Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Distance Resulting in a –100 dBm Interference Level into a 25 GHz PTP Receiver from a 25 GHz PTMP Transmitter**
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Re:	Contribution required following the discussion during Meeting #15
Abstract	This document shows the calculation of the distance needed for limiting the interference level at –100 dBm for a victim PTP receiver from a PTMP interferer, both operating at 25 GHz. It also provides some preliminary conclusions.
Purpose	Initiate the analysis for the interference mechanisms of a PTP system being interfered by a PTMP system.
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Distance Resulting in a –100 dBm Interference Level into a 25 GHz PTP Receiver from a 25 GHz PTMP Transmitter

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Following the discussions at the TG2a meeting of September 11, it was needed to look at the distance required for a 25 GHz point-to-point receiver facing a 25 GHz point-to-multipoint sector that would produce an interference level of –100 dBm. The point-to-multipoint characteristics were taken from the IEEE 802.16.2 guideline while the point-to-point characteristics were taken from the 25 GHz point-to-point table developed by the Task Group 2a.

The following Figure 1. shows the interference case.

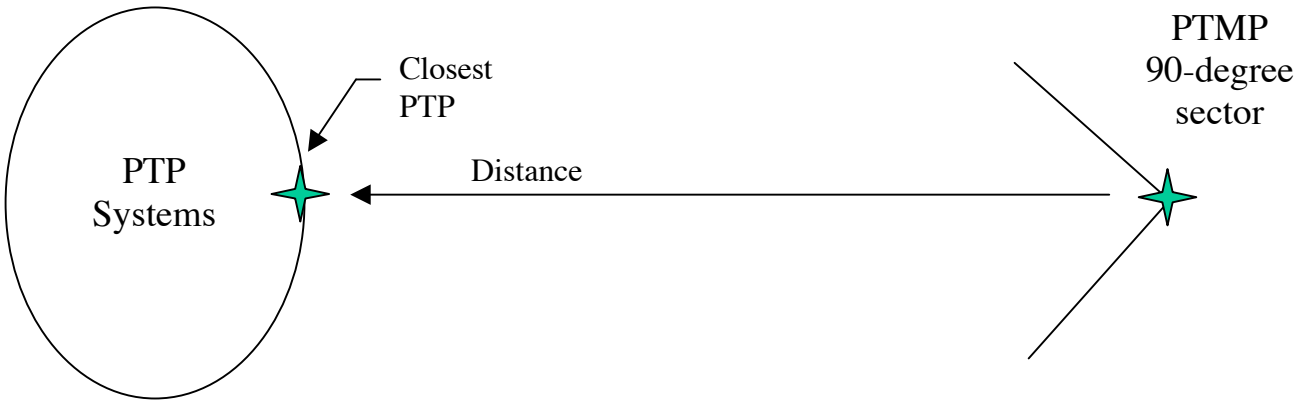

Figure 1.

Parameters:

Frequency	25 GHz
Channel bandwidth:	28 MHz
PTMP transmit power:	+24 dBm
PTMP antenna gain:	19 dBi
PTP antenna gain:	40 dBi

FSL = 92.4 + 20logf + 20logD
FSL = 120 + 20logD

RSL = -100 dBm = +24 dBm + 19 dBi – FSL + 40 dBi
FSL = 100 + 24 + 19 + 40 = 183 dB
120 + 20logD = 183 dB

D = antilog (183 – 120) / 20 = 1412.6 km

Conclusion: Boresight to boresight situations should be avoided. The only contributors to reduce the interference level should be antenna discrimination and interference path obstruction. Frequency spacing can also be used to take advantage of the NFD. In rare circumstances, when this kind of interference is unavoidable, systems spacing has to be increased so the interference is below horizon (approx. 60 km).