

No.: 46/2016/TT-BTTTT

Hanoi, December 26, 2016

**CIRCULAR**

**LIST OF RADIO DEVICES THAT TO BE EXEMPTED LICENSE OF  
RADIO FREQUENCY REGISTRATION AND ACCOMPANYING TECHNICAL AND  
OPERATIONAL CONDITIONS**

*Pursuant to the Law on radio frequency dated November 23, 2009;*

*Pursuant to Decision No. 71/2013/QĐ-TTg dated November 21, 2013 by the Prime Minister promulgating the Plan for national radio spectrum;*

*Pursuant to the Government's Decree No. 132/2013/ND-CP dated October 16, 2013 defining the functions, tasks, powers and organizational structure of Ministry of Information and Communications;*

*Upon the request of Director of the Authority of Radio Frequency Management,*

*Minister of Information and Communications promulgates the list of license-exempt radio devices and accompanying technical and operational conditions.*

**Article 1. Scope and regulated entities**

1. This Circular promulgates the list of radio devices that to be exempt license of radio frequency registration and technical and operational conditions pertaining thereto.
2. This Circular applies to organizational or individual entities that manage, use, produce, import or trade in radio devices exempt from radio frequency use licensing to use in Vietnam.
3. This Circular does not apply to radio devices which are produced or imported to serve national defense and security duties of armed forces. The manufacturing, import and use of the said radio devices shall be governed by regulations promulgated by Ministry of National Defence or Ministry of Public Security in conformity with corresponding national technical regulations.

**Article 2. Interpretation of terms**

In this document, these terms shall be construed as follows:

1. *Short Range Device* refers to the radio transmitter or the receiver & transmitter which provides either unidirectional or bidirectional communication and have low capability of causing harmful interference to other radio equipment.
2. *Non-Specific Short Range Devices* refer to Short Range Devices which meet all of prescribed technical and operational conditions regardless of their applications or uses.
3. *Cordless Phone* refers to the terminal telephonic device which is connected with the two-wire analogue subscriber interface. This device consists of two different parts which are connected with each other by means of radio link:

The base unit (also called as the base station) is located at a fixed place and connected with two fixed telephone lines of the Public Switched Telephone Network (PSTN) by using integrated antenna. Integrated antenna has fixed design and is set inside or outside the base unit as a part of the base unit.

The mobile unit (a cordless phone may include several mobile units, also called portable stations) is a handset using integrated antenna. The mobile unit shall have the same subscriber number with the base unit.

#### *4. Medical Implant Communications Systems (MICS) and Medical Implant Telemetry Systems (MITS)*

Medical Implant Communications Systems (hereinafter referred to as “MICS”) and Medical Implant Telemetry Systems (hereinafter referred to as “MITS”) refer to systems which consist of an implantable medical device placed in the human body and a radio communication device outside the body to communicate data with the implantable device in a distance around 02 meters; received data shall be transmitted to the data processing center and doctors by means of telecommunication network.

MICS provides two-way communications between an implantable device and a radio communication device. MITS provides one-way communications from an implantable device to a radio communication device at a pre-programmed time.

#### *5. Radio Frequency Identification (RFID)*

RFID uses radio waves to automatically identify and track goods, people or animals and have other applications. The RFID system includes two main different components which are connected to each other by means of radio interface:

- The radio-frequency tag (RF tag) has an electronic chip with or without power source and is attached to the object to be identified. Information about the identified object shall be stored on the electronic chip.
- The radio-frequency reader (RF Reader) generates signal at a determined frequency to activate the RF tag and read its response. The RF reader shall receive and transmit response from the RF tag to the data processing system.

RFID has many applications in the fields of distribution, transportation and retailing, health care services, traffic or is used in mobile applications (smart advertisements).

#### *6. Radio Detection and Alarm Device*

Radio Detection and Alarm Device consists of sensor and control system which are connected to each other by means of radio interface.

Anti-theft device, motion detector and metal detector are certain types of Radio Detection and Alarm Devices.

#### *7. Wireless Audio Device*

Wireless Audio Devices refer to devices that use radio waves to transmit sound in a short distance.

Wireless lavalier microphone, wireless handset microphone, wireless earphones, personal FM transmitter and hearing aids are typical types of Wireless Audio Devices.

### *8. Remote Control Device*

Remote Control Devices use radio waves to control models and have other control applications in industrial and civil sectors.

Typical types of remote control devices: remote control devices for models in the air such as model airplanes, remote control devices for models on land or water surface such as model cars and model ships, remote control devices in industrial and civil sectors such as remote car door openers and remote garage door openers.

### *9. Wireless Local Area Network equipment*

Wireless Local Area Network Device (hereinafter referred to as WLAN Device) is used to set up the radio local area network or enable users to connect all devices wirelessly.

Typical types of WLAN devices: access point, wifi router, wifi card, integrated radio receiver-transmitter modules according to IEEE 802.11 specifications (excluding Wireless bridges).

### *10. Telemetry Device*

Telemetry Device automatically displays or records measurements and controls functions of other devices by means of radio interface.

### *11. Wireless Video Transmitter*

Wireless Video Transmitter is used to send image data to the processing system by means of radio interface.

Typical types of Wireless Video Transmitters: wireless webcam, wireless camera and wireless video transmitters through computer USB port.

### *12. Radio devices placed on fishing vessels*

Radio devices placed on fishing vessels are used to connect communications between fishing vessels operating in the territorial waters of Vietnam.

*13. Receive-only radio device* refers to a radio device that has the function to receive radio wave signals only.

*14. Wide Band Communication Device* is a radio device that is used in IMT-Advanced wideband transmission applications (LTE-Advanced technology and its editions) using the bands 5150-5350 MHz and 5470-5850 MHz at the bandwidth of at least 20 MHz or for access with the rate of up to Gigabit/s in WLAN or WPAN (Wireless Personal Area Network) operating in the n 57-66 GHz frequency band.

*15. Automotive Radar* is short-range radar that is used in traffic communication applications such as cruise control, detection, warning and avoidance of collisions between vehicles and surrounding objects.

*16. Low-power handie-talkies* are portable radio terminal devices functioned to receive and transmit speech within a limited area (E.g. building, campus).

*17. Ultra Wide Band (UWB) Communication Device* is a short-range radio device that is used to transmit data at GHz frequency band with the bandwidth of above 500 MHz.

*18. Inductive Loop* is functioned to transmit signals, operates according to electromagnetic field principle and uses low frequency.

19. *Automatic Identification System (AIS)* refers to radio device used in maritime safety systems on vessels/ships and other motor or nonmotor vehicles with the aim of avoiding collisions and managing surface or underwater vehicles.

20. *Emergency Position Indicating Radio Beacon (EPIRB)* refers to radio device that is used to locate emergency cases in the 406-406.1 MHz frequency band and placed on surface or underwater vehicles such as vessels/ships and other motor or nonmotor vehicles.

21. *Search and Rescue Radar Transponder (SART)* refers to radio device intended for marine search and rescue operations in the 9 GHz frequency band.

22. *AIS Search and Rescue Transmitter (AIS-SART)* refers to radio device in the group of marine supporting devices used to support operations of search and rescue agencies in locating survival equipment or distressed vessels.

### **Article 3. List of radio devices that to be exempted license of radio frequency registration and accompanying technical and operational conditions**

1. The List of radio devices that to be exempt license of radio frequency registration (hereinafter referred to as the “List”) is provided in Appendix 1 enclosed herewith.

2. Technical and operational conditions applied to license-exempt radio devices are provided for in Appendix 2-19 enclosed herewith.

### **Article 4. Exemption license of radio frequency registration**

The radio devices in the List is exempted a license of radio frequency registration and must satisfy general requirements specified in Article 5 herein and corresponding technical and operational conditions mentioned in Appendix 2-19 enclosed herewith.

### **Article 5. General requirements**

The following requirements are generally applied to radio devices that to be exempted license of radio frequency registration:

1. Radio devices that to be exempted license of radio frequency registration must tolerate harmful interference caused by radio devices licensed to use radio frequency or radio devices licensed to operate by competent supervisory agencies.

In case a radio device that to be exempted license of radio frequency registration causes harmful interference to other radio devices which has a license to use radio frequency or radio devices licensed to operate by competent supervisory agencies, the operation of such license-exempt device must be immediately suspended and shall be resumed only when interference problems are successfully remedied.

2. Radio devices that to be exempted license of radio frequency registration must tolerate harmful interference caused by devices using radio frequency for industrial, scientific and medical (ISM) purposes when they share the following ISM frequency bands:

- a) Frequency band 13.553 ÷ 13.567 MHz;
- b) Frequency band 26.957 ÷ 27.283 MHz;
- c) Frequency band 40.66 ÷ 40.70 MHz;
- d) Frequency band 2400 ÷ 2483.5 MHz;

dd) Frequency band 5725 ÷ 5875 MHz;

e) Frequency band 24000 ÷ 24250 MHz.

3. Producers/ importers of radio devices that to be exempted license of radio frequency registration must strictly comply with law regulations on import, conformity certification and declaration, and corresponding technical and operational conditions specified in Appendixes enclosed herewith.

4. Operators/users of integrated remote control devices in model airplanes must strictly comply with regulations of law on flight licensing.

5. Users of receive-only radio devices that to be exempted license of radio frequency registration must strictly comply with regulations of laws on telecommunications and radio frequency and other relevant laws; are not allowed to use information received for illegal purposes.

#### **Article 6. Transitional clause and effect**

1. The use of radio devices that satisfy regulations in the Circular No. 03/2012/TT- BTTTT dated March 20, 2012 by Minister of Information and Communications promulgates the list of radio devices that to be exempted license of radio frequency registration and accompanying technical and operational conditions but fail to conform to regulations herein may be maintained but must be immediately stopped when such radio devices cause harmful interference to other radio devices which has a license to use radio frequency.

2. Low-power handie-talkies which are specified in the List prescribed in Appendix 1 enclosed herewith and satisfy corresponding frequency, technical and operational conditions prescribed in Appendix 2 and Appendix 18 enclosed herewith shall be exempted from radio frequency licensing as from January 01, 2020.

3. Stop issue a license for using new radio devices at the 446-446.2 MHz frequency band with more than 500 mW power from the entry into force of this Circular.

#### **Article 7. Implementation**

1. This Circular shall take effect as from February 14, 2017 and supersede the Circular No. 03/2012/TT- BTTTT dated March 20, 2012 by Minister of Information and Communications promulgates the list of license-exempt radio devices and accompanying technical and operational conditions.

2. Chief of Office, Director of the Authority of Radio Frequency Management, heads of affiliates of Ministry of Information and Communications, and relevant organizations and individuals shall implement this Circular.

3. Difficulties that arise during the implementation of this Circular should be reported to the Ministry of Information and Communications (via the Authority of Radio Frequency Management) for consideration./.

**MINISTER**

**Truong Minh Tuan**

## APPENDIX 1

### LIST OF RADIO DEVICES THAT TO BE EXEMPTED LICENSE OF RADIO FREQUENCY REGISTRATION

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

No.	Type of radio device
1	Group of short range devices
1.1	Non-Specific Short Range Device
1.2	Cordless phone
1.3	Medical Implant Communications Systems (MICS) and Medical Implant Telemetry Systems (MITS)
1.4	Radio Frequency Identification (RFID)
1.5	Radio Detection and Alarm Device
1.6	Wireless Audio Device
1.7	Remote Control Device
1.8	Wireless Local Area Network (WLAN)
1.9	Telemetry Device
1.10	Wireless Video Transmitter
1.11	Wide Band Communication Devices
1.12	Ultra Wide Band (UWB) Communication Devices
1.13	Automotive Radar
1.14	Inductive Loop
2	Radio devices placed on fishing vessels
3	Receive-only radio device (*)
4	Low-power handie-talkies
5	Group of radio devices for marine safety and rescue purposes
5.1	Automatic Identification System (AIS)
5.2	Emergency Position Indicating Radio Beacon (EPIRB)
5.3	Search and Rescue Radar Transponder (SART)
5.4	AIS Search and Rescue Radar Transponder (AIS-SART)

(\*) Users of receive-only radio devices who want to prevent their devices from harmful interference shall apply for license to use radio frequency in compliance with prevailing regulations of Ministry of Information and Communications.

## APPENDIX 2

### FREQUENCY CONDITIONS AND POWER LIMITS APPLIED TO RADIO DEVICES THAT TO BE EXEMPTED LICENSE OF RADIO FREQUENCY REGISTRATION

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

#### 1. Frequency conditions and emission limits include the following contents:

*Frequency band:* stipulate corresponding limits on frequency range for license-exempt radio devices.

*Type of radio device or application:* stipulate name of licensed radio device or application in the List provided in Appendix 1 herein.

*Main emission:* stipulate maximum limit on radiated power (for SART device, stipulate minimum radiated power) which is expressed under the form of Effective Radiated Power (ERP) or Equivalent Isotropically Radiated Power (EIRP) of corresponding license-exempt radio devices.

*Spurious emission:* stipulate maximum limit on spurious emission power or minimum limit on emission depletion for corresponding license-exempt radio devices.

No.	Frequency band	Type of radio device or application	Main emission	Spurious emission
A	B	C	D	
1.	<b>9 ÷ 16 kHz</b>	Inductive Loop	≤ 42 dBμA/m measured at 10m distance	According to spurious emission limit 1
2.	<b>16 ÷ 115 kHz</b>	Radio Detection and Alarm Device	≤ 4.5 mW ERP <sup>1</sup>	According to spurious emission limit 1
		Inductive Loop	≤ 42 dBμA/m measured at 10m distance	According to spurious emission limit 1
3.	<b>115 ÷ 148.5 kHz</b>	Inductive Loop	≤ 42 dBμA/m measured at 10m distance	According to spurious emission limit 1
4.	<b>115 ÷ 150 kHz</b>	Radio Detection and Alarm Device	≤ 4.5 mW ERP	According to spurious emission limit 1
		Radio Frequency Identification (RFID)		
		Remote Control Device		
5.	<b>326.5 kHz</b> <b>340 kHz</b>	Inductive Loop	≤ 15 dBμA/m measured at 10m distance (in a bandwidth of 10 kHz)	According to spurious emission limit 1
6.	<b>3.155 ÷ 3.400 MHz</b>	Wireless Audio Device for hearing aids	≤ 13.5 dBμA/m measured at 10m	According to spurious emission

			distance	limit 1
7.	<b>6.765 ÷ 6.795 MHz</b>	Inductive Loop	≤ 42 dB $\mu$ A/m measured at 10m distance	According to spurious emission limit 1
8.	<b>10.2 ÷ 11 MHz</b>	Wireless Audio Device for hearing aids	≤ 4 $\mu$ W ERP	According to spurious emission limit 1
9.	<b>13.553 ÷ 13.567 MHz</b>	Radio Detection and Alarm Device	≤ 4.5 mW ERP	According to spurious emission limit 1
		Radio Frequency Identification (RFID)		
		Non-Specific Short Range Devices		
10.	<b>26.957 ÷ 27.283 MHz</b>	Remote Control Device	≤ 100 mW ERP	≥40 dBc at transmitter output
		Telemetry Device		
		Non-Specific Short Range Devices		
11.	<b>26.96 ÷ 27.41 MHz</b>	Radio devices placed on fishing vessels	≤12 W ERP (single-sideband amplitude modulation: AM/SSB)	According to spurious emission limit 2
			≤4 W ERP (double-sideband amplitude modulation: AM/DSB, or angle modulation: frequency modulation and phase modulation (FM/PM))	
12.	<b>29.7 ÷ 30.0 MHz</b>	Remote Control Device	≤ 100 mW ERP	≥40 dBc at transmitter output
		Radio Detection and Alarm Device		
		Telemetry Device		
13.	<b>34.995 ÷ 35.225 MHz</b>	Remote Control Device	≤ 100 mW ERP	≥40 dBc at transmitter output
14.	<b>40.02 ÷ 40.98 MHz</b>	Remote Control Devices for model airplanes (in the group of remote control device)	≤ 100 mW ERP	≥40 dBc at transmitter output
15.	<b>40.66 ÷ 40.7 MHz</b>	Wireless Audio Device	≤ 100 mW ERP	≥40 dBc at transmitter output
		Remote Control Device		
		Non-Specific Short Range Devices		



16.	<b>40.50 ÷ 41.00 MHz</b>	Medical and biological applications (in the group of remote control device)	$\leq 10 \mu\text{W ERP}$	$\geq 32 \text{ dBc}$ at transmitter output
17.	<b>43.71 ÷ 44.00 MHz</b> <b>46.60 ÷ 46.98 MHz</b> <b>48.75 ÷ 49.51 MHz</b> <b>49.66 ÷ 50 MHz</b>	Cordless phone	$\leq 183 \mu\text{W ERP}$	$\geq 32 \text{ dBc}$ at 3m distance
18.	<b>50.01 ÷ 50.99 MHz</b>	Remote Control Devices for model airplanes (in the group of remote control device)	$\leq 100 \text{ mW ERP}$	$\geq 40 \text{ dBc}$ at transmitter output
19.	<b>72.00 ÷ 72.99 MHz</b>	Remote Control Devices for model airplanes (in the group of remote control device)	$\leq 1 \text{ W ERP}$	$\geq 40 \text{ dBc}$ at transmitter output
20.	<b>87 ÷ 108 MHz</b>	Wireless Audio Device (excluding personal FM transmitters) Personal FM transmitters (in the group of Wireless Audio Devices)	$\leq 3 \mu\text{W ERP}$ $\leq 20 \text{ nW ERP}$	$\geq 32 \text{ dBc}$ at 3 distance
21.	<b>146.35 ÷ 146.5 MHz</b>	Radio Detection and Alarm Device	$\leq 100 \text{ mW ERP}$	$\geq 40 \text{ dBc}$ at transmitter output
22.	<b>156.025 ÷ 162.025 MHz</b>	Automatic Identification System (AIS)	$\leq 7.7 \text{ W ERP}$ (12.5 W EIRP)	According to spurious emission limit 9
23.	<b>161.9625 ÷ 161.9875 MHz</b> <b>162.0125 ÷ 162.0375 MHz</b>	AIS Search and Rescue Radar Transponder (AIS-SART)	$\leq 7.7 \text{ W ERP}$ (12.5 W EIRP)	According to spurious emission limit 10
24.	<b>182.025 ÷ 182.975 MHz</b>	Wireless Audio Device	$\leq 30 \text{ mW ERP}$	$\geq 40 \text{ dBc}$ at transmitter output
25.	<b>216 ÷ 217 MHz</b>	Medical and biological applications (in the group of remote control device)	$\leq 10 \mu\text{W ERP}$	$\geq 40 \text{ dBc}$ at transmitter output
26.	<b>217.025 ÷ 217.975 MHz</b>	Wireless Audio Device	$\leq 30 \text{ mW ERP}$	$\geq 40 \text{ dBc}$ at transmitter output
27.	<b>218.025 ÷ 218.475 MHz</b>	Wireless Audio Device	$\leq 30 \text{ mW ERP}$	$\geq 40 \text{ dBc}$ at transmitter output

28.	<b>240.15 ÷ 240.30 MHz</b>	Radio Detection and Alarm Device	≤ 100 mW ERP	≥40 dBc at transmitter output
29.	<b>300.00 ÷ 300.33 MHz</b>	Radio Detection and Alarm Device	≤ 100 mW ERP	
30.	<b>312 ÷ 316 MHz</b>	Radio Detection and Alarm Device Remote Control Device	≤ 100 mW ERP	≥40 dBc at transmitter output
31.	<b>401 ÷ 406 MHz</b>	Medical Implant Communications Systems (MICS)	≤ 25 μW ERP	According to spurious emission limit 2
32.	<b>401 ÷ 402 MHz</b> <b>403.5 ÷ 403.8 MHz</b> <b>405 ÷ 406 MHz</b>	Medical Implant Telemetry Systems (MITS)	≤ 100 nW ERP	
33.	<b>406.0 ÷ 406.1 MHz</b>	Emergency Position Indicating Radio Beacon (EPIRB)	≤ 12.2 W ERP	<p>≥ 20 dBc at frequency offset from ± 3 kHz to ± 7 kHz in comparison to carrier frequency;</p> <p>≥ 30 dBc at frequency offset from ± 7 kHz to ± 12 kHz in comparison to carrier frequency;</p> <p>≥ 35 dBc at frequency offset from ± 12 kHz to ± 24 kHz in comparison to carrier frequency;</p> <p>≥ 40 dBc at frequency offset of -24 kHz in comparison to carrier frequency to 406.0 MHz frequency, and at frequency offset of +24 kHz in comparison to carrier frequency to 406.1 MHz frequency.</p>
34.	<b>433.05 ÷ 434.79 MHz</b>	Radio Frequency	≤ 10 mW ERP	≥ 32 dBc at 3m

		Identification (RFID)		distance
		Remote Control Device		≥ 40 dBc at 3m distance
		Telemetry Device		≥ 40 dBc at 3m distance
35.	<b>444.4 ÷ 444.8 MHz</b>	Radio Detection and Alarm Device	≤ 100 mW ERP	≥40 dBc at transmitter output
36.	<b>446.0 ÷ 446.2 MHz</b>	Low-power handie-talkies	≤ 500 mW ERP	According to spurious emission limit 8
37.	<b>470 ÷ 694 MHz</b>	Wireless Audio Devices (used in events)	≤ 30 mW ERP	≥40 dBc at transmitter output
38.	<b>866 ÷ 868 MHz</b>	Radio Frequency Identification (RFID)	≤ 500 mW ERP	According to spurious emission limit 2
39.	<b>918 ÷ 923 MHz</b>	Radio Frequency Identification (RFID)	≤ 500 mW ERP (*)	According to spurious emission limit 2
40.	<b>918 ÷ 923 MHz</b>	Non-Specific Short Range Devices	≤ 25 mW ERP	According to spurious emission limit 2
41.	<b>1880 ÷ 1900 MHz</b>	Cordless phone	≤ 250 mW EIRP <sup>2</sup>	According to spurious emission limit 2
42.	<b>2400 ÷ 2483.5 MHz</b>	Wireless Local Area Network (WLAN)	≤ 200 mW EIRP	According to spurious emission limit 3
		Non-Specific Short Range Devices using spread-spectrum techniques	≤ 100 mW EIRP and ≤ 100 mW/100 kHz EIRP for devices using Frequency-Hopping Spread Spectrum (FHSS) or ≤ 10 mW/1 MHz EIRP for devices using other modulation techniques	
		Wireless Video Transmitter	≤ 100 mW EIRP	According to spurious emission limit 2
		Non-Specific Short Range Devices	≤ 10 mW EIRP	According to spurious emission limit 2
43.	<b>2446 ÷ 2454 MHz</b>	Radio Frequency	≤ 500 mW EIRP	According to

		Identification (RFID)		spurious emission limit 2
44.	<b>4200 ÷ 4800 MHz</b>	Ultra Wide Band (UWB) Communication Devices	$\leq -70$ dBm/MHz (mean power) $\leq -30$ dBm/50 MHz (peak power)	Not applicable
45.	<b>5150 ÷ 5250 MHz</b>	Wireless Local Area Network (WLAN) Wide Band Communication Devices	$\leq 200$ mW EIRP and $\leq 10$ mW/MHz	According to spurious emission limit 4
46.	<b>5250 ÷ 5350 MHz</b>	Wireless Local Area Network (WLAN) Wide Band Communication Devices	$\leq 200$ mW EIRP and $\leq 10$ mW/MHz	According to spurious emission limit 4
47.	<b>5470 ÷ 5725 MHz</b>	Wireless Local Area Network (WLAN) Wide Band Communication Devices	$\leq 1$ W EIRP and $\leq 50$ mW/MHz	According to spurious emission limit 4
48.	<b>5725 ÷ 5850 MHz</b>	Wireless Local Area Network (WLAN) Wide Band Communication Devices	$\leq 1$ W EIRP and $\leq 50$ mW/MHz	According to spurious emission limit 4
		Wireless Video Transmitter	$\leq 100$ mW EIRP	According to spurious emission limit 2
		Non-Specific Short Range Devices	$\leq 25$ mW EIRP	According to spurious emission limit 2
49.	<b>9200 ÷ 9500 MHz</b>	Search and Rescue Radar Transponder (SART)	$\geq 400$ mW EIRP	Not applicable
50.	<b>10.5 ÷ 10.55 GHz</b>	Wireless Video Transmitter	$\leq 100$ mW EIRP	According to spurious emission limit 2
51.	<b>24 ÷ 24.25 GHz</b>	Wireless Video Transmitter	$\leq 100$ mW EIRP	According to spurious emission limit 2
		Telemetry Devices		
		Non-Specific Short Range Devices		

52.	<b>57 ÷ 66 GHz</b>	Wide Band Communication Devices	≤ 10 W EIRP	According to spurious emission limit 5
53.	<b>61 ÷ 61.5 GHz</b>	Non-Specific Short Range Devices	≤ 100 mW EIRP	According to spurious emission limit 6
54.	<b>76 ÷ 77 GHz</b>	Automotive Radar	≤ 316.23 W EIRP	According to spurious emission limit 7
55.	<b>77 ÷ 81 GHz</b>	Automotive Radar	≤ 316.23 W EIRP (at the bandwidth of 50 MHz) and ≤ 0.5 mW/MHz EIRP	According to spurious emission limit 7
56.	<b>122 ÷ 122.25 GHz</b>	Non-Specific Short Range Devices	≤ 10 mW EIRP (above the bandwidth of 250 MHz)	According to spurious emission limit 6
57.	<b>122.25 ÷ 123 GHz</b>	Non-Specific Short Range Devices	≤ 100 mW EIRP	According to spurious emission limit 6
58.	<b>244 ÷ 246 GHz</b>	Non-Specific Short Range Devices	≤ 100 mW EIRP	According to spurious emission limit 6

<sup>1</sup> ERP: Effective Radiated Power.

<sup>2</sup> EIRP: Equivalent Isotropically Radiated Power.

(\*): Radio Frequency Identification applied to intelligent traffic systems (nonstop electronic toll collection systems) with the radiated power ranging from above 500 mW to 2000 mW ERP may use the 920-923 MHz frequency band when having obtained the license to use radio frequency.

## 2. Classification of spurious emission limits

### 2.1. Spurious emission limit 1:

Frequency (f)	Limit at operation mode	Limit at standby mode
9 kHz ≤ f ≤ 10 MHz	22 μA/m (27 dB μA/m) at the 9 kHz frequency band, reduced by 3dB/ frequency range	1.99 μA/m (6 dB μA/m) at the 9 kHz frequency band, reduced by 3dB/ frequency range
10 MHz ≤ f ≤ 30 MHz	0.67 μA/m (-3.5 dB μA/m)	0.06 μA/m (-24.5 dB μA/m)
47 MHz ≤ f ≤ 74 MHz;	-54 dBm (4nW)	-57 dBm (2nW)

87.5 MHz ≤ f ≤ 118 MHz; 174 MHz ≤ f ≤ 230 MHz; 470 MHz ≤ f ≤ 862 MHz		
At other frequencies between 30 MHz and 1000 MHz	-36 dBm (250nW)	

2.2. Spurious emission limit 2:

Frequency (f)	Limit at operation mode	Limit at standby mode
47 MHz ≤ f ≤ 74 MHz; 87.5 MHz ≤ f ≤ 118 MHz; 174 MHz ≤ f ≤ 230 MHz; 470 MHz ≤ f ≤ 862 MHz	-54 dBm (4nW)	-57 dBm (2nW)
At other frequencies below 1000 MHz	-36 dBm (250nW)	-57 dBm (2nW)
At frequencies f > 1000 MHz	-30 dBm (1μW)	-47 dBm (20nW)

2.3. Spurious emission limit 3:

a. Narrow band spurious emissions:

Frequency (f)	Limit at operation mode	Limit at standby mode
30 MHz ≤ f ≤ 1 GHz	-36 dBm (250nW)	-57 dBm (2nW)
1.8 MHz ≤ f ≤ 1.9 GHz; 5.15 GHz ≤ f ≤ 5.3 GHz	-47 dBm (20nW)	-47 dBm (20 nW)
1 GHz ≤ f ≤ 12.75 GHz	-30 dBm (1μW)	-47 dBm (20 nW)

b. Wideband spurious emissions:

Frequency (f)	Limit at operation mode	Limit at standby mode
30 MHz ≤ f ≤ 1 GHz	-86 dBm/Hz	-107 dBm/Hz
1.8 MHz ≤ f ≤ 1.9 GHz; 5.15 GHz ≤ f ≤ 5.3 GHz	-97 dBm/Hz	-97 dBm/Hz
1 GHz ≤ f ≤ 12.75 GHz	-80 dBm/Hz	-97 dBm/Hz

2.4. Spurious emission limit 4:

Frequency (f)	Limit
47 MHz ≤ f ≤ 74 MHz; 87.5 MHz ≤ f ≤ 118 MHz; 174 MHz ≤ f ≤ 230 MHz; 470 MHz ≤ f ≤ 862 MHz	-54 dBm/100 kHz
At other frequencies between 30 MHz and 1000 MHz	-36 dBm/100 kHz
1 GHz ≤ f ≤ 26.5 GHz	-30 dBm/1 MHz

2.5. Spurious emission limit 5:

Frequency (f)	Limit
47 MHz ≤ f ≤ 74 MHz; 87.5 MHz ≤ f ≤ 118 MHz; 174 MHz ≤ f ≤ 230 MHz; 470 MHz ≤ f ≤ 862 MHz	-54 dBm/100 kHz
At other frequencies between 30 MHz and 1000 MHz	-36 dBm/100 kHz
1 GHz ≤ f ≤ 132 GHz	-30 dBm/1 MHz

2.6. Spurious emission limit 6:

Frequency (f)	Limit
$47 \text{ MHz} \leq f \leq 74 \text{ MHz}$ ; $87.5 \text{ MHz} \leq f \leq 118 \text{ MHz}$ ; $174 \text{ MHz} \leq f \leq 230 \text{ MHz}$ ; $470 \text{ MHz} \leq f \leq 862 \text{ MHz}$	-54 dBm/100 kHz
At other frequencies between 30 MHz and 1000 MHz	-36 dBm/100 kHz
$1 \text{ GHz} \leq f \leq 300 \text{ GHz}$	-30 dBm/1 MHz

2.7. Spurious emission limit 7:

Frequency (f)	Limit
$47 \text{ MHz} \leq f \leq 74 \text{ MHz}$ ; $87.5 \text{ MHz} \leq f \leq 118 \text{ MHz}$ ; $174 \text{ MHz} \leq f \leq 230 \text{ MHz}$ ; $470 \text{ MHz} \leq f \leq 862 \text{ MHz}$	-54 dBm/100 kHz
At other frequencies between 30 MHz and 1000 MHz	-36 dBm/100 kHz
$1 \text{ GHz} \leq f \leq 100 \text{ GHz}$	-30 dBm/1 MHz

2.8. Spurious emission limit 8:

Frequency (f)	Limit at operation mode	Limit at standby mode
$f \leq 1000 \text{ MHz}$	-36 dBm (250nW)	-57 dBm (2nW)
$1 \text{ GHz} < f \leq 4 \text{ GHz}$	-30 dBm (1 $\mu$ W)	-47 dBm (20 nW)

2.9. Spurious emission limit 9:

Signal transmission mode:

Frequency (f)	Limit
$108 \text{ MHz} \leq f \leq 137 \text{ MHz}$ ; $156 \text{ MHz} \leq f \leq 161.5 \text{ MHz}$ ;	-16 dBm (25 $\mu$ W)
$1525 \text{ MHz} \leq f \leq 1610 \text{ MHz}$	-16 dBm (25 $\mu$ W)

Idle mode:

Frequency (f)	Limit
$30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$ ;	-57 dBm (2 nW)
$1000 \text{ MHz} \leq f \leq 2000 \text{ MHz}$	-47 dBm (20 nW)

2.10. Spurious emission limit 10:

Frequency (f)	Limit
$108 \text{ MHz} \leq f \leq 137 \text{ MHz}$ ; $156 \text{ MHz} \leq f \leq 161.5 \text{ MHz}$ ; $406.0 \text{ MHz} \leq f \leq 406.1 \text{ MHz}$ ; $1525 \text{ MHz} \leq f \leq 1610 \text{ MHz}$	-16 dBm (25 $\mu$ W)

### APPENDIX 3

#### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT NON-SPECIFIC SHORT RANGE DEVICES

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of  
Information and Communications)*

Frequency band	Main emission (radiated power or maximum magnetic field)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
13.553 ÷ 13.567 MHz	≤ 4.5 mW ERP	According to spurious emission limit 1	
26.957 ÷ 27.283 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
40.66-40.7 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
918 ÷ 923 MHz	≤ 25 mW ERP	According to spurious emission limit 2	<p>- Frequency band from 918 MHz to 918.4 MHz is used to protect radio communication systems using adjacent frequency bands.</p> <p>Relevant organizations and individuals may not operate devices at this frequency band.</p> <p>- Device must have LBT feature (Listen Before Talk) or operating time of device must be less than 1% duty cycle.</p>
2400 ÷ 2483.5 MHz	≤ 10 mW EIRP	According to spurious emission limit 2	
	≤ 100 mW EIRP and ≤100 mW/100 kHz EIRP for devices using FHSS or ≤ 10 mW/1 MHz EIRP for devices using other modulation techniques	According to spurious emission limit 3	<p>- Devices using spread-spectrum techniques.</p> <p>- Typical types of Non-specific Short Range Devices are devices having integrated radio receiver-transmitter modules according to Bluetooth and Zigbee standards, smart</p>



			bands and smart indoor control devices.
5725 ÷ 5850 MHz	≤ 25 mW EIRP	According to spurious emission limit 2	
24 ÷ 24.25 GHz	≤ 100 mW EIRP	According to spurious emission limit 2	
61 ÷ 61.5 GHz	≤ 100 mW EIRP	According to spurious emission limit 6	
122 ÷ 122.25 GHz	≤ 10 mW EIRP (above the bandwidth of 250 MHz)	According to spurious emission limit 6	
122.25 ÷ 123 GHz	≤ 100 mW EIRP	According to spurious emission limit 6	
244 ÷ 246 GHz	≤ 100 mW EIRP	According to spurious emission limit 6	

#### APPENDIX 4

#### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT CORDLESS PHONES

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
43.71 ÷ 44.00 MHz	≤ 183 μW ERP	≥ 32 dBc at 3m distance	- Frequency bands for the base unit - Device may only use frequency modulation telephony (F3E) or phase modulation telephony (G3E).
48.75 ÷ 49.51 MHz	≤ 183 μW ERP	≥ 32 dBc at 3m distance	- Frequency bands for the mobile unit - Device may only use frequency modulation telephony (F3E) or phase modulation telephony (G3E).
46.60 ÷ 46.98 MHz	≤ 183 μW ERP	≥ 32 dBc at 3m distance	- Frequency bands for the base unit - Device may only use

			frequency modulation telephony (F3E) or phase modulation telephony (G3E).
49.66 ÷ 50 MHz	≤ 183 μW ERP	≥ 32 dBc at 3m distance	- Frequency bands for the mobile unit - Device may only use frequency modulation telephony (F3E) or phase modulation telephony (G3E).
1880 ÷ 1900 MHz	≤ 250 mW EIRP	According to spurious emission limit 2	- Indoor use device.

### APPENDIX 5

#### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT MEDICAL IMPLANT COMMUNICATIONS SYSTEMS (MICS) AND MEDICAL IMPLANT TELEMETRY SYSTEMS (MITS)

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
401 ÷ 406 MHz	25 μW ERP	According to spurious emission limit 2	- Frequency bands for MICS. - The width of occupying channel shall not exceed 300 kHz. - MICS must have at least 9 frequency channels arranged on the 401 ÷ 406 MHz frequency band. - MICS must use the Listen Before Transmit techniques. - MICS may only transmit data when having the control from the external. In an emergency where problems which may cause danger to the life or health of the patient are discovered, MICS may immediately transmit data.

401 ÷ 402 MHz; 403.5 ÷ 403.8 MHz; 405 ÷ 406MHz	100 nW ERP	According to spurious emission limit 2	Frequency bands for MITS.
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## APPENDIX 6

### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT RADIO FREQUENCY IDENTIFICATION (RFID)

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

<b>Frequency band</b>	<b>Main emission (maximum radiated power)</b>	<b>Spurious emission (maximum power or minimum emission depletion)</b>	<b>Other conditions</b>
115 ÷ 150 kHz	≤ 4.5 mW ERP	According to spurious emission limit 1	- Center frequencies are 125 kHz and 134.2 kHz
13.553 ÷ 13.567 MHz	≤ 4.5 mW ERP	According to spurious emission limit 1	- Center frequency is 13.56 MHz
433.05 ÷ 434.79 MHz	≤ 10 mW ERP	≥ 32 dBc at 3m distance	- Center frequency is 433.92 MHz
866 ÷ 868 MHz	≤ 500 mW ERP	According to spurious emission limit 2	- Center frequency of channel n is calculated by the following formula: 865.9 + 0.2 n (MHz), with n = 1 ÷ 10
918 ÷ 923 MHz	≤ 500 mW ERP (*)	According to spurious emission limit 2	- 918-918.4 MHz frequency band is used to protect radio communication systems using adjacent frequency bands. Relevant organizations and individuals may not operate devices at this frequency band.  - The maximum allowed bandwidth of the hopping channel at 20 db depletion is 500 kHz.  - Radio Frequency Identification operates in the 918 ÷ 923 MHz frequency band must employ Frequency-Hopping Spread Spectrum (FHSS)

			techniques.
2446 ÷ 2454 MHz	≤ 500 mW EIRP	According to spurious emission limit 2	

(\*): Radio Frequency Identification applied to intelligent traffic systems (nonstop electronic toll collection systems) with the radiated power ranging from above 500 mW to 2000 mW ERP may use the 920-923 MHz frequency band when having obtained the license to use radio frequency.

#### APPENDIX 7

##### FREQUENCY CONDITIONS AND EMISSION LIMITS APPLIED TO LICENSE-EXEMPT RADIO DETECTION AND ALARM DEVICES

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)
16 ÷ 150 kHz	≤ 4.5 mW ERP	According to spurious emission limit 1
13.553 ÷ 13.567 MHz	≤ 4.5 mW ERP	According to spurious emission limit 1
29.7 ÷ 30.0 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output
146.35 ÷ 146.5 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output
240.15 ÷ 240.30 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output
300 ÷ 300.33 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output
312 ÷ 316 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output
444.4 ÷ 444.8 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output

#### APPENDIX 8

##### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT WIRELESS AUDIO DEVICES

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
3.155 ÷ 3.400 MHz	≤ 13.5 dB $\mu$ A/m measured at 10m distance	According to spurious emission limit 1	- Used for hearing aids only.
10.2 ÷ 11 MHz	≤ 4 $\mu$ W	According to spurious emission limit 1	- Used for hearing aids only. - The channel has the width not exceeding 200 kHz and must

			entirely locate within the prescribed frequency band.
40.66 ÷ 40.70 MHz	≤ 100 mW	≥40 dBc at transmitter output	The channel has the width not exceeding 200 kHz and must entirely locate within the prescribed frequency band.
87 ÷ 108 MHz	≤ 20 nW ERP	≥ 32 dBc at 3 distance	- Personal FM transmitter may only use 87 ÷ 108 MHz frequency band. - The channel has the width not exceeding 200 kHz and must entirely locate within the prescribed frequency band.
87 ÷ 108 MHz	≤ 3μW ERP	≥ 32 dBc at 3 distance	- The frequency band for Wireless Audio Device (excluding personal FM transmitters). - The channel has the width not exceeding 200 kHz and must entirely locate within the prescribed frequency band.
182.025 ÷ 182.975 MHz	≤ 30 mW ERP		- The channel has the width not exceeding 200 kHz and must entirely locate within the prescribed frequency band.
217.025 ÷ 217.975 MHz	≤ 30 mW ERP	≥40 dBc at transmitter output	- The channel has the width not exceeding 200 kHz and must entirely locate within the prescribed frequency band.
218.025 ÷ 218.475 MHz	≤ 30 mW ERP	≥40 dBc at transmitter output	- The channel has the width not exceeding 200 kHz and must entirely locate within the prescribed frequency band.
470 ÷ 694 MHz	≤ 30 mW ERP	≥40 dBc at transmitter output	- Wireless Audio Devices for events - The channel has the width not exceeding 200 kHz and must entirely locate within the prescribed frequency band. - Device must be automatically adjusted and may adjust operating frequency. - Device may not be operated on television channels which

		<p>are broadcasted in the operating region.</p> <p>- Minimum distance between the center frequency of device when it operates and adjacent or upper and lower adjacent frequencies of television channel(s) in the operating region is 400 kHz.</p> <p>- Device is not allowed to cause harmful interference to television receivers in the operation region.</p>
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### APPENDIX 9

#### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT REMOTE CONTROL DEVICES

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
115 ÷ 150 kHz	≤ 4.5 mW ERP	According to spurious emission limit 1	
26.957 ÷ 27.283 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
29.7 ÷ 30.0 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
34.995 ÷ 35.225 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
40.02 ÷ 40.98 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	- For controlling model airplanes
40.66 ÷ 40.70 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
50.01 ÷ 50.99 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	- For controlling model airplanes
72.00 ÷ 72.99 MHz	≤ 1 W ERP	≥40 dBc at transmitter output	- For controlling model airplanes
312 ÷ 316 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
433.05 ÷ 434.79 MHz	≤ 10 mW ERP	≥ 40 dBc at 3m distance	

## APPENDIX 10

### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT WIRELESS LOCAL AREA NETWORK (WLAN) DEVICES

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
2400 ÷ 2483.5 MHz	≤ 200 mW EIRP	According to spurious emission limit 3	
5150 ÷ 5250 MHz	≤ 200 mW EIRP and 10 mW/MHz EIRP	According to spurious emission limit 4	- For indoor use.
5250 ÷ 5350 MHz	≤ 200 mW EIRP and 10 mW/MHz EIRP	According to spurious emission limit 4	- Device must have Dynamic Frequency Selection (DFS) feature. - Transmit power control (TPC).
5470 ÷ 5725 MHz	≤ 1 W EIRP and 50 mW/MHz	According to spurious emission limit 4	- Device must have Dynamic Frequency Selection (DFS) feature. - Device must have Transmit power control (TPC) feature. Radio access systems operating on the 5470 ÷ 5725 MHz frequency band with the power of less than 500 mW EIRP are not required to comply with these conditions.
5725 ÷ 5850 MHz	≤ 1 W EIRP and 50 mW/MHz	According to spurious emission limit 4	

## APPENDIX 11

### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT TELEMETRY DEVICES

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
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		<b>depletion)</b>	
26.957 ÷ 27.283 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
29.70 ÷ 30.00 MHz	≤ 100 mW ERP	≥40 dBc at transmitter output	
40.50 ÷ 41.00 MHz	≤ 0.01 mW ERP	≥32 dBc at transmitter output	- For medical and biological applications only.
216 ÷ 217 MHz	≤ 0.01 mW ERP	≥40 dBc at transmitter output	- For medical and biological applications only.
433.05 ÷ 434.79 MHz	≤ 10 mW ERP	≥ 40 dBc at 3m distance	
24 ÷ 24.25 GHz	≤ 100 mW EIRP	According to spurious emission limit 2	

### APPENDIX 12

#### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT WIRELESS VIDEO TRANSMITTERS

(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)
2400 ÷ 2483.5 MHz	≤ 100 mW EIRP	According to spurious emission limit 2
5725 ÷ 5850 MHz	≤ 100 mW EIRP	According to spurious emission limit 2
10.50 ÷ 10.55 GHz	≤ 100 mW EIRP	According to spurious emission limit 2
24.00 ÷ 24.25 GHz	≤ 100 mW EIRP	According to spurious emission limit 2

### APPENDIX 13

#### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT WIDE BAND COMMUNICATION DEVICES

(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
5150 ÷ 5250 MHz	≤ 200 mW EIRP and 10 mW/MHz	According to spurious emission limit 4	- For indoor use.



	EIRP		
5250 ÷ 5350 MHz	≤ 200 mW EIRP and 10 mW/MHz EIRP	According to spurious emission limit 4	- Device must have Dynamic Frequency Selection (DFS) feature. - Device must have Transmit power control (TPC) feature.
5470 ÷ 5725 MHz	≤ 1 W EIRP and 50 mW/MHz	According to spurious emission limit 4	- Device must have Dynamic Frequency Selection (DFS) feature. - Device must have Transmit power control (TPC) feature. Radio access systems operating on the 5470 ÷ 5725 MHz frequency band with the power of less than 500 mW EIRP are not required to comply with these conditions.
5725 ÷ 5850 MHz	≤ 1 W EIRP and 50 mW/MHz	According to spurious emission limit 4	
57 ÷ 66 GHz	≤ 10 W EIRP	According to spurious emission limit 5	- Device must use integrated antenna. - Device is not set up outdoor at a fixed location.

#### APPENDIX 14

#### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT ULTRA-WIDE BAND COMMUNICATION DEVICES

(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
4200 ÷ 4800 MHz	≤ -70 dBm/MHz (mean power) ≤ -30 dBm/50 MHz (peak power)	Not applicable	- Limits on radiated power at other frequency bands must comply with Note 1. - Device is used indoor or in the environment where

		device is shielded against radio waves; - Not for use on airplanes.
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Note 1:

Frequency (f)	Mean power (EIRP) spectral density limits	Peak power (EIRP) spectral density limits, defined at 50MHz bandwidth
$f \leq 1.6$ GHz	-90 dBm/MHz	-50 dBm
$1.6$ GHz $< f \leq 2.7$ GHz	-85 dBm/MHz	-45 dBm
$2.7$ GHz $< f \leq 3.1$ GHz	-70 dBm/MHz	-36 dBm
$3.1$ GHz $< f \leq 3.4$ GHz	-70 dBm/MHz	-36 dBm
$3.4$ GHz $< f \leq 3.8$ GHz	-80 dBm/MHz	-40 dBm
$3.8$ GHz $< f \leq 4.2$ GHz	-70 dBm/MHz	-30 dBm
$4.8$ GHz $< f \leq 6$ GHz	-70 dBm/MHz	-30 dBm
$6$ GHz $< f \leq 8.5$ GHz	-41.3 dBm/MHz	0 dBm
$8.5$ GHz $< f \leq 9$ GHz	-65 dBm/MHz	-25 dBm
$9$ GHz $< f \leq 10.6$ GHz	-65 dBm/MHz	-25 dBm
$f > 10.6$ GHz	-85 dBm/MHz	-45 dBm

#### APPENDIX 15

##### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT AUTOMOTIVE RADAR

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)
76 ÷ 77 GHz	$\leq 316.23$ W EIRP (peak power)	According to spurious emission limit 7
77 ÷ 81 GHz	$\leq 316.23$ W EIRP (peak power, measured at 50 MHz bandwidth) and $\leq 0.5$ mW/MHz EIRP (mean power spectral density)	According to spurious emission limit 7

#### APPENDIX 16

##### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT INDUCTIVE LOOP

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or
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		<b>minimum emission depletion)</b>
9 ÷ 148.5 kHz	≤ 42 dBμA/m measured at 10m distance	According to spurious emission limit 1
6.765 ÷ 6.795 MHz	≤ 42 dBμA/m measured at 10m distance	According to spurious emission limit 1
326.5 kHz 340 kHz	≤-15 dBμA/m measured at 10m distance (in a 10 kHz bandwidth)	According to spurious emission limit 1

### APPENDIX 17

#### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT RADIO DEVICES PLACED ON FISHING VESSELS

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

<b>Frequency band</b>	<b>Main emission (maximum radiated power)</b>	<b>Spurious emission (maximum power or minimum emission depletion)</b>	<b>Other conditions</b>
26.96 MHz ÷ 27.41 MHz	≤12 W ERP (single-sideband amplitude modulation: AM/SSB) ≤4 W ERP (double-sideband amplitude modulation: AM/DSB, or angle modulation: frequency modulation and phase modulation (FM/PM))	According to spurious emission limit 2	- This frequency band is divided into 40 channels from channel 1 to channel 40; each frequency channel is corresponding to center frequency and using purposes specified in Note 1. - Note 2.

- Note 1: Center frequencies and using purposes of frequency channels

<b>Channel</b>	<b>Center frequency (MHz)</b>	<b>Using purposes</b>	<b>Channel</b>	<b>Center frequency (MHz)</b>	<b>Using purposes</b>
1	26.965	Communication channel	21	27.215	Communication channel
2	26.975		22	27.225	
3	26.985		23	27.235	
4	27.005		24	27.245	
5	27.015		25	27.255	

6	27.025		26	27.265	
7	27.035		27	27.275	
8	27.055		28	27.285	
<b>9</b>	<b>27.065</b>	<b>Safety and rescue channel</b>	29	27.295	
10	27.075	Communication channel	30	27.305	
<b>11</b>	<b>27.085</b>	<b>Calling channel</b>	31	27.315	
12	27.105	Communication channel	32	27.325	
13	27.115		33	27.335	
14	27.125		34	27.345	
15	27.135		35	27.355	
16	27.155		36	27.365	
17	27.165		37	27.375	
18	27.175		38	27.385	
<b>19</b>	<b>27.185</b>	<b>Calling channel</b>	39	27.395	
20	27.205	Communication channel	40	27.405	

In the above table, channels are provided for as follows:

*Safety and rescue channel* provides safety and rescue information.

*Communication channel* serves the exchange of information and messages.

*Calling channel* serves making of calls.

- Note 2:

#### 1.1. Conditions for using safety and rescue channel

1.1.1. In an emergency where people and vessels at sea may face danger, relevant organizations and individuals may, in addition to the use of channel 9 (serve safety and rescue information), create waves to attract attention on any channels in the Table of frequency allocations when sending distress signals.

1.1.2. When receiving distress signals, radio stations must immediately stop transmitting waves on the frequency which may cause interference to distress signals and keep listening in on frequencies designated for transmission of distress signals; reply and provide necessary assistance, and inform search and rescue agencies.

#### 1.2. Conditions for using calling channel

1.2.1. Calling channels (channel 11 and channel 19) are dedicated for making calls between fishing vessels.

1.2.2. Maximum length of call made on the calling channel is 1 minute. The calling station must say its name and call name of the receiving station (3 times) on the calling channel. Immediately after receiving response from the receiving station, the calling station must actively name the communication channel so that both stations communicate on such communication channel; the communication on the calling channel is not allowed.

#### 1.3. Conditions for using communication channel

1.3.1. Communication channel is selected from 37 channels according to the Table of frequency allocations (excluding safety and rescue channel, and calling channels). If the selected communication channel is interfered by other stations, the communication may be transferred to another communication channel to avoid the interference.

1.3.2. Communications between stations on a communication channel shall not exceed 5 minutes. If the exchange requires a period more than 5 minutes, the communication must be stopped for one minute before it is continued.

1.4. The following acts are prohibited:

1.4.1. Use a power exceeding the radiated power limits prescribed in this Appendix.

1.4.2. Cause harmful interference to the safety and rescue channel.

1.4.3. Use the safety and rescue channel for making calls and communications.

1.4.4. Use the calling channel for communication activities (unless the transmission of distress signals).

1.4.5. Make communications on the communication channel for a consecutive period of exceeding 5 minutes or generate any carrier interfering between calls.

1.4.6. Send call or identification signals consecutively or repeatedly for a period of more than 1 minute on the calling channel.

1.4.7. Send identification signals on two or several frequencies at the same time in order to contact with the only station.

## APPENDIX 18

### TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO LICENSE-EXEMPT LOW-POWER HANDIE-TALKIES

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

Frequency band	Main emission (maximum radiated power)	Spurious emission (maximum power or minimum emission depletion)	Other conditions
446.00 ÷ 446.2 MHz	≤ 500 mW ERP	According to spurious emission limit 8	<ul style="list-style-type: none"> <li>- Device uses digital technologies with the width of each frequency channel of 6.25 kHz or 12.5 kHz.</li> <li>- Center frequencies of 12.5 kHz channels: <math>446.00625 + n * 0.0125</math> (n=0-15)</li> <li>- Center frequencies of 6.25 kHz</li> </ul>

		<p>channels:  <math>446.003125+n*0.00625</math> (n=0-31)</p> <ul style="list-style-type: none"> <li>- Device must use integrated antenna. Device must be designed so as not to adjust frequencies out of the 446-446.2 MHz frequency band and not to increase the power to more than 500 mW.</li> <li>- Device must be automatically broken when it operates for a period of exceeding 180 seconds.</li> <li>- Low-power handie-talkies which operate on the 446.0 – 446.2 MHz frequency band and comply with corresponding technical and operational conditions shall be exempted from radio frequency licensing as from January 01, 2020.</li> <li>- The frequency channel should be checked before making communications to avoid interference.</li> </ul>
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**APPENDIX 19**

**TECHNICAL AND OPERATIONAL CONDITIONS APPLIED TO RADIO DEVICES USED FOR MARINE SAFETY AND RESCUE PURPOSES**

*(Enclosed with the Circular No. 46/2016/TT-BTTTT dated December 26, 2016 by Minister of Information and Communications)*

<b>Frequency band</b>	<b>MAIN EMISSION</b>	<b>SPURIOUS EMISSION (maximum power or minimum emission depletion)</b>	<b>TYPE OF RADIO DEVICE</b>
156.025 ÷ 162.025 MHz (*)	≤ 7.7 W ERP (12.5 W EIRP)	According to spurious emission limit 9	Automatic Identification System (AIS)
406.0 ÷ 406.1 MHz	≤ 12.2 W ERP	≥ 20 dBc at frequency offset from ± 3 kHz to ± 7 kHz in comparison to carrier frequency;	Emergency Position Indicating Radio Beacon (EPIRB).

		<p>≥ 30 dBc at frequency offset from ± 7 kHz to ± 12 kHz in comparison to carrier frequency;</p> <p>≥ 35 dBc at frequency offset from ± 12 kHz to ± 24 kHz in comparison to carrier frequency;</p> <p>≥ 40 dBc at frequency offset of -24 kHz in comparison to carrier frequency to 406.0 MHz frequency, and at frequency offset of +24 kHz in comparison to carrier frequency to 406.1 MHz frequency.</p>	
9200 ÷ 9500 MHz	≥ 400 mW EIRP	Not applicable	Search and Rescue Radar Transponder (SART).
161.9625 ÷ 161.9875 MHz 162.0125 ÷ 162.0375 MHz	≤ 7.7 W ERP (12.5 W EIRP)	According to spurious emission limit 10	AIS Search and Rescue Radar Transponder (AIS-SART)

(\*): International default operating frequency: AIS1 (161.9625 ÷ 161.9875 MHz), AIS2 (162.0125 ÷ 162.0375 MHz).