



FCC RADIO TEST REPORT

FCC ID : GKRGBZ4S
Equipment : Wireless Device
Model Name : GBZ4S
Applicant : Compal Electronics, Inc.
No. 581-1 & 581, Ruiguang Rd., Nei-hu
District, Taipei City 114, TAIWAN (R.O.C.)
Standard : FCC 47 CFR Part 2, 22(H), 27

The product was received on May 31, 2021 and testing was started from Jul. 01, 2021 and completed on Aug. 09, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Product Feature of Equipment Under Test.....	5
1.2 Product Specification of Equipment Under Test.....	5
1.3 Modification of EUT	6
1.4 Testing Location	6
1.5 Applicable Standards.....	7
2 Test Configuration of Equipment Under Test	8
2.1 Test Mode.....	8
2.2 Connection Diagram of Test System.....	10
2.3 Support Unit used in test configuration and system	10
2.4 Measurement Results Explanation Example.....	10
2.5 Frequency List of Low/Middle/High Channels	11
3 Conducted Test Items	12
3.1 Measuring Instruments	12
3.2 Conducted Output Power and ERP/EIRP	13
3.3 Peak-to-Average Ratio	14
3.4 Occupied Bandwidth.....	15
3.5 Conducted Band Edge	16
3.6 Conducted Spurious Emission	17
3.7 Frequency Stability	18
4 Radiated Test Items	19
4.1 Measuring Instruments	19
4.2 Radiated Spurious Emission Measurement	21
5 List of Measuring Equipment.....	22
6 Uncertainty of Evaluation	24
Appendix A. Test Results of Conducted Test	
Appendix B. Test Results of Radiated Test	



History of this test report

Report No.	Version	Description	Issued Date
FG0D2204-01B	01	Initial issue of report	Sep. 27, 2021
FG0D2204-01B	02	1. Revise support unit used in test configuration and system in section 2.4 2. Revise test mode in section 2.1 3. Revise Band 26 frequency stability limit in appendix A26	Dec. 23, 2021
FG0D2204-01B	03	1. Revise remark in section 2.1 2. Revise appendix B	Dec. 27, 2021
FG0D2204-01B	04	Revise output power in appendix A	Dec. 28, 2021



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
	§22.913 (a)(5)	Effective Radiated Power (Band 5) (Band 26)	Pass	
	§27.50 (h)(2)	Equivalent Isotropic Radiated Power (Band 7)		
3.3	-	Peak-to-Average Ratio	Reporting only	-
3.4	§2.1049	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §22.917 (a)	Conducted Band Edge Measurement (Band 5) (Band 26)	Pass	-
	§2.1051 §27.53 (m)(4)	Conducted Band Edge Measurement (Band 7)		
3.6	§2.1051 §22.917 (a)	Conducted Spurious Emission (Band 5) (Band 26)	Pass	-
	§2.1051 §27.53 (m)(4)	Conducted Spurious Emission (Band 7)		
3.7	§2.1055 §22.355 §27.54	Frequency Stability Temperature & Voltage	Pass	-
4.2	§2.1053 §22.917 (a)	Radiated Spurious Emission (Band 5) (Band 26)	Pass	Under limit 19.32 dB at 10204.000 MHz
	§2.1051 §27.53 (m)(4)	Radiated Spurious Emission (Band 7)		

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Avis Chuang

Report Producer: Celery Wei



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Wireless Device
Model Name	GBZ4S
FCC ID	GKRGBZ4S
EUT supports Radios application	WCDMA/HSPA/LTE/NFC (Passive) WLAN 11b/g/n HT20 Bluetooth BR/EDR/LE

Remark: The above EUT's information was declared by manufacturer.

EUT Information List	
S/N	Performed Test Item
14151FQEJXR052	Conducted Measurement ERP/EIRP
15031FQEJSR008 14231FQEJSR00W	Radiated Spurious Emission

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 26: 824.7MHz ~ 848.3 MHz
Rx Frequency	LTE Band 5: 869.7 MHz ~ 893.3 MHz LTE Band 7: 2622.5MHz ~ 2687.5 MHz LTE Band 26: 869.7MHz ~ 893.3MHz
Bandwidth	LTE Band 5: 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 7: 5MHz / 10MHz / 15MHz / 20MHz LTE Band 26: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz
Maximum Output Power to Antenna	<Top Antenna> LTE Band 5 : 23.28 dBm LTE Band 7: 23.64 dBm LTE Band 26 : 23.34 dBm <Bottom Antenna> LTE Band 5 : 23.72 dBm LTE Band 26 : 24.00 dBm
Antenna Type	<Top Antenna>: IFA Antenna <Bottom Antenna>: IFA Antenna
Type of Modulation	QPSK / 16QAM



<Top Antenna>

Radio Tech	Band Number	Antenna name	Gain
LTE	B5	Ant 0	-14.2
LTE	B7	Ant 0	-9.2
LTE	B26	Ant 0	-14.2

<Bottom Antenna>

Radio Tech	Band Number	Antenna name	Gain
LTE	B5	Ant 1	-14.2
LTE	B26	Ant 1	-14

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

1.3 Modification of EUT

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

1.4 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. TH03-HY
Test Engineer	HaoEn Zhang
Temperature	22~24.3℃
Relative Humidity	51.2~55%

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. 03CH11-HY (TAF Code: 3786)
Test Engineer	Harvey Guo and Fu Chen
Temperature	18.2~26.2℃
Relative Humidity	53.7~69.4%
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory

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

FCC designation No.: TW1190 and TW3786



1.5 Applicable Standards

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

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 22(H), 27
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

2.1 Test Mode

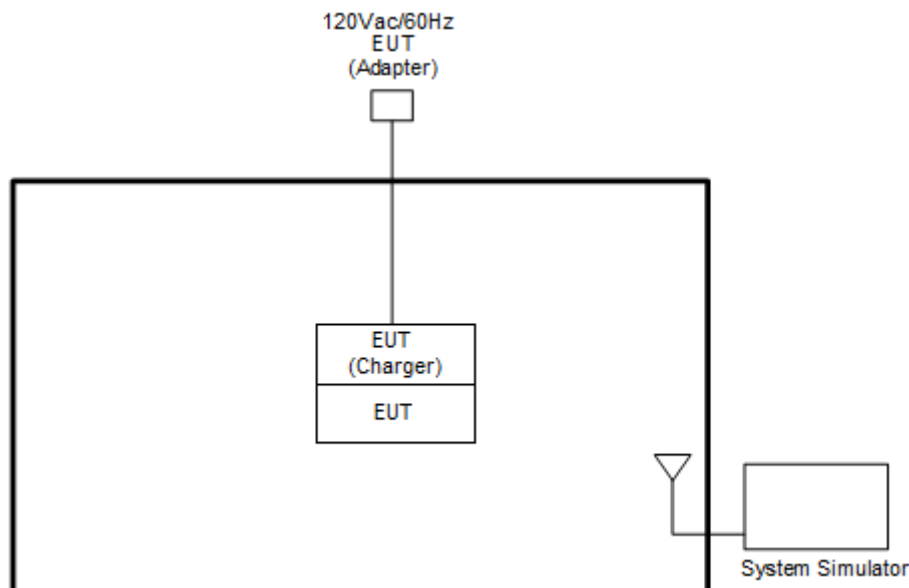
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, The measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and find <Top Antenna>: Y Plane with Strap 1 for LTE Band 26; Z Plane with Strap 3 for LTE Band 7; <Bottom Antenna>: Y Plane with Strap 3 for LTE Band 26 as worst plane.



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	5	v	v	v	v	-	-	v	v		v	v	v	v	v	v
	7	-	-	v	v	v	v	v	v		v	v	v	v	v	v
	26	v	v	v	v	v	-	v	v		v	v	v	v	v	v
Peak-to-Average Ratio	5	Covered by Band 26														
	7	-	-				v	v	v				v		v	
	26					v	-	v	v				v		v	
26dB and 99% Bandwidth	5	Covered by Band 26														
	7	-	-	v	v	v	v	v	v				v		v	
	26	v	v	v	v	v	-	v	v				v		v	
Conducted Band Edge	5	Covered by Band 26														
	7	-	-	v	v	v	v	v	v		v		v	v		v
	26	v	v	v	v	v	-	v	v		v		v	v		v
Conducted Spurious Emission	5	Covered by Band 26														
	7	-	-	v	v	v	v	v			v			v	v	v
	26	v	v	v	v	v	-	v			v			v	v	v
Frequency Stability	5	Covered by Band 26														
	7	-	-		v			v					v		v	
	26				v		-	v					v		v	
E.R.P / E.I.R.P	5	v	v	v	v	-	-	v	v		Max. Power					
	7	-	-	v	v	v	v	v	v							
	26	v	v	v	v	v	-	v	v							
Radiated Spurious Emission	5	Covered by Band 26														
	7	Worst Case												v	v	v
	26	Worst Case												v	v	v
Remark	1. The mark "v " means that this configuration is chosen for testing 2. The mark "- " means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Wider operating range bandwidth covers narrower one when the power is higher or the same. 5. For Conducted Test Cases, the tests were performed LTE Band 7 with Top Antenna as worst case; LTE Band 5/26 with Bottom Antenna as worst case. 6. For Radiated Spurious Emission, based on different materials of these strips, do full test with Strap 1 and spot check with Strap 3.															

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
2.	AC Adapter	N/A	N/A	N/A	N/A	N/A
3.	Wireless Device	N/A	G943M	GKRG943M	N/A	Unshielded, 1.0m

2.4 Measurement Results Explanation Example

For all conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$



2.5 Frequency List of Low/Middle/High Channels

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

LTE 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

LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
15	Channel	26865	26915	26965
	Frequency	831.5	836.5	841.5
10	Channel	26840	26915	26990
	Frequency	829.0	836.5	844.0
5	Channel	26815	26915	27015
	Frequency	826.5	836.5	846.5
3	Channel	26805	26915	27025
	Frequency	825.5	836.5	847.5
1.4	Channel	26797	26915	27033
	Frequency	824.7	836.5	848.3

3 Conducted Test Items

3.1 Measuring Instruments

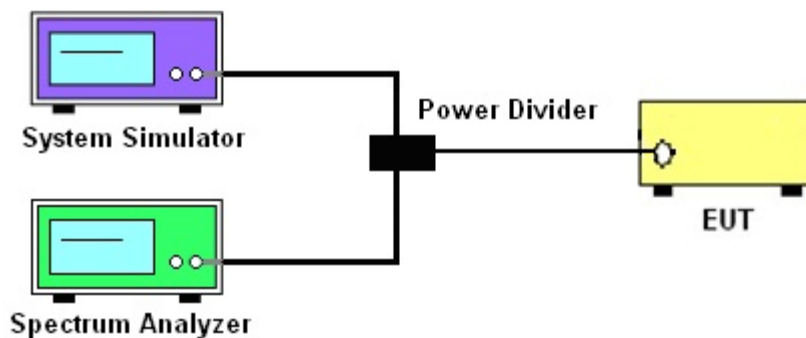
See list of measuring instruments of this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



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



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.



3.2 Conducted Output Power and ERP/EIRP

3.2.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

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

The ERP of mobile transmitters must not exceed 7 Watts for LTE Band 5 and Band 26

The EIRP of mobile transmitters must not exceed 2 Watts for LTE 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

22.917(a)

For operations in the 824 – 849 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

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 than $43 + 10 \log (P)$ 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 $\geq 1\%$ 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 $43 + 10\log(P)\text{dB}$ below the transmitter power $P(\text{Watts})$

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 LTE 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 10th 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 $43 + 10\log(P)$ dB below the transmitter power P(Watts)

For LTE Band 7

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



3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

22.355

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

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 $20\pm 5^{\circ}\text{C}$ and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

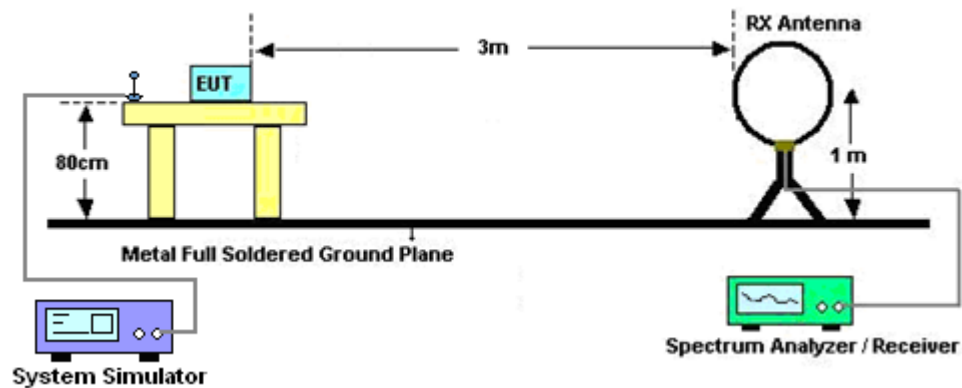
4 Radiated Test Items

4.1 Measuring Instruments

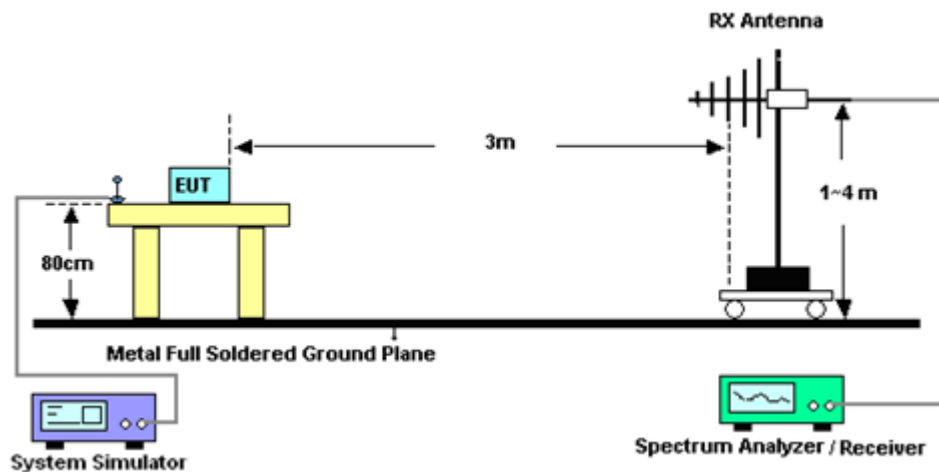
See list of measuring instruments of this test report.

4.1.1 Test Setup

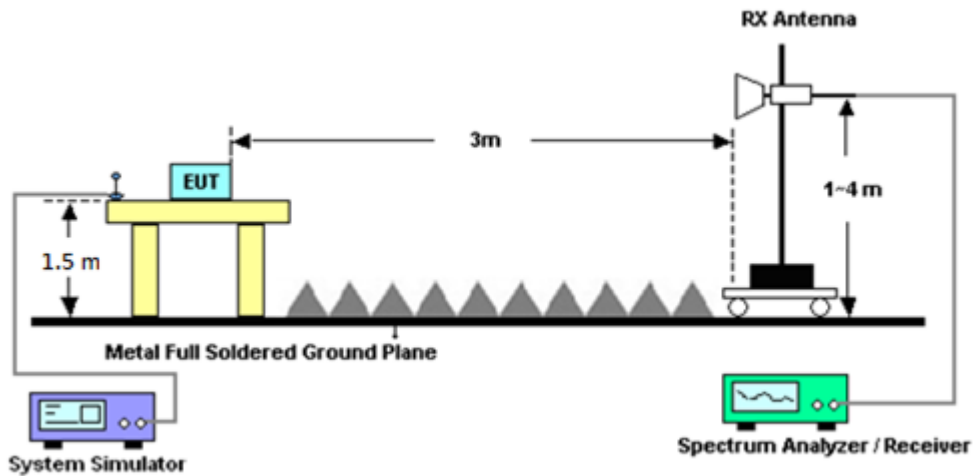
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



4.2 Radiated Spurious Emission Measurement

4.2.1 Description of Radiated Spurious Emission Measurement

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

For LTE Band 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 $43 + 10\log(P)$ dB below the transmitter power P(Watts)

For LTE Band 7

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

$EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$

$ERP \text{ (dBm)} = EIRP - 2.15$



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Nov. 03, 2020	Jul. 16, 2021~ Aug. 09, 2021	Nov. 02, 2021	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1212	1GHz ~ 18GHz	May 18, 2021	Jul. 16, 2021~ Aug. 09, 2021	May 17, 2022	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 11, 2020	Jul. 16, 2021~ Aug. 09, 2021	Oct. 10, 2021	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&00802N1 D01N-06	54682 & AT-N0603	30MHz~1GHz	Sep. 25, 2020	Jul. 16, 2021~ Aug. 09, 2021	Sep. 24, 2021	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00993	18GHz-40GHz	Nov. 19, 2020	Jul. 16, 2021~ Aug. 09, 2021	Nov. 18, 2021	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00994	18GHz-40GHz	Nov. 19, 2020	Jul. 16, 2021~ Aug. 09, 2021	Nov. 18, 2021	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Jul. 16, 2021~ Aug. 09, 2021	Jan. 03, 2022	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 12, 2020	Jul. 16, 2021~ Aug. 09, 2021	Nov. 11, 2021	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 02, 2020	Jul. 16, 2021~ Aug. 09, 2021	Dec. 01, 2021	Radiation (03CH11-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 22, 2021	Jul. 16, 2021~ Aug. 09, 2021	Jun. 21, 2022	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 23, 2020	Jul. 16, 2021~ Aug. 09, 2021	Oct. 22, 2021	Radiation (03CH11-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	Dec. 14, 2020	Jul. 16, 2021~ Aug. 09, 2021	Dec. 13, 2021	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Jul. 16, 2021~ Aug. 09, 2021	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jul. 16, 2021~ Aug. 09, 2021	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jul. 16, 2021~ Aug. 09, 2021	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Jul. 16, 2021~ Aug. 09, 2021	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz-30MHz	Mar. 11, 2021	Jul. 16, 2021~ Aug. 09, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 11, 2021	Jul. 16, 2021~ Aug. 09, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	30M-18G	Mar. 11, 2021	Jul. 16, 2021~ Aug. 09, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 11, 2021	Jul. 16, 2021~ Aug. 09, 2021	Mar. 10, 2022	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-900-10 00-15000-60SS	SN12	1GHz High Pass Filter	Nov. 05, 2020	Jul. 16, 2021~ Aug. 09, 2021	Nov. 04, 2021	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700-3 000-18000-60SS	SN3	3GHz High Pass Filter	Sep. 14, 2020	Jul. 16, 2021~ Aug. 09, 2021	Sep. 13, 2021	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Nov. 18, 2020	Jul. 16, 2021~ Aug. 09, 2021	Nov. 17, 2021	Radiation (03CH11-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Base Station (Measure)	Anritsu	MT8821C	62620025341	N/A	Oct. 06, 2020	Jul. 01, 2021~ Aug. 04, 2021	Oct. 05, 2021	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 27, 2020	Jul. 01, 2021~ Aug. 04, 2021	Nov. 26, 2021	Conducted (TH03-HY)
Thermal Chamber	ESPEC	SU-241	92003713	-30℃ ~95℃	May 21, 2021	Jul. 01, 2021~ Aug. 04, 2021	May 20, 2022	Conducted (TH03-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 05, 2020	Jul. 01, 2021~ Aug. 04, 2021	Oct. 04, 2021	Conducted (TH03-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#B	1-18GHz	Jan. 09, 2021	Jul. 01, 2021~ Aug. 04, 2021	Jan. 08, 2022	Conducted (TH03-HY)



6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.09 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.56 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.00 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power & ERP/EIRP)

<Top Antenna>

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	23.12	23.28	23.17	6.93	0.0049
10	1	25		23.11	23.15	23.14		
10	1	49		23.08	23.12	23.05		
10	25	0		22.16	22.22	22.22		
10	25	12		22.16	22.21	22.20		
10	25	25		22.15	22.21	22.18		
10	50	0		22.17	22.20	22.23		
10	1	0	16-QAM	22.00	21.96	22.05	5.70	0.0037
10	1	25		21.91	21.94	22.00		
10	1	49		21.90	21.71	21.88		
10	25	0		21.09	21.09	21.16		
10	25	12		21.04	21.09	21.16		
10	25	25		21.04	21.09	21.12		
10	50	0		21.12	21.14	21.18		
Limit	ERP < 7W			Result			Pass	

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	23.21	23.19	23.08	6.86	0.0049
5	1	12		23.19	23.19	23.01		
5	1	24		23.19	23.18	22.98		
5	12	0		22.21	22.20	22.07		
5	12	7		22.19	22.22	22.05		
5	12	13		22.21	22.21	22.06		
5	25	0		22.23	22.22	22.10		
5	1	0	16-QAM	21.92	22.11	21.95	5.76	0.0038
5	1	12		22.00	22.01	21.91		
5	1	24		21.96	21.82	21.89		
5	12	0		21.13	21.14	21.03		
5	12	7		21.16	21.15	21.03		
5	12	13		21.14	21.14	21.00		
5	25	0		21.13	21.14	21.00		
Limit	ERP < 7W			Result			Pass	



LTE Band 5 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3	1	0	QPSK	23.24	23.12	23.02	6.89	0.0049
3	1	8		23.22	23.13	22.99		
3	1	14		23.22	23.12	22.98		
3	8	0		22.26	22.20	22.07		
3	8	4		22.25	22.21	22.02		
3	8	7		22.26	22.20	22.02		
3	15	0		22.27	22.22	22.07		
3	1	0	16-QAM	22.05	22.00	21.97	5.70	0.0037
3	1	8		22.05	21.89	21.91		
3	1	14		22.04	21.87	21.89		
3	8	0		21.22	21.11	20.96		
3	8	4		21.22	21.09	20.92		
3	8	7		21.21	21.08	20.90		
3	15	0		21.16	21.10	20.93		
Limit	ERP < 7W			Result			Pass	

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
1.4	1	0	QPSK	23.26	23.18	22.98	6.92	0.0049
1.4	1	3		23.26	23.18	22.98		
1.4	1	5		23.27	23.16	22.99		
1.4	3	0		23.26	23.21	23.05		
1.4	3	1		23.26	23.20	23.06		
1.4	3	3		23.25	23.21	23.04		
1.4	6	0		22.25	22.18	22.02		
1.4	1	0	16-QAM	22.11	22.23	22.03	5.88	0.0039
1.4	1	3		22.13	22.20	21.94		
1.4	1	5		22.18	22.08	21.95		
1.4	3	0		22.10	21.94	21.96		
1.4	3	1		22.12	21.97	21.90		
1.4	3	3		22.05	21.96	21.86		
1.4	6	0		21.17	21.08	20.92		
Limit	ERP < 7W			Result			Pass	



LTE Band 7 Maximum Average Power [dBm] (GT - LC = -9.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
20	1	0	QPSK	23.30	23.64	23.52	14.44	0.0278
20	1	49		23.62	23.62	23.50		
20	1	99		23.58	23.56	23.51		
20	50	0		22.56	22.64	22.55		
20	50	24		22.73	22.74	22.59		
20	50	50		22.88	22.83	22.64		
20	100	0		22.74	22.72	22.58		
20	1	0	16-QAM	22.13	22.37	22.32	13.55	0.0226
20	1	49		22.51	22.56	22.38		
20	1	99		22.75	22.75	22.37		
20	50	0		21.50	21.58	21.55		
20	50	24		21.66	21.70	21.59		
20	50	50		21.83	21.77	21.64		
20	100	0		21.64	21.67	21.59		
Limit	EIRP < 2W			Result			Pass	

LTE Band 7 Maximum Average Power [dBm] (GT - LC = -9.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
15	1	0	QPSK	23.24	23.61	23.42	14.41	0.0276
15	1	37		23.56	23.60	23.48		
15	1	74		23.59	23.58	23.55		
15	36	0		22.49	22.65	22.51		
15	36	20		22.64	22.73	22.54		
15	36	39		22.79	22.82	22.54		
15	75	0		22.65	22.75	22.53		
15	1	0	16-QAM	22.27	22.42	22.36	13.59	0.0229
15	1	37		22.51	22.65	22.37		
15	1	74		22.79	22.76	22.46		
15	36	0		21.35	21.59	21.46		
15	36	20		21.54	21.68	21.50		
15	36	39		21.66	21.74	21.54		
15	75	0		21.55	21.72	21.54		
Limit	EIRP < 2W			Result			Pass	



LTE Band 7 Maximum Average Power [dBm] (GT - LC = -9.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
10	1	0	QPSK	23.28	23.52	23.49	14.43	0.0277
10	1	25		23.62	23.61	23.51		
10	1	49		23.62	23.63	23.58		
10	25	0		22.60	22.68	22.56		
10	25	12		22.71	22.73	22.60		
10	25	25		22.82	22.76	22.61		
10	50	0		22.71	22.73	22.60		
10	1	0	16-QAM	22.36	22.46	22.34	13.56	0.0227
10	1	25		22.61	22.63	22.29		
10	1	49		22.76	22.71	22.25		
10	25	0		21.52	21.64	21.54		
10	25	12		21.62	21.68	21.56		
10	25	25		21.71	21.72	21.56		
10	50	0		21.66	21.72	21.60		
Limit	EIRP < 2W			Result			Pass	

LTE Band 7 Maximum Average Power [dBm] (GT - LC = -9.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
5	1	0	QPSK	23.59	23.63	23.53	14.44	0.0278
5	1	12		23.62	23.62	23.55		
5	1	24		23.61	23.64	23.59		
5	12	0		22.74	22.69	22.57		
5	12	7		22.81	22.72	22.59		
5	12	13		22.85	22.74	22.60		
5	25	0		22.80	22.72	22.59		
5	1	0	16-QAM	22.62	22.41	22.48	13.58	0.0228
5	1	12		22.73	22.40	22.47		
5	1	24		22.78	22.51	22.29		
5	12	0		21.70	21.65	21.50		
5	12	7		21.77	21.68	21.54		
5	12	13		21.81	21.71	21.55		
5	25	0		21.74	21.68	21.57		
Limit	EIRP < 2W			Result			Pass	



LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
15	1	0	QPSK	23.30	23.29	23.34	6.99	0.0050
15	1	37		23.30	23.24	23.24		
15	1	74		23.25	23.10	23.17		
15	36	0		22.39	22.34	22.37		
15	36	20		22.36	22.29	22.34		
15	36	39		22.37	22.31	22.31		
15	75	0		22.38	22.34	22.35		
15	1	0	16-QAM	22.19	22.10	22.14	5.87	0.0039
15	1	37		22.22	22.11	22.13		
15	1	74		22.17	22.02	22.07		
15	36	0		21.31	21.24	21.28		
15	36	20		21.30	21.20	21.28		
15	36	39		21.29	21.18	21.23		
15	75	0		21.33	21.25	21.28		
Limit	ERP < 7W			Result			Pass	

LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	23.17	23.26	23.26	6.91	0.0049
10	1	25		23.21	23.14	23.21		
10	1	49		23.09	23.06	23.13		
10	25	0		22.33	22.29	22.33		
10	25	12		22.32	22.31	22.32		
10	25	25		22.20	22.24	22.28		
10	50	0		22.34	22.24	22.34		
10	1	0	16-QAM	22.04	22.05	22.13	5.78	0.0038
10	1	25		22.03	22.00	22.05		
10	1	49		21.94	21.93	21.97		
10	25	0		21.21	21.26	21.26		
10	25	12		21.19	21.14	21.24		
10	25	25		21.18	21.19	21.19		
10	50	0		21.23	21.26	21.28		
Limit	ERP < 7W			Result			Pass	



LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	23.24	23.22	23.29	6.94	0.0049
5	1	12		23.19	23.24	23.25		
5	1	24		23.17	23.11	23.20		
5	12	0		22.24	22.28	22.30		
5	12	7		22.23	22.20	22.27		
5	12	13		22.18	22.25	22.26		
5	25	0		22.25	22.22	22.30		
5	1	0	16-QAM	21.96	21.97	22.05	5.81	0.0038
5	1	12		22.07	22.08	22.16		
5	1	24		21.99	21.99	22.07		
5	12	0		21.16	21.21	21.24		
5	12	7		21.20	21.16	21.20		
5	12	13		21.18	21.11	21.19		
5	25	0		21.20	21.19	21.23		
Limit	ERP < 7W			Result			Pass	

LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3	1	0	QPSK	23.28	23.24	23.31	6.96	0.0050
3	1	8		23.24	23.22	23.25		
3	1	14		23.22	23.22	23.26		
3	8	0		22.26	22.28	22.30		
3	8	4		22.28	22.25	22.30		
3	8	7		22.18	22.23	22.28		
3	15	0		22.28	22.25	22.30		
3	1	0	16-QAM	22.32	22.28	22.32	5.97	0.0040
3	1	8		22.20	22.17	22.25		
3	1	14		22.19	22.13	22.20		
3	8	0		21.16	21.22	21.24		
3	8	4		21.20	21.15	21.25		
3	8	7		21.18	21.10	21.20		
3	15	0		21.17	21.19	21.22		
Limit	ERP < 7W			Result			Pass	



FCC RADIO TEST REPORT

Report No. : FG0D2204-01B

LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
1.4	1	0	QPSK	23.18	23.15	23.18	6.91	0.0049
1.4	1	3		23.12	23.12	23.21		
1.4	1	5		23.12	23.08	23.17		
1.4	3	0		23.18	23.23	23.26		
1.4	3	1		23.20	23.20	23.26		
1.4	3	3		23.16	23.20	23.26		
1.4	6	0		22.18	22.19	22.24		
1.4	1	0	16-QAM	22.14	22.09	22.15	5.83	0.0038
1.4	1	3		22.12	22.07	22.17		
1.4	1	5		22.13	22.11	22.18		
1.4	3	0		22.10	22.10	22.13		
1.4	3	1		22.07	22.12	22.15		
1.4	3	3		22.02	22.11	22.11		
1.4	6	0		21.10	21.11	21.18		
Limit	ERP < 7W			Result			Pass	



<Bottom Antenna>

Bottom Antenna

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	23.57	23.26	23.44	7.37	0.0055
10	1	25		23.72	23.17	23.59		
10	1	49		23.17	23.70	23.19		
10	25	0		22.97	22.53	22.78		
10	25	12		22.94	22.41	22.75		
10	25	25		22.75	22.24	22.34		
10	50	0		22.86	22.39	22.53		
10	1	0	16-QAM	22.88	22.59	22.65	6.53	0.0045
10	1	25		22.74	22.55	22.80		
10	1	49		22.49	22.18	22.59		
10	25	0		21.89	21.59	21.63		
10	25	12		21.87	21.48	21.62		
10	25	25		21.87	21.31	21.24		
10	50	0		21.91	21.48	21.44		
Limit	ERP < 7W			Result			Pass	

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	23.45	23.03	23.46	7.34	0.0054
5	1	12		23.45	23.69	23.67		
5	1	24		23.44	23.67	23.36		
5	12	0		22.72	22.14	22.45		
5	12	7		22.69	22.90	22.09		
5	12	13		22.73	22.89	22.78		
5	25	0		22.71	22.05	22.02		
5	1	0	16-QAM	22.90	22.43	22.70	6.55	0.0045
5	1	12		22.87	22.31	22.22		
5	1	24		22.82	22.29	22.67		
5	12	0		21.77	21.28	21.34		
5	12	7		21.74	21.16	21.06		
5	12	13		21.81	21.15	21.81		
5	25	0		21.79	21.21	21.05		
Limit	ERP < 7W			Result			Pass	



LTE Band 5 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3	1	0	QPSK	23.49	23.05	23.14	7.36	0.0054
3	1	8		23.44	23.70	23.71		
3	1	14		23.51	23.53	23.51		
3	8	0		22.64	22.06	22.11		
3	8	4		22.63	22.92	22.78		
3	8	7		22.69	22.90	22.76		
3	15	0		22.67	22.91	22.79		
3	1	0	16-QAM	22.91	22.32	22.43	6.62	0.0046
3	1	8		22.90	22.16	22.73		
3	1	14		22.97	22.17	22.65		
3	8	0		21.81	21.14	21.09		
3	8	4		21.79	21.03	21.76		
3	8	7		21.86	21.05	21.73		
3	15	0		21.80	21.08	21.76		
Limit	ERP < 7W			Result			Pass	

LTE Band 5 Maximum Average Power [dBm] (GT - LC = -14.2 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
1.4	1	0	QPSK	23.71	23.11	23.65	7.36	0.0054
1.4	1	3		23.70	23.69	23.64		
1.4	1	5		23.71	23.58	23.38		
1.4	3	0		23.67	23.70	23.70		
1.4	3	1		23.66	23.68	23.62		
1.4	3	3		23.66	23.70	23.38		
1.4	6	0		22.82	22.09	22.76		
1.4	1	0	16-QAM	23.02	22.44	22.03	6.77	0.0048
1.4	1	3		23.07	22.35	22.70		
1.4	1	5		23.12	22.38	22.64		
1.4	3	0		22.89	22.22	22.62		
1.4	3	1		22.90	22.20	22.60		
1.4	3	3		22.89	22.17	22.57		
1.4	6	0		21.92	21.27	21.74		
Limit	ERP < 7W			Result			Pass	



LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
15	1	0	QPSK	24.00	23.62	23.66	7.85	0.0061
15	1	37		23.94	23.65	23.65		
15	1	74		23.46	23.50	23.53		
15	36	0		23.04	22.53	22.62		
15	36	20		23.03	22.49	22.57		
15	36	39		22.80	22.18	22.26		
15	75	0		23.00	22.29	22.35		
15	1	0	16-QAM	22.93	22.67	22.70	6.78	0.0048
15	1	37		22.87	22.74	22.76		
15	1	74		22.60	22.56	22.62		
15	36	0		21.96	21.51	21.51		
15	36	20		21.95	21.44	21.50		
15	36	39		21.79	21.25	21.26		
15	75	0		21.98	21.40	21.40		
Limit	ERP < 7W			Result			Pass	

LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
10	1	0	QPSK	23.04	23.10	23.11	7.18	0.0052
10	1	25		23.24	23.24	23.33		
10	1	49		23.17	23.18	23.26		
10	25	0		22.20	22.20	22.30		
10	25	12		22.29	22.24	22.32		
10	25	25		22.79	22.80	22.84		
10	50	0		22.02	22.01	22.07		
10	1	0	16-QAM	22.23	22.20	22.27	6.53	0.0045
10	1	25		22.55	22.54	22.55		
10	1	49		22.60	22.68	22.68		
10	25	0		21.24	21.29	21.32		
10	25	12		21.26	21.35	21.35		
10	25	25		21.72	21.75	21.80		
10	50	0		21.05	21.10	21.14		
Limit	ERP < 7W			Result			Pass	



LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
5	1	0	QPSK	23.22	23.16	23.26	7.60	0.0058
5	1	12		23.67	23.74	23.75		
5	1	24		23.25	23.19	23.26		
5	12	0		22.08	22.06	22.16		
5	12	7		22.74	22.82	22.82		
5	12	13		22.78	22.71	22.79		
5	25	0		22.77	22.81	22.83		
5	1	0	16-QAM	22.40	22.34	22.43	6.35	0.0043
5	1	12		22.03	22.05	22.06		
5	1	24		22.50	22.42	22.50		
5	12	0		21.15	21.13	21.15		
5	12	7		21.76	21.66	21.76		
5	12	13		21.65	21.64	21.74		
5	25	0		21.80	21.79	21.81		
Limit	ERP < 7W			Result			Pass	

LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3	1	0	QPSK	23.07	23.01	23.11	7.57	0.0057
3	1	8		23.72	23.64	23.72		
3	1	14		22.95	23.00	23.00		
3	8	0		21.92	21.96	22.01		
3	8	4		22.81	22.77	22.87		
3	8	7		22.74	22.70	22.74		
3	15	0		22.80	22.86	22.89		
3	1	0	16-QAM	22.30	22.27	22.30	6.66	0.0046
3	1	8		22.74	22.72	22.81		
3	1	14		22.45	22.44	22.49		
3	8	0		21.07	21.04	21.08		
3	8	4		21.72	21.73	21.80		
3	8	7		21.72	21.70	21.78		
3	15	0		21.75	21.73	21.80		
Limit	ERP < 7W			Result			Pass	



FCC RADIO TEST REPORT

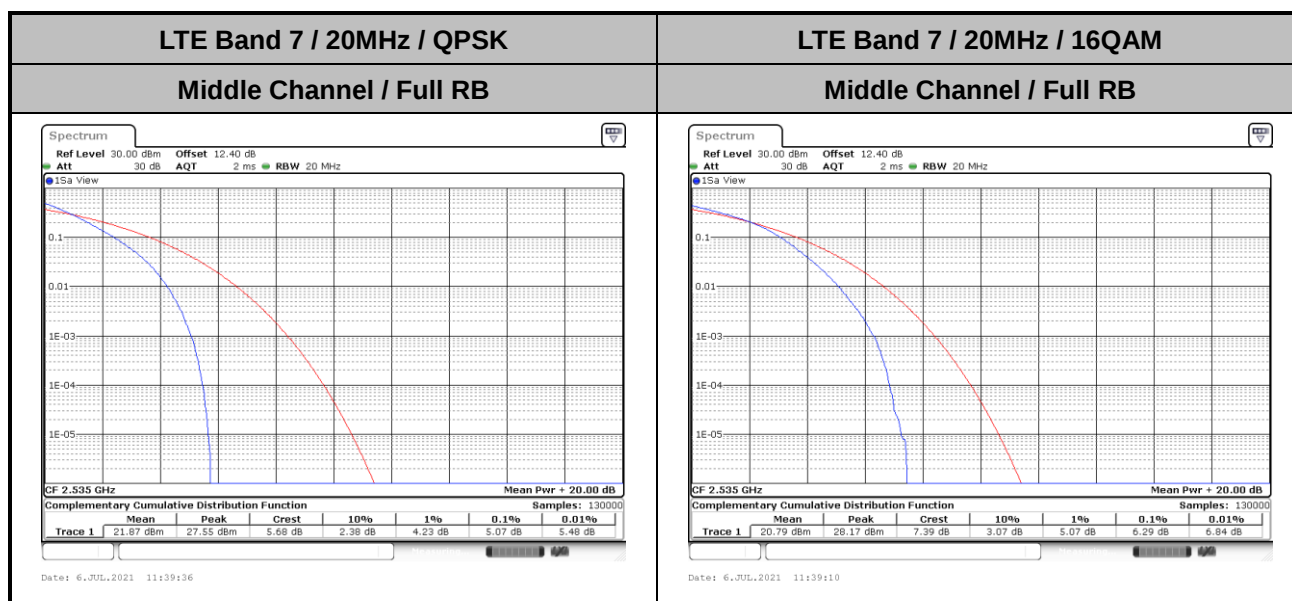
Report No. : FG0D2204-01B

LTE Band 26 Maximum Average Power [dBm] (GT - LC = -14 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
1.4	1	0	QPSK	23.84	23.79	23.85	7.70	0.0059
1.4	1	3		23.82	23.81	23.83		
1.4	1	5		23.62	23.61	23.71		
1.4	3	0		23.75	23.75	23.84		
1.4	3	1		23.84	23.84	23.85		
1.4	3	3		23.63	23.62	23.67		
1.4	6	0		22.81	22.86	22.89		
1.4	1	0	16-QAM	22.79	22.79	22.82	6.69	0.0047
1.4	1	3		22.75	22.79	22.84		
1.4	1	5		22.76	22.80	22.83		
1.4	3	0		22.68	22.67	22.75		
1.4	3	1		22.64	22.67	22.73		
1.4	3	3		22.60	22.60	22.70		
1.4	6	0		20.16	20.20	20.25		
Limit	ERP < 7W			Result			Pass	

LTE Band 7

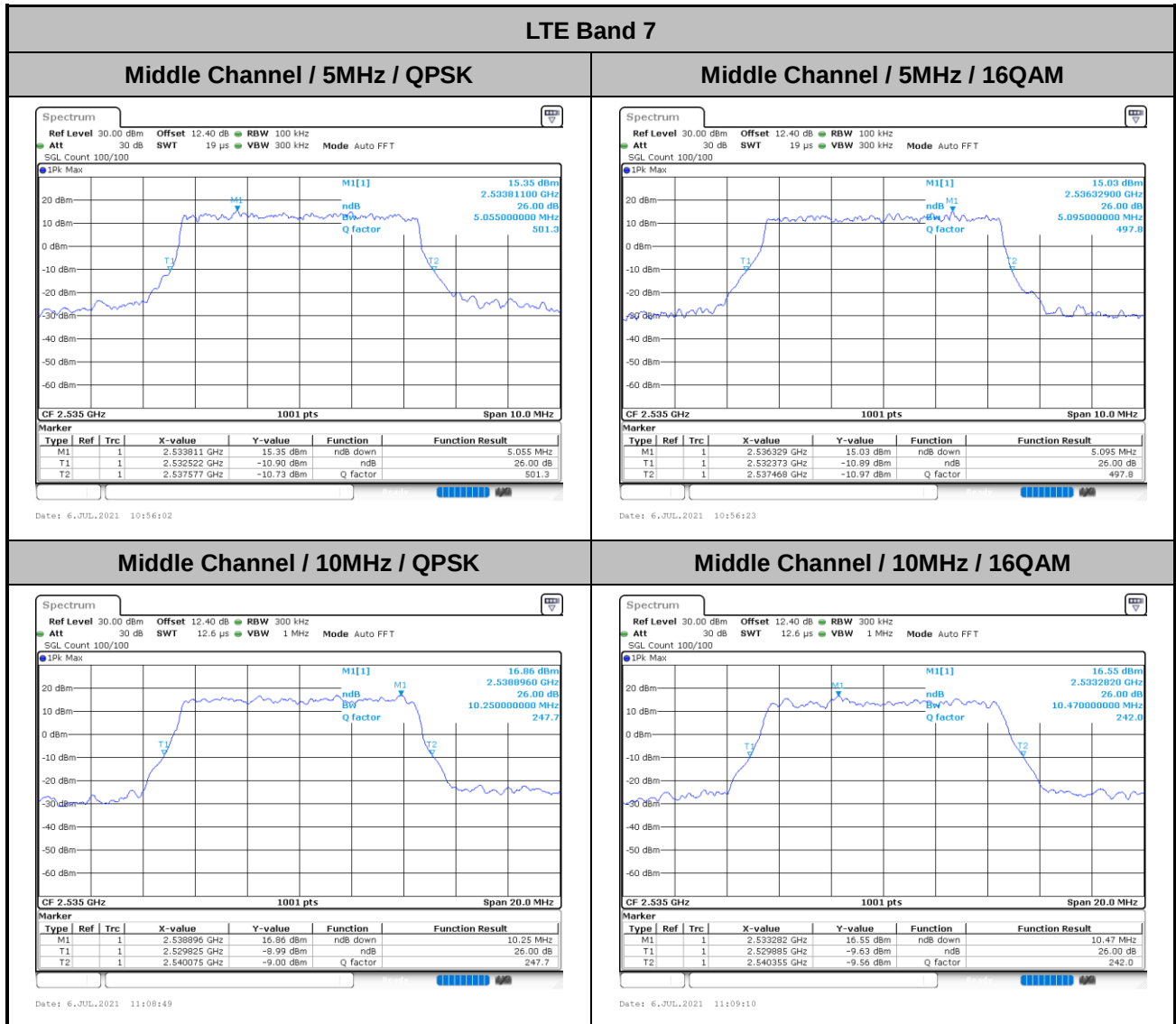
Peak-to-Average Ratio

Mode	LTE Band 7 / 20MHz		
Mod.	QPSK	16QAM	Limit: 13dB
RB Size	Full RB	Full RB	Result
Middle CH	5.07	6.29	PASS



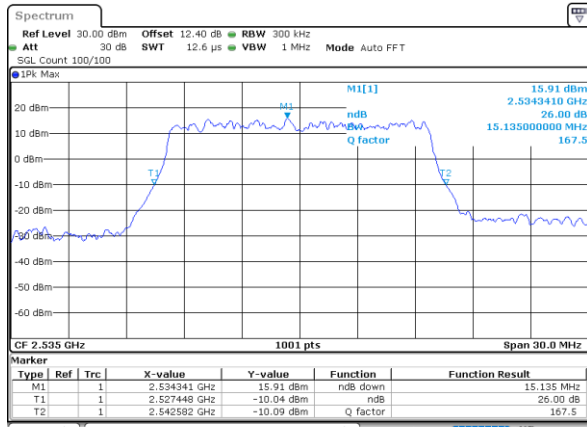
**26dB Bandwidth**

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
Middle CH	-	-	-	-	5.06	5.10	10.25	10.47	15.14	14.87	18.94	18.62



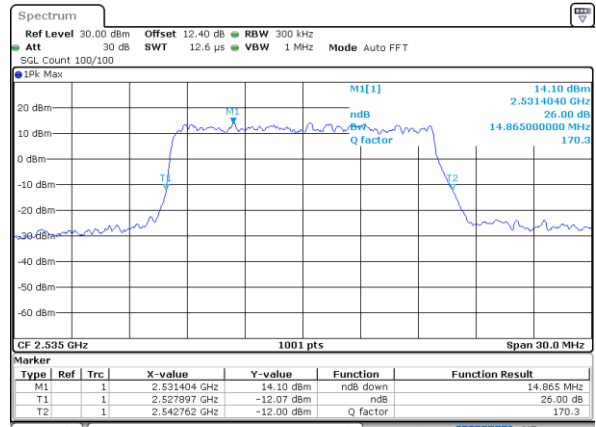


Middle Channel / 15MHz / QPSK



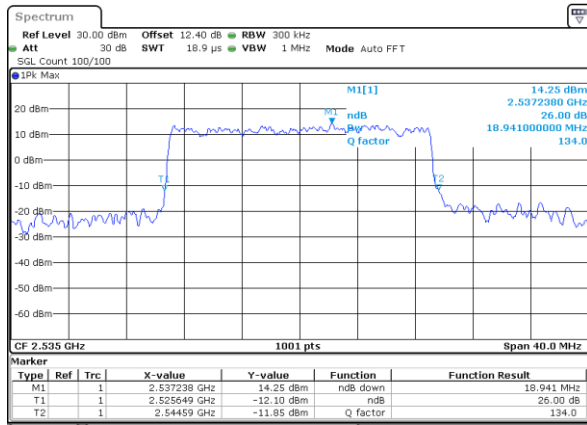
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Middle Channel / 15MHz / 16QAM



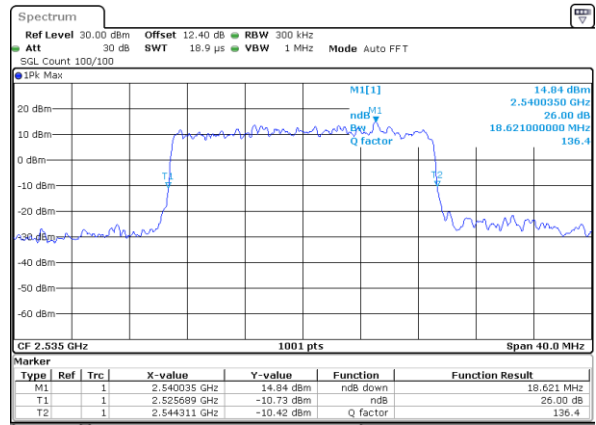
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Middle Channel / 20MHz / QPSK



Date: 6.JUL.2021 11:33:04

Middle Channel / 20MHz / 16QAM

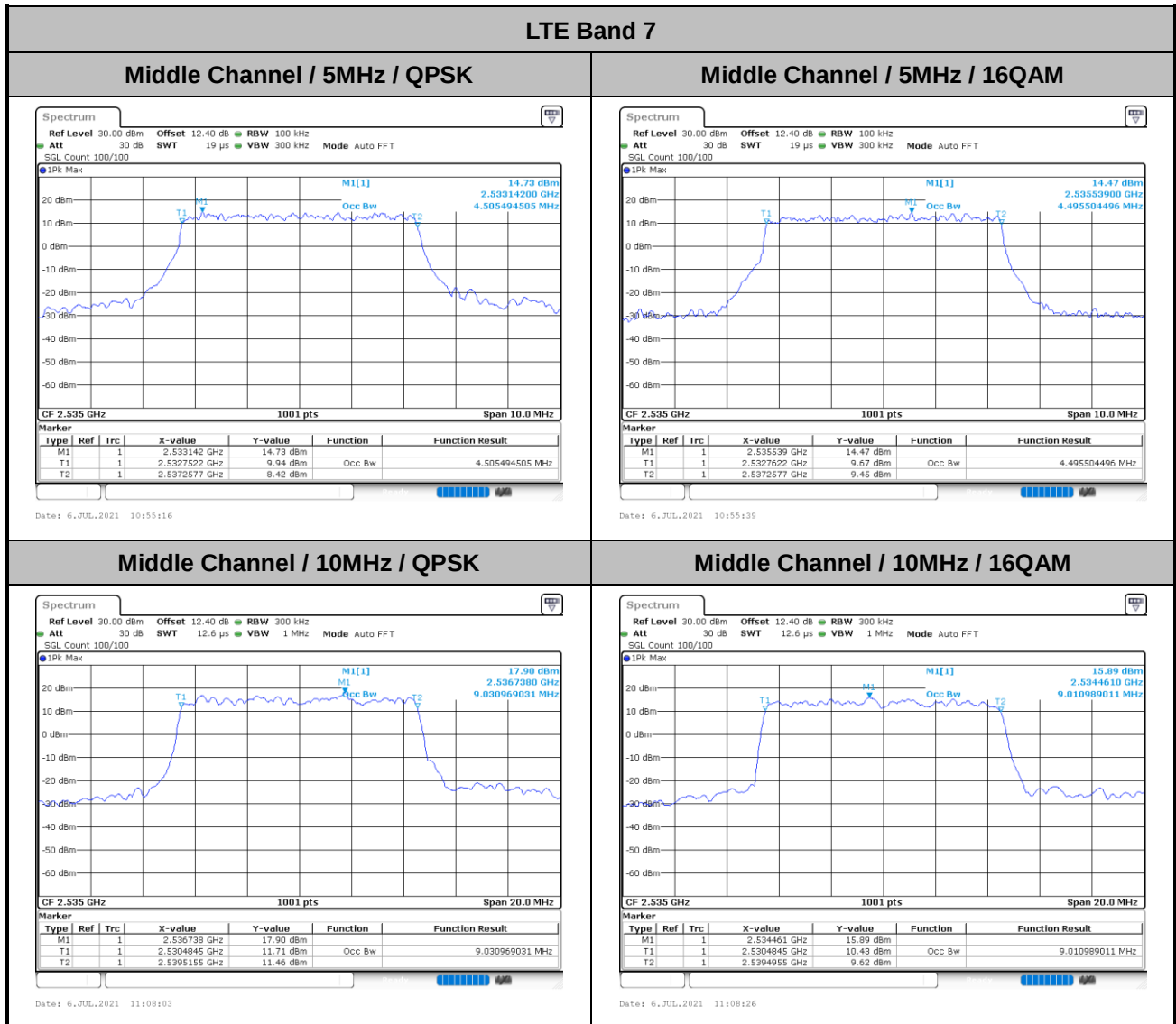


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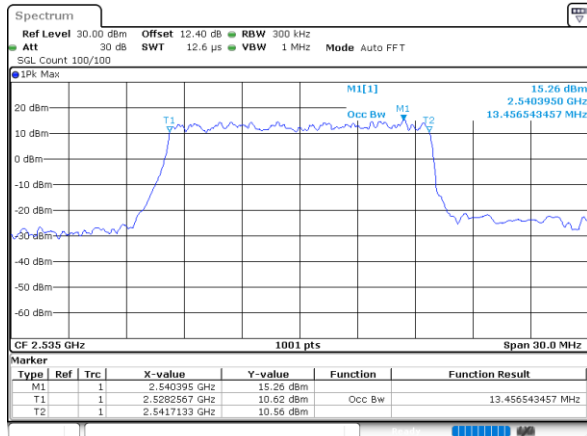
Occupied Bandwidth

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
Middle CH	-	-	-	-	4.51	4.50	9.03	9.01	13.46	13.49	17.90	17.90

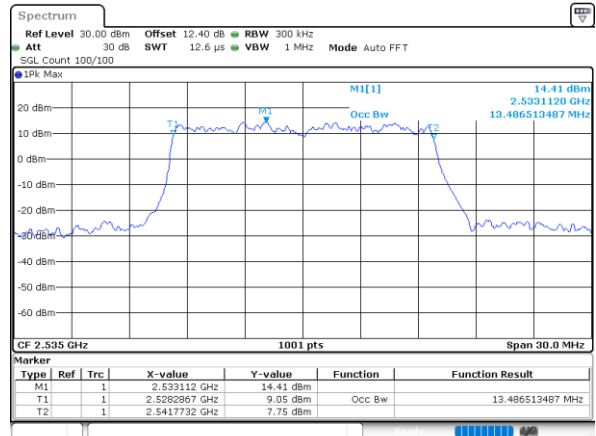




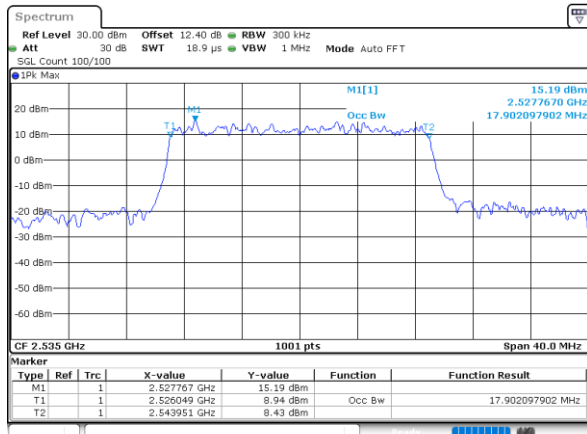
Middle Channel / 15MHz / QPSK



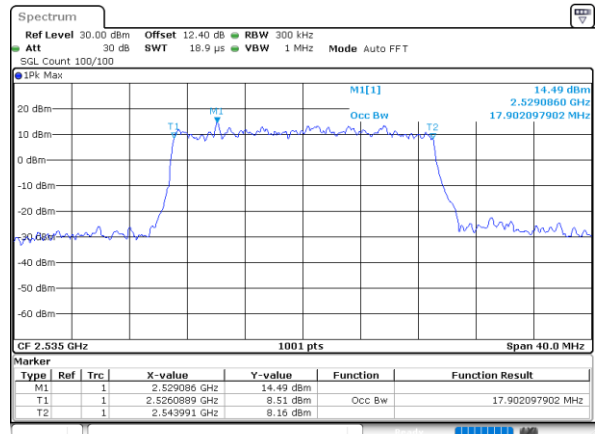
Middle Channel / 15MHz / 16QAM



Middle Channel / 20MHz / QPSK



Middle Channel / 20MHz / 16QAM

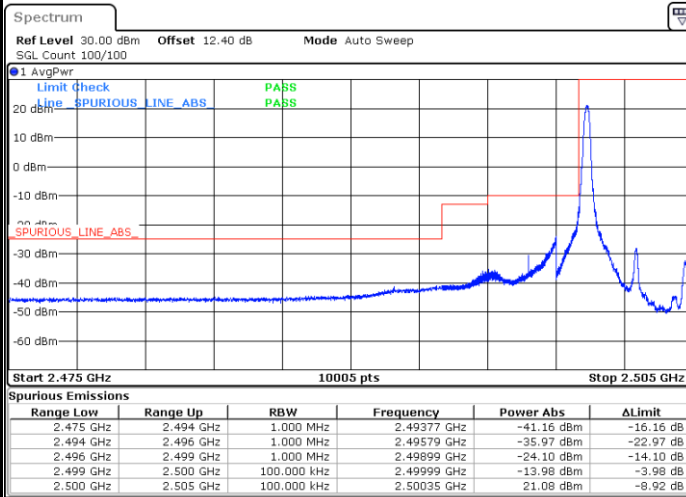




Conducted Band Edge

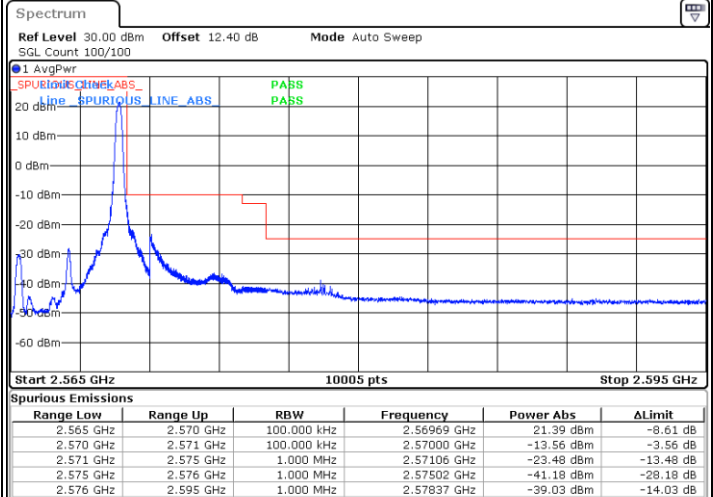
LTE Band 7 / 5MHz / QPSK

Lowest Band Edge / 1 RB



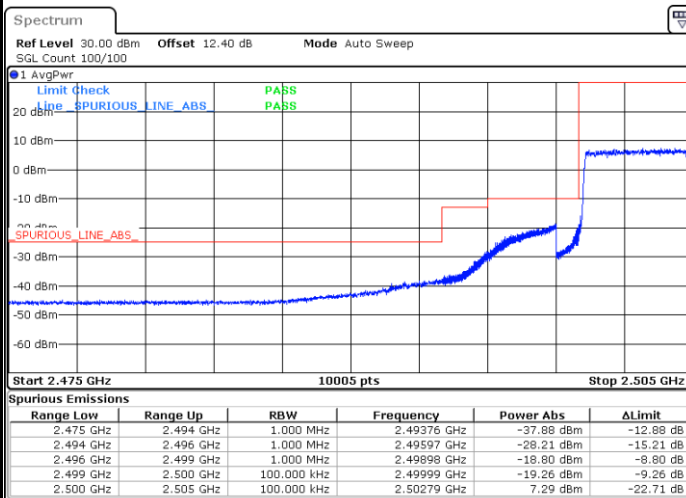
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Highest Band Edge / 1 RB



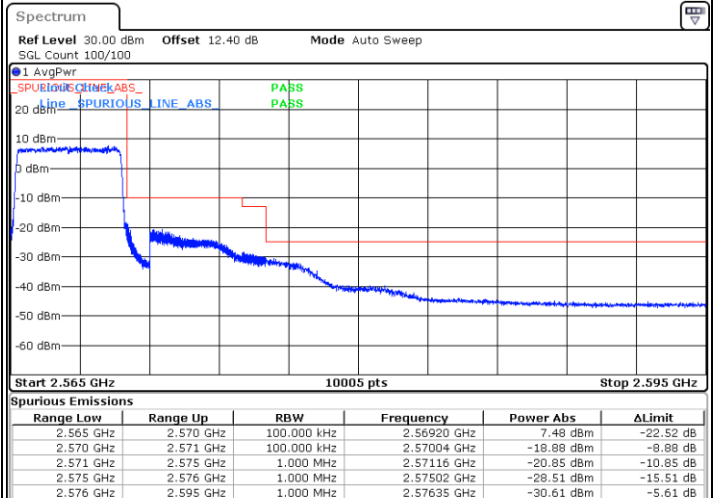
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Lowest Band Edge / Full RB



Date: 6.JUL.2021 10:53:03

Highest Band Edge / Full RB

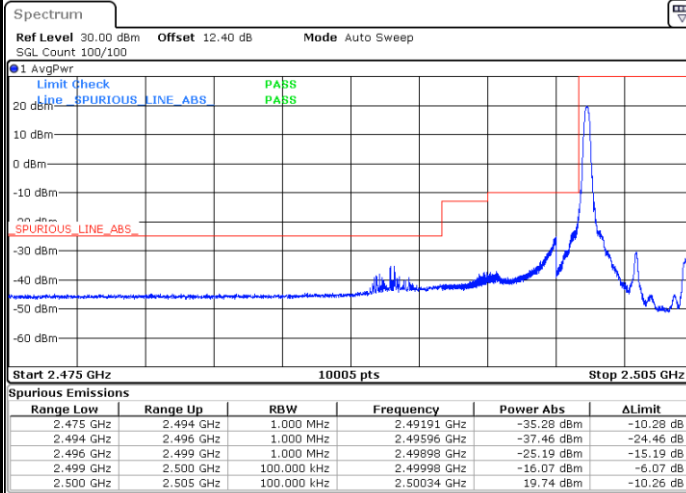


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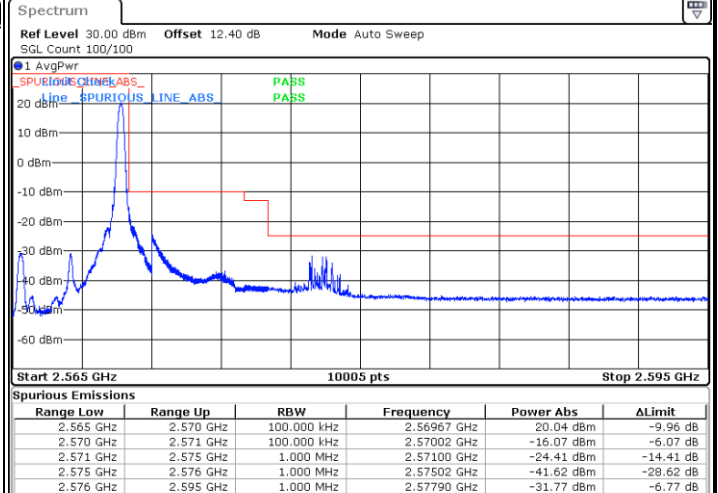


LTE Band 7 / 5MHz / 16QAM

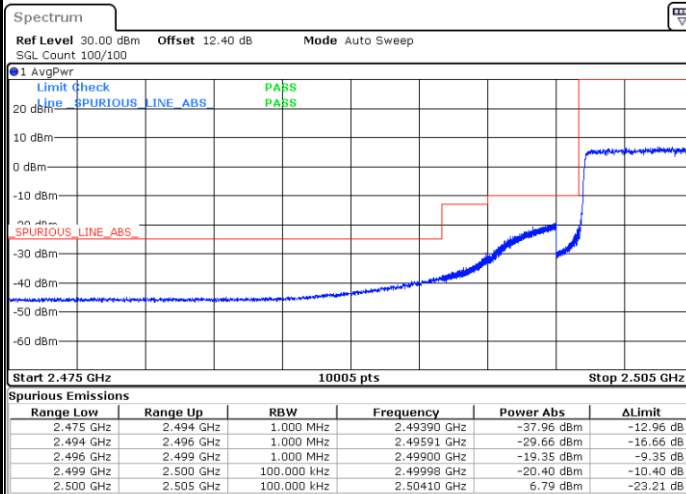
Lowest Band Edge / 1RB



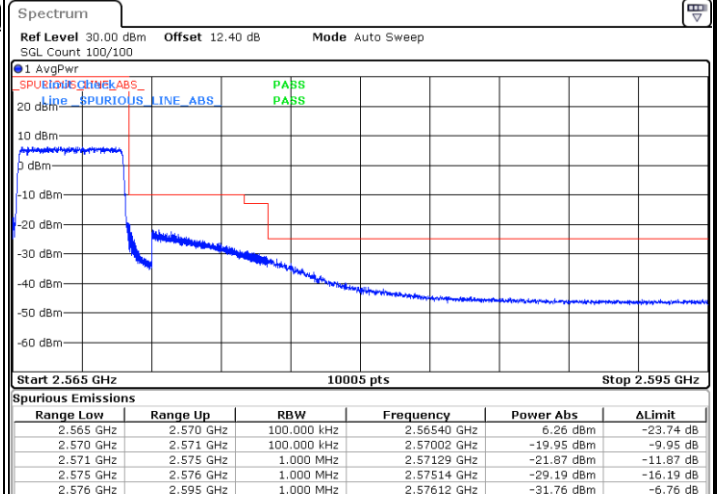
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



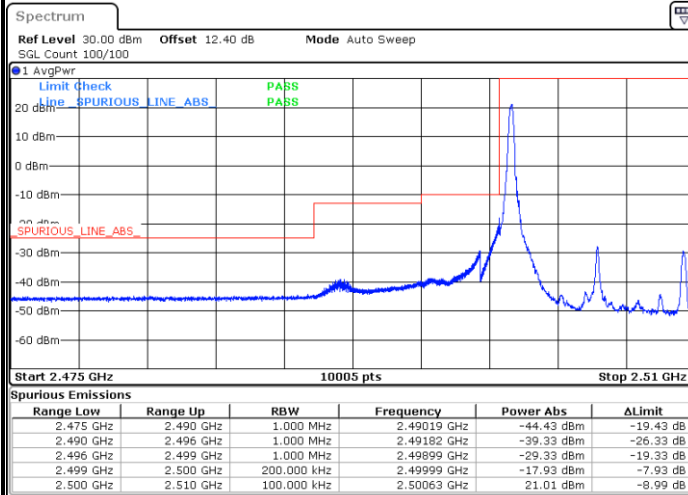
Highest Band Edge / Full RB



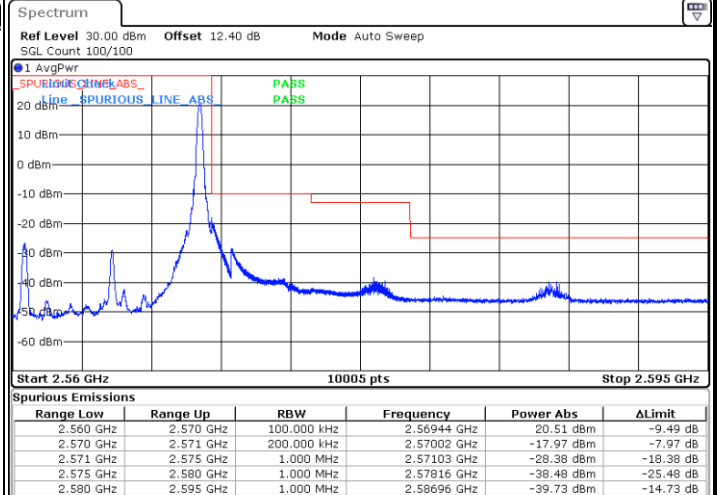


LTE Band 7 / 10MHz / QPSK

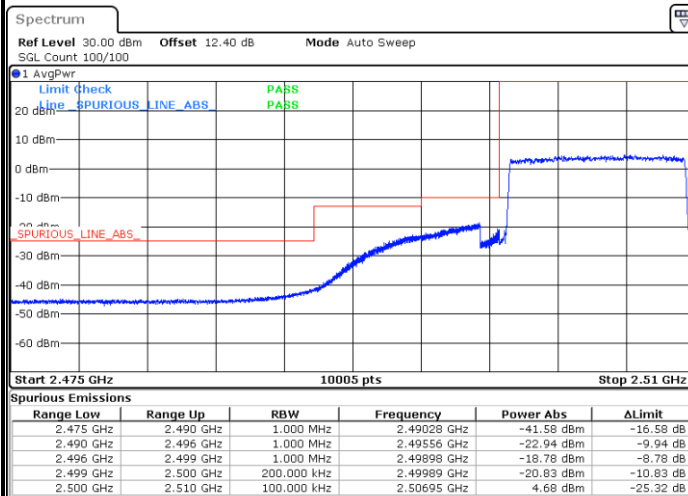
Lowest Band Edge / 1 RB



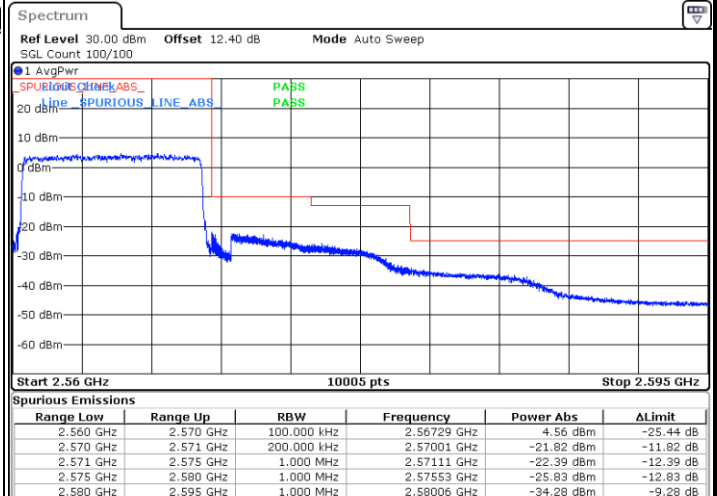
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



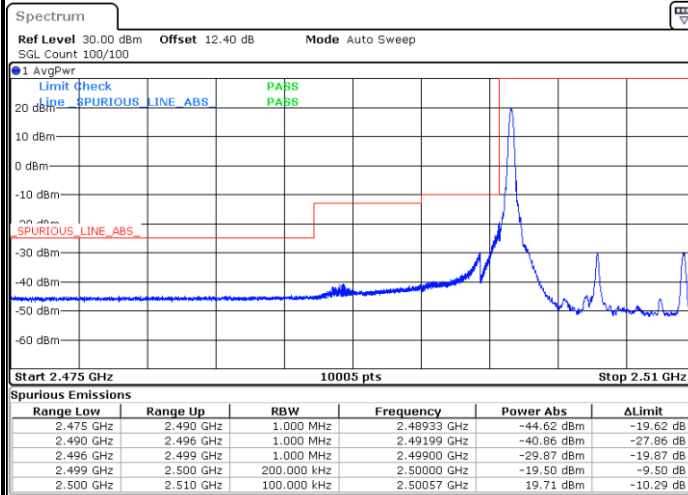
Highest Band Edge / Full RB



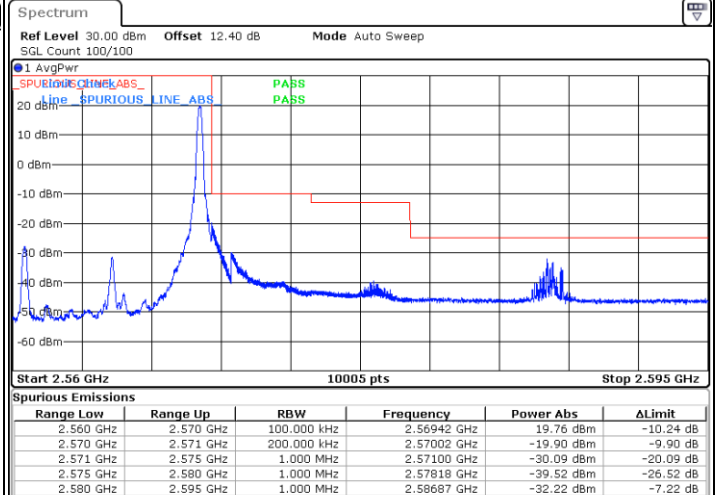


LTE Band 7 / 10MHz / 16QAM

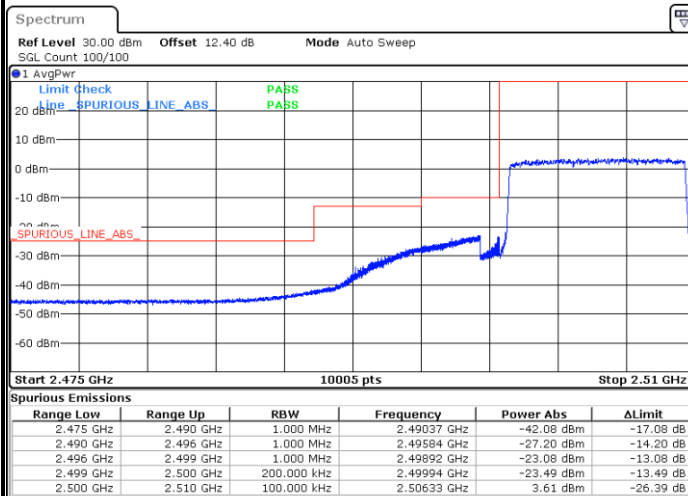
Lowest Band Edge / 1 RB



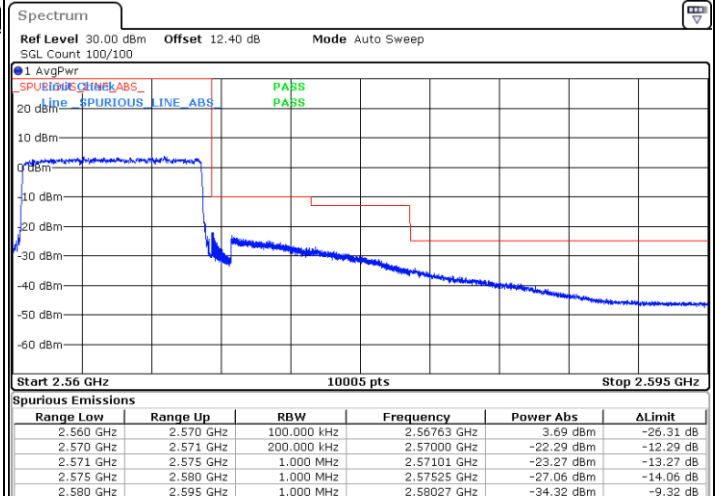
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



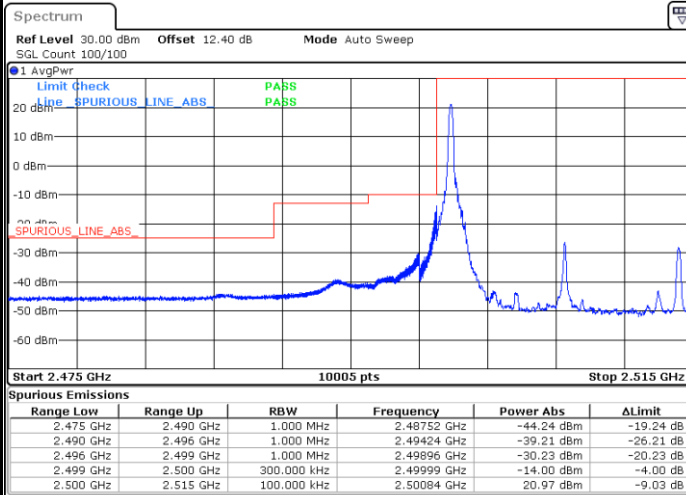
Highest Band Edge / Full RB



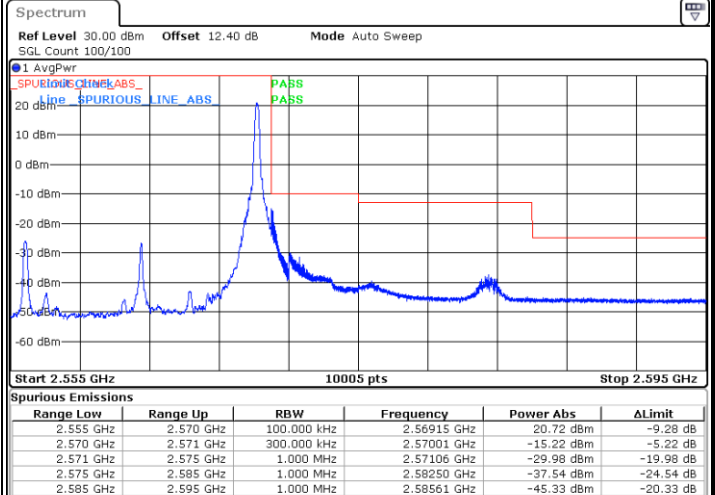


LTE Band 7 / 15MHz / QPSK

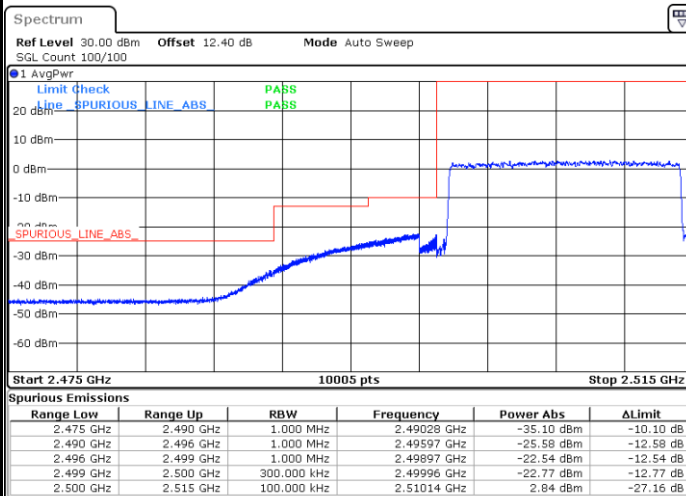
Lowest Band Edge / 1 RB



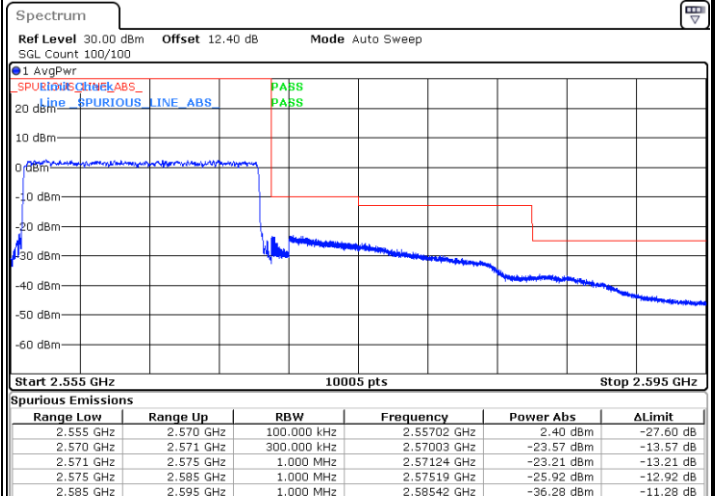
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



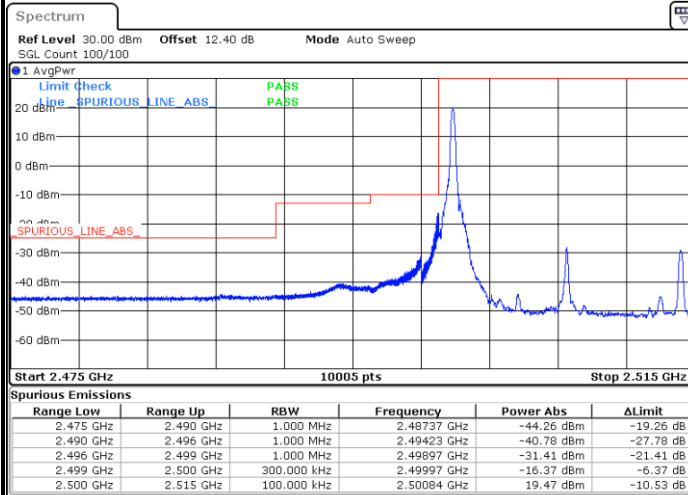
Highest Band Edge / Full RB



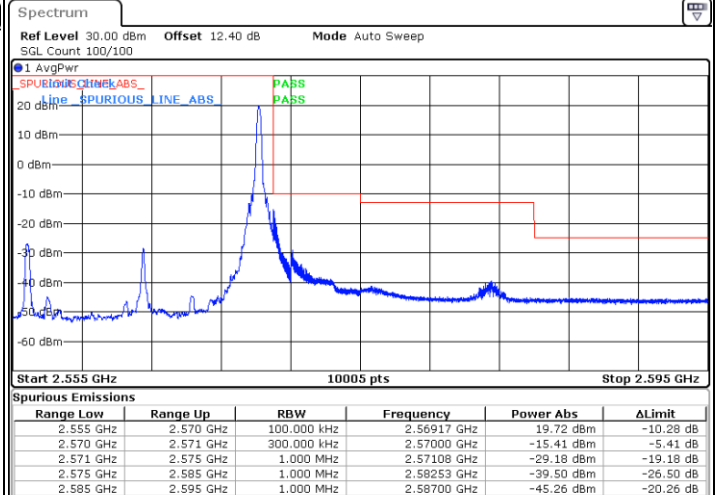


LTE Band 7 / 15MHz / 16QAM

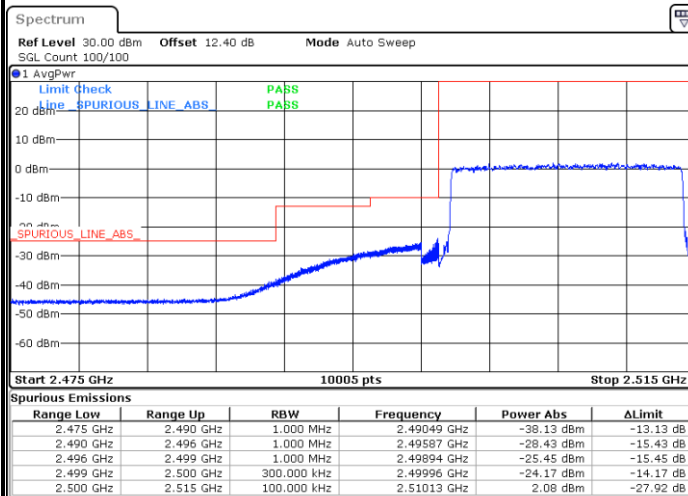
Lowest Band Edge / 1 RB



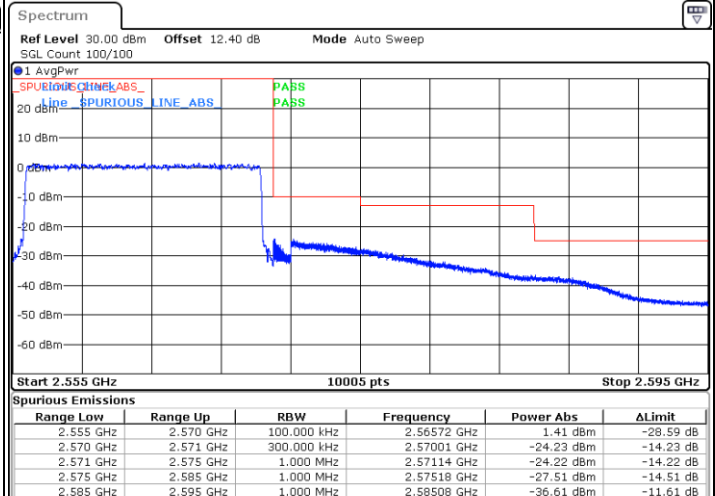
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



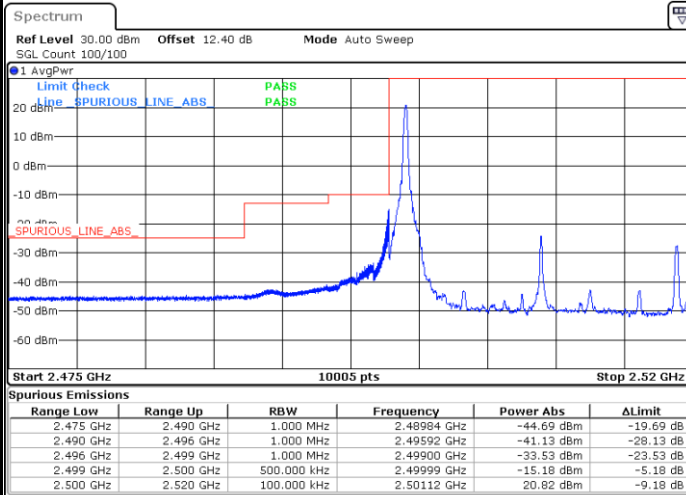
Highest Band Edge / Full RB



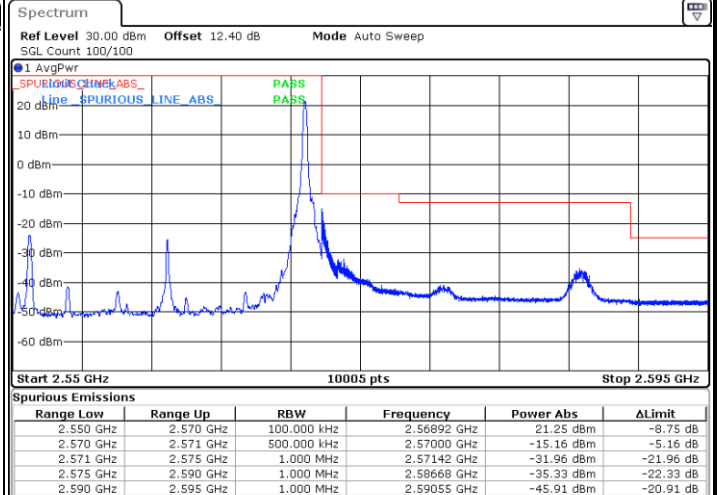


LTE Band 7 / 20MHz / QPSK

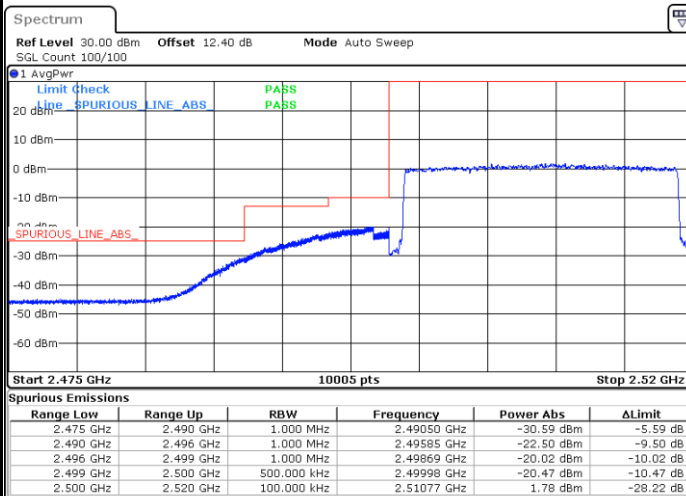
Lowest Band Edge / 1 RB



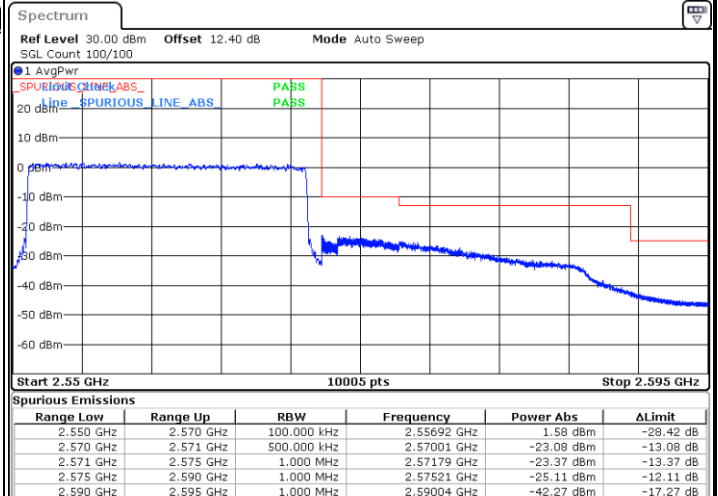
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



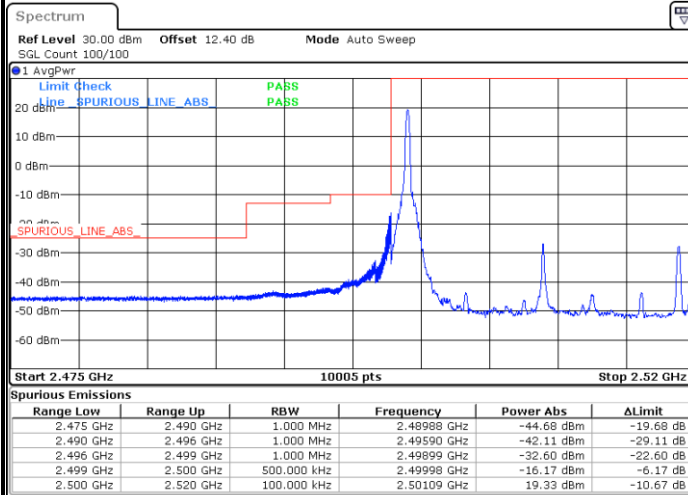
Highest Band Edge / Full RB





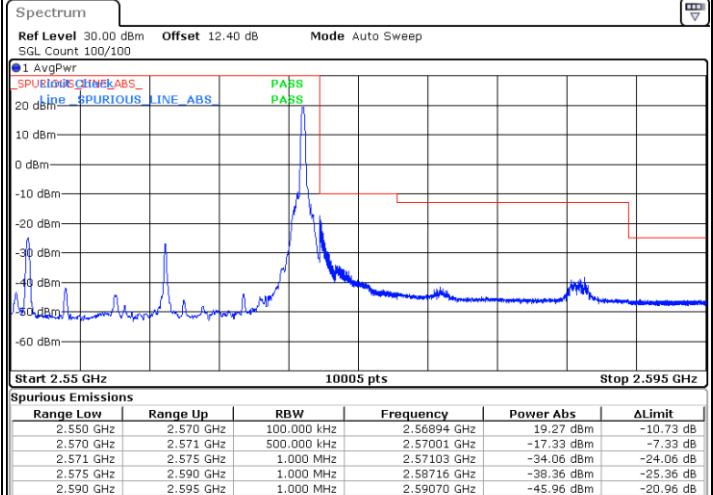
LTE Band 7 / 20MHz / 16QAM

Lowest Band Edge / 1 RB



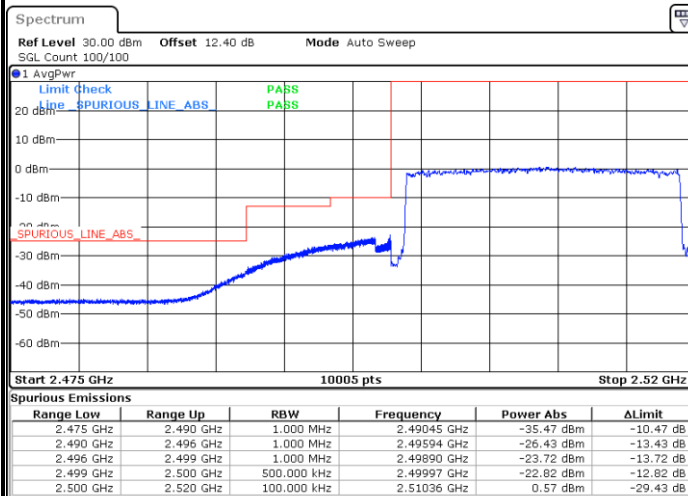
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Highest Band Edge / 1 RB



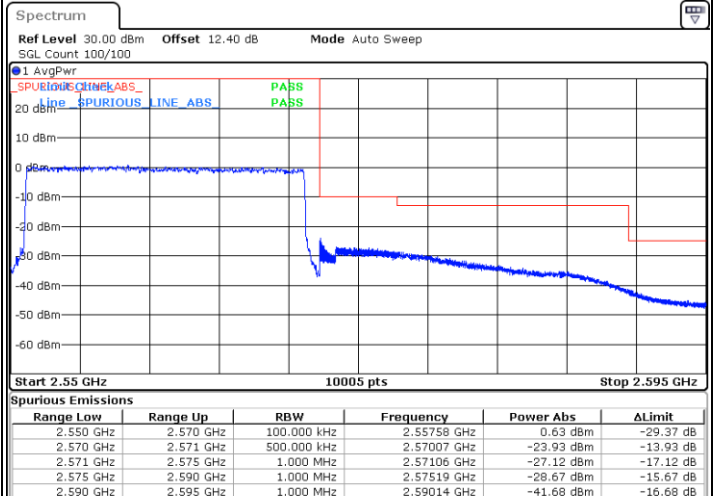
Date: 6.JUL.2021 11:36:06

Lowest Band Edge / Full RB



Date: 6.JUL.2021 11:30:57

Highest Band Edge / Full RB



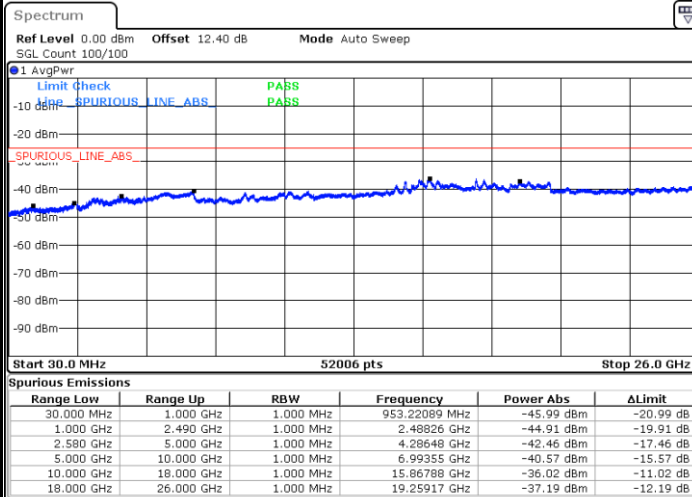
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Conducted Spurious Emission

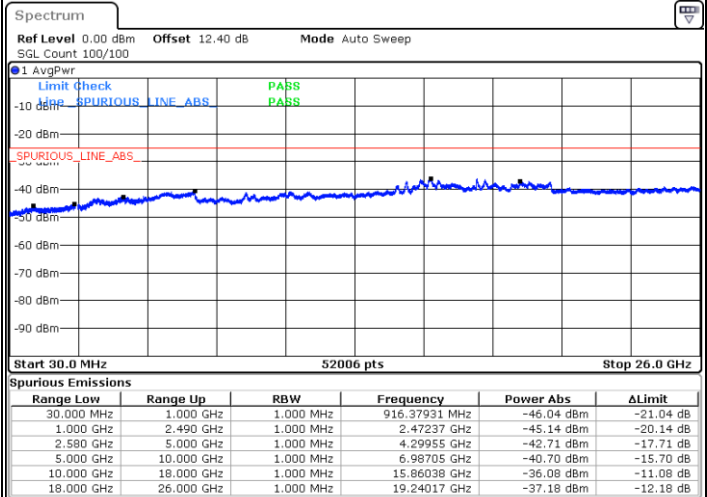
LTE Band 7 / 5MHz

Lowest Channel / QPSK



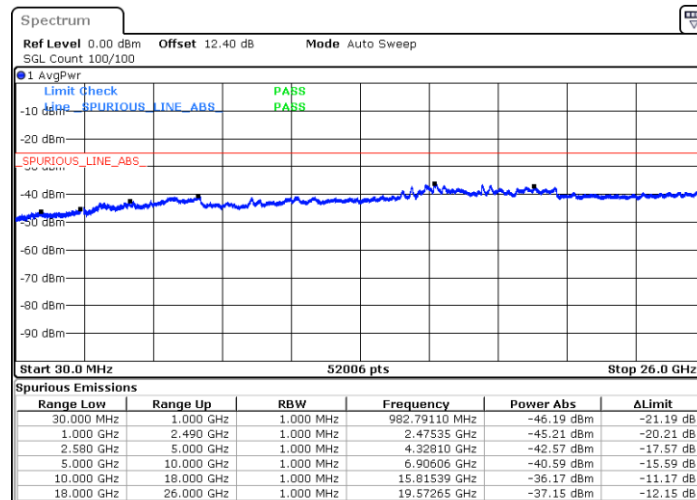
Date: 6.JUL.2021 10:54:55

Middle Channel / QPSK



Date: 6.JUL.2021 10:57:21

Highest Channel / QPSK

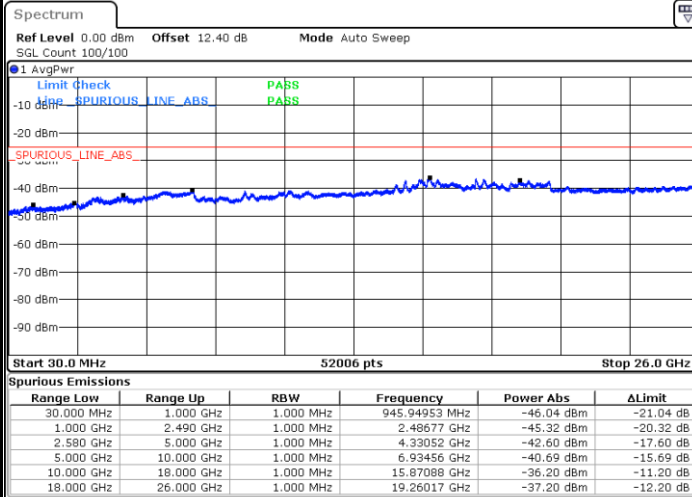


Date: 6.JUL.2021 11:01:43



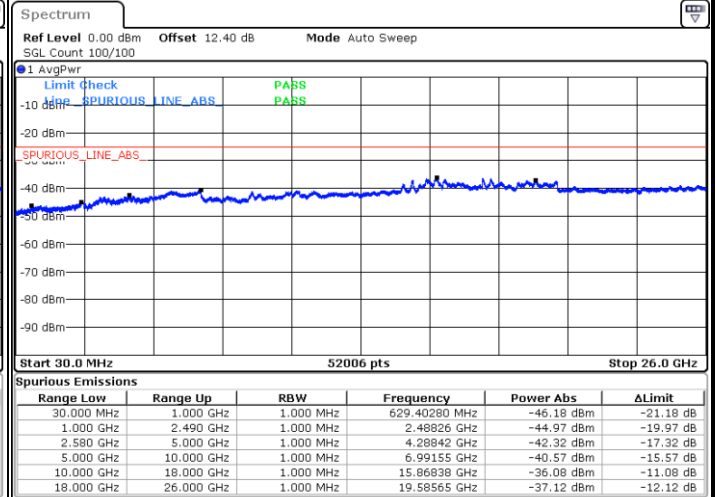
LTE Band 7 / 10MHz

Lowest Channel / QPSK



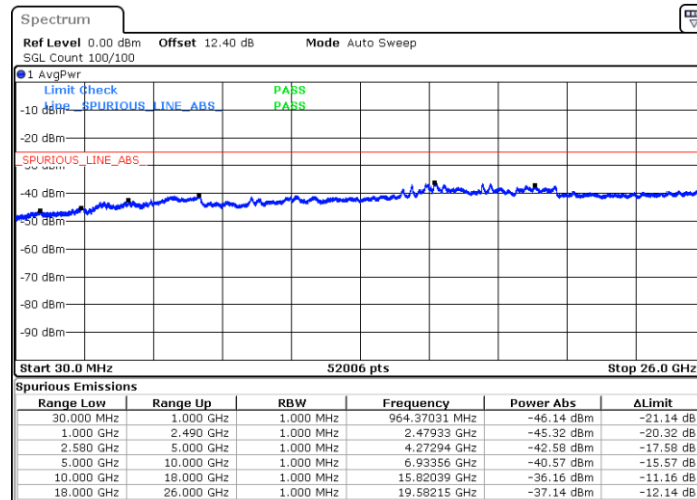
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Middle Channel / QPSK



Date: 6.JUL.2021 11:10:09

Highest Channel / QPSK

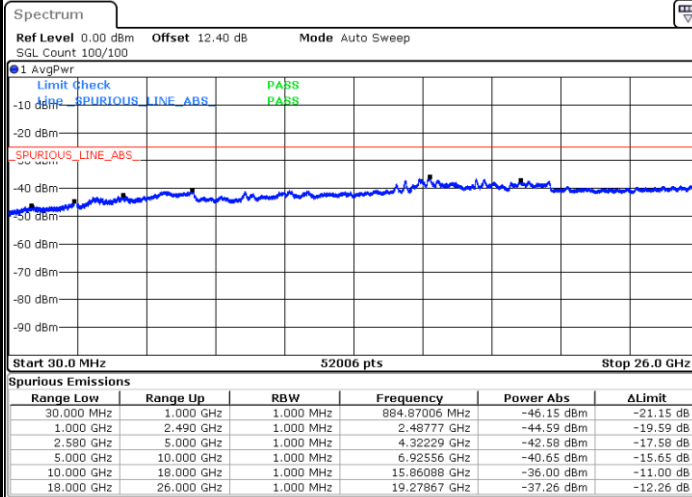


Date: 6.JUL.2021 11:14:32



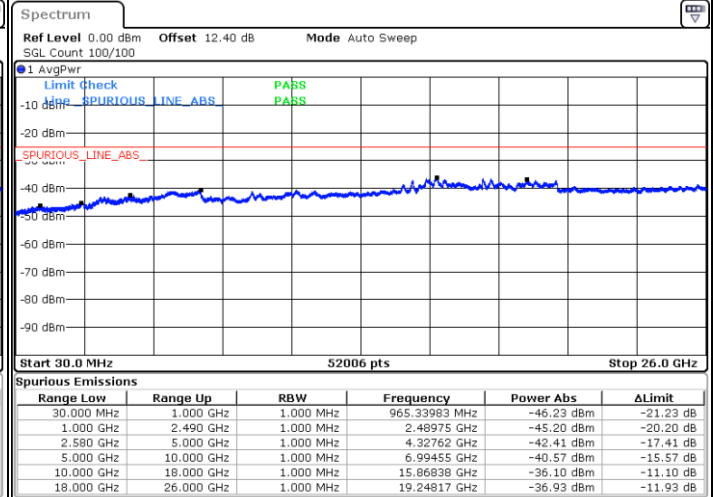
LTE Band 7 / 15MHz

Lowest Channel / QPSK



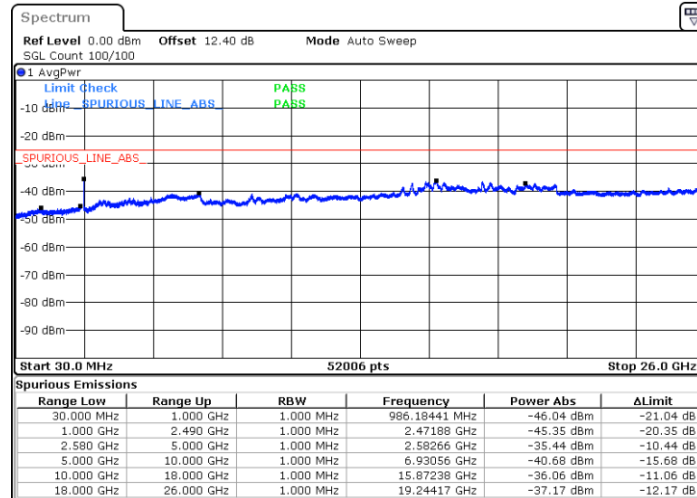
Date: 6.JUL.2021 11:20:19

Middle Channel / QPSK



Date: 6.JUL.2021 11:22:47

Highest Channel / QPSK

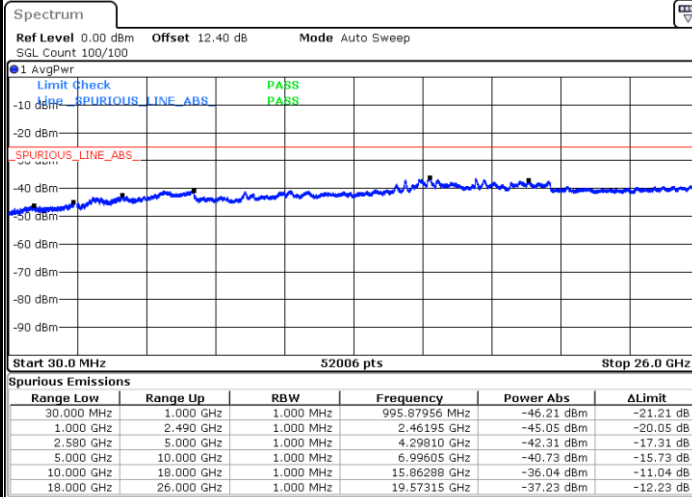


Date: 6.JUL.2021 11:27:10



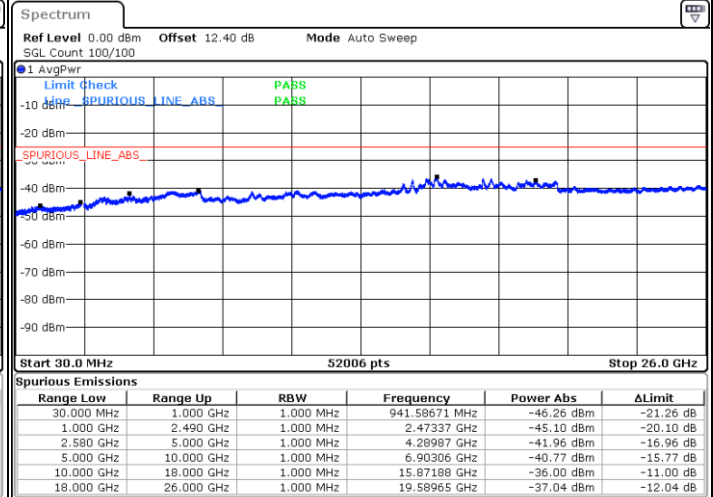
LTE Band 7 / 20MHz

Lowest Channel / QPSK



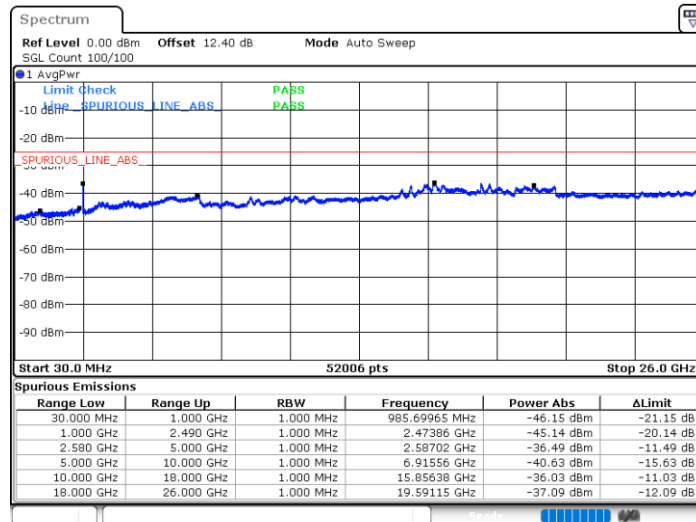
Date: 6.JUL.2021 11:31:57

Middle Channel / QPSK



Date: 6.JUL.2021 11:34:24

Highest Channel / QPSK



Date: 6.JUL.2021 11:38:47

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	0.0045	PASS
40	Normal Voltage	0.0025	
30	Normal Voltage	0.0018	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0025	
0	Normal Voltage	0.0044	
-10	Normal Voltage	0.0002	
-20	Normal Voltage	0.0006	
-30	Normal Voltage	0.0026	
20	Maximum Voltage	0.0008	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0007	

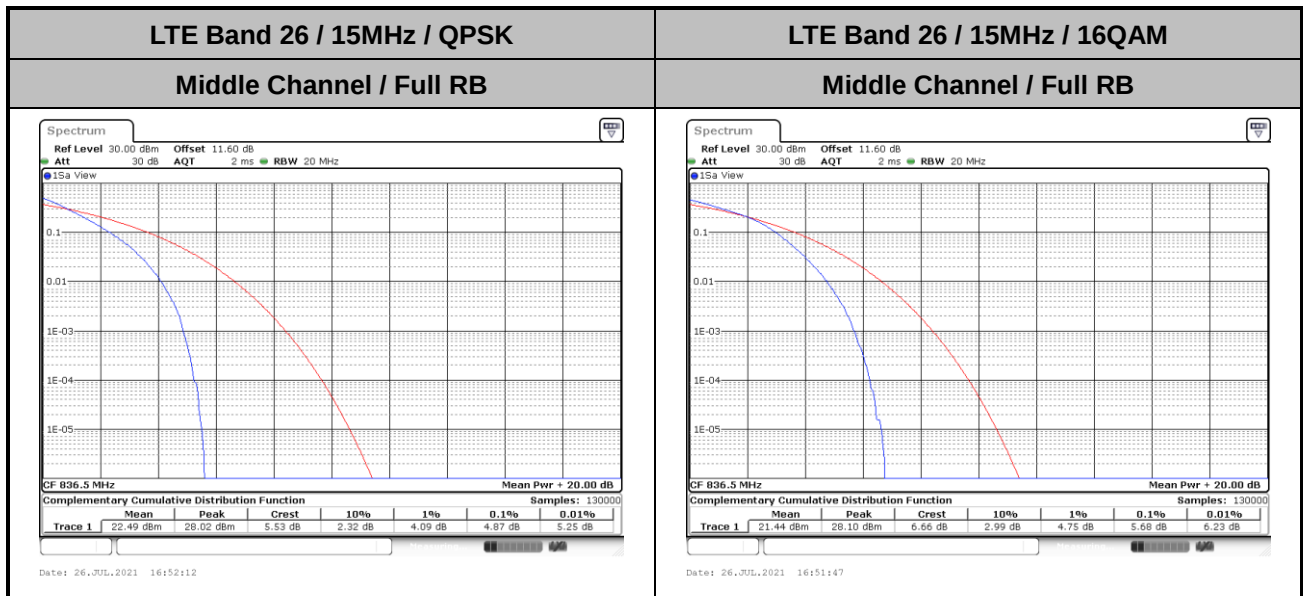
Note:

1. Normal Voltage =3.85 V. ; Battery End Point (BEP) =3.5 V. ; Maximum Voltage =4.3 V.
2. The frequency fundamental emissions stay within the authorized frequency block.

LTE Band 26

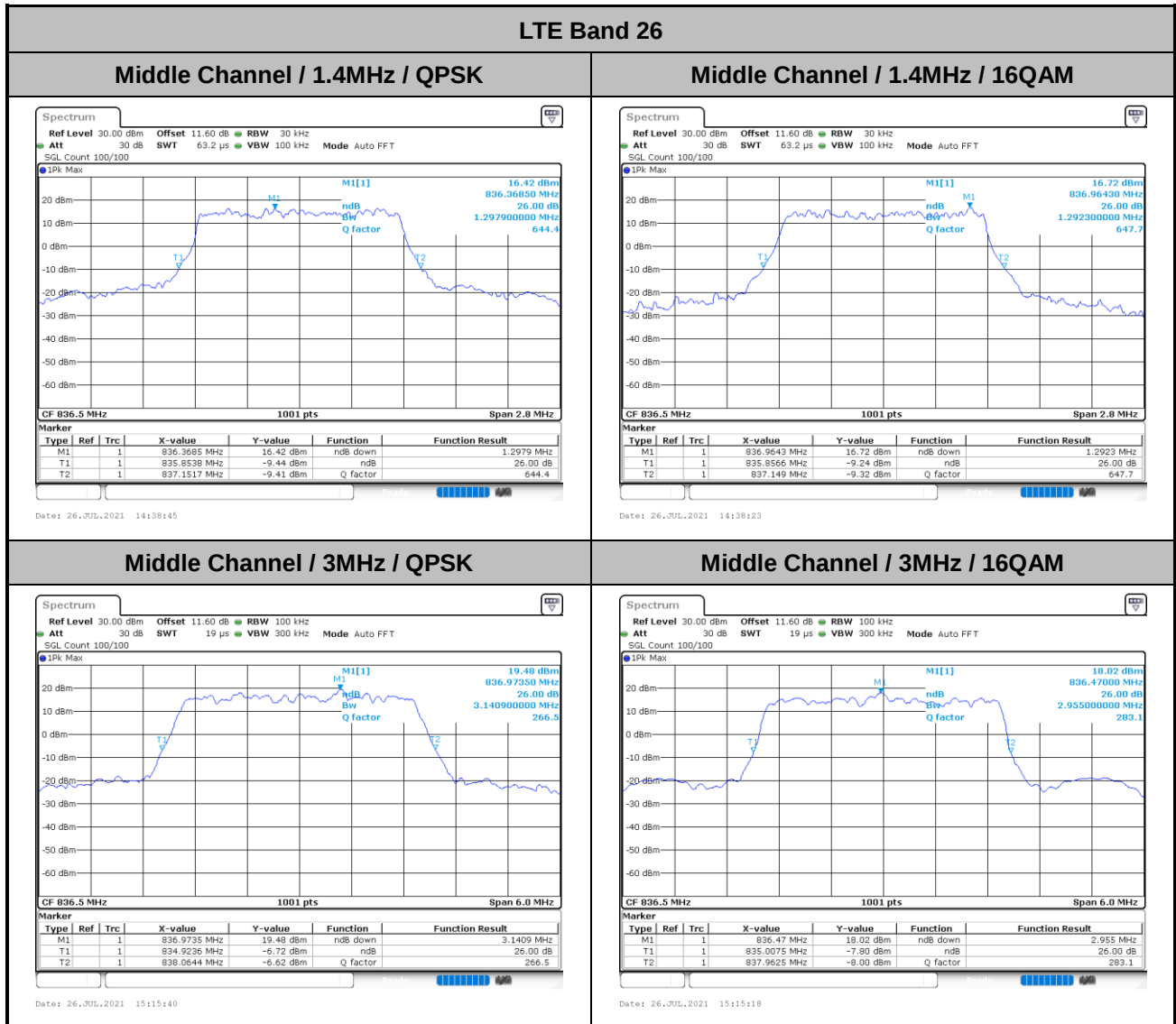
Peak-to-Average Ratio

Mode	LTE Band 26 / 15MHz		
Mod.	QPSK	16QAM	Limit: 13dB
RB Size	Full RB	Full RB	Result
Middle CH	4.87	5.68	PASS



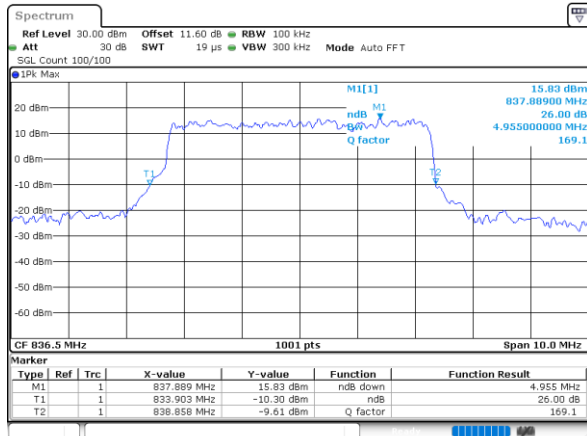
**26dB Bandwidth**

Mode	LTE Band 26 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	1.30	1.29	3.14	2.96	4.96	4.97	9.89	10.09	15.02	14.90	-	-



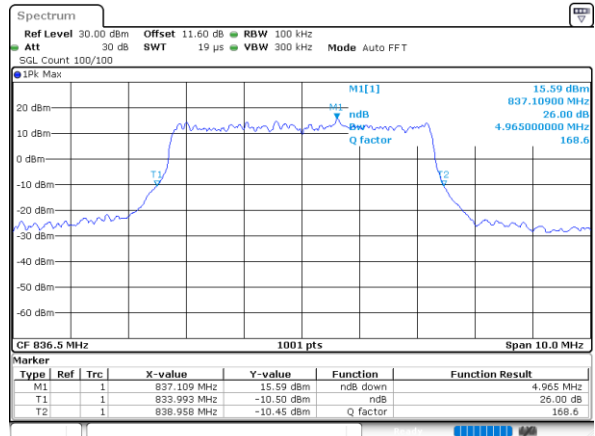


Middle Channel / 5MHz / QPSK



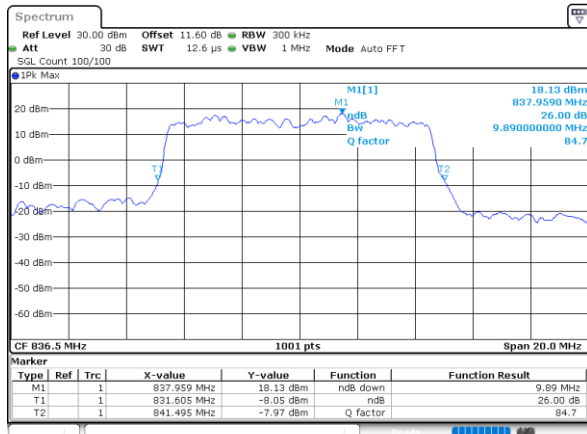
Date: 26.JUL.2021 15:35:11

Middle Channel / 5MHz / 16QAM



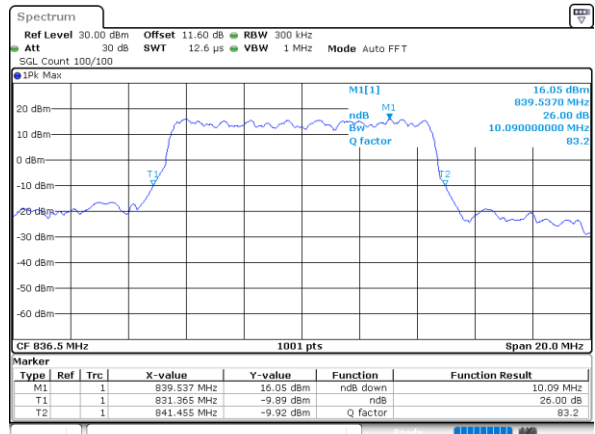
Date: 26.JUL.2021 15:34:50

Middle Channel / 10MHz / QPSK



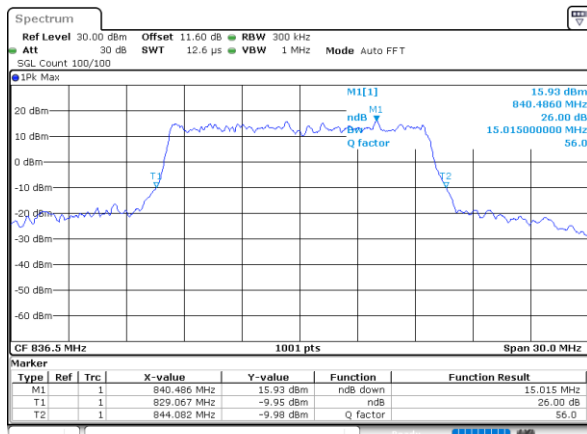
Date: 26.JUL.2021 16:03:06

Middle Channel / 10MHz / 16QAM



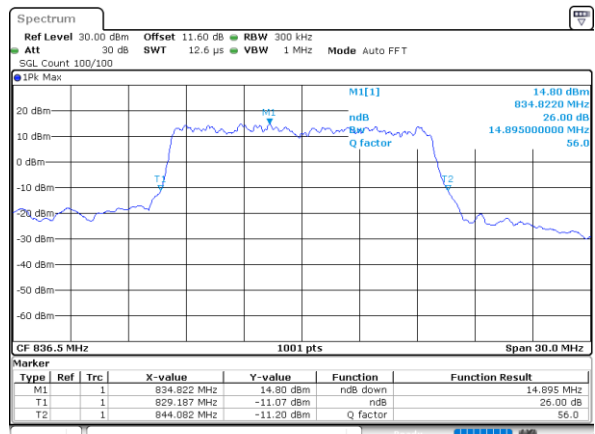
Date: 26.JUL.2021 16:02:44

Middle Channel / 15MHz / QPSK



Date: 26.JUL.2021 16:42:11

Middle Channel / 15MHz / 16QAM

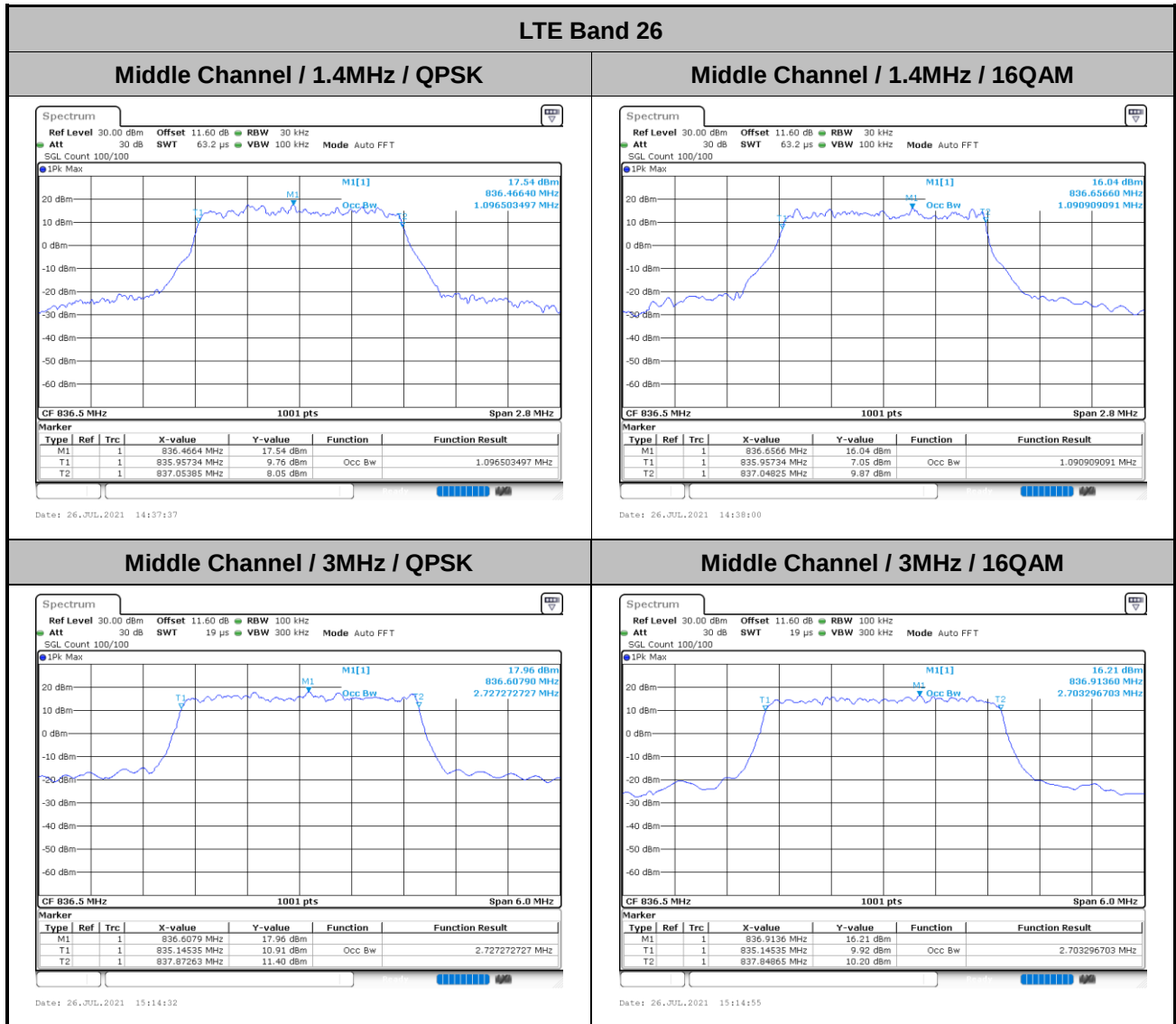


Date: 26.JUL.2021 16:41:50



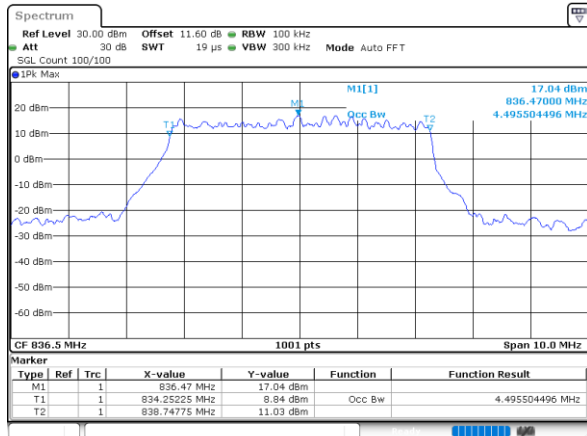
Occupied Bandwidth

Mode	LTE Band 26 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	1.10	1.09	2.73	2.70	4.50	4.48	9.05	9.01	13.46	13.43	-	-



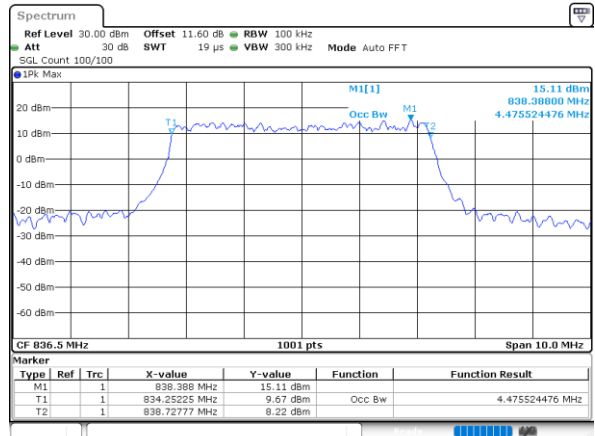


Middle Channel / 5MHz / QPSK



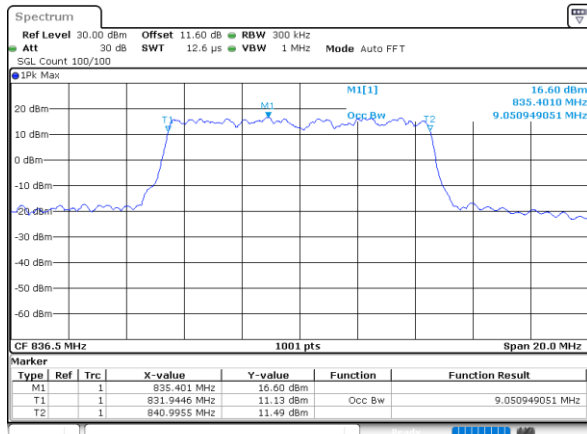
Date: 26.JUL.2021 15:34:03

Middle Channel / 5MHz / 16QAM



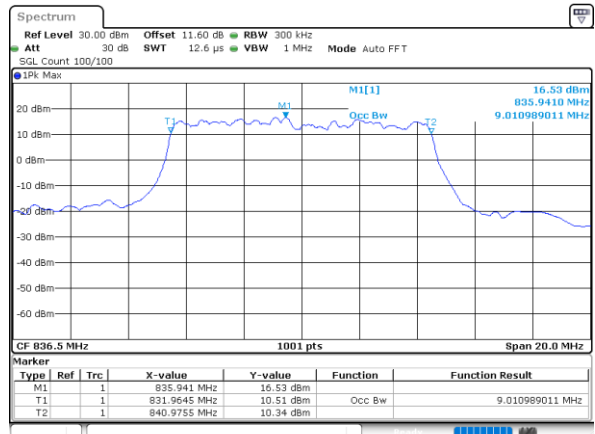
Date: 26.JUL.2021 15:34:27

Middle Channel / 10MHz / QPSK



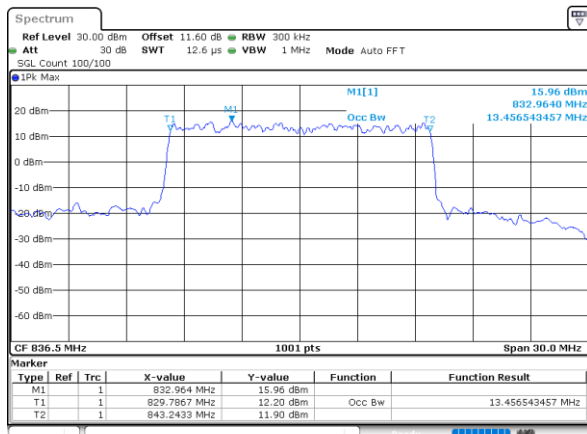
Date: 26.JUL.2021 16:01:58

Middle Channel / 10MHz / 16QAM



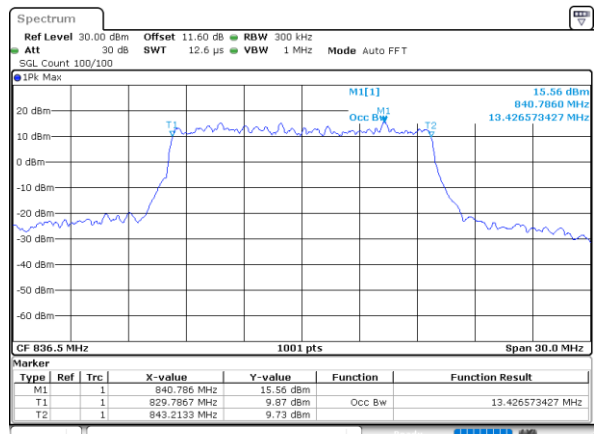
Date: 26.JUL.2021 16:02:21

Middle Channel / 15MHz / QPSK



Date: 26.JUL.2021 16:41:03

Middle Channel / 15MHz / 16QAM



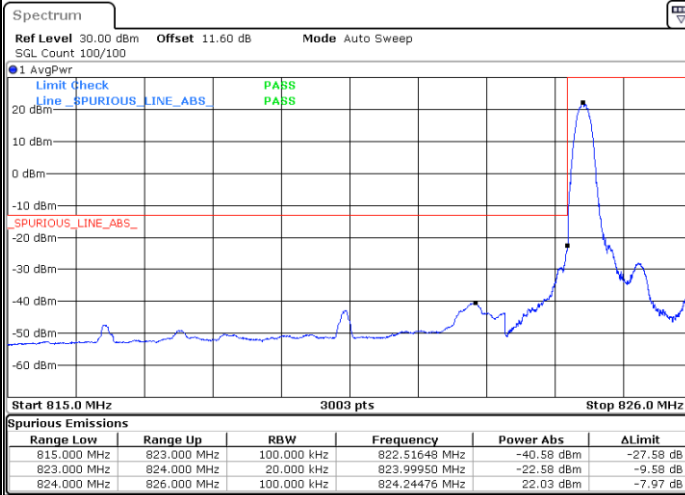
Date: 26.JUL.2021 16:41:27



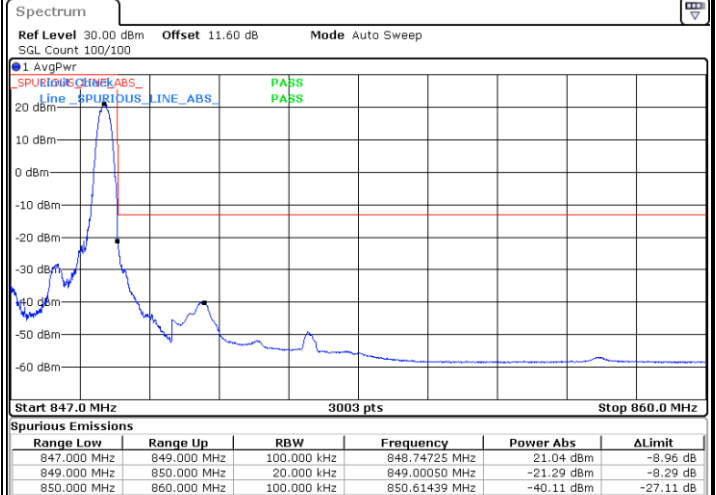
Conducted Band Edge

LTE Band 26 / 1.4MHz / QPSK

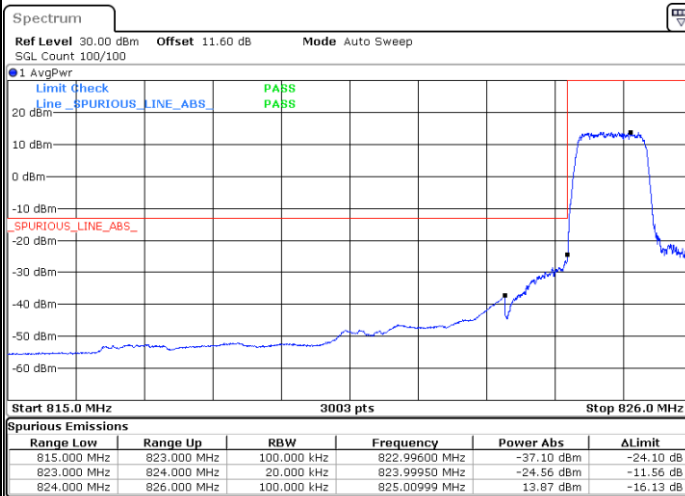
Lowest Band Edge / 1RB



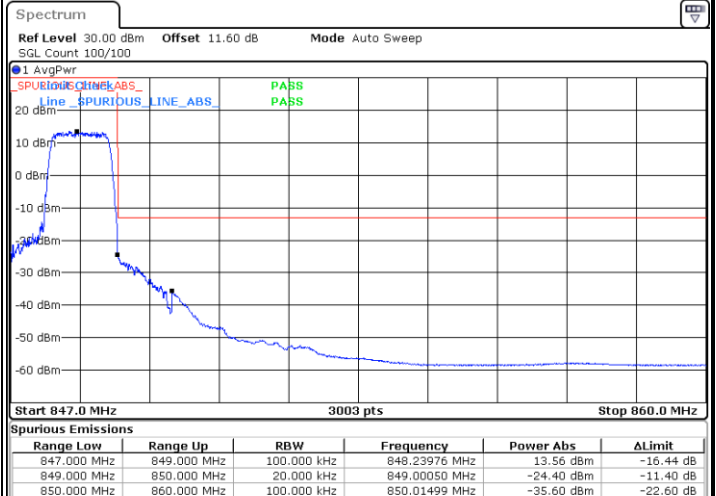
Highest Band Edge / 1RB



Lowest Band Edge / Full RB



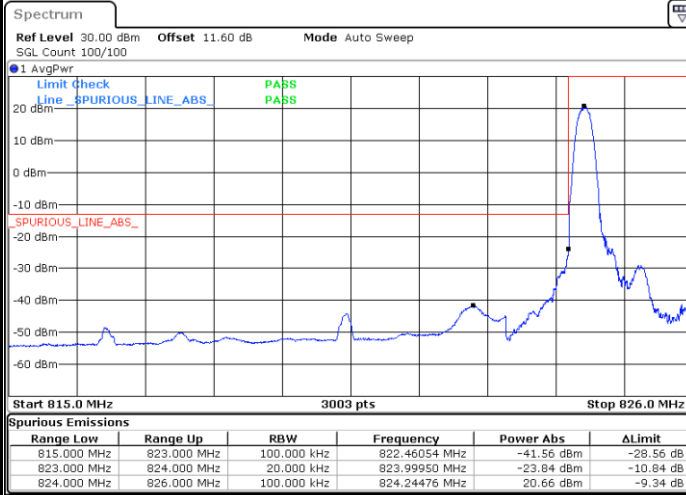
Highest Band Edge / Full RB



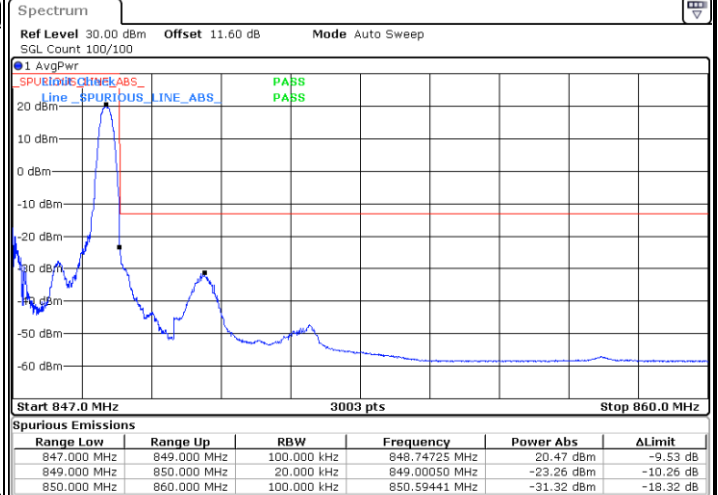


LTE Band 26 / 1.4MHz / 16QAM

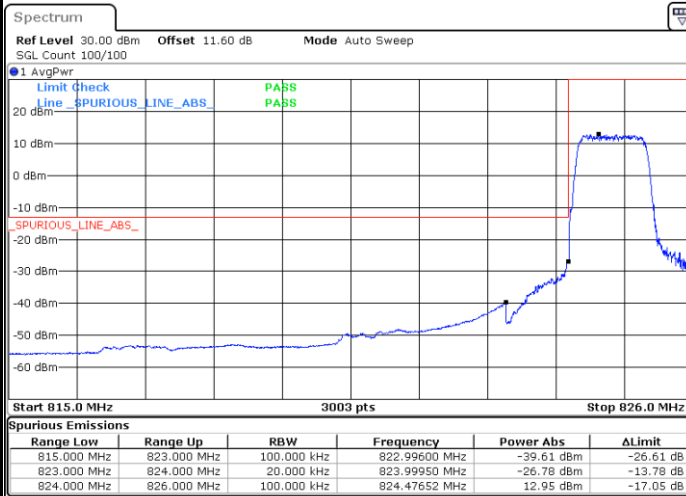
Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB



Lowest Band Edge / Full RB



Highest Band Edge / Full RB

