FCC RF Test Report

APPLICANT	: LENOVO (BEIJING) LIMITED
EQUIPMENT	: Mobile Phone
BRAND NAME	: Lenovo
MODEL NAME	: Lenovo L70081
FCC ID	: A5MLM21C81
STANDARD	: 47 CFR Part 2, 22(H), 24(E), 27(L) , 27(H) , 27(N)
CLASSIFICATION	: PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S)	: Apr. 01, 2021 ~ Apr. 25, 2021

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Jason Jia

Reviewed by: Jason Jia / Supervisor

Alex Wang

Approved by: Alex Wang / Manager

ACCREDITED Cert #5145.02

Sporton International (Kunshan) Inc.
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG111226-01B	Rev. 01	Initial issue of report	Jun. 08, 2021

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(5)	Effective Radiated Power (Band 5) (Band 26)	ERP < 7 Watt	PASS	-
	§27.50(c)(10)	Effective Radiated Power (Band 12) (Band 17) (Band 71)	ERP < 3 Watt	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power (Band 2) (Band 25)	EIRP < 2Watt	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)	EIRP < 1Watt	PASS	-
3.5	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 12) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §22.355	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22	PASS	-
	§2.1055 §24.235 §27.54		Within Authorized Band		
4.4	§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 25.93 dB at 3471.00 MHz

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

LENOVO (BEIJING) LIMITED

201-H2-6, Floor 2, Building 2, No.6 Shangdi West Road, Haidian District, Beijing, China 100085

1.2 Manufacturer

Lenovo PC HK Limited

23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong, P.R. China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Lenovo
Model Name	Lenovo L70081
FCC ID	A5MLM21C81
EUT supports Radios application	CDMA/GSM/WCDMA/LTE/5G NR WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac VHT20/VHT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/VHT160 WLAN 5GHz 802.11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE GNSS/NFC
IMEI Code	Conducted: N/A Radiation: 865576050015018
HW Version	DVT2
SW Version	L70081_CN_OPEN_UD_Q00017.0_R_ZUI_12.5.020_ST_210219_qpst
EUT Stage	Identical Prototype

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	LTE Band 2 : 1850 MHz ~ 1910 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 5 : 824 MHz ~ 849 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 17 : 704 MHz ~ 716 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 824 MHz ~ 849 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz
Rx Frequency	LTE Band 2 : 1930 MHz ~ 1990 MHz LTE Band 4 : 2110 MHz ~ 2155 MHz LTE Band 5 : 869 MHz ~ 894 MHz LTE Band 12 : 729 MHz ~ 746 MHz LTE Band 17 : 734 MHz ~ 746 MHz LTE Band 25 : 1930 MHz ~ 1995 MHz LTE Band 26 : 869 MHz ~ 894 MHz LTE Band 66 : 2110 MHz~ 2200 MHz LTE Band 71: 617 MHz ~ 652 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 12 : 1.4MHz / 3MHz / 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 66 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 71 : 5MHz / 10MHz / 15MHz / 20MHz
Maximum Output Power to Antenna	LTE Band 2 : 23.75 dBm LTE Band 4 : 23.82 dBm LTE Band 5 : 24.15 dBm LTE Band 12 : 23.98 dBm LTE Band 17 : 23.94 dBm LTE Band 25 : 23.76 dBm LTE Band 26 : 24.20 dBm LTE Band 66 : 23.94 dBm LTE Band 71 : 23.79 dBm
Antenna Gain	LTE Band 2 : -0.5 dBi LTE Band 4 : -1.5 dBi LTE Band 5 : -2.0 dBi LTE Band 12 : -4.5 dBi LTE Band 17 : -4.5 dBi LTE Band 25 : -0.5 dBi LTE Band 26 : -2.0 dBi LTE Band 66 : -1.5 dBi LTE Band 71 : -3.5 dBi
Type of Modulation	QPSK / 16QAM / 64QAM / 256QAM

Note: For QAM modulation mode, the whole testinghas assessed 16QAM&64QAM mode by referring to their higher conducted power.

1.5 Modification of EUT

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

1.6 Maximum ERP/EIRP, Frequency Tolerance, and Emission Designator

LTE Band 2		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
20	1860.0 ~ 1900.0	17M9G7D	0.0060	0.2113	17M9W7D	-	0.1824
LTE Band 4		**QPSK**			**16QAM**		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
20	1720.0 ~ 1745.0	17M8G7D	0.0033	0.1706	17M8W7D	-	0.1462
LTE Band 5		**QPSK**			**16QAM**		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
10	829.0 ~ 844.0	9M03G7D	0.0033	0.1000	9M03W7D	-	0.0863
LTE Band 12		**QPSK**			**16QAM**		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
10	704.0 ~ 711.0	9M07G7D	0.0061	0.0541	9M01W7D	-	0.0467
LTE Band 17		**QPSK**			**16QAM**		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
10	709.0 ~ 711.0	9M07G7D	0.0061	0.0536	9M01W7D	-	0.0460
LTE Band 25		**QPSK**			**16QAM**		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
20	1860.0 ~ 1905.0	17M9G7D	0.0060	0.2118	17M9W7D	-	0.1799

LTE Band 26		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
15	831.5 ~ 841.5	13M4G7D	0.0033	0.1012	13M4W7D	-	0.0857
CH26765	821.5	13M4G7D	-	0.0973	13M6W7D	-	0.0805
LTE Band 66		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum EIRP(W)
20	1720.0 ~ 1770.0	17M8G7D	0.0033	0.1754	17M8W7D	-	0.1493
LTE Band 71		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
20	673.0 ~ 688.0	17M9G7D	0.0050	0.0652	17M9W7D	-	0.0582

Note:

1. LTE Band 26 overlaps the entire frequency range of LTE Band 5. Therefore, the test results provided in this report covers Band 5 and the portion of Band 26 subject to Part 22.
2. LTE Band 66 overlaps the entire frequency range of LTE Band 4. Therefore, the test results provided in this report covers Band 66 as well as Band 4.
3. LTE Band 25 overlaps the entire frequency range of LTE Band 2. Therefore, the test results provided in this report covers Band 25 as well as Band 2.
4. LTE Band 12 overlaps the entire frequency range of LTE Band 17. Therefore, the test results provided in this report covers Band 12 as well as Band 17.
5. Based on engineering evaluation, only the maximum bandwidth and the worst modulation test results are shown in the report.

1.7 Testing Location

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

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

1.8 Test Software

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

1.9 Applicable Standards

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

- 47 CFR Part 2, 22(H), 24(E), 27(L) , 27(H) , 27(N)
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Test Items	Band	Bandwidth (MHz)						Modulation				RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256 QAM	1	Half	Full	L	M	H
Max. Output Power	2	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	5	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	12	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	17	-	-	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	25	v	v	v	v	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	v	v
	66	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	71	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	12				v	-	-	v	v	v				v		v	
	25						v	v	v	v				v		v	
	26					v	-	v	v	v				v		v	
	66						v	v	v	v				v		v	
	71	-	-				v	v	v	v				v		v	
26dB and 99% Bandwidth	12				v	-	-	v	v					v		v	
	25						v	v	v					v		v	
	26				v	v	-	v	v					v		v	
	66						v	v	v					v		v	
	71	-	-				v	v	v					v		v	
Conducted Band Edge	12	v	v	v	v	-	-	v	v	v	v	v		v	v		v
	25	v	v	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
	66	v	v	v	v	v	v	v	v	v	v	v		v	v		v
	71	-	-	v	v	v	v	v	v	v	v	v		v	v		v

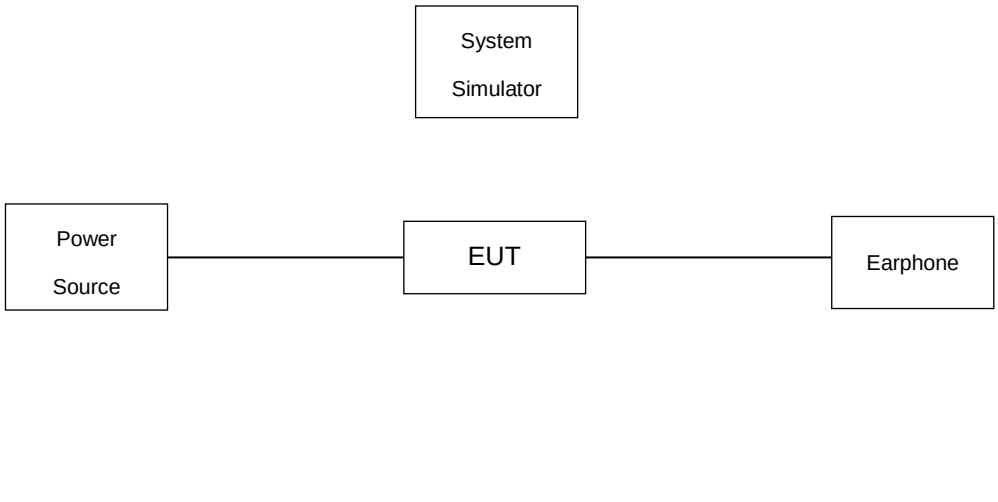
Test Items	Band	Bandwidth (MHz)						Modulation				RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256 QAM	1	Half	Full	L	M	H
Conducted Spurious Emission	12	v	v	v	v	-	-	v				v			v	v	v
	25	v	v	v	v	v	v	v				v			v	v	v
	26	v	v	v	v	v	-	v				v			v	v	v
	66	v	v	v	v	v	v	v				v			v	v	v
	71	-	-	v	v	v	v	v				v			v	v	v
Frequency Stability	12				v	-	-	v				v				v	
	25						v	v				v				v	
	26					v	-	v				v				v	
	66						v	v				v				v	
	71	-	-				v	v				v				v	
E.R.P / E.I.R.P	2	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	4	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	5	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	12	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	17	-	-	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	25	v	v	v	v	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	v	v
	66	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	71	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	12	Worst Case														v	
	25	Worst Case														v	
	26	Worst Case														v	
	66	Worst Case														v	
	71	Worst Case														v	

Note

1. The mark "**v** " means that this configuration is chosen for testing
2. The mark "-" means that this bandwidth is not supported.
3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.
4. LTE Band 26 overlaps the entire frequency range of LTE Band 5. Therefore, the test results provided in this report covers Band 5 and the portion of Band 26 subject to Part 22.
5. LTE Band 66 overlaps the entire frequency range of LTE Band 4. Therefore, the test results provided in this report covers Band 66 as well as Band 4.
6. LTE Band 25 overlaps the entire frequency range of LTE Band 2. Therefore, the test results provided in this report

	covers Band 25 as well as Band 2. 7. LTE Band 12 overlaps the entire frequency range of LTE Band 17. Therefore, the test results provided in this report covers Band 12 as well as Band 17. 8. All test items are based on engineering evaluation.

2.2 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

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

2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
3.	LTE Base Station	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 between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 4.8 dB.

Example :

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

= 4.8 (dB)

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 12 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3

LTE Band 17 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	23780	23790	23800
	Frequency	709	710	711
5	Channel	23755	23790	23825
	Frequency	706.5	710	713.5

LTE Band 25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	26140	26340	26590
	Frequency	1860	1880	1905
15	Channel	26115	26340	26615
	Frequency	1857.5	1880	1907.5
10	Channel	26090	26340	26640
	Frequency	1855	1880	1910
5	Channel	26065	26340	26665
	Frequency	1852.5	1880	1912.5
3	Channel	26055	26340	26675
	Frequency	1851.5	1880	1913.5
1.4	Channel	26047	26340	26683
	Frequency	1850.7	1880	1914.3

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	836.5	844
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

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

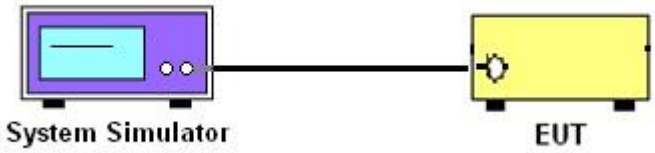
3 Conducted Test Items

3.1 Measuring Instruments

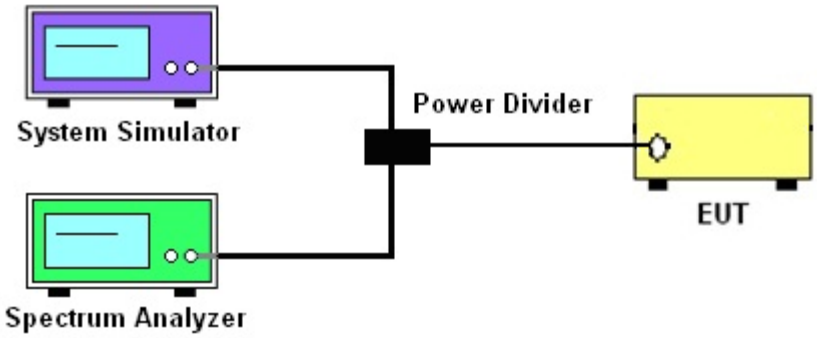
See list of measuring instruments of this test report.

3.2 Test Setup

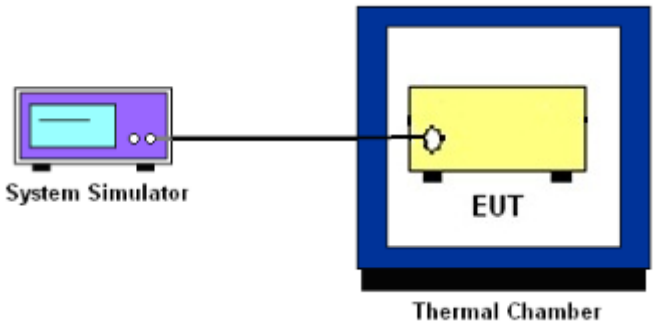
3.2.1 Conducted Output Power



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



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP/EIRP

3.4.1 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 ERP of mobile transmitters must not exceed 3 Watts for LTE Band 12, Band 17 and Band 71.

The EIRP of mobile transmitters must not exceed 2 Watts for LTE Band 2 and Band 25.

The EIRP of mobile transmitters must not exceed 1 Watts for LTE Band 4 and Band 66.

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 Test Procedures

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

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

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

3.5.2 Test Procedures

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

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

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

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

3.6.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

22.917(a)

For operations in the 824 – 849 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(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.

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the 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 (g)

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

27.53 (h)

For operations in the 1710 – 1755 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1 MHz 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.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

   Example:

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

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

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

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

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

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

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

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

3.9.2 Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.9.3 Test Procedures for Voltage Variation

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

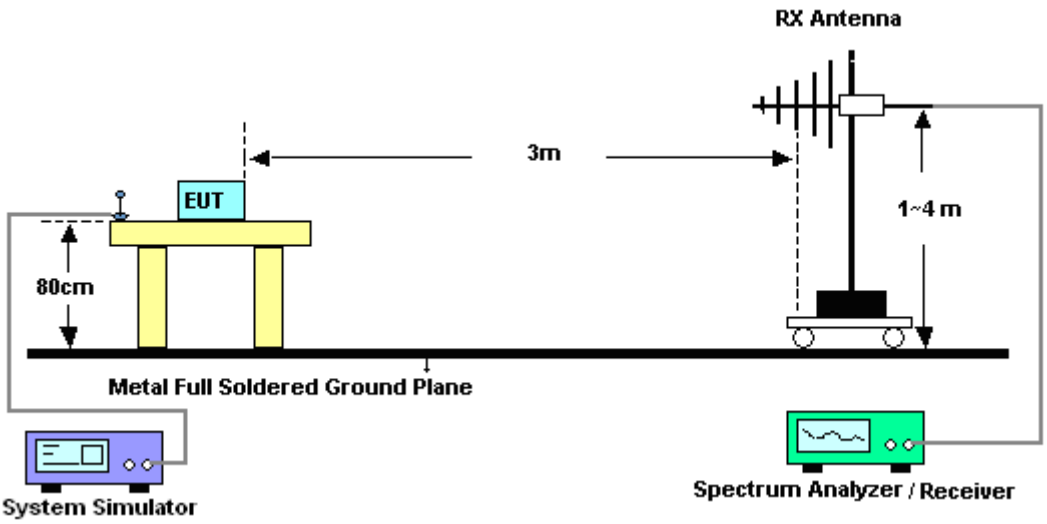
4 Radiated Test Items

4.1 Measuring Instruments

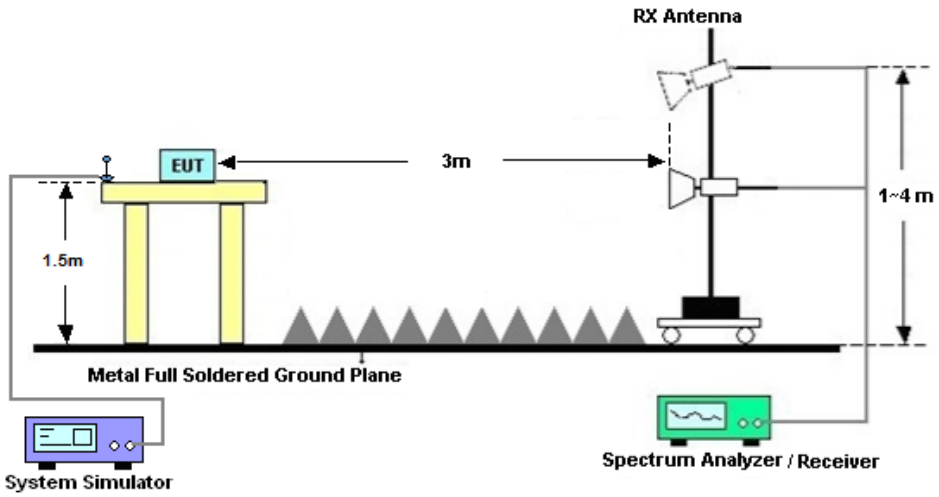
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

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

4.4.2 Test Procedures

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

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Nov. 01, 2020	Apr. 01, 2021~ Apr. 02, 2021	Oct. 31, 2021	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 03, 2020	Apr. 01, 2021~ Apr. 02, 2021	Jul. 02, 2021	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 13, 2021	Apr. 25, 2021	Apr. 12, 2022	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Jun. 08, 2020	Apr. 25, 2021	Jun. 07, 2021	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 18, 2021	Apr. 25, 2021	Apr. 17, 2022	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Jan. 06, 2021	Apr. 25, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 06, 2021	Apr. 25, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 07, 2021	Apr. 25, 2021	Jan. 06, 2022	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2025788	1Ghz-18Ghz	Jan. 06, 2021	Apr. 25, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 14, 2020	Apr. 25, 2021	Oct. 13, 2021	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Apr. 25, 2021	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Apr. 25, 2021	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Apr. 25, 2021	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

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

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

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

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

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

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) and ERP/EIRP

LTE Band 2:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				18700	18900	19100			
Frequency (MHz)				1860	1880	1900	L	M	H
20	QPSK	1	0	23.74	23.75	23.57	0.2109	0.2113	0.2028
20	QPSK	1	99	23.43	23.52	23.62	0.1963	0.2004	0.2051
20	QPSK	100	0	22.77	22.80	22.62	0.1687	0.1698	0.1629
20	16QAM	1	0	23.11	22.85	22.98	0.1824	0.1718	0.1770
20	64QAM	1	0	21.53	21.14	21.28	0.1268	0.1159	0.1197
20	256QAM	1	0	18.43	18.45	18.42	0.0621	0.0624	0.0619
Channel				18675	18900	19125	EIRP(W)		
Frequency (MHz)				1857.5	1880	1902.5	L	M	H
15	QPSK	1	0	23.63	23.53	23.64	0.2056	0.2009	0.2061
15	16QAM	1	0	23.06	22.88	22.92	0.1803	0.1730	0.1746
Channel				18650	18900	19150	EIRP(W)		
Frequency (MHz)				1855	1880	1905	L	M	H
10	QPSK	1	0	23.66	23.69	23.63	0.2070	0.2084	0.2056
10	16QAM	1	0	23.11	22.87	22.97	0.1824	0.1726	0.1766
Channel				18625	18900	19175	EIRP(W)		
Frequency (MHz)				1852.5	1880	1907.5	L	M	H
5	QPSK	1	0	23.57	23.49	23.69	0.2028	0.1991	0.2084
5	16QAM	1	0	23.06	22.78	22.91	0.1803	0.1690	0.1742
Channel				18615	18900	19185	EIRP(W)		
Frequency (MHz)				1851.5	1880	1908.5	L	M	H
3	QPSK	1	0	23.71	23.52	23.63	0.2094	0.2004	0.2056
3	16QAM	1	0	23.10	22.94	23.09	0.1820	0.1754	0.1816
Channel				18607	18900	19193	EIRP(W)		
Frequency (MHz)				1850.7	1880	1909.3	L	M	H
1.4	QPSK	1	0	23.69	23.45	23.59	0.2084	0.1972	0.2037
1.4	16QAM	1	0	23.02	22.83	22.96	0.1786	0.1710	0.1762

LTE Band 4:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				20050	20175	20300			
Frequency (MHz)				1720	1732.5	1745	L	M	H
20	QPSK	1	0	23.81	23.82	23.76	0.1702	0.1706	0.1683
20	QPSK	1	99	23.59	23.55	23.47	0.1618	0.1603	0.1574
20	QPSK	100	0	22.74	22.89	22.80	0.1330	0.1377	0.1349
20	16QAM	1	0	23.15	23.06	23.01	0.1462	0.1432	0.1416
20	64QAM	1	0	21.68	21.49	21.44	0.1042	0.0998	0.0986
20	256QAM	1	0	18.42	18.50	18.54	0.0492	0.0501	0.0506
Channel				20025	20175	20325	EIRP(W)		
Frequency (MHz)				1717.5	1732.5	1747.5	L	M	H
15	QPSK	1	0	23.79	23.78	23.75	0.1694	0.1690	0.1679
15	16QAM	1	0	23.12	23.05	22.97	0.1452	0.1429	0.1403
Channel				20000	20175	20350	EIRP(W)		
Frequency (MHz)				1715	1732.5	1750	L	M	H
10	QPSK	1	0	23.73	23.63	23.62	0.1671	0.1633	0.1629
10	16QAM	1	0	23.09	23.08	23.00	0.1442	0.1439	0.1413
Channel				19975	20175	20375	EIRP(W)		
Frequency (MHz)				1712.5	1732.5	1752.5	L	M	H
5	QPSK	1	0	23.74	23.74	23.63	0.1675	0.1675	0.1633
5	16QAM	1	0	23.12	23.12	22.99	0.1452	0.1452	0.1409
Channel				19965	20175	20385	EIRP(W)		
Frequency (MHz)				1711.5	1732.5	1753.5	L	M	H
3	QPSK	1	0	23.80	23.74	23.67	0.1698	0.1675	0.1648
3	16QAM	1	0	23.12	23.14	23.00	0.1452	0.1459	0.1413
Channel				19950	20175	20393	EIRP(W)		
Frequency (MHz)				1710	1732.5	1754.3	L	M	H
1.4	QPSK	1	0	23.75	23.71	23.64	0.1679	0.1663	0.1637
1.4	16QAM	1	0	23.03	23.00	22.90	0.1422	0.1413	0.1380

LTE Band 5:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				20450	20525	20600			
Frequency (MHz)				829	836.5	844	L	M	H
10	QPSK	1	0	24.06	24.15	24.08	0.0979	0.1000	0.0984
10	QPSK	1	49	24.01	24.12	24.11	0.0968	0.0993	0.0991
10	QPSK	50	0	23.22	23.28	23.24	0.0807	0.0818	0.0811
10	16QAM	1	0	23.39	23.51	23.48	0.0839	0.0863	0.0857
10	64QAM	1	0	22.07	22.11	22.15	0.0619	0.0625	0.0631
10	256QAM	1	0	19.17	19.02	18.94	0.0318	0.0307	0.0301
Channel				20425	20525	20625	ERP(W)		
Frequency (MHz)				826.5	836.5	846.5	L	M	H
5	QPSK	1	0	24.07	24.11	24.14	0.0982	0.0991	0.0998
5	16QAM	1	0	23.39	23.40	23.49	0.0839	0.0841	0.0859
Channel				20415	20525	20635	ERP(W)		
Frequency (MHz)				825.5	836.5	847.5	L	M	H
3	QPSK	1	0	24.13	24.15	24.10	0.0995	0.1000	0.0989
3	16QAM	1	0	23.45	23.45	23.51	0.0851	0.0851	0.0863
Channel				20407	20525	20643	ERP(W)		
Frequency (MHz)				824.7	836.5	848.3	L	M	H
1.4	QPSK	1	0	24.01	24.07	24.10	0.0968	0.0982	0.0989
1.4	16QAM	1	0	23.33	23.37	23.50	0.0828	0.0836	0.0861

LTE Band 12:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				23060	23095	23160			
Frequency (MHz)				704	707.5	714	L	M	H
10	QPSK	1	0	23.73	23.98	23.89	0.0511	0.0541	0.0530
10	QPSK	1	49	23.88	23.87	23.87	0.0528	0.0527	0.0527
10	QPSK	50	0	23.01	23.03	22.96	0.0433	0.0435	0.0428
10	16QAM	1	0	23.29	23.34	23.29	0.0461	0.0467	0.0461
10	64QAM	1	0	22.15	22.12	22.15	0.0355	0.0352	0.0355
10	256QAM	1	0	19.02	18.91	18.84	0.0173	0.0168	0.0166
Channel				23035	23095	23205	EIRP(W)		
Frequency (MHz)				701.5	707.5	718.5	L	M	H
5	QPSK	1	0	23.90	23.90	23.92	0.0531	0.0531	0.0533
5	16QAM	1	0	23.21	23.22	23.25	0.0453	0.0454	0.0457
Channel				23025	23095	23195	EIRP(W)		
Frequency (MHz)				700.5	707.5	717.5	L	M	H
3	QPSK	1	0	23.89	23.97	23.93	0.0530	0.0540	0.0535
3	16QAM	1	0	23.26	23.34	23.26	0.0458	0.0467	0.0458
Channel				23017	23095	23173	EIRP(W)		
Frequency (MHz)				699.7	707.5	715.3	L	M	H
1.4	QPSK	1	0	23.80	23.89	23.79	0.0519	0.0530	0.0518
1.4	16QAM	1	0	23.14	23.21	23.23	0.0446	0.0453	0.0455

LTE Band 17:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				23780	23790	23830			
Frequency (MHz)				709	710	714	L	M	H
10	QPSK	1	0	23.75	23.94	23.89	0.0513	0.0536	0.0530
10	QPSK	1	49	23.83	23.86	23.89	0.0522	0.0526	0.0530
10	QPSK	50	0	22.91	22.97	22.95	0.0423	0.0429	0.0427
10	16QAM	1	0	23.26	23.25	23.28	0.0458	0.0457	0.0460
10	64QAM	1	0	22.01	22.03	21.95	0.0344	0.0345	0.0339
10	256QAM	1	0	18.85	18.67	18.96	0.0166	0.0159	0.0170
Channel				23755	23790	23825	EIRP(W)		
Frequency (MHz)				706.5	710	713.5	L	M	H
5	QPSK	1	0	23.93	23.87	23.93	0.0535	0.0527	0.0535
5	16QAM	1	0	23.25	23.26	23.24	0.0457	0.0458	0.0456

LTE Band 25:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				26140	26340	26590			
Frequency (MHz)				1860	1880	1905	L	M	H
20	QPSK	1	0	23.58	23.76	23.55	0.2032	0.2118	0.2018
20	QPSK	1	99	23.49	23.42	23.55	0.1991	0.1959	0.2018
20	QPSK	100	0	22.68	22.72	22.66	0.1652	0.1667	0.1644
20	16QAM	1	0	22.98	23.01	23.05	0.1770	0.1782	0.1799
20	64QAM	1	0	21.58	21.84	21.57	0.1282	0.1361	0.1279
20	256QAM	1	0	18.49	18.55	18.47	0.0630	0.0638	0.0627
Channel				26115	26340	26615	EIRP(W)		
Frequency (MHz)				1857.5	1880	1907.5	L	M	H
15	QPSK	1	0	23.56	23.47	23.65	0.2023	0.1982	0.2065
15	16QAM	1	0	22.95	23.00	22.93	0.1758	0.1778	0.1750
Channel				26090	26340	26640	EIRP(W)		
Frequency (MHz)				1855	1880	1910	L	M	H
10	QPSK	1	0	23.52	23.47	23.64	0.2004	0.1982	0.2061
10	16QAM	1	0	22.93	22.84	23.04	0.1750	0.1714	0.1795
Channel				26065	26340	26665	EIRP(W)		
Frequency (MHz)				1852.5	1880	1912.5	L	M	H
5	QPSK	1	0	23.60	23.57	23.74	0.2042	0.2028	0.2109
5	16QAM	1	0	22.91	22.76	23.03	0.1742	0.1683	0.1791
Channel				26055	26340	26675	EIRP(W)		
Frequency (MHz)				1851.5	1880	1913.5	L	M	H
3	QPSK	1	0	23.65	23.66	23.75	0.2065	0.2070	0.2113
3	16QAM	1	0	22.97	22.91	23.05	0.1766	0.1742	0.1799
Channel				26047	26340	26683	EIRP(W)		
Frequency (MHz)				1850.7	1880	1914.3	L	M	H
1.4	QPSK	1	0	23.57	23.54	23.66	0.2028	0.2014	0.2070
1.4	16QAM	1	0	22.92	22.91	23.04	0.1746	0.1742	0.1795

LTE Band 26:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)			
Channel				26765	26865	26915	26965				
Frequency (MHz)				821.5	831.5	836.5	841.5	L		M	H
15	QPSK	1	0	24.03	24.16	24.20	24.08	0.0973	0.1002	0.1012	0.0984
15	QPSK	1	74	23.83	23.94	23.94	23.83	0.0929	0.0953	0.0953	0.0929
15	QPSK	75	0	23.05	23.11	23.21	23.10	0.0776	0.0787	0.0805	0.0785
15	16QAM	1	0	23.21	23.48	23.26	23.19	0.0805	0.0857	0.0815	0.0802
15	64QAM	1	0	21.99	22.14	22.20	21.97	0.0608	0.0630	0.0638	0.0605
15	256QAM	1	0	19.25	19.24	19.17	19.16	0.0324	0.0323	0.0318	0.0317
Channel					26840	26915	26990		ERP(W)		
Frequency (MHz)					829	836.5	844		L	M	H
10	QPSK	1	0		24.04	24.02	23.96		0.0975	0.0971	0.0957
10	16QAM	1	0		23.32	23.28	23.48		0.0826	0.0818	0.0857
Channel					26815	26915	27015		ERP(W)		
Frequency (MHz)					826.5	836.5	846.5		L	M	H
5	QPSK	1	0		23.89	24.17	24.07		0.0942	0.1005	0.0982
5	16QAM	1	0		23.24	23.42	23.33		0.0811	0.0845	0.0828
Channel					26815	26915	27025		ERP(W)		
Frequency (MHz)					825.5	836.5	847.5		L	M	H
3	QPSK	1	0		23.98	24.04	24.10		0.0962	0.0975	0.0989
3	16QAM	1	0		23.28	23.37	23.37		0.0818	0.0836	0.0836
Channel					26797	26915	27033		ERP(W)		
Frequency (MHz)					824.7	836.5	848.3		L	M	H
1.4	QPSK	1	0		23.89	24.01	24.05		0.0942	0.0968	0.0977
1.4	16QAM	1	0		23.18	23.44	23.38		0.0800	0.0849	0.0838

LTE Band 66:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	EIRP(W)		
Channel				132072	132322	132572			
Frequency (MHz)				1720	1745	1770	L	M	H
20	QPSK	1	0	23.82	23.94	23.80	0.1706	0.1754	0.1698
20	QPSK	1	99	23.65	23.56	23.62	0.1641	0.1607	0.1629
20	QPSK	100	0	22.87	22.91	22.85	0.1371	0.1384	0.1365
20	16QAM	1	0	23.24	23.14	23.10	0.1493	0.1459	0.1445
20	64QAM	1	0	21.52	21.66	21.52	0.1005	0.1038	0.1005
20	256QAM	1	0	18.85	18.86	18.75	0.0543	0.0545	0.0531
Channel				132047	132322	132597	EIRP(W)		
Frequency (MHz)				1717.5	1745	1772.5	L	M	H
15	QPSK	1	0	23.74	23.59	23.77	0.1675	0.1618	0.1687
15	16QAM	1	0	23.16	23.04	23.06	0.1466	0.1426	0.1432
Channel				132022	132322	132622	EIRP(W)		
Frequency (MHz)				1715	1745	1775	L	M	H
10	QPSK	1	0	23.89	23.71	23.75	0.1734	0.1663	0.1679
10	16QAM	1	0	23.24	23.02	23.19	0.1493	0.1419	0.1476
Channel				131997	132322	132647	EIRP(W)		
Frequency (MHz)				1712.5	1745	1777.5	L	M	H
5	QPSK	1	0	23.84	23.64	23.68	0.1714	0.1637	0.1652
5	16QAM	1	0	23.02	22.88	23.14	0.1419	0.1374	0.1459
Channel				131987	132322	132657	EIRP(W)		
Frequency (MHz)				1711.5	1745	1778.5	L	M	H
3	QPSK	1	0	23.91	23.73	23.79	0.1742	0.1671	0.1694
3	16QAM	1	0	23.13	22.92	23.18	0.1455	0.1387	0.1472
Channel				131979	132322	132665	EIRP(W)		
Frequency (MHz)				1710.7	1745	1779.3	L	M	H
1.4	QPSK	1	0	23.78	23.61	23.82	0.1690	0.1626	0.1706
1.4	16QAM	1	0	23.10	22.93	23.09	0.1445	0.1390	0.1442

LTE Band 71:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	ERP(W)		
Channel				133222	133322	133372			
Frequency (MHz)				673	683	688	L	M	H
20	QPSK	1	0	23.55	23.79	23.68	0.0617	0.0652	0.0635
20	QPSK	1	99	23.40	23.47	23.40	0.0596	0.0605	0.0596
20	QPSK	100	0	22.81	22.87	22.66	0.0520	0.0527	0.0502
20	16QAM	1	0	23.14	22.91	23.30	0.0561	0.0532	0.0582
20	64QAM	1	0	21.89	21.68	21.70	0.0421	0.0401	0.0403
20	256QAM	1	0	19.08	19.15	18.99	0.0220	0.0224	0.0216
Channel				133197	133297	133397	EIRP(W)		
Frequency (MHz)				670.5	680.5	690.5	L	M	H
15	QPSK	1	0	22.75	22.72	22.69	0.0513	0.0509	0.0506
15	16QAM	1	0	23.21	23.16	23.30	0.0570	0.0564	0.0582
Channel				133172	133272	133422	EIRP(W)		
Frequency (MHz)				668	678	693	L	M	H
10	QPSK	1	0	23.57	23.64	23.70	0.0619	0.0630	0.0638
10	16QAM	1	0	22.90	22.93	23.02	0.0531	0.0535	0.0546
Channel				133147	133247	133447	EIRP(W)		
Frequency (MHz)				665.5	675.5	695.5	L	M	H
5	QPSK	1	0	23.56	23.78	23.56	0.0618	0.0650	0.0618
5	16QAM	1	0	22.78	23.13	23.00	0.0516	0.0560	0.0543

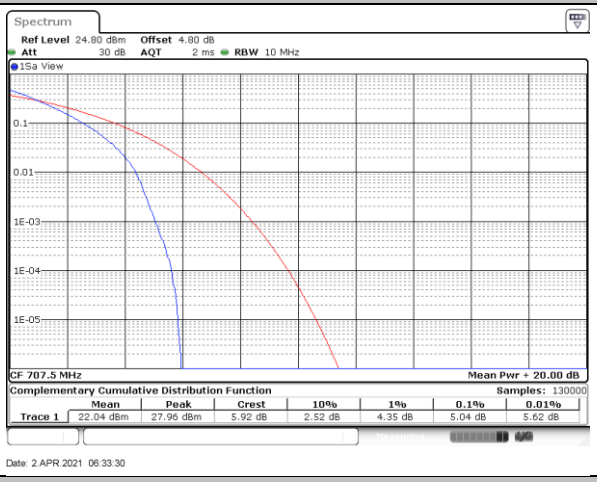
LTE Band 12

Peak-to-Average Ratio

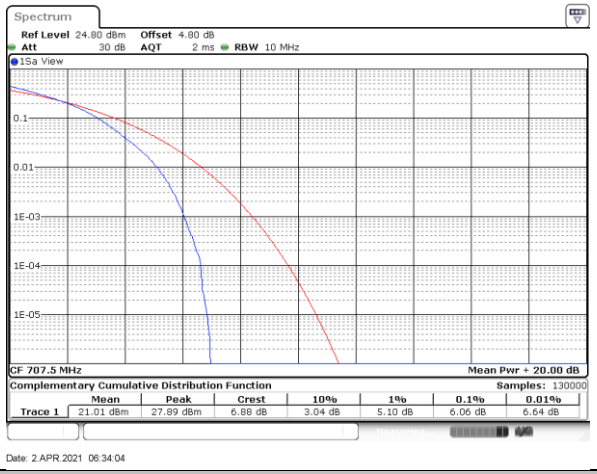
Mode	LTE Band 12 / 10MHz			
Mod.	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Result
Middle CH	5.04	6.06	5.97	PASS

LTE Band 12 / 10MHz

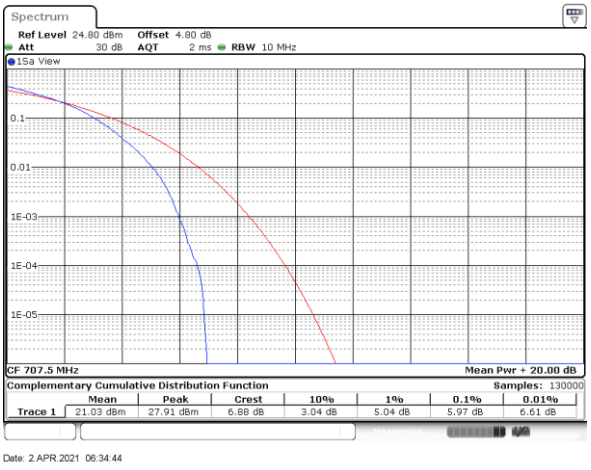
Middle Channel / Full RB/ QPSK



Middle Channel / Full RB/ 16QAM



Middle Channel / Full RB/ 64QAM

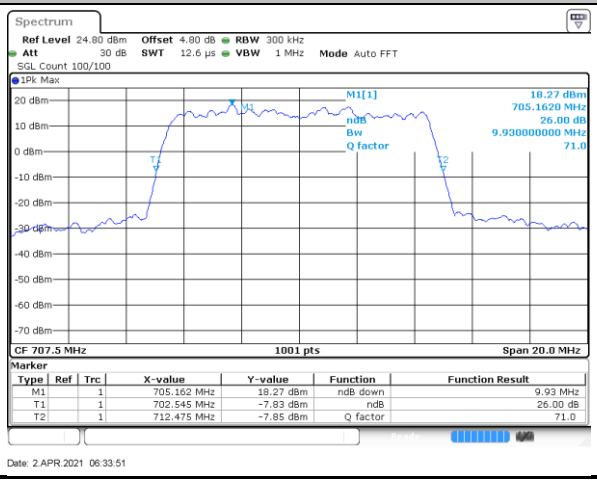


26dB Bandwidth

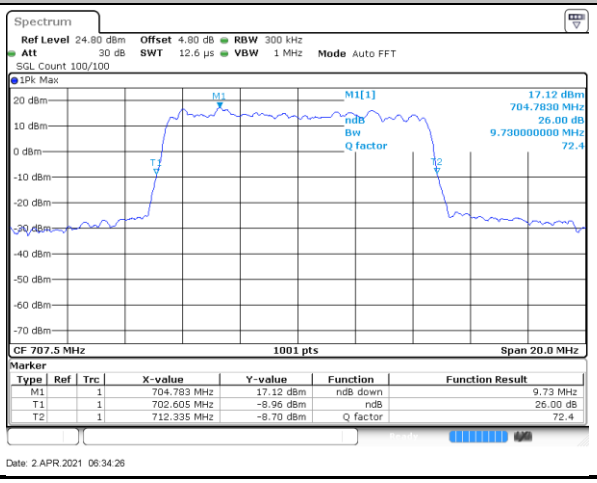
Mode	LTE Band 12 : 26dB BW(MHz)	
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	9.93	9.73

LTE Band 12

Middle Channel / 10MHz / QPSK



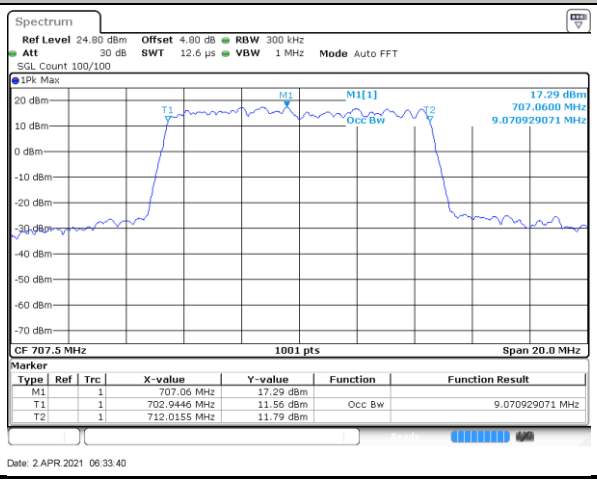
Middle Channel / 10MHz / 16QAM

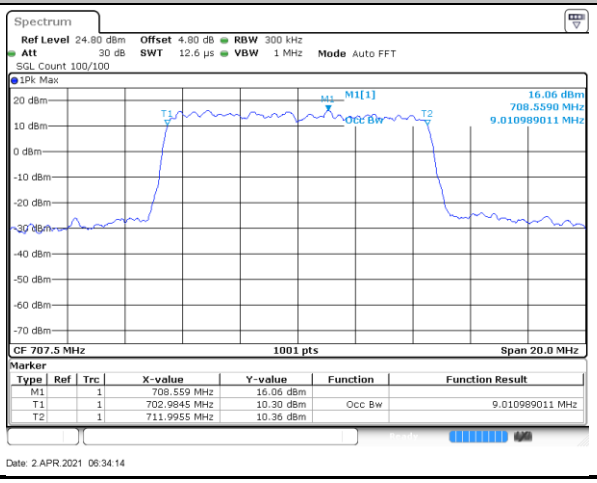


Occupied Bandwidth

Mode	LTE Band 12 : 99%OBW(MHz)	
BW	10MHz	
Mod.	QPSK	16QAM
Middle CH	9.07	9.01

LTE Band 12	
Middle Channel / 10MHz / QPSK	Middle Channel / 10MHz / 16QAM

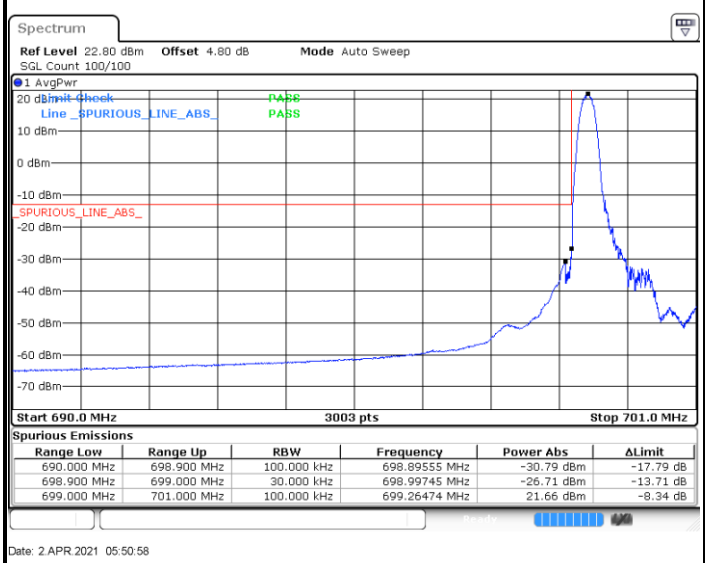




Conducted Band Edge

LTE Band 12 / 1.4MHz / QPSK

Lowest Band Edge / 1RB

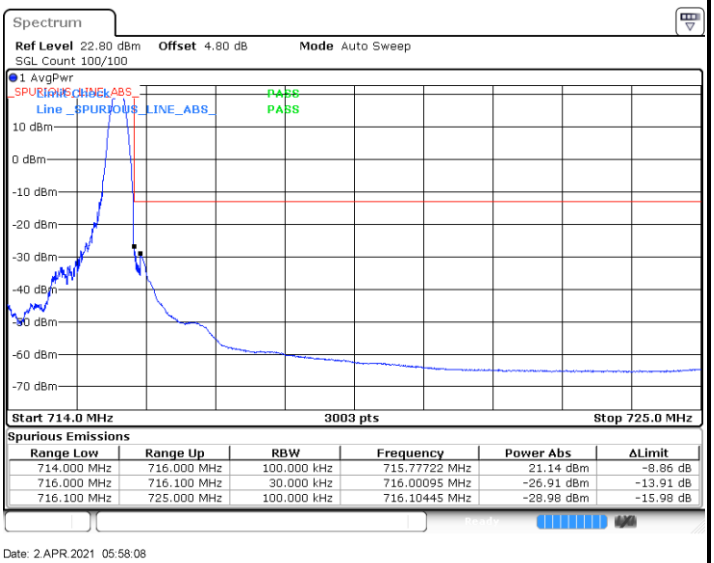


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-30.79 dBm	-17.79 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99745 MHz	-26.71 dBm	-13.71 dB
699.000 MHz	701.000 MHz	100.000 kHz	699.26474 MHz	21.66 dBm	-8.34 dB

Date: 2.APR.2021 05:50:58

Highest Band Edge / 1RB

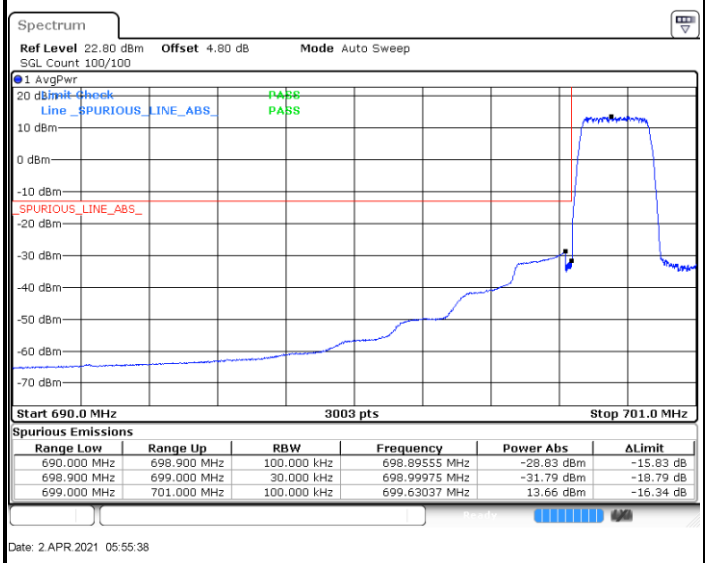


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
714.000 MHz	716.000 MHz	100.000 kHz	715.77722 MHz	21.14 dBm	-8.86 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00095 MHz	-26.91 dBm	-13.91 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-28.98 dBm	-15.98 dB

Date: 2.APR.2021 05:58:08

Lowest Band Edge / Full RB

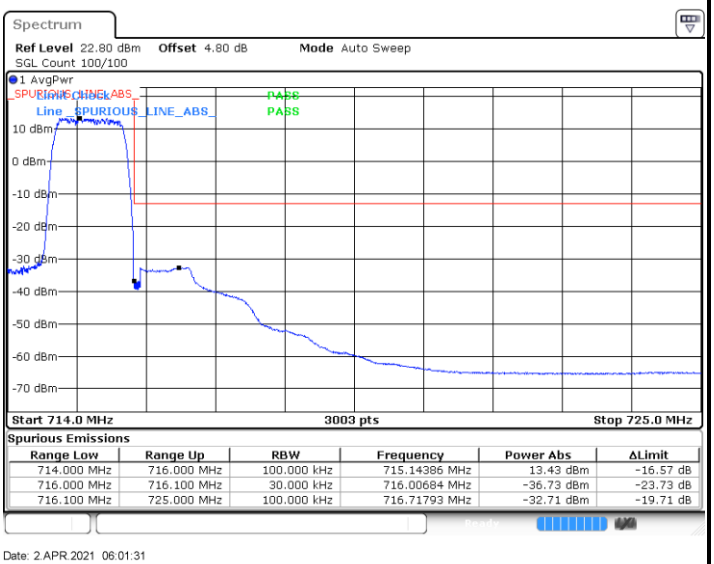


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-28.83 dBm	-15.83 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99975 MHz	-31.79 dBm	-18.79 dB
699.000 MHz	701.000 MHz	100.000 kHz	699.63037 MHz	13.66 dBm	-16.34 dB

Date: 2.APR.2021 05:55:38

Highest Band Edge / Full RB



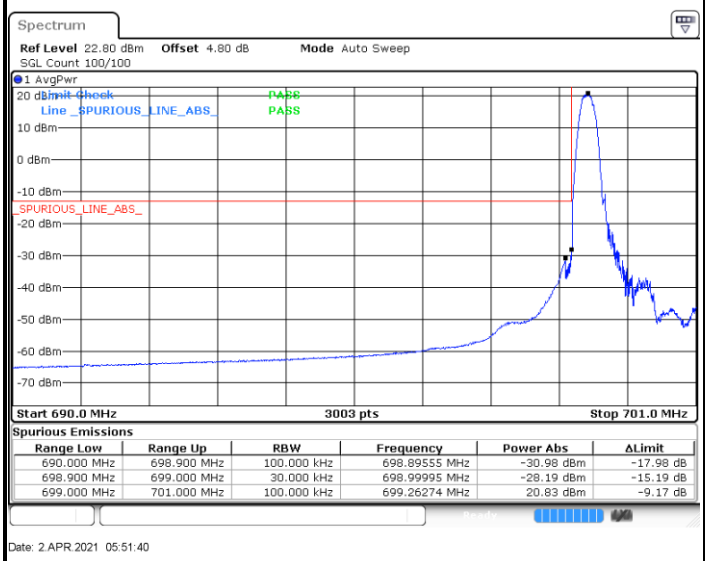
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
714.000 MHz	716.000 MHz	100.000 kHz	715.14386 MHz	13.43 dBm	-16.57 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00684 MHz	-36.73 dBm	-23.73 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.71793 MHz	-32.71 dBm	-19.71 dB

Date: 2.APR.2021 06:01:31

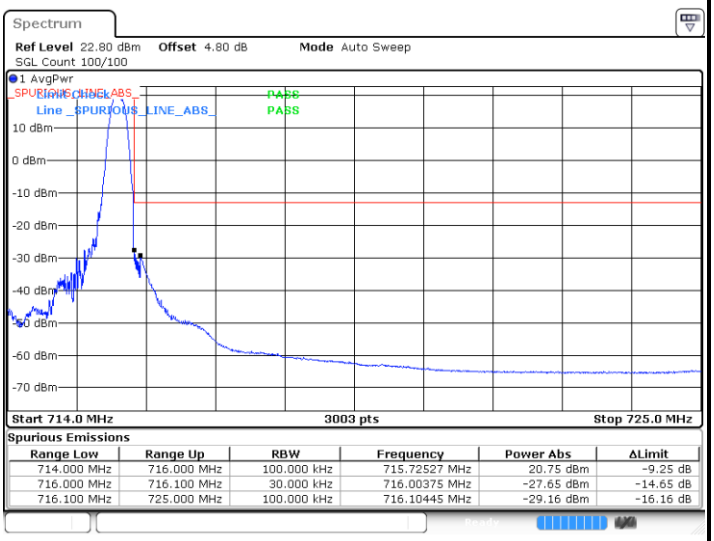
LTE Band 12 / 1.4MHz / 16QAM

Lowest Band Edge / 1 RB



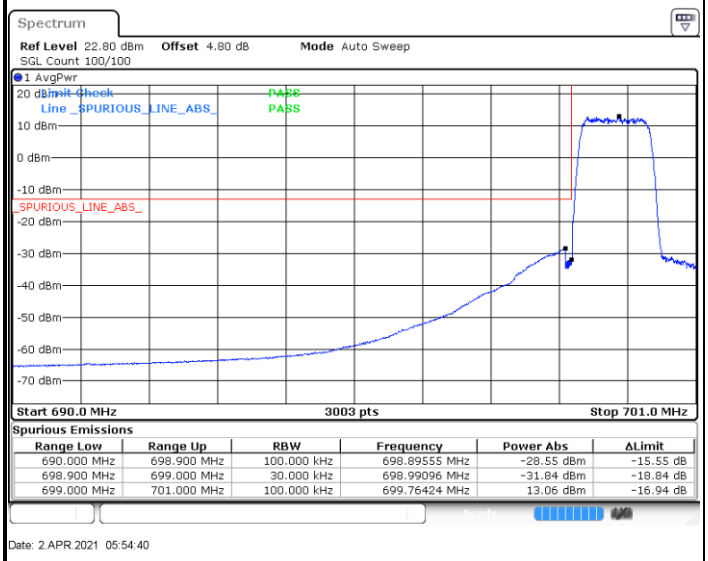
Date: 2.APR.2021 05:51:40

Highest Band Edge / 1 RB



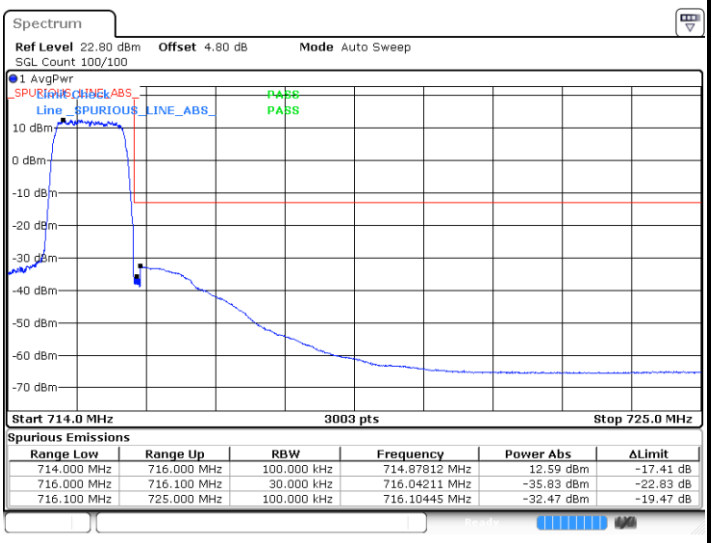
Date: 2.APR.2021 05:58:46

Lowest Band Edge / Full RB



Date: 2.APR.2021 05:54:40

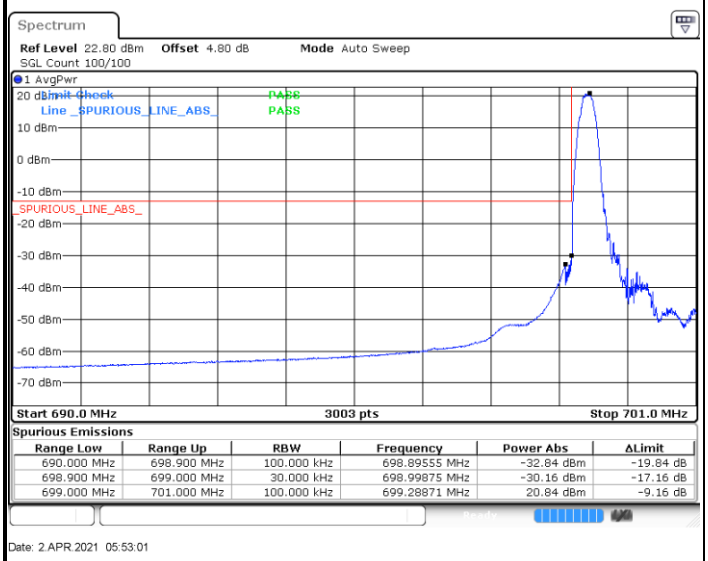
Highest Band Edge / Full RB



Date: 2.APR.2021 06:00:41

LTE Band 12 / 1.4MHz / 64QAM

Lowest Band Edge / 1 RB

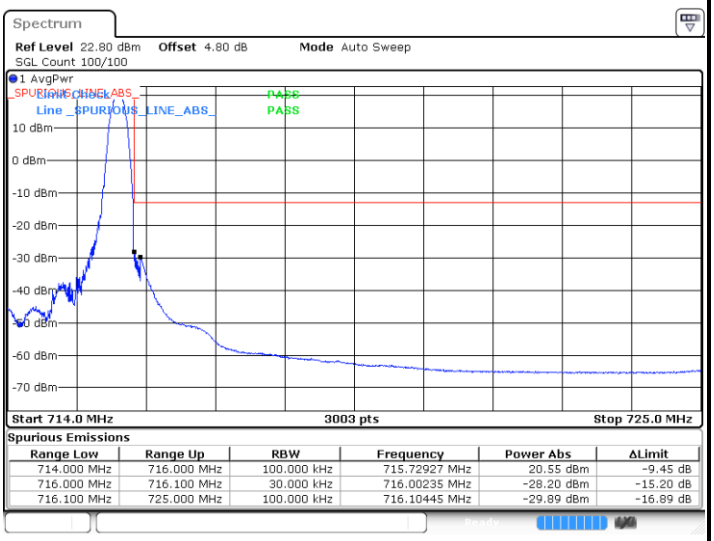


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-32.84 dBm	-19.84 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99875 MHz	-30.16 dBm	-17.16 dB
699.000 MHz	701.000 MHz	100.000 kHz	699.28871 MHz	20.84 dBm	-9.16 dB

Date: 2.APR.2021 05:53:01

Highest Band Edge / 1 RB

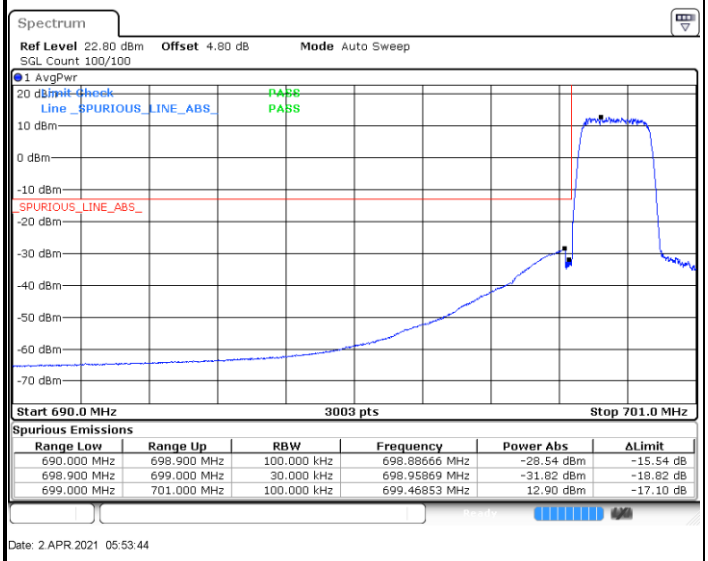


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
714.000 MHz	716.000 MHz	100.000 kHz	715.72927 MHz	20.55 dBm	-9.45 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00235 MHz	-28.20 dBm	-15.20 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-29.89 dBm	-16.89 dB

Date: 2.APR.2021 05:59:23

Lowest Band Edge / Full RB

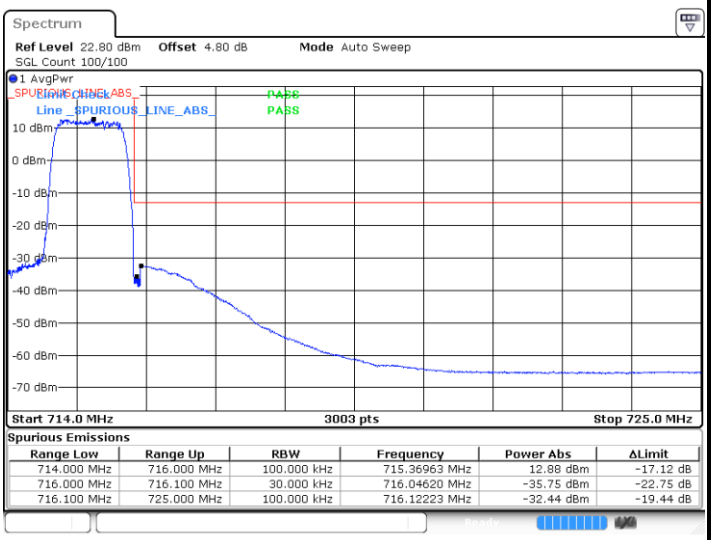


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.88666 MHz	-28.54 dBm	-15.54 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.95869 MHz	-31.82 dBm	-18.82 dB
699.000 MHz	701.000 MHz	100.000 kHz	699.46853 MHz	12.90 dBm	-17.10 dB

Date: 2.APR.2021 05:53:44

Highest Band Edge / Full RB



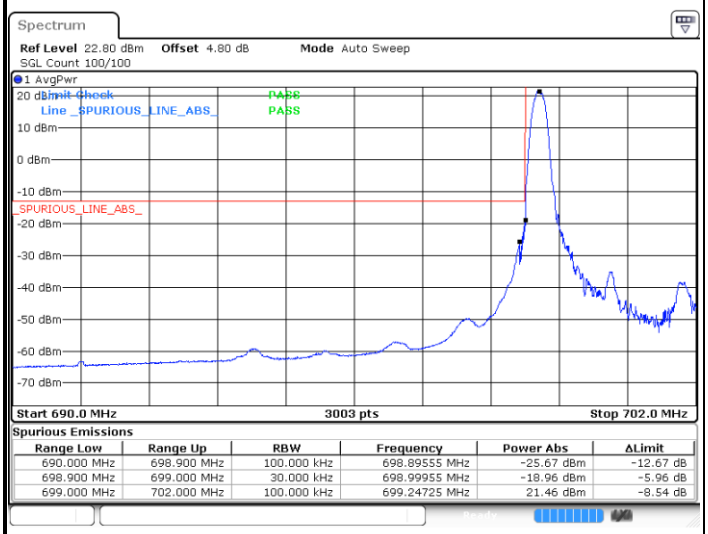
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
714.000 MHz	716.000 MHz	100.000 kHz	715.36963 MHz	12.88 dBm	-17.12 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.04620 MHz	-35.75 dBm	-22.75 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.12223 MHz	-32.44 dBm	-19.44 dB

Date: 2.APR.2021 06:00:01

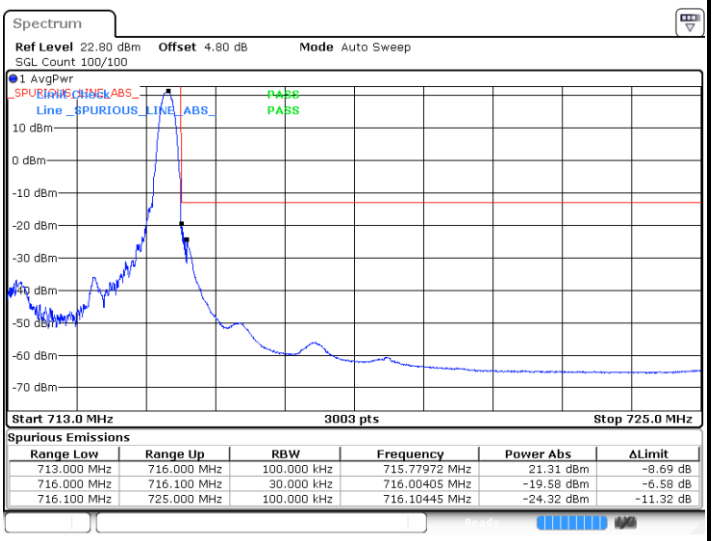
LTE Band 12 / 3MHz / QPSK

Lowest Band Edge / 1RB



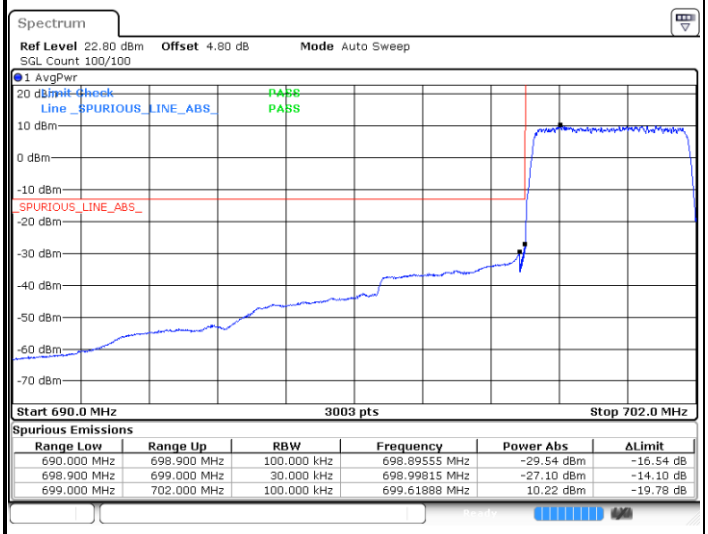
Date: 2.APR.2021 06:03:08

Highest Band Edge / 1 RB



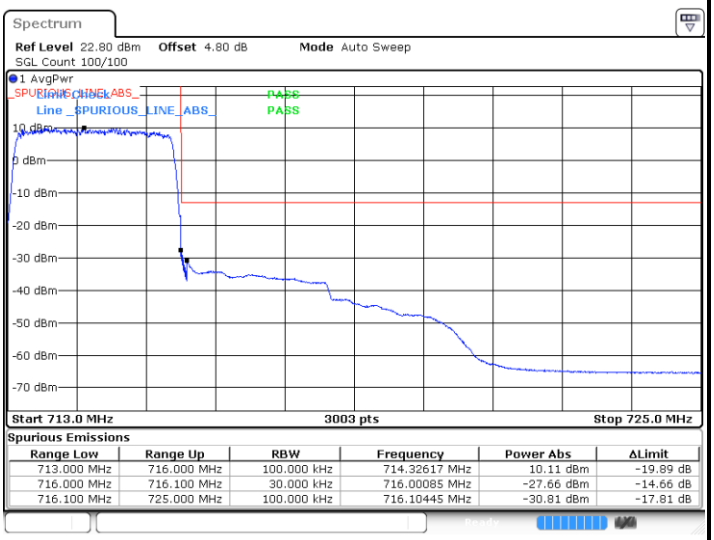
Date: 2.APR.2021 06:09:50

Lowest Band Edge / Full RB



Date: 2.APR.2021 06:07:05

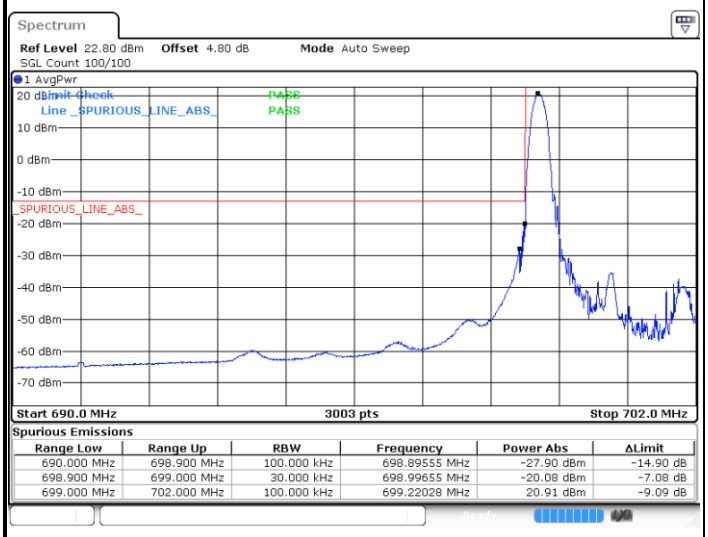
Highest Band Edge / Full RB



Date: 2.APR.2021 06:13:04

LTE Band 12 / 3MHz / 16QAM

Lowest Band Edge / 1 RB



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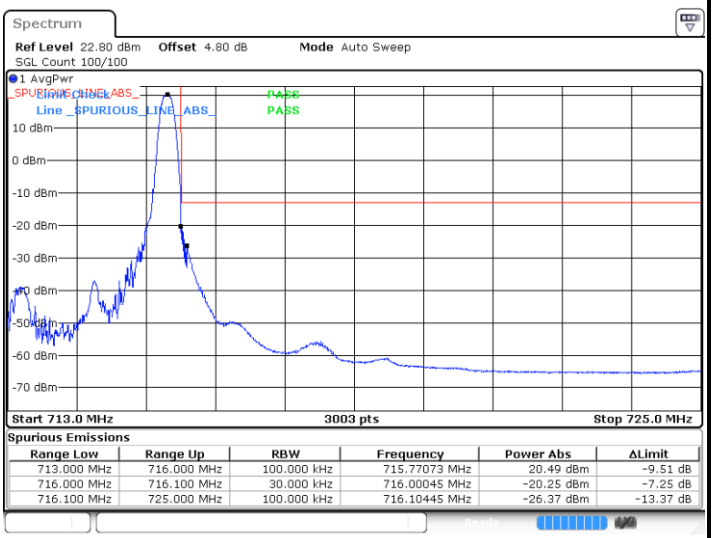
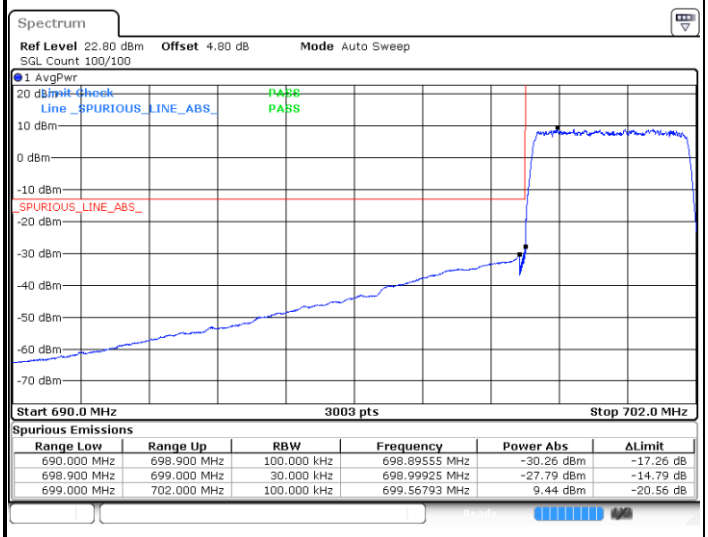
Highest Band Edge /1 RB



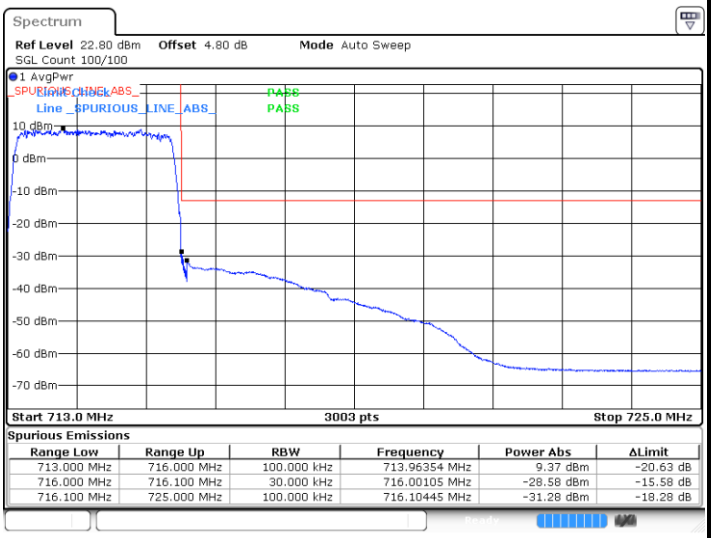
Date: 2.APR.2021 06:10:26

Lowest Band Edge / Full RB



Date: 2.APR.2021 06:06:30

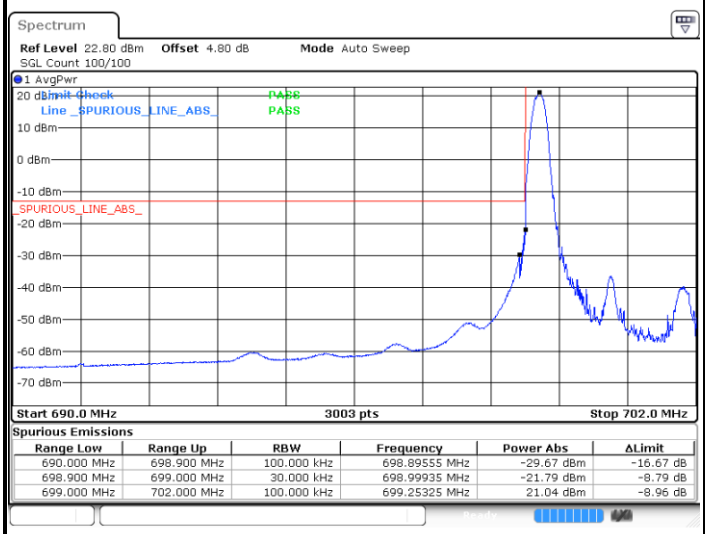
Highest Band Edge / Full RB



Date: 2.APR.2021 06:12:21

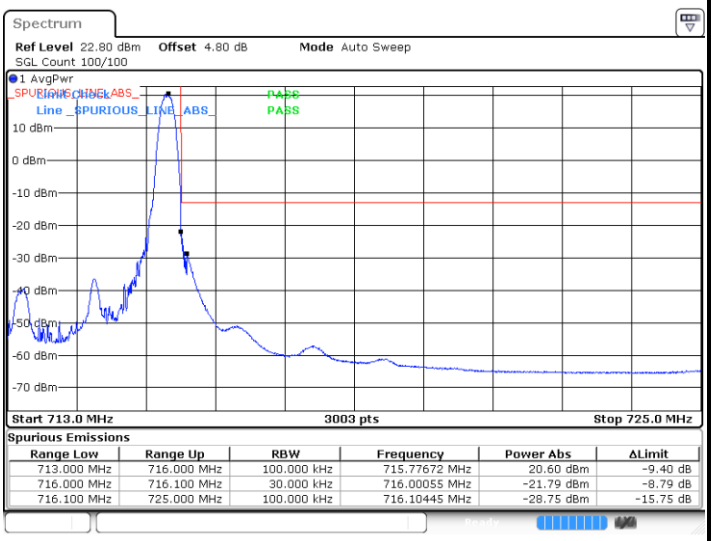
LTE Band 12 / 3MHz / 64QAM

Lowest Band Edge / 1 RB



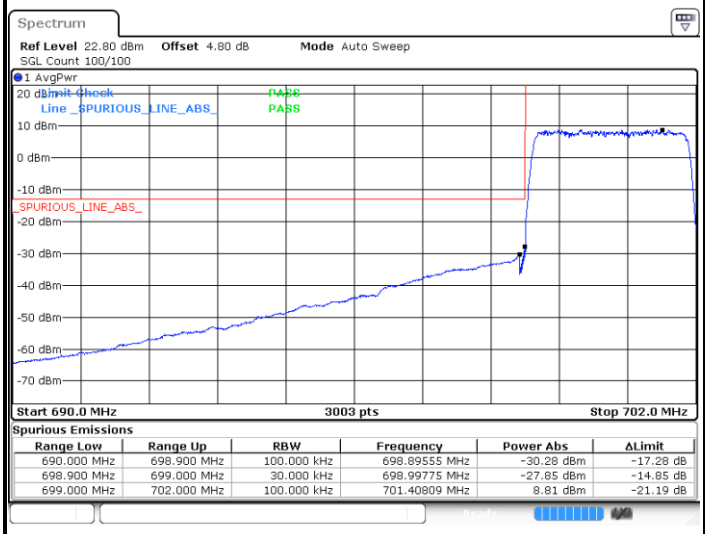
Date: 2.APR.2021 06:04:35

Highest Band Edge /1 RB



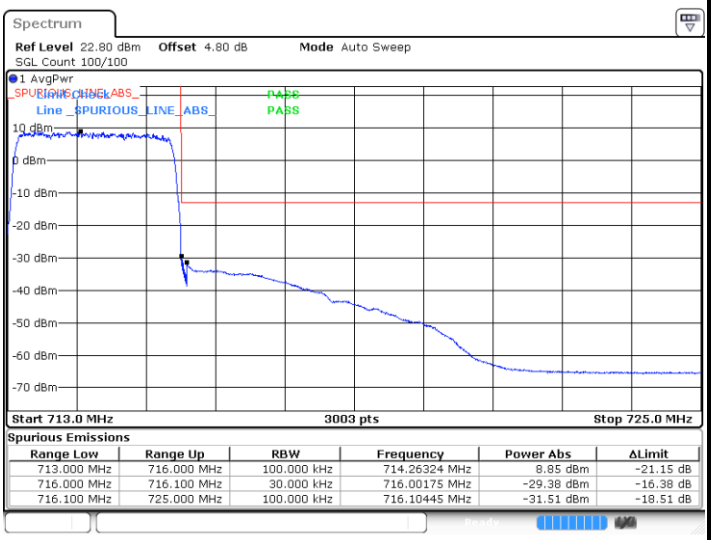
Date: 2.APR.2021 06:11:06

Lowest Band Edge / Full RB



Date: 2.APR.2021 06:05:36

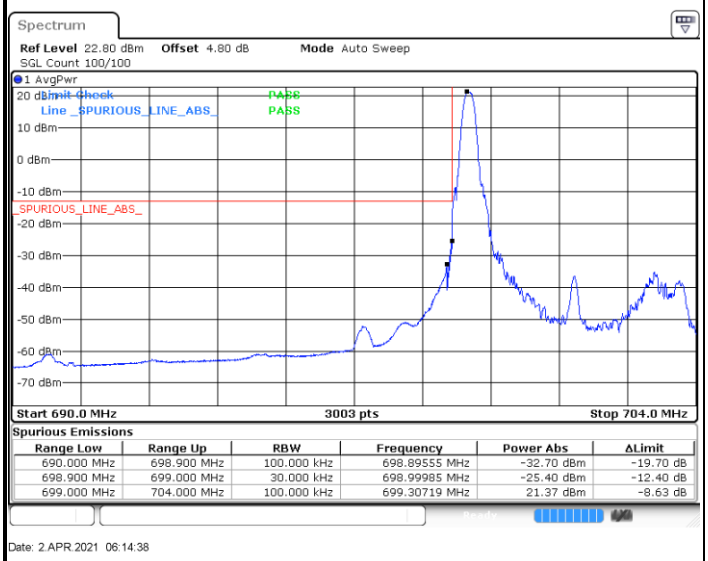
Highest Band Edge / Full RB



Date: 2.APR.2021 06:11:45

LTE Band 12 / 5MHz / QPSK

Lowest Band Edge / 1 RB

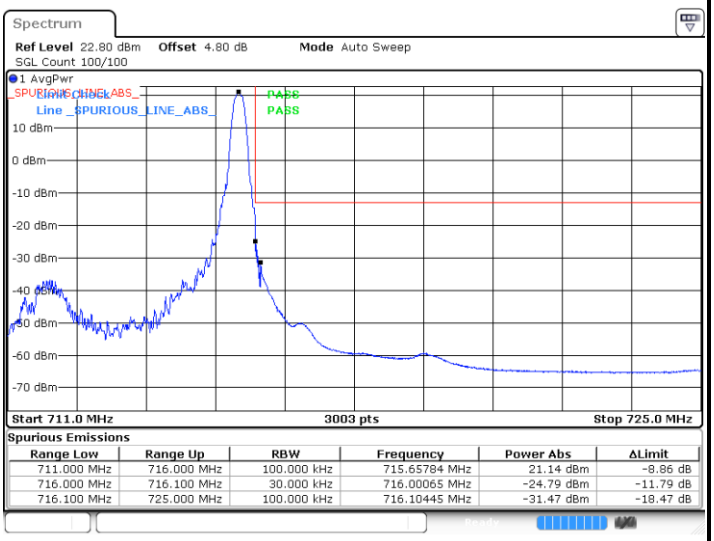


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-32.70 dBm	-19.70 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99985 MHz	-25.40 dBm	-12.40 dB
699.000 MHz	704.000 MHz	100.000 kHz	699.30719 MHz	21.37 dBm	-8.63 dB

Date: 2.APR.2021 06:14:38

Highest Band Edge / 1 RB

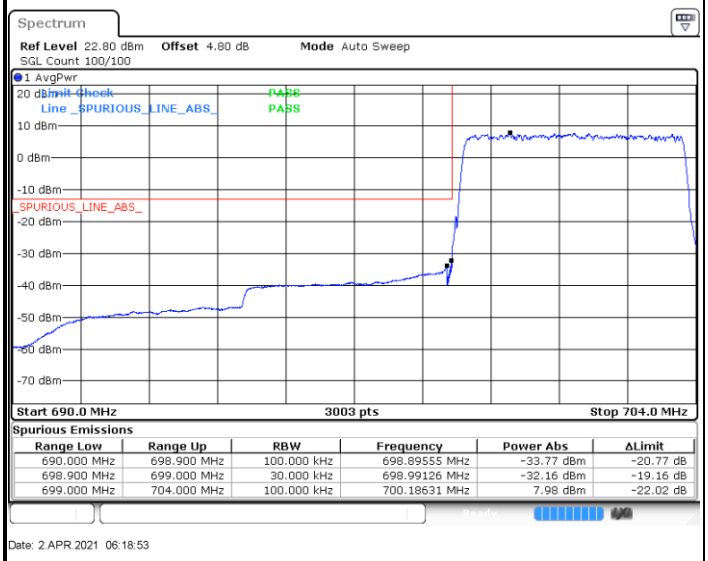


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
711.000 MHz	716.000 MHz	100.000 kHz	715.65784 MHz	21.14 dBm	-8.86 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00065 MHz	-24.79 dBm	-11.79 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-31.47 dBm	-18.47 dB

Date: 2.APR.2021 06:21:23

Lowest Band Edge / Full RB

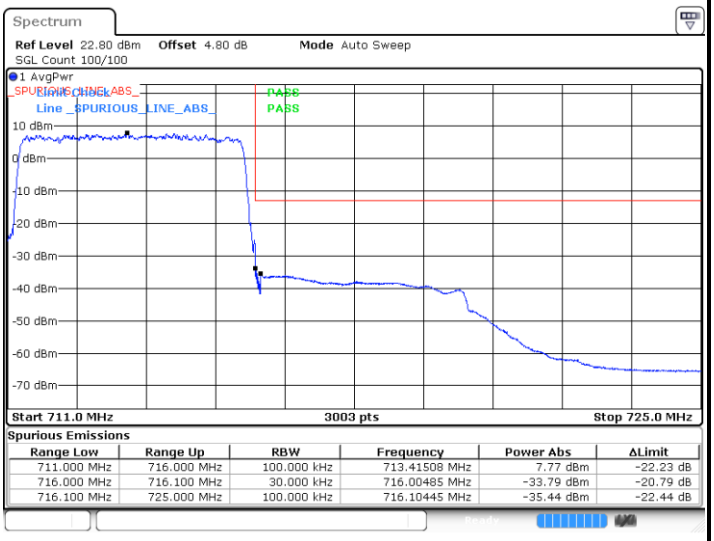


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-33.77 dBm	-20.77 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99126 MHz	-32.16 dBm	-19.16 dB
699.000 MHz	704.000 MHz	100.000 kHz	700.18631 MHz	7.98 dBm	-22.02 dB

Date: 2.APR.2021 06:18:53

Highest Band Edge / Full RB



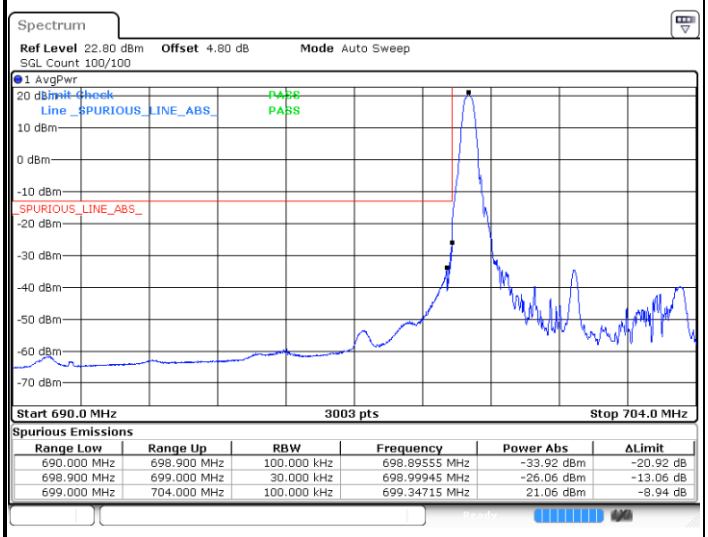
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
711.000 MHz	716.000 MHz	100.000 kHz	713.41508 MHz	7.77 dBm	-22.23 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00485 MHz	-33.79 dBm	-20.79 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-35.44 dBm	-22.44 dB

Date: 2.APR.2021 06:26:08

LTE Band 12 / 5MHz / 16QAM

Lowest Band Edge / 1RB

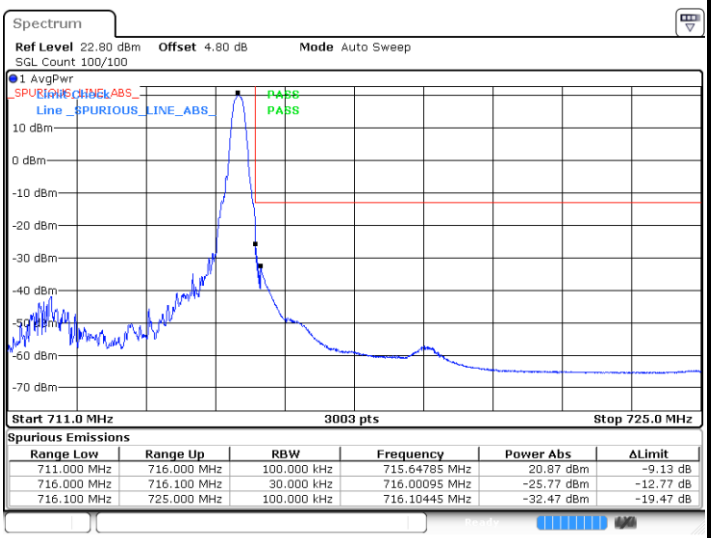


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-33.92 dBm	-20.92 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99945 MHz	-26.06 dBm	-13.06 dB
699.000 MHz	704.000 MHz	100.000 kHz	699.34715 MHz	21.06 dBm	-8.94 dB

Date: 2.APR.2021 06:15:30

Highest Band Edge / 1 RB

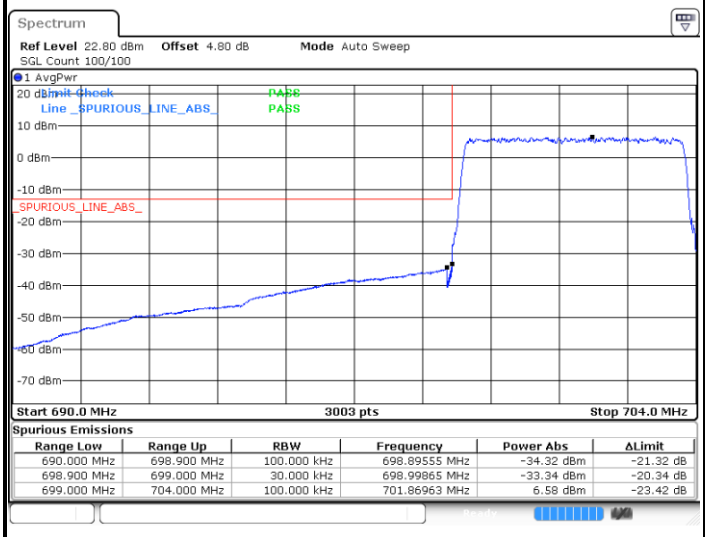


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
711.000 MHz	716.000 MHz	100.000 kHz	715.64785 MHz	20.87 dBm	-9.13 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00095 MHz	-25.77 dBm	-12.77 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-32.47 dBm	-19.47 dB

Date: 2.APR.2021 06:22:16

Lowest Band Edge / Full RB

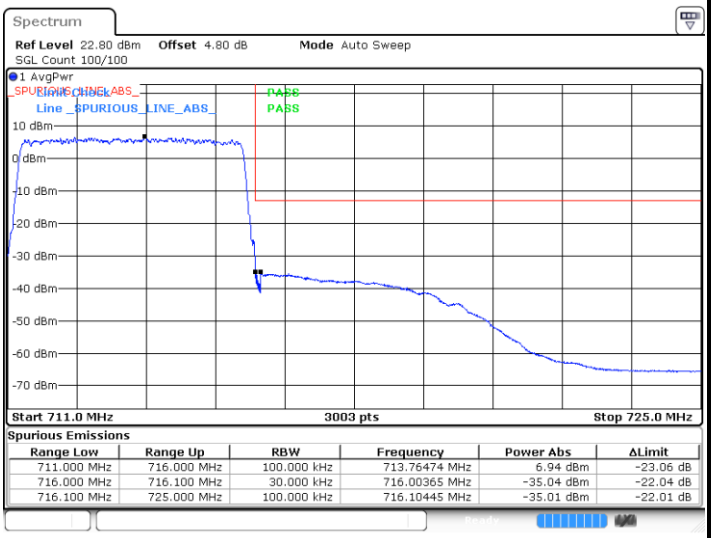


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-34.32 dBm	-21.32 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99865 MHz	-33.34 dBm	-20.34 dB
699.000 MHz	704.000 MHz	100.000 kHz	701.86963 MHz	6.58 dBm	-23.42 dB

Date: 2.APR.2021 06:18:04

Highest Band Edge / Full RB



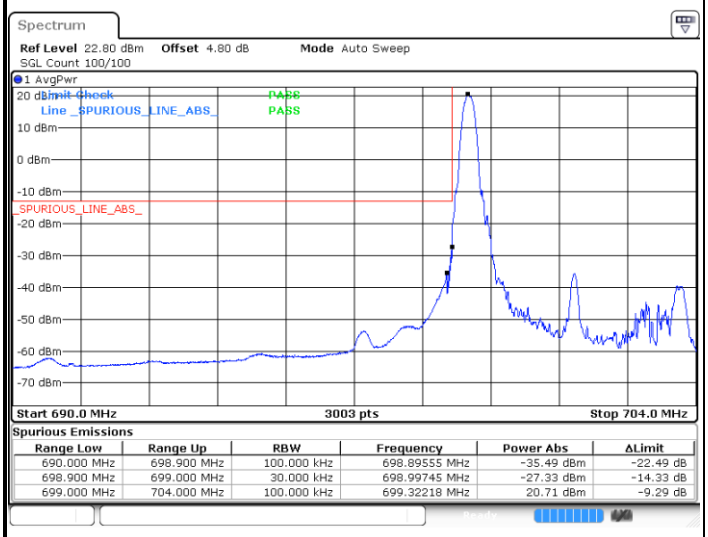
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
711.000 MHz	716.000 MHz	100.000 kHz	713.76474 MHz	6.94 dBm	-23.06 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00365 MHz	-35.04 dBm	-22.04 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-35.01 dBm	-22.01 dB

Date: 2.APR.2021 06:25:25

LTE Band 12 / 5MHz / 64QAM

Lowest Band Edge / 1RB

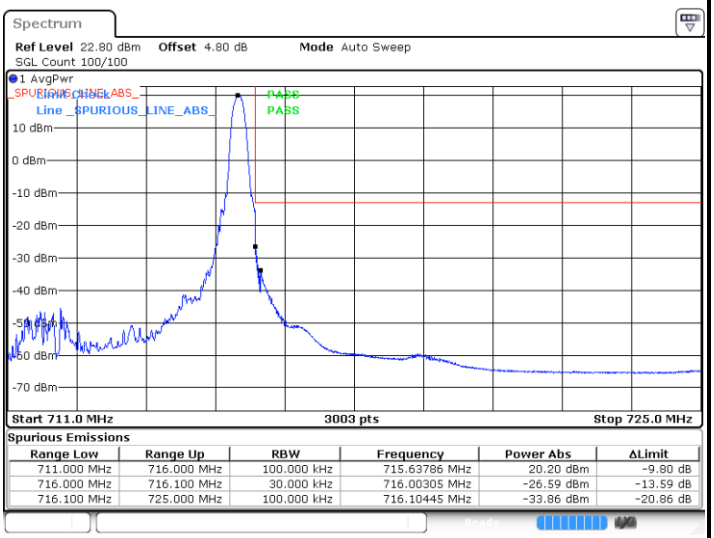


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-35.49 dBm	-22.49 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99745 MHz	-27.33 dBm	-14.33 dB
699.000 MHz	704.000 MHz	100.000 kHz	699.32218 MHz	20.71 dBm	-9.29 dB

Date: 2.APR.2021 06:16:12

Highest Band Edge / 1 RB

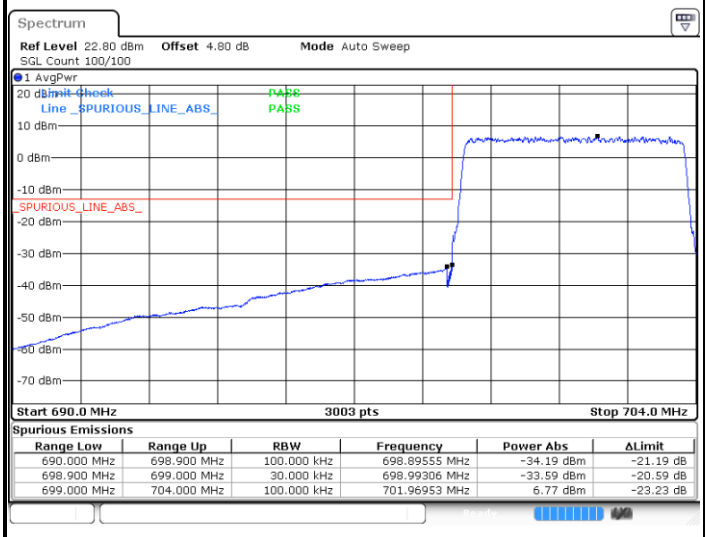


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
711.000 MHz	716.000 MHz	100.000 kHz	715.63786 MHz	20.20 dBm	-9.80 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00305 MHz	-26.59 dBm	-13.59 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-33.86 dBm	-20.86 dB

Date: 2.APR.2021 06:22:59

Lowest Band Edge / Full RB

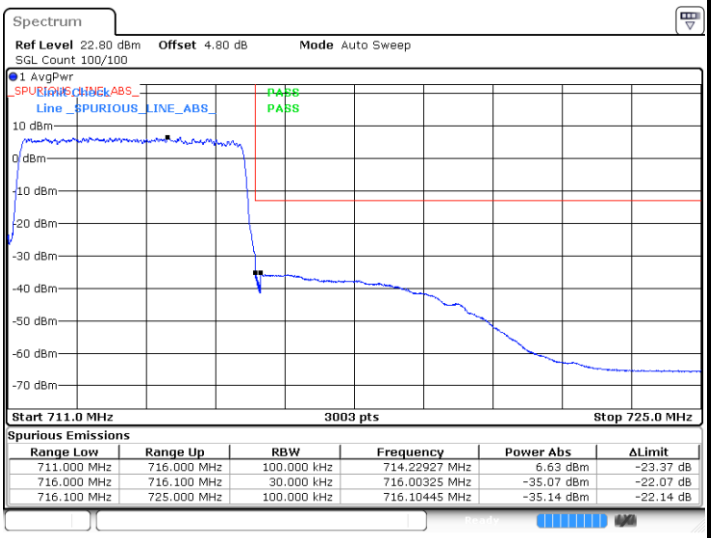


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-34.19 dBm	-21.19 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99306 MHz	-33.59 dBm	-20.59 dB
699.000 MHz	704.000 MHz	100.000 kHz	701.96953 MHz	6.77 dBm	-23.23 dB

Date: 2.APR.2021 06:16:56

Highest Band Edge / Full RB



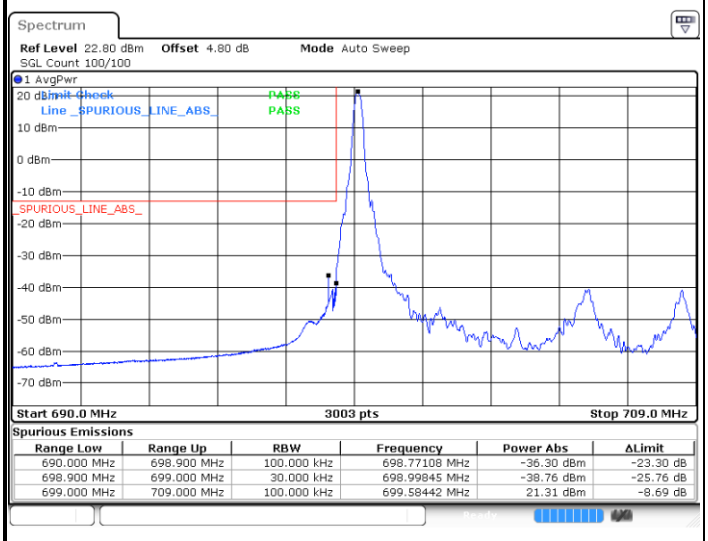
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
711.000 MHz	716.000 MHz	100.000 kHz	714.22927 MHz	6.63 dBm	-23.37 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00325 MHz	-35.07 dBm	-22.07 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-35.14 dBm	-22.14 dB

Date: 2.APR.2021 06:24:50

LTE Band 12 / 10MHz / QPSK

Lowest Band Edge / 1 RB

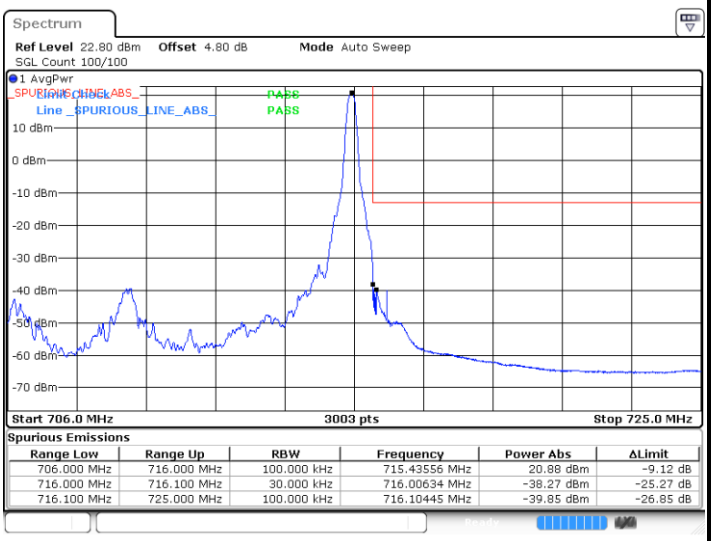


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.77108 MHz	-36.30 dBm	-23.30 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.99845 MHz	-38.76 dBm	-25.76 dB
699.000 MHz	709.000 MHz	100.000 kHz	699.58442 MHz	21.31 dBm	-8.69 dB

Date: 2.APR.2021 06:27:39

Highest Band Edge / 1 RB

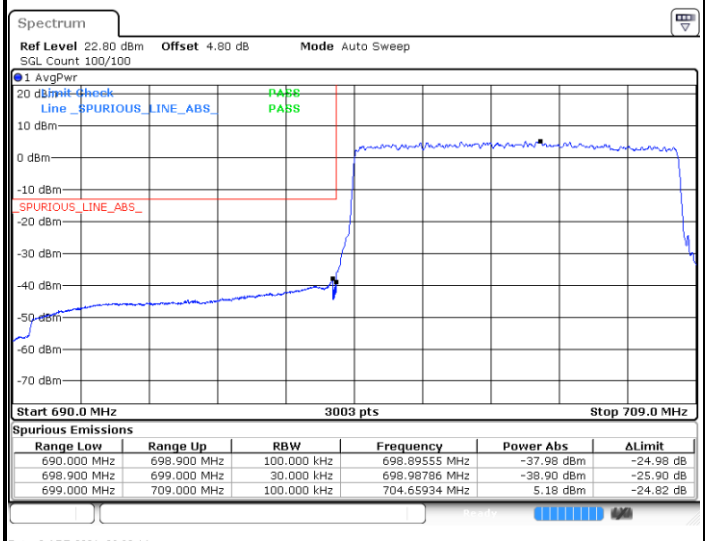


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
706.000 MHz	716.000 MHz	100.000 kHz	715.43556 MHz	20.88 dBm	-9.12 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.00634 MHz	-38.27 dBm	-25.27 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-39.85 dBm	-26.85 dB

Date: 2.APR.2021 06:36:25

Lowest Band Edge / Full RB

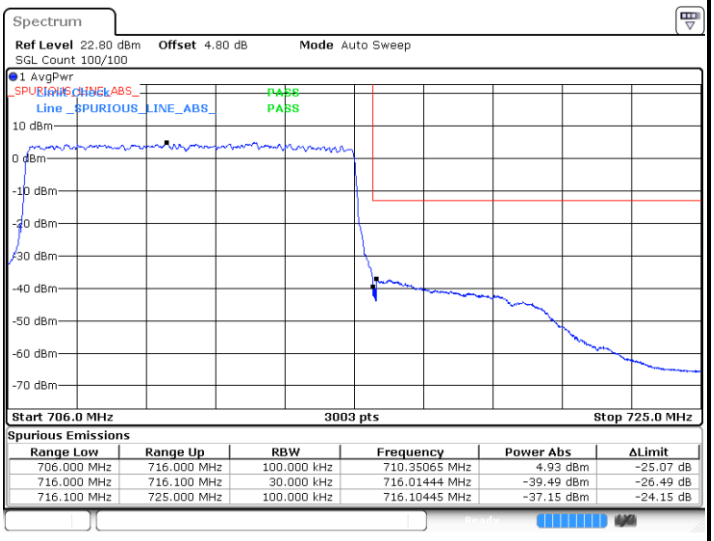


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
690.000 MHz	698.900 MHz	100.000 kHz	698.89555 MHz	-37.98 dBm	-24.98 dB
698.900 MHz	699.000 MHz	30.000 kHz	698.98786 MHz	-38.90 dBm	-25.90 dB
699.000 MHz	709.000 MHz	100.000 kHz	704.65934 MHz	5.18 dBm	-24.82 dB

Date: 2.APR.2021 06:32:14

Highest Band Edge / Full RB



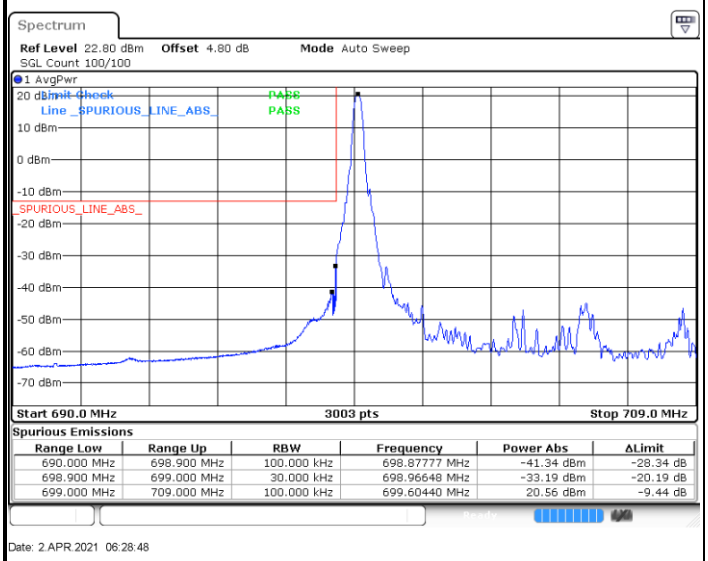
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
706.000 MHz	716.000 MHz	100.000 kHz	710.35065 MHz	4.93 dBm	-25.07 dB
716.000 MHz	716.100 MHz	30.000 kHz	716.01444 MHz	-39.49 dBm	-26.49 dB
716.100 MHz	725.000 MHz	100.000 kHz	716.10445 MHz	-37.15 dBm	-24.15 dB

Date: 2.APR.2021 06:42:44

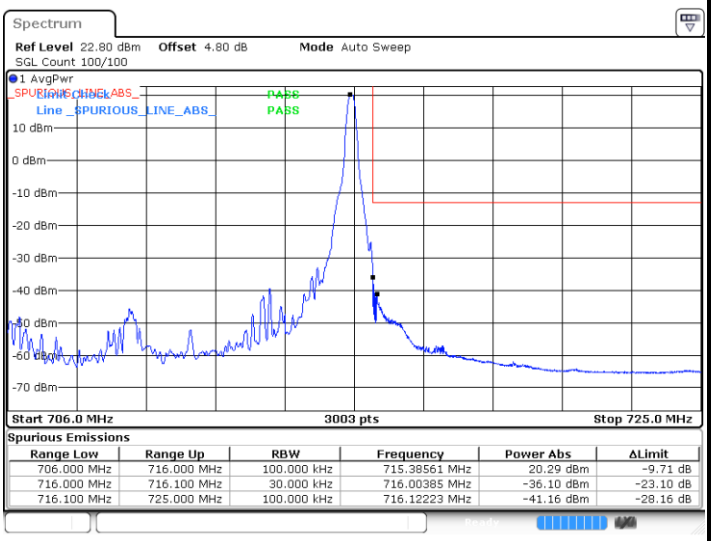
LTE Band 12 / 10MHz / 16QAM

Lowest Band Edge / 1 RB



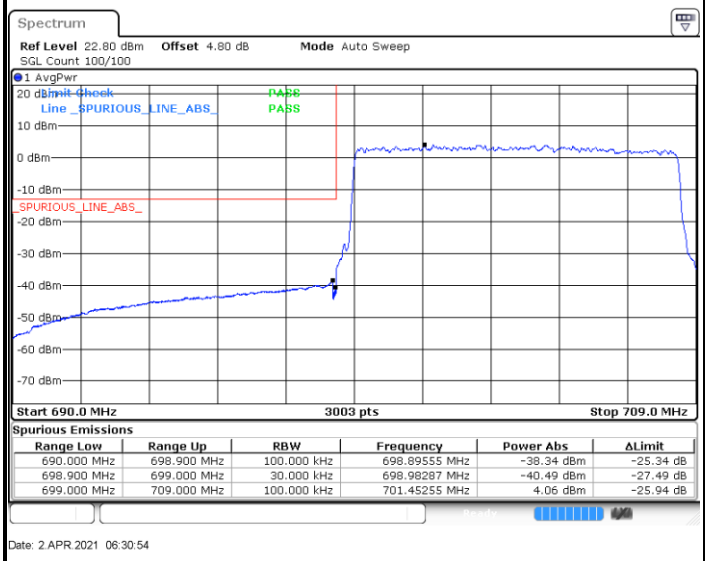
Date: 2.APR.2021 06:28:48

Highest Band Edge / 1 RB



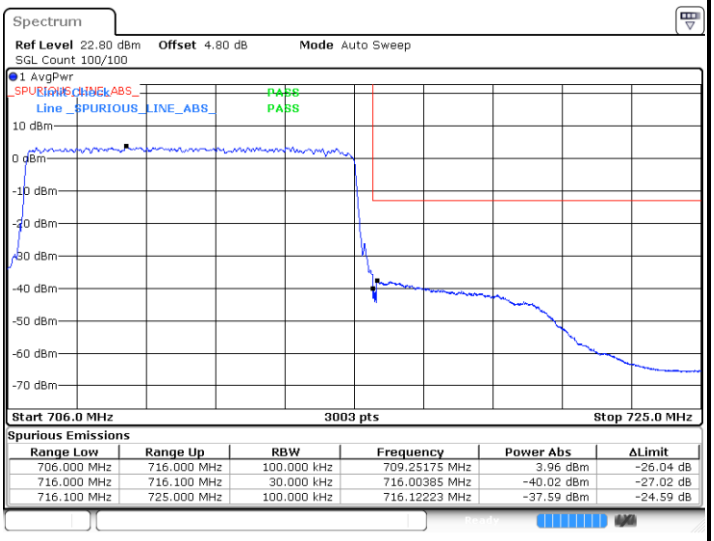
Date: 2.APR.2021 06:37:28

Lowest Band Edge / Full RB



Date: 2.APR.2021 06:30:54

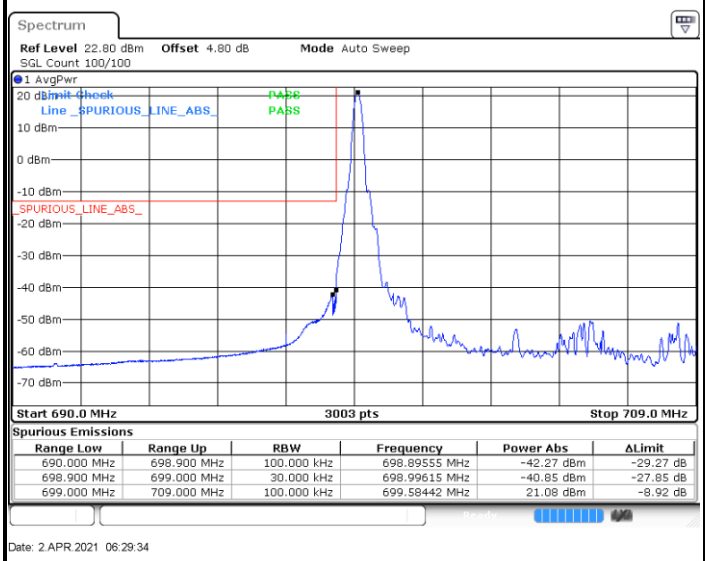
Highest Band Edge / Full RB



Date: 2.APR.2021 06:39:36

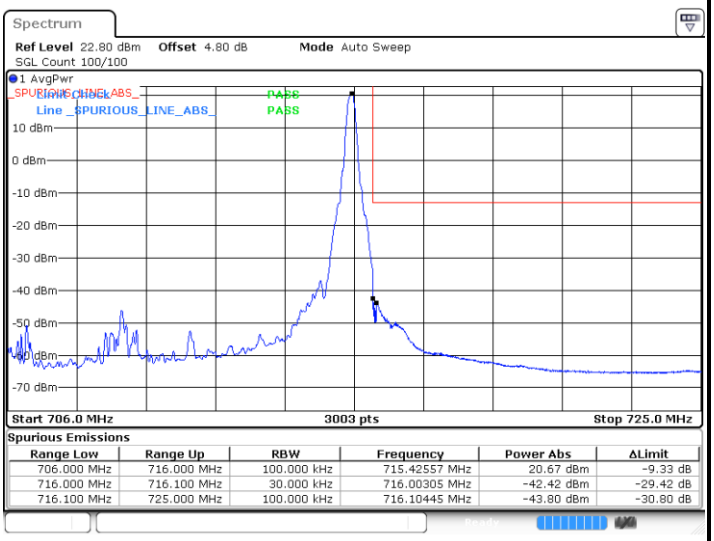
LTE Band 12 / 10MHz / 64QAM

Lowest Band Edge / 1 RB



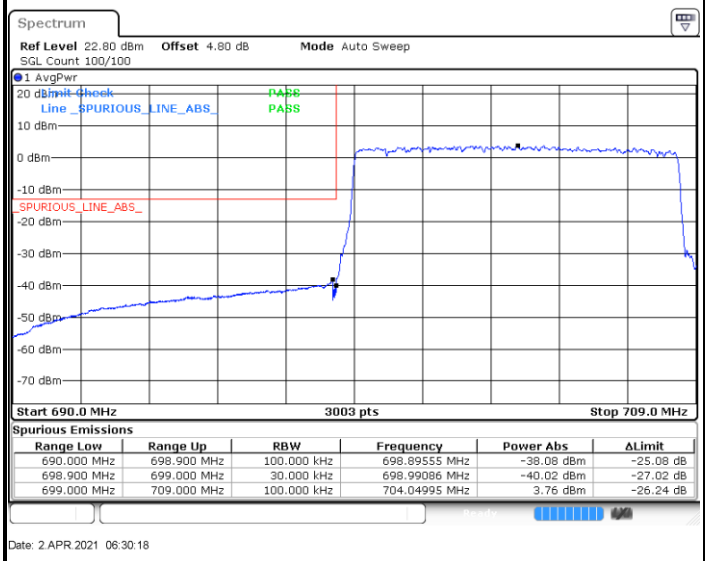
Date: 2.APR.2021 06:29:34

Highest Band Edge / 1 RB



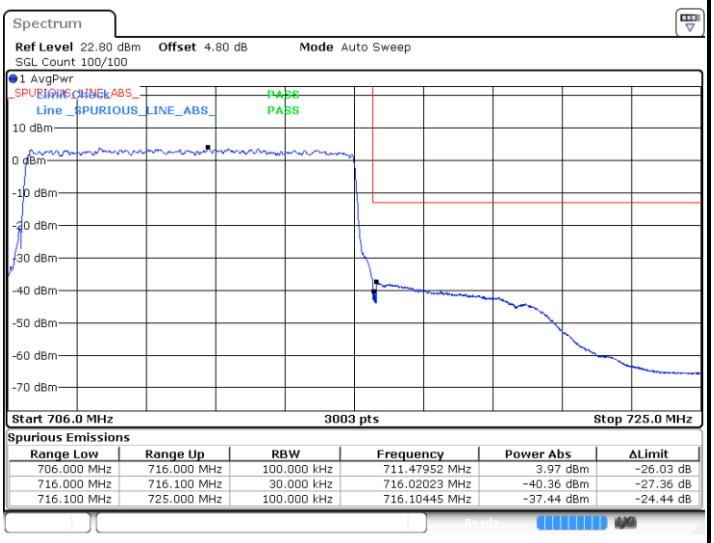
Date: 2.APR.2021 06:38:16

Lowest Band Edge / Full RB



Date: 2.APR.2021 06:30:18

Highest Band Edge / Full RB

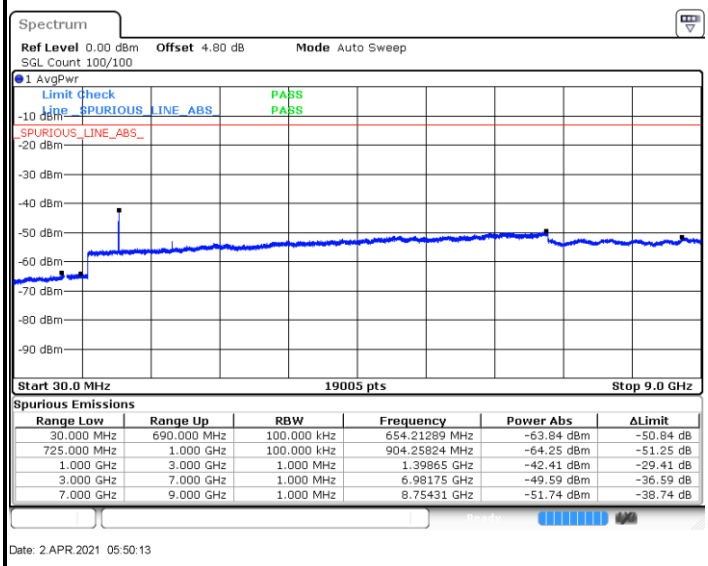


Date: 2.APR.2021 06:40:36

Conducted Spurious Emission

LTE Band 12 / 1.4MHz

Lowest Channel / QPSK

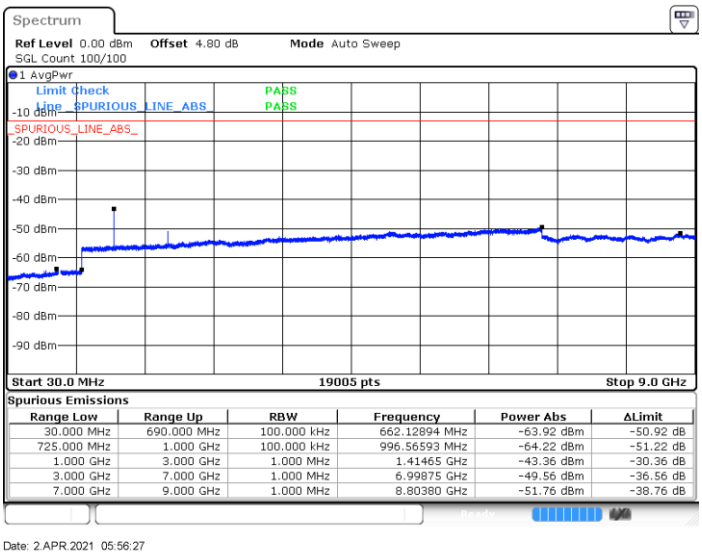


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	654.21289 MHz	-63.84 dBm	-50.84 dB
725.000 MHz	1.000 GHz	100.000 kHz	904.25824 MHz	-64.25 dBm	-51.25 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.39865 GHz	-42.41 dBm	-29.41 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98175 GHz	-49.59 dBm	-36.59 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.75431 GHz	-51.74 dBm	-38.74 dB

Date: 2.APR.2021 05:50:13

Middle Channel / QPSK

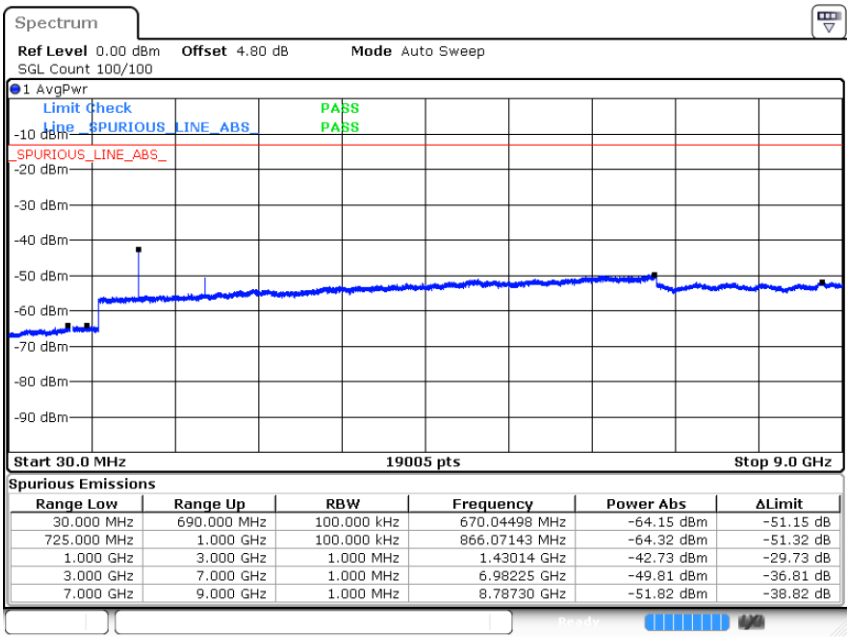


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	662.12894 MHz	-63.92 dBm	-50.92 dB
725.000 MHz	1.000 GHz	100.000 kHz	996.56593 MHz	-64.22 dBm	-51.22 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.41465 GHz	-43.36 dBm	-30.36 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99875 GHz	-49.56 dBm	-36.56 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.80380 GHz	-51.76 dBm	-38.76 dB

Date: 2.APR.2021 05:56:27

Highest Channel / QPSK



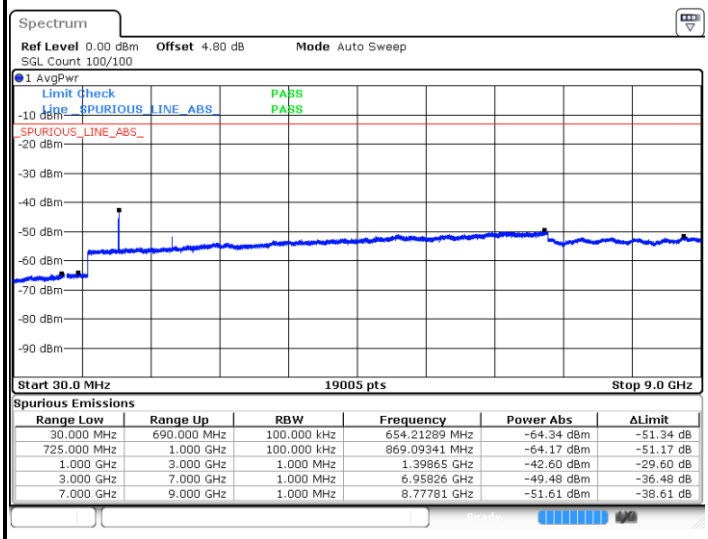
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	670.04498 MHz	-64.15 dBm	-51.15 dB
725.000 MHz	1.000 GHz	100.000 kHz	866.07143 MHz	-64.32 dBm	-51.32 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.43014 GHz	-42.73 dBm	-29.73 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98225 GHz	-49.81 dBm	-36.81 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.78730 GHz	-51.82 dBm	-38.82 dB

Date: 2.APR.2021 05:57:22

LTE Band 12 / 3MHz

Lowest Channel / QPSK

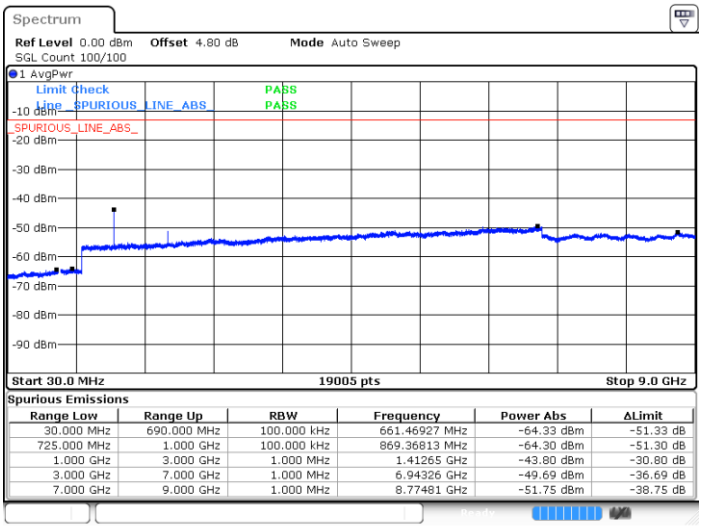


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	654.21289 MHz	-64.34 dBm	-51.34 dB
725.000 MHz	1.000 GHz	100.000 kHz	869.09341 MHz	-64.17 dBm	-51.17 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.39865 GHz	-42.60 dBm	-29.60 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.95826 GHz	-49.48 dBm	-36.48 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.77781 GHz	-51.61 dBm	-38.61 dB

Date: 2.APR.2021 06:02:25

Middle Channel / QPSK

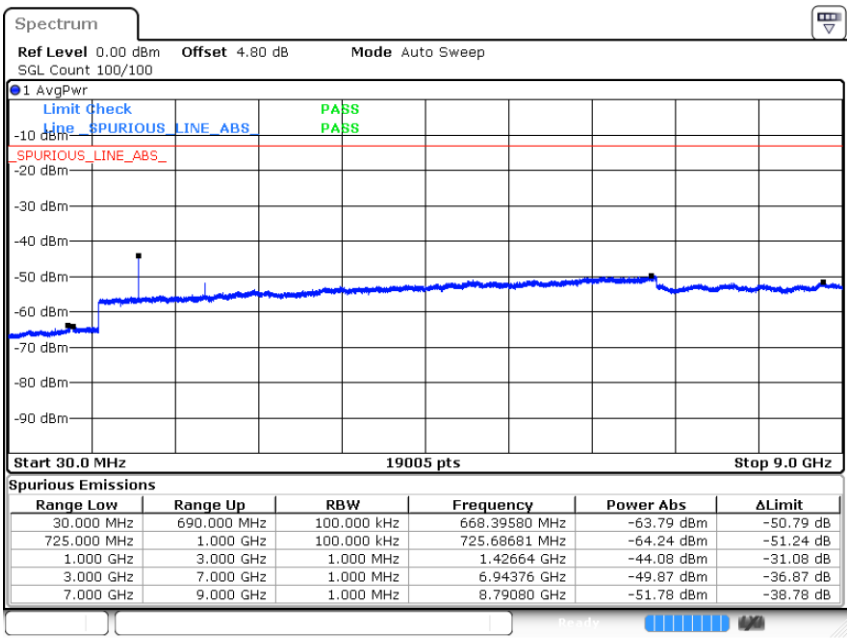


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	661.46927 MHz	-64.33 dBm	-51.33 dB
725.000 MHz	1.000 GHz	100.000 kHz	869.36813 MHz	-64.30 dBm	-51.30 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.41265 GHz	-43.80 dBm	-30.80 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94326 GHz	-49.69 dBm	-36.69 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.77481 GHz	-51.75 dBm	-38.75 dB

Date: 2.APR.2021 06:07:53

Highest Channel / QPSK



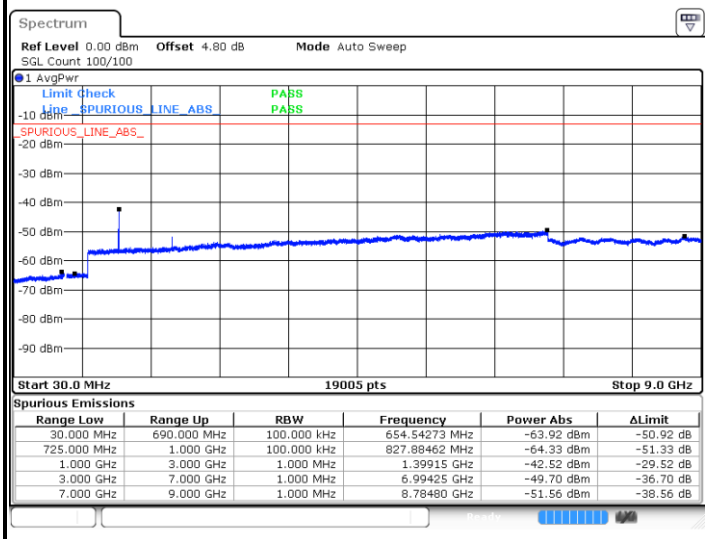
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	668.39580 MHz	-63.79 dBm	-50.79 dB
725.000 MHz	1.000 GHz	100.000 kHz	725.68681 MHz	-64.24 dBm	-51.24 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.42664 GHz	-44.08 dBm	-31.08 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94376 GHz	-49.87 dBm	-36.87 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.79080 GHz	-51.78 dBm	-38.78 dB

Date: 2.APR.2021 06:09:00

LTE Band 12 / 5MHz

Lowest Channel / QPSK

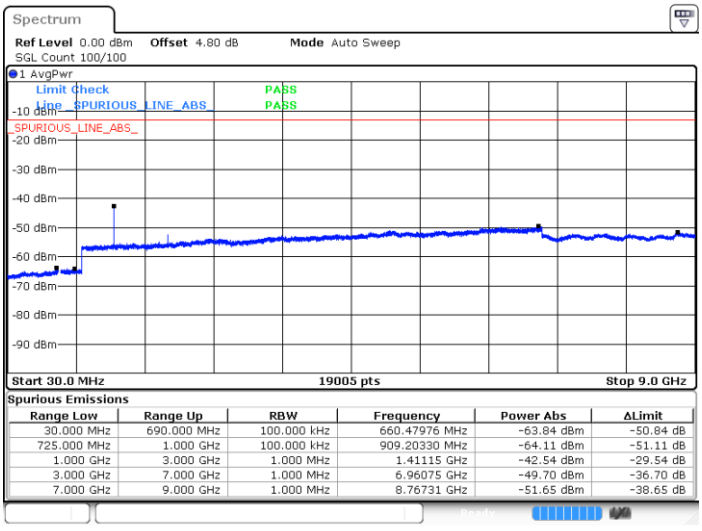


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	654.54273 MHz	-63.92 dBm	-50.92 dB
725.000 MHz	1.000 GHz	100.000 kHz	827.88462 MHz	-64.33 dBm	-51.33 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.39915 GHz	-42.52 dBm	-29.52 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99425 GHz	-49.70 dBm	-36.70 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.78480 GHz	-51.56 dBm	-38.56 dB

Date: 2.APR.2021 06:13:51

Middle Channel / QPSK

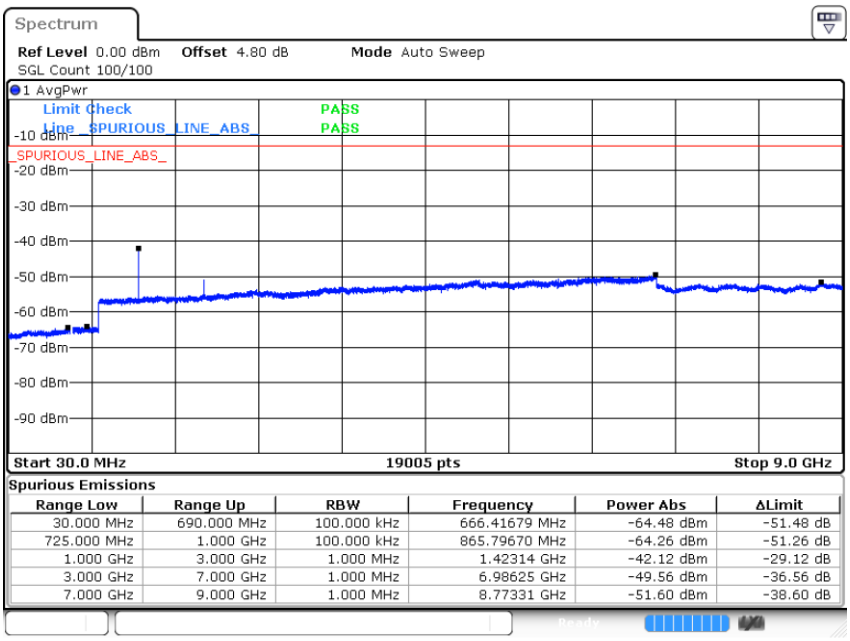


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	660.47976 MHz	-63.84 dBm	-50.84 dB
725.000 MHz	1.000 GHz	100.000 kHz	909.20330 MHz	-64.11 dBm	-51.11 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.41115 GHz	-42.54 dBm	-29.54 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.96075 GHz	-49.70 dBm	-36.70 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.76731 GHz	-51.65 dBm	-38.65 dB

Date: 2.APR.2021 06:19:40

Highest Channel / QPSK



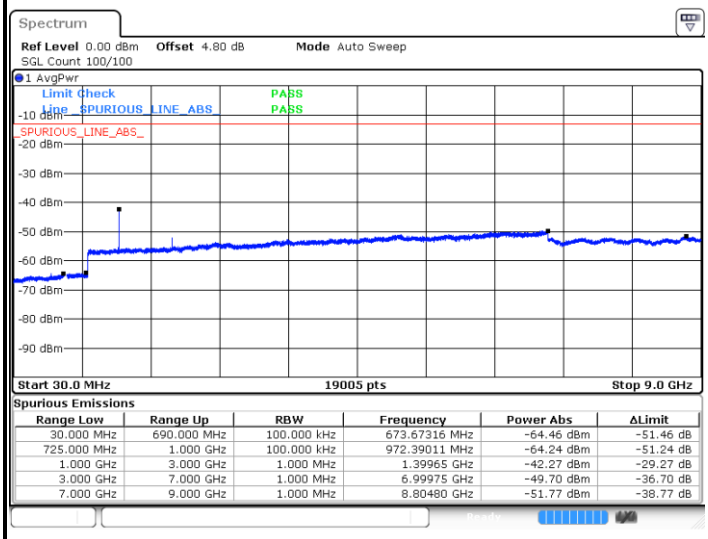
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	666.41679 MHz	-64.48 dBm	-51.48 dB
725.000 MHz	1.000 GHz	100.000 kHz	865.79670 MHz	-64.26 dBm	-51.26 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.42314 GHz	-42.12 dBm	-29.12 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98625 GHz	-49.56 dBm	-36.56 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.77331 GHz	-51.60 dBm	-38.60 dB

Date: 2.APR.2021 06:20:37

LTE Band 12 / 10MHz

Lowest Channel / QPSK

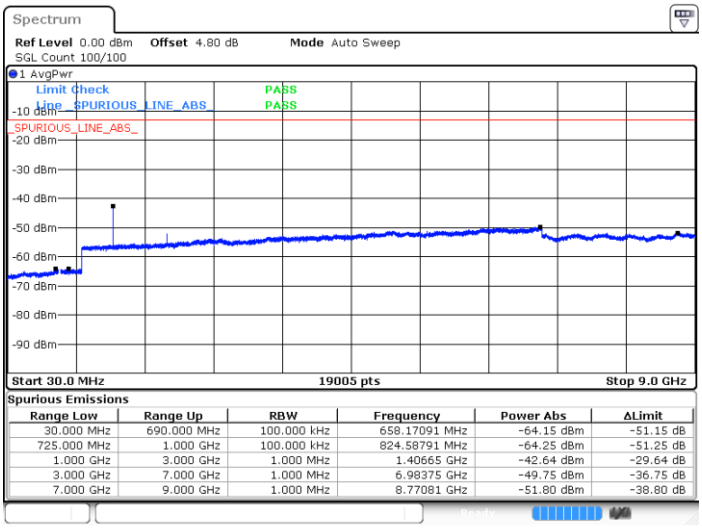


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	673.67316 MHz	-64.46 dBm	-51.46 dB
725.000 MHz	1.000 GHz	100.000 kHz	972.39011 MHz	-64.24 dBm	-51.24 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.39965 GHz	-42.27 dBm	-29.27 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99975 GHz	-49.70 dBm	-36.70 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.80480 GHz	-51.77 dBm	-38.77 dB

Date: 2.APR.2021 06:26:54

Middle Channel / QPSK

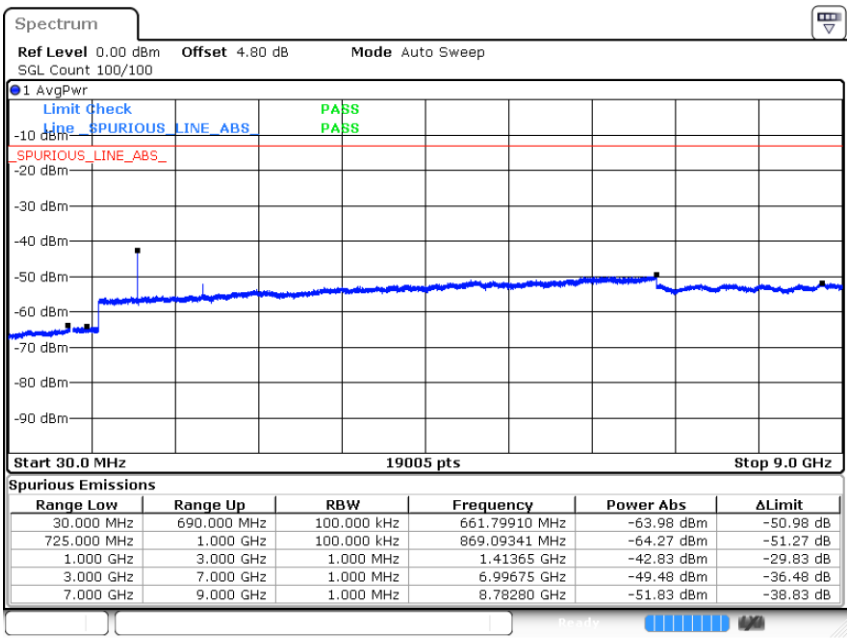


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	658.17091 MHz	-64.15 dBm	-51.15 dB
725.000 MHz	1.000 GHz	100.000 kHz	824.58791 MHz	-64.25 dBm	-51.25 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.40665 GHz	-42.64 dBm	-29.64 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.98375 GHz	-49.75 dBm	-36.75 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.77081 GHz	-51.80 dBm	-38.80 dB

Date: 2.APR.2021 06:33:08

Highest Channel / QPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	690.000 MHz	100.000 kHz	661.79910 MHz	-63.98 dBm	-50.98 dB
725.000 MHz	1.000 GHz	100.000 kHz	869.09341 MHz	-64.27 dBm	-51.27 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.41365 GHz	-42.83 dBm	-29.83 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.99675 GHz	-49.48 dBm	-36.48 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.78280 GHz	-51.83 dBm	-38.83 dB

Date: 2.APR.2021 06:35:30

Frequency Stability

Test Conditions		LTE Band 12 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0004	PASS
40	Normal Voltage	0.0061	
30	Normal Voltage	0.0018	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0003	
0	Normal Voltage	0.0014	
-10	Normal Voltage	0.0000	
-20	Normal Voltage	0.0016	
-30	Normal Voltage	0.0006	
20	Maximum Voltage	0.0033	
20	Normal Voltage	0.0002	
20	Battery End Point	0.0024	

Note:

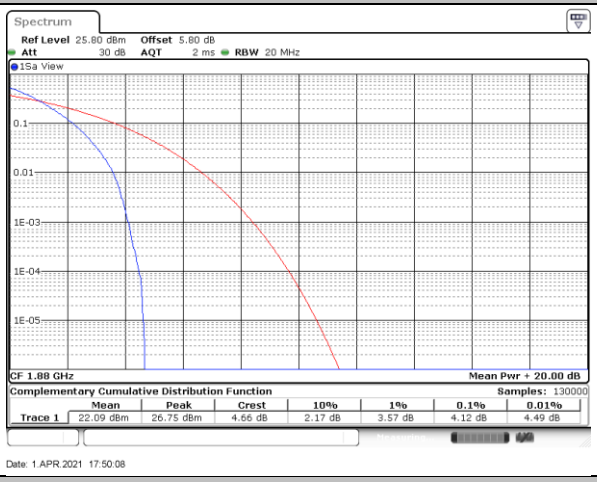
1. Normal Voltage =3.85 V. ; Battery End Point (BEP) =3.4 V. ; Maximum Voltage =4.3V.
2. The frequency fundamental emissions stay within the authorized frequency block.

LTE Band 25

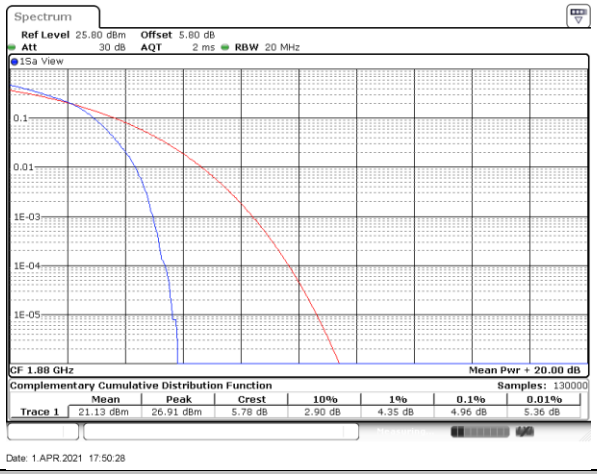
Peak-to-Average Ratio

Mode	LTE Band 25 / 20MHz			
Mod.	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Result
Middle CH	4.12	4.96	5.62	PASS

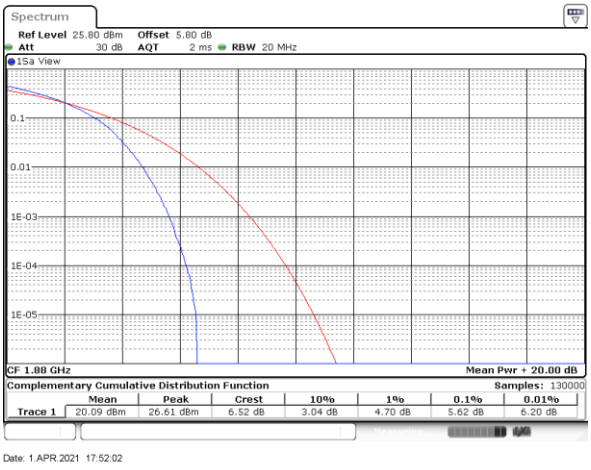
LTE Band 25 / 20MHz
Middle Channel / Full RB/ QPSK



Middle Channel / Full RB/ 16QAM



Middle Channel / Full RB/ 64QAM

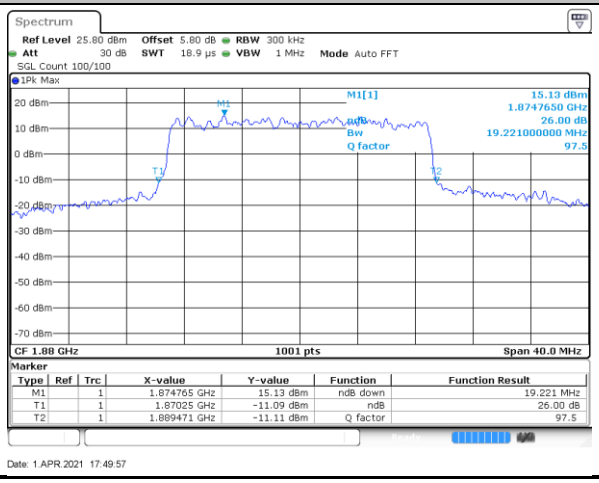


26dB Bandwidth

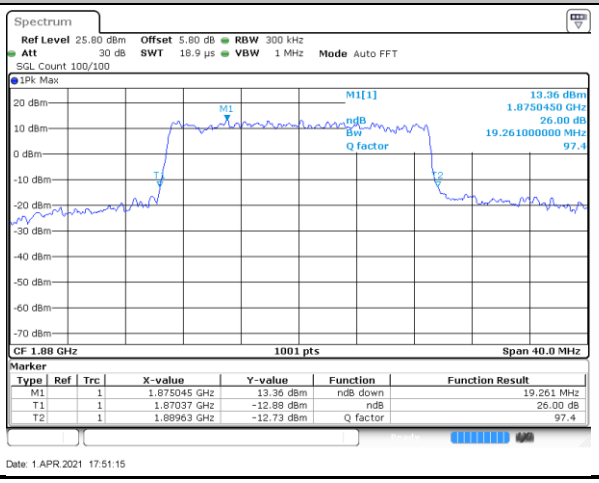
Mode	LTE Band 25 : 26dB BW(MHz)	
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	19.22	19.26

LTE Band 25

Middle Channel / 20MHz / QPSK



Middle Channel / 20MHz / 16QAM

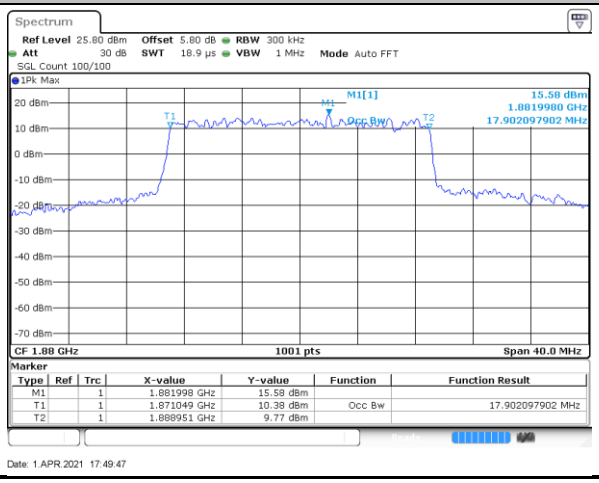


Occupied Bandwidth

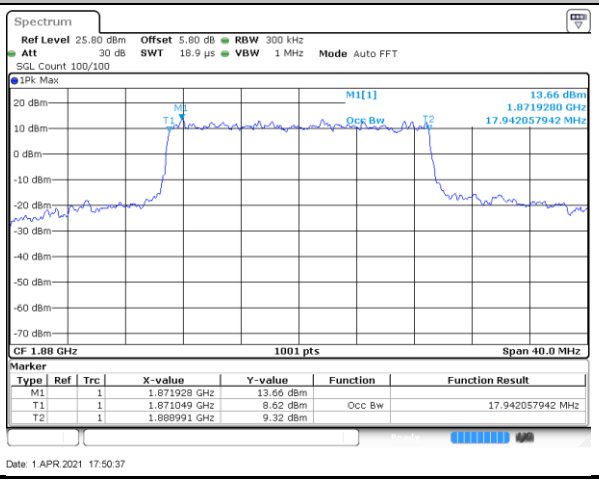
Mode	LTE Band 25 : 99%OBW(MHz)	
BW	20MHz	
Mod.	QPSK	16QAM
Middle CH	17.90	17.94

LTE Band 25

Middle Channel / 20MHz / QPSK



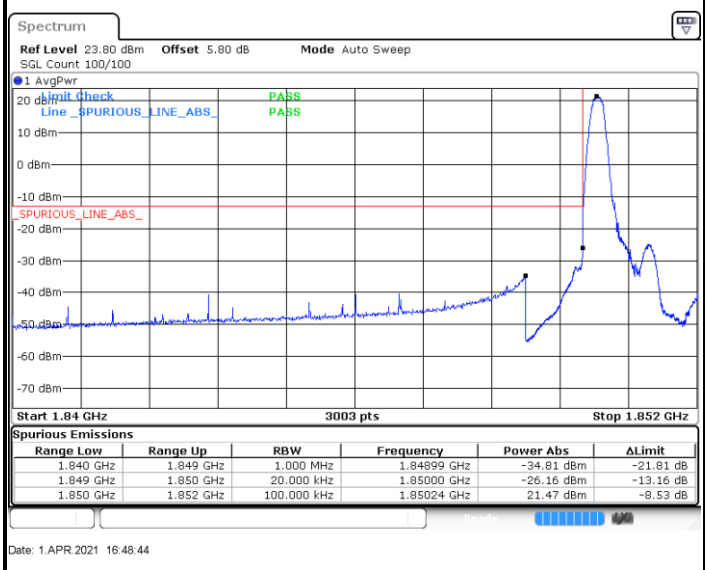
Middle Channel / 20MHz / 16QAM



Conducted Band Edge

LTE Band 25 / 1.4MHz / QPSK

Lowest Band Edge / 1RB



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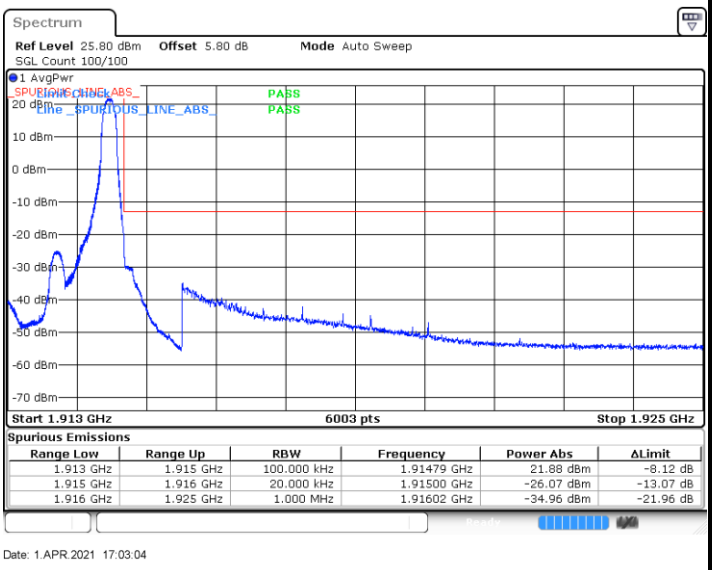
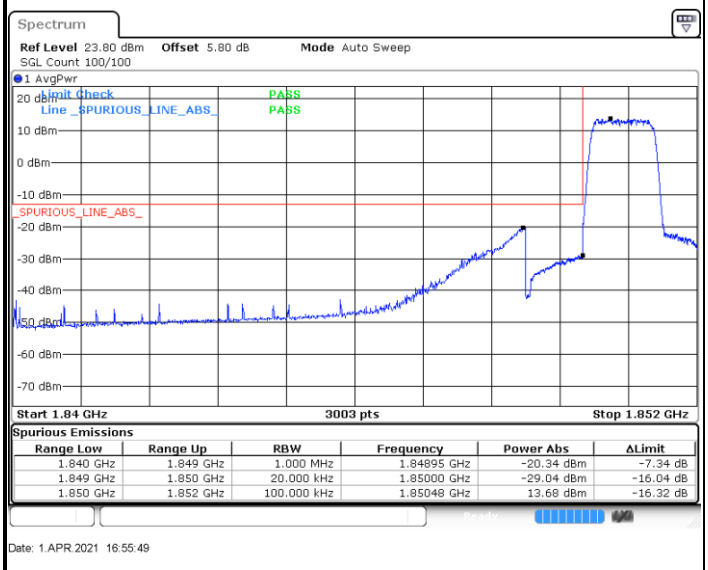
Highest Band Edge / 1RB



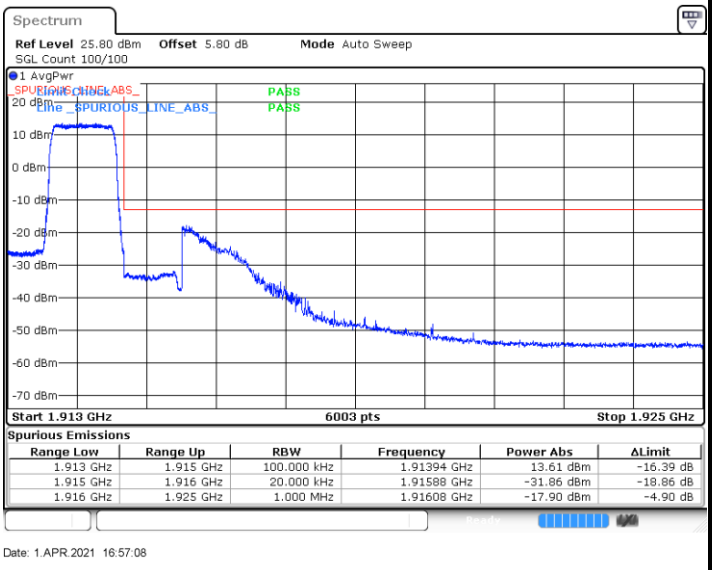
Date: 1.APR.2021 17:03:04

Lowest Band Edge / Full RB



Date: 1.APR.2021 16:55:49

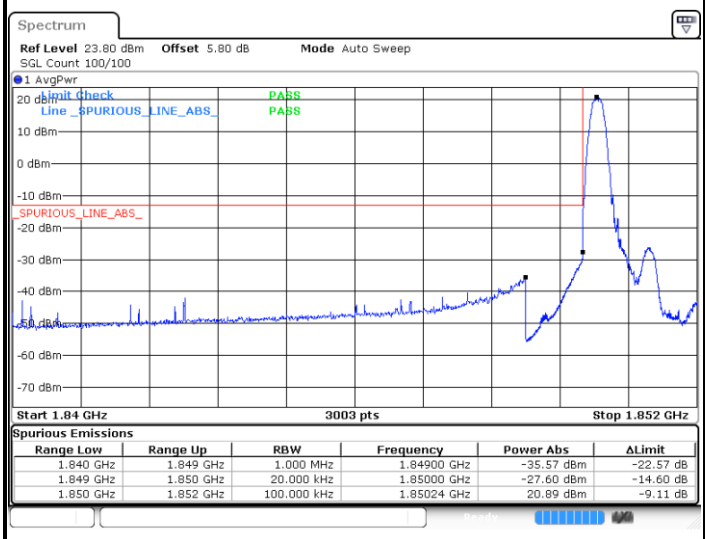
Highest Band Edge / Full RB



Date: 1.APR.2021 16:57:08

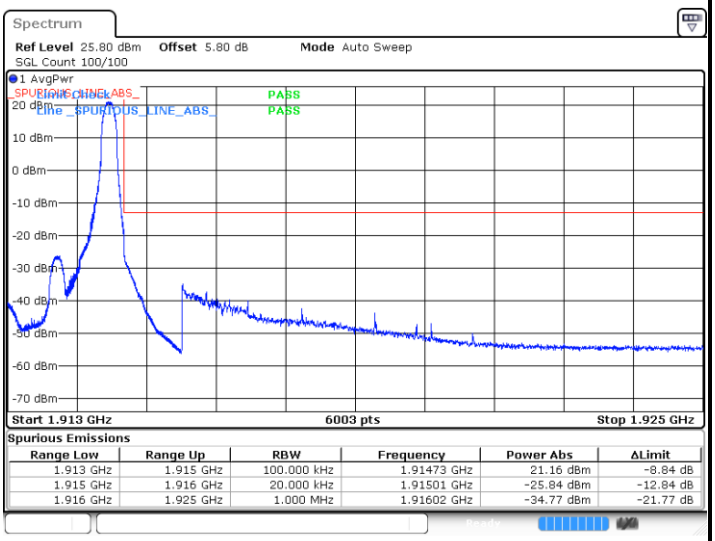
LTE Band 25 / 1.4MHz / 16QAM

Lowest Band Edge / 1 RB



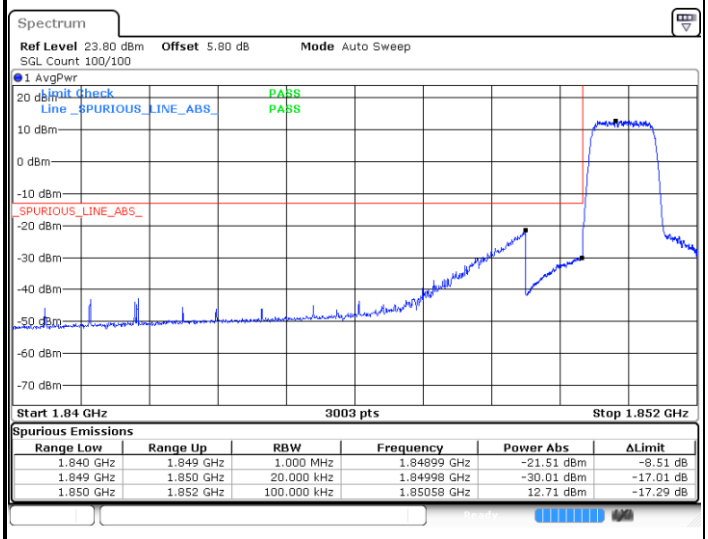
Date: 1.APR.2021 16:49:47

Highest Band Edge / 1 RB



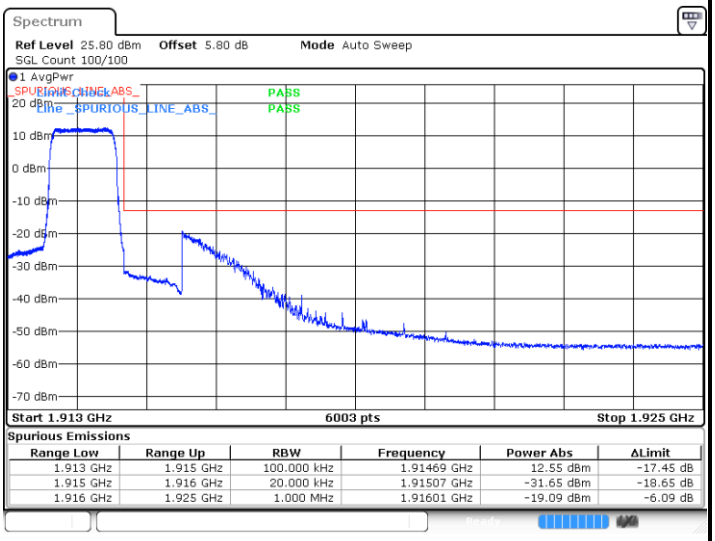
Date: 1.APR.2021 17:01:55

Lowest Band Edge / Full RB



Date: 1.APR.2021 16:53:01

Highest Band Edge / Full RB



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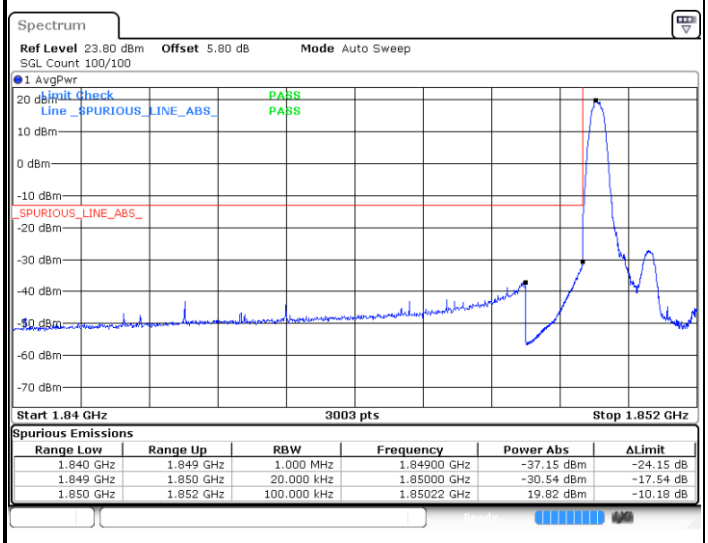
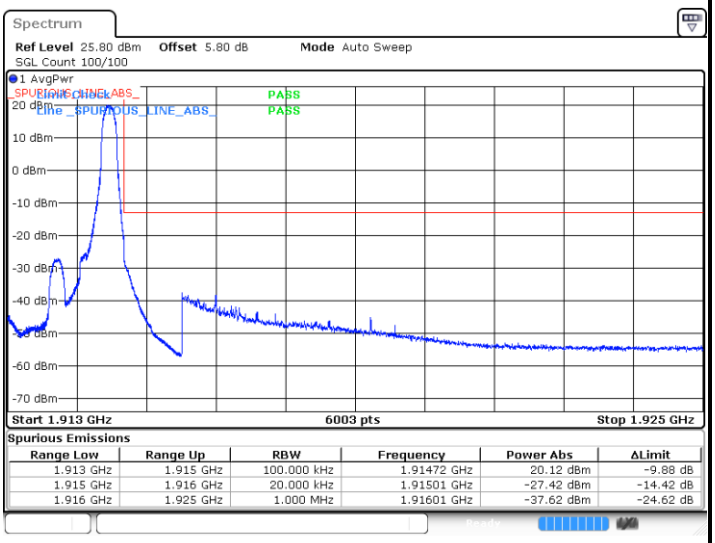
LTE Band 25 / 1.4MHz / 64QAM

Lowest Band Edge / 1 RB



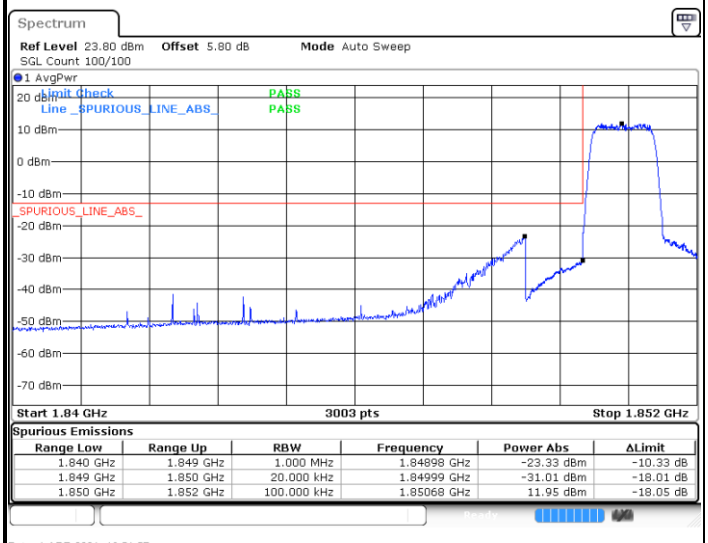
Date: 1.APR.2021 16:50:51

Highest Band Edge / 1 RB



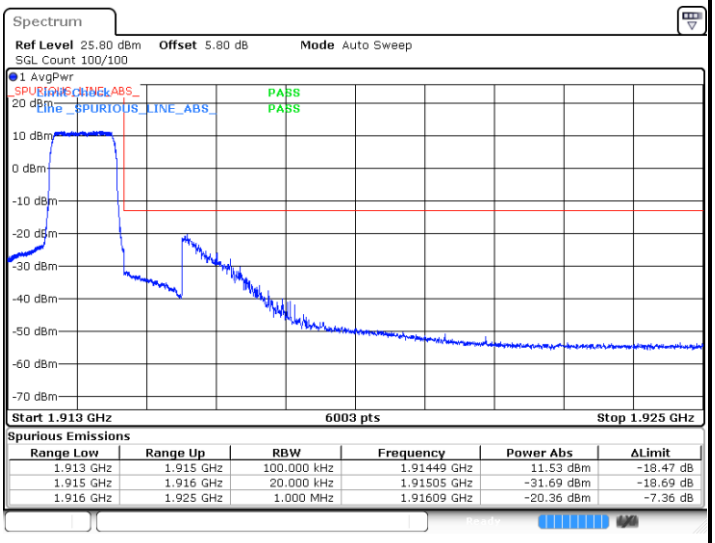
Date: 1.APR.2021 17:00:44

Lowest Band Edge / Full RB



Date: 1.APR.2021 16:51:57

Highest Band Edge / Full RB



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