FCC RADIO TEST REPORT

FCC ID	:	**2AP4W-VWEAR**
Equipment	:	**mPERS**
Brand Name	:	**Belle W**
Model Name	:	**Belle W**
Marketing Name	:	**Belle W**
Applicant	:	**Freeus, LLC** **1069 Stewart Dr, Suites 3-6 Ogden, Utah 84404, United States**
Manufacturer	:	**WiBASE Industrial Solutions Inc.** **Bldg. G, 17F, No. 3-1, Yuan Qu St., Nan Gang Dist., Taipei City, 115, Taiwan.**
Standard	:	**FCC 47 CFR Part 2, 22(H), 24(E), 27**

The product was received on Dec. 30, 2021 and testing was performed from Jan. 13, 2022 to Mar. 03, 2022. 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.)

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FG1D1704-01	01	Initial issue of report	Mar. 18, 2022
FG1D1704-01	02	Revse Test Mode and List of Measuring Equipment	Apr. 13, 2022

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
	§22.913 (a)(5)	Effective Radiated Power (Band 5)	Pass	
	§27.50 (b)(10)	Effective Radiated Power (Band 13)		
	§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 §22.917 (a) §24.238 (a) §27.53 (c)(2)(4) §27.53 (h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 13)	Pass	-
3.6	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 13)	Pass	-
3.7	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	Pass	-

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
4.2	§2.1053 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (f) §27.53 (h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 13)	Pass	Under limit 13.01 dB at 1560.000 MHz

Declaration of Conformity:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
   It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to this report "Uncertainty of Evaluation".

Comments and Explanations:

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Keven Cheng

Report Producer: Tina Chuang

1 General Description

1.1 Product Feature of Equipment Under Test

LTE and Wi-Fi 2.4GHz 802.11b/g/n

Product Feature	
Antenna Type	WWAN: PIFA (LDS) Antenna WLAN: LDS Antenna
Antenna Gain	LTE Band 2: -4.0 dBi LTE Band 4: -4.2 dBi LTE Band 5: -6.5 dBi LTE Band 13: -6.9dBi

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

1.2 Modification of EUT

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

1.3 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	03CH07-HY
Test Engineer	George Chen	Jesse Wang, Stan Hsieh and Ken Wu
Temperature (℃)	22.6~23.5	20~26
Relative Humidity (%)	52.0~58.0	48~63

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

FCC Designation No.: TW1190

1.4 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, 22(H), 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. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

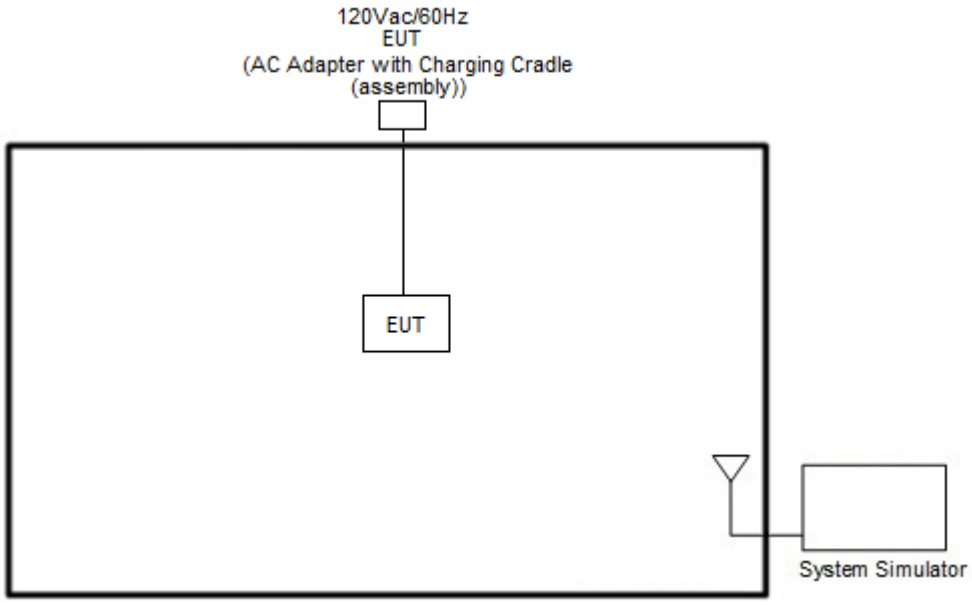
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and find X Plane as worst plane.

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

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
E.R.P / E.I.R.P	2	v	v	v	v	v	v	v	v	Max. Power					
	4	v	v	v	v	v	v	v	v						
	5	v	v	v	v	-	-	v	v						
	13	-	-	v	v	-	-	v	v						
Radiated Spurious Emission	2	Worst Case											v	v	v
	4	Worst Case											v	v	v
	5	Worst Case											v	v	v
	13	Worst Case											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. For Bandwidth 10 / 15 / 20 MHz 16QAM Full RB size is 27 RB.														

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	MT8821C	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 :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

2.5 Frequency List of Low/Middle/High Channels

LTE Cat 1 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 Cat 1 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 Cat 1 Band 5 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	20450	20525	20600
	Frequency	829	836.5	844
5	Channel	20425	20525	20625
	Frequency	826.5	836.5	846.5
3	Channel	20415	20525	20635
	Frequency	825.5	836.5	847.5
1.4	Channel	20407	20525	20643
	Frequency	824.7	836.5	848.3

LTE Cat 1 Band 13 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	-	23230	-
	Frequency	-	782	-
5	Channel	23205	23230	23255
	Frequency	779.5	782	784.5

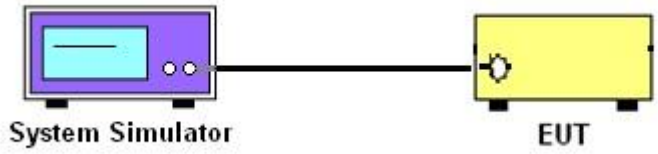
3 Conducted Test Items

3.1 Measuring Instruments

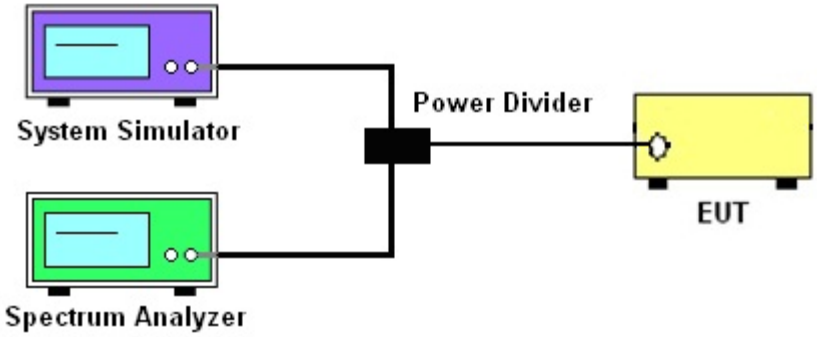
See list of measuring instruments of this test report.

3.1.1 Test Setup

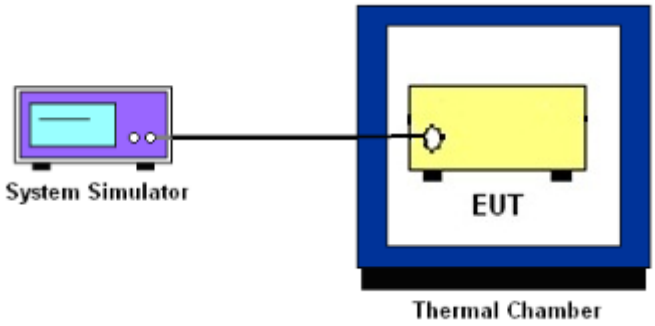
3.1.2 Conducted Output Power



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 7 Watts for LTE Band 5

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 13

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

22.917(a)

For operations in the 824 – 849 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100kHz 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.

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(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 (c)

For operations in the 776-788 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. 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. In addition, 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 65 + 10 log10 p(watts), dB, for mobile and portable equipment.

27.53 (h)

For operations in the 1710 – 1755 MHz band, 1755-1780 MHz, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(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 >= 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 + 10log(P)dB below the transmitter power P(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 10^{th} 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 + 10log(P)dB below the transmitter power P(Watts)

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

22.355

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

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.

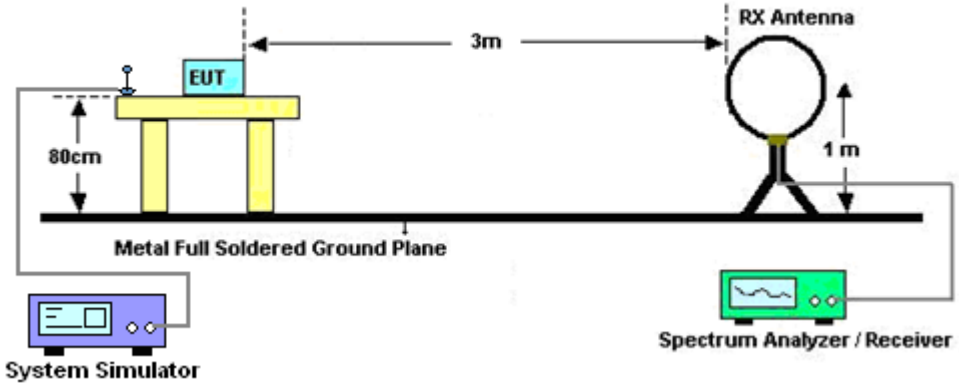
4 Radiated Test Items

4.1 Measuring Instruments

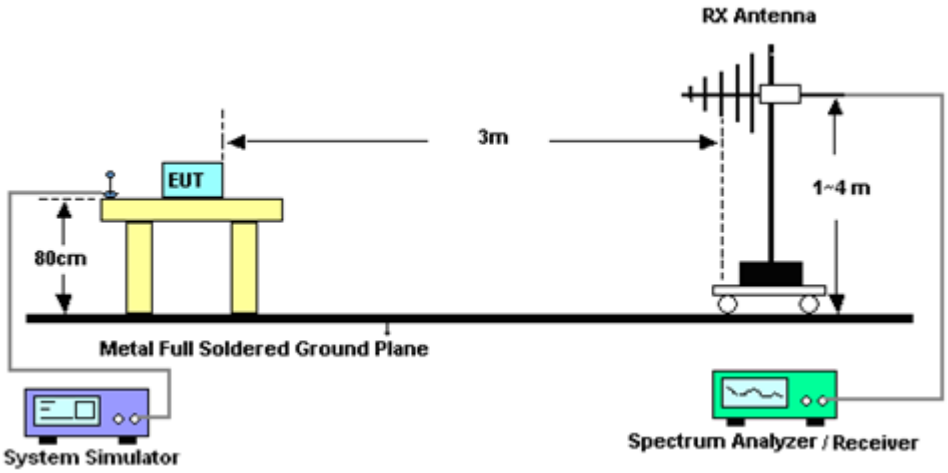
See list of measuring instruments of this test report.

4.1.1 Test Setup

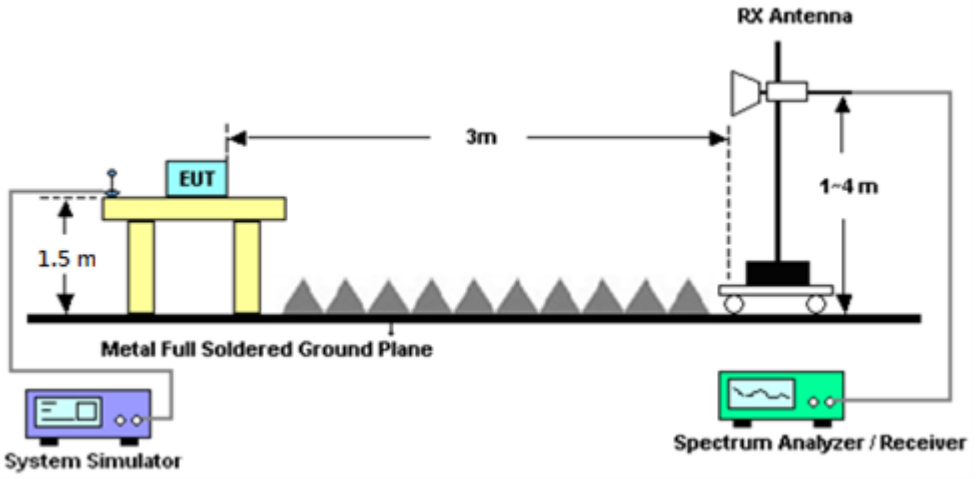
For radiated test below 30MHz



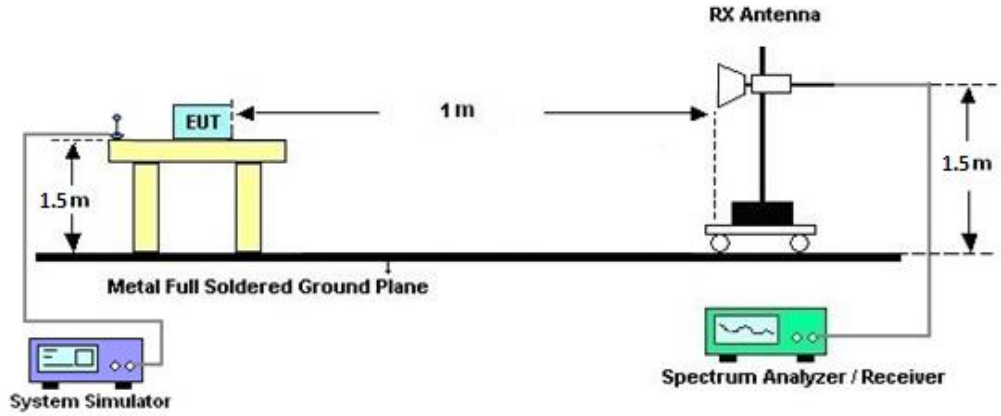
For radiated test from 30MHz to 1GHz



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.

For LTE Band 13

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

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 + 10log(P)dB below the transmitter power P(Watts)

    EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

    ERP (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	35419 & 03	30MHz~1GHz	Apr. 28, 2021	Mar. 02, 2022~ Mar. 03, 2022	Apr. 27, 2022	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 03, 2021	Mar. 02, 2022~ Mar. 03, 2022	Dec. 02, 2022	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590075	1GHz~18GHz	Apr. 22, 2021	Mar. 02, 2022~ Mar. 03, 2022	Apr. 21, 2022	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Oct. 04, 2021	Mar. 02, 2022~ Mar. 03, 2022	Oct. 03, 2022	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Oct. 04, 2021	Mar. 02, 2022~ Mar. 03, 2022	Oct. 03, 2022	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Jul. 23, 2021	Mar. 02, 2022~ Mar. 03, 2022	Jul. 22, 2022	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Jul. 22, 2021	Mar. 02, 2022~ Mar. 03, 2022	Jul. 21, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682-4	30MHz to 18GHz	Feb. 23, 2022	Mar. 02, 2022~ Mar. 03, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971-4	9kHz to 18GHz	Feb. 23, 2022	Mar. 02, 2022~ Mar. 03, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655-4	9kHz to 18GHz	Feb. 23, 2022	Mar. 02, 2022~ Mar. 03, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 17, 2021	Mar. 02, 2022~ Mar. 03, 2022	Sep. 16, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 23, 2022	Mar. 02, 2022~ Mar. 03, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801606/2	9KHz ~ 40GHz	Apr. 03, 2021	Mar. 02, 2022~ Mar. 03, 2022	Apr. 02, 2022	Radiation (03CH07-HY)
Controller	EMEC	EM1000	N/A	Control Ant Mast	N/A	Mar. 02, 2022~ Mar. 03, 2022	N/A	Radiation (03CH07-HY)
Controller	MF	MF-7802	N/A	Control Turn table	N/A	Mar. 02, 2022~ Mar. 03, 2022	N/A	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	Mar. 02, 2022~ Mar. 03, 2022	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Mar. 02, 2022~ Mar. 03, 2022	N/A	Radiation (03CH07-HY)
Software	Audix	E3	N/A	N/A	N/A	Mar. 02, 2022~ Mar. 03, 2022	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	Mar. 09, 2021	Mar. 02, 2022~ Mar. 03, 2022	Mar. 08, 2022	Radiation (03CH07-HY)
Horn Antenna	EMCO	3117	00066584	1GHz~18GHz	Oct. 25, 2021	Mar. 02, 2022~ Mar. 03, 2022	Oct. 24, 2022	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz~40GHz	Nov. 30, 2021	Mar. 02, 2022~ Mar. 03, 2022	Nov. 29, 2022	Radiation (03CH07-HY)
Signal Generator	Anritsu	MG3710A	6261943042	2G / 3G / LTE / 5G FR1	May 10, 2021	Mar. 02, 2022~ Mar. 03, 2022	May 09, 2022	Radiation (03CH07-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Radio Communication Analyzer	Anritsu	MT8821C	6201664755	2/3/4G/LTE FDD/TDD with44)/LTE-3CC DLCA/2CC ULCA, CatM1/NB1/NB2	Jul. 21, 2021	Jan. 13, 2022~ Feb. 25, 2022	Jul. 20, 2022	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101909	10Hz~40GHz	Aug. 13, 2021	Jan. 13, 2022~ Feb. 25, 2022	Aug. 12, 2022	Conducted (TH03-HY)
Thermal Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 09, 2021	Jan. 13, 2022~ Feb. 25, 2022	Sep. 08, 2022	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890001	1V~20V 0.5A~5A	Oct. 06, 2021	Jan. 13, 2022~ Feb. 25, 2022	Oct. 05, 2022	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 07, 2022	Jan. 13, 2022~ Feb. 25, 2022	Jan. 06, 2023	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))	**3.16 dB**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.71 dB**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.16 dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power & ERP/EIRP)

LTE Band 2 Maximum Average Power [dBm] (GT - LC = -4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	21.87	21.90	21.74	17.90	0.0617
20	1	49		21.85	21.89	21.85		
20	1	99		21.51	21.49	21.45		
20	50	0		20.33	20.43	20.58		
20	50	24		20.49	20.46	20.61		
20	50	50		20.18	20.27	20.28		
20	100	0		20.48	20.49	20.58		
20	1	0	16-QAM	20.30	20.47	20.49	16.66	0.0463
20	1	49		20.38	20.45	20.59		
20	1	99		20.23	20.37	20.35		
20	12	0		20.66	20.65	20.33		
20	12	24		20.55	20.34	20.54		
20	12	50		20.45	20.39	20.61		
20	27	0		20.61	20.54	20.50		
Limit	EIRP < 2W			Result			Pass	

LTE Band 2 Maximum Average Power [dBm] (GT - LC = -4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
15	1	0	QPSK	21.73	21.76	21.63	17.77	0.0598
15	1	37		21.75	21.71	21.77		
15	1	74		21.41	21.36	21.28		
15	36	0		20.30	20.33	20.48		
15	36	20		20.34	20.33	20.47		
15	36	39		20.18	20.14	20.21		
15	75	0		20.48	20.39	20.44		
15	1	0	16-QAM	20.14	20.43	20.44	16.64	0.0461
15	1	37		20.33	20.37	20.43		
15	1	74		20.12	20.34	20.23		
15	12	0		20.33	20.34	20.49		
15	12	20		20.31	20.55	20.64		
15	12	39		20.49	20.50	20.54		
15	27	0		20.51	20.55	20.51		
Limit	EIRP < 2W			Result			Pass	

LTE Band 2 Maximum Average Power [dBm] (GT - LC = -4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
10	1	0	QPSK	21.60	21.47	21.50	17.60	0.0575
10	1	25		21.36	21.55	21.42		
10	1	49		21.19	21.41	21.32		
10	25	0		20.06	20.39	20.23		
10	25	12		20.06	20.34	20.20		
10	25	25		20.14	20.44	20.35		
10	50	0		20.20	20.46	20.40		
10	1	0	16-QAM	20.23	20.40	20.26	16.67	0.0465
10	1	25		20.43	20.52	20.42		
10	1	49		20.03	20.32	20.29		
10	12	0		19.51	19.67	19.48		
10	12	12		19.35	19.66	19.61		
10	12	25		19.18	19.47	19.29		
10	27	0		20.67	20.34	20.00		
Limit	EIRP < 2W			Result			Pass	

LTE Band 2 Maximum Average Power [dBm] (GT - LC = -4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
5	1	0	QPSK	21.53	21.40	21.46	17.53	0.0566
5	1	12		21.21	21.46	21.42		
5	1	24		21.18	21.26	21.31		
5	12	0		19.93	20.28	20.15		
5	12	7		19.99	20.29	20.16		
5	12	13		20.02	20.31	20.22		
5	25	0		20.17	20.29	20.20		
5	1	0	16-QAM	20.11	20.27	20.12	16.45	0.0442
5	1	12		20.43	20.45	20.35		
5	1	24		20.02	20.24	20.15		
5	12	0		19.34	19.55	19.36		
5	12	7		19.34	19.47	19.41		
5	12	13		19.11	19.46	19.21		
5	25	0		19.21	19.51	19.48		
Limit	EIRP < 2W			Result			Pass	

LTE Band 2 Maximum Average Power [dBm] (GT - LC = -4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
3	1	0	QPSK	21.50	21.37	21.38	17.50	0.0562
3	1	8		21.10	21.37	21.33		
3	1	14		21.05	21.11	21.20		
3	8	0		19.73	20.13	20.10		
3	8	4		19.97	20.10	20.12		
3	8	7		19.92	20.22	20.10		
3	15	0		20.06	20.09	20.11		
3	1	0	16-QAM	20.00	20.09	19.95	16.43	0.0440
3	1	8		20.34	20.43	20.32		
3	1	14		19.96	20.04	20.03		
3	8	0		19.23	19.45	19.36		
3	8	4		19.30	19.41	19.32		
3	8	7		19.10	19.35	19.01		
3	15	0		19.15	19.40	19.16		
Limit	EIRP < 2W			Result			Pass	

LTE Band 2 Maximum Average Power [dBm] (GT - LC = -4 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
1.4	1	0	QPSK	21.45	21.32	21.43	17.52	0.0565
1.4	1	3		21.07	21.33	21.31		
1.4	1	5		20.98	21.20	21.16		
1.4	3	0		21.52	21.39	21.36		
1.4	3	1		21.05	21.30	21.36		
1.4	3	3		21.06	21.26	21.31		
1.4	6	0		20.15	20.14	20.06		
1.4	1	0	16-QAM	20.05	20.09	19.92	16.41	0.0438
1.4	1	3		20.37	20.40	20.25		
1.4	1	5		19.94	20.15	20.09		
1.4	3	0		20.09	20.09	19.94		
1.4	3	1		20.29	20.41	20.15		
1.4	3	3		19.92	20.22	20.06		
1.4	6	0		19.00	19.23	19.16		
Limit	EIRP < 2W			Result			Pass	

LTE Band 4 Maximum Average Power [dBm] (GT - LC = -4.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	22.58	22.60	22.57	18.40	0.0692
20	1	49		22.36	22.45	22.38		
20	1	99		22.49	22.53	22.55		
20	50	0		21.21	21.20	21.07		
20	50	24		20.99	21.11	21.07		
20	50	50		21.03	21.09	20.94		
20	100	0		20.99	21.17	21.08		
20	1	0	16-QAM	21.29	21.34	21.28	17.14	0.0518
20	1	49		21.05	21.05	21.08		
20	1	99		21.04	21.13	20.99		
20	12	0		21.02	21.18	21.29		
20	12	24		20.99	20.98	20.95		
20	12	50		20.89	20.98	20.97		
20	27	0		20.87	20.89	20.88		
Limit	EIRP < 1W			Result			Pass	

LTE Band 4 Maximum Average Power [dBm] (GT - LC = -4.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
15	1	0	QPSK	22.54	22.58	22.42	18.38	0.0689
15	1	37		22.34	22.35	22.32		
15	1	74		22.34	22.46	22.46		
15	36	0		21.15	21.17	20.94		
15	36	20		20.93	20.99	21.05		
15	36	39		20.95	20.91	20.79		
15	75	0		20.87	21.06	21.05		
15	1	0	16-QAM	21.19	21.19	21.13	17.06	0.0508
15	1	37		20.95	20.99	20.96		
15	1	74		20.94	20.94	20.92		
15	12	0		21.10	21.14	21.26		
15	12	20		20.98	20.99	20.95		
15	12	39		20.87	20.84	20.84		
15	27	0		20.87	20.80	20.88		
Limit	EIRP < 1W			Result			Pass	

LTE Band 4 Maximum Average Power [dBm] (GT - LC = -4.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
10	1	0	QPSK	22.59	22.53	22.58	18.39	0.0690
10	1	25		22.24	22.48	22.24		
10	1	49		22.20	22.44	22.30		
10	25	0		21.18	21.34	21.13		
10	25	12		21.03	21.27	21.13		
10	25	25		21.09	21.17	20.97		
10	50	0		21.05	21.25	21.09		
10	1	0	16-QAM	21.15	21.26	21.21	17.17	0.0521
10	1	25		21.23	21.37	21.19		
10	1	49		20.90	21.15	20.99		
10	12	0		20.08	20.23	20.11		
10	12	12		20.41	20.50	20.44		
10	12	25		20.18	20.30	20.17		
10	27	0		20.15	20.30	20.39		
Limit	EIRP < 1W			Result			Pass	

LTE Band 4 Maximum Average Power [dBm] (GT - LC = -4.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
5	1	0	QPSK	22.41	22.40	22.53	18.33	0.0681
5	1	12		22.18	22.39	22.10		
5	1	24		22.16	22.38	22.26		
5	12	0		21.17	21.30	21.08		
5	12	7		21.00	21.19	20.99		
5	12	13		20.99	20.99	20.81		
5	25	0		21.02	21.24	21.06		
5	1	0	16-QAM	21.08	21.13	21.07	17.01	0.0502
5	1	12		21.21	21.20	21.00		
5	1	24		20.81	21.13	20.79		
5	12	0		19.96	20.16	20.07		
5	12	7		20.31	20.32	20.35		
5	12	13		20.02	20.25	20.16		
5	25	0		20.20	20.30	20.15		
Limit	EIRP < 1W			Result			Pass	

LTE Band 4 Maximum Average Power [dBm] (GT - LC = -4.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
3	1	0	QPSK	22.33	22.38	22.41	18.21	0.0662
3	1	8		21.99	22.25	22.03		
3	1	14		22.02	22.33	22.18		
3	8	0		21.00	21.12	21.03		
3	8	4		20.85	21.01	20.90		
3	8	7		20.95	20.85	20.62		
3	15	0		20.82	21.22	20.92		
3	1	0	16-QAM	20.99	20.93	21.00	16.89	0.0489
3	1	8		21.09	21.00	20.81		
3	1	14		20.74	21.08	20.77		
3	8	0		19.84	19.98	19.94		
3	8	4		20.30	20.13	20.22		
3	8	7		19.94	20.16	20.09		
3	15	0		20.05	20.13	19.95		
Limit	EIRP < 1W			Result			Pass	

LTE Band 4 Maximum Average Power [dBm] (GT - LC = -4.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
1.4	1	0	QPSK	22.19	22.19	22.31	18.11	0.0647
1.4	1	3		21.82	22.09	21.84		
1.4	1	5		21.92	22.16	22.10		
1.4	3	0		22.24	22.30	22.25		
1.4	3	1		21.88	22.10	21.88		
1.4	3	3		21.96	22.21	22.01		
1.4	6	0		20.78	21.18	20.83		
1.4	1	0	16-QAM	20.97	20.75	20.84	16.79	0.0478
1.4	1	3		20.96	20.95	20.72		
1.4	1	5		20.58	20.96	20.68		
1.4	3	0		20.99	20.93	20.82		
1.4	3	1		20.91	20.82	20.66		
1.4	3	3		20.74	20.96	20.71		
1.4	6	0		20.23	20.14	20.15		
Limit	EIRP < 1W			Result			Pass	

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -6.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	23.51	23.18	23.30	14.86	0.0306
10	1	25		23.23	23.42	23.17		
10	1	49		23.01	23.24	23.25		
10	25	0		21.90	22.27	22.01		
10	25	12		21.87	22.33	22.06		
10	25	25		21.84	22.23	22.00		
10	50	0		21.81	22.30	22.12		
10	1	0	16-QAM	21.60	21.98	21.70	13.43	0.0220
10	1	25		21.98	22.06	22.08		
10	1	49		21.63	22.03	21.84		
10	12	0		20.91	21.33	21.08		
10	12	12		20.90	21.29	21.17		
10	12	25		20.83	21.23	21.10		
10	27	0		21.79	21.50	21.66		
Limit	ERP < 7W			Result			Pass	

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -6.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	22.97	23.10	23.16	14.75	0.0299
5	1	12		23.06	23.40	23.21		
5	1	24		22.95	23.20	23.13		
5	12	0		21.84	22.26	22.16		
5	12	7		22.06	22.15	22.22		
5	12	13		21.84	22.06	22.07		
5	25	0		21.87	22.20	22.13		
5	1	0	16-QAM	21.64	21.92	21.74	13.31	0.0214
5	1	12		21.73	21.94	21.88		
5	1	24		21.63	21.96	21.81		
5	12	0		20.88	21.24	21.17		
5	12	7		21.01	21.20	21.14		
5	12	13		20.74	21.19	21.09		
5	25	0		21.43	21.32	21.26		
Limit	ERP < 7W			Result			Pass	

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -6.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3	1	0	QPSK	23.10	23.06	23.21	14.56	0.0286
3	1	8		23.17	22.92	23.20		
3	1	14		23.12	22.84	22.96		
3	8	0		22.25	21.79	22.03		
3	8	4		22.15	21.78	22.09		
3	8	7		22.01	21.76	21.99		
3	15	0		22.40	21.94	22.13		
3	1	0	16-QAM	21.98	21.57	21.99	13.35	0.0216
3	1	8		22.00	21.59	21.90		
3	1	14		21.99	21.51	21.92		
3	8	0		21.30	20.82	21.05		
3	8	4		21.27	20.80	21.06		
3	8	7		21.27	20.86	20.97		
3	15	0		21.05	20.56	20.87		
Limit	ERP < 7W			Result			Pass	

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -6.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
1.4	1	0	QPSK	23.08	23.09	22.88	14.45	0.0279
1.4	1	3		22.90	22.86	22.68		
1.4	1	5		22.77	22.69	22.64		
1.4	3	0		23.09	23.10	22.87		
1.4	3	1		22.90	22.86	22.70		
1.4	3	3		22.76	22.84	22.72		
1.4	6	0		22.07	22.07	22.03		
1.4	1	0	16-QAM	21.90	21.92	21.86	13.33	0.0215
1.4	1	3		21.60	21.43	21.43		
1.4	1	5		21.50	21.44	21.51		
1.4	3	0		21.98	21.95	21.93		
1.4	3	1		21.54	21.62	21.50		
1.4	3	3		21.60	21.51	21.50		
1.4	6	0		20.80	20.80	20.71		
Limit	ERP < 7W			Result			Pass	

LTE Band 13 Maximum Average Power [dBm] (GT - LC = -6.9 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	-	23.09	-	14.04	0.0254
10	1	25			23.03			
10	1	49			22.59			
10	25	0			22.11			
10	25	12			22.04			
10	25	25			22.03			
10	50	0			22.13			
10	1	0	16-QAM		22.12		13.19	0.0208
10	1	25			22.24			
10	1	49			21.74			
10	12	0			21.92			
10	12	12			21.80			
10	12	25			21.74			
10	27	0			22.21			
Limit	ERP < 3W			Result			Pass	

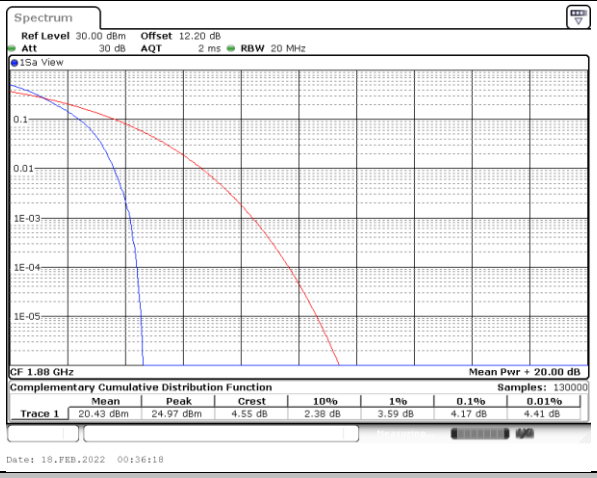
LTE Band 13 Maximum Average Power [dBm] (GT - LC = -6.9 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	22.98	23.08	23.02	14.03	0.0253
5	1	12		22.75	22.69	22.61		
5	1	24		22.97	22.94	22.85		
5	12	0		21.77	21.87	21.73		
5	12	7		21.83	21.88	21.87		
5	12	13		21.78	21.76	21.71		
5	25	0		22.39	22.34	22.32		
5	1	0	16-QAM	22.73	22.65	22.70	13.68	0.0233
5	1	12		22.52	22.60	22.55		
5	1	24		22.26	22.30	22.25		
5	12	0		20.27	20.31	20.27		
5	12	7		20.21	20.15	20.15		
5	12	13		20.49	20.45	20.32		
5	25	0		20.85	20.84	20.74		
Limit	ERP < 3W			Result			Pass	

LTE Cat 1 Band 2

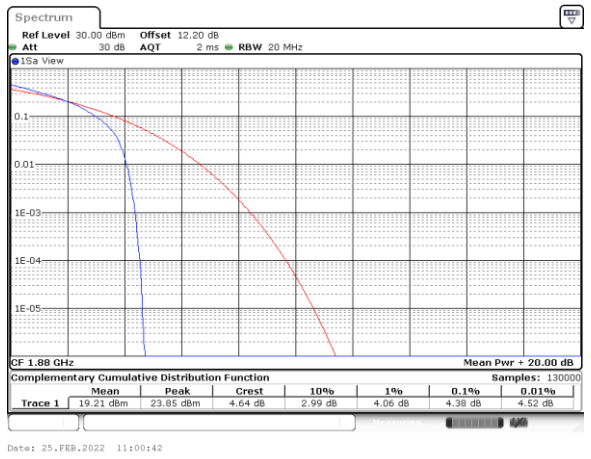
Peak-to-Average Ratio

Mode	LTE Cat 1 Band 2 / 20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.17	4.38	-	-	PASS

LTE Cat 1 Band 2 / 20MHz / QPSK
Middle Channel / Full RB



LTE Cat 1 Band 2 / 20MHz / 16QAM
Middle Channel / Full RB

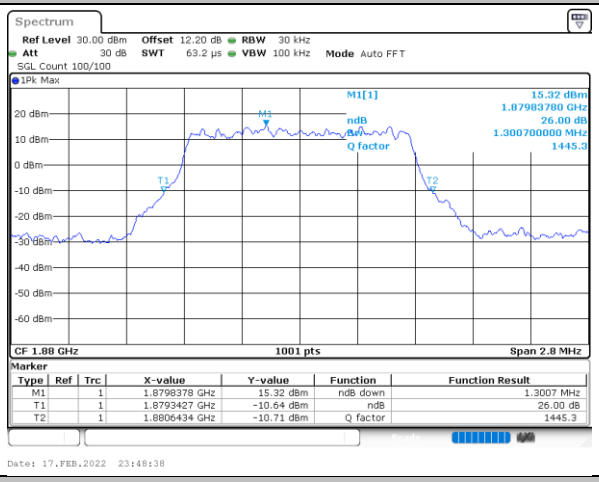


26dB Bandwidth

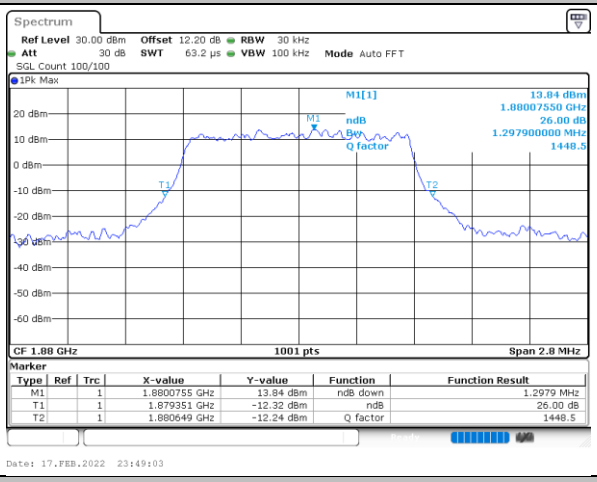
Mode	LTE Cat 1 Band 2 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	1.30	1.30	3.05	3.03	4.89	4.97	9.93	6.11	14.57	5.87	18.98	7.59
Mode	LTE Cat 1 Band 2 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM
Middle CH	-	-	-	-	-	-	-	-	-	-	-	-

LTE Cat 1 Band 2

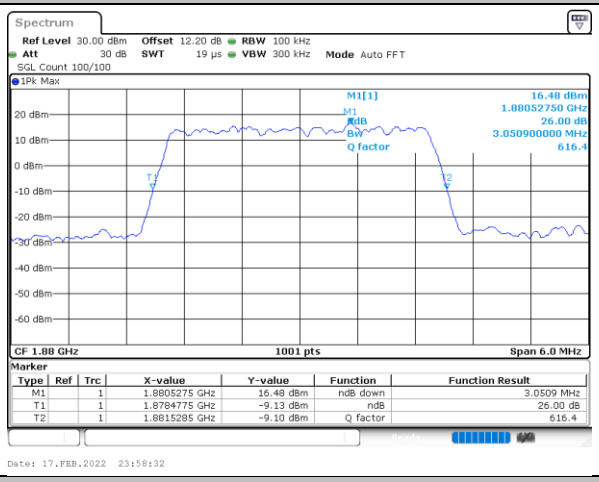
Middle Channel / 1.4MHz / QPSK



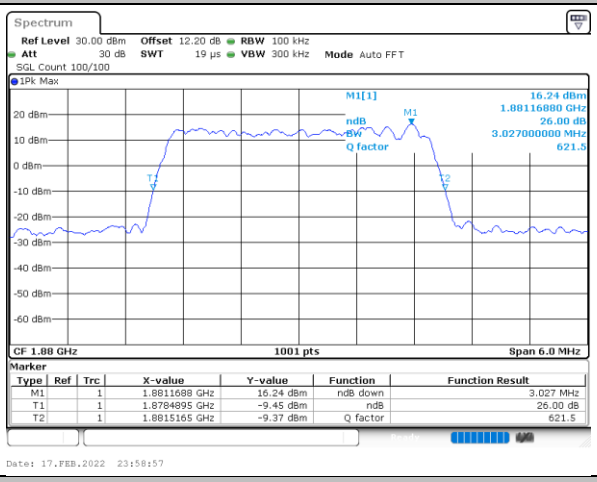
Middle Channel / 1.4MHz / 16QAM



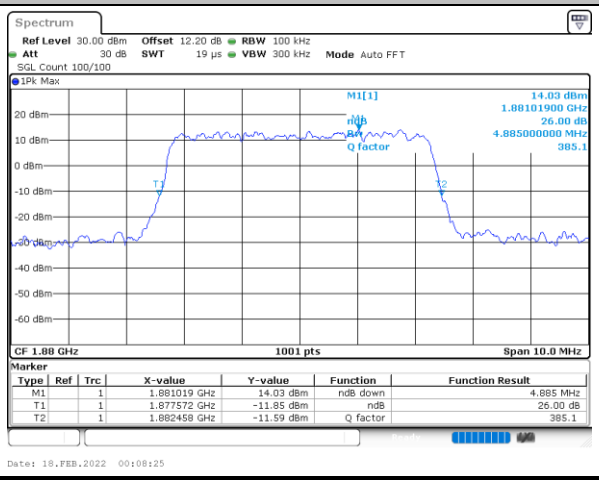
Middle Channel / 3MHz / QPSK



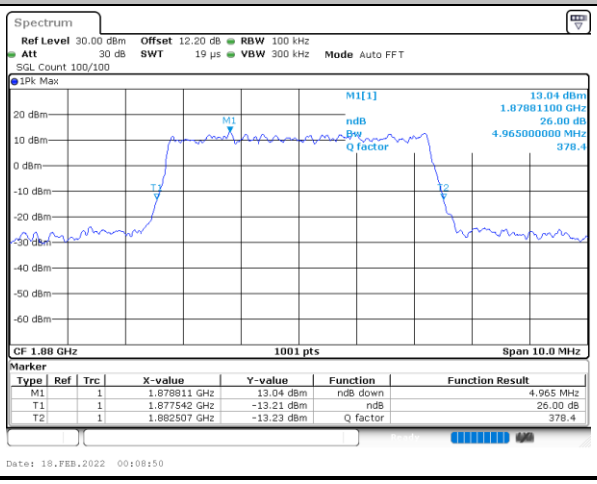
Middle Channel / 3MHz / 16QAM

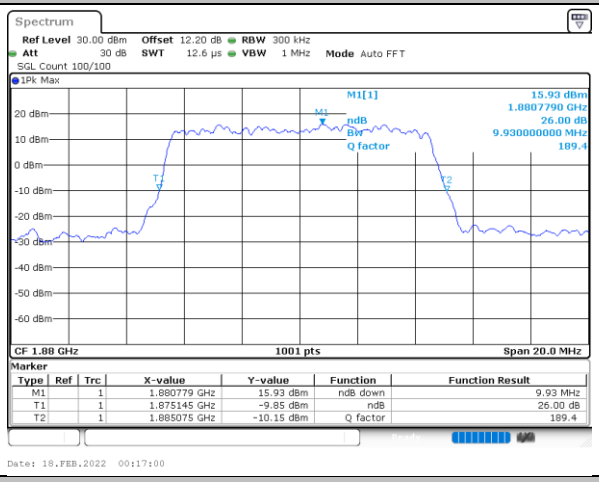
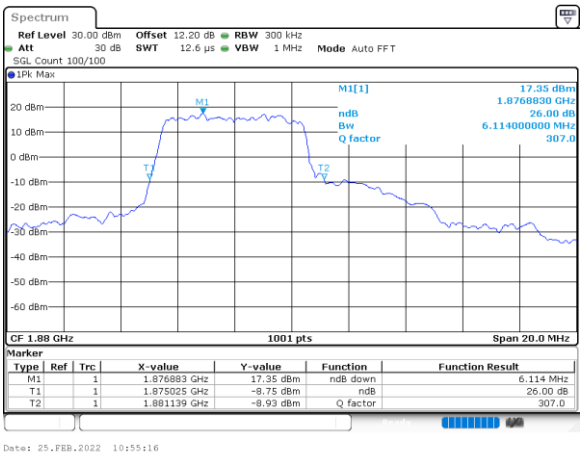
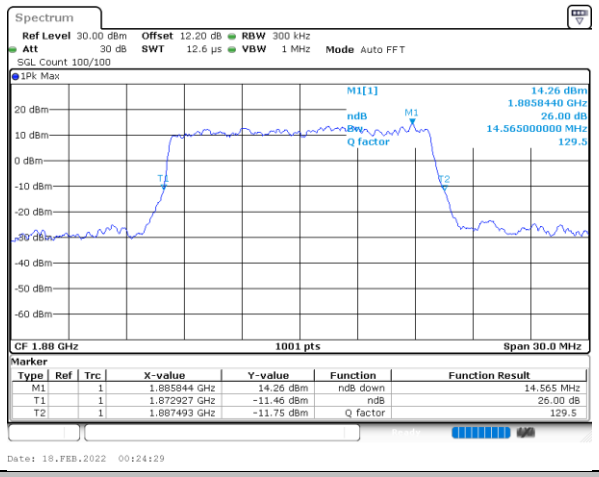
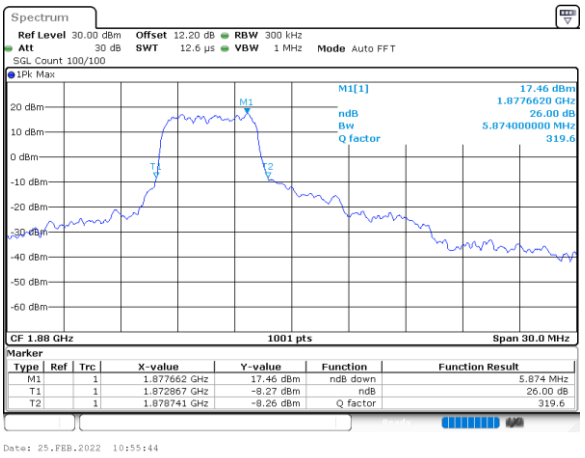
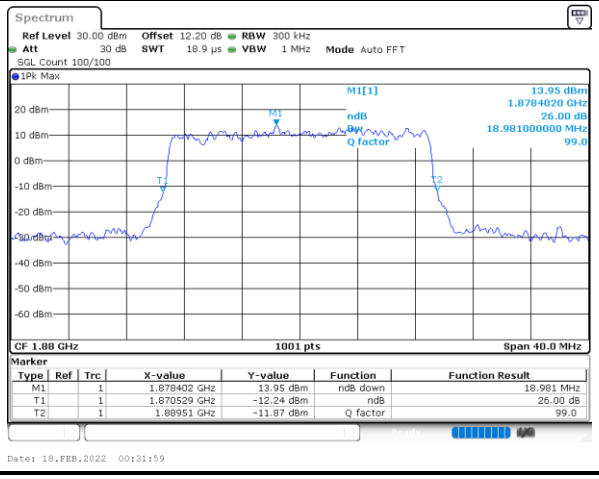
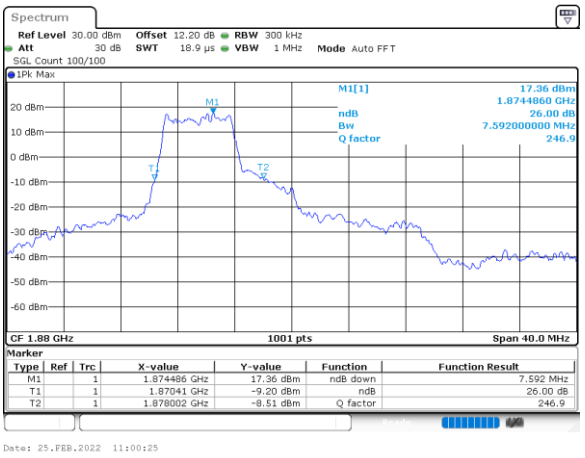


Middle Channel / 5MHz / QPSK



Middle Channel / 5MHz / 16QAM



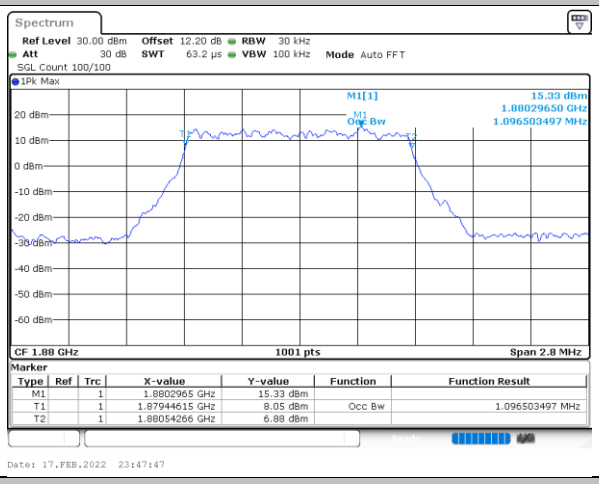
LTE Cat 1 Band 2	LTE Cat 1 Band 2
Middle Channel / 10MHz / QPSK	**Middle Channel / 10MHz / 16QAM**
	
Middle Channel / 15MHz / QPSK	**Middle Channel / 15MHz / 16QAM**
	
Middle Channel / 20MHz / QPSK	**Middle Channel / 20MHz / 16QAM**
	

Occupied Bandwidth

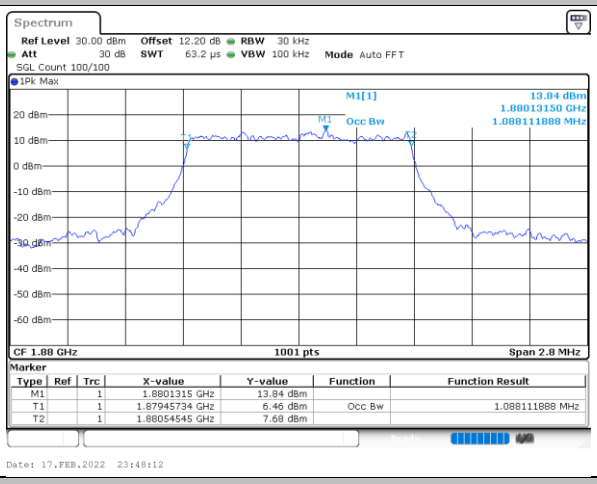
Mode	LTE Cat 1 Band 2 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	1.10	1.09	2.72	2.72	4.52	4.49	8.97	5.01	13.49	5.18	17.90	5.07
Mode	LTE Cat 1 Band 2 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM
Middle CH	-	-	-	-	-	-	-	-	-	-	-	-

LTE Cat 1 Band 2

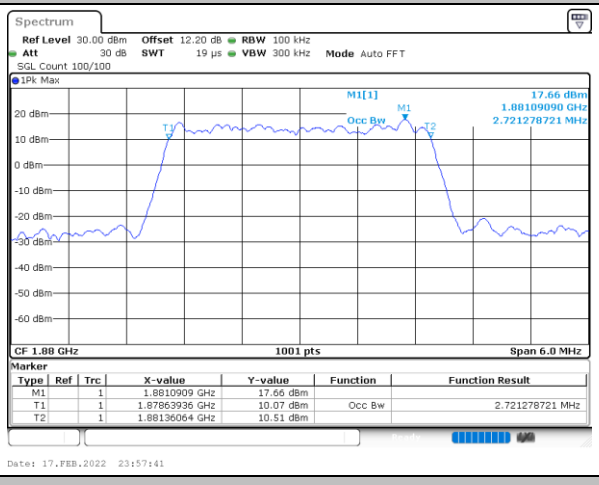
Middle Channel / 1.4MHz / QPSK



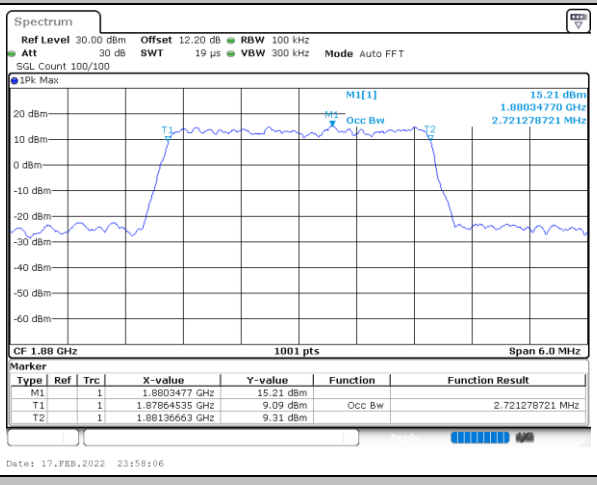
Middle Channel / 1.4MHz / 16QAM



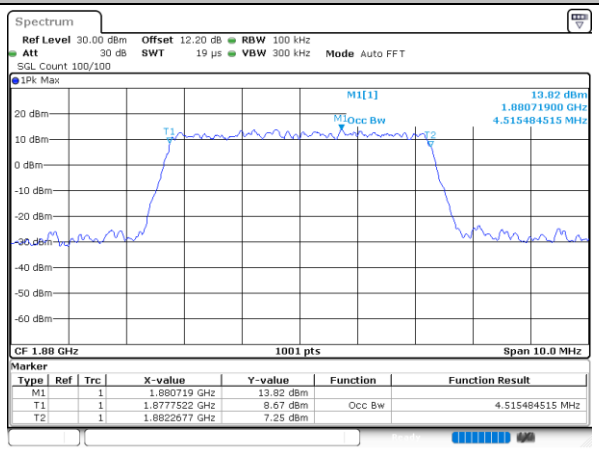
Middle Channel / 3MHz / QPSK



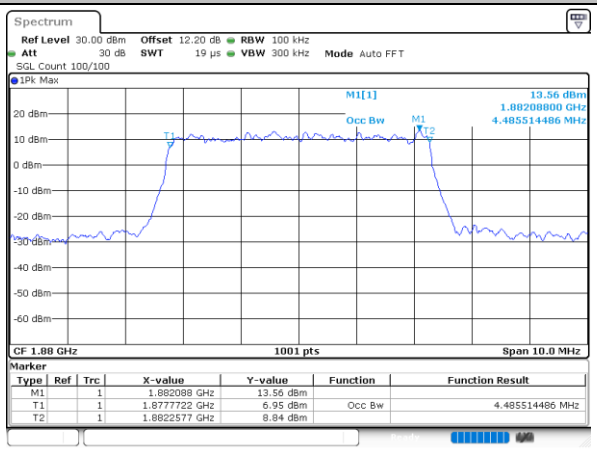
Middle Channel / 3MHz / 16QAM

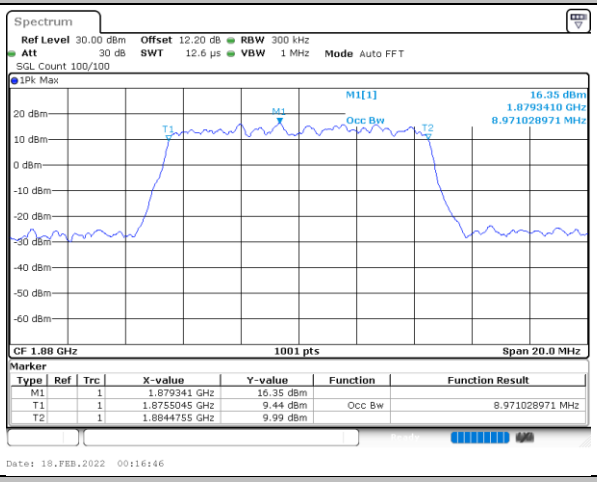
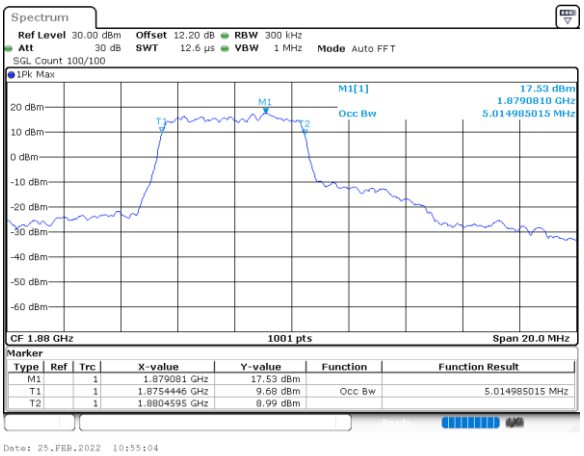
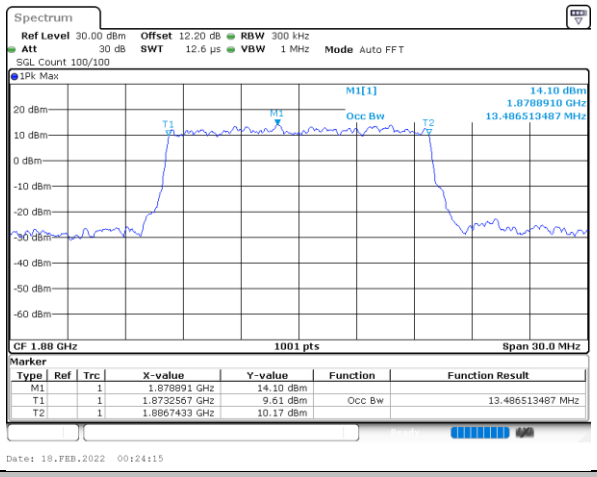
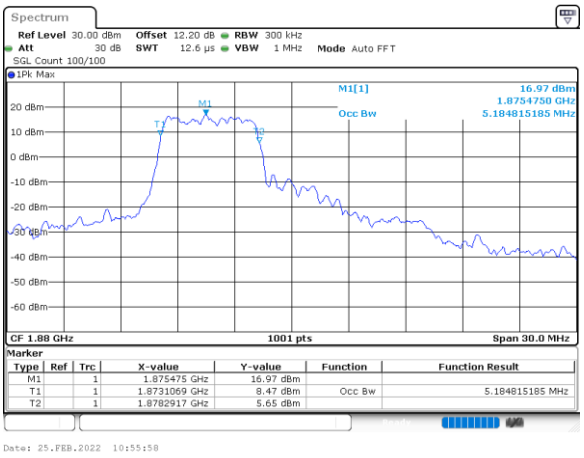
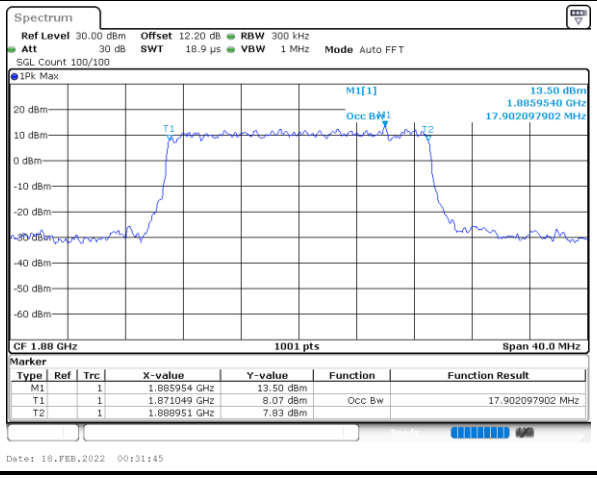
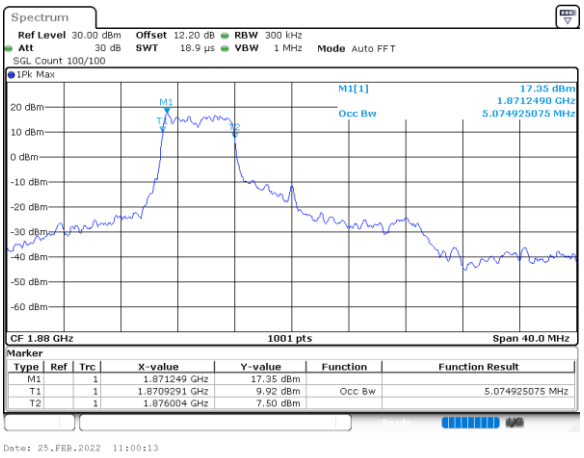


Middle Channel / 5MHz / QPSK



Middle Channel / 5MHz / 16QAM

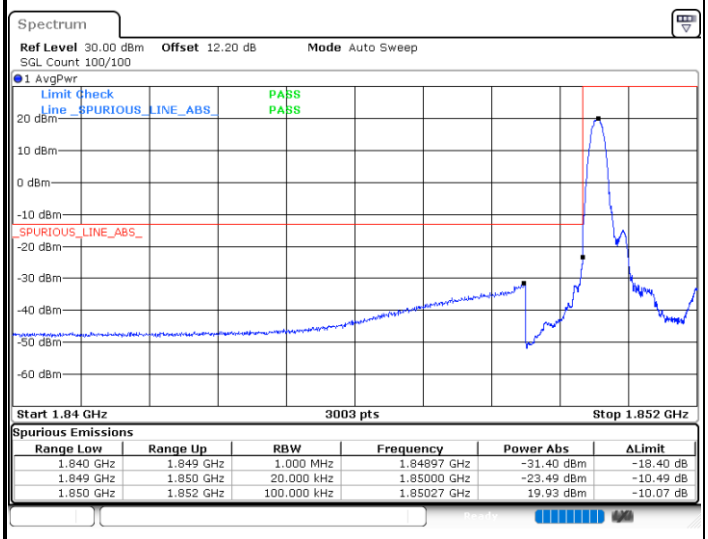


LTE Cat 1 Band 2	LTE Cat 1 Band 2
Middle Channel / 10MHz / QPSK	**Middle Channel / 10MHz / 16QAM**
	
Middle Channel / 15MHz / QPSK	**Middle Channel / 15MHz / 16QAM**
	
Middle Channel / 20MHz / QPSK	**Middle Channel / 20MHz / 16QAM**
	

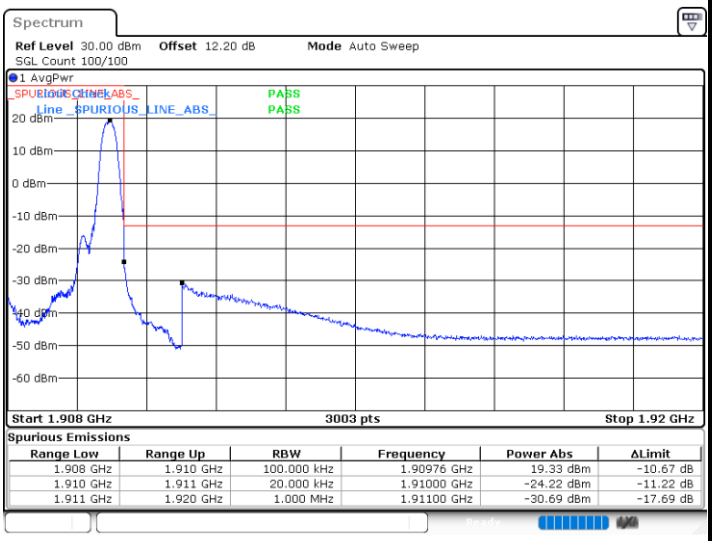
Conducted Band Edge

LTE Cat 1 Band 2 / 1.4MHz / QPSK

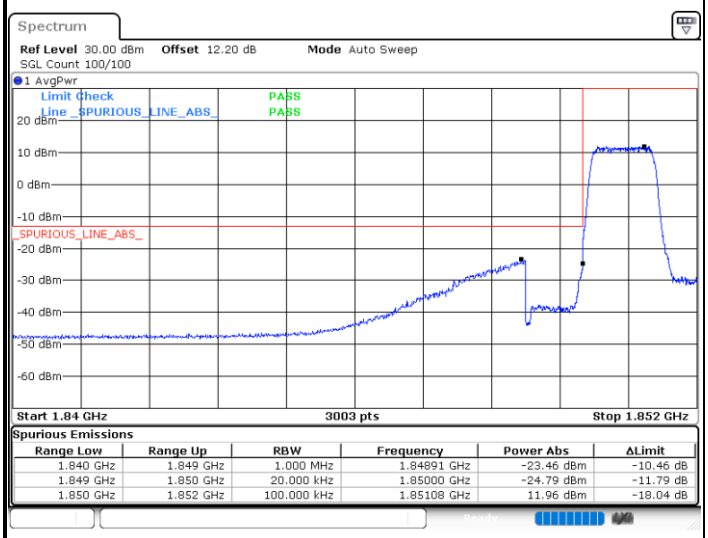
Lowest Band Edge / 1RB



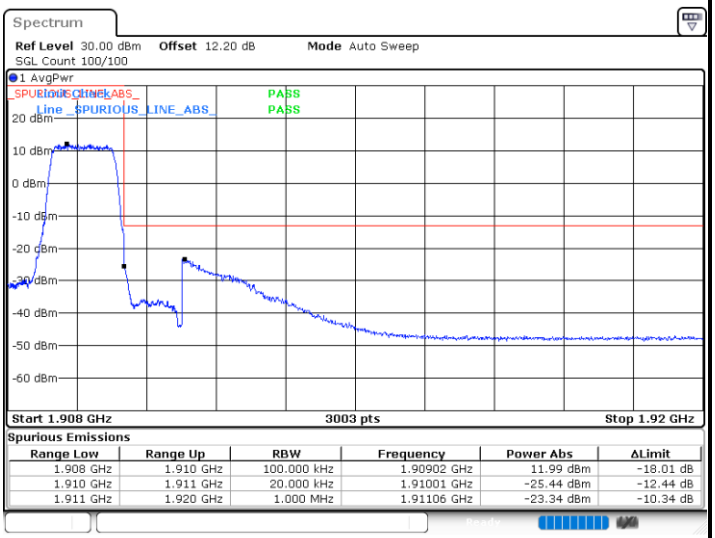
Highest Band Edge / 1RB



Lowest Band Edge / Full RB

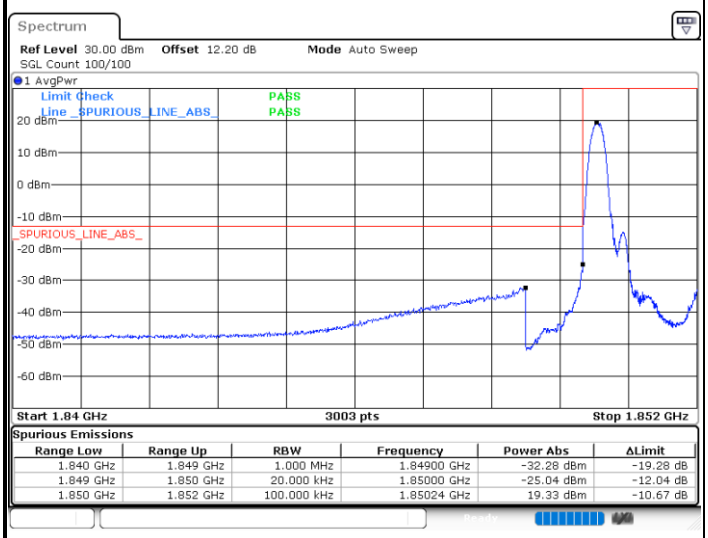


Highest Band Edge / Full RB

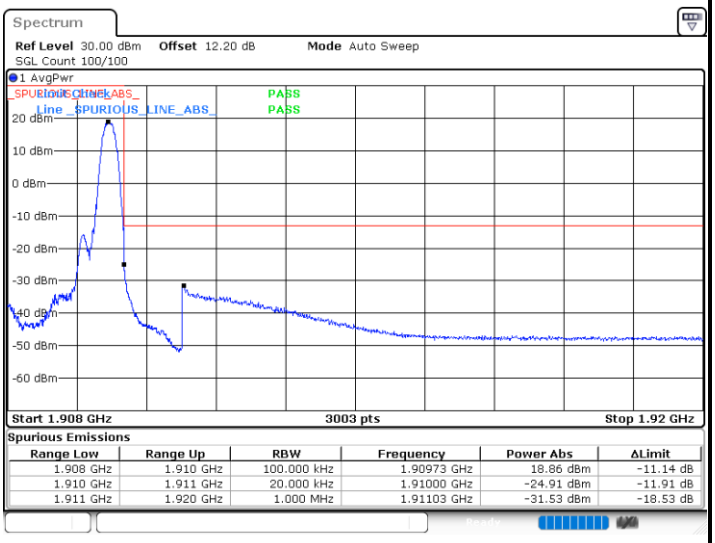


LTE Cat 1 Band 2 / 1.4MHz / 16QAM

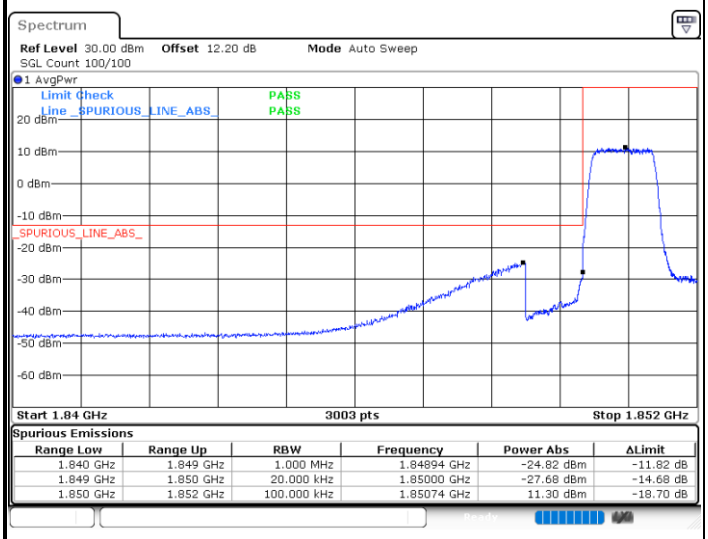
Lowest Band Edge / 1 RB



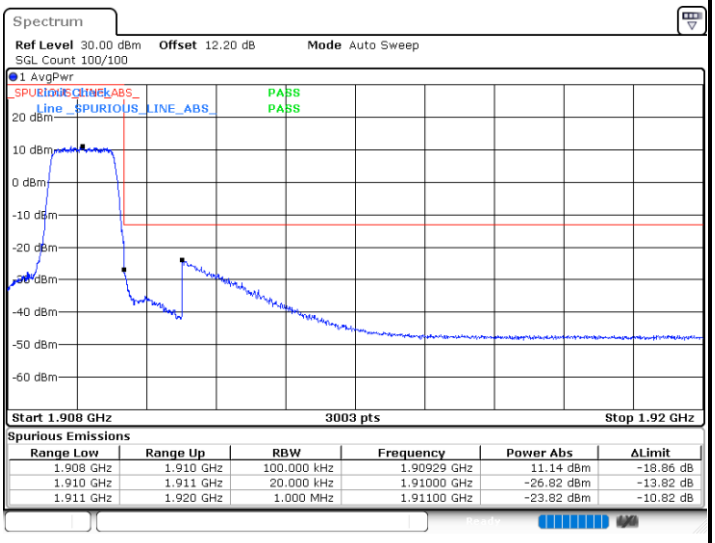
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

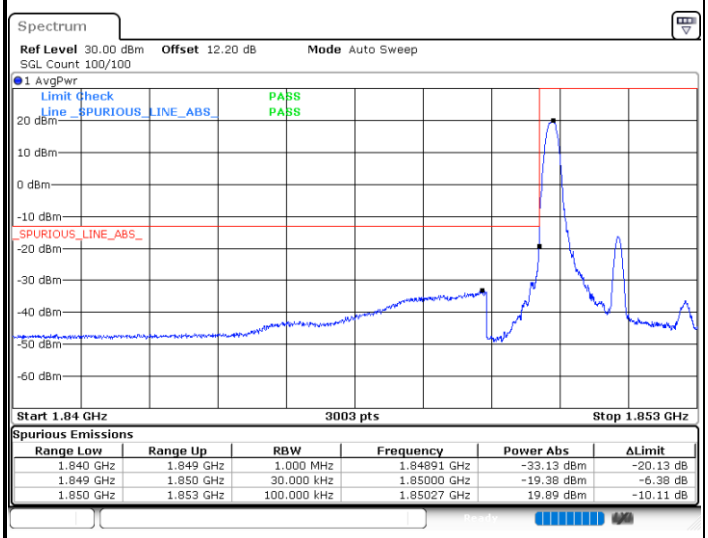


Highest Band Edge / Full RB

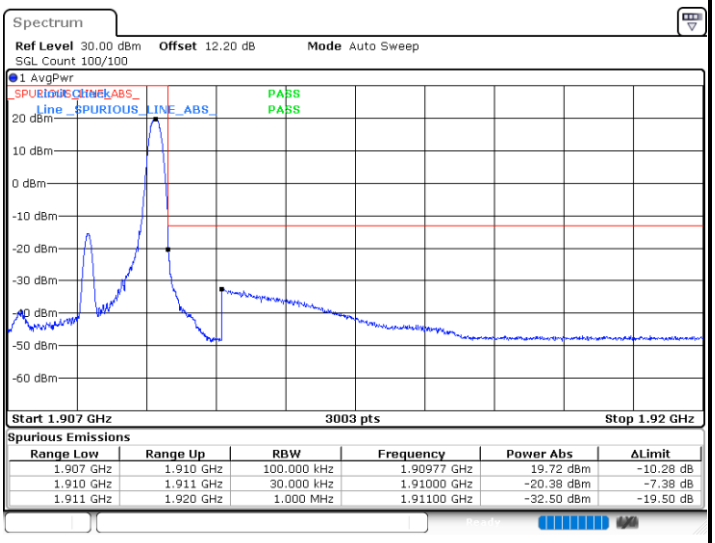


LTE Cat 1 Band 2 / 3MHz / QPSK

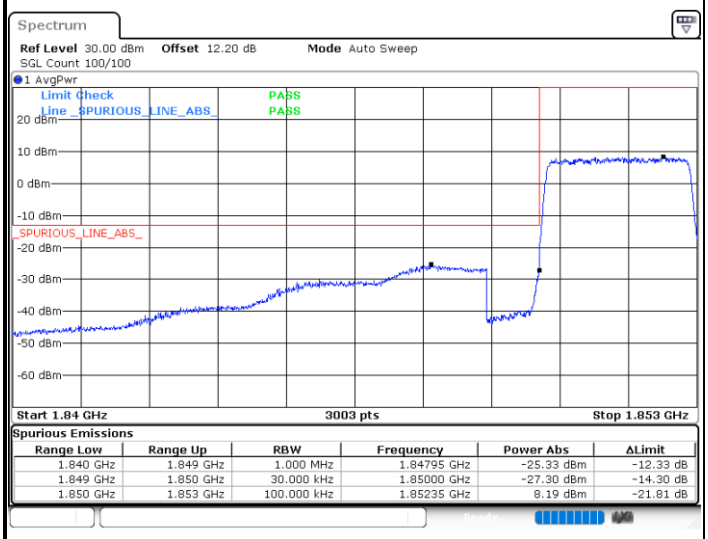
Lowest Band Edge / 1RB



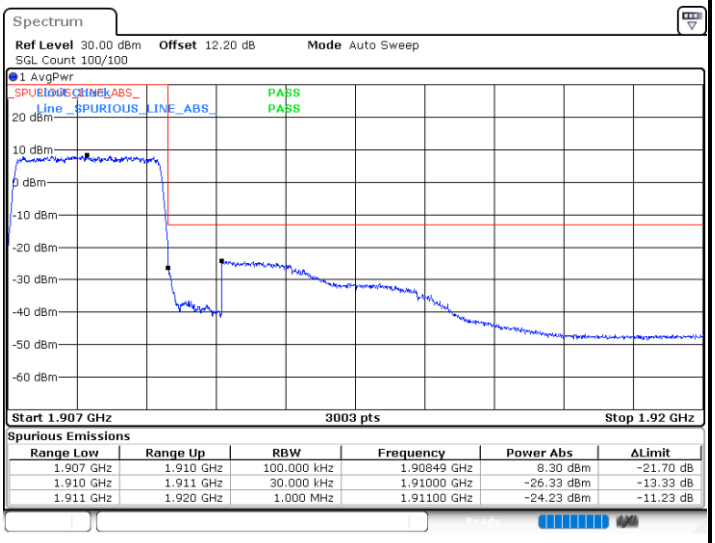
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

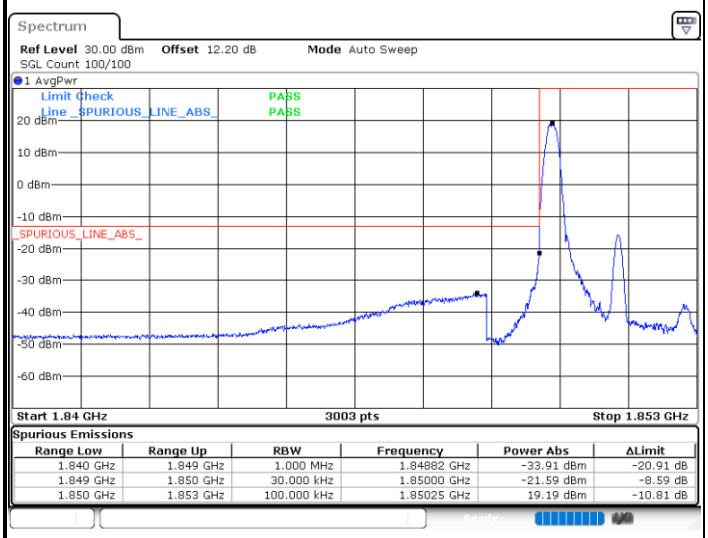


Highest Band Edge / Full RB

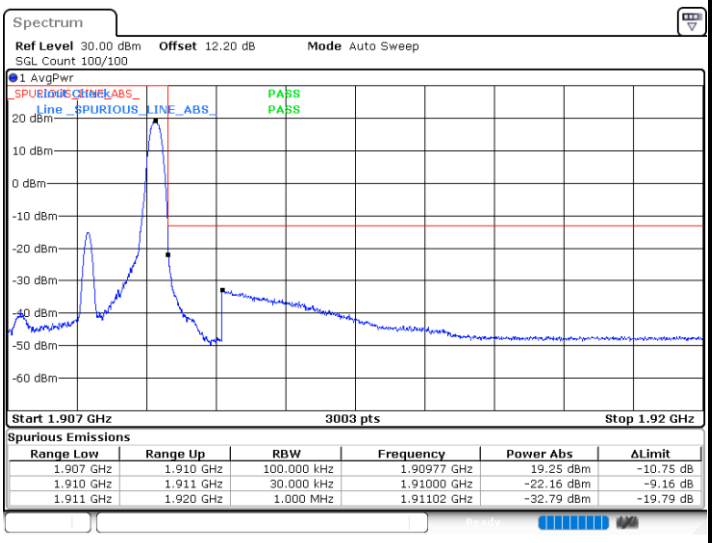


LTE Cat 1 Band 2 / 3MHz / 16QAM

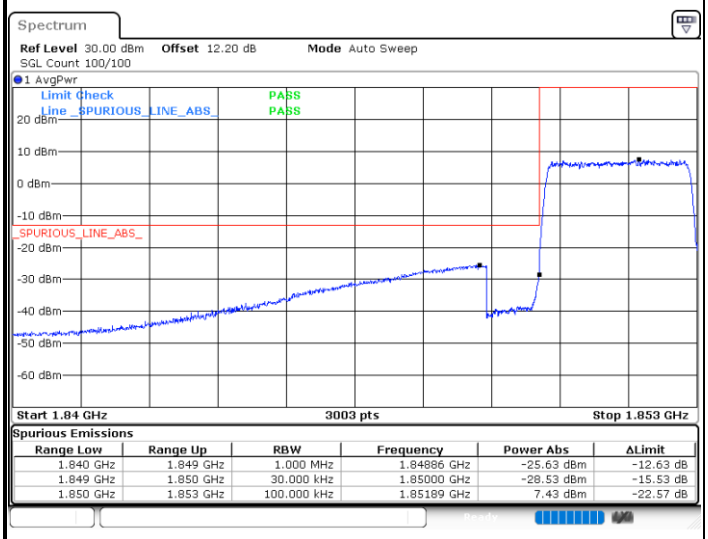
Lowest Band Edge / 1 RB



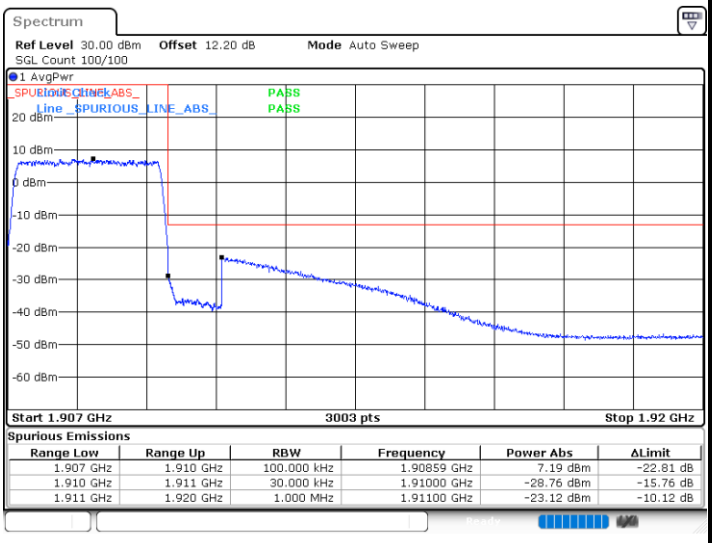
Highest Band Edge /1 RB



Lowest Band Edge / Full RB

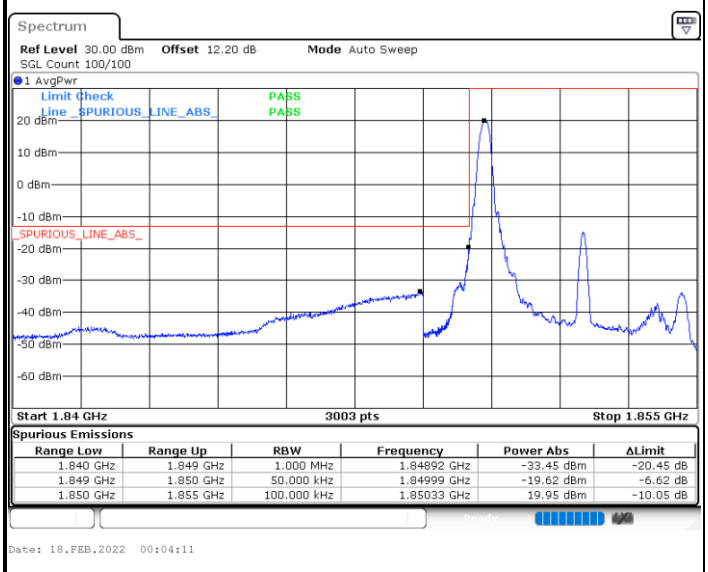


Highest Band Edge / Full RB

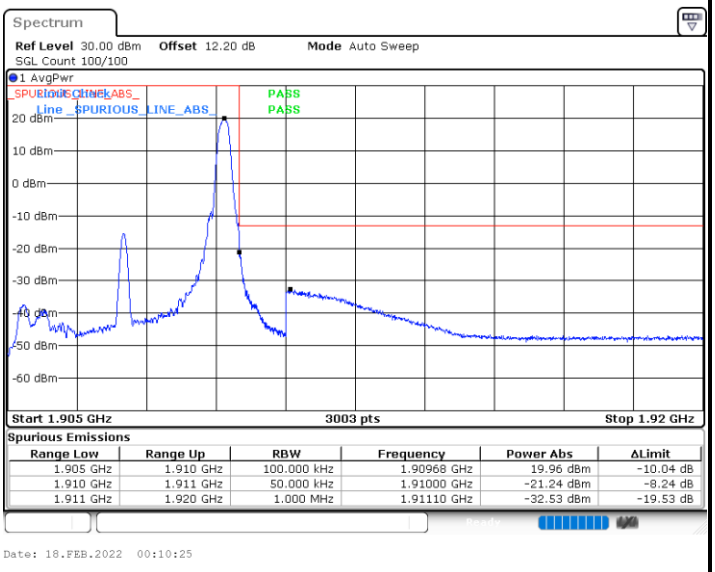


LTE Cat 1 Band 2 / 5MHz / QPSK

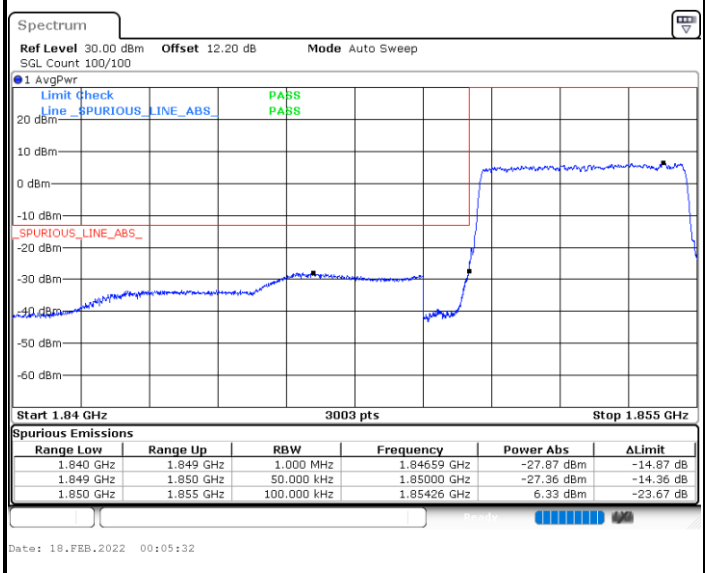
Lowest Band Edge / 1 RB



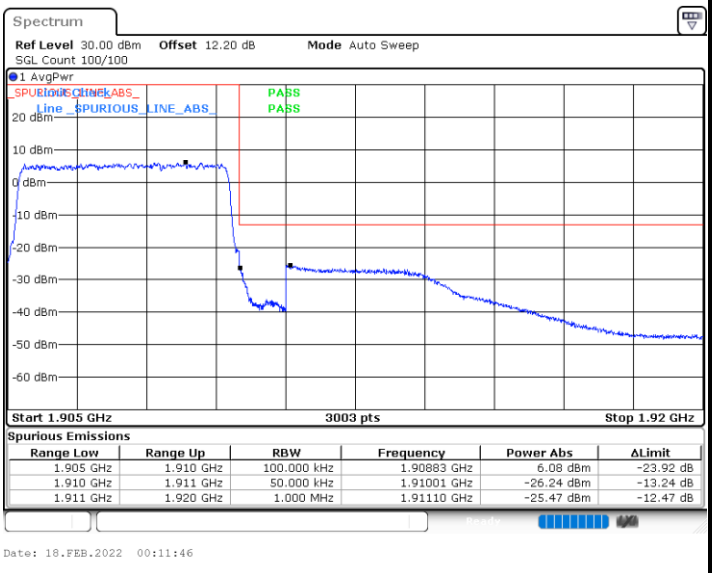
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

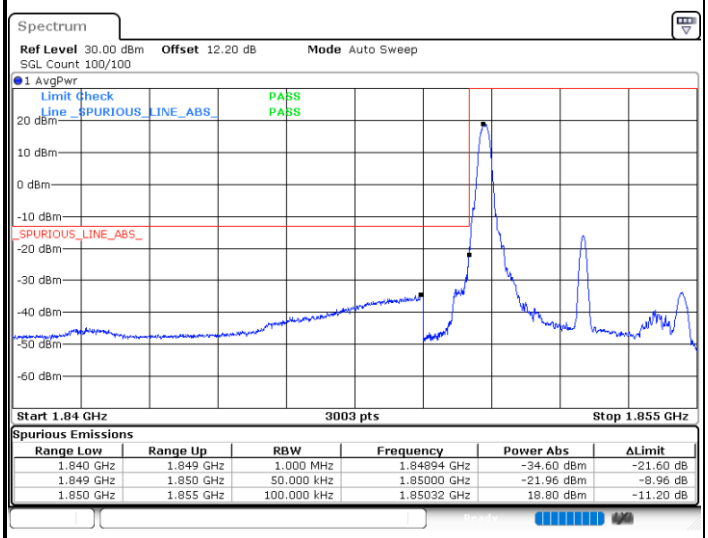


Highest Band Edge / Full RB

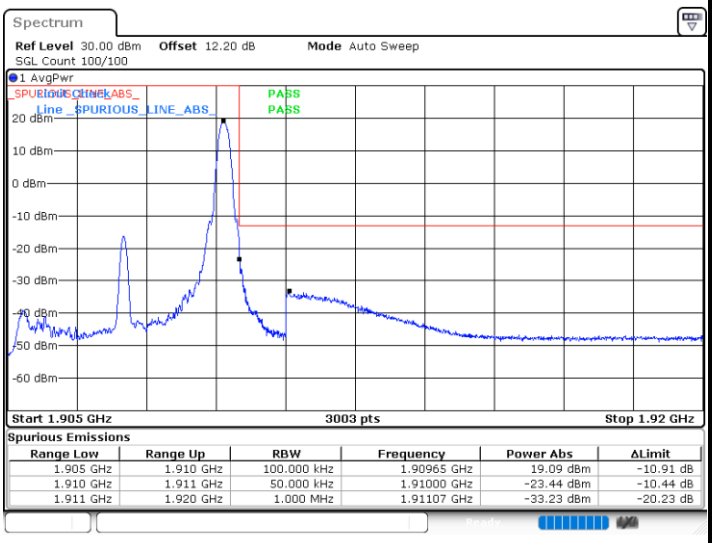


LTE Cat 1 Band 2 / 5MHz / 16QAM

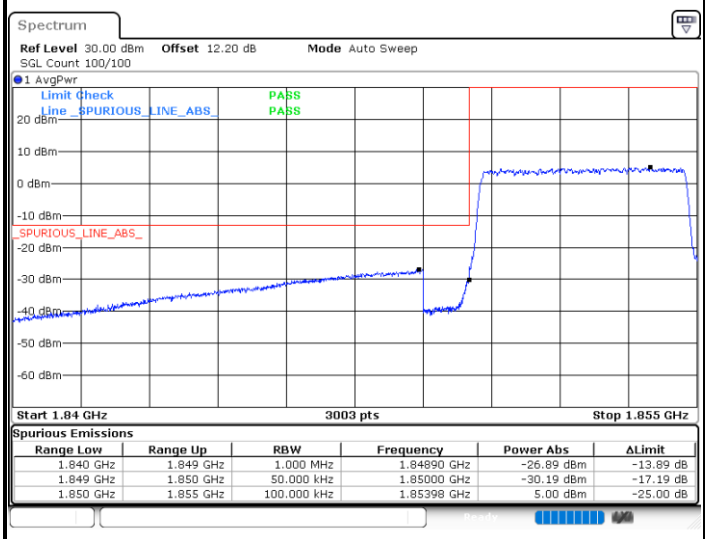
Lowest Band Edge / 1RB



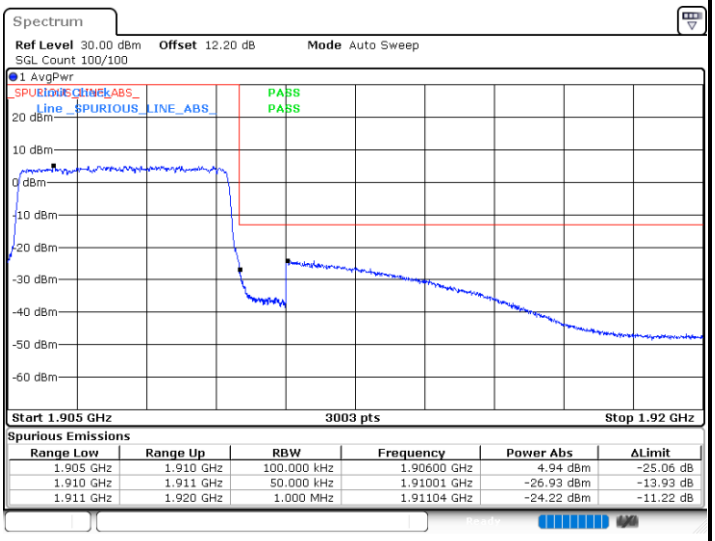
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

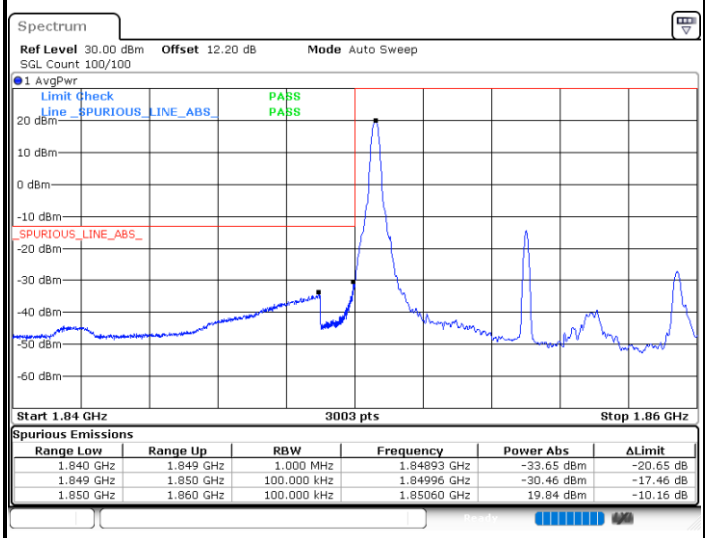


Highest Band Edge / Full RB

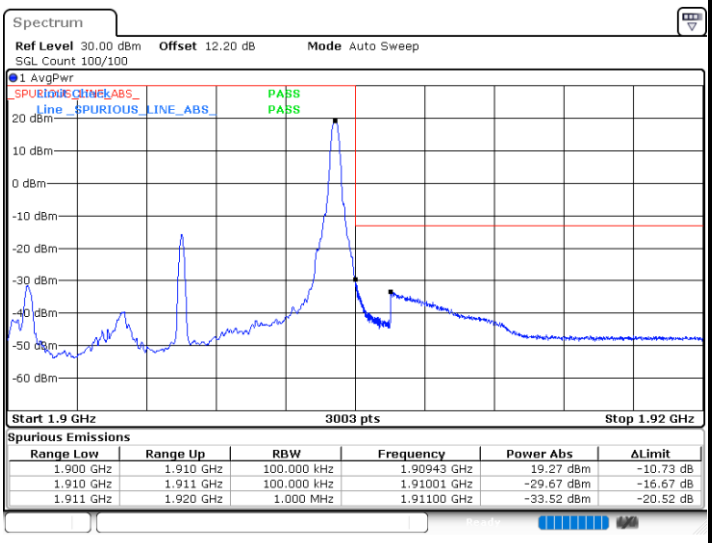


LTE Cat 1 Band 2 / 10MHz / QPSK

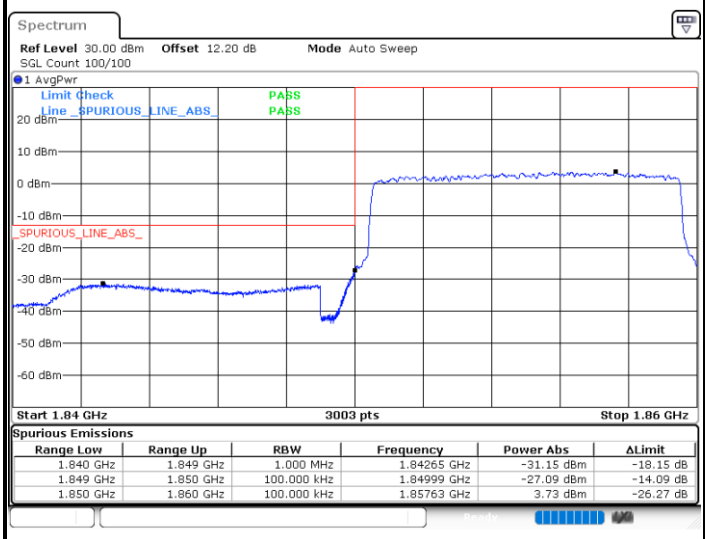
Lowest Band Edge / 1 RB



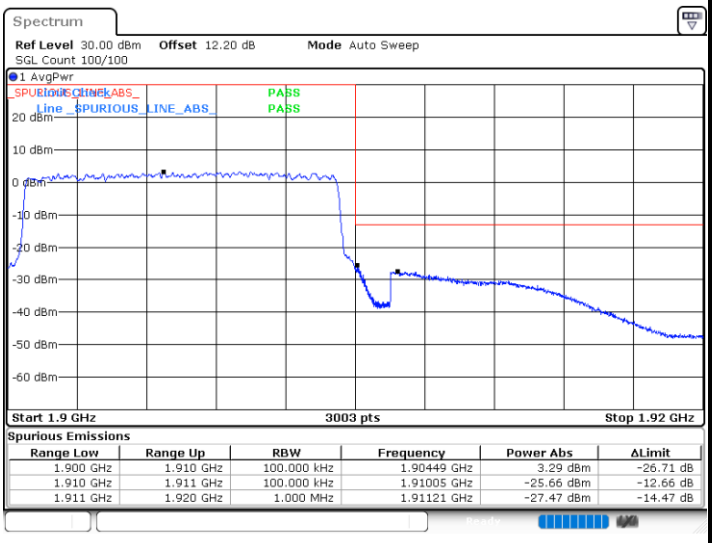
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

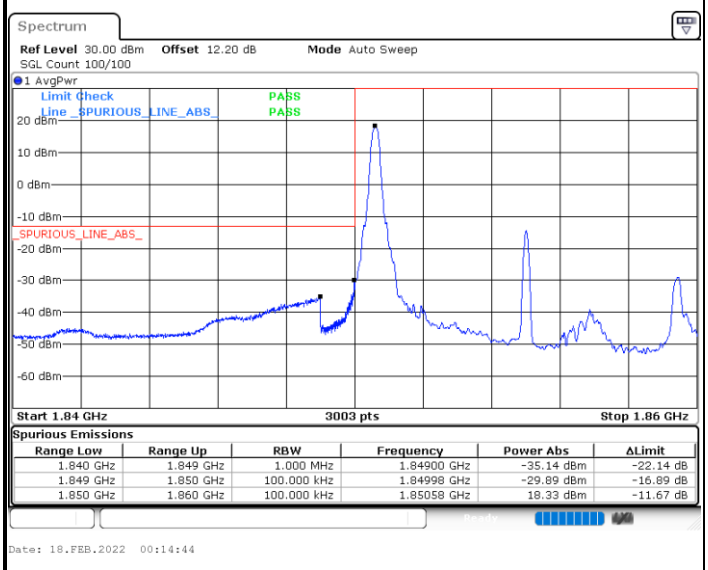


Highest Band Edge / Full RB

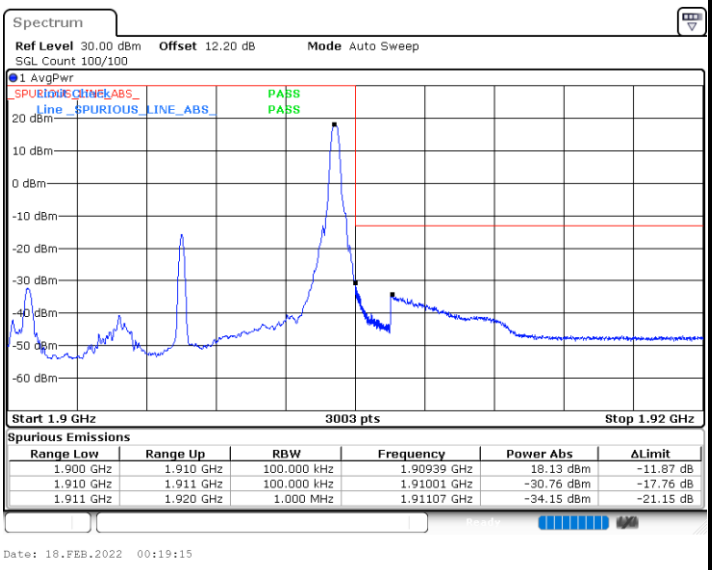


LTE Cat 1 Band 2 / 10MHz / 16QAM

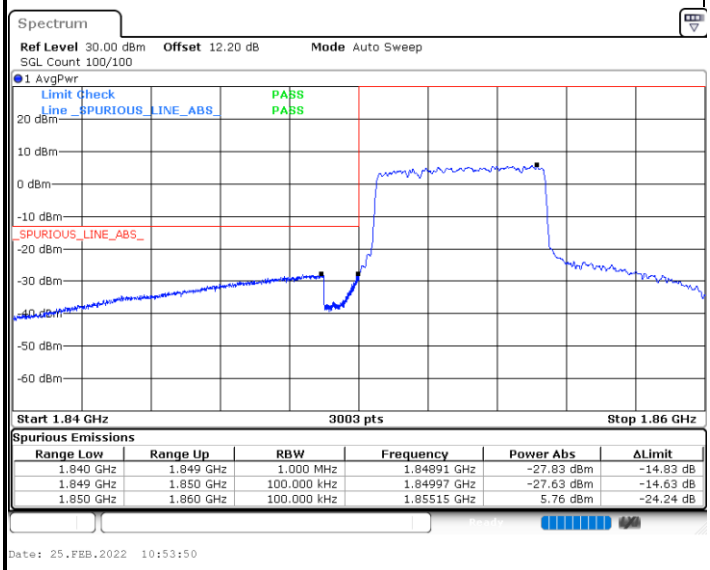
Lowest Band Edge / 1 RB



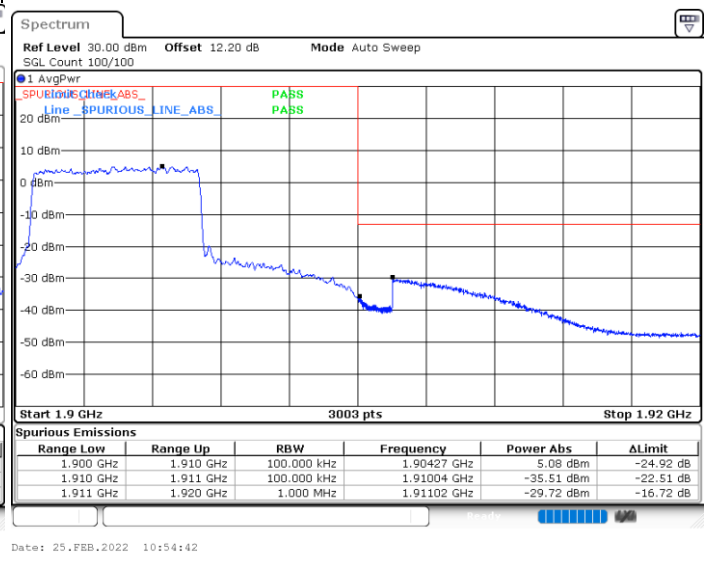
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

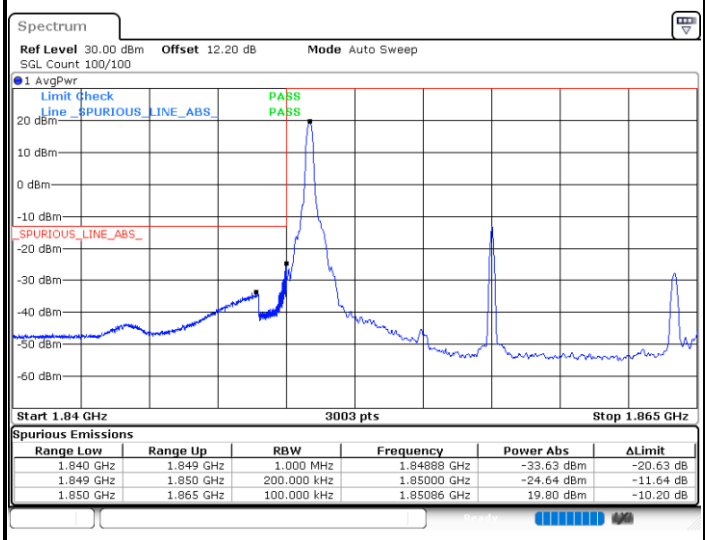


Highest Band Edge / Full RB

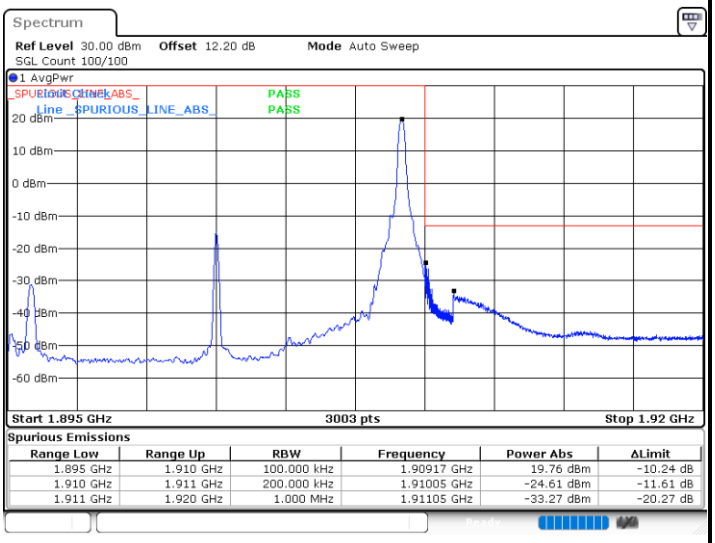


LTE Cat 1 Band 2 / 15MHz / QPSK

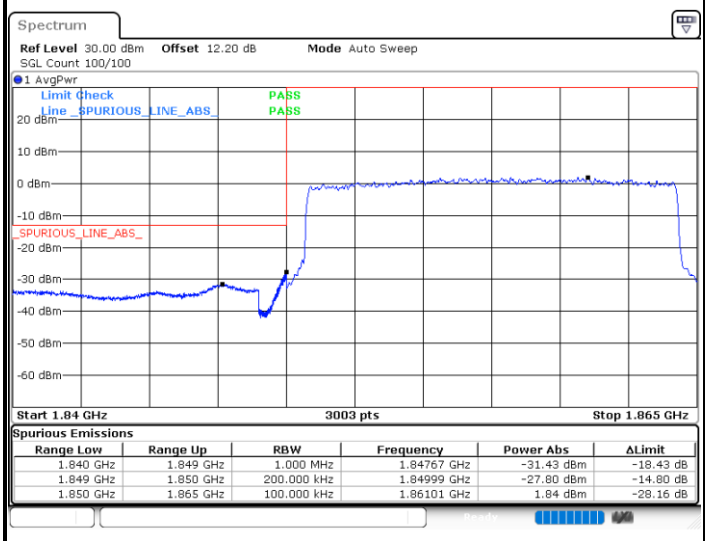
Lowest Band Edge / 1 RB



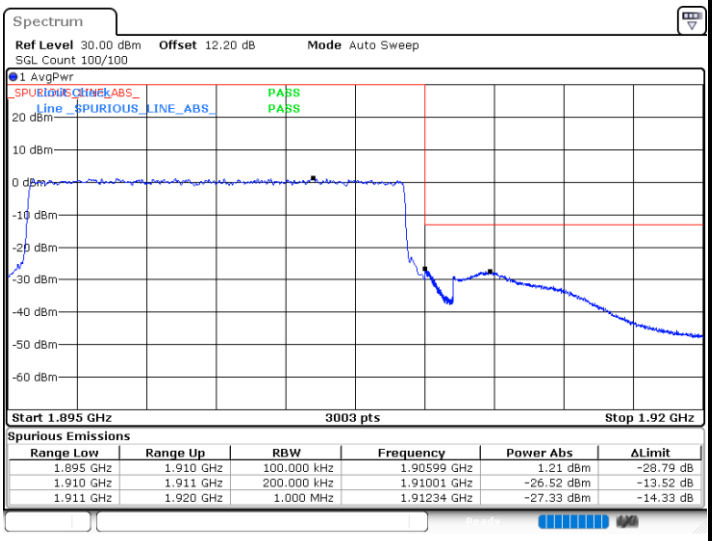
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

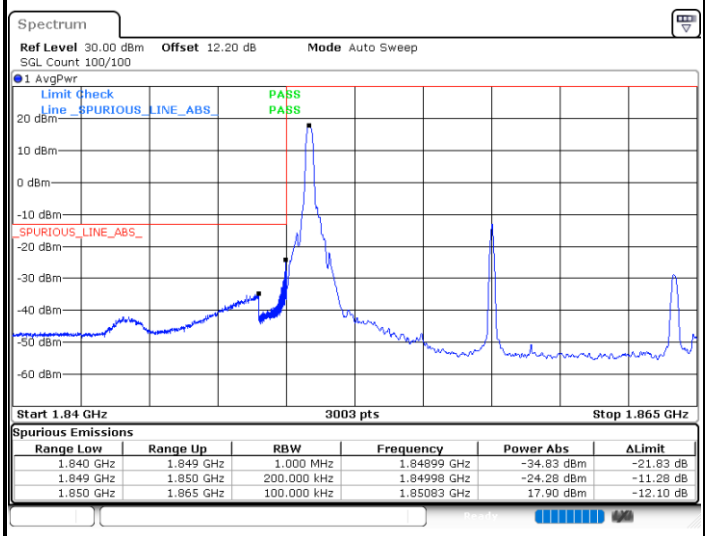


Highest Band Edge / Full RB



LTE Cat 1 Band 2 / 15MHz / 16QAM

Lowest Band Edge / 1 RB

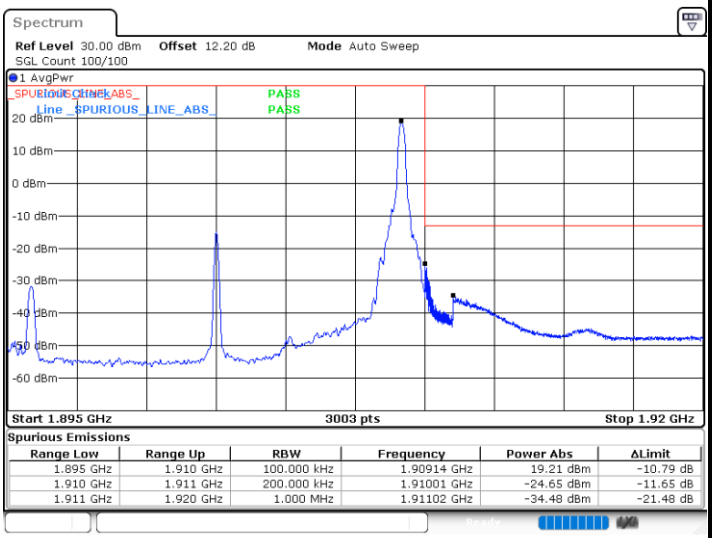


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.840 GHz	1.849 GHz	1.000 MHz	1.84899 GHz	-34.83 dBm	-21.83 dB
1.849 GHz	1.850 GHz	200.000 kHz	1.84998 GHz	-24.28 dBm	-11.28 dB
1.850 GHz	1.865 GHz	100.000 kHz	1.85083 GHz	17.90 dBm	-12.10 dB

Date: 18.FEB.2022 00:22:13

Highest Band Edge / 1 RB

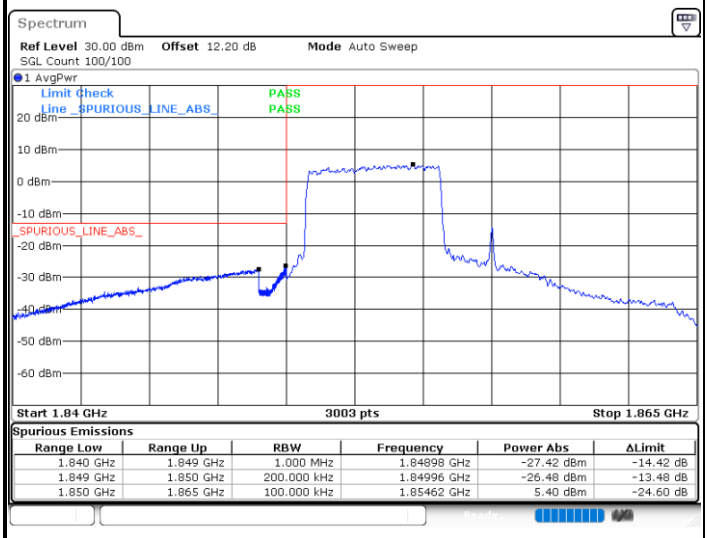


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.895 GHz	1.910 GHz	100.000 kHz	1.90914 GHz	19.21 dBm	-10.79 dB
1.910 GHz	1.911 GHz	200.000 kHz	1.91001 GHz	-24.65 dBm	-11.65 dB
1.911 GHz	1.920 GHz	1.000 MHz	1.91102 GHz	-34.48 dBm	-21.48 dB

Date: 18.FEB.2022 00:26:44

Lowest Band Edge / Full RB

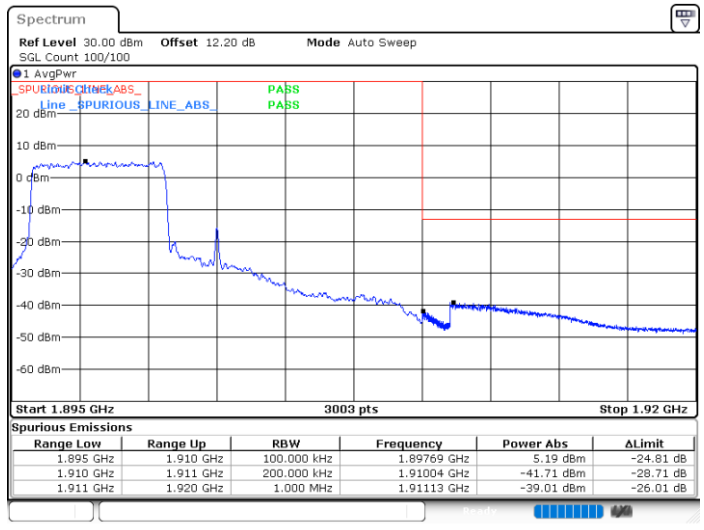


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.840 GHz	1.849 GHz	1.000 MHz	1.84898 GHz	-27.42 dBm	-14.42 dB
1.849 GHz	1.850 GHz	200.000 kHz	1.84996 GHz	-26.48 dBm	-13.48 dB
1.850 GHz	1.865 GHz	100.000 kHz	1.85462 GHz	5.40 dBm	-24.60 dB

Date: 25.FEB.2022 10:56:48

Highest Band Edge / Full RB



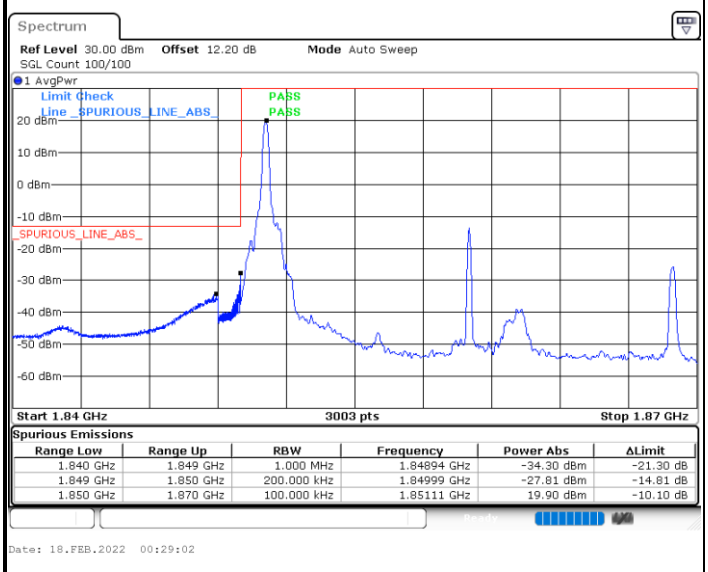
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.895 GHz	1.910 GHz	100.000 kHz	1.89769 GHz	5.19 dBm	-24.81 dB
1.910 GHz	1.911 GHz	200.000 kHz	1.91004 GHz	-41.71 dBm	-28.71 dB
1.911 GHz	1.920 GHz	1.000 MHz	1.91113 GHz	-39.01 dBm	-26.01 dB

Date: 25.FEB.2022 10:57:36

LTE Cat 1 Band 2 / 20MHz / QPSK

Lowest Band Edge / 1 RB

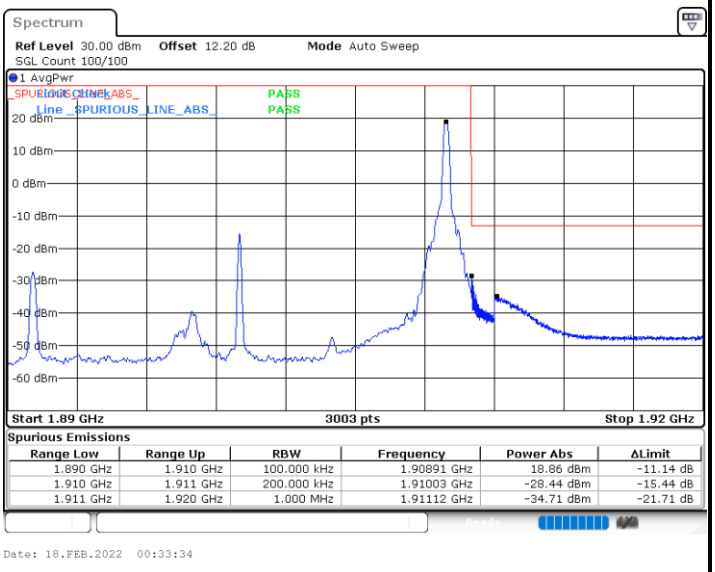


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.840 GHz	1.849 GHz	1.000 MHz	1.84894 GHz	-34.30 dBm	-21.30 dB
1.849 GHz	1.850 GHz	200.000 kHz	1.84999 GHz	-27.81 dBm	-14.81 dB
1.850 GHz	1.870 GHz	100.000 kHz	1.85111 GHz	19.90 dBm	-10.10 dB

Date: 18.FEB.2022 00:29:02

Highest Band Edge / 1 RB

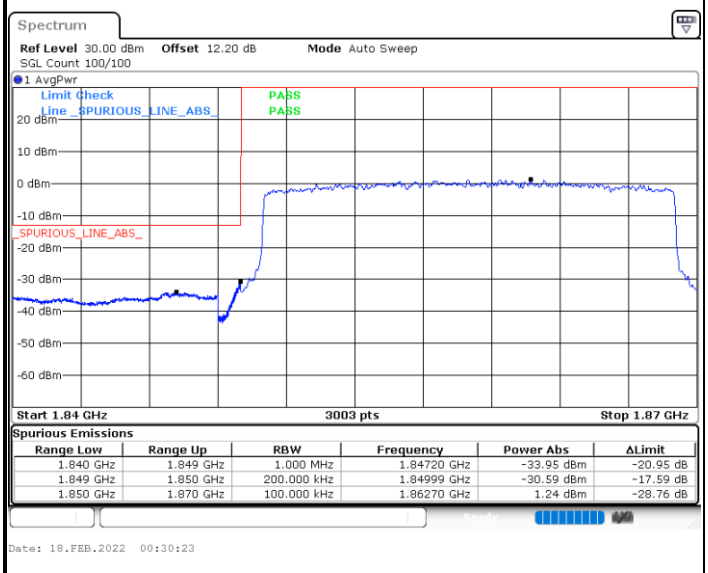


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.890 GHz	1.910 GHz	100.000 kHz	1.90891 GHz	18.86 dBm	-11.14 dB
1.910 GHz	1.911 GHz	200.000 kHz	1.91003 GHz	-28.44 dBm	-15.44 dB
1.911 GHz	1.920 GHz	1.000 MHz	1.91112 GHz	-34.71 dBm	-21.71 dB

Date: 18.FEB.2022 00:33:34

Lowest Band Edge / Full RB

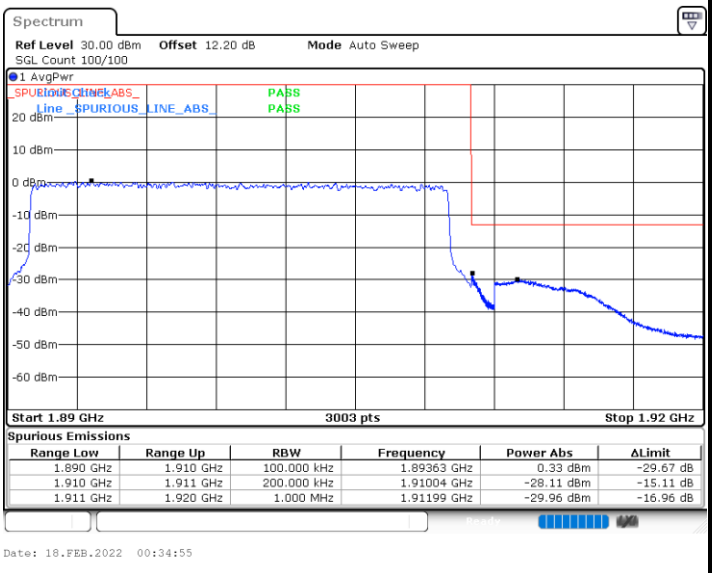


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.840 GHz	1.849 GHz	1.000 MHz	1.84720 GHz	-33.95 dBm	-20.95 dB
1.849 GHz	1.850 GHz	200.000 kHz	1.84999 GHz	-30.59 dBm	-17.59 dB
1.850 GHz	1.870 GHz	100.000 kHz	1.86270 GHz	1.24 dBm	-28.76 dB

Date: 18.FEB.2022 00:30:23

Highest Band Edge / Full RB



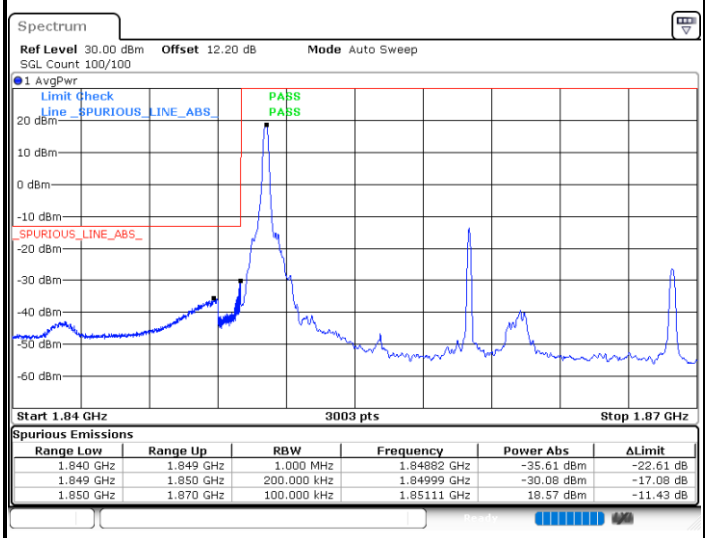
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
1.890 GHz	1.910 GHz	100.000 kHz	1.89363 GHz	0.33 dBm	-29.67 dB
1.910 GHz	1.911 GHz	200.000 kHz	1.91004 GHz	-28.11 dBm	-15.11 dB
1.911 GHz	1.920 GHz	1.000 MHz	1.91199 GHz	-29.96 dBm	-16.96 dB

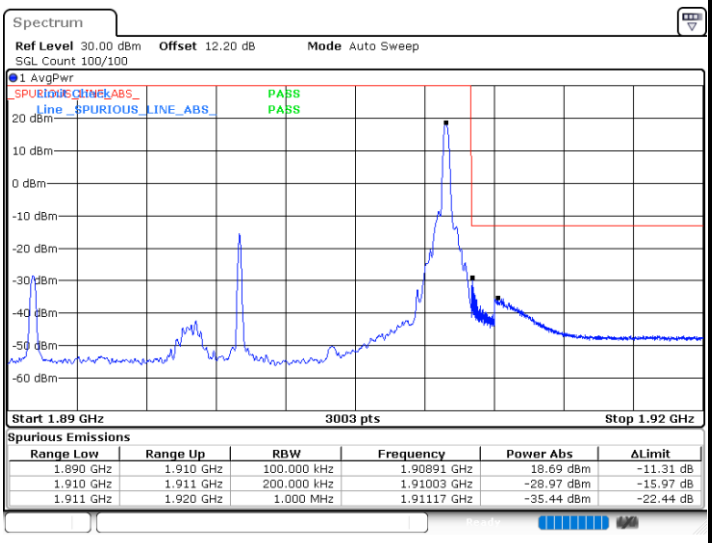
Date: 18.FEB.2022 00:34:55

LTE Cat 1 Band 2 / 20MHz / 16QAM

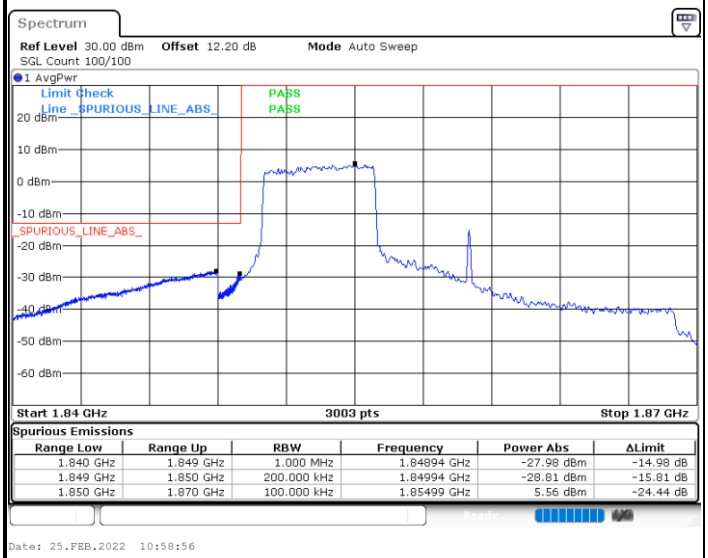
Lowest Band Edge / 1 RB



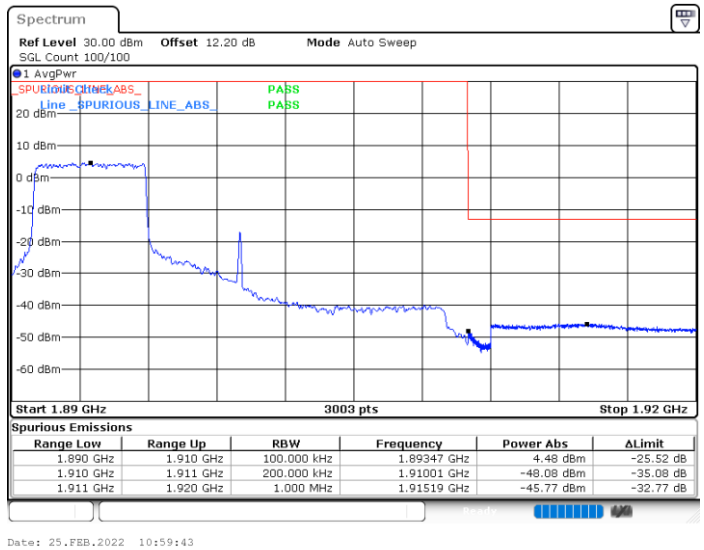
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



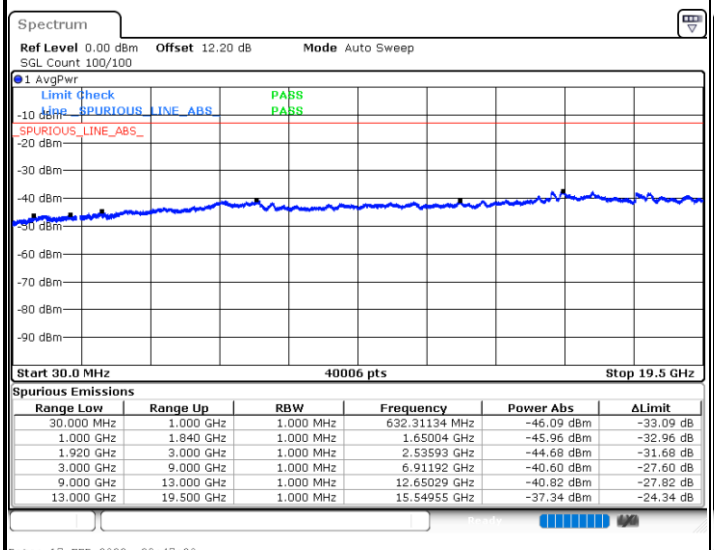
Highest Band Edge / Full RB



Conducted Spurious Emission

LTE Cat 1 Band 2 / 1.4MHz

Lowest Channel / QPSK

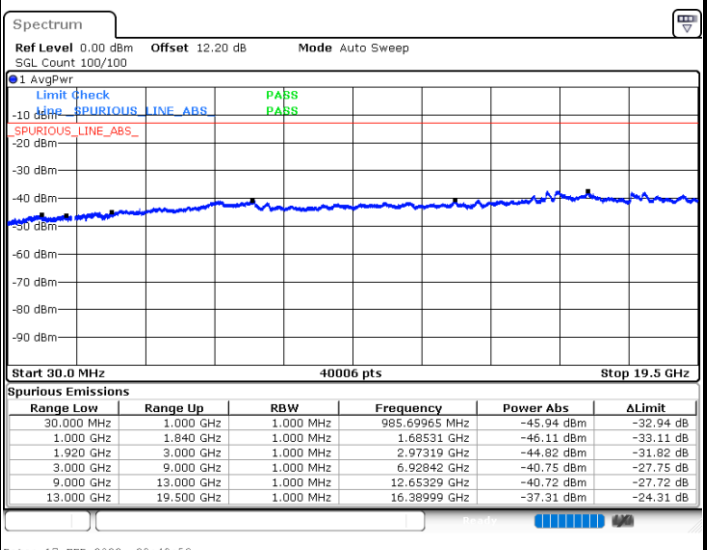


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	632.31134 MHz	-46.09 dBm	-33.09 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.65004 GHz	-45.96 dBm	-32.96 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.53593 GHz	-44.68 dBm	-31.68 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.91192 GHz	-40.60 dBm	-27.60 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.65029 GHz	-40.82 dBm	-27.82 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.54955 GHz	-37.34 dBm	-24.34 dB

Date: 17.FEB.2022 23:47:20

Middle Channel / QPSK

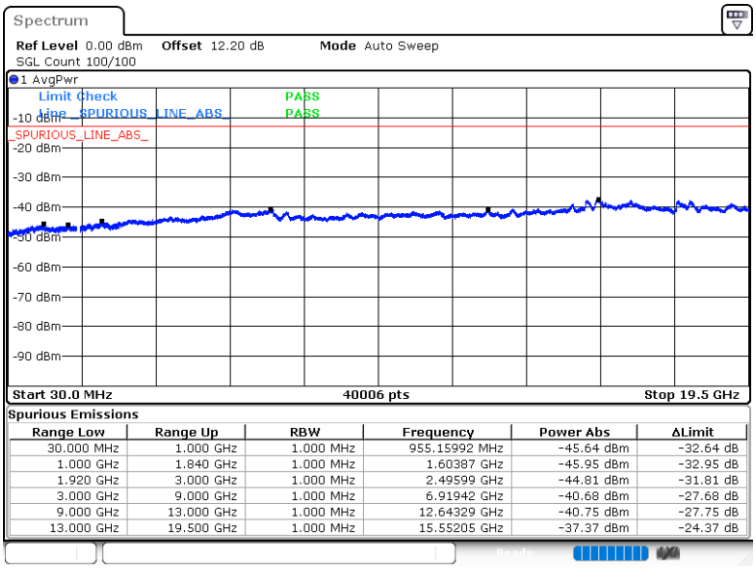


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	985.69965 MHz	-45.94 dBm	-32.94 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.68531 GHz	-46.11 dBm	-33.11 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.97319 GHz	-44.82 dBm	-31.82 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.92842 GHz	-40.75 dBm	-27.75 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.65329 GHz	-40.72 dBm	-27.72 dB
13.000 GHz	19.500 GHz	1.000 MHz	16.38999 GHz	-37.31 dBm	-24.31 dB

Date: 17.FEB.2022 23:49:58

Highest Channel / QPSK



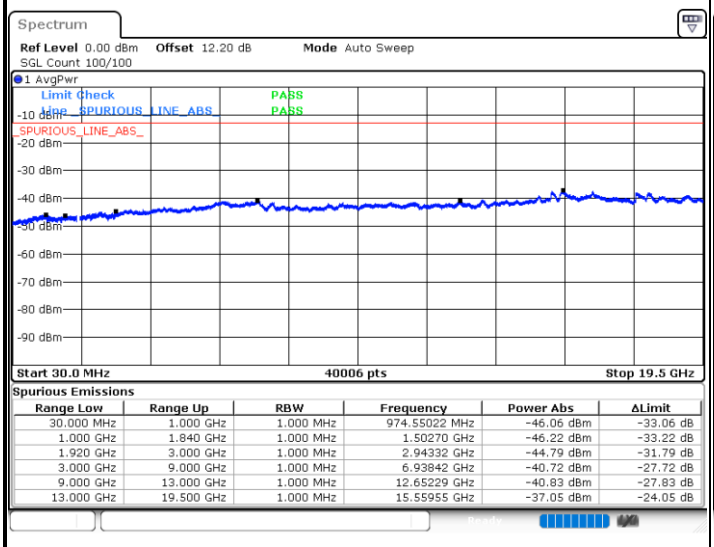
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	955.15992 MHz	-45.64 dBm	-32.64 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.60387 GHz	-45.95 dBm	-32.95 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.49599 GHz	-44.81 dBm	-31.81 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.91942 GHz	-40.68 dBm	-27.68 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64329 GHz	-40.75 dBm	-27.75 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.55205 GHz	-37.37 dBm	-24.37 dB

Date: 17.FEB.2022 23:53:35

LTE Cat 1 Band 2 / 3MHz

Lowest Channel / QPSK

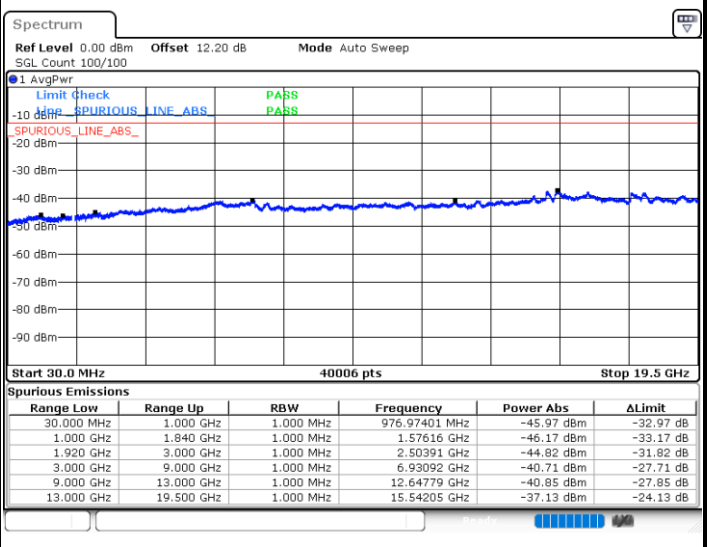


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	974.55022 MHz	-46.06 dBm	-33.06 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.50270 GHz	-46.22 dBm	-33.22 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.94332 GHz	-44.79 dBm	-31.79 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.93842 GHz	-40.72 dBm	-27.72 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.65229 GHz	-40.83 dBm	-27.83 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.55955 GHz	-37.05 dBm	-24.05 dB

Date: 17.FEB.2022 23:57:14

Middle Channel / QPSK

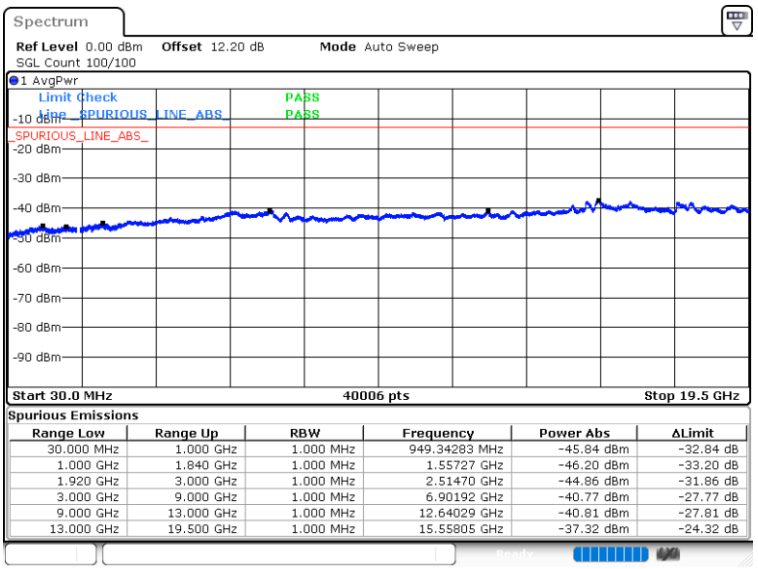


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	976.97401 MHz	-45.97 dBm	-32.97 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.57616 GHz	-46.17 dBm	-33.17 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.50391 GHz	-44.82 dBm	-31.82 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.93092 GHz	-40.71 dBm	-27.71 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64779 GHz	-40.85 dBm	-27.85 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.54205 GHz	-37.13 dBm	-24.13 dB

Date: 17.FEB.2022 23:59:52

Highest Channel / QPSK



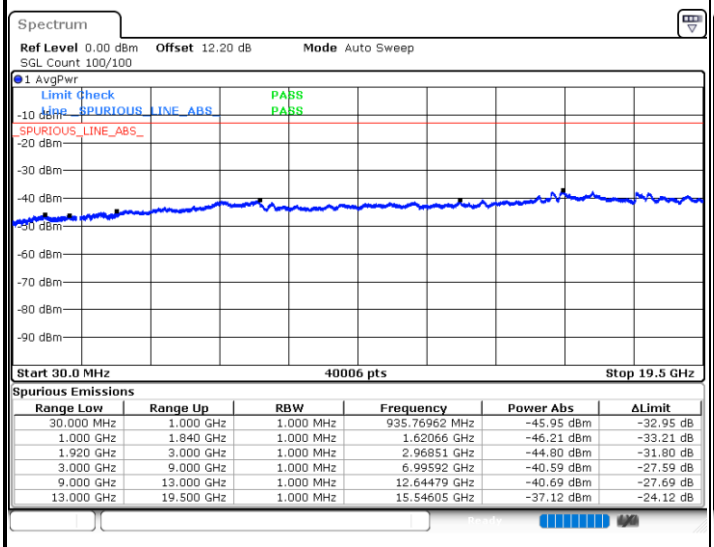
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	949.34283 MHz	-45.84 dBm	-32.84 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.55727 GHz	-46.20 dBm	-33.20 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.51470 GHz	-44.86 dBm	-31.86 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.90192 GHz	-40.77 dBm	-27.77 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64029 GHz	-40.81 dBm	-27.81 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.55805 GHz	-37.32 dBm	-24.32 dB

Date: 18.FEB.2022 00:03:30

LTE Cat 1 Band 2 / 5MHz

Lowest Channel / QPSK

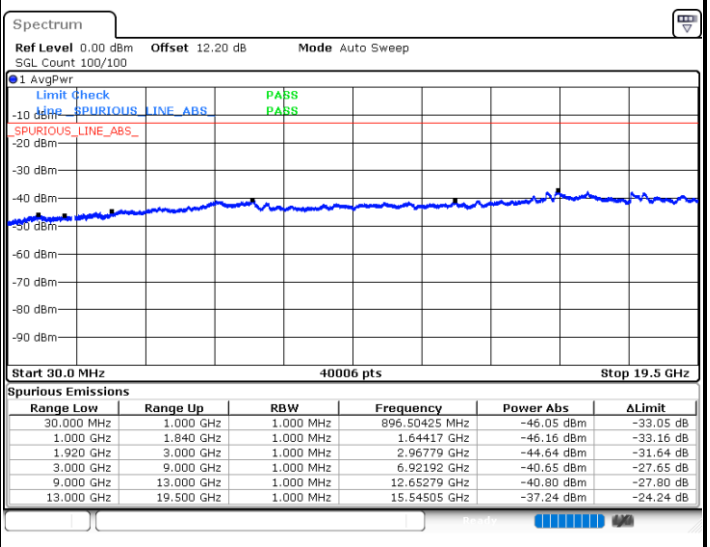


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	935.76962 MHz	-45.95 dBm	-32.95 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.62066 GHz	-46.21 dBm	-33.21 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.96851 GHz	-44.80 dBm	-31.80 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.99592 GHz	-40.59 dBm	-27.59 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64479 GHz	-40.69 dBm	-27.69 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.54605 GHz	-37.12 dBm	-24.12 dB

Date: 18.FEB.2022 00:07:07

Middle Channel / QPSK

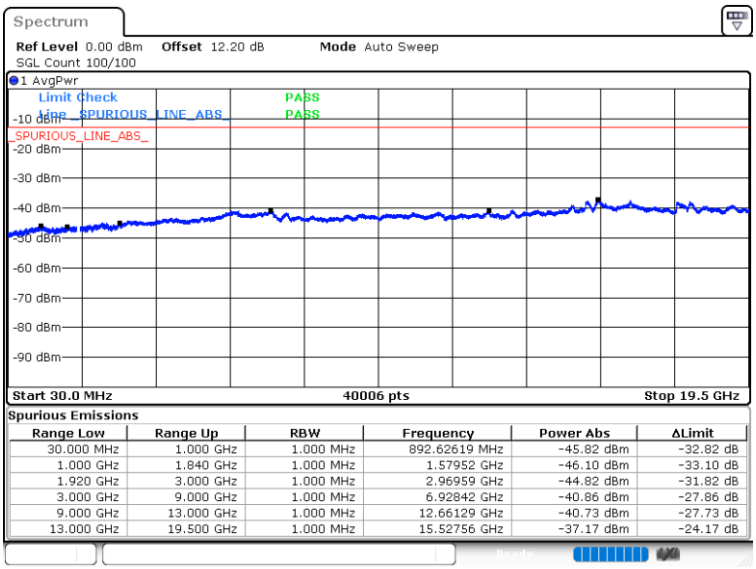


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	896.50425 MHz	-46.05 dBm	-33.05 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.64417 GHz	-46.16 dBm	-33.16 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.96779 GHz	-44.64 dBm	-31.64 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.92192 GHz	-40.65 dBm	-27.65 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.65279 GHz	-40.80 dBm	-27.80 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.54505 GHz	-37.24 dBm	-24.24 dB

Date: 18.FEB.2022 00:09:45

Highest Channel / QPSK



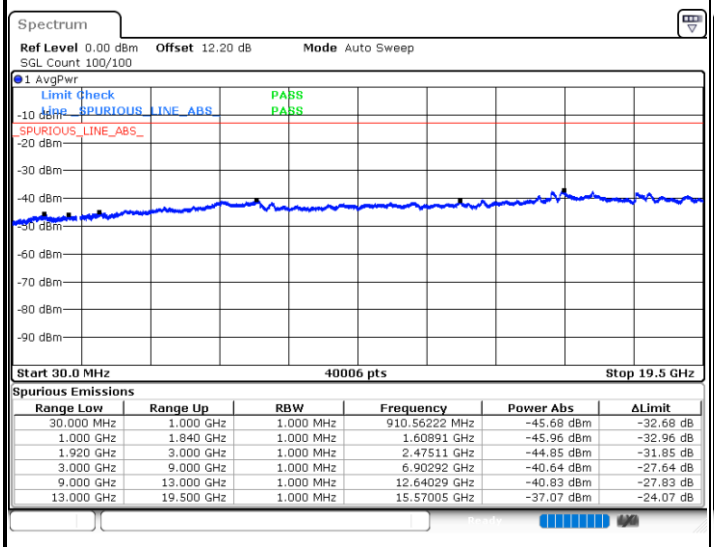
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	892.62619 MHz	-45.82 dBm	-32.82 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.57952 GHz	-46.10 dBm	-33.10 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.96959 GHz	-44.82 dBm	-31.82 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.92842 GHz	-40.86 dBm	-27.86 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.66129 GHz	-40.73 dBm	-27.73 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.52756 GHz	-37.17 dBm	-24.17 dB

Date: 18.FEB.2022 00:13:22

LTE Cat 1 Band 2 / 10MHz

Lowest Channel / QPSK

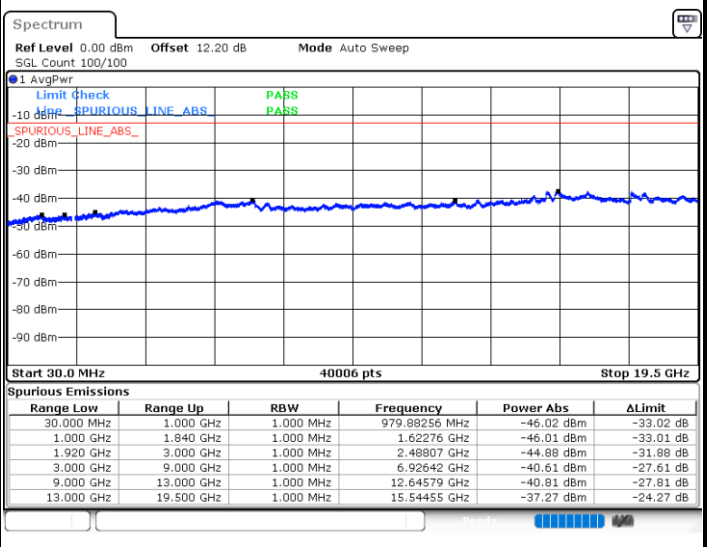


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	910.56222 MHz	-45.68 dBm	-32.68 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.60891 GHz	-45.96 dBm	-32.96 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.47511 GHz	-44.85 dBm	-31.85 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.90292 GHz	-40.64 dBm	-27.64 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64029 GHz	-40.83 dBm	-27.83 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.57005 GHz	-37.07 dBm	-24.07 dB

Date: 18.FEB.2022 00:16:20

Middle Channel / QPSK

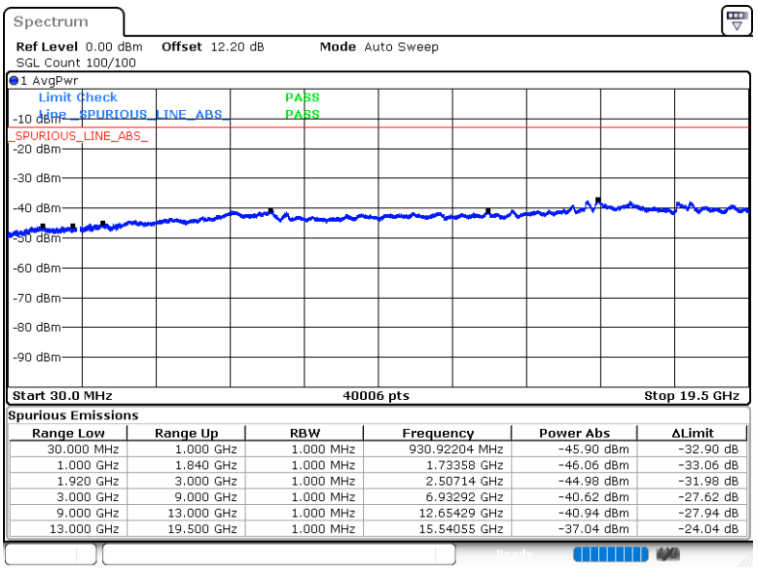


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	979.88256 MHz	-46.02 dBm	-33.02 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.62276 GHz	-46.01 dBm	-33.01 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.48807 GHz	-44.88 dBm	-31.88 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.92642 GHz	-40.61 dBm	-27.61 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64579 GHz	-40.81 dBm	-27.81 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.54455 GHz	-37.27 dBm	-24.27 dB

Date: 18.FEB.2022 00:17:55

Highest Channel / QPSK



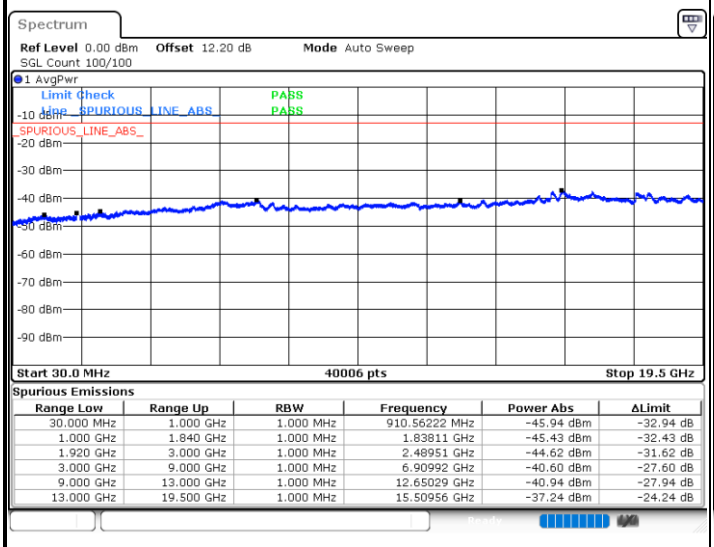
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	930.92204 MHz	-45.90 dBm	-32.90 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.73358 GHz	-46.06 dBm	-33.06 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.50714 GHz	-44.98 dBm	-31.98 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.93292 GHz	-40.62 dBm	-27.62 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.65429 GHz	-40.94 dBm	-27.94 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.54055 GHz	-37.04 dBm	-24.04 dB

Date: 18.FEB.2022 00:20:51

LTE Cat 1 Band 2 / 15MHz

Lowest Channel / QPSK

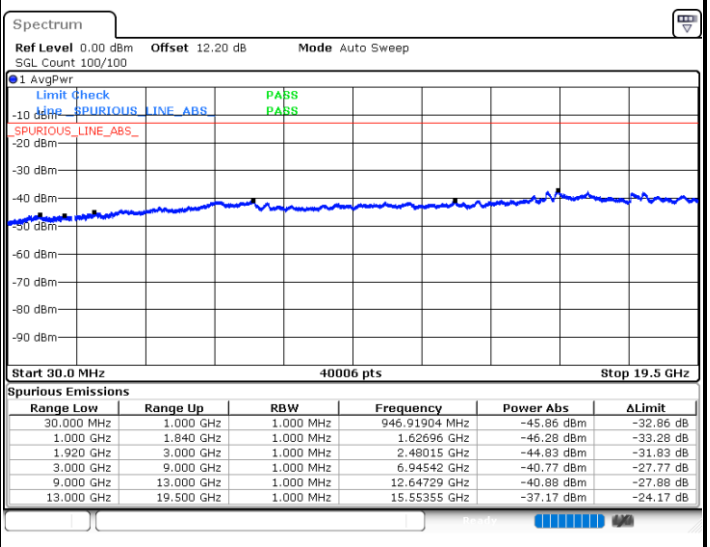


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	910.56222 MHz	-45.94 dBm	-32.94 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.83811 GHz	-45.43 dBm	-32.43 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.48951 GHz	-44.62 dBm	-31.62 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.90992 GHz	-40.60 dBm	-27.60 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.65029 GHz	-40.94 dBm	-27.94 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.50956 GHz	-37.24 dBm	-24.24 dB

Date: 18.FEB.2022 00:23:49

Middle Channel / QPSK

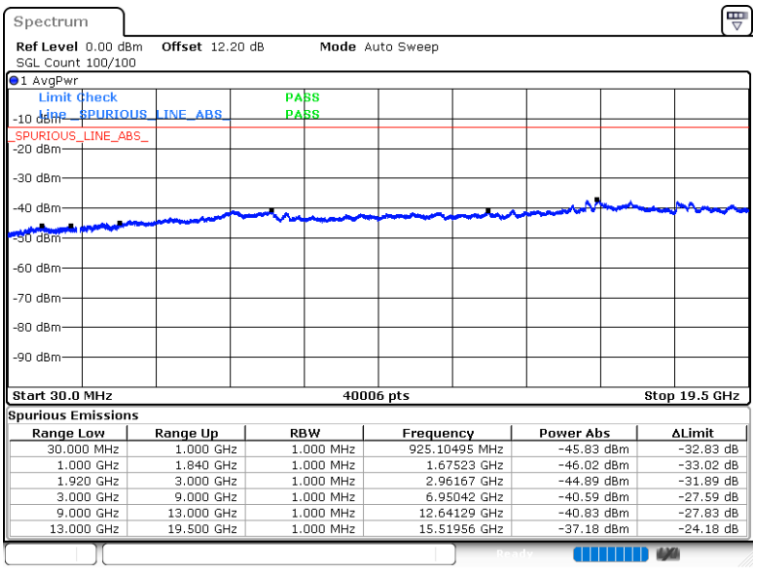


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	946.91904 MHz	-45.86 dBm	-32.86 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.62696 GHz	-46.28 dBm	-33.28 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.48015 GHz	-44.83 dBm	-31.83 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.94542 GHz	-40.77 dBm	-27.77 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64729 GHz	-40.88 dBm	-27.88 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.55355 GHz	-37.17 dBm	-24.17 dB

Date: 18.FEB.2022 00:25:24

Highest Channel / QPSK



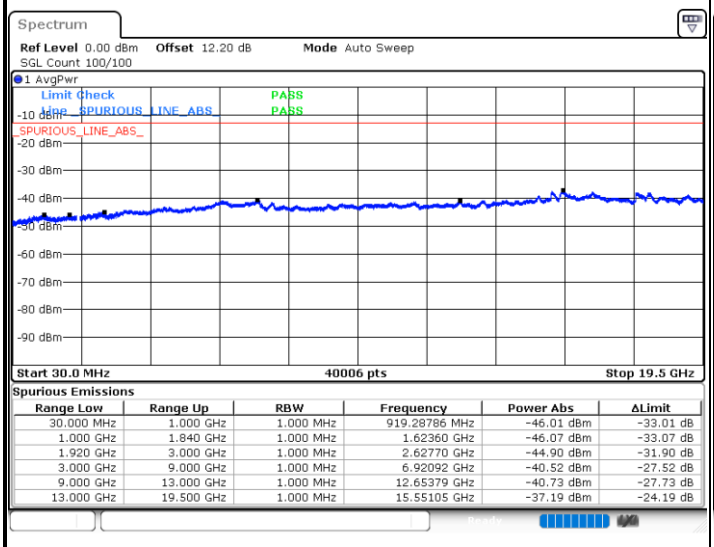
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	925.10495 MHz	-45.83 dBm	-32.83 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.67523 GHz	-46.02 dBm	-33.02 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.96167 GHz	-44.89 dBm	-31.89 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.95042 GHz	-40.59 dBm	-27.59 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64129 GHz	-40.83 dBm	-27.83 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.51956 GHz	-37.18 dBm	-24.18 dB

Date: 18.FEB.2022 00:28:21

LTE Cat 1 Band 2 / 20MHz

Lowest Channel / QPSK

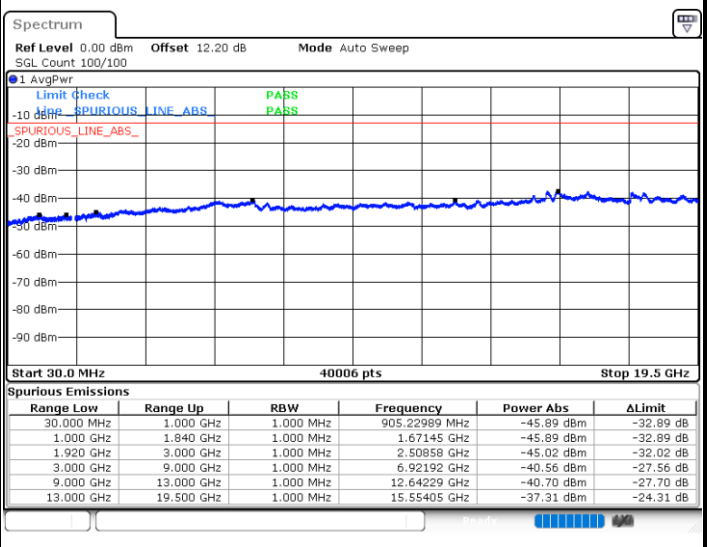


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	919.28786 MHz	-46.01 dBm	-33.01 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.62360 GHz	-46.07 dBm	-33.07 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.62770 GHz	-44.90 dBm	-31.90 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.92092 GHz	-40.52 dBm	-27.52 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.65379 GHz	-40.73 dBm	-27.73 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.55105 GHz	-37.19 dBm	-24.19 dB

Date: 18.FEB.2022 00:31:19

Middle Channel / QPSK

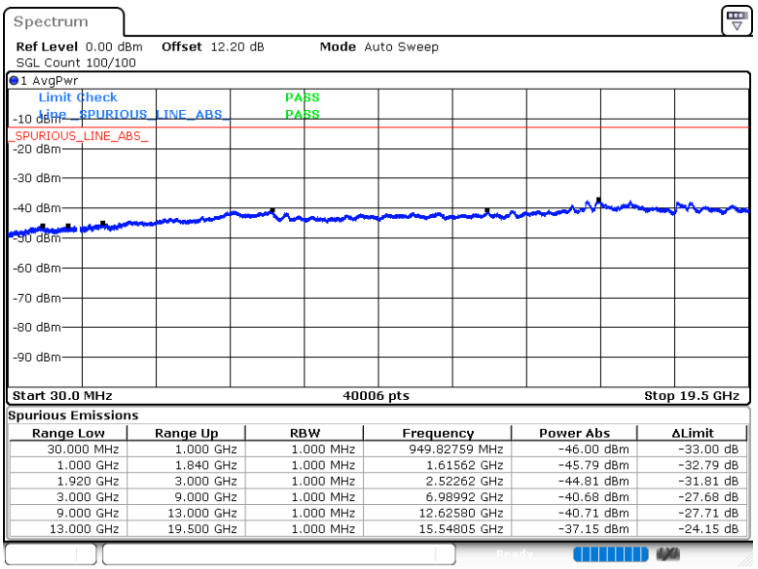


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	905.22989 MHz	-45.89 dBm	-32.89 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.67145 GHz	-45.89 dBm	-32.89 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.50858 GHz	-45.02 dBm	-32.02 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.92192 GHz	-40.56 dBm	-27.56 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.64229 GHz	-40.70 dBm	-27.70 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.55405 GHz	-37.31 dBm	-24.31 dB

Date: 18.FEB.2022 00:32:54

Highest Channel / QPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	949.82759 MHz	-46.00 dBm	-33.00 dB
1.000 GHz	1.840 GHz	1.000 MHz	1.61562 GHz	-45.79 dBm	-32.79 dB
1.920 GHz	3.000 GHz	1.000 MHz	2.52262 GHz	-44.81 dBm	-31.81 dB
3.000 GHz	9.000 GHz	1.000 MHz	6.98992 GHz	-40.68 dBm	-27.68 dB
9.000 GHz	13.000 GHz	1.000 MHz	12.62580 GHz	-40.71 dBm	-27.71 dB
13.000 GHz	19.500 GHz	1.000 MHz	15.54805 GHz	-37.15 dBm	-24.15 dB

Date: 18.FEB.2022 00:35:50

Frequency Stability

Test Conditions		LTE Cat 1 Band 2 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0003	PASS
40	Normal Voltage	0.0032	
30	Normal Voltage	0.0002	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0061	
0	Normal Voltage	0.0065	
-10	Normal Voltage	0.0070	
-20	Normal Voltage	0.0034	
-30	Normal Voltage	0.0034	
20	Maximum Voltage	0.0061	
20	Normal Voltage	0.0029	
20	Battery End Point	0.0024	

Note:

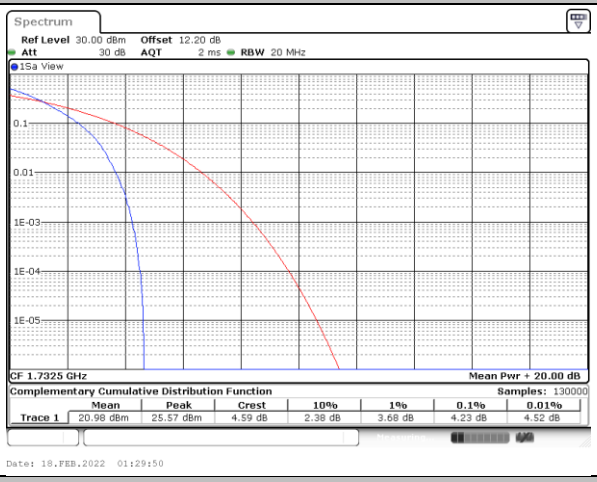
1. Normal Voltage =3.88 V.；Battery End Point (BEP) =3.6 V.；Maximum Voltage =4.45 V.
2. The frequency fundamental emissions stay within the authorized frequency block.

LTE Cat 1 Band 4

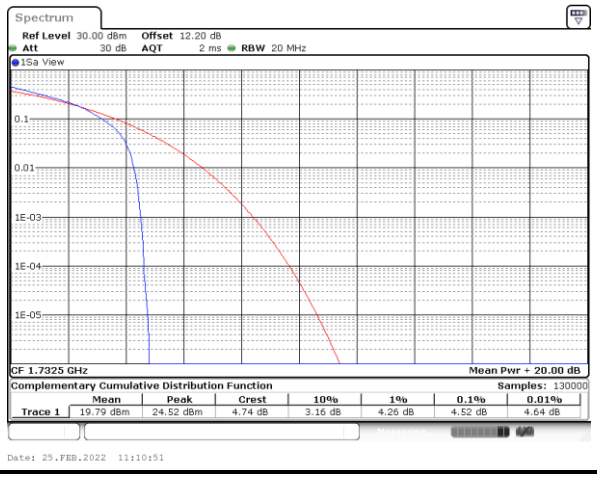
Peak-to-Average Ratio

Mode	LTE Cat 1 Band 4 / 20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.23	4.52	-	-	PASS

LTE Cat 1 Band 4 / 20MHz / QPSK
Middle Channel / Full RB



LTE Cat 1 Band 4 / 20MHz / 16QAM
Middle Channel / Full RB



26dB Bandwidth

Mode	LTE Cat 1 Band 4 : 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	1.31	1.27	2.99	3.02	4.95	4.88	9.93	5.71	14.42	5.69	19.02	5.67
Mode	LTE Cat 1 Band 4 : 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	-	-	-	-	-	-	-	-	-	-	-	-