

# EPI Manual Code Revision - Final List

For implementation in January 2005

Code	Title	Scope	Keywords/ search terms	IPC concordance	New, Changed or Retired code
<b>Section S</b>					
<b>S01 Electrical Instruments</b>					
S01-D07A		Includes measurement of point charges. See also S01-H02 for high voltage applications.		(G01R-029/12,14)	Change Scope
S01-E01D	Using magnetoresistive devices			(G01R-033/09)	New
S01-E01D1	Device per se			(G01R-033/09)	New
S01-E02A8A		Includes coils for RF excitation and detection. Does NOT include coils for generating magnetic fields, e.g. gradient coils. For coils generating magnetic fields, see S01-E02A8E.  Also includes antennae. See also V02-F01G and X12-C codes.		(G01J-033/32-38)	Change Scope
S01-E02A8C	Signal and image processing			(G01R-033/54)	Change Scope
S01-E02A8E		Includes coils for generating magnetic fields, e.g. gradient coils, electromagnets. See also V02-E codes.		(G01R-033/38-389)	Change Scope
S01-E02A8P	Pulse sequences	Covers methods and apparatus which control the timing, shape and duration of the RF pulses.		(G01J-033/32-38)	New
S01-E02A8Q	Control & Operation	Covers all systems for operation and control of NMR equipment other than RF pulses		(G01J-033/32-38)	New
S01-G02B		Codes in this section are used to denote testing of a semiconductor device as a "functional block" or "block box". See S01-G01A1 and S01-G01C1 for testing involving measurement of voltages and currents within the circuit itself.  Note, also includes unspecified electrical testing of semiconductor devices.		(G01R-031/26-27)	Change Scope
S01-H01	Testing, calibrating and compensation.			(G01R-035)	Change Scope
S01-H01B	Testing			(G01R-035)	New
S01-H01C	Calibration			(G01R-035)	New
S01-J02	Indicating elements, cooling, screening			(G12B)	Change Scope
S01-J02C	Cooling, Screening			(G12B-015,017)	New
S01-J09	Other instrument details (Incl. vibration damping)			(G12B)	Change Scope
<b>S02 Engineering Instrumentation</b>					
S02-A01C4	Angles, alignment, position, area	Includes measuring orientation.		(G01B-005/24-26)	Change Scope
S02-A02F		Includes measuring orientation.		(G01B-007/30-315)	Change Scope
S02-A03B4	Angles, alignment, position	Includes measurement of orientation, tapers or optical axes alignment.		(G01B-011/26-275)	Change Scope
S02-A05A1		Includes use of terahertz radiation.		(G01B-015)	Change Scope
S02-A05C4		Includes orientation measurement		(G01B-015, 017)	Change Scope
S02-A06C		For determining location in space rather than orientation		(G01B)	Change Scope
S02-A08D	Angles, alignment, position	Includes measurement of axes, tapers, orientation etc.		(G01B-021/22-26)	Change Scope
S02-B01A	Large scale position and location measurement	Includes mining and pipeline machinery position location. Does not include RADAR, GPS systems (see W06)		(G01C-003)	New
S02-B02A	Measuring altitude			(G01C-005, 007)	New
S02-B05A	Attitude and orientation			(G01C-001)	New
S02-B08G		Includes software.		(G01C-021)	Change Scope
S02-B08X	Other navigation techniques.	Includes inertial and dead reckoning techniques.		(G01C-021)	New
S02-C01A1			Wheel, turbine, blade, Bernoulli, Venturi	(G01F-001/06-12, 34-50)	Change Scope
S02-C06X		Includes dip-sticks, observable marks or scales on transparent vessel.		(G01F-023/28)	Change Scope
S02-E01	Vibration measurement methods	Includes measuring reverberation time, propagation velocity, resonant frequency or sound impedance.		(G01H-005,007,013,015)	Change Scope
S02-E02	Vibration detectors	Includes detectors in fluids, radiation-sensitive detectors; detecting capacitance or reluctance change		(G01H-003,009,011)	Change Scope
S02-F04C2	Blood pressure			(G01L-013)	New
S02-F04E	Protection against overload or environment; temperature compensation			(G01L-019)	Change Scope
S02-F04F	Testing, calibration and compensation	Does not include temperature compensation, see S02-F04E.		(G01L-025,027)	Change Scope

S02-G01B1A		From 200501, this code is no longer used.		(G01P-003/44-495)	Retired
S02-G01B1B		From 200501, this code is no longer used.		(G01P-003/44-495)	Retired
S02-G01B2	Measuring linear velocity			(G01P-003/50-60)	New
S02-G01B9	Other electrical or magnetic velocity measurement			(G01P-003/50-60)	Change Scope
S02-G02B			Pitot tube	(G01P-005/02-07,14-175)	Change Scope
S02-J01F	Rocket motors and Ion propulsion			(G01M-015)	New
S02-J02		Includes all vehicle types: aerospace, automotive and locomotive, etc.		(G01M-017)	Change Scope
S02-K05		Includes memory details, pen recorders, line printers etc.		(G01D-009)	Change Scope
S02-K07A	Testing			(G01D-018)	New
S02-K07B	Calibration			(G01D-018)	New
<b>S03 Scientific Instrumentation</b>					
S03-A03	Pyrometry and IR temperature measurement			(G01J-005)	Change Scope
S03-B01E	Adaptations and novel measurement for specific purposes	Includes novel measurement of temperature where sensor is of unspecified type or unimportant.		(G01K-013)	Change Scope
S03-B01X			Ultrasonic, thermochromic	(G01K-001,013)	Change Scope
S03-B02	Calorimeters	Heat quantity measurement. Includes electrical measurement for domestic heating system - also X27-E01A. Also includes calibration, testing and compensation of calorimeters. Calorimetry for investigation of sample properties is coded in S03-E01C.		(G01K-017,019)	Change Scope
S03-C04		REMOVE SCOPE NOTE		(G01V-007,011)	Change Scope
S03-C05	Geophysical natural disaster prediction and detection	Includes e.g. earthquake, volcano and landslide prediction and detection techniques. See also S03-C01 codes for seismic detection apparatus per se. See W05-B08 codes for natural disaster alarm systems.		(G01V)	Change Scope
S03-C07	For non-seismic well-logging or open water prospecting	These codes are used to differentiate between well-logging, open water prospecting or presence detection and are technology non-specific. Thus, they will almost always be combined with other (usually S03-C) codes. For seismic well-logging or open water prospecting, see S03-C01C codes.		(G01V)	New
S03-C07A	Non-seismic well-logging			(G01V)	New
S03-C07B	Non-seismic open water surveying			(G01V)	New
S03-D06		Includes all environmental pollution measurement, e.g. marine, fresh water, air, soil, etc. For air quality per se, see S03-E14N codes.		(G01W)	Change Scope
S03-D09		Includes detection of atmospheric measurements for non-meteorological applications, and meteorological data processing. Also include lightning strike detectors.		(G01W)	Change Scope
S03-E01B			Hygrometry	(G01N-025/02-18)	Change Scope
S03-E01E		Includes acoustic thermography. For detecting flaws, see also S03-E01B3.		(G01N-025)	Change Scope
S03-E02F	Using tunnel current and analogous effects	Includes all scanning probe microscope types and all adaptations for measurement, e.g. measurement of electric or magnetic fields, photon excitation, capacitance and ionic conductance, in addition to other relevant instrumentation codes.  See also V05-F for novel microscope and manufacturing details and S02-A codes for novel cantilever displacement measurement.  For optical scanning tunnelling or near-field optical microscopes with tunnel current type probes, see additionally S02-J04B1 and S03-E04R.  Does NOT include use of scanning probe technology for patterning techniques or recording - see V05-F05D and relevant I03-C and U11 codes.	SPM, magnetic force, MFM, SNOM, shear-force microscopy	(G01N-027) (G12B-021)	Change Scope
S03-E02F1	Scanning tunnelling microscopes		STM	(G01N-027) (G12B-021)	Change Scope
S03-E02F3	Atomic force microscopes		AFM	(G01N-027) (G12B-021)	Change Scope
S03-E03B1		Includes vehicle lambda probes.		(G01N-027/26-453)	Change Scope
S03-E03B2		Includes electrochemical pH sensors. See also S03-F10. For non-electrochemical pH detection, see relevant S03-E04 and E09 codes, as well as S03-F10.		(G01N-027/26-453)	Change Scope
S03-E03X		Prior to 2005, included non-electrochemical pH measurement. After 2005, see S03-F10 only.		(G01N-027/26-453)	Change Scope
S03-E04B5A	Surface plasmon resonance			(G01N-021)	New

S03-E04X	Imaging and other optical investigation			(G01N-021)	Change Scope
S03-E05		Includes microwave spectrometry. Also includes general terahertz radiation investigation. For terahertz imaging, see S03-E05E.		(G01N-022)	Change Scope
S03-E05E	Terahertz radiation imaging			None	New
S03-E06B1		See also V05-F codes for electron, ion and X-ray microscopes. Prior to 2005, included tunnelling microscopes - now only coded in S03-E02F codes.		(G01N-023/04,05)	Change Scope
S03-E06B3A	Computer tomography			(G01N-023/04,05)	New
S03-E06D		Does not include fluoroscopy.		(G01N-023/22-227)	Change Scope
S03-E06D1	Flaw detection			(G01N-023/22-227)	New
S03-E06H4	Source positioning			(G01N-023)	New
S03-E06H5		Includes e.g. cassettes.		(G01N-023)	Change Scope
S03-E06H5A	Semiconductor detectors	For novel semiconductor detectors per se, see S03-G02B2G and U12.		(G01N-023)	New
S03-E06H5B	Scintillation detectors	For novel scintillation detectors per se, see S03-G02B1.		(G01N-023)	New
S03-E06H5C	Stimulable sheet phosphors	For novel stimulable sheet phosphors per se, see V05-M01C1. For novel stimulable phosphor read-out systems, see W02-J codes.		(G01N-023)	New
S03-E06H5D	Video systems	For novel X-ray video systems per se, see W04-M codes.		(G01N-023)	New
S03-E07C		Includes NMR spectroscopy. See also S01-E02A1 codes.		(G01N-024/08)	Change Scope
S03-E08X		Includes construction details of ultrasonic equipment, e.g. probes and arrangements for orientation - see also V06.  Measuring deposition on crystal resonator using variation in Q-factor or impedance is not included - see S03-E02X.		(G01N-029/02,16-18)	Change Scope
S03-E09F	Immunoassay techniques and biological indicators	Includes all novel reagents and techniques. See also S03-E04D and S03-E04E for fluorescence detection and observation techniques. For radiopharmaceutical immunoassay indicators, see also S03-G02B9.  For microarray and biochip techniques, see also S03-H01 codes.  Prior to 2005 coded in S03-E14H4.	Antibody, assay, antigen, binding, ligand, fluorophore, monoclonal, conjugate	(G01N-033/50-60)	New
S03-E10A8	MALDI/SELDI mass spectrometry		Matrix assisted laser desorption ionisation, surface enhanced laser desorption ionisation	(G01N-027/62)	Change Scope
S03-E10B	Energy spectrometers			(G01N-027/62)	New
S03-E10C		Includes, e.g. plasma processing endpoint detection through plasma colour change.		(G01N-027/92)	Change Scope
S03-E12C	By measuring pressure/volume of gas			(G01N-005,007)	New
S03-E14A	Food, Pharmaceuticals and Cosmetics			(G01N-033/02-15)	Change Scope
S03-E14A2	Food, drink and tobacco		Milk, meat, tobacco, alcohol	(G01N-033/02-14)	New
S03-E14A3	Cosmetics			(G01N-33)	New
S03-E14E1		Includes crude oil and oil-derived fuels, as well as coal, natural gas etc. Oils for lubrication are covered by S03-E14F.		(G01N-33/22)	Change Scope
S03-E14H2	Biological fluids	Includes urine, semen etc.		(G01N-33/487-497)	New
S03-E14H3	Nucleic acids	Includes general DNA/RNA sequencing and tests for specific gene sequences, where there are no specific details. Where novel reagents are claimed, see also S03-E09F.  For microarray or biochip technology see also S03-H01A codes.		(G01N-33/48-98)	New
S03-E14H4		From 200501, this code is no longer used. See S03-E09F.		(G01N-22/53-577)	Retired
S03-E14H5	Enzymes, proteins and amino acids			(G01N-33/48-98)	Change Scope
S03-E14H6	Tissue samples			(G01N-33/48-98)	Change Scope
S03-E14L	Chemical and Biological warfare agents	Includes detection. See S03-E09 for chemical detection techniques, S03-C06 for luggage or mail inspection methods or S03-H01 for lab-on-chip or biochip technology.  For electrical aspects of chemical or biological warfare detection see W07-F01 also.		(G01N-33/48-98)	Change Scope
S03-F05C		Includes cytometry.		(G01N-015)	Change Scope
S03-F06C		Includes cytometry.		(G01N-015)	Change Scope
S03-F09A	General moisture detection			(G01N-19/10)	New

S03-F09B	General flaw detection			(G01N-19/08)	New
S03-F10	pH measurement	See also S03-E03B2 for electrochemical methods, and S03-E09E and S03-E04E for chemical indicators. Prior to 200501, non-electrochemical pH measurement was coded in S03-E03X.	Universal indicator, litmus	(G01N-031/22, G01N-027/416)	New
S03-G02B9		Includes radioactive immunoassay techniques - see also S03-E09F.		(G01T-001)	Change Scope
S03-G02C1			Faraday Cup	(G01T-001/29)	Change Scope
S03-H	General scientific instrumentation technology details	These codes can be used with S01 and S02 instrumentation types, except for the S03-H03 codes. For testing, calibration or compensation, see relevant sections in S01 and S02.		(G12B)	New
S03-H01	Lab on Chip and Microarray technology	These codes are used in combination with other S03 codes to denote specific technology types. For general automatic analysis equipment, see S03-E15. See also U13-D04 codes for semiconductor based technology. For instrumentation using electrochemical techniques, see S03-E03 codes.	LOC, Lab-on-chip.	(G12B)	New
S03-H01A	Microarrays and Biochips	See relevant S03 codes for detection type. See S03-E09F for Immunoassay techniques. Prior to 2005, see S03-E15.	DNA chip, Gene Chip™	(G12B)	New
S03-H01B	Microfluidic instrumentation			(B81B-001)	New
S03-H02	Micro/nanometre scale instrumentation	See also V06 codes for micro and nano-scale actuators/motors/sensors and U12-B03F codes for MEMs/NEMS technology in general.	MEMS, NEMS, Microelectromechanical	(B81, B82)	New
S03-H02A	Micrometre scale instrumentation	In general, covers instrumentation technology involving manipulation or manufacture at a scale of greater than 0.1 microns.		(B81B)	New
S03-H02B	Nanometre scale instrumentation	In general, covers instrumentation technology involving manipulation or manufacture beneath 0.1 microns, or 100 nanometres.		(B82B-001)	New
S03-H03	Testing, compensation and calibration	These codes are used to indicate general testing, calibration or compensation for S03 equipment. Note that some areas of S03 already have testing, calibration and compensation codes. Where these codes already exist, they take precedence over S03-H03, e.g. S03-A05 codes, S03-C10 and S03-E04P. Prior to 2005, see S02-K and S01-J02.		(G01D, G12B)	New
S03-H03A	Testing			(G01D-018)	New
S03-H03B	Compensation			(G01D-003)	New
S03-H03C	Calibration			(G12B-013)	New
<b>S04 Clocks and Timers</b>					
S04-A	Mechanical aspects of clocks and watches			(G04B)	Change Scope
S04-B	Electrical aspects of clocks and watches			(G04C)	Change Scope
S04-B06	Master slave clocks and radio controlled setting			(G04C-011,013,015) (G04G-007)	Change Scope
<b>S05 Electrical Medical Equipment</b>					
S05-A01B		Can be used for both internal and external defibrillators.		(A61N-001/38,39)	Change Scope
S05-A03C	Sonic or ultrasonic therapy	See S05-B02 for ultrasonic surgical equipment e.g. lithotripsy, and S05-A05 for massage using ultrasound. Infra-sonic can also be coded here. For Music therapy see S05-A09.		(A61N-007)	Change Scope
S05-A05B		Therapy using direct application of heat. Also includes therapy using cooling techniques.		(A61H-039/06)	Change Scope
S05-A05C	Massage			(A61H-007-023)	New
S05-A05D	Acupuncture			(A61H-039/08)	New
S05-B04		Note that both S05-B04 and S05-B04A can be used in conjunction if location of surgical instruments and patient are both being monitored.		(A61B-017)	Change Scope
S05-B07	Remote control and Automated/Robotic surgical systems			(A61B-017)	New
S05-D01J	Tissue, bone content and properties measurement	Includes measurement of bone density, bone mineral content, water, fat content and properties such as tissue elasticity etc. See S05-D01G for in-vivo blood composition measurement.		(A61B-005)	Change Scope
S05-D01K	Internal Pressure Measurement	Blood pressure measurement is coded in S05-D01B1A only, and Intraocular pressure measurement is coded in S05-D05 only.		(A61B-005/03)	New
S05-D01X	Other		psychotechnics, mental state	(A61B-005)	Change Scope
S05-D04			arthroscope, laparoscope, colonoscope	(A61B-001)	Change Scope
S05-D06A	Telediagnosis	Includes systems for patient diagnosis where patient and medical expert are in different geographical locations e.g. where patient's image, measurements etc. are transferred via internet, wireless telephone. N.B. This code is used for initial diagnosis of the patient only. For everyday monitoring of patients from remote locations, see S05-G02B2A.		(A61B, G06F-015)	New
S05-D08	General diagnostic processing			(A61B)	New

S05-D08A	General image processing	Can be applied either when type of image isn't mentioned or when it isn't important.		(A61B)	New
S05-D08B	General data processing	Can be applied either when type of data isn't mentioned or when it isn't important.		(A61B)	New
S05-G01		Includes electrical equipment for sterilising or disinfecting medical equipment only. For non-medical sterilisation or disinfection see X27.		(A61L-002, 009)	Change Scope
S05-G02G	Medical IT systems			(A61, G06F-017,019)	Change Scope
S05-G02G3	Data transfer/storage methods and apparatus	Includes all aspects of data transfer between medical equipment, from equipment to central database or from remote location to medical centre. Includes encryption, image compression, access control, network or database details, etc.		(A61, G06F-017,019)	New
S05-G02G9	Other medical IT systems methods/apparatus	Includes medical surveys, population screening etc.		(A61, G06F-017,019)	New
S05-M	Electrical drug storage and dosing			(A61J)	Change Scope
S05-M01	Drug delivery systems			(A61J-007)	Change Scope
S05-Y	Additional medical device details			(A61)	New
S05-Y01	Testing of medical equipment and systems			(A61)	New
S05-Y02	Nano/micro scale medical devices			(A61, B81, B82)	New
S05-Y03	Implantable medical devices			(A61)	New
S05-Y04	Ingestible medical devices			(A61)	New
<b>S06 Electrophotography and Photography</b>					
S06-A11	Multicolour systems	Used for any aspect of colour system, with other codes as appropriate. See also T04-G07 if for printer, and W02-J04 if for facsimile.	Dye, pigment, tint	(G03G-005/12, 013/01, 015/01)	Change Scope
S06-A12	Sheet handling/feeding	Includes all mechanisms for transporting sheet through copier, collators and sorters. See also T04-G06A if for printer, and W02-J05A if for facsimile.	paper, document, roller, guide, position, slide, belt, detect, platen, path	(G03G-021) (S06-A20)	Change Scope
S06-A14	Control, monitoring, warning devices	Includes operating status display (for display control circuitry see T04-H codes), mode selection devices, microprocessor details (see also T01-J codes, e.g. T01-J08A), and recording inhibiting devices. See also T04-G10 codes if for printer.		(G03G-015, 021/04) (S06-A20)	Change Scope
S06-A14B	Monitoring and error detection	See also W02-J03A5 for facsimile	Fault, reset	(G03G)	Change Scope
S06-A14F	Prevention of illegal copying	Preventing illegal copying of banknotes, securities and private documents, recognising copy prevention marks on documents, output to authorised operator. See also T01/T04 for image processing aspects and T05-J for testing of securities, banknotes, etc.			New
S06-A17	Recycling Systems	From 2005 covers all aspects of recycling. See also T04-G11B for printer systems. See X25-W04 for recycling systems in general.		(G03G-021)	Change Scope
S06-A17A	Paper Recycling	For removing toner from recording paper to enable re-use of paper.	paper	(G03G-021)	New
S06-A17B	Toner Recycling				New
S06-A17C	Component Recycling	See also V04/X12 for recycling electrical components.			New
S06-A19	Construction	Includes details of machine casing, framework, etc., and also internal mounting arrangements of components and modules. Image, optical, instant-picture, SLR, disc, roll, cartridge, film. See also T04-G11 if for printer.		(G03G) (S06-A20)	Change Scope
S06-B02A	Light metering	See also S03-A01 codes.	Intensity, compensate, bright, photometry	(G03B-007)	Change Scope
S06-B02C5	Actuation using timer delay	See also S04-C01.		(G03B)	Change Scope
S06-B04	Film processing	Electrical aspects of developing exposed film, exposing photographic paper, scanning negative, developing exposed film and paper. Includes electrical aspects of X-ray film processing. Does not include electrical aspects of film manufacture or details of film material.	Image, colour, print, expose, negative, positive, copy, dark-room	(G03B-001,027)	Change Scope
S06-B04A	Photographic printing appt..	Electrical aspects of printer for wet developing of photographic film to produce photograph. Control and monitoring of processes. For positive or negative scanning to provide digital image to computer and computer output appt.. see S06-B06B. For printing from digital camera see T04-G codes and W04 codes, especially W04-D10.	Frame, original, scan filter, magnify, reduce, colour output on microfilm	(G03B-027)	Change Scope
S06-B04A2	Processing exposed film	Electrical aspects of developing, fixing, washing and drying negative.			New
S06-B04A3	Processing developed negatives	Electrical aspects of processing developed negative to produce photographic prints. Enlarging, exposing, rinsing, fixing, washing, drying			New
S06-B04A5	Control and monitoring of printing station	This code is discontinued from 2005 see S06-B04A2 for film/slide processing, including control and monitoring details and S06-B04A3 for print/slide making, including control and monitoring details and modification of exposure based on e.g. negative characteristics.			Retired

S06-B04B	Photographic film manufacture	From 2005 this code covers electrical aspects of photographic film manufacture only. See S06-B04A2. for developing exposed film and electrical aspects of chemical, thermal development and S06-B04A3 for developing photographic paper and electrical aspects of chemical, thermal development.			Change Scope
S06-B08C	Power source details	Includes storage compartments for battery and detection of battery voltage level. See also X16 for battery details, if measuring battery level see X16 and S01. See U24 for power supply details.	battery	(G03B-007/26)	Change Scope
S06-B09	Other (photography)	Includes electrical aspects of X-ray photography (processing is also coded in S06-B04 codes).	Radiate, beam, colour, cassette, medical, Film scanners and viewers tomography	(G03B)	Change Scope
<b>Section T</b>					
<b>T01 Digital Computers</b>					
T01-C03	Data Exchange with distant stations	Includes any connection between two workstations over any distance. See also W01-A codes.	bus, transmit, receive, terminal, link		Change Scope
T01-C03C	Wireless Link	Includes, satellite, radio, infra-red, etc. interfaces for accessing a network. See also W01-A06C3 and W01-A06C4.			Change Scope
T01-C04D	Display processing		graphics card	(T01-C04)	Change Scope
T01-C07C4A	Serial interface with additional features	Additional features such as power supply. See also T01-H07, T01-H05B for bus transfer and T01-L01/3 for connector details. See also V04 codes.	USB, universal serial bus interface, hot swap, plug and play, firewire, IEEE 1394, i-link @		New
T01-D02A	Watermarking	See also T01-J10D for image watermarking and W04 for audio/visual watermarking.	stenography		New
T01-D04	Data flow speed conversion	Pre 2005 see T01-D09.		(G06F-005/06)	New
T01-D09	Other	From 2005 see T01-D04 for data flow speed conversion.		(G06F-005)	Change Scope
T01-E01A	Sorting	Including grouping data records, rearranging, and re-recording.	Software Boolean logic operation	(G06F007/08)	Change Scope
T01-E05Q	Quantum Computing	Using quantum theory for processing. Prior to 2005 see T01-E05X.			New
T01-F06	Program control arrangements	Includes record carriers containing only program instructions; using stored programs e.g. control for peripherals. Non-numerical controllers per se are covered by T06-A04B. For disclosure of firmware see T01-S01A. See also U21 for logic devices.	PLD, PLC, EEPROM	(T01-F09)	Change Scope
T01-G08	Computer Diagnostics	Includes fault location, file/diagnostic dictionary software, remote diagnostic (see also T01-N codes), fault masking and fault documentation. See T01-J08F for diagnostic of non-computer equipment.		(G06F-011) (T01-G09)	Change Scope
T01-G11X	Other measurement of non-processor parameters			(G06F-011)	New
T01-H01B1	Dynamic recording by relative movement between recording head and storage medium (disk, drum, tape, etc.)	Now discontinued. See T01-H01B4/5/6 from 2005.		(G11B)	Retired
T01-H01B1A	Storage Arrays	Now discontinued. See T01-H01B7 from 2005.		(G11B)	Retired
T01-H01B2	Optical, magneto-optical computer memory	Now discontinued. 1997-2004 see T01-H01B1 for dynamic optical recording, 2005 onward see T01-H01B4/5/6		(G11B)	Retired
T01-H01B3B	Static Magnetic Memories	Covers solid state magnetic memories	MRAM	(H01L, G11C)	New
T01-H01B3C	Static Optical Memories	Covers solid state optical memories.		(H01L, G11C)	New
T01-H01B4	Dynamic Magnetic	Includes Hard Disks, floppy disks		(G11B)	New
T01-H01B5	Dynamic Magneto-Optical		mini-disc	(G11B)	New
T01-H01B6	Dynamic Optical	For CDs, CD-ROMS, DVD's		(G11B)	New
T01-H01B6A	Volume Read e.g. Holographic	for use of media that is read by passing a light beam through (not off) the material such as holographic storage			New
T01-H01B7	Storage Arrays	Also code under memory type, see also T01-G03 for redundant storage areas, e.g. RAID. See T01-H01B1A prior to 2005.		(G11B)	New
T01-H01B9	Other, inc. all non-semiconductor static memories				New
T01-H03A	Cache memory, virtual memory and hierarchical memory	Includes use of small, high speed buffer, virtual and hierarchical memories. Includes address translation (see also T01-H01A). Prior to 1992 covered by T01-H02, now discontinued. Network Caching is covered by T01-N01D4 from 2005.	ageing	(G06F-012/08-12)	Change Scope
T01-J04E	Mathematical Modelling	See also T01-J15H for simulation systems involving mathematical models.	chaos theory		New
T01-J05A	non-specific Administration, business and commercial Tool	See T05-L codes also for EFT, point-of-sale and automatic teller machines. From 2002 see T01-N01A for on-line business systems.	Cash, cash-transaction, point-of-sale, meter, postage, management	(G06F-017/60, G06F-151:00, G06F-153:00)	Change Scope
T01-J05A2G	Intellectual Property and Copyright management	See T01-N01A2G for on-line systems. See also W04 for audio/video aspects.		(G06F-017/60)	New

T01-J05A2H	Personnel Management	Includes internal business administration, health and safety, employment tribunal, organisation chart, people performance management, payroll, pensions, benefits, recruitment, career development, etc. See T01-N01A2H for online personnel management.	Peoplesoft™, OrgPlus™	(G06F-017/60)	New
T01-J05A3	Tools for Government	This code is intended for electronic public administration and management tools used by governmental bodies or agencies to implement government-to-citizen (G2C), government-to-business (G2B) and/or government-to-government (G2G) service(s). Includes commerce, voting/election, immigration, law enforcement, licensing, taxation, records management etc.	IRS, legislation, ID, social services, Citizenship	(G06F-017/60)	New
T01-J06A	For medicine	See also S05 codes for electrical medical equipment in general. For initial diagnostic, S05-D06A. For continuing monitoring, S05-G02B2A. From 2005 see T01-N01E for on-line systems. See also T01-J13A for biological analysis.	Diagnose, patient, biological, medical	(G06F-017, 159:00)	Change Scope
T01-J06A1	Medical information systems	See also S05-G02G. For medical records, S05-G02G1. For administration including appointments, S05-G02G2. From 2005 see T01-N01E1 for on-line systems.		(G06F-017, 159:00)	Change Scope
T01-J07B	Computer control of manufacturing/industrial machine and quality control	Includes computer aided manufacture, computerised robotics/mechatronics see also T06-A, T06-D and X25-A codes.	CAM, industrial robot	(G06F-019/00)	Change Scope
T01-J07B1	Quality control			(G06F-019/00)	Change Scope
T01-J07B2	Semiconductor manufacture control	This code covers aspects of semiconductor manufacture and cleaning processes. See also U11-C (especially U11-C15C).			New
T01-J10B	Image processing	Covers digital image processing arrangements using a personal/mobile computer. E.g. image enhancement, analysis, objects processing, optical character recognition (OCR), edge detection, facsimile, and video. If processing is in peripheral or other device then see T04-D. T04-D07 can be applied to highlight applications. (T01-J10 and T04-D are only used together when the novelty does not describe how/when the processing is carried out).	Pel, pixel	(G06T-01/00)	Change Scope
T01-J10C3	In text	Includes form filling and format. Processing ideographic/pictographic languages and characters. Font generation and manipulation.	Graphic character representation		Change Scope
T01-J11	Productivity Tools and Applications	Includes WYSIWYG, typesetting and editing.		(G06F-017/21-27)	Change Scope
T01-J11C	Electronic and intranet documentation	See T01-N03B2 for on-line aspects			Change Scope
T01-J11E	Presentation Software	Presentation software, includes multimedia presentation software, see also T01-J30 and W04-W.	PowerPoint®		New
T01-J11F	Organiser/scheduler	See also T01-J05A2B for business schedule organising. See T01-N03A3 for networked aspects.	calendar		New
T01-J13	Scientific Analysis	Processing systems used to support scientific analysis. See S03 for analysis acquisition systems.			New
T01-J13A	Biological analysis	Biological analysis includes DNA analysis and other biological systems. See also T01-J06A for medical applications.			New
T01-J15H	Simulating non-electronic systems	Includes simulation of e.g. thermodynamics and weather systems, also includes electrical systems not covered by T01-J15A/B, see also T01-J04E for mathematical modelling.			Change Scope
T01-J15X	CAD for non-electronic applications	Includes any electrical systems not covered by T01-J15A/B.		(G06F-017/50)	Change Scope
T01-J17	Digital function generators		Trigonometric, Look-up table	(G06F-001/02, G06F) (T01-X)	Change Scope
T01-J20X	Other software details	See T01-J20B2 for copyright protection from 1997			Change Scope
T01-J30A	Educational aids	Includes use of multimedia systems for education and training purposes, CAI, tuition support systems, and student. Educational equipment is also assigned W04-W codes, also see T01-P01 prior to 2002. From 2005 see T01-N01B codes for on-line systems.			Change Scope
T01-J30C	Media Players	Includes media players that are not browser based for playing CDs, DVD's (see also T01-H01B1), videos and audio files. See also W04 and T01-N03A1B for on-line systems.			New
T01-J30D	Computer processing for sports and training equipment	Covers use of digital computing in sports equipment. See also W04.			New
T01-L01	Power supplies, standby arrangements	Mains supply are covered by U24-D&E and X12-H&J. See X16 for battery systems and X15 for solar power/renewable resources	regulator, stabiliser, automatic switching	(G06F-001/26-32)	Change Scope
T01-L01A	Primary power supply				New
T01-L01B	Back up power supply		UPS, battery back up	(G06F-001/30)	New
T01-L03	Connectors	Includes cables, wiring, etc. for computers. See also V04 (particularly V04-M30E) and X12.	connector, wiring		New

T01-L09	Other	From 2005 see T01-L03 for connectors.			Change Scope
T01-M01	Single processor computer unit	Covers processor arrangements where instructions are received from an external source. See T01-M05 for pre-programmed architectures.	Microprocessor, CPU		Change Scope
T01-M02A1B	Client-server systems	Covers architecture details of Client-Server systems. Computer networks in general are covered by W01-A06 codes. Data communication within Client-Server Networks are covered by T01-N02A2C. Use of servers is coded in T01-N02A3C	Client-server, back-end, front-end	(G06F-015/16) (T01-M02A)	Change Scope
T01-M02A1C	Internetworking	Covers architecture details of internetworking systems such as the Internet, WAN's and the computer architecture details of interconnections. Internets are also covered in W01-A06B7, interconnection details in W01-A06G and communication details are covered within T01-N02A2	Internet, intranet, WAN, LAN	(G06F-015/16)	Change Scope
T01-M02C3	Superscalar computers	For processors that execute multiple scalar operations in parallel. Includes Very Long Instruction Word processors. See T01-M02C prior to 2005.	VLIW, 2nd Generation RISC, Trace Scheduling	(G06F-15/76)	New
T01-M05	General microcomputing architectures	Covers processor arrangements where instructions are pre-programmed or hardwired into the processor before processing is carried out. See also T01-F06 for program arrangements.	ASIC		Change Scope
T01-M06A1A	Hand-Held: palm-tops, personal organisers	Includes PDA with phone functionality (Internet browsing, e-mail, etc.) for phones with computer functionality see W01. Pre-1997, search T01-J01, T01-J05, T01-J09, T01-M06A1	palm-top, hand-held		Change Scope
T01-M06Q	Quantum System	Using quantum devices for processing. Prior to 2005 see T01-M06C/X	quantum well gate		New
T01-M06S	Servers	Covers architecture and construction of servers. Use of servers in computer networks is covered in T01-N02A3C, client-server systems communications in T01-N02A2C and architecture of client-server systems in T01-M02A1B. Constructional details are also coded in T01-L section.			New
T01-N01A	Financial/Business	See T01-J05A and T01-H07C5E prior to 2002 . From 2002 on-line systems are coded here with off-line being coded in T01-J05A.		(G06F-017/60, G06F-151:00, G06F-153:00)	Change Scope
T01-N01A2C	Advertising and Marketing	Includes network based systems such as web marketing, common marketing, consumer buying habits, feedback and banner advertising. See also T01-N01A1 and T05-L02 if involving financial incentives (coupons) and W05-E03E for display aspects	banner	(G06F-017/60)	Change Scope
T01-N01A2F	Information Brokerage	Includes financial advice, consultancy, stock/commodities/futures market monitoring/trading (see also T01-N01A1 and T05-L02 for trading). See T01-J05A2 with T01-H07C5E prior to 2002.	on-line broker, stock trading	(G06F-017/60)	Change Scope
T01-N01A2G	On-line intellectual Property and Copyright management	See T01-J05A2G for off-line systems including protecting copyright of downloaded files. See also W04 for audio/video aspects.		(G06F-017/60)	New
T01-N01A2J	On-line insurance and risk Analysis	Includes on-line processing and assessing insurance claims, evaluation of risk factors in a loan determination.		(G06F-017/60)	New
T01-N01A2H	On-line Personnel Management	Includes internal business administration, performance management, payroll, pensions, benefits, recruitment, career development, etc. See T01-J05A2H for offline personnel management		(G06F-017/60)	New
T01-N01A3	E-Government	This code is intended for network based electronic public administration and management tools used by governmental bodies or agencies to implement government-to-citizen (G2C), government-to-business (G2B) and/or government-to-government (G2G) service(s). Includes commerce, e-voting, immigration, law enforcement, licensing, taxation, records management etc.	E-Gov, G2C, G2B, G2G, E-voting	(G06F-017/60)	New
T01-N01B	Entertainment and Educational	See T01-H07C together with T01-H07C5E prior to 2002, from 2005 expanded to cover on-line educational systems.			Change Scope
T01-N01B1	Gaming	Includes network, on-line gaming and on-line gambling (see also T01-N01A1, T05-L02 & W04). See T01-H07C3B, T01-H07C3D and T01-H07C5E prior to 2002. See T01-J30 for off-line systems	internet gaming, MUD, multi user dungeon, MMOG, MMORPG, massive multi-user on-line game		Change Scope
T01-N01B3	On-line Education	Covers Educational systems using a computer network and use of computer networks in an educational environment. See T01-J30A together with T01-N01D prior to 2005. See also T01-N01A2D for virtual classrooms, etc.			New
T01-N01B3A	Remote examination/testing				New
T01-N01B4	News systems	Covers on-line systems for news updates including e-mail subscription services (together with T01-N01C).			New

T01-N01D1B	Video and Image transfer	Includes computerised video conferencing. See T01-H07C3B and T01-H07C5E prior to 2002. See also W01-A06E1A for data conferencing and broadcasting and W02-F01E3 interactive Internet broadcasting.	JPEG, MPEG	(T01-H07C3B)	Change Scope
T01-N01D2	File Transfer	For transfer of files other than multimedia. Includes downloading non-internet executable programs, as well as web page transfer			Change Scope
T01-N01D3	From remote site or server	Includes networks where applications are run on server under the control of a client system. See T01-H07C3E prior to 2002.	Applet, Java, thin-client		Change Scope
T01-N01D4	Network File Caching	For storage of regularly accessed files such as web graphics. See also T01-N02A3C for server based caching, T01-N03A1 for browser based caching, see also T01-H03A before 2005			New
T01-N01E	On-line Medicine	See also S05 codes for electrical medical equipment in general. For initial diagnostic, S05-D06A. For continuing monitoring, S05-G02B2A. From 2005 see T01-N01E for on-line systems. For drug delivery/ordering systems see also T01-N01A2 codes.			New
T01-N01E1	On-line Medical information systems	See also S05-G02G. For medical records, S05-G02G1. For administration including appointments, S05-G02G2.			New
T01-N02A1	Communication Protocol	Covers Novel aspects of TCP/IP and novel uses of other protocol types for transfer over a network. See also W01-A06F for protocols in general and W01-A06F2 for network protocols. See T01-H07P prior to 2002, T01-H07C prior to 1997. Bus transfer protocols are found in T01-H07B.	TCP/IP		Change Scope
T01-N02A1A	Addressing	Covers network addressing as opposed to routing. For setting and determining destination of packets, not route that they will travel. Includes Domain Name system, network identification and Universal Resource Locators. See also W01-A06F2.	URL, IP address		New
T01-N02A1B	Ad-hoc network systems	Includes setting up dynamic networks. See also under application, e.g. T01-N01B2 for chat rooms, T01-N01A2C for advertising. See also W01 for network codes, e.g. W01-A06C4A for Bluetooth network or W01-A07H2A for Bluetooth interface.	proximitymail™, BluePing™, 'on the fly' wireless network, relay area network, RAN, localised community messaging network.		New
T01-N02A2D	SAN	Code covers storage area networks. See also T01-H01B codes for storage media type, T01-N02B codes for access and W01-A06B5B for network aspects.			New
T01-N02A2E	Peer-to-peer networks	Covers network communication between stations without using a central server. See also W01-A06B8C and W01-A06E2B.	viral network, p2p		New
T01-N02B1	Access and Control	Includes control of access to file and folders and Internet service provider systems.	permissions, access control list, ISP		Change Scope
T01-N02B1A	File management and access	See T01-F05G5 if done by an operating system. Includes watermarking (see also T01-D02A from 2005) and digital certificates for file authentication for file transfer see also T01-N01D.	hash values, digital certificates		Change Scope
T01-N02B1C	Unsolicited Advertising Protection	Includes spam and pop up protection, see also T01-N01C for e-mail	spyware, adware, browser hijack		New
T01-N02B1D	Firewalls	Includes devices or software for controlling access to network data or resources from external network connections and for controlling access to external network resources or data by internal network clients.	Firewall, intrusion detection, port forwarding, port blocking, NAT, Stateful packet inspection		New
T01-N02B2C	Transmitted content analysis	Monitoring contents of transmitted files, including emails.	Packet Sniffing. Chat room monitoring		New
T01-N03A3	Meeting co-ordination and organiser/calendar applications.	Covers applications to arrange meetings with groups of people through software. covers a personal calendar application linked to an email program. See T01-J11E for off-line see also T01-N01C email.	Outlook™, lotus notes™		New
T01-N03B1	Internet executable programs	Includes executable programs, e.g. applets, flash needed to view content. Covers only novel aspects see T01-N01D3 or T01-N03A1 for applications.	applet, flash, Java bean		Change Scope
T01-N03B3	Scripting Languages	Covers patents concerned with web based scripting languages which are neither compiled nor mark-up languages.	PHP, ASP, JavaScript, PERL, CGI		New
T01-N03B4	Format conversion	Covers conversion of media from one network standard to another one. Includes converting e-mail (T01-N01C) to e.g. fax (W02-J) or SMS (W01), also includes converting web browser formats such as SGML, XML and HTML (T01-N03B2).			New
T01-N0A2E	Value chain service provider and Integrator	Includes logistics, production management, and web based package shipping support and web hosting. See T01-J05A2 together with T01-H07C5E prior to 2002.		(G06F-017/60)	Change Scope
<b>T03 Data recording</b>					
T03-A02B9		Includes packing and shipping of manufactured carrier. Also includes wiring of servo tracks during manufacture.			Change Scope
T03-A03C3C	Tunnel junction magnetoresistive head	See also T03-A03C3A for tunnel junction giant magnetoresistive head.		G11B-005/39	New

T03-A03C9	Flux sensitive head details			G11B-005/39	New
T03-A03C9A	Magnetic layers		pinned layer, free layer	G11B-005/39	New
T03-A03C9C	Spacer layer	Includes conductive layers and non-magnetic layers between magnetic layers.		G11B-005/39	New
T03-A03C9E	Tunnel barrier layer			G11B-005/39	New
T03-A03C9G	Exchange layer		anti-ferromagnetic	G11B-005/39	New
T03-A03C9J	Shielding layer			G11B-005/39	New
T03-A03C9L	Layer arrangements	Covers emphasis on sequence of layers without particular reference to any one.		G11B-005/39	New
T03-A03C9N	Biasing arrangements	Circuitry for biasing magnetic heads is covered in T03-A06G.		G11B-005/39	New
T03-A03C9X	Other			G11B-005/39	New
T03-A03J		Covers details of inductive type heads. For details of magnetoresistive heads see T03-A03C9 codes. Codes in this section are used alone or in conjunction with other T03-A03 codes as appropriate.			Change Scope
T03-A03J7C		Includes shielding layers within film-type heads (see T03-A03E). For shielding layers within magnetoresistive heads see T03-A03C9J.			Change Scope
T03-A03J9		Prior to 9701 this code included head substrates, now covered by T03-A03J7E and prior to 200501 also included biasing arrangements for magnetoresistive heads which are now covered in T03-A03C9N. Circuitry for biasing magnetic heads is covered in T03-A06G.			Change Scope
T03-A05A1G	Using non-magnetic servo information	Includes use of optical servo tracks.		G11B-005/584, 596	New
T03-A05C8	Connections to read/write head	Includes wiring formed on head support arm.		G11B-005	New
T03-A05G	Parking, latching arrangements	Prior to 2005 this topic is coded in T03-A05X		G11B-005/54	New
T03-A06G		Arrangements for biasing magneto-resistive heads are covered in T03-A03C9N (prior to 2005 this was covered in T03-A03J9).			Change Scope
T03-A06M	Thermo-assisted magnetic recording	Cover use of laser to heat area to be written.		G11B-011, -013	New
T03-A07B1		Includes servo track writing post manufacture, e.g. in hard disc drive. Duplication of whole carrier information is covered by T03-A07B3 codes.			Change Scope
T03-B01A1		Includes glues, resins used for bonding multiple substrates			Change Scope
T03-B01E3G		Includes bonding of multiple substrates, setting resins etc..			Change Scope
T03-B02A4	Tilt correction	Covers arrangements involving movement of lens or using other optical systems e.g. liquid crystal element.		G11B-007/08-10	New
T03-B02B1		Light source control aspects are coded in T03-B02A7. Light source performing both reading and writing functions are coded in both subdivisions. For frequency doubling/multiplying optical arrangements search with T03-B02B7 prior to 9701 (now transferred to T03-B02B7E).			Change Scope
T03-B02B7G	Diffraction gratings			G11B-007/135	New
T03-B02C	Static carrier reading and writing system				Change Scope
T03-B03		From 2005 novel aspects of optical record carrier positioning are assigned T03-F or T03-E codes in conjunction with the appropriate T03-B10 code.			Retired
T03-B03A		Prior to 2005 T03-N01 is also assigned. Search with T03-F codes for specific details.			Retired
T03-B03C		Prior to 2005 T03-N05 is also assigned. Search with T03-F codes for specific details, and with codes in T04, e.g. T04-A03B and T04-J.			Retired
T03-B03E		Prior to 2005 T03-N02 and/or T03-N03 or T03-N04 are also assigned. See T03-E codes for tape drive details.			Retired
T03-B05A	Recording methods			G11B-007	New
T03-B05A1	Optimisation methods	Includes use of test recording area. Use with appropriate code, e.g. T03-B02A7 for controlling light source power.		G11B-007	New
T03-B05F	Format			G11B-020/12	New
T03-B05K	Determining format or type of carrier inserted	E.g. distinguishing between CD and DVD or between CD-R and CD-RW in drive capable of handling multiple formats.		G11B-007	New
T03-B10	Optical drive	From 2005 optical drives are coded in this section in accordance with carrier type and are no longer assigned a corresponding T03-N code. Prior to 2002 optical drives are coded in T03-N01 and W04-C10. From 2002 W04-C10 codes are applied only for audio/video recording applications and therefore between 2002 and 2005 optical drives with no audio/video aspect are assigned T03-N01 in conjunction with the appropriate T03-B codes to denote novel aspects.		G11B-007/002	New

T03-B10A	Disc drive		CD, CD-ROM, CD-R, CD-RW, DVD, DVD-ROM, DVD-R, DVD-RW, DVD-RAM, DVD+R, DVD+RW, Blu Ray	G11B-007/0037	New
T03-B10A1	Multilayer disc	From 2002 to 2005 drives for optical disc with multiple recording layers, e.g. DVD-9, DVD-10 and DVD-18 formats, are assigned W04-C10A2 where the invention has significant audio/video recording aspects. From 2005 W04-C10A2 is no longer used and all multi-layer aspects of drives are coded here. Optical disc drives for audio/video recording which are also used for recording other data formats are coded in W04-C10A3A.		G11B-007/0037	New
T03-B10C	Card drive			G11B-007/0033	New
T03-B10E	Tape drive			G11B-007/003	New
T03-B12	Holographic recording	This code is applied in conjunction with other T03-B codes to denote the relevant aspect. Prior to 2005 holographic recording was assigned T03-C09 as well as in T03-B codes		G11B-007	New
T03-D01A5J	Domain wall displacement system	Covers systems which transfer high density recorded marks from memory/recording layer to displacement/reproduction layer via switching layer through exchange coupling force, then causing exchange coupling force to disappear through heating and shifting domain wall in reproduction layer to increase size of mark so as to allow reading by standard wavelength laser.	memory layer, switching layer, displacement layer, control layer, reading layer	G11B-011, -013	New
T03-D01A9	Recording format	Covers physical aspects only, e.g. details of grooves and pits. See T03-D01E7 for signal aspects of recording format.		G11B-011, -013	New
T03-D01B		From 2005 novel aspects of magneto-optical record carrier positioning are assigned T03-F or T03-E codes in conjunction with the appropriate T03-D01K code.			Retired
T03-D01B1		Prior to 2005 T03-N01 is also assigned. Search with T03-F codes for specific details.			Retired
T03-D01B5		Prior to 2005 T03-N02 and/or T03-N03 or T03-N04 are also assigned. See T03-E codes for tape drive details.			Retired
T03-D01E1	Erasing/rewriting methods	Includes methods intended to reduce access time.			Change Scope
T03-D01E7	Signal recording format, methods			G11B-011, -013	New
T03-D01K	Magneto-optical drive	From 2005 magneto-optical drives are coded in this section in accordance with carrier type and are no longer assigned a corresponding T03-N code. Prior to 2002 magneto-optical drives are coded in T03-N01 and W04-D20. From 2002 W04-D10 codes are applied only for audio/video recording applications and therefore between 2002 and 2005 optical drives with no audio/video aspect are assigned T03-N01 in conjunction with the appropriate T03-D01 codes to denote novel aspects.		G11B-011, -013	New
T03-D01K1	Disc drive			G11B-011, -013	New
T03-D01K3	Card drive			G11B-011, -013	New
T03-D01K5	Tape drive			G11B-011, -013	New
T03-F02A5	Motor tilt control			G11B-019	New
T03-F02L		From 2005 codes in this section are no longer used. Constructional aspects of disc drives are now assigned T03-L05 codes in conjunction with T03-A08A, T03-B08A or T03-D01K1 as appropriate, or in conjunction with T03-N01 for general cases.			Retired
T03-F02L1					Retired
T03-F02L5					Retired
T03-F02X		Prior to 2005 this code included connectors, which are now covered in T03-M07.			Change Scope
T03-H02B	Cleaning of carriers				Change Scope
T03-K05	Recording equipment control and circuits (general)				Change Scope
T03-L05N	Noise and vibration reduction using constructional techniques			G11B-033/08	New
T03-L05S	Shock absorbing and damping			G11B-033/08	New
T03-M05	Power supply details			G11B-033	New
T03-M07	Interfacing, connectors	Interfacing for hard disk drives and optical disk drives is covered in T03-A10 and T03-B08 respectively, and is not coded here. See V04 codes also.		G11B-031, -033	New

T03-N01		Notes (1) Codes in this section are applied to indicate equipment type only, and do not themselves indicate novel features; (2) It is not intended that the codes be used in isolation, but rather to restrict the scope of other T03 codes; (3) From 9201, T03-N codes have not been assigned to record carriers per se which can be assigned codes from the following sections: T03-A01C, T03-A02E, T03-B01D, T03-D01A1; (4) Prior to 2005 T03-N codes were assigned to all inventions involving a record carrier drive used for a given type of record carrier. From 2005 codes in this section will be only be applied where the recording method, e.g. magnetic, optical etc., is unknown or the invention is of a general nature. T03-A08, T03B08 and T03-D01K codes are applied for inventions involving a particular method of recording; (5) Carriers in casings (e.g. cassettes, diskettes as covered by T03-H codes) are also assigned T03-N codes			Change Scope
T03-P01D	Equalisation, thresholding, detection			G11B-020/10	
T03-S	Use of data recording apparatus for non-recording applications	Use in conjunction with T03-B01D1 for articles incorporating optical discs, e.g. clocks, drinks coasters.		G11B	New
<b>T04 Computer Peripheral Equipment</b>					
T04-A01	Punched card or tape punches and readers		Optical, hole, punch hole, aperture	G06K-001/02-10, 20-22, -007/02-06, -021)	Change Scope
T04-A03B1	Bar code reading	Search with T05-L01C for point of sale application, T01-C06 for computer interfacing and T04-M02 for hand-held bar-code scanner.		(G06K-007/10-14)	Change Scope
T04-A05	Card feeding apparatus	Card feeding details for digitally marked record carrier see T04-A03 for reading aspects.			New
T04-D	Character and signal pattern recognition	For data processing aspects of image acquisition and processing devices e.g. analysis, image detection, scanning, optical character recognition, camera. E.g. recognition for edge detection in peripheral. (T01-J10 and T04-D are only used together when the novelty does not describe how/when the processing is carried out). See also X25 codes, e.g. X25-A03E for robot manipulators. If novelty is in camera then see V04.	Image, detect, camera, digital, identify, scan, optical, video, facsimile, line, pixel, analysis	(G06K-009)	Change Scope
T04-D07B	Sorting object by type	Includes quality pass-fail tests based on e.g. colour. See also T05-K and X25-F06 for sorting.		(G06K-009)	Change Scope
T04-F	Manual input arrangements	Only applied if input device details are given. Covers manual or other physical input arrangements. See T01-C02 codes for computer interface per se.	Position, select, switch, contact, digital, touch, co-ordinate	(G06K-011/06-20)	Change Scope
T04-F01B	Construction	Cross reference to V03 for constructional details.	Key, membrane, pushbutton, pressure, casing, housing	(G06F-003/023)	Change Scope
T04-F02A	Based on absolute position	Input device when pressed/touched on particular position, inputs data according to that position.		(G06K-011/06-20)	Change Scope
T04-F02B	Based on relative position	Input device when moved moves e.g. cursor accordingly.		(G06K-011/06-20)	Change Scope
T04-F02B1A	Optical	Mouse using optical elements instead of roller ball		(G06K-011/18)	New
T04-F02B2	Track Pad	Touch pad used as mouse input e.g. on laptop computer		(G06K-011/06-20)	New
T04-F02B3	Joystick, game pad	Includes input devices used for gaming machines, e.g. joypad, driving wheel, etc. that are used in place of joystick		(G06K-011/18-20)	Change Scope
T04-F02C	Construction and manufacturing details of analogue input arrangement.	Includes mechanical details, manufacture and manufacturing apparatus. See also codes for type (e.g. T04-F02B1 for mouse, etc.). See T04-L01/L05 prior to 2005		(G06K-011/06-20)	New
T04-G01C	Ribbon	From 2005 includes printer ribbon re-inking, previously coded in T04-X.	Ink, cassette	(B41J-002/305, G06K-015)	Change Scope
T04-G02D	Inkjet head cleaning and general maintenance of printhead			(B41J-002/01-215)	Change Scope
T04-G02G	Ink Chamber	See also T04-G11 for chamber construction and T04-G02F for refilling ink in chamber. Previously coded as T04-G02. Code with T04-G02A1/T04-G02B1 for combined chamber and printhead details.			New
T04-G02H	Post ink application processing	Includes processes for treating ink after application using e.g. heat or UV light.			New
T04-G02J	Novel applications of ink-jet printing technology	Includes textile printing (see also X25-T), 3-D printing and other industrial applications using inkjet technology			New
T04-G03C	Printhead details for thermal printer	For thin-film resistor heads see also U14 codes, e.g. U14-H01B.	Printhead	(B41J-002/335-375, G06K-015)	Change Scope

T04-G05	Electrode (e.g. electrosensitive/erosive)	Electrostatic printing using any means other than light for charging. For electrographic details (e.g. developing) see also S06-A codes. If not specifically for printing see also S02-K.	electrostatic, dielectric, electrochromic, stylus	(B41J-002/39-425,G06K-015/14)	Change Scope
T04-G06A	Sheet feeding	See also S06-A12 codes if for copier, W02-J05A if for facsimile.	Line feed, paper	(B41J-011-015,G06K-013)	Change Scope
T04-G06B	Finishing apparatus	Includes stapling, binding, etc. See also S06-A18 for copier apparatus., W02-J05B for fax and S06-C05 for industrial processes. For devices independent of the printer see T04-J02.			New
T04-G07	Colour printing	See also S06-A11 codes if for copier, and W02-J04 if for facsimile.	CMYK		Change Scope
T04-G10A1	User input and display	Includes mode selection keys, etc. See also S06-A14A if for copier and W02-J03A4 if for facsimile.		(G03G)	New
T04-G10E	Control from outside printer	See also S06-A14E if for copier, see T01-C05A for output to printer, T01-H05A for print drivers and T01-J08F for diagnostic aspects of any peripheral equipment. Network printers will also require other T01 codes.	Network printer, print driver	B41J,G06F-003/09,12,G06K)	Change Scope
T04-G10E1	Print Job/Queue	See also T01-C05A/T01-C05A1 for output to printer and T01-H05A for print drivers.			New
T04-G11	General Construction	See also codes for printer type e.g. T04-G02 for inkjet printer, etc.			New
T04-G11A	Construction and manufacturing details of printer	Includes mechanical details, manufacture and manufacturing apparatus. See also S06-A19 codes if for copier. See T04-L01/L05 prior to 2005			New
T04-G11B	Recycling Systems	See also S06-A17 codes for copier. See X25-W04 for recycling appt. in general.			New
T04-H03B	For several characters, e.g. matrix	From 2005 all display types (except LED) will not be coded in this section without novel details of the matrix array.	row, column, driver, address	(G09G-003/20-38)	Change Scope
T04-H03C1	LED	See also U12-A01A codes.		(G09G-003)	Change Scope
T04-H03C1A	Driver circuitry	See also U12-A01A5B for array or U12-A01A5A for single LED		(G09G-003)	Change Scope
T04-H03C2	LCD	See also U14-K01 codes.	liquid crystal, ferroelectric, antiferroelectric, deformed helical ferroelectric	(G09G-003/36)	Change Scope
T04-H03C2A	Driver circuitry	See also U14-K01A3.		(G09G-003/36)	Change Scope
T04-H03C3	Electroluminescent	See also U14-J codes.		(G09G-003/30-32)	Change Scope
T04-H03C3A	Driver circuitry	See also U14-J03.		(G09G-003/30-32)	Change Scope
T04-H03C4	Plasma display panel	See also V05 codes.		(G09G-003/28)	Change Scope
T04-H03C4A	Driver circuitry	See also V05-A01G.		(G09G-003/28)	Change Scope
T04-H03C5	Field emission display	See also V05 codes.		(G09G)	Change Scope
T04-H03C6	Digital micromirror display	See also V07 for mirror control.		(G09G)	Change Scope
T04-H03E	Projectors	Covers projectors for computer display see also other T04-H codes (e.g. T04-H03C2 for LCD projector), W04-Q codes and other sections as required.			New
T04-H04	Construction and manufacturing details of display	Covers display housings, casings, stands, supports, wiring components, etc. previously coded in T04-L. Does not include details of the display elements per se which are covered by the relevant class (e.g. U14 for LCD). Search with other T04-H codes for display types.			New
T04-J	Conveying record carriers between independent stations	Including computer paper perforation and sprocket details, collators and sorting appt.. For digitally marked record carriers see T04-A05 from 2005. See also S06-C05 and X25-F02A.	Guide, position, web, card, document	(G06K-013)	Change Scope
T04-K	Smart media e.g. cards incorporating integrated circuit memory etc.	Includes reading aspects - see T01-H01B3A also. Constructional details are coded in U11, or U14 as appropriate. See also under application, especially in T05, e.g. T05-H02C5C. Protective coating see V04-R03E. Construction see V04-Q02A3.	IC, memory, contactless, smart paper	G06K-019/07-077	Change Scope
T04-K01	Smart media details	Media with encapsulated microprocessor and memory. For memory cards, PC cards see T01 codes.	Key, IC	(G06K-019/07-077)	Change Scope
T04-K02	Reading and writing aspects	Including smart card feed/conveying. See also T01-H01B3A. See also W02-C02G7 (near-field radio) or W02-G05 (transponder) for non-contact details.	PCMCIA, contact, non-contact	(G06K-019/07-077)	Change Scope
T04-L	Constructional details of peripheral and ancillary equipment	Includes construction of peripheral equipment not covered by T04-F01B, T04-F02C, T04-G11 or T04-H04. Computer housing and constructional details are covered by T01-L02. See also V04-T and V04-S.		(B41J,G06K,G09G)(T04-X)	Change Scope
T04-L02	Power supply arrangements for peripheral equipment	See also U24 and X12			New
T04-M01	Digitiser incl. Flat bed scanner	See also T04-D codes for image processing aspects and W02-J as appropriate and T01-C06 for computer interfacing details.		G06K-011) (W02-J)	Change Scope

T04-M02	Hand-held Scanner	Includes hand-held bar-code scanner (see also T04-A03B1). Previously T04-F05 Hand Scanner for computer input		(G06K-011/18-20) (T04-F05)	Change Scope
T04-X	Miscellaneous	Includes card case/wallet (see also T03), office automation, cleaning appt. for computer peripherals, computer equipment for handicapped people (see also S05-K, and for Braille printer see also T04-G09), and maintenance equipment, shredder, electric stapler.		(B41J,G06K,G09G)	Change Scope
<b>T05 Counting, Checking, Vending, ATM and POS Systems</b>					
T05-D01A	With record carrier	See T05-H02 codes as appropriate for card-freed aspects in payment-based systems, see T04 for record carry types and W02-G for transponders. Includes checking/validating ticket or pre-paid card		(G07C-009, G07B-011)	Change Scope
T05-D01A1	With portable electronic device	Covers the use of a mobile device, e.g. PDA or mobile phone as the record carrier. See also W05-D08C and W05-D06G for remote control aspects.		(G07C-009, G07B-011)	New
T05-H02C5	Smart card, IC card	Integrated circuit memory cards per se are coded in T04-K01. For reading/writing aspects see T04-K02 and T01-H01B3A also. For non-contact type see also W02.		(G06K-019,G07F-007/08-12)	Change Scope
T05-H02D	Actuated by Mobile Device	For equipment actuated by fund or credit transfer from mobile telephone devices or portable computing devices, via e.g. cellular phone network, Internet, Bluetooth® or local wireless network. See W01-C and T01-N01A1 and T01-M06A1, T05-L02 codes			New
T05-H05E	Payment-freed amusement and entertainment systems	See W04-X02A also for electrical aspects of gaming machines and W04-X03A1 also for jukeboxes. See also T01-J30B for video game machines.	Gambling, prize, reward, award, win, lose, skill, AWP, amusement-with-prizes	(G07F-17/30-38)	Change Scope
T05-H08C	Control systems	See also T01 where significant control aspects are included.	Microprocessor, computer, logic, monitor, fault, alarm, antitheft	(G05B,G06F,G07F)	Change Scope
T05-H08C1	Control from outside unit	Covers control, management and monitoring of payment freed devices from an external unit such as a central server. Includes inventory monitoring for vending machines (see also T01-J05A2D), control of multiple gambling machines in casino (see also W04-X02A8).		(G05B, G06F, G07F)	New
T05-L01E	POS Weighing Scales	See T05-L01X prior to 2005. See also S02 for weighing apparatus in general.	scales, weigh		New
T05-L01F	Electronically Addressed shelf edge display	Coded as T05-L01X prior to 2005.			New
T05-L01X	Other POS equipment or systems		Conveyor, automatic packing, price	(G07)	Change Scope
T05-L02	Electronic funds transfer	Includes all aspects of EFT. Telephone line data transmission aspects are also coded in W01-C05B3C. Computer/Internet aspects are also coded T01-N01A1.			Change Scope
<b>Section U</b>					
<b>U11 Semiconductor Materials and Processes</b>					
U11-A02	Piezoelectric, electrostrictive, magnetostrictive materials	Materials for transducers are also codes in V06-L01. Includes electrets of organic materials which exhibit piezoelectric and pyroelectric properties. Also includes Ferroelectric materials.	Lead, titanate, zirconate, titanium, zirconium, bismuth, permalloy, lead scandium tantalate, polyvinyl fluoride, polyvinyl chloride, polyacrylonitrile	H01L-041	Change Scope
U11-A08B1	Organic conductive materials			H01B-001/12	New
U11-A08B2	Inorganic conductive materials			H01B-001	New
U11-A12	Gases for semiconductor technology	For reactive processing gases see also U11-A13.	Argon, nitrogen, helium, ozone		Change Scope
U11-A13	Precursors for deposition process in semiconductor manufacture	Includes reactive gases, liquid and solid precursors.			New
U11-C01A1	Thermal evaporation for deposition of semiconductor layer		Arc evaporation	C23C-014/24	Change Title/Search Term/Keyword
U11-C01B	Chemical vapour deposition of semiconductor layer	For appts. see U11-C09B and, in case of plasma enhanced CVD and electron cyclotron resonance CVD, U11-C09C. Also includes reactive ion beam deposition and seeded crystallisation deposition techniques. Prior to 9201 for PECVD see U11-C01A9 and U11-C01B.	CVD, low pressure, LPCVD, PECVD, photochemical, PhCVD, atmospheric pressure, APCVD, ECRVD, hot filament, HFCVD, metal-organic, MOCVD, organometallic, OMCVD	H01L-021/205, H01L-021/365	Change Scope
U11-C01J4	Other inorganic semiconductor materials				New
U11-C01J8A	Substrate bonding	Covers bonding of semiconductor layers to insulating or semiconductor substrate, forming protection film on back of wafer to prevent autodoping, (previously coded in U11-C01X). For silicon on insulator structures see also U11-C08A6.			Change Scope

U11-C01J8B	Preventing lattice mismatch	Includes forming buffer layer for lattice compatibility, and formation of strained semiconductor layers.		H01L-021	Change Title
U11-C04A	Resist processing, mask manufacture and inspection, and exposure control in microlithography	Includes beam modulation for microlithography between 1983 and 1987.		G03F-007	Change Title
U11-C04A1F	Resist processing	Includes all post wafer coating processes to prepare resist on wafer for lithographic exposure.	Hard bake, soft bake, surface treatment, hydrophilization, solvent evaporation	G03F-007/38	New
U11-C04A1E	Testing, measurement and inspection of mask for microlithography	For inspection of lithographic layers see also U11-F01B code. For all other measurement, testing or inspection for microlithography see also U11-F01 and S02/S03 codes as appropriate.		H01L-021/027, H01L-021/066	Change Title/Scope
U11-C04A7	Other lithographic aspects for microlithography	Includes e.g. biological process. For Micro- and Nano imprint lithography from Jan 2005 see U11-C04J codes.			Change Title/Scope
U11-C04D	Masking techniques for microlithography	Lift-off, sequences of masking and etching technique to produce patterned structure on IC. Pattern transfer. See cross-ref for masking technique in interconnection manufacture, mask used in fine etching, mask used in optical filter manufacture., U11-C07D1 for masks used in etching fine details, U11-C18D and U14-K01A1C for masks used in optical filter mfr. for LCD. etc.	Pattern transfer, Dissolving mask	H01L-021/027	Change Search Term/Keyword
U11-C04C5	Vibration control apparatus for microlithography	Includes e.g. reaction frames, balance mass, and mounts.		G03F-007/20	New
U11-C04E1A	Optical elements and systems for photolithography	Includes individual lenses and mirrors as well as multiple lens/mirror systems, and other non-electrical optical elements for beam focus.		G03F-007/213	New
U11-C04E1	Apparatus and method for photolithography	Includes exposure using optical and non-ionising ultraviolet radiation (for exposure using ionising ultraviolet radiation e.g. EUV see U11-C04H codes). For control and focusing aspects see also U11-C04A6 and U11-C04C2 respectively. Includes e.g. exposing peripheral portion of wafer.	Laser, UV, DUV, lamp, light source, projection, dummy wafer	H01L-021/027, G03F-007/2	Change Scope
U11-C04F1	Apparatus and method for electron beam lithography	For control and focusing aspects see also U11-C04A6 and U11-C04C2 respectively. Includes methods of avoiding 'charge up' of resist. See V05-F codes for novel details of apparatus and methods of apparatus monitoring, operation and control.		H01J-037/30, H01L-021/027	Change Scope
U11-C04F2	Masks for electron beam lithography	Also see V05-F codes for novel electron beam lithography masks.	stencil mask	H01J-037, H01J3	Change Scope/key words
U11-C04G1	Apparatus and method for ion beam lithography	For control and focusing aspects see also U11-C04A6 and U11-C04C2 respectively. See V05-F codes for novel details of apparatus and methods of apparatus monitoring, operation and control.		H01J-037/30, H01L-021/027	Change Scope
U11-C04G2	Masks for ion beam lithography	Also see V05-F codes for novel ion beam lithography masks.	stencil mask	H01J-037, H01J3	Change Scope/key words
U11-C04H1	Apparatus and method for X-ray lithography	Includes exposure using X-ray, soft X-ray and ionizing ultraviolet radiation (for exposure using non-ionizing ultraviolet radiation e.g. DUV see U11-C04E codes). For control and confinement aspects see also U11-C04A6 and U11-C04C2 respectively. See V05-E and V05-F codes for novel details of apparatus and methods of monitoring, operation and control.	extreme ultraviolet, EUV	H01J-035, H01L-021/027	Change Scope/key words
U11-C04H1	Apparatus and method for X-ray lithography	Includes exposure using X-ray, soft X-ray and ionizing ultraviolet radiation (for exposure using non-ionizing ultraviolet radiation e.g. DUV see U11-C04E codes). For control and confinement aspects see also U11-C04A6 and U11-C04C2 respectively. See V05-E and V05-F codes for novel details of apparatus and methods of monitoring, operation and control.	extreme ultraviolet, EUV	H01J-035, H01L-021/027	Change Scope/key words
U11-C04H2	X-ray masks	Also see V05-E08 codes and V05-F codes for novel X-ray, soft X-ray and EUV lithography masks.		H01J-035, H01L-021/027, G21K-001	Change Search Term/Keyword
U11-C04J	Imprint lithography	Includes use of stamps and presses to form pattern.		H01L-021, B41M-003	New
U11-C04J1	Stamp design and manufacture				New
U11-C04J2	Process methods and control				New
U11-C04K	Immersion Lithography	Includes all apparatus and methods for exposure through a liquid.		G03F-007	New
U11-C05B9A	Planarisation/ protection	Includes e.g. dielectric layer applied over interconnect structure (see also U11-C05D01), planarisation layers, patterning etching dielectric layers with metallic interconnect aspects (see other relevant codes e.g. U11-C05D1, U11-C05D3). Also covers passivation films, films for moisture protection, etching stop layers and films for radiation protection.		H01L-021/31, H01L-021/469, H01L-021/475	Change Scope

U11-C05B9B	Insulating sidewall formation	Includes forming side wall spacers.		H01L-021/31, H01L-021/469, H01L-021/475	Change Scope
U11-C05D2	Multilayer metallisation manufacture techniques	Sequence of steps to result in multilayer structure, e.g. deposition, shaping in which techniques may be routine but succession of steps or final structure is novel, Metallic layer deposited simultaneously over two differing apertures. Includes Damascene processes.		H01L-021/88, H01L-023/538	Change Scope
U11-C05D3	Lateral or vertical interconnection manufacture	Lithography, etching, deposition for shaping conductor, through hole to accomod. contact to device and between levels; opening, etching vias, window into diel. region. Conductive contact hole, metal plug. Buried interconnection, step coverage, runner. Includes dual-damascene processes.	Buried interconnections, etching windows, contacts, step coverage, runners	H01L-021/88, H01L-023/525, H01L-021/538	Change Scope
U11-C05F1A	Gate insulation layer manufacture	Includes forming insulated gate structures for all MOS gated devices.			New
U11-C05G2C	Via, pillar, stud manufacture	See also U11-C05D3, and U11-D03C3. For backside metallisation and metallised vias through ceramic substrates for high frequency circuits see also U11-D03C9 and U14-H03 codes.	plated through holes, plug	H01L-021/88, H01L-021/90	Change Search Term/Keyword
U11-C08A3	Dielectric, polycrystalline silicon trench for isolating integrated circuit component	Includes trench refilling with dielectric or e.g. polysilicon. If used as sidewall isolation e.g. for SOI or P-N junction structures also U11-C05B9B, U11-C08A6 and U11-C08A1 codes as appropriate.	Buried oxide, BOX	H01L-021/762, H01L-021/763	Change Scope
U11-C08A6	Semiconductor on insulator	Includes bonded wafers (see also U11-C01 and U11-C01J8A), full isolation by porous oxidised silicon (FIPOS), zone melted recrystallisation (ZMR), separation by silicon implanted buried oxide layer (SIMOX). See also U11-C08C for recrystallisation over insulating layers, selective epitaxial growth.	SEG, epitaxial lateral overgrowth, ELO, SOI, Silicon on sapphire, SOS	H01L-021/84, H01L-021/86, H01L-021/12	Change Scope
U11-C10	Prevention of charge build-up on wafer	Includes methods and apparatus for removing charge build-up on wafer which can cause incorrect operation of apparatus or damage to wafer during e.g. plasma process, charged particle beam lithography and charged particle beam microscopy. See also U11-F01B1 and S01 codes for monitoring of wafer charging.	Plasma damage		New
U11-C11	Pattern formation using scanning tunnelling microscope	Includes e.g. patterning, localised deposition and oxidation using scanning probe microscopes and other analogous microscopy techniques. Use in conjunction with other U11-C codes where applicable to particular process (e.g. U11-C11 and U11-C05C5 for localised deposition of conductive layer using SPM). Does not include microscopy per se, see S03-E02F codes and U11-F01B4 for application to semiconductor wafer measurement. See V05-F codes for novel apparatus and methods of apparatus monitoring, operation and control.	Scanning probe microscope, SPM, scanning tunnelling microscope, STM, atomic force microscope, AFM	G11B-009	New
U11-C15C	Semiconductor manufacture process control	For large scale process control, not for single processes. See also T01-J07B2 for computerised control systems.	Production management.	H01L-021	Change Scope
U11-C15Q	Waste reprocessing and disposal in semiconductor processing	Includes exhausts and exhaust management systems. For vacuum pumps and systems associated with exhaust and gas removal see also U11-C09Q		H01L-021, H01J-009/38	Change Scope
U11-D01A3	Leadless/ surface mounting for semiconductor package, e.g. ball grid array, BGA	Includes leadless with via holes, but leadless arrays with stand-offs, e.g. pad/ball grid arrays, are also covered by U11-D01A5. Prior to 9201 for chip carrier packages see U11-D01A. For sockets for surface interconnect package to board see U11-D01Q and V04-B01 or V04-K02. For flip-chip processes and packages see U11-E01C.	Surface mounted device, SMD, small outline integrated circuit, SOIC, flat pack chip carrier, FPCC, plastic leaded chip carrier, PLCC, gull-wing leads, TAB package, chip on tape, plastic quad flat pack, PQFP, ball grid array, BGA	H01L-023/02, H01L-023/04, H01L-023/05, H01L-023/08	Change Search Term/Keyword
U11-D01A4	High frequency package	Packages for high speed IC with large number of transmission and power lines. See cross-ref. for microstrip or stripline circuitry, metallurgical details, terminals for high frequency device. Microwave	Microwave, MMIC package	H01L-023/66	Change Search Term/Keyword
U11-D01A5	High pin count package	E.g. pin/pad grid arrays, and high ball count BGA's (see also U11-D01A3)	pad/pin grid array, PGA, BGA	H01L-023	Change Scope/key words
U11-D01C9	Other special package applications	Includes e.g. special moisture barrier, protection against short circuit. Fire retardant barriers. Hermetic seal structures (for sealing process see also U11-E02A2)		H01L-023	Change Scope
U11-D02B1	Internal cooling structures on chip or within package	Includes permanent, non-removable heat sinks.		H01L-023/34, H01L-023/36	Change Scope
U11-D03A9	Other type of connection to chip	For solder preforms see also U14-H03A2 (hybrid circuits). See also V04-A06 for direct connections to PCBs using conductive adhesives, and V04-A11 for direct connection using anisotropic connectors.		H01L-023/52	Change Scope

U11-D03B2	Metallurgical aspects of interconnections within chip, package	Forming diffusion barrier, e.g. titanium nitride, titanium tungsten, to prevent spiking or electromigration, e.g. slits in bent wiring section. Metallurgical aspects related to electrodes. Minimum resistance interconnection. air-bridge.	Electromigration, air bridges	H01L-023/532, H01L-021/90, H01L-021/92, H01L-021/88	Change Title
U11-D03B3	Metallurgy, solder, conductive adhesive connecting chip to substrate or lead-frame	Forming conductor pattern on ceramic, glass based packaging, joint/bond in multilayer package between metallised components e.g. pin, lead, or heat sink and ceramic substrate. See cross-ref for attaching lid to ceramic package and adhesive for die bonding (see also U11-E02A3).	Plated heat sink, eutectic alloying, self soldering, solder reflow, solder mask	H01L-021/52, H01L-021/58, H01B-001	Change Search Term/Keyword
U11-D03C3A	Noise reduction	For noise reduction interconnections, and removal of Cross talk, coupling/decoupling capacitance.	Cross talk, Parasitic capacitance	H01L-023	Change Scope/key words
U11-D03C3B	Three-dimensional interconnection, chip on chip	Includes e.g. opto-electronic, inductive, and capacitive feed through arrangements for high speed devices. For multi-chip high density interconnect see also U14-and/or U14-H03A4. Also includes interconnects for spherical IC's.			Change Scope
U11-E02A9	Other encapsulation details	Includes e.g. positioning of chip in rapport with predeterminable stress factors to reduce voltage offsets, marking TAB before encapsulation, forming lens on package etc. Also includes use of phosphor within package encapsulant e.g. for white light LED (see also U12-A01A4A).		H01L-021/50	Change Scope
U11-F01C1	Probes, connector apparatus for semiconductor device testing	Includes probe heads, contact parts, e.g. clips, sockets, liquid or conductive rubber contacts, connection to mount, strip line. See also S01-G02B5 and S01-H03 codes. Probes for testing semiconductors mounted on PCB's are coded in V04-R06 codes.	Burn-in board, prober	H01L-021/66	Change Scope
U11-F01D1	Probes, contacts, signal transfer methods for testing circuits on wafer	Includes wafer prober, probe card. See also S01-G02B1 and S01-H03 codes. For probes for testing semiconductors mounted on PCB's are coded in V04-R06 codes.		H01L-021/66	Change Scope
U11-F01A1	Doping and carrier transport related measurements	Includes measuring doping level, concentration, minority carrier lifetime, carrier mobility, semiconductor wafer conductivity. See also S03-E02 codes.		H01L-021/66	Change Scope
<b>U12 Discrete Devices</b>					
U12-A01A4A	Packages for white LEDs	Covers all special package adaptations specific to white LEDs e.g. encapsulating layers containing e.g. phosphor.			New
U12-A02A8	Dye sensitized solar cells	See also X15 codes as appropriate.			New
U12-A02A9	Other radiation sensitive devices for energy conversion	Includes e.g. hybrid systems (wind-photovoltaic, thermophotovoltaic, etc.) For photoelectrochemical cells after Jan 2005 see U12-A02A8.		H01L-031/058, H01L-031/055	Change Scope
U12-A03	Device sensitive to X-ray, gamma ray, particles and ions	See S03-G2B2G for radiation intensity measurement using semiconductor sensors or S03-E06H5A for semiconductor x-ray imaging detectors.		H01L-031/115	Change Scope
U12-B03D	Cold cathode field emission devices	See also V05 codes. Covers micro-scale, or smaller, devices created using IC manufacturing processes. For complete manufacture see also U11-C18B9, or relevant U11-C codes for specific processes.	FED	H01J-001/30, H01J-019, H01J-021	Change Scope
U12-B03F1	Microstructures	See S03-H02A for micrometre scale instrumentation.		B81	Change Scope
U12-B03F1A	Microstructural devices	Includes individual MEMs devices		B81B-001, B81B-003, B81B-005	Change Scope
U12-B03F1B	Microstructural systems	Includes assemblies of MEMs devices, and MEMs systems.		B81B-001/007	Change Scope
U12-B03F2	Nanostructures	See S03-H02B for nanometre scale instrumentation.		B82	Change Scope
U12-B03F2A	Nanostructural devices			B82B-001	Change IPC only
U12-B03F2B	Nanostructural systems			B82B-001	Change IPC only
U12-D02A	IGFETs	Also includes device in which insulator is made of material other than oxide e.g. nitride, and gate electrode is made of material other than metal, e.g. polysilicon. See also S03 codes	MOSFET, MISFET, CHEMFET, ISFET.	H01L-029/78	Change Scope
U12-D02A9	Other IGFET	Includes vertical MOS, trench, U-shaped grooved MOS, double diffused MOS, trench type MOSFET, Schottky barrier source and drain MOS. See cross-ref for superconductive FET.	VMOS, UMOS, DMOS, DIMOS, Double-gated MOS	H01L-029/78	Change Search Term/Keyword
U12-E02	Electrode for semiconductor device	Includes ohmic electrodes, schottky barrier electrodes and metal-insulator-semiconductor electrodes. Also includes novel gate structures. For electrode manufacture see U11-C05E and U11-C05F codes.	Schottky, ohmic	H01L-029/40, H01L-029/45, H01L-029/47	Change Scope
<b>U13 Integrated Circuits</b>					
U13-C05	Computer integrated circuit aspects. Single chip computer	See also T01-M05	Microcomputer, microprocessor, one chip, system on chip, SOC		Change Scope

U13-D04B	Lab-On-Chip (LOC)	Includes DNA microarrays or biochips using semiconductor based technology. For instrumentation details see also S03-H01 codes. For MEMS aspects see V06, and U12-B03F codes for micro- and nano-structural electronic or MEMS aspects. For glass microarray or non-semiconductor fluorescence based techniques see S03 codes only.	Microfluidic, microarray, DNA chip, biochip, Gene Chip TM	B81B, B82	New
<b>U14 Memories, Film and Hybrid Circuits</b>					
U14-J01A	Mfr. for electroluminescent displays	Includes all methods of mfr. for electroluminescent displays.		H05B-033	New
U14-J01B	Equipment for mfr of electroluminescent devices or displays	Includes all equipment for both electroluminescent devices or displays.		H05B-033/10	New
U14-J02B	Module details and sealing arrangements of electroluminescent display	Includes connections to external electrodes or PCBs		H05B-033/04	Change Scope
U14-J02C	EL display optical components	For complete filter manufacture see also U11-C18D.			New
U14-J02E	Switching elements for active matrix electroluminescent displays	Includes two and three terminal switching arrays		H05B-033/08	New
U14-J02Q	Multicolor Electroluminescent displays	Used to indicate novelty related specifically to multicolour EL displays where specified. For all novel aspects related to EL displays and their manufacture see also other U14-J codes.			New
U14-J04	Testing aspects of Electroluminescent displays	Testing for active matrix see also U11-F01F and U11-F01D codes. For module testing see also S01-G01A3 and V04-Q2A2.			New
U14-K01A1K	Equipment for manufacture of LCDs	Includes all equipment for mfr or LCD, including substrate handling equipment, etching, lithography etc. See U11 codes for individual processes and equipment.			New
U14-K01A2	Other constructional details, coating, and optical layers of LCD	Includes manufacture and structural details regarding switching elements for driving active matrix display. Also covers antireflective coatings.		G02F-001/136, G02F-001/29	Change Scope
U14-K03A	Constructional details and manufacture of Electrophoretic displays				New
U14-K03A1	Structural arrangements for Electrophoretic displays				New
U14-K03A2	Electrophoretic display manufacture				New
U14-K03B	Circuits, drivers of Electrophoretic displays				New
<b>U21 Logic circuits, Electronic Switching and coding</b>					
U21-C03B3	Programmable controllers	This code covers PLC. Also, see T01 codes for programme control aspects and T06 codes for process and machine control aspects.	PLC		New
U21-C03B4	State machines	Also see relevant T01 codes	State Machine, Finite State Machine		New
U21-C03B9					Change Scope
U21-C01E			PLA, PLD, FPGA		Change Search Term/keyword
U21-A02B3					Retired
U21-A03F3					Retired
U21-A02B1A	Input/output circuitry				New
U21-A02B1C	Clock arrangements				New
U21-A02B1X	Other details				New
U21-A03F5A	Input/output circuitry				New
U21-A03F5C	Clock arrangements				New
U21-A03F5X	Other details				New
U21-A02B7	Improvements to DA converter performance				New
U21-A02B7A	Increased resolution				New
U21-A02B7C	Increased conversion speed				New
U21-A02B7E	Increased range				New
U21-A02B7G	Noise reduction and error correction				New
U21-A02B7X	Other DA converter performance improvement				New
U21-A03F7	Improvements to AD converter performance				New
U21-A03F7A	Increased resolution				New
U21-A03F7C	Increased conversion speed				New
U21-A03F7E	Increased range				New
U21-A03F7G	Noise reduction and error correction				New
U21-A03F7X	Other AD converter performance improvement				New
U21-A03F6	Sampling	This code covers sampling arrangements and wider sampling aspects. See U21-B03 for sample and hold arrangements.			New
U21-A03F6A	Novel sampling circuit	This code covers all novel sampling arrangements. See U21-A03F6C codes for sampling function aspect.			New

U21-A03F6B	Oversampling				New
U21-A03F6C	Undersampling				New
U21-A03F6D	Sampling rate conversion				New
U21-A03F6X	Other				New
U21-A06A	Using block codes				New
U21-A06A1	CRC				New
U21-A06A2	Parity bit				New
U21-A06A3	Hamming codes				New
U21-A06A4	Reed solomon coding				New
U21-A06A9	Other				New
U21-A06C	Using convolutional codes				New
U21-A06C1	Viterbi coding				New
U21-A06C2	Turbo coding				New
U21-A06C3	Using Trellis coding				New
U21-A06C9	Other				New
U21-A06E	Using Interleaving techniques				New
U21-A06X	Other				New
U21-A04A		Includes oversampled converter architectures. Where sampling is novel see U21-A03F6 and also see U21-A02/A03 codes as appropriate.			Change Scope
<b>U22 Pulse Generation and Manipulation</b>					
U22-G01A1B	Kalman filter				New
U22-G01A5B	Matched filter				New
U22-G01C					Retired
U22-G01D					Retired
U22-G05					Retired
U22-G05A					Retired
U22-G05B					Retired
U22-G03	Digital Signal Processing/Networks	These codes cover digital signal processing in general. See U22-G01 codes in addition when concerned with digital filters.			New
U22-G03A	Construction				New
U22-G03A1	Testing				New
U22-G03C	Functions and performance				New
U22-G03C1	Functions				New
U22-G03C1A	Addition and multiplication				New
U22-G03C1C	Delay				New
U22-G03C1E	Array handling				New
U22-G03C1X	Other				New
U22-G03C2	Performance				New
U22-G03C2A	Size reduction				New
U22-G03C2C	Reduction in power consumption				New
U22-G03C2E	Increasing processing speed				New
U22-G03C2X	Other				New
U22-G03E	Operation and application				New
U22-G03E1	Operation				New
U22-G03E1A	Software and algorithms				New
U22-G03E3	Application				New
U22-G03E3A	Noise Cancelling				New
U22-G03E3C	Equalization				New
U22-G03E3D	Correlation				New
U22-G03E3F	Phase shifting and delay				New
U22-G03E3X	Other				New
U22-G		U22-G03 codes cover digital signal processing/networks in general and U22-G01 codes are applied in addition when concerned with digital filters. See U25 codes for analog equivalent filters and networks. See also T01-J08B for data processing aspects.			Change Scope
U22-G01		Codes in this section are split into filter type and filter function. For construction, performance, operation and application see relevant U22-G03 codes.			Change Scope
<b>U23 Oscillation and Modulation</b>					
U23-P01	Digital Modulation/Demodulation				Change Title
U23-P01A	Angle Modulation				New
U23-P01A1	FSK				New
U23-P01A3	PSK	Also includes QPSK.			New
U23-P01A5	MSK				New
U23-P01A9	Other				New
U23-P01C	Amplitude Modulation				New
U23-P01C1	ASK				New
U23-P01C9	Other				New
U23-P01E	Hybrid Modulation				New
U23-P01E1	QAM				New
U23-P01E9	Other				New
U23-P01G	Multi-frequency code techniques				New
U23-P01J	Novel Modulator/Demodulator Circuits				New
U23-P01J1	Modulator				New
U23-P01J3	Demodulator				New
U23-P01J3A	Coherent detection				New
U23-D01	DLL and PLL				Change Title

U23-D01A6	Delay array	Includes delay line, see U22-D04 and U25-A05 where relevant.			New
U23-D01D	DLL	This code is used to highlight DLL.			New
U23-F01					Retired
U23-F02					Retired
U23-F03	Direct Frequency Synthesizers	Indirect synthesizers are coded in U23-D01B.			New
U23-F03A	Novel synthesizer details				New
U23-F03A1	Memory aspect and look-up tables				New
U23-F03A3	Phase accumulators				New
U23-F03A5	D/A and A/D aspects				New
U23-F03A7	Analog circuitry				New
U23-F03A9	Other				New
U23-F03B	Synthesizer performance				New
U23-F03B1	Improving frequency resolution				New
U23-F03B3	Increasing frequency transition	Includes improving hopping speed.			New
U23-F03B5	Improve spectral purity				New
U23-F03B9	Other				New
U23-F05			Chaos, White noise		Change Search term/keyword
<b>U24 Amplifiers and Low Power Supplies</b>					
U24-G02E	Switching Amplifier	This code covers switching amplifier arrangements or as they are more commonly known Class D amplifiers. Digital Amplifiers and Class E amplifiers are also covered here. See U22-E codes for pulse modulation in general, U21-B codes for electronic switching in general and U24-G01 codes and W03-C codes for audio applications.	Digital Amplifier, Class D, Class E, PWM, Switching Amplifier		Change Title/Scope/Search term/Keyword
U24-D01B1	Snubber circuits				New
U24-D01B1A	Passive	Includes the use of RLC elements and diodes			New
U24-D01B1C	Active	Includes the use of transistors, etc			New
U24-D01B1F	Dissipative	Includes arrangements for dumping excess switching energy into a resistor. May be used in conjunction with other U24-D01B1 codes.			New
U24-D01B1H	Non-dissipative	Includes arrangements for excess switching energy to be fed back or fed forward, respectively, to the input or output.			New
U24-D01J	Measurements/testing	See S01 for related electrical instrumentation.			New
U24-D02A1	Charge pump				New
U24-D02A2	Chopper				New
U24-D05B	Inverter-type	To be used in conjunction with other inverter codes such as U24-D05A			New
U24-D05B1	Voltage source inverter				New
U24-D05B2	Current source inverter				New
U24-D05B3	Utility inter-tie inverter	Includes inverters fed by solar/wind power/etc generators for connecting to a mains/utility supply. For high power inverters, see X12-J codes.			New
U24-D06	Pulse voltage supply	See X12-J06 for high power pulse supply			New
U24-E01A	AC variable				New
U24-E01C	DC variable				New
U24-E01C1	Zener diode-based				New
U24-E01C5	Current mirror circuits	Includes current sinking/sourcing configurations for the regulating transistor to connect a load to the ground/DC power supply terminal.			New
U24-E01C7	Band gap reference circuits	Includes, generally, regulators using the difference between the base-emitter voltages of two bipolar transistors operating at different current densities.			New
U24-H01	Protection	Includes arrangements to protect LV power networks. For example, vehicle 12V network protection. To be used with U24-F codes, as appropriate. For individual PSU protection, see U24-D01B/F. For high power networks, see X13-C codes.			New
U24-H02	Non-contact power distribution	Includes low level power transfer by EM/inductive coupling, microwaves, etc. High power transfer is covered by X12-H codes. Novel inductive components are in V02.			New
U24-H03	Arrangement of power bus(es) fed by multiple sources	Includes several PSUs supplying main bus, or several buses at same or different voltages, that feeds power to one or more loads. Covers, for example, switch control to distribute power where required.			New
U24-H04	Power management techniques	Includes operation of a PSU to save/reduce battery energy dissipation and mains power. Operation measures may include switching off or operating in low power consumption mode, slowing of processor clock frequency, current/voltage control to reduce power consumption. The latter control, per se, is covered by U24-D/E codes.			New
U24-J01	Battery back-up				New
U24-J02	Capacitor back-up				New
U24-J03	Power converter back-up				New
U24-J04	Combination of battery and capacitor back-up				New

U24-K	PSU power-saving mode/operation	Power supply unit operation within a portable equipment to reduce battery dissipation.			New
U24-L	Capacitor charging circuits	This is analogous to X16-G for battery chargers.			New
<b>U25 Impedance Networks and Tuning</b>					
U25-B		This code covers networks of electromechanical devices, i.e. two or more resonators forming e.g. a lattice or ladder filter. Individual piezoelectric, electrostrictive and magnetostrictive devices are covered by V06-K codes and SAW devices by U14-G, and are not assigned U25-B unless specifically intended for use in a network. Also includes matching transformers and other components for electromechanical networks.			Change Scope
U25-E		Codes in this group are used for filters (excluding those covered by U25-A codes and U25-B) involving at least two types of elements, i.e. RC, RL, or LC networks. Thus individual components described as 'filters' or 'noise filters' in a power supply or other circuit are not included, unless intentionally using a secondary property such as series inductance of a capacitor, or stray capacitance of an inductor. Noise filters for RFI suppression are covered in general in W02-H01 codes and for power supply lines in W02-H03 and U24/X12 codes, whether single components or combinations. Where filter function is specified, codes from the U25-E05 section are used with either U25-E01 or U25-E02. Active networks other than filters are coded in the appropriate code elsewhere in U25. For digital filters see U22-G01 codes. Waveguide technology filters are covered by W02-A05 codes.			Change Scope
<b>Section V</b>					
<b>V01 Resistors and Capacitors</b>					
V01-A04R	Resistor manufacture process waste disposal and recycling	Prior to 2005 coded in V01-A04X		(H01C-017)	New
V01-A04R1	Waste treatment and disposal	Includes all aspects of waste disposal and waste treatment equipment to make the waste safe in the environment.		(H01C-017)	New
V01-A04R2	Materials treatment and recycling for reclaiming to be re-used.	Includes all aspects of waste treatment and recycling equipment.		(H01C-017)	New
V01-B01G6		Includes waste treatment and recovery processes.		(H01G-009/24)	Change Scope
V01-B01G6E	Process waste treatment and recycling to recover material for re-use	Includes all aspects of waste and contaminant treatment and recycling equipment, for electrolytic capacitor manufacture, and all waste classification and separation aspects. Prior to 2005 coded in V01-B01G6		(H01G-009/24)	New
V01-B01G6F	Waste handling and disposal, to make waste safe.	Waste handling and disposal aspects to make waste of electrolytic capacitor processes safe. Includes handling and disposal of contaminants, environmental protection and safety aspects. Prior to 2005 coded in V01-B01G6		(H01G-009/24)	New
V01-B01G6G	Materials recycling and reclaiming for re-use	Includes treatment and recycling, handling equipment and environmental protection and safety equipment aspects for electrolytic capacitor manufacture. Prior to 2005 coded in V01-B01G6. See V04-X01C for other electronics components recycling.		(H01G-009/24)	New
V01-B03A5	Hybrid dielectric (organic-inorganic) polymer material	Includes all compositions of hybrid dielectric material regardless of percentage of organic/inorganic materials ratio in the composite. See V01-B03A1 and V01-B03B1 for new dielectric compositions.		(H01G-004/20)	New
V01-B04B8		Includes waste treatment and recovery processes.  From 9701 the scope of this code is expanded to include novel equipment for manufacture, which is assigned V01-B04B8C together with other V01-B04 codes as appropriate.		(H01G-013)	Change Scope
V01- B04B8E	Process waste treatment and recycling to recover material for re-use	Includes all aspects of waste and contaminant treatment and recycling equipment, for dielectric capacitor manufacture, and all waste classification and separation aspects. Prior to 2005 coded in V01-B04X		(H01G-013)	New
V01- B04B8F	Waste handling and disposal, to make waste safe.	Waste handling and disposal aspects to make waste of electrolytic capacitor processes safe. Includes handling and disposal of contaminants, environmental protection and safety aspects. Prior to 2005 coded in V01-B04X		(H01G-013)	New
V01- B04B8G	Materials recycling and reclaiming for re-use	Includes treatment and recycling, handling equipment and environmental protection and safety equipment aspects for electrolytic capacitor manufacture. See V04-X01C for other electronics components recycling. Prior to 2005 coded in V01-B04X		(H01G-013)	New
<b>V02 Inductors and Transformers</b>					

V02		For power transformers and reactors, see X12-C codes. Inductors/transformers implemented as IC devices are not included; see U11/U12 codes.			Change Scope
V02-A01C		Includes mixtures of metallic and non-metallic magnetic substances			Change Scope
V02-A02A9		Only manufacture of the magnetic composition is included here. Magnetic laminations' manufacture is covered by V02-H03 codes			Change Scope
V02-A02B9		Only manufacture of the magnetic composition is included here. Magnetic laminations' manufacture is covered by V02-H03 codes			Change Scope
V02-A02C		Includes mixtures of metallic and non-metallic magnetic substances			Change Scope
V02-A10	Nanomaterials and their manufacture	Used in conjunction with hard/soft, metal/non-metallic substances			New
V02-A10A	Novel materials				New
V02-A10C	Manufacture				New
V02-B04	Nanostructures	Used in conjunction with other codes, such as V02-B03 for nanostructures of a thin film head.			New
V02-F01G	MRI/NMR equipment gradient/hf coil	Also see S01-E02, S03-E07 and S05-D02 codes, respectively, for magnetic properties sensor, MRI/NMR equipment and medical use.			Change Scope
V02-F01P	Inductive connector	For hf use. See V02-G01D for power supply inductive connector.			New
V02-F03A			Delete housing		Change Search Term/Keyword
V02-F03A3	Cases		Housing		New
V02-F03D	Shielding (V02-F03X)				New
V02-F05		See T03-A03 codes for a more detailed breakdown.			Change Scope
V02-G01D		For power supply use. See V02-F01P for hf inductive connector.			Change Scope
V02-G01E		Includes non-transformer type current/voltage/other sensors			Change Scope
V02-G01F	Heating inductor	For general induction heating, see X25-B02A codes, and X27-C06 for induction cookers.			New
V02-G02A			Delete housing		Change Keyword
V02-G02A3	Cases		Housing		New
V02-G02D	Shielding (V02-G02X)				New
V02-H02E	Magnetic head	See T03-A04 codes for a more detailed breakdown.			New
V02-H02F	Magnetic medium	See T03-A02 codes for a more detailed breakdown			New
V02-H02G	Nanostructures manufacture	Used in conjunction with other codes such as V02-H02E for magnetic head.			New
V02-H05		Includes manufacture of coil/winding and core plus other aspects and testing. See V02-H02 codes for thin film head manufacture, and T03-A04 for a more detailed breakdown.			Change Scope
V02-H10	Device, per se, manufacture	Includes indeterminate detail manufacture as well as multi-step processes			New
<b>V03 Switches, Relays</b>					
V03-A08	Contact mfr; testing; monitoring				Change Title
V03-B01C	Door switches				Change title
V03-B01D	Mat switches				Change title
V03-B01E	Seat switches				Change title
V03-C07	Switch mfr.; testing; monitoring				Change title
V03-C07A	Micromachining process, method or apparatus	See also U11-C and U12-B03F codes.	MEMS, microswitch, nanoswitch, silicon-machining, micromachining		New
V03-D06B1	Micromachining process, method or apparatus	See also U11-C and U12-B03F codes.	MEMS, microrelay, nanorelay, silicon-machining, micromachining		New
V03-U03A	Land vehicles				New
V03-U03B	Avionics				New
V03-U03C	Shipping				New
V03-U03D	Military				New
V03-U05	Telecommunication and broadcasting				Change Title
V03-U07	Industrial				Change Title
V03-U13	Instrumentation				New
V03-U14	Robotics				New
V03-U15	Alarms; signalling				New
V03-U16	Monitoring; control				New
V03-U17	HVAC; refrigeration				New
V03-U18	Doors and windows				New
<b>V04 Printed Circuits and Connectors</b>					
V04-M16	ZIF connector				New

V04-M30C	Land vehicles				Change Title
V04-M30R	Machine tools; robotics				Change Title
V04-M30S	Industrial machines				New
V04-Q02		Includes printed circuits/boards structurally association with electronic, electric and 'mechanical' components.			Change Scope
V04-Q02A4	Mechanical components				New
V04-Q02A5	RFI/EMI (non-tracks) shields	Includes individual modules and whole PCB shielding cans/boxes. See also V04-U codes.			New
V04-Q02A6	Buried (non-printed) components	Includes association with components such as capacitors, resistors or inductors buried within layers or under encapsulant. See V04-R03 for PCB encapsulation per se.			New
V04-Q02A7	Semiconductor device association with pcb	V04-Q02A2 and V04-Q02A3 take precedence.			New
V04-Q05		Includes track layout, general description of PCB and its components. V04-Q02A takes precedence for specific component association with PCB.			Change Scope
V04-Q05A	Tracks layout designed for EMI/RFI shielding	See V04-U codes for general EMI/RFI shielding.			New
V04-Q08	Probe cards	Use this code together with other V04-Q and V04-R codes if appropriate, e.g. V04-Q02A for novel structural association with electronic components, V04-Q02B for structural association with other PCBs within probe card assembly or test fixture, and V04-R codes for novel manufacturing aspects. See also V04-Q30Q, S01-G, S01-H and U11-F codes. V04-B01/M05 codes may be applied for highlighting novel feature of terminals, pins, blades mounted on PCB.			New
V04-Q08A	Horizontal probe card				New
V04-Q08B	Vertical probe card				New
V04-Q30	Characterised by application to specific industry or equipment				New
V04-Q30A	Avionics/military/shipping				New
V04-Q30B	Land vehicles				New
V04-Q30C	Computers				New
V04-Q30D	Displays; projectors				New
V04-Q30E	Data storage				New
V04-Q30F	Printers; scanners; photocopiers; fax machines				New
V04-Q30G	Telecommunication and broadcasting				New
V04-Q30H	Audio/video equipment				New
V04-Q30J	Cameras				New
V04-Q30K	Toys; games; sports				New
V04-Q30L	Power supplies				New
V04-Q30M	Medical equipment				New
V04-Q30N	Domestic appliances				New
V04-Q30P	Personal articles				New
V04-Q30Q	Instrumentation				New
V04-Q30R	Machine tools; robotics				New
V04-Q30S	Industrial machines				New
V04-Q30T	Alarms; signalling; telecontrol				New
V04-R02C	Through-hole or via plating		Through-vias, blind vias, buried vias		Change Title/Search Term/Keyword
V04-R02G	Adhesion aids	Includes arrangements or materials for improving adhesion between a conductor track and substrate. Materials related to additives incorporated within the conductive material (see also V04-R02P) and additives incorporated within a substrate material (See also V04-R07L). If the adhesion aid is particularly for either a track or metal foil/layer use either this code or V04-R07P5, respectively. For general cases, use both codes.			New
V04-R04	Assembling with components	Includes mounting of electric, electronic and mechanical components. Includes also component removal. V04-R04 codes are used in conjunction with each other as appropriate. For example, surface mounted components and their soldering is in V04-R04B and V04-R04A codes.			Change Scope
V04-R05H	Flex-rigid				New
V04-R06		See also S01-G, S02-A, S03-E, T01-J, T04-D codes. The V04-R06 codes are used in conjunction with each other as appropriate e.g. method for conductivity testing of a bare board by using bed-of-nails contact probe is coded in V04-R06A3 and V04-R06G1A.			Change Scope
V04-R06A1		Includes testing of spacing between conductor tracks, short circuits between tracks etc.			Change Scope
V04-R06A3		Includes testing of open circuits in conductor tracks.			Change Scope

V04-R06G2	Non-contact probes				New
V04-R06G4	Wireless fixture				New
V04-R06G5	MEMS-based probes				New
V04-R06M		Includes checking of traces, position of lands, photomasks/phototool, etc			Change Scope
V04-R07E	Metal-clad				New
V04-R07E1	Single-sided				New
V04-R07E2	Double-sided				New
V04-R07F	Constructional details				New
V04-R07P1		Selective lamination of metal to form tracks is in V04-R02. See V04-R07P5 for adhesion aids such as materials or arrangements for improving adhesion between a copper foil/layer and the substrate. See note for V04-R02G.			Change Scope
V04-R07P2	Manufacturing metal foil	Includes manufacture of metal foil which will subsequently be laminated on insulating substrate.			New
V04-R07P4	Depositing (un-patterned) metal layer	Includes depositing (un-patterned) metal layer directly on substrate.			New
V04-R07P5	Adhesion aids	Includes arrangements or materials for improving adhesion between a conductor foil or layer and substrate. Materials related to additives incorporated within the conductive material (see also V04-R02P) and additives incorporated within a substrate material (See also V04-R07L). If the adhesion aid is particularly for either a metal foil/layer or track use either this code or V04-R02G, respectively. For general cases, use both codes.			New
V04-R08	Drilling holes or vias		Drilling, punching, through-holes, through-vias, blind vias, buried vias		Change Title/Search Term/Keyword
V04-R12		Includes all exposure details and used either on its own or in conjunction, where appropriate, with an end application, such as V04-R01A for exposing a photoresist for conductive materials removal. For lamp details, see X26 codes also.			Change Scope
V04-R15	Materials recovery; recycling				Change Title
V04-R16	Decontamination of wastes; disposal				Change Title
V04-R19	EMI/RFI shielding tracks mfr.	Covers RFI/EMI shielding tracks mfr. See V04-U for general shielding.			New
V04-S01C	Metal casing with insulative coating				New
V04-S02B	Insulating casing with conductive coating				New
V04-S04	Conductive (non-metallic) material casing				New
V04-S20	Transparent casing				New
V04-S22	Fire-proof casing				New
V04-T	General constructional details of electronic appts.				Change Title
V04-T03		Includes cooling of electronic apparatus, systems and devices. Individual component cooling is also coded in relevant classes, e.g. for ICs, see U11-D02 codes also.			Change Scope
V04-T03B2	Using pumps/compressors; refrigeration				Change Title
V04-T03F	MEMS-based cooling				New
V04-T03G	Hybrid cooling				New
V04-T03P		Includes thermal materials and adhesives.			Change Scope
V04-T03Q	Manufacture; testing; monitoring				Change Title
V04-X01	General electronic components packaging, materials, cleaning, manufacture and disposal				Change Title
V04-X01B1	Nanomaterials	Includes nanomaterials or nanoparticles for general electronic applications.			New
V04-X01C	Materials recovery and recycling	Includes material recovery and recycling of general electronic components.			Change Title/Scope
V04-X01F	Manufacture and testing	Includes general electronic components manufacture and testing.			New
V04-X01G	Wastes decontamination and disposal	Includes decontamination and disposal of general electronic components.			New
<b>V05 Valves, Discharge Tubes and CRTs</b>					

V05		<p>Notes:</p> <p>(1) All aspects of discharge tubes for lighting (including manufacture) are covered by X26 and is not included in V05.</p> <p>(2) Manufacturing aspects of devices is normally only coded in V05-L. However, where important novelty or increased information can be conveyed by inclusion in device codes also, this is done. For example, manufacture of internal ribs specifically for an alternating current plasma display panel is coded in V05-L05A1, V05-L03A1 and V05-A01A3B.</p> <p>(3) In sections where separate codes for tube details are not included or are insufficient, codes from the general section (V05-M) should be used in conjunction with a device code.</p> <p>(4) From 199201 onwards, new codes were introduced to represent tube types which can be used whether the whole tube or just a component part is claimed. These codes can be applied if the particular tube type is specified and thus should be regarded as a means of limiting a search only since</p>			Change Scope
V05-A		Does not include plasma processing tubes - see V05-F05 codes. Prior to 199201, use V05-M in conjunction with V05-A codes for full coverage.		(H01J-011,017)	Change Scope
V05-A01		<p>V05-A01A codes are used to describe the display type in conjunction with codes from V05-A01B to V05-A01G, which describe novel features.</p> <p>Examples:</p> <p>(1) A novel barrier rib arrangement of a non-specific plasma display panel type, use V05-A01A3 and V05-A01D3 together.</p> <p>(2) A novel drive circuit for a plasma-addressed LCD would be coded in V05-A01A7 and V05-A01G, as well as U14 and relevant T04/W03 codes.</p>	REMOVE ALL KEYWORDS	(H01J-017/49)	Change Scope
V05-A01A		REMOVE SCOPE NOTE		(H01J-017/49)	Change Scope
V05-A01A3	Plasma Display Panel	<p>Includes display panels that directly emit the colour of the plasma discharge, as well as panels that use UV emission in order to excite a phosphor.</p> <p>Also includes plasma display panels of unspecified driving voltage type.</p>	PDP	(H01J-017/49)	Change Scope
V05-A01A3C		From 200501, this code is no longer used. See V05-A01A9 for other plasma display types.			Retired
V05-A01A3D		From 200501, this code is no longer used. See V05-A01A9 for other plasma display types.			Retired
V05-A01A5		From 200501, this code is no longer used. See V05-A01A9 for other plasma display types.			Retired
V05-A01A5A		From 200501, this code is no longer used. See V05-A01A9 for other plasma display types.			Retired
V05-A01A7	Combined technology displays e.g. Plasma Addressed LCD	Covers displays where gas discharge is not the sole display mechanism, for example in combination with electroluminescent elements, LCD addressing, FED pixels etc. See also U14-K01A2C for plasma addressed LCD.		(H01J) (H01J-017/49)	Change Scope
V05-A01A7A		From 200501, this code is no longer used. It is assumed that almost all plasma display panels operate using UV emission from the gas discharge in order to excite a phosphor, and thus are just coded in appropriate V05-A01A3 codes.			Retired
V05-A01B3	Phosphor Compositions	Prior to 2005, coded in V05-M01A. Includes manufacture of phosphor compositions. For coating of phosphors in plasma displays, see V05-L02 codes.		(H01J-017/49)	New
V05-A01B5	Phosphor arrangements	Prior to 2005 coded in V05-A01B.		(H01J-017/49)	New
V05-A01C2			Control electrode, bus/address electrodes	(H01J-17/12)	Change Scope
V05-A01C7		Includes protective overcoats for electrode insulating layers.		(H01J-017/04-12)	Change Scope
V05-A01F3		Includes shielding.		(H01J-17)	Change Scope
V05-A01G		Includes circuitry which may be either integral with the display or external to it. Also includes driving methods. See also T04-H03 codes.		(G09G-003, H01J-017/36)	Change Scope
V05-B	Classical and cold cathode vacuum tubes			(H01J-019,021)	Change Scope

V05-D		<p>This section relates to CRTs and similar tubes, chiefly for displays or for imaging purposes - video cameras for example. Tubes for beam processing of workpieces, electron microscopes etc. are not included and are covered by V05-F codes.</p> <p>V05-D codes are divided into those relating to particular tube types (V05-D01 to V05-D04) and those for details of tubes and associated devices (V05-D05 to V05-D10).</p> <p>Within V05-D, manufacture of all tube and device types is covered by V05-L codes only. Codes for the device per se are not used unless that aspect is also claimed.</p> <p>Prior to 9201 tube type codes were only assigned when the tube was presented as a complete novel device. From 9201 onwards, distinction is made between complete novel tubes and codes describing tube type and/or indicating novel details of the tube.</p> <p><i>Note that novel display drive circuitry for CRTs is not included unless specified.</i></p>		(H01J-029,031)	Change Scope
V05-D01B		Includes unspecified CRT display types.		(H01J-021/08-22)	Change Scope
V05-D01B3C		Covers tube with large number of electron beams, e.g. 'matrix drive with deflection' type. Prior to 2005 included field emission display matrices, now coded in V05-D06A codes.		(H01J-031)	Change Scope
V05-D01C	Vacuum fluorescent display tubes			(H01J-031/015)	Change Scope
V05-D01C3		Includes displays with field emission cathodes. For novel details of cold cathodes per se, see also V05-D05C5 codes. For novel emitter arrangements, see also V05-D06A codes.	Cold cathode, surface emission, surface emission electron conduction display, SED, FED	(H01J-031)	Change Scope
		Prior to 2002 field emission displays can be found in V05-D01C5 with V05-M03A to signify cathode type (if cathode is not novel) or in V05-D05C5 is cathode is novel.			
V05-D05A3	Semiconductor diode arrays	Includes e.g. Laser diode CRT screens. Prior to 2005, coded in V05-D05A5A.		(H01J-029/39-45)	New
V05-D05A5A		From 200501, this code is no longer used. See V05-D05A3.		(H01J-029/39-45)	Retired
V05-D05B7A	Protective metallic coatings	Covers metallic coatings applied over screen phosphors for protection.	Aluminum	(H01J-029/28)	Change Scope
V05-D05C			Coating, emission	(H01J-029/04)	Change Scope
V05-D05C5			SED, FED	(H01J-029/04)	Change Scope
V05-D05C5A	Microminiature cold cathodes	Covers e.g. carbon nanotube emitters. Also covers cold cathodes formed on semiconductor substrate. See V05-M03A1 and U12-B03D for such structures in general, and V05-B05 codes for complete microminiature devices.		(H01J-029/04)	Change Scope
V05-D05C5C		Include ballast resistors.		(H01J-029/04)	Change Scope
V05-D05D5			Frame	(H01J-029/07)	Change Scope
V05-D05F	Fluorescent or field emission display screen electrodes	Includes field emission display screen anodes. Also includes beam index electrodes (search with V05-D01B6) and fluorescent screen tube anodes.		(H01J-029/06)	Change Scope
V05-D06A1E	Matrix of electron guns or field emission devices	See also V05-D01B3C for CRT matrices. See V05-D01C3 for FED matrices. Prior to 2005, coded in V05-D01B3C.		(H01J-029/50)	Change Scope
V05-D06A1F	Field emission device	Includes novel complete emitter, gate and anode structure.		(H01J-029)	New
V05-D06A2		Includes grid/gate electrodes stimulating field emission.		(H01J-029/52)	Change Scope
V05-D06A7		Includes resistive potential divider structurally associated with gun. Current limiting arrangements associated with field emission cathodes are coded in V05-D05C5C only.		(H01J-029)	Change Scope
V05-D07B	Lead-ins, screening and antistatic coatings			(H01J-029/88,90)	Change Scope
V05-D07B3	Antistatic, magnetic and EM shielding coatings			(H01J-029/88)	Change Scope
V05-D07B3E	EM shielding coatings		X-ray, EMI	(H01J-029/88)	New
V05-D07B3M	Magnetic coatings			(H01J-029/88)	New
V05-D07B3S	Antistatic coatings			(H01J-029/88)	New
V05-D07B5		Includes detachable radiation screen placed over tube faceplate, for e.g. EM radiation prevention. For detachable optical filters see V05-D07C5E. V05-D07B3 takes precedence over this code if 'screening device' is mentioned without further detail.		(H01J-029, H05K-009)	Change Scope

V05-D08E		Includes external shields which can protect against effects either leaving or entering the body of the CRT other than through the faceplate. Shielding for electrical equipment in general is covered by V04-U codes.		(H01J, H05K-009)	Change Scope
V05-D10	Field Emission and Fluorescent Display Drive Circuitry	Includes drive circuitry integral with vacuum tube. Note that drive circuitry for Cathode Ray Tubes is not included in V05, and should be searched in appropriate T04/W03 classes.		(G09G)	New
V05-E	X-ray/Extreme UV tubes and techniques (general); ion beam tubes			(H01J-027, H01J-035, H05G)	Change Scope
V05-E01H9		Includes liquid metal target-impact tubes. For non-electron beam target-impact tubes (e.g. laser T-I), see V05-E03.	Gallium	(H01J-035)	Change Scope
V05-E03		Includes devices using plasma, non-electron beam target-impact tubes (e.g. laser target-impact) techniques and coherent X-ray laser sources (see also V08-B02). Includes non-standard extreme UV generation. For tube details, see V05-E04 and V05-M codes.		(H05G-002)	Change Scope
V05-E04	Details of non-standard X-ray generators			(H05G-002)	New
V05-E04A	Gas filling	Includes gas compositions.		(H05G-002)	New
V05-E04B	Ionising arrangements			(H05G-002)	New
V05-E06	Neutron sources and devices	Prior to 200501 neutron sources were coded in V05-E09.		(G21G-004/02, H05H-003/06)	New
V05-E08		Includes EUV and X-ray lithography masks. See also U11-C04H2 and V05-F05 codes.		(G21K-001)	Change Scope
V05-E08A	"Optical" manipulation of X-rays	This code is intended to be used with X-ray optical elements that use wave effects to alter e.g. the focus or direction of the radiation.	Molybdenum layered mirror, capillary optics, Kumakhov lens	(G21K-001/06)	New
V05-E08C	Absorption, blocking or anti-scatter X-ray optics	E.g. anti-scatter apparatus, grids and passive (i.e. non-"optical") collimators.		(G21K-001/02-04)	New
V05-F01A5	Tunnel current and analogous devices	Includes tunnel current microscopes and similar devices, e.g. atomic, magnetic force microscopes. For materials investigation see also S03-E02F codes and V05-F08B. For image-producing analysis search with S03-E02F codes and V05-F08A.  Prior to 2005, included processing and recording. After 200501, see V05-F05D, as well as relevant V05-F08C codes.		(G12B-021)	Change Scope
V05-F04B3		Only includes beam scanning arrangements inside e.g. electron gun structure. For post gun scanning/deflection arrangements see V05-F04C5.		(H01j-037/02-248)	Change Scope
V05-F04C8	For confinement			(H01J-037/10-153)	New
V05-F04D3		Includes evacuation apparatus.		(H01J-037/18)	Change Scope
V05-F04H1	Scanning probe or cantilever displacement detection	Includes detectors for all tunnel current and analogous scanning probe type microscopy techniques. See also S02-A03B for optical techniques, and S03 codes.		(G21B-021)	New
V05-F04X		Includes device heating and shielding.	Heater, deposition-limiting shield	(H01J-037)	Change Scope
V05-F05A3	With multiple beams	Includes e.g. field emission arrays for one-shot electron beam lithography or atomic resolution storage.		(H01J-037)	New
V05-F05A7X		Includes use of X-ray and Extreme UV (EUV)	EUV	(H01J)	Change Scope
V05-F05D	Using tunnelling effects	Includes all analogous techniques, e.g. AFM. See V05-F08C codes for lithography or recording techniques.  Does not include microscopy per se, see V05-F01A5. Prior to 200501, processing using tunnelling effects was coded in V05-F01A5 in combination with V05-F08C and V05-F05E codes. See U11-C10 for application to semiconductor wafer processing, or T03-C05 for recording or data storage applications.		(G11B-009)	New
V05-F05E9		Includes all cleaning and maintenance of processing equipment.		(H01J-037, H05H)	Change Scope
V05-F08D3			Doping.		Change Scope
V05-F08D5			Hardening, nitriding		Change Scope
V05-F08E	Removing material, cutting, machining, cleaning		Ashing, stripping	(H01J-037, H05H)	Change Scope
V05-F08F	Molecular decomposition and fluid processing	Includes fuel processing, e.g. Plasmatron <sup>TM</sup>		(H01J-037, H05H)	New
V05-F08G	Powder synthesis	Includes e.g. nanoparticulate production.		(H01J-037, H05H)	New
V05-F09			REMOVE ALL KEYWORDS	(H01J-037)	Change Scope
V05-G01	Photocathodes			(H01J-040/06)	New
V05-J01M		Includes operation of device.		(H01J-049)	Change Scope

V05-L		See note (1) of V05 class descriptor.  From 9201, codes from the V05-L05 section relating to the type of tube or device being manufactured are always assigned, except where the device is also claimed, resulting in the assignment of the code for that device also.  Manufacture of certain auxiliary devices for tubes, e.g. CRT deflection coils, are not regarded as manufacture of the tube per se, and hence not coded in V05-L. See also the appropriate codes for the auxiliary device and any relevant manufacturing codes in other sections, e.g. V02-H01 codes.  Also, novel manufacture of phosphor compositions is treated as a novel phosphor per se, and is coded under V05-M01 or relevant V05 sections.		(H01J-009)	Change Scope
V05-L01B1		Includes FED gate electrodes.		(H01J-009/14)	Change Scope
V05-L01B3		Includes FED screen electrodes. For FED gate electrodes, see V05-L01B1.		(H01J-009/14)	Change Scope
V05-L01B6	Plasma display panel electrodes			(H01J-009/14)	New
V05-L01B8	Screen electrodes	Covers e.g. beam index CRT screen electrodes. For FED screen anodes, see only V05-L01B3. Manufacture of image screens is covered by V05-L02 codes.		(H01J-009/14)	Change Scope
V05-L02C7		From 200501, this code is no longer used. See V05-L02M codes for general screen material types.		(H01J-009/20-233)	Retired
V05-L02C7A		From 200501, this code is no longer used. See V05-L02M1.		(H01J-009/20-227)	Retired
V05-L02C7B		From 200501, this code is no longer used. See V05-L02M2.		(H01J-009/20-233)	Retired
V05-L02C7C		From 200501, this code is no longer used. See V05-L02M3.		(H01J-009/20-233)	Retired
V05-L02D	Baking processes			(H01J-009/20-233)	New
V05-L02M	Screen material being processed			(H01J-009/20-233)	New
V05-L02M1	Visible radiation emitting material	E.g. phosphor.		(H01J-009/20-227)	New
V05-L02M2	Radiation sensitive materials			(H01J-009/20-233)	New
V05-L02M3	Auxiliary materials	Includes e.g. black matrix.		(H01J-009/20-233)	New
V05-L03A	Manufacture of vessels, spacers, ribs, lead-ins etc.			(H01J-009/24,28-32)	Change Scope
V05-L03A7	Manufacturing of vessel per se	Includes glass moulding, baking, toughening etc.		(H01J-009/24)	New
V05-L05B	Classical and cold cathode vacuum tubes			(H01J-009)	New
V05-L05B3	Cold cathode devices			(H01J-009)	New
V05-L05X	Other devices	Includes e.g. manufacture of radiation image storage screens.		(H01J-009)	New
V05-L07B	Workpiece holder			(H01J-009)	New
V05-L07D	Workpiece positioning			(H01J-009)	New
V05-L07E	Testing, salvage and other general aspects of manufacture			(G01R-031/24,25, H01J-009/44,50)	Change Scope
V05-M03	Includes unspecified emitting electrode types.			(H01J-001/02-12,30)	Change Scope
<b>V06 Electromechanical Transducers and Small Machines</b>					
V06-E07	Ultrasonic transducer	Includes audio/communication type ultrasonic transducers. See V06-B03 also.	Audio, communication		New
V06-E08	Bone conduction transducer				New
V06-J03	Micromachining process, method or apparatus	See also U11-C and U12-B03F codes.	MEMS, microtransducer, nanotransducer, silicon-machining, micromachining		New
V06-K08A	Micromachining process, method or apparatus	See also U11-C and U12-B03F codes.	MEMS, microresonator, nanoresonator, silicon-machining, micromachining		New
V06-K10	Ultrasonic resonator	Includes ultrasonic delay lines and resonators. See V06-B03 also.			New
V06-L02A	Micromachining process, method or apparatus	See also U11-C and U12-B03F codes.	MEMS, microsensor, nanosensor, silicon-machining, micromachining		New
V06-L06	Ultrasonic sensor	Includes physical variable measurement type ultrasonic sensors. See V06-B03 also.			New
V06-M06G8	Microgenerators; nanogenerators				New
V06-M06G8A	Nanogenerators				New
V06-M06H	Magnetostrictive motors; actuators; generators	Includes magnetostrictive motors, actuators and generators			Change Title/Scope

V06-M06H1	Motors; actuators				New
V06-M06H2	Generators				New
V06-M06R	Ultrasonic motors	Includes non-piezoelectric type ultrasonic motors; See V06-M06D1 for piezoelectric ultrasonic motors.			New
V06-M11G	Micromachining process, method or apparatus	See also U11-C and U12-B03F codes.	MEMS, micromotor, microactuator, nanomachine, nanoactuator, silicon-machining, micromachining		New
V06-N	Controlling small electric machines	Includes control of low power motors, actuators and generators.			Change Title/Scope
V06-N01A	Variable reluctance				New
V06-N01B	Permanent magnet				New
V06-N01C	Hybrid				New
V06-N36	Ultrasonic motors	Use this code together with other V06-N codes if required for highlighting the type of motor being controlled.			New
V06-N37	Vector control		Field-oriented, flux-vector, direct-torque, control, regulation		New
V06-N40	Low power generators	For records prior to 2005, see X13-G02 codes. Medium and high power generator control is in X13-G02.			New
V06-N40A	Synchronous generators				New
V06-N40B	DC generators				New
V06-N40C	Induction generators				New
V06-N40D	Piezoelectric generators				New
V06-N40E	Magnetostrictive generators				New
V06-N40F	Electrostatic generators				New
V06-N40G	MHD generators				New
V06-N40H	Microgenerators; nanogenerators				New
V06-N40H1	Nanogenerators				New
V06-N45	Speed control or regulation of electrical machines characterized by specific switching or control device				New
V06-N45A	Characterized by diodes				New
V06-N45B	Characterized by bipolar transistors				New
V06-N45C	Characterized by FETs				New
V06-N45D	Characterized by IGBTs				New
V06-N45E	Characterized by combination of switching devices				New
V06-N45F	Characterized by AC-to-DC converter				New
V06-N45G	Characterized by DC-to-AC converter				New
V06-N45H	Characterized by AC-to-AC				New
V06-N45J	Characterized by DC-to-DC converter				New
<b>V07 Fibre-Optics and Light Control</b>					
V07-F01A4	Slab and Planar waveguides	Prior to Jan 2005 see V07-F01A		G02B-006	New
V07-F01A1X	Other novel optical fibres	Includes holey fibres, photonic fibres and micro/nano structured fibres. Dispersion compensating and slope compensating fibres may also be coded here. U12-B03F and V06 codes maybe added for micro/nano-structured aspects.		G02B-006, G02B-001, C03C-003, C03C-004/08	New
V07-F01B	Light guide protection; repair and maintenance; optical cables			G02B-006/44	Change Title
V07-F01B1A	Dust-proof and water-tight structures	Includes drainage and protection system for relay points of optical cables, communication cable terminations, and enclosures for protecting optical fibre connections from dust and humidity.	Dust-proofing, weather-proofing, environmental protection	G02B-006/44	Change Scope
V07-F01B2	Optical Fibre repair and maintenance methods and equipment			G02B-006/44	New
V07-G02A	Optical ferrules	Includes all aspects of ferrule structure, manufacture, molding, methods and equipment		G02B-006/44	New
V07-G05	Optical components other than beam shaping and focusing	Includes filters, polarisers, gratings, mirrors etc. for coupling structures. Filters for beam shaping or lensing are covered in V07-G04, otherwise covered here. For novel optical element aspects see V07-F02 codes.		G02B-003, G02B-005,	New
V07-G13	Optical fibre component packages/modules for optical communications	Includes optical line cards, optical backplanes and other passive optical component modules. Does not include electro-optical packages, which are coded in W02. Includes manufacture.			New
V07-H04	Optical fibre excess management	Includes optical cable reels, trays, cable guides and supports both for storage, transport, and for excess management in e.g. distribution boxes. See X12-G04A1 for reels for composite optical and electrical cables. Before Jan 2005 see V07-H09.		G02B-006/44, G02B-006/46	New
V07-H09	Other aspects of light guide installations	Includes all other aspects of cable installation not covered anywhere else.		G02B-006/44, G02B-006/46	Change Scope

V07-K10C	Novel photonic crystals and materials			G02B-001, C03C-003	New
<b>V08 Lasers and Masers</b>					
V08-A04C1	Laser diode pumped solid state laser	Includes solid state lasers pumped by laser diodes or laser diode arrays. For specific optical pumping details see V08-A02B code also.		H01S-003/0941, H01S-003/16, H01S-003/17	Change Scope
V08-A04C2	Optical fibre laser	See also V07 codes. For Fibre-optic amplifier see V07-K01C2 only. Details of laser pumping of optical fibre are covered by V08-A02B. Prior to 9701 optical fibre lasers were covered by V08-A04X	Waveguide laser	H01S-003/17	Change Scope
V08-A05	Cooling/Heating aspects of laser	Includes cooling as part of gas recirculation system; heat sinks; temp. control and stabilisation. For laser parameter stabilisation and control see also appropriate V08-A03 code. For heat sinks for semiconductor lasers see also U12-A01B3A.	Circulate, coolant, pump, thermostat	H01S-003/04	Change Title/Search Term/Keyword
V08-A09	Other laser related aspects	Includes packaging and enclosure details. For packages for semiconductor lasers see U12-A01B3, with semiconductor laser package manufacture covered in U11-D01 and E02 codes.		H01S-003	Change Scope
<b>Section W</b>					
<b>W01 Telephone and Data Transmission Systems</b>					
W01-A01B2C	Reed Solomon coding	This code is discontinued and transferred to its correct place in the block code hierarchy (W01-A01B1C).		H03M-013	Retired
W01-A01B1A	Using parity	Includes the use of checking bits (odd and even)		H03M-013	New
W01-A01B1C	Reed Solomon coding			H03M-013	New
W01-A01B5	Interleaving	Reduces burst errors by re-organising data structure before transmission.			New
W01-A03C1	Time Division Multiple Access (TDMA)	See W01-A06F1G for network aspects of access control scheme and W02-C03B & W02-K codes, e.g. W02-C03B1D and W02-K02D, for TDMA aspects of satellite radio system.	Aloha, slotted, synchronous, frame, burst transmission, DQDB (distributed queue dual bus), CRMA (cyclic reservation multiple access)	H04L-005	New
W01-A05A	Blockwise coding using registers and memories	Includes DES (Data encryption standard) and AES (Advance encryption standard) systems, and key distribution.	DES, AES	H04L-009/06-30	Change Scope
W01-A05A1	Wireless	Includes WEP (Wired equivalent privacy) and WPA (Wi-Fi protected access) systems. Prior to 2005, this topic was coded as W01-A05A and W01-A06C4X.	WEP, WPA-PSK, WPA-802.1x	H04L-009/06-30	New
W01-A06A3	Network usage and operation monitoring	Includes measurement of network activity and QoS, and detection of overload/blocking condition. See T01-N02B2 for computer network aspects of monitoring. Analogous arrangements in telephone switching are covered by W01-C02A1A.	QoS		New
W01-A06B4	Tree/Mesh	Covers networks either in a tree or mesh configuration.			Change Title
W01-A06B7G	Virtual private network	Includes private data networks that make use of public telecommunication infrastructure, maintaining privacy through the use of tunnelling protocol (see also W01-A06F7C for this aspect) and security procedures.	VPN, VLAN (virtual local area network)		New
W01-A06C4E	IEEE 802.11 radio link	Includes systems using 802.11x standards.	Wi-Fi, 802.11x		New
W01-A06C4K	UWB and impulse radio link	Covers carrier-free and carrier-based links using time hopping and similar techniques. Novel details of ultra-wideband systems are covered by W02-K05 codes, especially W02-K05A9 codes.			New
W01-A06B8	Data network operation and logical structure	Includes networks operating with a client/server or client/client relationship.			New
W01-A06B8A	Client-server network	See T01-N02A2C for computer communication using a client/server relationship.	Client-server		New
W01-A06B8C	Peer-to-peer network	See also T01-N02A2E for computer network aspects of peer-to-peer network.	Peer-to-peer, P2P		New
W01-A06E1C	User privileges/password system	Includes systems for granting or denying access to a network. (See T01-N01B2B for computer aspects of user privileges/password systems).	Security, login, permissions, access control list		New
W01-A06E1E	Metering and billing aspects	Covers billing and usage aspects of data network services. Analogous systems for telephone usage charging are covered by W01-C06 codes.	Internet-café, public wireless access point		New
W01-A06E1G	Graded service	This code covers the provision of different level/quality of service based on entitlement/agreement in a network context. Analogous arrangements for telephone service are covered by W01-C02B6 codes.			New
W01-A06F1G	Time Division Multiple Access (TDMA)	See W01-A03C1 for non-network aspects of TDMA in data transmission and W02-C03B & W02-K codes, e.g. W02-C03B1D and W02-K02D, for TDMA aspects of satellite radio system.	Aloha, slotted, synchronous, frame, burst transmission, DQDB (distributed queue dual bus), CRMA (cyclic reservation multiple access)	H04L-005	Change Scope
W01-A06F7	Network protocol conversion, encapsulation, and tunnelling	This code covers arrangements for handling different protocols within a network, the topic previously being covered in W01-A06F9.			New
W01-A06F7A	Network protocol conversion				New
W01-A06F7C	Network protocol encapsulation and tunnelling	For protocol tunnelling in connection with VPNs search with W01-A06B7G.			New

W01-A06G5C	Gateway or bridge	Includes wireless access points (normally with W01-A06C4E), previously coded in W01-A06G5 or W01-A06G5E, depending on specific aspects, and in W01-A06C4X.		H04L-012	Change Scope
W01-A06G5X	Other network switching and interconnecting devices	Includes devices providing simple interconnection without any switching necessarily taking place, e.g. hubs.		H04L-012	Change Scope
W01-A07H2K	UWB and impulse radio link	Covers carrier-free and carrier-based links using time hopping and similar techniques. Novel details of ultra-wideband systems are covered by W02-K05 codes, especially W02-K05A9 codes. UWB wireless links between three or more stations (regarded as a network) are covered by W01-A06C4K.			New
W01-A09C	QAM and hybrid modulation				Change Title
W01-A09C1	QAM				New
W01-A09C5	Layered modulation				New
W01-C01E5D	From generator including battery charging	Includes the use of mechanical generator, e.g. hand-operated types, for battery charging or short-term powering of a telephone. See V06 for novel generators per se and X16-G, e.g. X16-G02C for battery charging using generators.			New
W01-C01F1P	Memory storage input for ring tone generation	Covers arrangements for inputting, including downloading, of ringing tone sounds or musical extracts to be stored as ringing tones. Search with W01-C01Q2 codes for storage of ringing tones in memory. Sampling in electronic musical instruments is covered by W04-U01C1, and sequencer arrangements in W04-U06, these codes being assigned also as appropriate for genuine novel aspects. Waveform storage for tone generation in general is covered by U23-F codes.		H04M-019/02	Change Scope
W01-C01F8	Call handling	Covers arrangements for call handling using a variety of methods, e.g. text message, ringing, voice message, etc.			New
W01-C01F8A	Based on Caller ID	Covers handling of incoming calls based on CLI information, e.g. activating ringer for priority numbers, sending a voice or text message for others.			New
W01-C01F8C	Based on profile, e.g. Presence-Enhanced Contacts profile	Provides a dynamic profile of the user, visible to others, the user's availability, whereabouts and suitable methods of communication.			New
W01-C01G6B	MMS	This code is intended for "multimedia messaging", primarily in mobile phones, for which W01-C01D3C is also assigned.	Multimedia messaging service, picture messaging, MMS		New
W01-C01G6F	Instant messaging	Provides real time mobile communication using messages.	Chat		New
W01-C01G6H	Push to talk over packet network	Provides direct one-to-one or one-to-many voice communication using Voice over IP (VoIP) over cellular packet network. Telephone systems aspects are covered by W01-C02B1 and W01-C05B3J.	PoC		New
W01-C01G8	Feature telephone	Covers telephone set with several features, e.g. operated by special keys or additional software modules, including smart phones.			Change Scope
W01-C01P	Telephone apparatus integrated with other device	Covers telephone combined with other equipment (in the form of a hardware or software module) forming a single unit. See W01-C05B codes for combination of external device with telephone system.		H04M-011, W01-C01X, W01-C05B	Change Scope
W01-C01P6	Telephone with built-in entertainment device				New
W01-C01P6A	Portable audio player/recorder	Search with W04-G01B8 for solid-state audio players such as MP3 types.			New
W01-C01P6C	Digital camera	See W04-M01B1 codes for novel details of digital cameras. Video phones are covered by W01-C01G4	Camera phone		New
W01-C01P6E	Broadcast radio receiver	See W03 for specific radio receiver aspects.			New
W01-C01P6G	Broadcast TV receiver	See W04 for specific TV receiver aspects.			New
W01-C01P6J	Video recorder	Search with W04-P01C8 for solid-state video recorder/player.			New
W01-C01P6L	Game player	See W04-X02 codes for gaming aspects in general and T01-J30B and T01-N01B1 for computer gaming.			New
W01-C01P6X	Other entertainment equipment				New
W01-C01P7	Navigational receiver	Covers telephone with integrated navigational receiver, for use with global positioning system. See W06-A for novel aspects of navigation receiver/system.			New
W01-C01Q2	Memory storage	Provides memory storage facility for data, including application programs, music and video files. See also W01-C01Q3A for software updating and modification and W01-C01D3D for storage of telephone numbers within the SIM card.			New
W01-C01Q2A	Internal		RAM, flash memory		New

W01-C01Q2C	External	See also T01-H01B3A for memory card per se.	Memory card, CF®, SD™, miniSD™, MMC™, reduced size MMC™, memory stick®, xD card™, smartmedia™		New
W01-C01Q4	Voice activated control	Includes the use of voice to control the operational aspects of the telephone. See also W01-C01B1B for voice dialling per se and W01-C01B5B for restricted dialling based on voice recognition. See W04-V codes, e.g. W04-V04A, for speech recognition aspects.	Voice command		New
W01-C01Q8C	Security based on biometrics identification	Includes access control based on fingerprint, eye or voice recognition. See W04-V codes, e.g. W04-V04A, for speech recognition aspects and S05-D01C5A for fingerprint and eye recognition aspects.			New
W01-C02B2L	Call forwarding	This code is intended for the facility by which a subscriber can set up a call forwarding facility, and specify a number to which calls are to be forwarded. Call diversion is covered by W01-C02B2E and call barring is covered by W01-C02B2G.			New
W01-C02B7F	Multimedia messaging service	Covers transmission of messages to a (usually mobile) telephone including a combination of image, sound and text, which was previously code as W01-C05B1A and W01-C05B2.	Multimedia messaging service, picture messaging, MMS		New
W01-C05B5G	Advertising	Covers transmission of advertising and promotional information to telephone users. See T01-N01A2C for transmission of advertising information in computer networks. Visual advertising in general is covered by W05-E03 codes.	Promotions, offers, adverts		New
W01-C05B6	Mobile commerce	Covers buying and selling of goods and services e.g. financial and business services through wireless telephone systems. See W01-C05B3C for novel aspects of PSTN electronic funds transfer and T01-N01A2 for computer e-commerce and T01-N01A1 for on-line banking.	m-commerce, on-line shopping, mobile banking		New
W01-C06G3	Toll free calling	Includes arrangements providing free telephone calls through special dial access.	Free call, toll free	H04M-015	New
W01-C06H	Prepaid telephone services	Covers telephone users that does not have a pre-agreement with the service provider. See W01-C07A for prepayment of public telephone services.	Pay-as-you-go		New
W01-C08H	Application of telephone systems and apparatus	This code is generally used without other W01 codes, and is intended for inventions making use of the telephone systems or apparatus, while not involving novel aspects. It is used only when the particular application cannot be coded elsewhere.			New
<b>W02 Broadcasting, Radio and Line Transmission Systems</b>					
W02-B06C	Automatic directional control antenna systems	This code covers antenna systems using either mechanical movement or electronic beam steering (with W02-B06A or W02-B06B codes as appropriate when necessary) to automatically adjust directional characteristics to optimise communication with a particular station, e.g. based on maximum signal strength or minimum BER. (W02-G03J codes are also assigned to highlight this aspect). Directional diversity systems are also assigned W02-C03A4 codes and SDMA systems are also assigned W02-K09. Automatic directional control was previously indicated by co-assignment of W06-A02A1 (automatic direction finding) when DF aspects were significant, but from 2005 this code will no longer be used. Antenna set-up based on optimum reception is not included, being covered by W02-B08A5A	Diversity, following, RSSI, tracking.	H01Q-003	New
W02-B08A5	Antenna set-up and alignment	This code covers arrangements for set-up and alignment of antennas and antenna systems. Search with W03-A16A for satellite TV receiving antenna set-up aspects. Adjustment of antenna parameters such as directional characteristics during normal operation is not included, and is covered by W02-B06 codes.			Change Scope
W02-B08A5A	Antenna set-up based on optimum reception	Covers arrangements to physically or electronically adjust antenna characteristics based on maximum signal strength or analogous indication.			New
W02-B08A5C	Antenna set-up based on geographical position	This code covers arrangements for antenna set-up and alignment based on known position, e.g. using compasses or inclinometer (also assigned S02-B codes), or GPS information (W06-A03A5E is also assigned)			New
W02-B08P8	Improved mechanical strength, durability, weather resistance, or appearance and reduced dimensions				Change Title
W02-B08P8J	Reduced-size antennas				New
W02-B08P8L	Reduced-weight antennas	Includes use of lighter materials, novel aspects of which are covered in W02-B08M also.			New

W02-B08R1	Antenna or antenna systems with multi-band or wideband characteristics	From 2005 the title of this code is expanded to better reflect previous inclusion of wideband antennas, and is subdivided to differentiate between continuous wideband coverage and multi-band operation, e.g. in harmonic modes, in several possibly narrow frequency bands.			Change Scope
W02-B08R1A	Antenna or antenna systems with multi-band characteristics	This code is intended to cover antennas operating in several frequency bands, harmonically-related or otherwise, the width of the bands not being the distinguishing aspect. Antennas operating over a continuous wide frequency range are covered by W02-B08R1C.			New
W02-B08R1C	Antenna or antenna systems with wideband characteristics	This code is intended to cover wideband antennas providing continuous coverage over a relatively wide frequency range. Antennas operating in several discrete frequency segments are covered by W02-B08R1A.			New
W02-B12	Antenna or antenna systems using existing structure or living body as radiator or radiation enhancer				New
W02-B12A	Using existing metallic structure or conductor system	This code covers the use of conductors whose primary function is not that of an aerial.			New
W02-B12C	Using living body, or part of body	This code includes arrangements for improving radiation in a hand-held transceiver such as a mobile phone (W01-C01D3C also assigned) by arranging for the user's body to serve as a ground plane, or similar, in conjunction with a monopole antenna.			New
W02-C01F	Line hybrids, transformers and impedance matching	See W02-F codes also for novel details of transformers and inductors for communications purposes.			New
W02-C01F1	Line hybrids and transformers	Line hybrids specifically for telephone equipment are covered in W01-C08B.			New
W02-C01F5	Impedance matching	Impedance matching in general is covered by U25-D05 for lumped-constant circuits and by W02-A02C for distributed-constant circuits.			New
W02-C01X	Other line communication aspects		Movable installation, lift car communication		Change Title
W02-C03B1	Satellite and airborne radio relay	From 2005 the title of this code is expanded to better reflect previous inclusion of 'atmospheric' relay systems using aircraft, balloons and the like. The new code W02-C03B1F will be assigned in conjunction with other codes as appropriate for system and apparatus details.			Change Title
W02-C03B1B	Satellite and airborne radio relay station details	This code covers novel details, including constructional details, in as far as they relate to the radio function, of satellites and also aircraft, balloons and the like when W02-C03B1F is also assigned. The following codes may also be required : W02-B codes (especially W02-B08F5 and W02-B08F7) for antenna system details; W02-G codes (especially W02-G05C) for radio equipment; W06-B codes for details of airborne or space vehicles.			Change Title
W02-C03B1F	Airborne relay	This code is used with other W02-C03B1 codes as appropriate to highlight the use of an atmospheric radio relay system, i.e. one using balloons, high-altitude aircraft, etc.			New
W02-D	Sound broadcast distribution systems	From 2005 this code is retitled to clarify its intended scope of audio broadcasting. As before, W02-F codes take precedence for TV broadcast systems in which audio is transmitted as a normal accompaniment to video signals.			Change Title
W02-F07M1	Digital video broadcasting	Includes DVB-T and similar systems.			New
W02-F07M5	Digital video for non-broadcasting applications.	Includes digital video transmission for conferencing, surveillance, equipment interconnection and the like			New
W02-F10C	Audio-on-demand system	From 2005 this code is retitled to clarify its intended scope of interactive audio broadcasting. As before, W02-F10A codes take precedence for interactive systems in which audio is transmitted as a normal accompaniment to video signals in interactive TV.			Change Title
W02-F10F	Archival storage of content primarily submitted by user	Includes storage and retrieval of images accessed by digital camera via communication link. Also covers storage of video footages and other information.			New
W02-F10N5A	According to user-determined level of commercial message provision	Overriding of systems which prevent the recording of commercial messages is covered in W04-E04C5E.			New
W02-F10Q	Selective insertion of commercial messages	Covers insertion of separate advertising content into programme breaks for different regions and/or different individual subscriber demographics.			New

W02-H01J	Interference avoidance in radio systems based on frequency allocation and network operation or planning	From 2005 this code is retitled to acknowledge the previous inclusion of interference-avoidance systems applied during normal operation, rather than at the network planning stage only. The code is now subdivided to distinguish these cases where possible.	Cell re-use, frequency re-use, co-channel interference, radio site surveys, field strength tests	H04B-007, H04Q-007, H04B-015	Change Title
W02-H01J1	Interference avoidance at radio network planning stage	Includes use of CAD (see W02-C03E5 and T01-J15A4 also). Interference avoidance as a normal part of network operation is covered by W02-H01J5.			New
W02-H01J5	Interference avoidance based on frequency allocation and network operation	This code is intended to cover interference avoidance during normal network operation, and includes channel allocation. Avoidance of interference at a network design stage is covered by W02-H01J1.			New
W02-H01J9	Other aspects of interference avoidance based on frequency allocation and other network details.				New
W02-K05	Spread spectrum, frequency hopping, time hopping and UWB	The title of this code has been expanded to better reflect its coverage of wideband impulse and other time hopping systems. W02-K05A codes define system type while W02-K05B codes indicate novelty at the system level, or in apparatus. Where the use of spread spectrum technique is inherent to a particular technology (e.g. Bluetooth or 3G mobile phones), W02-K05 codes are only assigned when the novelty lies in the SS aspect.			Change Title
W02-K05A9	Ultrawideband and time-hopping systems	This code is used with other W02-K05 codes as appropriate, e.g. with W02-K05B7 for synchronising aspects of UWB communication. Wireless data interfaces between two points using this technology are covered by W01-A07H2			New
W02-K05A9A	Carrier-free impulse communication				New
W02-K05A9C	Carrier-based impulse communication	Includes spectrally-filtered systems.			New
W02-K05B5	Pseudonoise code details for direct sequence, frequency hopping codes and time hopping codes	This code covers details of noise-like codes used in CDMA, frequency hopping and time hopping communication systems. Search with W02-K05A codes to differentiate type of system, e.g. with W02-K05A9A for hopping codes used in a carrier-free impulse communication system.			Change Title
W02-L	Secret communication; jamming and antijamming; eavesdropping and anti-eavesdropping				Change Title
W02-L01	Jamming and anti-jamming	Jamming/antijamming for radar is covered by W06-A04E1 codes only.			Change Title
W02-L01A	Jamming				New
W02-L01C	Anti-jamming				New
W02-L07	Eavesdropping and anti-eavesdropping	Covers 'bugging' and similar techniques. For systems specific to telephone systems (wired or wireless) see W01-C08F1 codes.			New
W02-L07A	Eavesdropping				New
W02-L07C	Anti-eavesdropping	Covers 'sweeping' for bugs and similar techniques.			New
<b>W03 TV and Broadcast Radio Receivers</b>					
W03-A02C5E	Combined with additional features	Includes provision of dedicated display, e.g. for indicating control functions, viewing alternative channel or electronic programme guide.		H04N-005/44	New
W03-A11A1	Transcoding			H04N-005/46, -007/01, -007/26	New
W03-A11C		Not used routinely for decoding predictively encoded video data. Covers circuitry to determine motion content of picture, e.g. in adaptive circuitry such as luminance-chrominance separator (also coded in W03-A05B7). Motion detector circuits in general are coded in W04-P01A1.		H04N-005/046, -007/24-68, -009/78	Change Scope
W03-A11D	Decoder		ATSC, DVB	H04N-007/24	Change Scope
W03-A11G	TV receiver for digital broadcasts			H04N-005/44, -007/26	New
W03-A11M	Processing involving memory	This code is used for applications or novel details of memory circuitry used in TV receiver decoders or standards conversion equipment. For memory circuits used for general audio/video applications see W04-P01C codes. For memory circuits used in dynamic recording of video signals see W04-F01M.		H04N-005/46, 91-93, -007/24	New
W03-A12	Stereoscopic, stereophonic and multichannel sound receiver				Change Scope
W03-A12A		Includes 3-dimensional display aspects. Covers decoding circuitry and display aspects. For display aspects see W03-A08 codes also, e.g. W03-A08E7. Demodulator aspects are also coded in W03-A05C5.			Change Scope

W03-A12B	Stereophonic and multichannel TV receiver				
W03-A12B1C	Surround sound aspects			H04H-005, H04N-005, H04R-005, H04S-001,-003	New
W03-A13A		Used only for PIP and OSD applications. Covers novel aspects of memory per se and addressing. Memory circuits specifically for teletext (e.g. to increase apparent retrieval rate) are coded in W03-A10E. Frame stores in general are covered by W04-P01C codes.			Change Scope
W03-A13L	Image manipulation	Covers use of special effects such as resizing, re-positioning and altering shape of picture for OSD. Prior to 2005 this topic was coded in W04-N, in conjunction with appropriate W03 codes. From 2005 W04-N codes are no longer applied for TV receiver applications.		H04N-005/262	New
W03-A16C1	Interfacing hardware			H04N-005	New
W03-A16C5	Interactive TV aspects	To better reflect developments in interactive TV from 2005 the title of this section has been changed and the codes within it are used to denote any application of interactive TV receivers, whether delivered via satellite, cable or terrestrial medium. Covers details of (subscriber) systems interacting with rest of two-way network, e.g. to request a programme, carry out a transaction, etc..			Change Scope
W03-A16C5	Interfacing with other systems			H04N-005	New
W03-A16C5A	Interfacing with stand-alone systems			H04N-005	New
W03-A16C5C	Interfacing with local network			H04N-005	New
W03-A16C5H	For access to multimedia system			G06F, H04N-007/173	New
W03-A16E	Set top box				New
W03-A16E1	Personal video recorder	Covers personal video recorder aspects that relate to receiver, e.g. programming recording using programme guide. Apply in conjunction with W04 codes and other W03 codes to denote novel aspects.	PVR, TIVO		New
W03-A18A5	Time programming, programme guide control	Covers use of programme guide to present suitable channels for viewing to user.			Change Scope
W03-A18A6	Identifying user	Covers arrangements to control presented programme content or settings, e.g. brightness, volume, according to individual user. Use in conjunction with W03-A18A7 for arrangements to identify child user and prevent access to certain programming content.		H04N-005/44	New
W03-A18A8	Program control aspects, software updating methods			G06F, H04N-005/44	New
W03-C01C1	Amplifier integrated with loudspeaker(s)		Powered speaker	H03F-003/20-22, 26-32, H04R-001	New
W03-C01G	Digital amplifier			H03F-003/217	New
W03-C01G1	Digital input			H03F-003/217	New
W03-C01G3	Digital input and output			H03F-003/217	New
W03-C03C	Volume control	See U24-C for automatic and manual gain control		H03G-003	New
W03-C05E	Digital EQ	See U22-G for details of digital filters		H03G-005, -009	New
W03-C05E1	Adaptive EQ	Includes sensing and matching character of speakers. For adaptive filters see U22-G01A5.		H03G-005, -009	New
W03-C05G	Amplifier integrated with loudspeaker(s)				New
W03-G02A	Battery power supply			H02J, H02M	New
W03-G02A1	Battery per se			H02J, H02M	New
W03-G02A3	Battery supply circuitry			H02J, H02M	New
W03-G02A5	Battery charging			H02J, H02M	New
W03-G02C	Mains power supply			H02M	New
W03-G05A5		Includes combination with e.g. telephone (see W01-C codes also, e.g. W01-C05B5A, or W01-C01P codes), and remote audio or video display facility. Includes provision of dedicated display, e.g. for indicating control functions.			Change Scope
W03-G05C5C	Wireless speaker systems			H04B, H04R-001	New
W03-G09		Includes recycling and packaging aspects.			Change Scope
<b>W04 Audio/ Visual Recording and Systems</b>					
W04-B01C3		From 2005 all duplication for production of pre-recorded tapes or discs is covered in T03-B07B. See W04-H05A for dubbing.			Retired
W04-B14A	Flexible disc system	For use within electronic still picture camera see also W04-M01B1A. Digital cameras using hard discs for picture storage are assigned W04-B14C3.			Change Scope
W04-B14B		From 2005 systems for playback of flexible discs used for storing pictures from digital cameras are covered in W04-B14A			Retired
W04-C10A1K	Dual deck optical disc player/recorder			G11B-007	New

W04-C10A2		From 2002 to 2004 this code was used to denote multilayer optical disc player/recorders used for non-specified audio/video/data storage. From 2005 this topic will be covered in T03-B10A1, and for storage of audio/video information along with additional data formats, in W04-C10A3A. Prior to 2002 digital versatile disc or digital video disc player/recorders were coded in W04-C10A3.			Retired
W04-C10A3					Change Scope
W04-C10A3A	Combined with additional data formats	Covers provision of computer program data and surround sound tracks in disc used primarily for storing video information.		G11B-007	New
W04-E04C1		Includes input of timer information by e.g. bar code reading, (reading of bar codes is also coded in T04-A03B1), and 'universal' programming devices learning function of normal remote control unit (from 9701, also assigned W03-G05A1A). From 2005 use of electronic programme guides and GUIs is covered in W04-E04C8	Video Plus		Change Scope
W04-E04C5E	Overriding prevention of recording of commercial messages	See W02-F10N for variation of subscription fees based on choice of whether or not to receive commercial messages.		G11B, H04N	New
W04-E04C8	Using programme guides	Includes use of EPG data transmitted with TV signal or interfacing with PC receiving programme guide information from e.g. Internet.		G04G, G11B, H04N-005/761	New
W04-E20S	Changing recording quality	Covers arrangements to allow switching from SP to LP mode during recording and automatic adjusting of recording quality to fit programme within available capacity of recording medium.		G11B	New
W04-E20T	Multiple operation modes	This code is used for inventions concerned with several modes of operation with no particular emphasis on any given one.	trick play	G11B	New
W04-E20V	Delayed recording	Covers arrangements to allow viewer to select recording from start of current programme, even when this programme is part-way through, by use of buffer to continuously record a given channel or set of channels. For arrangements to allow pausing of programme while viewing and then continue recording programme from pause point search in conjunction with W04-E20M.		G11B	New
W04-F01H3A	Transcoding			H04N-007/01, 26	New
W04-F01K		Includes arrangements to enable recording of data contained in blanking periods, e.g. teletext signals (prior to 9201 see W02-F05B and W04-F01), or in connection with VPS data. Also covers recording of other supplementary signals received off-air. All aspects of control of recorder by off-air signals are coded in W04-E04C5.	closed caption, region code		Change Scope
W04-F01L	Copy restriction, copy marking and scrambling				Change Scope
W04-F01L1	Signal processing to prevent or restrict recording or viewing				Change Scope
W04-F01M5		Search with other W04-F codes as appropriate, e.g. with W04-F01F for coding involving use of memory circuitry, or W04-F02B for timebase error correction.			Change Scope
W04-G01L	Copy restriction, copy marking and scrambling				Change Scope
W04-G01L1	Signal processing to prevent or restrict recording or listening				Change Scope
W04-G01M	Multiple channel recording			G11B-020, G11C, H03, H04B	New
W04-G01M1	Stereo and surround sound recording			G11B-020, G11C, H03, H04B	New
W04-G01M3	Recording of separate audio track	Covers arrangements to record alternative language versions of soundtrack		G11B-020, G11C, H03, H04B	New
W04-G01M5	Multitrack recording			G11B-020, G11C, H03, H04B	New
W04-G04	Audio signal compression, expansion and other effects			H03G, H04B	Change Scope
W04-G04A	Compression and expansion	Includes AGC, companding and limiting. See also U24-C codes.		H03G, H04B	New
W04-G04E	Frequency enhancement and addition of harmonics	Includes exciters, enhancers, bass expanders etc.. See W04-U03E for delay-based effects, e.g. reverberation, flanging, phasing.		H03G, H04B	New
W04-J01	Theft alarms, security system, access control				Change Scope
W04-J01A	Access control	Includes child lock systems, user authentication and user interfacing aspects of region control.		G11B-027	New
W04-J01C	Theft alarms			G11B-027	New
W04-J03C		For such arrangements in TV receivers see W03-A13G. Includes menus etc. on digital camera display.			Change Scope
W04-K01			synchronous dubbing		Change Scope

W04-K05	Recording equipment systems	Includes use of several recording/playback units e.g. for picture file, and recording equipment used as a 'functional block' in a larger system. Prior to 9701, this code included audio/video recording and reproduction aspects of multimedia systems.			Change Scope
W04-K10		Prior to 2005 this code was used to indicate audio/video aspects only of multimedia. Due to the current ubiquity of the term 'multimedia' this code has been discontinued. From 2005 audio/video aspects of personal computers are assigned the relevant W04 code in conjunction with T01 codes.			Retired
W04-M01B1	Digital camera	This code is used for solid-state video cameras used predominantly for recording single frames in e.g. RAM, hard disc or optical disc. W04-M01B1 codes are used for any aspect of the camera. For still-picture recording facility in camera designed primarily for video recording see W04-E20C together with W04-M01B and W04-M01K			Change Scope
W04-M01B1A		W04-B14 and W04-C10A3 codes are also assigned for recording on magnetic and optical discs respectively.			Change Scope
W04-M01B1E	Video recording aspects			H04N-005/335, 781, 85	New
W04-M01B5A			shift register		Change Scope
W04-M01B7		Covers drive circuitry external to pickup per se. Includes circuitry linked to CCD.			Change Scope
W04-M01D3		For display of menus etc. see W04-J03C.			Change Scope
W04-M01D6	Image processing and function control	Used with W04-P codes as appropriate, e.g. W04-P01D for colour balance control.			Change Scope
W04-M01D6A		Covers processing associated with e.g. read-out of image sensor, such as compensation for imager characteristics. Use in conjunction with W04-P01H1 (and W04-M01B7) for solid state circuit imager dark current compensation.			Change Scope
W04-M01F		Includes medical diagnostic imaging (see S05-D02 or S05-D03 codes also), but not systems where the primary means of 'imaging' uses visible radiation. Medical ultrasound systems are not routinely covered in W04-M01F.			Change Scope
W04-M01F5		Delete			Change Scope
W04-M01L		For use of external optics see also W04-M01C6.			Change Scope
W04-M01M	Audio aspects	Covers all audio aspects of video cameras. Prior to 2005 this topic was included in W04-M01X		H03, H04B, H04N-005/225,335	New
W04-M01S	Panoramic camera	Use in conjunction with W04-M01C6 for optical arrangements and with W04-N05C5 for 'stitch mode'. For moving platforms see also W04-M01G7C.		G02B, G03B, H04N-005/272, 275 Prev. coded in W04-M01X	New
W04-N05A1	Transcoding			H04N-007/01, 26	New
W04-P01A3A	Novel transform aspects		DCT, Wavelet	H04N-007/30	New
W04-P01A3C	Quantisation			H04N-007/30	New
W04-P01A3E	Run length, variable length encoding			H04N-007/30	New
W04-P01A4E	Novel transform aspects		DCT, Wavelet	H04N-007/48-50	New
W04-P01A4G	Quantisation			H04N-007/48-50	New
W04-P01A4J	Run length, variable length encoding			H04N-007/48-50	New
W04-P01A4L	Reducing artefacts			H04N-007/48-50	New
W04-P01A4N	3-dimensional transforms			H04N-007/48-50	New
W04-P01A4S	Scalability arrangements	Covers arrangements to allow change in bandwidth according to conditions or capability of receiver.		H04N-007/48-50	New
W04-P01C8	Solid state video recorder			G06F-012, G11C, H04N-005/907	New
W04-Q01B	Using light valve, e.g. LCD, laser sources	See V07-K01A2 for area modulation of light in general.			Change Scope
W04-Q01E7	Other optical arrangements			G02F, H04N-005/74, -009/31	New
W04-Q01E7A	Beam splitter			G02F, H04N-005/74, -009/31	New
W04-Q01E7C	Polariser	Polarisation filters are covered in W04-Q01E3		G02F, H04N-005/74, -009/31	New
W04-Q01F5	Volumetric, non-planar projection screens or media			G03B-021/56-62, H04N-005/74, -009/31, -013/04	New
W04-Q01J	Projection display circuitry and control systems				Change Scope
W04-Q01J1	Monitoring display output	Covers use of sensors or CCD		G09F, H04N-005/74	New
W04-Q01S	Stereoscopic and 3-dimensional projection display			H04N-005/74, -009/31, -013/04	New
W04-S05		Includes analagous equipment used in sound broadcasting and recording apart from mixing desks which are coded in W04-G05			Change Scope

W04-S05P	Parametric audio systems	Covers use of separate ultrasound sources providing highly directional beams that interfere at precise location.		H04R-027	New
W04-U01A		Includes oscillators used in additive and subtractive synthesisers (see W04-U03C) and waveform generators using acoustic modelling.			Change Scope
W04-U01C		Covers use of stored values (using ROM or RAM) to produce periodic waveforms, e.g. in 'wavetable' synthesis.			Change Scope
W04-U03C	Synthesis	Includes use of time varying filters and amplifiers, FM etc.	additive, subtractive		Change Scope
W04-U03E		Includes delay effects, e.g. reverberation. Also covers novel special effect processing for amplified or recorded acoustic instruments or voice, e.g. in karaoke device.			Change Scope
W04-U04J		Covers non-keyboard instruments with electronic actuators, e.g. guitar synthesizers, electronic drum pads.			Change Scope
W04-U05	Musical equipment interfacing standards, MIDI				Change Scope
W04-V04A5	Machine control	See also W05-D codes for general applications of remote control using speech recognition.		G10L-015	New
W04-V04A6	Speech-to-text			G10L-015/26	New
W04-V04C1	Text-to-speech			G10L-013	New
W04-V04E	Novel circuitry for speech analysis or synthesis	Includes novel features of signal processing circuitry, e.g. automatic gain control, noise reduction, used for speech analysis/synthesis applications. Applied in conjunction with U24, W04-G and W04-V05 codes as appropriate to indicate type of novel signal processing.		G11B-021	New
W04-V05G1		Includes channel vocoder and use of bank of bandpass filters.			Change Scope
W04-X02A	Arcade games				Change Scope
W04-X02A5	Games with physical interaction		grapple, whackamole	A63	New
W04-X02A8	Arcade security, management, multimachine control				Change Scope
W04-X03G7	Museums, exhibitions	Prior to 2005 electrical equipment for museums was coded in W04-W09		A63J	New
W04-X03G8	Information provision, guiding devices	Apply in conjunction with other W04-X03G codes.		A63G, A63J	New
W04-Y03A3		From 2005 digital signal processing is covered in W04-Y03G. See W03-C05 codes for audio amplifier control other than for hearing aids, and U25-F codes for bandwidth control in general.			Change Scope
W04-Y03G	Digital signal processing	Analogue filtering and tone control is covered in W04-Y03A3.		H04R-025	New
W04-Y03G1	Frequency domain manipulation	Includes digital filtering and use of transforms etc. for frequency shifting portions of the audio spectrum.		G06F 017/14, H03H-017, H04R-025	New
W04-Y03G3	Spacial localisation	Includes use of direction finding algorithms to pinpoint location of speaker and amplify relevant frequencies.		G01S-003/080-82, 86, H03H-017, H04R-025	New
W04-Y03G5	Using digital speech processing	Covers coding in/out signal as speech and manipulating parameters to enhance intelligibility. Also coded in W04-V as appropriate.		G10L, H04R-025	New
<b>W05 Alarms, Signalling, Telemetry and Telecontrol</b>					
W05-A03A	Using visible light sources		Back-lit display		Retire search term/Keyword
W05-A03C	Using display devices		Back-lit display		Change Search Term/Keyword
W05-B01E	Passive intrusion detection	Includes acoustic sensing of intrusion, e.g. using microphones to detect sound produced.		(G08B-013)	New
W05-B03	Alarms responsive to two or more different conditions	This code is intended for alarm sensing inventions, e.g. an IR sensor responsive to body heat for an intruder alarm and to heat radiation from a fire for a fire alarm. This code does not include separate alarm events e.g. any alarm transducer (klaxon, bell, flashing light) connected to respond to a number of events.			Change Scope
W05-B07	Personal safety alarms	Anti-mugging and personal defence alarms are covered by W05-B01D5. Alarms warning of abduction or separation from children based on transponders or received signal level are covered by W05-B01A5A.		(G08B-021)	New
W05-B07A	Industrial worker protection alarm			(G08B-021)	New
W05-B07C	Aged or infirm persons protection alarm	Monitoring of patients in hospital is not included – see S05-G02B codes.		(G08B-021)	New
W05-B07E	Driver or pilot protection alarm	X22-E04 is also assigned for road vehicle driver alertness alarms.		(G08B-021)	New

W05-B07G	Protection alarm triggering condition	These codes are assigned with W05-B07A, W05-B07C or W05-B07E as appropriate to indicate the condition being sensed.		(G08B-021)	New
W05-B07G1	Based on body position or attitude			(G08B-021)	New
W05-B07G3	Based on lack of activity			(G08B-021/04)	New
W05-B07G5	Based on medical parameter	S05-D codes are also assigned as appropriate for the condition sensed, e.g. S05-D01E for body temperature.		(G08B-021/04)	New
W05-B07G9	Based on other parameter				New
W05-B07J	Accidental falling into water alarm		Drowning, submerge in water	(G08B-021/08)	New
W05-B07J1	Swimming pool alarm			(G08B-021/08)	New
W05-B07J3	Person overboard alarm	See W06-C01B codes also for details of on-board aspects of ship or boat systems.		(G08B-021/08)	New
W05-B07J9	Other accidental falling into water alarm			(G08B-021/08)	New
W05-B07L	Dangerous gas alarms	This code is intended for detecting the presence of explosive, toxic or other dangerous gases.	Gas detector, combustible gas	(G08B-029/14, 16)	New
W05-B07L1	Sensing poisonous combustion products	This code is intended for detecting the presence of toxic combustion products, e.g. carbon monoxide, or other dangerous gases.		(G08B-029/14, 16)	New
W05-B07X	Other personal safety alarm			(G08B-021)	New
W05-B08G	Terrorist attack alarm	Includes systems, manually or automatically actuated, e.g. for warning of an attack in progress.		(G08B)	New
W05-B08J	Utility-based alarm	Includes gas leaks, burst water pipes.		(G08B)	Change Title
W05-B08J5	Commercial consumer utility alarm	Covers alarm installed on commercial premises, e.g. in a shop or hotel.		(G08B)	New
W05-B08J1	Domestic consumer utility alarm	Covers alarm at domestic customer premises.		(G08B)	New
W05-B08J3	Industrial consumer utility alarm	Covers alarm at industrial customer premises.		(G08B)	New
W05-B08J7	Utility supply producer alarm	Covers alarms relating to safety issues and the like affecting plant and distribution systems of a utility provider.		(G08B)	New
W05-B08X	Other disaster warning/alarm systems			(G08B-021/10)	New
W05-B09	Other alarm system details	Prior to 2005 this code included alarm switches, accessories of general application to alarms and personal safety alarms, now covered by W05-B10 and W05-B07 codes.			Change Scope
W05-B10	General details of alarm systems			(G08B)	New
W05-B10A	Alarm switches			(G08B)	New
W05-B10C	Alarm constructional details	This code is intended for external details such as housings and internal details such as PCB mounting. See V04-S and V04-T codes for further details.		(G08B)	New
W05-B10E	Alarm power supplies	Power supplies in general are covered by U24 codes, (assuming low-power types), which are also assigned as appropriate to indicate novel aspects.		(G08B)	New
W05-B10X	Other general alarm system details			(G08B)	New
W05-C01J	Detection of tampering with alarm systems	Covers sensing of deliberate tampering or unauthorised access to alarm equipment, e.g. through opening of housing.		(G08B)	New
W05-D06E	Internet-based transmission	This code covers the use of the internet as a measurement or control signal transmission medium. As such, 'internet' codes in W01-A06B7 are not normally used, unless some novel aspect from a data communications viewpoint is involved. T01-N codes may be assigned for 'computing' aspects also. The use of data networks other than the internet for telemetry / telecontrol signal transmission is covered by W05-D06F.		(G08C-019, H04M-011, H04L-012/28)	Change Title
W05-D06F	Data network-based transmission	This code covers the use of data networks as a transmission medium, other than internet-based systems which are covered by W05-D06E. W01-A06 codes are also assigned for novel data network aspects.		(G08C-019, H04M-011, H04L-012/28)	New
W05-D06R	Dedicated wired system	This code is intended for electric signal transmission over wires.			Change Scope
W05-D08L	'Learning' type remote controllers	Covers remote controls capable of controlling different equipment types, e.g. after 'training' in signal format.		(G08C)	New
W05-D08N	Constructional details of telemetry / telecontrol equipment		Housings, casings, enclosures	(G08C)	New
W05-E05B6	Light guide	See also X26-D01F.		(F21V, G02B)	New
<b>W06 Aviation, Marine and Radar Systems</b>					
W06-A03A5A	Differential and assisted GPS	Includes systems using ground based transmitter of known accurate position to correct for GPS timing errors, e.g. due to ionospheric conditions, to provide more accurate positioning. Also includes use of pseudolites that transmit GPS format signals when line of sight to sufficient orbiting GPS satellites is restricted.			Change Scope

W06-A04B		From 1997 remote reading of e.g. meters, etc., is excluded - see W05-D08G, W05-D08E and W05-D07G codes. Transponder details are coded in W02-G05 codes also. Analogous systems using other than radio waves are coded in the appropriate sections: e.g. W06-A05B codes for sonic/ultrasonic systems, and W06-A06B codes for light based systems.			Change Scope
W06-A04B7	Using different response medium	Includes secondary radar systems where transmitted and received signals take different forms, for example, when the transmitted signal is radio but the re-radiated signal received is e.g. acoustic.			New
W06-A04E1		Includes e.g. 'passive' chaff systems. Jamming/anti-jamming in general is covered by W02-L codes. Passive reflectors and absorbers are coded in W02-B03 codes also. Signature modification and camouflage aspects, such as radar absorbing coating on aircraft, are coded in W06-A04X only (and in W07-F codes as appropriate).			Change Scope
W06-A04E1A		Includes electronic countermeasures for 'actively' jamming a radar signal. Passive countermeasures are coded in W06-A04E1 only.			Change Scope
W06-A04E1C	Anti-jamming and countermeasures to jamming	Includes systems for overcoming an enemy's attempts to actively jam radar signal. Noise and clutter suppression in general is covered by W06-A04E5.			Change Scope
W06-A04E3A	Monitoring, testing, target simulation, calibration				Change Scope
W06-A04H1	Vehicle applications	From 2005 radar anticollision systems have been transferred to W06-A04H1K. Prior to 2005, anticollision systems remain searchable in W06-A04H1.			Change Scope
W06-A04H1A	Land vehicles	Includes radar systems used on-board motor vehicles and trains.			New
W06-A04H1B	Aircraft	Includes planes and helicopters.			New
W06-A04H1C	Ships	Includes marine vessels, boats and submarines.			New
W06-A04H1K	Anti-collision	Can be used in conjunction with above W06-A04H1 codes. Search with W06-B01B1 for aircraft based systems, and X22-J05A for motor vehicles.			New
W06-A04H3	Mapping/imaging				Change Scope
W06-A04L	Bistatic radar systems	Includes radar systems where the transmitter and receiver(s) are positioned in different locations. See also W06-A04H2 (and S03-D codes) for bistatic weather radar.			New
W06-A04X		Includes signature modification by e.g. absorber materials. For absorber materials per se, see W02-B03D. Includes radar absorbing coatings and paints.			Change Scope
W06-A05		Does not include ultrasound equipment used purely for medical application. See appropriate codes in S05 and S03 only. Does not also include low range systems e.g. for determining material properties or flaws. See appropriate S03 codes only.			Change Scope
W06-A05B		Includes use of transponders for identification. From 1997 remote reading of measured values is excluded - see W05-D08G, W05-D08E, W05-D07G and W05-D06A5 codes.			Change Scope
W06-A05B1	For vehicle or marine craft identification				New
W06-A05B3	Security and coding aspects	Includes control of sonar/ultrasound signal to prevent detection by unauthorised persons.			New
W06-A05B5	For object identification	Includes identification of persons, objects, workpieces etc.			New
W06-A05B7	Using different response medium	Includes secondary sonar systems where transmitted and received signals take different forms, for example, when the transmitted signal is ultrasound but the re-radiated signal received is e.g. radio.			New
W06-A05C7			Piezoelectric, casing, mounting		Change Scope
W06-A05D	Primary sonar systems	This code is only applied when no specific sonar application or novel aspect is mentioned. For example, a novel primary sonar receiver will only be coded in W06-A05C3, with the fact that it is used in a primary sonar application, capable of being determined by the omission of any secondary sonar (W06-A05B) codes.			New
W06-A05D1	Determining target position	Includes sonar distance or height sensing.			New
W06-A05D2	Using relative movement	Includes sonar velocity sensing.			New
W06-A05H3	Mapping/imaging	Includes sonar imaging of seabed (see also S03-C codes).			New
W06-A06B		Includes use of transponders for identification. From 1997 remote reading of measured values is excluded - see W05-D08G, W05-D08E, W05-D07G and W05-D06A3 codes.			Change Scope

W06-A06B1	For vehicle or aircraft identification				New
W06-A06B3	Security and coding aspects				New
W06-A06B5	For object identification	Includes secondary light-based systems for identifying and monitoring of people, objects, workpieces etc.			New
W06-A06B7	Using different response medium	Includes secondary light-based systems where transmitted and received signals take different forms, for example, when the transmitted signal is optical but the re-radiated signal received is e.g. ultrasonic.			New
W06-A06C	Details of non-radio e.m. wave, e.g. light, systems and equipment	Can be used alone or in conjunction with other W06-A06 codes as appropriate.			New
W06-A06D	Primary light-based systems	This code is only applied when no specific optical radar application or novel aspect is mentioned. For example, a novel primary LIDAR receiver will only be coded in W06-A05C, with the fact that it is used in a primary LIDAR application, capable of being determined by the omission of any secondary LIDAR (W06-A06B) codes.			New
W06-A06D1	Determining target position	Includes light-based distance and height sensing. Prior to 2005 indeterminate-application distance sensing was covered in W06-A06.			New
W06-A06D2	Using relative movement	Includes light-based velocity sensing.			New
W06-A06H3	Mapping/imaging	Includes LIDAR mapping of e.g. rain forest canopy. See S02-B04 only for photographic imaging/surveying.			New
W06-A06H5		See W07-A01C only for missile heat seeking system.			Change Scope
W06-B01C8	On-board security systems	Includes anti-hijack systems and arrangements to subdue attackers. Use with W06-B01A5 for systems preventing attackers from piloting aircraft, e.g. into building, and W06-B02E for systems enabling remote flying of aircraft from the ground.			New
W06-B02X		Only coded here if specific to airports. Includes fire-fighting (see also X25-X05), internal transportation of baggage and passengers and evacuation. Also includes other airport terminal electrical equipment such as terminal lighting. For runway lighting see W06-B02E only.			Change Scope
W06-B08	Manufacture and maintenance of aircraft or space vehicle	Includes manufacturing process of electrical components only or substantial electrical equipment for mfr. or maintenance of any part of vehicle.			Change Scope
W06-B09		Can be used to indicate application to other type of flying craft such as balloon, airship or glider.	Balloons, blimps, airships, gliders, microlights, parachutes, protective coating for anti-static or RF screening purposes		Change Scope
W06-C08	Marine vessel manufacture and maintenance	Includes electrical aspects of ship or boat manufacturing and maintenance.			Change Scope
W06-C09		Includes electrical aspects of diving equipment, buoys out at sea (see W06-C07 for port side buoys) and life saving equipment.			Change Scope
<b>W07 Electrical Military Equipment and Weapons</b>					
W07-B		Includes mountings e.g. for fixing flashlight to barrel of rifle. See also X26 for torch per se.			Change Scope
W07-B05		Includes electrical systems for correcting weapon aim. Also includes electrical aspects of munitions such as rearward facing LED for tracer bullet used to covertly illuminate bullet trajectory.			Change Scope
W07-E08	Non-lethal electric weapons	Includes stun guns and electrical aspects of other non-lethal weapons. Also see W07-F codes for self-defence systems.			New
W07-F04	Early warning and reconnaissance systems	Includes early detection of incoming missiles, and e.g. remote controlled unmanned vehicles for gathering video reconnaissance information about enemy forces. See also W02-F01 codes for CCTV aspects.			Change Scope
<b>Section X</b>					
<b>X11 Power Generation and High Power Machines</b>					
X11-B09		From 2005, tidal flow based electric power generation is covered by X15-C codes.			Change Scope
X11-C01		Includes electrical details of gas turbines used for electric power generation.			Change Scope
X11-C02		Includes electrical details of IC engine power plant.			Change Scope
X11-C03		Includes electric power generation by combinations of gas turbine and steam turbine cycles, as well as gas and (or) steam turbine cycles operating in combination with fuel cells, solar systems or any other power generation equipment.			Change Scope
X11-C04		Includes combined heat and electric power generation.			Change Scope
X11-U01A	Steam turbine generator.				Change Title

X12-C01D	Manufacture; maintenance				Change Title
<b>X12 Power Distribution/ Components/ Converters</b>					
X12-C01H	Induction heating coils	See also X25-B02A codes.			New
X12-C02A3	Superconducting device/equipment cooling				Change Title
X12-C02A3A	Cryostats		Cryogens, cryogenics		New
X12-C02A3C	Other	Includes, for example, thermoelectric cooling.			New
X12-D	Cables, conductors, conductive materials	Covers high power and low power cables/conductors, fibres and other structures.			Change Title/Scope
X12-D01D	Nano-materials	Includes conductive materials of small dimensions. This code is used in conjunction with the other X12-D codes as appropriate.	Nanotube, carbon nanotube, single wall nanotube, multiwall nanotube, double wall nanotube, SWNT, DWNT, MWNT		New
X12-D01E	Ion conductors	To be used in conjunction with other X12-D codes, as appropriate.			New
X12-D01F	Conductive dispersions (X12-D01X)	Generally used when the conductive material itself is not novel but its use within a dispersion is.			New
X12-D01F1	Organic vehicle				New
X12-D01F2	Inorganic vehicle				New
X12-D02A2	Anisotropic film	For application to connectors, see V04-A11.			New
X12-D02C	Non-insulated conductors (X12-D02X)	Includes only aspects of conductive part of wires and cables. For other details, such as sheaths, see X12-D03 codes.			New
X12-D02C1	High power conductors	Includes conductive part of an insulated wire or cable, non-insulated overhead power line, etc. designed to carry high currents.			New
X12-D02C1A	Bus bars	Bus bar installations are in X12-G03.			New
X12-D02C2	Low power conductors	Includes conductive part of an insulated wire or cable or non-insulated wires designed to carry low currents.			New
X12-D02C2A	Communication (X12-D02X, X12-D05)				New
X12-D02C2B	Audio/video				New
X12-D02C2C	Control and instrumentation				New
X12-D02C2D	Conducting nanostructures	Includes nanowires, nanotubes and nanofibres	DWNT, SWNT, MWNT, carbon nanotube, CNT,		New
X12-D02C2E	Fibres				New
X12-D03B2		Includes sensors incorporated within the cable structure to indicate temperature rise, water ingress, etc.			Change Scope
X12-D03F		Valid for records between 1992 and 2004. From 2005 onwards, see X12-D08			Retired
X12-D05	Low power cables or wires	Conductive parts of cables are covered by X12-D02C codes. Other details are covered by X12-D03 codes.			Change Scope
X12-D05A	Communication	Includes hf, telephony, and high speed data signals			New
X12-D05B	Audio/video				New
X12-D05C	Control and instrumentation				New
X12-D05J	HF				New
X12-D05K	LF				New
X12-D05L	High speed data				New
X12-D05M	Coaxial				New
X12-D05N	Twisted pair	Includes twisted pairs of both shielded and unshielded type.	STP, UTP		New
X12-D07E1	High power conductors				New
X12-D07E1A	Bus bars				New
X12-D07E2	Low power conductors				New
X12-D07E2A	Nano-wires; nanotubes				New
X12-D07E2C	Fibres				New
X12-D08	Composite optical fibre- and electric- cable	See also V07-F01B4 for optical fibre cables			New
X12-D09	Composite power- and signal- cable	Includes cables having a common outer covering that encloses low and high power cables			New
X12-E		For insulating materials used in general electronic equipment/device, see also V04-X01B from 1997 onwards. Prior to 1997, see also V04-S02. Materials for general electrical equipment are also coded here.			Change Scope
X12-E01C	Inorganic material within organic vehicle	Includes a mixture where the inorganic material is a major constituent			New
X12-E01D	Inorganic nanomaterials	Includes insulating materials of small dimensions. This code is used in conjunction with the other X12-E codes as appropriate.			New
X12-E02C	Organic material within an inorganic vehicle	Includes a mixture where the inorganic material is a major constituent			New
X12-E02D	Organic nanomaterials	Includes insulating materials of small dimensions. This code is used in conjunction with the other X12-E codes as appropriate.			New
X12-E03C1	Tapes, sleeves, tubes				New
X12-E03C3	Grommets				New
X12-E03D	Insulating nanostructures	Includes nanotubes and nanofibres	DWNT, SWNT, MWNT, carbon nanotube, CNT,		New

X12-G01C	Cable and fault locating; cable/line installation measuring/testing	See S01-G05 also for electrical fault location determination, and S03-C02 codes for cable location by, for example, magnetic fields. Also includes line/cable breaks, lightning strikes detector/recorder, line strain, tripped breaker detectors, etc.			Change Title/Scope
X12-G01D		Includes cleaning of insulators, de-icers, etc.			Change Scope
X12-G02D	Grounding connector	For low power earthing connectors, see V04-A05			New
X12-G02E	Sliding connector	Includes, for example, pantograph collectors for a train. Brushes, slip rings for electric motors are covered by V04-L, V06-M and X11-J codes.			New
X12-G02F	Vibration dampers	Includes dampers for an overhead line.			New
X12-H01B1	Distributed power generation system	Includes connection to the utility mains of geographically distributed solar power, wind power, fuel cells' power, gas microturbines, etc. See also U24-J or x12-J codes for power converter details.			Change Title/Scope
X12-H01B2	Bulk power transfer/interconnection	Also includes synchronising of generators and network/bus bar			New
X12-H01B3	Interconnection of networks operating at different frequencies				New
X12-H01B4	Aircraft and ships	See also W06-B/C codes.			New
X12-H03A1	Economics-driven inter-tie or multi-source control	Includes control of network power transfer based on tariffs offered for buying and selling of energy. See also X12-H07 and T01-J codes.			New
X12-H03E1	High power transmission/distribution networks	Typically includes communication/control signals sent over high power lines.			New
X12-H03E1A	Economics-driven inter-tie or multi-source communication.	Includes control of network communication based on tariffs offered for buying and selling of energy. See also X12-H07 and T01-J codes.			New
X12-H03E3	Low power mains network	Typically includes communication/control signals sent over mains wires to switch appliances.			New
X12-H03E5	Radio network				New
X12-H03E7	Internet/intranet				New
X12-H04B	Internet/intranet metering				New
X12-H04U	Applications	To be used in conjunction with other H04 codes.			New
X12-H04U1	Protection	Includes metering arrangements for use with protection devices. See also S01, X12-C01G and X13-C for electrical instrumentation, instrument transformers and protection circuits.			New
X12-H04U2	Network control	See also X12-H03A codes for control and monitoring of networks.			New
X12-H07	Power trading across separate networks/generators	Includes computerised trading of power based on varying tariffs. See also T01 codes. To be used with other X12-H03 codes for the communication and control aspects			New
X12-J03A	Matrix converter				New
X12-J05B	Inverter-type	To be used in conjunction with other inverter codes such as X12-J05A.			New
X12-J05B1	Voltage source inverter				New
X12-J05B2	Current source inverter				New
X12-J05B3	Utility inter-tie inverter	Includes inverters fed by solar/wind power/etc generators for connecting to a mains/utility supply. For low power inverters, see U24-D codes.			New
X12-J06	Pulse voltage supply	See U24-D06 for low power pulse supply			New
X13-A01C	Contact mfr; testing; monitoring				Change Title
<b>X13 Switchgear, Protection, Electric Drives</b>					
X13-A04F	Switch mfr; testing; monitoring				Change Title
X13-D12	Thermal fuses	Includes one-shot thermal fuses, thermal protectors and thermal cutoffs.			New
X13-F03B1C	Vector speed regulation		Field-oriented, flux-vector, direct-torque, control		Change Title
X13-F20	Starter-generator/motor-generator speed regulation				New
X13-F25	Speed regulation or starting/stopping of electrical machines or converters characterized by specific switching or control device	These codes are used together with other X13-F codes as appropriate.			New
X13-F25A	Characterized by bipolar transistors and diodes				New
X13-F25B	Characterized by IGBTs				New
X13-F25C	Characterized by FETs				New
X13-F25D	Characterized by thyristors				New
X13-F25E	Characterized by combination of switching devices				New
X13-F25F	Characterized by AC-to-DC converter				New
X13-F25G	Characterized by DC-to-AC converter				New
X13-F25H	Characterized by AC-to-AC				New
X13-F25J	Characterized by DC-to-DC converter				New

X13-G01B1C	Vector speed control				New
X13-G02		See V06-N40 codes for speed control of low power generators.			Change Scope
X13-G02T1	Steam turbine generator				Change Title
X13-G25	Speed control of electrical machines characterized by specific switching or control device	These codes are used together with other X13-G codes as appropriate.			New
X13-G25A	Characterized by bipolar transistors and diodes				New
X13-G25B	Characterized by IGBTs				New
X13-G25C	Characterized by FETs				New
X13-G25D	Characterized by thyristors				New
X13-G25E	Characterized by combination of switching devices				New
X13-G25F	Characterized by AC-to-DC converter				New
X13-G25G	Characterized by DC-to-AC converter				New
X13-G25H	Characterized by AC-to-AC				New
X13-G25J	Characterized by DC-to-DC converter				New
X13-U	Characterized by application to specific equipment or industry	For records prior to 2005, these codes were used for applications of medium and high power electric machines control only. From 2005 onwards, these codes are used for applications of fuses, protectors, circuit breakers, and medium and high power switches and electric machines control. See V03 codes for low power electric switches and V06 codes for low power electric machines.			Change Title/Scope
<b>X15 Non-Fossil Fuel Power Generating Systems</b>					
X15-A01A	Heat collecting panels	Includes panels provided with pipes carrying liquid that is heated by the sun. Direct conversion panel details are in X15-A02.			New
X15-A01C	Concentrators	Includes arrangements to direct the sun's rays onto the panels using reflectors, lenses and sun-tracking dishes.			New
X15-A02	Direct conversion photovoltaic panel details				Change Title
X15-A02D1	Dye-sensitised solar cell	Includes the use of an organic dye and electrolyte for absorbing solar energy and hole transport.	DSSC		New
X15-A02F	Organic solar cell	Includes cells that use electron-acceptor and electron-donor organic materials.			New
X15-B		Includes arrangements for electricity generation using wind power. Details of converters and interconnection to the utility mains are covered by, respectively, U24-D/X12-J and X12-H01B codes.			Change Scope
X15-B01A1	Large scale				New
X15-B01A3	Small scale	Includes microturbines e.g. those located at the bottom a chimney			New
X15-B02	On-shore systems	This code is used in conjunction with other codes as appropriate.			New
X15-B03	Off-shore systems	This code is used in conjunction with other codes as appropriate.			New
X15-C02	Tide energy (X11-B09)	For hydroelectric power generation using water turbines driven by river flow or river water falls, see X11-B codes.			New
<b>X16 Electrochemical Storage</b>					
X16-A05	Micro- and printed-primary cell	To be used together with the battery electrolyte type e.g. non-aqueous cell			New
X16-B01F1		Includes lithium ion cells when the state of the electrolyte is not known.			Change Scope
X16-B01F1A	Liquid electrolyte				New
X16-B01F1C	Solid electrolyte	Includes solid polymer electrolyte cells.			New
X16-B01G	Micro- and printed-secondary cell	To be used together with any other battery electrolyte-type cell e.g. alkaline.			New
X16-C	Fuel cells and associated components	Fuel cell electrodes, casings, measurements and electrolytes are, respectively, covered by X16-E06A/C18/H/J codes.			Change Title/Scope
X16-C01A1	Tubular	Includes tubular solid oxide electrolyte with inner and outer electrodes			New
X16-C01A3	Monolithic	Includes planar and corrugated solid oxide electrolyte with electrodes on its major surfaces.			New
X16-C01C			PEM, SPEFC, SPE fuel cell, proton exchange membrane, solid polyethylene, SPFC, PEMFC		Change Search Term/Keyword
X16-C06	Bio-fuel cell	Includes, for example, cells with electrodes having a 'bio' catalyst.			New
X16-C07	Micro/flat fuel cell	Includes fuel cells using small, replaceable fuel tank. To be used together with the type of cell such as SOFC.			New

X16-C15	Fuel/gas supply arrangements, storage facility; combustion products/exhaust gas handling				Change Title
X16-C15A	Fuel/gas supply arrangements.	For supplying gas to electrodes.			New
X16-C15A1	Manifolds				New
X16-C15A2	Flow plates				New
X16-C15A3	Fuel wicking				New
X16-C15A4	Liquid and air transmission pump				New
X16-C15C	Fuel storage facility				New
X16-C15C1	Bulk storage facility				New
X16-C15C2	Replaceable fuel container		Cartridge, reservoir, cassette, tank		New
X16-C15C3	Hydrogen storage/absorption material				New
X16-C15C3A	Nanomaterial/nanotube				New
X16-C15E	Exhaust/waste handling				New
X16-C17	Fuel processing				Change Title
X16-C17A	Hydrogen generation	Includes all aspects of hydrogen manufacture if for ultimate, stated use in fuel cells			New
X16-C17A1	Reformer	Includes extraction of hydrogen from hydrocarbons such as methanol, gasoline, etc.			New
X16-C17C	Catalyst	For electrode catalyst, see X16-E06A5A.			New
X16-C17E	Heater	Includes heating arrangement for fuel processing; for battery and fuel cell heating, see X16-K02.			New
X16-C18	Fuel cell housing, stack, and sealing arrangements (X16-F01/F01A/F06)	See X16-F codes for batteries.			New
X16-E01H	Characterised by active material size/structure	To be used together with X16-E01A/E01C codes.			Change Title/Scope
X16-E01H1	Nanomaterials	To be used together with X16-E01A/E01C codes.			New
X16-E01J	Binders and fillers (X16-E09)				New
X16-E06A1	Electrode materials	Includes all 'active' materials for the electrodes and catalysts. For fuel processor catalyst, see X16-C17C1.			New
X16-E06A1A	Nanomaterials/nanotubes		Nanocarbon		New
X16-E06A5	Electrode details	Includes constructional and arrangement details of electrodes.			New
X16-E06A5A	Catalyst	For fuel processor catalyst, see X16-C17C1.			New
X16-E06A5C	Membrane electrode assembly		MEA		New
X16-E06A5E	Gas diffusion layer		GDL		New
X16-E09		Includes electrodes not coded above and miscellaneous items relating to electrodes.	Remove: Fillers, binders		Change Scope
X16-E11	Photoelectrochemical cell electrode	See also U12-A02 and X15-A02 codes for solar cells.			New
X16-F01	Cases, seals, shapes	For battery holders, see X16-F06 codes.			Change Title/Scope
X16-F01C	Casing	Used in conjunction with X16-F01A/F01F codes when appropriate.	Covers, containers, housings, walls, lids		New
X16-F01F	Characterised by shape of casing	Used when casing/sealing arrangement is novel.			Change Title/Scope
X16-F01F4	Micro- or printed-battery				New
X16-F03A1	Terminals	Includes externally accessible terminals to contact equipment being powered. See X16-F05 for connections used for grouping cells or batteries to form packs.			New
X16-F03A3	Internal connections	Includes internal connections within cell or battery, inaccessible on the outside.			New
X16-F06	Battery holder/compartments associated with electrical/electronic equipment; battery packs; charging pods	Grouped/stacked fuel cells are covered by X16-C codes			Change Title/Scope
X16-F06A	Battery packs	Also covers individual batteries or cells grouped together by external connectors such as groups of batteries for electric vehicles, power station batteries, etc. Battery packs using a specific type of cell such as alkaline are also covered by X16-B01 codes.			New
X16-F06C	Battery compartment/holder associated with electrical/electronic equipment	See also V04-S03 for casings incorporating such holders/compartments			New
X16-F06E	Charging pods; cells or battery holder	Includes constructional details. For battery charging circuits, see X16-G codes.			New
X16-F06E1	Charging pods	Includes battery-powered equipment holders designed for charging the battery			New
X16-F06E2	Cell or battery holder	Includes battery or cell, per se, holder for charging.			New
X16-G03	Non-contact charger units	To be used in conjunction with other codes. For example, non-contact mains charger is also coded in X16-G01.			New
X16-J01E	Nanomaterials	To be used together with other appropriate X16-J codes.	CCFL		New

X16-J01G	Gel	To be used together with other appropriate X16-J codes.			New
X16-K	Battery cooling, heating, etc.				Change Title
X16-K01	Cooling		Water cooled, refrigeration, coolant circulation		New
X16-K02	Heating	Includes, for example, heating to aid correct battery operation.			New
X16-K03	Air conditioning	Includes humidification too, such as moisture introduction within a fuel cell gas, PEMFC humidity control, etc			New
<b>X21 Electric Vehicles</b>					
X21-U	Electric vehicle rental, hiring and sharing systems	Includes overall system associated with electric vehicle hiring and rental with some on-board vehicle aspect, e.g. enabling user to book vehicle on-line (see T01-N and T01-J05 codes) while central controller provides authorisation and remote access to allocated vehicle. Also includes car pooling arrangements with some on-board vehicle aspect.	Hiring, leasing, rental, car pool, car sharing, internet, booking		New
<b>X22 Automotive Electrics</b>					
X22-A02		"Scope notes and search terms need to be deleted for this code"			Change Scope
X22-A02A1	Fuel injection valve	Includes atomiser, EM fuel injection valve (also see V02 codes, e.g. V02-E02A1 for electromagnetic valve per se), and injectors.	Electromagnet, injector, piezoelectric, ultrasonic, magnetostrictive		New
X22-A02A3	Common rail arrangements	Includes fuel injection systems using a common rail fuel assembly. Also see X22-A20C for diesel engine applications.			New
X22-A02F	Fuel additive/treatment systems	Fuel additive/treatments to improve combustion. Includes water/steam injection and fuel ionising arrangements.			New
X22-A03B2	Drive-by-wire/Electronic throttle control	Includes 'drive-by-wire' type controllers e.g. using servomotors to control throttle position.			Change Scope
X22-A03G		Includes control of intake and exhaust valve timing. Also includes cam control in which multiple, selectable cam lobes can be selected to adjust valve timing, deviation and lift.	Control, intake, exhaust, valve, cam, camshaft		Change Scope
X22-A03I	Swirl control	Includes control of air motion in combustion chamber e.g. to enable stratified or ultra-lean burn combustion.			New
X22-A04	Starting motors	Includes motor per se and associated gearing. See X11 for further details of high power motors. Starter solenoid is included in X22-A08 only. For combined starter/generator also see X22-F02 and X11-H20 (or X13-G20 for starter/generator control).			Change Scope
X22-A05		Only includes on-board measurement or off-board diagnostics interfacing with on-board system. General measurement systems are included in section S, and vehicle testing systems are coded in S02-J. Includes electrical sensors per se as well as their mounting arrangements.			Change Scope
X22-A05A1	Ambient pressure*	*This code is discontinued and transferred to X22-A05A4, but remains searchable and valid for records from 1992 to 2004.			Retired
X22-A05A2	Knock detection	Includes pinking and pre-ignition detection.			New
X22-A05A3	Negative pressure*	*This code is discontinued and transferred to X22-A05A4, but remains searchable and valid for records from 1992 to 2004.			Retired
X22-A05A4	Pressure detection	Includes detection of both ambient and negative pressure.			New
X22-A05A6	Vibration/noise detection				New
X22-A05N	Engine related diagnostics	Includes diagnostic devices interfacing with engine management system.			New
X22-A08A	Remote/keyless IC engine starting				Change Scope
X22-B01A1		Includes Xenon and High Intensity Discharge(HID).			Change Scope
X22-B01E	Position control/beam aiming arrangements	Includes mechanical and motorised arrangements for adjusting headlamp position, and controlling movement of e.g. reflector to adjust headlamp aim e.g. to follow curve as vehicle negotiates a bend. See also X26-L.			Change Scope
X22-B02A	Braking indicators	From 2005, direction and braking indicators are separated, with turning indicators transferred to X22-B02D and braking indicators remaining in X22-B02A. Prior to 2005, X22-B02A remains searchable for both turning and braking indicators.			Change Scope
X22-B02A1		Includes activation of vehicle brake lights in response to driver removing foot from accelerator pedal.			Change Scope
X22-B02B	Fixtures	Includes reflectors, lenses and bulb holders (see also X26-D01 codes).			New
X22-B02D	Turning/direction indicators	See X22-B02A for records prior to 2005.			New
X22-B02R	Reversing indicators	Includes reversing lights and audible reversing warnings.			New

X22-B02X		Includes side lights, tail lights, hazard lights and warning lights. Reversing lamps and novel fixtures such as reflectors, are coded also in X22-B02R and X22-B02B respectively, from 2005.			Change Scope
X22-B03		"Scope notes need to be deleted for this code"			Change Scope
X22-B03A	Audible reversing warning*	*This Code is discontinued and transferred to X22-B02R from 2005 onwards. It remains searchable and valid for records up to 2004.			Retired
X22-B03B	Interior lighting	Includes courtesy lights, dashboard lights and lighting for other compartments such as vehicle boot.			New
X22-B03E	Emergency signalling devices	Includes portable emergency services flashing lights; search-or spot-light mounted on vehicle roof and warning triangle to be placed on the road before an accident or broken down vehicle.			New
X22-B03H	Horns				New
X22-B09		Includes general use light switches and door-lock lights. Also includes illumination not intended to warn other road users of vehicle presence/intentions, such as flood light to warn driver of puddle when exiting vehicle.			Change Scope
X22-C02C5	Electronic stability control	Includes control of braking to enhance vehicle stability, e.g. to control vehicle yaw. See X22-M for vehicle suspension based electronic stability control.			New
X22-C05A		Includes speed responsive power-assisted steering. Includes motor/gearing arrangements and power steering control.			Change Scope
X22-C05A3A	Steering feedback/'feel' control	Includes arrangements for controlling e.g. torque feedback to steering wheel to improve or adjust driver 'feel'.	Feel, feedback, self-centring, simulated, variable, adjustable, control		New
X22-D01A	Remote-controlled and keyless entry				Change Scope
X22-D01A1	Remote-controlled	Includes radio control and use of transponders.			New
X22-D01A2	Keyless entry				New
X22-D01A2A	Biometric access	Includes fingerprint and voice recognition or retinal scanning (see also S05-D01C5A).			New
X22-D01A2C	Card/keypad access	Includes smart/magnetic strip card reader or keypad code entry devices (also see T04 codes).			New
X22-D03	Theft alarms/theft monitoring				Change Scope
X22-D03A	Theft alarms	Includes audible and visual alarms (see also W05-B01 codes), e.g. sirens or flashing of vehicle hazard lights (see also X22-B codes).			New
X22-D03C	Theft monitoring	Includes remote monitoring/indication of vehicle theft, e.g. to central station or vehicle owner (see also W05-B05 codes). Also includes GPS tracking of stolen vehicle (see also W06-A03A5 codes). For in-car camera systems capturing image of thief for on-board recording or remote transmission, see also W02-F01 codes.			New
X22-E		Includes touch-sensitive screens (see also T04-F codes). Also includes internal display for passengers e.g. in a bus indicating approaching stops (see also T07-A05A1). For more details about general instrumentation for vehicles, section S codes must be searched. For example, S01-G06 for battery charge indicator, S02-G codes for speed sensors, S02-J codes for brake and transmission, and S02-K06 for recording or indicating in general. Also includes control of all information/warnings presented to driver to according to driving situation, e.g. to prioritise important warnings and prevent driver from being distracted by display of minor warnings during emergency situations.			Change Scope
X22-E02D	Brakes, tyres, transmission, steering				Change Scope
X22-E02D	Steering	Includes indication of information directly relating to vehicle steering system, e.g. steering angle display. For indication of failure of steering angle sensor also see X22-E10 and X22-X06H. This code is not used for general displays mounted on steering wheel. E.g. for speedometer mounted on steering wheel, see X22-E05 and X22-C05C only.			New
X22-F02	Alternators	Includes vehicle alternator per se (with further details in X11); output controllers (see also X13-G02). For combined starter/generator also see X22-A04 and X11-H20 (or X13-G20 for starter/generator control).			Change Scope

X22-G01		X22-G01 Transmission/clutch/gear systems. Includes electrical aspects of powertrain hardware such as novel solenoid valves used in the hydraulic system, electric aspects of differentials (See X22-G05 only for four-wheel drive aspects), motor gearing etc. that are used in an unspecified type of transmission system. Use X22-G01C/X22-G01E instead if type of transmission is detailed.		Change Scope
X22-G01A	Cruise Control*	*This code is now discontinued and transferred to X22-G03A. It is still searchable and valid for records from 1992-2004.		Retired
X22-G01B	Traction control*	*This code is now discontinued and transferred to X22-G03B. It is still searchable and valid for records from 1992-2004.		Retired
X22-G01C	Automatic transmission systems	Includes continuously variable transmission (CVT).		New
X22-G01E	Manual transmission			New
X22-G03	Powertrain/transmission control systems	Includes integral engine/transmission control (also see X22-A03F). Search with T01-J07D1A for microprocessor controlled transmission. See also X22-G01 for records prior to 2005.		New
X22-G03A	Cruise control	This code can be used on its own or in conjunction with X22-A03B1 or X22-C02D4 depending on the variables being controlled. See also X22-G01A for records prior to 2005.		New
X22-G03B	Traction control	This code can be used on its own or in conjunction with X22-A03D1 or X22-C02C1 depending on the variables being controlled. See also X22-G01B for records prior to 2005.		New
X22-G03G	Shift-by-wire	Includes steering wheel mounted gear change arrangements. Paddle-shift		New
X22-G03N	Transmission noise/vibration/harshness control	Includes arrangements for reducing shift-shock. see also X22-A03F for integral engine/transmission control aspects. See also X22-X08 for passenger compartment noise and vibration reduction in general and X22-A12 for engine noise reduction.		New
X22-G05	Four-wheel drive systems	Includes electrical aspects of four, six and all wheel drive systems, such as electrically lockable differentials and electrically locking hubs.		Change Scope
X22-J		Includes power stands for motorcycles; etc. Also includes electrical accessories not covered elsewhere such as refrigerated cool box (see also X27-F codes) powered from cigar lighter socket (see also X22-F05).		Change Scope
X22-J02	Heating, ventilating, air-conditioning	Includes electrical aspects of overall HVAC system.		Change Scope
X22-J02C		Includes heating for passenger compartments, door locks etc.		Change Scope
X22-J02D	Ventilating	Includes electrical aspects of passenger compartment ventilating. See X22-J02E instead if ventilator/blower is part of an air-conditioning/climate control system and X22-J03A if ventilator is for cooling vehicle seat.		New
X22-J02E	Air conditioning; climate control	For novel temperature or humidity sensing arrangements see X22-X06X and S03 codes.		Change Scope
X22-J02E1	Climate control			New
X22-J02E3	Air treatment arrangements	Includes de-odorisers, perfume dispensers and air ionisers etc.		New
X22-J03A3A	Active head restraint	Includes active control of seat headrest to place it in optimum position to protect occupant's head/neck during a collision.		New
X22-J05B		See W06-A05H also.		Change Scope
X22-J05C		Includes e.g. laser rangefinder. See W06-A06H codes also.		Change Scope
X22-J08		Includes obstruction detection.		Change Scope
X22-J11		Includes anti-submarining seats, flip up roll over bars and roll over control arrangements. For airbags and seat pretensioners see X22-J07 and X22-J03B1 only. From 2005 active head restraints are coded in X22-J03A3A only.		Change Scope
X22-J12	In-car office/information equipment	Includes e-mail, facsimile equipment powered by vehicle supply and reception of e.g. Internet information. Includes Internet browsing e.g. for downloading local tourist information (also see X22-E06F for downloading map information), restaurant menus and shop opening times or for making hotel reservations and booking tickets.		Change Scope
X22-P05F	Forklift truck	See also X25-F05A. Electric forklift trucks are coded in X21-A01B only.	Air conditioning and climate control	New
X22-P05X		Includes snow ploughs, commercial vans and refuse collection vehicles.		Change Scope

X22-U	Motor vehicle rental, hiring and sharing systems	Includes overall system associated with motor vehicle hiring and rental with some on-board vehicle aspect, e.g. enabling user to book vehicle on-line (see T01-N and T01-J05 codes) while central controller provides authorisation and remote access to allocated vehicle. Also includes car pooling arrangements with some on-board vehicle aspect.	Hiring, leasing, rental, car pool, car sharing, internet, booking		New
X22-X06		These codes are used on their own or in conjunction with other codes depending on claimed aspects. For general instrumentation, S01, S02, and S03 codes should also be searched. Includes electrical sensors per se and their mounting arrangements.			Change Scope
X22-X06N	Non-engine related diagnostics	Includes diagnostic devices interfacing with vehicle control devices.			New
X22-X06X	Other non-engine related measurements/sensors.	Includes other specific measurements and sensors, e.g. novel air conditioner temperature sensor (see also S03-B codes).			New
X22-X12		Includes pedals that are electrically positioned according to driver's requirements and other electrical arrangements connected to pedal operation. See X22-X06L for control pedals' position sensors per se.			Change Scope
X22-X16	Vehicle maintenance equipment and service monitoring	Includes on-board aspects associated with e.g. fleet maintenance, vehicle servicing equipment (see X22-A16 for engine servicing equipment) and remote service monitoring (see X22-E10 for on-board service required warning).			New
<b>X23 Electric Railways and Signalling</b>					
X22-A02A5	Non-diesel direct injection	Includes direct injection arrangements, e.g. for use in petrol engine.			New
X23-A01	Propulsion, braking, suspension				Change Scope
X23-A01A	Propulsion		Drive system, mountings		Change Scope
X23-A01A2	Engines	Includes engine control and electrical hardware aspects of railway vehicle engines.	Diesel-electric locomotive, diesel, petrol, fuel		Change Scope
X23-A01C	Suspension	Includes electrical aspects of railway vehicle suspension systems, such as carriage/ride tilt control. Magnetically levitated suspension/propulsion systems are coded in X23-A01A4 only.			New
X23-A03C		Includes on-board generators per se, with further details in X11 or X13 if its control is part of the invention, and power supply or conversion arrangements etc.			Change Scope
X23-A09		Includes connectors for cables passing between carriages etc. Includes refrigerated compartment for transporting cargo.			Change Scope
X23-A09A	Off-board/railway station systems	From 2005 major electric track laying equipment is transferred to X23-X. For station based passenger information/communications systems see X23-C02.			Change Scope
X23-A09A1	Security systems				New
X23-A09A1A	For personnel	Includes detection of concealed weapons. Also includes all aspects of passenger tracking and monitoring, including authorisation/access control for passengers (see T05-D codes also).	concealed weapon, authorisation, checking, magnetic, electromagnetic		New
X23-A09A1E	For baggage	Includes all aspects of baggage inspection, monitoring and tracking. Includes use of transponder tags (see also W02 codes) or bar-code reader (see also T04 codes). See S03-C03 and S03-E06B codes for inspection.	X-ray, neutron, image, tracking, inspection, monitoring, smuggling		New
X23-A09A3	Station safety systems	Includes fire-fighting arrangements and automatic platform-edge doors control. Prior to 2005, platform edge doors control was coded in X23-A09.	Fire-fighting, emergency, evacuation, safety		New
X23-A09A9	Other station details	Includes transportation of baggage and passengers, and railway station specific heating and air-conditioning.	escalator, lift, conveyor, heating, air-conditioning, travelator		New
X23-A10		Includes on-board train heating and air-conditioning systems, internal and external train lighting.			Change Scope
X23-A13		Includes electrically adjustable seats, electric windows, electric door locks etc. Also used for in-train entertainment systems.			Change Scope
X23-C	Passenger information/communications systems				Change Scope
X23-C01	On-board PA system; displays; telephones	Includes automatically triggered, e.g. by train or signalling, systems. See W04-S05 and W05-E codes, respectively, for PA systems and general displays. See also W05-A codes for warning tones. Also includes on-board public telephones (also see W01 codes), systems for enabling use of passenger's mobile phone e.g. while in tunnel, and passenger information arrangements e.g. allowing on-board internet browsing (see also T01 codes).			Change Scope

X23-C02		Includes automatically triggered, e.g. by train or signalling, systems. Also includes station based timetable displays, internet browsing systems, computerised ticket reservation systems and other station based information/communications systems.			Change Scope
X23-X	Other railway system details	Includes major electric railway track laying equipment.			New
<b>X24 Electric Welding</b>					
X25-B01F	Positive Temperature Coefficient heaters		PTC, self regulating		New
<b>X25 Industrial Electric Equipment</b>					
X25-A04		Mainly apparatus for sputtering and chemical vapour deposition included; for methods, substantial electrical details must be disclosed. See U11-C09 for sputtering and CVD apparatus used for integrated circuit manufacture and appropriate T03/W04 codes for magnetic head manufacture. Non-cathodic, e.g. general plasma (laser) deposition is not included - see X25-A09 and X14-F codes.			Change Scope
X25-A09		Includes metallic coating, e.g. plasma deposition (for other coating see X25-K05).			Change Scope
X25-B01C		Includes resistance heaters having extended surface area substantially in a two-dimensional plane.			Change Scope
X25-B01H			Halogen, IR		Change Scope
X25-B02			Laser heating		Change Scope
X25-C	Industrial furnaces				Change Scope
X25-C07	Gas furnaces	Includes electrical aspects of gas furnaces.			New
X25-C09	Other industrial furnaces				Change Scope
X25-D01			Dredger, bulldozer		Change Scope
X25-L		Includes electrical components per se, and mechanical parts of these components, e.g. mechanical impeller used in electric pump.			Change Scope
X25-L07		Includes heat exchanger comprising built-in electric resistance heater to supplement heat exchange or solenoid flow control valve.			Change Scope
X25-P01A		Includes meat slicing, food packing/canning (also see X25-F03A for food packing/tinning). Also includes food/packaging sterilisation/disinfecting e.g. using mechanical cleaning, chemicals, heat, radiation or electricity.	Packing, canning, tinning, sterilising, UV, microwave, ultrasonic, plasma		Change Scope
X25-Q		For control details see T06-D09 also. For industrial furnaces per se see X25-C			Change Scope
X25-W04		Includes recycling processes for plastics, paper and aluminium, as well as retrieval and sorting if waste for recycling. See also X25-F06 for sorting, and X25-T09 for paper industry. For recycling of copier and printer components also see S06-A17 and T04-G11B respectively.			Change Scope
X25-X13	Industrial combustion	Includes boilers using solid, liquid or gaseous fuels and involving electrical aspects. Domestic scale combustion, e.g. central heating gas boiler, is not included - see X27-G.			New
X25-X14	Manufacturing/assembly plants	Includes assembly line systems and general manufacturing plants. For novel assembly/manufacturing devices such as manipulators or conveyors see X25-A03E and X25-F01 respectively.	Vehicle assembly line, car manufacturing plant		New
X25-Y	Pipelines, *toilets				Change Scope
X25-Y01	Toilets*	*This code is now discontinued and transferred to X27-L from 2005. It is still searchable and remains valid for records from 1997-2004. Public and domestic toilets and urinals. Includes toilets with integral bidets. See X27-A02A also.			Retired
<b>X26 Lighting</b>					
X26-A02F	Integral light source and reflector (X26-A02X)	For reflectors as part of a light fixture, see X26-D01A			New
X26-A02G	Integral operating circuit/envelope (X26-A02X)	Includes constructional details of the combination. Electrical details of the operating circuits are covered by X26-C01 codes.			New
X26-B01A	Halogen lamps				New
X26-B01B	Heating lamp	See X25/X27, respectively, for industrial/cooking/heating applications.			New
X26-B02A1		Includes end caps, filters e.g. coated onto the inside of the envelope.			Change Scope
X26-B02A3	Filaments (X26-B02X)				New
X26-B02B	Integral light source and reflector (X26-A02X)	For reflectors as part of a light fixture, see X26-D01A			New
X26-B02X		Includes fillings, getters., etc.			Change Scope

X26-C01B1	Inductive ballast; inductive components; starter switches				Change Title
X26-C01B1A	Inductive ballast	Includes inductive starting circuit.			New
X26-C01B1C	Inductive components	Includes novel inductors/transformers specifically for use in (non)electronic ballasts. See V02-G codes for further details for reactors and transformers.			New
X26-C01B5A	Fluorescent lamp		CCFL		New
X26-C01D	Current/power/voltage control				New
X26-C01E	Remote control				New
X26-C02A	Halogen lamps				New
X26-C02B	Heating lamp	See X25/X27, respectively, for industrial/cooking/heating applications.			New
X26-C02C	Dimmer				New
X26-D01		Generally, includes items considered to be part of the light fitting structure. So, excludes optical systems that are at some distance from the light source.			Change Scope
X26-D01D			Gobo		Change Search Term/Keyword
X26-D01F		Includes light guides such as a plate, glass block, optical fibre, etc. locally within a light fitting. For guiding of light over some distance, see X26-G. Where the light guiding aspect relates to the backlighting of an LCD, see also U14-K01A and W05-E05 codes.			Change Scope
X26-E01	Portable battery-powered lights				
X26-E01A	Torches				New
X26-E01A1	LED-based				New
X26-E01B	Lanterns				New
X26-E01C	Penlights				New
X26-E01D	Key ring lights				New
X26-E01E	Solar garden/path lights				New
X26-E01F	Wearable	Includes portable lights mounted on clothing, shoes, jewellery, etc			New
X26-E02	Portable mains-powered lights				Change Title
X26-E02A	Table lamps				New
X26-E02B	Floor lamp				New
X26-E02C	Emergency	Includes e.g. exit lights with batteries previously charged by the mains.			New
X26-E02D	Night light	Includes light/mains plug combinations used in, say, children's rooms.			New
X26-G		Includes, in general, the use of guides such as optical fibres, rods, etc in leading light from a source to a distant location. For light guiding structures within a light fitting or for 'local' use, see X26-D01F. For optical fibre-based illumination, see also V07-N03. Guiding of solar/sun light is not included unless a space is illuminated with a combination of natural and electric lights with, for example, the latter controlled to supplement or supplant natural light depending on ambient conditions.			Change Scope
X26-K			Gobo		Change Search Term/Keyword
X26-U	Lighting application	To be used with other relevant X26 codes. See also appropriate classes e.g. S05 for medical applications.			New
X26-U01	Cosmetic	Includes lights for sun tanning.			New
X26-U02	Medical				New
X26-U03	Heating	Not used when X26-B01B/C02B are applied.			New
X26-U04	Displays/signs	For backlighting.			New
X26-U05	General lighting system		GLS		New
X26-U05A	Commercial				New
X26-U06	Street				New
X26-U07	Vehicle	Includes lighting for motor vehicle, electric vehicle and train.			New
X26-U08	Marine vessels				New
X26-U09	Aircraft/space craft				New
X26-X		Covers lighting details not involving light emission (X26-A, etc) or light distribution (X26-D). Includes lamp posts, general lighting installations, pendant light rod, light strings/garland (Christmas lights or other decorative or novelty lights are in X26-M), etc.			Change Scope
<b>X27 Domestic Electrical Appliances</b>					
X27-A02A		Includes articles for washing - e.g. foot washers, bidets, tooth-paste dispenser, contact lens steriliser, incontinence detector, weighing scales, roller towel.			Change Scope

X27-A02A4	Bath; shower; washbasin	Includes electrical aspects such as electric mixer tap or presence detector. For electric water heating aspects of e.g. showers or baths, see X27-E03A1 only.	Sink, tap, detector, EM valve		Change Scope
X27-A02B1		Includes electrical aspects only. X27-A02B1 codes can be used alone or in conjunction with one another depending on claimed aspects.			Change Scope
X27-A02B1E	With integral electrical parts	Includes clothing in which e.g. lighting, sensors, wiring, heating elements (see X25-B01 codes), actuators and other electrical parts are integrated into fabric. E.g. includes electrical elements such as resistive heating elements woven into fabric, flexible electrical coatings applied to fabric or fibres, or e.g. light moulded into plastic sole of shoe. Also see X25-T codes for fabric manufacture per se.			New
X27-A02B1F	With attachable electrical parts	Includes electrical parts that are attachable to clothing. E.g. includes LED fixed to cap by clip, or LED incorporated in button that is sewn onto e.g. shirt fabric.			New
X27-D04C	Cyclone type	Includes dual and multi-cyclone type vacuum cleaners.			Change Scope
X27-D07	Mixed mode cleaning	Includes cleaning systems with secondary cleaning, disinfecting, deodorising or sterilising function. This code can be used in conjunction with other X27-D codes to specify the primary cleaning function.			New
X27-D07A	Using ultrasonic vibration	Includes use of ultrasonic vibrator to provide enhanced cleaning action			New
X27-D07C	Using radiation	Includes use of ultraviolet or microwave radiation e.g. to kill germs.	UV, microwave		New
X27-D07X	Using other medium				New
X27-F		Includes all domestic and industrial systems e.g. cold rooms and components; display cabinets, ice mfr., water coolers, heat pump systems (for air-conditioning, see X27-E01B), refrigerated containers for lorry (see also X22-X04). Cryogenics is in X25-V. Also includes refrigerant per se.			Change Scope
X27-F02A	Refrigeration systems	Includes details of overall refrigeration system.			Change Scope
X27-G	Domestic combustion	Includes domestic boilers using solid, liquid or gaseous fuels and involving electrical aspects. Exhaust gas sensors per se are not included, see e.g. S03-E02, S03-E03. Combustion processes for central heating are also coded in X27-E03.	"delete search terms for this code"		Change Scope
X27-H01	Aquarium, vivarium	Heater, pump, lighting, air.			Change Scope
X27-H02	Feeding and drinking	Includes heated food bowl and timed food dispenser.	Timer, dispenser		New
X27-H03	Control and training	Includes electrical or electromagnetic shocking apparatus for the control/training of pets, e.g. dogs. Also includes ultrasonic deterrent devices for confining pets within a specific area. Includes transponder (see also W06-A04B5 and W02 codes) collar for controlling pet access e.g. through cat flap.	Control, train, shock, deterrent, behaviour		New
X27-K	Domestic waste disposal	Includes only electrical aspects of domestic waste disposal, such as kitchen waste disposal unit and electrical rubbish bin.			Change Scope
X27-L	Toilets	Includes all electrical aspects of public and domestic toilets and urinals. Includes toilets with integral bidets (see also X27-A02A).			New
X27-F02B1	Solid state heat pump	Includes thermoelectric cooling, e.g. for mini fridges and freezers and picnic coolers. See V04-T03C only for thermoelectric cooling used in electronic devices.	Thermoelectric, Peltier effect		New
X27-F02A1	Magnetic cooling	Includes magnetic fridges and freezers that utilise magnetocaloric effect of some metals that become hot when magnetised and cool when demagnetised.	Magnetic, magnetocaloric		New