



FCC RADIO TEST REPORT

FCC ID : PKRISGM2000B
Equipment : Wireless Hotspot Modem
Brand Name : Inseego
Model Name : M2000B
 : M2000E
Marketing Name : M2000
Applicant : Inseego Corporation
 : 9710 Scranton Road Suite 200, San Diego, CA 92121
Manufacturer : Inseego Corporation
 : 9710 Scranton Road Suite 200, San Diego, CA 92121
Standard : FCC 47 CFR Part 2, 22(H), 24(E), 27

The product was received on Feb. 02, 2021 and testing was started from Feb. 12, 2021 and completed on Mar. 31, 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 variant report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

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



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History of this test report

Report No.	Version	Description	Issued Date
FG041658-02A	01	Initial issue of report	Apr. 21, 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 (b)(10) §27.50 (c)(10)	Effective Radiated Power (Band 12) (Band 13) (Band 17) (Band 71)		
	§24.232 (c)	Equivalent Isotropic Radiated Power (Band 2) (Band 25)		
	§27.50 (h)(2)	Equivalent Isotropic Radiated Power (Band 7) (Band 38) (Band 41)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)		
3.3	§24.232 (d) §27.50 (d)(5)	Peak-to-Average Ratio	Pass	-
3.4	§2.1049	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2)(4) §27.53 (g) §27.53 (h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	Pass	-
	§2.1051 §27.53 (m)(4)	Conducted Band Edge Measurement (Band 7) (Band 38) (Band 41)		
3.6	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (g) §27.53 (h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	Pass	-
	§2.1051 §27.53 (m)(4)	Conducted Spurious Emission (Band 7) (Band 38) (Band 41)		
-	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	Not Required	-



Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
4.2	§2.1053 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (f) §27.53 (g) §27.53 (h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	Pass	Under limit 17.86 dB at 10136.000 MHz
	§2.1051 §27.53 (m)(4)	Radiated Spurious Emission (Band 7) (Band 38) (Band 41)		

Remark:

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report by changing WWAN function by software. All the test cases were performed on original report which can be referred to Sporton Report Number FG041658-01B.

Declaration of Conformity:

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

Comments and Explanations:

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

Reviewed by: Wii Chang

Report Producer: Yimin Ho



1 General Description

1.1 Product Feature of Equipment Under Test

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

Product Specification subjective to this standard	
Tx Frequency	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7MHz ~ 1914.3 MHz LTE Band 26: 824.7MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz LTE Band 71: 665.5 MHz ~ 695.5 MHz
Rx Frequency	LTE Band 2: 1930.7 MHz ~ 1989.3 MHz LTE Band 4: 2110.7 MHz ~ 2154.3 MHz LTE Band 5: 869.7 MHz ~ 893.3 MHz LTE Band 7: 2622.5MHz ~ 2687.5 MHz LTE Band 12: 729.7 MHz ~ 745.3 MHz LTE Band 13: 748.5 MHz ~ 753.5 MHz LTE Band 17: 736.5 MHz ~ 743.5 MHz LTE Band 25: 1930.7MHz ~ 1994.3 MHz LTE Band 26: 869.7MHz ~ 893.3MHz LTE Band 38: 2572.5MHz ~ 2617.5MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 2110.7 MHz ~ 2179.3 MHz LTE Band 71: 619.5 MHz ~ 649.5 MHz
Bandwidth	LTE Band 2: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5: 1.4MHz / 3MHz / 5MHz / 10MHz 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 25: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 26: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz LTE Band 38: 5MHz / 10MHz / 15MHz / 20MHz LTE Band 41: 5MHz / 10MHz / 15MHz / 20MHz LTE Band 66: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 71: 5MHz / 10MHz / 15MHz / 20MHz
Antenna Type	Fixed Internal Antenna
Type of Modulation	QPSK / 16QAM / 64QAM / 256QAM



Product Specification subjective to this standard	
Antenna Gain	<p><Ant. 0> <Main Antenna> LTE Band 2: 3.6 dBi LTE Band 4: 3.3 dBi LTE Band 5: 0.2 dBi LTE Band 7: 2.9 dBi LTE Band 12: 0.2 dBi LTE Band 13: 0.2 dBi LTE Band 17: 0.2 dBi LTE Band 25: 3.6 dBi LTE Band 26: 0.1 dBi LTE Band 38: 2.3 dBi LTE Band 41: 2.9 dB LTE Band 66: 3.3 dBi LTE Band 71: 0.0 dBi <Aux. Antenna> LTE Band 2: 3.5 dBi LTE Band 4: 3.6 dBi LTE Band 5: 0.5 dBi LTE Band 7: 0.8 dBi LTE Band 12: 0.4 dBi LTE Band 13: 0.5 dBi LTE Band 17: 0.4 dBi LTE Band 25: 3.5 dBi LTE Band 26: 0.5 dBi LTE Band 66: 3.6 dBi LTE Band 71: 0.6 dBi <Ant. 8> <Main Antenna> LTE Band 2: 0.8 dBi LTE Band 7: 0.8 dBi LTE Band 25: 0.9 dBi LTE Band 41: 0.6 dB LTE Band 66: 0.1 dBi <Aux. Antenna> LTE Band 2: 1.4 dBi LTE Band 7: 0.6 dBi LTE Band 25: 1.4 dBi LTE Band 66: 1.9 dBi</p>

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

1.2 Modification of EUT

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



1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. TH05-HY
Test Engineer	Benjamin Lin
Temperature	22.2~24.9°C
Relative Humidity	48.4~53.1%

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. 03CH12-HY (TAF Code: 3786)
Test Engineer	Jack Cheng, Lance Chiang, Chuan Chu
Temperature	21.3~24.5°C
Relative Humidity	54~65%
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

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

FCC Designation No.: TW1190 and TW0007

1.4 Applicable Standards

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

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 22(H), 24(E), 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. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

2.1 Test Mode

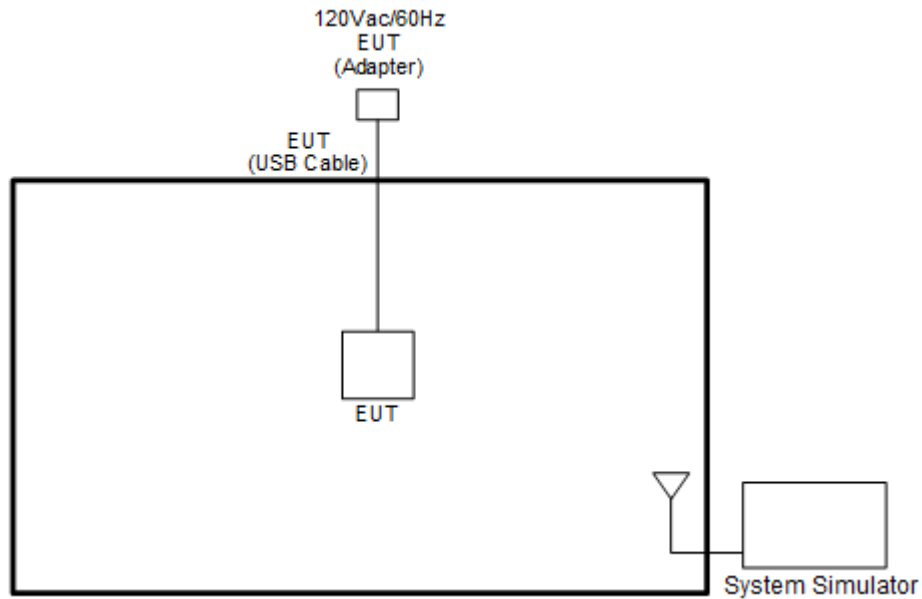
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane for LTE Band 7C, 5A+7A, 2A+5A, 2A+7A, 4A+7A and Z plane for LTE Band 38C, 5A+66A, 4A+5A) were recorded in this report.

Test Items	Band	Bandwidth (MHz)										Modulation			RB #			Test Channel		
		20+20	20+15	15+20	20+10	10+20	20+5	5+20	15+15	15+10	10+15	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	7_CA	v	v	v	v	v	-	-	v	v	-	v	v	v	v	v	v	v	v	v
	38_CA	v	-	-	-	-	-	-	v	-	-	v	v	v	v	v	v	v	v	v
26dB and 99% Bandwidth	7_CA	v	v	v	v	v	-	-	v	v	-	v	v	v			v		v	
	38_CA	v	-	-	-	-	-	-	v	-	-	v	v	v			v		v	
Conducted Band Edge	7_CA	v	v	v	v	v	-	-	v	v	-	v	v	v	v		v	v		v
	38_CA	v	-	-	-	-	-	-	v	-	-	v	v	v	v		v	v		v
Conducted Spurious Emission	7_CA	v	v	v	v	v	-	-	v	v	-	v			v		v	v	v	v
	38_CA	v	-	-	-	-	-	-	v	-	-	v			v		v	v	v	v
E.I.R.P.	7_CA	v	v	v	v	v	-	-	v	v	-	v	v	v	Max. Power					
	38_CA	v	-	-	-	-	-	-	v	-	-	v	v	v	Max. Power					
Radiated Spurious Emission	7_CA	Worst Case																v	v	v
	38_CA	Worst Case																v	v	v
Remark	<ol style="list-style-type: none"> The mark "v" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. 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. All the radiated test cases were performed with Battery 2. 																			

Test Items	Band	Bandwidth (MHz)			Modulation			RB #			Test Channel		
		10+20	20+10	20+20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	CA_2A-5A		v		v			v				v	
	CA_2A-7A			v	v			v				v	
	CA_4A-5A		v		v			v				v	
	CA_4A-7A			v	v			v				v	
	CA_5A-7A	v			v			v				v	
	CA_5A-66A	v			v			v				v	
Remark	1. The mark "v" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. All the radiated test cases were performed with Battery 2.												

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m



2.4 Measurement Results Explanation Example

For all conducted test items:

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

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 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 2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 4 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3



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 66 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	132072	132322	132572
	Frequency	1720	1745	1770
15	Channel	132047	132322	132597
	Frequency	1717.5	1745	1772.5
10	Channel	132022	132322	132622
	Frequency	1715	1745	1775
5	Channel	131997	132322	132647
	Frequency	1712.5	1745	1777.5
3	Channel	131987	132322	132657
	Frequency	1711.5	1745	1778.5
1.4	Channel	131979	132322	132665
	Frequency	1710.7	1745	1779.3



LTE Band 7 Channel and Frequency List_CA					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	20850	21001	21152
		Frequency	2510.0	2525.1	2540.2
	SCC	Channel	21048	21199	21350
		Frequency	2529.8	2544.9	2560.0
20 + 15	PCC	Channel	20850	21026	21201
		Frequency	2510.0	2527.6	2545.1
	SCC	Channel	21021	21197	21372
		Frequency	2527.1	2544.7	2562.2
15 + 20	PCC	Channel	20828	21003	21179
		Frequency	2507.8	2525.3	2542.9
	SCC	Channel	20999	21174	21350
		Frequency	2524.9	2542.4	2560.0
20 + 10	PCC	Channel	20850	21051	21251
		Frequency	2510.0	2530.1	2550.1
	SCC	Channel	20994	21195	21395
		Frequency	2524.4	2544.5	2564.5
10 + 20	PCC	Channel	20805	21006	21206
		Frequency	2505.5	2525.6	2545.6
	SCC	Channel	20949	21150	21350
		Frequency	2519.9	2540.0	2560.0
15 + 15	PCC	Channel	20825	21025	21225
		Frequency	2507.5	2527.5	2547.5
	SCC	Channel	20975	21175	21375
		Frequency	2522.5	2542.5	2562.5
15 + 10	PCC	Channel	20825	21051	21277
		Frequency	2507.5	2530.1	2552.7
	SCC	Channel	20945	21171	21397
		Frequency	2519.5	2542.1	2564.7



LTE Band 38 Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	37850	37901	37952
		Frequency	2580.0	2585.1	2590.2
	SCC	Channel	38048	38099	38150
		Frequency	2599.8	2604.9	2610.0
15+ 15	PCC	Channel	37825	37925	38025
		Frequency	2577.5	2587.5	2597.5
	SCC	Channel	37975	38075	38175
		Frequency	2592.5	2602.5	2612.5

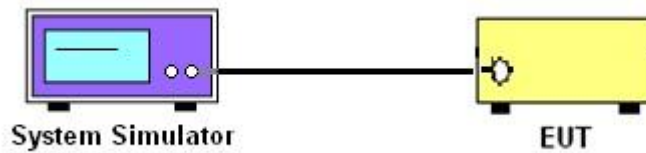
3 Conducted Test Items

3.1 Measuring Instruments

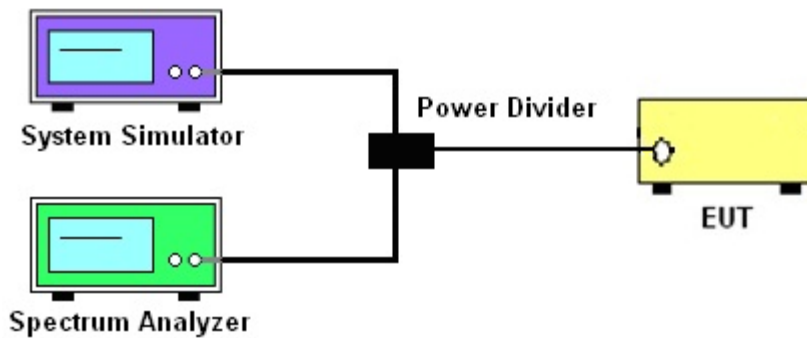
See list of measuring instruments of this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



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



3.1.4 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 EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 7 and Band 38

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.2.2 Test Procedures

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



3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

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

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

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



3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

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

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

3.4.2 Test Procedures

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

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



3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

27.53(m)(4)

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

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW \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 $43 + 10\log(P)$ dB below the transmitter power P(Watts)

For LTE Band 7, 38

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, 38

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, 38
The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)

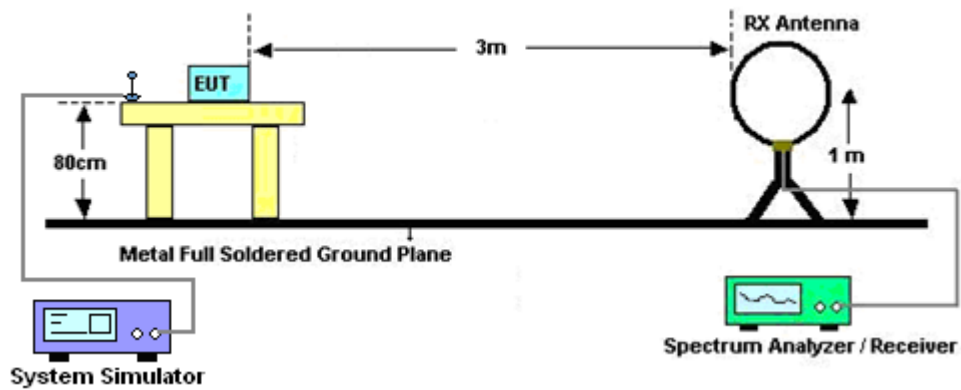
4 Radiated Test Items

4.1 Measuring Instruments

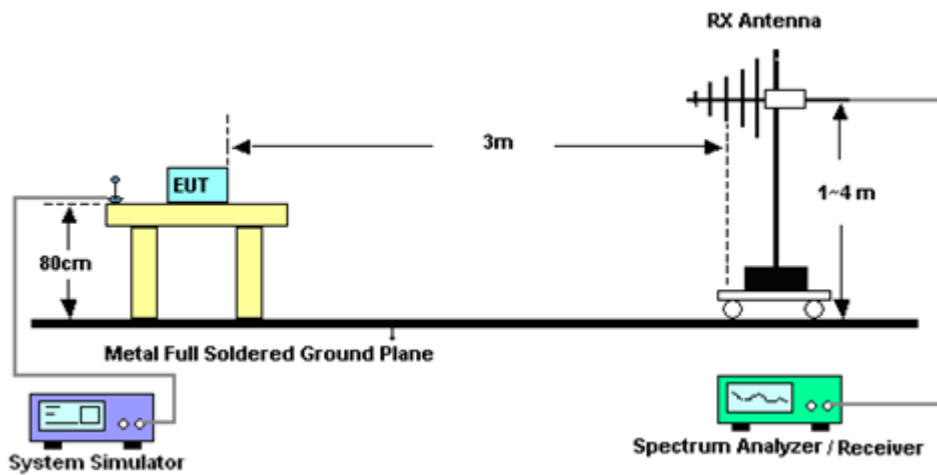
See list of measuring instruments of this test report.

4.1.1 Test Setup

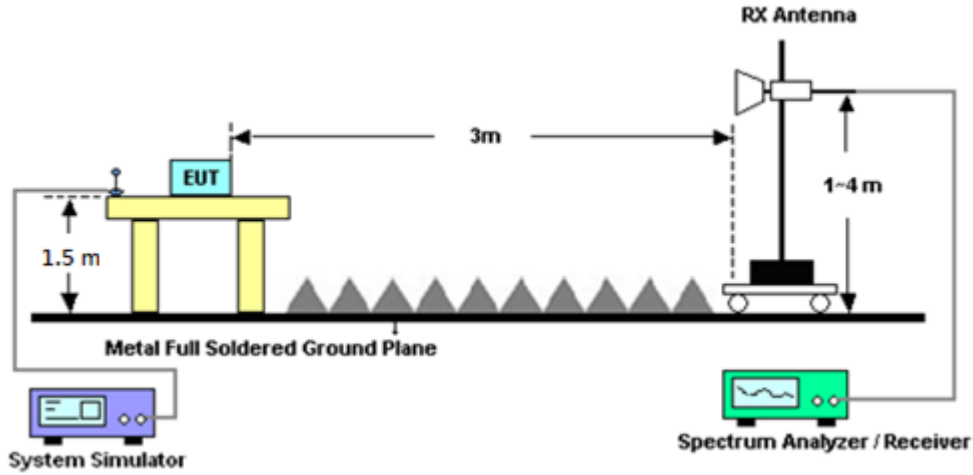
For radiated test below 30MHz



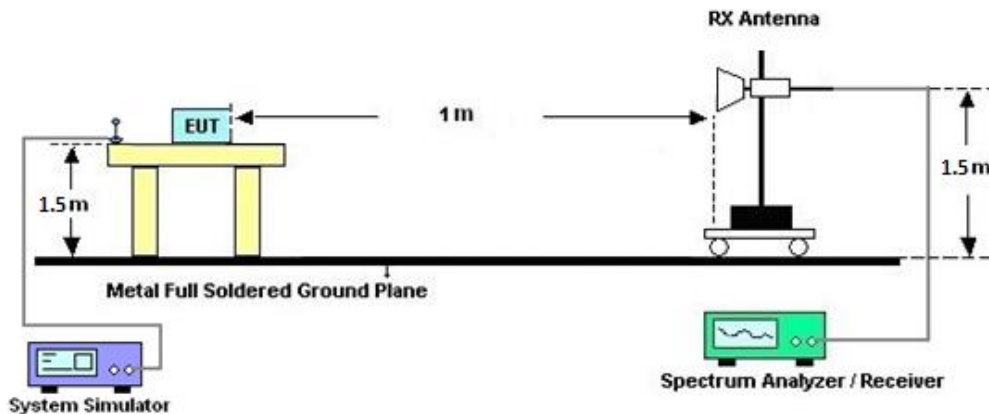
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



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 a comparison data 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, 38

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, 38

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

EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

ERP (dBm) = EIRP - 2.15



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Feb. 12, 2021~ Mar. 27, 2021	Jan. 03, 2022	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	40103 & 07	30MHz~1GHz	Apr. 29, 2020	Feb. 12, 2021~ Mar. 27, 2021	Apr. 28, 2021	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1328	1GHz~18GHz	Nov. 23, 2020	Feb. 12, 2021~ Mar. 27, 2021	Nov. 22, 2021	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1212	1GHz~18GHz	May 20, 2020	Feb. 12, 2021~ Mar. 27, 2021	May 19, 2021	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	00993	18GHz~40GHz	Dec. 19, 2020	Feb. 12, 2021~ Mar. 27, 2021	Dec. 18, 2021	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917057 6	18GHz~40GHz	May 22, 2020	Feb. 12, 2021~ Mar. 27, 2021	May 21, 2021	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 25, 2020	Feb. 12, 2021~ Mar. 23, 2021	Mar. 24, 2021	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 24, 2021	Mar. 24, 2021~ Mar. 27, 2021	Mar. 23, 2022	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY57280120	1GHz~26.5GHz	Jul. 20, 2020	Feb. 12, 2021~ Mar. 27, 2021	Jul. 19, 2021	Radiation (03CH12-HY)
Preamplifier	E-INSTRUME NT TECH LTD.	ERA-100M-18 G-56-01-A70	EC1900249	1GHz-18GHz	Dec. 05, 2020	Feb. 12, 2021~ Mar. 27, 2021	Dec. 04, 2021	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 11, 2020	Feb. 12, 2021~ Mar. 27, 2021	Dec. 10, 2021	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Jan. 15, 2021	Feb. 12, 2021~ Mar. 27, 2021	Jan. 14, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 12, 2020	Feb. 12, 2021~ Mar. 10, 2021	Mar. 11, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 11, 2021	Mar. 11, 2021~ Mar. 27, 2021	Mar. 10, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 11, 2020	Feb. 12, 2021~ Mar. 27, 2021	Dec. 10, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 25, 2020	Feb. 12, 2021~ Feb. 23, 2021	Feb. 24, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 22, 2021	Feb. 24, 2021~ Mar. 27, 2021	Feb. 21, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 25, 2020	Feb. 12, 2021~ Feb. 23, 2021	Feb. 24, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 22, 2021	Feb. 24, 2021~ Mar. 27, 2021	Feb. 21, 2022	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Feb. 12, 2021~ Mar. 27, 2021	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Feb. 12, 2021~ Mar. 27, 2021	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Feb. 12, 2021~ Mar. 27, 2021	N/A	Radiation (03CH12-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Filter	Wainwright	WLKS1200-12 SS	SN2	1.2GHz Low Pass Filter	Mar. 21, 2020	Feb. 12, 2021~ Mar. 19, 2021	Mar. 20, 2021	Radiation (03CH12-HY)
Filter	Wainwright	WLKS1200-12 SS	SN2	1.2GHz Low Pass Filter	Mar. 17, 2021	Mar. 20, 2021~ Mar. 27, 2021	Mar. 16, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 0ST	SN2	3GHz High Pass Filter	Jul. 14, 2020	Feb. 12, 2021~ Mar. 27, 2021	Jul. 13, 2021	Radiation (03CH12-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000- 40ST	SN2	6.75GHz High Pass Filter	Mar. 18, 2020	Feb. 12, 2021~ Mar. 16, 2021	Mar. 17, 2021	Radiation (03CH12-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000- 40ST	SN2	6.75GHz High Pass Filter	Mar. 17, 2021	Mar. 17, 2021~ Mar. 27, 2021	Mar. 16, 2022	Radiation (03CH12-HY)
Base Station (Measure)	Anritsu	MT8821C	6262025341	GSM / GPRS /WCDMA / LTE FDD/TDD with 44) /LTE-3CC DLCA,2CC ULCA	Oct. 06, 2020	Feb. 14, 2021~ Mar. 31, 2021	Oct. 05, 2021	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101908	10Hz~40GHz	May 13, 2020	Feb. 14, 2021~ Mar. 31, 2021	May 12, 2021	Conducted (TH05-HY)
Thermal Chamber	ESPEC	SU-241	92003713	-40°C~90°C	May 15, 2020	Feb. 14, 2021~ Mar. 31, 2021	May 14, 2021	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	GPP-2323	GES906037	0V~64V ; 0A~6A	Dec. 15, 2020	Feb. 14, 2021~ Mar. 31, 2021	Dec. 14, 2021	Conducted (TH05-HY)
Coupler	Warison	20dB 25W SMA Directional Coupler	#A	1-18GHz	Jan. 12, 2021	Feb. 14, 2021~ Mar. 31, 2021	Jan. 11, 2022	Conducted (TH05-HY)



6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.07
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.21
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.80
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Appendix A. Test Results of Conducted Test

Conducted Output Power (Average power & EIRP)

LTE Band 7C_CA Maximum Average Power [dBm] (GT - LC = 2.9 dB)										
BW [MHz]	PCC		SCC		Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
	RB Size	RB Offset	RB Size	RB Offset						
20+20	100	0	100	0	QPSK	19.41	19.51	19.43	24.36	0.2729
20+20	1	0	1	99		12.99	12.95	13.10		
20+20	1	99	1	0		21.26	21.46	21.21		
20+20	100	0	100	0	16-QAM	18.50	18.54	18.49	23.77	0.2382
20+20	1	0	1	99		13.53	13.52	13.62		
20+20	1	99	1	0		20.87	20.80	20.67		
20+20	100	0	100	0	64-QAM	18.22	18.49	18.07	22.47	0.1766
20+20	1	0	1	99		13.31	13.35	13.39		
20+20	1	99	1	0		19.57	18.97	17.90		
20+15	100	0	75	0	QPSK	19.45	19.48	19.43	24.30	0.2692
20+15	1	0	1	74		12.99	13.04	13.03		
20+15	1	99	1	0		21.40	21.31	21.21		
20+15	100	0	75	0	16-QAM	18.47	18.47	18.42	23.71	0.2350
20+15	1	0	1	74		13.57	13.61	13.59		
20+15	1	99	1	0		20.72	20.81	20.61		
20+15	100	0	75	0	64-QAM	18.57	18.38	17.57	22.53	0.1791
20+15	1	0	1	74		13.31	13.31	13.34		
20+15	1	99	1	0		19.63	18.72	18.39		
15+20	75	0	100	0	QPSK	19.50	19.44	19.51	24.24	0.2655
15+20	1	0	1	99		13.00	12.91	13.07		
15+20	1	74	1	0		21.34	21.33	21.25		
15+20	75	0	100	0	16-QAM	18.55	18.49	18.50	23.61	0.2296
15+20	1	0	1	99		13.48	13.61	13.61		
15+20	1	74	1	0		20.67	20.69	20.71		
15+20	75	0	100	0	64-QAM	18.30	18.48	17.97	22.13	0.1633
15+20	1	0	1	99		13.28	13.23	13.37		
15+20	1	74	1	0		19.21	19.23	18.94		
Limit	EIRP < 2W					Result			Pass	



LTE Band 7C_CA Maximum Average Power [dBm] (GT - LC = 2.9 dB)										
BW [MHz]	PCC		SCC		Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
	RB Size	RB Offset	RB Size	RB Offset						
20+10	100	0	75	0	QPSK	19.27	19.44	19.17	22.34	0.1714
20+10	1	0	1	74		12.87	13.01	12.81		
20+10	1	99	1	0		14.75	15.55	15.79		
20+10	100	0	75	0	16-QAM	18.32	18.49	18.17	21.39	0.1377
20+10	1	0	1	74		13.30	13.53	13.29		
20+10	1	99	1	0		14.12	15.04	15.32		
20+10	100	0	75	0	64-QAM	17.33	18.00	17.10	20.90	0.1230
20+10	1	0	1	74		13.20	13.27	13.12		
20+10	1	99	1	0		10.49	10.96	11.51		
10+20	75	0	100	0	QPSK	19.39	19.48	19.40	24.19	0.2624
10+20	1	0	1	99		12.98	13.00	12.91		
10+20	1	74	1	0		21.28	21.29	21.18		
10+20	75	0	100	0	16-QAM	18.43	18.53	18.43	23.74	0.2366
10+20	1	0	1	99		13.46	13.68	13.37		
10+20	1	74	1	0		20.71	20.84	20.69		
10+20	75	0	100	0	64-QAM	17.85	18.50	18.33	22.33	0.1710
10+20	1	0	1	99		13.24	13.34	13.21		
10+20	1	74	1	0		18.45	19.43	18.84		
15+15	75	0	100	0	QPSK	19.50	19.48	19.37	24.26	0.2667
15+15	1	0	1	99		13.00	12.91	12.89		
15+15	1	74	1	0		21.36	21.31	21.24		
15+15	75	0	100	0	16-QAM	18.51	18.51	18.41	23.73	0.2360
15+15	1	0	1	99		13.53	13.53	13.50		
15+15	1	74	1	0		20.76	20.83	20.62		
15+15	75	0	100	0	64-QAM	18.31	18.48	18.07	21.88	0.1542
15+15	1	0	1	99		13.34	13.36	13.26		
15+15	1	74	1	0		18.98	18.92	17.95		
Limit	EIRP < 2W					Result			Pass	



LTE Band 7C_CA Maximum Average Power [dBm] (GT - LC = 2.9 dB)										
BW [MHz]	PCC		SCC		Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
	RB Size	RB Offset	RB Size	RB Offset						
15+10	75	0	100	0	QPSK	19.42	19.52	19.31	24.26	0.2667
15+10	1	0	1	99		12.99	13.07	12.88		
15+10	1	74	1	0		21.27	21.36	21.08		
15+10	75	0	100	0	16-QAM	18.45	18.52	18.34	23.82	0.2410
15+10	1	0	1	99		13.45	13.60	13.42		
15+10	1	74	1	0		20.80	20.92	20.66		
15+10	75	0	100	0	64-QAM	17.60	18.57	17.34	21.69	0.1476
15+10	1	0	1	99		13.32	13.32	13.27		
15+10	1	74	1	0		18.24	18.79	18.36		
Limit	EIRP < 2W					Result			Pass	



LTE Band 38C_CA Maximum Average Power [dBm] (GT - LC = 2.3 dB)										
BW [MHz]	PCC		SCC		Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP (W)
	RB Size	RB Offset	RB Size	RB Offset						
20+20	100	0	100	0	QPSK	17.74	17.64	17.63	24.88	0.3076
20+20	1	0	1	99		13.75	13.71	13.77		
20+20	1	99	1	0		20.40	21.98	20.68		
20+20	100	0	100	0	16-QAM	16.65	16.70	16.64	24.42	0.2767
20+20	1	0	1	99		14.20	14.27	14.32		
20+20	1	99	1	0		19.92	21.52	20.12		
20+20	100	0	100	0	64-QAM	15.60	15.61	15.65	23.20	0.2089
20+20	1	0	1	99		13.96	14.01	14.14		
20+20	1	99	1	0		16.58	20.30	16.69		
15+15	75	0	75	0	QPSK	17.56	17.75	20.19	24.87	0.3069
15+15	1	0	1	74		13.60	13.66	13.63		
15+15	1	74	1	0		21.89	21.92	21.97		
15+15	75	0	75	0	16-QAM	16.84	17.18	19.18	24.41	0.2761
15+15	1	0	1	74		14.18	14.23	14.12		
15+15	1	74	1	0		21.47	21.51	21.24		
15+15	75	0	75	0	64-QAM	15.44	16.11	19.21	23.13	0.2056
15+15	1	0	1	74		13.86	13.88	13.90		
15+15	1	74	1	0		20.13	20.23	20.23		
Limit	EIRP < 2W					Result			Pass	



LTE Band 7C

26dB Bandwidth

Mode	LTE Band 7C : 26dB BW(MHz)			
QPSK				
BW	10MHz+20MHz	15MHz+10MHz	15MHz+15MHz	15MHz+20MHz
Middle CH	29.73	25.13	30.57	34.69
BW	20MHz+10MHz	20MHz+15MHz	20MHz+20MHz	N/A
Middle CH	30.03	34.69	39.88	

Mode	LTE Band 7C : 26dB BW(MHz)			
16QAM				
BW	10MHz+20MHz	15MHz+10MHz	15MHz+15MHz	15MHz+20MHz
Middle CH	29.79	25.33	30.39	34.97
BW	20MHz+10MHz	20MHz+15MHz	20MHz+20MHz	N/A
Middle CH	29.91	34.83	39.72	

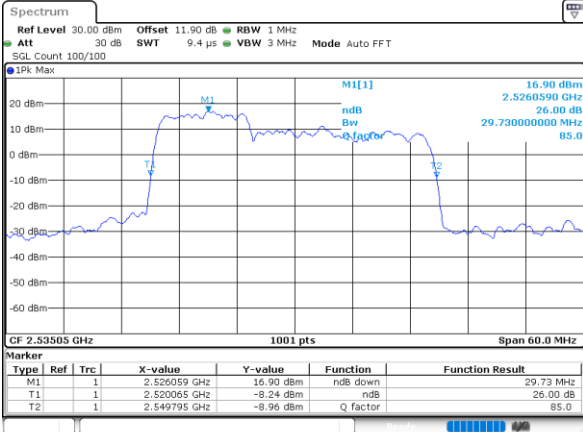
Mode	LTE Band 7C : 26dB BW(MHz)			
64QAM				
BW	10MHz+20MHz	15MHz+10MHz	15MHz+15MHz	15MHz+20MHz
Middle CH	29.79	25.13	30.45	34.76
BW	20MHz+10MHz	20MHz+15MHz	20MHz+20MHz	N/A
Middle CH	29.97	34.83	39.72	



LTE Band 7C

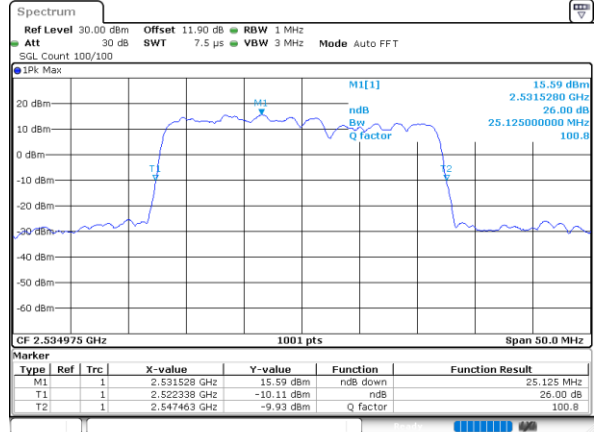
QPSK

Middle Channel / 10MHz+20MHz



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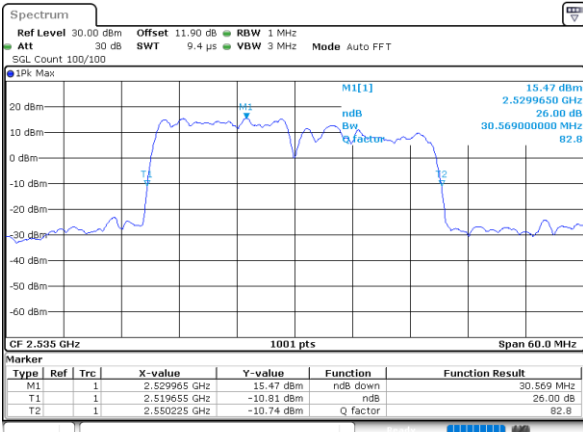
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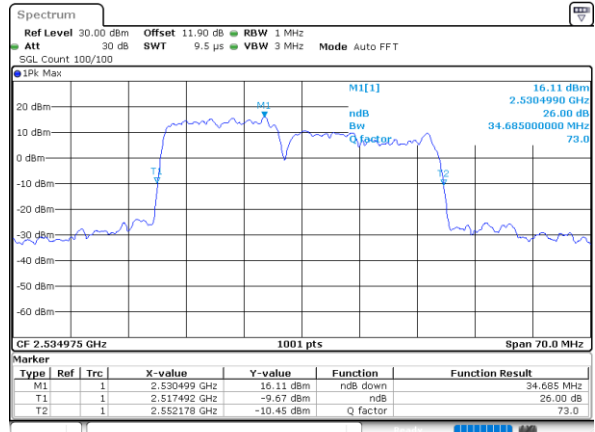
QPSK

Middle Channel / 15MHz+15MHz



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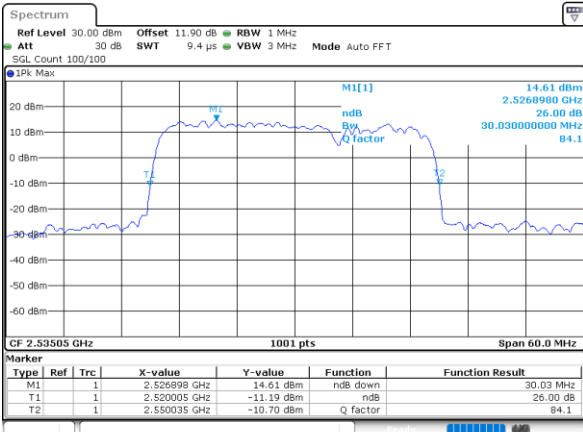
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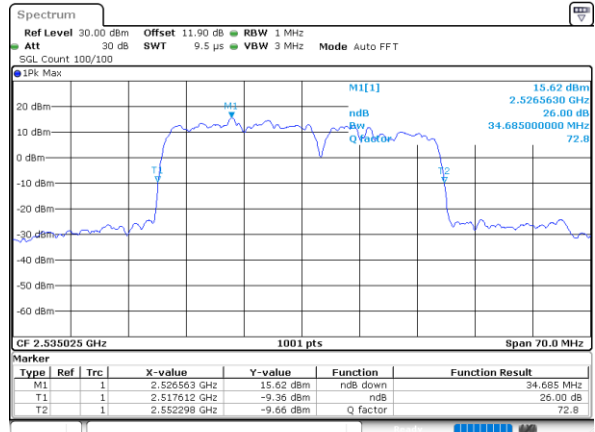
QPSK

Middle Channel / 20MHz+10MHz



Date: 24.FEB.2021 15:06:49

Middle Channel / 20MHz+15MHz



Date: 24.FEB.2021 15:39:57

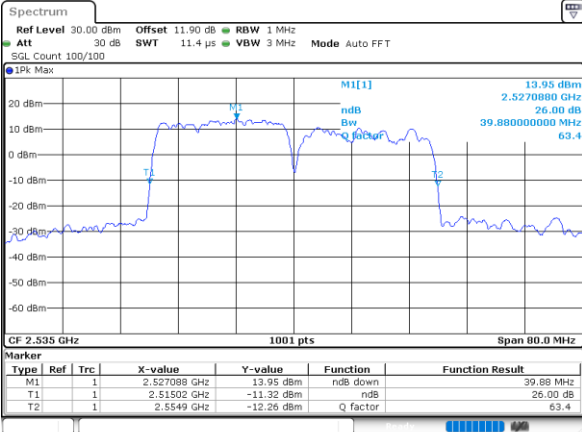


LTE Band 7C

QPSK

Middle Channel / 20MHz+20MHz

N/A



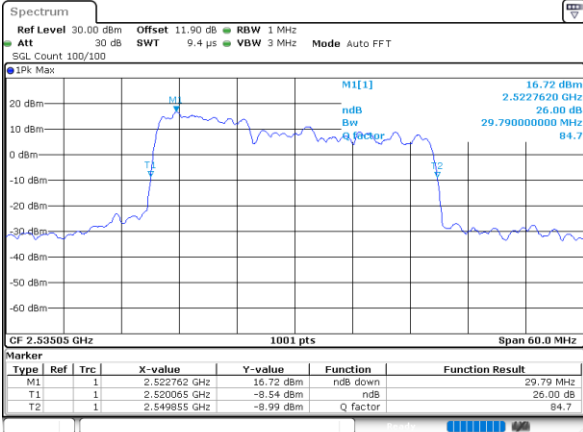
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LTE Band 7C

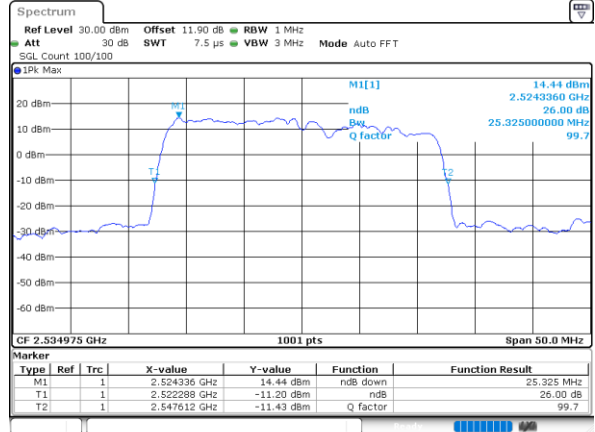
16QAM

Middle Channel / 10MHz+20MHz



Date: 24.FEB.2021 14:56:53

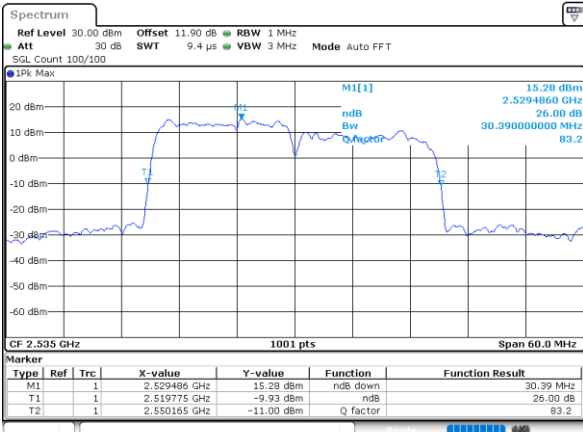
Middle Channel / 15MHz+10MHz



Date: 24.FEB.2021 16:01:18

16QAM

Middle Channel / 15MHz+15MHz



Date: 24.FEB.2021 15:19:14

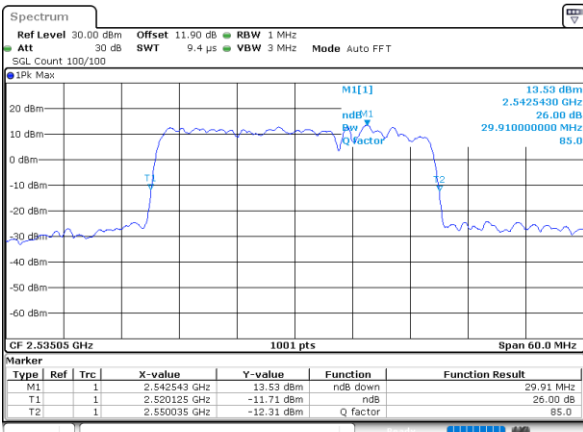
Middle Channel / 15MHz+20MHz



Date: 24.FEB.2021 15:28:37

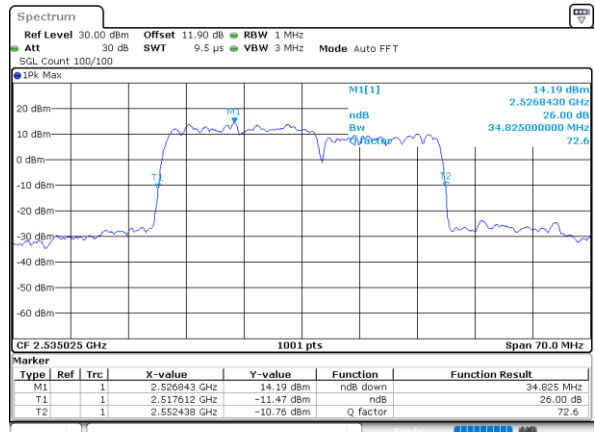
16QAM

Middle Channel / 20MHz+10MHz



Date: 24.FEB.2021 15:06:27

Middle Channel / 20MHz+15MHz



Date: 24.FEB.2021 15:39:34

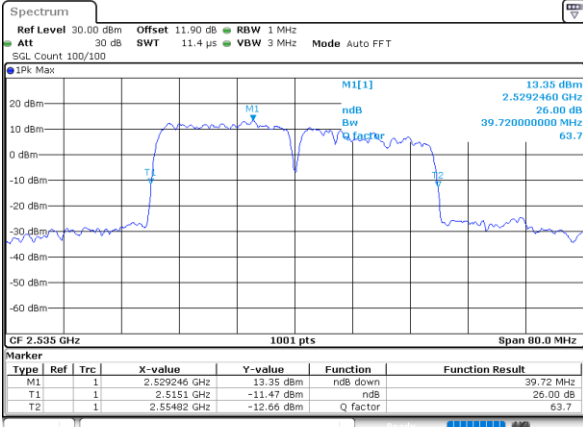


LTE Band 7C

16QAM

Middle Channel / 20MHz+20MHz

N/A



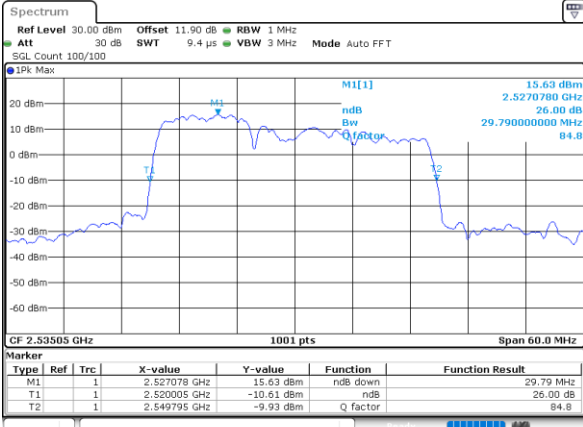
Date: 24.FEB.2021 15:50:16



LTE Band 7C

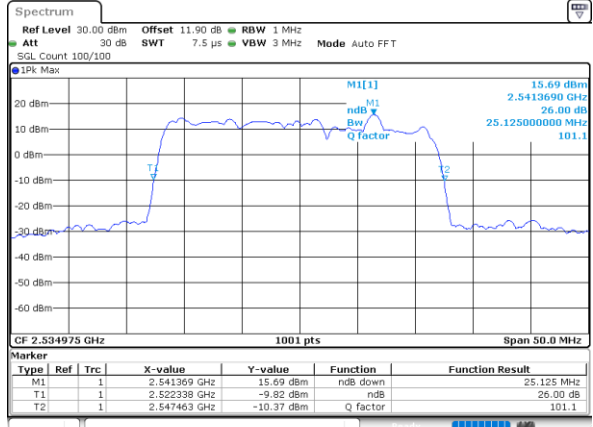
64QAM

Middle Channel / 10MHz+20MHz



Date: 24.FEB.2021 14:56:33

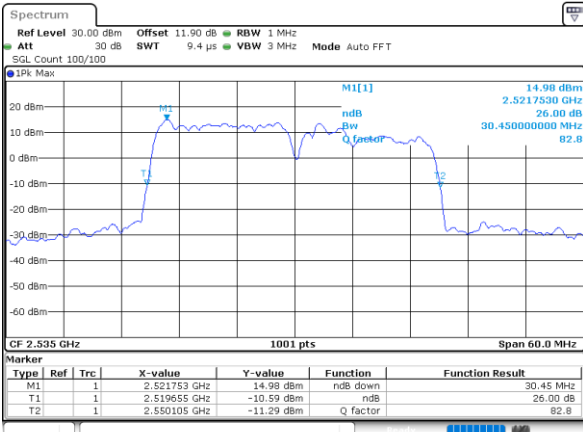
Middle Channel / 15MHz+10MHz



Date: 24.FEB.2021 16:00:55

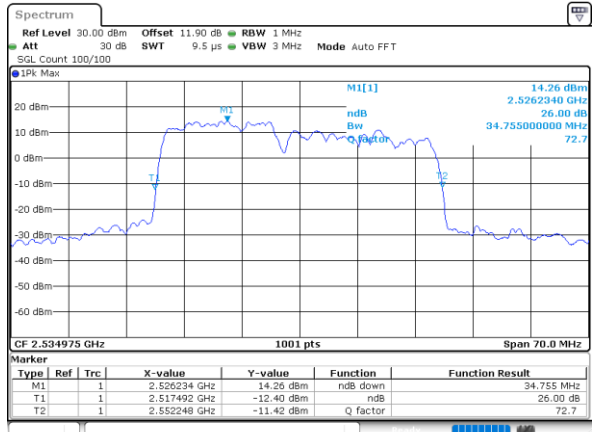
64QAM

Middle Channel / 15MHz+15MHz



Date: 24.FEB.2021 15:18:52

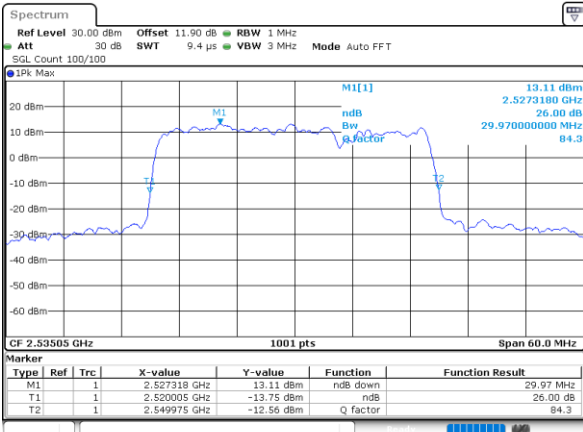
Middle Channel / 15MHz+20MHz



Date: 24.FEB.2021 15:28:14

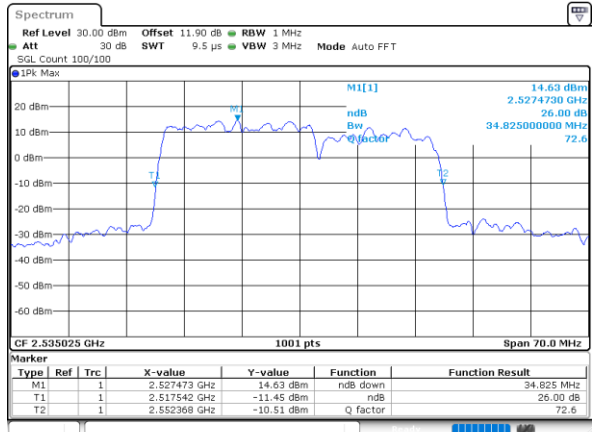
64QAM

Middle Channel / 20MHz+10MHz



Date: 24.FEB.2021 15:06:05

Middle Channel / 20MHz+15MHz



Date: 24.FEB.2021 15:39:12

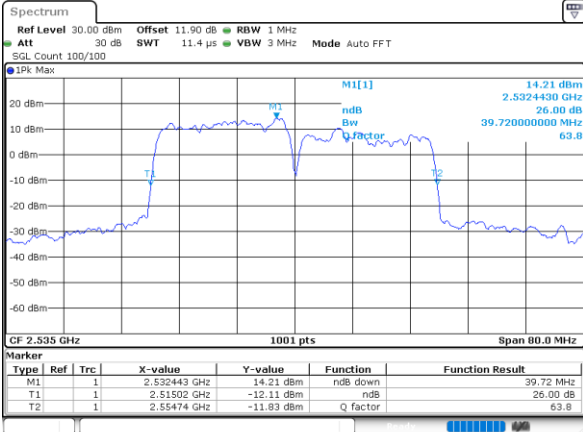


LTE Band 7C

64QAM

Middle Channel / 20MHz+20MHz

N/A



Date: 24, FEB, 2021 15:49:53



Occupied Bandwidth

Mode	LTE Band 7C : 99%OBW(MHz)			
QPSK				
BW	10MHz+20MHz	15MHz+10MHz	15MHz+15MHz	15MHz+20MHz
Middle CH	27.81	23.23	28.59	32.73
BW	20MHz+10MHz	20MHz+15MHz	20MHz+20MHz	
Middle CH	27.99	32.87	37.72	

Mode	LTE Band 7C : 99%OBW(MHz)			
16QAM				
BW	10MHz+20MHz	15MHz+10MHz	15MHz+15MHz	15MHz+20MHz
Middle CH	27.87	23.53	28.23	32.45
BW	20MHz+10MHz	20MHz+15MHz	20MHz+20MHz	
Middle CH	27.93	32.73	37.72	

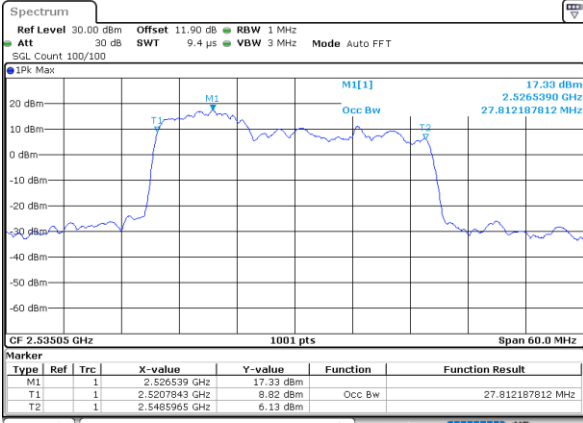
Mode	LTE Band 7C : 99%OBW(MHz)			
64QAM				
BW	10MHz+20MHz	15MHz+10MHz	15MHz+15MHz	15MHz+20MHz
Middle CH	27.51	23.18	28.41	32.87
BW	20MHz+10MHz	20MHz+15MHz	20MHz+20MHz	
Middle CH	27.81	32.52	37.64	



LTE Band 7C

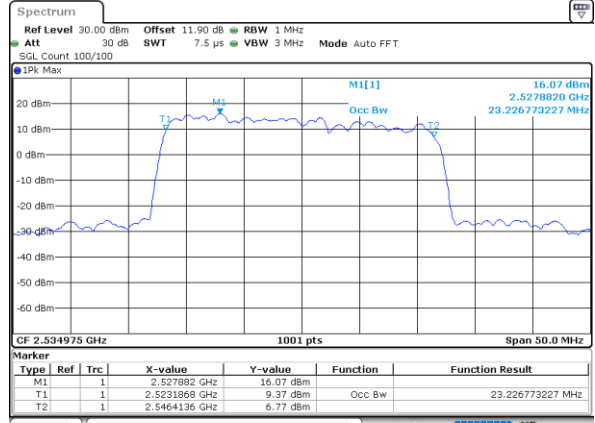
QPSK

Middle Channel / 10MHz+20MHz



Date: 24.FEB.2021 14:55:24

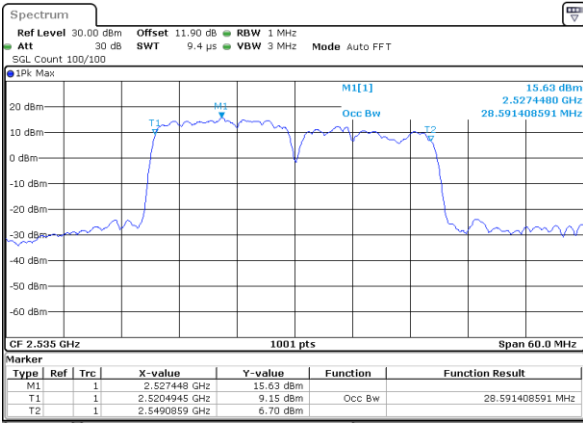
Middle Channel / 15MHz+10MHz



Date: 24.FEB.2021 15:59:49

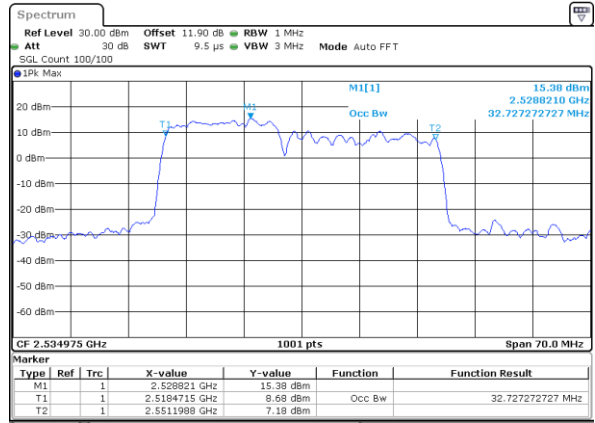
QPSK

Middle Channel / 15MHz+15MHz



Date: 24.FEB.2021 15:17:46

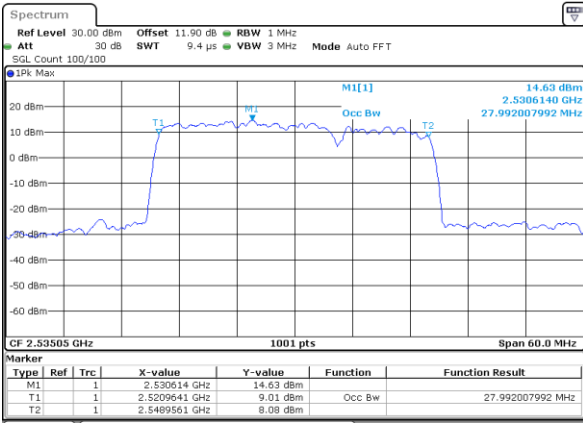
Middle Channel / 15MHz+20MHz



Date: 24.FEB.2021 15:27:08

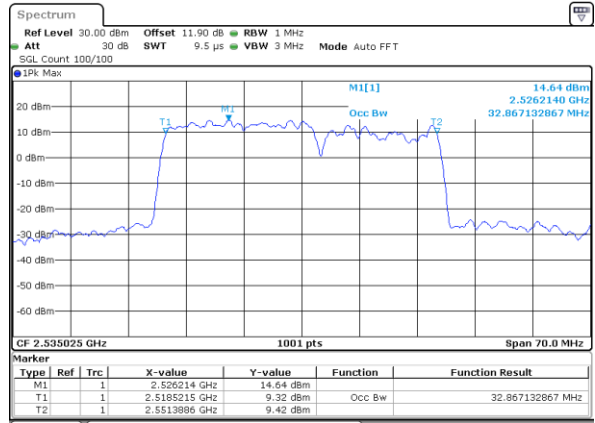
QPSK

Middle Channel / 20MHz+10MHz



Date: 24.FEB.2021 15:04:58

Middle Channel / 20MHz+15MHz



Date: 24.FEB.2021 15:38:05

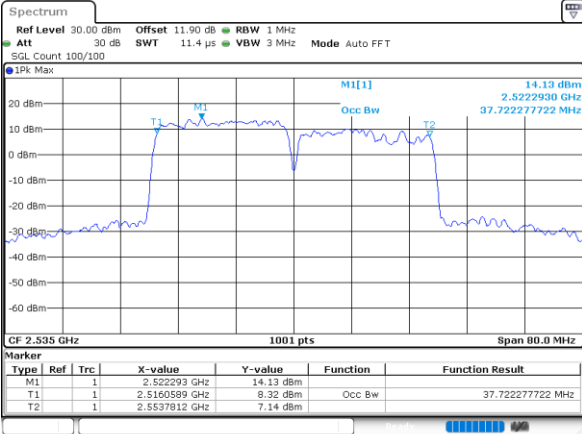


LTE Band 7C

QPSK

Middle Channel / 20MHz+20MHz

N/A



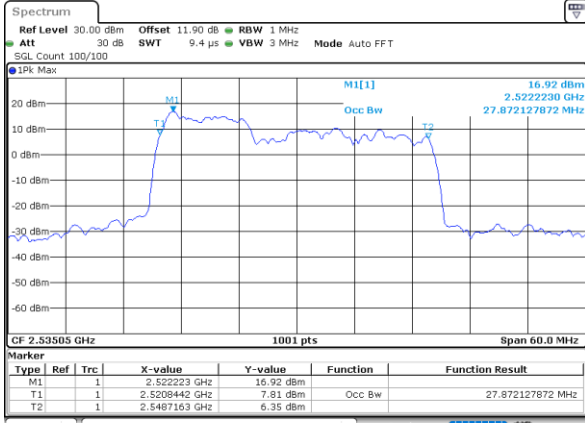
Date: 24, FEB, 2021 15:48:47



LTE Band 7C

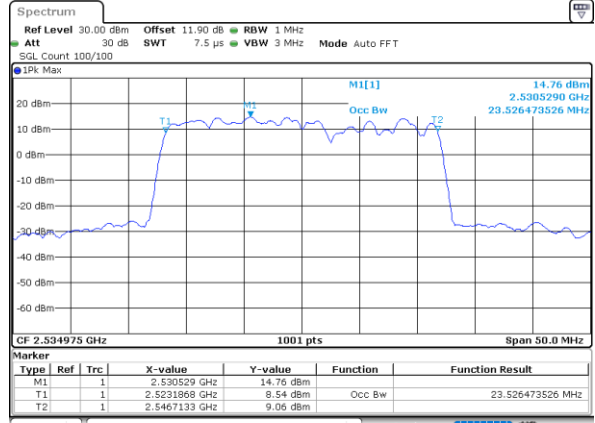
16QAM

Middle Channel / 10MHz+20MHz



Date: 24.FEB.2021 14:55:47

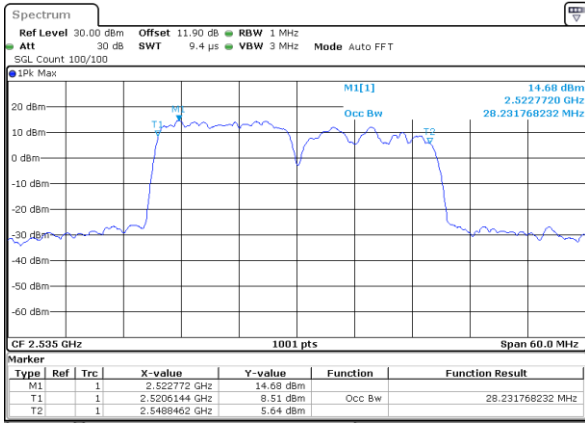
Middle Channel / 15MHz+10MHz



Date: 24.FEB.2021 16:00:11

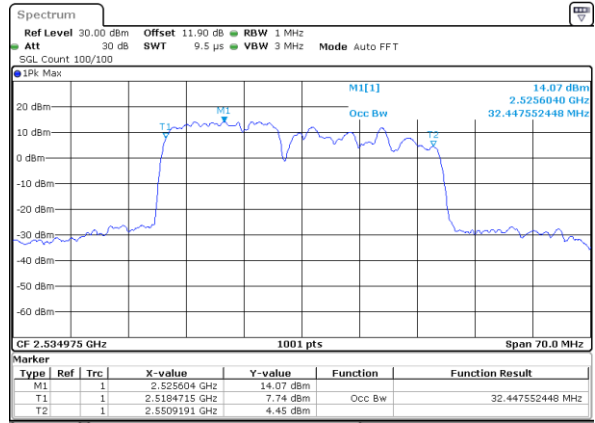
16QAM

Middle Channel / 15MHz+15MHz



Date: 24.FEB.2021 15:18:08

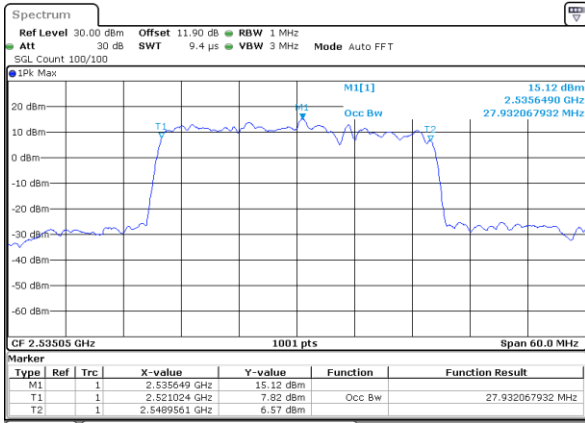
Middle Channel / 15MHz+20MHz



Date: 24.FEB.2021 15:27:30

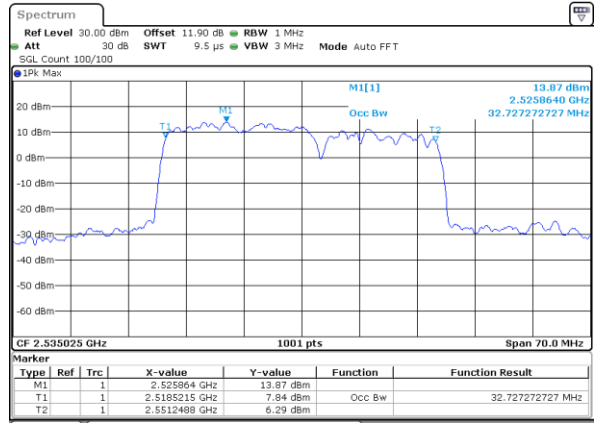
16QAM

Middle Channel / 20MHz+10MHz



Date: 24.FEB.2021 15:05:20

Middle Channel / 20MHz+15MHz



Date: 24.FEB.2021 15:38:28

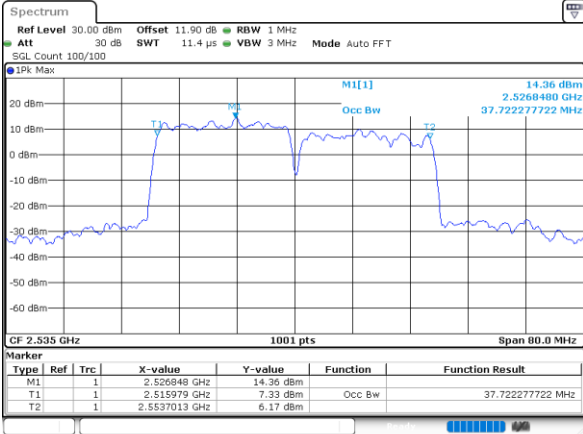


LTE Band 7C

16QAM

Middle Channel / 20MHz+20MHz

N/A

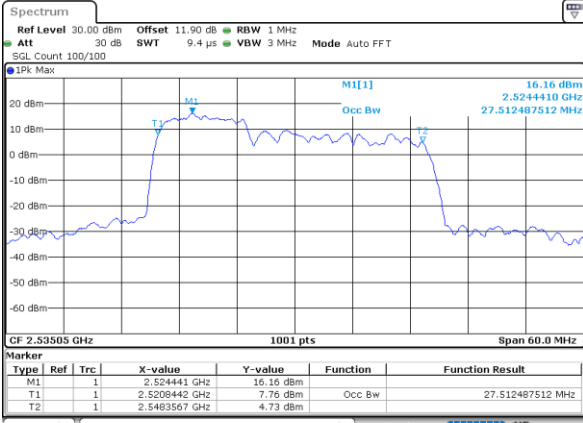




LTE Band 7C

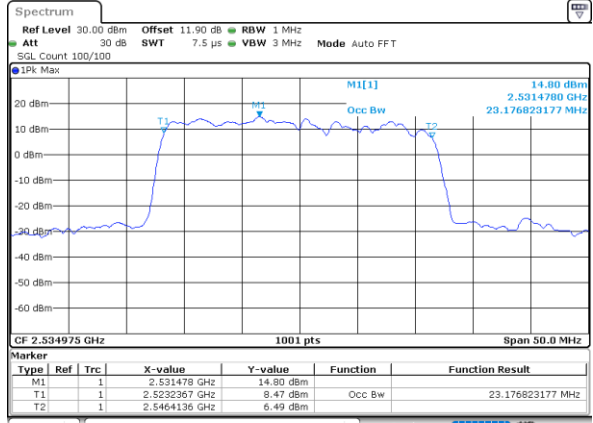
64QAM

Middle Channel / 10MHz+20MHz



Date: 24.FEB.2021 14:56:09

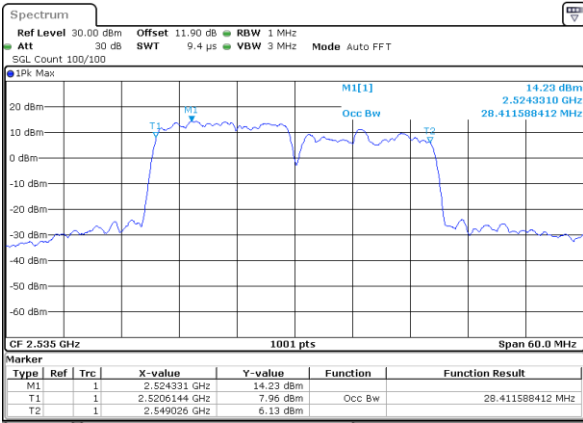
Middle Channel / 15MHz+10MHz



Date: 24.FEB.2021 16:00:33

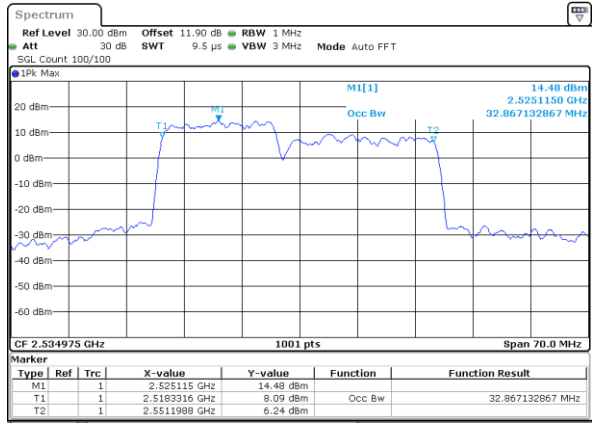
64QAM

Middle Channel / 15MHz+15MHz



Date: 24.FEB.2021 15:18:30

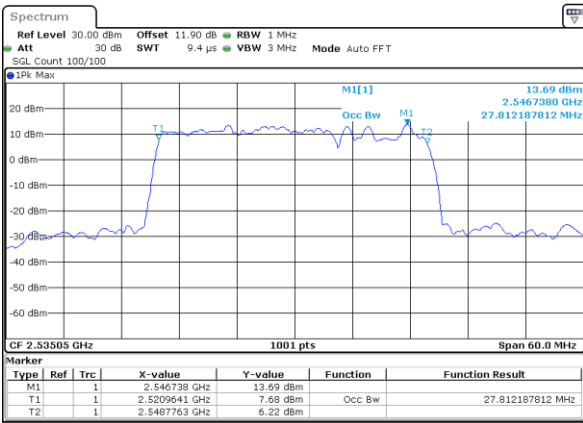
Middle Channel / 15MHz+20MHz



Date: 24.FEB.2021 15:27:52

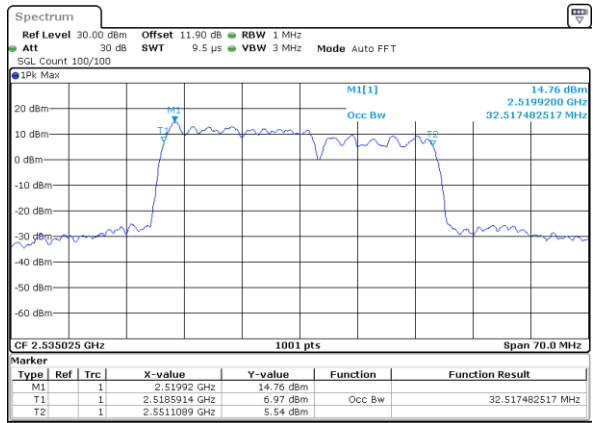
64QAM

Middle Channel / 20MHz+10MHz



Date: 24.FEB.2021 15:05:43

Middle Channel / 20MHz+15MHz



Date: 24.FEB.2021 15:38:50

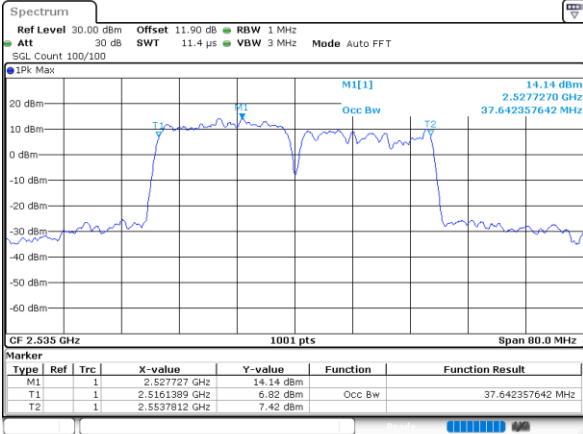


LTE Band 7C

64QAM

Middle Channel / 20MHz+20MHz

N/A



Date: 24, FEB, 2021 15:49:31



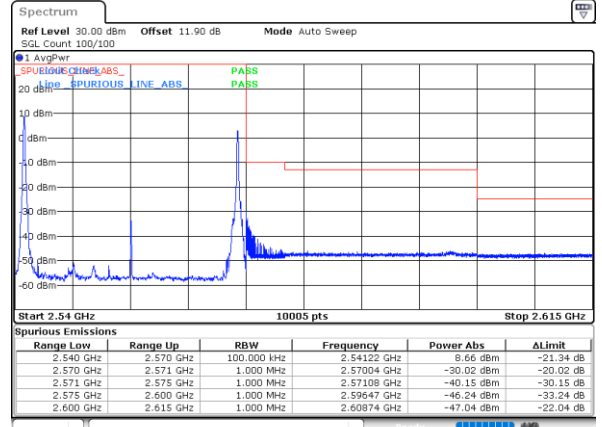
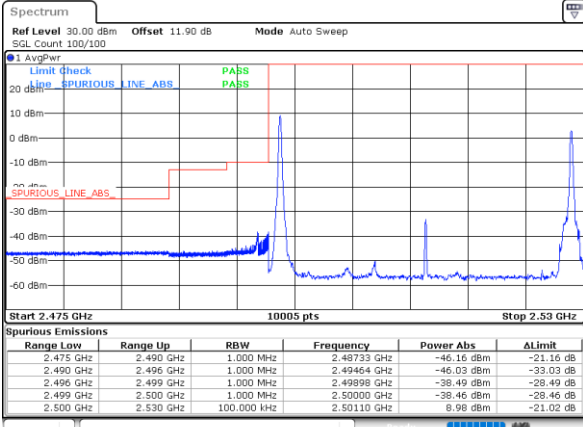
Conducted Band Edge

LTE Band 7C / 10MHz+20MHz

QPSK

Lowest Band Edge / 1RB0 and 1RB99

Highest Band Edge / 1RB0 and 1RB99

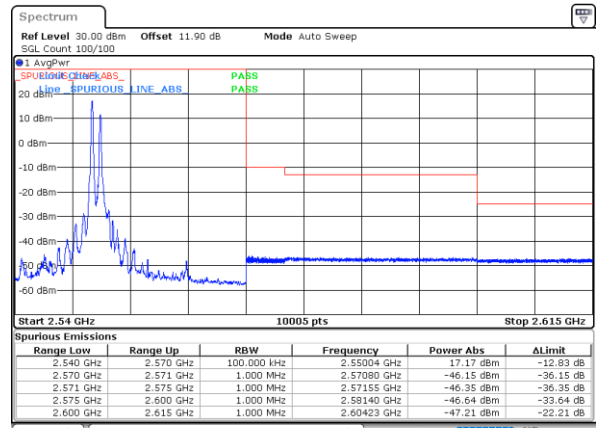
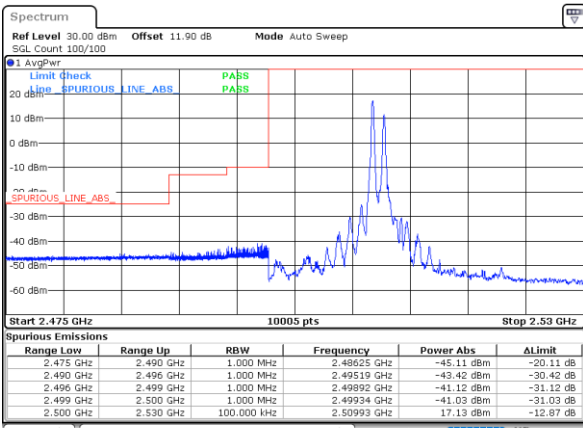


Date: 14.FEB.2021 14:45:52

Date: 14.FEB.2021 14:51:57

Lowest Band Edge / 1RB49 and 1RB0

Highest Band Edge / 1RB49 and 1RB0

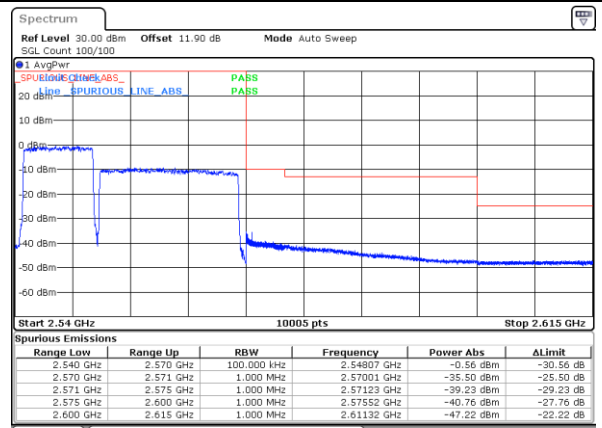
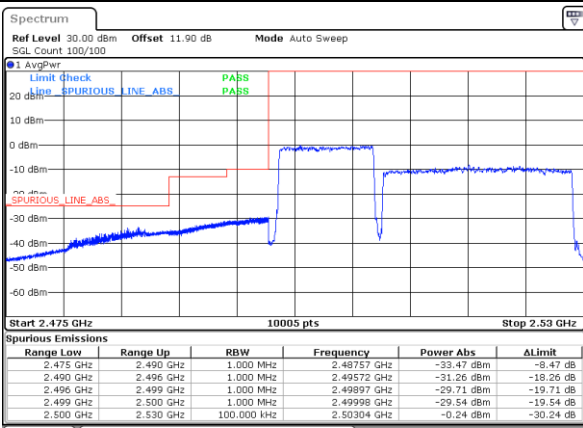


Date: 14.FEB.2021 14:46:20

Date: 14.FEB.2021 14:54:16

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 14.FEB.2021 14:43:30

Date: 14.FEB.2021 14:51:29

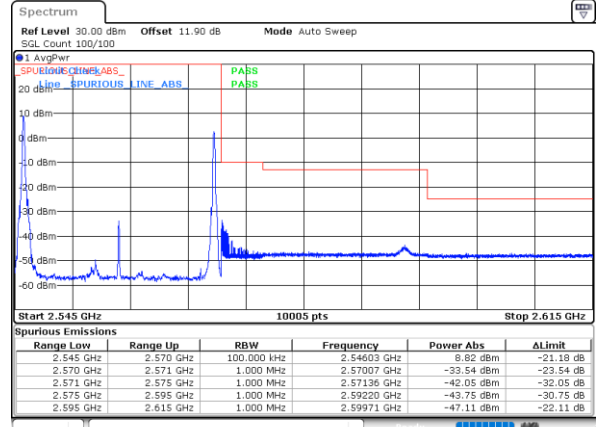
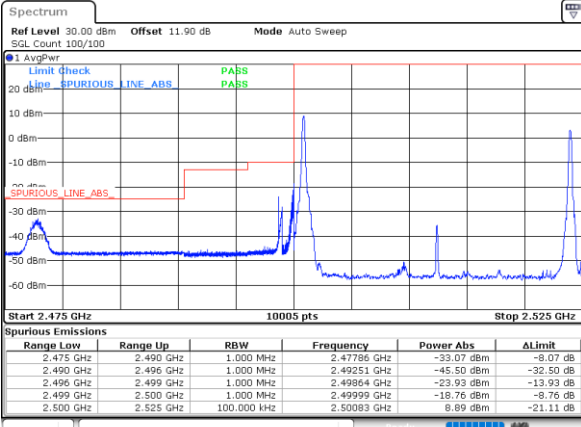


LTE Band 7C / 15MHz+10MHz

QPSK

Lowest Band Edge / 1RB0 and 1RB49

Highest Band Edge / 1RB0 and 1RB49

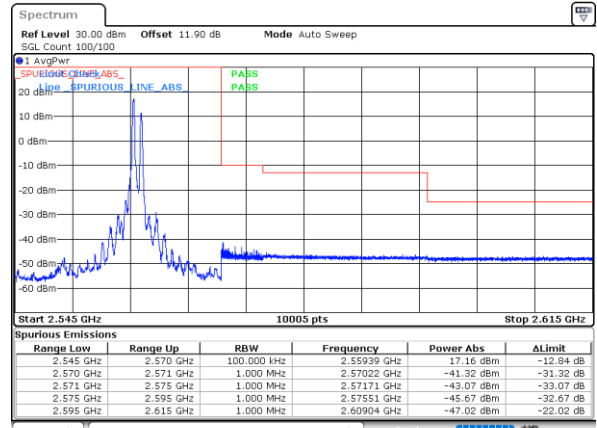
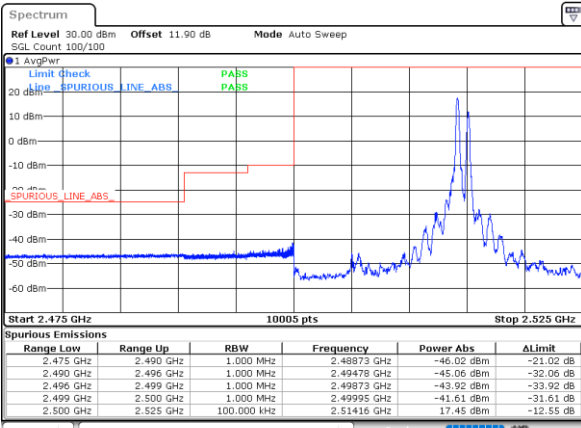


Date: 14.FEB.2021 16:48:24

Date: 14.FEB.2021 16:42:22

Lowest Band Edge / 1RB74 and 1RB0

Highest Band Edge / 1RB74 and 1RB0

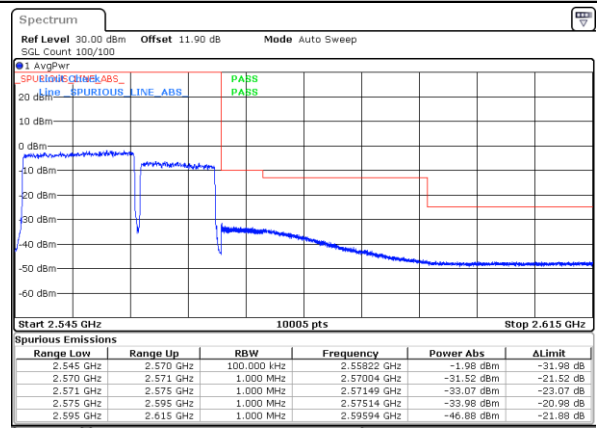
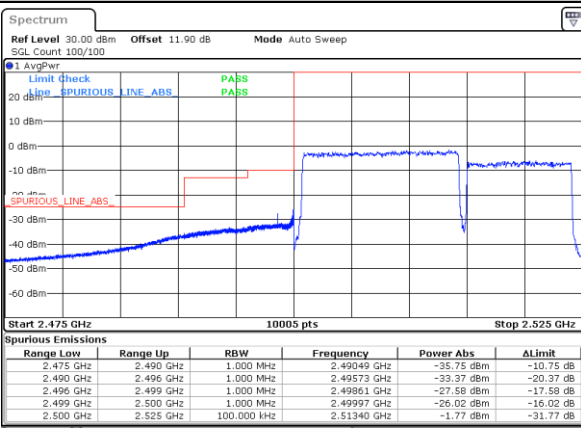


Date: 14.FEB.2021 16:48:52

Date: 14.FEB.2021 16:42:42

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 14.FEB.2021 16:46:02

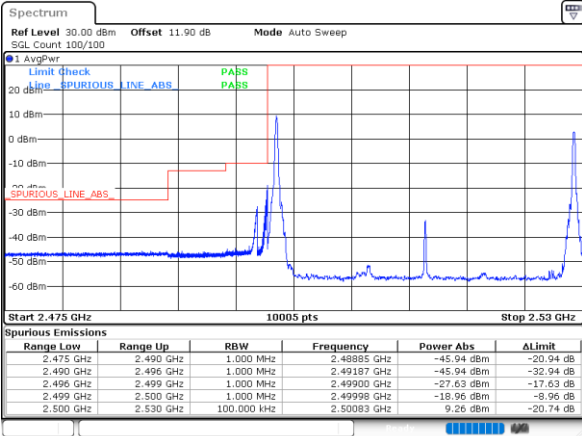
Date: 14.FEB.2021 16:39:54



LTE Band 7C / 15MHz+15MHz

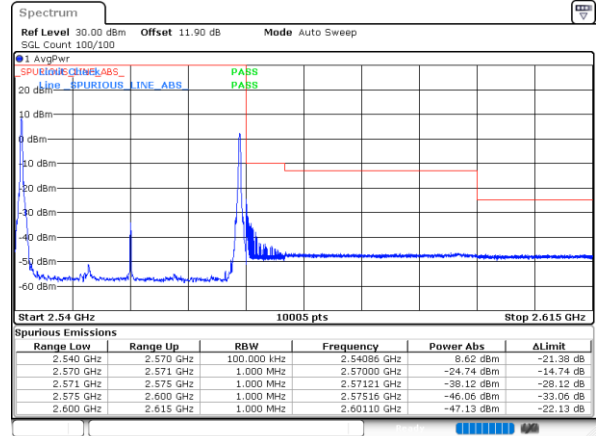
QPSK

Lowest Band Edge / 1RB0 and 1RB4



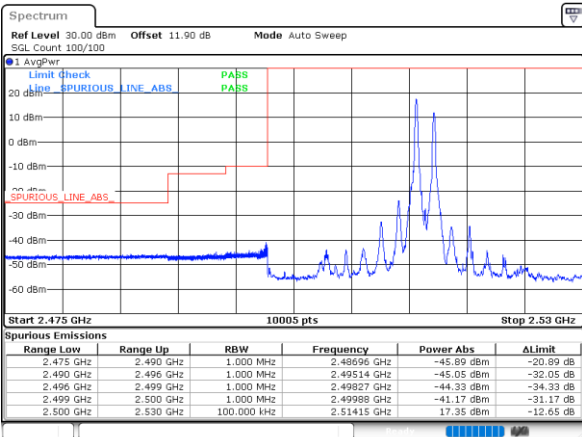
Date: 14.FEB.2021 15:29:13

Highest Band Edge / 1RB0 and 1RB4



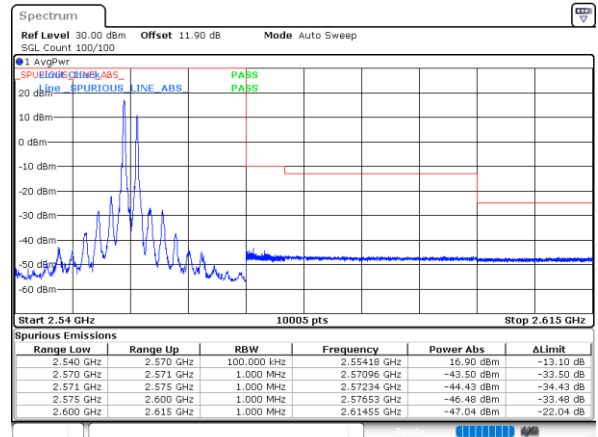
Date: 14.FEB.2021 15:06:21

Lowest Band Edge / 1RB74 and 1RB0



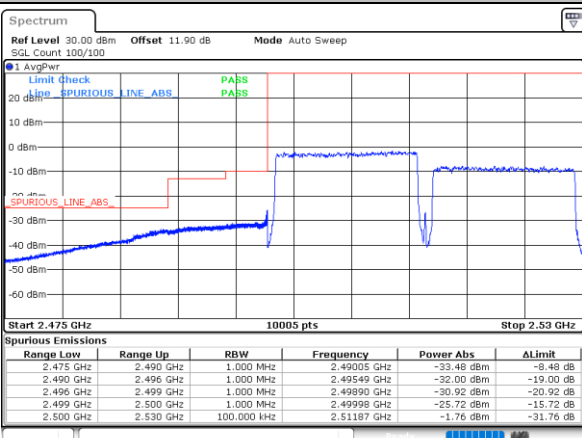
Date: 14.FEB.2021 15:29:41

Highest Band Edge / 1RB74 and 1RB0



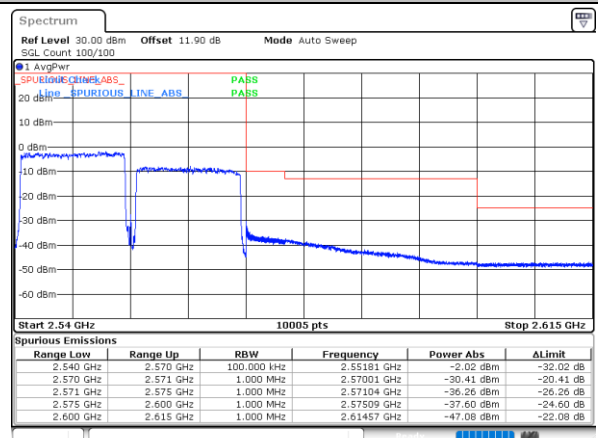
Date: 14.FEB.2021 15:06:40

Lowest Band Edge / Full RB



Date: 14.FEB.2021 15:26:51

Highest Band Edge / Full RB



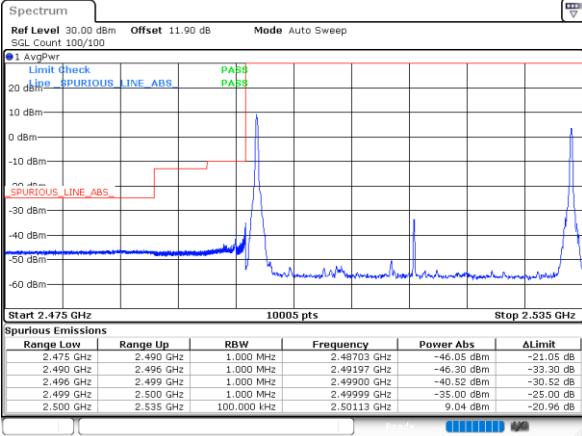
Date: 14.FEB.2021 15:05:53



LTE Band 7C / 15MHz+20MHz

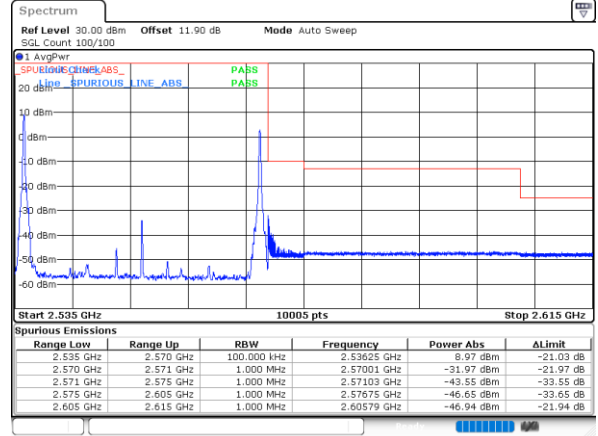
QPSK

Lowest Band Edge / 1RB0 and 1RB9



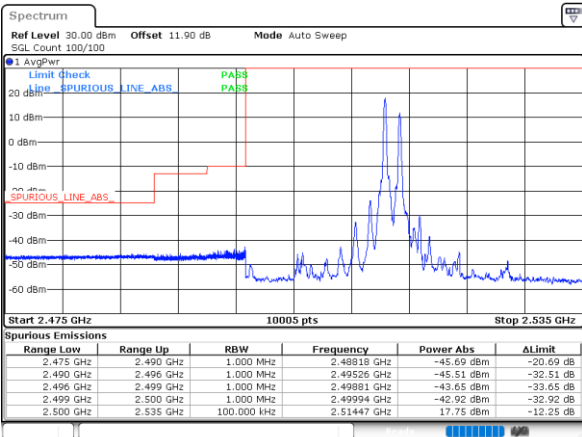
Date: 14.FEB.2021 15:50:09

Highest Band Edge / 1RB0 and 1RB9



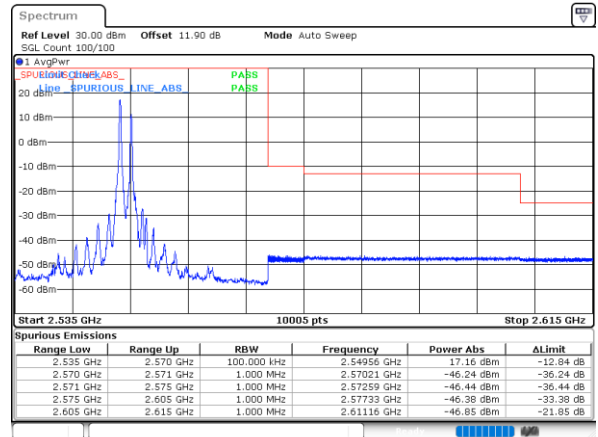
Date: 14.FEB.2021 15:14:20

Lowest Band Edge / 1RB74 and 1RB0



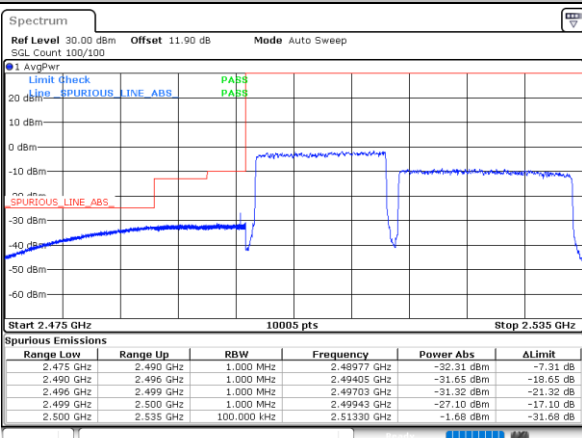
Date: 14.FEB.2021 15:50:37

Highest Band Edge / 1RB74 and 1RB0



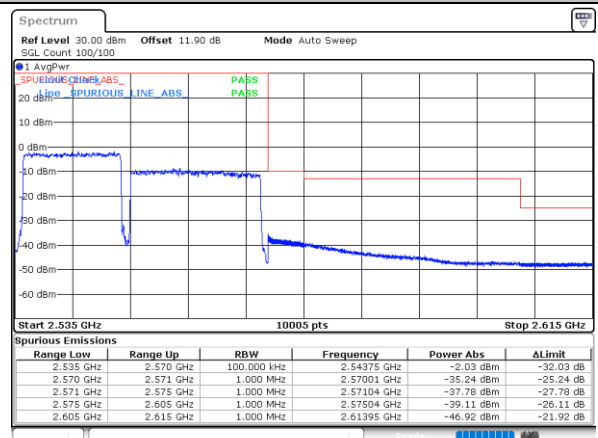
Date: 14.FEB.2021 15:14:23

Lowest Band Edge / Full RB



Date: 14.FEB.2021 15:47:47

Highest Band Edge / Full RB



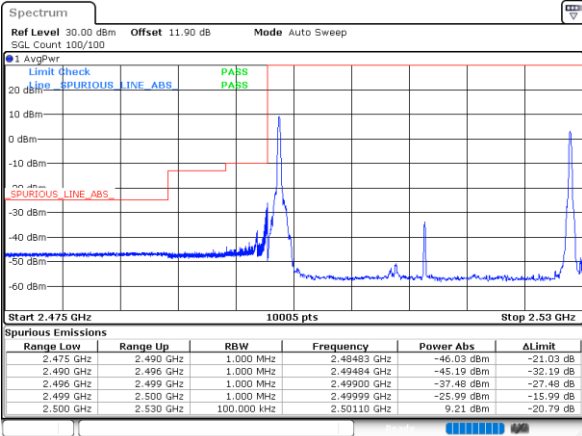
Date: 14.FEB.2021 15:41:35



LTE Band 7C / 20MHz+10MHz

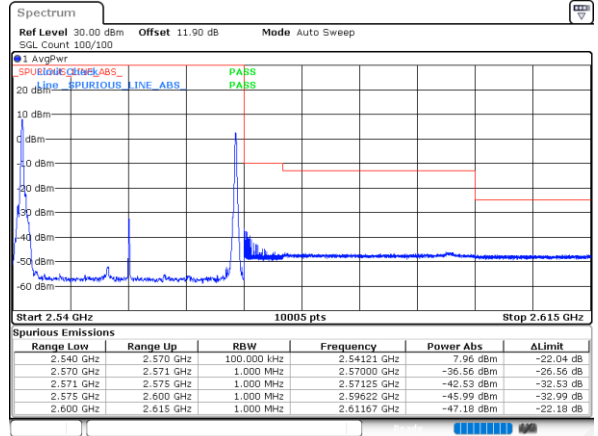
QPSK

Lowest Band Edge / 1RB0 and 1RB49



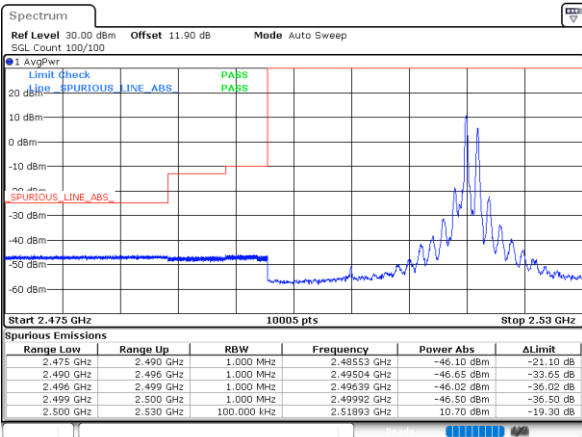
Date: 14.FEB.2021 14:35:06

Highest Band Edge / 1RB0 and 1RB49



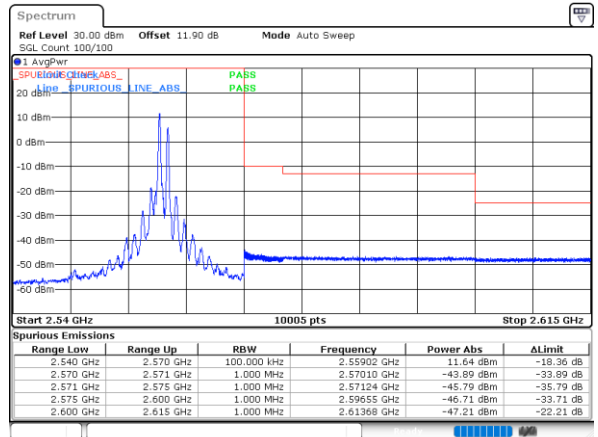
Date: 14.FEB.2021 14:24:41

Lowest Band Edge / 1RB99 and 1RB0



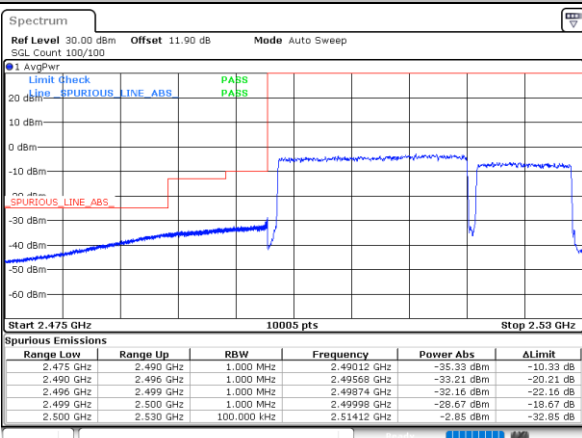
Date: 14.FEB.2021 14:35:34

Highest Band Edge / 1RB99 and 1RB0



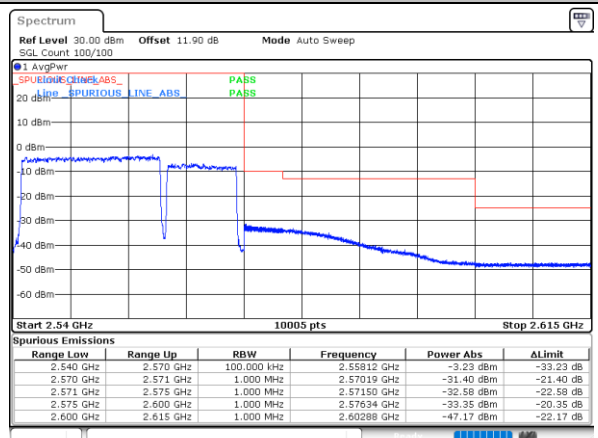
Date: 14.FEB.2021 14:27:01

Lowest Band Edge / Full RB



Date: 14.FEB.2021 14:32:44

Highest Band Edge / Full RB



Date: 14.FEB.2021 14:24:14

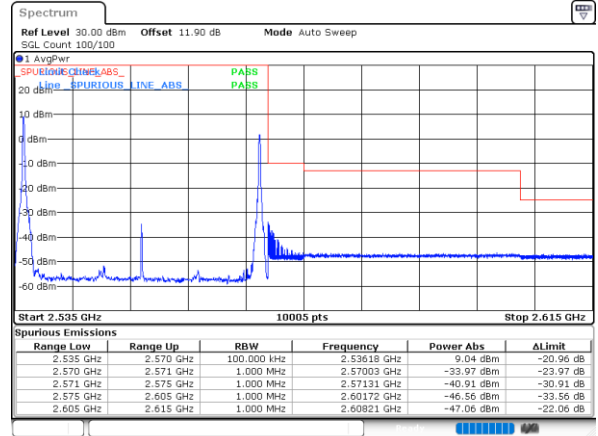
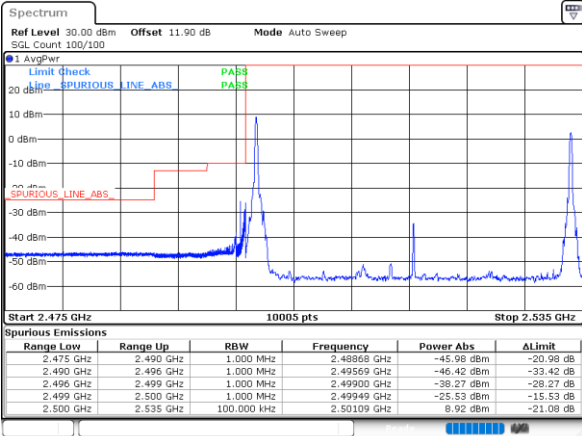


LTE Band 7C / 20MHz+15MHz

QPSK

Lowest Band Edge / 1RB0 and 1RB74

Highest Band Edge / 1RB0 and 1RB74

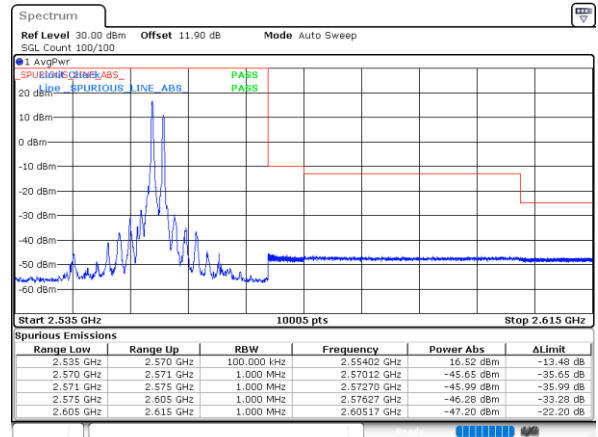
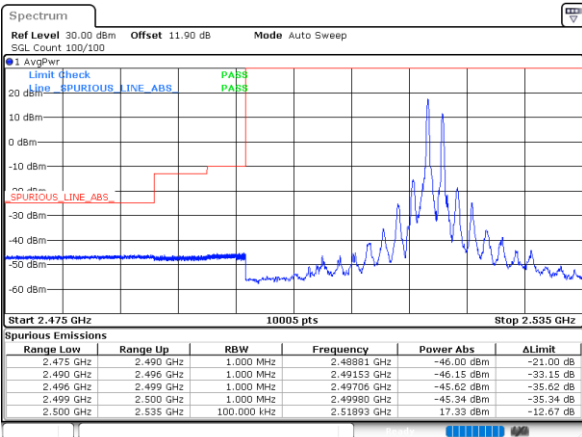


Date: 14.FEB.2021 16:14:23

Date: 14.FEB.2021 16:06:15

Lowest Band Edge / 1RB99 and 1RB0

Highest Band Edge / 1RB99 and 1RB0

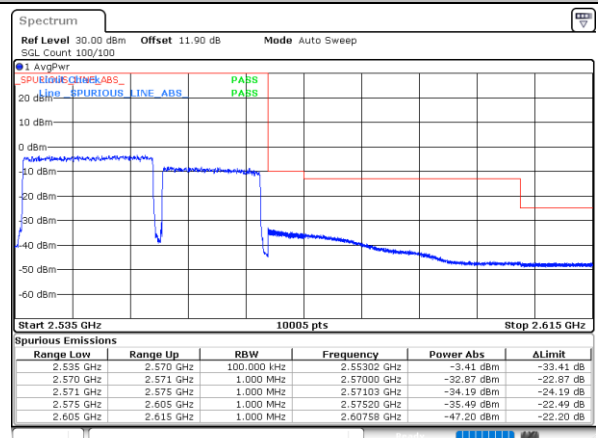
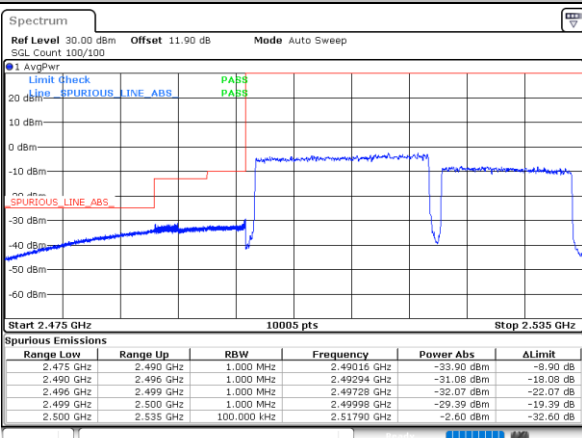


Date: 14.FEB.2021 16:14:51

Date: 14.FEB.2021 16:08:35

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 14.FEB.2021 16:12:01

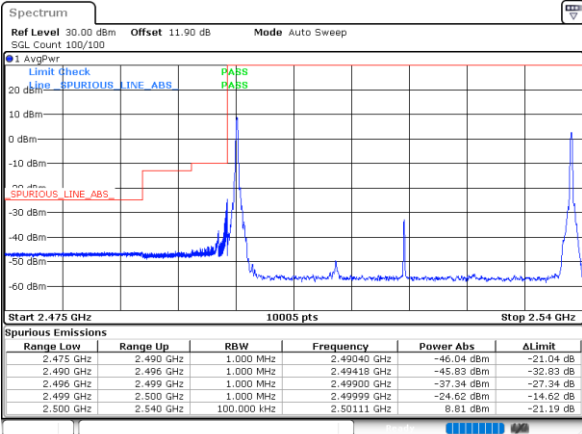
Date: 14.FEB.2021 16:05:47



LTE Band 7C / 20MHz+20MHz

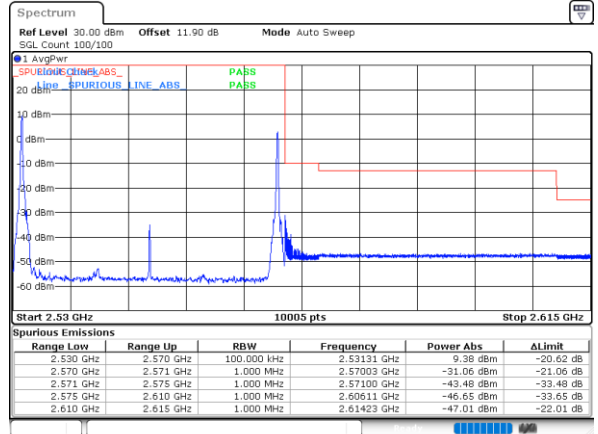
QPSK

Lowest Band Edge / 1RB0 and 1RB9



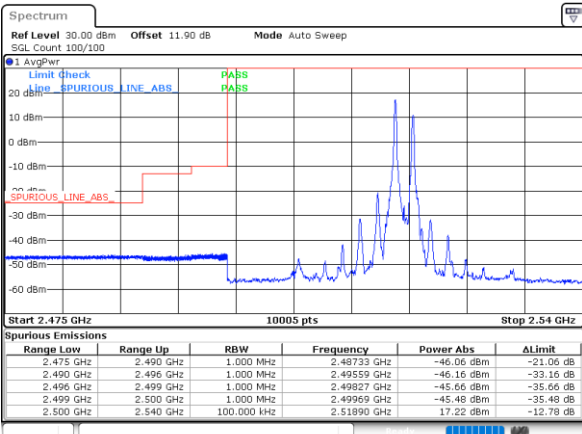
Date: 14.FEB.2021 16:32:51

Highest Band Edge / 1RB0 and 1RB9



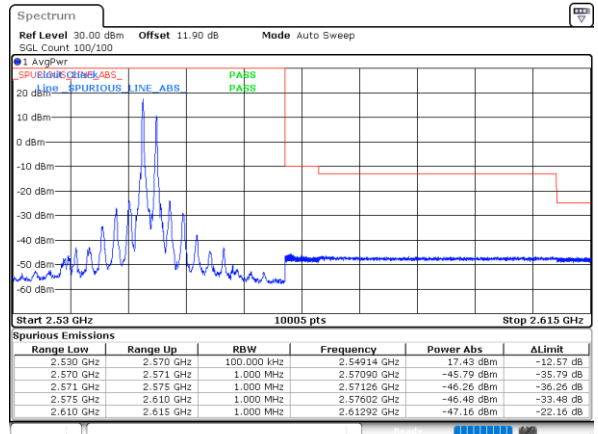
Date: 14.FEB.2021 16:23:13

Lowest Band Edge / 1RB99 and 1RB0



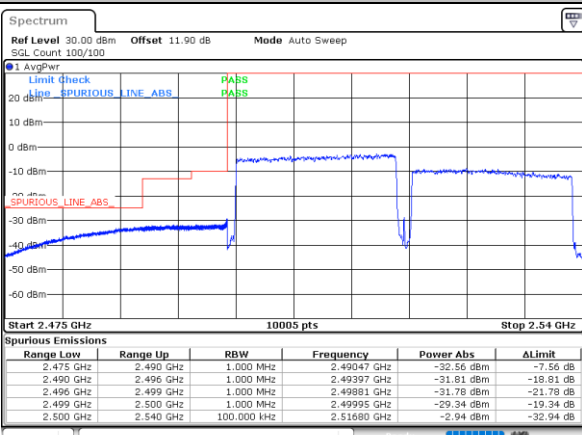
Date: 14.FEB.2021 16:33:19

Highest Band Edge / 1RB99 and 1RB0



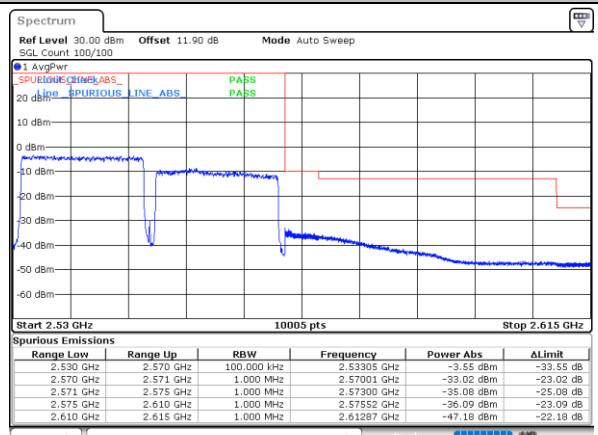
Date: 14.FEB.2021 16:25:56

Lowest Band Edge / Full RB



Date: 14.FEB.2021 16:30:29

Highest Band Edge / Full RB



Date: 14.FEB.2021 16:22:44

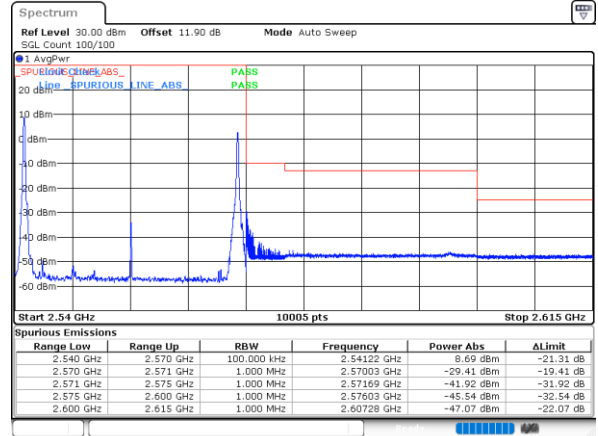
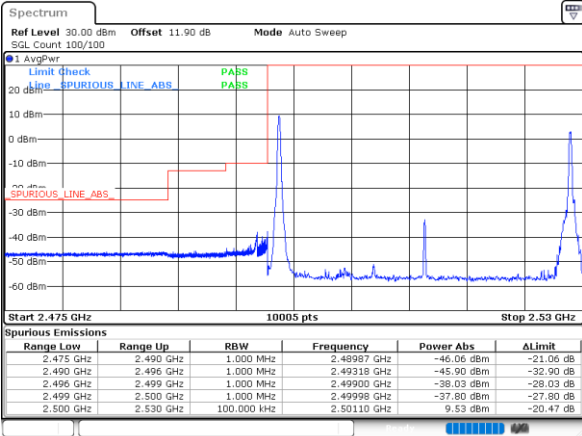


LTE Band 7C / 10MHz+20MHz

16QAM

Lowest Band Edge / 1RB0 and 1RB9

Highest Band Edge / 1RB0 and 1RB9

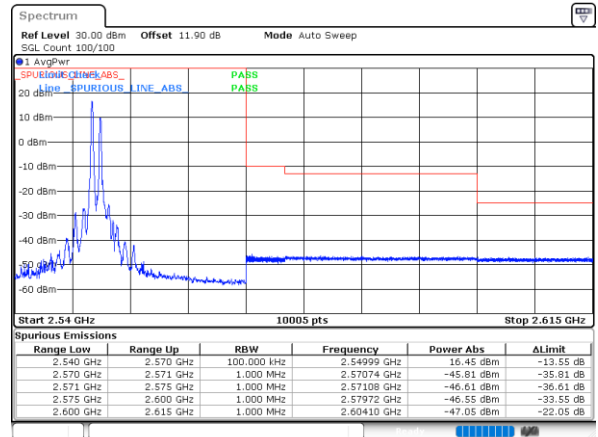
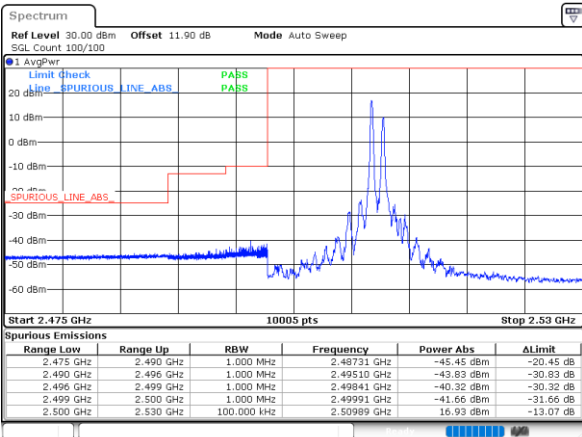


Date: 14.FEB.2021 14:45:23

Date: 14.FEB.2021 14:52:25

Lowest Band Edge / 1RB49 and 1RB0

Highest Band Edge / 1RB49 and 1RB0

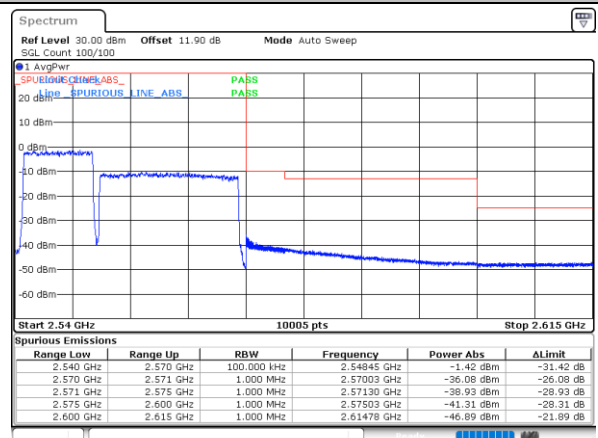
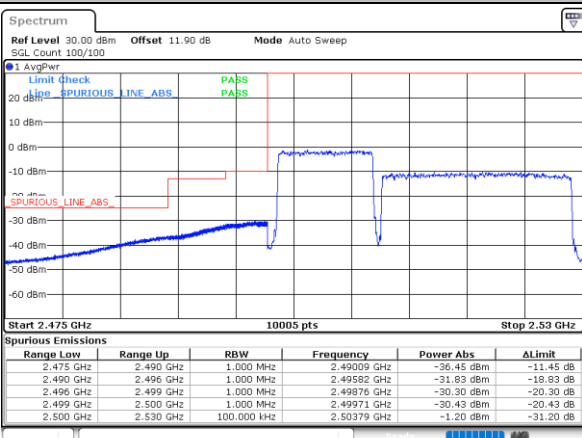


Date: 14.FEB.2021 14:46:48

Date: 14.FEB.2021 14:53:48

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 14.FEB.2021 14:43:58

Date: 14.FEB.2021 14:51:01

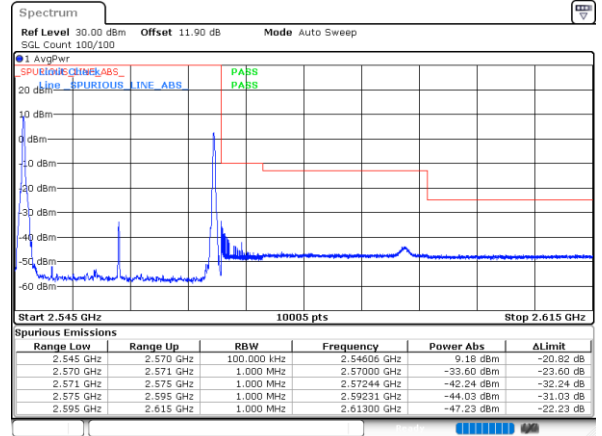
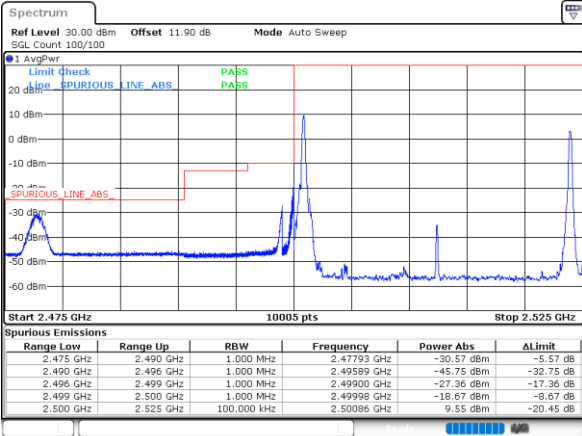


LTE Band 7C / 15MHz+10MHz

16QAM

Lowest Band Edge / 1RB0 and 1RB49

Highest Band Edge / 1RB0 and 1RB49

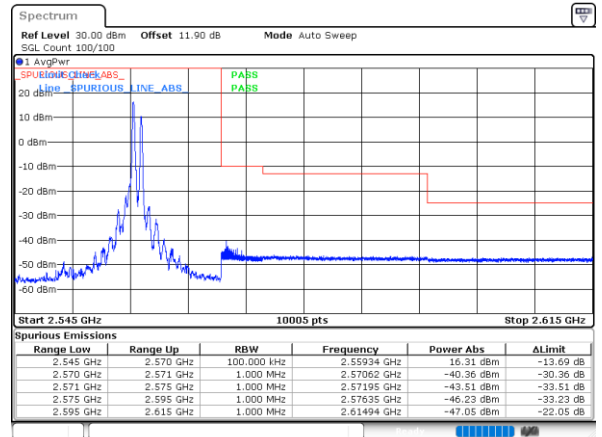
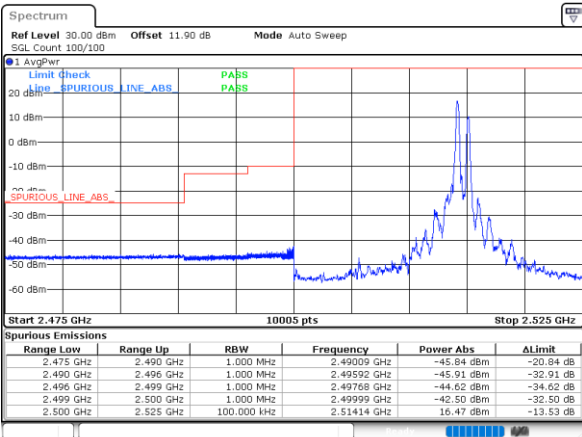


Date: 14.FEB.2021 16:47:55

Date: 14.FEB.2021 16:40:50

Lowest Band Edge / 1RB74 and 1RB0

Highest Band Edge / 1RB74 and 1RB0

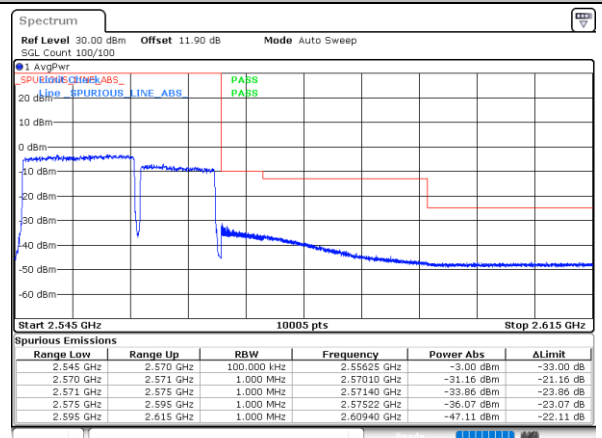
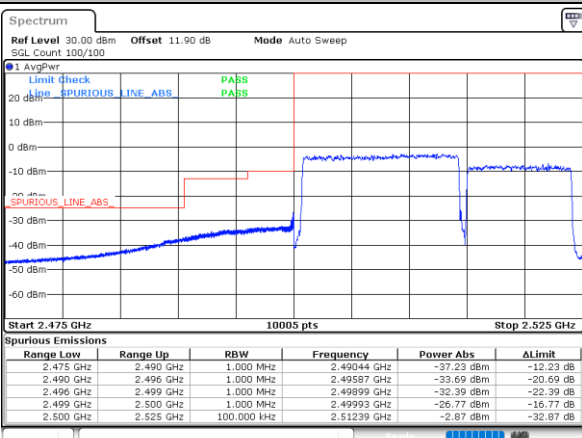


Date: 14.FEB.2021 16:49:20

Date: 14.FEB.2021 16:42:14

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



Date: 14.FEB.2021 16:46:30

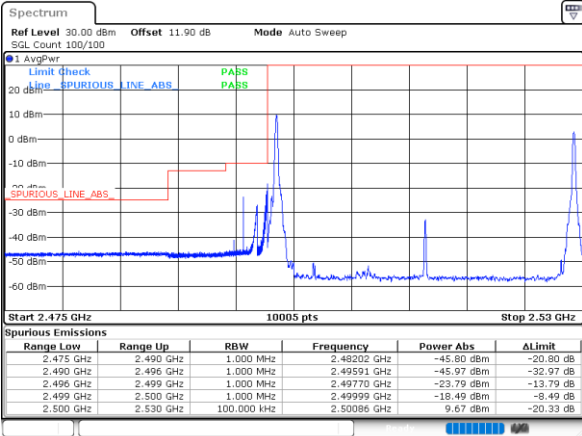
Date: 14.FEB.2021 16:39:26



LTE Band 7C / 15MHz+15MHz

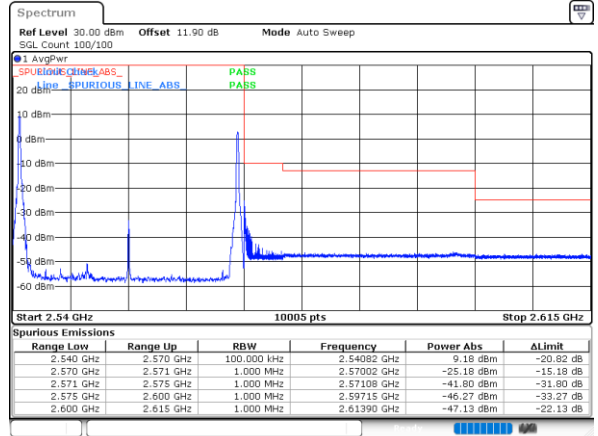
16QAM

Lowest Band Edge / 1RB0 and 1RB74



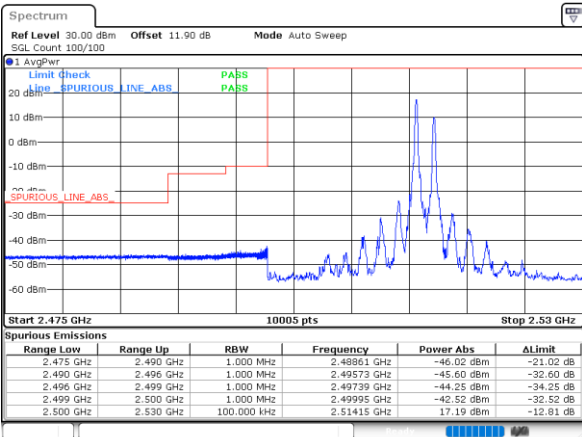
Date: 14.FEB.2021 15:28:44

Highest Band Edge / 1RB0 and 1RB74



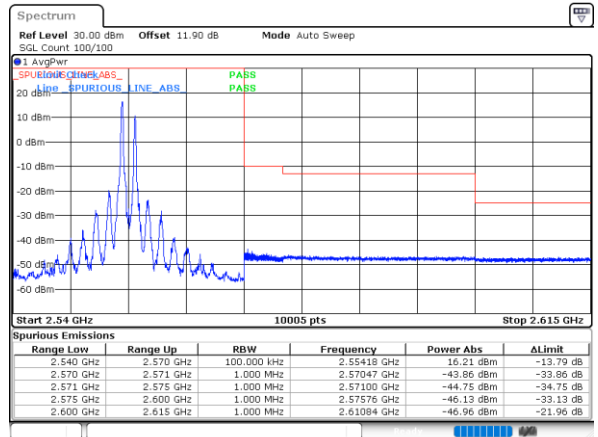
Date: 14.FEB.2021 15:06:49

Lowest Band Edge / 1RB74 and 1RB0



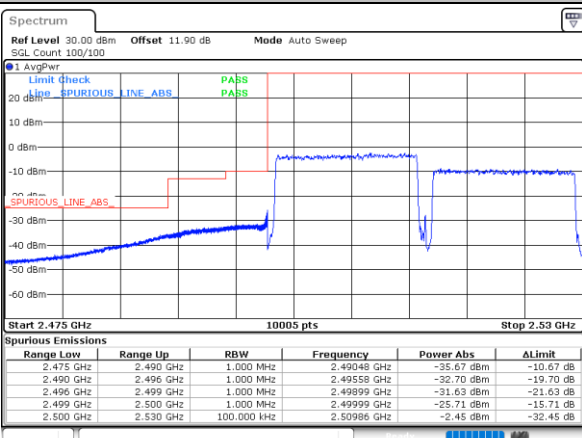
Date: 14.FEB.2021 15:30:09

Highest Band Edge / 1RB74 and 1RB0



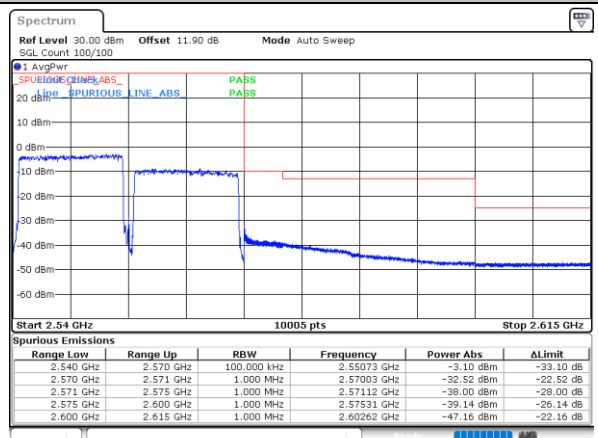
Date: 14.FEB.2021 15:08:12

Lowest Band Edge / Full RB



Date: 14.FEB.2021 15:27:19

Highest Band Edge / Full RB



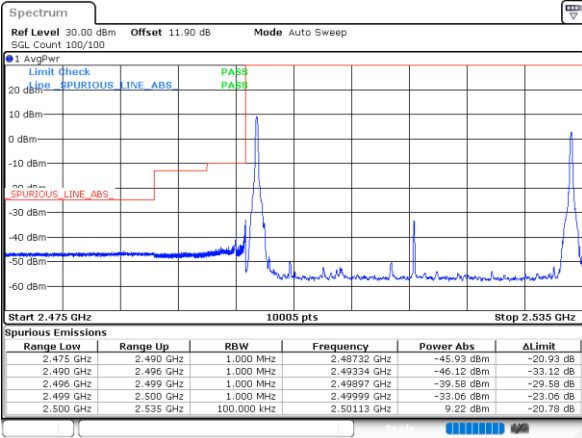
Date: 14.FEB.2021 15:05:25



LTE Band 7C / 15MHz+20MHz

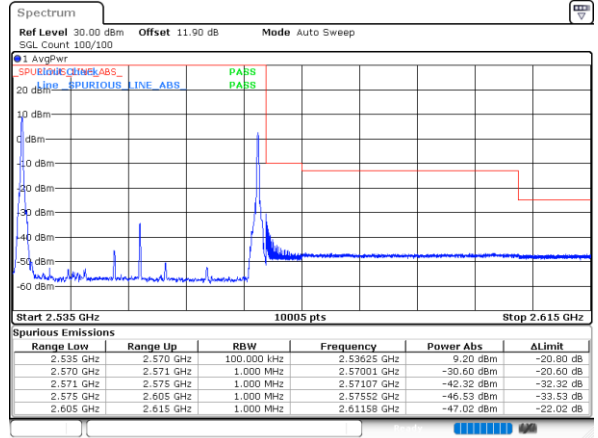
16QAM

Lowest Band Edge / 1RB0 and 1RB9



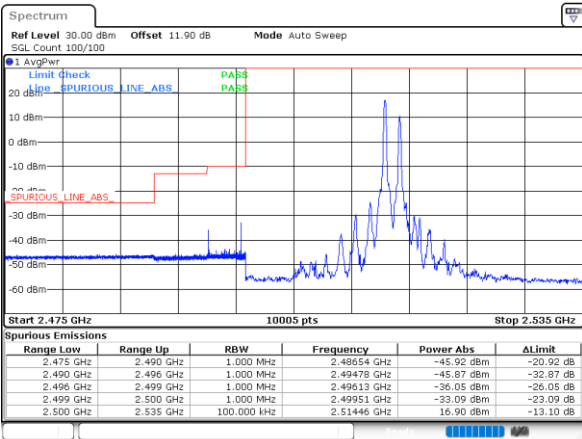
Date: 14.FEB.2021 15:49:40

Highest Band Edge / 1RB0 and 1RB9



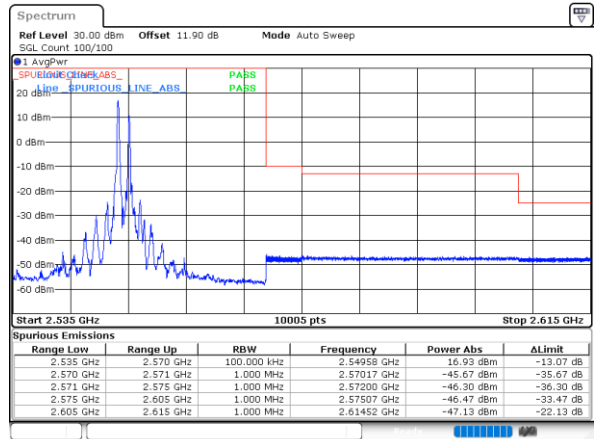
Date: 14.FEB.2021 15:42:31

Lowest Band Edge / 1RB74 and 1RB0



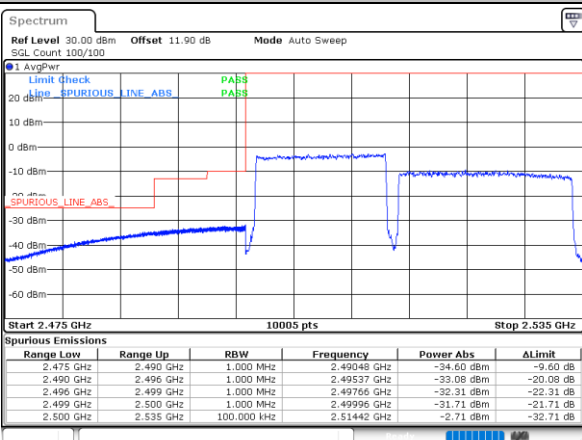
Date: 14.FEB.2021 15:51:05

Highest Band Edge / 1RB74 and 1RB0



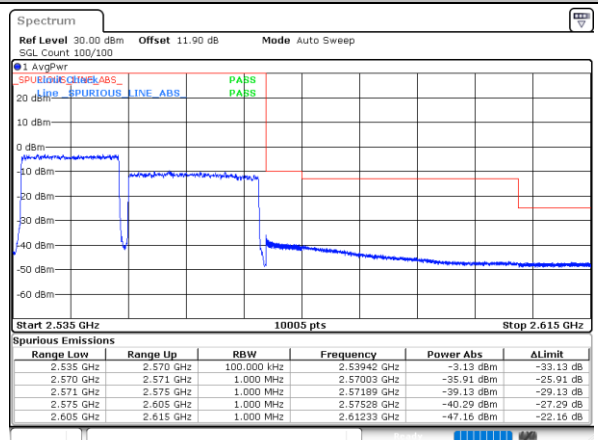
Date: 14.FEB.2021 15:43:55

Lowest Band Edge / Full RB



Date: 14.FEB.2021 15:48:15

Highest Band Edge / Full RB



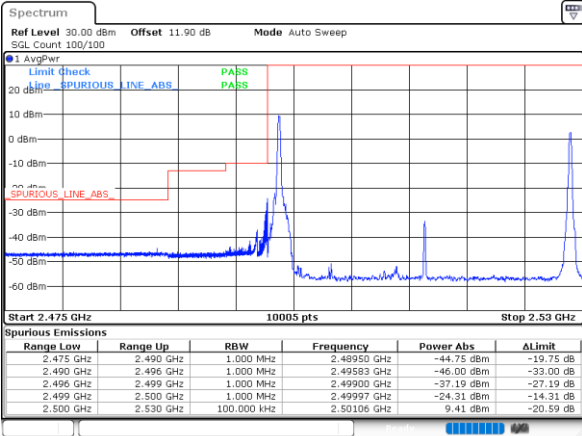
Date: 14.FEB.2021 15:41:07



LTE Band 7C / 20MHz+10MHz

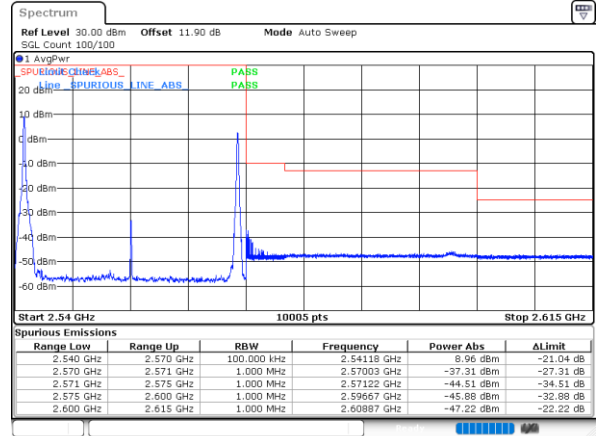
16QAM

Lowest Band Edge / 1RB0 and 1RB49



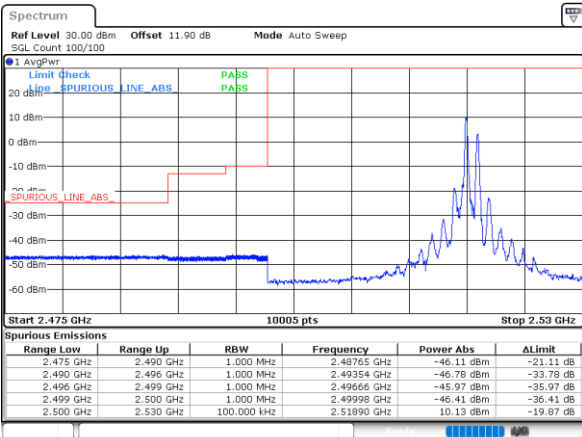
Date: 14.FEB.2021 14:34:38

Highest Band Edge / 1RB0 and 1RB49



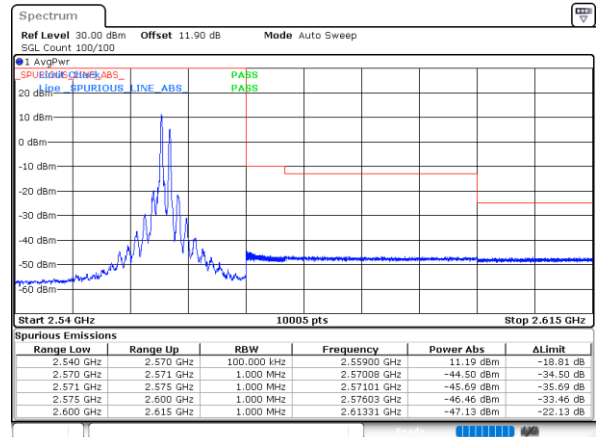
Date: 14.FEB.2021 14:25:09

Lowest Band Edge / 1RB99 and 1RB0



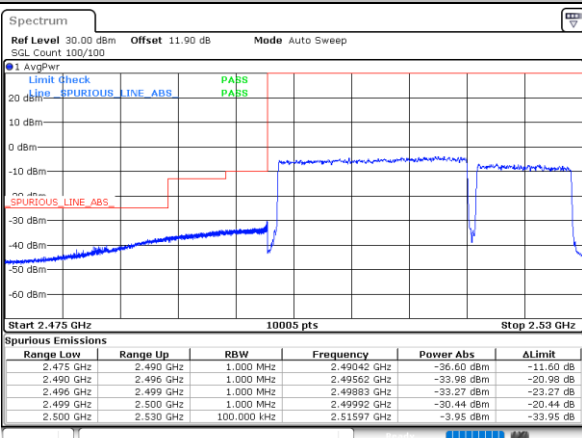
Date: 14.FEB.2021 14:36:03

Highest Band Edge / 1RB99 and 1RB0



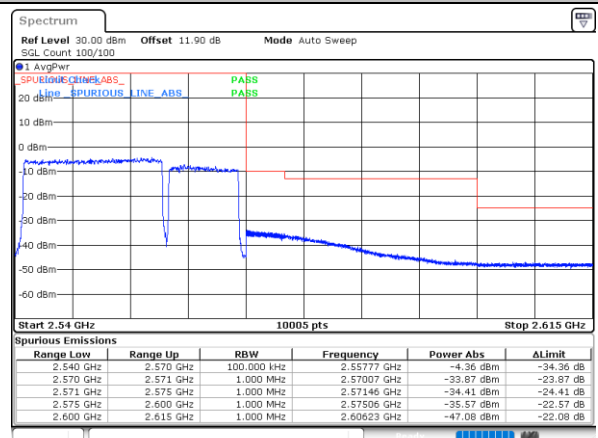
Date: 14.FEB.2021 14:26:33

Lowest Band Edge / Full RB



Date: 14.FEB.2021 14:33:13

Highest Band Edge / Full RB



Date: 14.FEB.2021 14:23:46