

CODE (max. 10 chars incl. spaces)	TITLE	SCOPE NOTES	KEYWORDS/SEARCH TERMS
<b>Section S</b>			
<b>S01 Electrical Instruments</b>			
S01-G14	Wires or cables	See also relevant X12-G codes.	
S01-J03	Instrument manufacture	Includes all manufacturing of instrumentation included in S01 S02 or S03 classes. Search with apparatus or method codes in addition to this code for specific instrumentation manufacturing details.	
<b>S03 Scientific Instrumentation</b>			
S03-E04R1	Confocal Microscopy	Includes laser scanning microscopy etc. See also S03-E04D/E04E if used with fluorescent staining methods.	
S03-E06H2	Detector positioning	See S03-E06H5 codes for novel detection system per se.	
S03-E06H4	Source Positioning		
S03-E13F	Sample holders, carriers or storage systems	Includes e.g. microscope slides, sample refridgerators, cuvettes, novel instrumentation-type glassware, e.g. test tube, petri dish. Note that general laboratory glassware is not included.	
<b>S05 Electrical Medical Equipment</b>			
S05-B04A1	Monitoring location of surgical instruments	Includes equipment for tracking the location of surgical instruments inserted into patient, and monitoring location of instruments in the operating theatre, e.g. instrument tags, swab counters etc. Prior to 2006 coded in S05-B04A.	
S05-B04B	Monitoring patient during surgery	For monitoring vital signs, etc. of patient during surgery. Prior to 2006 coded in S05-B04.	
S05-D02A7	X-ray contrast media	See also S03-E09X for contrast agents.	
S05-D02B4	Adaptations for MRI compatability	Adaptations to electrical medical appts for use in MRI environment or for mitigating unwanted effects due to MRI procedures, e.g. shielding for implanted devices.	
S05-D03C	Ultrasound contrast media	See also S03-E09X for contrast agents.	
S05-G02G4	Treatment planning systems	This code is used for systems such as radiotherapy planning systems, wherein for example the size, shape and location of a tumour are used to calculate the most effective positioning and intensity of X-ray generators. Can be used with S05-A or S05-B codes	
<b>S06 Electrophotography and Photography</b>			
S06-A18B	Laminating	See also T04-G06B if for printer, and/or W02-J05B if for facsimile.	laminating, protective layer
S06-C02A1	Computer to plate manufacture	Covers all aspects of direct plate manufacture and production from computer original without intermediate stages. See also T01 for computer design aspects.	CTP, computer-to-plate

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<b>Section T</b>			
<b>T01 Digital Computers</b>			
T01-F02C3	Multi-thread	The ability of an operating system to execute different parts of a program simultaneously.	
T01-F05G5A	Screen Savers		
T01-F05G7	Real Time Clock	covers updating and management of real time system clock	
T01-H01B3D	Non volatile electronic semiconductors memories	Flash memories, see also T01-H1B3A flash memory cards	
T01-J08F1	Performance and data logging		
T01-J12C1	Authentication	See also W04-V04A3 for voice authentication	
T01-J12C1A	Using passwords	Covers password systems for gaining access to computer system. See T01-N02B1B for network based password systems	
T01-J12C1B	Using Biometrics	Covers biometric systems for gaining access to computer system. See T01-N02B1E for network based biometric systems. See also T04-D07F for biometric image recognition and S05-D01C5A for measuring systems	
T01-J12C2	Security System Administration		
T01-J21	Non-vehicle navigation	For vehicle guidance see T01-J07D3, covers all other guidance systems. See also S02-B08.	
T01-J21A	Geographical information systems	Includes updating or displaying geographical information.	
T01-J21B	Position fixing	Processing details used to fix position of user, see also W01/W02 for communication system position fixing and W06 for position fixing in general.	
T01-J21C	Route planning		
T01-J30E	E-book reader software		
T01-J30F	Image/Video/Audio editing software	See T01-J12 for GUI aspects and W04 for details of thing being edited.	
T01-J40C	Augmented reality systems	Combining virtual reality displays with real world views allowing a user to see both at the same time. See also T01-J10C codes for image generation aspects. See also W04-W07E codes for virtual reality in general, as well other W04 codes for virtual realit	
T01-L02F	Computer system acoustic noise reduction	Includes noise reduction for Forced Cooling (e.g. fans and liquid cooling pumps etc)	
T01-M06A1C	E-book reader hardware	Hardware specifically for displaying E-books. Includes details of screens , controls and design intended to simulate a conventional paper book. See also T01-N01B5 for online aspects , U14 for novel displat aspects T01-M06A1A , T01 L02B ,V04 for novel cas	E-book reader
T01-M06A1C	Wearable computers		
T01-M06A5	Consoles	This code covers computer systems designed as one self contained unit, e.g. video game console.	
T01-N01B5	E-books	Documents describing E-book (electronic book) per say including file format aspects see also T01-N01A2G for copyright control aspects T01-J11C for electronic documents in general	E-book,Electronic book
T01-N01D5	Multicasting		
T01-N02B1H	Biometric authentication	covers biometric authentication for computer networks. See T01-J12C1B for offline systems. See also T04-D07F for biometric image recognition and S5-D01C5A for measuring systems	
T01-N02B1E	Network operating system management	Management of network operating systems. Installation and/or updating of software involving transmission over network	
T01-N02B1F	Internet portals		
T01-N02B1G	Internet gateway		
T01-N02B3	Testing network vulnerability	Covers testing server security and setting updates for security programs.	
T01-N03B5	Web site management	Incorporation of multimedia content in websites. Changing content viewed by different vistors to site.	
<b>T03 Data recording</b>			
T03-A01A6A	Exchange coupling system		
T03-A01R	Recycling and destroying magnetic carrier		
T03-A03C3G	Ballistic magnetoresistive head		
T03-A03C3X	Other magnetoesitive head types		colossal
T03-A03E1	Lead layers	Covers layer arrangements for internal head connections. External head connections are covered in T03-A05C8.	
T03-A03J8	Internal head connections	See T03-A03E1 for internal head connections for thin-film heads (e.g. magnetoresistive or inductive heads). External head connections are covered in T03-A05C8.	
T03-B01D4	Super resolution carrier	Includes layer arrangements on carrier, e.g. mask layers, to increase resolution beyond wavelength of read/write laser. Super resolution arrangements involving optical components of head are covered in T03-B02B6 and are not coded here.	Super RENS, Super Resolution Near Field Structure
T03-B01E1M	Mastering equipment	Includes equipment for writing to glass master and performing other mastering processes. See V05 codes for novel aspects of electron beam writing equipment.	Electron beam writer
T03-B01R	Recycling and destroying optical carrier		
T03-B02B7M	Multiple optical path	Includes systems for reading different types of optical disc.	
T03-D01R	Recycling and destroying magneto-optical carrier		

T03-H02R	General carrier recycling and destroying arrangements	For recycling and destroying of specific carrier types see T03-A01R, T03-B01R and T03-D01R. For recycling of equipment see V04-X01C [Check appropriate usage of this code].	
T03-H07	Preventing overwriting, erasure or copying	Covers hardware-based methods of write/erase protection, e.g. erase tab, disc-drive lock. See T03-P07 for erasure/copy prevention using signal formats/signal processing.	
T03-H07A	Preventing accidental loss of data		
T03-H07C	Preventing unauthorised deliberate access or copying		
T03-J01E	Error management information		
T03-K07E	Detecting carrier defect	Covers arrangements to protect drive from damage. For detection of defects using BER measurements search along with T03-P01A. Arrangements to store information concerning the location of carrier errors, e.g. bad sectors, in order to speed up read and wr	
T03-M08	General equipment manufacturing details	Manufacture of carriers is covered in T03-A02, T03-B01E, T03-C, T03-D01A8, T03-D03A and T03-D09.	
T03-Q07	General aspects of recording media library	From 200601 this section covers all media library loading mechanisms and control systems. Previously this topic was covered in T03-E01B5 and T03-F01 for tape and disc systems respectively.	
T03-Q07A	Loading mechanism and drive		
T03-Q07B	Media changing control system		
<b>T04 Computer Peripheral Equipment</b>			
T04-D07F	Biometrics	For image recognition relating to fingerprint recognition. See T04-D04 only prior to 2006. See also T05-D01B for entry/exit registers based on human characteristics and S05-D1C5A for measurement systems	
T04-D07F1	Facial Recognition		
T04-D07F2	Fingerprint Recognition		
T04-G06C	Transferring image	e.g. in ink jet printer - jetting onto substrate and then transfer to final substrate.	
T04-G10F	Illegal printing prevention	Prevention of illegal printing of private documents, etc, recognizing or printing copy prevention mark on documents, output to authorised operator. See S06-A14F if for copier, W02-J03C6 if for facsimile, T01 for image processing aspects, and T05-J for tes	
T04-H03C7	electrophoretic display	bases on electrophoresis effect, microencapsulated EPD, partition-type EPD, charged particle display, electrochromatic display, electrostatic display	
T04-H03C7A	Driver Circuitry		
T04-K01A	Circuitry, inc. encapsulation	For construction and manufacturing of the circuitry aspects of smart media. See also U11, U14 and V04 for details.	
T04-K01B	General construction details	For all aspects of smart media construction/manufacture except circuitry which is coded in T04-K01A.	
T04-K02A	Contact		
T04-K02B	Non-contact	See also W02-C02G7.	
T04-K02C	Reading/Writing apparatus	Covers all aspects of the apparatus used to read from or write to smart media, rather than the media itself.	
T04-K02C1	Feeding mechanisms	Prior to 2006 see T04-J.	
T04-K03	Media type	Codes used to highlight the type of media used. Search together with other T04-K codes as required.	
T04-K03A	Smart card		
T04-K03B	RFID/transponder		
T04-K03C	paper/cardboard		
T04-K03D	Memory card/stick		
T04-K03D1	USB Memory stick		
T04-K04	Security	All security aspects including physical protection of the hardware, encryption (see also T01-D01) and fraud protection (previously coded T01-H01C1).	
<b>T05 Counting, Checking, Vending, ATM and POS Systems</b>			
T05-L01C1	Using bar code	See also T04-A03B1 for bar code reading in general.	
T05-L01C3	Using RFID/transponder	See also T04-K and W02 for RFID/transponders in general.	
T05-L01C9	Other	Includes image recognition of item (see T04-D)	
T05-L01H	POS printers		

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<b>Section U</b>			
<b>U11 Semiconductor Materials and Processes</b>			
U11-A14	Nano-structural materials	Use in conjunction with other U11-A codes to indicate type of material. For conductive materials in general, see also X12 codes.	
U11-C01J6A	Strained layers and their manufacture	Manufacture of strained layers to enhance material properties such as charge-carrier mobility. For device with strained layer structure see also U12-E01B1A.	Strained silicon, strained-layer super lattice, strained layer, relaxed layer, SLS
U11-C09F1	Testing of manufacture appts.	See also U11-C09 codes for type of apparatus being tested.	Fault diagnosis
U11-C12	Self-assembly monolayers	Includes self assembled monolayer deposition of all material types for semiconductor manufacture.	SAM, viral deposition
U11-C15D	Control and monitoring of single or specific process/apparatus only	Includes automated fluid/gas control systems. See also U11-F01B and S02/S03 codes for film measurement. See U11-C04 codes or U11-C03A for control of lithography or temperature respectively. For process control of complete production facility and multiple	Feedback
<b>U12 Discrete Devices</b>			
U12-A01A1E	LEDs with Organic Materials		OLED
U12-A01A4B	Package phosphors	Covers all wavelength conversion aspects for LEDs, including phosphors for white and non-white light LEDs. For white LED packages see also U12-A01A4A.	
U12-A02A2D	Solar Cells with Organic Materials		
U12-A02B5E	Photoreceiver with organic materials		
U12-B03F1C	Micromachine Packages		
U12-D02E	Multigate Unipolar transistors	Used in conjunction with other U12-D02 codes where necessary to indicate the type of device, e.g. for Dual-gate MESFET see also U12-D02B.	Double-gated MOS, FINFET
U12-E01B1A	Device with strained layer structure	Includes strained channel to enhance charge-carrier mobility. For strained-layer super lattice see also U12-E01B2.	Strained silicon, strained layer, relaxed layer, SLS
<b>U13 Integrated Circuits</b>			
U13-A01H	Circuits, drivers for IC radiation sensors.		
U13-A02D	Optical elements for CCD imagers.	Includes optical filters, lenses that are inside, or part of, the package. For complete optical filter manufacture see U11-C18D. For package window structures see U13-A02C and U11-D01C1.	
U13-D09	Integrated circuit with strained structures.	Includes CMOS with strained channel structure to enhance charge-carrier mobility (see also U13-D02A), lattice mismatch and bandgap engineering.	Strain
<b>U14 Memories, Film and Hybrid Circuits</b>			
U14-A03H	Programmable conductor RAM (PCRAM)	Includes chalcogenide memories, phase change ovonic unified memories, phase change memories, and programmable resistor memories, resistive memories.	OUM
U14-A04A1	Using giant magnetoresistance effect	E.g. using ferromagnetic layers separated by metallic layer. Includes pseudo spin valve MRAM devices.	GMR, spin valve, spin transistor, pseudo spin valve, PSMRAM
U14-A04A2	Using tunnel magnetoresistance effect	E.g. using ferromagnetic layers separated by electrically insulating layer. Includes magnetic tunnel junction or tunnelling magneto-resistance MRAM devices.	TMR, spin tunnel transistor, tunnel junction, MJT
<b>U21 Logic circuits, Electronic Switching and coding</b>			
U21-A02A4	Resistor string		
U21-A02B1B	Voltage reference circuits	Also see relevant U24 codes for novel voltage reference circuits.	
U21-A02B7J	Reducing power consumption		
U21-A02B7L	Size reduction		
U21-A03B1	SAR	Successive approximation type converters.	
U21-A03B3	Pipeline		
U21-A03B9	Other feedback types		
U21-A03F5B	Voltage reference circuits		
U21-A03F7J	Reducing power consumption		
U21-A03F7L	Size reduction		
U21-A06G	Using multiple coding techniques	This code covers error correction/detection using either multiple (two or more) block or convolutional codes or a combination of block and convolutional. The coding types of the combination are applied in addition to this code. Please note, this code is o	
U21-B01A1	Switching using IGBTs		
U21-B01T	Using nano-tubes	Other U21-B01 codes are applied where applicable, only electronic switches are coded here, if electromechanical see V03 and if solely optical see V07.	
U21-B02H	Bidirectional switching	Only novel bi-directional switching arrangements are coded here and not e.g. a novel triac.	
U21-B02J	Switch testing		
U21-C01T	Nano tubes	Prior to 0601 this was coded in U21-C01X.	
U21-C02E	IC termination	Covers interface for termination of transmission line for integrated circuits using active or passive components. Includes stand alone or on-chip, see also U25-D05 and/or W01/W02.	
U21-C03A5	Reducing circuit size		

<b>U22 Pulse Generation and Manipulation</b>			
U22-G01B1A	Up-sampling		
U22-G01B1C	Down-sampling		
U22-G03B	Digital sampling	Includes systems that sample signals that are already digital, for sampling of analog signals see U21-A03F6 codes. Interpolation aspects are coded here.	
U22-G03B1	Re-sampling	Includes arrangements for interfacing two DSP blocks/systems that have different sampling rates.	
U22-G03C1G	Integration		
<b>U23 Oscillation and Modulation</b>			
U23-A01A2	MEMs resonator		
U23-D01E	PLL testing	Includes PLL calibration aspects, apply with U23-D01D for DLL.	
U23-R	Testing/calibration	This code covers all testing/calibration aspects for U23 type circuits apart from PLL/DLL where U23-D01E and/or U23-D01D are applied. See also S01 codes.	
U23-R01	Testing		
U23-R02	Calibration		
<b>U24 Amplifiers and Low Power Supplies</b>			
U24-D01E1	Harmonics reduction		
U24-D01E2	Ripple reduction		
U24-D05A5	Characterised by combination of bipolar/IGBTs/FETs		
U24-E02B7	Voltage reference circuit	Includes circuit using feedback. For non-feedback voltage reference circuits, see U24-E01C5	
U24-H05	Power distribution over communication network	Includes power supply distribution and its control over a communications network such as a LAN.	POE, POWER OVER ETHERNET (RTM)
U24-H06	Low power network control		
U24-H07	Vehicle LV distribution network	Includes systems for IC engine-driven vehicles for voltages up to 42V. HV electric traction vehicle distribution systems are covered by X12-H01B codes and X21/X23. Also includes low voltage electric distribution systems for vehicles (see also X21-B and X2	

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<b>Section V</b>			
<b>V01 Resistors and Capacitors</b>			
V01-B01A3	Double-layer and supercapacitor electrodes	This code is assigned alone or with V01-B01A4 codes describing composition or manufacture of materials. For all other aspects of double-layer and supercapacitors V01-B01D codes are assigned with other V01-B codes as appropriate. Manufacture of these capacitors	
V01-B01A4	Novel electrode materials composition and materials manufacture	These codes are normally assigned with V01-B01A1 or V01-B01A3 as appropriate. For such details relating to foil electrodes, see V01-B01A5 codes.	
V01-B01A4A	Novel electrode materials composition		
V01-B01A4C	Manufacture of electrode materials	This code is intended to cover manufacture of materials to be subsequently used as an electrolytic capacitor electrode, and does not include manufacture or treatment of electrode materials forming part of a process for mfg the capacitor itself, which is c	
V01-B01B1A	Solid electrolyte composition and materials	Novel details of solid electrolyte composition, and/or materials used in the preparation/manufacture of the solid electrolyte.	
V01-B01B1C	Solid electrolyte and material manufacturing aspects	This code covers the manufacture of materials destined to be used as a solid electrolyte. Manufacture of the capacitor itself is covered by V01-B01G8A and other V01-B01G codes as appropriate.	
V01-B01B5A	Liquid or paste electrolyte compositions and materials	Novel details of liquid or paste electrolyte composition and/or materials used for the preparation/manufacture of the liquid/paste electrolyte	
V01-B01B5C	Liquid or paste electrolyte manufacture	This code covers the manufacture of materials destined to be used as a liquid or paste electrolyte. Manufacture of the capacitor itself is covered by V01-B01G8B and other V01-B01G codes as appropriate, e.g. forming aspects in V01-B01G7A.	
V01-B01B6	Electrolytic capacitor characterised by electrolyte type	These codes are assigned to indicate the physical state of electrolyte only, and are not assigned when novel aspects of electrolyte composition or manufacture can be highlighted by V01-B01B1 or V01-B01B5 codes. For inventions concerned solely with capacit	
V01-B01B6A	Solid electrolyte capacitor	This code covers novel details of solid electrolyte used in solid electrolytic capacitor prodn.	
V01-B01B6C	Liquid or paste electrolyte capacitor	This code covers novel aspects/details of liquid/paste electrolyte of electrolytic capacitor	
<b>V02 Inductors and Transformers</b>			
V02-A01A8	Novel magnetic metals or alloys		
V02-A01B8	Novel magnetic non-metallic materials		
V02-A02A8	Novel magnetic metals or alloys		
V02-A02B8	Novel magnetic non-metallic materials		
V02-E02X2	Shim coil	Includes small current-carrying coils that generate the auxiliary magnetic fields for improving the homogeneity of a main field e.g. in an MRI equipment (see also S01-E01 and S03-E07 codes).	
V02-F01G1	Gradient coil		
V02-F01G2	HF coil	Includes the receiver/transmitter antenna or coil for detecting the NMR/MRI signal	
<b>V04 Printed Circuits and Connectors</b>			
V04-M17	Cable-connector combination	Includes a combination of cable and connector where neither is, or both are, novel. See X12-D03Q also.	
V04-P12	Testing		
V04-Q02A9	Other associated electrical components	Includes PCB association with other electrical components e.g. mountable type antenna.	
V04-Q04A	Printed resistor		
V04-Q04B	Printed capacitor		
V04-Q04C	Printed inductor		
V04-Q04D	Composite printed components	Includes printed RC, RL, RLC or LC component combinations. Passive frequency-selective networks using structurally-associated components are also assigned U25-E02A.	
V04-R02S	Ink-jet printing	Includes forming conductive tracks by using an ink-jet printer (see T04-G codes for printer details)	
V04-R06J3	Mechanical or thermal tests	Includes e.g. vibration, structural, mechanical or thermal testing.	
V04-R06J9	Other testing techniques		

<b>V05 Valves, Discharge Tubes and CRTs</b>			
V05-A01H	Tube cooling	Note that this only applies to cooling systems used to remove heat from the tube envelope. Drive circuitry cooling is not included per se, but may be included in V05-A01F3 or V05-A01F5 codes where relevant housing or PCB mounting details are required. Pr	
V05-B05A5C	Carbon nanotube		CNT, nanohorn
V05-C01E	Inductive output tubes	Prior to 2006, coded in V05-C01X.	IOT
V05-C01E1	Tube details	Search with V05-C02 codes for novel details of tube.	
V05-E01C7	Cold cathode	Note that prior to 2006, cold cathode electron emitters for x-ray generators were coded in V05-E01C combined with V05-M03A codes.	Field emission, FE
V05-E01C7A	Carbon nanotube based	Includes all microminiature semiconductor or nanotechnology-based field emitters. Prior to 2006, coded in V05-E01C and V05-M03A1.	CNT, nanotube, carbon nanofibre
V05-E01H1A	Multiple rotary anode tube		
V05-E03B	Laser target impact sources	Prior to 2006, coded in V05-E03.	
V05-E03C	X-ray laser sources	Includes tubes which produce coherent, monochromatic x-ray radiation. See also V08-B02. Prior to 2006, coded in V05-E03.	
V05-E10	Complete novel tube	See also V05-E01, E03, E04, E05 or E06 for individual tube/source tube where relevant.	
V05-F05C2	With internally applied ionising energy	Includes e.g. conductive RF coupling. Prior to 2006, coded in V05-F05C.	RF, discharge, arc
V05-L01B6A	Dielectric coatings	Includes manufacture of protective coatings for electrode insulating layers.	
V05-L05A1A	DC Displays		
V05-L05A1B	AC Displays		
V05-L05A3	Gas-filled switching/protection devices	Prior to 2006, coded in V05-L05A.	
<b>V06 Electromechanical Transducers and Small Machines</b>			
V06-N03B1	With permanent magnet		
V06-N03B2	Without permanent magnet		
V06-U99	Other electric machine applications		
<b>V07 Fibre-Optics and Light Control</b>			
V07-F02D	Photonic optical elements	For waveguides see V07-F01A4. For fibres see V07-F01A1X. For novel band gap aspects of photonic materials, and novel photonic materials, see V07-K10C.	
V07-H04A	Optical fiber excess handling and management	Includes optical cable reels, trays, cable guides and supports for excess cable management, surface inlaid fiber optic installations and pre-assembled fiber-optic installation panels for fibre-optics connected to communications/light transmitting system.	
V07-H04B	Optical fiber storage and transporting aspects	Includes optical cable reels, trays, cable guides and supports for excess cable management, surface inlaid fiber optic installations and pre-assembled fiber-optic installation panels for excess/spare fibre not connected to anything, e.g. for storage in wa	
V07-L	Manufacture, materials, equipment for optical elements other than optical fibres and waveguides	All manufacturing aspects of optical fibres and waveguides are coded in V07-F01A3 codes. Prior to 2006 all manufacturing aspects were coded under the relevant device. Post 2006 see both relevant device code and V07-L code to indicate the manufacturing asp	
V07-L01	Manufacturing methods for optical elements other than optical fibres and waveguides		
V07-L02	Materials for manufacturing optical elements other than optical fibres and waveguides.	For non-linear and electro-optical materials see V07-K10 codes.	
V07-L03	Equipment for manufacturing optical elements other than optical fibres and waveguides		

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<b>Section W</b>			
<b>W01 Telephone and Data Transmission Systems</b>			
W01-A01B4	Hybrid coding scheme	This code covers error correction using either a combination of block and convolution code or multiple block or convolutional codes. Other W01-A01B codes are assigned as appropriate to highlight the coding types being used. Prior to 2006, combined error c	Concatenated, outer-inner coding
W01-A05E	Quantum cryptography	This code covers the use of quantum physics to provide inherent detection of eavesdropping or interception of data communications. Where optical communications are involved, e.g. single-photon systems, W01-A07E, W01-A06C1, or W02-C04 codes are also assign	Polarisation, filter
W01-A06C4G	IEEE 802.16 radio link	This code covers long-range data communications by radio including wireless MAN, etc.	WMAN, IEEE802.16x
W01-A06C6	Power line data network	Covers network using power line carrier as the medium for data transmission, and not systems for supplying power via data network conductors, which are coded according to network type and in U24-H codes. Novel aspects of power line communication are cover	
W01-A06E1J	Routing	To determine the appropriate path on which data should be travel between two places.	
W01-A06E1R	Roaming between same-standard networks	This code covers roaming between networks, e.g. wireless LANs for which W01-A06B5A and W01-A06C4 codes are also assigned, it being assumed that the networks are operating on the same transmission standards. Roaming between different-standard networks is c	
W01-A06E1S	Roaming between networks operating on different standards	This code covers roaming between networks operating on different transmission standards, including switching between wireless data networks and mobile telephone networks when W01-B05A1R is also assigned, and takes precedence over W01-A06E1R, which covers	
W01-A07H4	Optical fibre interface	Prior to 2006 this topic was covered by W01-A07E and W01-A07H1. Novel details of optical communications equipment are also assigned W02-C04 codes and those relating to novel fibre-optic technology are also assigned V07 codes.	
W01-B05A1M	Network broadcasting	This code is intended for network broadcast messages for system management and information, and other broadcasting aspects, e.g. involving entertainment aspects with W01-C05 codes assigned as appropriate.	
W01-B05A1N	Registration of mobile subscriber	ID checking aspects are also covered by W01-C02B6A.	
W01-B05A1Q	Location register details	Subscriber location determination in a cellular system is covered by W02-C03C1E, which is also assigned as appropriate.	HLR, VLR
W01-B05A1R	Subscriber roaming aspects	Roaming between wireless data networks, e.g. WLANs, is covered by W01-A06E1R.	
W01-C01A2A	Back or edge lighting for telephone display	These topics in general are covered by W05-E05B codes (which from 2006 are not assigned in addition to this code unless other applications exist), and in U14 (assuming LCD).	
W01-C01A2C	Multiple display aspects	Covers the use of more than one display and arrangements for viewing a display from e.g. both sides of a handset.	
W01-C01A3G	Telephone set incorporated into clothing	Includes telephones, usually of portable type and hence also assigned W01-C01D3C, forming a permanent part of headgear or other clothing. Mountings for telephones which are detachable from clothing are covered by W01-C01A5. X27-A02B1 codes are also assign	
W01-C01B8L	Manual input devices based on relative position	Covers trackball, joystick, or analogous arrangements for data input (previously coded in W01-C01B8K).. See T04-F codes for further details.	Mouse, track pad, joystick, track ball
W01-C01F6A	Controlling internal equipment in response to incoming call	This code covers the control of additional equipment built-in to a telephone, such as audio or video players, in response to an incoming call.	
W01-C01F6C	Controlling external equipment in response to incoming call	This code covers the control of equipment external to a telephone, such as audio or video players, in response to an incoming call.	
W01-C01Q6	Graphics and display processing	Includes the arrangement of processing graphical and display information that is not part of the display screen hardware. See also T01-C04D for computer display processing. Prior to 2006, all aspects of disply/control circuitry are coded in W01-C01B3A.	Acceleration, rendering, GPU
W01-C01R	Interfacing systems	Includes the interfacing of a telephone set (usually mobile, for which W01-C01D3C is also assigned) to a local external device via a digital connection. See also W01-A07H codes, which are also assigned to highlight the interface medium used, e.g. W01-A07H	
W01-C02B2M	Call transfer	This code is primarily intended for manual arrangements for re-directing a received call to another extension. Automatic arrangements for diversion of calls are covered by W01-C02B2E if no ringing of the dialled telephone occurs and W01-C02B2L if the call	Redial, redirect

W01-C02B2N	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. Subscriber telephone set aspects of profile-based call handling are covered in W01-C01F8C	
W01-C05B4G	Push to talk over packet network system	Providing direct one-to-one or one-to-many voice communication using Voice over IP (VoIP) over cellular packet network. Prior to 2006, this topic was covered in W01-C02B1 and W01-C05B3J. Telephone sets equipped for this mode are assigned W01-C01G6H. Inter	PoC
<b>W02 Broadcasting, Radio and Line Transmission Systems</b>			
W02-B05B6	Helical antenna		
W02-B06E	Variable polarisation antenna	This code is assigned alone or with W02-B06A or W02-B06B codes as appropriate. Novel antenna polarisers are covered by W02-B03C codes.	
W02-B08C5A	Mast-head amplifiers	Covers amplifiers mounted in close proximity to an antenna. Amplifiers used at the receiver end of an antenna cable are covered by W02-B08C5C.	
W02-B08C5C	General RF preamplifiers	Covers amplifiers mounted in close proximity to a receiver, but external to it. Amplifiers used at the antenna end of an antenna cable, i.e. mast-head amplifiers, are covered by W02-B08C5A.	
W02-B08F6	Missile or other projectile	Includes antennas on missiles, rockets, shells and the like, e.g. for guidance, target-seeking, or proximity fuzes. W06 and W07 codes are also assigned as appropriate.	
W02-C03A5	Hybrid diversity schemes	Includes combined space and frequency diversity and systems, e.g. of MIMO and similar type, making use of propagation effects such as multipath to improve reliability, channel capacity, and the like. Rake receivers are covered by W02-G03B6A.	
W02-C03E7	Resource allocation	This code includes channel allocation and similar aspects of radio communication management. When interference avoidance is the aim W02-H01J5 is also assigned.	
W02-C04A6	Optical multiplexing and switching devices	This code covers novel aspects of optical switches and multiplexers for communications purposes, the core technology area for these topics being covered by V07 codes. Novel switching devices are also assigned W01-B02 or W01-A06G5 codes and novel multiplex	
W02-F01M	Medical CCTV systems	This code covers the use of CCTV systems and equipment with medical apparatus, normally for diagnosis, for which S05 codes are also assigned such as S05-D04B for endoscopes.	
W02-F06B3	Surround sound TV		
W02-F10A1E	Video-on-request system	Covers systems in which video programming is delivered for later viewing, e.g. taking advantage of unused network capacity overnight.	
W02-G03A5A	Image rejection mixer	For application to low-IF receivers search with W02-G03A8C. Prior to 2006 image rejection mixers were represented (in W02) by W02-G03A5 and W02-G03B4A (receiver image signal suppression in general). From 2006 W02-G03B4A will only be assigned for specific	
W02-G03C5	IF amplifier	Novel IF amplifier details are also assigned U24-G01D and other relevant amplifier codes. From 2006, IF AGC is covered by W02-G03D5, previously coded as W02-G03C and W02-G03D.	
W02-G03D1	Novel AGC characteristic	Covers delayed AGC, or other specific characteristic. See U24-C01C1 for signal processing aspects to obtain a particular AGC characteristic	
W02-G03D3	RF AGC	Prior to 2006 this topic was covered by W02-G03A3 and W02-G03D.	
W02-G03D5	IF AGC	Prior to 2006 this topic was covered by W02-G03C and W02-G03D.	
W02-G03D9	Other communications receiver AGC aspects.		
W02-G03K7	Transform implementation	DSP-based transform implementation is covered by U22-G03E1A and computer data processing aspects in general by T01-J04B1.	Fourier, Hilbert, Walsh
W02-G03K8	DA conversion	Novel aspects of DA converters and DA conversion are covered by U21-A02 codes.	
W02-J03C4	Remote control/monitoring of a facsimile	E.g. monitoring from host over network, etc. See also T04-G10E if for a printer, or S06-A14E if for a copier.	
W02-J11	Prevention of illegal photocopy transmission/reception	See S06-A14F for prevention of illegal photocopying.	

W03 TV and Broadcast Radio Receivers			
W03-A01B5A	Image rejection mixer	Prior to 2006 this topic was represented by W03-A01B5 and W02-G03B4A (receiver image signal suppression in general). From 2006 W02-G03B4A will only be assigned for specific novelty in the image rejection aspect.	
W03-A01B6A	Zero-IF receivers	This code is intended for direct conversion schemes in which the baseband information is centred on zero frequency.	
W03-A01B6C	Low-IF receivers	This code is intended for direct conversion schemes in which the baseband information is centred on a low frequency, e.g. of the same order as the baseband bandwidth itself.	
W03-A02B1G	User control of channel storage	Includes re-ordering stored channels, deleting channels, forming 'favourites' lists and the like. For security aspects, e.g. parental control, PIN control etc. search with W03-A18A6 and W03-A18A7.	
W03-A02C5G	Receiver-based remote control circuitry, components and construction	This code is assigned with other codes as appropriate, e.g. W03-A09A5 for internal receiver constructional aspects, W02-C04A3 codes for IR receiver circuitry, U12-A01A codes for LEDs or U12-A02B2A for photodiodes.	
W03-A03A1	Novel AGC characteristic	Covers delayed AGC, or other specific characteristic. See U24-C01C1 for signal processing aspects to obtain a particular AGC characteristic	
W03-A03A3	RF AGC	Prior to 2006 this topic was covered by W03-A01B3 and W03-A03A.	
W03-A03A5	IF AGC	Prior to 2006 this topic was covered by W03-A03A and W03-A03B.	
W03-A03A9	Other TV receiver AGC aspects		
W03-A03B5	IF amplifier	Novel IF amplifier details are also assigned U24-G01D and other relevant amplifier codes	
W03-A08S	Display interfacing	Covers circuitry for interfacing between receiver and display	
W03-A08S1	Digital display interfacing	This topic was previously covered in W03-A04F for general interfacing aspects and in W03-A05F for interfacing and display driving specifically related to colour video signals. This aspect is still assigned other W03-A05 codes in addition to W03-A08S1, e.	
W03-A08S5	Matrix drive details	For driving e.g. LCD, plasma displays with native resolution. Colour matrix circuits for converting colour-difference signals into colour drive signals are not coded here, being covered by W03-A05E instead.	
W03-A10C5	Character sets and fonts	Includes use of particular character sets for different languages. Character set encoding is also covered in U21-A05D1.	
W03-A11B5	Novel standard recognition circuits		
W03-A11G1	Combined with analogue receiver		
W03-A11K7	Transform implementation	DSP-based transform implementation is covered by U22-G03E1A and computer data processing aspects in general by T01-J04B1.	
W03-A11K8	DA conversion	Novel aspects of DA converters and DA conversion are covered by U21-A02 codes.	
W03-A16G	Local storage of commercial messages	Production of and arrangements for displaying commercial messages for TV are also covered in W05-E03C.	
W03-A18A2	Self-testing, monitoring and calibration of TV receiver	This code covers control aspects within the receiver itself for test and diagnosis and also internal calibration.	
W03-A18A5G	Detecting commercial messages	Includes arrangements to change channels when commercials are detected.	
W03-A19	Manufacturing, recycling and packaging of TV receiver	See W03-G10 codes for manufacture, recycling and packaging of general audio/video equipment	
W03-A19A	Manufacturing TV receiver	Includes assembly of component parts into TV receiver. Manufacture of displays and other TV receiver components is covered in V05, U14 etc. as appropriate, along with relevant W03 codes.	
W03-A19C	Recycling TV receiver	Recycling of CRTs themselves is not included, being covered by V05-L05D1B and V05-L07E6 (these codes relating especially to tube manufacture) .	
W03-A19G	Packaging TV receiver		
W03-B01A5A	Image rejection mixer	Prior to 2006 this topic was represented by W03-B01A5 and W02-G03B4A (receiver image signal suppression in general). From 2006 W02-G03B4A will only be assigned for specific novelty in the image rejection aspect.	
W03-B01A6A	Zero-IF receivers	This code is intended for direct conversion schemes in which the baseband information is centred on zero frequency.	
W03-B01A6C	Low-IF receivers	This code is intended for direct conversion schemes in which the baseband information is centred on a low frequency, e.g. of the same order as the baseband bandwidth itself.	
W03-B01B1G	User control of channel storage	Includes re-ordering stored channels, deleting channels, forming 'favourites' lists and the like.	
W03-B02A1	Novel AGC characteristic	Covers delayed AGC, or other specific characteristic. See U24-C01C1 for signal processing aspects to obtain a particular AGC characteristic	
W03-B02A3	RF AGC	Prior to 2006 this topic was covered by W03-B01A3 and W03-B02A.	
W03-B02A5	IF AGC	Prior to 2006 this topic was covered by W03-B02A and W03-B02B.	

W03-B02A9	Other TV receiver AGC aspects		
W03-B02B5	IF amplifier	Novel IF amplifier details are also assigned U24-G01D and other relevant amplifier codes. From 2006, IF AGC is covered by W03-B02A5, previously coded as W03-B02A and W03-B02B.	
W03-B02C3C	Novel stereophonic decoder	U23-P05 is also assigned.	
W03-B07J	Transform implementation	DSP-based transform implementation is covered by U22-G03E1A and computer data processing aspects in general by T01-J04B1.	
W03-B07L	DA conversion	Novel aspects of DA converters and DA conversion are covered by U21-A02 codes.	
W03-B08A	Message and programme content storage	This code, which replaces W03-B02C5A, covers arrangements for storing either messages and other RDS-type information for subsequent replay, or the programme content otherwise missed by the reproduction of the message, e.g. due to channel changing. The sto	
W03-B08A1	Message or bulletin storage arrangements	Covers arrangements for storing traffic bulletins (e.g. TMC announcements) or other information in text, audio or other form, for replay as desired.	
W03-B08A5	Programme content storage arrangements	Covers arrangements for storing programme content interrupted by e.g. RDS or similar system messages, so that listening or viewing can resume from the time of the interruption. The content stored may be a radio programme received by the broadcast receiver	
W03-G03A1	Media centre PC and related equipment	This code is assigned for multimedia PC systems designed to perform the functions of several AV equipment units, e.g. TV set, CD/DVD recorder/player, radio receiver, etc. See also T01 codes for specific computing aspects, such as multimedia computer syste	
W03-G04	Portable AV equipment		
W03-G05A6	In conjunction with on-screen display	This code includes the application of GUI techniques to control of AV equipment in general. When specific to remote control of a TV set W03-A02C5A is assigned instead.	
W03-G05E	General AV equipment control	This code covers control systems of general application to AV equipment, but not remote control, which is covered by W03-G05A codes.	
W03-G05E1	Menu-based AV equipment control		
W03-G05G	General AV equipment display	These codes are intended for display aspects applicable to AV equipment in general. For display aspects specific to TV sets and recording equipment see W03-A and W04-J03 codes respectively.	HAVI, Home Audio Video Interface
W03-G05G	General AV equipment display	These codes are intended for display aspects applicable to AV equipment in general. For display aspects specific to TV sets and recording equipment see W03-A and W04-J03 codes respectively.	HAVI, Home Audio Video Interface
W03-G05G1	Dedicated display for AV equipment	Dedicated displays forming part of recording and playback equipment are covered by W04-J03A.	
W03-G05G5	On-screen display for AV equipment	OSD generated within a TV set is covered by W03-A13G and within recording equipment by W04-J03C	
W03-G06	AV equipment requiring operation with PC	Includes sound, TV and video recording/editing cards installed in PC or external devices with e.g. USB interface which operate using PC processor. See also T01 for computing aspects.	
W03-G06	AV equipment requiring operation with PC	Includes sound, TV and video recording/editing cards installed in PC or external devices with e.g. USB interface which operate using PC processor. See also T01 for computing aspects.	
W03-G10	Manufacturing, recycling and packaging of AV equipment	Coves all general audio-video equipment, including recording equipment (see W04 for other aspects). Manufacturing, recycling and packaging specifically for TV receivers is covered in W03-A19. For manufacturing, recycling and packaging aspects of general	
W03-G10	Manufacturing, recycling and packaging of AV equipment	Coves all general audio-video equipment, including recording equipment (see W04 for other aspects). Manufacturing, recycling and packaging specifically for TV receivers is covered in W03-A19. For manufacturing, recycling and packaging aspects of general	
W03-G10A	Manufacturing AV equipment		
W03-G10C	Recycling AV equipment		
W03-G10G	Packaging for AV equipment		

<b>W04 Audio/ Visual Recording and Systems</b>			
W04-E04C7A	Determining recording priority	Deciding between conflicting time programming settings, searching for repeat showings etc..	
W04-F01P	Multiple channel recording	Covers simultaneous recording of separate video streams. For simultaneous recording of multiple camera outputs search in conjunction with W04-M01V.	
W04-G08	Sound recording studio equipment	Used in conjunction with W03-C, W04-U03E, W04-S and other W04-G codes as necessary.	
W04-H01C5	Automatic content indexing	Includes use of electronic programme guide data to generate searchable indexing information	
W04-H01C8	Differentiating between different data types		MPV, music photo video
W04-H01E	Error management information		
W04-H05E1	User controlled editing		
W04-H05E5	Automatic editing		
W04-M01D6C	Multi-standard processing	Includes arrangements for changing resolution of still pictures (see also W04-M01B1) and standards conversion (see also W04-N05A).	
W04-M01V	Multiple camera systems	Search along with W04-F01P and W02-F01A for CCTV security systems recording multiple camera outputs.	
W04-Q01J5	Copy protection systems	Includes arrangements for projecting UV or IR light onto screen in order to prevent recording by video camera. Copy protection involving signal processing is covered in W04-F01L1.	
W04-Y03D	Self-testing and diagnostic systems		
<b>W05 Alarms, Signalling, Telemetry and Telecontrol</b>			
W05-B05B6	Using data network	This code covers the use of data networks as an alarm signal transmission medium, other than internet-based systems which are covered by W05-B05B5 which takes precedence for use of the internet and e.g. a local network. W01-A06 codes are also assigned for	
W05-B07K	Detecting presence of person in hazardous area	Covers alarms indicating the presence of a person in a hazardous area, (other than in water as covered by W05-B07J codes), e.g. a person fallen onto a railway track (see X23-A09A3 also) or a highway (see T07 codes also). Industrial safety systems in gener	
W05-D07H	For earth drilling and well logging	Prior to 2006 this topic was covered by W05-D07X. For mud pulse telemetry W05-D06M1 and W05-D08E are also assigned. See S03-C codes and X25-E02 codes for well logging in general, and class H01 for all aspects of oil and gas production.	
W05-E05G	General constructional details	This code is used with other W05-E codes or alone, as appropriate. It is not assigned for single applications covered elsewhere, such as for construction of a TV set display.	
<b>W06 Aviation, Marine and Radar Systems</b>			
W06-A06C3	Display arrangements		
W06-A06C5	Monitoring; testing; calibrating		
W06-A06C8	Jamming/anti-jamming	Includes countermeasures and counter-counter measures for optical targeting systems, such as laser designed to illuminate and confuse missile optical targeting sensor.	
W06-A06H2	Weather lidar	Includes laser radar systems designed for meteorological use. See also S03-D codes for meteorology.	
W06-B01A1A	IC engine power plant	Includes control of internal combustion engines e.g. driving propellers.	Propeller
W06-B01A1C	Gas turbine/jet engine power plant	Includes control of gas turbine jet engines such as turboprop, turboprop, turboshaft, RAM jet and SCRAM jet engines.	Gas turbine engine control, Supersonic Combustion RAMJET
W06-B01A1X	Other power plant	Includes control of aircraft power plant not already provided for.	
W06-B02A5A	Baggage inspection	Includes detection of concealed articles such as guns and explosives or other illegal substances, e.g. using x-rays or neutron sensors. See S03-C03 and S03-E06B codes also for inspection.	Image, drugs, narcotics, guns
W06-B02A5E	Baggage tracking and monitoring	Includes all aspects of tracking and monitoring of location of baggage within airport, e.g. using transponder tags (see also W06-A04B5 and W02-G05 codes) or bar-code reader (see also T04).	
W06-B15	Specific aircraft types		
W06-B15A	Lighter-than-air craft	Includes balloons and airships.	Blimp, dirigible
W06-B15B	Helicopter; Rotorcraft		
W06-B15C	Glider		
W06-B15D	Commercial aircraft	Only applied if specific to commercial aircraft. Can be used in conjunction with other W06-B15 codes.	
W06-B15E	Military aircraft	Only applied if specific to military aircraft. Can also be used in conjunction with other W06-B15 codes. See W07 also for military equipment per se.	
W06-B15F	Microlight		
W06-B15G	VTOL (Vertical Take-Off and Landing) aircraft		
W06-B15X	Other aircraft types	Includes sea planes, motor vehicles convertible into aircraft, and electrical aspects of other aircraft such as hang gliders, ornithopters or parachutes.	
W06-C01C6	Public address and on-board entertainment	See also W04 codes for public address and gaming systems per se.	PA, loudspeaker, amplifier, tape recorder, video, VTR, projection, television, game
W06-C10	Life saving equipment	Includes life jackets. See W06-C15D instead for emergency/survival craft per se.	Buoyancy aid
W06-C15	Specific marine vessel types		

W06-C15A	Personal/recreational watercraft	Includes jet-skis, kayaks and canoes. See W04-X codes for electrical aspects of sports equipment such as water skis.	
W06-C15B	Submarines; Submersible craft		
W06-C15C	Emergency/rescue craft	Includes life boats and life rafts. See W06-C10 instead for life saving accessories such as life jackets.	Survival craft, inflatable craft
W06-C15D	Commercial vessels		
W06-C15D1	Fishing boats; Trawlers	Includes electrical cranes, hoists, winches etc. for handling fish and whales.	
W06-C15D3	Tankers	Includes oil tankers.	
W06-C15E	Military vessels	Includes aircraft carriers, destroyers, frigates etc. Use with W06-C15B for military specific submarines or W06-C15F for military specific hovercraft. See also W07 for military equipment per se.	
W06-C15F	Hovercraft	See also W06-C15D or W06-C15E for commercial or military specific hovercraft respectively.	
W06-C15X	Other marine craft types	Includes marine vessels not already provided for.	

CODE (max. 10 chars incl. spaces)	TITLE	SCOPE NOTES	KEYWORDS/SEARCH TERMS
<b>Section X</b>			
<b>X12 Power Distribution/ Components/ Converters</b>			
X12-D03N	Drain wire	Includes the uninsulated wire located beneath, and in contact with, a grounded shield.	
X12-D03P	Cable strengthening core	Includes, for example, steel wire or core located within cable covering to impart strength.	
X12-D03Q	Cable-connector combination	Includes a combination of cable and connector where neither is, or both are, novel. See V04-M17 also.	
X12-D04A	High power	Includes cables carrying power beyond the level of 110/220V mains. Also includes high power DC cables.	
X12-D04C	Low power	Includes cables carrying power up to and below the level of 110/220V mains. Also includes low power DC cables.	
X12-D07E1C	Superconducting wire/line		
X12-D07E3	Conductive films		
X12-H01A1E	Voltage control by using tap changing transformer	See X12-C02B1 for tap changers, per se.	
X12-H01A2E	Power converter	Involves the use of static converters to compensate for system reactance. See also X12-J for converters.	
X12-H01A8	Frequency regulation		
X12-H01A9	Load shedding	Includes load shedding to maintain the balance between generated power and load demand. Also includes shedding to regulate system frequency (see also X12-H01A8). For load shedding to regulate voltage, see X12-H01A1A	
X12-H01B5	Electric traction vehicles	Includes high level power distribution system onboard a train, tram, electric vehicle, hybrid electric vehicle. Generally applicable to voltage buses in excess of 42V. IC engine-driven vehicle systems are covered by U24-H and X22-F codes.	
X12-H04C	Individual transmission/distribution/mains line meters	Includes current, voltage, power, energy, etc. meters, per se. Does not include meters not designed for the purpose of generation, transmission/distribution. Where the meter has the facility to be interrogated by a central station or electricity provider,	
X12-H04D	Metering/measurement systems	Includes arrangements/circuitry for obtaining measures of voltage, current, etc for power systems. Individual current/voltage transformers are covered by X12-C codes. By their nature, these are 'remote' measurements but are not coded in X12-H04A.	
X12-H04E	Other metering/measurement systems	Includes recording of transients, harmonics, over voltages/current data, line fault parameters, lightning strikes etc.	
X12-J01E1	Harmonics reduction		
X12-J01E2	Ripple reduction		
X12-J01J	Measurements/testing/monitoring	See S01 for related electrical instrumentation.	
<b>X13 Switchgear, Protection, Electric Drives</b>			
X13-F03E1	With permanent magnet		
X13-F03E2	Without permanent magnet		
X13-G01E1	With permanent magnet		
X13-G01E2	Without permanent magnet		
X13-G02T7	Synchronous generator		
X13-G02T8	DC generator		
X13-G02T9	Other generators control		
X13-G02T9A	Induction generator		
X13-G03C	DC-DC converter		
X13-G03D	AC-AC converter		
<b>X15 Non-Fossil Fuel Power Generating Systems</b>			
X15-B04	Small scale turbines/power plant	This code is used in conjunction with other codes as required to indicate the small scale nature, where disclosed, of the turbine construction or plant such as used in vehicles, at the top of a chimney, etc.	
X15-B05	Control	Includes blade pitch control, etc	
X15-B06	Support structures	Includes wind turbine tower	
<b>X22 Automotive Electrics</b>			
X22-A01E3	Glow plugs	Includes glow plugs for pre-heating compression ignition diesel engines (see also X22-A20C).	Diesel, glow, compression ignition
X22-A03W	Engine-related by-wire control	Includes engine based by-wire controllers not covered elsewhere. Drive by-wire is coded in X22-A03B2 only. See X22-W for general non-engine based by-wire control.	By-wire, engine
X22-E09	TV/video camera for all round view	Only used when camera image is presented to driver. For video image recognition of e.g. road signs or obstacles, see X22-E13A only. Also see W04-M01 codes for novel cameras per se, and W02-F01 codes for general CCTV systems.	Reversing camera, IR imaging
X22-E09A	For external view	Includes rear-view reversing cameras and 'enhanced' or 'assisted' vision cameras/displays, such as IR imagers for assisting driver when driving at night or in poor weather conditions (see also W07-G and W04-M01E codes as appropriate). Also see W02-F01E fo	
X22-E09C	For internal view	Includes video camera for enabling driver to view interior of vehicle, e.g. to enable bus driver (also see X22-P05A) to see if passenger wants to alight or to monitor vandalism. Can also be used for anti-theft purposes, e.g. to capture image of thief insi	
X22-M01	Suspension systems	Includes electrical aspects of motor vehicle suspension hardware.	

X22-M03	Suspension control	Includes suspension control arrangements such as active suspension, electronically controlled dampers, body roll control etc.	Active, control
X22-W	Non-engine related by-wire control	Includes general by-wire control systems, including 'total' vehicle by-wire control and specific controllers not covered elsewhere such as a by-wire headlamp beam aiming controller (see also X22-B01E and X26-L). By-wire brake (X22-C02C7), shift (X22-G03G)	By-wire
<b>X24 Electric Welding</b>			
X24-A04	Soldering accessories	Includes solder feeding devices and dispensers.	
X24-C04	Electrodes and Accessories		
X24-D08	Solid state welding	Includes low temperature welding processes not involving fusion.	Cold welding
X24-D08A	Ultrasonic	Involves applying ultrasonic vibrations parallel to interface of surfaces being joined, which are under compressive force, so that welding is reached through a solid state process involving atomic movement and diffusion. Also see X24-D06 for ultrasonic we	
X24-D08C	Friction welding	Includes friction stir welding.	
X24-D08E	Magnetic pulse welding	Includes cold welding of electrically conductive metals in the total absence of fusion.	Cold welding, inductor coil, capacitor discharge
X24-D08G	Diffusion bonding	Involves solid state diffusion by application of pressure and temperature to a joint surface for a prescribed period of time.	Aerospace, titanium, loading press, cladding
X24-D08X	Other solid state welding/bonding	Includes explosive welding and forge welding processes.	
X24-D10	Welding, cutting, boring accessories	Coverage is restricted to all aspects of cables and connectors, with other accessories requiring significant electrical content.	
X24-F04	Electro-erosion accessories	Includes cables and connectors for electro-erosion and electrical discharge machining equipment. See also V04 codes for connectors and X12 codes for cables.	
<b>X25 Industrial Electric Equipment</b>			
X25-A08	Rapid prototyping and solid freeform fabrication	Includes rapid prototyping and solid freeform fabrication (SFF). May also involve stereolithography (e.g. using a UV laser to create successive cross-sections of a three-dimensional object within a vat of liquid photopolymer) or selective laser sintering	SFF, SLA, LOM, FDM
X25-E03	Well production; Extraction of oil, gas, water, etc.	Includes pumping assemblies. Also see X25-L03A for novel electric pumps per se.	
X25-H04	Ground/soil decontamination	Includes cleaning of contaminated soil, e.g. from pollution by petroleum or heavy metal spills.	
X25-H05	Industrial workspace cleaning	Includes e.g. vacuum systems for dust extraction or removing swarf etc. during machining of materials. Can be used in conjunction with X25-A codes as appropriate. See X27-E01B only for general air-conditioning of industrial work spaces.	Vacuum, dust, extraction
X25-T04	Textile industry		Dyeing, printing, bleaching, binding
X25-T04A	Fibre, yarn, etc. mfr.	See T06-D03B also for control details.	Spinning, winding, bobbins, twisting, combing, carding, crimping
X25-T04B	Fabric manufacture	See T06-D03C also for control details.	Tension-control
X25-T04B1	Weaving machines		Looms, wefting, warping machines, tension-control
X25-T04B2	Knitting machines		Weft knitting
X25-T04B3	Non-woven fabric production machines	Includes production of non-woven fabrics such as wadding, felt or fleece, and the production of fabrics, e.g. by welding together thermoplastic fibres.	Cotton wool
X25-T04C	Sewing machines; Embroidery machines	See T06-D03D also for control details of sewing and embroidery machines.	Sewing, emboider
X25-T04G	Other textile industry aspects	Includes industrial scale fabric pressing/ironing, fabric cutting, industrial electric scissors etc.	
<b>X26 Lighting</b>			
X26-U10	Projectors	Includes display projectors and cine projectors, see W04-Q01 and S06-B codes respectively.	
X26-U11	Cameras		
X26-U11A	Digital camera	See also W04-M01 codes	
X26-U11B	Film based-camera	See also S06 codes	
X26-U99	Other lighting applications		
<b>X27 Domestic Electrical Appliances</b>			
X27-A01B	Garden furniture	Includes garden furniture such as patio heaters, patio umbrellas etc. incorporating some electrical content, such as built-in lights (see also X26 codes).	
X27-C08	Breadmaker	For specific electric heating details also see appropriate X25-B codes.	
X27-D04R	Robotic vacuum cleaner	Includes autonomous vacuum cleaners. Also see X27-U for domestic assistance robots per se.	Automatic guidance
X27-D10	Disinfection and sterilization arrangements	Includes general disinfection and sterilization systems not covered elsewhere, e.g. using ultraviolet/microwave radiation or heat. For mixed mode cleaning/sterilizing see X27-D07 only. For air treatment arrangements see X27-E01B2 only. Industrial food pro	
X27-F04	Ice manufacture	Includes domestic and industrial ice manufacture. For ice cube trays per se see X27-F01 only.	

X27-U	Domestic assistance robot	Includes e.g. humanoid robots which carry out general housework, nursing, and other duties. For task-specific robots also see relevant codes elsewhere, e.g. X27-D codes for cleaning robots. For industrial scale robots see X25-A03E or X25-F05A only.	
X27-V	Home automation	Includes systems for automatically controlling/programming multiple pieces of domestic equipment, e.g. using internet or telephone communication. For remote control of individual domestic devices, use the appropriate device code only (see also W05-D codes	Total home control