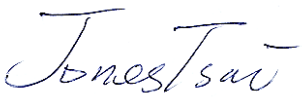
FCC RADIO TEST REPORT

FCC ID	:	**LHJ-BL28EURD1**
Equipment	:	**BL28EU-RD1**
Brand Name	:	**BL28EU-RD1**
Model Name	:	**BL28EU-RD1**
Marketing Name	:	**BL28EU-RD1**
Applicant	:	**Continental Automotive Systems, Inc. 21440 W Lake Cook Rd.**
Manufacturer	:	**Continental Automotive Systems, Inc. 21440 W Lake Cook Rd.**
Standard	:	**47 CFR Part 2, 27M**

The product was received on Mar. 30, 2019 and testing was started from Jun. 24, 2019 and completed on Jun. 26, 2019. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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.



Approved by: Jones Tsai

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

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History of this test report

Report No.	Version	Description	Issued Date
FG933002	01	Initial issue of report	Jul. 16, 2019

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
	§27.50 (h)(2)	Equivalent Isotropic Radiated Power (Band 7)	Pass	
3.3	-	Peak-to-Average Ratio	Reporting only	-
3.4	§2.1049	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §27.53 (m)(4)	Conducted Band Edge Measurement (Band 7)	Pass	-
3.6	§2.1051 §27.53 (m)(4)	Conducted Spurious Emission (Band 7)	Pass	-
3.7	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Pass	-
4.2	§2.1053 §27.53 (m)(4)	Radiated Spurious Emission (Band 7)	Pass	Under limit 11.35 dB at 7530.000 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: Wii Chang

Report Producer: Elise Chang

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, and GNSS.

Product Specification subjective to this standard	
Antenna Type	WWAN: Fixed External Antenna GPS / Glonass / BDS / Galileo / SBAS: Fixed External Antenna

1.2 Modification of EUT

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

1.3 Testing Location

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	TH05-HY
Test Engineer	George Chen
Temperature	22~24°C
Relative Humidity	60~65%

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

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH12-HY
Test Engineer	Jack Cheng, Lance Chiang,Chuan Chu
Temperature	22~24°C
Relative Humidity	56~60%

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

FCC Designation No.: TW1190 and TW0007

1.4 Applicable Standards

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

- ANSI C63.26-2015
- ANSI / TIA-603-E
- 47 CFR Part 2, 27M
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC 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.

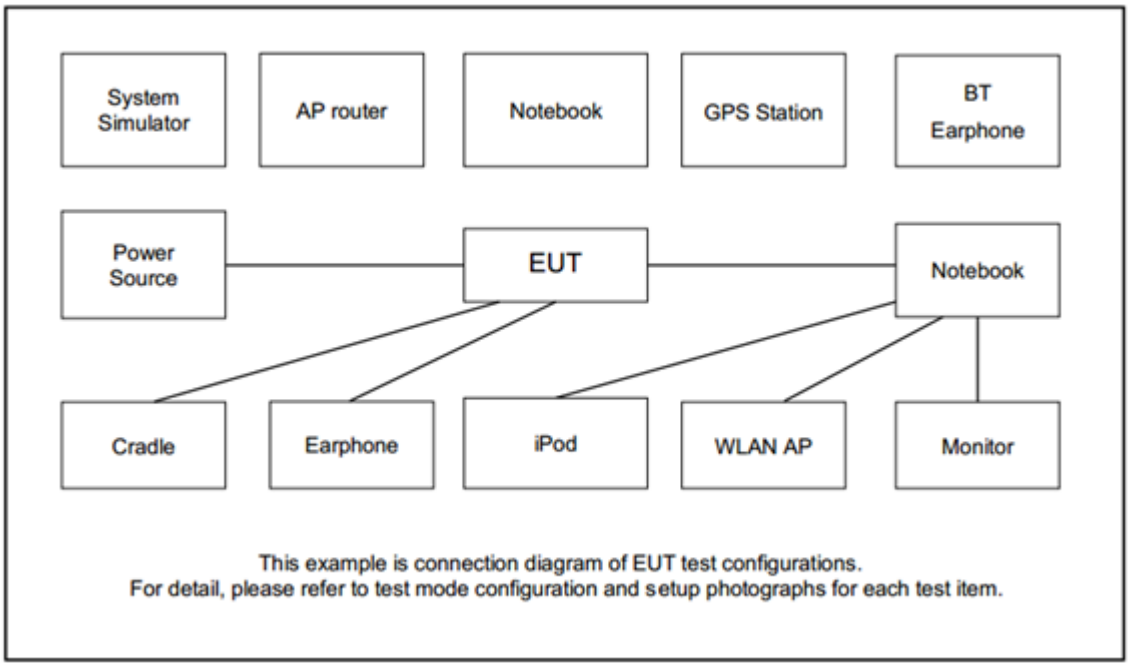
2 Test Configuration of Equipment Under Test

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.

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	7	-	-	v	v	v	v	v	-	-	v	v	v	v	v	v
Peak-to-Average Ratio	7	-	-				v	v	-	-	v		v	v	v	v
26dB and 99% Bandwidth	7	-	-	v	v	v	v	v	-	-			v	v	v	v
Conducted Band Edge	7	-	-	v	v	v	v	v	-	-	v		v	v		v
Conducted Spurious Emission	7	-	-	v	v	v	v	v	-	-	v			v	v	v
Frequency Stability	7	-	-		v			v	-	-			v		v	
E.I.R.P	7	-	-	v	v	v	v	v	-	-	v			v	v	v
Radiated Spurious Emission	7	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.															

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 2.80 dB and 10dB attenuator.

Example :

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

= 2.80 + 10 = 12.80(dB)

2.5 Frequency List of Low/Middle/High Channels

LTE Band 7 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	20850	21100	21350
	Frequency	2510	2535	2560
15	Channel	20825	21100	21375
	Frequency	2507.5	2535	2562.5
10	Channel	20800	21100	21400
	Frequency	2505	2535	2565
5	Channel	20775	21100	21425
	Frequency	2502.5	2535	2567.5

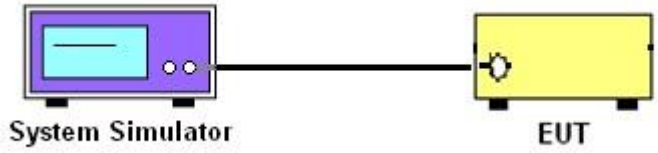
3 Conducted Test Items

3.1 Measuring Instruments

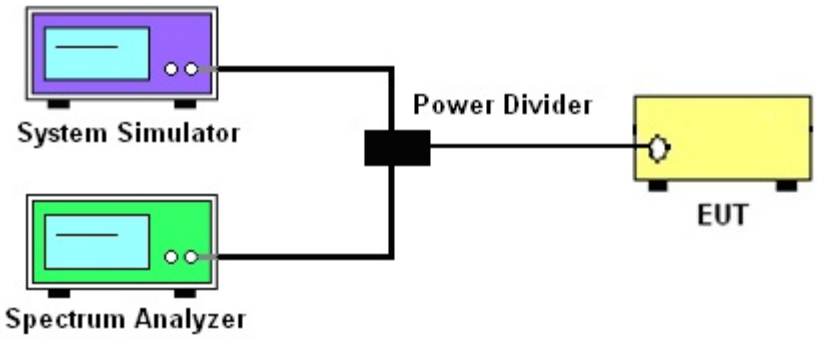
See list of measuring instruments of this test report.

3.1.1 Test Setup

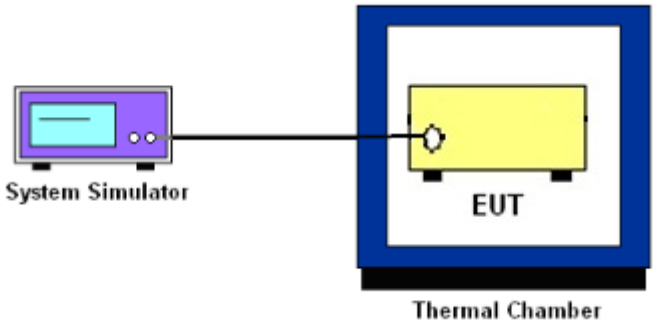
3.1.2 Conducted Output Power



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



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power and EIRP

3.2.1 Description of the Conducted Output Power Measurement and EIRP Measurement

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

The EIRP of mobile transmitters must not exceed 2 Watts for Band 7.

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.2.2 Test Procedures

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

3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

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

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

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

3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

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

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

3.4.2 Test Procedures

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

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

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

27.53(m)(4)

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
5. Set spectrum analyzer with RMS detector.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. Checked that all the results comply with the emission limit line.
   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
8. For LTE Band 7, the other 40 dB, and 55 dB have additionally applied same calculation above.

3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

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

For Band 7:

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 55 + 10 log (P) dB.

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

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

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

    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

27.54

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

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

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

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

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

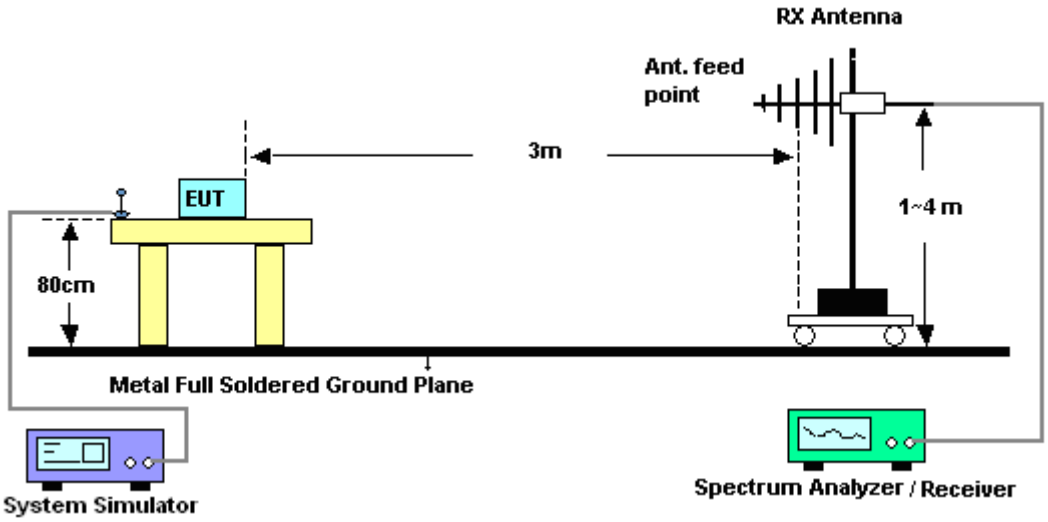
4 Radiated Test Items

4.1 Measuring Instruments

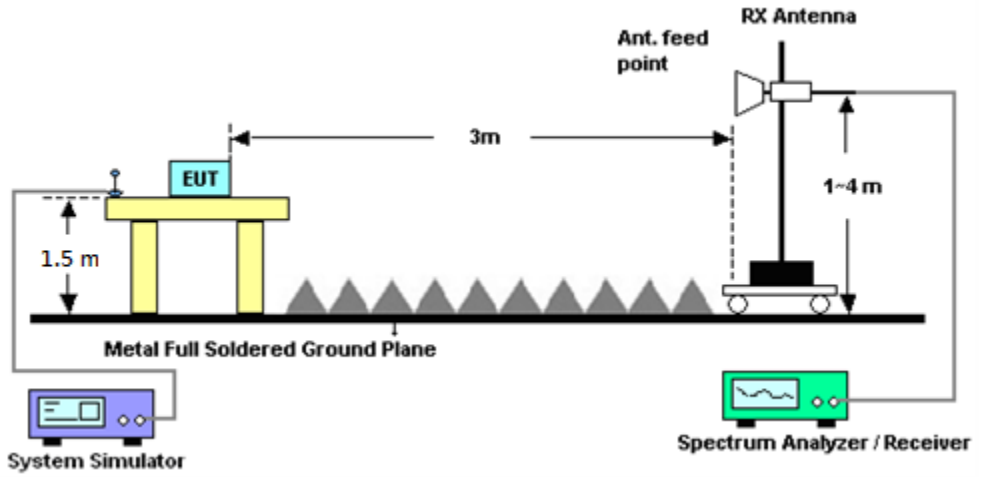
See list of measuring instruments of this test report.

4.1.1 Test Setup

For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

4.2 Radiated Spurious Emission Measurement

4.2.1 Description of Radiated Spurious Emission Measurement

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

For Band 7

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 55 + 10 log (P) dB.

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

4.2.2 Test Procedures

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

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
11. For Band 7:
    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)
    EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
    ERP (dBm) = EIRP - 2.15

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jan. 07, 2019	Jun. 26, 2019	Jan. 06, 2020	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802N 1D01N-06	47020&06	30MHz to 1GHz	Oct. 13, 2018	Jun. 26, 2019	Oct. 12, 2019	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1212	1GHz ~ 18GHz	Oct. 19, 2018	Jun. 26, 2019	Oct. 18, 2019	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1326	1GHz ~ 18GHz	Oct. 30, 2018	Jun. 26, 2019	Oct. 29, 2019	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz ~ 40GHz	Dec. 05, 2018	Jun. 26, 2019	Dec. 04, 2019	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 25, 2019	Jun. 26, 2019	Mar. 24, 2020	Radiation (03CH12-HY)
Preamplifier	Agilent	8449B	3008A02375	1GHz~26.5Ghz	May 28, 2018	Jun. 26, 2019	May 26, 2020	Radiation (03CH12-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055007	1GHz~18GHz	Apr. 01, 2019	Jun. 26, 2019	Mar. 31, 2020	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz ~ 40GHz	Dec. 06, 2018	Jun. 26, 2019	Dec. 05, 2019	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 26, 2018	Jun. 26, 2019	Dec. 25, 2019	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Dec. 19, 2018	Jun. 26, 2019	Dec. 18, 2019	Radiation (03CH12-HY)
Signal Generator	Rohde & Schwarz	SMB100A	175727	100kHz~40GHz	Dec. 23, 2018	Jun. 26, 2019	Dec. 23, 2019	Radiation (03CH12-HY)
Base Station	Anritsu	MT8821C	6201432816	GSM / GPRS /WCDMA / LTE FDD/TDD with 44) /LTE-3CC DLCA,2CC ULCA	May 05, 2019	Jun. 26, 2019	May 04, 2020	Radiation (03CH12-HY)
Filter	Wainwright	WLK4-1000-1530-6000-40SS	SN11	1 GHz Lowpass	Sep. 16, 2018	Jun. 26, 2019	Sep. 15, 2019	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60ST	SN2	3GHz High Pass	Mar. 20, 2019	Jun. 26, 2019	Mar. 19, 2020	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30M-18G	Mar. 13, 2019	Jun. 26, 2019	Mar. 12, 2020	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30M~40GHz	Oct. 16, 2018	Jun. 26, 2019	Oct. 15, 2019	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30M~40GHz	Oct. 16, 2018	Jun. 26, 2019	Oct. 15, 2019	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jun. 26, 2019	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jun. 26, 2019	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Jun. 26, 2019	N/A	Radiation (03CH12-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201432821	GSM/GPRS /WCDMA/LTE	Oct. 14, 2018	Jun. 24, 2019	Oct. 13, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 13, 2018	Jun. 24, 2019	Nov. 12, 2019	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40℃~90℃	Aug. 29, 2018	Jun. 24, 2019	Aug. 28, 2019	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 02, 2018	Jun. 24, 2019	Oct. 01, 2019	Conducted (TH05-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#A	1-18GHz	Jan. 14, 2019	Jun. 24, 2019	Jan. 13, 2020	Conducted (TH05-HY)

6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.36**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.70**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.98**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

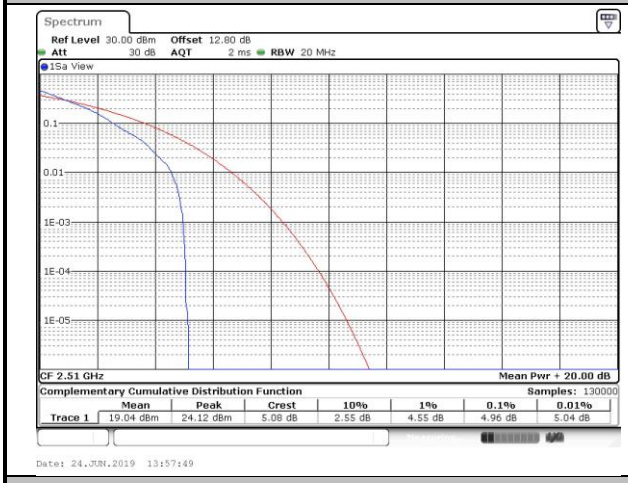
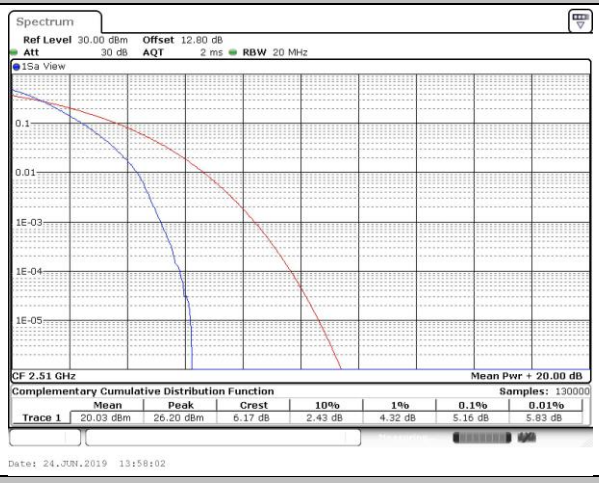
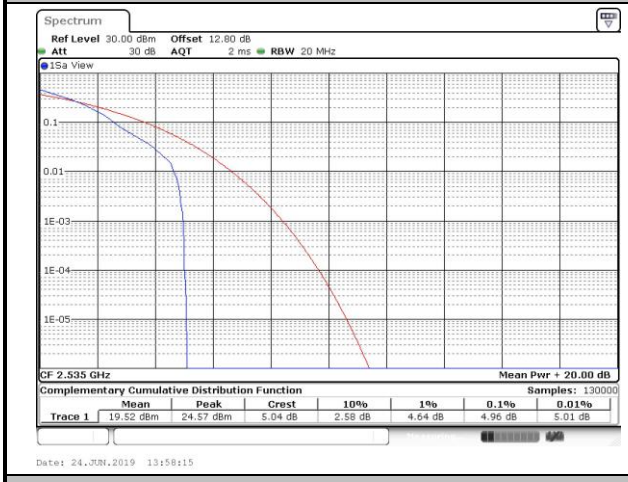
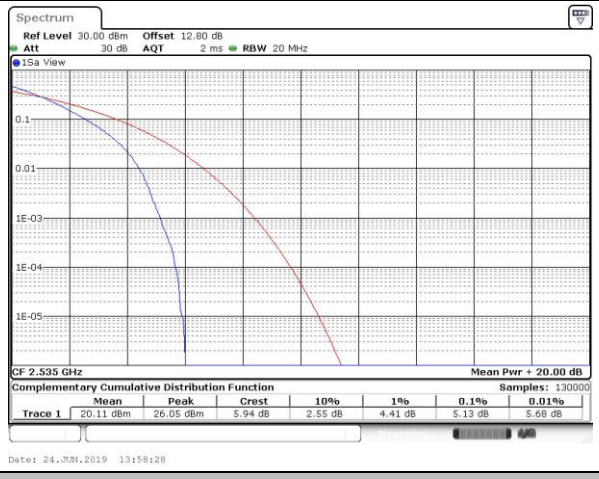
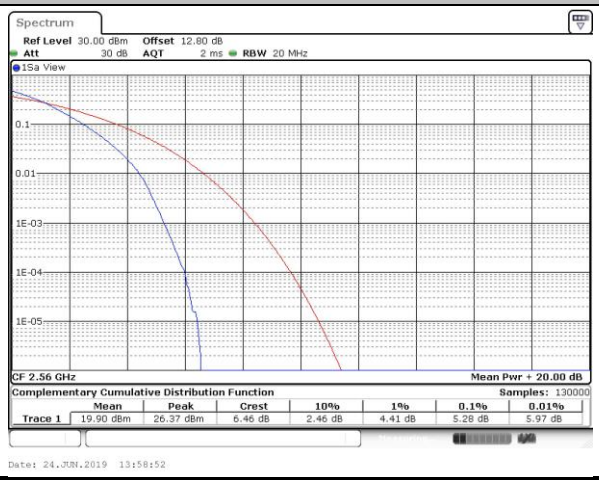
LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
20	1	0	QPSK	21.51	21.84	21.65
20	1	49		**22.57**	22.35	22.32
20	1	99		21.89	21.49	21.63
20	50	0		21.17	21.14	21.13
20	50	24		21.26	21.18	21.12
20	50	50		21.35	21.11	21.15
20	100	0		21.26	21.17	21.16
15	1	0	QPSK	21.68	22.03	21.87
15	1	37		22.31	22.29	22.08
15	1	74		22.07	21.93	21.77
15	36	0		21.11	21.17	21.13
15	36	20		21.22	21.10	21.12
15	36	39		21.33	21.05	21.17
15	75	0		21.20	21.07	21.13

LTE Band 7 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	21.72	21.83	21.80
10	1	25		22.15	22.26	22.14
10	1	49		21.87	21.78	21.63
10	25	0		21.21	21.14	21.16
10	25	12		21.20	21.27	21.10
10	25	25		21.33	21.15	21.00
10	50	0		21.12	21.26	21.17
5	1	0	QPSK	21.71	21.93	21.61
5	1	12		21.90	22.00	21.77
5	1	24		21.74	21.68	21.39
5	12	0		21.01	21.17	21.11
5	12	7		21.15	21.15	21.03
5	12	13		21.07	21.12	20.98
5	25	0		21.09	21.19	21.04

A2. LTE Band 7

Peak-to-Average Ratio

Mode	LTE Band 7 / 20MHz				
Mod.	QPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	4.96	5.16	-	-	PASS
Middle CH	4.96	5.13	-	-	
Highest CH	5.04	5.28	-	-	

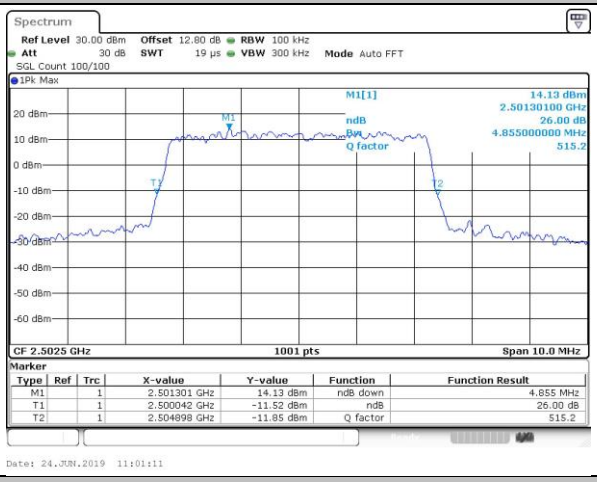
LTE Band 7 / 20MHz / QPSK	
Lowest Channel / 1RB	**Lowest Channel / Full RB**
	
Middle Channel / 1RB	**Middle Channel / Full RB**
	
Highest Channel / 1RB	**Highest Channel / Full RB**
	

26dB Bandwidth

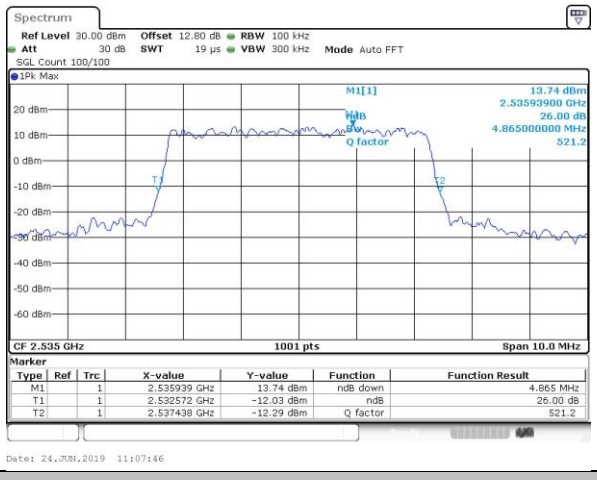
Mode	LTE Band 7 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.855	-	9.63	-	14.565	-	19.061	-
Middle CH	-	-	-	-	4.865	-	9.61	-	14.266	-	18.981	-
Highest CH	-	-	-	-	4.925	-	9.77	-	14.416	-	18.821	-

LTE Band 7

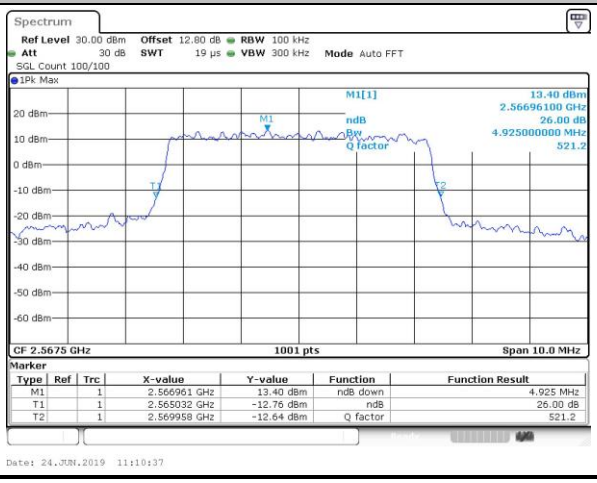
Lowest Channel / 5MHz / QPSK



Middle Channel / 5MHz / QPSK

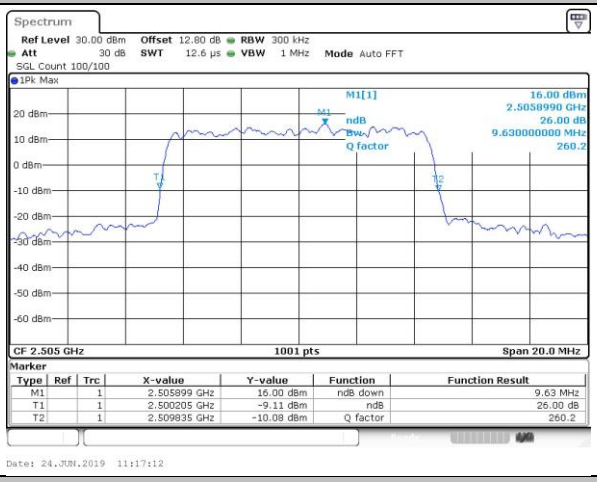


Highest Channel / 5MHz / QPSK

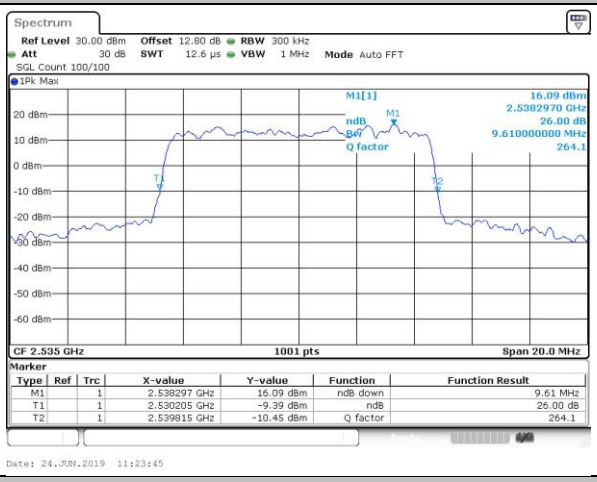


LTE Band 7

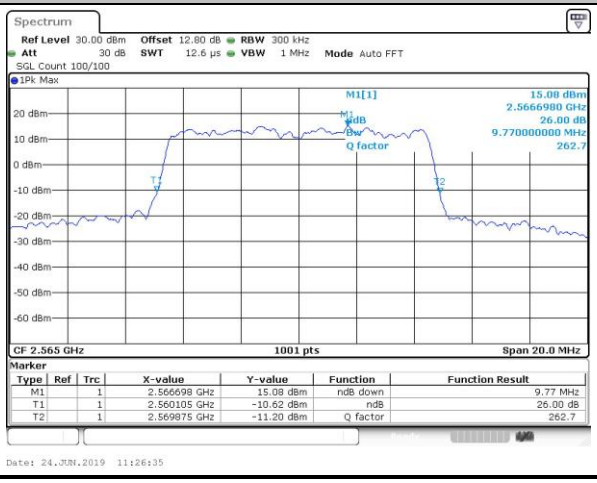
Lowest Channel / 10MHz / QPSK



Middle Channel / 10MHz / QPSK

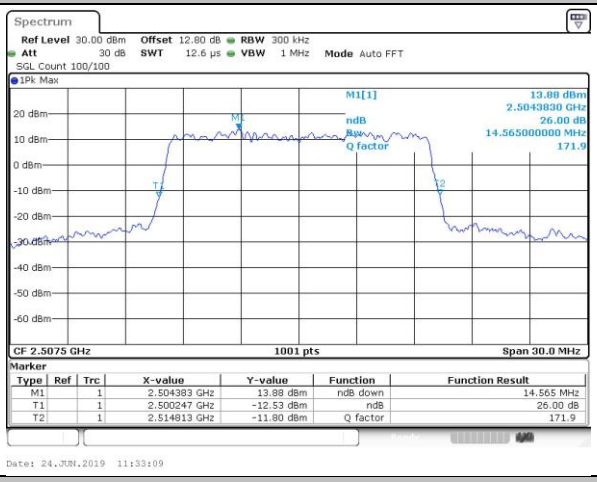


Highest Channel / 10MHz / QPSK

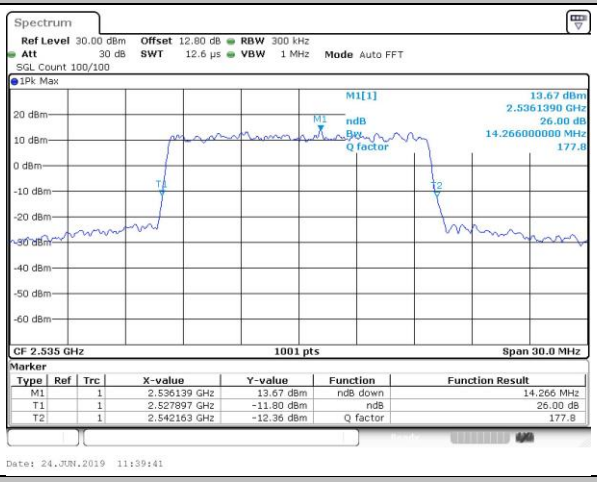


LTE Band 7

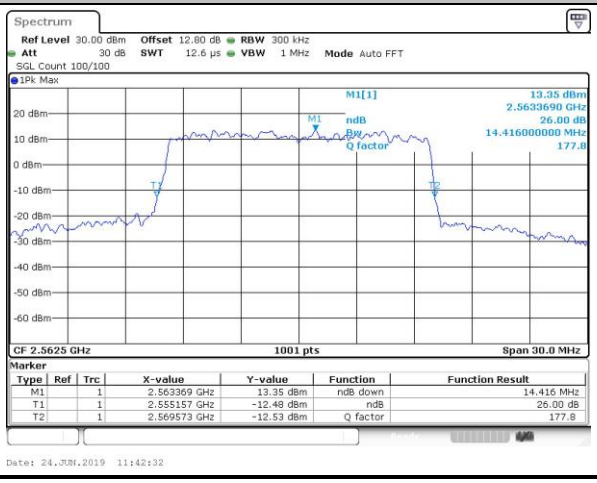
Lowest Channel / 15MHz / QPSK



Middle Channel / 15MHz / QPSK

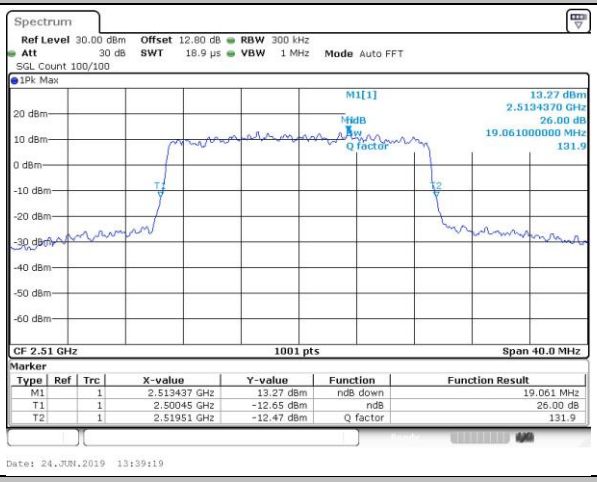


Highest Channel / 15MHz / QPSK

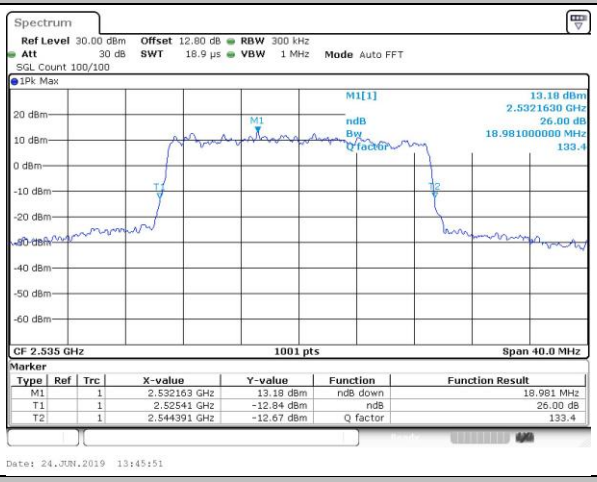


LTE Band 7

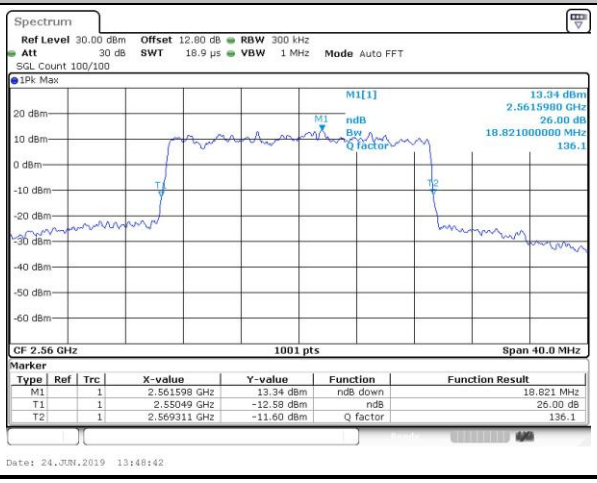
Lowest Channel / 20MHz / QPSK



Middle Channel / 20MHz / QPSK



Highest Channel / 20MHz / QPSK

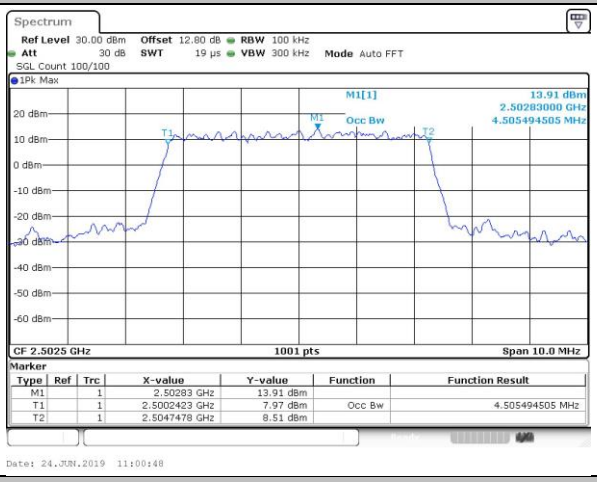


Occupied Bandwidth

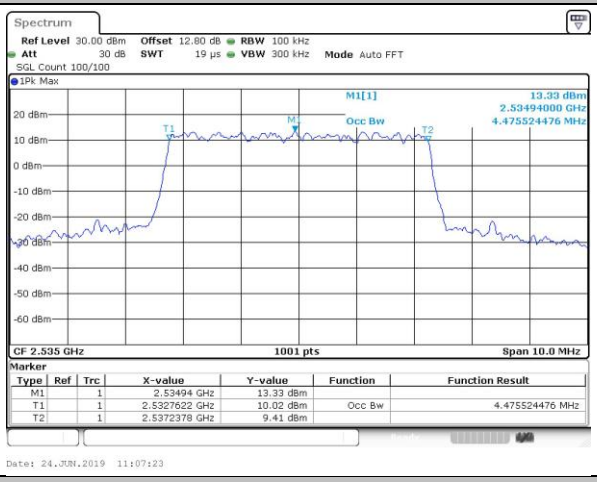
Mode	LTE Band 7 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.51	-	8.97	-	13.43	-	17.9	-
Middle CH	-	-	-	-	4.48	-	8.97	-	13.46	-	17.9	-
Highest CH	-	-	-	-	4.5	-	9.03	-	13.43	-	17.82	-

LTE Band 7

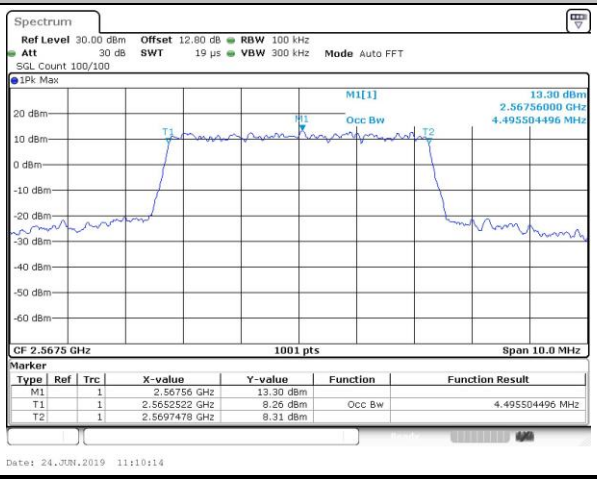
Lowest Channel / 5MHz / QPSK



Middle Channel / 5MHz / QPSK

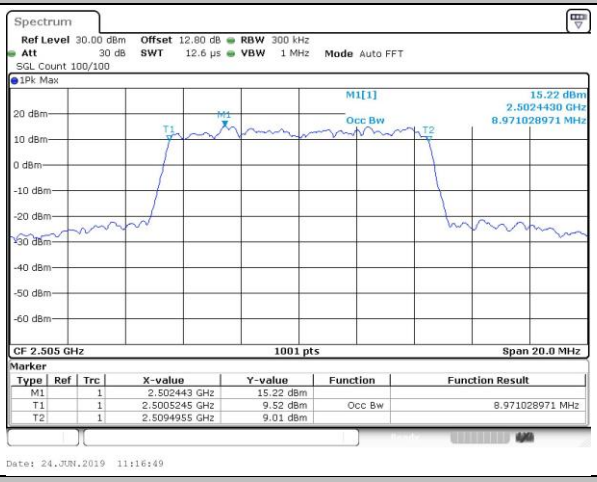


Highest Channel / 5MHz / QPSK

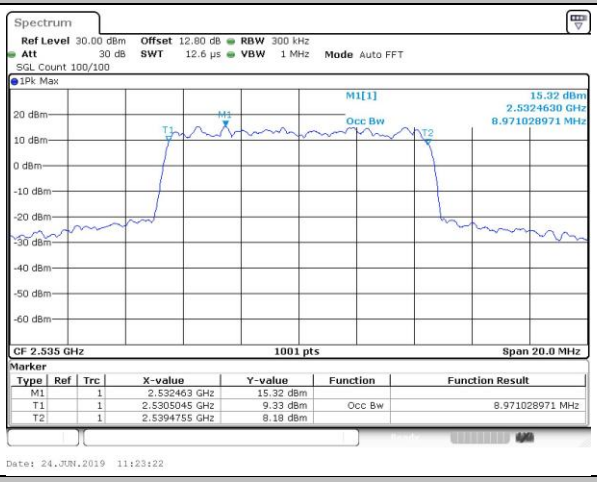


LTE Band 7

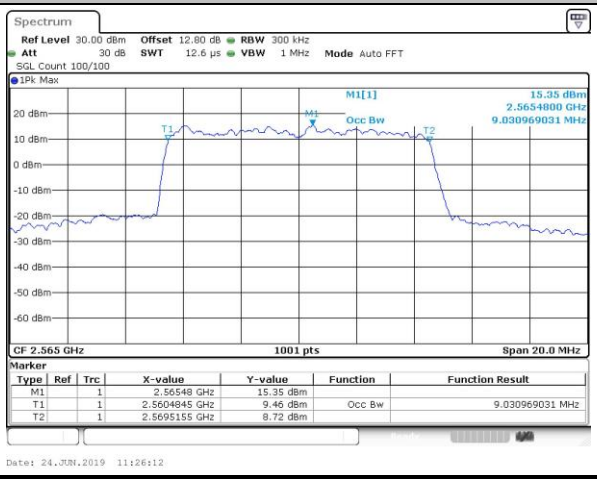
Lowest Channel / 10MHz / QPSK



Middle Channel / 10MHz / QPSK

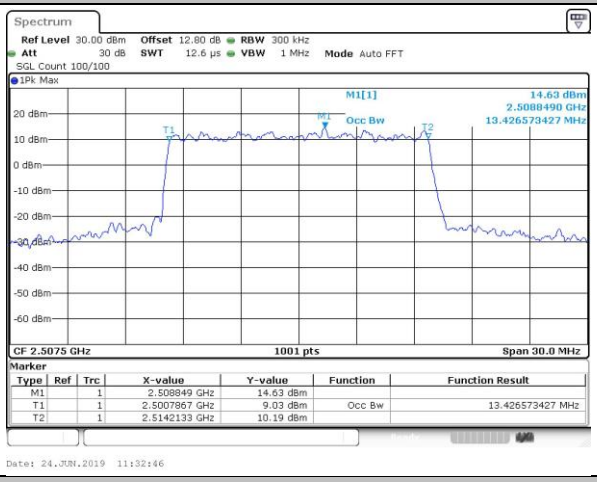


Highest Channel / 10MHz / QPSK

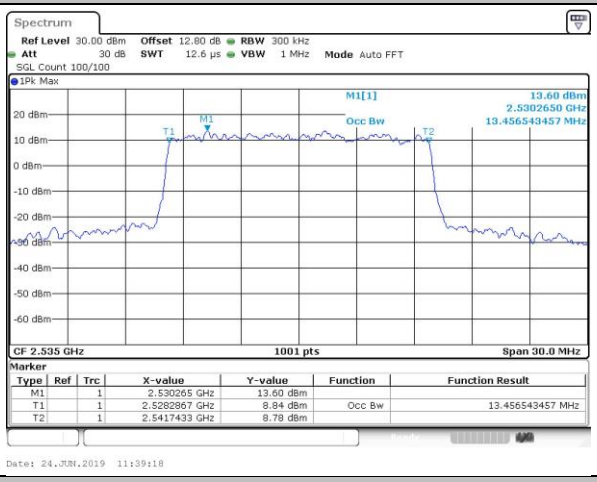


LTE Band 7

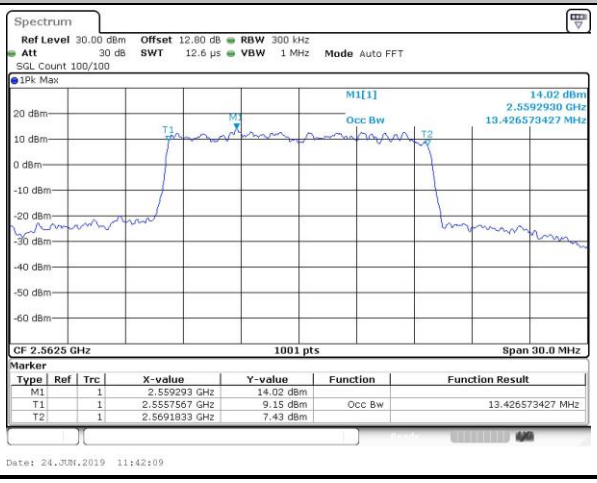
Lowest Channel / 15MHz / QPSK



Middle Channel / 15MHz / QPSK

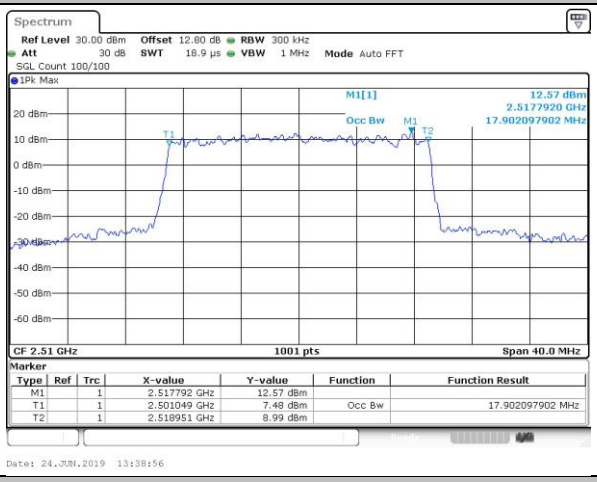


Highest Channel / 15MHz / QPSK

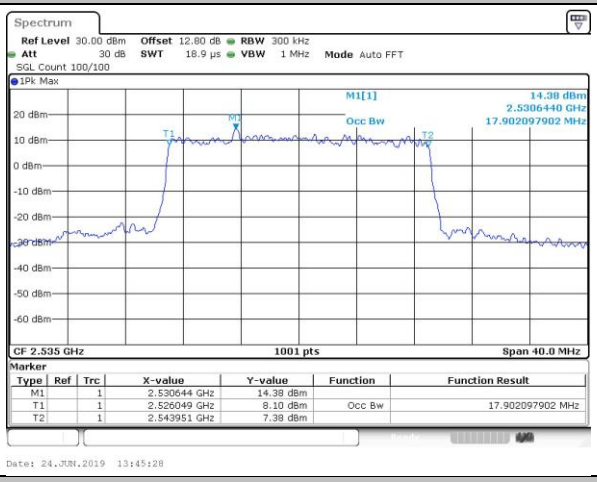


LTE Band 7

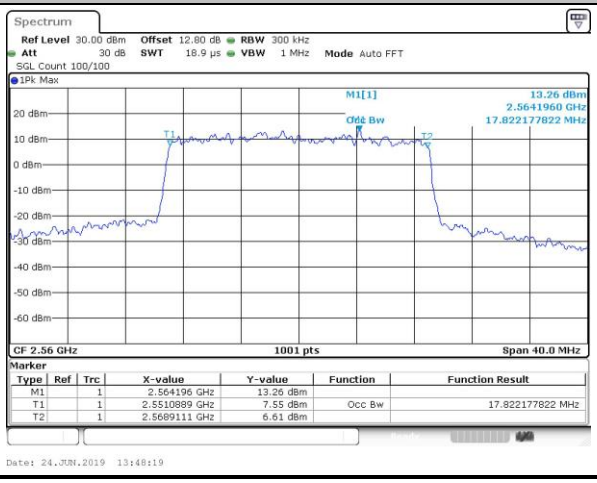
Lowest Channel / 20MHz / QPSK



Middle Channel / 20MHz / QPSK



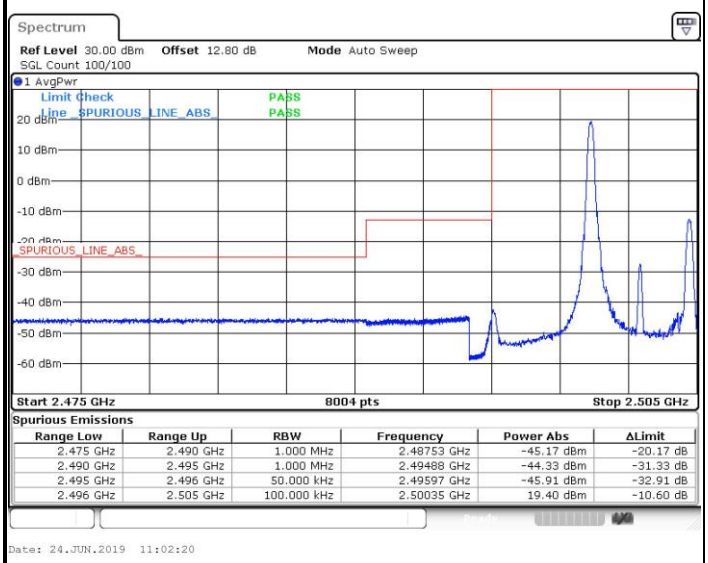
Highest Channel / 20MHz / QPSK



Conducted Band Edge

LTE Band 7 / 5MHz / QPSK

Lowest Band Edge / 1 RB

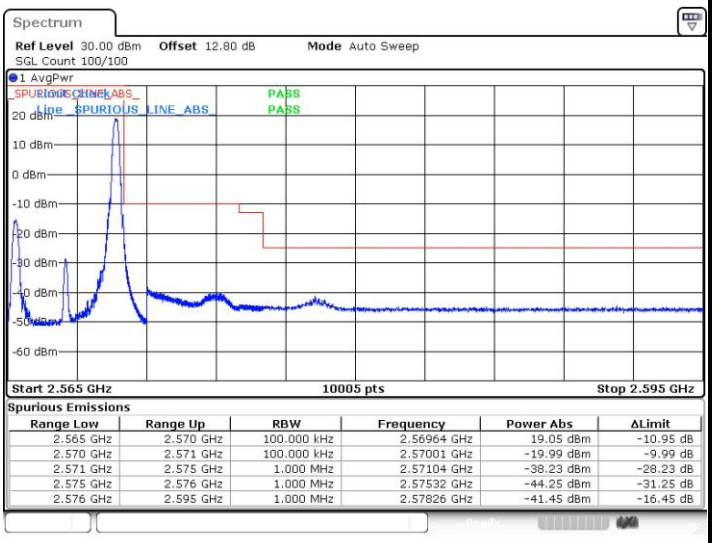


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48753 GHz	-45.17 dBm	-20.17 dB
2.490 GHz	2.495 GHz	1.000 MHz	2.49488 GHz	-44.33 dBm	-31.33 dB
2.495 GHz	2.496 GHz	50.000 kHz	2.49597 GHz	-45.91 dBm	-32.91 dB
2.496 GHz	2.505 GHz	100.000 kHz	2.50035 GHz	19.40 dBm	-10.60 dB

Date: 24.JUN.2019 11:02:20

Highest Band Edge / 1 RB

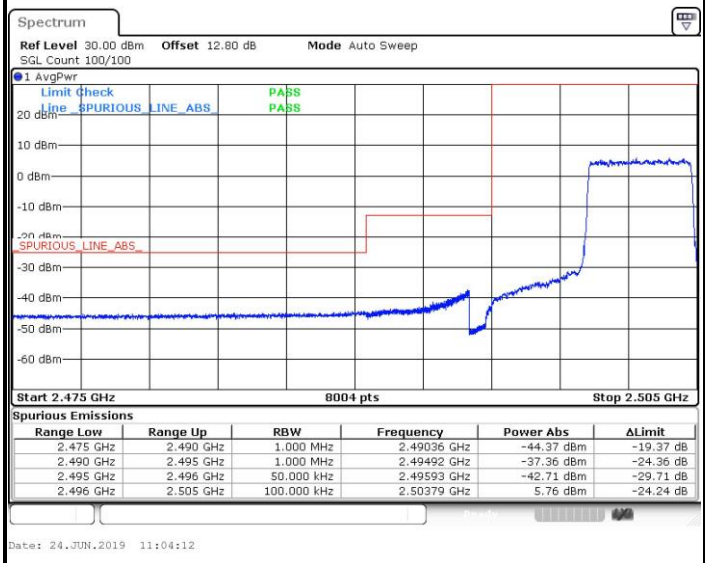


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56964 GHz	19.05 dBm	-10.95 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57001 GHz	-19.99 dBm	-9.99 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57104 GHz	-38.23 dBm	-28.23 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57532 GHz	-44.25 dBm	-31.25 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.57826 GHz	-41.45 dBm	-16.45 dB

Date: 24.JUN.2019 11:11:44

Lowest Band Edge / Full RB

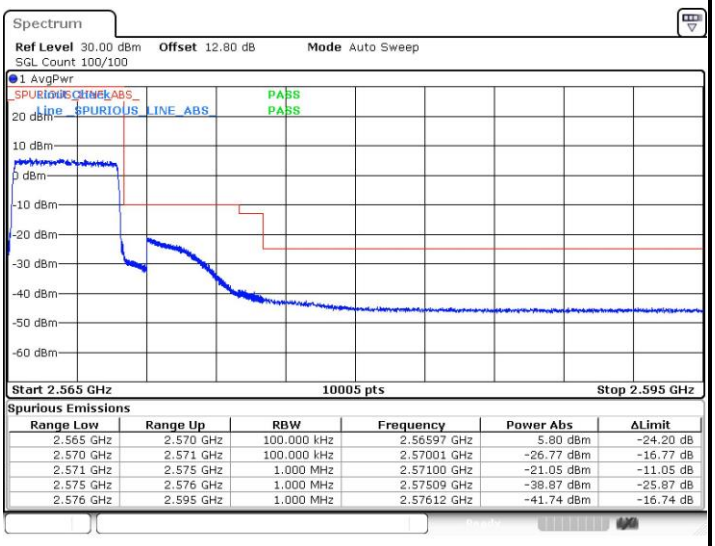


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49036 GHz	-44.37 dBm	-19.37 dB
2.490 GHz	2.495 GHz	1.000 MHz	2.49492 GHz	-37.36 dBm	-24.36 dB
2.495 GHz	2.496 GHz	50.000 kHz	2.49593 GHz	-42.71 dBm	-29.71 dB
2.496 GHz	2.505 GHz	100.000 kHz	2.50379 GHz	5.76 dBm	-24.24 dB

Date: 24.JUN.2019 11:04:12

Highest Band Edge / Full RB



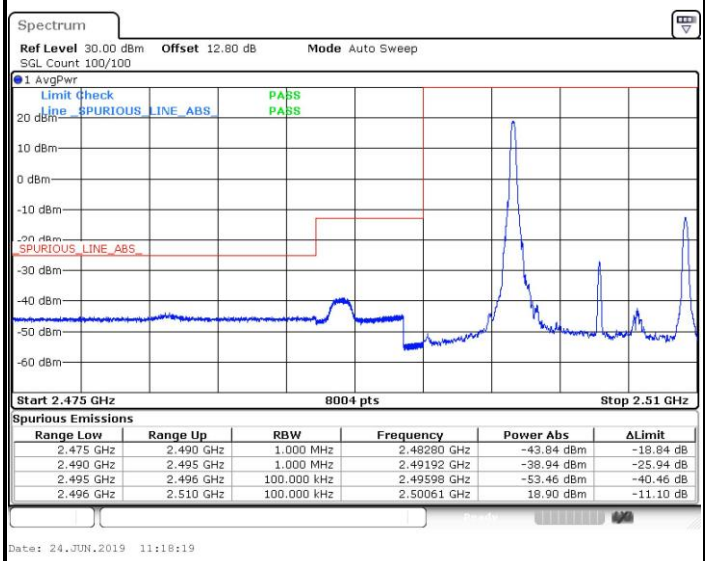
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.565 GHz	2.570 GHz	100.000 kHz	2.56597 GHz	5.80 dBm	-24.20 dB
2.570 GHz	2.571 GHz	100.000 kHz	2.57001 GHz	-26.77 dBm	-16.77 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57100 GHz	-21.05 dBm	-11.05 dB
2.575 GHz	2.576 GHz	1.000 MHz	2.57509 GHz	-38.87 dBm	-25.87 dB
2.576 GHz	2.595 GHz	1.000 MHz	2.57612 GHz	-41.74 dBm	-16.74 dB

Date: 24.JUN.2019 11:13:37

LTE Band 7 / 10MHz / QPSK

Lowest Band Edge / 1 RB

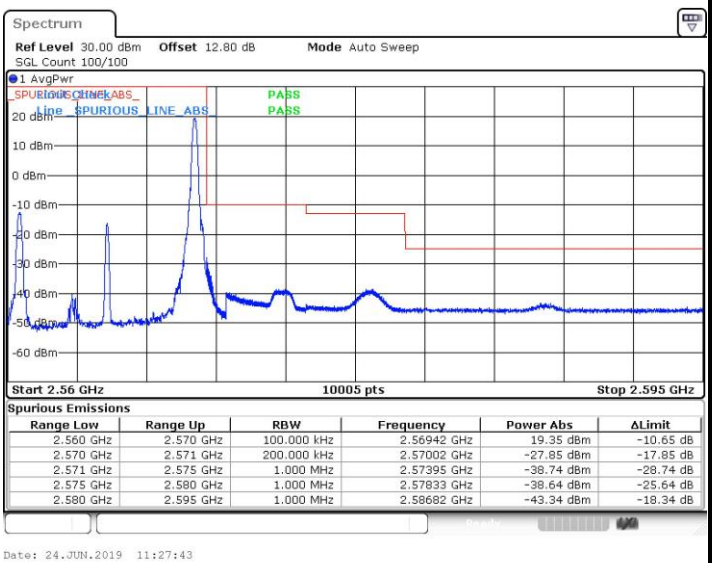


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48280 GHz	-43.84 dBm	-18.84 dB
2.490 GHz	2.495 GHz	1.000 MHz	2.49192 GHz	-38.94 dBm	-25.94 dB
2.495 GHz	2.496 GHz	100.000 kHz	2.49598 GHz	-53.46 dBm	-40.46 dB
2.496 GHz	2.510 GHz	100.000 kHz	2.50061 GHz	18.90 dBm	-11.10 dB

Date: 24.JUN.2019 11:18:19

Highest Band Edge / 1 RB

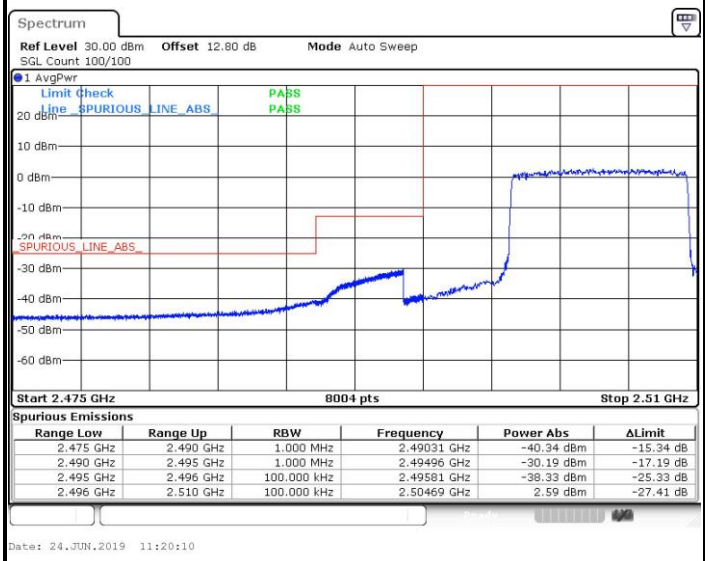


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.560 GHz	2.570 GHz	100.000 kHz	2.56942 GHz	19.35 dBm	-10.65 dB
2.570 GHz	2.571 GHz	200.000 kHz	2.57002 GHz	-27.85 dBm	-17.85 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57395 GHz	-38.74 dBm	-28.74 dB
2.575 GHz	2.580 GHz	1.000 MHz	2.57833 GHz	-38.64 dBm	-25.64 dB
2.580 GHz	2.595 GHz	1.000 MHz	2.58682 GHz	-43.34 dBm	-18.34 dB

Date: 24.JUN.2019 11:27:43

Lowest Band Edge / Full RB

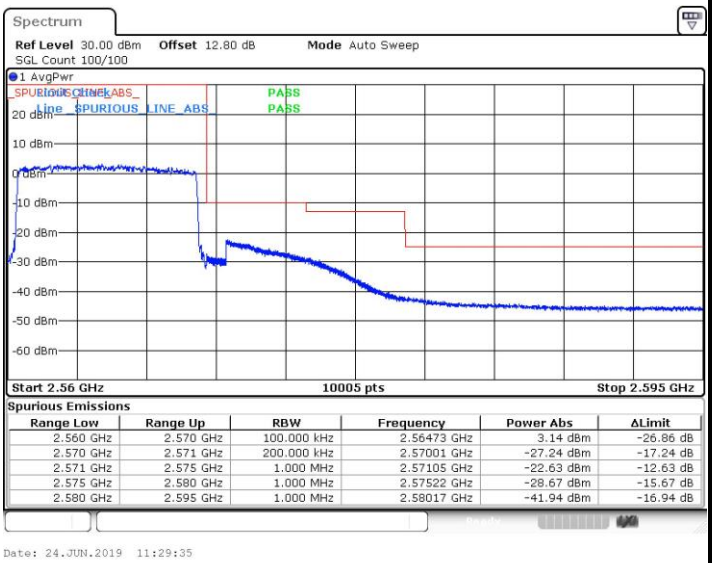


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49031 GHz	-40.34 dBm	-15.34 dB
2.490 GHz	2.495 GHz	1.000 MHz	2.49496 GHz	-30.19 dBm	-17.19 dB
2.495 GHz	2.496 GHz	100.000 kHz	2.49581 GHz	-38.33 dBm	-25.33 dB
2.496 GHz	2.510 GHz	100.000 kHz	2.50469 GHz	2.59 dBm	-27.41 dB

Date: 24.JUN.2019 11:20:10

Highest Band Edge / Full RB



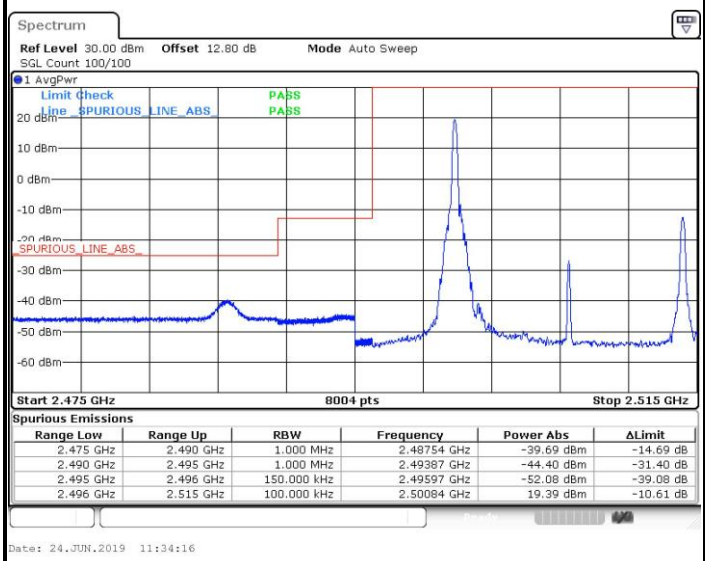
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.560 GHz	2.570 GHz	100.000 kHz	2.56473 GHz	3.14 dBm	-26.86 dB
2.570 GHz	2.571 GHz	200.000 kHz	2.57001 GHz	-27.24 dBm	-17.24 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57105 GHz	-22.63 dBm	-12.63 dB
2.575 GHz	2.580 GHz	1.000 MHz	2.57522 GHz	-28.67 dBm	-15.67 dB
2.580 GHz	2.595 GHz	1.000 MHz	2.58017 GHz	-41.94 dBm	-16.94 dB

Date: 24.JUN.2019 11:29:35

LTE Band 7 / 15MHz / QPSK

Lowest Band Edge / 1 RB

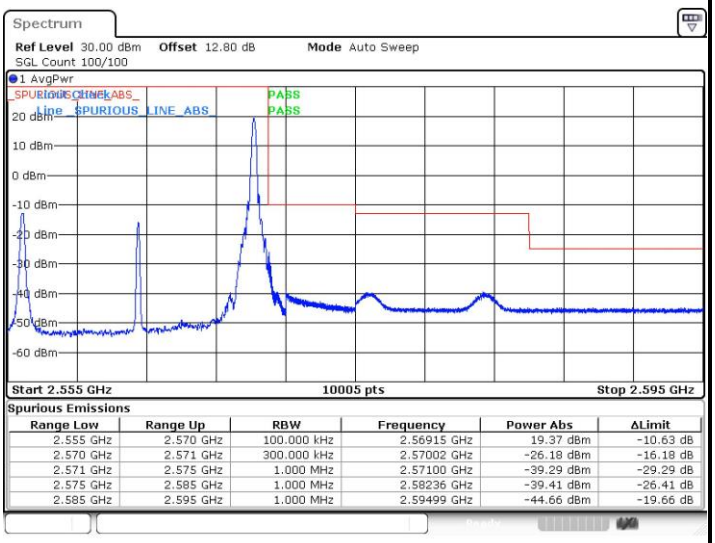


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48754 GHz	-39.69 dBm	-14.69 dB
2.490 GHz	2.495 GHz	1.000 MHz	2.49387 GHz	-44.40 dBm	-31.40 dB
2.495 GHz	2.496 GHz	150.000 kHz	2.49597 GHz	-52.08 dBm	-39.08 dB
2.496 GHz	2.515 GHz	100.000 kHz	2.50084 GHz	19.39 dBm	-10.61 dB

Date: 24.JUN.2019 11:34:16

Highest Band Edge / 1 RB

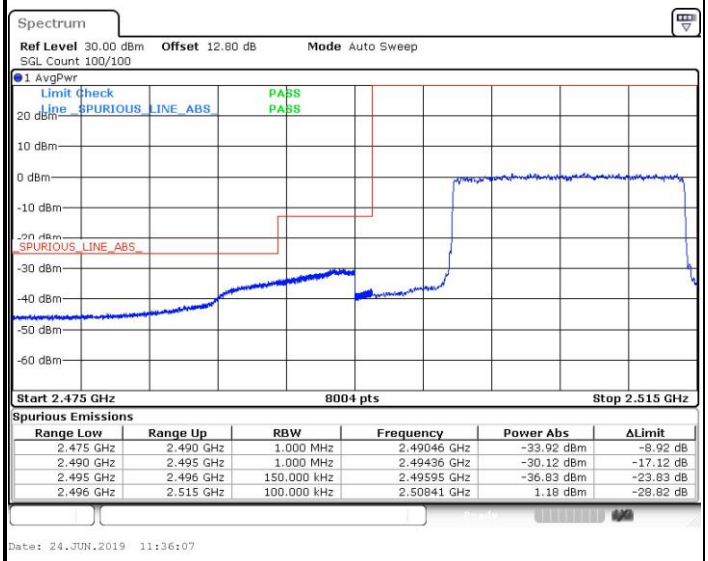


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.555 GHz	2.570 GHz	100.000 kHz	2.56915 GHz	19.37 dBm	-10.63 dB
2.570 GHz	2.571 GHz	300.000 kHz	2.57002 GHz	-26.18 dBm	-16.18 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57100 GHz	-39.29 dBm	-29.29 dB
2.575 GHz	2.585 GHz	1.000 MHz	2.58236 GHz	-39.41 dBm	-26.41 dB
2.585 GHz	2.595 GHz	1.000 MHz	2.59499 GHz	-44.66 dBm	-19.66 dB

Date: 24.JUN.2019 11:43:40

Lowest Band Edge / Full RB

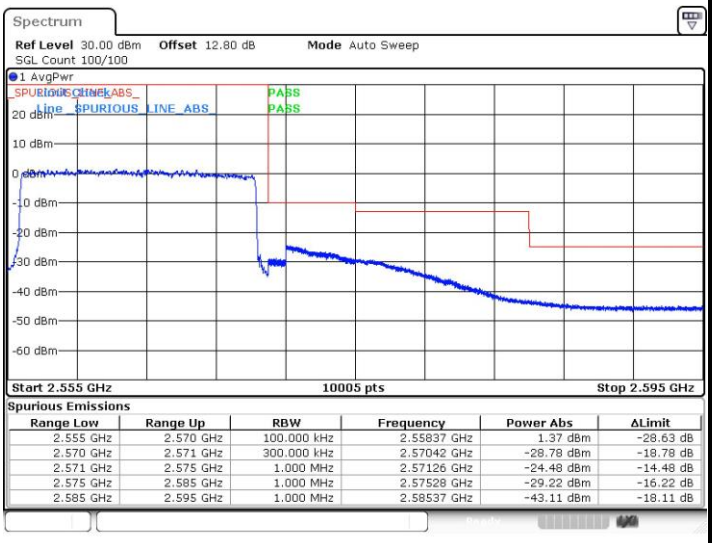


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49046 GHz	-33.92 dBm	-8.92 dB
2.490 GHz	2.495 GHz	1.000 MHz	2.49436 GHz	-30.12 dBm	-17.12 dB
2.495 GHz	2.496 GHz	150.000 kHz	2.49595 GHz	-36.83 dBm	-23.83 dB
2.496 GHz	2.515 GHz	100.000 kHz	2.50841 GHz	1.18 dBm	-28.82 dB

Date: 24.JUN.2019 11:36:07

Highest Band Edge / Full RB



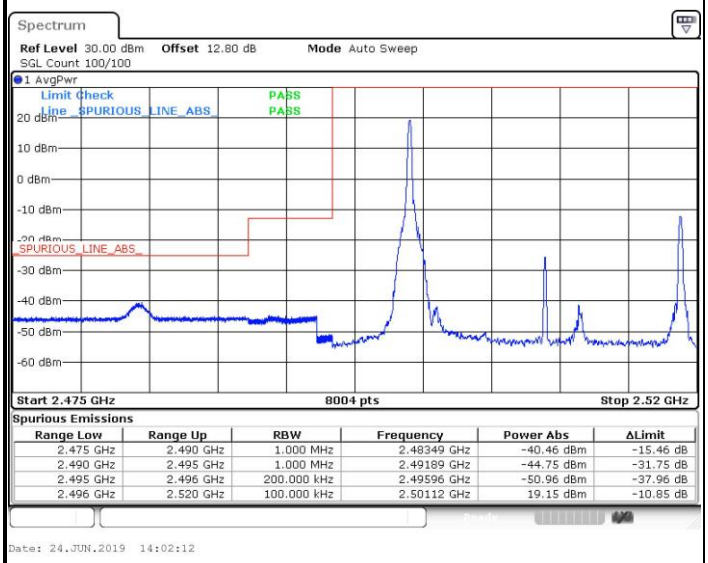
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.555 GHz	2.570 GHz	100.000 kHz	2.55837 GHz	1.37 dBm	-28.63 dB
2.570 GHz	2.571 GHz	300.000 kHz	2.57042 GHz	-28.78 dBm	-18.78 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57126 GHz	-24.48 dBm	-14.48 dB
2.575 GHz	2.585 GHz	1.000 MHz	2.57528 GHz	-29.22 dBm	-16.22 dB
2.585 GHz	2.595 GHz	1.000 MHz	2.58537 GHz	-43.11 dBm	-18.11 dB

Date: 24.JUN.2019 11:45:32

LTE Band 7 / 20MHz / QPSK

Lowest Band Edge / 1 RB

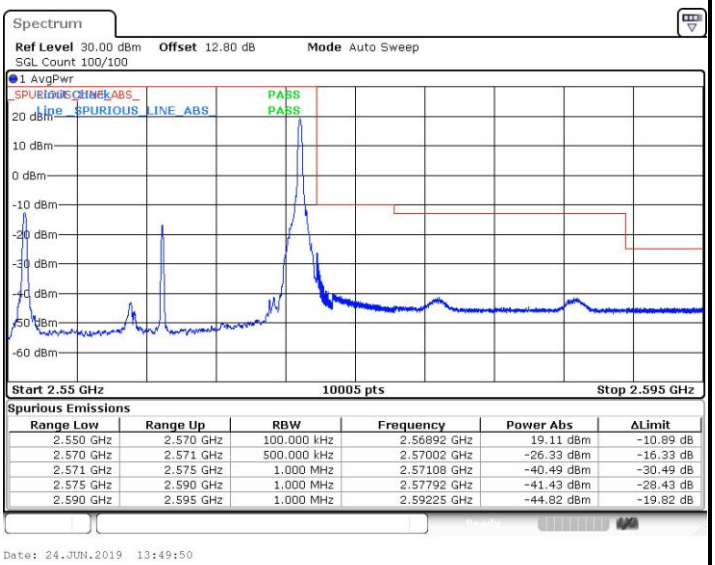


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.48349 GHz	-40.46 dBm	-15.46 dB
2.490 GHz	2.495 GHz	1.000 MHz	2.49189 GHz	-44.75 dBm	-31.75 dB
2.495 GHz	2.496 GHz	200.000 kHz	2.49596 GHz	-50.96 dBm	-37.96 dB
2.496 GHz	2.520 GHz	100.000 kHz	2.50112 GHz	19.15 dBm	-10.85 dB

Date: 24.JUN.2019 14:02:12

Highest Band Edge / 1 RB

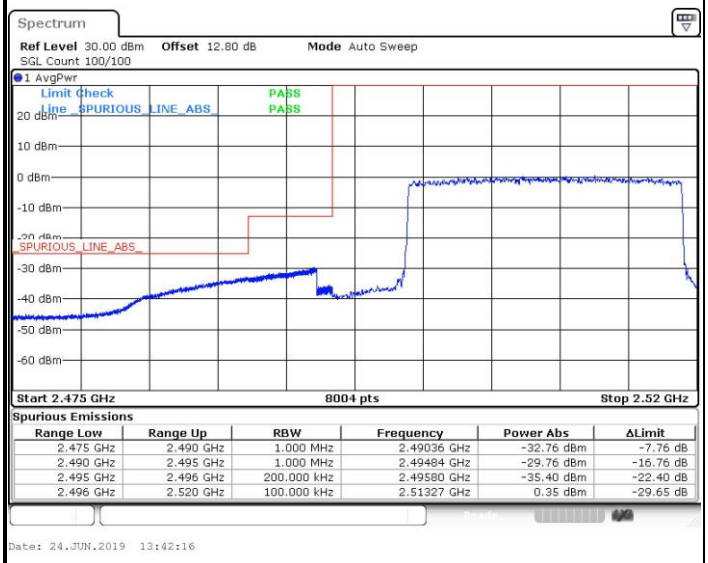


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.550 GHz	2.570 GHz	100.000 kHz	2.56892 GHz	19.11 dBm	-10.89 dB
2.570 GHz	2.571 GHz	500.000 kHz	2.57002 GHz	-26.33 dBm	-16.33 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57108 GHz	-40.49 dBm	-30.49 dB
2.575 GHz	2.590 GHz	1.000 MHz	2.57792 GHz	-41.43 dBm	-28.43 dB
2.590 GHz	2.595 GHz	1.000 MHz	2.59225 GHz	-44.82 dBm	-19.82 dB

Date: 24.JUN.2019 13:49:50

Lowest Band Edge / Full RB

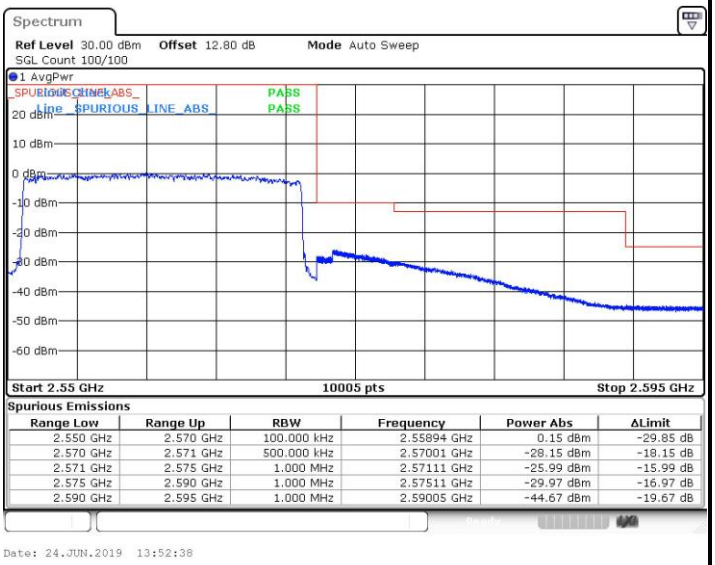


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.475 GHz	2.490 GHz	1.000 MHz	2.49036 GHz	-32.76 dBm	-7.76 dB
2.490 GHz	2.495 GHz	1.000 MHz	2.49484 GHz	-29.76 dBm	-16.76 dB
2.495 GHz	2.496 GHz	200.000 kHz	2.49580 GHz	-35.40 dBm	-22.40 dB
2.496 GHz	2.520 GHz	100.000 kHz	2.51327 GHz	0.35 dBm	-29.65 dB

Date: 24.JUN.2019 13:42:16

Highest Band Edge / Full RB



Spurious Emissions

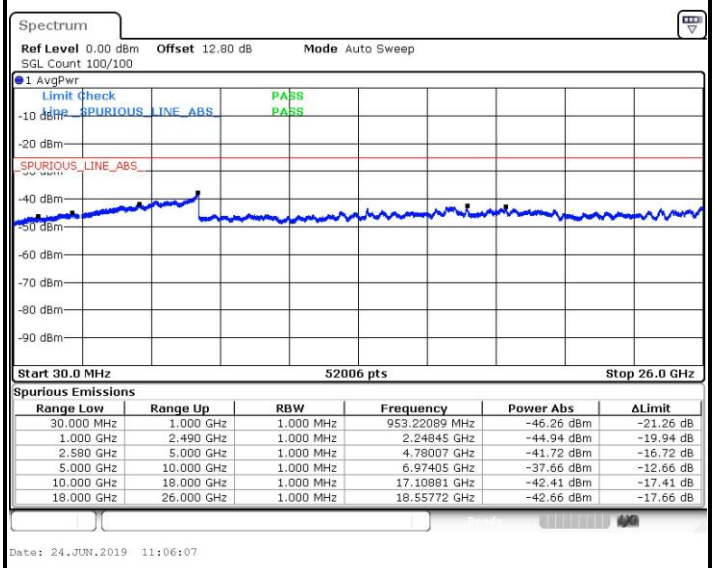
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.550 GHz	2.570 GHz	100.000 kHz	2.55894 GHz	0.15 dBm	-29.85 dB
2.570 GHz	2.571 GHz	500.000 kHz	2.57001 GHz	-28.15 dBm	-18.15 dB
2.571 GHz	2.575 GHz	1.000 MHz	2.57111 GHz	-25.99 dBm	-15.99 dB
2.575 GHz	2.590 GHz	1.000 MHz	2.57511 GHz	-29.97 dBm	-16.97 dB
2.590 GHz	2.595 GHz	1.000 MHz	2.59005 GHz	-44.67 dBm	-19.67 dB

Date: 24.JUN.2019 13:52:38

Conducted Spurious Emission

LTE Band 7 / 5MHz

Lowest Channel / QPSK

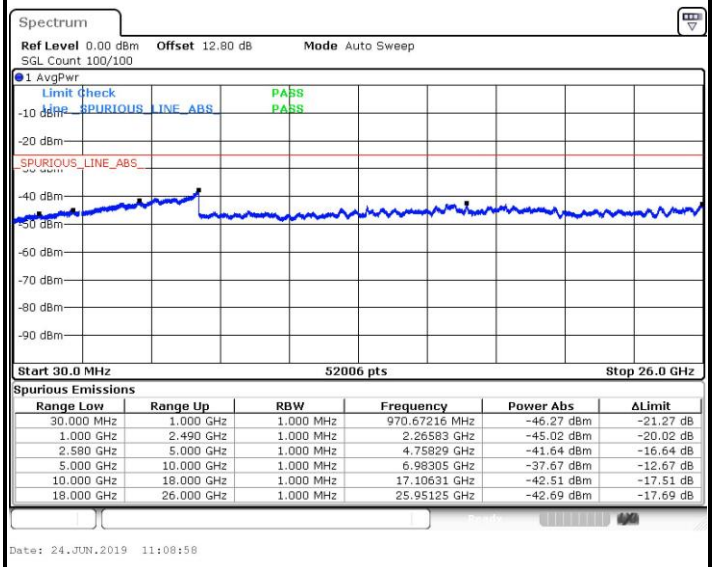


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	953.22089 MHz	-46.26 dBm	-21.26 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.24845 GHz	-44.94 dBm	-19.94 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.78007 GHz	-41.72 dBm	-16.72 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.97405 GHz	-37.66 dBm	-12.66 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.10881 GHz	-42.41 dBm	-17.41 dB
18.000 GHz	26.000 GHz	1.000 MHz	18.55772 GHz	-42.66 dBm	-17.66 dB

Date: 24.JUN.2019 11:06:07

Middle Channel / QPSK

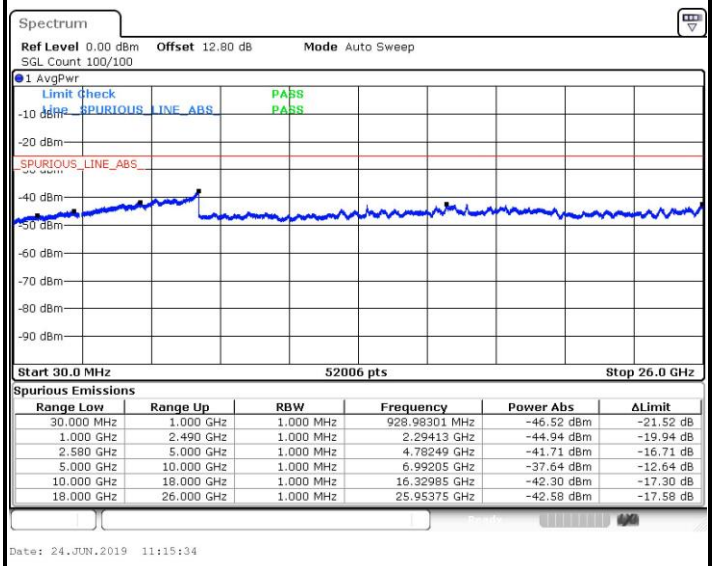


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	970.67216 MHz	-46.27 dBm	-21.27 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.26583 GHz	-45.02 dBm	-20.02 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.75829 GHz	-41.64 dBm	-16.64 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.98305 GHz	-37.67 dBm	-12.67 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.10631 GHz	-42.51 dBm	-17.51 dB
18.000 GHz	26.000 GHz	1.000 MHz	25.95125 GHz	-42.69 dBm	-17.69 dB

Date: 24.JUN.2019 11:08:58

LTE Band 7 / 5MHz
Highest Channel / QPSK

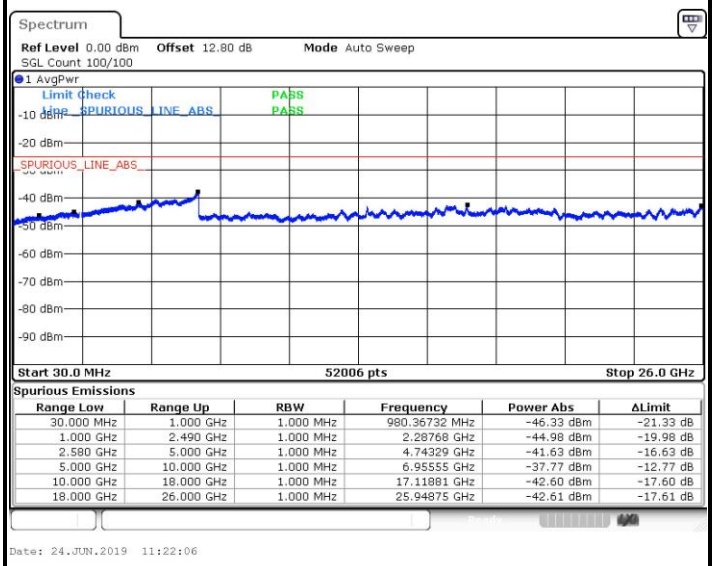


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	928.98301 MHz	-46.52 dBm	-21.52 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.29413 GHz	-44.94 dBm	-19.94 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.78249 GHz	-41.71 dBm	-16.71 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.99205 GHz	-37.64 dBm	-12.64 dB
10.000 GHz	18.000 GHz	1.000 MHz	16.32985 GHz	-42.30 dBm	-17.30 dB
18.000 GHz	26.000 GHz	1.000 MHz	25.95375 GHz	-42.58 dBm	-17.58 dB

Date: 24.JUN.2019 11:15:34

LTE Band 7 / 10MHz
Lowest Channel / QPSK



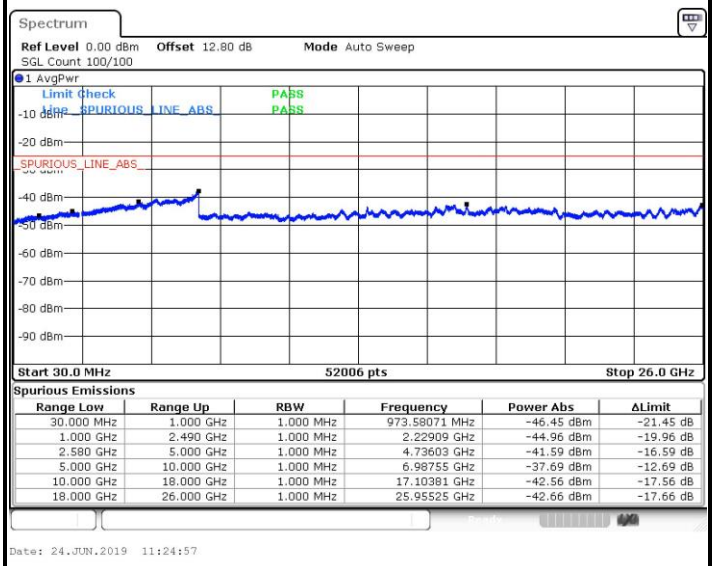
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	980.36732 MHz	-46.33 dBm	-21.33 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.28768 GHz	-44.98 dBm	-19.98 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.74329 GHz	-41.63 dBm	-16.63 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.95555 GHz	-37.77 dBm	-12.77 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.11881 GHz	-42.60 dBm	-17.60 dB
18.000 GHz	26.000 GHz	1.000 MHz	25.94875 GHz	-42.61 dBm	-17.61 dB

Date: 24.JUN.2019 11:22:06

LTE Band 7 / 10MHz

Middle Channel / QPSK

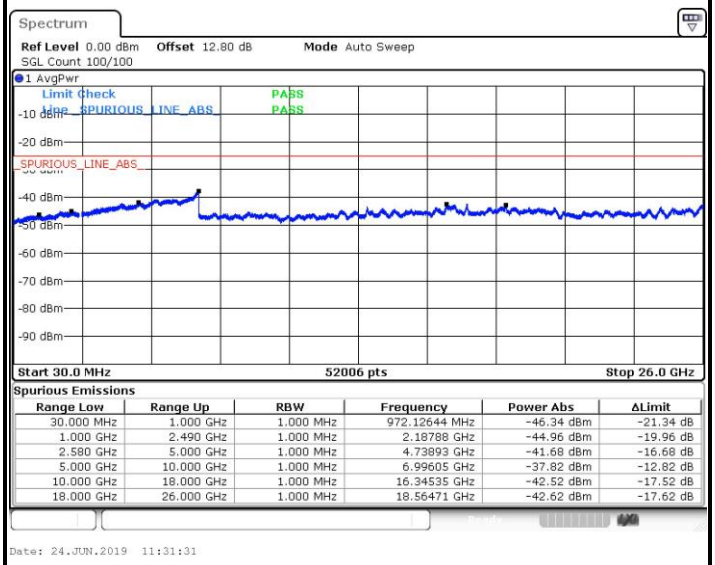


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	973.58071 MHz	-46.45 dBm	-21.45 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.22909 GHz	-44.96 dBm	-19.96 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.73603 GHz	-41.59 dBm	-16.59 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.98755 GHz	-37.69 dBm	-12.69 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.10381 GHz	-42.56 dBm	-17.56 dB
18.000 GHz	26.000 GHz	1.000 MHz	25.95525 GHz	-42.66 dBm	-17.66 dB

Date: 24.JUN.2019 11:24:57

Highest Channel / QPSK



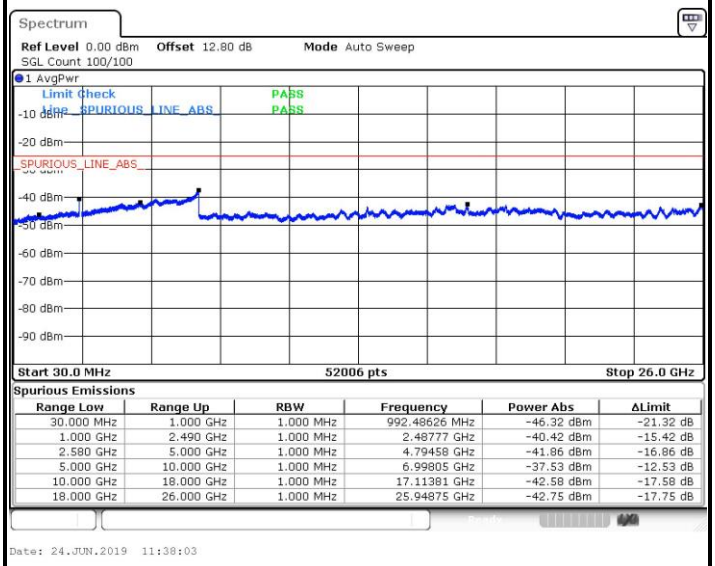
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	972.12644 MHz	-46.34 dBm	-21.34 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.18788 GHz	-44.96 dBm	-19.96 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.73893 GHz	-41.68 dBm	-16.68 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.99605 GHz	-37.82 dBm	-12.82 dB
10.000 GHz	18.000 GHz	1.000 MHz	16.34535 GHz	-42.52 dBm	-17.52 dB
18.000 GHz	26.000 GHz	1.000 MHz	18.56471 GHz	-42.62 dBm	-17.62 dB

Date: 24.JUN.2019 11:31:31

LTE Band 7 / 15MHz

Lowest Channel / QPSK

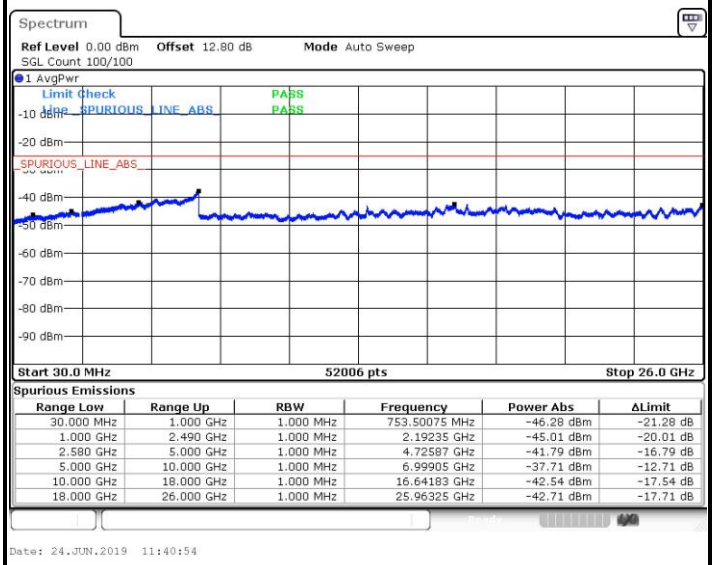


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	992.48626 MHz	-46.32 dBm	-21.32 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48777 GHz	-40.42 dBm	-15.42 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.79458 GHz	-41.86 dBm	-16.86 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.99805 GHz	-37.53 dBm	-12.53 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.11381 GHz	-42.58 dBm	-17.58 dB
18.000 GHz	26.000 GHz	1.000 MHz	25.94875 GHz	-42.75 dBm	-17.75 dB

Date: 24.JUN.2019 11:38:03

Middle Channel / QPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	753.50075 MHz	-46.28 dBm	-21.28 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.19235 GHz	-45.01 dBm	-20.01 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.72587 GHz	-41.79 dBm	-16.79 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.99905 GHz	-37.71 dBm	-12.71 dB
10.000 GHz	18.000 GHz	1.000 MHz	16.64183 GHz	-42.54 dBm	-17.54 dB
18.000 GHz	26.000 GHz	1.000 MHz	25.96325 GHz	-42.71 dBm	-17.71 dB

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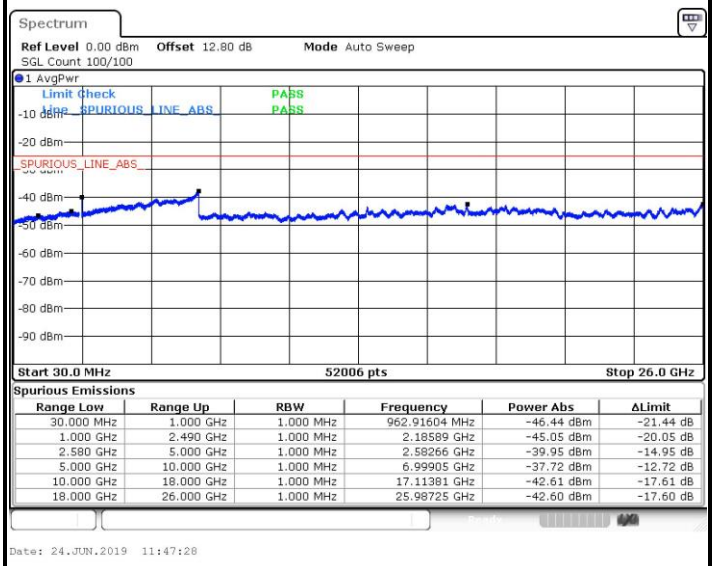
LTE Band7 / 15MHz
Highest Channel / QPSK

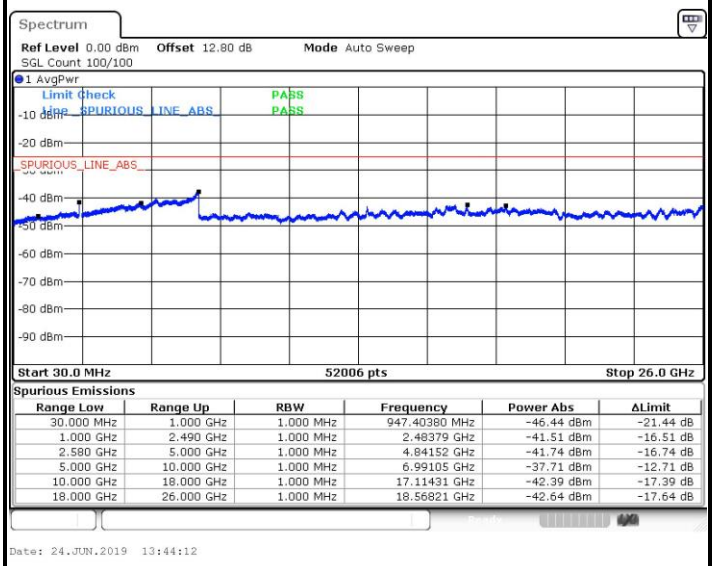


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	962.91604 MHz	-46.44 dBm	-21.44 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.18589 GHz	-45.05 dBm	-20.05 dB
2.580 GHz	5.000 GHz	1.000 MHz	2.58266 GHz	-39.95 dBm	-14.95 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.99905 GHz	-37.72 dBm	-12.72 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.11381 GHz	-42.61 dBm	-17.61 dB
18.000 GHz	26.000 GHz	1.000 MHz	25.98725 GHz	-42.60 dBm	-17.60 dB

Date: 24.JUN.2019 11:47:28

LTE Band 7 / 20MHz
Lowest Channel / QPSK



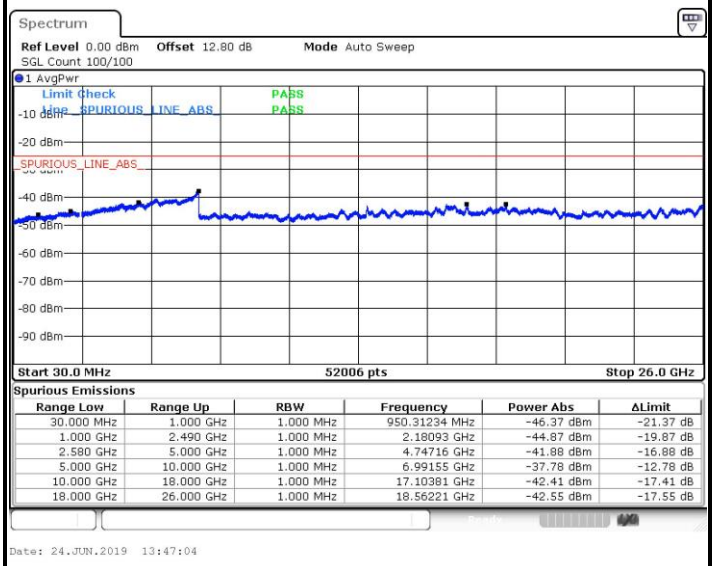
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	947.40380 MHz	-46.44 dBm	-21.44 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.48379 GHz	-41.51 dBm	-16.51 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.84152 GHz	-41.74 dBm	-16.74 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.99105 GHz	-37.71 dBm	-12.71 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.11431 GHz	-42.39 dBm	-17.39 dB
18.000 GHz	26.000 GHz	1.000 MHz	18.56821 GHz	-42.64 dBm	-17.64 dB

Date: 24.JUN.2019 13:44:12

LTE Band 7 / 20MHz

Middle Channel / QPSK

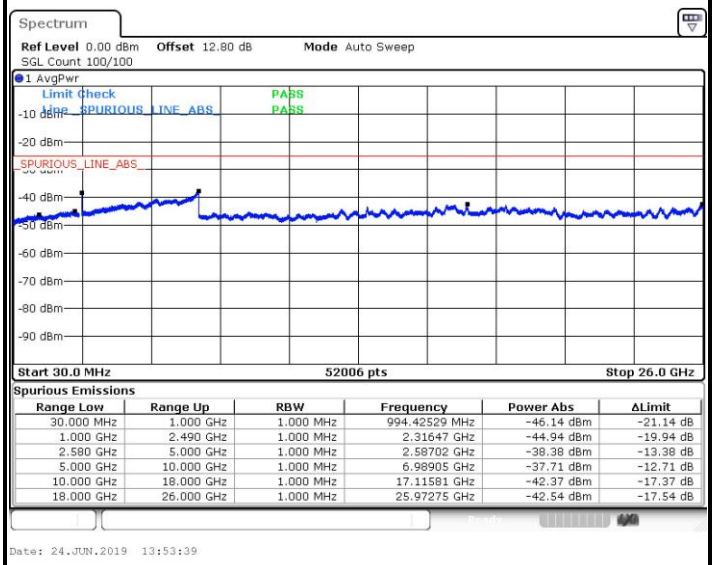


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	950.31234 MHz	-46.37 dBm	-21.37 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.18093 GHz	-44.87 dBm	-19.87 dB
2.580 GHz	5.000 GHz	1.000 MHz	4.74716 GHz	-41.88 dBm	-16.88 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.99155 GHz	-37.78 dBm	-12.78 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.10381 GHz	-42.41 dBm	-17.41 dB
18.000 GHz	26.000 GHz	1.000 MHz	18.56221 GHz	-42.55 dBm	-17.55 dB

Date: 24.JUN.2019 13:47:04

Highest Channel / QPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	994.42529 MHz	-46.14 dBm	-21.14 dB
1.000 GHz	2.490 GHz	1.000 MHz	2.31647 GHz	-44.94 dBm	-19.94 dB
2.580 GHz	5.000 GHz	1.000 MHz	2.58702 GHz	-38.38 dBm	-13.38 dB
5.000 GHz	10.000 GHz	1.000 MHz	6.98905 GHz	-37.71 dBm	-12.71 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.11581 GHz	-42.37 dBm	-17.37 dB
18.000 GHz	26.000 GHz	1.000 MHz	25.97275 GHz	-42.54 dBm	-17.54 dB

Date: 24.JUN.2019 13:53:39

Frequency Stability

Test Conditions		LTE Band 7 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0012	PASS
40	Normal Voltage	0.0005	
30	Normal Voltage	0.0002	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0001	
0	Normal Voltage	0.0005	
-10	Normal Voltage	0.0002	
-20	Normal Voltage	0.0006	
-30	Normal Voltage	0.0001	
20	Maximum Voltage	0.0002	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0002	

Note:

1. Normal Voltage =14.0 V.；Battery End Point (BEP) =14.0 V.；Maximum Voltage =16.0 V.

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

Appendix B. Test Results of EIRP and Radiated Test

EIRP

LTE Band 7 / 5MHz (Average) (GT - LC = 9 dB)							
Channel	Mode	RB		Conducted		EIRP	
		Size	Offset	Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	12	21.90	0.1549	30.90	1.2303
Middle		1	12	22.00	0.1585	31.00	1.2589
Highest		1	12	21.77	0.1503	30.77	1.1940
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 10MHz (Average) (GT - LC = 9 dB)							
Channel	Mode	RB		Conducted		EIRP	
		Size	Offset	Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	25	22.15	0.1641	31.15	1.3032
Middle		1	25	22.26	0.1683	31.26	1.3366
Highest		1	25	22.14	0.1637	31.14	1.3002
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 15MHz (Average) (GT - LC = 9 dB)							
Channel	Mode	RB		Conducted		EIRP	
		Size	Offset	Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	37	22.31	0.1702	31.31	1.3521
Middle		1	37	22.29	0.1694	31.29	1.3459
Highest		1	37	22.08	0.1614	31.08	1.2823
Limit	EIRP < 2W			Result		PASS	

LTE Band 7 / 20MHz (Average) (GT - LC = 9 dB)							
Channel	Mode	RB		Conducted		EIRP	
		Size	Offset	Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	49	22.57	0.1807	31.57	1.4355
Middle		1	49	22.35	0.1718	31.35	1.3646
Highest		1	49	22.32	0.1706	31.32	1.3552
Limit	EIRP < 2W			Result		PASS	

Radiated Spurious Emission

LTE Band 7

LTE Band 7 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (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	5020	-41.62	-25	-16.62	-63.29	-52.63	1.62	12.63	H
	7530	-42.30	-25	-17.30	-68.67	-51.41	1.99	11.11	H
	10040	-42.23	-25	-17.23	-71.33	-51.10	2.40	11.27	H
	5020	-36.62	-25	-11.62	-57.87	-47.63	1.62	12.63	V
	7530	-36.35	-25	-11.35	-62.69	-45.46	1.99	11.11	V
	10040	-41.93	-25	-16.93	-71.74	-50.80	2.40	11.27	V
Middle	5070	-46.09	-25	-21.09	-67.78	-57.16	1.63	12.70	H
	7605	-46.54	-25	-21.54	-72.61	-55.66	2.00	11.12	H
	10140	-42.62	-25	-17.62	-72.12	-51.41	2.40	11.19	H
	5070	-41.07	-25	-16.07	-62.4	-52.14	1.63	12.70	V
	7605	-44.05	-25	-19.05	-70.05	-53.17	2.00	11.12	V
	10140	-41.99	-25	-16.99	-71.96	-50.78	2.40	11.19	V
Highest	5120	-44.03	-25	-19.03	-65.73	-55.16	1.64	12.77	H
	7680	-45.29	-25	-20.29	-71.35	-54.41	2.02	11.14	H
	10240	-41.55	-25	-16.55	-71.43	-50.26	2.40	11.11	H
	5120	-45.99	-25	-20.99	-67.41	-57.12	1.64	12.77	V
	7680	-46.60	-25	-21.60	-72.5	-55.72	2.02	11.14	V
	10240	-42.87	-25	-17.87	-73.01	-51.58	2.40	11.11	V

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