

Draft India Remarks in the National Frequency Allocation Table

- IND01 Use of very low power devices, in frequency band 50-200 kHz on non interference, non protection and shared (non exclusive) basis has been exempted from licensing requirement. (see also GSR 90(E) dated 10.02.2009)
- IND02 Use of very low power devices, like tyre pressure indicator systems for use by airlines during all phases of flight, vehicle security system other low power devices, in frequency band 125-135 kHz on non interference, non protection and shared (non exclusive) basis has been exempted from licensing requirement. (see also GSR 90(E) dated 10.02.2009).
- IND03 Freq. spots 101.4, 121.6, and 145.7 kHz have been earmarked for cable locator systems
- IND04 The following frequencies are earmarked for Cordless Telephones:
- Base unit:** 1610, 1640, 1675, 1690 kHz, 43.720, 43.740, 43.820, 43.840, 43.920, 43.960, 44.120, 44.160, 44.180, 44.200, 44.320, 44.360, 44.400, 44.460, 44.480, 46.610, 46.630, 46.670, 46.675, 46.710, 46.725, 46.730, 46.770, 46.775, 46.825, 46.830, 46.870, 46.930 and 46.970 MHz.
- Remote Unit:** 26.375, 26.475, 26.575, 26.625, 48.760, 48.840, 48.860, 48.920, 49.020, 49.080, 49.100, 49.160, 49.200, 49.240, 49.280, 49.360, 49.400, 49.460, 49.500, 49.670, 49.770, 49.830, 49.845, 49.850, 49.860, 49.875, 49.890, 49.930, 49.970, 49.90, 150.350, 150.750, 150.850 and 150.950 MHz.
- IND05 Amateur Service is permitted in the following bands:
- 1820-1860 kHz
 - 3500-3700 kHz
 - 3890-3900 kHz
 - 7000-7100 kHz
 - 14000-14350 kHz
 - 18068-18168 kHz
 - 21000-21450 kHz
 - 24890-24990 kHz
 - 28000-29700 kHz

144-146 MHz

434-438 MHz

1260-1300 MHz

- IND06 The frequency spots 2010.4 kHz and 2025 kHz are earmarked for Fishing vessels.
- IND07 The frequency spots 3213, 5218, 13862.4 kHz, 73.675, 79.025, 159.55, 436.525 MHz are earmarked for demonstration of equipments on Non Interference and Non Protection Basis (NIB/NPB-shared use). In addition, appropriate channels for short-term demonstration of equipment in other frequency bands may be considered on case-by-case basis, on NIB/NPB.
- IND08 The frequency spots 3698 and 5883 kHz are earmarked for shipping industry.
- IND09 The frequency spots 8268 & 12361.4 kHz, 156.375, 156.475, 156.575, 156.675 & 156.850 MHz are earmarked for port operations (from shore to ship).
- IND10 Use of wireless equipments intended to be used while in motion or during halts, in the frequency band 26.957-27.283 MHz, with a maximum Effective Radiated Power (ERP) of 5 Watts has been exempted from licensing requirements. (see also GSR no 35 E dated 10.01.2007)
- IND11 The frequency spots 36.5, 36.7, 37.1, 37.9, 160.9 & 161.8 MHz are earmarked for Radio microphones.
- IND12 The requirement of Fixed/Mobile services in the band 54-68 MHz may be considered on case-by-case basis.
- IND13 The requirement of FM broadcasting will be considered in the frequency band 87-91.5 MHz and 95-100 MHz on case-by-case basis.
- IND14 The frequency band 91.5-95 MHz is earmarked for FM broadcasting.
- IND15 Frequency spots in the frequency bands 88-100 MHz and 103.8-108 MHz for private FM broadcasting have been specifically identified.
- IND16 The frequency spots 143.950, 150.175 & 150.9 MHz are earmarked for Car rallies/Sports activities.
- IND17 The requirement of wide area radio paging systems will be considered in the frequency band 146.45-147.95, 151.5-153, 164.5-166.5 and 171-173 MHz. The frequency spots 146.5625, 146.6125, 146.6375, 151.6125, 151.6625, 151.6875, 165.3625 (Delhi only), 165.4625, 165.6625, 166.1125 166.1625 (except Delhi), 166.2375 & 166.2875 (Mumbai only), 166.3125, 166.3625, 166.3875, 166.4375, 172.8635, 172.8875 and 172.9375 MHz are earmarked for wide area radio paging only. The use of frequencies in the frequency band 151.5-153 MHz including the frequencies earmarked above in this band have appropriate geographical

restrictions of operation around GMRT, Pune.

- IND18 Following frequencies are earmarked for construction and allied industries including remote control of EOT:

148.5, 148.575, 166.875, 167.725 MHz with a channel bandwidth of 10 KHz. The maximum RF transmitter power for EOT cranes is 1 mW.
- IND19 Use of low power equipments for the remote control of cranes using frequencies 335.7125, 335.7375, 335.7625, 335.7875, 335.8125 and 335.8375 MHz, with a channel bandwidth of 10 KHz and maximum transmit power of 1 mW has been exempted from licensing requirement. (see also GSR 34(E) dated 10.1.2007 and GSR 532 (E) dated 12.8.2005
- IND20 The requirement of onsite radio paging systems and talkback facility will be considered in the frequency band 150.05-151.5 MHz. The frequency spots 150.3, 150.9 and 151.07 MHz are earmarked for onsite paging and 151.15, 151.55 and 150.6 MHz for talkback facility for such systems.
- IND21 The frequency spot 150.525, 151.250 and 166.950 MHz are earmarked for purposes such as O.B. Vans & film shooting.
- IND22 Requirement of fixed and mobile services including those of wireless telemetry seismic systems will be considered in the frequency band 174-230 MHz on a case-by-case basis. Specific requirement of wind profiler radars in the frequency band 200-220 MHz may also be coordinated on a case-by-case basis.
- IND23 Digital Audio Broadcasting (DAB) may be considered in the frequency band 174-230 MHz initially in the four Metro cities and further introduction of DAB could be considered on a case-by-case basis taking into account interference potentiality aspects.
- IND24 Protection requirements of radio astronomy service in the frequency band 230-235 MHz within the appropriate coordination zone around GMRT, Pune may be borne in mind while considering spot frequencies for other services.
- IND25 The requirement for wide area Radio Paging systems, two way radio systems including voice paging systems may be considered in the frequency band 276-280 MHz with talk back in the frequency band 917-921 MHz up to a maximum of 1 MHz in each band.
- IND26 The requirement of short-range radio may be considered in the frequency band 350-351 MHz. The frequency spots 350.1625, 350.1750, 350.1875, 350.2000, 350.2125, 350.2250, 350.2375, 350.2500, 350.2625, 350.2750, 350.2875, 350.3000, 350.3125, 350.3250, 350.3375, 350.3500, 350.3625, 350.3750, 350.3875, 350.4000, 350.4125, 350.4250, 350.4375, 350.45, 350.4625, 350.4750, 350.4875, 350.5000, 350.5125, 350.5250 and 350.5375 MHz are earmarked for this purpose

- IND27 Requirements of public mobile radio trunked systems (PMRTS) and Captive mobile radio trunked systems will be considered in the frequency band 338-340 MHz paired with 348-350 MHz and its additional requirements may be considered in the frequency bands 336-338 MHz paired with 346-348 MHz on a case-by-case basis.
- IND28 The requirement of digital radio trunked service for captive networks will also be considered in the frequency band 351-356 MHz paired with 361-366 MHz and 356-358 MHz paired with 366-368 MHz on case by case basis.
- IND29 Requirements for digital radio trunked systems may be considered in the frequency bands 380-389.9 MHz paired with 390-399.9 MHz as also in 410-430 MHz on a case- by- case basis.
- IND30 Requirement of rural communications may be considered for coordination in the frequency band 368-380 MHz on case-by-case basis.
- IND31 Use of very low power remote cardiac monitoring RF wireless medical devices, medical implant communication/ telemetry systems and other such medical RF wireless devices in frequency band 402-405 MHz using a maximum radiated power of 25 micro watt or less with channel emission band width with in 300 KHz has been exempted from licensing requirement. (See also GSR no 673 (E) dated 23.9.2008)
- IND32 Requirements of digital seismic telemetry upto 1.5 MHz bandwidth may be met in the frequency band 406.1-450 MHz on case-by-case basis.
- IND33 Low power short range devices may be considered in the frequency band 433-434 MHz with a power output of 10 mW with a channel bandwidth of 10 KHz on non-interference, non protection and non- exclusiveness basis.
- IND34 The frequency spots 441.6 and 466.8 MHz may be considered for Anti Collision Device (ACD) applications on case by case basis.
- IND35 The requirement of IMT applications in the frequency band 450.5-457.5 MHz paired with 460.5-467.5 MHz may be considered for coordination on a case by case basis subject to its availability.
- IND36 Requirements of fixed and mobile services will be considered in the frequency band 470-520 MHz and 520-585 MHz on case-by-case basis.
- IND37 The requirement of Digital Broadcasting Services including Mobile TV may be considered in the .frequency band 585-698 MHz. subject to coordination on case to case basis.
- IND38 The requirement for IMT and Broadband Wireless Access may be considered in the frequency band 698-806 MHz subject to coordination on a case by case basis.

- IND39 Requirements of broadcasting and mobile satellite services except aeronautical mobile satellite(R) service in the frequency band 806-890 MHz may be considered for co-ordination on case by case basis.
- IND40 Frequency band 806-811 MHz paired with 851-856 MHz has been earmarked for mobile trunked radio system to be used predominantly for captive networks. The requirements for public mobile radio trunked systems (PMRTS), which cannot be met in other bands, may also be considered in this band.
- IND41 Frequency bands 811-814 MHz paired with 856-859 MHz has been earmarked for spectrum efficient digital public mobile radio trunked systems (PMRTS) and captive mobile radio trunked systems.
- IND42 Frequency band 814-819 MHz paired with 859-864 MHz has been earmarked for mobile radio trunked systems to be used predominantly for public mobile radio trunked systems (PMRTS).
- IND43 Requirement of public mobile radio trunked systems (PMRTS) and captive mobile radio trunked systems may also be considered, as appropriate, in the frequency bands 819-824 MHz paired with 864-869 MHz.
- IND44 Use of low power RFID equipments or any other low power wireless devices or equipments in the frequency band 865-867 MHz with a maximum transmitter power of 1 Watt (4 Watts Effective Radiated Power) with 200 KHz carrier band width has been exempted from licensing requirement. (see also GSR 564 (E) dated 30 July 2008)
- IND45 Frequency spots 849.0125/933.0125, 849.0250/933.0250, 849.0375/933.0375, 849.0500/933.0500, 849.0625/933.0625, 849.0750/933.0750, 849.0875/933.0875, 849.1000/933.1000, 849.1125/933.1125, 849.1250/933.1250 MHz have been earmarked for supervisory control and data acquisition system (SCADA) except in a few specific locations.
- IND46 Frequency band 824-844 MHz paired with 869-889 MHz has been earmarked for cellular telecommunication systems, including WLL
- IND47 Frequency band 890-902.5MHz paired with 935-947.5MHz has been earmarked for cellular telecom systems.
- IND48 Additional requirements for cellular telecom systems in the frequency band 902.5-915 MHz paired with 947.5-960 MHz may be coordinated on case by case basis.
- IND49 Certain frequency spots in the frequency bands 902.5-915 MHz and 947.5-960 MHz may be considered for train control & mobile train radio systems for specific locations on a case-by-case basis.

- IND 50 Requirements for Micro cellular low powered, telecommunication systems with maximum EIRP up to 4 Watts, FDD access techniques may be considered at specific locations for indigenously developed systems and technology, in a small chunk, in the frequency band 900 MHz presently exploited by existing wireless users of captive systems on case to case basis subject to co-ordination with existing usage and availability.
- IND51 In relation to specific problem of harmful interference from wireless access systems (fixed/mobile) for telecommunication services into cellular based networks, appropriate measures of incorporating filters in the wireless access systems (fixed/mobile) for telecommunication services shall be taken. Appropriate measures of incorporating filters in cellular based networks for blocking signals leaking through the extended cellular frequency bands shall also be taken.
- IND52 Certain frequency spots in the frequency band 926 - 926.5 MHz may be considered for very low power cordless telephone systems. The use of this band for such purpose is on the basis of non-interference, non-protection and non-exclusiveness.
- IND53 A chunk of 20 MHz spectrum in the frequency band 1427 - 1535 MHz may be considered on case-to-case basis for experimental/ trial/ pilot-study purposes for indigenously developed technologies use for point-to-point backhaul and point-to-multipoint access systems.
- IND54 The requirements of cellular telecom systems in the frequency band 1700-2000 MHz, appropriate amount of spectrum in the frequency band 1710-1785 MHz paired with 1805-1880 may be coordinated on a case by case basis.
- IND 55 Requirements for Micro cellular low powered telecommunication systems with maximum EIRP up to 4 Watts, FDD access techniques may be considered at specific locations for indigenously developed systems and technology, in a small chunk, in the frequency band 1800 MHz presently exploited by existing wireless users of captive systems on case to case basis, subject to co-ordination with existing usage and availability.
- IND56 The requirement of cellular telecommunication systems in the frequency band 1785-1805 MHz may be considered for coordination on a case by case basis subject to availability of spectrum in the band and after ensuring compatibility for coexistence with the systems in the frequency bands 1710-1785 MHz paired with 1805-1880 MHz
- IND57 Requirements of micro cellular wireless access systems (fixed/mobile) based on TDD access techniques, especially indigenously developed technologies and low power Digital Enhanced Cordless Telecommunication (DECT) systems and devices with maximum transmit power of 250 mW, capable of coexistence with

multiple operators may be considered in the frequency band 1880-1900 MHz on a case by case basis.

- IND58 The frequency band 1900-1910 MHz paired with 1880-1900 MHz may also be considered for cellular telecom systems especially for indigenously developed systems and technologies for coordination on a case by case basis subject to availability of spectrum in these bands and after ensuring compatibility for coexistence with the systems operating in the frequency bands 1920-1980 MHz paired with 2110-2170 MHz.
- IND59 Requirements of IMT (3G) applications in the frequency bands 1920-1980 MHz paired with 2110-2170 MHz (FDD mode) and 2010-2025 MHz (TDD mode) may be coordinated with existing users depending upon the availability, as far as possible.
- IND60 Requirement of Deep Space Research operations in the frequency bands 2110-2120 MHz (uplink) and 2290-2300 MHz (downlink) may be considered at few locations.
- IND61 The requirement of IMT applications including Broadband Wireless Access (BWA) in the frequency band 2300-2400 MHz may be considered for coordination on a case by case basis
- IND62 Use of low power equipments in the frequency band 2.4-2.4835 GHz using a maximum transmitter output power of 1 Watt (4 Watts Effective Radiated Power) with spectrum spread of 10 MHz or higher has been exempted from licensing requirement (see also GSR 45E dated 28.1.2005)
- IND63 INSAT system uses the frequency band 2535-2655 MHz for Radio Networking, cyclone warning dissemination system, meteorological data dissemination, satellite time frequency dissemination and Broadcasting Satellite Service applications. Requirements of IMT applications including Broadband Wireless Access (BWA) may be considered for coordination on a case by case basis in this band.
- IND64 Requirements for Microwave Multipoint Distribution System (MMDS) including broadband applications in the frequency band 2.7-2.9 GHz may be considered on case by case basis, while ensuring protection to Aeronautical Radio navigation service and Radio location service. International recognition for such purpose is not affordable.
- IND65 Requirements of Broadband Wireless Access (BWA) applications may be considered in the frequency band 3.3 – 3.4 GHz on a case-by-case basis.
- IND66 The requirement of IMT including Broadband Wireless Access (BWA) in the frequency band 3400-3600 MHz may be considered for coordination on a case by case basis subject to availability of spectrum in this band and appropriate

protection from out of band emission to the networks in the FSS in the frequency band 3600- 4200 MHz.

- IND 67 Use of low power equipments for wireless access systems including Radio Local Area Networks, in the frequency band 5.150-5.350 GHz and 5.725 – 5.875 GHz using a maximum mean Effective Isotropic Radiated Power of 200 mW and a maximum mean Effective Isotropic Radiated Power density of 10 mW/MHz in any 1 MHz bandwidth, for the indoor applications has been exempted from licensing requirement. (See also GSR No 46E dated 28.1.2005)
- IND68 Use of low power equipments for Wireless Access Systems including Radio Local Area Networks (RLAN), in the frequency band 5.150-5.350 GHz using a maximum mean Effective Isotropic Radiated Power of 4 Watts and a maximum mean Effective Isotropic Radiated Power density of 200 mW/MHz in any 1 MHz bandwidth may be considered for outdoor applications
- IND69 Requirement of indoor Wireless Access Systems including RLAN may be considered in the frequency band 5570-5725 MHz, with a maximum mean eirp of 1W and a maximum mean eirp density of 50 mW/ MHz in any 1MHz band on a case to case basis,.
- IND70 The requirement of very low power radio gadgets, radio toys, etc with maximum power of 100 Microwatts may be considered in the frequency band 5725-5875 MHz. Such use will be on the basis of non-interference, non-protection and non-exclusiveness.
- IND71 Use of low power Wireless Access Systems including RLAN and Dedicated Short Range Communications (DSRC) for Intelligent Transport Networks may be considered in the frequency band 5.725 to 5.825 GHz using a maximum transmitter output power of 1 Watt (4 Watts Effective Radiated Power) with spectrum spread of 10 MHz or higher on non interference non protection and non exclusive basis.
- IND72 Use of low power equipments in the frequency band 5.825 to 5.875 GHz using a maximum transmitter output power of 1 Watt (4 Watts Effective Radiated Power) with spectrum spread of 10 MHz or higher has been exempted from licensing requirements. (See also GSR no 38E dated 19.1.2007)
- IND73 The use of Ultra Wide Band (UWB) equipment may be considered in the frequency band 6-9 GHz with maximum mean EIRP density of -41 dBm/MHz in any 1 MHz bandwidth with minimum bandwidth of 50 MHz on non exclusive and non protection basis
- IND74 The requirement for LMDS may be considered in the frequency band 10.15-10.65 GHz on case-by-case basis. The technical parameters of terrestrial systems in the band 10.6-10.68 GHz should be in conformity with the Resolution 751(WRC 2007) of Radio Regulations of ITU.

- IND75 Frequency bands 10.95-11.2 GHz, 11.45-11.7 GHz and 12.2-12.75 GHz may be predominantly used for fixed satellite service (down links).
- IND76 It may be borne in mind that the frequency band 18.6-18.8 GHz is being used for Earth Exploration Satellite (EES) in IRS Satellite.
- IND77 The frequency bands 19.7-21.2 GHz and 29.5-31.0GHz may be considered predominantly for the use of FSS.
- IND78 Use of low power devices for telecom systems including Radio Local Area Networks (RLAN), in the frequency band 24.0 - 24.25 GHz using a maximum Effective Isotropic Radiated Power of 2Watts with spectrum spread of 50 MHz or higher may be considered for indoor and outdoor applications on non-interference, non protection and non-exclusive basis.
- IND70 Requirements of LMDS and MMDS may be considered in the frequency bands 24.5 -26.5 GHz and 27.5-29.5 GHz on a case-by-case basis. Requirements of EESS Earth Station downlink operation in 25.5.-27.0 GHz at few locations may also be considered on a case by case basis appropriately.
- IND80 Requirements of high capacity dense network may be considered in the frequency bands 31.8-33.4, 37-40 GHz, 40.5-43.5, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz. Requirements of Deep Space Research (Space-to-Earth) in the band 31.8-32.3 GHz and protection of the same may be considered at a few locations. Requirements of inter-satellite link in the band 32.3-33.0 GHz may be considered.
- IND81 Use of high capacity dense network may be considered in the frequency bands 71-76 GHz paired with 81-86 GHz.
- IND82 Requirement of public protection and disaster relief (PPDR) communications including Broadband Wireless Access may be considered, as far as possible, in the frequency bands 380-400 MHz, 406.1-430 MHz, 440-470 MHz, 746-806 MHz, 806-824/851-869 MHz, 4940-4990 MHz and 5850-5925 MHz on a case by case basis depending on specific need and equipments availability