



NOTES FOR COMPLETING REPORT OF IRREGULARITY OR INTERFERENCE FORM

Definitions (ITU Regulations)

Interference

1.166 *interference*: The effect of unwanted energy due to one or a combination of *emissions, radiations, or inductions* upon reception in a *radiocommunication* system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy.

1.167 *permissible interference*³: Observed or predicted *interference* which complies with quantitative *interference* and sharing criteria contained in these Regulations or in ITU-R Recommendations or in special agreements as provided for in these Regulations.

1.168 *accepted interference*³: *Interference* at a higher level than that defined as *permissible interference* and which has been agreed upon between two or more *administrations* without prejudice to other *administrations*.

1.169 *harmful interference*: *Interference* which endangers the functioning of a *radionavigation service* or of other *safety services* or seriously degrades, obstructs, or repeatedly interrupts a *radiocommunication service* operating in accordance with Radio Regulations (CS).

Typical Emission Classification Characteristics as used by the IARU Monitoring System:

Emission key to be used: A3E=AM, J3E/U=USB, J3E/L =LSB or F1B=RTTY, P0N=Pulse Radar (OHR)

The emission bandwidth is inserted before the classification letters. More information below:

³ **1.167.1** and **1.168.1** The terms “permissible interference” and “accepted interference” are used in the coordination of frequency assignments between *administrations*.



APPENDIX 1 (REV.WRC-19)

Classification of emissions and necessary bandwidths

(See Article 2)

§ 1 1) Emissions shall be designated according to their necessary bandwidth and their classification as explained in this Appendix.

2) Formulae and examples of emissions designated in accordance with this Appendix are given in Recommendation ITU-R SM.1138-3. Further examples may be provided in other ITU-R Recommendations. These examples may also be published in the Preface to the International Frequency Information Circular (BR IFIC). (WRC-19)

Section I – Necessary bandwidth

§ 2 1) The necessary bandwidth, as defined in No. 1.152 and determined in accordance with the formulae and examples, shall be expressed by three numerals and one letter. The letter occupies the position of the decimal point and represents the unit of bandwidth. The first character shall be neither zero nor K, M or G.

2) Necessary bandwidths¹:

between 0.001 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).

3) For the full designation of an emission, the necessary bandwidth, indicated in four characters, shall be added just before the classification symbols. When used, the necessary bandwidth shall be determined by one of the following methods:

3.1) use of the formulae and examples of necessary bandwidths and designation of corresponding emissions given in Recommendation ITU-R SM.1138-3; (WRC-19)

3.2) computation, in accordance with other ITU-R Recommendations;

3.3) measurement, in cases not covered by § 3.1) or 3.2) above.

¹ Examples:

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

**Section II – Classification**

§ 3 The class of emission is a set of characteristics conforming to § 4 below.

§ 4 Emissions shall be classified and symbolized according to their basic characteristics as given in Sub-Section IIA and any optional additional characteristics as provided for in Sub-Section IIB.

§ 5 The basic characteristics (see Sub-Section IIA) are:

- 1) first symbol – type of modulation of the main carrier;
- 2) second symbol – nature of signal(s) modulating the main carrier;
- 3) third symbol – type of information to be transmitted.

Modulation used only for short periods and for incidental purposes (such as, in many cases, for identification or calling) may be ignored provided that the necessary bandwidth as indicated is not thereby increased.

Sub-Section IIA – Basic characteristics

§ 6	1) <i>First symbol</i> – Type of modulation of the main carrier	
1.1)	Emission of an unmodulated carrier	N
1.2)	Emission in which the main carrier is amplitude-modulated (including cases where sub-carriers are angle-modulated)	
	1.2.1) Double-sideband	A
	1.2.2) Single-sideband, full carrier	H
	1.2.3) Single-sideband, reduced or variable level carrier	R
	1.2.4) Single-sideband, suppressed carrier	J
	1.2.5) Independent sidebands	B
	1.2.6) Vestigial sideband	C
1.3)	Emission in which the main carrier is angle-modulated	
	1.3.1) Frequency modulation	F
	1.3.2) Phase modulation	G
1.4)	Emission in which the main carrier is amplitude-and angle-modulated either simultaneously or in a pre-established sequence	D
1.5)	Emission of pulses ²	
	1.5.1) Sequence of unmodulated pulses	P
	1.5.2) A sequence of pulses	
	1.5.2.1) modulated in amplitude	K
	1.5.2.2) modulated in width/duration	L

² 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 § 1.2) or 1.3).



	1.5.2.3)	modulated in position/phase	M
	1.5.2.4)	in which the carrier is angle-modulated during the angle-period of the pulse	Q
	1.5.2.5)	which is a combination of the foregoing or is produced by other means	V
1.6)		Cases not covered above, in which an emission consists of the main carrier modulated, either simultaneously or in a pre-established sequence, in a combination of two or more of the following modes: amplitude, angle, pulse	W
1.7)		Cases not otherwise covered	X
	2)	<i>Second symbol</i> – Nature of signal(s) modulating the main carrier	
2.1)		No modulating signal	0
2.2)		A single channel containing quantized or digital information without the use of modulating sub-carrier ³	a 1
2.3)		A single channel containing quantized or digital information with the use of a modulating sub-carrier ³	2
2.4)		A single channel containing analogue information	3
2.5)		Two or more channels containing quantized or digital information	7
2.6)		Two or more channels containing analogue information	8
2.7)		Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analogue information	9
2.8)		Cases not otherwise covered	X
	3)	<i>Third symbol</i> – Type of information to be transmitted ⁴	
3.1)		No information transmitted	N
3.2)		Telegraphy – for aural reception	A
3.3)		Telegraphy – for automatic reception	B
3.4)		Facsimile	C
3.5)		Data transmission, telemetry, telecommand	D
3.6)		Telephony (including sound broadcasting)	E
3.7)		Television (video)	F
3.8)		Combination of the above	W
3.9)		Cases not otherwise covered	X

³ This excludes time-division multiplex.

⁴ In this context the word “information” does not include information of a constant, unvarying nature such as is provided by standard frequency emissions, continuous wave and pulse radars, etc.



IARU Region 3

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**Signal Strength Reporting**

Administrations prefer to use signal level measurement in dBm or dB μ V and not necessarily amateur “S” units. The IARU has standardized signal strength levels (S meter), refer to the table below.

S-points for frequencies below 30 MHz:

Signal strength	Relative intensity	Received voltage		Received power ($Z_c = 50 \Omega$)	
S1	-48 dB	0.20 μ V	-14 dB μ V	790 aW	-121 dBm
S2	-42 dB	0.40 μ V	-8 dB μ V	3.2 fW	-115 dBm
S3	-36 dB	0.79 μ V	-2 dB μ V	13 fW	-109 dBm
S4	-30 dB	1.6 μ V	4 dB μ V	50 fW	-103 dBm
S5	-24 dB	3.2 μ V	10 dB μ V	200 fW	-97 dBm
S6	-18 dB	6.3 μ V	16 dB μ V	790 fW	-91 dBm
S7	-12 dB	13 μ V	22 dB μ V	3.2 pW	-85 dBm
S8	-6 dB	25 μ V	28 dB μ V	13 pW	-79 dBm
S9	0 dB	50 μV	34 dB μ V	50 pW	-73 dBm
S9+10	10 dB	160 μ V	44 dB μ V	500 pW	-63 dBm
S9+20	20 dB	500 μ V	54 dB μ V	5.0 nW	-53 dBm
S9+30	30 dB	1.6 mV	64 dB μ V	50 nW	-43 dBm
S9+40	40 dB	5.0 mV	74 dB μ V	500 nW	-33 dBm
S9+50	50 dB	16 mV	84 dB μ V	5.0 μ W	-23 dBm
S9+60	60 dB	50 mV	94 dB μ V	50 μ W	-13 dBm