中国认可
国际互认
检测
TESTING
CNAS L0570

TEST REPORT

REPORT NUMBER: B16W00042-FCC-RF

ON

Type of Equipment:	Wireless Modules
Model Name:	WP7504
Manufacturer:	Sierra Wireless Inc.

ACCORDING TO

FCC CFR Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS; e-CFR, Mar 17, 2015

PART 22, PUBLIC MOBILE SERVICES , e-CFR, Mar 17, 2015

PART 24, PERSONAL COMMUNICATIONS SERVICES, e-CFR, Mar 17, 2015

PART 27,MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES, e-CFR, Aug. 15, 2014

PART 90,PRIVATE LAND MOBILE RADIO SERVICES，e-CFR, Jan. 26, 2012

RSS-Gen General Requirements for Compliance of Radio Apparatus. Issue 4, November 13, 2014

RSS-130 Mobile Broadband Services (MBS) Equipment Operating in the Frequency Bands 698-756 MHz and 777-787 MHz, Issue 1, October , 2013

RSS-132 Cellular Telephone Systems Operating in the Bands 824-849MHz and 869-894MHz, Issue 3, January 2013

RSS-133 2GHz Personal Communications Services, Issue 6, January 2013

RSS-139 Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz, Issue 3, July 2015

RSS-199 Broadband Radio Service (BRS) Equipment Operating in the Band 2500-2690 MHz, Issue 2, October 9, 2014

China Telecommunication Technology Labs.

Month date, year

Apr, 15, 2016

Signature

Zhang Yan

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 China Telecommunication Technology Labs.

FCC ID:	N7NWP7
IC:	2147C-WP7
Report Date:	2016-04-15

Test Firm Name:	Chongqing Institute of Telecommunications
FCC Registration Number:	428018
IC Registration Number:	11590A

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Parts 2, 22, 24, 27, 90 and RSS-Gen, 130, 132, 133, 139 199. The sample tested was found to comply with the requirements defined in the applied rules.

CTTL Test Report

CONTENTS

1 GENERAL INFORMATION 4

1.1 NOTES 4

1.2 TESTERS 5

1.3 TESTING LABORATORY INFORMATION 6

1.4 DETAILS OF APPLICANT OR MANUFACTURER 7

2 TEST ITEM 8

2.1 GENERAL INFORMATION 8

2.2 OUTLINE OF EQUIPMENT UNDER TEST 8

2.3 MODIFICATIONS INCORPORATED IN EUT 9

2.4 EQUIPMENT CONFIGURATION 9

2.5 OTHER INFORMATION 9

3 SUMMARY OF TEST RESULTS 10

4 TEST EQUIPMENTS AND ANCILLARIES USED FOR TESTS 11

5 TEST RESULTS 12

5.1 CONDUCTED RF POWER OUTPUT 12

5.2 OCCUPIED BANDWIDTH 37

5.3 CONDUCTED SPURIOUS EMISSION 72

5.4 RADIATED SPURIOUS EMISSION 115

5.5 BAND EDGE 142

5.6 FREQUENCY STABILITY OVER TEMPERATURE VARIATION 249

5.7 FREQUENCY STABILITY OVER VOLTAGE VARIATION 251

5.8 PEAK TO AVERAGE RATIO 253

ANNEX A EUT PHOTOS 264

ANNEX B DEVIATIONS FROM PRESCRIBED TEST METHODS 265

CTTL Test Report

1 General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Parts 2, 22, 24, 27 and RSS-Gen, 130, 132, 133,139, 199.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex B.

China Telecommunication Technology Labs authorizes the applicant or manufacturer (see section 1.4) to reproduce this report provided, and the test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of China Telecommunication Technology Labs. Mr. Zhang Yan.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Chongqing Institute of Telecommunications accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

CTTL Test Report

1.2 Testers

Name:	Chen Wen
Position:	Engineer
Department:	Department of RF test
Date:	2016-03-10 to 2016-04-15
Signature:	

Editor of this test report:

Name:	Zhou Jin
Position:	Engineer
Department:	Department of RF test
Date:	2016-04-15
Signature:	

Technical responsibility for area of testing:

Name:	Zhang Yan
Position:	Manager
Department:	Director of the laboratory
Date:	2016-04-15
Signature:	

CTTL Test Report

1.3 Testing Laboratory information

1.3.1 Location

Name:	Chongqing Institute of Telecommunications
Address:	No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing P. R. CHINA, 401336
Tel:	+86-23-88069965
Fax:	+86-23-88608777
Email:	songweiwei@chinattl.com

1.3.2 Details of accreditation status

Accredited by:	China National Accreditation Service for Conformity Assessment (CNAS)
Registration number:	CNAS Registration No. CNAS L0570
Standard:	ISO/IEC 17025:2005

1.3.3 Test location, where different from section 1.3.1

Name:	------
Street:	------
City:	------
Country:	------
Telephone:	------
Fax:	------
Postcode:	------

CTTL Test Report

1.4 Details of applicant or manufacturer

1.4.1 Applicant

Name:	Sierra Wireless Inc.
Address:	13811, Wireless Way, Richmond, British Columbia
Country:	Canada
Telephone:	+1 604 232 1440
Fax:	+1 604 231 1109
Contact:	Ying Wang
Telephone:	+1 604 232 1440
Email:	ywang@sierrawireless.com

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name:	--
Address:	--
City:	--
Country:	--

CTTL Test Report

2 Test Item

2.1 General Information

Manufacturer: Sierra Wireless Inc.

Type of Equipment: Wireless Modules

Model Name: WP7504

Serial Number: S1/3: 356207070002119
S2/3: 356207070002101
S3/3: 356207071234562

Production Status: Product

Receipt date of test item: 2016-03-10

2.2 Outline of Equipment under Test

The WP7504, referred to as "EUT" hereafter, is a multi-band wireless modem operating on the UMTS/CDMA/LTE networks. The table below shows the supported bands for the EUT.

Technology	Band	UL Freq.(MHz)	DL Freq.(MHz)	Note
WCDMA/HSUPA /HSDPA	B2	1850 – 1910	1930 – 1990	--
	B4	1710 – 1755	2110 – 2155	--
	B5	824 – 849	869 – 894	--
CDMA/EVDO	BC0	824 – 849	869 – 894	--
	BC1	1850 – 1910	1930 – 1990	--
	BC10	817 – 824	862 – 869	--
LTE	B2	1850 – 1910	1930 – 1990	Covered by B25 (B2 is a subset of B25. Both bands share the same hardware and have the same radio performance. Separate measurement in B2 is not required.)
	B4	1710 – 1755	2110 – 2155	--
	B5	824 – 849	869 – 894	Covered by B26 (B5 is a subset of B26. Both bands share the same hardware and have the same radio performance. Separate measurement in B5 is not required.)
	B12	699 – 716	729 – 746	--
	B25	1850 – 1915	1930 – 1995	--
	B26	814 – 849	859 – 894	--

CTTL Test Report

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	Modem	Sierra Wireless Inc.	WP7504	S1/3: 356207070002119 S2/3: 356207070002101 S3/3: 356207071234562	None
B	Adaptor	None	None	--	None

2.5 Other Information

--

CTTL Test Report

3 Summary of Test Results

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

FCC Rules	IC Standards	Name of Test	Result
2.1046,22.913(a), 24.232(c),27.50, 90.635(b)	RSS-130 4.4 RSS-132 4.4 RSS-133 6.4 RSS-139 4.4 RSS-199 4.4	Conducted RF Power Output	Pass
2.1049,22.917(b), 24.238(b)	RSS-Gen 6.6	Occupied Bandwidth	*Note 1
2.1051,24.238,2.1053, 22.917, 27.53,90.691	RSS-130 4.6 RSS-132 4.5 RSS-133 6.5 RSS-199 4.6	Conducted spurious emissions	Pass
2.1051,24.238,2.1053, 22.917, 27.53,90.691	RSS-130 4.6 RSS-132 4.5 RSS-133 6.5 RSS-199 4.6	Radiated Spurious Emission	Pass
2.1051,24.238, 2.1053, 22.917, 27.53,90.691	RSS-130 4.6 RSS-132 4.5 RSS-133 6.5 RSS-199 4.6	Band Edge	Pass
2.1055, 22.355, 24.235, 27.54,90.213	RSS-130 4.3 RSS-132 4.3 RSS-133 6.3 RSS-199 4.3	Frequency Stability over Temperature Variation	Pass
2.1055, 22.355, 24.235, 27.54,90.213	RSS-130 4.3 RSS-132 4.3 RSS-133 6.3 RSS-199 4.3	Frequency Stability over Voltage Variation	Pass
24.232, 27.50	RSS-130 4.4	Peak to Average Ratio	Pass
Note 1: No applicable performance criteria.			

CTTL Test Report

4 Test Equipments and Ancillaries Used For Tests

The test equipments and ancillaries used are as follows.

No.	Equipment	Model	SN	Manufacture	Cal. Due Date
1	EMI Test Receiver	ESU26	100367	R&S	2017-03-04
2	Trilog super broadband test antenna	VULB 9163	9163-544	R&S	2017-01-05
3	Double-Ridged Horn Antenna	HF907	100356	R&S	2016-12-12
4	Fully-Anechoic Chamber	11.8m×6.5 m×6.3m	--	ETS	2017-08-19
5	Universal Radio Communication Tester	CMW500	128181	R&S	2017-03-04
6	Signal Generator	SMU200A	104517	R&S	2017-03-04
7	spectrum analyzer	FSQ 26	201137/026	R&S	2017-03-04
8	spectrum analyzer	N9020A	MY50200376	Agilent	2017-03-04
9	Universal Radio Communication Tester	CMU200	112012	R&S	2017-03-04
10	Climate chamber	SH-241	92010759	ESPEC	2017-03-04
11	DC Power Supply	N6705B	MY50000919	Agilent	2017-12-06

CTTL Test Report

5 Test Results

5.1 Conducted RF Power Output

Specifications:	FCC Part 2.1046, 22.913(a), 24.232(c), 27.50, 90.635(b) RSS-130 4.4, S-132 4.4, S-133 6.4, S-139 4.4, S-199 4.4
DUT Serial Number:	S1/3: 356207070002119 S3/3: 356207071234562
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 22.913(a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to Part24.232(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(b), portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

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;

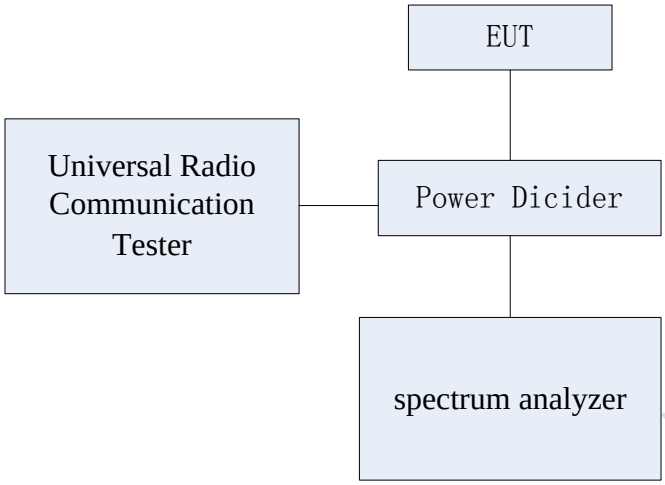
According to Part 27.50(d), fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

According to Part 90.635(b), the maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

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.

CTTL Test Report



Test Method:

1) The EUT was coupled to the spectrum analyzer and the Wireless Telecommunications Test Set through a power divider. The lost of the cables the test system is calibrated to correct the readings.

2) The spectrum analyzer was set to Maxpeak Detector function and Maximum hold mode.

3) The resolution bandwidth of the spectrum analyzer was comparable to the emission bandwidth.

Note: --

5.1.1 WCDMA Band2 Conducted RF Power Output Results

		Maximum output power(pk) [dBm]			Maximum output power(RMS) [dBm]		
Mode	3GPP Subtest	9262	9400	9538	9262	9400	9538
RMC	--	26.06	25.76	25.88	23.09	23.01	23.10
HSDPA	1	25.26	26.24	25.71	22.01	22.23	22.16
	2	26.33	25.72	25.92	22.68	22.15	22.21
	3	25.88	25.58	25.49	21.77	21.53	21.50
	4	25.91	25.71	25.63	21.81	21.71	21.62
HSUPA	1	26.26	25.72	25.93	22.25	21.71	21.84
	2	26.31	25.77	25.69	22.25	21.64	21.68
	3	26.17	25.63	25.73	22.27	21.64	21.69
	4	26.34	25.73	25.73	22.27	21.59	21.65
	5	26.30	25.63	25.68	22.26	21.64	21.66

CTTL Test Report

5.1.2 WCDMA Band4 Conducted RF Power Output Results

		Maximum output power(pk) [dBm]			Maximum output power(RMS) [dBm]		
Mode	3GPP Subtest	1312	1412	1512	1312	1412	1512
RMC	--	25.15	25.79	25.85	22.52	22.72	23.38
HSDPA	1	24.99	25.43	25.37	22.06	22.30	22.85
	2	25.52	25.90	26.25	22.16	22.59	22.69
	3	25.46	25.87	25.55	21.75	21.97	22.00
	4	25.55	25.92	25.66	21.72	21.95	22.01
HSUPA	1	25.17	25.75	25.81	22.45	22.77	23.46
	2	25.16	25.75	25.76	22.47	22.76	23.38
	3	25.19	25.75	25.77	22.51	22.83	23.39
	4	25.20	25.77	25.77	22.52	22.71	23.38
	5	25.18	25.74	25.79	22.52	22.75	23.41

5.1.3 WCDMA Band5 Conducted RF Power Output Results

		Maximum output power(pk) [dBm]			Maximum output power(RMS) [dBm]		
Mode	3GPP Subtest	4132	4182	4233	4132	4182	4233
RMC	--	25.28	26.19	26.24	22.94	23.02	23.10
HSDPA	1	25.58	25.67	25.80	22.49	22.53	22.55
	2	26.30	26.51	26.56	22.43	22.66	22.83
	3	25.68	25.95	25.98	21.60	21.79	21.81
	4	25.91	26.06	26.00	21.75	21.79	21.82
HSUPA	1	26.32	26.36	26.53	22.14	22.30	22.29
	2	26.28	26.50	26.44	22.12	22.24	22.28
	3	26.28	26.50	26.51	22.08	22.30	22.33
	4	26.27	26.50	26.52	22.12	22.27	22.24
	5	26.23	26.41	26.39	22.08	22.29	22.26

CTTL Test Report

5.1.4 CDMA/EVDO Band Conducted RF Power Output Results

		CDMA Maximum output power [dBm]						1x EvDo	
Band	Channel	SO2		SO9		SO55		Rel.0	Rel.A
		RC1	RC3	RC1	RC3	RC1	RC3	RTAP	RETAP
BC0	1013	23.21	23.18	23.17	23.19	23.21	23.24	23.31	23.22
	384	23.17	23.22	23.22	23.17	23.20	23.18	23.19	23.29
	777	23.34	23.35	23.31	23.77	23.36	23.38	23.37	23.68
BC1	25	23.41	23.43	23.44	23.45	23.45	23.40	23.50	23.57
	600	23.67	23.69	23.64	23.88	23.64	23.85	23.75	23.80
	1175	23.44	23.47	23.44	23.47	23.45	23.44	23.48	23.60
BC10*	476	22.83	22.81	22.78	22.77	22.80	22.78	--	--
	560	22.85	22.86	22.84	22.85	22.85	22.82	--	--
	684	22.86	22.87	22.85	22.84	22.89	22.85	--	--
*Note: Only BC10 Band Subclass 2 and 3 are supported.									

CTTL Test Report

5.1.5 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)	PAR
19957	1710.7	1	0	QPSK	22.99	26.93	3.94
		1	2		22.94	26.85	3.91
		1	5		22.96	26.82	3.86
		6	0		22.04	27.27	5.23
		1	0	16QAM	21.77	26.62	4.85
		1	2		21.72	26.49	4.77
		1	5		21.72	26.48	4.76
		6	0		21.00	27.25	6.25
20175	1732.5	1	0	QPSK	23.20	27.67	4.47
		1	2		23.16	27.67	4.51
		1	5		23.17	27.76	4.59
		6	0		22.22	27.70	5.48
		1	0	16QAM	22.07	26.88	4.81
		1	2		22.06	26.87	4.81
		1	5		22.10	27.01	4.91
		6	0		21.15	27.41	6.26
20393	1754.3	1	0	QPSK	23.28	25.94	2.66
		1	2		23.28	26.02	2.74
		1	5		23.26	26.10	2.84
		6	0		22.26	26.77	4.51
		1	0	16QAM	21.97	25.67	3.70
		1	2		21.98	25.73	3.75
		1	5		22.00	25.80	3.80
		6	0		21.27	26.51	5.24

CTTL Test Report

Test Data (3MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
19965	1711.5	1	0	QPSK	23.01	26.80	3.79
		1	8		23.06	26.57	3.51
		1	15		23.02	26.49	3.47
		15	0		22.06	27.28	5.22
		1	0	16QAM	21.88	26.25	4.37
		1	8		21.89	26.03	4.14
		1	15		22.00	26.05	4.05
		15	0		21.02	26.97	5.95
20175	1732.5	1	0	QPSK	23.18	27.31	4.13
		1	8		23.13	27.46	4.33
		1	15		23.10	27.59	4.49
		15	0		22.13	27.81	5.68
		1	0	16QAM	21.88	26.92	5.04
		1	8		21.84	27.05	5.21
		1	15		21.88	27.18	5.30
		15	0		21.26	28.00	6.74
20385	1753.5	1	0	QPSK	23.24	25.81	2.57
		1	8		23.31	25.95	2.64
		1	15		23.27	26.15	2.88
		15	0		22.22	26.94	4.72
		1	0	16QAM	22.63	25.88	3.25
		1	8		22.64	25.97	3.33
		1	15		22.65	26.17	3.52
		15	0		21.32	26.91	5.59

CTTL Test Report

Test Data (5MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
19975	1712.5	1	0	QPSK	22.97	26.78	3.81
		1	13		23.00	26.45	3.45
		1	24		23.08	26.36	3.28
		25	0		21.85	27.21	5.36
		1	0	16QAM	22.09	26.68	4.59
		1	13		22.10	26.32	4.22
		1	24		22.23	26.26	4.03
		25	0		20.90	27.40	6.50
20175	1732.5	1	0	QPSK	23.19	27.38	4.19
		1	13		23.26	27.65	4.39
		1	24		23.27	27.81	4.54
		25	0		21.99	27.93	5.94
		1	0	16QAM	22.07	27.30	5.23
		1	13		22.02	27.51	5.49
		1	24		22.11	27.68	5.57
		25	0		21.07	28.17	7.10
20375	1752.5	1	0	QPSK	23.36	25.98	2.62
		1	13		23.32	25.98	2.66
		1	24		23.36	26.33	2.97
		25	0		22.08	26.80	4.72
		1	0	16QAM	22.08	25.69	3.61
		1	13		22.05	25.63	3.58
		1	24		22.11	25.92	3.81
		25	0		21.18	26.76	5.58

CTTL Test Report

Test Data (10MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
20000	1715	1	0	QPSK	22.96	26.75	3.79
		1	25		23.09	26.29	3.20
		1	49		23.03	26.23	3.20
		50	0		21.89	27.03	5.14
		1	0	16QAM	21.85	26.20	4.35
		1	25		21.97	25.82	3.85
		1	49		21.97	25.81	3.84
		50	0		20.82	26.77	5.95
20175	1732.5	1	0	QPSK	23.07	26.94	3.87
		1	25		23.06	27.41	4.35
		1	49		23.12	27.60	4.48
		50	0		21.87	27.79	5.92
		1	0	16QAM	21.84	26.64	4.80
		1	25		21.80	26.97	5.17
		1	49		21.83	27.18	5.35
		50	0		20.87	27.93	7.06
20350	1750	1	0	QPSK	23.19	26.51	3.32
		1	25		23.25	25.78	2.53
		1	49		23.25	26.12	2.87
		50	0		22.02	26.81	4.79
		1	0	16QAM	22.67	26.74	4.07
		1	25		22.65	25.89	3.24
		1	49		22.65	26.14	3.49
		50	0		21.03	26.95	5.92

CTTL Test Report

Test Data (15MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
20025	1717.5	1	0	QPSK	22.93	26.69	3.76
		1	38		23.07	26.17	3.10
		1	74		23.05	26.59	3.54
		75	0		21.81	27.21	5.40
		1	0	16QAM	21.82	26.13	4.31
		1	38		21.94	25.75	3.81
		1	74		21.93	26.08	4.15
		75	0		20.75	26.93	6.18
20175	1732.5	1	0	QPSK	23.07	26.58	3.51
		1	38		23.14	27.32	4.18
		1	74		23.07	27.26	4.19
		75	0		21.87	27.99	6.12
		1	0	16QAM	22.27	26.50	4.23
		1	38		22.26	27.13	4.87
		1	74		22.39	27.24	4.85
		75	0		20.82	27.77	6.95
20325	1747.5	1	0	QPSK	23.19	27.41	4.22
		1	38		23.21	26.04	2.83
		1	74		23.27	26.11	2.84
		75	0		21.90	27.42	5.52
		1	0	16QAM	22.77	27.74	4.97
		1	38		22.60	26.19	3.59
		1	74		22.63	26.12	3.49
		75	0		20.88	27.05	6.17

CTTL Test Report

Test Data (20MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
20050	1720	1	0	QPSK	22.97	26.58	3.61
		1	50		23.09	26.20	3.11
		1	99		23.11	27.18	4.07
		100	0		21.89	27.30	5.41
		1	0	16QAM	22.04	26.61	4.57
		1	50		22.11	26.19	4.08
		1	99		22.15	27.15	5.00
		100	0		20.85	26.99	6.14
20175	1732.5	1	0	QPSK	23.05	26.54	3.49
		1	50		23.13	27.64	4.51
		1	99		23.23	27.45	4.22
		100	0		21.98	27.97	5.99
		1	0	16QAM	22.66	26.49	3.83
		1	50		22.82	27.60	4.78
		1	99		22.77	27.45	4.68
		100	0		20.88	27.72	6.84
20300	1745	1	0	QPSK	23.04	27.85	4.81
		1	50		23.17	26.66	3.49
		1	99		23.27	26.17	2.90
		100	0		21.94	27.37	5.43
		1	0	16QAM	22.23	27.68	5.45
		1	50		22.29	26.58	4.29
		1	99		22.36	25.99	3.63
		100	0		20.95	27.33	6.38

CTTL Test Report

5.1.6 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)	PAR
23017	699.7	1	0	QPSK	22.89	27.92	5.03
		1	2		22.92	28.01	5.09
		1	5		23.00	28.11	5.11
		6	0		22.09	27.92	5.83
		1	0	16QAM	21.69	27.18	5.49
		1	2		21.68	27.21	5.53
		1	5		21.82	27.35	5.53
		6	0		21.05	27.89	6.84
23095	707.5	1	0	QPSK	23.22	28.16	4.94
		1	2		23.11	28.04	4.93
		1	5		23.16	28.04	4.88
		6	0		22.14	27.84	5.70
		1	0	16QAM	22.07	26.99	4.92
		1	2		22.01	26.91	4.90
		1	5		22.03	27.00	4.97
		6	0		21.03	27.45	6.42
23173	715.3	1	0	QPSK	22.95	27.24	4.29
		1	2		23.09	27.17	4.08
		1	5		23.11	27.15	4.04
		6	0		22.15	27.62	5.47
		1	0	16QAM	21.82	26.75	4.93
		1	2		21.78	26.66	4.88
		1	5		21.82	26.66	4.84
		6	0		21.06	27.27	6.21

CTTL Test Report

Test Data (3MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
23025	700.5	1	0	QPSK	22.85	27.58	4.73
		1	8		23.00	27.75	4.75
		1	15		23.09	27.87	4.78
		15	0		22.04	27.69	5.65
		1	0	16QAM	21.83	26.56	4.73
		1	8		21.76	26.47	4.71
		1	15		21.86	26.62	4.76
		15	0		20.85	27.35	6.50
23095	707.5	1	0	QPSK	23.09	27.73	4.64
		1	8		23.09	27.65	4.56
		1	15		23.14	27.72	4.58
		15	0		22.07	28.59	6.52
		1	0	16QAM	21.85	27.14	5.29
		1	8		21.76	27.08	5.32
		1	15		21.85	27.10	5.25
		15	0		21.10	28.10	7.00
23165	714.5	1	0	QPSK	22.99	27.43	4.44
		1	8		23.01	27.25	4.24
		1	15		23.14	27.23	4.09
		15	0		22.13	27.60	5.47
		1	0	16QAM	22.61	28.05	5.44
		1	8		22.59	27.82	5.23
		1	15		22.61	27.66	5.05
		15	0		21.20	27.68	6.48

CTTL Test Report

Test Data (5MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
23035	701.5	1	0	QPSK	22.99	27.68	4.69
		1	13		23.01	27.71	4.70
		1	24		23.19	27.99	4.80
		25	0		22.01	28.31	6.30
		1	0	16QAM	22.14	27.40	5.26
		1	13		22.12	27.35	5.23
		1	24		22.26	27.63	5.37
		25	0		20.91	28.18	7.27
23095	707.5	1	0	QPSK	23.20	27.97	4.77
		1	13		23.22	27.93	4.71
		1	24		23.19	27.98	4.79
		25	0		21.94	28.09	6.15
		1	0	16QAM	21.94	27.75	5.81
		1	13		22.00	27.72	5.72
		1	24		22.03	27.78	5.75
		25	0		21.03	28.26	7.23
23155	713.5	1	0	QPSK	23.18	28.36	5.18
		1	13		23.17	28.09	4.92
		1	24		23.26	27.84	4.58
		25	0		21.99	27.96	5.97
		1	0	16QAM	22.05	27.27	5.22
		1	13		21.93	26.94	5.01
		1	24		22.03	26.88	4.85
		25	0		21.06	28.22	7.16

CTTL Test Report

Test Data (10MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
23060	704	1	0	QPSK	23.00	27.76	4.76
		1	25		23.02	27.90	4.88
		1	49		23.15	28.12	4.97
		50	0		21.95	27.97	6.02
		1	0	16QAM	21.83	26.60	4.77
		1	25		21.88	26.65	4.77
		1	49		22.07	27.00	4.93
		50	0		20.86	27.68	6.82
23095	707.5	1	0	QPSK	23.05	27.59	4.54
		1	25		23.14	27.75	4.61
		1	49		23.00	27.60	4.60
		50	0		22.00	27.90	5.90
		1	0	16QAM	22.55	28.16	5.61
		1	25		22.66	28.30	5.64
		1	49		22.52	28.21	5.69
		50	0		20.90	28.17	7.27
23130	711	1	0	QPSK	23.18	28.10	4.92
		1	25		23.13	27.93	4.80
		1	49		23.05	27.53	4.48
		50	0		21.96	28.03	6.07
		1	0	16QAM	22.02	26.91	4.89
		1	25		21.93	26.66	4.73
		1	49		21.88	26.47	4.59
		50	0		20.82	27.78	6.96

CTTL Test Report

5.1.7 LTE B25 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)	PAR
26047	1850.7	1	0	QPSK	23.24	27.66	4.42
		1	2		23.21	27.63	4.42
		1	5		23.24	27.70	4.46
		6	0		22.24	27.93	5.69
		1	0	16QAM	22.09	27.32	5.23
		1	2		22.01	27.29	5.28
		1	5		22.03	27.34	5.31
		6	0		21.29	27.99	6.7
26365	1882.5	1	0	QPSK	23.50	27.86	4.36
		1	2		23.38	27.79	4.41
		1	5		23.41	27.87	4.46
		6	0		22.43	27.95	5.52
		1	0	16QAM	22.42	27.22	4.80
		1	2		22.30	27.11	4.81
		1	5		22.35	27.22	4.87
		6	0		21.36	27.69	6.33
26683	1914.3	1	0	QPSK	23.34	24.89	1.55
		1	2		22.96	24.53	1.57
		1	5		22.51	24.21	1.70
		6	0		22.65	25.78	3.13
		1	0	16QAM	22.48	25.04	2.56
		1	2		22.59	24.79	2.20
		1	5		22.26	24.54	2.28
		6	0		21.54	26.02	4.48

CTTL Test Report

Test Data (3MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26055	1851.5	1	0	QPSK	23.20	27.41	4.21
		1	8		23.21	27.45	4.24
		1	15		23.24	27.48	4.24
		15	0		22.22	27.85	5.63
		1	0	16QAM	22.13	26.88	4.75
		1	8		22.05	26.82	4.77
		1	15		22.13	26.96	4.83
		15	0		21.25	27.67	6.42
26365	1882.5	1	0	QPSK	23.46	27.60	4.14
		1	8		23.36	27.56	4.20
		1	15		23.37	27.68	4.31
		15	0		22.45	28.64	6.19
		1	0	16QAM	22.18	27.29	5.11
		1	8		22.07	27.25	5.18
		1	15		22.11	27.33	5.22
		15	0		21.50	28.42	6.92
26675	1913.5	1	0	QPSK	23.32	25.46	2.14
		1	8		23.54	25.28	1.74
		1	15		22.69	24.41	1.72
		15	0		22.47	26.68	4.21
		1	0	16QAM	22.73	25.40	2.67
		1	8		22.86	25.28	2.42
		1	15		22.61	24.73	2.12
		15	0		21.54	26.37	4.83

CTTL Test Report

Test Data (5MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26065	1852.5	1	0	QPSK	23.30	27.42	4.12
		1	13		23.26	27.45	4.19
		1	24		23.29	27.38	4.09
		25	0		22.15	28.05	5.90
		1	0	16QAM	22.41	27.39	4.98
		1	13		22.38	27.39	5.01
		1	24		22.39	27.33	4.94
		25	0		21.16	28.35	7.19
26365	1882.5	1	0	QPSK	23.52	27.67	4.15
		1	13		23.52	27.74	4.22
		1	24		23.55	27.86	4.31
		25	0		22.43	28.39	5.96
		1	0	16QAM	22.28	27.60	5.32
		1	13		22.27	27.67	5.40
		1	24		22.32	27.78	5.46
		25	0		21.43	28.21	6.78
26665	1912.5	1	0	QPSK	23.35	26.26	2.91
		1	13		23.42	25.42	2.00
		1	24		23.07	24.75	1.68
		25	0		22.26	26.70	4.44
		1	0	16QAM	22.15	25.95	3.80
		1	13		22.27	25.29	3.02
		1	24		22.41	24.91	2.50
		15	0		21.32	26.72	5.40

CTTL Test Report

Test Data (10MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26090	1855	1	0	QPSK	23.22	27.51	4.29
		1	25		23.26	27.35	4.09
		1	49		23.39	26.93	3.54
		50	0		22.02	27.67	5.65
		1	0	16QAM	22.23	27.17	4.94
		1	25		22.23	26.75	4.52
		1	49		22.21	26.55	4.34
		50	0		21.05	27.51	6.46
26365	1882.5	1	0	QPSK	23.47	27.42	3.95
		1	25		23.50	27.73	4.23
		1	49		23.42	27.57	4.15
		50	0		22.33	28.07	5.74
		1	0	16QAM	22.18	27.13	4.95
		1	25		22.10	27.31	5.21
		1	49		22.17	27.26	5.09
		50	0		21.35	28.48	7.13
26640	1910	1	0	QPSK	23.39	27.41	4.02
		1	25		23.35	26.21	2.86
		1	49		23.22	25.08	1.86
		50	0		22.26	27.11	4.85
		1	0	16QAM	22.85	27.63	4.78
		1	25		22.78	26.33	3.55
		1	49		22.93	25.23	2.30
		50	0		21.21	27.29	6.08

CTTL Test Report

Test Data (15MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26115	1857.5	1	0	QPSK	23.29	27.61	4.32
		1	38		23.39	27.10	3.71
		1	74		23.30	26.63	3.33
		75	0		22.05	27.79	5.74
		1	0	16QAM	22.14	26.99	4.85
		1	38		22.21	26.65	4.44
		1	74		22.16	26.32	4.16
		75	0		21.00	27.63	6.63
26365	1882.5	1	0	QPSK	23.39	26.79	3.40
		1	38		23.38	27.44	4.06
		1	74		23.34	27.05	3.71
		75	0		22.22	28.23	6.01
		1	0	16QAM	22.58	26.77	4.19
		1	38		22.61	27.35	4.74
		1	74		22.52	26.99	4.47
		75	0		21.14	28.09	6.95
26615	1907.5	1	0	QPSK	23.40	26.86	3.46
		1	38		23.24	26.98	3.74
		1	74		23.18	24.97	1.79
		75	0		22.17	27.47	5.30
		1	0	16QAM	22.92	26.98	4.06
		1	38		22.78	27.21	4.43
		1	74		22.91	25.18	2.27
		75	0		21.18	27.37	6.19

CTTL Test Report

Test Data (20MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26140	1860	1	0	QPSK	23.24	27.46	4.22
		1	50		23.37	26.73	3.36
		1	99		23.37	26.56	3.19
		100	0		22.09	27.72	5.63
		1	0	16QAM	22.30	27.50	5.20
		1	50		22.36	26.77	4.41
		1	99		22.41	26.64	4.23
		100	0		21.04	27.58	6.54
26365	1882.5	1	0	QPSK	23.45	26.81	3.36
		1	50		23.42	27.71	4.29
		1	99		23.41	26.91	3.50
		100	0		22.25	28.03	5.78
		1	0	16QAM	23.06	26.81	3.75
		1	50		23.10	27.71	4.61
		1	99		23.04	26.91	3.87
		100	0		21.27	27.98	6.71
26590	1905	1	0	QPSK	23.46	26.64	3.18
		1	50		23.38	27.40	4.02
		1	99		23.08	25.14	2.06
		100	0		22.28	27.60	5.32
		1	0	16QAM	22.59	26.56	3.97
		1	50		22.52	27.29	4.77
		1	99		22.71	25.25	2.54
		100	0		21.26	27.69	6.43

CTTL Test Report

5.1.8 LTE B26 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)	PAR
26697	814.7	1	0	QPSK	23.01	28.11	5.10
		1	2		22.99	28.13	5.14
		1	5		23.03	28.17	5.14
		6	0		22.02	28.06	6.04
		1	0	16QAM	21.79	27.50	5.71
		1	2		21.73	27.44	5.71
		1	5		21.86	27.53	5.67
		6	0		21.04	28.13	7.09
26865	831.5	1	0	QPSK	23.11	28.25	5.14
		1	2		23.03	28.16	5.13
		1	5		23.09	28.21	5.12
		6	0		22.13	28.07	5.94
		1	0	16QAM	21.97	27.13	5.16
		1	2		21.97	27.12	5.15
		1	5		21.95	27.17	5.22
		6	0		21.04	27.67	6.63
27033	848.3	1	0	QPSK	23.27	27.32	4.05
		1	2		23.32	27.06	3.74
		1	5		23.32	26.88	3.56
		6	0		22.40	27.68	5.28
		1	0	16QAM	22.03	26.99	4.96
		1	2		22.00	26.79	4.79
		1	5		22.14	26.69	4.55
		6	0		21.30	27.38	6.08

CTTL Test Report

Test Data (3MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26705	815.5	1	0	QPSK	23.07	27.91	4.84
		1	8		23.05	27.94	4.89
		1	15		23.00	27.99	4.99
		15	0		21.98	27.69	5.71
		1	0	16QAM	21.93	26.94	5.01
		1	8		21.87	26.88	5.01
		1	15		21.84	26.95	5.11
		15	0		21.01	28.07	7.06
26865	831.5	1	0	QPSK	22.99	27.88	4.89
		1	8		23.01	27.80	4.79
		1	15		23.00	27.92	4.92
		15	0		22.03	28.76	6.73
		1	0	16QAM	21.81	27.32	5.51
		1	8		21.72	27.29	5.57
		1	15		21.82	27.36	5.54
		15	0		21.10	28.20	7.10
27025	847.5	1	0	QPSK	23.18	27.66	4.48
		1	8		23.31	27.37	4.06
		1	15		23.32	26.92	3.60
		15	0		22.29	27.91	5.62
		1	0	16QAM	22.79	28.05	5.26
		1	8		22.81	27.70	4.89
		1	15		22.79	27.17	4.38
		15	0		21.30	27.74	6.44

CTTL Test Report

Test Data (5MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26715	816.5	1	0	QPSK	23.06	27.93	4.87
		1	13		23.01	27.95	4.94
		1	24		22.99	28.13	5.14
		25	0		21.88	27.89	6.01
		1	0	16QAM	22.15	27.67	5.52
		1	13		22.08	27.63	5.55
		1	24		22.07	27.84	5.77
		25	0		20.82	28.21	7.39
26865	831.5	1	0	QPSK	23.23	28.20	4.97
		1	13		23.12	28.09	4.97
		1	24		23.12	28.22	5.10
		25	0		21.93	28.32	6.39
		1	0	16QAM	22.04	28.04	6.00
		1	13		21.91	27.88	5.97
		1	24		21.93	28.05	6.12
		25	0		21.02	28.44	7.42
27015	846.5	1	0	QPSK	23.32	28.31	4.99
		1	13		23.36	28.00	4.64
		1	24		23.45	27.25	3.80
		25	0		22.11	28.16	6.05
		1	0	16QAM	22.13	27.50	5.37
		1	13		22.07	27.22	5.15
		1	24		22.18	26.84	4.66
		25	0		21.17	28.24	7.07

CTTL Test Report

Test Data (10MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26740	819	1	0	QPSK	23.01	27.90	4.89
		1	25		22.88	27.98	5.10
		1	49		23.02	28.22	5.20
		50	0		21.72	28.22	6.50
		1	0	16QAM	21.86	26.90	5.04
		1	25		21.76	26.86	5.10
		1	49		21.86	27.08	5.22
		50	0		20.71	28.00	7.29
26865	831.5	1	0	QPSK	23.01	27.84	4.83
		1	25		23.03	27.80	4.77
		1	49		22.94	27.90	4.96
		50	0		21.87	28.26	6.39
		1	0	16QAM	21.75	27.28	5.53
		1	25		21.72	27.23	5.51
		1	49		21.75	27.36	5.61
		50	0		20.84	28.43	7.59
26990	844	1	0	QPSK	23.05	27.91	4.86
		1	25		23.19	27.76	4.57
		1	49		23.31	27.10	3.79
		50	0		21.84	28.11	6.27
		1	0	16QAM	22.67	28.45	5.78
		1	25		22.76	28.20	5.44
		1	49		22.81	27.38	4.57
		50	0		20.87	28.33	7.46

CTTL Test Report

Test Data (15MHz bandwidth Mode)

Channel	Frequency (MHz)	No.RB	RB START	Modulation	Max Power(RMS)	Max Power (PK)	PAR
26765	821.5	1	0	QPSK	22.98	28.06	5.08
		1	38		23.04	28.32	5.28
		1	74		23.02	28.21	5.19
		75	0		21.67	28.44	6.77
		1	0	16QAM	21.93	27.02	5.09
		1	38		21.87	26.99	5.12
		1	74		21.93	27.10	5.17
		75	0		20.71	28.24	7.53
26865	831.5	1	0	QPSK	23.09	27.72	4.63
		1	38		23.02	27.62	4.60
		1	74		23.11	27.74	4.63
		75	0		21.81	28.46	6.65
		1	0	16QAM	22.33	27.54	5.21
		1	38		22.26	27.44	5.18
		1	74		22.29	27.55	5.26
		75	0		20.77	28.25	7.48
26965	841.5	1	0	QPSK	23.07	28.03	4.96
		1	38		23.08	27.86	4.78
		1	74		23.30	27.23	3.93
		75	0		21.78	28.45	6.67
		1	0	16QAM	22.66	28.59	5.93
		1	38		22.67	28.32	5.65
		1	74		22.82	27.53	4.71
		75	0		20.78	28.25	7.47

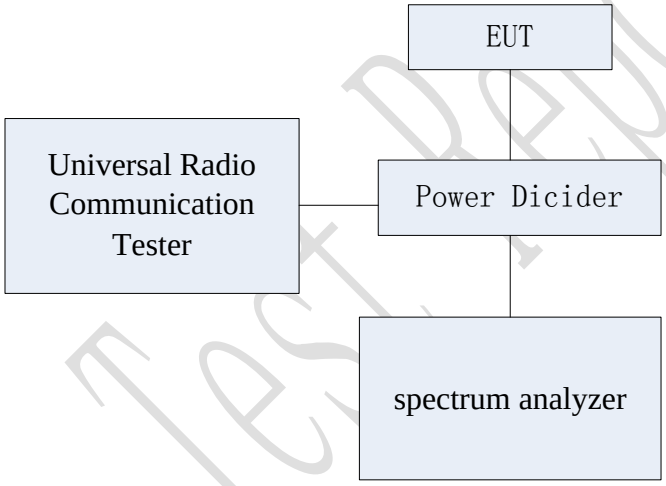
CTTL Test Report

5.2 Occupied bandwidth

Specifications:	FCC Part 2.1049, 22.917(b), 24.238(b), RSS-Gen 6.6
DUT Serial Number:	S1/2: 356207070002119 S3/3: 356207071234562
Test conditions:	Ambient Temperature:15℃-35℃ 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.



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: --

CTTL Test Report

5.2.1 WCDMA Band mode occupied bandwidth Results

Band	EUT channel No.	Mode	99% OBW (MHz)	-26dBc OBW (MHz)
B2	9400 (1880.0 MHz)	QPSK	4.16	4.82
B4	1412 (1732.4 MHz)	QPSK	4.17	4.71
B5	4182 (836.4MHz)	QPSK	4.17	4.68

5.2.2 CDMA/EVDO Band mode occupied bandwidth Results

Band	EUT channel No.	Configuration		99% OBW (MHz)	-26dBc OBW (MHz)
BC0	384 (836.52MHz)	SO2	RC1	1.28	1.43
			RC3	1.28	1.43
		1x EvDo	Rel.A	1.28	1.43
BC1	600 (1880.00MHz)	SO2	RC1	1.28	1.44
			RC3	1.28	1.44
		1x EvDo	Rel.A	1.28	1.45
BC10	560 (820.00 MHz)	SO2	RC1	1.27	1.42
			RC3	1.27	1.42
		1x EvDo	Rel.A	--	--

CTTL Test Report

5.2.3 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	1.08	1.30
		3MHz	15		2.69	2.98
		5MHz	25		4.49	4.90
		10MHz	50		8.94	9.63
		15MHz	75		13.5	14.7
		20MHz	100		17.9	19.1
16QAM		1.4MHz	6		1.09	1.31
		3MHz	15		2.68	2.96
		5MHz	25		4.47	4.98
		10MHz	50		8.91	9.70
		15MHz	75		13.5	14.6
		20MHz	100		17.9	19.1

5.2.4 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	1.08	1.28
		3MHz	15		2.68	2.92
		5MHz	25		4.48	4.95
		10MHz	50		8.94	9.68
16QAM		1.4MHz	6		1.09	1.30
		3MHz	15		2.68	2.96
		5MHz	25		4.47	4.87
		10MHz	50		8.93	9.52

CTTL Test Report

5.2.5 LTE B25 occupied bandwidth Results

Mode	EUT channel No.	bandwidth	No. RB	RB offset	99% occupied bandwidth [MHz]	-26dBc occupied bandwidth [MHz]
QPSK	26365 (1882.5MHz)	1.4MHz	6	0	1.08	1.29
		3MHz	15		2.68	2.95
		5MHz	25		4.48	5.00
		10MHz	50		8.92	9.62
		15MHz	75		13.44	14.43
		20MHz	100		17.85	18.90
16QAM		1.4MHz	6		1.09	1.30
		3MHz	15		2.68	2.95
		5MHz	25		4.47	4.94
		10MHz	50		8.92	9.65
		15MHz	75		13.43	14.43
		20MHz	100		17.86	18.90

5.2.6 LTE B26 occupied bandwidth Results

Test Data (Part22:824 MHz ~849MHz)

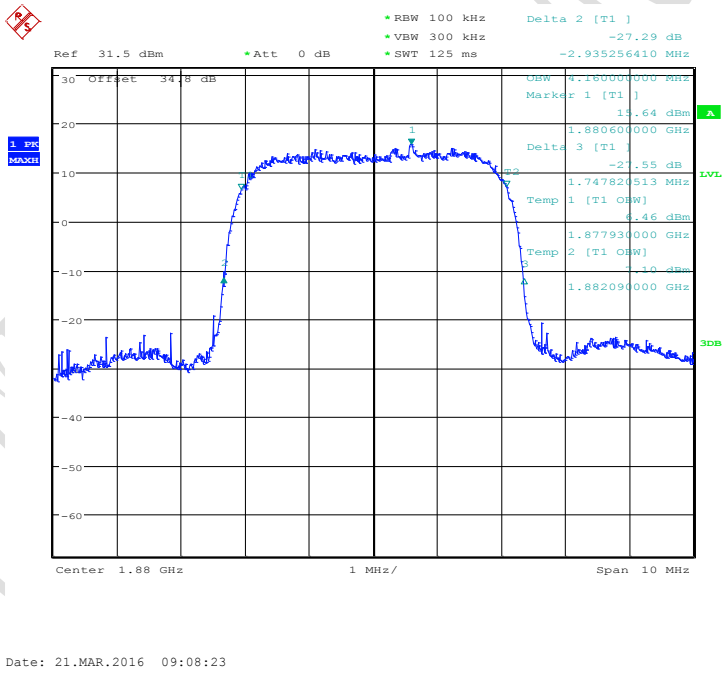
Mode	EUT channel No.	bandwidth	No. RB	RB offset	99% occupied bandwidth [MHz]	-26dBc occupied bandwidth [MHz]
QPSK	26865 (831.5MHz)	1.4MHz	6	0	1.08	1.27
		3MHz	15		2.68	2.93
		5MHz	25		4.48	4.96
		10MHz	50		8.96	9.64
		15MHz	75		13.45	14.51
16QAM		1.4MHz	6		1.09	1.27
		3MHz	15		2.68	2.99
		5MHz	25		4.48	4.90
		10MHz	50		8.94	9.67
		15MHz	75		13.43	14.47

CTTL Test Report

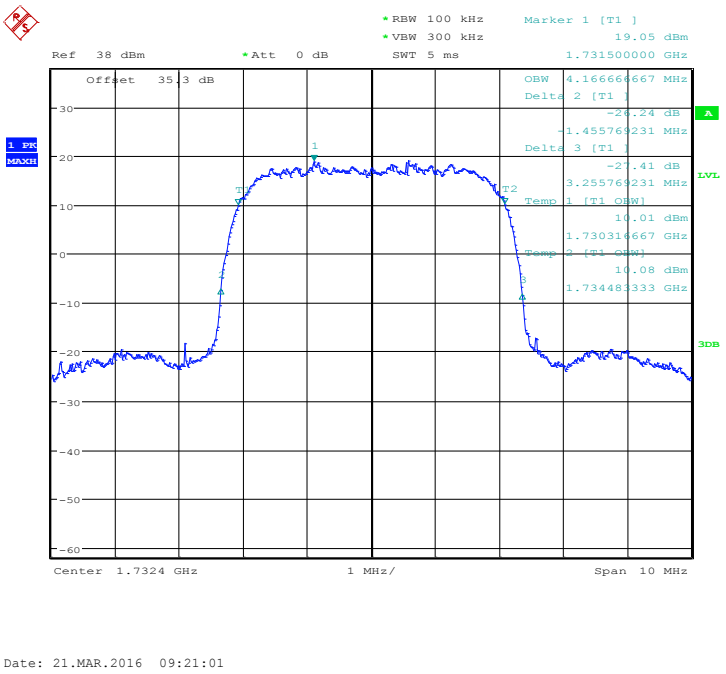
Test Data(Part90:814MHz~824MHz)

Mode	EUT channel No.	bandwidth	No. RB	RB offset	99% occupied bandwidth [MHz]	-26dBc occupied bandwidth [MHz]
QPSK	26739 (818.9MHz)	1.4MHz	6	0	1.09	1.27
16QAM					1.08	1.27
QPSK	26735 (818.5MHz)	3MHz	15	0	2.69	2.96
16QAM					2.69	2.97
QPSK	26740 (819.0MHz)	5MHz	25	0	4.49	4.98
		10MHz	50		8.97	9.80
16QAM		5MHz	25		4.49	4.90
		10MHz	50		8.96	9.67

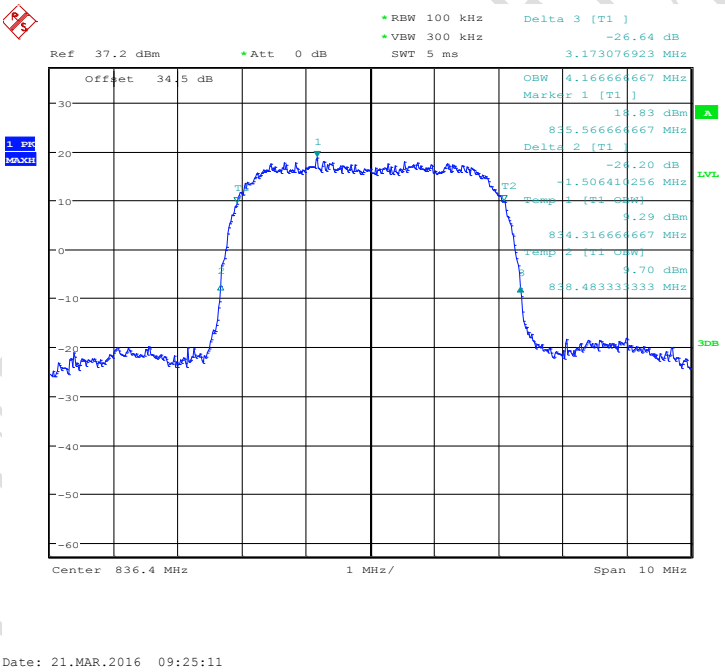
Graphical results for WCDMA :



WCDMA B2 Channel 9400, QPSK

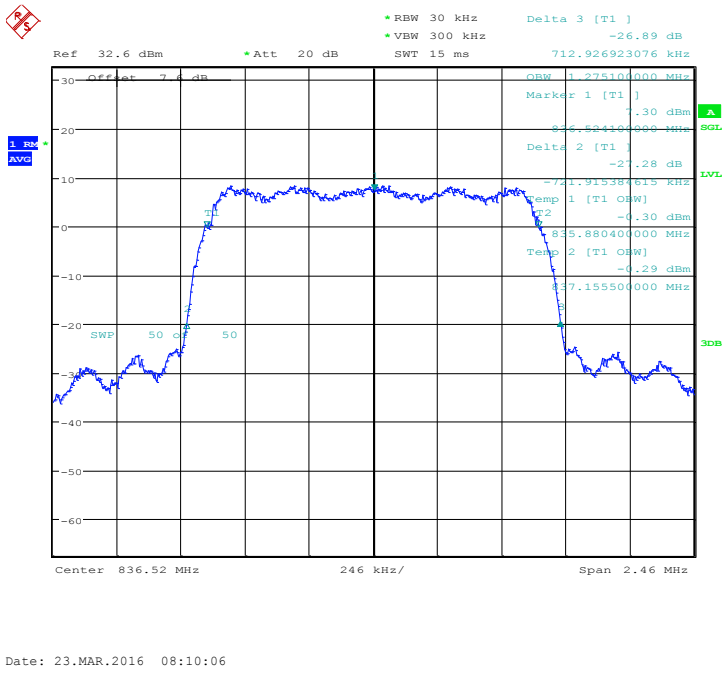


WCDMA B4 Channel 1412, QPSK



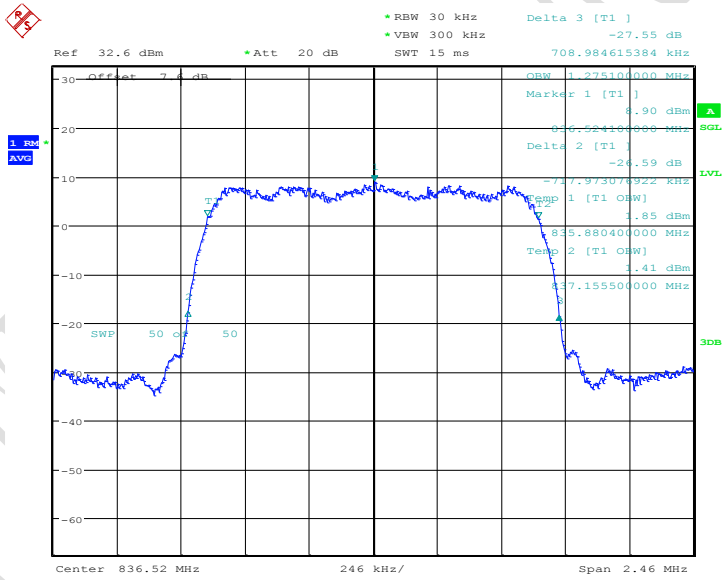
WCDMA B5 Channel 4182, QPSK

Graphical results for CDMA:



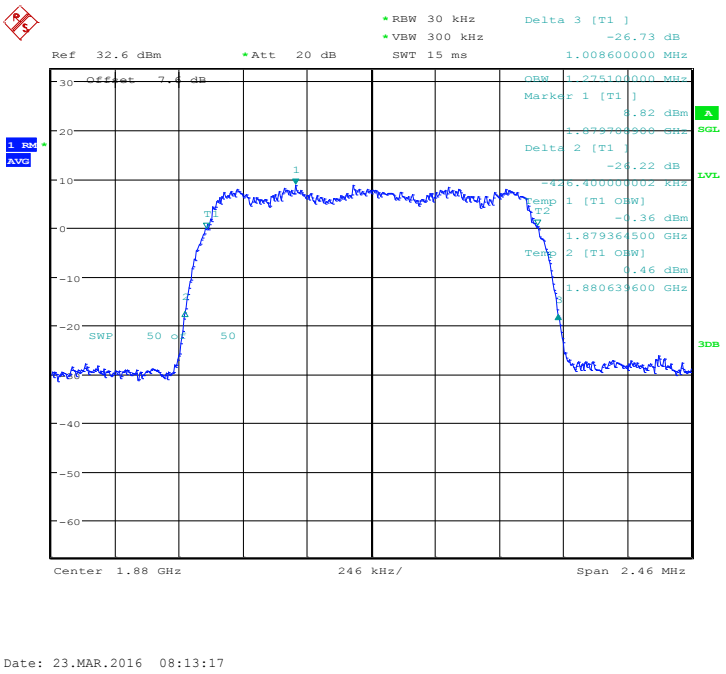
Date: 23.MAR.2016 08:10:06

CDMA Occupied Bandwidth, SO2, RC1, BC0 channel 384

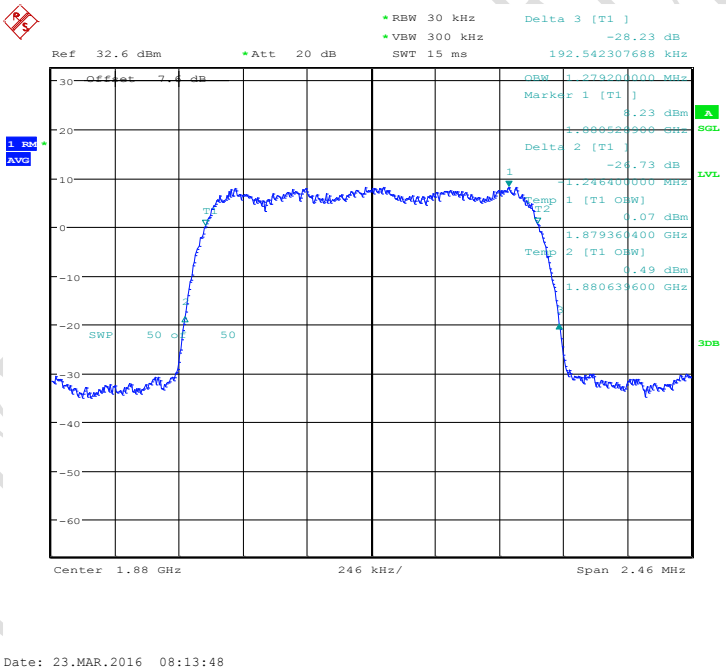


Date: 23.MAR.2016 08:10:53

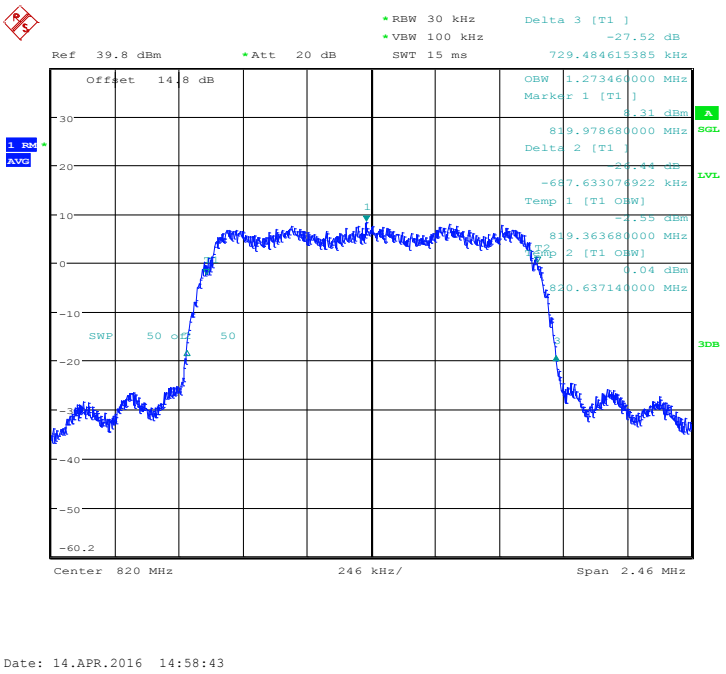
CDMA Occupied Bandwidth, SO2, RC3, BC0 channel 384



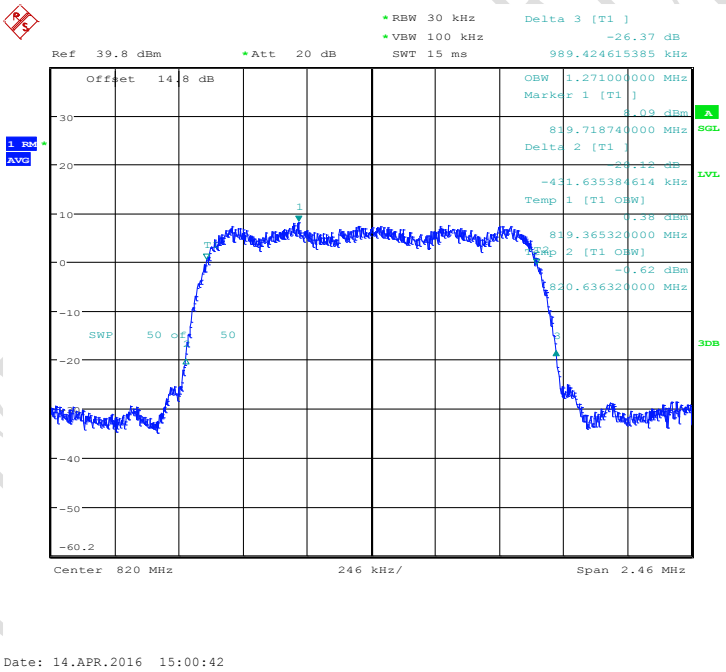
CDMA Occupied Bandwidth, SO2, RC1, BC1 channel 600



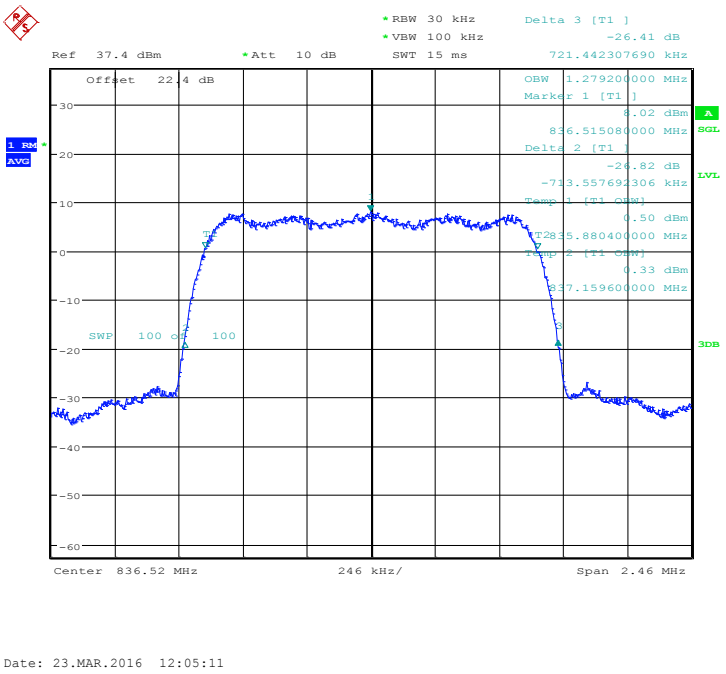
CDMA Occupied Bandwidth, SO2, RC3, BC1 channel 600



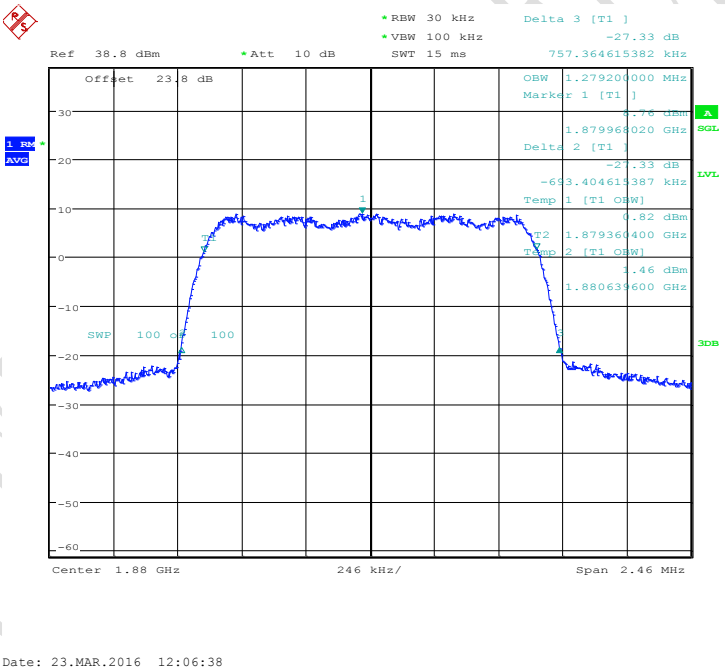
CDMA Occupied Bandwidth, SO2, RC1, BC10 channel 560



CDMA Occupied Bandwidth, SO2, RC3, BC10 channel 560

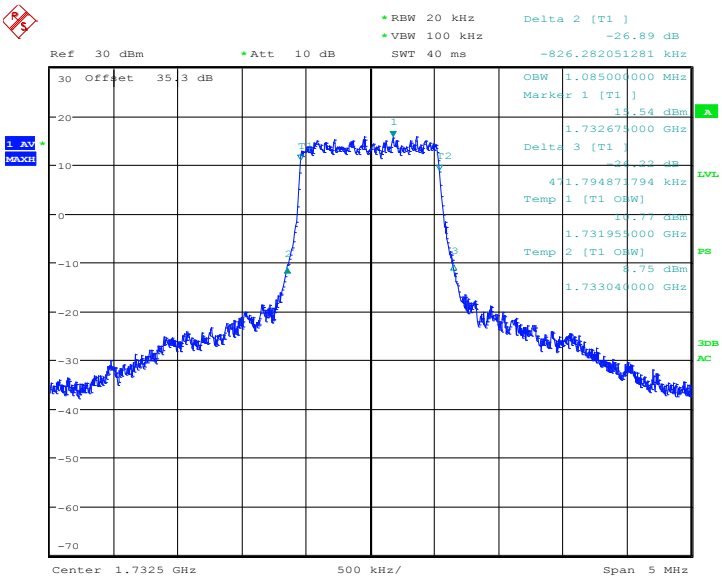


1x EvDO Occupied Bandwidth, Rel. A, BC0 channel 384



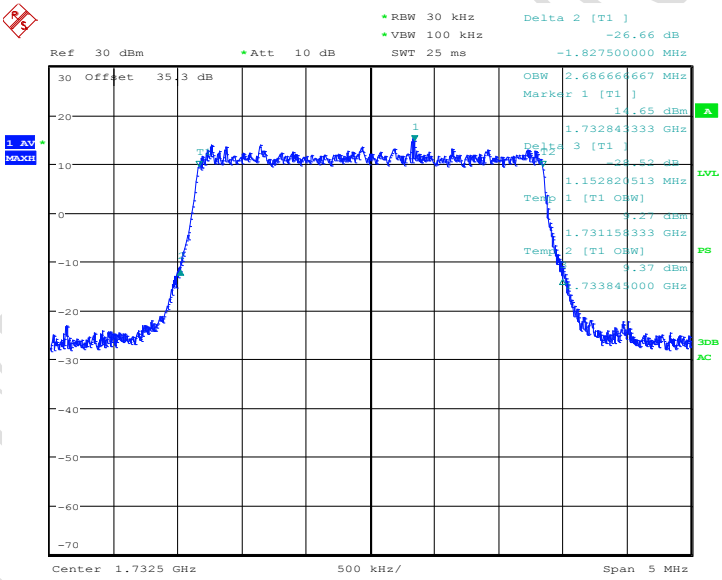
1x EvDO Occupied Bandwidth, Rel. A, BC1 channel 600

Graphical results for LTE B4:



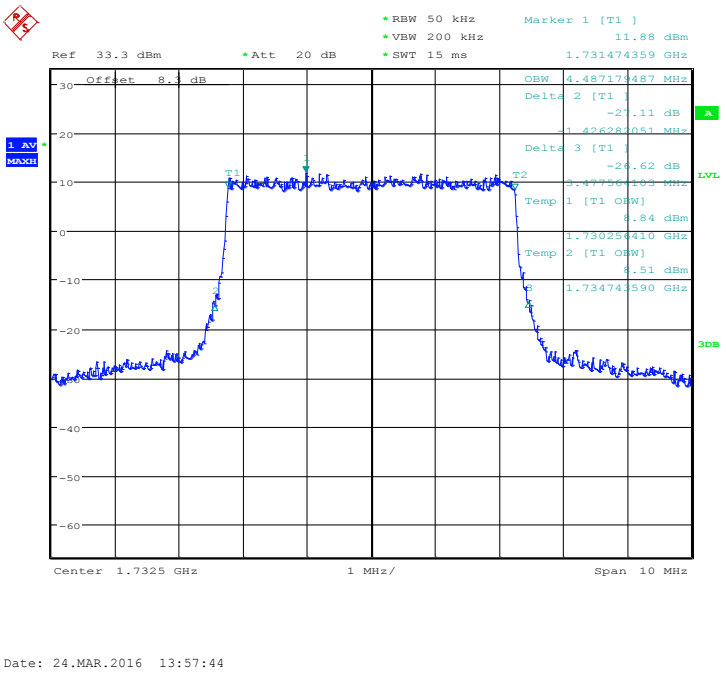
Date: 16.MAR.2016 19:27:48

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

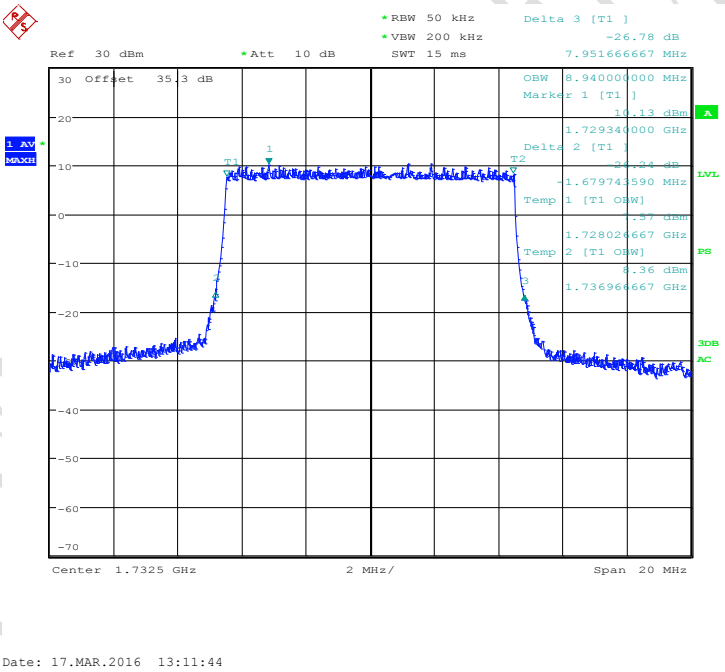


Date: 16.MAR.2016 19:33:00

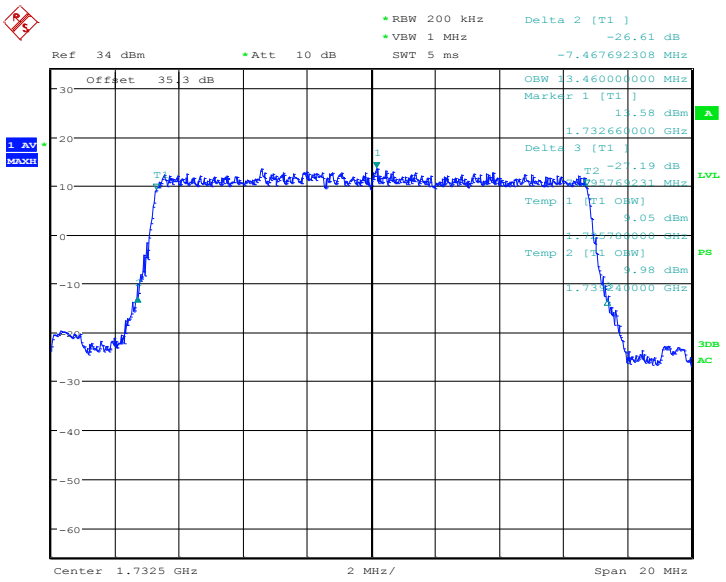
LTE Band4 QPSK Channel 20175 BW=3MHz RB=15 RB Offset=0



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

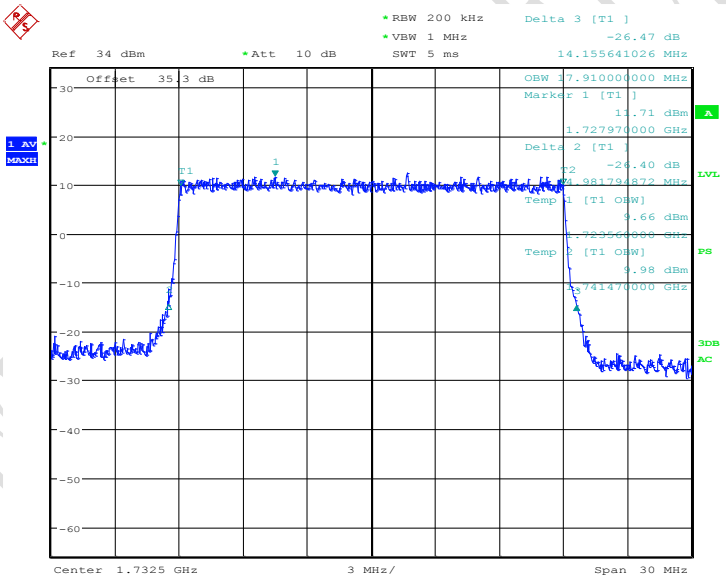


LTE Band4 QPSK Channel 20175 BW=10MHz RB=50 RB Offset=0



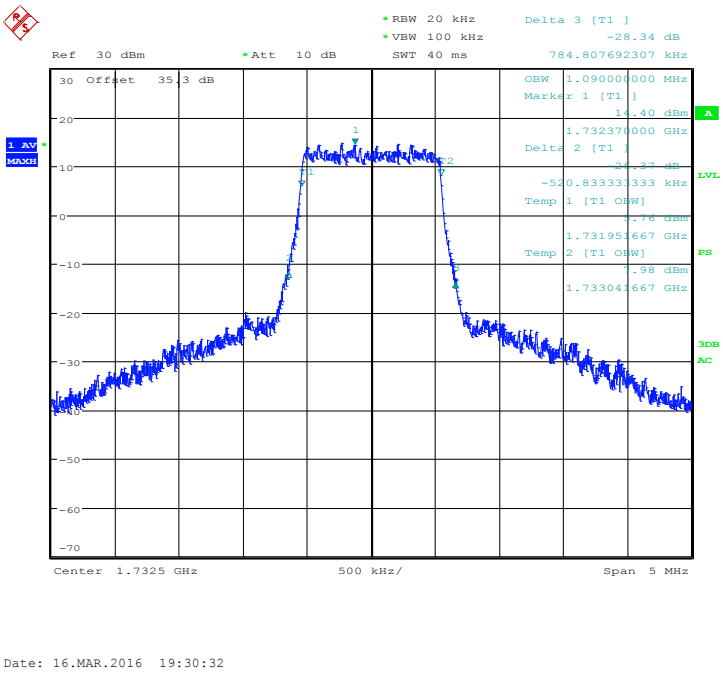
Date: 17.MAR.2016 13:18:41

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

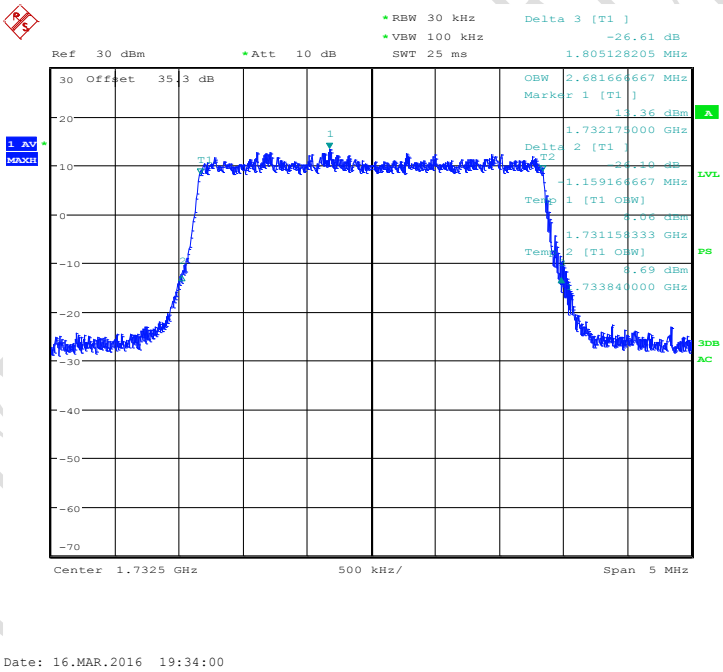


Date: 17.MAR.2016 13:23:28

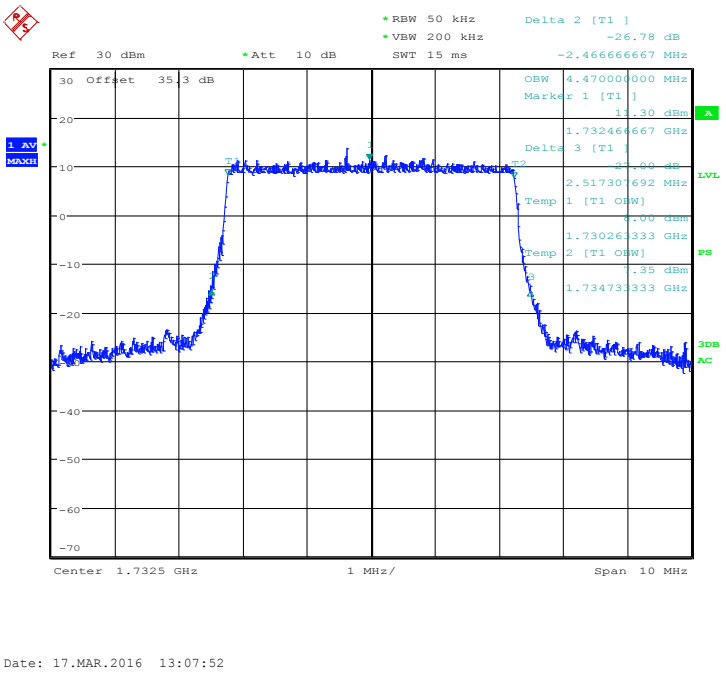
LTE Band4 QPSK Channel 20175 BW=20MHz RB=100 RB Offset=0



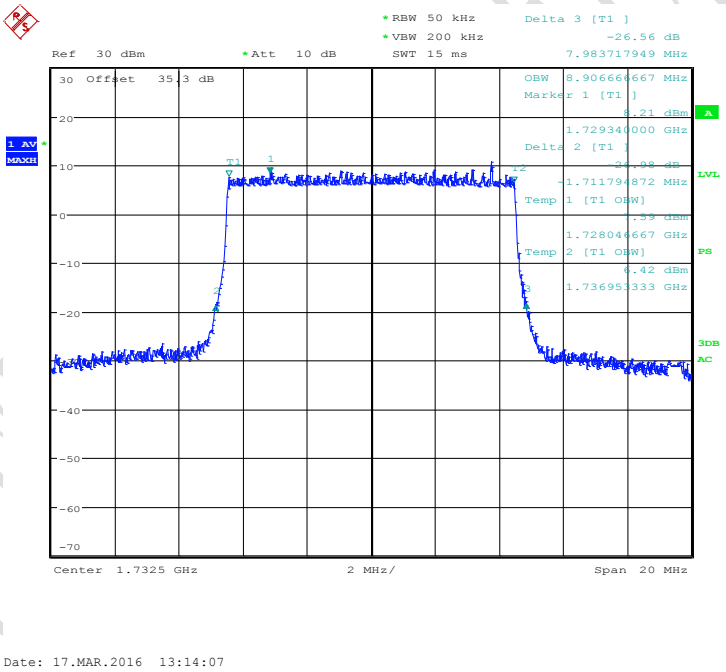
LTE Band4 16QAM Channel 20175 BW=1.4MHz RB=6 RB Offset=0



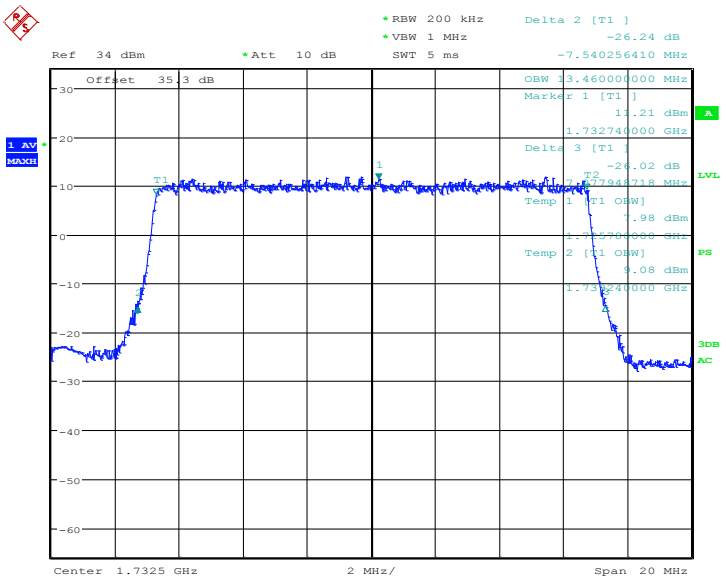
LTE Band4 16QAM Channel 20175 BW=3MHz RB=15 RB Offset=0



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

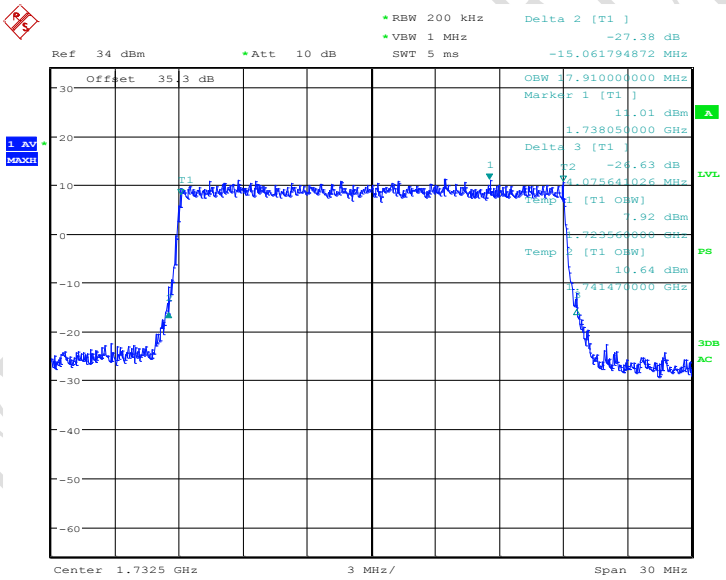


LTE Band4 16QAM Channel 20175 BW=10MHz RB=50 RB Offset=0



Date: 17.MAR.2016 13:21:39

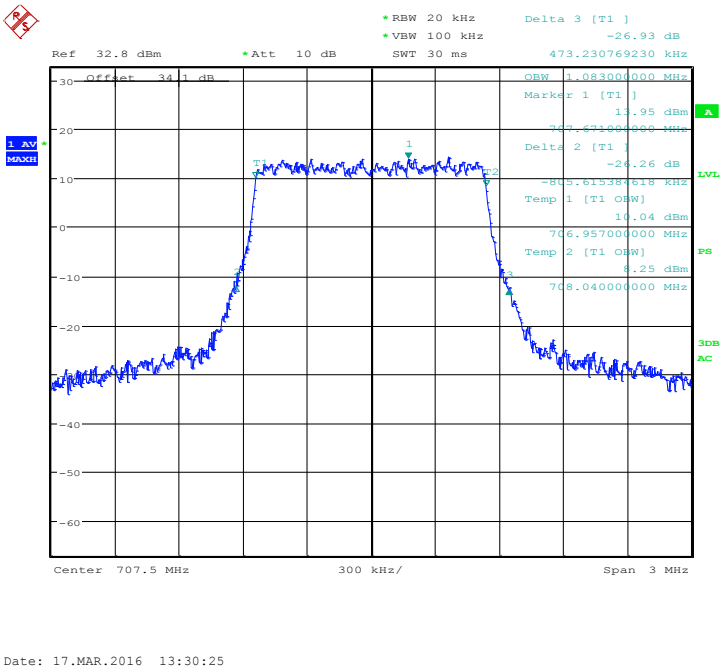
LTE Band4 16QAM Channel 20175 BW=15MHz RB=75 RB Offset=0



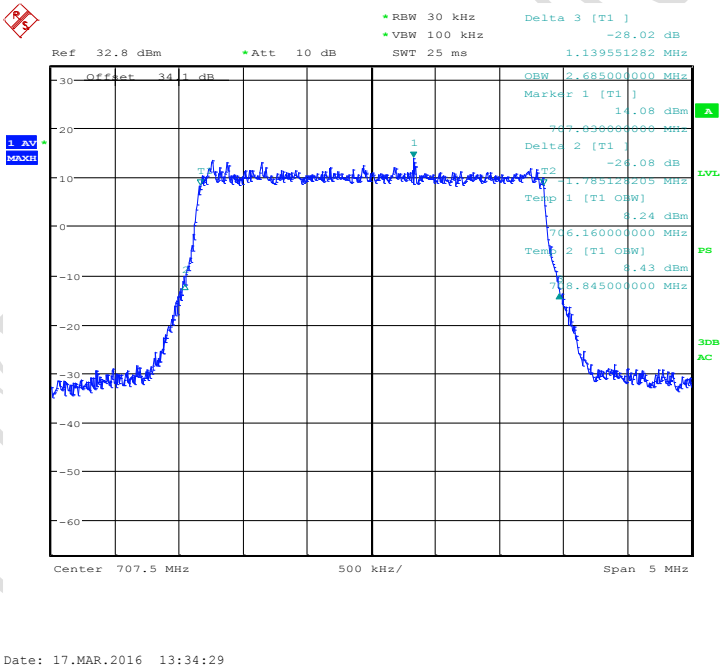
Date: 17.MAR.2016 13:24:34

LTE Band4 16QAM Channel 20175 BW=20MHz RB=100 RB Offset=0

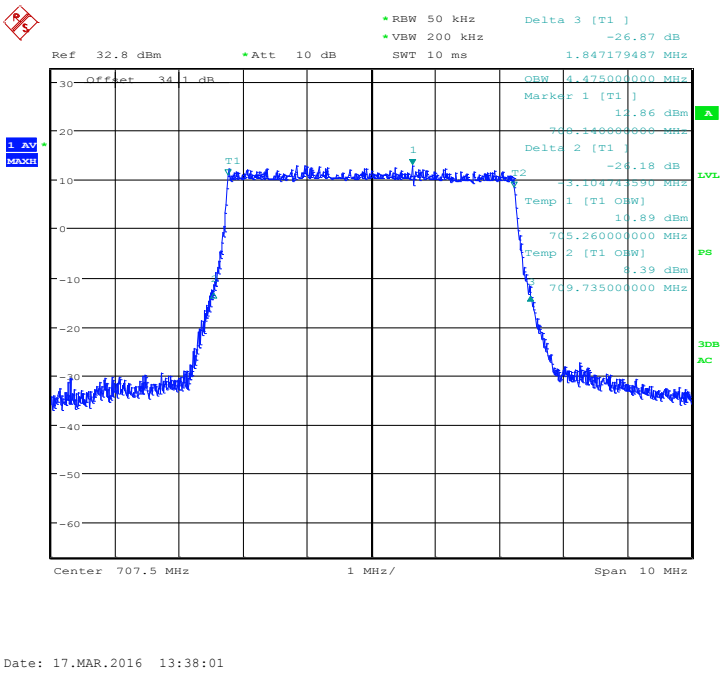
Graphical results for LTE B12:



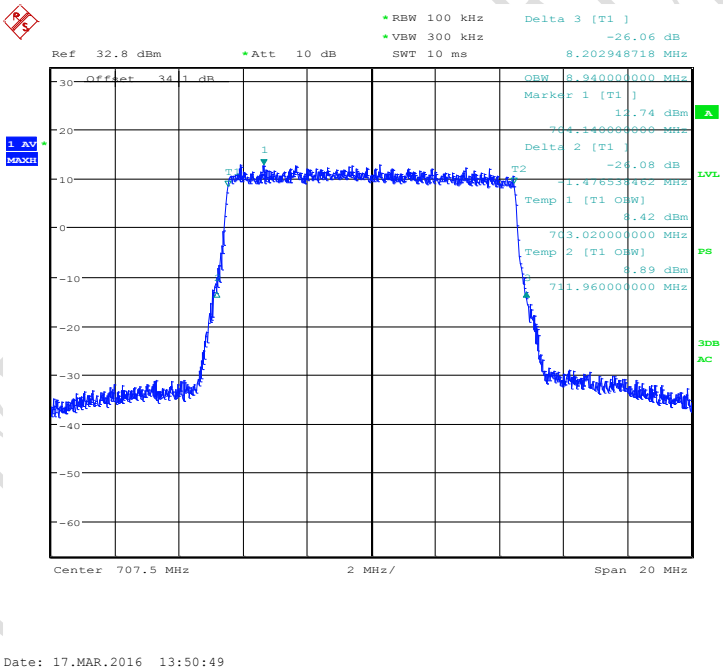
LTE Band12 QPSK Channel 23095 BW=1.4MHz RB=6 RB Offset=0



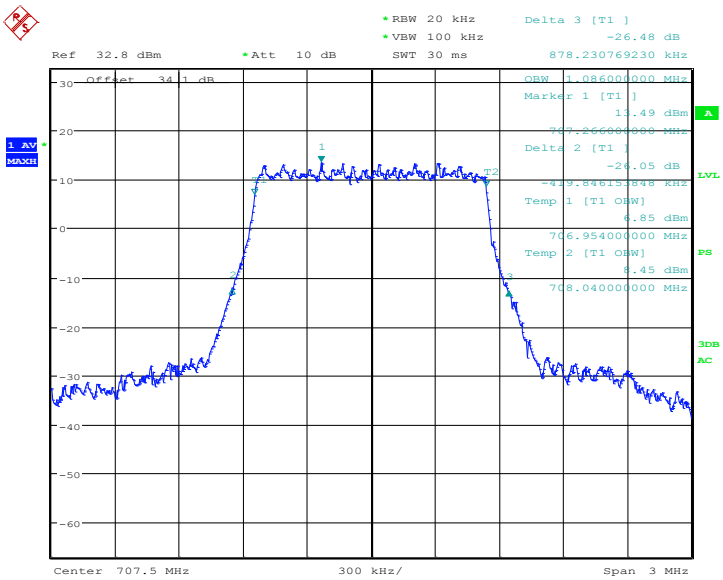
LTE Band12 QPSK Channel 23095 BW=3MHz RB=15 RB Offset=0



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

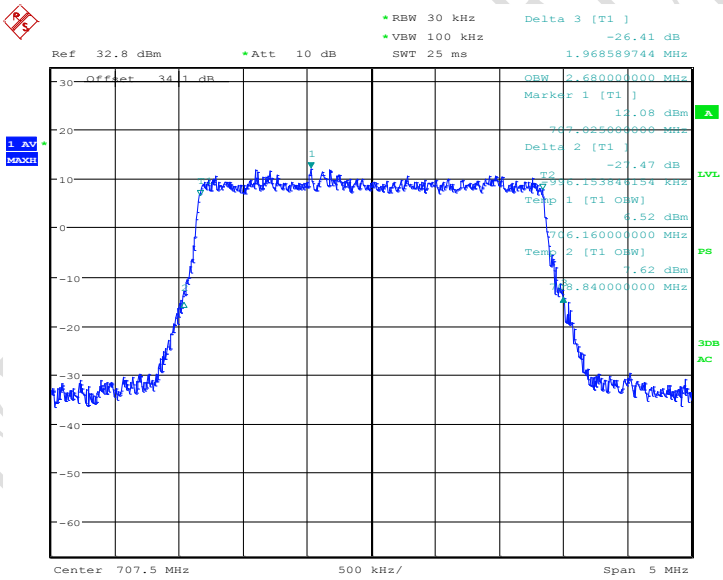


LTE Band12 QPSK Channel 23095 BW=10MHz RB=50 RB Offset=0



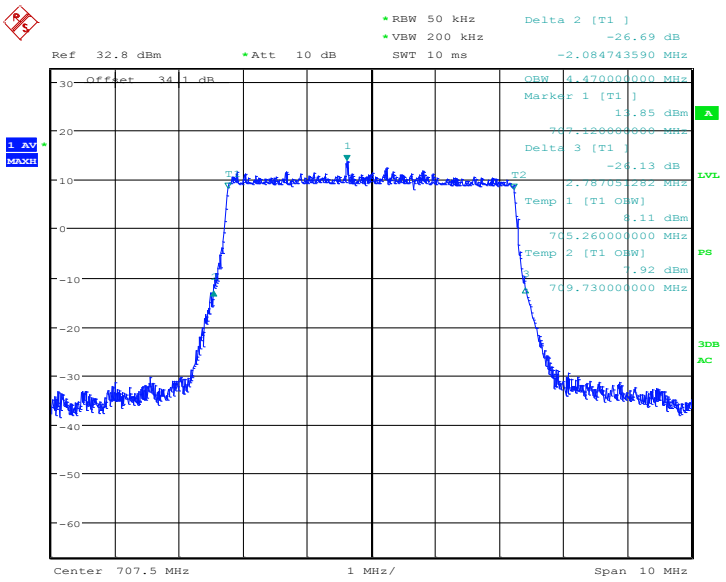
Date: 17.MAR.2016 13:32:07

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



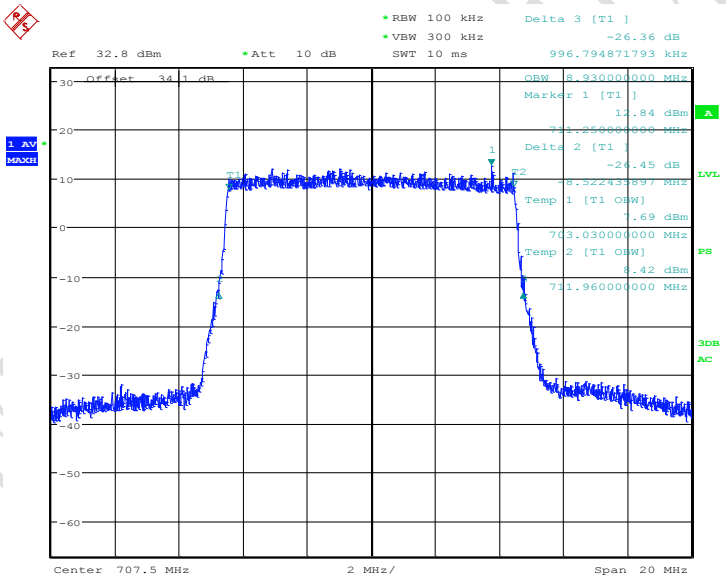
Date: 17.MAR.2016 13:35:30

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



Date: 17.MAR.2016 13:39:09

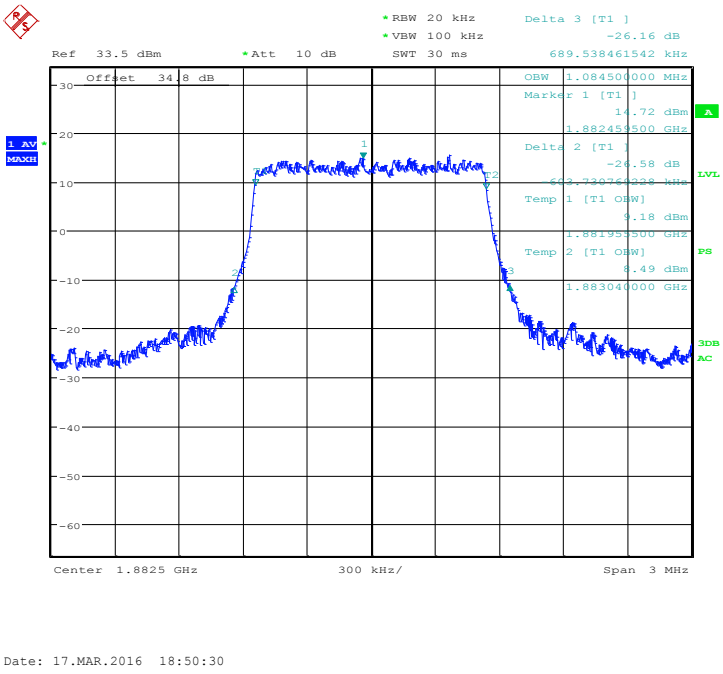
LTE Band12 16QAM Channel 23095 BW=5MHz RB=25 RB Offset=0



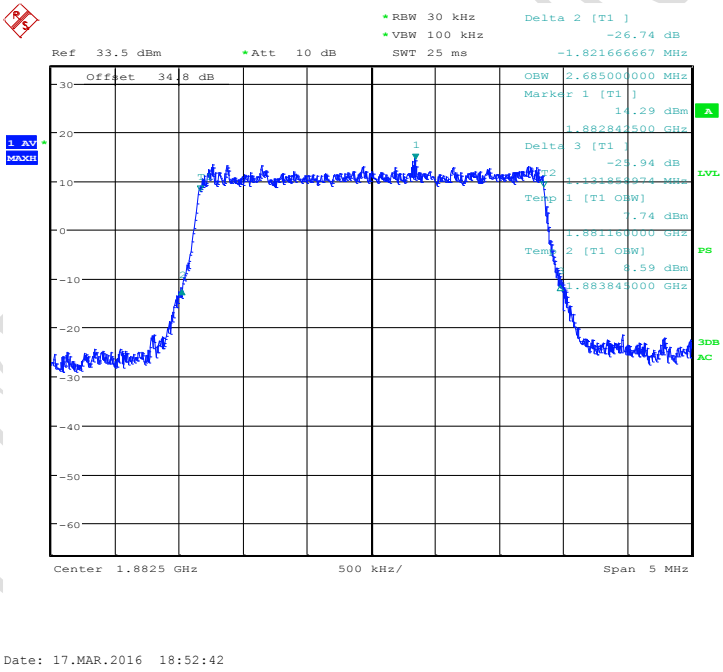
Date: 17.MAR.2016 13:51:37

LTE Band12 16QAM Channel 23095 BW=10MHz RB=50 RB Offset=0

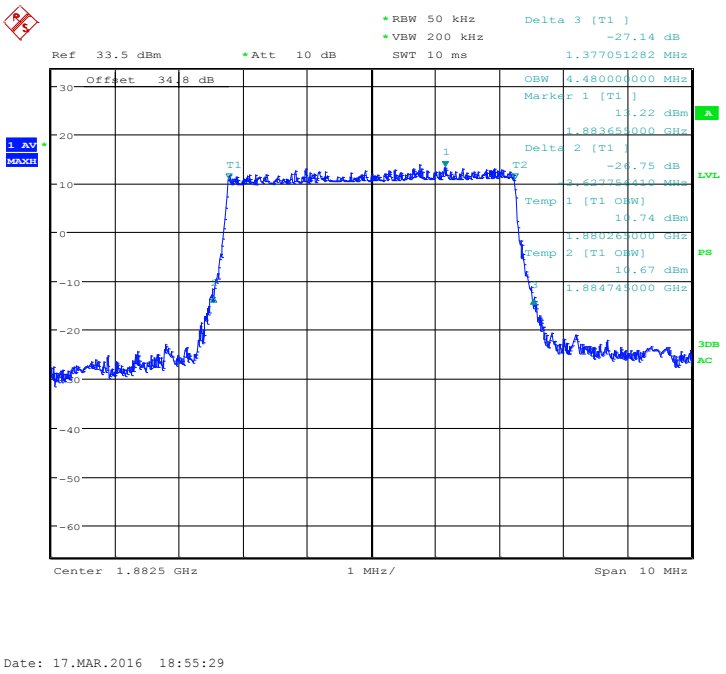
Graphical results for LTE B25:



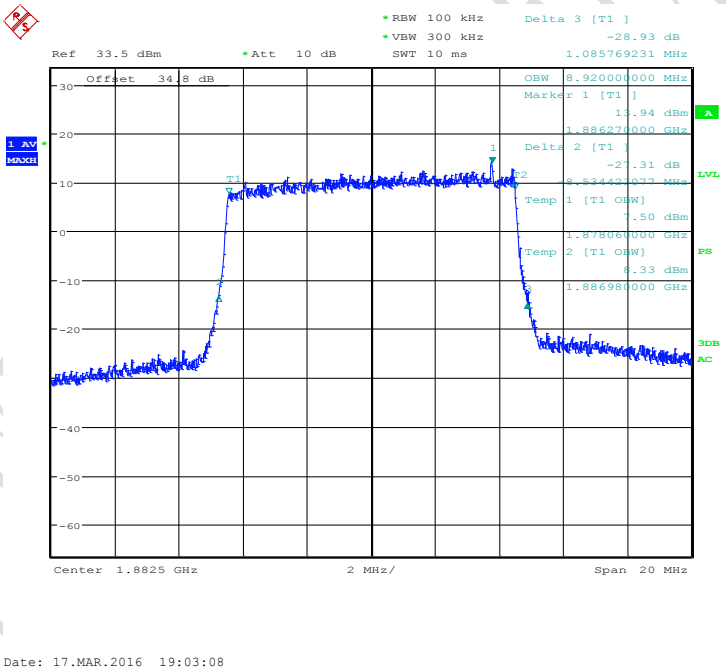
LTE Band25 QPSK Channel 26365 BW=1.4MHz RB=6 RB Offset=0



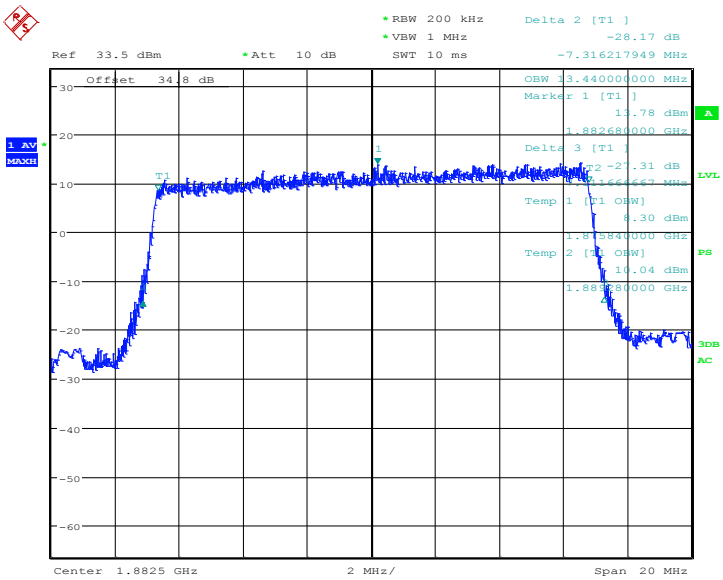
LTE Band25 QPSK Channel 26365 BW=3MHz RB=15 RB Offset=0



LTE Band25 QPSK Channel 26365 BW=5MHz RB=25 RB Offset=0

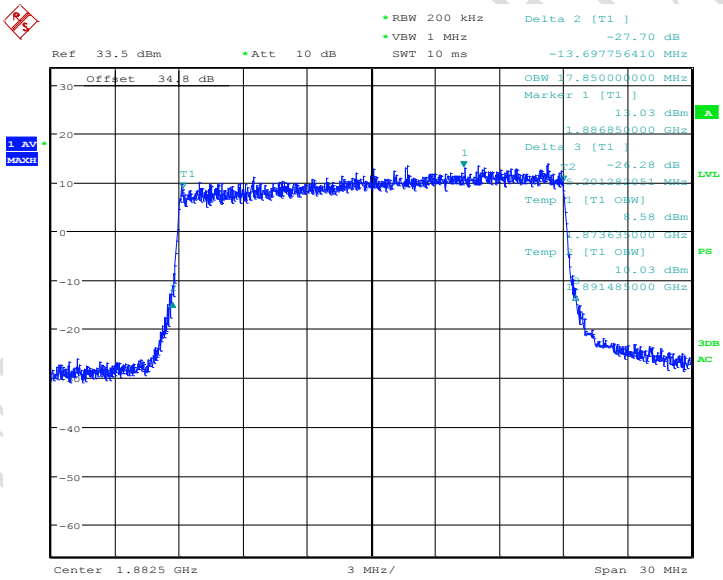


LTE Band25 QPSK Channel 26365 BW=10MHz RB=50 RB Offset=0



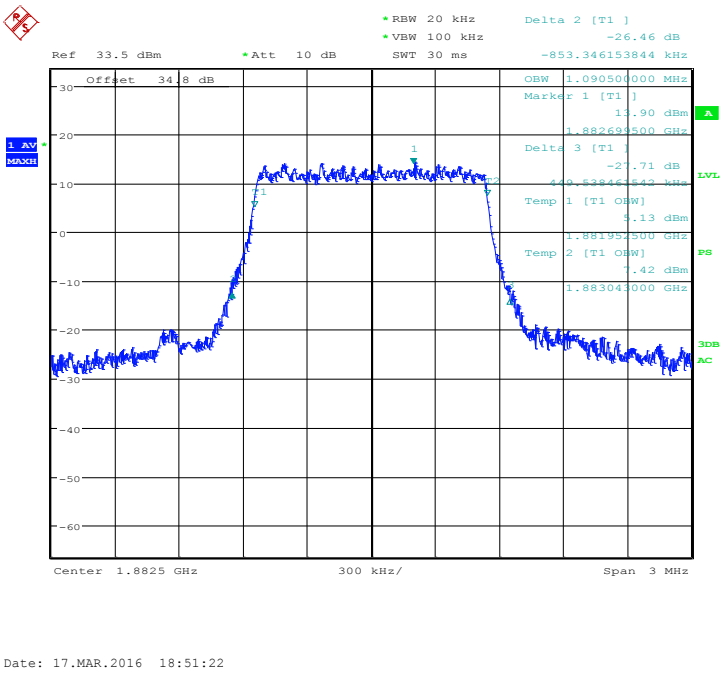
Date: 17.MAR.2016 19:05:38

LTE Band25 QPSK Channel 26365 BW=15MHz RB=75 RB Offset=0

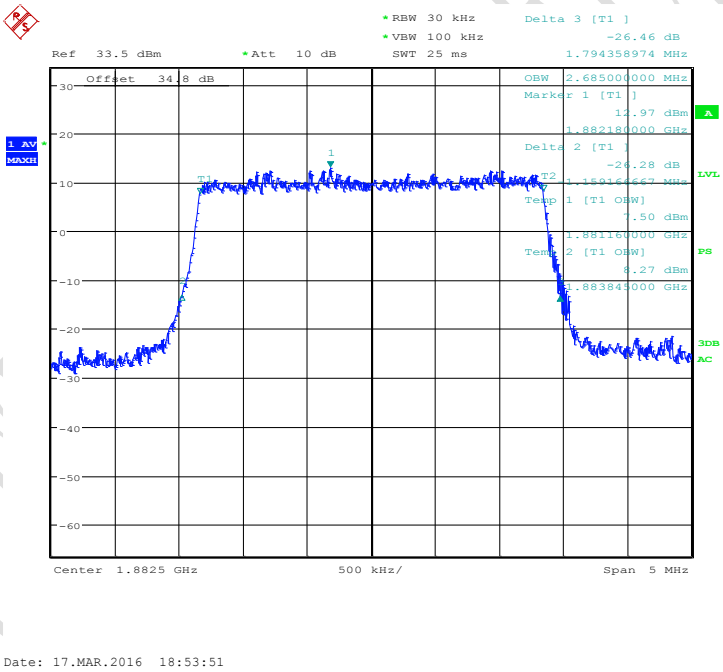


Date: 17.MAR.2016 19:07:30

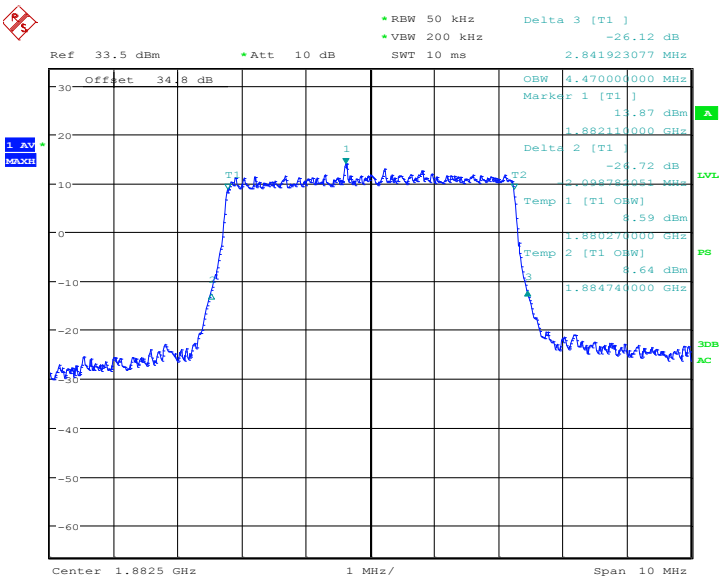
LTE Band25 QPSK Channel 26365 BW=20MHz RB=100 RB Offset=0



LTE Band25 16QAM Channel 26365 BW=1.4MHz RB=6 RB Offset=0

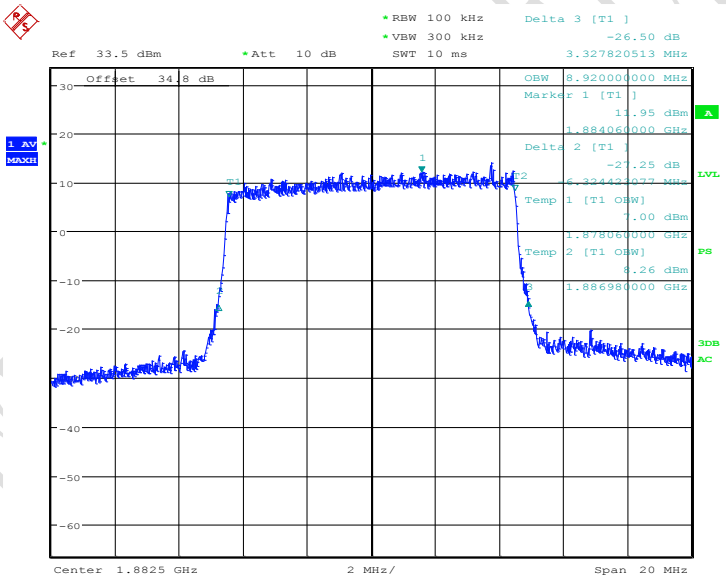


LTE Band25 16QAM Channel 26365 BW=3MHz RB=15 RB Offset=0



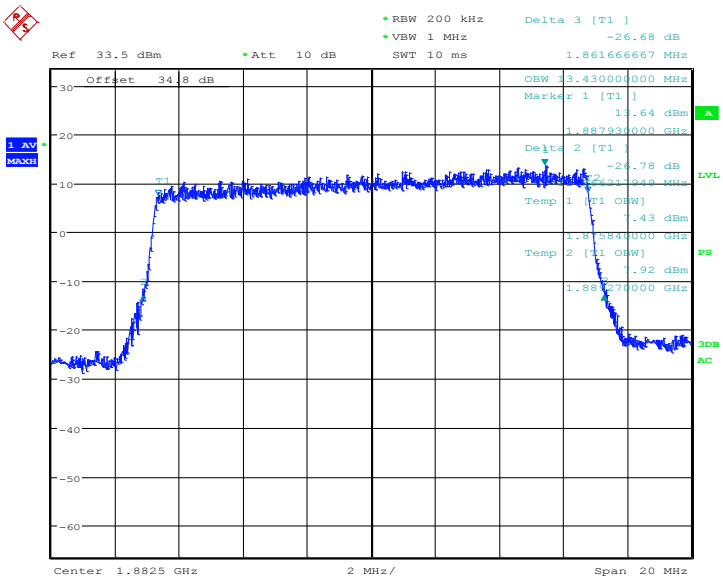
Date: 17.MAR.2016 19:01:17

LTE Band25 16QAM Channel 26365 BW=5MHz RB=25 RB Offset=0



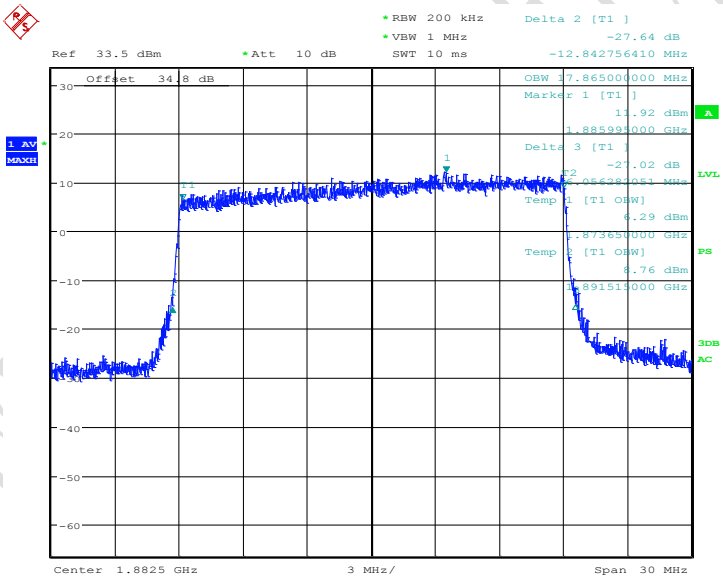
Date: 17.MAR.2016 19:04:12

LTE Band25 16QAM Channel 26365 BW=10MHz RB=50 RB Offset=0



Date: 17.MAR.2016 19:06:22

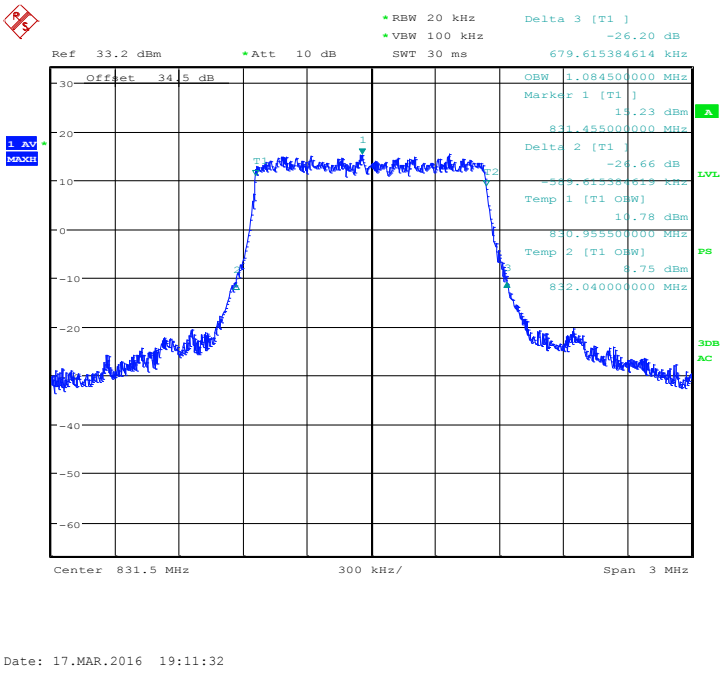
LTE Band25 16QAM Channel 26365 BW=15MHz RB=75 RB Offset=0



Date: 17.MAR.2016 19:08:09

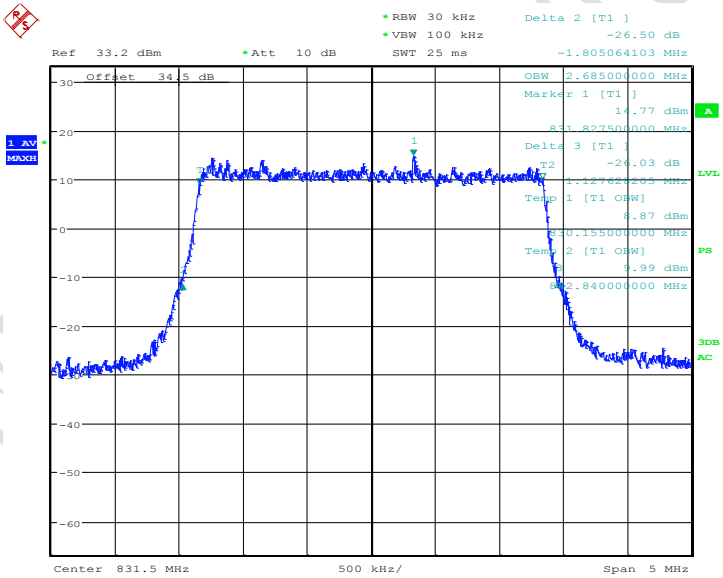
LTE Band25 16QAM Channel 26365 BW=20MHz RB=100 RB Offset=0

Graphical results for LTE B26:



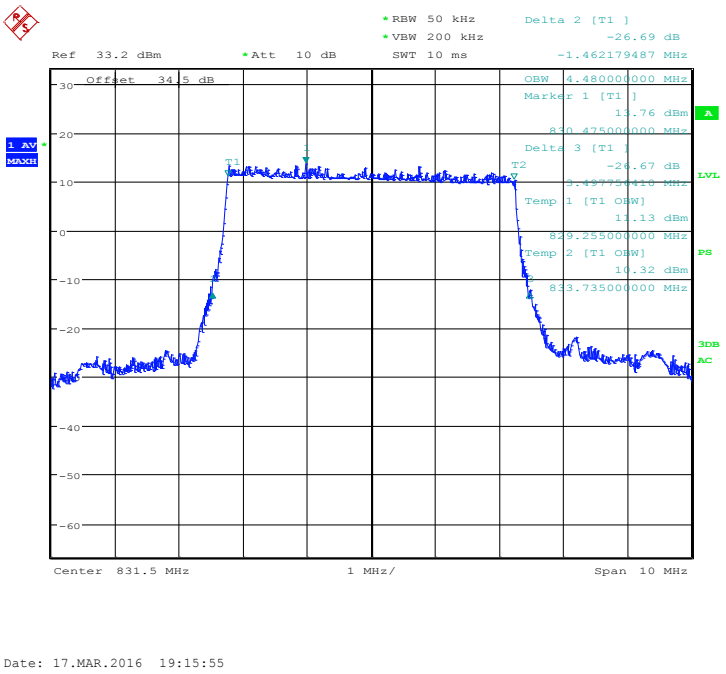
Date: 17.MAR.2016 19:11:32

LTE Band26 QPSK Channel 26865 BW=1.4MHz RB=6 RB Offset=0

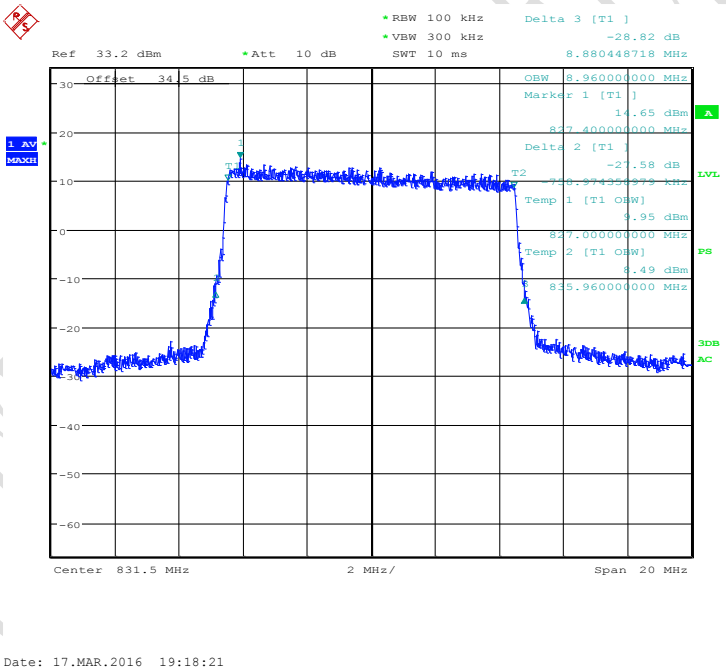


Date: 17.MAR.2016 19:13:31

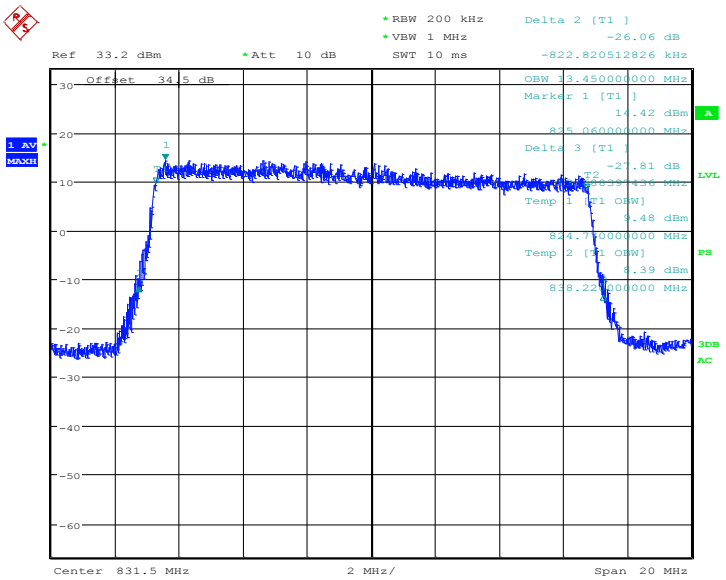
LTE Band26 QPSK Channel 26865 BW=3MHz RB=15 RB Offset=0



LTE Band26 QPSK Channel 26865 BW=5MHz RB=25 RB Offset=0

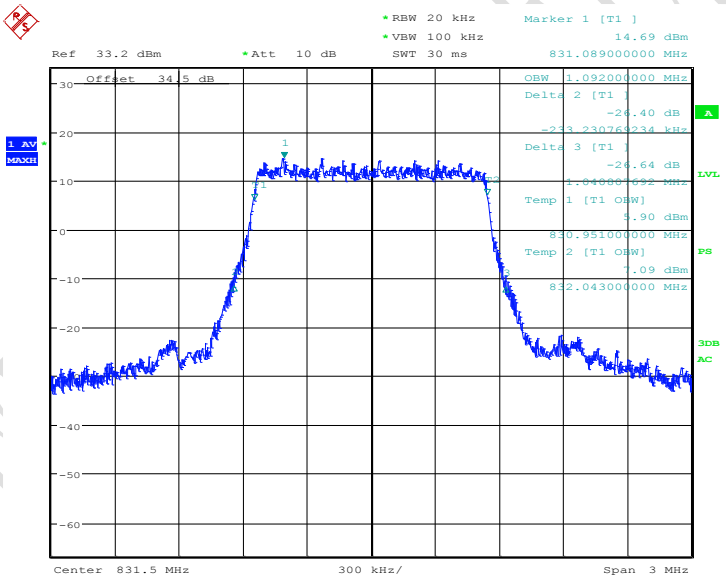


LTE Band26 QPSK Channel 26865 BW=10MHz RB=50 RB Offset=0



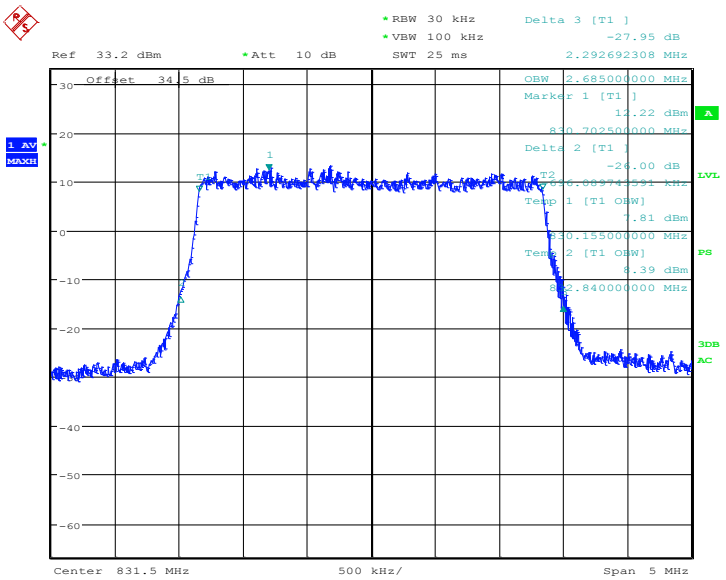
Date: 17.MAR.2016 19:21:07

LTE Band26 QPSK Channel 26865 BW=15MHz RB=75 RB Offset=0



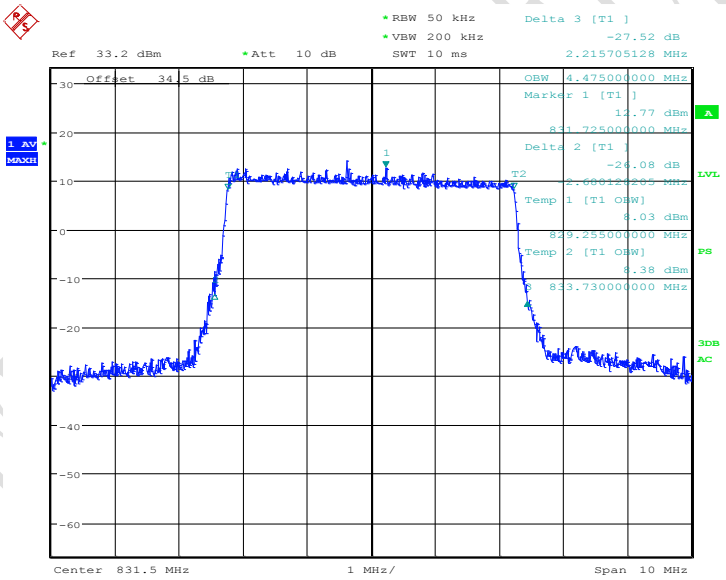
Date: 17.MAR.2016 19:12:10

LTE Band26 16QAM Channel 26865 BW=1.4MHz RB=6 RB Offset=0



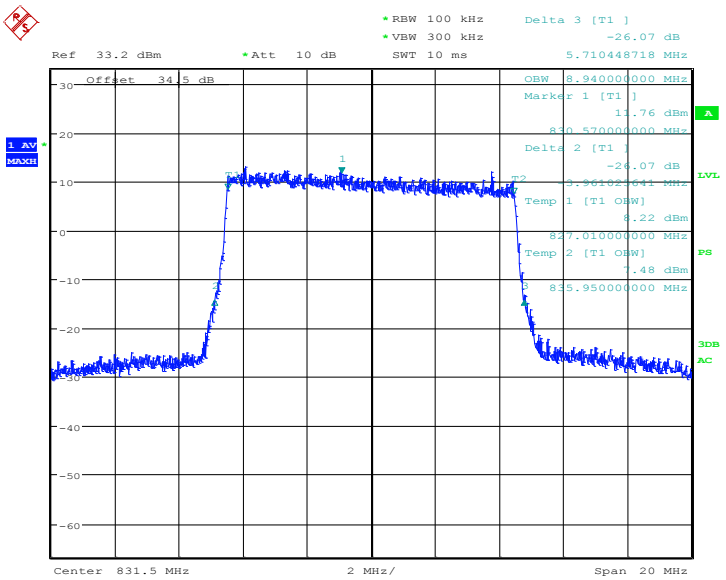
Date: 17.MAR.2016 19:14:26

LTE Band26 16QAM Channel 26865 BW=3MHz RB=15 RB Offset=0



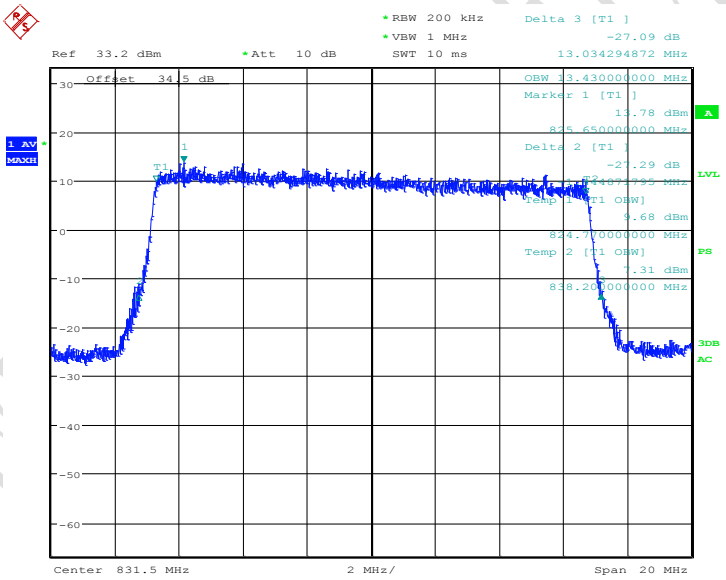
Date: 17.MAR.2016 19:16:47

LTE Band26 16QAM Channel 26865 BW=5MHz RB=25 RB Offset=0



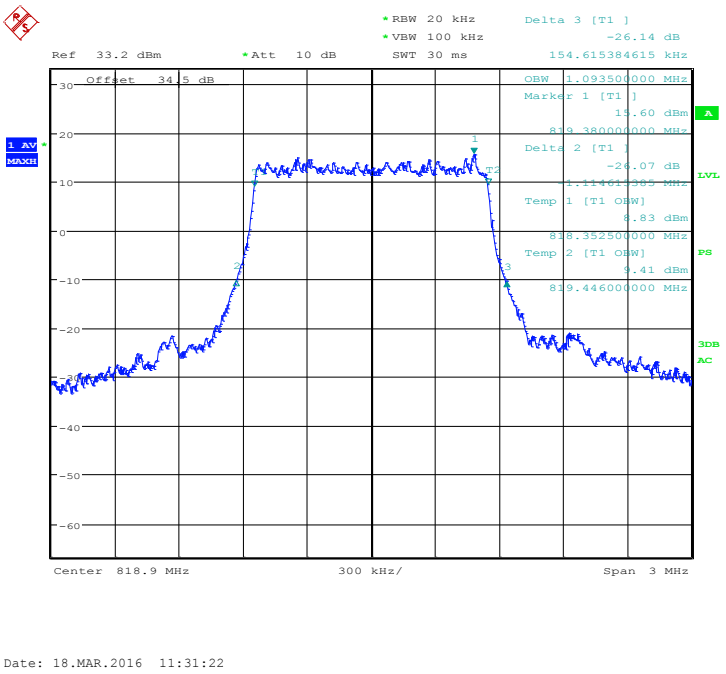
Date: 17.MAR.2016 19:19:27

LTE Band26 16QAM Channel 26865 BW=10MHz RB=50 RB Offset=0

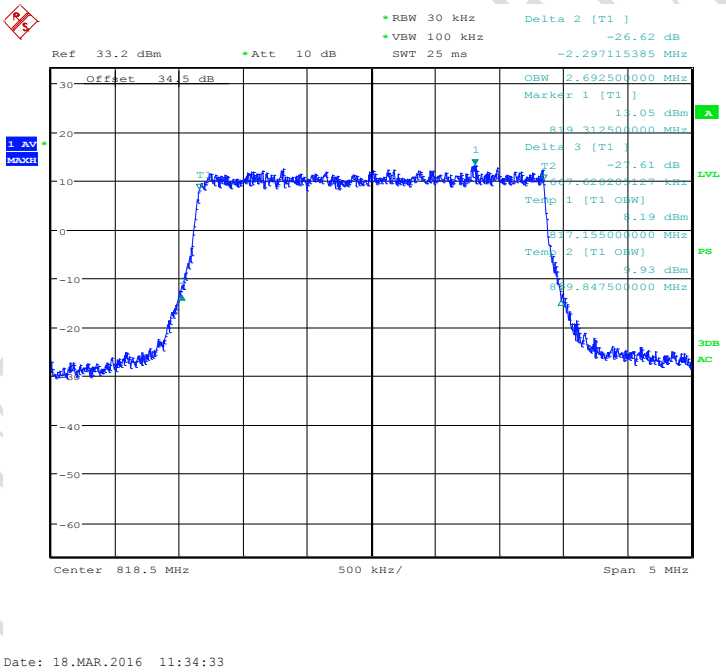


Date: 17.MAR.2016 19:21:55

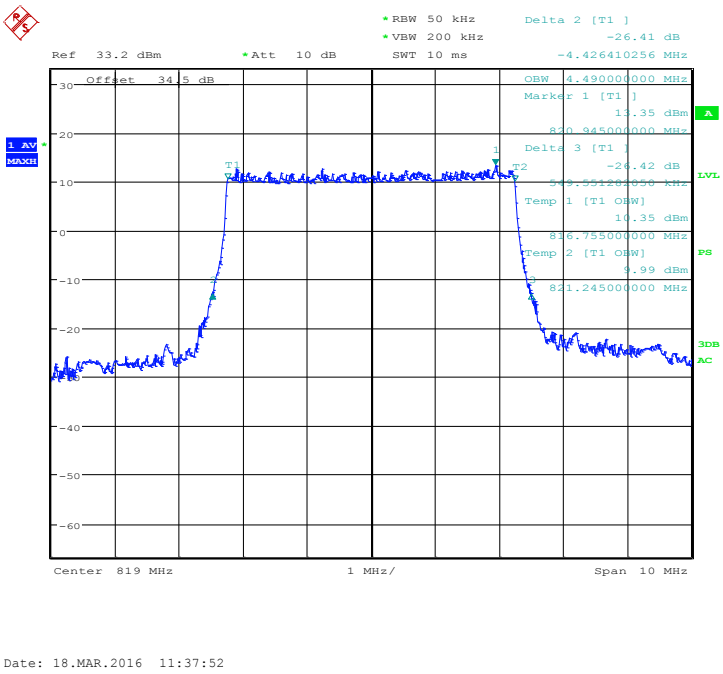
LTE Band26 16QAM Channel 26865 BW=15MHz RB=75 RB Offset=0



LTE Band26 814MHz~824MHz QPSK Channel 26739 BW=1.4MHz RB=6 RB Offset=0

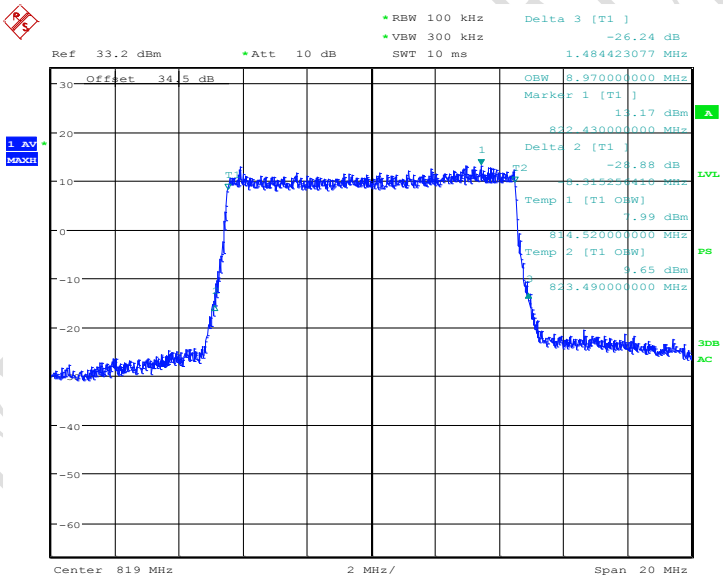


LTE Band26 814MHz~824MHz QPSK Channel 26735 BW=3MHz RB=15 RB Offset=0



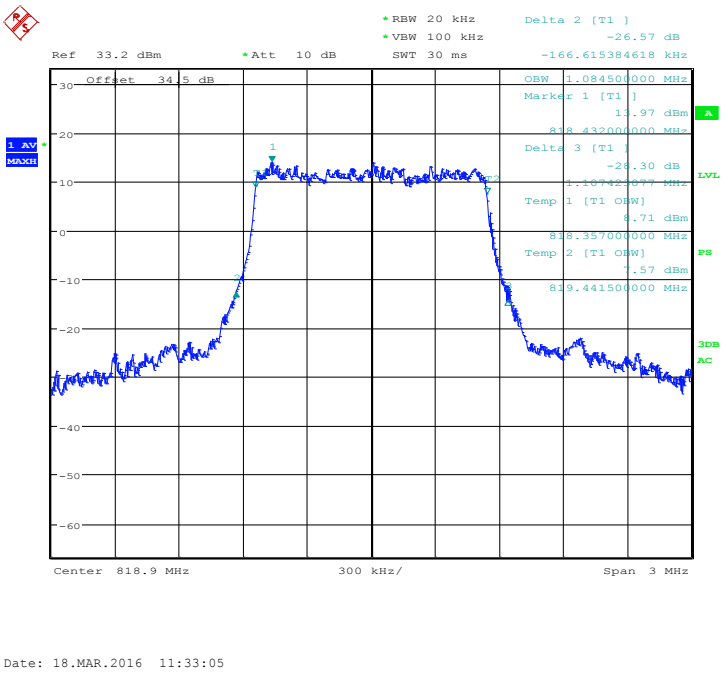
Date: 18.MAR.2016 11:37:52

LTE Band26 814MHz~824MHz QPSK Channel 26740 BW=5MHz RB=25 RB Offset=0



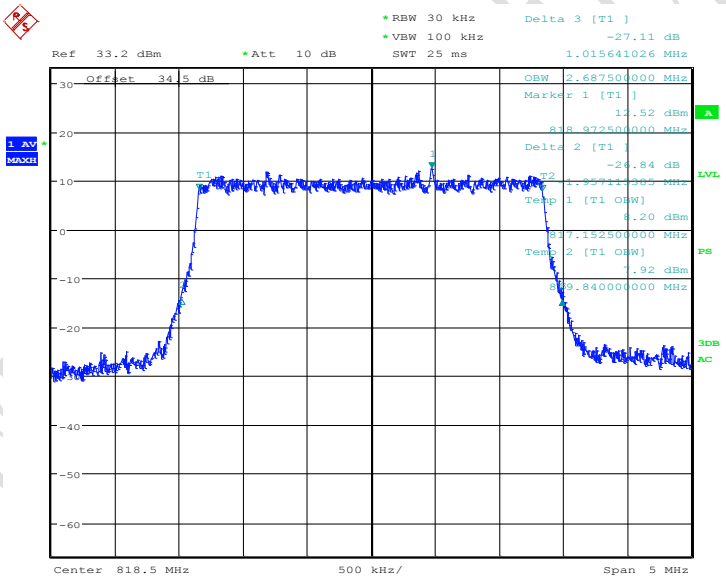
Date: 18.MAR.2016 11:40:48

LTE Band26 814MHz~824MHz QPSK Channel 26740 BW=10MHz RB=50 RB Offset=0



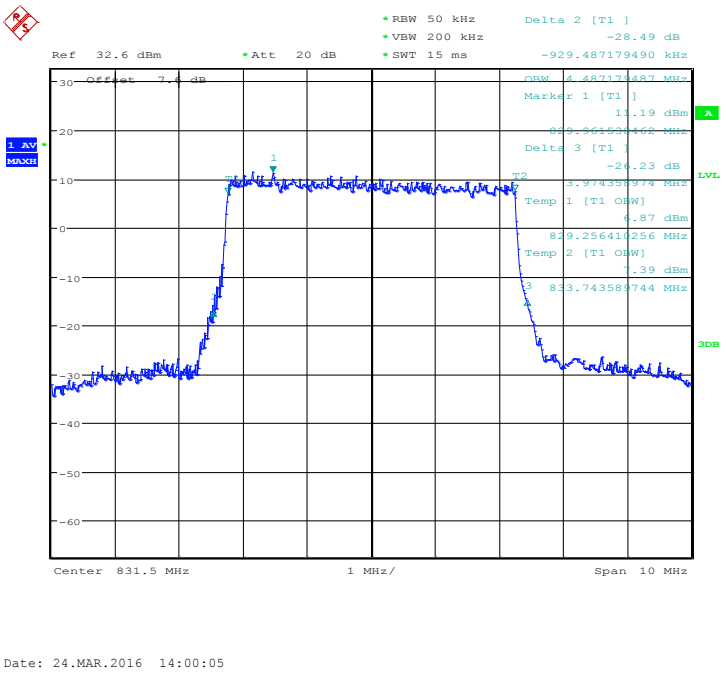
Date: 18.MAR.2016 11:33:05

LTE Band26 814MHz~824MHz 16QAM Channel 26739 BW=1.4MHz RB=6 RB Offset=0

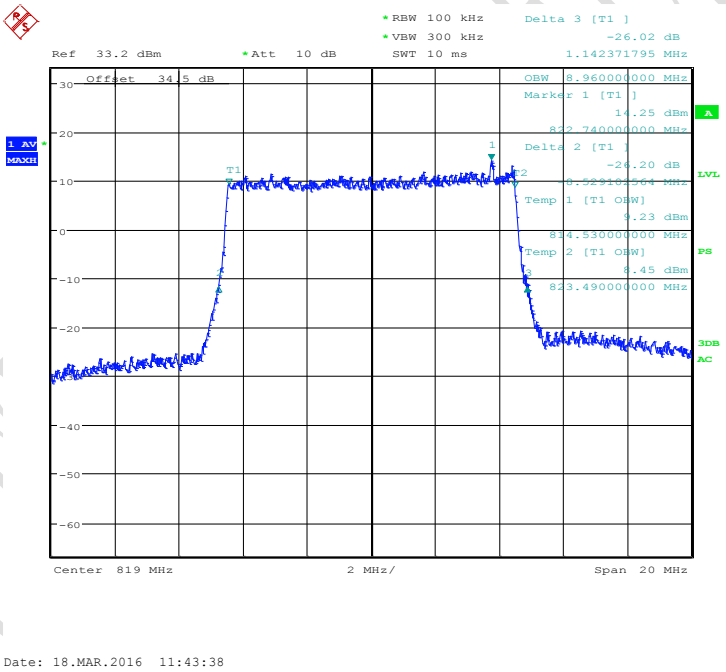


Date: 18.MAR.2016 11:35:20

LTE Band26 814MHz~824MHz 16QAM Channel 26735 BW=3MHz RB=15 RB Offset=0



LTE Band26 814MHz~824MHz 16QAM Channel 26740 BW=5MHz RB=25 RB Offset=0



LTE Band26 814MHz~824MHz 16QAM Channel 26740 BW=10MHz RB=50 RB Offset=0

5.3 Conducted Spurious Emission

Specifications:	FCC Part 2.1051, 24.238, 2.1053, 22.917, 27.53, 90.691 RSS-130 4.6, RSS-132 4.5, RSS-133 6.5, RSS-199 4.6
DUT Serial Number:	S1/2: 356207070002119 S3/3: 356207071234562
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Limit Level Construction:

According to Part 22.917 (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.

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(dBm) – (43 + 10 log(P)) dB= -13dBm.

According to Part 27.53(h):

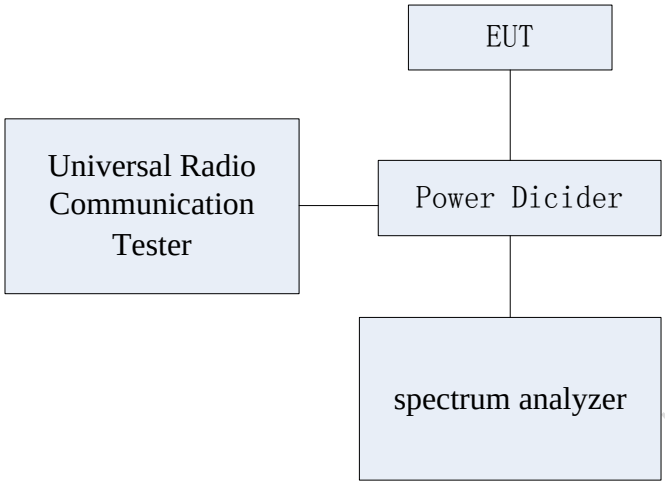
Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10(P) dB

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

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.

CTTL Test Report



Test Method:

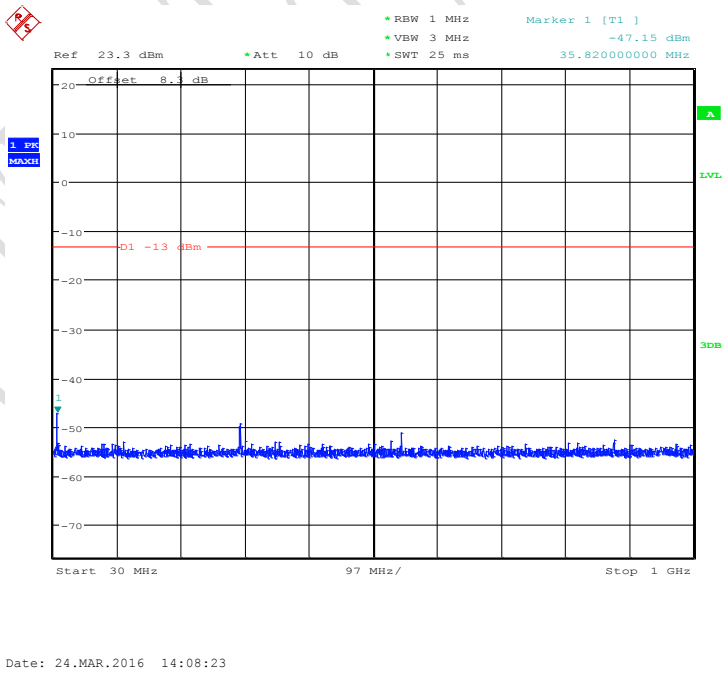
The measurement was performed accordance with section 2.2.13 of ANSI/TIA-603-B-2002: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

The following steps outline the procedure used to measure the conducted emissions from the EUT.

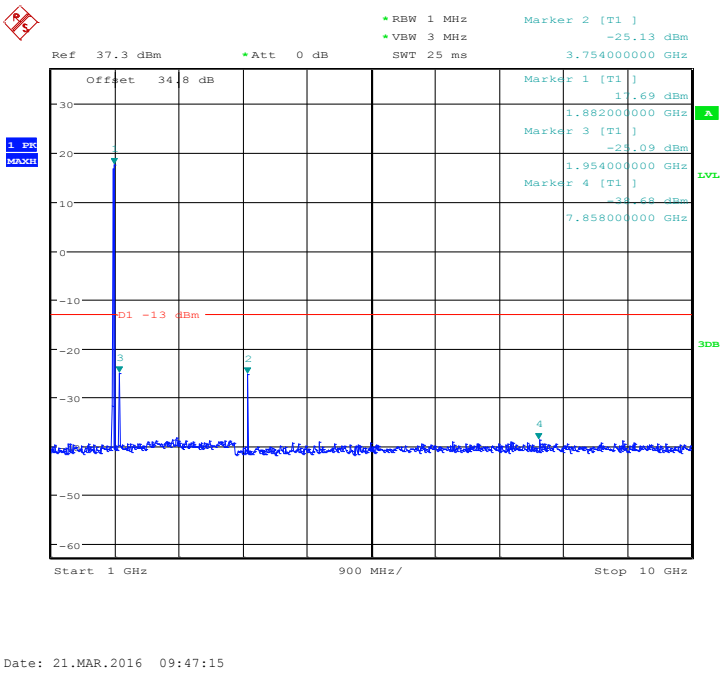
1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency.

Note: --

5.3.1 WCDMA Band mode Conducted Spurious Emission Results

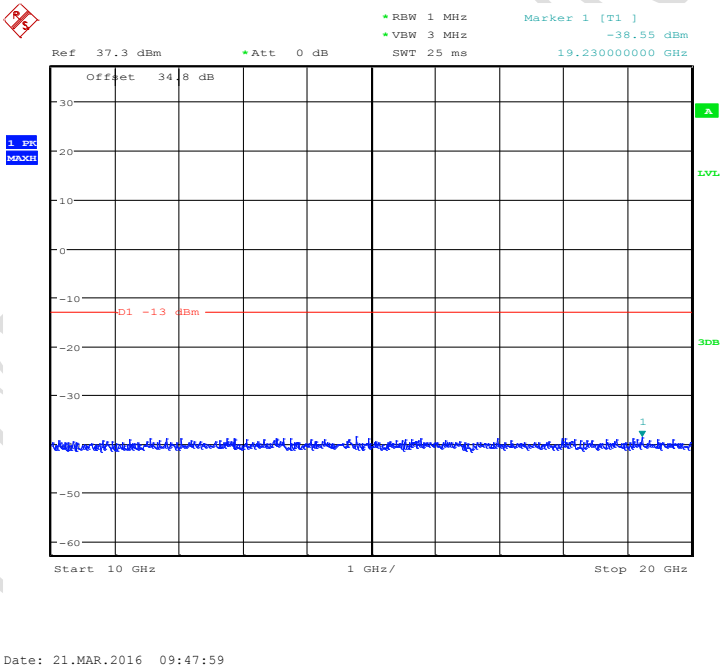


WCDMA Band 2 Middle Channel, 1880 MHz, 30MHz to 1GHz

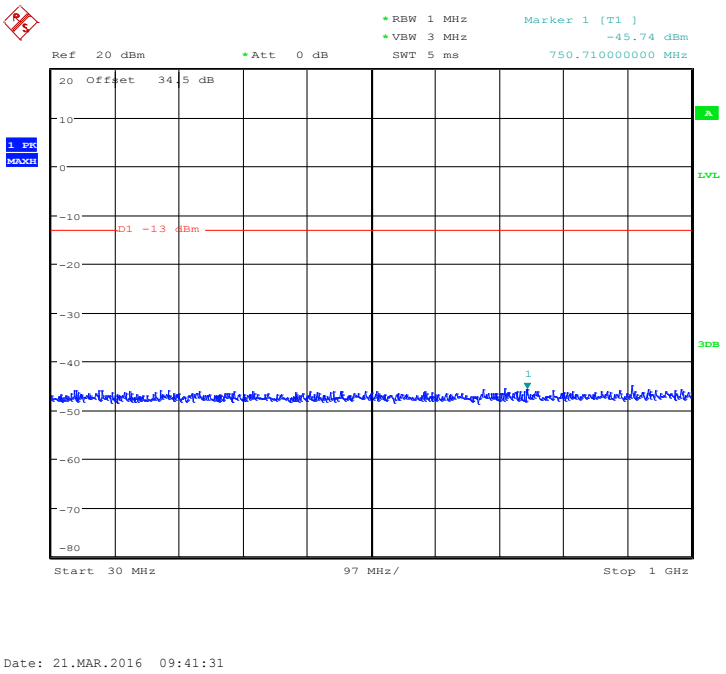


WCDMA Band 2 Middle Channel, 1880 MHz, 1GHz to 10GHz

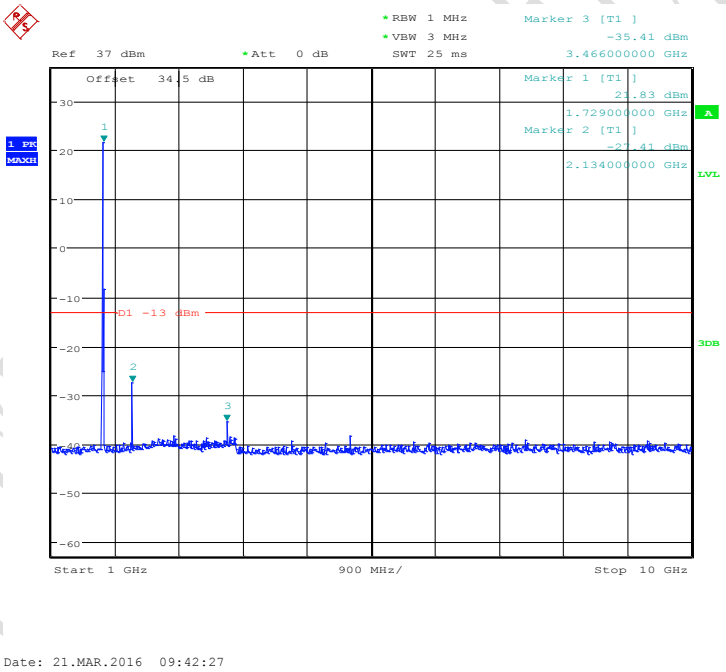
Note: The strong emission shown in each case is the carrier signal.



WCDMA Band 2 Middle Channel, 1880 MHz, 10GHz to 20GHz

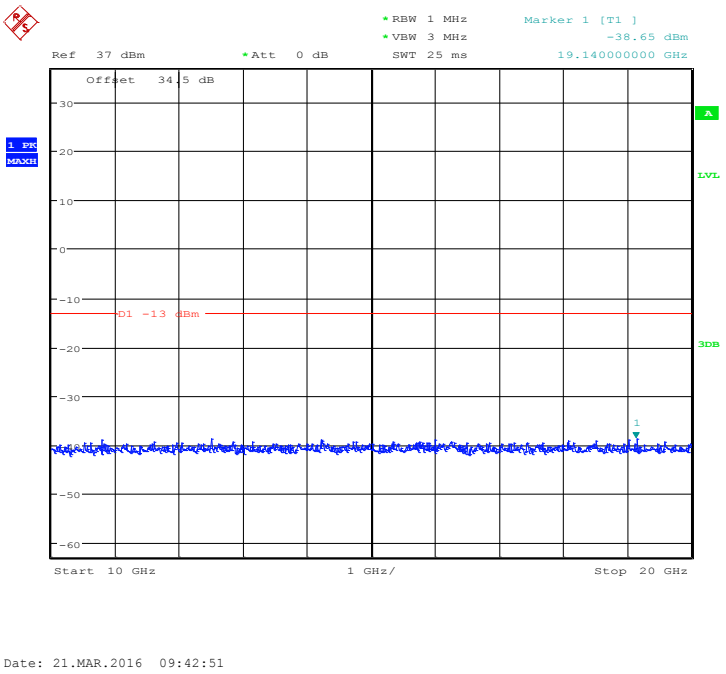


WCDMA Band 4 Middle Channel, 1732.4 MHz, 30MHz to 1GHz

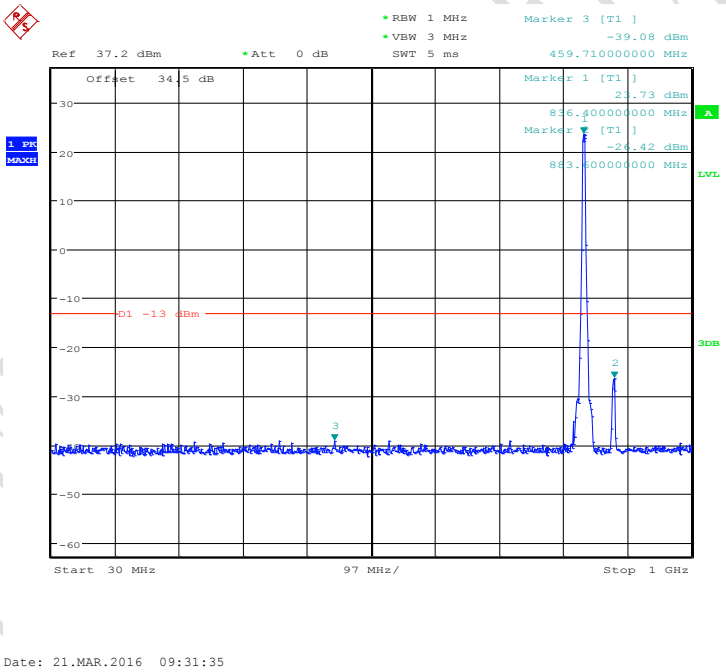


WCDMA Band 4 Middle Channel, 1732.4 MHz, 1GHz to 10GHz

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

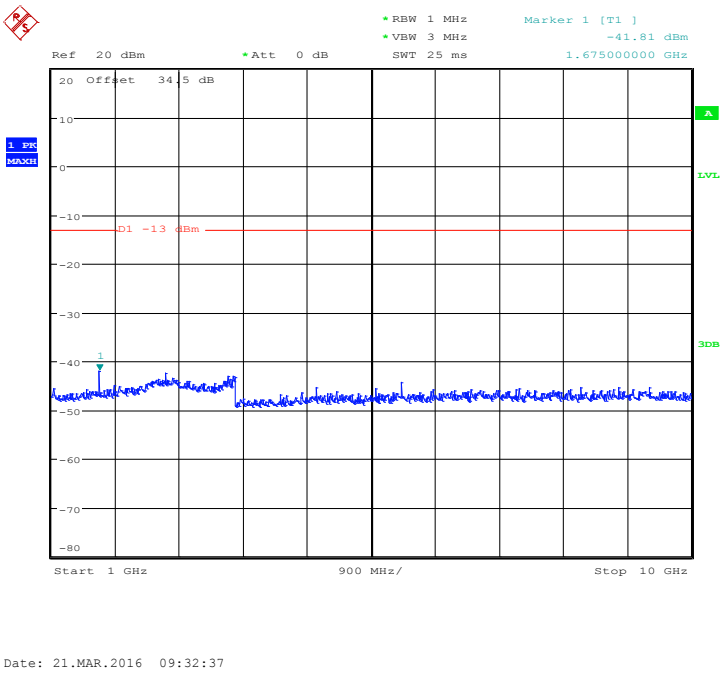


WCDMA Band 4 Middle Channel, 1732.4 MHz, 10GHz to 20GHz



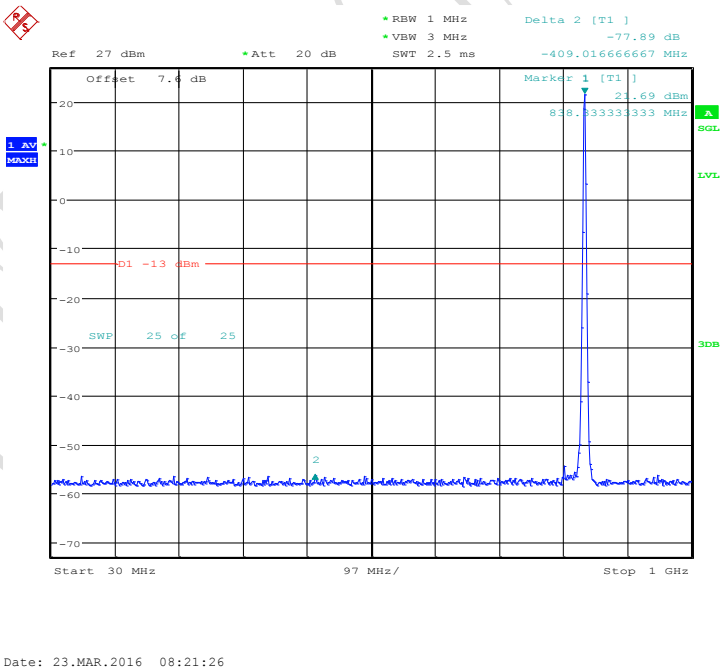
WCDMA Band 5 Middle Channel, 836.4 MHz, 30MHz to 1GHz

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



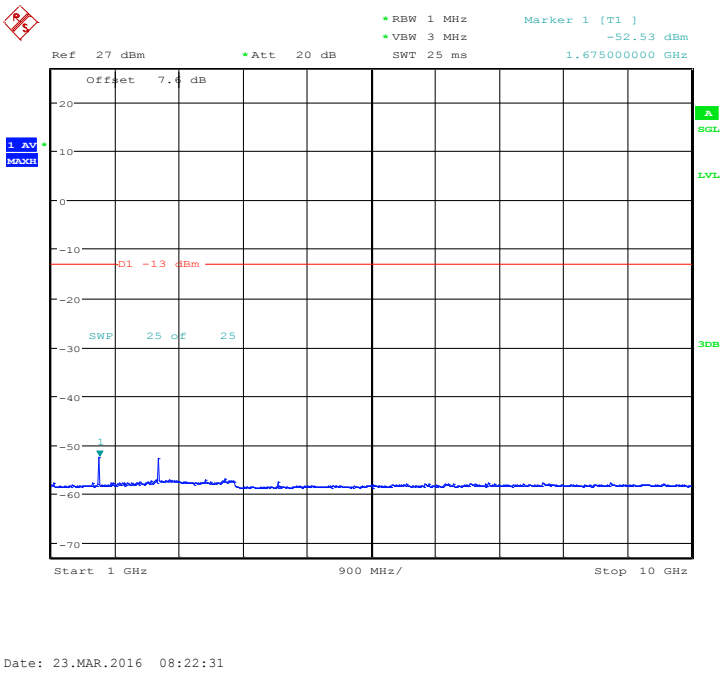
WCDMA Band 5 Middle Channel, 836.4 MHz, 1GHz to 10GHz

5.3.2 CDMA/EVDO Band mode Conducted Spurious Emission Results

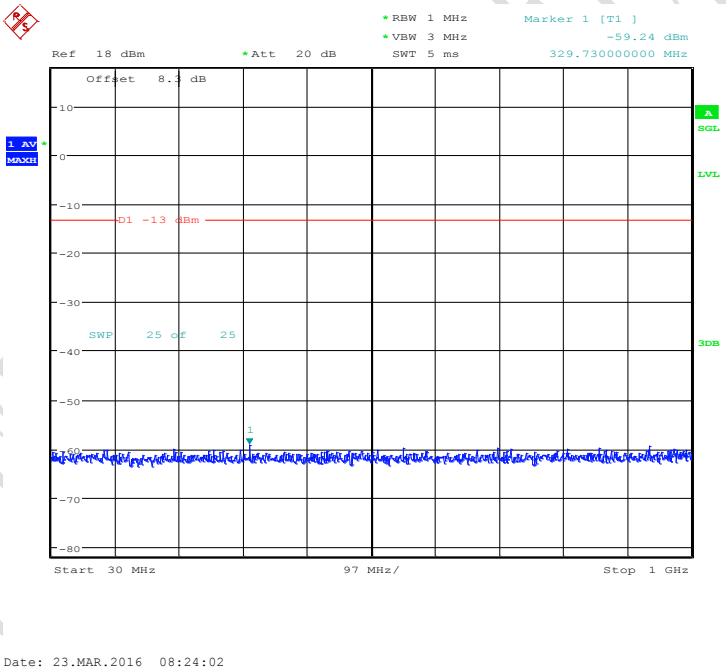


CDMA BC0, Middle channel, 836.52 MHz, 30 MHz to 1 GHz

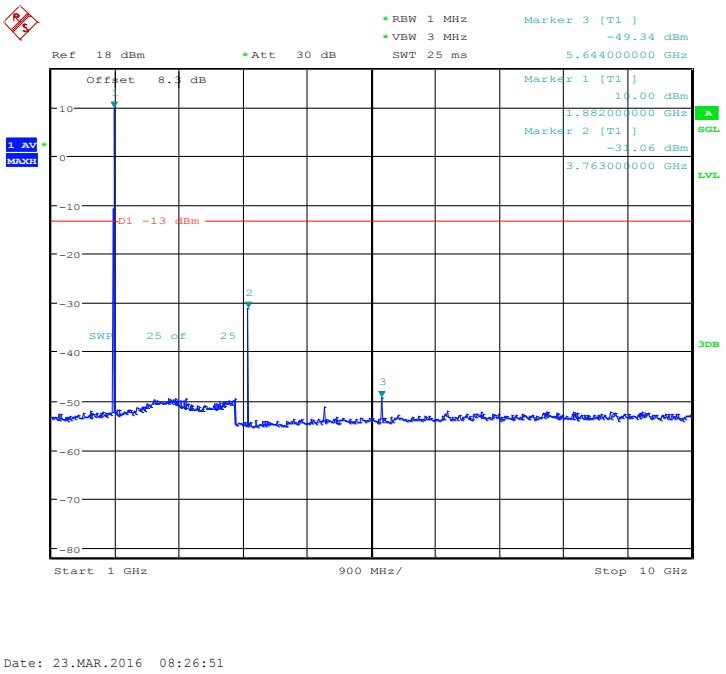
Note: The strong emission shown in each case is the carrier signal.



CDMA BC0, Middle channel, 836.52 MHz, 1 GHz to 10 GHz

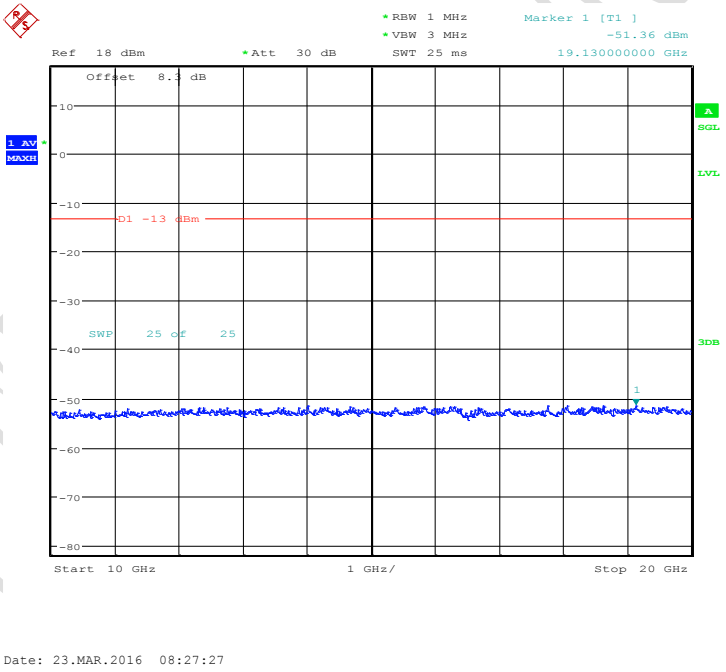


CDMA BC1, Middle channel, 1880.0 MHz, 30 MHz to 1 GHz

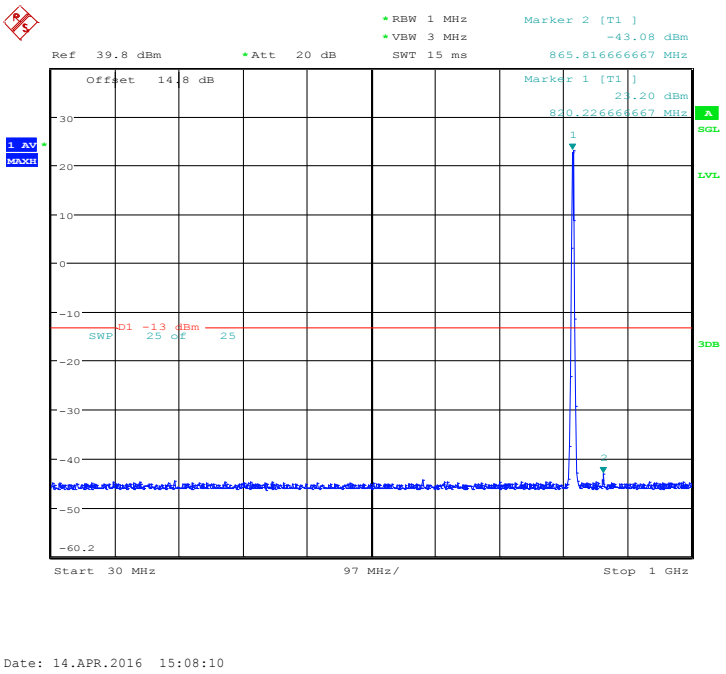


CDMA BC1, Middle channel, 1880.0 MHz, 1 GHz to 10 GHz

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

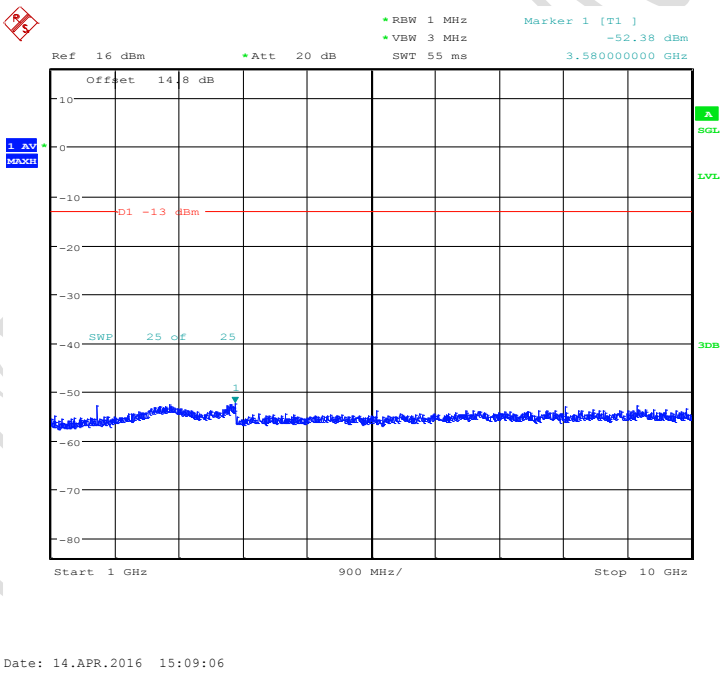


CDMA BC1, Middle channel, 1880.0 MHz, 10 GHz to 20 GHz

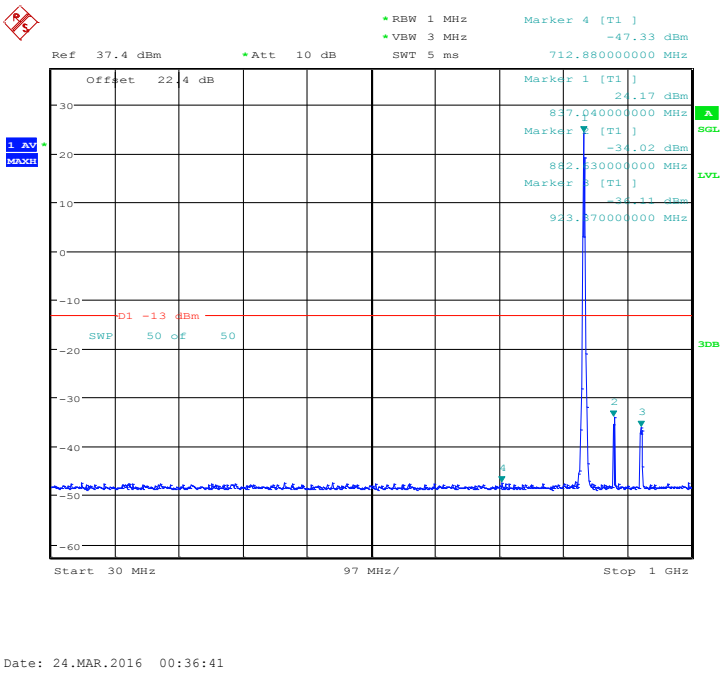


CDMA BC10, Middle channel, 820.0 MHz, 30 MHz to 1 GHz

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

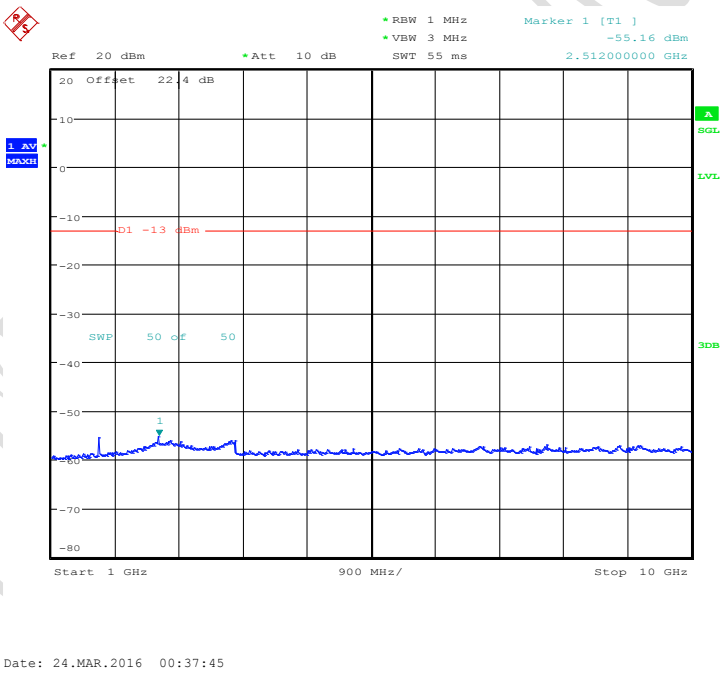


CDMA BC10, M Middle id channel, 820.0 MHz, 1 GHz to 10 GHz

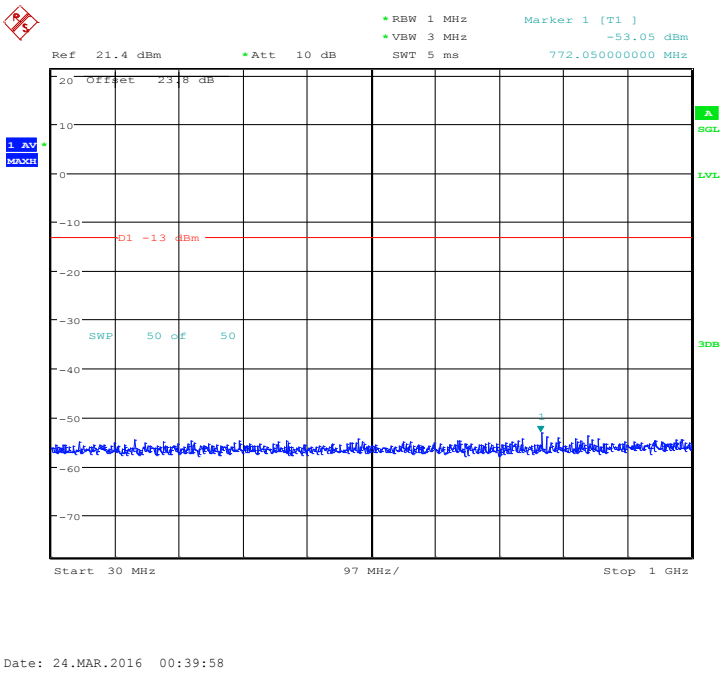


1x EvDO BC0, Middle channel, 836.52 MHz, 30 MHz to 1 GHz

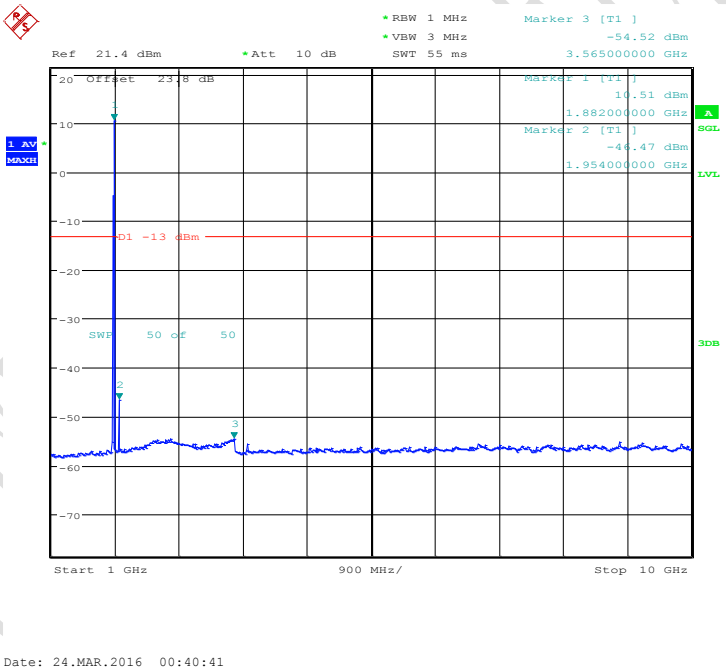
Note: The strong emission shown in each case is the carrier signal.



1x EvDO BC0, Middle channel, 836.52 MHz, 1 GHz to 10 GHz

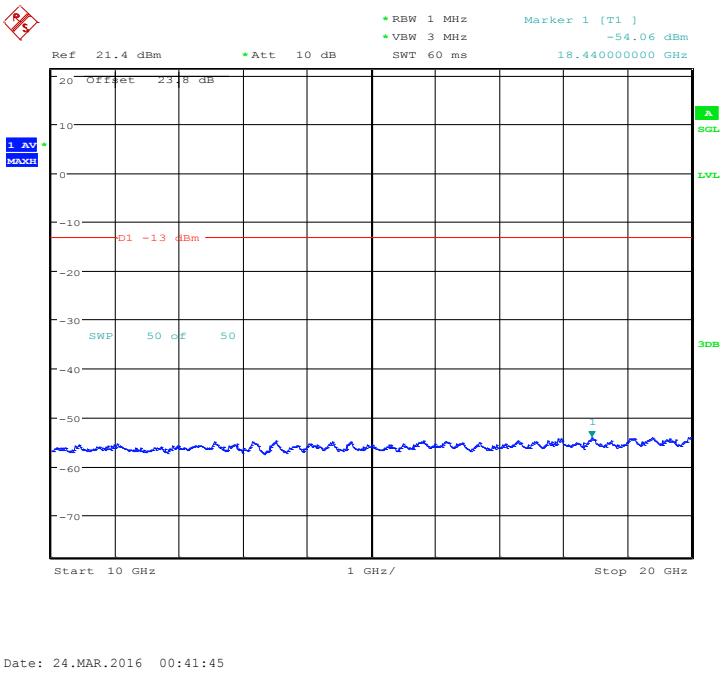


1x EvDO BC1, Middle channel, 1880.0 MHz, 30 MHz to 1 GHz



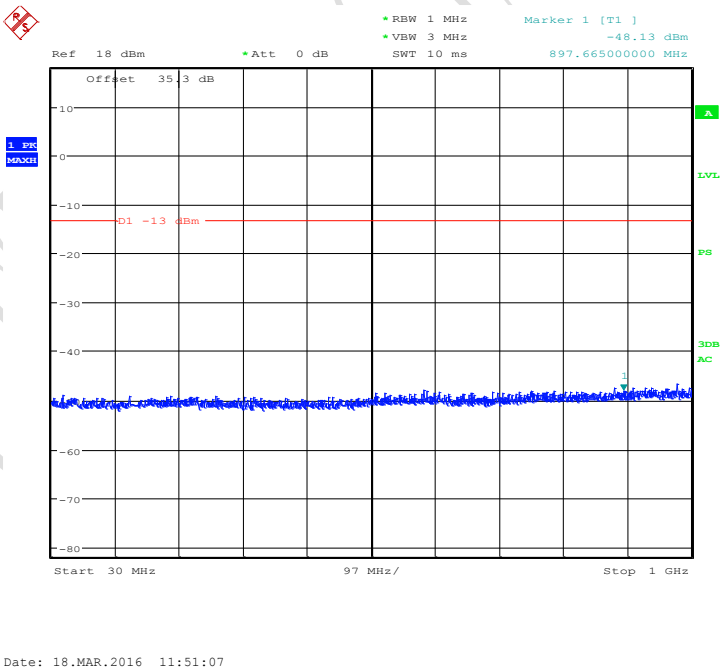
1x EvDO BC1, Middle channel, 1880.0 MHz, 1 GHz to 10 GHz

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

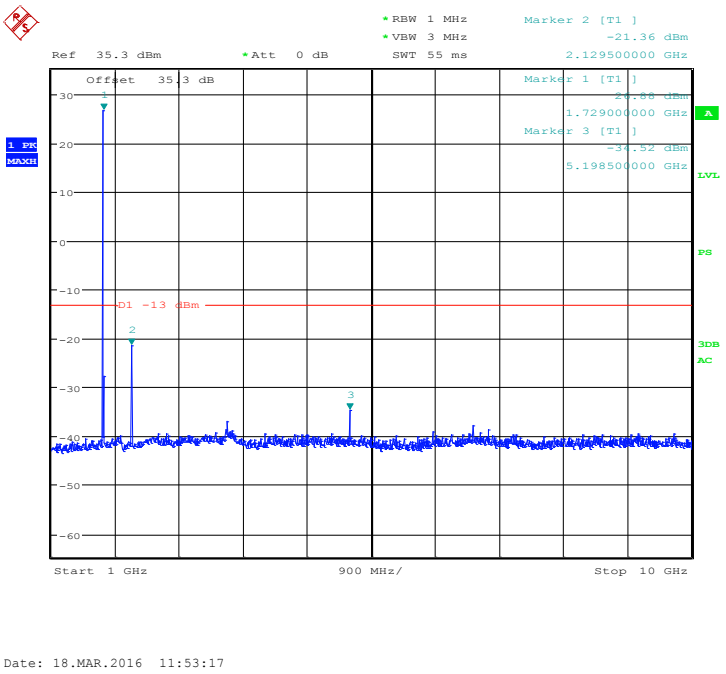


1x EvDO BC1, Middle channel, 1880.0 MHz, 10 GHz to 20 GHz

5.3.3 LTE B4 Conducted Spurious Emission Results

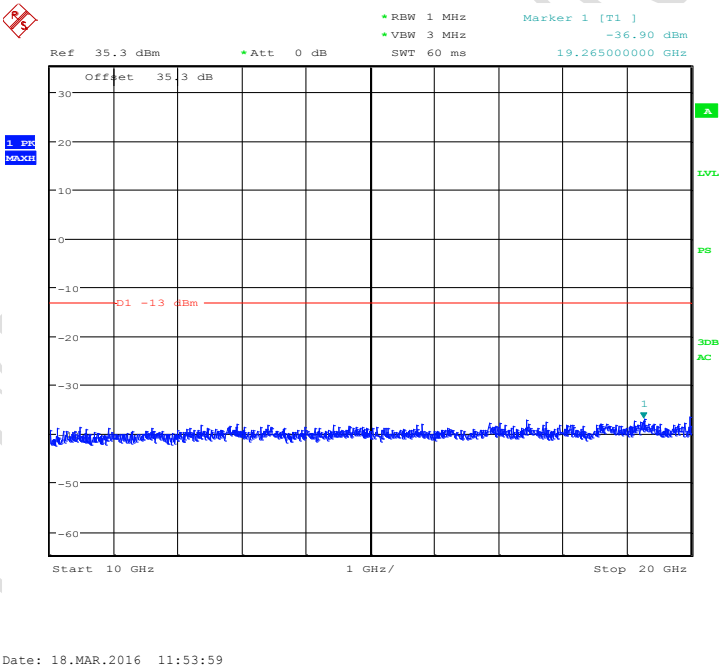


1.4MHz bandwidth QPSK Mode Middle channel, 1732.5 MHz, 30MHz to 1GHz

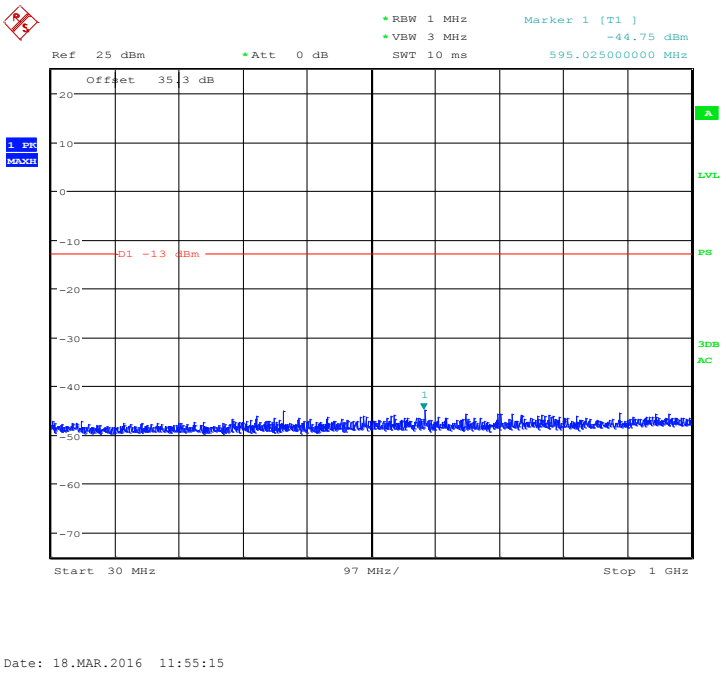


1.4MHz bandwidth QPSK Middle channel, 1732.5MHz,1GHz to 10GHz

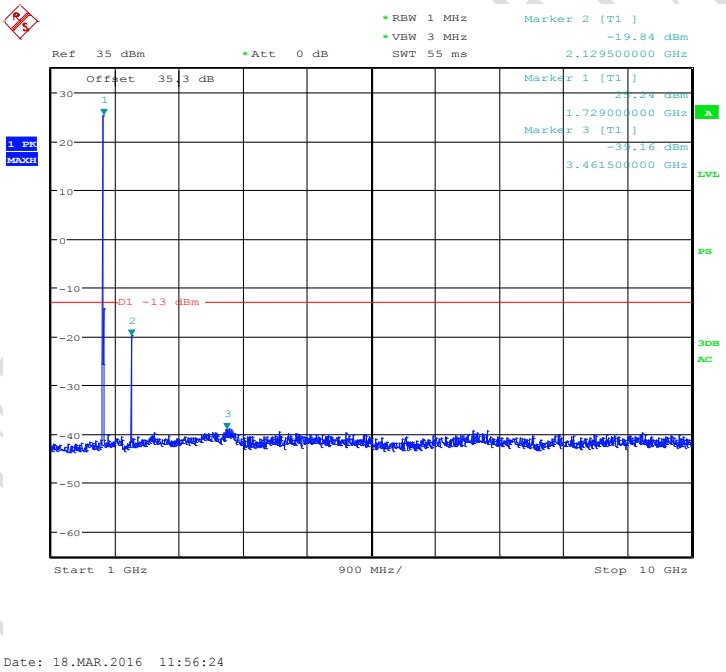
Note: The strong emission shown in each case is the carrier signal.



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

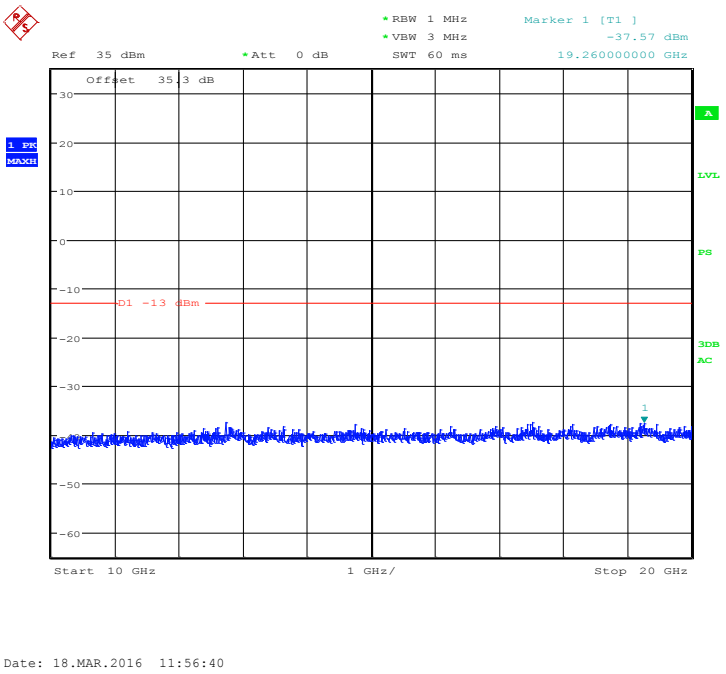


3MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 30MHz to 1GHz

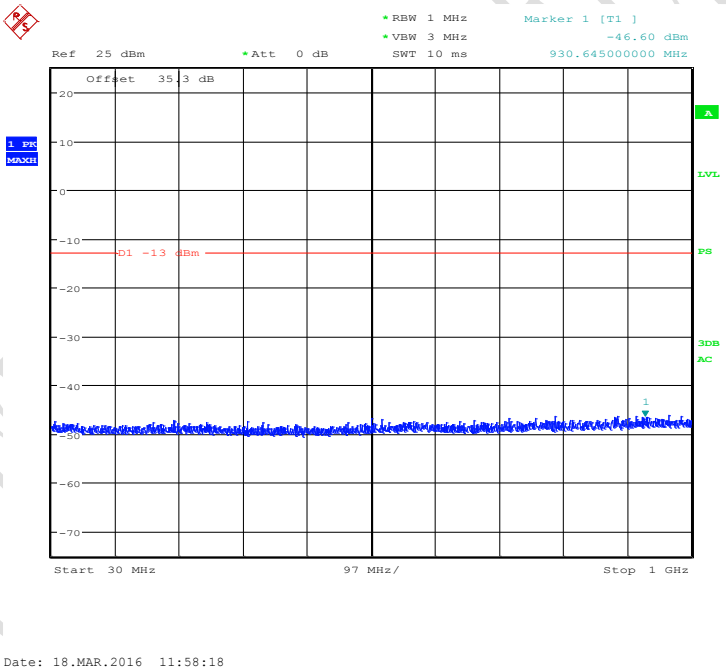


3MHz bandwidth QPSK Middle Channel, 1732.5 MHz, 1GHz to 10GHz

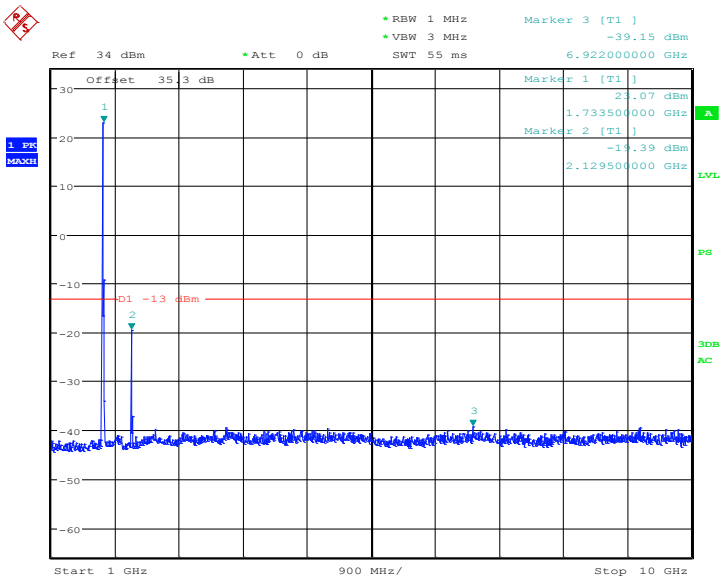
Note: The strong emission shown in each case is the carrier signal.



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



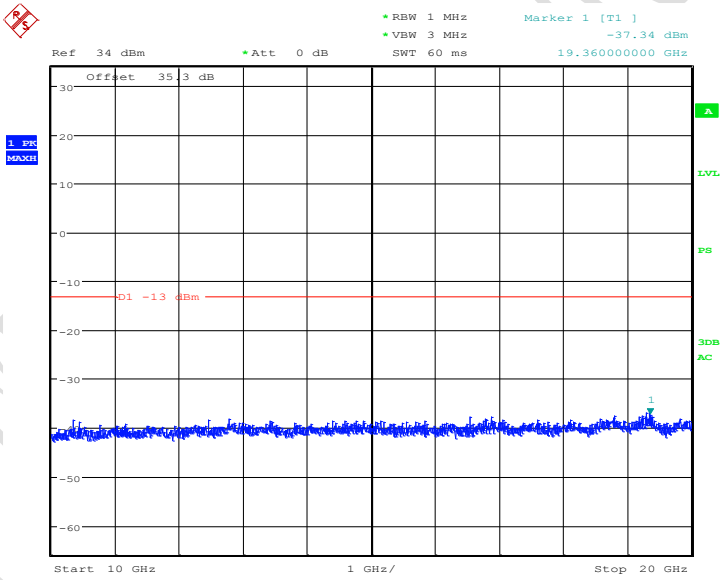
5MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz,30MHz to 1GHz



Date: 18.MAR.2016 11:58:55

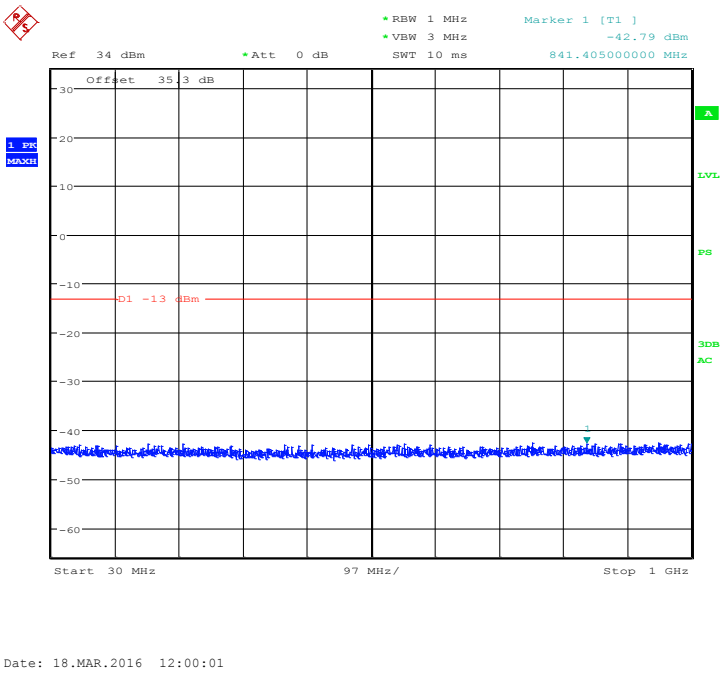
5MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz,1GHz to 10GHz

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

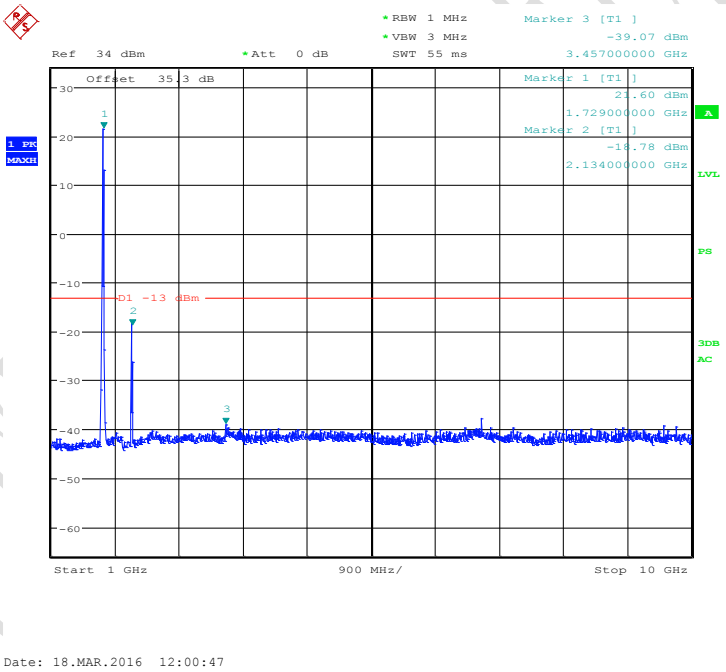


Date: 18.MAR.2016 11:59:16

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

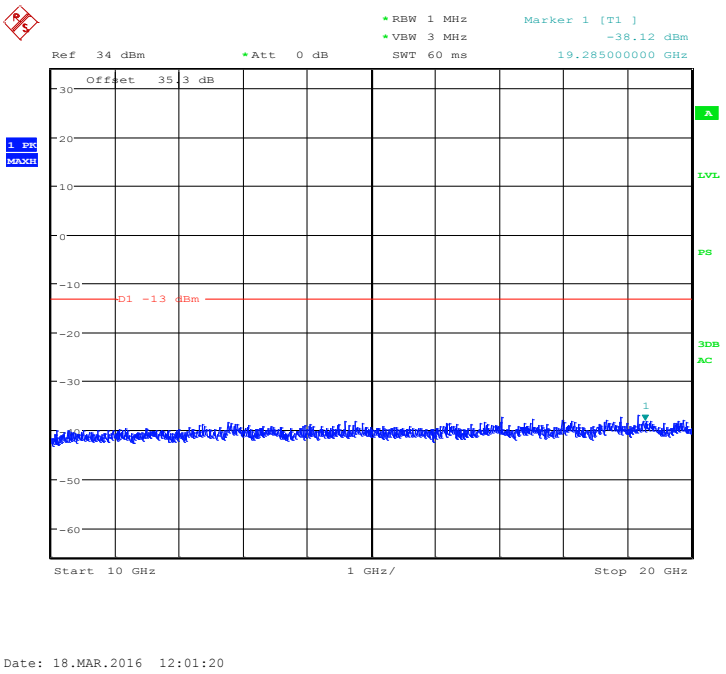


10MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 30MHz to 1GHz

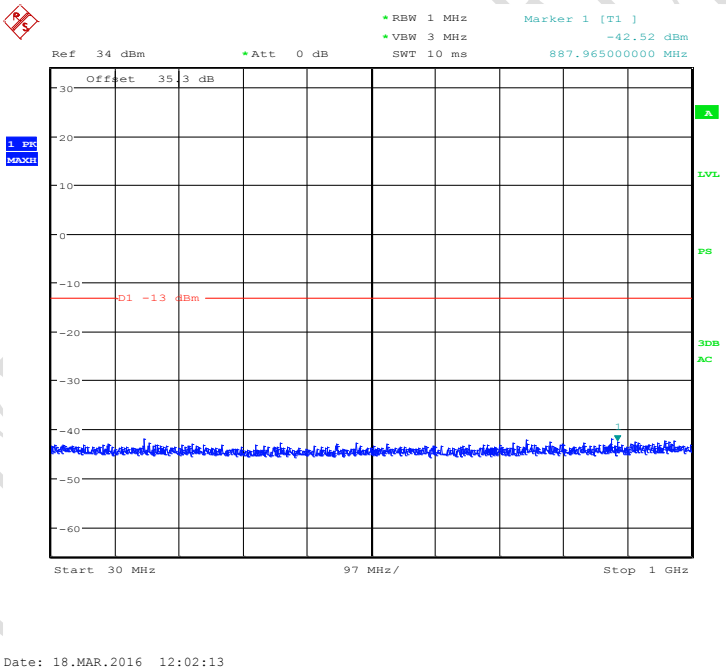


10MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 1GHz to 10GHz

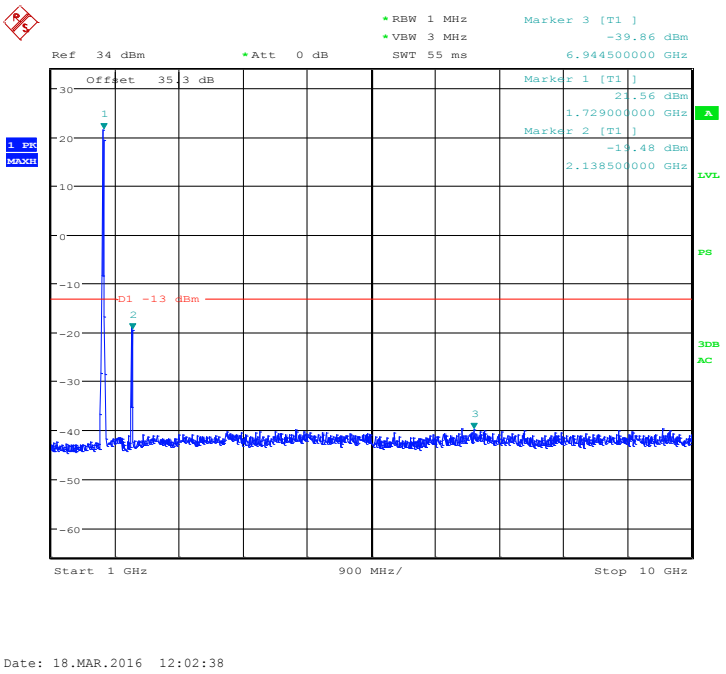
Note: The strong emission shown in each case is the carrier signal.



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

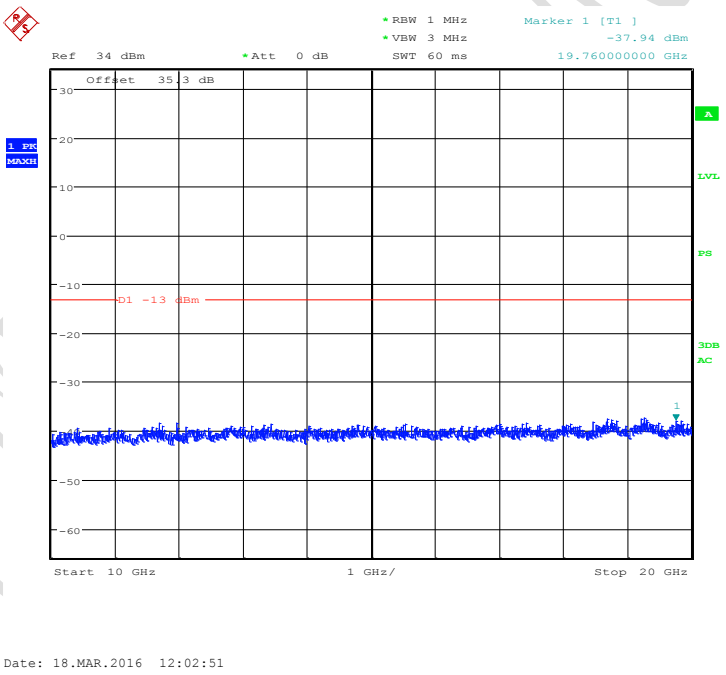


15MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 30MHz to 1GHz

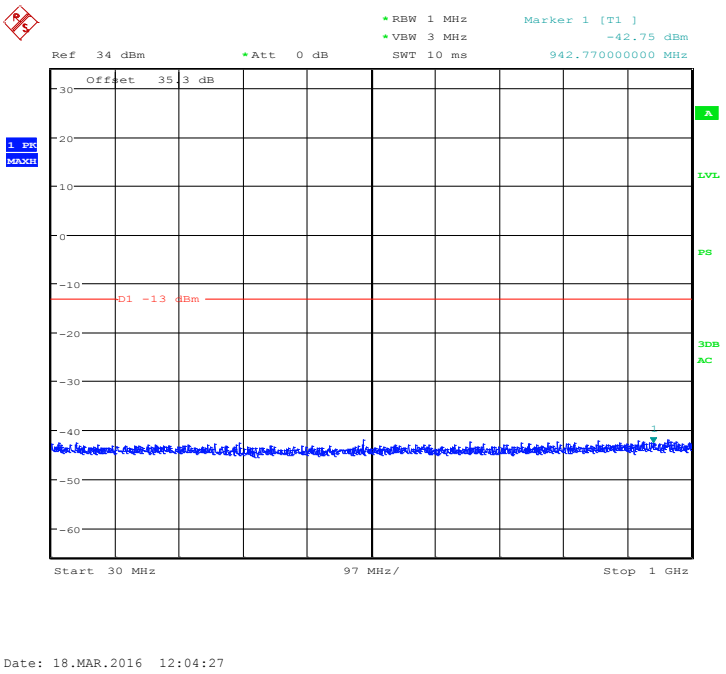


15MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 1GHz to 10GHz

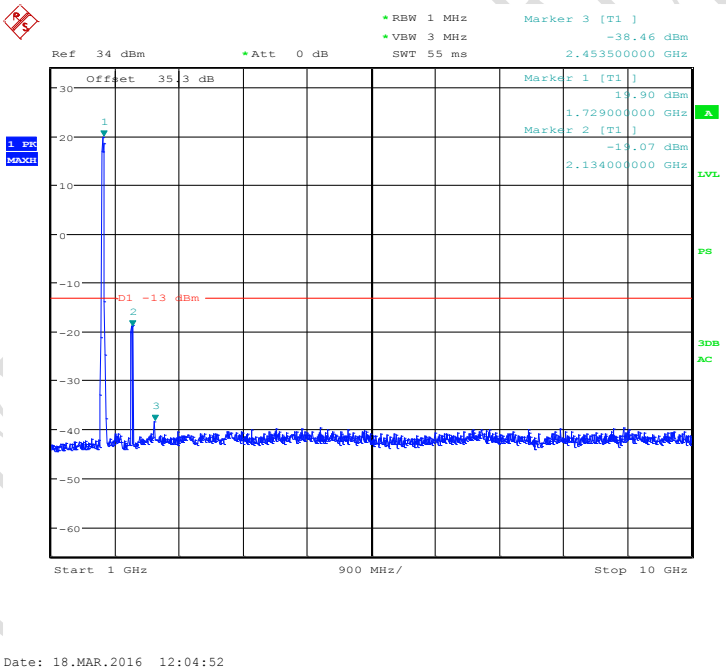
Note: The strong emission shown in each case is the carrier signal.



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

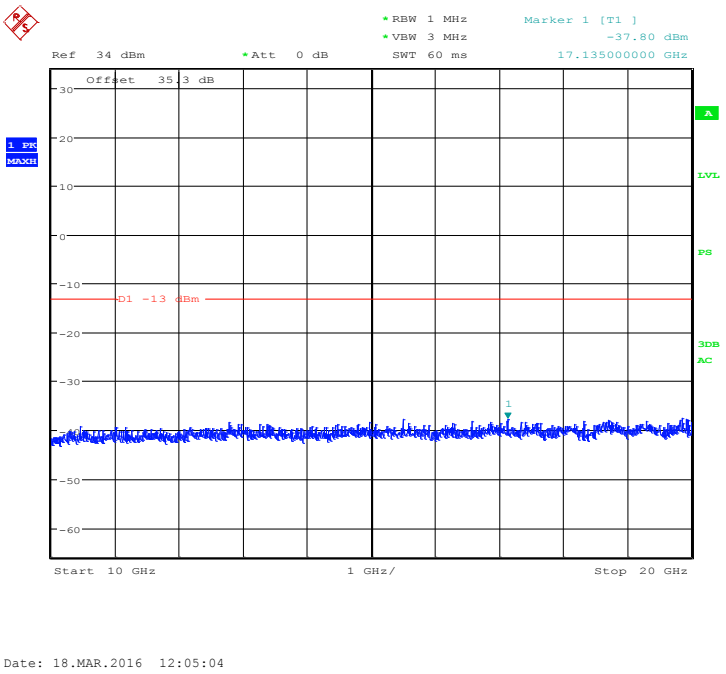


20MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 30MHz to 1GHz



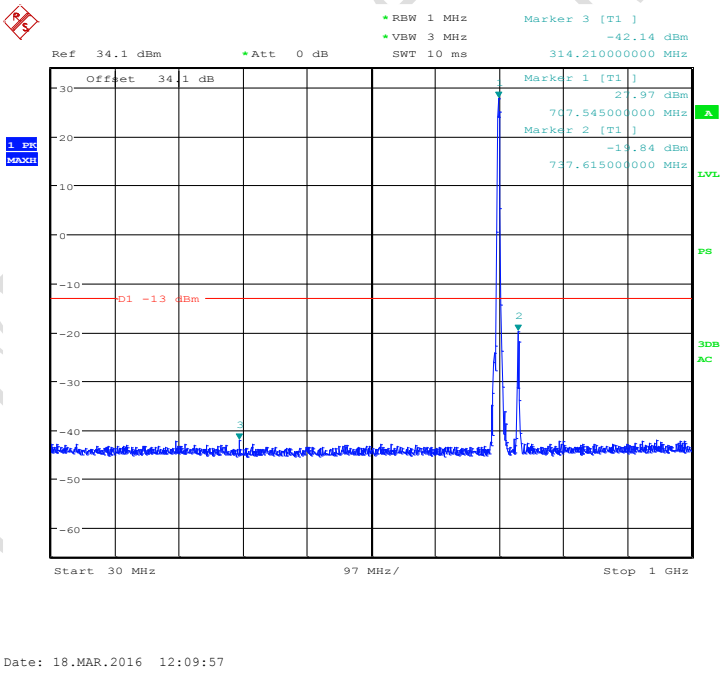
20MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 1GHz to 10GHz

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



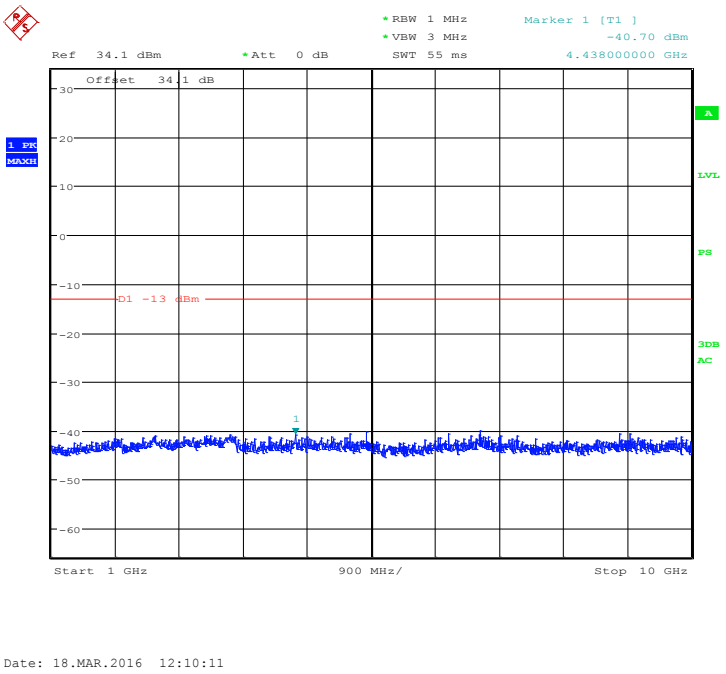
20MHz bandwidth QPSK Mode Middle Channel, 1732.5 MHz, 10GHz to 20GHz

5.3.4 LTE B12 Conducted Spurious Emission Results

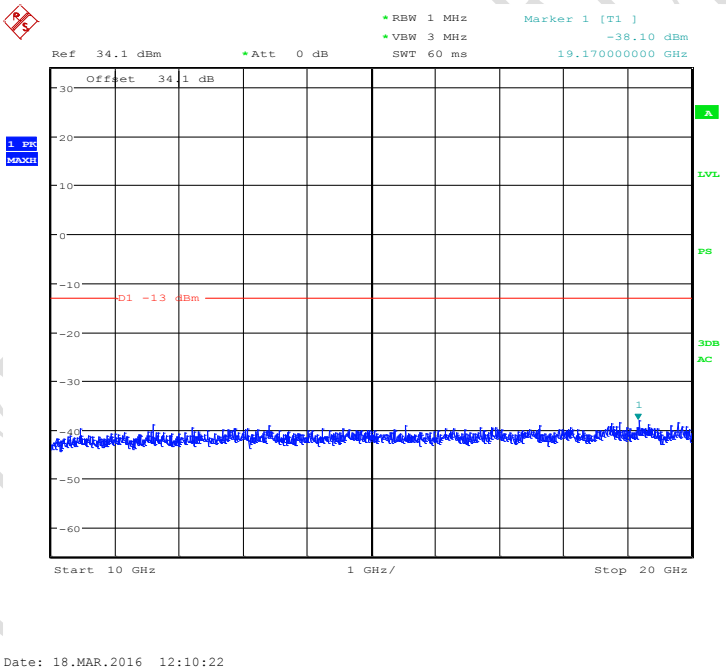


1.4MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,30MHz to 1GHz

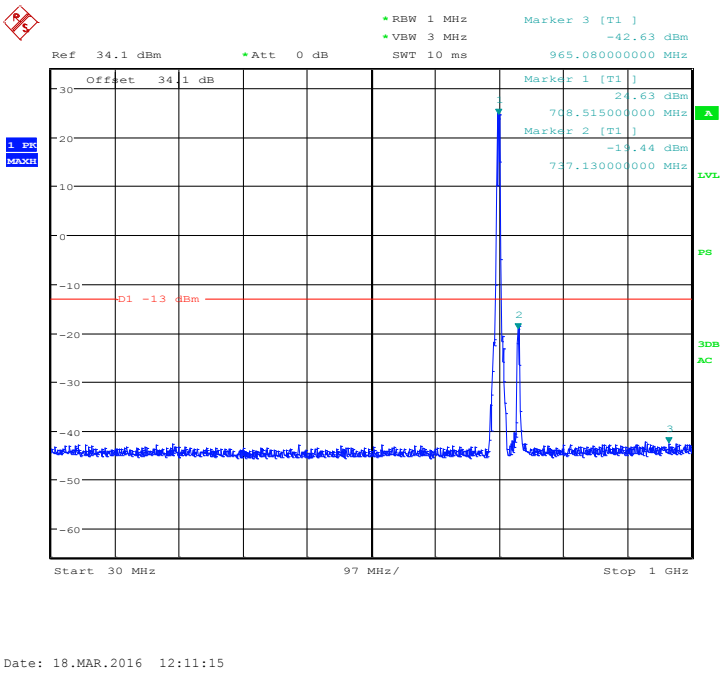
Note: The strong emission shown in each case is the carrier signal.



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

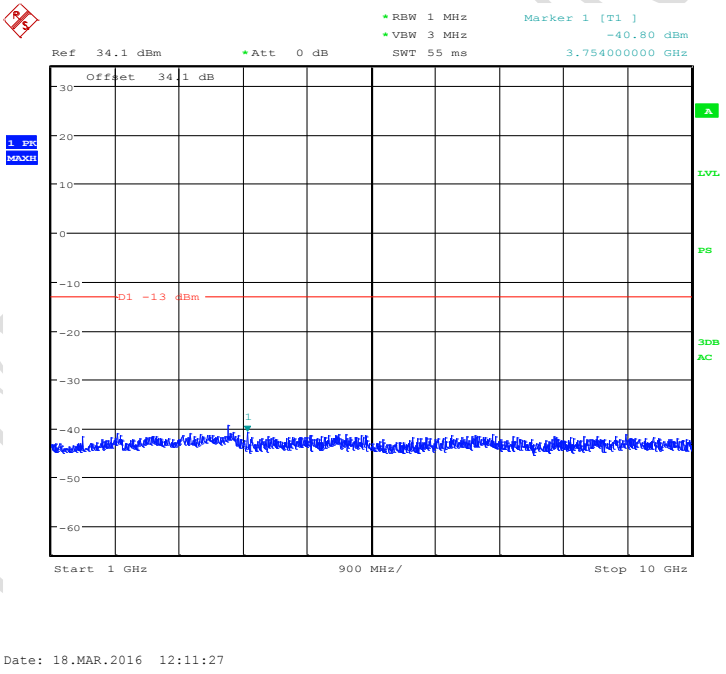


1.4MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz, 10GHz to 20GHz

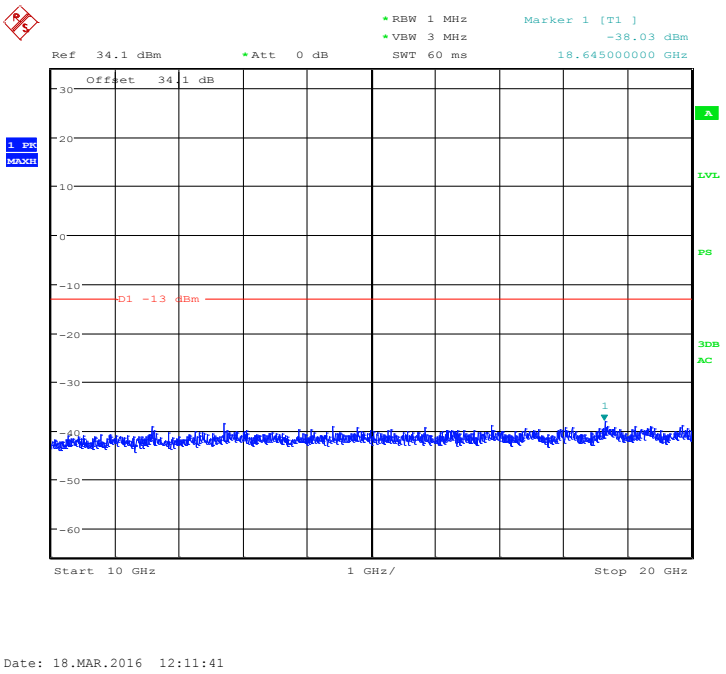


3MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,30MHz to 1GHz

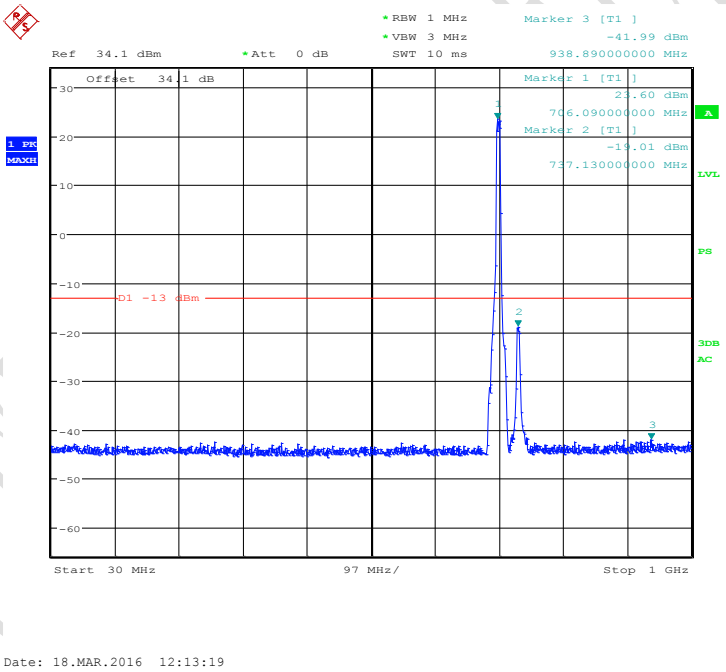
Note: The strong emission shown in each case is the carrier signal.



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

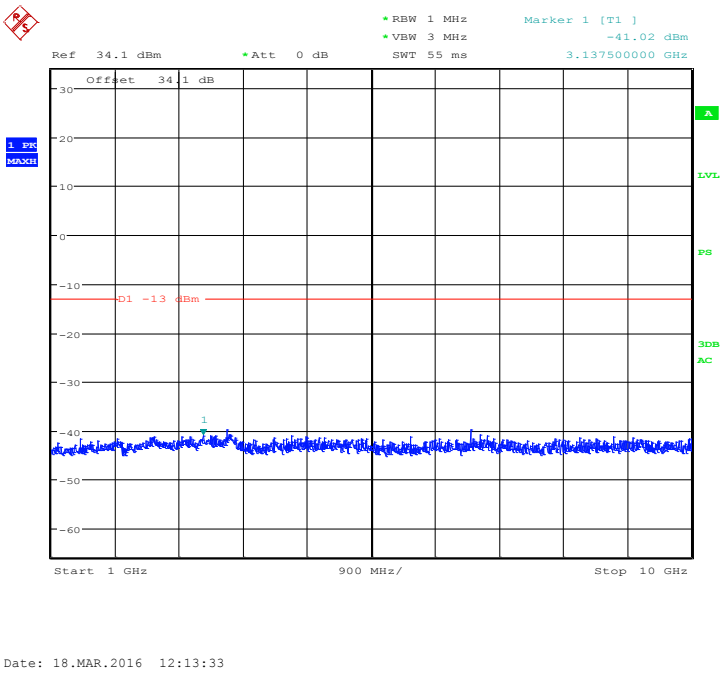


3MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,10GHz to 20GHz

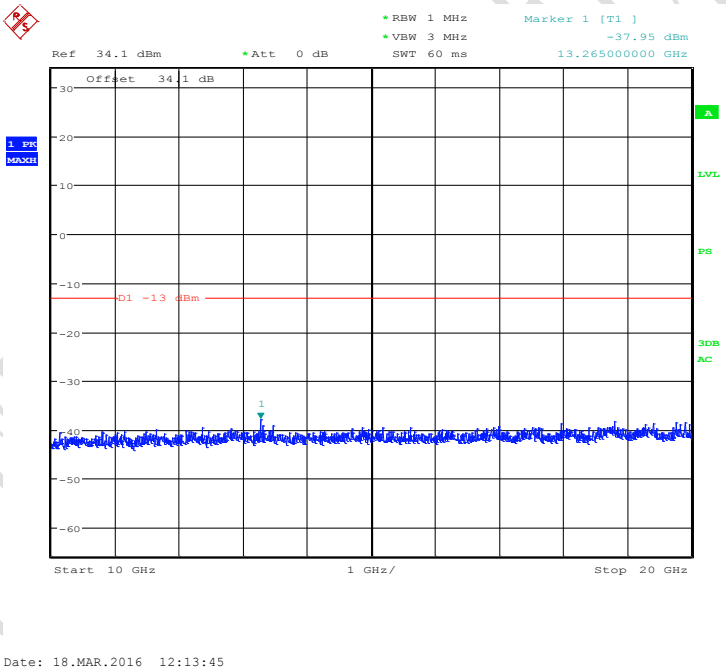


5MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,30MHz to 1GHz

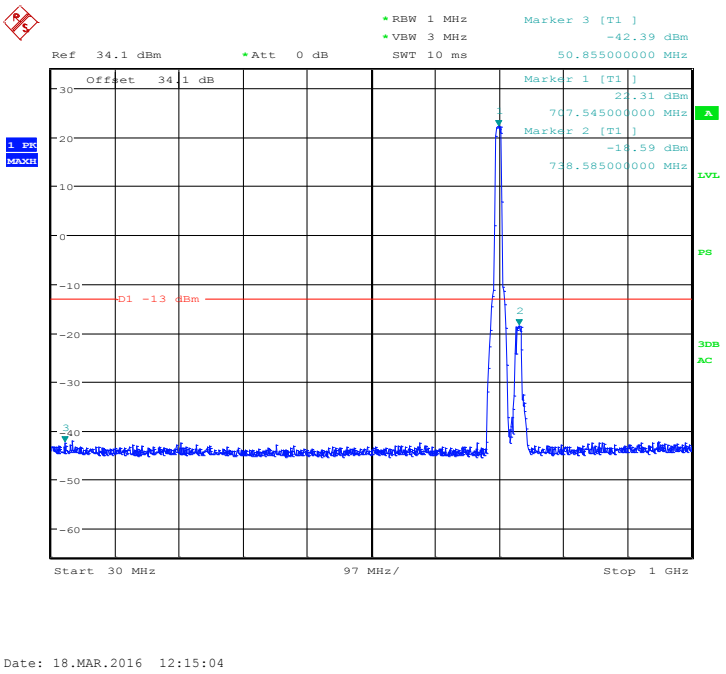
Note: The strong emission shown in each case is the carrier signal.



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

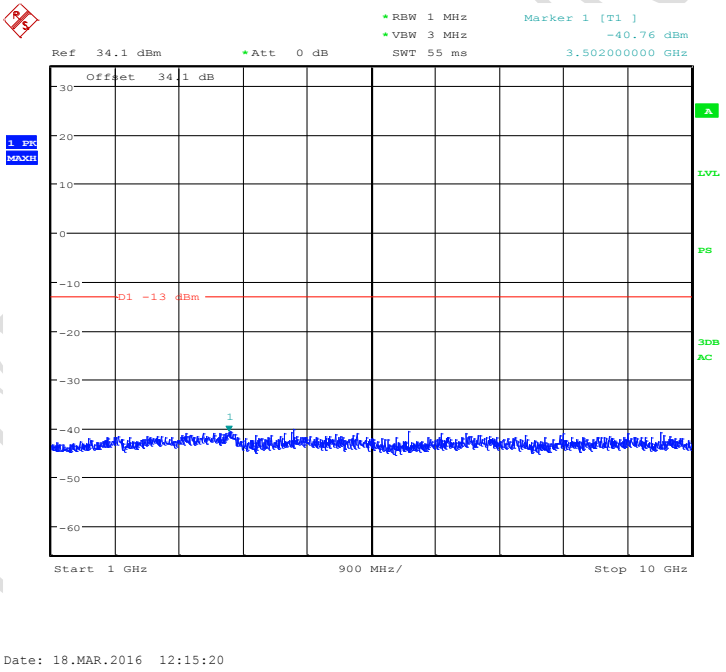


5MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,10GHz to 20GHz

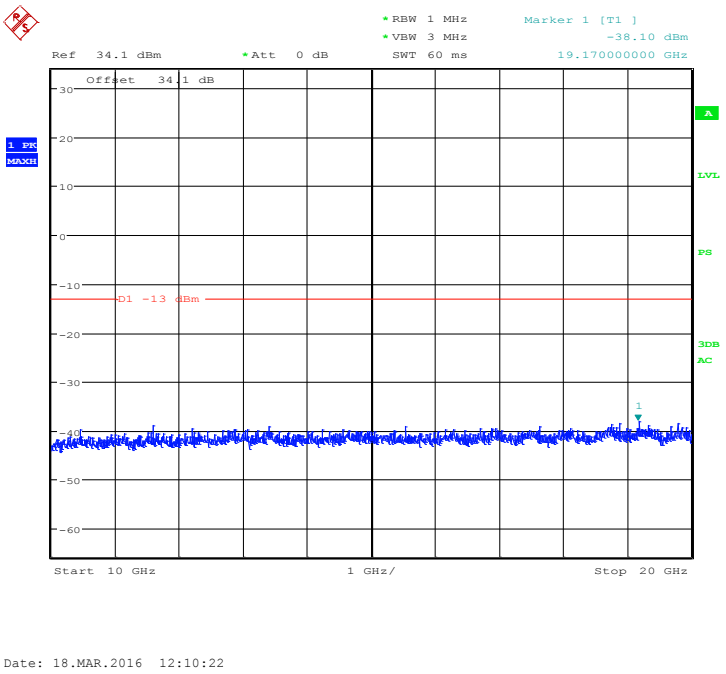


10MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,30MHz to 1GHz

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

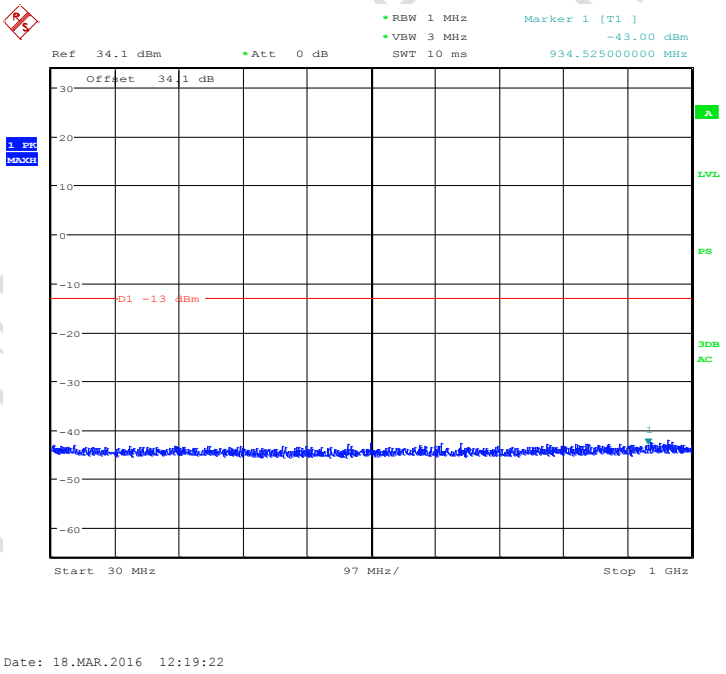


10MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,1GHz to 10GHz

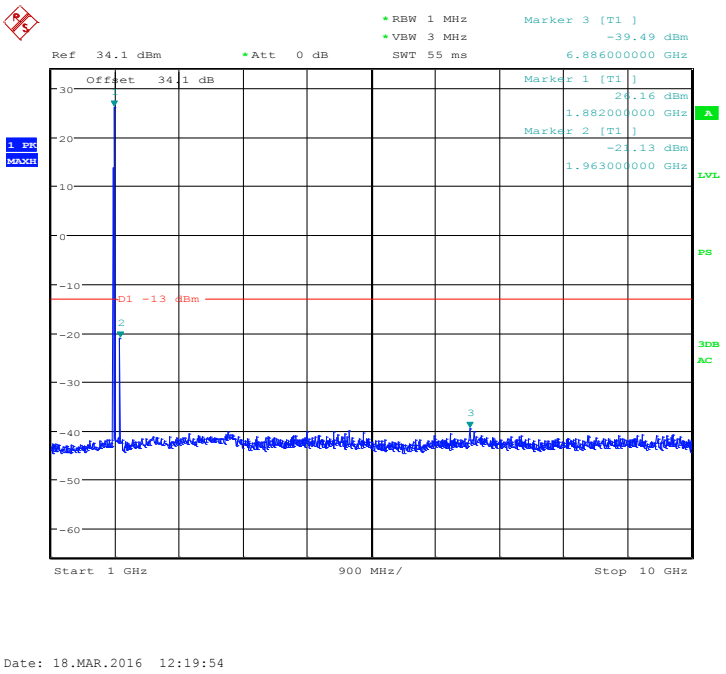


10MHz bandwidth QPSK Mode Middle Channel, 707.5 MHz,10GHz to 20GHz

5.3.5 LTE B25 Conducted Spurious Emission Results

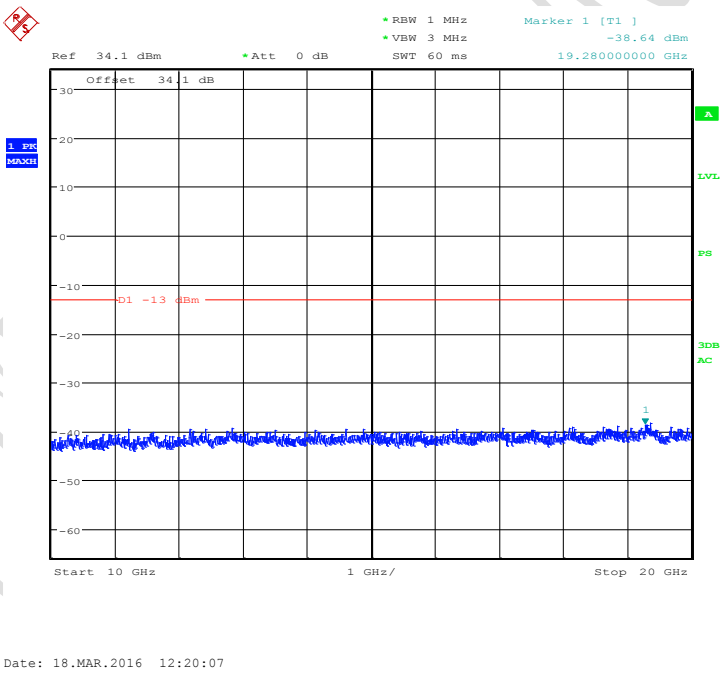


1.4MHz bandwidth QPSK Mode Middle channel, 1882.5 MHz, 30MHz to 1GHz

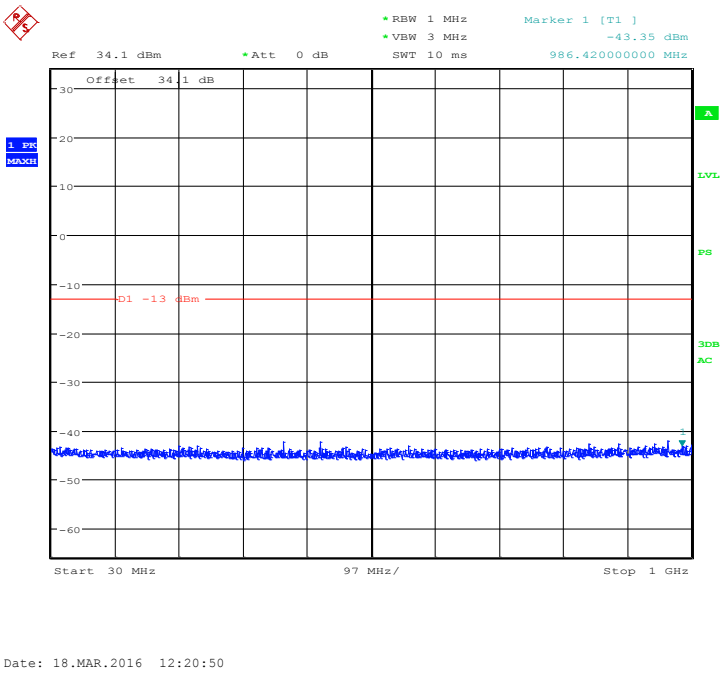


1.4MHz bandwidth QPSK Mode Middle channel, 1882.5 MHz, 1GHz to 10GHz

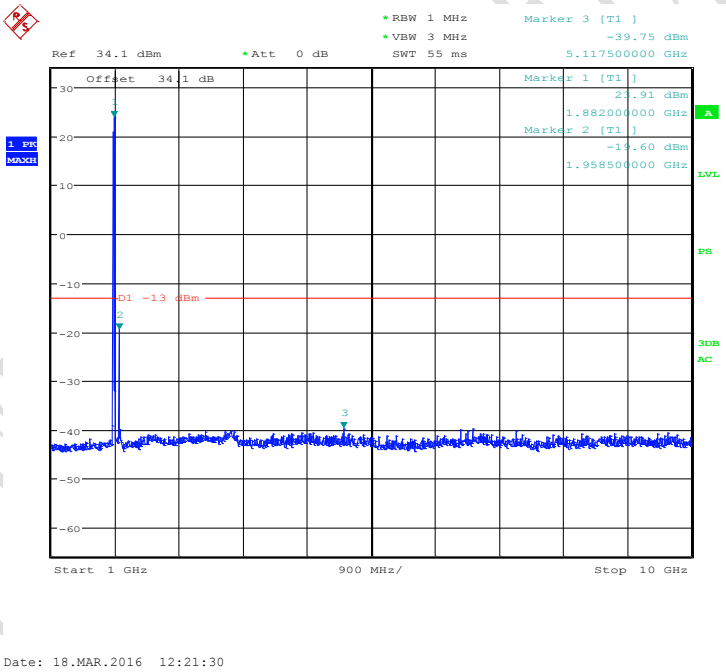
Note: The strong emission shown in each case is the carrier signal.



1.4MHz bandwidth QPSK Mode Middle channel, 1882.5 MHz, 10GHz to 20GHz



3MHz bandwidth QPSK Mode Middle Channel, 1882.5 MHz, 30MHz to 1GHz



3MHz bandwidth QPSK Mode Middle Channel, 1882.5 MHz, 1GHz to 10GHz

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