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SUBJECT	RSQ Reporting Amendment		
Society	NRRL	Country:	Norway
Committee:	C4	Paper number:	35
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- 1 The paper DV05_C4_28 RSQ Reporting submitted by OeVSV is supported by NRRL; proposing that the RSQ reporting scale should be included in the HF Manager's Handbook as a supplement to the RST reporting scale for digital modes.
- 2 For digitized speech, the MOS (Mean Opinion Score) reporting scale is used professionally, and should be recommended for amateur radio use. NRRL proposes that the MOS reporting scale should be included in the HF Manager's Handbook as a supplement to the RST reporting scale for digitized speech.
- 3 The MOS reporting scale is reproduced below, excerpted from the paper "*Digital Voice: The Next New Mode?*" by Doug Smith, KF6DX, published in QST Magazine, January 2002, page 29:

How Do I Sound?

That seems like an innocent question and it's easy to slip into non-technical terms, like "scratchy," "warm" and so forth. If you are serious about giving a meaningful response, though, some forethought is required. For scientific voice-quality evaluation, a uniform system that gauges subjective responses is necessary.

A wide variety of factors influences perceived voice quality, including amplitude and frequency distortion, echoes and noise. Anything detracting from the naturalness of speech increases the effort a listener must exert to understand what is being said. For signals that are significantly impaired, the annoyance experienced by a listener may be rated on a linear scale called mean opinion score (MOS).

The MOS scale is shown below:

<i>MOS</i>	<i>Quality</i>	<i>Impairment</i>
5	Excellent	Imperceptible
4	Good	Perceptible, but not annoying
3	Fair	Slightly annoying
2	Poor	Annoying
1	Bad	Very annoying
0	Unusable	Total

Non-integer scores like 3.5 are possible. An MOS of 3.0 is generally referred to as "toll quality," meaning "good enough to pay for." Digital voice users may tolerate MOS levels less than three if they get additional benefits, such as simultaneous voice and data services.

While evaluation of voice systems may be made based on test-bench measurements, they must ultimately relate to the perception of the listener. A large body of voice-system evaluations exists based on MOS. Comparisons among systems are therefore readily made. MOS relates well to the readability figures commonly used in Amateur Radio signal reports.

Comparison is always part of subjective analysis. In fact, comparison is absolutely necessary to remove all bias in voice-quality evaluation. Most often, a listener is presented with two audio samples in succession; he or she is not informed beforehand which sample is the one being evaluated. Several repetitions using many different listeners may be averaged to mitigate the effects of individual listening talents. For digital voice systems, MOS may be correlated with the bit error rate (BER) on the communications link. Performance in hostile environments — those containing high levels of environmental and man-made noise — may thereby be quantified.