



FCC RADIO TEST REPORT

FCC ID : PY7-53953L
Equipment : GSM/WCDMA/LTE/5G Phone with BT,
DTS/UNII a/b/g/n/ac/ax, GPS and NFC
Brand Name : Sony
Applicant : Sony Corporation
1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Manufacturer : Sony Corporation
1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Standard : FCC 47 CFR Part 2, 24(E), 27

The product was received on May 04, 2021 and testing was started from May 06, 2021 and completed on Jun. 06, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issued Date
FG133144B	01	Initial issue of report	Jun. 11, 2021



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
	§27.50 (c)(10)	Effective Radiated Power (Band 12) (Band 17)	Pass	
	§24.232 (c)	Equivalent Isotropic Radiated Power (Band 2)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 4)		
3.3	§24.232 (d) §27.50 (d)(5)	Peak-to-Average Ratio	Pass	-
3.4	§2.1049	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §24.238 (a) §27.53 (g) §27.53 (h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 12) (Band 17)	Pass	-
3.6	§2.1051 §24.238 (a) §27.53 (g) §27.53 (h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 12) (Band 17)	Pass	-
3.7	§2.1055 §24.235 §27.54	Frequency Stability Temperature & Voltage	Pass	-
4.2	§2.1053 §24.238 (a) §27.53 (g) §27.53 (h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 12) (Band 17)	Pass	Under limit 37.1 dB at 7404.000 MHz

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Keven Cheng

Report Producer: Ruby Zou



1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac/ax, NFC, FM Receiver, and GNSS.

Product Specification subjective to this standard	
Antenna Type	Loop Antenna
Antenna Gain	LTE Band 2: 0.8 dBi LTE Band 4: -0.7 dBi LTE Band 12: -5.3 dBi LTE Band 17: -5.3 dBi

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

EUT Information List			
HW Version	SW Version	S/N	Performed Test Item
A	2.33	QV7200CP7P	Conducted Measurement ERP/EIRP Test
		QV7200CM7P	Radiated Spurious Emission

Accessory List	
AC Adapter	Model Name: XQZ-UC1
	S/N: 0020W51300039
USB Cable	Model Name: XQZ-UB1
	S/N: N/A
Earphone	Model Name: STH40D
	S/N: N/A

Note:

1. Above EUT list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test, and the serial number of each type of accessories is listed in each section of this report. .
3. For other wireless features of this EUT, test report will be issued separately.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.



1.3 Emission Designator

LTE Band 2		QPSK			16QAM			64QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1850.7 ~ 1909.3	1M09G7D	-	0.1062	1M10W7D	-	0.1023	1M10W7D	-	0.1005
3	1851.5 ~ 1908.5	2M72G7D	-	0.1079	2M72W7D	-	0.1033	2M71W7D	-	0.1030
5	1852.5 ~ 1907.5	4M46G7D	-	0.1084	4M49W7D	-	0.1021	4M48W7D	-	0.1016
10	1855.0 ~ 1905.0	9M03G7D	0.0113	0.1089	9M01W7D	-	0.1028	8M99W7D	-	0.1007
15	1857.5 ~ 1902.5	13M4G7D	-	0.1094	13M5W7D	-	0.1016	13M3W7D	-	0.0998
20	1860.0 ~ 1900.0	17M9G7D	-	0.1127	17M8W7D	-	0.1023	17M9W7D	-	0.0993
LTE Band 4		QPSK			16QAM			64QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
1.4	1710.7~1754.3	1M09G7D	-	0.0745	1M10W7D	-	0.0718	1M08W7D	-	0.0698
3	1711.5~1753.5	2M74G7D	-	0.0757	2M71W7D	-	0.0719	2M73W7D	-	0.0708
5	1712.5~1752.5	4M49G7D	-	0.0759	4M49W7D	-	0.0708	4M51W7D	-	0.0705
10	1715.0~1750.0	8M99G7D	0.0110	0.0757	8M99W7D	-	0.0718	8M99W7D	-	0.0708
15	1717.5~1747.5	13M4G7D	-	0.0764	13M4W7D	-	0.0719	13M5W7D	-	0.0700
20	1720.0~1745.0	17M8G7D	-	0.0798	17M9W7D	-	0.0719	17M9W7D	-	0.0701
LTE Band 12		QPSK			16QAM			64QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
1.4	699.7 ~ 715.3	1M09G7D	-	0.0485	1M09W7D	-	0.0395	1M08W7D	-	0.0322
3	700.5 ~ 714.5	2M73G7D	-	0.0490	2M72W7D	-	0.0391	2M70W7D	-	0.0327
5	701.5 ~ 713.5	4M48G7D	-	0.0485	4M48W7D	-	0.0385	4M50W7D	-	0.0324
10	704.0 ~ 711.0	9M05G7D	0.0222	0.0497	8M97W7D	-	0.0396	9M09W7D	-	0.0340
LTE Band 17		QPSK			16QAM			64QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
5	706.5~713.5	-	-	0.0489	-	-	0.0393	-	-	0.0325
10	709.0~711.0	-	-	0.0491	-	-	0.0399	-	-	0.0328



1.4 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. TH03-HY
Test Engineer	Benjamin Lin
Temperature	22.4~24.2℃
Relative Humidity	49.4~52.8%

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. 03CH15-HY (TAF Code: 3786)
Test Engineer	Leo Lee, Mancy Chou and Bigshow Wang
Temperature	22.3~24.2℃
Relative Humidity	46~56%
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW3786



1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 24(E), 27
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

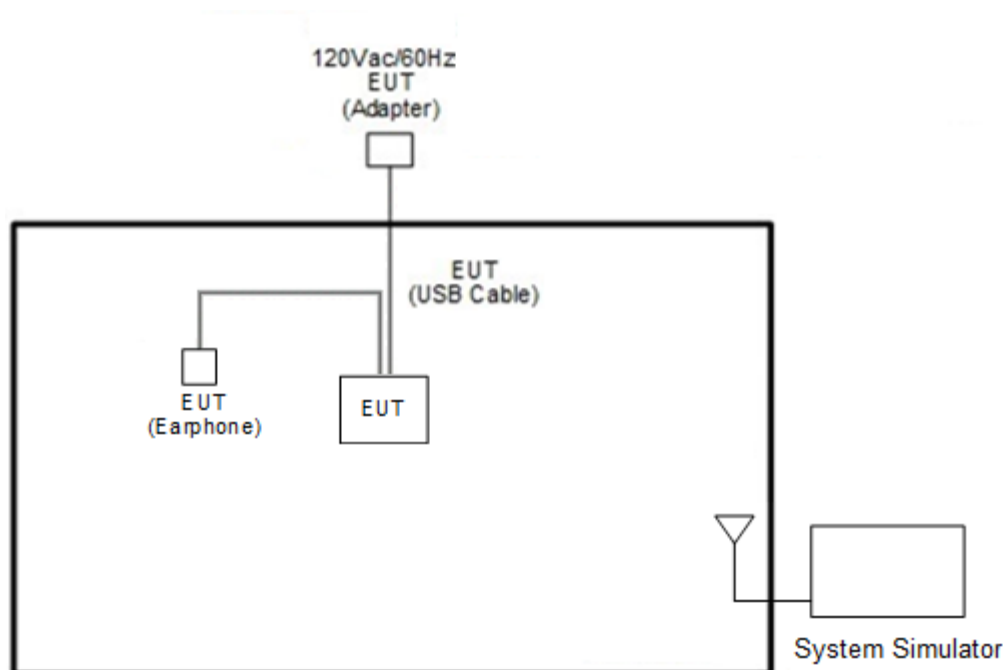
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane for LTE Band 4, Y plane for LTE Band 12 and Z plane for LTE Band 2,) were recorded in this report.

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	2	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	12	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v
	17	-	-	v	v	-	-	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	2						v	v	v	v			v		v	
	4						v	v	v	v			v		v	
	12				v	-	-	v	v	v			v		v	
	17	Covered by Band 12														
26dB and 99% Bandwidth	2	v	v	v	v	v	v	v	v	v			v		v	
	4	v	v	v	v	v	v	v	v	v			v		v	
	12	v	v	v	v	-	-	v	v	v			v		v	
	17	Covered by Band 12														
Conducted Band Edge	2	v	v	v	v	v	v	v	v	v	v		v	v		v
	4	v	v	v	v	v	v	v	v	v	v		v	v		v
	12	v	v	v	v	-	-	v	v	v	v		v	v		v
	17	Covered by Band 12														



Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Conducted Spurious Emission	2	v	v	v	v	v	v	v			v			v	v	v
	4	v	v	v	v	v	v	v			v			v	v	v
	12	v	v	v	v	-	-	v			v			v	v	v
	17	Covered by Band 12														
Frequency Stability	2				v			v					v		v	
	4				v			v					v		v	
	12				v	-	-	v					v		v	
	17	Covered by Band 12														
E.R.P / E.I.R.P	2	v	v	v	v	v	v	v	v	v	Max. Power					
	4	v	v	v	v	v	v	v	v	v						
	12	v	v	v	v	-	-	v	v	v						
	17	-	-	v	v	-	-	v	v	v						
Radiated Spurious Emission	2	Worst Case												v	v	v
	4	Worst Case												v	v	v
	12	Worst Case												v	v	v
	17	Covered by Band 12												v	v	v
Remark	1. The mark “v ” means that this configuration is chosen for testing 2. The mark “-” means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Wider operating range bandwidth covers narrower one when the power is higher or the same.															

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$



2.5 Frequency List of Low/Middle/High Channels

LTE Band 2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 4 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3



LTE Band 12 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3

LTE Band 17 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	23780	23790	23800
	Frequency	709	710	711
5	Channel	23755	23790	23825
	Frequency	706.5	710	713.5

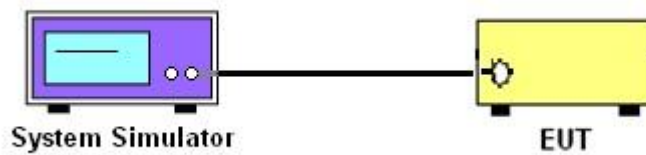
3 Conducted Test Items

3.1 Measuring Instruments

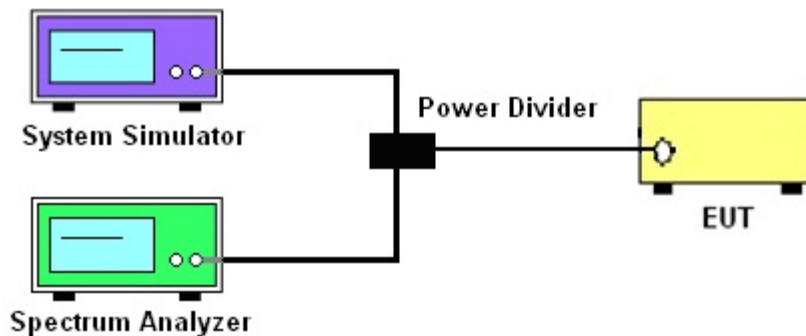
See list of measuring instruments of this test report.

3.1.1 Test Setup

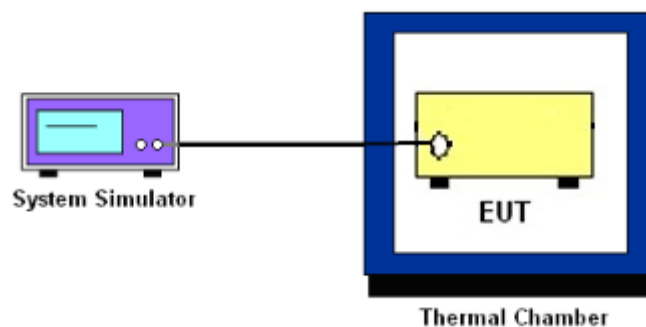
3.1.2 Conducted Output Power



3.1.3 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.



3.2 Conducted Output Power and ERP/EIRP

3.2.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12 and Band 17

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.



3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.



3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
(this is the reference value)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.



3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1MHz bandwidth. However, in the 1 MHz 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.

27.53 (g)

For operations in the 600MHz band and 698-746 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

27.53 (h)

For operations in the 1710 – 1755 MHz band, 1755-1780 MHz, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
5. Set spectrum analyzer with RMS detector.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. Checked that all the results comply with the emission limit line.

The limit line is derived from $43 + 10\log(P)\text{dB}$ below the transmitter power $P(\text{Watts})$



3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)



3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

24.235 & 27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

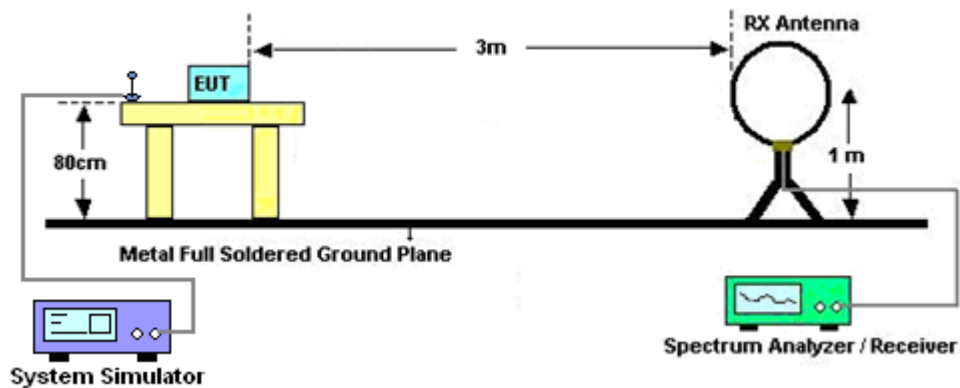
4 Radiated Test Items

4.1 Measuring Instruments

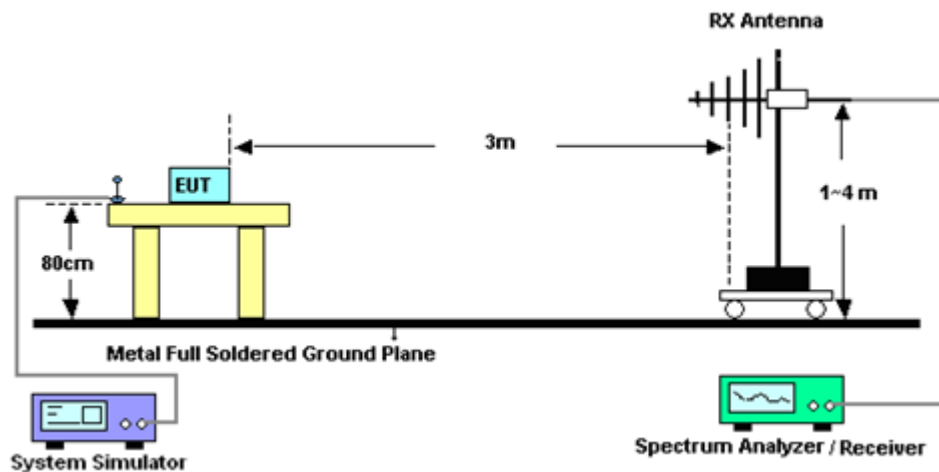
See list of measuring instruments of this test report.

4.1.1 Test Setup

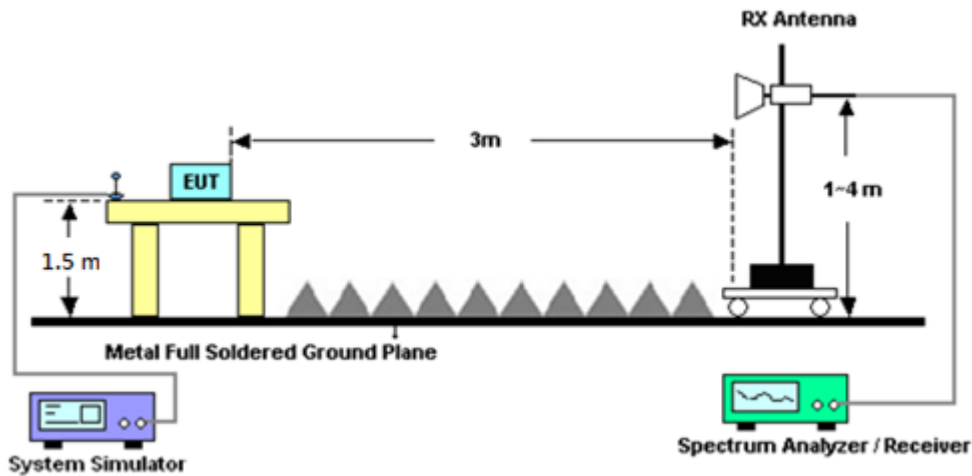
For radiated test below 30MHz



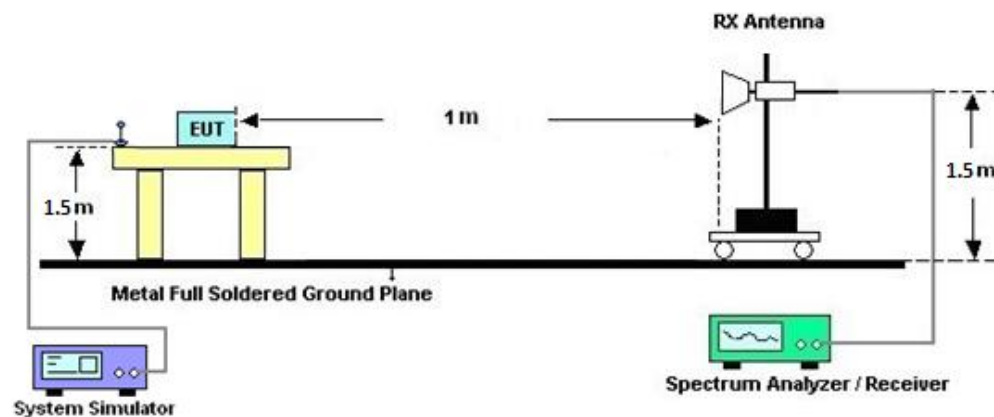
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



4.2 Radiated Spurious Emission Measurement

4.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)

$EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$

$ERP \text{ (dBm)} = EIRP - 2.15$



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	37059 & 01	30MHz~1GHz	Oct. 11, 2020	Jun. 05, 2021~Jun. 06, 2021	Oct. 10, 2021	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL6111D&00800N1D01N-06	41912&05	30MHz to 1GHz	Feb. 08, 2021	Jun. 05, 2021~Jun. 06, 2021	Feb. 07, 2022	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 28, 2020	Jun. 05, 2021~Jun. 06, 2021	Dec. 27, 2021	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02114	1-18GHz	Aug. 04, 2020	Jun. 05, 2021~Jun. 06, 2021	Aug. 03, 2021	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz~18GHz	Nov. 03, 2020	Jun. 05, 2021~Jun. 06, 2021	Nov. 02, 2021	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz- 40GHz	Dec. 02, 2020	Jun. 05, 2021~Jun. 06, 2021	Dec. 01, 2021	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz~40GHz	May 22, 2020	Jun. 05, 2021~Jun. 06, 2021	May 21, 2021	Radiation (03CH15-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055006	1GHz~18GHz	May 06, 2021	Jun. 05, 2021~Jun. 06, 2021	May 05, 2022	Radiation (03CH15-HY)
Preamplifier	Keysight	83017A	MY53270195	1GHz~26.5GHz	Aug. 21, 2020	Jun. 05, 2021~Jun. 06, 2021	Aug. 20, 2021	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz ~ 40GHz	Jun. 15, 2020	Jun. 05, 2021~Jun. 06, 2021	Jun. 14, 2021	Radiation (03CH15-HY)
Spectrum Analyzer	Keysight	N9038A	MY54130085	20MHz~8.4GHz	Nov. 02, 2020	Jun. 05, 2021~Jun. 06, 2021	Nov. 01, 2021	Radiation (03CH15-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200485	10Hz~44GHz	Mar. 05, 2021	Jun. 05, 2021~Jun. 06, 2021	Mar. 04, 2022	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jun. 05, 2021~Jun. 06, 2021	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jun. 05, 2021~Jun. 06, 2021	N/A	Radiation (03CH15-HY)
Software	Audix	E3 6.2009-8-24 (k5)	RK-000451	N/A	N/A	Jun. 05, 2021~Jun. 06, 2021	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY36980/4, MY9838/4PE, 508405/2E	30MHz~18G	Nov. 16, 2020	Jun. 05, 2021~Jun. 06, 2021	Nov. 15, 2021	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz-40GHz	Feb. 22, 2021	Jun. 05, 2021~Jun. 06, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz-40GHz	Feb. 22, 2021	Jun. 05, 2021~Jun. 06, 2021	Feb. 21, 2022	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 11, 2021	Jun. 05, 2021~Jun. 06, 2021	Mar. 10, 2022	Radiation (03CH15-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN4	1.53G Low Pass	Jul. 03, 2020	Jun. 05, 2021~Jun. 06, 2021	Jul. 02, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WHKX12-1080-1200-15000-60ST	SN5	1.2GHz High Pass Filter	Jul. 01, 2020	Jun. 05, 2021~Jun. 06, 2021	Jun. 30, 2021	Radiation (03CH15-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN4	3GHz High Pass Filter	Sep. 16, 2020	Jun. 05, 2021~Jun. 06, 2021	Sep. 15, 2021	Radiation (03CH15-HY)
Signal Generator	Anritsu	MG3694C	163401	0.1Hz~40GHz	Jan. 31, 2021	Jun. 05, 2021~Jun. 06, 2021	Jan. 30, 2022	Radiation (03CH15-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Base Station (Measure)	Anritsu	MT8821C	6262002534 1	N/A	Oct. 05, 2020	May 06, 2021~ May 10, 2021	Oct. 04, 2021	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 27, 2020	May 06, 2021~ May 10, 2021	Nov. 26, 2021	Conducted (TH03-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Aug. 05, 2020	May 06, 2021~ May 10, 2021	Aug. 04, 2021	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 05, 2020	May 06, 2021~ May 10, 2021	Oct. 04, 2021	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 09, 2021	May 06, 2021~ May 10, 2021	Jan. 08, 2022	Conducted (TH03-HY)



6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.98 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.31 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.92 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power & ERP/EIRP)

LTE Band 2 Maximum Average Power [dBm] (GT - LC = 0.8 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	19.42	19.45	19.39	20.52	0.1127
20	1	49		19.50	19.72	19.60		
20	1	99		19.31	19.45	19.50		
20	50	0		19.44	19.48	19.40		
20	50	24		19.51	19.52	19.51		
20	50	50		19.49	19.56	19.47		
20	100	0		19.53	19.48	19.42		
20	1	0	16-QAM	19.28	19.30	19.22	20.1	0.1023
20	1	49		19.18	19.28	19.17		
20	1	99		19.17	19.22	19.17		
20	50	0		18.94	18.99	18.92		
20	50	24		19.05	19.03	19.03		
20	50	50		19.02	19.10	19.00		
20	100	0		19.03	19.00	18.92		
20	1	0	64-QAM	19.15	19.15	19.16	19.97	0.0993
20	1	49		19.10	19.16	19.08		
20	1	99		19.08	19.17	19.10		
20	50	0		18.97	19.03	18.96		
20	50	24		19.06	19.07	19.02		
20	50	50		19.04	19.12	19.03		
20	100	0		19.04	19.01	18.94		
Limit	EIRP < 2W			Result			Pass	



LTE Band 2 Maximum Average Power [dBm] (GT - LC = 0.8 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
15	1	0	QPSK	19.38	19.47	19.39	20.39	0.1094
15	1	37		19.36	19.49	19.38		
15	1	74		19.40	19.43	19.34		
15	36	0		19.43	19.47	19.47		
15	36	20		19.55	19.51	19.49		
15	36	39		19.51	19.59	19.48		
15	75	0		19.53	19.51	19.47		
15	1	0	16-QAM	19.22	19.27	19.18	20.07	0.1016
15	1	37		19.20	19.25	19.17		
15	1	74		19.22	19.25	19.14		
15	36	0		18.93	18.99	18.96		
15	36	20		19.04	19.03	18.99		
15	36	39		19.01	19.10	18.99		
15	75	0		19.03	19.02	18.99		
15	1	0	64-QAM	19.09	19.15	19.17	19.99	0.0998
15	1	37		19.09	19.19	19.07		
15	1	74		19.15	19.19	19.09		
15	36	0		19.01	19.04	19.02		
15	36	20		19.09	19.09	19.01		
15	36	39		19.10	19.15	19.03		
15	75	0		19.03	19.05	18.99		
Limit	EIRP < 2W			Result			Pass	



LTE Band 2 Maximum Average Power [dBm] (GT - LC = 0.8 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
10	1	0	QPSK	19.39	19.38	19.31	20.37	0.1089
10	1	25		19.38	19.42	19.28		
10	1	49		19.32	19.39	19.25		
10	25	0		19.46	19.46	19.41		
10	25	12		19.51	19.49	19.45		
10	25	25		19.50	19.57	19.45		
10	50	0		19.50	19.50	19.46		
10	1	0	16-QAM	19.22	19.29	19.21	20.12	0.1028
10	1	25		19.20	19.31	19.18		
10	1	49		19.22	19.32	19.20		
10	25	0		18.97	18.98	18.93		
10	25	12		19.01	19.03	18.96		
10	25	25		19.02	19.09	18.96		
10	50	0		19.01	19.02	18.97		
10	1	0	64-QAM	19.08	19.09	19.12	20.03	0.1007
10	1	25		19.16	19.23	19.07		
10	1	49		19.09	19.21	19.05		
10	25	0		19.02	19.01	18.95		
10	25	12		19.07	19.05	19.01		
10	25	25		19.08	19.11	19.01		
10	50	0		19.04	19.04	18.99		
Limit	EIRP < 2W			Result			Pass	



LTE Band 2 Maximum Average Power [dBm] (GT - LC = 0.8 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
5	1	0	QPSK	19.33	19.36	19.24	20.35	0.1084
5	1	12		19.35	19.38	19.27		
5	1	24		19.39	19.41	19.30		
5	12	0		19.44	19.44	19.39		
5	12	7		19.50	19.49	19.46		
5	12	13		19.44	19.55	19.38		
5	25	0		19.43	19.42	19.38		
5	1	0	16-QAM	19.16	19.16	19.01	20.09	0.1021
5	1	12		19.17	19.13	19.15		
5	1	24		19.18	19.29	19.17		
5	12	0		18.99	18.92	18.89		
5	12	7		19.03	19.01	18.93		
5	12	13		18.96	19.04	18.92		
5	25	0		18.98	18.99	18.89		
5	1	0	64-QAM	19.13	19.16	19.06	20.07	0.1016
5	1	12		19.14	19.25	19.10		
5	1	24		19.19	19.27	19.03		
5	12	0		19.02	19.03	18.95		
5	12	7		19.06	19.08	18.99		
5	12	13		19.06	19.15	19.00		
5	25	0		18.96	18.98	18.92		
Limit	EIRP < 2W			Result			Pass	



LTE Band 2 Maximum Average Power [dBm] (GT - LC = 0.8 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
3	1	0	QPSK	19.37	19.38	19.29	20.33	0.1079
3	1	8		19.43	19.46	19.33		
3	1	14		19.40	19.47	19.32		
3	8	0		19.45	19.46	19.38		
3	8	4		19.49	19.49	19.41		
3	8	7		19.49	19.53	19.41		
3	15	0		19.47	19.48	19.39		
3	1	0	16-QAM	19.15	19.22	19.08	20.14	0.1033
3	1	8		19.28	19.33	19.21		
3	1	14		19.22	19.34	19.10		
3	8	0		18.98	18.95	18.90		
3	8	4		19.09	19.08	19.00		
3	8	7		18.99	19.04	18.91		
3	15	0		19.02	18.99	18.94		
3	1	0	64-QAM	19.18	19.17	19.02	20.13	0.1030
3	1	8		19.29	19.33	19.14		
3	1	14		19.20	19.28	19.15		
3	8	0		19.09	19.03	18.94		
3	8	4		19.08	19.08	18.98		
3	8	7		19.04	19.16	18.99		
3	15	0		19.04	19.05	18.96		
Limit	EIRP < 2W			Result			Pass	



LTE Band 2 Maximum Average Power [dBm] (GT - LC = 0.8 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
1.4	1	0	QPSK	19.28	19.39	19.21	20.26	0.1062
1.4	1	3		19.34	19.40	19.29		
1.4	1	5		19.32	19.38	19.22		
1.4	3	0		19.19	19.27	19.06		
1.4	3	1		19.43	19.45	19.33		
1.4	3	3		19.27	19.36	19.15		
1.4	6	0		19.38	19.46	19.32		
1.4	1	0	16-QAM	19.07	19.18	19.07	20.10	0.1023
1.4	1	3		19.22	19.30	19.16		
1.4	1	5		19.12	19.20	19.09		
1.4	3	0		18.95	19.00	18.88		
1.4	3	1		18.99	19.04	18.87		
1.4	3	3		18.99	19.01	18.85		
1.4	6	0		18.94	19.04	18.91		
1.4	1	0	64-QAM	19.04	19.12	18.73	20.02	0.1005
1.4	1	3		19.08	19.13	18.91		
1.4	1	5		19.03	19.14	18.98		
1.4	3	0		19.13	19.17	19.00		
1.4	3	1		19.15	19.22	19.05		
1.4	3	3		19.07	19.16	19.03		
1.4	6	0		18.94	19.03	18.86		
Limit	EIRP < 2W			Result			Pass	



LTE Band 4 Maximum Average Power [dBm] (GT - LC = -0.7 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	19.53	19.72	19.54	19.02	0.0798
20	1	49		19.30	19.30	19.24		
20	1	99		19.40	19.25	19.20		
20	50	0		19.45	19.45	19.46		
20	50	24		19.50	19.43	19.38		
20	50	50		19.44	19.35	19.40		
20	100	0		19.44	19.46	19.37		
20	1	0	16-QAM	19.27	19.24	19.24	18.57	0.0719
20	1	49		19.10	19.10	19.14		
20	1	99		19.08	19.04	19.14		
20	50	0		18.98	18.95	18.96		
20	50	24		18.99	18.95	18.91		
20	50	50		18.91	18.88	18.92		
20	100	0		18.95	18.93	18.87		
20	1	0	64-QAM	19.13	19.09	19.16	18.46	0.0701
20	1	49		19.03	18.99	18.97		
20	1	99		18.99	18.97	19.03		
20	50	0		18.99	18.98	19.00		
20	50	24		19.01	18.97	18.94		
20	50	50		18.92	18.90	18.92		
20	100	0		18.98	18.97	18.94		
Limit	EIRP < 1W			Result			Pass	



LTE Band 4 Maximum Average Power [dBm] (GT - LC = -0.7 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
15	1	0	QPSK	19.44	19.39	19.43	18.83	0.0764
15	1	37		19.30	19.25	19.26		
15	1	74		19.27	19.22	19.23		
15	36	0		19.53	19.43	19.45		
15	36	20		19.42	19.44	19.37		
15	36	39		19.39	19.36	19.40		
15	75	0		19.47	19.45	19.36		
15	1	0	16-QAM	19.24	19.26	19.27	18.57	0.0719
15	1	37		19.09	19.03	19.04		
15	1	74		19.10	19.05	19.10		
15	36	0		19.04	18.93	18.95		
15	36	20		18.96	18.91	18.89		
15	36	39		18.91	18.86	18.94		
15	75	0		18.98	18.96	18.91		
15	1	0	64-QAM	19.15	19.12	19.14	18.45	0.0700
15	1	37		19.04	18.97	19.03		
15	1	74		19.03	18.97	19.01		
15	36	0		19.08	18.98	19.00		
15	36	20		18.98	18.98	18.91		
15	36	39		18.97	18.94	18.97		
15	75	0		19.00	18.97	18.93		
Limit	EIRP < 1W			Result			Pass	



LTE Band 4 Maximum Average Power [dBm] (GT - LC = -0.7 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
10	1	0	QPSK	19.41	19.29	19.33	18.79	0.0757
10	1	25		19.32	19.27	19.31		
10	1	49		19.29	19.28	19.28		
10	25	0		19.45	19.34	19.36		
10	25	12		19.48	19.46	19.38		
10	25	25		19.47	19.46	19.49		
10	50	0		19.49	19.46	19.40		
10	1	0	16-QAM	19.26	19.18	19.21	18.56	0.0718
10	1	25		19.21	19.16	19.21		
10	1	49		19.19	19.14	19.22		
10	25	0		18.99	18.86	18.88		
10	25	12		19.01	18.96	18.90		
10	25	25		18.99	18.91	18.96		
10	50	0		18.99	18.95	18.92		
10	1	0	64-QAM	19.16	18.98	19.06	18.50	0.0708
10	1	25		19.12	19.07	19.20		
10	1	49		19.07	19.08	19.11		
10	25	0		19.00	18.89	18.91		
10	25	12		19.05	19.00	18.95		
10	25	25		19.03	19.01	19.06		
10	50	0		19.02	18.98	18.97		
Limit	EIRP < 1W			Result			Pass	



LTE Band 4 Maximum Average Power [dBm] (GT - LC = -0.7 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
5	1	0	QPSK	19.37	19.22	19.25	18.80	0.0759
5	1	12		19.31	19.24	19.25		
5	1	24		19.34	19.31	19.34		
5	12	0		19.45	19.30	19.39		
5	12	7		19.50	19.45	19.45		
5	12	13		19.46	19.40	19.43		
5	25	0		19.43	19.39	19.42		
5	1	0	16-QAM	19.13	19.07	19.16	18.50	0.0708
5	1	12		19.19	19.01	19.04		
5	1	24		19.20	19.10	19.13		
5	12	0		18.97	18.80	18.92		
5	12	7		19.02	18.92	18.99		
5	12	13		18.99	18.94	18.92		
5	25	0		19.01	18.90	18.93		
5	1	0	64-QAM	19.18	18.99	19.08	18.48	0.0705
5	1	12		19.14	19.11	19.11		
5	1	24		19.16	19.13	19.17		
5	12	0		19.02	18.89	19.01		
5	12	7		19.08	18.99	19.03		
5	12	13		19.06	18.98	18.98		
5	25	0		18.99	18.94	18.94		
Limit	EIRP < 1W			Result			Pass	



LTE Band 4 Maximum Average Power [dBm] (GT - LC = -0.7 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
3	1	0	QPSK	19.37	19.29	19.31	18.79	0.0757
3	1	8		19.41	19.35	19.40		
3	1	14		19.36	19.32	19.37		
3	8	0		19.47	19.42	19.41		
3	8	4		19.46	19.40	19.45		
3	8	7		19.45	19.39	19.45		
3	15	0		19.49	19.40	19.42		
3	1	0	16-QAM	19.12	19.11	19.22	18.57	0.0719
3	1	8		19.27	19.21	19.19		
3	1	14		19.16	19.16	19.16		
3	8	0		18.98	18.94	18.90		
3	8	4		19.06	18.99	19.03		
3	8	7		18.98	18.90	18.95		
3	15	0		19.00	18.94	18.97		
3	1	0	64-QAM	19.19	19.09	19.14	18.50	0.0708
3	1	8		19.20	19.17	19.17		
3	1	14		19.20	19.13	19.17		
3	8	0		19.04	18.96	19.01		
3	8	4		19.07	19.04	19.03		
3	8	7		19.04	18.99	18.99		
3	15	0		19.04	18.97	19.01		
Limit	EIRP < 1W			Result			Pass	



LTE Band 4 Maximum Average Power [dBm] (GT - LC = -0.7 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
1.4	1	0	QPSK	19.30	19.24	19.22	18.72	0.0745
1.4	1	3		19.37	19.27	19.29		
1.4	1	5		19.36	19.25	19.25		
1.4	3	0		19.18	19.13	19.15		
1.4	3	1		19.28	19.34	19.34		
1.4	3	3		19.29	19.15	19.16		
1.4	6	0		19.42	19.33	19.36		
1.4	1	0	16-QAM	19.15	19.14	19.07	18.56	0.0718
1.4	1	3		19.26	19.22	19.21		
1.4	1	5		19.20	19.20	19.07		
1.4	3	0		18.95	18.88	18.86		
1.4	3	1		18.97	18.91	18.92		
1.4	3	3		18.94	18.88	18.89		
1.4	6	0		18.95	18.92	18.92		
1.4	1	0	64-QAM	19.07	18.99	19.01	18.44	0.0698
1.4	1	3		19.09	19.06	18.98		
1.4	1	5		19.07	19.04	18.99		
1.4	3	0		19.10	19.03	19.06		
1.4	3	1		19.14	19.10	19.06		
1.4	3	3		19.12	19.04	19.03		
1.4	6	0		18.96	18.89	18.86		
Limit	EIRP < 1W			Result			Pass	



LTE Band 12 Maximum Average Power [dBm] (GT - LC = -5.3 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	24.30	24.19	24.21	16.96	0.0497
10	1	25		24.25	24.26	24.27		
10	1	49		24.26	24.41	24.24		
10	25	0		23.39	23.40	23.42		
10	25	12		23.44	23.40	23.39		
10	25	25		23.42	23.47	23.44		
10	50	0		23.44	23.48	23.39		
10	1	0	16-QAM	23.35	23.29	23.23	15.98	0.0396
10	1	25		23.28	23.30	23.31		
10	1	49		23.38	23.43	23.35		
10	25	0		22.18	22.20	22.21		
10	25	12		22.26	22.20	22.23		
10	25	25		22.23	22.22	22.24		
10	50	0		22.25	22.27	22.19		
10	1	0	64-QAM	22.56	22.43	22.43	15.32	0.0340
10	1	25		22.68	22.52	22.54		
10	1	49		22.77	22.62	22.48		
10	25	0		21.36	21.43	21.42		
10	25	12		21.39	21.44	21.44		
10	25	25		21.66	21.48	21.48		
10	50	0		21.50	21.49	21.43		
Limit	ERP < 3W			Result			Pass	



LTE Band 12 Maximum Average Power [dBm] (GT - LC = -5.3 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	24.31	24.30	24.25	16.86	0.0485
5	1	12		24.26	24.26	24.27		
5	1	24		24.19	24.27	24.28		
5	12	0		23.41	23.34	23.39		
5	12	7		23.39	23.44	23.39		
5	12	13		23.34	23.31	23.40		
5	25	0		23.35	23.41	23.33		
5	1	0	16-QAM	23.27	23.31	23.27	15.86	0.0385
5	1	12		23.25	23.27	23.22		
5	1	24		23.26	23.25	23.25		
5	12	0		22.27	22.17	22.19		
5	12	7		22.22	22.23	22.21		
5	12	13		22.18	22.17	22.23		
5	25	0		22.23	22.22	22.17		
5	1	0	64-QAM	22.53	22.56	22.54	15.11	0.0324
5	1	12		22.46	22.52	22.55		
5	1	24		22.47	22.55	22.56		
5	12	0		21.45	21.42	21.46		
5	12	7		21.46	21.48	21.42		
5	12	13		21.39	21.42	21.44		
5	25	0		21.39	21.40	21.38		
Limit	ERP < 3W			Result			Pass	



LTE Band 12 Maximum Average Power [dBm] (GT - LC = -5.3 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3	1	0	QPSK	24.33	24.32	24.34	16.9	0.0490
3	1	8		24.31	24.33	24.35		
3	1	14		24.23	24.27	24.27		
3	8	0		23.40	23.35	23.37		
3	8	4		23.37	23.38	23.43		
3	8	7		23.37	23.38	23.40		
3	15	0		23.37	23.41	23.34		
3	1	0	16-QAM	23.29	23.37	23.36	15.92	0.0391
3	1	8		23.33	23.27	23.33		
3	1	14		23.26	23.27	23.24		
3	8	0		22.21	22.19	22.19		
3	8	4		22.28	22.28	22.33		
3	8	7		22.19	22.20	22.20		
3	15	0		22.25	22.25	22.16		
3	1	0	64-QAM	22.60	22.56	22.59	15.15	0.0327
3	1	8		22.59	22.55	22.60		
3	1	14		22.54	22.50	22.51		
3	8	0		21.46	21.37	21.46		
3	8	4		21.45	21.45	21.49		
3	8	7		21.38	21.44	21.45		
3	15	0		21.42	21.44	21.39		
Limit	ERP < 3W			Result			Pass	



LTE Band 12 Maximum Average Power [dBm] (GT - LC = -5.3 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
1.4	1	0	QPSK	24.26	24.22	24.23	16.86	0.0485
1.4	1	3		24.22	24.26	24.25		
1.4	1	5		24.21	24.17	24.23		
1.4	3	0		24.12	24.10	24.15		
1.4	3	1		24.31	24.20	24.31		
1.4	3	3		24.19	24.12	24.17		
1.4	6	0		23.33	23.32	23.33		
1.4	1	0	16-QAM	23.22	23.23	23.26	15.97	0.0395
1.4	1	3		23.34	23.32	23.42		
1.4	1	5		23.19	23.19	23.33		
1.4	3	0		23.10	23.06	23.08		
1.4	3	1		23.09	23.08	23.12		
1.4	3	3		23.04	23.00	23.03		
1.4	6	0		22.17	22.19	22.22		
1.4	1	0	64-QAM	22.44	22.41	22.50	15.08	0.0322
1.4	1	3		22.46	22.45	22.48		
1.4	1	5		22.48	22.49	22.41		
1.4	3	0		22.48	22.38	22.50		
1.4	3	1		22.51	22.45	22.53		
1.4	3	3		22.45	22.45	22.48		
1.4	6	0		21.34	21.34	21.36		
Limit	ERP < 3W			Result			Pass	



LTE Band 17 Maximum Average Power [dBm] (GT - LC = -5.3 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	24.20	24.19	24.18	16.91	0.0491
10	1	25		24.26	24.30	24.28		
10	1	49		24.32	24.36	24.32		
10	25	0		23.31	23.32	23.32		
10	25	12		23.36	23.38	23.38		
10	25	25		23.47	23.46	23.47		
10	50	0		23.34	23.36	23.34		
10	1	0	16-QAM	23.27	23.27	23.28	16.01	0.0399
10	1	25		23.29	23.33	23.33		
10	1	49		23.43	23.46	23.43		
10	25	0		22.12	22.09	22.10		
10	25	12		22.16	22.18	22.19		
10	25	25		22.26	22.25	22.26		
10	50	0		22.14	22.15	22.17		
10	1	0	64-QAM	22.44	22.41	22.43	15.16	0.0328
10	1	25		22.54	22.56	22.61		
10	1	49		22.60	22.61	22.60		
10	25	0		21.31	21.33	21.36		
10	25	12		21.41	21.41	21.43		
10	25	25		21.48	21.49	21.50		
10	50	0		21.36	21.35	21.39		
Limit	ERP < 3W			Result			Pass	



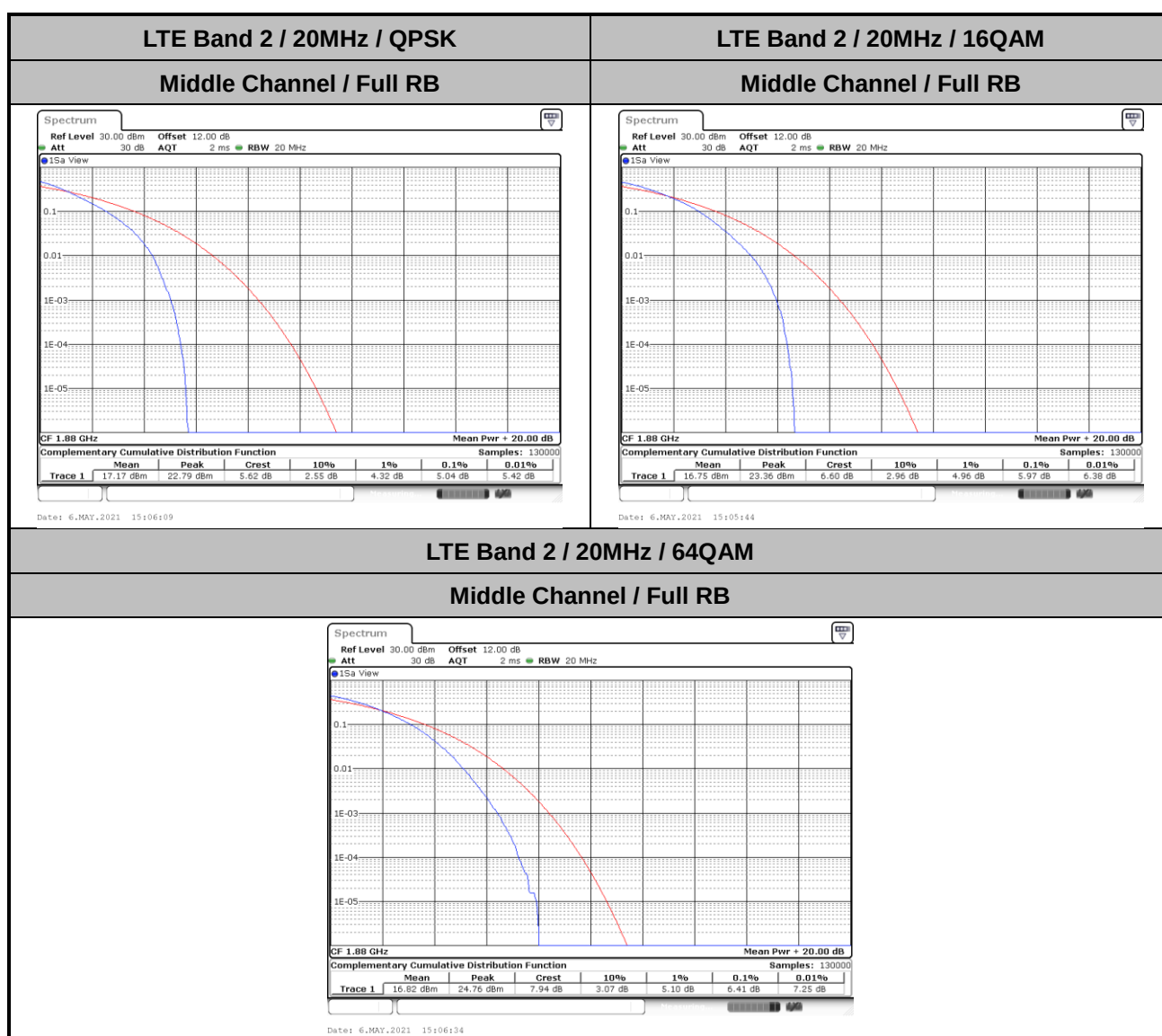
LTE Band 17 Maximum Average Power [dBm] (GT - LC = -5.3 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	24.24	24.25	24.32	16.89	0.0489
5	1	12		24.22	24.24	24.34		
5	1	24		24.27	24.33	24.31		
5	12	0		23.28	23.33	23.37		
5	12	7		23.40	23.41	23.47		
5	12	13		23.33	23.37	23.42		
5	25	0		23.34	23.36	23.31		
5	1	0	16-QAM	23.21	23.23	23.27	15.94	0.0393
5	1	12		23.18	23.28	23.35		
5	1	24		23.28	23.31	23.39		
5	12	0		22.11	22.15	22.16		
5	12	7		22.21	22.19	22.28		
5	12	13		22.14	22.20	22.25		
5	25	0		22.19	22.20	22.17		
5	1	0	64-QAM	22.47	22.47	22.52	15.12	0.0325
5	1	12		22.51	22.54	22.56		
5	1	24		22.54	22.38	22.57		
5	12	0		21.35	21.36	21.39		
5	12	7		21.45	21.46	21.50		
5	12	13		21.39	21.37	21.48		
5	25	0		21.37	21.40	21.36		
Limit	ERP < 3W			Result			Pass	



LTE Band 2

Peak-to-Average Ratio

Mode	LTE Band 2 / 20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	5.04	5.97	6.41	-	PASS



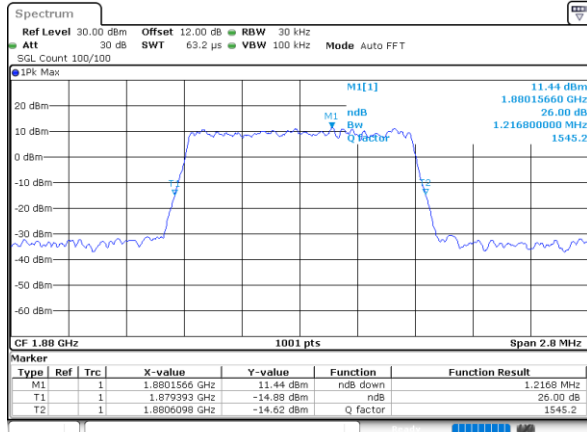
**26dB Bandwidth**

Mode	LTE Band 2 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	1.22	1.24	3.03	3.02	4.93	4.88	9.79	9.95	14.48	14.51	19.06	19.10
Mode	LTE Band 2 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM
Middle CH	1.22	-	3.06	-	4.93	-	9.77	-	14.42	-	18.90	-

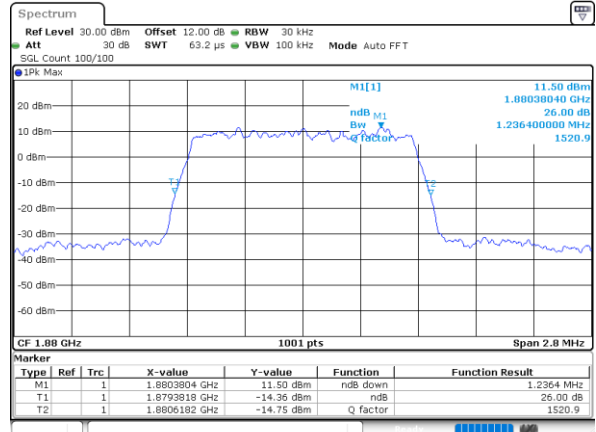


LTE Band 2

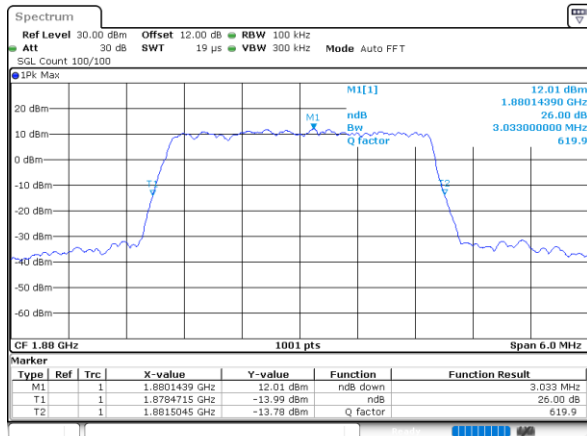
Middle Channel / 1.4MHz / QPSK



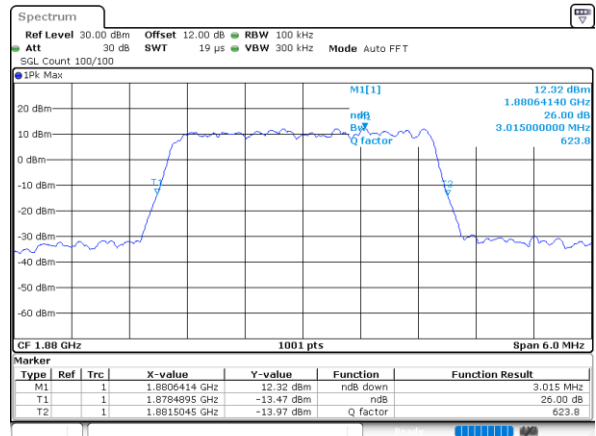
Middle Channel / 1.4MHz / 16QAM



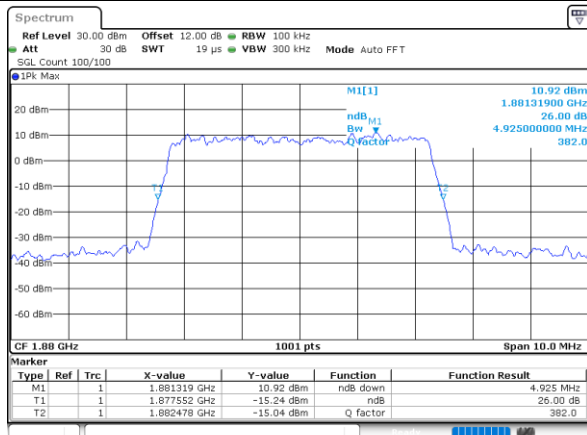
Middle Channel / 3MHz / QPSK



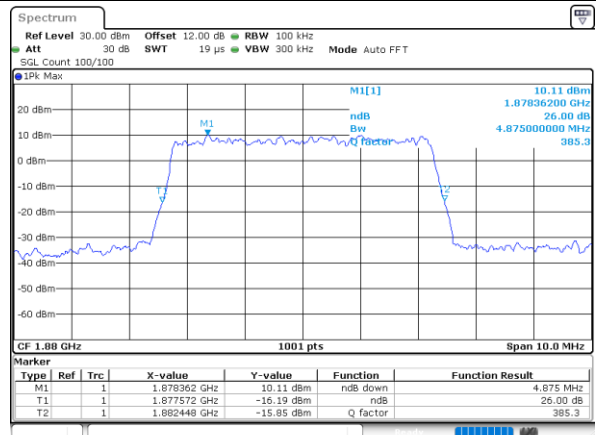
Middle Channel / 3MHz / 16QAM



Middle Channel / 5MHz / QPSK



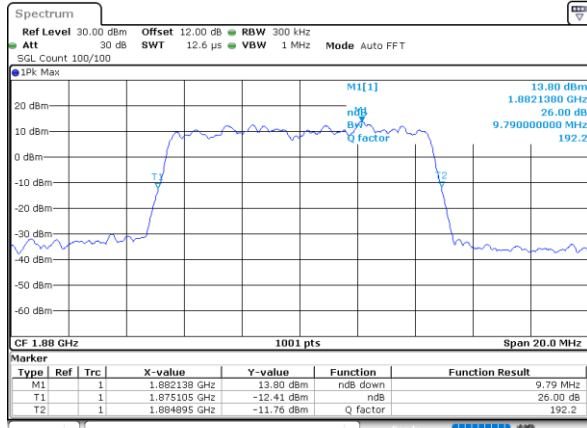
Middle Channel / 5MHz / 16QAM





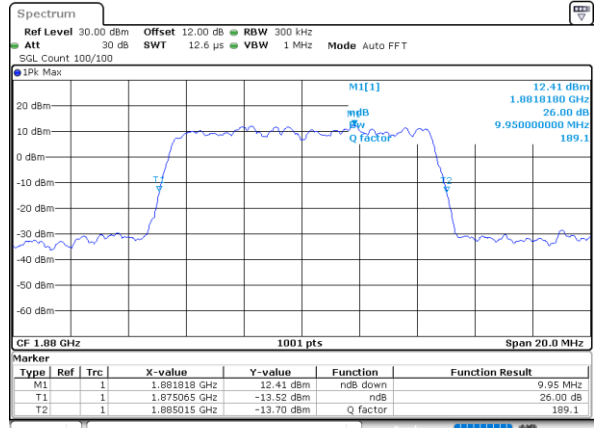
LTE Band 2

Middle Channel / 10MHz / QPSK



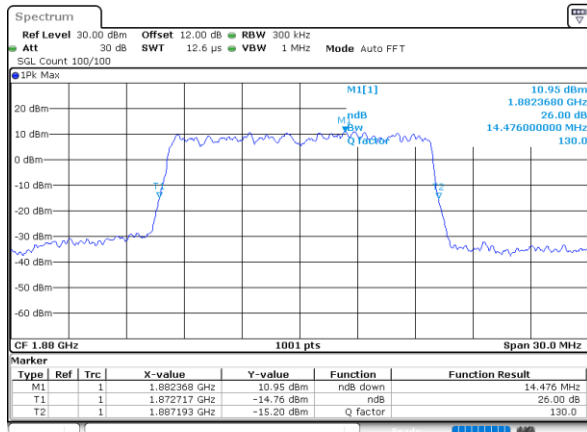
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Middle Channel / 10MHz / 16QAM



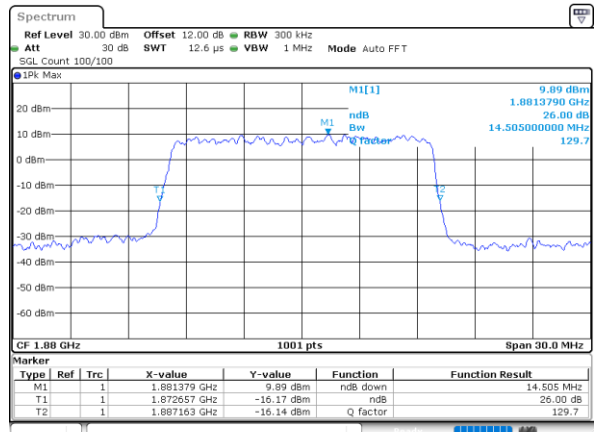
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Middle Channel / 15MHz / QPSK



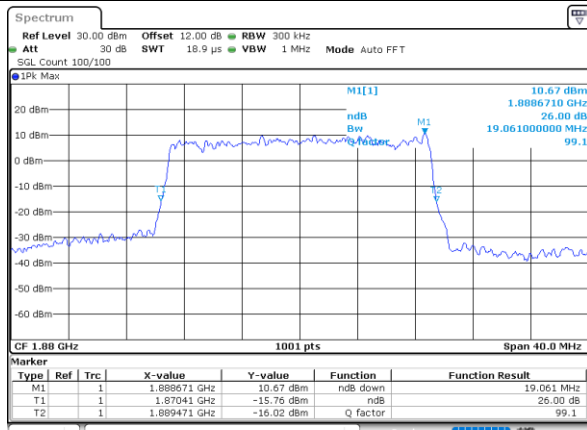
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Middle Channel / 15MHz / 16QAM



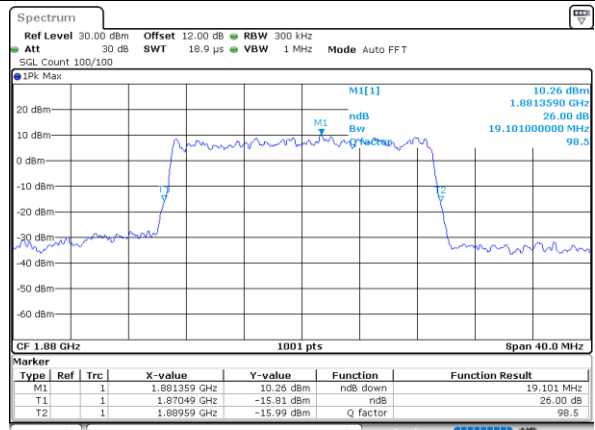
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Middle Channel / 20MHz / QPSK



Date: 6.MAY.2021 14:49:24

Middle Channel / 20MHz / 16QAM

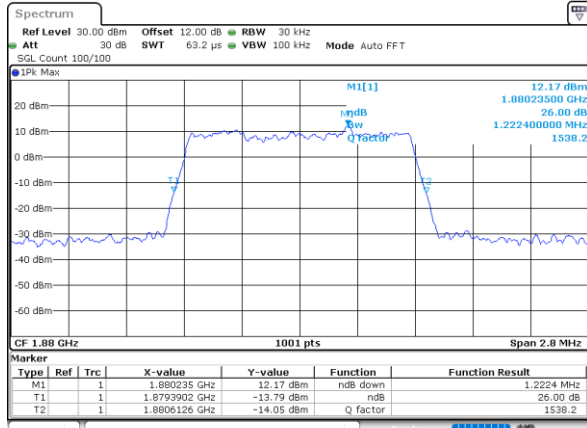


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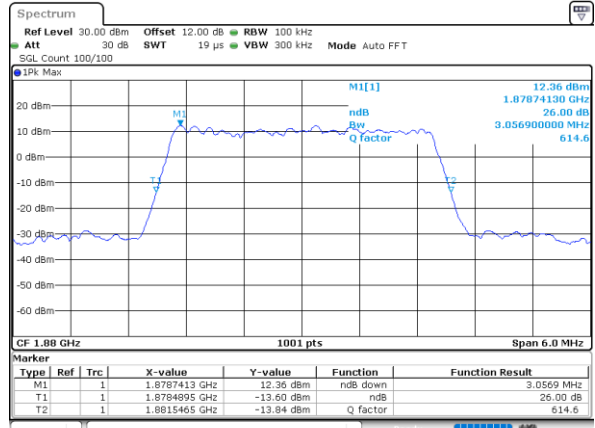


LTE Band 2

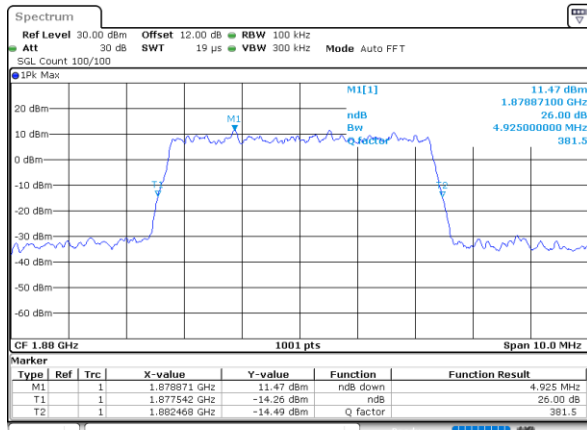
Middle Channel / 1.4MHz / 64QAM



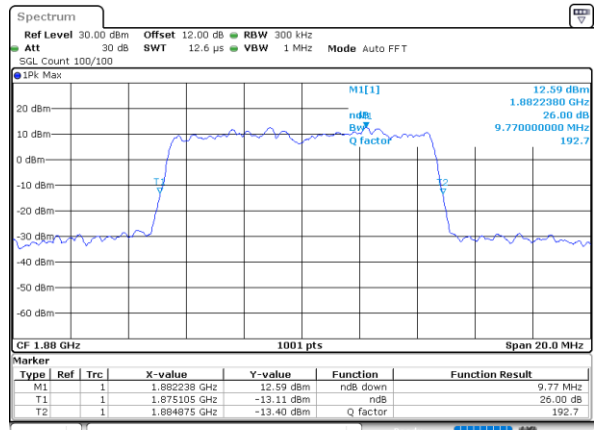
Middle Channel / 3MHz / 64QAM



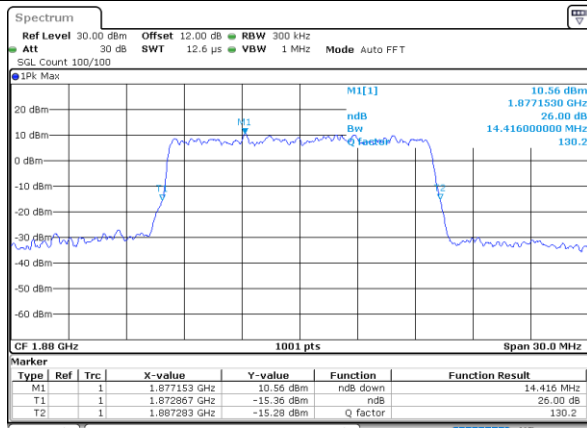
Middle Channel / 5MHz / 64QAM



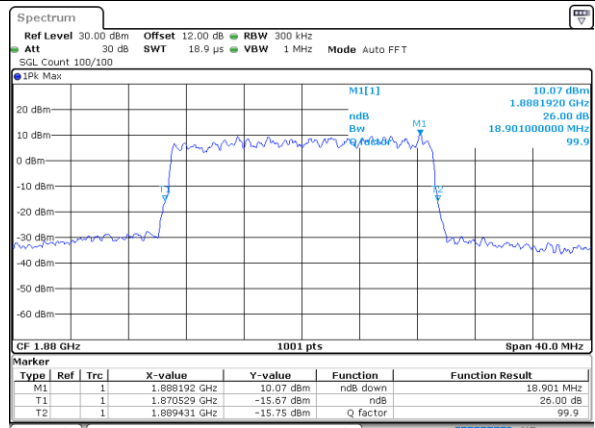
Middle Channel / 10MHz / 64QAM



Middle Channel / 15MHz / 64QAM



Middle Channel / 20MHz / 64QAM



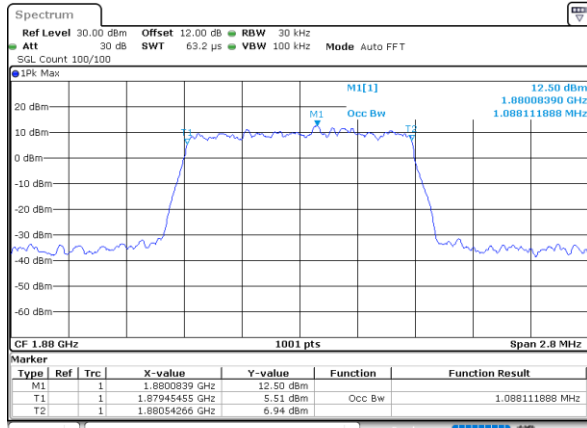
**Occupied Bandwidth**

Mode	LTE Band 2 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	1.09	1.10	2.72	2.72	4.46	4.49	9.03	9.01	13.43	13.49	17.94	17.82
Mode	LTE Band 2 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM
Middle CH	1.10	-	2.71	-	4.48	-	8.99	-	13.34	-	17.86	-

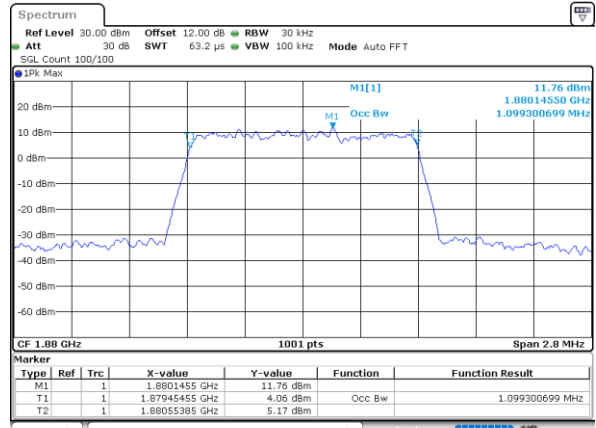


LTE Band 2

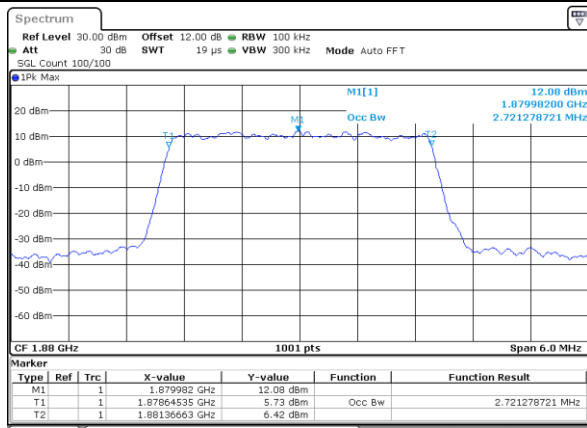
Middle Channel / 1.4MHz / QPSK



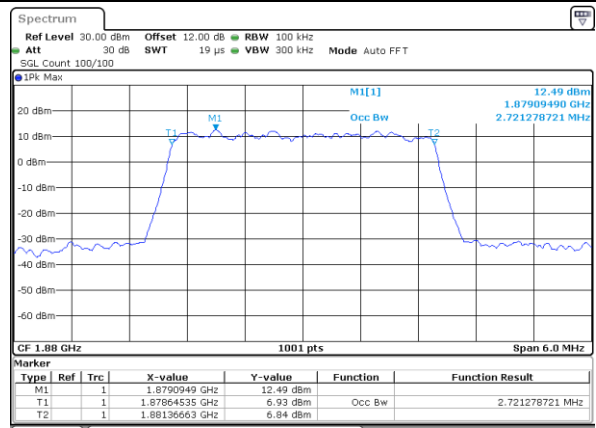
Middle Channel / 1.4MHz / 16QAM



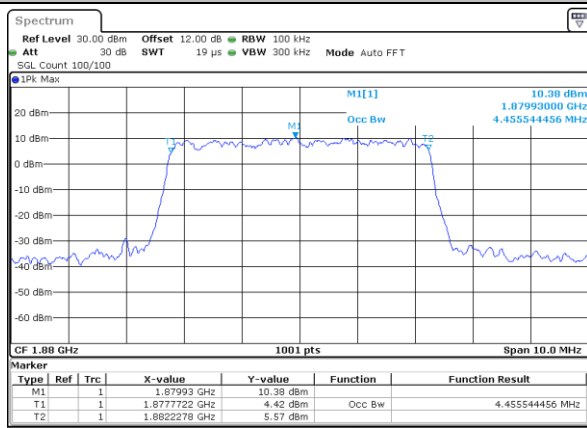
Middle Channel / 3MHz / QPSK



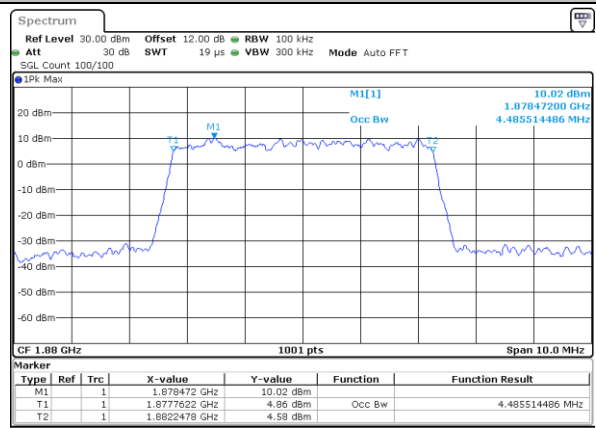
Middle Channel / 3MHz / 16QAM



Middle Channel / 5MHz / QPSK



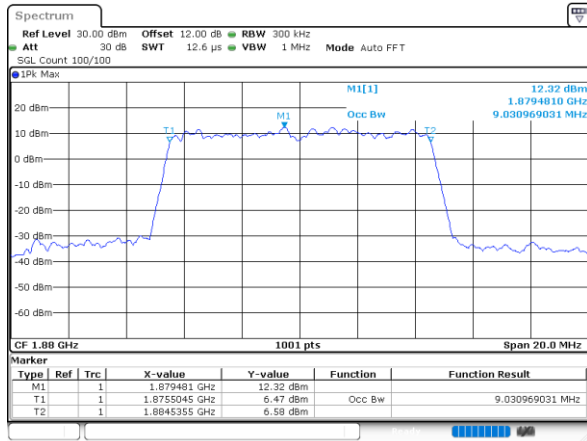
Middle Channel / 5MHz / 16QAM



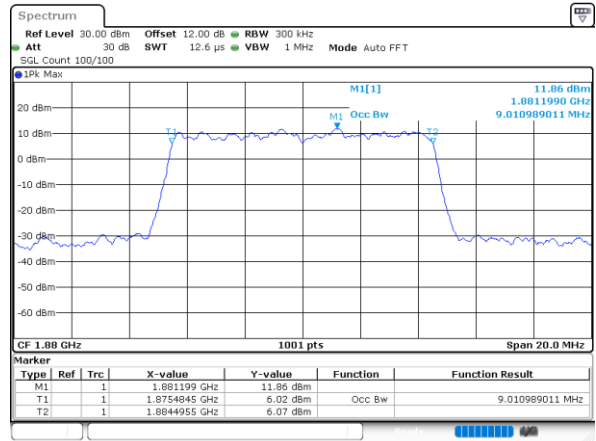


LTE Band 2

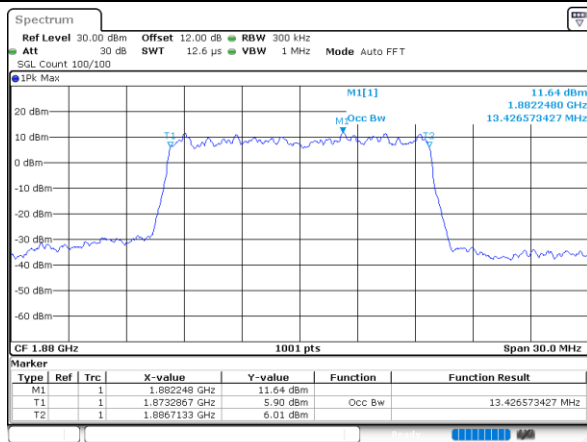
Middle Channel / 10MHz / QPSK



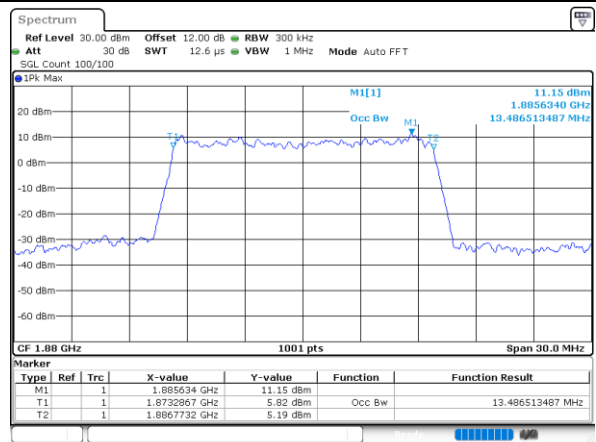
Middle Channel / 10MHz / 16QAM



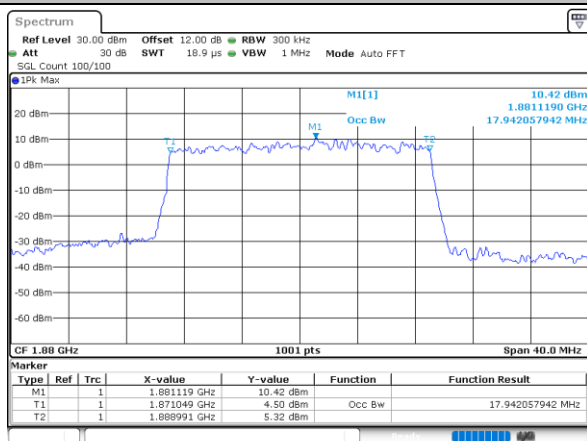
Middle Channel / 15MHz / QPSK



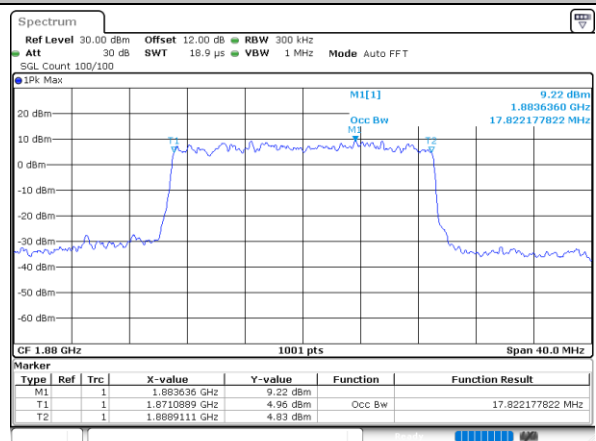
Middle Channel / 15MHz / 16QAM



Middle Channel / 20MHz / QPSK



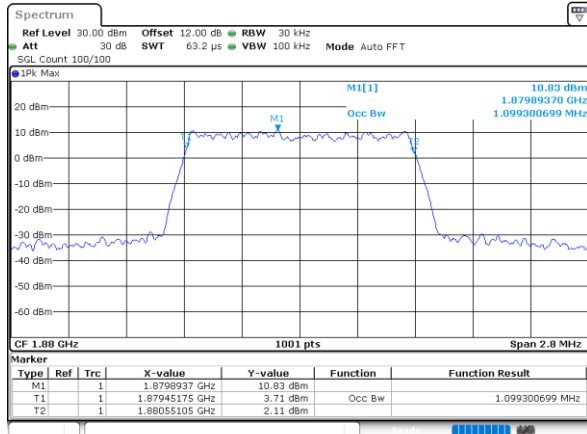
Middle Channel / 20MHz / 16QAM



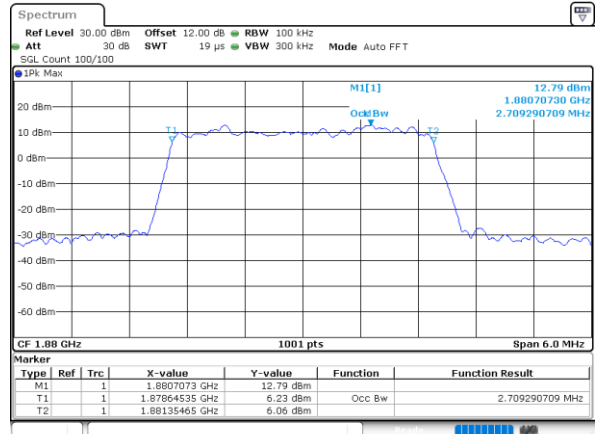


LTE Band 2

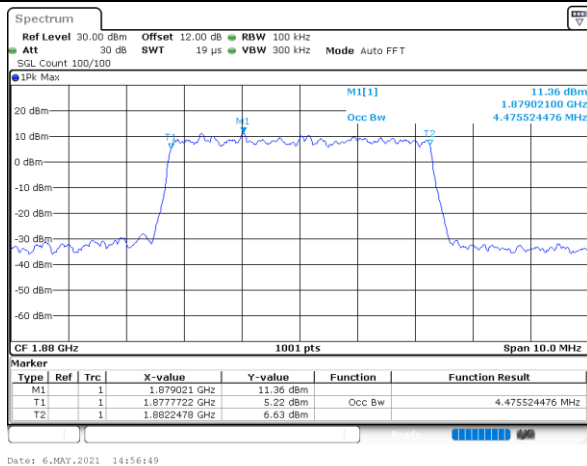
Middle Channel / 1.4MHz / 64QAM



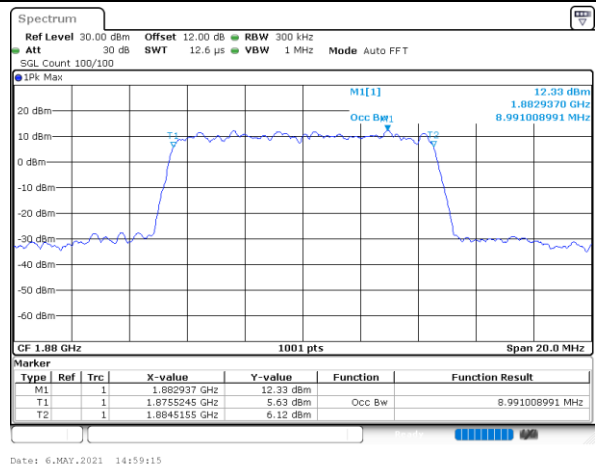
Middle Channel / 3MHz / 64QAM



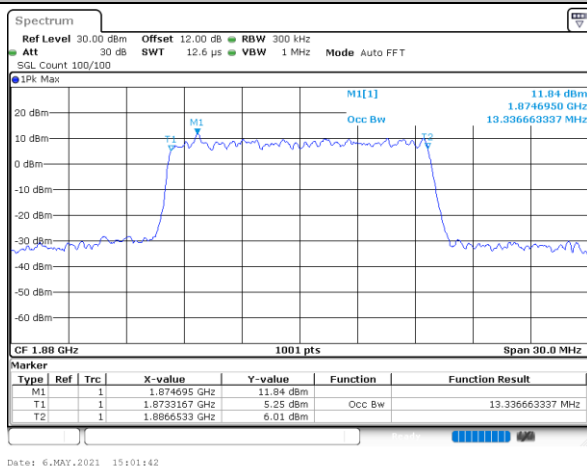
Middle Channel / 5MHz / 64QAM



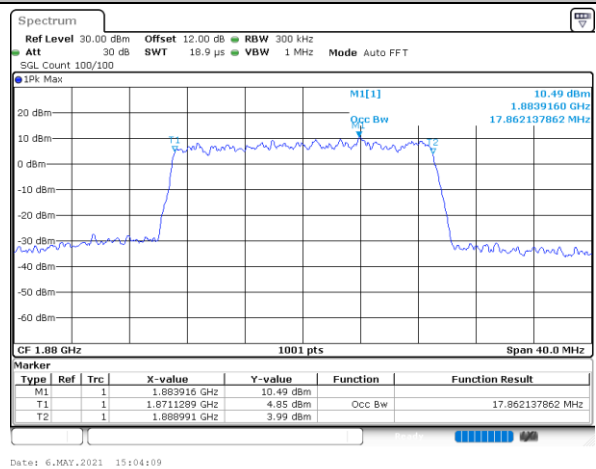
Middle Channel / 10MHz / 64QAM



Middle Channel / 15MHz / 64QAM



Middle Channel / 20MHz / 64QAM

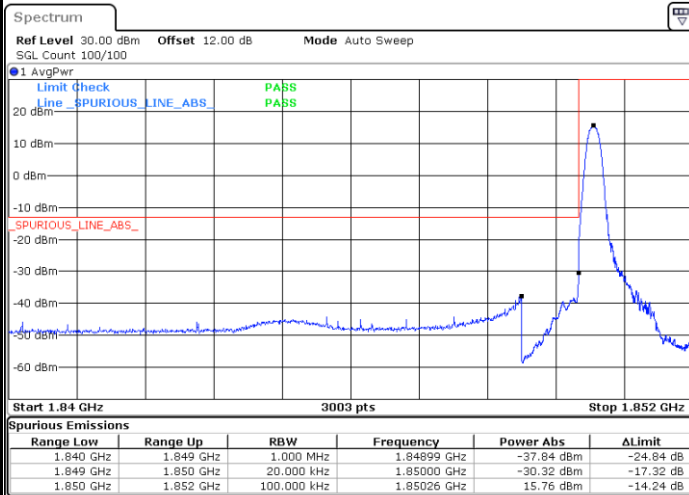




Conducted Band Edge

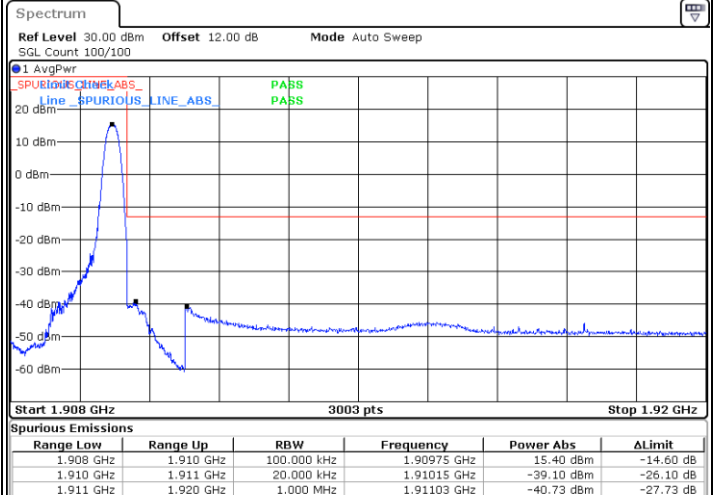
LTE Band 2 / 1.4MHz / QPSK

Lowest Band Edge / 1RB



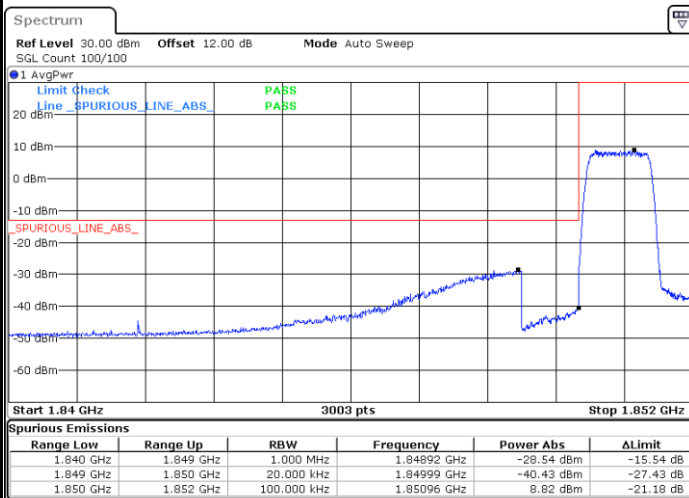
Date: 6.MAY.2021 13:52:52

Highest Band Edge / 1RB



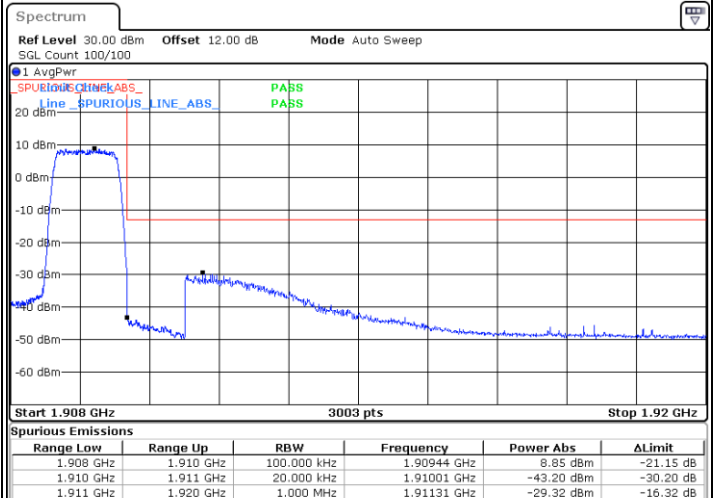
Date: 6.MAY.2021 13:57:45

Lowest Band Edge / Full RB



Date: 6.MAY.2021 13:53:44

Highest Band Edge / Full RB

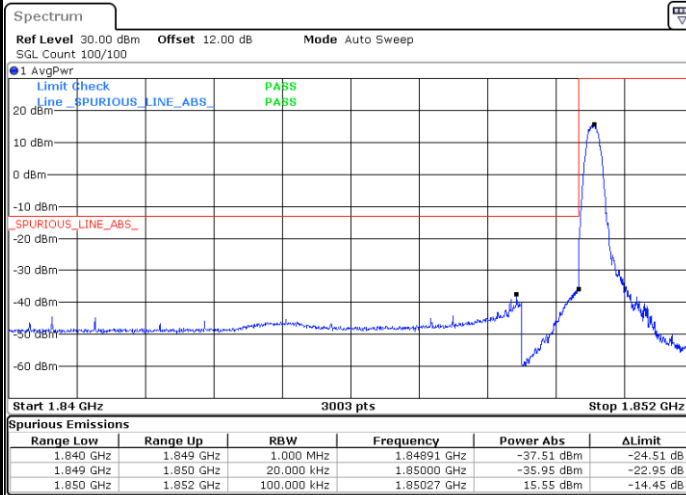


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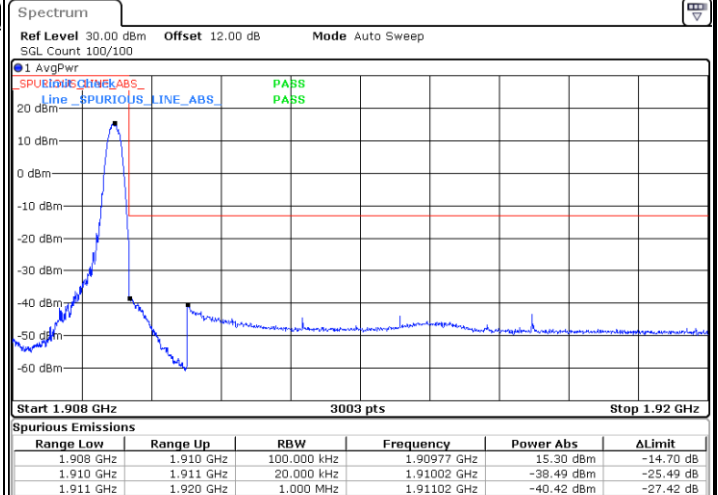


LTE Band 2 / 1.4MHz / 16QAM

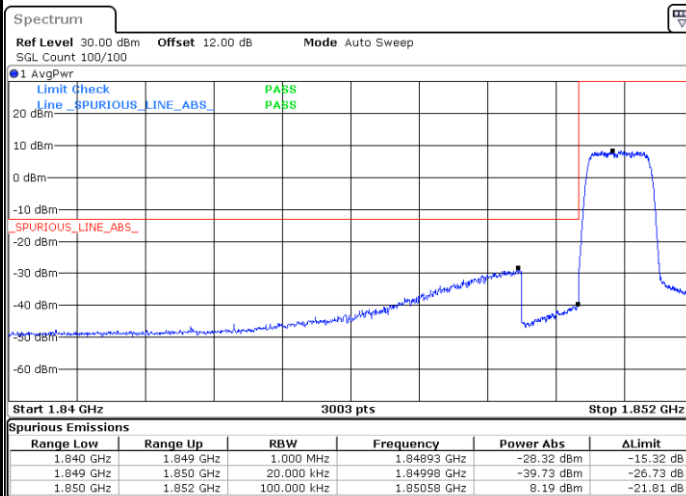
Lowest Band Edge / 1 RB



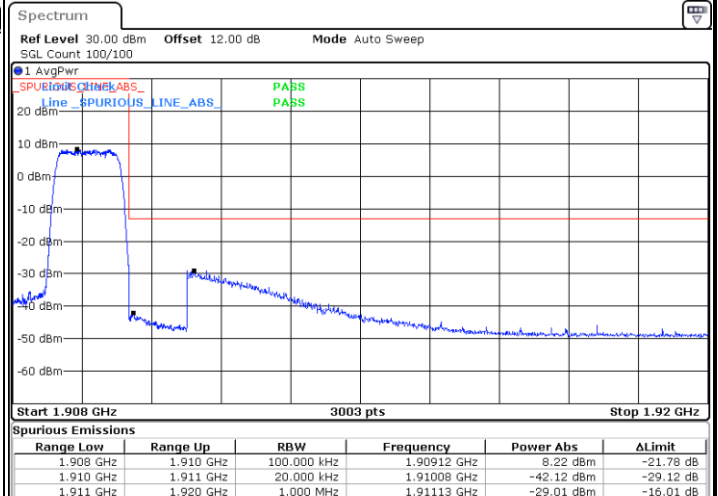
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



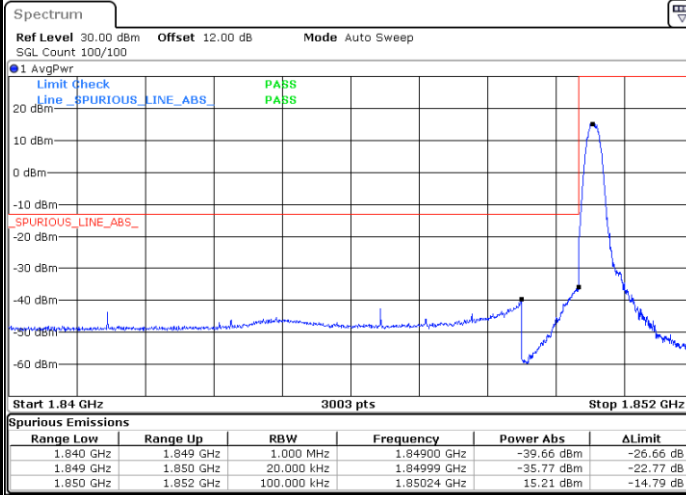
Highest Band Edge / Full RB



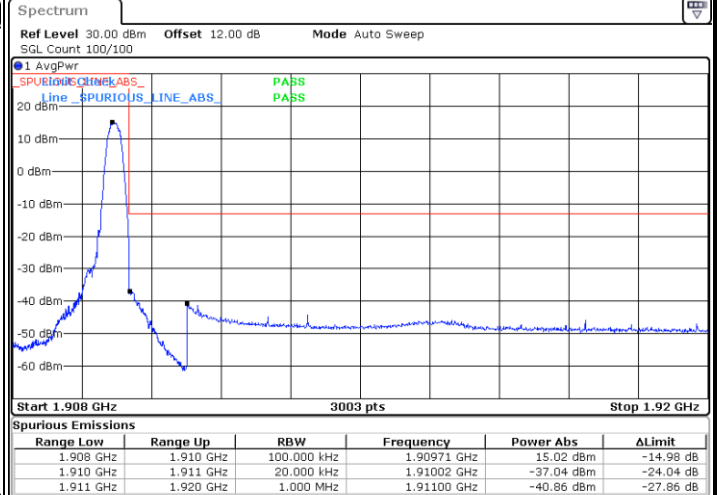


LTE Band 2 / 1.4MHz / 64QAM

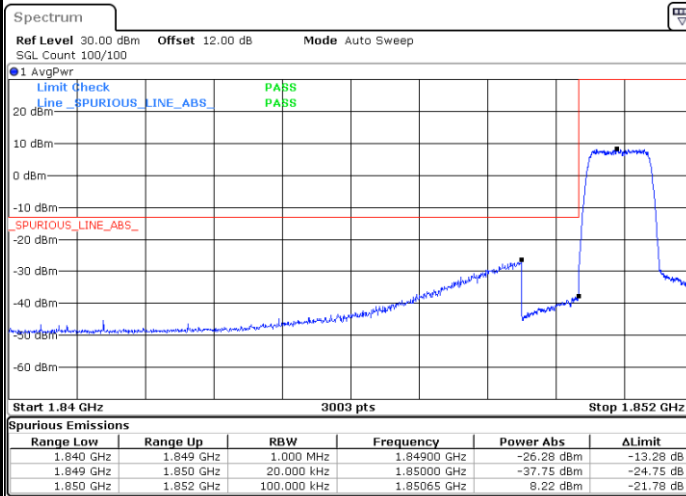
Lowest Band Edge / 1 RB



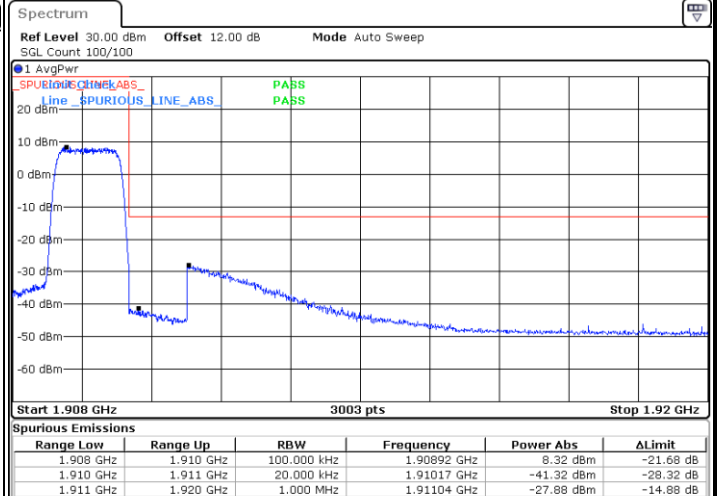
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



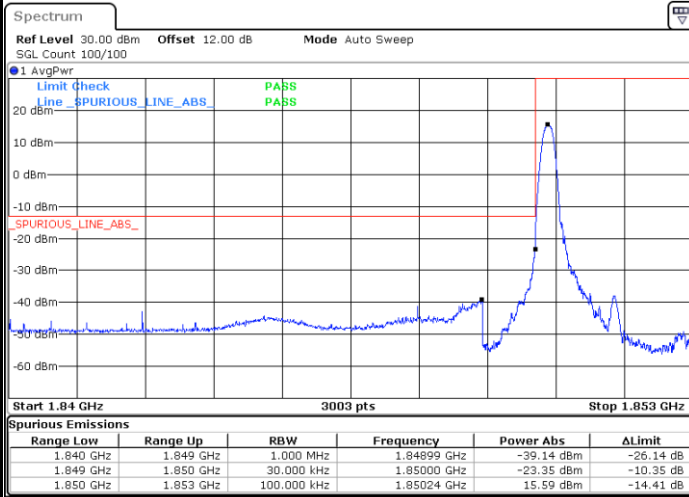
Highest Band Edge / Full RB



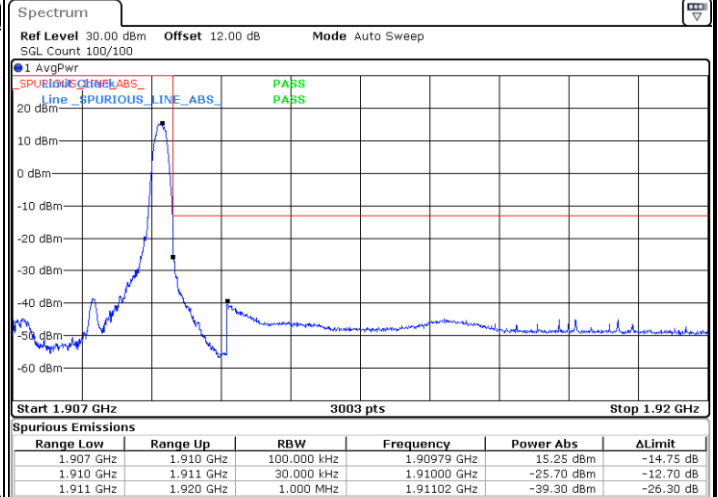


LTE Band 2 / 3MHz / QPSK

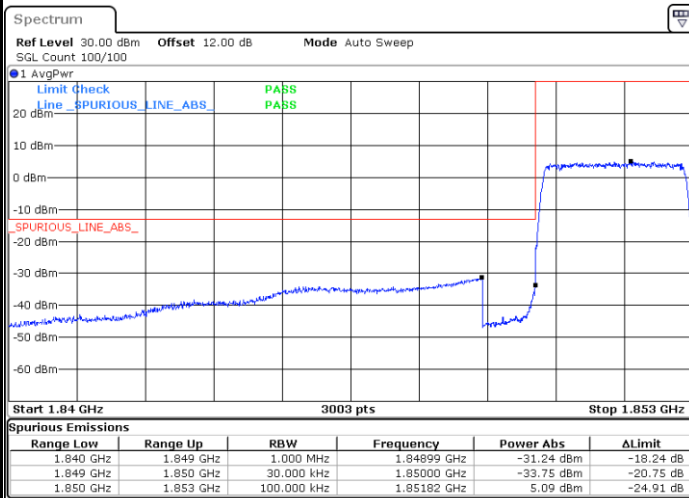
Lowest Band Edge / 1RB



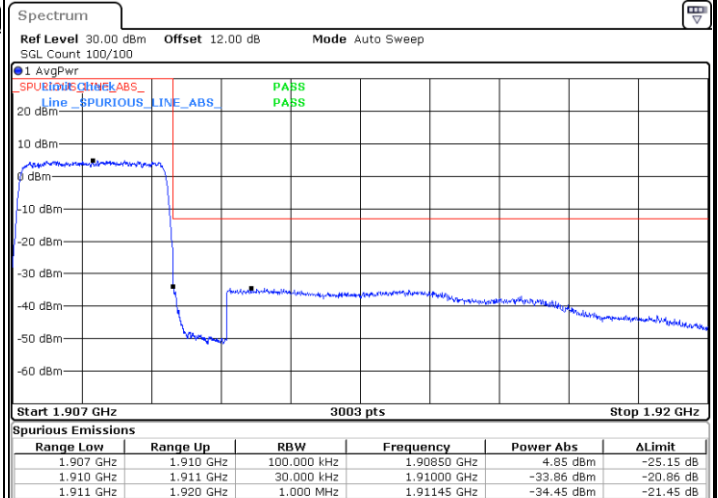
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



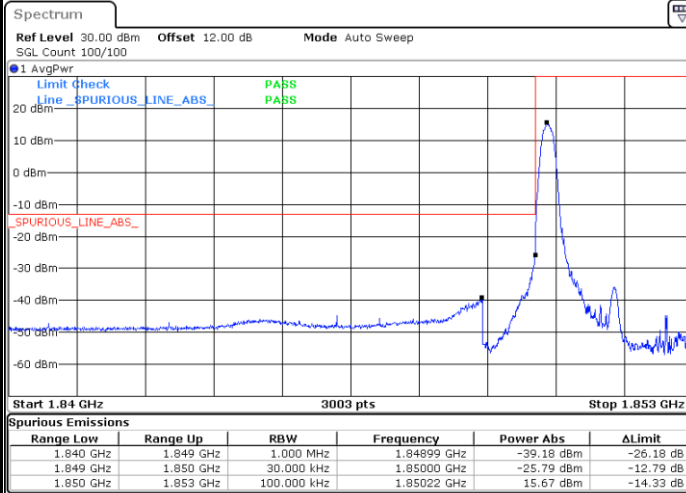
Highest Band Edge / Full RB



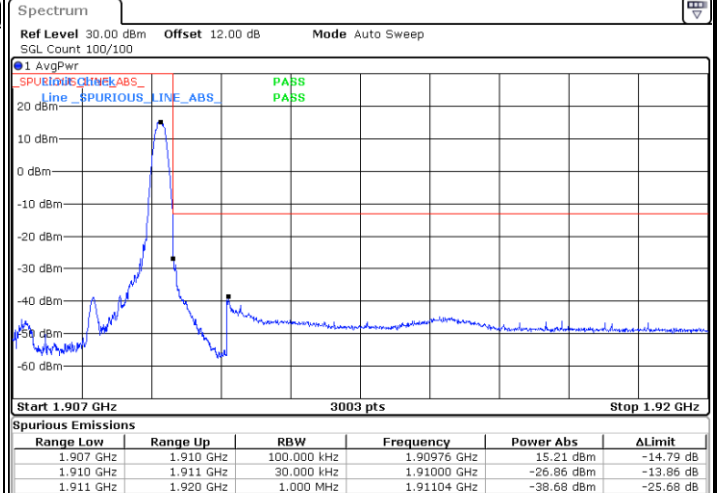


LTE Band 2 / 3MHz / 16QAM

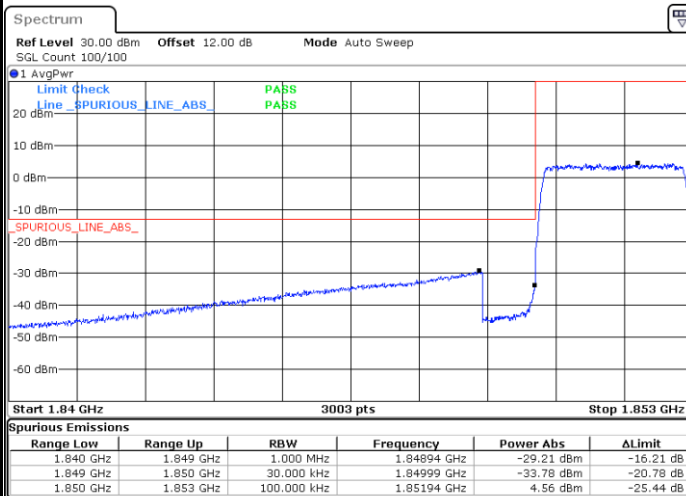
Lowest Band Edge / 1 RB



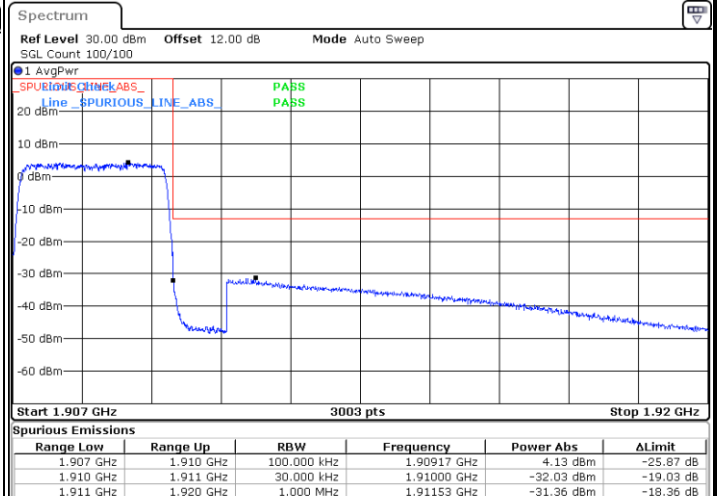
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



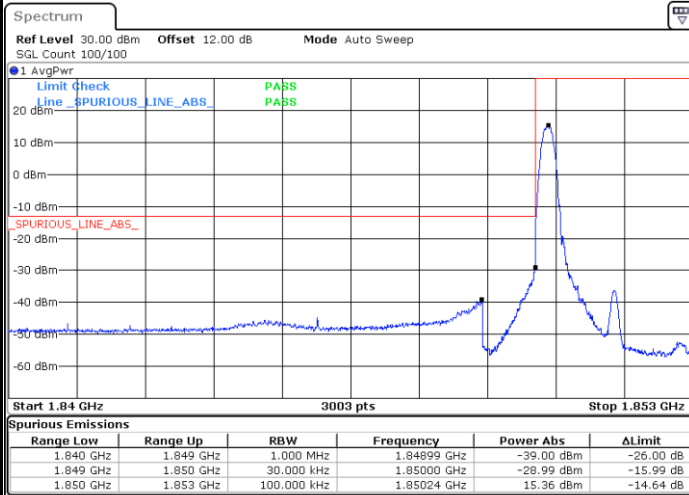
Highest Band Edge / Full RB



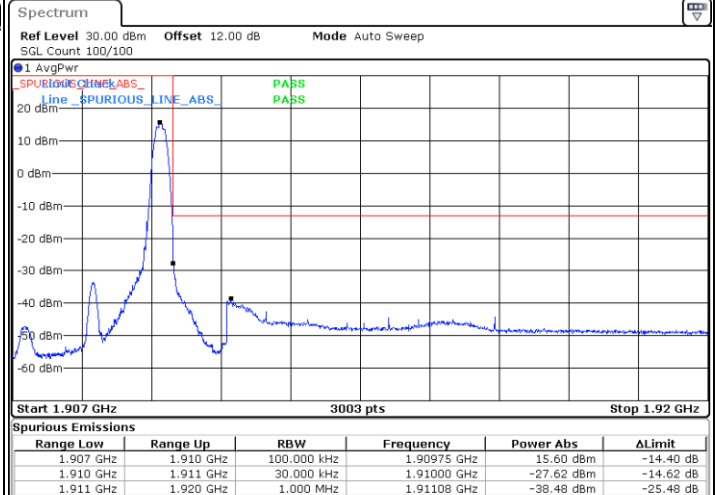


LTE Band 2 / 3MHz / 64QAM

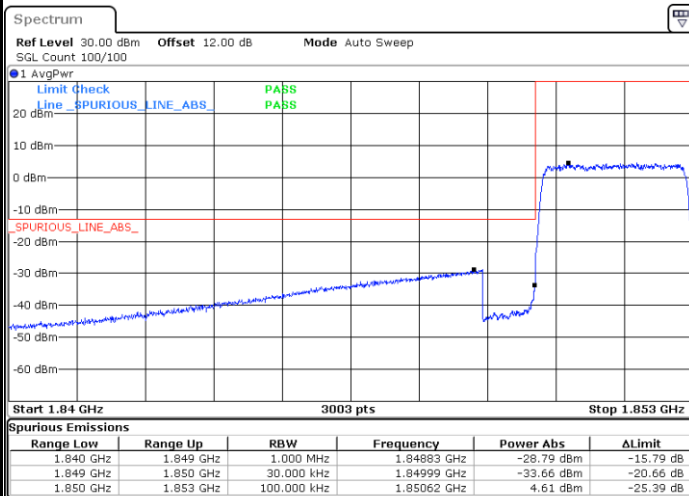
Lowest Band Edge / 1 RB



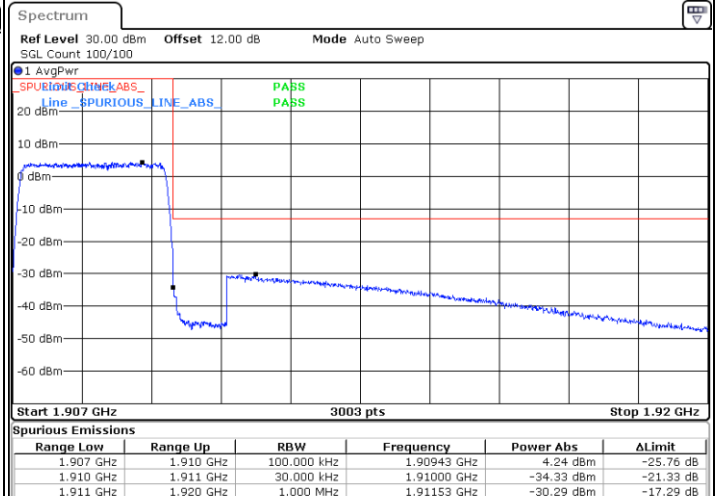
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



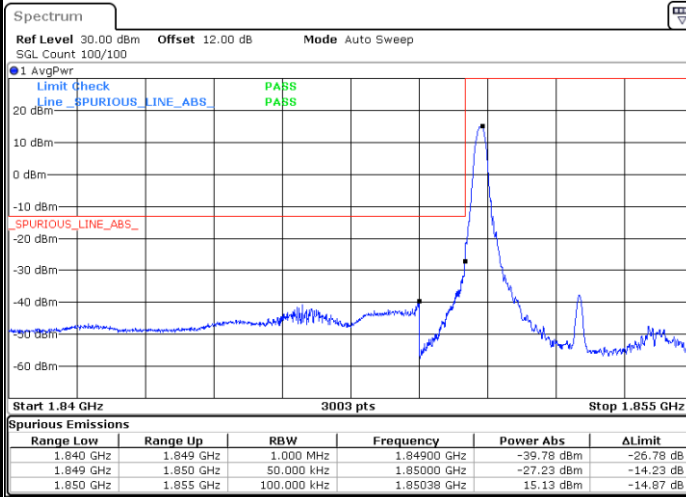
Highest Band Edge / Full RB



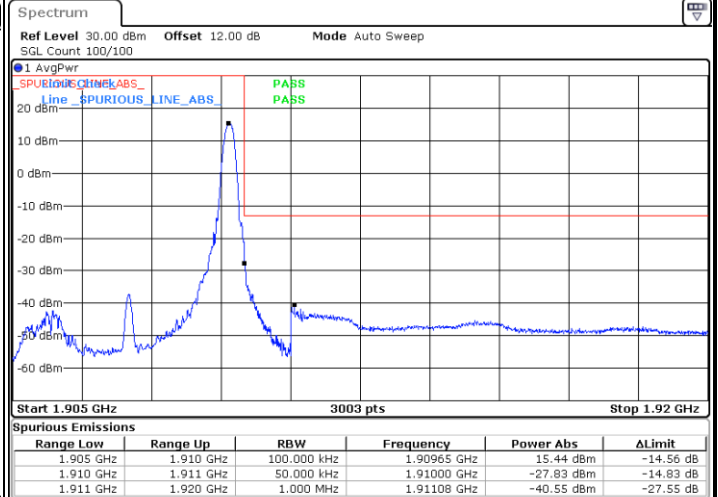


LTE Band 2 / 5MHz / QPSK

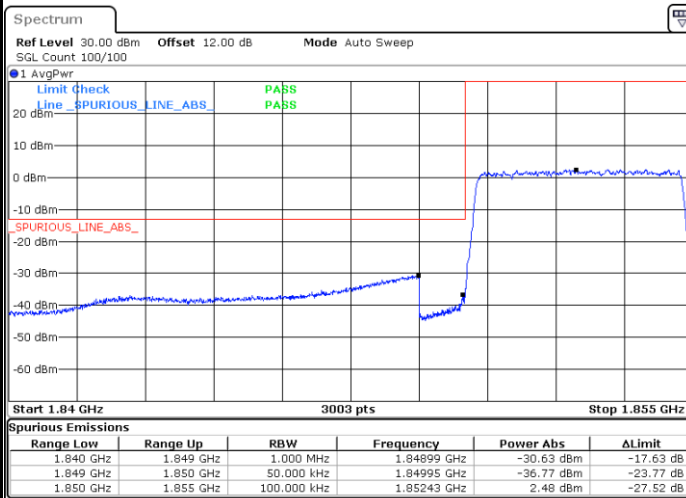
Lowest Band Edge / 1 RB



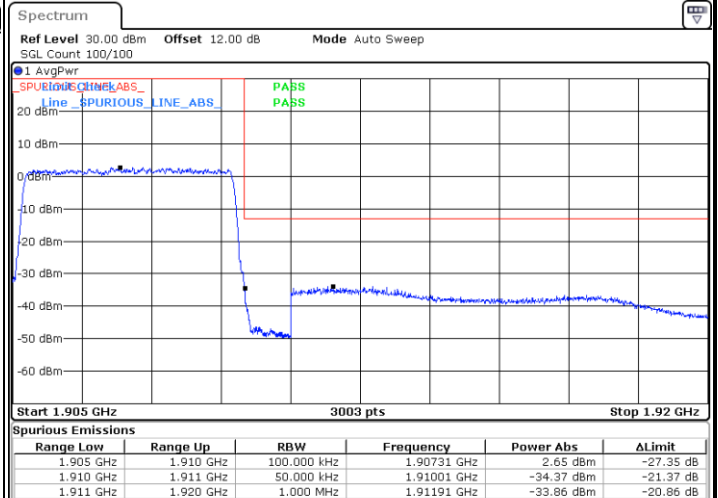
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



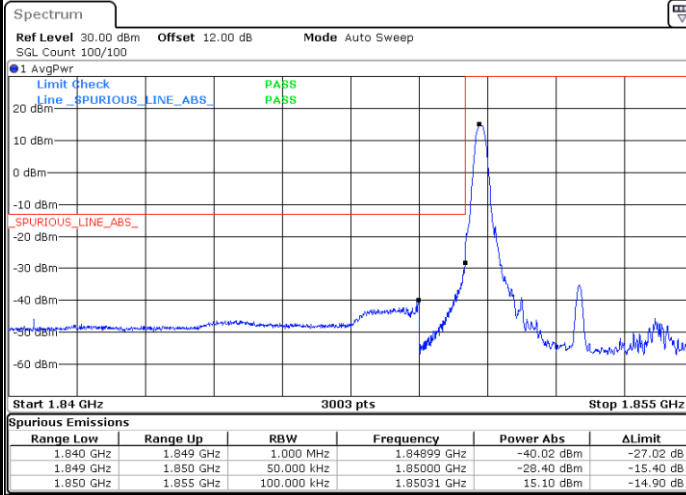
Highest Band Edge / Full RB



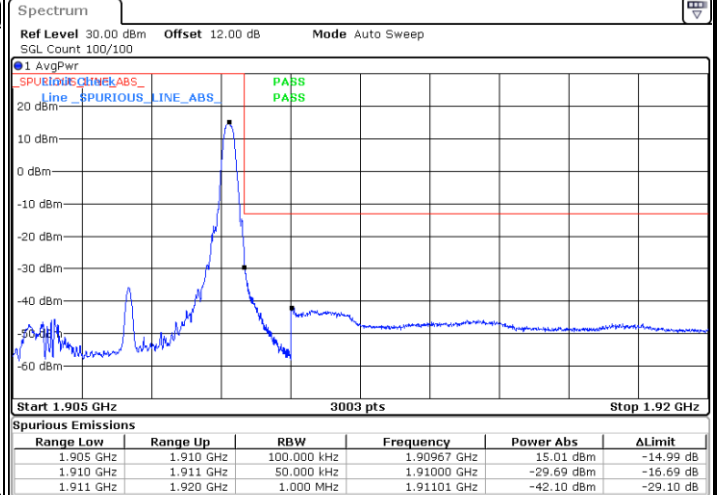


LTE Band 2 / 5MHz / 16QAM

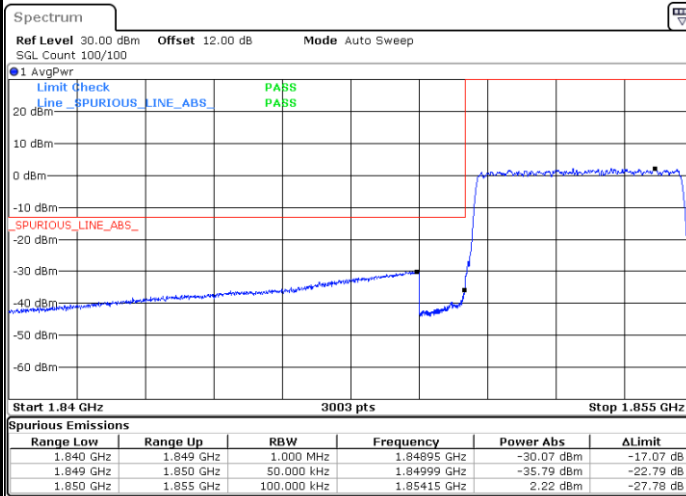
Lowest Band Edge / 1RB



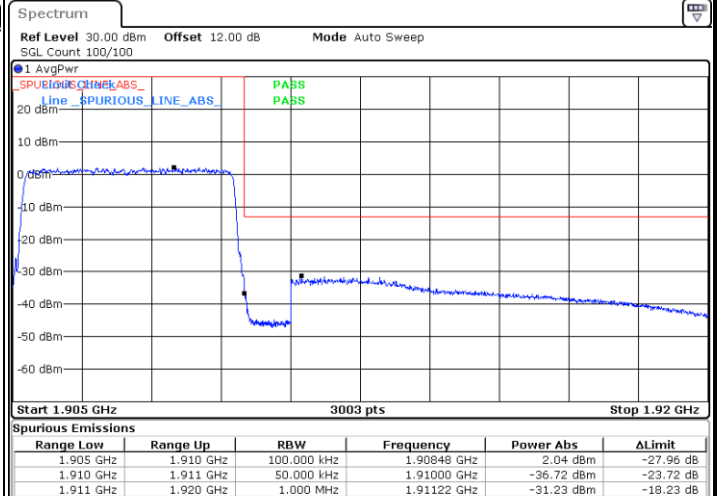
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



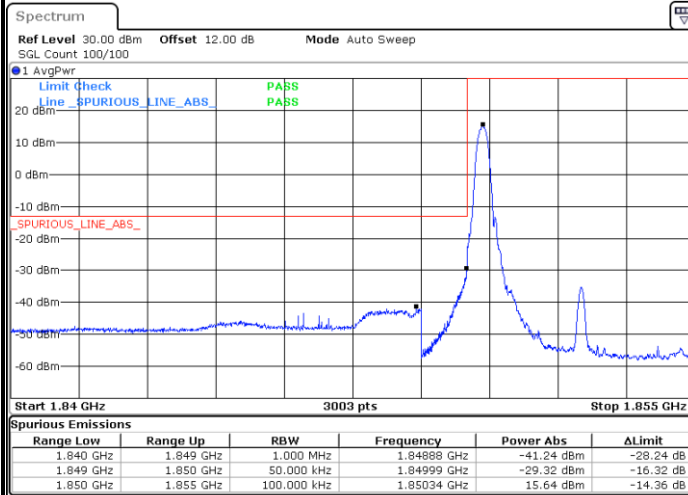
Highest Band Edge / Full RB



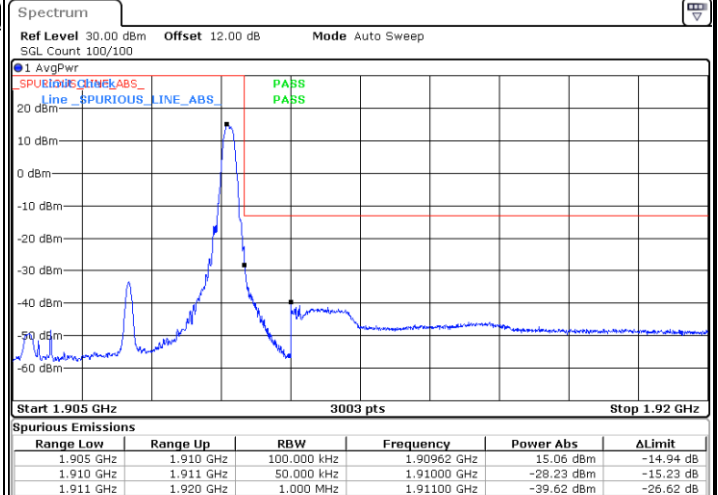


LTE Band 2 / 5MHz / 64QAM

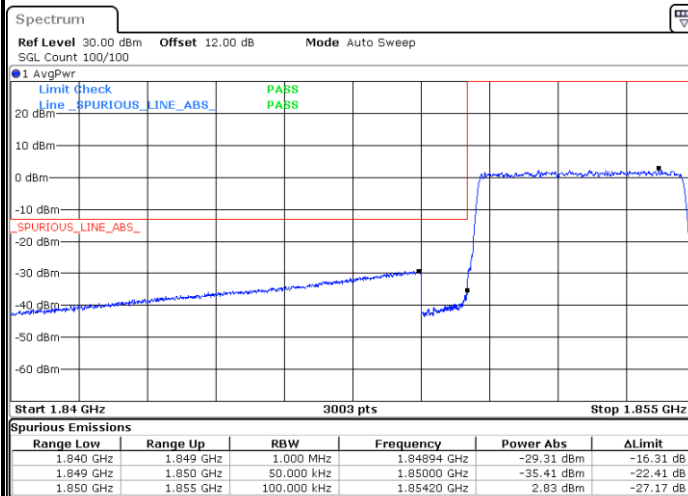
Lowest Band Edge / 1RB



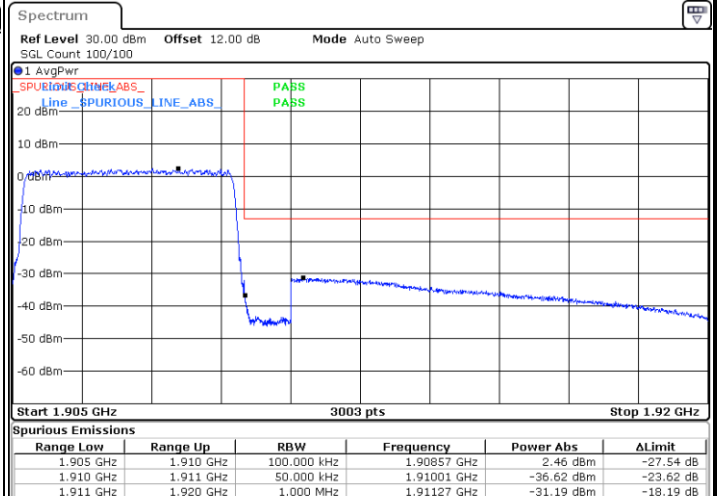
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



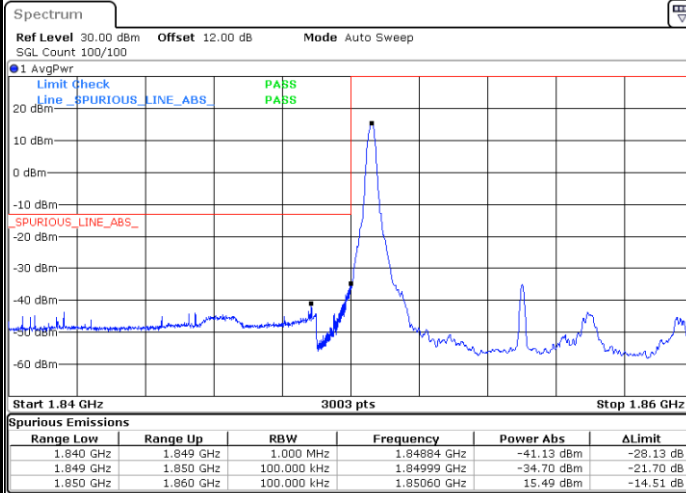
Highest Band Edge / Full RB



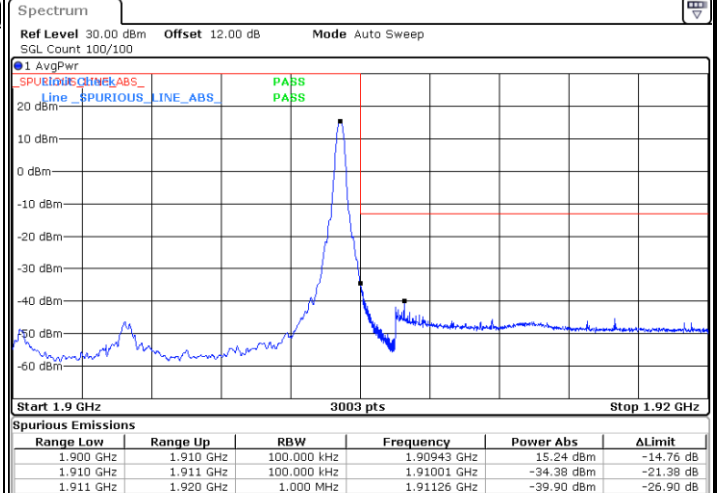


LTE Band 2 / 10MHz / QPSK

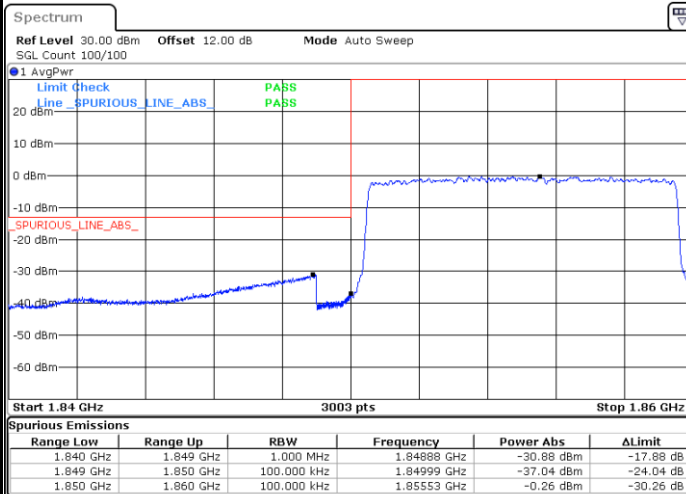
Lowest Band Edge / 1 RB



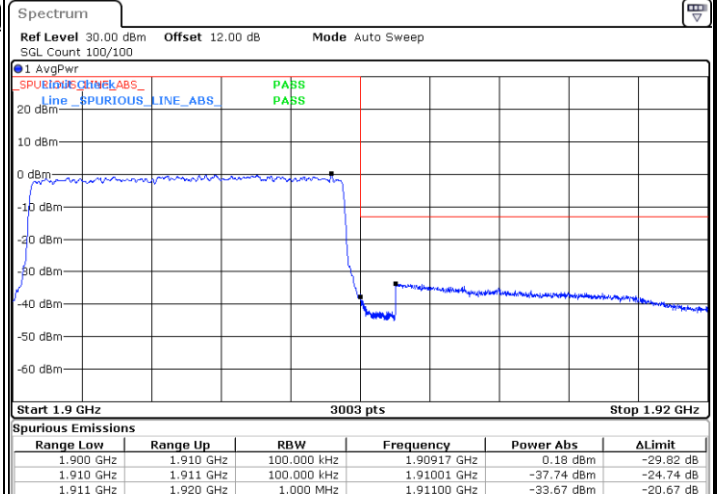
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



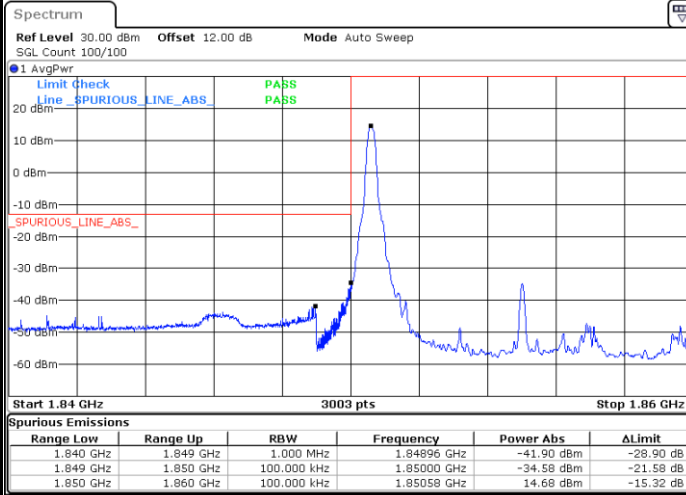
Highest Band Edge / Full RB



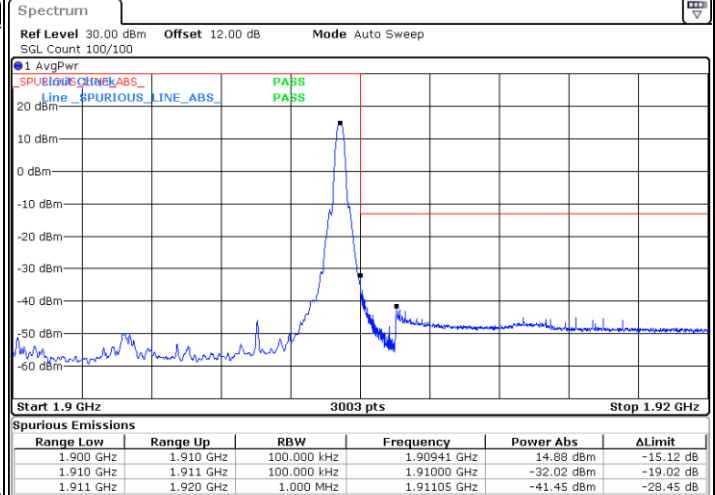


LTE Band 2 / 10MHz / 16QAM

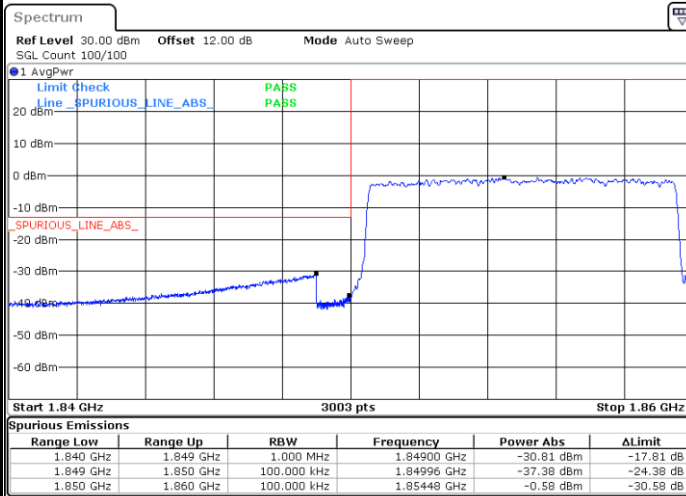
Lowest Band Edge / 1 RB



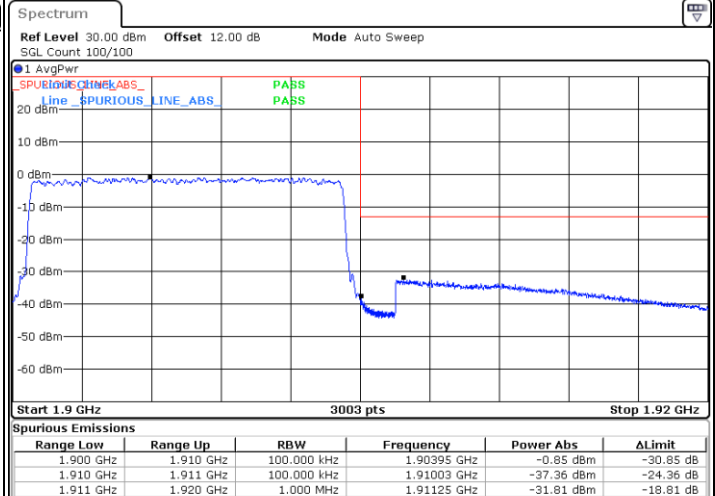
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



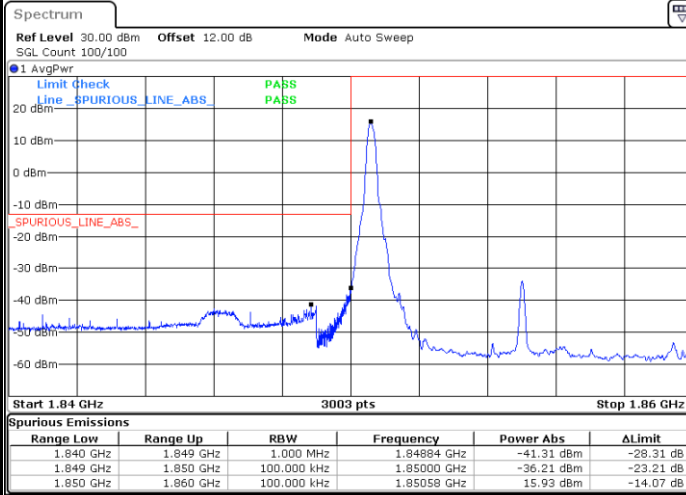
Highest Band Edge / Full RB



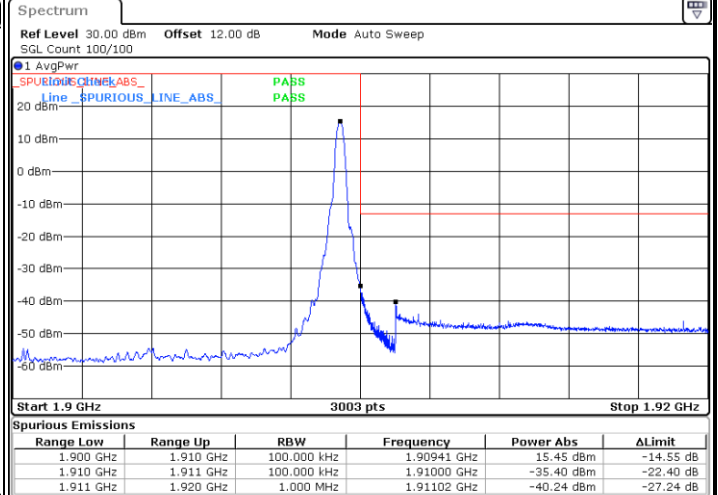


LTE Band 2 / 10MHz / 64QAM

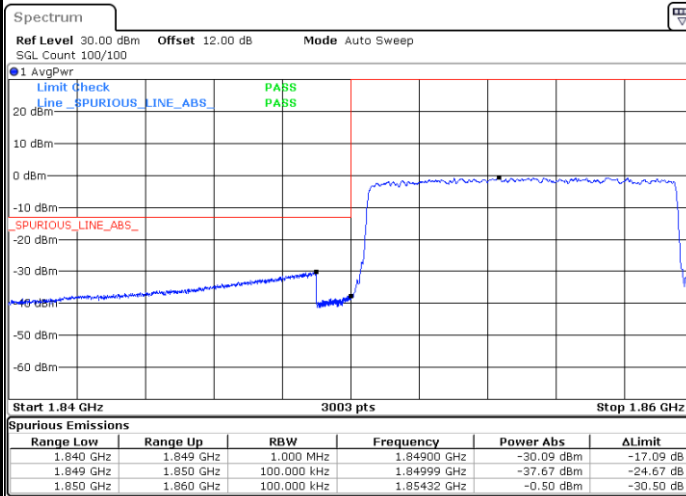
Lowest Band Edge / 1 RB



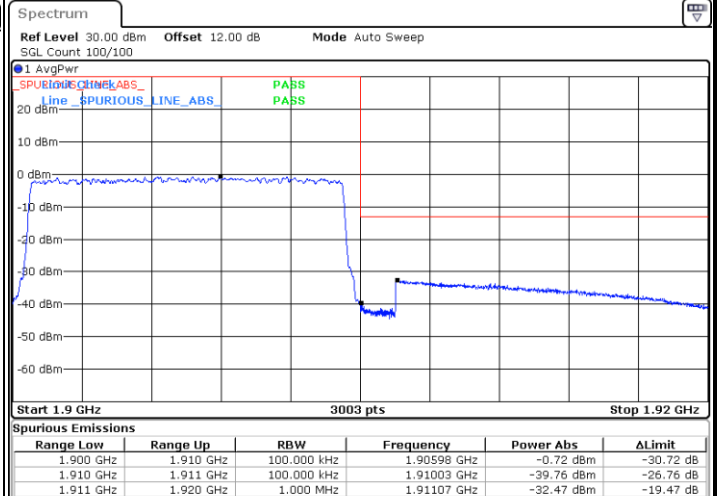
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



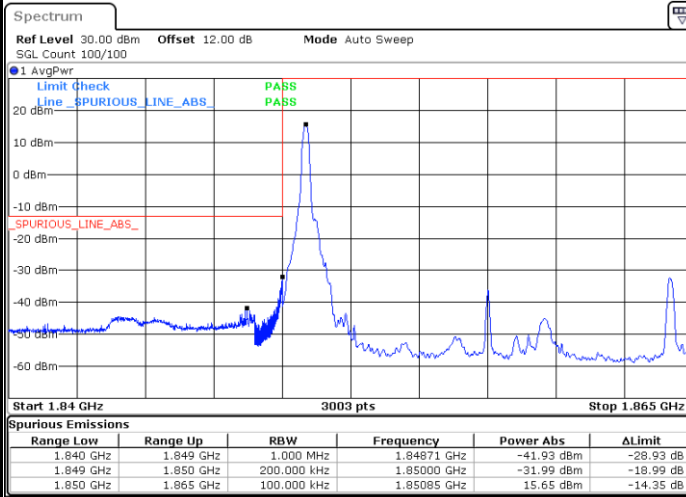
Highest Band Edge / Full RB





LTE Band 2 / 15MHz / QPSK

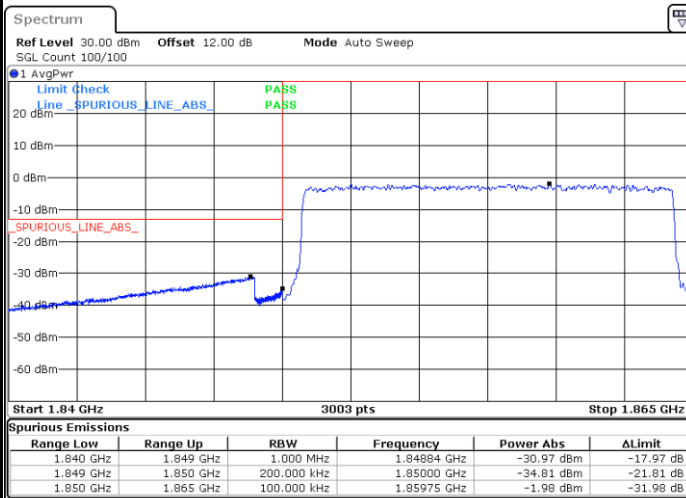
Lowest Band Edge / 1 RB



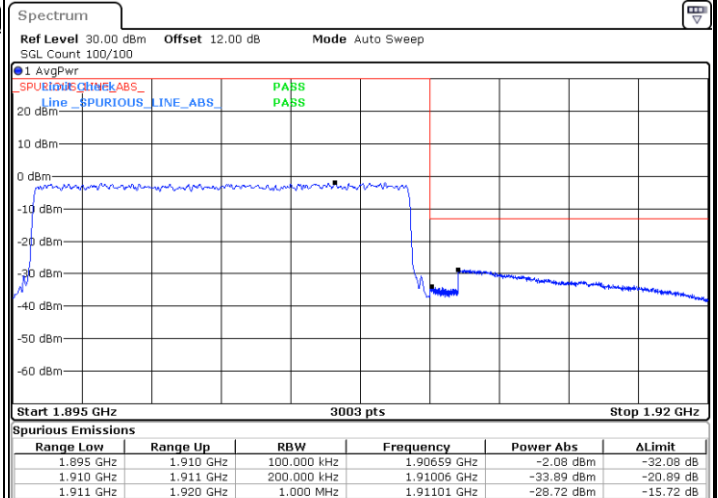
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



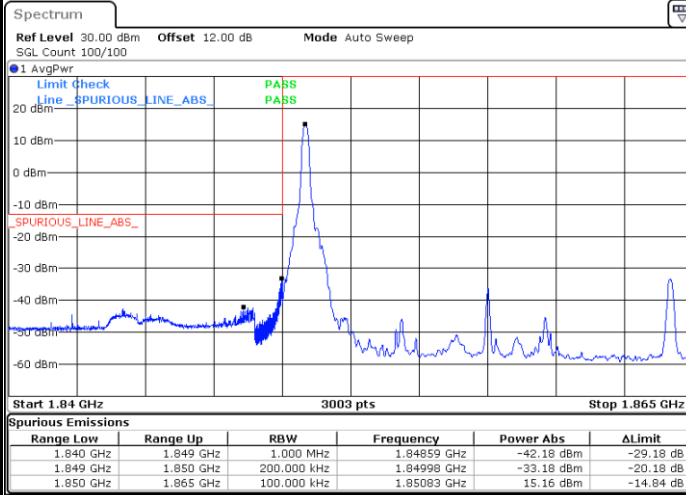
Highest Band Edge / Full RB



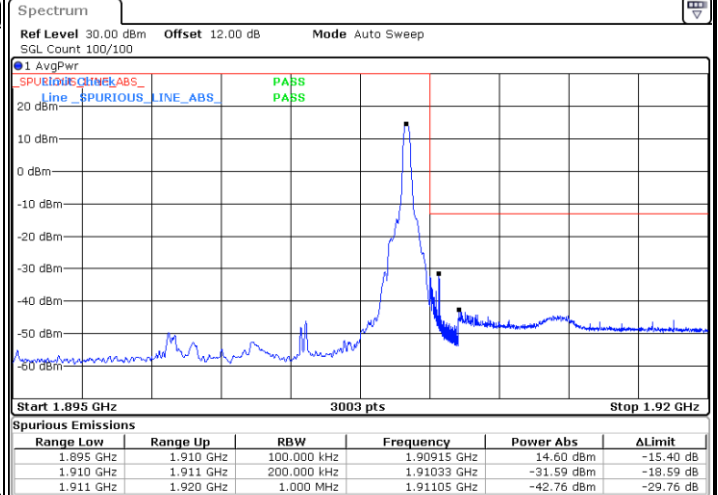


LTE Band 2 / 15MHz / 16QAM

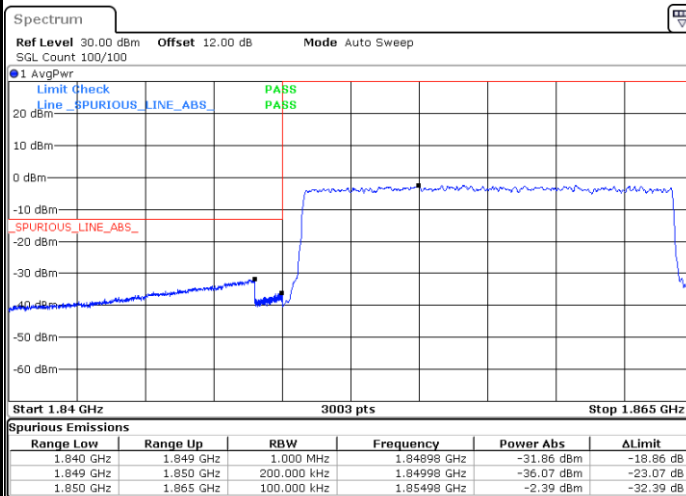
Lowest Band Edge / 1 RB



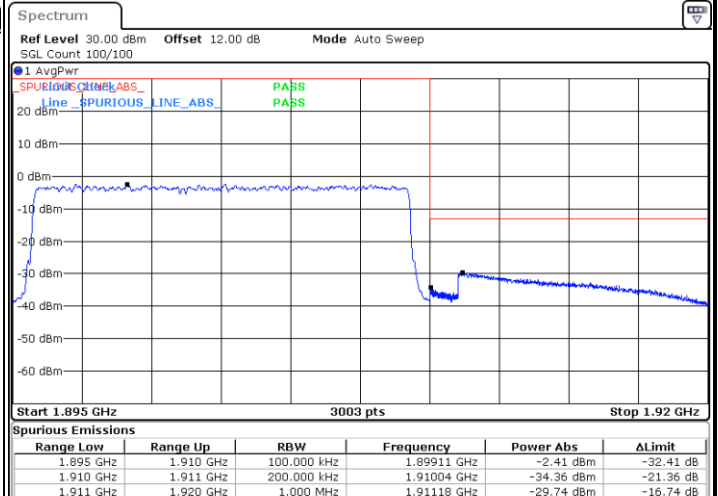
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



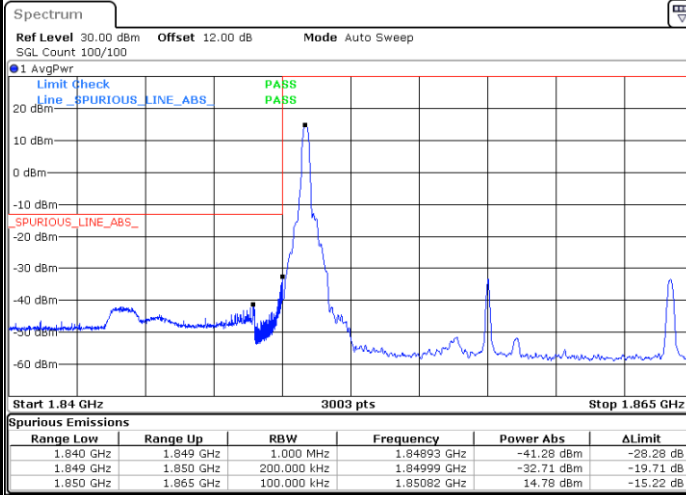
Highest Band Edge / Full RB



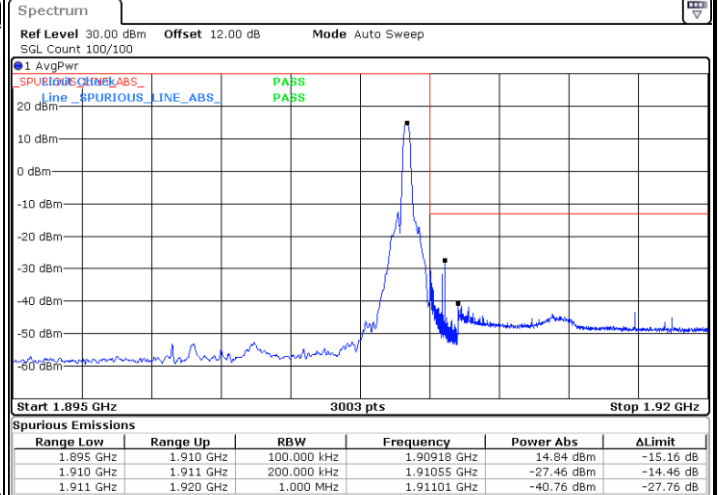


LTE Band 2 / 15MHz / 64QAM

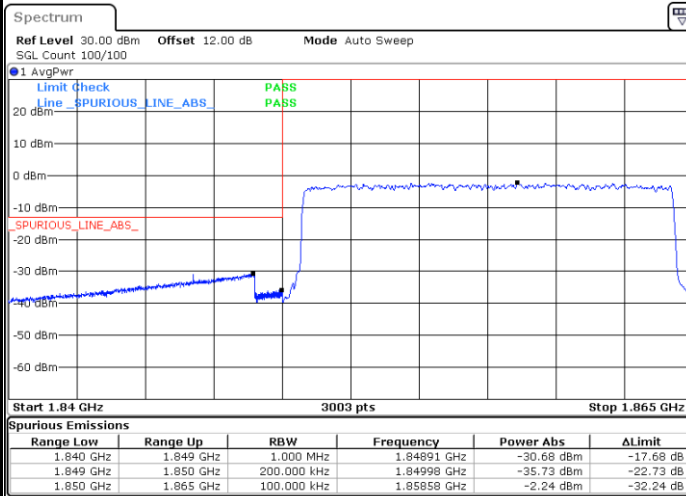
Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



Highest Band Edge / Full RB

