



PT. DIMULTI PILAR NARMADI

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SHORT RANGE DEVICE REQUIREMENTS

What is meant by Short Range Device Telecommunication Equipment? This question is explained in page 3 of the regulation on article 1 (Pasal 1) paragraph 2. Based on this paragraph, Short Range Device Telecommunication Equipment consists of:

1. Bluetooth
2. Telecommunication Device with Transmit Power less than 10 mW (commonly called as "Low Power Device")
3. Radio Frequency Identification (RFID)
4. Near Field Communication (NFC)
5. Wireless Personal Area Network (WPAN) IEEE 802.15.4;
6. Intelligent Transport System; and
7. Other Short Range Device Telecommunication equipment

CONFORMITY REQUIREMENTS

Below is the Conformity Requirement of Each SRD Telecommunication Device.

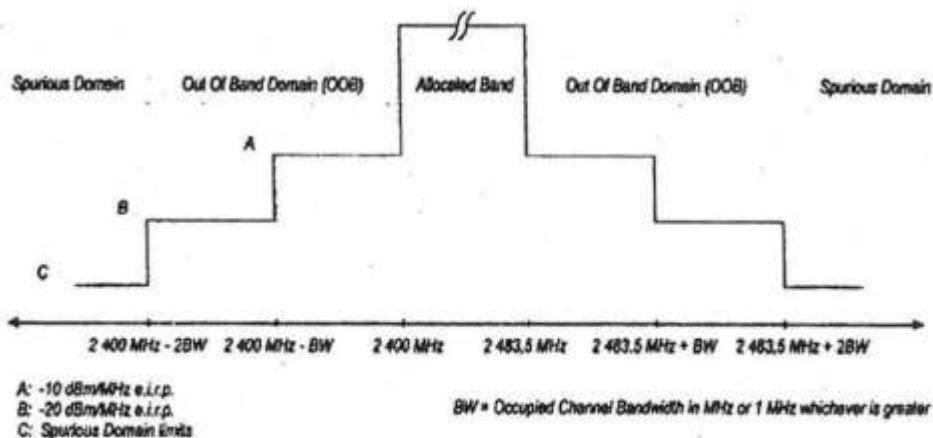
BLUETOOTH

1. Radio Frequency : 2400 - 2483,5 MHz
2. Maximum Transmit Power : ≤ -10 dBW (100 mW) EIRP
3. Spurious Emission of transmitter and Receiver : Based on table below

Tabel 2.9 *Category B of Spurious Domain Emission Limits*
(ITU-R Rec. SM.329-12 §4.3, Table 3)

Type of SRD	Limits
SRD operating below 30 MHz	$29-10\log(f[\text{kHz}/9])\text{dB}(\mu\text{A}/\text{m})$ at 10m for $9\text{ kHz} < f < 10\text{ MHz}$ -1 dB $\mu\text{A}/\text{m}$ at 10m for $10\text{ MHz} < f < 30\text{MHz}$ -36 dBm for $30\text{ MHz} \leq$ except frequencies below <1GHz -54 dBm for f within the bands 47-74 MHz, 87.5-118 MHz, 174-230 MHz, 470-862 MHz -30 dBm for $1\text{ GHz} \leq f <$ (see ITU-R Rec.SM.329-12 §2.5)
SRD operating above 30 MHz	-36 dBm for $9\text{ kHz} \leq$ except frequencies below < 1GHz -54 dBm for f within the bands 47-74 MHz, 87.5-118 MHz, 174-230 MHz, 470-862 MHz -30 dBm for $1\text{ GHz} \leq f <$ (see ITU-R Rec.SM.329-12 §2.5)

- 4. Radio Standard and Testing Standard : EN 300 328 or EN 300 440
- 5. Output Power : Based on the Bluetooth SIG standard (mandatory)
- 6. Allowed Spread Spectrum are Frequency Hopping Spread Spectrum (FHSS) or Direct Sequence Spread Spectrum (DSSS) (voluntary)
- 7. Transmitter Unwanted in the out-off-band domain follows below picture (mandatory)



Gambar 1. Transmit Mask (ETSI 300. 328)

- 8. Transmitter Unwanted in Spurious Domain based on following table

Tabel 2.2 Karakteristik Utama Alat dan/atau Perangkat SRD
 (ETSI 300. 328)

Frequency Range	Operating		Standby	
	in 100 kHz	in 1 MHz	in 100 kHz	in 1 MHz
1 GHz - 12,75 GHz	n.a	-30 dBm (1 uW)	n.a	- 47 dBm (20nW)



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LOW POWER TELECOMMUNICATION DEVICE UNDER 10 MW

1. Frequency Radio Allocation :

1. 3 - 190 kHz;	20. 300 - 322 MHz;
2. 10,2 - 11 MHz;	21. 380,2125 - 381,3125 MHz;
3. 13,553 -13,567 MHz;	22. 402 - 405 MHz;
4. 26,957 - 27,283 MHz;	23. 407 - 425 MHz;
5. 29,7 - 47 MHz;	24. 430 - 432 MHz;
6. 40,66 - 40,7 MHz;	25. 433 - 434,79 MHz;
7. 44 - 50 MHz;	26. 470 - 806 MHz;
8. 72,610 -73,910 MHz;	27. 863 - 865 MHz;
9. 74,000 - 74,800 MHz;	28. 868,6 - 868,7 MHz;
10. 75.4 - 76 MHz;	29. 869,2 - 869,3 MHz;
11. 84 - 87 MHz;	30. 916,1-916,5MHz;
12. 87,5 - 108 MHz;	31. 917,3-917,7 MHz;
13. 8,2 - 138,45 MHz;	32. 918,5 - 918,9 MHz;
14. 169,4 - 169,8125 MHz;	33. 919,5 - 923 MHz;
15. 173,965-216 MHz;	34. 2 400 - 2 483.5 MHz;
16. 216 - 225 MHz;	35. 5 250 - 5 350 MHz;
17. 230 - 242 MHz;	36. 5 725 - 5 825 MHz;
18. 244 - 250 MHz;	37. 24 - 24,25 GHz.
19. 266,75 - 267,25 MHz;	

2. Transmit Power Maximum : ≤ 10 Mw EIRP

3. Radiated Emission Limit (FCC Part 15.209)

Frekuensi Radio (MHz)	Field Strength (microVolts/meter)	Jarak Pengukuran (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Or spurious emission limit is ≤ -26 dBm (ITU R-Rec SM-.329-12).

4. Transmit antenna has to be integrated with the product and not allowed to be added with some kind of transmit power amplifying device

5. Frequency error : $\leq \pm 50$ Hz

6. Receiver Sensitivity maximum : -113 dBm

RADIO FREQUENCY IDENTIFICATION (RFID)

Technical Characteristic of RFID Telecommunication Device

No	Radio Frequency Range	Maximum Transmit Power	Spurious Emission of Transmitter and Receiver	Radio Testing Standard
1	16 - 150 KHz	≤ 66 dBμA/m at 10 meters of distance	Based on table below	EN 300 330
2	6765 - 6795 KHz	≤ 42 dBμA/m at 10 meters of distance	Based on table below	EN 300 330
3	7400 – 8800 KHz	≤ 9 dBμA/m at 10 meters of distance	Based on table below	EN 300 330
4	13, 553 - 13,567 MHz	≤ 10 mW ERP or ≤ 94 dBμA/m at 10 meters of distance	Based on table below	FCC Part 12 § 15.225 (a) and ANSI C63.10-2013; or EN 302 291-1
5	920 - 923 MHz	400 Mw EIRP	Based on table below	FCC Part 15 § 15.249 (a) and ANSI C63.10-2013; or EN 302 208

*Tabel 2.9 Category B of Spurious Domain Emission Limits
 (ITU-R Rec. SM.329-12 §4.3, Table 3)*

Type of SRD	Limits
SRD operating below 30 MHz	$29-10\log(f[\text{kHz}/9])\text{dB}(\mu\text{A}/\text{m})$ at 10m for 9 kHz < f < 10 MHz -1 dBμA/m at 10m for 10 MHz < f < 30MHz -36 dBm for 30 MHz ≤ except frequencies below <1GHz -54 dBm for f within the bands 47-74 MHz, 87.5-118 MHz, 174-230 MHz, 470-862 MHz -30 dBm for 1 GHz ≤ f < (see ITU-R Rec.SM.329-12 §2.5)
SRD operating above 30 MHz	-36 dBm for 9 kHz ≤ except frequencies below < 1GHz -54 dBm for f within the bands 47-74 MHz, 87.5-118 MHz, 174-230 MHz, 470-862 MHz -30 dBm for 1 GHz ≤ f < (see ITU-R Rec.SM.329-12 §2.5)



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For RFID telecommunication device that uses transmit power more than 400 mW EIRP and less than 2000 mW EIRP within frequency range 920-923 MHz, should obtain Radio Frequency License (ISR) first, and should comply with below characteristics.

No	Radio Frequency Range	Maximum Transmit Power	Spurious Emission of Transmitter and Receiver	Radio and Testing Standard	Application
1	920 – 923 MHz	> 400 mW EIRP ≤ 2000 mW EIRP	Based on Table 2.9 above	FCC Part 15 § 15.249 (a) and ANSI C63.10-2013; or EN 300 220-1 or EN 302 208	Electronic Paid Road

NFC TELECOMMUNICATION DEVICE

Technical Characteristic of NFC Telecommunication Device

No	Radio Frequency Range	Maximum Transmit Power	Spurious Emission of Transmitter and Receiver	Radio and Testing Standard
1	13, 553 - 13,567 MHz	≤ 100 mW ERP or ≤ 94 dBμA/m at 10 meters of distance	Based on table 2.9 above	FCC Part 12 § 15.225 (a) and ANSI C63.10-2013; or EN 302 291-1

WIRELESS PERSONAL AREA NETWORK (WPAN) IEEE 802.15.4

Technical characteristic of Wireless Personal Area Network (WPAN) IEEE 802.15.4

No	Radio Frequency Range	Maximum Transmit Power	Spurious Emission of Transmitter and Receiver	Radio and Testing Standard
1	2 4000 – 1 483,5 MHz	≤ 100 mW ERP	Based on table 2.9 above	FCC Part 15 § 15.249 (a) and ANSI C63.10-2013; or EN 300 440

OTHER SHORT RANGE TELECOMMUNICATION DEVICE

NO.	FREQUENCY RANGE	Max. Transmit Power	Spurious Emission	Radio and Testing Standard	APPLICATION
1.	16 – 150 kHz	≤ 66 dBμA/m pada jarak 10 meter	Sesuai dengan Tabel 2.9	EN 300 330	Sistem aliran induksi (<i>induction loop system</i>)
2.	16 – 150 kHz	≤ 100 dBμV/m pada jarak 3 meter	Sesuai dengan Tabel 2.9	EN 300 330	Radio detection, alarm system
3.	9 – 315 kHz	≤ 30 dBμA/m pada jarak 10 meter	-	EN 302 195	Medical and biological telemetry
4.	510 – 1 600 kHz	≤ 57 dBμV/m pada jarak 3 meter	Sesuai dengan Tabel 2.9	FCC Part 15 §15.221 (b) and ANSI C63.10-2013; or EN 300 330	Mikrofon nirkabel (<i>wireless microphone</i>)
5.	6 765 – 6 795 kHz	≤ 42 dBμA/m pada jarak 10 meter	Sesuai dengan Tabel 2.9	EN 300 330	Sistem aliran induksi (<i>induction loop system</i>)
6.	7 400 – 8 800 kHz	≤ 9 dBμA/m pada jarak 10 meter	Sesuai dengan Tabel 2.9	EN 300 330	Sistem aliran induksi (<i>Induction loop system</i>)
7.	13,553 – 13,567 MHz	≤ 100 mW ERP atau ≤ 94 dBμV/m pada jarak 10 meter	Sesuai dengan Tabel 2.9	FCC Part 15 §15.225 (a) and ANSI C63.10-2013; atau EN 302 291-1	Close range inductive data communication
				EN 300 330	Non-specific SRD
8.	26,96 – 27,28 MHz	≤ 100 mW ERP	Sesuai dengan Tabel 2.9	FCC Part 15 §15.227 and ANSI C63.10-2013; atau EN 300 220-1 atau EN 300 220-2	Remote control of garage door, cameras, toys, and miscellaneous devices Bandwidth 10 kHz
9.	26,96 – 27,28 MHz	≤ 500 mW ERP	Sesuai dengan Tabel 2.9	EN 300 433 atau EN 300 224	On site radio paging system
10.	26,96 – 27,28 MHz	≤ 65 dBμV/m pada jarak 10 meter atau ≤ 500 mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Remote control of aircraft and glider models, telemetry, detection, and alarm systems



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11.	29,7 – 30 MHz	≤ 500 mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	<i>Remote control of aircraft and glider models, telemetry, detection, and alarm systems</i>
12.	40,5 – 41 MHz	$\leq 0,01$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	<i>Medical and biological telemetry</i>
13.	40,66 – 40,70 MHz	≤ 65 dB μ V/m pada jarak 10 meter	Sesuai dengan Tabel 2.9	FCC Part 15 §15.229 and ANSI C63.10-2013; atau EN 300 220-1 atau EN 300 220-2	Mikrofon nirkabel, <i>Non-specific SRD</i>
14.	40,66 – 40,70 MHz	≤ 500 mW ERP	Sesuai dengan Tabel 2.9	EN 300 224	<i>On-Site Radio Paging System</i>
15.	72,08 MHz	$\leq 1 000$ mW ERP	Sesuai dengan Tabel 7	EN 300 390 atau EN 300 113	<i>Wireless modem, data communication system</i>
16.	72,20 MHz	$\leq 1 000$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 390 atau EN 300 113	<i>Wireless modem, data communication system</i>
17.	72,40 MHz	$\leq 1 000$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 390 atau EN 300 113	<i>Wireless modem, data communication system</i>
18.	72,60 MHz	$\leq 1 000$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 390 atau EN 300 113	<i>Wireless modem, data communication system</i>
19.	88,00 – 108 MHz	≤ 60 dB μ V/m pada jarak 10 meter	Sesuai dengan Tabel 2.9	FCC Part 15 §15.239 and ANSI C63.10-2013; atau EN 300 220-1	Mikrofon nirkabel (<i>wireless microphone</i>), FM transmitter untuk <i>media player</i>
20.	146,35 – 146,50 MHz	≤ 100 mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Alat pendeteksi radio (<i>radio detection</i>), sistem alarm
21.	158,275/ 162,875 MHz	$\leq 1 000$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 390 atau EN 300 113	<i>Wireless modem, data communication system</i>
22.	158,325/ 162,925 MHz	$\leq 1 000$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 390 atau EN 300 113	<i>Wireless modem, data communication system</i>



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23.	170,275 MHz	$\leq 1\ 000$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Pengendali radio jarak jauh dari alat pengangkat berat (<i>remote control of cranes and loading arms</i>)
24.	170,375 MHz	$\leq 1\ 000$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Pengendali radio jarak jauh dari alat pengangkat berat (<i>remote control of cranes and loading arms</i>)
25.	173,575 MHz	$\leq 1\ 000$ mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Pengendali radio jarak jauh dari alat pengangkat berat (<i>Remote control of cranes and loading arms</i>)
26.	173,675 MHz	≤ 1000 mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Pengendali radio jarak jauh dari alat pengangkat berat (<i>Remote control of cranes and loading arms</i>)
27.	180,00 – 200,00 MHz	≤ 112 dB μ V/m pada jarak 10 meter	Sesuai dengan Tabel 2.9	EN 300 422-1 atau EN 300 422-4	Mikrofon nirkabel (<i>wireless microphone</i>), Alat bantu dengar (<i>Hearing Audio assistance aids</i>)
28.	240,15 – 240,30 MHz	≤ 100 mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Alat pendeteksi radio (<i>radio detection</i>), <i>system alarm</i>
29.	300 – 300,33 MHz	≤ 100 mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Alat pendeteksi radio (<i>radio detection</i>), <i>system alarm</i>
30.	312,00 – 316,00 MHz	≤ 100 mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Alat pendeteksi radio (<i>radio detection</i>), <i>system alarm</i>



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31.	444,40 – 444,80 MHz	≤100 mW ERP	Sesuai dengan Tabel 2.9	EN 300 220-1	Alat pendeteksi radio (<i>radio detection</i>), <i>system alarm</i> , <i>Telecommand</i>
32.	487 – 694 MHz	≤ 30 mW ERP	Sesuai dengan Tabel 2.9	EN 300 422-1, EN 300 422-4 atau EN 300 220-1	Wireless Microphone, <i>hearing/ audio assistance aids</i>
33.	920 – 923 MHz	≤ 400 mW EIRP	Sesuai dengan Tabel 2.9	FCC <i>Part 15</i> §15.249 and ANSI C63.10-2013; atau EN 300 220-1 atau EN 302 208	<i>Radio telemetry</i> , <i>Telecommand</i>
34.	2 400 – 2 483,5 MHz	≤ 100 mW ERP	Sesuai dengan Tabel 2.9	FCC <i>Part 15</i> §15.249 and ANSI C63.10-2013; atau EN 300 440	<i>Wireless Video Transmitter</i> , dan aplikasi SRD lainnya (contohnya perangkat radio determinasi)
35.	5 150 – 5 250 MHz	EIRP ≤ 200 mW, dengan ketentuan: 1. Pengguna- an harus <i>indoor</i> ; dan 2. Pengope- rasiannya harus menerap- kan teknik mekanisme <i>Dynamic Frequency Selection (DFS)</i> dan <i>Transmit Power Control (TPC)</i> secara default (bukan <i>optional</i>).	Sesuai dengan Tabel 2.9	FCC <i>Part 15</i> §15.407(1) 5.15- 5.25 GHz (2)5.25- 5.35 GHz atau EN 301 893 atau EN 300 440	Aplikasi SRD
36.	5 250 – 5 350 MHz		Sesuai dengan Tabel 2.9	FCC <i>Part 15</i> §15.407(1) 5.15- 5.25 GHz (2)5.25- 5.35 GHz atau EN 301 893 atau EN 300 440	Aplikasi SRD



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37.	5 725 – 5 825 MHz	≤ 100 mW ERP	Sesuai dengan Tabel 2.9	EN 300 440	Aplikasi SRD
38.	10,50 – 10,55 GHz	≤ 117 dB μ V/m pada jarak 10 meter	Sesuai dengan Tabel 2.9	EN 300 440	<i>Wireless Video Transmitter,</i> dan aplikasi SRD lainnya (contohnya perangkat radio determinasi)
39.	24,00 – 24,25 GHz	≤ 100 mW EIRP	Sesuai dengan Tabel 2.9	EN 302 858, EN 300 440	<i>Wireless Video Transmitter,</i> dan aplikasi SRD lainnya (contohnya perangkat radio determinasi), kecuali perangkat <i>Radar Gun</i>
40.	61 – 61,5 GHz	≤ 100 mW EIRP	Sesuai dengan Tabel 2.9	EN 305 550-1	<i>Non-Specific SRD</i>
41.	76 – 77 GHz	Sesuai dengan Peraturan Perundang-undangan			Sistem radar jarak pendek pada kendaraan bermotor (Automotive <i>Short Range Radar System</i>)