FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2323-2, XT2323-5, XT2323-6
FCC ID	:	IHDT56AL9
STANDARD	:	47 CFR Part 2, 27(M), 27(H), 27(F), 27(N)
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S)	:	May 05, 2023 ~ May 25, 2023

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 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 Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED Cert #5145.02

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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
FG340401-01C	Rev. 01	Initial issue of report	Jun. 05, 2023

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	-	Report Only	-
	§27.50(c)(10)	Effective Radiated Power (Band 71)	ERP < 3 Watt	PASS	-
3.5	N/A	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	-	Report Only	-
3.7	§2.1051 §27.53(g)	Conducted Band Edge Measurement (Band 71)	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §27.53(g)	Conducted Spurious Emission (Band 71)	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(g)	Radiated Spurious Emission (Band 71)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 38.83 dB at 2040.00 MHz

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”

Disclaimer:

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

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2323-2, XT2323-5, XT2323-6
FCC ID	IHDT56AL9
IMEI Code	Conducted: 351606570017474/351606570017482 Radiation: 351606570016138/351606570016146
HW Version	DVT2
SW Version	T2TV33.23
EUT Stage	Identical Prototype

Remark: The three models XT2323-2, XT2323-5, XT2323-6 are only for market differentiation, all the others are the same.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 7 : 2500 MHz ~ 2570 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 13 : 777 MHz ~ 787 MHz LTE Band 17 : 704 MHz ~ 716 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 71: 663 MHz ~ 698 MHz
Rx Frequency	LTE Band 7 : 2620 MHz ~ 2690 MHz LTE Band 12 : 729 MHz ~ 746 MHz LTE Band 13 : 746 MHz ~ 756 MHz LTE Band 17 : 734 MHz ~ 746 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 71: 617 MHz ~ 652 MHz
Bandwidth	LTE Band 7 : 5MHz/ 10MHz / 15MHz / 20MHz LTE Band 12 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 13 : 5MHz / 10MHz

	LTE Band 17 : 5MHz / 10MHz LTE Band 38 : 5MHz / 10MHz / 15MHz / 20MHz LTE Band 41 : 5MHz / 10MHz / 15MHz / 20MHz LTE Band 71 : 5MHz / 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	<Ant.0> LTE Band 71 : 22.91 dBm <Ant.1> LTE Band 71 : 23.02 dBm
Antenna Gain	<Ant.0> LTE Band 7 : -0.37 dBi LTE Band 12 : -4.57 dBi LTE Band 13 : -4.84 dBi LTE Band 17 : -4.57 dBi LTE Band 38 : -0.37 dBi LTE Band 41 : -0.37 dBi LTE Band 71 : -6.00 dBi <Ant.1> LTE Band 7 : -3.80 dBi LTE Band 12 : -4.20 dBi LTE Band 13 : -3.50 dBi LTE Band 17 : -4.20 dBi LTE Band 38 : -3.80 dBi LTE Band 41 : -3.80 dBi LTE Band 71 : -5.50 dBi <Ant.2> LTE Band 7 : -4.60 dBi LTE Band 38 : -4.60 dBi LTE Band 41 : -4.60 dBi <Ant.3> LTE Band 7 : -1.20 dBi LTE Band 38 : -1.20 dBi LTE Band 41 : -1.00 dBi
Type of Modulation	QPSK / 16QAM / 64QAM / 256QAM

Note:

1. The maximum ERP is calculated from max output power and antenna gain, so only the maximum ERP of Ant.1 for LTE B71 is shown in the report.
2. LTE Band 41/41C support HPUE mode.

1.5 Specification of Accessory

Accessories Information				
AC Adapter	**Brand Name**	Motorola(Salom)	**Model Name**	MC-301
Base Battery	**Brand Name**	Motorola (ATL)	**Model Name**	PM29
Flip Battery	**Brand Name**	Motorola (ATL)	**Model Name**	PV11
USB Cable 1	**Brand Name**	Motorola(Cabletech)	**Model Name**	SC18D13216
USB Cable 2	**Brand Name**	Motorola(Luxshare)	**Model Name**	SC18D13217
USB Cable 3	**Brand Name**	Motorola(Saibao)	**Model Name**	SC18D13215
USB Cable 4	**Brand Name**	Motorola(Saibao)	**Model Name**	SC18D86732

1.6 Modification of EUT

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

1.7 Re-use of Measured Data

1.7.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: XT2323-2, XT2323-5, XT2323-6, FCC ID: IHDT56AL9) is electrically identical to the reference device (Model: XT2323-1, FCC ID: IHDT56AL8) for the portions of the circuitry corresponding to the data being re-used. Based on their similarity, the FCC Part 27 for LTE B7/12/13/17/38/41/7C/41C (equipment class: PCE) reuse the original model's result and do spot-check, following the FCC KDB 484596 D01 Referencing Test Data v01.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: IHDT56AL9.

1.7.2 Model Difference Information

The **main** difference between FCC ID: IHDT56AL8 and FCC ID: IHDT56AL9 is as below:

- Remove LTE B19/32/42/43/38C, 5G NR n8/n38/n40.
- Add LTE B14/29/30/46/71/5B/66B/48C, 5G NR n12/n14/n25/n29/n30/n48/n70/n71;

Other differences and all the details of similarity and difference can be found in the confidential documents (XT2323-2, XT2323-5, XT2323-6_Operational Description of Product Equality Declaration).

1.7.3 Reference detail Section:

Rule Part	Equipment Class	Frequency Band (MHz)	Reference FCC ID (Parent)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)	Report Title/Section
27	PCE (LTE)	B12/13/17	IHDT56AL8	Original Grant	FG340401B	IHDT56AL9	All sections applicable
		B7/38/41 ULCA 7C/41C	IHDT56AL8	Original Grant	FG340401C	IHDT56AL9	All sections applicable

1.7.4 Spot Check Verification Data Section

Conducted power test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

All test procedures follow the related section of parent report.

Summary for power and RSE spot check for each rule entry and technology is listed as below:

Test Item	Mode	IHDT56AL8 Parent Worst mode Test Result	IHDT56AL9 Variant Check Test Result	Difference (dB)
Conducted Power (dBm)	LTE B7	22.83	22.79	0.04
	LTE B7C	21.45	21.41	0.04
	LTE B12/17	22.48	22.40	0.08
	LTE B13	22.45	22.39	0.06
	LTE B41/38	24.62	24.52	0.10
	LTE B41C	23.82	23.79	0.03

Note: For the RSE spot check, we select the worst mode across all LTE bands form parent report for comparison testing, the spot check data is in variant report No. FG340401-01G(LTE B48)

Conclusion:
Conducted power test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result, the test data from the original model is representative for the variant model. The power level spot check is shown within expected level compliant to limit line.

We are using power and ERP/EIRP measurements from the original parent model reports to list on the grant.

We confirm that the test data reuse policy of FCC KDB 484596 D01 Referencing Test Data v01 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.

1.8 Maximum ERP and Emission Designator

LTE Band 71		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	665.5 ~ 695.5	0.0339	4M51G7D	0.0321	4M51W7D
10	668.0 ~ 693.0	0.0332	8M99G7D	0.0324	9M03W7D
15	670.5 ~ 690.5	0.0333	13M4G7D	0.0322	13M4W7D
20	673.0 ~ 688.0	0.0344	17M8G7D	0.0335	17M9W7D

Note: All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.

1.9 Testing Location

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

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

1.10 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24al

1.11 Applicable Standards

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

- 47 CFR Part 2, 27(M), 27(H), 27(F), 27(N)
- ANSI C63.26-2015
- 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

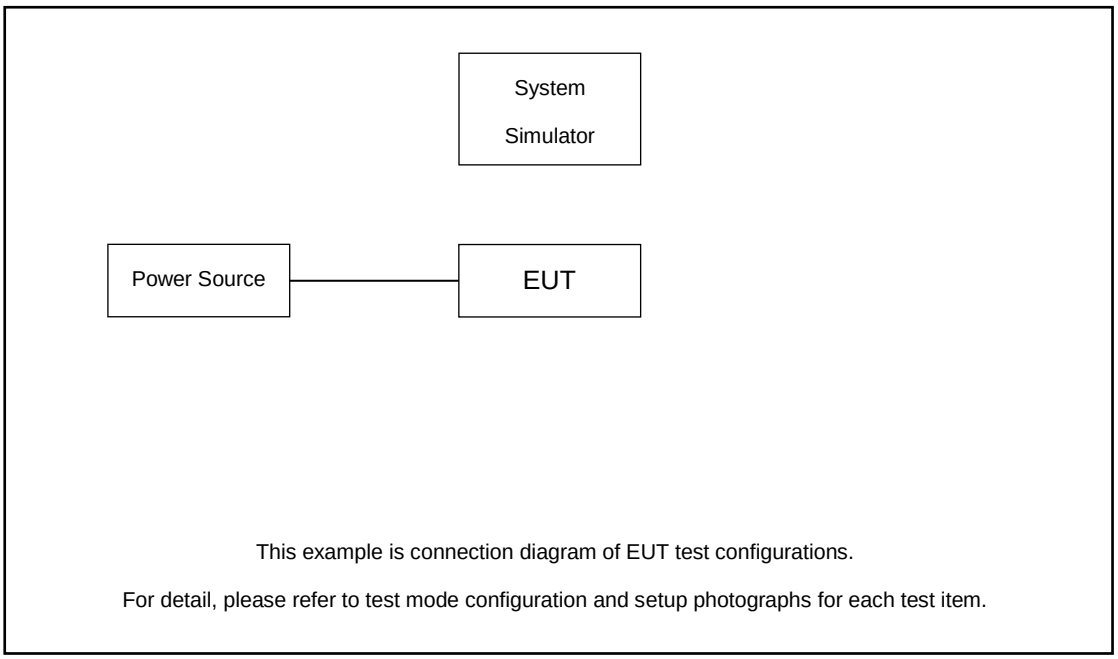
2.1 Test Mode

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.

For radiated measurement, pre-scanned flip open and close state in three orthogonal panels X, Y, Z. The worst cases (Z plane with flip open) were recorded in this report

Test Items	Band	Bandwidth (MHz)						Modulation				RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256 QAM	1	Half	Full	L	M	H
Max. Output Power	71	-	-	v	v	v	v	v	v	v	v	v		v	v	v	v
Peak-to-Average Ratio	71	-	-				v	v	v	v	v			v		v	
26dB and 99% Bandwidth	71	-	-	v	v	v	v	v	v					v		v	
Conducted Band Edge	71	-	-	v	v	v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	71	-	-	v	v	v	v	v				v			v	v	v
Frequency Stability	71	-	-		v			v						v		v	
E.R.P	71	-	-	v	v	v	v	v	v	v	v	v		v	v	v	v
Radiated Spurious Emission	71	Worst Case													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



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	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 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.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 4.6 dB.

Example :

Offset(dB) = RF cable loss(dB).

= 4.6 (dB)

2.5 Frequency List of Low/Middle/High Channels

LTE Band 71 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	133222	133322	133372
	Frequency	673.0	680.5	688.0
15	Channel	133197	133297	133397
	Frequency	670.5	680.5	690.5
10	Channel	133172	133272	133422
	Frequency	668.0	678.0	693.0
5	Channel	133147	133247	133447
	Frequency	665.5	675.5	695.5

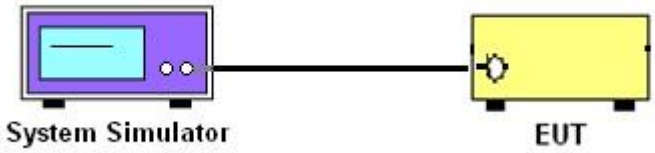
3 Conducted Test Items

3.1 Measuring Instruments

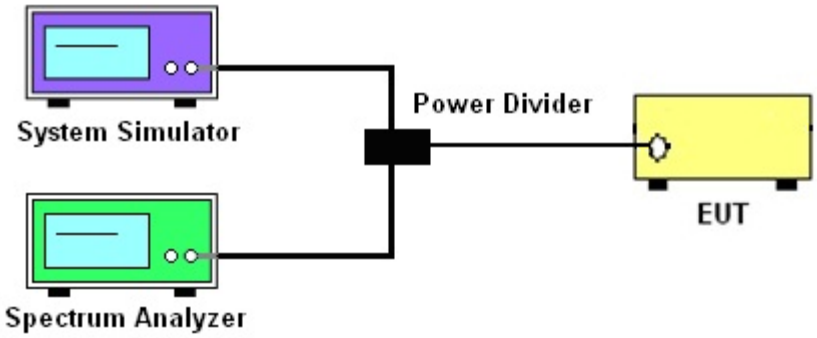
See list of measuring instruments of this test report.

3.2 Test Setup

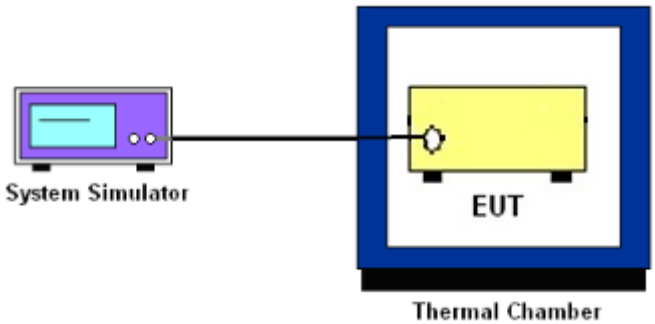
3.2.1 Conducted Output Power



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



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP

3.4.1 Description of the Conducted Output Power Measurement and ERP Measurement

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

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 71.

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

3.4.2 Test Procedures

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

3.5 Peak-to-Average Ratio

3.5.1 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.

3.5.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2.3.4 (CCDF).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.6 Occupied Bandwidth

3.6.1 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.

3.6.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
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.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

27.53 (g)

For operations in the 600MHz band and 698 -746 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used or a narrower RBW was used and the measured power was integrated over the full required measurement bandwidth of 1 MHz.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. 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.
9. When using the integration method, the starting frequency of the integration shall be centered at one-half of the RBW away from the band edge.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

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

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

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
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 RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. 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.

3.9 Frequency Stability

3.9.1 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. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.9.2 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 system simulator.
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.

3.9.3 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 system simulator.
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.

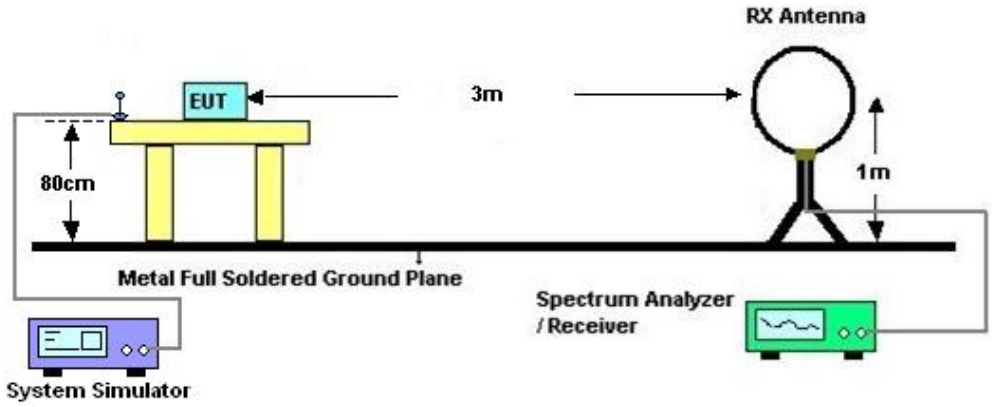
4 Radiated Test Items

4.1 Measuring Instruments

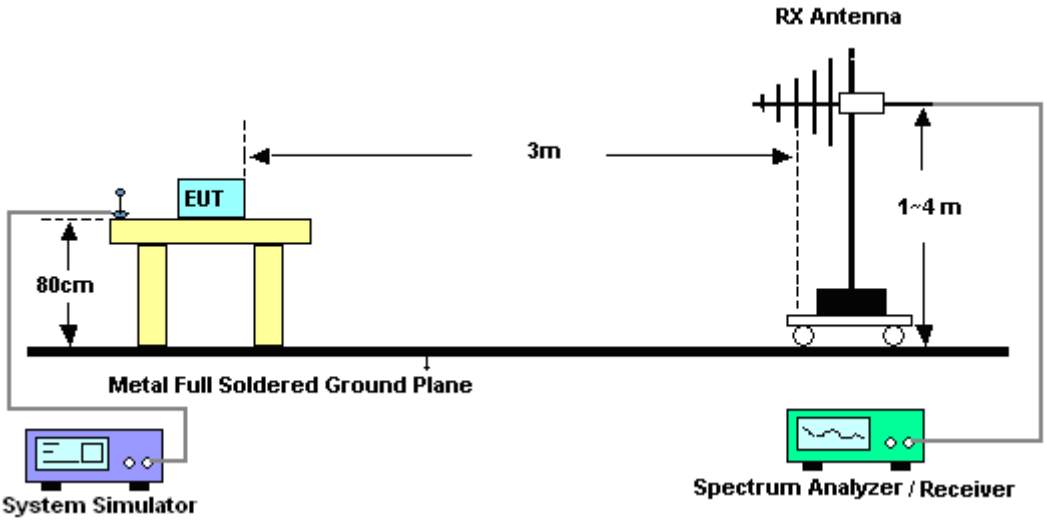
See list of measuring instruments of this test report.

4.2 Test Setup

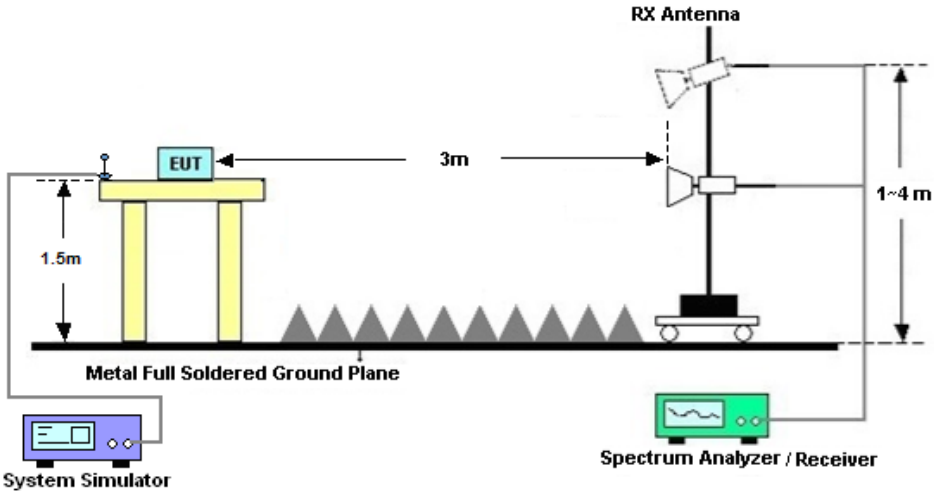
4.2.1 For radiated test below 30MHz



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

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.

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

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, the system simulator parameters were 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	Oct. 12, 2022	May 05, 2023	Oct. 11, 2023	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	May 05, 2023	NCR	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 15, 2022	May 05, 2023	Jul. 14, 2023	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 12, 2022	May 25, 2023	Oct. 11, 2023	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 16, 2022	May 25, 2023	Oct. 15, 2023	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Apr. 09, 2023	May 25, 2023	Apr. 08, 2024	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1284	1GHz~18GHz	Oct. 16, 2022	May 25, 2023	Oct. 15, 2023	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 08, 2023	May 25, 2023	Jan. 07, 2024	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	380827	9KHz-1GHz	Jul. 11, 2022	May 25, 2023	Jul. 10, 2023	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2023	May 25, 2023	Jan. 04, 2024	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18GA	060840	1Ghz-18Ghz	Oct. 12, 2022	May 25, 2023	Oct. 11, 2023	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 12, 2022	May 25, 2023	Oct. 11, 2023	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 25, 2023	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 25, 2023	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 25, 2023	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Measurement Uncertainty

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 Conducted Measurement

Test Item	Uncertainty
Conducted Power	±0.46 dB
Conducted Emissions	±0.48 dB
Occupied Channel Bandwidth	±0.1 %

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.82 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.56 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.54 dB

Appendix A. Test Results of Conducted Test

Test Engineer :	Simle Wang	Temperature :	22~23℃
		Relative Humidity :	40~42%

Conducted Output Power(Average power) and ERP

LTE Band 71 <Ant.1>:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				133222	133322	133372			
Frequency (MHz)				673	683	688	L	M	H
20	QPSK	1	0	22.98	23.02	22.91	0.0341	0.0344	0.0336
20	QPSK	1	99	22.81	22.97	22.74	0.0328	0.0340	0.0323
20	QPSK	100	0	22.89	22.93	22.82	0.0334	0.0337	0.0329
20	16QAM	1	0	22.79	22.90	22.85	0.0327	0.0335	0.0331
20	64QAM	1	0	22.28	22.42	22.25	0.0290	0.0300	0.0288
20	256QAM	1	0	19.04	19.09	18.93	0.0138	0.0139	0.0134
Channel				133197	133297	133397	EIRP(W)		
Frequency (MHz)				670.5	680.5	690.5	L	M	H
15	QPSK	1	0	22.75	22.88	22.82	0.0324	0.0333	0.0329
15	16QAM	1	0	22.60	22.73	22.67	0.0313	0.0322	0.0318
Channel				133172	133272	133422	EIRP(W)		
Frequency (MHz)				668	678	693	L	M	H
10	QPSK	1	0	22.84	22.86	22.70	0.0330	0.0332	0.0320
10	16QAM	1	0	22.75	22.68	22.71	0.0324	0.0318	0.0321
Channel				133147	133247	133447	EIRP(W)		
Frequency (MHz)				665.5	675.5	695.5	L	M	H
5	QPSK	1	0	22.82	22.95	22.68	0.0329	0.0339	0.0318
5	16QAM	1	0	22.63	22.69	22.72	0.0315	0.0319	0.0321

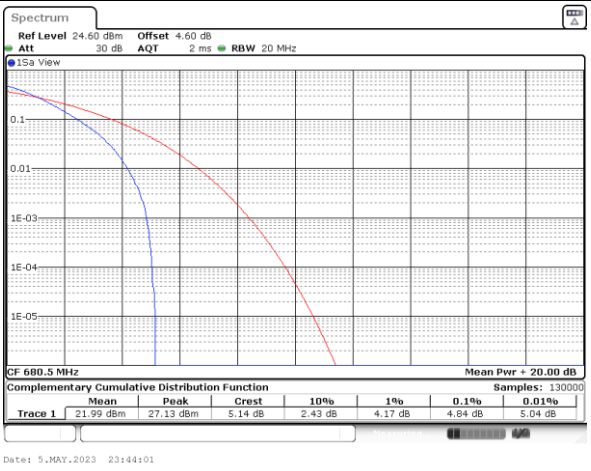
LTE Band 71

Peak-to-Average Ratio

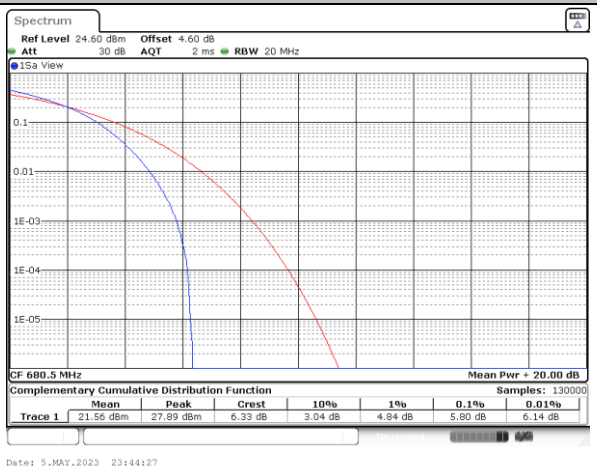
Mode	LTE Band 71 / 20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.84	5.80	6.29	**6.61**	PASS

LTE Band 71 / 20MHz

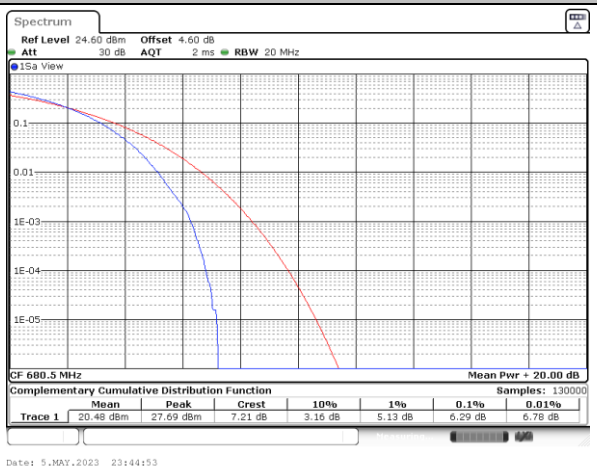
Middle Channel / Full RB / QPSK



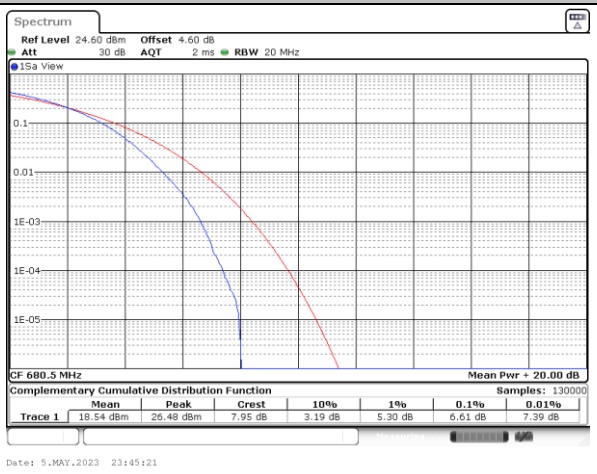
Middle Channel / Full RB / 16QAM



Middle Channel / Full RB / 64QAM

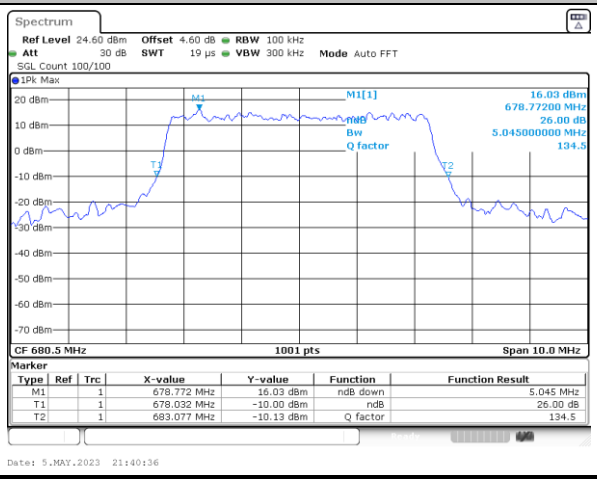
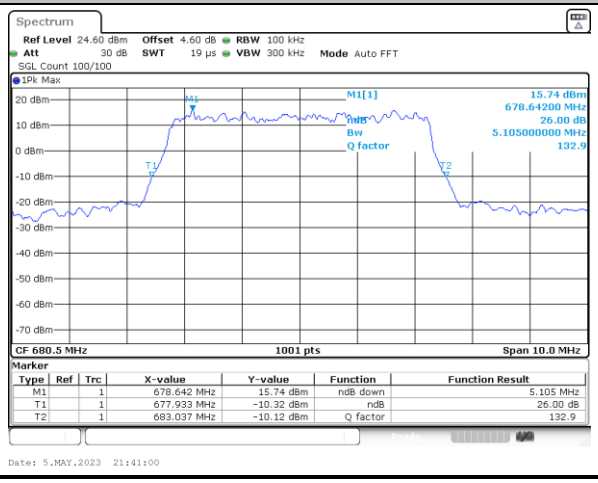


Middle Channel / Full RB / 256QAM



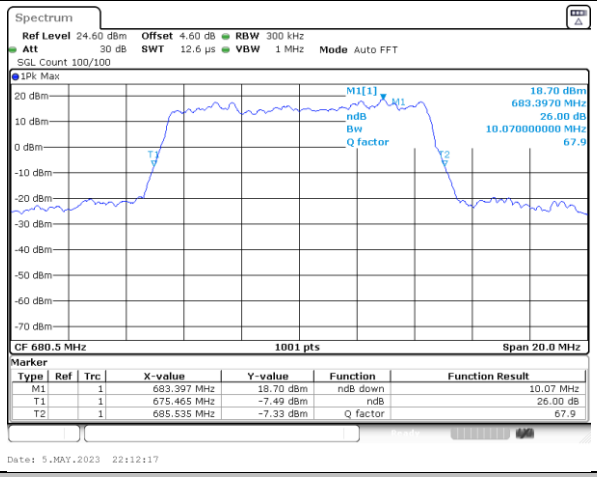
26dB Bandwidth

Mode	LTE Band 71 : 26dB BW(MHz)	
BW	5MHz	
Mod.	QPSK	16QAM
Middle CH	5.05	5.11
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	10.07	10.03
BW	15MHz	
Mod.	QPSK	16QAM
Middle CH	14.69	14.30
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	18.98	19.30

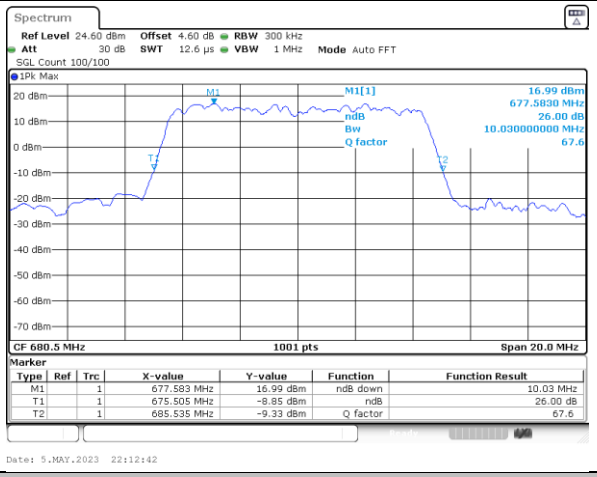
LTE Band 71	
Middle Channel / 5MHz / QPSK	Middle Channel / 5MHz / 16QAM
	

LTE Band 71

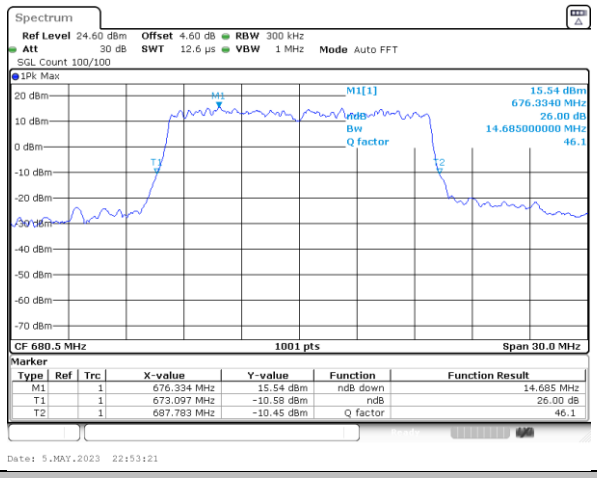
Middle Channel / 10MHz / QPSK



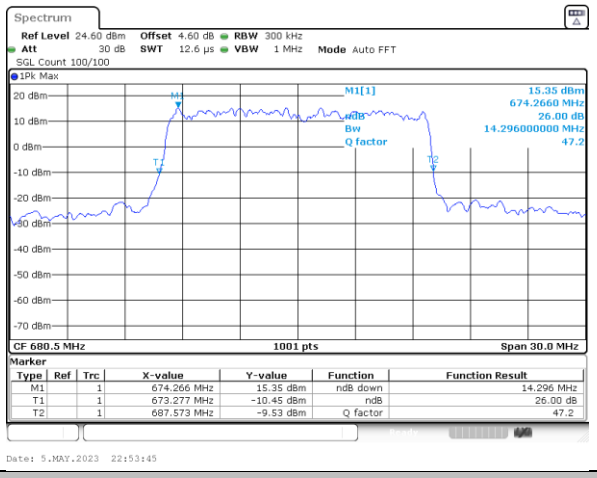
Middle Channel / 10MHz / 16QAM



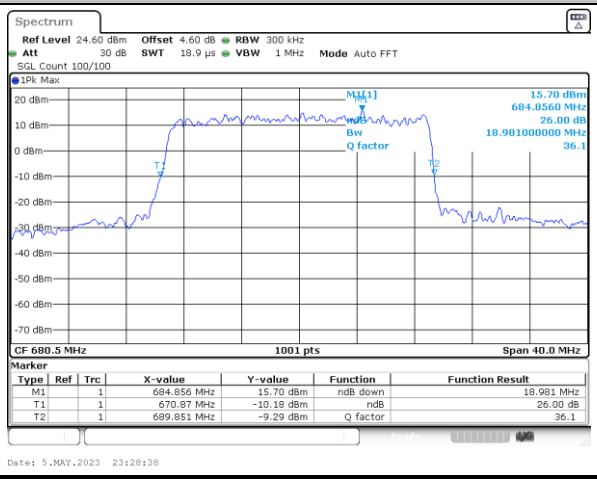
Middle Channel / 15MHz / QPSK



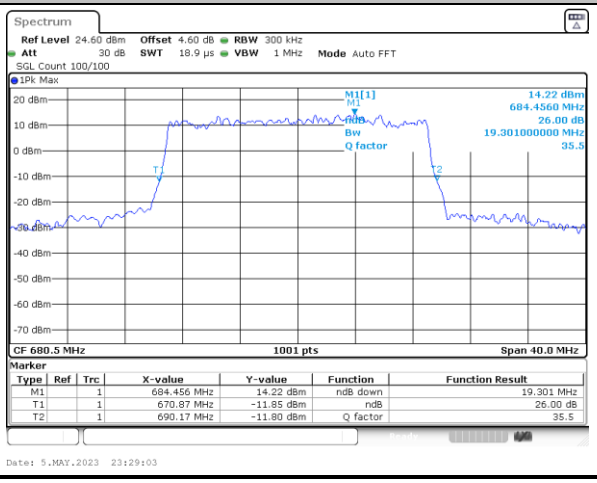
Middle Channel / 15MHz / 16QAM



Middle Channel / 20MHz / QPSK



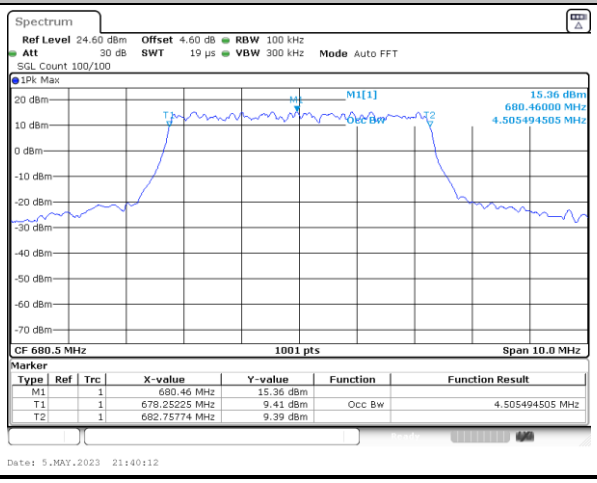
Middle Channel / 20MHz / 16QAM

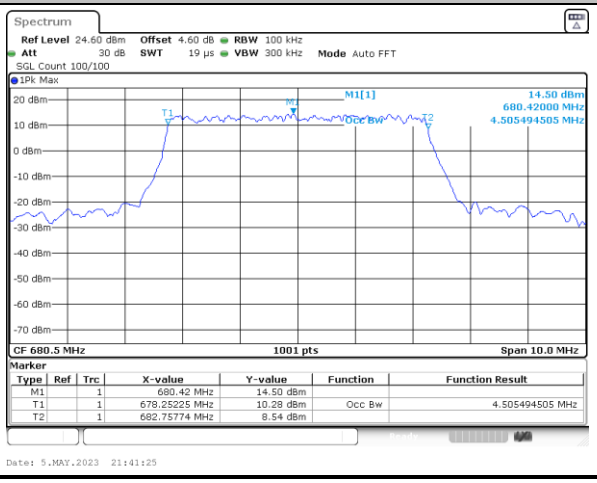


Occupied Bandwidth

Mode	LTE Band 71 : 99%OBW(MHz)	
BW	5MHz	
Mod.	QPSK	16QAM
Middle CH	4.51	4.51
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	8.99	9.03
BW	15MHz	
Mod.	QPSK	16QAM
Middle CH	13.43	13.40
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	17.82	17.90

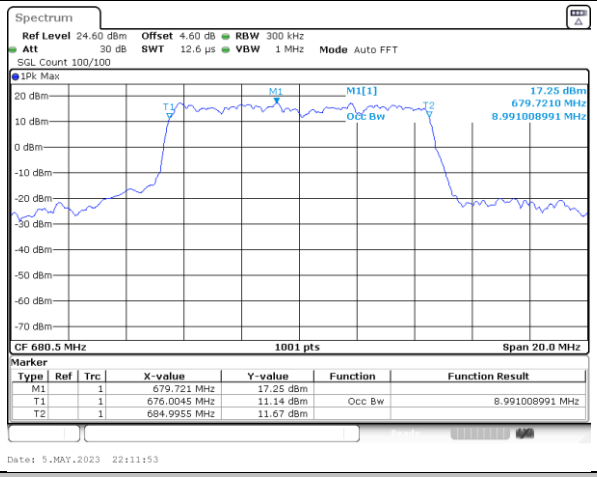
LTE Band 71	
Middle Channel / 5MHz / QPSK	Middle Channel / 5MHz / 16QAM



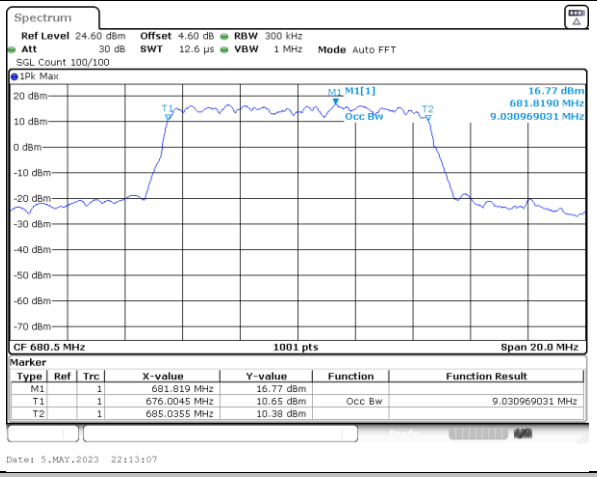


LTE Band 71

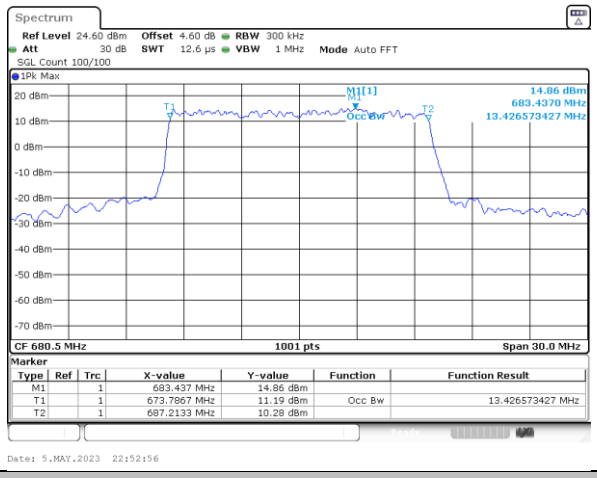
Middle Channel / 10MHz / QPSK



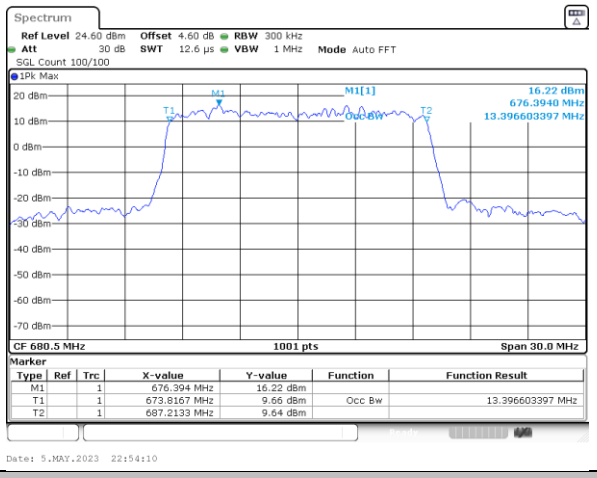
Middle Channel / 10MHz / 16QAM



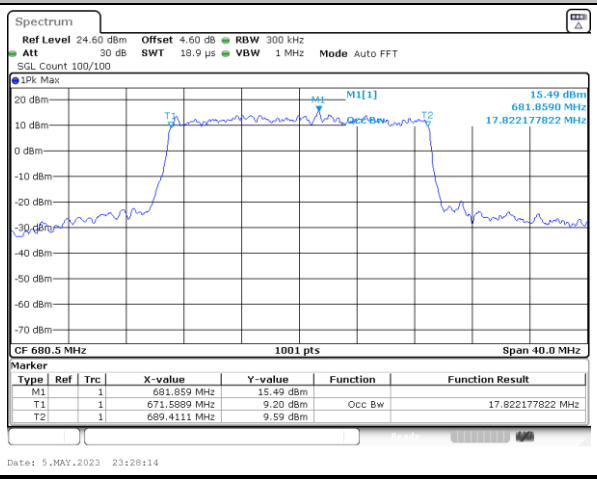
Middle Channel / 15MHz / QPSK



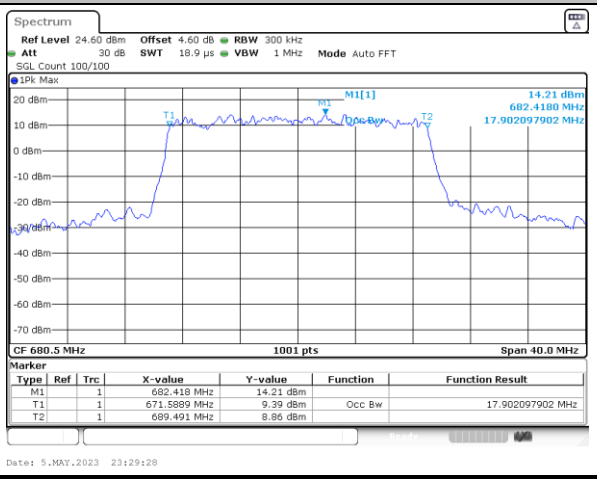
Middle Channel / 15MHz / 16QAM



Middle Channel / 20MHz / QPSK



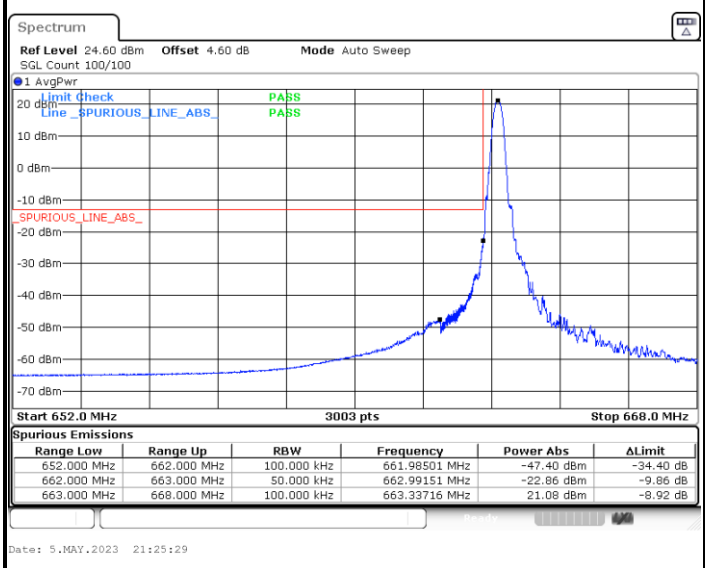
Middle Channel / 20MHz / 16QAM



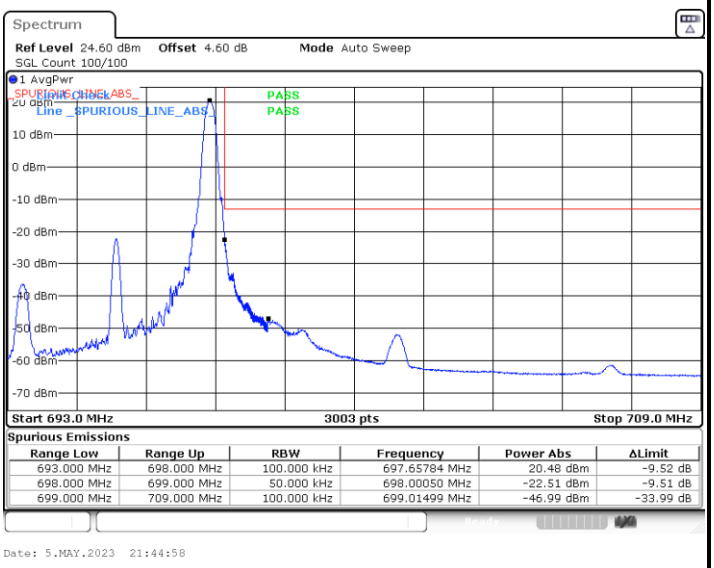
Conducted Band Edge

LTE Band 71 / 5MHz / QPSK

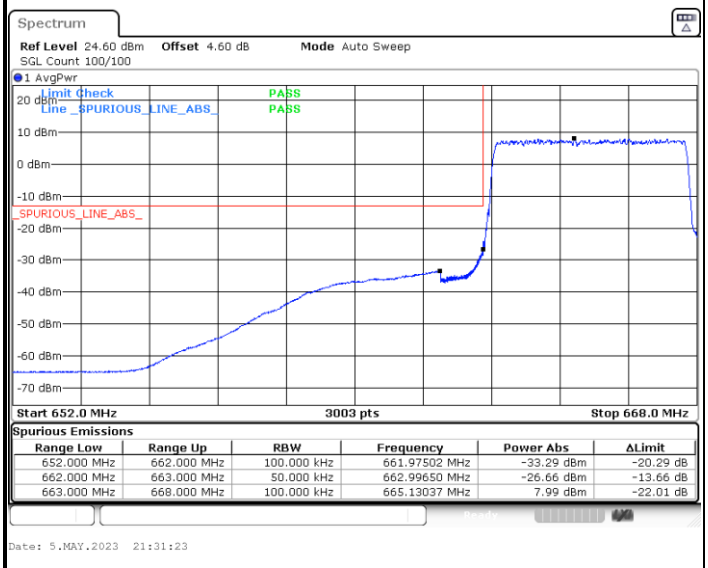
Lowest Band Edge / 1 RB



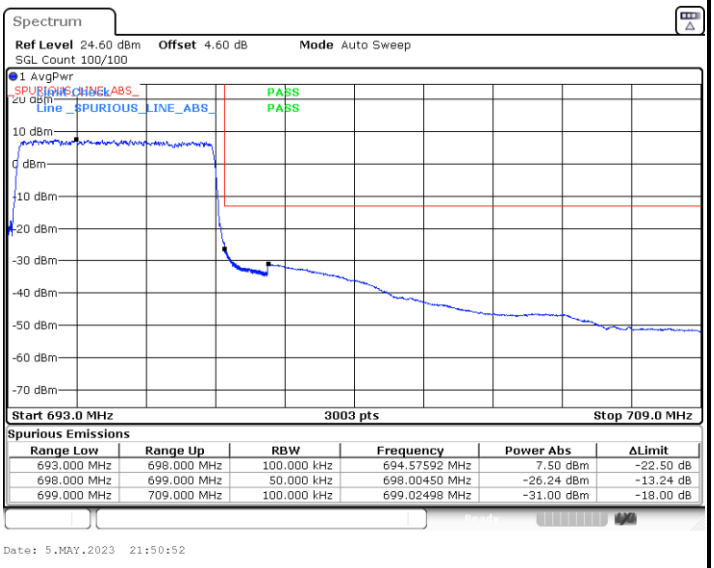
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

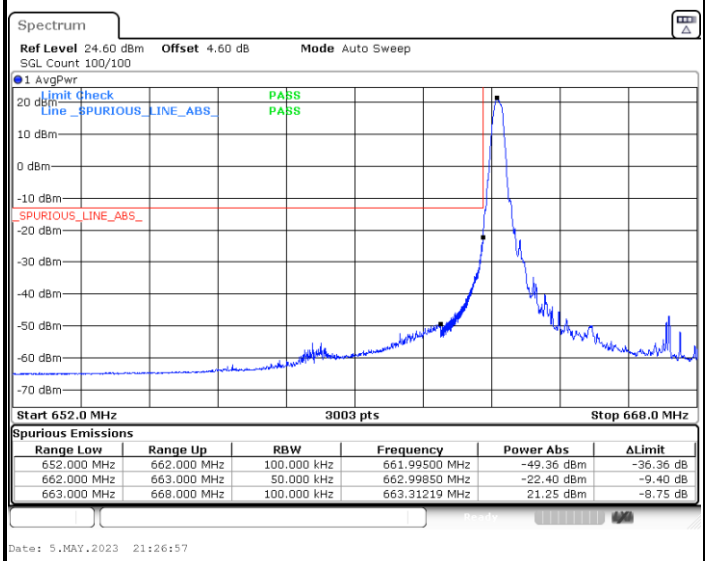


Highest Band Edge / Full RB

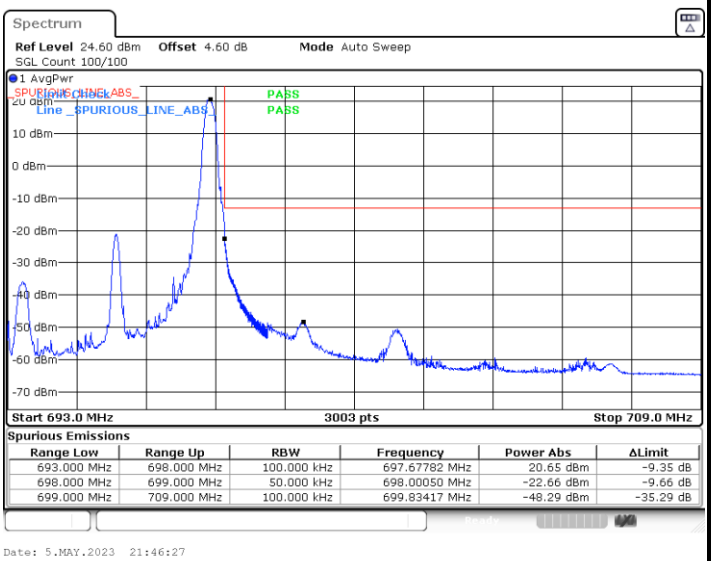


LTE Band 71 / 5MHz / 16QAM

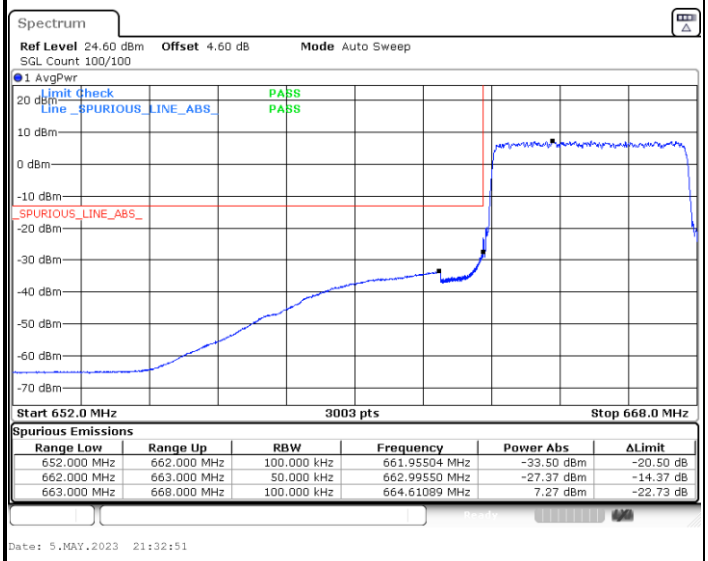
Lowest Band Edge / 1 RB



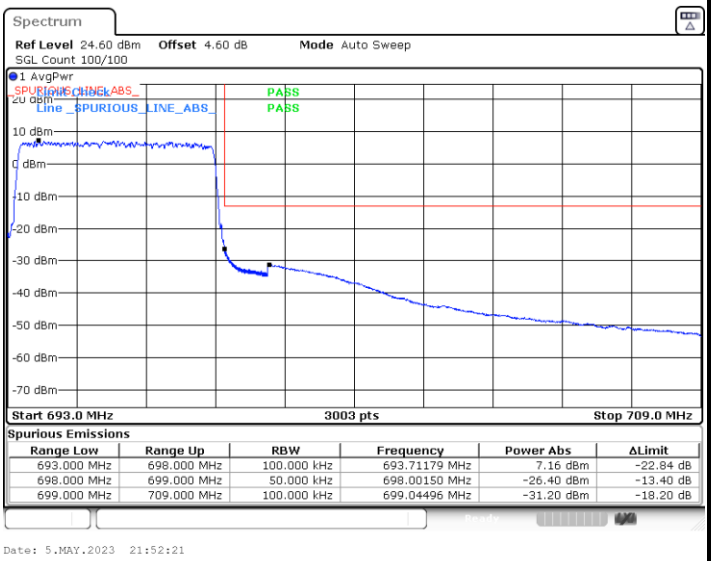
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

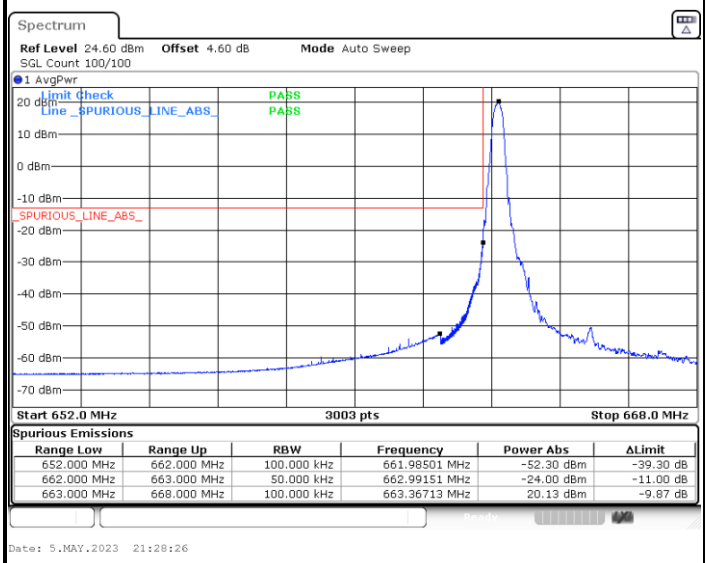


Highest Band Edge / Full RB



LTE Band 71 / 5MHz / 64QAM

Lowest Band Edge / 1RB

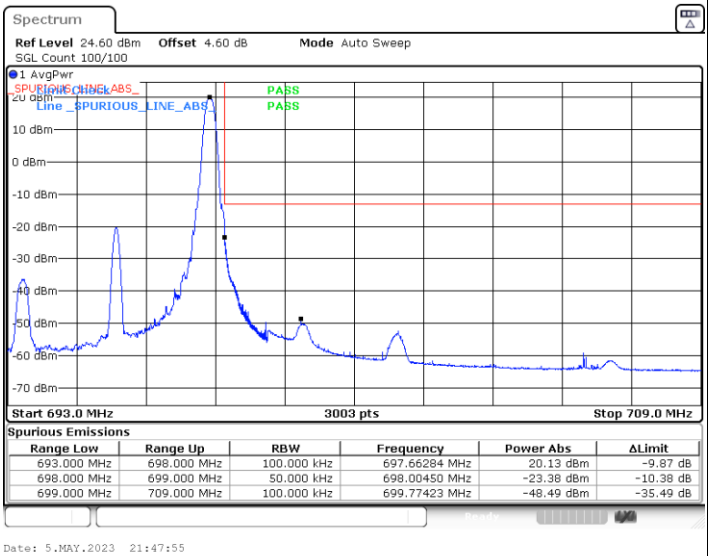


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.98501 MHz	-52.30 dBm	-39.30 dB
662.000 MHz	663.000 MHz	50.000 kHz	662.99151 MHz	-24.00 dBm	-11.00 dB
663.000 MHz	668.000 MHz	100.000 kHz	663.36713 MHz	20.13 dBm	-9.87 dB

Date: 5.MAY.2023 21:28:26

Highest Band Edge / 1 RB

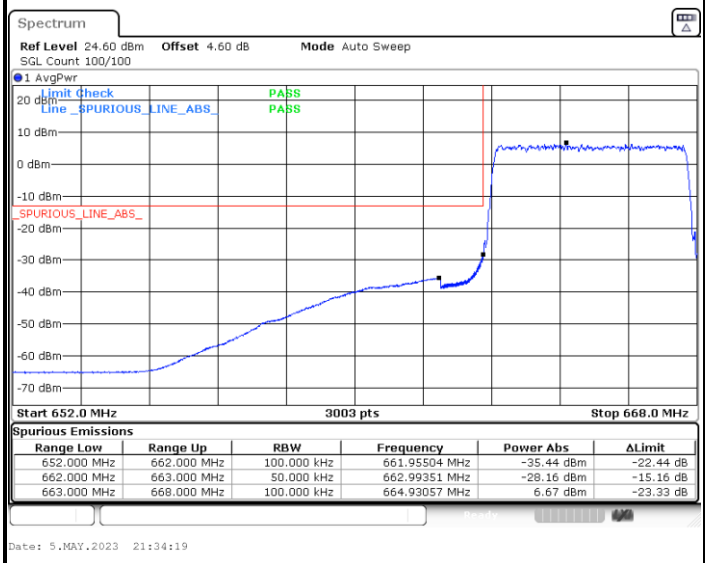


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
693.000 MHz	698.000 MHz	100.000 kHz	697.66284 MHz	20.13 dBm	-9.87 dB
698.000 MHz	699.000 MHz	50.000 kHz	698.00450 MHz	-23.38 dBm	-10.38 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.77423 MHz	-48.49 dBm	-35.49 dB

Date: 5.MAY.2023 21:47:55

Lowest Band Edge / Full RB

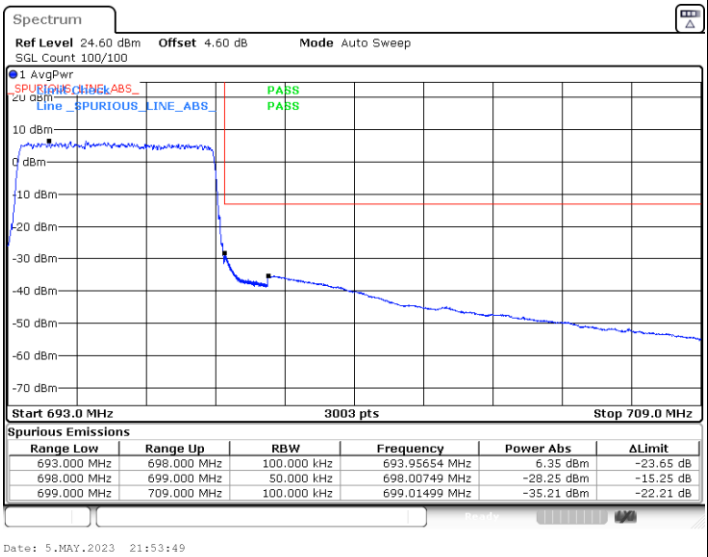


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.95504 MHz	-35.44 dBm	-22.44 dB
662.000 MHz	663.000 MHz	50.000 kHz	662.99351 MHz	-28.16 dBm	-15.16 dB
663.000 MHz	668.000 MHz	100.000 kHz	664.93057 MHz	6.67 dBm	-23.33 dB

Date: 5.MAY.2023 21:34:19

Highest Band Edge / Full RB



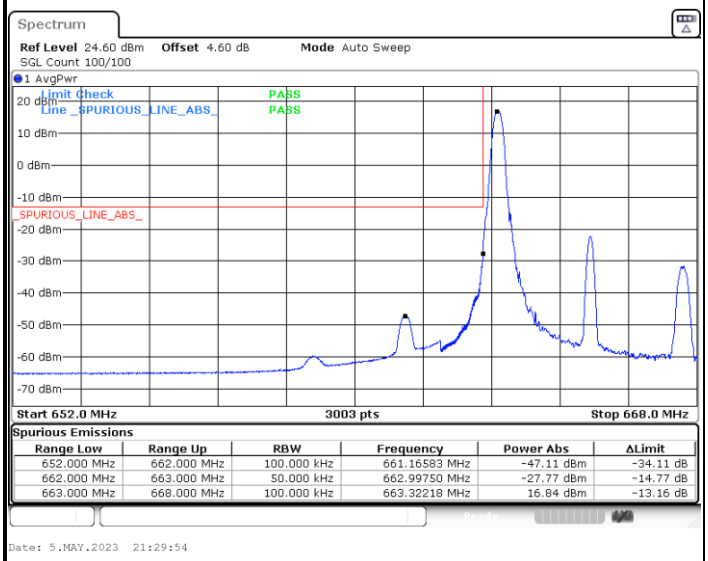
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
693.000 MHz	698.000 MHz	100.000 kHz	693.95654 MHz	6.35 dBm	-23.65 dB
698.000 MHz	699.000 MHz	50.000 kHz	698.00749 MHz	-28.25 dBm	-15.25 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.01499 MHz	-35.21 dBm	-22.21 dB

Date: 5.MAY.2023 21:53:49

LTE Band 71 / 5MHz / 256QAM

Lowest Band Edge / 1RB

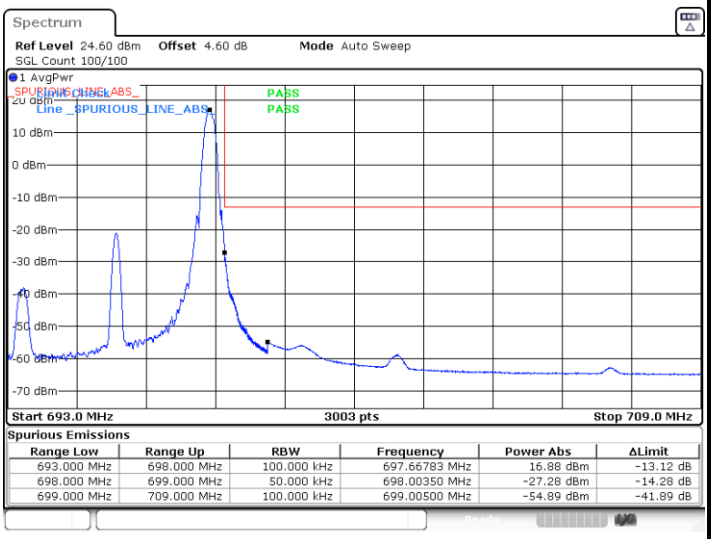


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.16583 MHz	-47.11 dBm	-34.11 dB
662.000 MHz	663.000 MHz	50.000 kHz	662.99750 MHz	-27.77 dBm	-14.77 dB
663.000 MHz	668.000 MHz	100.000 kHz	663.32218 MHz	16.84 dBm	-13.16 dB

Date: 5.MAY.2023 21:29:54

Highest Band Edge / 1 RB

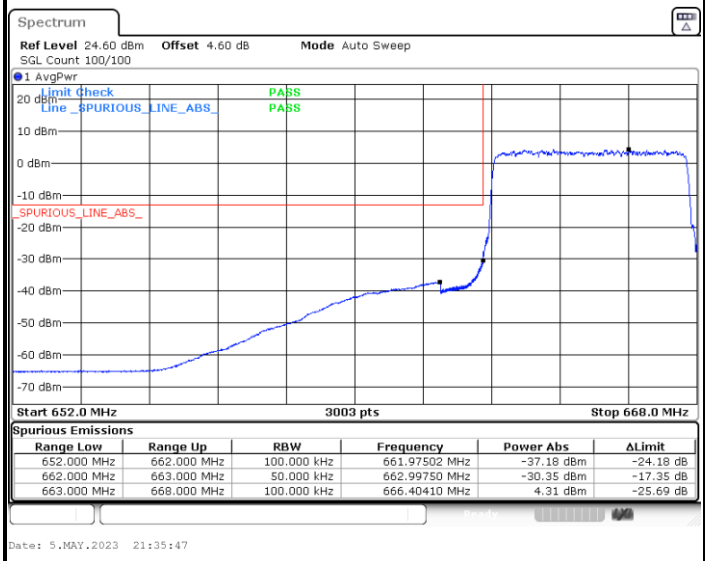


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
693.000 MHz	698.000 MHz	100.000 kHz	697.66783 MHz	16.88 dBm	-13.12 dB
698.000 MHz	699.000 MHz	50.000 kHz	698.00350 MHz	-27.28 dBm	-14.28 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.00500 MHz	-54.89 dBm	-41.89 dB

Date: 5.MAY.2023 21:49:23

Lowest Band Edge / Full RB

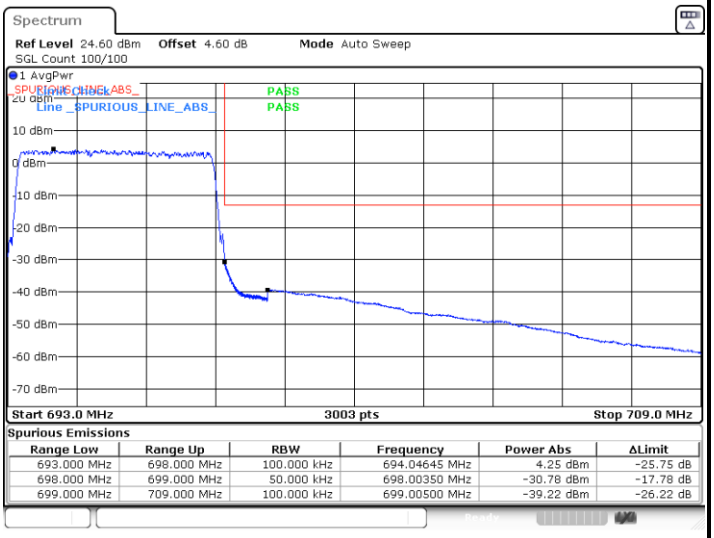


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.97502 MHz	-37.18 dBm	-24.18 dB
662.000 MHz	663.000 MHz	50.000 kHz	662.99750 MHz	-30.35 dBm	-17.35 dB
663.000 MHz	668.000 MHz	100.000 kHz	666.40410 MHz	4.31 dBm	-25.69 dB

Date: 5.MAY.2023 21:35:47

Highest Band Edge / Full RB



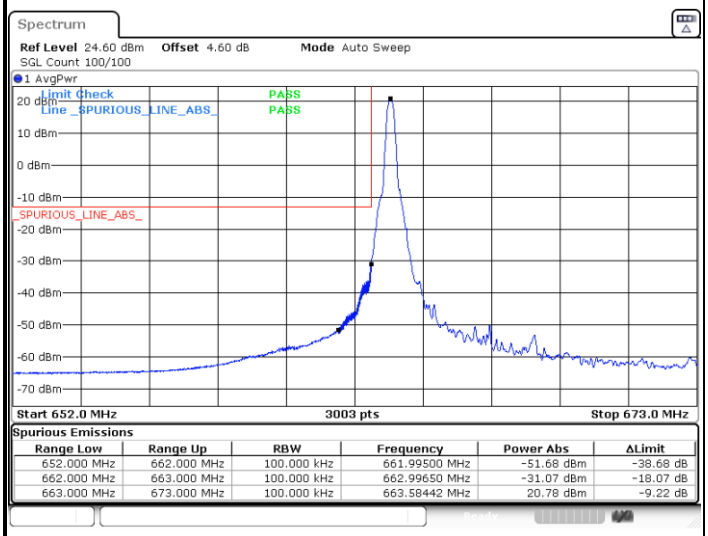
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
693.000 MHz	698.000 MHz	100.000 kHz	694.04645 MHz	4.25 dBm	-25.75 dB
698.000 MHz	699.000 MHz	50.000 kHz	698.00350 MHz	-30.78 dBm	-17.78 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.00500 MHz	-39.22 dBm	-26.22 dB

Date: 5.MAY.2023 21:55:17

LTE Band 71 / 10MHz / QPSK

Lowest Band Edge / 1 RB

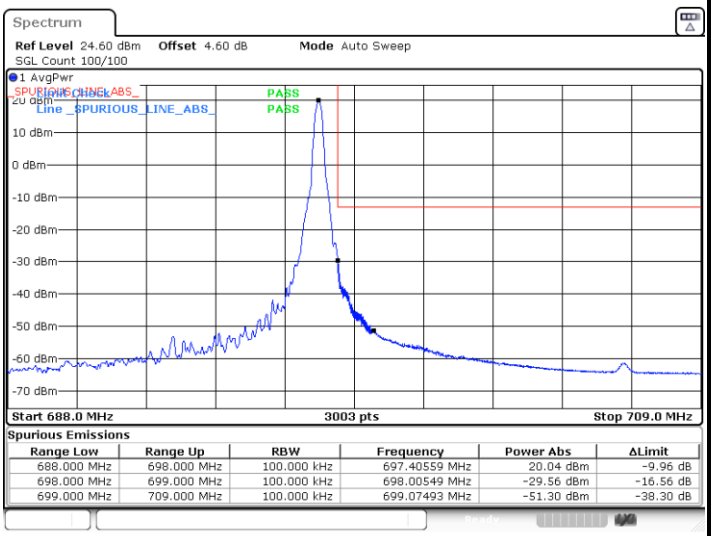


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.99500 MHz	-51.68 dBm	-38.68 dB
662.000 MHz	663.000 MHz	100.000 kHz	662.99650 MHz	-31.07 dBm	-18.07 dB
663.000 MHz	673.000 MHz	100.000 kHz	663.58442 MHz	20.78 dBm	-9.22 dB

Date: 5.MAY.2023 22:03:01

Highest Band Edge / 1 RB

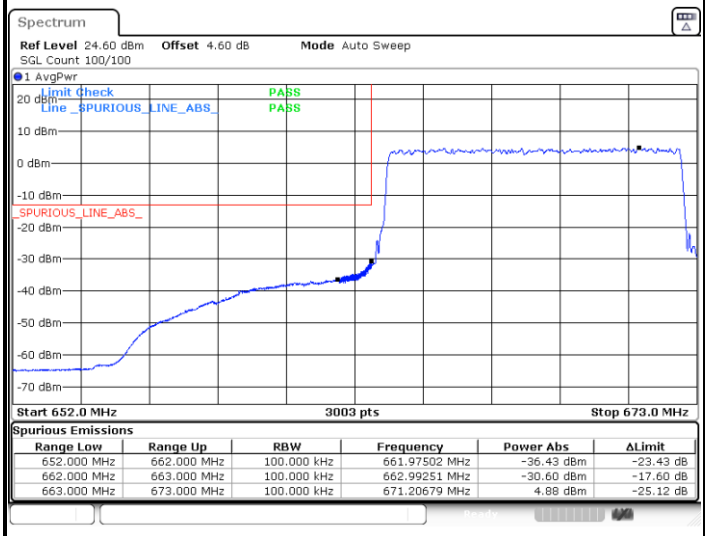


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
688.000 MHz	698.000 MHz	100.000 kHz	697.40559 MHz	20.04 dBm	-9.96 dB
698.000 MHz	699.000 MHz	100.000 kHz	698.00549 MHz	-29.56 dBm	-16.56 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.07493 MHz	-51.30 dBm	-38.30 dB

Date: 5.MAY.2023 22:16:39

Lowest Band Edge / Full RB

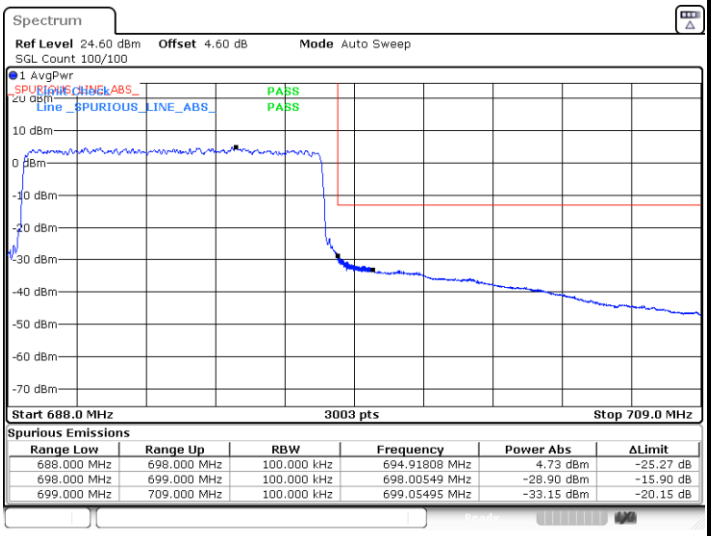


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.97502 MHz	-36.43 dBm	-23.43 dB
662.000 MHz	663.000 MHz	100.000 kHz	662.99251 MHz	-30.60 dBm	-17.60 dB
663.000 MHz	673.000 MHz	100.000 kHz	671.20679 MHz	4.88 dBm	-25.12 dB

Date: 5.MAY.2023 21:57:10

Highest Band Edge / Full RB



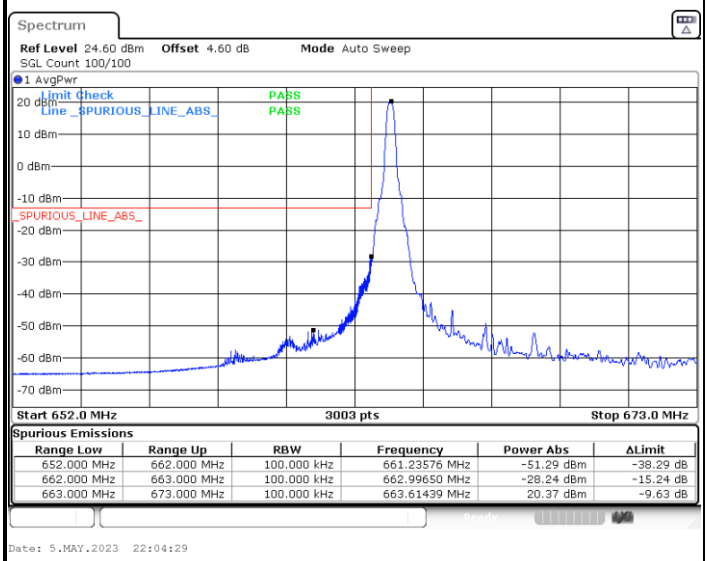
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
688.000 MHz	698.000 MHz	100.000 kHz	694.91808 MHz	4.73 dBm	-25.27 dB
698.000 MHz	699.000 MHz	100.000 kHz	698.00549 MHz	-28.90 dBm	-15.90 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.05495 MHz	-33.15 dBm	-20.15 dB

Date: 5.MAY.2023 22:22:32

LTE Band 71 / 10MHz / 16QAM

Lowest Band Edge / 1 RB

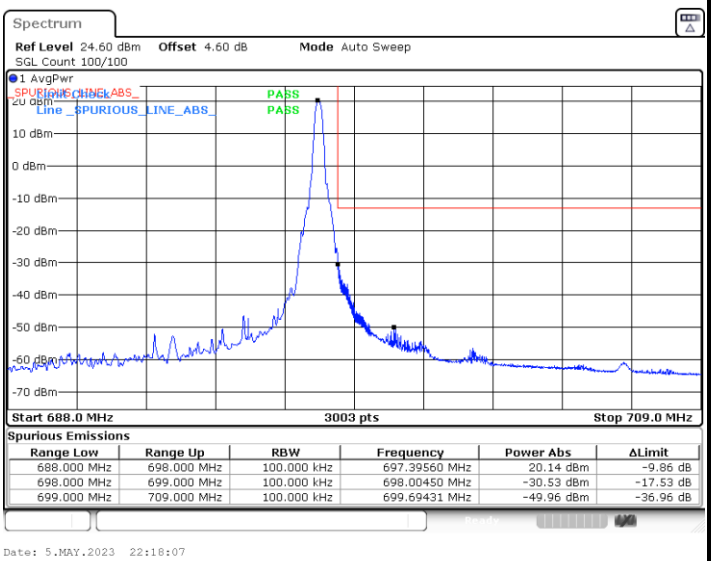


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.23576 MHz	-51.29 dBm	-38.29 dB
662.000 MHz	663.000 MHz	100.000 kHz	662.99650 MHz	-28.24 dBm	-15.24 dB
663.000 MHz	673.000 MHz	100.000 kHz	663.61439 MHz	20.37 dBm	-9.63 dB

Date: 5.MAY.2023 22:04:29

Highest Band Edge / 1 RB

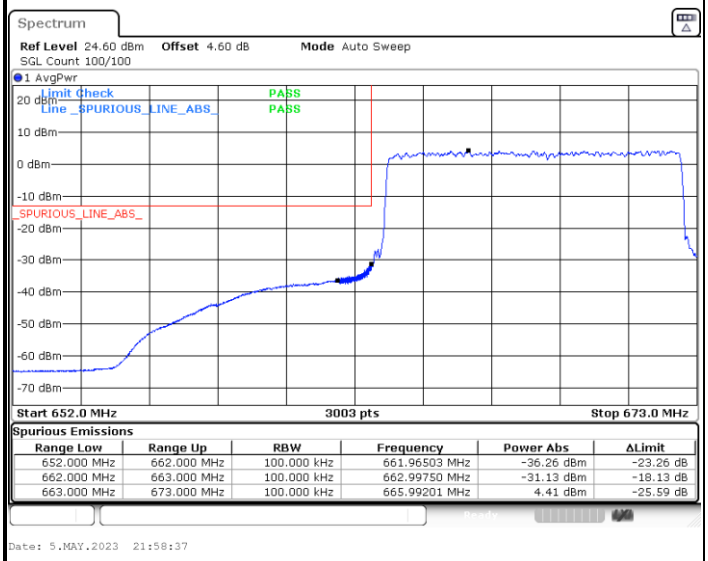


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
688.000 MHz	698.000 MHz	100.000 kHz	697.39560 MHz	20.14 dBm	-9.86 dB
698.000 MHz	699.000 MHz	100.000 kHz	698.00450 MHz	-30.53 dBm	-17.53 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.69431 MHz	-49.96 dBm	-36.96 dB

Date: 5.MAY.2023 22:18:07

Lowest Band Edge / Full RB

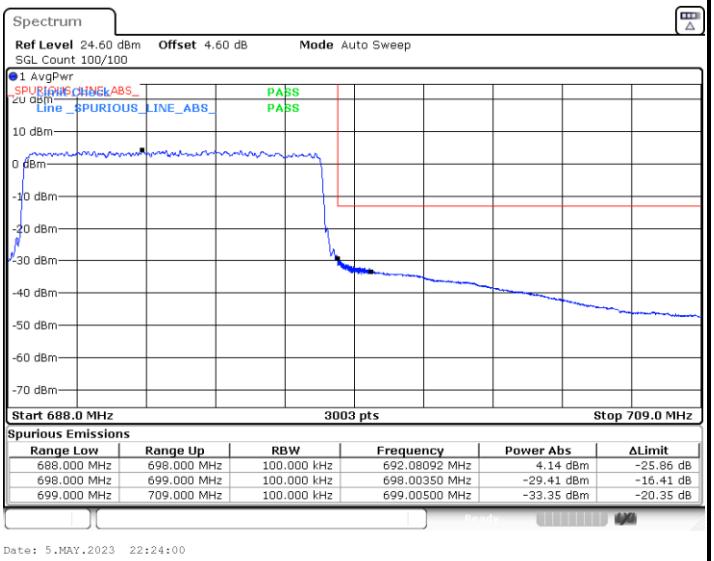


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.96503 MHz	-36.26 dBm	-23.26 dB
662.000 MHz	663.000 MHz	100.000 kHz	662.99750 MHz	-31.13 dBm	-18.13 dB
663.000 MHz	673.000 MHz	100.000 kHz	665.99201 MHz	4.41 dBm	-25.59 dB

Date: 5.MAY.2023 21:58:37

Highest Band Edge / Full RB



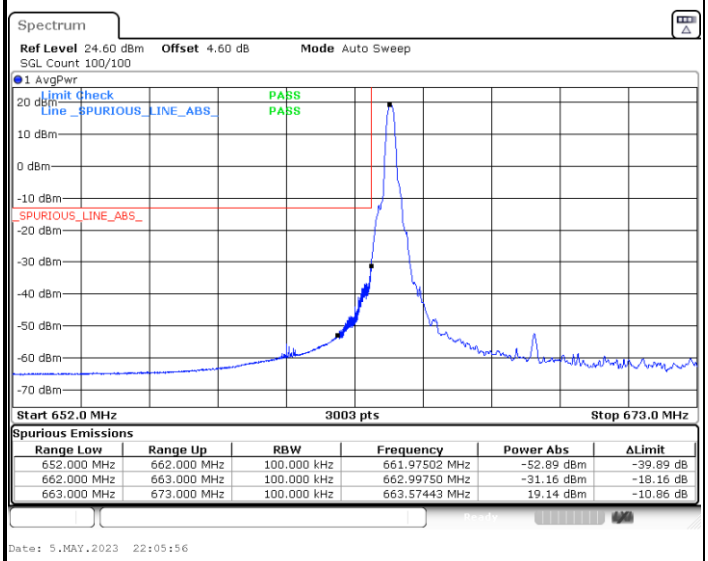
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
688.000 MHz	698.000 MHz	100.000 kHz	692.08092 MHz	4.14 dBm	-25.86 dB
698.000 MHz	699.000 MHz	100.000 kHz	698.00350 MHz	-29.41 dBm	-16.41 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.00500 MHz	-33.35 dBm	-20.35 dB

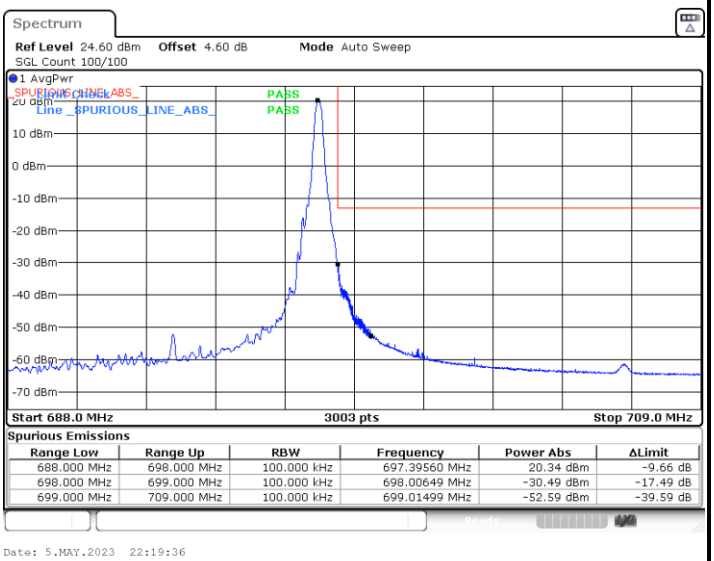
Date: 5.MAY.2023 22:24:00

LTE Band 71 / 10MHz / 64QAM

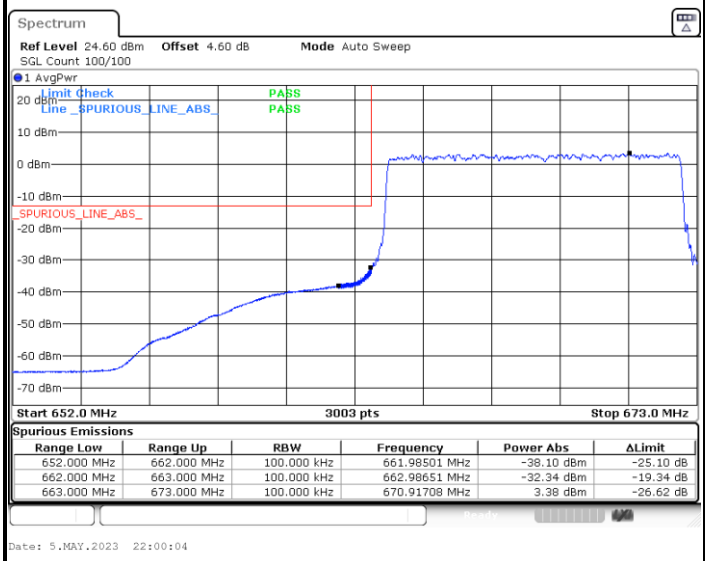
Lowest Band Edge / 1 RB



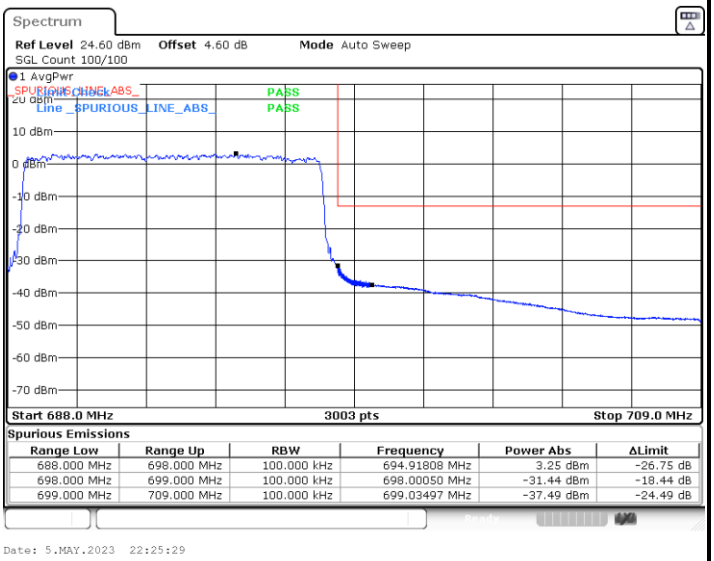
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

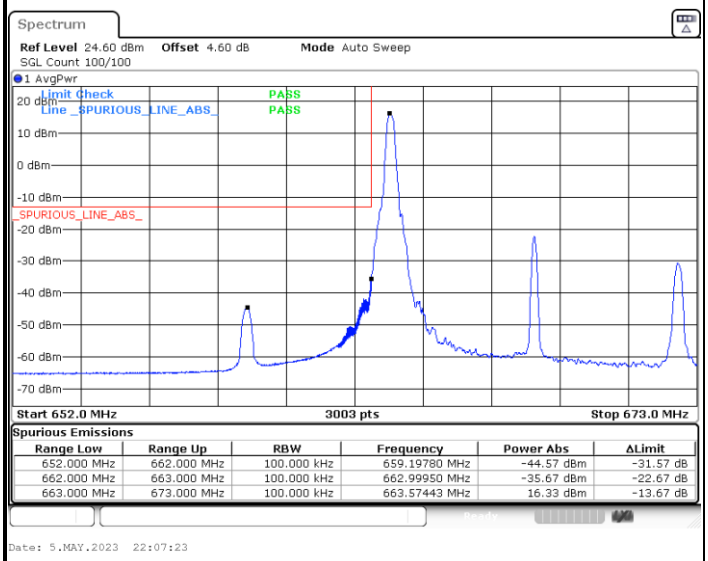


Highest Band Edge / Full RB



LTE Band 71 / 10MHz / 256QAM

Lowest Band Edge / 1 RB

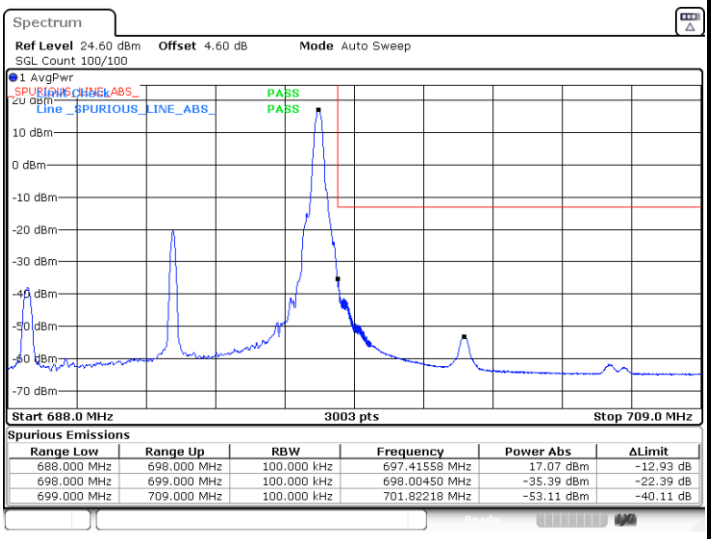


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	659.19780 MHz	-44.57 dBm	-31.57 dB
662.000 MHz	663.000 MHz	100.000 kHz	662.99950 MHz	-35.67 dBm	-22.67 dB
663.000 MHz	673.000 MHz	100.000 kHz	663.57443 MHz	16.33 dBm	-13.67 dB

Date: 5.MAY.2023 22:07:23

Highest Band Edge / 1 RB

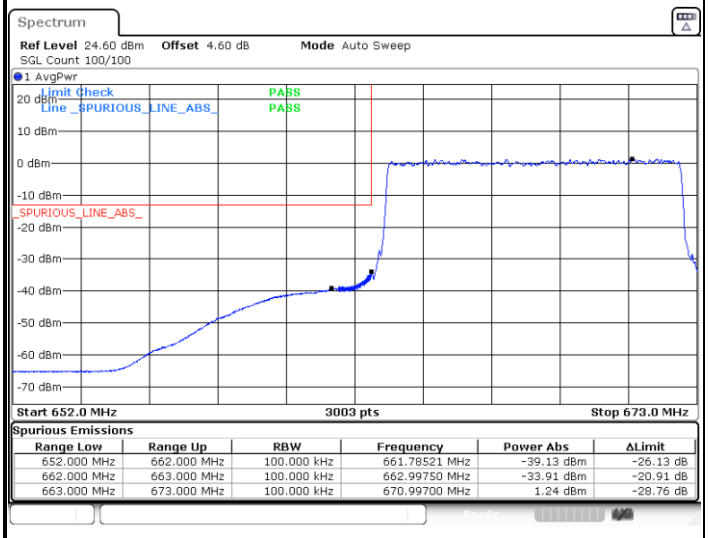


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
688.000 MHz	698.000 MHz	100.000 kHz	697.41558 MHz	17.07 dBm	-12.93 dB
698.000 MHz	699.000 MHz	100.000 kHz	698.00450 MHz	-35.39 dBm	-22.39 dB
699.000 MHz	709.000 MHz	100.000 kHz	701.82218 MHz	-53.11 dBm	-40.11 dB

Date: 5.MAY.2023 22:21:04

Lowest Band Edge / Full RB

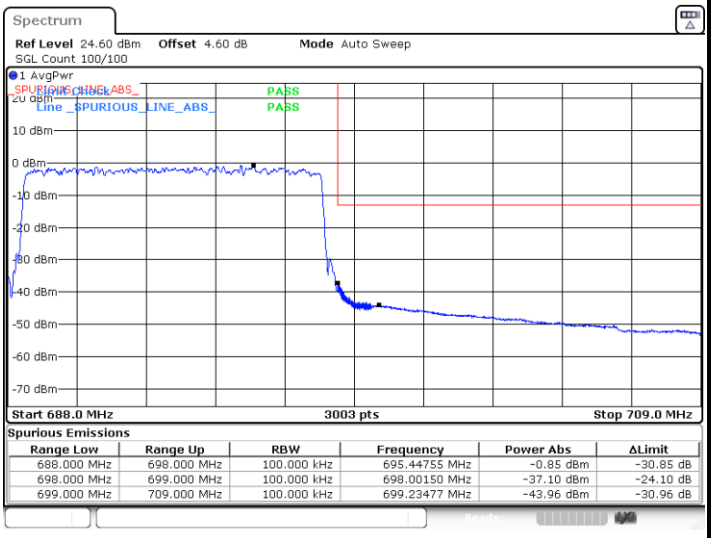


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.78521 MHz	-39.13 dBm	-26.13 dB
662.000 MHz	663.000 MHz	100.000 kHz	662.99750 MHz	-33.91 dBm	-20.91 dB
663.000 MHz	673.000 MHz	100.000 kHz	670.99700 MHz	1.24 dBm	-28.76 dB

Date: 5.MAY.2023 22:01:32

Highest Band Edge / Full RB



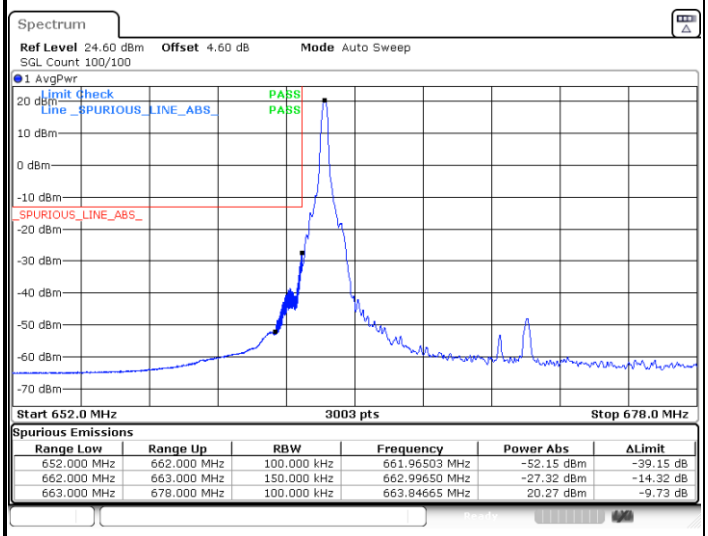
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
688.000 MHz	698.000 MHz	100.000 kHz	695.44755 MHz	-0.85 dBm	-30.85 dB
698.000 MHz	699.000 MHz	100.000 kHz	698.00150 MHz	-37.10 dBm	-24.10 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.23477 MHz	-43.96 dBm	-30.96 dB

Date: 5.MAY.2023 22:35:04

LTE Band 71 / 15MHz / QPSK

Lowest Band Edge / 1 RB

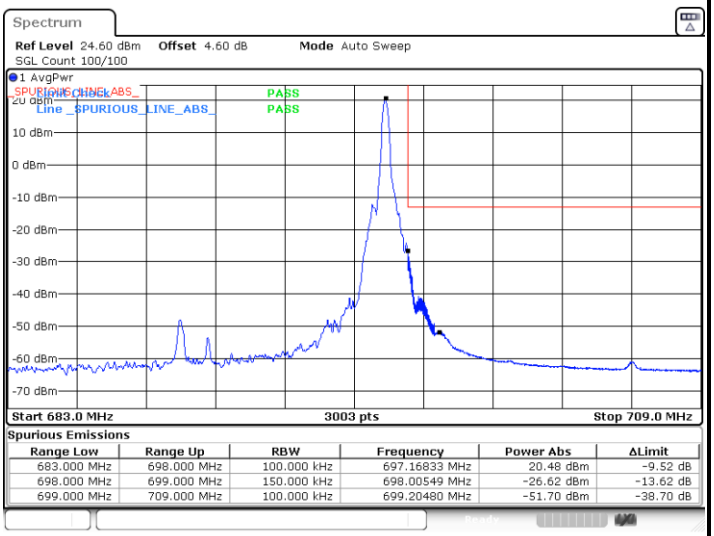


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.96503 MHz	-52.15 dBm	-39.15 dB
662.000 MHz	663.000 MHz	150.000 kHz	662.99650 MHz	-27.32 dBm	-14.32 dB
663.000 MHz	678.000 MHz	100.000 kHz	663.84665 MHz	20.27 dBm	-9.73 dB

Date: 5.MAY.2023 22:44:02

Highest Band Edge / 1 RB

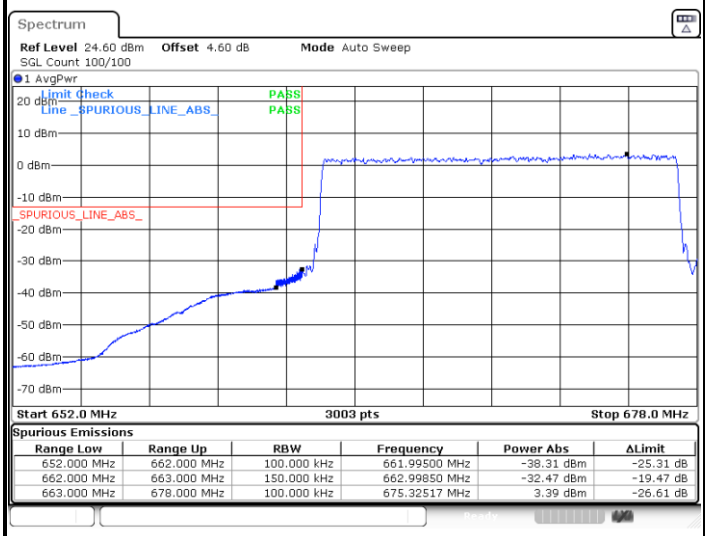


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
683.000 MHz	698.000 MHz	100.000 kHz	697.16833 MHz	20.48 dBm	-9.52 dB
698.000 MHz	699.000 MHz	150.000 kHz	698.00549 MHz	-26.62 dBm	-13.62 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.20480 MHz	-51.70 dBm	-38.70 dB

Date: 5.MAY.2023 22:57:41

Lowest Band Edge / Full RB

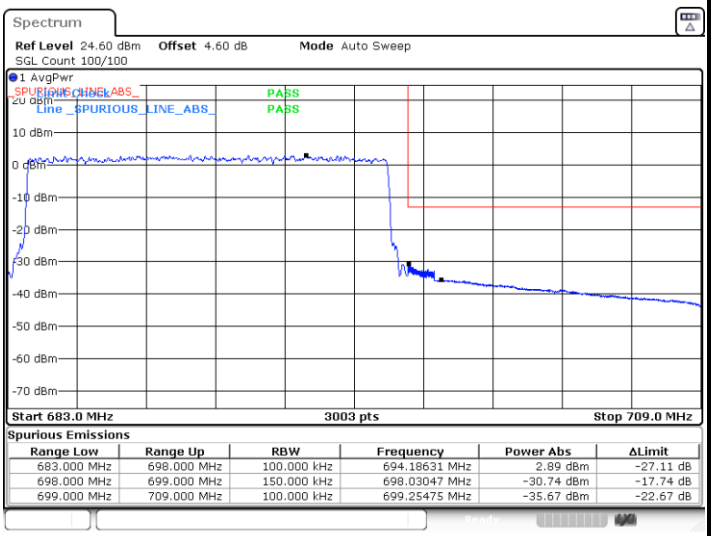


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.99500 MHz	-38.31 dBm	-25.31 dB
662.000 MHz	663.000 MHz	150.000 kHz	662.99850 MHz	-32.47 dBm	-19.47 dB
663.000 MHz	678.000 MHz	100.000 kHz	675.32517 MHz	3.39 dBm	-26.61 dB

Date: 5.MAY.2023 22:38:11

Highest Band Edge / Full RB



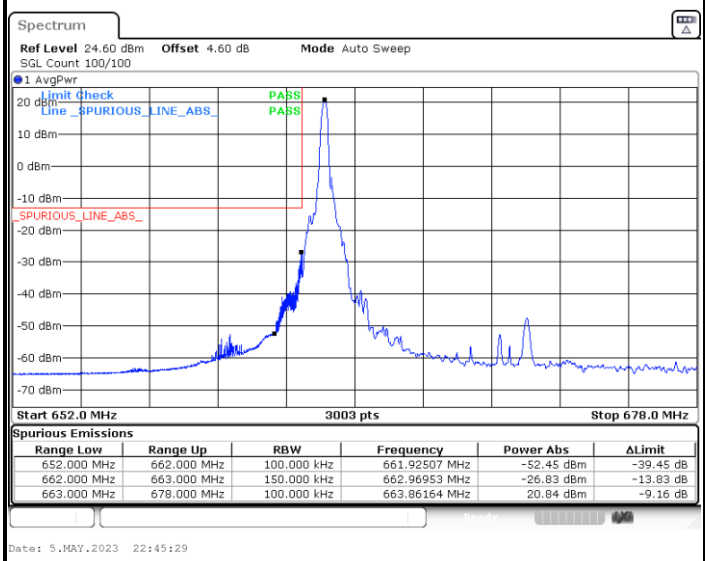
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
683.000 MHz	698.000 MHz	100.000 kHz	694.18631 MHz	2.89 dBm	-27.11 dB
698.000 MHz	699.000 MHz	150.000 kHz	698.03047 MHz	-30.74 dBm	-17.74 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.25475 MHz	-35.67 dBm	-22.67 dB

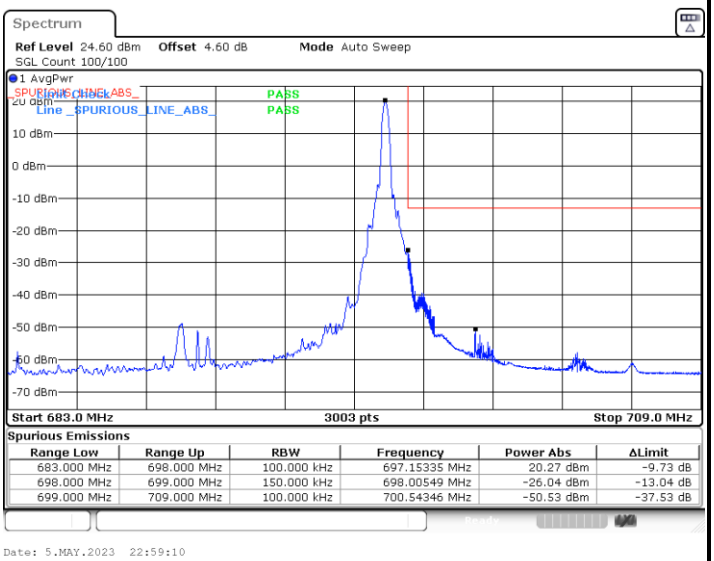
Date: 5.MAY.2023 23:03:41

LTE Band 71 / 15MHz / 16QAM

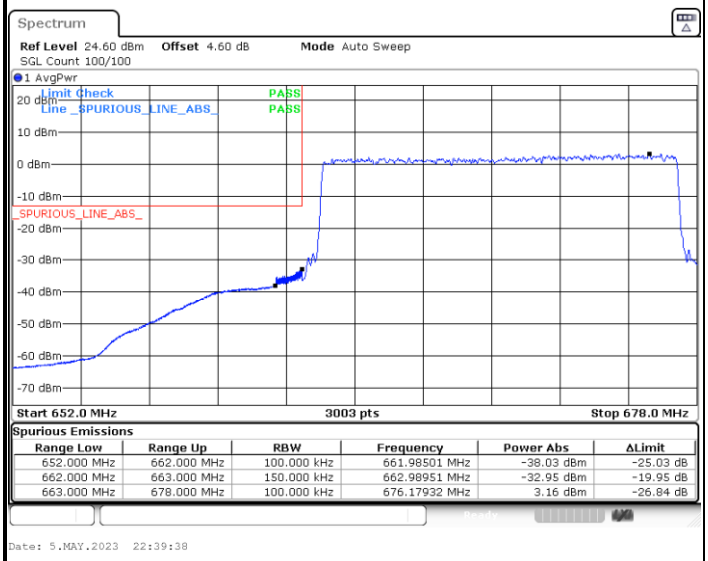
Lowest Band Edge / 1 RB



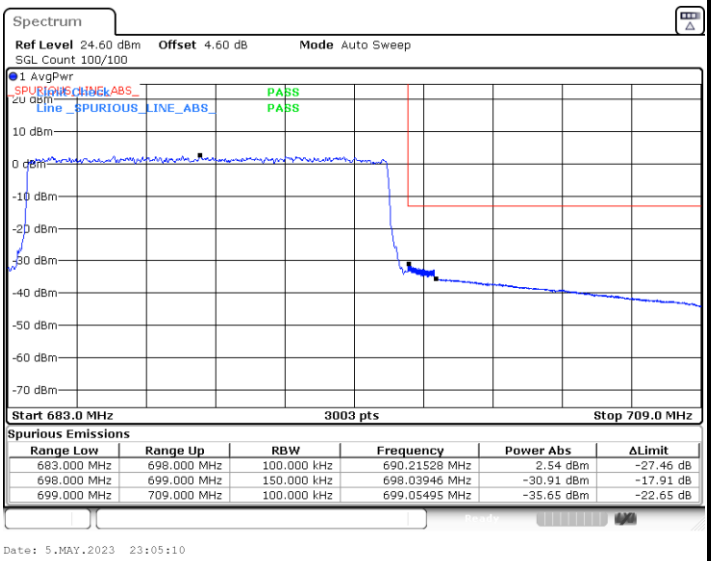
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

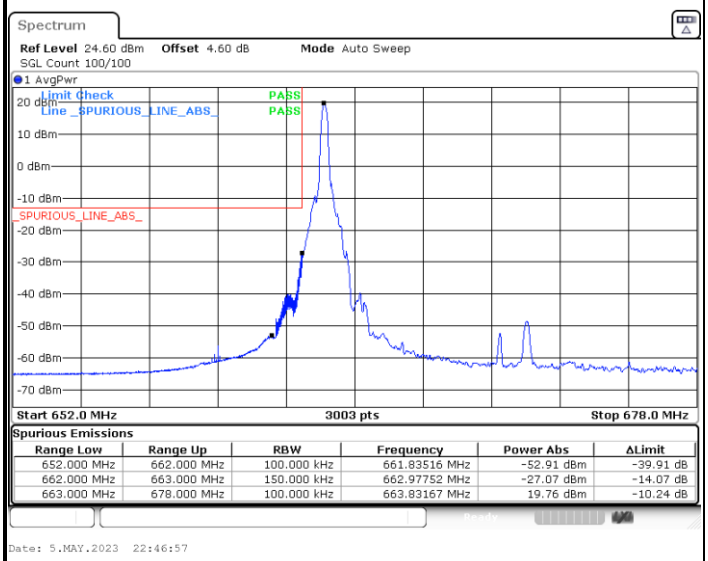


Highest Band Edge / Full RB



LTE Band 71 / 15MHz / 64QAM

Lowest Band Edge / 1 RB

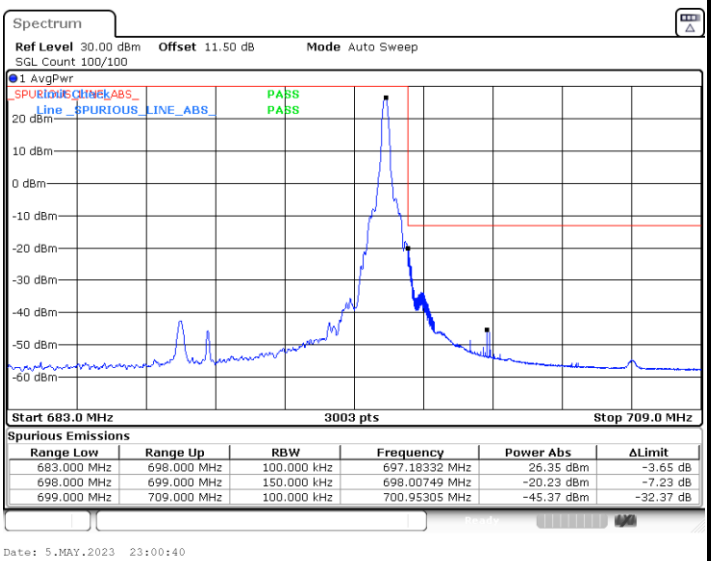


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.83516 MHz	-52.91 dBm	-39.91 dB
662.000 MHz	663.000 MHz	150.000 kHz	662.97752 MHz	-27.07 dBm	-14.07 dB
663.000 MHz	678.000 MHz	100.000 kHz	663.83167 MHz	19.76 dBm	-10.24 dB

Date: 5.MAY.2023 22:46:57

Highest Band Edge / 1 RB

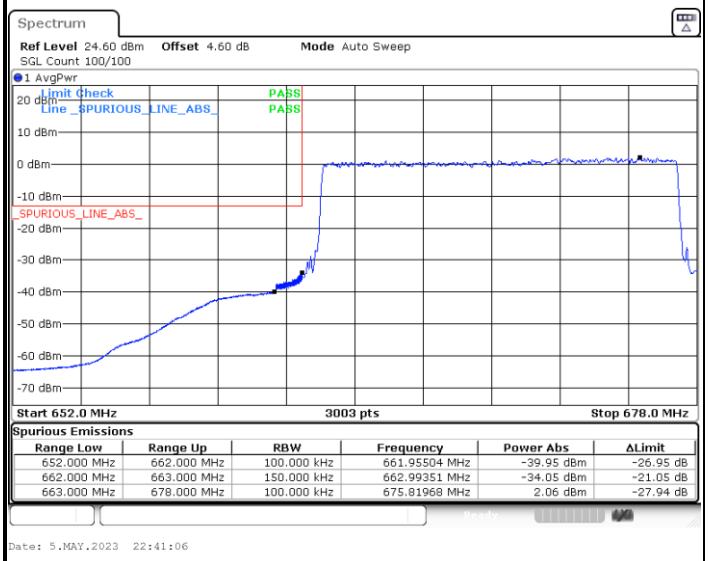


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
683.000 MHz	698.000 MHz	100.000 kHz	697.18332 MHz	26.35 dBm	-3.65 dB
698.000 MHz	699.000 MHz	150.000 kHz	698.00749 MHz	-20.23 dBm	-7.23 dB
699.000 MHz	709.000 MHz	100.000 kHz	700.95305 MHz	-45.37 dBm	-32.37 dB

Date: 5.MAY.2023 23:00:40

Lowest Band Edge / Full RB

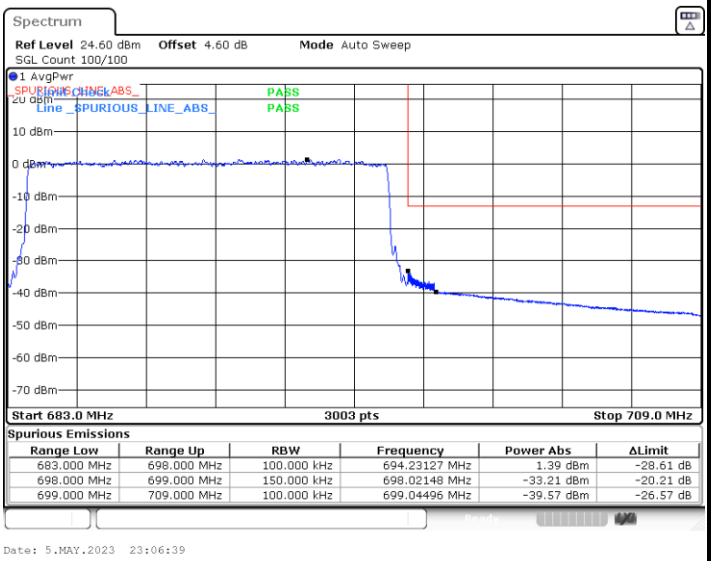


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.95504 MHz	-39.95 dBm	-26.95 dB
662.000 MHz	663.000 MHz	150.000 kHz	662.99351 MHz	-34.05 dBm	-21.05 dB
663.000 MHz	678.000 MHz	100.000 kHz	675.81968 MHz	2.06 dBm	-27.94 dB

Date: 5.MAY.2023 22:41:06

Highest Band Edge / Full RB



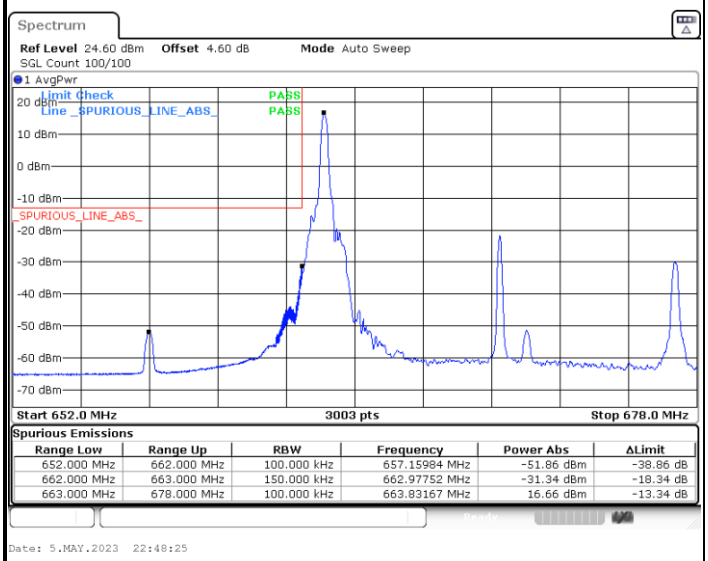
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
683.000 MHz	698.000 MHz	100.000 kHz	694.23127 MHz	1.39 dBm	-28.61 dB
698.000 MHz	699.000 MHz	150.000 kHz	698.02148 MHz	-33.21 dBm	-20.21 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.04496 MHz	-39.57 dBm	-26.57 dB

Date: 5.MAY.2023 23:06:39

LTE Band 71 / 15MHz / 256QAM

Lowest Band Edge / 1 RB

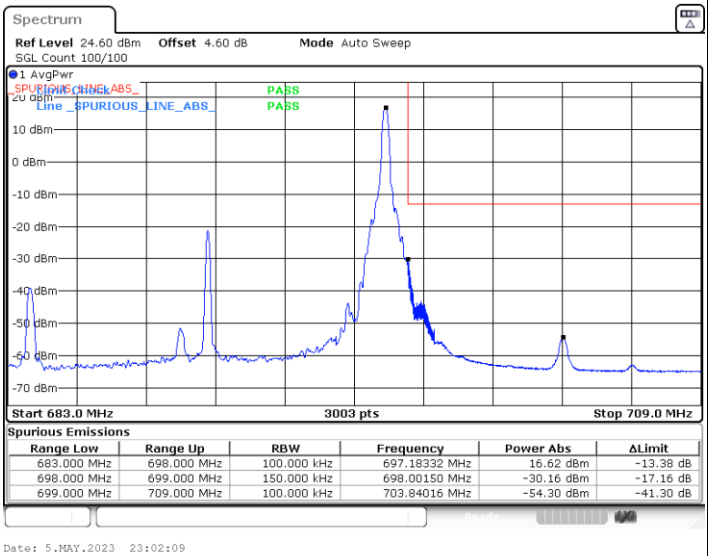


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	657.15984 MHz	-51.86 dBm	-38.86 dB
662.000 MHz	663.000 MHz	150.000 kHz	662.97752 MHz	-31.34 dBm	-18.34 dB
663.000 MHz	678.000 MHz	100.000 kHz	663.83167 MHz	16.66 dBm	-13.34 dB

Date: 5.MAY.2023 22:48:25

Highest Band Edge / 1 RB

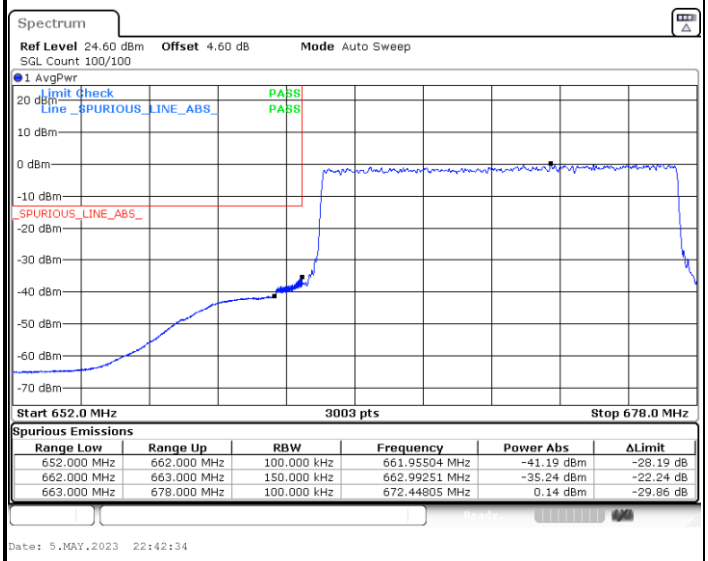


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
683.000 MHz	698.000 MHz	100.000 kHz	697.18332 MHz	16.62 dBm	-13.38 dB
698.000 MHz	699.000 MHz	150.000 kHz	698.00150 MHz	-30.16 dBm	-17.16 dB
699.000 MHz	709.000 MHz	100.000 kHz	703.84016 MHz	-54.30 dBm	-41.30 dB

Date: 5.MAY.2023 23:02:09

Lowest Band Edge / Full RB

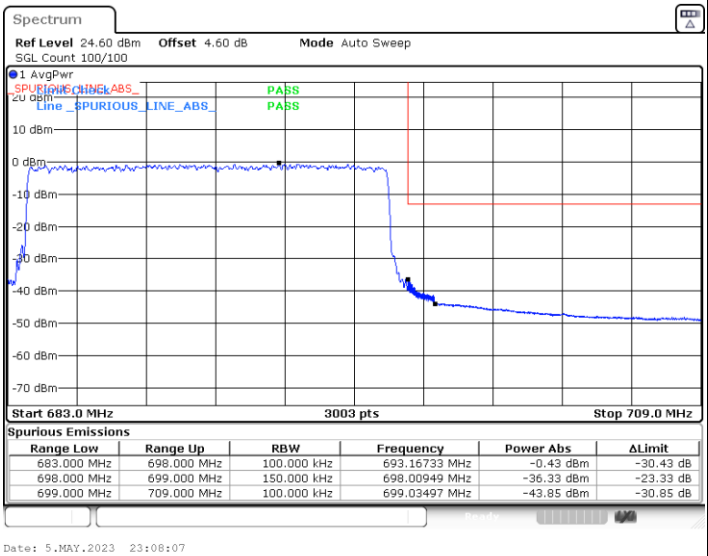


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.95504 MHz	-41.19 dBm	-28.19 dB
662.000 MHz	663.000 MHz	150.000 kHz	662.99251 MHz	-35.24 dBm	-22.24 dB
663.000 MHz	678.000 MHz	100.000 kHz	672.44805 MHz	0.14 dBm	-29.86 dB

Date: 5.MAY.2023 22:42:34

Highest Band Edge / Full RB



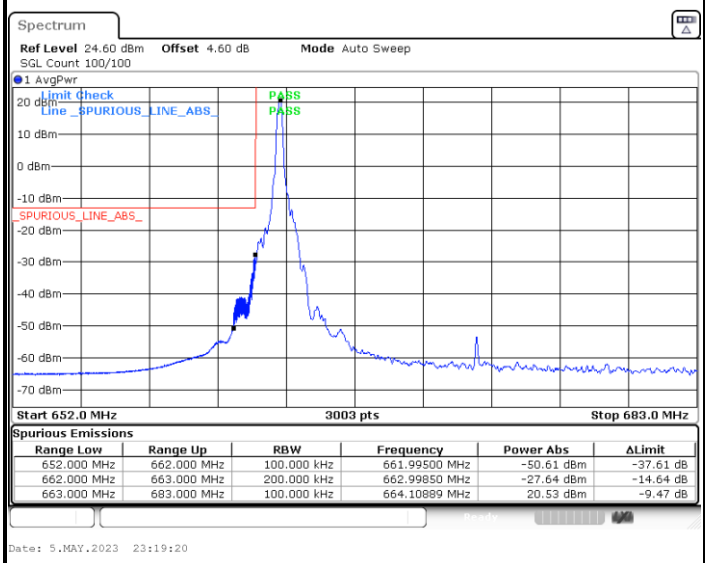
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
683.000 MHz	698.000 MHz	100.000 kHz	693.16733 MHz	-0.43 dBm	-30.43 dB
698.000 MHz	699.000 MHz	150.000 kHz	698.00949 MHz	-36.33 dBm	-23.33 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.03497 MHz	-43.85 dBm	-30.85 dB

Date: 5.MAY.2023 23:08:07

LTE Band 71 / 20MHz / QPSK

Lowest Band Edge / 1 RB

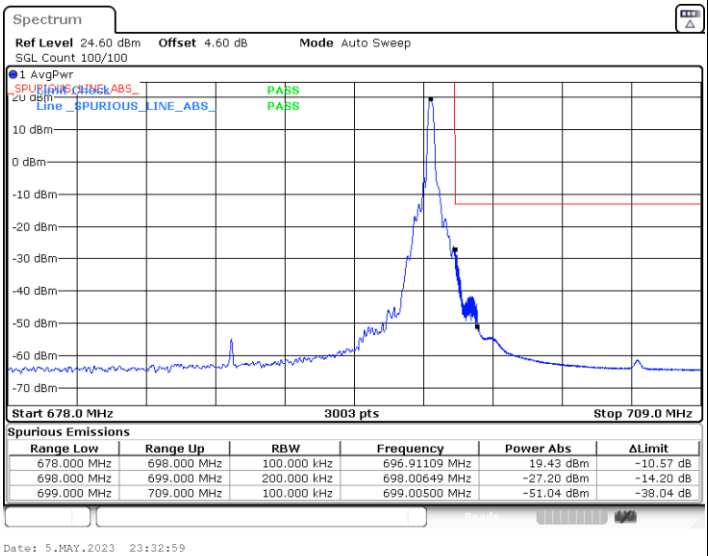


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.99500 MHz	-50.61 dBm	-37.61 dB
662.000 MHz	663.000 MHz	200.000 kHz	662.99850 MHz	-27.64 dBm	-14.64 dB
663.000 MHz	683.000 MHz	100.000 kHz	664.10889 MHz	20.53 dBm	-9.47 dB

Date: 5.MAY.2023 23:19:20

Highest Band Edge / 1 RB

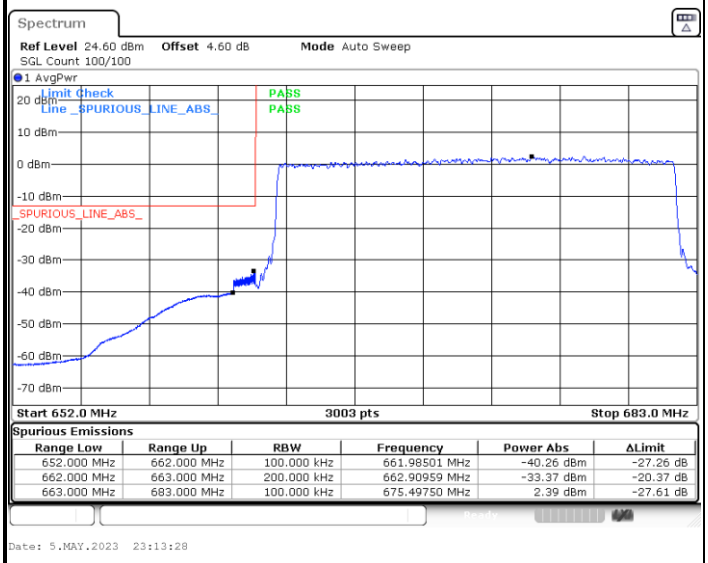


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
678.000 MHz	698.000 MHz	100.000 kHz	696.91109 MHz	19.43 dBm	-10.57 dB
698.000 MHz	699.000 MHz	200.000 kHz	698.00649 MHz	-27.20 dBm	-14.20 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.00500 MHz	-51.04 dBm	-38.04 dB

Date: 5.MAY.2023 23:32:59

Lowest Band Edge / Full RB

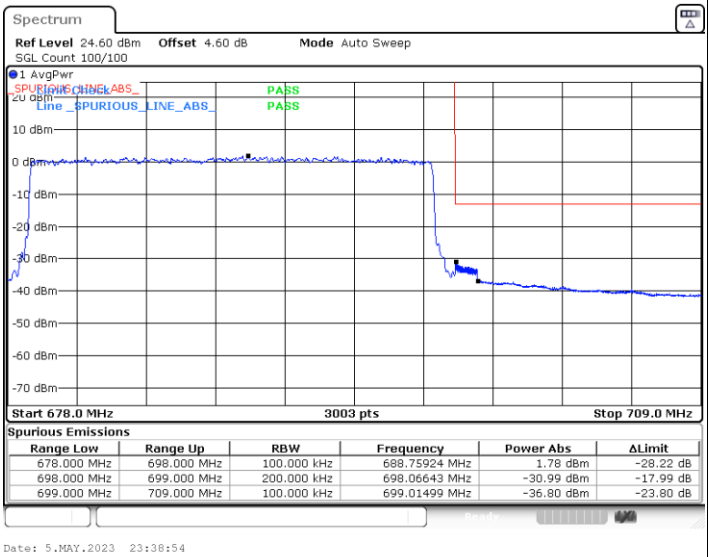


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
652.000 MHz	662.000 MHz	100.000 kHz	661.98501 MHz	-40.26 dBm	-27.26 dB
662.000 MHz	663.000 MHz	200.000 kHz	662.90959 MHz	-33.37 dBm	-20.37 dB
663.000 MHz	683.000 MHz	100.000 kHz	675.49750 MHz	2.39 dBm	-27.61 dB

Date: 5.MAY.2023 23:13:28

Highest Band Edge / Full RB



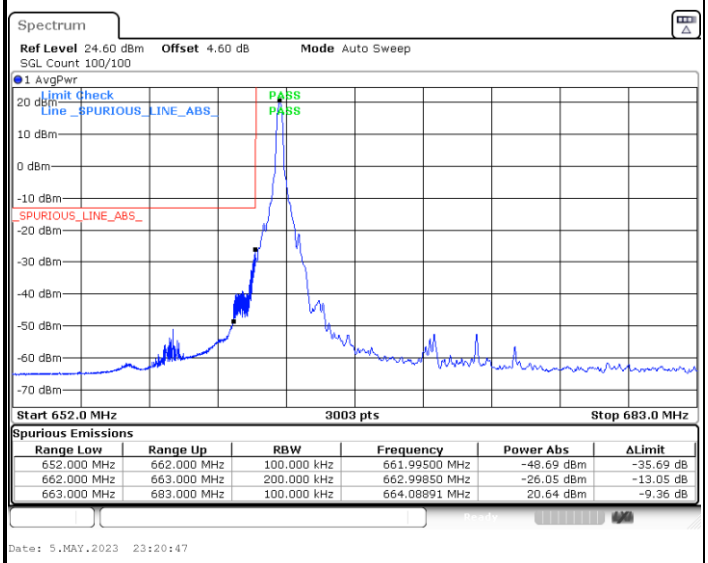
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
678.000 MHz	698.000 MHz	100.000 kHz	688.75924 MHz	1.78 dBm	-28.22 dB
698.000 MHz	699.000 MHz	200.000 kHz	698.06643 MHz	-30.99 dBm	-17.99 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.01499 MHz	-36.80 dBm	-23.80 dB

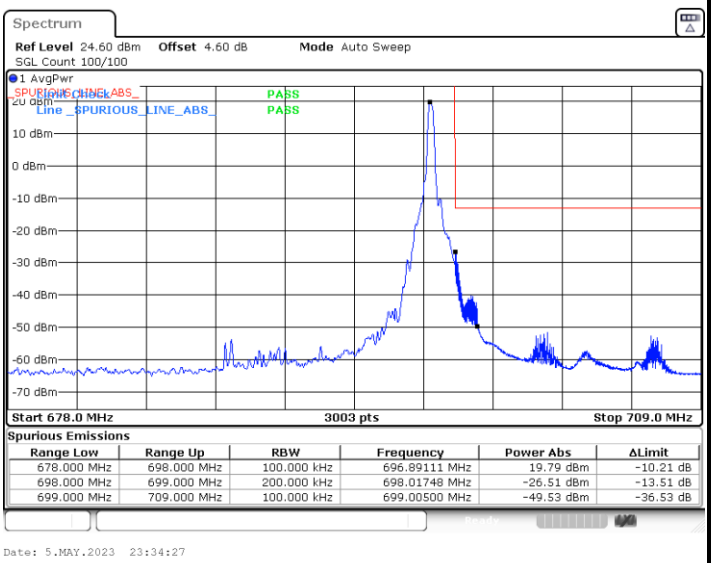
Date: 5.MAY.2023 23:38:54

LTE Band 71 / 20MHz / 16QAM

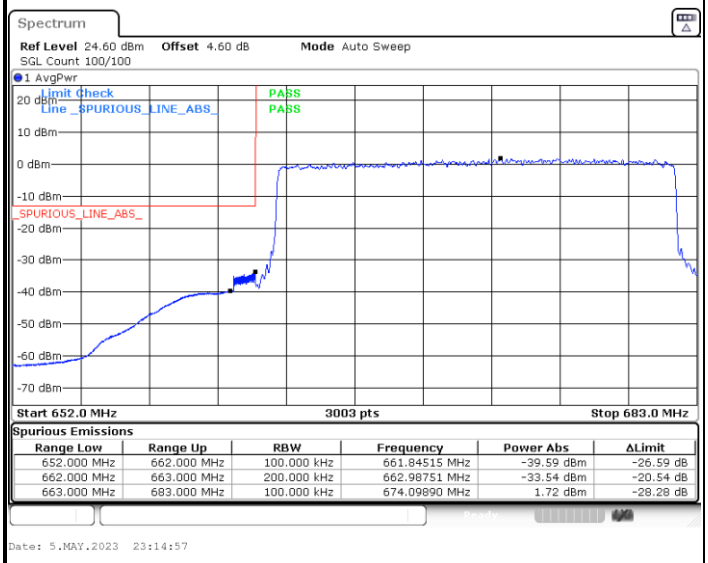
Lowest Band Edge /1 RB



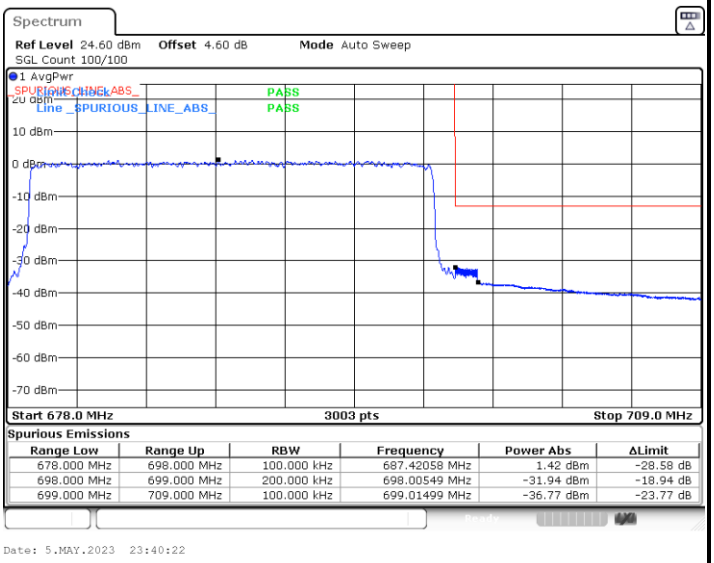
Highest Band Edge / 1RB



Lowest Band Edge / Full RB

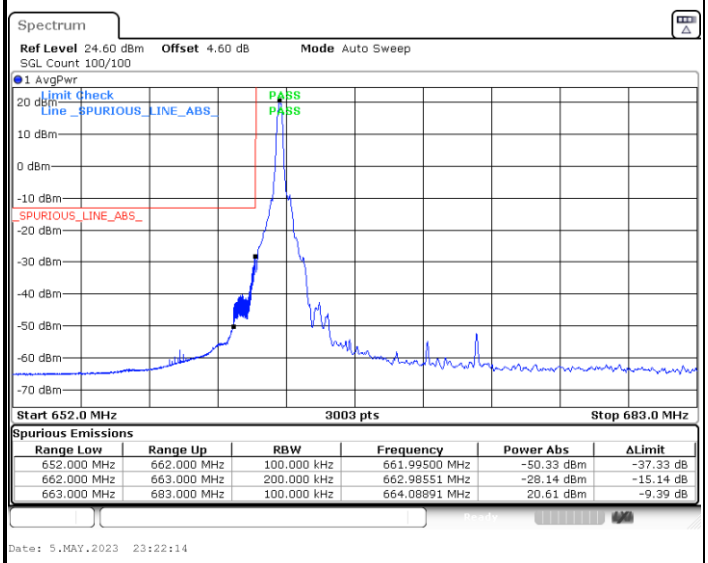


Highest Band Edge / Full RB

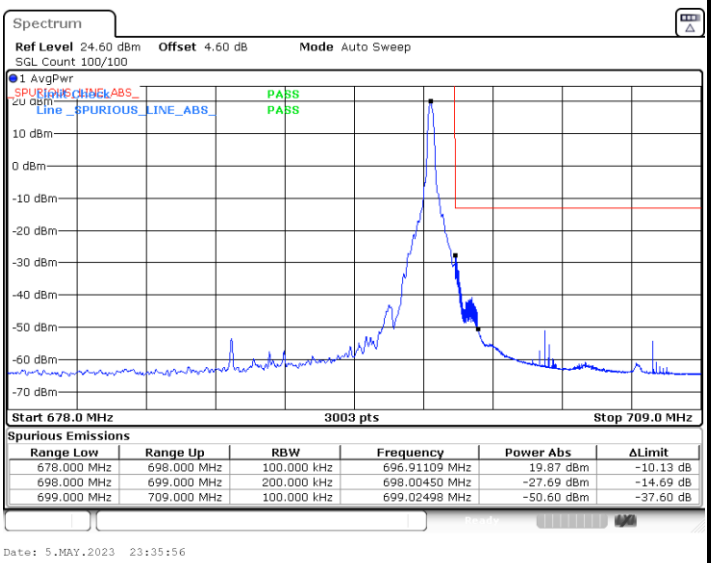


LTE Band 71 / 20MHz / 64QAM

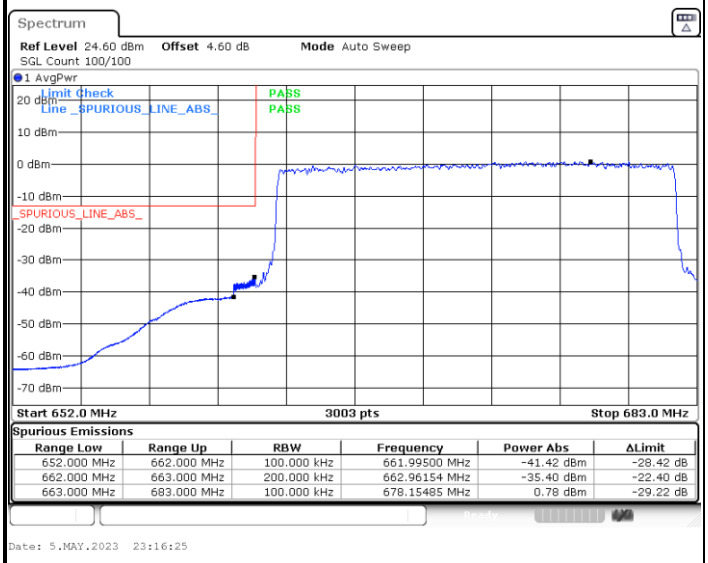
Lowest Band Edge / 1 RB



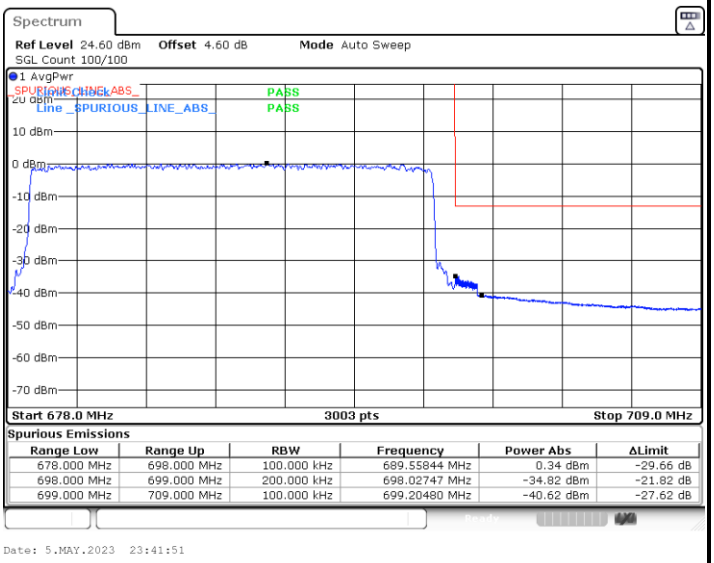
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

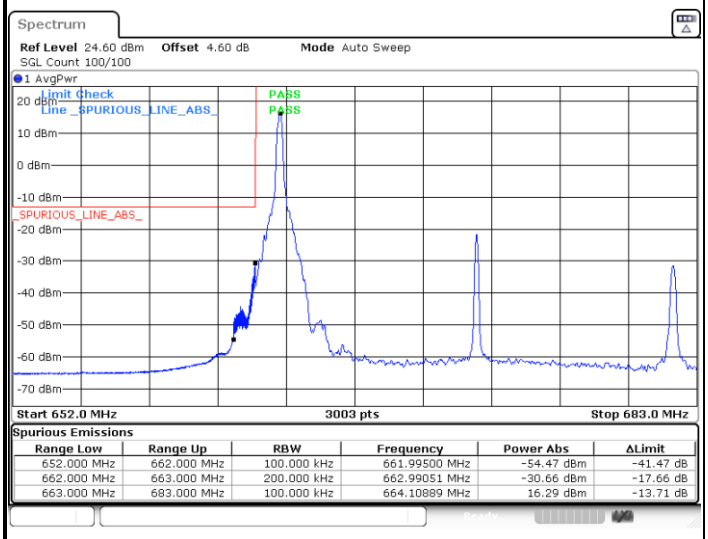


Highest Band Edge / Full RB

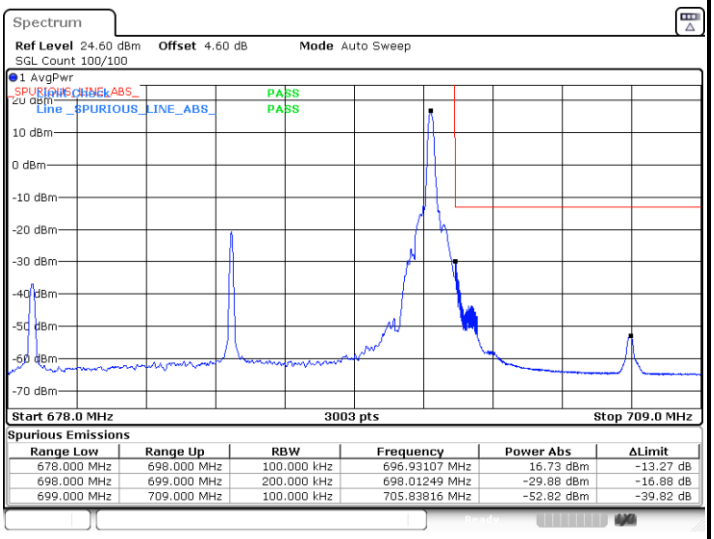


LTE Band 71 / 20MHz / 256QAM

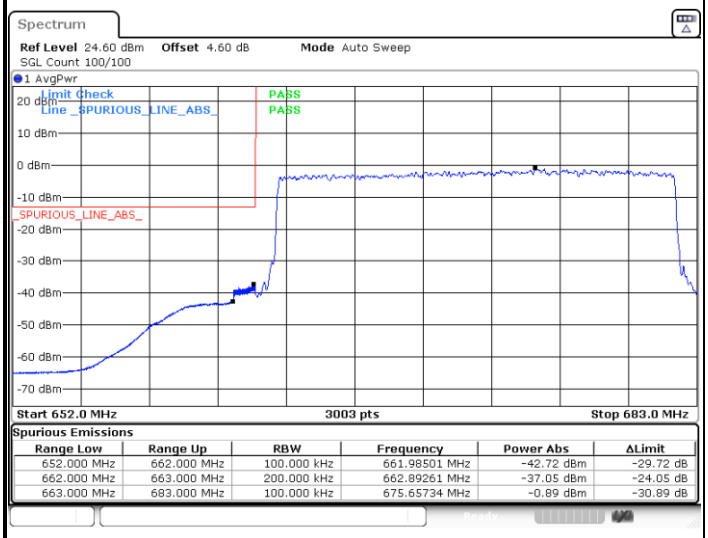
Lowest Band Edge / 1 RB



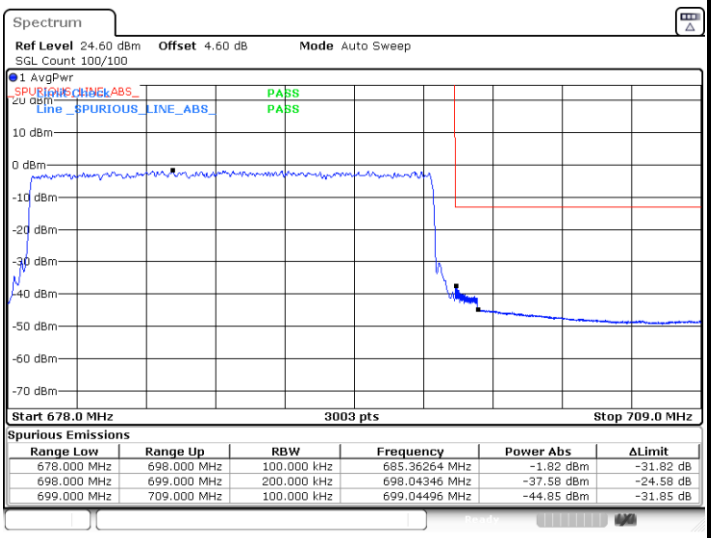
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



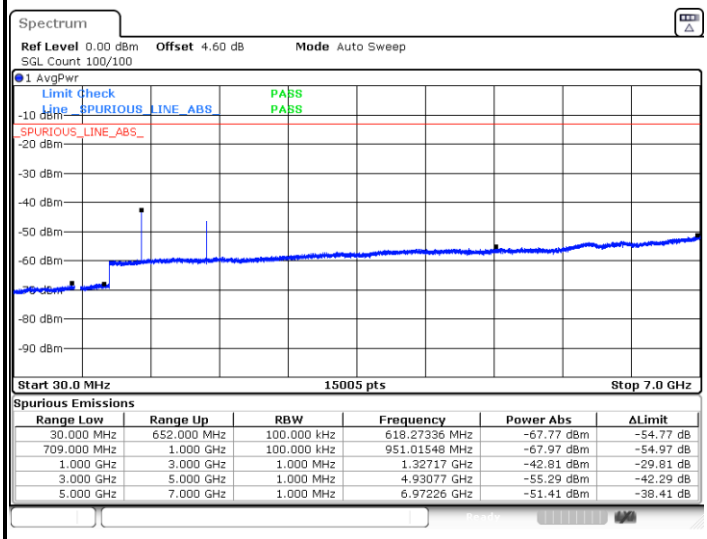
Highest Band Edge / Full RB



Conducted Spurious Emission

LTE Band 71 / 5MHz

Lowest Channel / QPSK

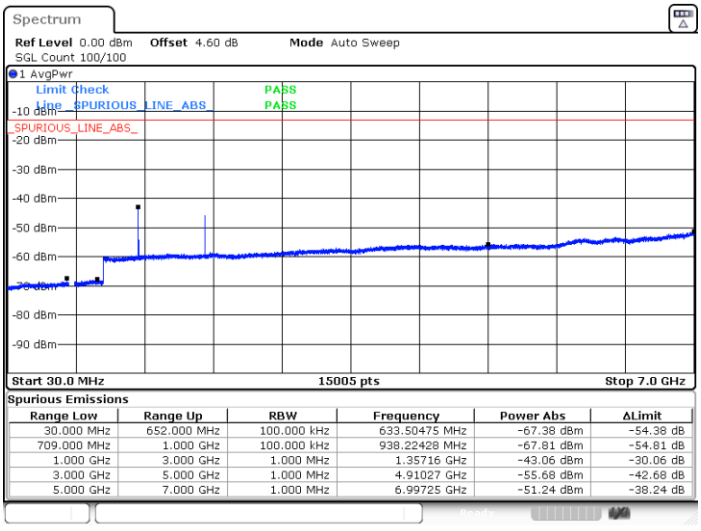


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	618.27336 MHz	-67.77 dBm	-54.77 dB
709.000 MHz	1.000 GHz	100.000 kHz	951.01548 MHz	-67.97 dBm	-54.97 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.32717 GHz	-42.81 dBm	-29.81 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.93077 GHz	-55.29 dBm	-42.29 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.97226 GHz	-51.41 dBm	-38.41 dB

Date: 5.MAY.2023 21:22:44

Middle Channel / QPSK

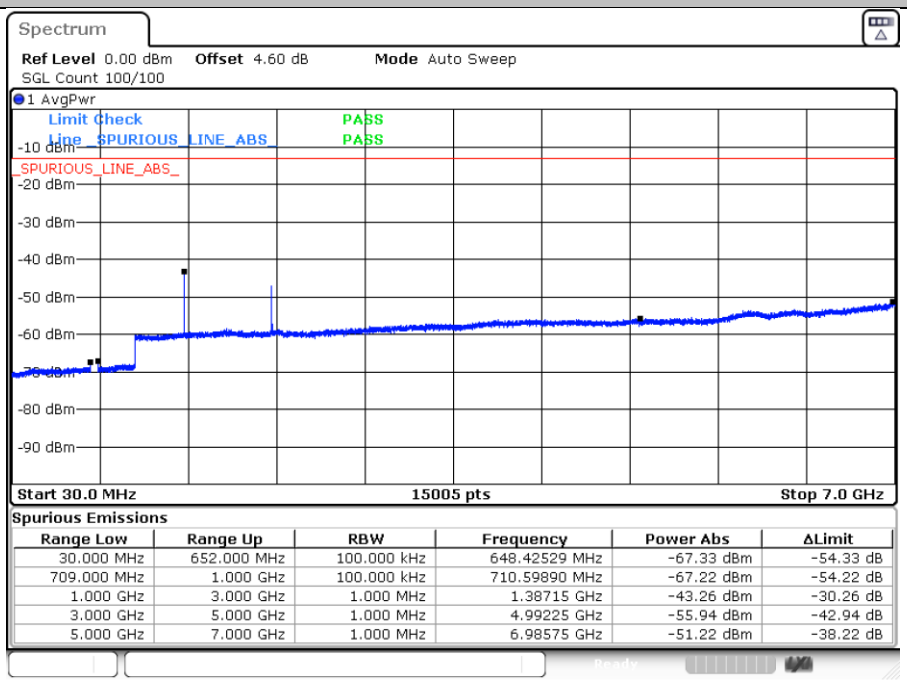


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	633.50475 MHz	-67.38 dBm	-54.38 dB
709.000 MHz	1.000 GHz	100.000 kHz	938.22428 MHz	-67.81 dBm	-54.81 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.35716 GHz	-43.06 dBm	-30.06 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.91027 GHz	-55.68 dBm	-42.68 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.99725 GHz	-51.24 dBm	-38.24 dB

Date: 5.MAY.2023 21:39:46

Highest Channel / QPSK



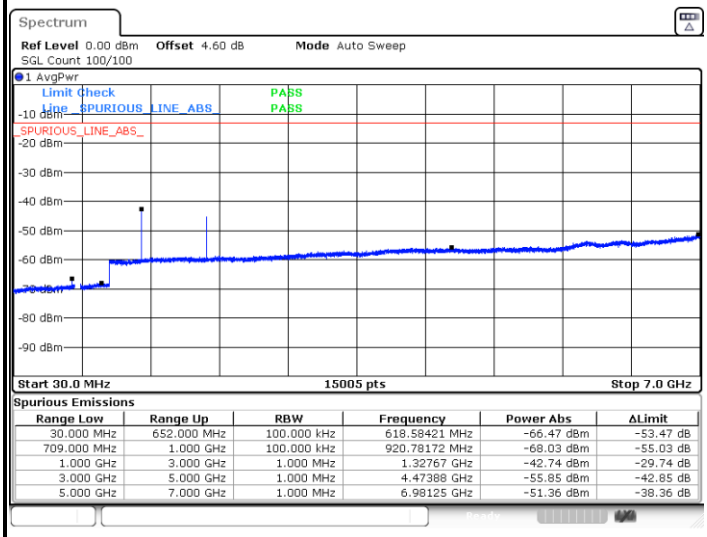
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	648.42529 MHz	-67.33 dBm	-54.33 dB
709.000 MHz	1.000 GHz	100.000 kHz	710.59890 MHz	-67.22 dBm	-54.22 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.38715 GHz	-43.26 dBm	-30.26 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.99225 GHz	-55.94 dBm	-42.94 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.98575 GHz	-51.22 dBm	-38.22 dB

Date: 5.MAY.2023 21:43:29

LTE Band 71 / 10MHz

Lowest Channel / QPSK

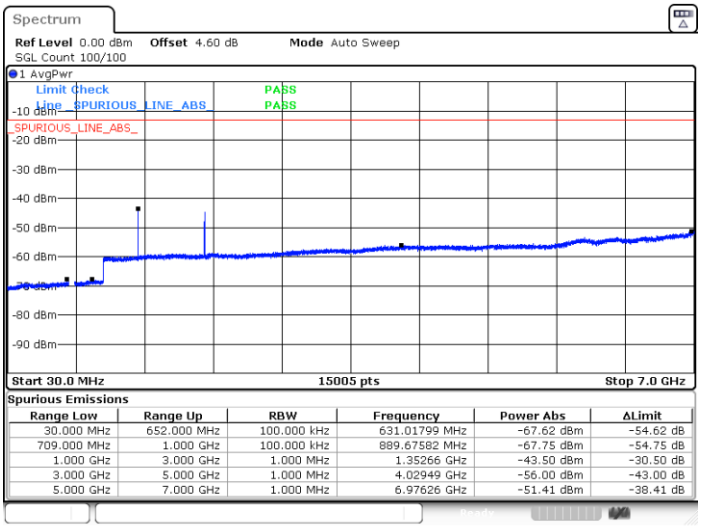


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	618.58421 MHz	-66.47 dBm	-53.47 dB
709.000 MHz	1.000 GHz	100.000 kHz	920.78172 MHz	-68.03 dBm	-55.03 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.32767 GHz	-42.74 dBm	-29.74 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.47388 GHz	-55.85 dBm	-42.85 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.98125 GHz	-51.36 dBm	-38.36 dB

Date: 5.MAY.2023 22:09:26

Middle Channel / QPSK

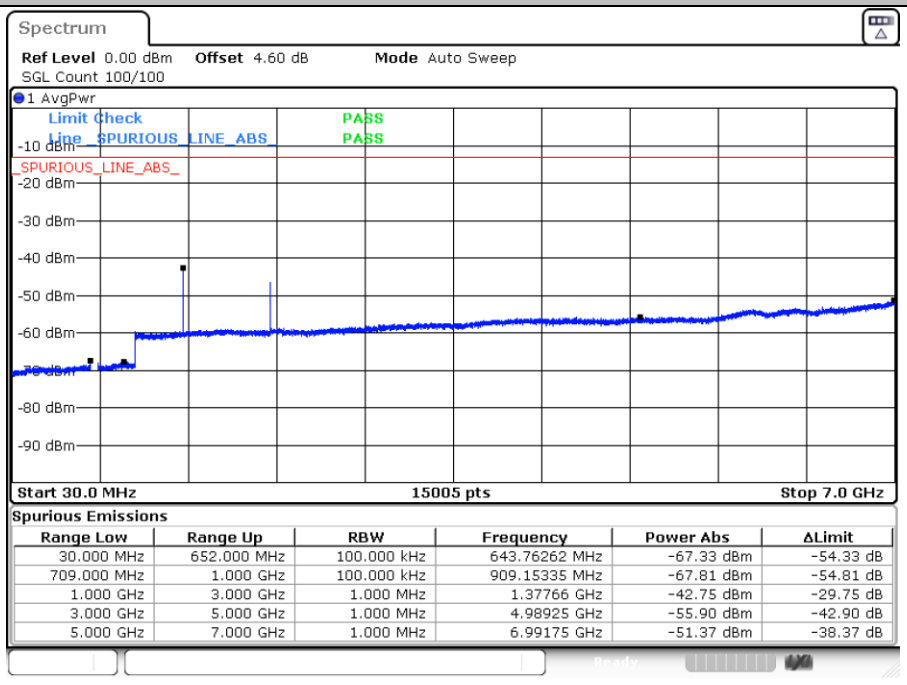


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	631.01799 MHz	-67.62 dBm	-54.62 dB
709.000 MHz	1.000 GHz	100.000 kHz	889.67582 MHz	-67.75 dBm	-54.75 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.35266 GHz	-43.50 dBm	-30.50 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.02949 GHz	-56.00 dBm	-43.00 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.97626 GHz	-51.41 dBm	-38.41 dB

Date: 5.MAY.2023 22:11:28

Highest Channel / QPSK



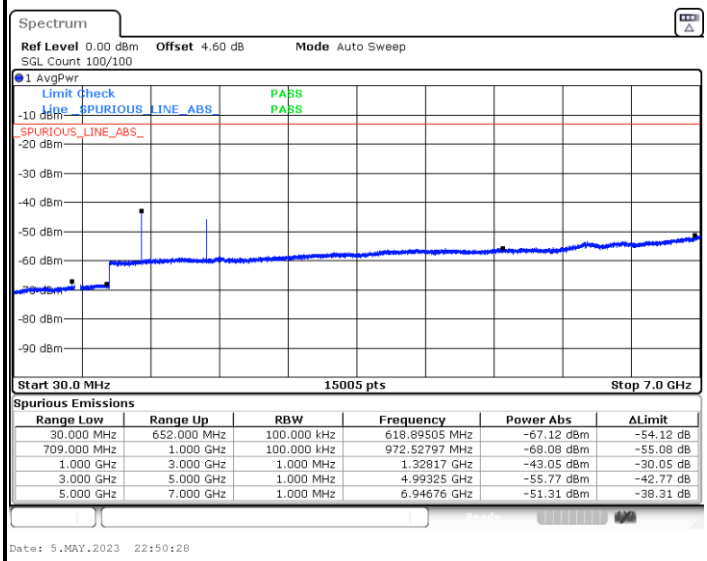
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	643.76262 MHz	-67.33 dBm	-54.33 dB
709.000 MHz	1.000 GHz	100.000 kHz	909.15335 MHz	-67.81 dBm	-54.81 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.37766 GHz	-42.75 dBm	-29.75 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.98925 GHz	-55.90 dBm	-42.90 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.99175 GHz	-51.37 dBm	-38.37 dB

Date: 5.MAY.2023 22:15:10

LTE Band 71 / 15MHz

Lowest Channel / QPSK

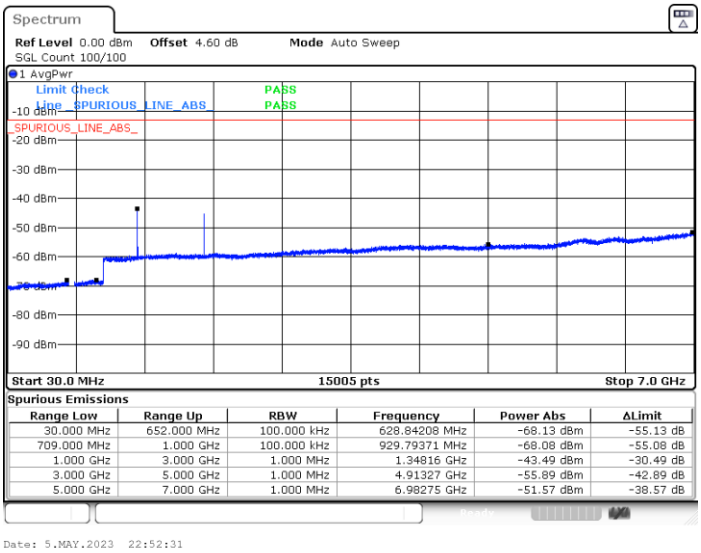


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	618.89505 MHz	-67.12 dBm	-54.12 dB
709.000 MHz	1.000 GHz	100.000 kHz	972.52797 MHz	-68.08 dBm	-55.08 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.32817 GHz	-43.05 dBm	-30.05 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.99325 GHz	-55.77 dBm	-42.77 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.94676 GHz	-51.31 dBm	-38.31 dB

Date: 5.MAY.2023 22:50:28

Middle Channel / QPSK

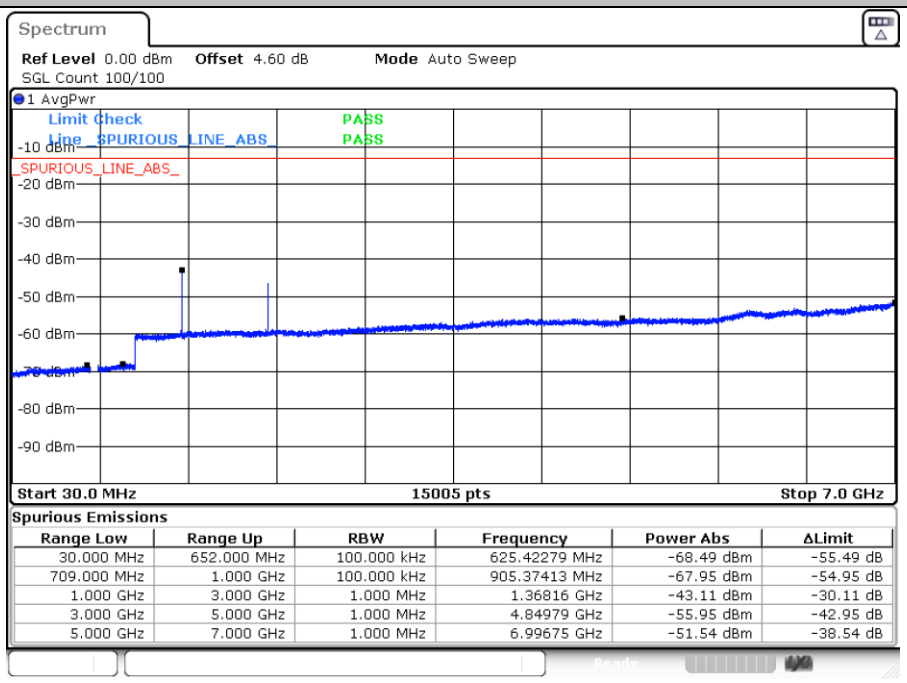


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	628.84208 MHz	-68.13 dBm	-55.13 dB
709.000 MHz	1.000 GHz	100.000 kHz	929.79371 MHz	-68.08 dBm	-55.08 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.34816 GHz	-43.49 dBm	-30.49 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.91327 GHz	-55.89 dBm	-42.89 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.98275 GHz	-51.57 dBm	-38.57 dB

Date: 5.MAY.2023 22:52:31

Highest Channel / QPSK



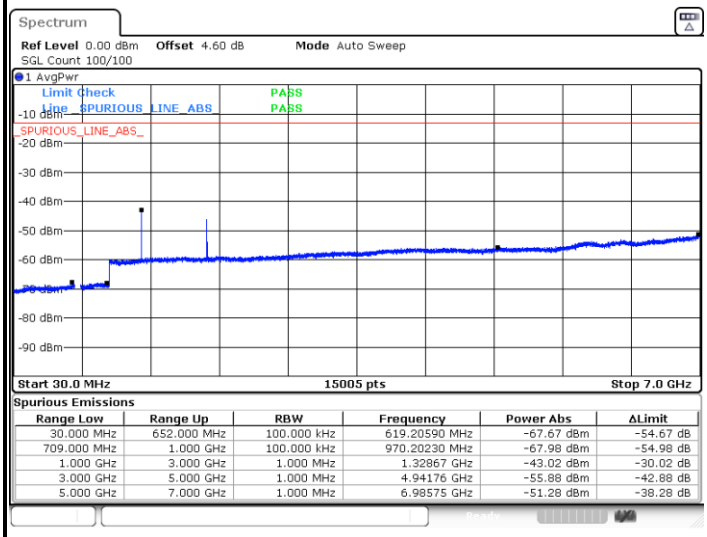
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	625.42279 MHz	-68.49 dBm	-55.49 dB
709.000 MHz	1.000 GHz	100.000 kHz	905.37413 MHz	-67.95 dBm	-54.95 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.36816 GHz	-43.11 dBm	-30.11 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.84979 GHz	-55.95 dBm	-42.95 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.99675 GHz	-51.54 dBm	-38.54 dB

Date: 5.MAY.2023 22:56:12

LTE Band 71 / 20MHz

Lowest Channel / QPSK

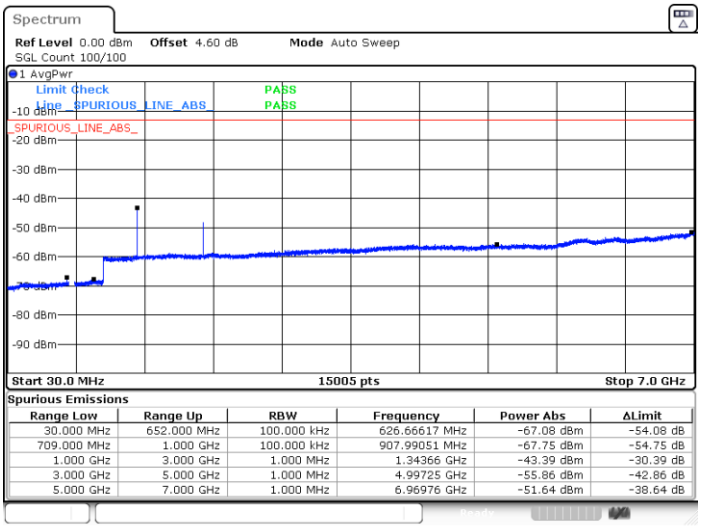


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	619.20590 MHz	-67.67 dBm	-54.67 dB
709.000 MHz	1.000 GHz	100.000 kHz	970.20230 MHz	-67.98 dBm	-54.98 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.32867 GHz	-43.02 dBm	-30.02 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.94176 GHz	-55.88 dBm	-42.88 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.98575 GHz	-51.28 dBm	-38.28 dB

Date: 5.MAY.2023 23:25:45

Middle Channel / QPSK

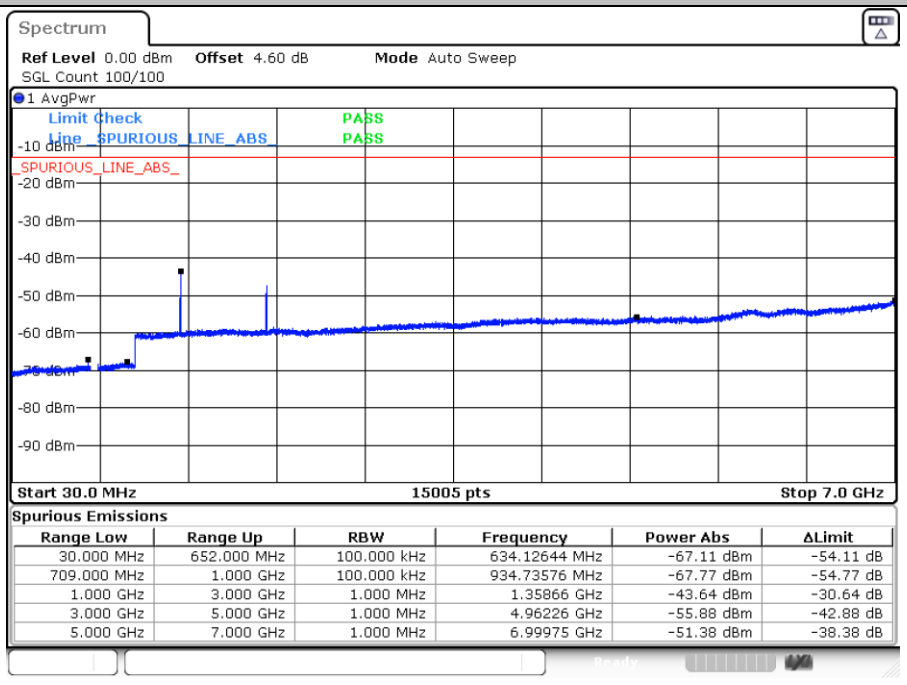


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	626.66617 MHz	-67.08 dBm	-54.08 dB
709.000 MHz	1.000 GHz	100.000 kHz	907.99051 MHz	-67.75 dBm	-54.75 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.34366 GHz	-43.39 dBm	-30.39 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.99725 GHz	-55.86 dBm	-42.86 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.96976 GHz	-51.64 dBm	-38.64 dB

Date: 5.MAY.2023 23:27:49

Highest Channel / QPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	652.000 MHz	100.000 kHz	634.12644 MHz	-67.11 dBm	-54.11 dB
709.000 MHz	1.000 GHz	100.000 kHz	934.73576 MHz	-67.77 dBm	-54.77 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.35866 GHz	-43.64 dBm	-30.64 dB
3.000 GHz	5.000 GHz	1.000 MHz	4.96226 GHz	-55.88 dBm	-42.88 dB
5.000 GHz	7.000 GHz	1.000 MHz	6.99975 GHz	-51.38 dBm	-38.38 dB

Date: 5.MAY.2023 23:31:30

Frequency Stability

Test Conditions		LTE Band 71 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0015	PASS
40	Normal Voltage	0.0019	
30	Normal Voltage	0.0021	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0038	
0	Normal Voltage	0.0032	
-10	Normal Voltage	0.0045	
-20	Normal Voltage	0.0014	
-30	Normal Voltage	0.0006	
20	Maximum Voltage	0.0017	
20	Normal Voltage	0.0023	
20	Battery End Point	0.0007	

Note:

1. Normal Voltage =3.91V. ; Battery End Point (BEP) =3.4 V. ; Maximum Voltage =4.5 V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

Test Engineer :	Carry Xu	Temperature :	23~25℃
		Relative Humidity :	41~42%

Note: Pre-scanned harmonic for the different antennas, we choose the worst antenna mode to test.

LTE Band 71 / 20MHz / QPSK (Ant. 0)								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1328	-68.09	-13	-55.09	-69.84	1.02	4.92	H
	1992	-62.91	-13	-49.91	-64.88	1.27	5.39	H
	2656	-60.83	-13	-47.83	-63.76	1.49	6.57	H
	1328	-67.15	-13	-54.15	-68.90	1.02	4.92	V
	1992	-54.73	-13	-41.73	-56.70	1.27	5.39	V
	2656	-60.12	-13	-47.12	-63.05	1.49	6.57	V
Middle	1344	-67.84	-13	-54.84	-69.59	1.02	4.92	H
	2016	-61.97	-13	-48.97	-63.94	1.27	5.39	H
	2688	-60.69	-13	-47.69	-63.62	1.49	6.57	H
	1344	-66.68	-13	-53.68	-68.43	1.02	4.92	V
	2016	-53.79	-13	-40.79	-55.76	1.27	5.39	V
	2688	-60.16	-13	-47.16	-63.09	1.49	6.57	V
Highest	1360	-67.92	-13	-54.92	-69.67	1.02	4.92	H
	2040	-61.29	-13	-48.29	-63.26	1.27	5.39	H
	2712	-60.30	-13	-47.30	-63.23	1.49	6.57	H
	1360	-66.57	-13	-53.57	-68.32	1.02	4.92	V
	2040	-51.83	-13	-38.83	-53.80	1.27	5.39	V
	2712	-60.11	-13	-47.11	-63.04	1.49	6.57	V

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