



FCC PART 27  
FCC PART 22H, PART 24E  
MEASUREMENT AND TEST REPORT

For

**WOO GLOBAL MARKETS, S.L.**

Camino de Vinateros, 10. Bajo (Oficinas) 28030 , MADRID, Spain

**FCC ID: 2AETN5045GS**

<b>Report Type:</b> Original Report	<b>Product Type:</b> 4G Mobile Phone
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<b>Report Number:</b> RSZ150918003-00D	
<b>Report Date:</b> 2015-10-09	
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**Note:** This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *WOO GLOBAL MARKETS, S.L.*'s product, model number: *5045GS (FCC ID: 2AETN5045GS)* or the "EUT" in this report was a *4G Mobile Phone*, which was measured approximately: 142mm (L) × 71 mm (W) × 8 mm (H), rated with input voltage: DC 3.8 V rechargeable Li-ion battery.

*\*All measurement and test data in this report was gathered from production sample serial number: 1506575 (Assigned by Shenzhen BACL). The EUT supplied by the applicant was received on 2015-08-13.*

### Objective

This type approval report is prepared on behalf of *WOO GLOBAL MARKETS, S.L.* in accordance with Part 2, Part 22-Subpart H, Part 24-Subpart E and Part 27 of the Federal Communication Commissions rules.

The objective is to determine the compliance of EUT with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability, and band edge.

### Related Submittal(s)/Grant(s)

FCC Part 15B JBP, Part 15.247 DSS&DTS submissions with FCC ID: 2AETN5045GS.

### Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services  
Part 24 Subpart E - Personal Communication Services  
Part 27 – Miscellaneous wireless communications services

Applicable Standards: TIA/EIA 603-D, ANSI C63.4-2014.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement uncertainty with radiated emission is 5.91 dB for 30MHz-1GHz and 4.92 dB for above 1GHz, 1.95dB for conducted measurement.

## **Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2103. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

## SYSTEM TEST CONFIGURATION

### Justification

The EUT was configured for testing according to TIA/EIA-603-D.

The final qualification test was performed with the EUT operating at normal mode.

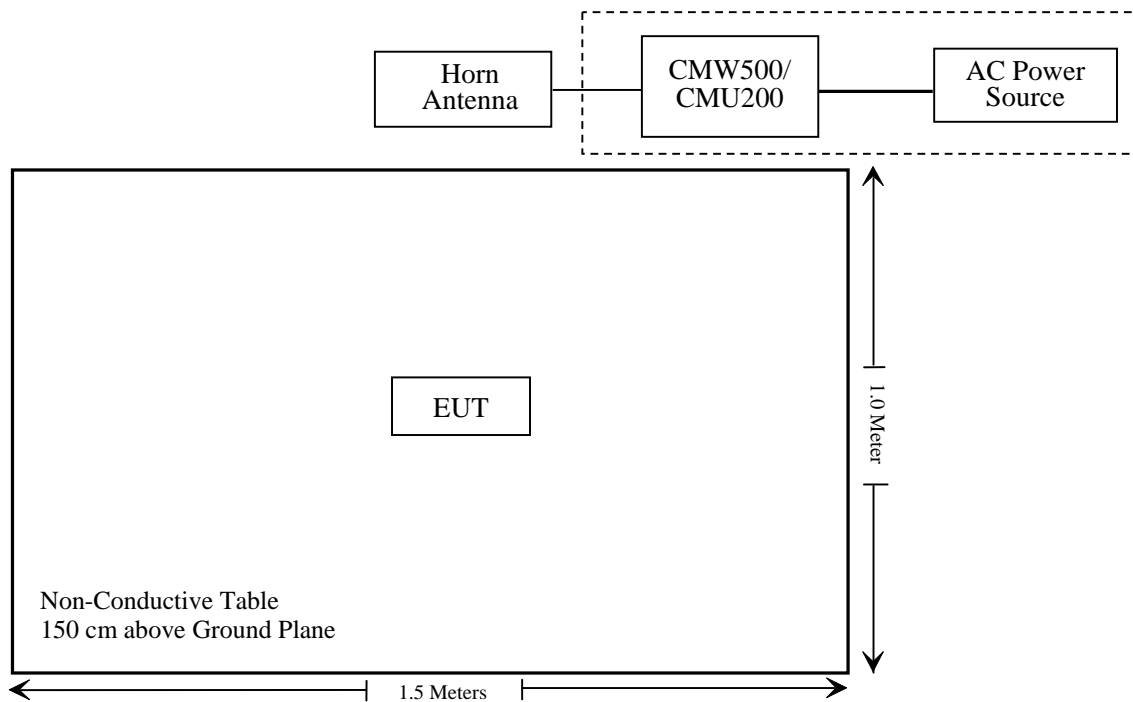
### Equipment Modifications

No modifications were made to the EUT.

### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.0002K50
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891

### Block Diagram of Test Setup



## **SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
§1.1307 (b)(1), §2.1093	RF Exposure Information	Compliance*
§2.1046; § 22.913 (a); § 24.232 (c); §27.50 (d) (i)	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53 (c)	Occupied Bandwidth	Compliance
§ 2.1051; § 22.917 (a); § 24.238 (a); §27.53(c) (g)	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53 (c) (g)	Spurious Radiated Emissions	Compliance
§ 22.917 (a); § 24.238 (a); §27.53 (c) (g);	Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliance

Note: \* Please refer to SAR report released by BACL, report number: RSZ150918003-20.

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## **FCC §1.1307(b) & §2.1093 - RF EXPOSURE INFORMATION**

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### **Applicable Standard**

FCC§1.1307, §2.1093.

### **Test Result**

Compliance, please refer to the SAR report: RSZ150918003-20

## **FCC §2.1047 - MODULATION CHARACTERISTIC**

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According to FCC § 2.1047(d) , Part 22H & 24E, Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

**FCC § 2.1046, § 22.913 (a) & § 24.232 (c) & § 27.50 - RF OUTPUT POWER**

**Applicable Standards**

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §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 §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz. The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

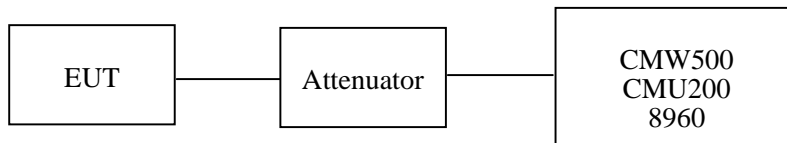
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz. According to §27.50(h), the maximum EIRP must not exceed 2Watts (33dBm) for 2500-2570MHz.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

**Test Procedure**

*Conducted method:*

The RF output of the transmitter was connected to the CMW500/CMU200 through sufficient attenuation.



*Radiated method:*

TIA603-D section 2.2.17

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2014-11-03	2015-11-03
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2014-12-07	2017-12-06
HP	Synthesized Sweeper	8341B	2624A00116	2015-06-03	2016-06-03
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-11	2016-02-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11
Sunol Sciences	Horn Antenna	DRH-118	A052304	2014-12-01	2015-11-30
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23
Agilent	WIRELESS COMMUNICATIONS TEST SET	8960	MY50266471	2015-1-13	2016-1-13
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2014-11-23	2015-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

**Test Data****Environmental Conditions**

<b>Temperature:</b>	25
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0kPa

*The testing was performed by William Li on 2015-10-09.*

**Conducted Power**

**Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.58	38.45
	190	836.6	32.68	38.45
	251	848.8	32.67	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.51	32.00	30.55	29.54	38.45
	190	836.6	32.55	32.04	30.62	29.61	38.45
	251	848.8	32.53	32.09	30.61	29.60	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	27.49	26.59	24.79	23.99	38.45
	190	836.6	27.58	26.63	24.82	24.09	38.45
	251	848.8	27.44	26.49	24.78	23.95	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		22.28	22.31	22.16
		Rel 6 HSDPA	1	21.68	21.32	21.39
			2	21.22	21.12	21.15
			3	20.91	20.81	20.58
			4	20.95	20.82	20.66
		Rel 6 HSUPA	1	21.44	21.53	21.32
			2	21.20	21.25	21.11
			3	20.96	21.08	20.74
			4	20.95	21.06	20.82
			5	20.91	21.02	20.81
		DC-HSDPA	1	20.94	20.95	20.92
			2	20.93	20.90	20.90
			3	20.92	20.84	20.87
			4	20.88	20.81	20.82
		HSPA+	1	20.89	20.87	20.86

**PCS Band (Part 24E)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	29.43	33
	661	1880.0	29.47	33
	810	1909.8	29.24	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.41	29.01	27.49	26.42	33
	661	1880.0	29.46	28.87	27.38	26.33	33
	810	1909.8	29.23	28.80	27.41	26.36	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.15	24.36	23.09	22.74	33
	661	1880.0	26.60	24.59	23.11	22.65	33
	810	1909.8	26.57	25.05	22.86	22.51	33

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	RMC12.2k		22.48	22.56	22.33
		Rel 6 HSDPA	1	20.66	20.74	20.63
			2	20.49	20.59	20.44
			3	20.36	20.42	20.38
			4	20.43	20.32	20.24
		Rel 6 HSUPA	1	20.79	20.55	20.47
			2	20.69	20.52	20.45
			3	20.62	20.58	20.49
			4	20.60	20.42	20.35
			5	20.51	20.57	20.26
		DC-HSDPA	1	20.71	20.65	20.62
			2	20.79	20.62	20.61
			3	20.71	20.58	20.56
			4	20.64	20.49	20.52
		HSPA+	1	20.56	20.45	20.42

**Peak-to-average ratio (PAR)**

**Cellular Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.27	13
	Middle	0.25	13
	High	0.28	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.21	13
	Middle	2.43	13
	High	2.49	13

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (BPSK)	Low	3.98	13
	Middle	4.00	13
	High	3.96	13
HSDPA (16QAM)	Low	3.91	13
	Middle	3.98	13
	High	3.95	13
HSUPA (BPSK)	Low	3.96	13
	Middle	3.94	13
	High	3.91	13

**PCS Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.24	13
	Middle	0.28	13
	High	0.26	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.29	13
	Middle	2.43	13
	High	2.32	13

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (BPSK)	Low	2.96	13
	Middle	2.92	13
	High	2.91	13
HSDPA (16QAM)	Low	2.92	13
	Middle	2.93	13
	High	2.95	13
HSUPA (BPSK)	Low	2.88	13
	Middle	2.86	13
	High	2.83	13

**Radiated Power (Measured at Max. conducted power channel)**

**ERP & EIRP**

**GSM Mode:**

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H/24E	
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
ERP for Cellular Band (Part 22H), Middle Channel										
836.60	99.22	278	1.5	H	30.2	0.67	0	29.53	38.45	8.92
836.60	97.91	95	1.1	V	28.9	0.67	0	28.23	38.45	10.22
ERP for PCS Band (Part 24E), Middle Channel										
1880.00	90.74	260	2.4	H	22.1	1.38	7.30	28.02	33	4.98
1880.00	88.59	225	2.2	V	20.0	1.38	7.30	25.92	33	7.08

**EDGE Mode :**

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H/24E	
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
ERP for Cellular Band (Part 22H), Middle Channel										
836.60	95.40	47	2.2	H	26.4	0.67	0	25.73	38.45	12.72
836.60	94.30	189	1.6	V	25.3	0.67	0	24.63	38.45	13.82
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	86.40	3	1.9	H	17.4	1.38	7.30	23.32	33	9.68
1880.00	85.70	353	1.0	V	16.7	1.38	7.30	22.62	33	10.38

**WCDMA Mode:**

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H/24E	
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
ERP for WCDMA Band V (Part 22H), Middle Channel										
836.60	91.13	181	1.4	H	22.1	0.67	0	21.43	38.45	17.02
836.60	92.08	306	2.4	V	23.1	0.67	0	22.43	38.45	16.02
ERP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	84.09	92	2.3	H	15.5	1.38	7.30	21.42	33	11.58
1880.00	83.14	91	1.1	V	14.5	1.38	7.30	20.42	33	12.58

**Note :**

All above data were tested with no amplifier.

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

**LTE Band 2:**

**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	21.99	22.05	22.03
		RB Size=1, RB Offset=2	22.04	21.99	22.05
		RB Size=1, RB Offset=5	22.04	22.16	21.95
		RB Size=3, RB Offset=0	21.85	21.88	21.96
		RB Size=3, RB Offset=1	22.00	21.92	21.90
		RB Size=3, RB Offset=2	21.85	21.93	21.96
		RB Size=6, RB Offset=0	21.60	21.65	21.72
	16QAM	RB Size=1, RB Offset=0	21.53	21.64	21.68
		RB Size=1, RB Offset=2	22.03	22.03	22.05
		RB Size=1, RB Offset=5	21.56	21.87	21.90
		RB Size=3, RB Offset=0	21.83	22.09	22.10
		RB Size=3, RB Offset=1	21.55	21.83	21.91
		RB Size=3, RB Offset=2	21.88	22.02	22.05
		RB Size=6, RB Offset=0	21.59	21.87	21.95
3.0	QPSK	RB Size=1, RB Offset=0	21.70	21.63	21.67
		RB Size=1, RB Offset=7	21.07	21.35	21.41
		RB Size=1, RB Offset=14	21.72	22.01	22.02
		RB Size=8, RB Offset=0	21.52	21.71	21.82
		RB Size=8, RB Offset=4	21.06	21.30	21.33
		RB Size=8, RB Offset=7	21.47	21.77	21.76
		RB Size=15, RB Offset=0	21.32	21.79	21.71
	16QAM	RB Size=1, RB Offset=0	21.40	21.86	21.79
		RB Size=1, RB Offset=7	22.27	22.11	21.66
		RB Size=1, RB Offset=14	21.64	21.98	21.72
		RB Size=8, RB Offset=0	21.67	21.77	21.74
		RB Size=8, RB Offset=4	21.95	22.21	22.02
		RB Size=8, RB Offset=7	21.77	22.18	21.94
		RB Size=15, RB Offset=0	21.62	21.80	21.71

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.99	21.77	22.18
		RB Size=1, RB Offset=12	21.98	21.78	22.11
		RB Size=1, RB Offset=24	21.66	21.71	21.63
		RB Size=12, RB Offset=0	21.57	21.84	21.69
		RB Size=12, RB Offset=6	21.61	21.82	21.65
		RB Size=12, RB Offset=11	21.50	21.81	21.59
		RB Size=25, RB Offset=0	21.62	21.78	21.74
	16QAM	RB Size=1, RB Offset=0	21.63	20.92	21.72
		RB Size=1, RB Offset=12	21.58	20.70	21.77
		RB Size=1, RB Offset=24	21.61	21.79	21.67
		RB Size=12, RB Offset=0	20.69	21.65	20.85
		RB Size=12, RB Offset=6	20.48	22.11	20.64
		RB Size=12, RB Offset=11	21.61	22.06	21.75
		RB Size=25, RB Offset=0	21.50	22.20	21.56
10.0	QPSK	RB Size=1, RB Offset=0	21.88	22.18	22.07
		RB Size=1, RB Offset=24	21.92	21.93	21.94
		RB Size=1, RB Offset=49	22.04	22.07	22.02
		RB Size=25, RB Offset=0	21.95	22.05	22.01
		RB Size=25, RB Offset=12	21.92	22.01	21.98
		RB Size=25, RB Offset=24	21.68	21.68	21.69
		RB Size=50, RB Offset=0	21.87	21.92	21.87
	16QAM	RB Size=1, RB Offset=0	22.02	22.12	22.13
		RB Size=1, RB Offset=24	21.98	22.05	22.01
		RB Size=1, RB Offset=49	21.74	21.77	21.81
		RB Size=25, RB Offset=0	21.55	21.61	21.58
		RB Size=25, RB Offset=12	21.62	21.65	21.68
		RB Size=25, RB Offset=24	21.59	21.68	21.64
		RB Size=50, RB Offset=0	21.65	21.74	21.78

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	21.86	21.66	21.68
		RB Size=1, RB Offset=37	21.56	21.60	21.63
		RB Size=1, RB Offset=74	21.60	21.67	21.67
		RB Size=36, RB Offset=0	21.90	21.98	21.97
		RB Size=36, RB Offset=18	21.74	21.74	21.77
		RB Size=36, RB Offset=37	21.59	21.63	21.60
		RB Size=75, RB Offset=0	21.95	22.04	22.02
	16QAM	RB Size=1, RB Offset=0	21.68	21.76	21.82
		RB Size=1, RB Offset=37	21.60	21.68	21.72
		RB Size=1, RB Offset=74	21.67	21.75	21.79
		RB Size=36, RB Offset=0	21.93	21.96	22.06
		RB Size=36, RB Offset=18	21.97	22.02	22.06
		RB Size=36, RB Offset=37	22.01	22.05	22.13
		RB Size=75, RB Offset=0	22.33	22.09	22.04
20.0	QPSK	RB Size=1, RB Offset=0	21.92	21.93	21.97
		RB Size=1, RB Offset=49	22.19	22.26	22.30
		RB Size=1, RB Offset=99	21.66	21.69	21.76
		RB Size=50, RB Offset=0	22.06	21.72	21.78
		RB Size=50, RB Offset=24	21.37	21.46	21.51
		RB Size=50, RB Offset=49	21.96	21.98	22.00
		RB Size=100, RB Offset=0	21.75	21.80	21.89
	16QAM	RB Size=1, RB Offset=0	21.27	21.35	21.40
		RB Size=1, RB Offset=49	21.68	21.77	21.84
		RB Size=1, RB Offset=99	21.58	21.68	21.76
		RB Size=50, RB Offset=0	21.67	21.72	21.77
		RB Size=50, RB Offset=24	21.83	22.05	21.70
		RB Size=50, RB Offset=49	21.60	21.70	21.76
		RB Size=100, RB Offset=0	20.72	20.77	20.82

**EIRP:**

**QPSK:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)
Middle Channel									
1.4 MHz Bandwidth									
1880.00	85.50	336	1.9	H	16.5	1.38	7.30	22.42	33
1880.00	83.60	338	1.6	V	14.6	1.38	7.30	20.52	33
3 MHz Bandwidth									
1880.00	85.70	10	1.1	H	16.7	1.38	7.30	22.62	33
1880.00	84.10	175	2.4	V	15.1	1.38	7.30	21.02	33
5 MHz Bandwidth									
1880.00	85.90	187	2.4	H	16.9	1.38	7.30	22.82	33
1880.00	84.30	173	1.6	V	15.3	1.38	7.30	21.22	33
10 MHz Bandwidth									
1880.00	85.60	140	2.1	H	16.6	1.38	7.30	22.52	33
1880.00	84.10	13	1.3	V	15.1	1.38	7.30	21.02	33
15 MHz Bandwidth									
1880.00	85.50	55	2.3	H	16.5	1.38	7.30	22.42	33
1880.00	83.90	335	1.8	V	14.9	1.38	7.30	20.82	33
20 MHz Bandwidth									
1880.00	85.70	71	2.2	H	16.7	1.38	7.30	22.62	33
1880.00	84.10	311	1.9	V	15.1	1.38	7.30	21.02	33

**16QAM:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)
Middle Channel									
1.4 MHz Bandwidth									
1880.00	85.10	58	1.5	H	16.1	1.38	7.30	22.02	33
1880.00	83.60	310	2.4	V	14.6	1.38	7.30	20.52	33
3 MHz Bandwidth									
1880.00	84.90	164	2.0	H	15.9	1.38	7.30	21.82	33
1880.00	83.80	248	1.3	V	14.8	1.38	7.30	20.72	33
5 MHz Bandwidth									
1880.00	84.80	281	1.7	H	15.8	1.38	7.30	21.72	33
1880.00	83.70	319	1.0	V	14.7	1.38	7.30	20.62	33
10 MHz Bandwidth									
1880.00	84.90	323	1.3	H	15.9	1.38	7.30	21.82	33
1880.00	83.60	24	2.5	V	14.6	1.38	7.30	20.52	33
15 MHz Bandwidth									
1880.00	85.30	162	2.2	H	16.3	1.38	7.30	22.22	33
1880.00	84.10	47	1.3	V	15.1	1.38	7.30	21.02	33
20 MHz Bandwidth									
1880.00	85.10	349	2.4	H	16.1	1.38	7.30	22.02	33
1880.00	84.50	216	1.3	V	15.5	1.38	7.30	21.42	33

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
16QAM (1RB Size)	4.45	13	Pass
16QAM (100RB Size)	6.55	13	Pass

**LTE Band 4:**

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	21.26	21.36	21.29
		RB Size=1, RB Offset=2	21.24	21.27	21.32
		RB Size=1, RB Offset=5	21.26	21.35	21.24
		RB Size=3, RB Offset=0	21.09	21.46	21.25
		RB Size=3, RB Offset=1	21.16	21.18	21.15
		RB Size=3, RB Offset=2	21.12	21.22	21.16
		RB Size=6, RB Offset=0	20.87	21.23	21.10
	16QAM	RB Size=1, RB Offset=0	20.87	20.95	21.16
		RB Size=1, RB Offset=2	21.30	20.94	20.92
		RB Size=1, RB Offset=5	21.04	21.33	20.88
		RB Size=3, RB Offset=0	21.31	21.17	21.25
		RB Size=3, RB Offset=1	21.03	21.39	21.10
		RB Size=3, RB Offset=2	21.36	21.13	21.30
		RB Size=6, RB Offset=0	21.07	21.32	21.11
3.0	QPSK	RB Size=1, RB Offset=0	21.18	21.17	21.25
		RB Size=1, RB Offset=7	20.55	20.93	21.15
		RB Size=1, RB Offset=14	21.20	21.28	20.87
		RB Size=8, RB Offset=0	21.00	21.05	20.61
		RB Size=8, RB Offset=4	20.54	20.57	21.22
		RB Size=8, RB Offset=7	20.95	20.98	21.02
		RB Size=15, RB Offset=0	20.80	20.90	20.53
	16QAM	RB Size=1, RB Offset=0	20.88	20.97	20.96
		RB Size=1, RB Offset=7	21.54	20.91	20.91
		RB Size=1, RB Offset=14	20.91	20.93	20.99
		RB Size=8, RB Offset=0	20.94	21.00	21.01
		RB Size=8, RB Offset=4	21.22	21.25	21.29
		RB Size=8, RB Offset=7	21.04	21.12	21.21
		RB Size=15, RB Offset=0	20.89	20.91	20.98

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	20.81	20.83	20.90
		RB Size=1, RB Offset=12	21.18	21.27	21.37
		RB Size=1, RB Offset=24	21.17	21.24	21.30
		RB Size=12, RB Offset=0	20.85	20.86	20.91
		RB Size=12, RB Offset=6	20.76	20.83	20.88
		RB Size=12, RB Offset=11	20.80	20.84	20.84
		RB Size=25, RB Offset=0	20.69	20.77	20.78
	16QAM	RB Size=1, RB Offset=0	20.81	20.90	20.93
		RB Size=1, RB Offset=12	20.82	20.88	20.91
		RB Size=1, RB Offset=24	20.77	20.87	20.96
		RB Size=12, RB Offset=0	20.80	20.84	20.86
		RB Size=12, RB Offset=6	19.88	19.98	20.04
		RB Size=12, RB Offset=11	19.67	19.76	19.83
		RB Size=25, RB Offset=0	20.80	20.85	20.94
10.0	QPSK	RB Size=1, RB Offset=0	20.69	20.71	20.75
		RB Size=1, RB Offset=24	21.07	21.17	21.26
		RB Size=1, RB Offset=49	21.31	21.34	21.29
		RB Size=25, RB Offset=0	21.22	21.32	21.28
		RB Size=25, RB Offset=12	21.19	21.28	21.30
		RB Size=25, RB Offset=24	20.95	20.95	21.01
		RB Size=50, RB Offset=0	21.21	21.28	21.29
	16QAM	RB Size=1, RB Offset=0	20.97	21.00	21.09
		RB Size=1, RB Offset=24	20.78	20.84	20.86
		RB Size=1, RB Offset=49	20.85	20.88	20.96
		RB Size=25, RB Offset=0	20.82	20.91	20.92
		RB Size=25, RB Offset=12	20.88	20.97	21.06
		RB Size=25, RB Offset=24	21.09	20.89	20.96
		RB Size=50, RB Offset=0	20.79	20.83	20.91

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	20.83	20.90	20.95
		RB Size=1, RB Offset=37	21.13	21.21	21.25
		RB Size=1, RB Offset=74	20.97	20.97	21.05
		RB Size=36, RB Offset=0	20.82	20.86	20.88
		RB Size=36, RB Offset=18	21.01	21.01	21.09
		RB Size=36, RB Offset=37	20.86	20.90	20.92
		RB Size=75, RB Offset=0	21.22	21.31	21.28
	16QAM	RB Size=1, RB Offset=0	20.96	21.04	21.03
		RB Size=1, RB Offset=37	20.88	20.96	20.93
		RB Size=1, RB Offset=74	21.14	21.17	21.20
		RB Size=36, RB Offset=0	21.18	21.23	21.20
		RB Size=36, RB Offset=18	21.22	21.26	21.27
		RB Size=36, RB Offset=37	21.54	21.30	21.18
		RB Size=75, RB Offset=0	21.13	21.14	21.11
20.0	QPSK	RB Size=1, RB Offset=0	21.40	21.47	21.44
		RB Size=1, RB Offset=49	20.87	20.90	20.90
		RB Size=1, RB Offset=99	21.27	20.93	20.92
		RB Size=50, RB Offset=0	20.58	20.67	20.65
		RB Size=50, RB Offset=24	21.17	21.19	21.14
		RB Size=50, RB Offset=49	20.96	21.01	21.03
		RB Size=100, RB Offset=0	20.48	20.56	20.60
	16QAM	RB Size=1, RB Offset=0	20.88	20.97	21.04
		RB Size=1, RB Offset=49	20.78	20.88	20.96
		RB Size=1, RB Offset=99	20.83	20.88	20.93
		RB Size=50, RB Offset=0	20.99	21.21	20.86
		RB Size=50, RB Offset=24	20.81	20.86	20.88
		RB Size=50, RB Offset=49	20.83	20.93	20.99
		RB Size=100, RB Offset=0	19.99	20.04	20.09

**EIRP:**

**QPSK:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)
Middle Channel									
1.4 MHz Bandwidth									
1732.50	84.60	103	1.7	H	15.6	1.62	6.90	20.88	30
1732.50	83.30	191	1.1	V	14.3	1.62	6.90	19.58	30
3 MHz Bandwidth									
1732.50	84.90	71	2.5	H	15.9	1.62	6.90	21.18	30
1732.50	83.40	26	1.5	V	14.4	1.62	6.90	19.68	30
5 MHz Bandwidth									
1732.50	85.10	98	1.7	H	16.1	1.62	6.90	21.38	30
1732.50	83.50	167	2.3	V	14.5	1.62	6.90	19.78	30
10MHz Bandwidth									
1732.50	85.20	172	1.5	H	16.2	1.62	6.90	21.48	30
1732.50	83.60	357	1.2	V	14.6	1.62	6.90	19.88	30
15 MHz Bandwidth									
1732.50	85.50	103	1.8	H	16.5	1.62	6.90	21.78	30
1732.50	83.90	105	1.2	V	14.9	1.62	6.90	20.18	30
20 MHz Bandwidth									
1732.50	85.70	229	1.9	H	16.7	1.62	6.90	21.98	30
1732.50	84.00	60	2.5	V	15.0	1.62	6.90	20.28	30

**16QAM:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)
Middle Channel									
1.4 MHz Bandwidth									
1732.50	85.20	90	1.2	H	16.2	1.62	6.90	21.48	30
1732.50	84.70	295	2.3	V	15.7	1.62	6.90	20.98	30
3 MHz Bandwidth									
1732.50	85.30	26	1.4	H	16.3	1.62	6.90	21.58	30
1732.50	84.90	22	1.4	V	15.9	1.62	6.90	21.18	30
5 MHz Bandwidth									
1732.50	85.80	172	1.2	H	16.8	1.62	6.90	22.08	30
1732.50	84.60	78	1.7	V	15.6	1.62	6.90	20.88	30
10MHz Bandwidth									
1732.50	85.50	283	2.0	H	16.5	1.62	6.90	21.78	30
1732.50	84.40	228	2.1	V	15.4	1.62	6.90	20.68	30
15 MHz Bandwidth									
1732.50	85.70	114	1.4	H	16.7	1.62	6.90	21.98	30
1732.50	84.10	335	2.3	V	15.1	1.62	6.90	20.38	30
20 MHz Bandwidth									
1732.50	85.80	329	1.5	H	16.8	1.62	6.90	22.08	30
1732.50	83.90	202	1.4	V	14.9	1.62	6.90	20.18	30

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
16QAM (1RB Size)	5.08	13	Pass
16QAM (100RB Size)	6.20	13	Pass

**LTE Band 7:**

**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.20	21.42	21.32
		RB Size=1, RB Offset=12	21.28	21.36	21.38
		RB Size=1, RB Offset=24	21.67	21.60	21.71
		RB Size=12, RB Offset=0	21.58	21.51	21.63
		RB Size=12, RB Offset=6	21.69	21.66	21.73
		RB Size=12, RB Offset=11	21.69	21.68	21.81
		RB Size=25, RB Offset=0	21.63	21.54	21.62
	16QAM	RB Size=1, RB Offset=0	21.66	21.58	21.67
		RB Size=1, RB Offset=12	20.78	20.78	20.88
		RB Size=1, RB Offset=24	20.55	20.52	20.58
		RB Size=12, RB Offset=0	21.67	21.65	21.73
		RB Size=12, RB Offset=6	21.81	21.90	21.89
		RB Size=12, RB Offset=11	21.73	21.65	21.74
		RB Size=25, RB Offset=0	21.68	21.62	21.78
10.0	QPSK	RB Size=1, RB Offset=0	21.34	21.28	21.41
		RB Size=1, RB Offset=24	21.70	21.70	21.77
		RB Size=1, RB Offset=49	21.38	21.32	21.44
		RB Size=25, RB Offset=0	21.38	21.46	21.52
		RB Size=25, RB Offset=12	21.45	21.51	21.48
		RB Size=25, RB Offset=24	21.27	21.29	21.35
		RB Size=50, RB Offset=0	21.25	21.32	21.35
	16QAM	RB Size=1, RB Offset=0	21.72	21.72	21.72
		RB Size=1, RB Offset=24	21.62	21.68	21.71
		RB Size=1, RB Offset=49	21.75	21.77	21.83
		RB Size=25, RB Offset=0	21.67	21.73	21.75
		RB Size=25, RB Offset=12	21.66	21.74	21.77
		RB Size=25, RB Offset=24	21.69	21.76	21.86
		RB Size=50, RB Offset=0	20.79	20.88	20.91

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	21.91	21.94	21.96
		RB Size=1, RB Offset=37	21.78	21.76	21.81
		RB Size=1, RB Offset=74	21.75	21.69	21.86
		RB Size=36, RB Offset=0	21.62	21.80	21.76
		RB Size=36, RB Offset=18	21.68	21.93	21.79
		RB Size=36, RB Offset=37	21.66	21.40	21.49
		RB Size=75, RB Offset=0	21.88	21.58	21.59
	16QAM	RB Size=1, RB Offset=0	21.31	21.37	21.40
		RB Size=1, RB Offset=37	21.50	21.38	21.47
		RB Size=1, RB Offset=74	21.22	21.66	21.75
		RB Size=36, RB Offset=0	21.23	21.50	21.54
		RB Size=36, RB Offset=18	21.60	21.46	21.48
		RB Size=36, RB Offset=37	21.35	21.97	22.05
		RB Size=75, RB Offset=0	21.32	21.80	21.87
20.0	QPSK	RB Size=1, RB Offset=0	22.07	21.40	21.49
		RB Size=1, RB Offset=49	21.75	21.37	21.44
		RB Size=1, RB Offset=99	21.39	21.40	21.46
		RB Size=50, RB Offset=0	21.37	21.30	21.37
		RB Size=50, RB Offset=24	21.42	21.27	21.34
		RB Size=50, RB Offset=49	21.25	21.74	21.82
		RB Size=100, RB Offset=0	21.27	21.30	21.37
	16QAM	RB Size=1, RB Offset=0	21.71	21.77	21.85
		RB Size=1, RB Offset=49	21.66	21.69	21.70
		RB Size=1, RB Offset=99	21.65	21.75	21.78
		RB Size=50, RB Offset=0	21.62	21.65	21.66
		RB Size=50, RB Offset=24	21.66	21.71	21.71
		RB Size=50, RB Offset=49	20.79	20.85	20.92
		RB Size=100, RB Offset=0	20.91	20.88	20.90

**Radiated Power:**

**QPSK:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)
Middle Channel									
5 MHz Bandwidth									
2535.00	82.10	187	1.4	H	13.1	1.65	8.60	20.05	33
2535.00	81.50	95	1.4	V	12.5	1.65	8.60	19.45	33
10 MHz Bandwidth									
2535.00	82.30	1	1.6	H	13.3	1.65	8.60	20.25	33
2535.00	81.70	255	1.5	V	12.7	1.65	8.60	19.65	33
15 MHz Bandwidth									
2535.00	82.60	91	1.2	H	13.6	1.65	8.60	20.55	33
2535.00	81.90	317	2.3	V	12.9	1.65	8.60	19.85	33
20 MHz Bandwidth									
2535.00	82.90	224	2.4	H	13.9	1.65	8.60	20.85	33
2535.00	82.10	325	1.0	V	13.1	1.65	8.60	20.05	33

**16QAM:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)
Middle Channel									
5 MHz Bandwidth									
2535.00	83.90	196	1.6	H	14.9	1.65	8.60	21.85	33
2535.00	82.30	312	1.5	V	13.3	1.65	8.60	20.25	33
10 MHz Bandwidth									
2535.00	83.80	247	1.0	H	14.8	1.65	8.60	21.75	33
2535.00	82.60	286	1.8	V	13.6	1.65	8.60	20.55	33
15 MHz Bandwidth									
2535.00	83.70	119	1.2	H	14.7	1.65	8.60	21.65	33
2535.00	82.80	189	1.2	V	13.8	1.65	8.60	20.75	33
20 MHz Bandwidth									
2535.00	83.60	126	1.2	H	14.6	1.65	8.60	21.55	33
2535.00	83.10	188	2.4	V	14.1	1.65	8.60	21.05	33

Note :

All above data were tested with no amplifier.

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
16QAM (1RB Size)	4.81	13	Pass
16QAM (100RB Size)	6.30	13	Pass

**LTE Band 17:**

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.81	21.92	21.94
		RB Size=1, RB Offset=12	21.49	21.50	21.55
		RB Size=1, RB Offset=24	21.40	21.47	21.52
		RB Size=12, RB Offset=0	21.44	21.51	21.56
		RB Size=12, RB Offset=6	21.42	21.49	21.52
		RB Size=12, RB Offset=11	21.46	21.50	21.46
		RB Size=25, RB Offset=0	21.35	21.43	21.43
	16QAM	RB Size=1, RB Offset=0	21.47	21.56	21.37
		RB Size=1, RB Offset=12	21.48	21.54	21.52
		RB Size=1, RB Offset=24	21.43	21.53	21.50
		RB Size=12, RB Offset=0	21.46	21.50	21.55
		RB Size=12, RB Offset=6	20.54	20.64	21.45
		RB Size=12, RB Offset=11	20.33	20.42	20.63
		RB Size=25, RB Offset=0	21.46	21.51	20.42
10.0	QPSK	RB Size=1, RB Offset=0	21.35	21.37	21.53
		RB Size=1, RB Offset=24	21.79	21.80	21.34
		RB Size=1, RB Offset=49	21.91	21.94	21.85
		RB Size=25, RB Offset=0	21.82	21.92	21.72
		RB Size=25, RB Offset=12	21.79	21.88	21.80
		RB Size=25, RB Offset=24	21.55	21.55	21.79
		RB Size=50, RB Offset=0	21.81	21.91	21.97
	16QAM	RB Size=1, RB Offset=0	21.77	21.84	21.85
		RB Size=1, RB Offset=24	21.53	21.56	21.65
		RB Size=1, RB Offset=49	21.34	21.40	21.42
		RB Size=25, RB Offset=0	21.41	21.44	21.52
		RB Size=25, RB Offset=12	21.38	21.47	21.48
		RB Size=25, RB Offset=24	21.46	21.55	21.56
		RB Size=50, RB Offset=0	21.52	21.61	21.70

**Radiated Power:**

**QPSK:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)
Middle Channel									
5 MHz Bandwidth									
710.00	90.10	275	1.4	H	21.1	0.62	0	20.48	34.77
710.00	89.20	155	2.0	V	20.2	0.62	0	19.58	34.77
10 MHz Bandwidth									
710.00	89.90	36	2.2	H	20.9	0.62	0	20.28	34.77
710.00	89.10	105	2.0	V	20.1	0.62	0	19.48	34.77

**16QAM:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)
Middle Channel									
5 MHz Bandwidth									
710.00	89.50	67	1.3	H	20.5	0.62	0	19.88	34.77
710.00	88.90	6	1.6	V	19.9	0.62	0	19.28	34.77
10 MHz Bandwidth									
710.00	89.80	197	1.7	H	20.8	0.62	0	20.18	34.77
710.00	89.40	142	2.5	V	20.4	0.62	0	19.78	34.77

Note :

All above data were tested with no amplifier.

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
16QAM (1RB Size)	5.58	13	Pass
16QAM (50RB Size)	7.05	13	Pass

## FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53 - OCCUPIED BANDWIDTH

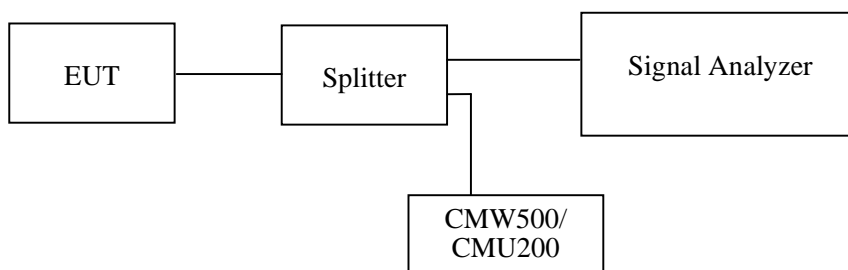
### Applicable Standards

FCC 47 §2.1049, §22.917, §22.905, §24.238 and §27.53.

### Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 5 kHz (Cellular /PCS) & 100 kHz (WCDMA) and the 26 dB & 99% bandwidth was recorded.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2015-06-13	2016-06-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2014-11-23	2015-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

### Test Data

#### Environmental Conditions

Temperature:	24~25
Relative Humidity:	48~50 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by William Li from 2015-10-02 to 2015-10-08.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables and plots.

**Cellular Band (Part 22H)**

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	836.6	244.57	316.90
EGPRS(8PSK)	836.6	251.81	318.40

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA (BPSK)	836.6	4.211	4.848
HSUPA (BPSK)	836.6	4.226	4.863
HSDPA (16QAM)	836.6	4.226	4.863

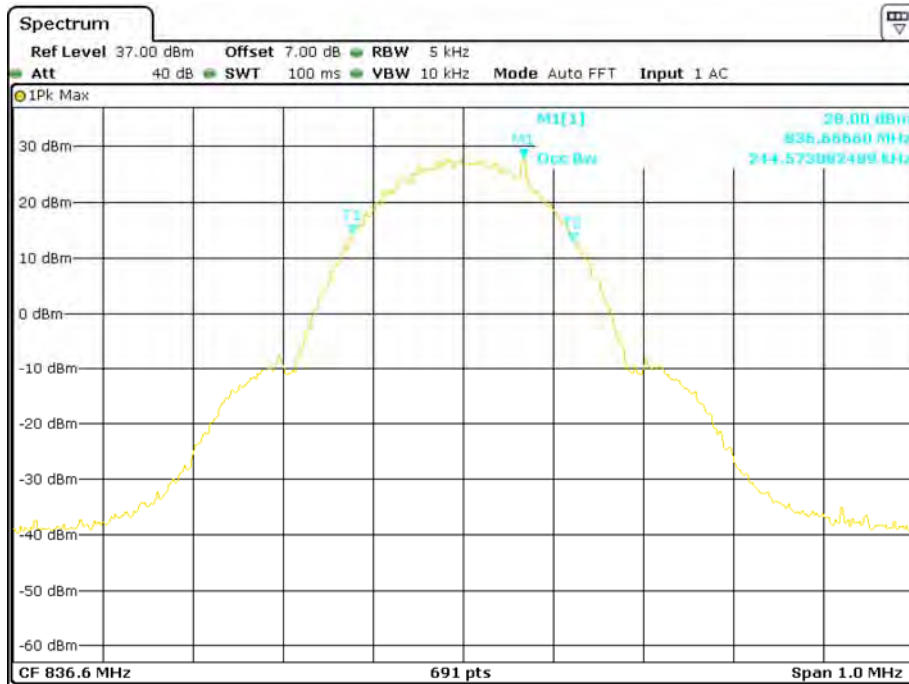
**PCS Band (Part 24E)**

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	244.57	314.00
EGPRS(8PSK)	1880.0	251.81	315.50

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA (BPSK)	1880.0	4.211	4.891
HSUPA (BPSK)	1880.0	4.211	4.863
HSDPA (16QAM)	1880.0	4.211	4.877

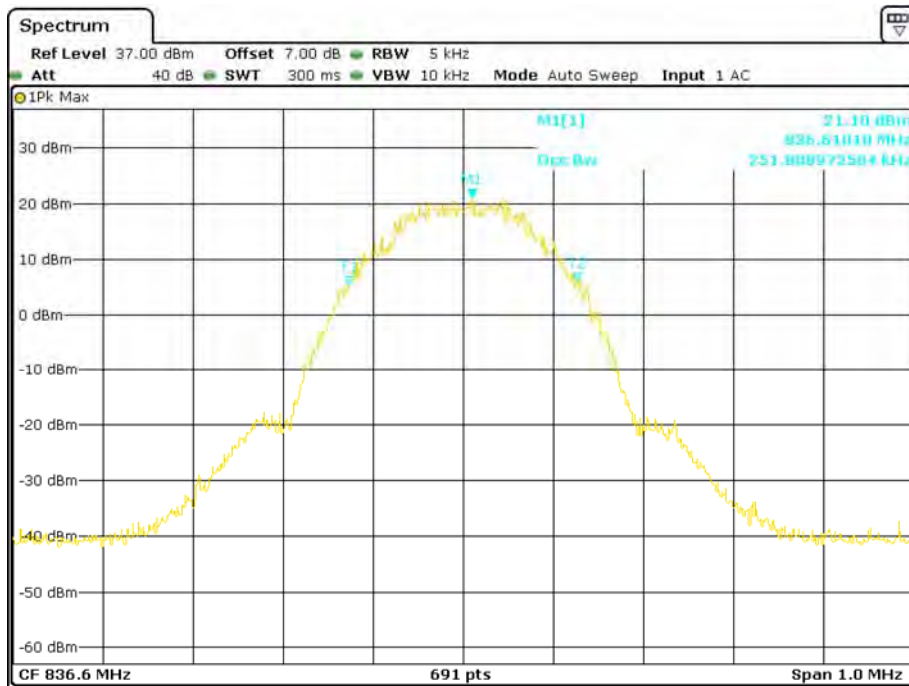
Cellular Band (Part 22H)

99% Occupied Bandwidth for GSM (GMSK) Mode



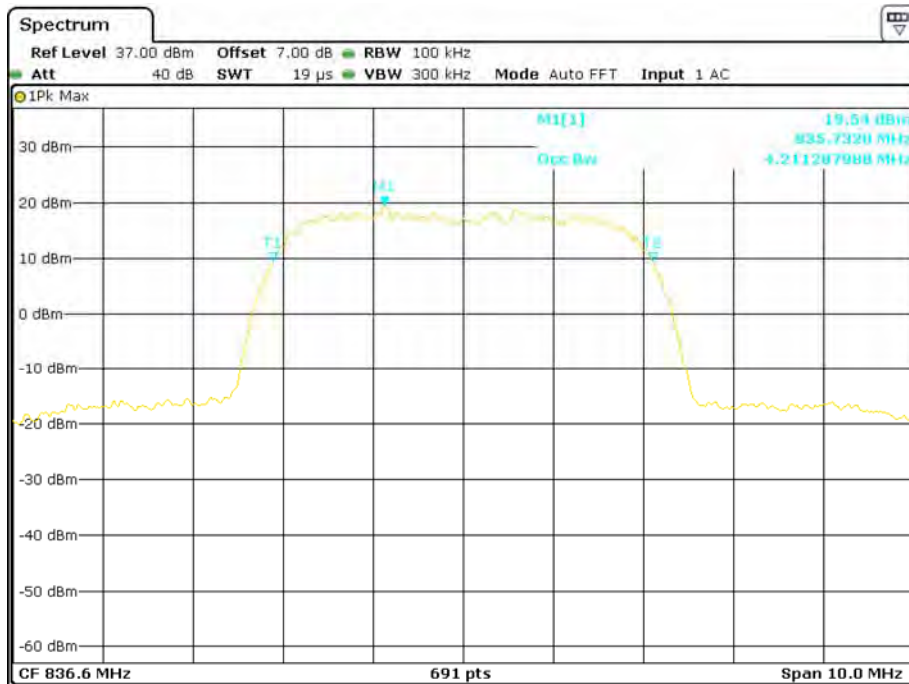
Date: 2.OCT.2015 17:05:56

99% Occupied Bandwidth for EDGE Mode



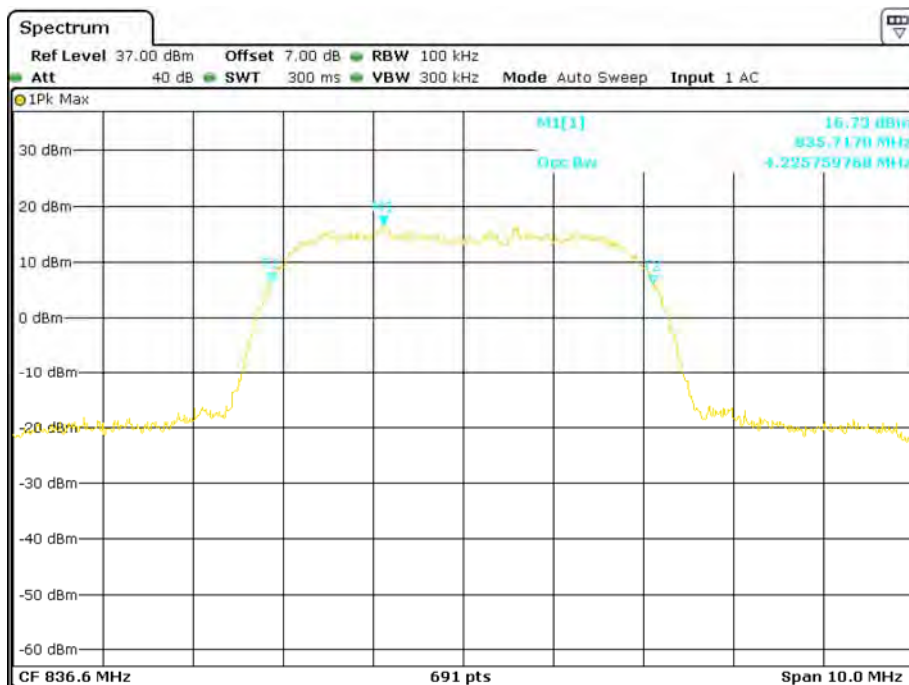
Date: 2.OCT.2015 17:54:53

### 99% Occupied Bandwidth for WCDMA (BPSK) Mode



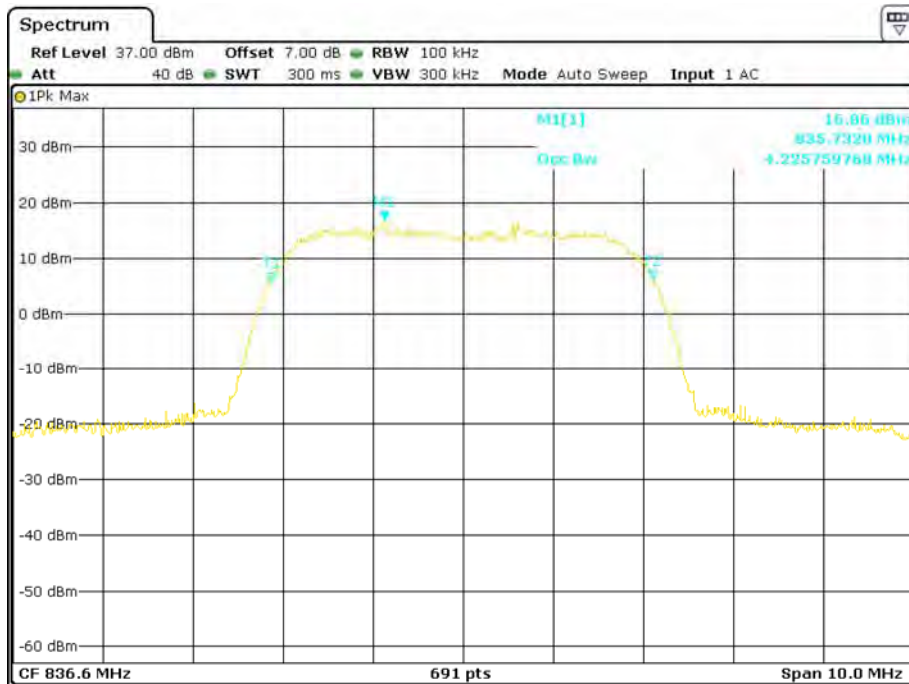
Date: 2.OCT.2015 18:07:02

### 99% Occupied Bandwidth for HSUPA (BPSK) Mode



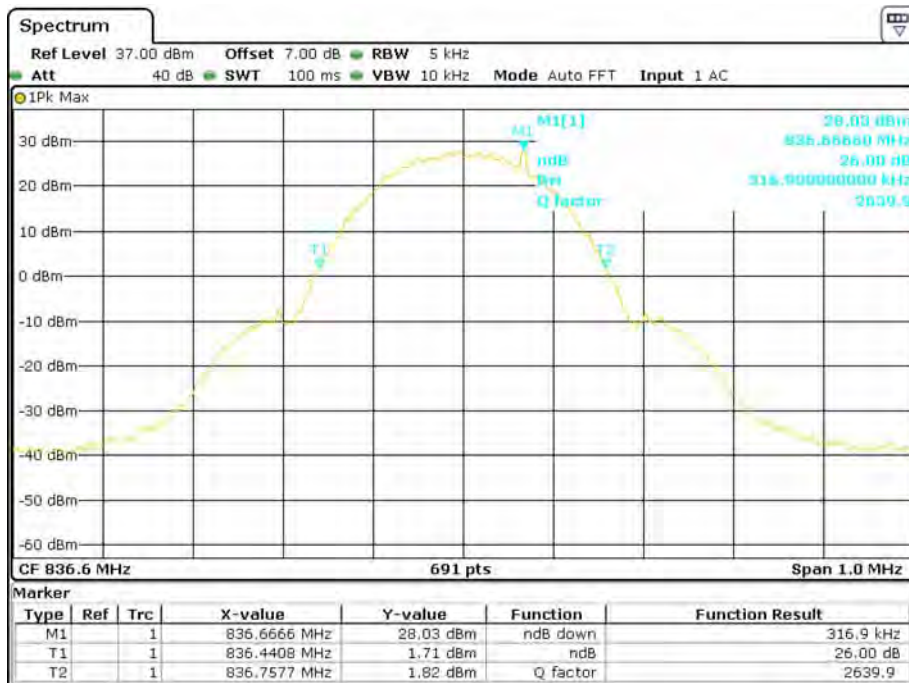
Date: 2.OCT.2015 18:29:00

### 99% Occupied Bandwidth for HSDPA (16QAM) Mode



Date: 2.OCT.2015 18:31:03

### 26 dB Emissions Bandwidth for GSM (GMSK) Mode



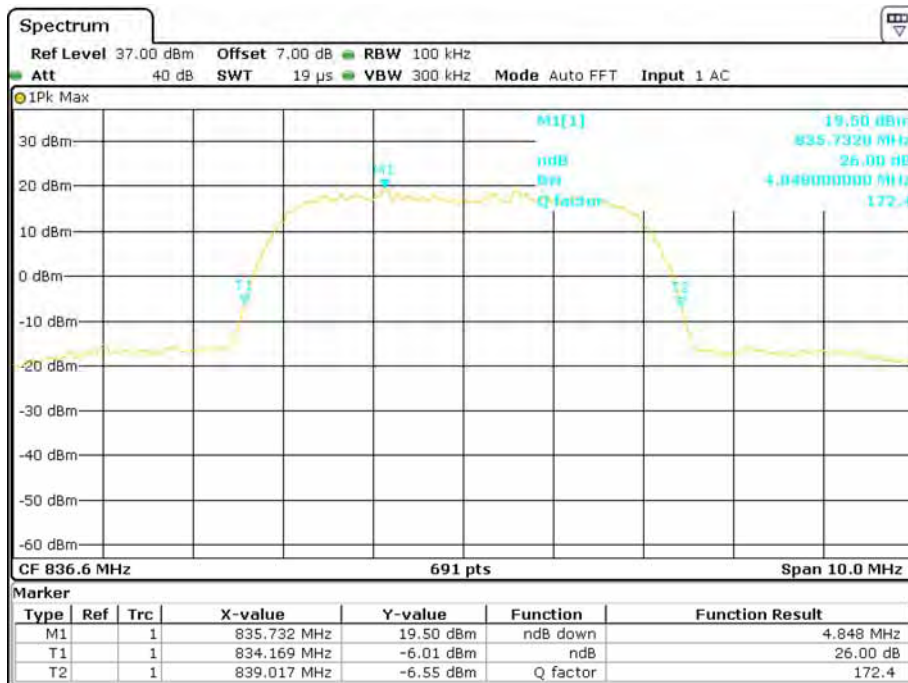
Date: 2.OCT.2015 17:08:01

### 26 dB Emissions Bandwidth for EDGE Mode



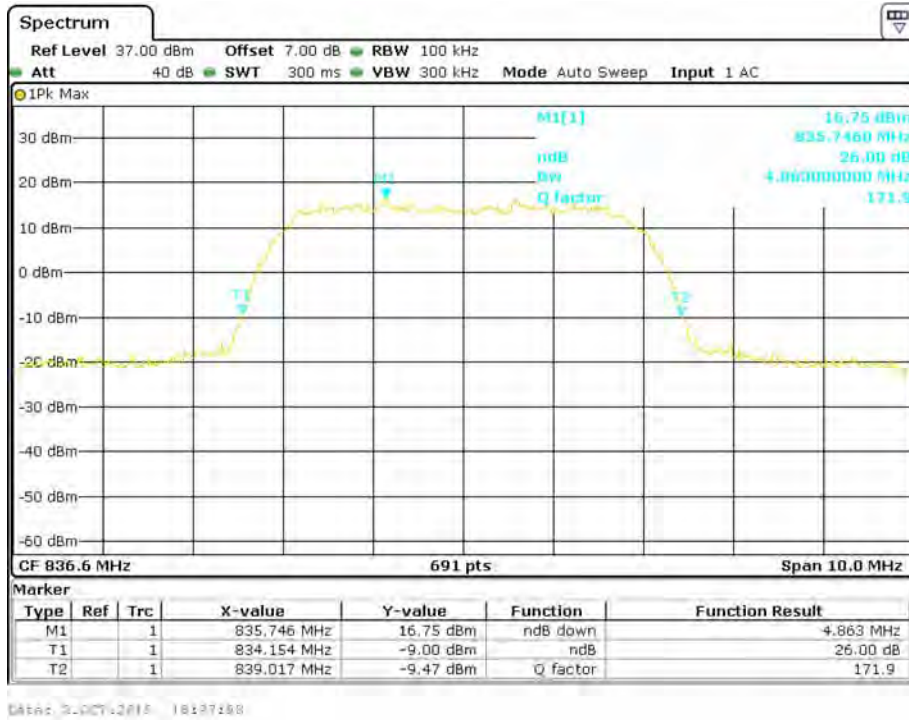
Date: 2.OCT.2015 17:57:45

### 26 dB Emissions Bandwidth for WCDMA (BPSK) Mode

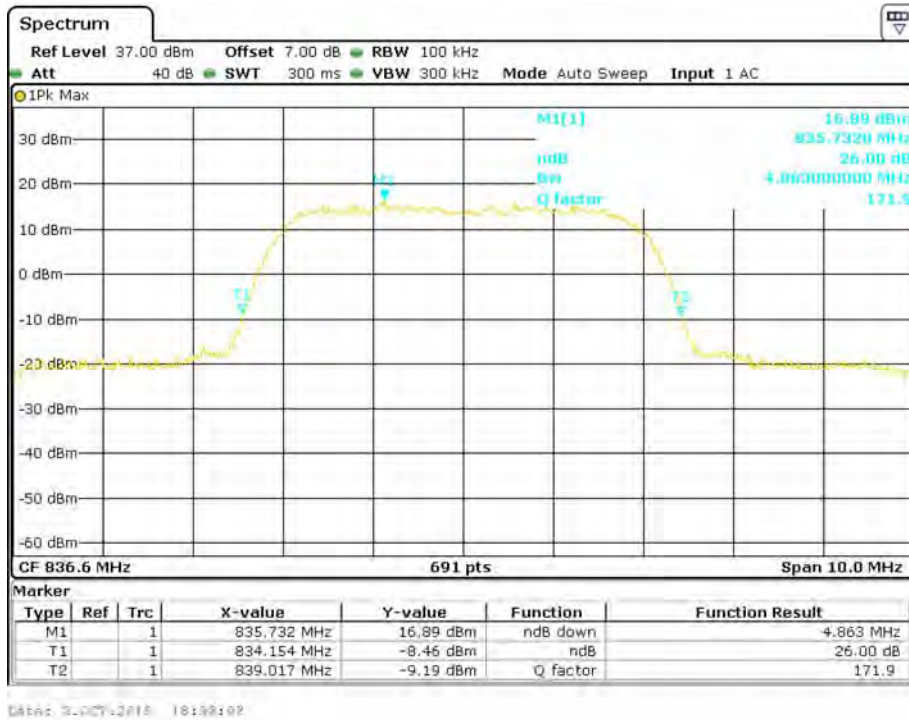


Date: 2.OCT.2015 18:05:24

26 dB Emissions Bandwidth for HSUPA (BPSK) Mode

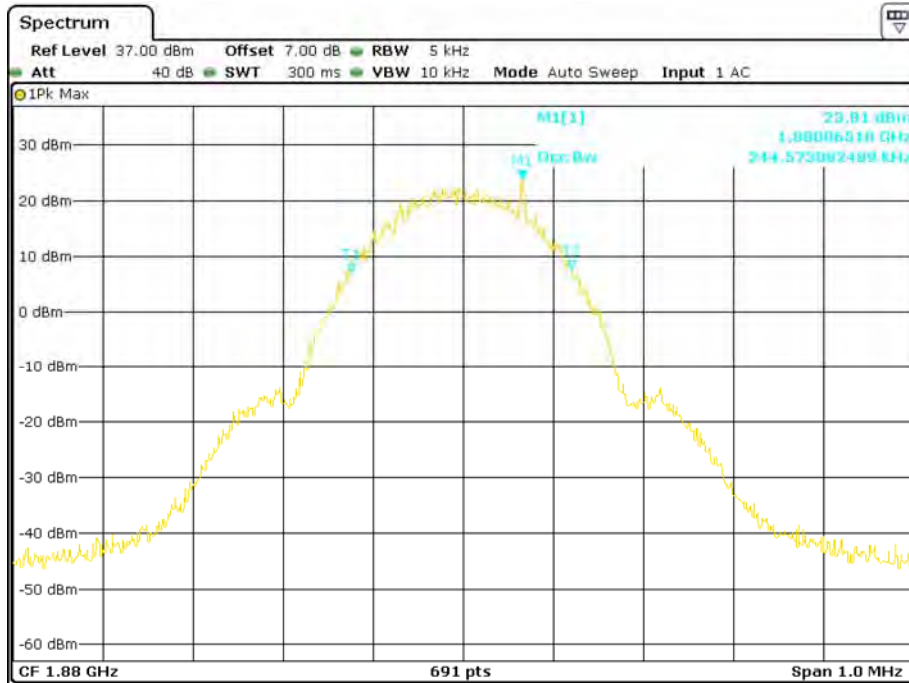


26 dB Emissions Bandwidth for HSDPA (16QAM) Mode



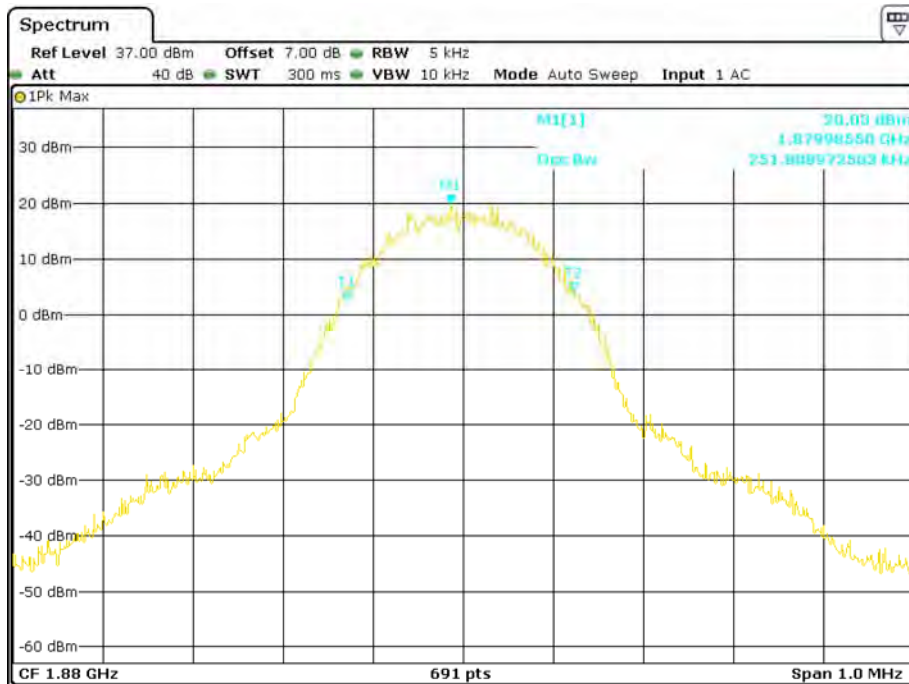
PCS Band (Part 24E)

99% Occupied Bandwidth for GSM (GMSK) Mode



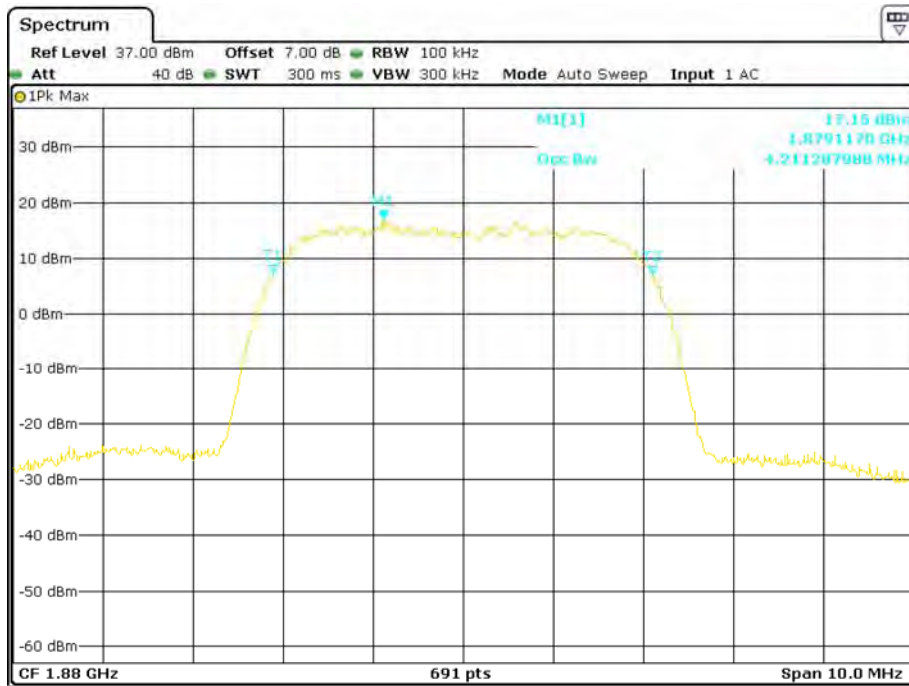
Date: 2.OCT.2015 17:26:15

99% Occupied Bandwidth for EGPRS Mode



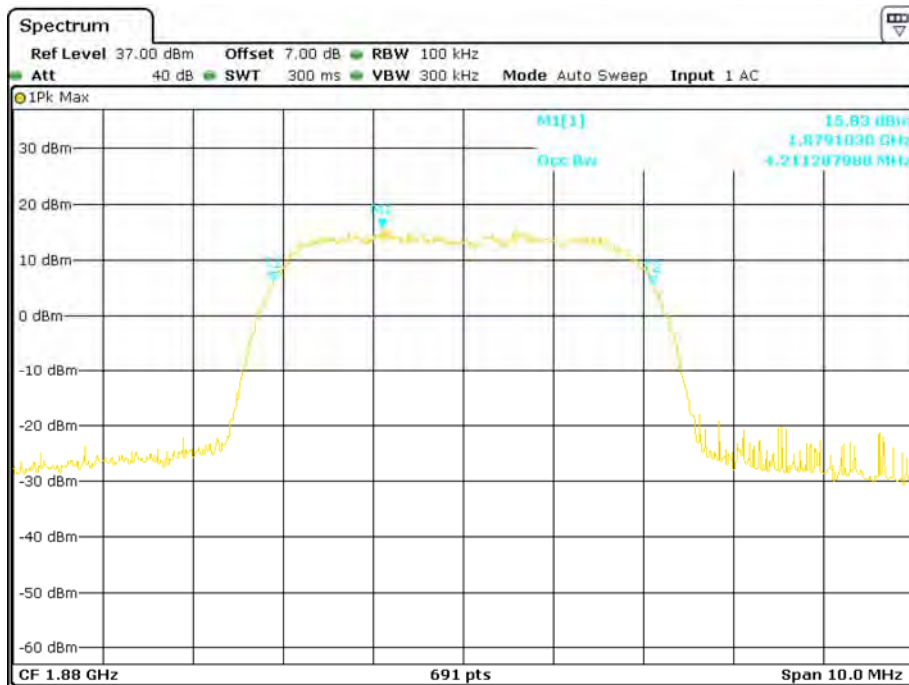
Date: 2.OCT.2015 17:35:36

### 99% Occupied Bandwidth for WCDMA (BPSK) Mode



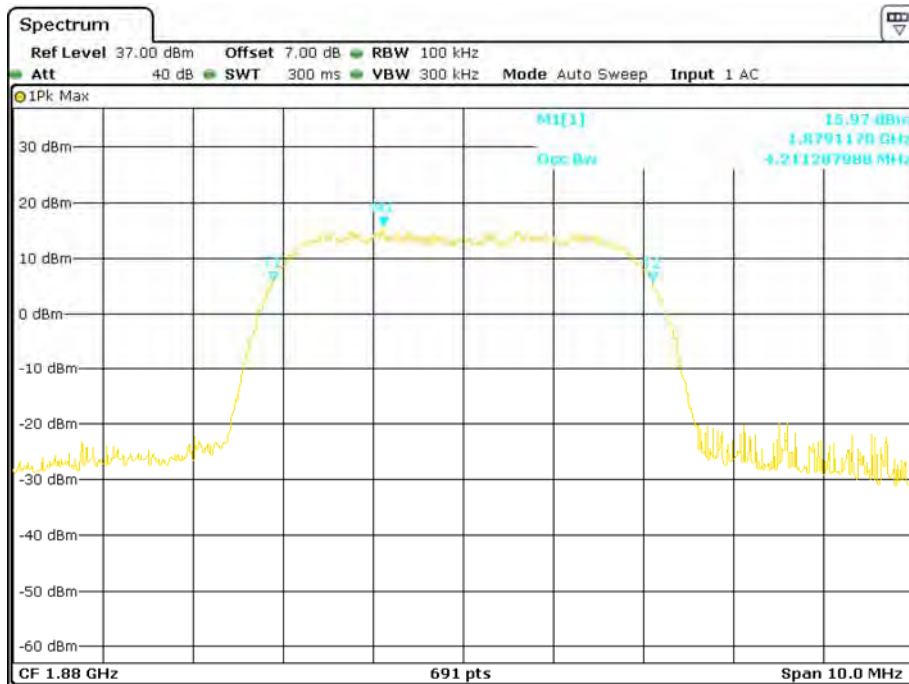
Date: 2.OCT.2015 18:15:44

### 99% Occupied Bandwidth for HSUPA (BPSK) Mode



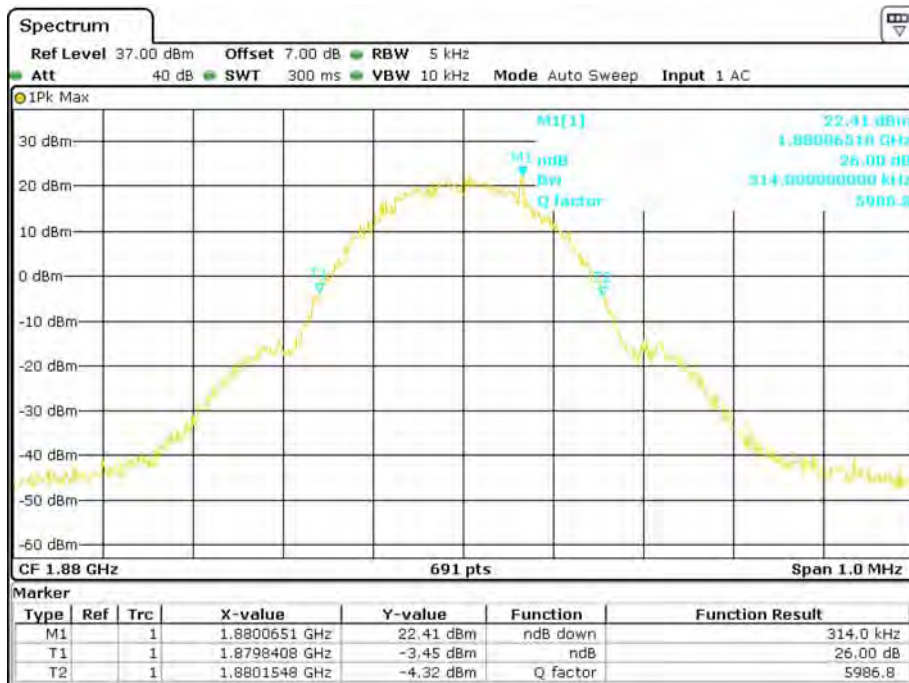
Date: 2.OCT.2015 18:19:51

**99% Occupied Bandwidth for HSDPA (16QAM) Mode**



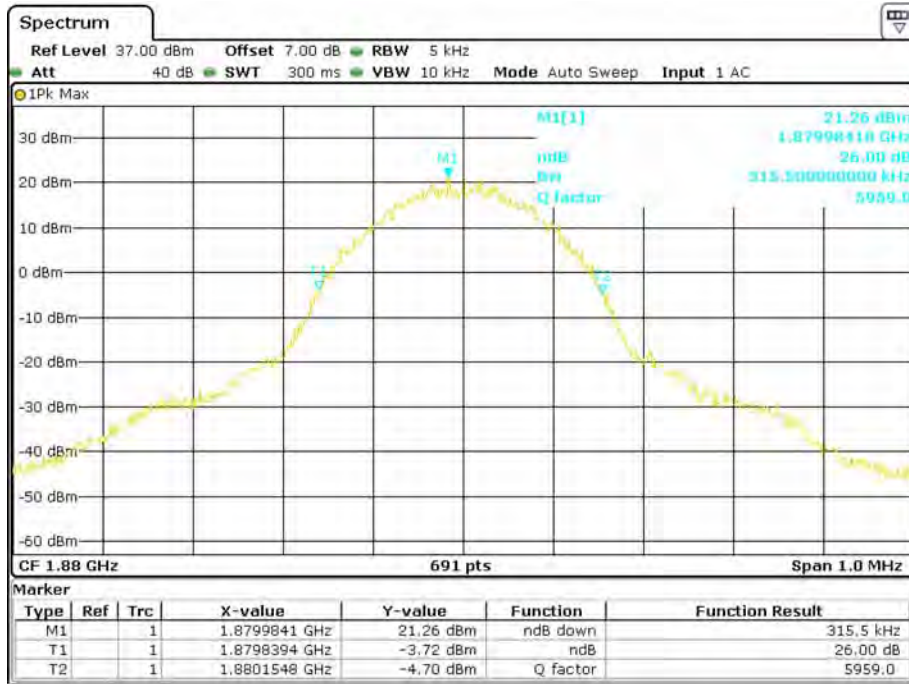
Date: 2.OCT.2015 18:47:02

**26 dB Emissions Bandwidth for GSM (GMSK) Mode**



Date: 2.OCT.2015 17:27:13

26 dB Emissions Bandwidth for EGPRS Mode



Date: 2.OCT.2015 17:32:52

26 dB Emissions Bandwidth for WCDMA (BPSK) Mode



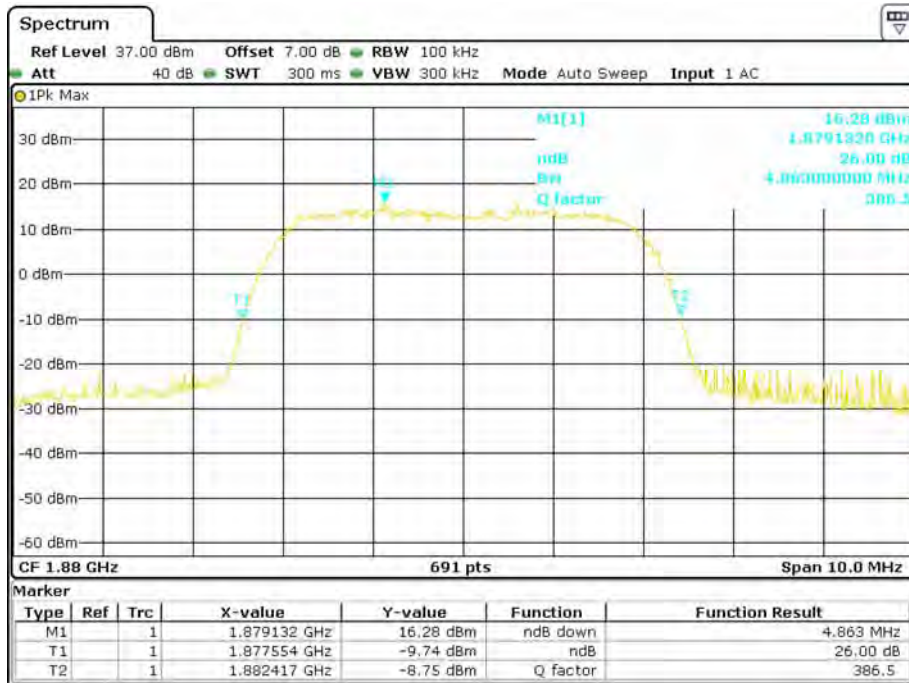
Date: 2.OCT.2015 18:16:30

26 dB Emissions Bandwidth for HSUPA (BPSK) Mode



Date: 2.OCT.2015 18:18:36

26 dB Emissions Bandwidth for HSDPA (16QAM) Mode

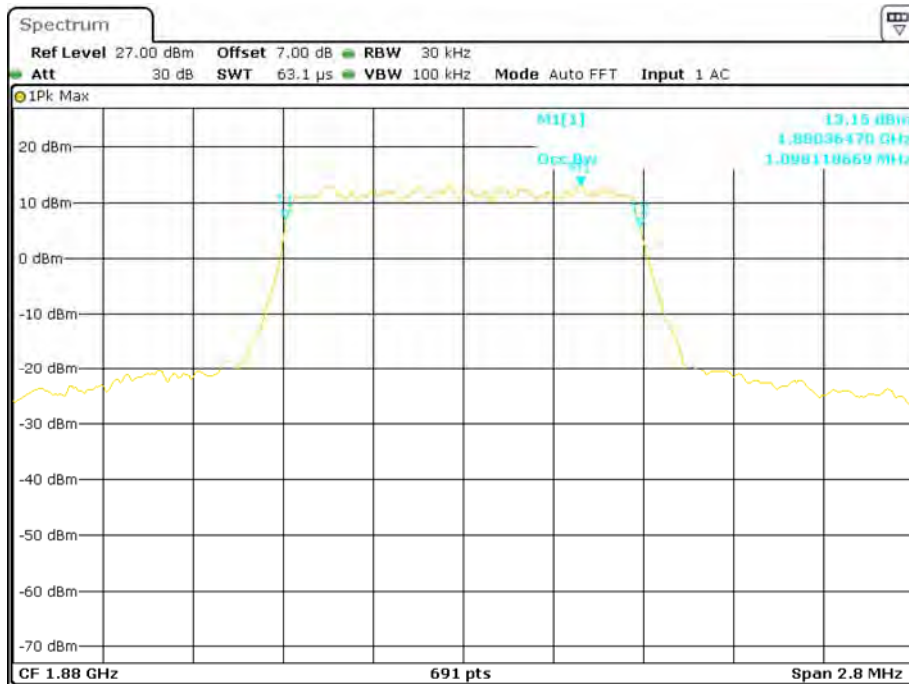


Date: 2.OCT.2015 18:18:46

**LTE Band 2: (Middle Channel)**

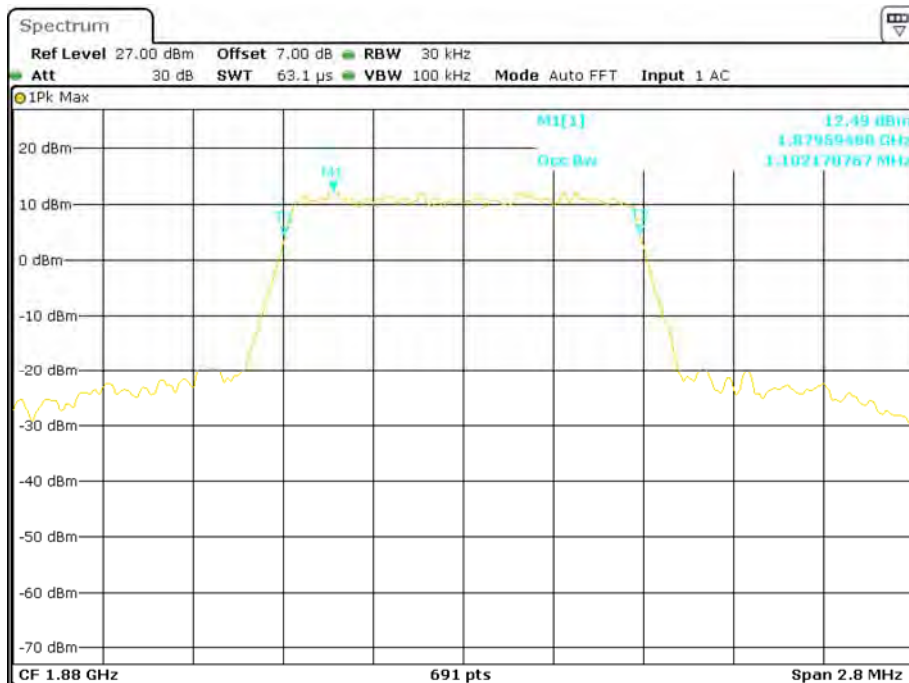
<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
1.4	QPSK	1.098	1.285
	16QAM	1.102	1.297
3.0	QPSK	2.692	2.935
	16QAM	2.683	2.918
5.0	QPSK	4.544	5.094
	16QAM	4.515	5.065
10.0	QPSK	8.973	9.841
	16QAM	8.944	9.609
15.0	QPSK	13.546	14.935
	16QAM	13.546	15.022
20.0	QPSK	18.003	19.334
	16QAM	18.003	19.450

**QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel**



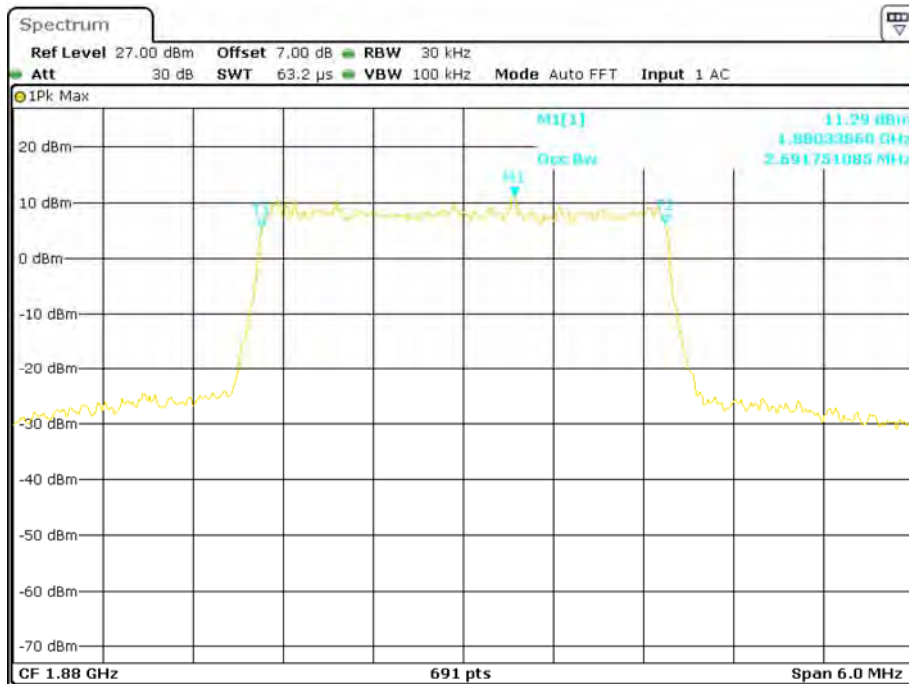
Date: 8.OCT.2015 09:27:14

**16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel**



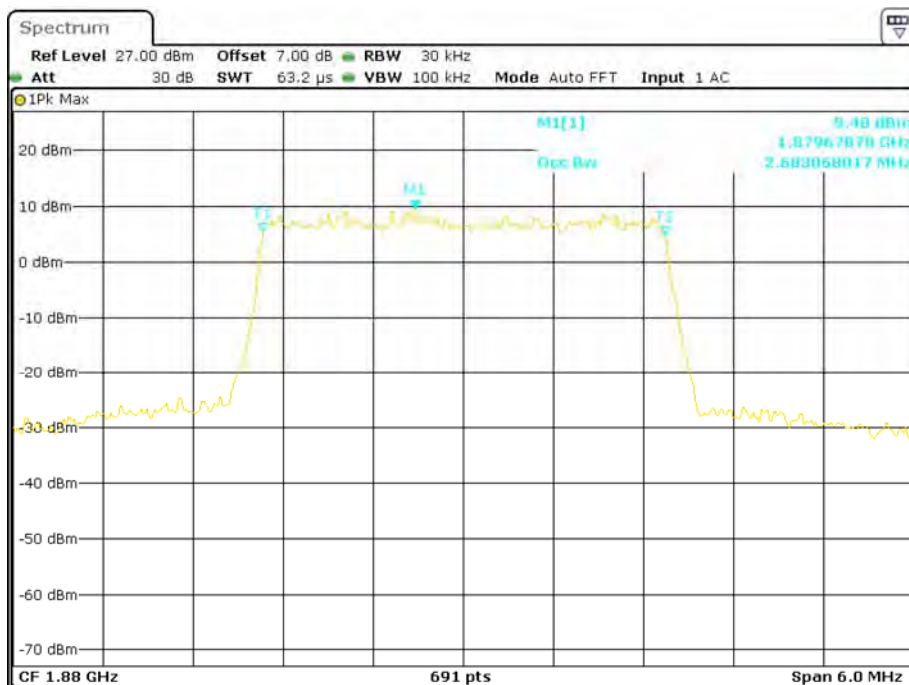
Date: 8.OCT.2015 09:26:44

### QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.OCT.2015 09:25:35

### 16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



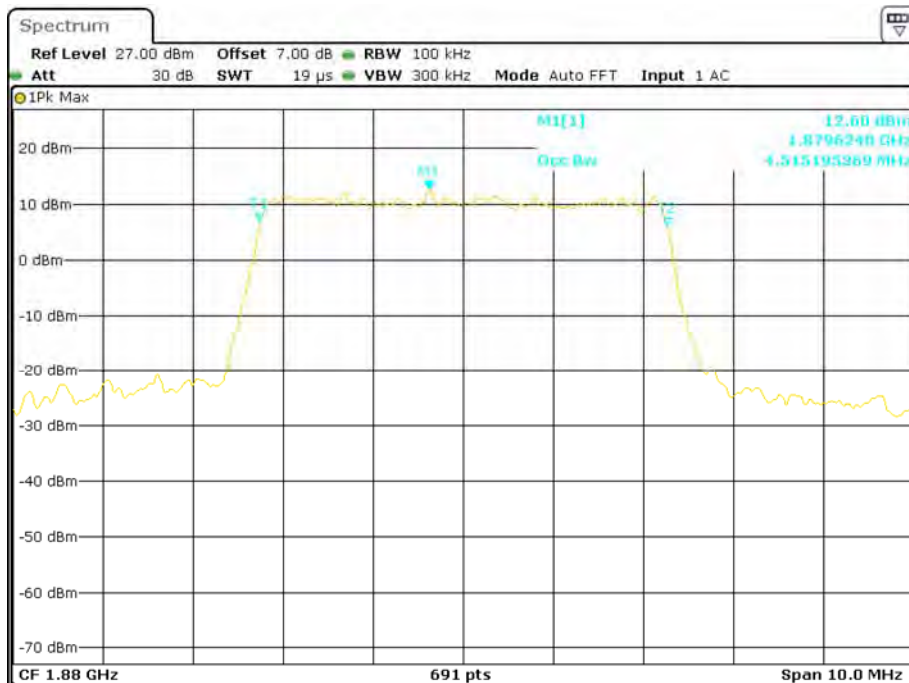
Date: 8.OCT.2015 09:25:01

### QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



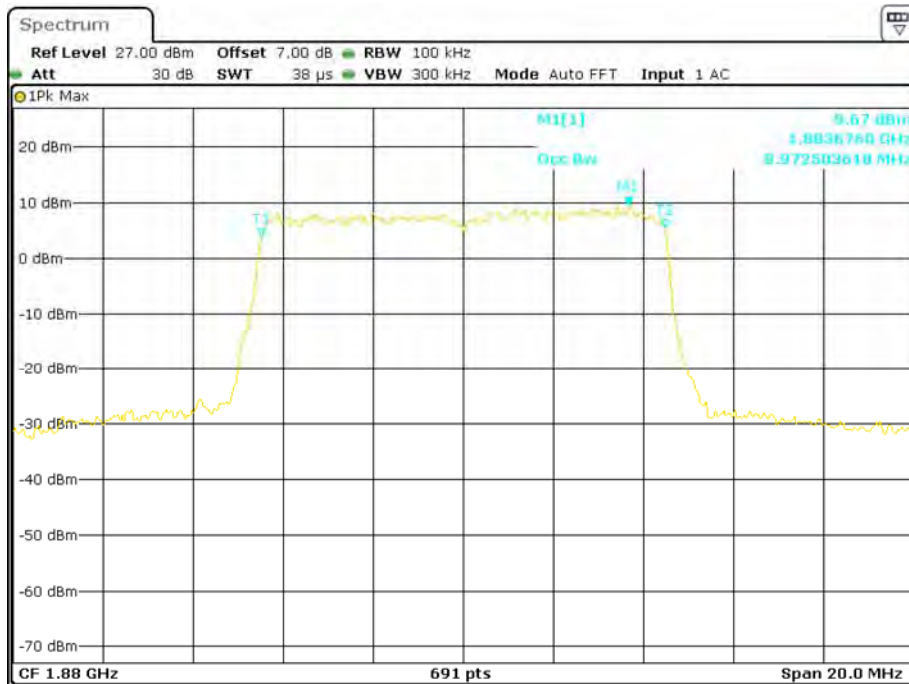
Date: 8.OCT.2015 09:24:07

### 16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



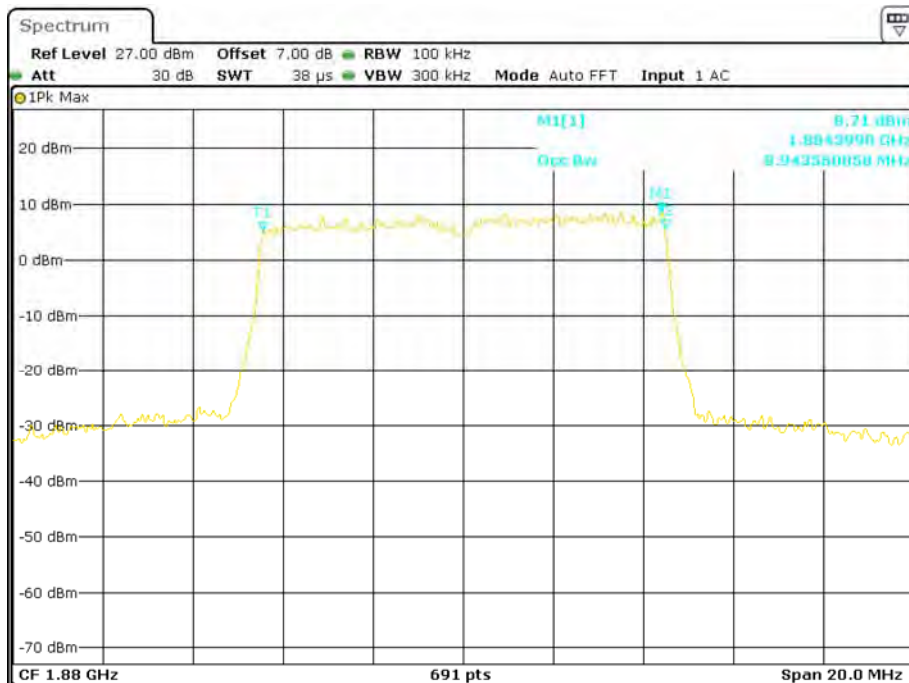
Date: 8.OCT.2015 09:23:29

**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



Date: 8.OCT.2015 09:22:54

**16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



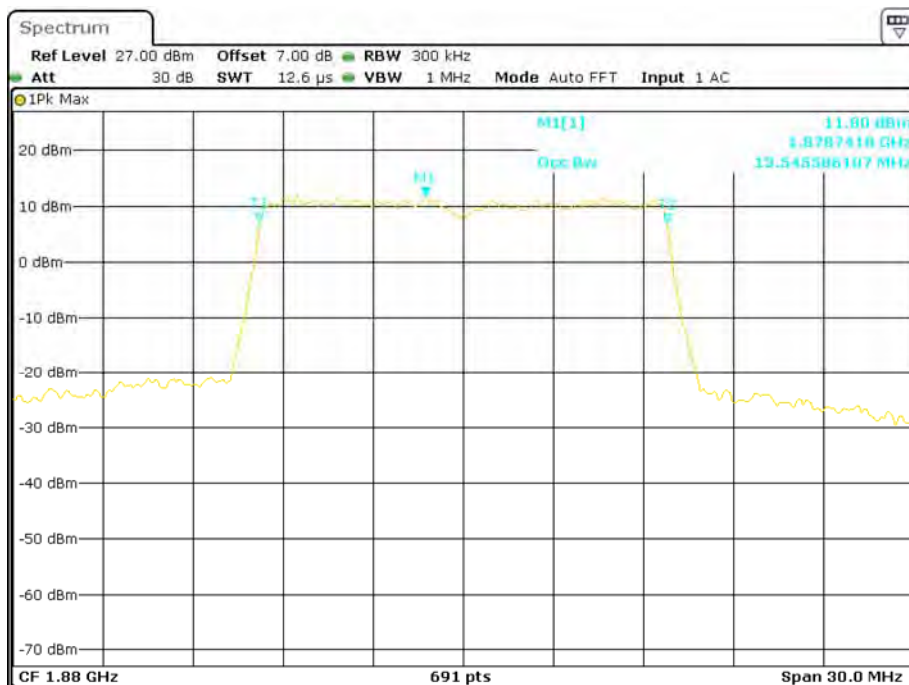
Date: 8.OCT.2015 09:21:59

### QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel



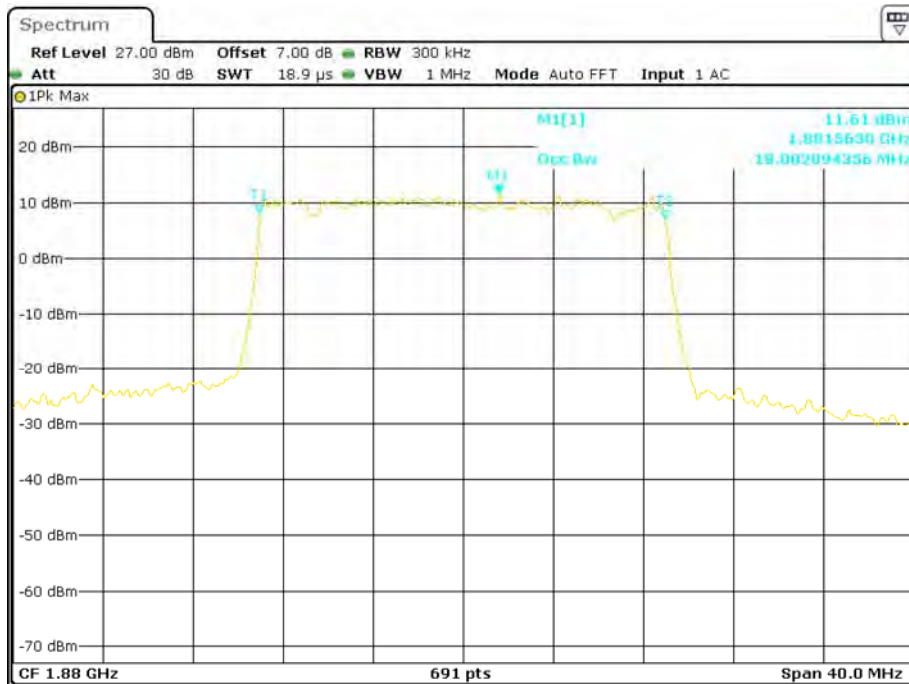
Date: 8.OCT.2015 09:20:19

### 16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel



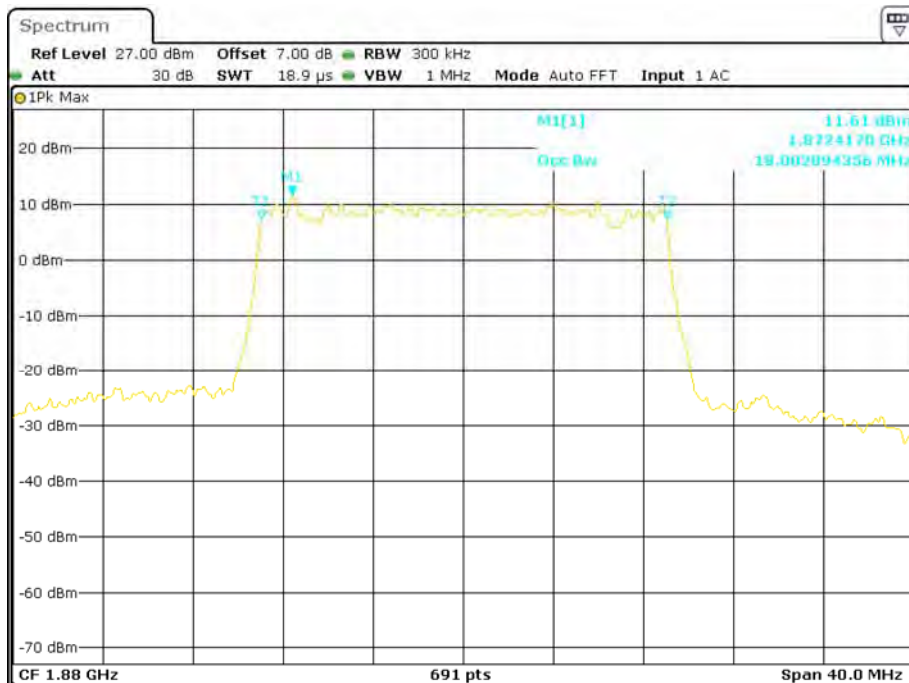
Date: 8.OCT.2015 09:19:32

**QPSK (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



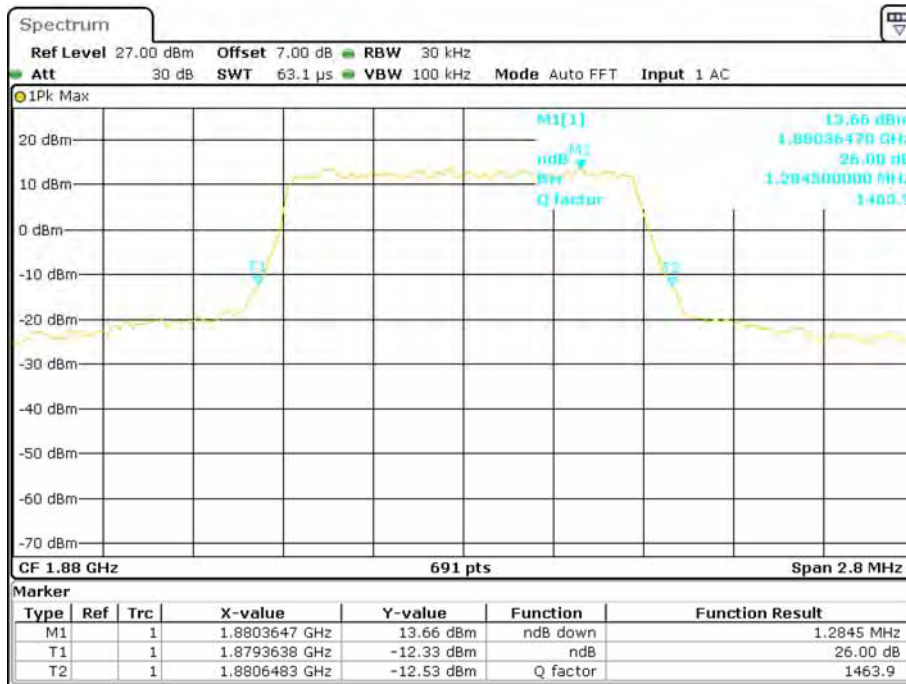
Date: 8.OCT.2015 09:17:40

**16-QAM (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



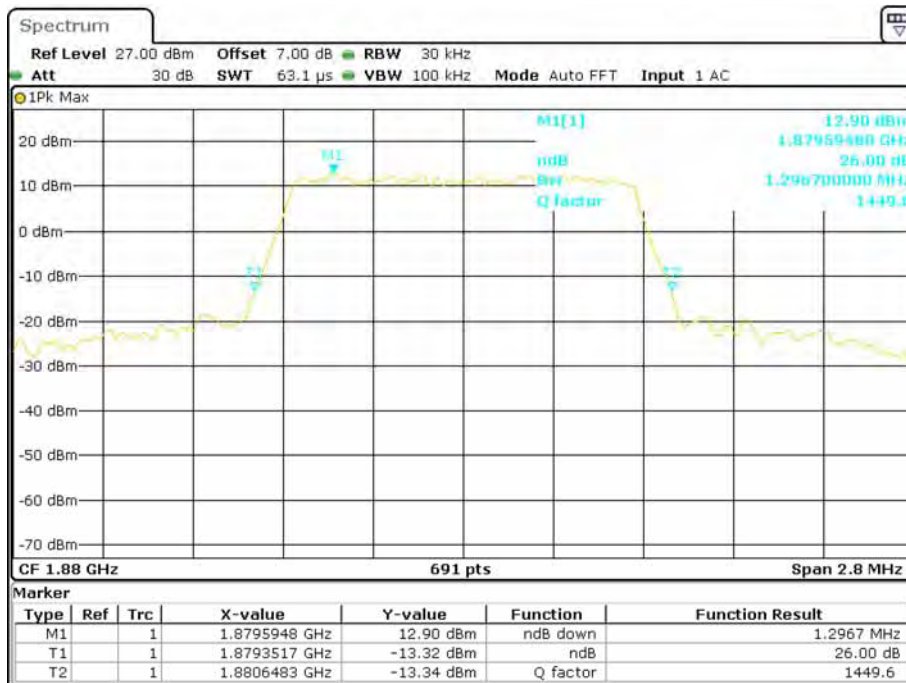
Date: 8.OCT.2015 09:16:55

**QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel**



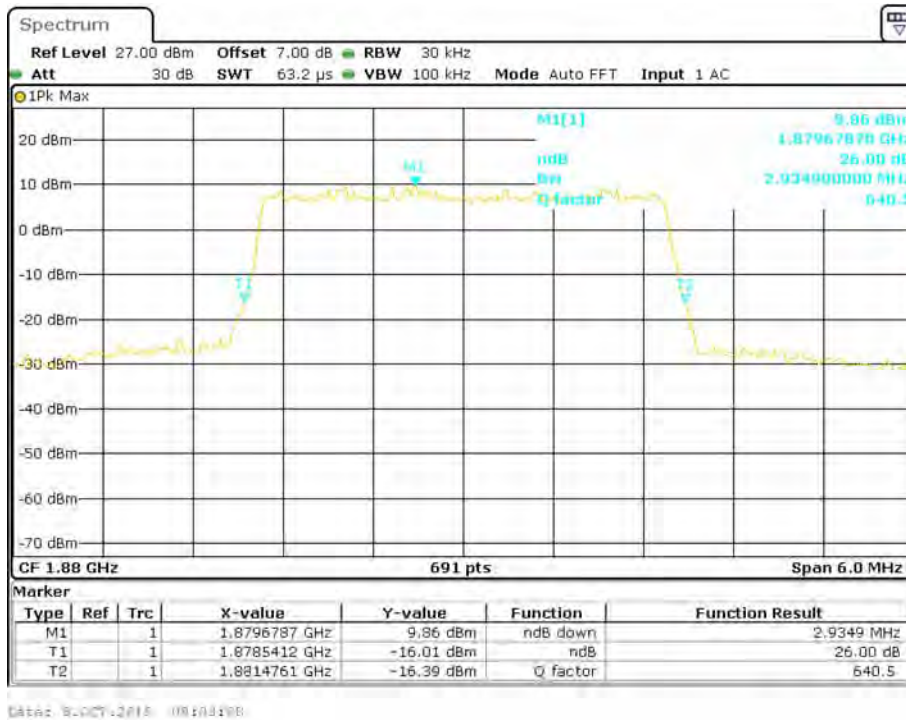
Date: 8.OCT.2015 09:01:10

**16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel**

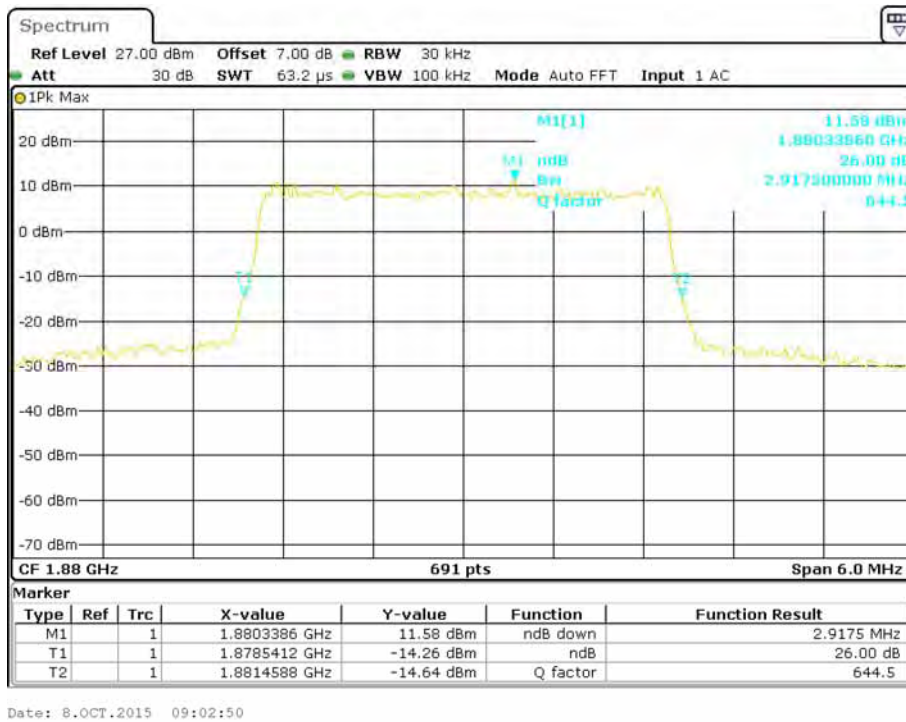


Date: 8.OCT.2015 09:02:08

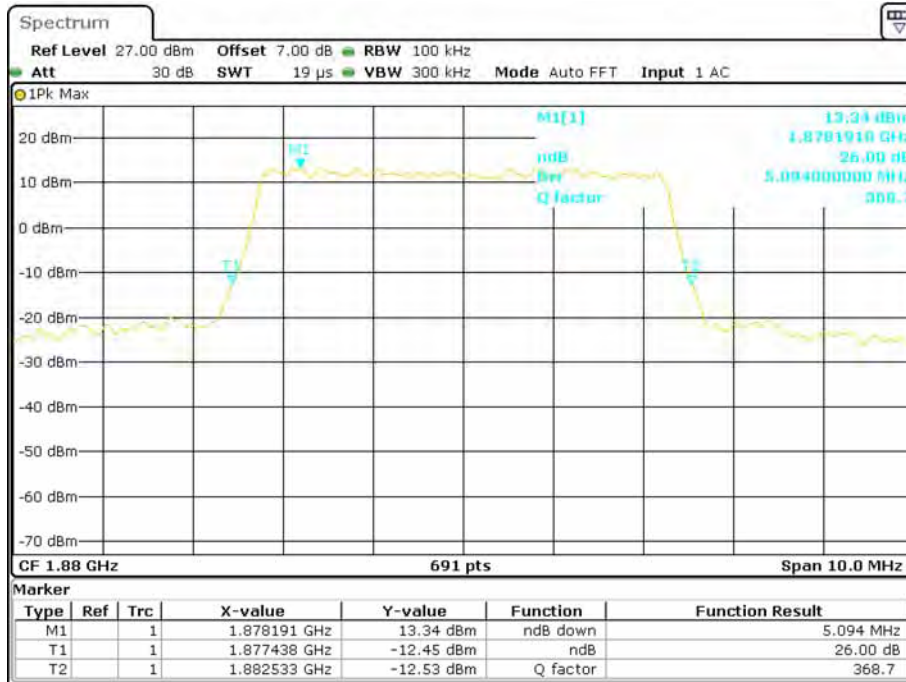
**QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel**



**16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel**

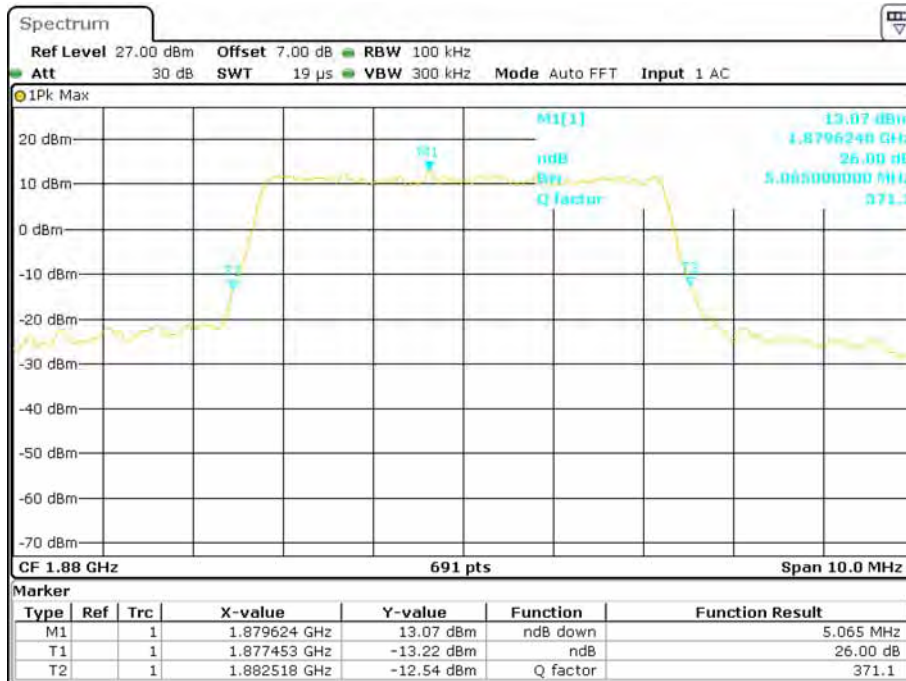


**QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel**



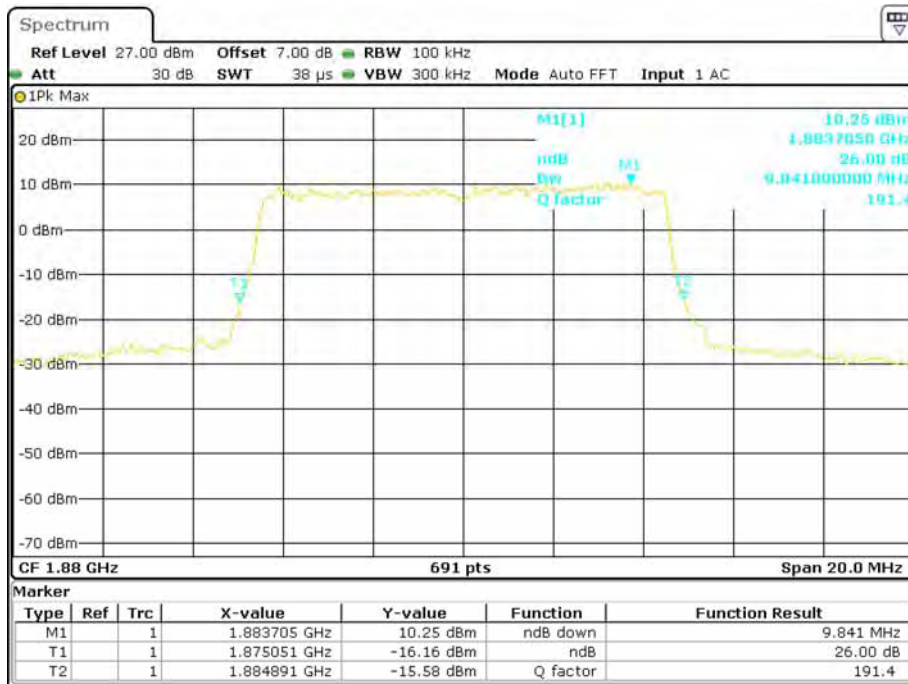
Date: 8.OCT.2015 09:04:36

**16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel**



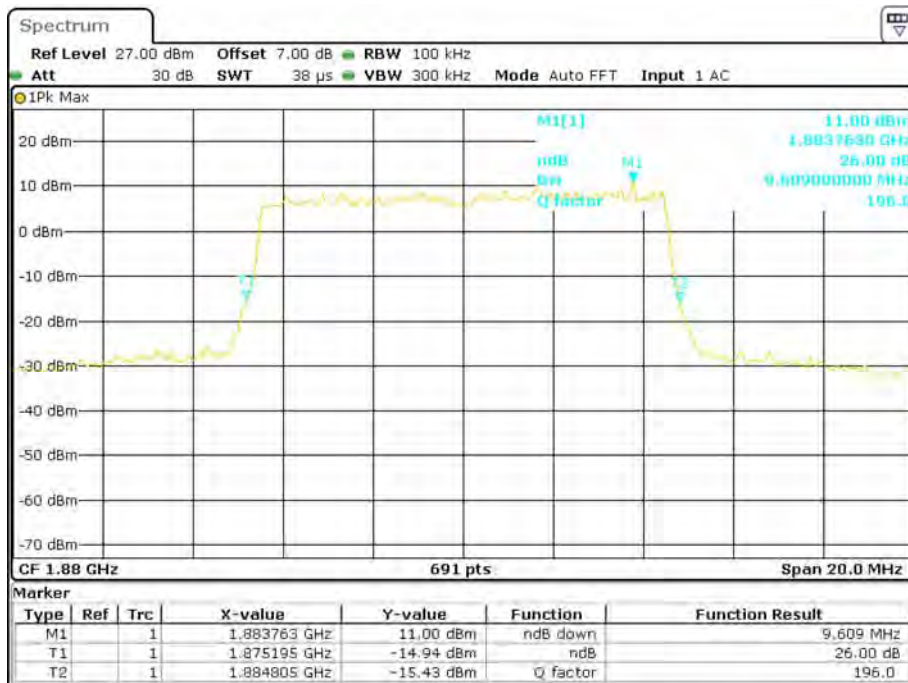
Date: 8.OCT.2015 09:05:15

**QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel**



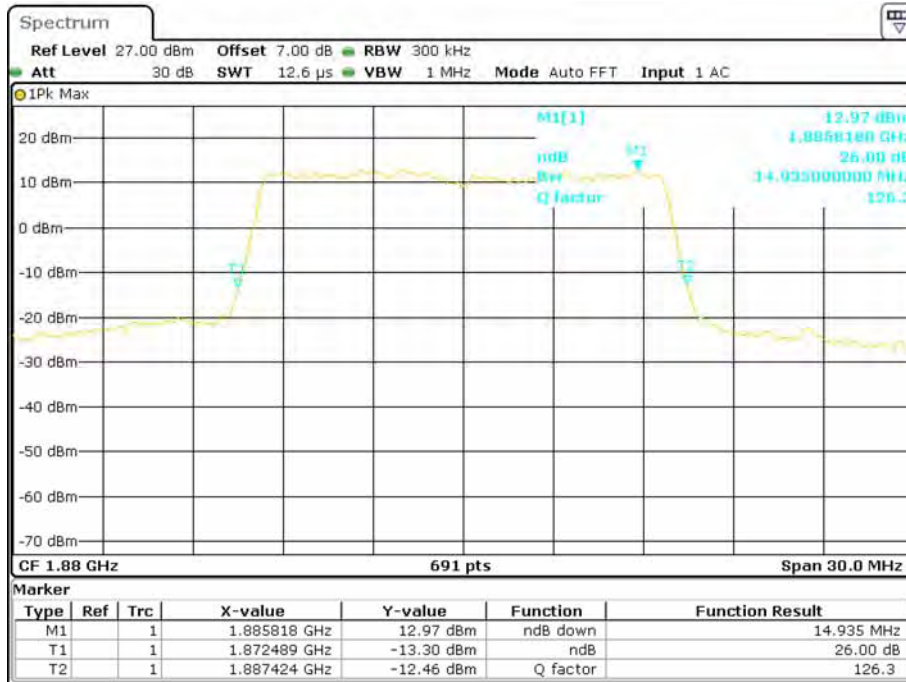
Date: 8.OCT.2015 09:08:36

**16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel**



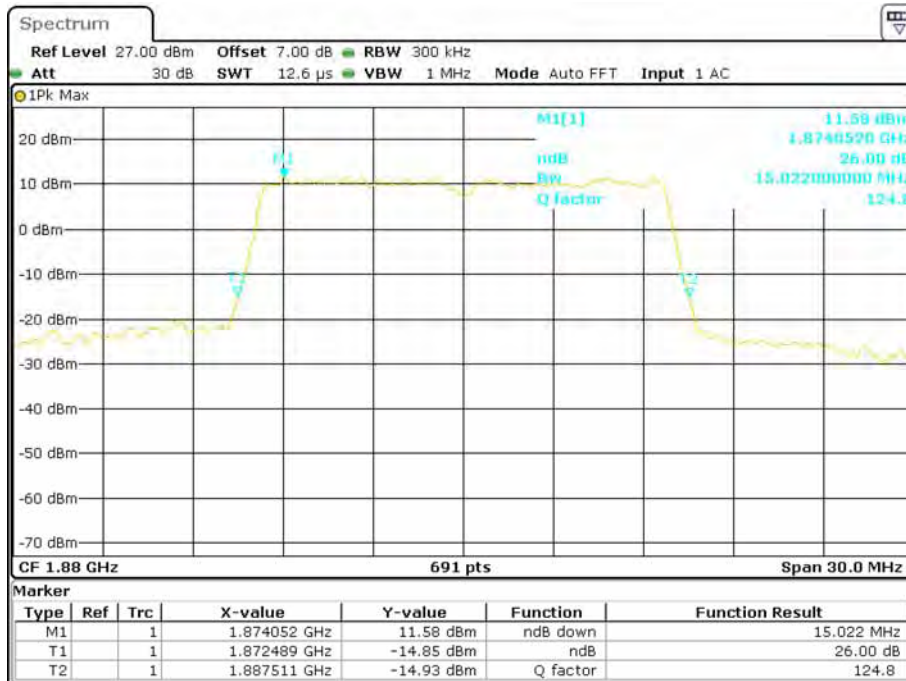
Date: 8.OCT.2015 09:08:58

**QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel**



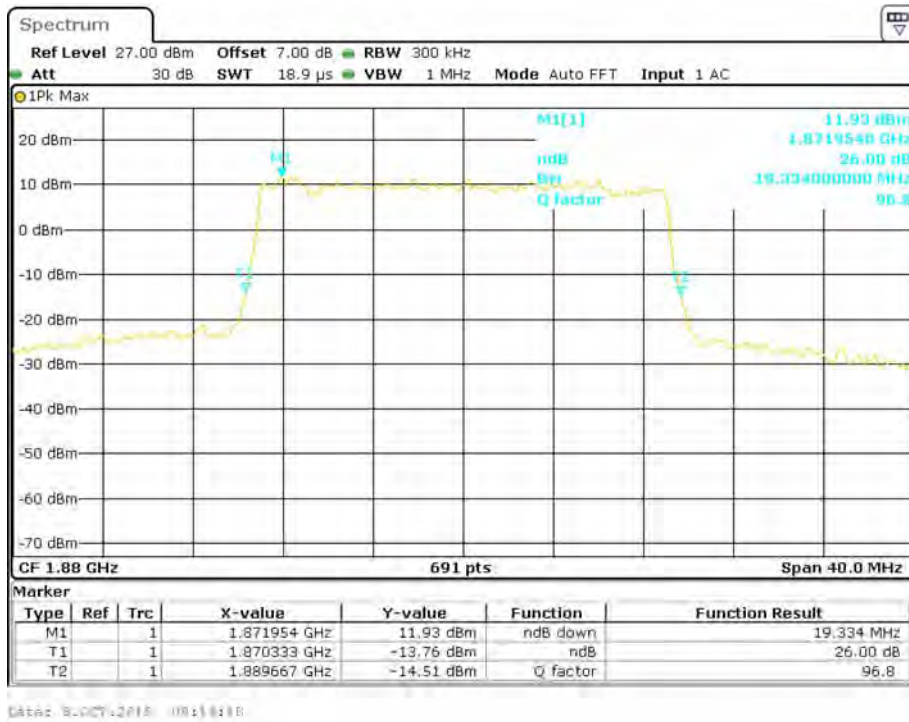
Date: 8.OCT.2015 09:12:33

**16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel**

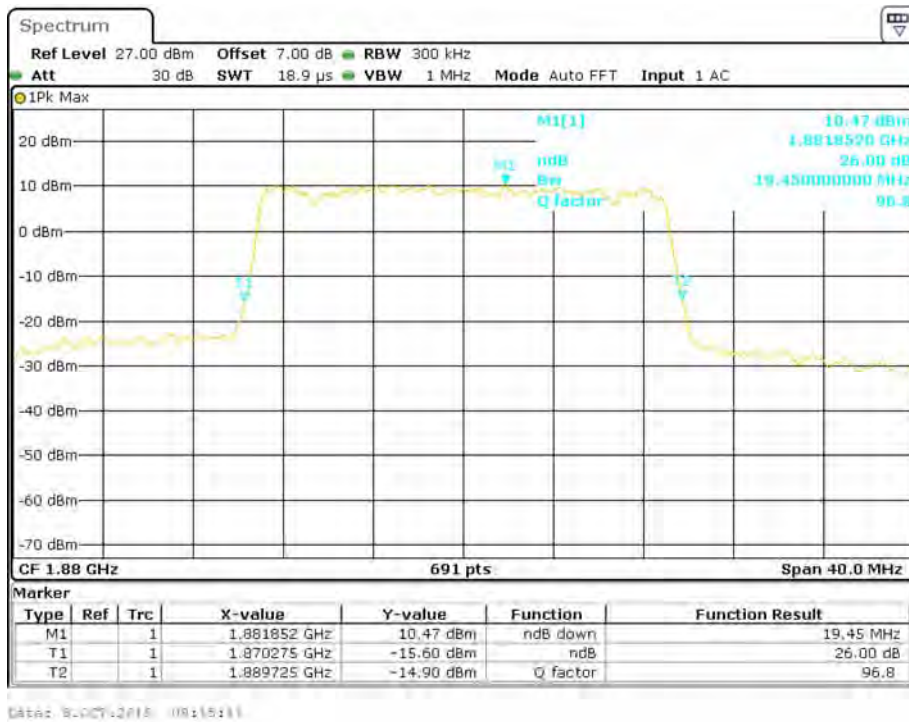


Date: 8.OCT.2015 09:13:10

**QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel**



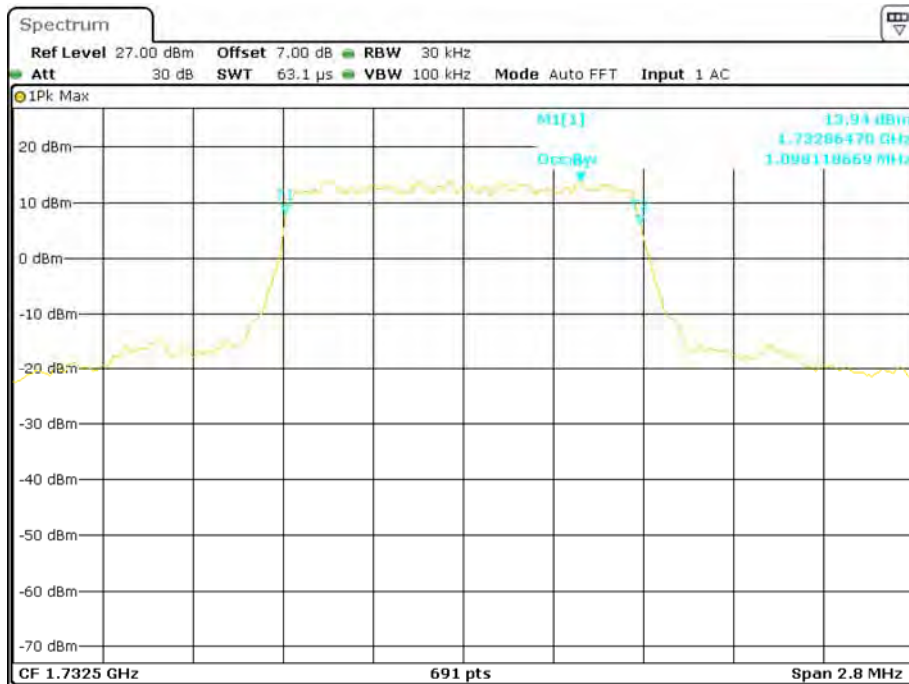
**16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel**



**LTE Band 4: (Middle Channel)**

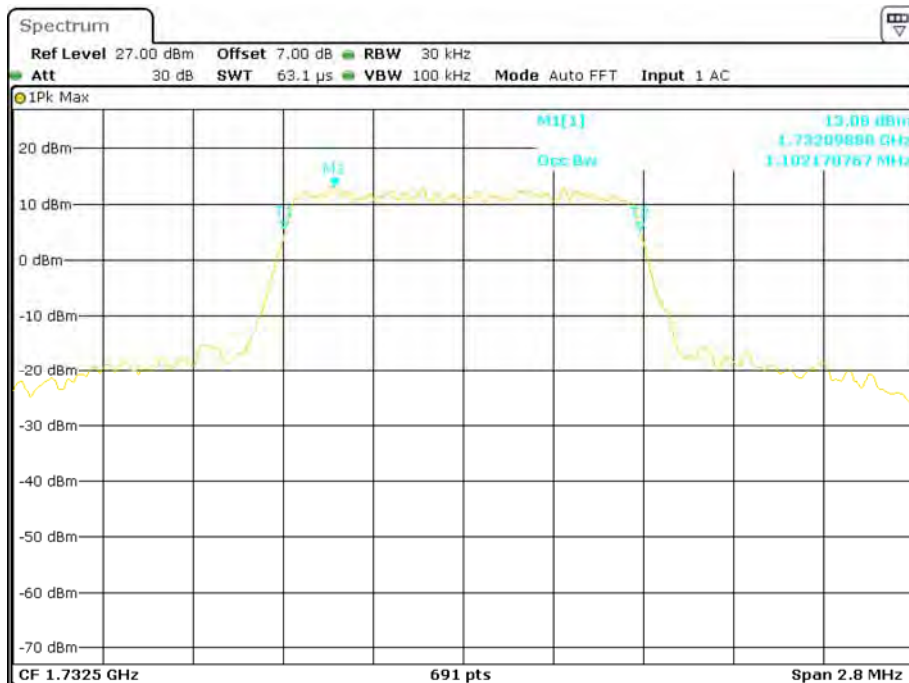
<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
1.4	QPSK	1.098	1.329
	16QAM	1.102	1.305
3.0	QPSK	2.692	2.935
	16QAM	2.683	2.935
5.0	QPSK	4.544	5.109
	16QAM	4.530	5.080
10.0	QPSK	8.973	9.899
	16QAM	8.915	9.667
15.0	QPSK	13.546	14.978
	16QAM	13.546	14.848
20.0	QPSK	17.945	19.392
	16QAM	18.003	19.392

### QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.OCT.2015 09:29:19

### 16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



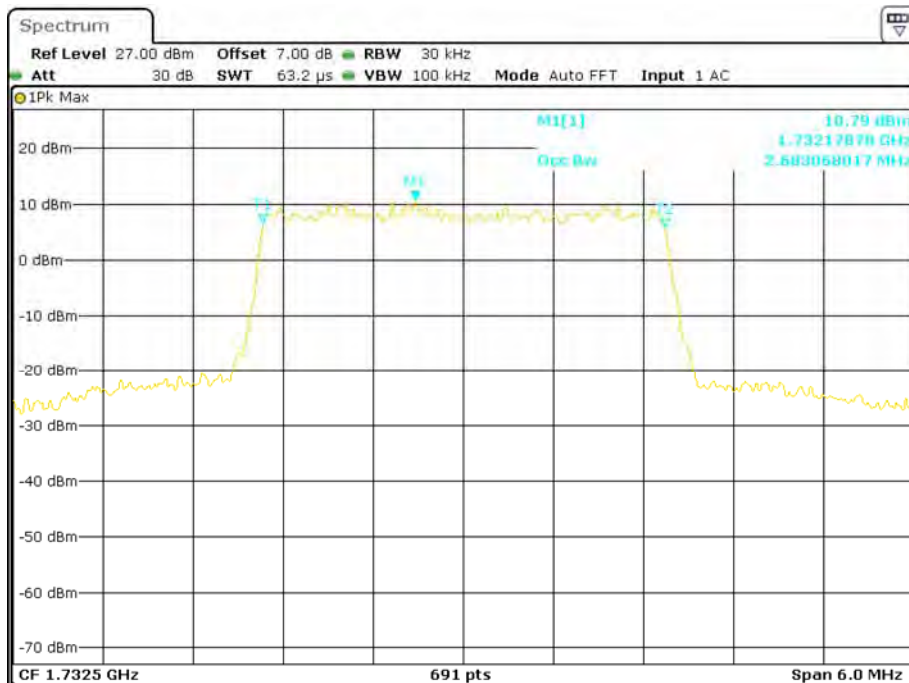
Date: 8.OCT.2015 09:30:00

### QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.OCT.2015 09:30:47

### 16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



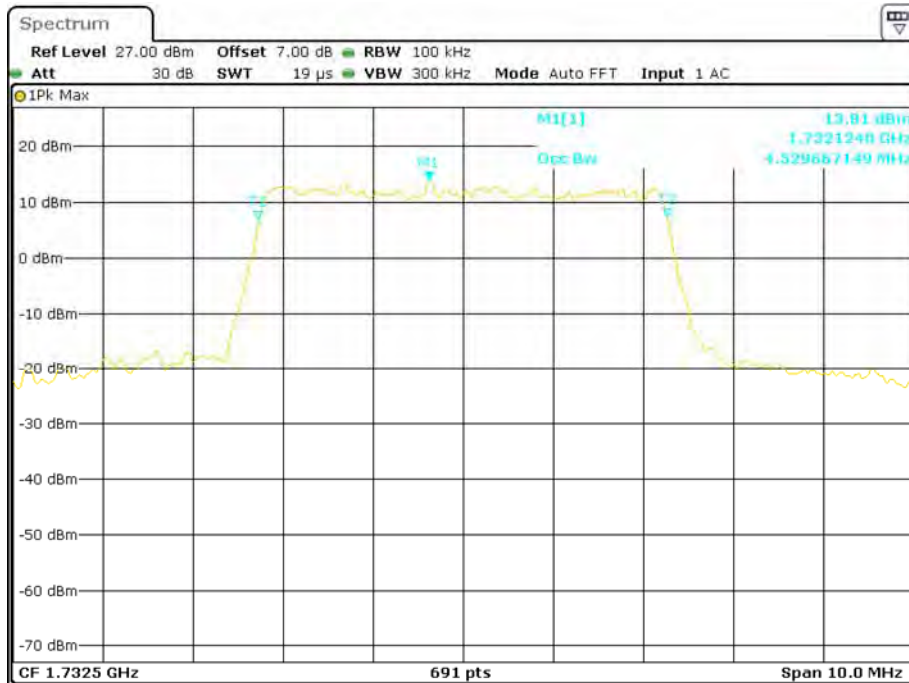
Date: 8.OCT.2015 09:31:44

### QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



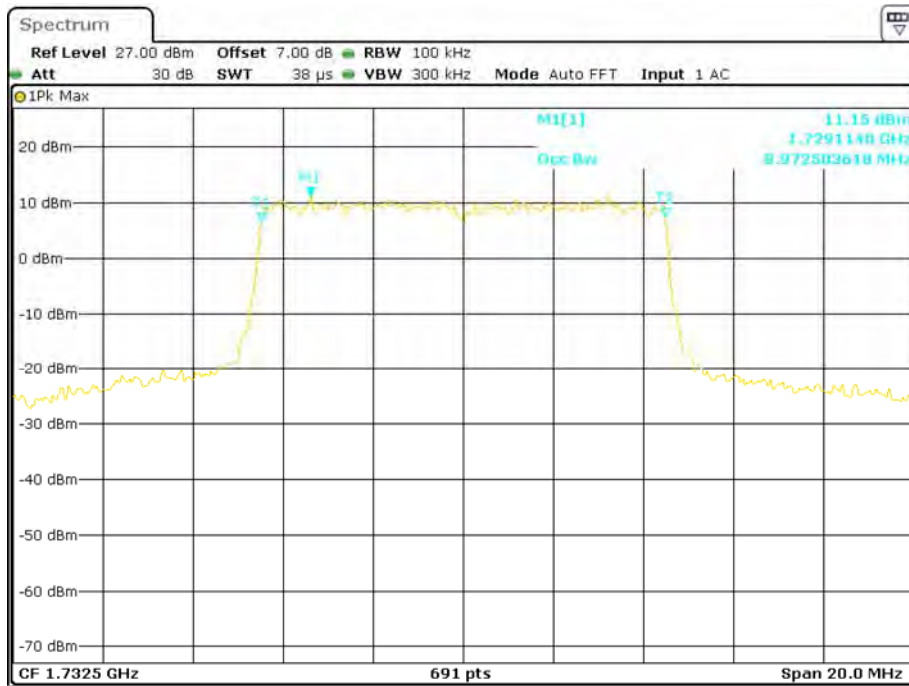
Date: 8.OCT.2015 09:32:36

### 16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.OCT.2015 09:33:07

**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



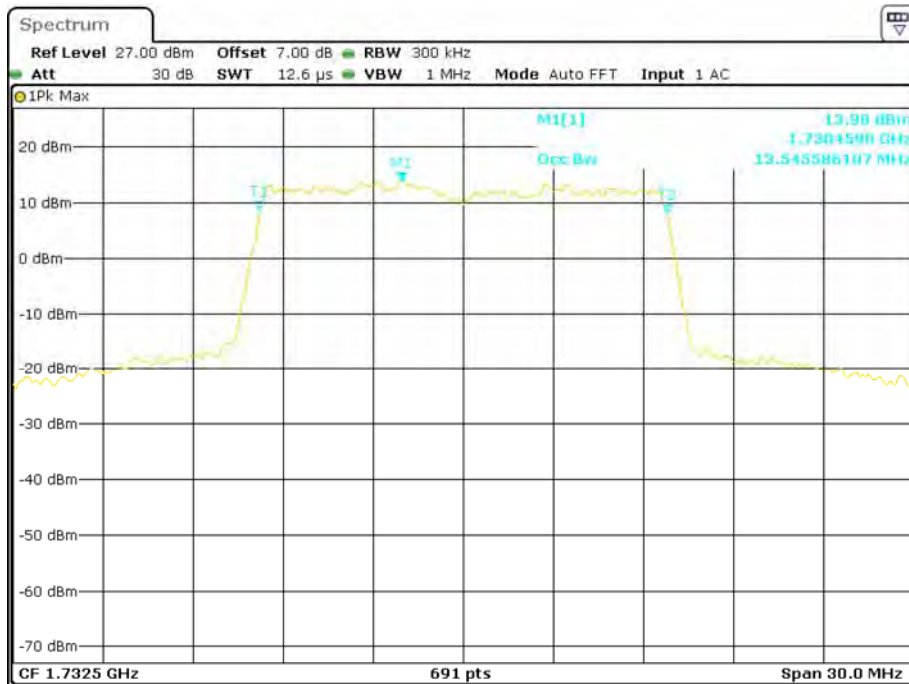
Date: 8.OCT.2015 09:33:41

**16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



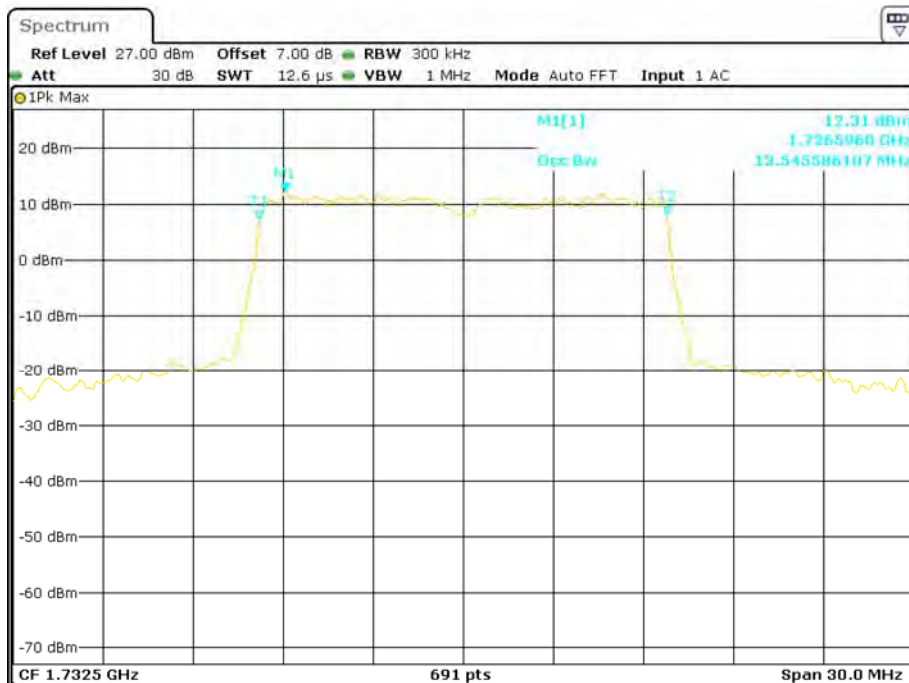
Date: 8.OCT.2015 09:35:17

**QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



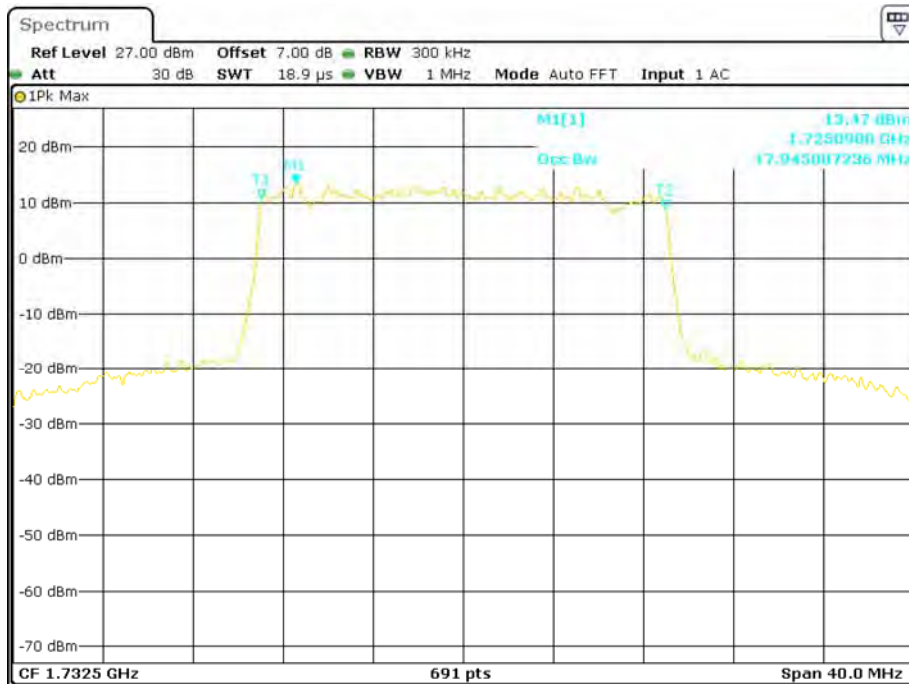
Date: 8.OCT.2015 09:46:16

**16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



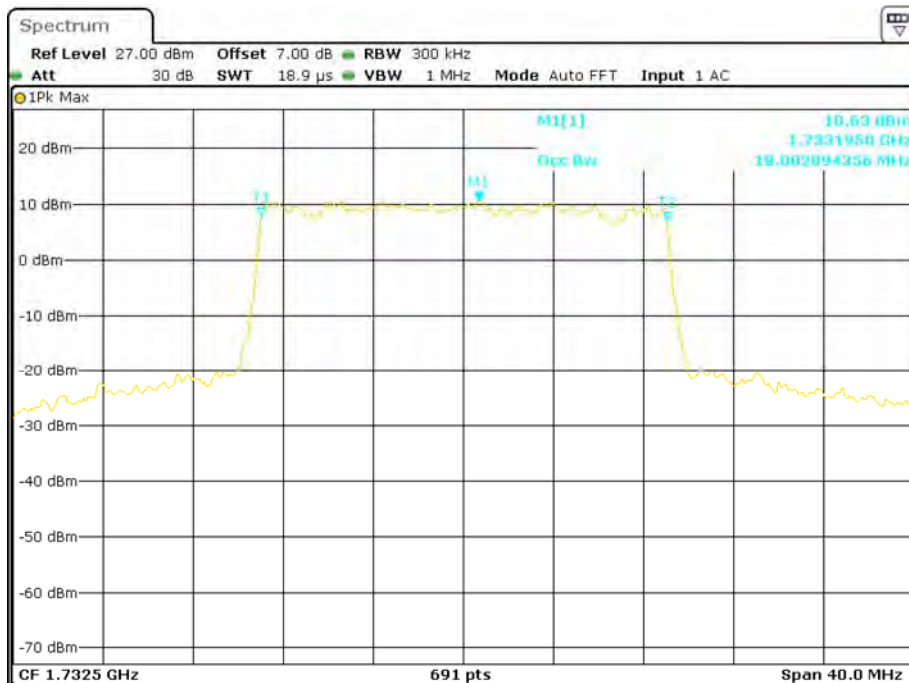
Date: 8.OCT.2015 09:44:09

**QPSK (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



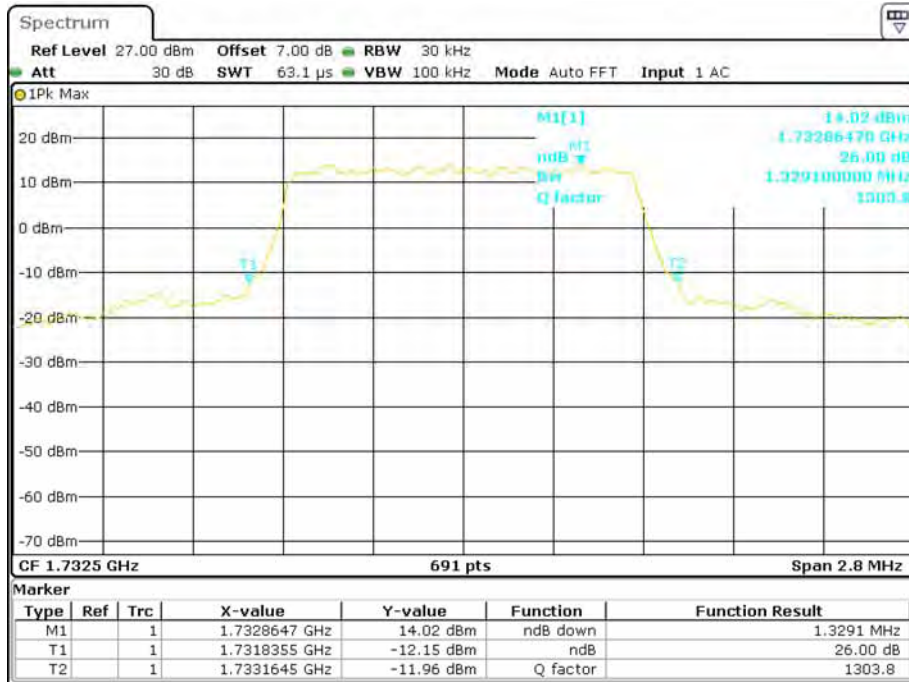
Date: 8.OCT.2015 09:42:01

**16-QAM (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



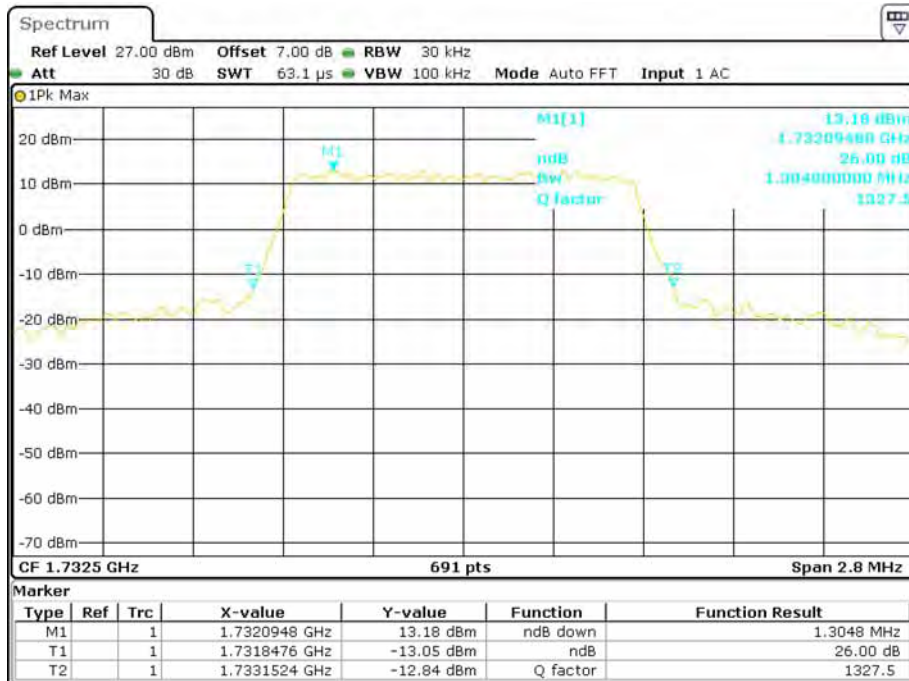
Date: 8.OCT.2015 09:42:40

**QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel**



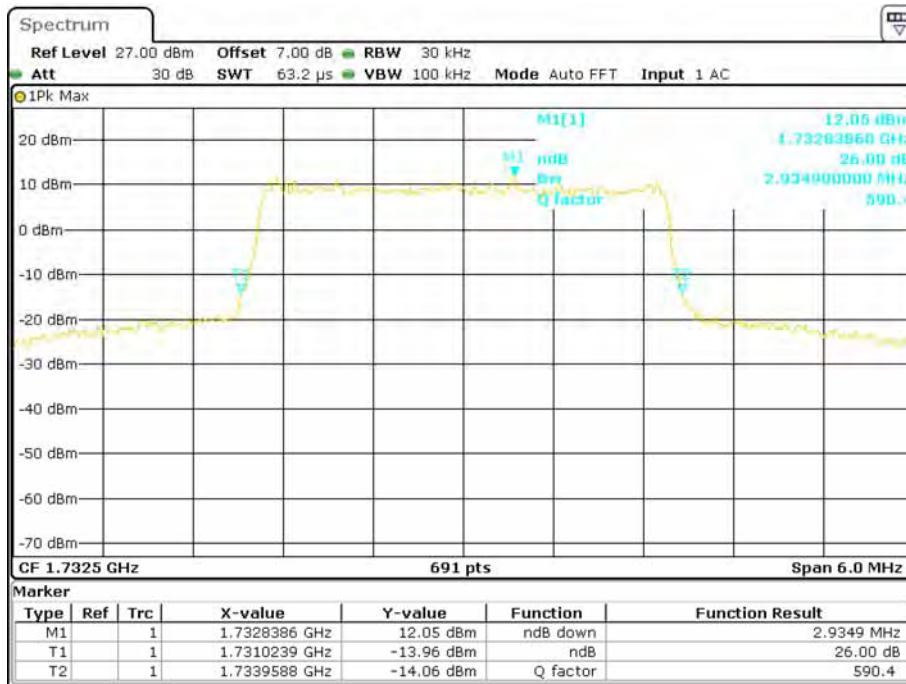
Date: 8.OCT.2015 10:01:54

**16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel**



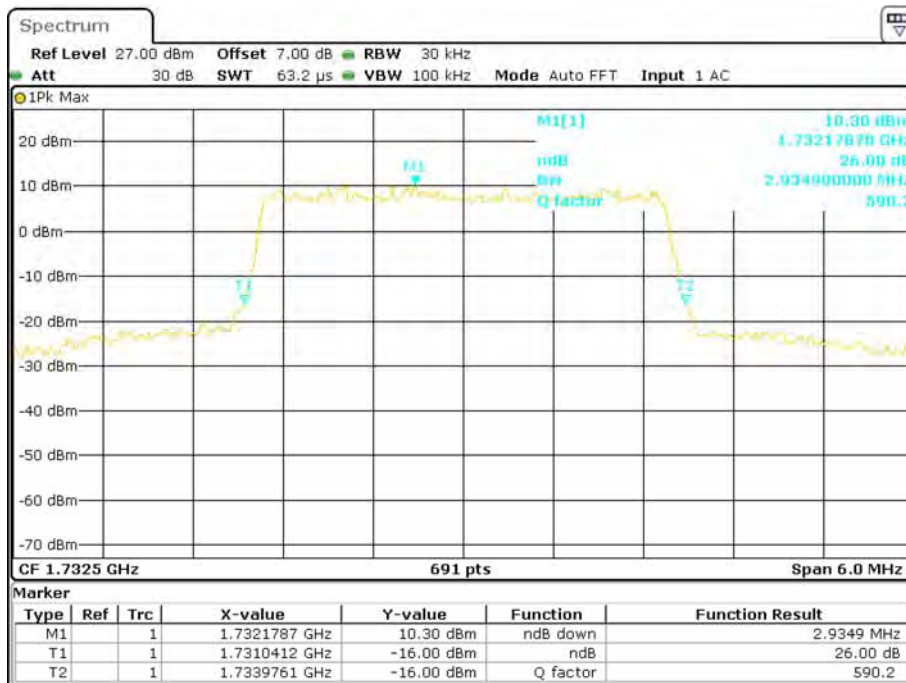
Date: 8.OCT.2015 10:01:08

**QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel**



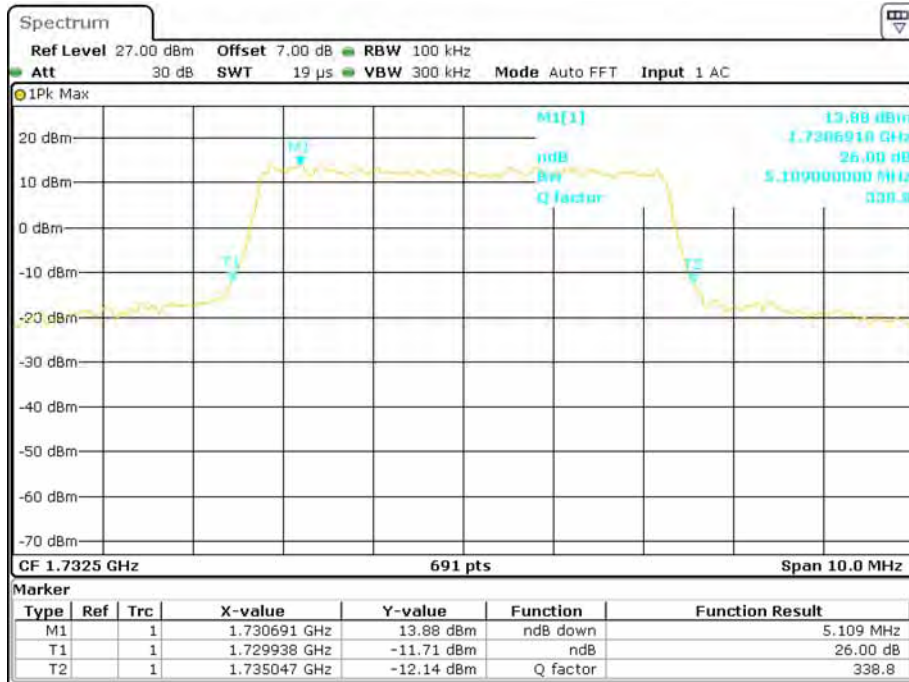
Date: 8.OCT.2015 09:59:53

**16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel**



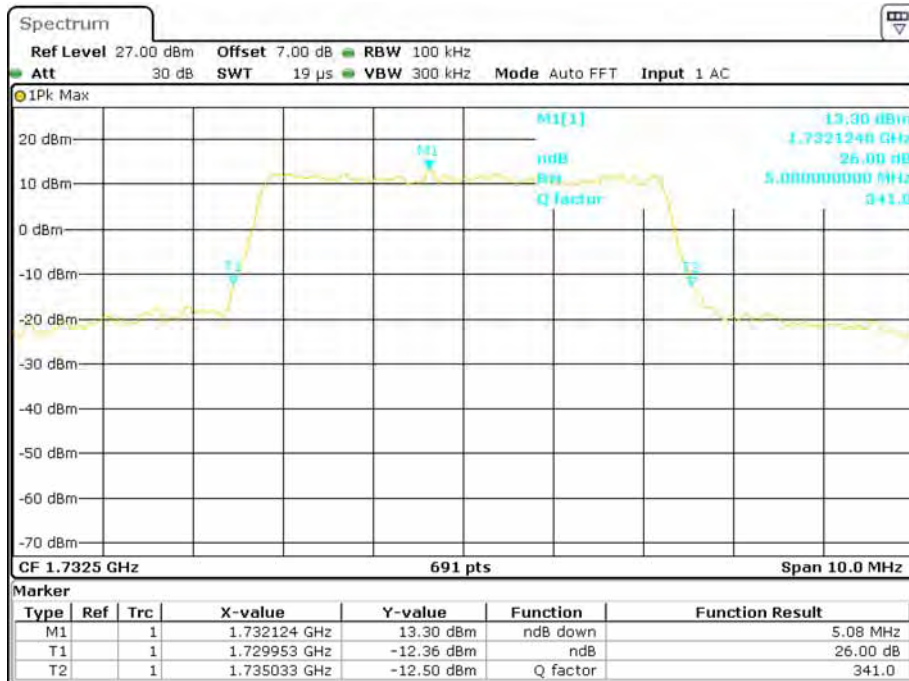
Date: 8.OCT.2015 09:58:50

**QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel**



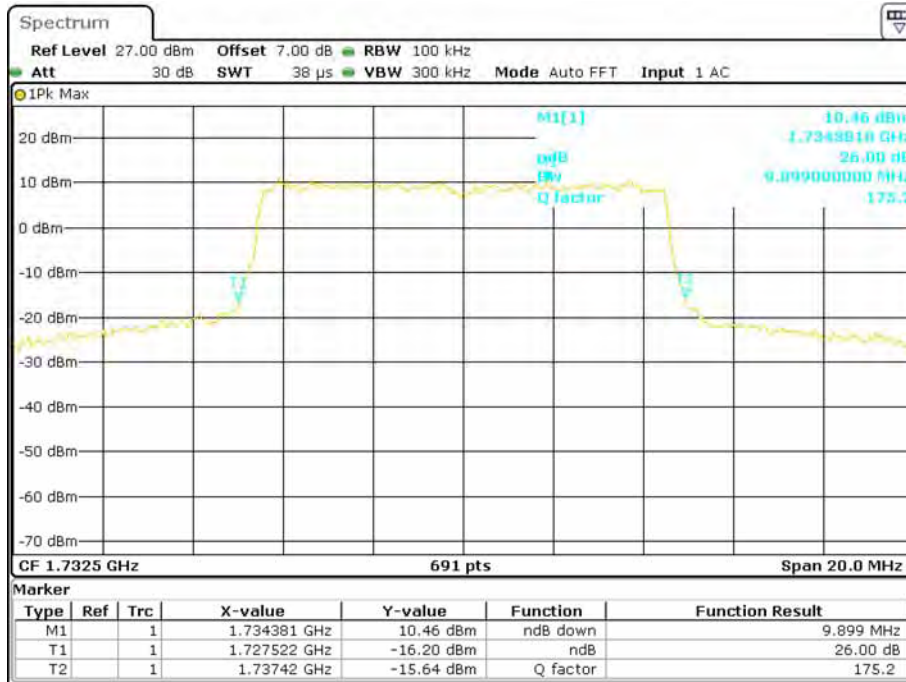
Date: 8.OCT.2015 09:57:52

**16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel**



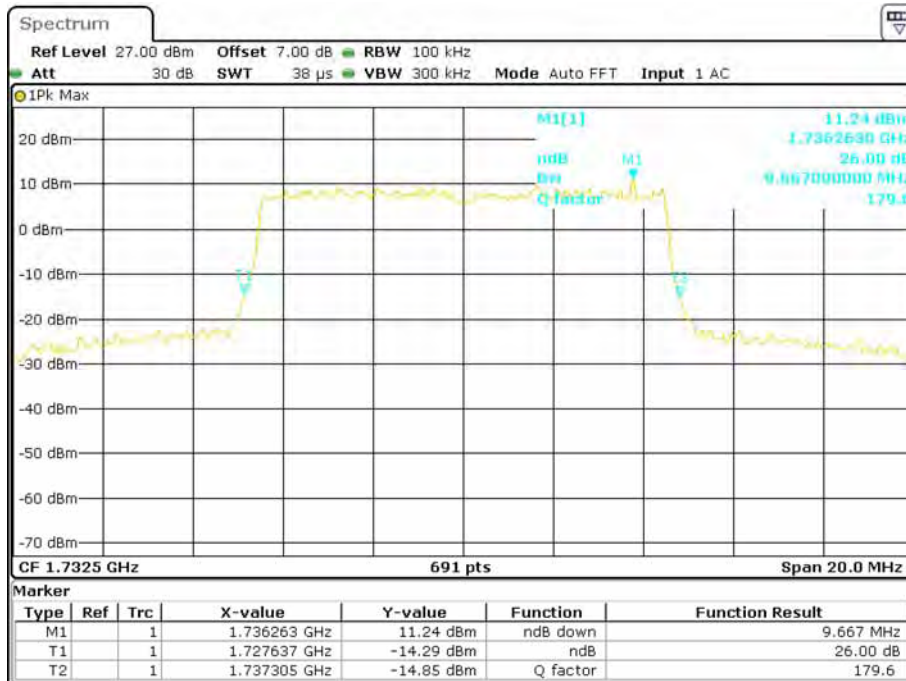
Date: 8.OCT.2015 09:56:06

**QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel**



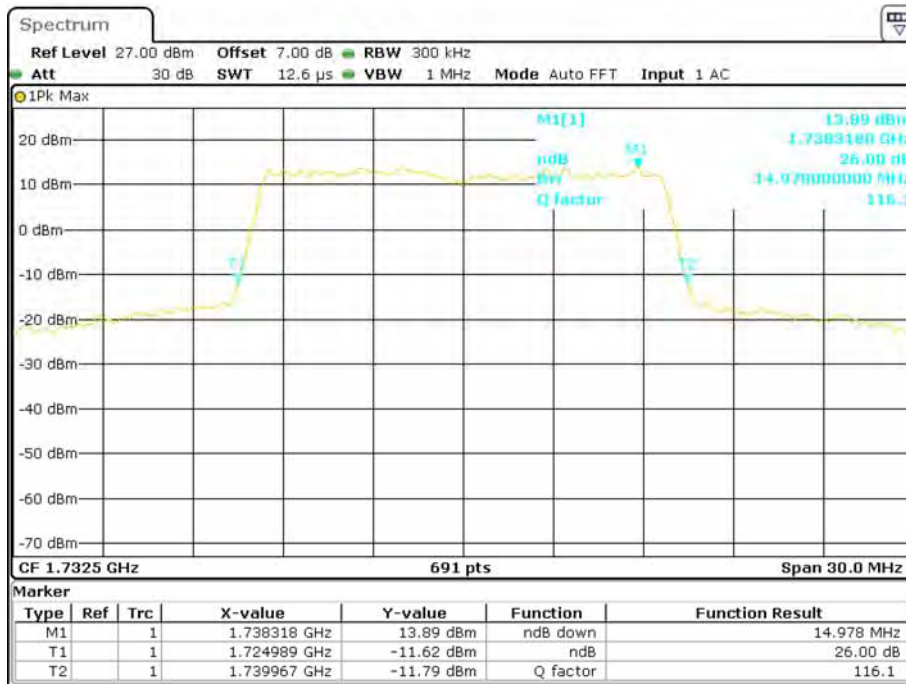
Date: 8.OCT.2015 09:54:20

**16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel**



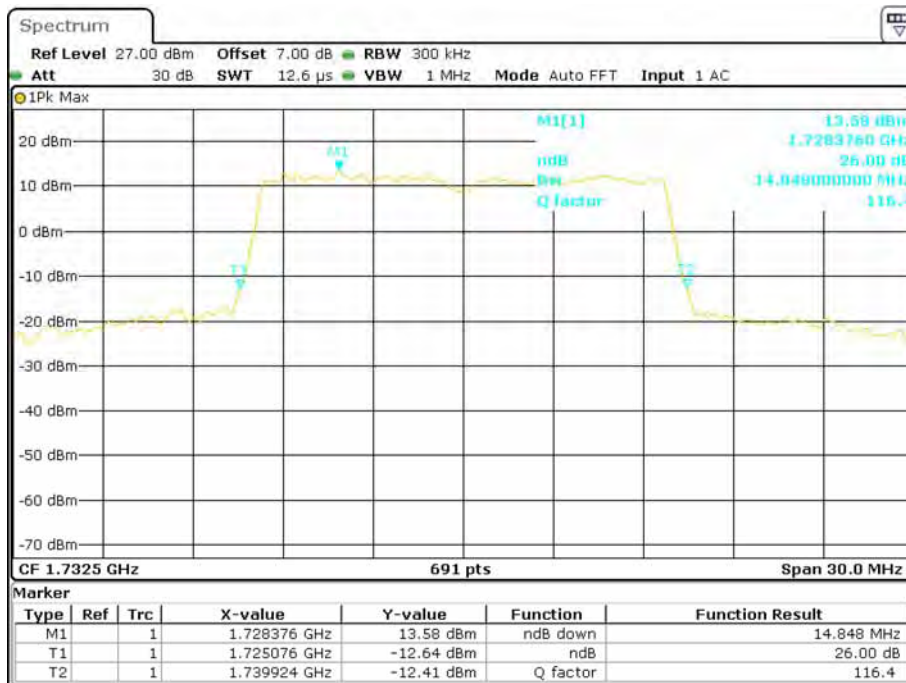
Date: 8.OCT.2015 09:53:46

**QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel**



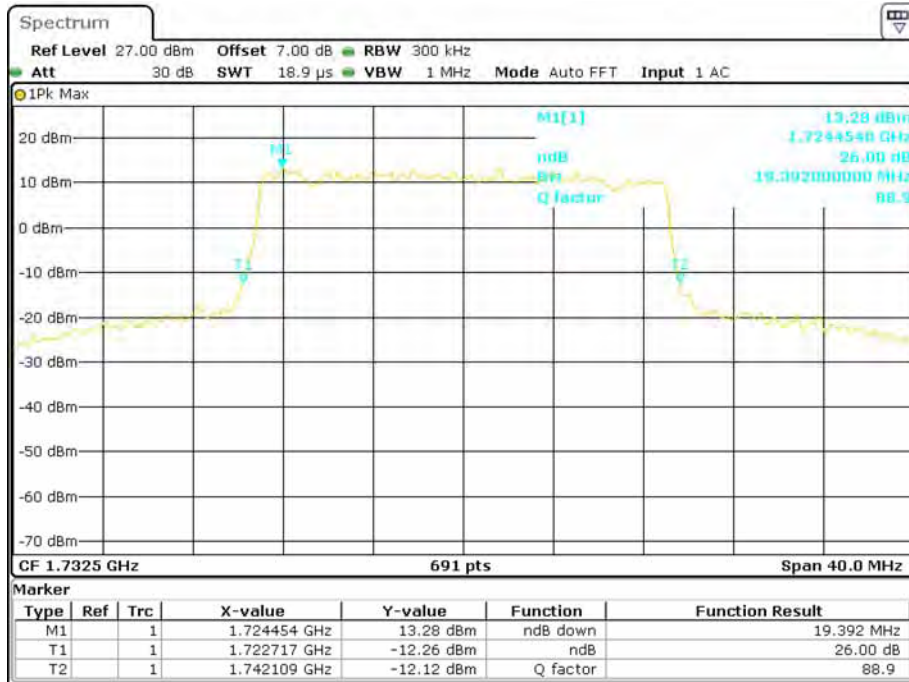
Date: 8.OCT.2015 09:48:11

**16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel**



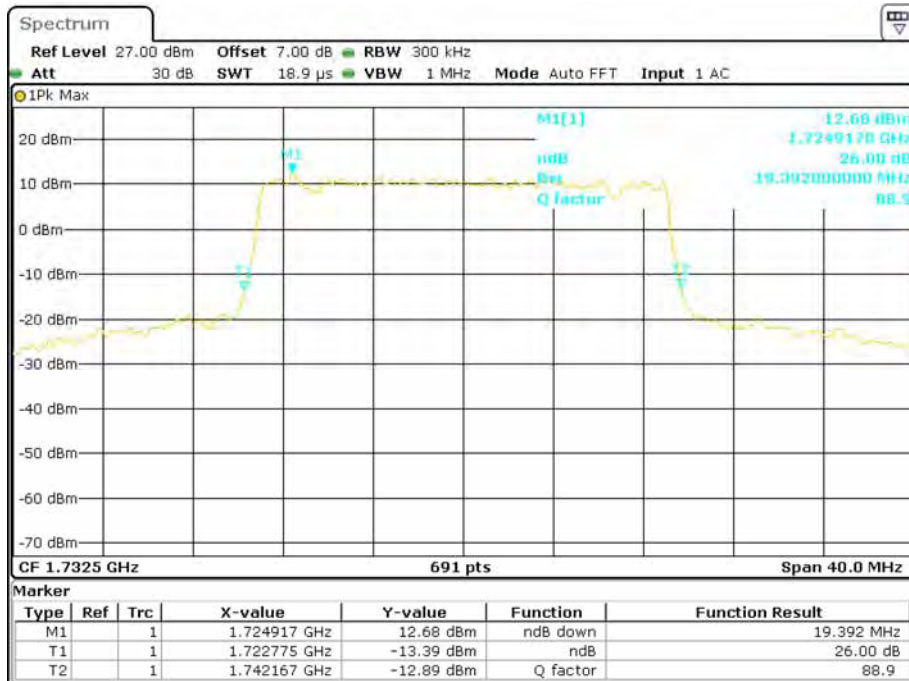
Date: 8.OCT.2015 09:49:26

**QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel**



Date: 8.OCT.2015 09:51:59

**16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel**



Date: 8.OCT.2015 09:50:47

**LTE Band 7: (Middle Channel)**

<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
5.0	QPSK	4.530	5.080
	16QAM	4.530	5.109
10.0	QPSK	8.973	9.841
	16QAM	8.944	9.725
15.0	QPSK	13.589	14.978
	16QAM	13.589	14.935
20.0	QPSK	18.003	19.334
	16QAM	18.061	19.392

### QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



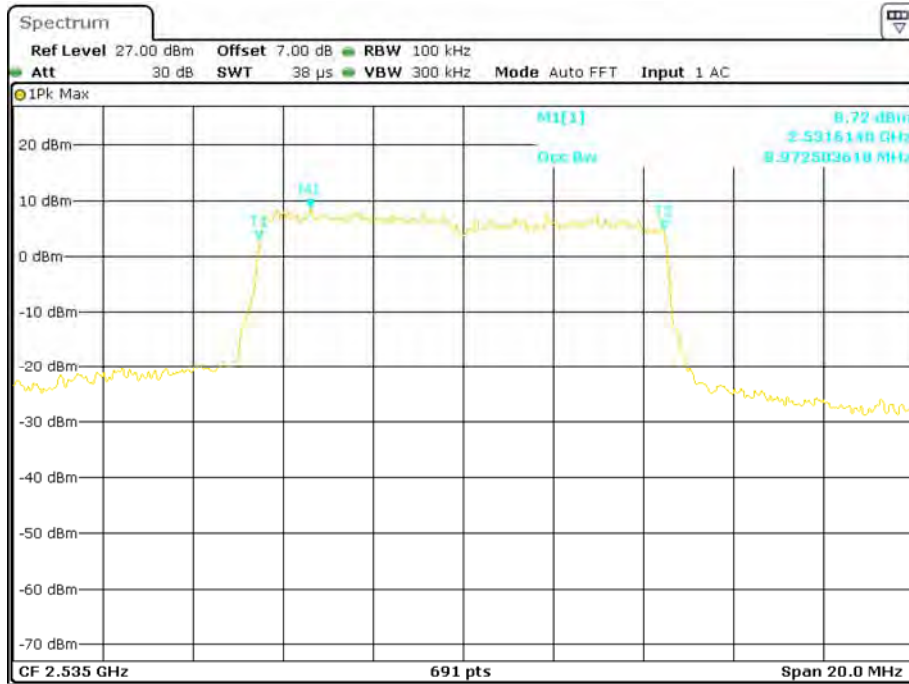
Date: 8.OCT.2015 11:04:09

### 16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



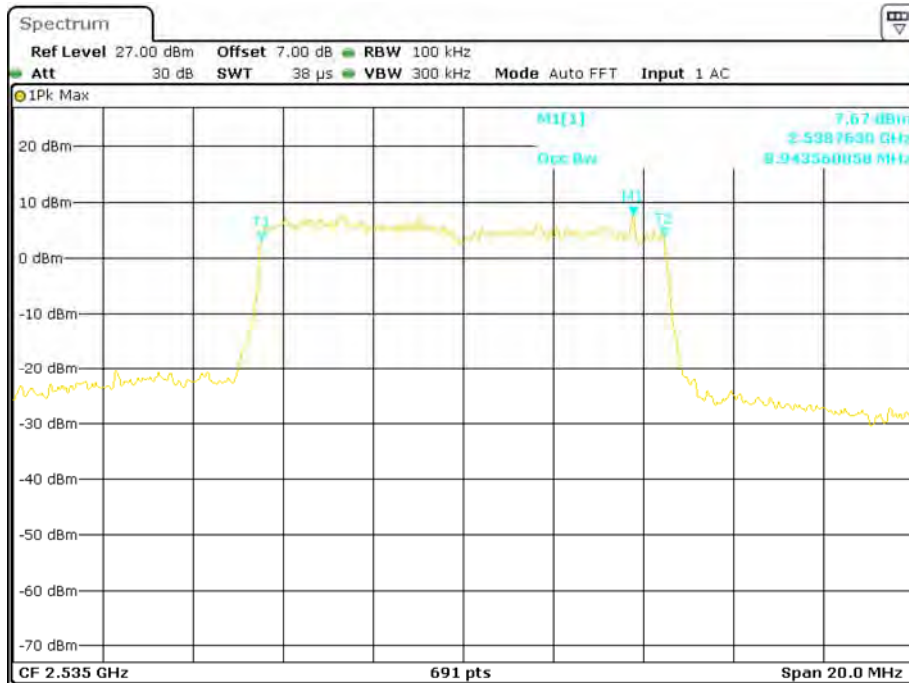
Date: 8.OCT.2015 11:03:30

**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



Date: 8.OCT.2015 11:00:04

**16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



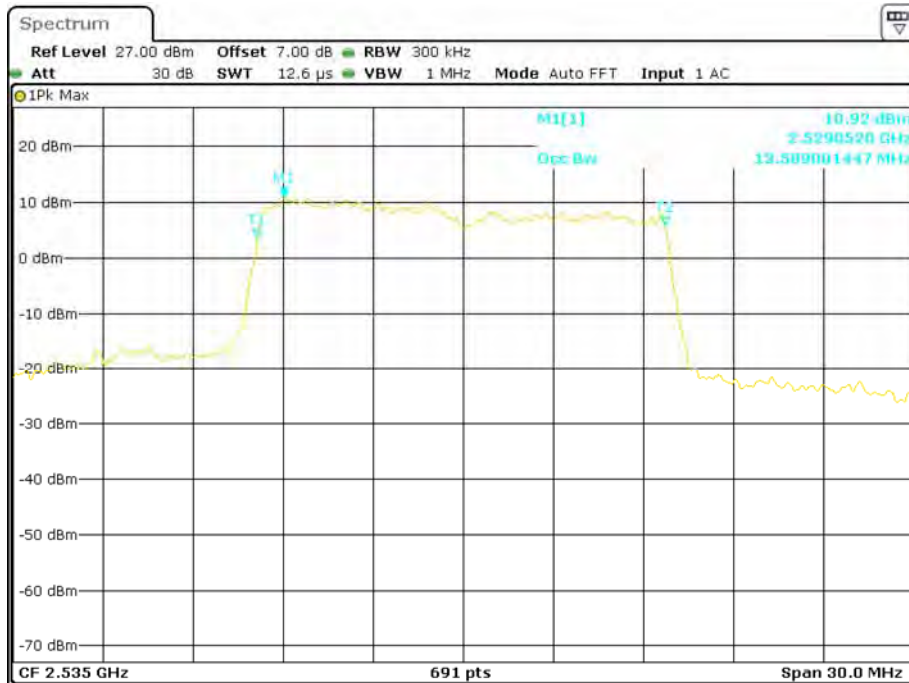
Date: 8.OCT.2015 10:59:32

**QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



Date: 8.OCT.2015 10:56:00

**16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



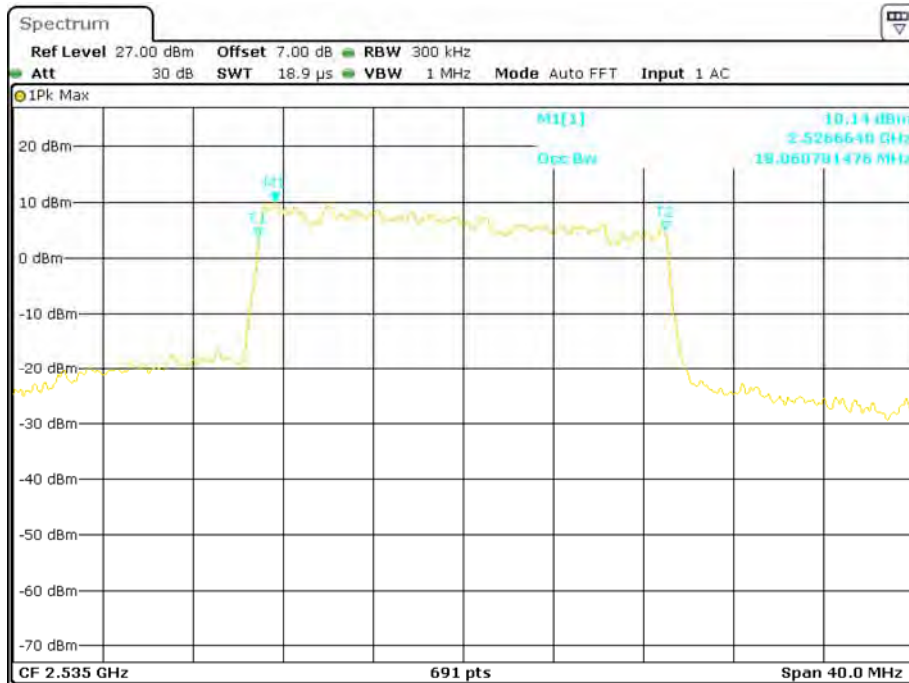
Date: 8.OCT.2015 10:58:43

**QPSK (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



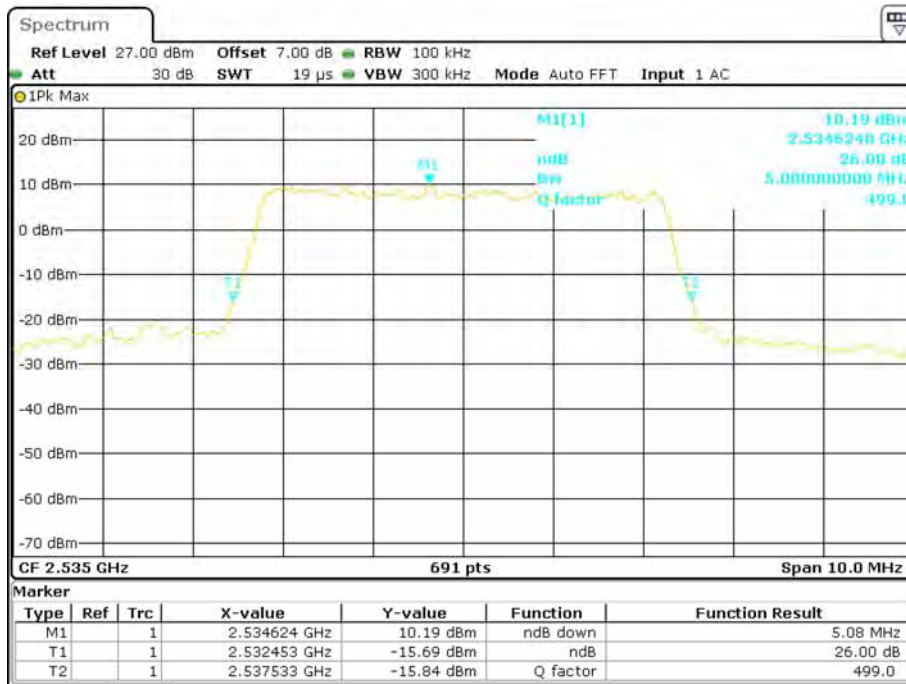
Date: 8.OCT.2015 10:54:28

**16-QAM (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



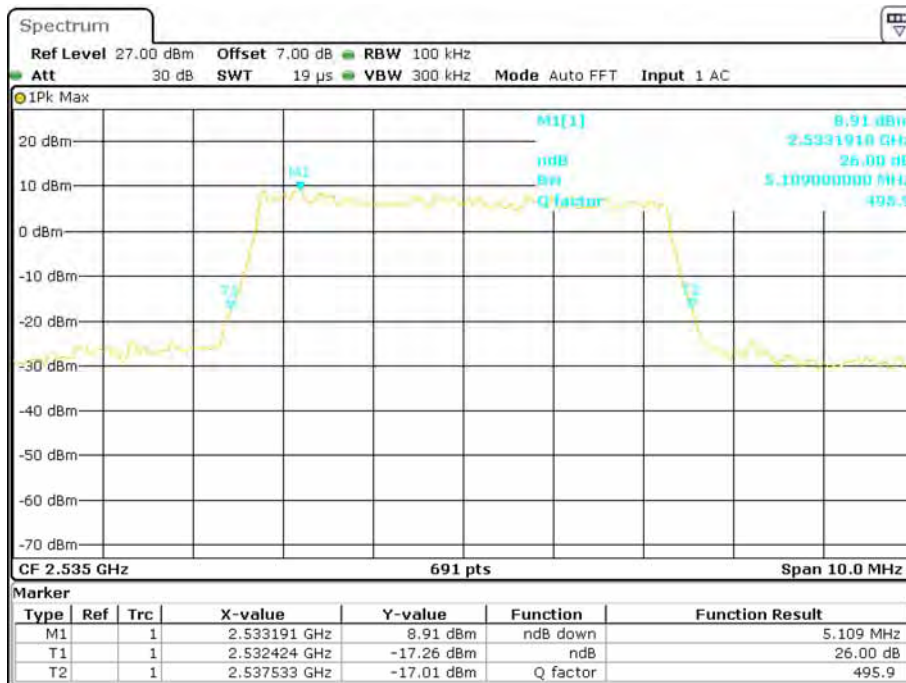
Date: 8.OCT.2015 10:52:18

**QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel**



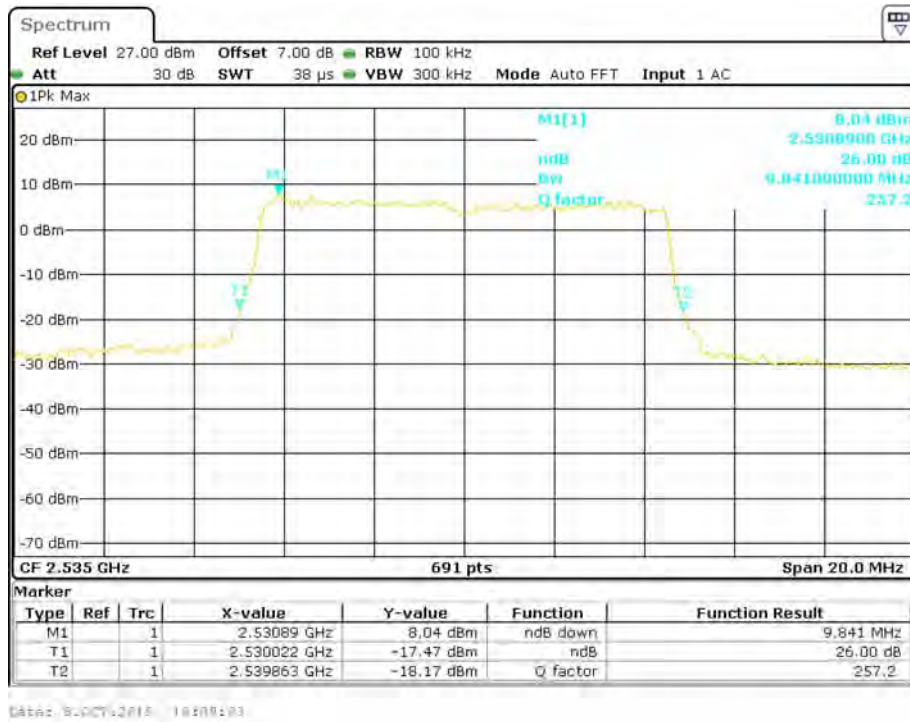
Date: 8.OCT.2015 10:05:37

**16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel**

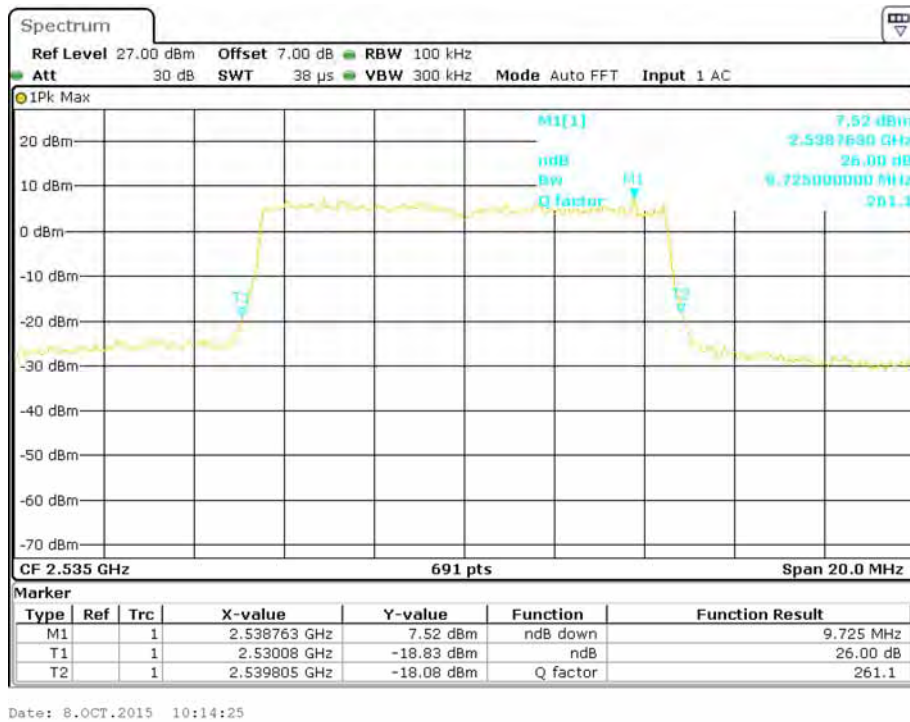


Date: 8.OCT.2015 10:05:00

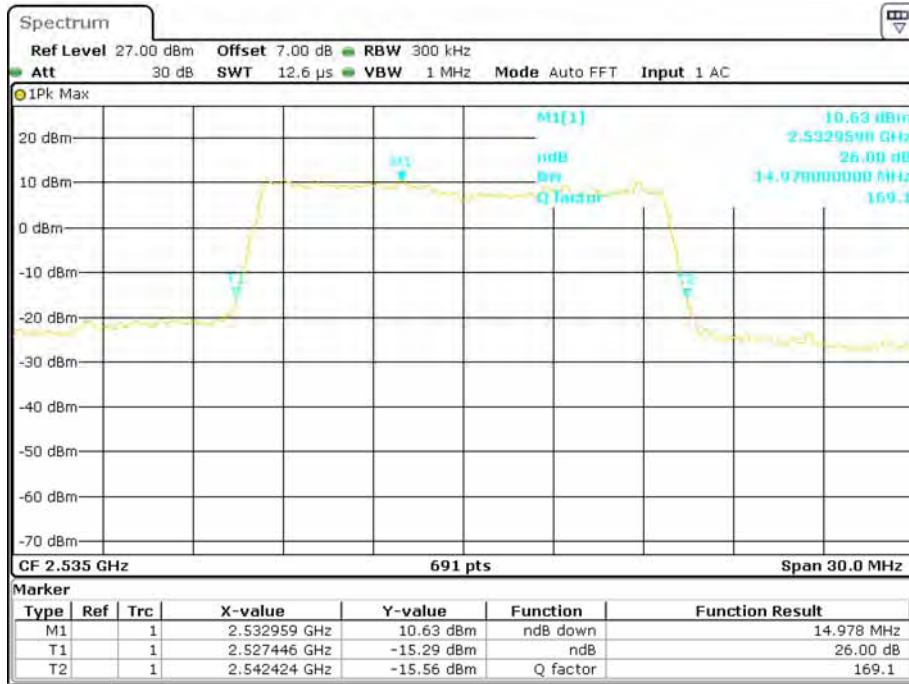
**QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel**



**16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel**

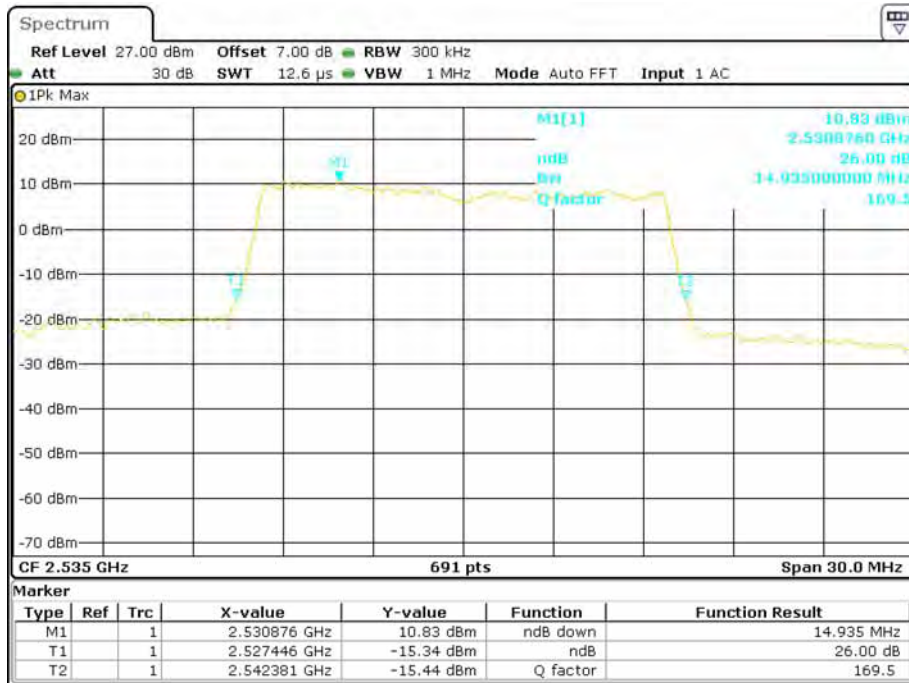


**QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel**



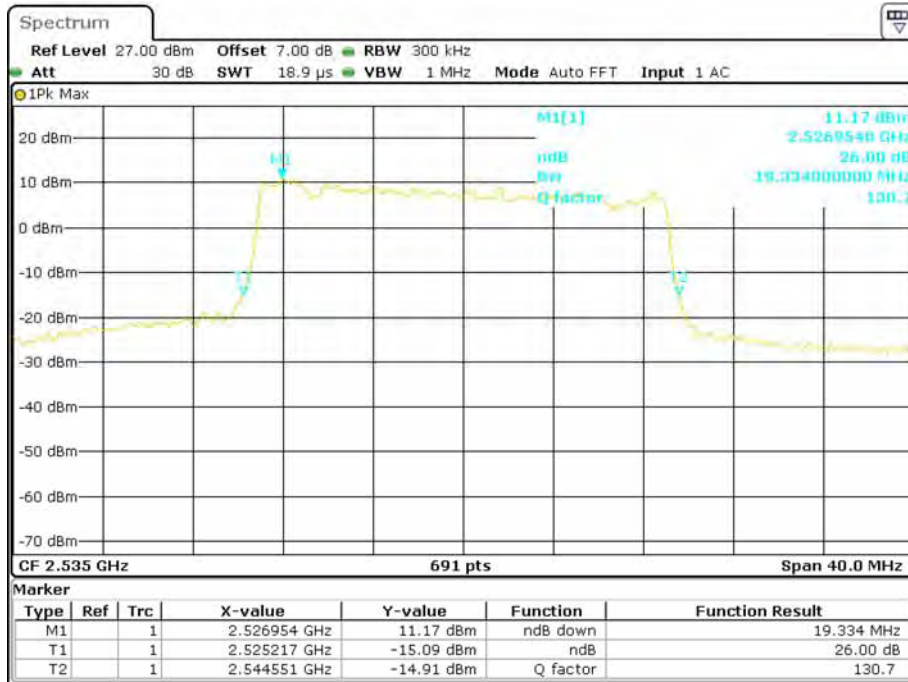
Date: 8.OCT.2015 10:18:56

**16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel**



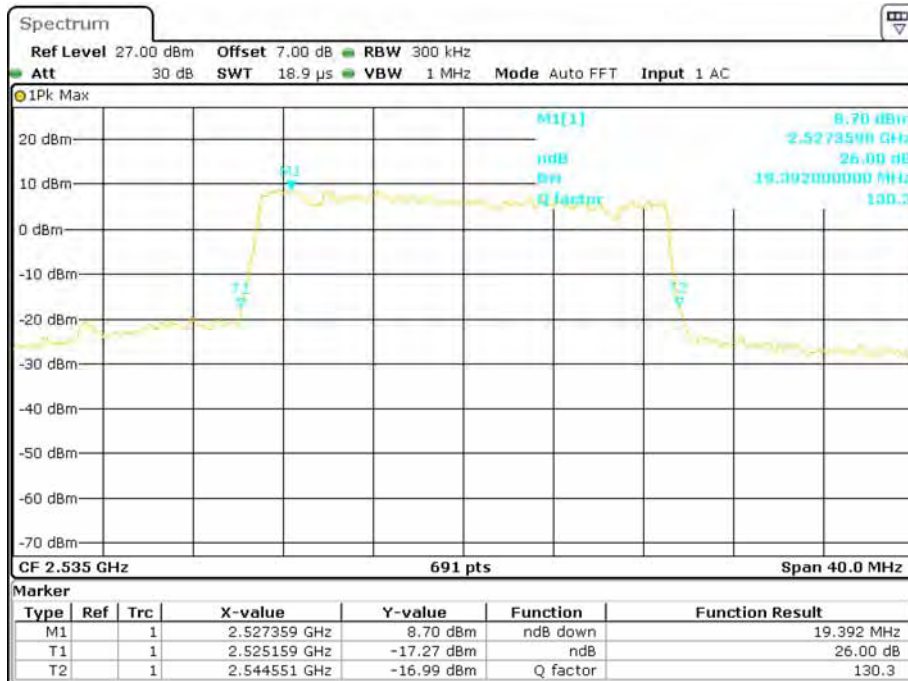
Date: 8.OCT.2015 10:18:01

**QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel**



Date: 8.OCT.2015 10:20:29

**16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel**

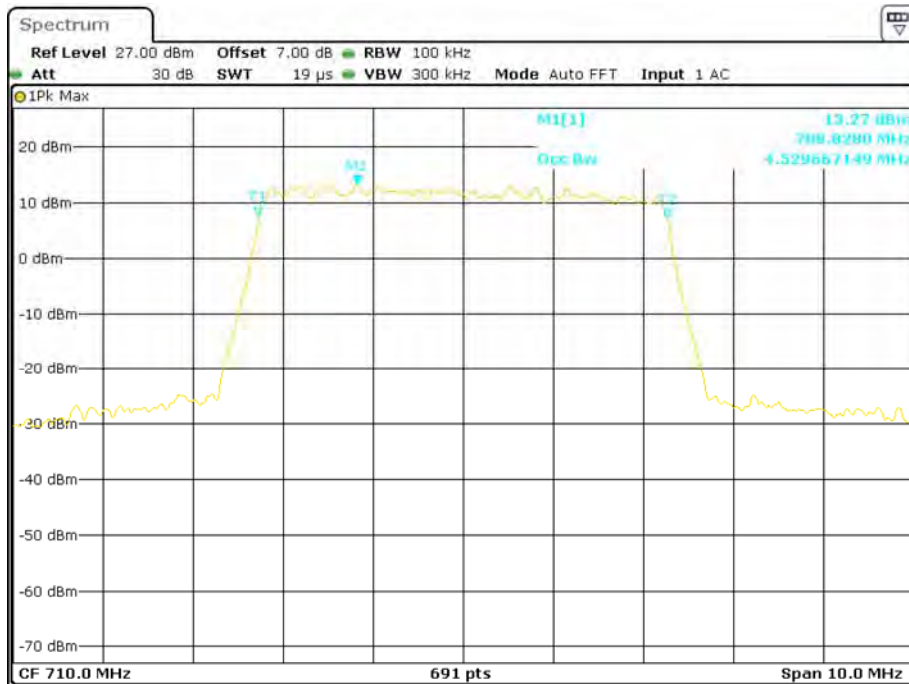


Date: 8.OCT.2015 10:21:12

**Band 17: (Middle Channel)**

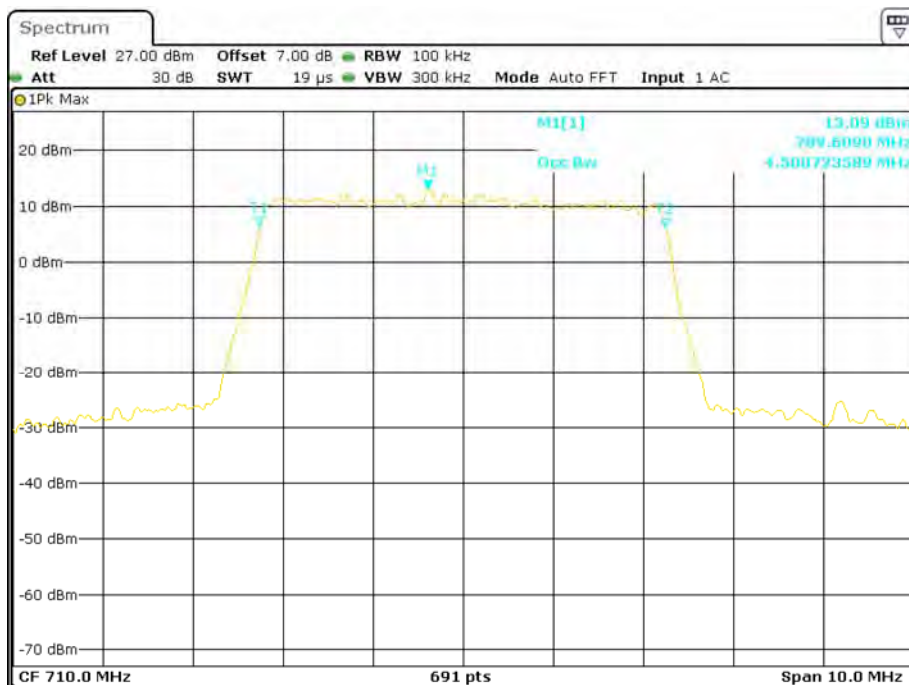
<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
5.0	QPSK	4.530	5.051
	16QAM	4.501	5.022
10.0	QPSK	8.915	9.609
	16QAM	8.944	9.609

### QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



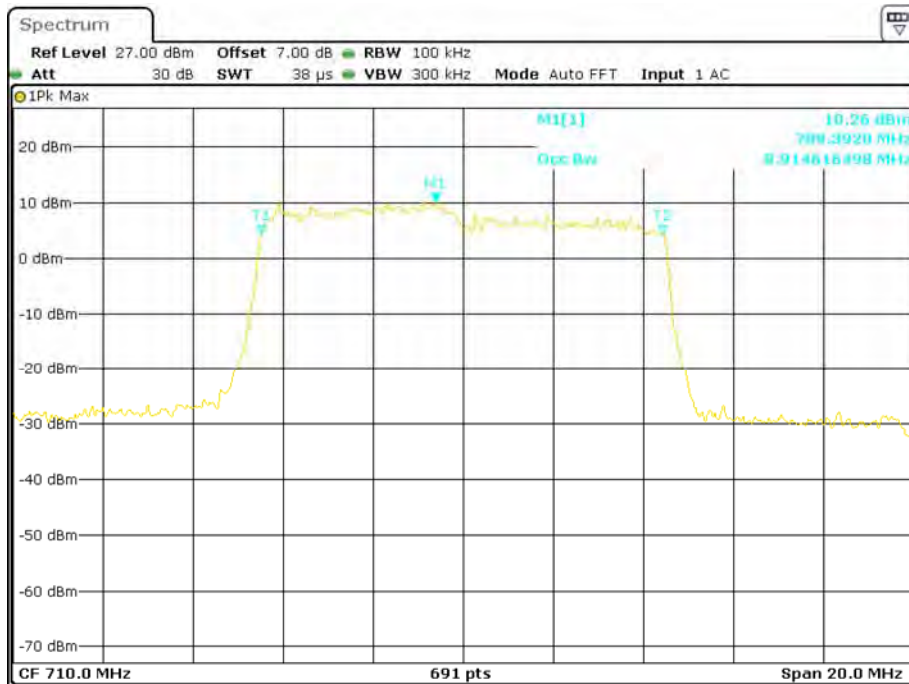
Date: 8.OCT.2015 11:05:46

### 16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



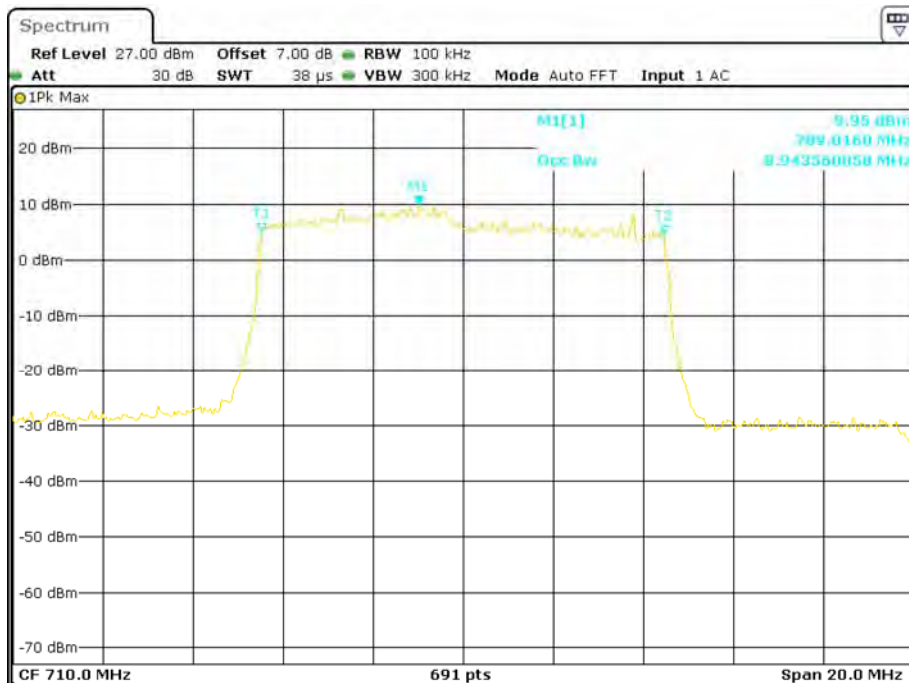
Date: 8.OCT.2015 11:06:20

**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



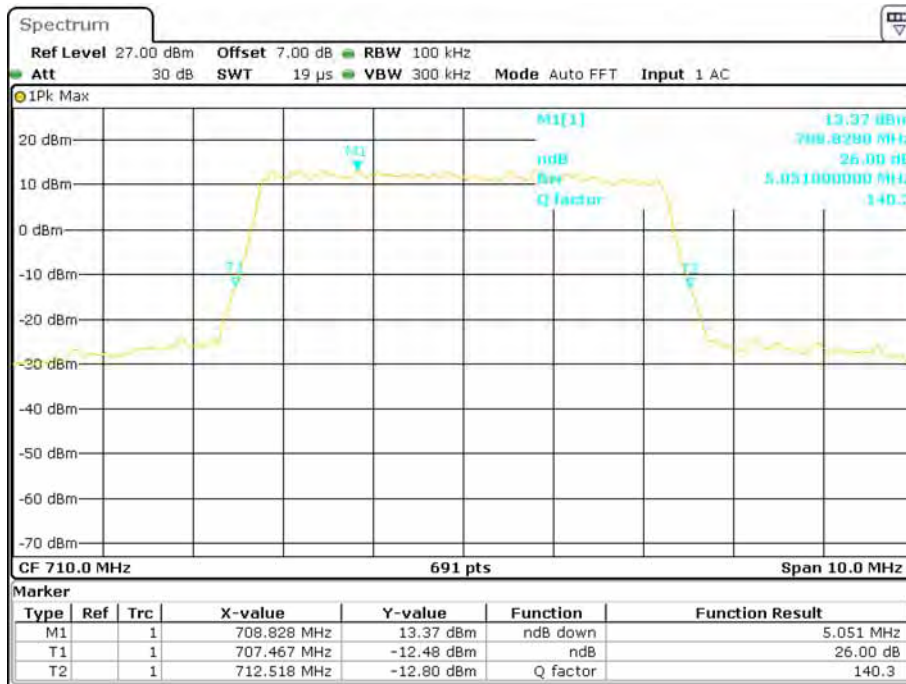
Date: 8.OCT.2015 11:07:14

**16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



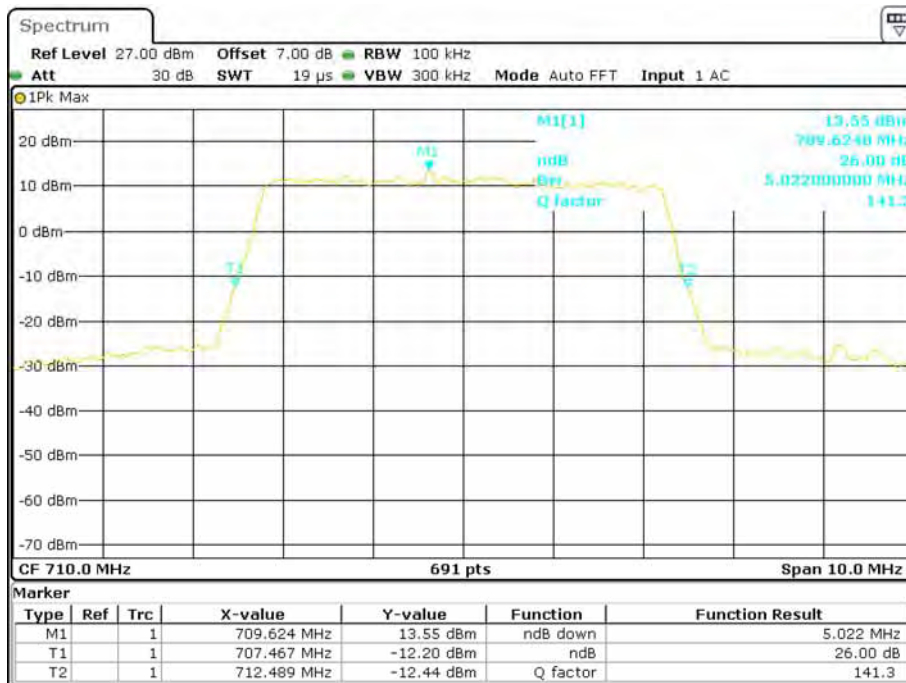
Date: 8.OCT.2015 11:07:56

**QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel**



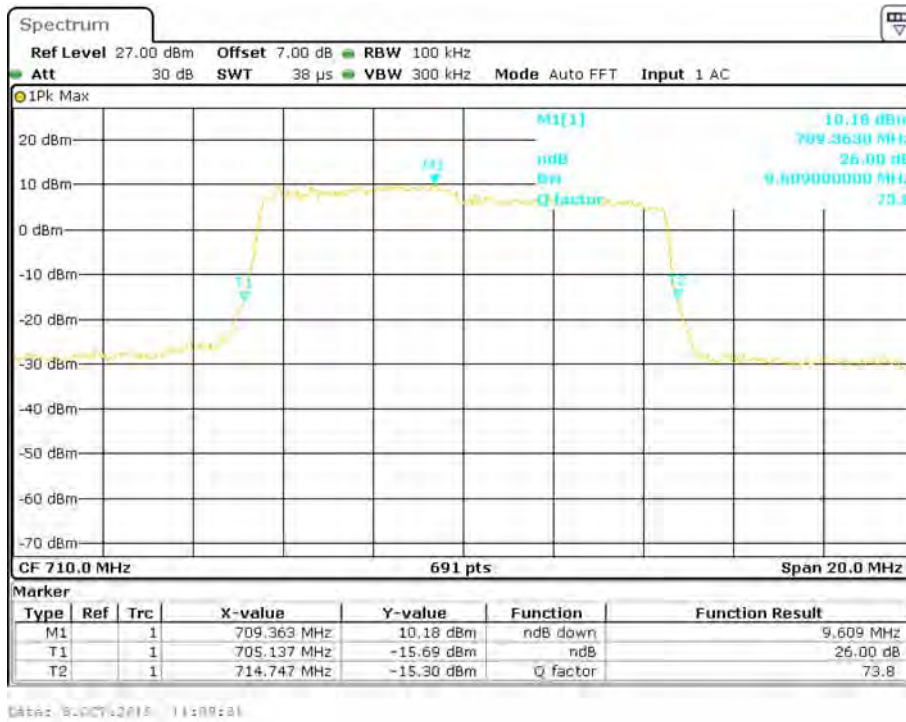
Date: 8.OCT.2015 11:10:53

**16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel**

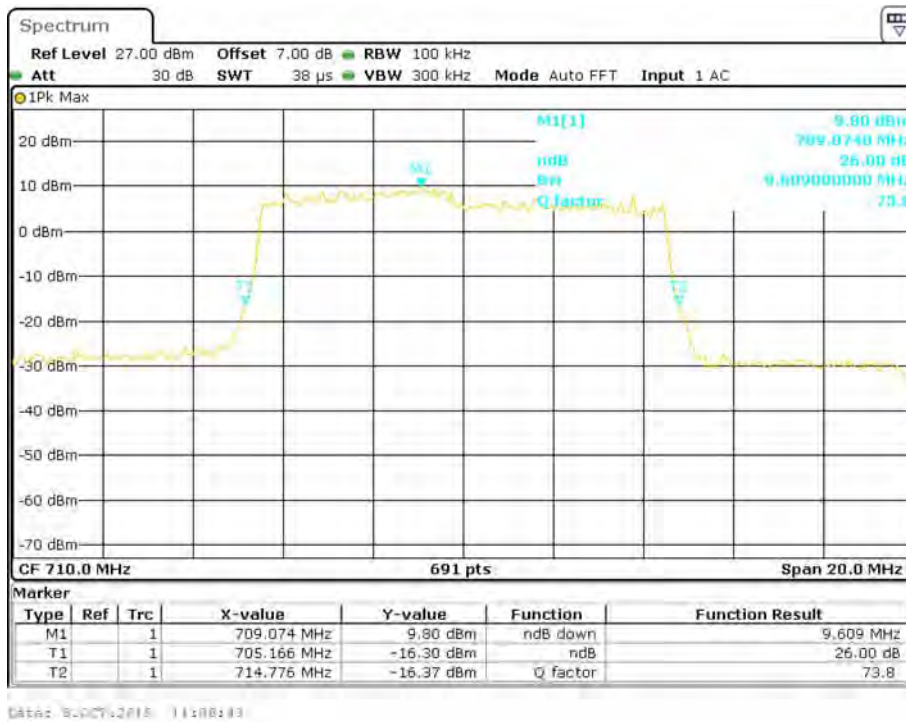


Date: 8.OCT.2015 11:10:14

**QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel**



**16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel**



## FCC §2.1051, §22.917(a) & §24.238(a) & §27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

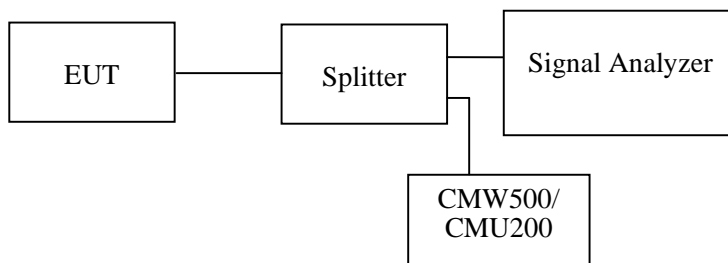
### Applicable Standards

FCC §2.1051, §22.917(a) and §24.238(a) and §27.53.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

### Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10<sup>th</sup> harmonic.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2014-11-23	2015-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

### Test Data

#### Environmental Conditions

Temperature:	25
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

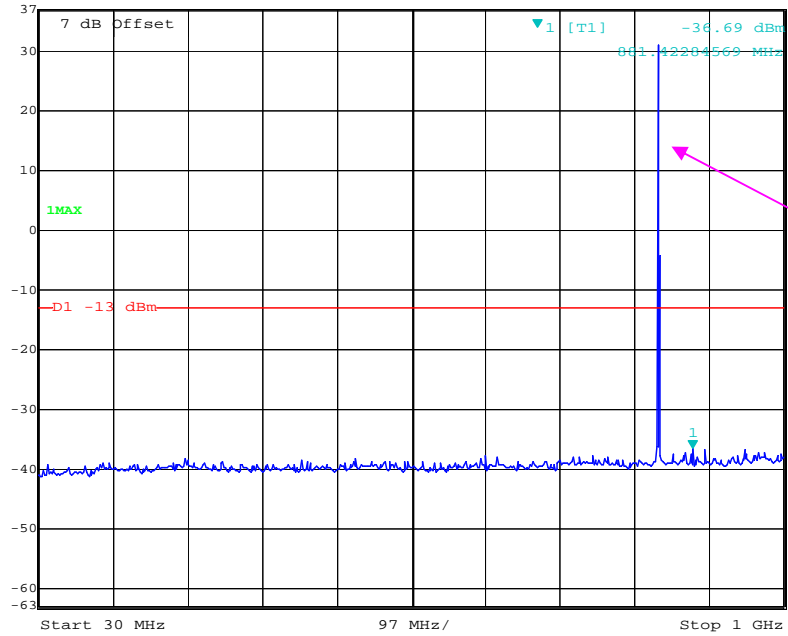
*The testing was performed by William Li on 2015-10-08.*

Please refer to the following plots.

Cellular Band (Part 22H)

30 MHz – 1 GHz (GSM Mode)

	Marker 1 [T1]	RBW	100 kHz	RF Att	40 dB
	Ref Lvl	-36.69 dBm	VBW	300 kHz	
	37 dBm	881.42284569 MHz	SWT	245 ms	Unit dBm

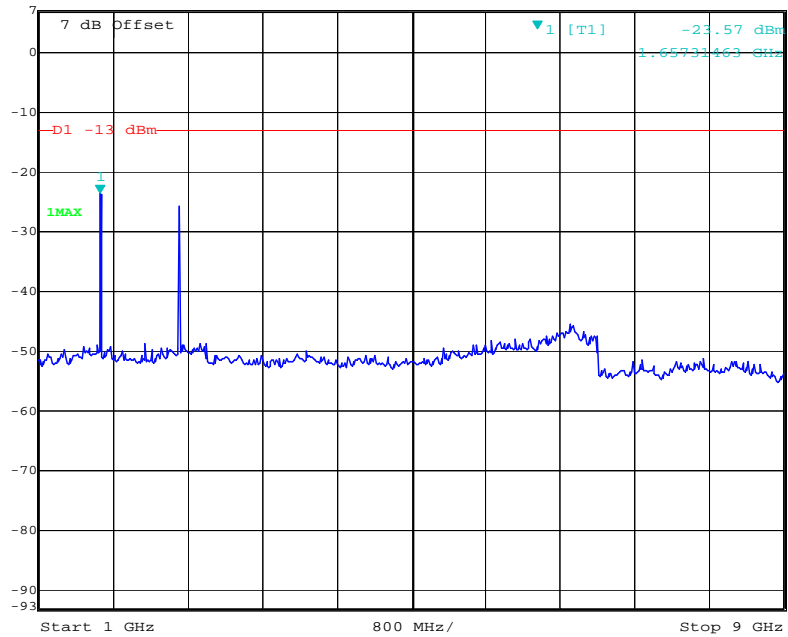


Fundamental test

Date: 8.OCT.2015 13:27:35

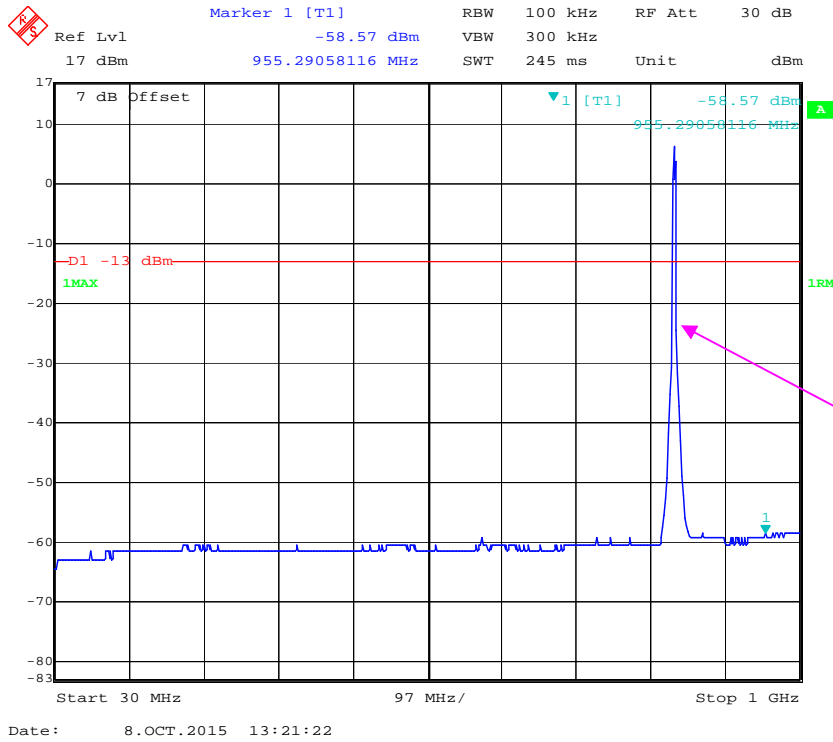
1 GHz – 9 GHz (GSM Mode)

	Marker 1 [T1]	RBW	1 MHz	RF Att	20 dB
	Ref Lvl	-23.57 dBm	VBW	3 MHz	
	7 dBm	1.65731463 GHz	SWT	46 ms	Unit dBm

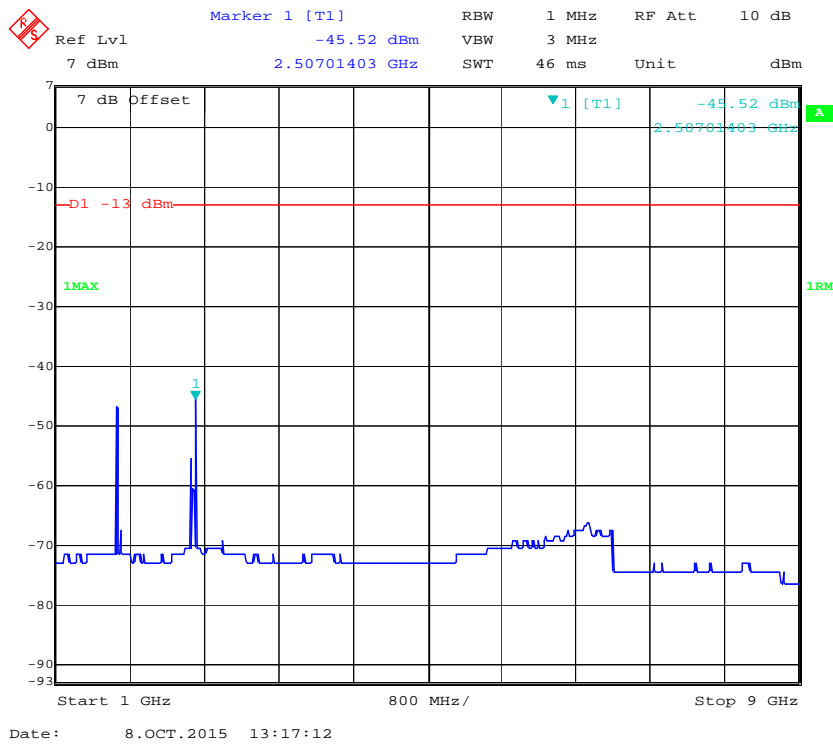


Date: 8.OCT.2015 13:26:44

### 30 MHz – 1 GHz (WCDMA Mode)

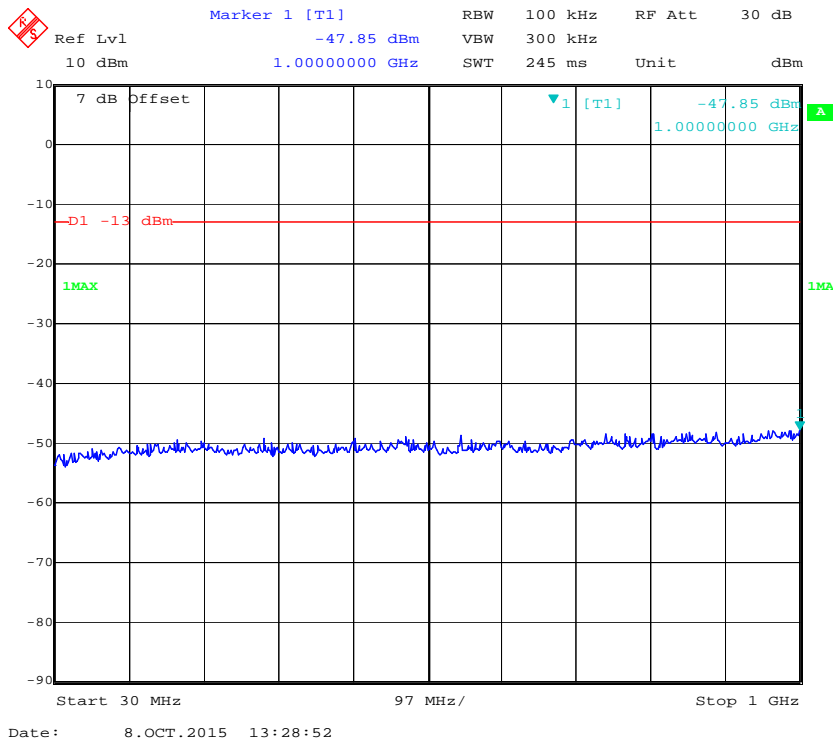


### 1 GHz – 9 GHz (WCDMA Mode)

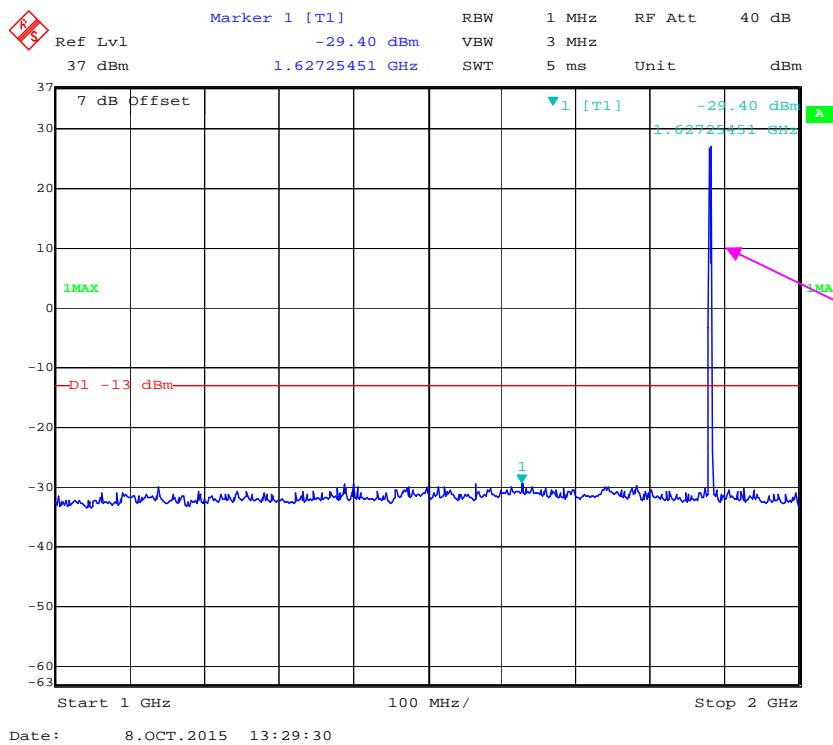


PCS Band (Part 24E)

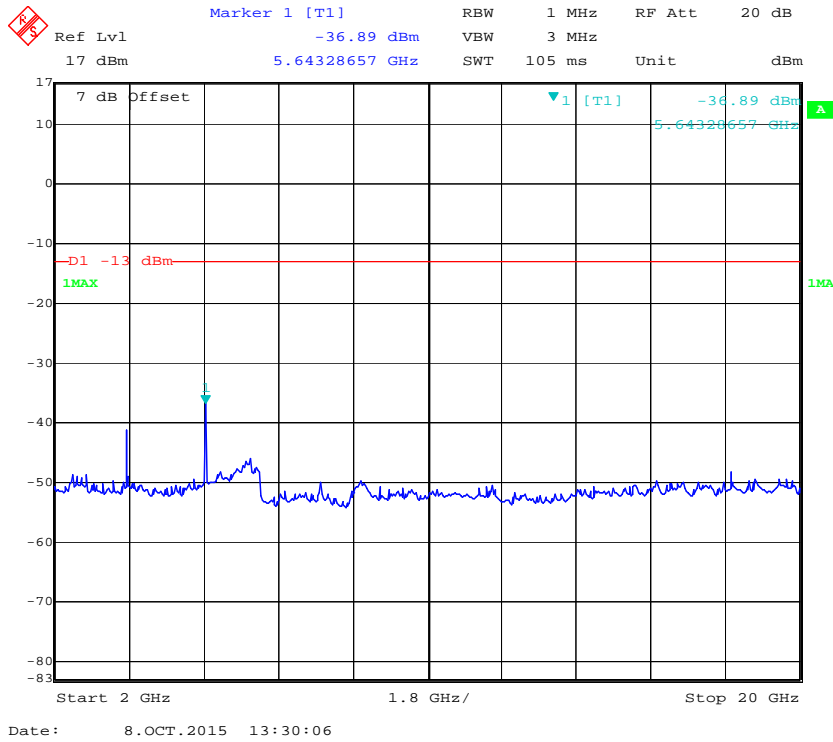
30 MHz – 1 GHz (GSM Mode)



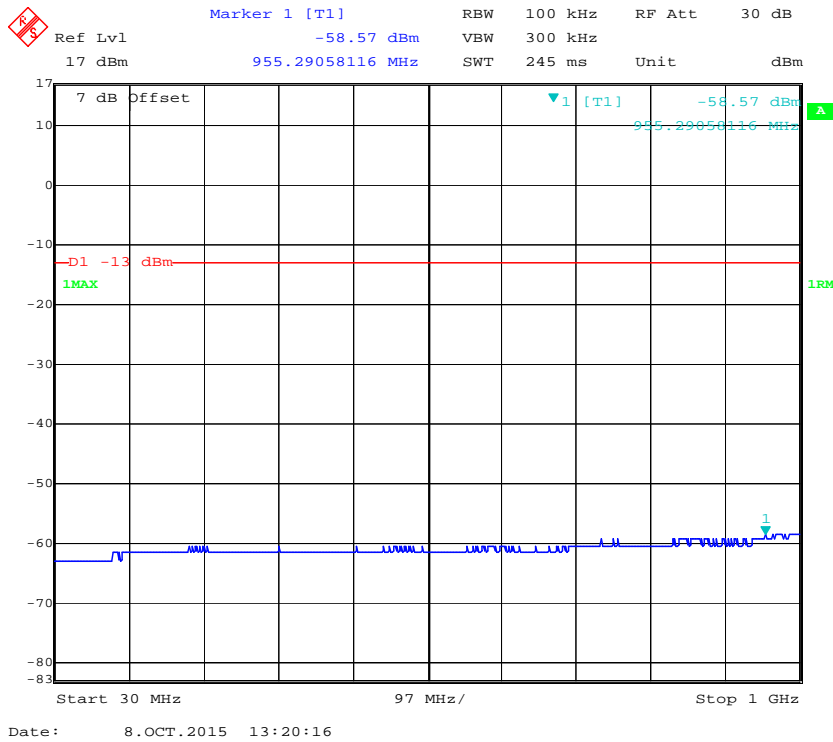
1 GHz – 2 GHz (GSM Mode)



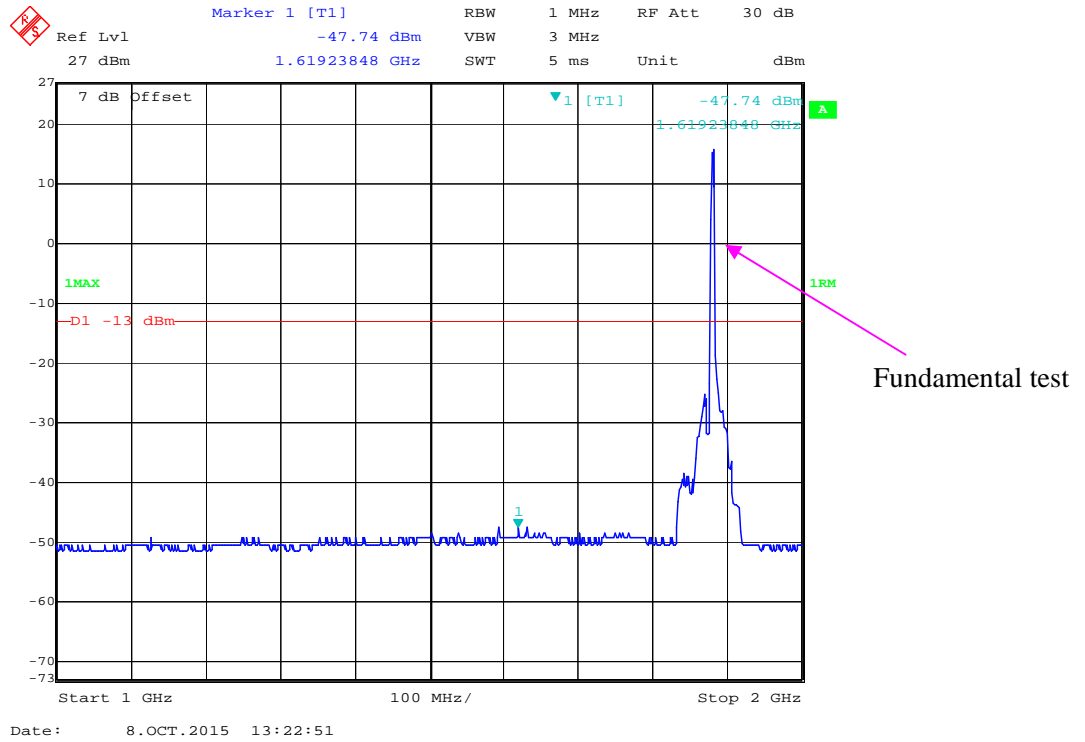
### 2 GHz – 20 GHz (GSM Mode)



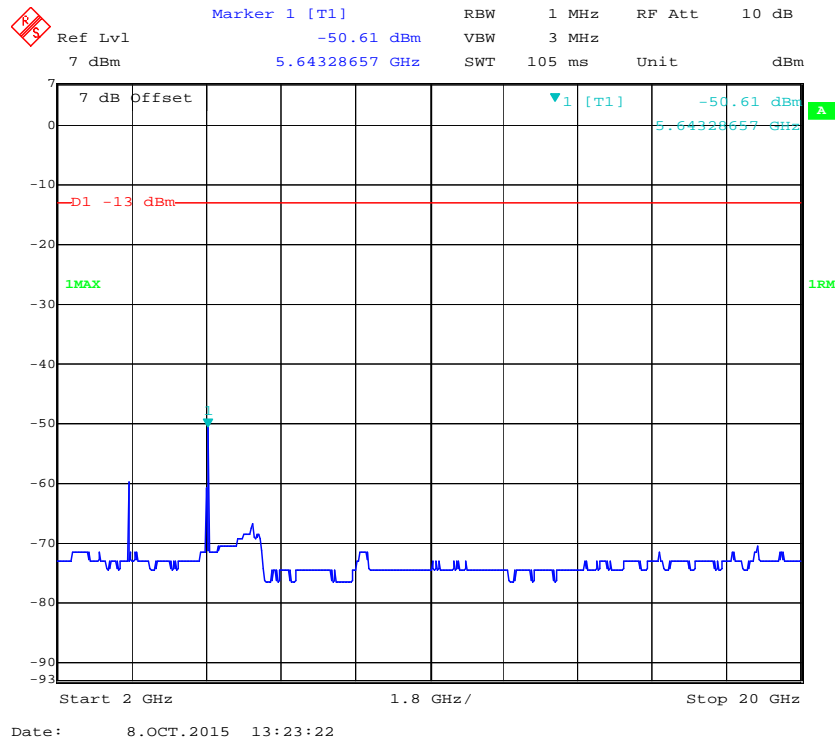
### 30 MHz – 1 GHz (WCDMA Mode)



### 1 GHz – 2 GHz (WCDMA Mode)

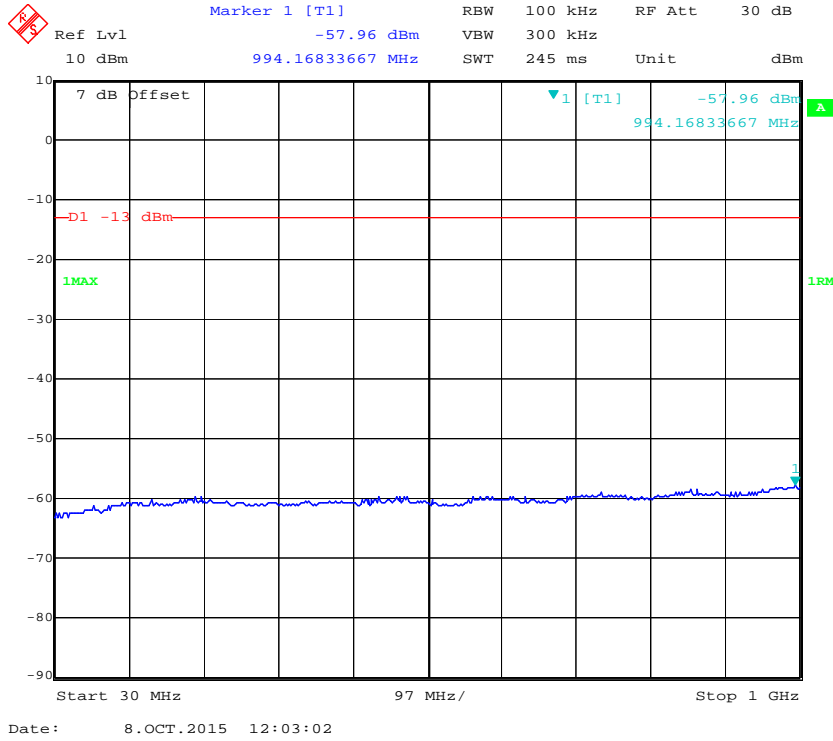


### 2 GHz – 20 GHz (WCDMA Mode)

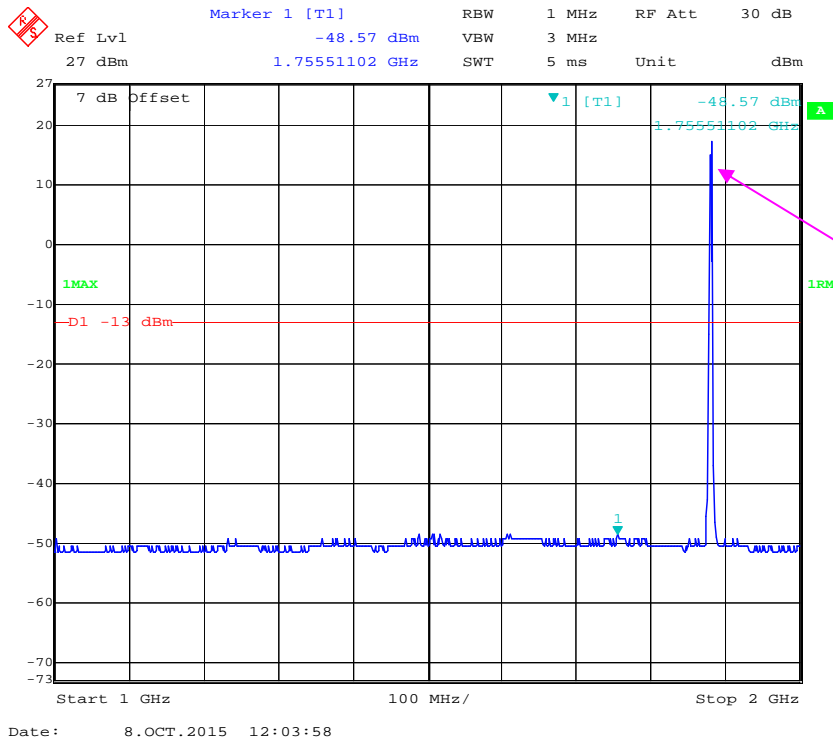


**LTE Band 2:**

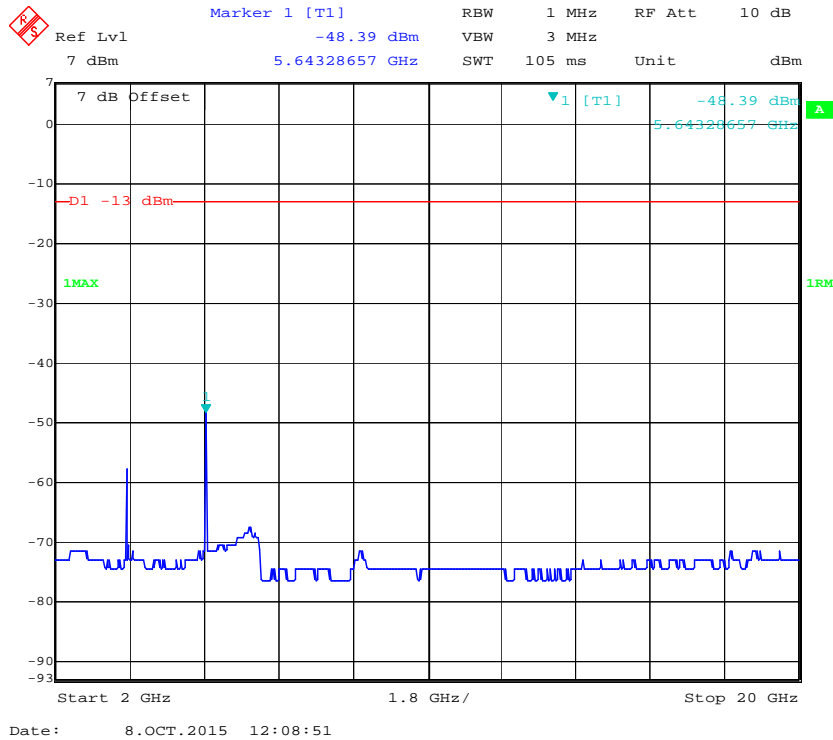
**30 MHz - 1 GHz (1.4 MHz, Middle Channel)**



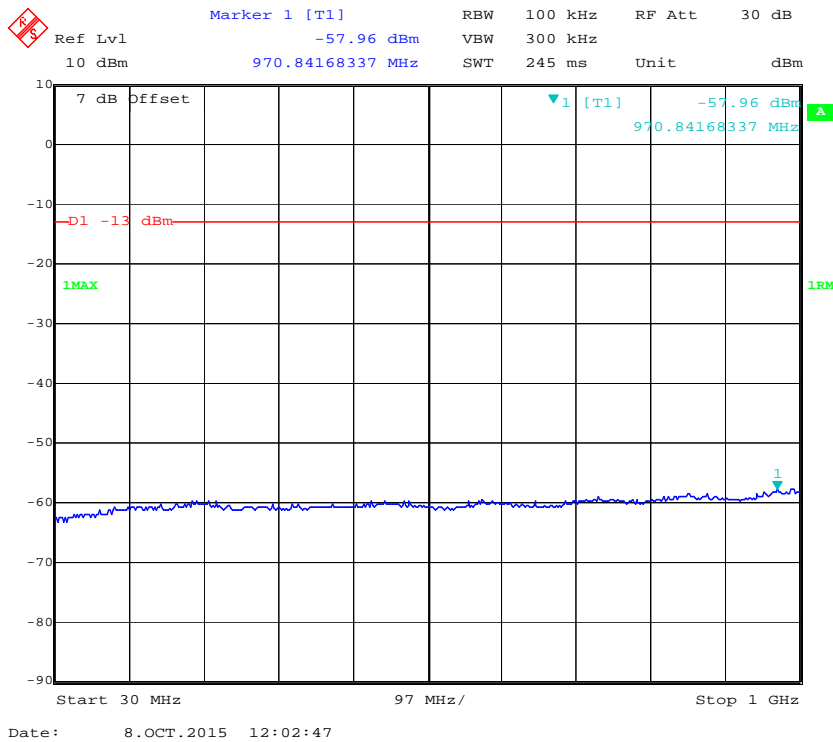
**1 GHz - 2 GHz (1.4 MHz, Middle Channel)**



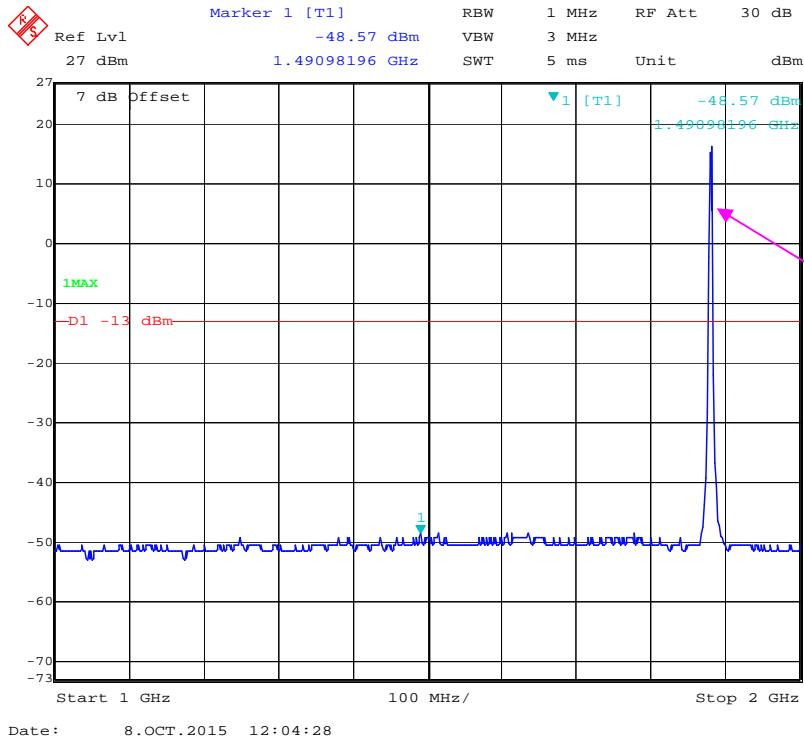
**2 GHz – 20 GHz (1.4 MHz, Middle Channel)**



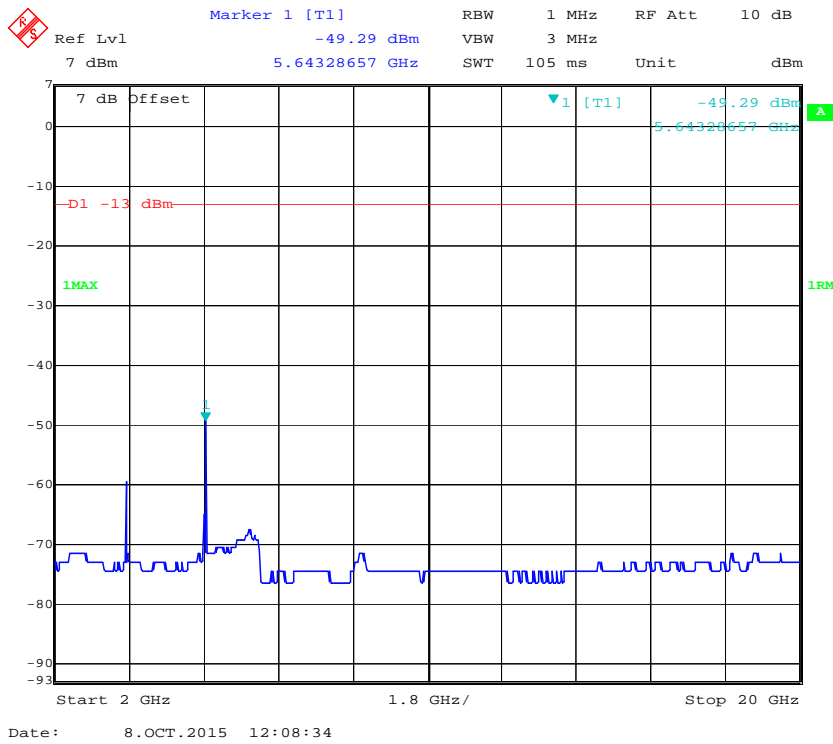
**30 MHz - 1 GHz (3.0 MHz, Middle Channel)**



### 1 GHz – 2 GHz (3.0 MHz, Middle Channel)

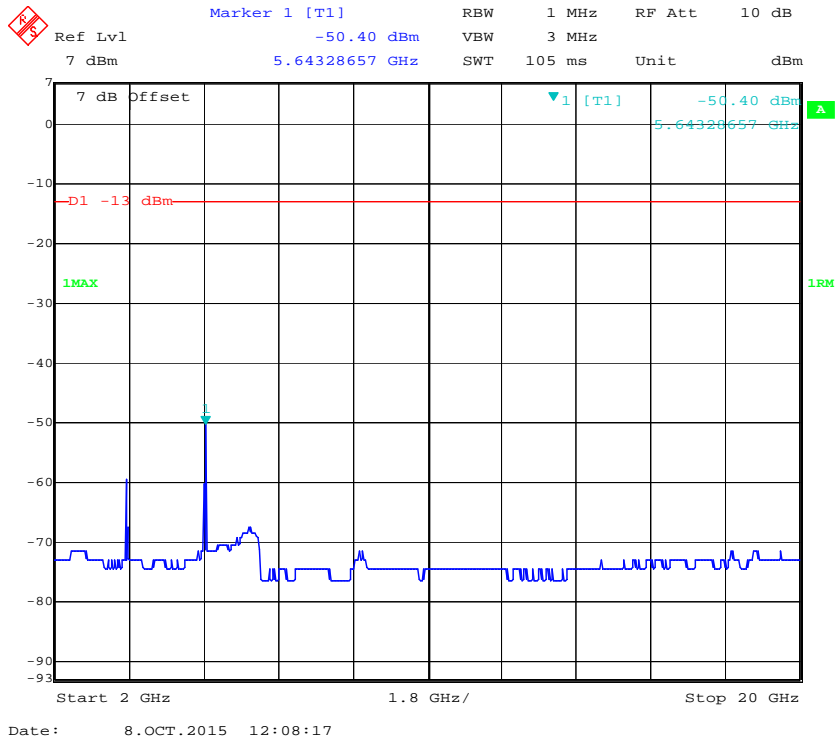


### 2 GHz – 20 GHz (3.0 MHz, Middle Channel)

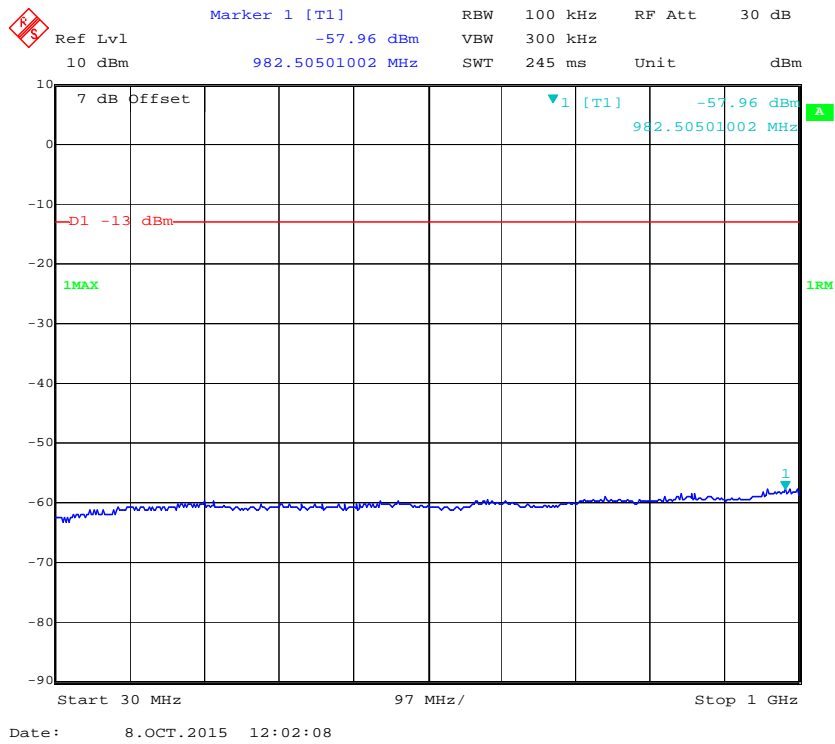




### 2 GHz – 20 GHz (5.0 MHz, Middle Channel)

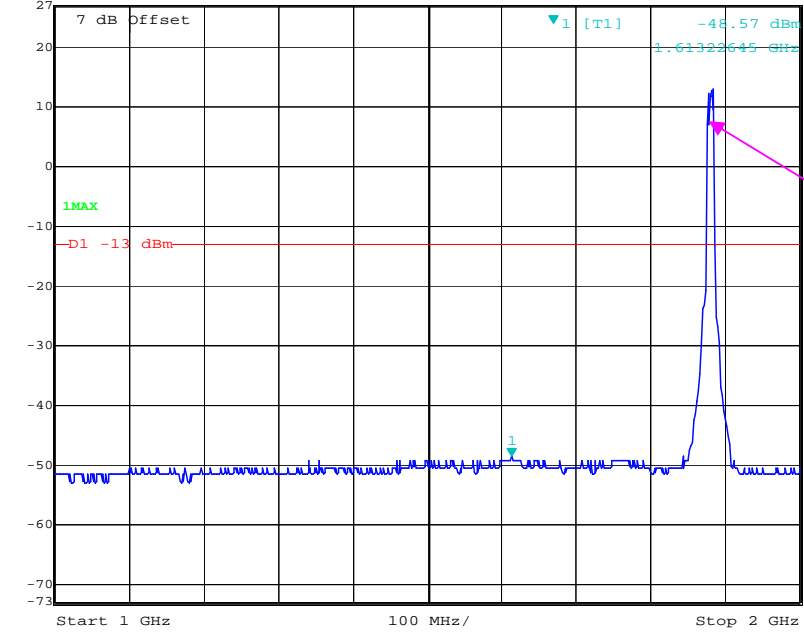


### 30 MHz - 1 GHz (10.0 MHz, Middle Channel)



1 GHz – 2 GHz (10.0 MHz, Middle Channel)

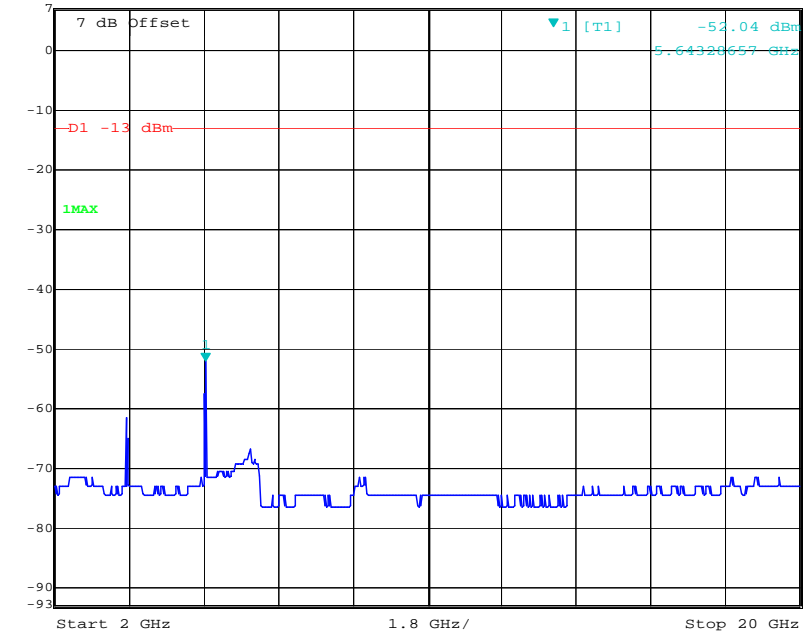
	Marker 1 [T1]	RBW	1 MHz	RF Att	30 dB
	Ref Lvl	-48.57 dBm	VBW	3 MHz	
	27 dBm	1.61322645 GHz	SWT	5 ms	Unit



Date: 8.OCT.2015 12:05:17

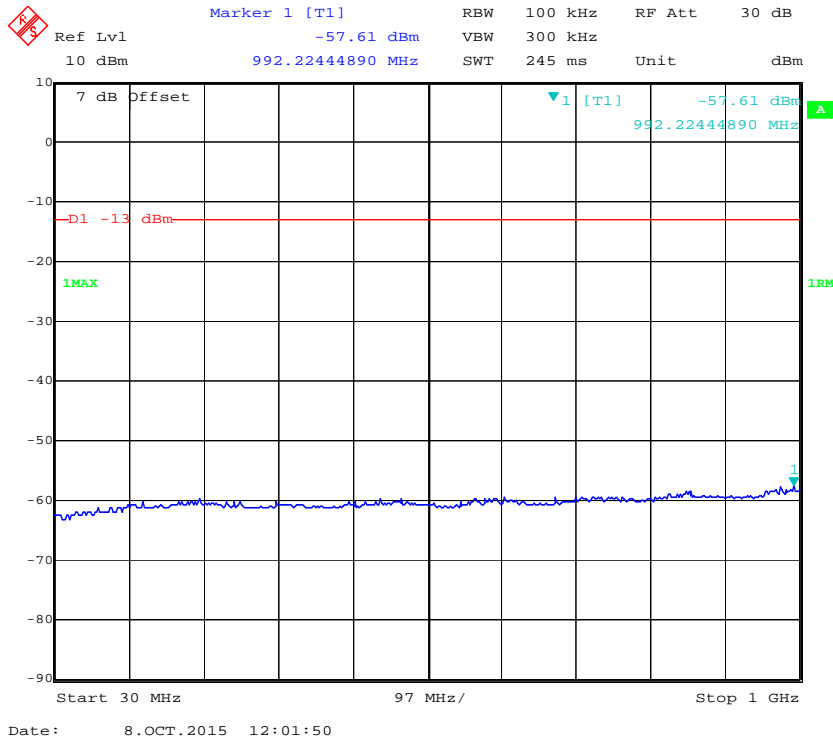
2 GHz – 20 GHz (10.0 MHz, Middle Channel)

	Marker 1 [T1]	RBW	1 MHz	RF Att	10 dB
	Ref Lvl	-52.04 dBm	VBW	3 MHz	
	7 dBm	5.64328657 GHz	SWT	105 ms	Unit

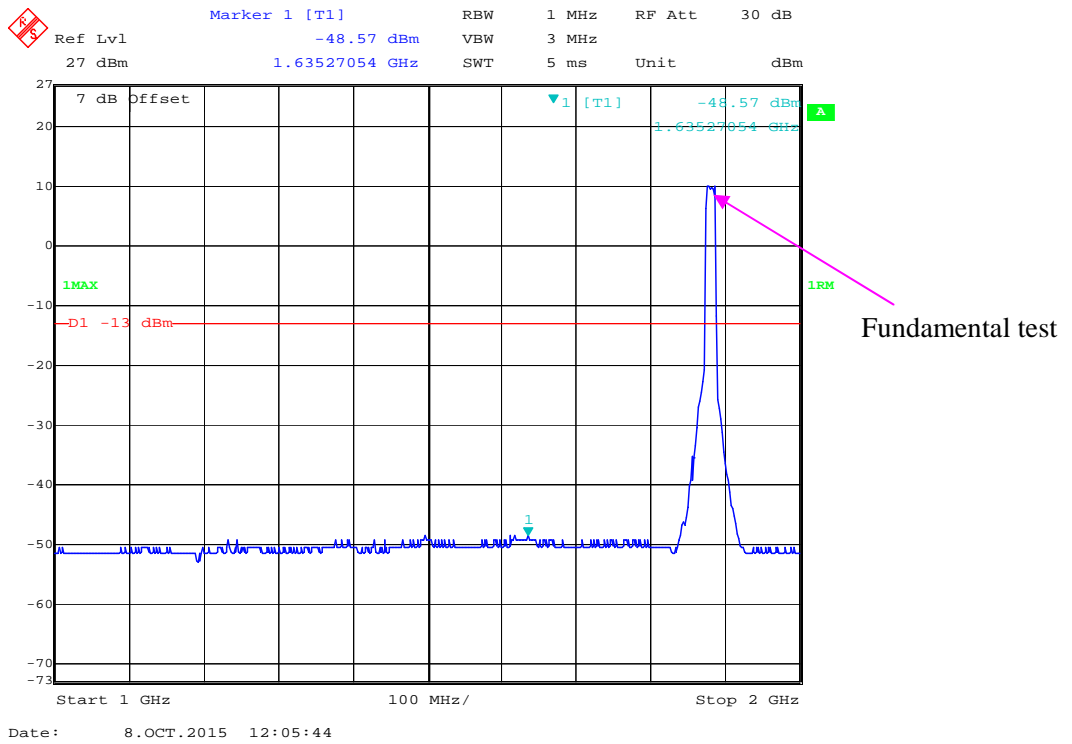


Date: 8.OCT.2015 12:07:54

### 30 MHz - 1 GHz (15.0 MHz, Middle Channel)



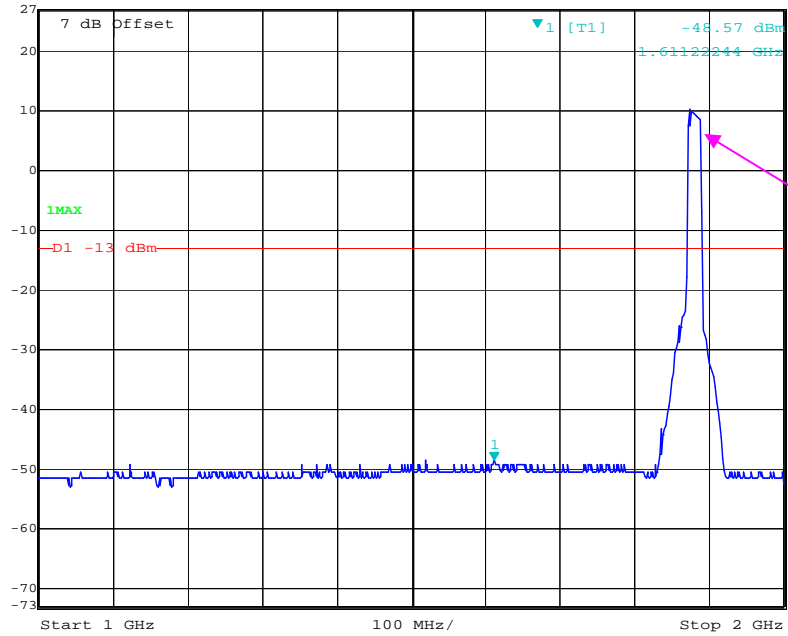
### 1 GHz - 2 GHz (15.0 MHz, Middle Channel)





**1 GHz –2 GHz (20.0 MHz, Middle Channel)**

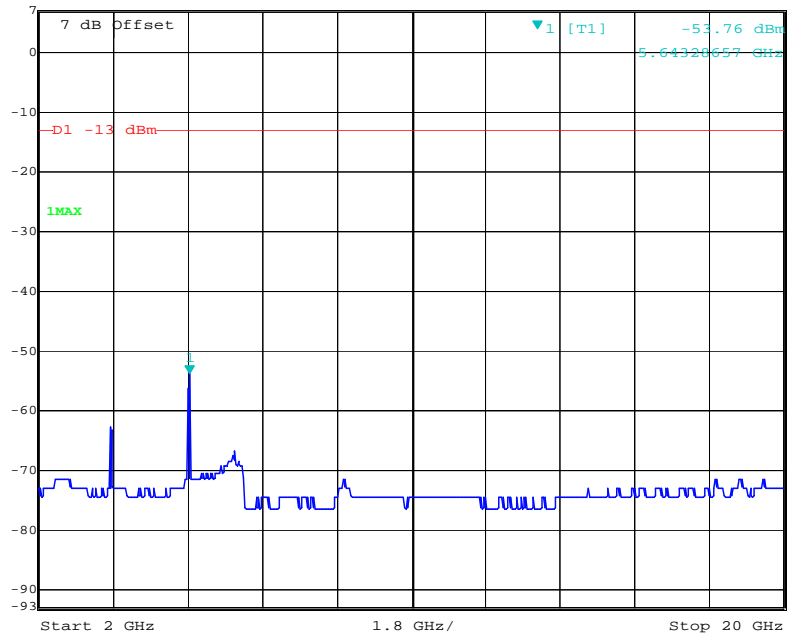
	Marker 1 [T1]	RBW	1 MHz	RF Att	30 dB
	Ref Lvl	-48.57 dBm	VBW	3 MHz	
	27 dBm	1.61122244 GHz	SWT	5 ms	Unit dBm



Date: 8.OCT.2015 12:06:08

**2 GHz –20 GHz (20.0 MHz, Middle Channel)**

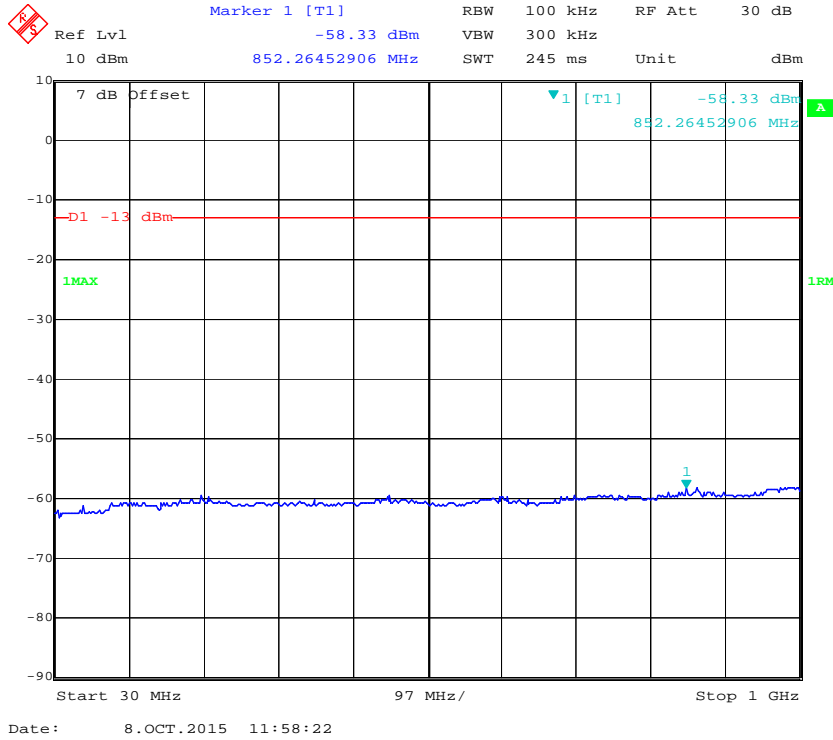
	Marker 1 [T1]	RBW	1 MHz	RF Att	10 dB
	Ref Lvl	-53.76 dBm	VBW	3 MHz	
	7 dBm	5.64328657 GHz	SWT	105 ms	Unit dBm



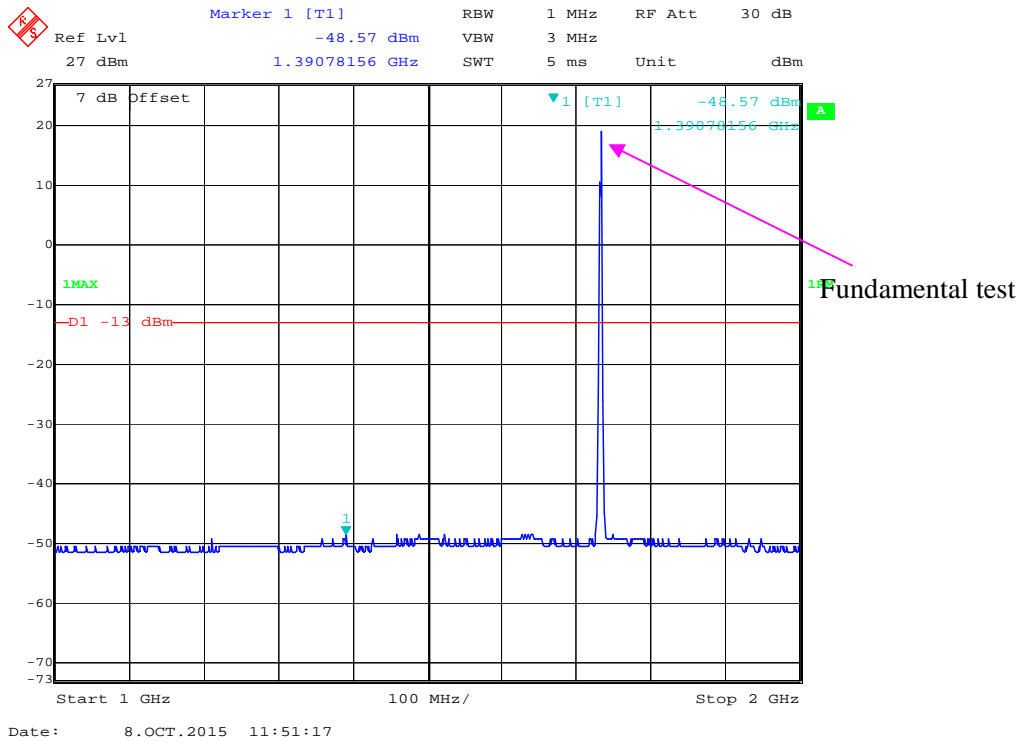
Date: 8.OCT.2015 12:07:19

**LTE Band 4:**

**30 MHz - 1 GHz (1.4 MHz, Middle Channel)**



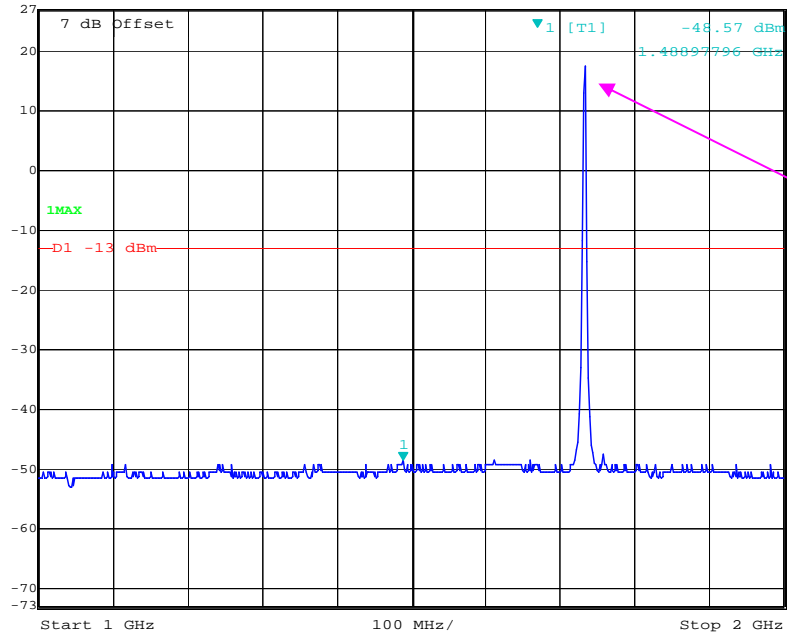
**1 GHz - 2 GHz (1.4 MHz, Middle Channel)**





**1 GHz – 2 GHz (3.0 MHz, Middle Channel)**

	Marker 1 [T1]	RBW	1 MHz	RF Att	30 dB
	Ref Lvl	-48.57 dBm	VBW	3 MHz	
	27 dBm	1.48897796 GHz	SWT	5 ms	Unit dBm

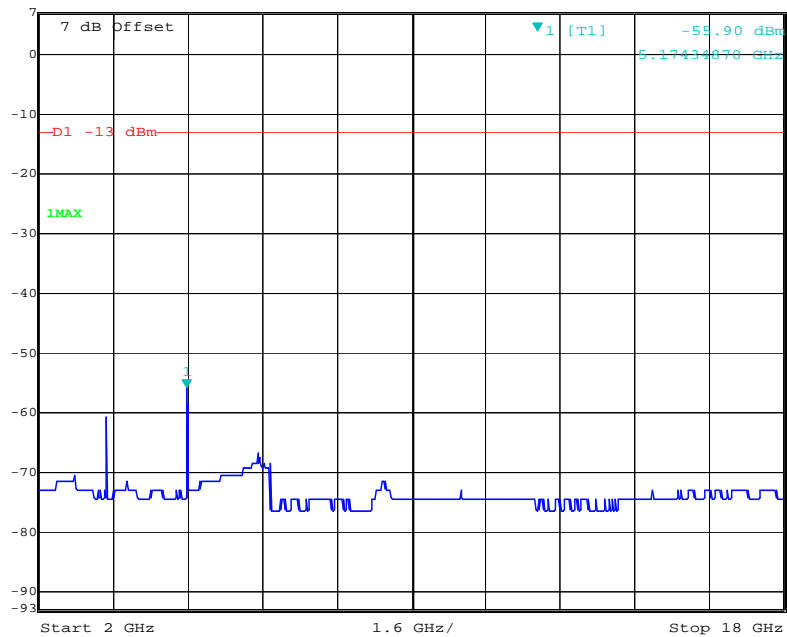


Fundamental test

Date: 8.OCT.2015 11:51:57

**2 GHz – 18 GHz (3.0 MHz, Middle Channel)**

	Marker 1 [T1]	RBW	1 MHz	RF Att	10 dB
	Ref Lvl	-55.90 dBm	VBW	3 MHz	
	7 dBm	5.17434870 GHz	SWT	92 ms	Unit dBm




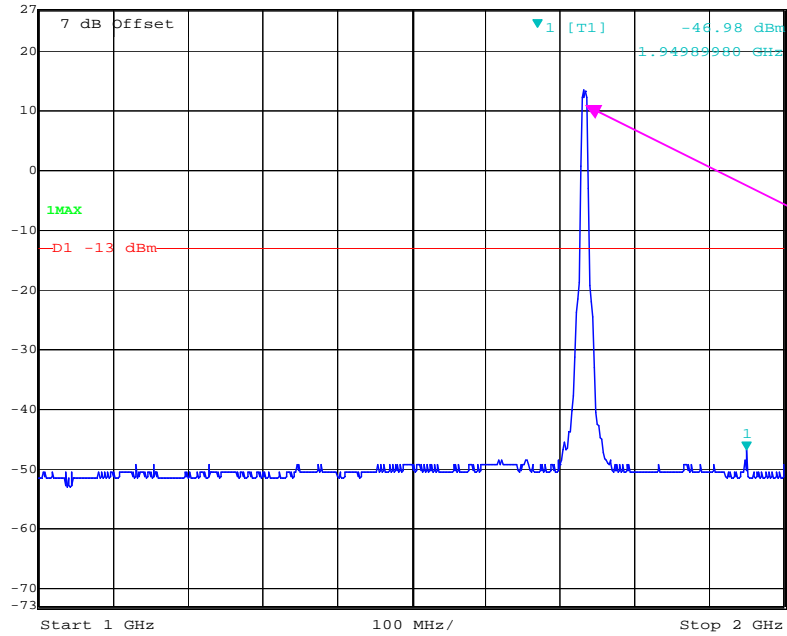
Date: 8.OCT.2015 11:56:45





**1 GHz – 2 GHz (10.0 MHz, Middle Channel)**


	Marker 1 [T1]	RBW	1 MHz	RF Att	30 dB
	Ref Lvl	-46.98 dBm	VBW	3 MHz	
	27 dBm	1.94989980 GHz	SWT	5 ms	Unit dBm

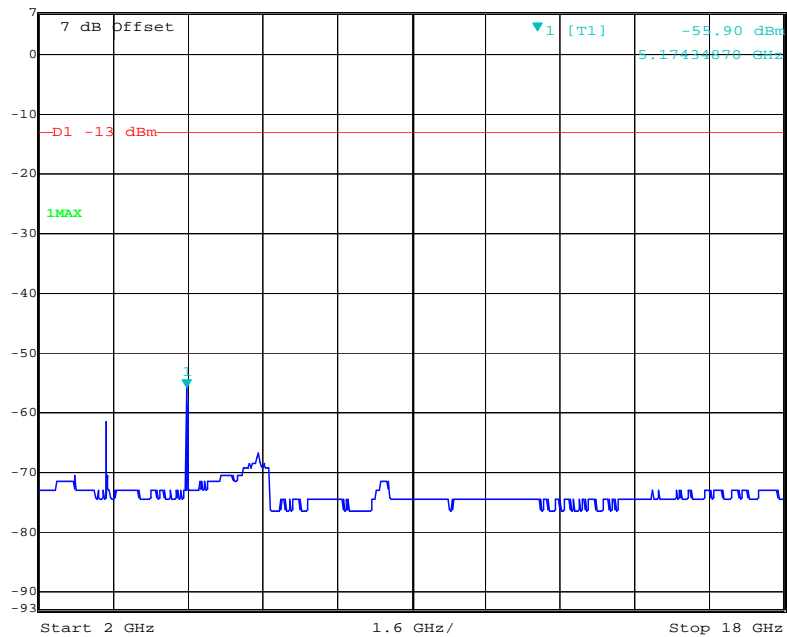


Fundamental test

Date: 8.OCT.2015 11:53:15

**2 GHz – 18 GHz (10.0 MHz, Middle Channel)**

	Marker 1 [T1]	RBW	1 MHz	RF Att	10 dB
	Ref Lvl	-55.90 dBm	VBW	3 MHz	
	7 dBm	5.17434870 GHz	SWT	92 ms	Unit dBm



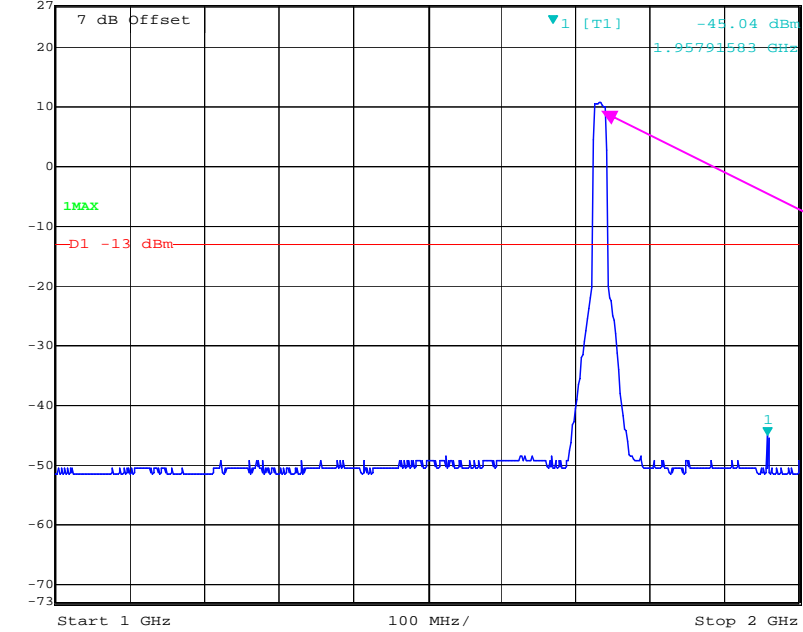
Date: 8.OCT.2015 11:56:12





### 1 GHz – 2 GHz (20.0 MHz, Middle Channel)

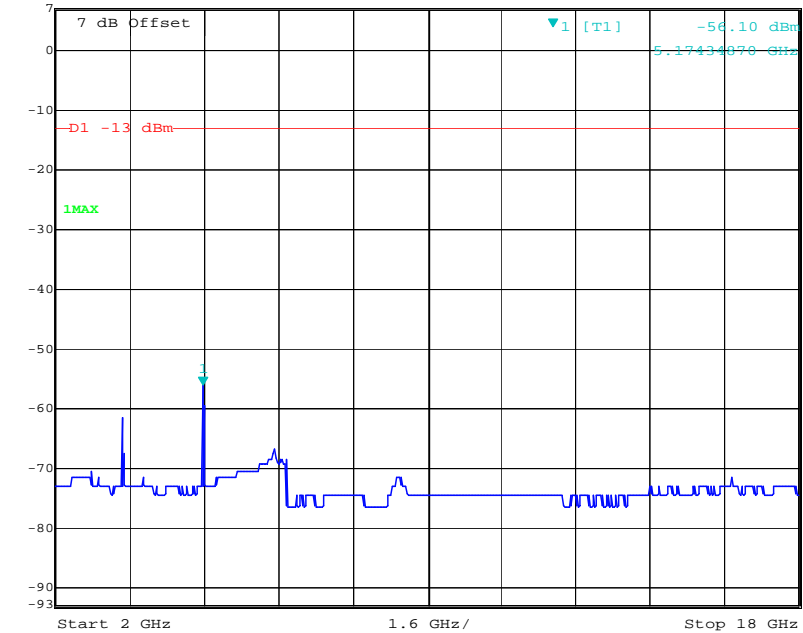
**Marker 1 [T1]**  
Ref Lvl 27 dBm  
RBW 1 MHz  
VBW 3 MHz  
RF Att 30 dB  
SWT 5 ms  
Unit dBm



Date: 8.OCT.2015 11:54:25

### 2 GHz – 18 GHz (20.0 MHz, Middle Channel)

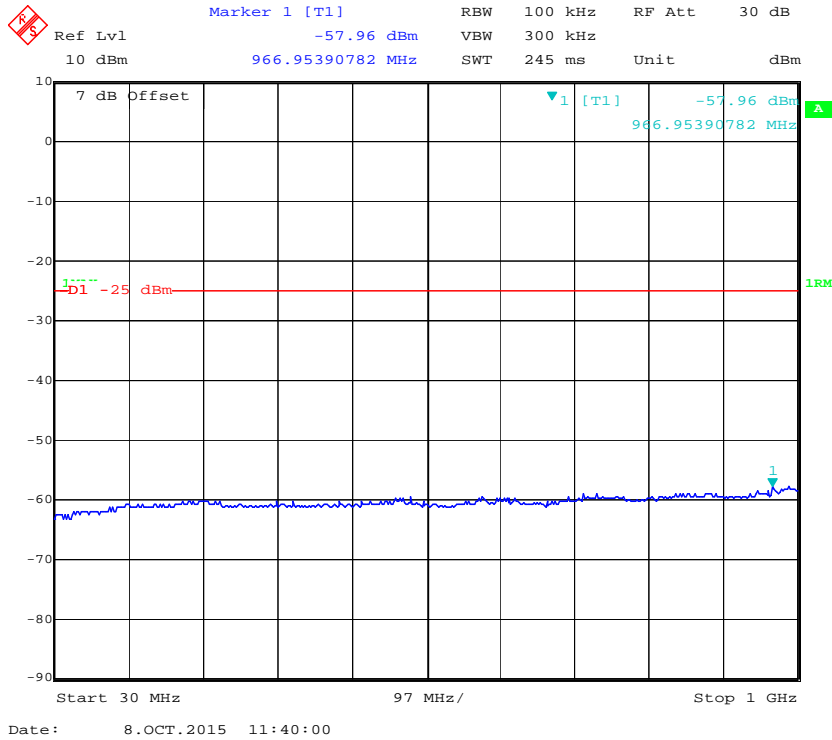
**Marker 1 [T1]**  
Ref Lvl 7 dBm  
RBW 1 MHz  
VBW 3 MHz  
RF Att 10 dB  
SWT 92 ms  
Unit dBm



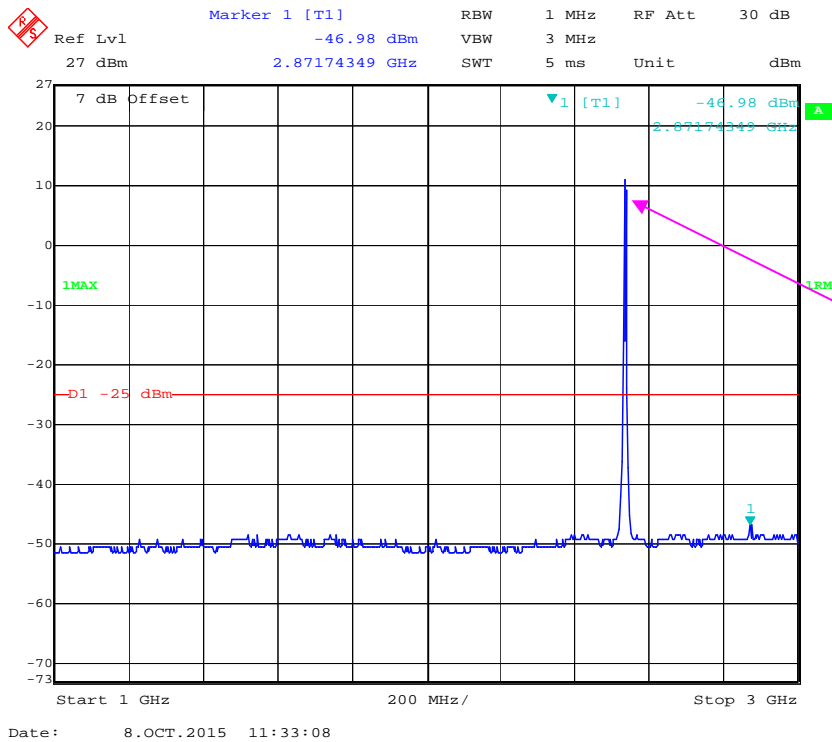
Date: 8.OCT.2015 11:55:35

LTE Band 7:

30 MHz - 1 GHz (5.0 MHz, Middle Channel)

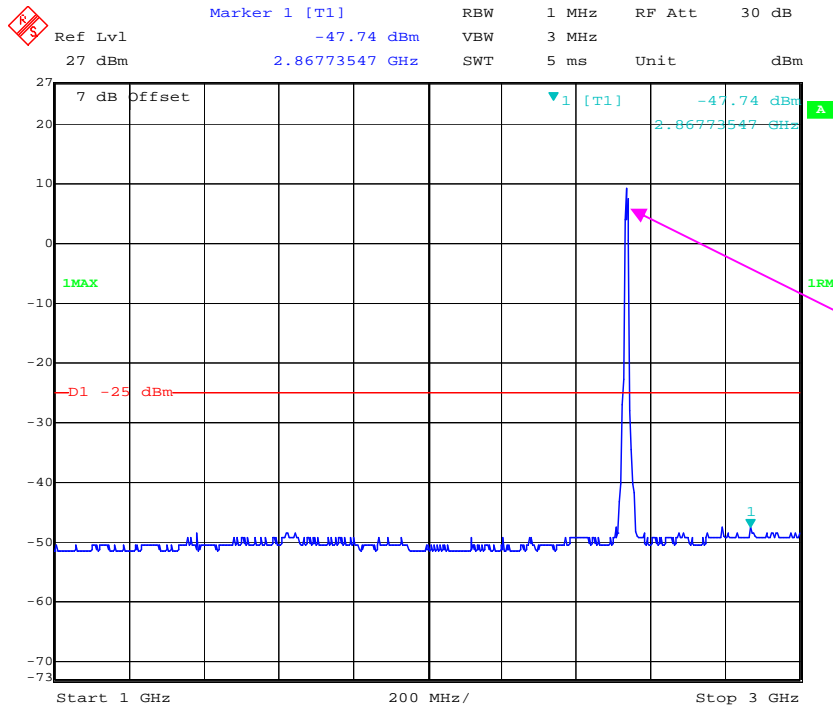


1 GHz - 3 GHz (5.0 MHz, Middle Channel)





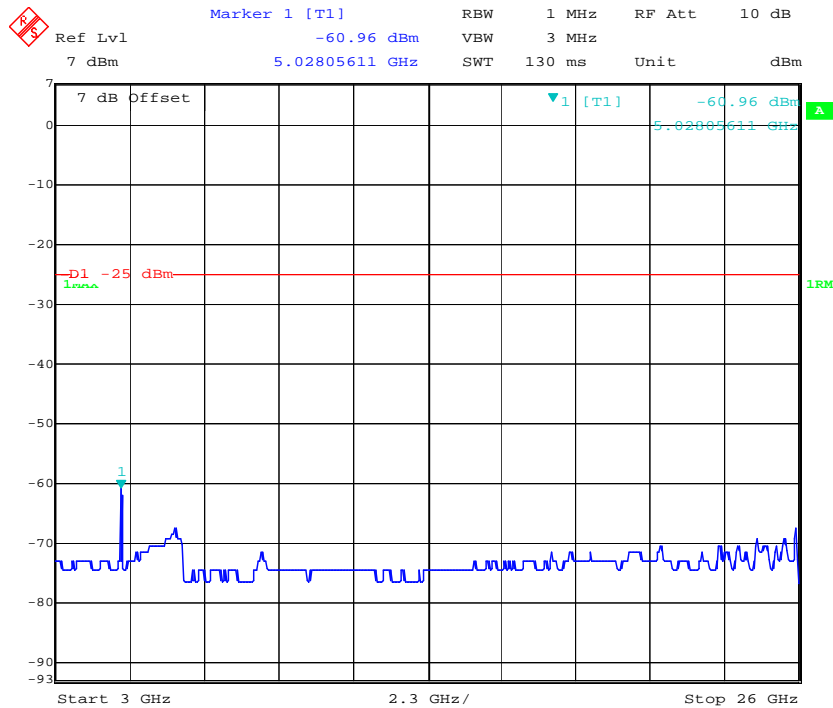
**1 GHz – 3 GHz (10.0 MHz, Middle Channel)**



Date: 8.OCT.2015 11:35:41

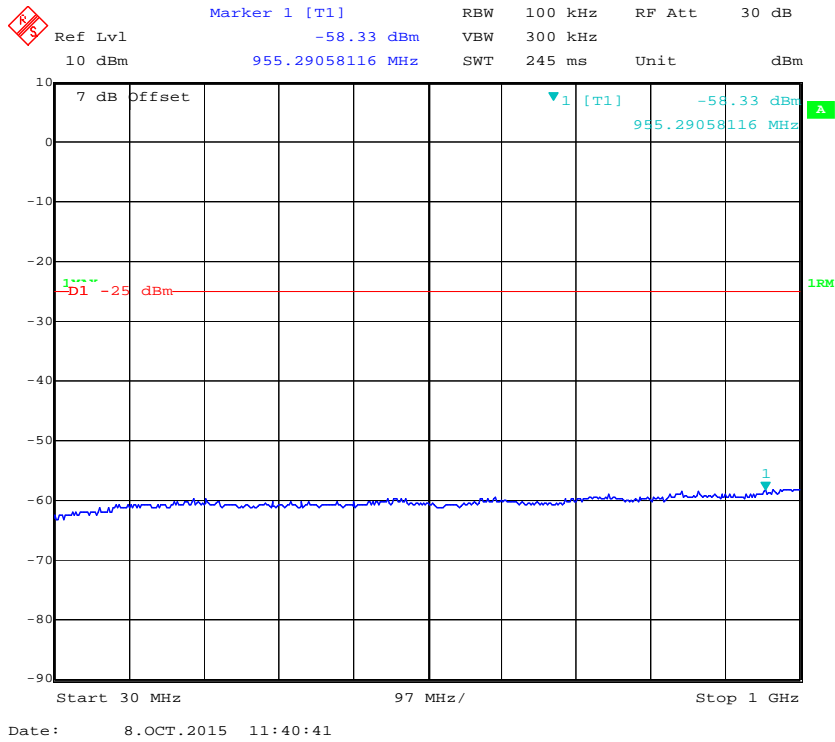
1RM  
Fundamental test

**3 GHz – 26 GHz (10.0 MHz, Middle Channel)**

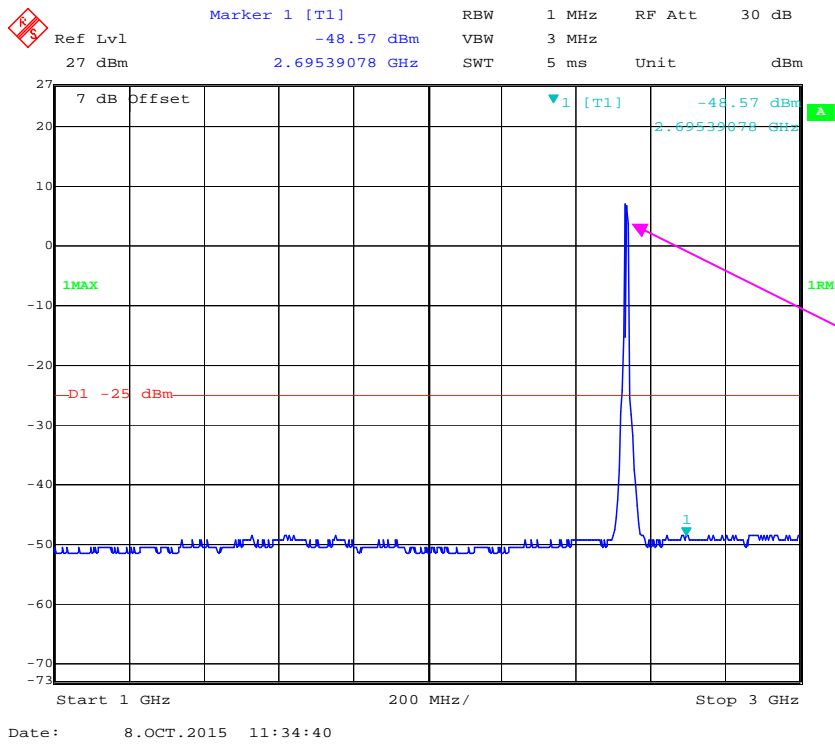


Date: 8.OCT.2015 11:38:06

**30 MHz - 1 GHz (15.0 MHz, Middle Channel)**



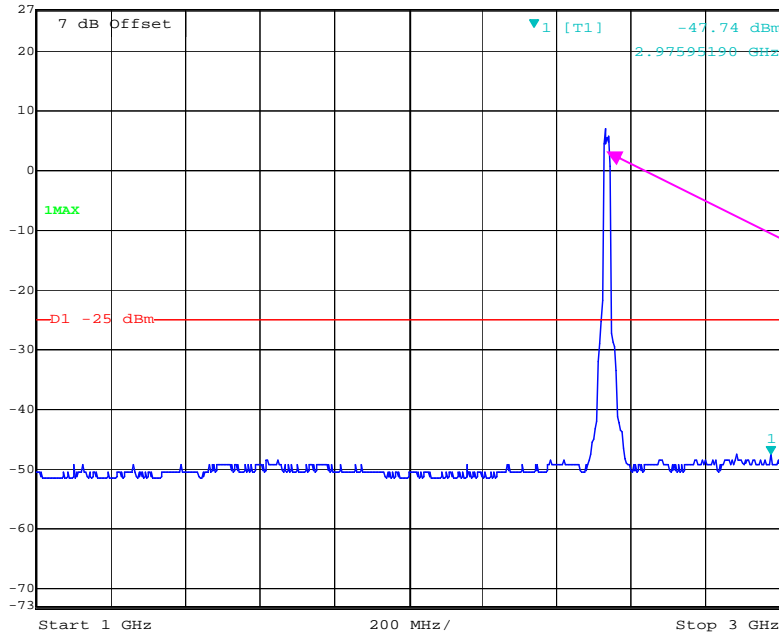
**1 GHz - 3 GHz (15.0 MHz, Middle Channel)**





**1 GHz – 3 GHz (20.0 MHz, Middle Channel)**

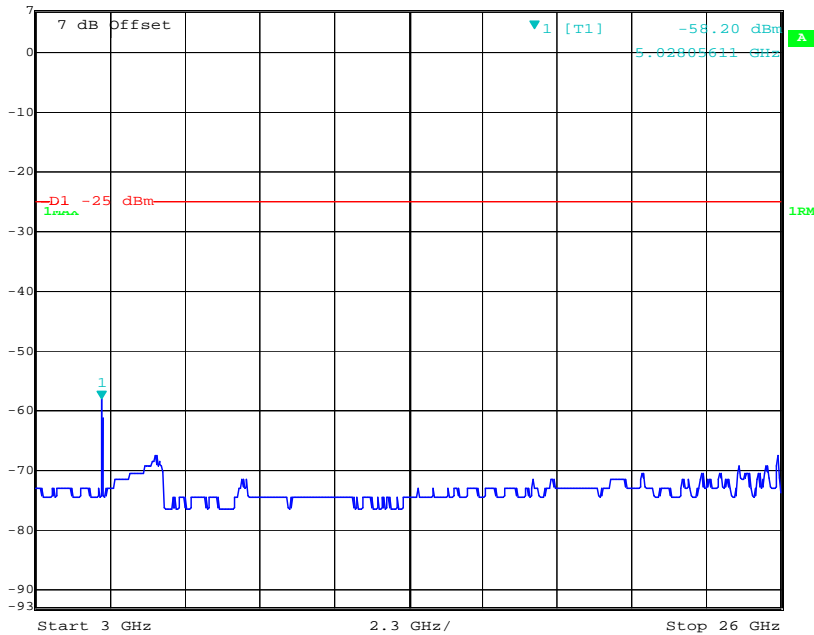
	Marker 1 [T1]	RBW	1 MHz	RF Att	30 dB
	Ref Lvl	-47.74 dBm	VBW	3 MHz	
	27 dBm	2.97595190 GHz	SWT	5 ms	Unit dBm



Date: 8.OCT.2015 11:36:36

**3 GHz – 26 GHz (20.0 MHz, Middle Channel)**

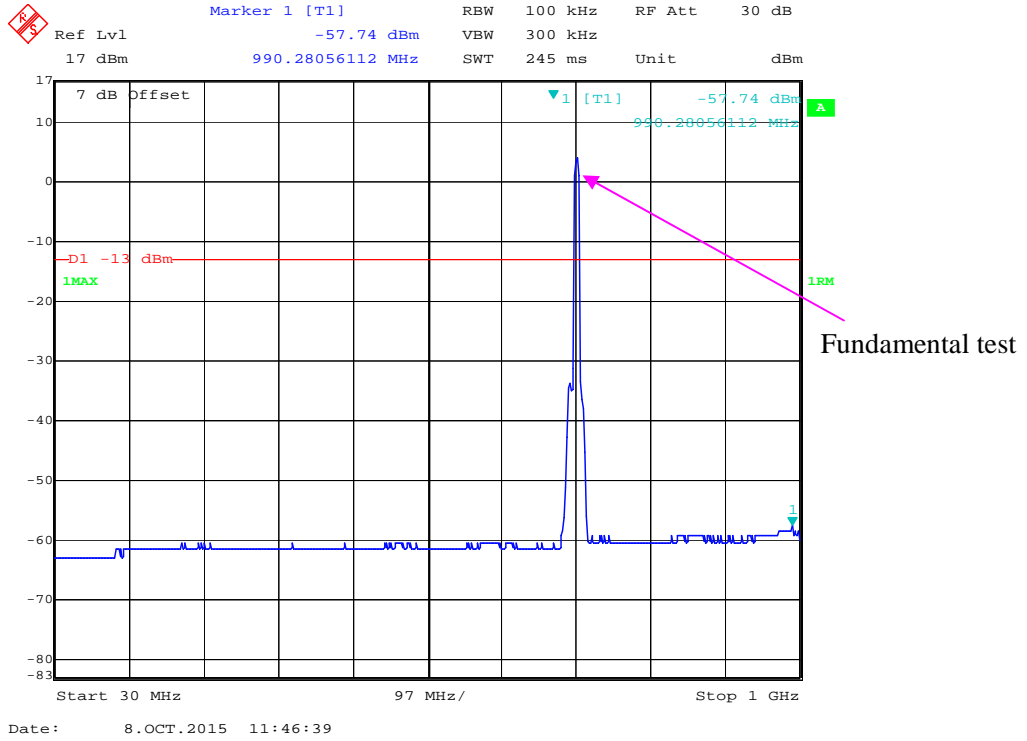
	Marker 1 [T1]	RBW	1 MHz	RF Att	10 dB
	Ref Lvl	-58.20 dBm	VBW	3 MHz	
	7 dBm	5.02805611 GHz	SWT	130 ms	Unit dBm



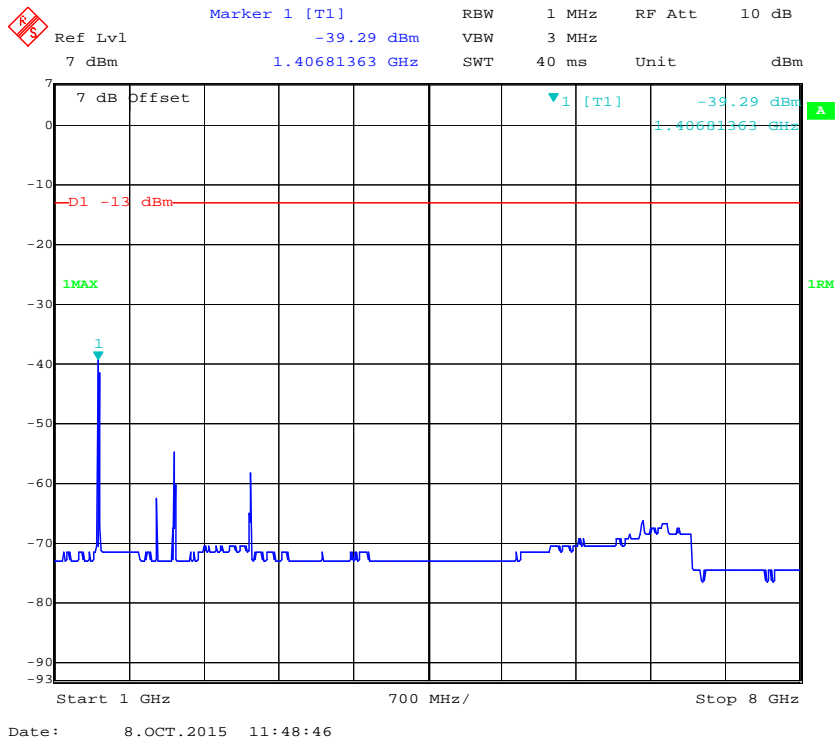
Date: 8.OCT.2015 11:37:30



### 30 MHz - 1 GHz (10.0 MHz, Middle Channel)



### 1 GHz - 8 GHz (10.0 MHz, Middle Channel)



## **FCC §2.1053, §22.917 & §24.238 & §27.53 - SPURIOUS RADIATED EMISSIONS**

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### **Applicable Standards**

FCC § 2.1053, §22.917 and § 24.238 and § 27.53.

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

### **Test Procedure**

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB =  $10 \lg (\text{TX pwr in Watts}/0.001)$  – the absolute level

Spurious attenuation limit in dB =  $43 + 10 \text{Log}_{10} (\text{power out in Watts})$

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2014-12-01	2015-11-30
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
HP	Amplifier	HP8447E	1937A01046	2015-05-06	2016-05-06
HP	Signal Generator	8341B	2624A00116	2015-06-03	2016-06-03
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-11	2016-02-10
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2014-11-03	2015-11-03
Electro-Mechanics	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2014-11-23	2015-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

**Test Data****Environmental Conditions**

<b>Temperature:</b>	25
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by William Li on 2015-10-09.*

Test mode: Transmitting (Pre-scan with all the bandwidth, and worse case as below)

30 MHz ~ 10 GHz:

**Cellular Band (Part 22H)**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
160.91	31.19	186	2.5	H	-65.8	0.27	0	-66.07	-13	53.07
160.91	32.08	101	2.2	V	-64.9	0.27	0	-65.17	-13	52.17
1673.20	44.02	36	1.1	H	-51.7	1.60	6.90	-46.40	-13	33.40
1673.20	50.91	112	1.5	V	-45.2	1.60	6.90	-39.90	-13	26.90
2509.80	56.24	4	2.0	H	-37.3	1.70	8.60	-30.40	-13	17.40
2509.80	49.89	78	1.8	V	-44.0	1.70	8.60	-37.10	-13	24.10
WCDMA Mode, Middle channel										
160.91	31.94	239	2.2	H	-65.1	0.27	0	-65.37	-13	52.37
160.91	31.56	331	2.5	V	-65.4	0.27	0	-65.67	-13	52.67
1673.20	36.24	130	1.1	H	-59.5	1.60	6.90	-54.20	-13	41.20
1673.20	36.55	29	1.2	V	-59.6	1.60	6.90	-54.30	-13	41.30
2509.80	42.03	144	1.2	H	-51.5	1.70	8.60	-44.60	-13	31.60
2509.80	39.91	185	1.5	V	-54.0	1.70	8.60	-47.10	-13	34.10

**30 MHz ~ 20 GHz:**

**PCS Band (Part 24E)**

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
160.91	30.51	356	1.8	H	-66.5	0.27	0	-66.77	-13	53.77
160.91	31.54	158	1.6	V	-65.5	0.27	0	-65.77	-13	52.77
3760.00	34.99	60	2.0	H	-52.1	1.90	9.90	-44.10	-13	31.10
3760.00	34.71	55	1.1	V	-51.9	1.90	9.90	-43.90	-13	30.90
5640.00	42.02	124	1.1	H	-40.5	2.10	10.30	-32.30	-13	19.30
5640.00	44.53	262	1.1	V	-37.4	2.10	10.30	-29.20	-13	16.20
WCDMA Mode, middle channel										
160.91	30.25	104	1.7	H	-66.7	0.27	0	-66.97	-13	53.97
160.91	32.53	284	2.0	V	-64.5	0.27	0	-64.77	-13	51.77
3760.00	35.69	258	2.4	H	-51.4	1.90	9.90	-43.40	-13	30.40
3760.00	36.73	212	2.3	V	-49.9	1.90	9.90	-41.90	-13	28.90
5640.00	39.31	263	1.9	H	-43.2	2.10	10.30	-35.00	-13	22.00
5640.00	35.96	44	1.1	V	-46.0	2.10	10.30	-37.80	-13	24.80

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H&24E&27	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
<b>Band 2</b>										
160.91	31.71	349	2.3	H	-65.3	0.27	0	-65.57	-13	52.57
160.91	30.25	314	2.4	V	-66.7	0.27	0	-66.97	-13	53.97
3760.00	35.28	114	2.4	H	-51.8	1.90	9.90	-43.80	-13	30.80
3760.00	35.21	249	1.1	V	-51.4	1.90	9.90	-43.40	-13	30.40
<b>Band 4</b>										
160.91	31.61	337	2.0	H	-65.4	0.27	0	-65.67	-13	52.67
160.91	30.97	199	1.6	V	-66.0	0.27	0	-66.27	-13	53.27
3465.00	35.31	215	1.0	H	-48.5	1.90	10.00	-40.40	-13	27.40
3465.00	36.98	0	2.4	V	-47.0	1.90	10.00	-38.90	-13	25.90
<b>Band 7</b>										
160.91	30.90	200	1.9	H	-66.1	0.27	0	-66.37	-25	41.37
160.91	31.59	180	2.3	V	-65.4	0.27	0	-65.67	-25	40.67
5070.00	36.86	220	2.0	H	-47.2	2.30	10.10	-39.40	-25	14.40
5070.00	35.71	132	1.7	V	-47.6	2.30	10.10	-39.80	-25	14.80
7605.00	40.31	94	2.1	H	-39.5	4.70	10.80	-33.40	-25	8.40
7605.00	38.93	239	1.0	V	-41.7	4.70	10.80	-35.60	-25	10.60
<b>Band 17</b>										
160.91	30.72	76	2.3	H	-66.3	0.27	0	-66.57	-13	53.57
160.91	31.38	12	1.9	V	-65.6	0.27	0	-65.87	-13	52.87
1420.00	44.89	349	2.1	H	-51.7	1.20	6.40	-46.50	-13	33.50
1420.00	45.58	122	1.5	V	-51.1	1.20	6.40	-45.90	-13	32.90
2130.00	43.09	208	1.6	H	-49.5	1.60	7.80	-43.30	-13	30.30
2130.00	43.58	134	1.6	V	-48.6	1.60	7.80	-42.40	-13	29.40
2840.00	36.17	205	1.8	H	-57.7	1.60	9.40	-49.90	-13	36.90
2840.00	37.24	109	2.2	V	-56.8	1.60	9.40	-49.00	-13	36.00

**Note:**

- 1) Absolute Level = SG Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level

## **FCC §22.917(a) & §24.238(a) & §27.53 - BAND EDGES**

### **Applicable Standards**

According to § 22.917(a), the power of any emissions 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 §24.238(a), the power of any emissions 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.

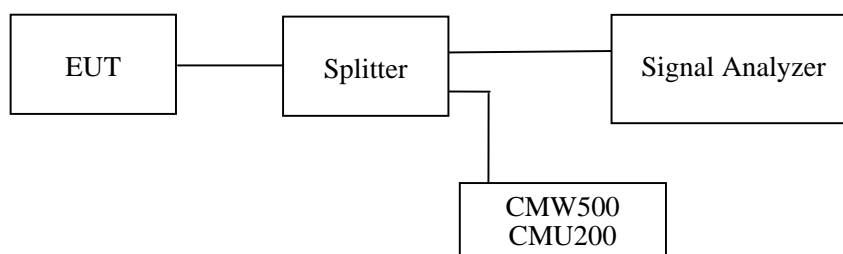
According to FCC §27.53, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

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

### **Test Procedure**

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2015-06-13	2016-06-13
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2014-12-11	2015-12-11
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2014-11-23	2015-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

**Test Data****Environmental Conditions**

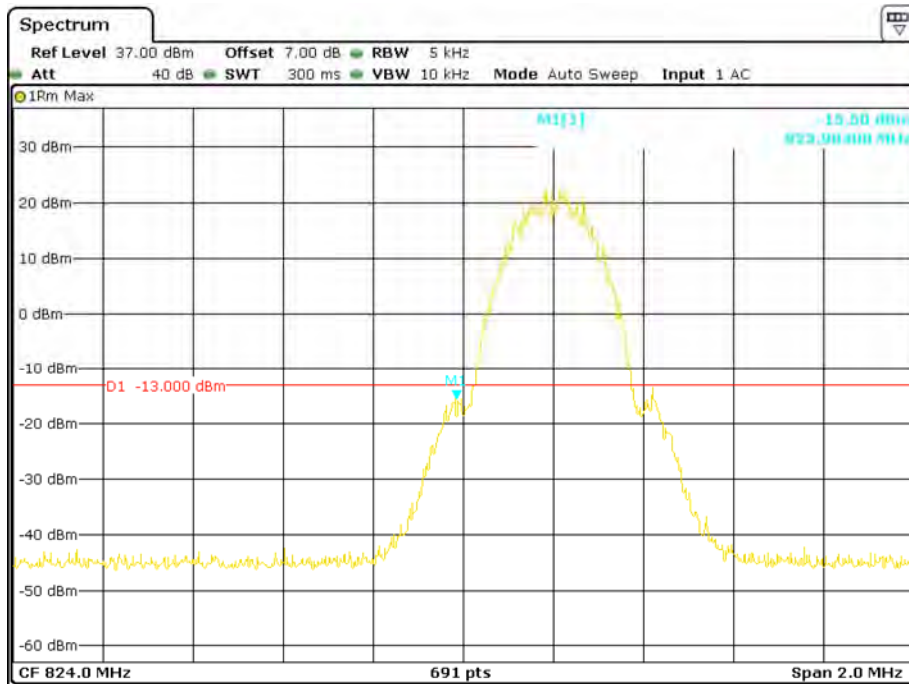
<b>Temperature:</b>	24~25
<b>Relative Humidity:</b>	48~51 %
<b>ATM Pressure:</b>	100.0~101.0 kPa

*The testing was performed by William Li from 2015-10-02 to 2015-10-06.*

*EUT operation mode: Transmitting*

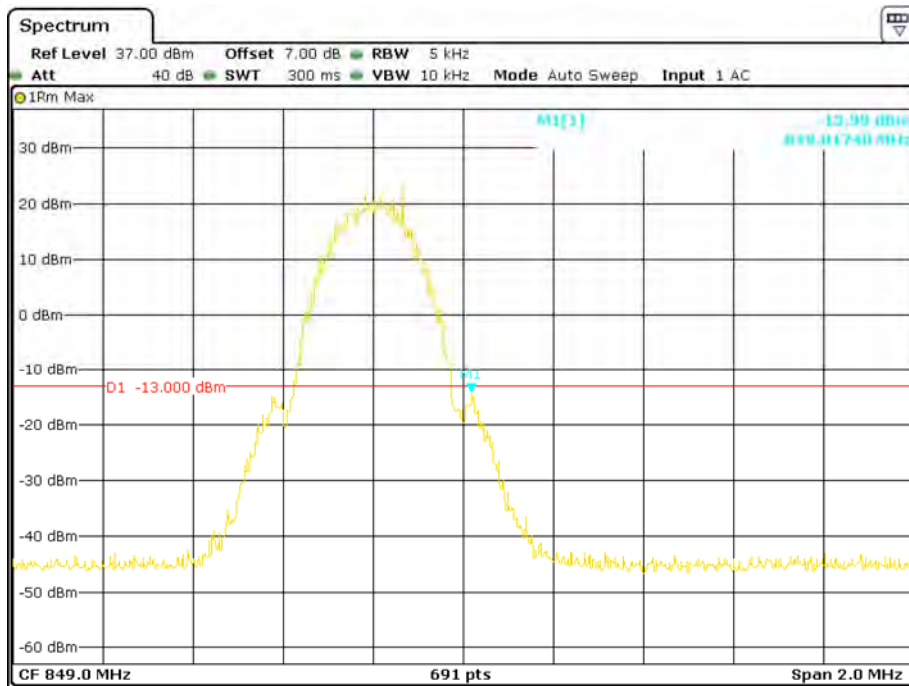
*Test Result: Compliance. Please refer to the following plots.*

### Cellular Band, Left Band Edge for GSM (GMSK) Mode



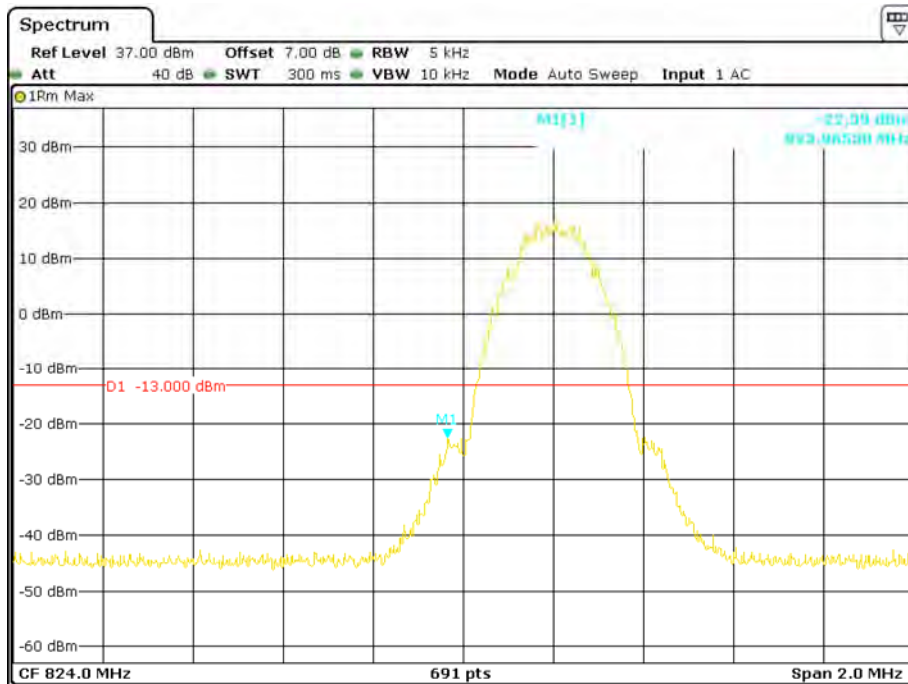
Date: 2.OCT.2015 17:15:26

### Cellular Band, Right Band Edge for GSM (GMSK) Mode



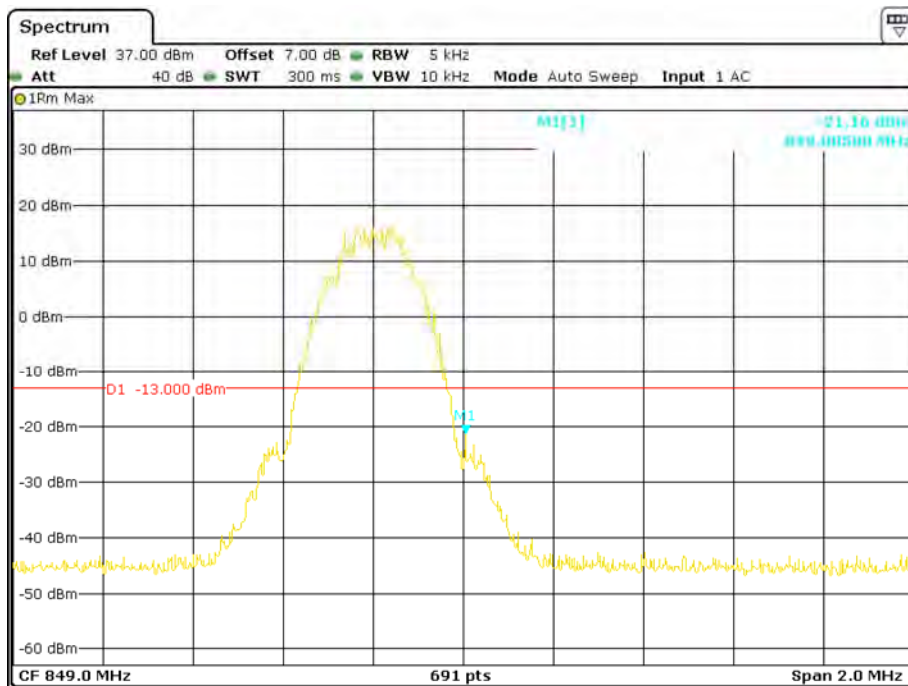
Date: 2.OCT.2015 17:17:20

### Cellular Band, Left Band Edge for EGPRS Mode



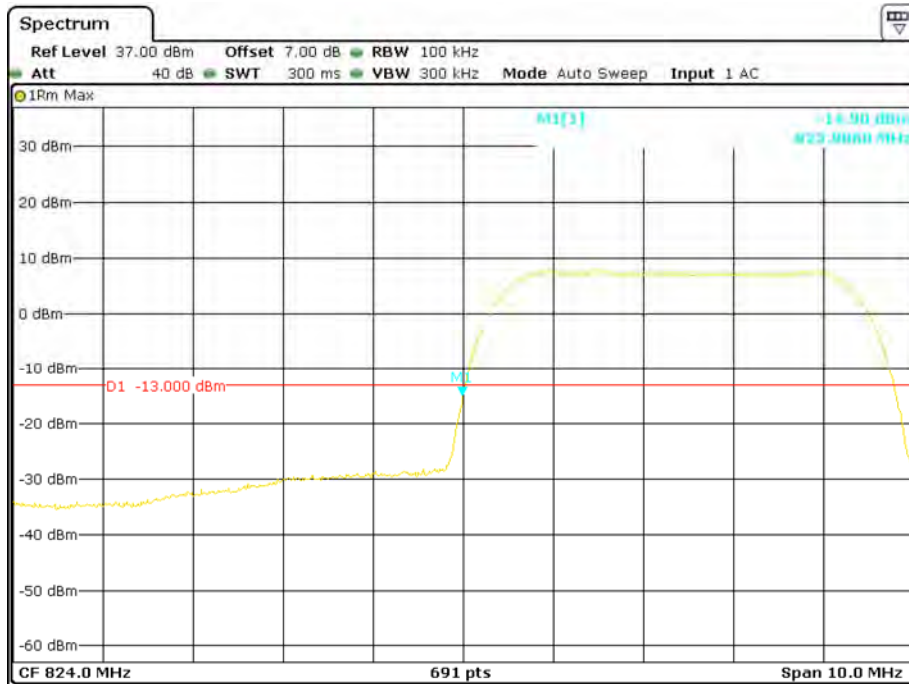
Date: 2.OCT.2015 17:52:41

### Cellular Band, Right Band Edge for EGPRS Mode



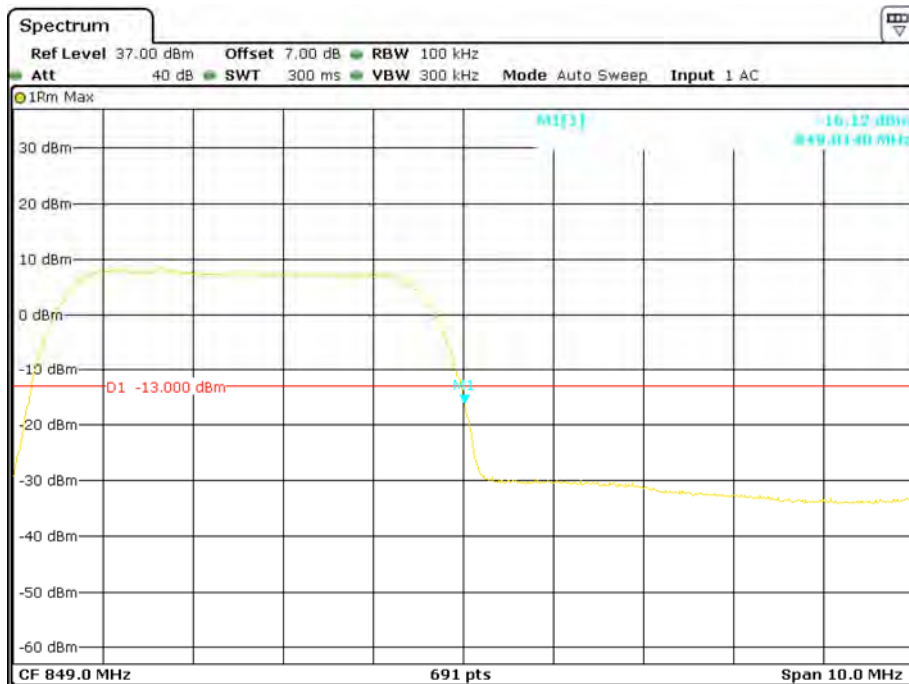
Date: 2.OCT.2015 17:49:22

### Cellular Band, Left Band Edge for WCDMA (BPSK) Mode



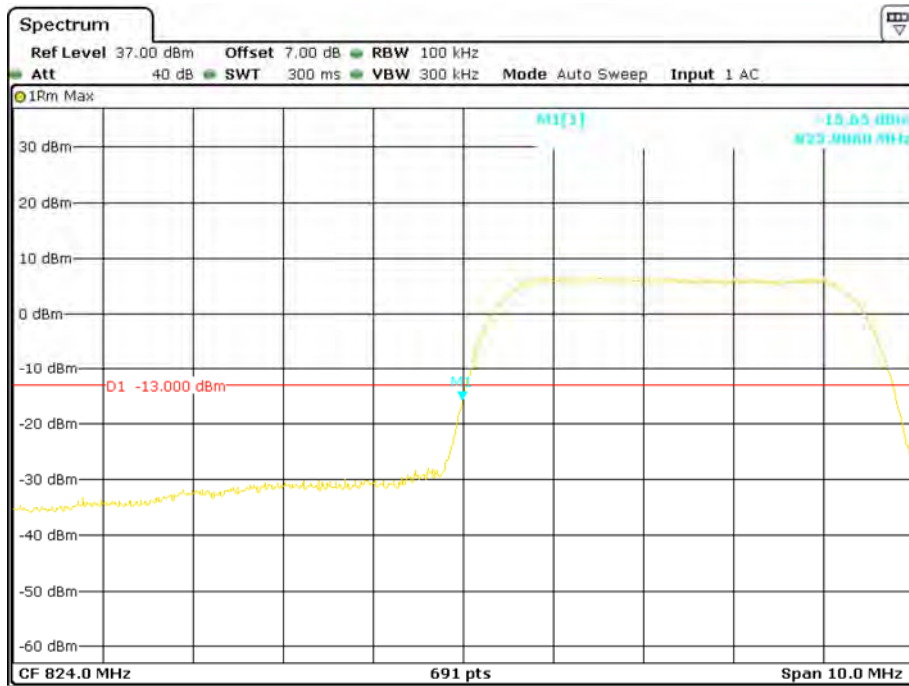
Date: 2.OCT.2015 18:11:23

### Cellular Band, Right Band Edge for WCDMA (BPSK) Mode



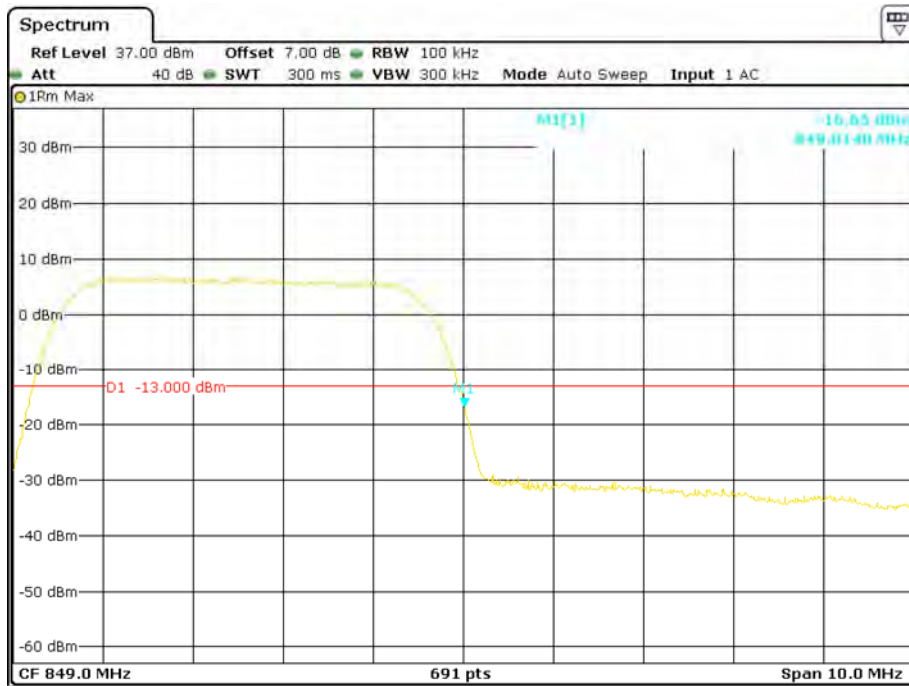
Date: 2.OCT.2015 18:10:08

### Cellular Band, Left Band Edge for HSDPA (16QAM) Mode



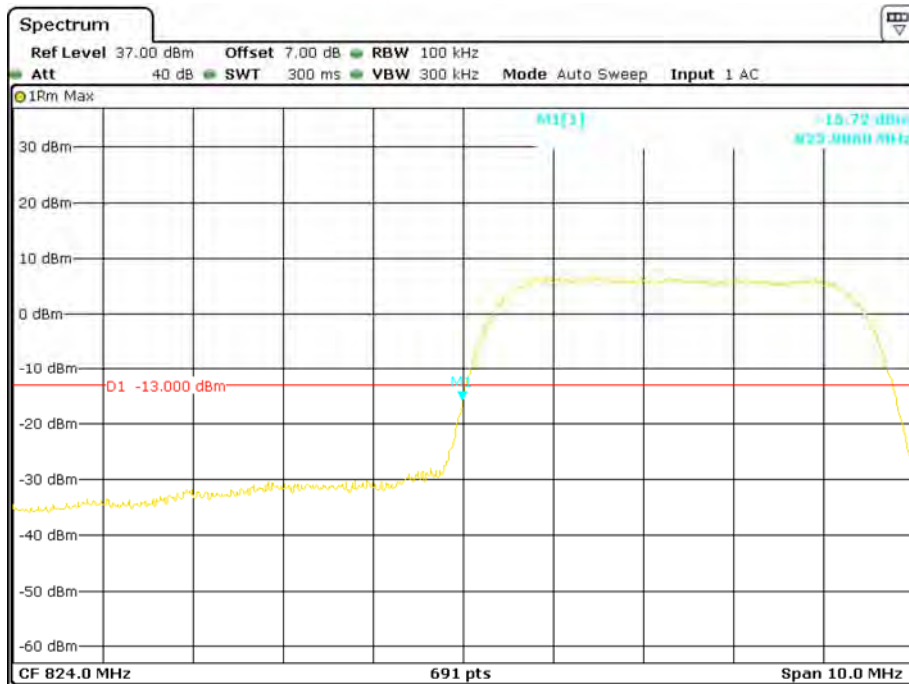
Date: 2.OCT.2015 18:34:14

### Cellular Band, Right Band Edge for HSDPA (16QAM) Mode



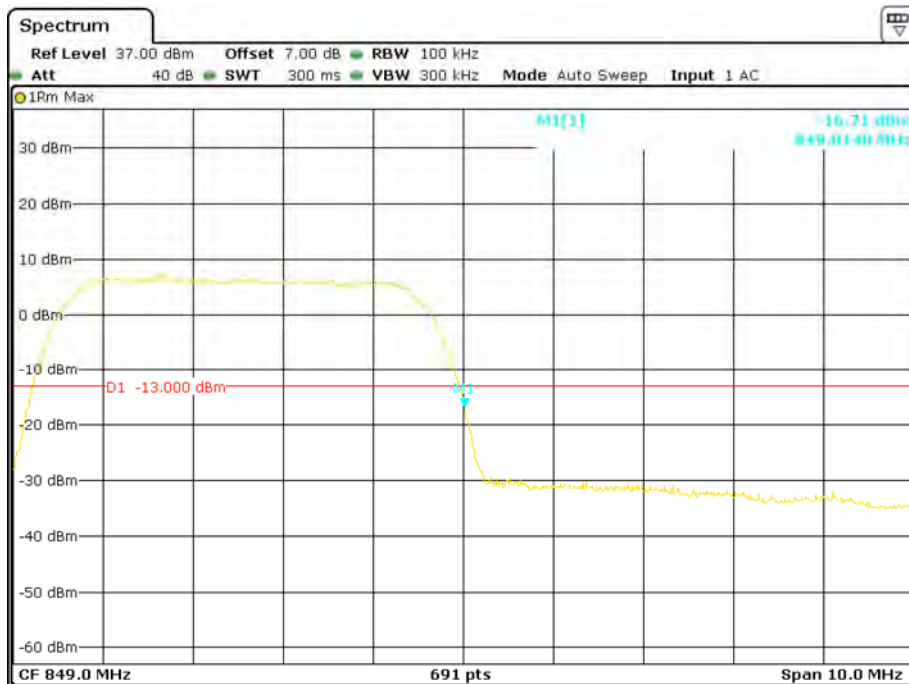
Date: 2.OCT.2015 18:35:12

### Cellular Band, Left Band Edge for HSUPA (BPSK) Mode



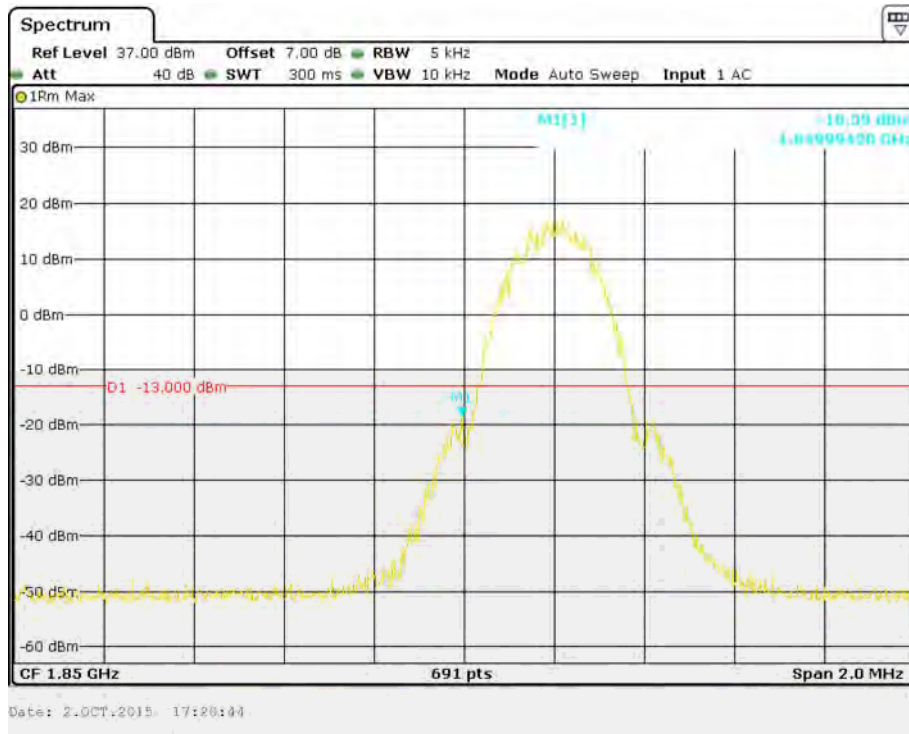
Date: 2.OCT.2015 18:24:08

### Cellular Band, Right Band Edge for HSUPA (BPSK) Mode

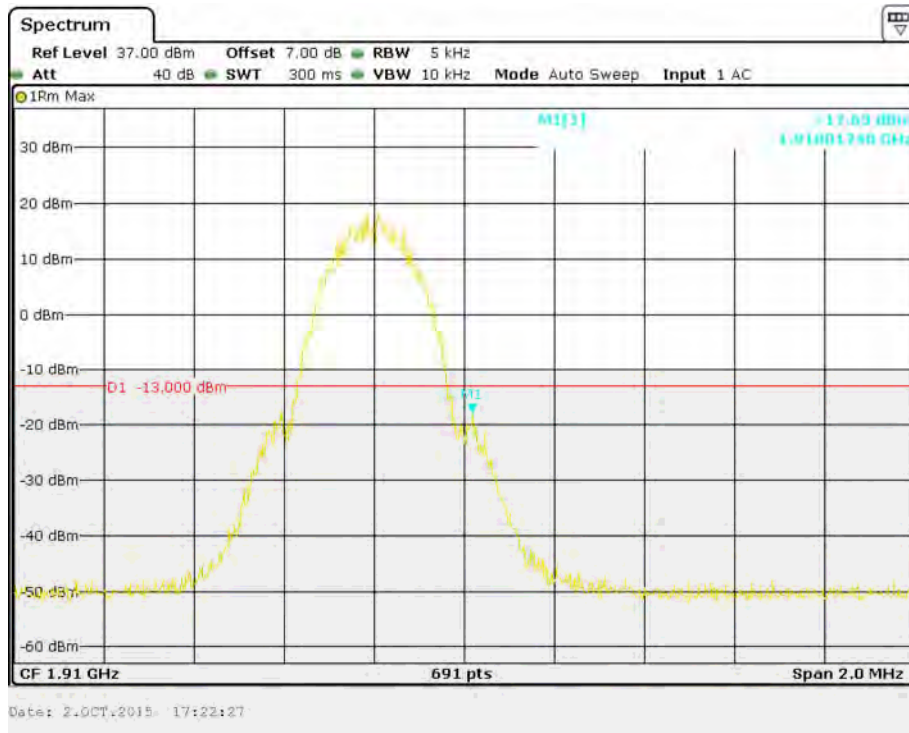


Date: 2.OCT.2015 18:25:55

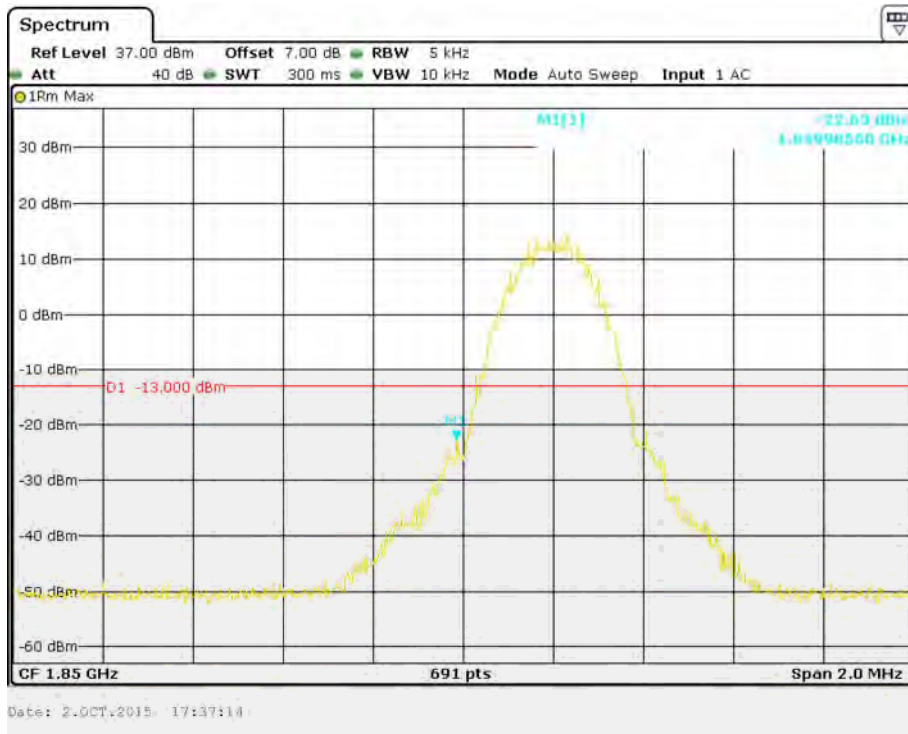
### PCS Band, Left Band Edge for GSM (GMSK) Mode



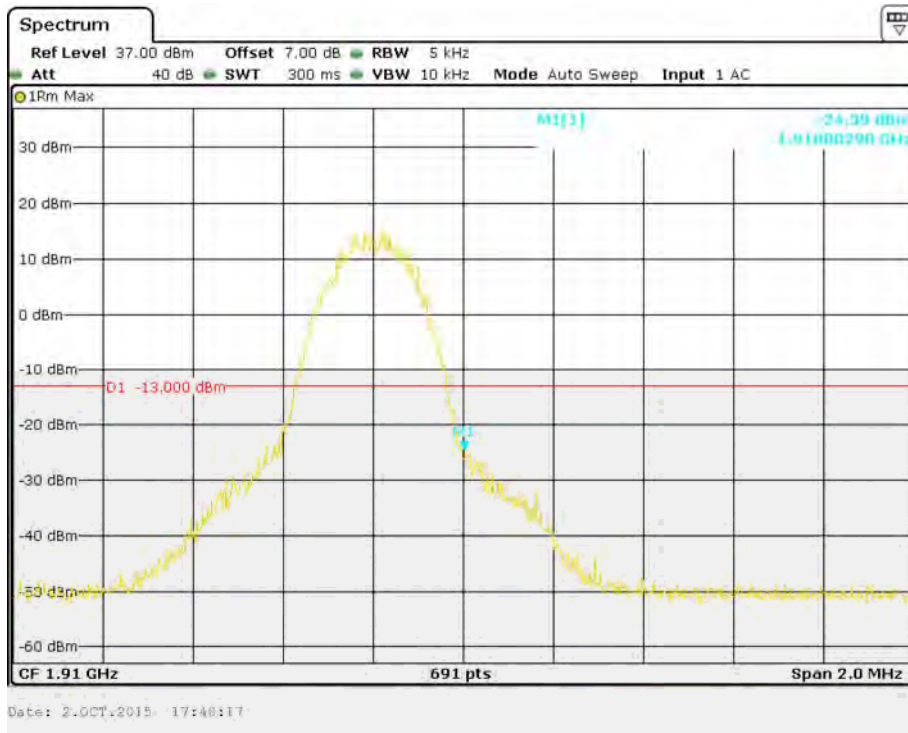
### PCS Band, Right Band Edge for GSM (GMSK) Mode



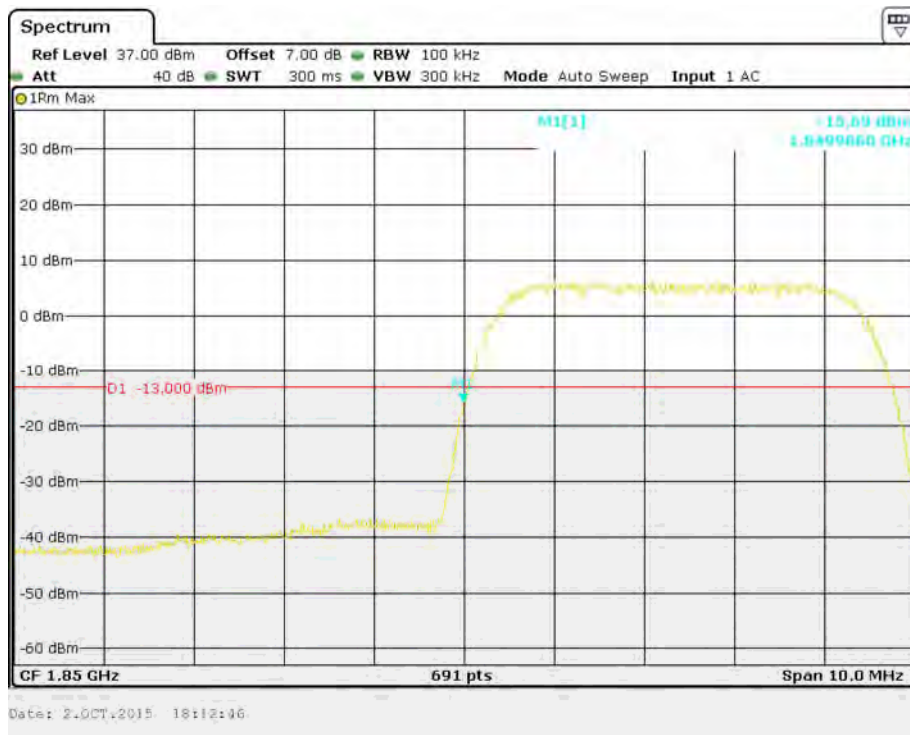
### PCS Band, Left Band Edge for EGPRS Mode



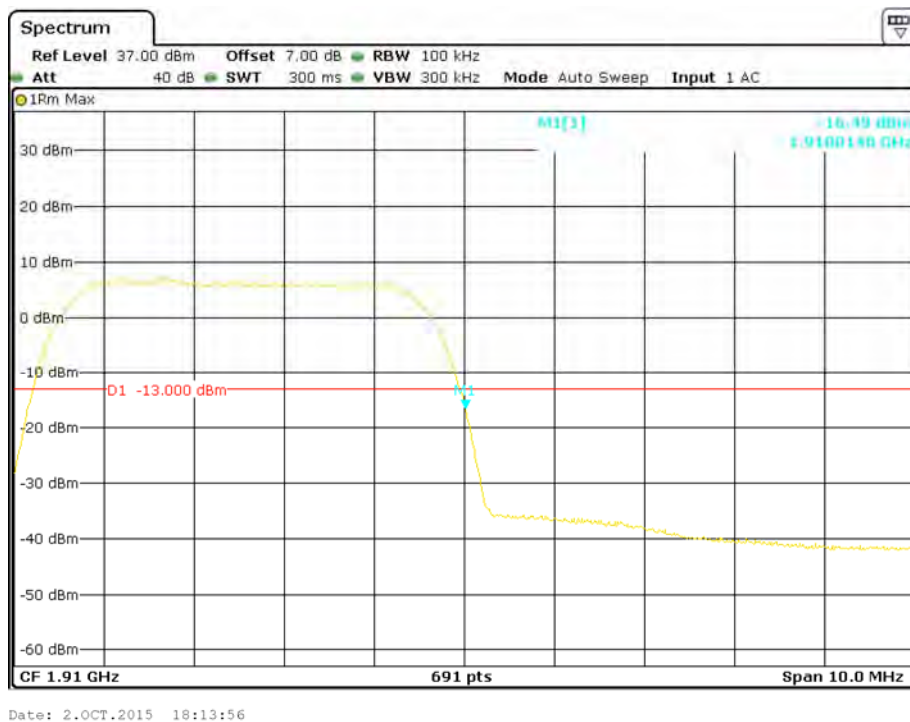
### PCS Band, Right Band Edge for EGPRS Mode



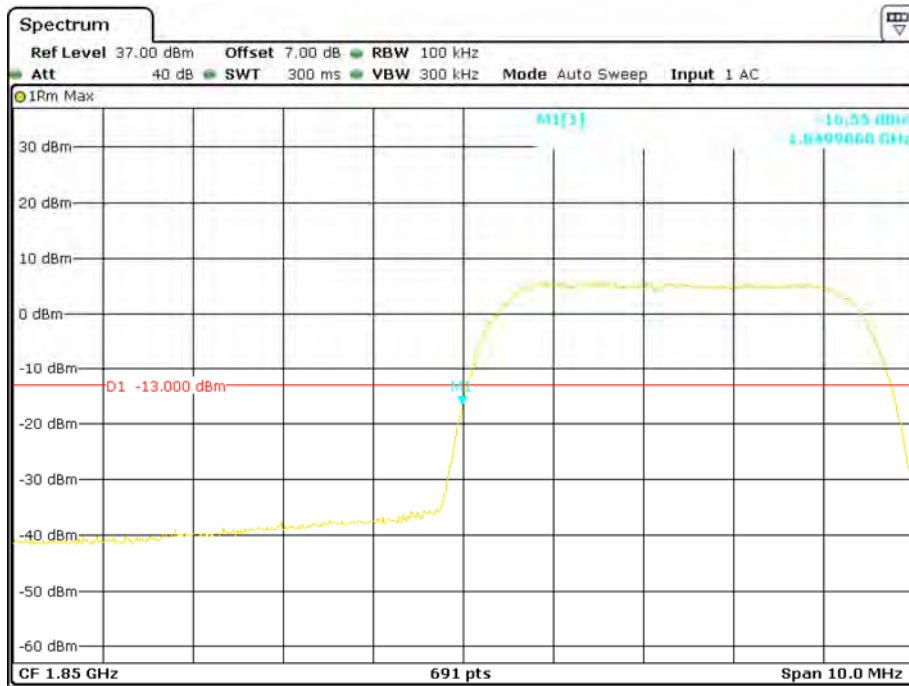
### PCS Band, Left Band Edge for WCDMA (BPSK) Mode



### PCS Band, Right Band Edge for WCDMA (BPSK) Mode

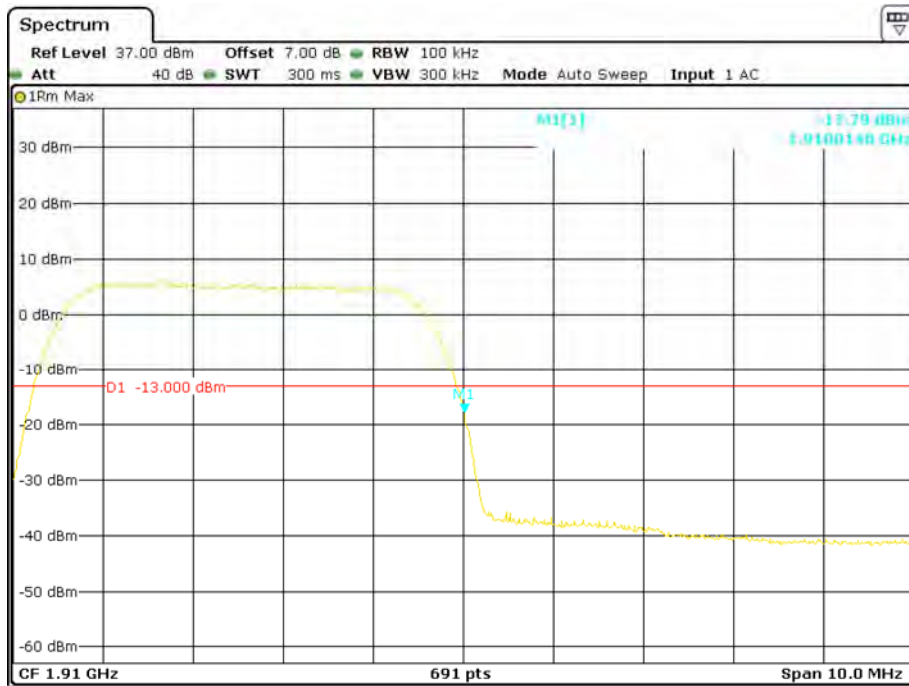


### PCS Band, Left Band Edge for HSDPA (16QAM) Mode



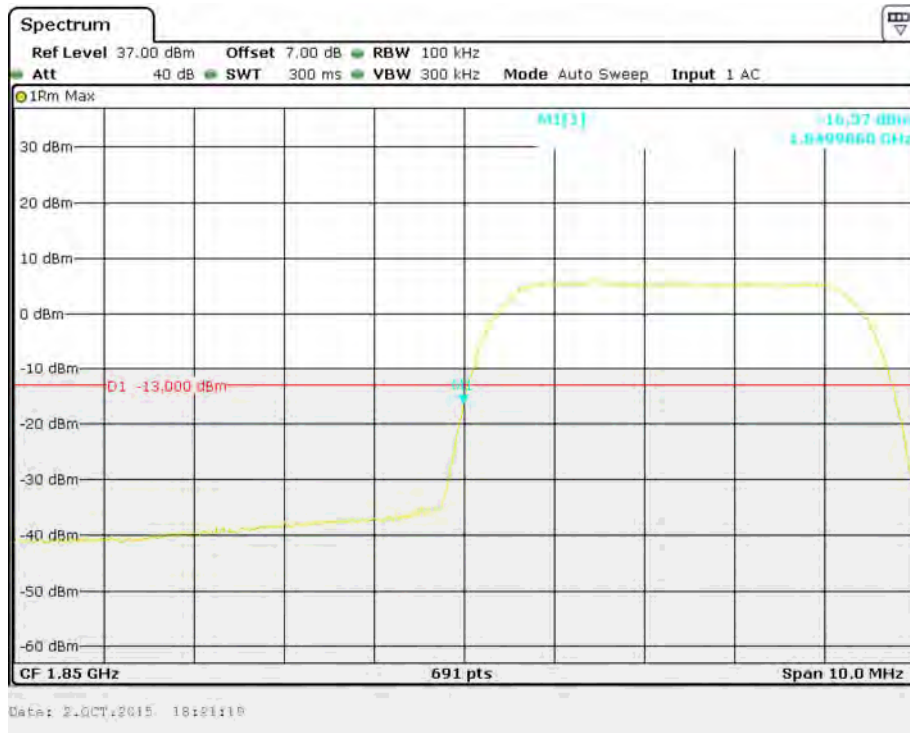
Date: 2.OCT.2015 18:44:27

### PCS Band, Right Band Edge for HSDPA (16QAM) Mode

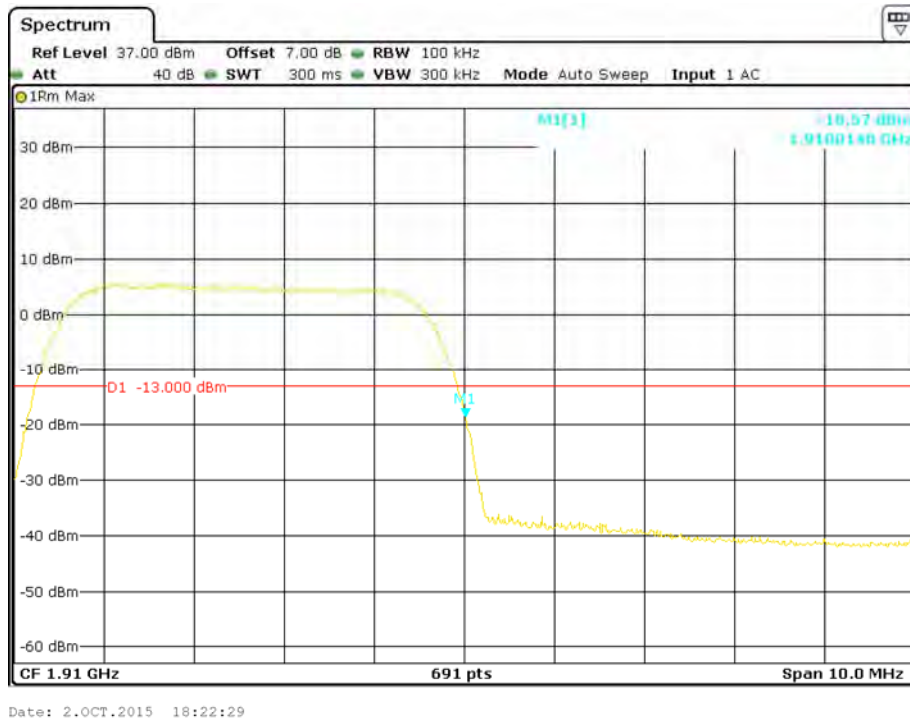


Date: 2.OCT.2015 18:43:21

### PCS Band, Left Band Edge for HSUPA (BPSK) Mode

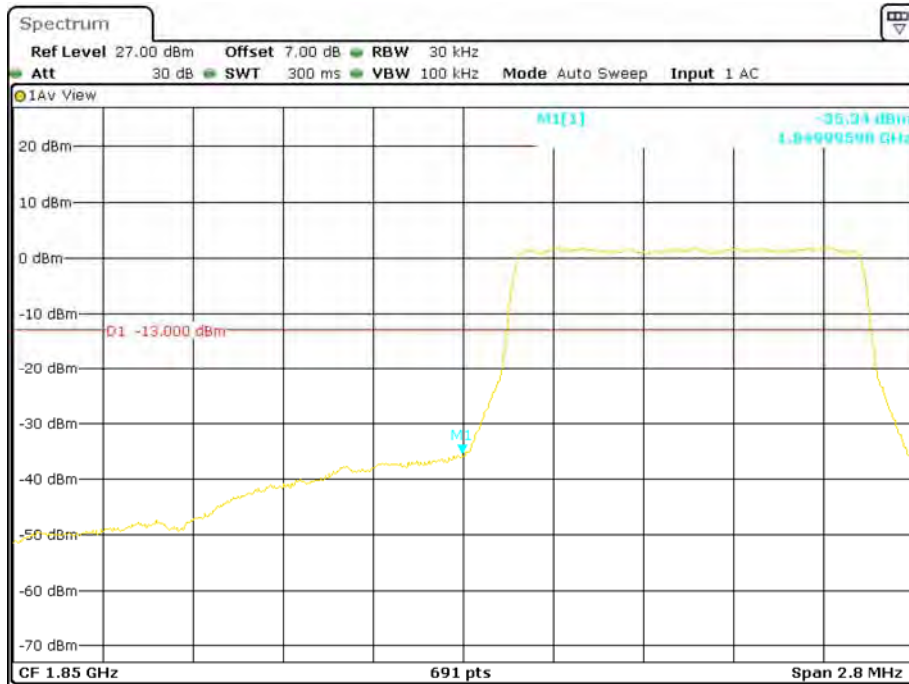


### PCS Band, Right Band Edge for HSUPA (BPSK) Mode



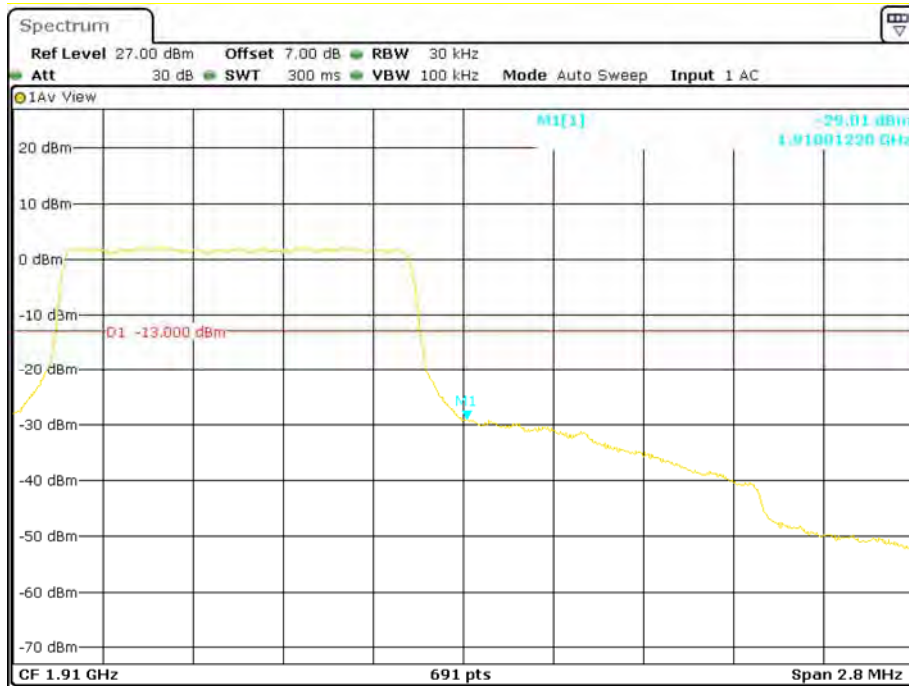
**Band 2:**

**QPSK (1.4 MHz, FULL RB) - Left Band Edge**



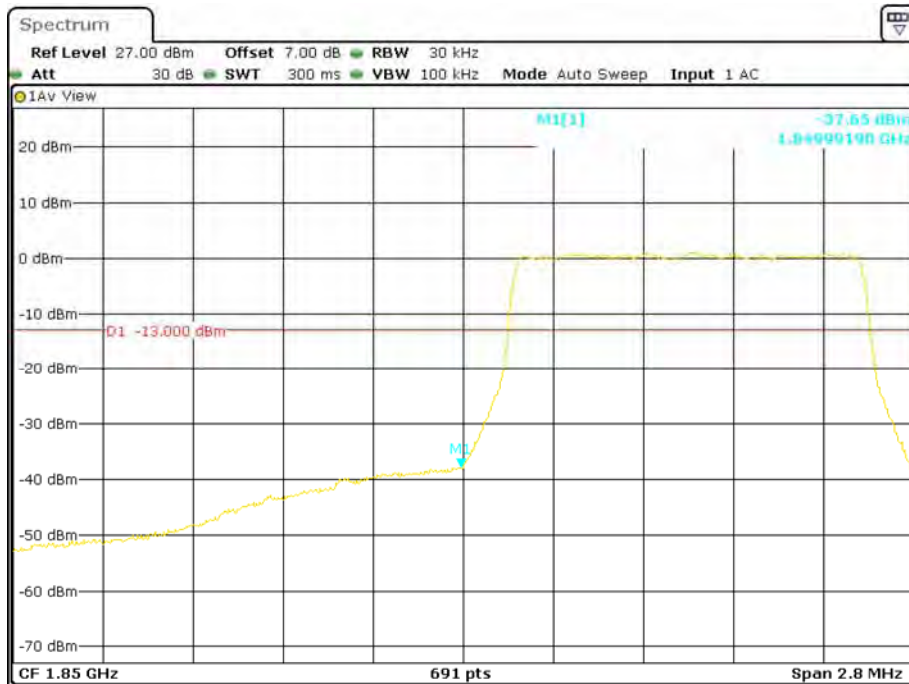
Date: 6.OCT.2015 17:20:53

**QPSK (1.4 MHz, FULL RB) - Right Band Edge**



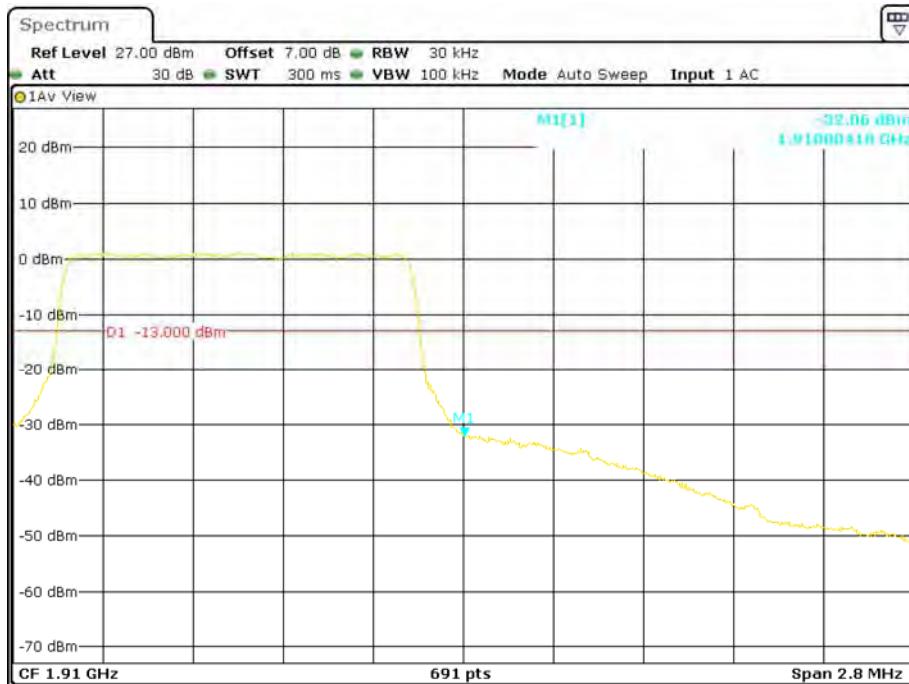
Date: 6.OCT.2015 17:25:15

### 16-QAM (1.4 MHz, FULL RB) - Left Band Edge



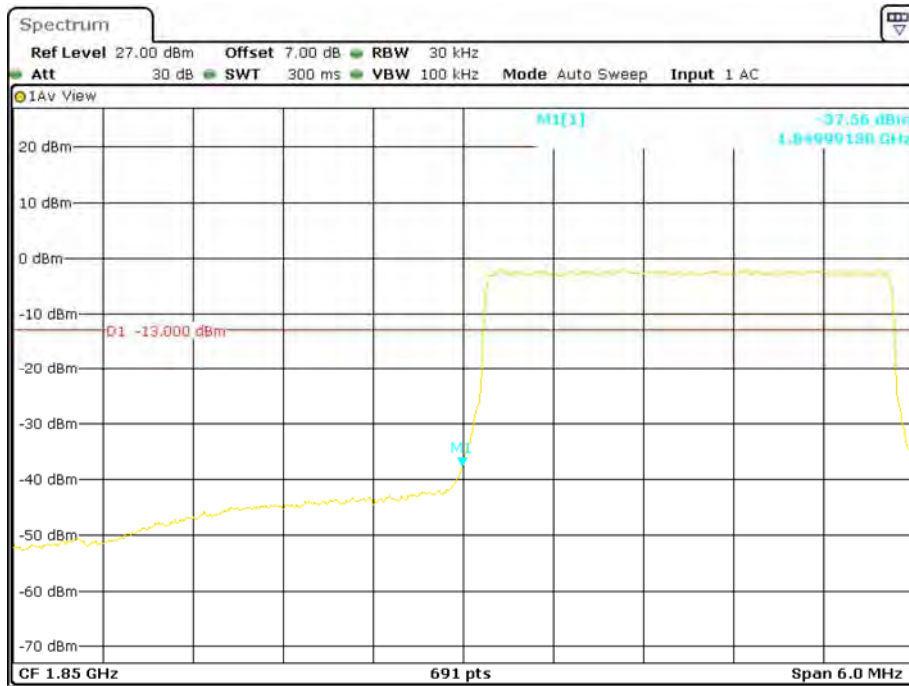
Date: 6.OCT.2015 17:19:36

### 16-QAM (1.4 MHz, FULL RB) - Right Band Edge



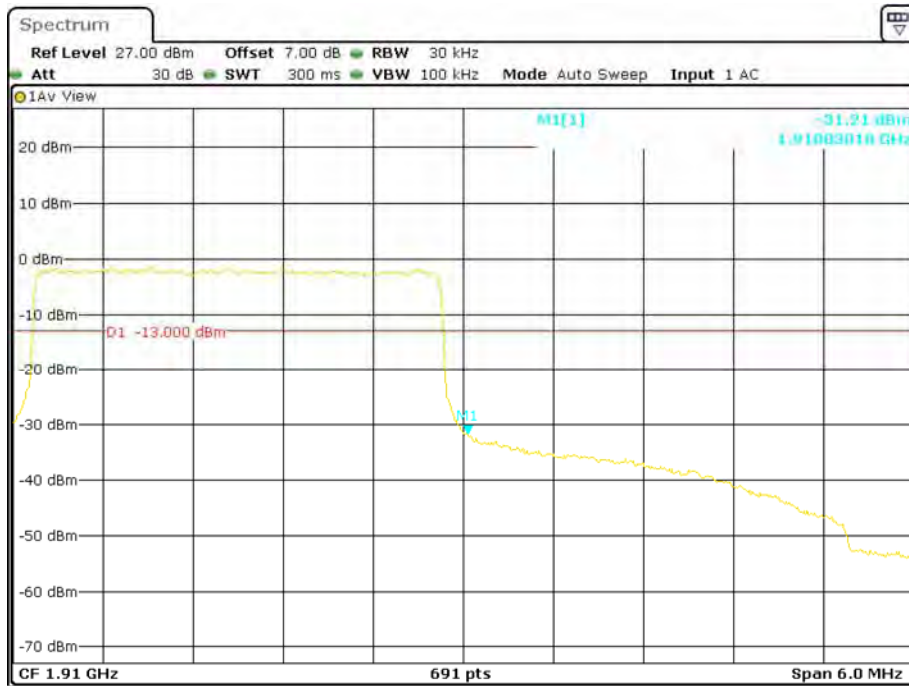
Date: 6.OCT.2015 17:25:52

### QPSK (3.0 MHz, FULL RB) - Left Band Edge



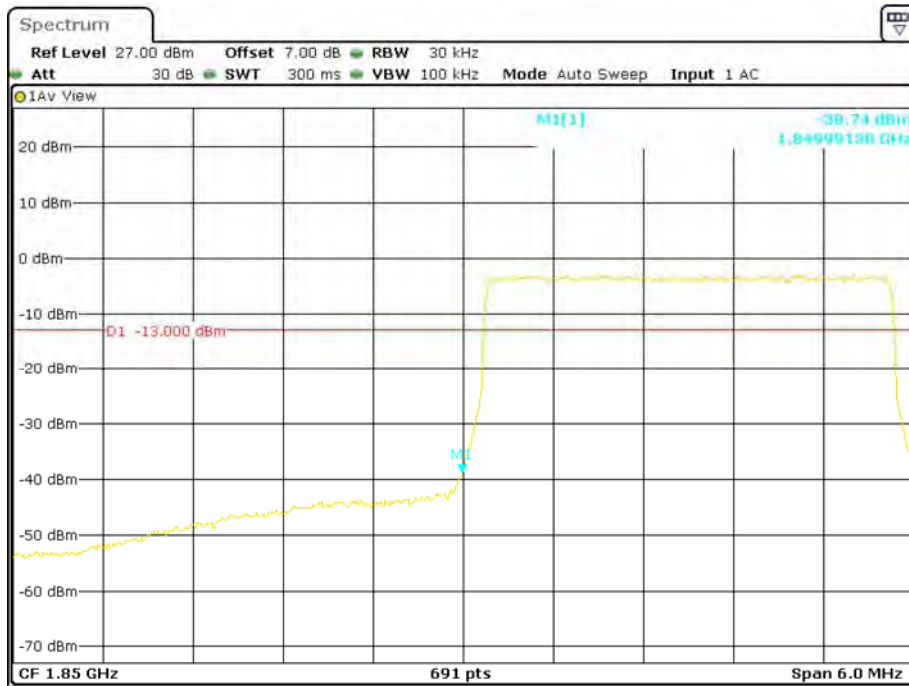
Date: 6.OCT.2015 17:32:17

### QPSK (3.0 MHz, FULL RB) - Right Band Edge



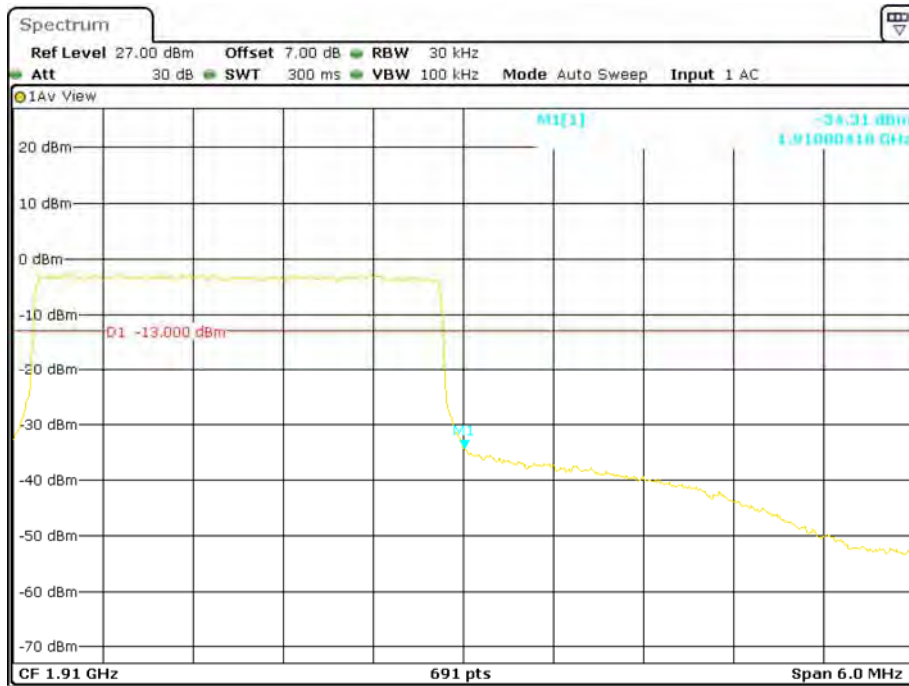
Date: 6.OCT.2015 17:26:54

### 16-QAM (3.0 MHz, FULL RB) - Left Band Edge



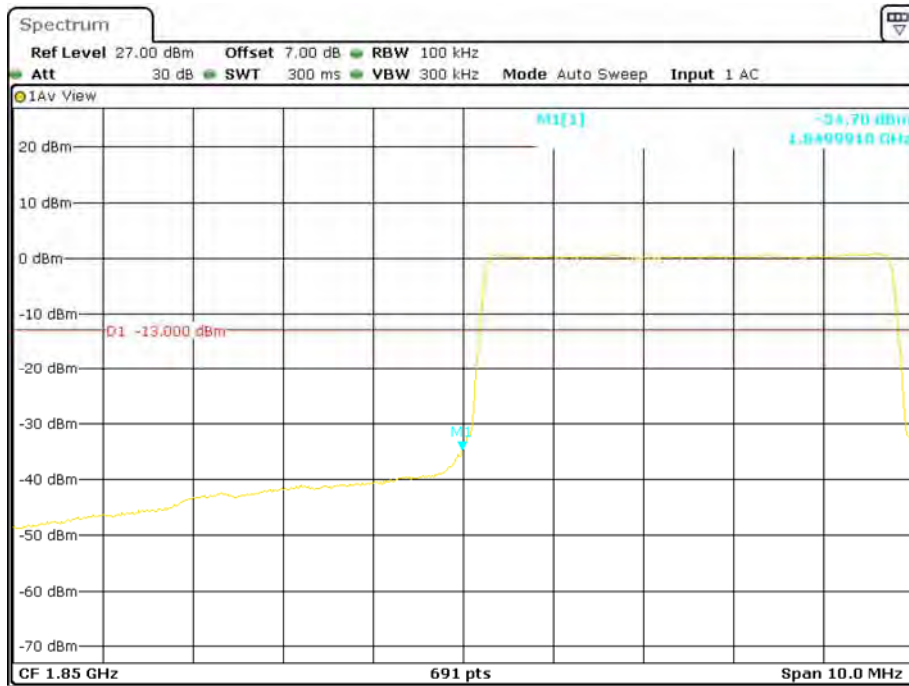
Date: 6.OCT.2015 17:31:40

### 16-QAM (3.0 MHz, FULL RB) - Right Band Edge



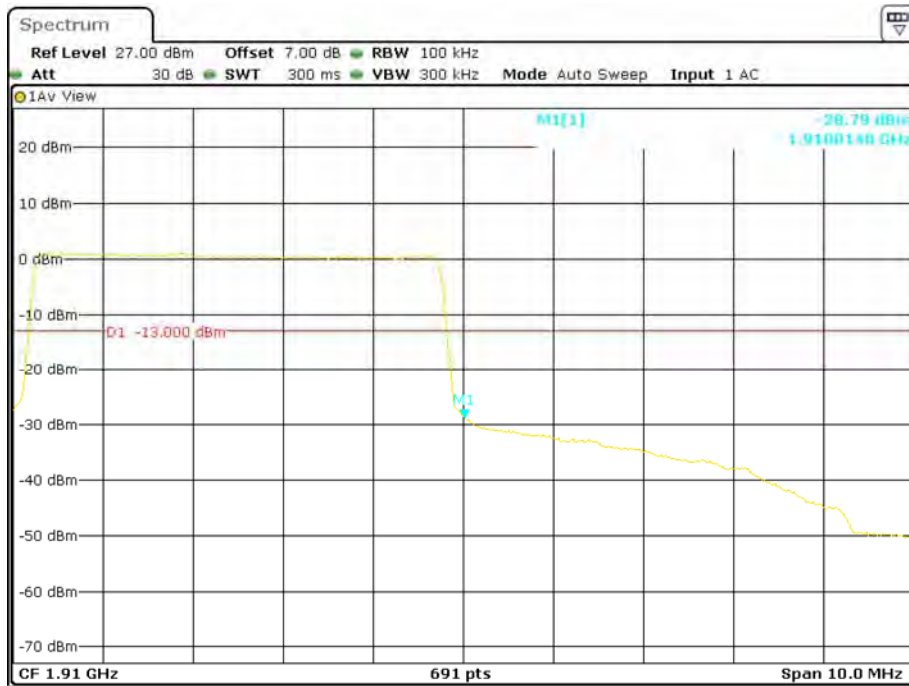
Date: 6.OCT.2015 17:27:41

### QPSK (5.0 MHz, FULL RB) - Left Band Edge



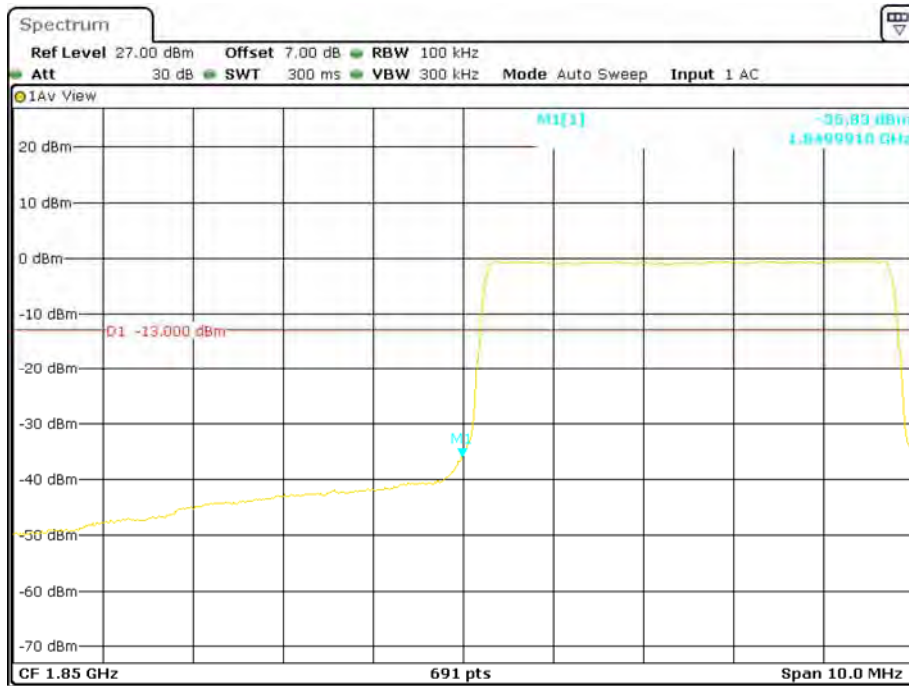
Date: 6.OCT.2015 17:34:12

### QPSK (5.0 MHz, FULL RB) - Right Band Edge



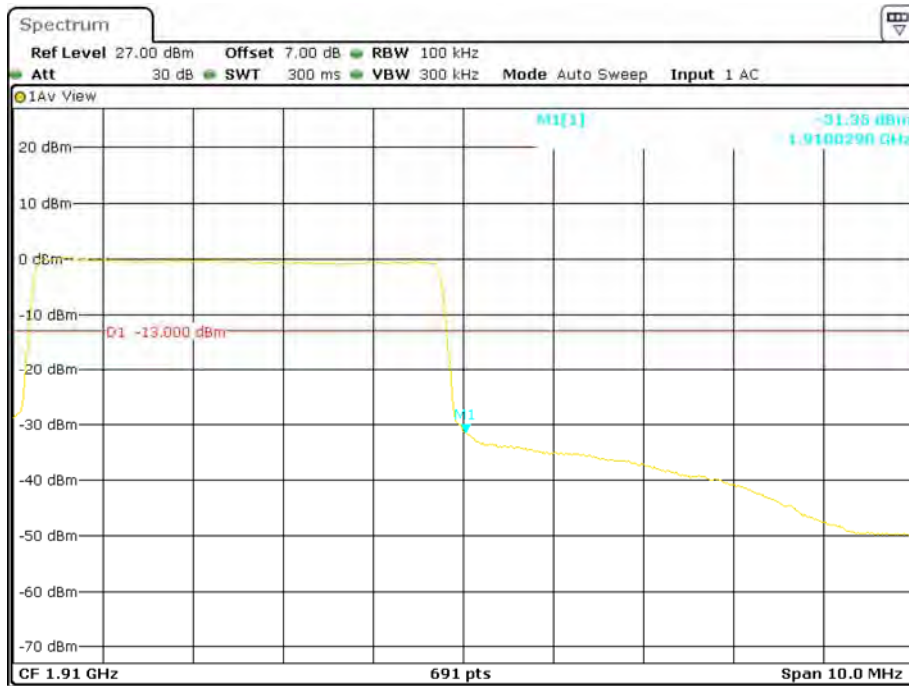
Date: 6.OCT.2015 17:37:41

### 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



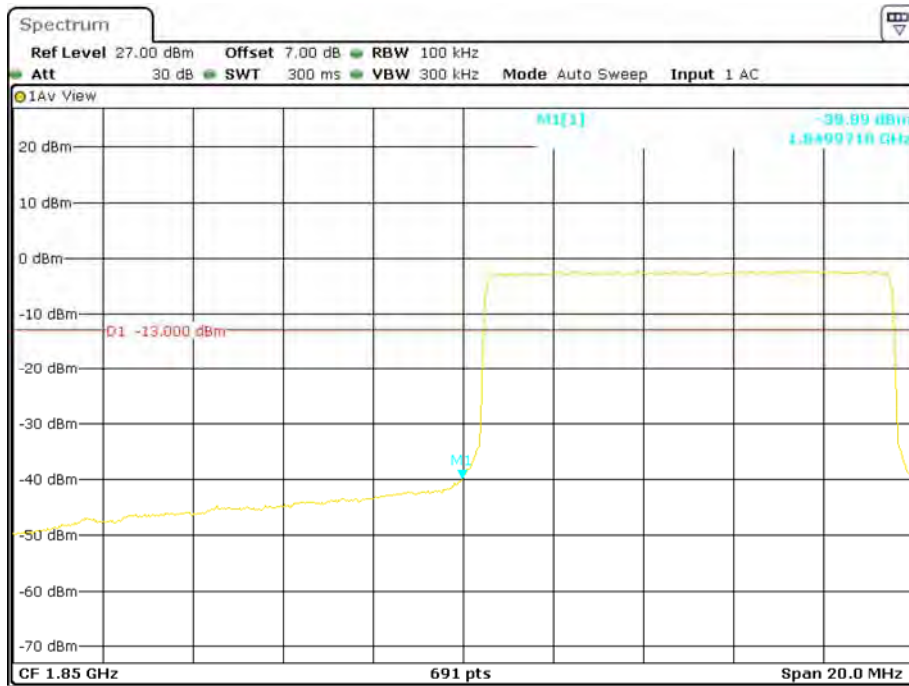
Date: 6.OCT.2015 17:33:35

### 16-QAM (5.0 MHz, FULL RB) - Right Band Edge



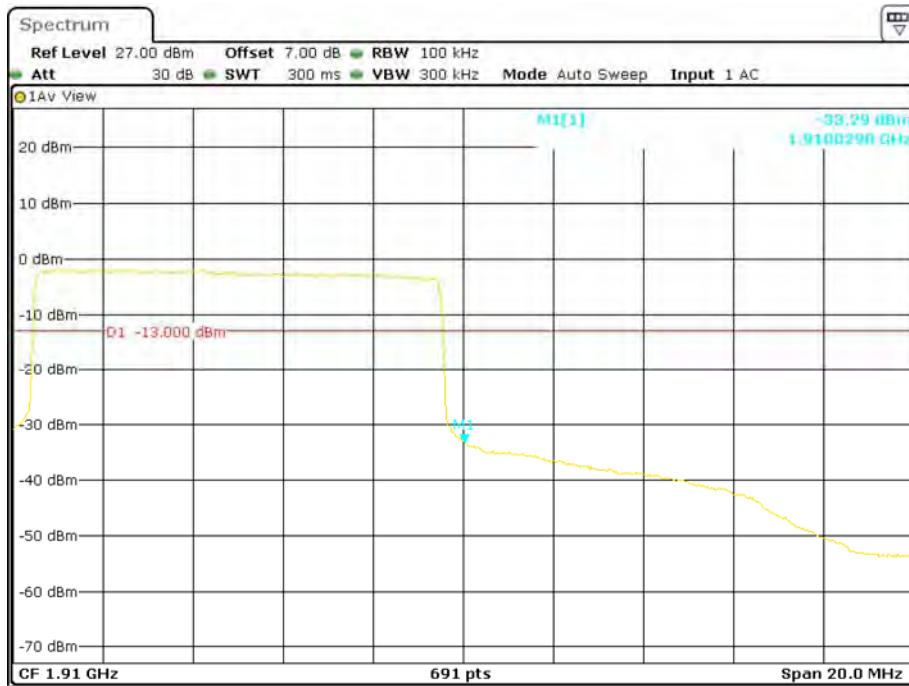
Date: 6.OCT.2015 17:38:23

### QPSK (10.0 MHz, FULL RB) - Left Band Edge



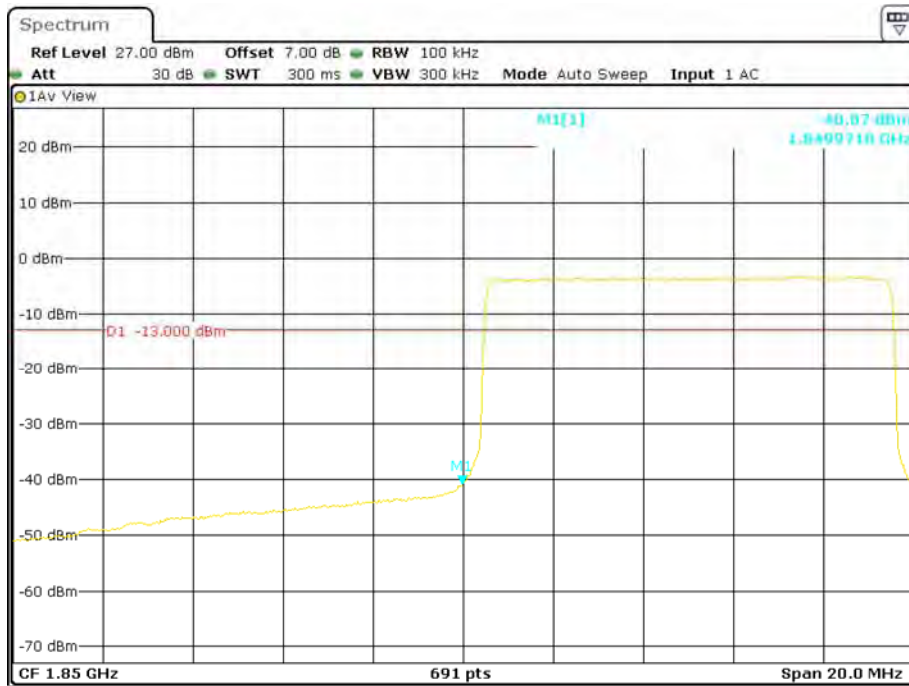
Date: 6.OCT.2015 17:44:02

### QPSK (10.0 MHz, FULL RB) - Right Band Edge



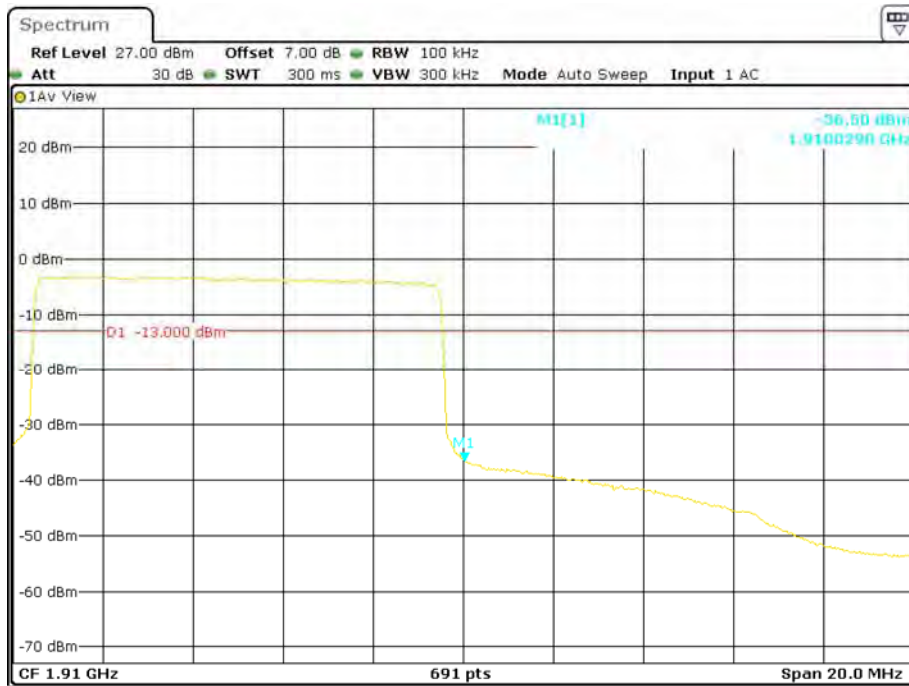
Date: 6.OCT.2015 17:42:00

### 16-QAM (10.0 MHz, FULL RB) - Left Band Edge



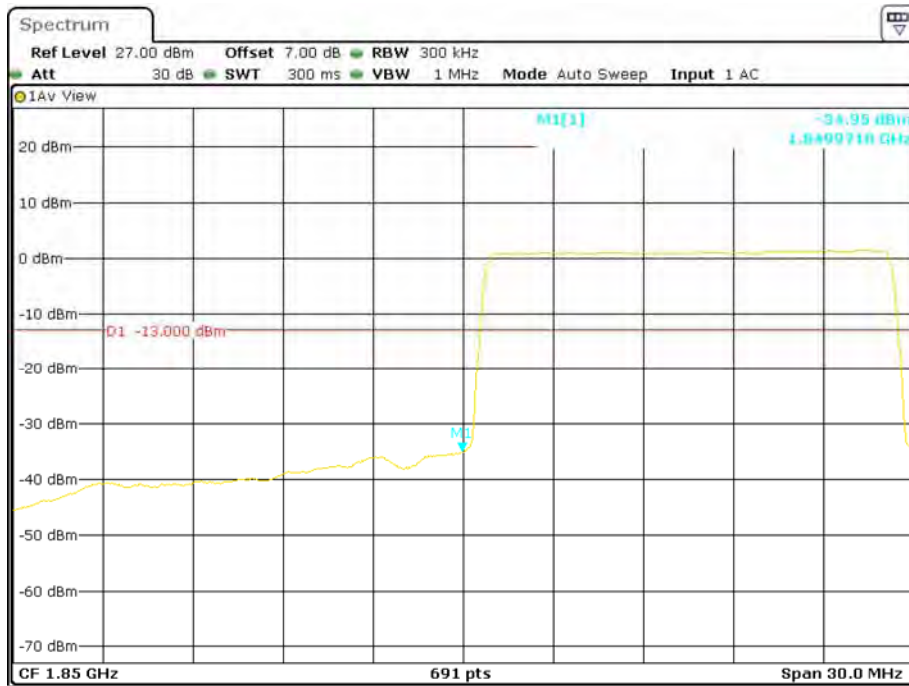
Date: 6.OCT.2015 17:43:22

### 16-QAM (10.0 MHz, FULL RB) - Right Band Edge



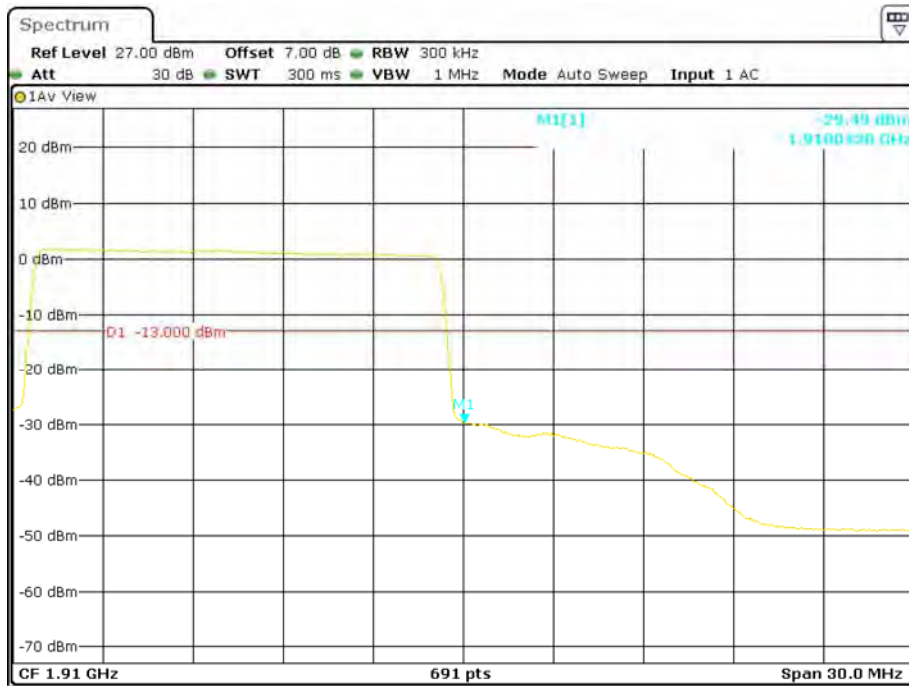
Date: 6.OCT.2015 17:42:37

### QPSK (15.0 MHz, FULL RB) - Left Band Edge



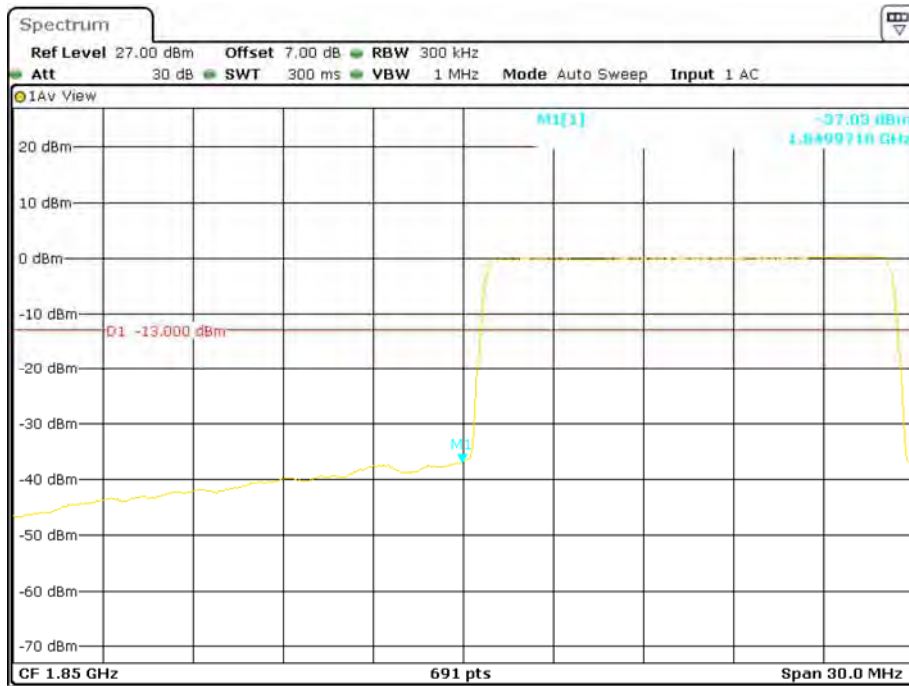
Date: 6.OCT.2015 17:46:58

### QPSK (15.0 MHz, FULL RB) - Right Band Edge



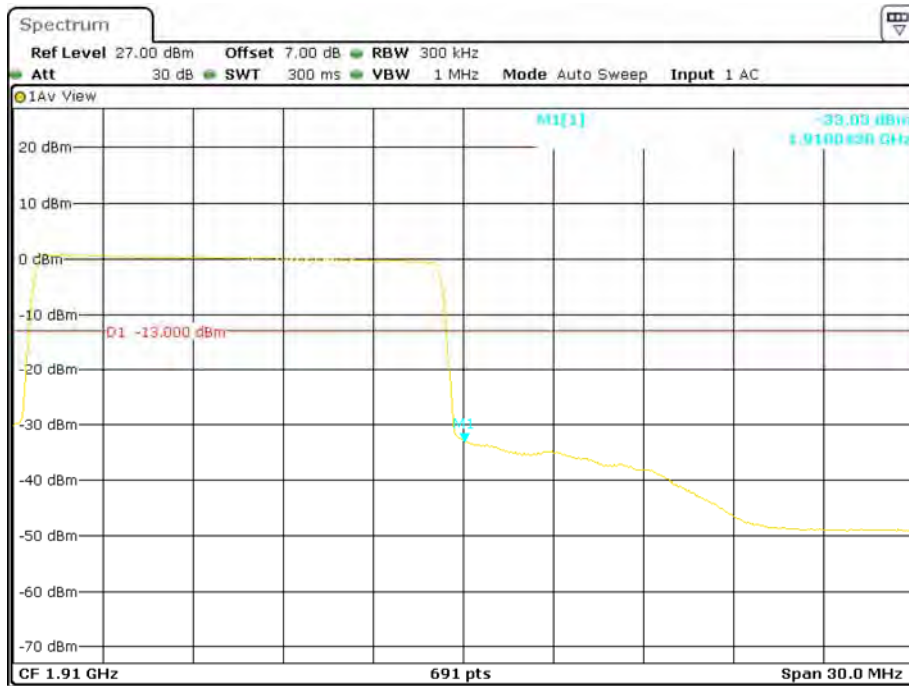
Date: 6.OCT.2015 17:51:42

### 16-QAM (15.0 MHz, FULL RB) - Left Band Edge



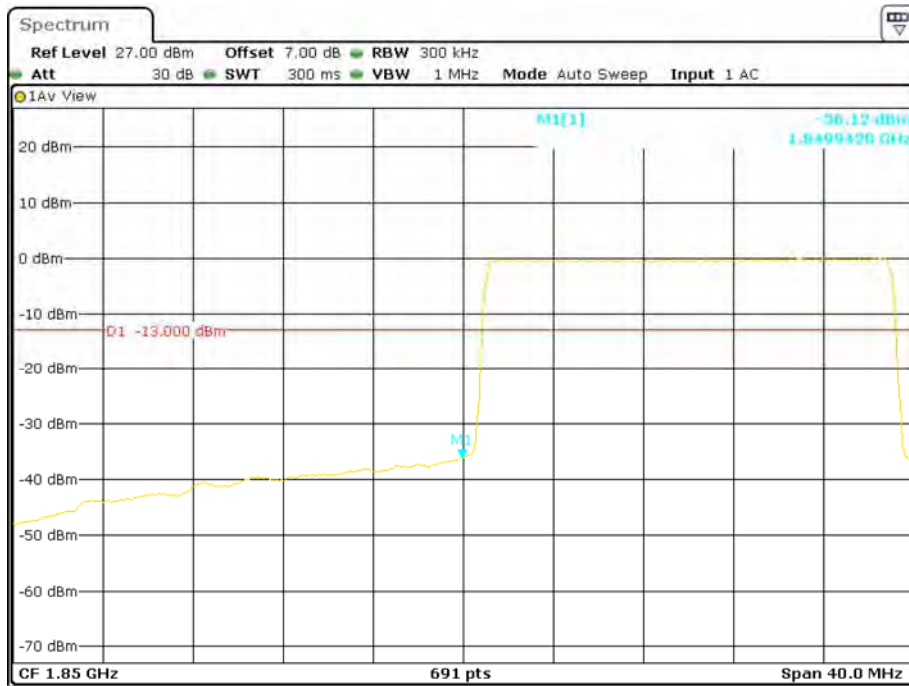
Date: 6.OCT.2015 17:47:39

### 16-QAM (15.0 MHz, FULL RB) - Right Band Edge



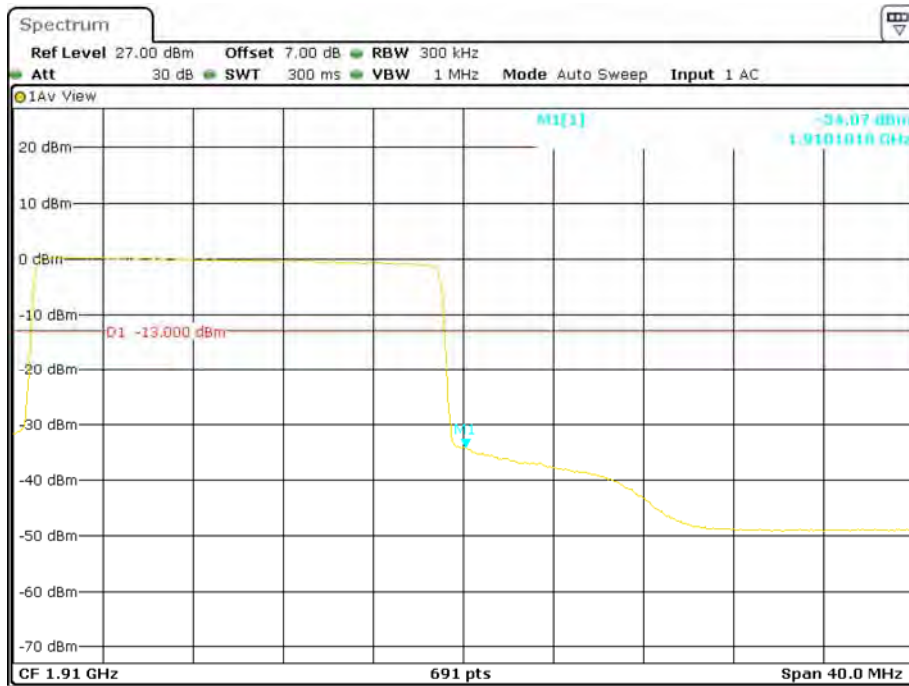
Date: 6.OCT.2015 17:51:04

### QPSK (20.0 MHz, FULL RB) - Left Band Edge



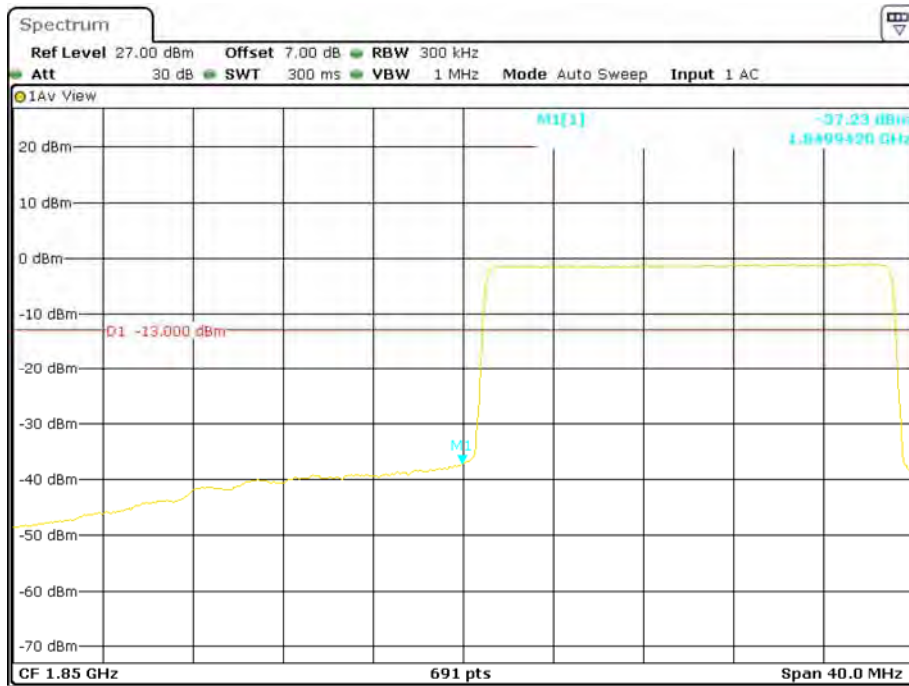
Date: 6.OCT.2015 17:56:39

### QPSK (20.0 MHz, FULL RB) - Right Band Edge



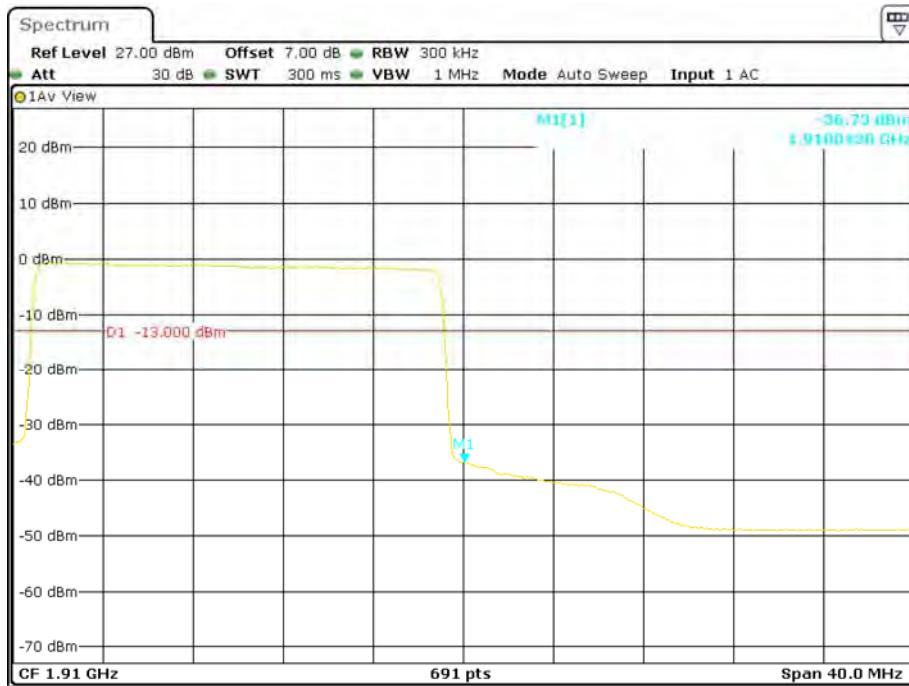
Date: 6.OCT.2015 17:54:23

### 16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 6.OCT.2015 17:56:06

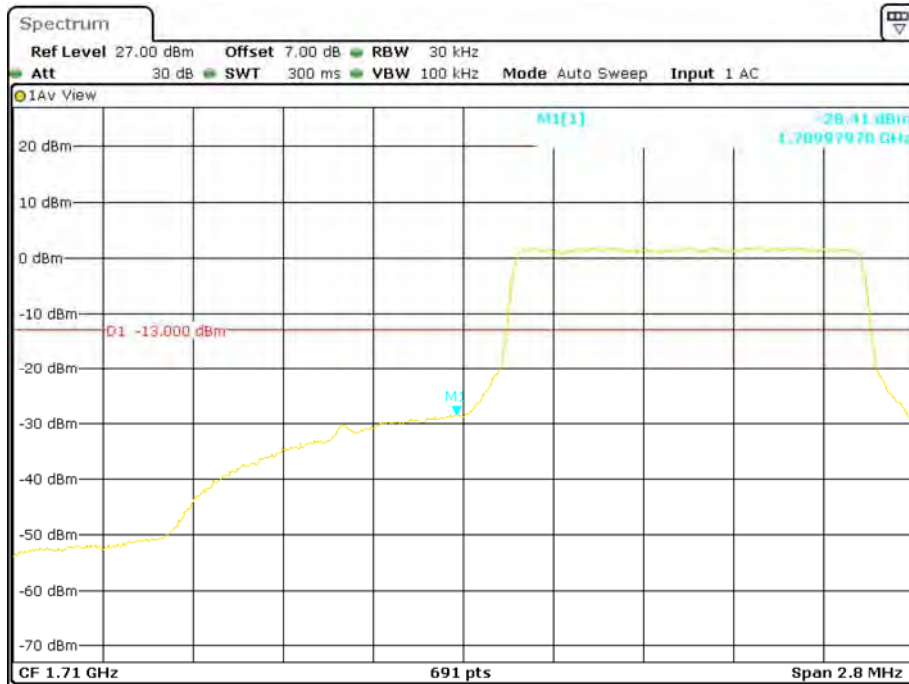
### 16-QAM (20.0 MHz, FULL RB) - Right Band Edge



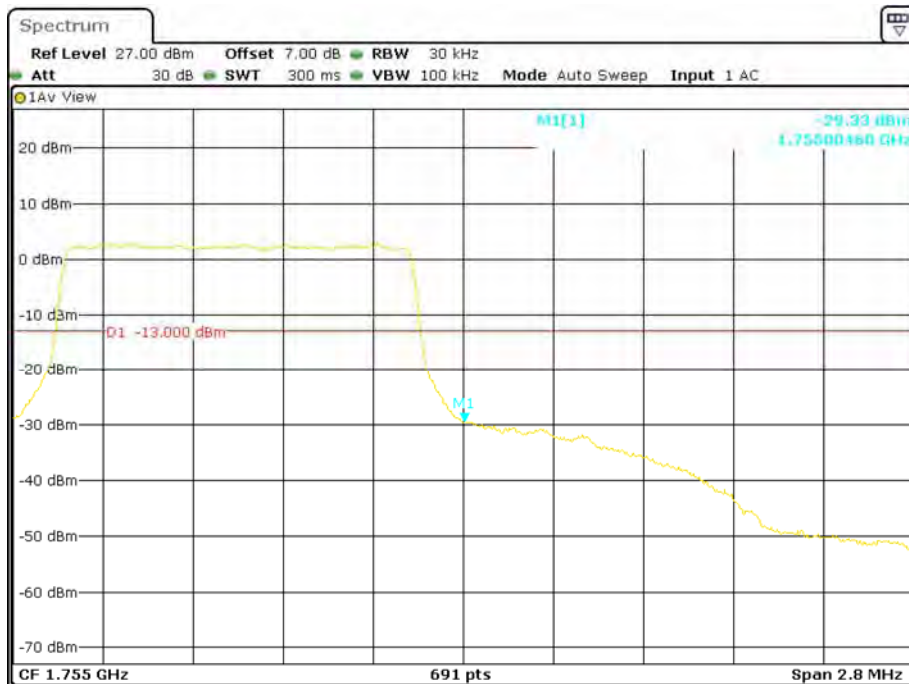
Date: 6.OCT.2015 17:55:04

**Band 4:**

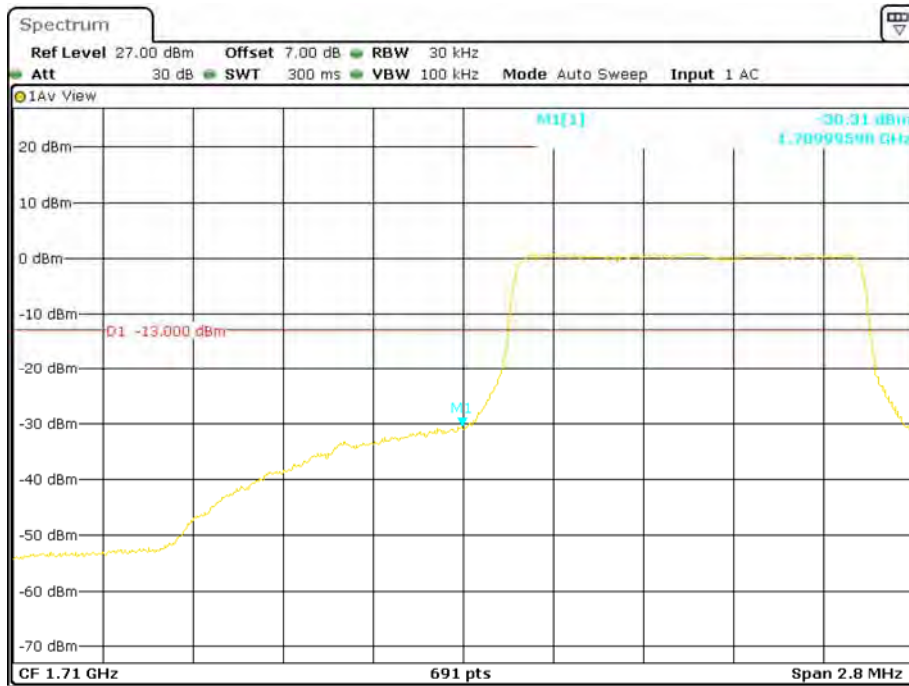
**QPSK (1.4 MHz, FULL RB) - Left Band Edge**



**QPSK (1.4 MHz, FULL RB) - Right Band Edge**

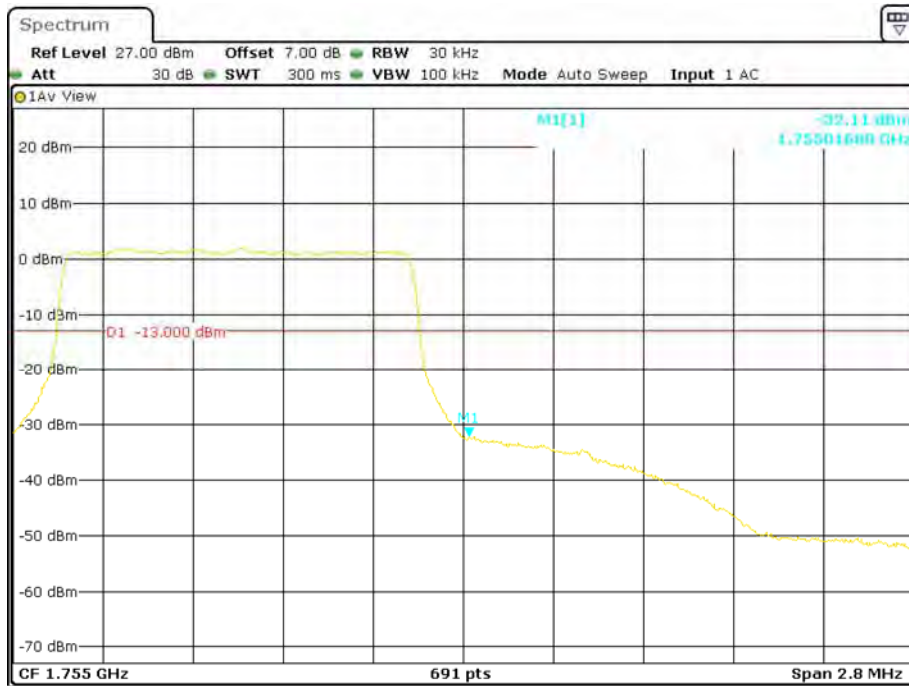


### 16-QAM (1.4 MHz, FULL RB) - Left Band Edge



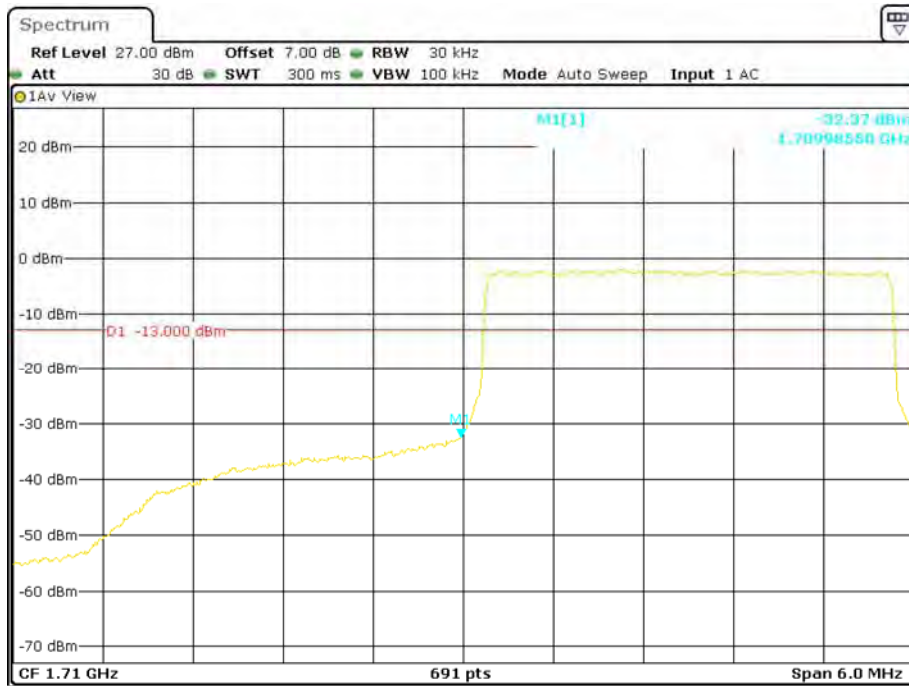
Date: 6.OCT.2015 16:47:17

### 16-QAM (1.4 MHz, FULL RB) - Right Band Edge



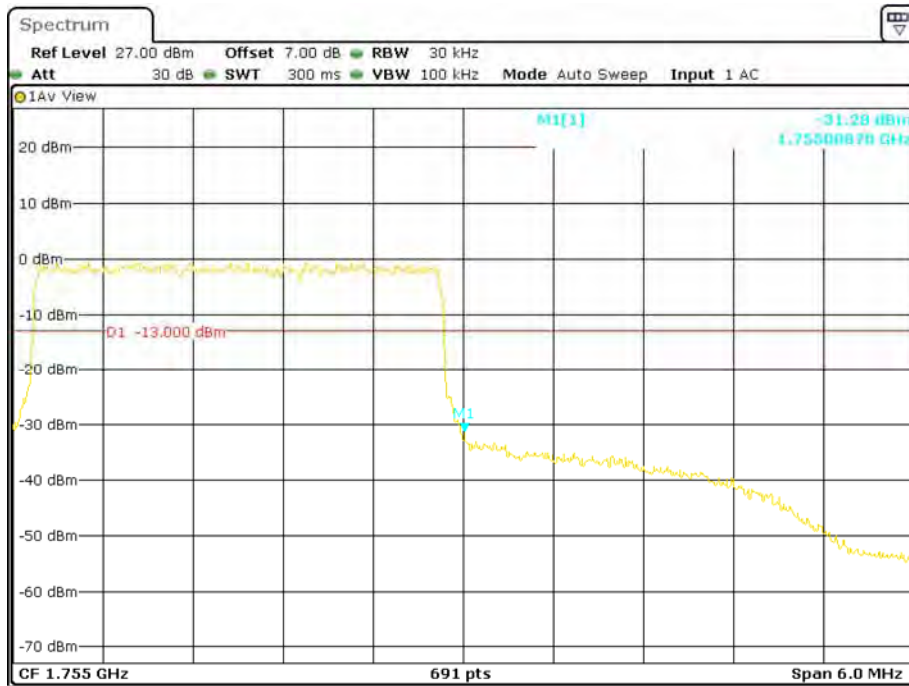
Date: 6.OCT.2015 16:40:07

### QPSK (3.0 MHz, FULL RB) - Left Band Edge



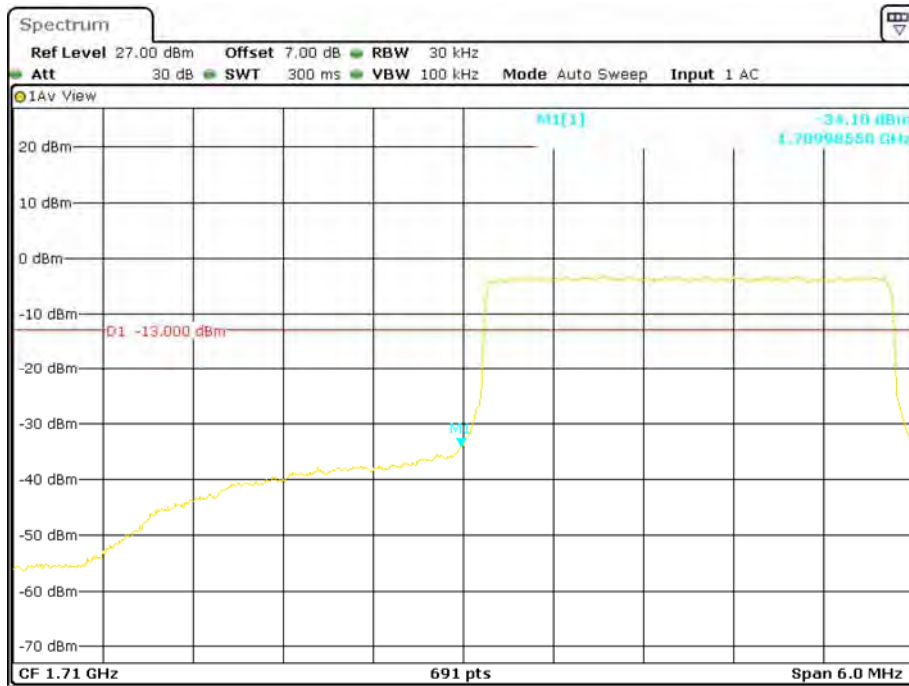
Date: 6.OCT.2015 16:31:44

### QPSK (3.0 MHz, FULL RB) - Right Band Edge



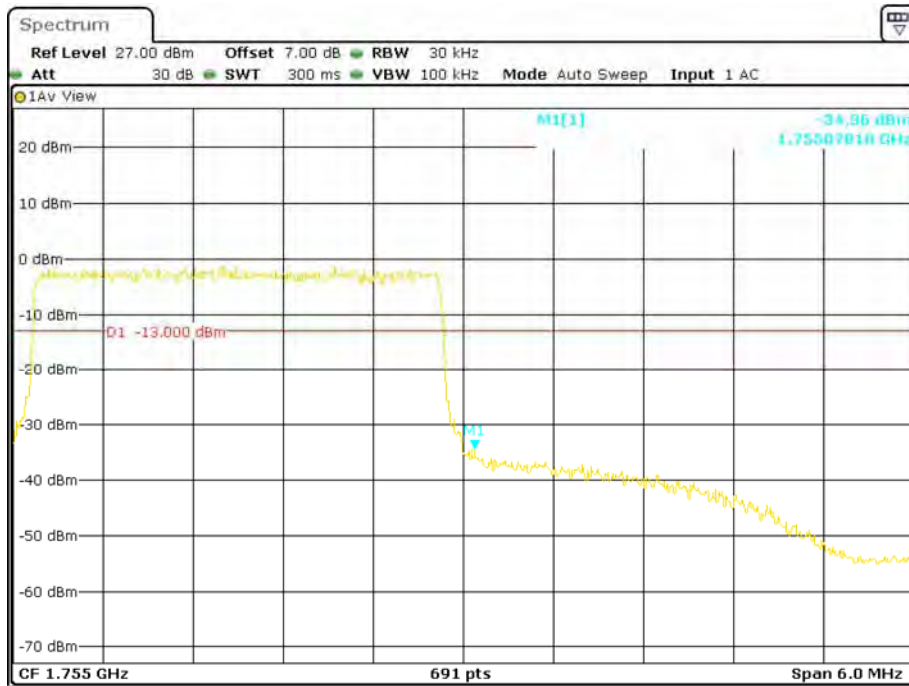
Date: 6.OCT.2015 16:37:51

### 16-QAM (3.0 MHz, FULL RB) - Left Band Edge



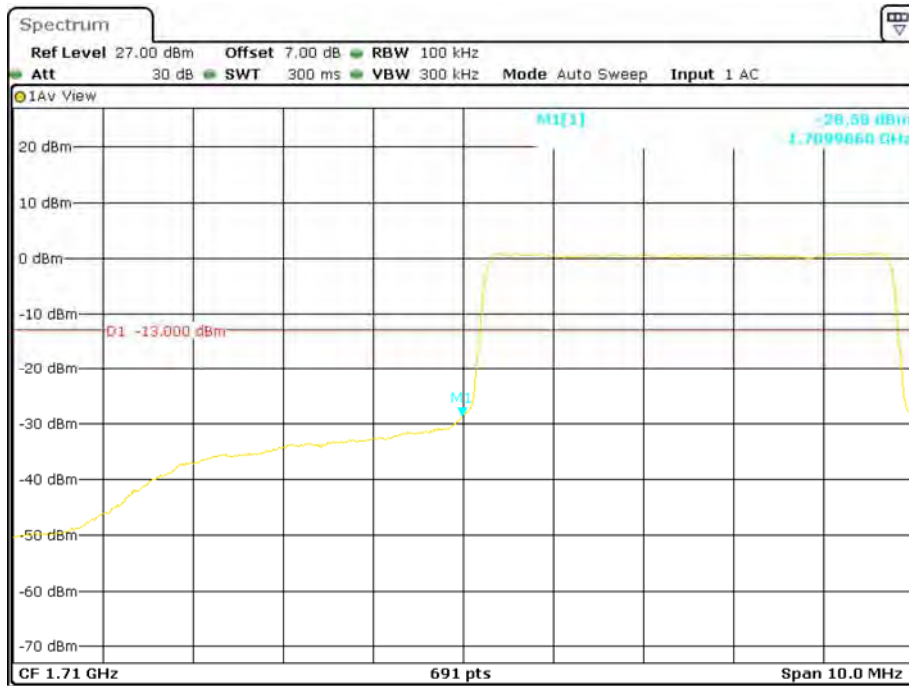
Date: 6.OCT.2015 16:33:13

### 16-QAM (3.0 MHz, FULL RB) - Right Band Edge



Date: 6.OCT.2015 16:37:08

### QPSK (5.0 MHz, FULL RB) - Left Band Edge



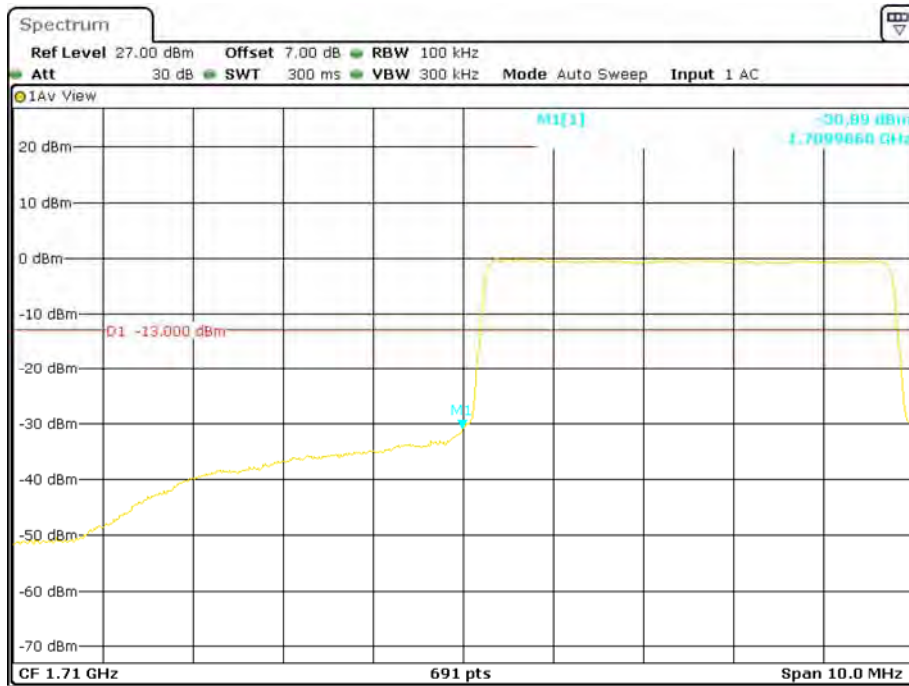
Date: 6.OCT.2015 16:29:19

### QPSK (5.0 MHz, FULL RB) - Right Band Edge



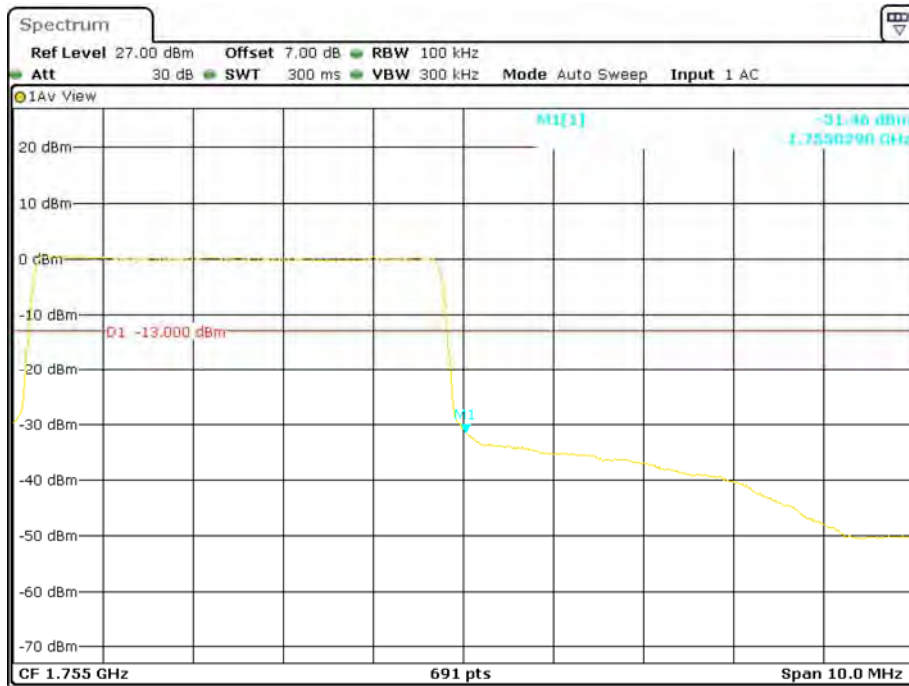
Date: 6.OCT.2015 16:24:16

### 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



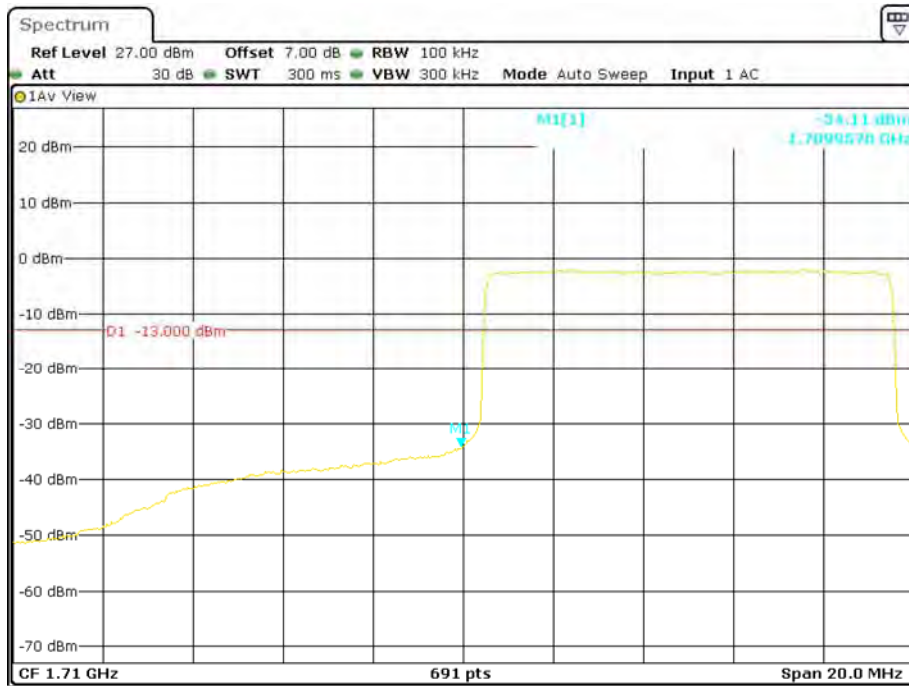
Date: 6.OCT.2015 16:29:52

### 16-QAM (5.0 MHz, FULL RB) - Right Band Edge



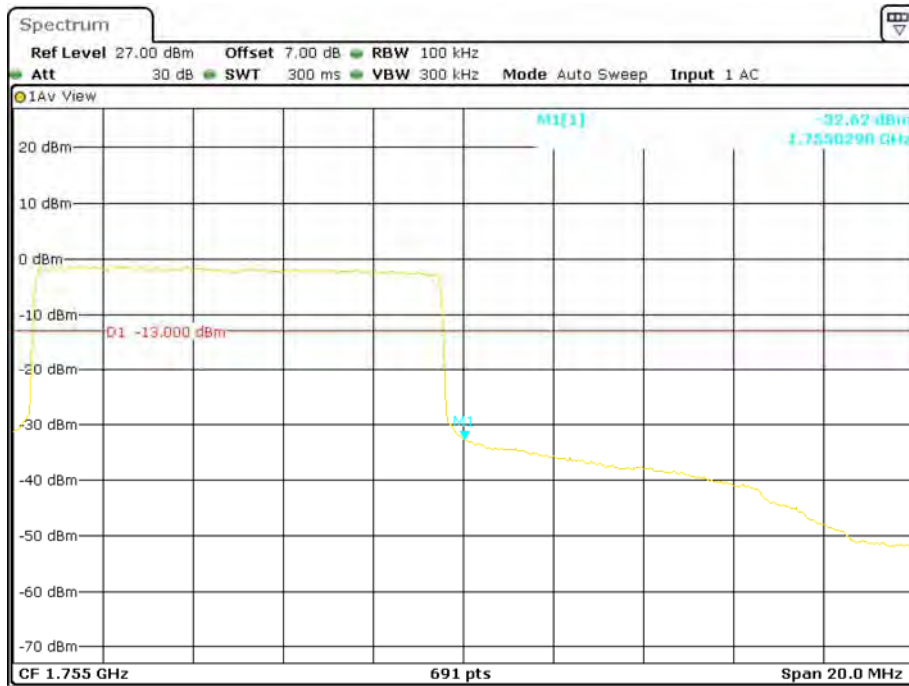
Date: 6.OCT.2015 16:23:37

### QPSK (10.0 MHz, FULL RB) - Left Band Edge



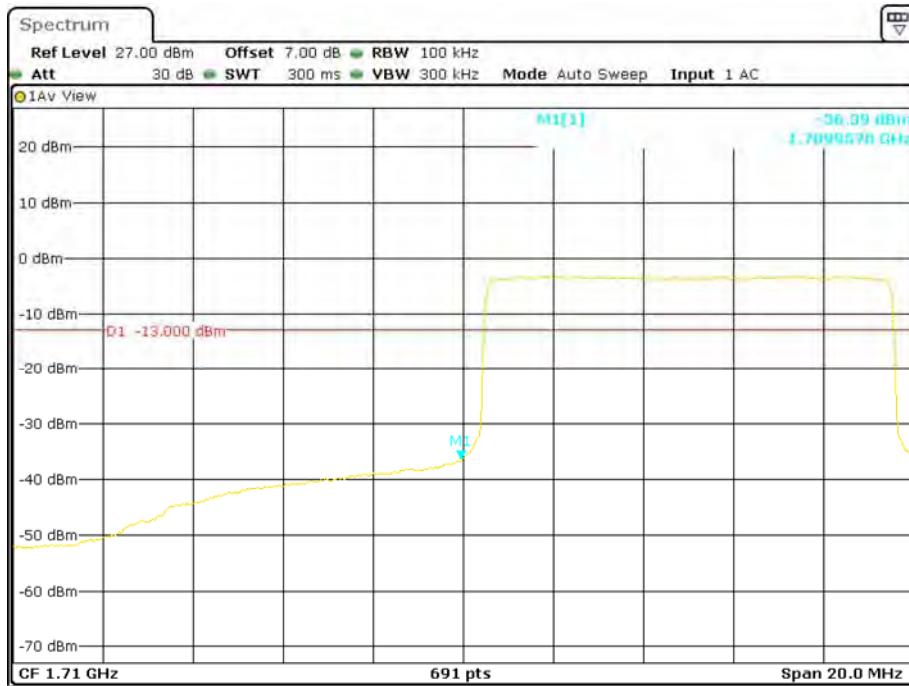
Date: 6.OCT.2015 16:15:09

### QPSK (10.0 MHz, FULL RB) - Right Band Edge



Date: 6.OCT.2015 16:18:13

### 16-QAM (10.0 MHz, FULL RB) - Left Band Edge



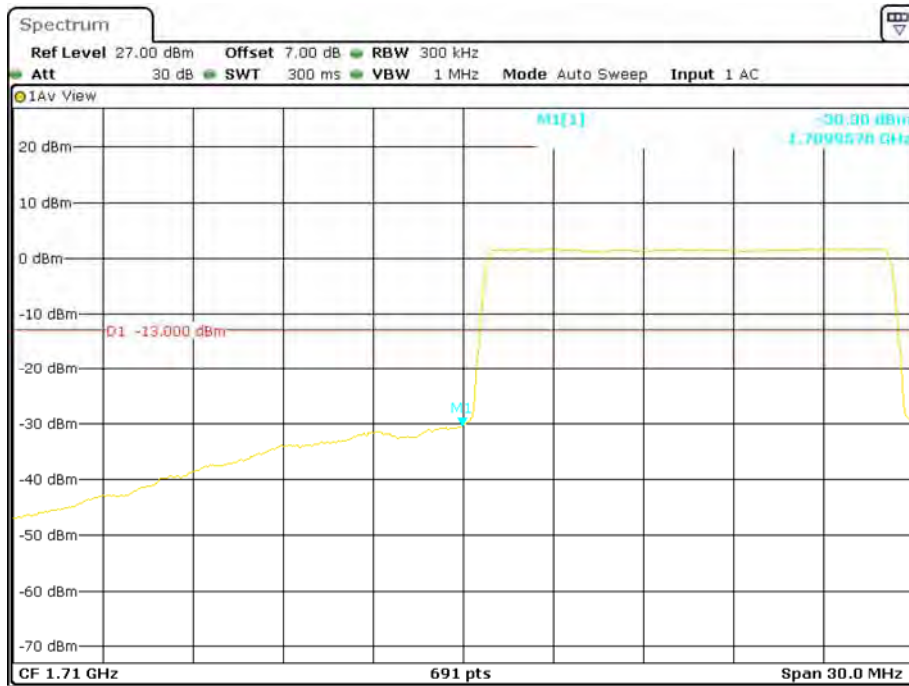
Date: 6.OCT.2015 16:15:56

### 16-QAM (10.0 MHz, FULL RB) - Right Band Edge



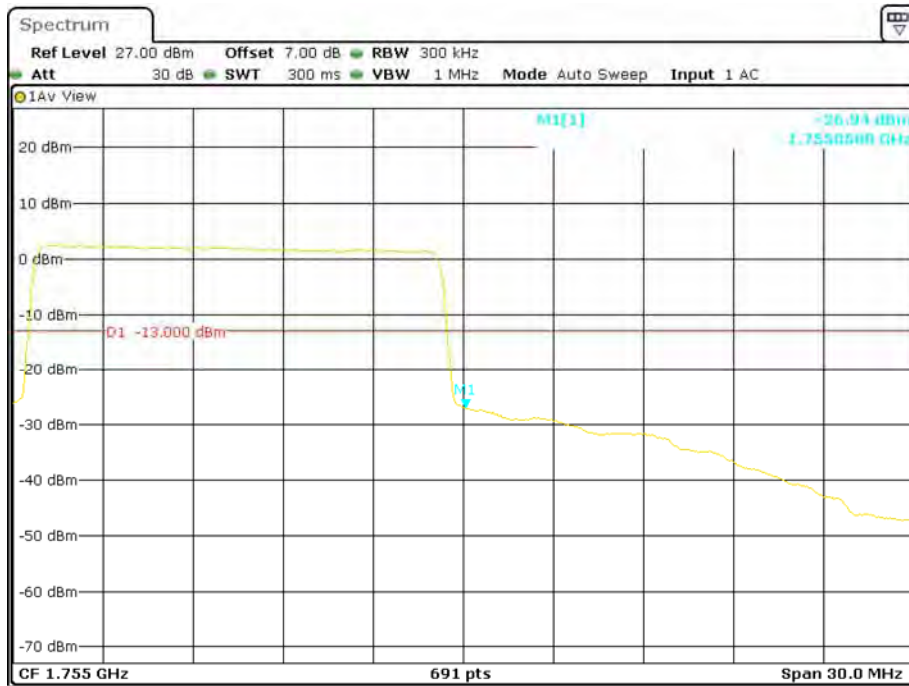
Date: 6.OCT.2015 16:16:49

### QPSK (15.0 MHz, FULL RB) - Left Band Edge



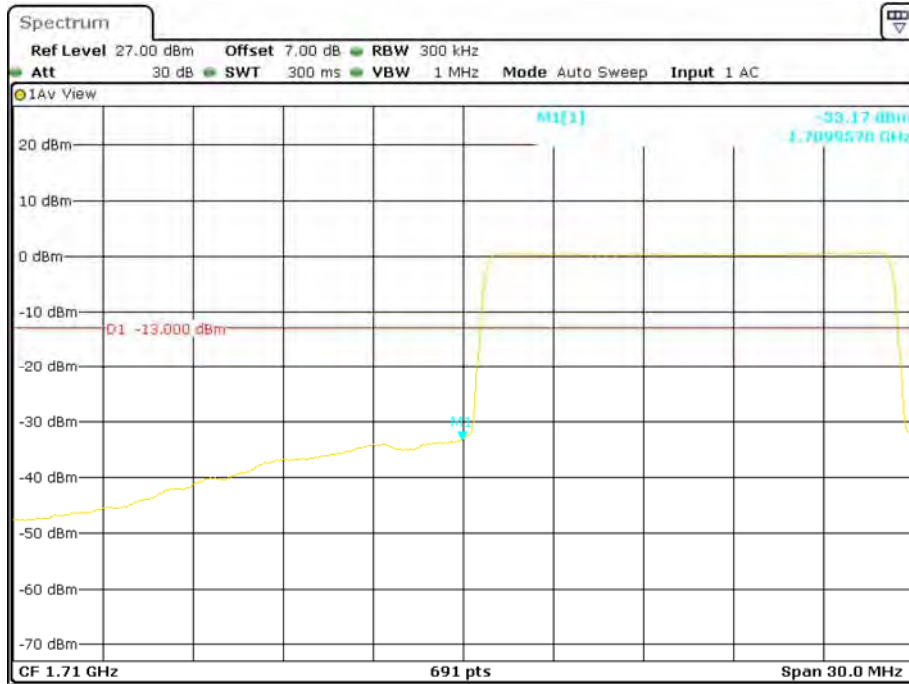
Date: 6.OCT.2015 16:11:36

### QPSK (15.0 MHz, FULL RB) - Right Band Edge



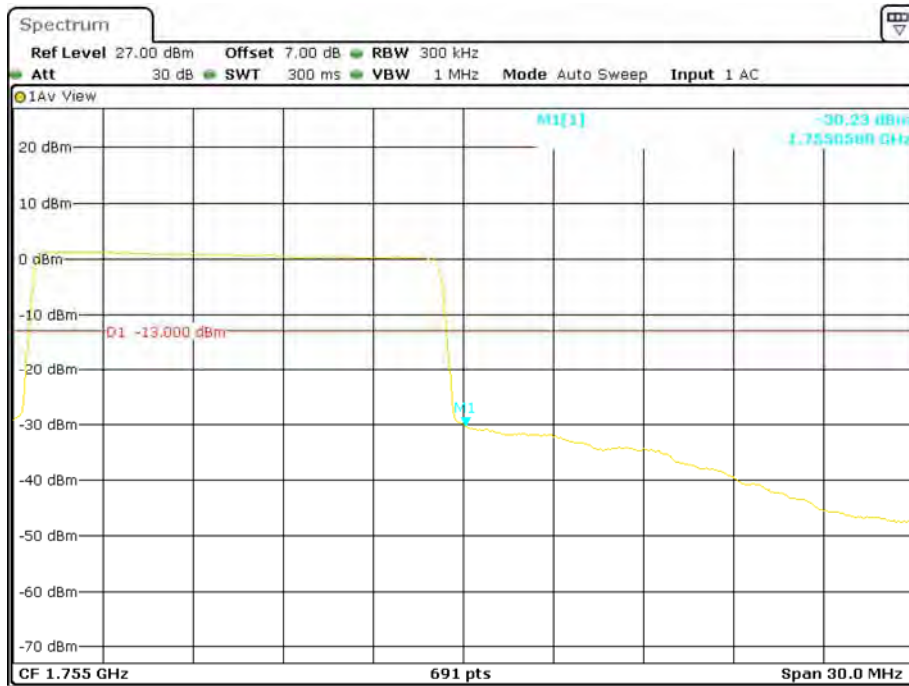
Date: 6.OCT.2015 16:02:22

### 16-QAM (15.0 MHz, FULL RB) - Left Band Edge



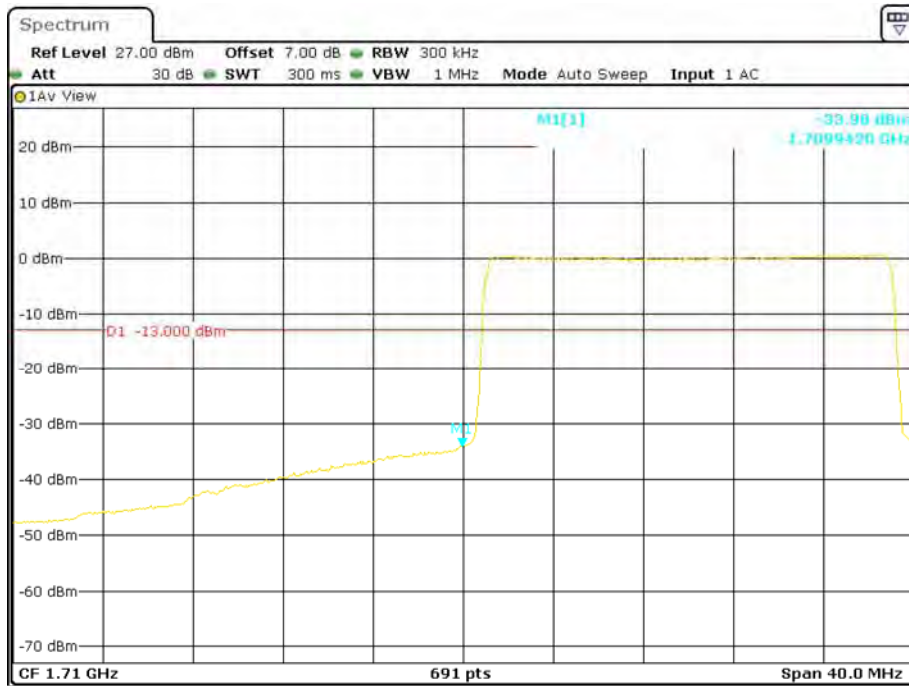
Date: 6.OCT.2015 16:11:01

### 16-QAM (15.0 MHz, FULL RB) - Right Band Edge



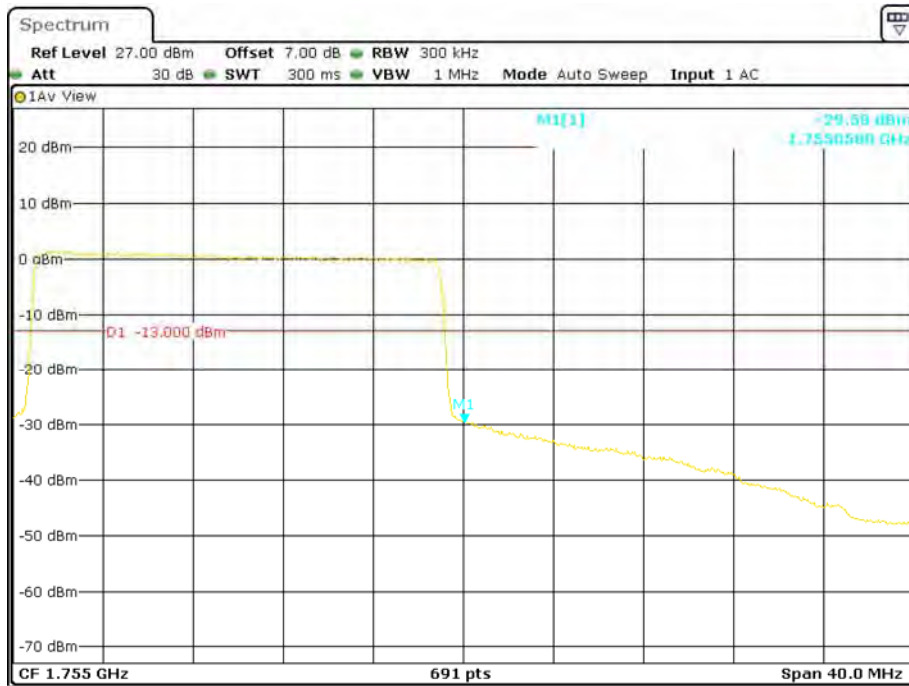
Date: 6.OCT.2015 16:03:14

### QPSK (20.0 MHz, FULL RB) - Left Band Edge



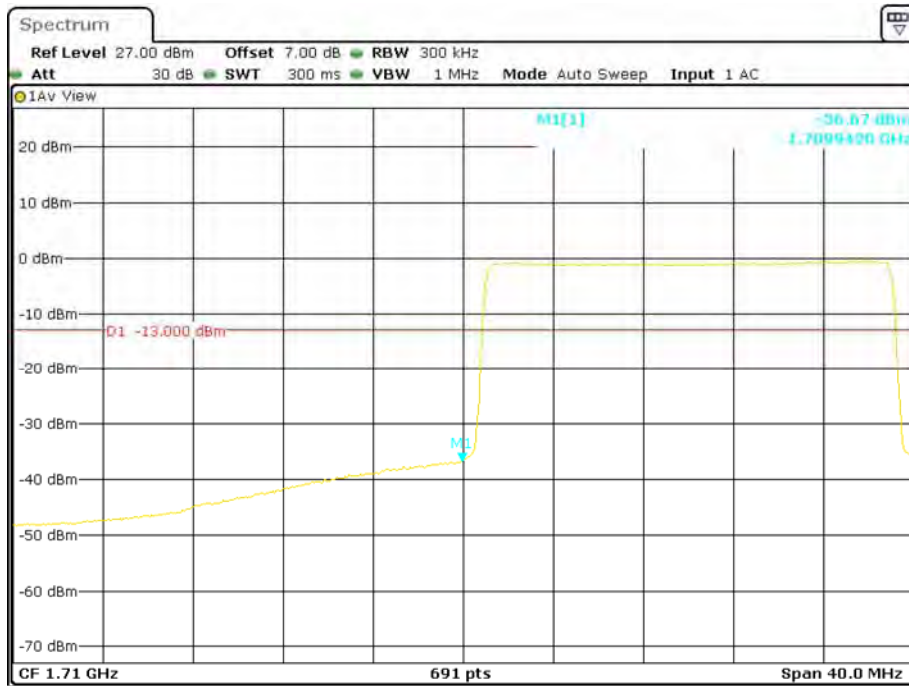
Date: 6.OCT.2015 15:38:23

### QPSK (20.0 MHz, FULL RB) - Right Band Edge



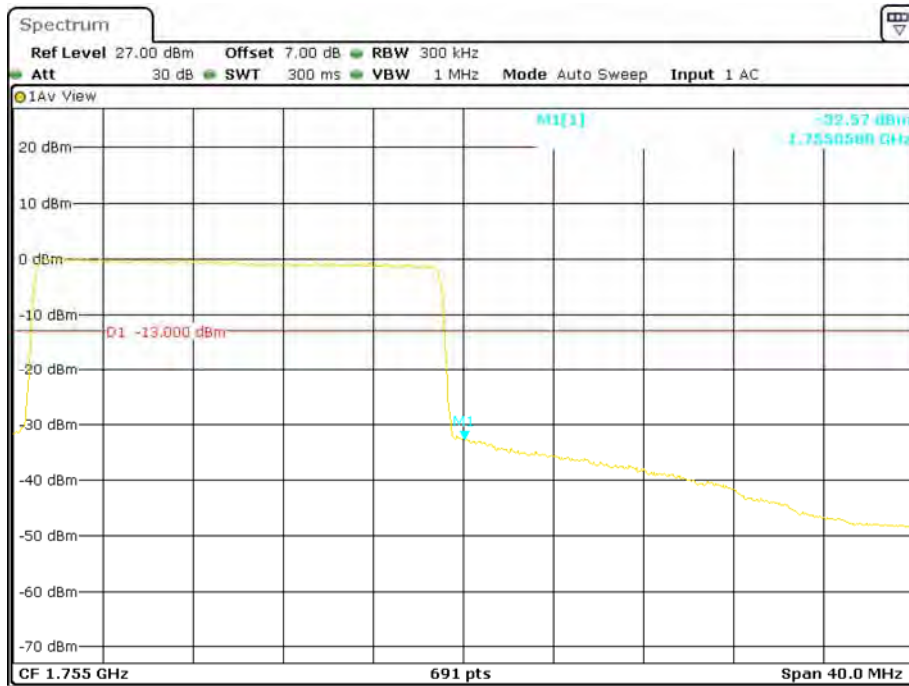
Date: 6.OCT.2015 15:40:43

### 16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 6.OCT.2015 15:39:01

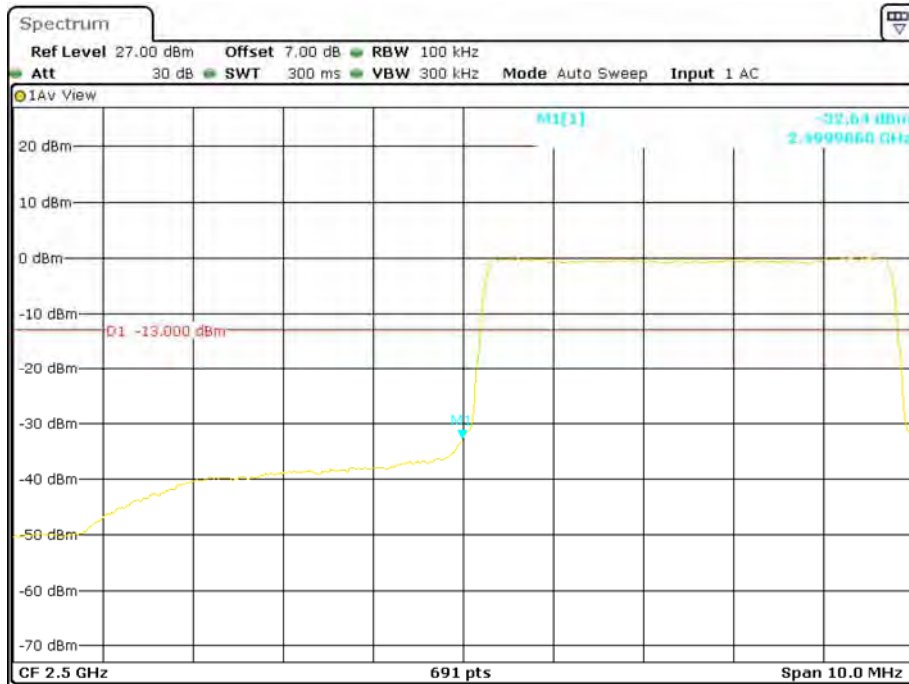
### 16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 6.OCT.2015 15:40:13

**Band 7:**

**QPSK (5.0 MHz, FULL RB) - Left Band Edge**



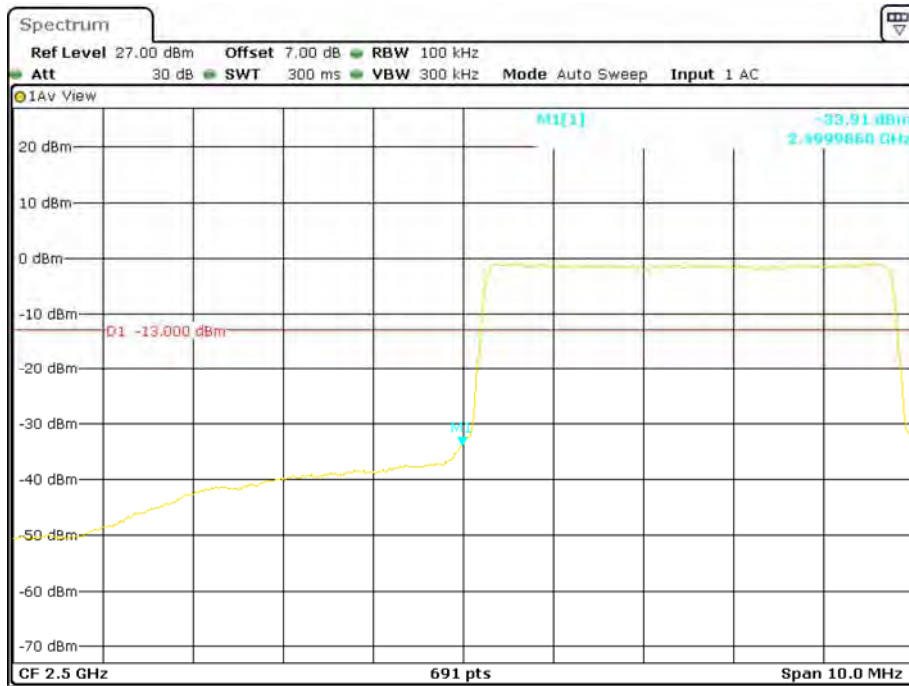
Date: 6.OCT.2015 14:55:44

**QPSK (5.0 MHz, FULL RB) - Right Band Edge**



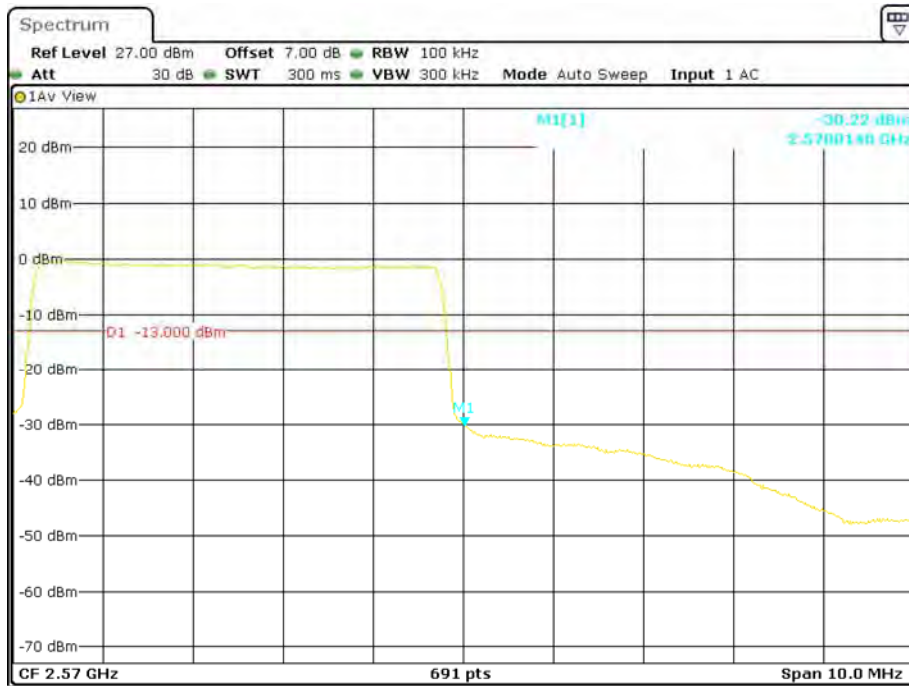
Date: 6.OCT.2015 14:51:04

### 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



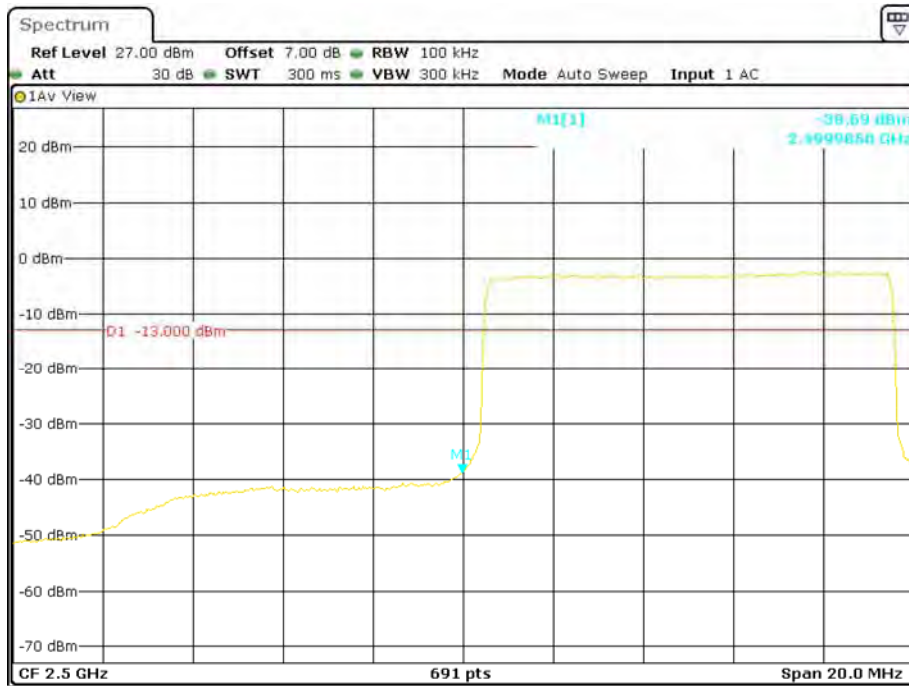
Date: 6.OCT.2015 14:56:15

### 16-QAM (5.0 MHz, FULL RB) - Right Band Edge



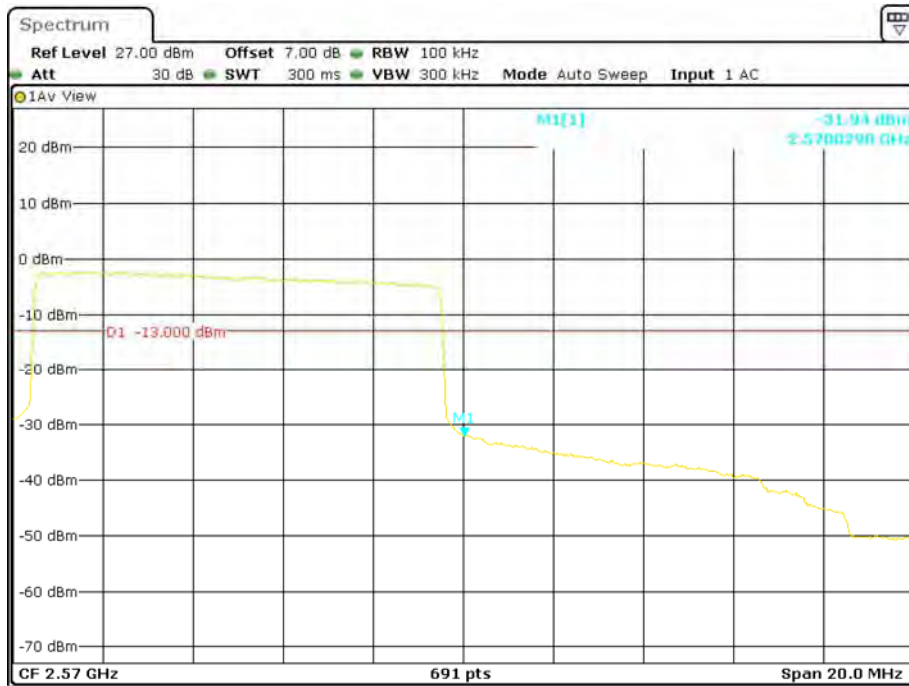
Date: 6.OCT.2015 14:48:19

### QPSK (10.0 MHz, FULL RB) - Left Band Edge



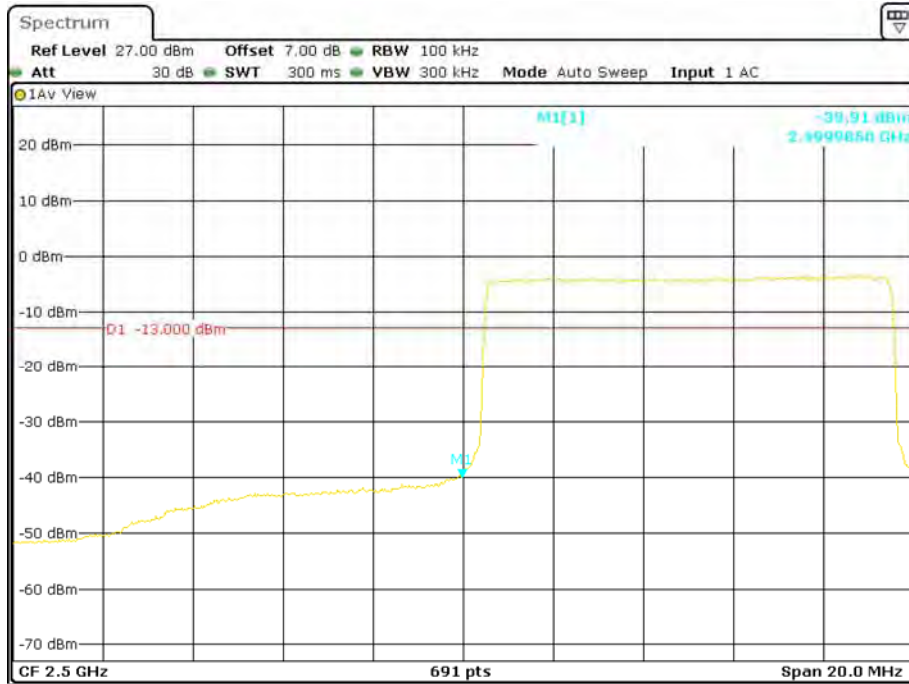
Date: 6.OCT.2015 15:01:50

### QPSK (10.0 MHz, FULL RB) - Right Band Edge



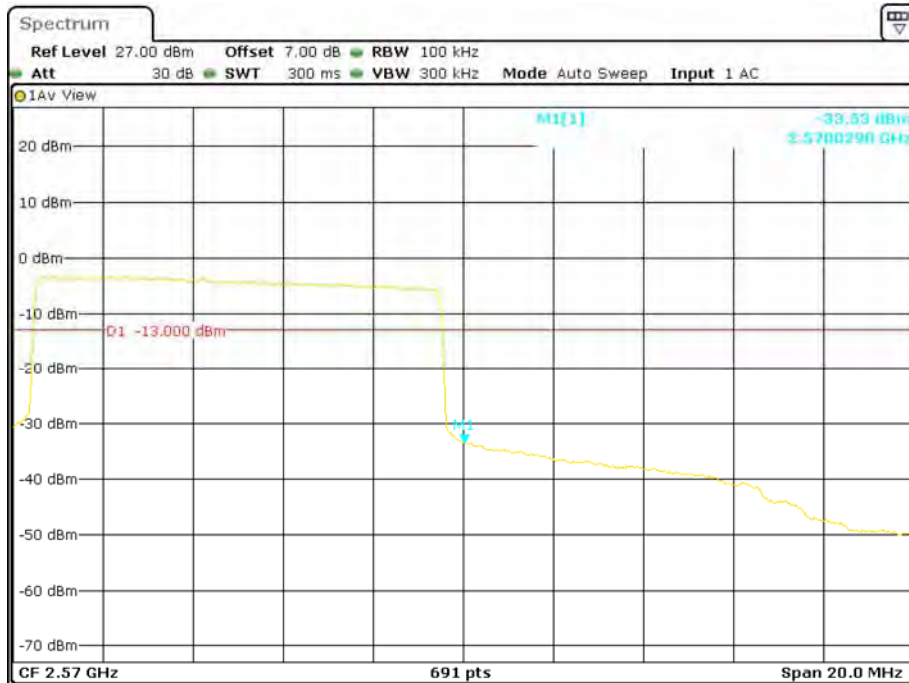
Date: 6.OCT.2015 15:04:33

### 16-QAM (10.0 MHz, FULL RB) - Left Band Edge



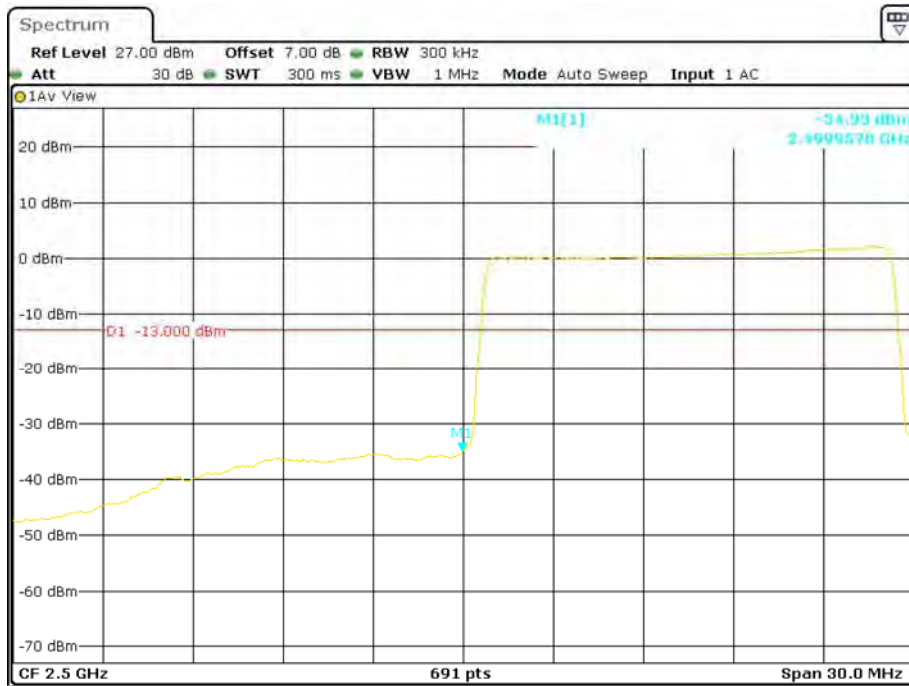
Date: 6.OCT.2015 15:02:25

### 16-QAM (10.0 MHz, FULL RB) - Right Band Edge



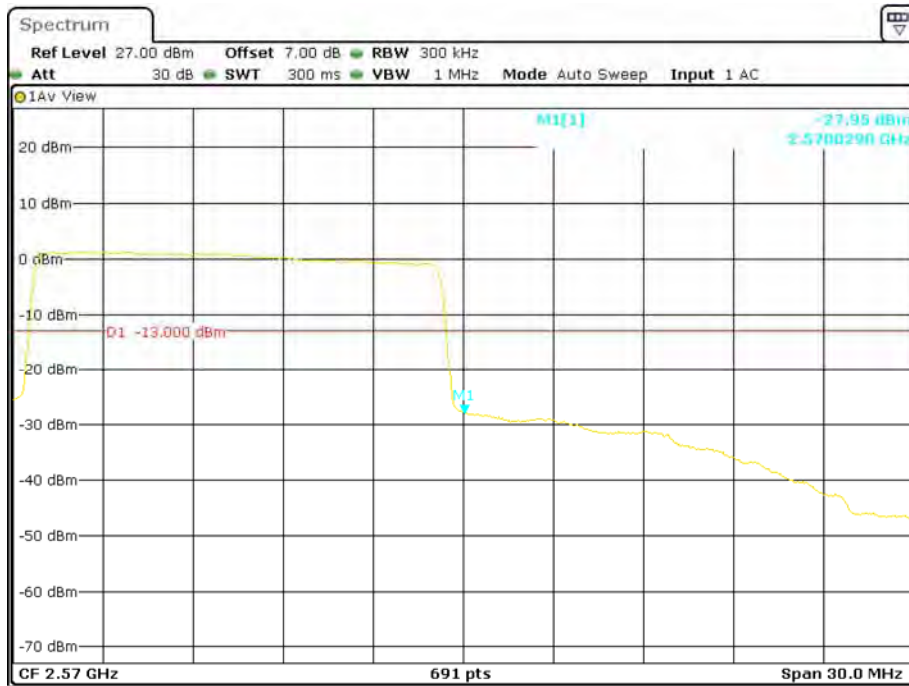
Date: 6.OCT.2015 15:03:26

### QPSK (15.0 MHz, FULL RB) - Left Band Edge



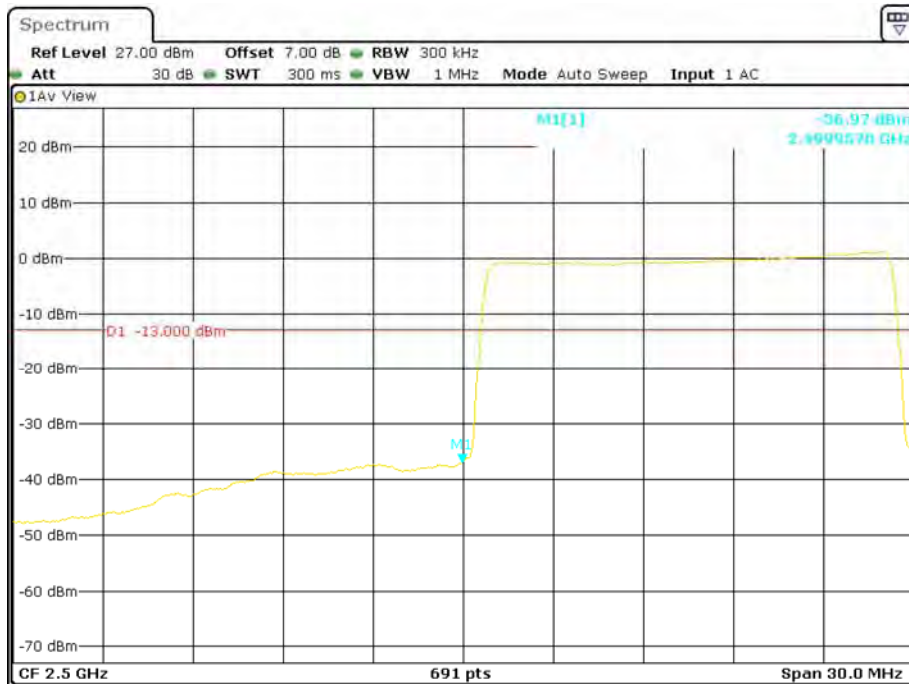
Date: 6.OCT.2015 15:24:06

### QPSK (15.0 MHz, FULL RB) - Right Band Edge



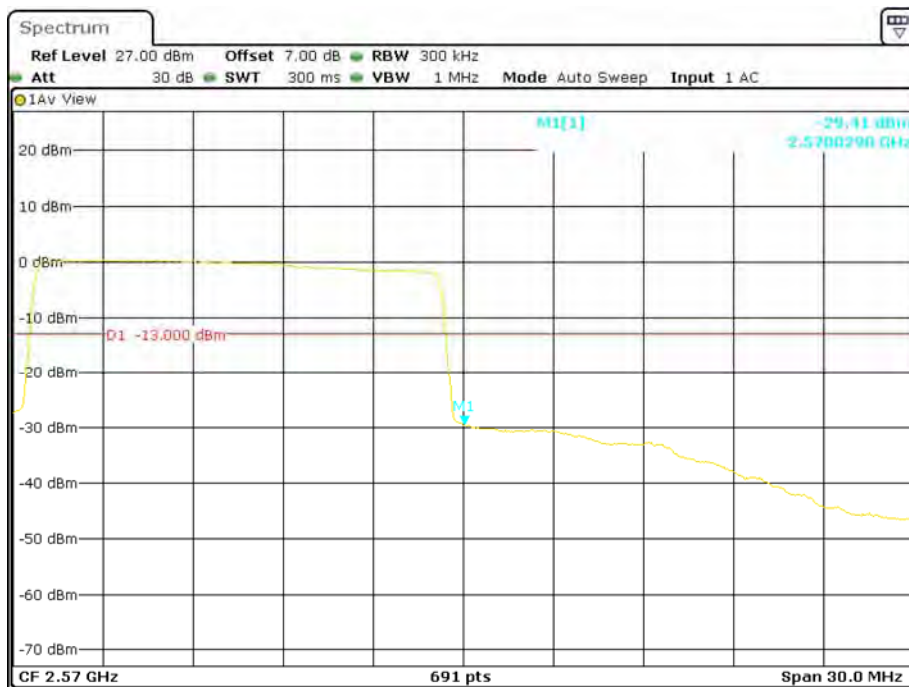
Date: 6.OCT.2015 15:08:18

### 16-QAM (15.0 MHz, FULL RB) - Left Band Edge



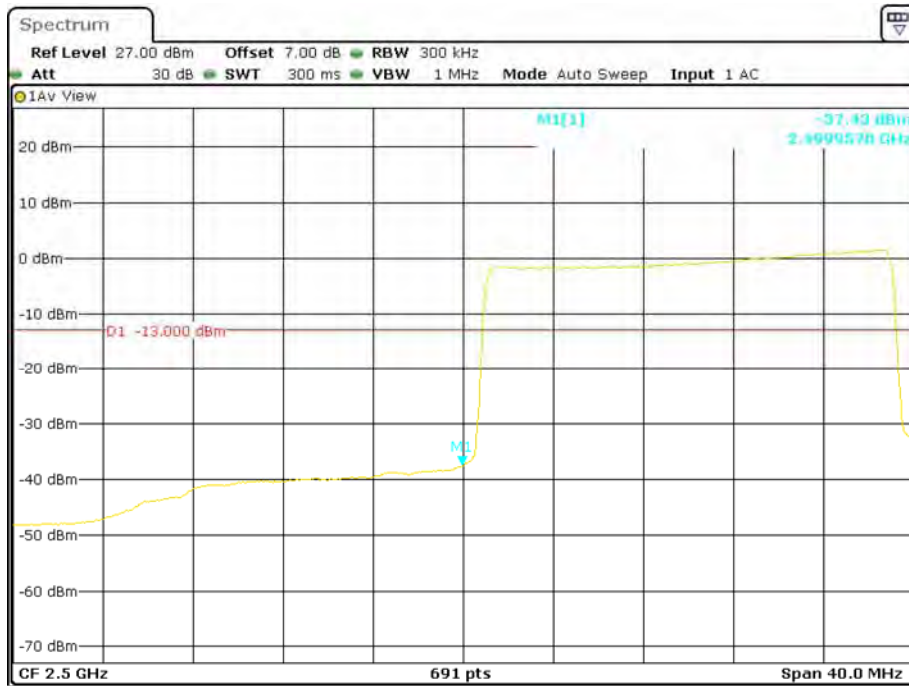
Date: 6.OCT.2015 15:23:28

### 16-QAM (15.0 MHz, FULL RB) - Right Band Edge



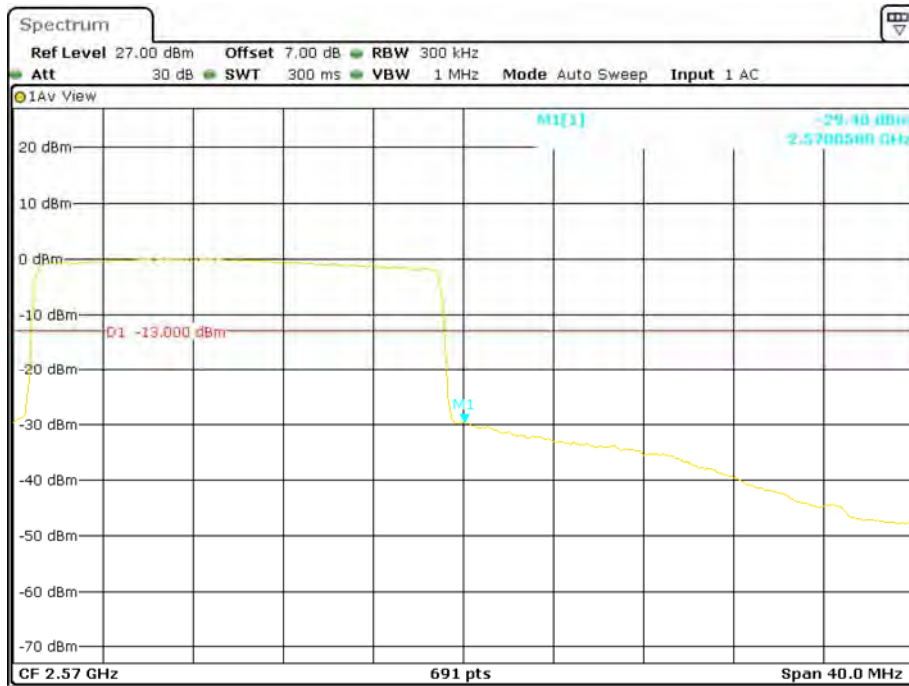
Date: 6.OCT.2015 15:09:15

### QPSK (20.0 MHz, FULL RB) - Left Band Edge



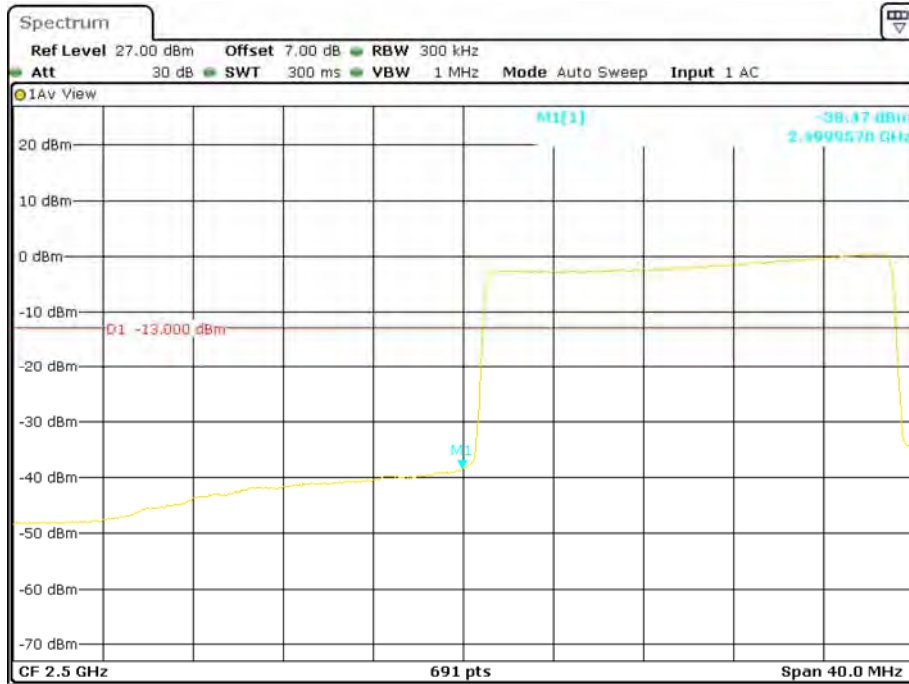
Date: 6.OCT.2015 15:29:01

### QPSK (20.0 MHz, FULL RB) - Right Band Edge



Date: 6.OCT.2015 15:31:54

### 16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 6.OCT.2015 15:29:42

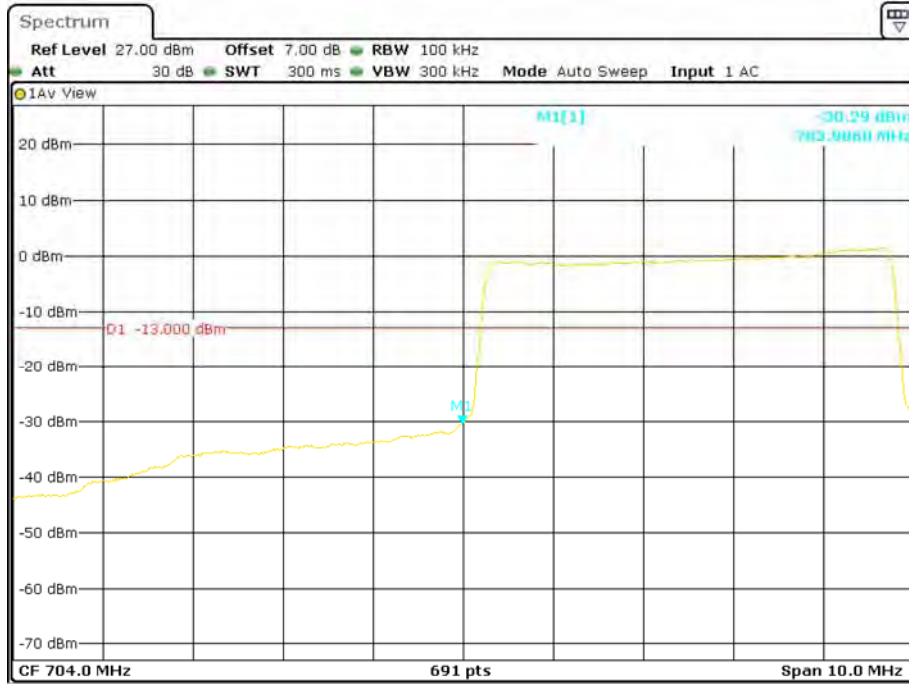
### 16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 6.OCT.2015 15:31:08

**Band 17:**

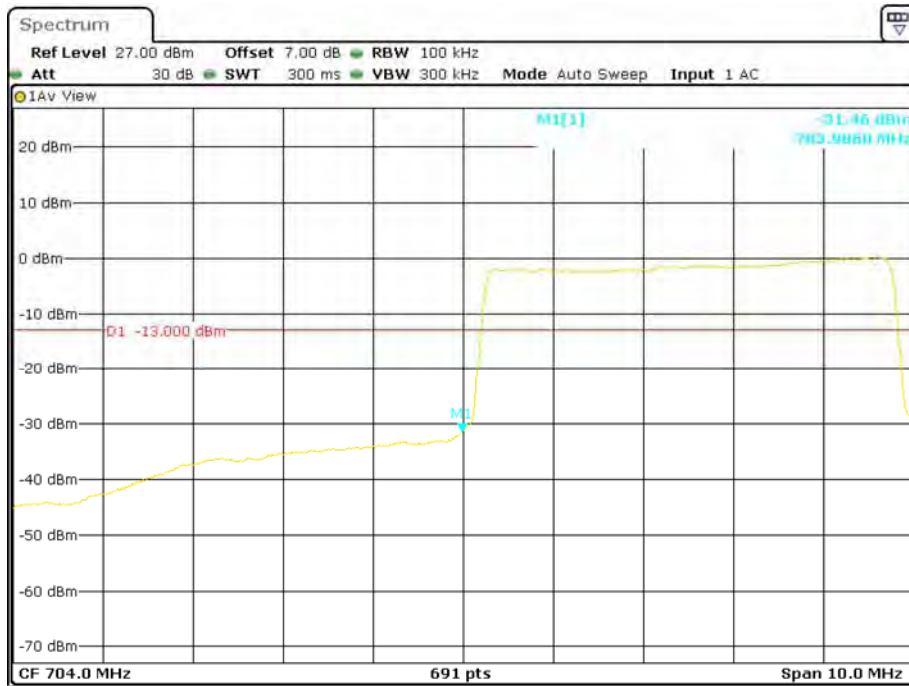
**QPSK (5.0 MHz, FULL RB) - Left Band Edge**



**QPSK (5.0 MHz, FULL RB) - Right Band Edge**

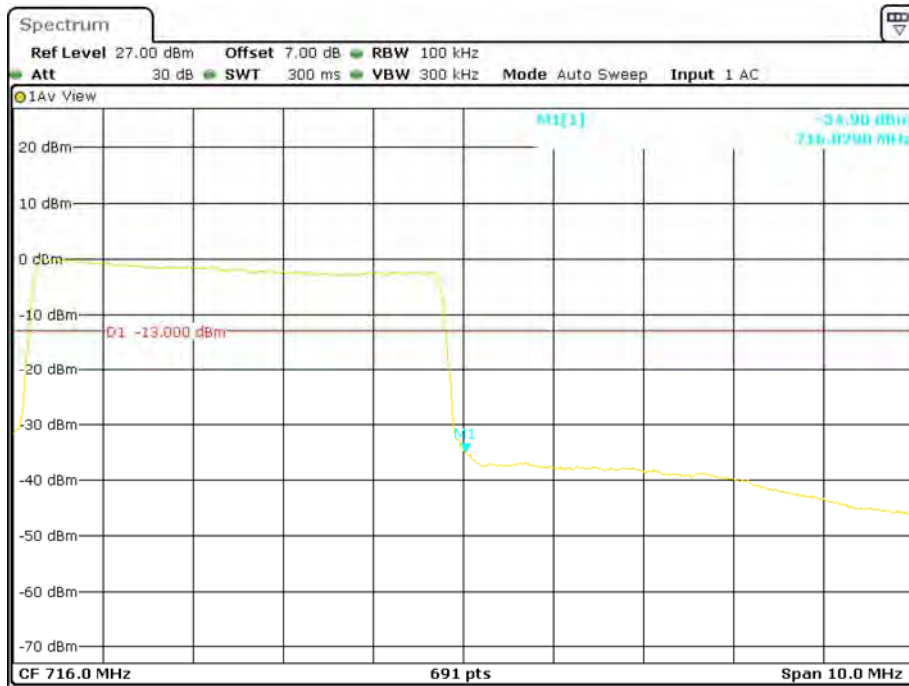


### 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



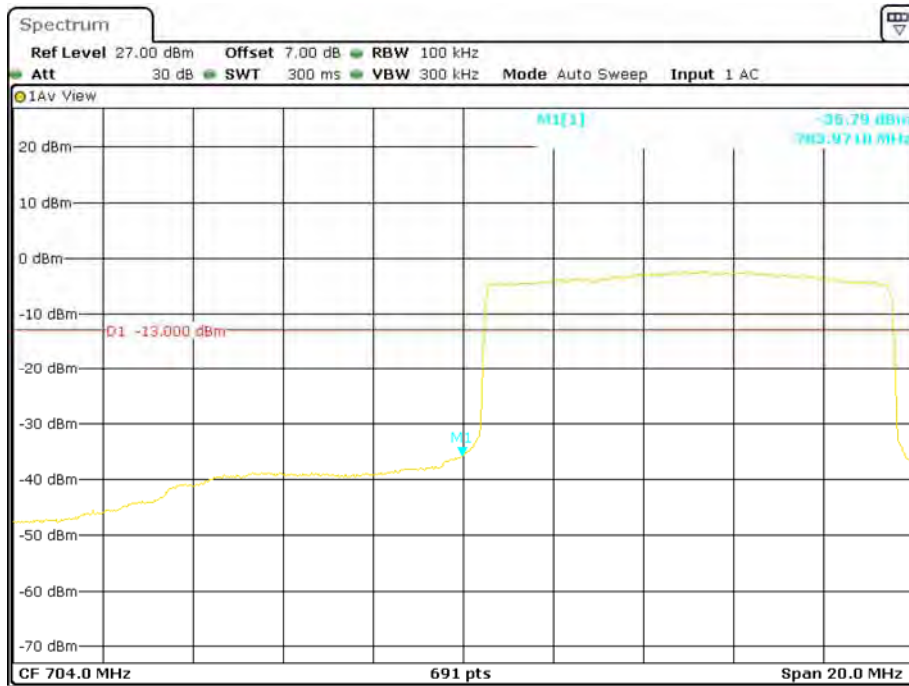
Date: 6.OCT.2015 14:46:14

### 16-QAM (5.0 MHz, FULL RB) - Right Band Edge



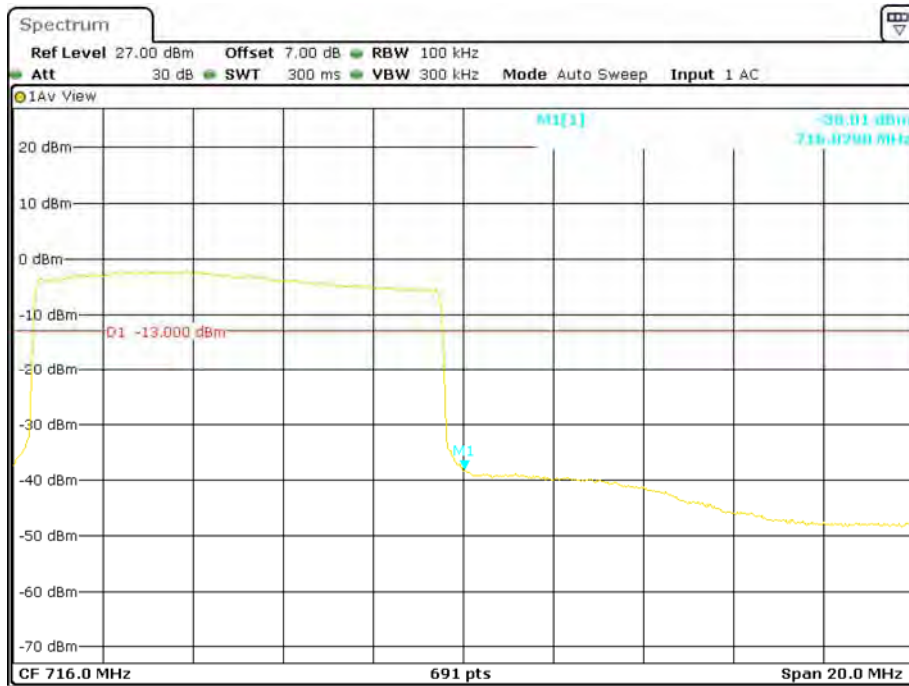
Date: 6.OCT.2015 14:37:11

### QPSK (10.0 MHz, FULL RB) - Left Band Edge



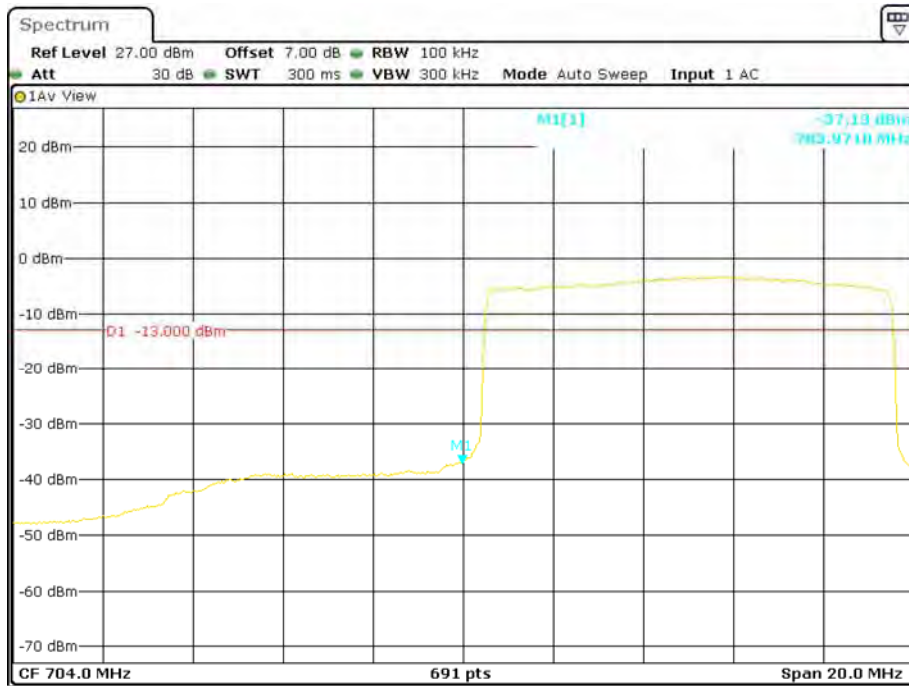
Date: 6.OCT.2015 14:29:50

### QPSK (10.0 MHz, FULL RB) - Right Band Edge



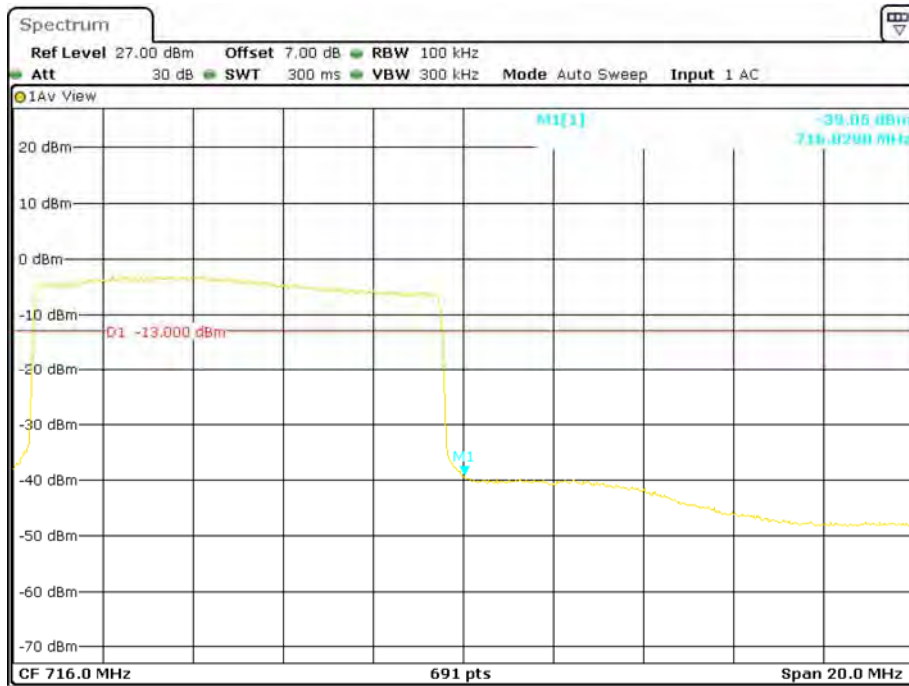
Date: 6.OCT.2015 14:33:49

### 16-QAM (10.0 MHz, FULL RB) - Left Band Edge



Date: 6.OCT.2015 14:30:28

### 16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 6.OCT.2015 14:31:46

**FCC §2.1055, §22.355 & §24.235 & §27.54 - FREQUENCY STABILITY**

**Applicable Standards**

FCC § 2.1055, §22.355, §24.235 and & §27.54.

According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile > 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

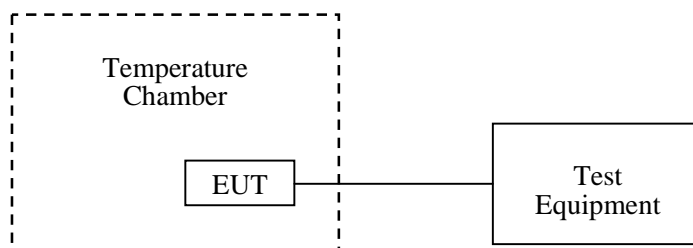
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

**Test Procedure**

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2014-11-01	2015-11-01
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2014-11-23	2015-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2014-11-23	2015-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	25
<b>Relative Humidity:</b>	51 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by William Li on 2015-10-02.*

*EUT operation mode: Transmitting*

*Test Result: Compliance. Please refer to the following tables.*

**Cellular Band (Part 22H)**

**GSM Mode**

Middle Channel, $f_0 = 836.6$ MHz				
Temperature ( )	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	13	0.01554	2.5
-20		12	0.01434	2.5
-10		10	0.01195	2.5
0		11	0.01315	2.5
10		12	0.01434	2.5
20		13	0.01554	2.5
30		9	0.01076	2.5
40		15	0.01793	2.5
50		13	0.01554	2.5
25		V min.= 3.5	14	0.01673
25	V max.= 4.2	15	0.01793	2.5

**EDGE Mode**

Middle Channel, $f_0 = 836.6$ MHz				
Temperature ( )	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	9	0.01076	2.5
-20		8	0.00956	2.5
-10		7	0.00837	2.5
0		6	0.00717	2.5
10		8	0.00956	2.5
20		9	0.01076	2.5
30		8	0.00956	2.5
40		10	0.01195	2.5
50		9	0.01076	2.5
25	V min.= 3.5	10	0.01195	2.5
25	V max.= 4.2	12	0.01434	2.5

**WCDMA Mode**

Middle Channel, $f_0 = 836.6$ MHz				
Temperature ( )	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	18	0.02152	2.5
-20		16	0.01913	2.5
-10		15	0.01793	2.5
0		17	0.02032	2.5
10		16	0.01913	2.5
20		18	0.02152	2.5
30		19	0.02271	2.5
40		20	0.02391	2.5
50		21	0.02510	2.5
25	V min.= 3.5	18	0.02152	2.5
25	V max.= 4.2	19	0.02271	2.5

**PCS Band (Part 24E)**

**GSM Mode**

Middle Channel, f <sub>0</sub> =1880.0 MHz				
Temperature ( )	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	26	0.01383	pass
-20		25	0.01330	pass
-10		24	0.01277	pass
0		26	0.01383	pass
10		22	0.01170	pass
20		19	0.01011	pass
30		20	0.01064	pass
40		23	0.01223	pass
50		22	0.01170	pass
25		V min.= 3.5	23	0.01223
25	V max.= 4.2	25	0.01330	pass

**EDGE Mode**

Middle Channel, f <sub>0</sub> =1880.0 MHz				
Temperature ( )	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	18	0.00957	pass
-20		15	0.00798	pass
-10		14	0.00745	pass
0		16	0.00851	pass
10		16	0.00851	pass
20		15	0.00798	pass
30		12	0.00638	pass
40		15	0.00798	pass
50		14	0.00745	pass
25		V min.= 3.5	15	0.00798
25	V max.= 4.2	18	0.00957	pass

**WCDMA Mode**

<b>Middle Channel, f<sub>0</sub> =1880.0 MHz</b>				
<b>Temperature ( )</b>	<b>Power Supplied (V<sub>DC</sub>)</b>	<b>Frequency Error (Hz)</b>	<b>Frequency Error (ppm)</b>	<b>Result</b>
-30	3.8	29	0.01543	pass
-20		28	0.01489	pass
-10		26	0.01383	pass
0		27	0.01436	pass
10		24	0.01277	pass
20		25	0.01330	pass
30		23	0.01223	pass
40		28	0.01489	pass
50		28	0.01489	pass
25		V min.= 3.5	30	0.01596
25	V max.= 4.2	29	0.01543	pass

**Band 2:**

	<b>Temperature (°C)</b>	<b>QPSK (Hz)</b>	<b>QPSK (ppm)</b>	<b>Result</b>	
<b>10.0 MHz, Middle Channel</b>	-30	36	0.019	Pass	
	-20	35	0.019	Pass	
	-10	33	0.018	Pass	
	0	30	0.016	Pass	
	10	29	0.015	Pass	
	20	32	0.017	Pass	
	30	31	0.016	Pass	
	40	30	0.016	Pass	
	50	35	0.019	Pass	
		<b>Voltage (V<sub>DC</sub>)</b>	<b>QPSK (Hz)</b>	<b>QPSK (ppm)</b>	<b>Result</b>
		3.8	33	0.018	Pass
		3.5	32	0.017	Pass
		4.2	36	0.019	Pass

**Band 4:**

	Temperature (°C)	QPSK (Hz)	QPSK (ppm)	Result
<b>10.0 MHz, Middle Channel</b>	-30	30	0.017	Pass
	-20	28	0.016	Pass
	-10	26	0.015	Pass
	0	25	0.014	Pass
	10	24	0.014	Pass
	20	25	0.014	Pass
	30	26	0.015	Pass
	40	27	0.016	Pass
	50	29	0.017	Pass
	Voltage (V <sub>DC</sub> )	QPSK (Hz)	QPSK (ppm)	Result
	3.8	25	0.014	Pass
	3.5	27	0.016	Pass
	4.2	29	0.017	Pass

**Band 7:**

	Temperature (°C)	QPSK (Hz)	QPSK (ppm)	Result
<b>10.0 MHz, Middle Channel</b>	-30	44	0.017	Pass
	-20	42	0.017	Pass
	-10	39	0.015	Pass
	0	45	0.018	Pass
	10	44	0.017	Pass
	20	41	0.016	Pass
	30	38	0.015	Pass
	40	36	0.014	Pass
	50	42	0.017	Pass
	Voltage (V <sub>DC</sub> )	QPSK (Hz)	QPSK (ppm)	Result
	3.8	39	0.015	Pass
	3.5	40	0.016	Pass
	4.2	42	0.017	Pass

**Band 17:**

	Temperature (°C)	QPSK (Hz)	QPSK (ppm)	Result
<b>10.0 MHz, Middle Channel</b>	-30	10	0.014	Pass
	-20	9	0.013	Pass
	-10	12	0.017	Pass
	0	11	0.015	Pass
	10	13	0.018	Pass
	20	11	0.015	Pass
	30	10	0.014	Pass
	40	9	0.013	Pass
	50	12	0.017	Pass
	Voltage (V <sub>DC</sub> )	QPSK (Hz)	QPSK (ppm)	Result
	3.8	13	0.018	Pass
	3.5	10	0.014	Pass
	4.2	12	0.017	Pass

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