GUIDELINES ON

THE USE OF SHORT RANGE DEVICES

IN NIGERIA

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THE NIGERIAN COMMUNICATIONS COMMISSION

NIGERIAN COMMUNICATIONS ACT 2003

GUIDELINES ON THE USE OF SHORT RANGE DEVICES IN NIGERIA

1 INTRODUCTION

1.1 In exercise of the powers conferred by Section 70 of the Nigerian Communications Act, 2003 the Commission hereby make these Guidelines.

1.2 All Short Range Devices shall be type approved by the Commission and shall meet all requirements as contained in the Type Approval Guidelines published by the Commission, as may be reviewed from time to time.

1.3 These Guidelines are principally intended to prescribe a standard of practice for use of Short Range Devices and to provide a framework to guide their usage.

1.4 The Commission may, at its discretion, constitute an industry group to regulate the use of Short Range Devices including monitoring compliance with the provision of these Guidelines. The group to be created will also perform such advisory roles as may be required of it under these Guidelines from time to time.

2. Objectives of the Guidelines

The objectives of these Guidelines are to:

2.1 Prescribe a regulatory framework to provide the minimum standards and requirements which Short Range Devices are to comply with whether imported or produced in Nigeria.

2.2 Provide guidance on Spectrum allocation and technical conditions for its use.

3. Scope and Operation of Short Range Devices

3.1 These Guidelines shall apply to Short Range Devices used on ISM frequency bands and exclude other licensed radio devices used on licensed frequency bands such as Mobile GSM.

i. It describes (a) coverage features, (b) frequency bands and principles of assembling and using short range and low powered radio devices which are for specific purposes.

ii. It affirms the frequency bands and output power which do not interfere with other systems.

3.2 These Guidelines apply to short range and low powered radio devices and systems which do not require frequency spectrum, but can be utilized by public authorities, establishments and corporate entities within frequency bands and power limits assigned for specific purposes.

4. Type Approval Process for Short Range Devices

4.1 The use of a Short Range Device is prohibited where its use will causes harmful interference to other lawful users of radio spectrum. Where such harmful interference occurs, the use of the Short Range Device shall be discontinued and shall only resume after the resolution of such interference.

4.2 The user of a Short Range Device shall avoid, and be responsible for any interference to any transmission by other lawful users of radio spectrum or interference to ISM devices. In the case of any interference arising under the above instances, the user of the Short Range Device may make an appeal to the Commission for intervention.

4.3 Users of Short Range Devices are not required to obtain a license, but all such devices will require necessary type approval by the Commission to ensure that it performs within the acceptable range.

4.4 Short Range Devices shall be type approved in accordance with the Type Approval Regulation and Guidelines published by the Commission before it can be sold or utilized in Nigeria.

4.5 Any person involved in the development, production or importation, or sale of Short Range Devices is required to comply with such laws as may be relevant to its activity.

4.6 Users of Short Range Devices which have been type-approved by the Commission shall not change the operating frequency or increase the transmitting power (including the addition of an extra RF amplifier). In the event of any alteration by a user, such user will be sanctioned as appropriate pursuant to the Part IX of the type Approval Regulations, 2008 published by the Commission. For the purpose of clarity, a user shall not install any external antenna or replace the original one with another transmitting antenna; neither shall a user change the original specification and functions.

4.7 Short Range Devices shall be housed inside an integrated cabinet. Its external adjustment and control shall only be used within the range of the technical specifications as approved by the Commission.

4.8 In the event that a Short Range Device is intended for use outside the technical specification and purposes as indicated in these Guidelines, the prior written permission of the Commission shall to be obtained.

4.9 A Short Range Device shall use a dedicated or integral antenna unless otherwise stated. The use of a combination of antenna and Short Range Devices shall be in accordance with these Guidelines.

4.10 The Commission may either directly or through a third party inspect all the systems and devices subject to these Guidelines to ensure conformity with the standards of installation and technical requirements as specified in these Guidelines.

4.11 All devices and systems subject to these Guidelines shall only be supplied or sold to any user if such devices or systems have satisfied the technical provisions stated in these Guidelines on use of Short Range Devices.

5. Dispute Resolution

Any dispute arising from the implementation of these Guidelines shall be resolved by the Commission in accordance with its dispute resolution mechanism as provided under the Act or the Commission may refer the dispute to the Industry

Group as constituted under paragraph 1.4 of this Guidelines to be resolved within such a period of time as may be determined by the Commission.

6. Application Process for Short Range Devices in Nigeria.

6.1 An application for Type Approval shall be made using the standard type approval application form which may be obtained from the Commission on request or downloaded from its web site – www.ncc.gov.ng.

6.2 To determine the origin of the Short Range Devices imported or supplied for sale or for use and to - identify manufacturing brand names, product names and model numbers reference shall be made to the list of approved communications equipment types maintained by the Commission pursuant to paragraph 10(a) and (b) of the Type Approval Guidelines.

6.3 The Commission may reject any application that is incomplete, or that is submitted by a person who is in contravention of any regulations, decision, direction or order issued by the Commission or any other requirement under Act.

6.4 Applicant should submit Declaration of Conformity supported by suitable test results. The Commission will accept test results from any laboratory on the list to be maintained by the Commission pursuant to regulations 7 of the Type Approval Regulations.

6.5 Where tests are to be carried out by a laboratory that has not been accredited by the Commission, the credentials of the laboratory or accredited body shall be approved by the Commission.

7. Technical Specifications for Short Range Devices in Nigeria

7.1 Short Range Device manufactured or imported into Nigeria shall have

a) Supplier/Manufacturer's name or identification mark;
b) Supplier/Manufacturer's model or type reference; and
c) Be labeled by the Commission in accordance with Paragraph 10 of the Type Approval Guidelines, 2008.
d) Other labels as required by any other approved or relevant standards.

7.2 **Technical Requirements** – Short Range Devices shall comply with the maximum Effective Isotropic Radiated Power (EIRP) and Transmitter and Receiver Spurious Emissions given in compliance with the provisions of these Guidelines while operating in its assigned frequency band. The Devices and systems are also to fulfil

all relevant requirements under Technical Specifications for all the permitted frequencies in which it intends to operate.

7.3 The radiated power or H-field-strength limits as recommended by the Commission are the maximum values allowed for Short Range Devices. The levels were determined after careful analysis within the Commission's standards requirements and are dependent on the frequency range and the applications chosen. The average H-field strength/power level is 5 dB (μA/m) at 10 m as specified in the First Schedule.

8. Acceptable Standards for the Short Range Devices

The Short Range Devices Standards in the First Schedule to these Guidelines are based on international standards as adopted in the Second Schedule of the Type Approval Guidelines, 2008.

9. Regulatory Review

The Commission may from time to time review or modify these Guidelines including the schedules, pursuant to Section 72 of the Act.

10. Interpretation Section

In these Guidelines, the following terms shall have the following meanings unless the context requires otherwise.

Act: - means the Nigerian Communications Act 2003.

Alarms: - means apparatus for wireless telegraphy used exclusively for alarm systems including social alarms and alarms for security and safety.

Application: - means the request to the Commission for issuance of a Licence or an Authorization under these Guidelines.

Commission: - means Nigerian Communication Commission.

Duty Cycle: - means the ratio, expressed as a percentage, of the minimum transmitter on time on one carrier frequency, relative to a one hour period.

ERP: - means Effective Radiated Power and **"EIRP"** means Effective Isotropic Radiated Power as defined in the Radio Regulations.

Fixed: - means a communications network/topology in which all devices are in a fixed geographical location within the network.

Harmful Interference: - means Interference which impairs the functioning of a radio-communication service or which materially degrades or obstructs or repeatedly interrupts Radio-communication.

HIPERLAN: - means apparatus for wireless telegraphy which meets the ESTI harmonized standard EN301 893.

Inductive Application: - means systems which operate by producing a controlled magnetic field within which a predetermined recognizable signal is formed

IPC: - means Transmitter Power Control which is a feature of an apparatus for wireless telegraphy which ensures a reduction in radiated power of 50% when the transmitting device is in close proximity to the intended receiver.

ISM devices: - means Industrial, Scientific, Medical (ISM) devices and refers to apparatus designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunication.

Low Power Radio Transmitter: - means apparatus for wireless telegraphy for short range two-way voice communications.

Medical Implant: - means apparatus for wireless telegraphy for programming and occasional communications with a medical device implanted in the body.

Model Control: - means apparatus for wireless telegraphy used to control the movement of a model in the air, on land or over/under the surface of water.

National Spectrum Plan: - means Radio Frequency Allocation plan for Nigeria approved by the Board and any modifications thereof.

Non-Specific SRD: - means Non-Specific Short Range Device which is an apparatus for wireless telegraphy including telemetry, telecommand, alarms and data.

Normadic: - means a communications network/topology which permits limited mobility of one or more devices within the network.

Wireless Audio Systems: - means apparatus for wireless telegraphy which transit audio or voice over short distances to a remote receiver.

Wideband Data Transmission Systems: - means a wireless local, metropolitan or personal area network utilizing apparatus for wireless telegraphy.

RFID: - means Radio Frequency Identification which is apparatus for wireless telegraphy used to identify tagged articles.

Radio Regulations: - means the Radio regulations annexed to the Constitution of the International Telecommunications Union.

RTTT: - means Road Transport and Traffic Telematics which are apparatus for wireless telegraphy for applications relating to road traffic and transport management including automatic road toll collection, route guidance systems, traffic information and advance incident warning.

Telecommand: - means the use of radio-communication for the transmission of signals to initiate modify or terminate functions of equipment at a distance.

Telemetry: - means the use of radio-communication for automatically indicating or recording measurements at a distance from the measuring instrument.

Type Approval Guidelines: - means the type approval guidelines published by the Nigerian Communications Commissions.

Type Approval Regulations: - means the Nigerian Communication's Type Approval Regulations.

Issued this…….day of……..2018

The Nigerian Communications Commission

FIRST SCHEDULE

TABLE OF FREQUENCY BANDS ALLOCATION

IN NIGERIA

FREQUENCY RANGES APPROVED FOR THE USE OF SHORT RANGE DEVICE IN NIGERIA

Frequency Band	Typical Application	Spectrum access and mitigation requirements	Max. Power or Magnetic Field Strength	Prescribed channel spacing	Standard ETSI	Additional information
9 to 59.75 kHz	Inductive		72 dBµA/m @ 10m		300 330	ERC/REC/70-03 ERC/DEC/(01)13
59.75 to 60.25 kHz	Inductive		42dBµA/m @ 10m		300 330	ERC/REC/70-03 ERC/DEC/(01)13
60.25 to 70 kHz	Inductive		72dBµA/m @ 10m		300 330	ERC/REC/70-03 ERC/DEC/(01)13
70 to 119 kHz	Inductive		42 dBµA/m @ 10m		300 330	ERC/REC/70-03 ERC/DEC/(01)13
119 to 135 kHz	Inductive		72 dBµA/m @ 10m		300 330	ERC/REC/70-03 ERC/DEC/(01)13
285 to 400 kHz	Inductive		38 dBµA/m @ 10m		300 330	
1650 to 1950 kHz	Inductive		8 dBµA/m @ 10m		300 330	
1800 to 2200 kHz	Inductive		-8 dBµA/m @ 10m		300 330	

2540 to 3560 kHz	**Inductive**		**-8 dBµA/m @ 10m**		**300 330**	
6765 to 6795 kHz	**Inductive**		**42 dBµA/m @ 10m**		**300 330**	**ERC/REC/70-03 ERC/DEC/(01)14**
6765 to 6795 kHz	**Inductive**		**42 dBµA/m @ 10m**		**300 330**	**ERC/REC/70-03 ERC/DEC/(01)01**
7400 to 8800 kHz	**Inductive**		**9 dBµA/m @ 10m**		**300 330**	**ERC/REC/70-03 ERC/DEC/(01)15**
13.553 to 13.567 MHz	**Inductive**		**42 dBµA/m @ 10m**		**300 330**	**ERC/REC/70-03 ERC/DEC/(01)14**
13 .553 to 13.567 MHz	**Non-specific SRD**		**42 dBµA/m@ 10m**		**300 330**	**ERC/REC/70-03 ERC/DEC/(01)01**
26.957 to 27.283 MHz	**Inductive**		**42 dBµA/m @ 10m**		**300 330**	**ERC/REC/70-03 ERC/DEC/(01)16**
26.957 to 27.283 MHz	**Non-Specific SRD**		**10 mW erp**		**300 220**	**ERC/REC/70-03 ERC/DEC/(01)02**
26.99 to 27.20 MHz	**Surface Model Control**		**100 mW erp**	**10 kHz**	**300 220**	**ERC/REC/70-03 ERC/DEC/(01)10**
34.995 to 35.225 MHz	**Aircraft Model Control**		**100 mW erp**	**10 kHz**	**300 220**	**ERC/REC/70-03 ERC/DEC/(01)11**
40.66 to 40.7 MHz	**Surface Model Control**		**100 mW erp**	**10 kHz**	**300 220**	**ERC/REC/70-03 ERC/DEC/(01)12**
40.66 to 40.7 MHz	**Non-specific SRD**		**10 mW erp**		**300 220**	**ERC/REC/70-03 ERC/DEC/(01)03**
49.82 to 49.98 MHz	**Baby Monitors**		**10 mW erp**		**300 220**	
49.82 to 49.98 MHz	**Low Power Radio transmitter**		**10 mW erp**		**300 220**	
173.2125 to 173.2375 MHz	**Non-Specific SRD telecommand only**		**10 mW erp**	**25 kHz**	**300 220**	

173.2375 to 173.275 MHz	**Non-Specific SRD**		**100 mW erp**	**25 kHz**	**300 220**	
173.7 to 175.1 MHz	**Wireless microphones**		**10 mW erp**		**300 422**	
173.965 to 174.015 MHz	**Wireless Microphones**		**2 mW erp**	**50 kHz**	**300 422**	**ERC/REC/70-03**
402 to 405 MHz	**Medical Implants**		**25 µW erp**	**25 kHz**	**300 220**	**ERC/REC/70-03 ERC/DEC/(01)17**
433.05 to 434.79 MHz	**Non-Specific**	**< 10 % duty cycle**	**10 mW erp**		**300 220**	**ERC/REC/70-03 Duty Cycle <10%**
433.05 to 434.79 MHz	**Non-Specific SRD**		**1 mW erp**		**300 220**	**ERC/REC/70-03 Duty Cycle ≤100%**
434.04 to 434.79 MHz	**Non-Specific SRD**		**10 mW erp**	**25kHz**	**300 200**	**ERC/REC/70-03 Duty Cycle ≤100%**
863 to 865 MHz	**Wireless Audio Systems**		**10 mW erp**		**301 357**	**ERC/REC/70-03 ERC/DEC/(01)18**
863 to 865 MHz	**Wireless Microphones**		**10 mW erp**	**200 kHz**	**301 357**	**ERC/REC/70-03**
864.8 to 865 MHz	**Wireless Audio Systems**		**10 mW erp**	**50 kHz**	**300 220**	**ERC/REC/70-03**
868 to 868.7 MHz	**Non-Specific SRD**		**25 mW erp**		**300 220**	**ERC/REC/70-03 ERC/DEC/(01)04**
868.6 to 868.7 MHz	**Alarms**		**10 mW erp**	**25kHz**	**300 220**	**ERC/REC/70-03 ERC/DEC/(01)09**
868.7 to 869.2 MHz	**Non-Specific SRD**		**25 mW erp**		**300 220**	**ERC/REC/70-03 ERC/DEC/(01)04**
869.2 to 869.25 MHz	**Social Alarms**		**10 mW erp**	**25 kHz**	**300 220**	**ERC/REC/70-03 ERC/DEC/(01)6**
869.25 to 869.3 MHz	**Alarms**		**10 mW erp**	**25 kHz**	**300 220**	**ERC/REC/70-03 ERC/DEC/(01)09**

869.4 to 869.65 MHz	**Non-Specific SRD**		**500 mW erp**	**25 kHz**	**300 200**	**ERC/REC/70-03 ERC/DEC/(01)04**
Frequency Band	**Typical Application**	**Duty cycle restriction**	**Max. Power or Magnetic Field Strength**	**Prescribed channel spacing**	**Standard ETSI**	**Additional information**
869.65 to 869.7 MHz	**Alarms**		**25 mW erp**	**25 kHz**	**300 200**	**ERC/REC/70-03 ERC/DEC/(01)09**
869.7 to 870.0 MHz	**Non-Specific SRD**		**5 mW erp**		**300 200**	**ERC/REC/70-03 ERC/DEC/(01)04**
1785.7 to 1799.4 MHz	**Wireless Microphones**		**10 mW eirp**	**200 kHz**	**301 840**	**ERC/REC/70-03**
2400 to 2483.5 MHz	**Non-Specific SRD**		**10 mW eirp**		**300 328**	**ERC/REC/70-03 ERC/DEC/(01)05**
2400 to 2483.5 MHz	**Wideband Data Transmission Systems**		**100 mW eirp**		**300 328**	**ERC/REC/70-03 ERC/DEC/(01)07**
2400 to 2483.5 ** MHz	**FDDA**		**25 mW eirp**		**300 440**	**ERC/REC/70-03 ERC/DEC/(01)08**
2446 to 2454 MHz	**AVI for railway**		**500 mW eirp**		**300 761**	**ERC/REC/70-03 ERC/DEC/(01)03**
2446 to 2454 MHz	**RFID**		**500 mW eirp** **4 mW eirp (indoor use)**		**300 440**	**ERC/REC/70-03**
5150 to 5350 ** MHz	**HIPERLAN: indoor use only (Nomadic)**		**1 W eirp**		**301 893**	**ERC/REC/70-03 ERC/DEC/(01)23**
5725 to 5875 ** MHz	**Non-Specific SRD**		**25 mW eirp**		**300 440**	**ERC/REC/70-03 ERC/DEC/(01)06**
5795 to 5805 MHz	**RTTT**		**2 W eirp**		**300 674 201 674**	**ERC/REC/70-03 ERC/DEC/(01)01**
5805 to 5815 MHZ	**RTTT (Expansion Spectrum)**		**2 W eirp**		**300 674 201 674**	**ERC/REC/70-03 ERC/DEC/(01)01**
9200 to 9500 MHz	**FDDA**		**25 mW eirp**		**300 440**	**ERC/REC/70-03**

9500 to 9975 MHz	**FDDA**		**25 mW eirp**		**300 440**	**ERC/REC/70-03**
10.5 to 10.6 GHz	**FDDA**		**25 mW eirp**		**300 440**	**ERC/REC/70-03**
13.4 to 14 GHz	**FDDA**		**25 mW eirp**		**330 440**	**ERC/REC/70-03**
17.1 to 17.3 GHz	**HIPERLAN**		**100 mW eirp**			**ERC/REC/70-03**
24.00 to 24.25 GHz	**Non-Specific SRD**		**100 mW eirp**		**300 440**	**ERC/REC/70-03**
24.05 to 24.25 GHz	**FDDA**		**100 mW eirp**		**300 440**	**ERC/REC/70-03**
57–66 GHz	**Wide band data transmission systems**		**40 dBm mean e.i.r.p. This refers to the highest power level of the transmitter power control range during the transmission burst if transmitter power control is implemented**	**No spacing**		**Fixed outdoor installations are not allowed. The maximum mean e.i.r.p density is limited to 13 dBm/MHz. Point-to-point links of the Fixed Service are regulated by ECC/REC/(05)02 and ECC/REC/(09)01**
76 to 77 GHz	**RTTT**		**55 dBm peak eirp**		**301 091**	**ERC/REC/70-03**

*Maximum Permitted Channel Spacing

** Provision of services to the public is permitted Public service provider is required to hold an appropriate Telecommunications License (ref. ODTR 98/44R)

NOTE: When selecting parameters for new SRDs, which may have inherent safety of `human, life implications, manufactures and users should pay particular attention to the potential for interference from other systems operating in the same or adjacent bands. Manufacturers should advice users on the risks of potential interference and its consequences

SECOND SCHEDULE

STANDARD TO BE ADOPTED IN NIGERIA

Second Schedule

Standard Numbers	Standard Title	Emphasis
ETSI EN 301 489-3	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz	Electromagnetic compatibility
ETSI EN 300 220-3	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 3: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive	Physical interoperability
ETSI EN 300 330-2	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive	Physical interoperability
ETSI EN 300 440-2	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1GHz to 40 GHz frequency range; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive	Physical interoperability

The individually identified standards are not dated. In general, Equipment Holders should refer to the most recent editions of the standards and watch for subsequent amendments.

11. Explanatory Notes

The term Short-Range Devices, covers radio transmitters which provide either unidirectional or bidirectional communication and which have low capability of causing interference to other radio equipment such devices are permitted to operate on a non-interference and non-protected basis.

These Guidelines are to examine the effect of emissions from Short-Range Devices on radio communication services. The proliferation of Short Range RF Devices such as UWB and RFID tags and the effect on existing radio communication services of these devices.

To ensure that radio communication services are adequately protected, further studies are required on the emissions from SRDs, inside and outside the frequency bands designated in the Radio Regulation for ISM applications.

In general Short Range Devices cannot claim protection from radio services, intentional or unintentional radiator, by ISM equipment, or by an incidental radiator

Due to the many different applications provided by these devices, no description can be exhaustive; however, the following categories are amongst those regarded as Short Range Devices.

Alarms: - The social alarm service is an emergency assistance service intended to allow people signal that they are in distress and allow them to receive the appropriate assistance. The service is organized as any assistance network, generally with a team available on a 24 hour basis in a situation where alarm signals are received and appropriate steps are taken to provide the required assistance (calling a doctor, the fire brigade, etc)

Automatic Vehicle Identification: - The automatic identification (AVI) system uses data transmission between a transponder located on a vehicle and a fixed interrogator positioned on the track to provide for the automatic and unambiguous identification of a passing vehicle. The system also enables any other stored data to be read and provides for the bidirectional exchange of variable data.

Broadband radio local area networks: - Broadband radio local area networks (RLANs) were conceived in order to replace physical cables for the connection of data networks within a building, thus providing a more flexible and, possibly, a more economic approach to the installation, reconfiguration and use of such networks within the business and industrial environment.

Duty Cycle: - A duty cycle is the percentage of one period in which a signal or system is active. A period is the time it takes for a signal to complete an on-and-off cycle. The device may be triggered either automatically or manually and depending on how the device is triggered will also depend on whether the duty cycle is fixed or random.

For instance if a signal is on for 1 second during each period of 4 seconds, the duty cycle of the signal is 1/4 or 25%.

The concept of duty cycle is for instance used in radio communications to limit the transmission time. Some devices are allowed to operate only with a duty cycle restriction to give other devices the possibility to access the spectrum.

For automatic devices, either software controlled or pre-programmed devices, the provider shall declare the duty cycle class or classes for the equipment under test.

For manual operated or event dependent devices, with or without software controlled functions, the provider shall declare whether the device once triggered followed a pre-programmed cycle or whether the transmitter remains on until the trigger is released or the device is manually reset. The provider shall also give a description of the application for the device and include a typical usage pattern.

Equipment for detecting avalanche victims: - Avalanche beacons are radio location systems used for searching for and/or finding avalanche victims, for the purpose of direct rescue.

Equipment for detecting movement and equipment for alert: - Equipment for detecting movement and equipment for alert are low power radar systems for radio determination purposes. Radio determination means the determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation properties of radio waves.

Inductive applications: - Inductive loop systems are communication systems based on magnetic fields generally at low RF frequencies. Inductive applications include for example car immobilizers, car access systems or car detectors, animal identification, alarm systems, item management and logistic systems, cable detection, waste management, persona identification, wireless voice links, access control, proximity sensors, anti-theft systems including anti-theft induction systems, data transfer to handheld devices, automatic article identification, wireless control systems and automatic road tolling.

Model Control: - Model control covers the application of radio model control equipment, which is solely for the purpose of controlling the movement of the model (toy), in the air, on land or over or under the water surface.

Railway applications: - Applications specifically intended for use on railways comprise mainly the following three categories:

Road transport and traffic telemetric:- Road transport and traffic telemetric (RTTT) systems are defined as systems providing data communication between two or more vehicles and between road vehicles and the road infrastructure for various information-based travel and transport applications, including automatic toll-collection, route and parking guidance, collision avoidance and similar applications.

Radio microphones: - Radio microphones (also refer to as wireless microphones or cordless microphones) are small, low power (50mW or less) unidirectional designed to be worn on the body, or hand held, for the transmission of sound over short distances for personal use. The receivers are more tailored to specific uses and may range in size from small hand unit's o track mounted modules as part of a multichannel system.

RF identification systems: - The object of any RF identification (RFID) system is to carry data in suitable transponders, generally known as tags, and to retrieve data, by hand or machine readable means, at a suitable time and place to satisfy particular application needs. Data within a tag may provide identification of an item in manufacture, goods in transit, a location, the identity of persons and/or their belongings, a vehicle or assets, an animal or other types of information. By including additional data the prospect is provided for supporting applications through item specific information or instructions immediately available on reading the tag. Read – write tags are often used as a decentralized database for tracking or managing goods in the absence of a host link.

Telecommand: - The use of radio communication for the transmission of signals to initiate, modify or terminate functions of equipment at a distance.

Telemetry: - The use of radio communication for indicating or recording data at a distance

Ultra low power active medical implant:- The ultra low power active implant are part of a medical implant communication systems (MICS) for use with implanted medical devices, like pacemakers, implantable defibrillators, nerve stimulators, and other types of implanted devices. The MICS uses transceiver modules for radio frequency communication between external devices referred to as a programmer/controller and a medical implant placed within a human or animal body.

Voice and Video: - In connection with short range devices, voice covers applications like walkie-talkie, baby monitoring and similar use. Citizen band (CB) and private mobile radio (PMR 446) equipment is excluded. With video applications, non-professional cordless cameras are meant mainly to be used for controlling or monitoring purposes.

Wireless audio application;- Applications for wireless audio include the following: cordless loudspeakers, cordless headphones, cordless headphones for portable use, i.e. portable compact disc players, cassette decks or radio receivers carried on a person, etc for use in concerts or other stage productions.

AVI for Railway: - means Automatic Vehicle Identification for Railways which is apparatus for wireless telegraphy used to track and identify railway vehicles.

Baby Monitors: - means apparatus for wireless telegraphy which transmits sound to a remote receiver and is commonly used to monitor infants.