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| Title | **Minimum Performance - BS** |
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| Re: | Letter Ballot #7 |
| Abstract | Minimum RF performance for the BS |
| Purpose | Support a Letter Ballot #7 comment |
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# Minimum Performance Parameters - BS

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## For ProfP1

Table xx: Minimum Tx Performance - BS

| **Capability** | **Minimum Performance** |
|---|---|
| Peak-to-peak symbol jitter, referenced to the previous symbol zero crossing of the transmitted waveform, as percentage of the nominal symbol duration when measured over a 2 second period | 2 % |
| Tx RF frequency | 10-66 GHz |
| Tx RF frequency accuracy | +/- 10 ppm |
| Spectral mask (OOB) | local regulation |
| Spurious | local regulation |
| Ramp up/ramp down time | <= 24 symbols |
| Modulation accuracy when measured with an ideal receiver without an equalizer for QPSK | 12% |
| Modulation accuracy when measured with an ideal receiver without an equalizer for 16-QAM | 6% |
| Modulation accuracy when measured with an ideal receiver without an equalizer for 64-QAM | 2% |
| Modulation accuracy when measured with an ideal receiver with an equalizer for QPSK | 10% |
| Modulation accuracy when measured with an ideal receiver with an equalizer for 16-QAM | 3% |
| Modulation accuracy when measured with an ideal receiver with an equalizer for 64-QAM | 1.5% |

Table xx: Minimum Rx Performance - BS

| **Capability** | **Minimum performance** |
|---|---|

| **Capability** | **Minimum performance** |
|---|---|
| Dynamic Range | 27 dB for QPSK<br>30 dB, otherwise |
| BER performance threshold for QPSK, BER=$10^{-3}$ | -94 + 10log(25) dBm |
| BER performance threshold for 16-QAM, BER=$10^{-3}$ | -87 + 10log(25) dBm |
| BER performance threshold for 64-QAM, BER=$10^{-3}$ | -79 + 10log(25) dBm |
| BER performance threshold for QPSK, BER=$10^{-6}$ | -90 + 10log(25) dBm |
| BER performance threshold for 16-QAM, BER=$10^{-6}$ | -83 + 10log(25) dBm |
| BER performance threshold for 64-QAM, BER=$10^{-6}$ | -74 + 10log(25) dBm |
| 1st adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for QPSK | -9 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for 16-QAM | -2 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for 64-QAM | +5 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for QPSK | -5 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for 16-QAM | +2 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for 64-QAM | +9 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for QPSK | -5 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for 16-QAM | +2 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for 64-QAM | +9 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for QPSK | -1 dB |

| **Capability** | **Minimum performance** |
|---|---|
| 1st adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for 16-QAM | +6 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for 64-QAM | +13 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for QPSK | -34 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for 16-QAM | -27 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for 64-QAM | -20 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for QPSK | -30 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for 16-QAM | -22 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for 64-QAM | -16 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for QPSK | -30 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for 16-QAM | -23 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for 64-QAM | -16 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for QPSK | -26 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for 16-QAM | -20 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for 64-QAM | -12 dB |

## For ProfP2

Table xx: Minimum Tx Performance - BS

| **Capability** | **Minimum Performance** |
|---|---|
| Peak-to-peak symbol jitter, referenced to the previous symbol zero crossing of the transmitted waveform, as percentage of the nominal symbol duration when measured over a 2 second period | 2 % |
| Tx RF frequency | 10-66 GHz |
| Tx RF frequency accuracy | +/- 10 ppm |
| Spectral mask (OOB) | local regulation |
| Spurious | local regulation |
| Ramp up/ramp down time | <= 24 symbols |
| Modulation accuracy when measured with an ideal receiver without an equalizer for QPSK | 12% |
| Modulation accuracy when measured with an ideal receiver without an equalizer for 16-QAM | 6% |
| Modulation accuracy when measured with an ideal receiver without an equalizer for 64-QAM | 2% |
| Modulation accuracy when measured with an ideal receiver with an equalizer for QPSK | 10% |
| Modulation accuracy when measured with an ideal receiver with an equalizer for 16-QAM | 3% |
| Modulation accuracy when measured with an ideal receiver with an equalizer for 64-QAM | 1.5% |

Table xx: Minimum Rx Performance - BS

| **Capability** | **Minimum performance** |
|---|---|
| Dynamic Range | 27 dB for QPSK<br>30 dB, otherwise |
| BER performance threshold for QPSK, BER=$10^{-3}$ | -94 + 10log(28) dBm |
| BER performance threshold for 16-QAM, BER=$10^{-3}$ | -87 + 10log(28) dBm |

| **Capability** | **Minimum performance** |
|---|---|
| BER performance threshold for 64-QAM, BER=$10^{-3}$ | -79 + 10log(28) dBm |
| BER performance threshold for QPSK, BER=$10^{-6}$ | -90 + 10log(28) dBm |
| BER performance threshold for 16-QAM, BER=$10^{-6}$ | -83 + 10log(28) dBm |
| BER performance threshold for 64-QAM, BER=$10^{-6}$ | -74 + 10log(28) dBm |
| 1st adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for QPSK | -9 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for 16-QAM | -2 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for 64-QAM | +5 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for QPSK | -5 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for 16-QAM | +2 dB |
| 1st adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for 64-QAM | +9 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for QPSK | -5 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for 16-QAM | +2 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for 64-QAM | +9 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for QPSK | -1 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for 16-QAM | +6 dB |
| 1st adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for 64-QAM | +13 dB |

| **Capability** | **Minimum performance** |
|---|---|
| 2nd adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for QPSK | -34 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for 16-QAM | -27 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 3 dB degradation C/I for 64-QAM | -20 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for QPSK | -30 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for 16-QAM | -22 dB |
| 2nd adjacent channel interference at BER=$10^{-3}$ for 1 dB degradation C/I for 64-QAM | -16 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for QPSK | -30 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for 16-QAM | -23 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 3 dB degradation C/I for 64-QAM | -16 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for QPSK | -26 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for 16-QAM | -20 dB |
| 2nd adjacent channel interference at BER=$10^{-6}$ for 1 dB degradation C/I for 64-QAM | -12 dB |