FCC RF Test Report

APPLICANT	:	Shenzhen Gongjin Electronics Co.,Ltd.
EQUIPMENT	:	Nokia Smart Node
BRAND NAME	:	Nokia
MODEL NAME	:	Nokia Multi-Standard Smart Node B2B14B66 (SN4IBN)
FCC ID	:	V4V1SN4IBN
STANDARD	:	47 CFR Part 2, 90(R)
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)
TEST DATE(S)	:	Jun. 26, 2021 ~ Jul. 23, 2021

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26 and shown 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 (Kunshan) Inc., the test report shall not be reproduced except in full.

Jason Jia

Reviewed by: Jason Jia / Supervisor

Alex Wang

Approved by: Alex Wang / Manager

ACCREDITED Cert #5145.02

Sporton International (Kunshan) Inc.
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APPENDIX A. TEST RESULTS OF CONDUCTED TEST

APPENDIX B. TEST RESULTS OF RADIATED TEST

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG151309B	Rev. 01	Initial issue of report	Jul. 30, 2021

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	PASS	-
	§90.542 (a)(3)	Effective Radiated Power	ERP < 1000Watt	PASS	-
3.3	-	Peak-to-Average Ratio	Reporting only	-	-
3.4	§2.1049	Occupied Bandwidth	Reporting only	PASS	-
3.5	§2.1053 §90.543 (e)(1)(3)	Conducted Band Edge Measurement	Refer standard	PASS	-
3.6	§2.1051 §90.210(n)	Emission Mask	Mask B	PASS	-
3.7	§2.1053 §90.543 (e)(3)	Conducted Spurious Emission	< $43+10\log_{10}$(P[Watts])	PASS	-
3.8	§2.1055	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §90.543 (e)(3) §90.543 (f)	Radiated Spurious Emission	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 44.15 dB at 3156.000 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.

1 General Description

1.1 Applicant

Shenzhen Gongjin Electronics Co.,Ltd.
No.2 Danzi North Road, Kengzi Street, Pingshan District, Shenzhen, Guangdong, 518122, P.R. China

1.2 Manufacturer

Nokia Solutions and Networks Oy
Karakaari 7, 02610 Espoo, Finland

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Nokia Smart Node
Brand Name	Nokia
Model Name	Nokia Multi-Standard Smart Node B2B14B66 (SN4IBN)
FCC ID	V4V1SN4IBN
Tx Frequency	LTE Band 14: 758 MHz ~ 768 MHz
Rx Frequency	LTE Band 14: 788 MHz ~ 798 MHz
Bandwidth	5MHz / 10MHz
Maximum Output Power to Antenna	<MIMO Ant. 3+4> LTE Band 14 : 23.98 dBm
Antenna Gain	<MIMO Ant. 3+4> LTE Band 14 : 4.21 dBi
Type of Modulation	QPSK / 16QAM / 64QAM
HW Version	V03
SW Version	56850
EUT Stage	Identical Prototype

Note:

1. For SISO & MIMO mode, the RSE testing has assessed only MIMO mode by referring to their higher conducted power.
2. The maximum ERP/EIRP is calculated from max output power and max antenna gain, only the maximum ERP/EIRP is shown on the report for MIMO mode.
3. The device is a low-power RF transmitter for LTE.
4. LTE Tx is non-signaling mode.
5. LTE only support full RB mode.
6. MIMO Gain = SISO Gain + Array Gain(10log 2)

1.4 Maximum ERP Power, and Emission Designator

LTE Band 14 MIMO		QPSK		16QAM/64QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
10	**763**	0.4019	9M81G7D	0.3917	9M81W7D

1.5 Testing Site

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH04-KS TH01-KS	CN1257	314309

1.6 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24a

1.7 Applied Standards

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

- 47 CFR Part 2, Part 90(R)
- ANSI C63.26
- KDB 971168 D01 Power Meas License Digital Systems v03r01
- KDB 412172 D01 Determining ERP and EIRP 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.

2 Test Configuration of Equipment Under Test

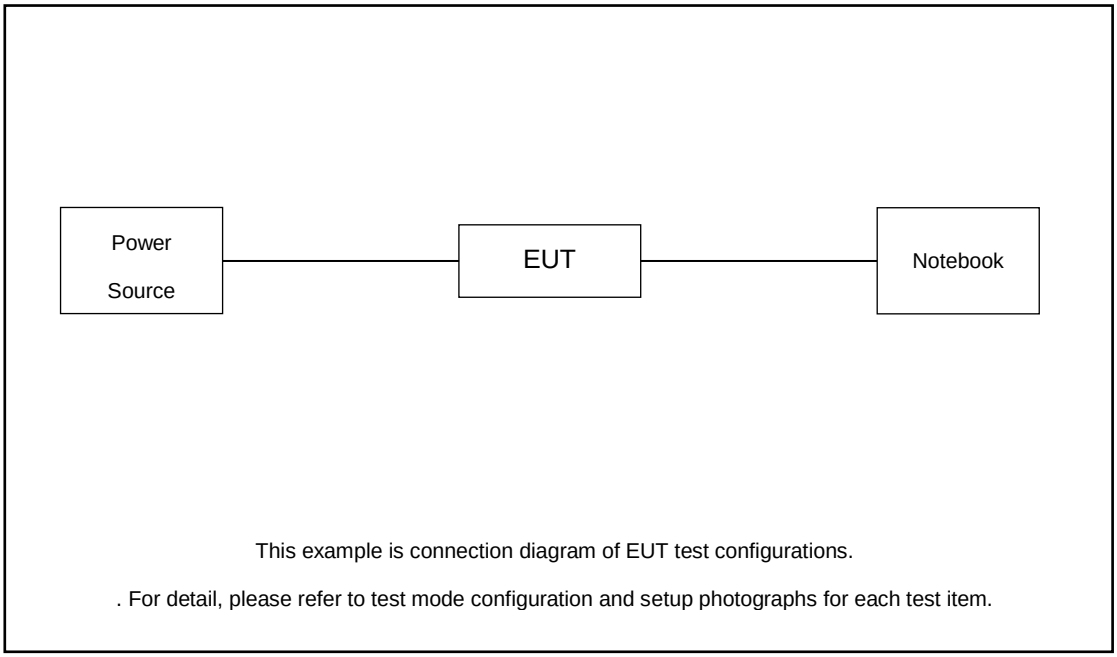
2.1 Test Mode

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.

The WWAN Tx mode was pre-scanned for harmonics in three orthogonal panels (Y, Z and X planes) for both horizontal and vertical polarizations, and then the worst mode(X planes) was performed the full test and recorded in this report.

Conducted Test Cases	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	14	-	-	V		-	-	V	V	V			V	V	V	V
	14	-	-		V	-	-	V	V	V			V		V	
Peak-to-Average Ratio	14	-	-		V	-	-	V	V	V			V		V	
26dB and 99% Bandwidth	14	-	-		V	-	-	V	V				V		V	
Conducted Band Edge	14	-	-	V		-	-	V	V	V			V	V		V
	14	-	-		V	-	-	V	V	V			V		V	
Conducted Spurious Emission	14	-	-	V		-	-	V					V	V	V	V
	14	-	-		V	-	-	V					V		V	
Frequency Stability	14	-	-		V	-	-	V					V		V	
E.R.P	14	-	-	V		-	-	V	V	V			V	V	V	V
	14	-	-		V	-	-	V	V	V			V		V	
Radiated Spurious Emission	14	-	-		V	-	-	V					V		V	
Note	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.															

2.2 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Notebook	Lenovo	V130-15IKB005	N/A	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m

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 RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

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

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 4.8 dB and a 20dB attenuator.

Example :

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

= 4.8 + 20 = 24.8 (dB)

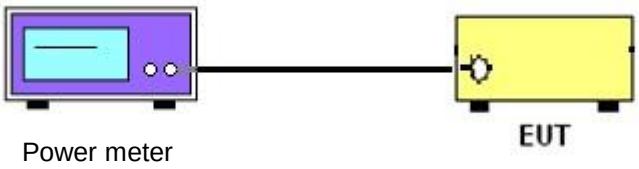
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

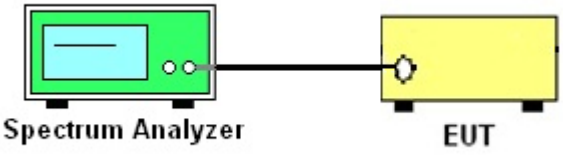
3.1.1 Test Setup

3.1.2 Conducted Output Power

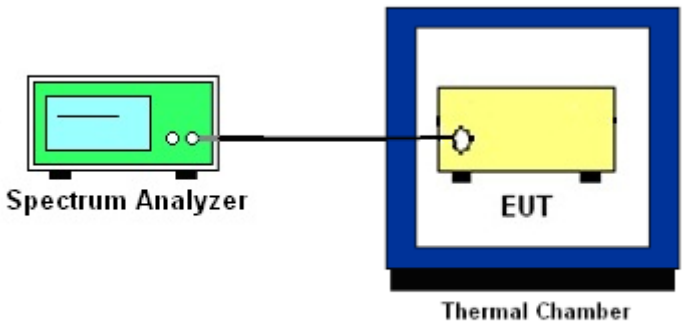


Power meter

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 and ERP

3.2.1 Description of the Conducted Output Power Measurement and ERP

§90.542 (a)(3)Fixed and base stations transmitting a signal in the 758-768 MHz band with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP accordance with Table 3 of this section

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 testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the power meter.
3. Set EUT at maximum power perform non-signaling mode.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the power meter.

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

1. The EUT was connected to spectrum and perform non-signaling mode.
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

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and perform non-signaling mode.
3. 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.
4. 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.
5. Set the detection mode to peak, and the trace mode to max hold.
6. 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)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. 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.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.5 Conducted Band Edge Measurement

3.5.1 Description of Conducted Band Edge Measurement

For operations in the 758-768 MHz and the 788-798 MHz bands

(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

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and perform non-signaling mode.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. Checked that all the results comply with the emission limit line.

   Example:

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

   = P(W)- [43 + 10log(P)] (dB)

   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

3.6 Emission Mask

3.6.1 Description of Emission Mask

<Emission Mask B>.

For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.

(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.

(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

3.6.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and perform non-signaling mode.
3. 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.
4. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
5. Set spectrum analyzer with RMS detector.
6. Taking the record of maximum spurious emission.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

3.7 Conducted Spurious Emission Measurement

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 10^{th} harmonic.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and perform non-signaling mode.
3. 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.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's, for under 1GHz RBW = 100kHz, VBW = 300kHz and for above 1GHz RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. Set spectrum analyzer with RMS detector.
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)
   = P(W)- [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

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.

3.8.2 Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4
2. The EUT was set up in the thermal chamber and connected with the spectrum analyzer.
3. 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.
4. 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

1. The testing follows ANSI C63.26 section 5.6.5.
2. The EUT was placed in a temperature chamber at 20±5°C and connected with the spectrum analyzer.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

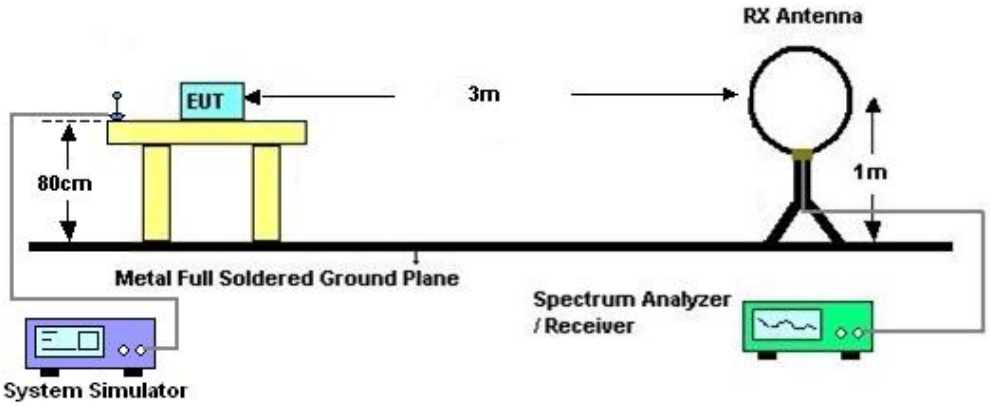
4 Radiated Test Items

4.1 Measuring Instruments

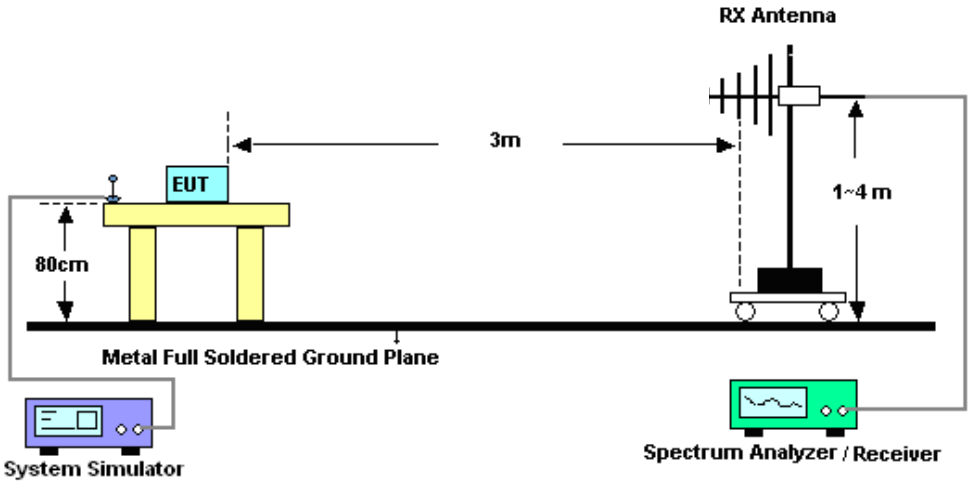
See list of measuring instruments of this test report.

4.2 Test Setup

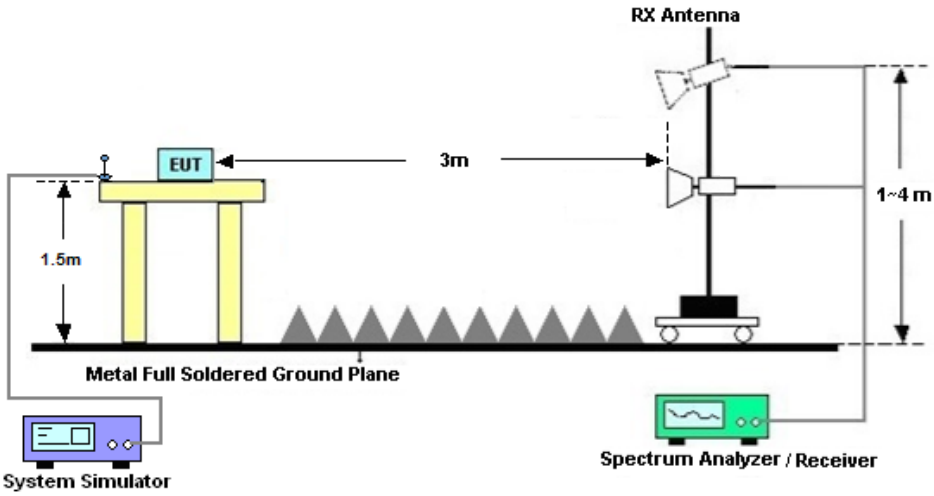
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

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.

Please refer to Appendix B.

4.4 Radiated Spurious Emission Measurement

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. 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.

4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. 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)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Nov. 01, 2020	Jun. 26, 2021~ Jul. 23, 2021	Oct. 31, 2021	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 07, 2021	Jun. 26, 2021~ Jul. 23, 2021	Jan. 06, 2022	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 07, 2021	Jun. 26, 2021~ Jul. 23, 2021	Jan. 06, 2022	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 03, 2020	Jun. 26, 2021~ Jul. 23, 2021	Jul. 02, 2021	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr.13, 2021	Jul. 01, 2021	Apr. 12, 2022	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 1, 2020	Jul. 01, 2021	Oct. 31, 2021	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Jan. 02, 2021	Jul. 01, 2021	Jan. 01, 2022	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218642	1GHz~18GHz	Apr. 01, 2021	Jul. 01, 2021	Mar. 31, 2022	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 09, 2020	Jul. 01, 2021	Nov. 08, 2021	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 02, 2021	Jul. 01, 2021	Jan. 01, 2022	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 07, 2021	Jul. 01, 2021	Jan. 06, 2022	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Jan. 02, 2021	Jul. 01, 2021	Jan. 01, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 14, 2020	Jul. 01, 2021	Oct. 13, 2021	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jul. 01, 2021	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jul. 01, 2021	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jul. 01, 2021	NCR	Radiation (03CH04-KS)
Band Reject Filter	WI	WTRCT8-69 8-850-20-40 -40SSK	698-850 Tunable Notch	SN 1	NCR	Jul. 01, 2021	NCR	Radiation (03CH04-KS)
High Pass Filter	WI	WHKX12-93 5-1000-1500 0-40ST	1G High Pass	SN 2	NCR	Jul. 01, 2021	NCR	Radiation (03CH04-KS)
High pass Filter	WI	WHKX12-28 05-3000-180 00-40ST	3G High Pass	SN 8	NCR	Jul. 01, 2021	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.3dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.8dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.8dB**

---------- THE END ----------

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)and ERP

For MIMO Antenna 3+4

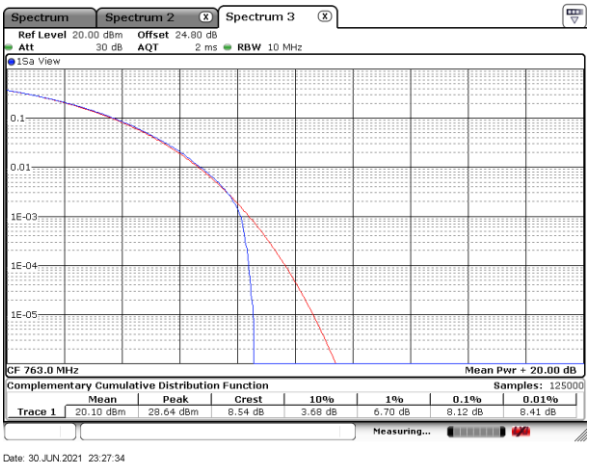
Ant.	BW	Modulation	Channel	Frequency (MHz)	Gain (dB)	Power (dBm)	EIRP (dbm)	EIRP power (W)
3+4	5M	QPSK	5305	760.5	4.21	23.71	25.77	0.3776
		QPSK	5330	763	4.21	23.66	25.72	0.3731
		QPSK	5355	765.5	4.21	23.47	25.53	0.3573
	10M	QPSK	5330	763	4.21	23.98	26.04	0.4019
	5M	16QAM	5305	760.5	4.21	23.84	25.90	0.3889
		16QAM	5330	763	4.21	23.80	25.86	0.3855
		16QAM	5355	765.5	4.21	23.62	25.68	0.3698
	10M	16QAM	5330	763	4.21	23.87	25.93	0.3917
	5M	64QAM	5305	760.5	4.21	23.85	25.91	0.3899
		64QAM	5330	763	4.21	23.82	25.88	0.3872
		64QAM	5355	765.5	4.21	23.66	25.72	0.3728
	10M	64QAM	5330	763	4.21	23.85	25.91	0.3899

LTE Band 14 for Antenna 3

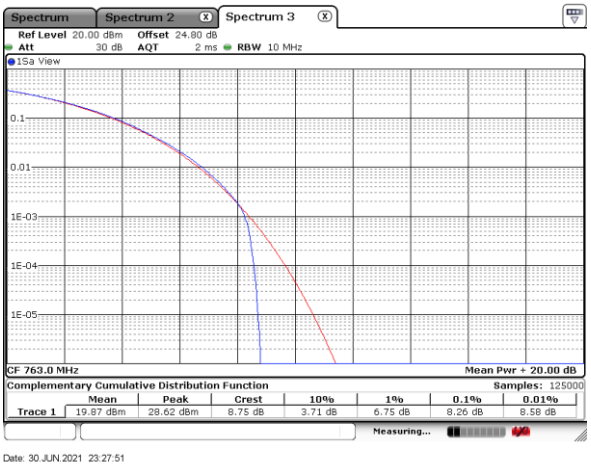
Peak-to-Average Ratio

Mode	LTE Band 14 / 10MHz			
Mod.	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Result
Middle CH	8.12	8.26	8.23	PASS

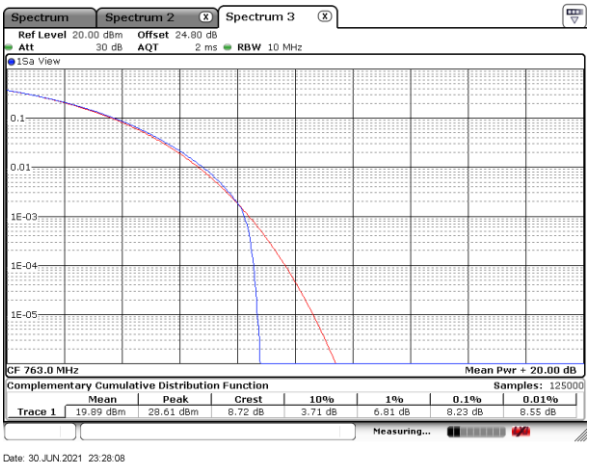
LTE Band 14 / 10MHz
Middle Channel / Full RB/ QPSK



Middle Channel / Full RB/ 16QAM



Middle Channel / Full RB/ 64QAM

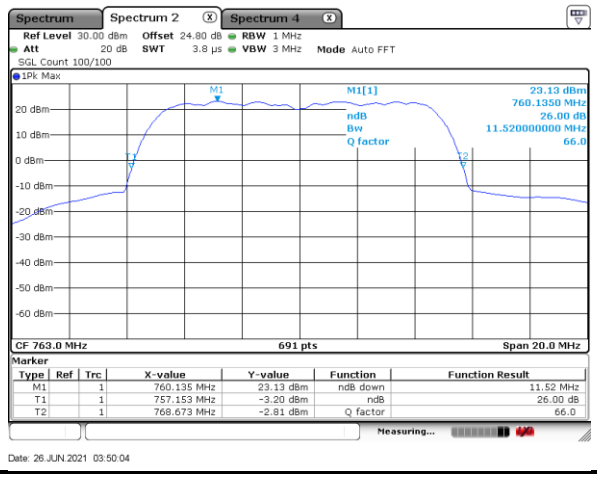


26dB Bandwidth

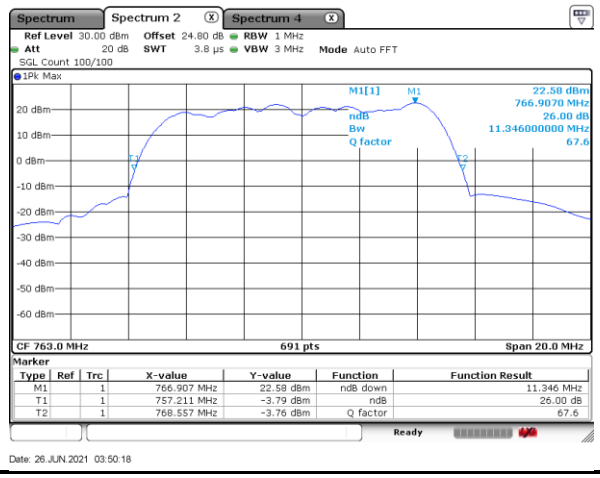
Mode	LTE Band 14 : 26dB BW(MHz)	
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	11.52	11.35

LTE Band 14

Middle Channel / 10MHz / QPSK

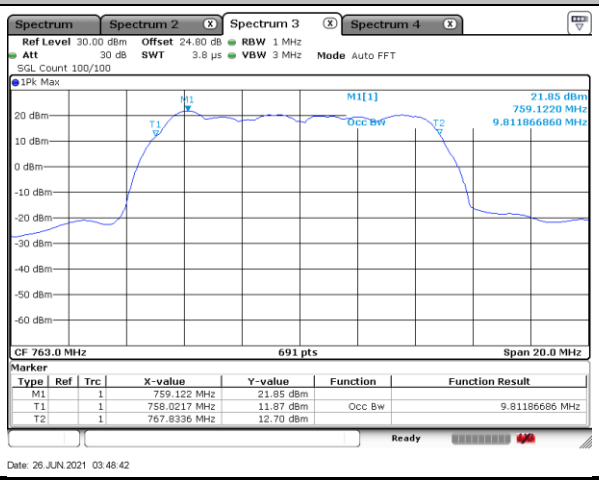
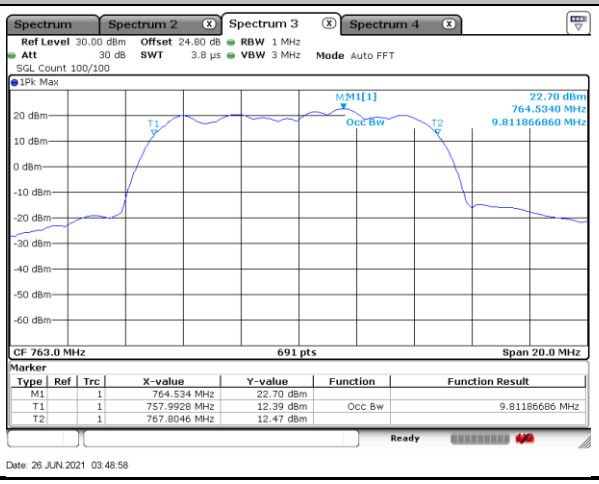


Middle Channel / 10MHz / 16QAM



Occupied Bandwidth

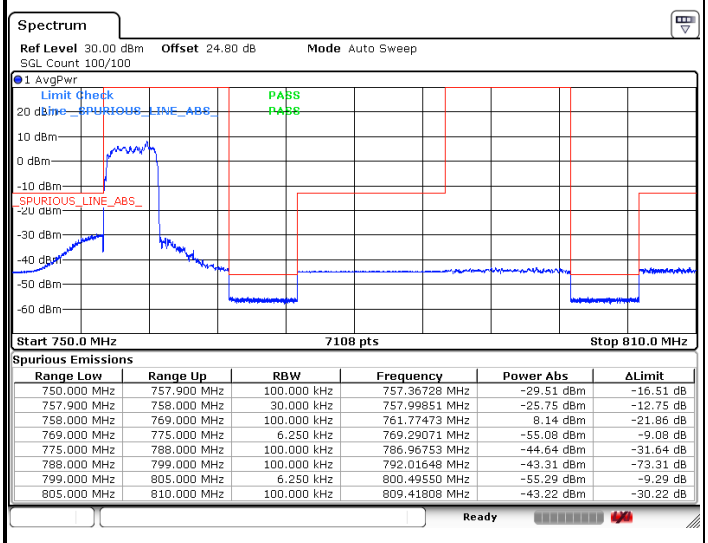
Mode	LTE Band 14 : 99%OBW(MHz)	
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	9.81	9.81

LTE Band 14	
Middle Channel / 10MHz / QPSK	Middle Channel / 10MHz / 16QAM
	

Conducted Band Edge

LTE Band 14 / 5MHz / QPSK

Lowest Band Edge / Full RB

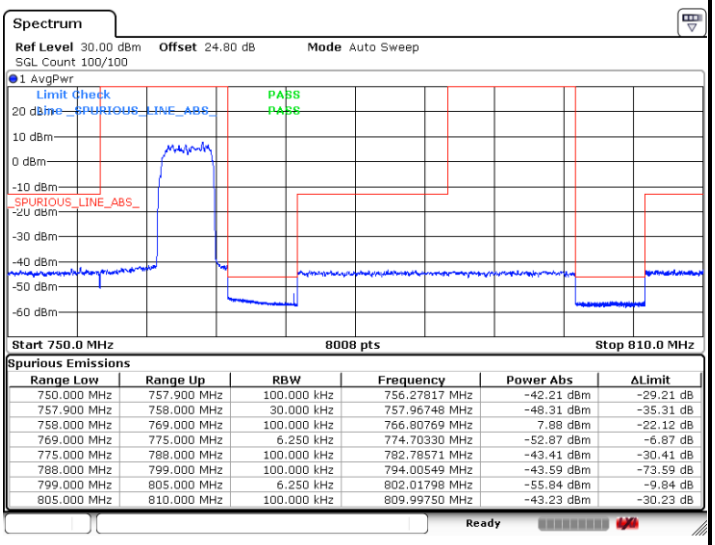


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.36728 MHz	-29.51 dBm	-16.51 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.99851 MHz	-25.75 dBm	-12.75 dB
758.000 MHz	769.000 MHz	100.000 kHz	761.77473 MHz	8.14 dBm	-21.86 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.29071 MHz	-55.08 dBm	-9.08 dB
775.000 MHz	788.000 MHz	100.000 kHz	786.96753 MHz	-44.64 dBm	-31.64 dB
788.000 MHz	799.000 MHz	100.000 kHz	792.01648 MHz	-43.31 dBm	-73.31 dB
799.000 MHz	805.000 MHz	6.250 kHz	800.49550 MHz	-55.29 dBm	-9.29 dB
805.000 MHz	810.000 MHz	100.000 kHz	809.41808 MHz	-43.22 dBm	-30.22 dB

Date: 1.JUL.2021 08:57:21

Highest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	756.27817 MHz	-42.21 dBm	-29.21 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.96748 MHz	-48.31 dBm	-35.31 dB
758.000 MHz	769.000 MHz	100.000 kHz	766.80769 MHz	7.88 dBm	-22.12 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.70330 MHz	-52.87 dBm	-6.87 dB
775.000 MHz	788.000 MHz	100.000 kHz	782.78571 MHz	-43.41 dBm	-30.41 dB
788.000 MHz	799.000 MHz	100.000 kHz	794.00549 MHz	-43.59 dBm	-73.59 dB
799.000 MHz	805.000 MHz	6.250 kHz	802.01798 MHz	-55.84 dBm	-9.84 dB
805.000 MHz	810.000 MHz	100.000 kHz	809.99750 MHz	-43.23 dBm	-30.23 dB

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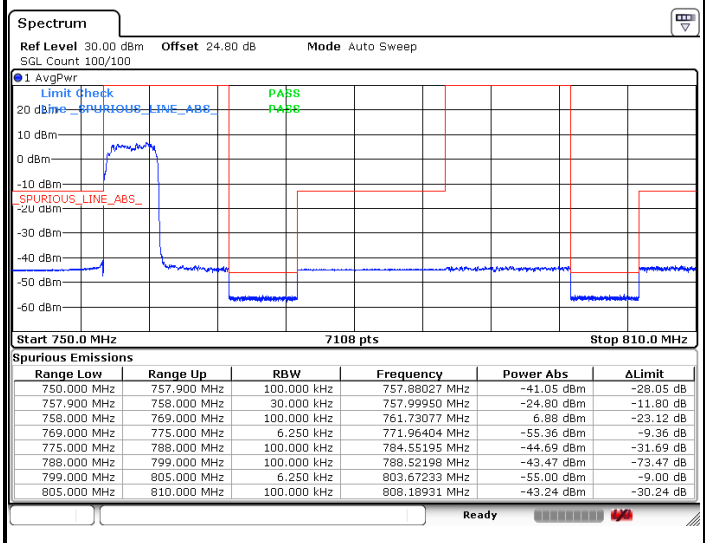
LTE Band 14 / 5MHz / 16QAM

Lowest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.88027 MHz	-41.05 dBm	-28.05 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.99950 MHz	-24.80 dBm	-11.80 dB
758.000 MHz	769.000 MHz	100.000 kHz	761.73077 MHz	6.88 dBm	-23.12 dB
769.000 MHz	775.000 MHz	6.250 kHz	771.96404 MHz	-55.36 dBm	-9.36 dB
775.000 MHz	788.000 MHz	100.000 kHz	784.55195 MHz	-44.69 dBm	-31.69 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.52198 MHz	-43.47 dBm	-73.47 dB
799.000 MHz	805.000 MHz	6.250 kHz	803.67233 MHz	-55.00 dBm	-9.00 dB
805.000 MHz	810.000 MHz	100.000 kHz	808.18931 MHz	-43.24 dBm	-30.24 dB

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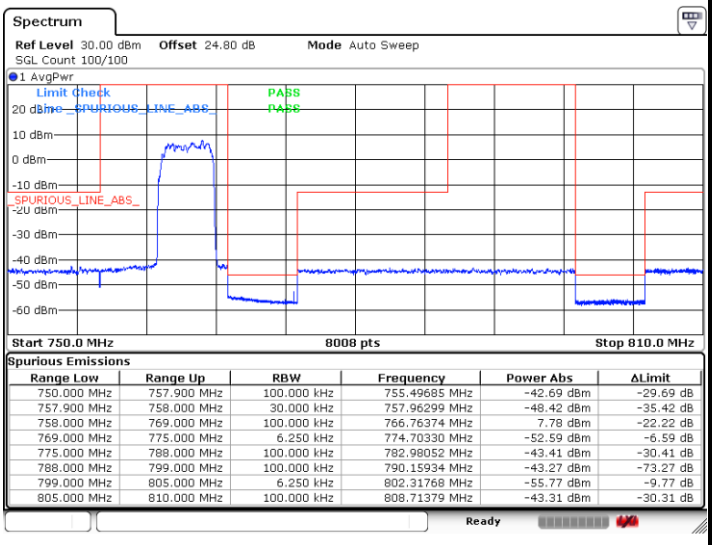
Highest Band Edge / Full RB

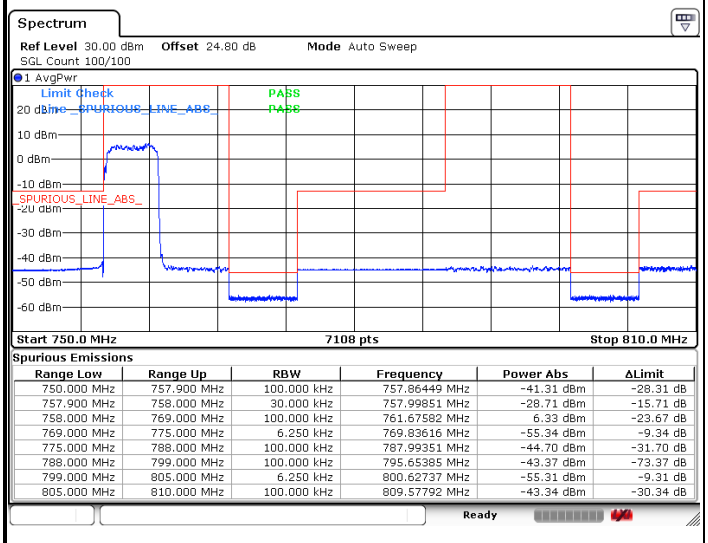


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	755.49685 MHz	-42.69 dBm	-29.69 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.96299 MHz	-48.42 dBm	-35.42 dB
758.000 MHz	769.000 MHz	100.000 kHz	766.76374 MHz	7.78 dBm	-22.22 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.70330 MHz	-52.59 dBm	-6.59 dB
775.000 MHz	788.000 MHz	100.000 kHz	782.98052 MHz	-43.41 dBm	-30.41 dB
788.000 MHz	799.000 MHz	100.000 kHz	790.15934 MHz	-43.27 dBm	-73.27 dB
799.000 MHz	805.000 MHz	6.250 kHz	802.31768 MHz	-55.77 dBm	-9.77 dB
805.000 MHz	810.000 MHz	100.000 kHz	808.71379 MHz	-43.31 dBm	-30.31 dB

Date: 26.JUN.2021 04:07:46

LTE Band 14 / 5MHz / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.86449 MHz	-41.31 dBm	-28.31 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.99851 MHz	-28.71 dBm	-15.71 dB
758.000 MHz	769.000 MHz	100.000 kHz	761.67582 MHz	6.33 dBm	-23.67 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.83616 MHz	-55.34 dBm	-9.34 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-44.70 dBm	-31.70 dB
788.000 MHz	799.000 MHz	100.000 kHz	795.65385 MHz	-43.37 dBm	-73.37 dB
799.000 MHz	805.000 MHz	6.250 kHz	800.62737 MHz	-55.31 dBm	-9.31 dB
805.000 MHz	810.000 MHz	100.000 kHz	809.57792 MHz	-43.34 dBm	-30.34 dB

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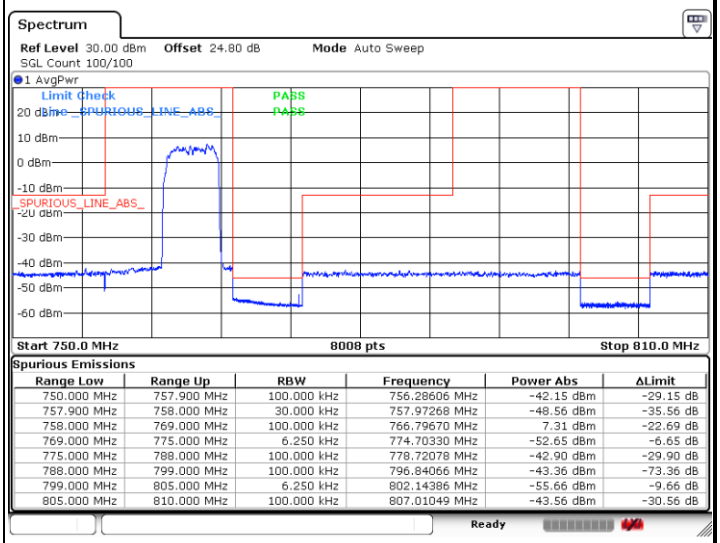

Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	756.28606 MHz	-42.15 dBm	-29.15 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.97268 MHz	-48.56 dBm	-35.56 dB
758.000 MHz	769.000 MHz	100.000 kHz	766.79670 MHz	7.31 dBm	-22.69 dB
769.000 MHz	775.000 MHz	6.250 kHz	774.70330 MHz	-52.65 dBm	-6.65 dB
775.000 MHz	788.000 MHz	100.000 kHz	778.72078 MHz	-42.90 dBm	-29.90 dB
788.000 MHz	799.000 MHz	100.000 kHz	796.84066 MHz	-43.36 dBm	-73.36 dB
799.000 MHz	805.000 MHz	6.250 kHz	802.14386 MHz	-55.66 dBm	-9.66 dB
805.000 MHz	810.000 MHz	100.000 kHz	807.01049 MHz	-43.56 dBm	-30.56 dB

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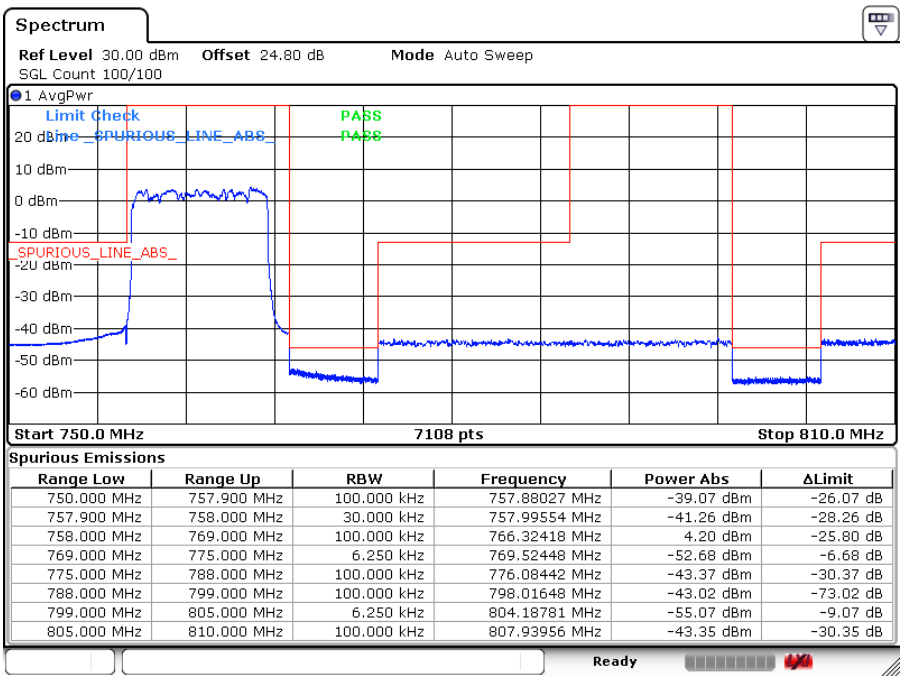
LTE Band 14 / 10MHz / QPSK

Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.88027 MHz	-39.07 dBm	-26.07 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.99554 MHz	-41.26 dBm	-28.26 dB
758.000 MHz	769.000 MHz	100.000 kHz	766.32418 MHz	4.20 dBm	-25.80 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.52448 MHz	-52.68 dBm	-6.68 dB
775.000 MHz	788.000 MHz	100.000 kHz	776.08442 MHz	-43.37 dBm	-30.37 dB
788.000 MHz	799.000 MHz	100.000 kHz	798.01648 MHz	-43.02 dBm	-73.02 dB
799.000 MHz	805.000 MHz	6.250 kHz	804.18781 MHz	-55.07 dBm	-9.07 dB
805.000 MHz	810.000 MHz	100.000 kHz	807.93956 MHz	-43.35 dBm	-30.35 dB

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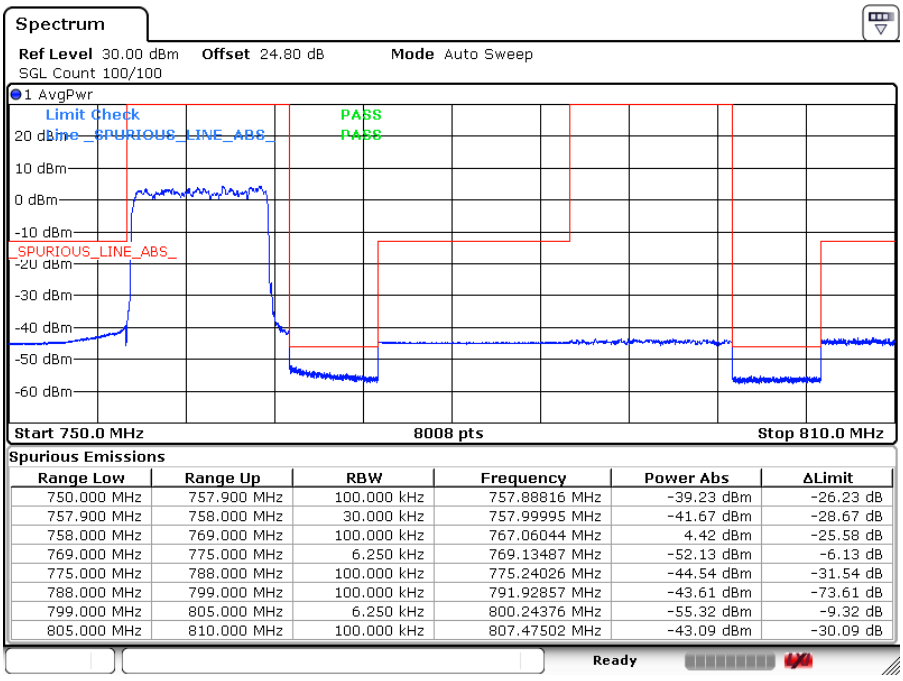
LTE Band 14 / 10MHz / 16QAM

Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.88816 MHz	-39.23 dBm	-26.23 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.99995 MHz	-41.67 dBm	-28.67 dB
758.000 MHz	769.000 MHz	100.000 kHz	767.06044 MHz	4.42 dBm	-25.58 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.13487 MHz	-52.13 dBm	-6.13 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.24026 MHz	-44.54 dBm	-31.54 dB
788.000 MHz	799.000 MHz	100.000 kHz	791.92857 MHz	-43.61 dBm	-73.61 dB
799.000 MHz	805.000 MHz	6.250 kHz	800.24376 MHz	-55.32 dBm	-9.32 dB
805.000 MHz	810.000 MHz	100.000 kHz	807.47502 MHz	-43.09 dBm	-30.09 dB

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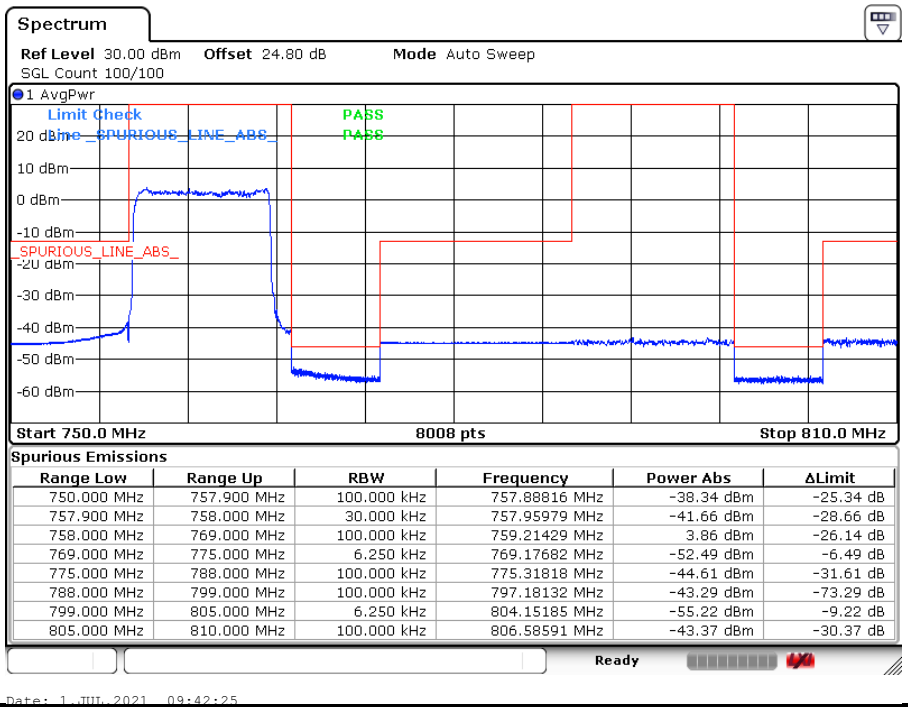
LTE Band 14 / 10MHz / 64QAM

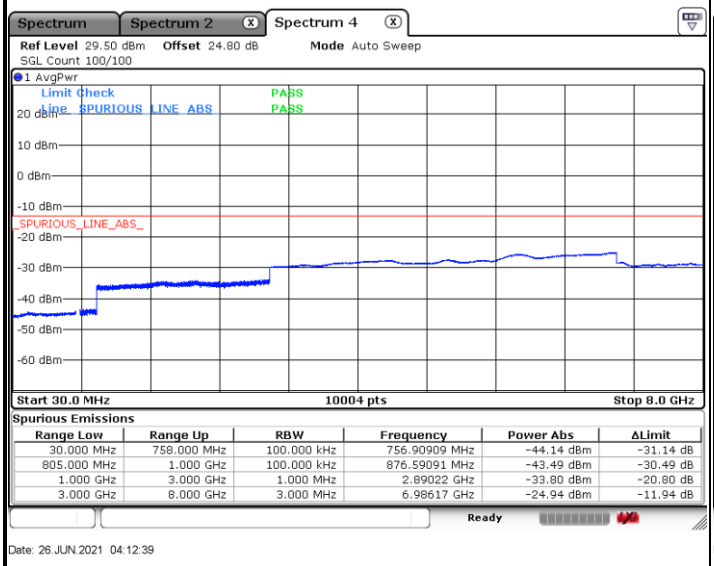
Band Edge / Full RB



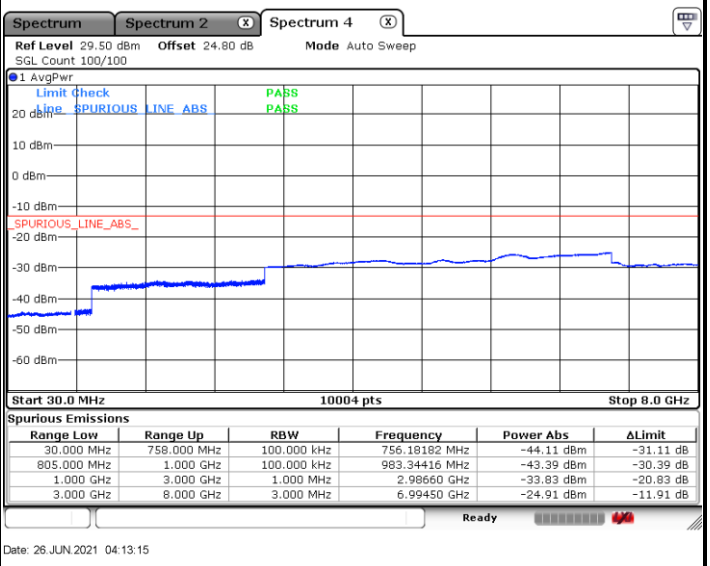
Conducted Spurious Emission

LTE Band 14 / 5MHz

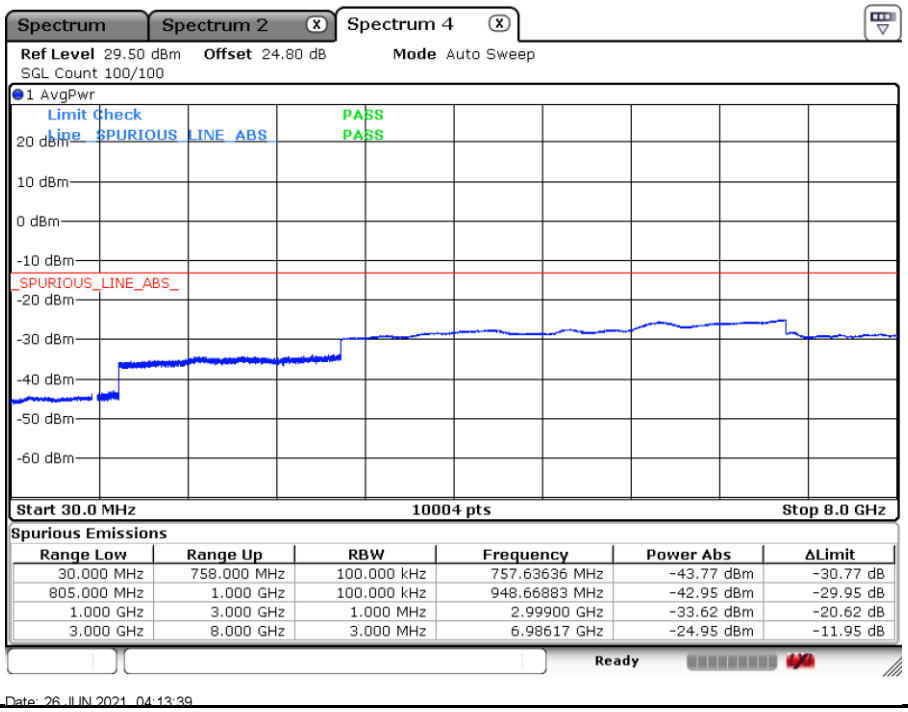
Lowest Channel / QPSK



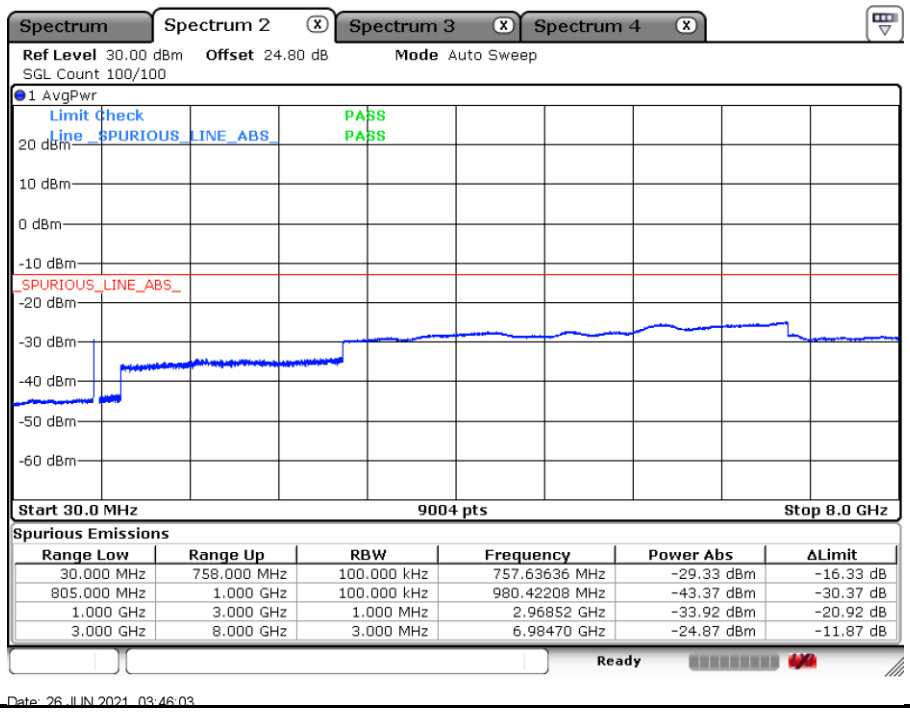
Middle Channel / QPSK



Highest Channel / QPSK



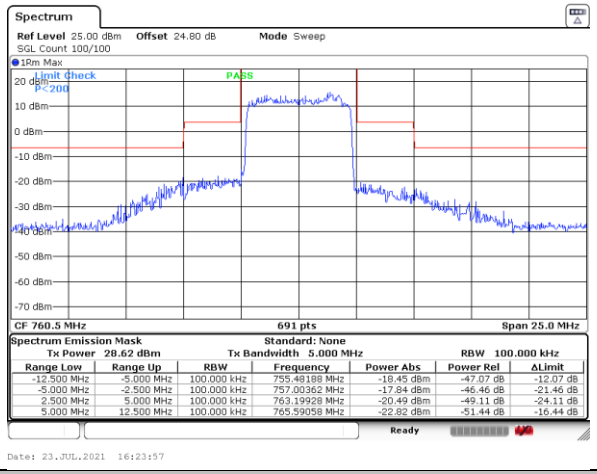
LTE Band 14 / 10MHz
Middle Channel / QPSK



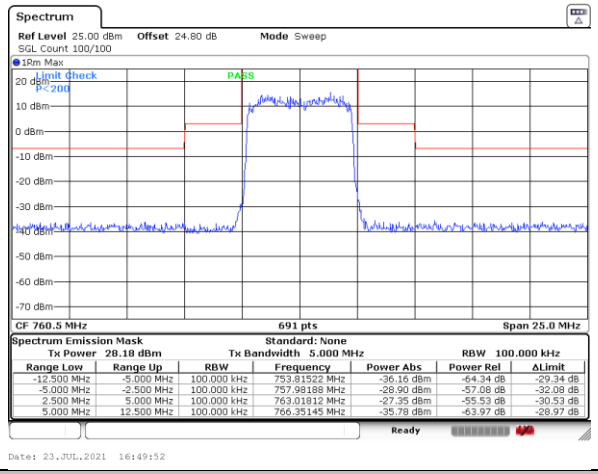
Emission Mask

LTE Band 14/ 5M(fullRB0)

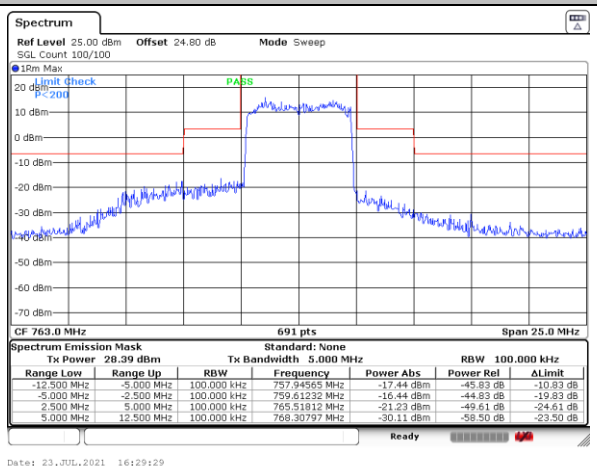
Lowest Channel / 5MHz / QPSK



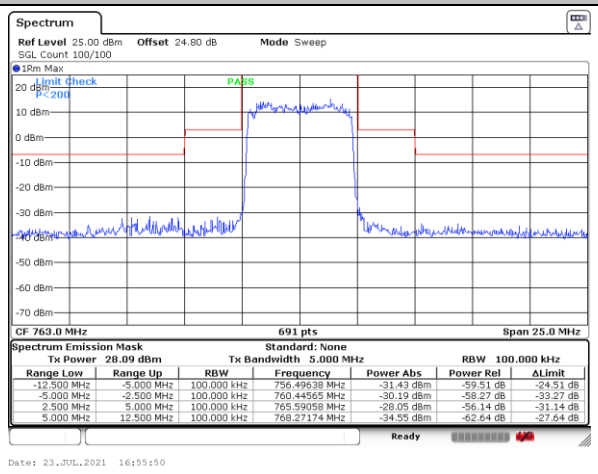
Lowest Channel / 5MHz / 16QAM



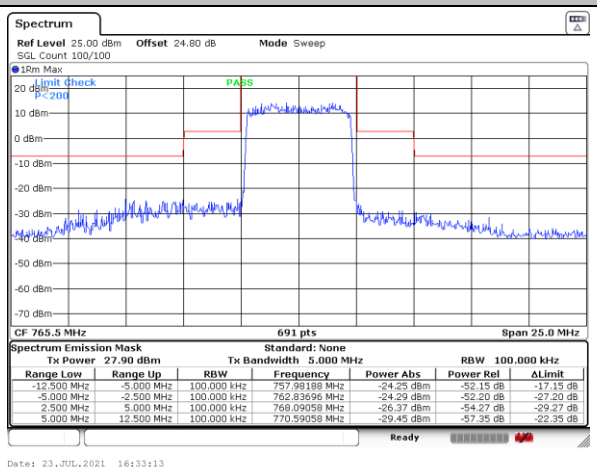
Middle Channel / 5MHz / QPSK



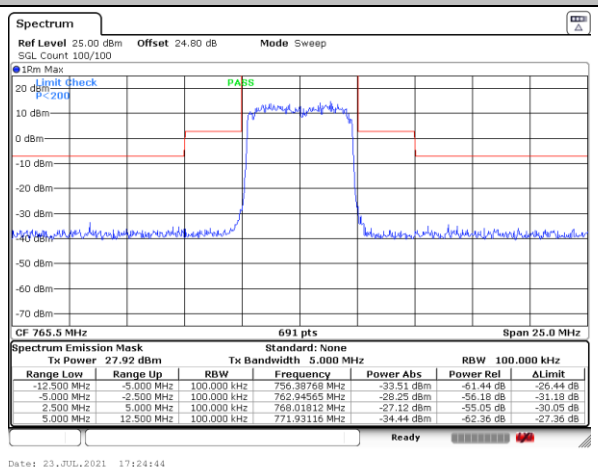
Middle Channel / 5MHz / 16QAM

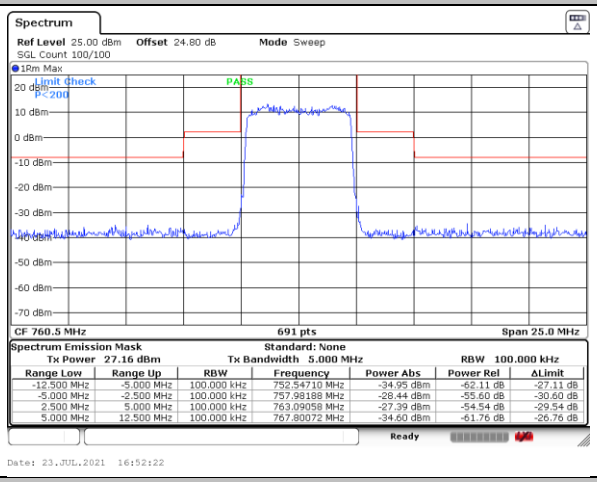
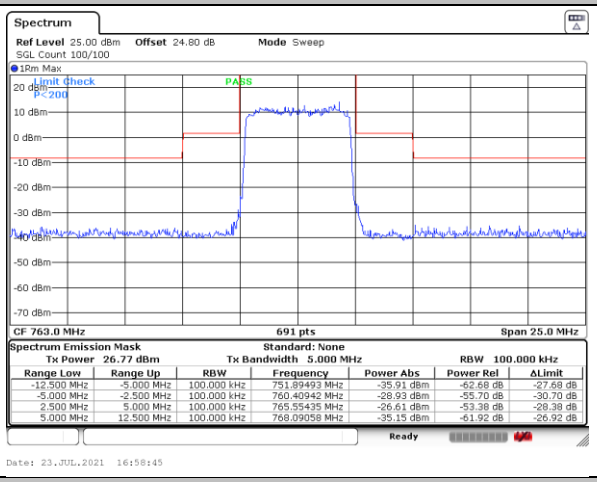
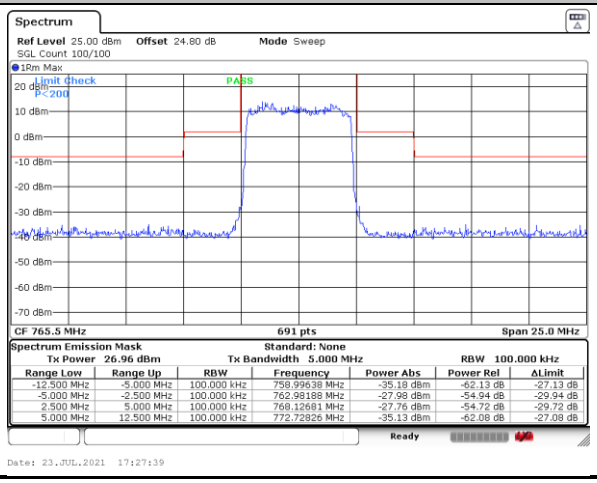


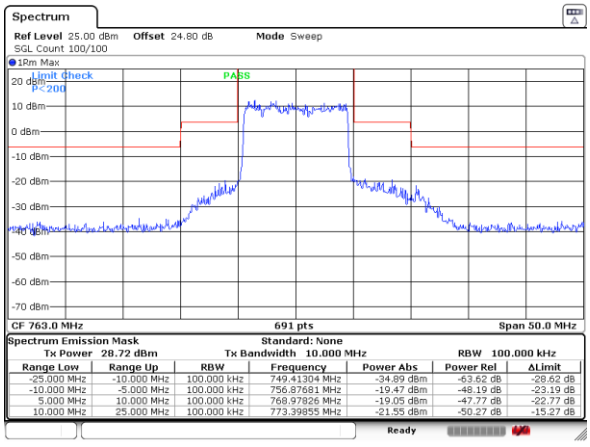
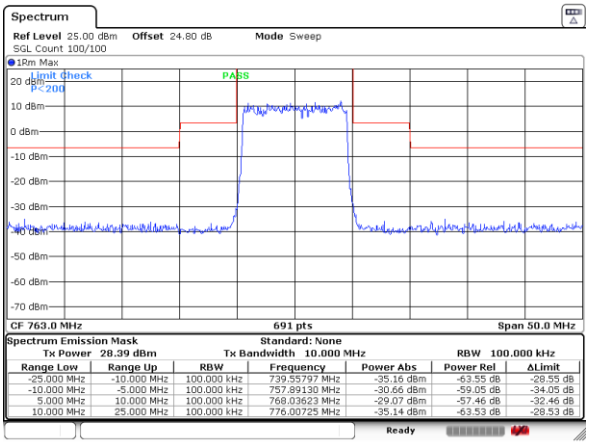
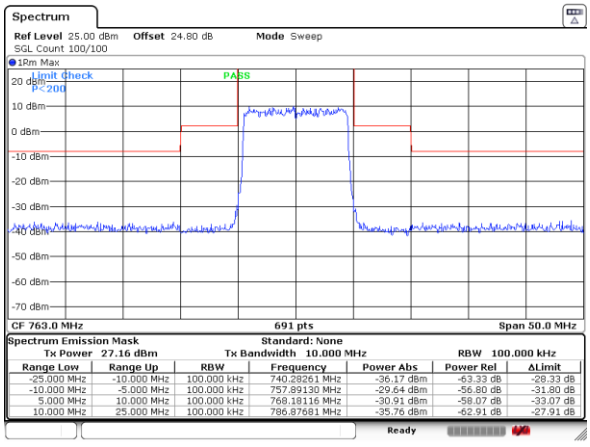
Highest Channel / 5MHz / QPSK



Highest Channel / 5MHz / 16QAM



Lowest Channel / fullRB0 / 64QAM	Middle Channel / fullRB0 / 64QAM
	
Middle Channel / fullRB0 / 64QAM	
	

LTE Band 14/ 10MHz	
Middle Channel / fullRB0 / QPSK	**Middle Channel / fullRB0 / 16QAM**
	
Middle Channel / fullRB0 / 64QAM	
	

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	0.00	PASS
40	Normal Voltage	0.00	
30	Normal Voltage	0.00	
20(Ref.)	Normal Voltage	0.00	
10	Normal Voltage	0.00	
0	Normal Voltage	0.00	
-10	Normal Voltage	0.00	
-20	Normal Voltage	0.00	
-30	Normal Voltage	0.00	
20	Maximum Voltage	0.00	
20	Normal Voltage	0.00	
20	Minimum Voltage	0.00	

Note:

1. Normal Voltage =120 V. ; Minimum Voltage =102 V. ; Maximum Voltage =138 V.

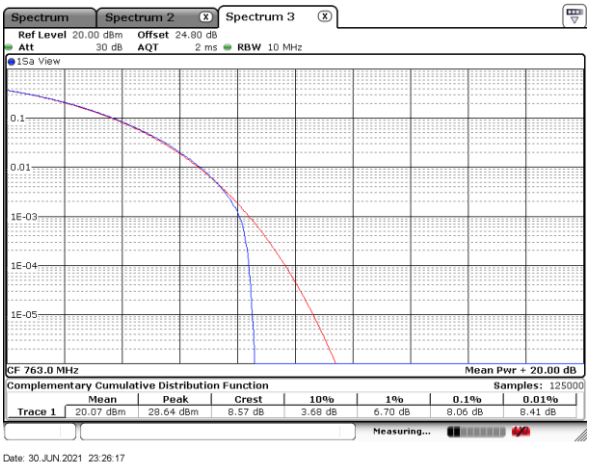
2. Note: The frequency fundamental emissions stay within the authorized frequency block.

LTE Band 14 for Antenna 4

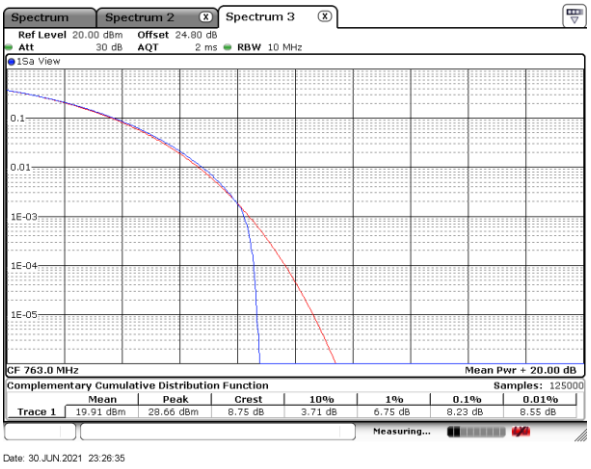
Peak-to-Average Ratio

Mode	LTE Band 14 / 10MHz			
Mod.	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Result
Middle CH	8.06	8.23	8.14	PASS

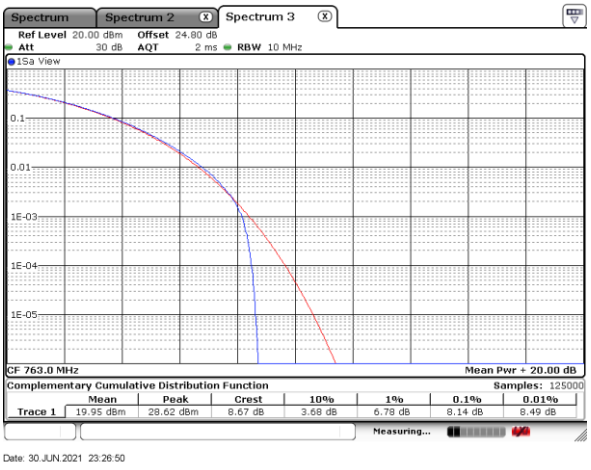
LTE Band 14 / 10MHz
Middle Channel / Full RB/ QPSK



Middle Channel / Full RB/ 16QAM



Middle Channel / Full RB/ 64QAM

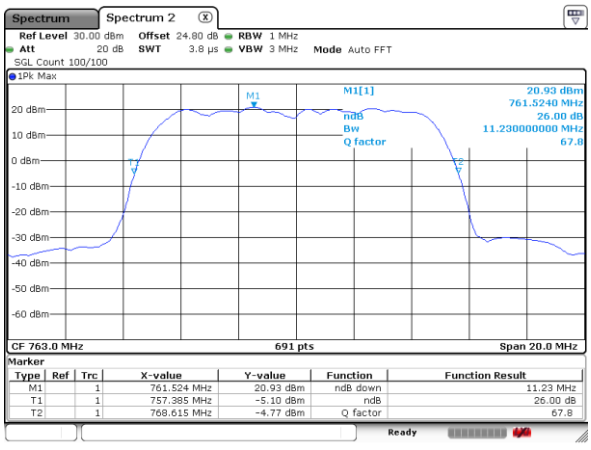


26dB Bandwidth

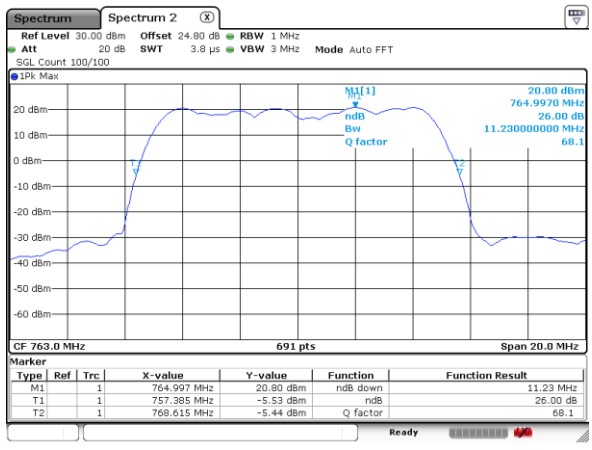
Mode	LTE Band 14 : 26dB BW(MHz)	
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	11.23	11.23

LTE Band 14

Middle Channel / 10MHz / QPSK



Middle Channel / 10MHz / 16QAM

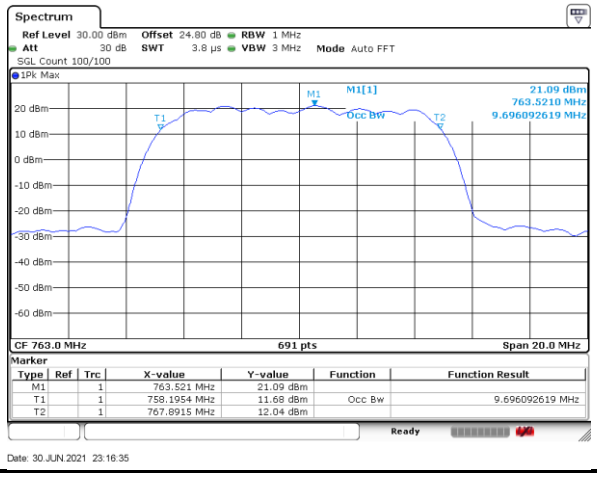


Occupied Bandwidth

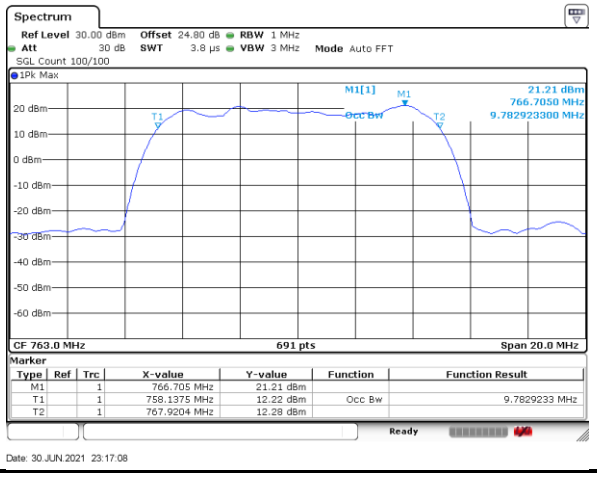
Mode	LTE Band 14 : 99%OBW(MHz)	
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	9.70	9.78

LTE Band 14

Middle Channel / 10MHz / QPSK



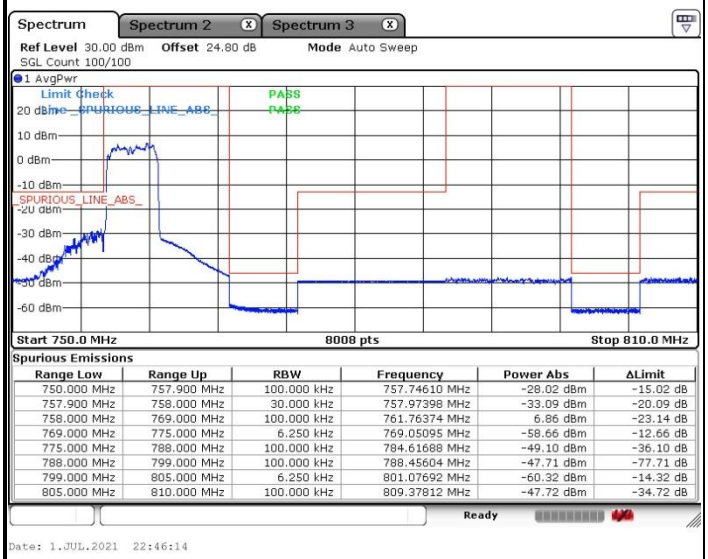
Middle Channel / 10MHz / 16QAM



Conducted Band Edge

LTE Band 14 / 5MHz / QPSK

Lowest Band Edge / Full RB



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.74610 MHz	-28.02 dBm	-15.02 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.97398 MHz	-33.09 dBm	-20.09 dB
758.000 MHz	769.000 MHz	100.000 kHz	761.76374 MHz	6.86 dBm	-23.14 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.05095 MHz	-58.66 dBm	-12.66 dB
775.000 MHz	788.000 MHz	100.000 kHz	784.61688 MHz	-49.10 dBm	-36.10 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.45604 MHz	-47.71 dBm	-77.71 dB
799.000 MHz	805.000 MHz	6.250 kHz	801.07692 MHz	-60.32 dBm	-14.32 dB
805.000 MHz	810.000 MHz	100.000 kHz	809.37812 MHz	-47.72 dBm	-34.72 dB

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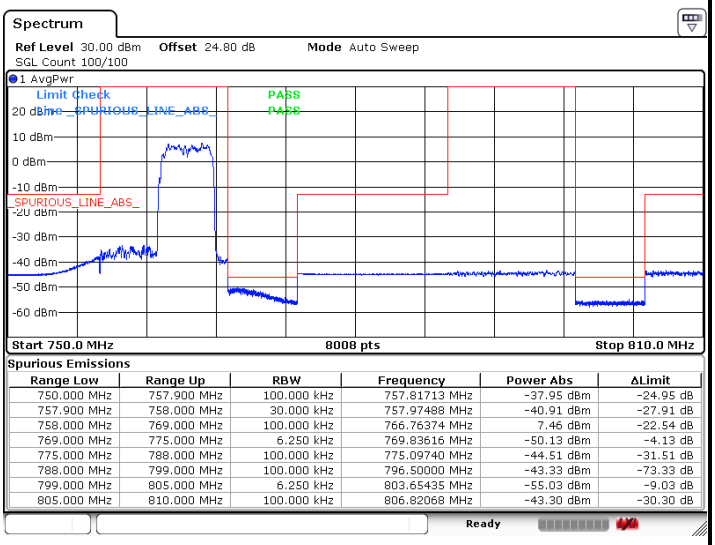
Highest Band Edge / Full RB



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.81713 MHz	-37.95 dBm	-24.95 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.97488 MHz	-40.91 dBm	-27.91 dB
758.000 MHz	769.000 MHz	100.000 kHz	766.76374 MHz	7.46 dBm	-22.54 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.83616 MHz	-50.13 dBm	-4.13 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.09740 MHz	-44.51 dBm	-31.51 dB
788.000 MHz	799.000 MHz	100.000 kHz	796.50000 MHz	-43.33 dBm	-73.33 dB
799.000 MHz	805.000 MHz	6.250 kHz	803.65435 MHz	-55.03 dBm	-9.03 dB
805.000 MHz	810.000 MHz	100.000 kHz	806.82068 MHz	-43.30 dBm	-30.30 dB

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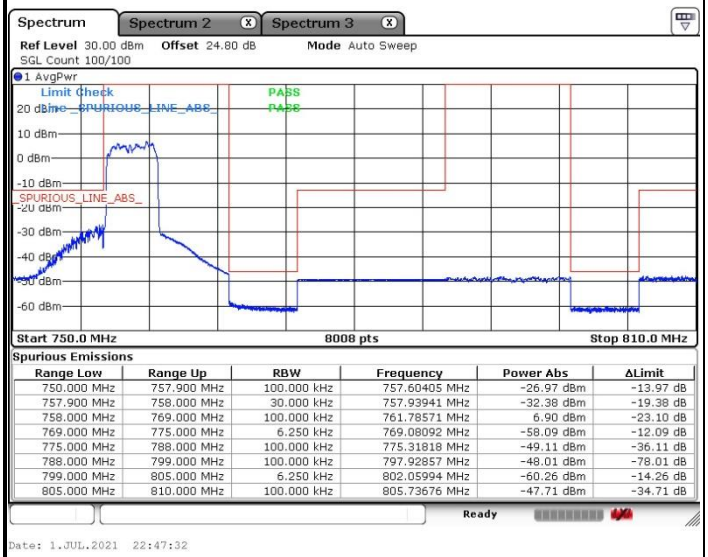
LTE Band 14 / 5MHz / 16QAM

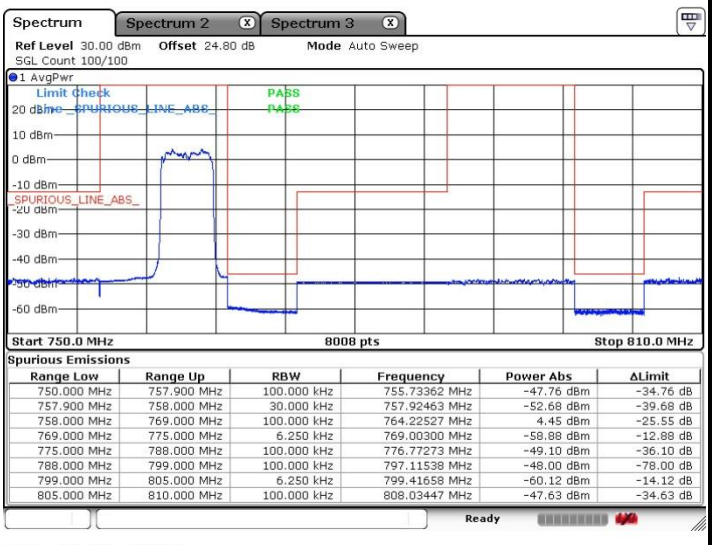
Lowest Band Edge / Full RB



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.60405 MHz	-26.97 dBm	-13.97 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.93941 MHz	-32.38 dBm	-19.38 dB
758.000 MHz	769.000 MHz	100.000 kHz	761.78571 MHz	6.90 dBm	-23.10 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.08092 MHz	-58.09 dBm	-12.09 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.31818 MHz	-49.11 dBm	-36.11 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.92857 MHz	-48.01 dBm	-78.01 dB
799.000 MHz	805.000 MHz	6.250 kHz	802.05994 MHz	-60.26 dBm	-14.26 dB
805.000 MHz	810.000 MHz	100.000 kHz	805.73676 MHz	-47.71 dBm	-34.71 dB

Date: 1.JUL.2021 22:47:32

Highest Band Edge / Full RB



Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	755.73362 MHz	-47.76 dBm	-34.76 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.92463 MHz	-52.68 dBm	-39.68 dB
758.000 MHz	769.000 MHz	100.000 kHz	764.22527 MHz	4.45 dBm	-25.55 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.00300 MHz	-58.88 dBm	-12.88 dB
775.000 MHz	788.000 MHz	100.000 kHz	776.77273 MHz	-49.10 dBm	-36.10 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.11538 MHz	-48.00 dBm	-78.00 dB
799.000 MHz	805.000 MHz	6.250 kHz	799.41658 MHz	-60.12 dBm	-14.12 dB
805.000 MHz	810.000 MHz	100.000 kHz	808.03447 MHz	-47.63 dBm	-34.63 dB

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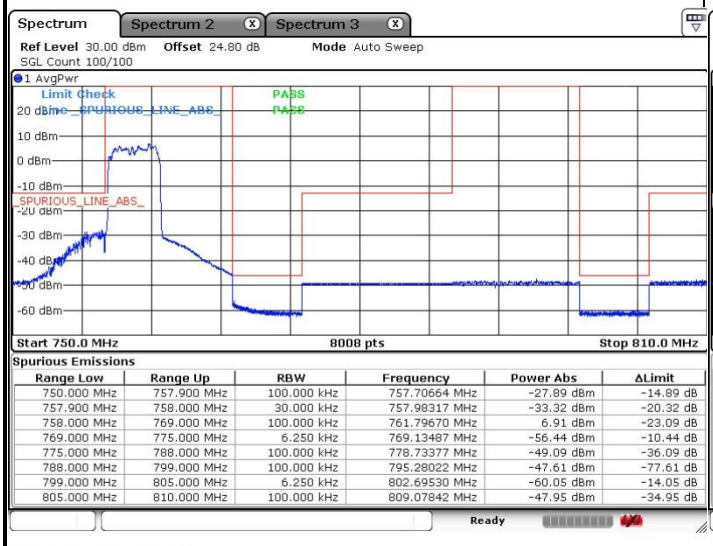
LTE Band 14 / 5MHz / 64QAM	
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.70664 MHz	-27.89 dBm	-14.89 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.98317 MHz	-33.32 dBm	-20.32 dB
758.000 MHz	769.000 MHz	100.000 kHz	761.79670 MHz	6.91 dBm	-23.09 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.13487 MHz	-56.44 dBm	-10.44 dB
775.000 MHz	788.000 MHz	100.000 kHz	778.73377 MHz	-49.09 dBm	-36.09 dB
788.000 MHz	799.000 MHz	100.000 kHz	795.28022 MHz	-47.61 dBm	-77.61 dB
799.000 MHz	805.000 MHz	6.250 kHz	802.69530 MHz	-60.05 dBm	-14.05 dB
805.000 MHz	810.000 MHz	100.000 kHz	809.07842 MHz	-47.95 dBm	-34.95 dB

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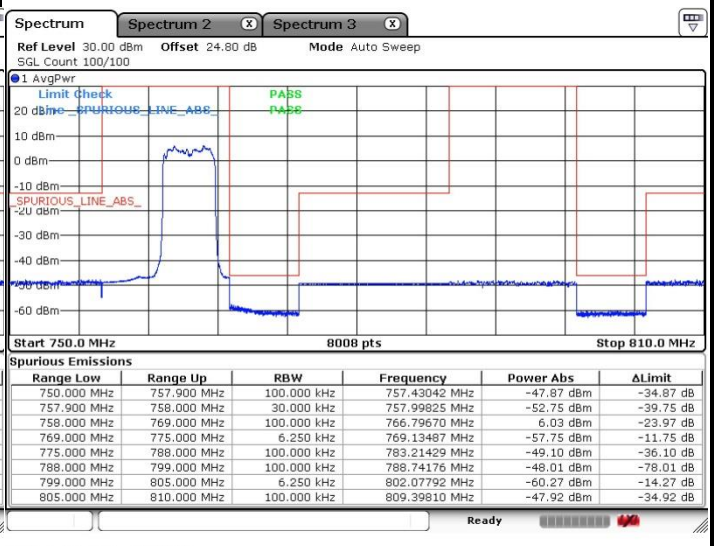

Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.43042 MHz	-47.87 dBm	-34.87 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.99825 MHz	-52.75 dBm	-39.75 dB
758.000 MHz	769.000 MHz	100.000 kHz	766.79670 MHz	6.03 dBm	-23.97 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.13487 MHz	-57.75 dBm	-11.75 dB
775.000 MHz	788.000 MHz	100.000 kHz	783.21429 MHz	-49.10 dBm	-36.10 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.74176 MHz	-48.01 dBm	-78.01 dB
799.000 MHz	805.000 MHz	6.250 kHz	802.07792 MHz	-60.27 dBm	-14.27 dB
805.000 MHz	810.000 MHz	100.000 kHz	809.39810 MHz	-47.92 dBm	-34.92 dB

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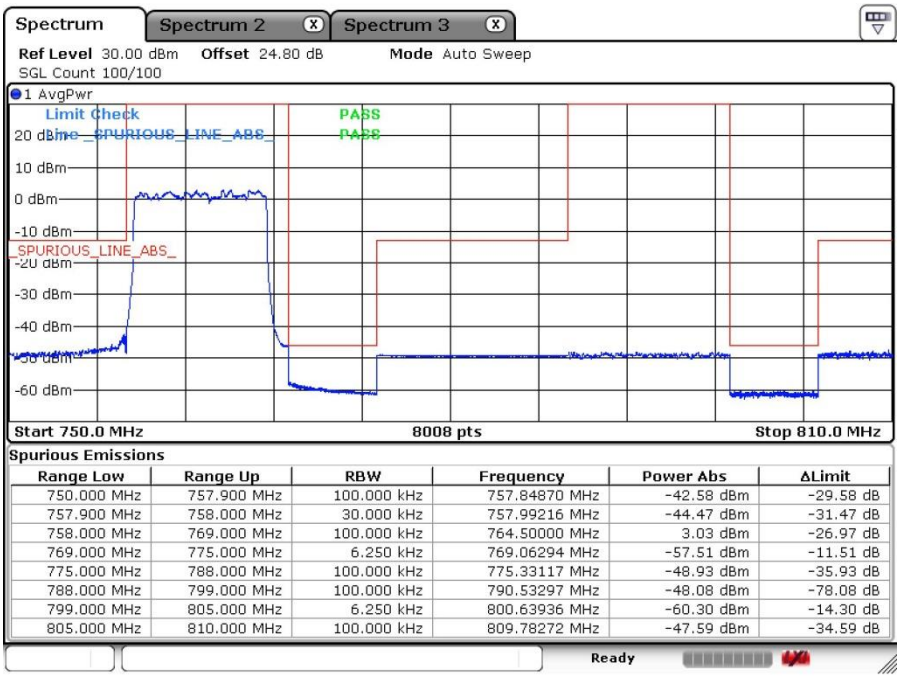
LTE Band 14 / 10MHz / QPSK

Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.84870 MHz	-42.58 dBm	-29.58 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.99216 MHz	-44.47 dBm	-31.47 dB
758.000 MHz	769.000 MHz	100.000 kHz	764.50000 MHz	3.03 dBm	-26.97 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.06294 MHz	-57.51 dBm	-11.51 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.33117 MHz	-48.93 dBm	-35.93 dB
788.000 MHz	799.000 MHz	100.000 kHz	790.53297 MHz	-48.08 dBm	-78.08 dB
799.000 MHz	805.000 MHz	6.250 kHz	800.63936 MHz	-60.30 dBm	-14.30 dB
805.000 MHz	810.000 MHz	100.000 kHz	809.78272 MHz	-47.59 dBm	-34.59 dB

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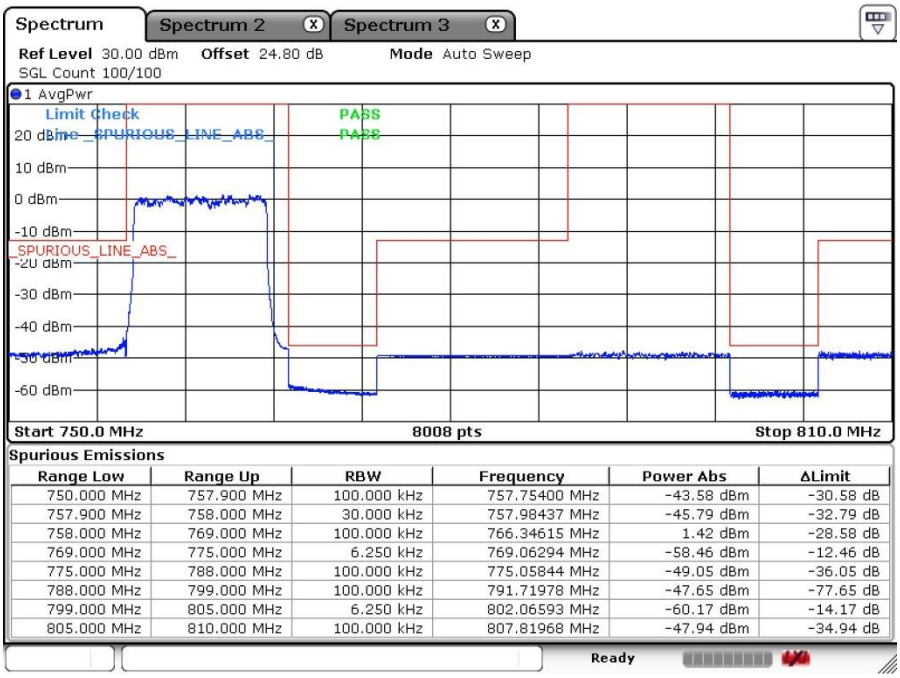
LTE Band 14 / 10MHz / 16QAM

Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.75400 MHz	-43.58 dBm	-30.58 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.98437 MHz	-45.79 dBm	-32.79 dB
758.000 MHz	769.000 MHz	100.000 kHz	766.34615 MHz	1.42 dBm	-28.58 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.06294 MHz	-58.46 dBm	-12.46 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.05844 MHz	-49.05 dBm	-36.05 dB
788.000 MHz	799.000 MHz	100.000 kHz	791.71978 MHz	-47.65 dBm	-77.65 dB
799.000 MHz	805.000 MHz	6.250 kHz	802.06593 MHz	-60.17 dBm	-14.17 dB
805.000 MHz	810.000 MHz	100.000 kHz	807.81968 MHz	-47.94 dBm	-34.94 dB

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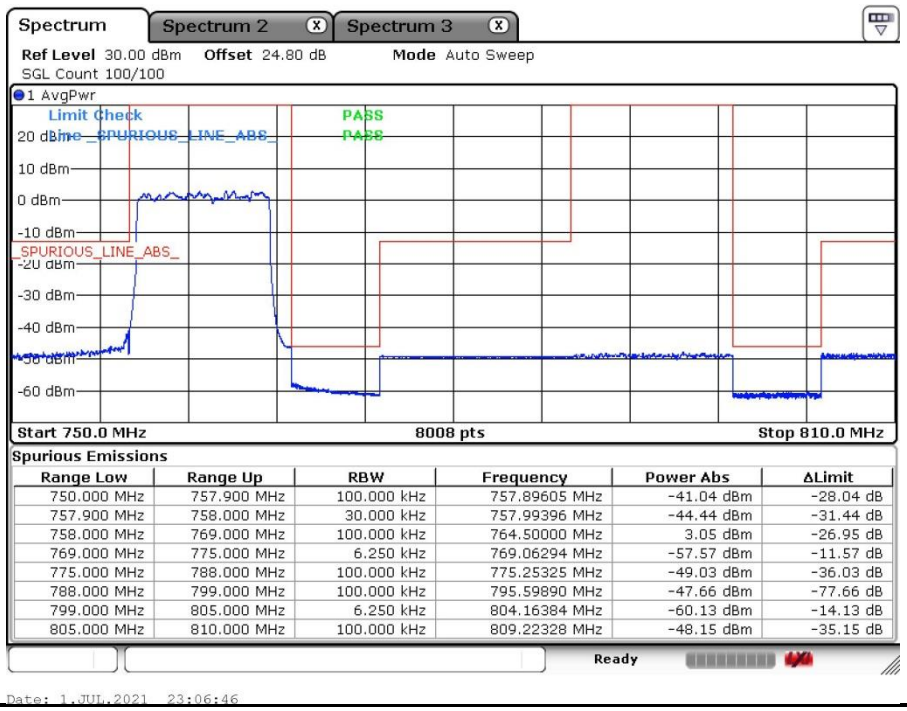
LTE Band 14 / 10MHz / 64QAM
Band Edge / Full RB



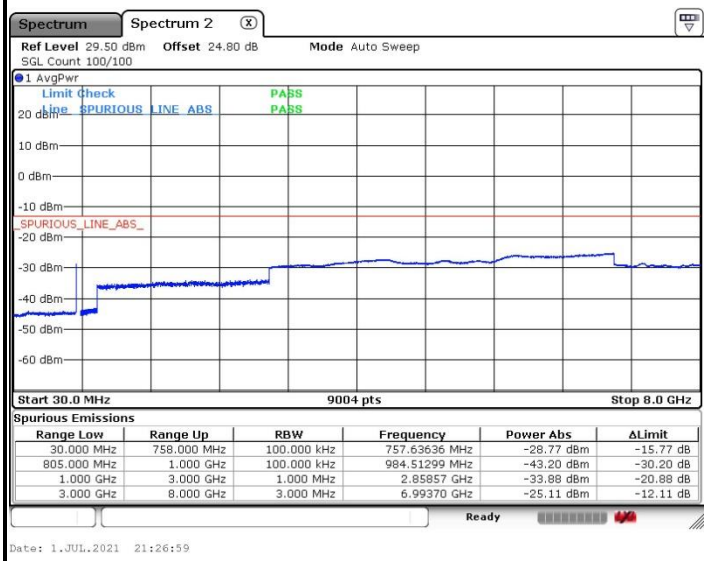
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	757.900 MHz	100.000 kHz	757.89605 MHz	-41.04 dBm	-28.04 dB
757.900 MHz	758.000 MHz	30.000 kHz	757.99396 MHz	-44.44 dBm	-31.44 dB
758.000 MHz	769.000 MHz	100.000 kHz	764.50000 MHz	3.05 dBm	-26.95 dB
769.000 MHz	775.000 MHz	6.250 kHz	769.06294 MHz	-57.57 dBm	-11.57 dB
775.000 MHz	788.000 MHz	100.000 kHz	775.25325 MHz	-49.03 dBm	-36.03 dB
788.000 MHz	799.000 MHz	100.000 kHz	795.59890 MHz	-47.66 dBm	-77.66 dB
799.000 MHz	805.000 MHz	6.250 kHz	804.16384 MHz	-60.13 dBm	-14.13 dB
805.000 MHz	810.000 MHz	100.000 kHz	809.22328 MHz	-48.15 dBm	-35.15 dB

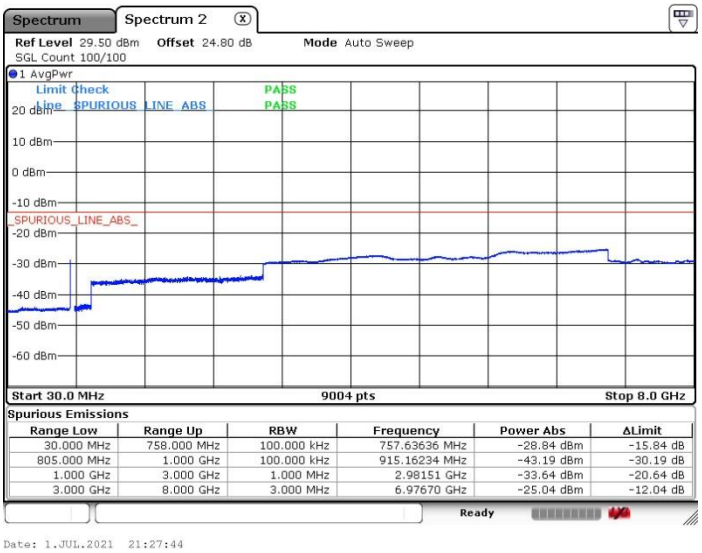
Conducted Spurious Emission

LTE Band 14 / 5MHz

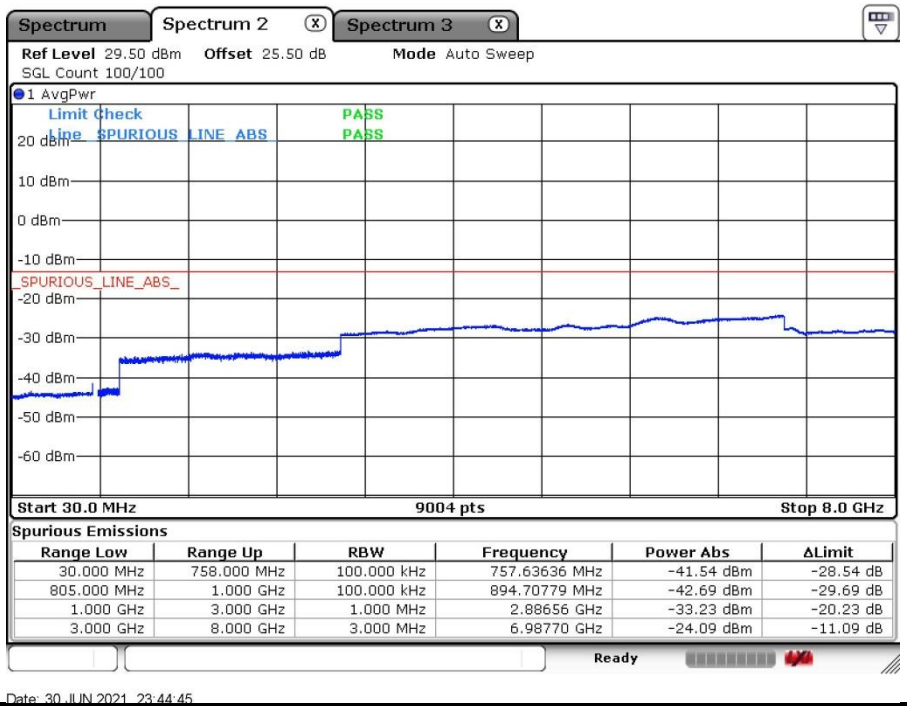
Lowest Channel / QPSK



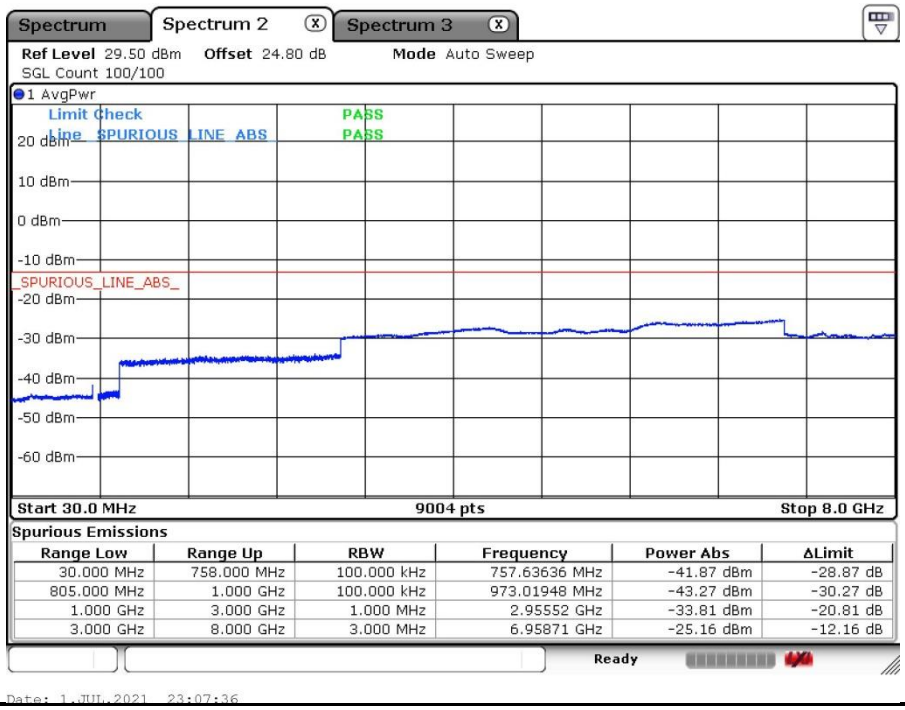
Middle Channel / QPSK



Highest Channel / QPSK



LTE Band 14 / 10MHz
Middle Channel / QPSK

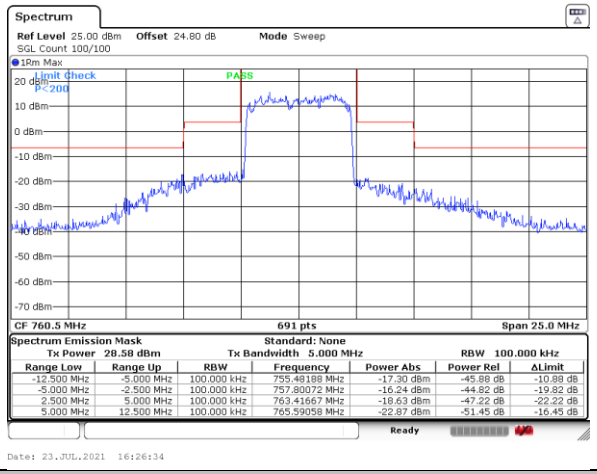


Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	758.000 MHz	100.000 kHz	757.63636 MHz	-41.87 dBm	-28.87 dB
805.000 MHz	1.000 GHz	100.000 kHz	973.01948 MHz	-43.27 dBm	-30.27 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.95552 GHz	-33.81 dBm	-20.81 dB
3.000 GHz	8.000 GHz	3.000 MHz	6.95871 GHz	-25.16 dBm	-12.16 dB

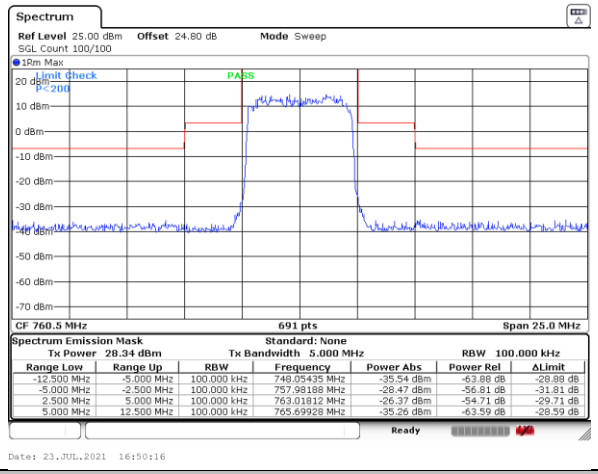
Emission MasK

LTE Band 14/ 5M(fullRB0)

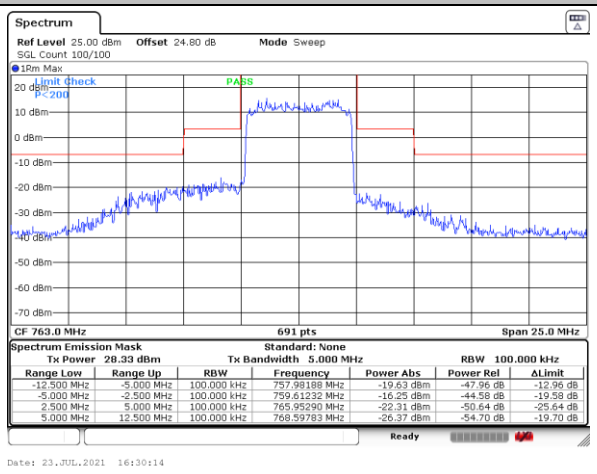
Lowest Channel / 5MHz / QPSK



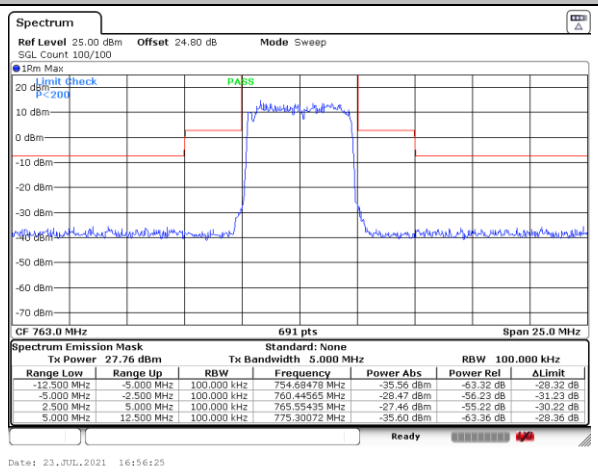
Lowest Channel / 5MHz / 16QAM



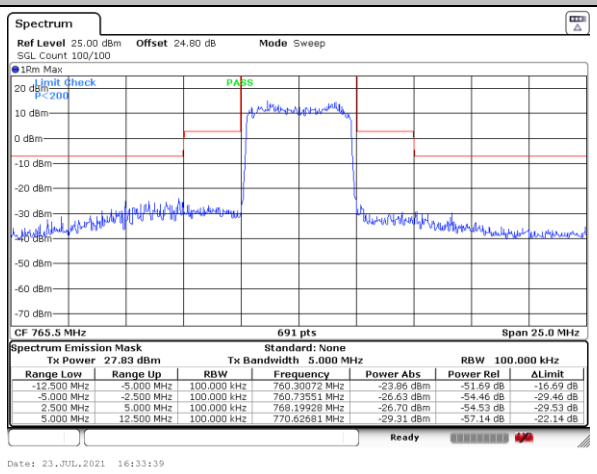
Middle Channel / 5MHz / QPSK



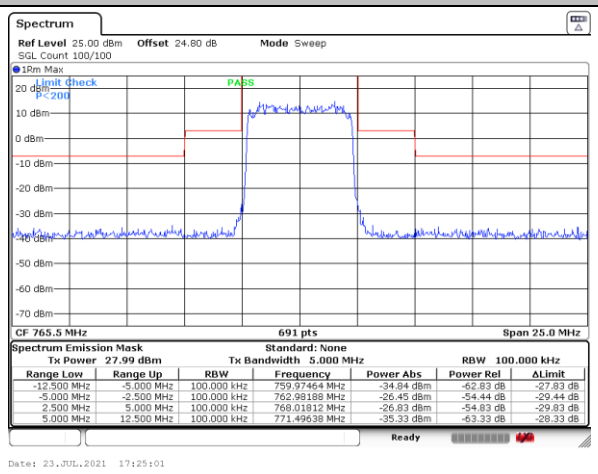
Middle Channel / 5MHz / 16QAM

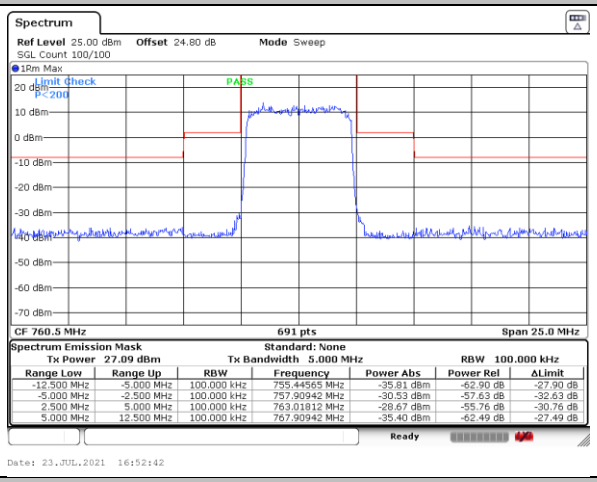
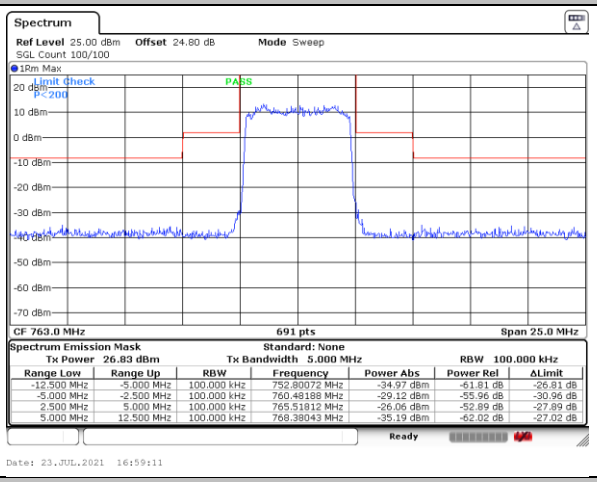
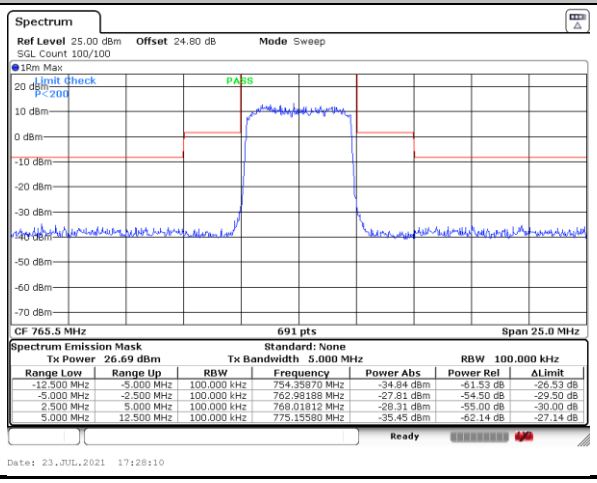


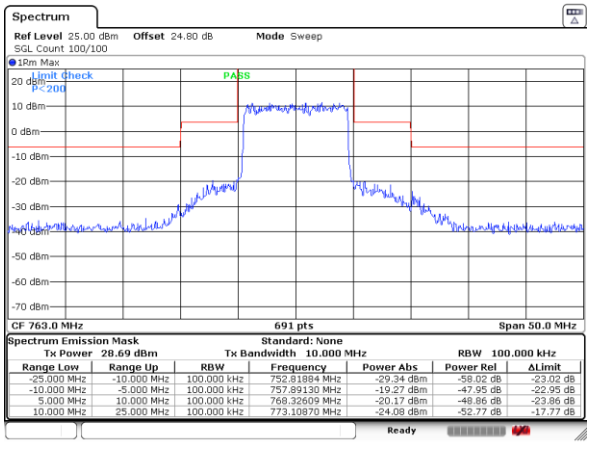
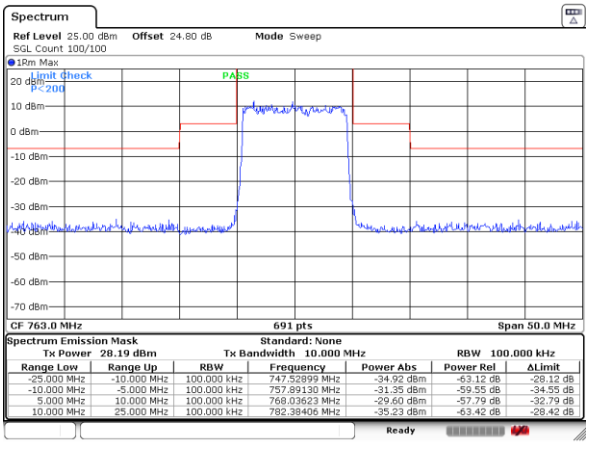
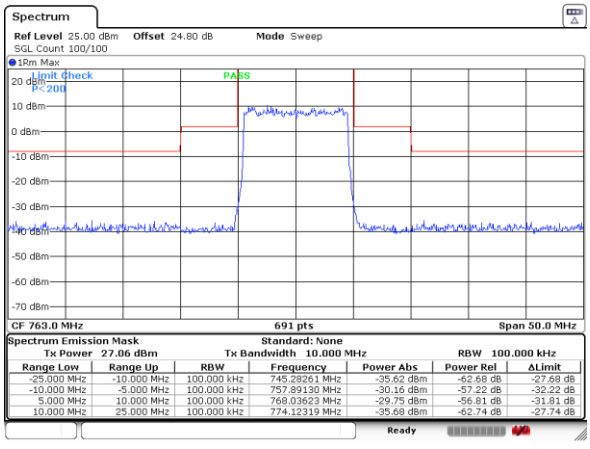
Highest Channel / 5MHz / QPSK



Highest Channel / 5MHz / 16QAM



Lowest Channel / fullRB0 / 64QAM	Middle Channel / fullRB0 / 64QAM
	
Middle Channel / fullRB0 / 64QAM	
	

LTE Band 14/ 10MHz	
Middle Channel / fullRB0 / QPSK	**Middle Channel / fullRB0 / 16QAM**
	
Middle Channel / fullRB0 / 64QAM	
	

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	0.0000	PASS
40	Normal Voltage	0.0000	
30	Normal Voltage	0.0000	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0000	
0	Normal Voltage	0.0000	
-10	Normal Voltage	0.0000	
-20	Normal Voltage	0.0000	
-30	Normal Voltage	0.0000	
20	Maximum Voltage	0.0000	
20	Normal Voltage	0.0000	
20	Minimum Voltage	0.0000	

Note:

1. Normal Voltage =120 V. ; Minimum Voltage =102 V. ; Maximum Voltage =138 V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of Radiated Test

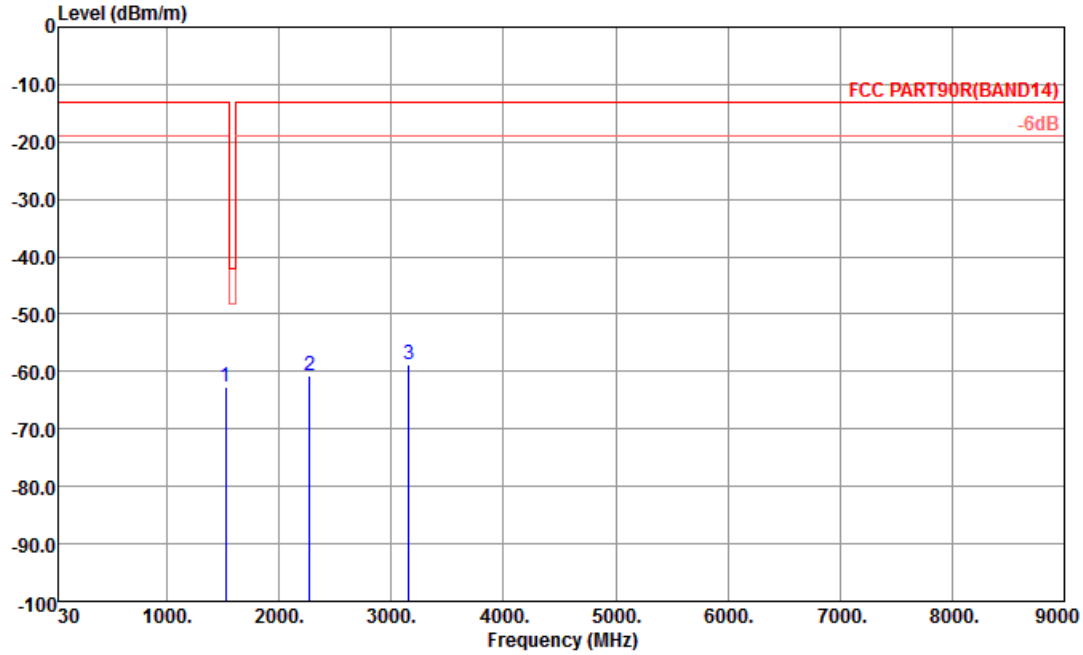
Field Strength of Spurious Radiated

LTE Band 14 / 10MHz / QPSK / full RB								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1522	-62.81	-13	-49.81	-65.44	1.09	5.87	H
	2276	-60.67	-13	-47.67	-63.07	1.37	5.92	H
	3156	-58.67	-13	-45.67	-62.56	1.64	7.68	H
	1522	-58.77	-13	-45.77	-61.40	1.09	5.87	V
	2276	-59.74	-13	-46.74	-62.14	1.37	5.92	V
	3156	-57.15	-13	-44.15	-61.04	1.64	7.68	V

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

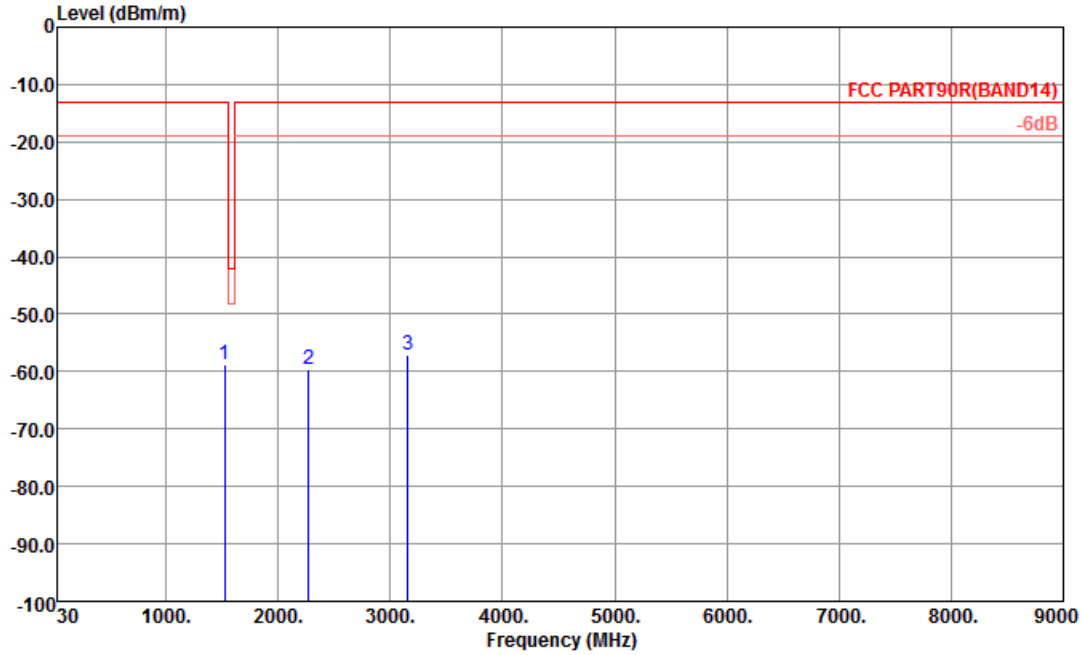
Worst test plots

LTE Band 14 / 10MHz / QPSK / full RB / QPSK for middle channel



Site : 03CH04-KS
Condition : FCC PART90R(BAND14) 3m HF PART 22/24/27 HORIZONTAL
Project : (FG)151309

	Freq	Level	Over Limit	Limit Line	Read Level	Pol/Phase
	MHz	dBm/m	dB	dBm/m	dBm	
1	1522.00	-62.81	-49.81	-13.00	-67.67	HORIZONTAL
2	2276.00	-60.67	-47.67	-13.00	-72.19	HORIZONTAL
3	3156.00	-58.67	-45.67	-13.00	-72.48	HORIZONTAL



Site : 03CH04-KS
Condition : FCC PART90R(BAND14) 3m HF PART 22/24/27 VERTICAL
Project : (FG)151309

	Freq	Level	Over Limit	Limit Line	Read Level	Pol/Phase
	MHz	dBm/m	dB	dBm/m	dBm	
1	1522.00	-58.77	-45.77	-13.00	-64.22	VERTICAL
2	2276.00	-59.74	-46.74	-13.00	-72.64	VERTICAL
3	3156.00	-57.15	-44.15	-13.00	-71.11	VERTICAL