FCC RADIO TEST REPORT

FCC ID	:	**PY321100529**
Equipment	:	**Netgear 5G MHS Travel Router**
Brand Name	:	**Netgear**
Model Name	:	**MR6500**
Applicant	:	**Netgear Inc 350 E. Plumeria Drive, San Jose, CA 95134, United States**
Manufacturer	:	**Netgear Inc 350 E. Plumeria Drive, San Jose, CA 95134, United States**
Standard	:	**FCC 47 CFR Part 2, 90(R)**

The product was received on Oct. 19, 2021 and testing was performed from Oct. 29, 2021 and completed on Jan. 04, 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.)

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History of this test report

Report No.	Version	Description	Issued Date
FG190614E	01	Initial issue of report	Jan. 24, 2022
FG190614E	02	Revise Product Feature of Equipment Under Test	Jan. 28, 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	-
	§90.542 (a)(7)	Effective Radiated Power	Pass	-
3.3	-	Peak-to-Average Ratio	Reporting only	-
3.4	§2.1049	Occupied Bandwidth	Reporting only	-
3.5	§2.1053 §90.543 (e)(2)	Conducted Band Edge Measurement	Pass	-
3.6	§2.1051 §90.210 (n)	Emission Mask	Pass	-
3.7	§2.1053 §90.543 (e)(3)	Conducted Spurious Emission	Pass	-
3.8	§2.1055 §90.539 (e)	Frequency Stability Temperature & Voltage	Pass	-
4.2	§2.1053 §90.543 (e)(3) §90.543 (f)	Radiated Spurious Emission	Pass	Under limit 7.05 dB at 1584.000 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: Avis Chuang

Report Producer: Lucy Wu

1 General Description

1.1 Product Feature of Equipment Under Test

LTE/5G NR, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax, Wi-Fi 6GHz 802.11a/n/ac/ax, and GNSS

Product Feature	
Antenna Type	WWAN: **<Ant. 1>:** Monopole Antenna **<Ant. 2>:** Monopole Antenna WLAN: **<Ant. 3>:** Monopole Antenna **<Ant. 4>:** Monopole Antenna GPS: PIFA Antenna

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

Antenna Information	
Internal Antenna Gain	**<Ant. 1>:**-0.83 dBi
External Connector	TS9

Remark:

1. TS9 connector is for the external antennas, while the external antennas are connected, RF outputs are switched from internal antenna 1 to the external one.
2. The maximum antenna gain allowed for the external antenna is limited by the internal antenna gain, also illustrated in the user manual.

1.2 Modification of EUT

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

1.3 Testing Site

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	Bryant Liu
Temperature (℃)	22.8~23.2
Relative Humidity (%)	52~56

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.**
	03CH16-HY (TAF Code: 3786)
Test Engineer	Karl Hou and Andy Yang
Temperature (℃)	18~25
Relative Humidity (%)	50~65
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

1.4 Applied Standards

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

- ANSI C63.26-2015
- FCC 47 CFR Part 2, Part 90(R)
- ANSI / TIA-603-E
- 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

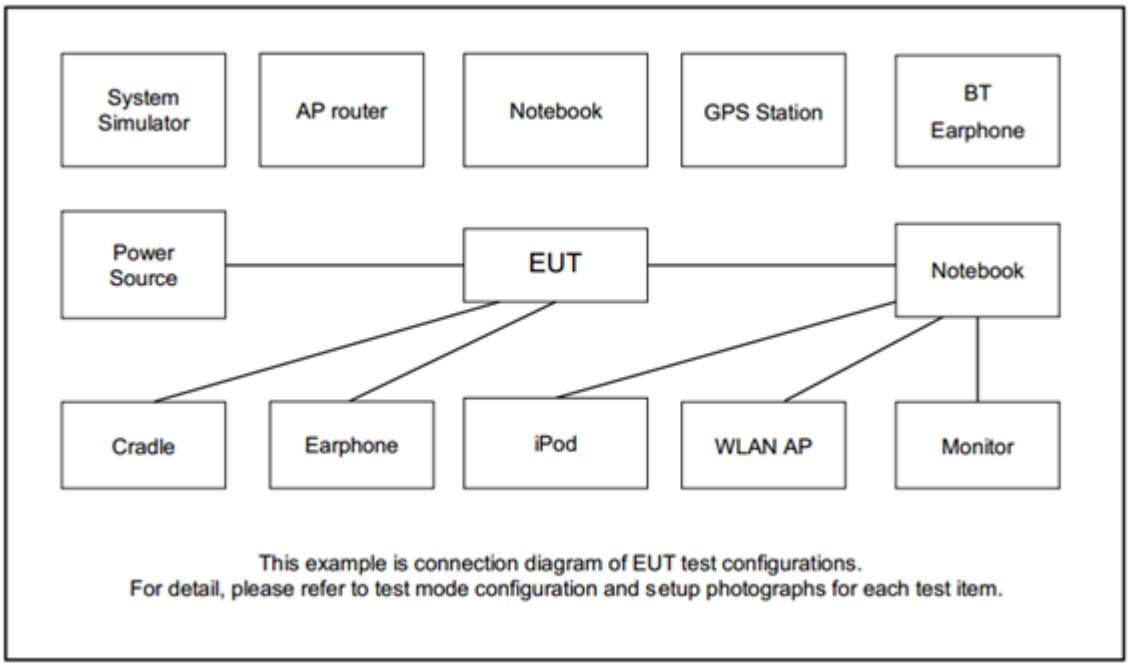
2.1 Test Mode

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, 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.

Conducted Test Cases	Band	Bandwidth (MHz)						Modulation				RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Max. Output Power	14	-	-	v	v	-	-	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	14	-	-		v	-	-	v	v	v	v			v		v	
26dB and 99% Bandwidth	14	-	-	v	v	-	-	v	v	v	v			v		v	
Conducted Band Edge	14	-	-	v	v	-	-	v	v	v	v	v		v	v		v
Emission Mask	14	-	-	v	v	-	-	v	v	v	v	v		v	v	v	v
Conducted Spurious Emission	14	-	-	v	v	-	-	v				v			v	v	v
Frequency Stability	14	-	-		v	-	-	v						v		v	
E.R.P	14	-	-	v	v	-	-	v	v	v	v	Max Power					
Radiated Spurious Emission	14	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. All the radiated test cases were performed with Adapter 1.																

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 4.5 dB and 10dB attenuator.

Example :

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

= 4.5 + 10 = 14.5 (dB)

2.5 Frequency List of Low/Middle/High Channels

LTE Band 14 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	-	23330	-
	Frequency	-	793	-
5	Channel	23305	23330	23355
	Frequency	790.5	793	795.5

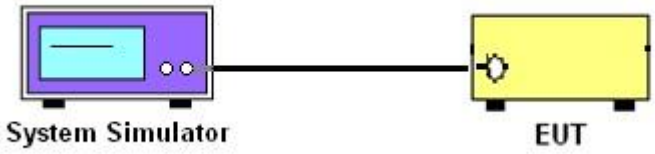
3 Conducted Test Items

3.1 Measuring Instruments

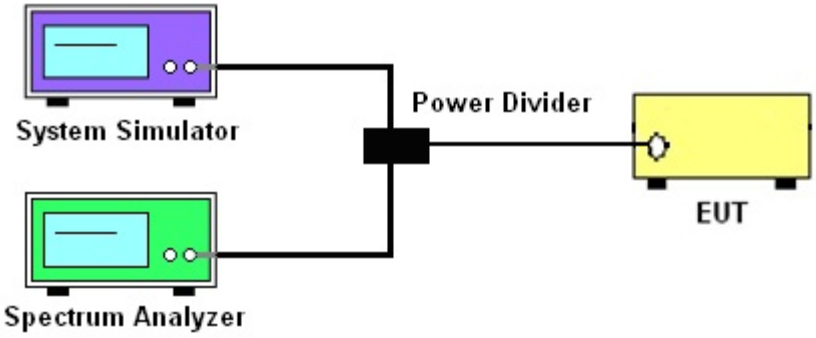
See list of measuring instruments of this test report.

3.1.1 Test Setup

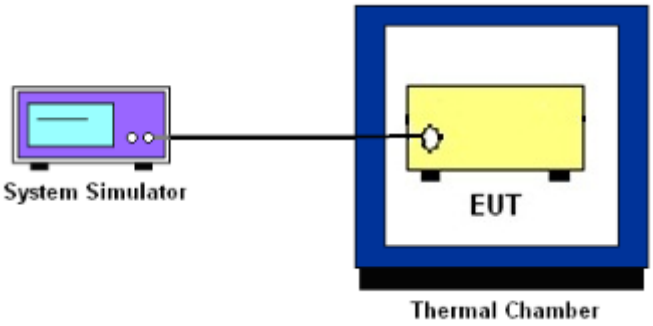
3.1.2 Conducted Output Power



3.1.3 Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge, Emission Mask, 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 Measurement and ERP

3.2.1 Description of the Conducted Output Power Measurement and ERP Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. 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 14.

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 base station.
2. Set EUT at maximum power through base station.
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

90.543(e)

(1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.

(2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

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 100kHz band immediately outside and adjacent to the band edge.
4. Beyond the 100kHz band from the band edge, RBW=100kHz 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 Emission Mask

3.6.1 Description of Emissions Mask Measurement

Transmitters designed must meet the emission mask comply with the emission mask provisions of FCC Part 90.210(n).

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.0.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The power of the modulated signal was measured on a spectrum analyzer using an RMS and 10 second sweep time in order to maximize the level.
3. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7 Conducted Spurious Emission

3.7.1 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 30MHz up to a frequency including its 10th harmonic.

3.7.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and base station via 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)

3.8 Frequency Stability

3.8.1 Description of Frequency Stability Measurement

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

3.8.2 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 base station.
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.

3.8.3 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 base station.
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.

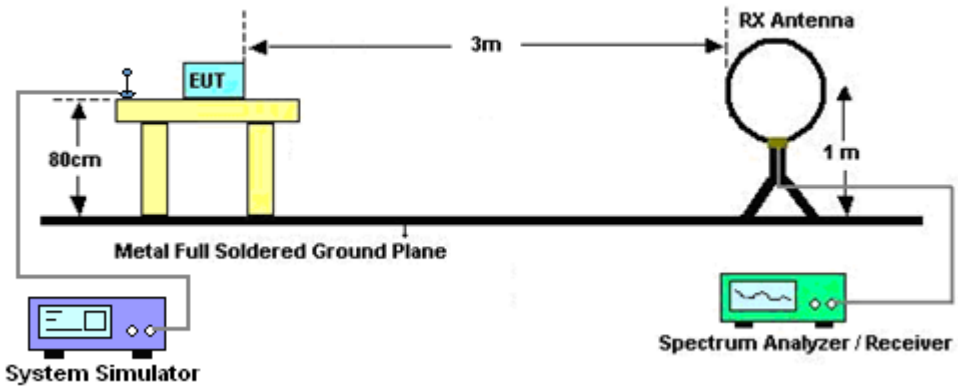
4 Radiated Test Items

4.1 Measuring Instruments

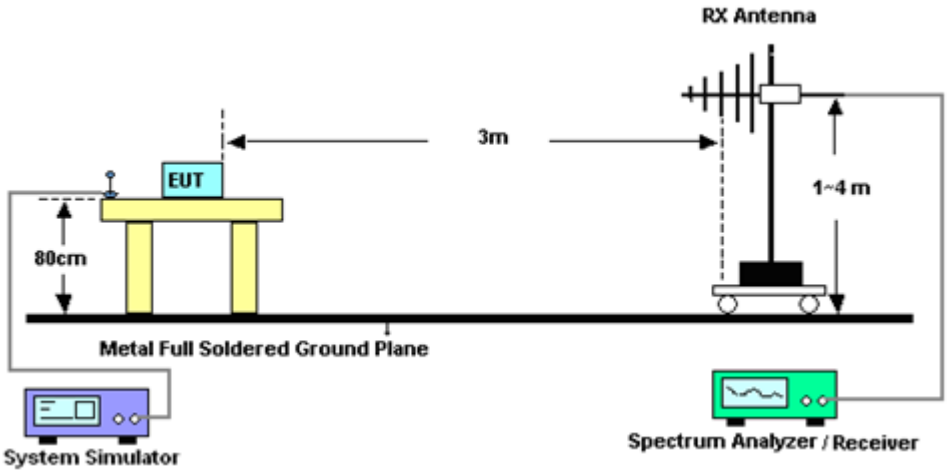
See list of measuring instruments of this test report.

4.1.1 Test Setup

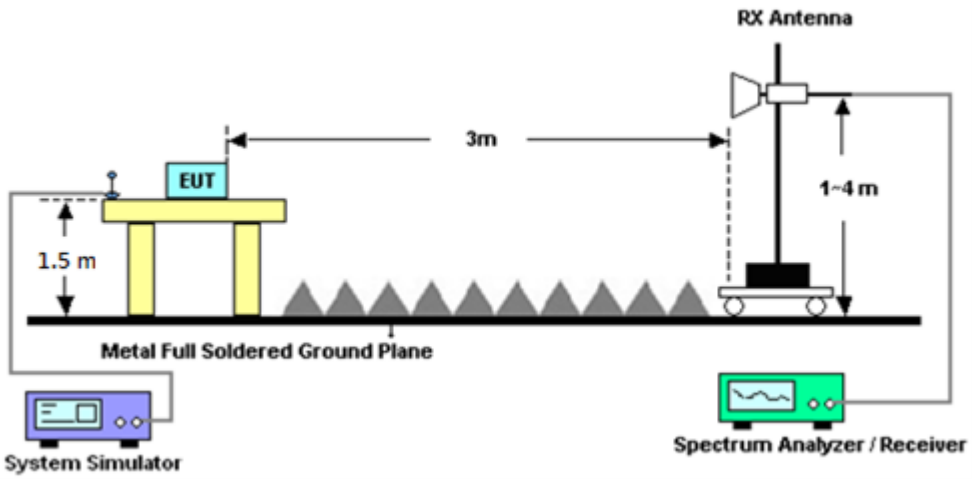
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



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

4.2.1 Description of Radiated Spurious Emission

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 operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics 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. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

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, Sweep = 500ms, 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.
11. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 07, 2021	Oct. 29, 2021~ Dec. 03, 2021	Sep. 06, 2022	Radiation (03CH16-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 15, 2021	Oct. 29, 2021~ Dec. 03, 2021	Oct. 14, 2022	Radiation (03CH16-HY)
Signal Generator	Agilent	MG3694C	163401	0.1Hz~40GHz	Jan. 31, 2021	Oct. 29, 2021~ Dec. 03, 2021	Jan. 30, 2022	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	41912 & 05	30MHz to 1GHz	Feb. 08, 2021	Oct. 29, 2021~ Dec. 03, 2021	Feb. 07, 2022	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01N-06	47020 & 06	30MHz to 1GHz	Oct. 09, 2021	Oct. 29, 2021~ Dec. 03, 2021	Oct. 08, 2022	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1G~18GHz	Oct. 12, 2021	Oct. 29, 2021~ Dec. 03, 2021	Oct. 11, 2022	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1212	1G~18GHz	May 18, 2021	Oct. 29, 2021~ Dec. 03, 2021	May 18, 2022	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1G	Jul. 05, 2021	Oct. 29, 2021~ Dec. 03, 2021	Jul. 04, 2022	Radiation (03CH16-HY)
Amplifier	Jet-Power	JPA0118-55-303	1710001800054001	1-18GHz	Jun. 16, 2021	Oct. 29, 2021~ Dec. 03, 2021	Jun. 15, 2022	Radiation (03CH16-HY)
Preamplifier	Keysight	83017A	MY53270264	1GHz~26.5GHz	Dec. 10, 2020	Oct. 29, 2021~ Dec. 03, 2021	Dec. 09, 2021	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A	MY57290111	3Hz~26.5GHz	Dec. 11, 2020	Oct. 29, 2021~ Dec. 03, 2021	Dec. 10, 2021	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11680/4PE	NA	Aug. 28, 2021	Oct. 29, 2021~ Dec. 03, 2021	Aug. 27, 2022	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY11688/4PE	NA	Aug. 28, 2021	Oct. 29, 2021~ Dec. 03, 2021	Aug. 27, 2022	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	EC-A5-300-5757	NA	Aug. 28, 2021	Oct. 29, 2021~ Dec. 03, 2021	Aug. 27, 2022	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Oct. 29, 2021~ Dec. 03, 2021	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Oct. 29, 2021~ Dec. 03, 2021	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Oct. 29, 2021~ Dec. 03, 2021	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Oct. 29, 2021~ Dec. 03, 2021	N/A	Radiation (03CH16-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	Nov. 03, 2021~ Jan. 04, 2022	Jul. 20, 2022	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101909	10Hz~40GHz	Aug. 13, 2021	Nov. 03, 2021~ Jan. 04, 2022	Aug. 12, 2022	Conducted (TH03-HY)
Thermal Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 09, 2021	Nov. 03, 2021~ Jan. 04, 2022	Sep. 08, 2022	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890001	1V~20V 0.5A~5A	Oct. 06, 2021	Nov. 03, 2021~ Jan. 04, 2022	Oct. 05, 2022	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 09, 2021	Nov. 03, 2021~ Jan. 04, 2022	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))	**2.86 dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.68 dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power & ERP)

LTE Band 14 Maximum Average Power [dBm] (GT - LC = -0.83 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	-	**23.09**	-	**20.11**	**0.1026**
10	1	25			23.03			
10	1	49			23.05			
10	25	0			22.08			
10	25	12			22.09			
10	25	25			22.13			
10	50	0			22.07			
10	1	0	16-QAM		22.37		19.47	0.0885
10	1	25			22.45			
10	1	49			22.45			
10	25	0			21.09			
10	25	12			21.11			
10	25	25			21.16			
10	50	0			21.09			
10	1	0	64-QAM		21.24		18.35	0.0684
10	1	25			21.32			
10	1	49			21.33			
10	25	0			20.06			
10	25	12			20.12			
10	25	25			20.13			
10	50	0			20.08			
10	1	0	256-QAM		18.27		15.44	0.0350
10	1	25			18.32			
10	1	49			18.38			
10	25	0			18.30			
10	25	12			18.42			
10	25	25			18.41			
10	50	0			18.31			
Limit	ERP < 3W			Result			Pass	

LTE Band 14 Maximum Average Power [dBm] (GT - LC = -0.83 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	22.95	22.88	23.01	20.03	0.1007
5	1	12		22.89	22.78	22.86		
5	1	24		22.82	22.83	22.87		
5	12	0		21.90	21.87	22.00		
5	12	7		21.86	21.84	21.91		
5	12	13		21.96	21.83	22.04		
5	25	0		21.91	21.81	21.94		
5	1	0	16-QAM	22.16	22.09	22.26	19.34	0.0859
5	1	12		22.31	22.21	22.32		
5	1	24		22.23	22.15	22.30		
5	12	0		20.91	20.79	20.91		
5	12	7		20.89	20.84	20.93		
5	12	13		20.97	20.91	20.98		
5	25	0		20.85	20.81	20.98		
5	1	0	64-QAM	21.03	20.97	21.12	18.22	0.0664
5	1	12		21.14	21.10	21.20		
5	1	24		21.16	21.07	21.20		
5	12	0		19.87	19.81	19.95		
5	12	7		19.95	19.82	20.01		
5	12	13		19.90	19.87	20.00		
5	25	0		19.88	19.79	19.92		
5	1	0	256-QAM	18.12	17.98	18.16	15.35	0.0343
5	1	12		18.10	18.06	18.16		
5	1	24		18.15	18.14	18.29		
5	12	0		18.10	18.02	18.21		
5	12	7		18.19	18.14	18.29		
5	12	13		18.18	18.17	18.33		
5	25	0		18.12	18.09	18.23		
Limit	ERP < 3W			Result			Pass	

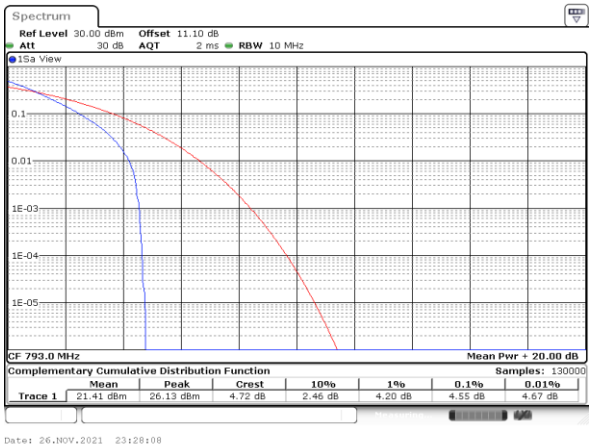
LTE Band 14

Peak-to-Average Ratio

Mode	LTE Band 14 / 10MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.55	5.65	6.32	6.41	PASS

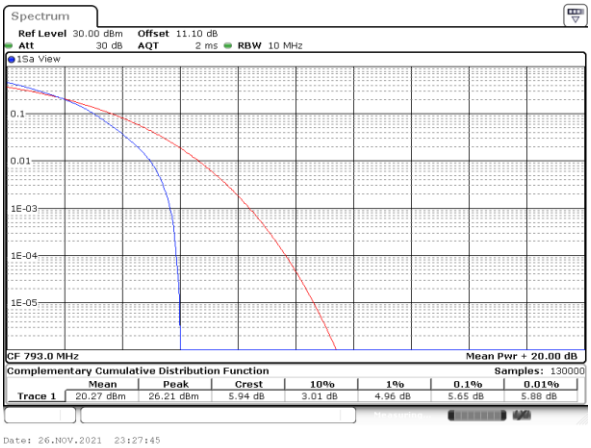
LTE Band 14 / 10MHz / QPSK

Middle Channel / Full RB



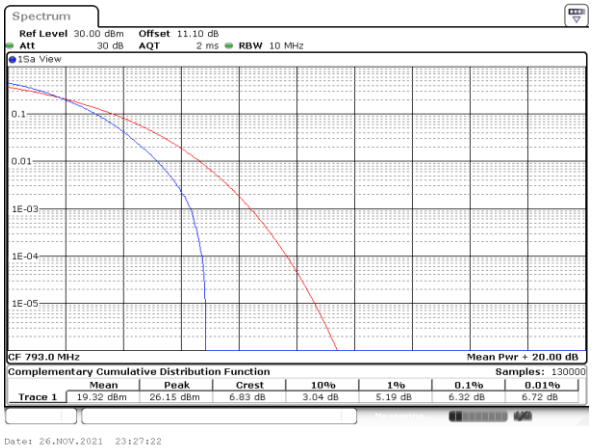
LTE Band 14 / 10MHz / 16QAM

Middle Channel / Full RB



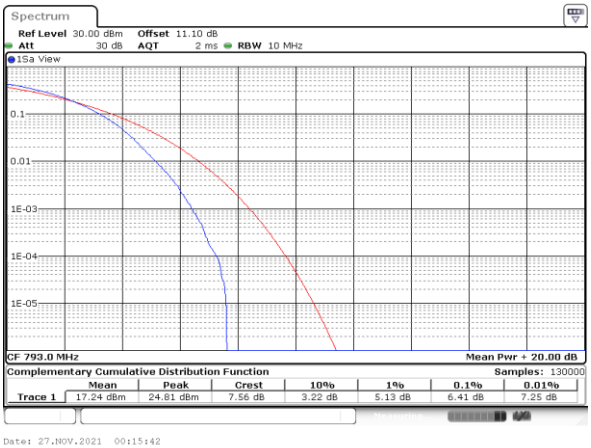
LTE Band 14 / 10MHz / 64QAM

Middle Channel / Full RB



LTE Band 14 / 10MHz / 256QAM

Middle Channel / Full RB

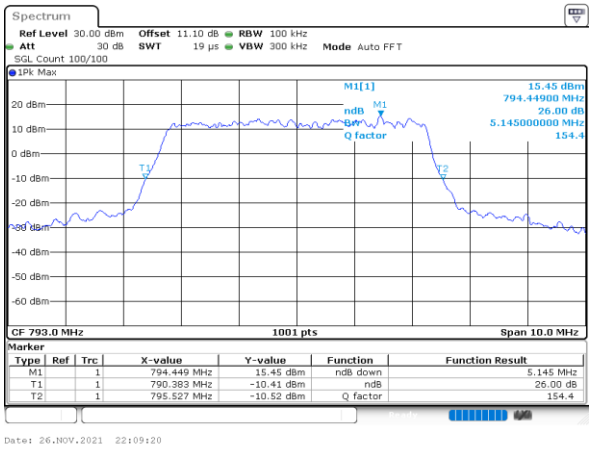


26dB Bandwidth

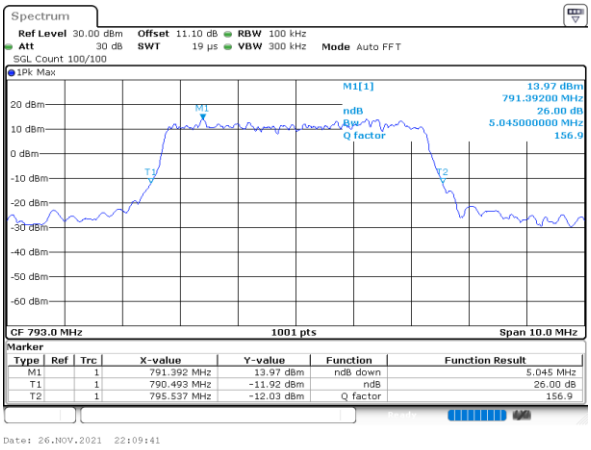
Mode	LTE Band 14 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	-	-	5.15	5.05	9.89	9.81	-	-	-	-
Mode	LTE Band 14 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM
Middle CH	-	-	-	-	5.00	5.20	9.69	10.07	-	-	-	-

LTE Band 14

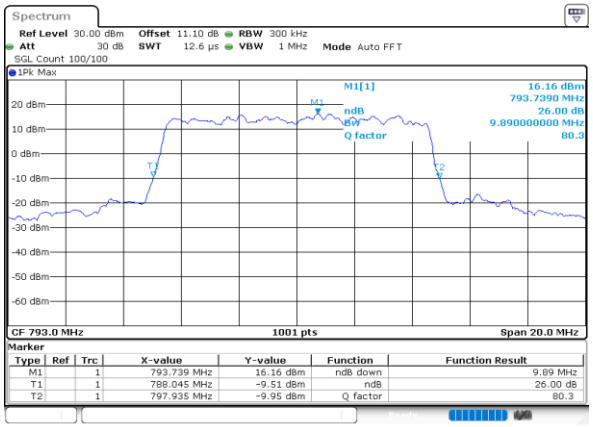
Middle Channel / 5MHz / QPSK



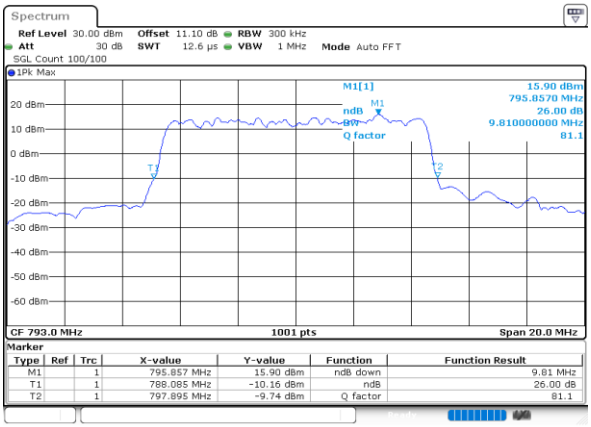
Middle Channel / 5MHz / 16QAM



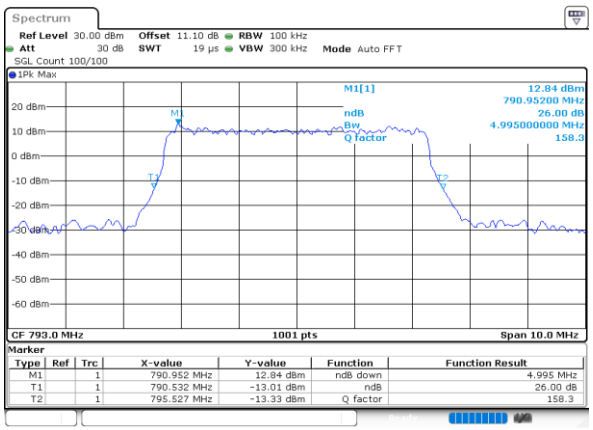
Middle Channel / 10MHz / QPSK



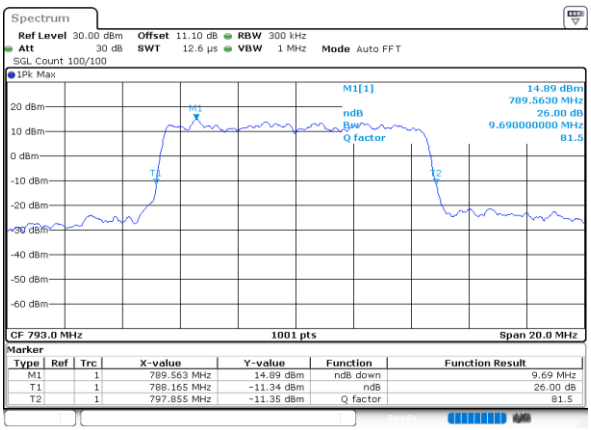
Middle Channel / 10MHz / 16QAM

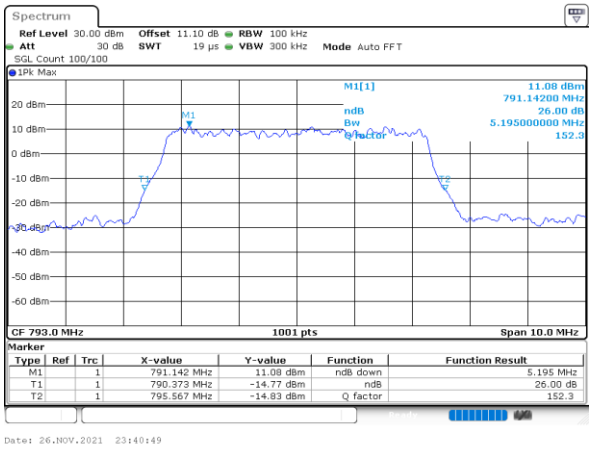
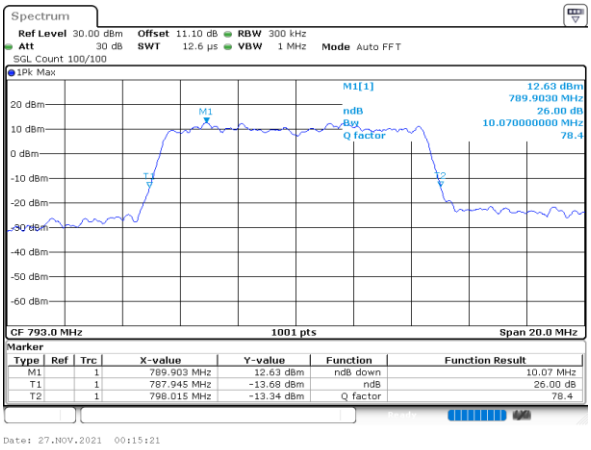


Middle Channel / 5MHz / 64QAM



Middle Channel / 10MHz / 64QAM



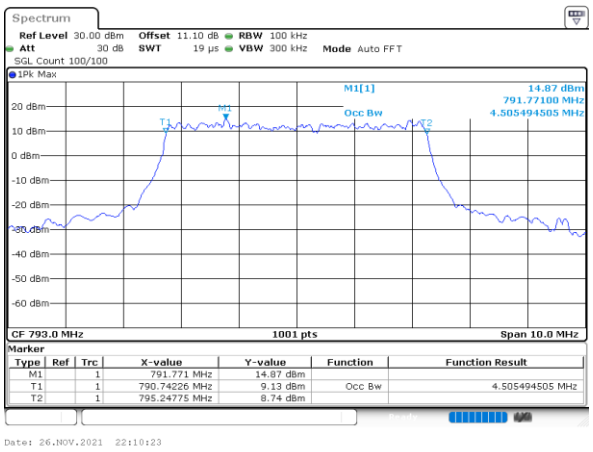
LTE Band 14	
Middle Channel / 5MHz / 256QAM	**Middle Channel / 10MHz / 256QAM**
	

Occupied Bandwidth

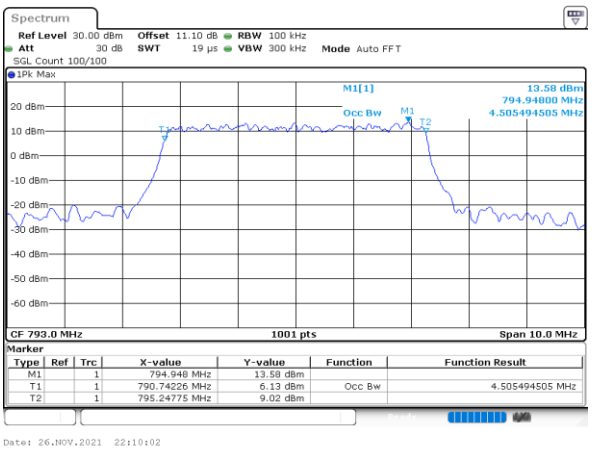
Mode	LTE Band 14 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	-	-	4.51	4.51	9.05	9.03	-	-	-	-
Mode	LTE Band 14 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM	64QAM	256 QAM
Middle CH	-	-	-	-	4.50	4.50	9.11	9.03	-	-	-	-

LTE Band 14

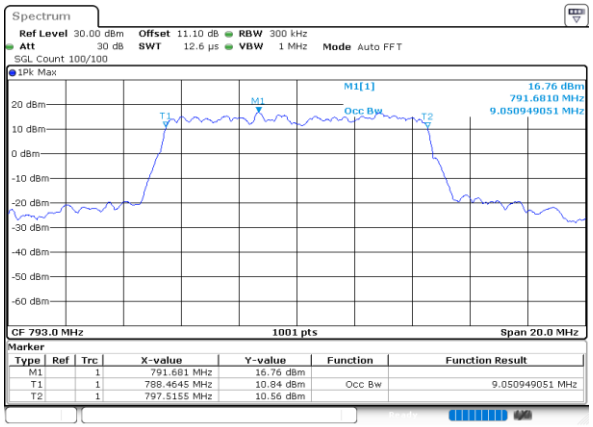
Middle Channel / 5MHz / QPSK



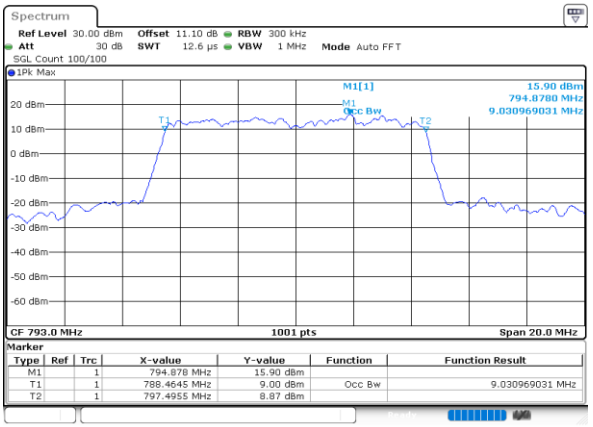
Middle Channel / 5MHz / 16QAM



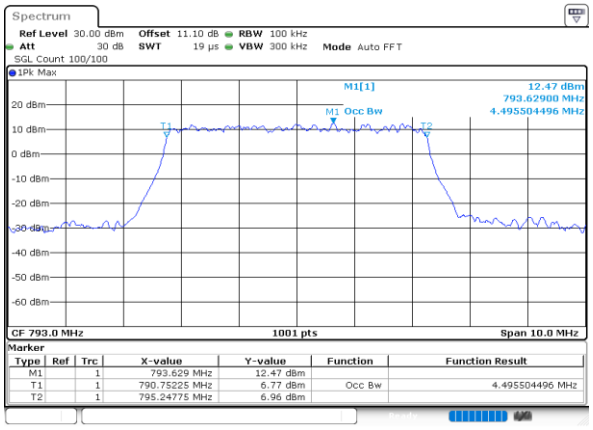
Middle Channel / 10MHz / QPSK



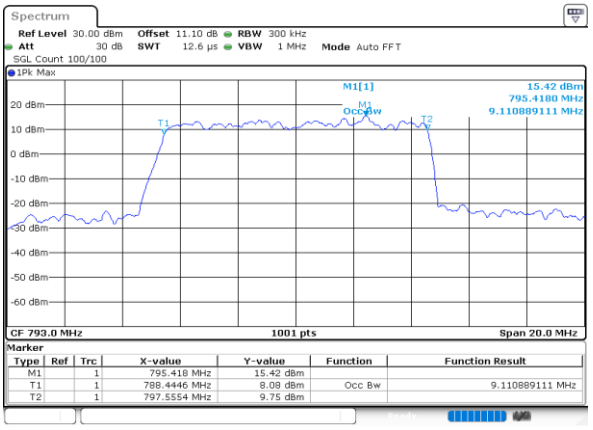
Middle Channel / 10MHz / 16QAM



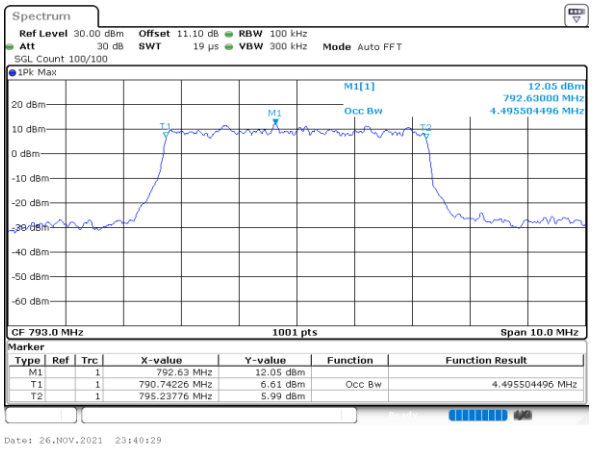
Middle Channel / 5MHz / 64QAM

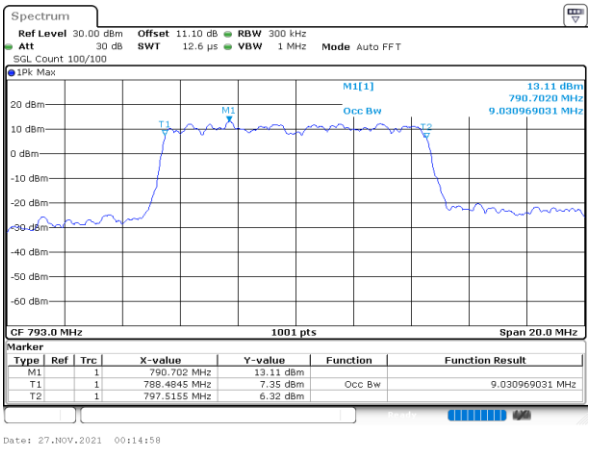


Middle Channel / 10MHz / 64QAM



LTE Band 14	
Middle Channel / 5MHz / 256QAM	**Middle Channel / 10MHz / 256QAM**

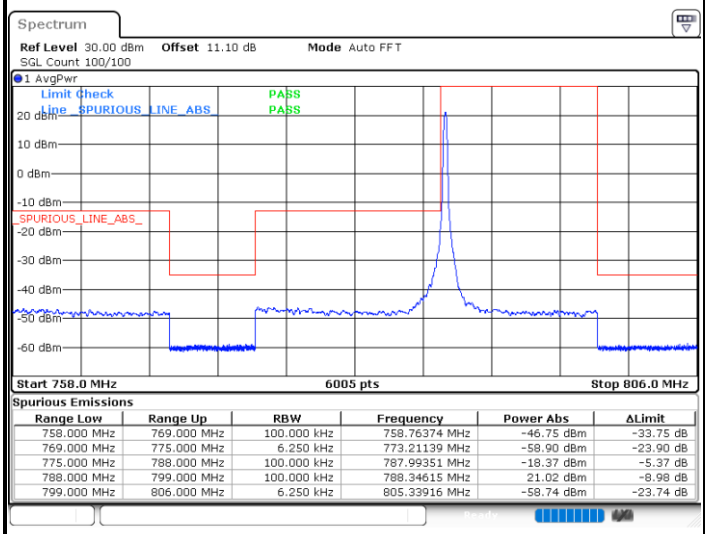




Conducted Band Edge

LTE Band 14 / 5MHz / QPSK

Lowest Band Edge / 1 RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.76374 MHz	-46.75 dBm	-33.75 dB
769.000 MHz	775.000 MHz	6.250 kHz	773.21139 MHz	-58.90 dBm	-23.90 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-18.37 dBm	-5.37 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.34615 MHz	21.02 dBm	-8.98 dB
799.000 MHz	806.000 MHz	6.250 kHz	805.33916 MHz	-58.74 dBm	-23.74 dB

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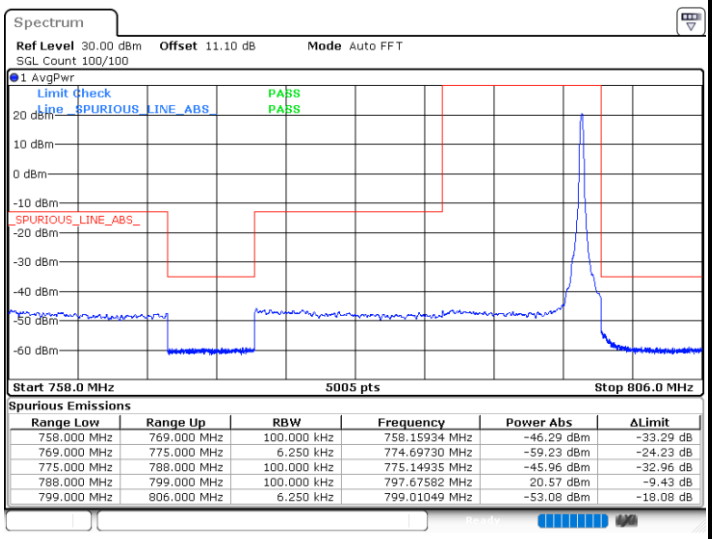
Highest Band Edge / 1 RB

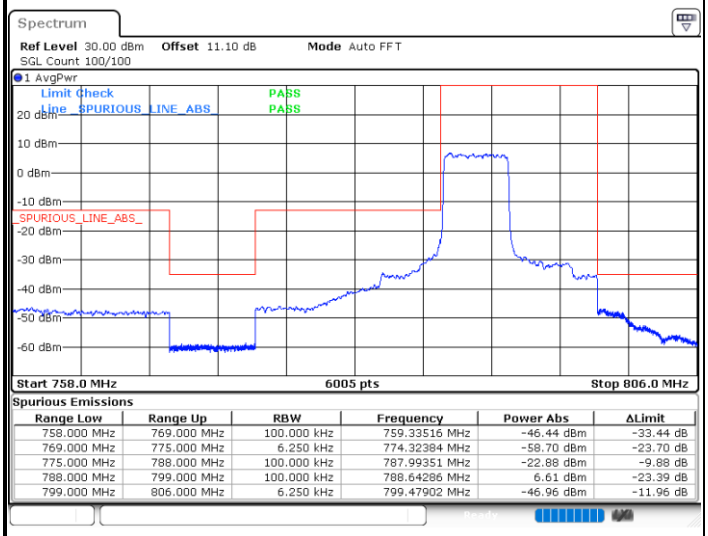


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.15934 MHz	-46.29 dBm	-33.29 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.69730 MHz	-59.23 dBm	-24.23 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.14935 MHz	-45.96 dBm	-32.96 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.67582 MHz	20.57 dBm	-9.43 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.01049 MHz	-53.08 dBm	-18.08 dB

Date: 26.NOV.2021 22:13:28

Lowest Band Edge / Full RB

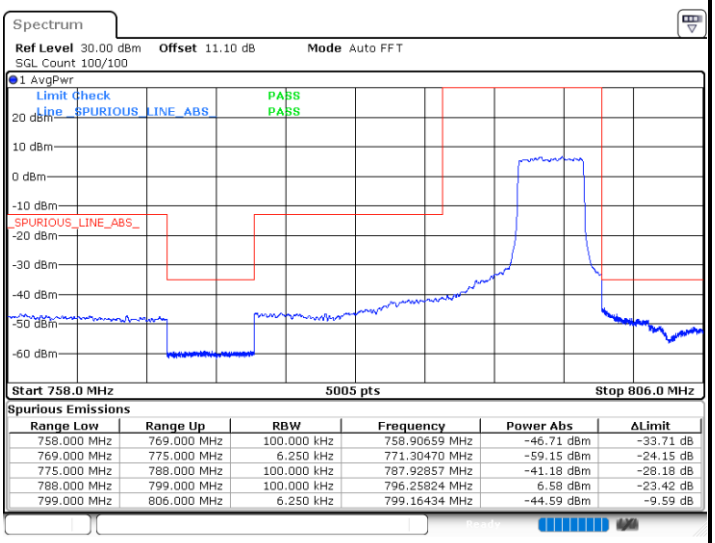


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.33516 MHz	-46.44 dBm	-33.44 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.32384 MHz	-58.70 dBm	-23.70 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-22.88 dBm	-9.88 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.64286 MHz	6.61 dBm	-23.39 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.47902 MHz	-46.96 dBm	-11.96 dB

Date: 26.NOV.2021 22:04:47

Highest Band Edge / Full RB



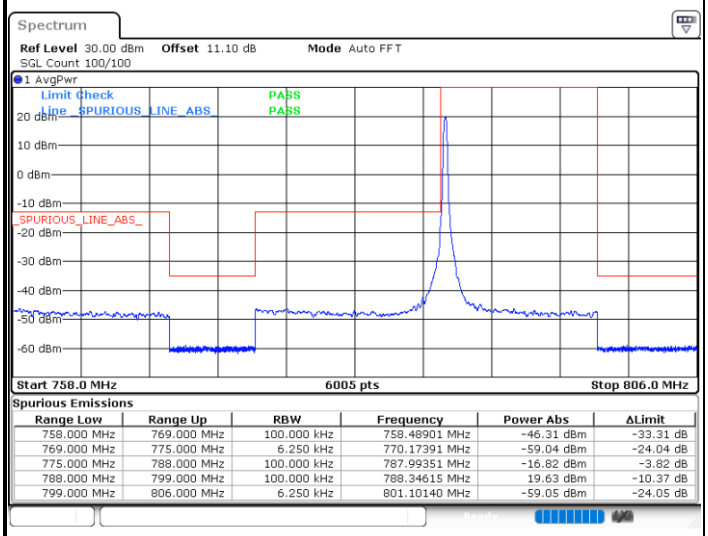
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.90659 MHz	-46.71 dBm	-33.71 dB
769.000 MHz	775.000 MHz	6.250 kHz	771.30470 MHz	-59.15 dBm	-24.15 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.92857 MHz	-41.18 dBm	-28.18 dB
788.000 MHz	799.000 MHz	100.000 kHz	796.25824 MHz	6.58 dBm	-23.42 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.16434 MHz	-44.59 dBm	-9.59 dB

Date: 26.NOV.2021 22:11:08

LTE Band 14 / 5MHz / 16QAM

Lowest Band Edge / 1 RB

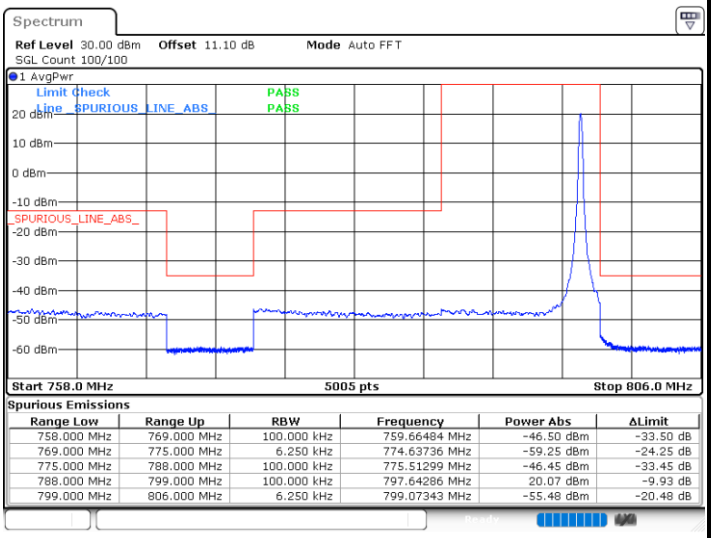


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.48901 MHz	-46.31 dBm	-33.31 dB
769.000 MHz	775.000 MHz	6.250 kHz	770.17391 MHz	-59.04 dBm	-24.04 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-16.82 dBm	-3.82 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.34615 MHz	19.63 dBm	-10.37 dB
799.000 MHz	806.000 MHz	6.250 kHz	801.10140 MHz	-59.05 dBm	-24.05 dB

Date: 26.NOV.2021 22:06:21

Highest Band Edge / 1 RB

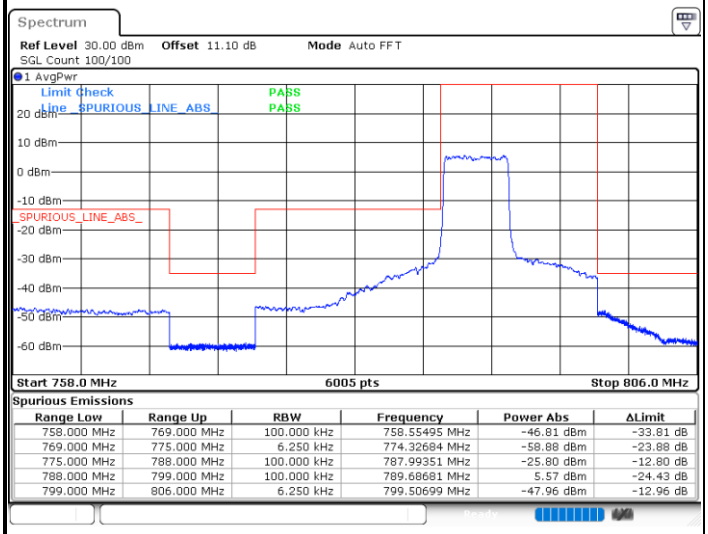


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.66484 MHz	-46.50 dBm	-33.50 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.63736 MHz	-59.25 dBm	-24.25 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.51299 MHz	-46.45 dBm	-33.45 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.64286 MHz	20.07 dBm	-9.93 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.07343 MHz	-55.48 dBm	-20.48 dB

Date: 26.NOV.2021 22:12:41

Lowest Band Edge / Full RB

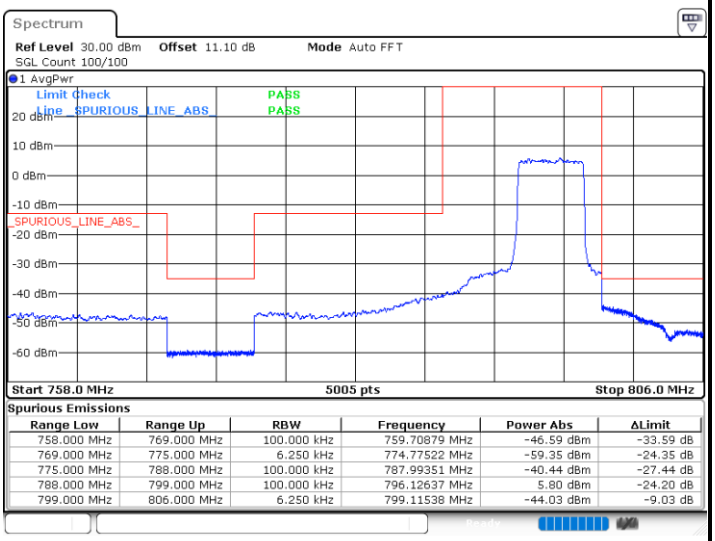


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.55495 MHz	-46.81 dBm	-33.81 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.32684 MHz	-58.88 dBm	-23.88 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-25.80 dBm	-12.80 dB
788.000 MHz	799.000 MHz	100.000 kHz	789.68681 MHz	5.57 dBm	-24.43 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.50699 MHz	-47.96 dBm	-12.96 dB

Date: 26.NOV.2021 22:05:34

Highest Band Edge / Full RB



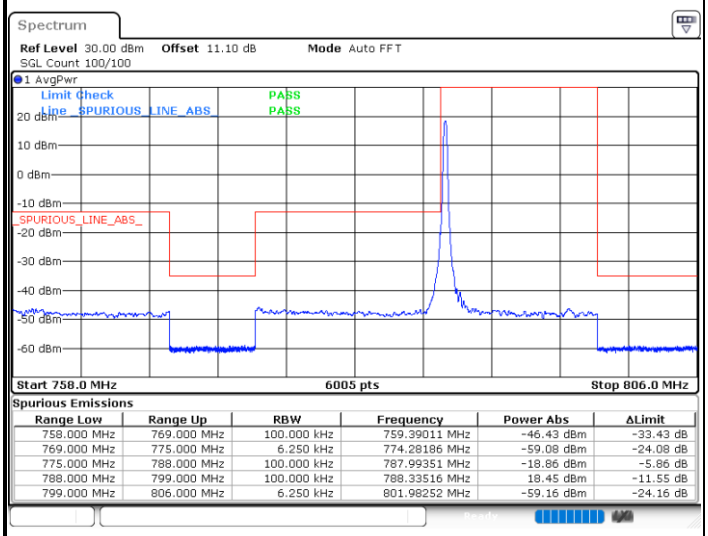
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.70879 MHz	-46.59 dBm	-33.59 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.77522 MHz	-59.35 dBm	-24.35 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-40.44 dBm	-27.44 dB
788.000 MHz	799.000 MHz	100.000 kHz	796.12637 MHz	5.80 dBm	-24.20 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.11538 MHz	-44.03 dBm	-9.03 dB

Date: 26.NOV.2021 22:11:54

LTE Band 14 / 5MHz / 64QAM

Lowest Band Edge / 1 RB

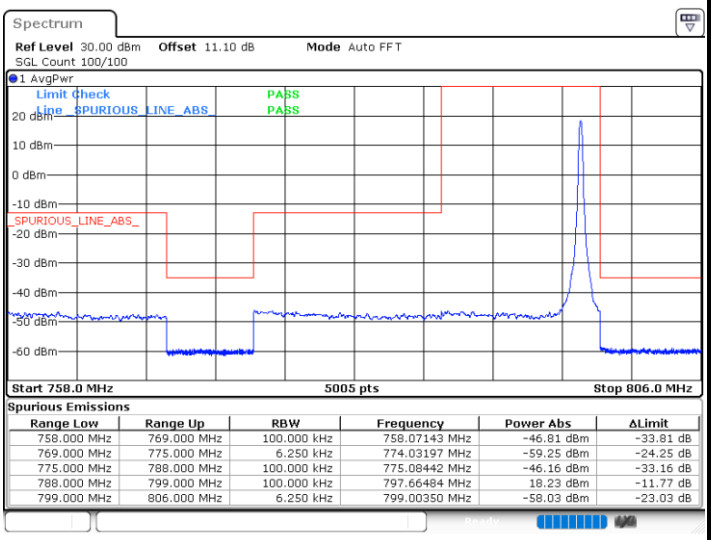


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.39011 MHz	-46.43 dBm	-33.43 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.28186 MHz	-59.08 dBm	-24.08 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-18.86 dBm	-5.86 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.33516 MHz	18.45 dBm	-11.55 dB
799.000 MHz	806.000 MHz	6.250 kHz	801.98252 MHz	-59.16 dBm	-24.16 dB

Date: 26.NOV.2021 22:15:56

Highest Band Edge / 1 RB

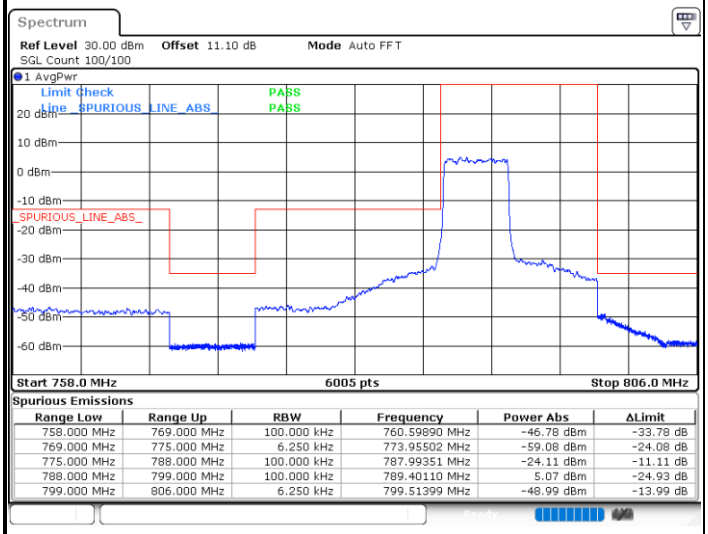


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.07143 MHz	-46.81 dBm	-33.81 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.03197 MHz	-59.25 dBm	-24.25 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.08442 MHz	-46.16 dBm	-33.16 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.66484 MHz	18.23 dBm	-11.77 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.00350 MHz	-58.03 dBm	-23.03 dB

Date: 26.NOV.2021 22:18:11

Lowest Band Edge / Full RB

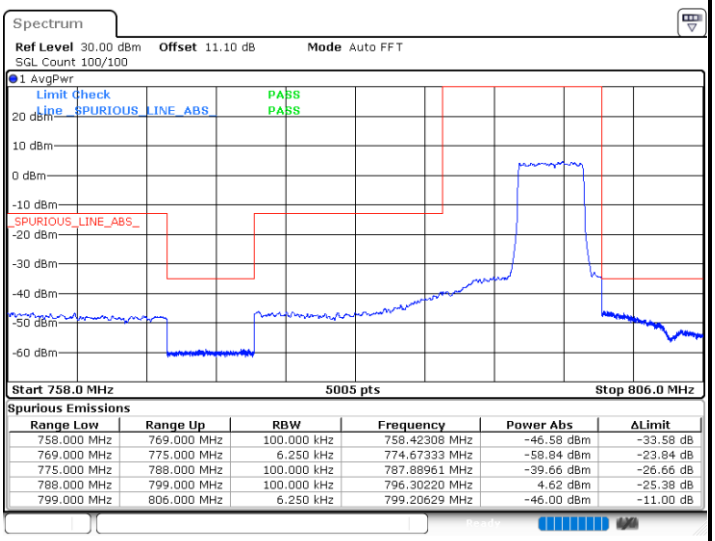


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	760.59890 MHz	-46.78 dBm	-33.78 dB
769.000 MHz	775.000 MHz	6.250 kHz	773.95502 MHz	-59.08 dBm	-24.08 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-24.11 dBm	-11.11 dB
788.000 MHz	799.000 MHz	100.000 kHz	789.40110 MHz	5.07 dBm	-24.93 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.51399 MHz	-48.99 dBm	-13.99 dB

Date: 26.NOV.2021 22:15:09

Highest Band Edge / Full RB



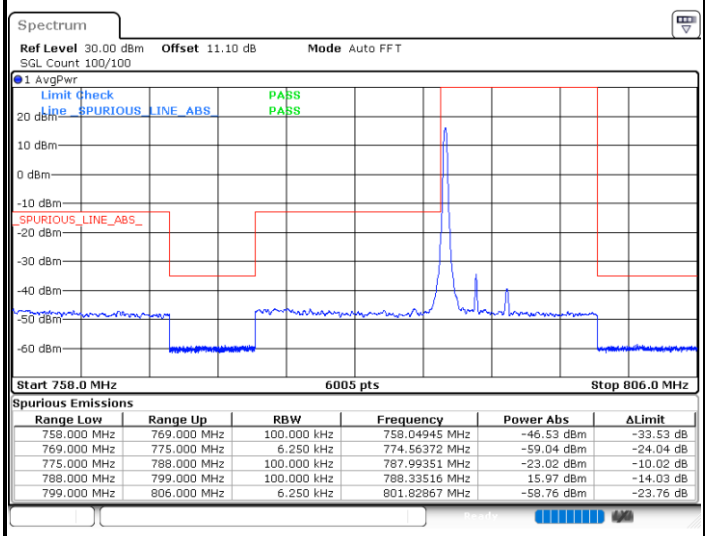
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.42308 MHz	-46.58 dBm	-33.58 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.67333 MHz	-58.84 dBm	-23.84 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.88961 MHz	-39.66 dBm	-26.66 dB
788.000 MHz	799.000 MHz	100.000 kHz	796.30220 MHz	4.62 dBm	-25.38 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.20629 MHz	-46.00 dBm	-11.00 dB

Date: 26.NOV.2021 22:17:24

LTE Band 14 / 5MHz / 256QAM

Lowest Band Edge / 1 RB

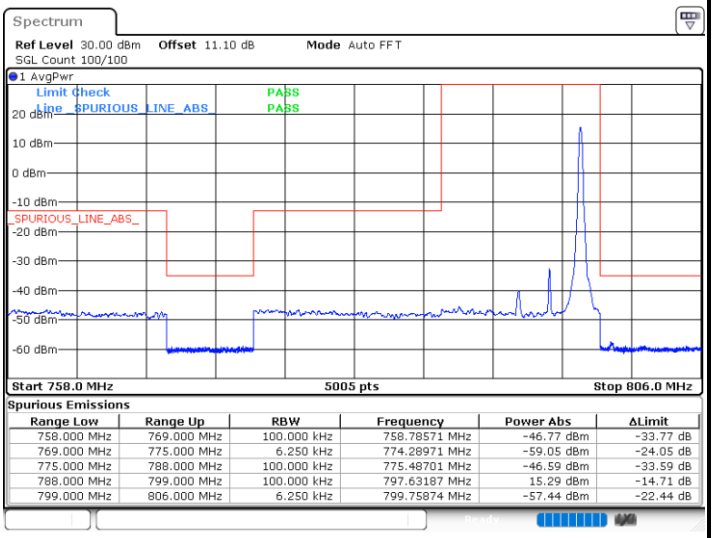


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.04945 MHz	-46.53 dBm	-33.53 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.56372 MHz	-59.04 dBm	-24.04 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-23.02 dBm	-10.02 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.33516 MHz	15.97 dBm	-14.03 dB
799.000 MHz	806.000 MHz	6.250 kHz	801.82867 MHz	-58.76 dBm	-23.76 dB

Date: 26.NOV.2021 23:32:37

Highest Band Edge / 1 RB

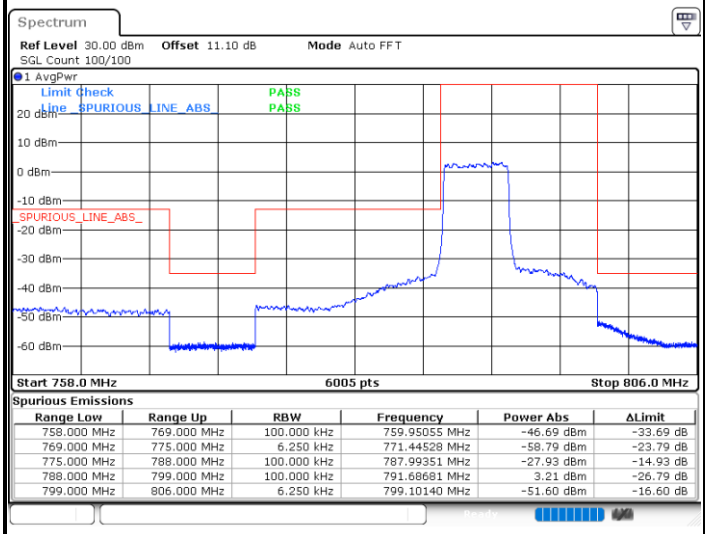


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.78571 MHz	-46.77 dBm	-33.77 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.28971 MHz	-59.05 dBm	-24.05 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.48701 MHz	-46.59 dBm	-33.59 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.63187 MHz	15.29 dBm	-14.71 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.75874 MHz	-57.44 dBm	-22.44 dB

Date: 26.NOV.2021 23:52:47

Lowest Band Edge / Full RB

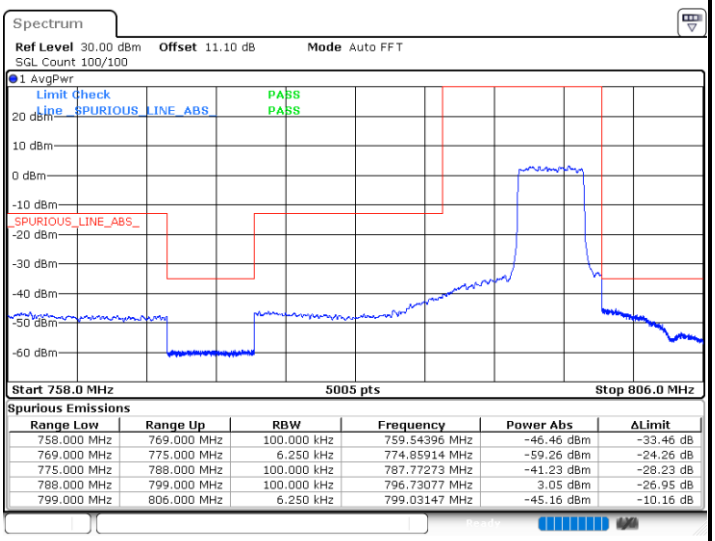


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.95055 MHz	-46.69 dBm	-33.69 dB
769.000 MHz	775.000 MHz	6.250 kHz	771.44528 MHz	-58.79 dBm	-23.79 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-27.93 dBm	-14.93 dB
788.000 MHz	799.000 MHz	100.000 kHz	791.68681 MHz	3.21 dBm	-26.79 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.10140 MHz	-51.60 dBm	-16.60 dB

Date: 26.NOV.2021 23:34:51

Highest Band Edge / Full RB



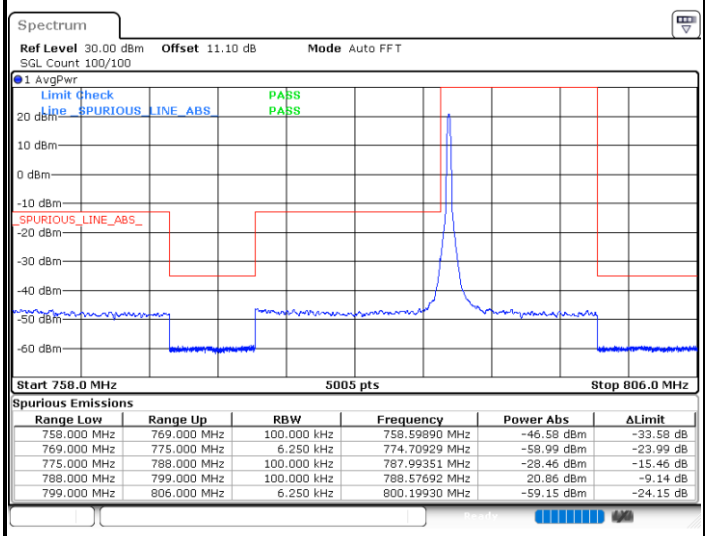
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.54396 MHz	-46.46 dBm	-33.46 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.85914 MHz	-59.26 dBm	-24.26 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.77273 MHz	-41.23 dBm	-28.23 dB
788.000 MHz	799.000 MHz	100.000 kHz	796.73077 MHz	3.05 dBm	-26.95 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.03147 MHz	-45.16 dBm	-10.16 dB

Date: 26.NOV.2021 23:56:59

LTE Band 14 / 10MHz / QPSK

Lowest Band Edge / 1 RB

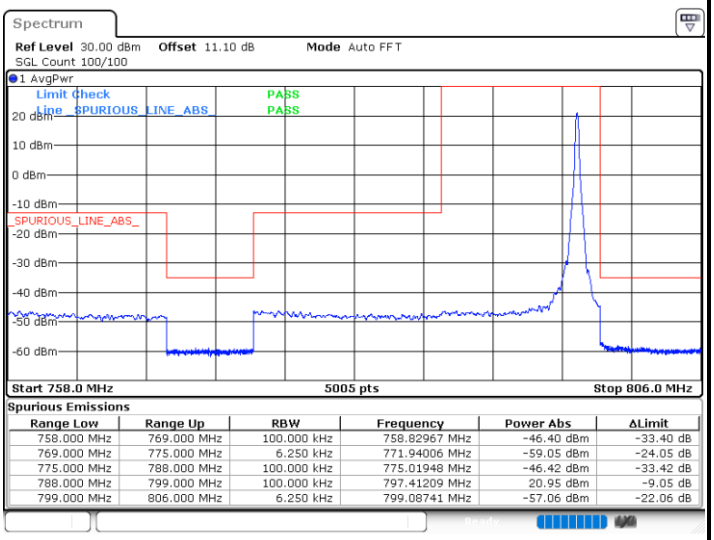


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.59890 MHz	-46.58 dBm	-33.58 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.70929 MHz	-58.99 dBm	-23.99 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-28.46 dBm	-15.46 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.57692 MHz	20.86 dBm	-9.14 dB
799.000 MHz	806.000 MHz	6.250 kHz	800.19930 MHz	-59.15 dBm	-24.15 dB

Date: 26.NOV.2021 22:22:40

Highest Band Edge / 1 RB

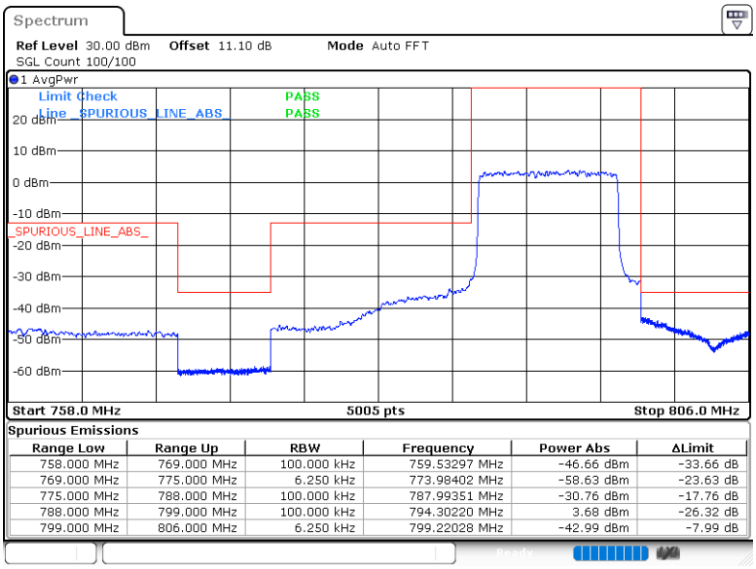


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.82967 MHz	-46.40 dBm	-33.40 dB
769.000 MHz	775.000 MHz	6.250 kHz	771.94006 MHz	-59.05 dBm	-24.05 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.01948 MHz	-46.42 dBm	-33.42 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.41209 MHz	20.95 dBm	-9.05 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.08741 MHz	-57.06 dBm	-22.06 dB

Date: 26.NOV.2021 22:23:25

Band Edge / Full RB



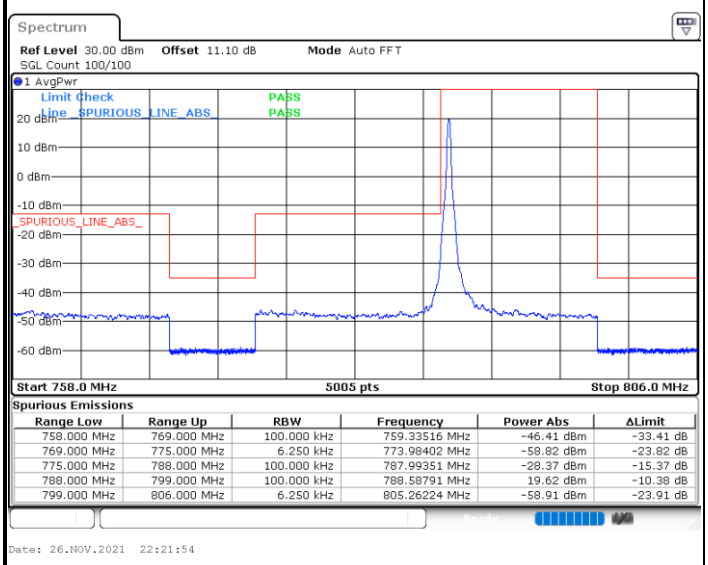
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.53297 MHz	-46.66 dBm	-33.66 dB
769.000 MHz	775.000 MHz	6.250 kHz	773.98402 MHz	-58.63 dBm	-23.63 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-30.76 dBm	-17.76 dB
788.000 MHz	799.000 MHz	100.000 kHz	794.30220 MHz	3.68 dBm	-26.32 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.22028 MHz	-42.99 dBm	-7.99 dB

Date: 26.NOV.2021 22:20:22

LTE Band 14 / 10MHz / 16QAM

Lowest Band Edge / 1 RB

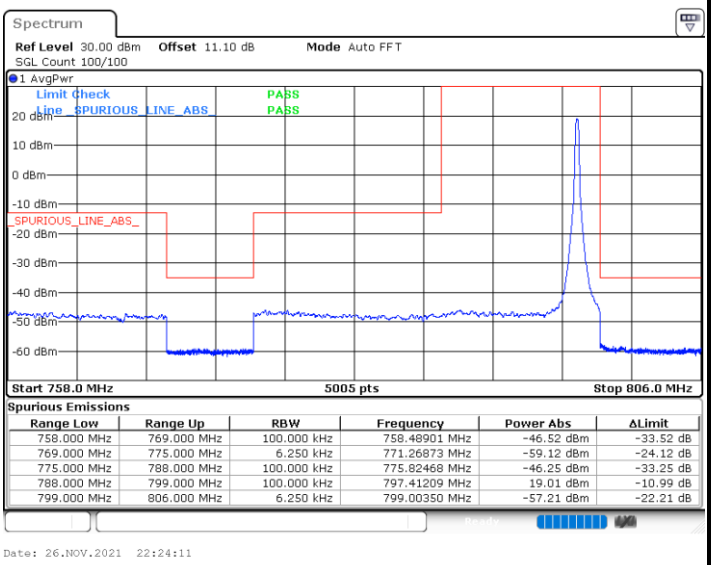


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.33516 MHz	-46.41 dBm	-33.41 dB
769.000 MHz	775.000 MHz	6.250 kHz	773.98402 MHz	-58.82 dBm	-23.82 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-28.37 dBm	-15.37 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.58791 MHz	19.62 dBm	-10.38 dB
799.000 MHz	806.000 MHz	6.250 kHz	805.26224 MHz	-58.91 dBm	-23.91 dB

Date: 26.NOV.2021 22:21:54

Highest Band Edge / 1 RB

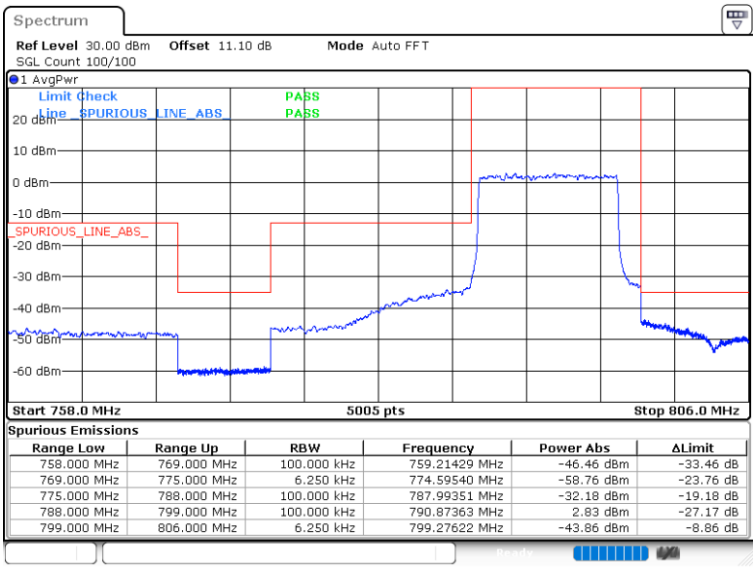


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.48901 MHz	-46.52 dBm	-33.52 dB
769.000 MHz	775.000 MHz	6.250 kHz	771.26873 MHz	-59.12 dBm	-24.12 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.82468 MHz	-46.25 dBm	-33.25 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.41209 MHz	19.01 dBm	-10.99 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.00350 MHz	-57.21 dBm	-22.21 dB

Date: 26.NOV.2021 22:24:11

Band Edge / Full RB



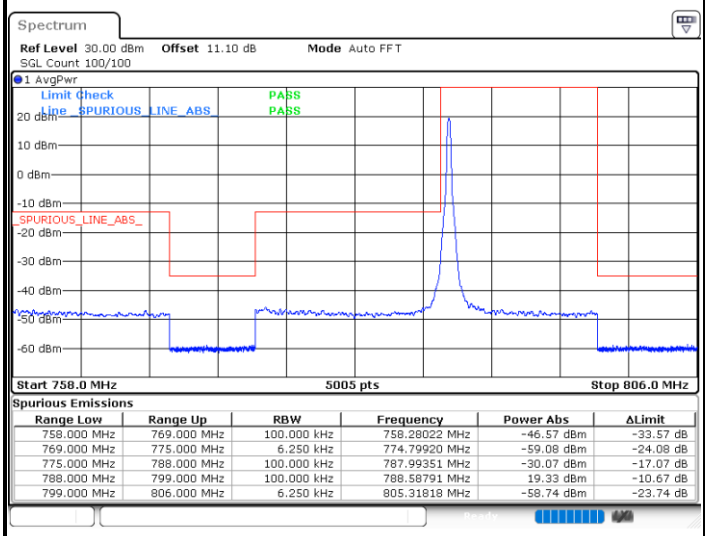
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.21429 MHz	-46.46 dBm	-33.46 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.59540 MHz	-58.76 dBm	-23.76 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-32.18 dBm	-19.18 dB
788.000 MHz	799.000 MHz	100.000 kHz	790.87363 MHz	2.83 dBm	-27.17 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.27622 MHz	-43.86 dBm	-8.86 dB

Date: 26.NOV.2021 22:21:08

LTE Band 14 / 10MHz / 64QAM

Lowest Band Edge / 1 RB

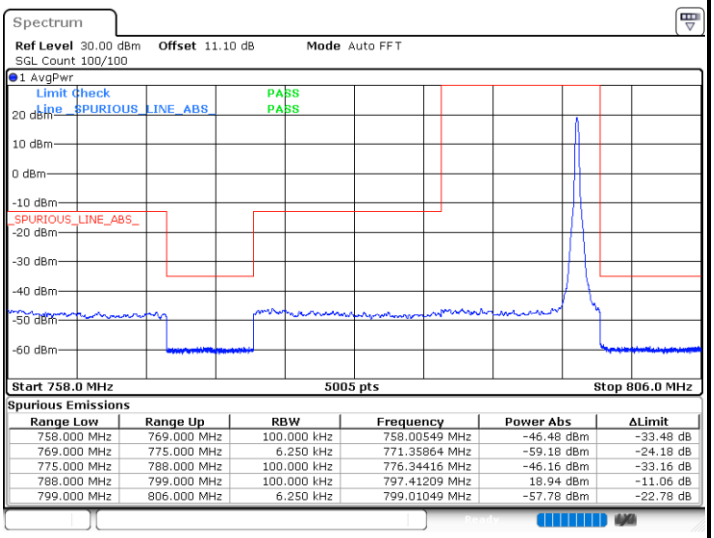


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.28022 MHz	-46.57 dBm	-33.57 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.79920 MHz	-59.08 dBm	-24.08 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-30.07 dBm	-17.07 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.58791 MHz	19.33 dBm	-10.67 dB
799.000 MHz	806.000 MHz	6.250 kHz	805.31818 MHz	-58.74 dBm	-23.74 dB

Date: 26.NOV.2021 22:27:20

Highest Band Edge / 1 RB

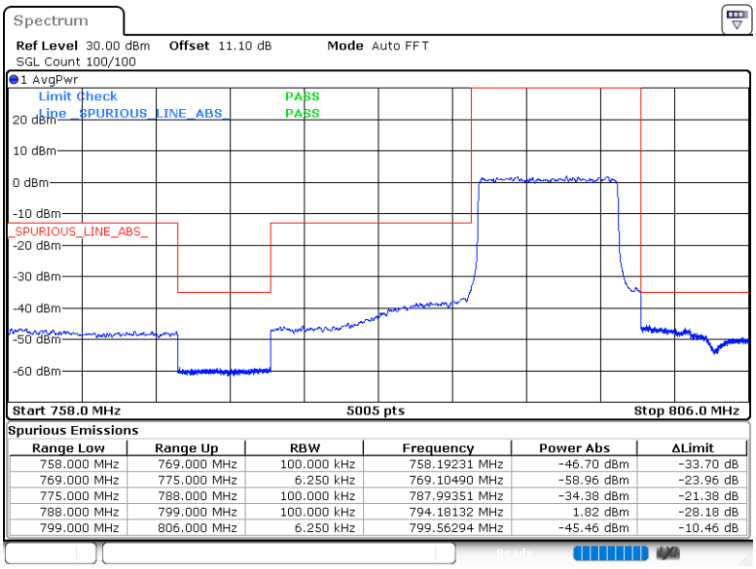


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.00549 MHz	-46.48 dBm	-33.48 dB
769.000 MHz	775.000 MHz	6.250 kHz	771.35864 MHz	-59.18 dBm	-24.18 dB
775.000 MHz	788.000 MHz	100.000 kHz	776.34416 MHz	-46.16 dBm	-33.16 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.41209 MHz	18.94 dBm	-11.06 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.01049 MHz	-57.78 dBm	-22.78 dB

Date: 26.NOV.2021 22:28:07

Band Edge / Full RB



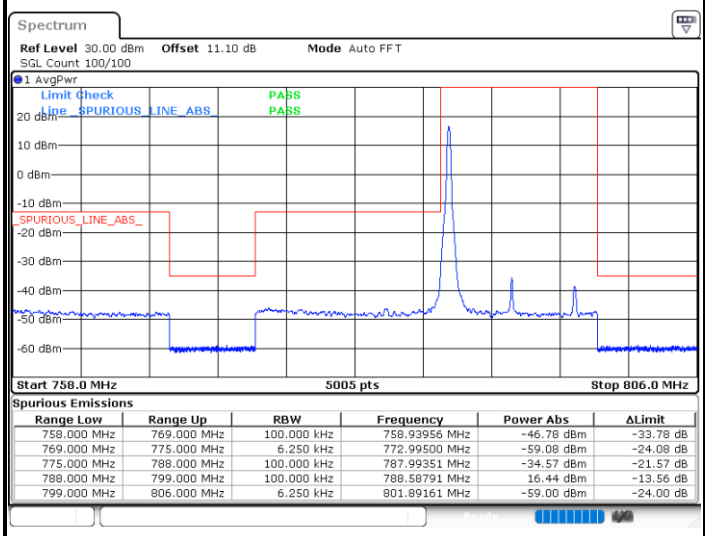
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.19231 MHz	-46.70 dBm	-33.70 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.10490 MHz	-58.96 dBm	-23.96 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-34.38 dBm	-21.38 dB
788.000 MHz	799.000 MHz	100.000 kHz	794.18132 MHz	1.82 dBm	-28.18 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.56294 MHz	-45.46 dBm	-10.46 dB

Date: 26.NOV.2021 22:26:34

LTE Band 14 / 10MHz / 256QAM

Lowest Band Edge / 1 RB

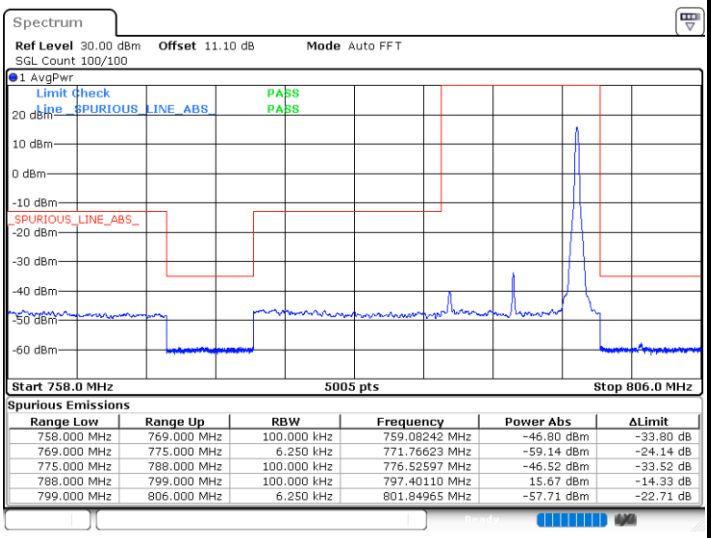


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.93956 MHz	-46.78 dBm	-33.78 dB
769.000 MHz	775.000 MHz	6.250 kHz	772.99500 MHz	-59.08 dBm	-24.08 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-34.57 dBm	-21.57 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.58791 MHz	16.44 dBm	-13.56 dB
799.000 MHz	806.000 MHz	6.250 kHz	801.89161 MHz	-59.00 dBm	-24.00 dB

Date: 27.NOV.2021 00:09:45

Highest Band Edge / 1 RB

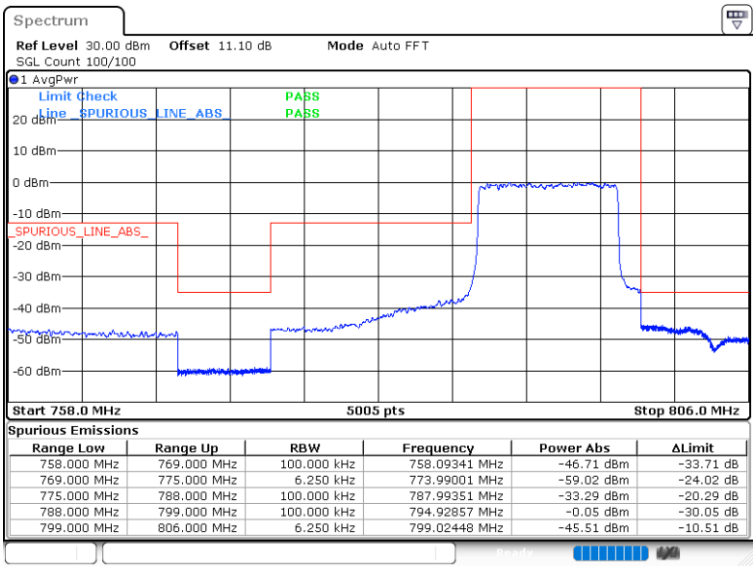


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	759.08242 MHz	-46.80 dBm	-33.80 dB
769.000 MHz	775.000 MHz	6.250 kHz	771.76623 MHz	-59.14 dBm	-24.14 dB
775.000 MHz	788.000 MHz	100.000 kHz	776.52597 MHz	-46.52 dBm	-33.52 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.40110 MHz	15.67 dBm	-14.33 dB
799.000 MHz	806.000 MHz	6.250 kHz	801.84965 MHz	-57.71 dBm	-22.71 dB

Date: 27.NOV.2021 00:12:33

Band Edge / Full RB



Spurious Emissions

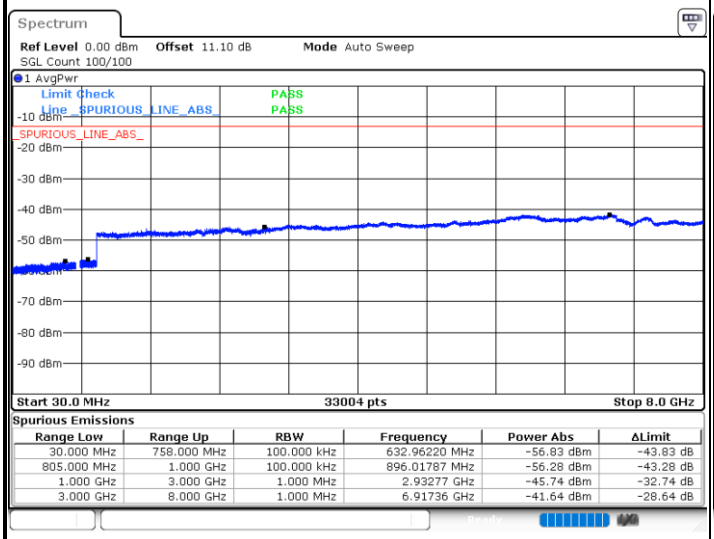
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
758.000 MHz	769.000 MHz	100.000 kHz	758.09341 MHz	-46.71 dBm	-33.71 dB
769.000 MHz	775.000 MHz	6.250 kHz	773.99001 MHz	-59.02 dBm	-24.02 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-33.29 dBm	-20.29 dB
788.000 MHz	799.000 MHz	100.000 kHz	794.92857 MHz	-0.05 dBm	-30.05 dB
799.000 MHz	806.000 MHz	6.250 kHz	799.02448 MHz	-45.51 dBm	-10.51 dB

Date: 27.NOV.2021 00:16:06

Conducted Spurious Emission

LTE Band 14 / 5MHz

Lowest Channel / QPSK

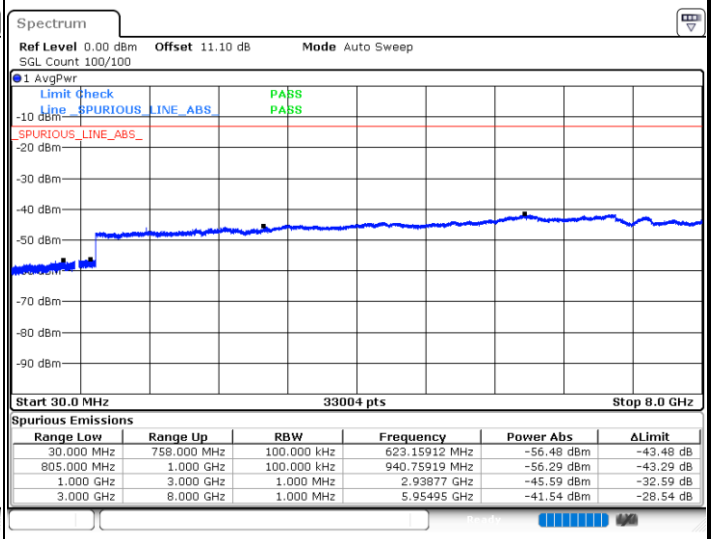


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	758.000 MHz	100.000 kHz	632.96220 MHz	-56.83 dBm	-43.83 dB
805.000 MHz	1.000 GHz	100.000 kHz	896.01787 MHz	-56.28 dBm	-43.28 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.93277 GHz	-45.74 dBm	-32.74 dB
3.000 GHz	8.000 GHz	1.000 MHz	6.91736 GHz	-41.64 dBm	-28.64 dB

Date: 26.NOV.2021 22:08:03

Middle Channel / QPSK

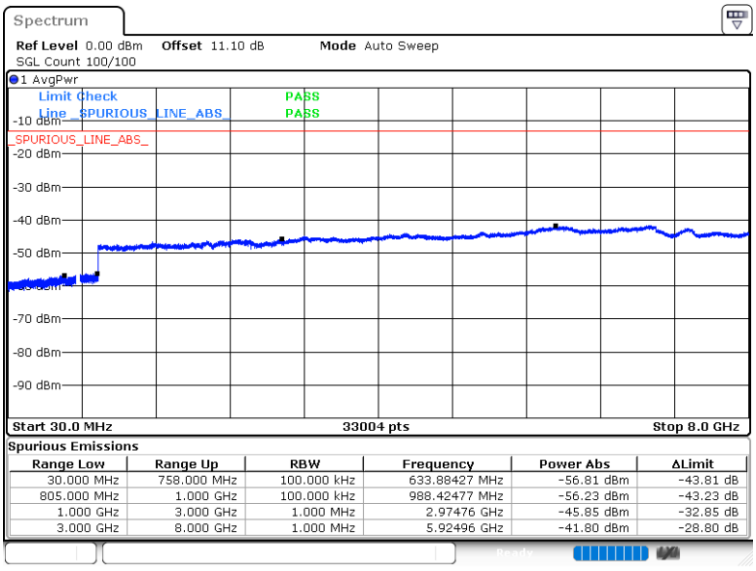


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	758.000 MHz	100.000 kHz	623.15912 MHz	-56.48 dBm	-43.48 dB
805.000 MHz	1.000 GHz	100.000 kHz	940.75919 MHz	-56.29 dBm	-43.29 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.93877 GHz	-45.59 dBm	-32.59 dB
3.000 GHz	8.000 GHz	1.000 MHz	5.95495 GHz	-41.54 dBm	-28.54 dB

Date: 26.NOV.2021 22:08:58

Highest Channel / QPSK

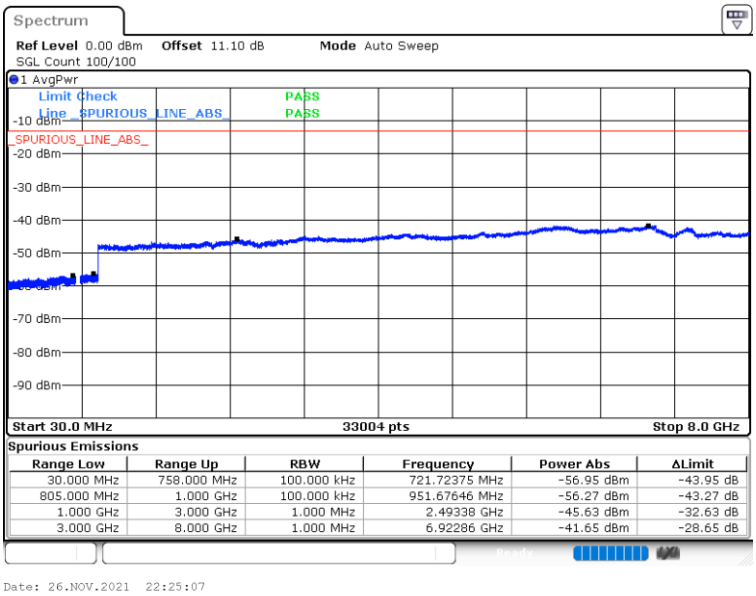


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	758.000 MHz	100.000 kHz	633.88427 MHz	-56.81 dBm	-43.81 dB
805.000 MHz	1.000 GHz	100.000 kHz	988.42477 MHz	-56.23 dBm	-43.23 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.97476 GHz	-45.85 dBm	-32.85 dB
3.000 GHz	8.000 GHz	1.000 MHz	5.92496 GHz	-41.80 dBm	-28.80 dB

Date: 26.NOV.2021 22:14:24

LTE Band 14 / 10MHz
Middle Channel / QPSK



Spurious Emissions

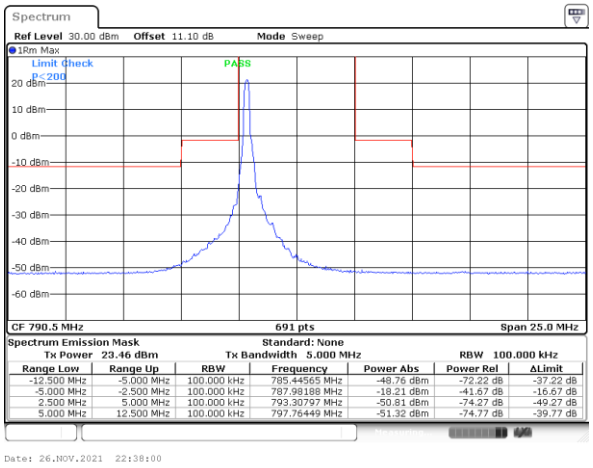
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	758.000 MHz	100.000 kHz	721.72375 MHz	-56.95 dBm	-43.95 dB
805.000 MHz	1.000 GHz	100.000 kHz	951.67646 MHz	-56.27 dBm	-43.27 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.49338 GHz	-45.63 dBm	-32.63 dB
3.000 GHz	8.000 GHz	1.000 MHz	6.92286 GHz	-41.65 dBm	-28.65 dB

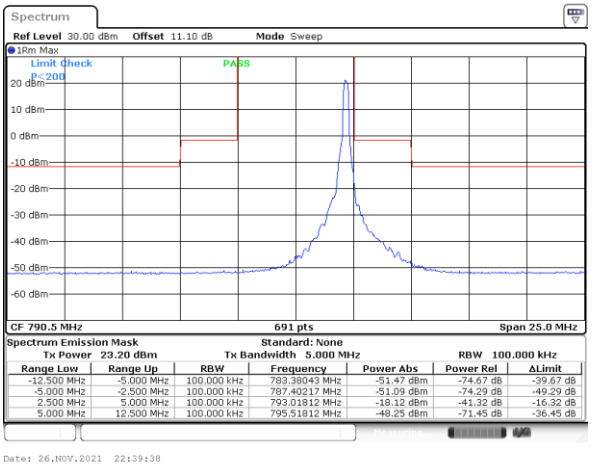
Date: 26.NOV.2021 22:25:07

Mask

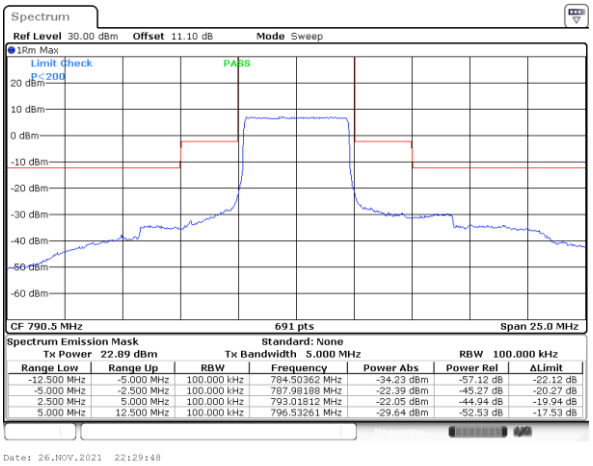
LTE Band 14 / 5MHz / QPSK

Lowest Channel / 1RB



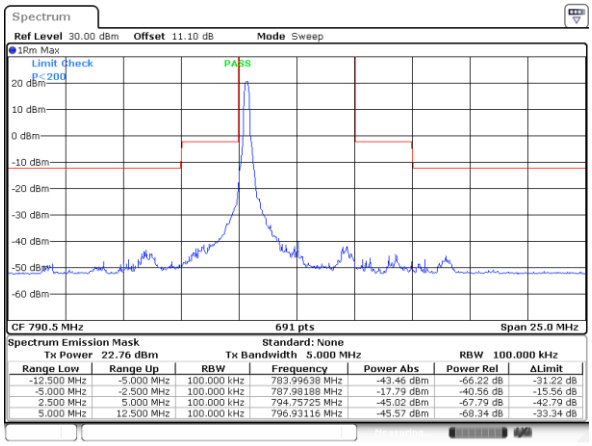


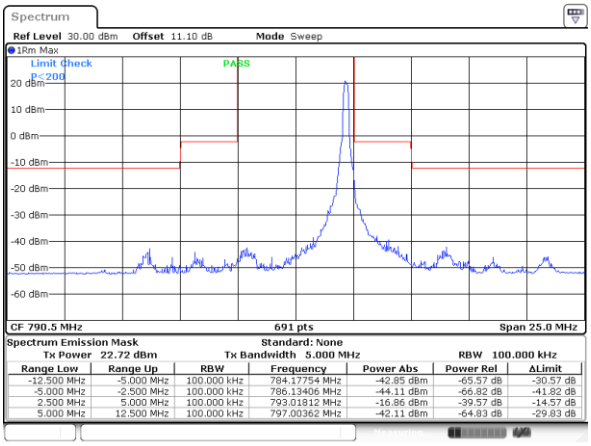
Lowest Channel / Full RB



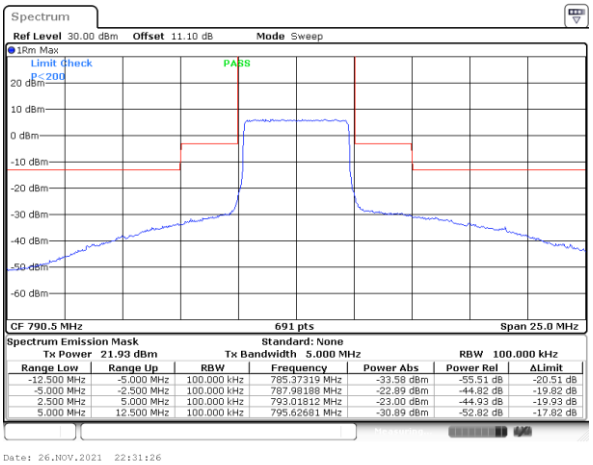
LTE Band 14 / 5MHz / 16QAM

Lowest Channel / 1RB



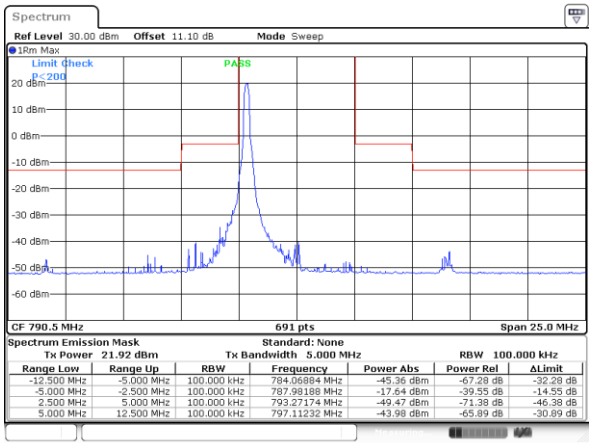


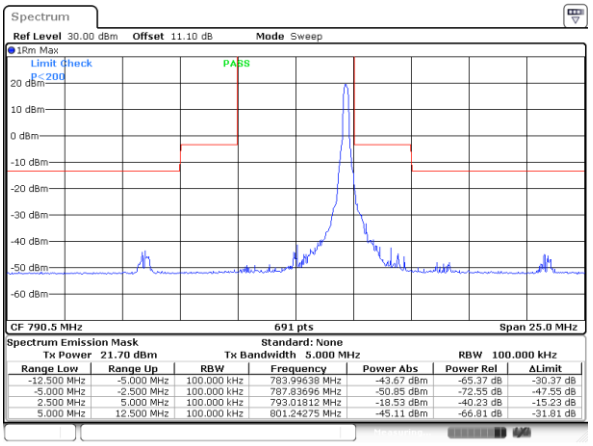
Lowest Channel / Full RB



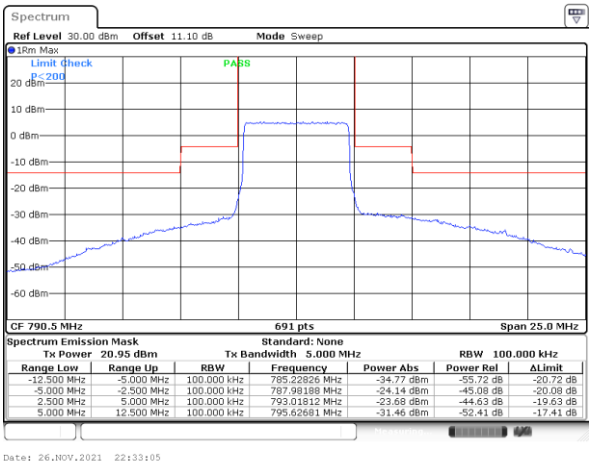
LTE Band 14 / 5MHz / 64QAM

Lowest Channel / 1RB



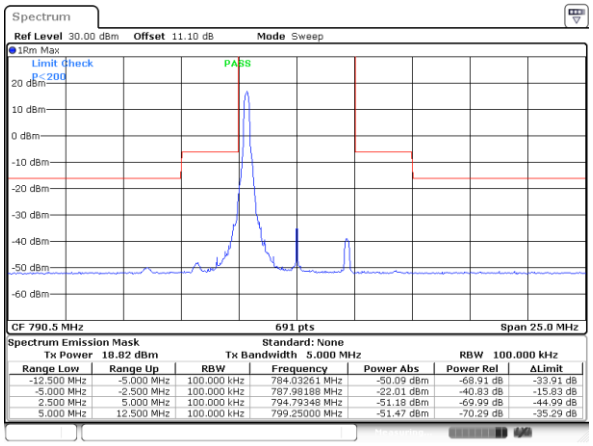


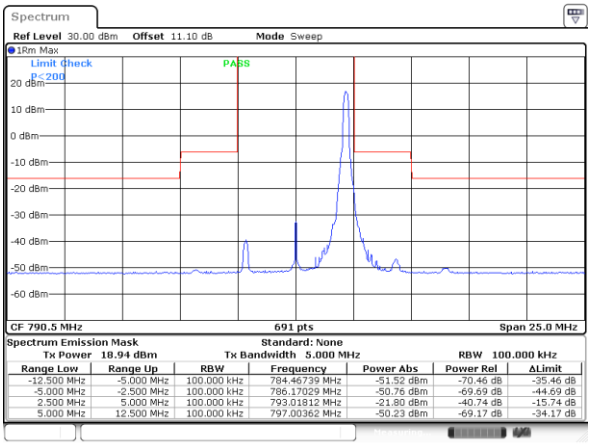
Lowest Channel / Full RB



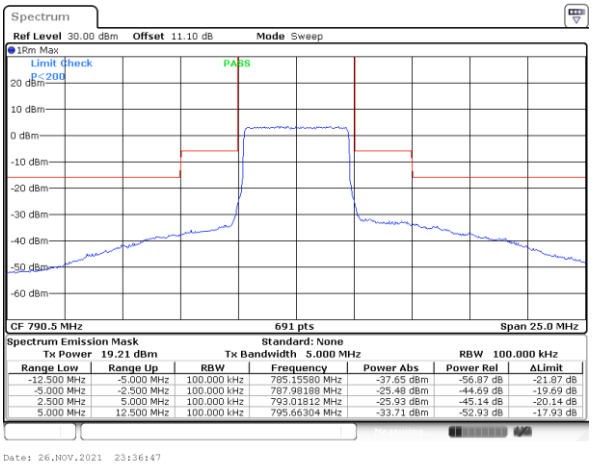
LTE Band 14 / 5MHz / 256QAM

Lowest Channel / 1RB



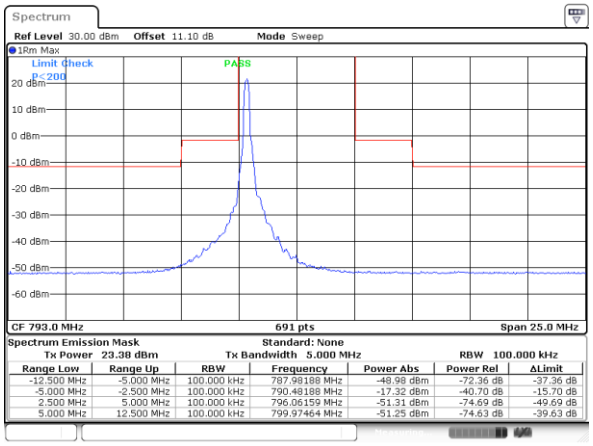


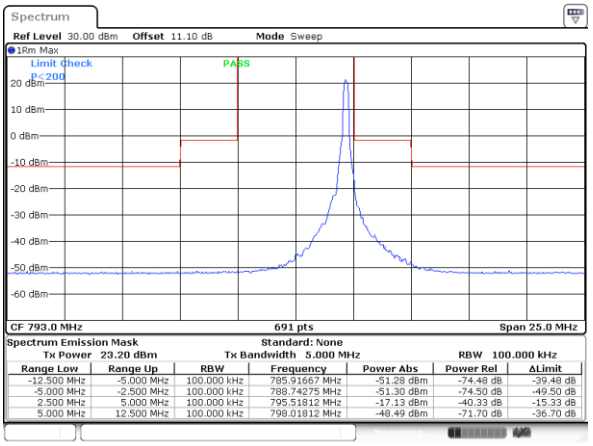
Lowest Channel / Full RB



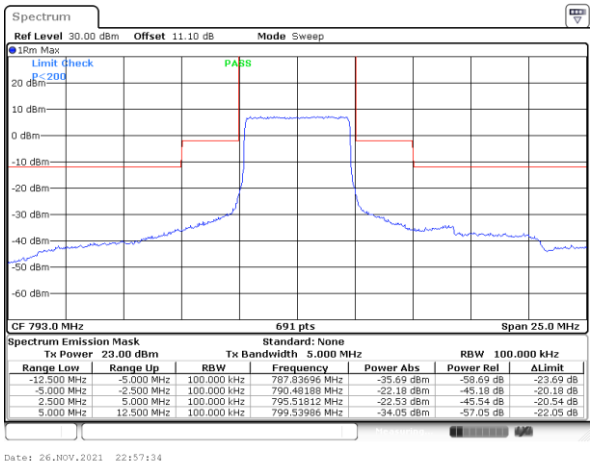
LTE Band 14 / 5MHz / QPSK

Middle Channel / 1RB



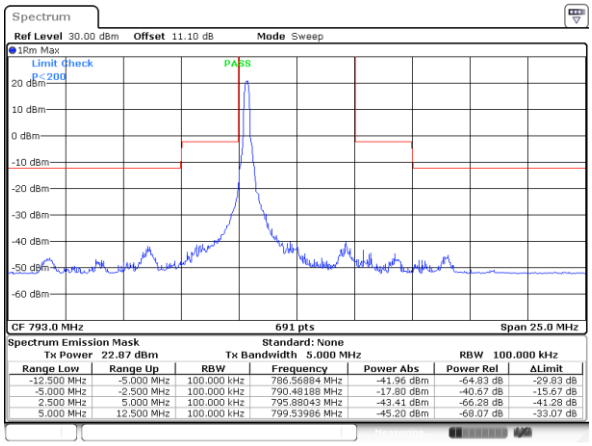


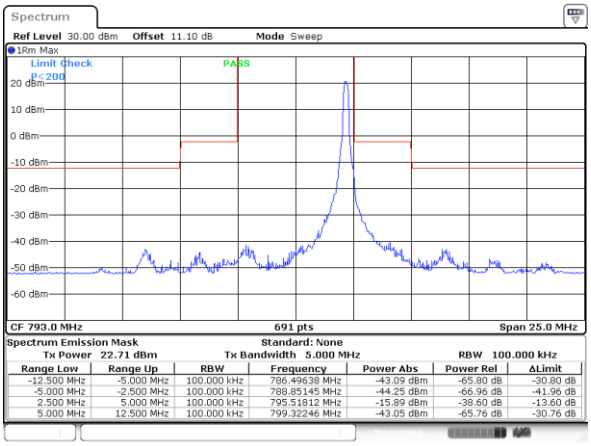
Middle Channel / Full RB



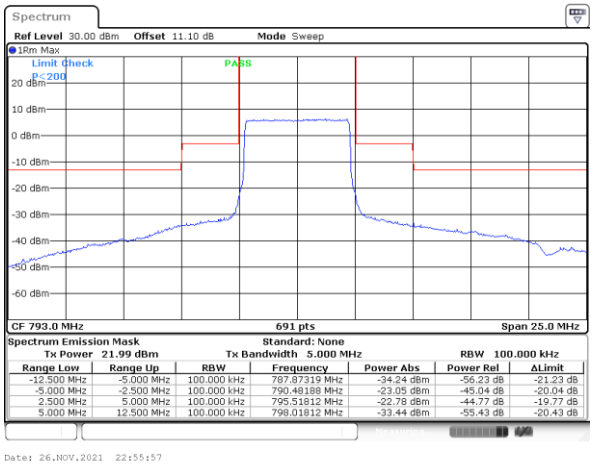
LTE Band 14 / 5MHz / 16QAM

Middle Channel / 1RB



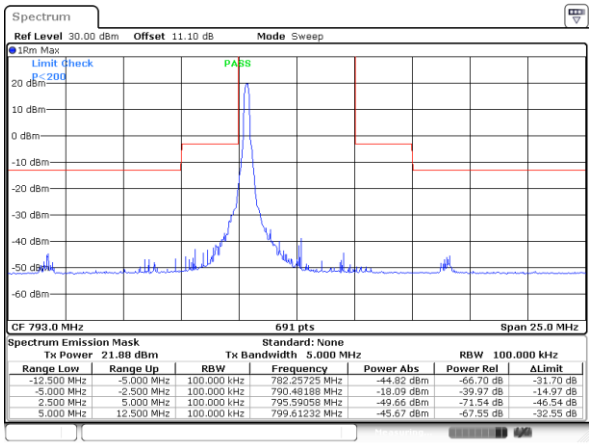


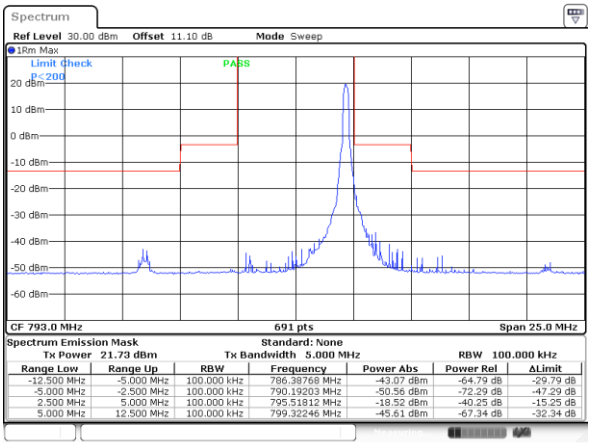
Middle Channel / Full RB



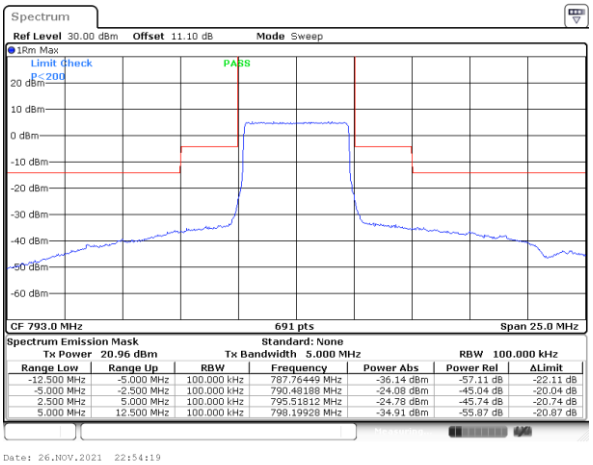
LTE Band 14 / 5MHz / 64QAM

Middle Channel / 1RB



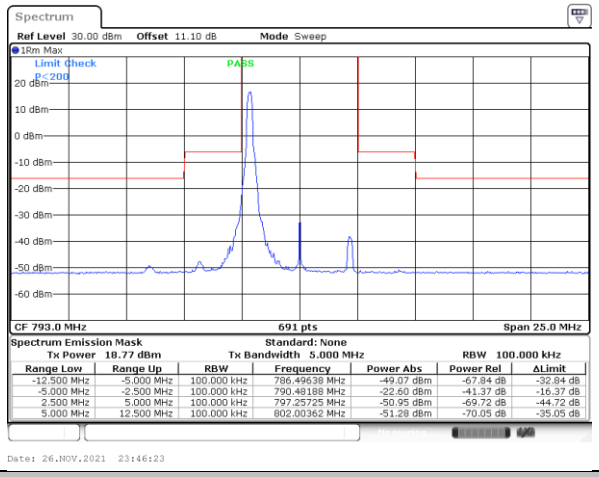


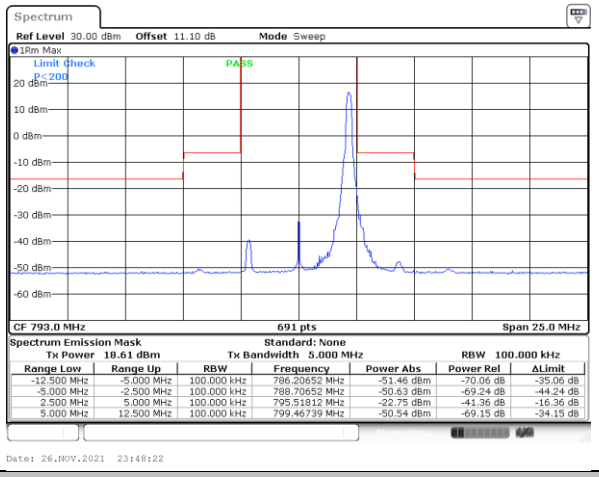
Middle Channel / Full RB



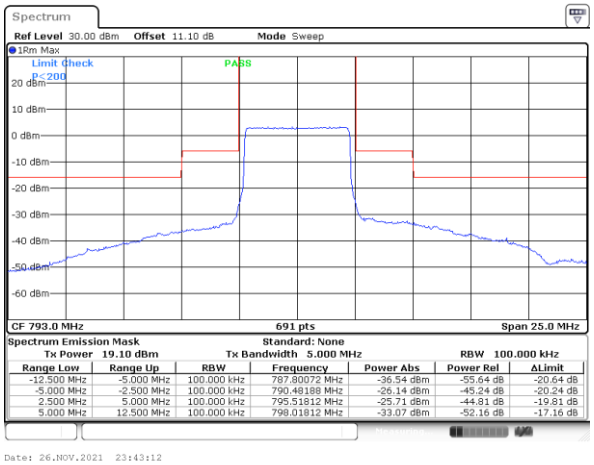
LTE Band 14 / 5MHz / 256QAM

Middle Channel / 1RB



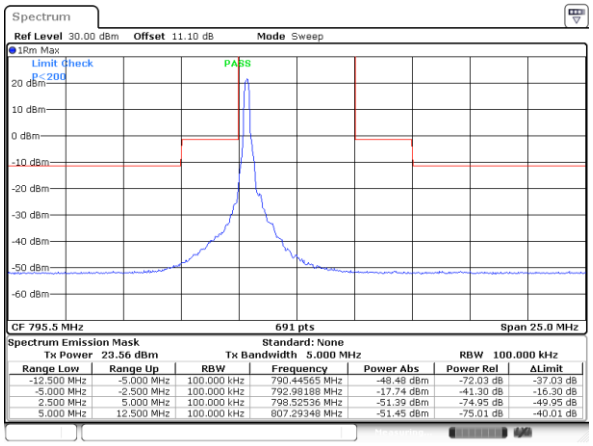


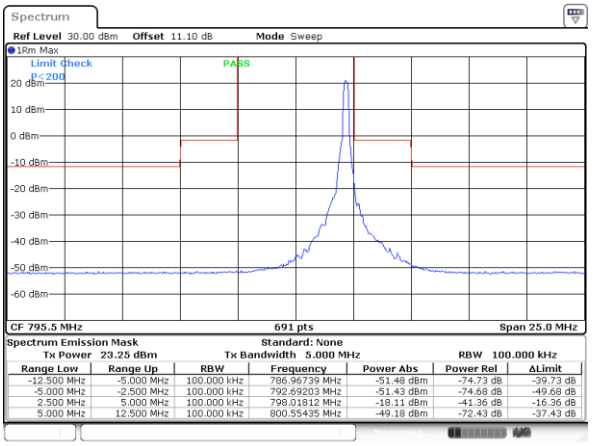
Middle Channel / Full RB



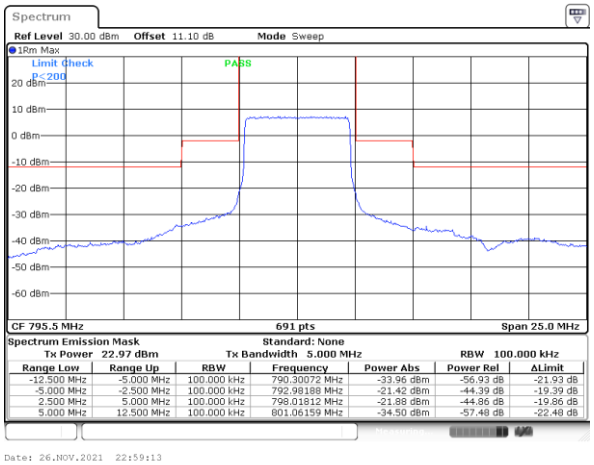
LTE Band 14 / 5MHz / QPSK

Highest Channel / 1RB



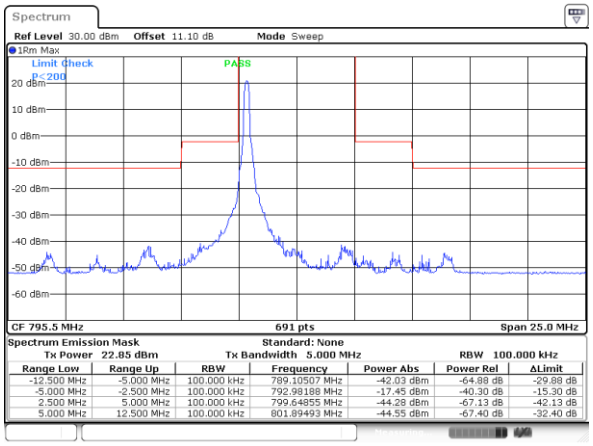


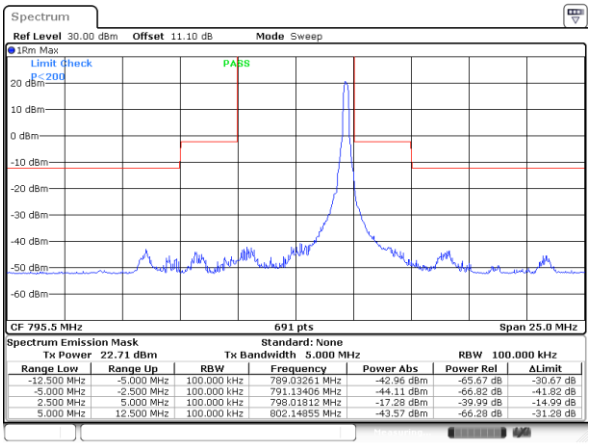
Highest Channel / Full RB



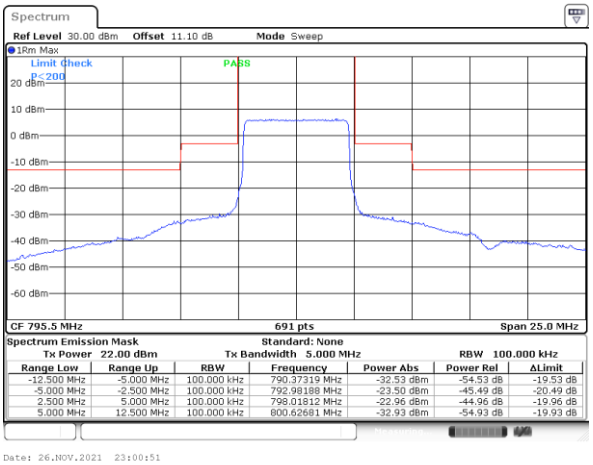
LTE Band 14 / 5MHz / 16QAM

Highest Channel / 1RB



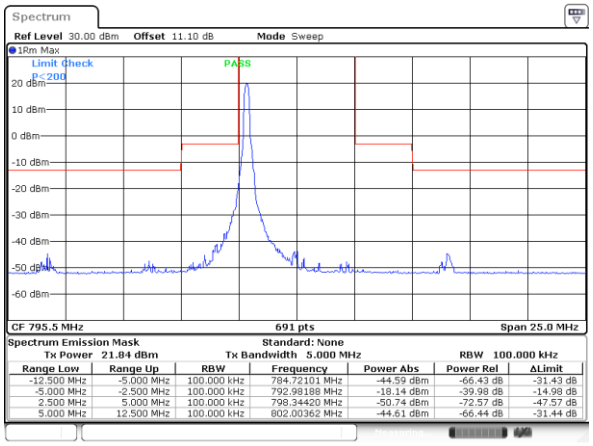


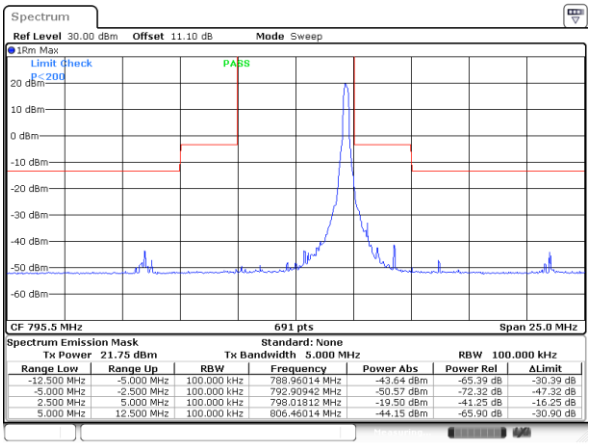
Highest Channel / Full RB



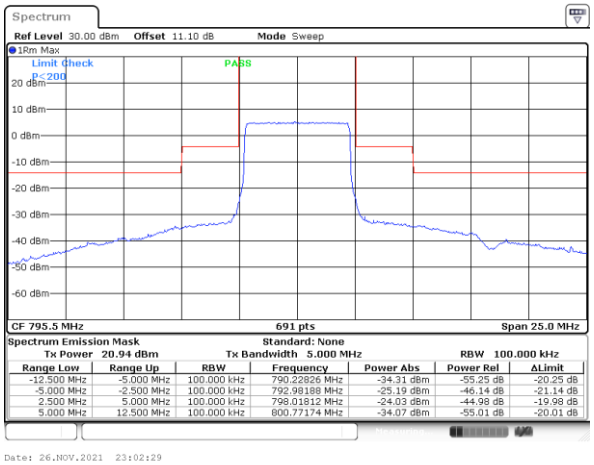
LTE Band 14 / 5MHz / 64QAM

Highest Channel / 1RB



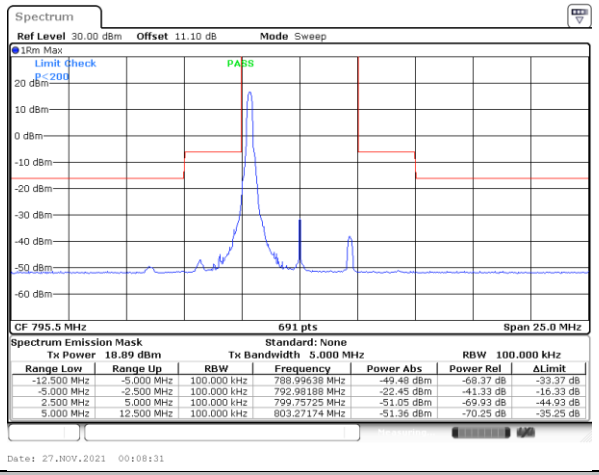


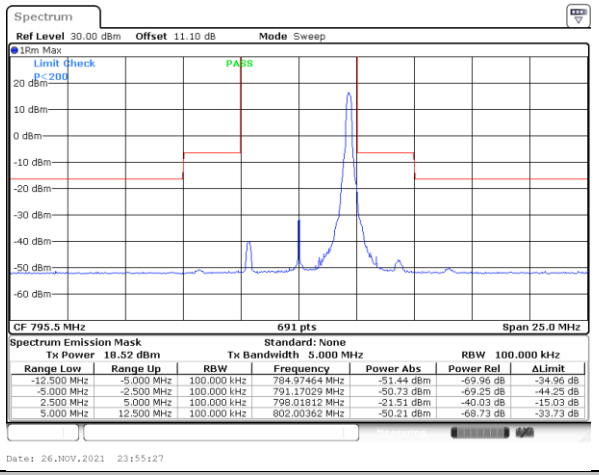
Highest Channel / Full RB



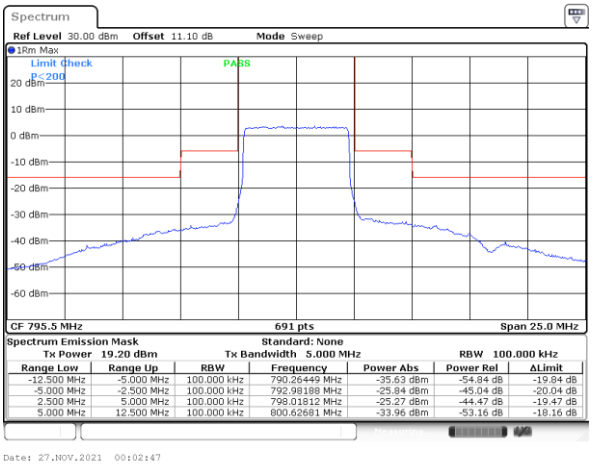
LTE Band 14 / 5MHz / 256QAM

Highest Channel / 1RB



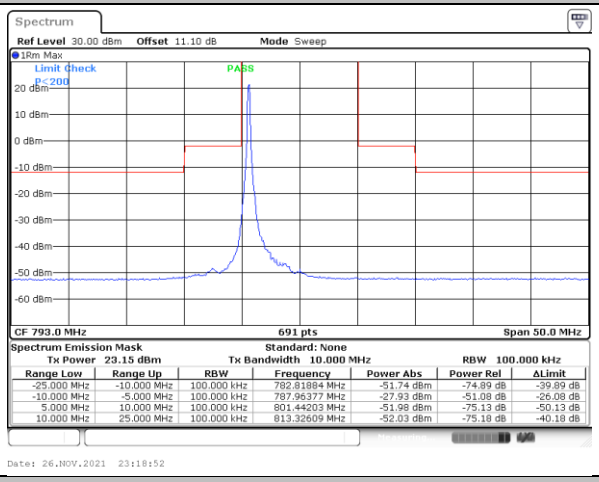


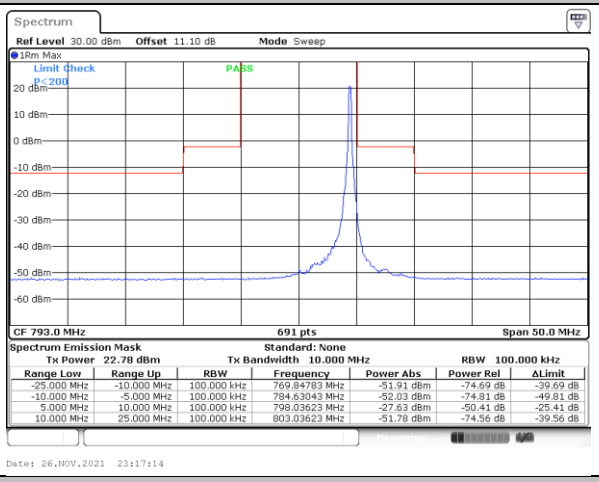
Highest Channel / Full RB



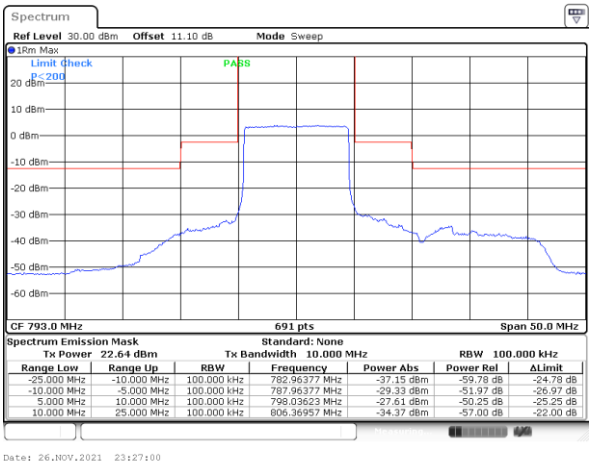
LTE Band 14 / 10MHz / QPSK

Middle Channel / 1RB



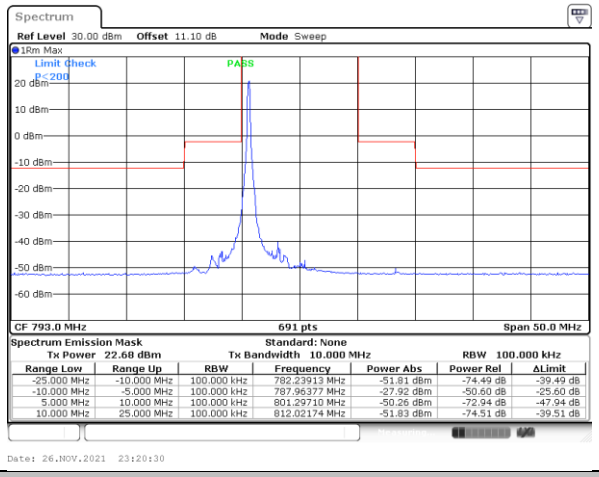


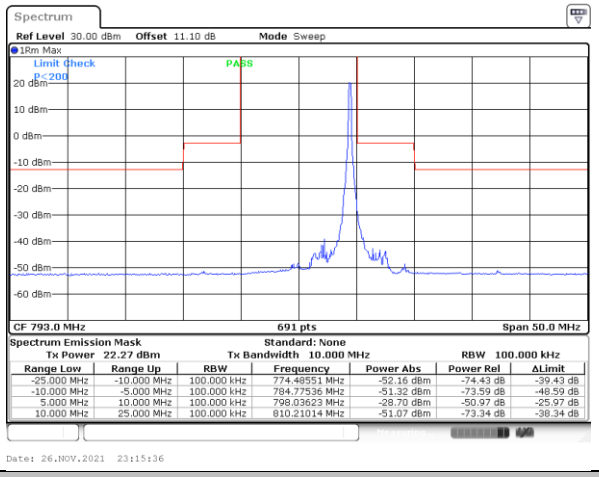
Middle Channel / Full RB



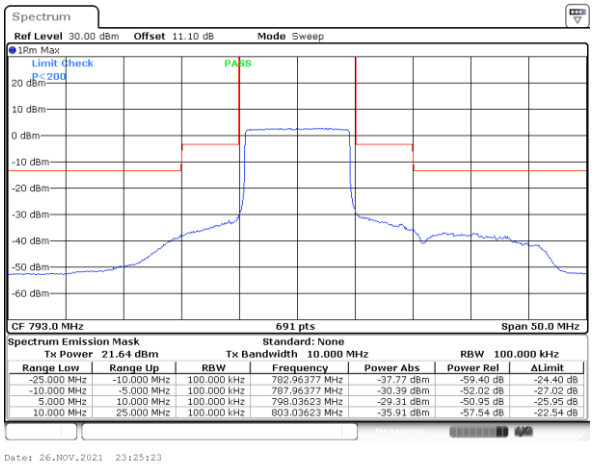
LTE Band 14 / 10MHz / 16QAM

Middle Channel / 1RB



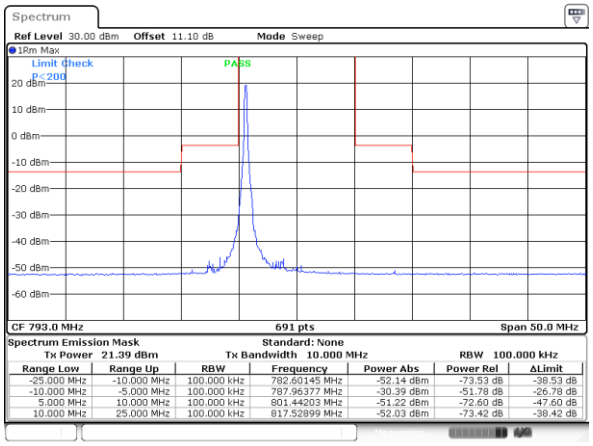


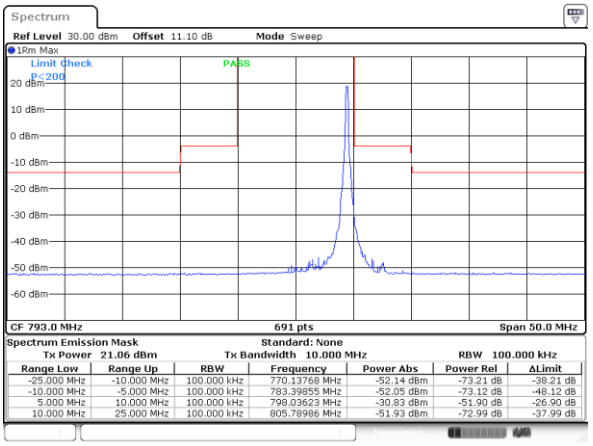
Middle Channel / Full RB



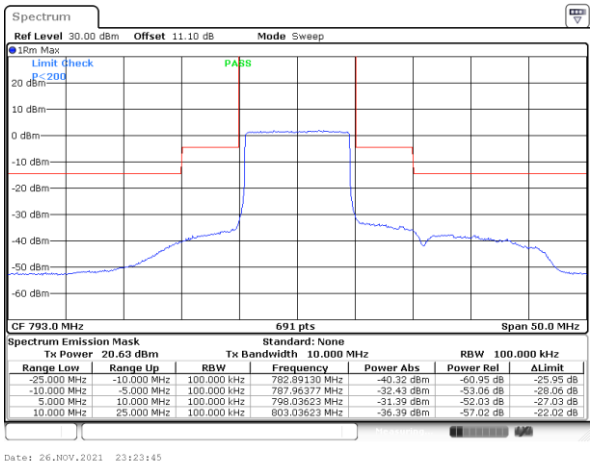
LTE Band 14 / 10MHz / 64QAM

Middle Channel / 1RB



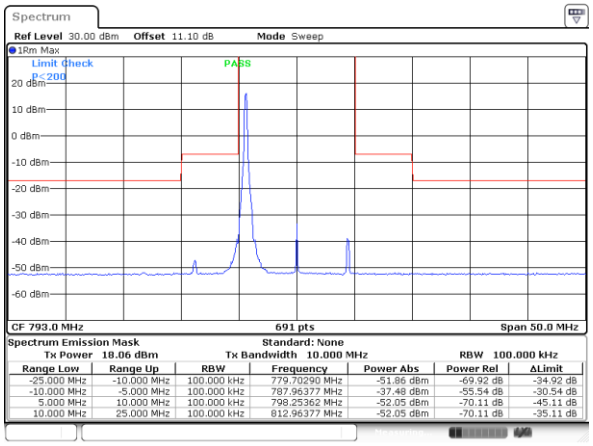


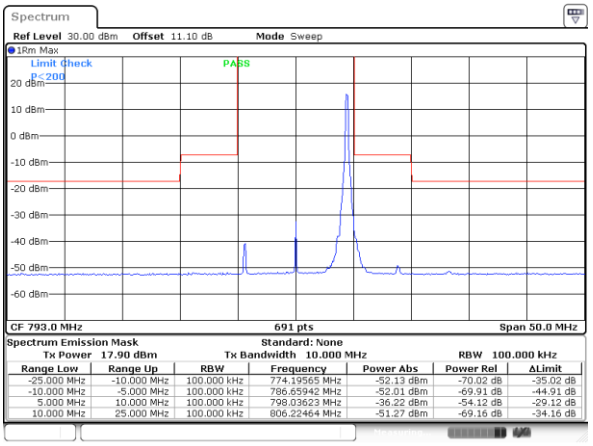
Middle Channel / Full RB



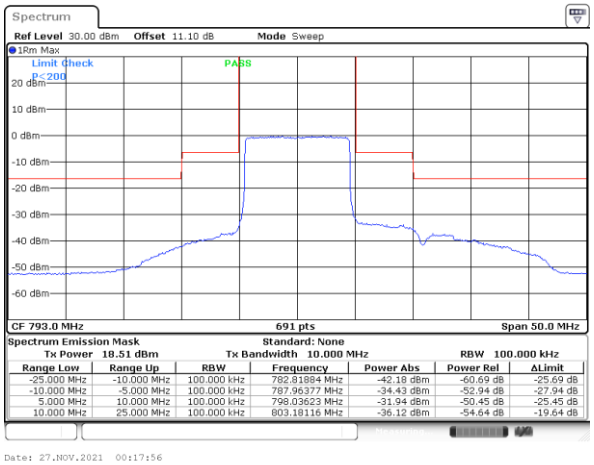
LTE Band 14 / 10MHz / 256QAM

Middle Channel / 1RB





Middle Channel / Full RB



Frequency Stability

Test Conditions		LTE Band 14 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0035	PASS
40	Normal Voltage	0.0103	
30	Normal Voltage	0.0006	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0005	
0	Normal Voltage	0.0095	
-10	Normal Voltage	0.0038	
-20	Normal Voltage	0.0023	
-30	Normal Voltage	0.0052	
20	Maximum Voltage	0.0003	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0028	

Note:

1. Normal Voltage =3.85 V.；Battery End Point (BEP) =3.4 V.；Maximum Voltage =4.4 V.
2. The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of Radiated Test

<Internal Antenna 1>

LTE Band 14

LTE Band 14 / 5MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1576	-51.92	-42.15	-9.77	-67.18	-54.98	3.80	9.01	H
	2368	-52.69	-13.00	-39.69	-72.11	-55.80	4.69	9.94	H
	3153	-53.37	-13.00	-40.37	-75.33	-57.11	5.42	11.31	H
									H
									H
									H
	1576	-53.28	-42.15	-11.13	-68.42	-56.34	3.80	9.01	V
	2365	-55.64	-13.00	-42.64	-74.97	-58.73	4.68	9.92	V
	3152	-53.61	-13.00	-40.61	-75.47	-57.35	5.42	11.31	V
									V
									V
									V
Middle	1584	-49.20	-42.15	-7.05	-64.48	-52.31	3.81	9.07	H
	2376	-43.43	-13.00	-30.43	-62.89	-46.59	4.70	10.01	H
	3160	-53.51	-13.00	-40.51	-75.49	-57.27	5.43	11.34	H
									H
									H
									H
	1584	-53.47	-42.15	-11.32	-68.61	-56.58	3.81	9.07	V
	2376	-42.53	-13.00	-29.53	-61.85	-45.69	4.70	10.01	V
	3160	-53.66	-13.00	-40.66	-75.54	-57.42	5.43	11.34	V
									V
									V
									V

Highest	1584	-52.97	-42.15	-10.82	-68.25	-56.08	3.81	9.07	H
	2384	-54.07	-13.00	-41.07	-73.54	-57.29	4.70	10.07	H
	3173	-53.23	-13.00	-40.23	-75.26	-57.03	5.44	11.39	H
									H
									H
									H
	1584	-53.89	-42.15	-11.74	-69.03	-57.00	3.81	9.07	V
	2380	-56.07	-13.00	-43.07	-75.37	-59.26	4.70	10.04	V
	3173	-53.20	-13.00	-40.20	-75.12	-57.00	5.44	11.39	V
									V
									V
									V

LTE Band 14 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1576	-52.11	-42.15	-9.96	-67.37	-55.17	3.80	9.01	H
	2365	-55.75	-13.00	-42.75	-75.17	-58.84	4.68	9.92	H
	3154	-53.24	-13.00	-40.24	-75.20	-56.98	5.42	11.32	H
									H
									H
									H
	1577	-54.11	-42.15	-11.96	-69.25	-57.18	3.80	9.02	V
	2365	-56.32	-13.00	-43.32	-75.65	-59.41	4.68	9.92	V
	3152	-53.84	-13.00	-40.84	-75.70	-57.58	5.42	11.31	V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.