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R-S-T system

The **R-S-T system** is used by amateur radio operators, shortwave listeners, and other radio hobbyists to exchange information about the quality of a radio signal being received. The code is a three digit number, with one digit each for conveying an assessment of the signal's readability, strength, and tone.[1][2] The code was developed in 1934 by Amateur radio operator Arthur W. Braaten, W2BSR[3][4][5][6], and was similar to that codified in the ITU Radio Regulations, Cairo, 1938.[7]

Kenwood TS-480HX S-meter

Contents

Readability

The **R** stands for "Readability". Readability is a qualitative assessment of how easy or difficult it is to correctly copy the information being sent during the transmission. In a Morse code telegraphy transmission, readability refers to how easy or difficult it is to

distinguish each of the characters in the text of the message being sent; in a voice transmission, readability refers to how easy or difficult it is for each spoken word to be understood correctly. Readability is measured on a scale of 1 to 5.[8]

1. Unreadable
2. Barely readable, occasional words distinguishable
3. Readable with considerable difficulty
4. Readable with practically no difficulty
5. Perfectly readable

Strength

The **S** stands for "Strength". Strength is an assessment of how powerful the received signal is at the receiving location. Although an accurate signal strength meter can determine a quantitative value for signal strength, in practice this portion of the RST code is a qualitative assessment, often made based on the S meter of the radio receiver at the location of signal reception. "Strength" is measured on a scale of 1 to 9.[8]

1. Faint—signals barely perceptible
2. Very weak signals
3. Weak signals
4. Fair signals
5. Fairly good signals
6. Good signals
7. Moderately strong signals
8. Strong signals
9. Extremely strong signals

For a quantitative assessment, quality HF receivers are calibrated so that S9 on the S-meter corresponds to a signal of 50 μV at the antenna standard terminal impedance 50 ohms.[9] One "S" difference should correspond to 6 dB at signal strength (2x voltage = 4x power). On VHF and UHF receivers used for weak signal communications, S9 often

corresponds to 5 μV at the antenna terminal 50 ohms. Amateur radio (ham) operators may also use a signal strength of "20 to 60 over 9", or "+20 to +60 over 9." This is in reference to a signal that exceeds S9 on a signal meter on a HF receiver.

Tone

The **T** stands for "Tone" and is measured on a scale of 1 to 9. Tone only pertains to Morse code and other digital transmission modes and is therefore omitted during voice operations. With modern technology, imperfections in the quality of transmitters' digital modulation severe enough to be detected by human ears are rare.[8]

Value	1936 definition	modern definition
1	Extremely rough hissing note	Sixty cycle a.c or less, very rough and broad
2	Very rough a.c. note, no trace of musicality	Very rough a.c., very harsh and broad
3	Rough, low-pitched a.c. note, slightly musical	Rough a.c. tone, rectified but not filtered
4	Rather rough a.c. note, moderately musical	Rough note, some trace of filtering
5	Musically modulated note	Filtered rectified a.c. but strongly ripple-modulated
6	Modulated note, slight trace of whistle	Filtered tone, definite trace of ripple modulation
7	Near d.c. note, smooth ripple	Near pure tone, trace of ripple modulation
8	Good d.c. note, just a trace of ripple	Near perfect tone, slight trace of modulation
9	Purest d.c. note	Perfect tone, no trace of ripple or modulation of any kind
*If there are other notable tonal qualities add one or more of the letters **A**–**X**, listed below, after the number.*		

Suffixes were historically added to indicate other signal properties, and might be sent as **599K** to indicate a clear, strong signal but with bothersome key clicks.

Suffix code	Meaning
A	signal distorted by auroral propagation[10]
C	"chirp" (frequency shift when keying)
K	key clicks
M	signal distorted by multipath propagation
S	signal distorted by scatter propagation
X	stable frequency (crystal control)

Variations

An example RST report for a voice transmission is "59", usually pronounced "five nine" or "five by nine", a report that indicates a perfectly readable and very strong signal. Exceptionally strong signals are designated by the quantitative number of decibels, in excess of "S9", displayed on the receiver's S meter. Example: "Your signal is 30 dB over S9."

Because the N character in Morse code requires less time to send than the 9, during amateur radio contests where the competing amateur radio stations are all using Morse code, the nines in the RST are typically abbreviated to N to read 5NN.[11] In general, this practice is referred to as abbreviated or "cut" numbers.[12][13][14]

See also

- Plain Language Radio Checks
- QSA and QRK code (for Morse code only)
- SINPO
- Signal strength and readability report
- Circuit Merit (for wired and wireless telephone circuits only, not radiotelephony)
- QSL card
- R-S-M-Q, A Standard Method of Reporting for Telephony, A. M. Braaten, T. & R.

Bulletin 1936[15]

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11. http://www.radioing.com/hamstart/rst.html Ham Radio RST Signal Reporting System for CW Operation, by Charlie Bautsch, W5AM

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13. http://ac6v.com/morseaids.htm#AB MORSE CODE, INTERNATIONAL EXTENSIONS AND ABBREVIATED NUMBERS

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15. " "R-S-M-Q, A Standard Method of Reporting for Telephony" " (http://www.americanr
    adiohistory.com/Archive-RCA-Review/RCA-Technical-Papers-1919-1945.pdf)
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External links

- Ham Radio RST Signal Reporting System for CW Operation (http://www.radioing.co
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- RSQ - An Improved Signal Reporting System for PSK (http://www.rsq-info.net/RSQ-i
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