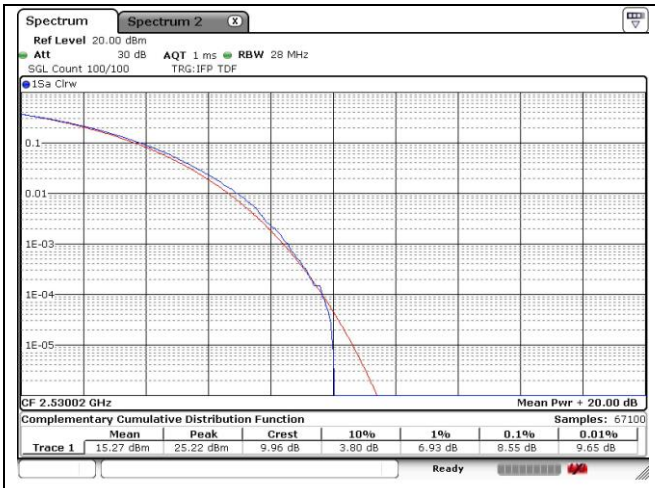
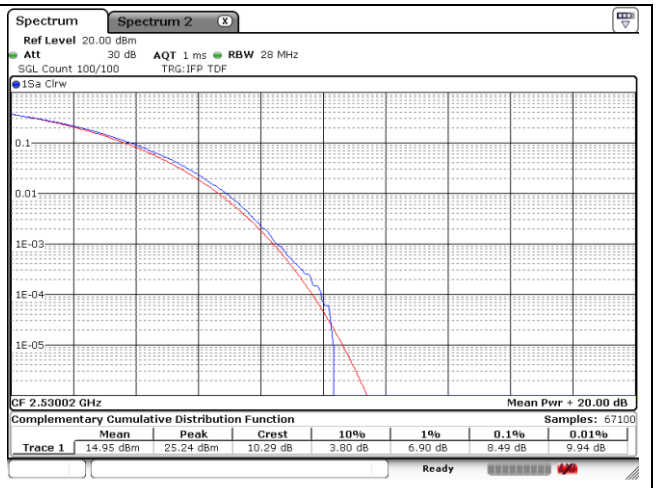


60 ㎒ Low Channel - Full RB - CP-OFDM_Port 1



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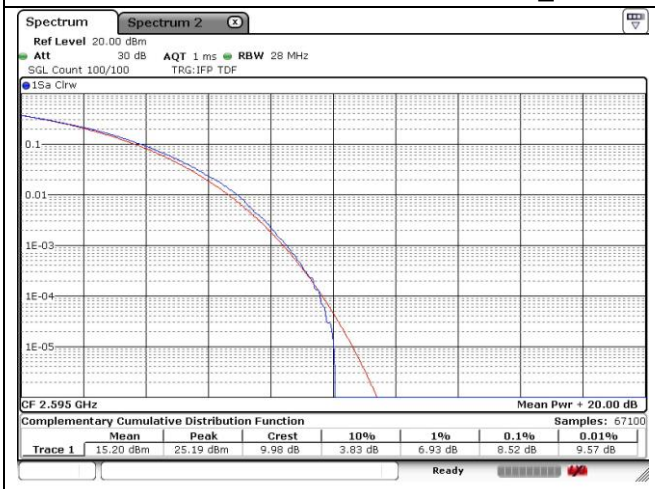
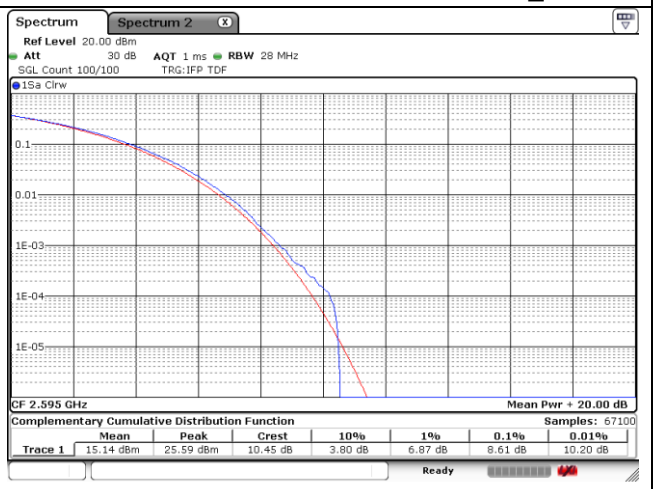


60 ㎒ Middle Channel - Full RB - CP-OFDM_Port 1



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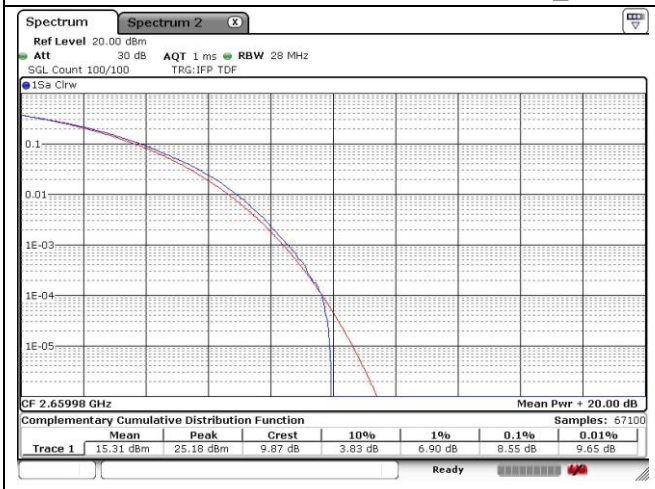
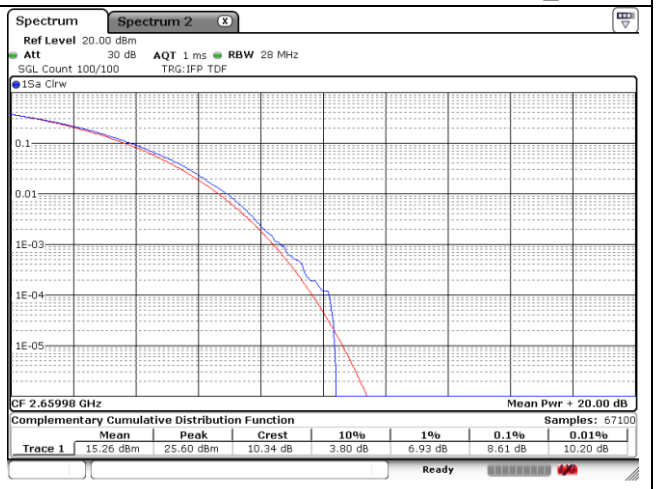


60 ㎒ High Channel - Full RB - CP-OFDM_Port 1



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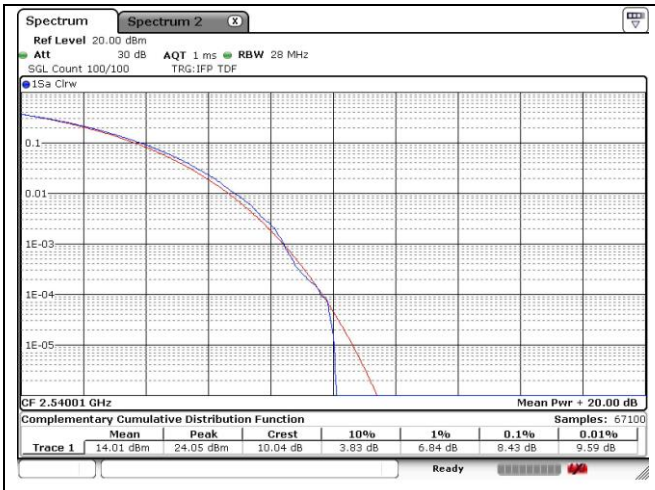
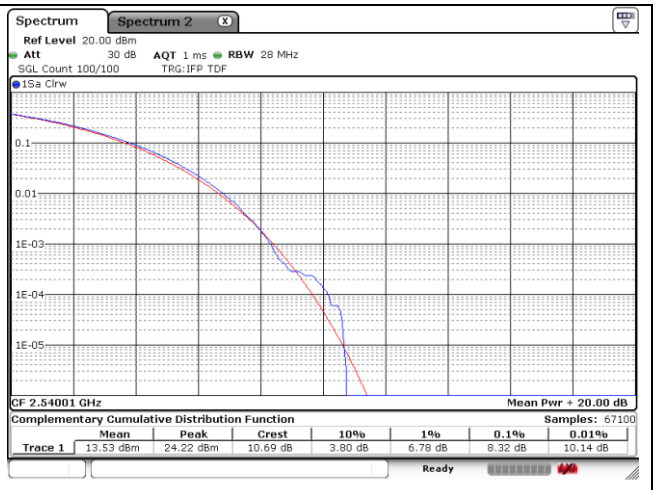


80 ㎒ Low Channel - Full RB - CP-OFDM_Port 1



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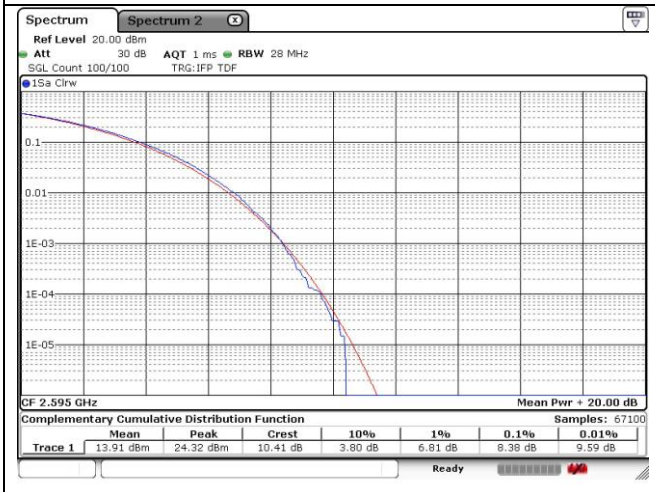

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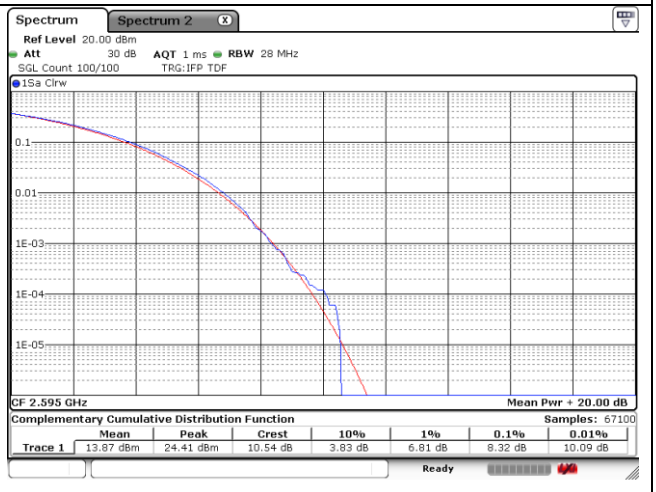

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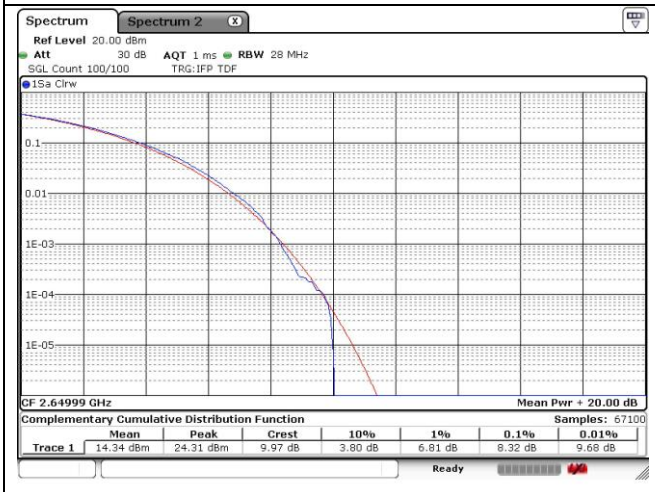
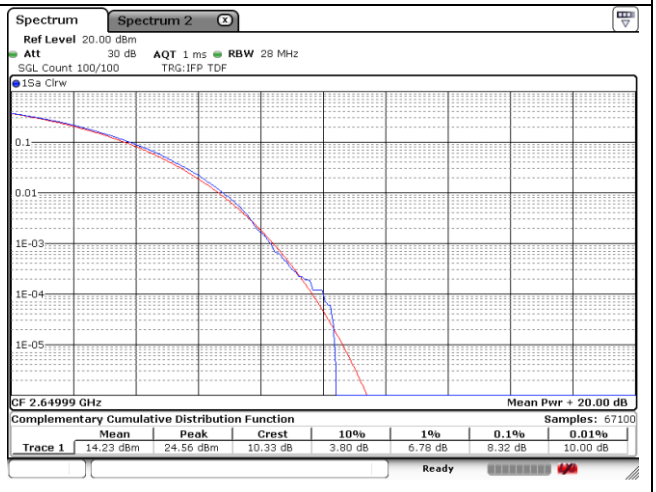


80 ㎒ High Channel - Full RB - CP-OFDM_Port 1



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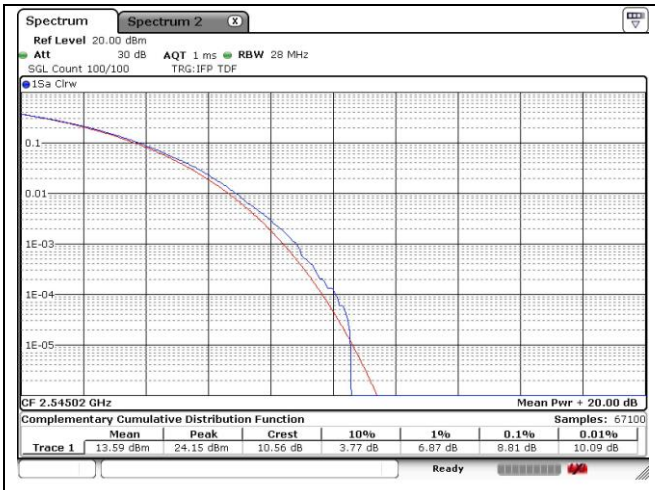
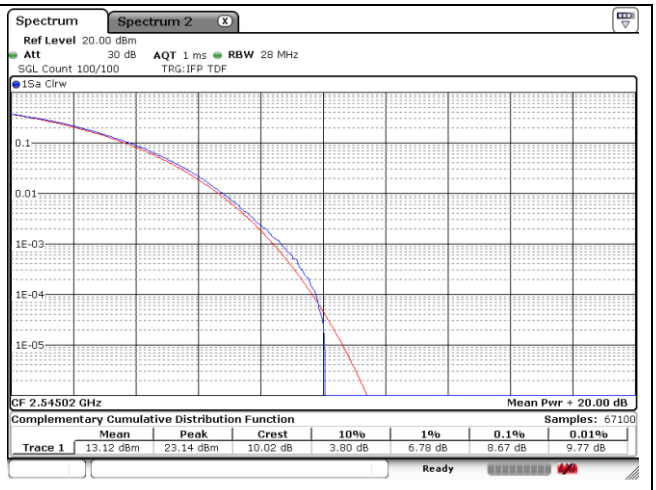


90 ㎒ Low Channel - Full RB - CP-OFDM_Port 1



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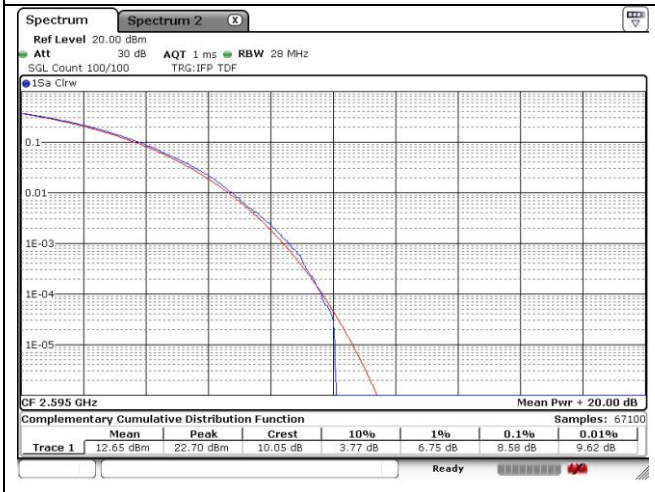

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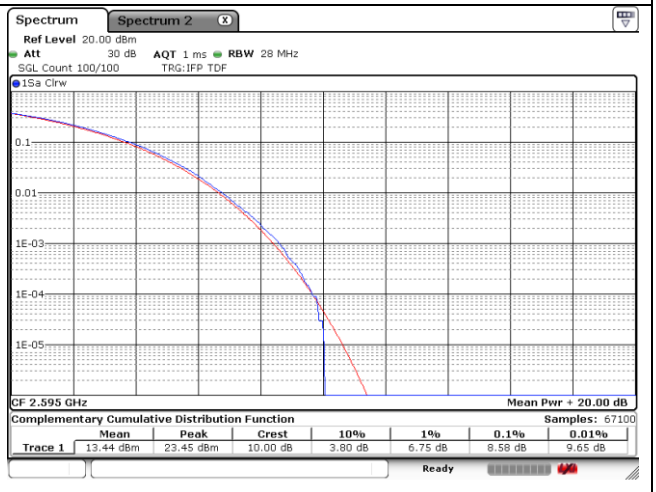

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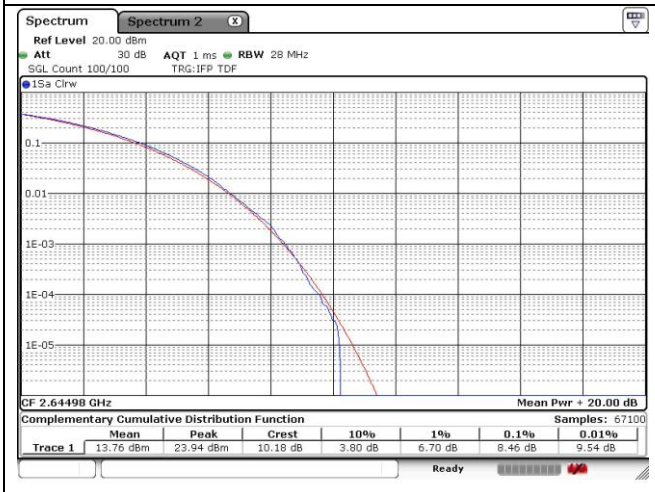

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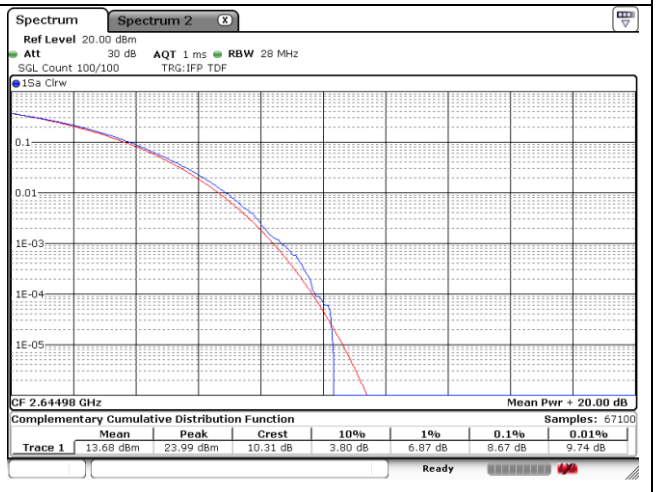

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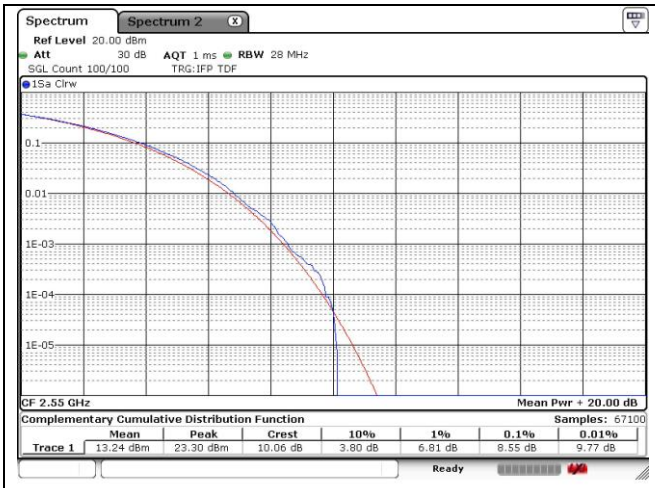

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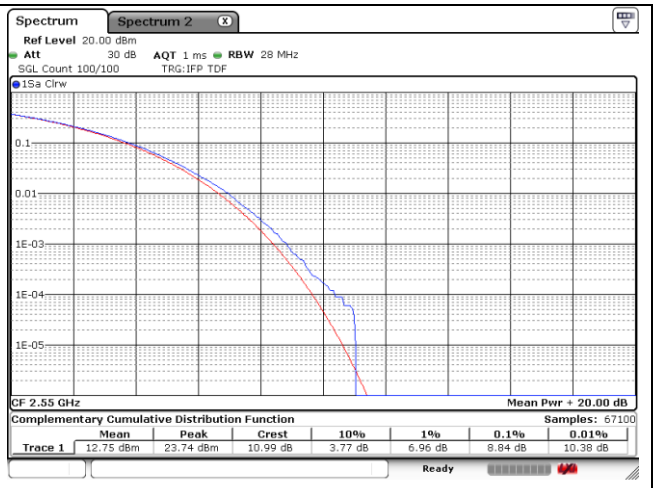

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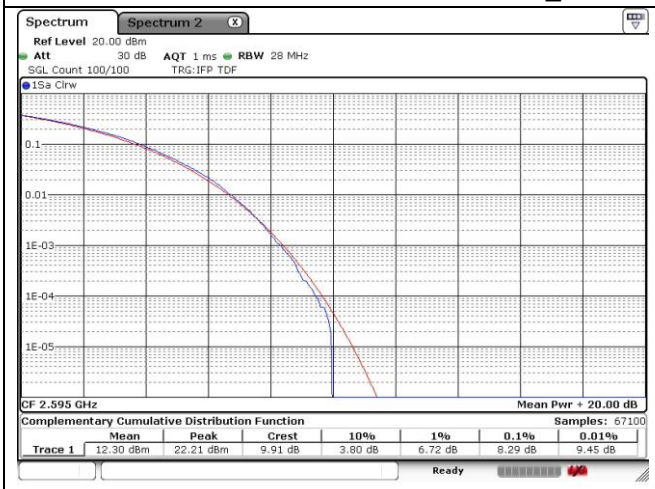
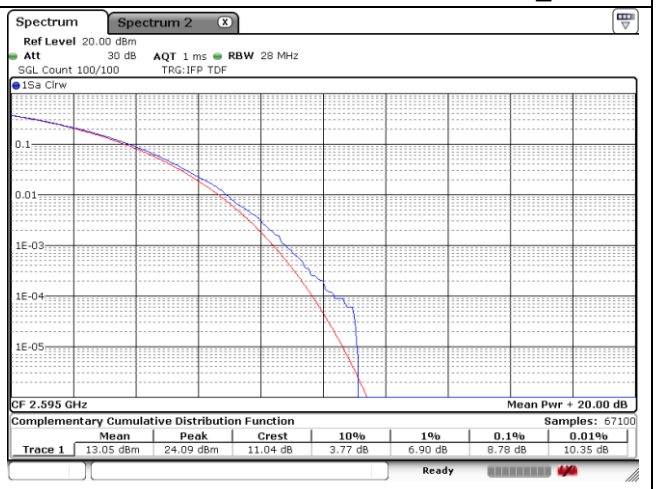
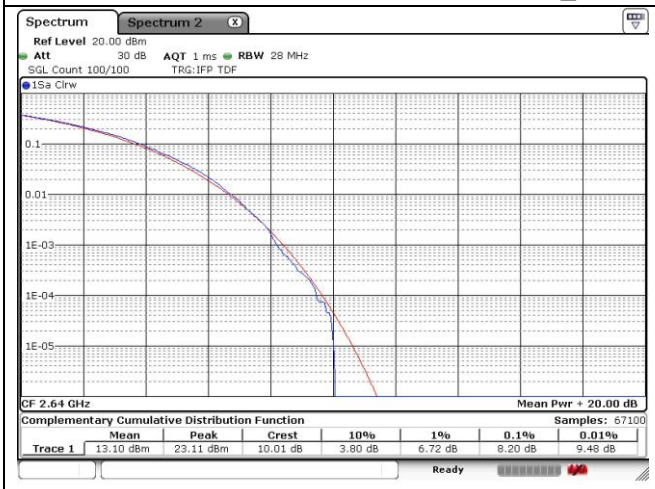


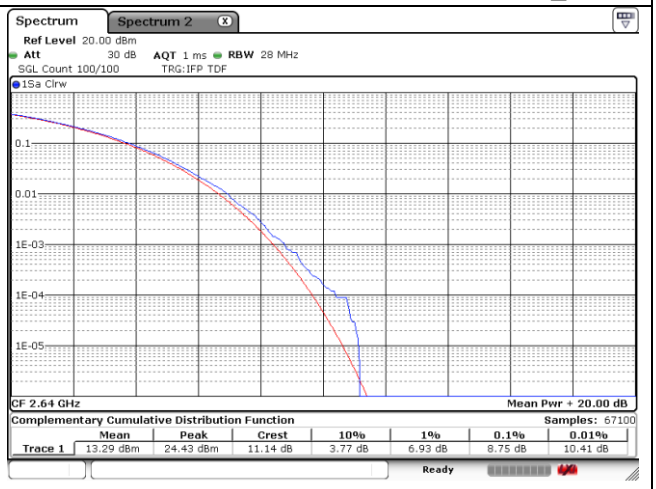
100 ㎒ Middle Channel - Full RB - CP-OFDM_Port 1



100 ㎒ Middle Channel - Full RB - CP-OFDM_Port 2



100 ㎒ High Channel - Full RB - CP-OFDM_Port 1



100 ㎒ High Channel - Full RB - CP-OFDM_Port 2

6. Spurious Emissions at Antenna Terminal

6.1. Limit

FCC

- §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 $\log_{10}$ (P) ㏈ on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 $\log_{10}$ (P) ㏈ on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 2 490.5 ㎒ and 2 496 ㎒ and 55 + 10 $\log_{10}$ (P) ㏈ at or below 2 490.5 ㎒. Mobile Satellite Service licensees operating on frequencies below 2 495 ㎒ may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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4.5, In the 1 ㎒ band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 ㎒ band, a resolution bandwidth of 1 ㎒ shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 ㎒, or 1% or 2% of the occupied bandwidth, as applicable.

Equipment shall comply with the following unwanted emission limits:

for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in ㏈) below the transmitter power, P (㏈ W), by at least 43 + 10 log10 p for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in ㏈) below the transmitter power, P (㏈ W), by at least:

i. 40 + 10 log10 p from the channel edges to 5 ㎒ away
ii. 43 + 10 log10 p between 5 ㎒ and X ㎒ from the channel edges, and
iii. 55 + 10 log10 p at X ㎒ and beyond from the channel edges

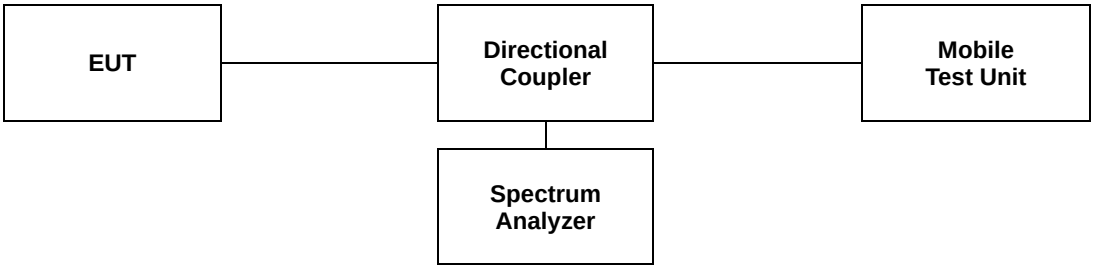
In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2 490.5 ㎒ and 2 496 ㎒, and 55 + 10 log10 p at or below 2 490.5 ㎒.

In (a) and (b), p is the transmitter power measured in watts and X is 6 ㎒ or the equipment occupied bandwidth, whichever is greater.

6.2. Test Procedure

The test follows section 5.7 of ANSI C63.26-2015.

1. Start frequency was set to 9 ㎑ and stop frequency was set to at least 10* the fundamental frequency.
2. Detector = RMS.
3. Trace mode = Max hold.
4. Sweep time = Auto couple.
5. The trace was allowed to stabilize.
6. Please see notes below for RBW and VBW settings.
7. For plots showing conducted spurious emissions from 9 ㎑ to 27 ㎓, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as TDF function.



Note;

1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 ㎑ or greater for frequencies less than 1 ㎓ and frequencies greater than 1 ㎓. However, in the 1 ㎒ bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two point, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 ㏈ below the transmitter power.

2. The limits were adjusted by a factor of 10*log(2) ㏈ to account for the device operation as a 2 port MIMO transmitter, as per KDB 622911. MIMO factor calculation as below:
MIMO Factor = 10*log(2) = 3.01 ㏈

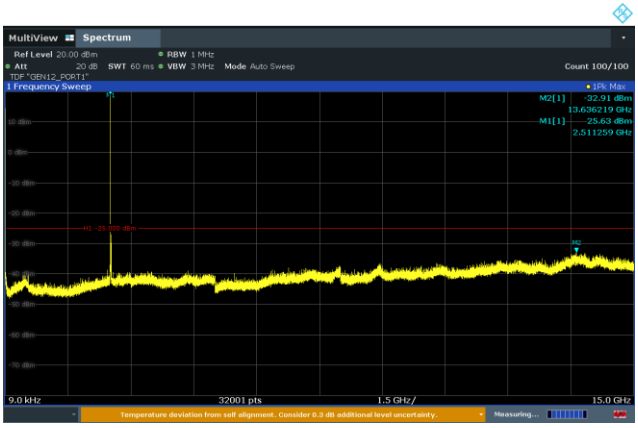
Frequency Range	Basic Limit (㏈m)	MIMO Factor (㏈)	Adjusted Limit (㏈m)
Below 2 490.5 ㎒ and above X ㎒ from channel edges	-25	3.01	-28.01

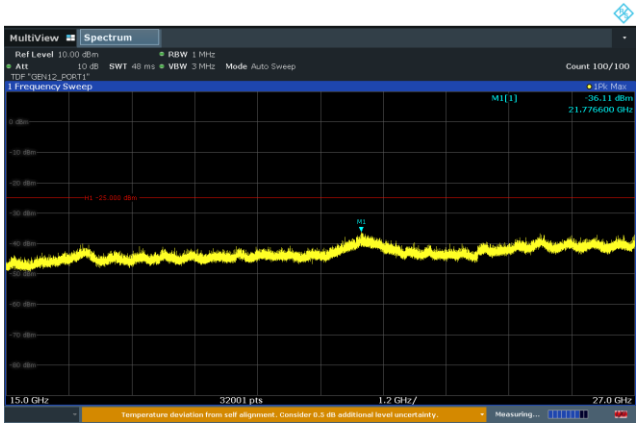
6.3. Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

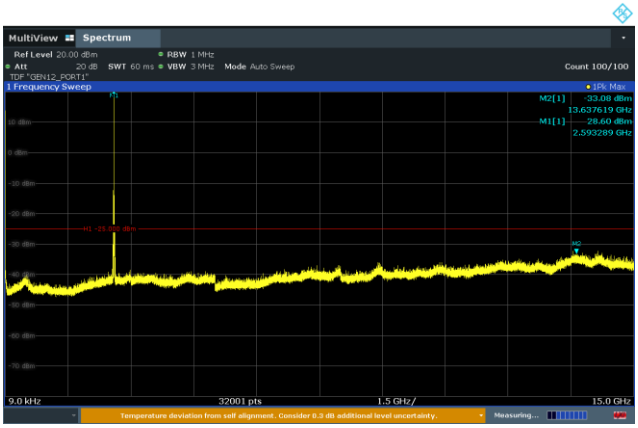
- Test plots

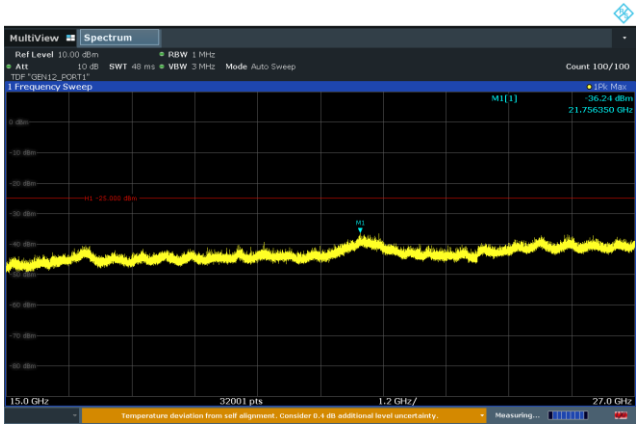
NR band 41 (FCC)_SISO



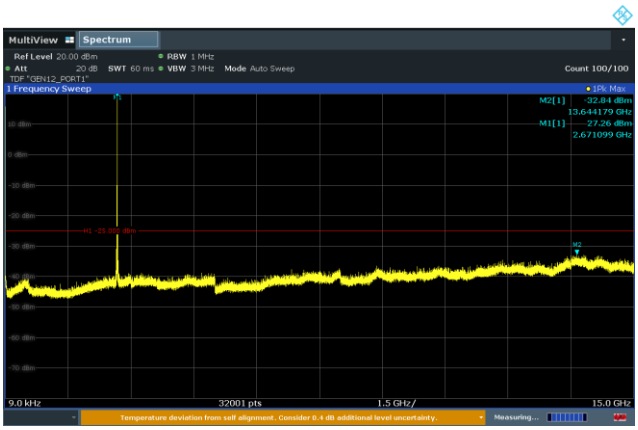


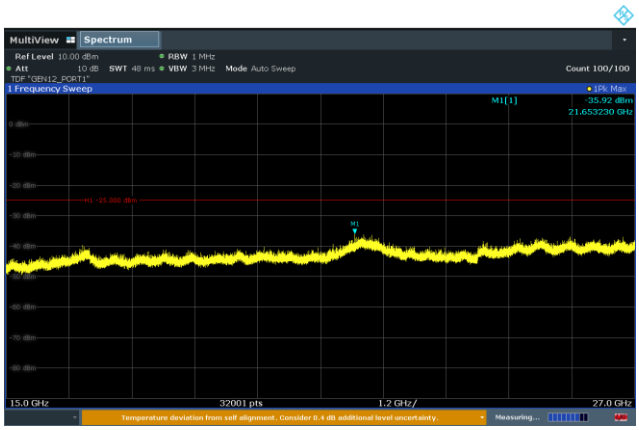
DFT-S-OFDM QPSK - 30 ㎒ Low Channel - 1 RB





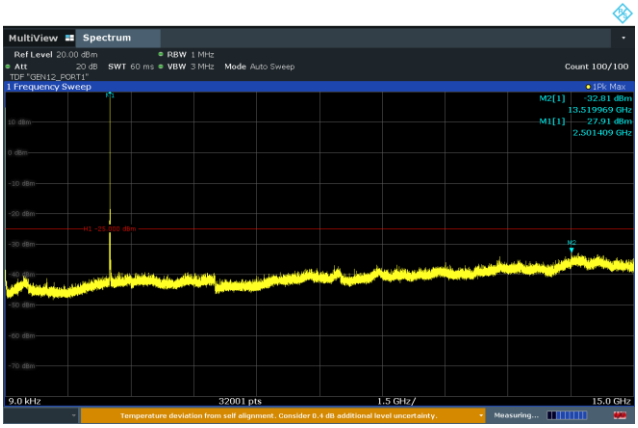
DFT-S-OFDM QPSK - 30 ㎒ Middle Channel - 1 RB

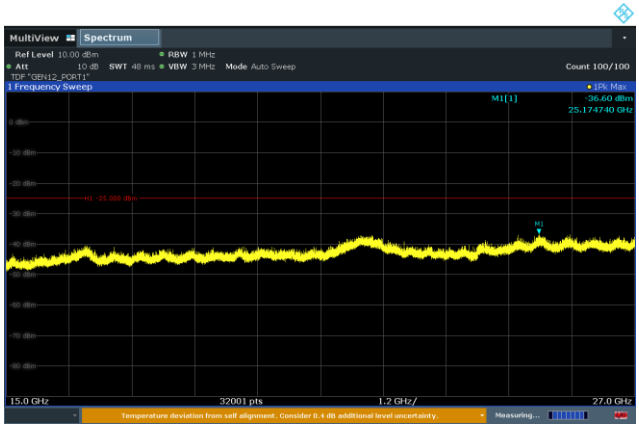




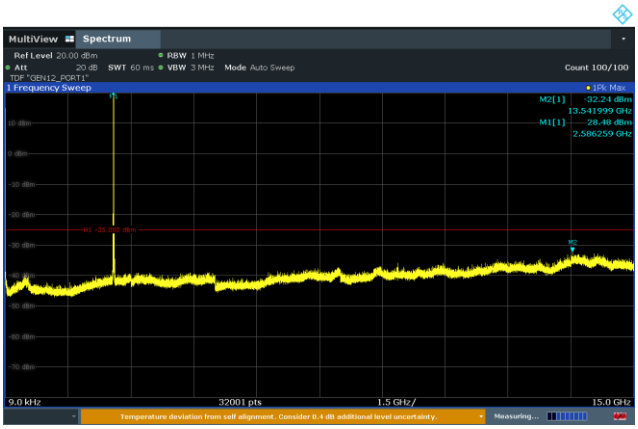
DFT-S-OFDM QPSK - 30 ㎒ High Channel - 1 RB

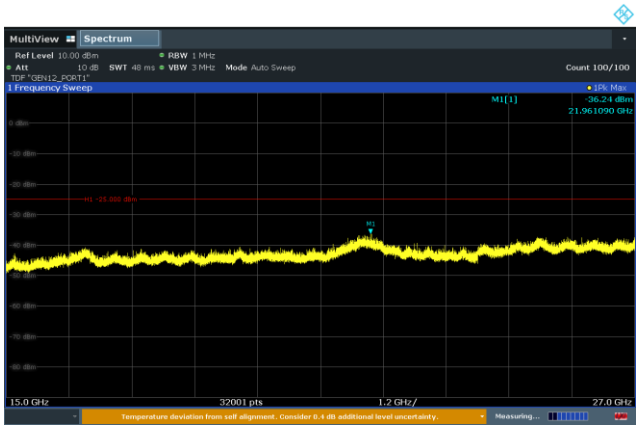
NR band 41 (IC)_SISO



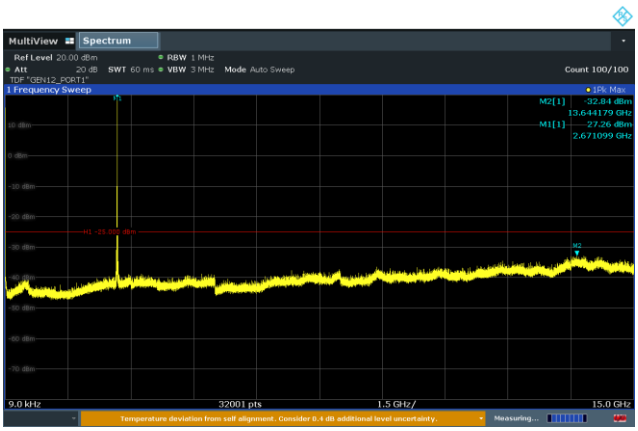


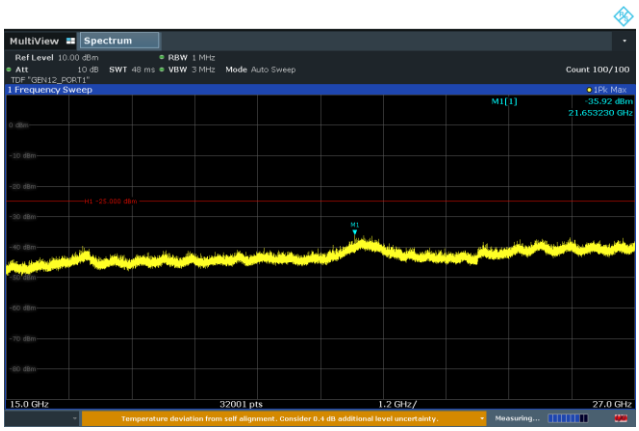
DFT-S-OFDM BPSK - 20 ㎒ Low Channel - 1 RB





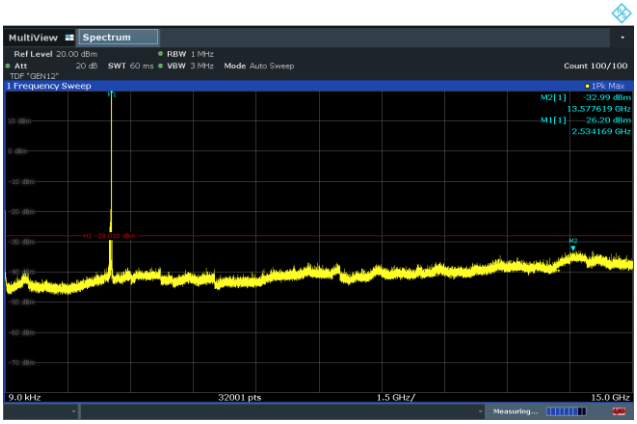
DFT-S-OFDM BPSK - 20 ㎒ Middle Channel - 1 RB

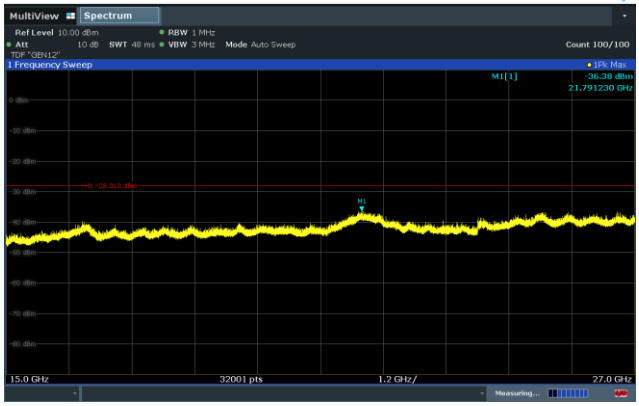




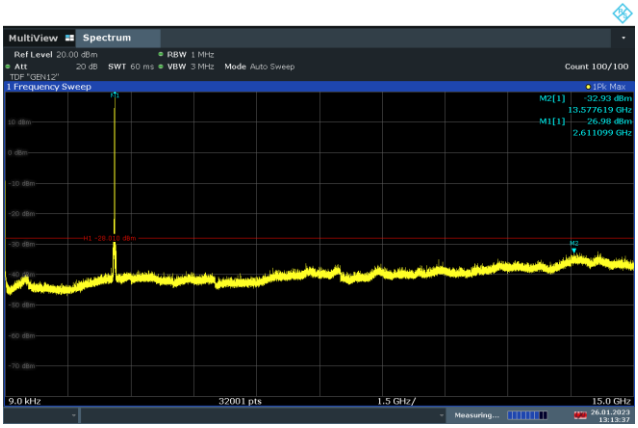
DFT-S-OFDM BPSK - 20 ㎒ High Channel - 1 RB

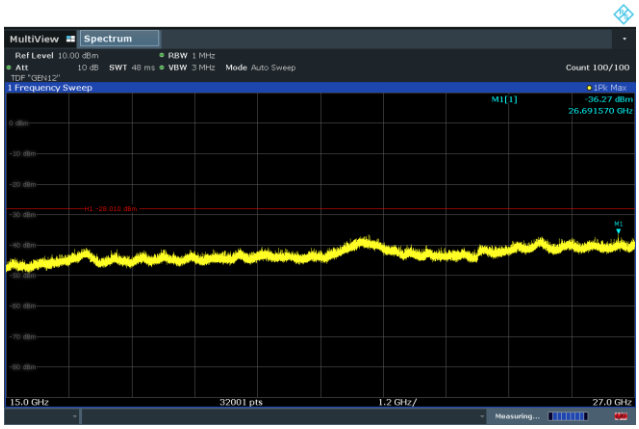
NR band 41 (FCC)_MIMO-Port 1



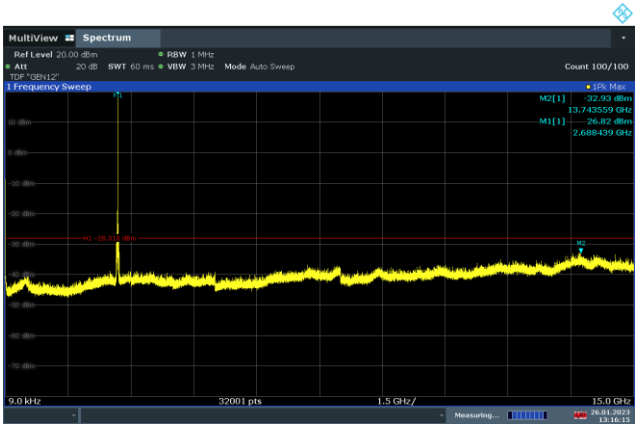


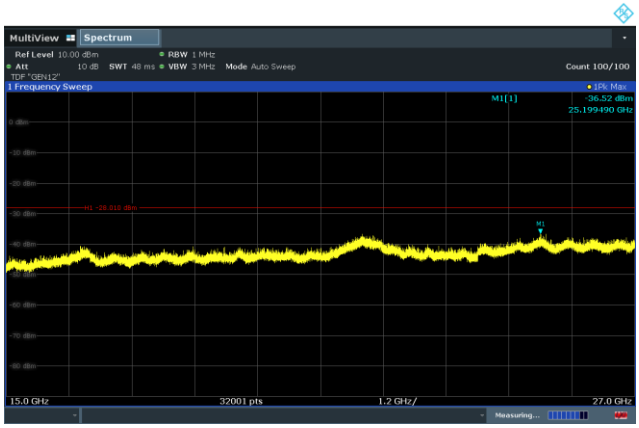
CP-OFDM QPSK - 40 ㎒ Low Channel - 1 RB





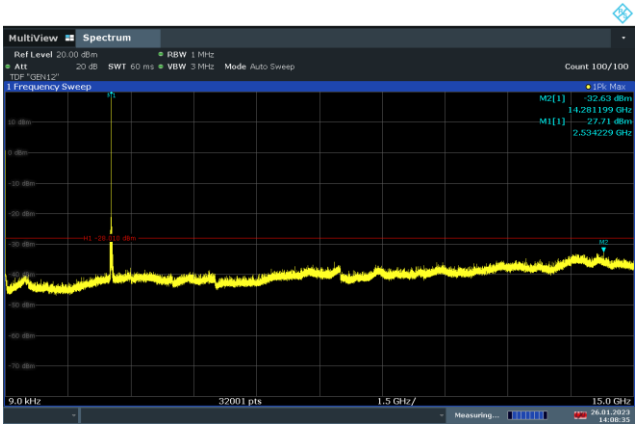
CP-OFDM QPSK - 40 ㎒ Middle Channel - 1 RB

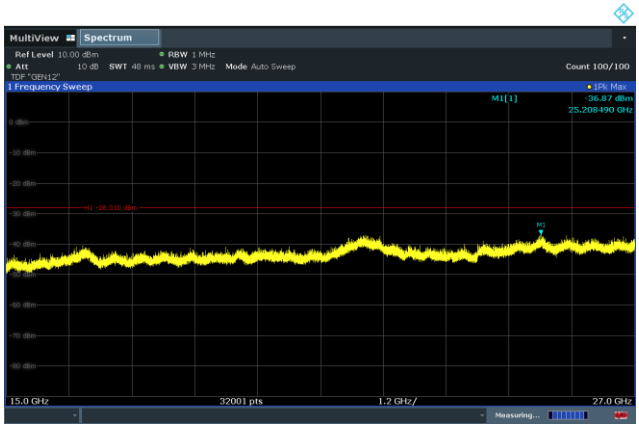




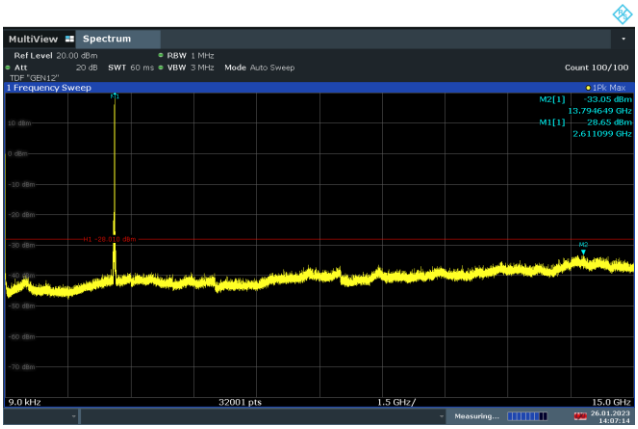
CP-OFDM QPSK - 40 ㎒ High Channel - 1 RB

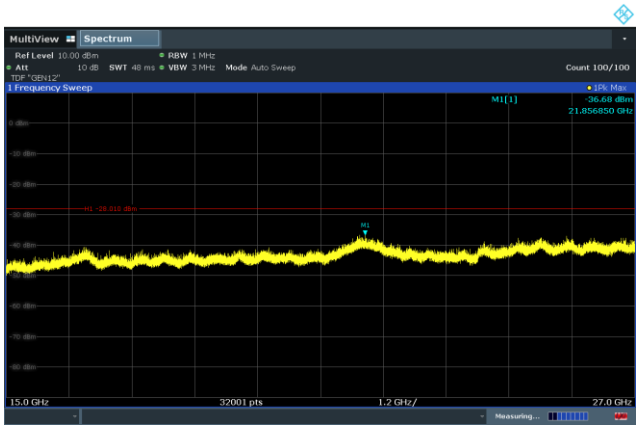
NR band 41 (FCC)_MIMO-Port 2



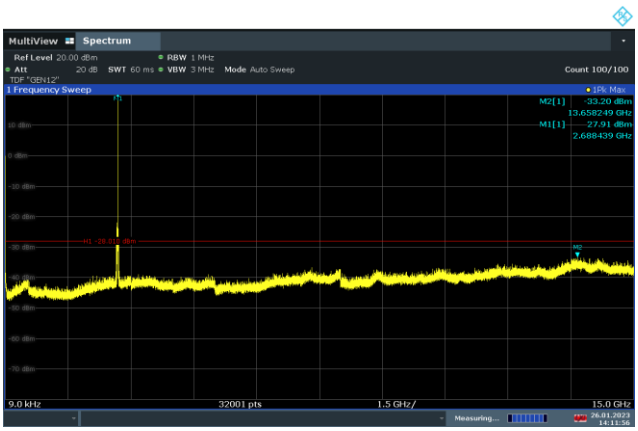


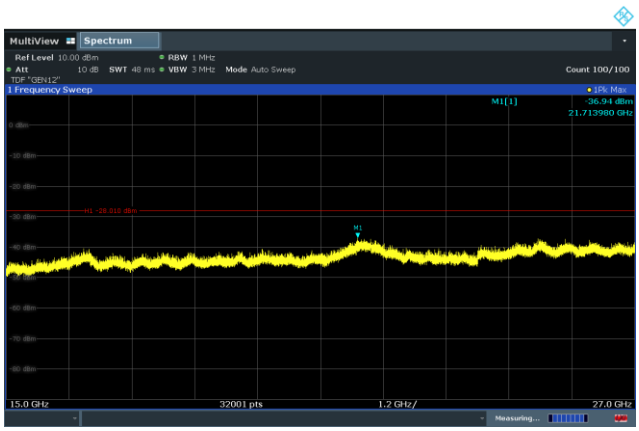
CP-OFDM QPSK - 40 ㎒ Low Channel - 1 RB





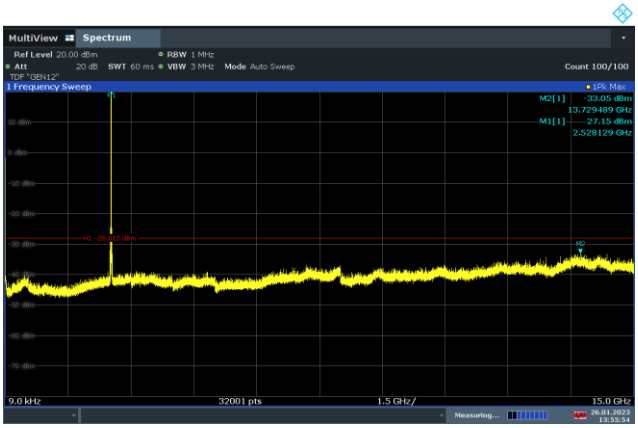
CP-OFDM QPSK - 40 ㎒ Middle Channel - 1 RB

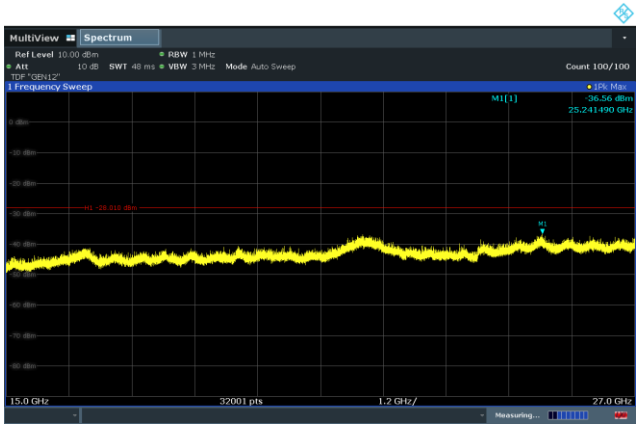




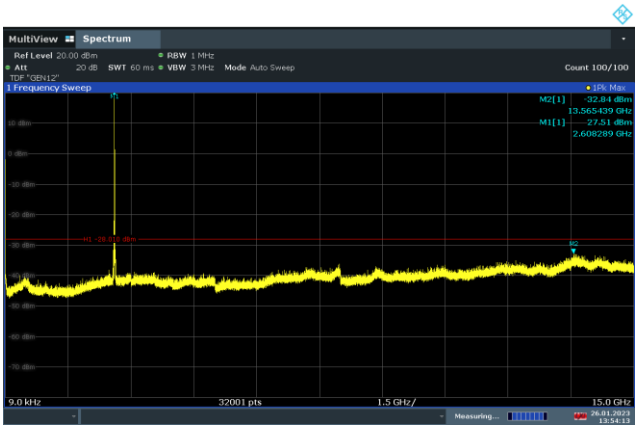
CP-OFDM QPSK - 40 ㎒ High Channel - 1 RB

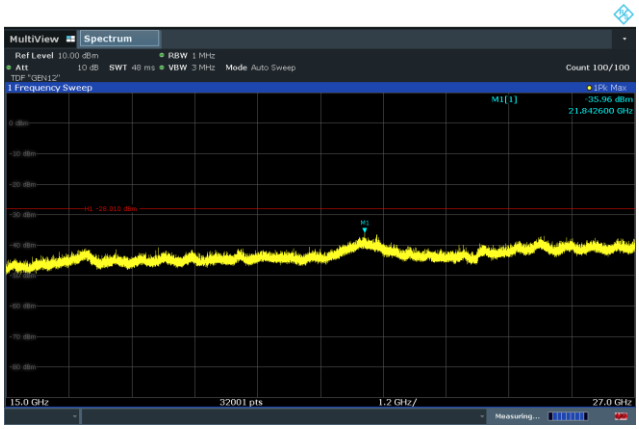
NR band 41 (IC)_MIMO-Port 1



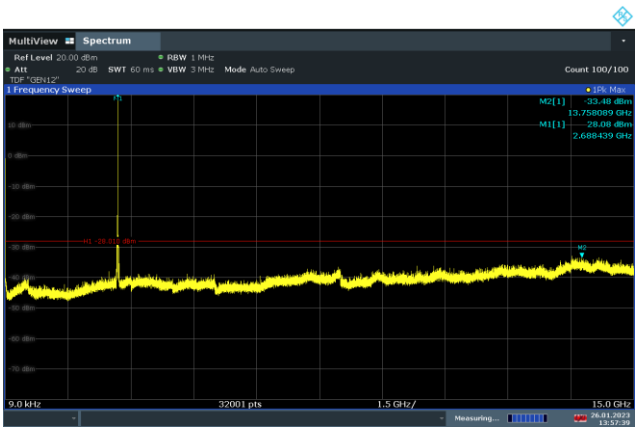


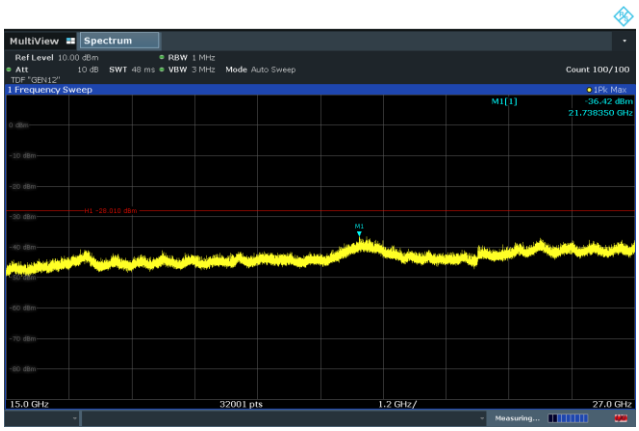
CP-OFDM QPSK - 30 ㎒ Low Channel - 1 RB





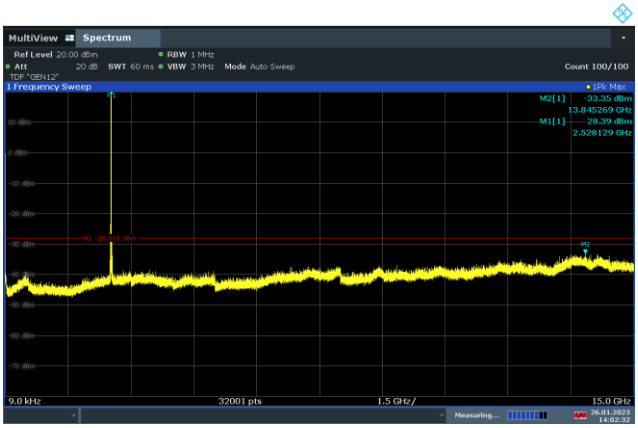
CP-OFDM QPSK - 30 ㎒ Middle Channel - 1 RB

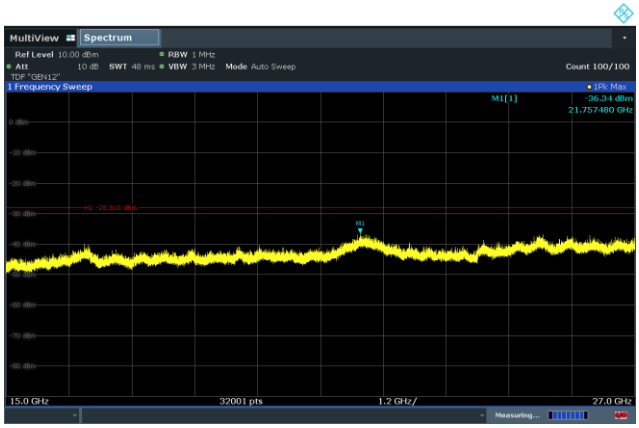




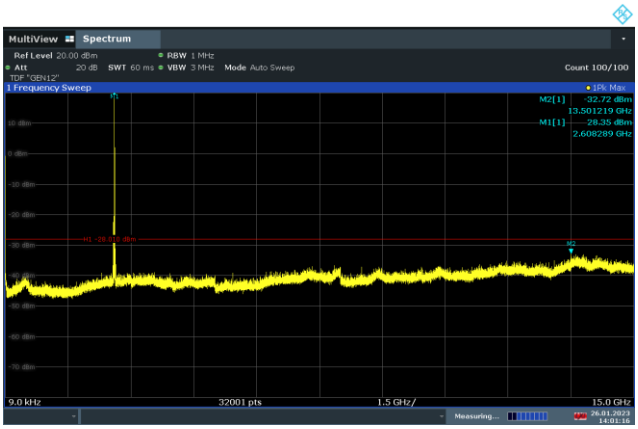
CP-OFDM QPSK - 30 ㎒ High Channel - 1 RB

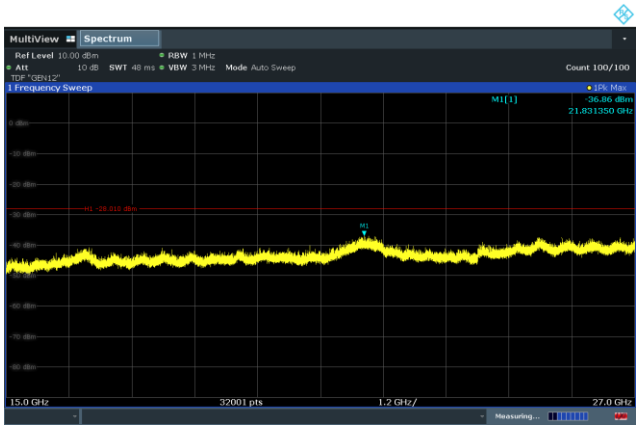
NR band 41 (IC)_MIMO-Port 2



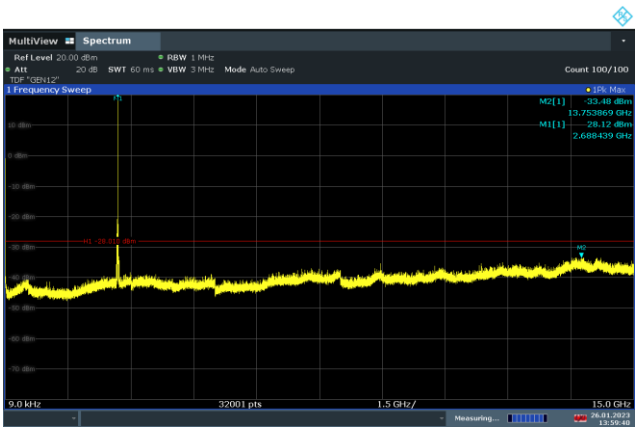


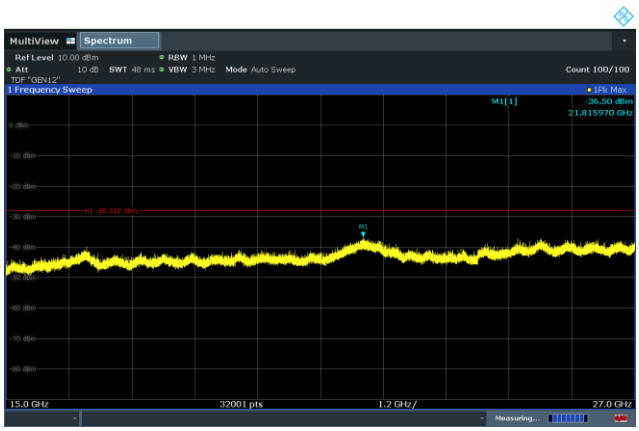
CP-OFDM QPSK - 30 ㎒ Low Channel - 1 RB





CP-OFDM QPSK - 30 ㎒ Middle Channel - 1 RB





CP-OFDM QPSK - 30 ㎒ High Channel - 1 RB

7. Band Edge and Emission Mask

7.1. Limit

FCC

- §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 $\log_{10}$ (P) ㏈ on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 $\log_{10}$ (P) ㏈ on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 $\log_{10}$ (P) ㏈ on all frequencies between 2 490.5 ㎒ and 2 496 ㎒ and 55 + 10 $\log_{10}$ (P) ㏈ at or below 2 490.5 ㎒. Mobile Satellite Service licensees operating on frequencies below 2 495 ㎒ may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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4.5, In the 1 ㎒ band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 ㎒ band, a resolution bandwidth of 1 ㎒ shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 ㎒, or 1% or 2% of the occupied bandwidth, as applicable.

Equipment shall comply with the following unwanted emission limits:

for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in ㏈) below the transmitter power, P (㏈ W), by at least 43 + 10 log10 p for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in ㏈) below the transmitter power, P (㏈ W), by at least:

i. 40 + 10 log10 p from the channel edges to 5 ㎒ away
ii. 43 + 10 log10 p between 5 ㎒ and X ㎒ from the channel edges, and
iii. 55 + 10 log10 p at X ㎒ and beyond from the channel edges

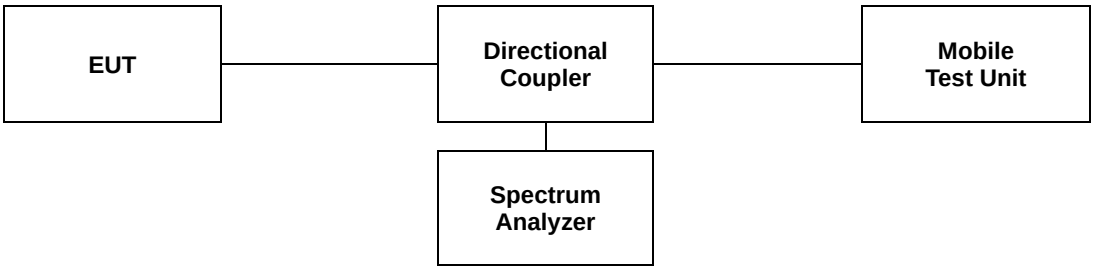
In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2 490.5 ㎒ and 2 496 ㎒, and 55 + 10 log10 p at or below 2 490.5 ㎒.

In (a) and (b), p is the transmitter power measured in watts and X is 6 ㎒ or the equipment occupied bandwidth, whichever is greater.

7.2. Test Procedure

The test follows section 5.7 of ANSI C63.26-2015.

a. Span was set large enough so as to capture all out of band emissions near the band edge.
b. RBW ≥ 1 % of OBW
c. VBW ≥ 3 x RBW.
d. Detector = RMS.
e. Trace mode = Average.
f. Sweep time = Auto.
g. The trace was allowed to stabilize.
h. All path loss of frequency range was investigated and compensated to spectrum analyzer as TDF function.



Note;

1. In case of MIMO mode, the limits were adjusted by a factor of 10*log(2) ㏈ to account for the device operation as a 2 port MIMO transmitter, as per KDB 622911. MIMO factor calculation as below:
MIMO Factor = 10*log(2) = 3.01 ㏈

Frequency Range	Basic Limit (㏈m)	MIMO Factor (㏈)	Adjusted Limit (㏈m)
0 ㎒ to 5 ㎒ above and below the channel edges	-10	3.01	-13.01
5 ㎒ to X ㎒ above and below the channel edges	-13	3.01	-16.01
Below 2 490.5 ㎒ and above X ㎒ from channel edges	-25	3.01	-28.01

7.3. Test Results

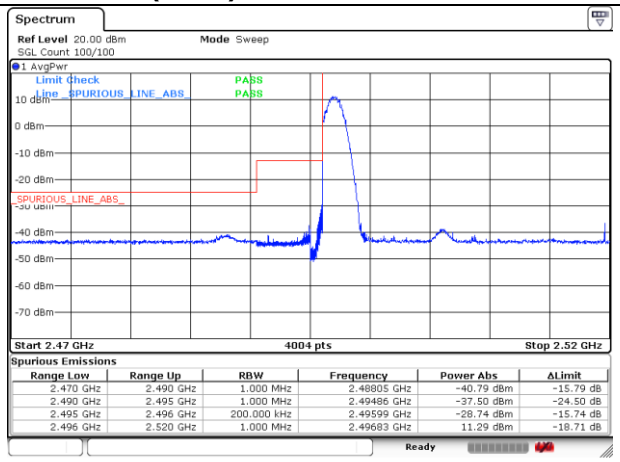
Ambient temperature : (23 ± 1) ℃

Relative humidity : 47 % R.H.

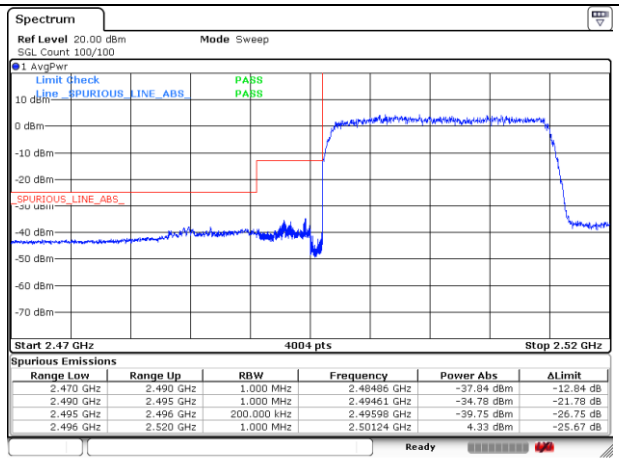
- Test plots

SISO

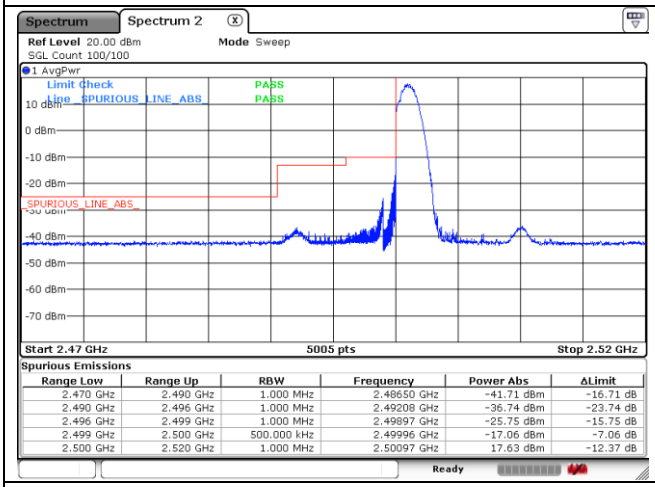
NR band 41 (20 ㎒)



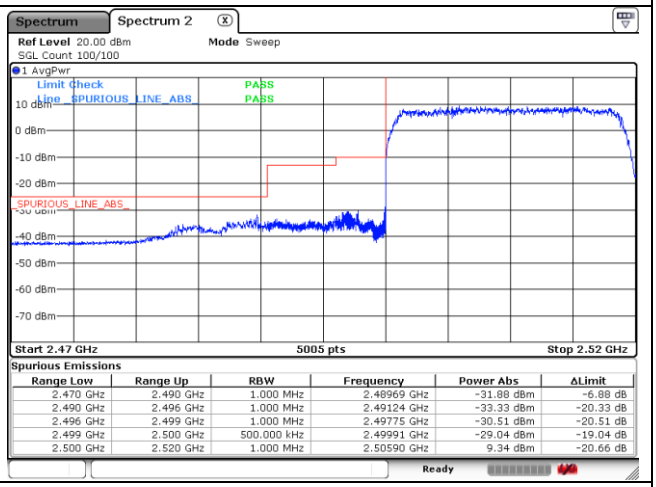
DFT-S-OFDM BPSK - FCC Low Channel - 1 RB



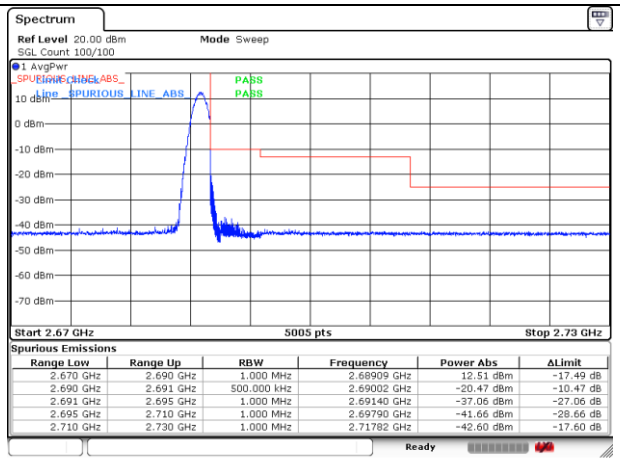
DFT-S-OFDM BPSK - FCC Low Channel - Full RB



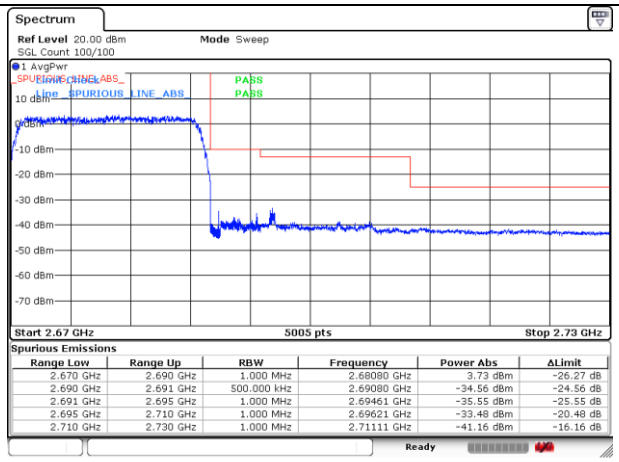
DFT-S-OFDM BPSK - IC Low Channel - 1 RB



DFT-S-OFDM BPSK - IC Low Channel - Full RB

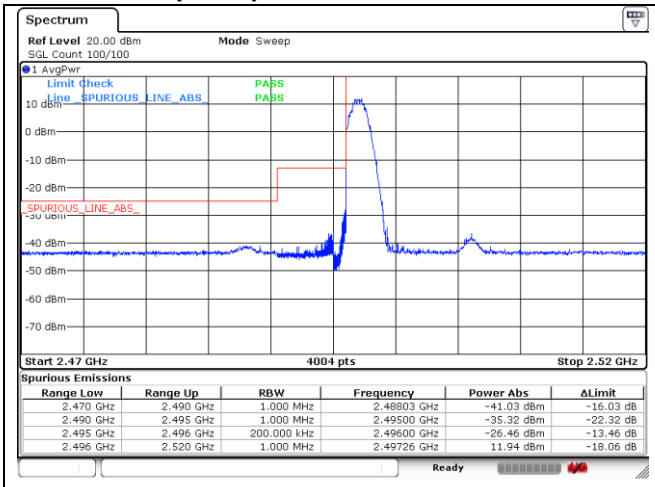


DFT-S-OFDM BPSK - High Channel - 1 RB

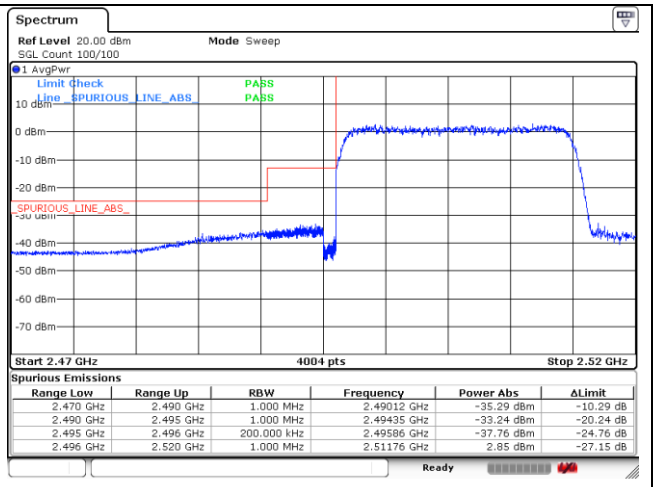


DFT-S-OFDM BPSK - High Channel - Full RB

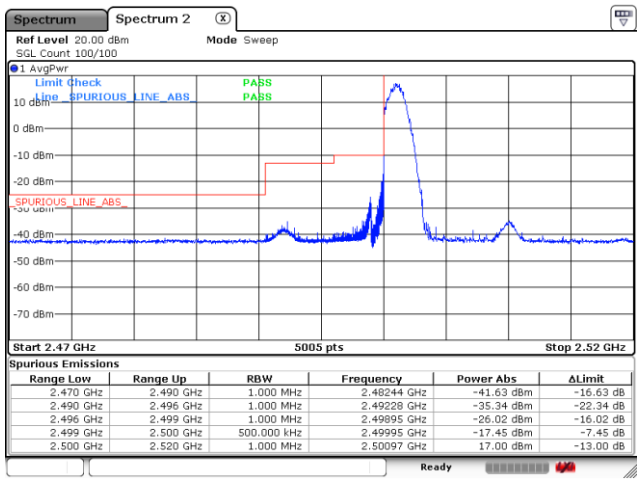
NR band 41 (20 ㎒)



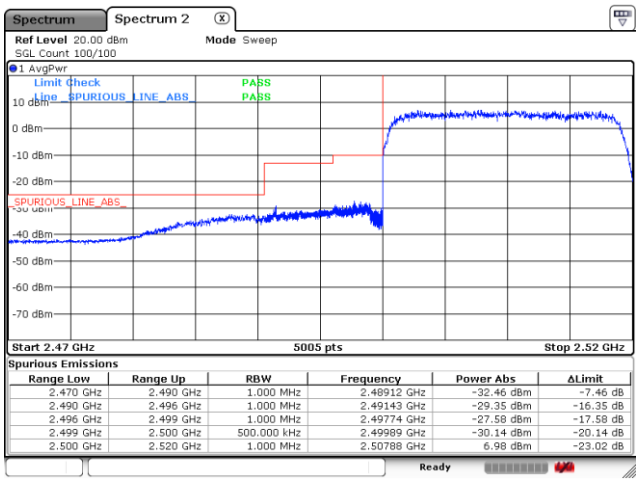
DFT-S-OFDM 16QAM - FCC Low Channel - 1 RB



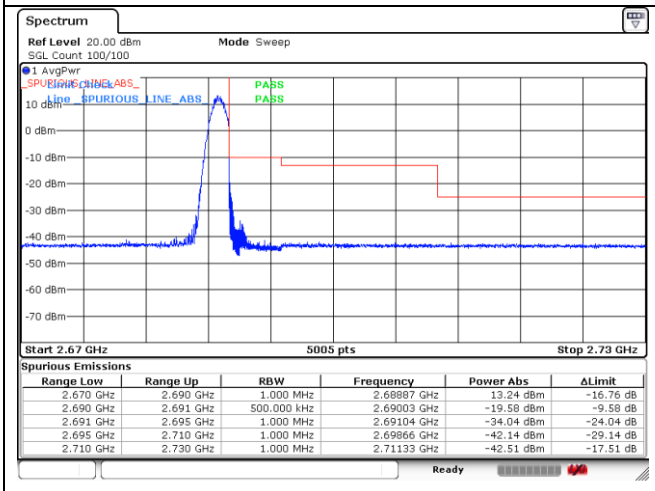
DFT-S-OFDM 16QAM - FCC Low Channel - Full RB



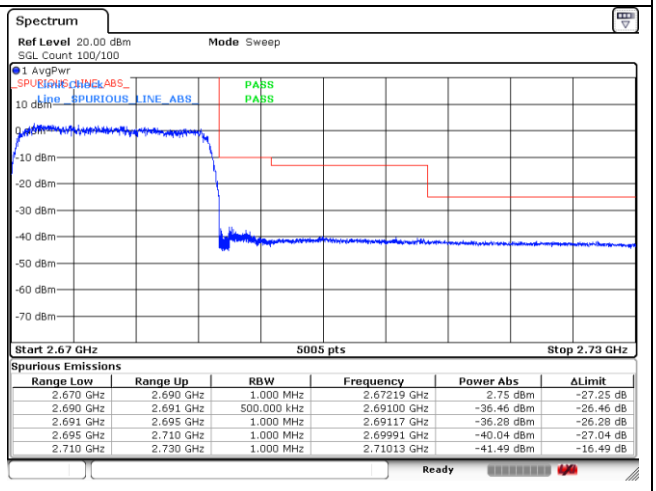
DFT-S-OFDM 16QAM - IC Low Channel - 1 RB



DFT-S-OFDM 16QAM - IC Low Channel - Full RB

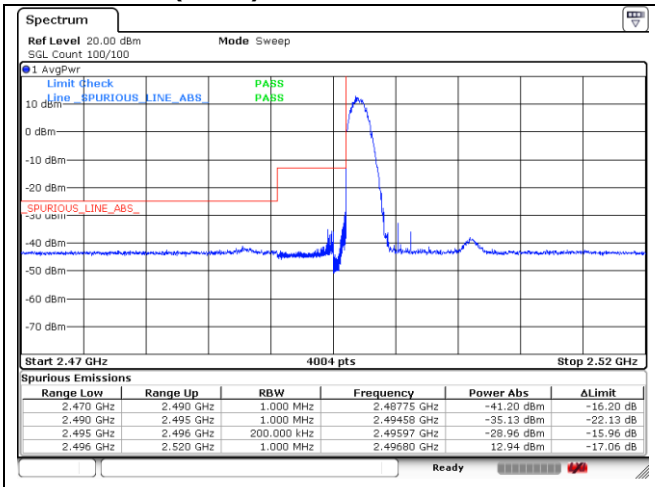


DFT-S-OFDM 16QAM - High Channel - 1 RB

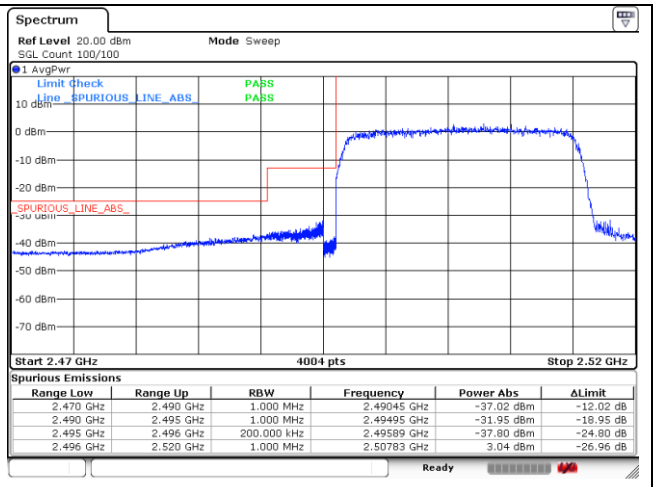


DFT-S-OFDM 16QAM - High Channel - Full RB

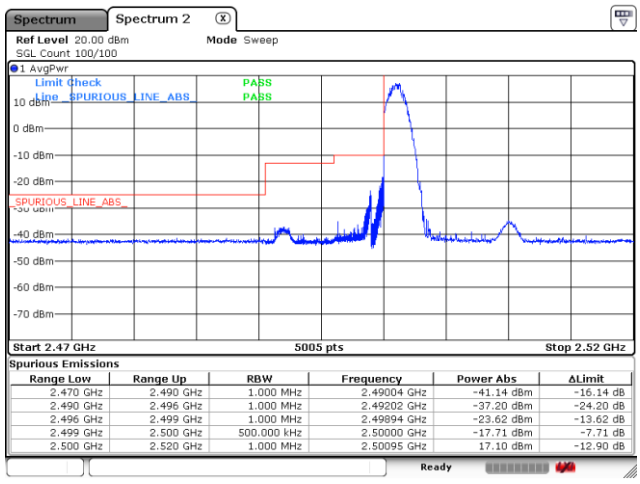
NR band 41 (20 ㎒)



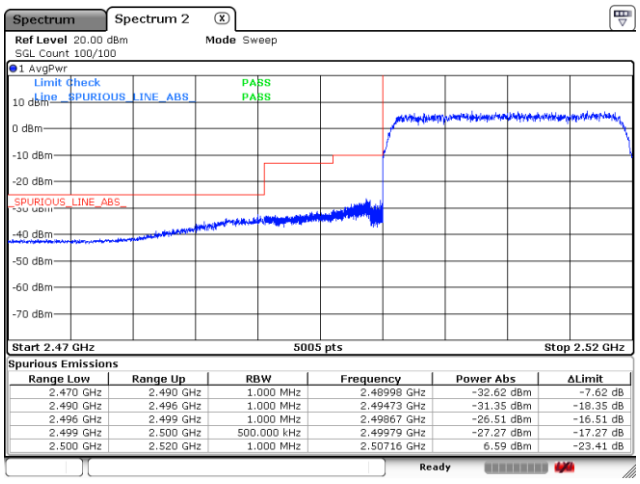
CP-OFDM QPSK - FCC Low Channel - 1 RB



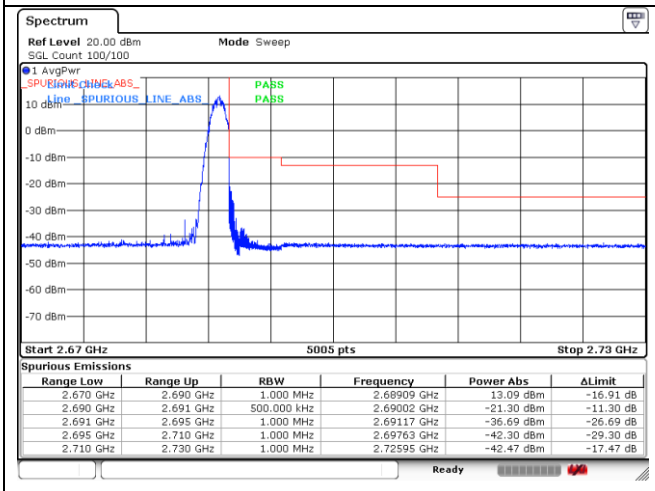
CP-OFDM QPSK - FCC Low Channel - Full RB



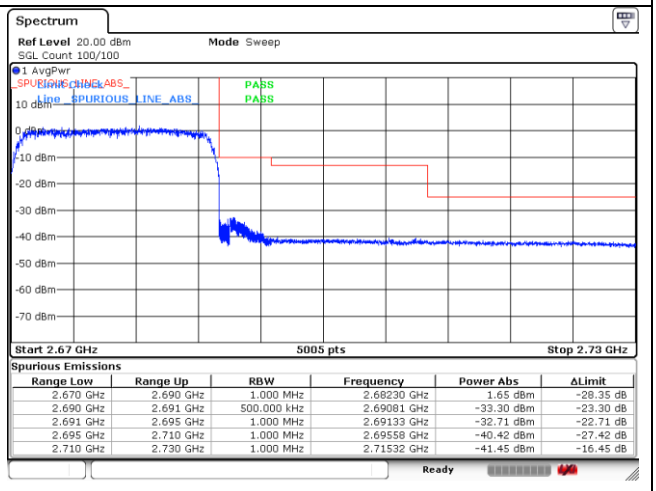
CP-OFDM QPSK - IC Low Channel - 1 RB



CP-OFDM QPSK - IC Low Channel - Full RB

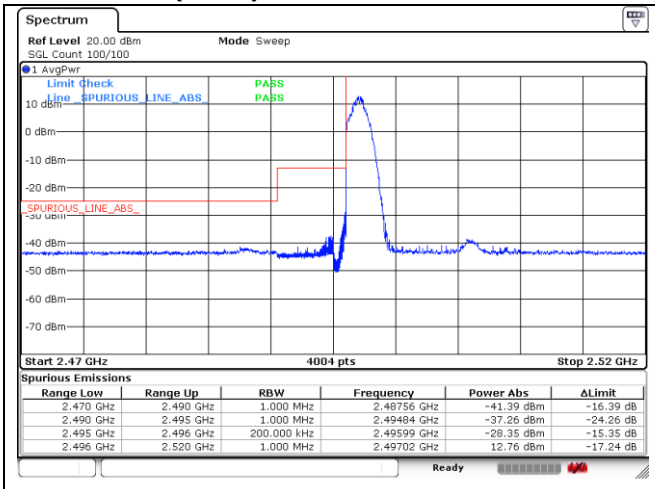


CP-OFDM QPSK - High Channel - 1 RB

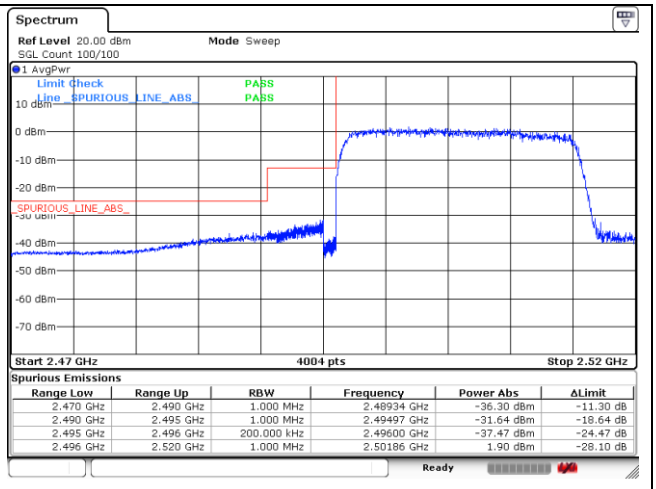


CP-OFDM QPSK - High Channel - Full RB

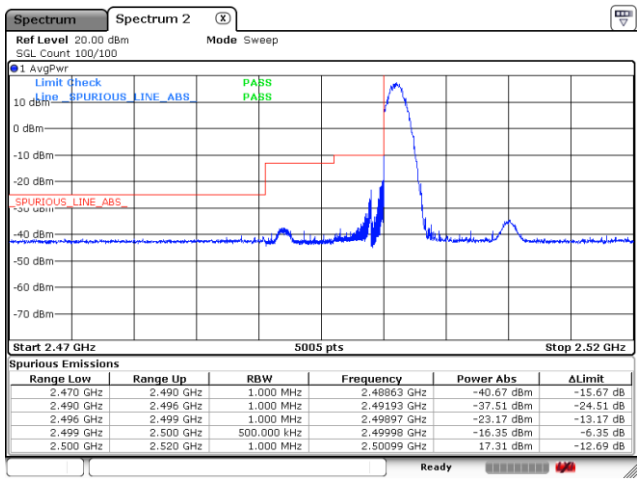
NR band 41 (20 ㎒)



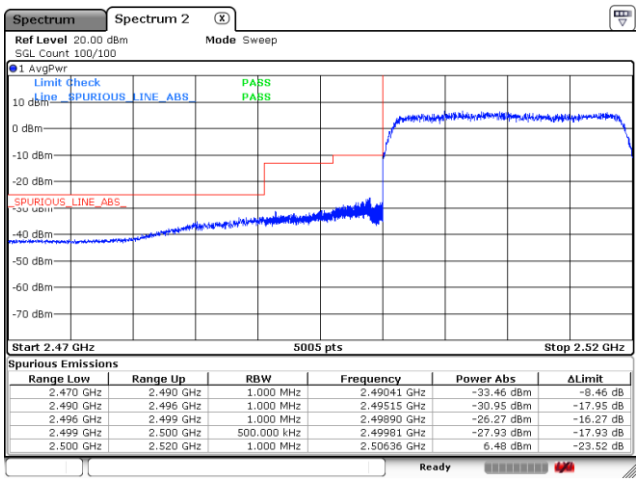
CP-OFDM 16QAM - FCC Low Channel - 1 RB



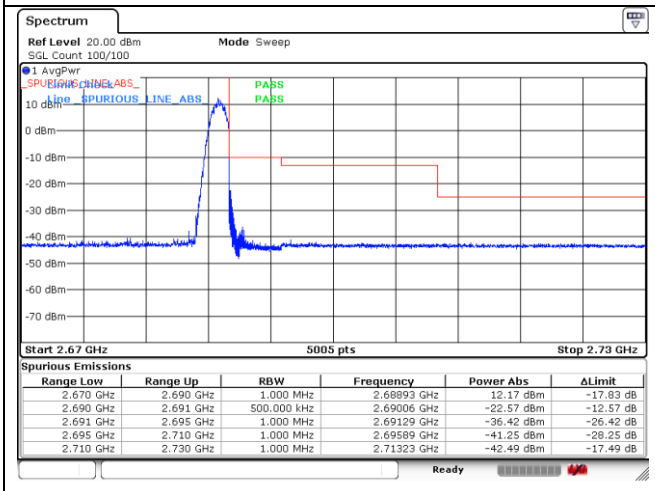
CP-OFDM 16QAM - FCC Low Channel - Full RB



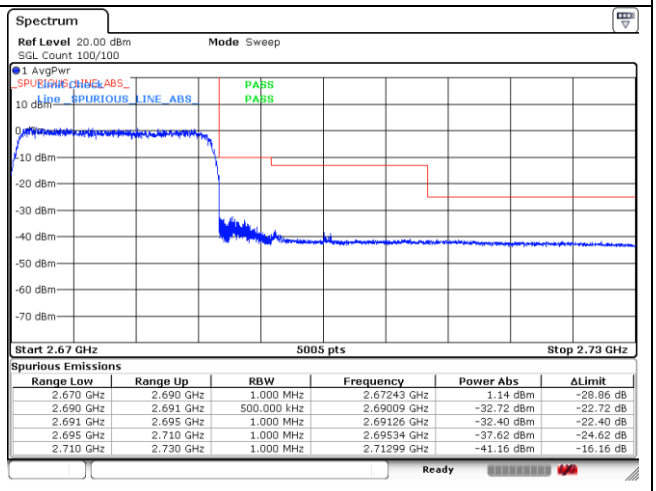
CP-OFDM 16QAM - IC Low Channel - 1 RB



CP-OFDM 16QAM - IC Low Channel - Full RB

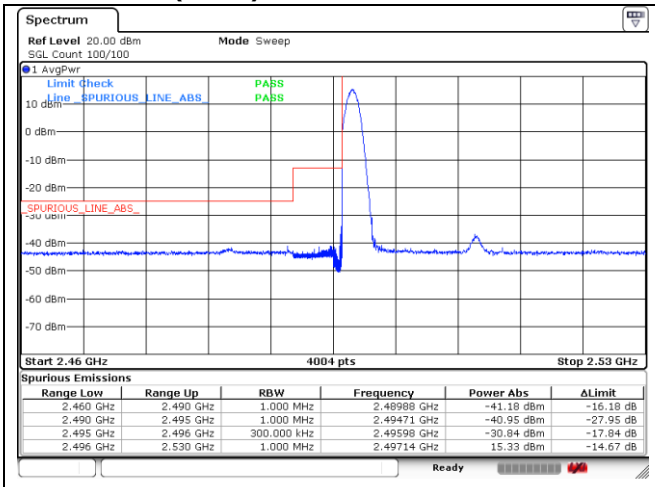


CP-OFDM 16QAM - High Channel - 1 RB

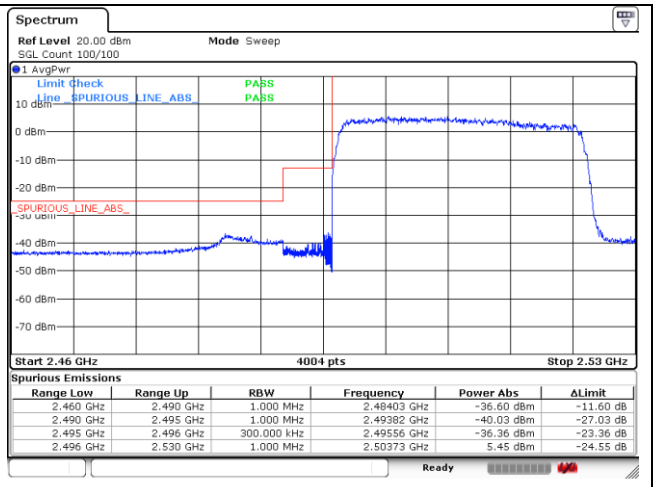


CP-OFDM 16QAM - High Channel - Full RB

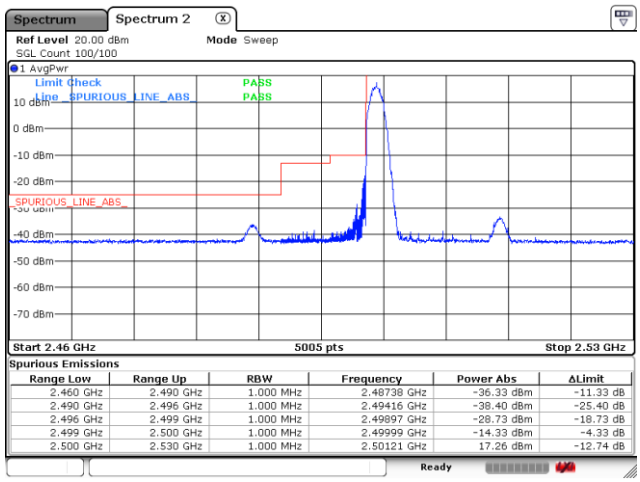
NR band 41 (30 ㎒)



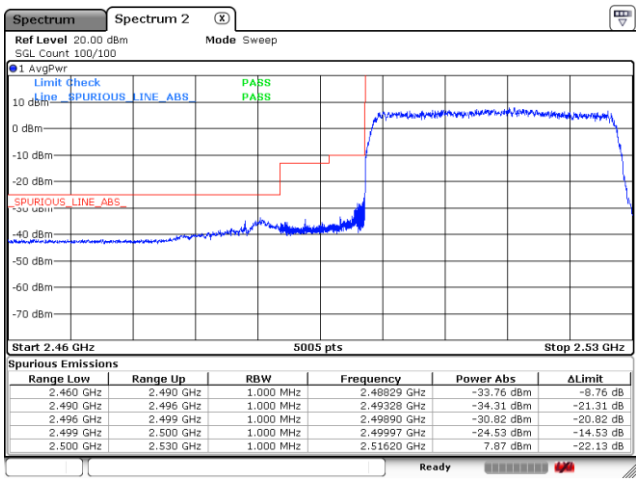
DFT-S-OFDM BPSK - FCC Low Channel - 1 RB



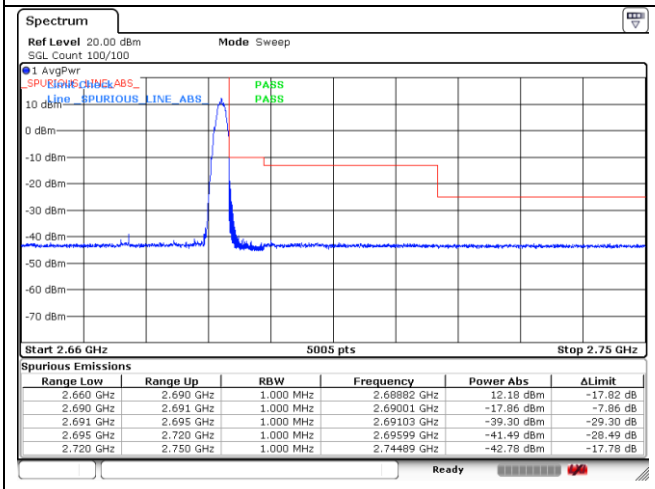
DFT-S-OFDM BPSK - FCC Low Channel - Full RB



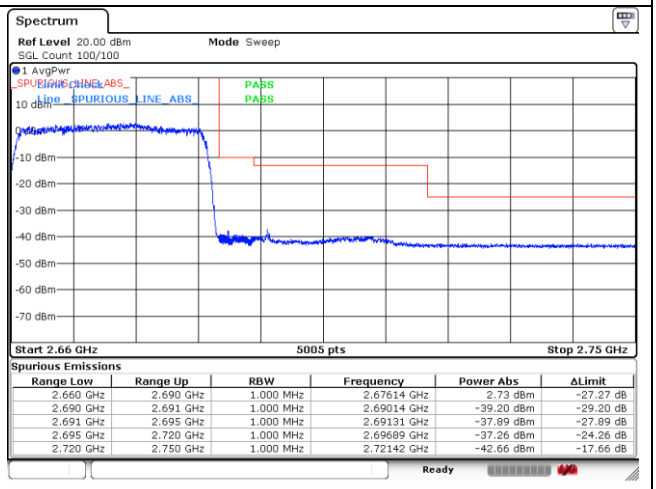
DFT-S-OFDM BPSK - IC Low Channel - 1 RB



DFT-S-OFDM BPSK - IC Low Channel - Full RB



DFT-S-OFDM BPSK - High Channel - 1 RB



DFT-S-OFDM BPSK - High Channel - Full RB