



TEST REPORT

REPORT NUMBER: I22W00013-WWAN_Rev1

ON

Type of Equipment: Wireless Module
Type of Designation: SIM7500A-H
Brand Name: SIMCom
Manufacturer: SIMCom Wireless Solutions Limited
FCC ID: 2AJYU-8PYA00B

ACCORDING TO

FCC CFR Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS;
GENERAL RULES AND REGULATIONS, e-CFR, 2020
PART 24, PERSONAL COMMUNICATIONS SERVICES, e-CFR, 2020
PART 27, MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES, e-CFR, 2020
ANSI C63.26-2015

Chongqing Academy of Information and Communications Technology

Month date, year

Mar, 21, 2022

Signature

Xiang Luoyong

Director

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.



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Revision Version

Report Number	Revision	Date	Memo
I22W00013-WWAN	00	2022-03-04	Initial creation of test report
I22W00013-WWAN_Rev1	01	2022-03-21	Second creation of test report

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1. Test Laboratory

1.1. Testing Location

Name:	Chongqing Academy of Information and Communications Technology
FCC Registration Number:	CN1239
Address:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China
	No.19 East Road, Xiantao Big-data Valley, Yubei District, Chongqing, People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
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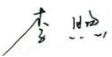

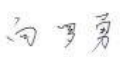
1.2. Testing Environment

Normal Temperature:	15-35°C
Relative Humidity:	30-60%

1.3. Project data

Testing Start Date:	2022-02-11
Testing End Date:	2022-03-19

1.4. Signature

	2022-03-21
LiXu (Prepared this test report)	Date
	2022-03-21
ChenWen (Reviewed this test report)	Date
	2022-03-21
XiangLuoYong Director of the laboratory (Approved this test report)	Date

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2. Client Information

2.1. Applicant Information

Company Name:	SIMCom Wireless Solutions Limited
Address /Post:	Building 3, No. 289, Linhong Road, Changning District, Shanghai, P.R.China
City:	Shanghai
Country:	China
Telephone:	15902149520
Fax:	--
Email:	yue.hai@simcom.com
Contact Person:	Haiyue

2.2. Manufacturer Information

Company Name:	SIMCom Wireless Solutions Limited
Address /Post:	Building 3, No. 289, Linhong Road, Changning District, Shanghai, P.R.China
City:	Shanghai
Country:	China
Telephone:	15902149520
Fax:	--
Email:	yue.hai@simcom.com
Contact Person:	Haiyue

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3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	SIMCom Wireless Solutions Limited
Model name	SIM7500A-H
Brand name	SIMCom
LTE Frequency Band	2/4/12
Type of modulation	QPSK/16QAM
Extreme Temperature	-10/+55°C
Nominal Voltage	3.8
Extreme High Voltage	4.2
Extreme Low Voltage	3.4

Note: Photographs of EUT are shown in ANNEX A of this test report.

Note: High and low voltage values in extreme condition test are given by manufacturer.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
S2	861475035587502	V2.01	B05V01	2021-02-11
S1	867806060000009	V2.01	B05V01	2022-02-11

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Outline of Equipment under Test

Technology	Band	UL Freq.(MHz)	DL Freq.(MHz)	Note
LTE	B2	1850 – 1910	1930 – 1990	--
	B4	1710 – 1755	2110 – 2155	--
	B12	699-716	729-746	--

3.4. Internal Identification of AE used during the test

AE ID*	Description	dB*
AE1	RF cable	--

*AE ID: is used to identify the test sample in the lab internally.

dB*: is provided customer.

4. Reference Documents

4.1. Documents supplied by applicant

PICS/PIXIT, referring to Annex B for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC CFR Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS, e-CFR	2020
FCC CFR Part 24	PERSONAL COMMUNICATIONS SERVICES, e-CFR	2020
FCC CFR Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES, e-CFR	2020
ANSI C63.26-2015	--	2015

5. Test Equipments Utilized

5.1. RF Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacturer	Cal. Date	Cal.Due Date
1	spectrum analyzer	FSQ 26	201137/026	--	--	R&S	2021-05-12	2022-06-11
2	DC Power Supply	N6705B	MY50000919	--	--	Agilent	2021-05-12	2022-06-11
3	Universal Radio Communication Tester	CMW500	152395	--	--	R&S	2021-05-12	2022-06-11

5.2. RSE Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacturer	Cal. Date	Cal.Due Date
1	Test Receiver	ESU 26	100367	--	5.1-24-3	R&S	2021-05-12	2022-06-11
2	Ultra-wideband Log Periodic Antenna	VULB9163	01392	--	--	Schwarzbeck	2021-02-04	2023-03-03
3	Double Ridged Guide Antenna	HF907	100357	--	--	R&S	2021-02-11	2023-02-10
4	Universal Radio Communication Tester	CMW500	152395	--	--	R&S	2021-05-12	2022-06-11

5.3. Climate Chamber

No.	Name	Type	SN	Manufacture	Cal. Date	Cal.Due Date
1	Semi-anechoic chamber	FACT3-2	--	ETS	2020-12-23	2024-01-22

5.4. Vibration table

No.	Name	Type	SN	Manufacture	Cal.Due Date
--	--	--	--	--	--

Anechoic chamber

Fully anechoic chamber by ETS.

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5.5. Test software

No.	Name	version	SN	Manufacture
1	EMC32	V8.51.0	--	R&S

6. Test Results

6.1. Summary of Test Results

A brief summary of the tests carried out is shown as following.

FCC Rules	Name of Test	Result
2.1046,24.232(c),27.50	Conducted RF Power Output	Pass
2.1046,24.232(c),27.50	ERP and EIRP	Pass
2.1049, 24.238(b)	Occupied Bandwidth	*Note 1
2.1051,24.238,2.1053, 27.53	Conducted spurious emissions	Pass
2.1051,24.238,2.1053, 27.53	Radiated Spurious Emission	Pass
2.1051,24.238, 2.1053, 27.53	Band Edge	Pass
2.1055,24.235, 27.54	Frequency Stability over Temperature Variation	Pass
2.1055,24.235, 27.54	Frequency Stability over Voltage Variation	Pass
24.232, 27.50	Peak to Average Ratio	Pass
Note 1: No applicable performance criteria.		
Note 2: The module Under 16QAM modulation mode, the maximum number of RB is 27		

6.2. Conducted RF Power Output

Specifications:	FCC Part 2.1046, 24.232(c), 27.50
DUT Serial Number:	861475035587502
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to Part 27.50(c), portable stations (hand-held devices) in the 600 MHz uplink Band and the 698-746 MHz Band, and fixed and mobile stations in the 600 MHz uplink Band are limited to 3 watts ERP.

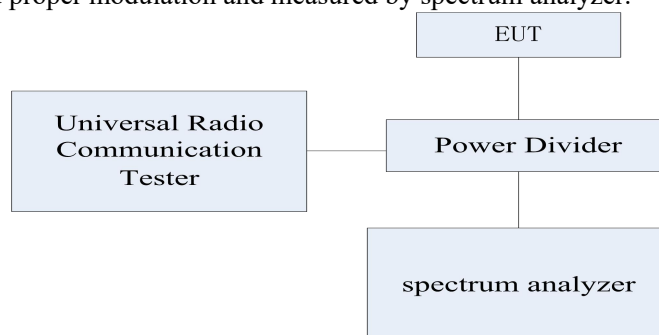
According to Part 27.50(d), fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz Band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz Bands are limited to 1 watt EIRP.

Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	0.62 dB (k=2)

Test Setup:

During the test, the EUT was controlled via the Wireless Telecommunications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Test Method:

- 1) The EUT was coupled to the spectrum analyzer and the Wireless Telecommunications Test Set through a power divider. The loss of the RF cables of the test system is calibrated to correct the readings.
- 2) For RMS power test, the spectrum analyzer was set to RMS Detector function and Maximum hold mode.
- 3) For Peak power test, the spectrum analyzer was set to Maxpeak Detector function and Maximum hold

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mode.

4) The resolution Bandwidth of the spectrum analyzer was comparable to the emission Bandwidth.

Note: --

6.2.1 LTE B2 Conducted RF Power Output Results

Test Data (1.4MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
18607	1850.7	1	0	QPSK	20.77	25.10
		1	2		20.95	25.10
		1	5		20.83	24.97
		6	0		19.59	24.82
		16QAM	1	0	19.84	25.04
			1	2	19.87	25.07
			1	5	19.71	24.96
			6	0	18.74	24.98
18900	1880	1	0	QPSK	20.05	24.84
		1	2		20.11	24.79
		1	5		20.08	24.87
		6	0		19.18	24.51
		16QAM	1	0	19.77	24.89
			1	2	19.74	24.78
			1	5	19.53	24.67
			6	0	18.46	24.53
19193	1909.3	1	0	QPSK	20.28	24.59
		1	2		20.47	24.66
		1	5		20.43	24.55
		6	0		19.31	24.52
		16QAM	1	0	19.03	24.35
			1	2	19.26	24.34
			1	5	19.03	24.18
			6	0	18.40	24.62

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Test Data (3MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
18615	1851.5	1	0	QPSK	20.63	24.96
		1	8		20.65	24.83
		1	15		20.49	24.85
		15	0		19.63	25.15
		1	0	16QAM	19.86	24.97
		1	8		19.77	24.85
		1	15		19.70	24.86
		15	0		18.6	24.79
18900	1880	1	0	QPSK	20.08	24.84
		1	8		20.22	24.80
		1	15		20.27	25.05
		15	0		19.21	24.73
		1	0	16QAM	19.41	24.63
		1	8		19.29	24.35
		1	15		19.35	24.6
		15	0		18.20	24.68
19185	1908.5	1	0	QPSK	20.59	25.06
		1	8		20.53	24.70
		1	15		20.38	24.95
		15	0		20.36	24.64
		1	0	16QAM	19.95	24.89
		1	8		19.88	24.61
		1	15		19.91	24.63
		15	0		18.55	24.78

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Test Data (5MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
18625	1852.5	1	0	QPSK	20.52	24.87
		1	13		20.47	24.75
		1	24		20.55	24.91
		25	0		19.57	25.06
		1	0	16QAM	19.18	24.50
		1	13		19.12	24.31
		1	24		19.17	24.51
		25	0		18.60	24.91
18900	1880	1	0	QPSK	20.19	24.88
		1	13		20.41	24.95
		1	24		20.01	24.63
		25	0		19.21	24.76
		1	0	16QAM	19.47	24.93
		1	13		19.81	25.06
		1	24		19.61	24.95
		25	0		18.07	24.89
19175	1907.5	1	0	QPSK	20.31	24.82
		1	13		20.41	24.73
		1	24		20.36	24.49
		25	0		19.36	24.87
		1	0	16QAM	18.96	24.49
		1	13		19.11	24.48
		1	24		19.05	24.23
		25	0		18.36	20.70

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Test Data (10MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
18650	1855	1	0	QPSK	20.66	24.95
		1	25		20.90	25.06
		1	49		20.44	24.97
		50	0		19.69	25.42
		1	0	16QAM	19.50	24.54
		1	25		19.99	24.81
		1	49		19.26	24.47
		27	0		18.51	24.47
18900	1880	1	0	QPSK	20.31	25.09
		1	25		20.55	25.23
		1	49		19.95	24.64
		50	0		19.31	25.00
		1	0	16QAM	19.97	25.23
		1	25		20.02	24.98
		1	49		19.63	24.76
		27	0		18.30	24.36
19150	1905	1	0	QPSK	20.31	24.85
		1	25		20.58	25.04
		1	49		20.37	24.59
		50	0		19.36	25.28
		1	0	16QAM	18.83	24.33
		1	25		19.80	25.08
		1	49		19.07	24.28
		27	0		18.27	24.30

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Test Data (15MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
18675	1857.5	1	0	QPSK	20.60	24.95
		1	38		20.76	25.09
		1	74		20.40	25.09
		75	0		19.61	25.24
		1	0	16QAM	19.91	24.77
		1	38		20.03	24.91
		1	74		19.78	24.97
		27	0		18.64	24.45
18900	1880	1	0	QPSK	20.18	25.03
		1	38		20.31	24.93
		1	74		20.00	24.61
		75	0		19.23	24.89
		1	0	16QAM	19.78	25.05
		1	38		20.46	25.44
		1	74		19.58	24.64
		27	0		18.18	24.27
19125	1902.5	1	0	QPSK	20.01	24.31
		1	38		20.19	24.46
		1	74		20.12	24.26
		75	0		19.17	24.86
		1	0	16QAM	18.48	23.64
		1	38		19.12	24.20
		1	74		19.25	24.19
		27	0		18.49	24.51

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Test Data (20MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
18700	1860	1	0	QPSK	20.50	24.84
		1	50		20.88	25.29
		1	99		20.19	24.99
		100	0		19.63	25.41
		16QAM	1	0	20.15	25.05
			1	50	20.43	25.39
			1	99	19.66	25.15
			27	0	18.44	24.50
18900	1880	1	0	QPSK	20.34	25.30
		1	50		20.53	25.11
		1	99		20.35	24.80
		100	0		19.30	25.03
		16QAM	1	0	18.80	24.39
			1	50	19.25	24.03
			1	99	18.77	24.15
			27	0	18.12	24.18
19100	1900	1	0	QPSK	20.10	24.59
		1	50		20.43	24.84
		1	99		20.59	24.83
		100	0		19.24	24.79
		16QAM	1	0	19.90	24.77
			1	50	20.03	24.87
			1	99	19.98	24.73
			27	0	18.45	24.39

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6.2.2 LTE B4 Conducted RF Power Output Results

Test Data (1.4MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
19957	1710.7	1	0	QPSK	21.89	26.73
		1	2		21.99	26.70
		1	5		21.89	26.76
		6	0		20.73	26.21
		1	0	16QAM	20.82	26.64
		1	2		20.18	26.87
		1	5		20.78	26.64
		6	0		19.75	26.13
20175	1732.5	1	0	QPSK	21.73	26.09
		1	2		21.87	25.90
		1	5		21.69	26.08
		6	0		20.78	25.92
		1	0	16QAM	21.17	25.96
		1	2		21.30	25.97
		1	5		21.22	25.99
		6	0		19.85	25.81
20393	1754.3	1	0	QPSK	21.76	26.11
		1	2		21.92	25.96
		1	5		21.63	26.02
		6	0		20.67	25.90
		1	0	16QAM	21.25	26.00
		1	2		21.46	26.05
		1	5		21.23	26.06
		6	0		19.82	25.76

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Test Data (3MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
19965	1711.5	1	0	QPSK	21.72	26.61
		1	8		21.70	26.5
		1	15		21.61	26.66
		15	0		20.72	26.38
		1	0	16QAM	20.96	26.38
		1	8		20.95	26.23
		1	15		20.95	26.47
		15	0		19.76	25.96
20175	1732.5	1	0	QPSK	21.76	26.04
		1	8		21.82	25.99
		1	15		20.81	26.08
		15	0		20.79	26.61
		1	0	16QAM	20.88	25.82
		1	8		20.98	25.65
		1	15		21.01	26.22
		15	0		19.75	25.99
20385	1753.5	1	0	QPSK	21.47	26.00
		1	8		21.57	25.87
		1	15		21.60	25.95
		15	0		20.65	26.41
		1	0	16QAM	20.19	25.69
		1	8		20.66	25.84
		1	15		20.75	25.95
		15	0		19.70	25.94

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Test Data (5MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
19975	1712.5	1	0	QPSK	21.86	26.70
		1	13		21.72	26.47
		1	24		21.58	26.448
		25	0		20.65	26.02
		1	0	16QAM	19.96	25.70
		1	13		20.08	25.65
		1	24		20.25	25.92
		25	0		19.90	26.28
20175	1732.5	1	0	QPSK	21.70	26.04
		1	13		21.90	26.02
		1	24		21.80	26.15
		25	0		20.77	26.35
		1	0	16QAM	21.14	26.11
		1	13		21.16	26.03
		1	24		21.08	26.19
		25	0		19.78	26.54
20375	1752.5	1	0	QPSK	21.35	26.02
		1	13		21.59	25.86
		1	24		21.43	25.86
		25	0		20.43	25.94
		1	0	16QAM	20.13	25.77
		1	13		20.09	25.59
		1	24		20.31	25.63
		25	0		19.53	26.07

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Test Data (10MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
20000	1715	1	0	QPSK	21.60	26.55
		1	25		21.60	26.40
		1	49		21.43	26.24
		50	0		20.58	26.36
		1	0	16QAM	20.51	25.96
		1	25		21.22	26.51
		1	49		20.92	26.14
		27	0		19.74	25.92
20175	1732.5	1	0	QPSK	21.58	25.90
		1	25		22.09	26.10
		1	49		21.58	26.11
		50	0		20.61	26.04
		1	0	16QAM	21.14	25.93
		1	25		21.29	25.82
		1	49		21.19	26.12
		27	0		21.17	26.11
20350	1750	1	0	QPSK	21.48	26.20
		1	25		21.45	25.94
		1	49		21.62	26.34
		50	0		20.51	25.66
		1	0	16QAM	20.30	25.99
		1	25		20.87	25.75
		1	49		20.16	25.12
		27	0		19.50	25.56

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Test Data (15MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
20025	1717.5	1	0	QPSK	21.67	26.58
		1	38		21.53	26.30
		1	74		21.66	26.11
		75	0		20.41	26.15
		1	0	16QAM	20.74	26.18
		1	38		20.89	26.18
		1	74		20.91	25.92
		27	0		19.39	25.50
20175	1732.5	1	0	QPSK	21.43	25.91
		1	38		21.53	25.84
		1	74		21.34	26.08
		75	0		20.50	26.21
		1	0	16QAM	20.93	25.88
		1	38		20.99	25.72
		1	74		20.83	25.61
		27	0		19.39	25.43
20325	1747.5	1	0	QPSK	21.32	25.88
		1	38		21.35	25.81
		1	74		21.38	25.56
		75	0		20.33	25.99
		1	0	16QAM	19.92	25.28
		1	38		20.32	25.40
		1	74		20.36	25.40
		27	0		19.40	25.40

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Test Data (20MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
20050	1720	1	0	QPSK	21.25	26.17
		1	50		21.57	26.12
		1	99		21.42	25.76
		100	0		20.48	25.88
		1	0	16QAM	20.90	26.53
		1	50		20.96	26.19
		1	99		20.78	25.80
		27	0		19.56	25.48
20175	1732.5	1	0	QPSK	21.69	26.10
		1	50		21.73	25.88
		1	99		21.49	26.11
		100	0		20.36	26.28
		1	0	16QAM	20.24	25.69
		1	50		20.59	25.70
		1	99		20.13	25.69
		27	0		19.28	25.41
20300	1745	1	0	QPSK	21.49	26.00
		1	50		21.25	26.00
		1	99		21.13	25.59
		100	0		20.31	26.29
		1	0	16QAM	21.26	26.12
		1	50		21.69	26.55
		1	99		21.32	25.96
		27	0		19.40	25.35

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6.2.3 LTE B12 Conducted RF Power Output Results

Test Data (1.4MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
23017	699.7	1	0	QPSK	23.01	27.51
		1	2		23.10	27.46
		1	5		23.09	27.58
		6	0		21.98	27.32
		1	0	16QAM	22.11	27.45
		1	2		22.35	27.60
		1	5		22.18	27.52
		6	0		21.00	27.30
23095	707.5	1	0	QPSK	23.29	27.64
		1	2		23.22	27.60
		1	5		23.06	27.55
		6	0		22.08	27.24
		1	0	16QAM	22.36	27.30
		1	2		22.69	27.53
		1	5		22.64	27.53
		6	0		21.25	27.32
23173	715.3	1	0	QPSK	22.80	27.18
		1	2		23.28	27.38
		1	5		23.17	27.31
		6	0		22.12	27.26
		1	0	16QAM	21.73	26.93
		1	2		22.06	27.12
		1	5		22.34	27.38
		6	0		21.06	27.09

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Test Data (3MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
23025	700.5	1	0	QPSK	23.11	27.41
		1	8		23.03	27.36
		1	15		23.02	27.52
		15	0		22.11	27.49
		1	0	16QAM	22.25	27.17
		1	8		22.32	27.09
		1	15		22.58	27.45
		15	0		21.18	27.44
23095	707.5	1	0	QPSK	23.15	27.66
		1	8		23.18	27.53
		1	15		23.06	27.55
		15	0		22.20	27.55
		1	0	16QAM	22.61	27.53
		1	8		22.76	27.58
		1	15		22.57	27.46
		15	0		21.37	27.62
23165	714.5	1	0	QPSK	22.82	27.24
		1	8		22.92	27.14
		1	15		23.04	27.23
		15	0		22.06	27.43
		1	0	16QAM	21.58	26.90
		1	8		21.57	26.73
		1	15		22.29	27.35
		15	0		21.12	27.26

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Test Data (5MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
23035	701.5	1	0	QPSK	22.78	27.18
		1	13		23.04	27.37
		1	24		23.19	27.64
		25	0		22.19	27.49
		1	0	16QAM	21.27	26.51
		1	13		22.14	27.28
		1	24		21.68	26.91
		25	0		21.54	27.75
23095	707.5	1	0	QPSK	23.06	27.38
		1	13		23.06	27.65
		1	24		23.02	27.45
		25	0		22.13	27.82
		1	0	16QAM	22.36	27.61
		1	13		22.62	27.62
		1	24		22.48	27.55
		25	0		21.23	27.60
23155	713.5	1	0	QPSK	22.99	27.45
		1	13		22.90	27.23
		1	24		23.19	27.37
		25	0		22.02	27.16
		1	0	16QAM	21.81	27.10
		1	13		21.69	26.97
		1	24		21.85	27.08
		25	0		20.97	27.19

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Test Data (10MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)
23060	704	1	0	QPSK	22.88	27.33
		1	25		23.35	27.73
		1	49		23.03	27.51
		50	0		22.33	27.69
		1	0	16QAM	21.92	26.84
		1	25		21.99	27.27
		1	49		21.98	26.88
		27	0		21.19	27.10
23095	707.5	1	0	QPSK	23.15	27.60
		1	25		23.20	27.61
		1	49		22.91	27.63
		50	0		22.18	28.07
		1	0	16QAM	22.03	27.00
		1	25		22.94	27.75
		1	49		22.00	26.95
		27	0		21.04	27.02
23130	711	1	0	QPSK	23.15	27.62
		1	25		23.24	27.62
		1	49		22.92	27.26
		50	0		22.01	27.35
		1	0	16QAM	22.76	27.61
		1	25		23.21	27.88
		1	49		22.35	27.13
		27	0		21.14	27.07

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6.3. ERP and EIRP

Specifications:	FCC Part 2.1046, 24.232(c), 27.50
DUT Serial Number:	861475035587049
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

This is the test for the maximum radiated power from the EUT.

According to Part 24.232(c),"Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power"and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

According to Part 27.50(d), "Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP".

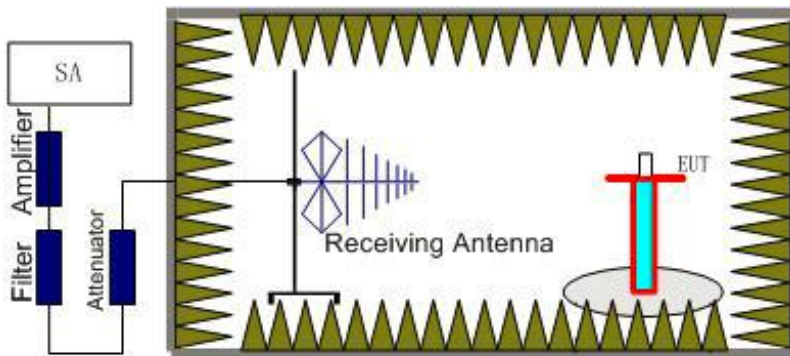
According to Part 27.50(h)(2) "Mobile stations are limited to 2.0 watts EIRP".

According to Part 27.50(c),specifies "Portable stations (hand-held de-vices) are limited to 3 watts ERP".

Method of Measurement

The measurements procedures in TIA-603E-2016 are used.

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from thereceive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUTfor emission measurements. The height of receiving antenna is 1.5m. The test setup refers tofigure below. Detected emissions were maximized at each frequency by rotating the EUTthrough 360° and adjusting the receiving antenna polarization. The radiated emissionmeasurements of all transmit frequencies in three channels (High, Middle, Low) weremeasured with peak detector.

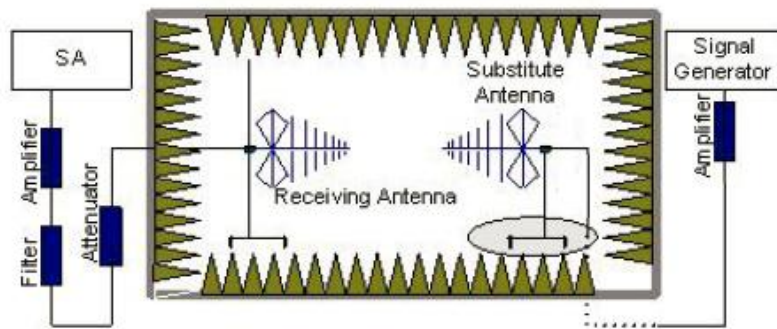


2. The EUT is then put into continuously transmitting mode at its maximum power level duringthe test. And the maximum value of the receiver should be recorded as (Pr).

3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.

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In the chamber, an substitution antenna for the frequency band of interest is placed at thereference point of the chamber. An RF Signal source for the frequency band of interest isisconnected to the substitution antenna with a cable that has been constructed to not interferewith the radiation pattern of the antenna. A power (PMea) is applied to the input of thesubstitution antenna, and adjust the level of the signal generator output until the value of thereceiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. Thetest should be performed by rotating the test item and adjusting the receiving antennapolarization.

4. A amplifier should be connected to the Signal Source output port. And the cable should beconnect between the Amplifier and the Substitution Antenna.

The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should berecorded after test.

The measurement results are obtained as described below:

$$\text{Power(EIRP)} = \text{PMea} + \text{PAg} - \text{Pcl} + \text{Ga}$$

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15dBi) and known input power.

6. ERP can be calculated from EIRP by subtracting the gain of the dipole,

$$\text{ERP} = \text{S.G output(dBM)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$

$$\text{EIRP} = \text{S.G output(dBM)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$$

Note:The worst ERP / EIRP data only records the test mode with the worst conducted power

6.3.1 LTE Band 2 Measurement result

LTE Band 2_1.4 MHz_QPSK

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	EIRP [dBm]	Antenna Polarization [H/V]
1850.7	21.7	5.0	7.2	23.9	V
1880.0	20.9	5.0	7.2	23.1	V
1909.3	21.7	5.1	6.8	23.4	V

LTE Band 2_1.4 MHz_16QAM

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	EIRP [dBm]	Antenna Polarization [H/V]
1850.7	19.6	5.0	7.2	21.8	V
1880.0	19.5	5.0	7.2	21.7	V
1909.3	19.5	5.1	6.8	21.2	V

LTE Band 2_20 MHz_QPSK

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	EIRP [dBm]	Antenna Polarization [H/V]
1860.0	21.1	5.0	7.2	23.3	V
1880.0	21.0	5.0	7.2	23.2	V
1900.0	21.4	5.1	6.8	23.1	V

LTE Band 2_20 MHz_16QAM

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	EIRP [dBm]	Antenna Polarization [H/V]
1860.0	20.7	5.0	7.2	22.9	V
1880.0	20.7	5.0	7.2	22.9	V
1900.0	20.6	5.1	6.8	22.3	V

6.3.2 LTE Band 4 Measurement result

LTE Band 4_20MHz_QPSK

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	EIRP [dBm]	Antenna Polarization [H/V]
1710.7	21.1	4.8	7.9	24.2	V
1732.5	20.8	4.9	8.1	24.0	V
1754.3	20.8	4.9	8.1	24.0	V

LTE Band 4_20MHz_16QAM

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	EIRP [dBm]	Antenna Polarization [H/V]
1710.7	19.9	4.8	7.9	23.0	V
1732.5	20.2	4.9	8.1	23.4	V
1754.3	20.4	4.9	8.1	23.6	V

LTE Band 4_20MHz_QPSK

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	EIRP [dBm]	Antenna Polarization [H/V]
1720.0	21.1	4.8	7.9	24.2	V
1732.5	21.2	4.9	8.1	24.4	V
1745.0	21.1	4.9	8.1	24.3	V

LTE Band 4_20MHz_16QAM

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	EIRP [dBm]	Antenna Polarization [H/V]
1720.0	20.7	4.8	7.9	23.8	V
1732.5	20.7	4.9	8.1	23.9	V
1745.0	20.7	4.9	8.1	23.9	V

6.3.3 LTE Band 12 Measurement result

LTE Band 12_10MHz_QPSK

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	ERP [dBm]	Antenna Polarization [H/V]
704.0	21.1	3.4	8.9	26.6	V
707.5	21.1	3.4	9.1	26.8	V
711.0	20.4	3.4	9.1	26.1	V

LTE Band 12_10MHz_16QAM

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	ERP [dBm]	Antenna Polarization [H/V]
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704.0	20.6	3.4	8.9	26.1	V
707.5	20.1	3.4	9.1	25.8	V
711.0	19.5	3.4	9.1	25.2	V

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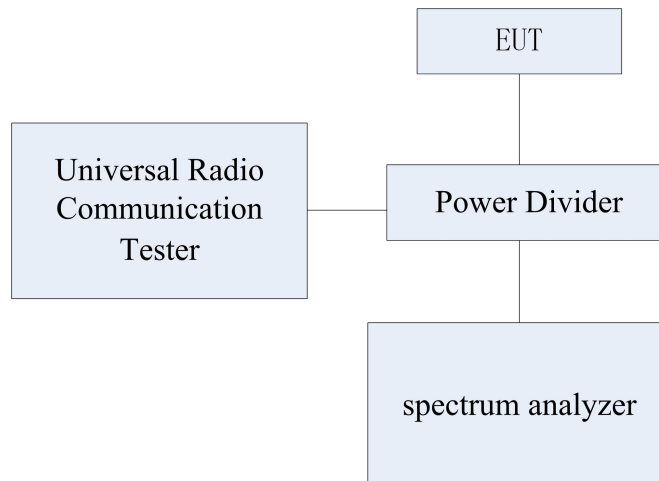
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6.4. Occupied Bandwidth

Specifications:	FCC Part 2.1049, 22.917(b), 24.238(b)
DUT Serial Number:	861475035587502
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Test Setup

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	500 kHz (k=2)

Test Method

The 99% occupied Bandwidth was calculated from the spectrum analyzer. Markers in the spectrum analyzer were then placed between the calculated frequencies to show the calculated 99% power Band. The 26dB Bandwidth was also measured and recorded.

Note: --

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6.4.1 LTE B2 occupied bandwidth Results

Mode	EUT channel No.	bandwidth	No. RB	RB offset	99% occupied bandwidth [MHz]	-26dBc occupied bandwidth [MHz]
QPSK	18900 (1880MHz)	1.4MHz	6	0	1.10	1.29
		3MHz	15		2.69	2.94
		5MHz	25		4.53	5.01
		10MHz	50		8.94	9.74
		15MHz	75		13.4	14.5
		20MHz	100		17.9	19.2
16QAM		1.4MHz	6		1.10	1.30
		3MHz	15		2.68	2.96
		5MHz	25		4.51	5.00
		10MHz	27		4.93	5.67
		15MHz	27		5.09	6.15
		20MHz	27		5.19	6.60

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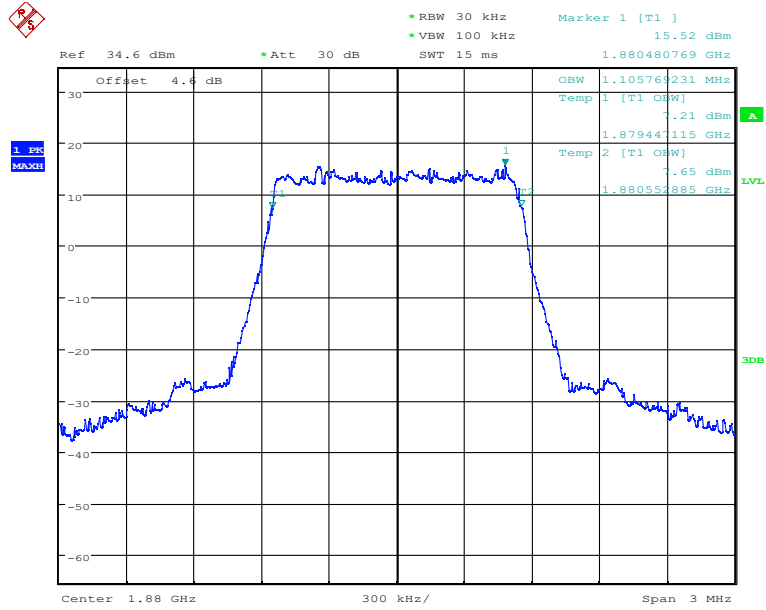
6.4.2 LTE B4 occupied bandwidth Results

Mode	EUT channel No.	bandwidth	No. RB	RB offset	99% occupied bandwidth [MHz]	-26dBc occupied bandwidth [MHz]
QPSK	20175 (1732.5MHz)	1.4MHz	6	0	1.10	1.31
		3MHz	15		2.69	2.95
		5MHz	25		4.53	5.01
		10MHz	50		8.97	9.80
		15MHz	75		13.5	14.9
		20MHz	100		17.9	19.4
16QAM		1.4MHz	6		1.10	1.31
		3MHz	15		2.69	2.97
		5MHz	25		4.50	5.01
		10MHz	27		4.90	5.70
		15MHz	27		5.19	6.34
		20MHz	27		5.32	6.41

6.4.3 LTE B12 occupied bandwidth Results

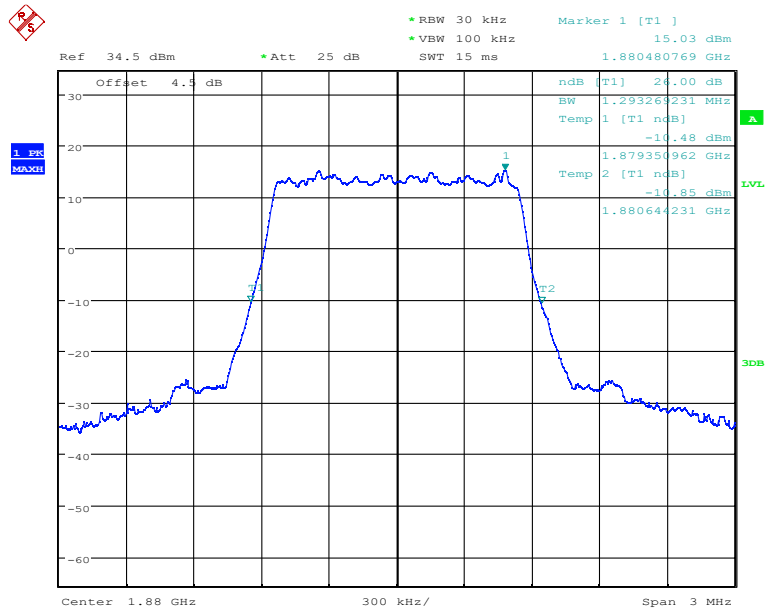
Mode	EUT channel No.	bandwidth	No. RB	RB offset	99% occupied bandwidth [MHz]	-26dBc occupied bandwidth [MHz]
QPSK	23095 (707.5MHz)	1.4MHz	6	0	1.10	1.30
		3MHz	15		2.69	2.95
		5MHz	25		4.51	5.03
		10MHz	50		8.94	9.77
16QAM		1.4MHz	6		1.10	1.30
		3MHz	15		2.68	2.97
		5MHz	25		4.51	5.00
		10MHz	27		4.90	5.57

Graphical results for LTE B2:



Date: 15.DEC.2021 03:39:50

LTE Band2 QPSK 99% Channel 18900 BW=1.4MHz RB=6 RB Offset=0



Date: 14.DEC.2021 22:17:23

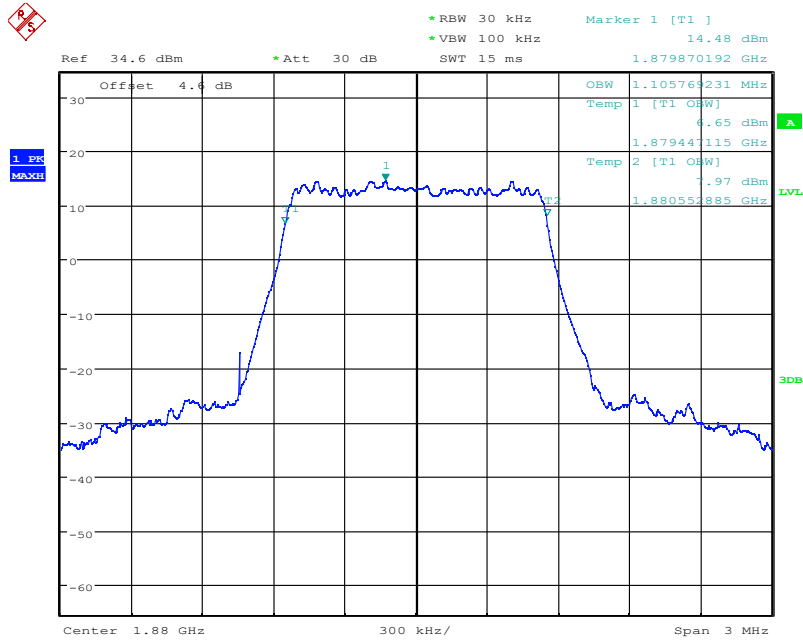
LTE Band2 QPSK -26dBc Channel 18900 BW=1.4MHz RB=6 RB Offset=0

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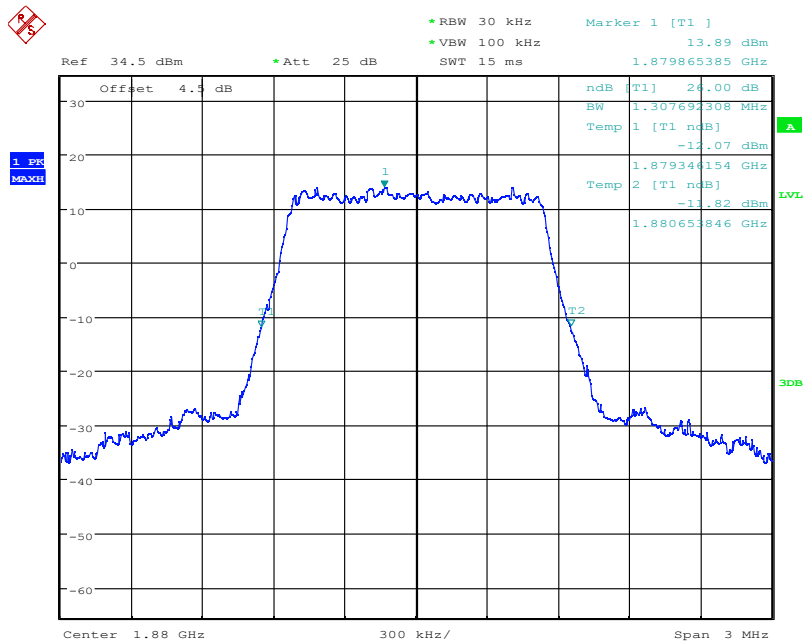


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:39:37

LTE Band2 16QAM 99% Channel 18900 BW=1.4MHz RB=6 RB Offset=0



Date: 14.DEC.2021 22:19:40

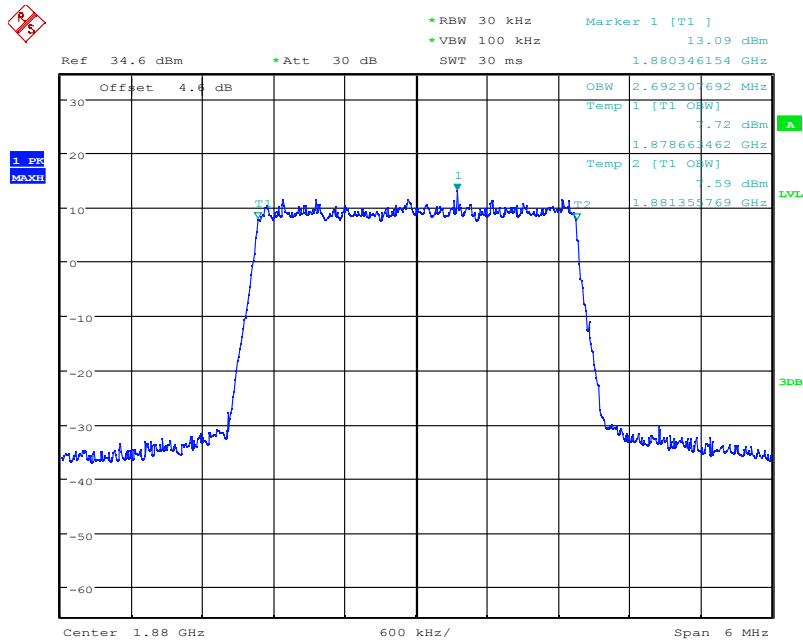
LTE Band2 16QAM -26dBc Channel 18900 BW=1.4MHz RB=6 RB Offset=0

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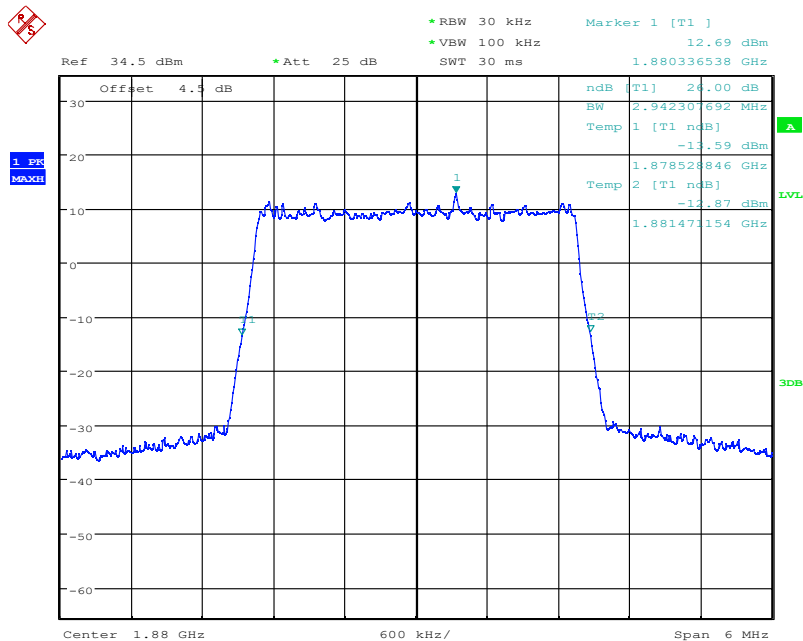


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:40:04

LTE Band2 QPSK 99% Channel 18900 BW=3MHz RB=15 RB Offset=0



Date: 14.DEC.2021 22:23:26

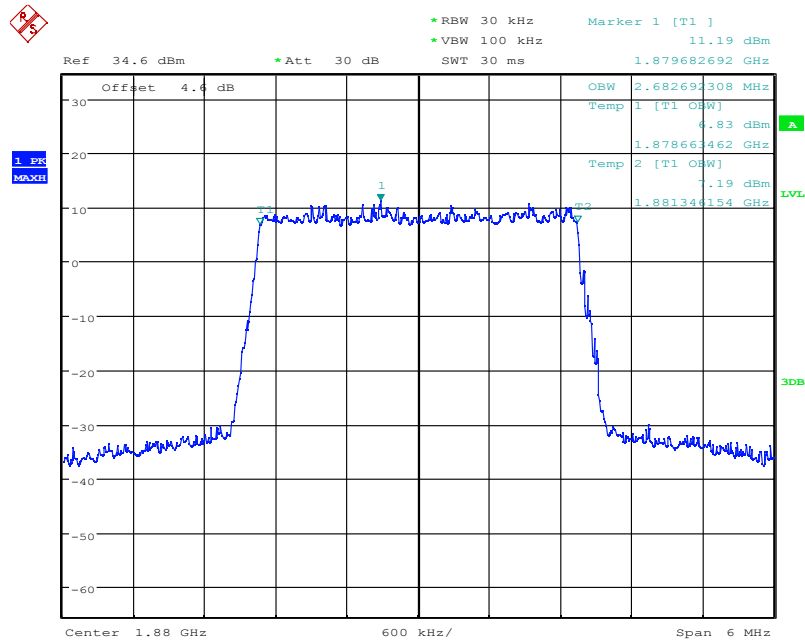
LTE Band2 QPSK -26dBc Channel 18900 BW=3MHz RB=15 RB Offset=0

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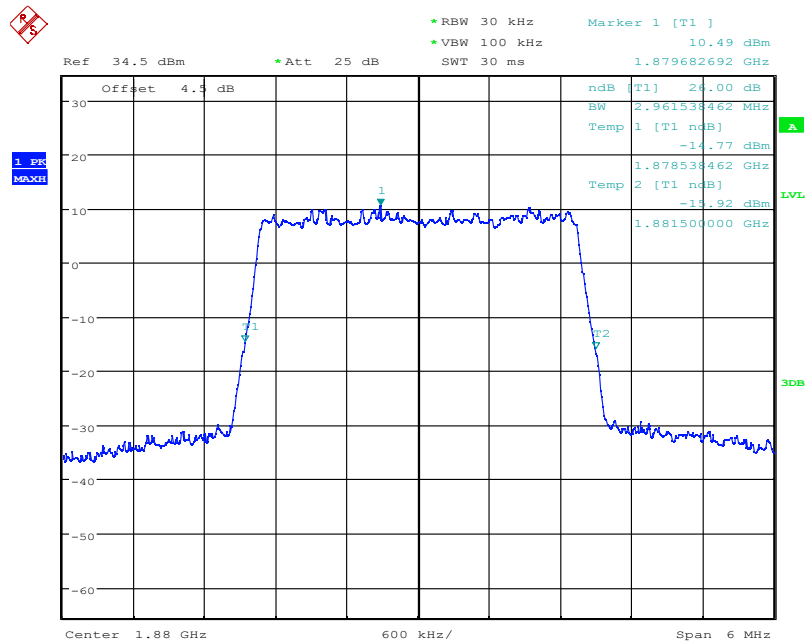


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:40:14

LTE Band2 16QAM 99% Channel 18900 BW=3MHz RB=15 RB Offset=0



Date: 14.DEC.2021 22:24:09

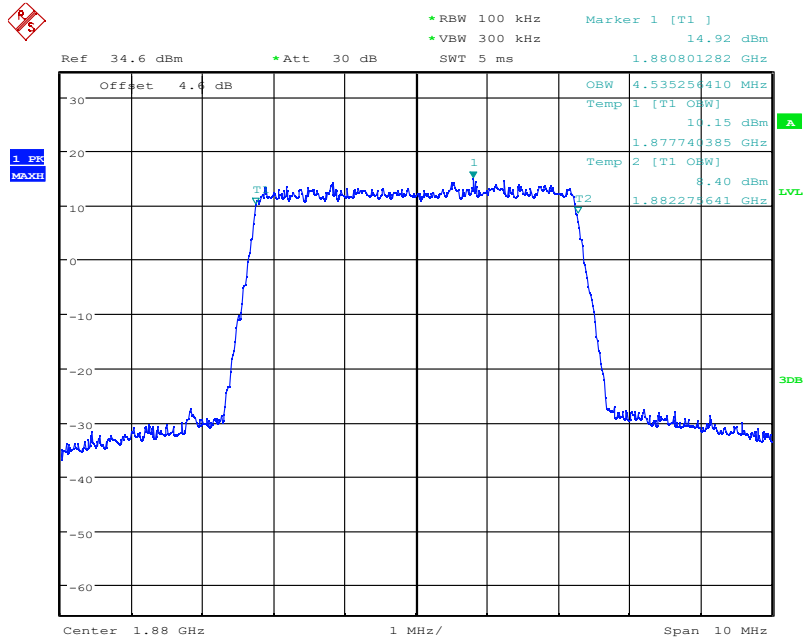
LTE Band2 16QAM -26dBc Channel 18900 BW=3MHz RB=15 RB Offset=0

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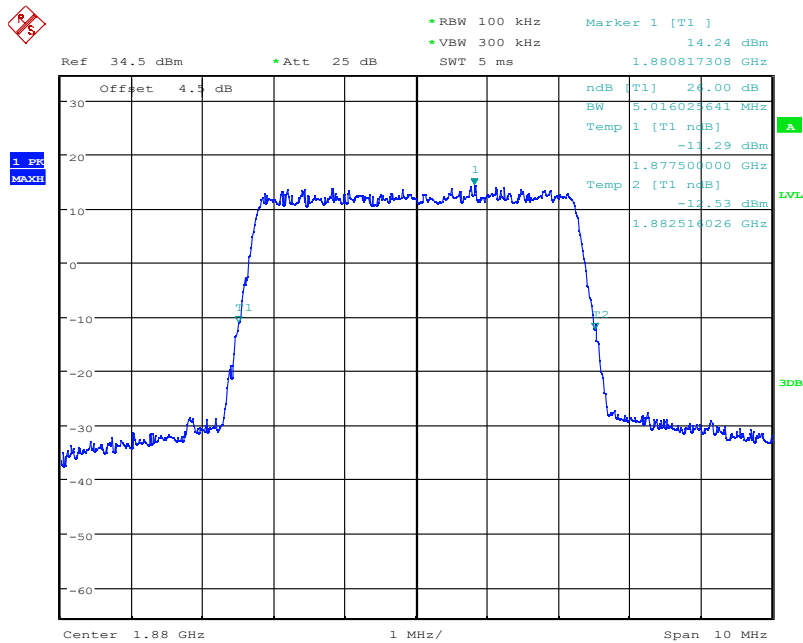


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:40:48

LTE Band2 QPSK 99% Channel 1890 BW=5MHz RB=25 RB Offset=0



Date: 14.DEC.2021 22:26:55

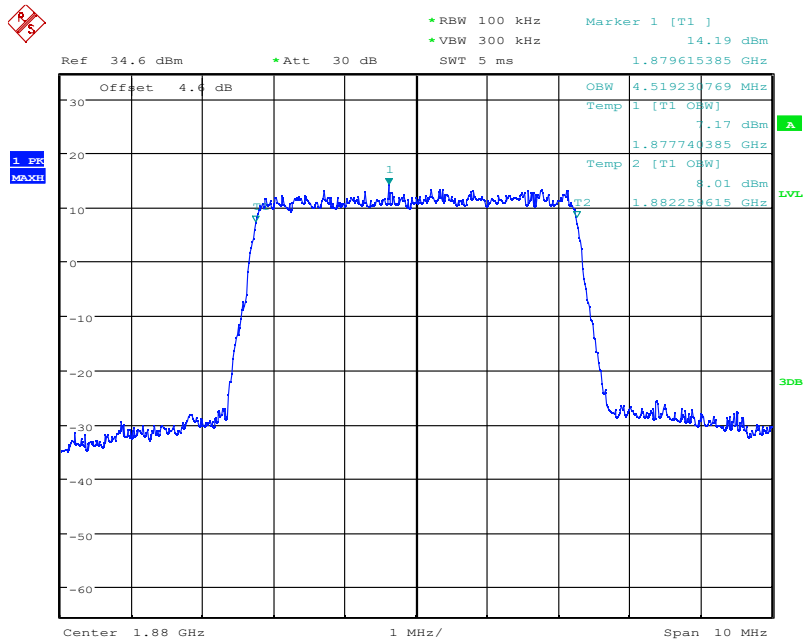
LTE Band2 QPSK -26dBc Channel 1890 BW=5MHz RB=25 RB Offset=0

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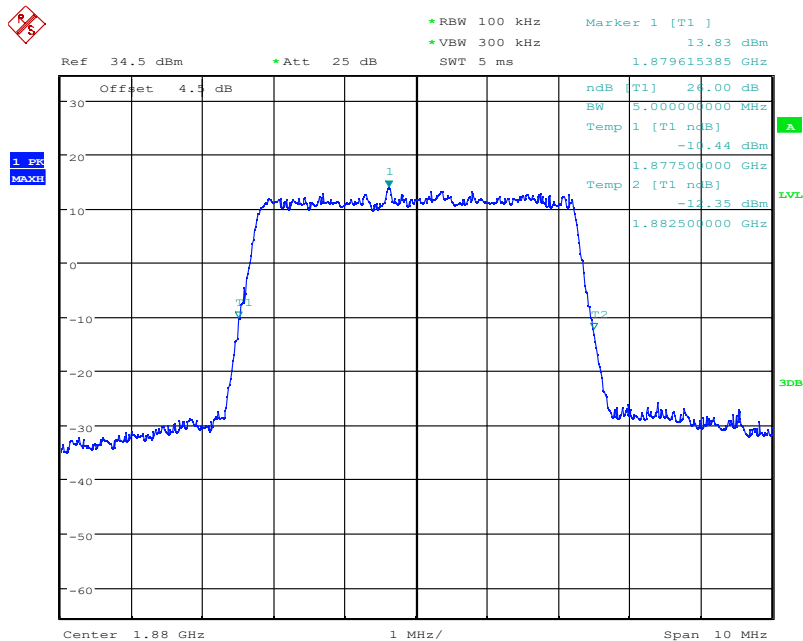


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:40:36

LTE Band2 16QAM 99% Channel 18900 BW=5MHz RB=25 RB Offset=0



Date: 14.DEC.2021 22:27:31

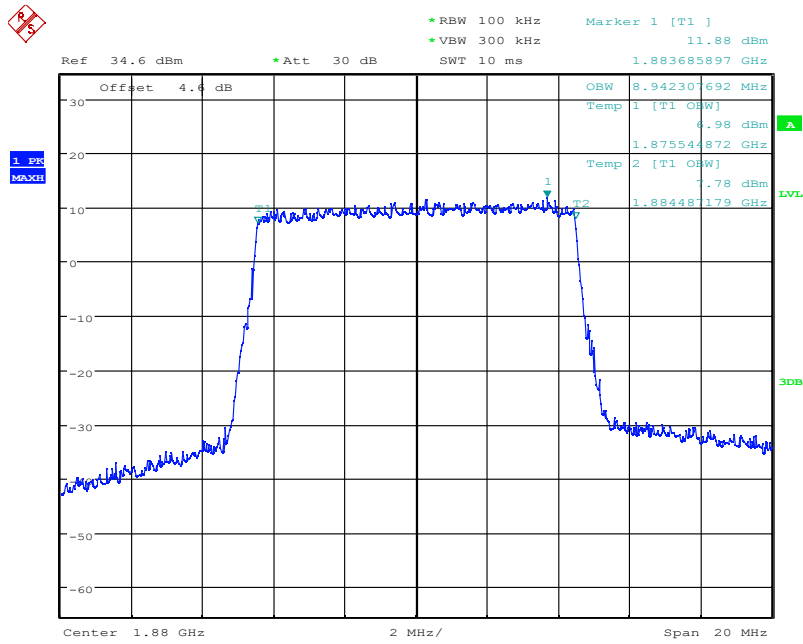
LTE Band2 16QAM -26dBc Channel 18900 BW=5MHz RB=25 RB Offset=0

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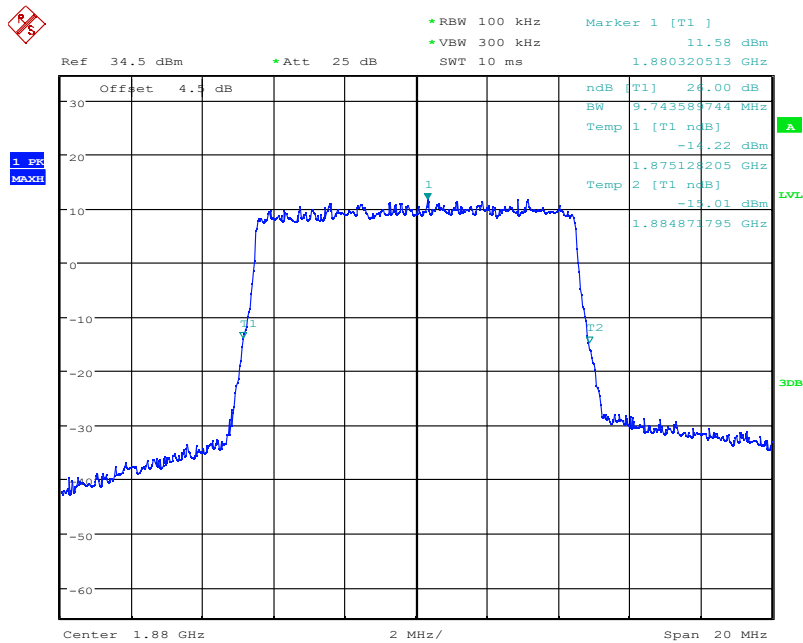


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:41:02

LTE Band2 QPSK 99% Channel 18900 BW=10MHz RB=50 RB Offset=0



Date: 14.DEC.2021 22:47:39

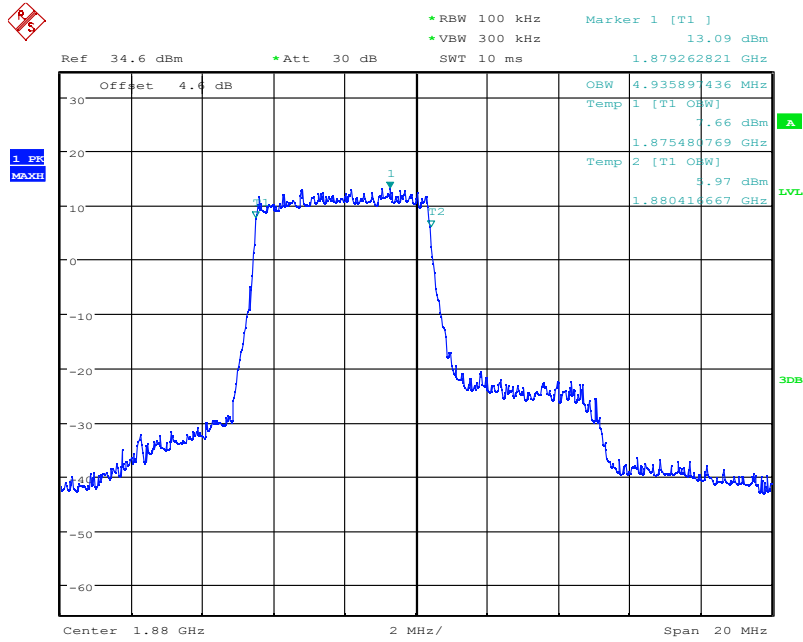
LTE Band2 QPSK -26dBc Channel 18900 BW=10MHz RB=50 RB Offset=0

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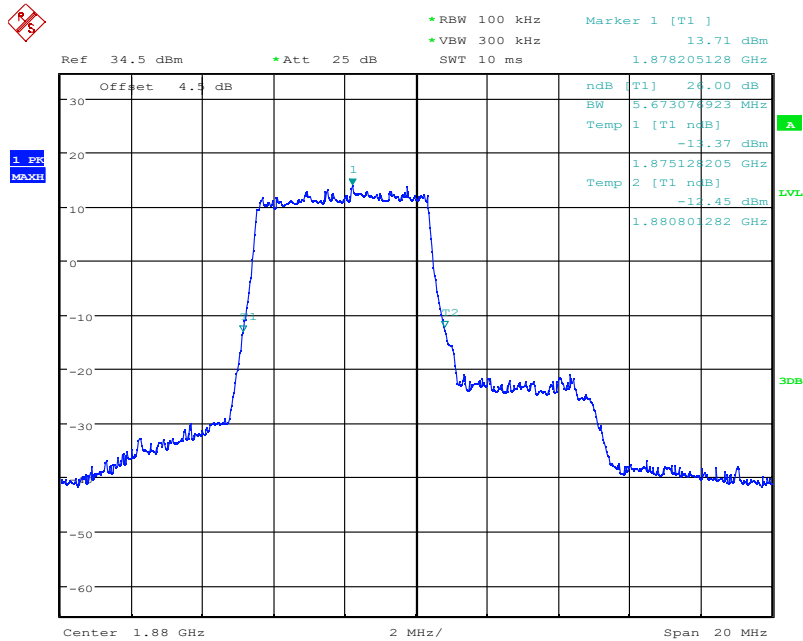


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:41:16

LTE Band2 16QAM 99% Channel 18900 BW=10MHz RB=27 RB Offset=0



Date: 14.DEC.2021 22:47:07

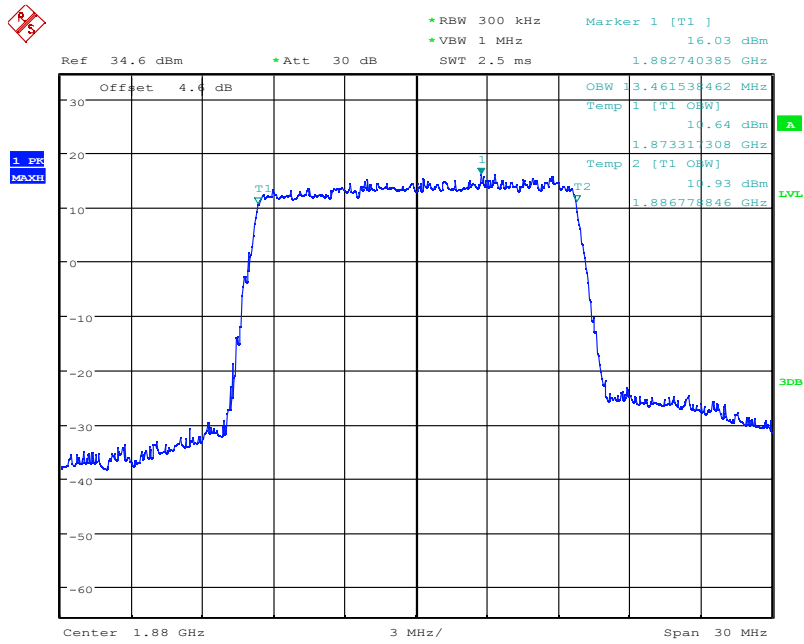
LTE Band2 16QAM -26dBc Channel 18900 BW=10MHz RB=27 RB Offset=0

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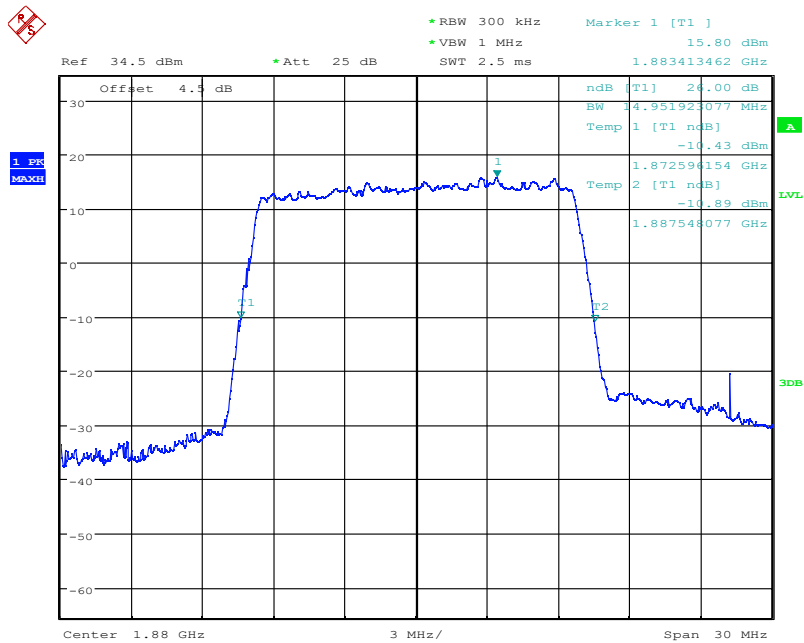


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:42:31

LTE Band2 QPSK 99% Channel 18900 BW=15MHz RB=75 RB Offset=0



Date: 14.DEC.2021 22:36:06

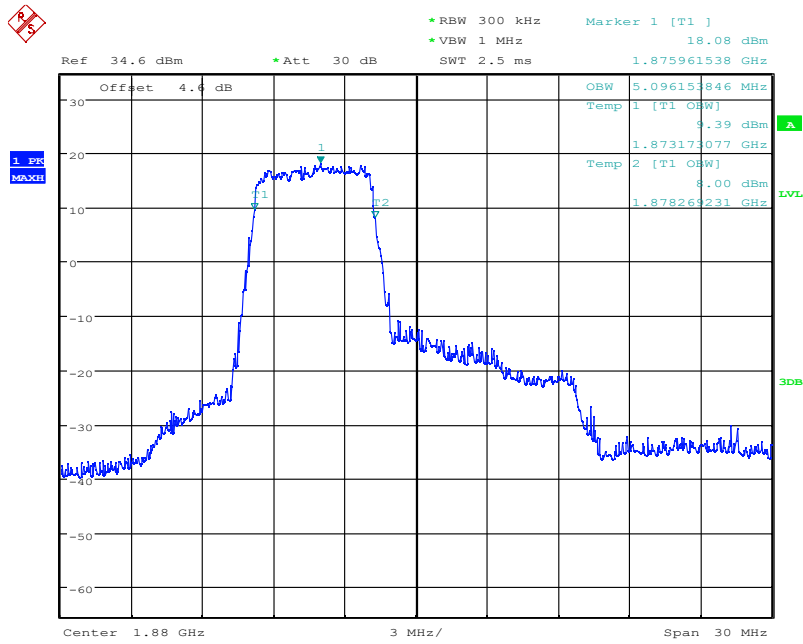
LTE Band2 QPSK -26dBc Channel 18900 BW=15MHz RB=75 RB Offset=0

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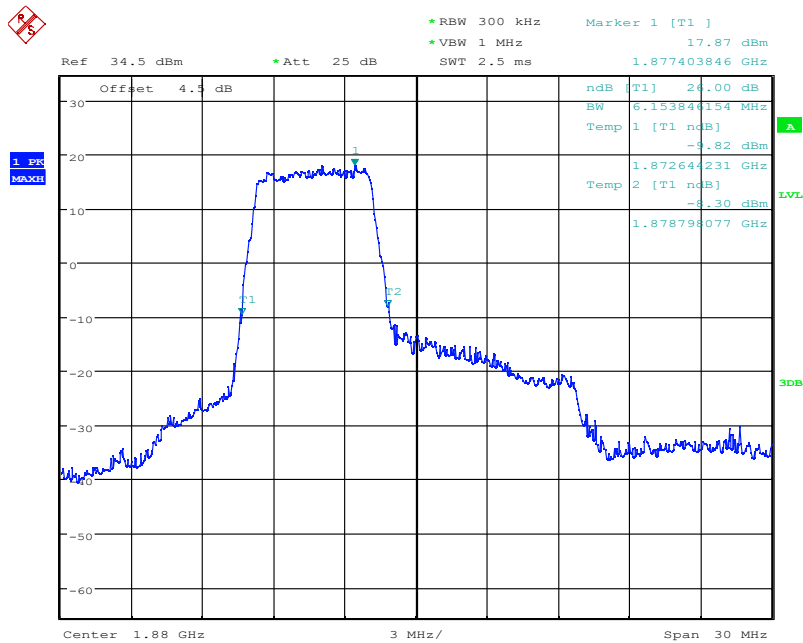


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:42:12

LTE Band2 16QAM 99% Channel 18900 BW=15MHz RB=27 RB Offset=0



Date: 14.DEC.2021 22:37:32

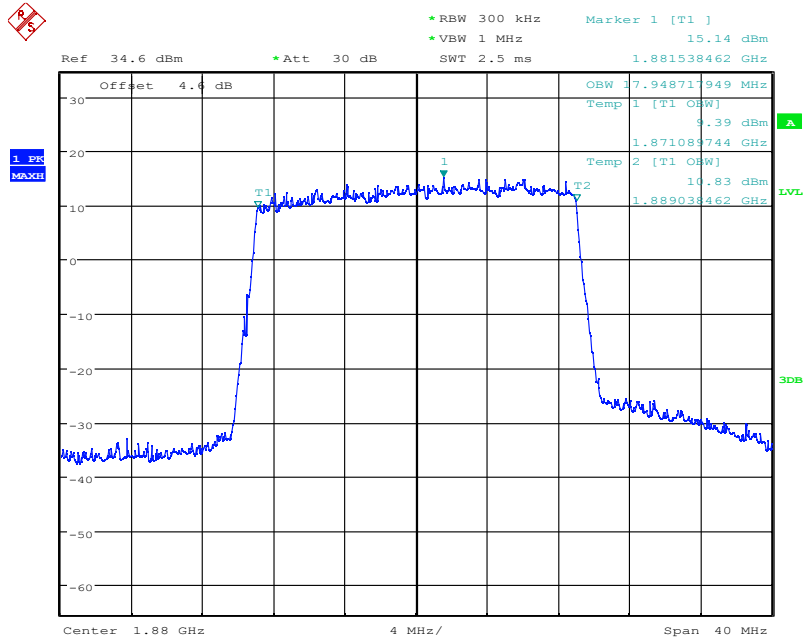
LTE Band2 16QAM -26dBc Channel 18900 BW=15MHz RB=27 RB Offset=0

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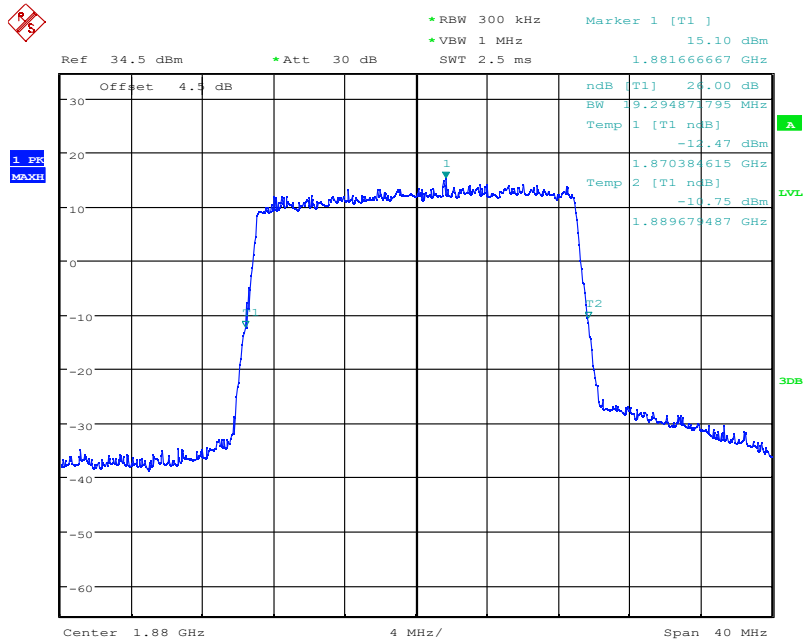


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:42:50

LTE Band2 QPSK 99% Channel 18900 BW=20MHz RB=100 RB Offset=0



Date: 14.DEC.2021 22:49:42

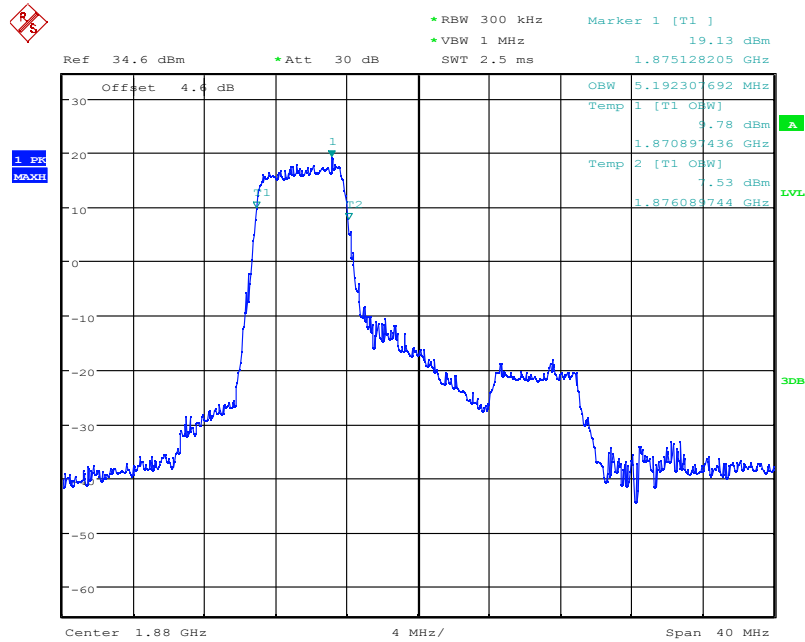
LTE Band2 QPSK -26dBc Channel 18900 BW=20MHz RB=100 RB Offset=0

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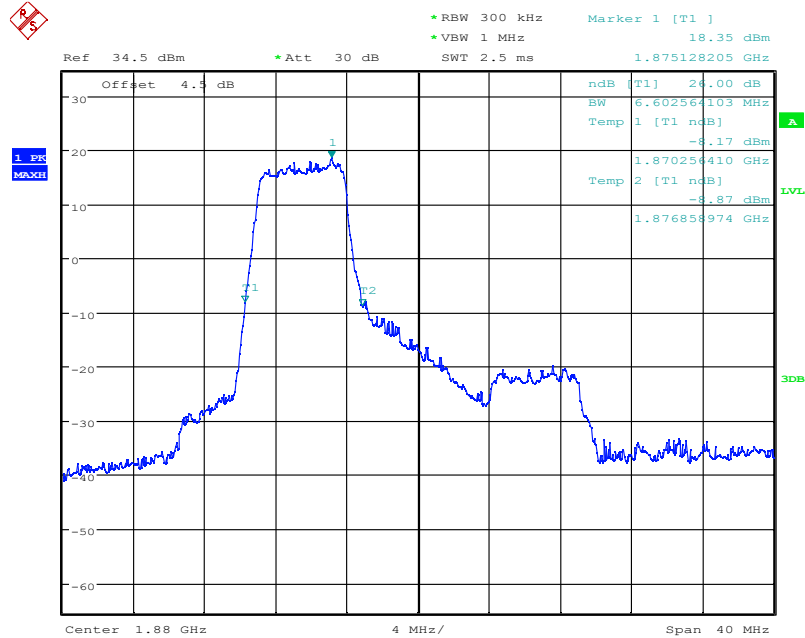


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:43:03

LTE Band2 16QAM 99% Channel 18900 BW=20MHz RB=27 RB Offset=0



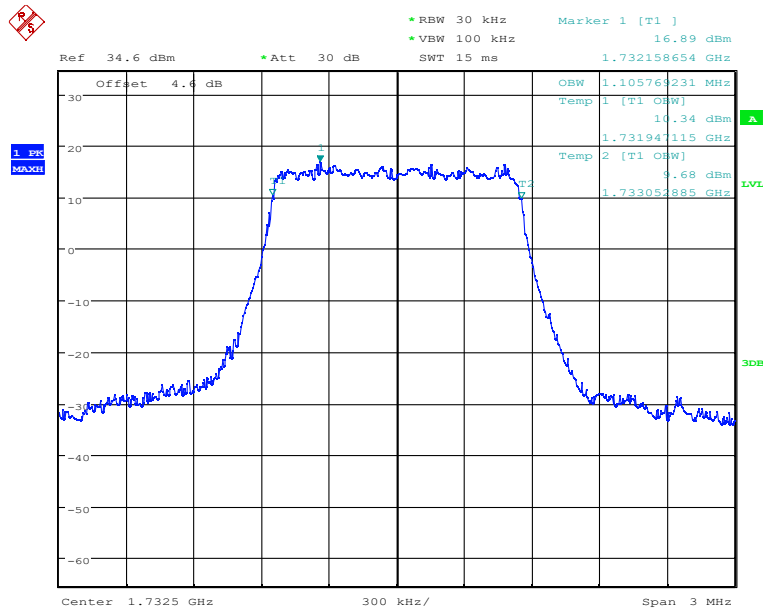
Date: 14.DEC.2021 22:50:27

LTE Band2 16QAM -26dBc Channel 18900 BW=20MHz RB=27 RB Offset=0

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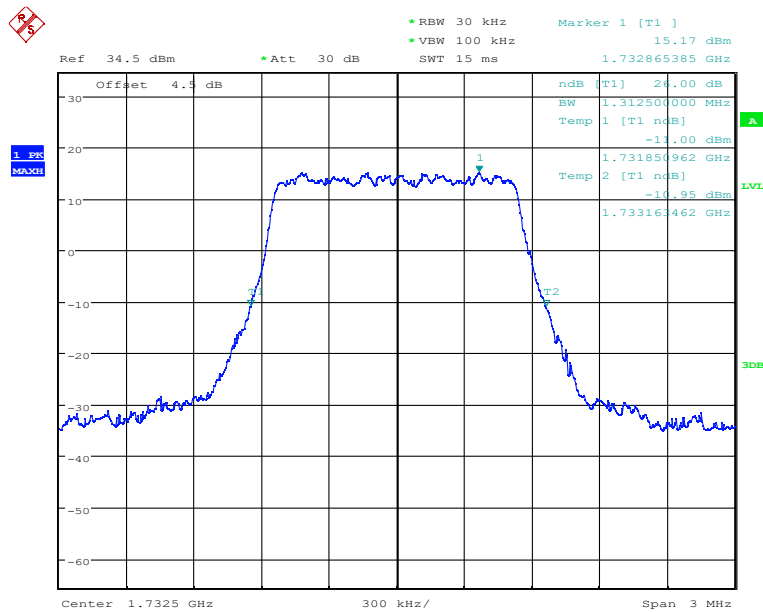
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Graphical results for LTE B4



Date: 15.DEC.2021 03:43:52

LTE Band4 QPSK 99% Channel 20175 BW=1.4MHz RB=6 RB Offset=0



Date: 14.DEC.2021 22:54:49

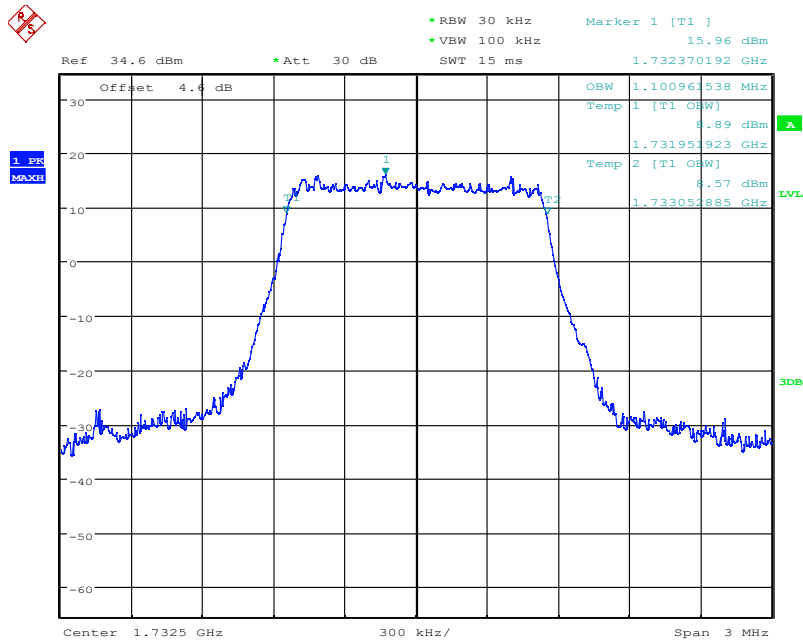
LTE Band4 QPSK -26dBc Channel 20175 BW=1.4MHz RB=6 RB Offset=0

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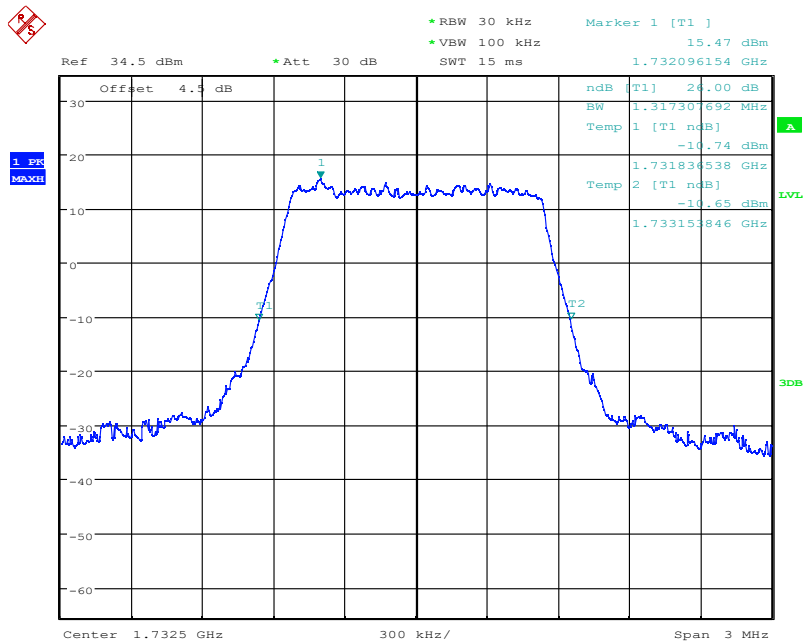


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:44:12

LTE Band4 16QAM 99% Channel 20175 BW=1.4MHz RB=6 RB Offset=0



Date: 14.DEC.2021 22:54:15

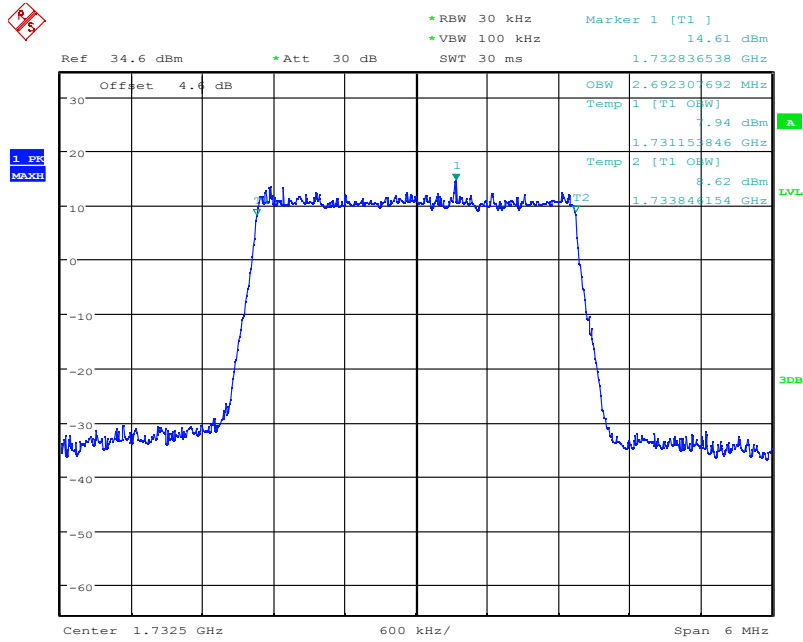
LTE Band4 16QAM -26dBc Channel 20175 BW=1.4MHz RB=6 RB Offset=0

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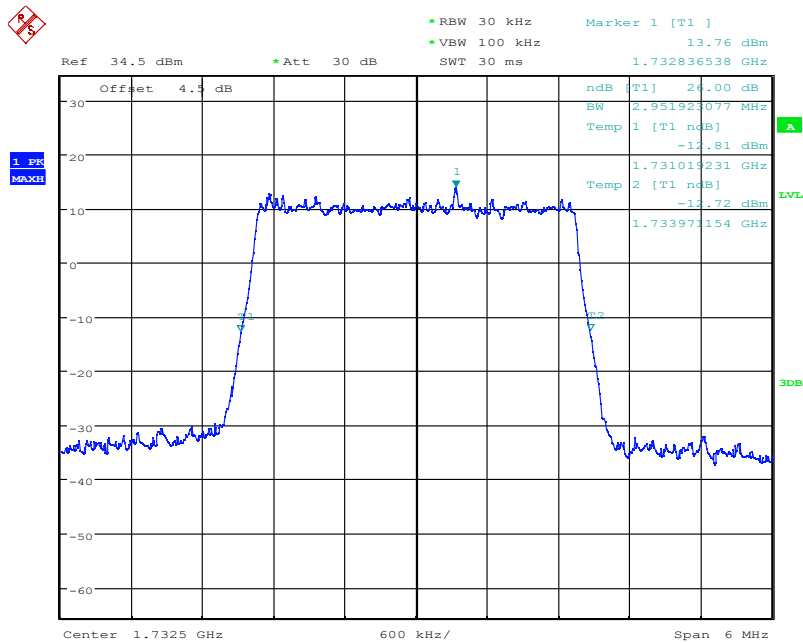


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:44:37

LTE Band4 QPSK 99% Channel 20175 BW=3MHz RB=15 RB Offset=0



Date: 14.DEC.2021 22:56:39

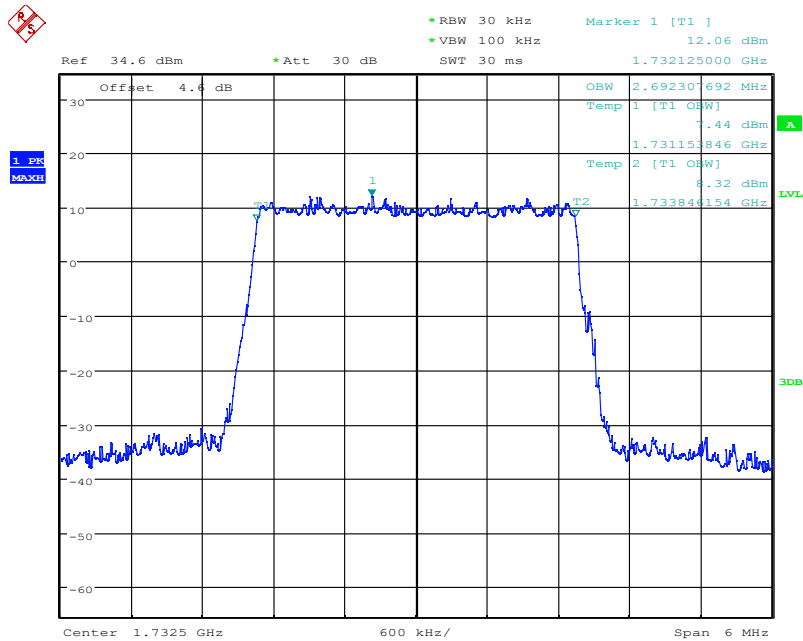
LTE Band4 QPSK -26dBc Channel 20175 BW=3MHz RB=15 RB Offset=0

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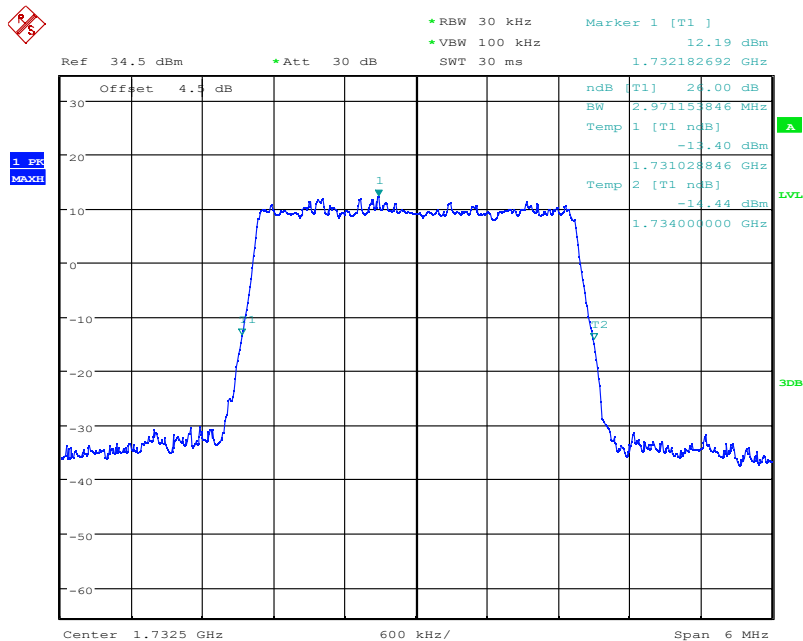


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:44:28

LTE Band4 16QAM 99% Channel 20175 BW=3MHz RB=15 RB Offset=0



Date: 14.DEC.2021 22:59:10

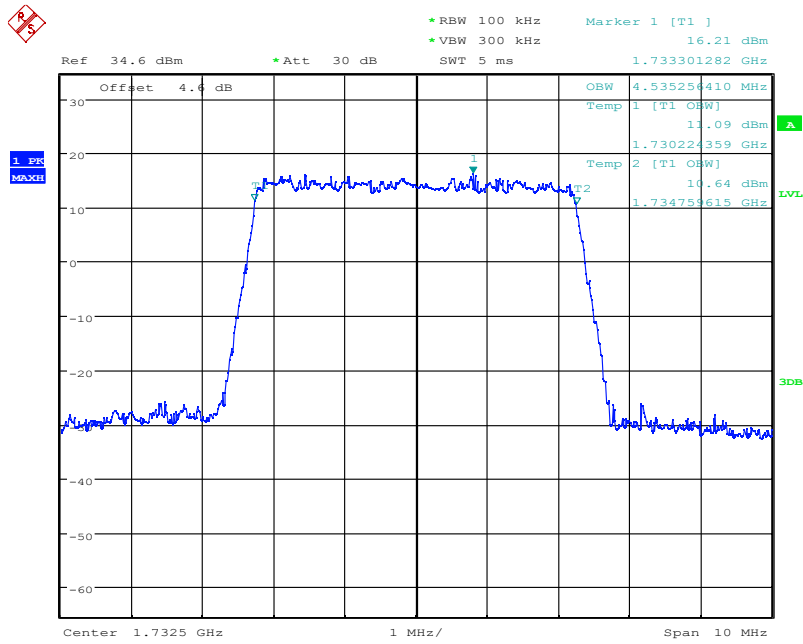
LTE Band4 16QAM -26dBc Channel 20175 BW=3MHz RB=15 RB Offset=0

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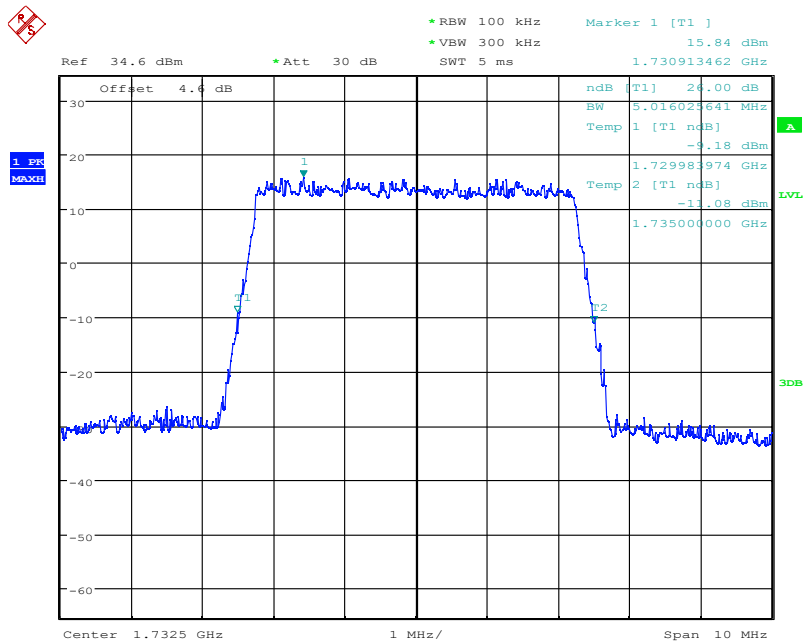


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:45:10

LTE Band4 QPSK 99% Channel 20175 BW=5MHz RB=25 RB Offset=0



Date: 15.DEC.2021 03:45:19

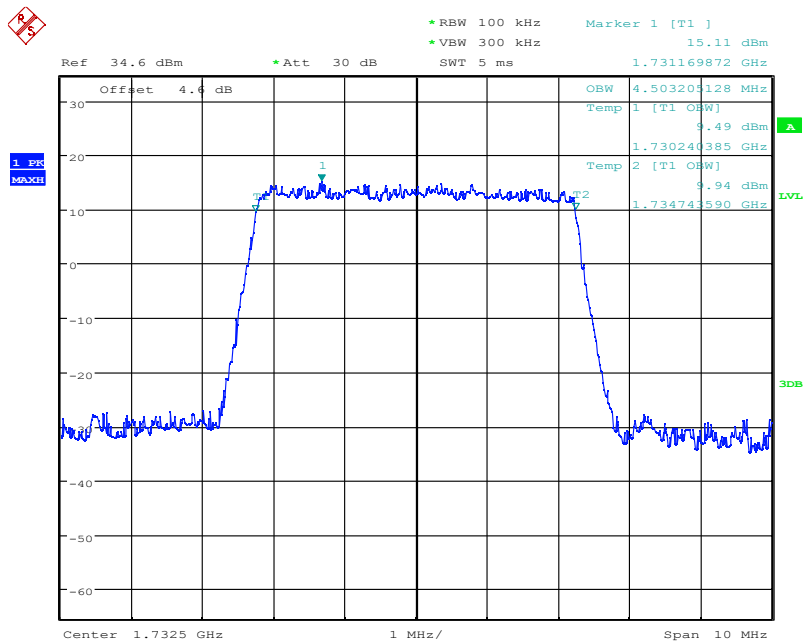
LTE Band4 QPSK -26dBc Channel 20175 BW=5MHz RB=25 RB Offset=0

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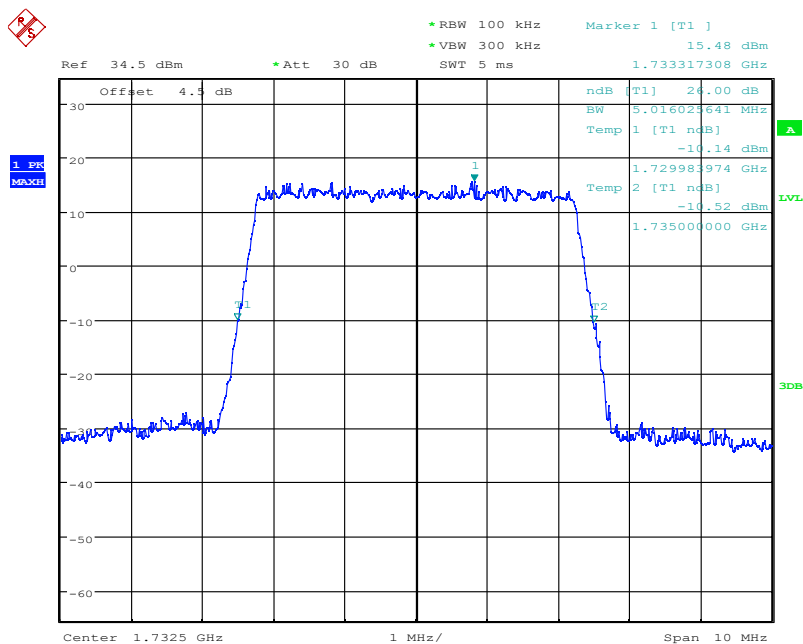


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:45:39

LTE Band4 16QAM 99% Channel 20175 BW=5MHz RB=25 RB Offset=0



Date: 14.DEC.2021 23:00:41

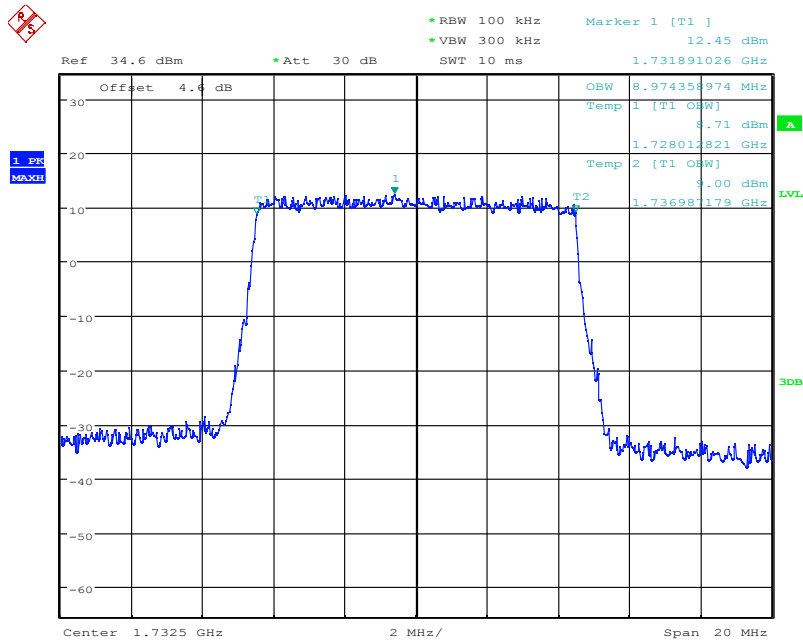
LTE Band4 16QAM -26dBc Channel 20175 BW=5MHz RB=25 RB Offset=0

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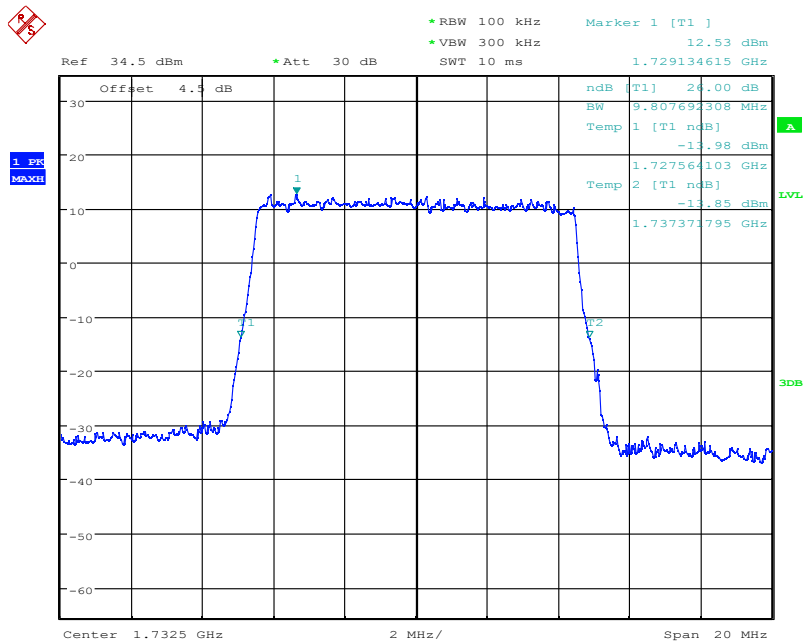


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:46:13

LTE Band4 QPSK 99% Channel 20175 BW=10MHz RB=50 RB Offset=0



Date: 14.DEC.2021 23:01:30

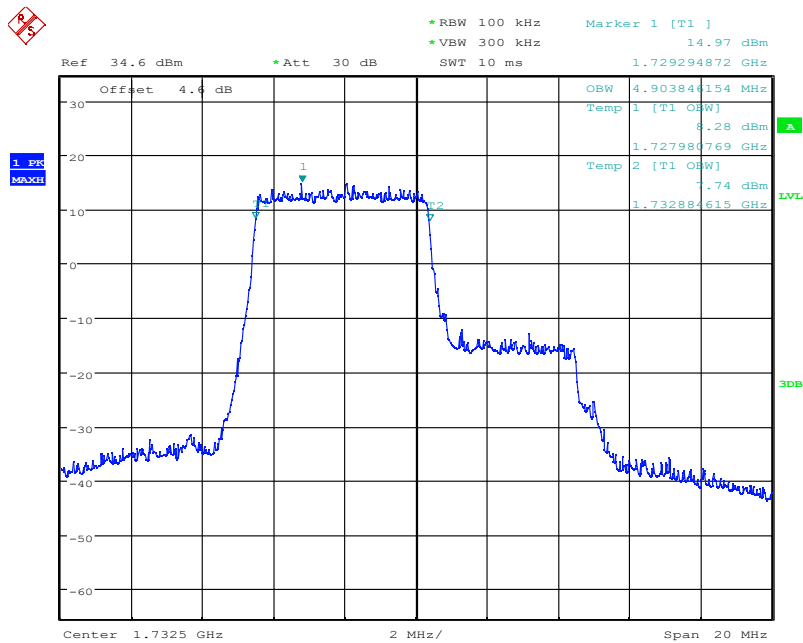
LTE Band4 QPSK -26dBc Channel 20175 BW=10MHz RB=50 RB Offset=0

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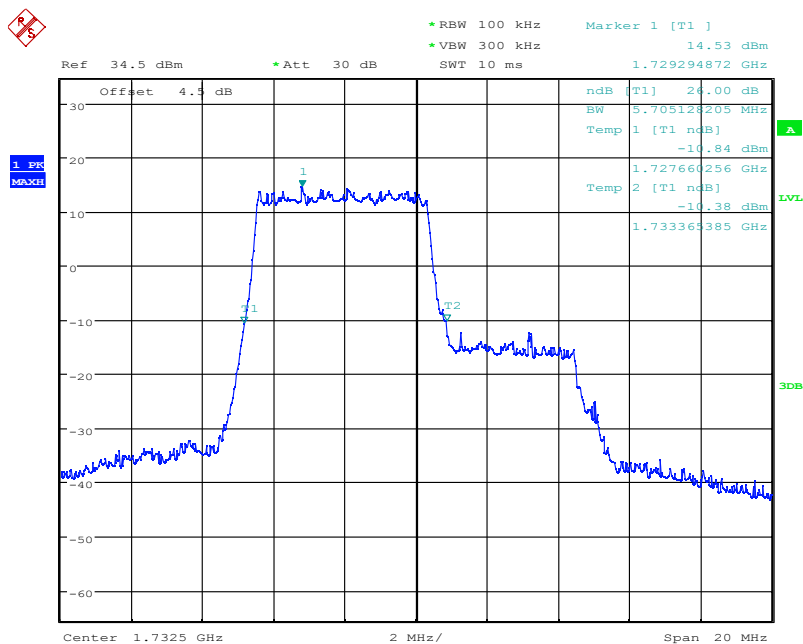
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Report No.: I22W00013-WWAN_Rev1



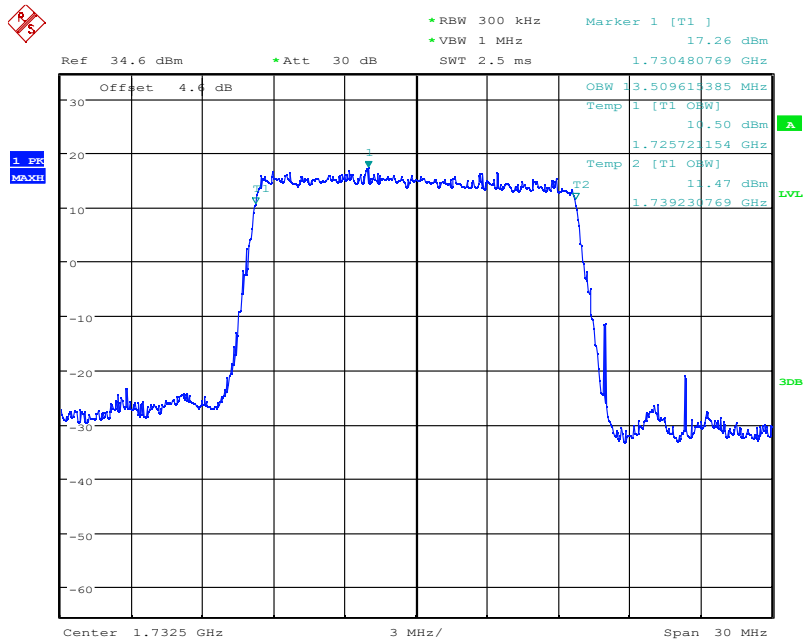
LTE Band4 16QAM 99% Channel 20175 BW=10MHz RB=27 RB Offset=0



LTE Band4 16QAM -26dBc Channel 20175 BW=10MHz RB=27 RB Offset=0

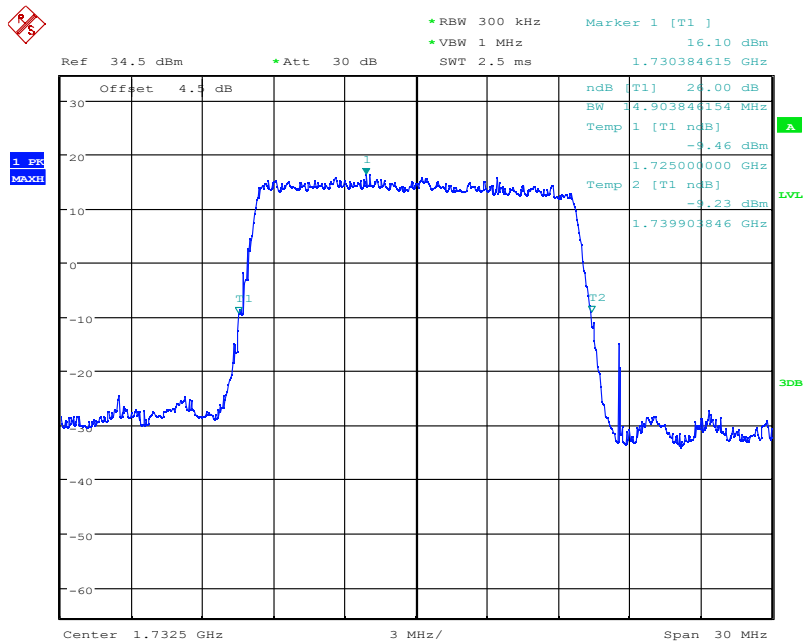
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Date: 15.DEC.2021 03:46:31

LTE Band4 QPSK 99% Channel 20175 BW=15MHz RB=75 RB Offset=0



Date: 14.DEC.2021 23:04:03

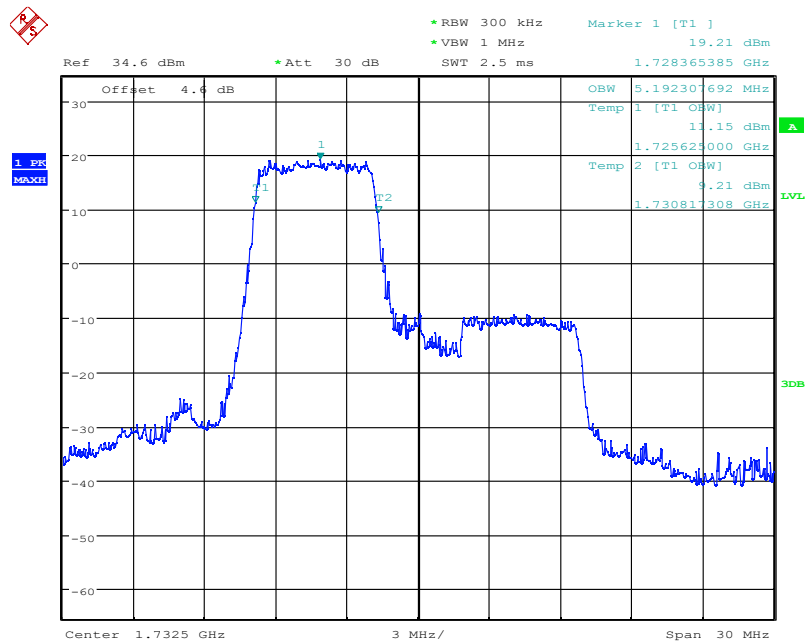
LTE Band4 QPSK -26dBc Channel 20175 BW=15MHz RB=75 RB Offset=0

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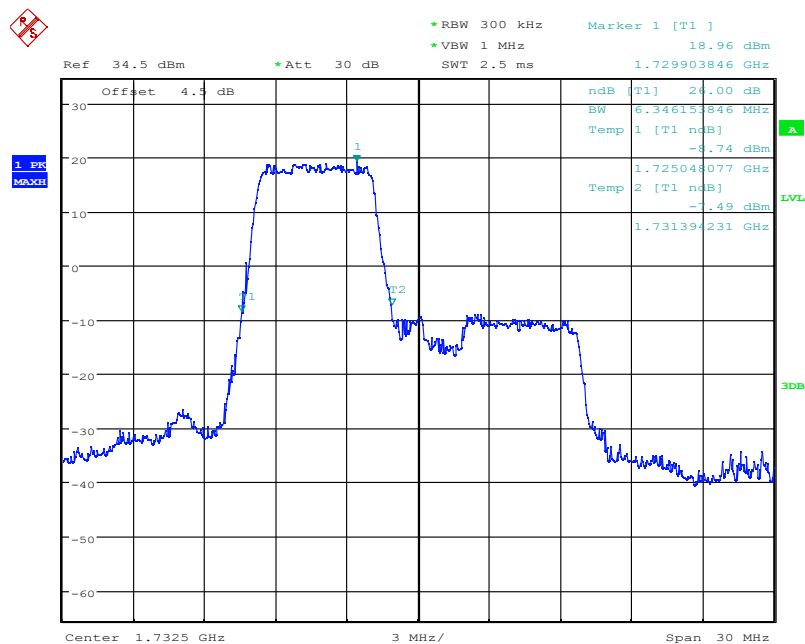


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:46:44

LTE Band4 16QAM 99% Channel 20175 BW=15MHz RB=27 RB Offset=0



Date: 14.DEC.2021 23:03:26

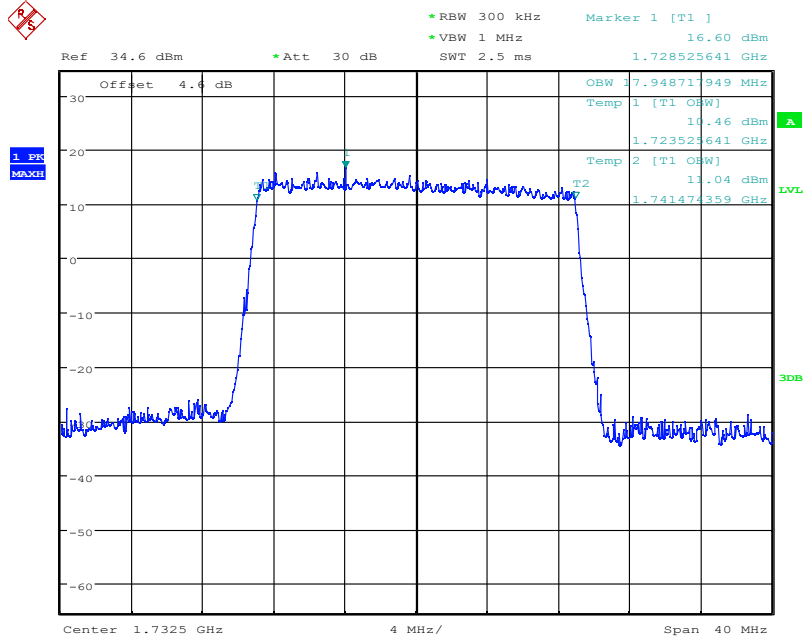
LTE Band4 16QAM -26dBc Channel 20175 BW=15MHz RB=27 RB Offset=0

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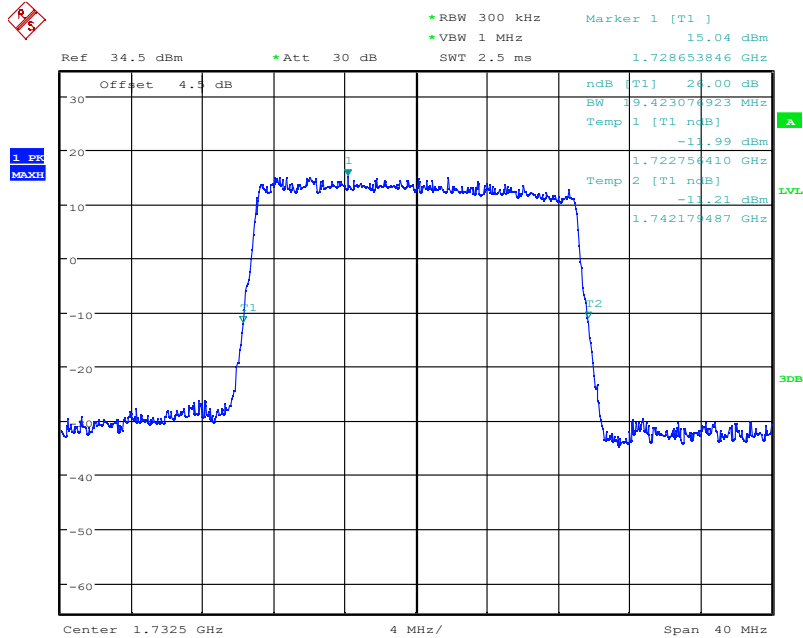


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:47:08

LTE Band4 QPSK 99% Channel 20175 BW=20MHz RB=100 RB Offset=0



Date: 14.DEC.2021 23:04:53

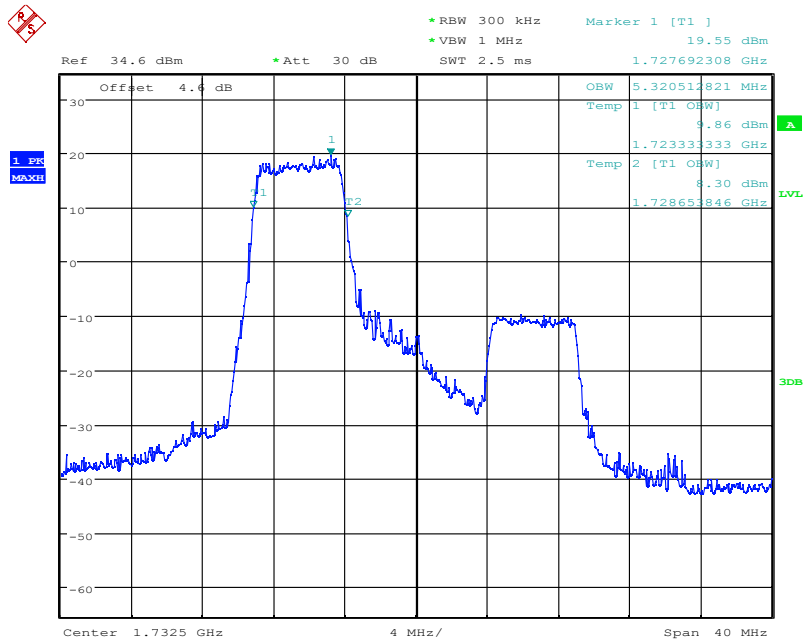
LTE Band4 QPSK -26dBc Channel 20175 BW=20MHz RB=100 RB Offset=0

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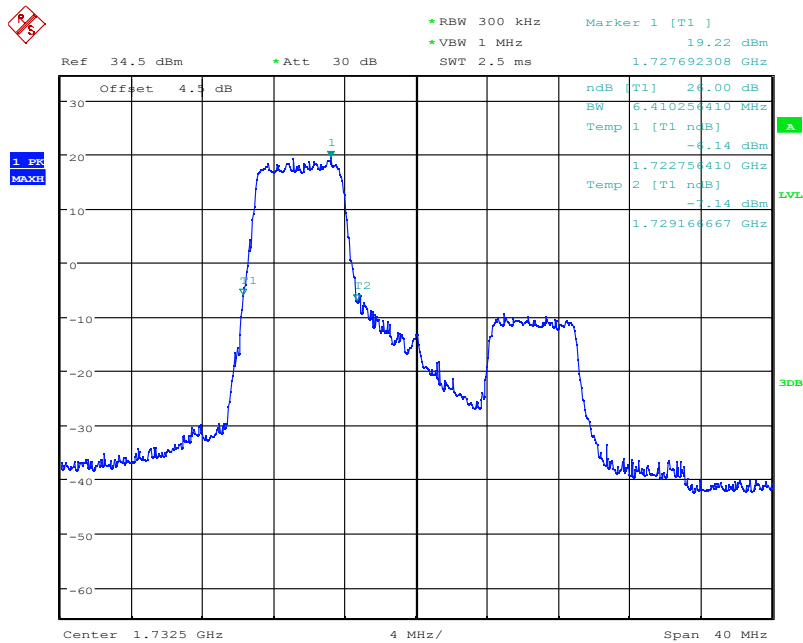


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:46:57

LTE Band4 16QAM 99% Channel 20175 BW=20MHz RB=27 RB Offset=0



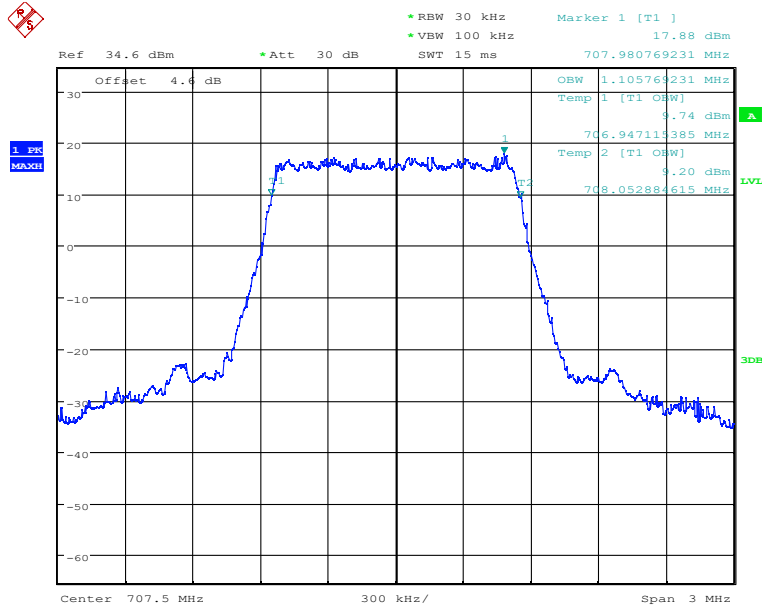
Date: 14.DEC.2021 23:04:31

LTE Band4 16QAM -26dBc Channel 20175 BW=20MHz RB=27 RB Offset=0

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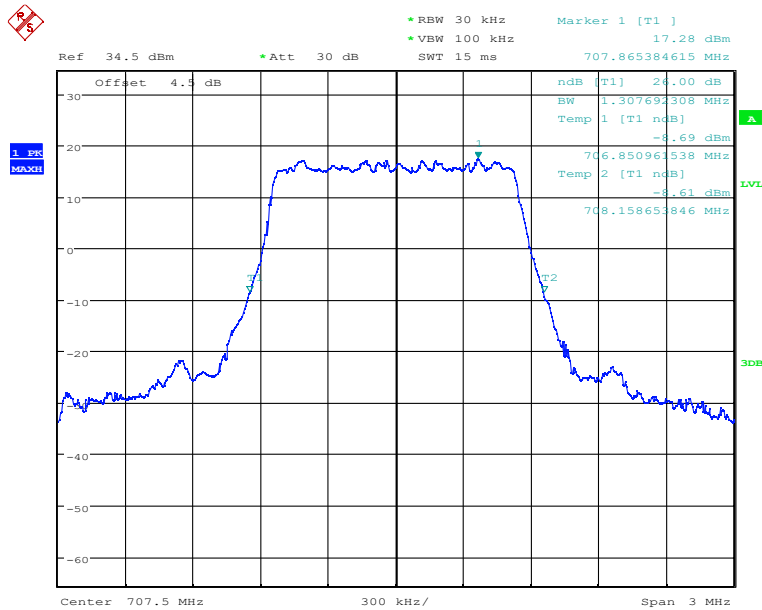
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX:0086-23-88608777

Graphical results for LTE B12:



Date: 15.DEC.2021 03:52:04

LTE Band12 QPSK 99% Channel 23095 BW=1.4MHz RB=6 RB Offset=0



Date: 14.DEC.2021 23:06:19

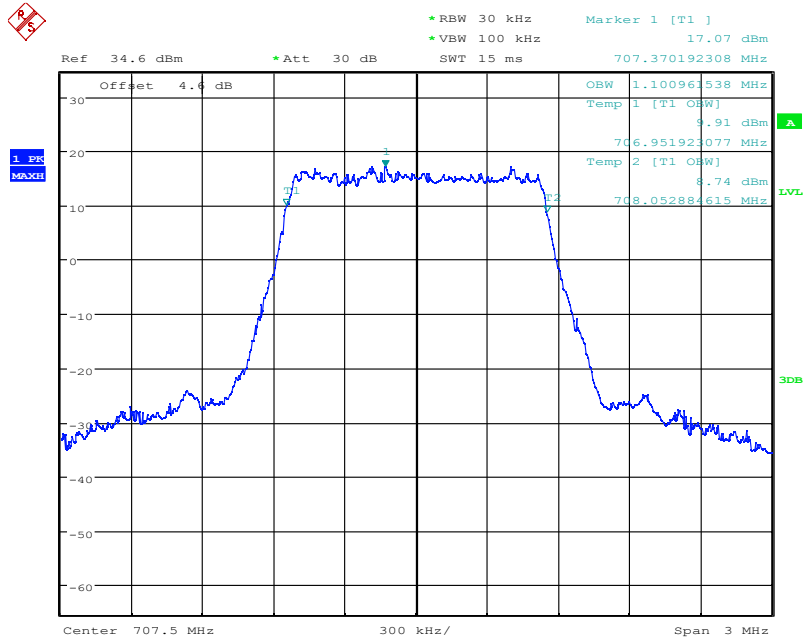
LTE Band12 QPSK -26dBc Channel 23095 BW=1.4MHz RB=6 RB Offset=0

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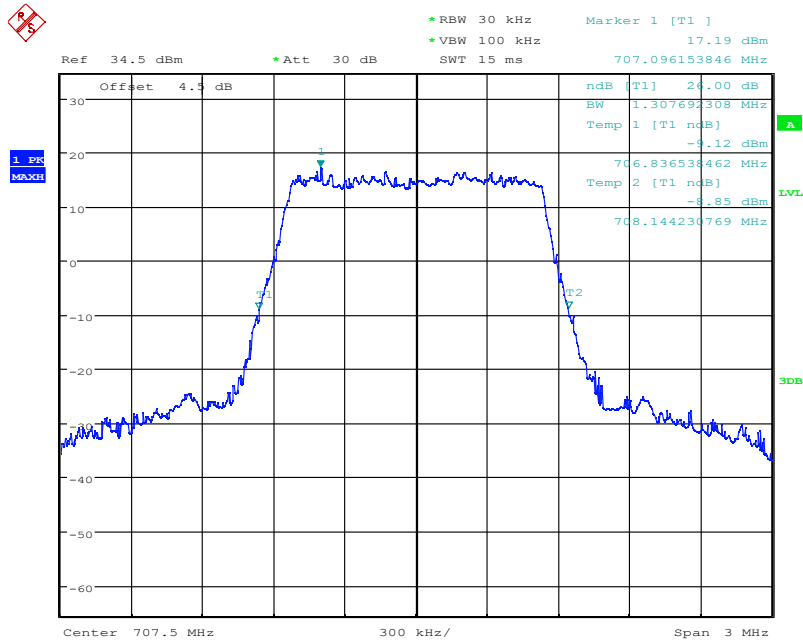


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:51:52

LTE Band12 16QAM 99% Channel 23095 BW=1.4MHz RB=6 RB Offset=0



Date: 14.DEC.2021 23:06:38

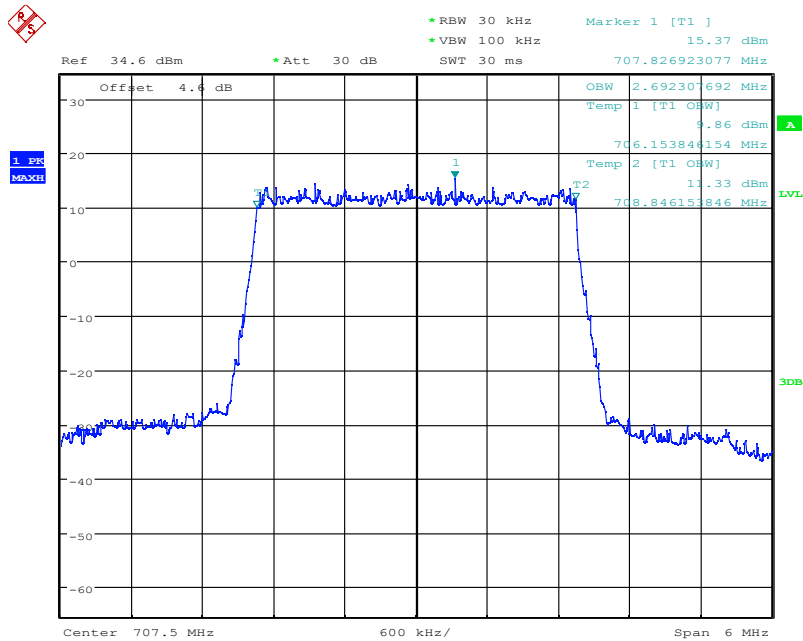
LTE Band12 16QAM -26dBc Channel 23095 BW=1.4MHz RB=6 RB Offset=0

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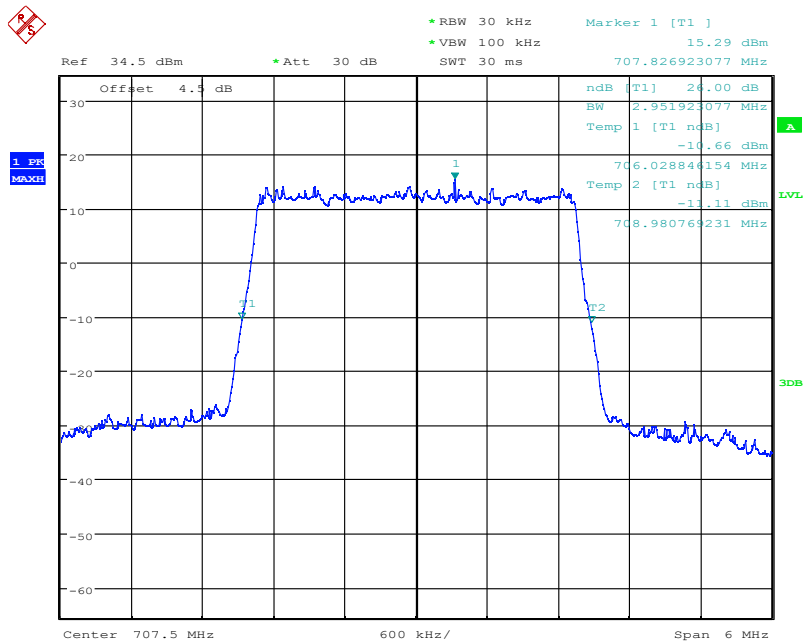


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:52:15

LTE Band12 QPSK 99% Channel 23095 BW=3MHz RB=15 RB Offset=0



Date: 14.DEC.2021 23:07:44

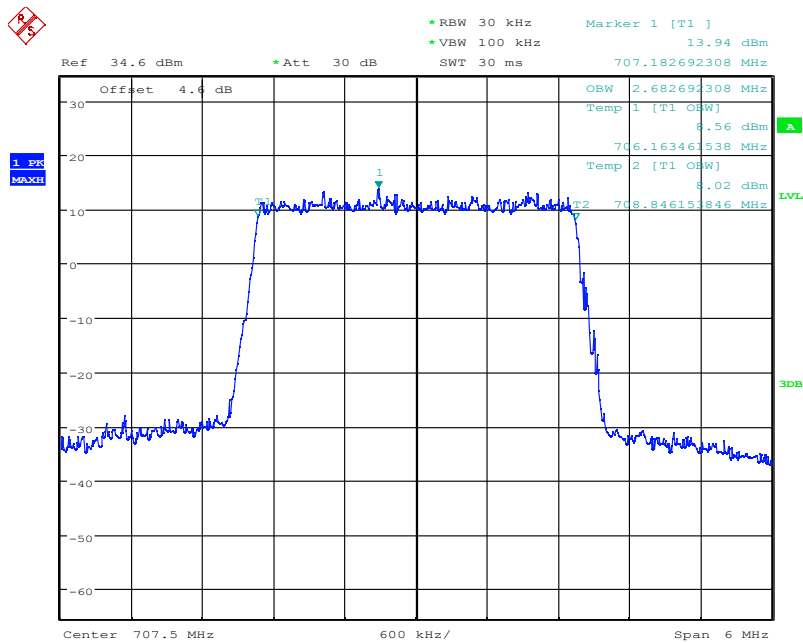
LTE Band12 QPSK 16dBc Channel 23095 BW=3MHz RB=15 RB Offset=0

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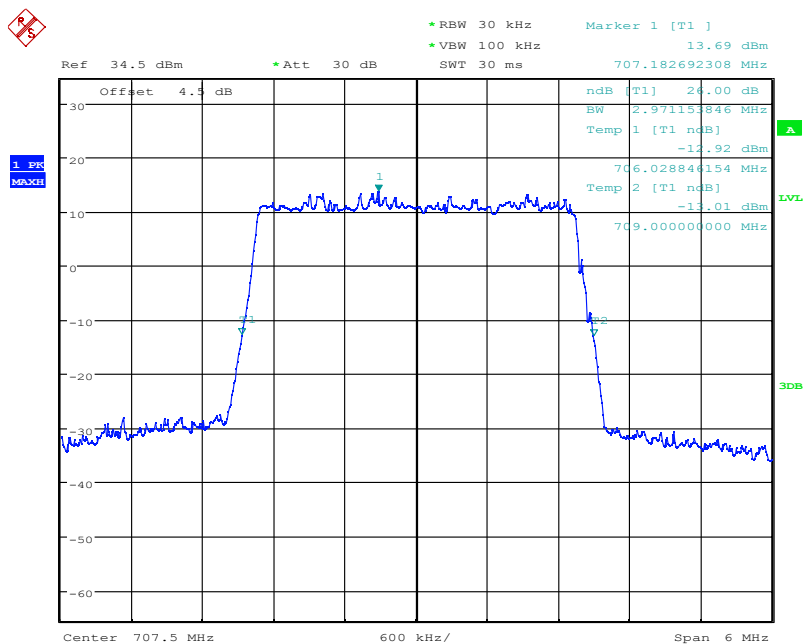


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:52:23

LTE Band12 16QAM 99% Channel 23095 BW=3MHz RB=15 RB Offset=0



Date: 14.DEC.2021 23:07:16

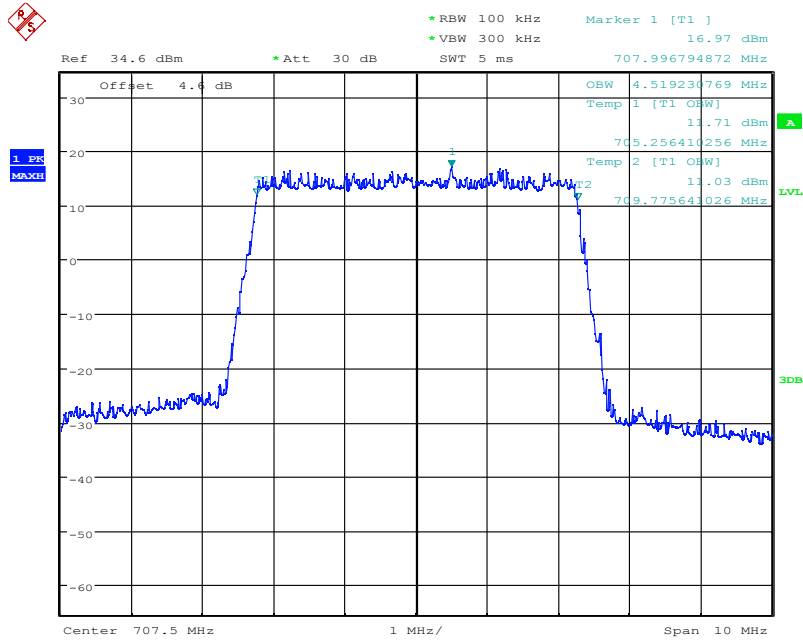
LTE Band12 16QAM -26dBc Channel 23095 BW=3MHz RB=15 RB Offset=0

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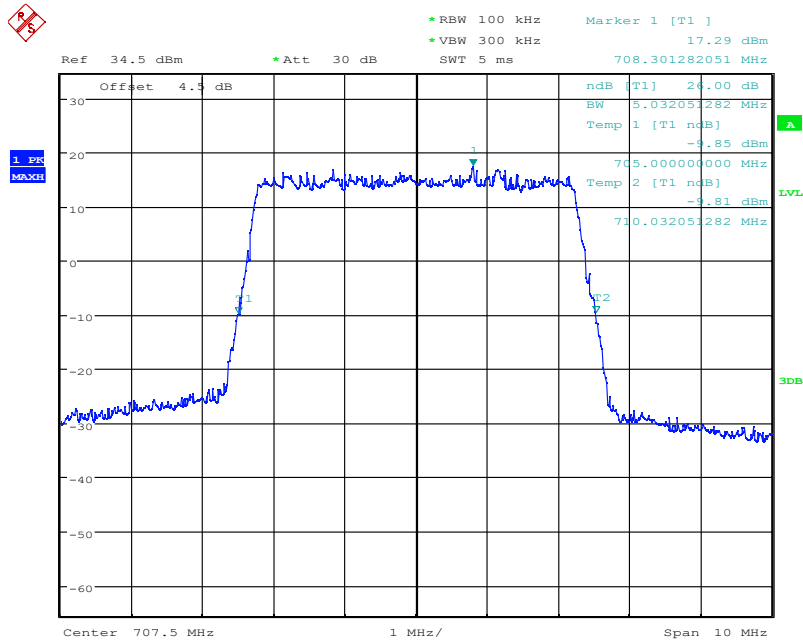


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:52:52

LTE Band12 QPSK 99% Channel 23095 BW=5MHz RB=25 RB Offset=0



Date: 14.DEC.2021 23:08:12

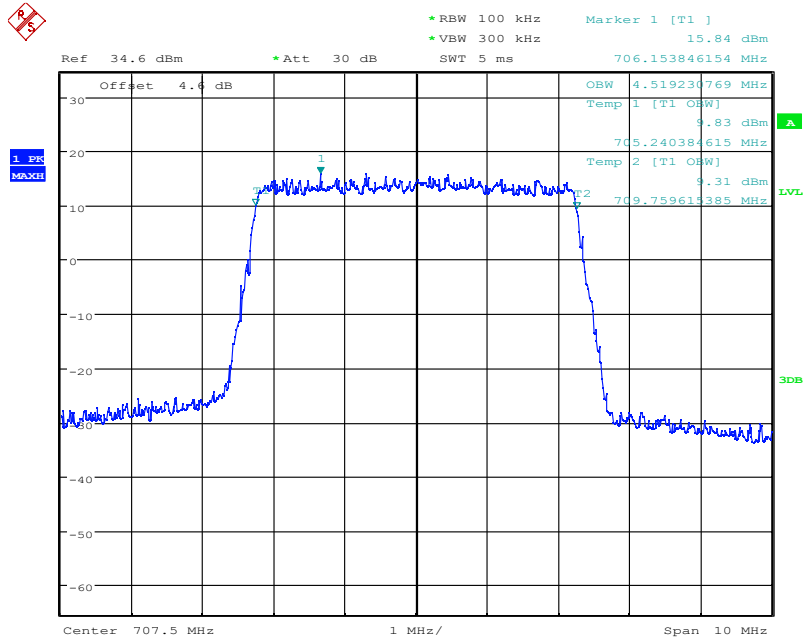
LTE Band12 QPSK -26dBc Channel 23095 BW=5MHz RB=25 RB Offset=0

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Tel: 0086-23-88069965 FAX:0086-23-88608777

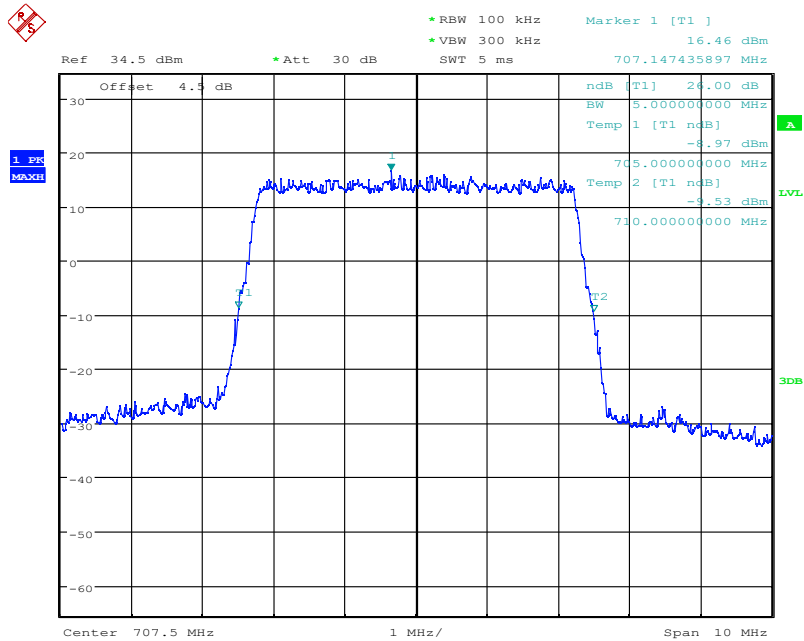


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:52:43

LTE Band12 16QAM 99% Channel 23095 BW=5MHz RB=25 RB Offset=0



Date: 14.DEC.2021 23:08:31

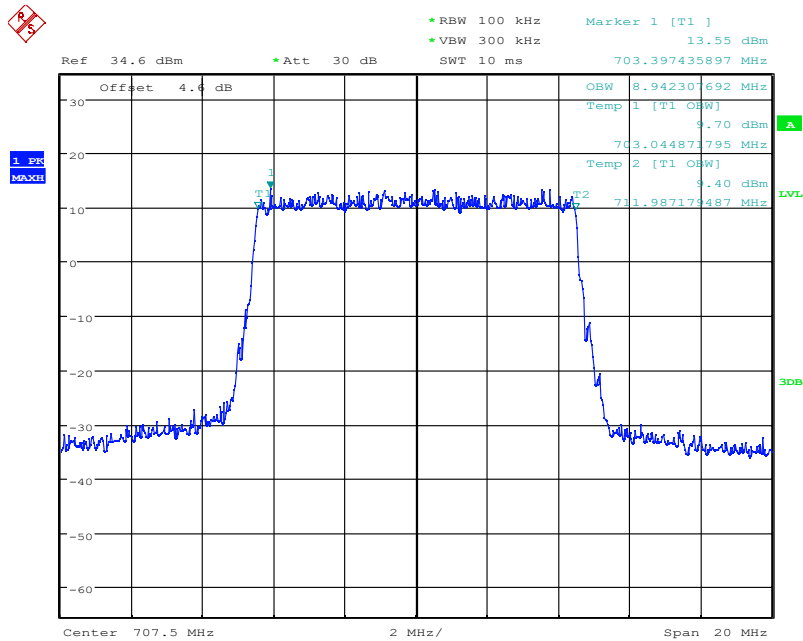
LTE Band12 16QAM -26dBc Channel 23095 BW=5MHz RB=25 RB Offset=0

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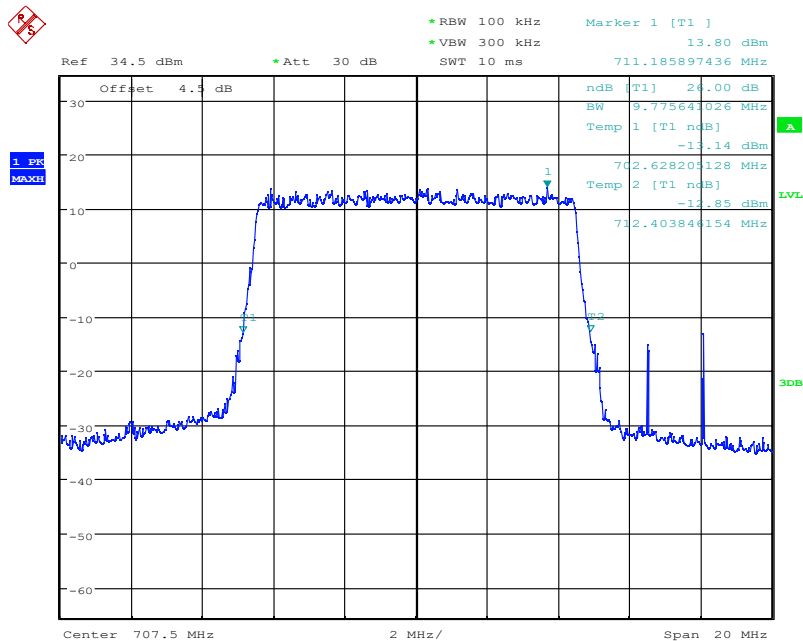


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:53:03

LTE Band12 QPSK 99% Channel 23095 BW=10MHz RB=50 RB Offset=0



Date: 14.DEC.2021 23:09:24

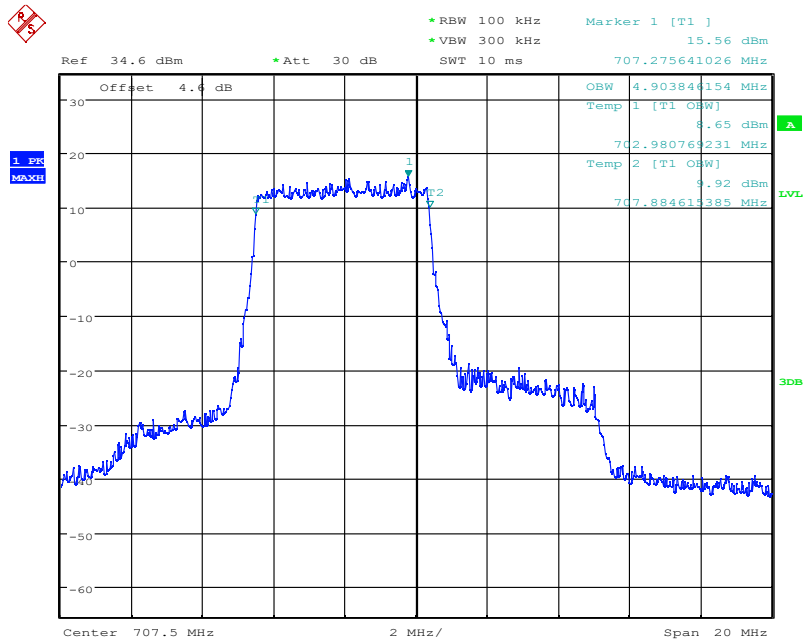
LTE Band12 QPSK -26dBc Channel 23095 BW=10MHz RB=50 RB Offset=0

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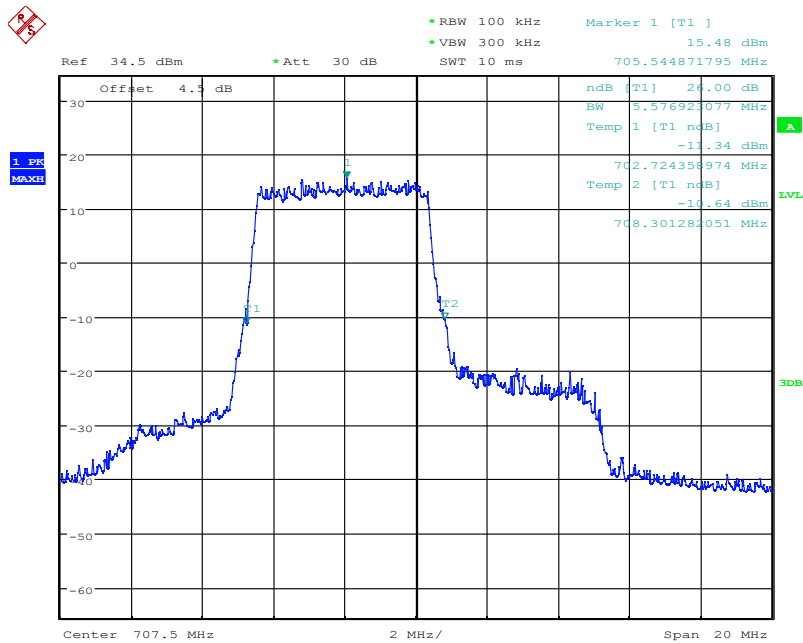


Report No.: I22W00013-WWAN_Rev1



Date: 15.DEC.2021 03:53:15

LTE Band12 16QAM 99% Channel 23095 BW=10MHz RB=27 RB Offset=0



Date: 14.DEC.2021 23:09:03

LTE Band12 16QAM -26dBc Channel 23095 BW=10MHz RB=27 RB Offset=0

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6.5. Conducted spurious emissions

Specifications:	FCC Part 2.1051, 24.238, 2.1053, 27.53
DUT Serial Number:	861475035587502
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 24.238 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB, so the limit level is: $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13\text{dBm}$.

According to Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 Bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

According to Part 27.53(g):

For operations in the 600 MHz Band and the 698-746 MHz Band, the power of any emission outside a licensee's frequency Band(s) of operation shall be attenuated below the transmitter power (P) within the licensed Band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution Bandwidth of 100 kilohertz or greater. 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.

Measurement Uncertainty:

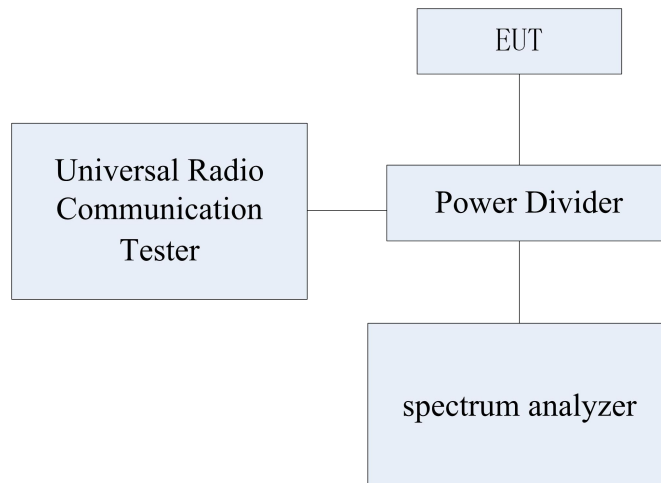
Item	Uncertainty	
Expanded Uncertainty	$9\text{kHz} < f \leq 4\text{GHz}$	0.71 dB (k=2)
	$4\text{GHz} \leq f < 12.75\text{GHz}$	0.74 dB (k=2)
	$12.75\text{GHz} \leq f < 26\text{GHz}$	2.70 dB (k=2)

Test Setup:

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.

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Test Method:

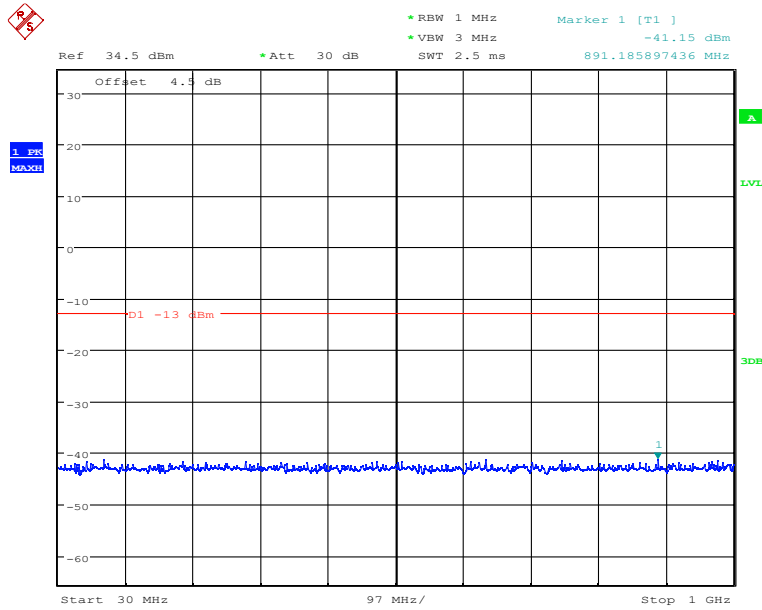
The measurement was performed accordance with section 2.2.13 of ANSI/TIA-603-E: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

The measurement was performed accordance with section 2.2.13 of ANSI/TIA-603-E-2016: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-Band emissions, if any, up to 10th harmonic. The EUT was scanned for spurious emissions from 30MHz to 20GHz with sufficient Bandwidth and video resolution. The spectrum analyzer was set to Maximum hold mode to ensure that the worst-case emissions were captured.

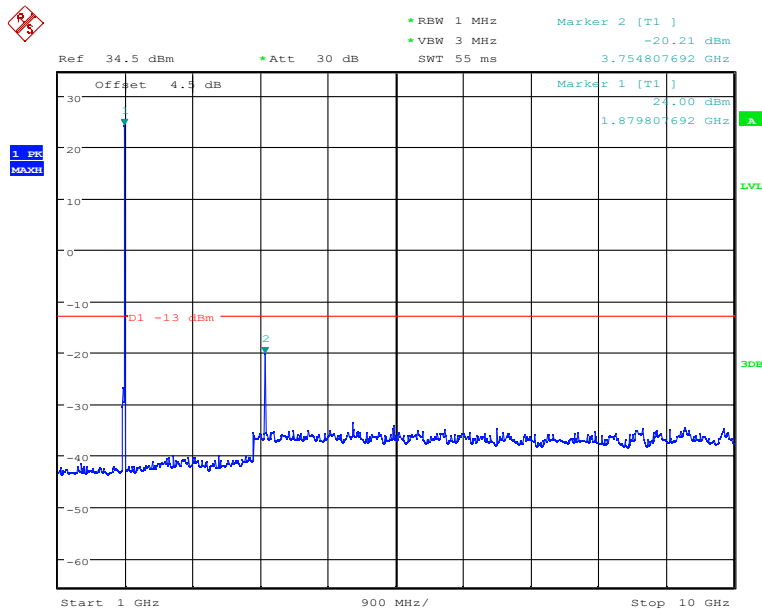
Note: Only worst case result is given below

6.5.1 LTE B2 Conducted Spurious Emission Results



Date: 14.DEC.2021 10:04:19

1.4MHz bandwidth QPSK Mode Middle channel, 1880 MHz, 30MHz to 1GHz



Date: 14.DEC.2021 10:04:32

1.4MHz bandwidth QPSK Middle channel, 1880MHz,1GHz to 10GHz

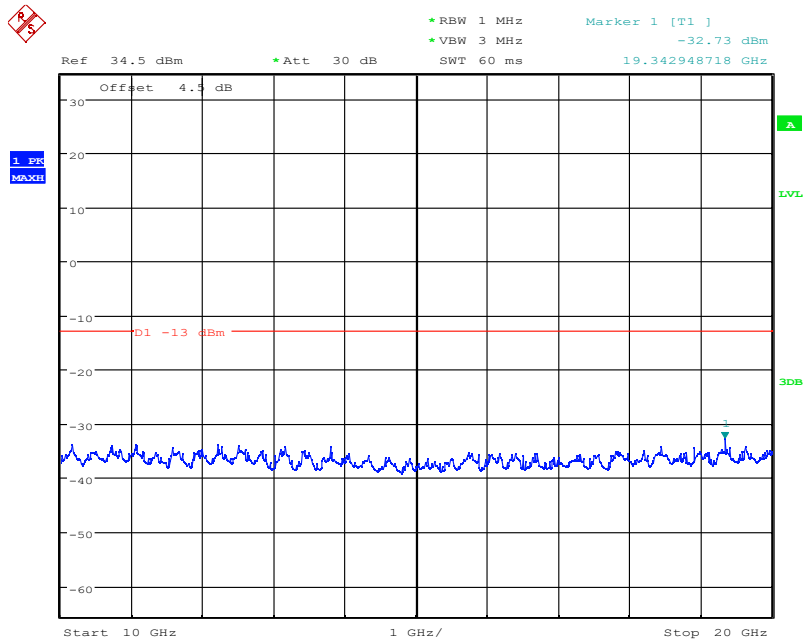
Note: The strong emission shown in each case is the carrier signal.

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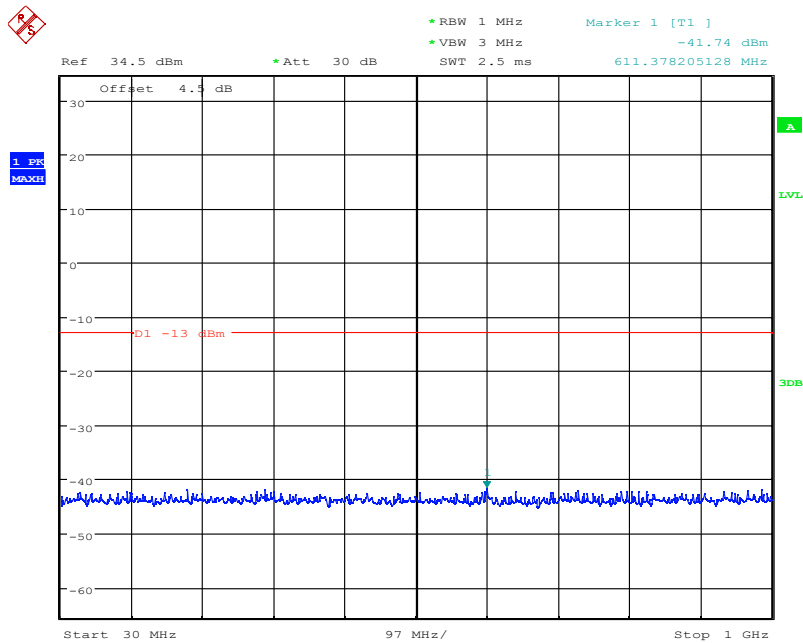


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 10:04:45

1.4MHz bandwidth QPSK Middle channel, 1880 MHz, 10GHz to 20GHz

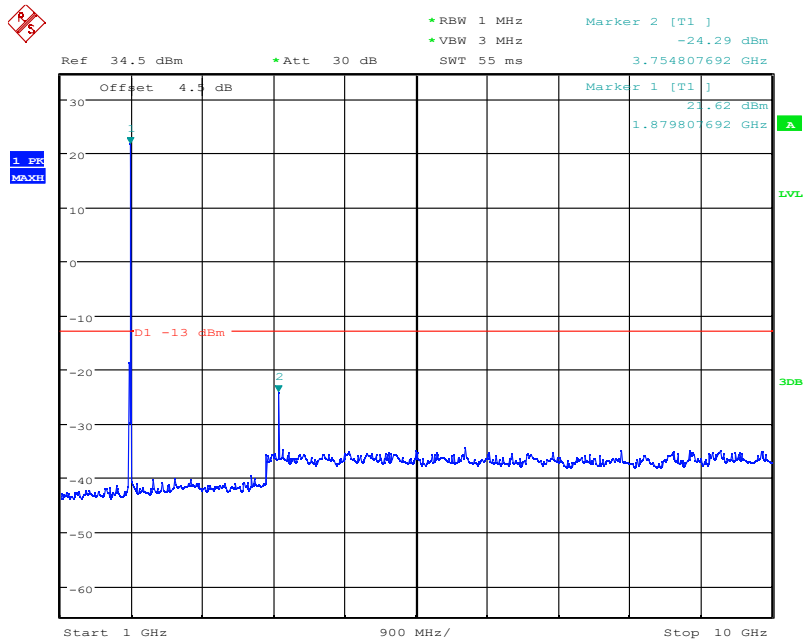


Date: 14.DEC.2021 10:05:23

3MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 30MHz to 1GHz

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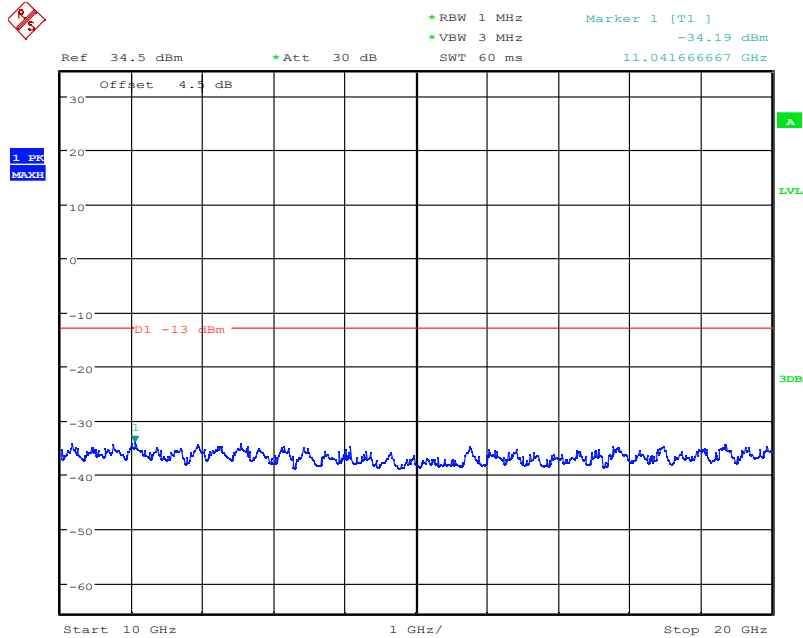
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Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 14.DEC.2021 10:05:13

3MHz bandwidth QPSK Middle Channel, 1880 MHz, 1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.

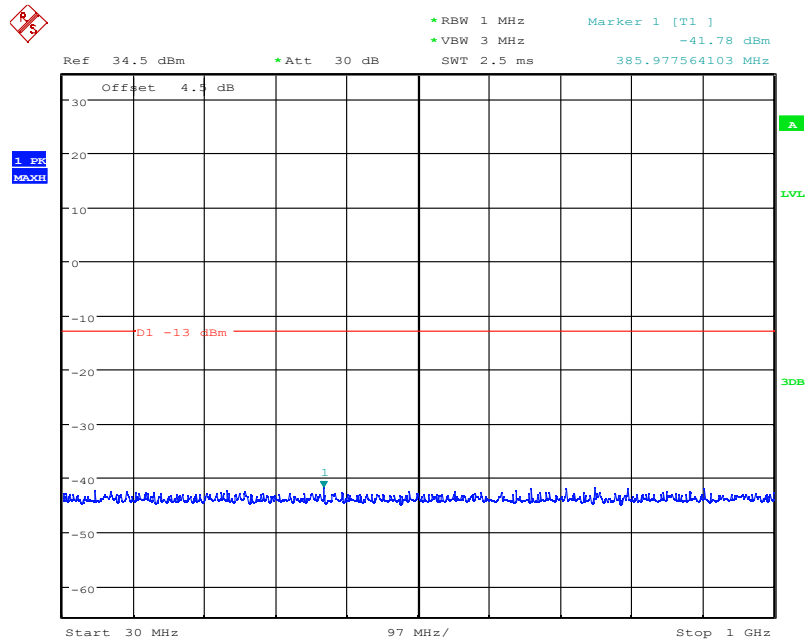


Date: 14.DEC.2021 10:05:01

3MHz bandwidth QPSK Middle Channel, 1880 MHz, 10GHz to 20GHz

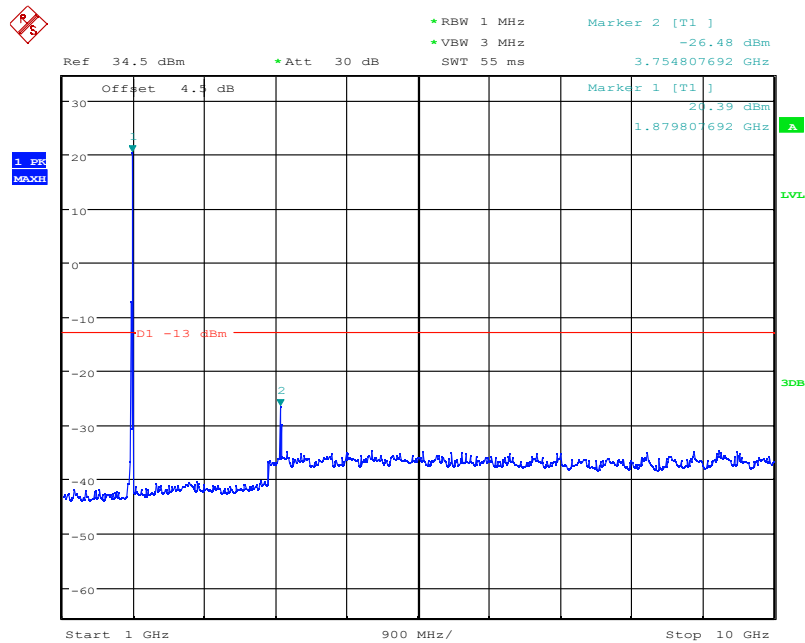
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Date: 14.DEC.2021 10:05:36

5MHz bandwidth QPSK Mode Middle Channel, 1880 MHz,30MHz to 1GHz



Date: 14.DEC.2021 10:05:47

5MHz bandwidth QPSK Mode Middle Channel, 1880 MHz,1GHz to 10GHz

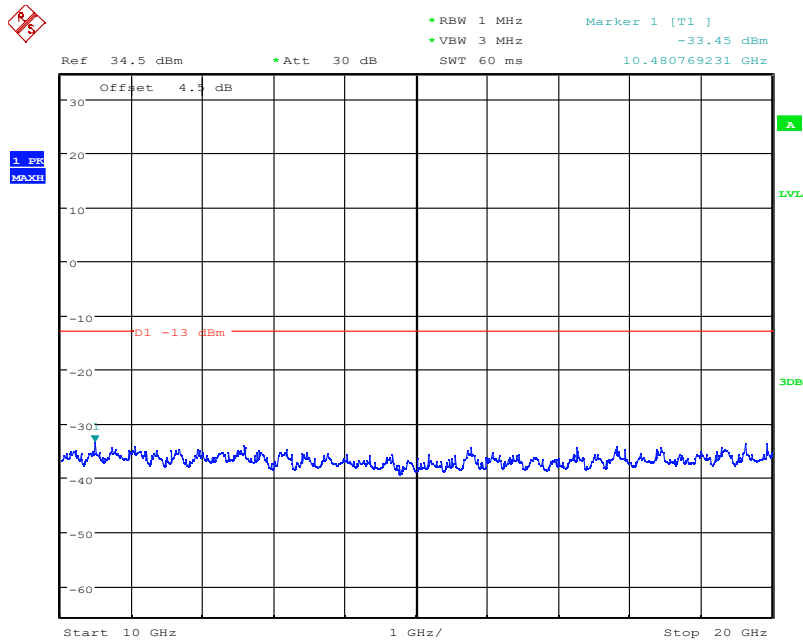
Note: The strong emission shown in each case is the carrier signal.

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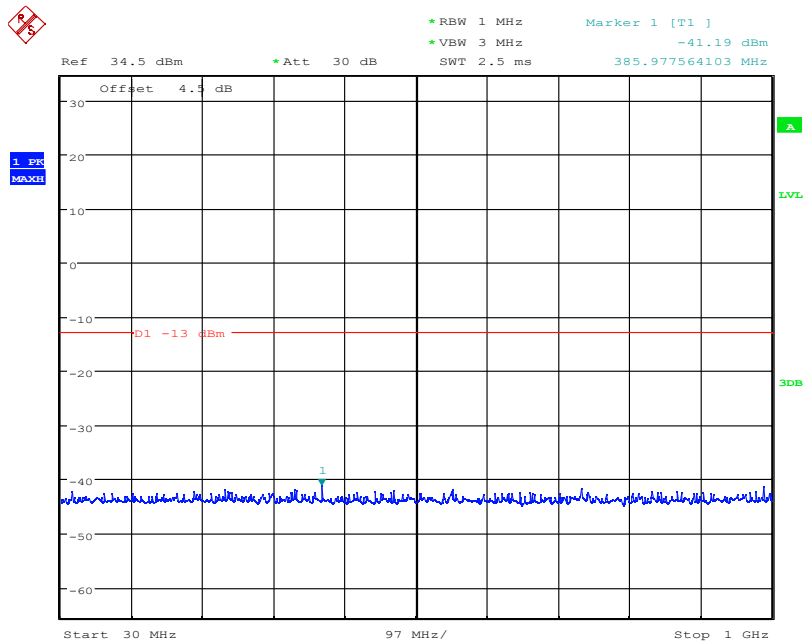


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 10:05:58

5MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 10GHz to 20GHz

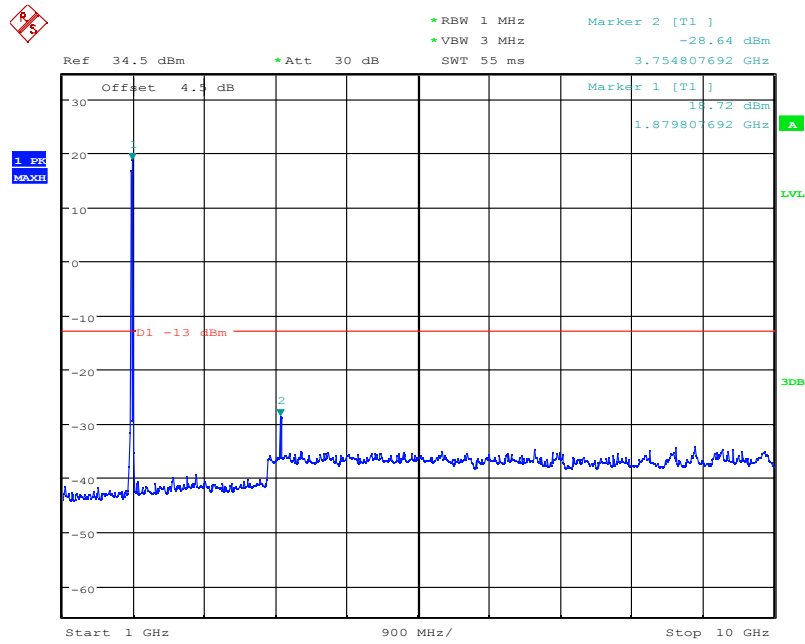


Date: 14.DEC.2021 10:06:29

10MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 30MHz to 1GHz

Chongqing Academy of Information and Communication Technology

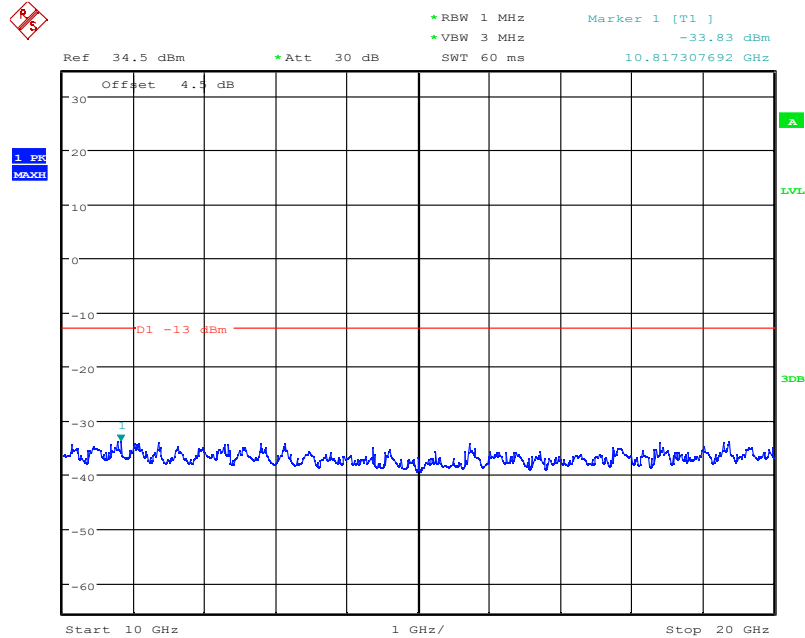
Address: No. 8, Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China, 401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 14.DEC.2021 10:06:19

10MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.



Date: 14.DEC.2021 10:06:08

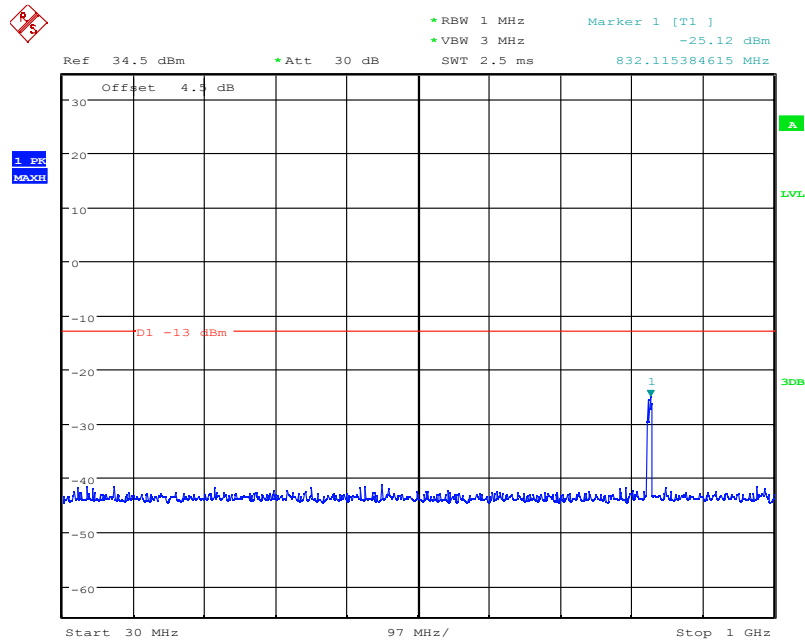
10MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 10GHz to 20GHz

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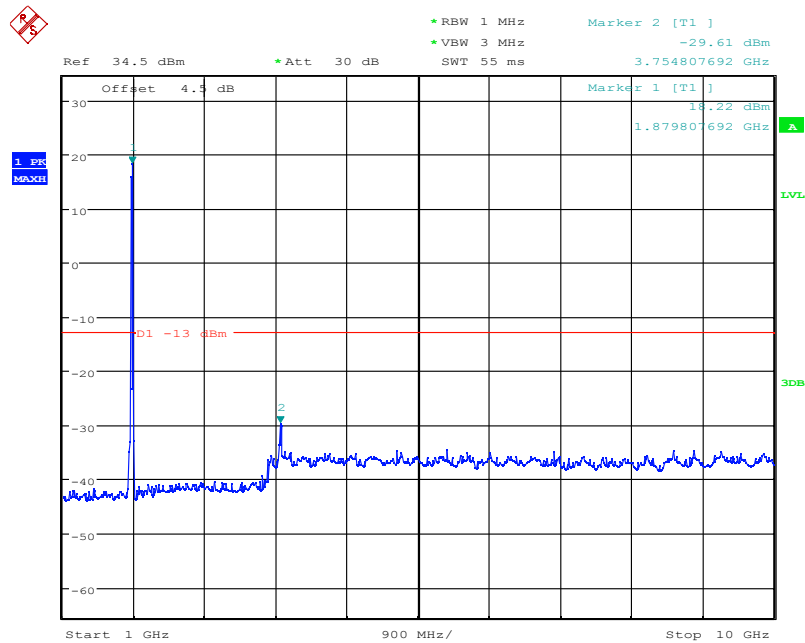


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 10:06:42

15MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 30MHz to 1GHz



Date: 14.DEC.2021 10:07:26

15MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 1GHz to 10GHz

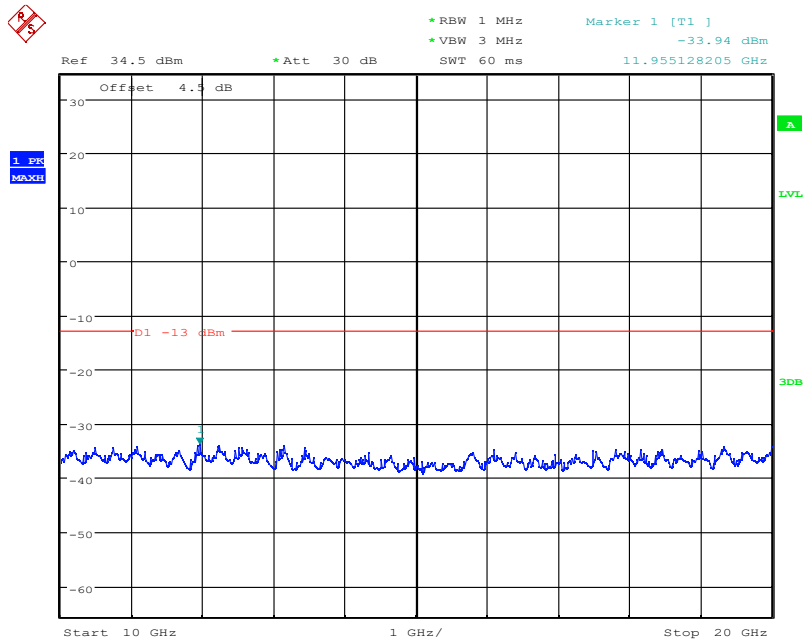
Note: The strong emission shown in each case is the carrier signal.

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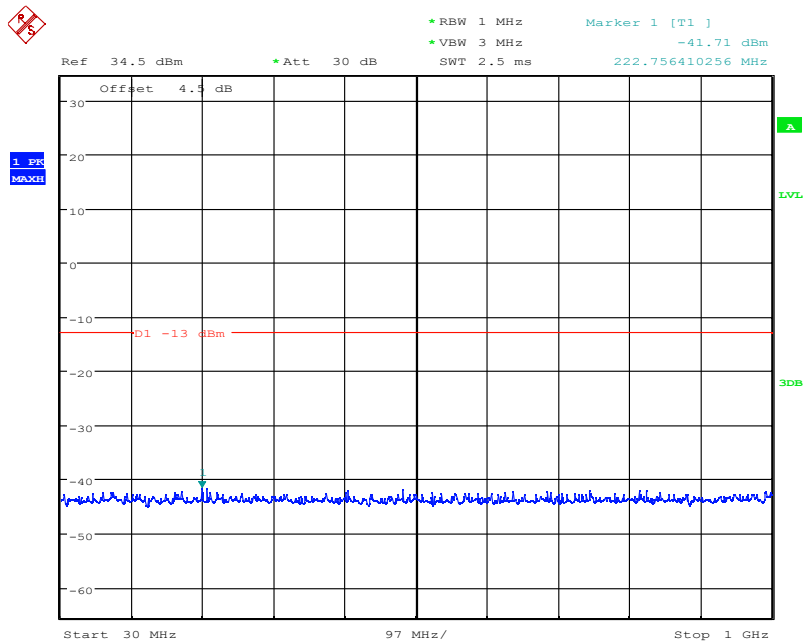


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 10:07:37

15MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 10GHz to 20GHz

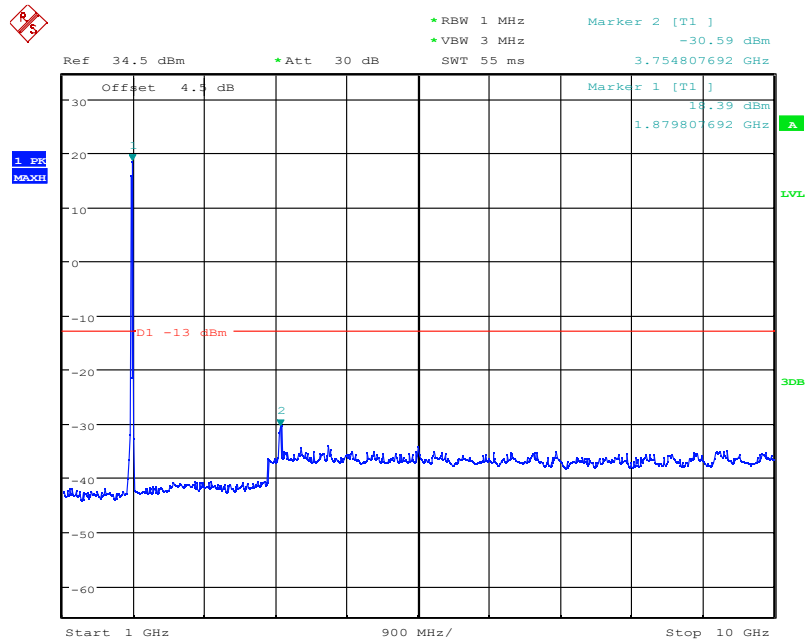


Date: 14.DEC.2021 10:08:13

20MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 30MHz to 1GHz

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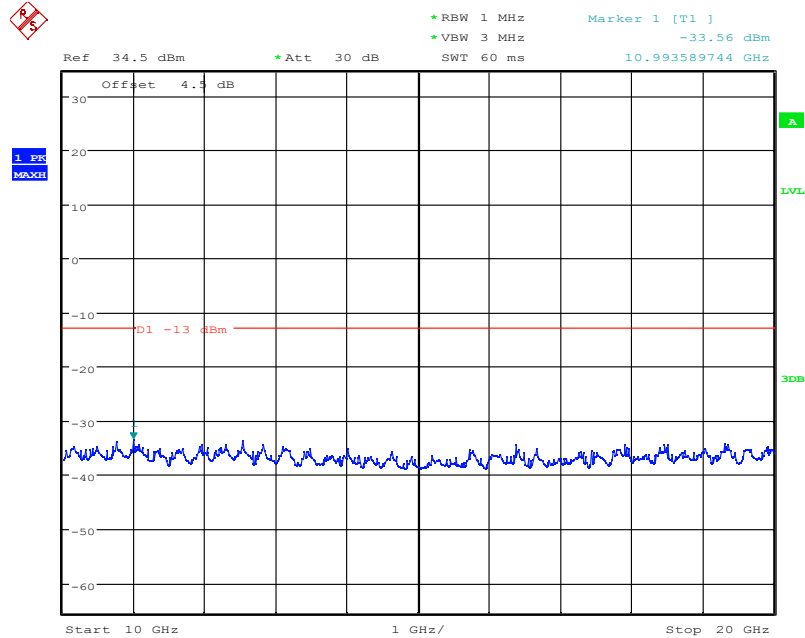
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX:0086-23-88608777



Date: 14.DEC.2021 10:08:02

20MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.



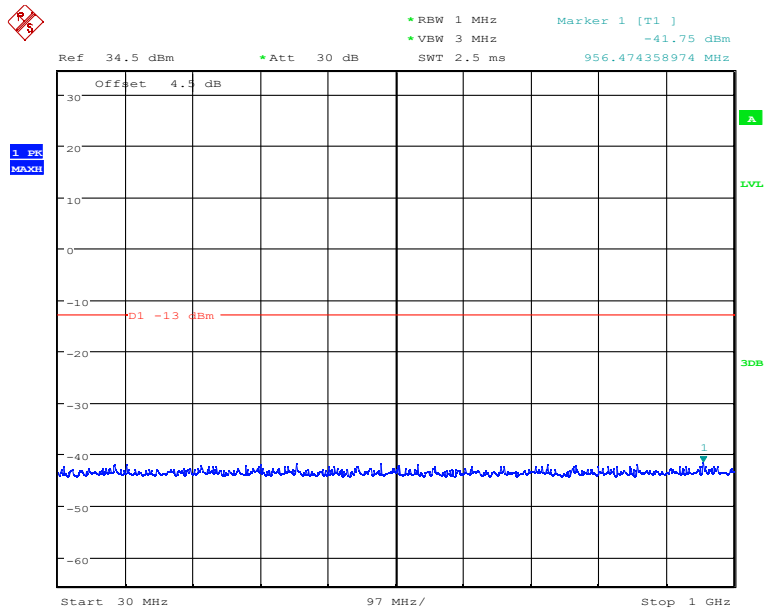
Date: 14.DEC.2021 10:07:48

20MHz bandwidth QPSK Mode Middle Channel, 1880 MHz, 10GHz to 20GHz

Chongqing Academy of Information and Communication Technology

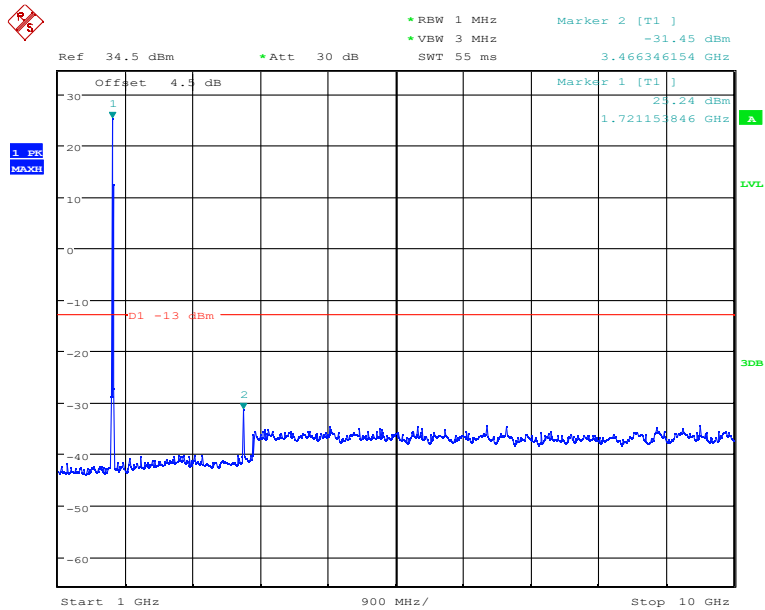
Address: No. 8, Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China, 401336
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

6.5.2 LTE B4 Conducted Spurious Emission Results



Date: 14.DEC.2021 10:08:44

1.4MHz bandwidth QPSK Mode Middle channel, 1732.5 MHz, 30MHz to 1GHz



Date: 14.DEC.2021 10:08:55

1.4MHz bandwidth QPSK Middle channel, 1732.5MHz, 1GHz to 10GHz

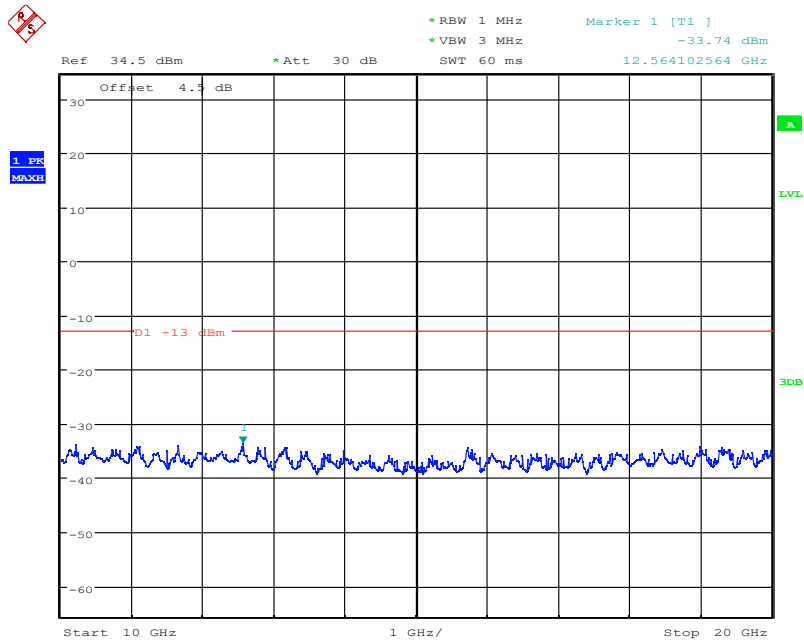
Note: The strong emission shown in each case is the carrier signal.

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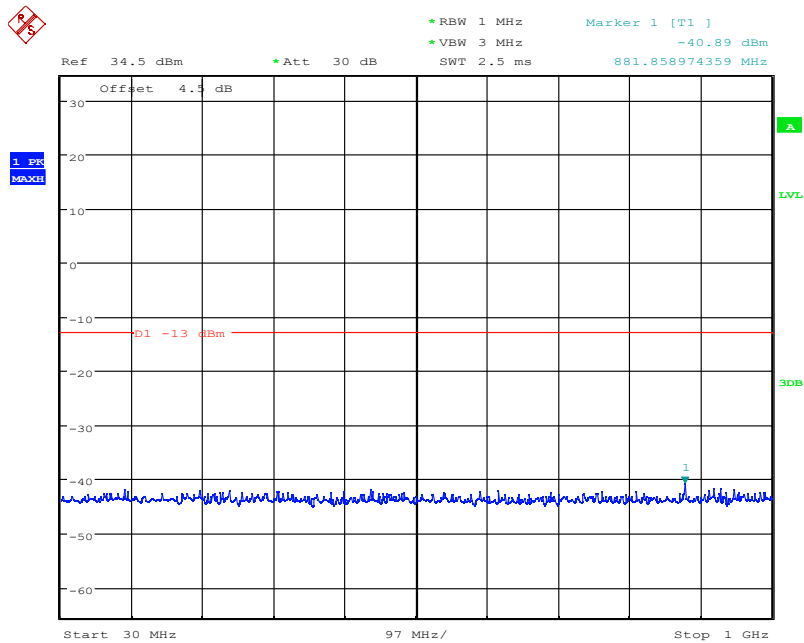


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 10:09:06

1.4MHz bandwidth QPSK Middle channel, 1732.5 MHz, 10GHz to 20GHz

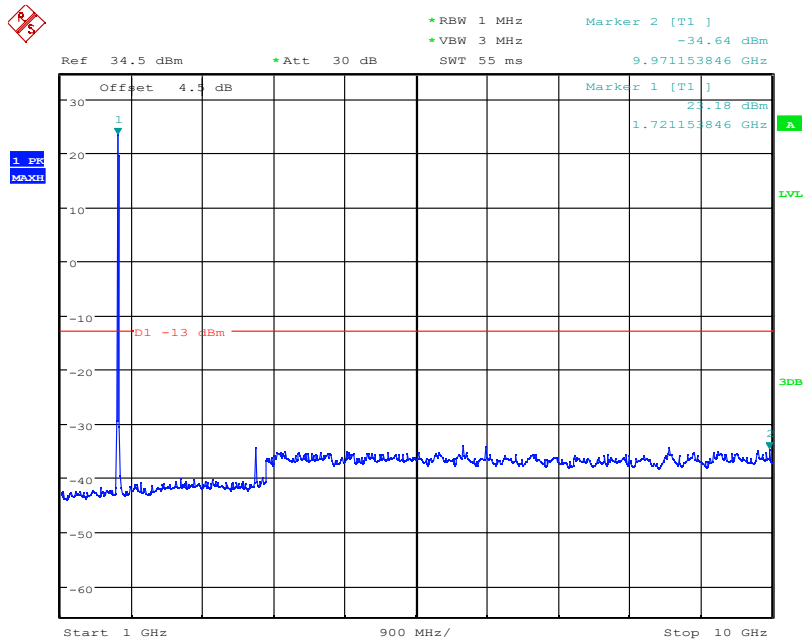


Date: 14.DEC.2021 10:09:43

3MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 30MHz to 1GHz

Chongqing Academy of Information and Communication Technology

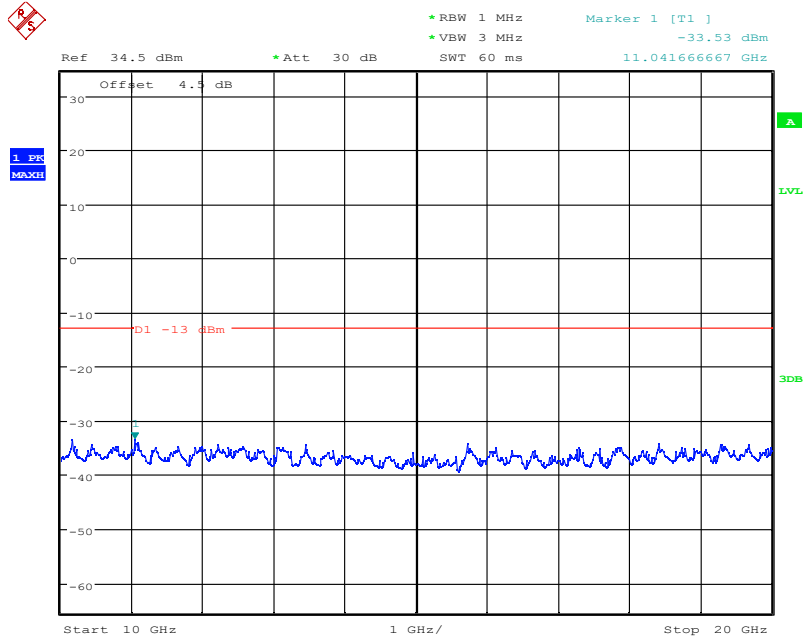
Address: No. 8, Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China, 401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 14.DEC.2021 10:09:32

3MHz bandwidth QPSK Middle Channel, 1732.5 MHz, 1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.

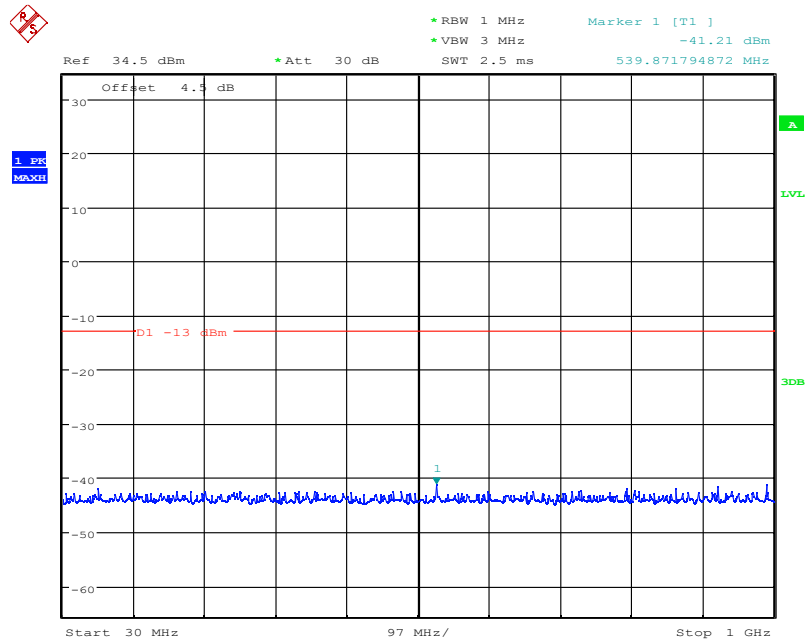


Date: 14.DEC.2021 10:09:18

3MHz bandwidth QPSK Middle Channel, 1732.5 MHz, 10GHz to 20GHz

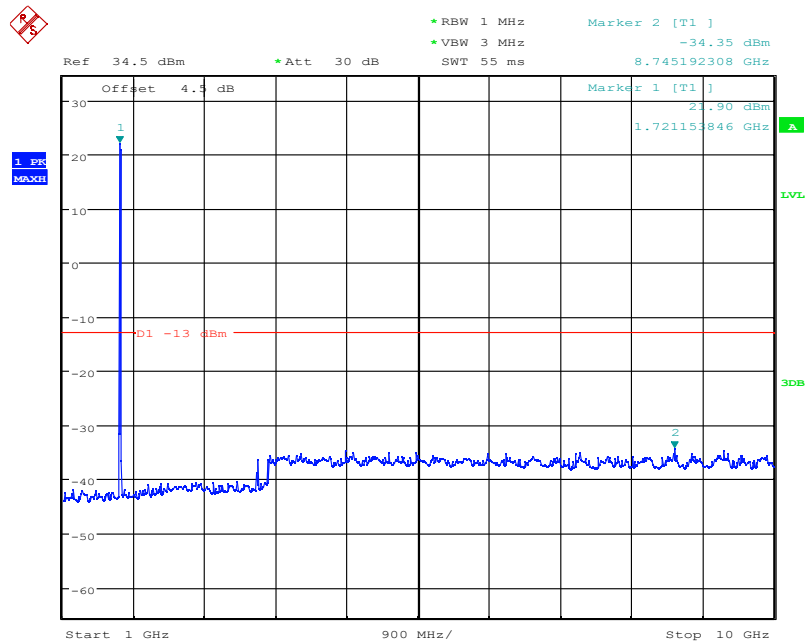
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Date: 14.DEC.2021 10:09:52

5MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz,30MHz to 1GHz



Date: 14.DEC.2021 10:10:04

5MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz,1GHz to 10GHz

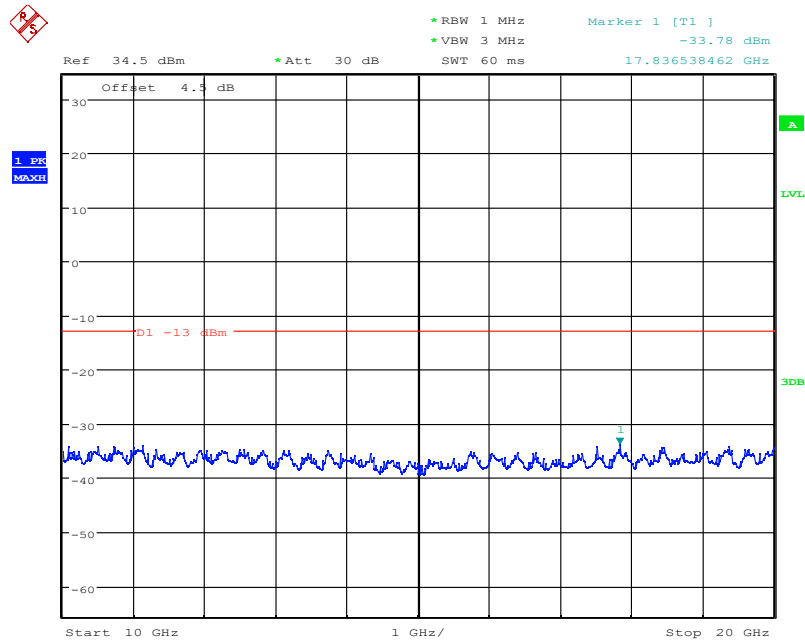
Note: The strong emission shown in each case is the carrier signal.

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Tel: 0086-23-88069965 FAX:0086-23-88608777

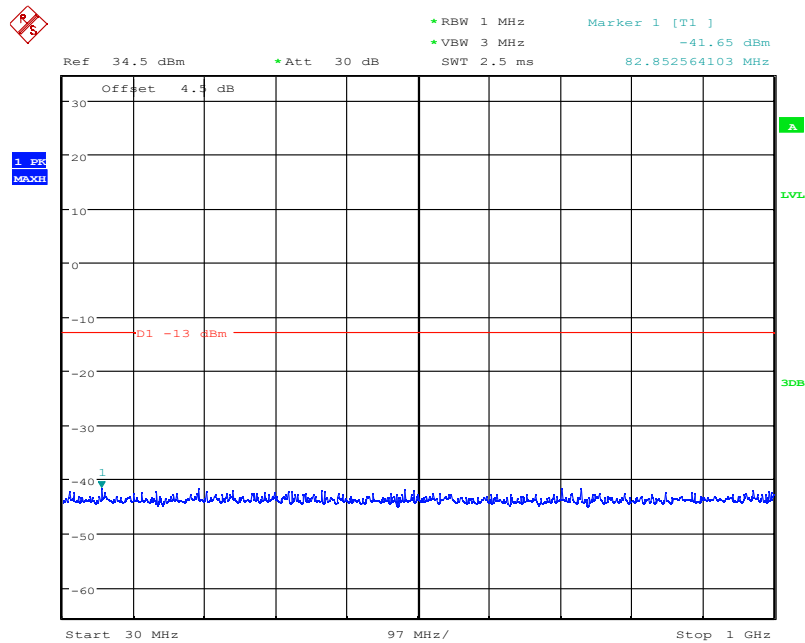


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 10:10:16

5MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz,10GHz to 20GHz

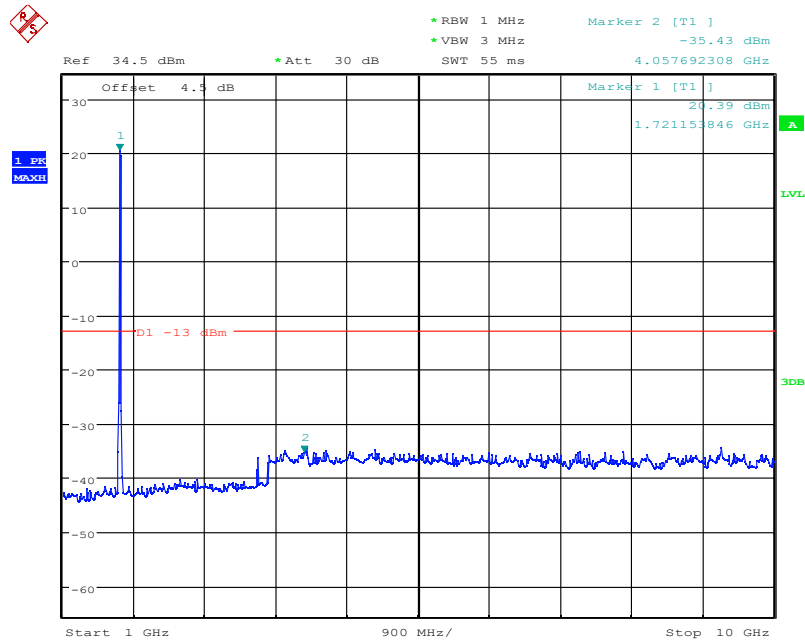


Date: 14.DEC.2021 10:10:52

10MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 30MHz to 1GHz

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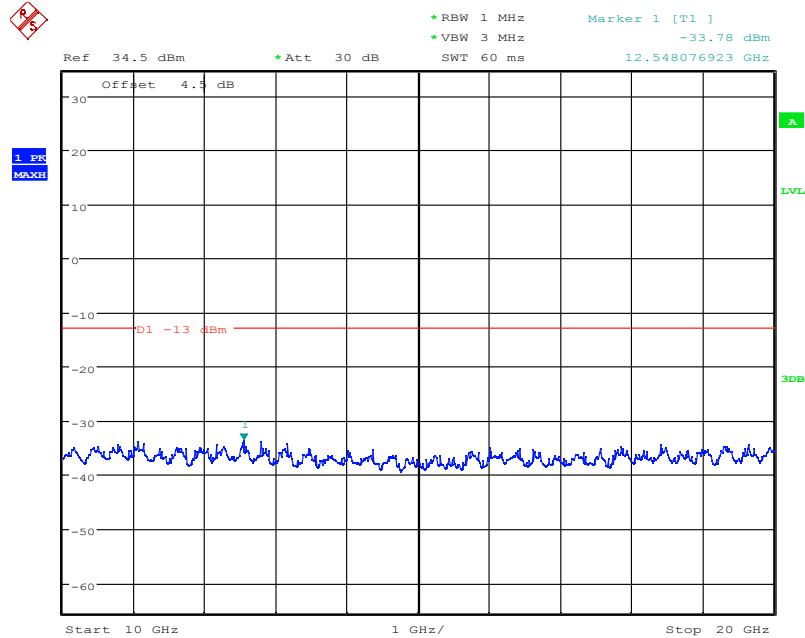
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Date: 14.DEC.2021 10:10:39

10MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.

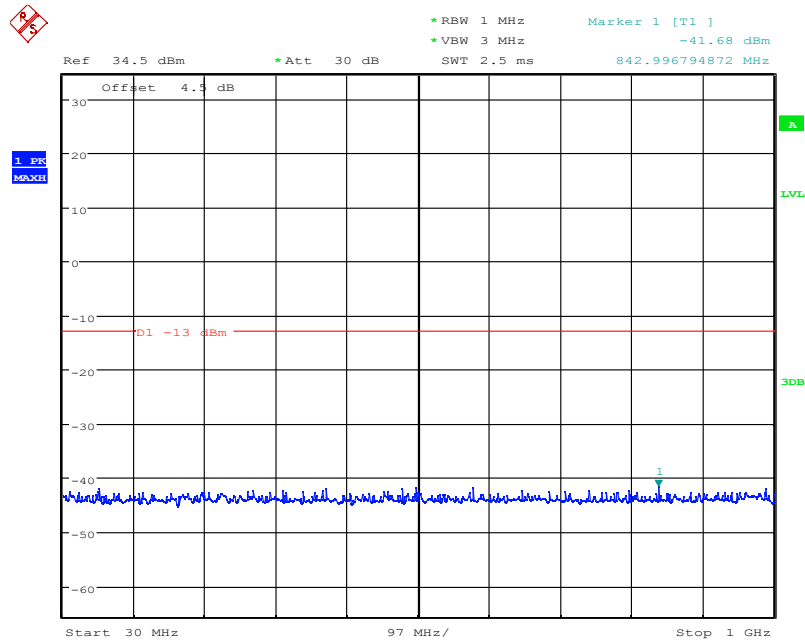


Date: 14.DEC.2021 10:10:25

10MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 10GHz to 20GHz

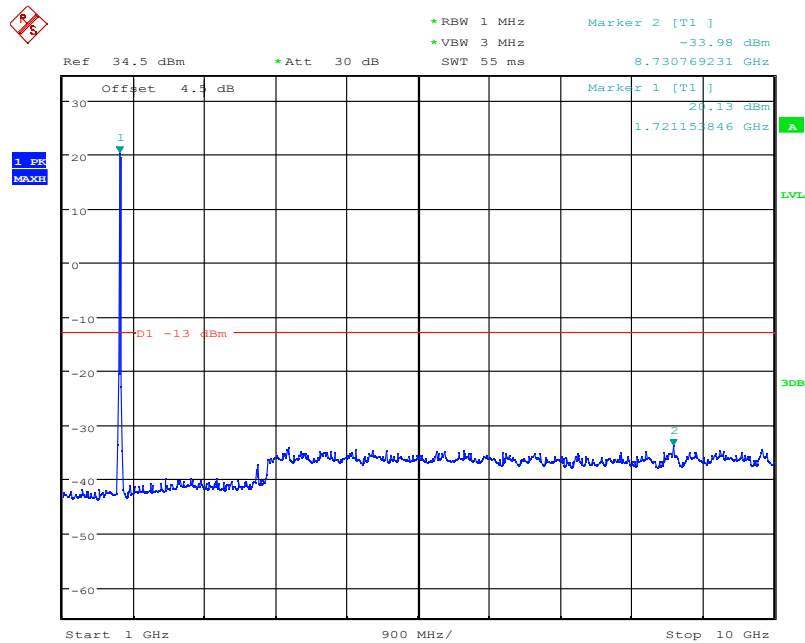
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Date: 14.DEC.2021 10:11:03

15MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 30MHz to 1GHz



Date: 14.DEC.2021 10:11:27

15MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 1GHz to 10GHz

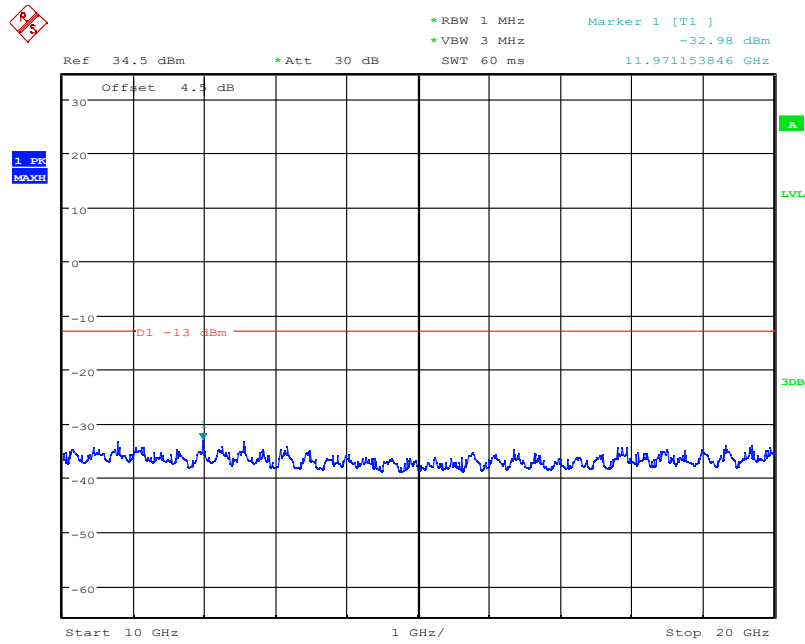
Note: The strong emission shown in each case is the carrier signal.

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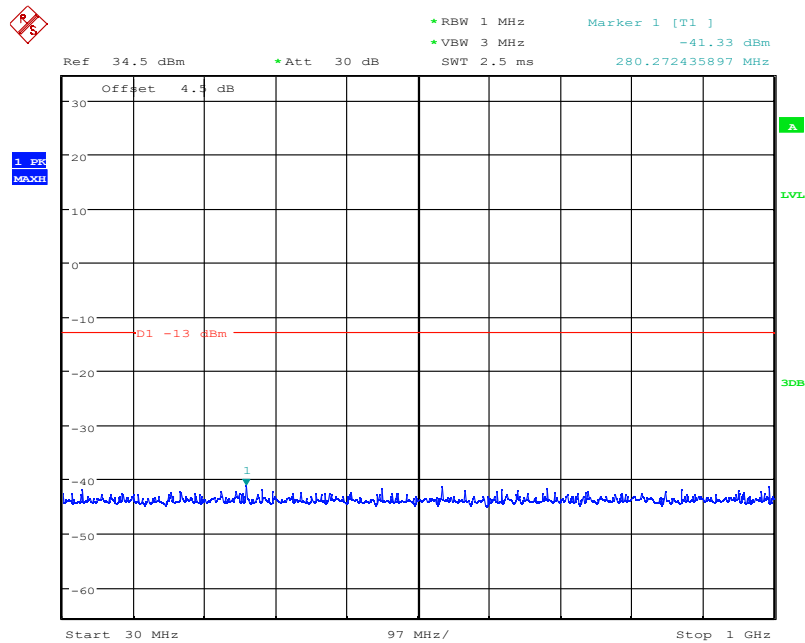


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 10:11:41

15MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 10GHz to 20GHz

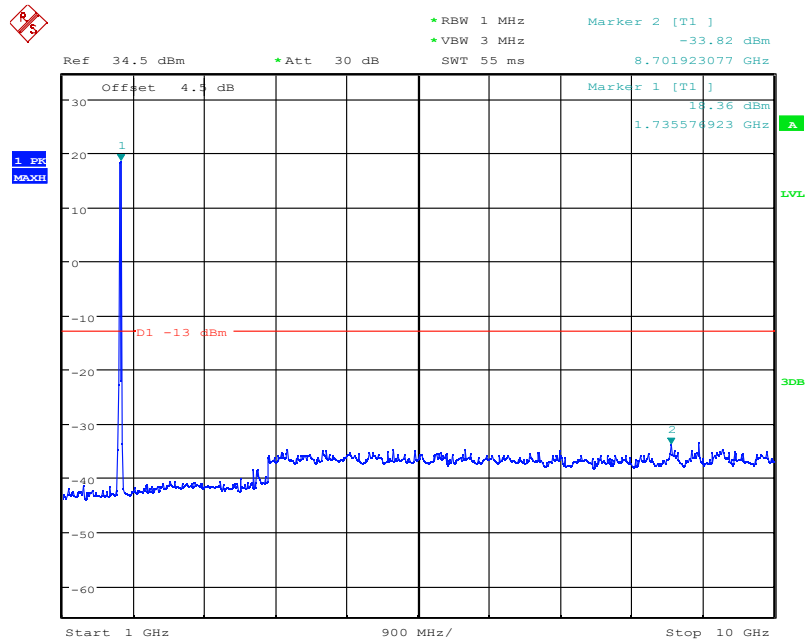


Date: 14.DEC.2021 10:13:13

20MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 30MHz to 1GHz

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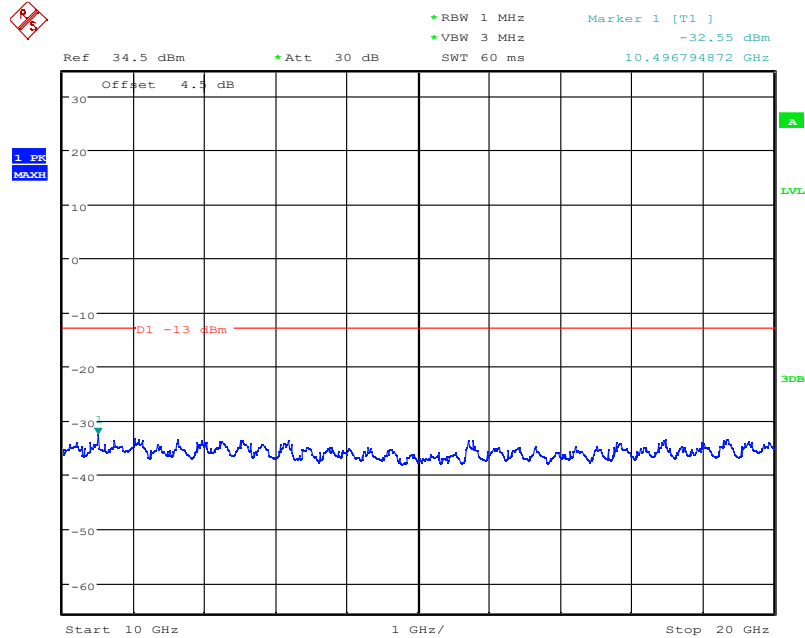
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Tel: 0086-23-88069965 FAX:0086-23-88608777



Date: 14.DEC.2021 10:13:03

20MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 1GHz to 10GHz

Note: The strong emission shown in each case is the carrier signal.



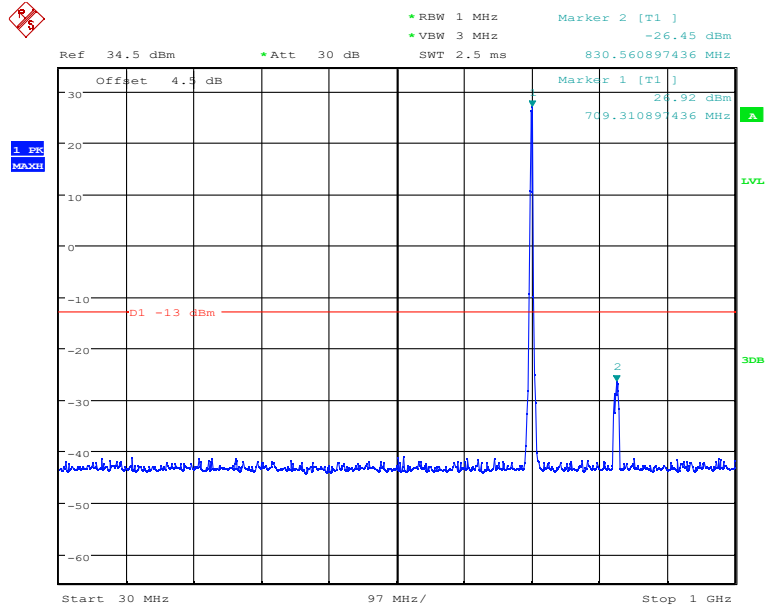
Date: 14.DEC.2021 10:12:49

20MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 10GHz to 20GHz

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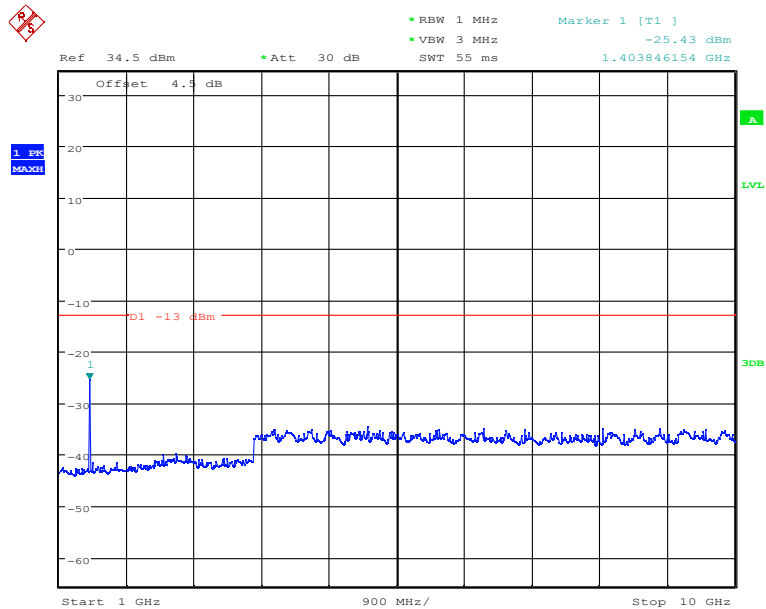
6.5.3 LTE B12 Conducted Spurious Emission Results



Date: 14.DEC.2021 10:14:41

1.4MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,30MHz to 1GHz

Note: The strong emission shown in each case is the carrier signal.

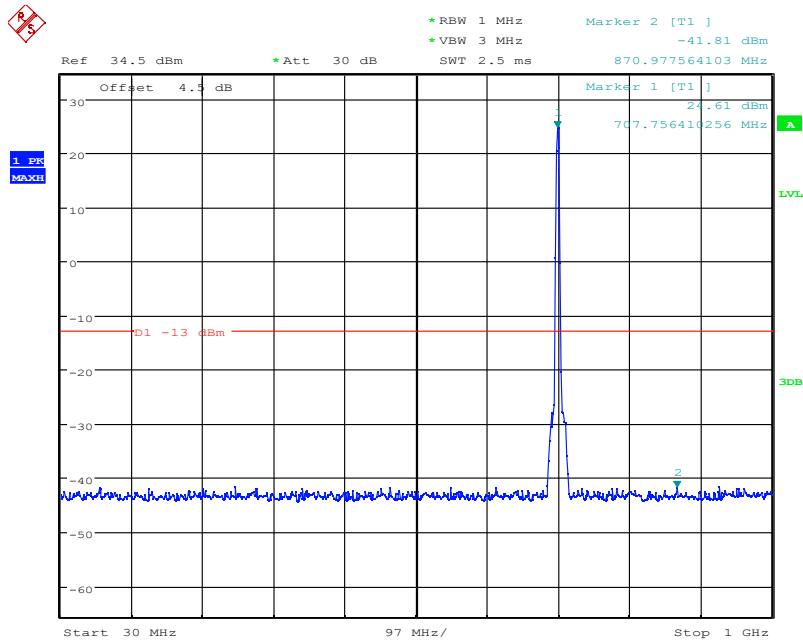


Date: 14.DEC.2021 10:14:53

1.4MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,1GHz to 10GHz

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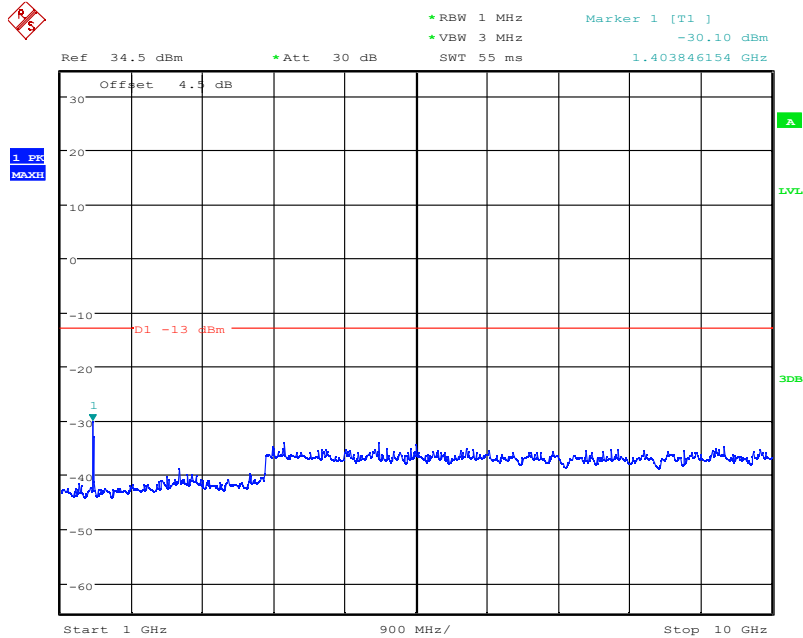
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Date: 14.DEC.2021 10:15:33

3MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,30MHz to 1GHz

Note: The strong emission shown in each case is the carrier signal.

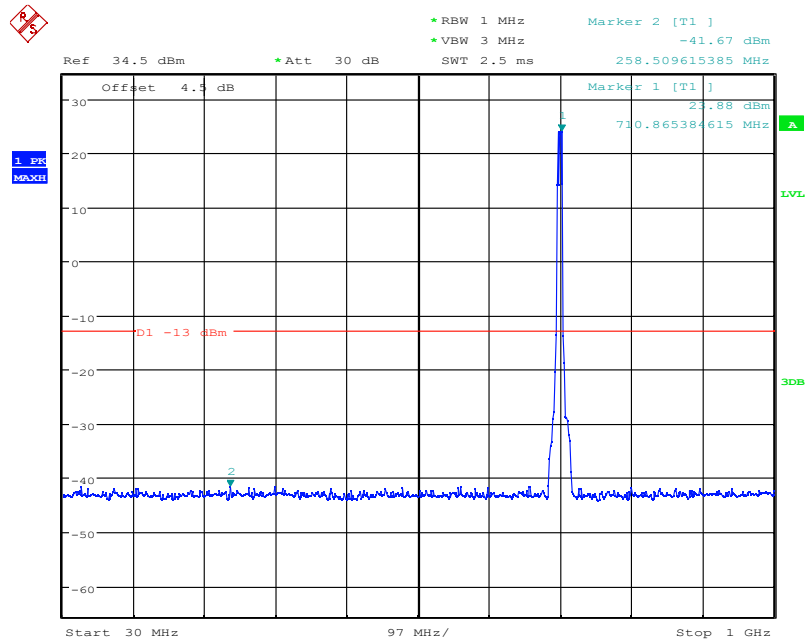


Date: 14.DEC.2021 10:15:10

3MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,1GHz to 10GHz

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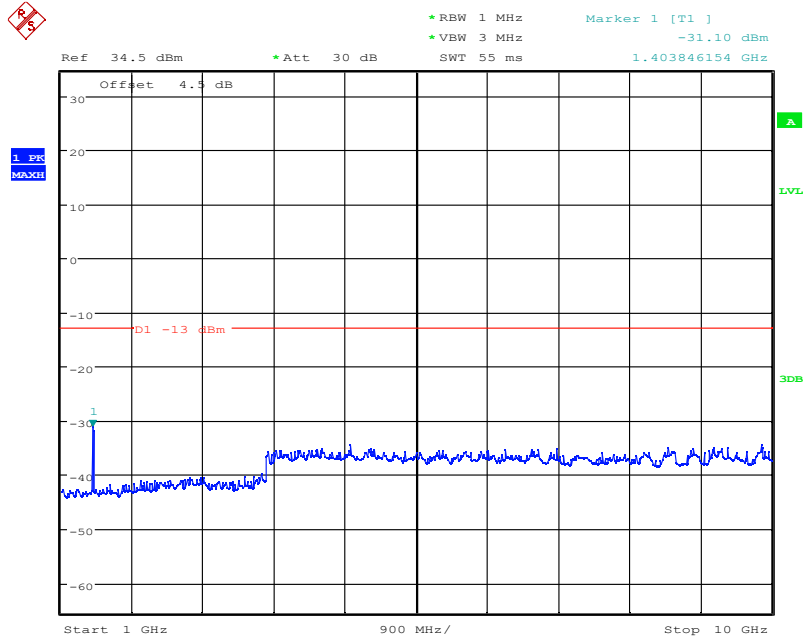
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Date: 14.DEC.2021 10:16:12

5MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,30MHz to 1GHz

Note: The strong emission shown in each case is the carrier signal.

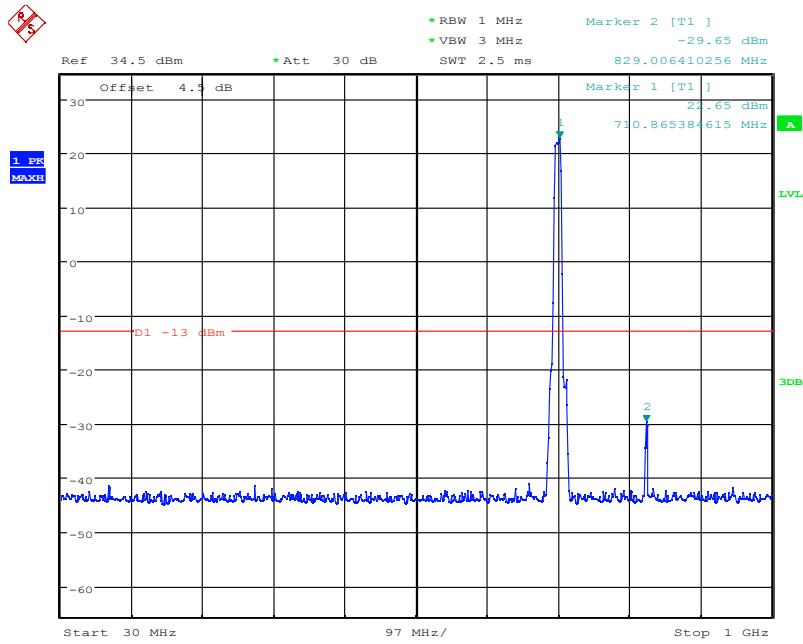


Date: 14.DEC.2021 10:16:22

5MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,1GHz to 10GHz

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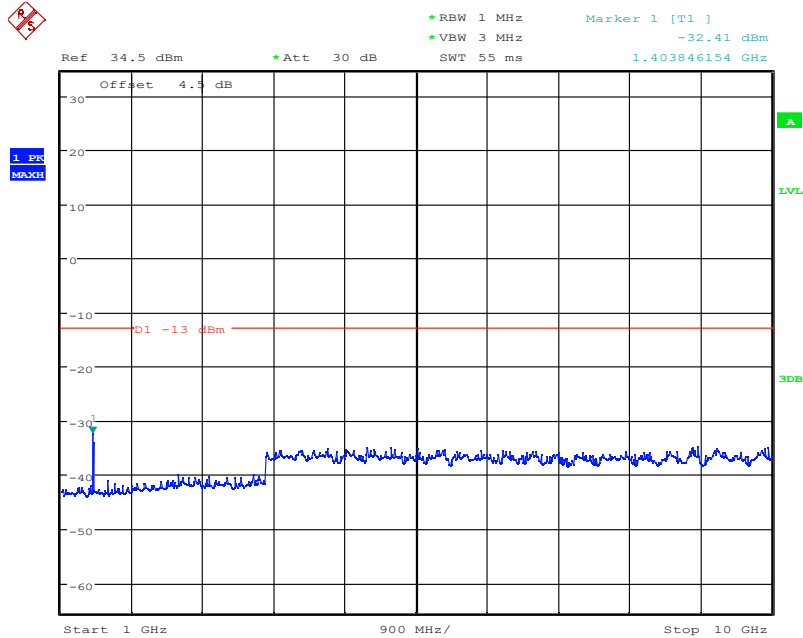
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Date: 14.DEC.2021 10:16:47

10MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,30MHz to 1GHz

Note: The strong emission shown in each case is the carrier signal.



Date: 14.DEC.2021 10:16:34

10MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,1GHz to 10GHz

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6.6. Radiated Spurious Emission

Specifications:	FCC Part 2.1051, 2.1053, 24.238, 27.53
DUT Serial Number:	861475035587049
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 24.238 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB, so the limit level is: $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13\text{dBm}$.

According to Part 27.53(c):

On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

According to Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 Bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

According to Part 27.53(g):

For operations in the 600 MHz Band and the 698-746 MHz Band, the power of any emission outside a licensee's frequency Band(s) of operation shall be attenuated below the transmitter power (P) within the licensed Band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution Bandwidth of 100 kilohertz or greater. 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.

Limits for Radiated spurious emissions(UE)	
Frequency range	Limit Level /Resolution Bandwidth
30 MHz to 20000 MHz	-13dBm/1MHz

Measurement Uncertainty:

Frequency Range	Uncertainty
$30\text{MHz} \leq f \leq 1\text{GHz}$	4.09dB

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$1\text{GHz} \leq f \leq 6\text{GHz}$	4.84dB
$6\text{GHz} \leq f \leq 18\text{GHz}$	4.52dB

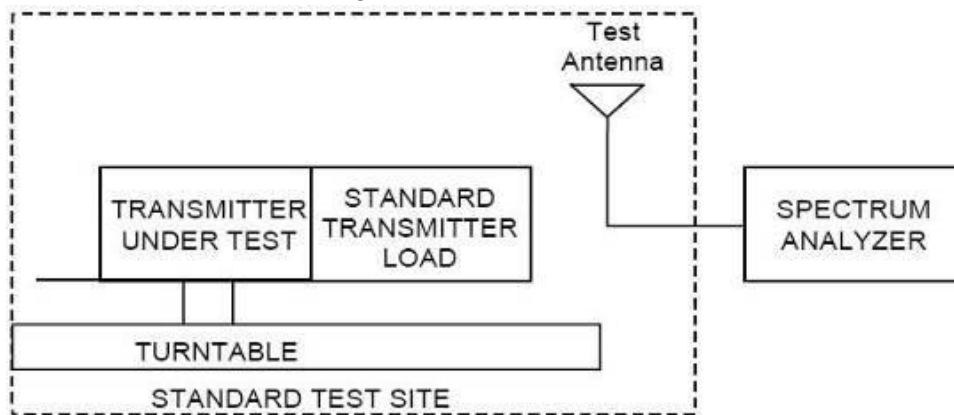
Test Setup:

The EUT was placed in an anechoic chamber. The Wireless Communications Test Set was used to set the TX channel and power level and modulate the TX signal with different bit patterns.

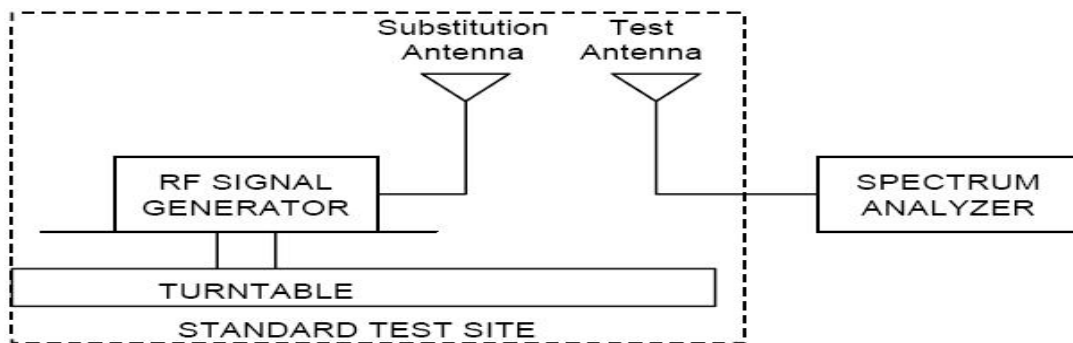
Test Method:

The measurement method is substitution method accordance with section 2.2.12 of ANSI/TIA-603-E: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

(a) Connect the equipment as illustrated and measure the spurious emissions as the method as above. The distance from the device to the antenna is 3 m .



(b) Reconnect the equipment as illustrated.



(c) Remove the transmitter and replace it with a substitution antenna. The center of the substitution antenna should be approximately at the same location as the center of the transmitter.

(d) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating

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the adjustment of the test antenna and generator output.

(e) Repeat step d) with both antennas vertically polarized for each spurious frequency.

(f) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps d) and e) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:

$$P_d(\text{dBm}) = P_g(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dB)}$$

where:

P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

Note: Only worst case result is given below.

6.6.1 LTE B2 Radiated Spurious Emission Results

Test Data (1.4MHz bandwidth 18607 QPSK Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3701.4	-57.9	7.2	8.9	-56.2	V
5552.1	-65.9	2.5	10.5	-57.9	V
7402.8	-66.2	0.9	11.9	-55.2	V
9253.5	-62.6	1.0	11.5	-52.1	V
11104.2	-70.0	0.3	12.1	-58.2	V
12954.9	-70.1	0.4	12.4	-58.1	V

Test Data (1.4MHz bandwidth 18607 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3701.4	-57.8	7.2	8.9	-56.1	V
5552.1	-67.3	2.5	10.5	-59.3	V
7402.8	-66.4	0.9	11.9	-55.4	V
9253.5	-60.8	1.0	11.5	-50.3	V
11104.2	-70.4	0.3	12.1	-58.6	V
12954.9	-70.2	0.4	12.4	-58.2	V

**Test Data (1.4MHz bandwidth 18900 QPSK Mode)**

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-54.5	7.3	8.9	-52.9	V
5640.0	-70.1	1.8	10.5	-61.4	V
7520.0	-63.8	0.9	11.9	-52.8	V
9400.0	-59.5	0.8	11.8	-48.5	V
11280.0	-69.5	0.3	12.1	-57.7	V
13160.0	-69.6	0.4	12.4	-57.6	V

Test Data (1.4MHz bandwidth 18900 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3760.0	-54.9	7.3	8.9	-53.3	V
5640.0	-68.8	1.8	10.5	-60.1	V
7520.0	-64.8	0.9	11.9	-53.8	V
9400.0	-58.7	0.8	11.8	-47.7	V
11280.0	-70.1	0.3	12.1	-58.3	V
13160.0	-70.2	0.4	12.4	-58.2	V

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Test Data (1.4MHz bandwidth 19192 QPSK Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3818.4	-56.5	7.4	9.2	-54.7	V
5727.6	-67.9	1.5	10.5	-58.9	V
7636.8	-63.4	1.1	11.9	-52.6	V
9546.0	-69.4	0.9	11.8	-58.5	V
11455.2	-70.5	0.3	12.2	-58.6	V
13364.4	-70.5	0.4	12.4	-58.5	V

Test Data (1.4MHz bandwidth 19192 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3818.4	-55.6	7.4	9.2	-53.8	V
5727.6	-67.2	1.5	10.5	-58.2	V
7636.8	-63.7	1.1	11.9	-52.9	V
9546.0	-57.6	0.9	11.8	-46.7	V
11455.2	-70.3	0.3	12.2	-58.4	V
13364.4	-70.2	0.4	12.4	-58.2	V

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6.6.2 LTE B4 Radiated Spurious Emission Results

Test Data (10MHz bandwidth 20000 QPSK Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3430.0	-69.1	6.9	8.9	-67.1	V
5145.0	-68.2	6.3	9.9	-64.6	V
6860.0	-73.9	0.8	11.9	-62.8	V
8575.0	-71.0	0.9	11.2	-60.7	V
10290.0	-72.5	0.5	12.0	-61.0	V
12005.0	-69.8	0.4	12.2	-58.0	V

Test Data (10MHz bandwidth 20000 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3430.0	-69.5	6.9	8.9	-67.5	V
5145.0	-67.4	6.3	9.9	-63.8	V
6860.0	-72.1	0.8	11.9	-61.0	V
8575.0	-71.4	0.9	11.2	-61.1	V
10290.0	-73.0	0.5	12.0	-61.5	V
12005.0	-70.6	0.4	12.2	-58.8	V

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**Test Data (10MHz bandwidth 20175 QPSK Mode)**

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-69.2	6.9	8.9	-67.2	V
5197.5	-68.6	5.8	9.9	-64.5	V
6930.0	-73.7	0.9	11.9	-62.7	V
8662.5	-69.6	0.9	11.2	-59.3	V
10395.0	-72.8	0.7	12.2	-61.3	V
12127.5	-70.3	0.6	12.2	-58.7	V

Test Data (10MHz bandwidth 20175 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3465.0	-68.6	6.9	8.9	-66.6	V
5197.5	-67.6	5.8	9.9	-63.5	V
6930.0	-74.3	0.9	11.9	-63.3	V
8662.5	-70.6	0.9	11.2	-60.3	V
10395.0	-73.4	0.7	12.2	-61.9	V
12127.5	-70.4	0.6	12.2	-58.8	V

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Test Data (10MHz bandwidth 20349 QPSK Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3499.8	-68.5	7.0	8.9	-66.6	V
5249.7	-69.7	5.0	9.9	-64.8	V
6999.6	-73.2	0.9	11.9	-62.2	V
8749.5	-69.8	1.2	11.2	-59.8	V
10499.4	-72.2	0.6	12.2	-60.6	V
12249.3	-70.9	0.3	12.2	-59.0	V

Test Data (10MHz bandwidth 20349 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
3499.8	-68.5	7.0	8.9	-66.6	V
5249.7	-69.7	5.0	9.9	-64.8	V
6999.6	-73.2	0.9	11.9	-62.2	V
8749.5	-69.8	1.2	11.2	-59.8	V
10499.4	-72.4	0.6	12.2	-60.8	V
12249.3	-70.6	0.3	12.2	-58.7	V

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6.6.3 LTE B12 Radiated Spurious Emission Results

Test Data (1.4MHz bandwidth 23017 QPSK Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1399.4	-71.9	4.4	7.8	-68.5	H
2099.1	-67.0	5.4	8.3	-64.1	H
2798.8	-60.3	6.2	7.9	-58.6	V
3498.5	-68.2	7.0	8.9	-66.3	V
4198.2	-65.9	7.8	9.2	-64.5	V
4897.9	-65.3	7.8	9.9	-63.2	V

Test Data (1.4MHz bandwidth 23017 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1399.4	-72.0	4.4	7.8	-68.6	V
2099.1	-67.4	5.4	8.3	-64.5	V
2798.8	-60.0	6.2	7.9	-58.3	V
3498.5	-69.0	7.0	8.9	-67.1	V
4198.2	-65.6	7.8	9.2	-64.2	V
4897.9	-66.6	7.8	9.9	-64.5	V

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**Test Data (1.4MHz bandwidth 23095 QPSK Mode)**

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1415.0	-73.1	4.4	8.3	-69.2	H
2122.5	-65.6	5.4	8.1	-62.9	H
2830.0	-60.1	6.3	7.5	-58.9	H
3537.5	-68.9	7.0	8.9	-67.0	V
4245.0	-66.1	7.8	9.2	-64.7	V
4952.5	-66.1	7.7	9.9	-63.9	V

Test Data (1.4MHz bandwidth 23095 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1415.0	-72.3	4.4	8.3	-68.4	V
2122.5	-66.1	5.4	8.1	-63.4	H
2830.0	-59.2	6.3	7.5	-58.0	V
3537.5	-68.4	7.0	8.9	-66.5	V
4245.0	-66.6	7.8	9.2	-65.2	V
4952.5	-64.7	7.7	9.9	-62.5	V

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**Test Data (1.4MHz bandwidth 23172 QPSK Mode)**

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1430.4	-71.4	4.4	8.2	-67.6	H
2145.6	-63.8	5.4	7.0	-62.2	V
2860.8	-60.2	6.5	8.0	-58.7	V
3576.0	-68.1	7.2	8.9	-66.4	V
4381.2	-66.4	7.8	9.5	-64.7	V
5006.4	-66.2	7.5	9.9	-63.8	V

Test Data (1.4MHz bandwidth 23172 16QAM Mode)

Frequency [MHz]	Generator output power(Pg) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (Pd) [dBm]	Antenna Polarization [H/V]
1430.4	-71.4	4.4	8.2	-67.6	H
2145.6	-64.2	5.4	7.0	-62.6	H
2860.8	-60.2	6.5	8.0	-58.7	V
3576.0	-67.7	7.2	8.9	-66.0	V
4381.2	-66.0	7.8	9.5	-64.3	V
5006.4	-66.5	7.5	9.9	-64.1	V

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6.7. Band Edge

Specifications:	FCC Part 2.1051, 24.238, 2.1053, 22.917, 27.53
DUT Serial Number:	861475035587502
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 24.238 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB, so the limit level is: $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13\text{dBm}$.

According to Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 Bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

According to Part 27.53(g):

For operations in the 600 MHz Band and the 698-746 MHz Band, the power of any emission outside a licensee's frequency Band(s) of operation shall be attenuated below the transmitter power (P) within the licensed Band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution Bandwidth of 100 kilohertz or greater. 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.

Measurement Uncertainty:

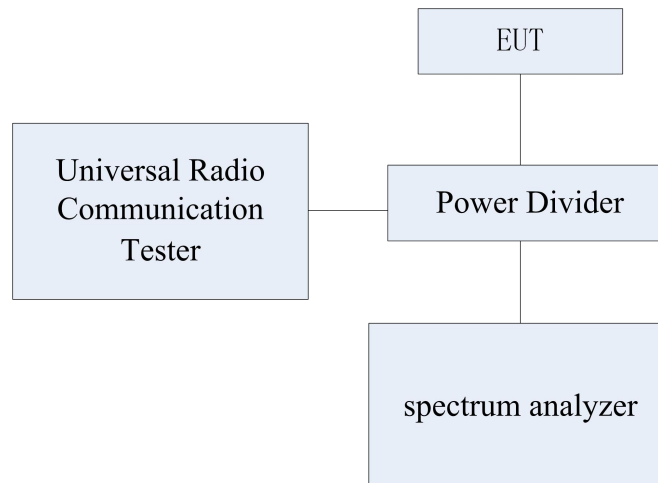
Item	Uncertainty	
Expanded Uncertainty	$9\text{kHz} < f \leq 4\text{GHz}$	0.71 dB (k=2)
	$4\text{GHz} \leq f < 12.75\text{GHz}$	0.74 dB (k=2)
	$12.75\text{GHz} \leq f < 26\text{GHz}$	2.70 dB (k=2)

Test Setup:

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.

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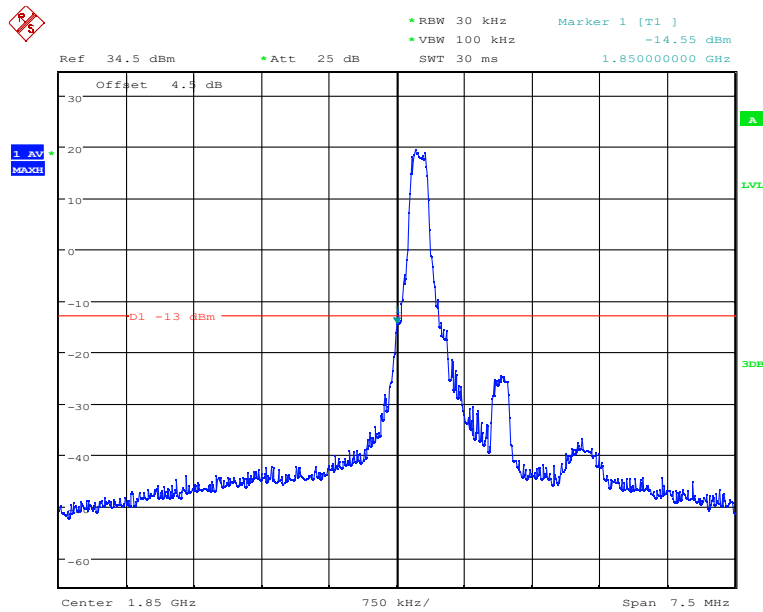


Test Method:

- 1) The EUT was coupled to the EMI test receiver analyzer mode and the base station simulator through a power divider. The loss of the cables the test system is calibrated to correct the readings.
- 2) The spectrum analyzer was set to Average Detector function and Maximum hold mode.
- 3) The resolution Bandwidth of the spectrum analyzer was a little greater than 1% of the 26dB emission Bandwidth.

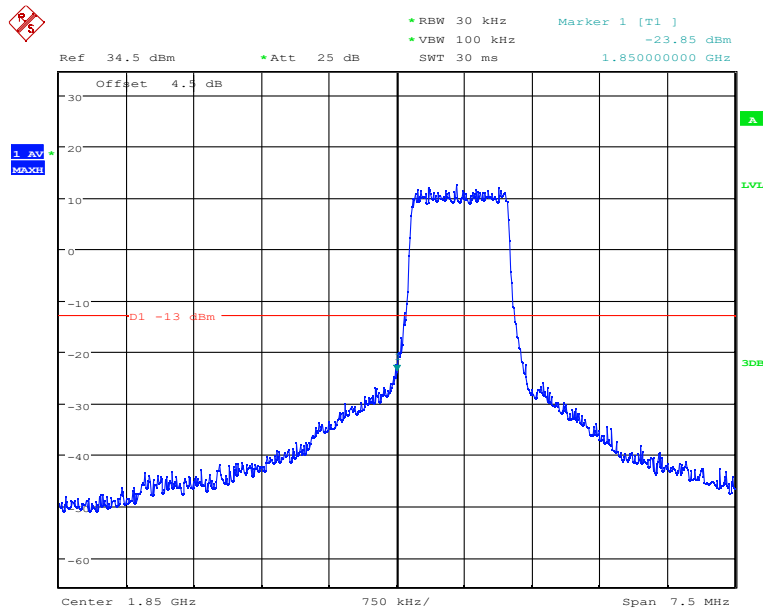
Note: Only worst case result is given below

6.7.1 LTE B2 Band Edge Results



Date: 14.DEC.2021 09:58:03

LTE Band2, 1.4MHz bandwidth, QPSK,(1,0) Mode , Below 1850MHz

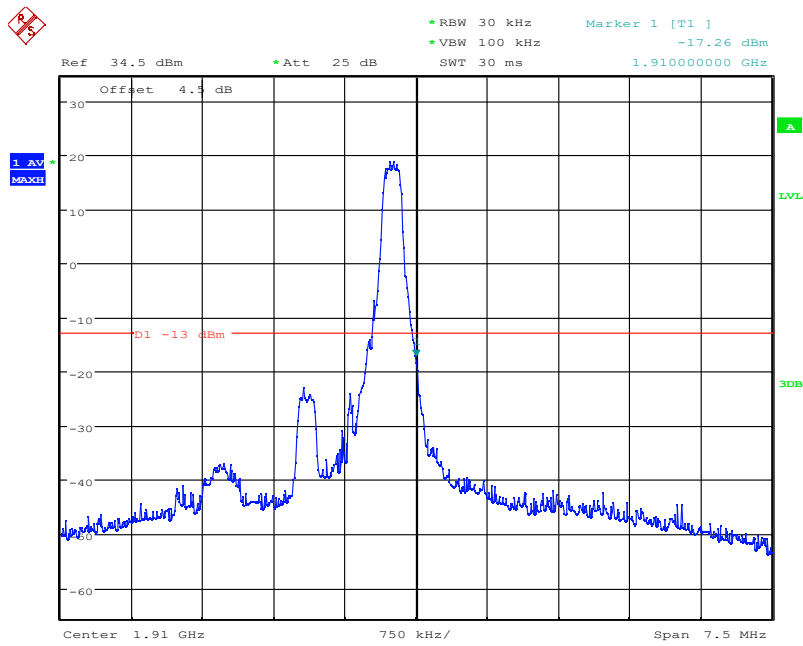


Date: 14.DEC.2021 09:57:50

LTE Band2, 1.4MHz bandwidth, QPSK,(6,0) Mode , Below 1850MHz

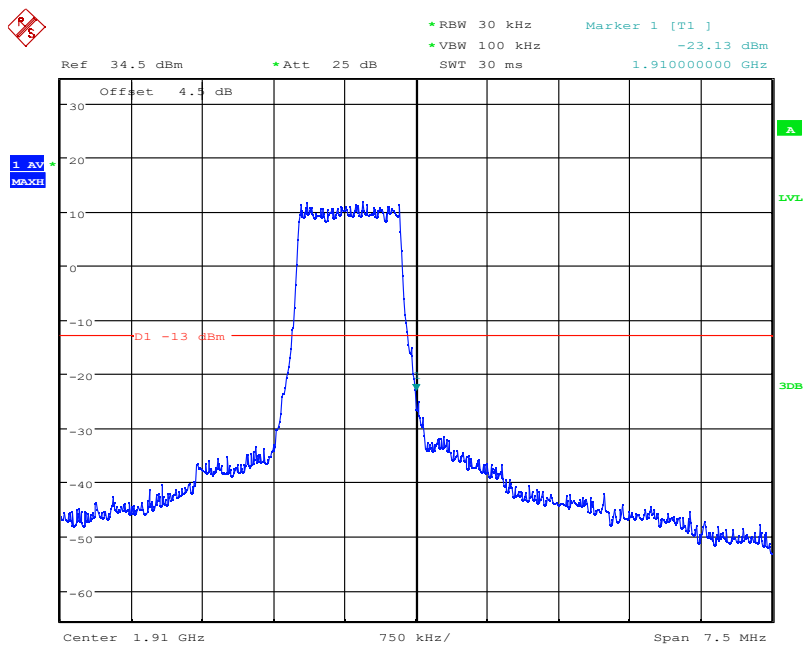
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Date: 14.DEC.2021 09:58:34

LTE Band2, 1.4MHz bandwidth, QPSK,(1,6) Mode, Above 1910MHz

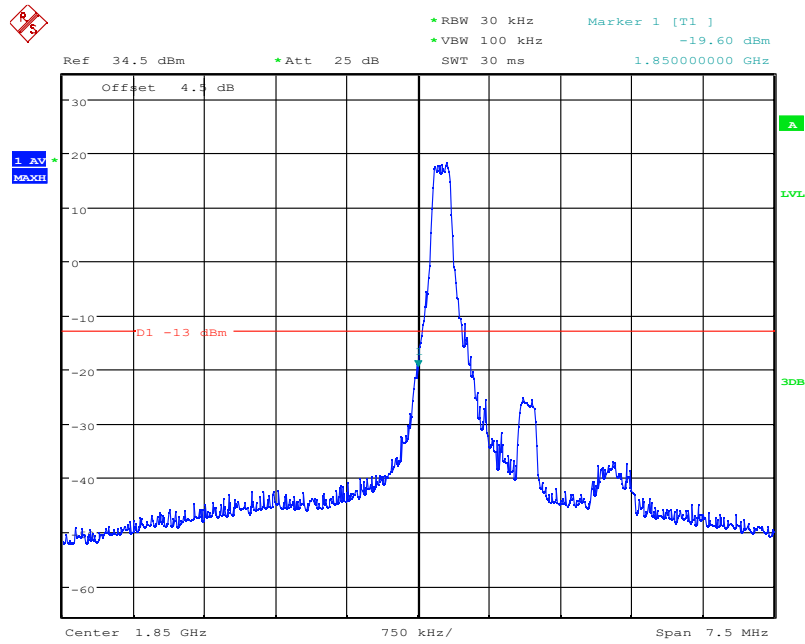


Date: 14.DEC.2021 09:58:48

LTE Band2, 1.4MHz bandwidth, QPSK,(6,0) Mode, Above 1910MHz

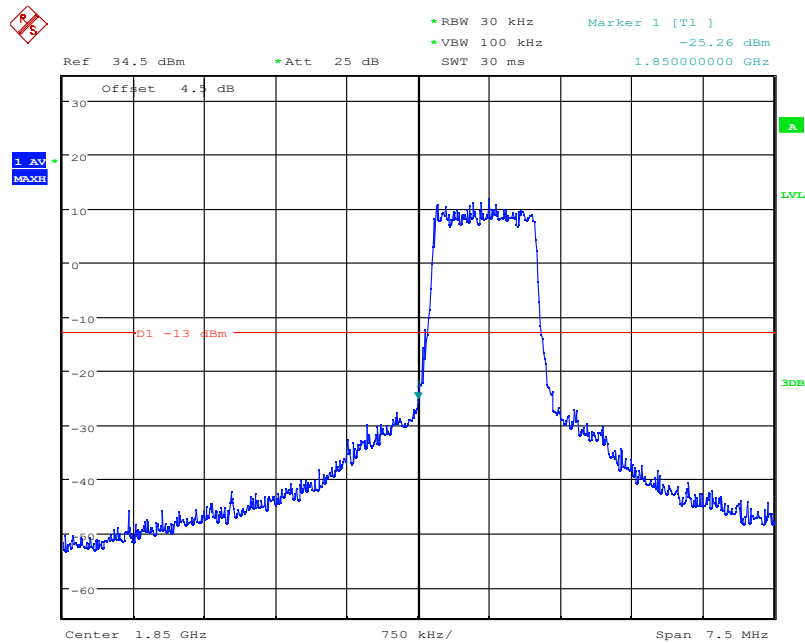
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Date: 14.DEC.2021 09:57:26

LTE Band2, 1.4MHz bandwidth, 16QAM,(1,0) Mode , Below 1850MHz

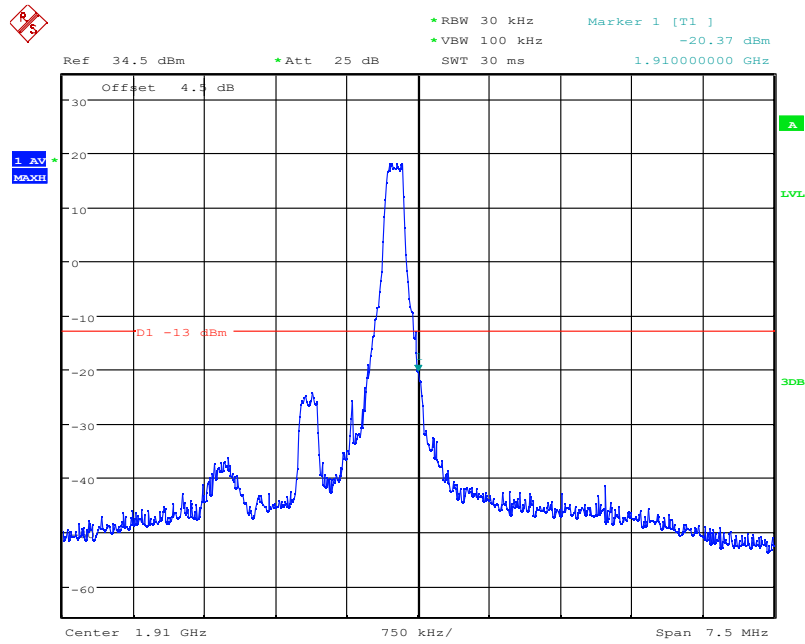


Date: 14.DEC.2021 09:57:35

LTE Band2, 1.4MHz bandwidth, 16QAM,(6,0) Mode , Below 1850MHz

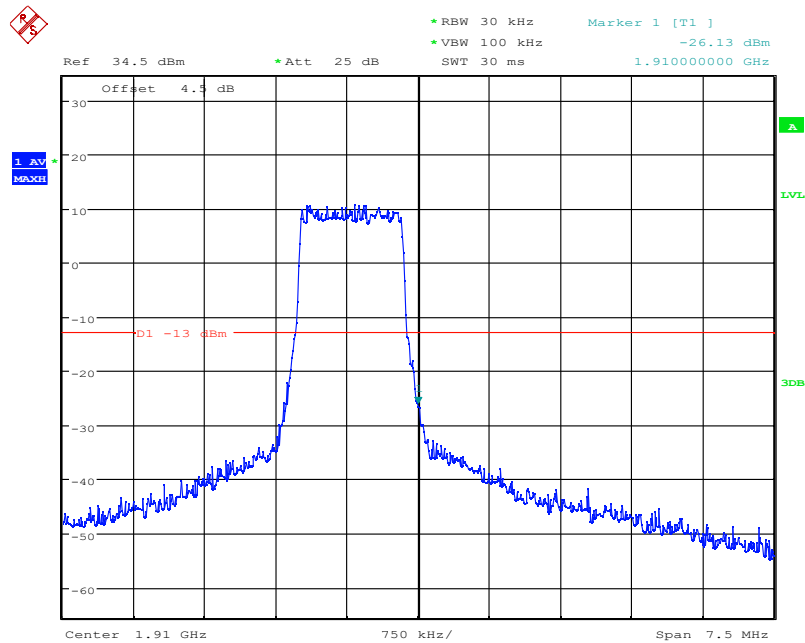
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Date: 14.DEC.2021 09:59:08

LTE Band2, 1.4MHz bandwidth, 16QAM,(1,6) Mode, Above 1910MHz

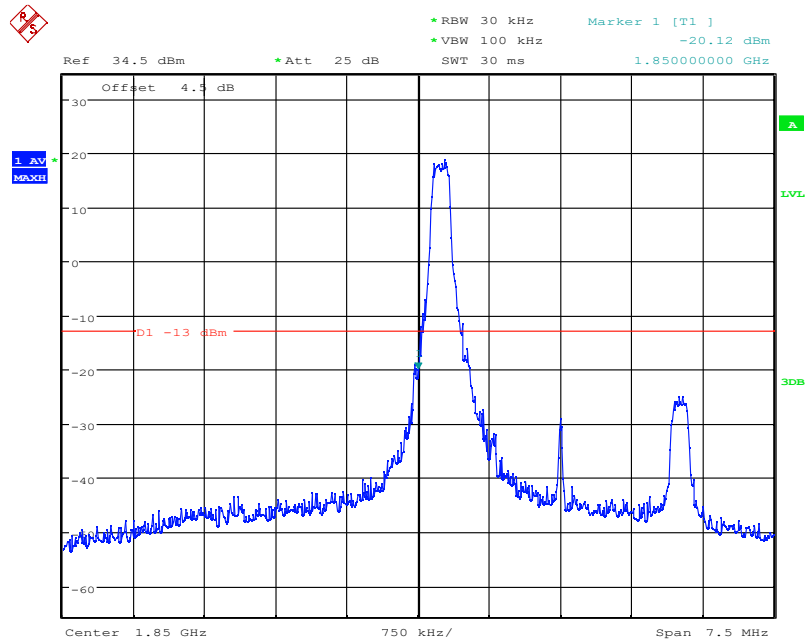


Date: 14.DEC.2021 09:58:58

LTE Band2, 1.4MHz bandwidth, 16QAM,(6,0) Mode, Above 1910MHz

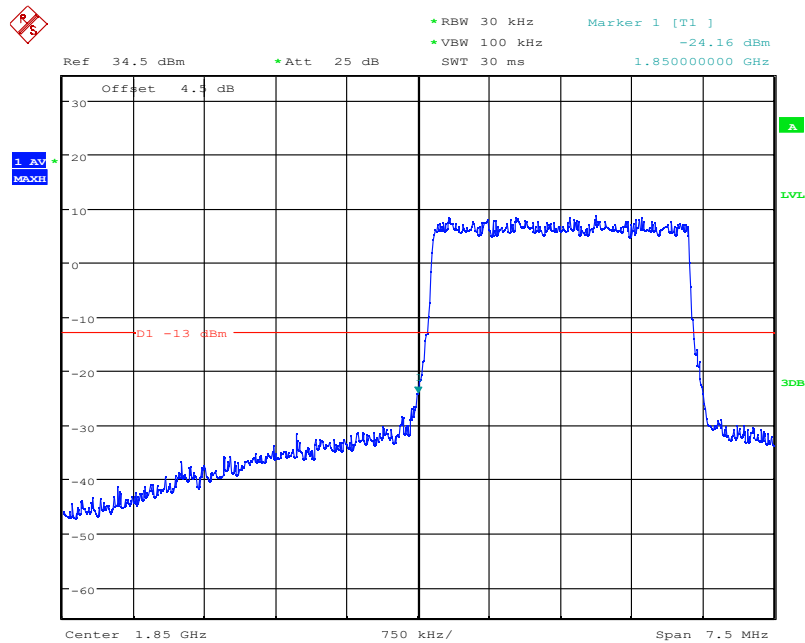
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Date: 14.DEC.2021 10:00:16

LTE Band2, 3MHz bandwidth, QPSK,(1,0) Mode , Below 1850MHz

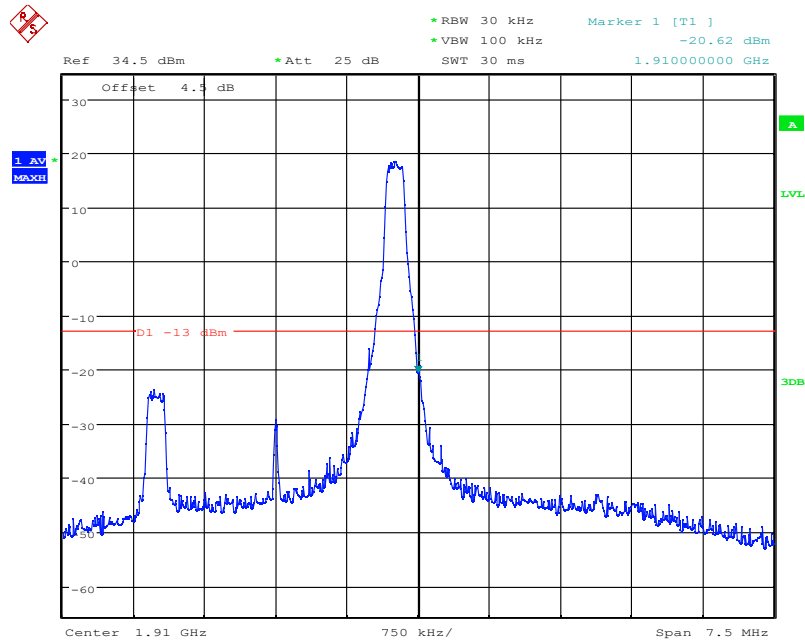


Date: 14.DEC.2021 10:00:07

LTE Band2, 3MHz bandwidth, QPSK,(15,0) Mode , Below 1850MHz

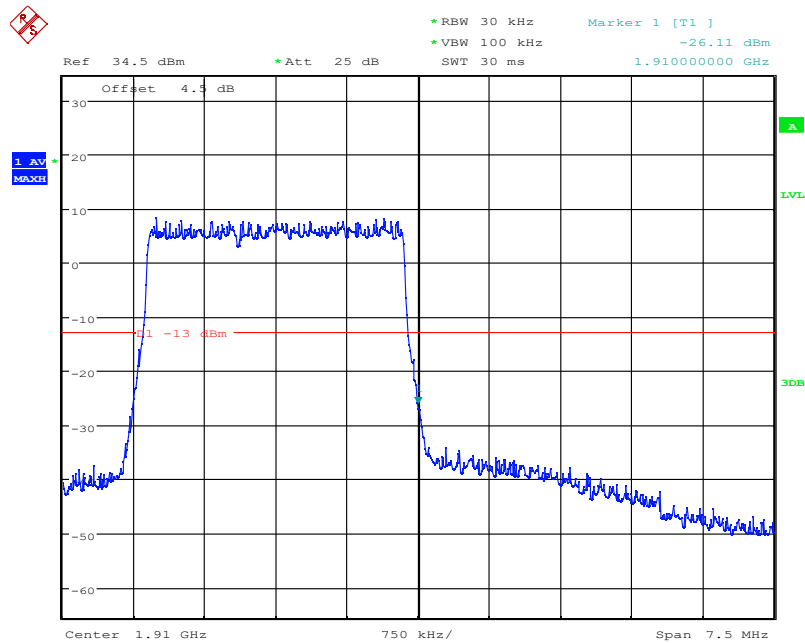
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Date: 14.DEC.2021 10:01:22

LTE Band2, 3MHz bandwidth, QPSK,(1,15) Mode, Above 1910MHz

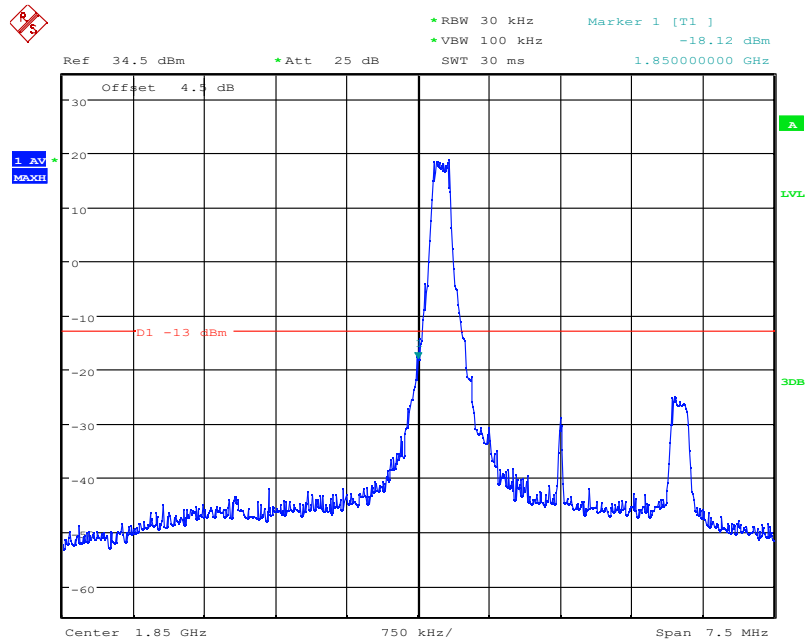


Date: 14.DEC.2021 10:01:34

LTE Band2, 3MHz bandwidth, QPSK,(15,0) Mode, Above 1910MHz

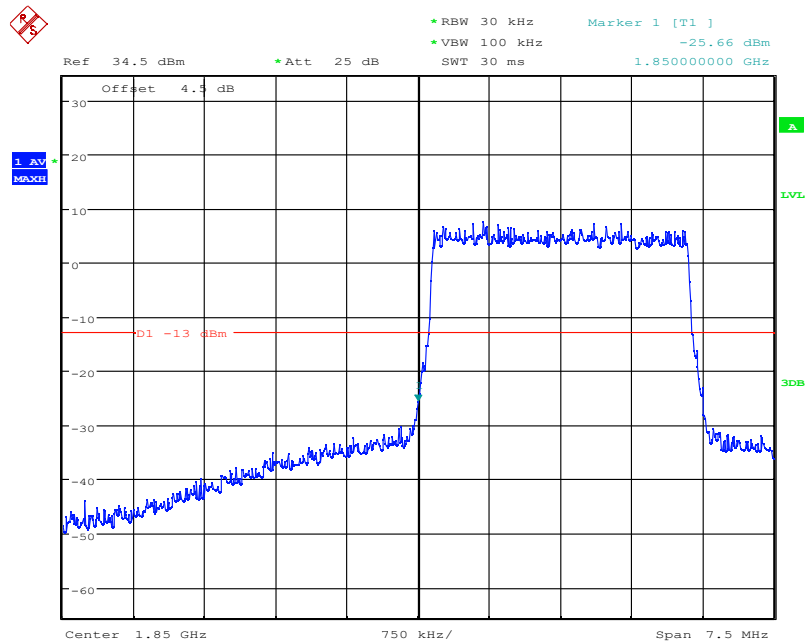
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Date: 14.DEC.2021 10:00:25

LTE Band2, 3MHz bandwidth, 16QAM,(1,0) Mode , Below 1850MHz

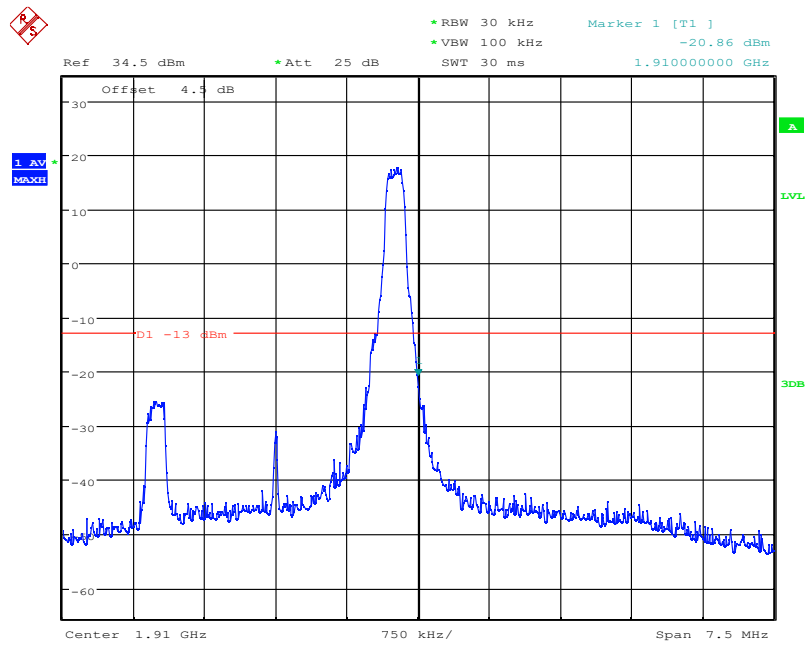


Date: 14.DEC.2021 10:00:34

LTE Band2, 3MHz bandwidth, 16QAM,(15,0) Mode , Below 1850MHz

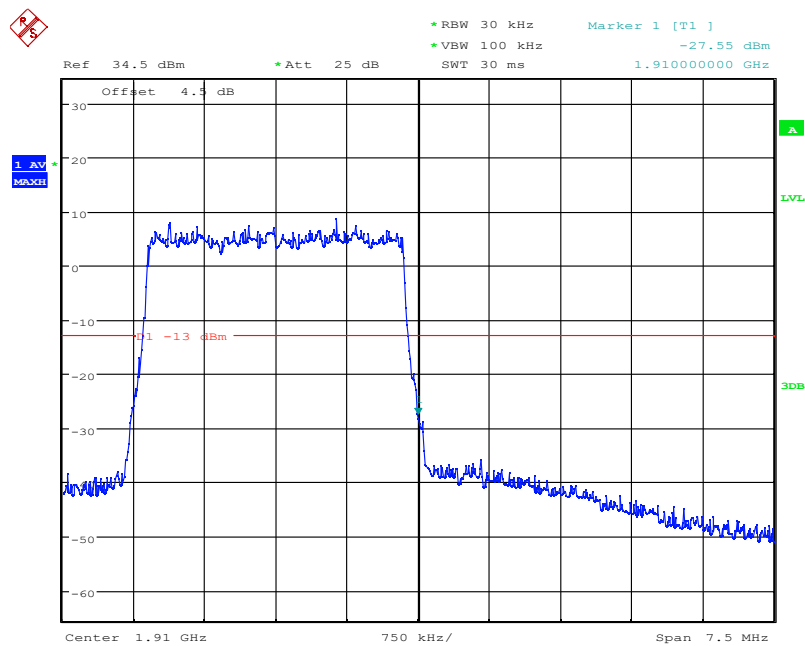
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Date: 14.DEC.2021 10:01:10

LTE Band2, 3MHz bandwidth, 16QAM,(1,15) Mode, Above 1910MHz

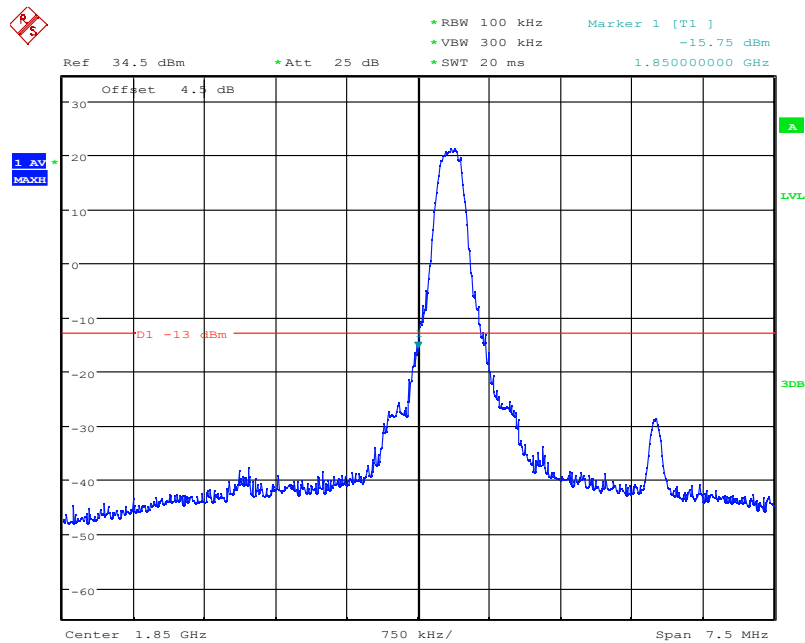


Date: 14.DEC.2021 10:00:57

LTE Band2, 3MHz bandwidth, 16QAM,(15,0) Mode, Above 1910MHz

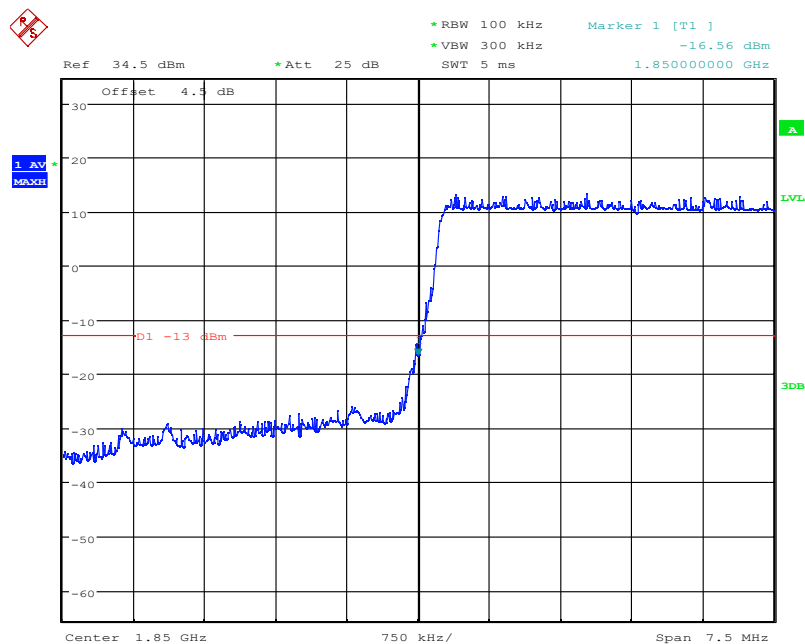
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Date: 14.DEC.2021 10:02:34

LTE Band2, 5MHz bandwidth, QPSK,(1,0) Mode , Below 1850MHz

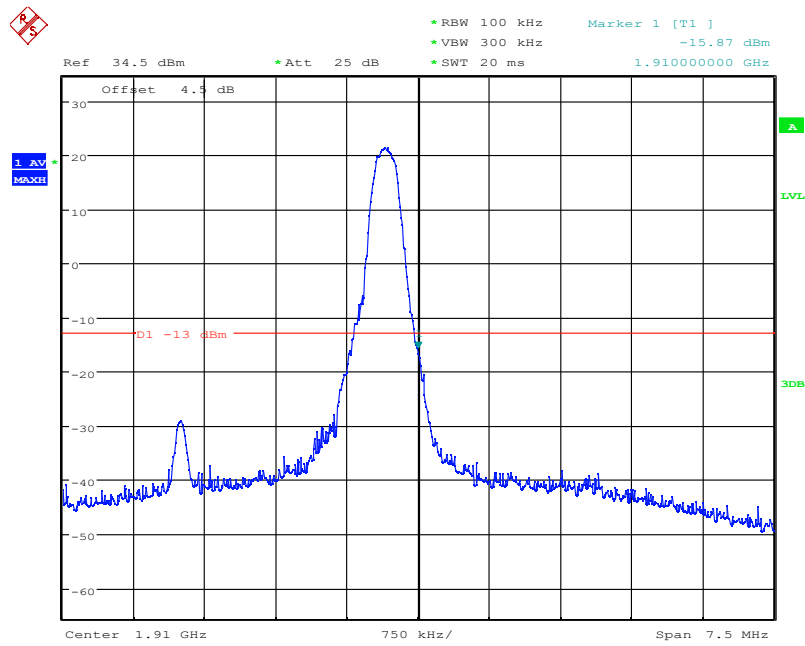


Date: 14.DEC.2021 10:02:05

LTE Band2, 5MHz bandwidth, QPSK,(25,0) Mode , Below 1850MHz

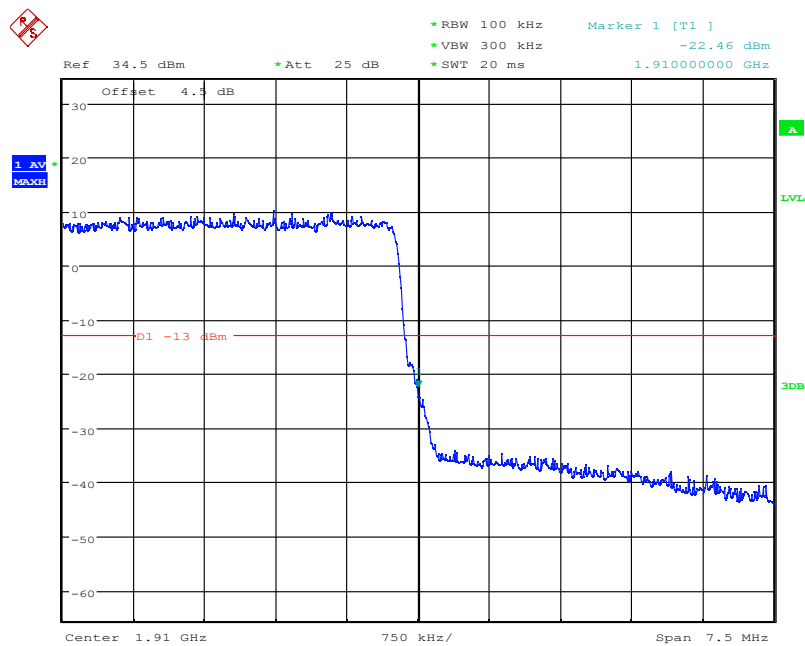
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Date: 14.DEC.2021 10:03:53

LTE Band2, 5MHz bandwidth, QPSK,(1,25) Mode, Above 1910MHz

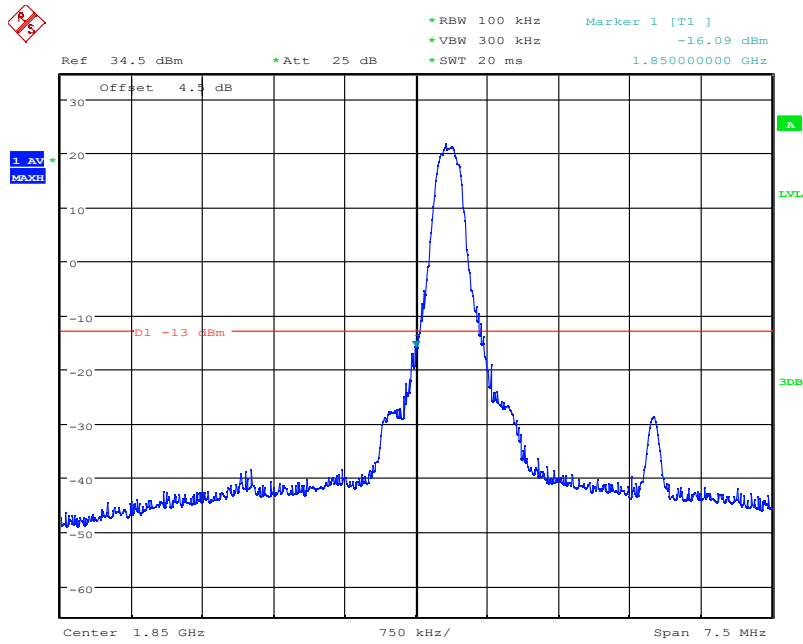


Date: 14.DEC.2021 10:04:04

LTE Band2, 5MHz bandwidth, QPSK,(25,0) Mode, Above 1910MHz

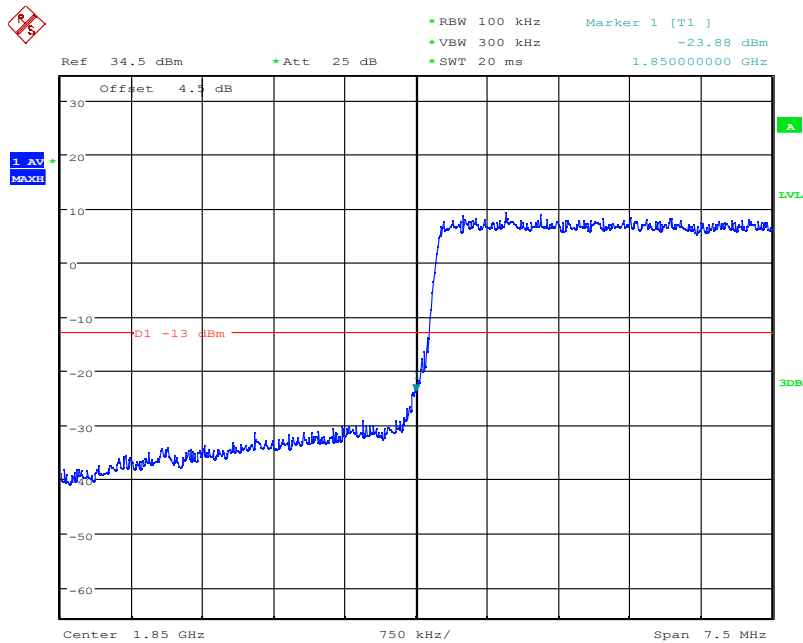
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Date: 14.DEC.2021 10:02:45

LTE Band2, 5MHz bandwidth, 16QAM,(1,0) Mode , Below 1850MHz

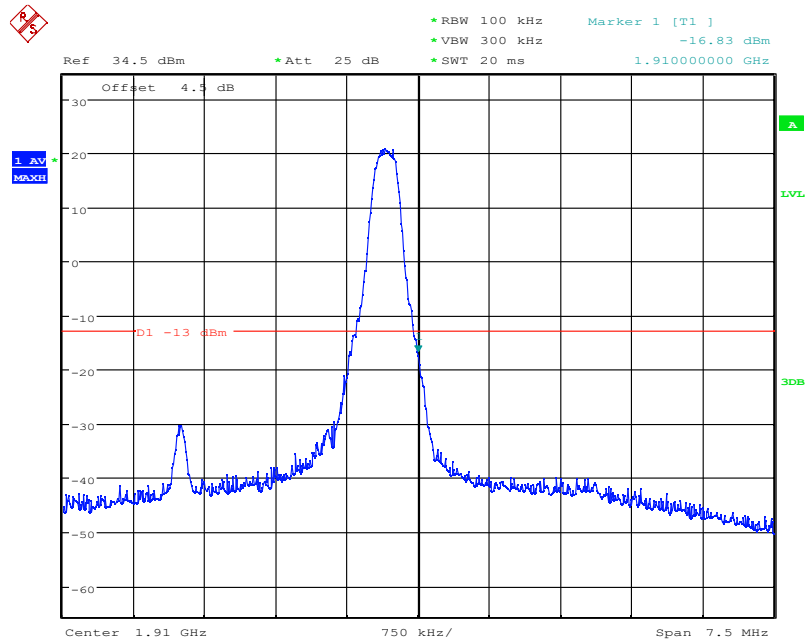


Date: 14.DEC.2021 10:02:56

LTE Band2, 5MHz bandwidth, 16QAM,(25,0) Mode , Below 1850MHz

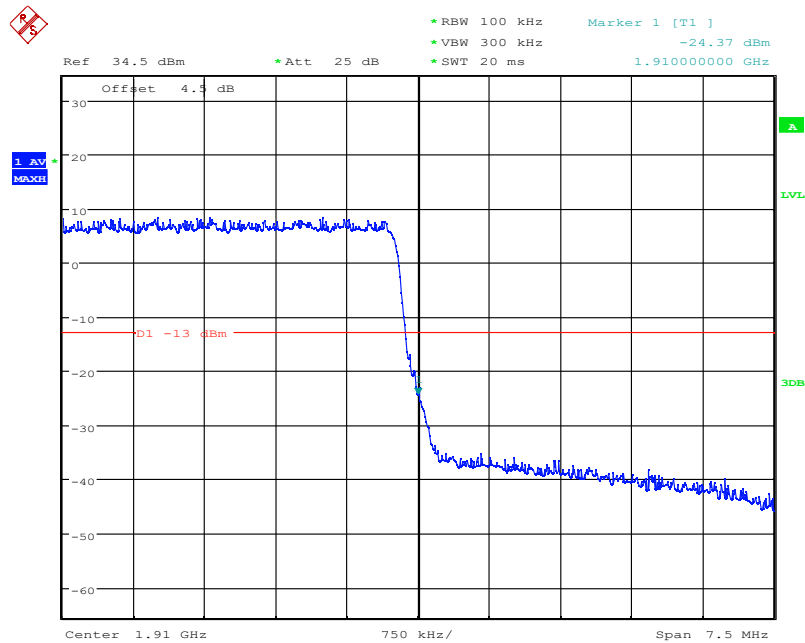
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Date: 14.DEC.2021 10:03:42

LTE Band2, 5MHz bandwidth, 16QAM,(1,25) Mode, Above 1910MHz

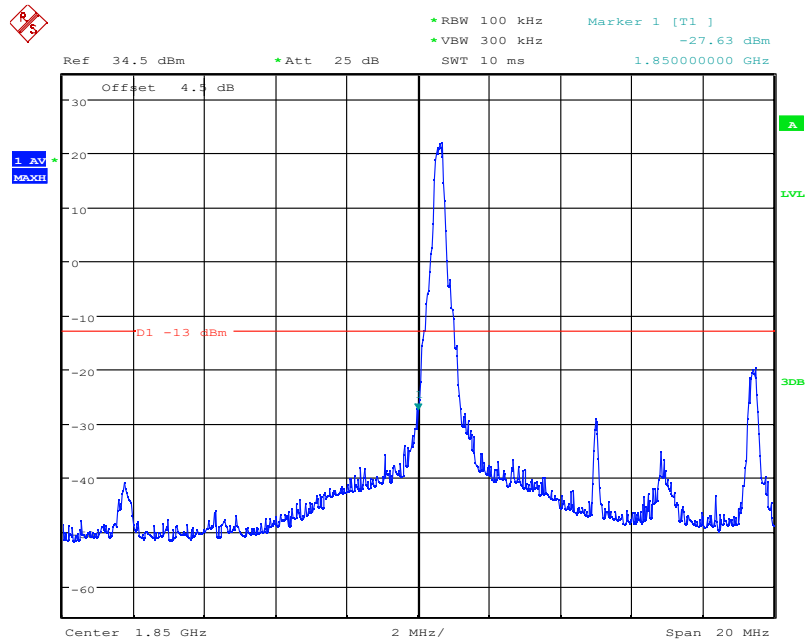


Date: 14.DEC.2021 10:03:31

LTE Band2, 5MHz bandwidth, 16QAM,(25,0) Mode, Above 1910MHz

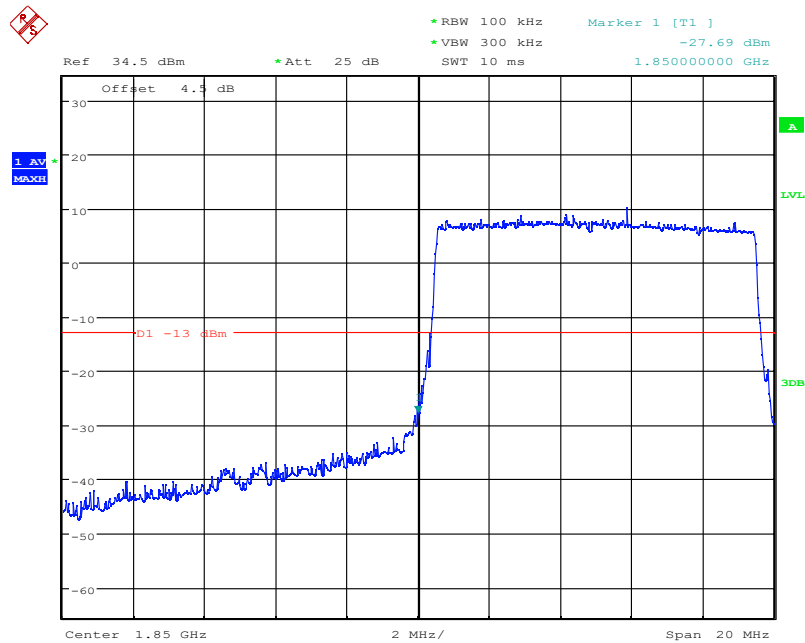
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Date: 14.DEC.2021 10:07:07

LTE Band2, 10MHz bandwidth, QPSK,(1,0) Mode , Below 1850MHz



Date: 14.DEC.2021 10:06:54

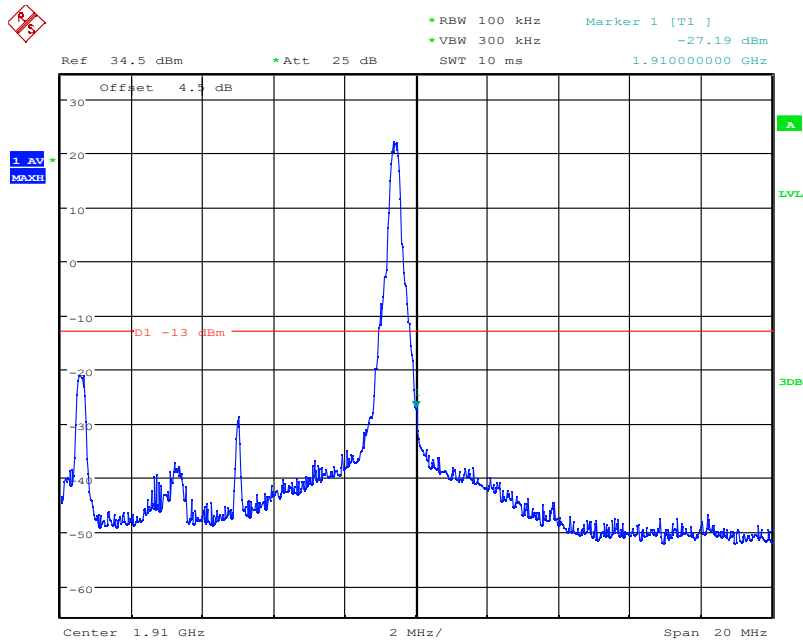
LTE Band2, 10MHz bandwidth, QPSK,(50,0) Mode , Below 1850MHz

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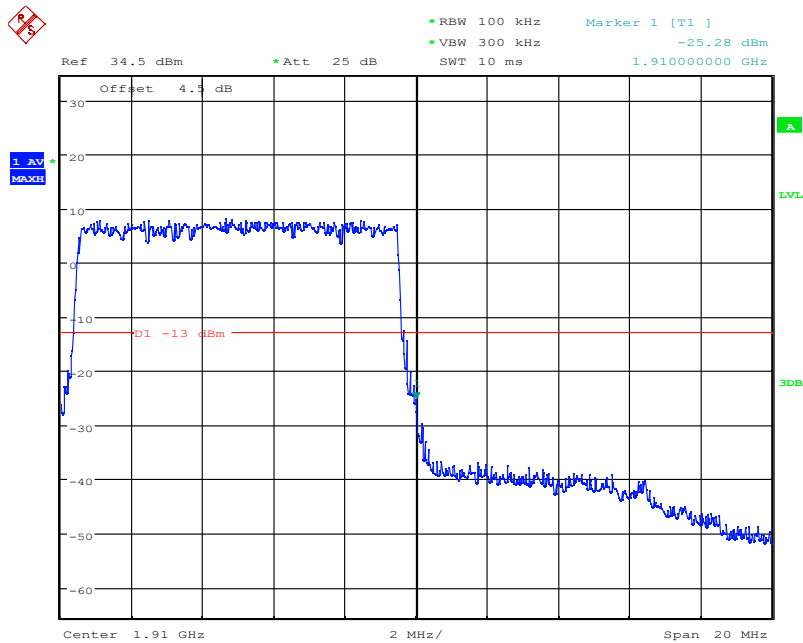


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Date: 14.DEC.2021 10:10:50

LTE Band2, 10MHz bandwidth, QPSK,(1,50) Mode, Above 1910MHz

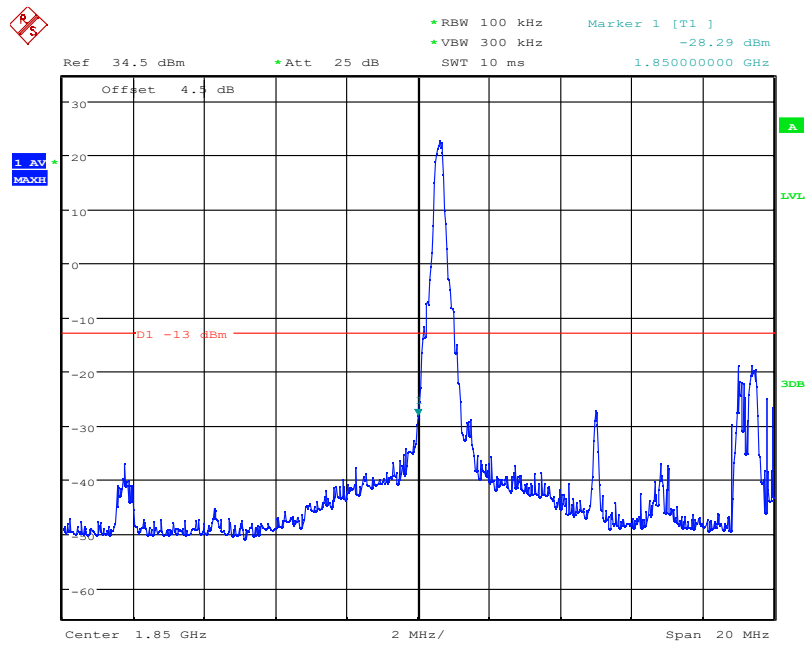


Date: 14.DEC.2021 10:11:00

LTE Band2, 10MHz bandwidth, QPSK,(50,0) Mode, Above 1910MHz

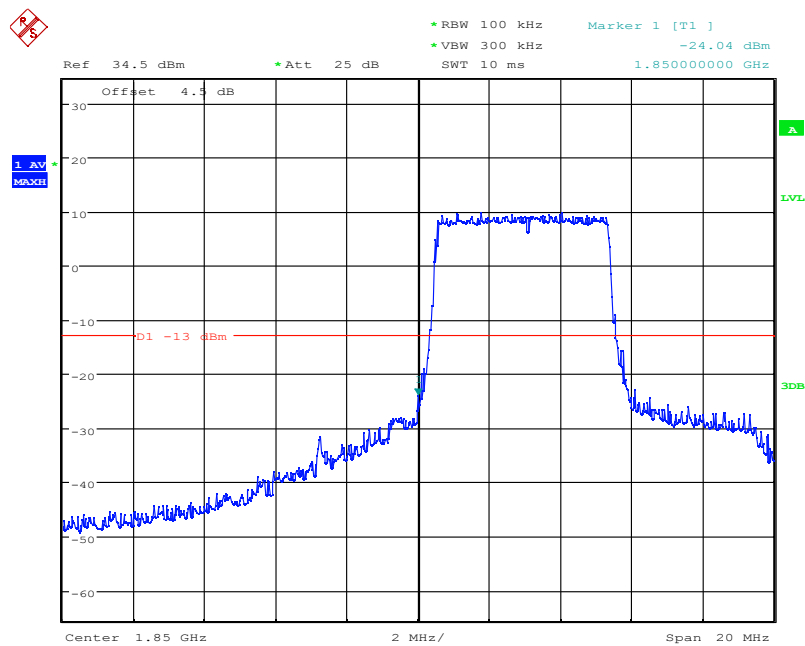
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Date: 14.DEC.2021 10:08:05

LTE Band2, 10MHz bandwidth, 16QAM,(1,0) Mode , Below 1850MHz

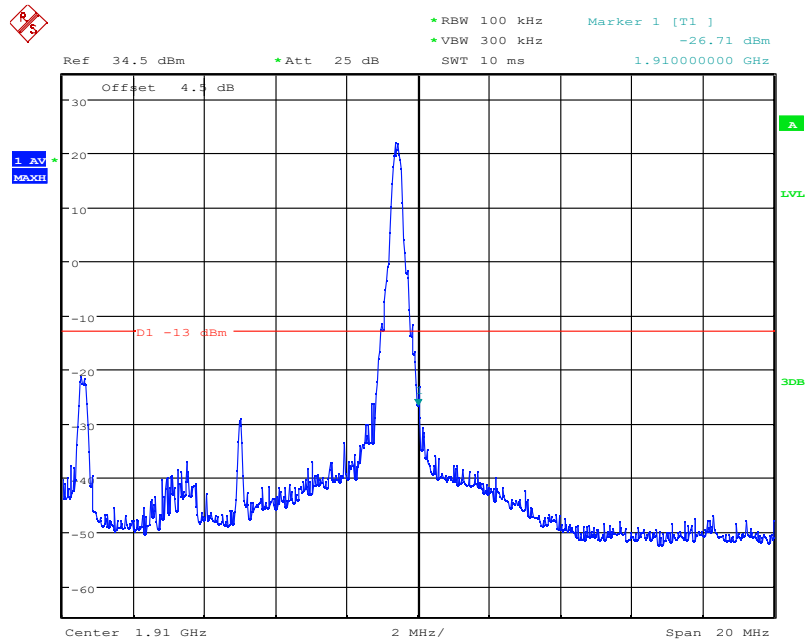


Date: 14.DEC.2021 10:09:55

LTE Band2, 10MHz bandwidth, 16QAM,(27,0) Mode , Below 1850MHz

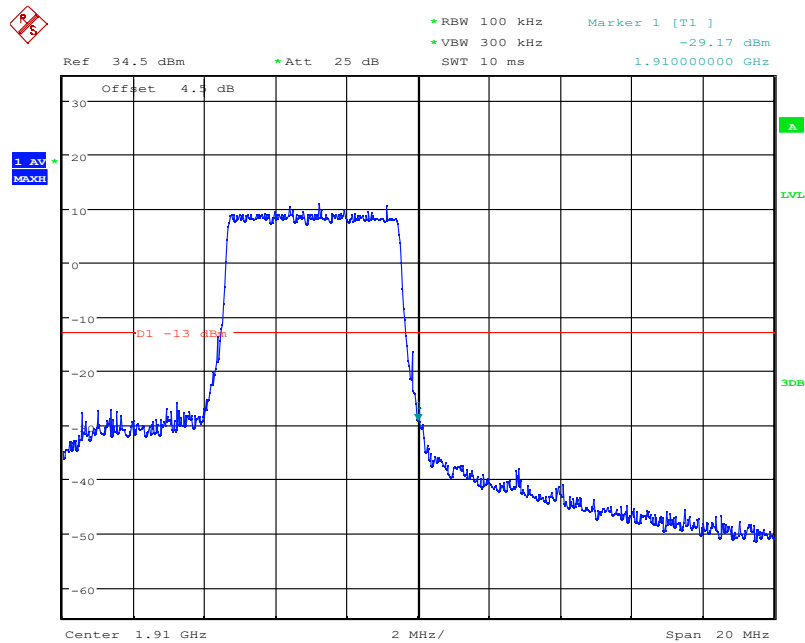
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Date: 14.DEC.2021 10:10:37

LTE Band2, 10MHz bandwidth, 16QAM,(1,50) Mode, Above 1910MHz

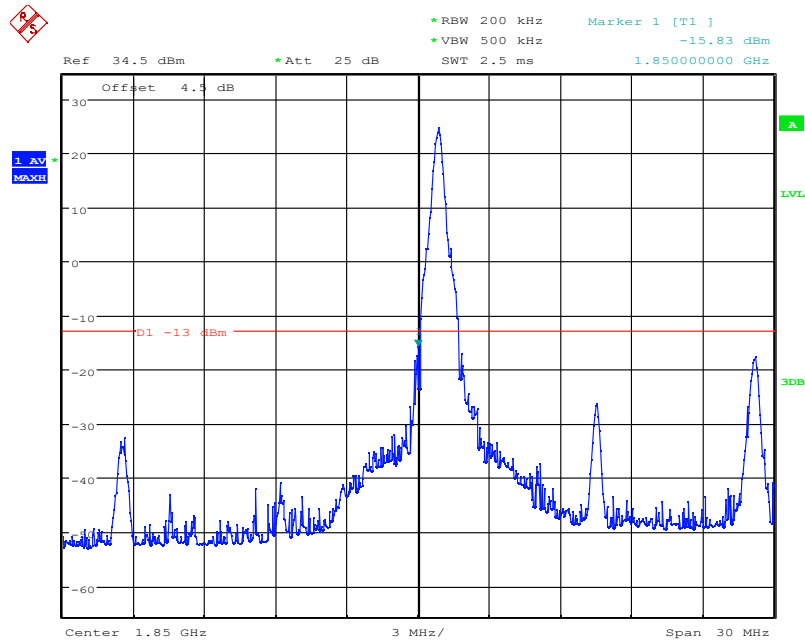


Date: 14.DEC.2021 10:10:27

LTE Band2, 10MHz bandwidth, 16QAM,(27,0) Mode, Above 1910MHz

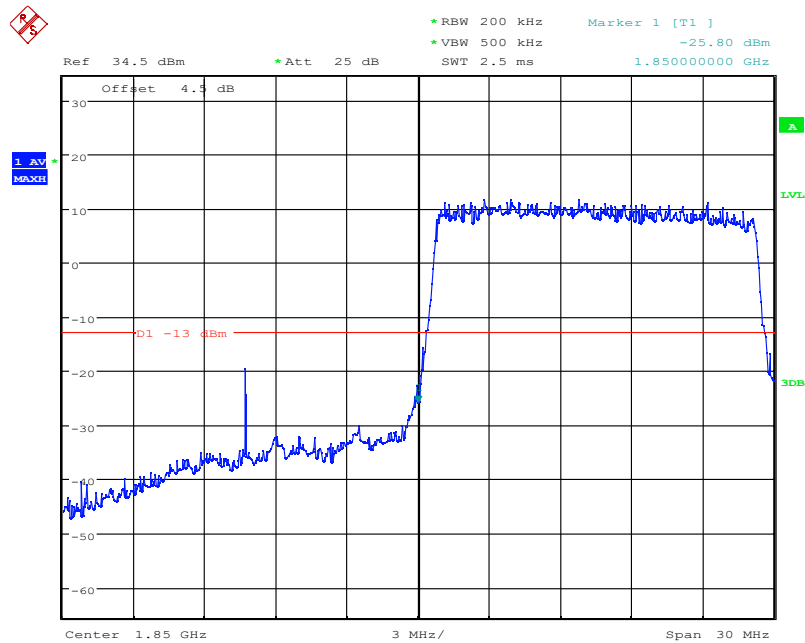
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Date: 14.DEC.2021 10:18:59

LTE Band2, 15MHz bandwidth, QPSK,(1,0) Mode , Below 1850MHz



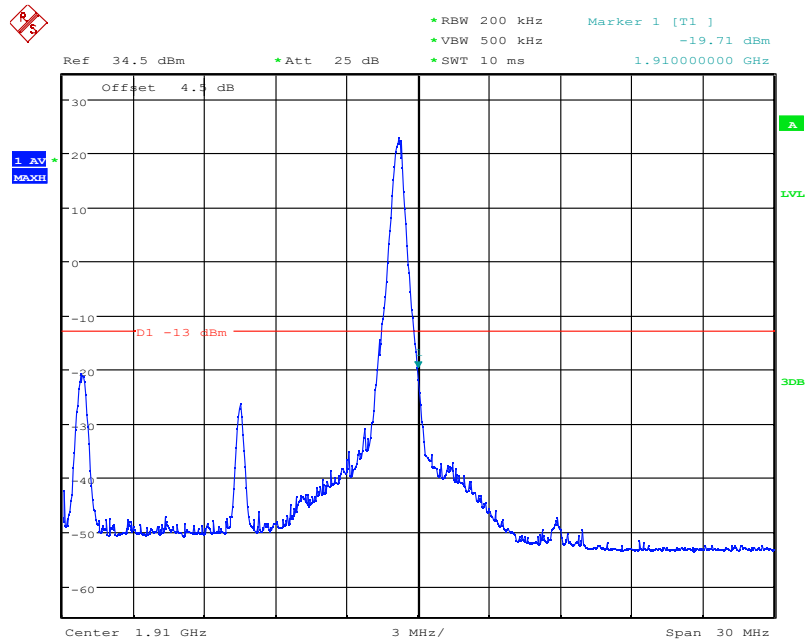
Date: 14.DEC.2021 10:18:44

LTE Band2, 15MHz bandwidth, QPSK,(75,0) Mode , Below 1850MHz

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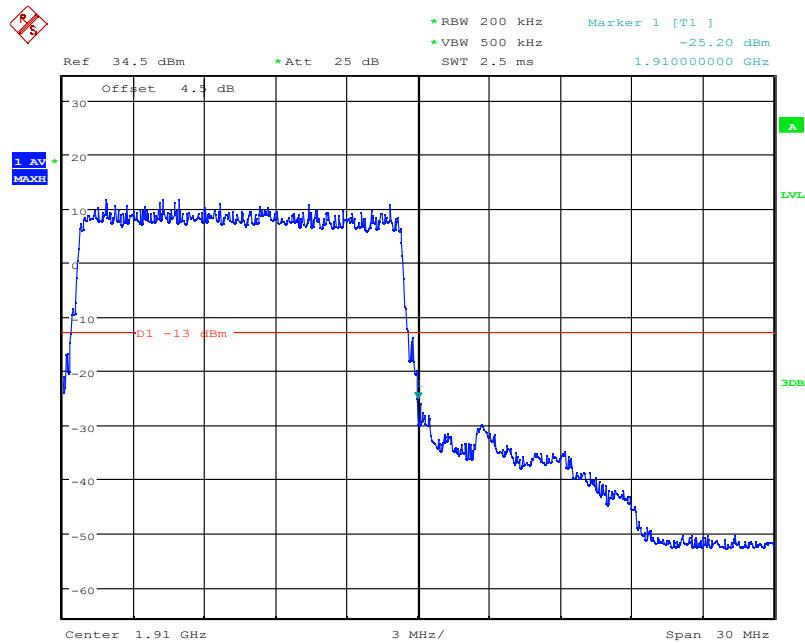
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Date: 14.DEC.2021 10:20:31

LTE Band2, 15MHz bandwidth, QPSK,(1,75) Mode, Above 1910MHz



Date: 14.DEC.2021 10:13:33

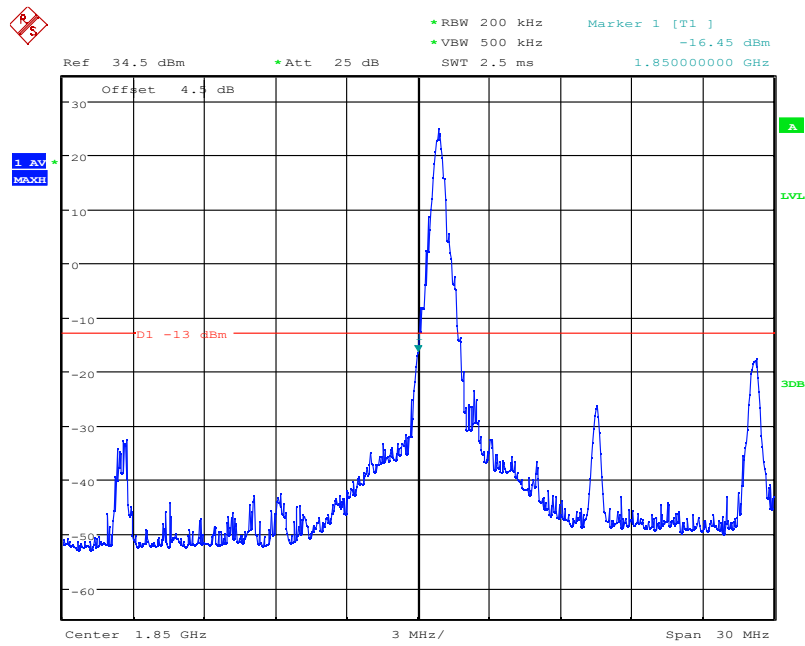
LTE Band2, 15MHz bandwidth, QPSK,(75,0) Mode, Above 1910MHz

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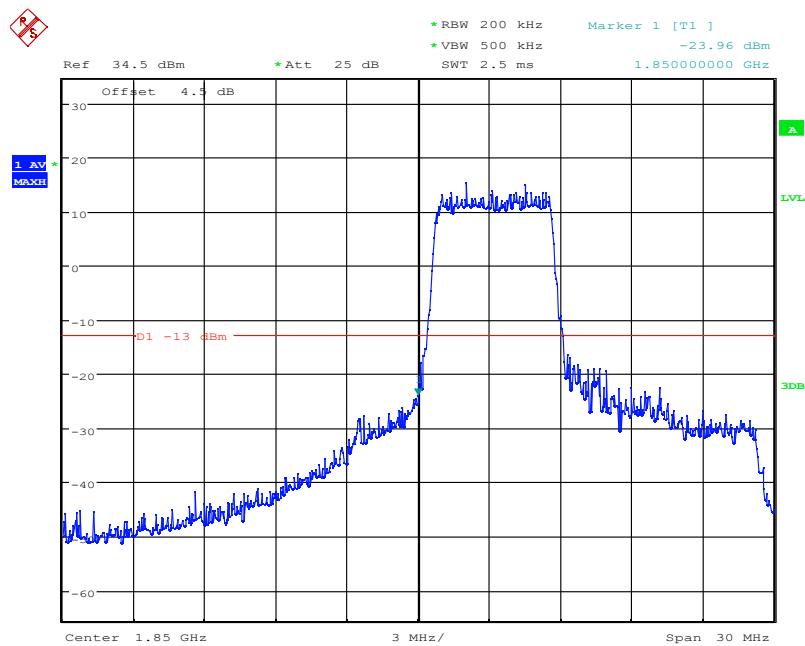


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Date: 14.DEC.2021 10:19:14

LTE Band2, 15MHz bandwidth, 16QAM,(1,0) Mode , Below 1850MHz

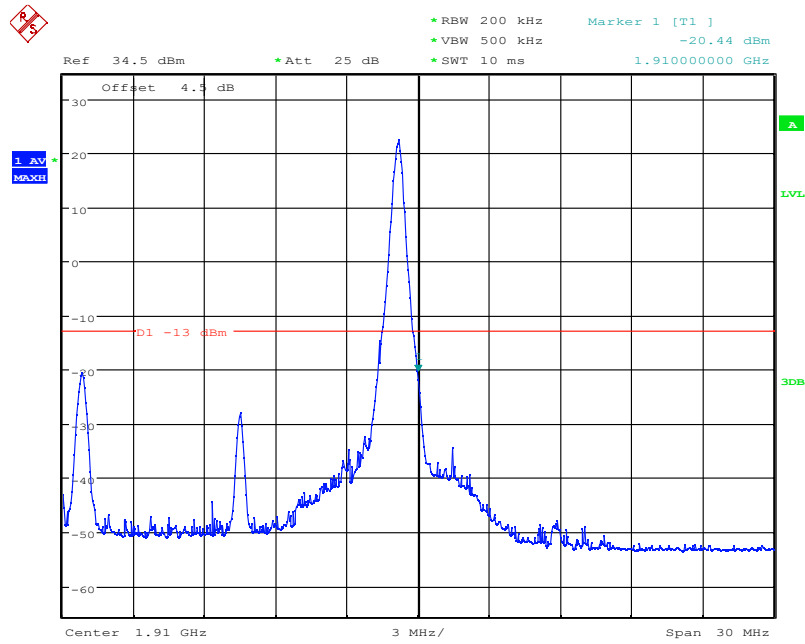


Date: 14.DEC.2021 10:19:29

LTE Band2, 15MHz bandwidth, 16QAM,(27,0) Mode , Below 1850MHz

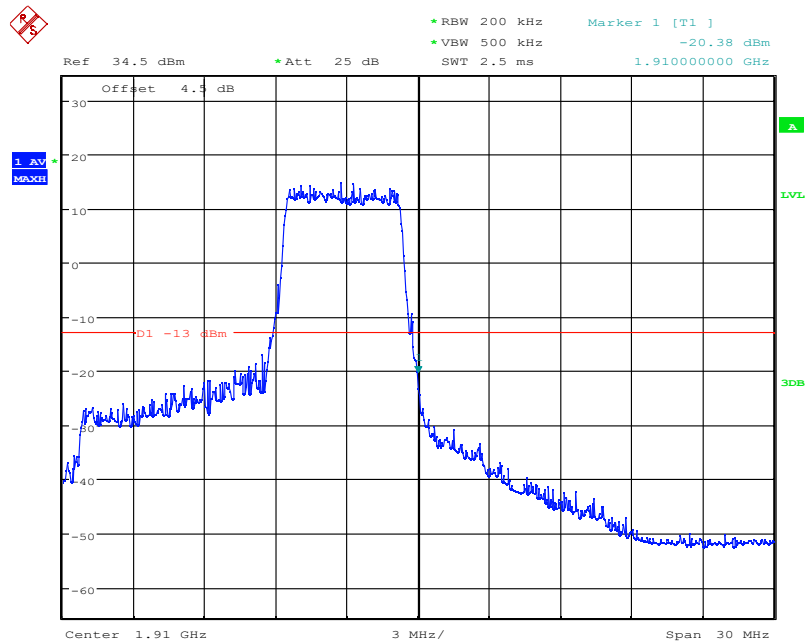
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Date: 14.DEC.2021 10:20:20

LTE Band2, 15MHz bandwidth, 16QAM,(1,75) Mode, Above 1910MHz

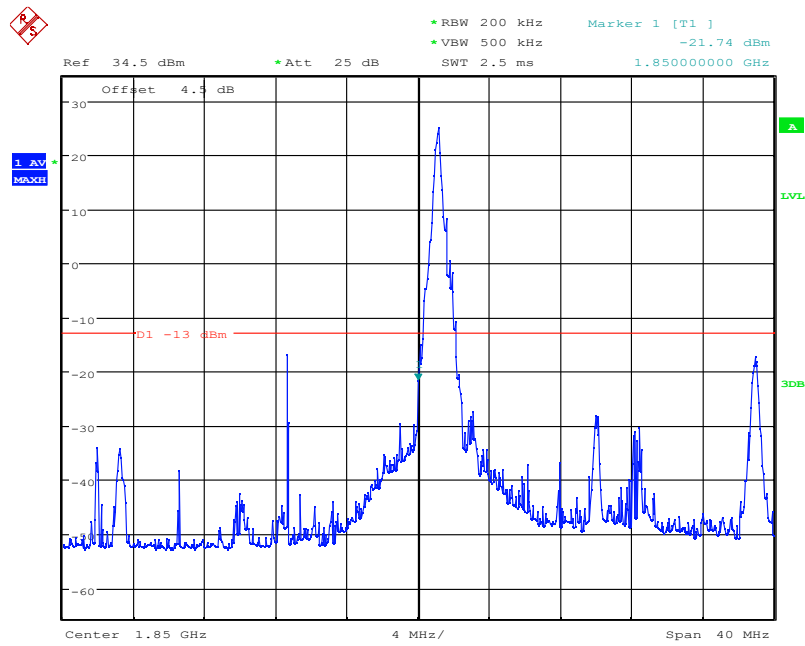


Date: 14.DEC.2021 10:12:59

LTE Band2, 15MHz bandwidth, 16QAM,(27,0) Mode, Above 1910MHz

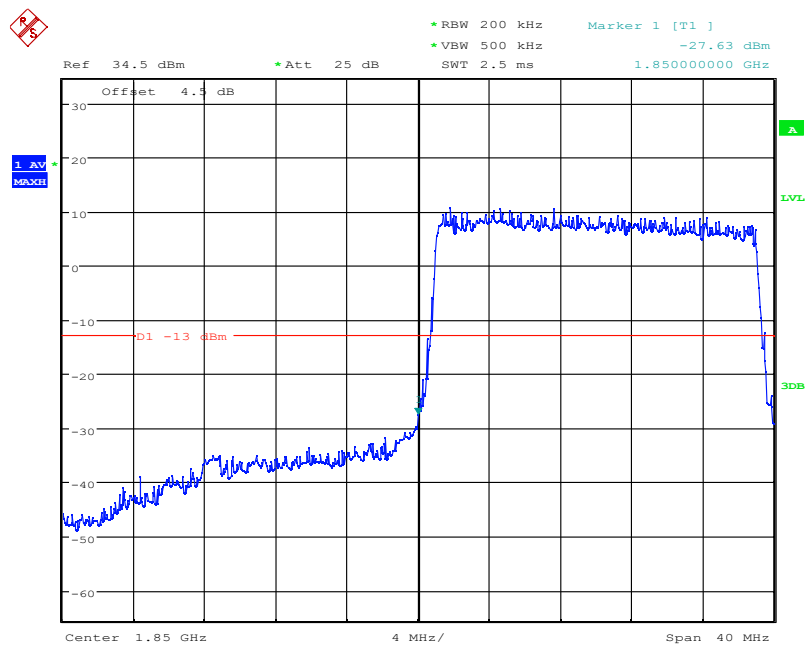
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Date: 14.DEC.2021 10:14:27

LTE Band2, 20MHz bandwidth, QPSK,(1,0) Mode , Below 1850MHz

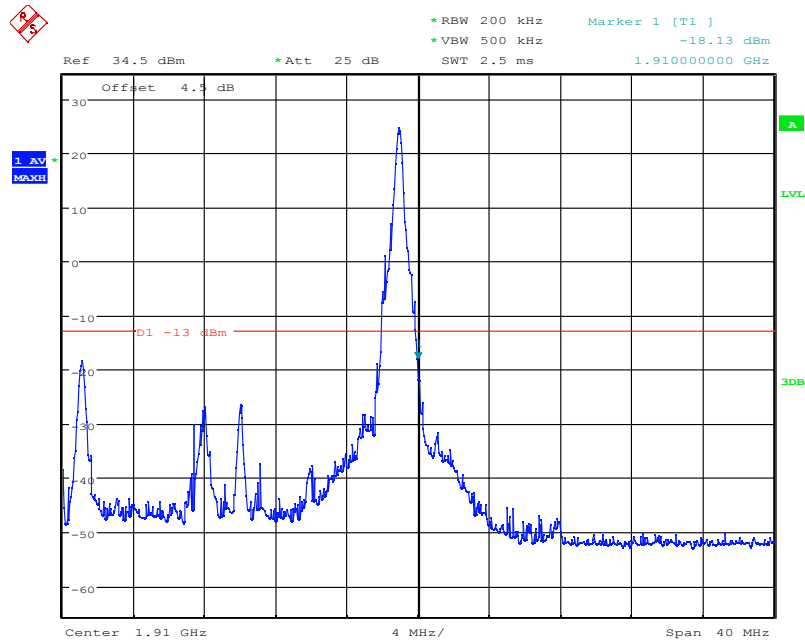


Date: 14.DEC.2021 10:14:16

LTE Band2, 20MHz bandwidth, QPSK,(100,0) Mode , Below 1850MHz

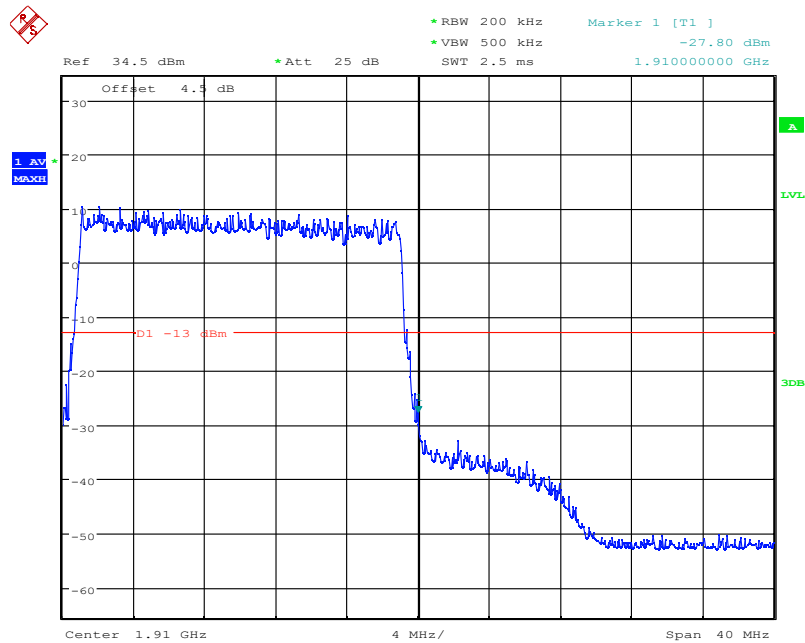
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Date: 14.DEC.2021 10:15:33

LTE Band2, 20MHz bandwidth, QPSK,(1,100) Mode, Above 1910MHz



Date: 14.DEC.2021 10:15:44

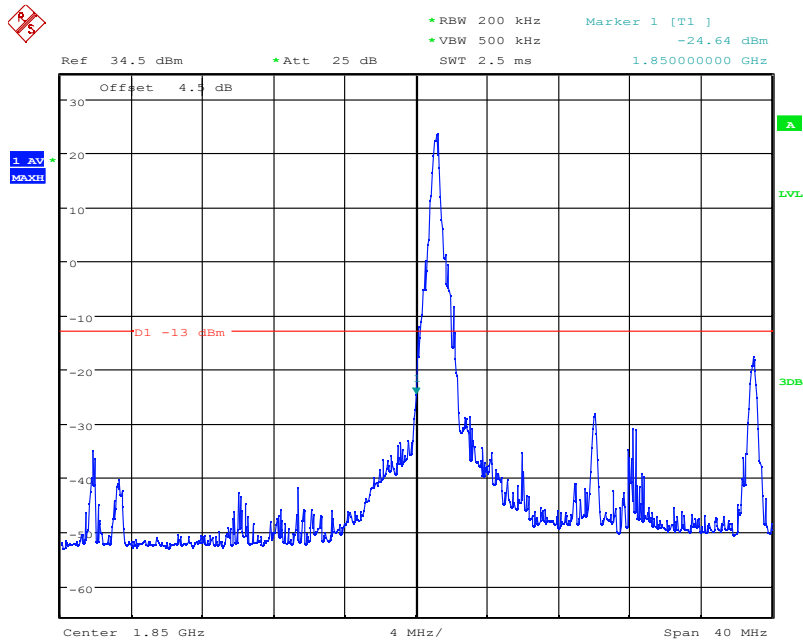
LTE Band2, 20MHz bandwidth, QPSK,(100,0) Mode, Above 1910MHz

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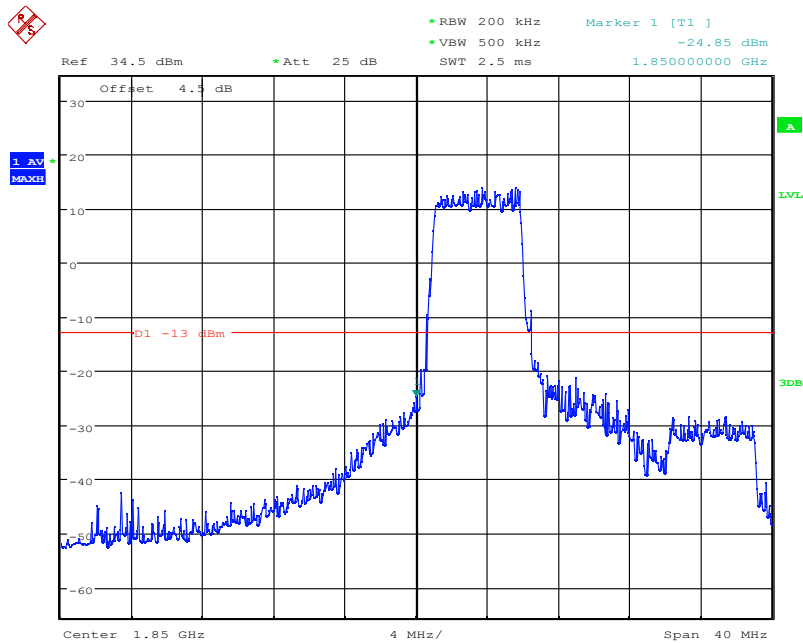


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Date: 14.DEC.2021 10:14:36

LTE Band2, 20MHz bandwidth, 16QAM,(1,0) Mode , Below 1850MHz

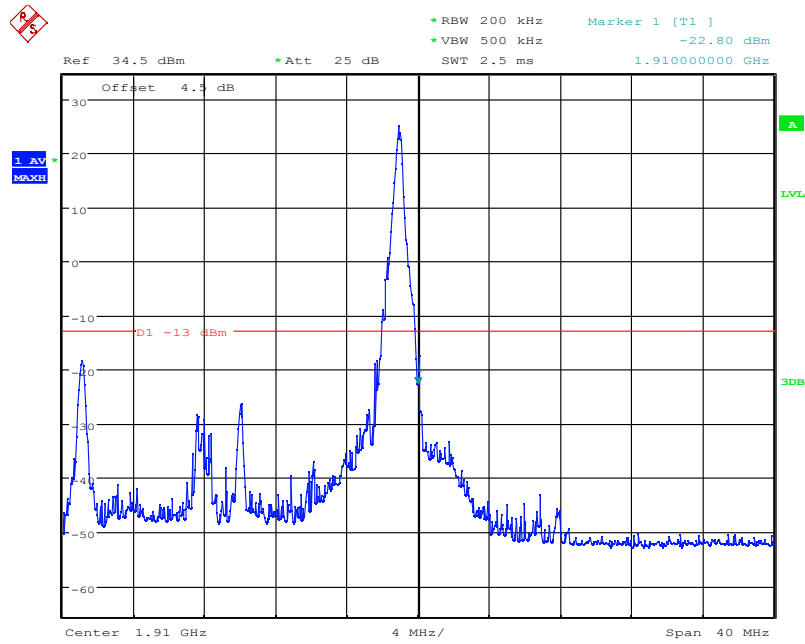


Date: 14.DEC.2021 10:14:47

LTE Band2, 20MHz bandwidth, 16QAM,(27,0) Mode , Below 1850MHz

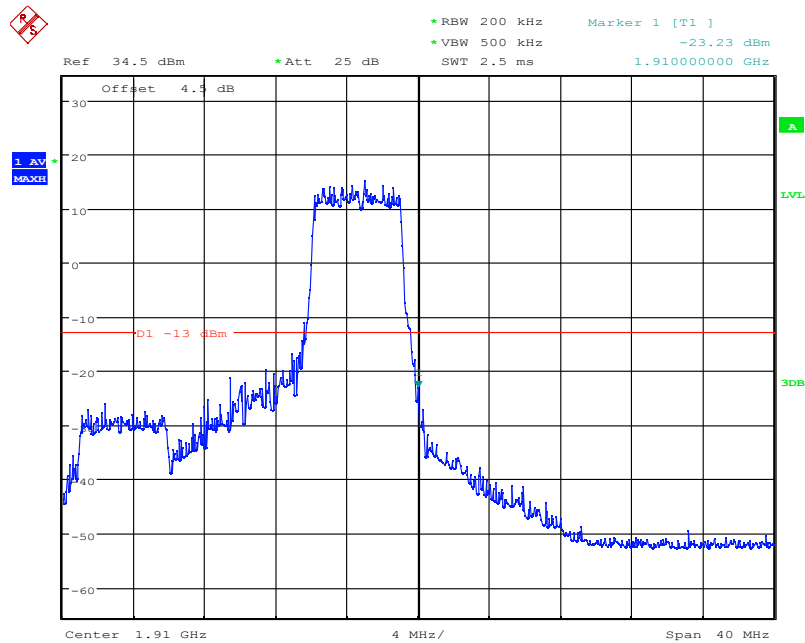
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Date: 14.DEC.2021 10:15:20

LTE Band2, 20MHz bandwidth, 16QAM,(1,100) Mode, Above 1910MHz



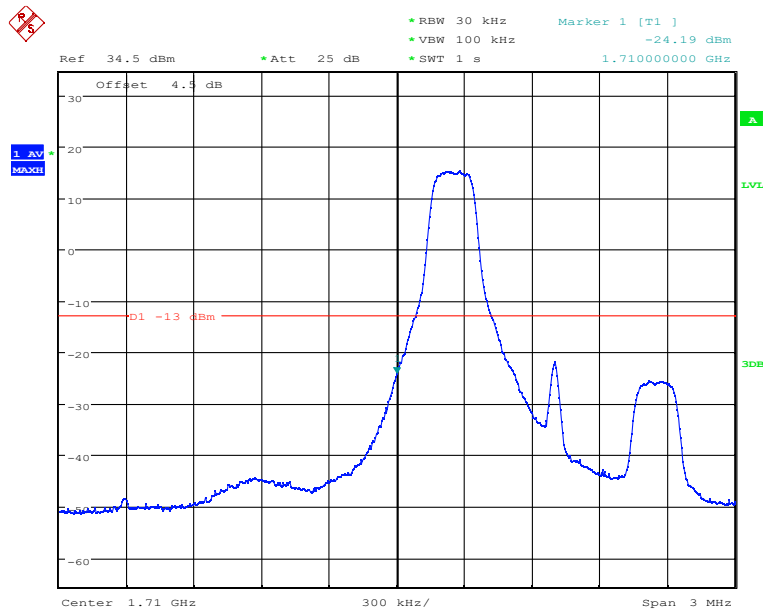
Date: 14.DEC.2021 10:15:07

LTE Band2, 20MHz bandwidth, 16QAM,(27,0) Mode, Above 1910MHz

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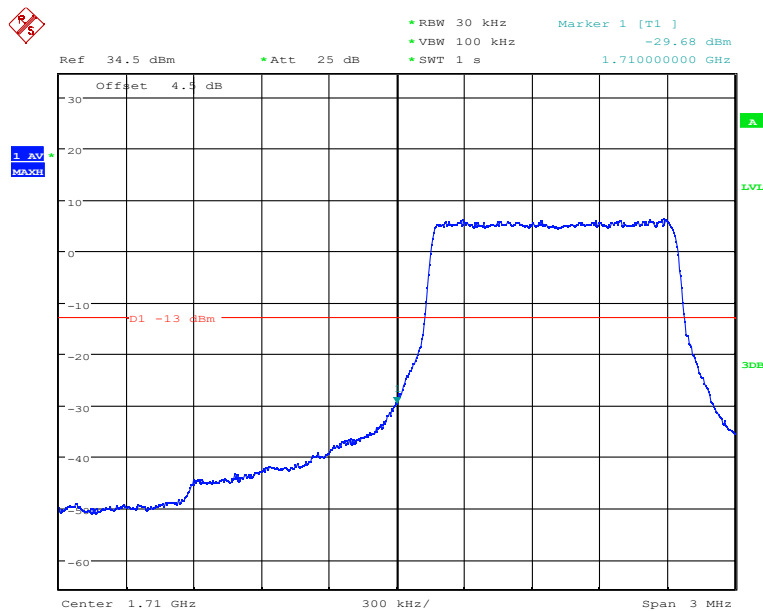
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6.7.2 LTE B4 Band Edge Results



Date: 14.DEC.2021 19:08:58

LTE Band4, 1.4MHz bandwidth, QPSK,(1,0) Mode , Below 1710MHz

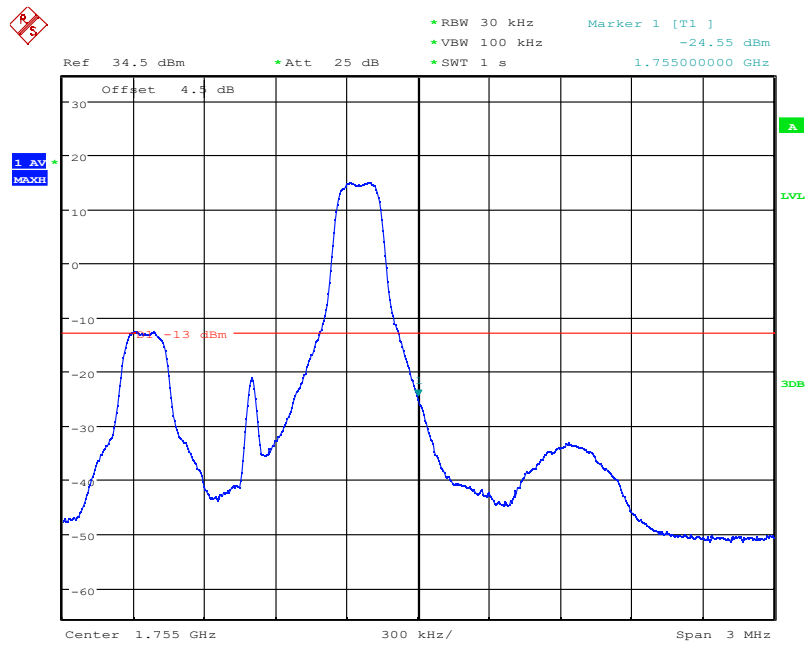


Date: 14.DEC.2021 19:09:46

LTE Band4, 1.4MHz bandwidth, QPSK,(6,0) Mode , Below 1710MHz

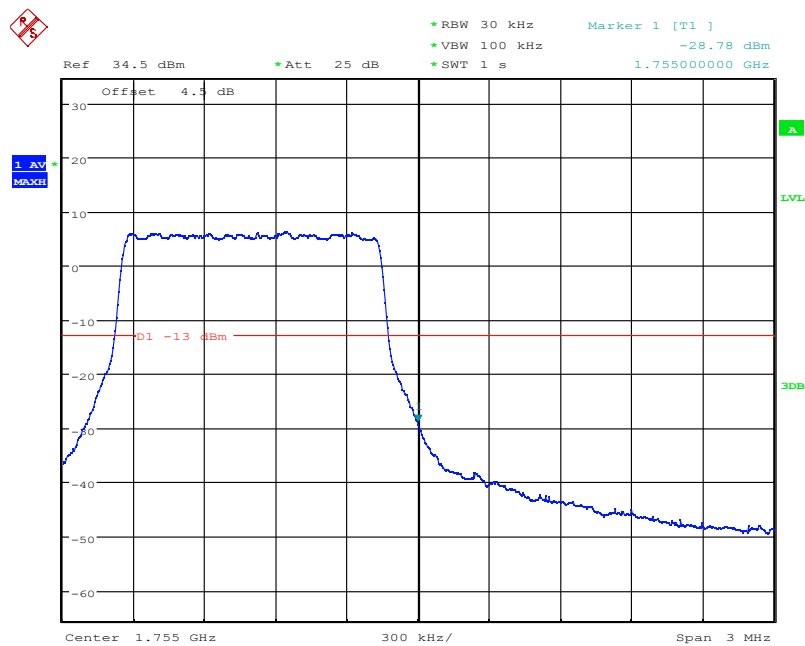
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Date: 14.DEC.2021 19:13:19

LTE Band4, 1.4MHz bandwidth, QPSK,(1,6) Mode, Above 1755MHz

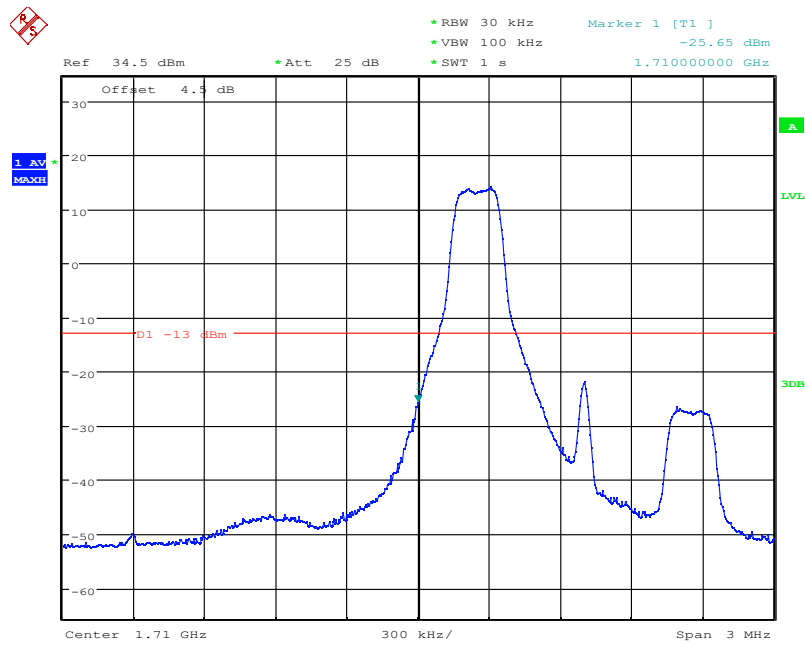


Date: 14.DEC.2021 19:12:42

LTE Band4, 1.4MHz bandwidth, QPSK,(6,0) Mode, Above 1755MHz

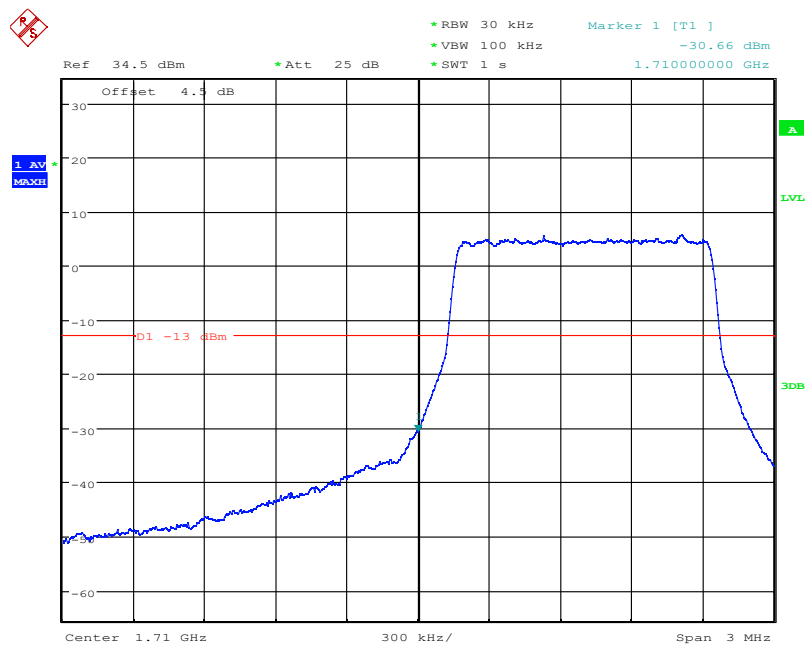
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Date: 14.DEC.2021 19:10:49

LTE Band4, 1.4MHz bandwidth, 16QAM,(1,0) Mode , Below 1710MHz



Date: 14.DEC.2021 19:10:14

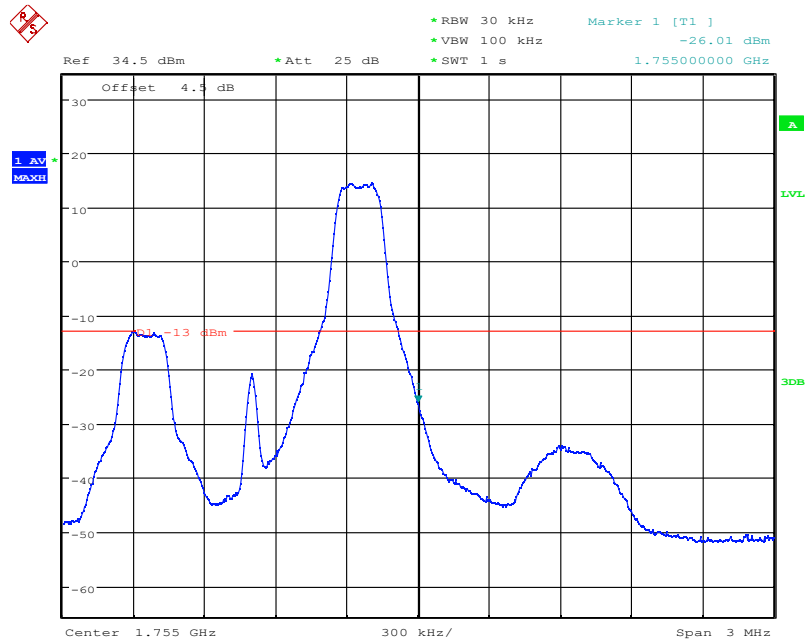
LTE Band4, 1.4MHz bandwidth, 16QAM,(6,0) Mode , Below 1710MHz

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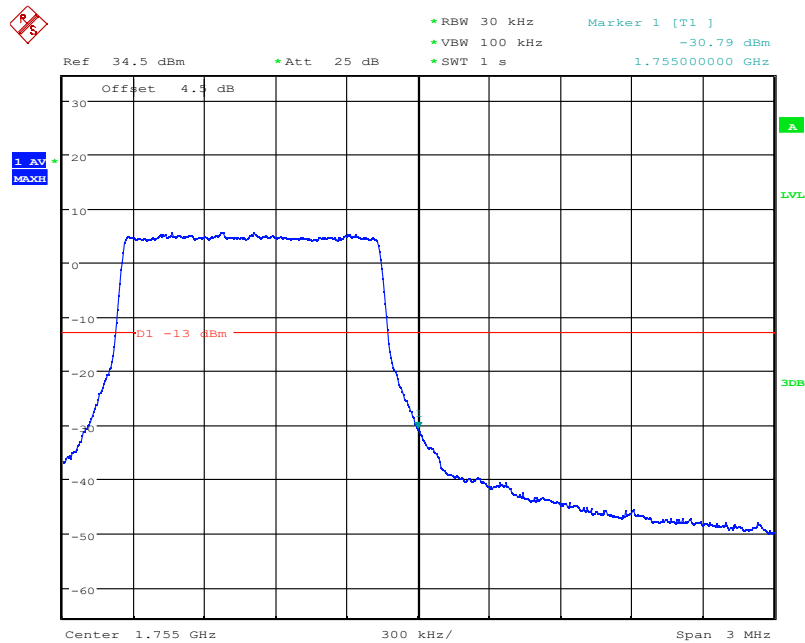


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Date: 14.DEC.2021 19:12:01

LTE Band4, 1.4MHz bandwidth, 16QAM,(1,6) Mode, Above 1755MHz

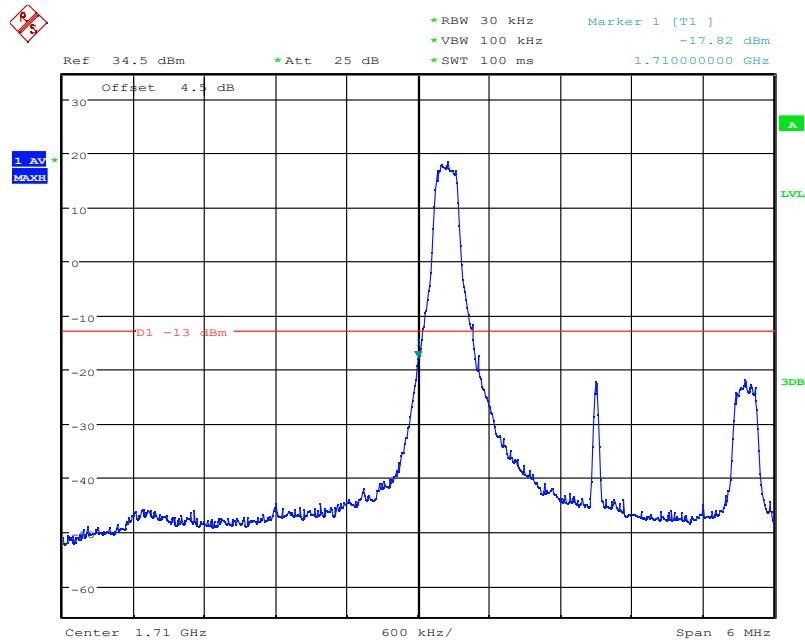


Date: 14.DEC.2021 19:12:21

LTE Band4, 1.4MHz bandwidth, 16QAM,(6,0) Mode, Above 1755MHz

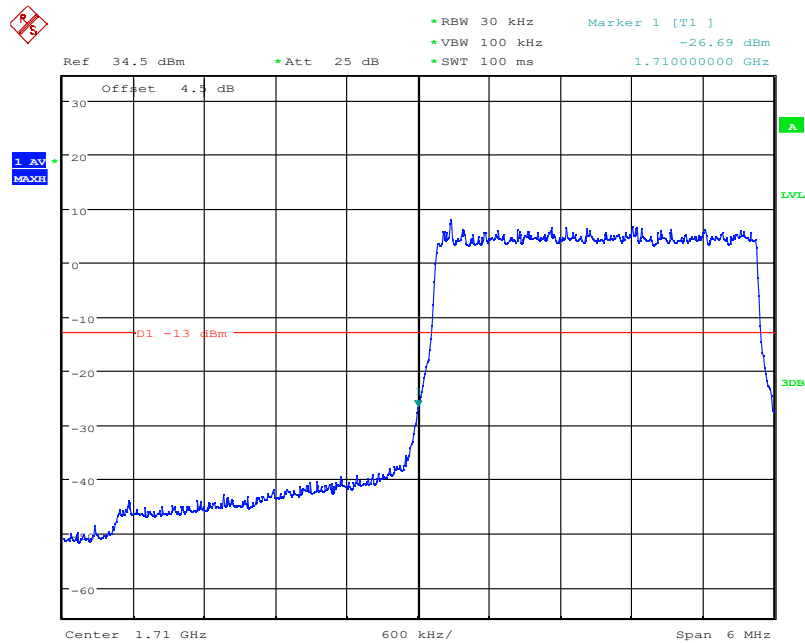
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Date: 14.DEC.2021 19:34:13

LTE Band4, 3MHz bandwidth, QPSK,(1,0) Mode , Below 1710MHz

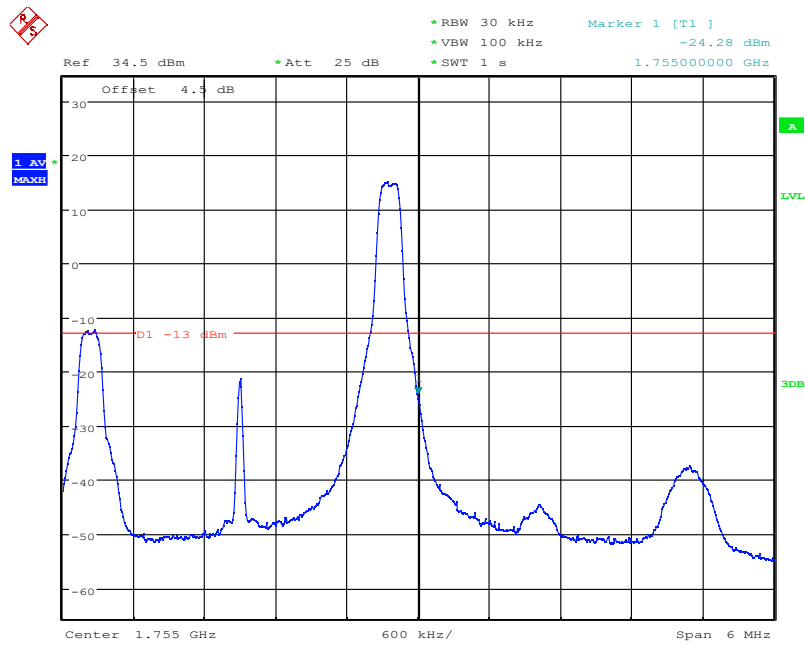


Date: 14.DEC.2021 19:36:28

LTE Band4, 3MHz bandwidth, QPSK,(15,0) Mode , Below 1710MHz

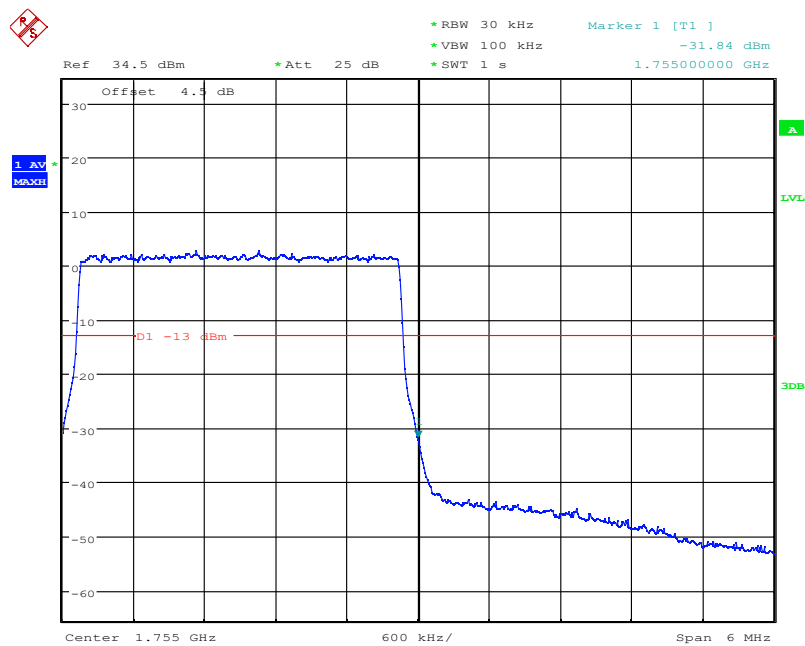
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Date: 14.DEC.2021 19:43:09

LTE Band4, 3MHz bandwidth, QPSK,(1,15) Mode, Above 1755MHz

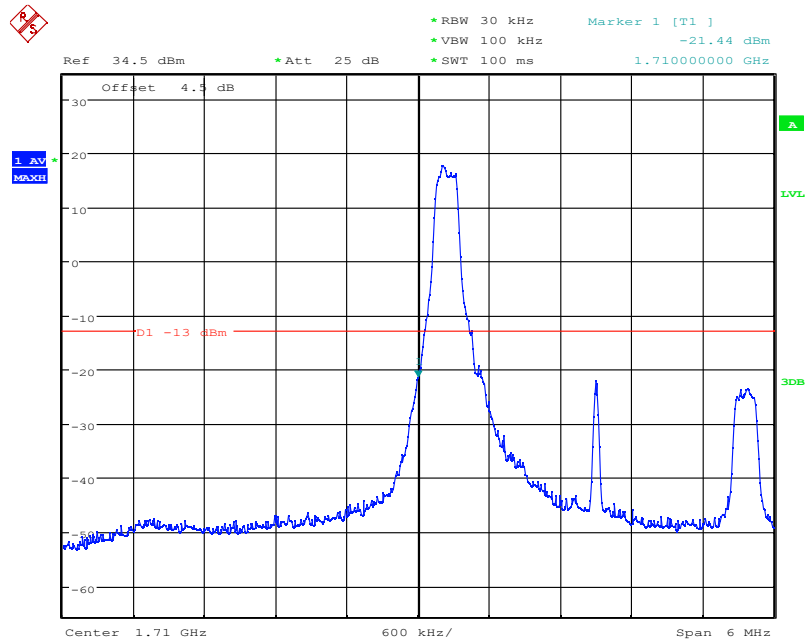


Date: 14.DEC.2021 19:43:34

LTE Band4, 3MHz bandwidth, QPSK,(15,0) Mode, Above 1755MHz

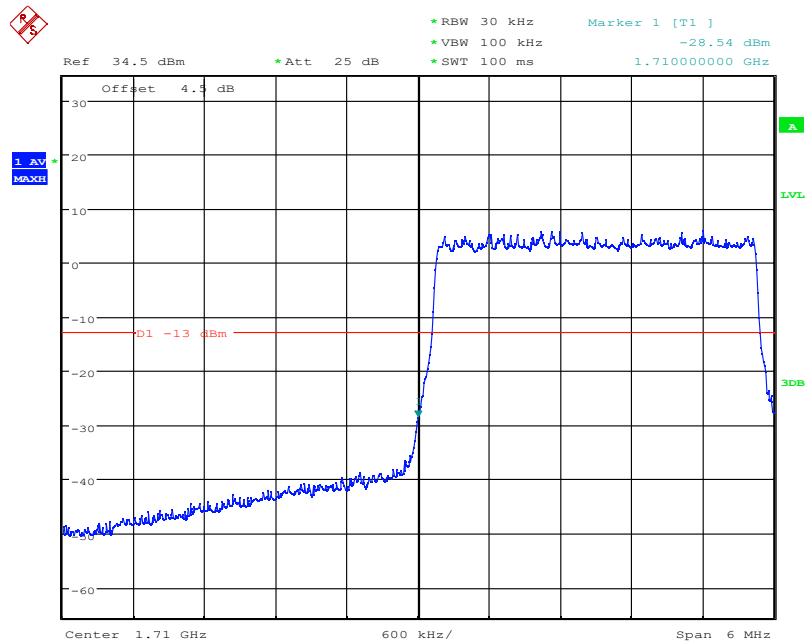
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Date: 14.DEC.2021 19:38:12

LTE Band4, 3MHz bandwidth, 16QAM,(1,0) Mode , Below 1710MHz

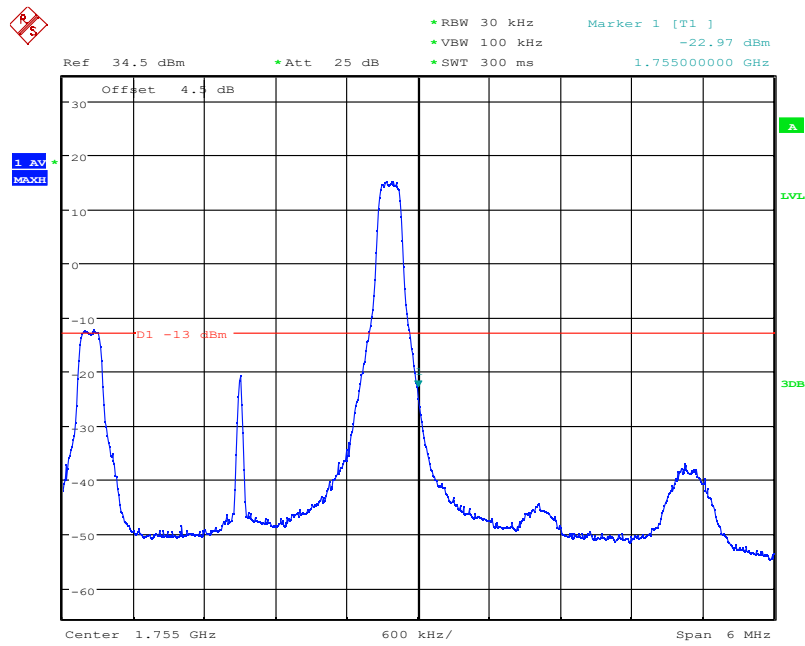


Date: 14.DEC.2021 19:37:08

LTE Band4, 3MHz bandwidth, 16QAM,(15,0) Mode , Below 1710MHz

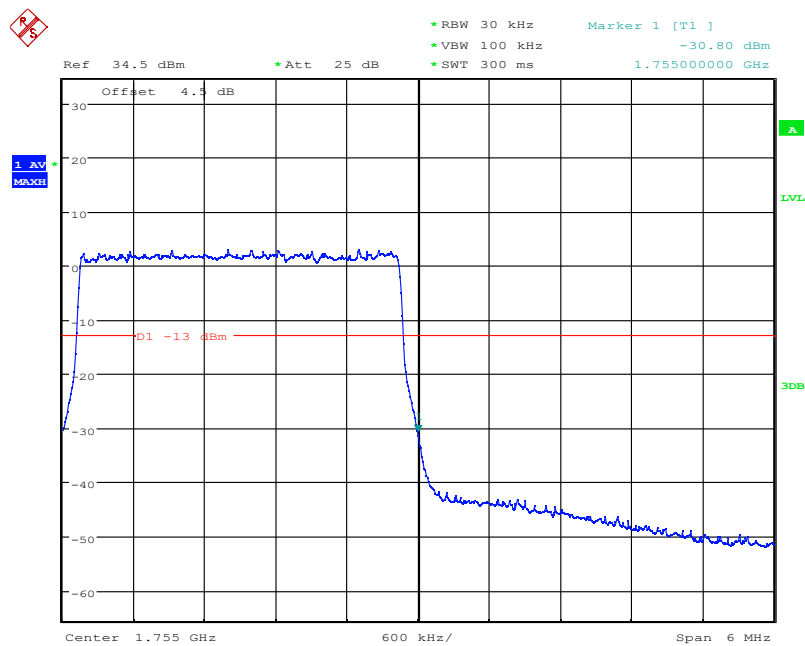
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Date: 14.DEC.2021 19:40:27

LTE Band4, 3MHz bandwidth, 16QAM,(1,15) Mode, Above 1755MHz



Date: 14.DEC.2021 19:41:05

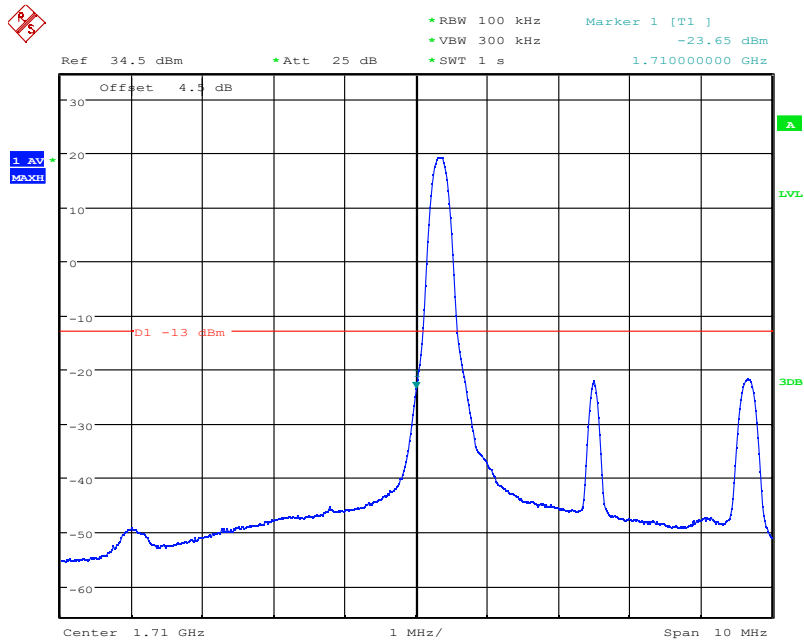
LTE Band4, 3MHz bandwidth, 16QAM,(15,0) Mode, Above 1755MHz

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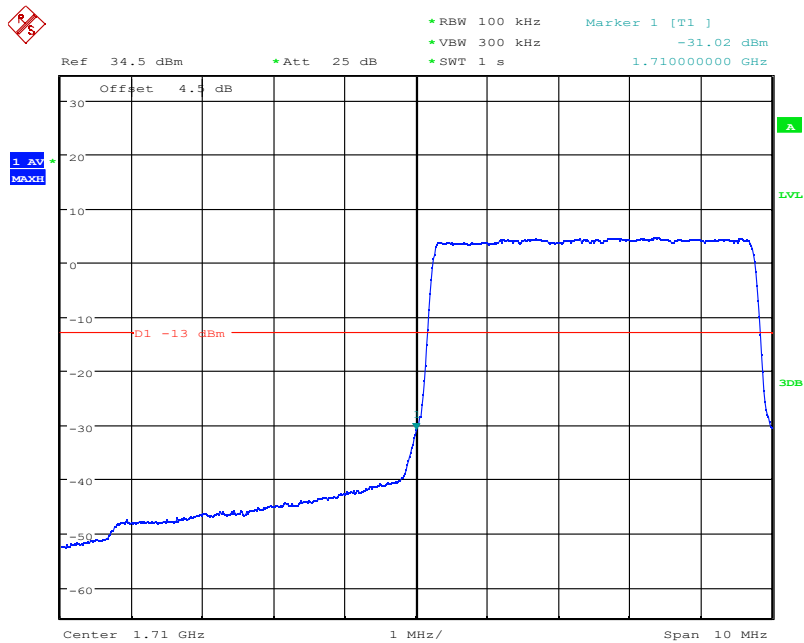


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Date: 14.DEC.2021 19:45:24

LTE Band4, 5MHz bandwidth, QPSK,(1,0) Mode , Below 1710MHz

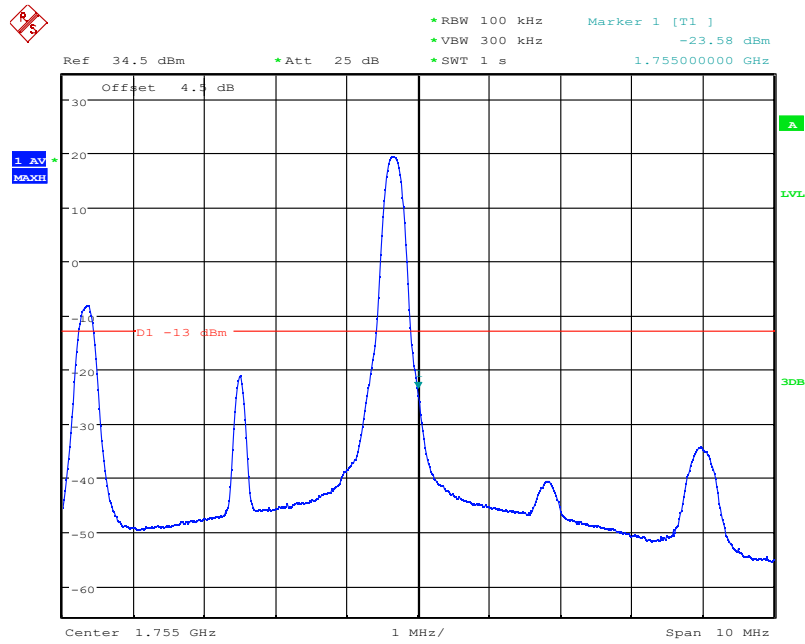


Date: 14.DEC.2021 19:45:46

LTE Band4, 5MHz bandwidth, QPSK,(25,0) Mode , Below 1710MHz

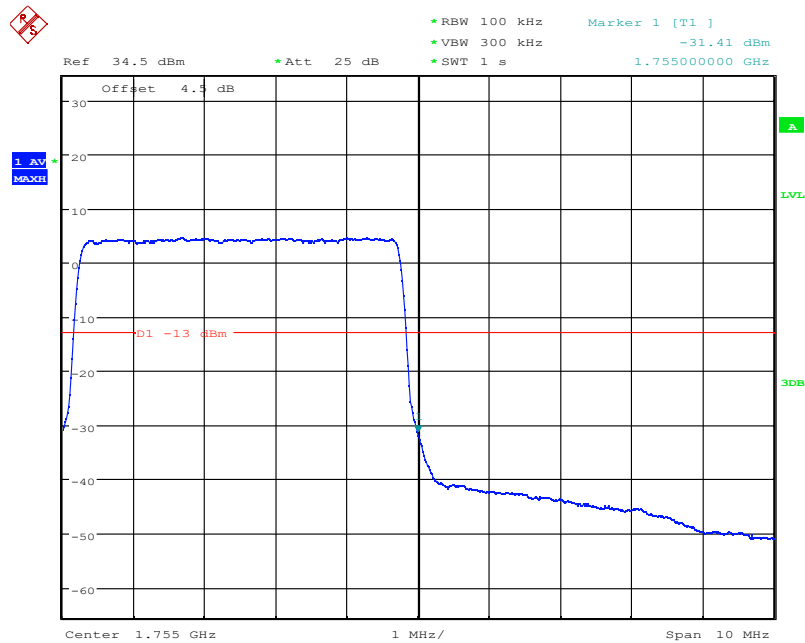
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Date: 14.DEC.2021 19:17:51

LTE Band4, 5MHz bandwidth, QPSK,(1,25) Mode, Above 1755MHz

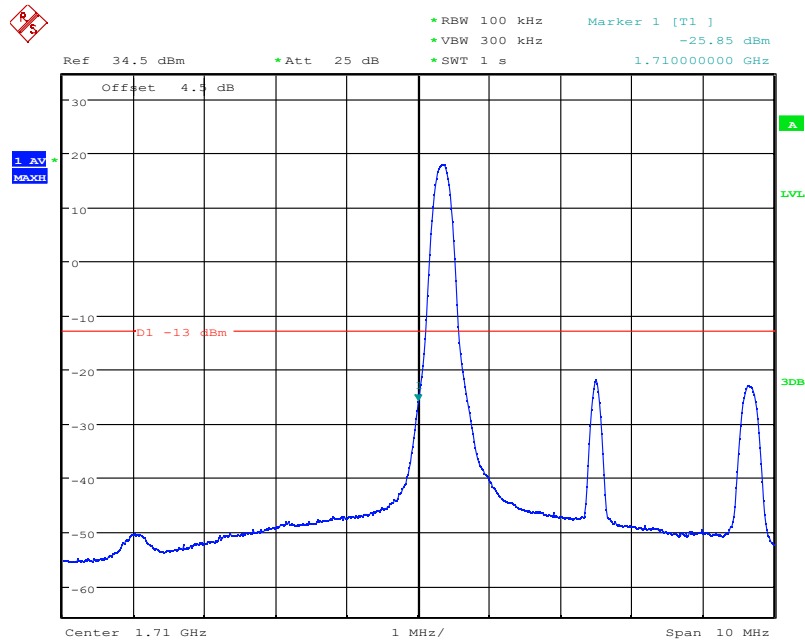


Date: 14.DEC.2021 19:17:20

LTE Band4, 5MHz bandwidth, QPSK,(25,0) Mode, Above 1755MHz

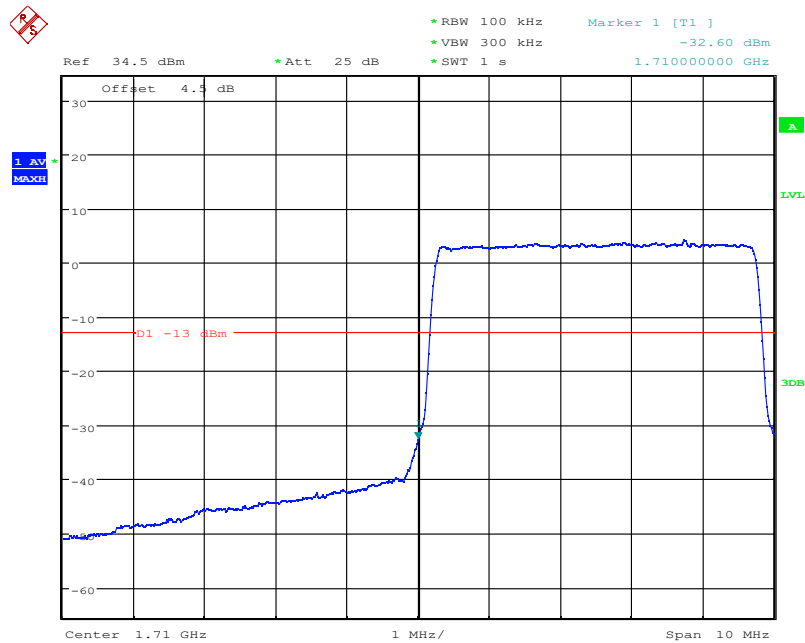
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Date: 14.DEC.2021 19:46:38

LTE Band4, 5MHz bandwidth, 16QAM,(1,0) Mode , Below 1710MHz

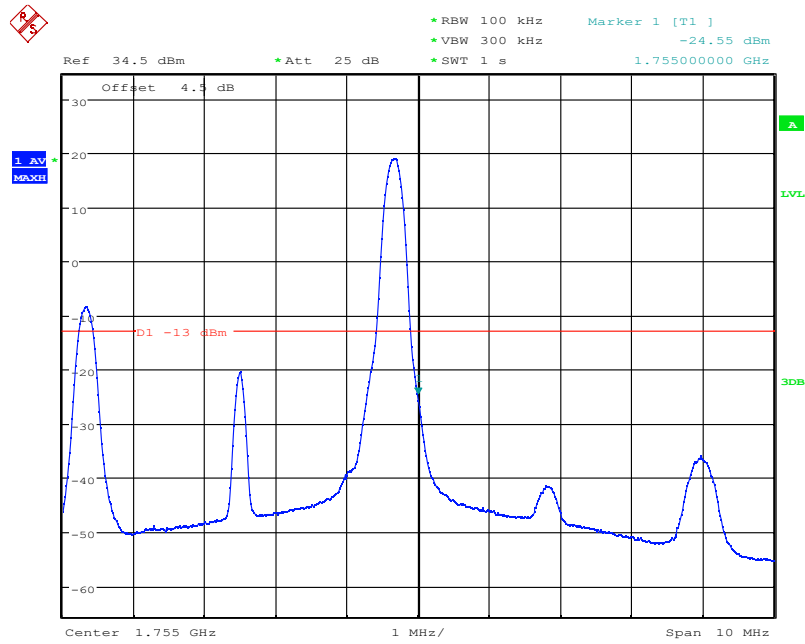


Date: 14.DEC.2021 19:46:12

LTE Band4, 5MHz bandwidth, 16QAM,(25,0) Mode , Below 1710MHz

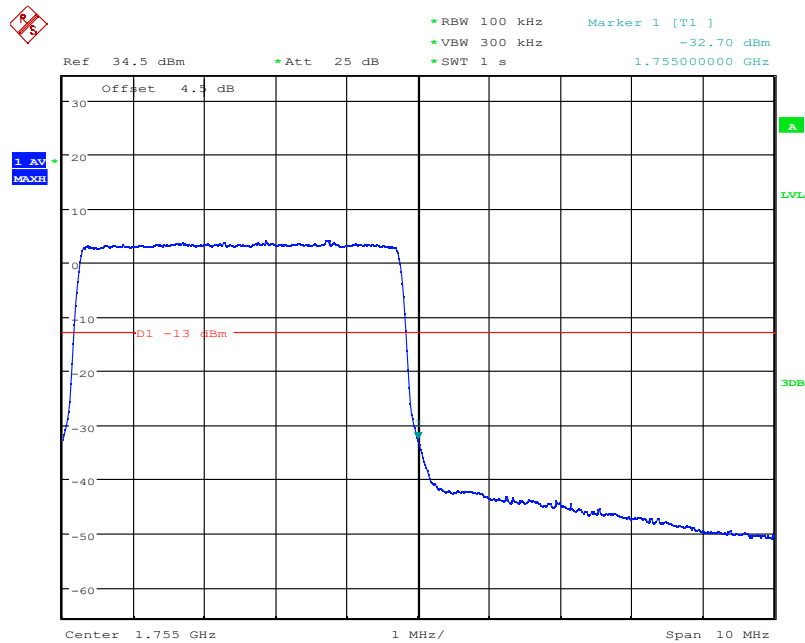
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Date: 14.DEC.2021 19:00:43

LTE Band4, 5MHz bandwidth, 16QAM,(1,25) Mode, Above 1755MHz

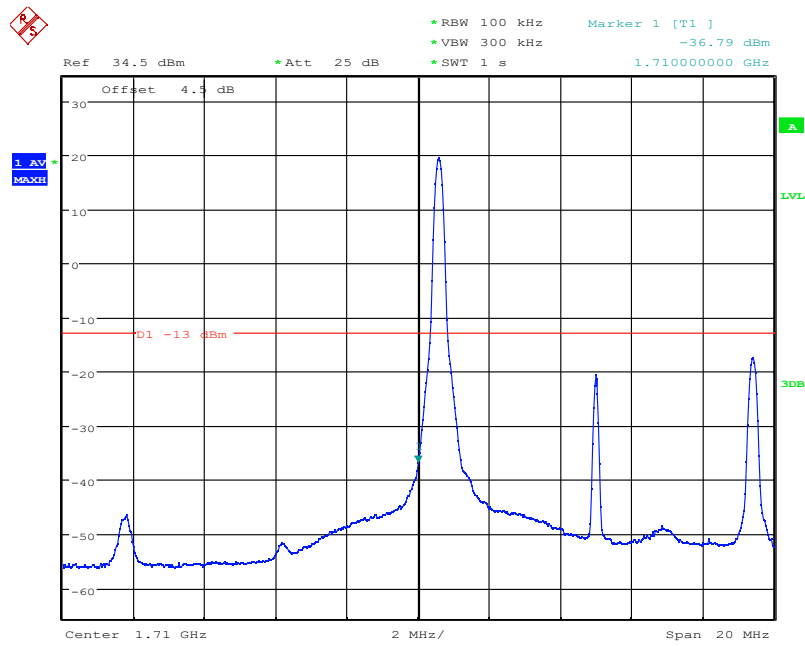


Date: 14.DEC.2021 19:01:09

LTE Band4, 5MHz bandwidth, 16QAM,(25,0) Mode, Above 1755MHz

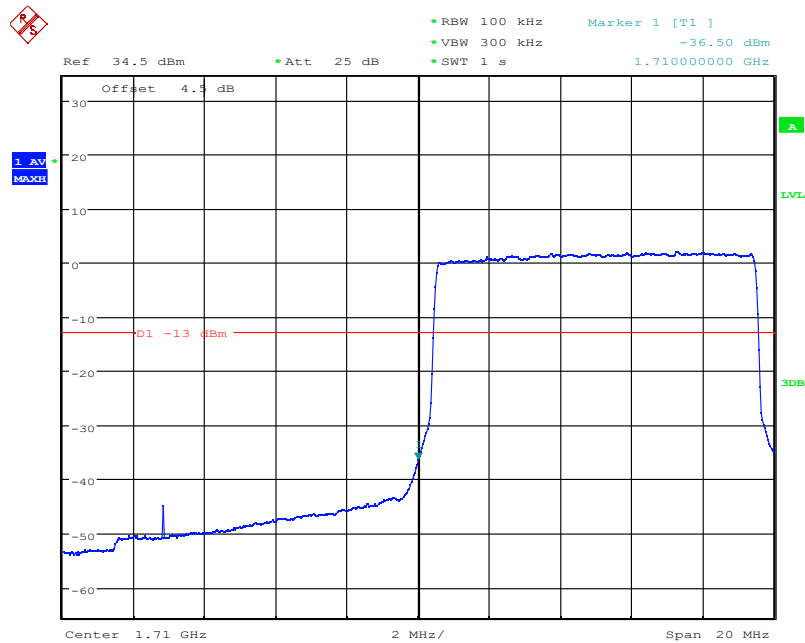
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Date: 14.DEC.2021 19:06:37

LTE Band4, 10MHz bandwidth, QPSK,(1,0) Mode , Below 1710MHz

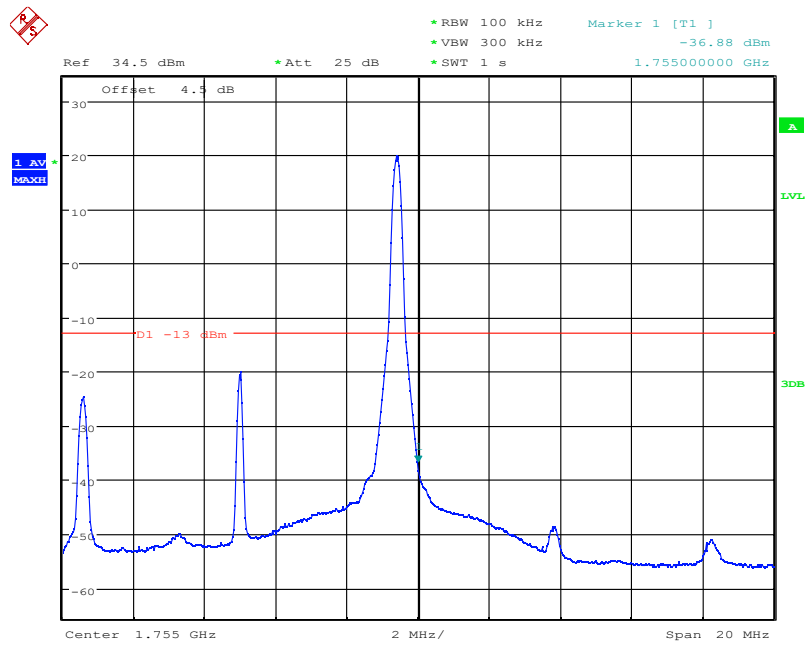


Date: 14.DEC.2021 19:06:10

LTE Band4, 10MHz bandwidth, QPSK,(50,0) Mode , Below 1710MHz

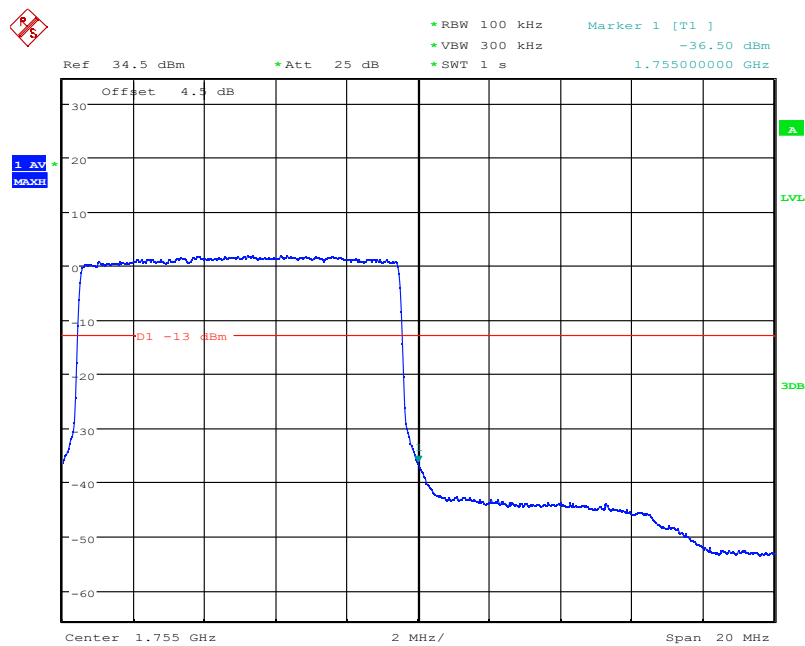
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Date: 14.DEC.2021 19:13:53

LTE Band4, 10MHz bandwidth, QPSK,(1,50) Mode, Above 1755MHz



Date: 14.DEC.2021 19:14:17

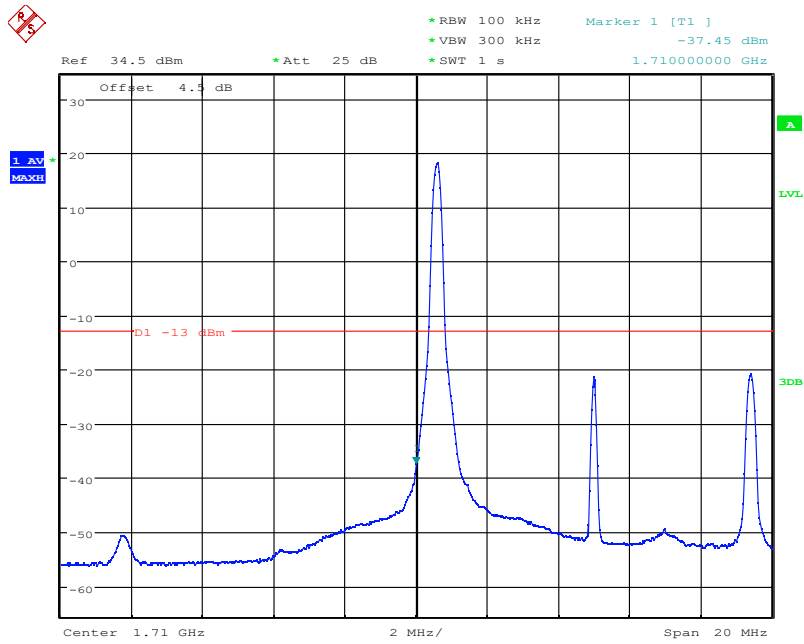
LTE Band4, 10MHz bandwidth, QPSK,(50,0) Mode, Above 1755MHz

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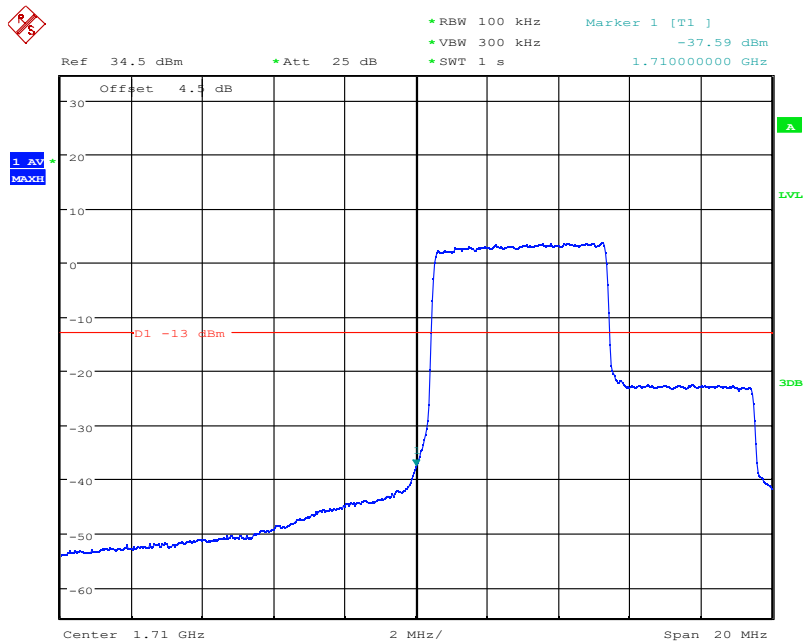


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Date: 14.DEC.2021 19:07:12

LTE Band4, 10MHz bandwidth, 16QAM,(1,0) Mode , Below 1710MHz

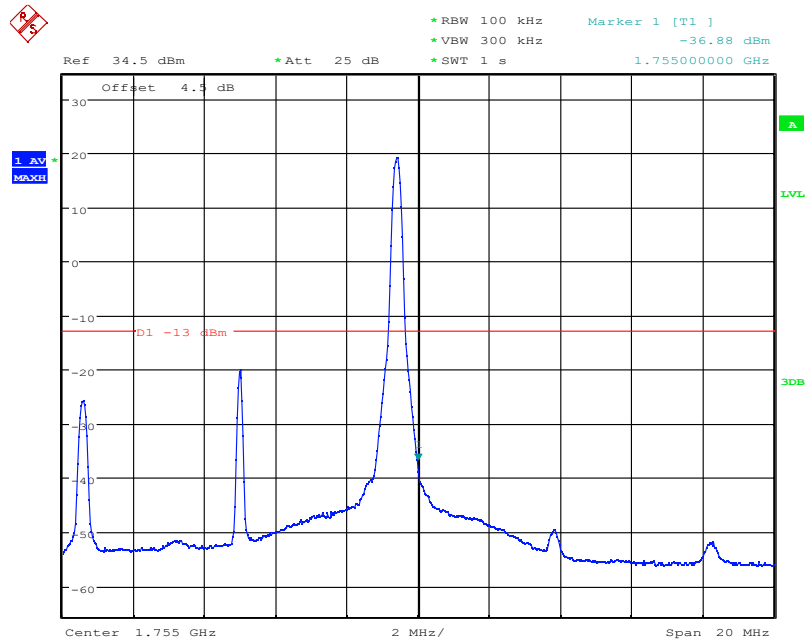


Date: 14.DEC.2021 19:08:46

LTE Band4, 10MHz bandwidth, 16QAM,(27,0) Mode , Below 1710MHz

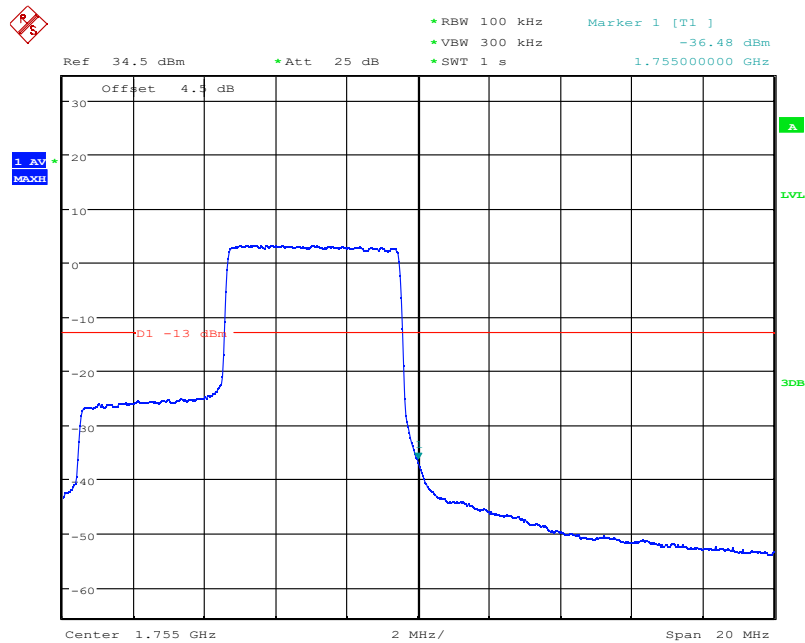
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Date: 14.DEC.2021 19:13:18

LTE Band4, 10MHz bandwidth, 16QAM,(1,50) Mode, Above 1755MHz

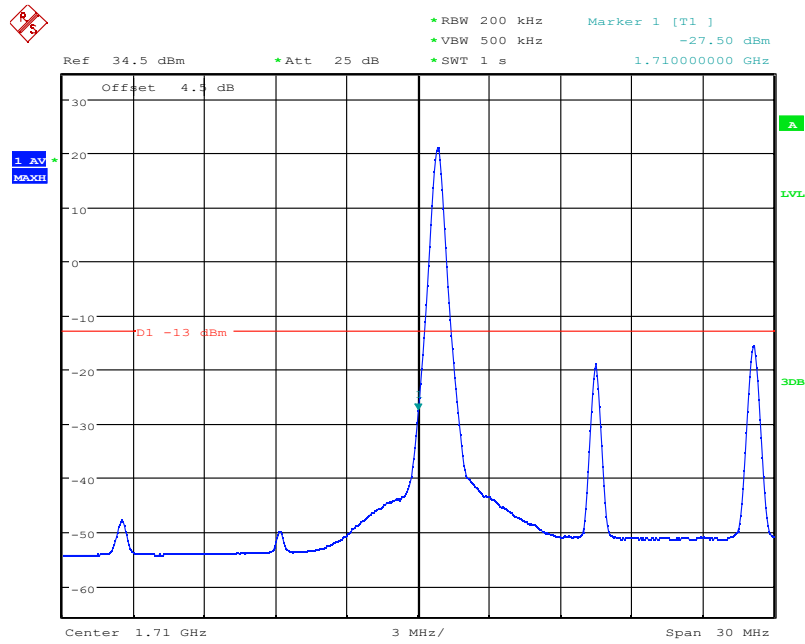


Date: 14.DEC.2021 19:12:52

LTE Band4, 10MHz bandwidth, 16QAM,(27,0) Mode, Above 1755MHz

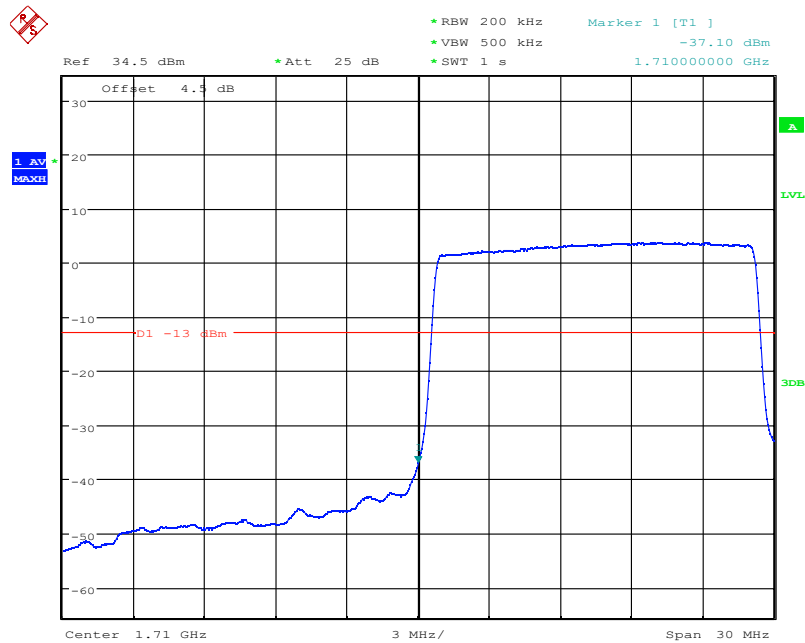
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Date: 14.DEC.2021 19:32:00

LTE Band4, 15MHz bandwidth, QPSK,(1,0) Mode , Below 1710MHz

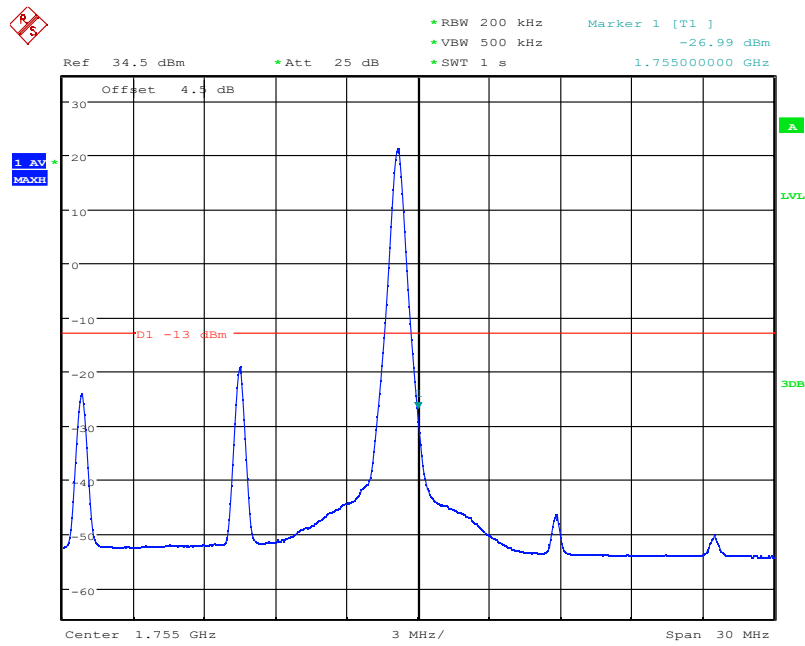


Date: 14.DEC.2021 19:31:20

LTE Band4, 15MHz bandwidth, QPSK,(75,0) Mode , Below 1710MHz

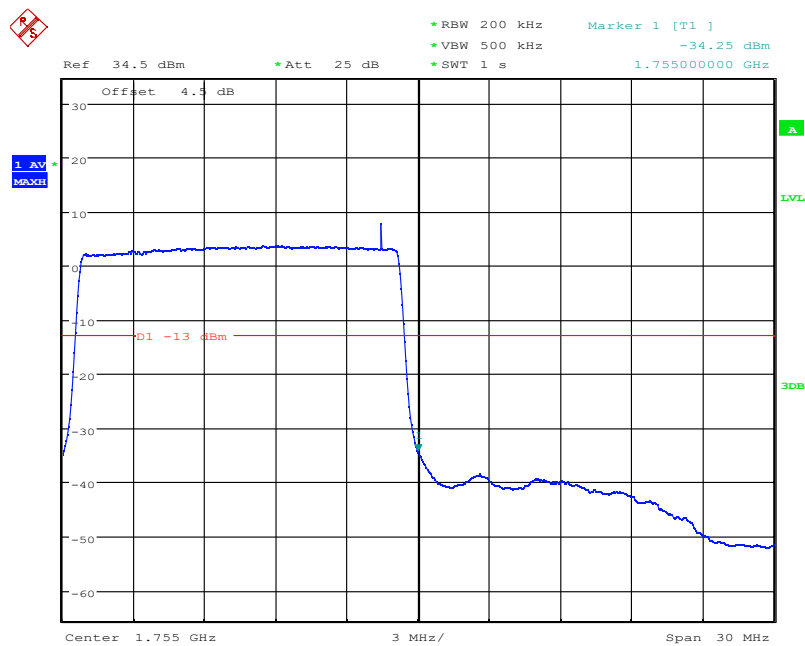
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Date: 14.DEC.2021 19:29:24

LTE Band4, 15MHz bandwidth, QPSK,(1,75) Mode, Above 1755MHz

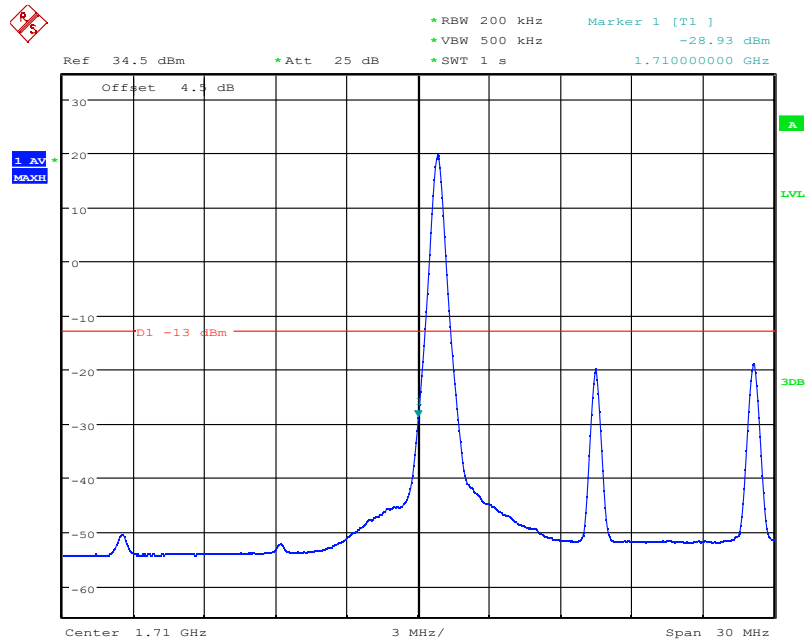


Date: 14.DEC.2021 19:29:47

LTE Band4, 15MHz bandwidth, QPSK,(75,0) Mode, Above 1755MHz

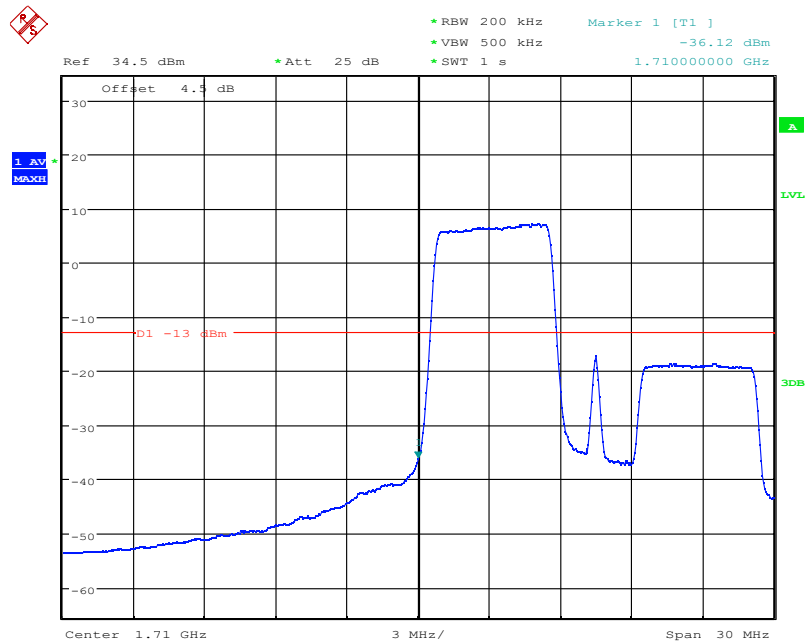
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Date: 14.DEC.2021 19:32:32

LTE Band4, 15MHz bandwidth, 16QAM,(1,0) Mode , Below 1710MHz

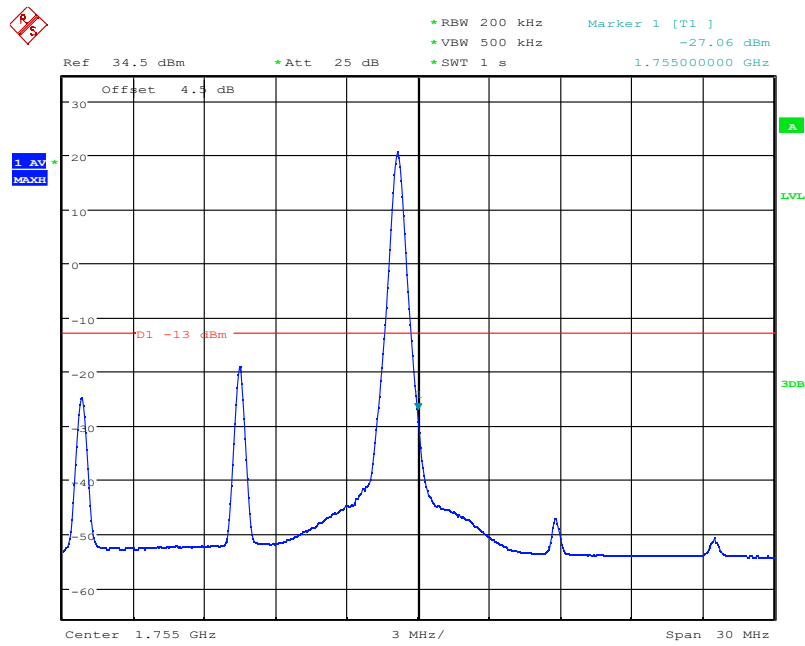


Date: 14.DEC.2021 19:32:56

LTE Band4, 15MHz bandwidth, 16QAM,(27,0) Mode , Below 1710MHz

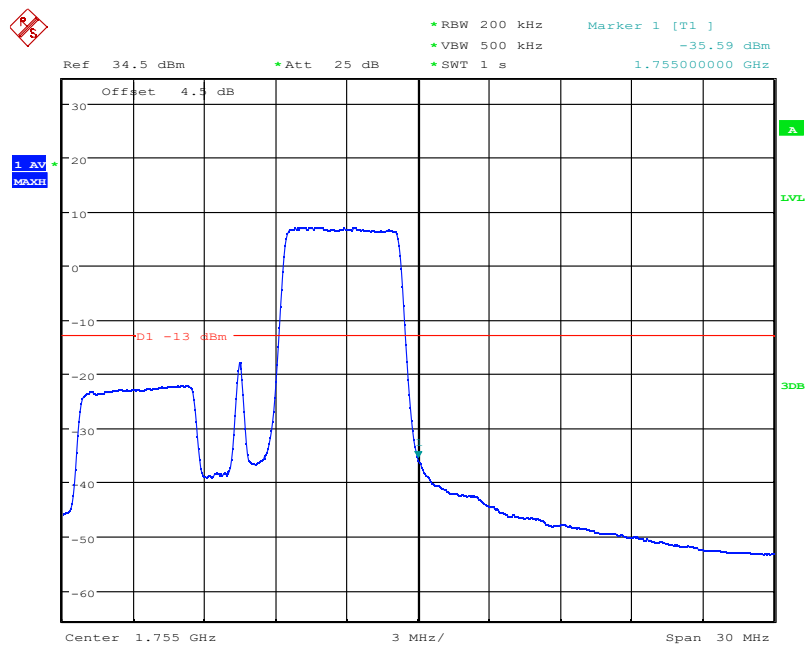
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Date: 14.DEC.2021 19:28:47

LTE Band4, 15MHz bandwidth, 16QAM,(1,75) Mode, Above 1755MHz

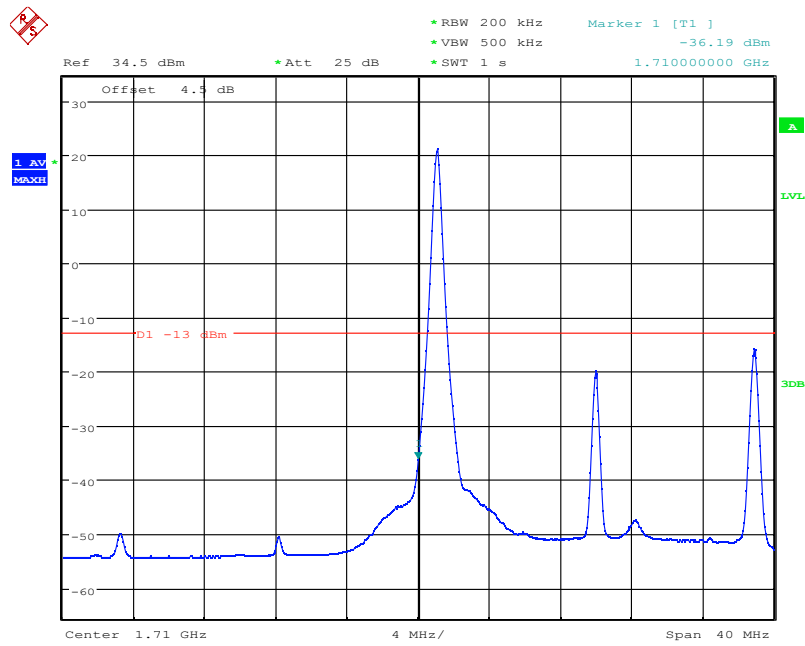


Date: 14.DEC.2021 19:28:11

LTE Band4, 15MHz bandwidth, 16QAM,(27,0) Mode, Above 1755MHz

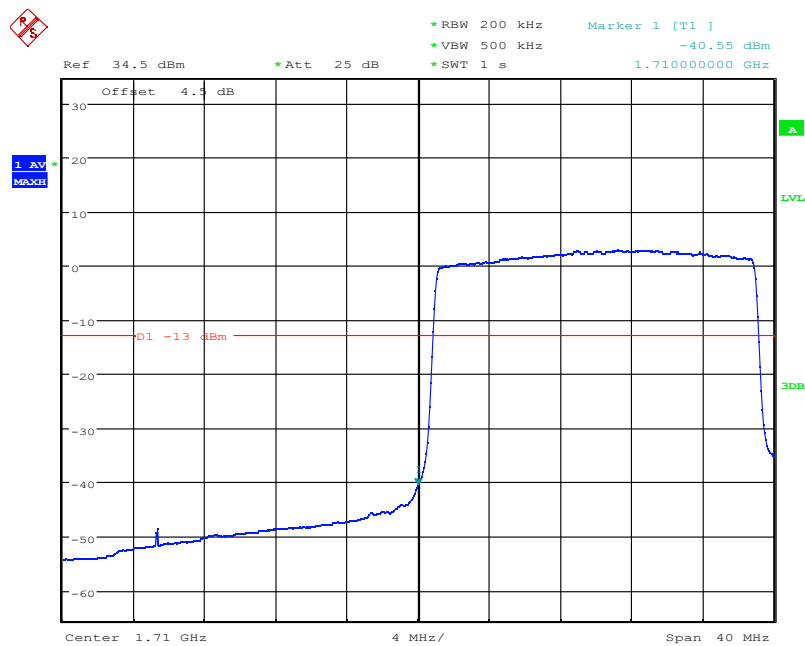
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Date: 14.DEC.2021 19:40:31

LTE Band4, 20MHz bandwidth, QPSK,(1,0) Mode , Below 1710MHz

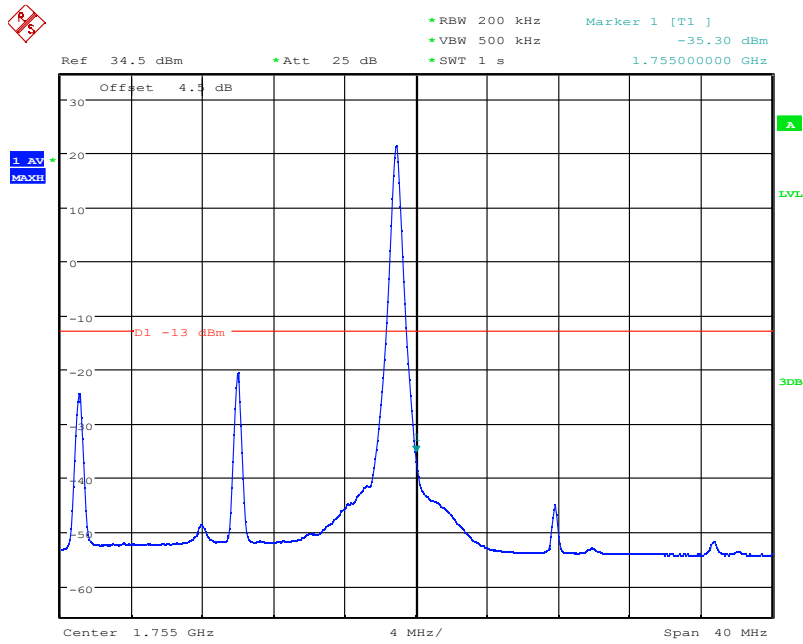


Date: 14.DEC.2021 19:39:55

LTE Band4, 20MHz bandwidth, QPSK,(100,0) Mode , Below 1710MHz

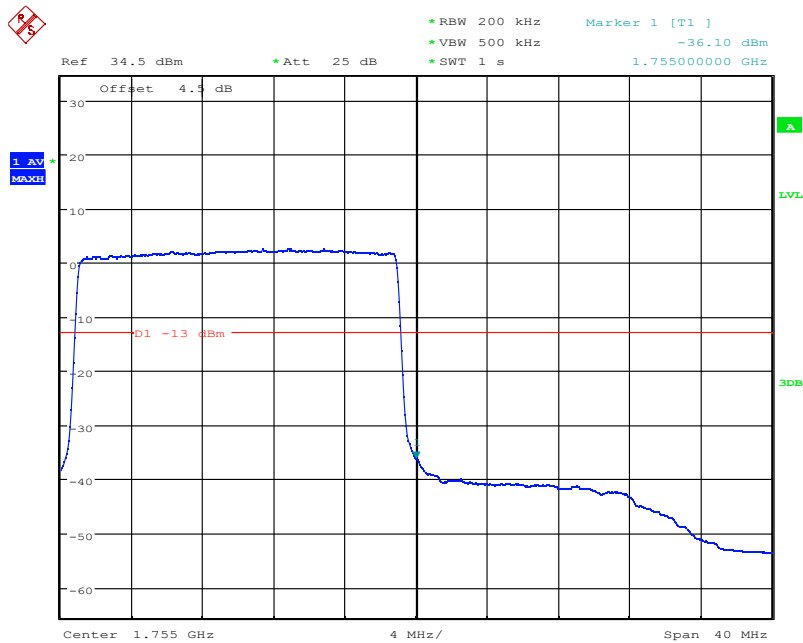
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Date: 14.DEC.2021 19:44:30

LTE Band4, 20MHz bandwidth, QPSK,(1,100) Mode, Above 1755MHz



Date: 14.DEC.2021 19:44:56

LTE Band4, 20MHz bandwidth, QPSK,(100,0) Mode, Above 1755MHz

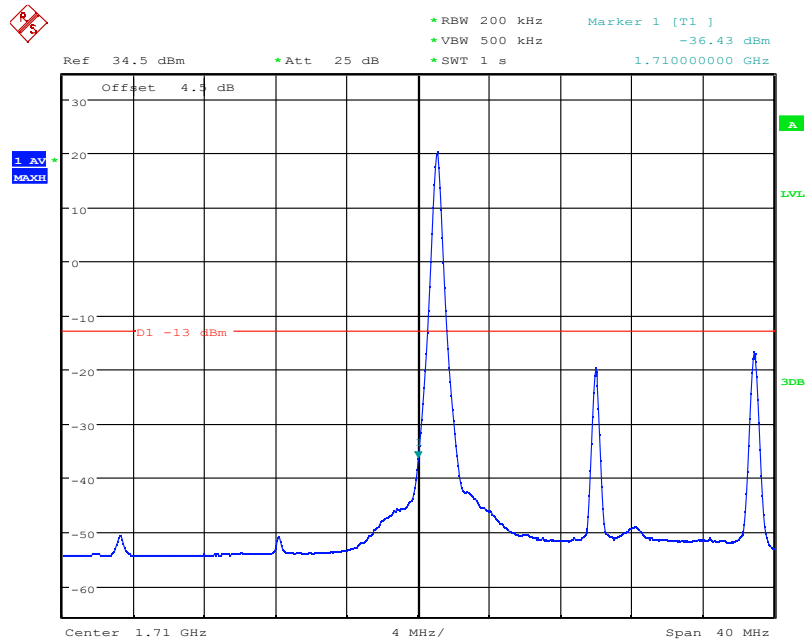
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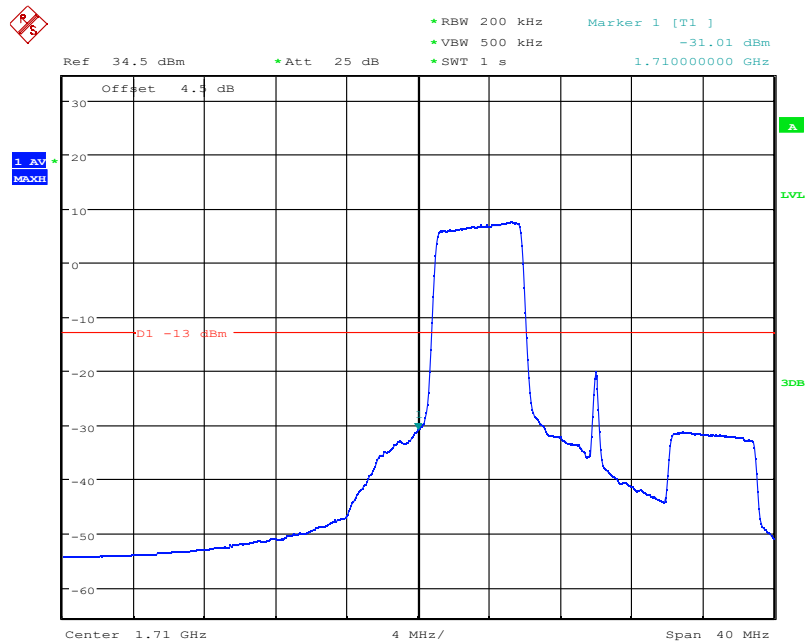


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 19:41:02

LTE Band4, 20MHz bandwidth, 16QAM,(1,0) Mode , Below 1710MHz



Date: 14.DEC.2021 19:41:38

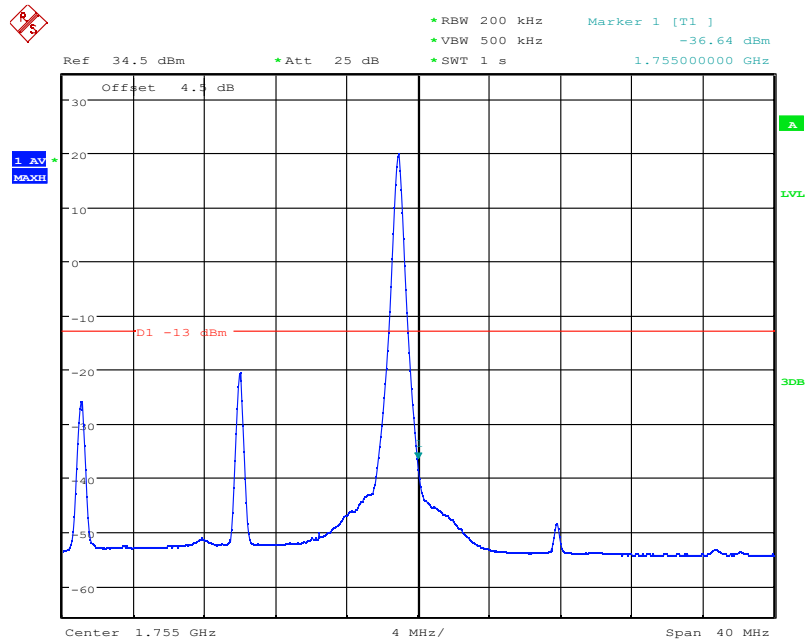
LTE Band4, 20MHz bandwidth, 16QAM,(27,0) Mode , Below 1710MHz

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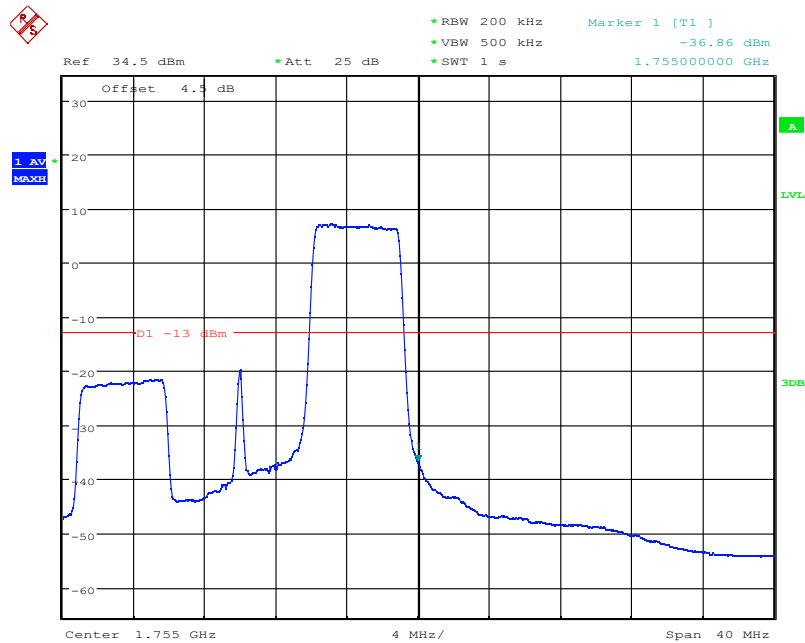


Report No.: I22W00013-WWAN_Rev1



Date: 14.DEC.2021 19:43:53

LTE Band4, 20MHz bandwidth, 16QAM,(1,100) Mode, Above 1755MHz



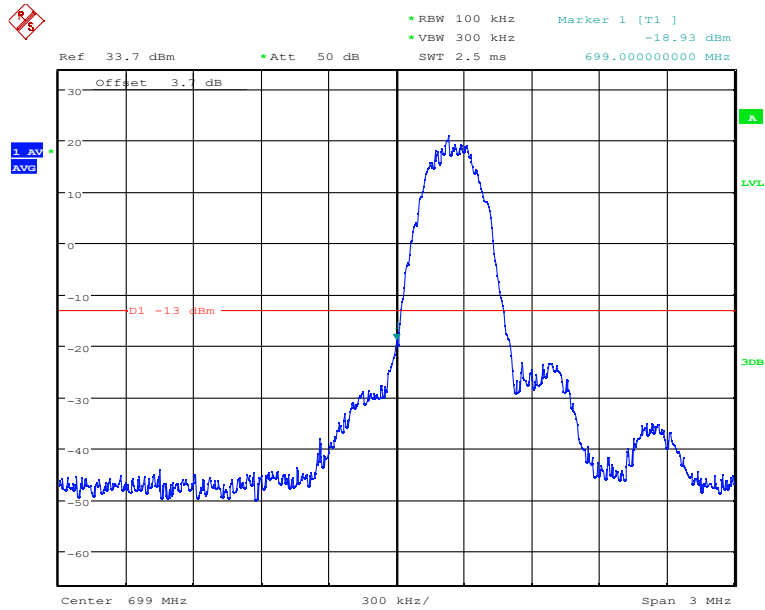
Date: 14.DEC.2021 19:43:28

LTE Band4, 20MHz bandwidth, 16QAM,(27,0) Mode, Above 1755MHz

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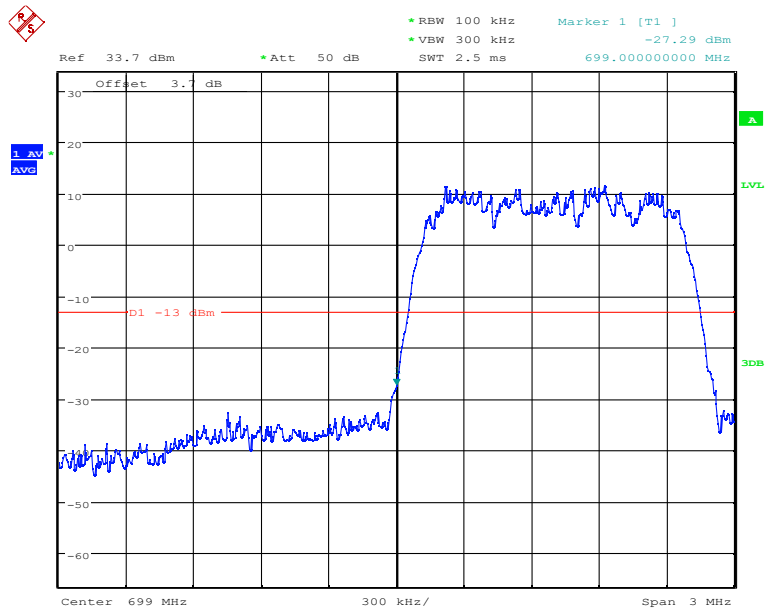
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6.7.3 LTE B12 Band Edge Results



Date: 19.MAR.2022 06:02:56

LTE Band12, 1.4MHz bandwidth, QPSK,(1,0) Mode , Below 699MHz



Date: 19.MAR.2022 06:03:22

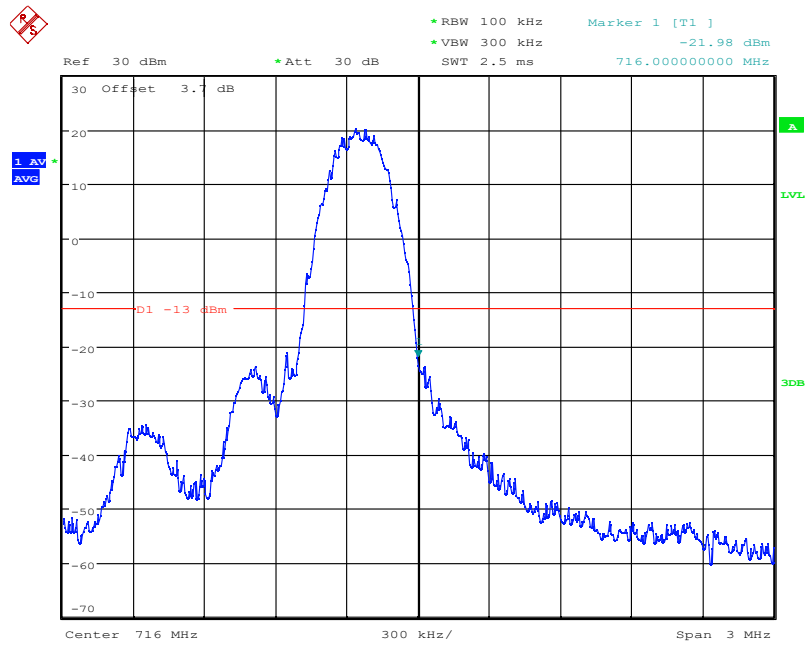
LTE Band12, 1.4MHz bandwidth, QPSK,(6,0) Mode , Below 699MHz

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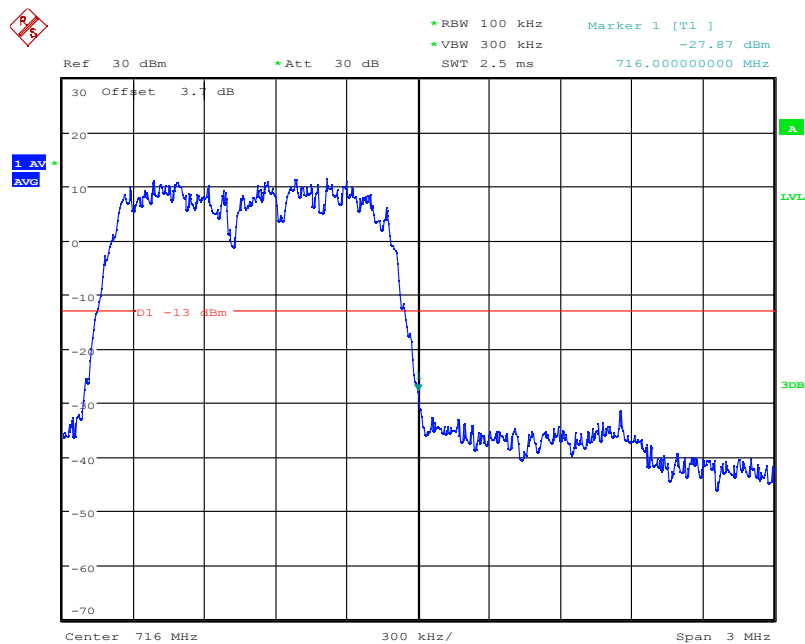


Report No.: I22W00013-WWAN_Rev1



Date: 19.MAR.2022 06:05:56

LTE Band12, 1.4MHz bandwidth, QPSK,(1,6) Mode, Above 716MHz



Date: 19.MAR.2022 06:06:16

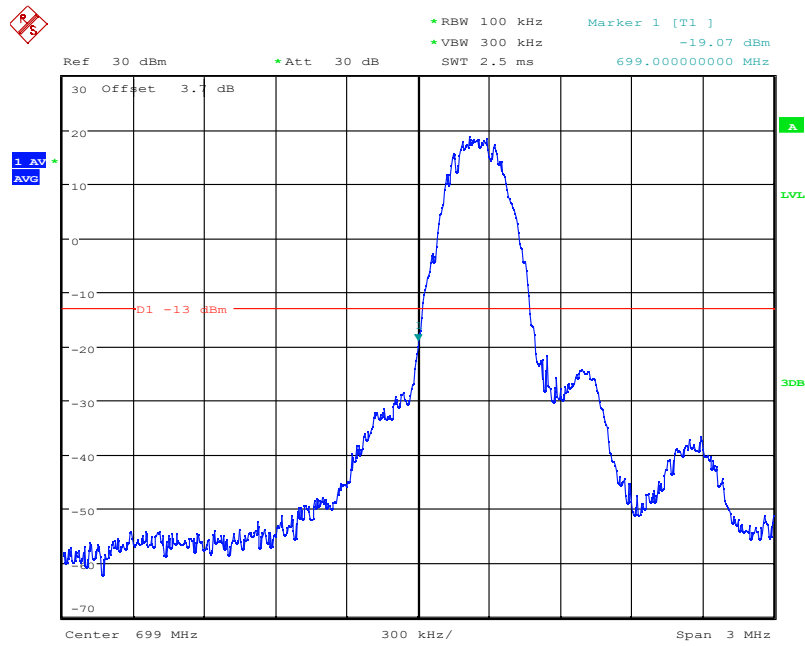
LTE Band12, 1.4MHz bandwidth, QPSK,(6,0) Mode, Above 716MHz

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Tel: 0086-23-88069965 FAX:0086-23-88608777

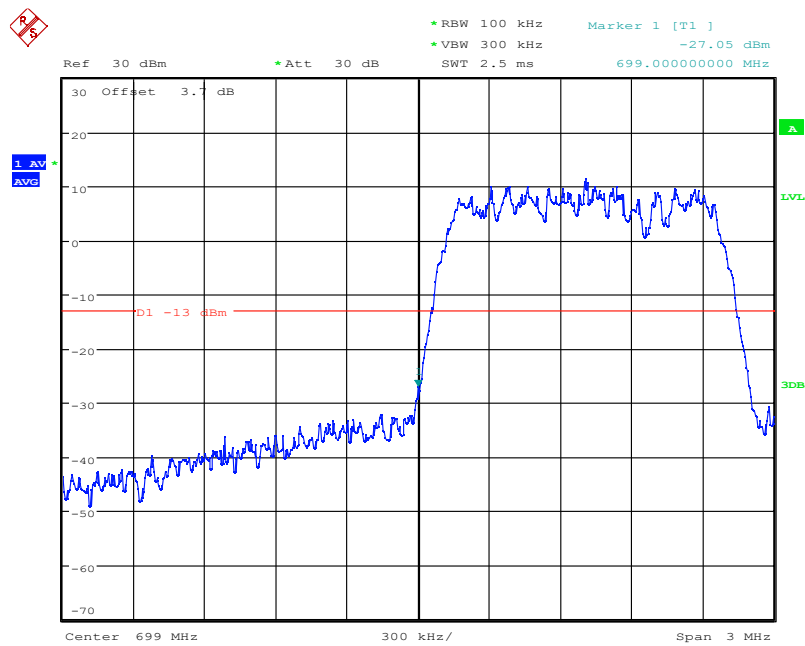


Report No.: I22W00013-WWAN_Rev1



Date: 19.MAR.2022 06:05:04

LTE Band12, 1.4MHz bandwidth, 16QAM,(1,0) Mode , Below 699MHz

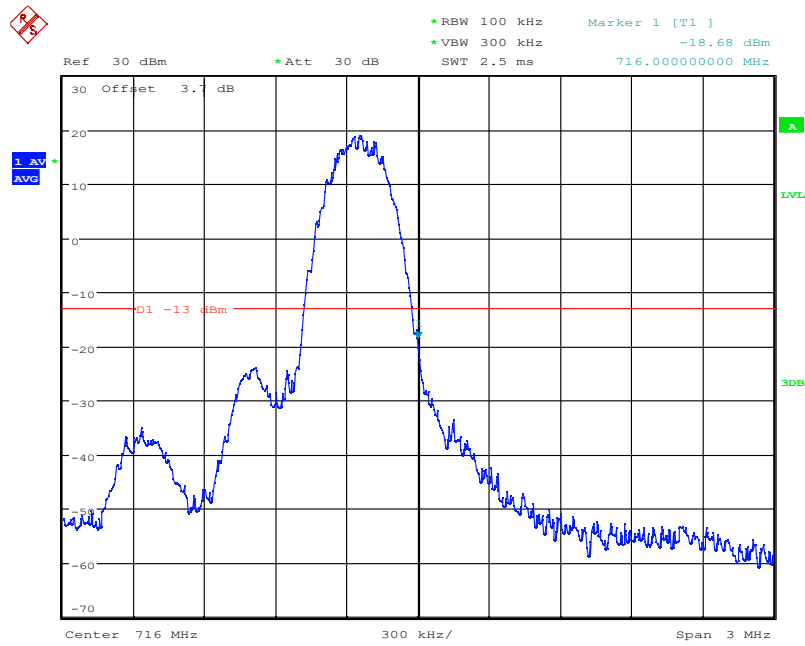


Date: 19.MAR.2022 06:04:33

LTE Band12, 1.4MHz bandwidth, 16QAM,(6,0) Mode , Below 699MHz

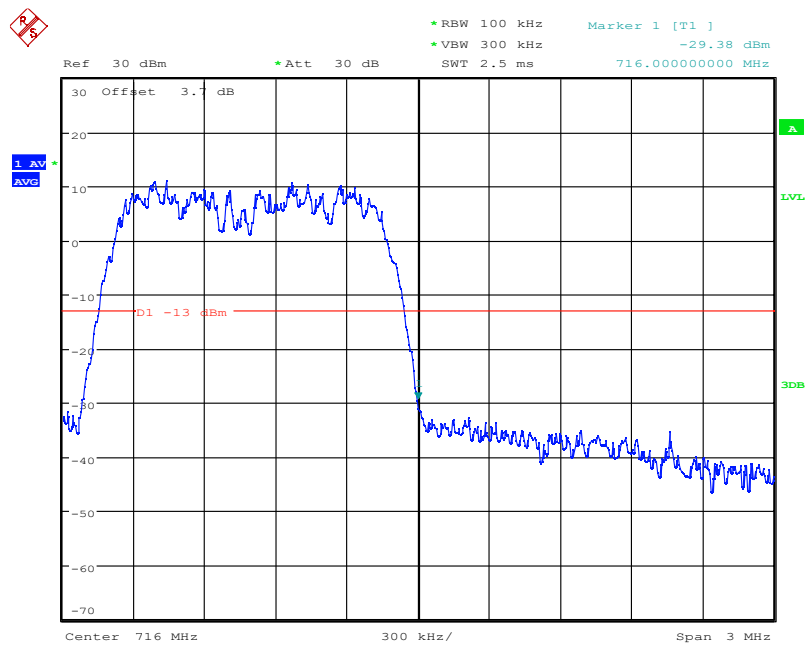
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Date: 19.MAR.2022 06:06:41

LTE Band12, 1.4MHz bandwidth, 16QAM,(1,6) Mode, Above 716MHz



Date: 19.MAR.2022 06:06:30

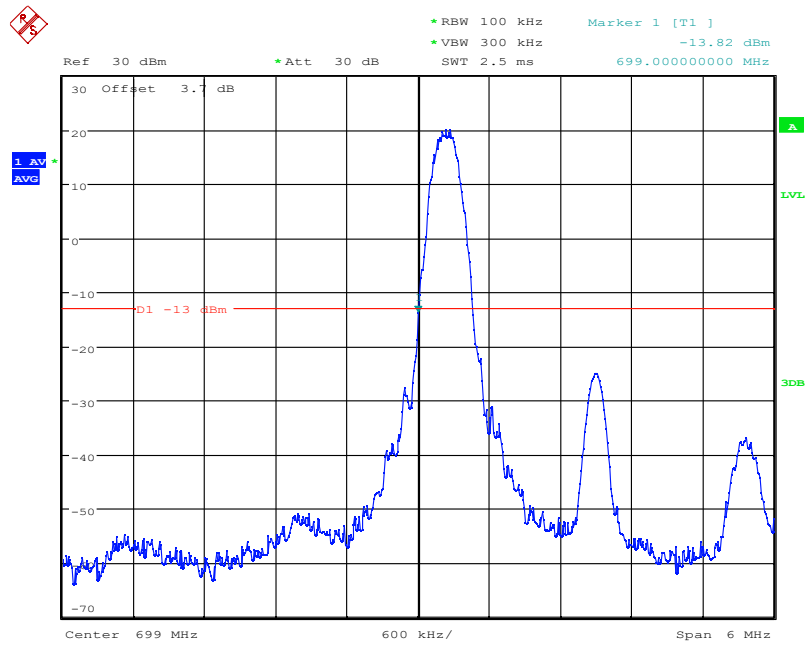
LTE Band12, 1.4MHz bandwidth, 16QAM,(6,0) Mode, Above 716MHz

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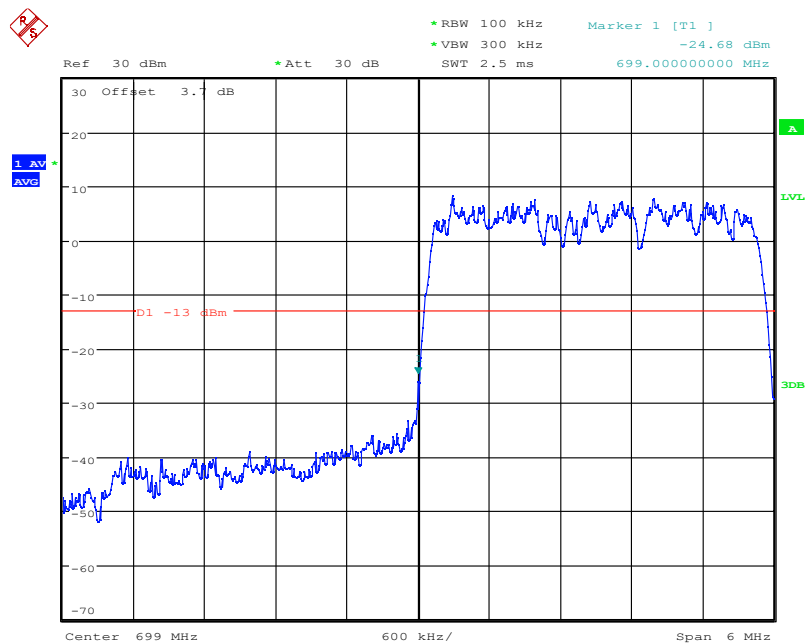


Report No.: I22W00013-WWAN_Rev1



Date: 19.MAR.2022 06:09:05

LTE Band12, 3MHz bandwidth, QPSK,(1,0) Mode , Below 699MHz

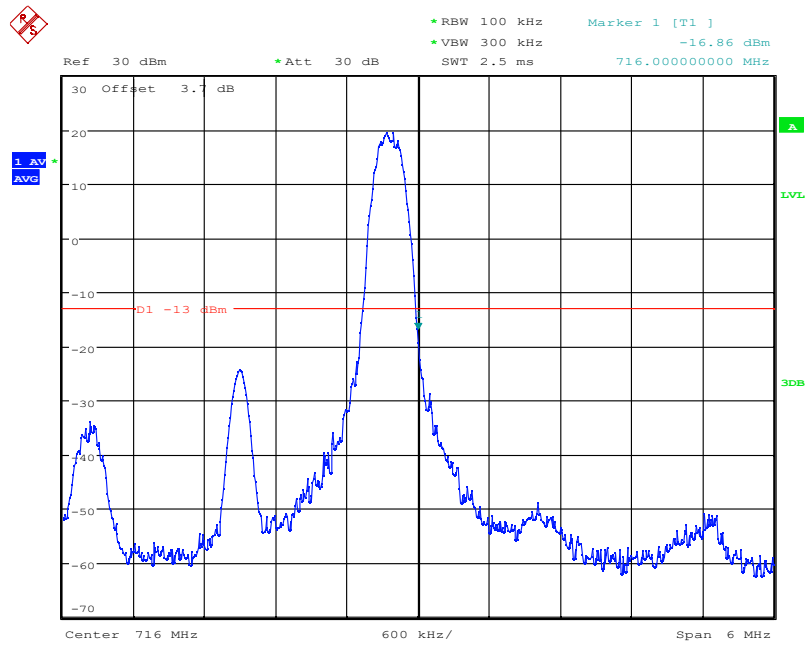


Date: 19.MAR.2022 06:08:43

LTE Band12, 3MHz bandwidth, QPSK,(15,0) Mode , Below 699MHz

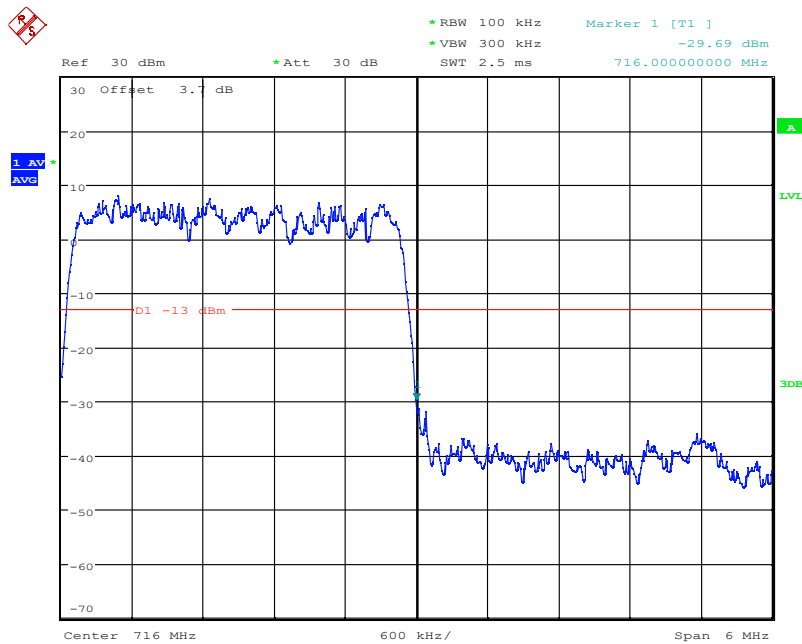
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Date: 19.MAR.2022 06:11:11

LTE Band12, 3MHz bandwidth, QPSK,(1,15) Mode, Above 716MHz

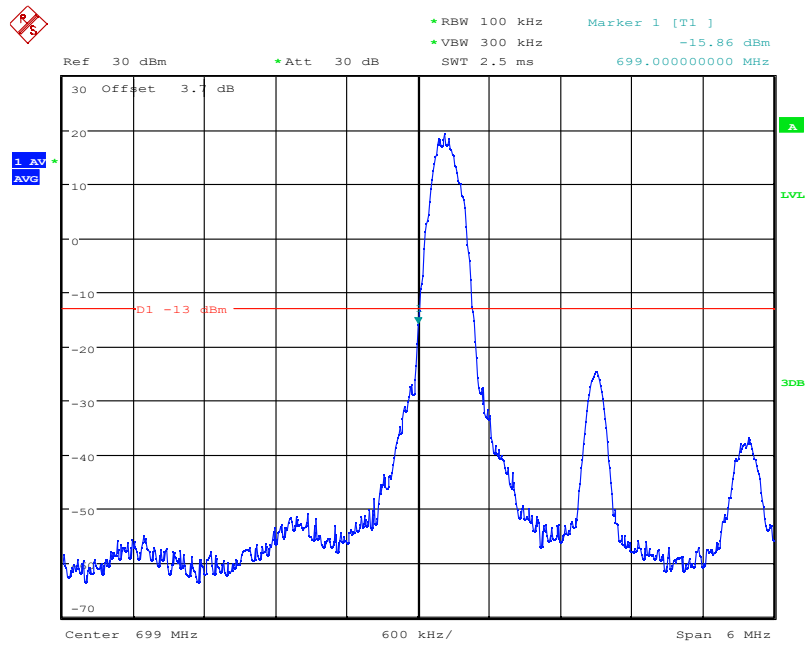


Date: 19.MAR.2022 06:11:22

LTE Band12, 3MHz bandwidth, QPSK,(15,0) Mode, Above 716MHz

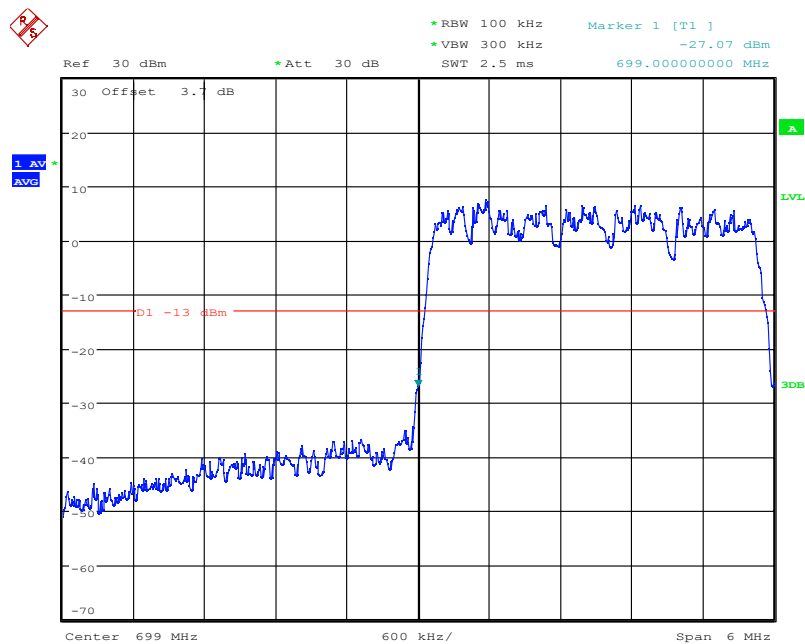
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Tel: 0086-23-88069965 FAX:0086-23-88608777



Date: 19.MAR.2022 06:09:27

LTE Band12, 3MHz bandwidth, 16QAM,(1,0) Mode , Below 699MHz

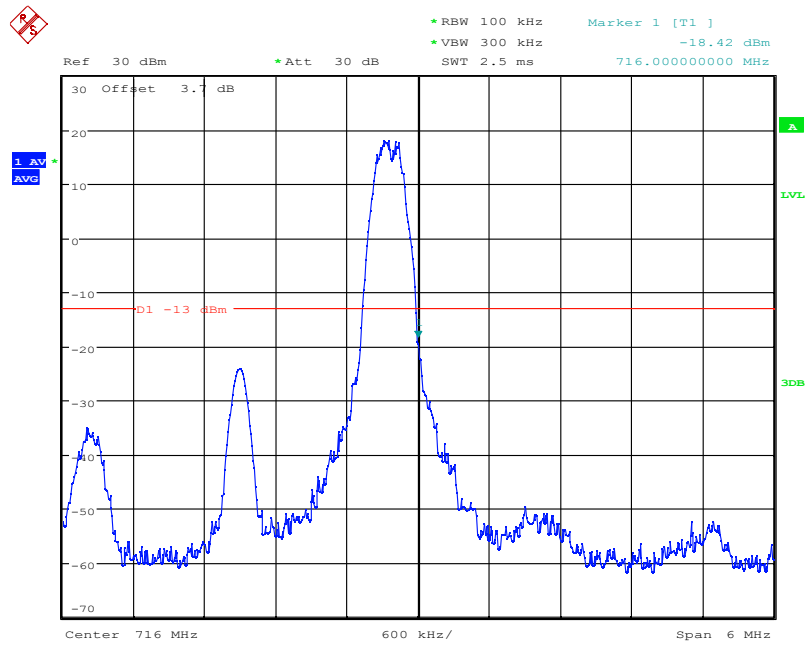


Date: 19.MAR.2022 06:09:53

LTE Band12, 3MHz bandwidth, 16QAM,(15,0) Mode , Below 699MHz

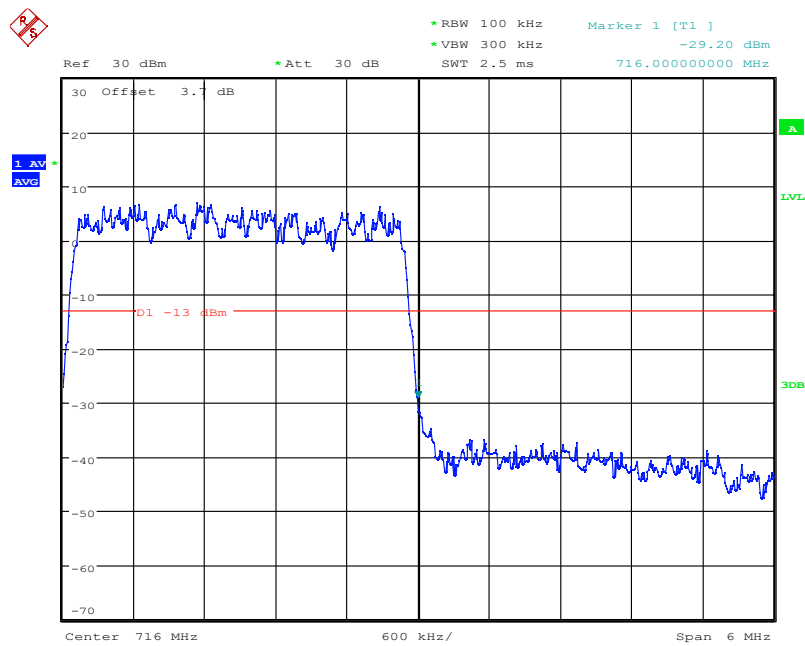
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Date: 19.MAR.2022 06:11:47

LTE Band12, 3MHz bandwidth, 16QAM,(1,15) Mode, Above 716MHz

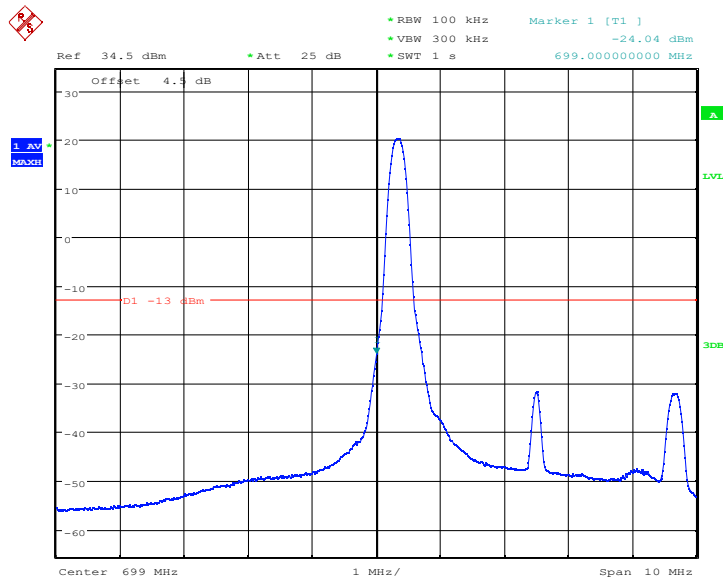


Date: 19.MAR.2022 06:11:34

LTE Band12, 3MHz bandwidth, 16QAM,(15,0) Mode, Above 716MHz

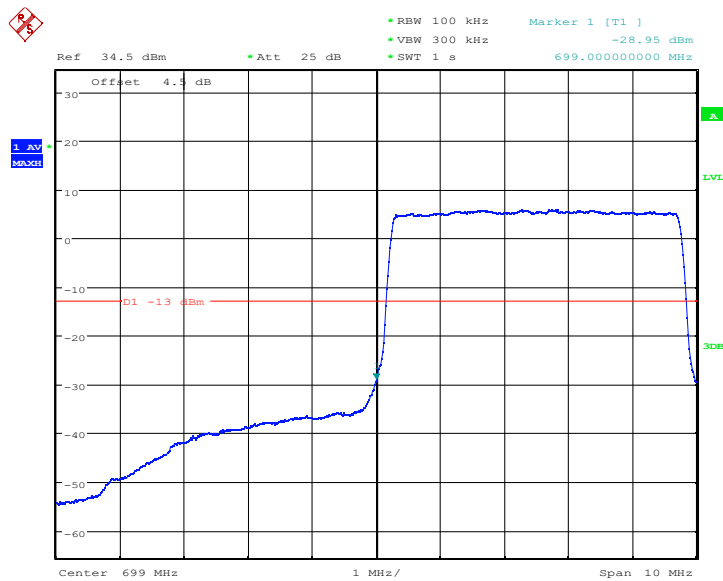
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Date: 14.DEC.2021 20:11:32

LTE Band12, 5MHz bandwidth, QPSK,(1,0) Mode , Below 699MHz

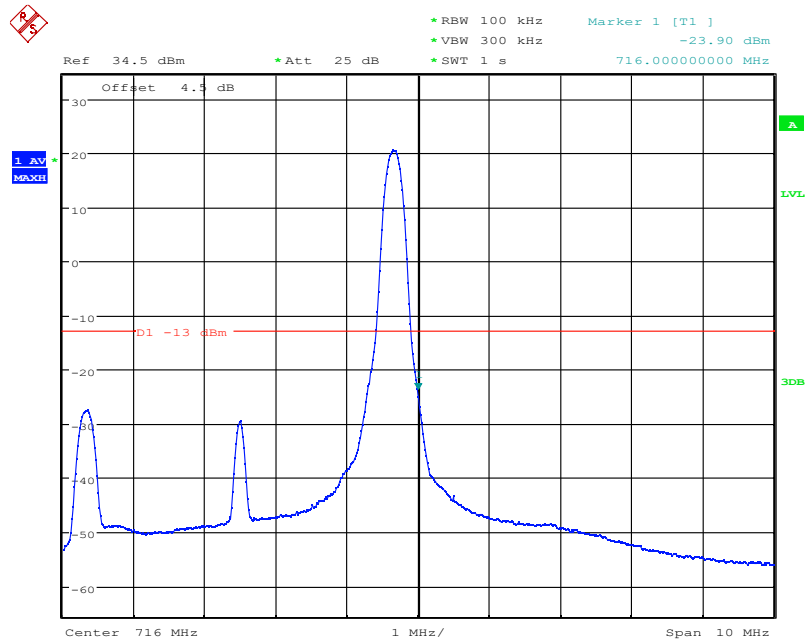


Date: 14.DEC.2021 20:11:53

LTE Band12, 5MHz bandwidth, QPSK,(25,0) Mode , Below 699MHz

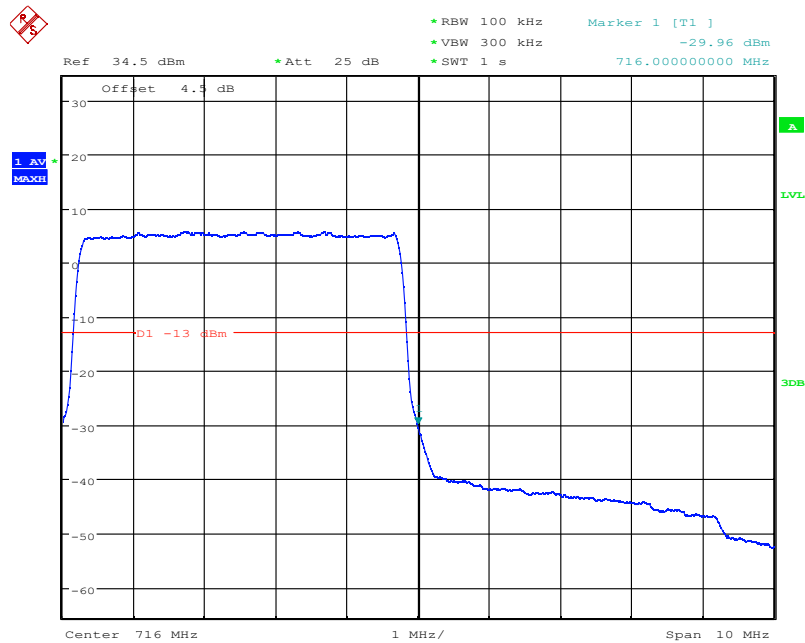
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Date: 14.DEC.2021 20:15:53

LTE Band12, 5MHz bandwidth, QPSK,(1,25) Mode, Above 716MHz

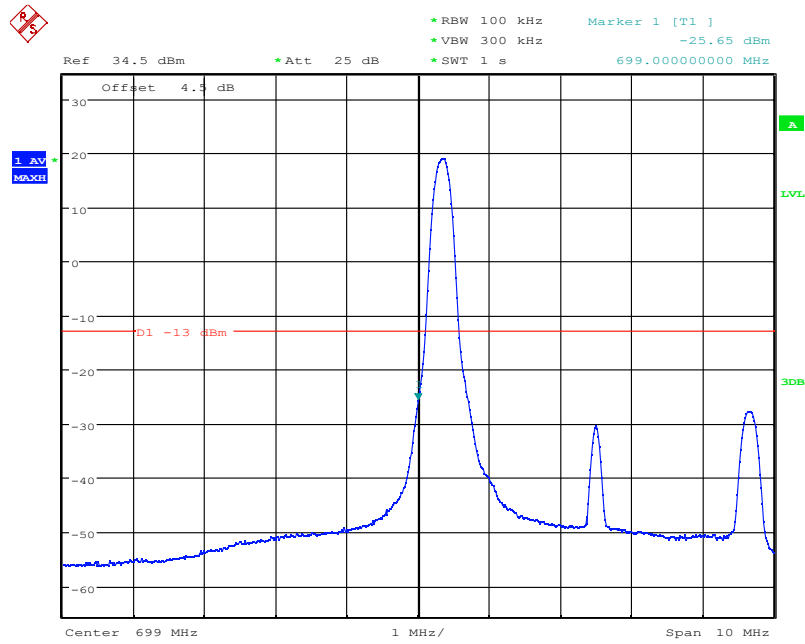


Date: 14.DEC.2021 20:15:14

LTE Band12, 5MHz bandwidth, QPSK,(25,0) Mode, Above 716MHz

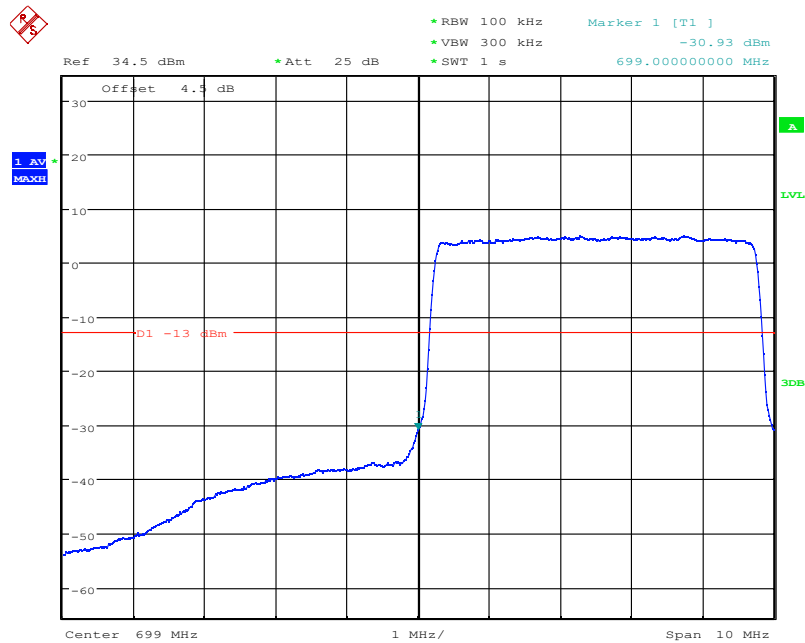
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Date: 14.DEC.2021 20:12:53

LTE Band12, 5MHz bandwidth, 16QAM,(1,0) Mode , Below 699MHz

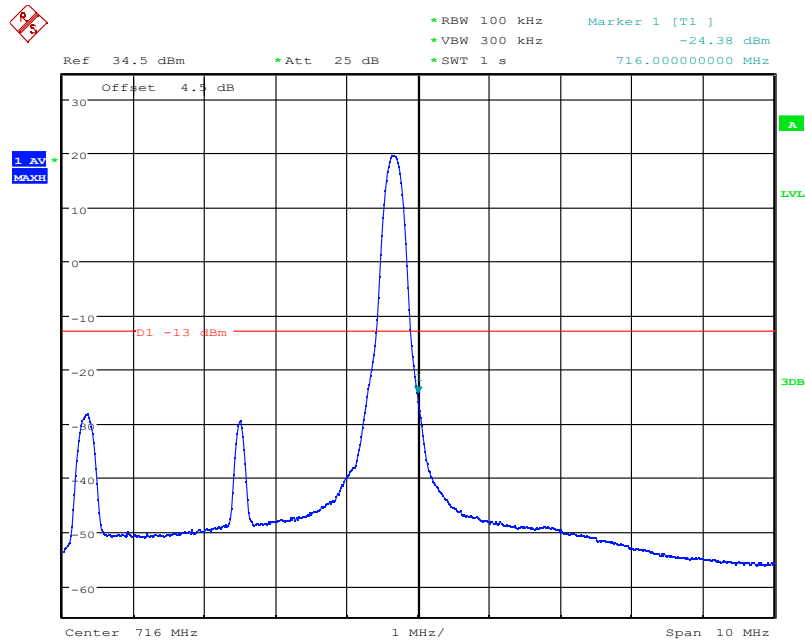


Date: 14.DEC.2021 20:12:21

LTE Band12, 5MHz bandwidth, 16QAM,(25,0) Mode , Below 699MHz

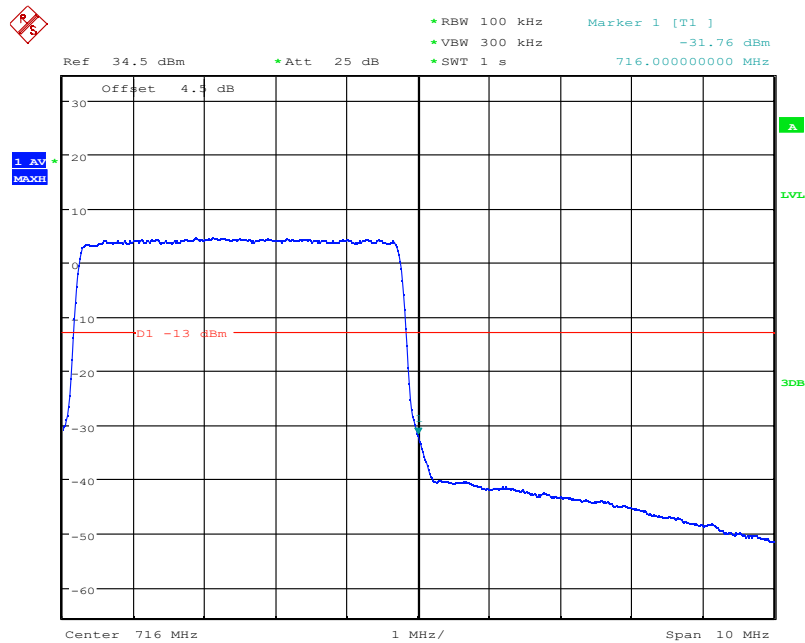
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Date: 14.DEC.2021 20:14:20

LTE Band12, 5MHz bandwidth, 16QAM,(1,25) Mode, Above 716MHz

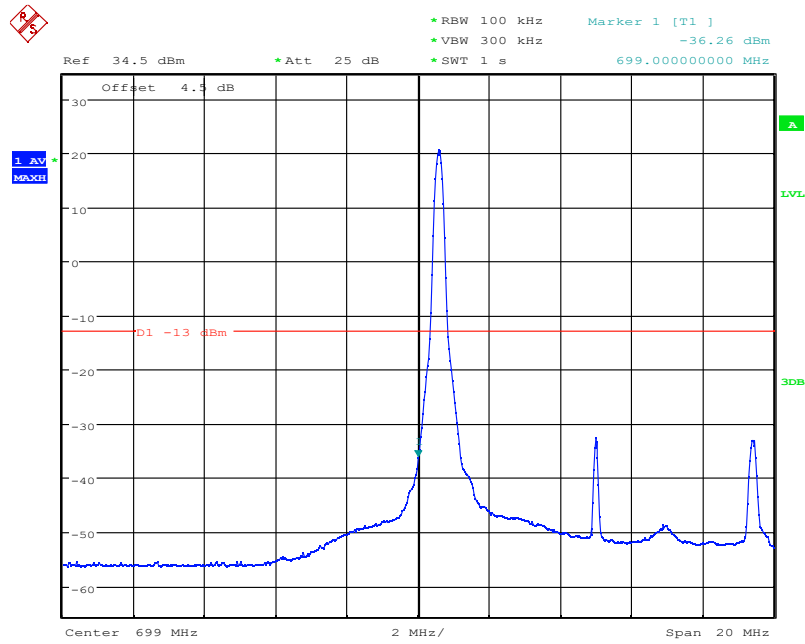


Date: 14.DEC.2021 20:14:44

LTE Band12, 5MHz bandwidth, 16QAM,(25,0) Mode, Above 716MHz

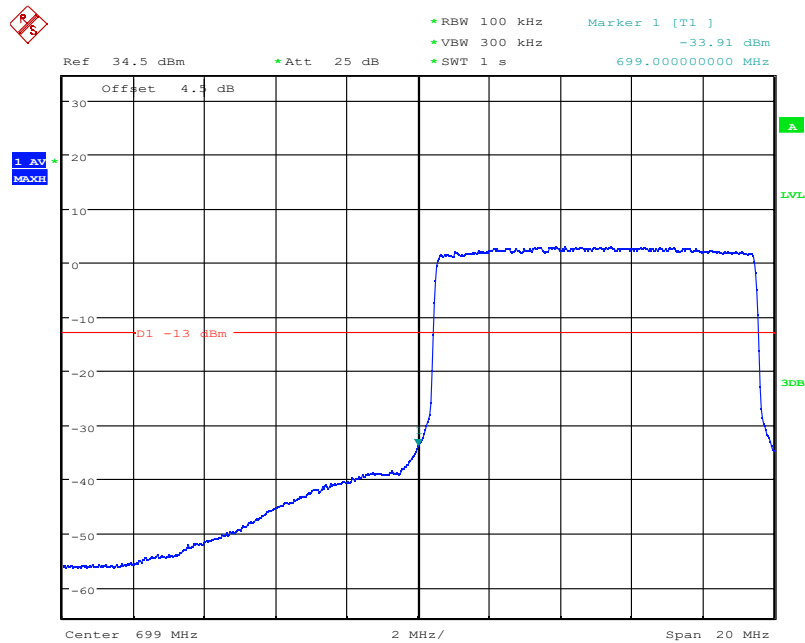
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Date: 14.DEC.2021 20:30:11

LTE Band12, 10MHz bandwidth, QPSK,(1,0) Mode , Below 699MHz

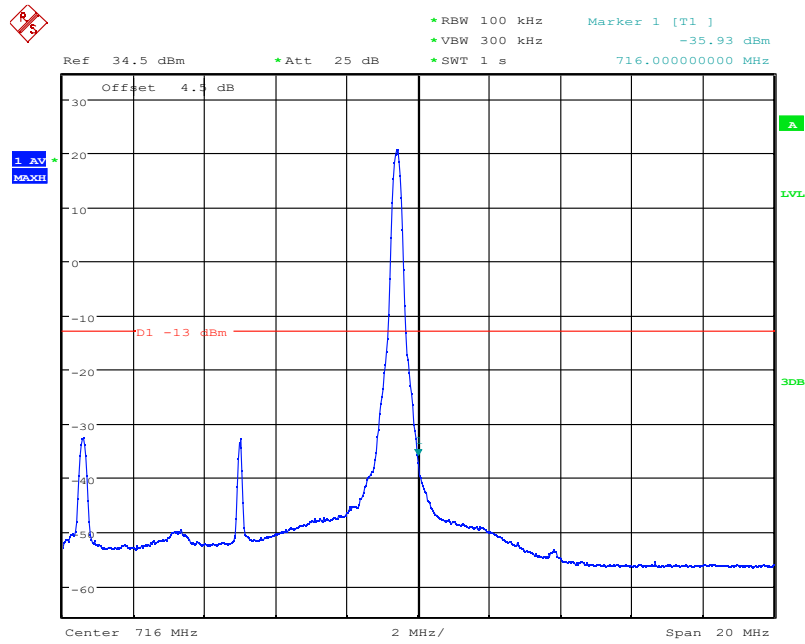


Date: 14.DEC.2021 20:30:36

LTE Band12, 10MHz bandwidth, QPSK,(50,0) Mode , Below 699MHz

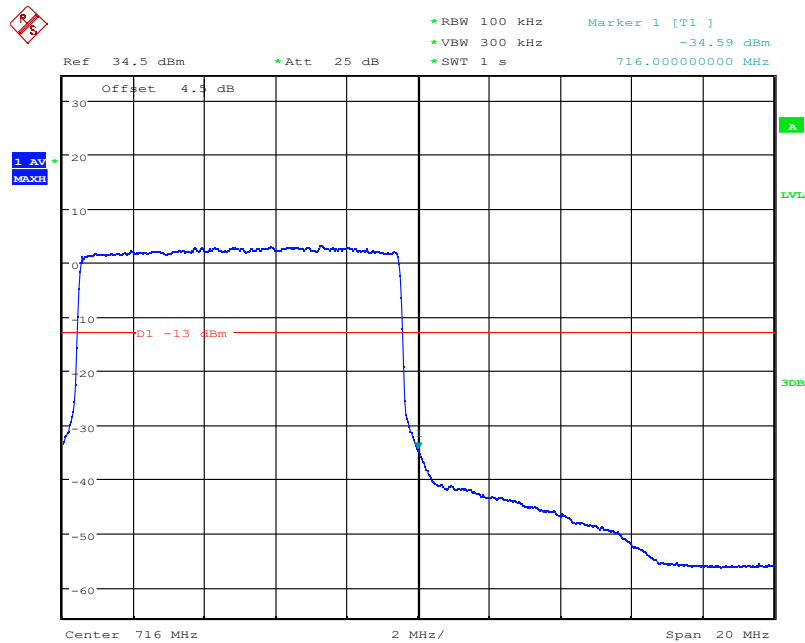
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Date: 14.DEC.2021 20:19:38

LTE Band12, 10MHz bandwidth, QPSK,(1,50) Mode, Above 716MHz

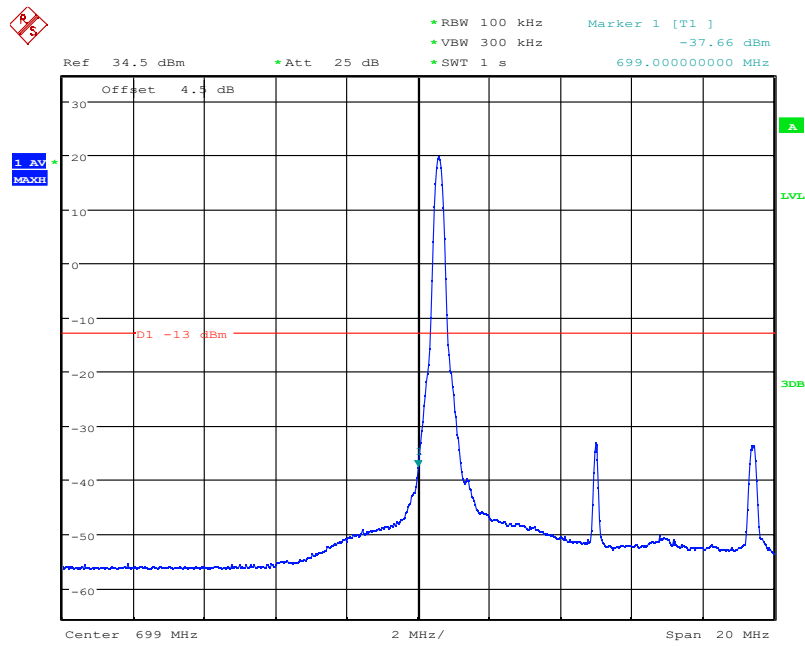


Date: 14.DEC.2021 20:19:16

LTE Band12, 10MHz bandwidth, QPSK,(50,0) Mode, Above 716MHz

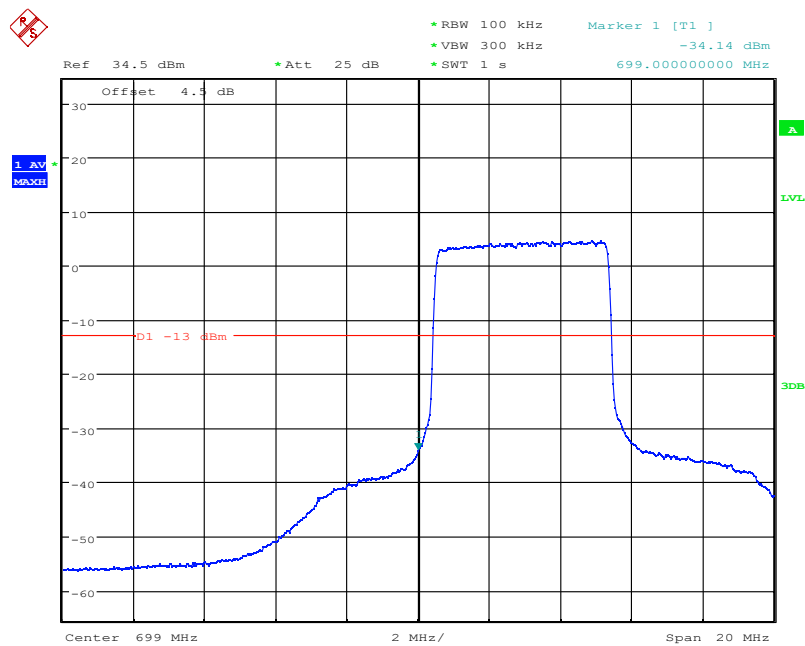
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Date: 14.DEC.2021 20:29:33

LTE Band12, 10MHz bandwidth, 16QAM,(1,0) Mode , Below 699MHz

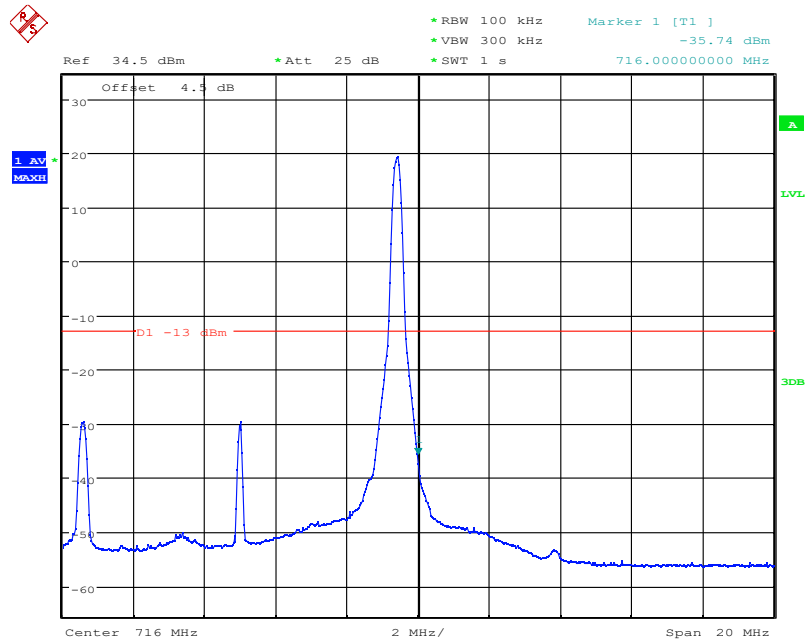


Date: 14.DEC.2021 20:29:10

LTE Band12, 10MHz bandwidth, 16QAM,(27,0) Mode , Below 699MHz

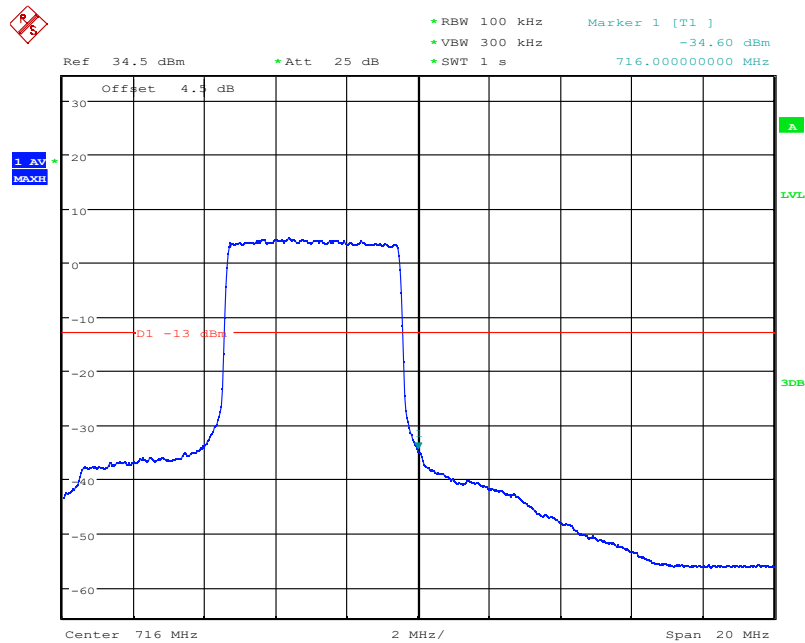
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Date: 14.DEC.2021 20:26:46

LTE Band12, 10MHz bandwidth, 16QAM,(1,50) Mode, Above 716MHz



Date: 14.DEC.2021 20:27:50

LTE Band12, 10MHz bandwidth, 16QAM,(27,0) Mode, Above 716MHz

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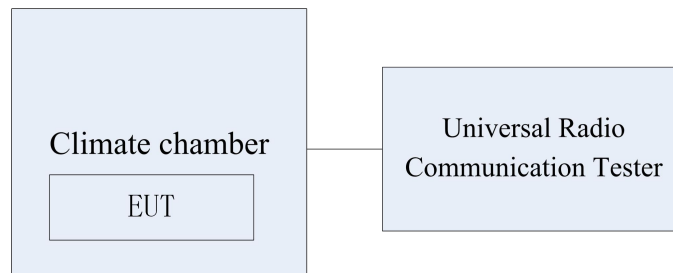
6.8. Frequency Stability over Temperature Variation

Specifications:	FCC Part 2.1055, 24.235, 27.54
DUT Serial Number:	861475035587502
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit	
Frequency deviation [ppm]	±2.5

Test Setup

The EUT was placed in a temperature chamber, demonstrated as figure T. The Wireless Telecommunications Test Set was used to set the Tx channel and power level, modulate the TX signal with different bit patterns and measure the frequency of Tx.



Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	1.54 Hz (k=2)

Test Method

- 1、 The EUT was turned off and placed in the temperature chamber.
- 2、 The temperature of the chamber was set to -30°C and allowed to stabilize.
- 3、 The EUT temperature was allowed to stabilize for 45 minutes.
- 4、 The EUT was turned on and set to transmit with Wireless Telecommunications Test Set.
- 5、 The maximum transmit frequency deviation during one minute period was measured by Wireless Communications Test Set.
- 6、 The steps 3-5 were repeated for -30°C, -20°C, -10°C, 0°C, 10°C, 20°C, 30°C, 40°C and 50°C.

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6.8.1 LTE Band Frequency Stability over Temperature Variation Results

Band	Offset	Temperature[°C]								
		-30	-20	-10	0	10	20	30	40	50
2	Hz	-1.52	-4.19	-2.62	-1.69	-2.23	-2.32	-2.59	-3.62	-3.15
	ppm	-0.001	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
4	Hz	0.40	2.05	2.40	0.49	0.74	0.27	-1.40	0.50	-0.41
	ppm	0.001	0.001	0.001	0.001	0.001	0.001	-0.001	0.001	-0.001
12	Hz	0.30	0.94	0.27	0.17	0.53	-0.29	-0.69	-0.77	-0.23
	ppm	0.001	0.001	0.001	0.001	0.001	-0.001	-0.001	-0.001	-0.001

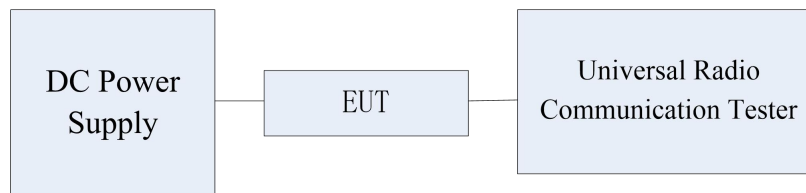
6.9. Frequency Stability over Voltage Variation

Specifications:	FCC Part 2.1055, 24.235, 27.54
DUT Serial Number:	861475035587502
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit	
Frequency deviation [ppm]	±2.5

Test Setup

The EUT was placed in a shielding chamber and powered by an adjustable power supply, demonstrated as figure V. A Wireless Telecommunications Test Set was used to set the TX channel and power level, modulate the TX signal with different bit patterns and measure the frequency of TX.



Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	1.54Hz (k=2)

Test Method

The EUT was powered by the adjustable power supply. The frequency stability is measured by the Wireless Telecommunications Test Set.

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6.9.1 LTE Band Frequency Stability over Voltage Variation Results

Test data:

Band	Offset	Voltage (V)		
		3.40	3.80	4.20
2	Hz	0.07	0.04	0.49
	ppm	0.001	0.001	0.001
4	Hz	4.78	5.92	6.04
	ppm	0.002	0.003	0.003
12	Hz	4.85	5.34	5.09
	ppm	0.006	0.007	0.007

6.10. Peak to Average Ratio

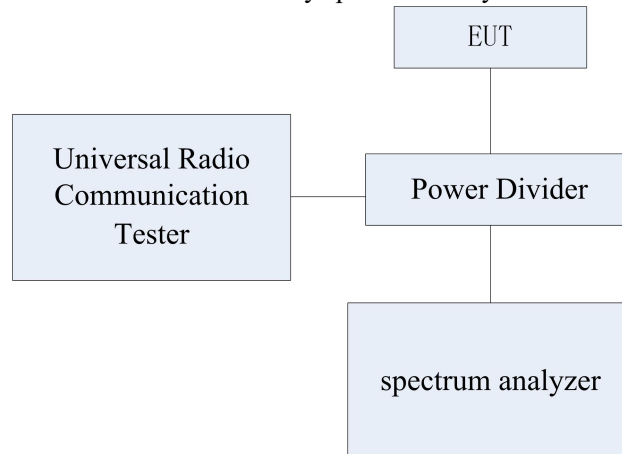
Specifications:	FCC Part 24.232, 27.50,
DUT Serial Number:	861475035587502
Test conditions:	Ambient Temperature:15 °C-35 °C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit

The EUT meets the requirement of having a peak to average ratio of less than 13dB.

Test Setup

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.



Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	0.62 dB (k=2)

Test Method

The transmitter output was connected to a CMW500 through a coaxial RF cable and directional coupler, and configured to operate at maximum power. The peak to average ratio was measured at the required operating frequencies in each Band on the Spectrum Analyzer.

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6.10.1 LTE B2 Peak to Average Ratio Results

Frequency (MHz)	EUT channel No.	bandwidth	Modulation	Peak to Average Ratio
1880	18900	10MHz	QPSK	5.22
			16QAM	5.93

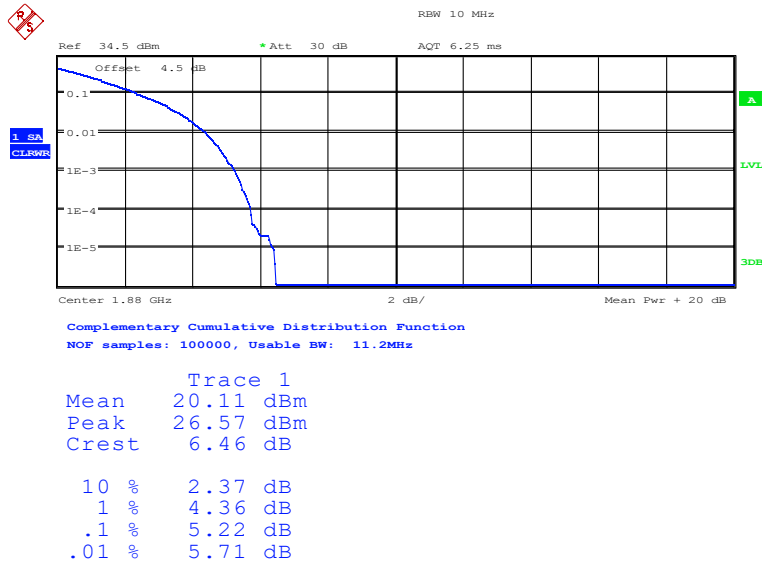
6.10.2 LTE B4 Peak to Average Ratio Results

Frequency (MHz)	EUT channel No.	bandwidth	Modulation	Peak to Average Ratio
1732.5	20175	10MHz	QPSK	5.10
			16QAM	5.74

6.10.3 LTE B12 Peak to Average Ratio Results

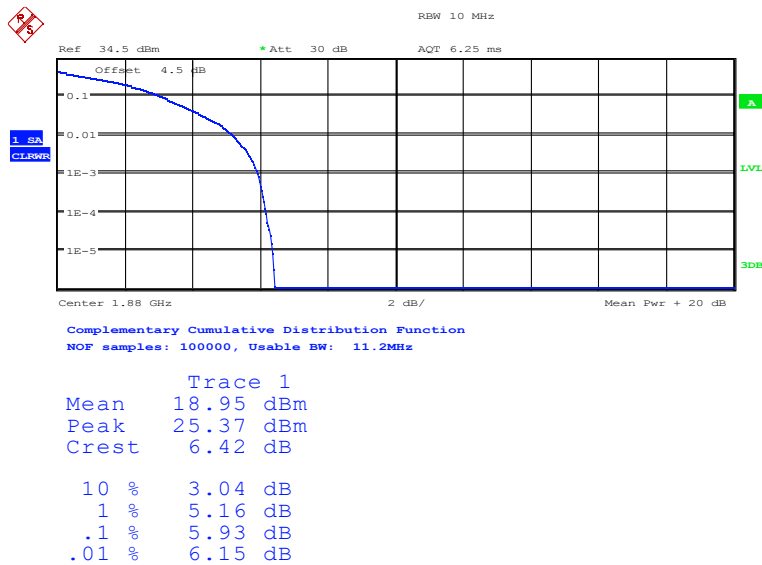
Frequency (MHz)	EUT channel No.	bandwidth	Modulation	Peak to Average Ratio
707.5	23095	10MHz	QPSK	5.16
			16QAM	5.42

Graphical for Peak to Average Ratio Results



Date: 14.DEC.2021 10:44:49

LTE Band2, QPSK



Date: 14.DEC.2021 10:44:37

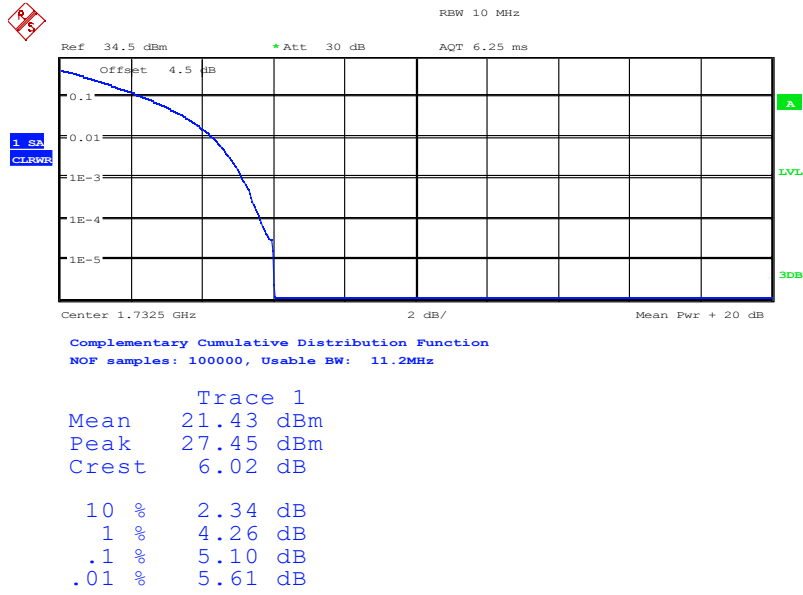
LTE Band2, 16QAM

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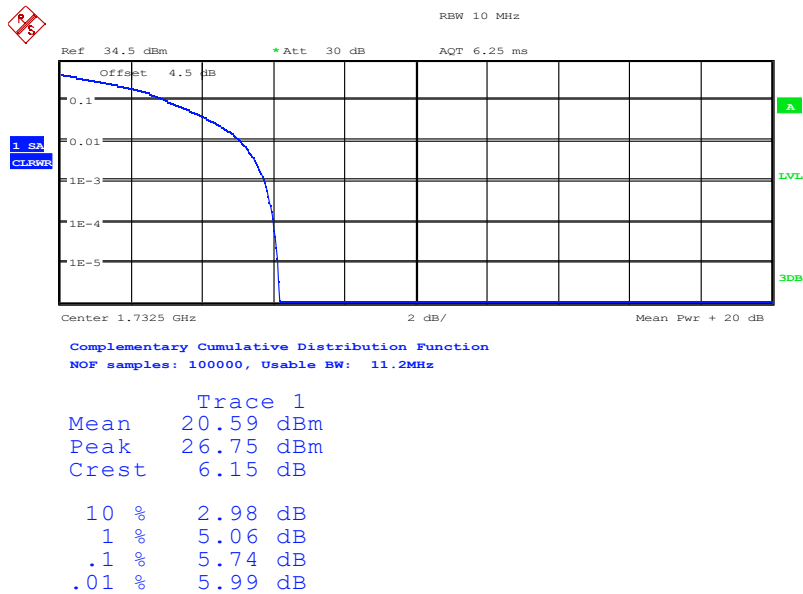


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Date: 14.DEC.2021 09:53:30

LTE Band4, QPSK



Date: 14.DEC.2021 09:53:52

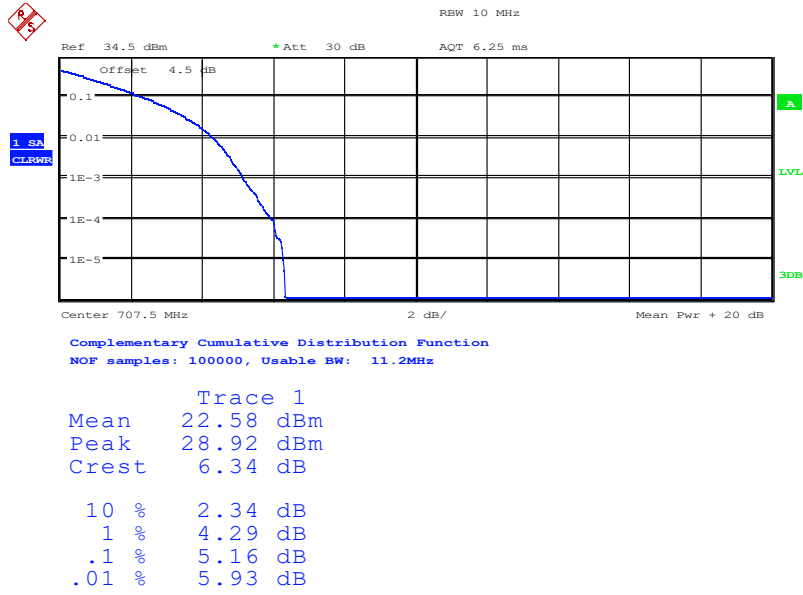
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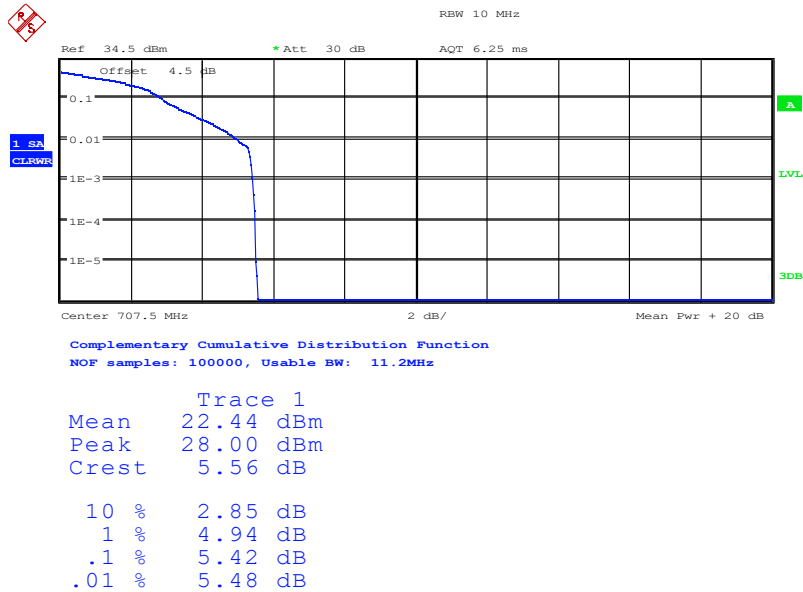


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Date: 14.DEC.2021 10:39:50

LTE Band12, QPSK



Date: 14.DEC.2021 10:43:52

LTE Band12, 16QAM

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Annex A EUT Photos

See the document "SIM7500A-H-External Photos".

See the document "SIM7500A-H-Internal Photos".

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ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

*****END OF REPORT*****

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