

Guide to Emission Designators

An **emission designator** utilizes a seven-character “word” to represent the bandwidth, modulation, nature of signal, and type of information transmitted by a particular radio. The emission designator is required in most FCC radio applications.

An **emission designator** consists of seven characters as follows:

- The first four characters identify the necessary bandwidth required to transmit the desired information at the rate and with the quality required for the system employed;
- The fifth character identifies the type of modulation of the main carrier;
- The sixth character identifies the nature of signal(s) modulating the main carrier;
- The seventh character identifies the type of information to be transmitted.

Detailed information and examples of each of the four components are provided below.

Necessary Bandwidth – First Four Characters

The necessary bandwidth is to be expressed using three numerals and one letter. The letter occupies the position of the decimal point and represents the unit of bandwidth. The first character can be neither zero, K, M, nor G; it must be a non-zero digit or H. The necessary bandwidths must be rounded to three significant digits. The rounded value of the necessary bandwidth must follow the syntax below:

- between 0.00100 and 999 Hz shall be expressed in Hz (letter H);
- between 1.00 and 999 kHz shall be expressed in kHz (letter K);
- between 1.00 and 999 MHz shall be expressed in MHz (letter M);
- between 1.00 and 999 GHz shall be expressed in GHz (letter G).

Examples:

Frequency	Bandwidth Designator
0.002 Hz	H002
0.1 Hz	H100
25.3 Hz	25H3
400 Hz	400H
2.4 kHz	2K40
6 kHz	6K00
12.5 kHz	12K5
180.4 kHz	180K
180.5 kHz	181K
180.7 kHz	181K
1.25 MHz	1M25
2 MHz	2M00
10 MHz	10M0
202 MHz	202M
5.65 GHz	5G65

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Types of Modulation of the Main Carrier – Fifth Character

Description	Symbol
Emission of an unmodulated carrier	N
Emission in which the main carrier is amplitude-modulated (including cases where sub-carriers are angle-modulated):	
Double-sideband	A
Single-sideband, full carrier	H
Single-sideband, reduced or variable level carrier	R
Single-sideband, suppressed carrier	J
Independent sidebands	B
Vestigial sideband	C
Emission in which the main carrier is angle-modulated:	
Frequency modulation	F
Phase modulation	G
Emission in which the main carrier is amplitude and angle-modulated either simultaneously or in a pre-established sequence	D
Emission of pulses: (see note below)	
Sequence of unmodulated pulses	P
A sequence of pulses:	
Modulated in amplitude	K
Modulated in width/duration	L
Modulated in position/phase	M
In which the carrier is angle-modulated during the period of the pulse	Q
Which is a combination of the foregoing or is produced by other means	V
Cases not covered above, in which an emission consists of the main carrier modulated, either simultaneously or in pre-established sequence, in a combination of two or more of the following modes: amplitude, angle, pulse	W
Cases not otherwise covered	X

NOTE: Whenever frequency modulation "F" is indicated, Phase modulation "G" is also acceptable. Emissions where the main carrier is directly modulated by a signal which has been coded into quantized form (e.g. pulse code modulation) should be designated under amplitude modulation or angle modulation.

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Nature of Signal(s) Modulating the Main Carrier – Sixth Character

Description	Symbol
No modulating signal	0
A single channel containing quantized or digital information without the use of a modulating sub-carrier, excluding time-division multiplex	1
A single channel containing quantized or digital information with the use of a modulating sub-carrier, excluding time-division multiplex	2
A single channel containing analog information	3
Two or more channels containing quantized or digital information	7
Two or more channels containing analog information	8
Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analog information	9
Cases not otherwise covered	X

Type of Information to be Transmitted – Seventh Character

Description	Symbol
No information transmitted	N
Telegraphy - for aural reception	A
Telegraphy - for automatic reception	B
Facsimile	C
Data transmission, telemetry, telecommand	D
Telephony (including sound broadcasting)	E
Television (video)	F
Combination of the above	W
Cases not otherwise covered	X