ISM Band

The ISM radio bands are portions of the radio spectrum reserved internationally for *industrial, scientific, and medical* (**ISM**) purposes, excluding applications in telecommunications. Examples of applications for the use of radio frequency (RF) energy in these bands include RF heating, microwave ovens, and medical diathermy machines. The powerful emissions of these devices can create electromagnetic interference and disrupt radio communication using the same frequency, so these devices are limited to certain bands of frequencies. In general, communications equipment operating in ISM bands must tolerate any interference generated by ISM applications, and users have no regulatory protection from ISM device operation in these bands.

Despite the intent of the original allocations, in recent years the fastest-growing use of these bands has been for short-range, low-power wireless communications systems, since these bands are often approved for such devices, which can be used without a government license, as would otherwise be required for transmitters; ISM frequencies are often chosen for this purpose as they already must tolerate interference issues. Cordless phones, Bluetooth devices, near-field communication (NFC) devices, garage door openers, baby monitors, and wireless computer networks (Wi-Fi) may all use the ISM frequencies, although these low-power transmitters are not considered to be ISM devices.

The ISM bands

designation	Midband	Frequency Range	Availability	Application Areas	Applications in the band
-	**6,78 MHz**	6,765 - 6,795 MHz	according to local regulations	mobile services	
-	**13 MHz**	13,553 - 13,567 MHz	Worldwide	mobile services, aeronautical communication (helicon double-layer ion thruster)	Wiegand, RFID, NFC
-	**27 MHz**	26,957 - 27,283 MHz	Worldwide	CB, mobile services, aeronautical communication	NFC
-	**40,68 MHz**	40,66 - 40,7 MHz	Worldwide	satellite broadcast communication, mobile services	
-	**433,92 MHz**	433,05 - 434,79 MHz	Europe, Africa	radio amateur communication	RFID, NFC, DASH7, HC-12 Arduino modul
UHF ISM	USA: **908,42 MHz** Europe: **868,42 MHz**	USA: 902 - 928 MHz Europe: 865 - 868 MHz	America Europe	radio amateur communication	ZigBee, RFID, NFC, DASH7, Z-Wave

designation	Midband	Frequency Range	Availability	Application Areas	Applications in the band
S-band ISM[1]	**2,4 GHz**	2,4 - 2,5 GHz	Worldwide	radio amateur and satellite communication, microwave power transmission, induction heating, wireless modems	Bluetooth, Bluetooth LE, Wi-Fi, ZigBee, RFID, NFC, Thread, MiWi, nRF24
C-band ISM[2]	**5,7 GHz**	5,725 - 5,875 GHz	Worldwide	radio amateur and satellite communication, wireless modems	Wi-Fi
UWB	**3,1..10,6 GHz**	3,1 - 10,6 GHz	Worldwide	UWB, “pulse radio”	
Ku-band	**11 GHz**	10,95 - 12,7 GHz	Worldwide	satellite communication	Starlink Downlink
Ku-band	**14 GHz**	14,0 - 14,5 GHz	Worldwide	satellite communication	Starlink Uplink
Ka-band	**18 GHz**	17,3 - 18,6 GHz	Worldwide	satellite communication	Starlink Downlink
Ka-band	**28 GHz**	27,5 - 29,1 GHz	Worldwide	satellite communication	Starlink Uplink
K-band	**24 GHz**	18 - 27 GHz	Worldwide	short-range radar systems, vehicular speed detection	Radar Module Rd-xx
X-band	**12 GHz**	8 - 12 GHz	Worldwide	crucial for weather radar, military tracking, space communication	
-	**61,25 GHz**	61 - 61,5 GHz	according to local regulations	satellite communication	
-	**122,5 GHz**	122 - 123 GHz	according to local regulations	satellite communication	
-	**245 GHz**	244 - 246 GHz	according to local regulations	satellite communication	

[1]: The S-band frequency range: 2-4 GHz
[2]: The C-band frequency range: 4-8 GHz

Sources

source: https://en.wikipedia.org/wiki/ISM_band

ISM topics on lamaPLC

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• ISM Band	2026/04/23 21:51	ism, ism band, rfid, nfc, dash7, hc-12, arduino, zigbee, z-wave, bluetooth, wi-fi, thread, miwi, nrf24, starlink, wiegand, rf, communication, bus, radio, ku band, ka band, k band, x band
• lamaPLC Communication: Bluetooth basic	2026/04/23 21:51	communication, bus, bluetooth, ism, ieee, 802.15.1, ble, lmp, l2cap, rfcomm, iot, arduino, hc-05, hc-06
• lamaPLC Communication: DASH7	2026/04/23 21:51	bus, communication, dash7, ism, srd, aes 128, d7a, blast, iot, rfid
• lamaPLC Communication: NRF24	2024/11/16 02:26	bus, communication, nrf24, ism, ism band, gfsk, rpd, arduino
• lamaPLC Communication: Z-Wave	2026/04/23 21:51	communication, ethernet, bus, ip, z-wave, ism
• lamaPLC Communication: Zigbee	2026/04/23 21:51	communication, ethernet, bus, ip, zigbee, wpan, bluetooth, wi-fi, ism, ieee 802.15.4, zdo, zigbee pro, zc, zr, zed, smart energy, homegrid, homeplug, powerline, ipso, sunspec, 6lowpan, ipv6, rf4ce

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