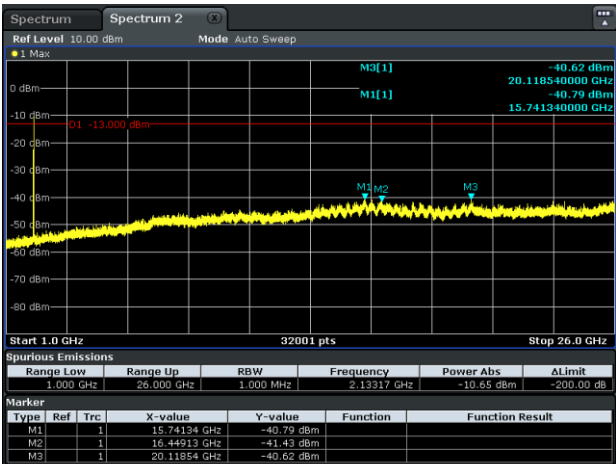


Date: 4 APR 2019 12:18:21

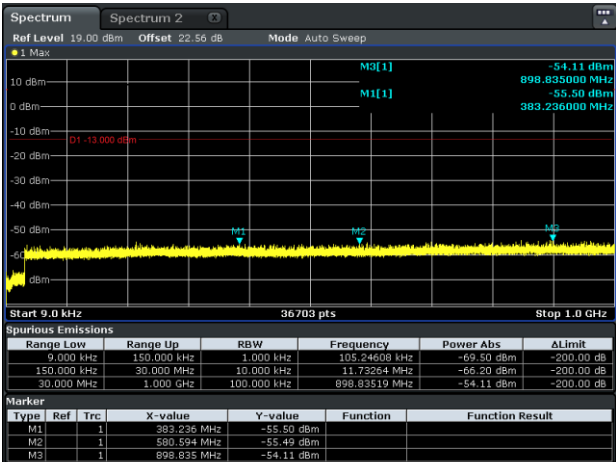
Figure 8.2-21: Conducted spurious emissions 9KHz to 1GHz, 2132.5MHz, 16QAM, 20MHz BW.



Date: 4 APR 2019 12:19:07

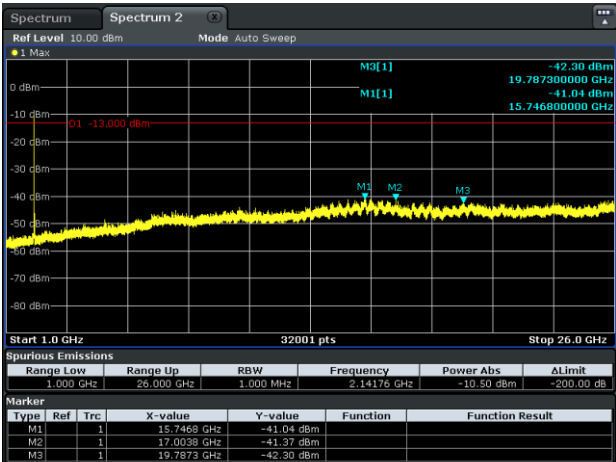
Figure 8.2-22: Conducted spurious emissions 1GHz to 26GHz, 2132.5MHz, 16QAM, 20MHz BW.

Figure 8.2-22



Date: 4 APR 2019 12:22:09

Figure 8.2-23: Conducted spurious emissions 9KHz to 1GHz, 2145MHz, 16QAM, 20MHz BW.



Date: 4 APR 2019 12:22:57

Figure 8.2-24: Conducted spurious emissions 1GHz to 26GHz, 2145MHz, 16QAM, 20MHz BW.

Figure 8.2-24

8.3 Spurious emissions at RF antenna connector (Band 13)

8.3.1 Definitions and limits

FCC 27.53:

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

RSS-130 Issue 2

4.7 Transmitter unwanted emissions

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} P$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

- a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least: (i) $76 + 10 \log_{10} P$ (watts), dB, for base and fixed equipment, and (ii) $65 + 10 \log_{10} P$ (watts), dB, for mobile and portable equipment.
- b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

8.3.2 Test summary

Test date	April 4, 2019
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8.3.3 Observations, settings and special notes

The spectrum was searched from 9kHz to the 26GHz.

All measurements were performed using RMS detector at Max Hold.

Antenna 2 – LTE Band 13, 16QAM, 5Mhz and 10MHz Bandwidth - Spurious Emissions

Not shown –Plots for Port 1 were essentially the same.

Offset: 20db attenuator + 0.41dB cable loss + 2.15dBi (<1GHz) antenna gain = 22.56dB

8.3.4 Test data

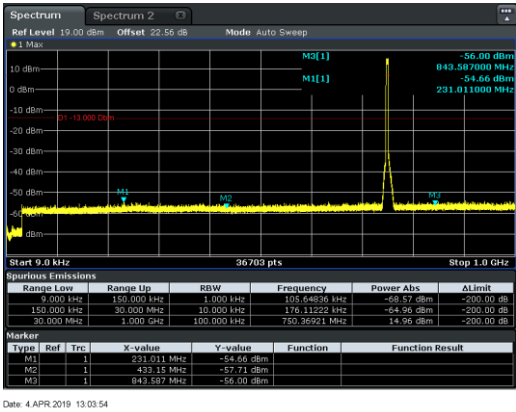


Figure 8.3-1: Conducted spurious emissions 9KHz to 1GHz, 748.5MHz, 16QAM, 5MHz BW.

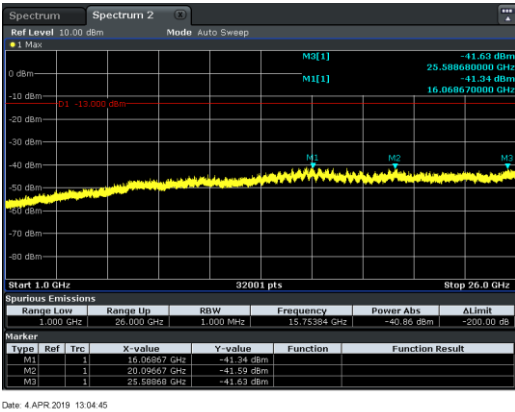


Figure 8.3-2: Conducted spurious emissions 1GHz to 26GHz, 748.5MHz, 16QAM, 5MHz BW.

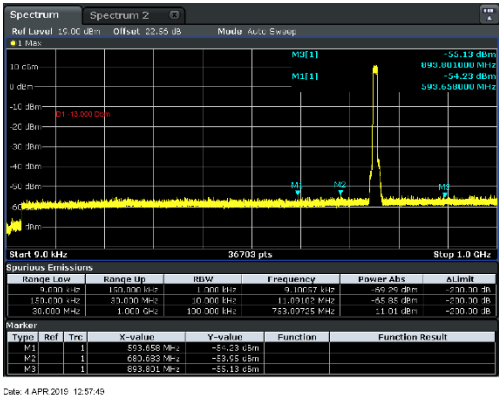


Figure 8.3-33: Conducted spurious emissions 9KHz to 1GHz, 751MHz, 16QAM, 5MHz BW.

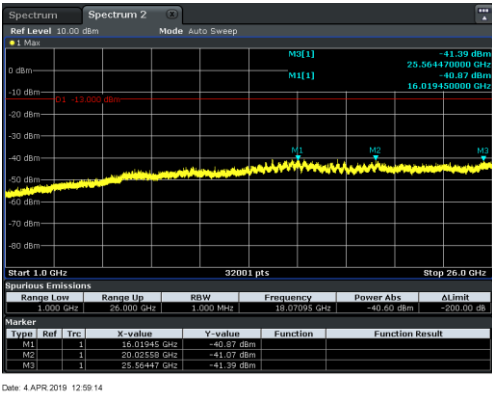


Figure 8.3-34: Conducted spurious emissions for QPSK to 26GHz (751MHz) at 16QAM, 5MHz BW.

Figure 8.3-4: :

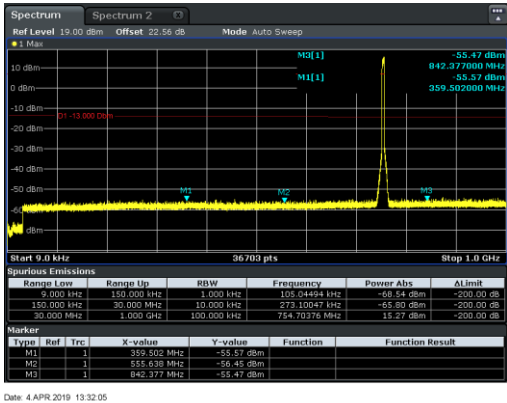


Figure 8.3-35: Conducted spurious emissions 9KHz to 1GHz, 753.5MHz, 16QAM, 5MHz BW.

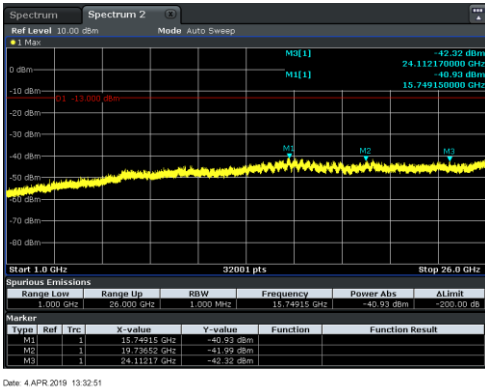


Figure 8.3-36: Conducted spurious emissions 1GHz to 26GHz, 753.5MHz, 16QAM, 5MHz BW.

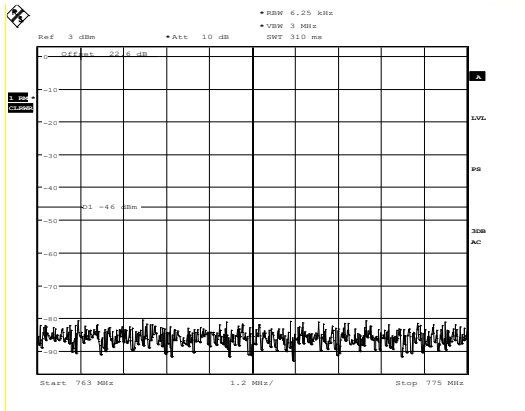


Figure 8.32-37: Conducted additional unwanted emissions limits 763-775MHz 6QAM, 5MHz BW.

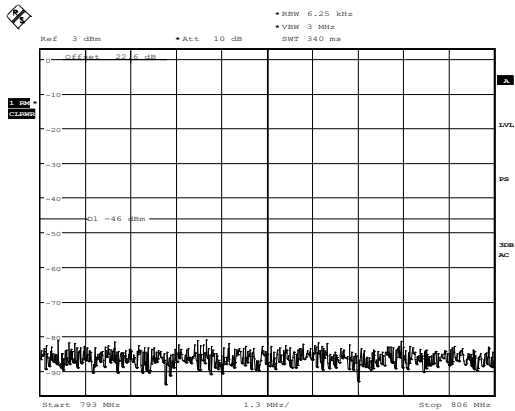


Figure 8.3-38: Conducted additional unwanted emissions limits 793-806MHz 6QAM, 5MHz BW.

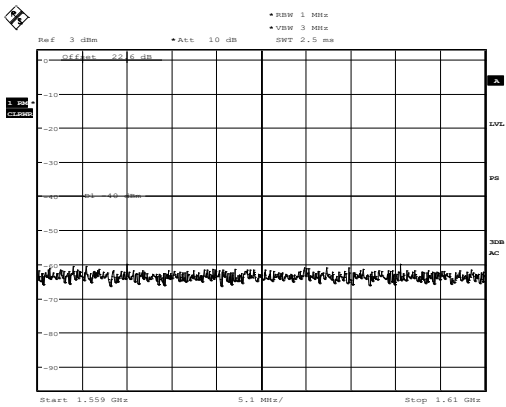


Figure 8.3-39: Conducted additional unwanted emissions limits 1559-1610MHz 6QAM, 5MHz BW.

Figure 8.3-5: : Conducted spurious emissions for QPSK 5 MHz Mid channel at Port 1

Figure 8.3-6: :

Table 8.3-1: Spurious Emissions at Band Edges – Port 2 – LTE Band 4

Frequency	Band Edge Measurement (dBm)	RBW (kHz)	Limit (dBm)
Band 4			
Bandwidth 5MHz			
QPSK			
2112.5	-29.54	50	-13
2152.5	-26.00	50	-13
16QAM			
2112.5	-31.08	50	-13
2152.5	-24.94	50	-13
64QAM			
2112.5	-29.97	50	-13
2152.5	-27.70	50	-13
Bandwidth 10MHz			
QPSK			
2115	-22.72	200	-13
2150	-21.54	200	-13
16QAM			
2115	-21.21	200	-13
2150	-21.94	200	-13
64QAM			
2115	-26.09	200	-13
2150	-23.85	200	-13
Bandwidth 15MHz			
QPSK			
2117.5	-26.61	200	-13
2147.5	-31.70	200	-13
16QAM			
2117.5	-28.35	200	-13
2147.5	-28.49	200	-13
64QAM			
2117.5	-28.78	200	-13
2147.5	-27.65	200	-13
Bandwidth 20MHz			
QPSK			
2120	-30.45	200	-13
2145	-30.00	200	-13
16QAM			
2120	-30.79	200	-13
2145	-28.15	200	-13
64QAM			
2120	-29.16	200	-13
2145	-29.74	200	-13

Table 8.3-2: Spurious Emissions at band edges – Port 2 – LTE Band 13

Frequency	Band Edge Measurement (dBm)	RBW (kHz)	Limit (dBm)
Band 13			
Bandwidth 5MHz			
QPSK			
748.5	-31.95	30	-13
753.5	-31.86	30	-13
16QAM			
748.5	-31.81	30	-13
753.5	-27.51	30	-13
64QAM			
748.5	-29.07	30	-13
753.5	-33.98	30	-13
Bandwidth 10MHz			
QPSK			
751	-39.11 / -35.31	30	-13
16QAM			
751	-35.49 / -35.91	30	-13
64QAM			
751	-33.54 / -36.01	30	-13



Spurious Emissions at band edges – Port 2 – LTE Band 4

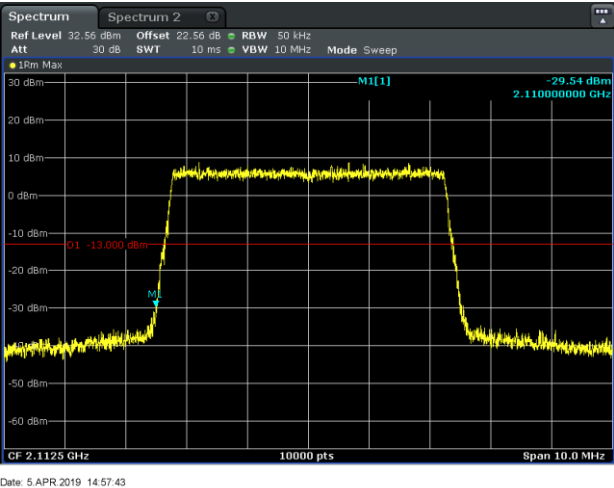


Figure 8.3-7: Conducted band edge for QPSK 212.5MHz, 5MHz Channel.

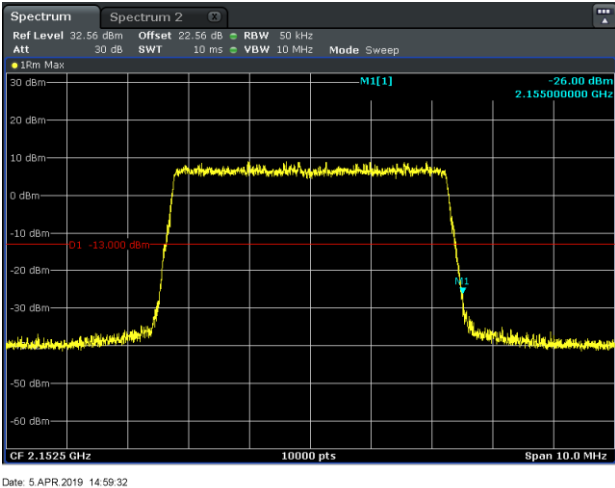


Figure 8.3-8: Conducted band edge for QPSK 2152.5MHz, 5MHz Channel.

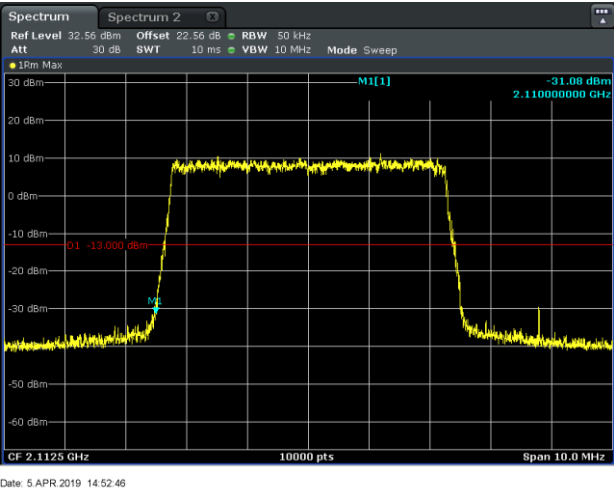


Figure 8.3-39: Conducted band edge for 16QAM 212.5MHz, 5MHz channel.

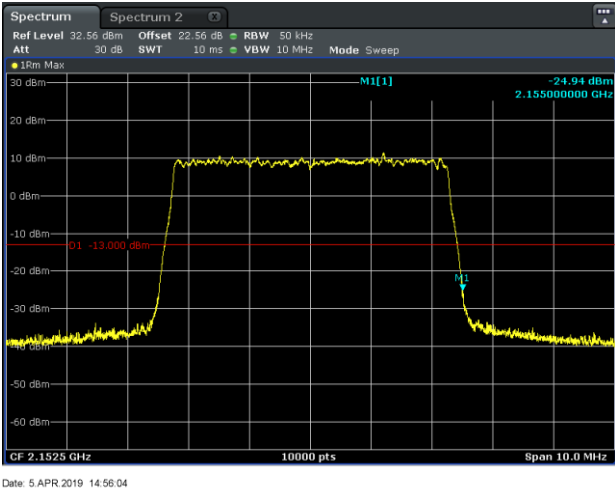
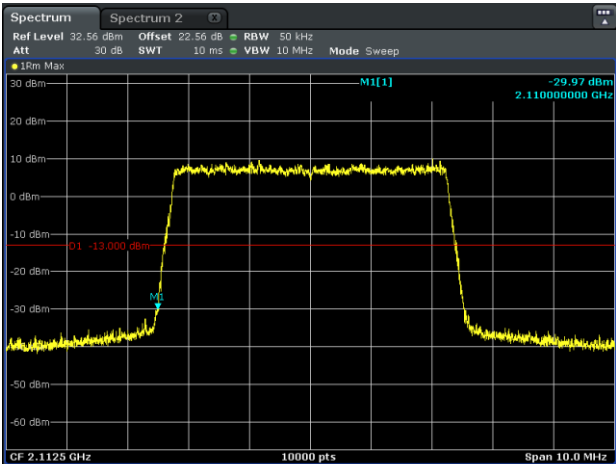
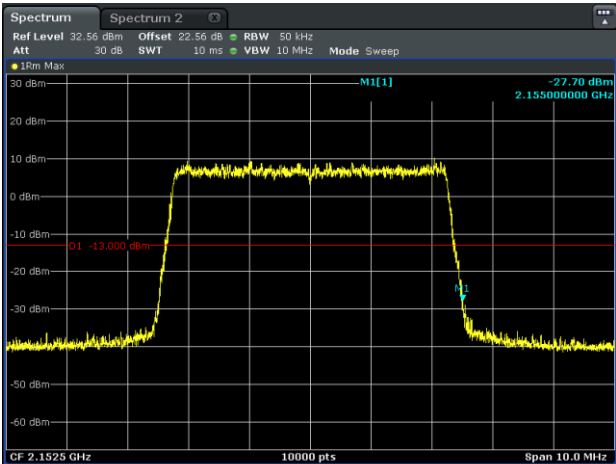


Figure 8.3-40: Conducted band edge for 16QAM 2152.5MHz, 5MHz channel.



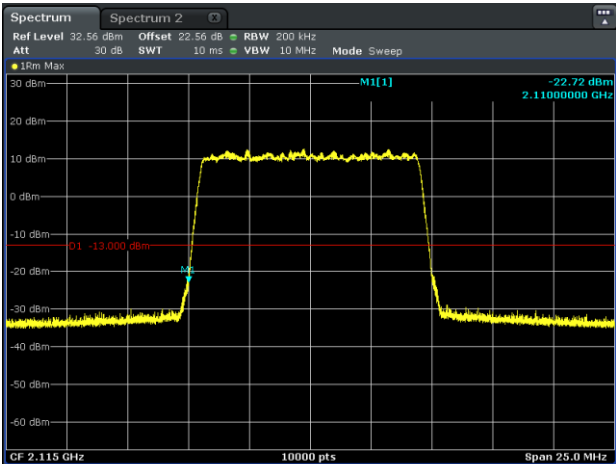
Date: 5 APR 2019 14:49:23

Figure 8.3-41: Conducted band edge for 64QAM 212.5MHz, 5MHz Channel.



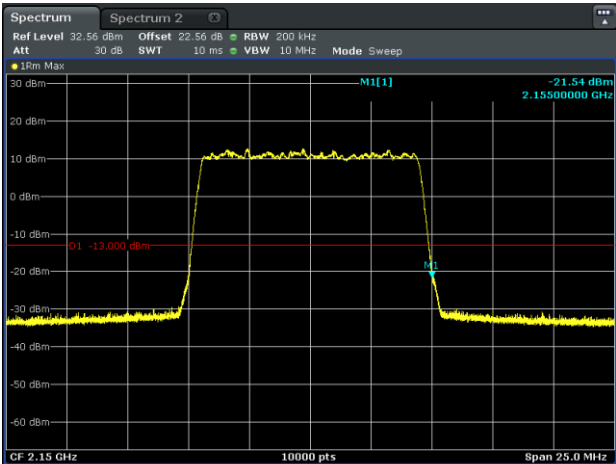
Date: 5 APR 2019 14:51:05

Figure 8.3-42: Conducted band edge for 64QAM 2152.5MHz, 5MHz channel.



Date: 5 APR 2019 14:36:06

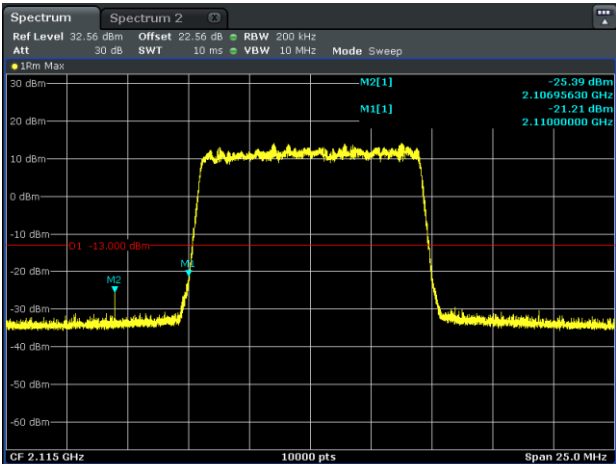
Figure 8.3-43: Conducted band edge for QPSK 2115 MHz, 10MHz channel



Date: 5 APR 2019 14:46:29

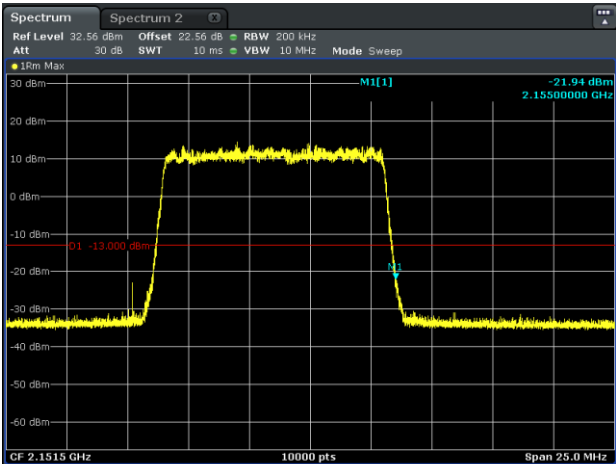
Figure 8.3-44: Conducted band edge for QPSK 2150 MHz, 10MHz channel - Port 1

Figure 8.3-1



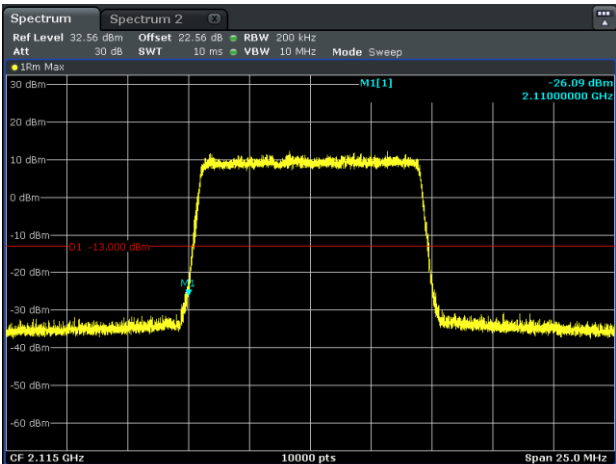
Date: 5 APR 2019 14:25:32

Figure 8.3-45: Conducted band edge for 16QAM 2115 MHz, 10MHz channel



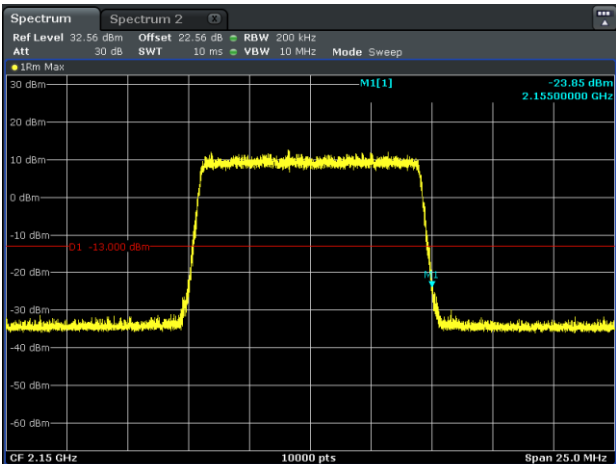
Date: 5 APR 2019 14:29:20

Figure 8.3-46: Conducted band edge for 16QAM 2115 MHz, 10MHz channel - Port 1



Date: 5 APR 2019 14:21:10

Figure 8.3-47: Conducted band edge for 64QAM 2115 MHz, 10MHz channel



Date: 5 APR 2019 14:22:55

Figure 8.3-48: Conducted band edge for 64QAM 2150 MHz, 10MHz channel

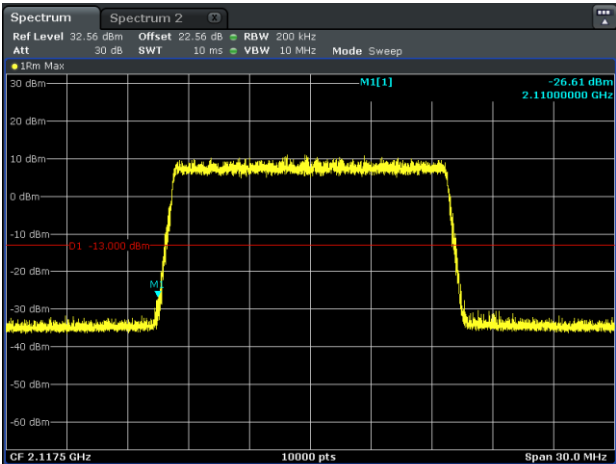


Figure 8.3-49: Conducted band edge for QPSK 2117.5 MHz, 15MHz channel

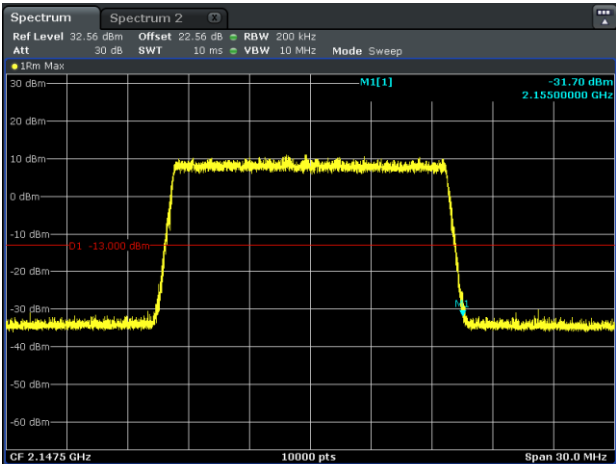


Figure 8.3-50: Conducted band edge for QPSK 2117.5 MHz, 15MHz channel - Port 1

Figure 8.3-13: 15 MHz channel -

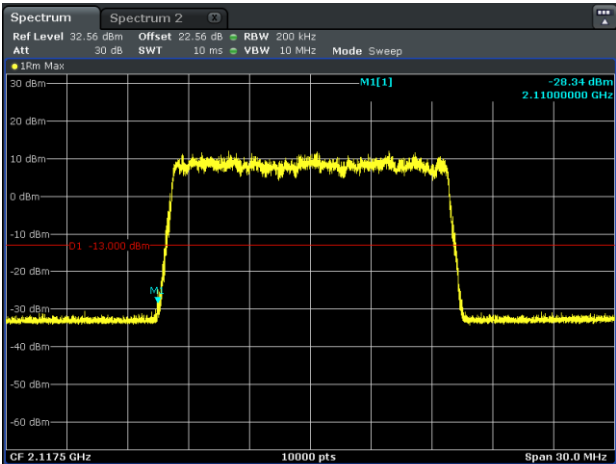


Figure 8.3-51: Conducted band edge for 16QAM 2117.5MHz,15MHz channel

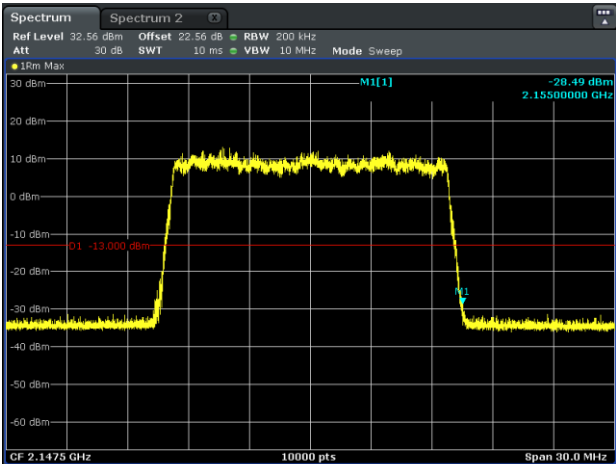
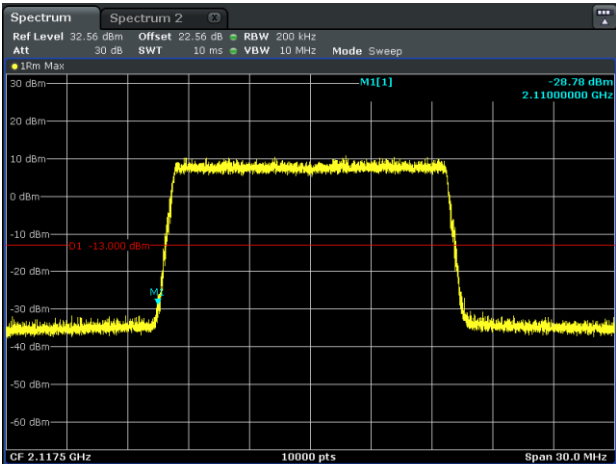


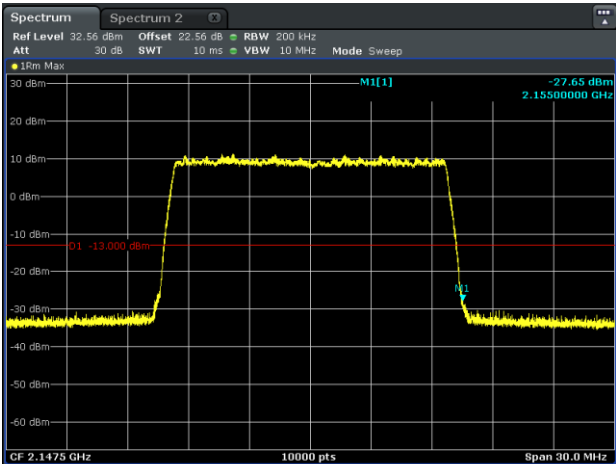
Figure 8.3-54: Conducted band edge for 16QAM 2117.5 MHz, 15MHz channel - Port 1

Figure 8.3-15: 15 MHz channel -



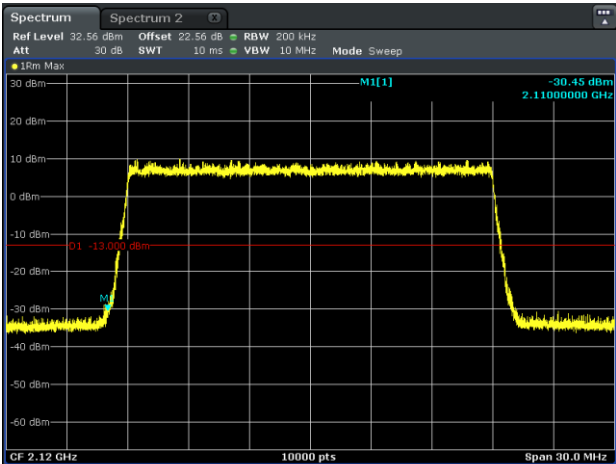
Date: 5 APR 2019 13:09:38

Figure 8.3-53: Conducted band edge for 64QAM 2117.5MHz,15MHz channel



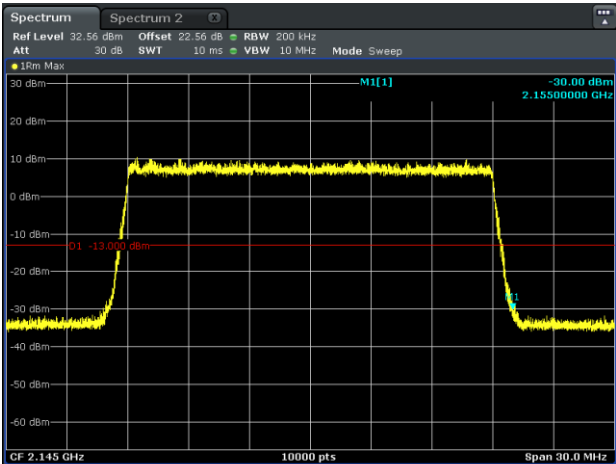
Date: 5 APR 2019 13:12:45

Figure 8.3-54: Conducted band edge for 64QAM 2147.5MHz,15MHz channel



Date: 5 APR 2019 11:48:06

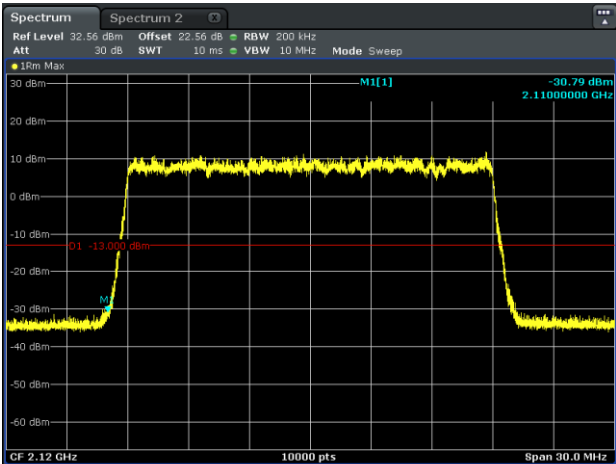
Figure 8.3-55: Conducted band edge for QPSK 2120MHz, 20MHz channel



Date: 5 APR 2019 11:48:08

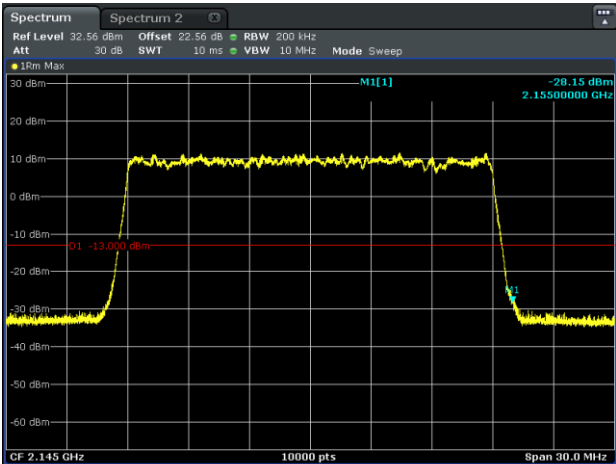
Figure 8.3-56: Conducted band edge for QPSK 2145MHz, 20MHz channel

Figure 8.3-17: 17.5MHz channel - Port 1



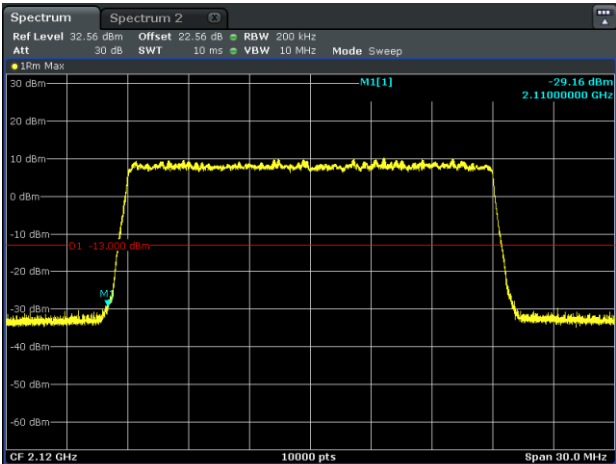
Date: 5 APR 2019 11:38:46

Figure 8.3-57: Conducted band edge for 16QAM 2120MHz, 20MHz channel



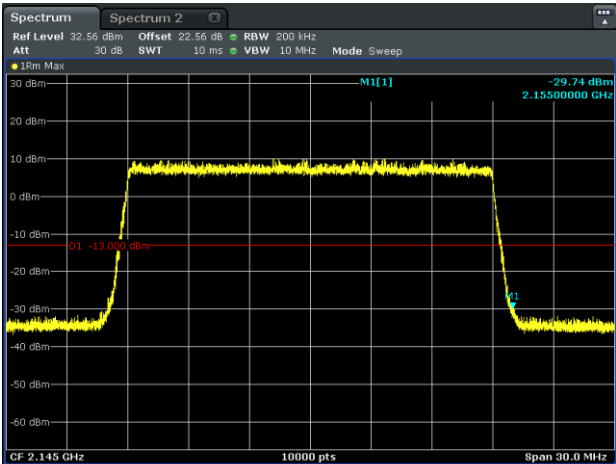
Date: 5 APR 2019 11:42:34

Figure 8.3-58: Conducted band edge for 16QAM 2145MHz, 20MHz channel



Date: 5 APR 2019 11:34:41

Figure 8.3-59: Conducted band edge for 64QAM 2120MHz, 20MHz channel

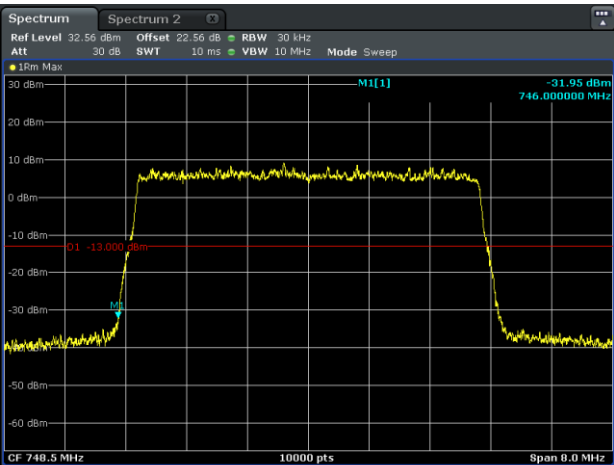


Date: 5 APR 2019 11:36:53

Figure 8.3-60: Conducted band edge for 64QAM 2145MHz, 20MHz channel

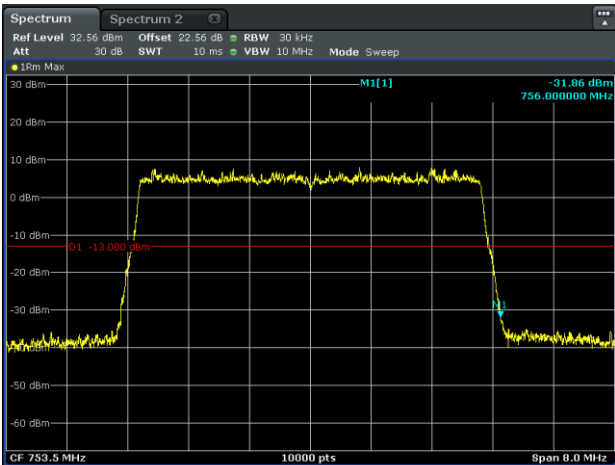


Spurious Emissions at band edges – Port 2 – LTE Band 13



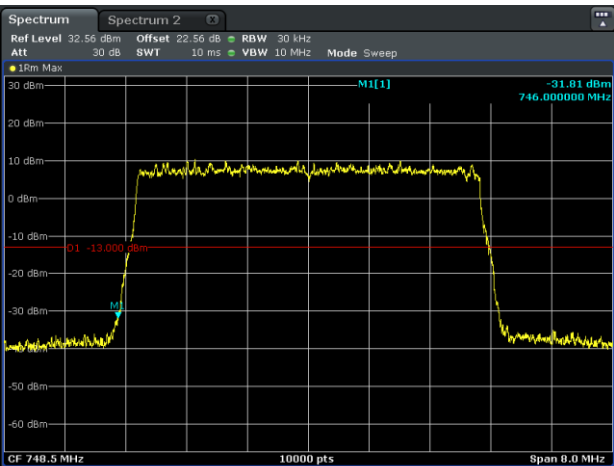
Date: 5 APR 2019 10:51:17

Figure 8.3-61: Conducted band edge for QPSK 748.5MHz, 5MHz channel



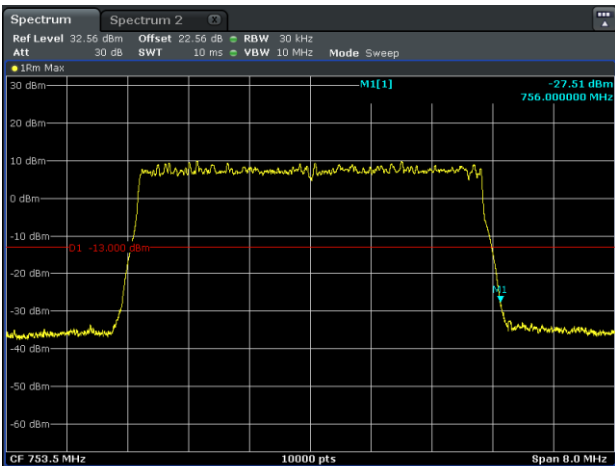
Date: 5 APR 2019 10:49:27

Figure 8.3-62: Conducted band edge for QPSK 753.5MHz, 5MHz channel



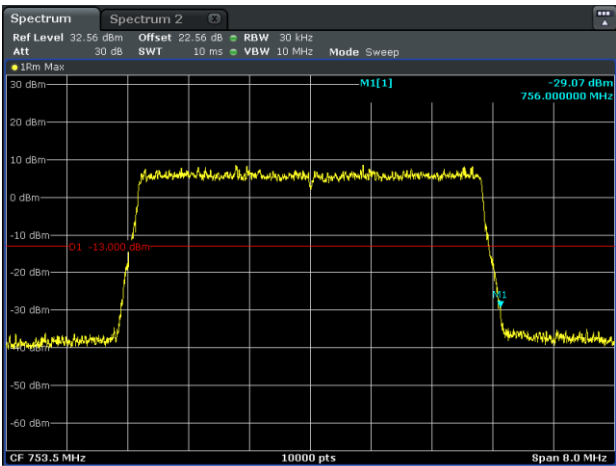
Date: 5 APR 2019 10:24:53

Figure 8.3-61: Conducted band edge for 16QAM 748.5MHz, 5MHz channel



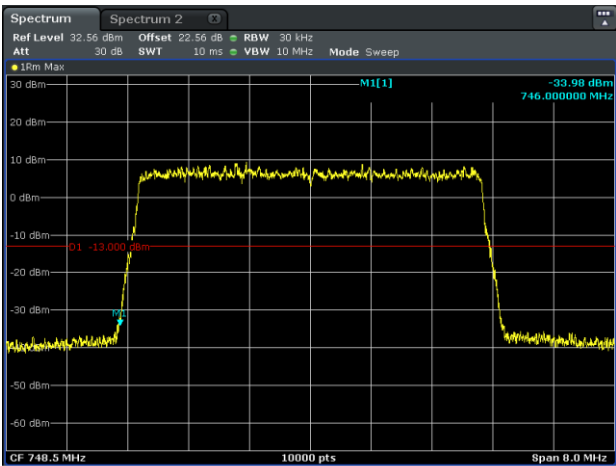
Date: 5 APR 2019 10:21:05

Figure 8.3-62: Conducted band edge for 16QAM 753.5MHz, 5MHz channel



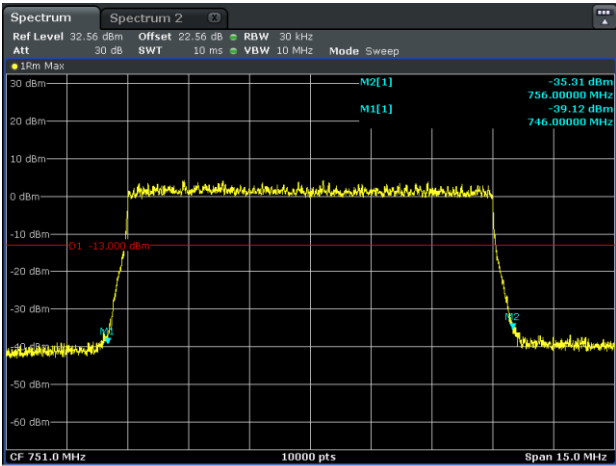
Date: 5 APR 2019 10:31:01

Figure 8.3-61: Conducted band edge for 64QAM 748.5MHz, 5MHz channel



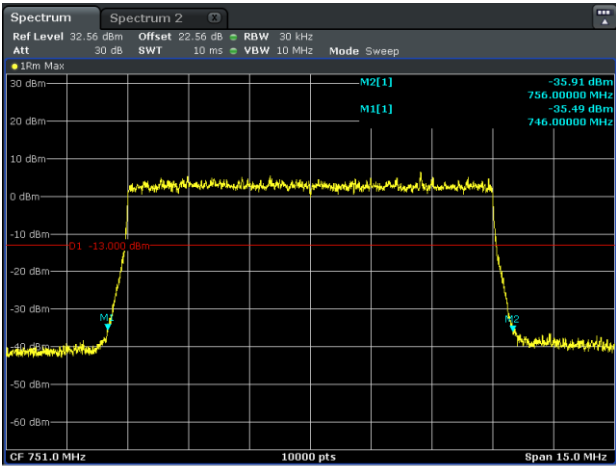
Date: 5 APR 2019 10:27:37

Figure 8.3-62: Conducted band edge for 64QAM 753.5MHz, 5MHz channel



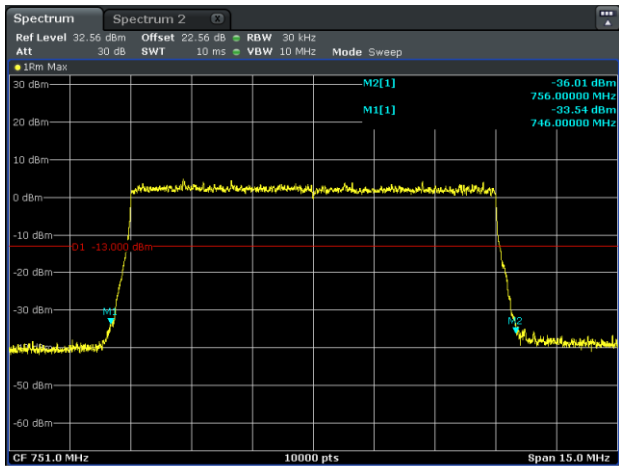
Date: 5 APR 2019 11:28:06

Figure 8.3-61: Conducted band edge for QPSK 751MHz, 10MHz channel



Date: 5 APR 2019 11:26:15

Figure 8.3-62: Conducted band edge for 16QAM 751MHz, 10MHz channel



Date: 5 APR 2019 10:55:39

Figure 8.3-61: Conducted band edge for 64QAM 751MHz, 10MHz channel

8.4 Radiated spurious emissions

8.4.1 Definitions and limits

FCC:

Part 27

(m) For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.

(2) For digital base stations, the attenuation shall be not less than $43 + 10 \log (P)$ dB, unless a documented interference complaint is received from an adjacent channel licensee with an overlapping Geographic Service Area.

8.4.2 Test summary

Test date	April 11, 2019	Temperature	22 °C
Test engineer	Andres Martinez, Test Engineer.	Air pressure	1000 mbar
Verdict	Pass	Relative humidity	30 %

8.4.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to the 10th harmonic.
All measurements were performed using a peak detector.
RBW within 30–1000 MHz was 100 kHz and 1 MHz above 1 GHz. VBW was wider than RBW.
Testing was performed with all RF ports terminated with 50 Ohm load.
Tested Band 4, QPSK, 20MHz Bandwidth, 2120MHz.
Tested Band 13, 64QAM, 5MHz Bandwidth, 748.5MHz.

8.4.4 Test data

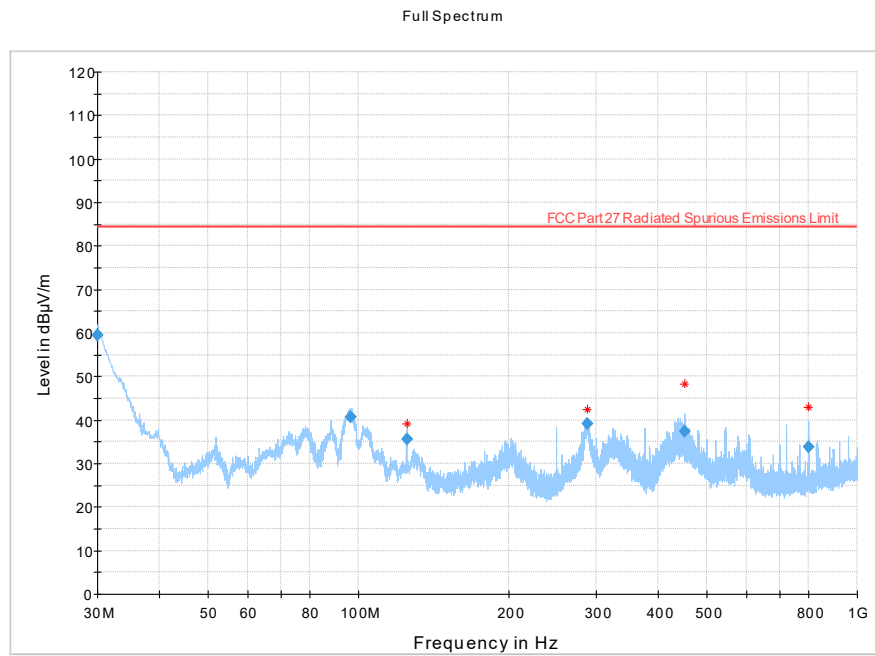


Figure 8.4-1: Radiated spurious emission below 1GHz, B4 at QPSK/ 2120MHz/20 MHz

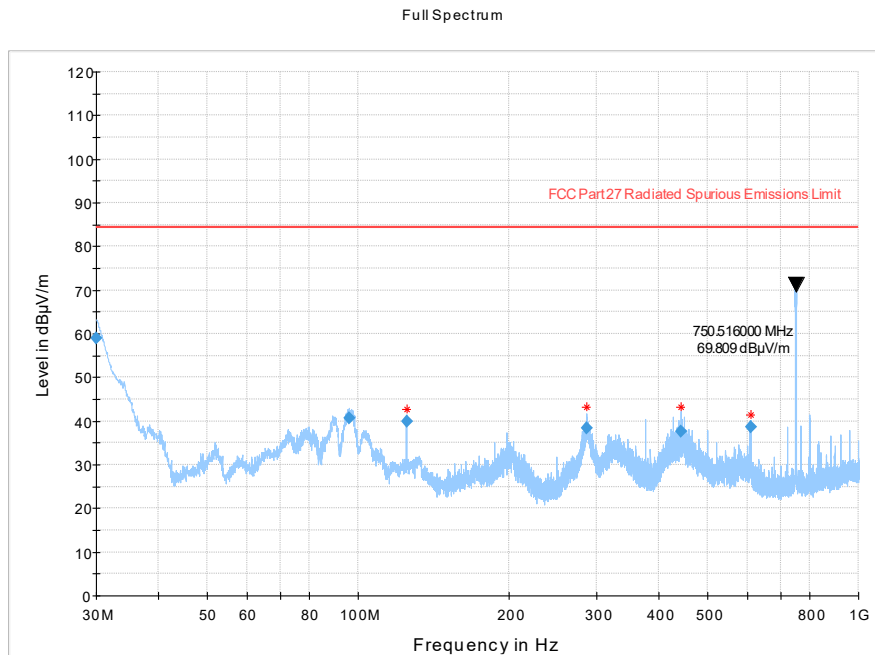


Figure 8.4-2 Radiated spurious emission below 1GHz, B13 at 64QAM/ 748.5MHz/5MHz

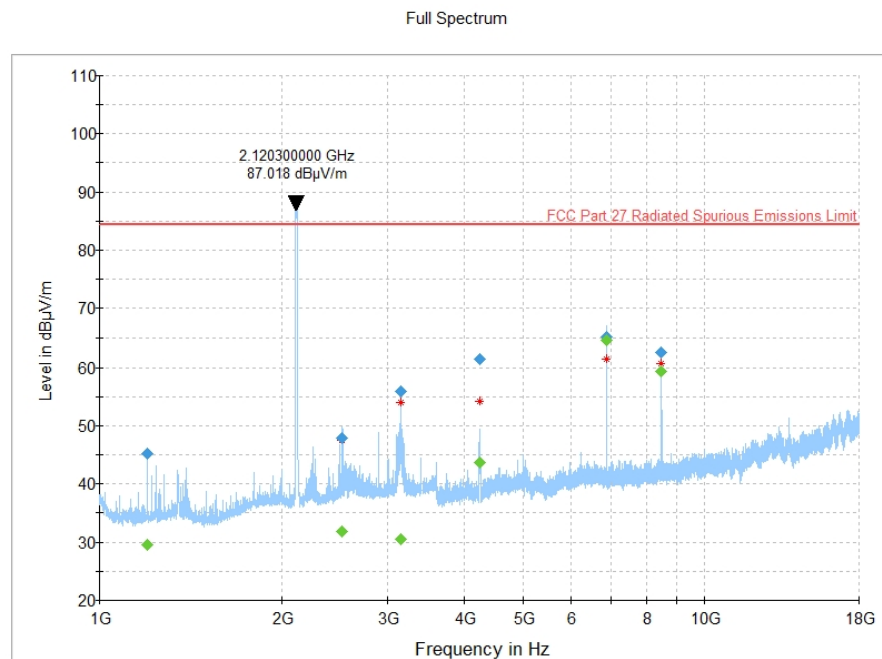


Figure 8.4-3: Radiated spurious emission 1GHz to 18GHz, B4 at QPSK/2120MHz/20 MHz

Note: Emission at 2120MHz is the transmitter not spurious

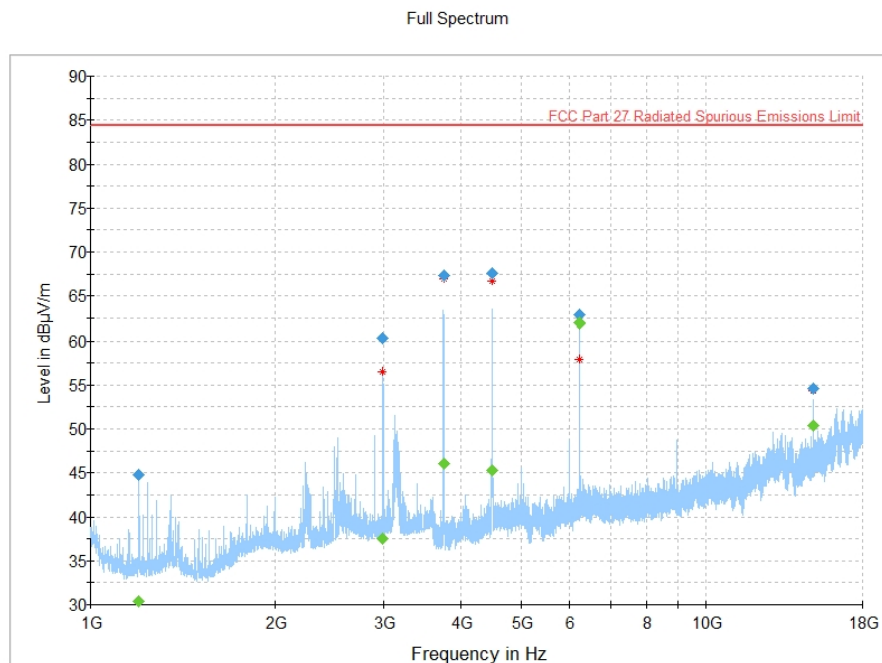


Figure 8.4-4: Radiated spurious emission 1GHz to 18GHz, B13 at 64QAM/748.5MHz/5MHz

Note: Emission at 2120MHz is the transmitter not spurious

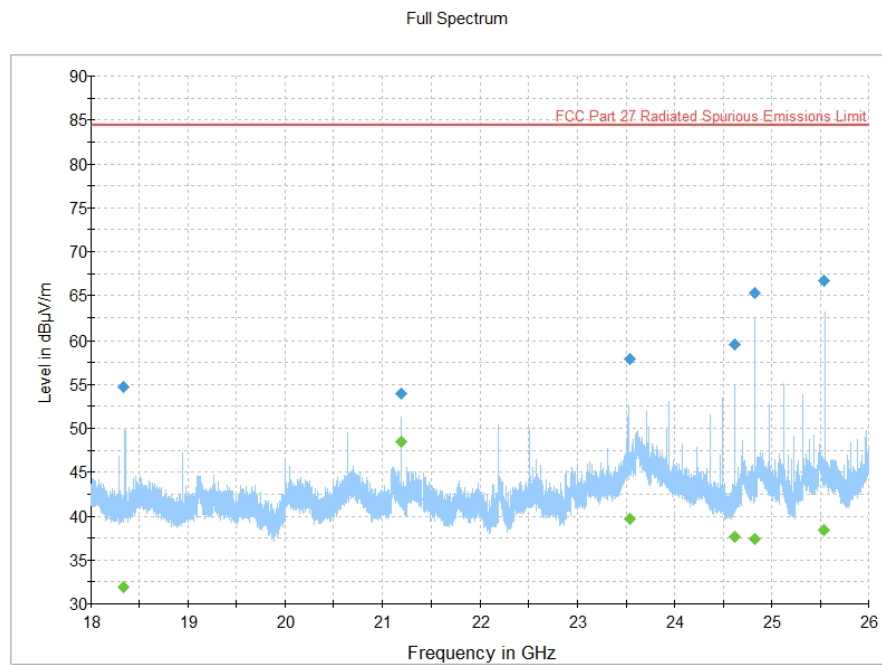


Figure 8.4-5: Radiated spurious emission 18 GHz to 26GHz, B4 at QPSK/ 2120MHz/20 MHz

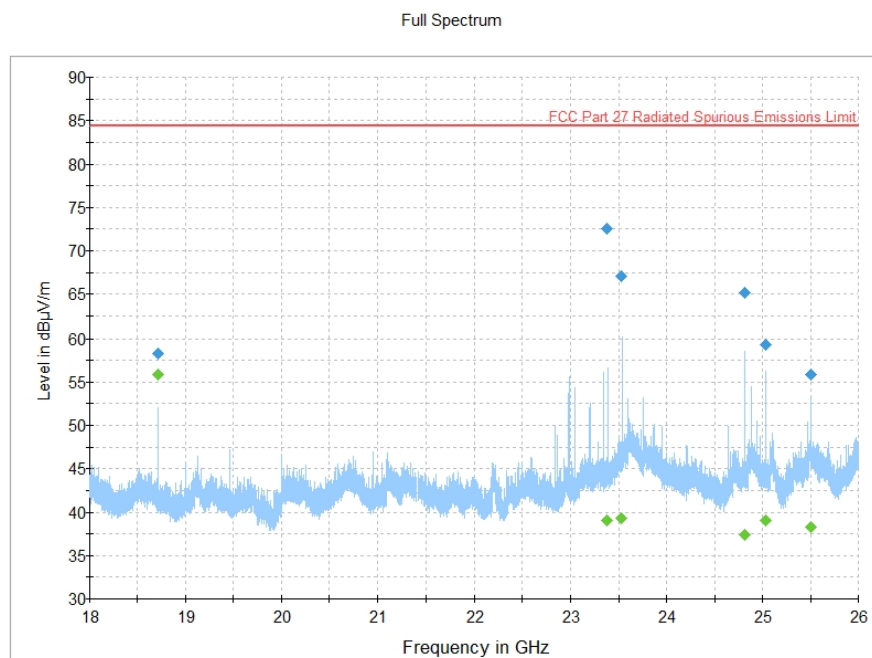


Figure 8.4-6: Radiated spurious emission 18GHz to 26GHz, B13 at 64QAM/ 748.5MHz/5MHz

8.5 Frequency stability (Band 4, Band 13)

8.5.1 Definitions and limits

FCC:

The frequency stability shall be enough to ensure that the fundamental emissions stay within the authorized bands of operation.
Voltage Variation at 102Vac (85%), 120Vac (100%) and 138Vac (115%) shows the fundamental frequency stays within the authorized band of operation.

RSS-139 Issue 3

6.4 Frequency Stability

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS-130 Issue 2

4.5 Transmitter frequency stability

The frequency stability shall be sufficient to ensure that the occupied bandwidth remains within each frequency block range when tested at the temperature and supply voltage variations specified in RSS Gen.

RSS-GEN Issue 5 Amend 1

With the transmitter installed in an environmental test chamber, the unmodulated carrier frequency and frequency stability shall be measured under the conditions specified below for licensed and licence-exempt devices, unless specified otherwise in the applicable RSS. A sufficient stabilization period at each temperature shall be used prior to each frequency measurement.

For licensed devices, the following measurement conditions apply:

- at the temperatures of -30°C (-22°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage
- at the temperature of +20°C (+68°F) and at ±15% of the manufacturer's rated supply voltage

8.5.2 Test summary

Test date April 8, 2019

Passed – the EUT fundamental emissions stays within the band of operation during testing.

8.5.3 Observations, settings and special notes

Frequency Stability (Frequency= 2132.5MHz, Bandwidth= 5 MHz, QPSK modulation)

Voltage variation (+/- 15 % of 120 V, 60 HZ)

Temperature variation: (+50°C to -30°C)

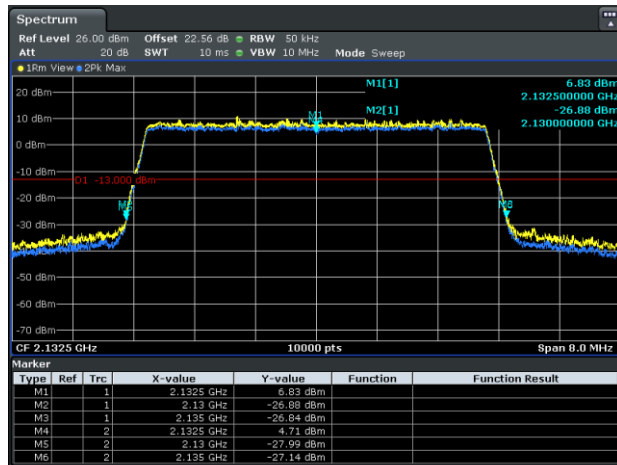
The EUT frequency change was monitored by setting trace 1 on the spectrum analyzer to View. Then trace 2 was set to max hold. The plots below demonstrate that at each voltage and temperature setting no variation was noted. Therefore the fundamental emissions has remained with the band of operation.

Offset: 20db attenuator + 0.41dB cable loss + 2.15dBi antenna gain = 22.56dB

8.5.4 Test data

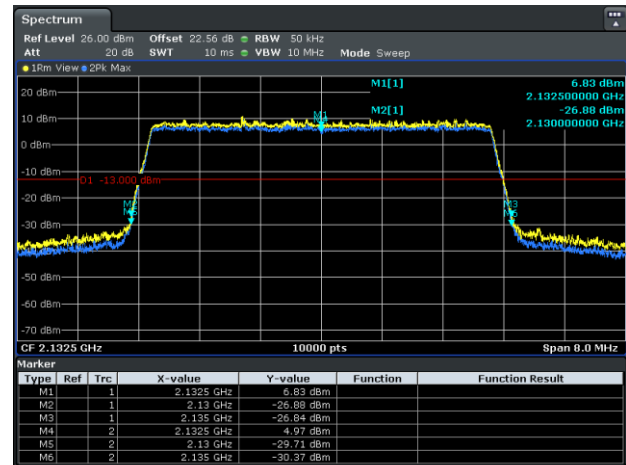
Temperature	102V	120V	138V
50	Pass	Pass	Pass
40	Pass	Pass	Pass
30	Pass	Pass	Pass
20	Pass	Pass	Pass
10	Pass	Pass	Pass
0	Pass	Pass	Pass
-10	Pass	Pass	Pass
-20	Pass	Pass	Pass
-30	Pass	Pass	Pass

Table 8.5-1: Frequency error results



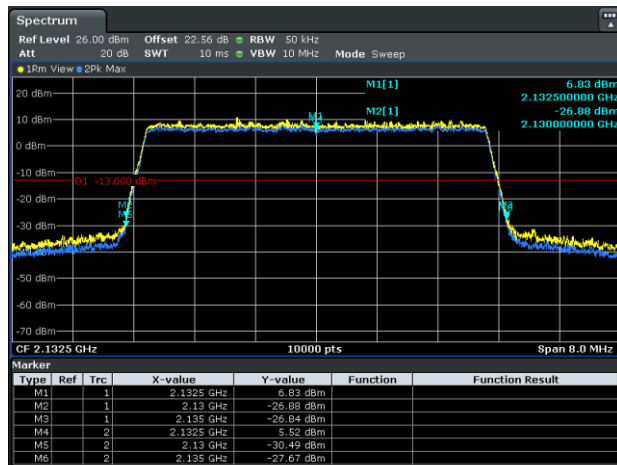
Date: 8 APR 2019 11:55:52

Figure 8.5-61: Frequency Stability, +50°C @ 120V



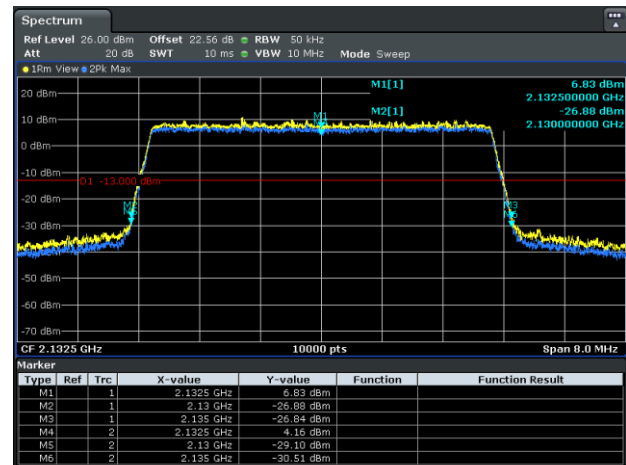
Date: 8 APR 2019 11:51:03

Figure 8.5-62: Frequency Stability, +50°C @ 120V



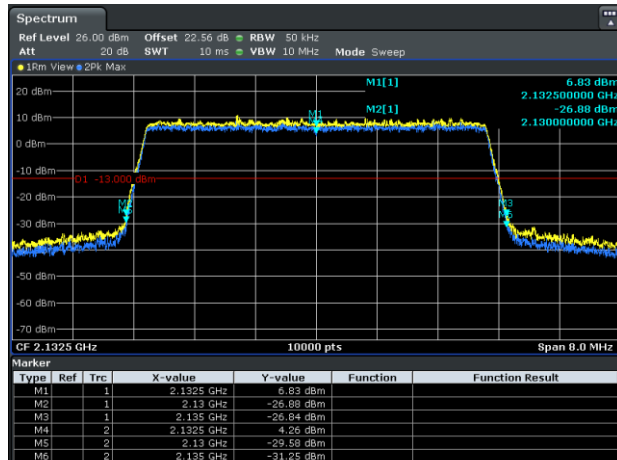
Date: 8 APR 2019 11:54:14

Figure 8.5-61: Frequency Stability, +50°C @ 138V



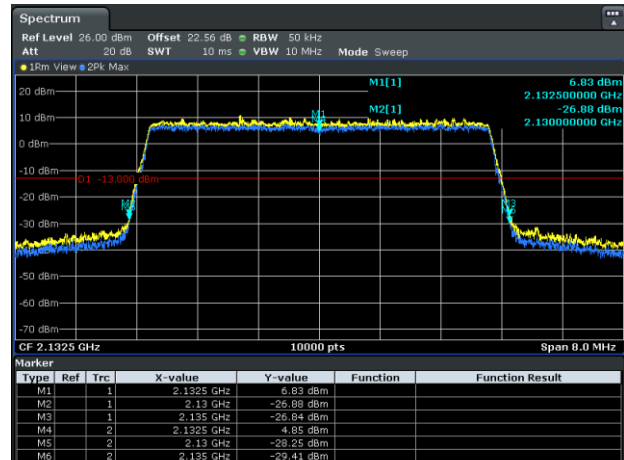
Date: 8 APR 2019 12:13:19

Figure 8.5-62: Frequency Stability, +40°C @ 102V



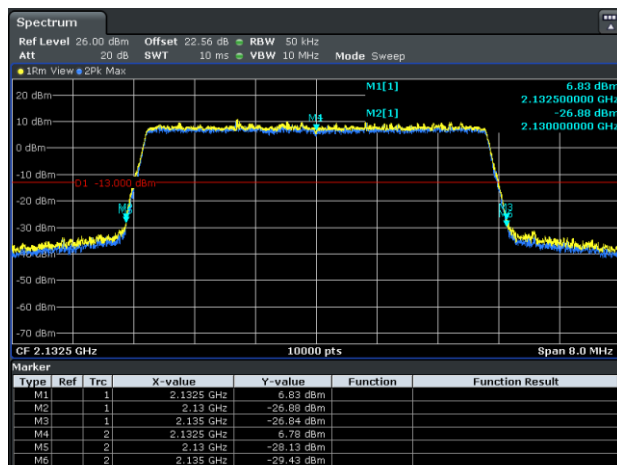
Date: 8 APR 2019 12:13:58

Figure 8.5-61: Frequency Stability, +40°C @ 120V



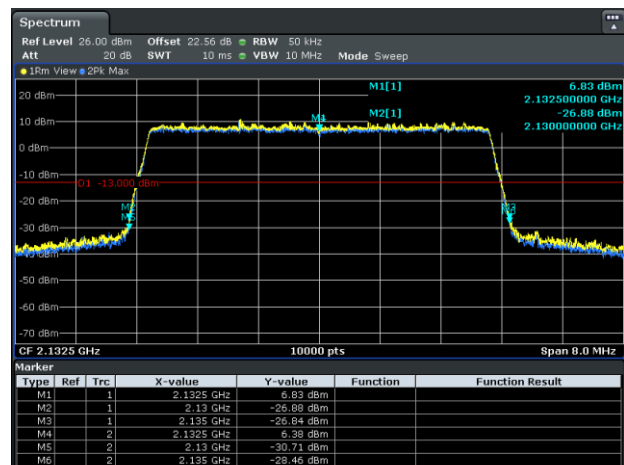
Date: 8 APR 2019 12:14:30

Figure 8.5-62: Frequency Stability, +40°C @ 138V



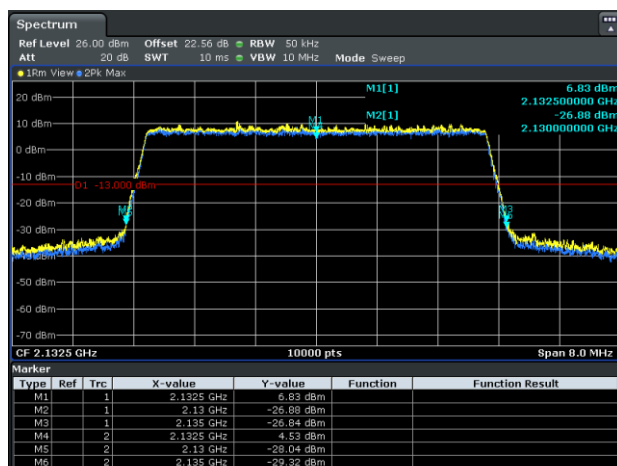
Date: 8 APR 2019 12:28:45

Figure 8.5-61: Frequency Stability, +30°C @ 102V



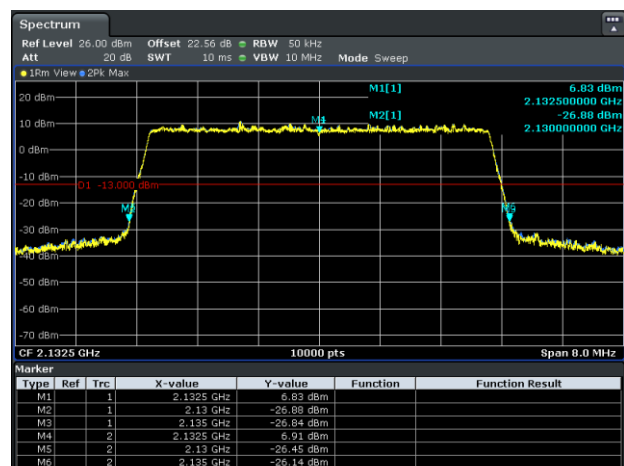
Date: 8 APR 2019 12:28:12

Figure 8.5-62: Frequency Stability, +30°C @ 120V



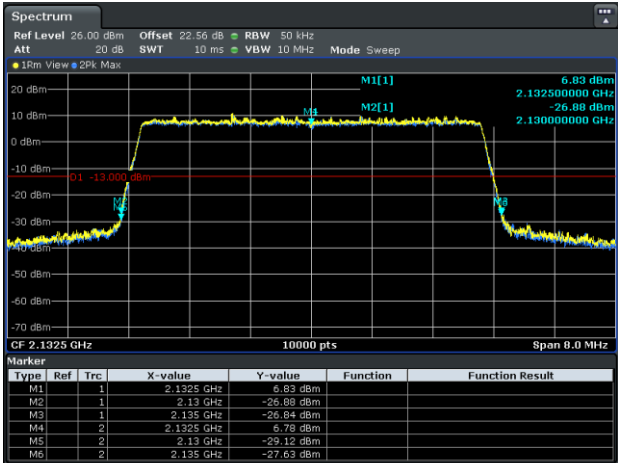
Date: 8 APR 2019 12:27:29

Figure 8.5-61: Frequency Stability, +30°C @ 138V



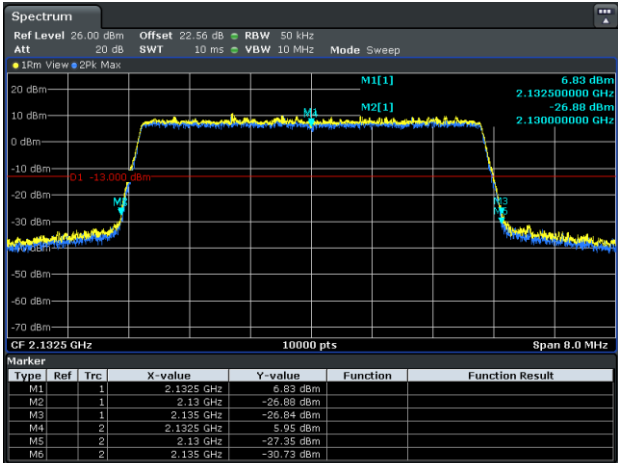
Date: 8 APR 2019 12:32:40

Figure 8.5-62: Frequency Stability, +20°C @ 102V



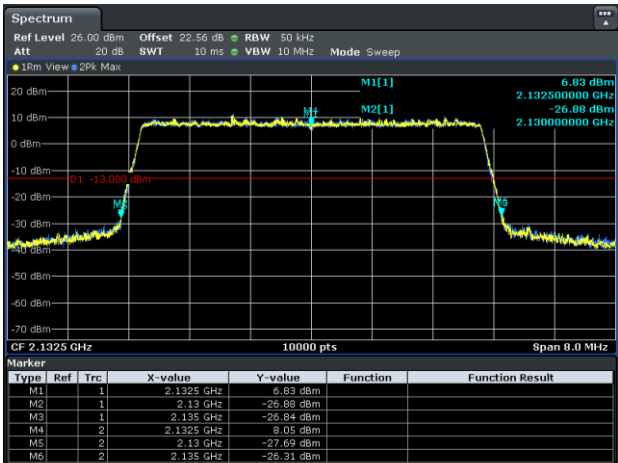
Date: 8 APR 2019 12:34:19

Figure 8.5-61: Frequency Stability, +20°C @ 120V



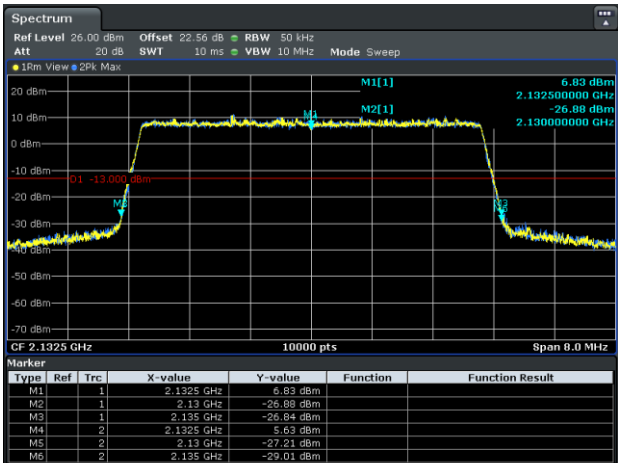
Date: 8 APR 2019 12:34:58

Figure 8.5-62: Frequency Stability, +20°C @ 138V



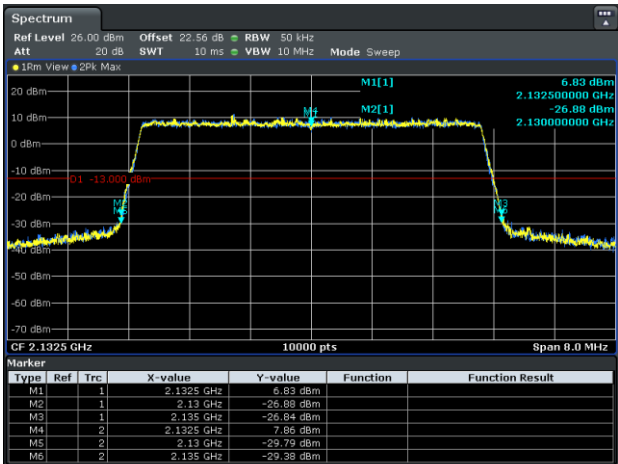
Date: 8 APR 2019 12:53:57

Figure 8.5-61: Frequency Stability, +10°C @ 120V



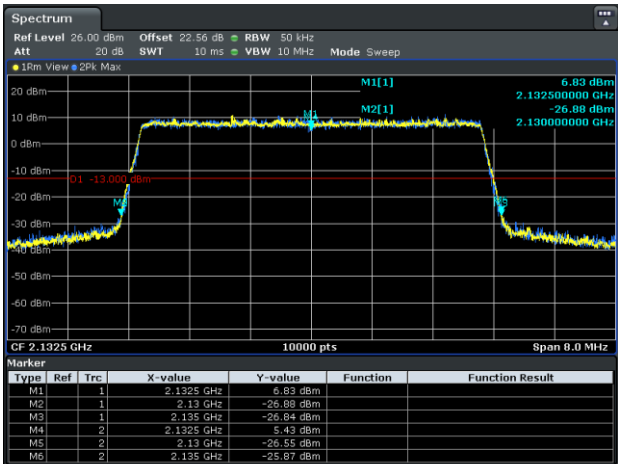
Date: 8 APR 2019 12:53:27

Figure 8.5-62: Frequency Stability, +10°C @ 120V



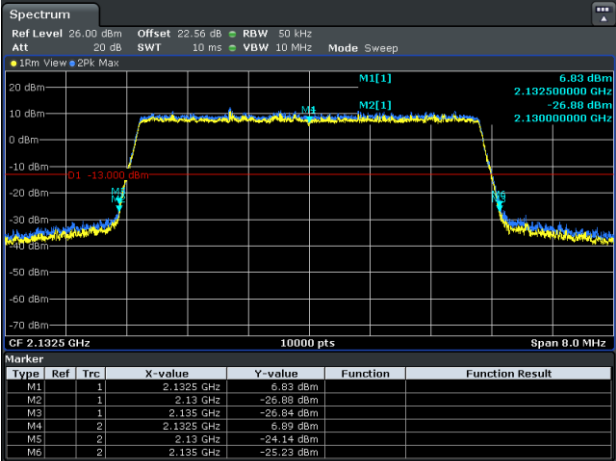
Date: 8 APR 2019 12:52:56

Figure 8.5-61: Frequency Stability, +10°C @ 138V



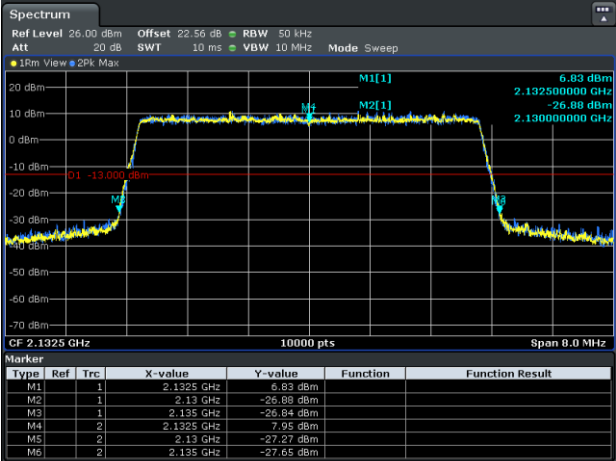
Date: 8 APR 2019 13:18:25

Figure 8.5-62: Frequency Stability, 0°C @ 102V



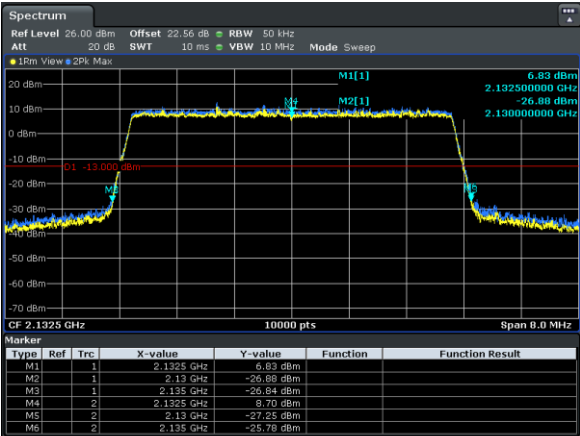
Date: 8 APR 2019 13:18:53

Figure 8.5-61: Frequency Stability, 0°C @ 120V



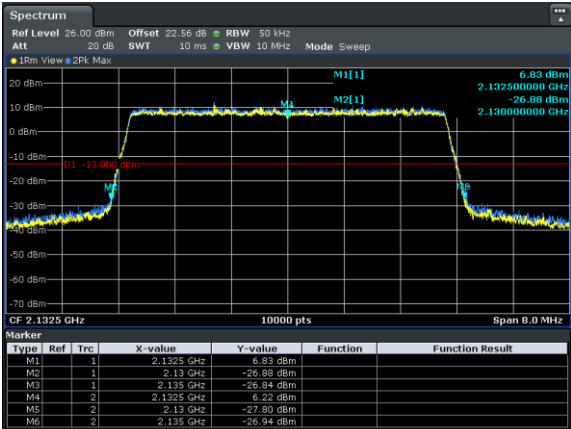
Date: 8 APR 2019 13:19:13

Figure 8.5-62: Frequency Stability, 0°C @ 138V



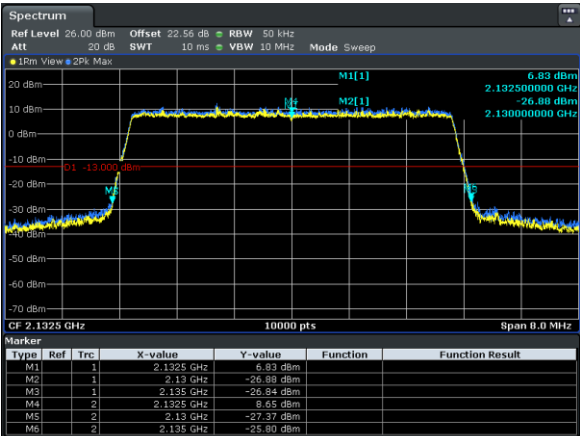
Date: 8 APR 2019 13:22:10

Figure 8.5-61: Frequency Stability, -10°C @ 120V



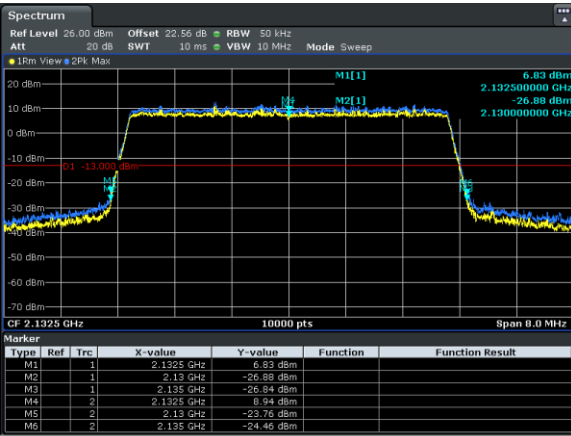
Date: 8 APR 2019 13:21:39

Figure 8.5-62: Frequency Stability, -10°C @ 120V



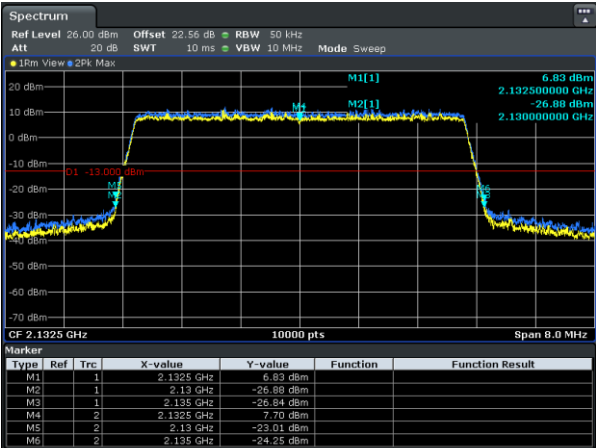
Date: 8 APR 2019 13:20:55

Figure 8.5-61: Frequency Stability, -10°C @ 138V



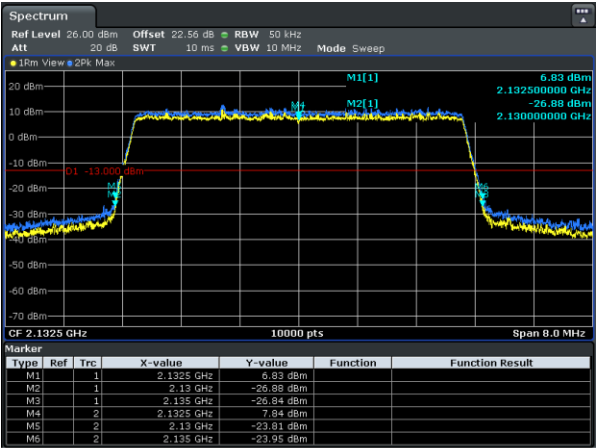
Date: 8 APR 2019 13:24:46

Figure 8.5-62: Frequency Stability, -20°C @ 102V



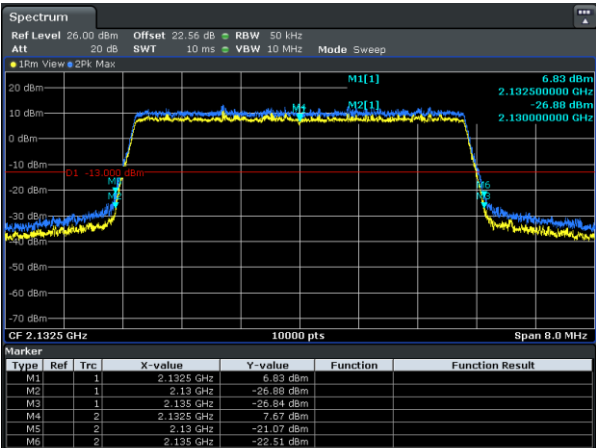
Date: 8 APR 2019 13:25:20

Figure 8.5-61: Frequency Stability, -20°C @ 120V



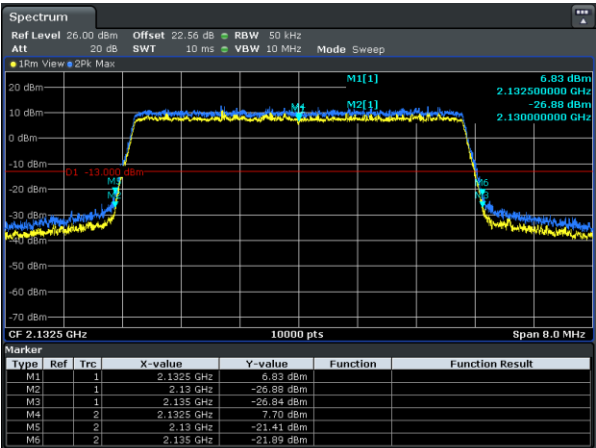
Date: 8 APR 2019 13:26:01

Figure 8.5-62: Frequency Stability, -20°C @ 138V



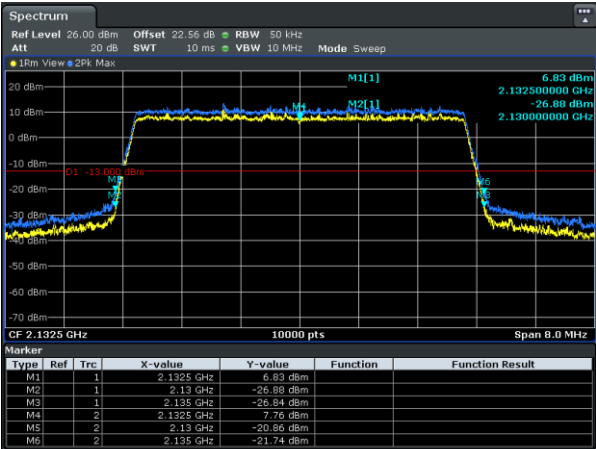
Date: 8 APR 2019 13:36:41

Figure 8.5-61: Frequency Stability, -30°C @ 102V



Date: 8 APR 2019 13:36:11

Figure 8.5-62: Frequency Stability, -30°C @ 120V



Date: 8 APR 2019 13:35:43

Figure 8.5-61: Frequency Stability, -30°C @ 138V

8.6 Occupied bandwidth (Band 4, Band 13)

8.6.1 Definitions and limits

FCC:

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RSS:

The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

8.6.2 Test summary

Test date April 3, 2019

Compliant

8.6.3 Observations, settings and special notes

Offset: 20db attenuator + 0.41dB cable loss + 2.15dBi antenna gain = 22.56dB

8.6.4 Test data

Band 4

Declared Bandwidth = 5 MHz						
Bandwidth: 99 %			Bandwidth: 26 dB			
CF	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2112.5 MHz	4.5570	4.5720	4.5803	4.9990	5.0055	5.0085
2132.5 MHz	4.5450	4.5600	4.5570	4.9875	4.9680	5.0835
2152.5 MHz	4.5510	4.5735	4.5495	4.9770	4.9845	5.0370

Declared Bandwidth = 10 MHz						
Bandwidth: 99 %			Bandwidth: 26 dB			
CF	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2115 MHz	9.1606	9.2474	9.2040	10.2460	10.2460	10.2890
2132.5 MHz	9.2040	9.2040	9.1606	10.2890	10.2890	10.2890
2150 MHz	9.2040	9.2040	9.2040	10.2460	10.2030	10.2460

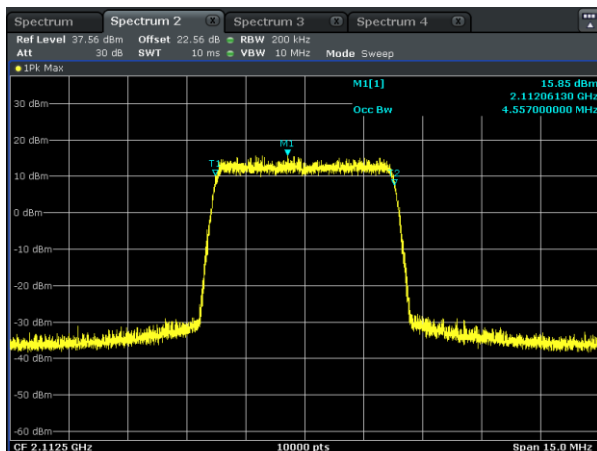
Declared Bandwidth = 15 MHz						
Bandwidth: 99 %			Bandwidth: 26 dB			
CF	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2117.5 MHz	13.6758	13.6107	13.6758	14.9780	14.9780	15.0430
2132.5 MHz	13.6758	13.6107	13.6758	14.9780	14.9780	14.9780
2147.5 MHz	13.6758	13.6107	13.6260	14.8480	14.8480	14.9780

Declared Bandwidth = 20 MHz						
Bandwidth: 99 %				Bandwidth: 26 dB		
CF	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2120 MHz	18.3212	18.4949	18.4081	20.5790	20.4920	20.4920
2132.5 MHz	18.3212	18.4949	18.4081	20.4920	20.3180	20.4050
2145 MHz	18.3212	18.4949	18.4081	20.4920	20.4050	20.4920

Band 13

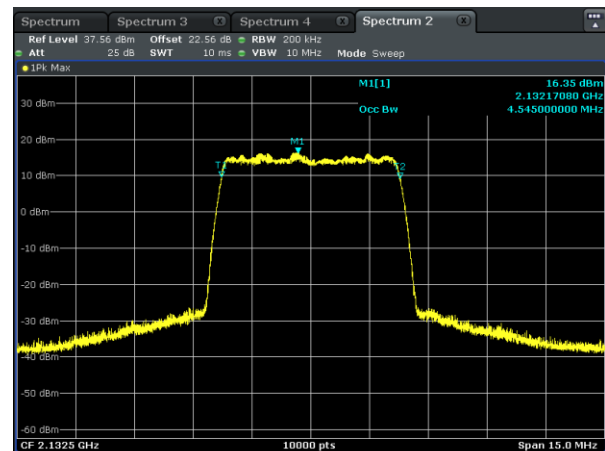
Declared Bandwidth = 5 MHz						
Bandwidth: 99 %				Bandwidth: 26 dB		
CF	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
748.5 MHz	4.5405	4.5135	4.8450	4.9830	4.9275	5.6055
751 MHz	4.5555	4.5585	4.5540	4.9650	4.9410	4.9800
753.5 MHz	4.5615	4.5510	4.5480	4.9530	4.9395	5.0415

Declared Bandwidth = 10 MHz						
Bandwidth: 99 %				Bandwidth: 26 dB		
CF	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
751 MHz	9.1830	9.1710	9.1680	10.0470	10.0380	10.0800



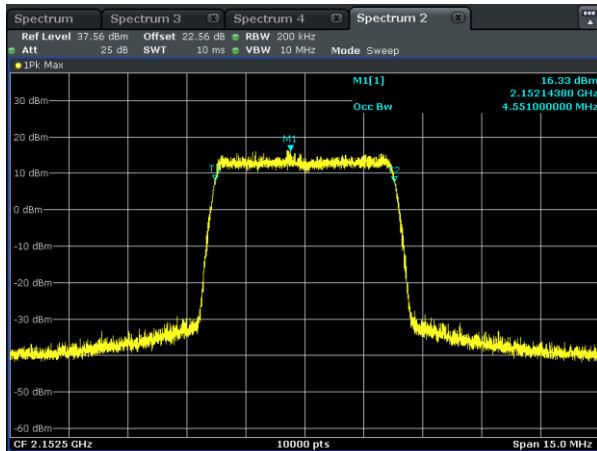
Date: 1 APR 2019 14:22:42

Figure 8.6-61: Occupied Bandwidth, 5MHz BW, QPSK, 2112.5MHz



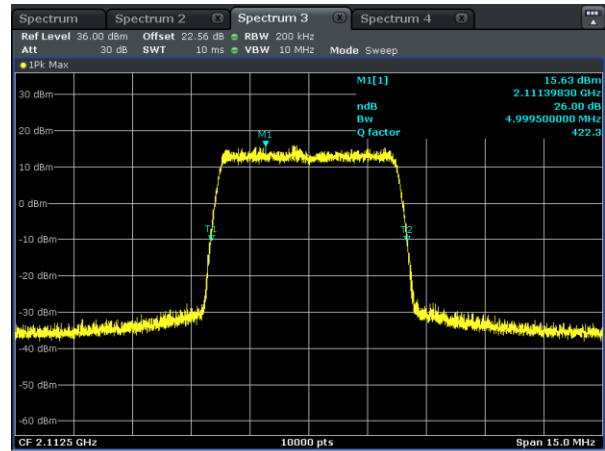
Date: 1 APR 2019 14:33:24

Figure 8.6-62: Occupied Bandwidth, 5MHz BW, QPSK, 2132.5MHz



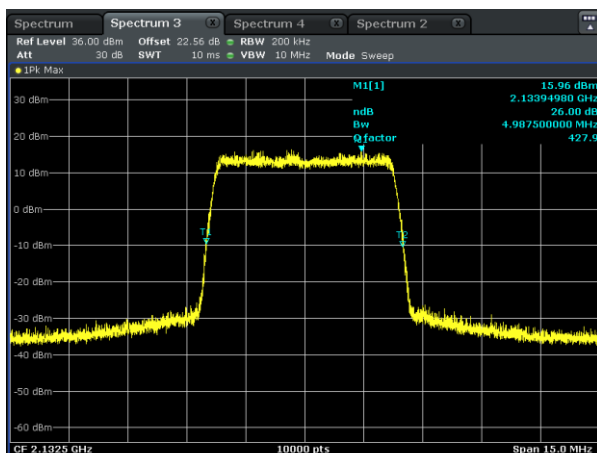
Date: 1.APR.2019 14:40:17

Figure 8.6-61: Occupied Bandwidth, 5MHz BW, QPSK, 2152.5MHz



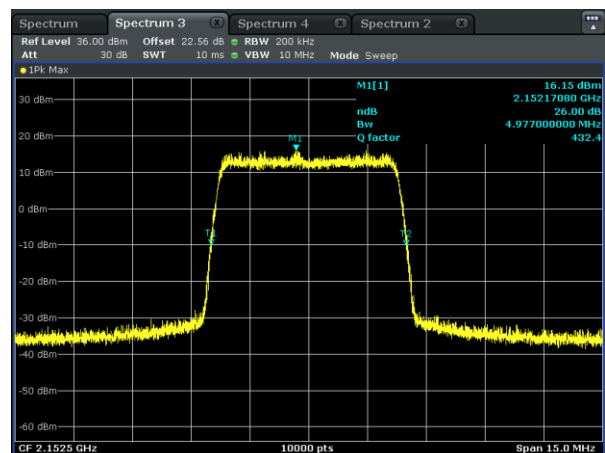
Date: 1.APR.2019 14:22:57

Figure 8.6-62: 26dB, 5MHz BW, QPSK, 2112.5MHz



Date: 1.APR.2019 14:34:09

Figure 8.6-61: 26dB, 5MHz BW, QPSK, 2132.5MHz



Date: 1.APR.2019 14:40:33

Figure 8.6-62: 26dB, 5MHz BW, QPSK, 2152.5MHz

8.7 Peak-to-average power ratio (Band 4, Band 13)

8.7.1 Definitions and limits

RSS 130 Issue 2:

The transmitter output power shall be measured in terms of average power. For base and fixed equipment, refer to SRSP-518 for power limits. The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment. In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RSS 139 Issue 3:

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt. Consult SRSP-513 for e.i.r.p. limits on fixed and base stations operating in the band 2110-2180 MHz. In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

8.7.2 Test summary

Test date	April 3, 2019
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Compliant

8.7.3 Observations, settings and special notes

None.

8.7.4 Test data

Table 8.7-1: Peak-to-average power ratio – Port 2

Frequency	0.01% PAPR (dB)
Band 4	
Bandwidth 5MHz	
QPSK	
2112.5	8.09
2132.5	8.06
2152.5	8.03
16QAM	
2112.5	8.03
2132.5	8.06
2152.5	8.00
64QAM	
2112.5	8.06
2132.5	8.12
2152.5	8.06
Bandwidth 10MHz	
QPSK	
2115	8.00
2132.5	7.97
2150	8.00
16QAM	
2115	7.97
2132.5	8.03
2150	8.03
64QAM	
2115	7.97
2132.5	8.03
2150	8.00
Bandwidth 15MHz	
QPSK	
2117.5	7.83
2132.5	7.86
2147.5	7.86
16QAM	
2117.5	8.14
2132.5	8.14
2147.5	8.09
64QAM	
2117.5	7.91
2132.5	7.88
2147.5	7.91
Bandwidth 20MHz	
QPSK	
2120	7.86
2132.5	7.86
2145	7.86
16QAM	
2120	7.80
2132.5	7.83
2145	7.83
64QAM	
2120	7.88
2132.5	7.91
2145	7.91

Table 8.7-2: Peak-to-average power ratio – Port 2

Frequency	0.01% PAPR (dB)
Band 13	
Bandwidth 5MHz	
QPSK	
748.5	8.12
751	8.12
753.5	8.12
16QAM	
748.5	8.09
751	8.12
753.5	8.06
64QAM	
748.5	8.06
751	8.20
753.5	8.14
Bandwidth 10MHz	
QPSK	
751	8.14
16QAM	
751	8.14
64QAM	
751	8.14

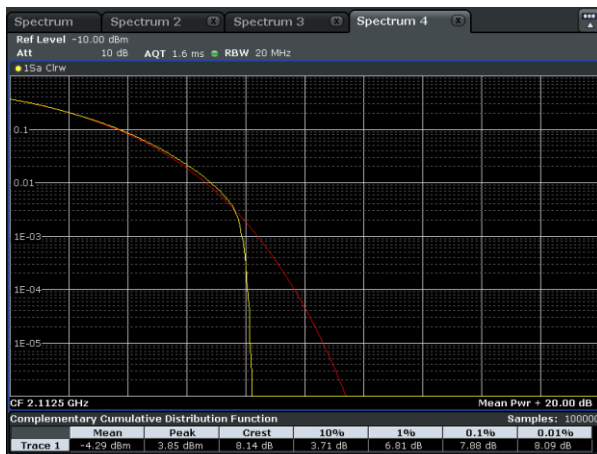


Figure 8.7-1: PAPR, Band 4, 5MHz BW, QPSK, 2112.5MHz

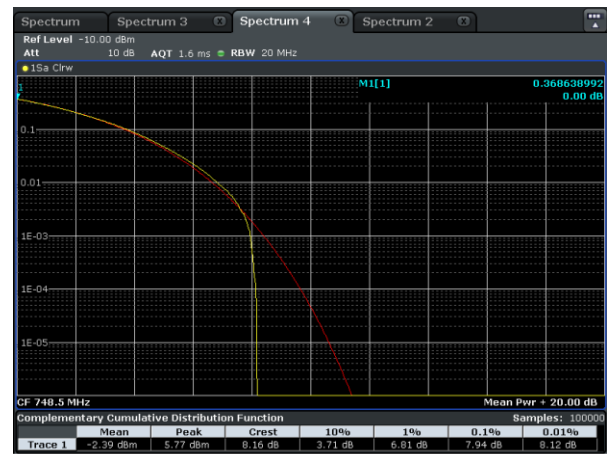
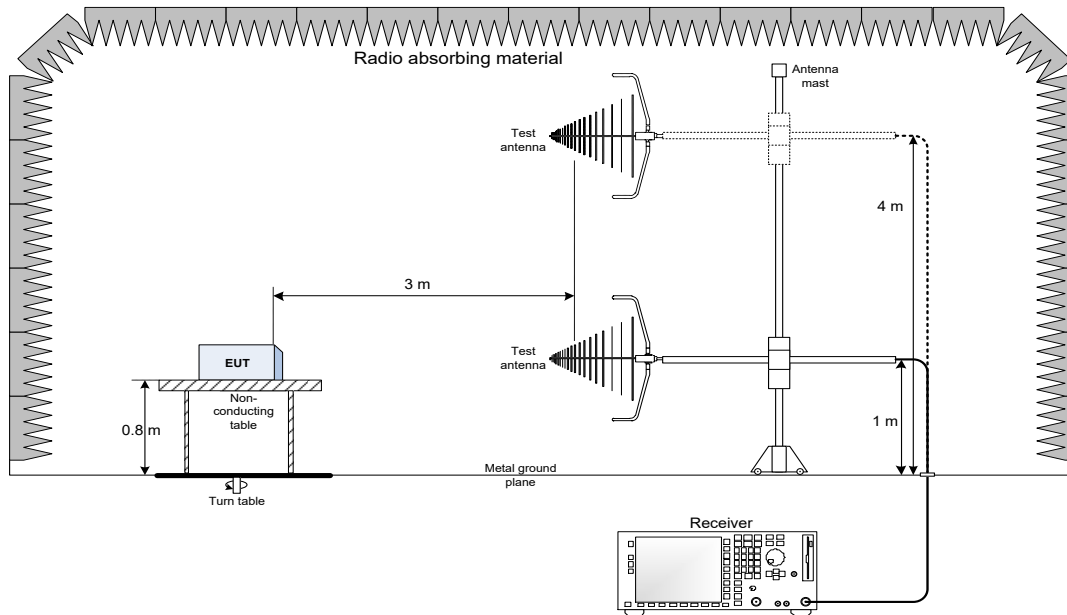


Figure 8.7-2: PAPR, Band13, 5MHz BW, QPSK, 748.5MHz

Section 9. Block diagrams of test set-ups

9.1 Radiated emissions set-up for frequencies below 1 GHz



9.2 Radiated emissions set-up for frequencies above 1 GHz

