Source: Telchemy Incorporated

Title: Comparison of TS101 329-5 Annex E with E Model

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Document for:

Decision:	**X**
Discussion:	**X**
Meeting Report:	
Liaison:	
Information:	X

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1. Decision/Action Requested

This contribution provides additional support for TS 101 329-5 Annex E. It is proposed that Annex E is moved from informative to normative status.

2. References

[1] ETSI TS 101 329-5 QoS Measurement Methodologies

[2] ANSI T1A1.7/98-031 Testing the quality of connections having time varying impairments. AT&T 1998

[3] ITU-T Recommendation G.107 E Model

[4] ETSI Technical Report ETR250 E Model

3. Introduction

This contribution provides a comparison between the E Model and the Extended E Model as described in TS101 329-5 Annex E (VQmon). The objective of the comparison was to verify that that Annex E provided a reasonable estimate of the effects of *recency*. This test was not designed to test Annex E's ability to predict absolute quality but to provide a comparison of the relative performance of Annex E and the E Model in the presence of time varying effects.

4. Discussion

AT&T contribution T1A1.7/98-031 reported the results of subjective tests that exhibited a strong recency effect. A 60 second audio file was constructed from 7 segments and a subset of the file corrupted using added noise. MOS scores were given for both impaired and unimpaired file segments. Subjective MOS scores were reported for impaired segment locations 1, 4, 7, 1 & 4, 1 & 7, 4 & 7 and 1 & 4 & 7 with both high and low amplitude noise bursts, giving a total of fourteen impaired files.

In order to determine the results presented in this contribution the data provided in AT&T's contribution was "reverse engineered" by creating sequences of packet loss that would emulate the severity, length and position of impairments. It was assumed that a G.711 CODEC was used and the packet loss rate required to achieve the required impaired segment MOS score was determined.

Each sequence of packet loss was processed through the Annex E algorithm, emulating the real time monitoring of calls. The recency adjusted R Factor was determined for each of the 14 impaired files and converted to an estimated MOS score using the R -> MOS score mapping defined in ETR250 and G.107.

For comparison purposes the Ie factor required in the E Model was calculated for each segment using the average packet loss for each impaired file and applying the same mapping of packet loss to Ie that was used for the Annex E calculation. The Ie factor was used to determine an R Factor which was then converted to a MOS score, as described above. The *only* difference between the MOS scores derived from the E Model and those derived from the Annex E algorithm were the effects of the *distribution* of packet loss.

5. Conclusion

Figure 1 compares the subjective test result reported by AT&T with the results predicted by TS101 329-5 Annex E and the E Model for high amplitude noise bursts. Figure 2 provides the same comparison for low amplitude noise bursts. The results clearly show that under the test conditions used:

(i) the Annex E algorithm does provide a reasonable estimate of the effects of the recency effect as reported in the AT&T contribution

(ii) the absence of any recency adjustment in the E Model causes significant loss of accuracy

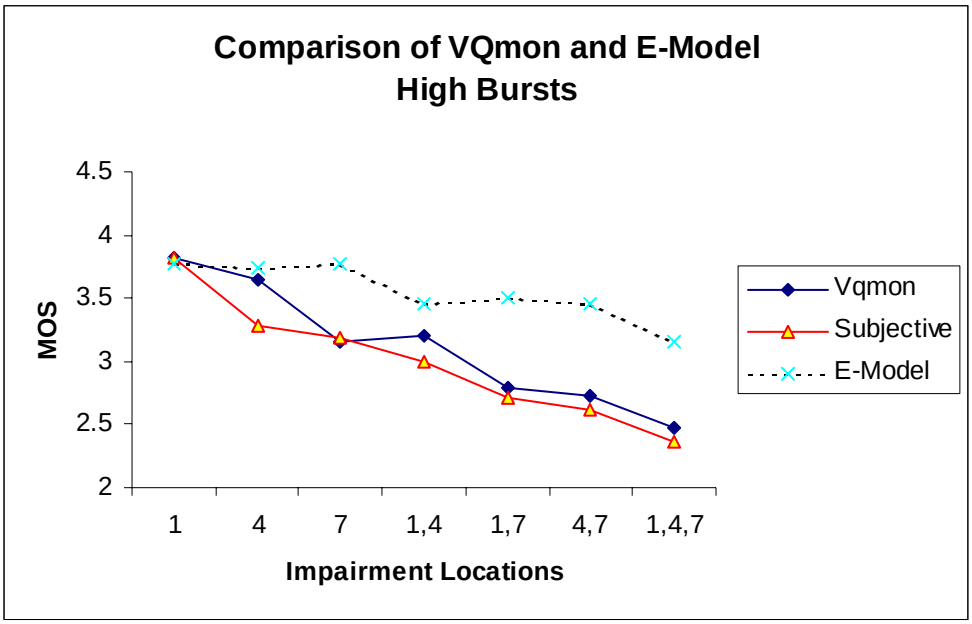

Figure 1 Comparison of TS101 329-5 Annex E with E Model – AT&T High Burst data

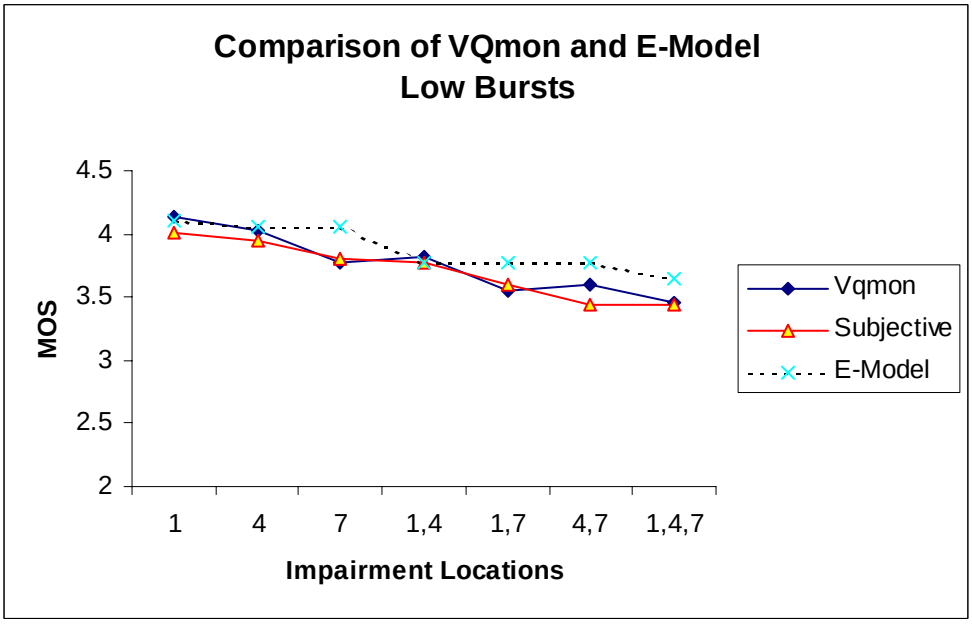

Figure 2 Comparison of TS101 329-5 Annex E with E Model – AT&T Low Burst data