International Telecommunication Union

ITU-R
Radiocommunication Sector of ITU

Recommendation ITU-R M.1677-1
(10/2009)

International Morse code

M Series

Mobile, radiodetermination, amateur and related satellite services

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Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

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ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from http://www.itu.int/ITU-R/go/patents/en where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

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Series	**Title**
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S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management
SNG	Satellite news gathering
TF	Time signals and frequency standards emissions
V	Vocabulary and related subjects

Note: *This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.*

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RECOMMENDATION ITU-R M.1677-1*

International Morse code

Scope

This Recommendation confirms the International Morse code characters and the operational provisions applying to their use in radiocommunication services*.

The ITU Radiocommunication Assembly,

considering

a)   that versions of the Morse code have been in use since 1844;

b)   that it continues to be used in some radiocommunication services including the amateur and amateur-satellite services, and to a diminishing extent in the mobile and fixed services;

c)   that the code needs to be updated from time-to-time to meet the needs of the radiocommunication services,

recommends

1   that Annex 1 should be used to define the Morse code characters and their applications in the radiocommunication services.

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*   Division B of ITU-T Recommendation F.1, which also addressed the Morse code, has been withdrawn.

Annex 1

Operational provisions applying to Morse working

Part I – Morse code

1   Morse code signals

1.1   The following are the written characters that may be used and the corresponding Morse code signals:

1.1.1   Letters

	a	. −	i	. .	r	. − .
	b	− . . .	j	. − − −	s	. . .
	c	− . − .	k	− . −	t	−
	d	− . .	l	. − . .	u	. . −
	e	.	m	− −	v	. . . −
accented	e	. . − . .	n	− .	w	. − −
	f	. . − .	o	− − −	x	− . . −
	g	− − .	p	. − − .	y	− . − −
	h	. . . .	q	− − . −	z	− − . .

1.1.2   Figures

1	. − − − −	6	− . . . .
2	. . − − −	7	− − . . .
3	. . . − −	8	− − − . .
4	. . . . −	9	− − − − .
5	. . . . .	0	− − − − −

1.1.3 Punctuation marks and miscellaneous signs

Full stop (period)	[.]	. − . − . −
Comma	[,]	− − . . − −
Colon or division sign	[:]	− − − . . .
Question mark (note of interrogation or request for repetition of a transmission not understood)	[?]	. . − − . .
Apostrophe	[’]	. − − − − .
Hyphen or dash or subtraction sign	[−]	− . . . . −
Fraction bar or division sign	[/]	− . . − .
Left-hand bracket (parenthesis)	[(]	− . − − .
Right-hand bracket (parenthesis)	[)]	− . − − . −
Inverted commas (quotation marks) (before and after the words)	[" "]	. − . . − .
Double hyphen	[=]	− . . . −
Understood		. . . − .
Error (eight dots)		. . . .
Cross or addition sign	[+]	. − . − .
Invitation to transmit		− . −
Wait		. − . . .
End of work		. . . − . −
Starting signal (to precede every transmission)		− . − . −
Multiplication sign	[×]	− . . −
Commercial at[1]	[@]	. − − . − .

2 Spacing and length of the signals

2.1 A dash is equal to three dots.

2.2 The space between the signals forming the same letter is equal to one dot.

2.3 The space between two letters is equal to three dots.

2.4 The space between two words is equal to seven dots.

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[1] Vocabulary note: In December 2002, the French General Committee on Terminology approved the term "arobase" for the @ symbol used in e-mail addresses.

3   Transmission of signs for which there is no corresponding signal in the Morse code

3.1   Signs that have no corresponding signal in the Morse code, but that are acceptable in the writing of telegrams, shall be sent as follows:

3.2   Multiplication sign

3.2.1   For the multiplication sign, the signal corresponding to the letter X shall be transmitted.

3.3   Percentage or per thousand sign

3.3.1   To indicate the signal % or ‰, the figure **0**, the fraction bar and the figures **0** or **00** shall be transmitted successively (i.e. **0/0**, **0/00**).

3.3.2   A whole number, a fractional number, or a fraction, followed by a % or ‰ sign, shall be transmitted by joining up the whole number, the fraction number, or the fraction to the % or ‰ by a single hyphen.

>   Examples: For 2%, transmit **2-0/0**, and not **20/0**.
>   For 4^1/$_2$‰, transmit **4-1/2-0/00**, and not **41/20/00**.

3.4   Inverted commas (quotation marks)

3.4.1   The special signal for inverted commas shall be transmitted before and after the word or words. However, where code converters are used, the apostrophe may be transmitted twice before and twice after the word or words to signal inverted commas (quotation marks).

3.5   Minute and second signs

3.5.1   To transmit the minute (′) or second (″) signs, when such signs follow figures – for example 1′15″ – the apostrophe signal (**. − − − −.**) must be used once or twice as appropriate. The signal (**.− . . −.**) reserved for inverted commas may not be used for the second sign.

4   Transmission of groups of figures and letters, of ordinal numbers or of fractions

4.1   A group consisting of figures and letters shall be transmitted without spaces between figures and letters.

4.2   Ordinal numbers composed of figures and letters, 30me, 25th, etc., shall be transmitted in the form **30ME**, **25TH**, etc.

4.3   A number that includes a fraction shall be transmitted with the fraction linked to the whole number by a single hyphen.

>   Examples: For 1^3/$_4$, transmit **1-3/4**, and not **13/4**.
>   For ^{3}/$_4$ 8, transmit **3/4-8**, and not **3/48**.
>   For 363^1/$_2$ 4 5642, transmit **363-1/2 4 5642**, and not **3631/2 4 5642**.

Part II – General transmission rules

1 All correspondence between two stations shall begin with the call signal.

1.1 For calling, the calling station shall transmit the call sign (not more than twice) of the station required, the word **DE** followed by its own call sign and the signal $-$ **.** $-$ unless there are special rules peculiar to the type of apparatus used. The call shall always be made at hand speed.

2 The station called must reply immediately by transmitting the call sign of the calling station, the word **DE** followed by its own call sign and the signal $-$ **.** $-$.

2.1 If the station called is unable to receive, it shall give the *wait* signal. If it expects the wait to exceed ten minutes, the reason and probable duration shall be given.

2.2 When a station called does not reply, the call may be repeated at suitable intervals.

2.3 When the station called does not reply to the repeated call, the condition of the circuit must be examined.

3 The double hyphen ($-$ **...** $-$) shall be transmitted either to separate:

3.1 the preamble from the service indications;

3.2 the service indications from each other;

3.3 the service indications from the address;

3.4 the station of destination from the text;

3.5 the text from the signature.

4 A transmission, once begun, may not be interrupted to give place to a communication of higher priority except in a case of absolute urgency.

5 Every telegram shall be terminated with a cross signal (**.** $-$ **.** $-$ **.**).

6 The end of the transmission shall be indicated by the cross signal (**.** $-$ **.** $-$ **.**) followed by the *invitation to transmit* signal **K** ($-$ **.** $-$).

7 The end of work shall be indicated by the station that transmitted the last telegram. The correct indication is the *end of work* signal (**...** $-$ **.** $-$).