

Radiocommunication Study Groups

**2ND MEETING OF WORKING PARTY 5D
DUBAI, 24 JUNE - 1 JULY 2008**



Working Party 5D

LIAISON STATEMENT RESPONSE TO IEEE AND WIMAX FORUM FURTHER CORRESPONDENCE ON OFDMA-TDD-WMAN BS AND MS ACS VALUES

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WP 5D would like to thank WiMAX Forum and IEEE for their responses to the liaison statement on the request for clarification on OFDMA-TDD-WMAN BS and MS ACS values and to take the opportunity to further cooperation on this matter.

In response to IEEE, WP 5D notes that according to input contribution 5D/70, the ACS values have been calculated based on Equation (1) giving the relation between ACS, SNR_{min} and ACR values. The calculations have been made using the same modulation and coding scheme assumptions contained in TABLE 84 of ITU-R Recommendation M.1457-7.

$$ACS = \frac{P}{N} = SNR_{\min} + 3 \text{ dB} + \textit{Adjacent / Alternate Channel Rejection} \quad (1)$$

On the question of the origin of the above formula and how it has been derived, WP 5D will investigate further on in order to have it clearly explained.

On the question of the relationship between the above formula and Section 5.1 of M.1457 and its reference to "REFSENS +14 dB" (cf. Section 7.5 in 3GPP TS 36.101 V8.0.0 (2007-12)), WP 5D will investigate this question towards its next meeting.

On the use of a value of 3 dB in the formula, it is our understanding that in the above formula, the 3 dB value is the C/I degradation corresponding to the Minimum adjacent (or alternate) channel rejection at BER = 10⁻⁶ and SNR min values given for 16-QAM-3/4 and 64-QAM-2/3 modulations assumptions provided in the TABLE 84 of Recommendation ITU-R M.1457-7.

Hereafter an extract of the Table 84 providing used parameters for ACS values calculation:

	Requirement	Reference	Values specified		Values required
ACS_1	Min adjacent channel rejection at BER = 10^{-6} for 3 dB degradation C/I (ACR in the adjacent channel)	8.4.13.2	16-QAM-3/4 64-QAM-2/3 (if 64-QAM supported)	11 dB 4 dB	11 dB 4 dB
ACS_2	Min alternate channel rejection at BER = 10^{-6} for 3 dB degradation C/I (ACR in the alternate channel)	8.4.13.2	16-QAM-3/4 64-QAM-2/3 (if 64-QAM supported)	30 dB 23 dB	30 dB 23 dB

The calculated ACS values in 5D/70 are summarized in the following table:

	ACS calculated with ACR defined in ITU-R Rec. M.1457-7	
	Base station	Mobile station
ACS_1 (dB)	26.7 (16QAM-3/4)	26.7 (16QAM-3/4)
	23.9 (64QAM-2/3)	23.9 (64QAM-2/3)
ACS_2 (dB)	45.7 (16QAM-3/4)	45.7 (16QAM-3/4)
	42.9 (64QAM-2/3)	42.9 (64QAM-2/3)

In response to the WiMAX Forum, WP 5D understands that the WiMAX forum is of the view that:

- those values are not appropriate since the assumptions used to derive the SNR_{min} and ACR, used in the formula 1, were not the same,
- the validity of this formula is not challenged (only its application) by the WiMAX Forum. However, WP-5D will investigate further on the origin of the formula in order to have it clearly explained.

On the one hand, WP 5D recognizes that the assumptions should be uniform to derive the two values, on the other hand, it is of the view that this does not justify, taken in isolation, a rough 45 dB difference for the base stations and a rough 15 dB difference for the mobile stations.

Given that some inconsistencies in the parameters and/or in the formula have been observed in the material provided by WP 5D, WiMax Forum and IEEE experts are kindly invited to provide values for the following table that are derived in a manner that satisfy consistent conditions (modulation/coding schemes, bandwidth, propagation, etc.).

	ACS used in sharing study				ACS calculated with ACR defined in Rec. ITU-R M. 1457 From WiMAX Forum	
	Base station	Mobile station			Base station	Mobile station
ACS_1 (dB)	70 dB	40 dB				
ACS_2 (dB)	70 dB	59 dB				

The WiMAX Forum and/or IEEE are asked to provide the conditions/assumptions used to derive those values, including all factors involved in the derivation of ACS values so that these values could be added in the ITU-R documents (ITU-R Reports, ITU-R Recommendations)..

WP5D thanks WiMAX Forum and IEEE for their responses, hopes the information contained in this document will be useful and would be grateful to receive a further response from WiMAX Forum and IEEE on this subject.

WP 5D would like to inform WiMAX Forum and IEEE that next WP 5D meeting is scheduled from 8 to 15 October 2008. The deadline for contributions to that meeting is 16:00 hours UTC, 1 October 2008.

Status: For response

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