

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

For

**Shenzhen Jingwah Information Technology Co., Ltd.**

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**FCC ID: RBD-S60L**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Smart Phone
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<b>Report Number:</b> RSZ160106005-00D	
<b>Report Date:</b> 2016-01-22	
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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 *Shenzhen Jingwah Information Technology Co., Ltd.*'s product, model number: *S60L (FCC ID: RBD-S60L)* or the "EUT" in this report was a *Smart Phone*, which was measured approximately: 162 mm (L) × 84 mm (W) × 9 mm (H), rated with input voltage: DC 3.8V rechargeable Li-ion battery or DC 5.0V from adapter.

#### Adapter Information:

Model: KA25-0501000US

Input AC: 100-240V, 50/60Hz, 0.25A, Max

Output DC: 5.0V, 1000mA

*Note: The series product, model S60, P600 and S60L are electrically identical, they are just different from model number due to marketing purposes. Detailed information is stated and guaranteed by the applicant which was explained in the attached declaration letter.*

*\*All measurement and test data in this report was gathered from production sample serial number: 1601036 (Assigned by Shenzhen BAACL). The EUT supplied by the applicant was received on 2016-01-06.*

### Objective

This type approval report is prepared on behalf of *Shenzhen Jingwah Information Technology Co., Ltd.* in accordance with Part 2, Part 22-Subpart H, Part 24-Subpart E and Part 27 of the Federal Communication Commission's 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: RBD-S60L.

### 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.

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 5.81 dB for 30MHz-1GHz, and 4.88 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.

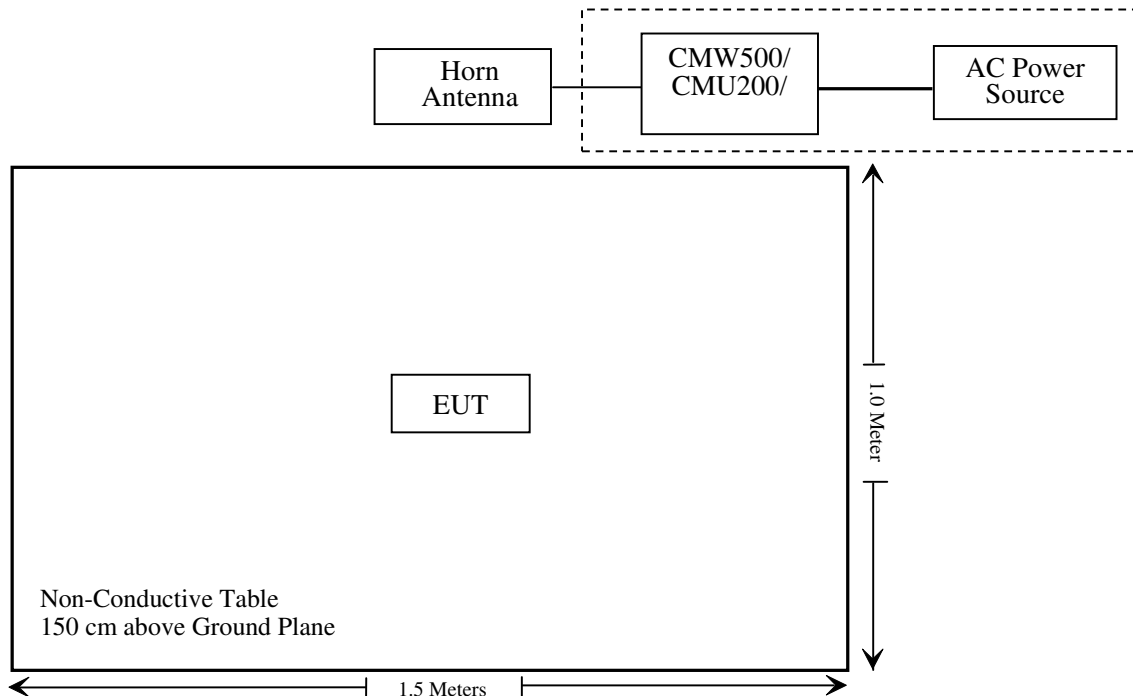
### Equipment Modifications

No modifications were made to the EUT.

### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891
Agilent	Wireless Communications Test Set	8960	MY50266471

### Block Diagram of Test Setup



## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§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: RSZ160106005-20.

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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: RSZ160106005-20.



## **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..

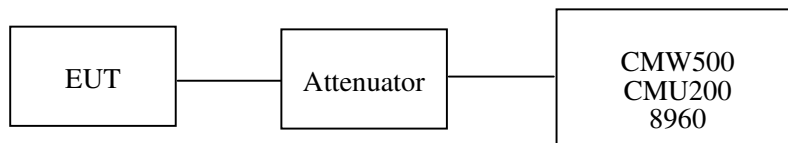
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz. The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

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

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

**Test Procedure***Conducted method:*

The RF output of the transmitter was connected to the CMW500/CMU200/8960 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	2015-11-03	2016-11-03
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
HP	Synthesized Sweeper	HP 8341B	2624A00116	2015-07-02	2016-07-01
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	2015-12-11	2016-12-11
Sunol Sciences	Horn Antenna	DRH-118	A052604	2014-12-29	2017-12-28
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
Agilent	WIRELESS COMMUNICATIONS TEST SET	8960	MY50266471	2016-01-13	2017-01-13
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23

\* **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>	23 °C
<b>Relative Humidity:</b>	55 %
<b>ATM Pressure:</b>	101.0kPa

*The testing was performed by Haiguo Li on 2016-01-19.*

**Conducted Power**

**Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.04	38.45
	190	836.6	32.00	38.45
	251	848.8	31.95	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	31.97	31.35	29.87	29.19	38.45
	190	836.6	31.96	31.28	29.76	29.09	38.45
	251	848.8	31.91	31.22	29.66	28.97	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	26.67	25.67	23.62	22.61	38.45
	190	836.6	26.57	25.62	23.54	22.51	38.45
	251	848.8	26.35	25.32	23.30	22.28	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		22.90	22.30	22.51
		Rel 6 HSDPA	1	21.82	21.21	21.39
			2	21.72	21.09	21.33
			3	21.94	21.29	21.45
			4	21.77	21.09	21.35
		Rel 6 HSUPA	1	21.85	21.17	21.41
			2	21.77	21.12	21.29
			3	21.97	21.23	21.54
			4	21.77	21.10	21.37
			5	21.95	21.26	21.51
HSPA+	1	21.35	21.23	21.11		

**PCS Band (Part 24E)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	29.87	33
	661	1880.0	29.68	33
	810	1909.8	29.31	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.83	28.96	27.29	26.61	33
	661	1880.0	29.59	28.89	27.32	26.65	33
	810	1909.8	29.23	28.62	27.23	26.63	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.10	25.05	24.09	23.00	33
	661	1880.0	26.56	25.46	24.51	23.44	33
	810	1909.8	26.87	25.75	24.81	23.79	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		22.07	22.53	21.98
		Rel 6 HSDPA	1	20.89	21.37	20.92
			2	20.82	21.31	20.85
			3	21.02	21.42	21.02
			4	20.85	21.33	20.87
		Rel 6 HSUPA	1	20.92	21.29	20.71
			2	20.88	21.16	20.59
			3	21.02	21.40	20.75
			4	20.85	21.21	20.60
			5	21.05	21.38	20.79
		HSPA+	1	20.93	21.25	20.86

**AWS Band (Part 27)**

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band IV)	Normal	RMC12.2k		22.57	22.46	22.27
		Rel 6 HSDPA	1	21.34	21.27	21.03
			2	21.29	21.23	20.98
			3	21.45	21.33	21.13
			4	21.30	21.24	20.97
		Rel 6 HSUPA	1	21.52	21.33	21.14
			2	21.41	21.22	21.07
			3	21.60	21.38	21.22
			4	21.45	21.22	21.03
			5	21.64	21.43	21.19
		HSPA+	1	21.35	21.22	21.08

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

**Cellular Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.27	13
	Middle	0.22	13
	High	0.29	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.34	13
	Middle	2.35	13
	High	2.39	13

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (BPSK)	Low	3.11	13
	Middle	3.07	13
	High	3.15	13
HSDPA (16QAM)	Low	3.19	13
	Middle	3.09	13
	High	3.12	13
HSUPA (BPSK)	Low	3.14	13
	Middle	3.08	13
	High	3.19	13
HSPA+ (BPSK)	Low	2.95	13
	Middle	3.11	13
	High	3.26	13

**PCS Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.29	13
	Middle	0.26	13
	High	0.27	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.36	13
	Middle	2.37	13
	High	2.35	13

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (BPSK)	Low	3.15	13
	Middle	3.10	13
	High	3.18	13
HSDPA (16QAM)	Low	3.13	13
	Middle	3.12	13
	High	3.17	13
HSUPA (BPSK)	Low	3.14	13
	Middle	3.12	13
	High	3.19	13
HSPA+ (BPSK)	Low	3.21	13
	Middle	3.17	13
	High	3.05	13

**AWS Band**

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (BPSK)	Low	2.78	13
	Middle	2.71	13
	High	2.75	13
HSDPA (16QAM)	Low	2.77	13
	Middle	2.74	13
	High	2.76	13
HSUPA (BPSK)	Low	2.76	13
	Middle	2.73	13
	High	2.78	13
HSPA+ (BPSK)	Low	2.83	13
	Middle	2.68	13
	High	2.76	13



**Radiated Power**

**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	100.78	102	1.5	H	30.3	0.67	0	29.61	38.45	8.84
836.60	99.73	162	1.3	V	29.2	0.67	0	28.56	38.45	9.89
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	89.78	231	2.1	H	21.1	1.40	7.30	27.00	33	6.00
1880.00	88.93	297	2.4	V	19.7	1.40	7.30	25.60	33	7.40

**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	93.74	182	2.2	H	23.2	0.67	0	22.57	38.45	15.88
836.60	92.52	25	1.0	V	22.0	0.67	0	21.35	38.45	17.1
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	86.24	165	2.2	H	17.6	1.40	7.30	23.50	33	9.5
1880.00	85.13	119	1.3	V	15.9	1.40	7.30	21.80	33	11.2

**WCDMA Mode:**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H/24E/27	
			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	84.56	313	1.5	H	15.9	1.40	7.30	21.8	38.45	16.65
836.60	84.32	184	2.0	V	15.1	1.40	7.30	21.0	38.45	17.45
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	92.56	102	1.4	H	22.1	0.67	0	21.43	33	11.57
1880.00	92.14	121	1.5	V	21.6	0.67	0	20.97	33	12.03
EIRP for WCDMA Band IV (Part 27), Middle Channel										
1732.60	84.56	97	1.7	H	15.8	1.60	6.90	21.10	30	8.90
1732.60	84.23	304	2.3	V	15.0	1.60	6.90	20.30	30	9.70

**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	22.21	22.45	22.36
		RB Size=1, RB Offset=2	22.25	22.32	22.42
		RB Size=1, RB Offset=5	22.52	22.47	22.37
		RB Size=3, RB Offset=0	22.24	22.47	22.36
		RB Size=3, RB Offset=1	22.54	22.72	22.62
		RB Size=3, RB Offset=2	21.87	21.53	21.21
		RB Size=6, RB Offset=0	22.23	21.45	21.32
	16QAM	RB Size=1, RB Offset=0	22.25	22.67	22.42
		RB Size=1, RB Offset=2	22.57	22.52	22.42
		RB Size=1, RB Offset=5	22.47	22.35	22.36
		RB Size=3, RB Offset=0	21.91	21.65	21.75
		RB Size=3, RB Offset=1	22.37	22.41	22.41
		RB Size=3, RB Offset=2	22.23	21.85	21.32
		RB Size=6, RB Offset=0	22.27	22.75	21.53
3.0	QPSK	RB Size=1, RB Offset=0	22.67	22.42	22.31
		RB Size=1, RB Offset=7	22.52	22.32	22.45
		RB Size=1, RB Offset=14	22.53	22.41	22.58
		RB Size=8, RB Offset=0	22.24	22.32	22.32
		RB Size=8, RB Offset=4	22.17	21.75	21.42
		RB Size=8, RB Offset=7	22.45	22.43	22.42
		RB Size=15, RB Offset=0	21.75	21.56	21.53
	16QAM	RB Size=1, RB Offset=0	22.23	22.42	21.46
		RB Size=1, RB Offset=7	21.87	21.75	21.41
		RB Size=1, RB Offset=14	22.21	21.53	21.53
		RB Size=8, RB Offset=0	22.37	22.42	22.42
		RB Size=8, RB Offset=4	22.23	22.35	21.71
		RB Size=8, RB Offset=7	22.32	22.47	22.53
		RB Size=15, RB Offset=0	22.53	22.72	22.42

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	22.75	22.43	22.36
		RB Size=1, RB Offset=12	22.35	21.58	21.55
		RB Size=1, RB Offset=24	22.17	22.41	21.63
		RB Size=12, RB Offset=0	22.37	22.32	22.72
		RB Size=12, RB Offset=6	21.97	21.74	21.23
		RB Size=12, RB Offset=11	22.45	22.53	22.45
		RB Size=25, RB Offset=0	22.51	22.28	22.48
	16QAM	RB Size=1, RB Offset=0	22.52	22.32	22.86
		RB Size=1, RB Offset=12	22.57	22.52	22.43
		RB Size=1, RB Offset=24	22.12	21.72	21.27
		RB Size=12, RB Offset=0	22.45	22.53	22.63
		RB Size=12, RB Offset=6	22.31	21.85	21.52
		RB Size=12, RB Offset=11	22.57	22.42	22.41
		RB Size=25, RB Offset=0	22.41	22.32	22.42
10.0	QPSK	RB Size=1, RB Offset=0	22.23	22.47	22.36
		RB Size=1, RB Offset=24	22.42	22.42	22.75
		RB Size=1, RB Offset=49	22.75	22.31	22.65
		RB Size=25, RB Offset=0	22.53	22.53	22.56
		RB Size=25, RB Offset=12	22.25	22.52	21.58
		RB Size=25, RB Offset=24	22.42	22.42	22.31
		RB Size=50, RB Offset=0	22.58	22.25	22.52
	16QAM	RB Size=1, RB Offset=0	22.31	22.32	22.73
		RB Size=1, RB Offset=24	22.27	22.52	21.52
		RB Size=1, RB Offset=49	22.42	22.58	22.32
		RB Size=25, RB Offset=0	22.43	22.41	22.42
		RB Size=25, RB Offset=12	22.78	22.42	22.42
		RB Size=25, RB Offset=24	22.47	22.21	22.36
		RB Size=50, RB Offset=0	22.36	22.26	22.36

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	22.42	22.35	22.23
		RB Size=1, RB Offset=37	22.53	22.42	22.35
		RB Size=1, RB Offset=74	22.31	22.56	22.47
		RB Size=36, RB Offset=0	22.53	22.42	22.23
		RB Size=36, RB Offset=18	21.75	21.52	21.42
		RB Size=36, RB Offset=37	22.53	22.53	22.24
		RB Size=75, RB Offset=0	22.63	22.42	22.36
	16QAM	RB Size=1, RB Offset=0	22.24	22.25	22.75
		RB Size=1, RB Offset=37	21.63	21.23	21.45
		RB Size=1, RB Offset=74	22.58	22.23	22.23
		RB Size=36, RB Offset=0	22.43	22.42	21.47
		RB Size=36, RB Offset=18	22.51	22.23	22.47
		RB Size=36, RB Offset=37	22.58	22.34	22.56
		RB Size=75, RB Offset=0	22.63	22.37	22.53
20.0	QPSK	RB Size=1, RB Offset=0	22.53	22.28	22.52
		RB Size=1, RB Offset=49	21.58	21.82	21.42
		RB Size=1, RB Offset=99	22.43	21.53	21.42
		RB Size=50, RB Offset=0	22.53	22.42	22.53
		RB Size=50, RB Offset=24	22.75	22.43	22.24
		RB Size=50, RB Offset=49	22.42	21.57	21.45
		RB Size=100, RB Offset=0	22.53	22.52	22.53
	16QAM	RB Size=1, RB Offset=0	22.75	22.13	22.23
		RB Size=1, RB Offset=49	22.42	22.16	22.27
		RB Size=1, RB Offset=99	22.75	22.53	22.58
		RB Size=50, RB Offset=0	22.65	22.58	22.34
		RB Size=50, RB Offset=24	22.32	22.58	22.23
		RB Size=50, RB Offset=49	22.42	22.92	22.45
		RB Size=100, RB Offset=0	22.47	22.27	21.45

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

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	5.11	13	Pass
QPSK (100%RB Size)	6.93	13	Pass
16QAM (1RB Size)	5.29	13	Pass
16QAM (100%RB Size)	7.05	13	Pass

**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	84.75	252	1.0	H	16.1	1.40	7.30	22.00	33
1880.00	83.43	262	1.9	V	14.2	1.40	7.30	20.10	33
3 MHz Bandwidth									
1880.00	84.63	90	1.9	H	16.0	1.40	7.30	21.90	33
1880.00	83.47	297	1.6	V	14.2	1.40	7.30	20.10	33
5 MHz Bandwidth									
1880.00	84.56	342	1.7	H	15.9	1.40	7.30	21.80	33
1880.00	83.42	210	1.4	V	14.2	1.40	7.30	20.10	33
10 MHz Bandwidth									
1880.00	84.83	341	2.0	H	16.2	1.40	7.30	22.10	33
1880.00	83.32	312	1.9	V	14.1	1.40	7.30	20.00	33
15 MHz Bandwidth									
1880.00	84.87	355	2.5	H	16.2	1.40	7.30	22.10	33
1880.00	83.36	346	1.3	V	14.1	1.40	7.30	20.00	33
20 MHz Bandwidth									
1880.00	84.84	223	2.1	H	16.2	1.40	7.30	22.10	33
1880.00	83.32	149	1.2	V	14.1	1.40	7.30	20.00	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	84.53	163	1.5	H	15.9	1.40	7.30	21.80	33
1880.00	83.73	2	1.9	V	14.5	1.40	7.30	20.40	33
3 MHz Bandwidth									
1880.00	84.58	136	1.8	H	15.9	1.40	7.30	21.80	33
1880.00	83.63	203	2.4	V	14.4	1.40	7.30	20.30	33
5 MHz Bandwidth									
1880.00	84.52	259	1.2	H	15.8	1.40	7.30	21.70	33
1880.00	83.59	235	1.7	V	14.4	1.40	7.30	20.30	33
10 MHz Bandwidth									
1880.00	84.49	29	2.5	H	15.8	1.40	7.30	21.70	33
1880.00	83.32	105	1.7	V	14.1	1.40	7.30	20.00	33
15 MHz Bandwidth									
1880.00	84.57	113	1.9	H	15.9	1.40	7.30	21.80	33
1880.00	83.52	187	1.7	V	14.3	1.40	7.30	20.20	33
20 MHz Bandwidth									
1880.00	84.72	216	1.3	H	16.0	1.40	7.30	21.90	33
1880.00	83.43	244	1.4	V	14.2	1.40	7.30	20.10	33

**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	22.21	22.27	22.21
		RB Size=1, RB Offset=2	22.54	22.52	22.32
		RB Size=1, RB Offset=5	22.53	22.42	22.42
		RB Size=3, RB Offset=0	22.42	21.42	21.53
		RB Size=3, RB Offset=1	22.32	22.75	22.41
		RB Size=3, RB Offset=2	22.41	21.42	21.52
		RB Size=6, RB Offset=0	22.52	22.12	22.42
	16QAM	RB Size=1, RB Offset=0	22.32	22.42	22.43
		RB Size=1, RB Offset=2	22.41	22.53	22.54
		RB Size=1, RB Offset=5	21.52	21.58	21.57
		RB Size=3, RB Offset=0	22.53	22.49	21.58
		RB Size=3, RB Offset=1	22.41	22.52	22.59
		RB Size=3, RB Offset=2	22.43	22.13	22.41
		RB Size=6, RB Offset=0	21.56	21.23	21.23
3.0	QPSK	RB Size=1, RB Offset=0	22.43	21.42	21.34
		RB Size=1, RB Offset=7	22.45	22.46	22.35
		RB Size=1, RB Offset=14	22.47	22.47	22.36
		RB Size=8, RB Offset=0	21.32	21.52	21.52
		RB Size=8, RB Offset=4	22.36	22.36	22.26
		RB Size=8, RB Offset=7	21.37	21.24	21.42
		RB Size=15, RB Offset=0	22.38	22.32	22.52
	16QAM	RB Size=1, RB Offset=0	22.39	22.35	22.53
		RB Size=1, RB Offset=7	21.53	21.36	21.58
		RB Size=1, RB Offset=14	21.56	21.25	21.57
		RB Size=8, RB Offset=0	22.58	22.42	22.59
		RB Size=8, RB Offset=4	22.53	22.42	22.53
		RB Size=8, RB Offset=7	21.23	21.42	21.52
		RB Size=15, RB Offset=0	22.24	22.23	21.52



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	22.23	22.42	22.52
		RB Size=1, RB Offset=12	22.42	22.42	22.52
		RB Size=1, RB Offset=24	22.37	22.42	22.53
		RB Size=12, RB Offset=0	21.87	21.48	21.52
		RB Size=12, RB Offset=6	22.23	22.56	22.21
		RB Size=12, RB Offset=11	22.42	22.42	22.23
		RB Size=25, RB Offset=0	21.23	21.42	21.24
	16QAM	RB Size=1, RB Offset=0	21.26	21.53	21.27
		RB Size=1, RB Offset=12	22.21	22.45	22.23
		RB Size=1, RB Offset=24	22.25	22.32	22.21
		RB Size=12, RB Offset=0	22.37	22.53	22.27
		RB Size=12, RB Offset=6	22.52	22.52	22.62
		RB Size=12, RB Offset=11	22.36	22.42	22.61
		RB Size=25, RB Offset=0	21.78	21.23	21.21
10.0	QPSK	RB Size=1, RB Offset=0	22.24	22.42	22.42
		RB Size=1, RB Offset=24	22.53	22.75	21.42
		RB Size=1, RB Offset=49	22.32	21.52	21.52
		RB Size=25, RB Offset=0	22.52	22.41	22.41
		RB Size=25, RB Offset=12	22.41	22.25	22.32
		RB Size=25, RB Offset=24	22.24	22.32	22.42
		RB Size=50, RB Offset=0	22.47	22.54	22.34
	16QAM	RB Size=1, RB Offset=0	22.52	22.52	22.78
		RB Size=1, RB Offset=24	22.23	21.41	21.72
		RB Size=1, RB Offset=49	22.21	21.43	21.25
		RB Size=25, RB Offset=0	22.31	22.47	21.42
		RB Size=25, RB Offset=12	22.37	22.52	22.42
		RB Size=25, RB Offset=24	21.52	21.36	21.52
		RB Size=50, RB Offset=0	22.42	22.52	22.51

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	22.41	22.45	22.42
		RB Size=1, RB Offset=37	22.52	22.53	22.14
		RB Size=1, RB Offset=74	22.43	22.74	22.37
		RB Size=36, RB Offset=0	22.22	22.52	22.74
		RB Size=36, RB Offset=18	22.52	22.32	22.68
		RB Size=36, RB Offset=37	21.41	21.25	21.52
		RB Size=75, RB Offset=0	22.32	22.47	21.24
	16QAM	RB Size=1, RB Offset=0	22.41	22.42	22.74
		RB Size=1, RB Offset=37	22.45	21.85	21.25
		RB Size=1, RB Offset=74	22.43	22.23	22.47
		RB Size=36, RB Offset=0	22.52	22.12	21.25
		RB Size=36, RB Offset=18	22.41	22.17	22.35
		RB Size=36, RB Offset=37	22.52	22.72	22.32
		RB Size=75, RB Offset=0	22.23	22.42	22.37
20.0	QPSK	RB Size=1, RB Offset=0	22.25	22.27	22.41
		RB Size=1, RB Offset=49	22.52	22.15	21.34
		RB Size=1, RB Offset=99	22.58	21.95	21.58
		RB Size=50, RB Offset=0	22.42	22.24	22.52
		RB Size=50, RB Offset=24	22.42	22.12	22.54
		RB Size=50, RB Offset=49	21.30	21.51	21.47
		RB Size=100, RB Offset=0	22.25	22.12	21.45
	16QAM	RB Size=1, RB Offset=0	22.23	22.54	22.52
		RB Size=1, RB Offset=49	22.24	21.47	21.71
		RB Size=1, RB Offset=99	22.27	22.52	22.75
		RB Size=50, RB Offset=0	22.52	22.45	22.78
		RB Size=50, RB Offset=24	22.23	22.32	22.25
		RB Size=50, RB Offset=49	22.27	22.45	22.34
		RB Size=100, RB Offset=0	22.25	22.52	22.54

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

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	4.95	13	Pass
QPSK (100%RB Size)	6.01	13	Pass
16QAM (1RB Size)	5.03	13	Pass
16QAM (100%RB Size)	5.80	13	Pass

**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	85.63	114	2.2	H	16.8	1.60	6.90	22.10	30
1732.50	84.86	84	1.3	V	15.6	1.60	6.90	20.90	30
3 MHz Bandwidth									
1732.50	85.45	79	1.3	H	16.7	1.60	6.90	22.00	30
1732.50	84.81	334	1.1	V	15.6	1.60	6.90	20.90	30
5 MHz Bandwidth									
1732.50	85.53	254	2.0	H	16.7	1.60	6.90	22.00	30
1732.50	84.59	331	1.4	V	15.4	1.60	6.90	20.70	30
10MHz Bandwidth									
1732.50	85.76	257	1.5	H	17.0	1.60	6.90	22.30	30
1732.50	84.52	100	2.3	V	15.3	1.60	6.90	20.60	30
15 MHz Bandwidth									
1732.50	85.57	166	1.2	H	16.8	1.60	6.90	22.10	30
1732.50	84.43	30	1.1	V	15.2	1.60	6.90	20.50	30
20 MHz Bandwidth									
1732.50	85.71	202	1.2	H	16.9	1.60	6.90	22.20	30
1732.50	84.46	93	1.9	V	15.2	1.60	6.90	20.50	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	85.54	111	1.8	H	16.8	1.60	6.90	22.10	30
1732.50	84.43	307	2.2	V	15.2	1.60	6.90	20.50	30
3 MHz Bandwidth									
1732.50	85.58	207	2.3	H	16.8	1.60	6.90	22.10	30
1732.50	84.26	36	2.3	V	15.0	1.60	6.90	20.30	30
5 MHz Bandwidth									
1732.50	85.54	266	2.4	H	16.8	1.60	6.90	22.10	30
1732.50	84.23	22	2.1	V	15.0	1.60	6.90	20.30	30
10 MHz Bandwidth									
1732.50	85.35	35	1.2	H	16.6	1.60	6.90	21.90	30
1732.50	84.27	341	1.7	V	15.1	1.60	6.90	20.40	30
15 MHz Bandwidth									
1732.50	85.64	204	2.2	H	16.9	1.60	6.90	22.20	30
1732.50	84.22	20	1.2	V	15.0	1.60	6.90	20.30	30
20 MHz Bandwidth									
1732.50	85.37	154	2.1	H	16.6	1.60	6.90	21.90	30
1732.50	84.26	55	2.0	V	15.0	1.60	6.90	20.30	30

**LTE Band 5:**

**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	22.45	22.58	22.54
		RB Size=1, RB Offset=2	22.32	22.53	22.42
		RB Size=1, RB Offset=5	22.37	22.21	22.53
		RB Size=3, RB Offset=0	22.42	21.74	21.54
		RB Size=3, RB Offset=1	22.36	22.36	22.47
		RB Size=3, RB Offset=2	22.42	21.47	21.53
		RB Size=6, RB Offset=0	22.56	22.32	22.36
	16QAM	RB Size=1, RB Offset=0	22.12	22.24	22.63
		RB Size=1, RB Offset=2	22.14	22.42	22.24
		RB Size=1, RB Offset=5	21.45	21.53	21.78
		RB Size=3, RB Offset=0	22.23	22.54	21.53
		RB Size=3, RB Offset=1	22.42	22.41	22.62
		RB Size=3, RB Offset=2	22.57	22.25	22.42
		RB Size=6, RB Offset=0	21.56	21.13	21.52
3.0	QPSK	RB Size=1, RB Offset=0	22.32	21.45	21.85
		RB Size=1, RB Offset=7	22.36	22.75	22.53
		RB Size=1, RB Offset=14	22.42	22.42	22.52
		RB Size=8, RB Offset=0	21.52	21.36	21.42
		RB Size=8, RB Offset=4	22.52	22.42	22.46
		RB Size=8, RB Offset=7	21.63	21.53	21.73
		RB Size=15, RB Offset=0	22.42	22.24	22.27
	16QAM	RB Size=1, RB Offset=0	22.42	22.36	22.45
		RB Size=1, RB Offset=7	21.53	21.54	21.62
		RB Size=1, RB Offset=14	21.63	21.42	21.56
		RB Size=8, RB Offset=0	22.53	22.23	22.21
		RB Size=8, RB Offset=4	22.51	22.26	22.47
		RB Size=8, RB Offset=7	21.75	21.45	21.53
		RB Size=15, RB Offset=0	22.41	22.42	21.65

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	22.23	22.13	22.35
		RB Size=1, RB Offset=12	22.63	22.57	22.43
		RB Size=1, RB Offset=24	22.52	22.36	22.54
		RB Size=12, RB Offset=0	21.41	21.52	21.34
		RB Size=12, RB Offset=6	22.32	22.52	22.52
		RB Size=12, RB Offset=11	22.35	22.78	22.53
		RB Size=25, RB Offset=0	21.58	21.83	21.23
	16QAM	RB Size=1, RB Offset=0	21.74	21.25	21.42
		RB Size=1, RB Offset=12	22.41	22.42	22.26
		RB Size=1, RB Offset=24	22.52	22.43	22.45
		RB Size=12, RB Offset=0	22.54	22.47	22.36
		RB Size=12, RB Offset=6	22.63	22.26	22.63
		RB Size=12, RB Offset=11	22.74	22.14	22.62
		RB Size=25, RB Offset=0	21.41	21.23	21.61
10.0	QPSK	RB Size=1, RB Offset=0	22.24	22.12	22.24
		RB Size=1, RB Offset=24	22.65	22.57	22.56
		RB Size=1, RB Offset=49	22.58	22.27	22.54
		RB Size=25, RB Offset=0	22.45	22.52	22.75
		RB Size=25, RB Offset=12	22.25	22.57	21.42
		RB Size=25, RB Offset=24	22.47	22.32	22.31
		RB Size=50, RB Offset=0	22.42	22.51	22.42
	16QAM	RB Size=1, RB Offset=0	22.23	22.21	22.42
		RB Size=1, RB Offset=24	22.42	22.52	21.54
		RB Size=1, RB Offset=49	22.45	22.24	22.42
		RB Size=25, RB Offset=0	22.41	22.31	22.27
		RB Size=25, RB Offset=12	22.52	22.23	22.58
		RB Size=25, RB Offset=24	22.47	22.45	22.27
		RB Size=50, RB Offset=0	22.26	22.75	22.38

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

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	5.71	13	Pass
QPSK (100%RB Size)	7.13	13	Pass
16QAM (1RB Size)	5.43	13	Pass
16QAM (100%RB Size)	7.35	13	Pass

**ERP:**

**QPSK:**

Frequency (MHz)	Receiver Reading (dBµV)	Turn table 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)
Middle Channel									
1.4 MHz Bandwidth									
836.50	92.13	228	1.4	H	21.6	0.69	0	20.91	38.45
836.50	91.25	29	1.4	V	20.8	0.69	0	20.11	38.45
3 MHz Bandwidth									
836.50	92.75	152	1.4	H	22.3	0.69	0	21.61	38.45
836.50	91.42	74	1.6	V	20.9	0.69	0	20.21	38.45
5 MHz Bandwidth									
836.50	92.89	125	1.6	H	22.4	0.69	0	21.71	38.45
836.50	91.73	158	1.4	V	21.2	0.69	0	20.51	38.45
10MHz Bandwidth									
836.50	92.81	158	1.5	H	22.3	0.69	0	21.61	38.45
836.50	91.53	78	1.4	V	21.0	0.69	0	20.31	38.45

**16QAM:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table 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)
Middle Channel									
1.4 MHz Bandwidth									
836.50	92.45	147	1.5	H	22.0	0.69	0	21.26	38.45
836.50	91.36	125	1.5	V	20.9	0.69	0	20.17	38.45
3 MHz Bandwidth									
836.50	92.57	178	1.5	H	22.1	0.69	0	21.38	38.45
836.50	91.43	123	1.6	V	20.9	0.69	0	20.24	38.45
5 MHz Bandwidth									
836.50	92.63	127	1.6	H	22.1	0.69	0	21.44	38.45
836.50	91.25	101	1.5	V	20.8	0.69	0	20.06	38.45



**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	22.52	22.35	22.53
		RB Size=1, RB Offset=12	22.57	22.47	22.42
		RB Size=1, RB Offset=24	22.42	22.78	22.52
		RB Size=12, RB Offset=0	21.47	21.52	21.56
		RB Size=12, RB Offset=6	22.53	21.42	21.72
		RB Size=12, RB Offset=11	22.58	22.26	22.42
		RB Size=25, RB Offset=0	21.65	21.36	21.32
	16QAM	RB Size=1, RB Offset=0	22.62	22.24	22.34
		RB Size=1, RB Offset=12	22.42	22.41	22.72
		RB Size=1, RB Offset=24	22.58	22.72	22.25
		RB Size=12, RB Offset=0	22.53	22.53	22.42
		RB Size=12, RB Offset=6	22.51	22.63	22.23
		RB Size=12, RB Offset=11	22.53	22.69	22.47
		RB Size=25, RB Offset=0	22.47	22.52	22.25
10.0	QPSK	RB Size=1, RB Offset=0	21.83	21.58	21.28
		RB Size=1, RB Offset=24	22.23	22.42	22.23
		RB Size=1, RB Offset=49	22.63	22.32	22.24
		RB Size=25, RB Offset=0	22.52	22.36	22.43
		RB Size=25, RB Offset=12	21.53	21.37	21.47
		RB Size=25, RB Offset=24	22.35	22.48	22.48
		RB Size=50, RB Offset=0	22.62	22.42	22.49
	16QAM	RB Size=1, RB Offset=0	21.92	21.23	21.48
		RB Size=1, RB Offset=24	21.83	21.27	21.53
		RB Size=1, RB Offset=49	22.45	22.36	22.56
		RB Size=25, RB Offset=0	22.27	22.24	22.57
		RB Size=25, RB Offset=12	22.42	22.42	22.45
		RB Size=25, RB Offset=24	22.85	22.72	22.46
		RB Size=50, RB Offset=0	21.91	21.45	21.48

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	22.25	22.32	22.49
		RB Size=1, RB Offset=37	22.14	22.41	22.36
		RB Size=1, RB Offset=74	22.43	22.75	22.42
		RB Size=36, RB Offset=0	22.25	22.36	22.43
		RB Size=36, RB Offset=18	22.72	22.56	22.75
		RB Size=36, RB Offset=37	21.92	21.54	21.79
		RB Size=75, RB Offset=0	22.15	22.42	21.72
	16QAM	RB Size=1, RB Offset=0	22.14	22.23	22.53
		RB Size=1, RB Offset=37	22.26	21.45	21.58
		RB Size=1, RB Offset=74	22.37	22.75	22.56
		RB Size=36, RB Offset=0	22.02	22.86	21.53
		RB Size=36, RB Offset=18	22.22	22.53	22.57
		RB Size=36, RB Offset=37	22.73	22.23	22.53
		RB Size=75, RB Offset=0	22.55	22.42	22.42
20.0	QPSK	RB Size=1, RB Offset=0	22.45	22.53	22.52
		RB Size=1, RB Offset=49	22.53	22.42	21.36
		RB Size=1, RB Offset=99	22.41	21.45	21.38
		RB Size=50, RB Offset=0	22.35	22.52	22.42
		RB Size=50, RB Offset=24	22.42	22.42	22.47
		RB Size=50, RB Offset=49	21.52	21.72	21.53
		RB Size=100, RB Offset=0	22.42	22.73	21.58
	16QAM	RB Size=1, RB Offset=0	22.52	22.74	22.59
		RB Size=1, RB Offset=49	22.42	21.75	21.61
		RB Size=1, RB Offset=99	22.48	22.63	22.35
		RB Size=50, RB Offset=0	22.23	22.25	22.32
		RB Size=50, RB Offset=24	22.35	22.42	22.31
		RB Size=50, RB Offset=49	22.40	22.46	22.34
		RB Size=100, RB Offset=0	22.52	22.46	22.75

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

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	5.71	13	Pass
QPSK (100%RB Size)	7.13	13	Pass
16QAM (1RB Size)	5.43	13	Pass
16QAM (100%RB Size)	7.35	13	Pass

**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									
5 MHz Bandwidth									
2535.00	81.34	75	2.4	H	15.0	1.70	8.60	21.90	33
2535.00	80.52	325	1.2	V	13.8	1.70	8.60	20.70	33
10MHz Bandwidth									
2535.00	81.69	133	1.6	H	15.3	1.70	8.60	22.20	33
2535.00	80.76	247	2.0	V	14.1	1.70	8.60	21.00	33
15 MHz Bandwidth									
2535.00	81.62	153	2.4	H	15.2	1.70	8.60	22.10	33
2535.00	80.71	191	2.2	V	14.0	1.70	8.60	20.90	33
20 MHz Bandwidth									
2535.00	81.52	15	2.3	H	15.1	1.70	8.60	22.00	33
2535.00	80.63	284	1.9	V	13.9	1.70	8.60	20.80	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	81.73	296	1.9	H	15.3	1.70	8.60	22.20	33
2535.00	80.86	246	1.9	V	14.2	1.70	8.60	21.10	33
10 MHz Bandwidth									
2535.00	81.34	276	1.9	H	15.0	1.70	8.60	21.90	33
2535.00	80.53	353	1.8	V	13.8	1.70	8.60	20.70	33
15 MHz Bandwidth									
2535.00	81.63	341	1.5	H	15.2	1.70	8.60	22.10	33
2535.00	80.34	103	2.2	V	13.6	1.70	8.60	20.50	33
20 MHz Bandwidth									
2535.00	81.78	181	1.1	H	15.4	1.70	8.60	22.30	33
2535.00	80.39	180	1.2	V	13.7	1.70	8.60	20.60	33

**LTE Band 17:**

**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB Size=1, RB Offset=0	22.24	22.55	22.35
		RB Size=1, RB Offset=12	22.41	21.44	21.25
		RB Size=1, RB Offset=24	22.36	22.32	21.74
		RB Size=12, RB Offset=0	22.24	22.42	22.36
		RB Size=12, RB Offset=6	21.52	21.45	21.24
		RB Size=12, RB Offset=11	21.41	21.47	21.32
		RB Size=25, RB Offset=0	22.46	22.49	22.42
	16QAM	RB Size=1, RB Offset=0	22.52	22.52	22.57
		RB Size=1, RB Offset=12	22.58	22.56	22.22
		RB Size=1, RB Offset=24	22.62	22.32	22.45
		RB Size=12, RB Offset=0	22.32	21.42	21.47
		RB Size=12, RB Offset=6	22.36	21.52	21.65
		RB Size=12, RB Offset=11	22.38	21.65	21.58
		RB Size=25, RB Offset=0	22.82	21.67	21.52
10	QPSK	RB Size=1, RB Offset=0	21.42	21.62	21.36
		RB Size=1, RB Offset=24	22.32	22.62	22.41
		RB Size=1, RB Offset=49	22.35	22.41	22.37
		RB Size=25, RB Offset=0	22.36	21.52	21.82
		RB Size=25, RB Offset=12	22.38	22.32	22.34
		RB Size=25, RB Offset=24	22.41	22.42	22.22
		RB Size=50, RB Offset=0	21.42	21.42	21.74
	16QAM	RB Size=1, RB Offset=0	22.45	22.32	22.12
		RB Size=1, RB Offset=24	22.63	22.85	22.25
		RB Size=1, RB Offset=49	22.68	22.65	22.42
		RB Size=25, RB Offset=0	22.85	22.42	22.35
		RB Size=25, RB Offset=12	22.42	22.63	22.54
		RB Size=25, RB Offset=24	22.43	22.22	22.54
		RB Size=50, RB Offset=0	22.23	22.53	22.87

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

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	6.12	13	Pass
QPSK (100%RB Size)	7.76	13	Pass
16QAM (1RB Size)	5.91	13	Pass
16QAM (100%RB Size)	7.84	13	Pass

**ERP:**

**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	92.13	115	1.5	H	21.6	0.64	0	20.96	34.8
710.00	91.25	126	1.4	V	20.8	0.64	0	20.16	34.8
10MHz Bandwidth									
710.00	92.75	152	1.5	H	22.3	0.64	0	21.66	34.8
710.00	91.86	125	1.4	V	21.4	0.64	0	20.96	34.8

**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	92.56	159	1.5	H	22.1	0.64	0	21.46	34.8
710.00	91.76	112	1.6	V	21.3	0.64	0	20.66	34.8
10 MHz Bandwidth									
710.00	92.34	169	1.5	H	21.8	0.64	0	21.16	34.8
710.00	91.52	74	1.6	V	21.0	0.64	0	20.16	34.8

**Note:**

All above data were tested with no amplifier

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

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

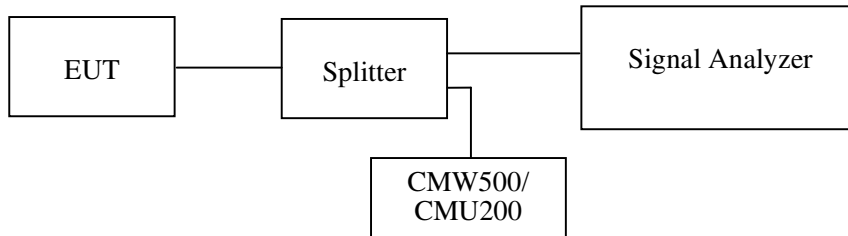
### Applicable Standards

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

\* **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>	23~24 °C
<b>Relative Humidity:</b>	55~57 %
<b>ATM Pressure:</b>	101.0kPa

The testing was performed by Haiguo Li from 2016-01-17 to 2016-01-22.

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	248.5	316.6
EGPRS(8PSK)	836.6	248.5	324.6

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA (BPSK)	836.6	4.288	4.890
HSUPA (BPSK)	836.6	4.228	4.890
HSDPA (16QAM)	836.6	4.228	4.890

**PCS Band (Part 24E)**

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	244.5	320.6
EGPRS(8PSK)	1880.0	252.5	324.6

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
WCDMA (BPSK)	1880.0	4.248	4.950
HSUPA (BPSK)	1880.0	4.269	4.950
HSDPA (16QAM)	1880.0	4.269	4.910

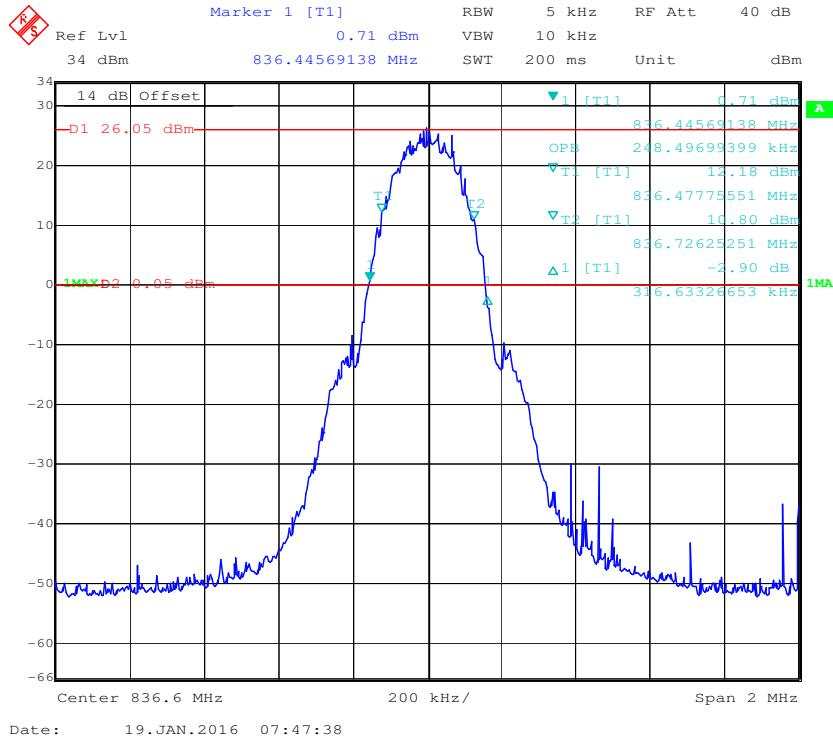


**AWS Band (Part 27)**

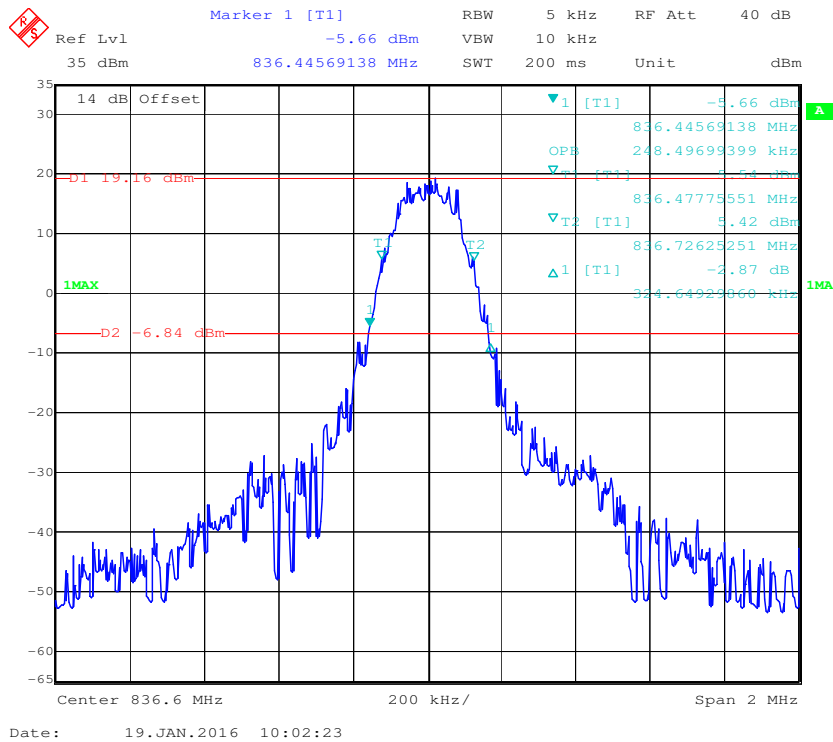
<b>Mode</b>	<b>Frequency (MHz)</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
WCDMA (BPSK)	1732.6	4.228	4.910
HSUPA (BPSK)	1732.6	4.228	4.910
HSDPA (16QAM)	1732.6	4.228	4.910

**Cellular Band (Part 22H)**

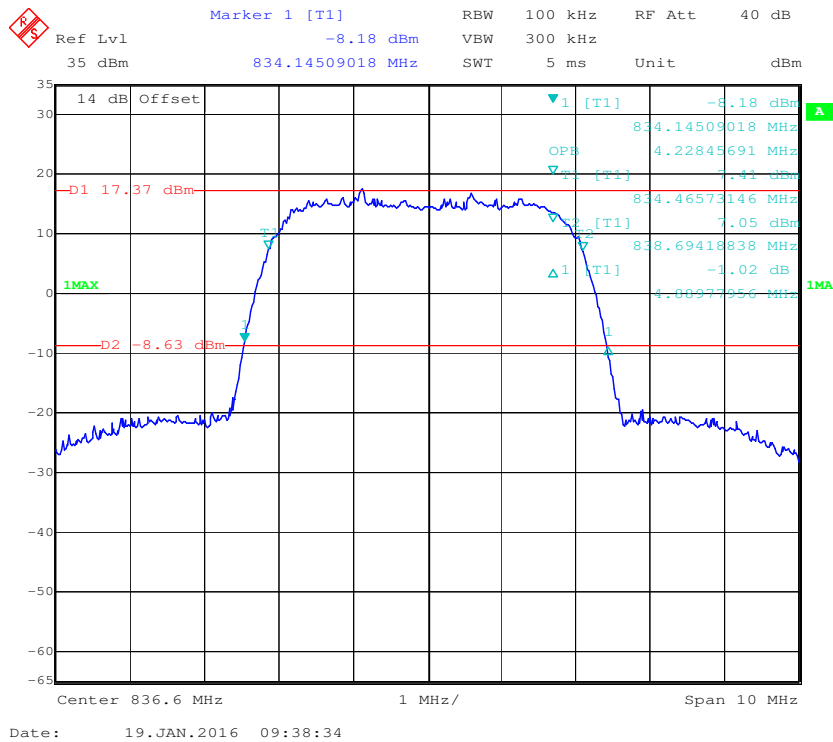
**99% Occupied & 26 dB Emissions Bandwidth for GSM (GMSK) Mode**



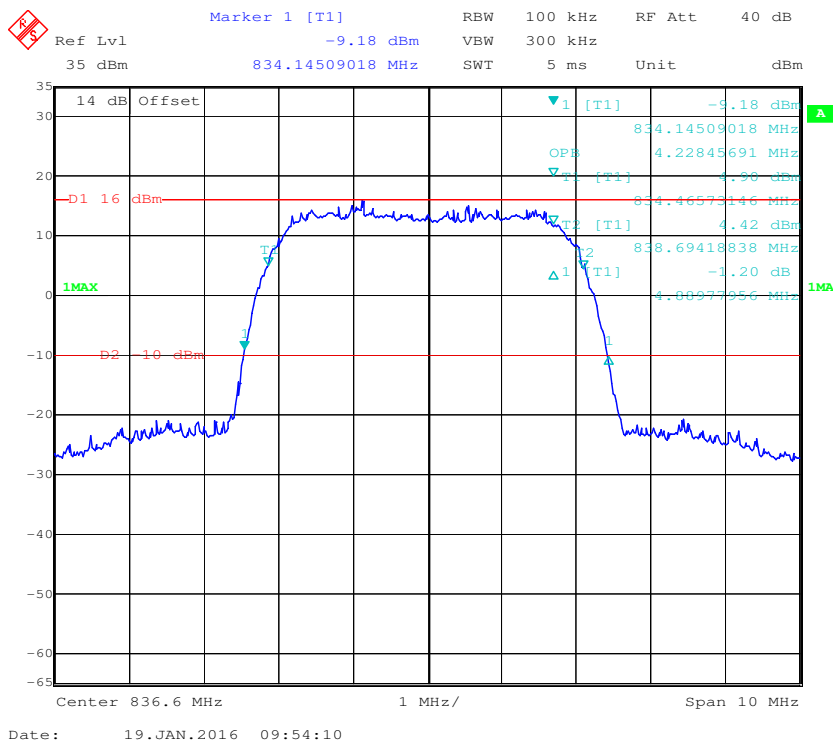
**99% Occupied & 26 dB Emissions Bandwidth for EDGE Mode**



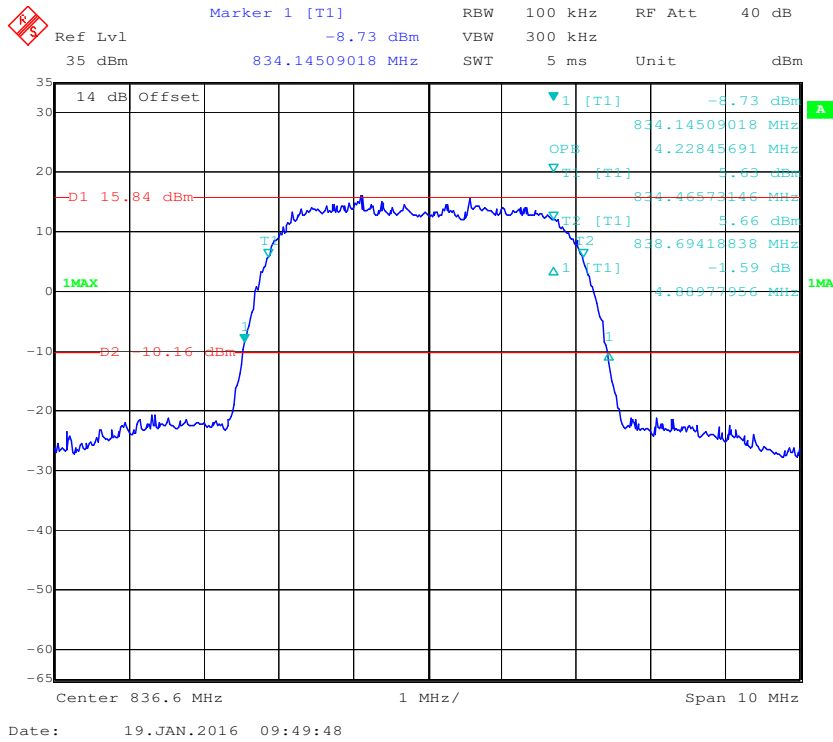
**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (BPSK) Mode**



**99% Occupied & 26 dB Emissions Bandwidth for HSUPA (BPSK) Mode**

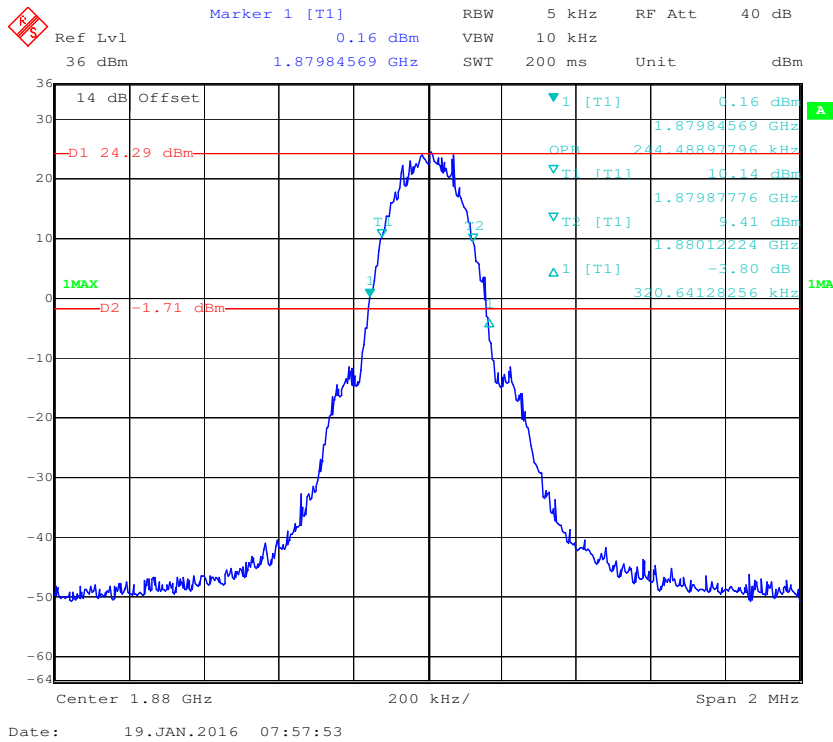


**99% Occupied & 26 dB Emissions Bandwidth for HSDPA (16QAM) Mode**

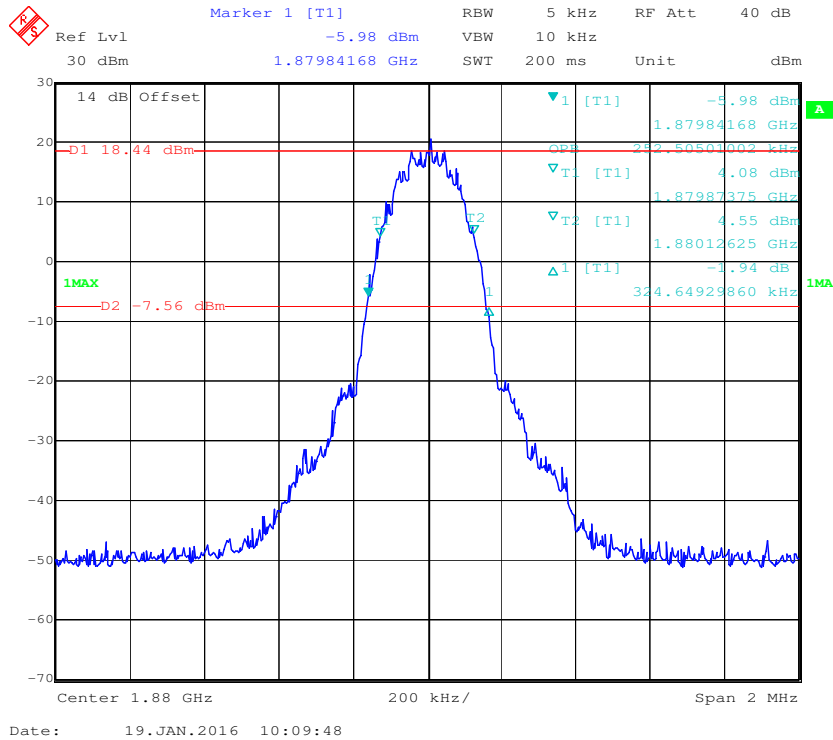


**PCS Band (Part 24E)**

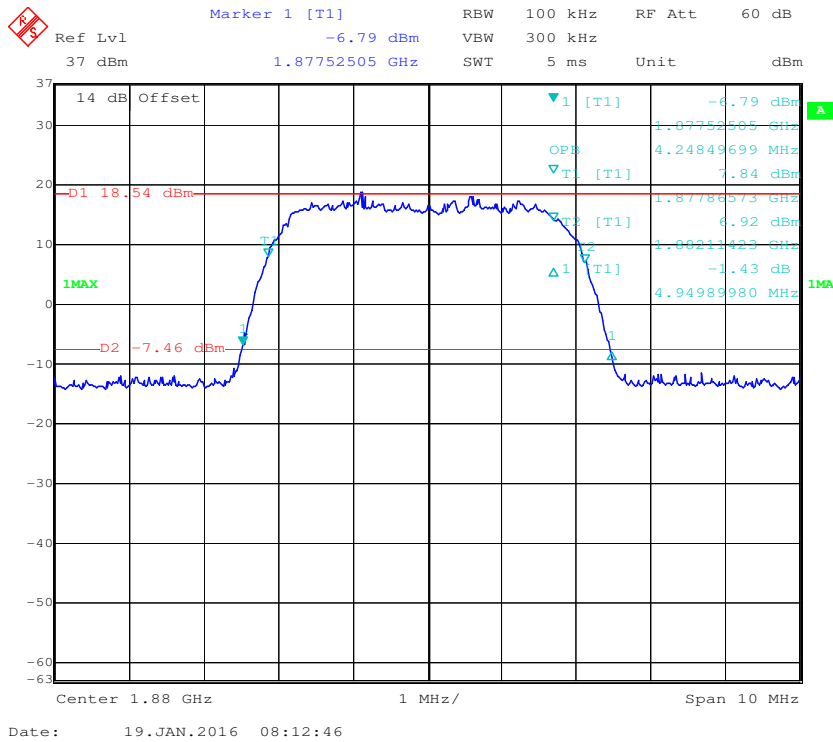
**99% Occupied & 26 dB Emissions Bandwidth for GSM (GMSK) Mode**



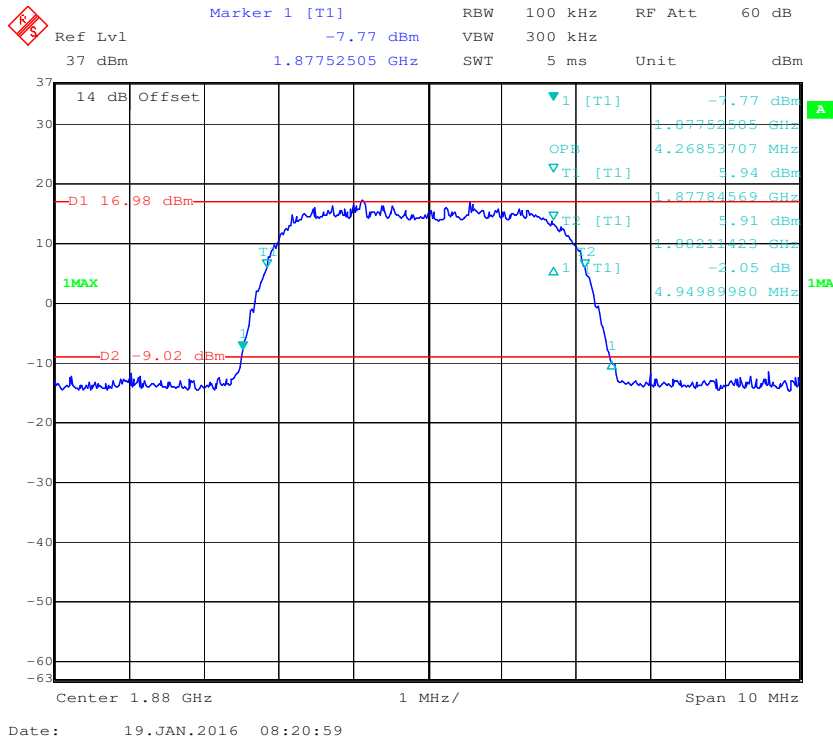
**99% Occupied & 26 dB Emissions Bandwidth for EGPRS Mode**



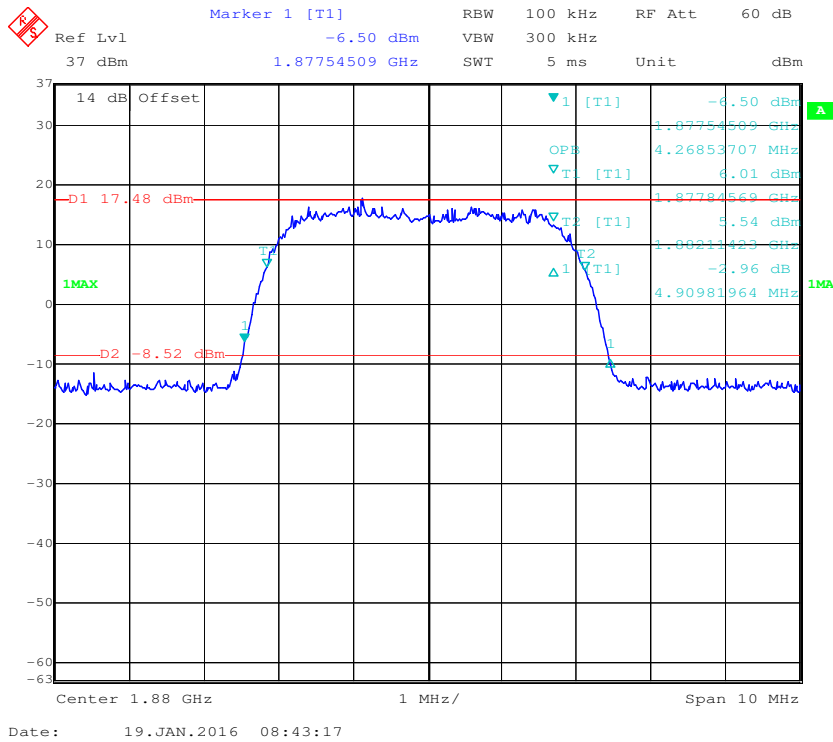
**999% Occupied & 26 dB Emissions Bandwidth for WCDMA (BPSK) Mode**



**99% Occupied & 26 dB Emissions Bandwidth for HSUPA (BPSK) Mode**

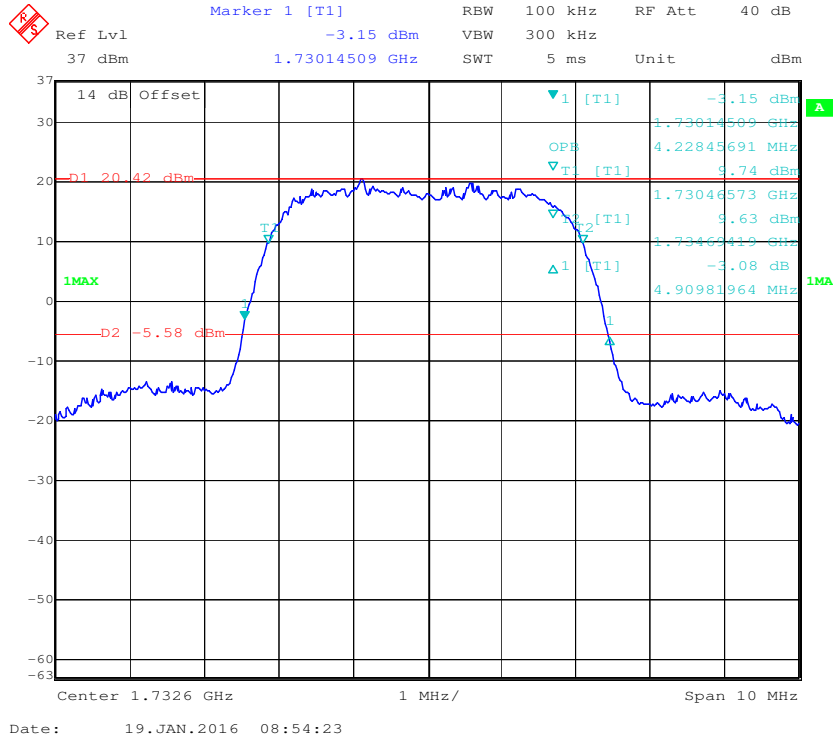


**99% Occupied & 26 dB Emissions Bandwidth for HSDPA (16QAM) Mode**

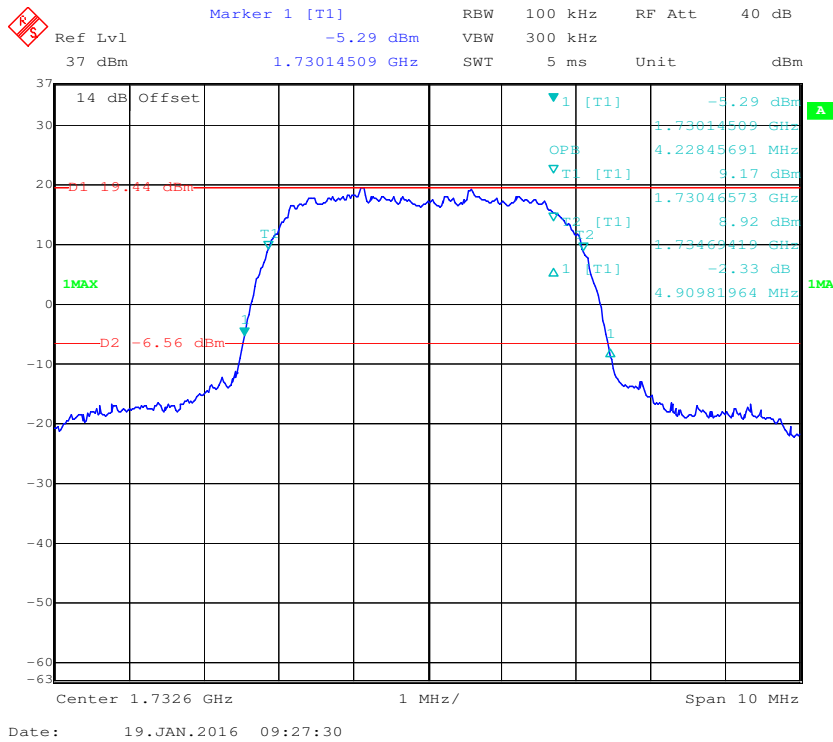


**AWS Band (Part 27)**

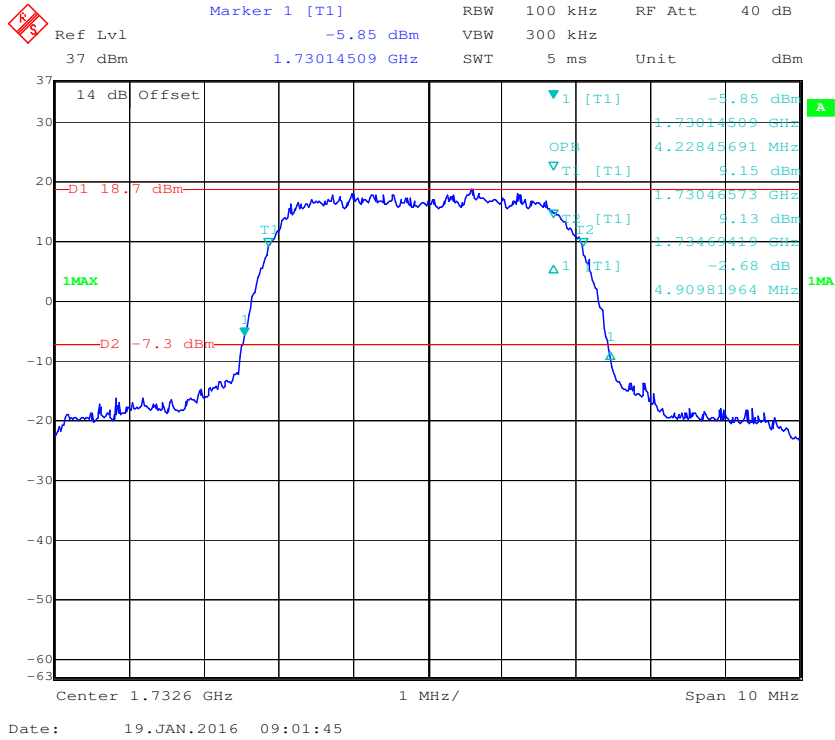
**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (BPSK) Mode**



**99% Occupied & 26 dB Emissions Bandwidth for HSUPA (BPSK) Mode**



**99% Occupied & 26 dB Emissions Bandwidth for HSDPA (16QAM) Mode**

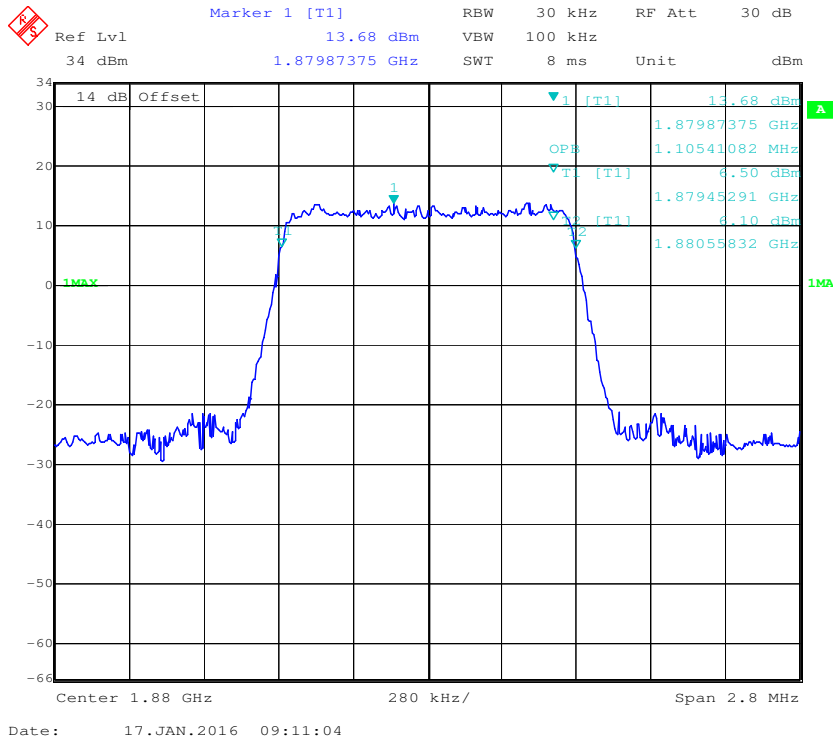




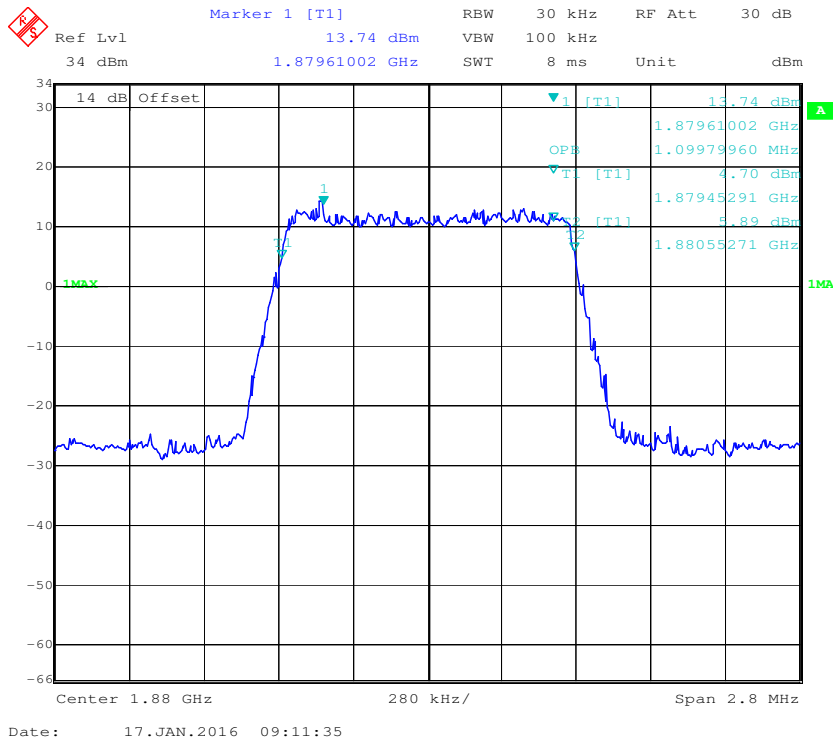
**LTE Band 2: (Middle Channel)**

<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
1.4	QPSK	1.105	1.276
	16QAM	1.100	1.293
3.0	QPSK	2.705	2.918
	16QAM	2.693	2.944
5.0	QPSK	4.549	5.109
	16QAM	4.549	5.080
10.0	QPSK	9.018	9.812
	16QAM	8.938	9.667
15.0	QPSK	13.527	14.978
	16QAM	13.527	14.978
20.0	QPSK	17.956	19.450
	16QAM	18.036	19.392

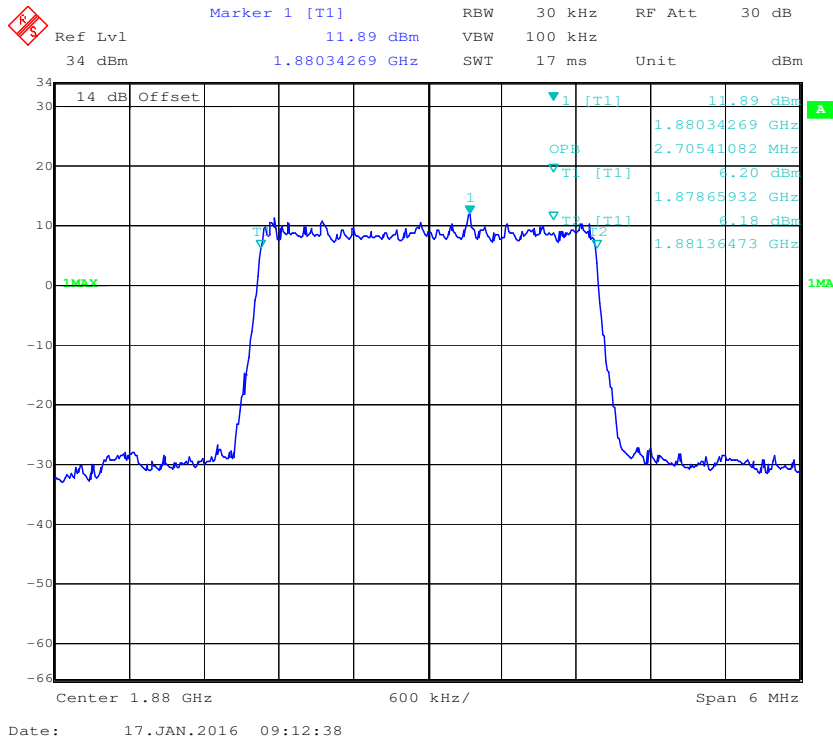
**QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel**



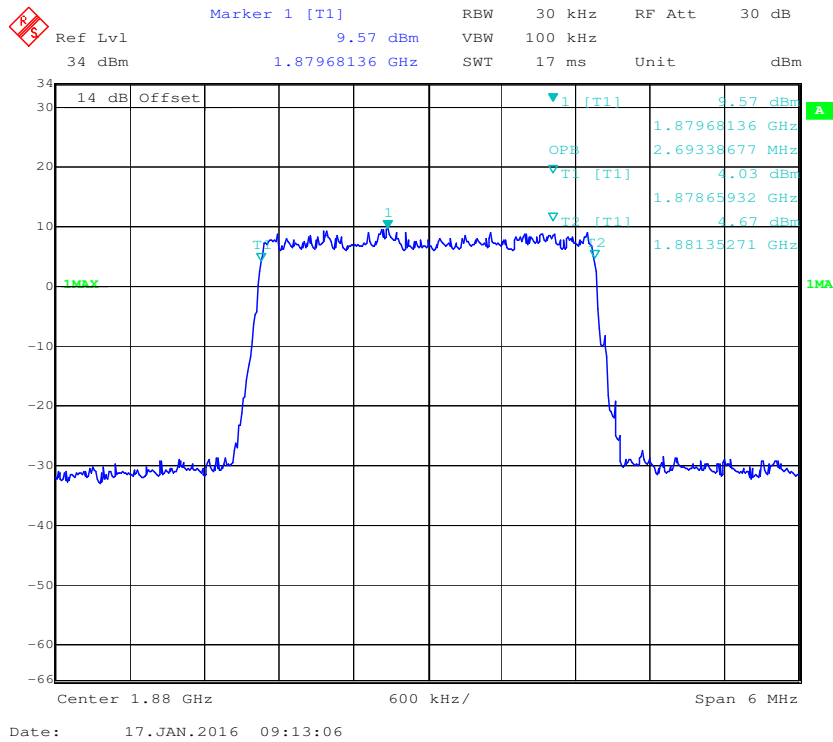
**16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel**



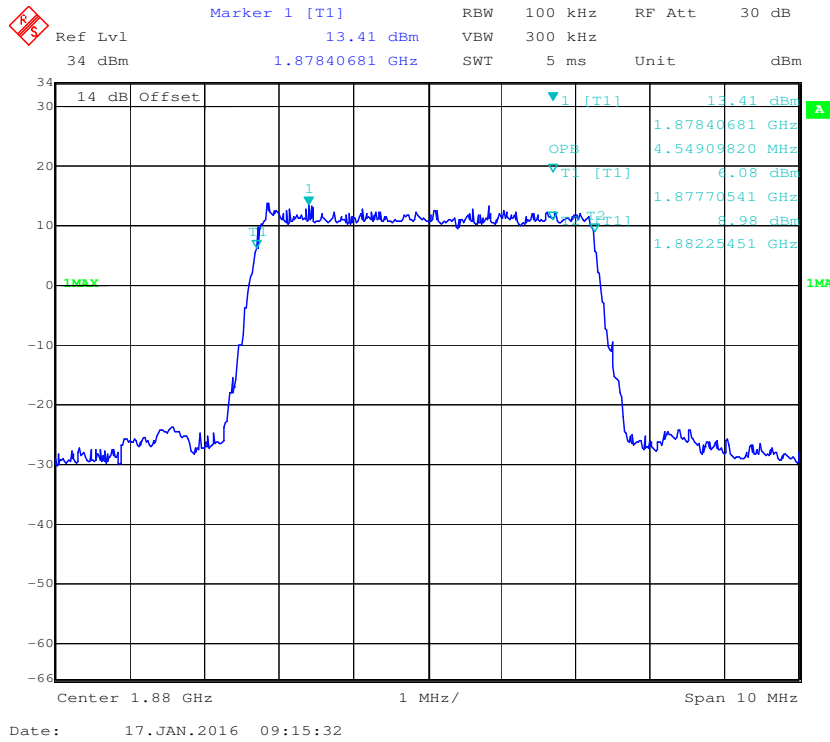
**QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel**



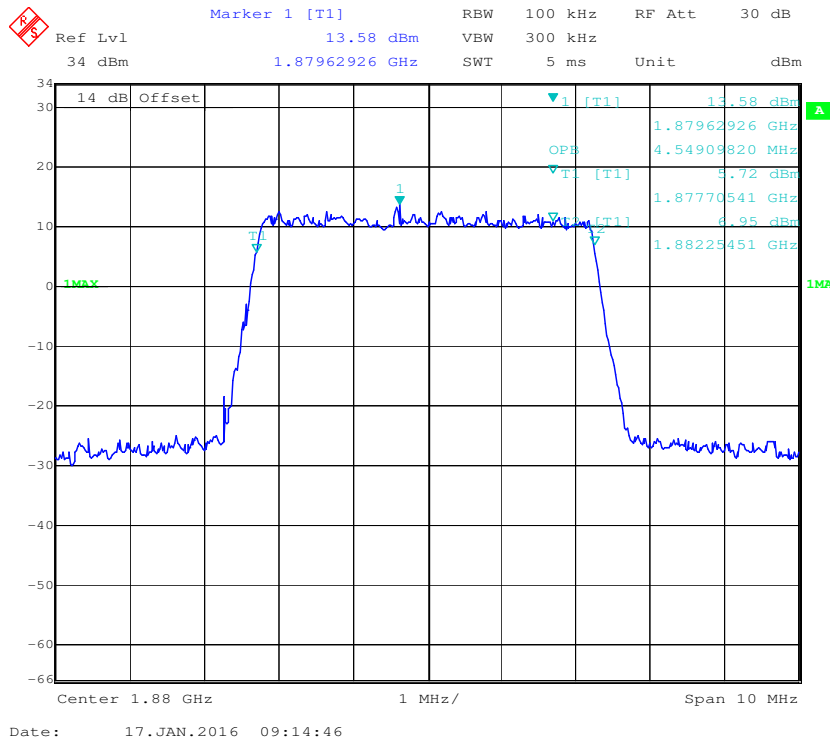
**16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel**



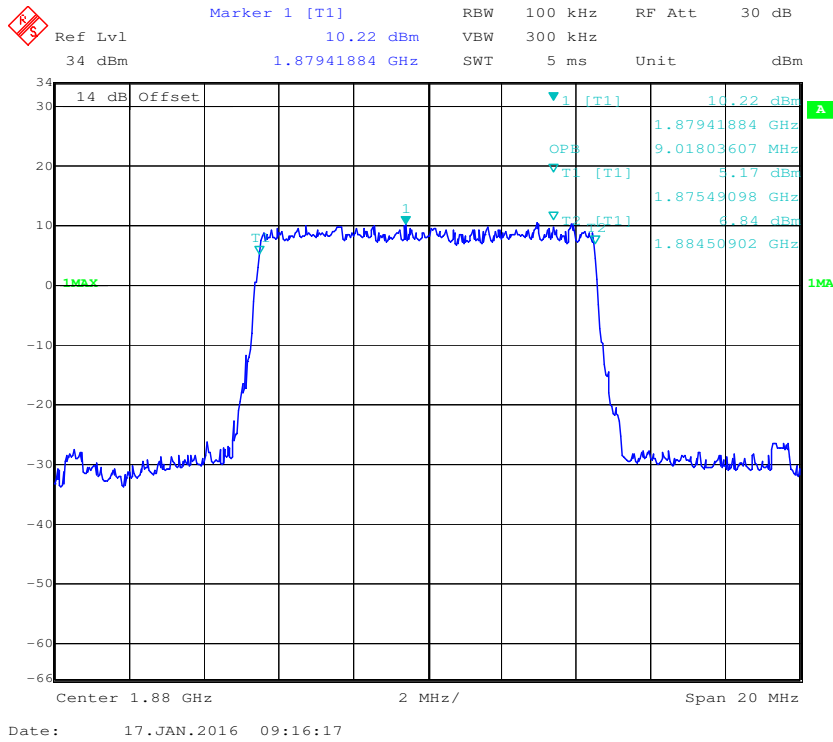
**QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



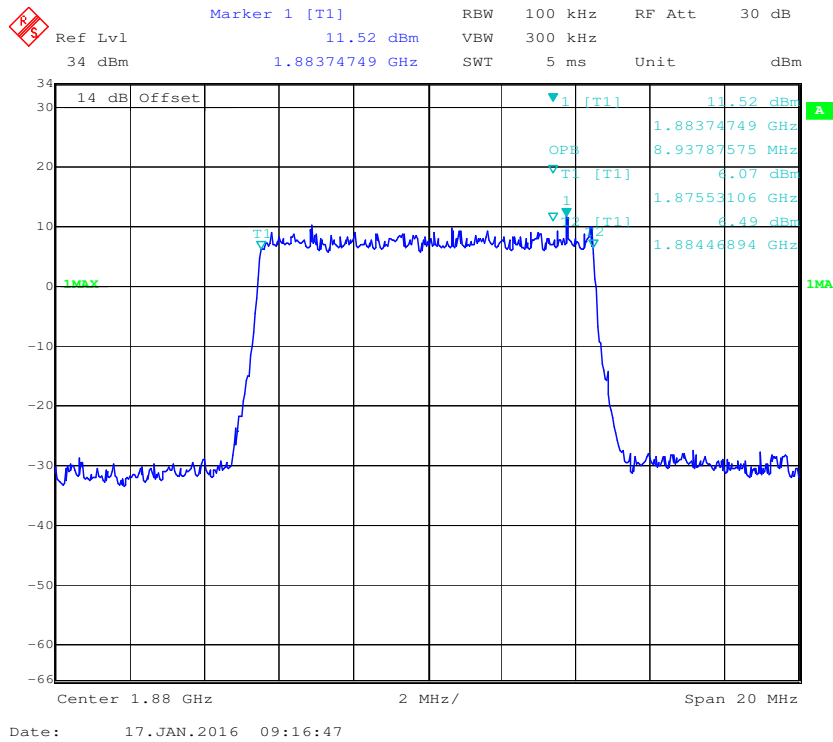
**16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



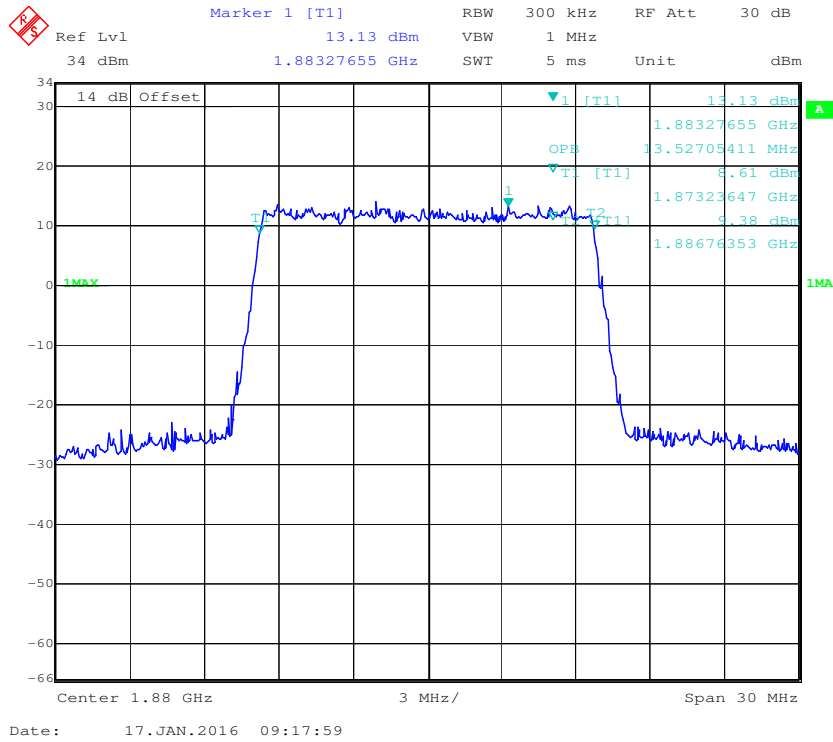
**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



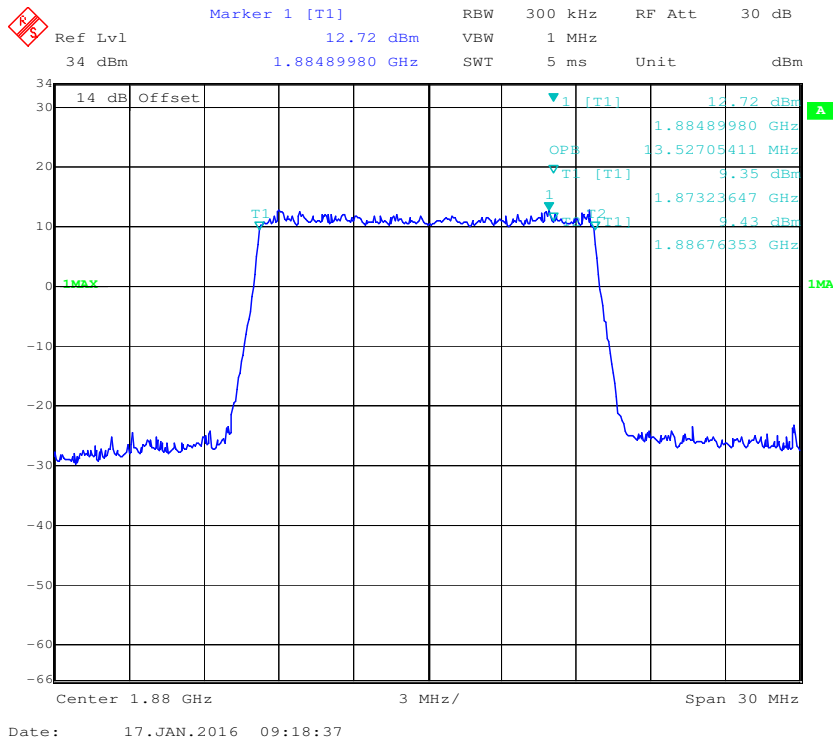
**16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



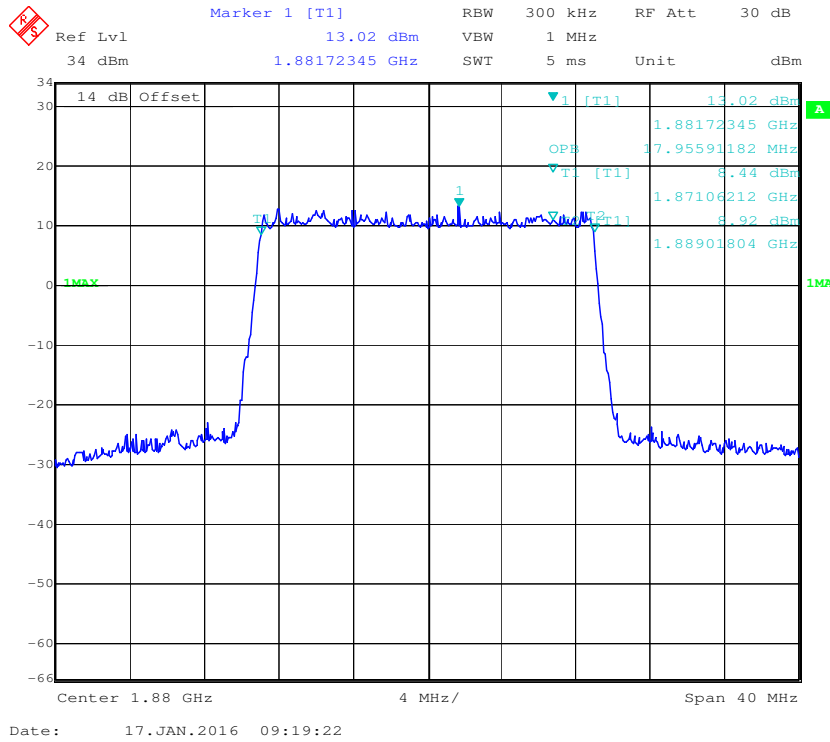
**QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



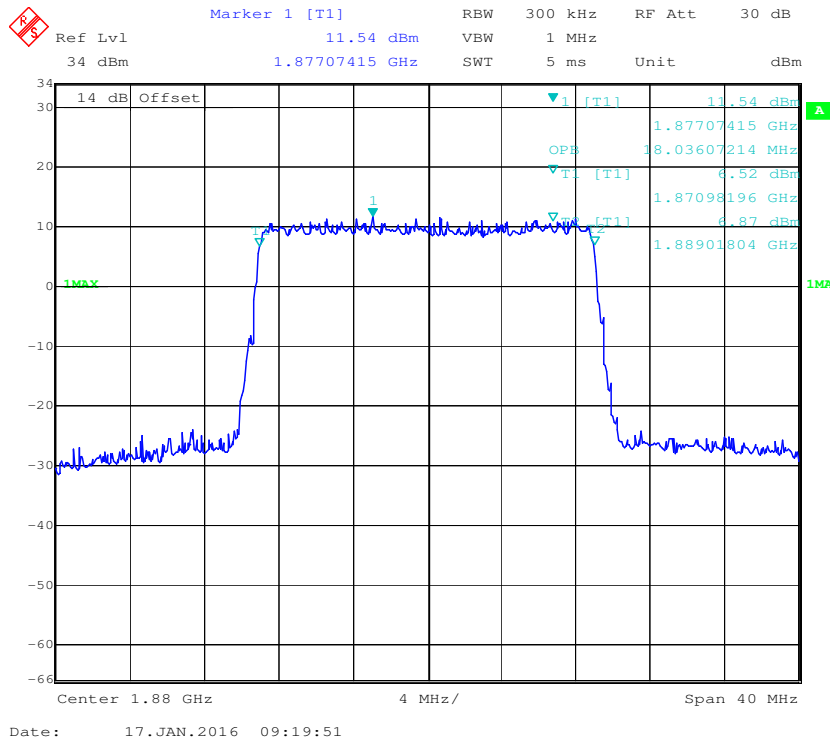
**16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



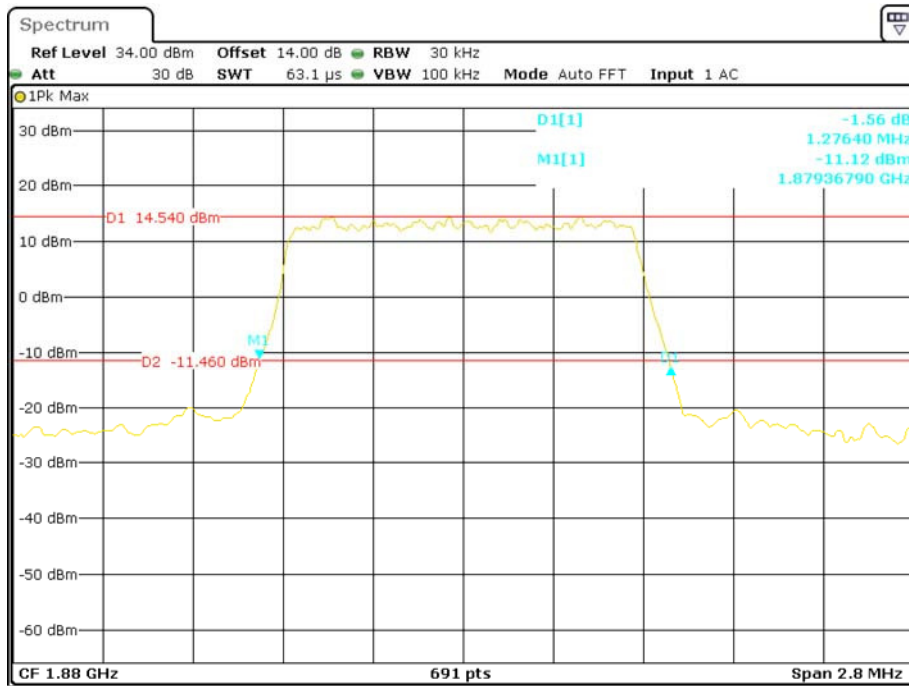
**QPSK (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



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

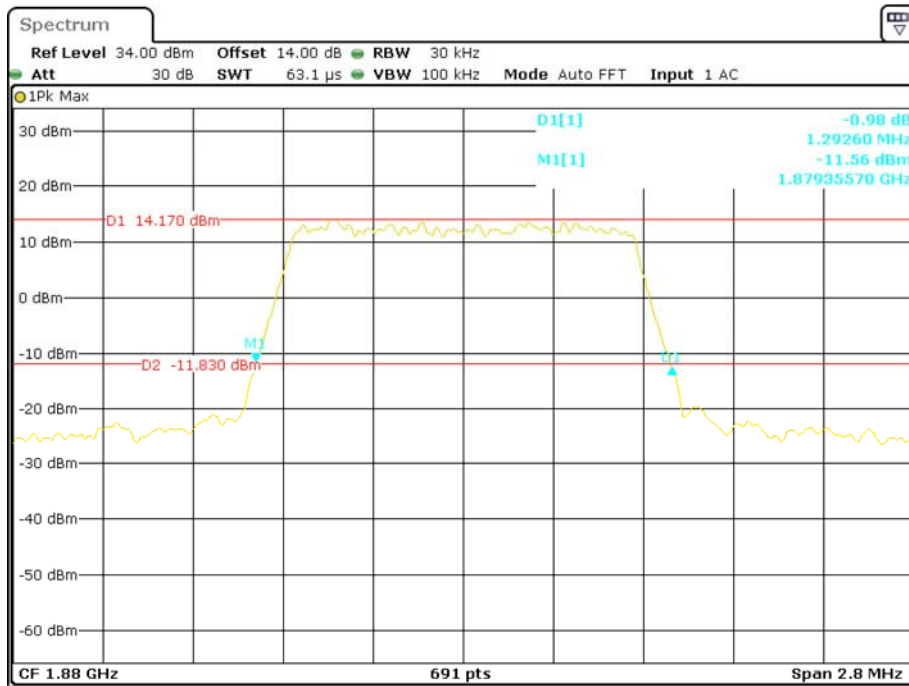


### QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel



Date: 22.JAN.2016 11:26:03

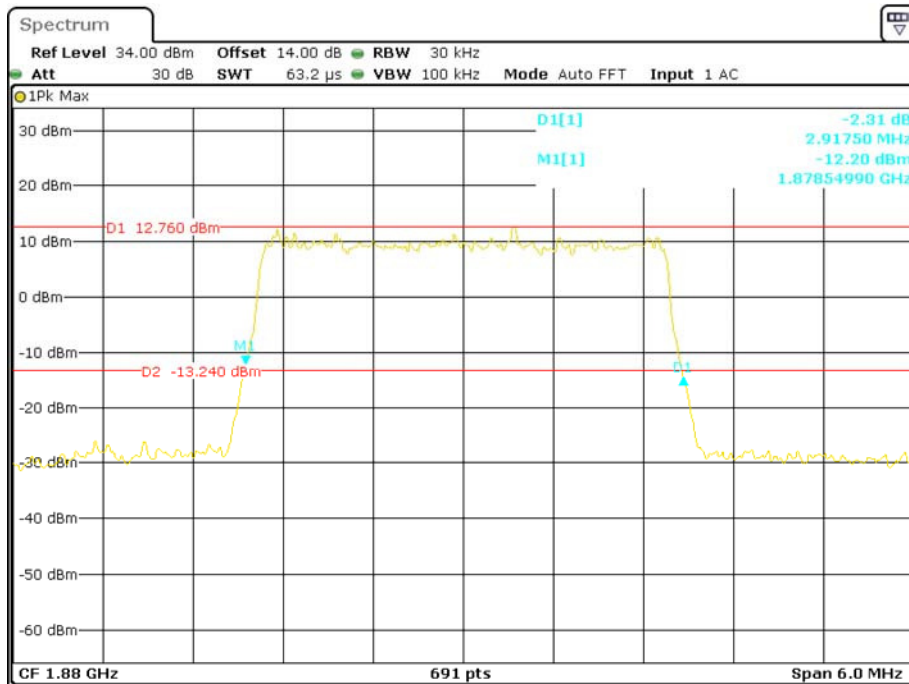
### 16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel



Date: 22.JAN.2016 11:27:46

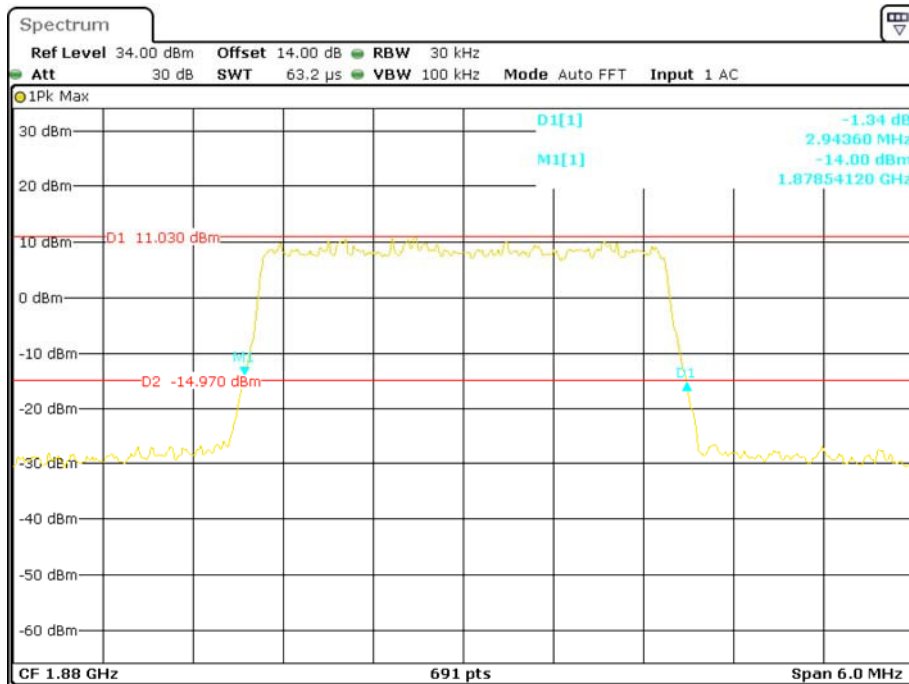


**QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel**



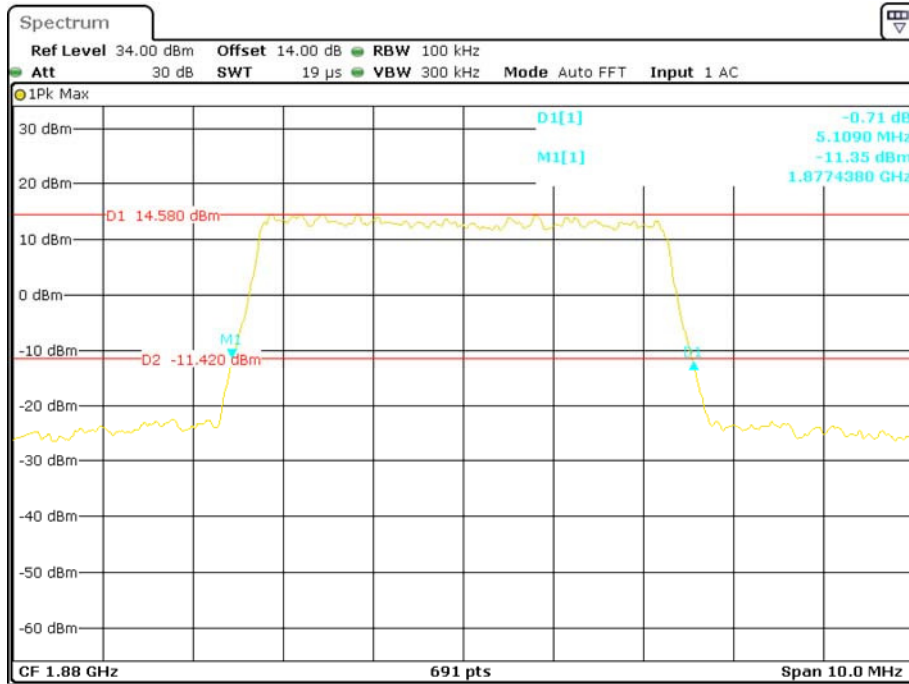
Date: 22.JAN.2016 11:29:10

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



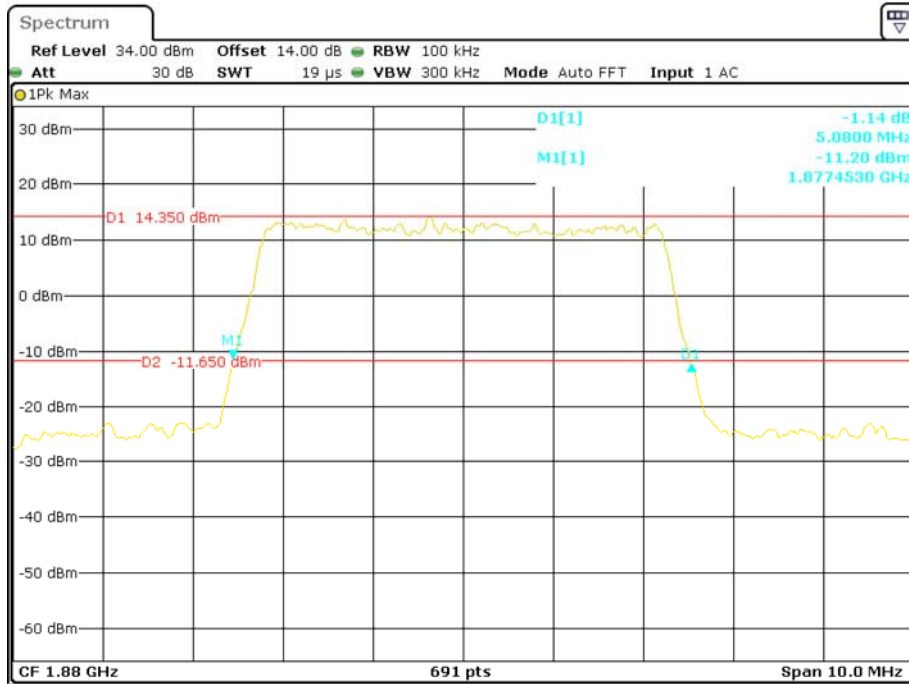
Date: 22.JAN.2016 11:30:18

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



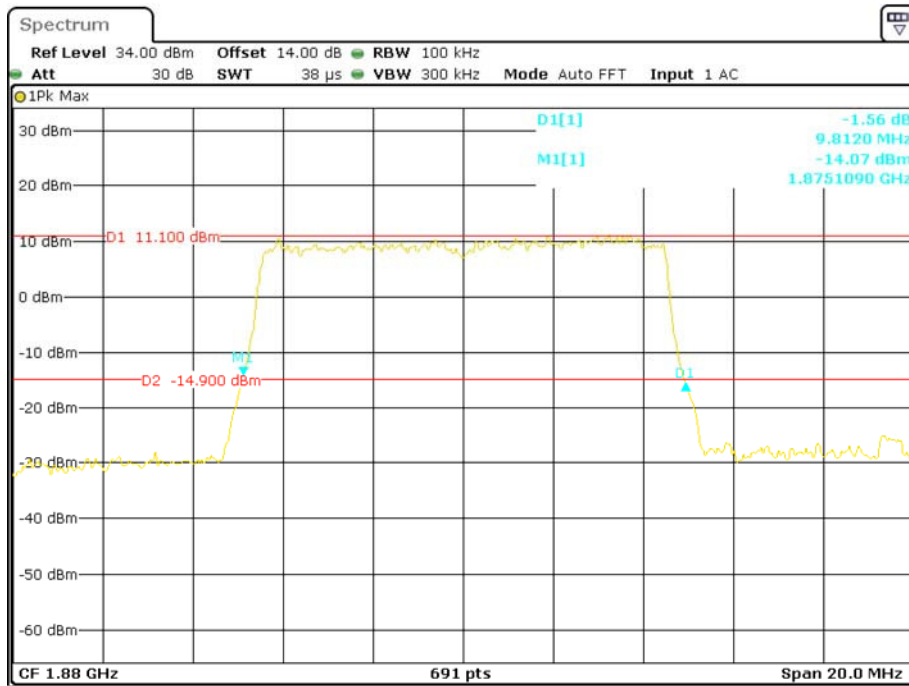
Date: 22.JAN.2016 11:32:47

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



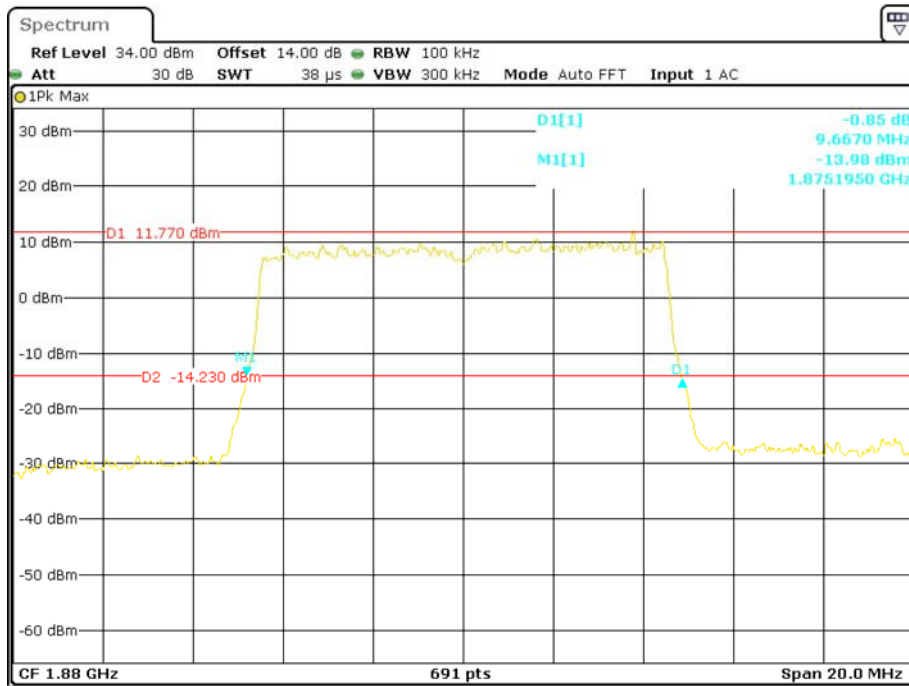
Date: 22.JAN.2016 11:33:41

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



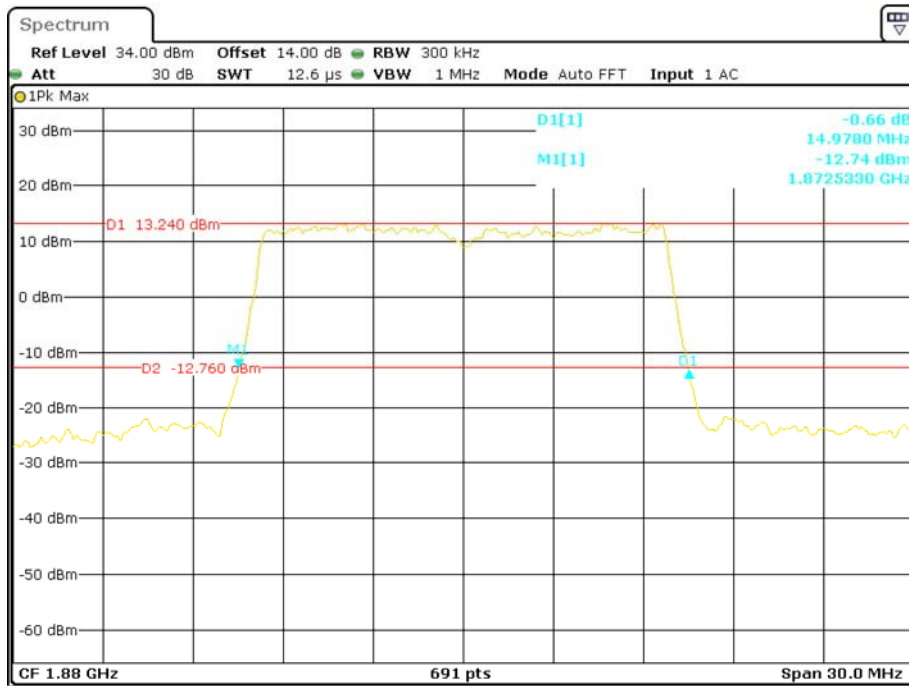
Date: 22.JAN.2016 11:34:48

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



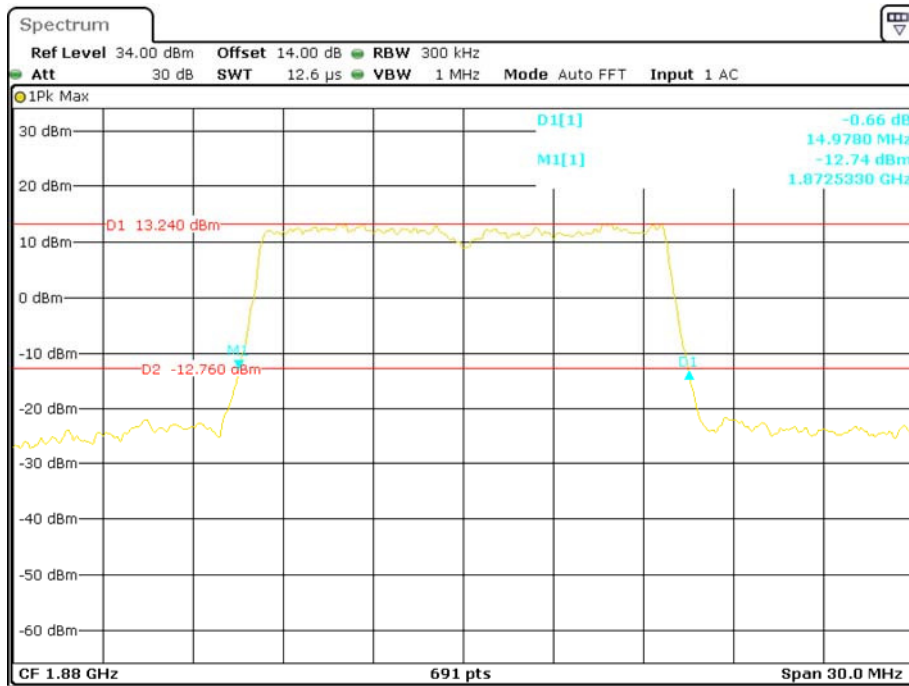
Date: 22.JAN.2016 11:36:21

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



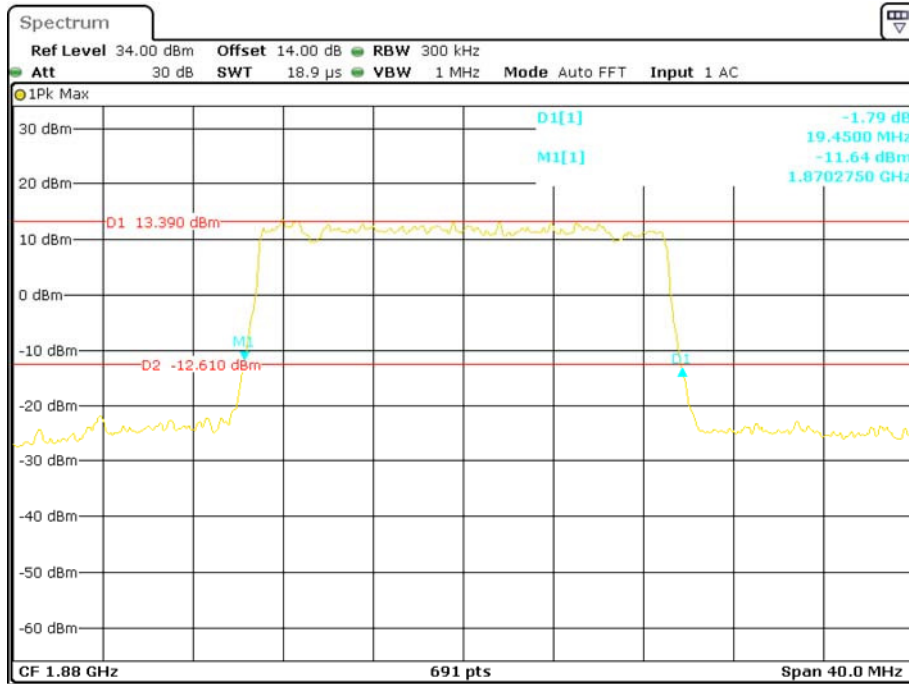
Date: 22.JAN.2016 11:39:19

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



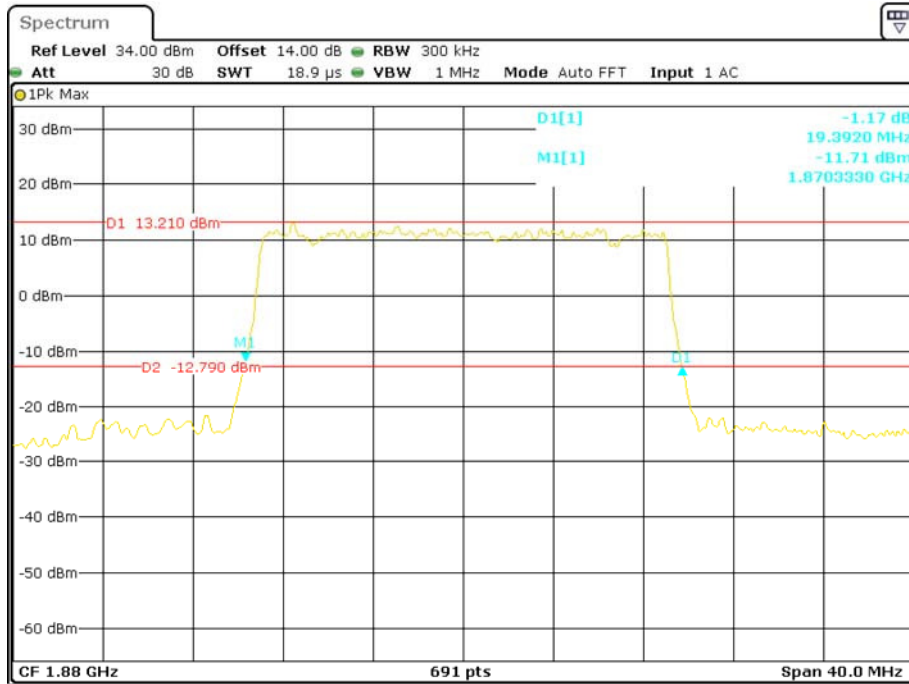
Date: 22.JAN.2016 11:39:19

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



Date: 22.JAN.2016 11:42:16

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

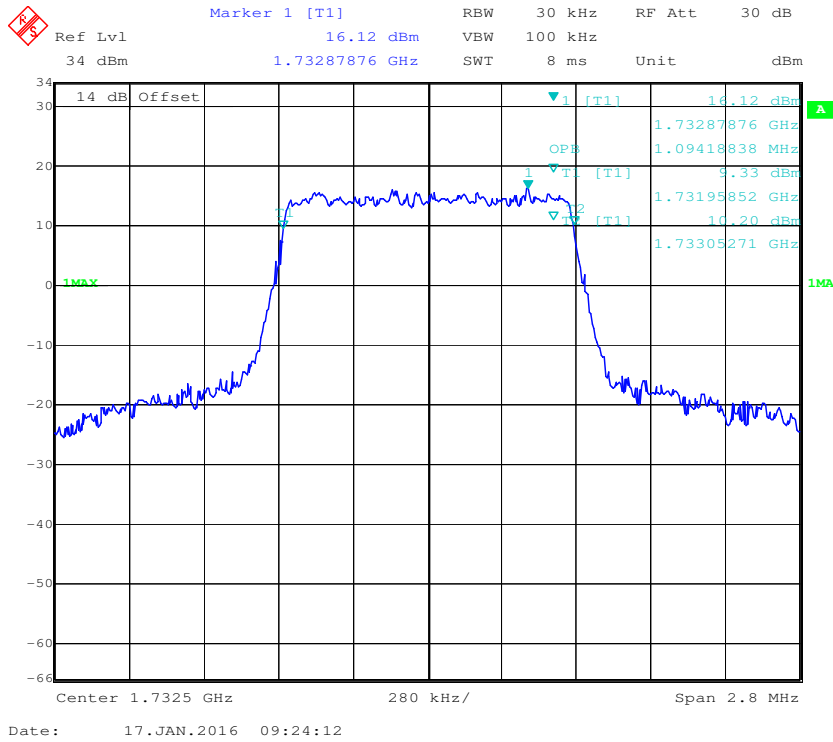


Date: 22.JAN.2016 11:43:57

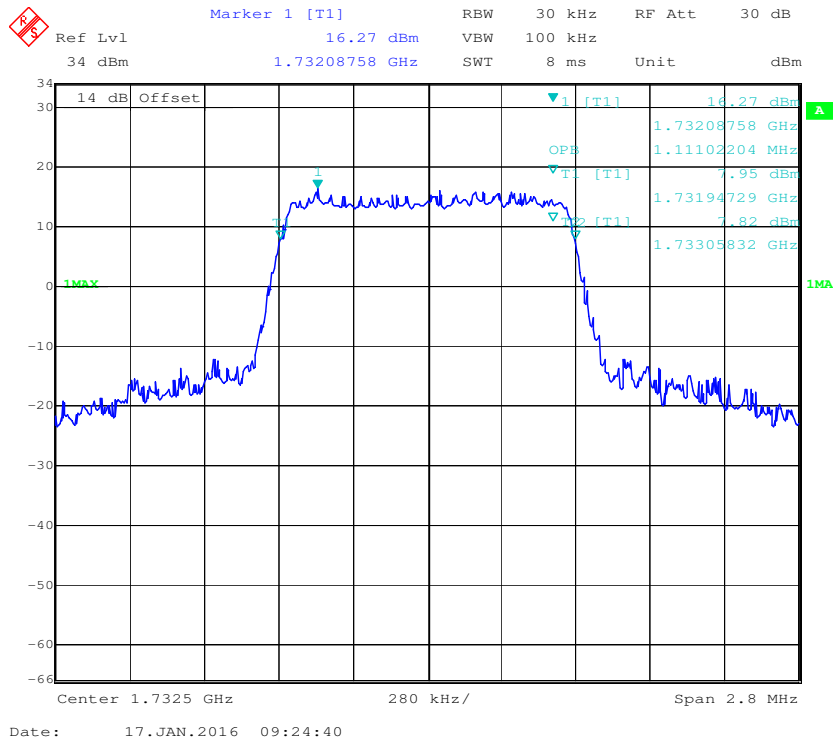
**LTE Band 4: (Middle Channel)**

<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
1.4	QPSK	1.094	1.293
	16QAM	1.111	1.264
3.0	QPSK	2.693	2.926
	16QAM	2.705	2.935
5.0	QPSK	4.509	5.109
	16QAM	4.549	5.080
10.0	QPSK	8.978	9.783
	16QAM	8.978	9.667
15.0	QPSK	13.527	14.848
	16QAM	13.467	14.891
20.0	QPSK	17.876	19.334
	16QAM	17.876	19.508

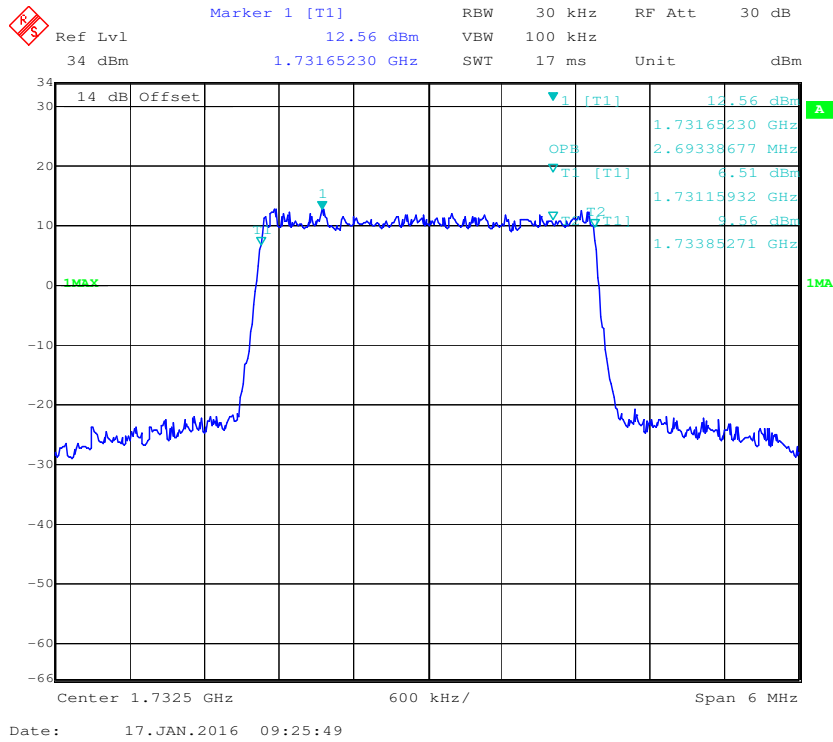
**QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel**



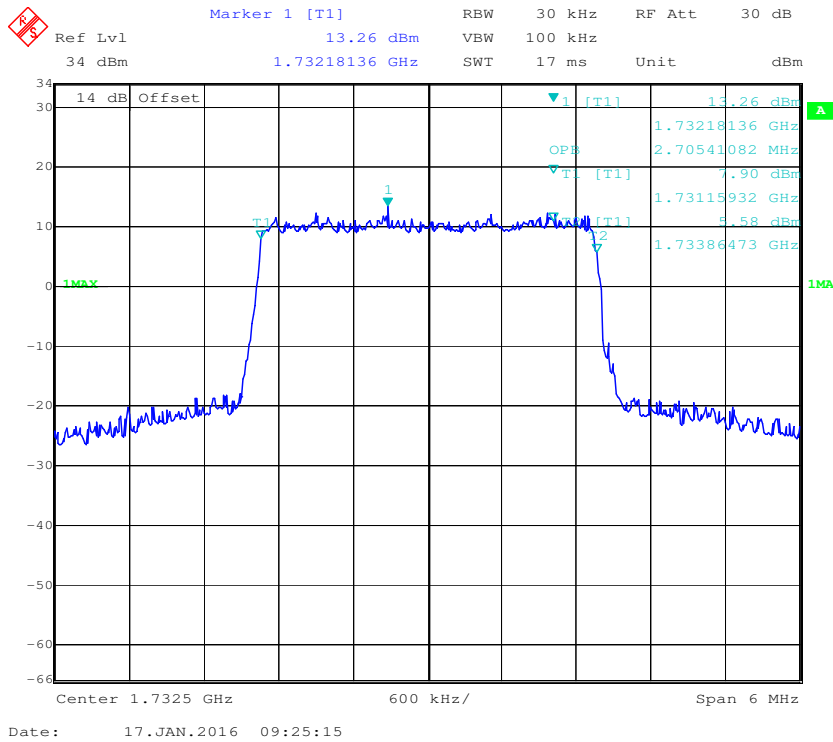
**16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel**



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

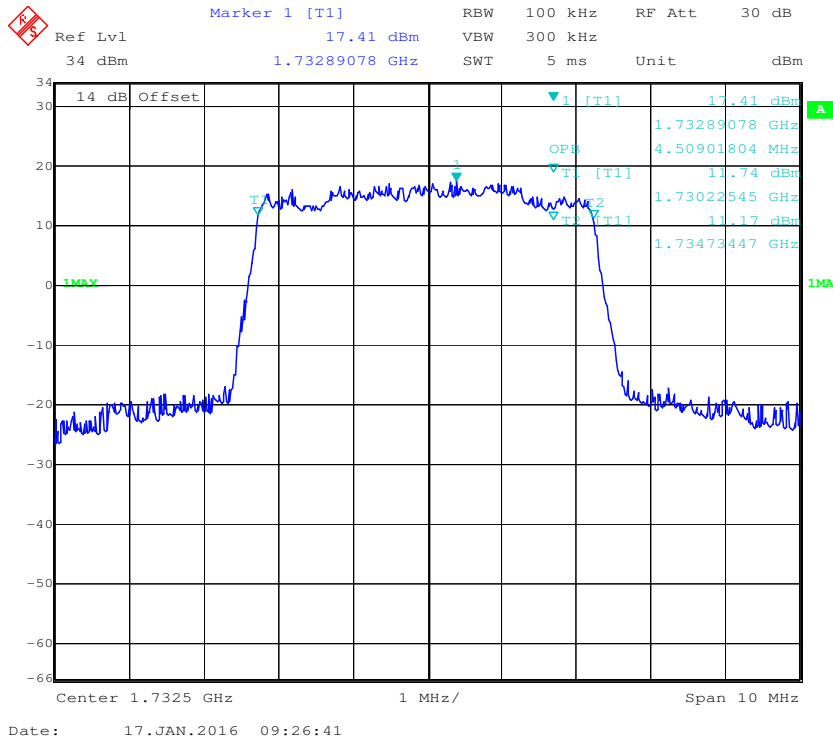


**16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel**

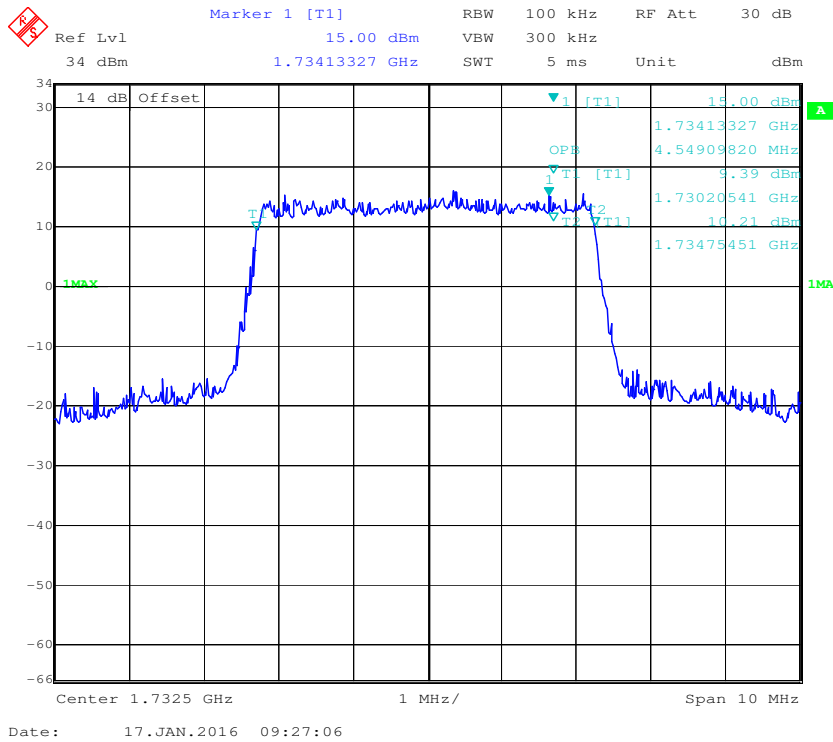




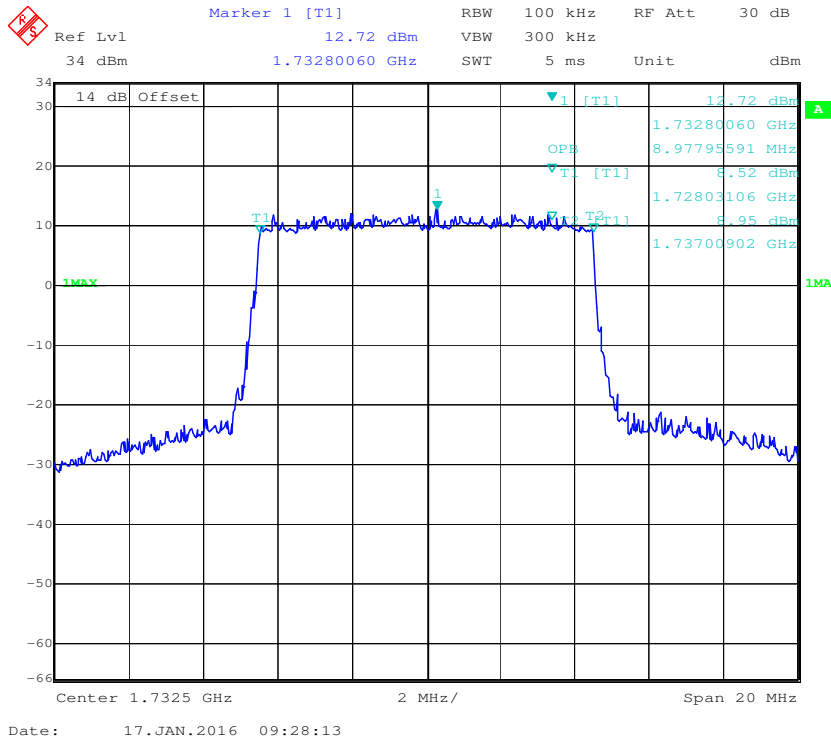
**QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



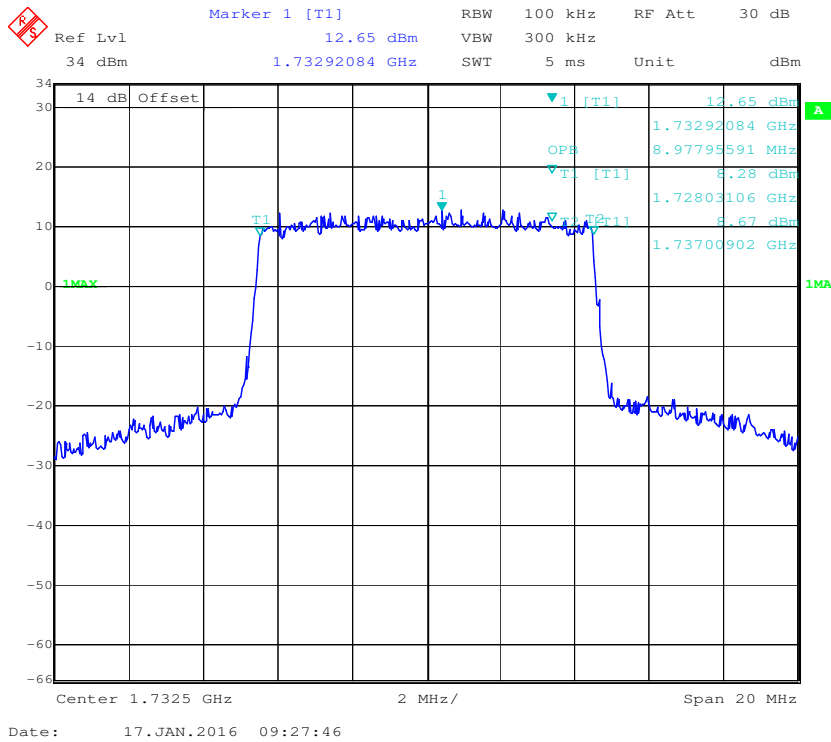
**16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



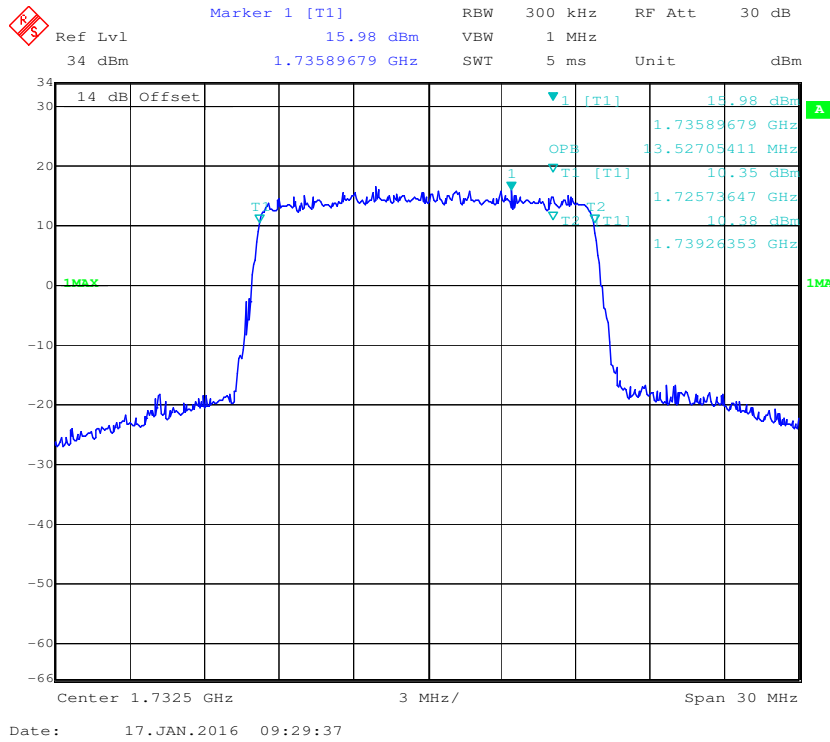
**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



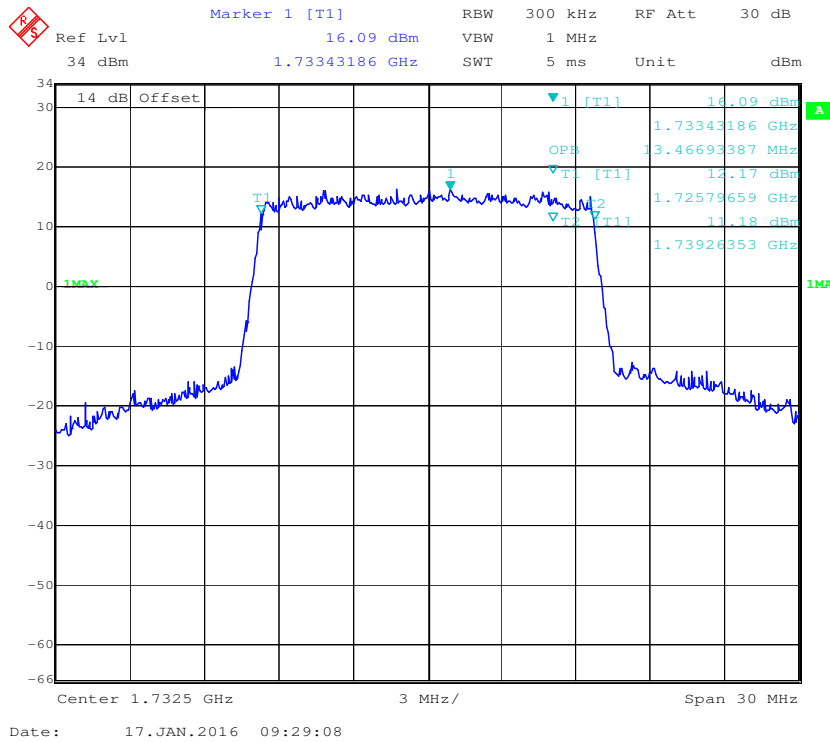
**16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



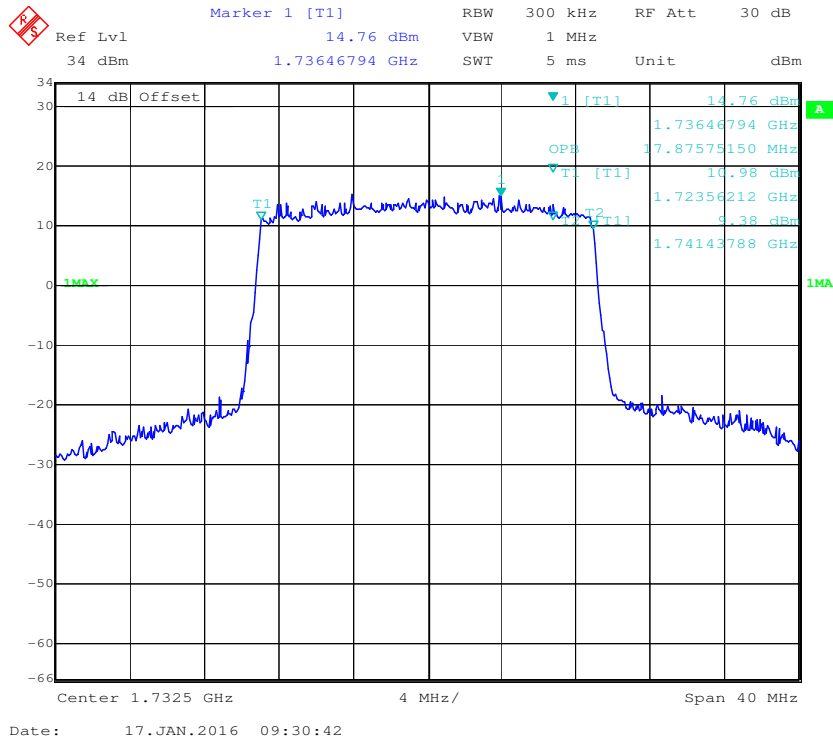
**QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



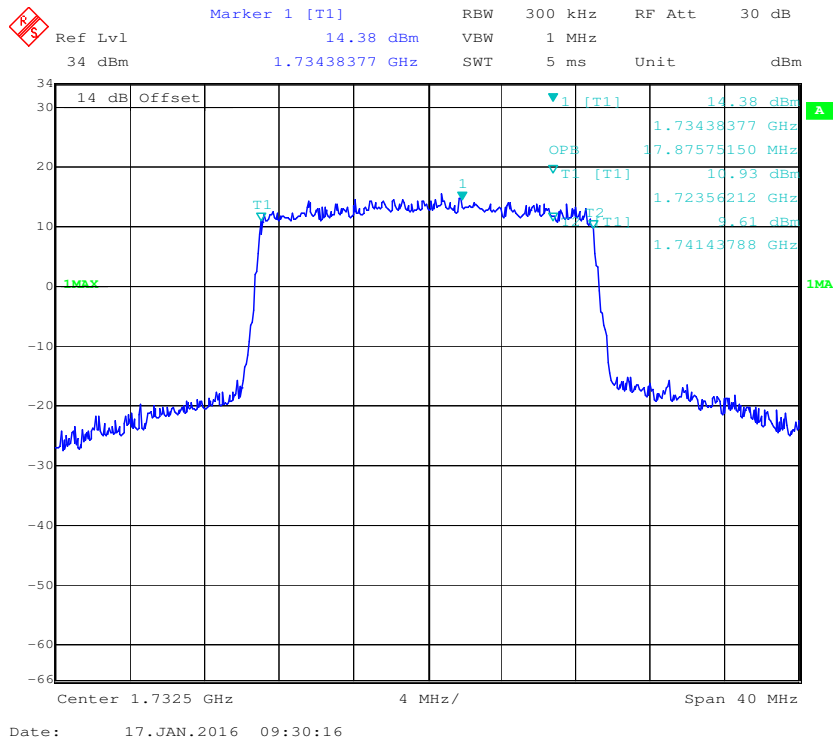
**16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



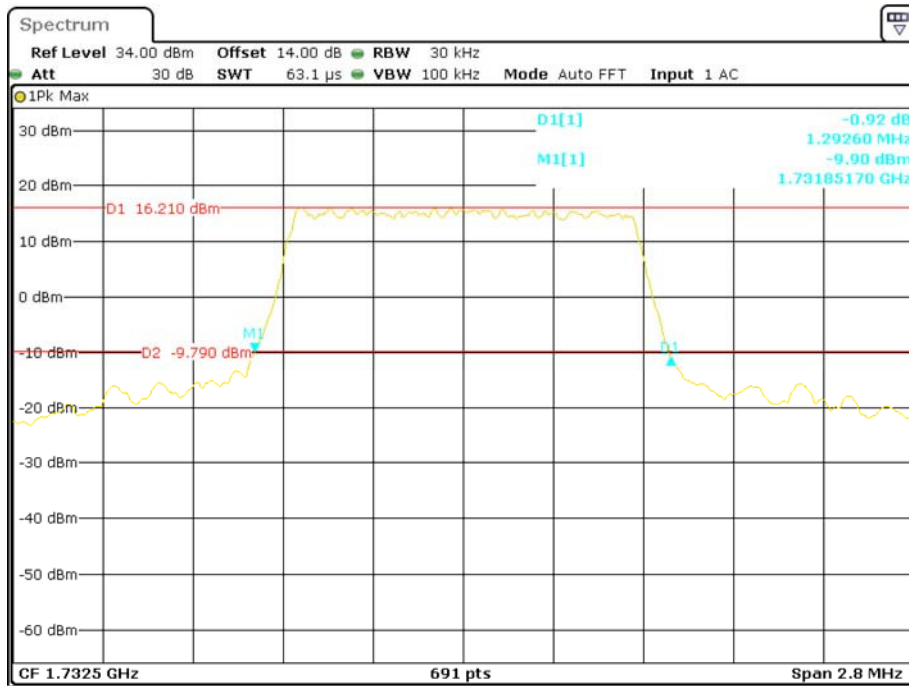
**QPSK (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



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

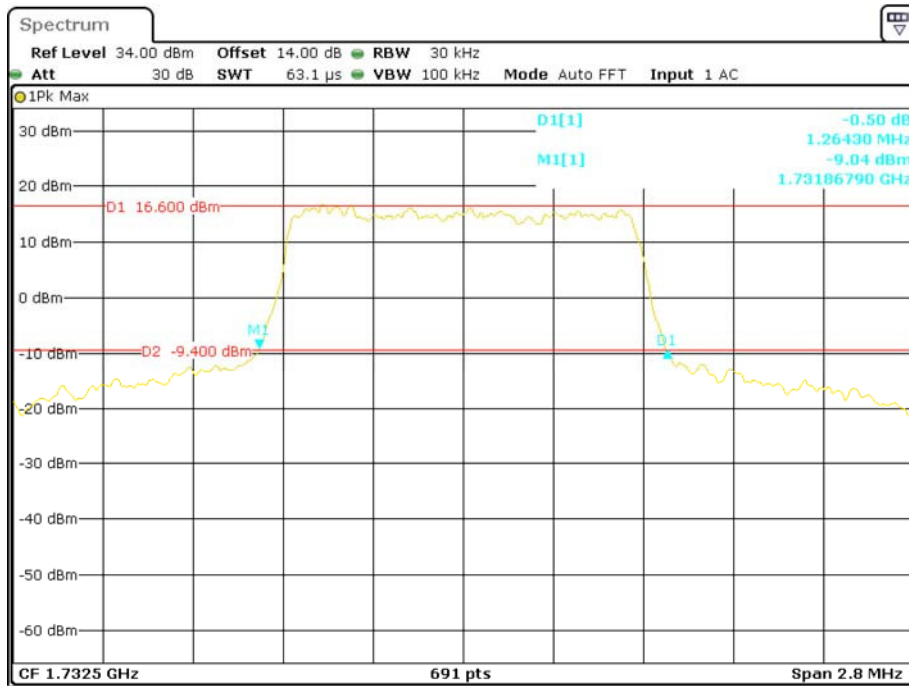


### QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel



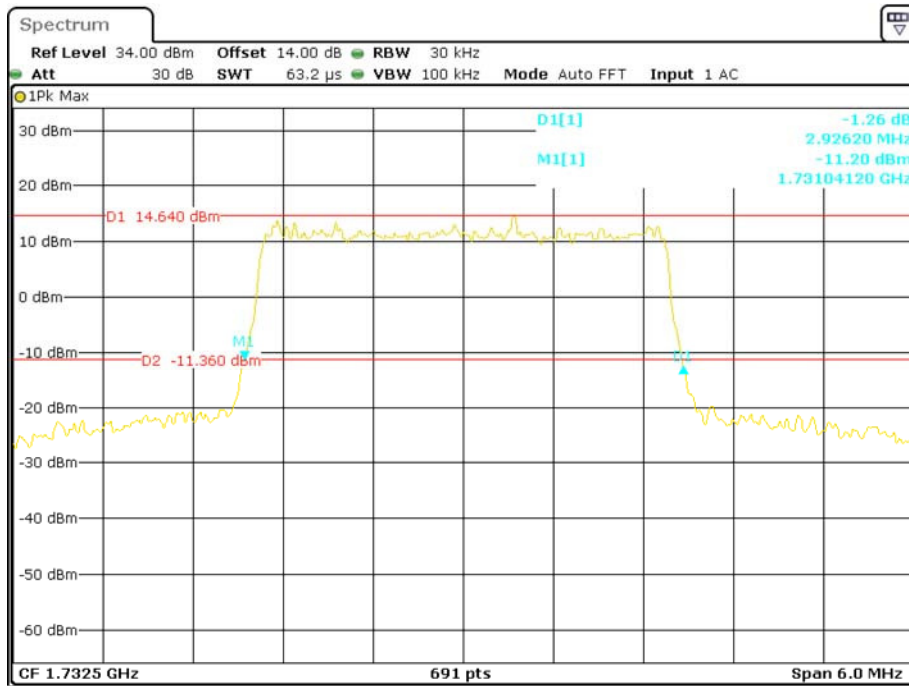
Date: 22.JAN.2016 11:48:05

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



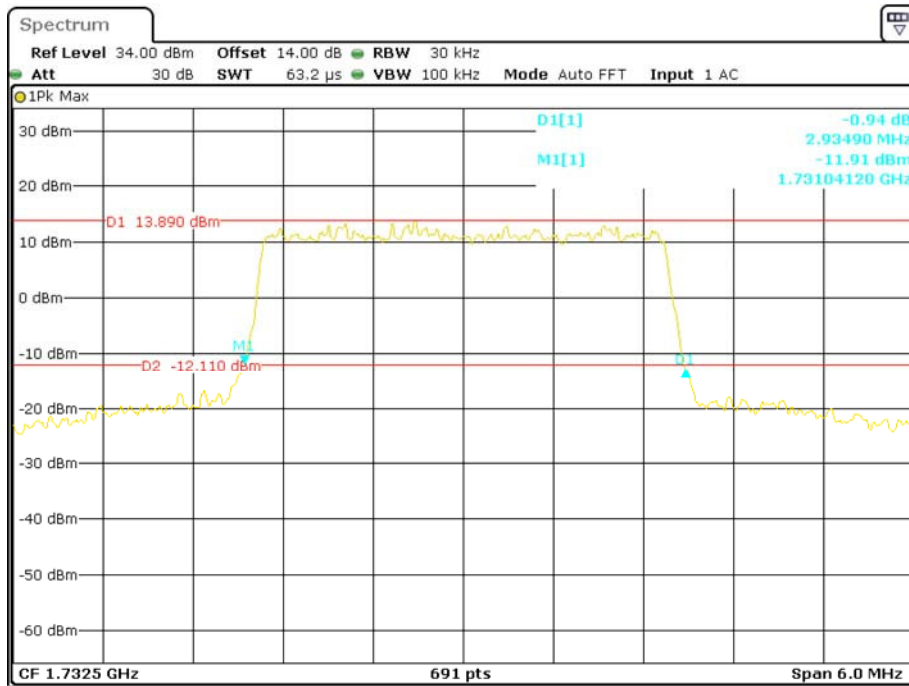
Date: 22.JAN.2016 11:49:17

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



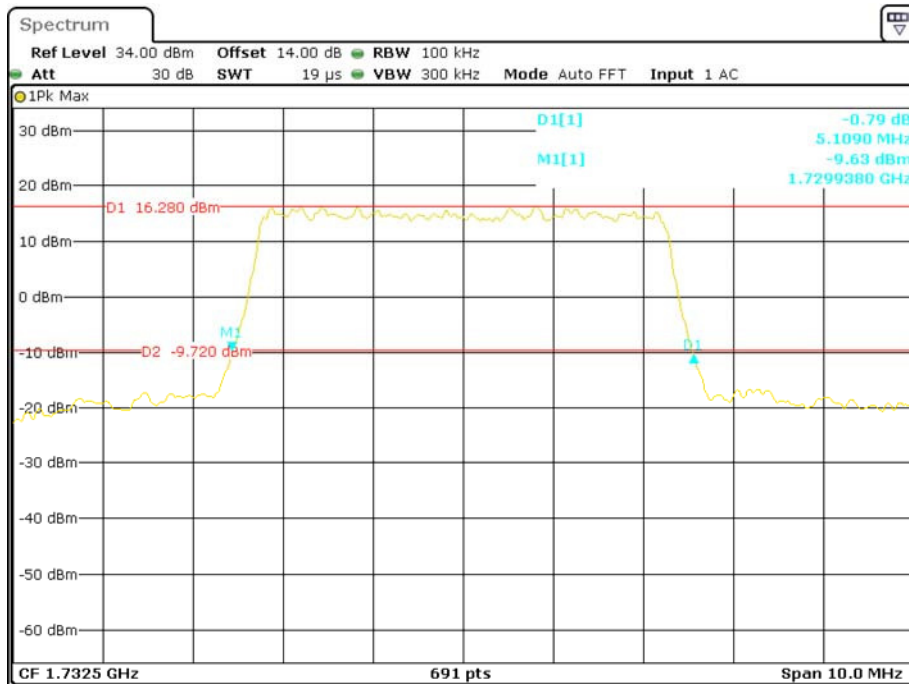
Date: 22.JAN.2016 11:50:21

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



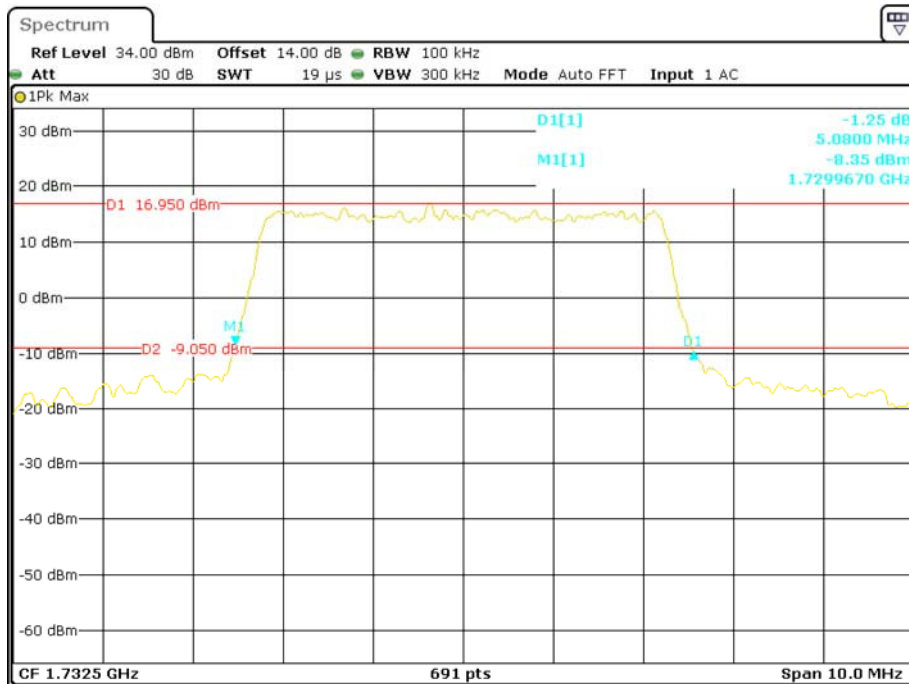
Date: 22.JAN.2016 11:51:20

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



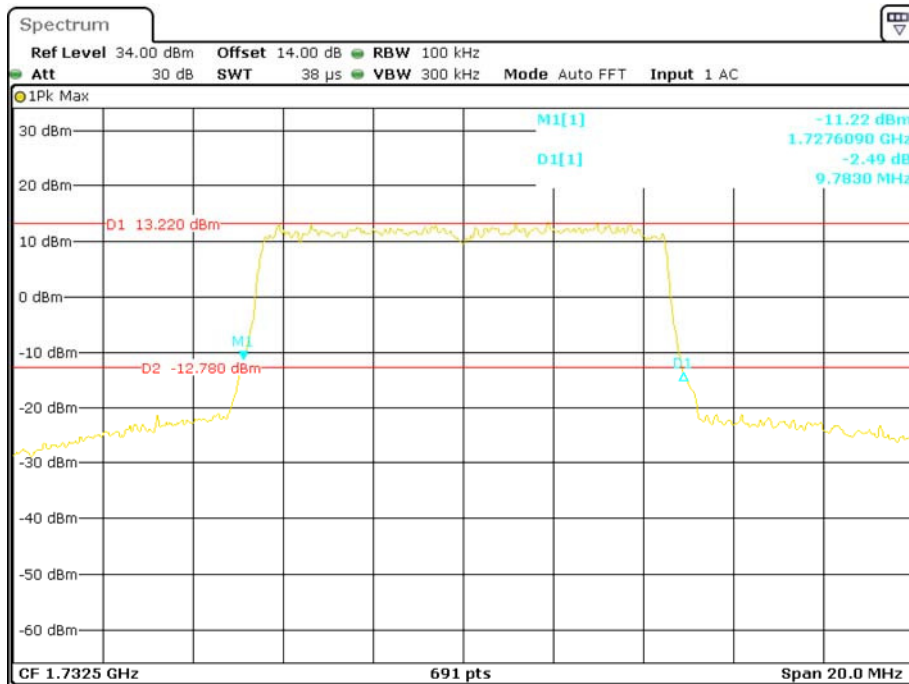
Date: 22.JAN.2016 11:52:50

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



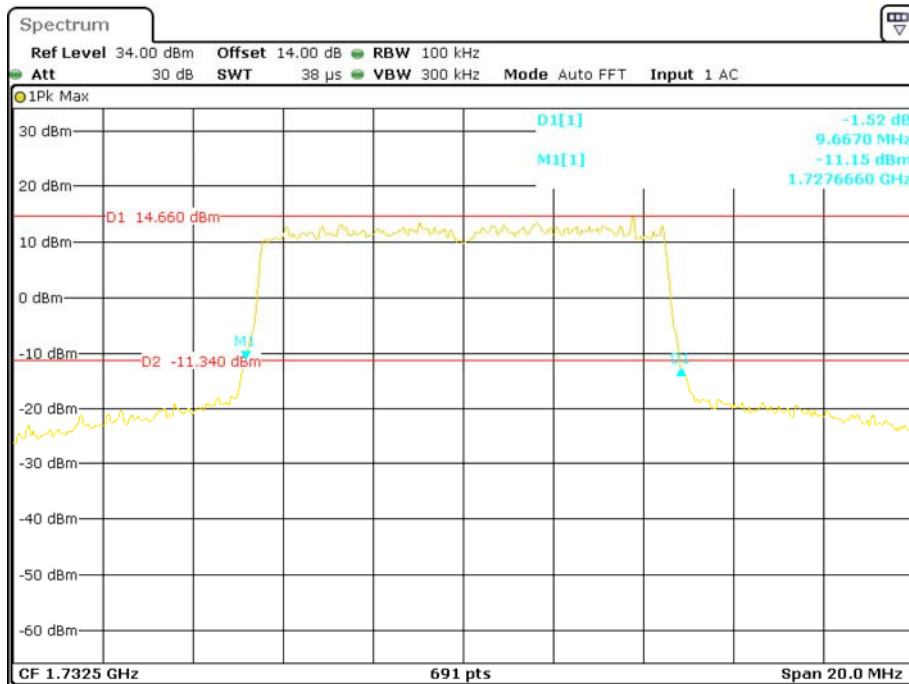
Date: 22.JAN.2016 11:53:53

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



Date: 22.JAN.2016 11:55:40

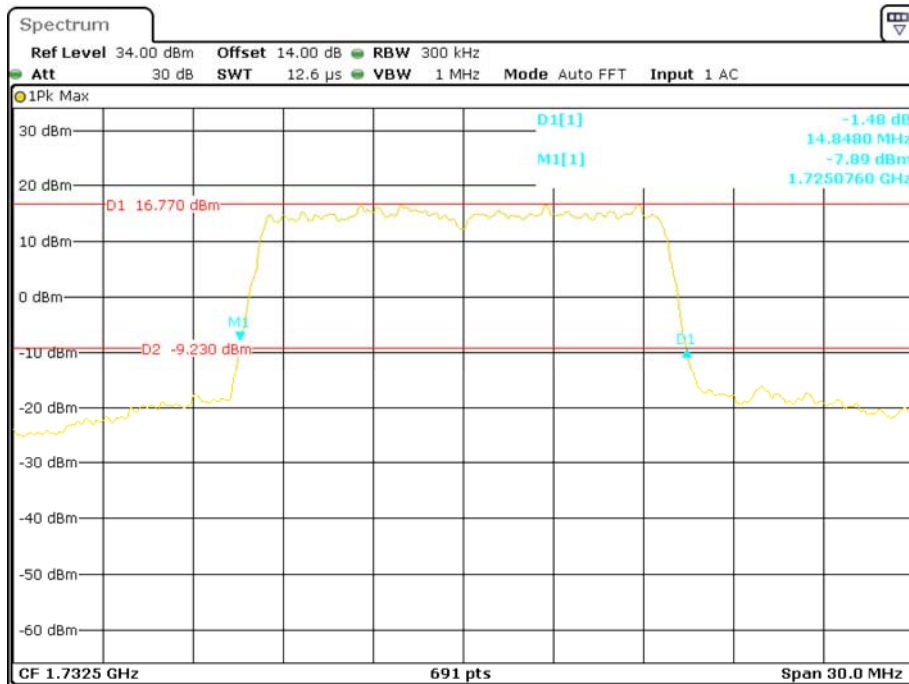
**16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel**



Date: 22.JAN.2016 11:56:57

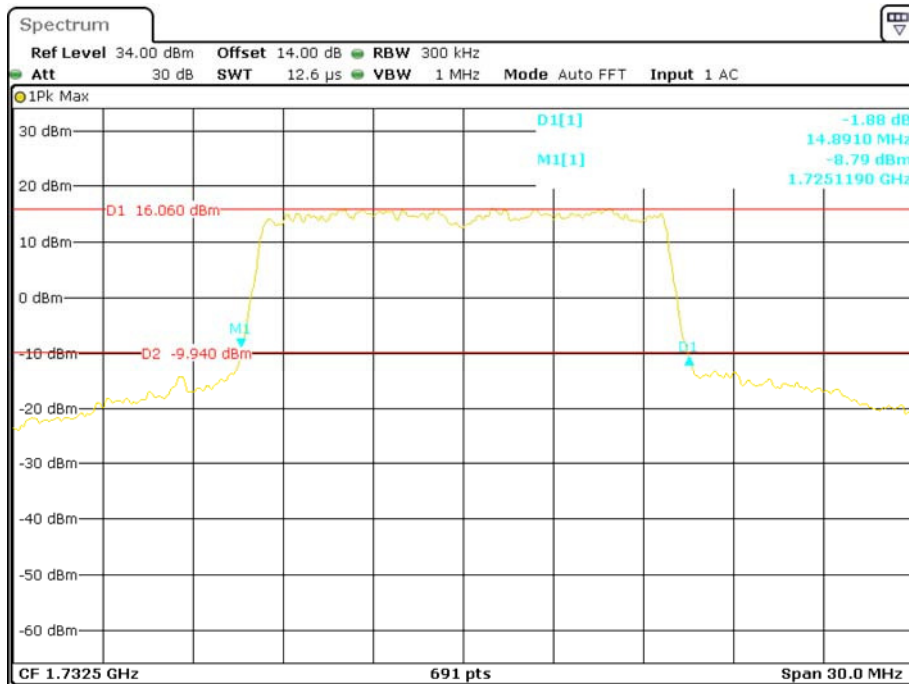


**QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel**



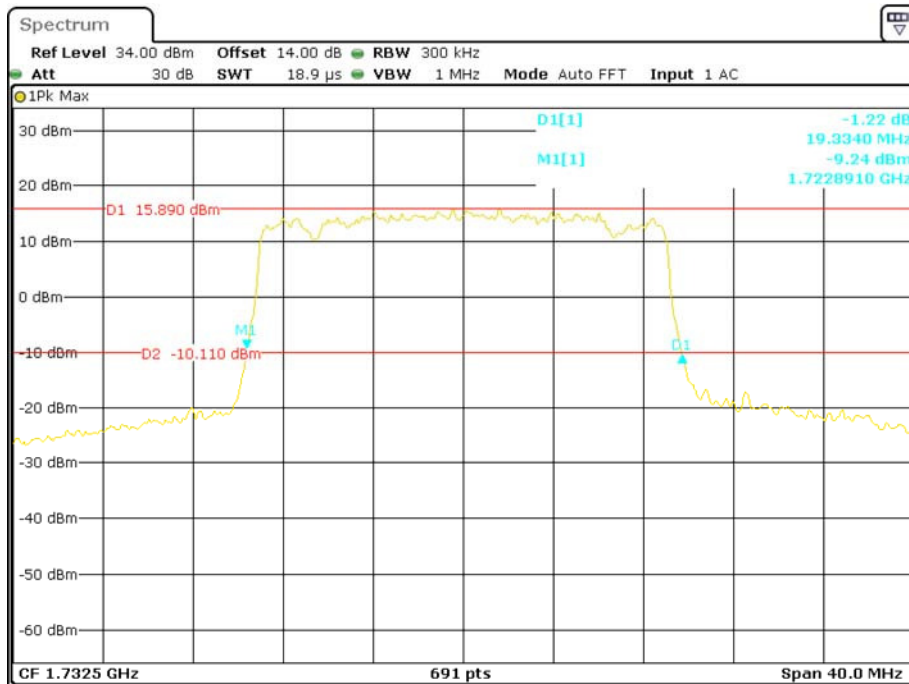
Date: 22.JAN.2016 11:58:26

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



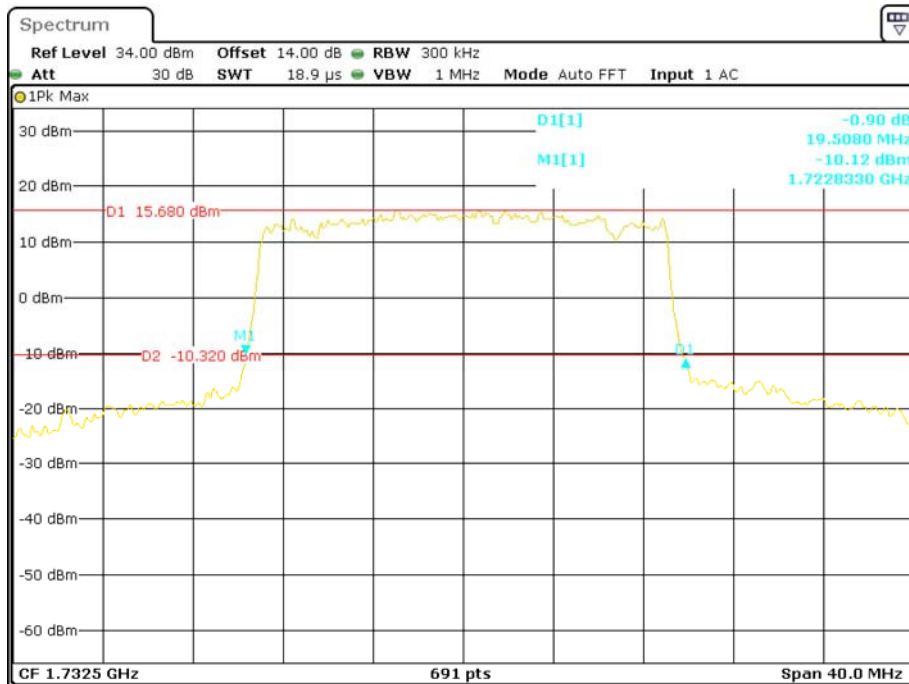
Date: 22.JAN.2016 11:59:15

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



Date: 22.JAN.2016 13:05:25

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

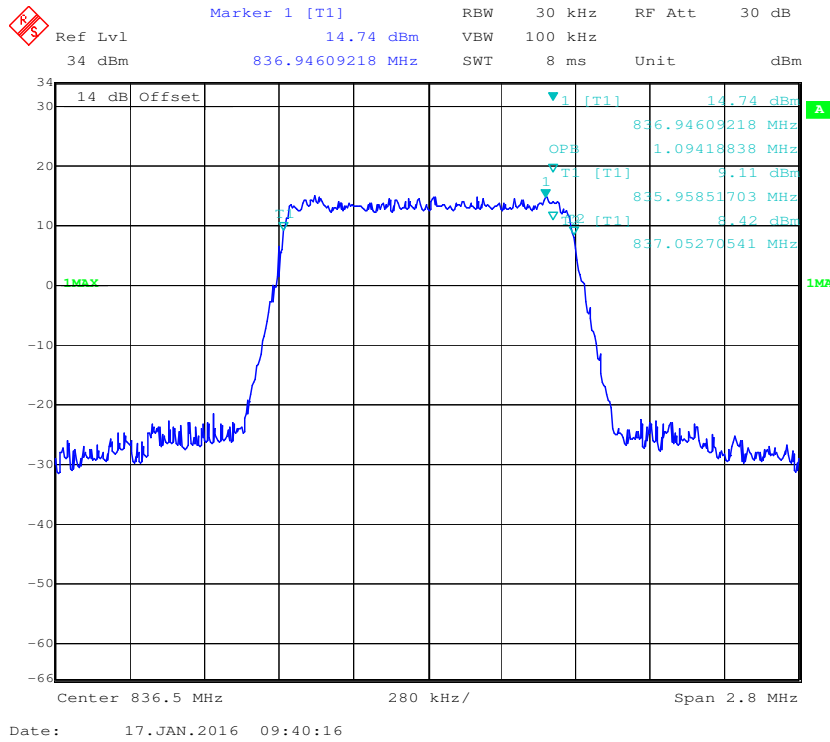


Date: 22.JAN.2016 13:07:02

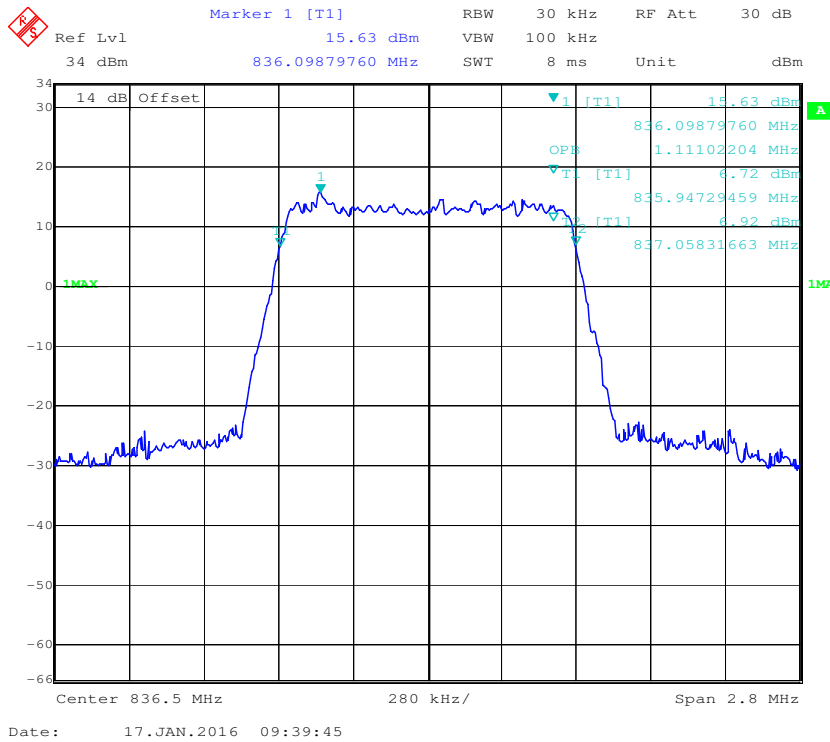
**LTE Band 5: (Middle Channel)**

<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
1.4	QPSK	1.094	1.285
	16QAM	1.111	1.293
3.0	QPSK	2.693	2.909
	16QAM	2.693	2.944
5.0	QPSK	4.529	5.094
	16QAM	4.529	5.065
10.0	QPSK	9.018	9.841
	16QAM	9.018	9.638

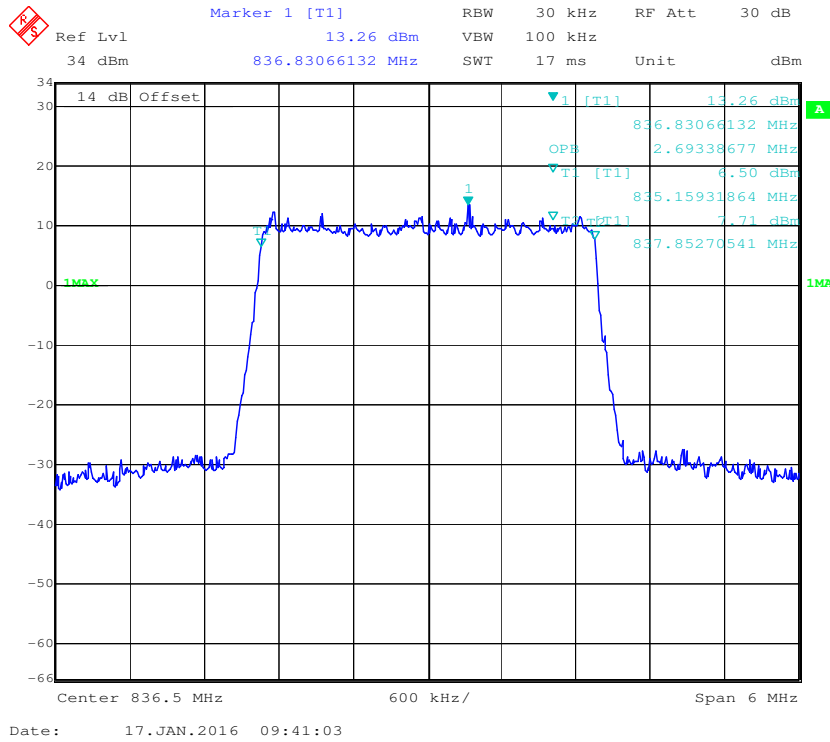
**QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel**



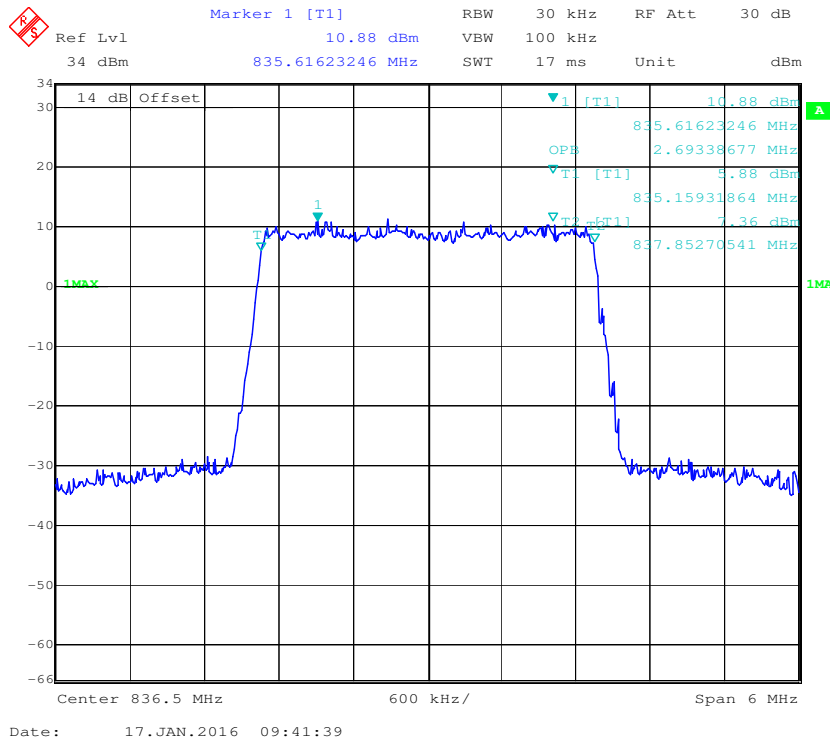
**16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel**



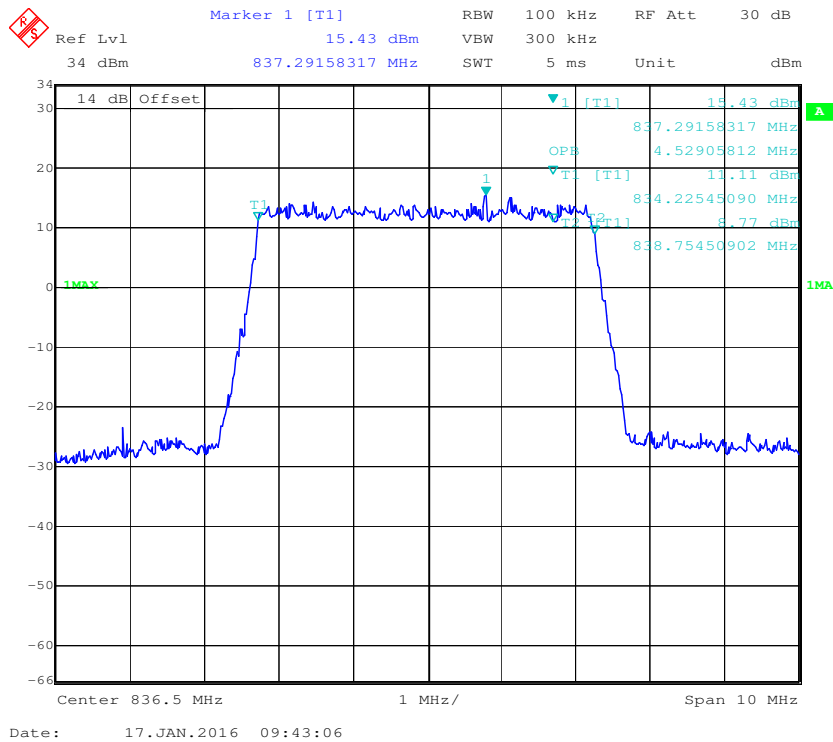
### QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



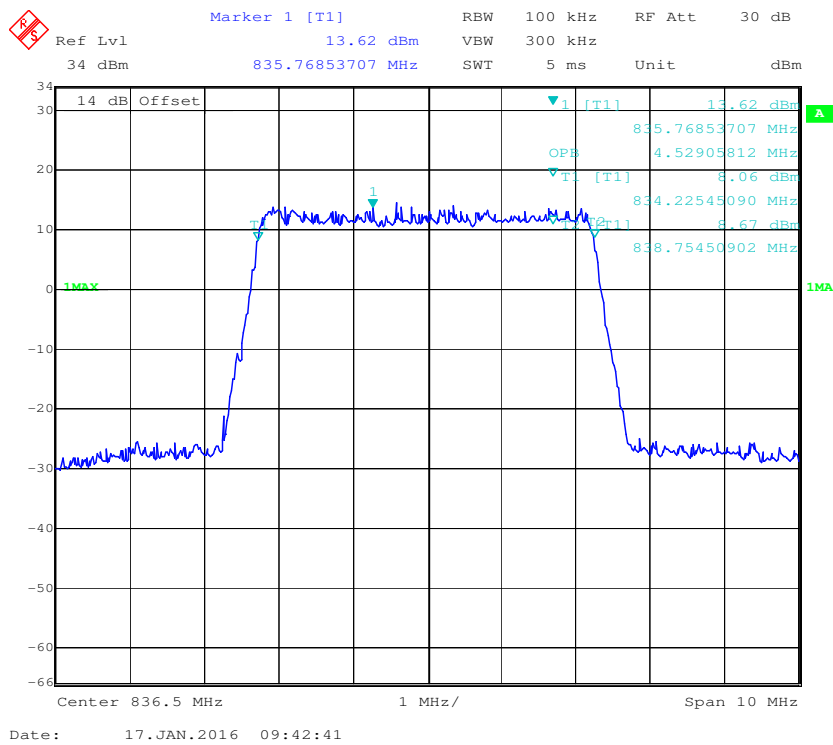
### 16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



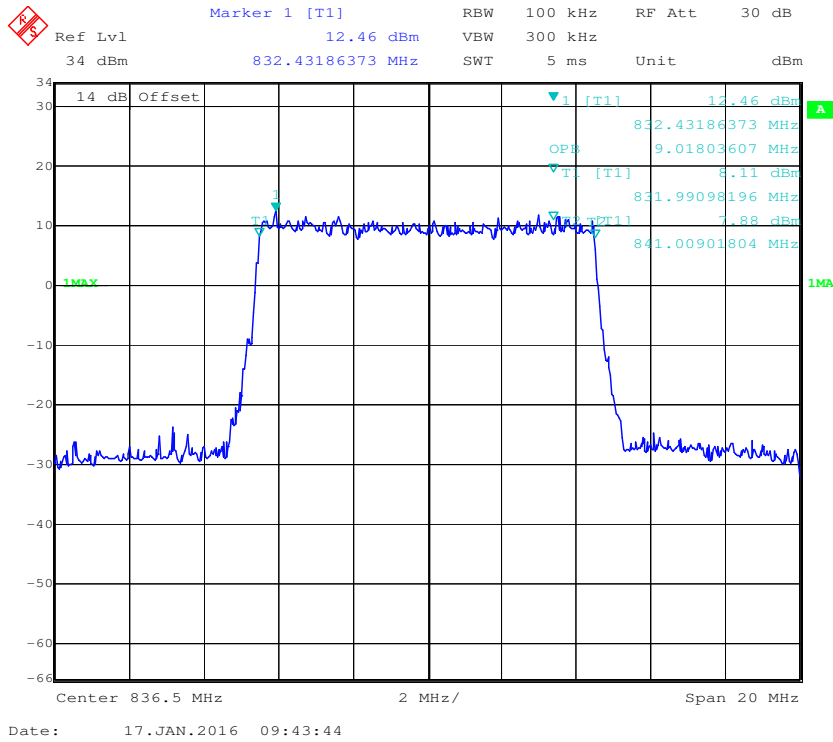
**QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



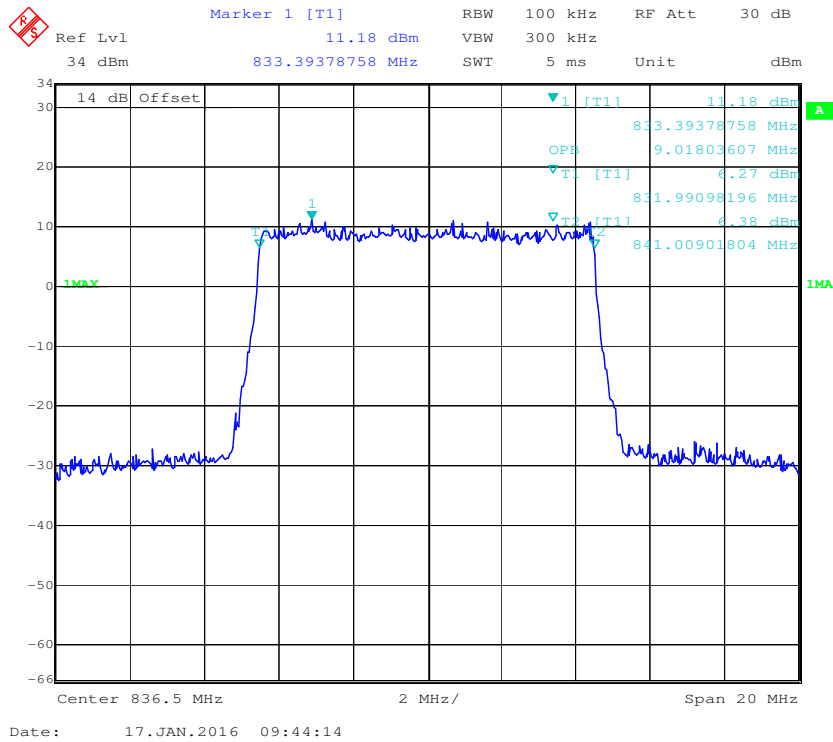
**16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



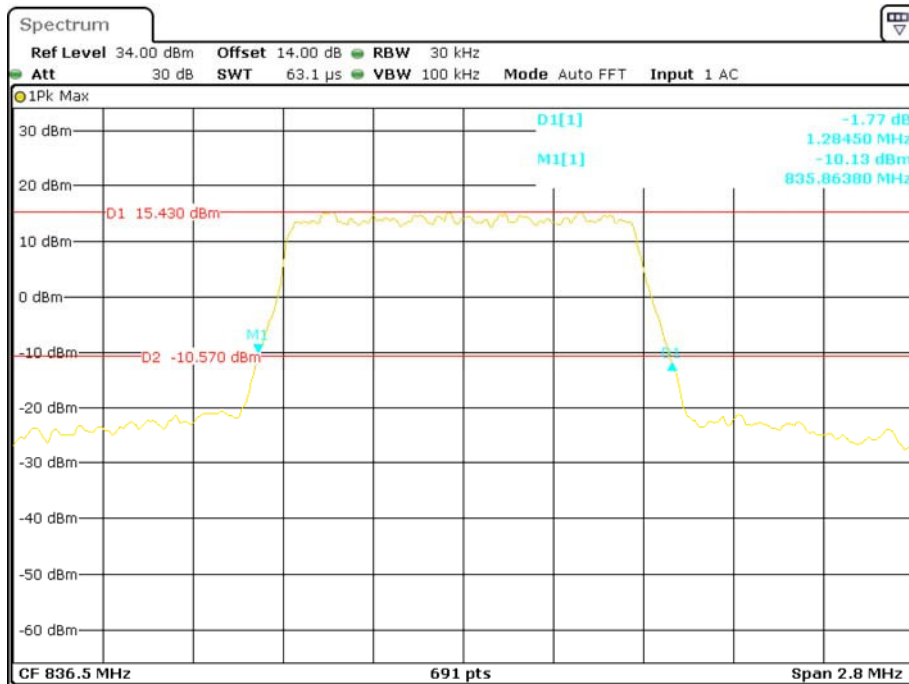
**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



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

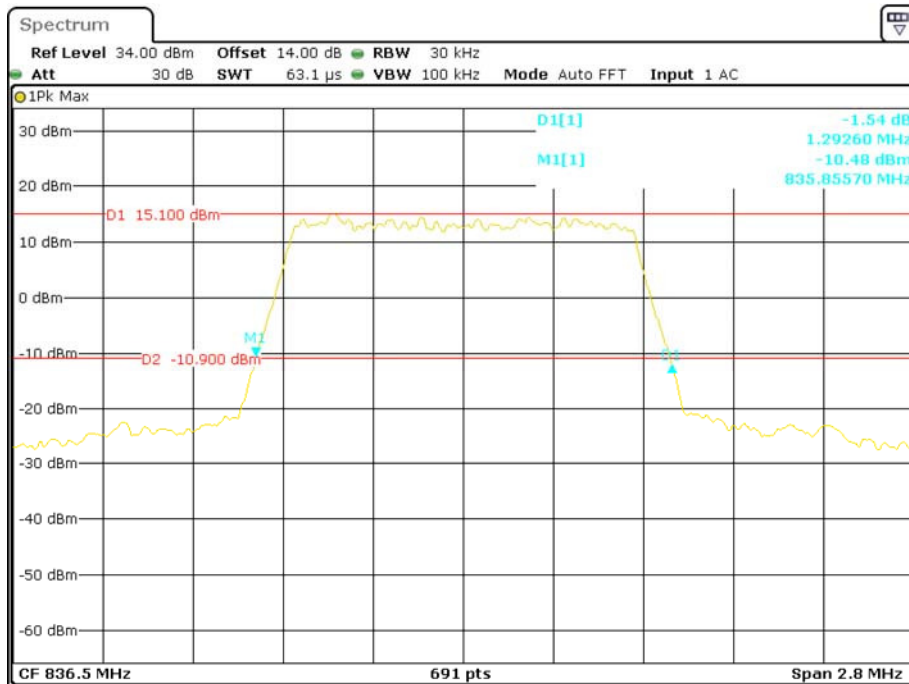


**QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel**



Date: 22.JAN.2016 13:11:05

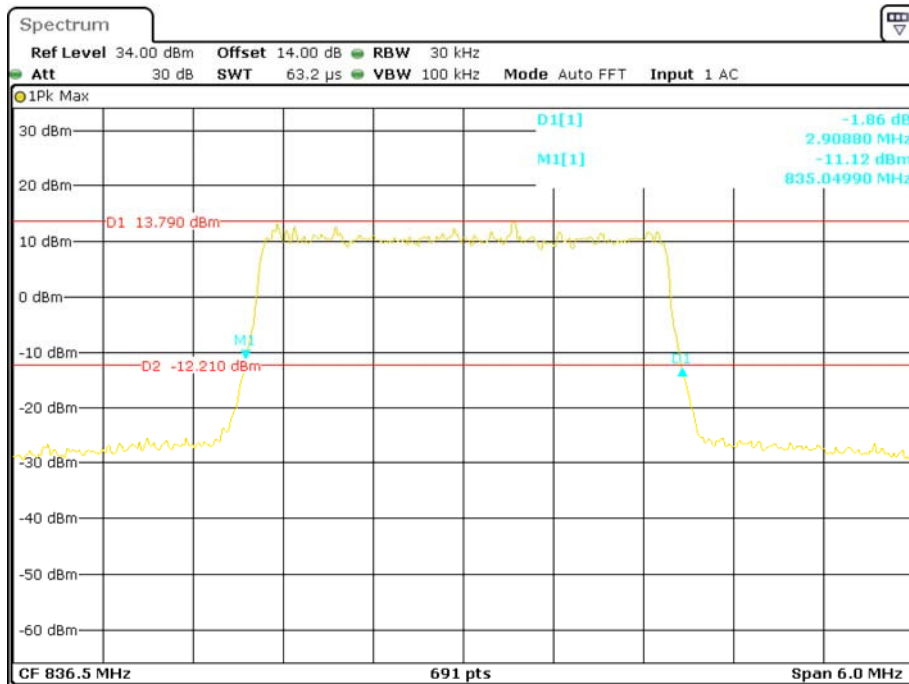
**16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel**



Date: 22.JAN.2016 13:12:14

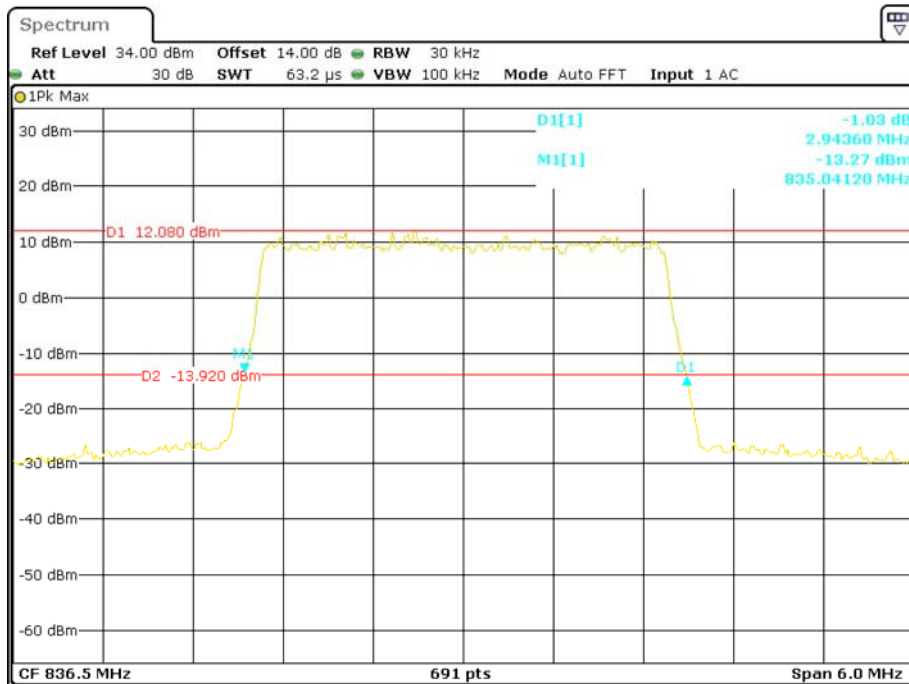


**QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel**



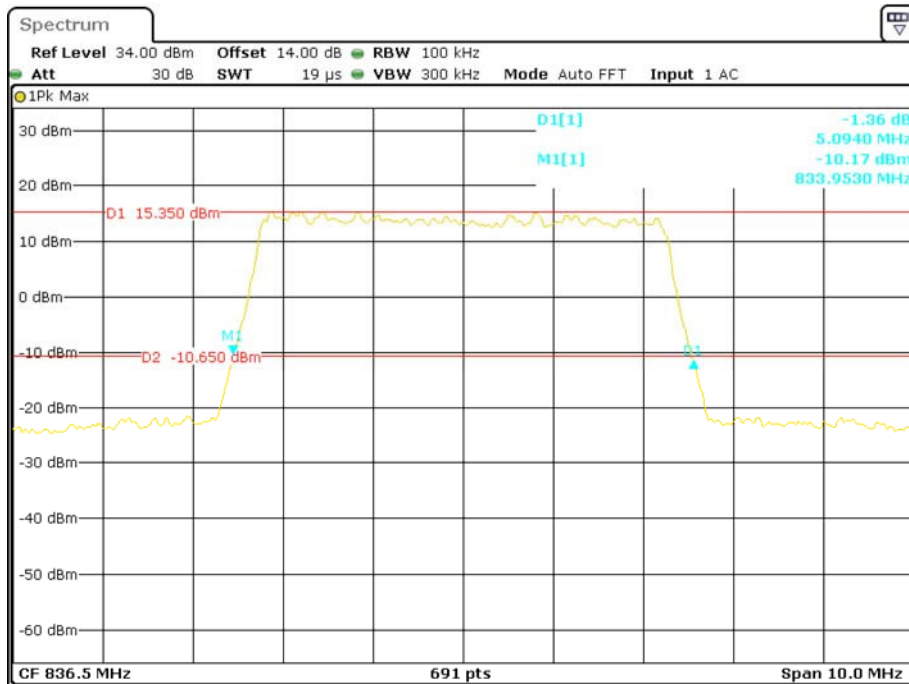
Date: 22.JAN.2016 13:14:00

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



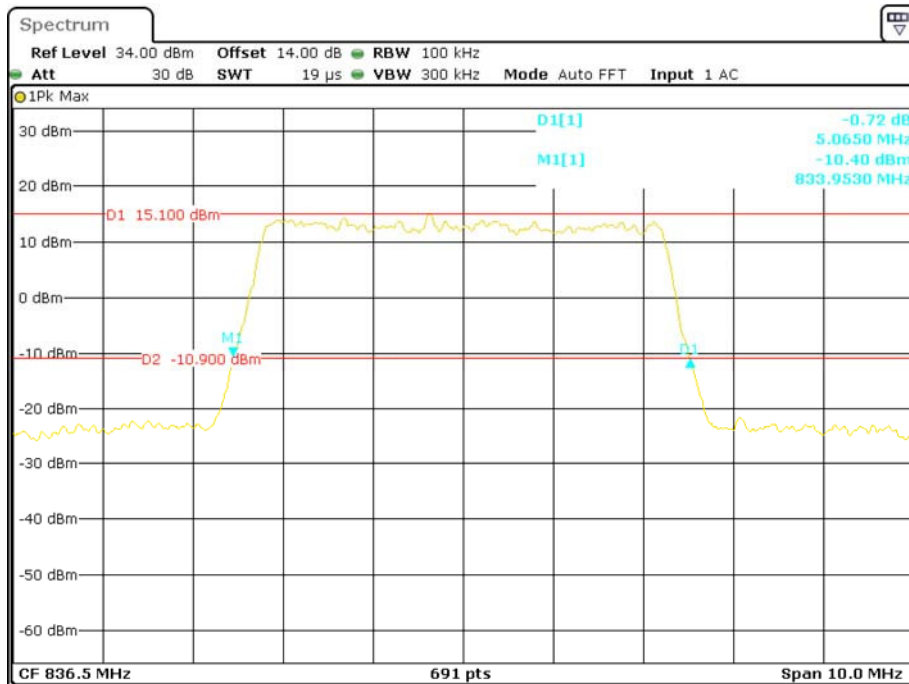
Date: 22.JAN.2016 13:13:09

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



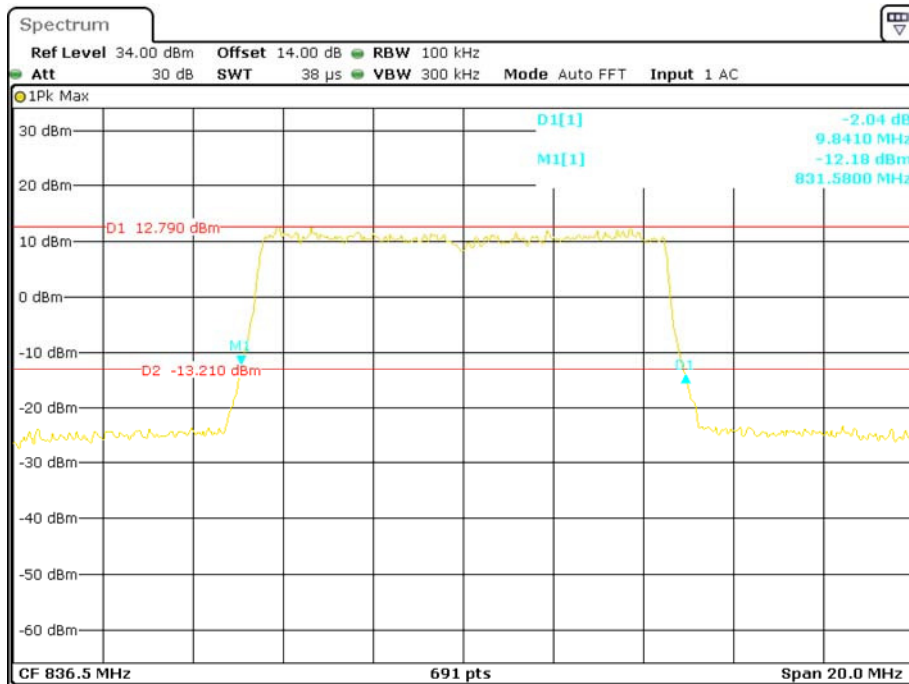
Date: 22.JAN.2016 13:16:52

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



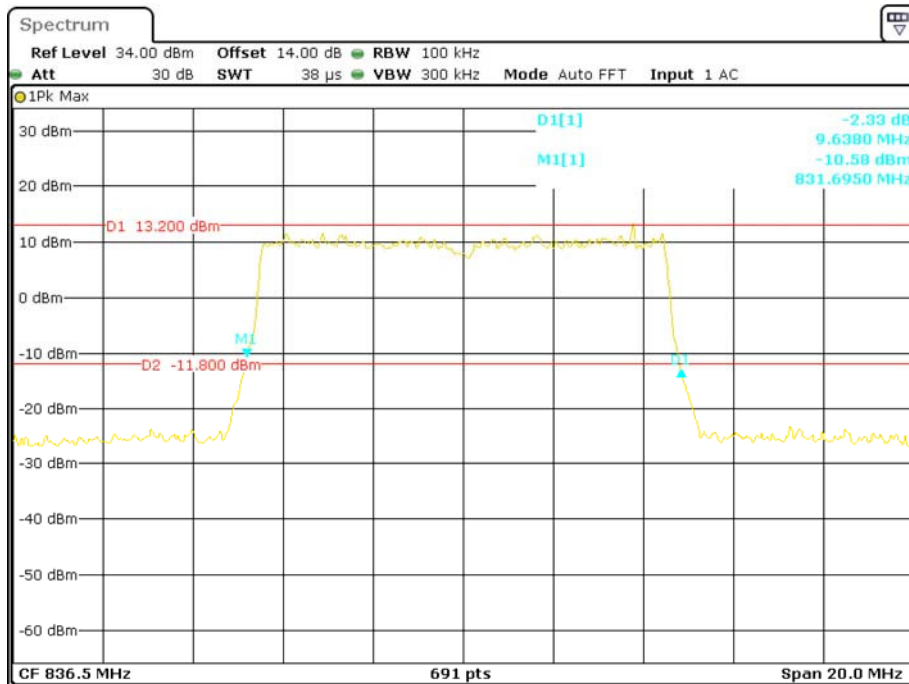
Date: 22.JAN.2016 13:15:58

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



Date: 22.JAN.2016 13:18:58

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

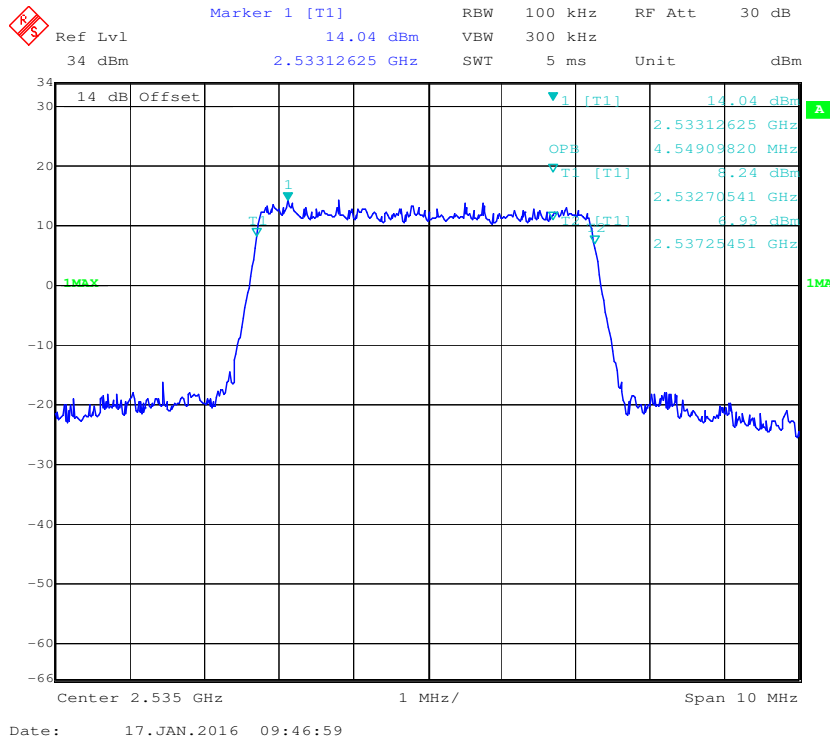


Date: 22.JAN.2016 13:17:57

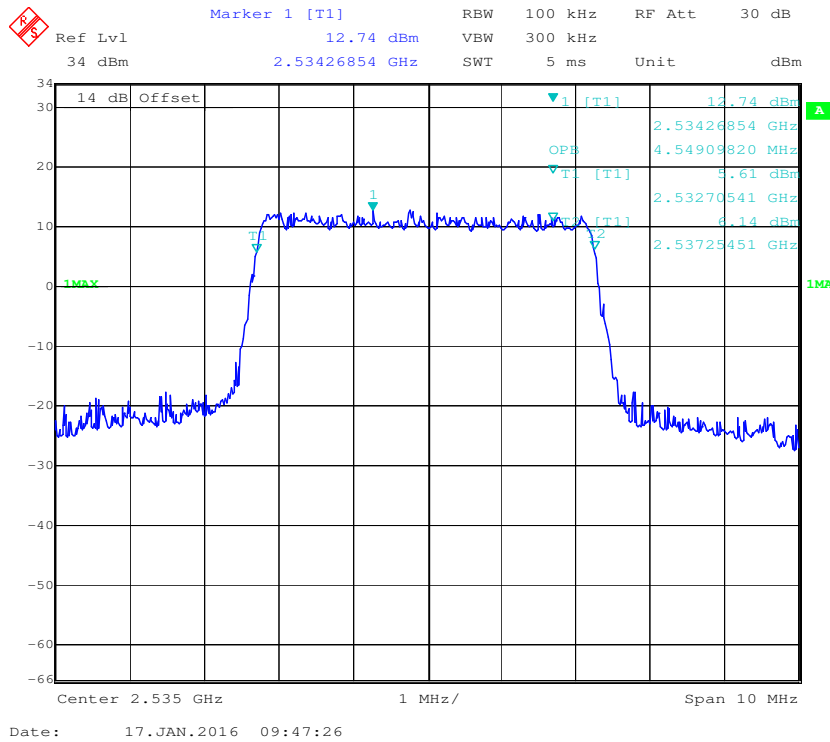
**LTE Band 7: (Middle Channel)**

<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
5.0	QPSK	4.549	5.109
	16QAM	4.549	5.080
10.0	QPSK	8.978	9.812
	16QAM	8.938	9.667
15.0	QPSK	13.587	14.978
	16QAM	13.587	14.891
20.0	QPSK	17.956	19.508
	16QAM	17.956	19.624

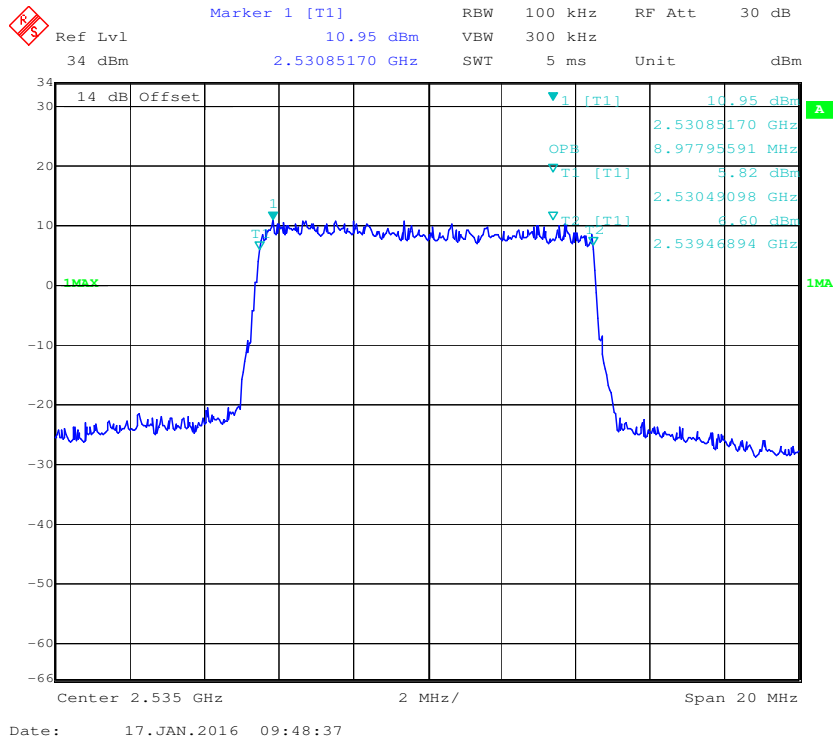
**QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



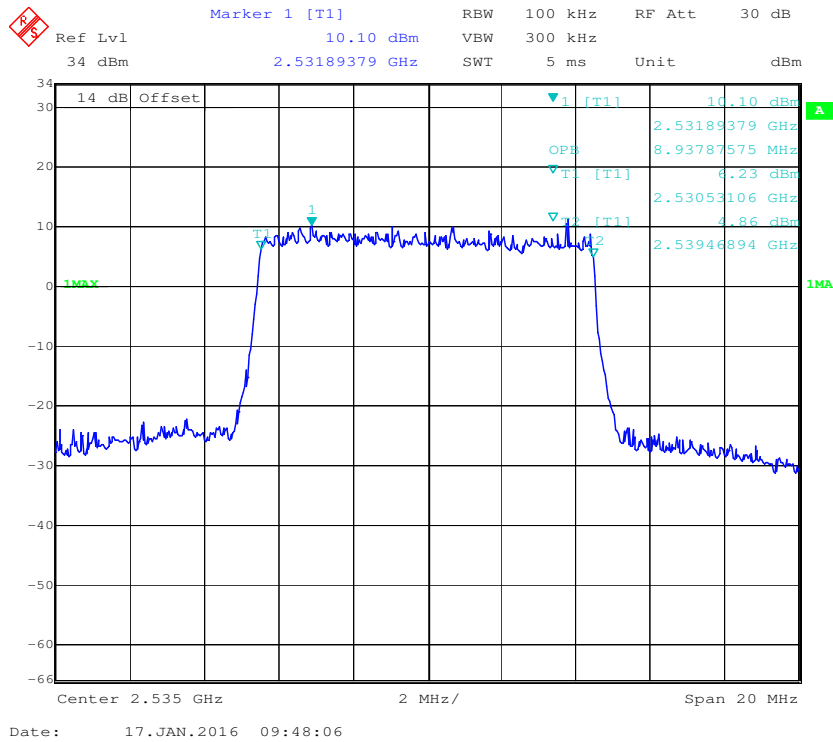
**16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



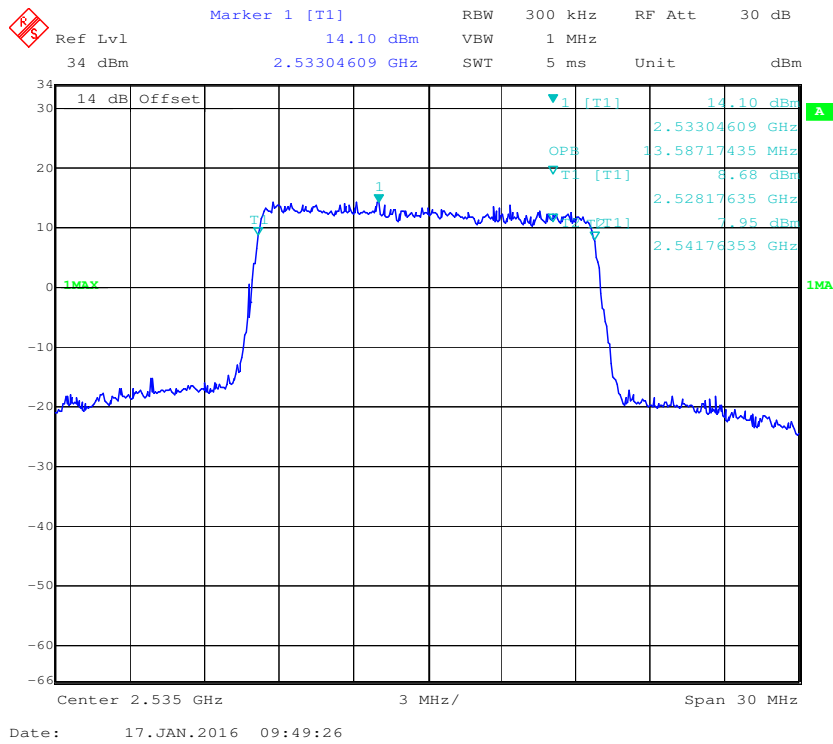
**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



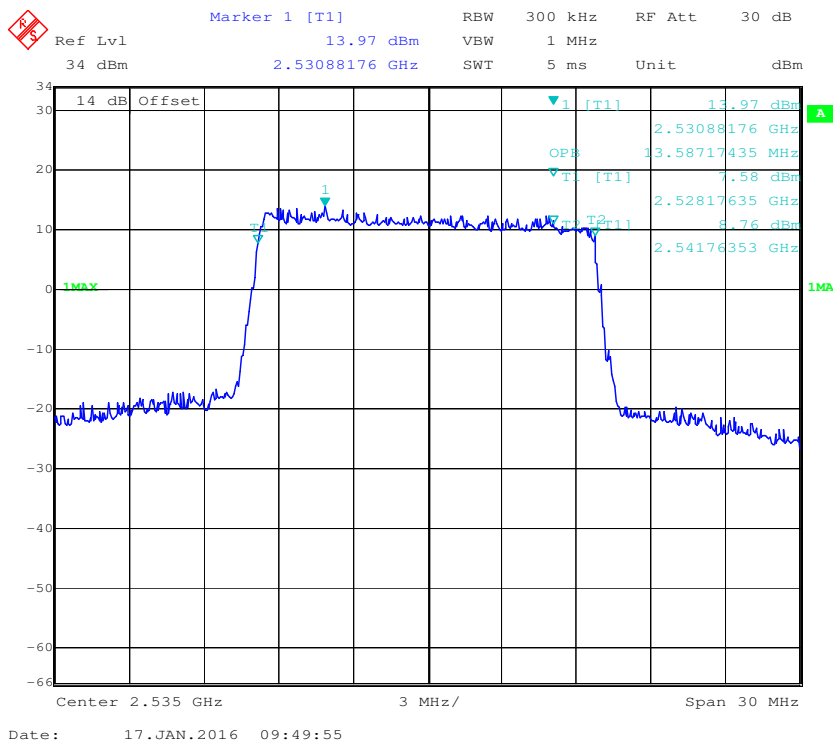
**16-QAM (10.0MHz) - 99% Occupied Bandwidth, Middle channel**



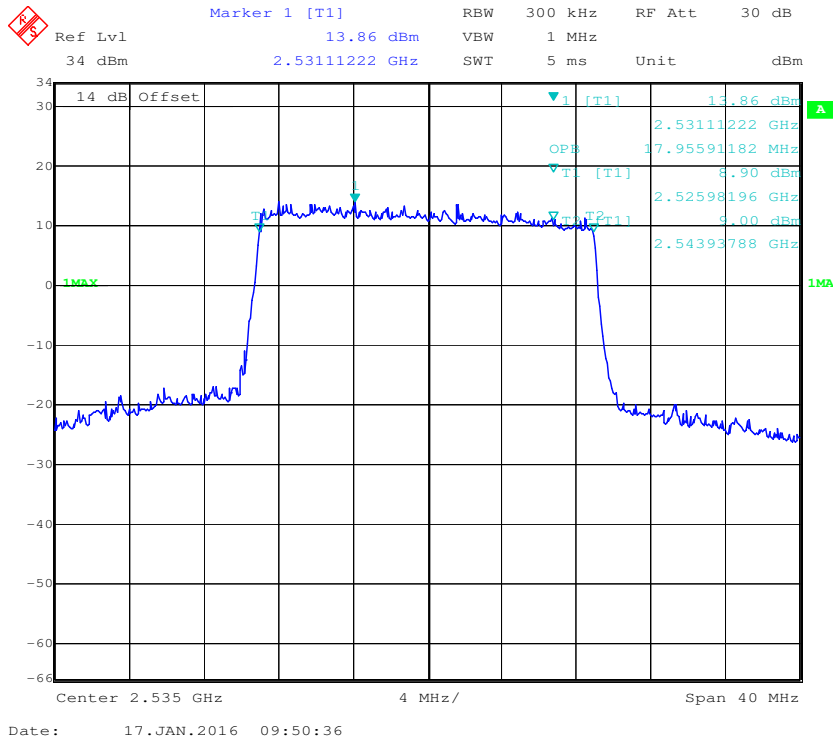
**QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



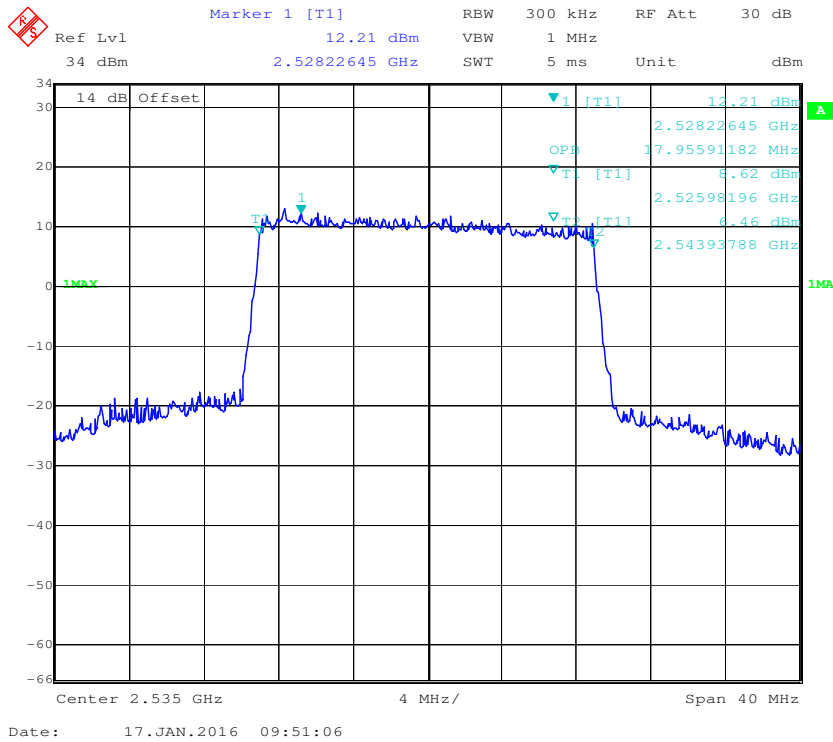
**16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**



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

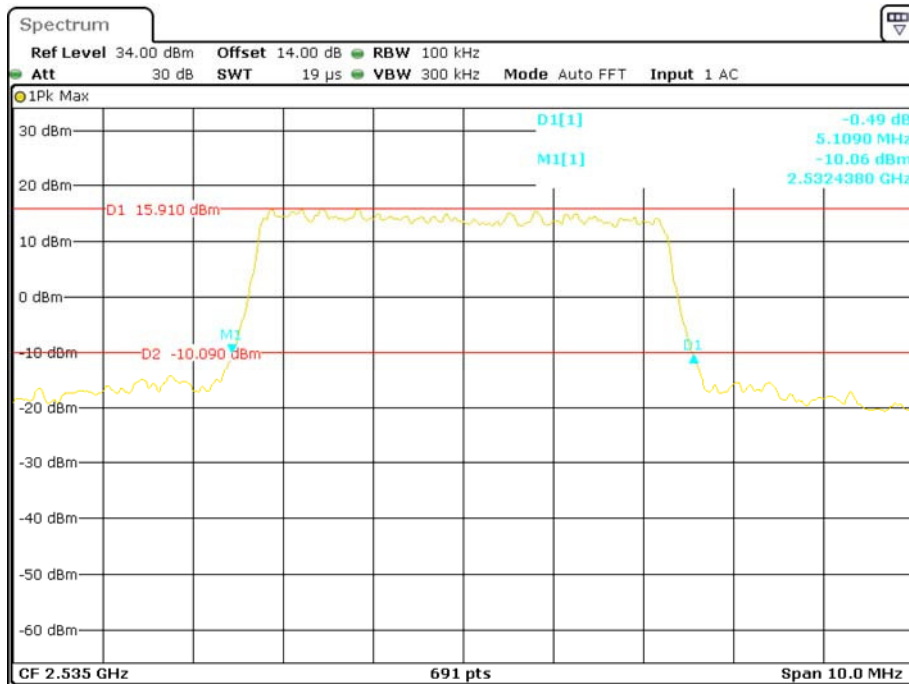


**16-QAM (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**



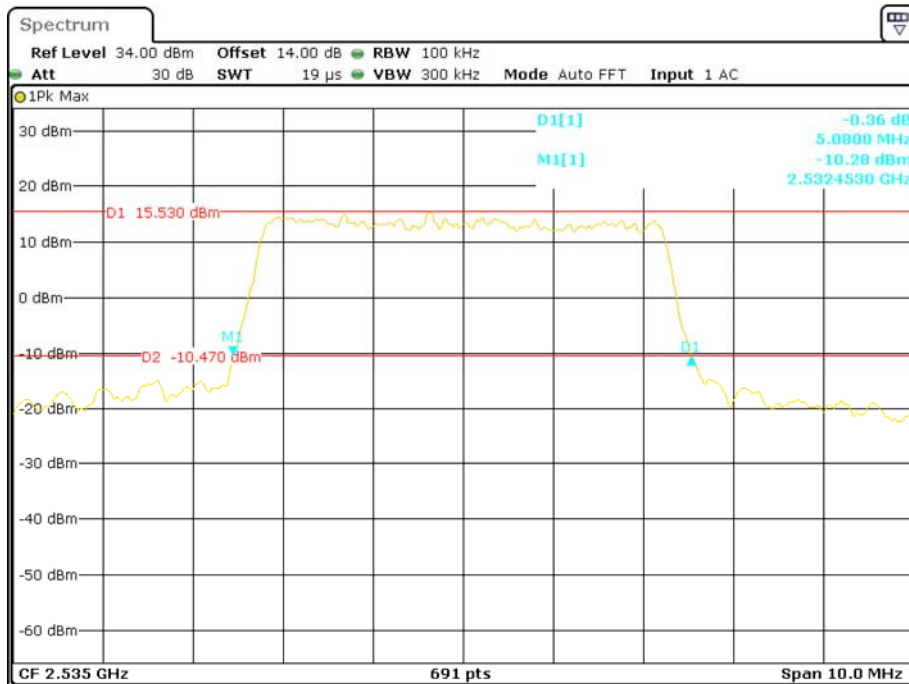


**QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel**



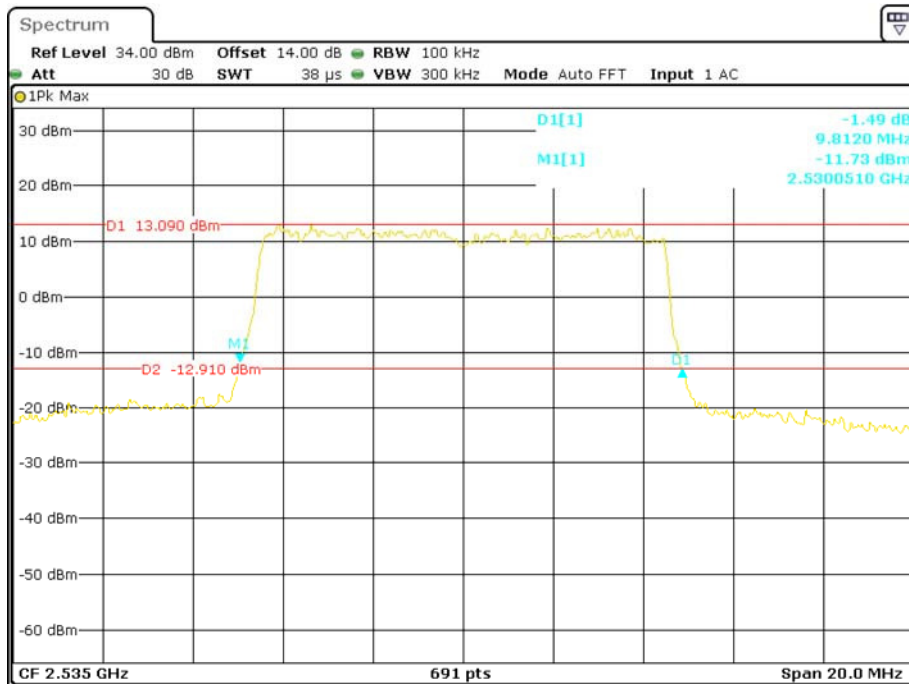
Date: 22.JAN.2016 13:21:33

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



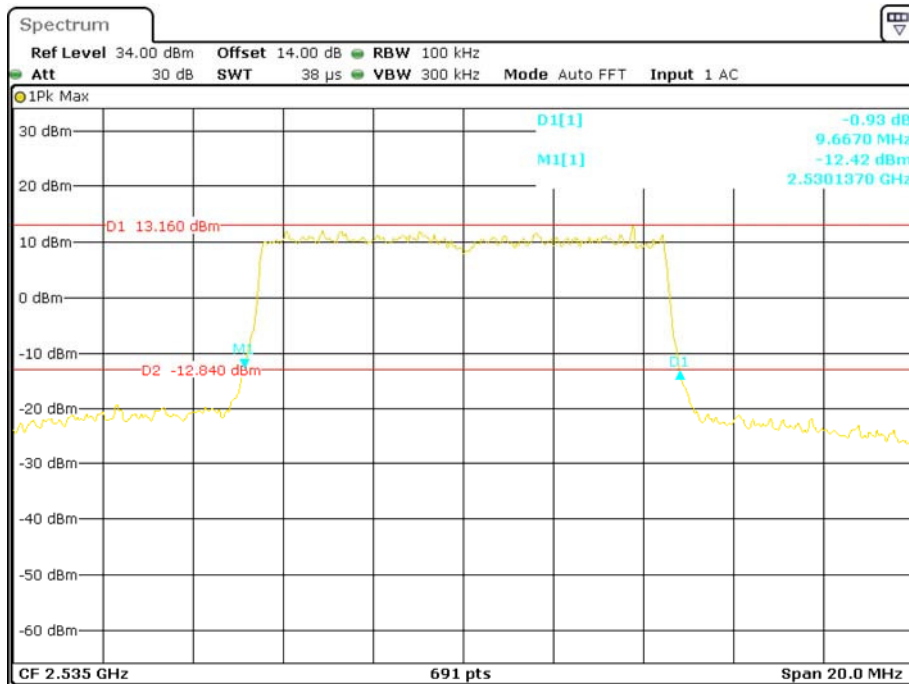
Date: 22.JAN.2016 13:22:47

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



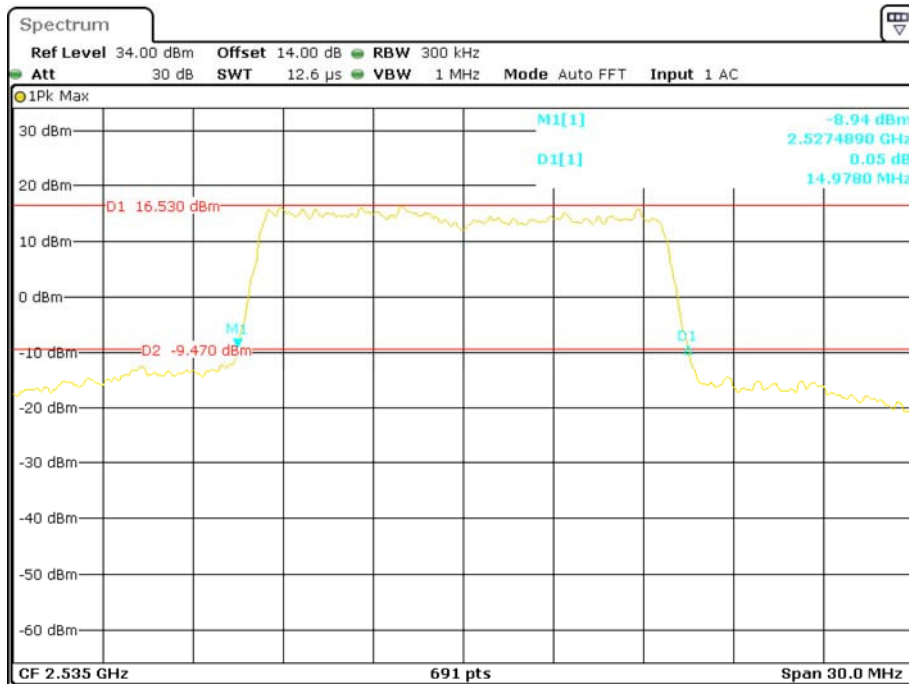
Date: 22.JAN.2016 13:24:03

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



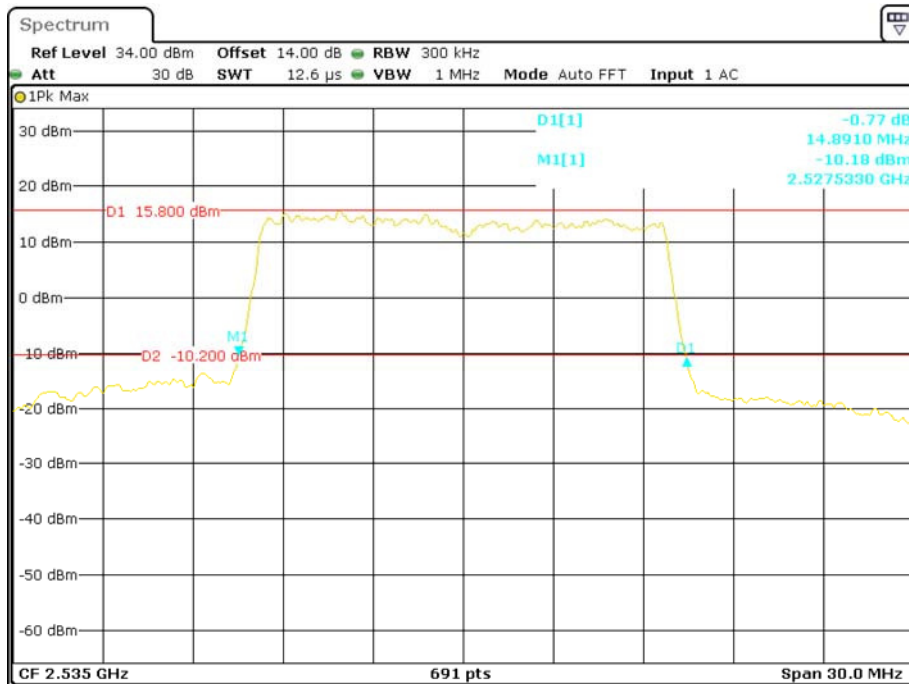
Date: 22.JAN.2016 13:25:28

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



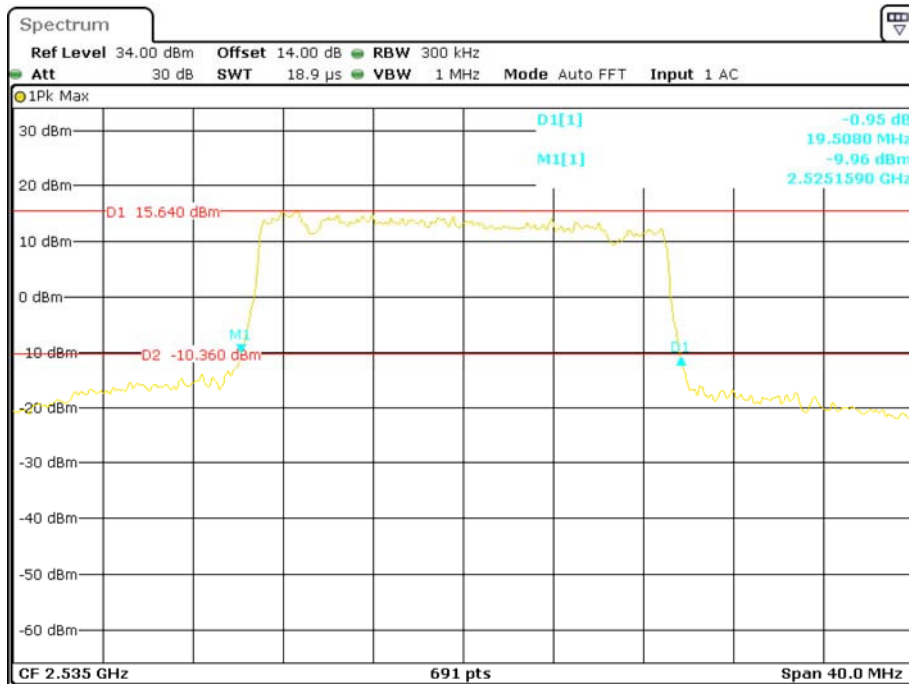
Date: 22.JAN.2016 13:29:54

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



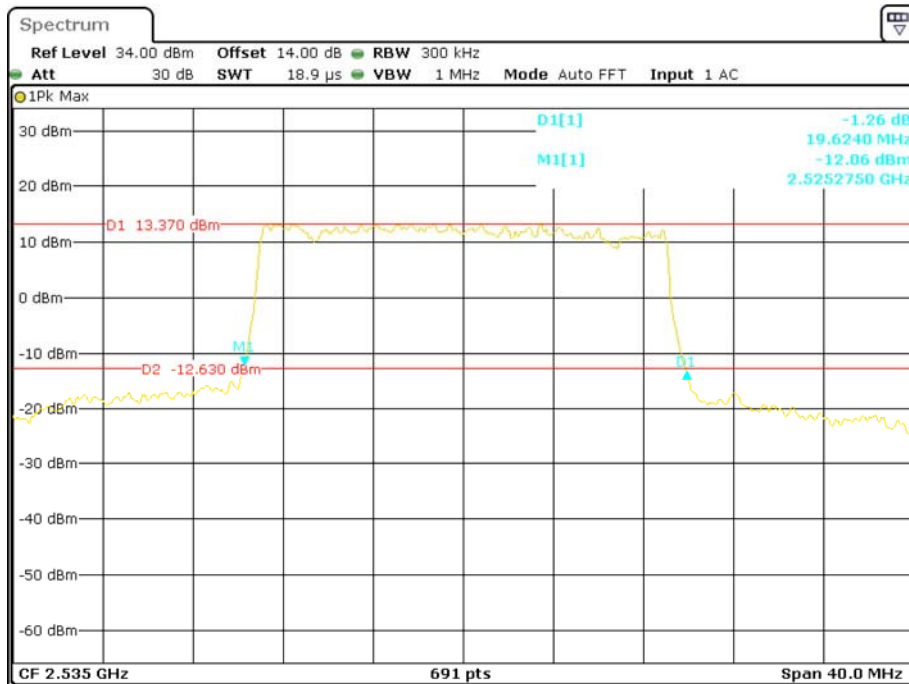
Date: 22.JAN.2016 13:27:44

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



Date: 22.JAN.2016 13:32:31

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

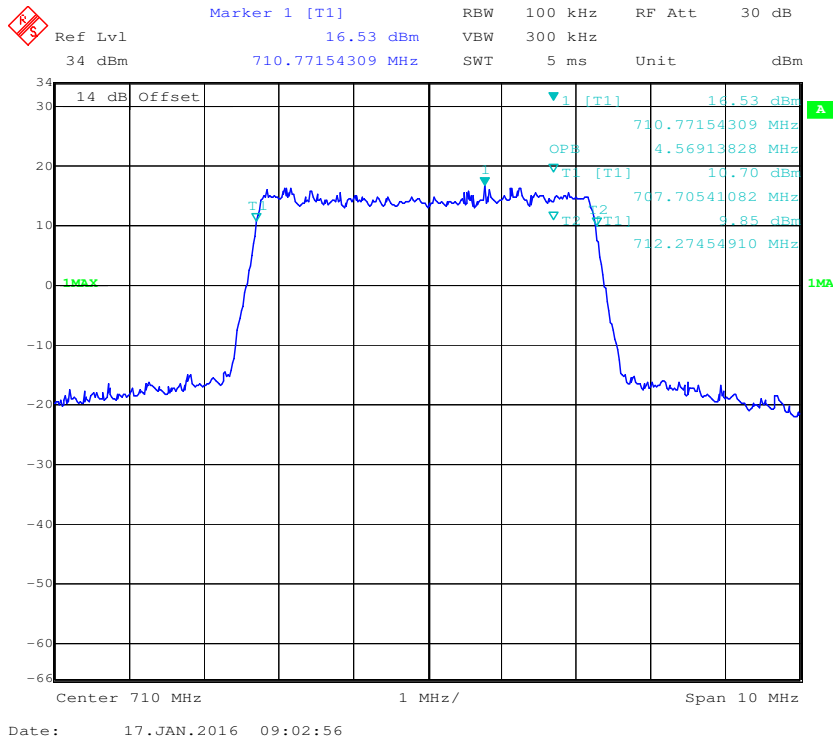


Date: 22.JAN.2016 13:31:04

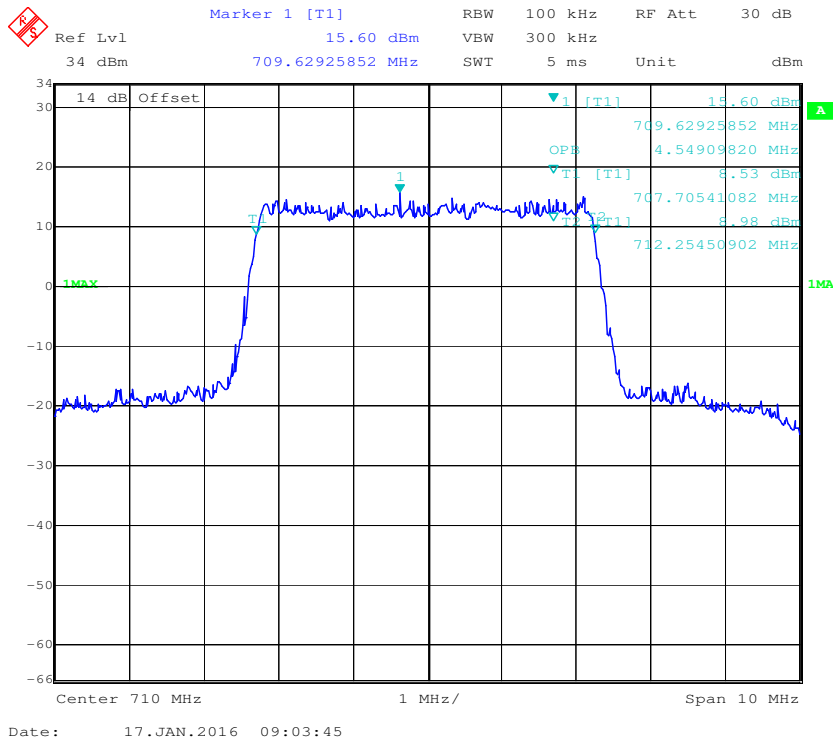
**LTE Band 17: (Middle Channel)**

<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
5.0	QPSK	4.569	5.123
	16QAM	4.549	5.065
10.0	QPSK	9.018	9.725
	16QAM	9.018	9.812

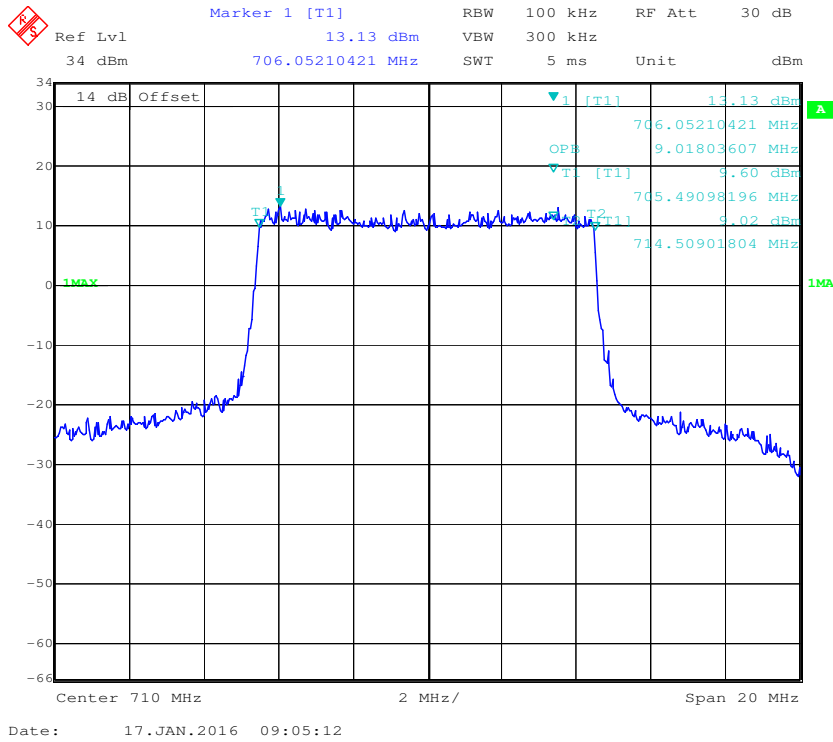
**QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



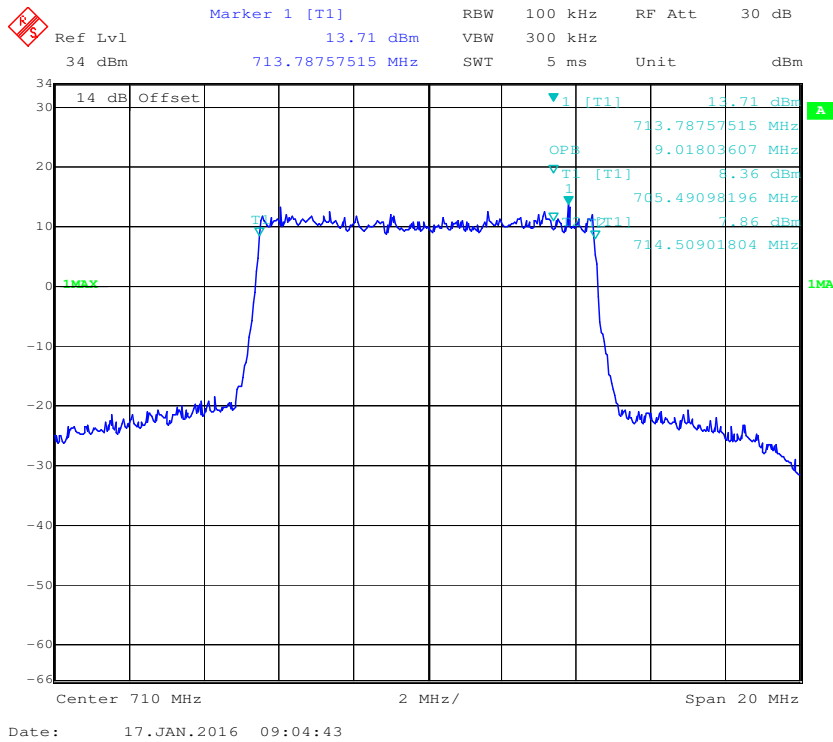
**16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**



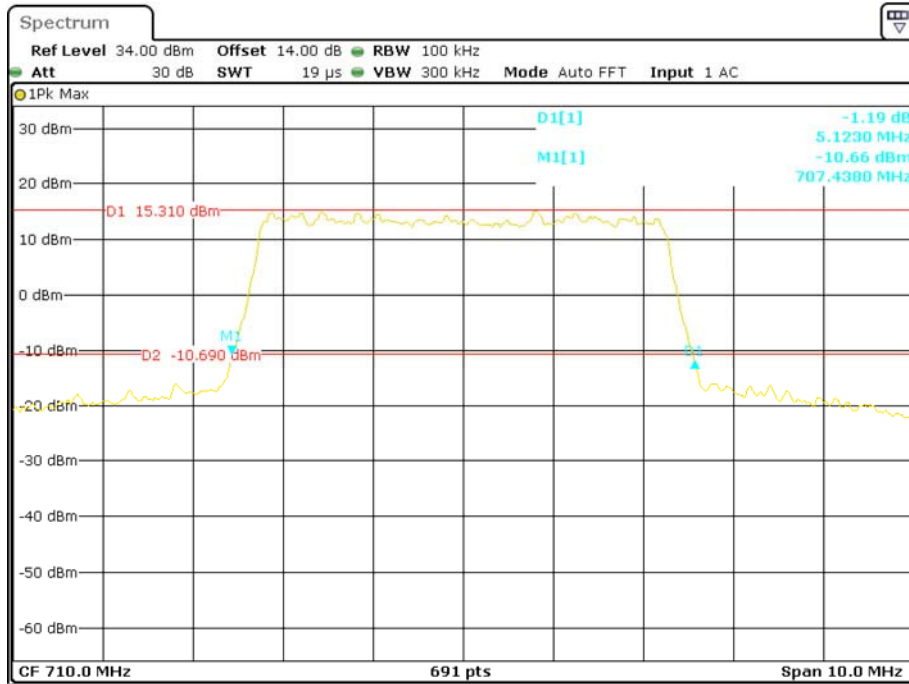
**QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**



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

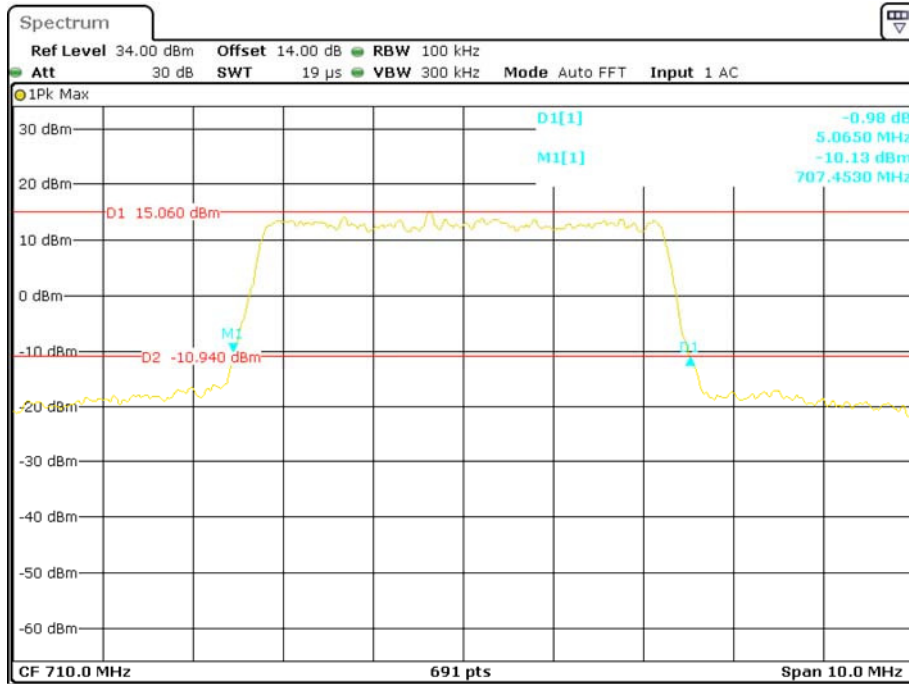


### QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel



Date: 22.JAN.2016 13:34:43

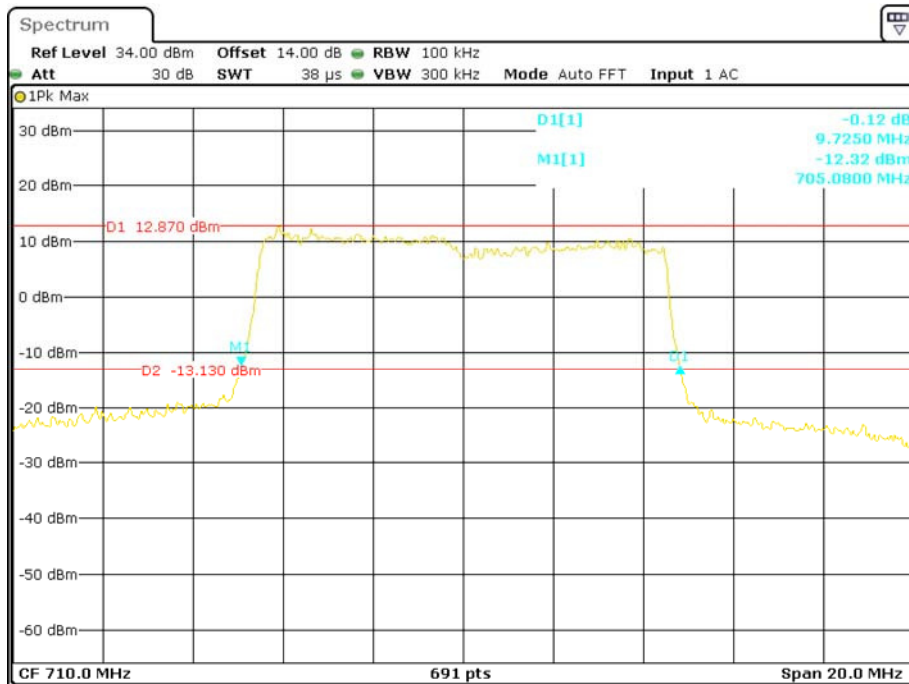
### 16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel



Date: 22.JAN.2016 13:35:41

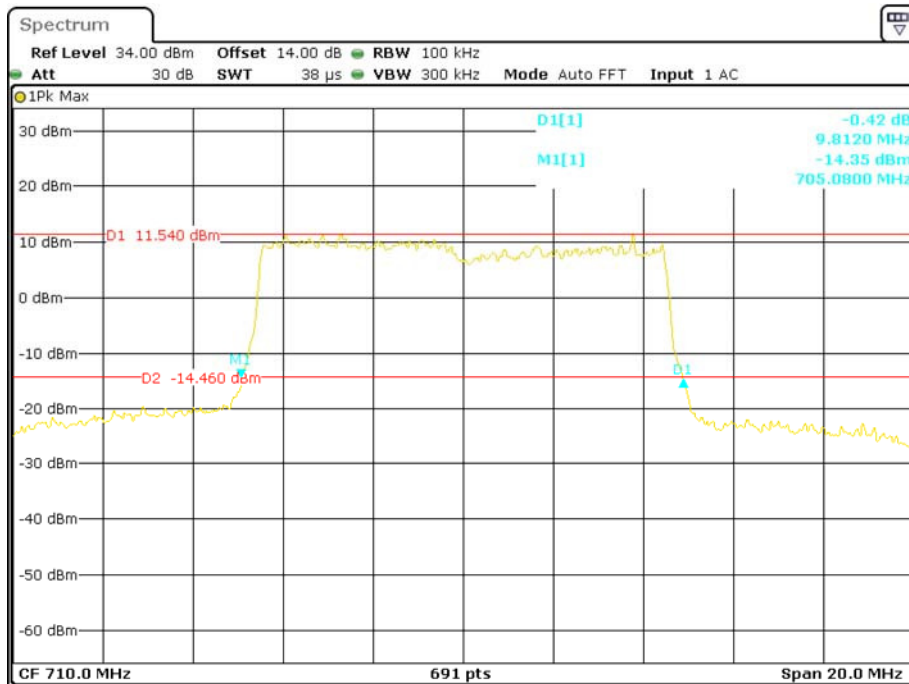


**QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel**



Date: 22.JAN.2016 13:37:39

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



Date: 22.JAN.2016 13:36:42

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

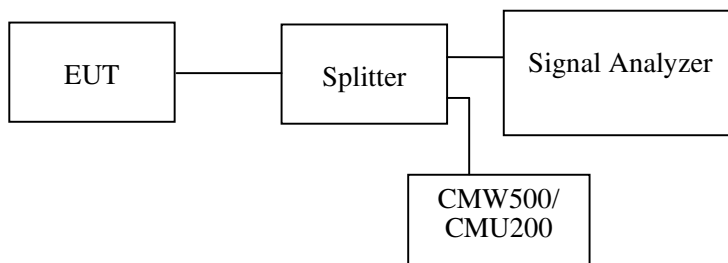
### Applicable Standards

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	2015-12-11	2016-12-11
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23

\* **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>	23~24 °C
<b>Relative Humidity:</b>	55~57 %
<b>ATM Pressure:</b>	101.0kPa

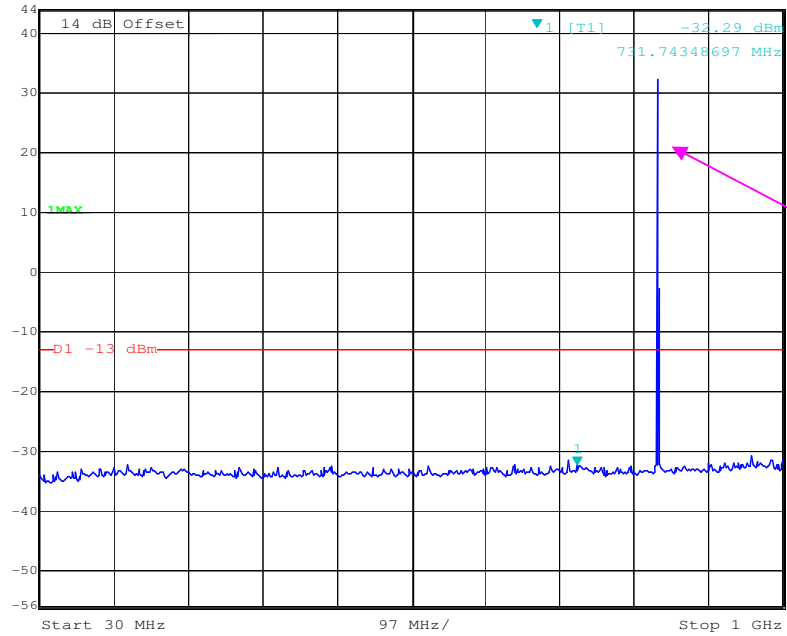
*The testing was performed by Haiguo Li from 2016-01-17 to 2016-01-19.*

*Please refer to the following plots.*

Cellular Band (Part 22H)

30 MHz – 1 GHz (GSM Mode)

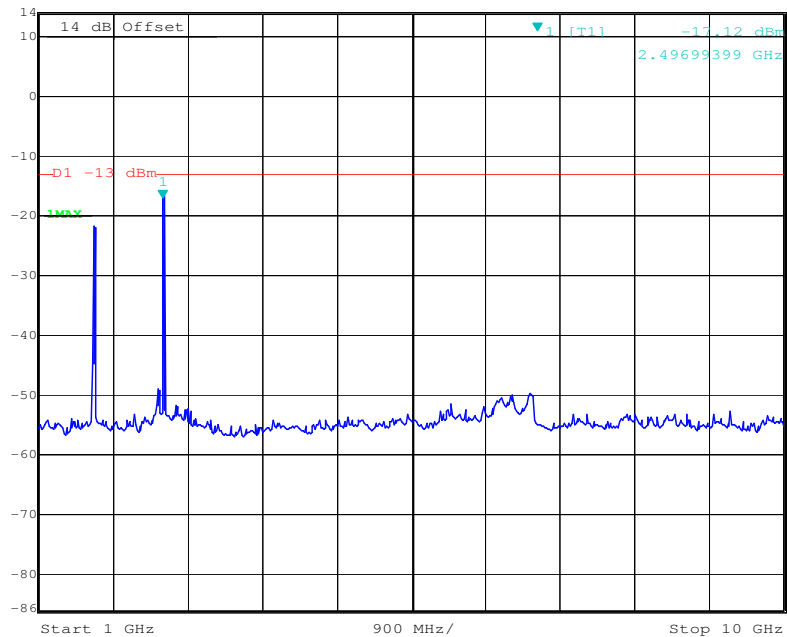
F
S
Marker 1 [T1]
RBW 100 kHz
RF Att 40 dB  
Ref Lvl 44 dBm
-32.29 dBm
VBW 300 kHz  
731.74348697 MHz
SWT 245 ms
Unit dBm



Date: 19.JAN.2016 07:43:46

1 GHz – 10 GHz (GSM Mode)

F
S
Marker 1 [T1]
RBW 1 MHz
RF Att 10 dB  
Ref Lvl 14 dBm
-17.12 dBm
VBW 3 MHz  
2.49699399 GHz
SWT 52 ms
Unit dBm

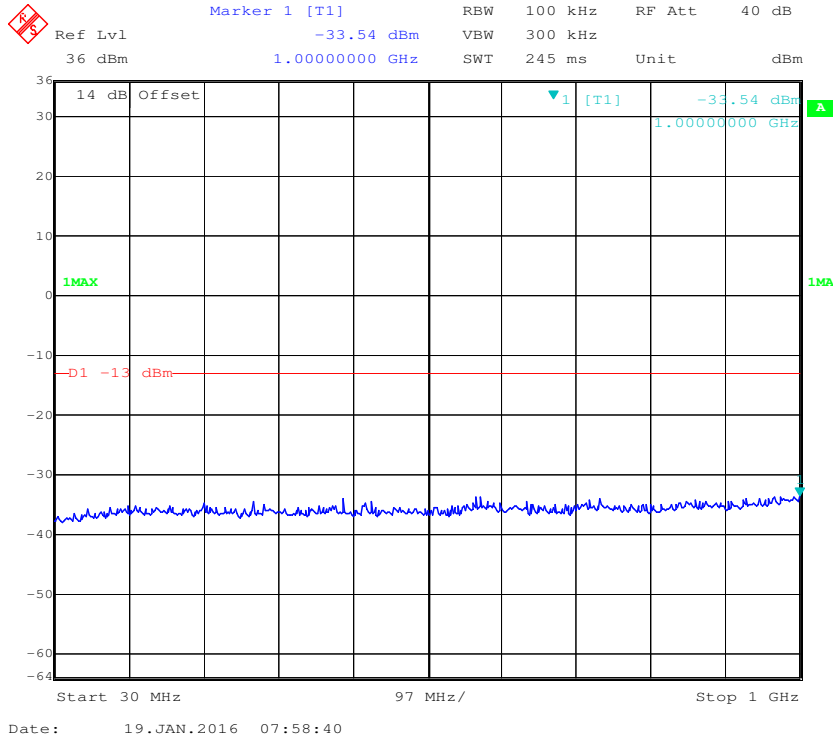


Date: 19.JAN.2016 07:44:38

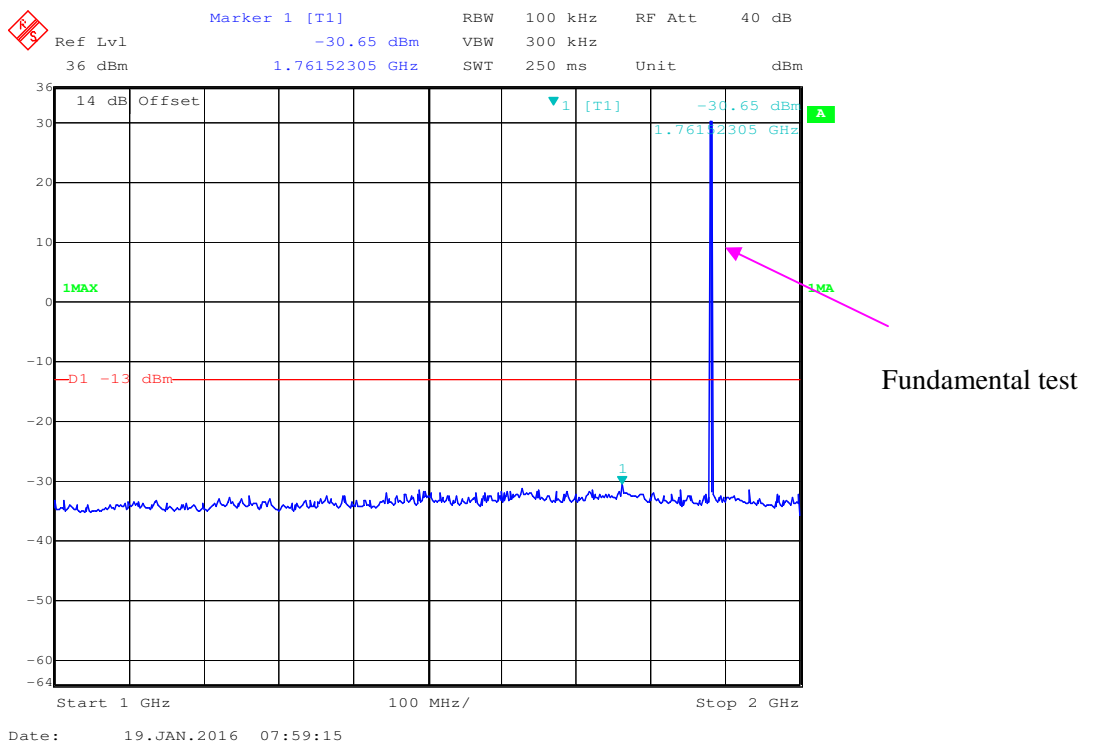


PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)




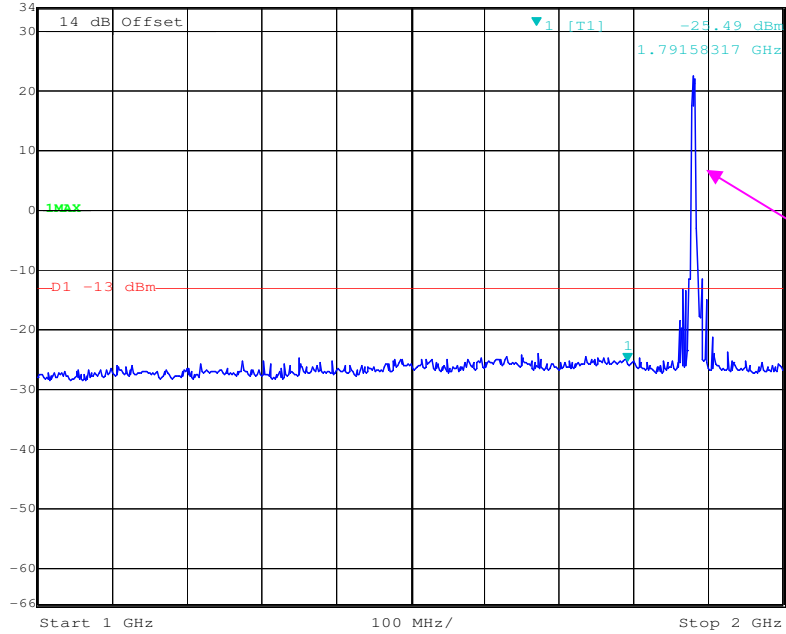
1 GHz – 2 GHz (GSM Mode)






### 1 GHz – 2 GHz (WCDMA Mode)

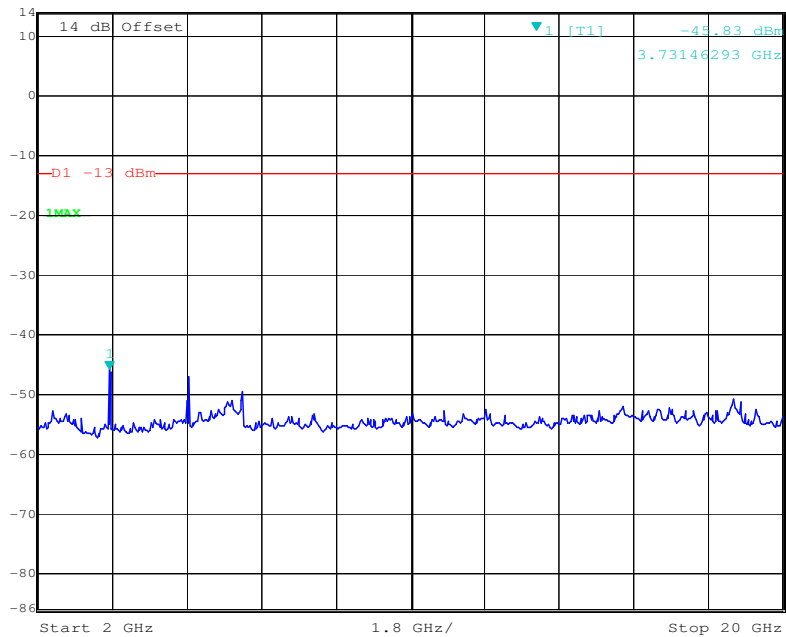
 Marker 1 [T1] RBW 1 MHz RF Att 40 dB  
Ref Lvl -25.49 dBm VBW 3 MHz  
34 dBm 1.79158317 GHz SWT 5 ms Unit dBm



Date: 19.JAN.2016 08:09:24

### 2 GHz – 20 GHz (WCDMA Mode)

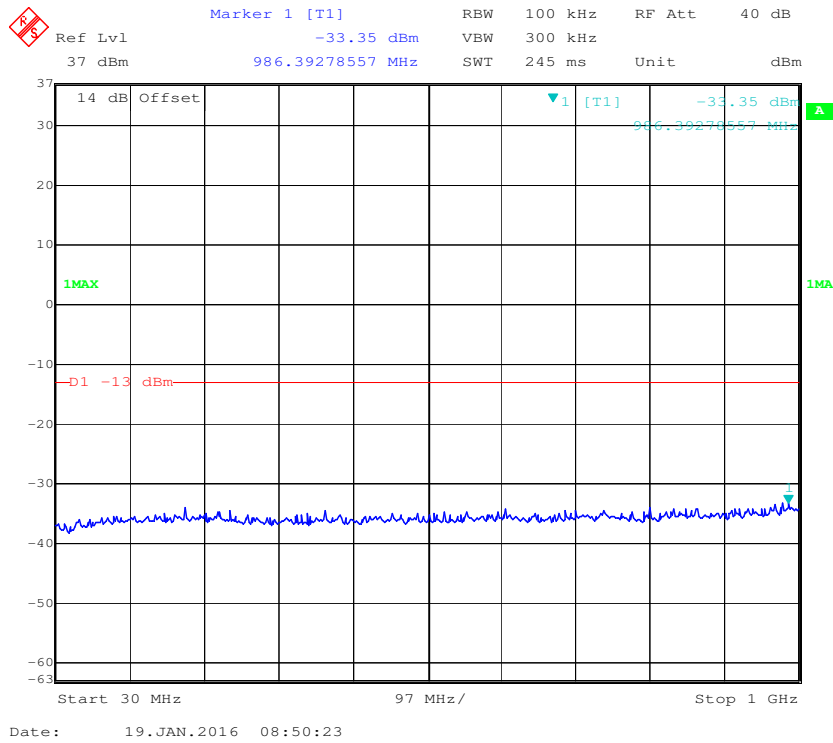
 Marker 1 [T1] RBW 1 MHz RF Att 10 dB  
Ref Lvl -45.83 dBm VBW 3 MHz  
14 dBm 3.73146293 GHz SWT 105 ms Unit dBm



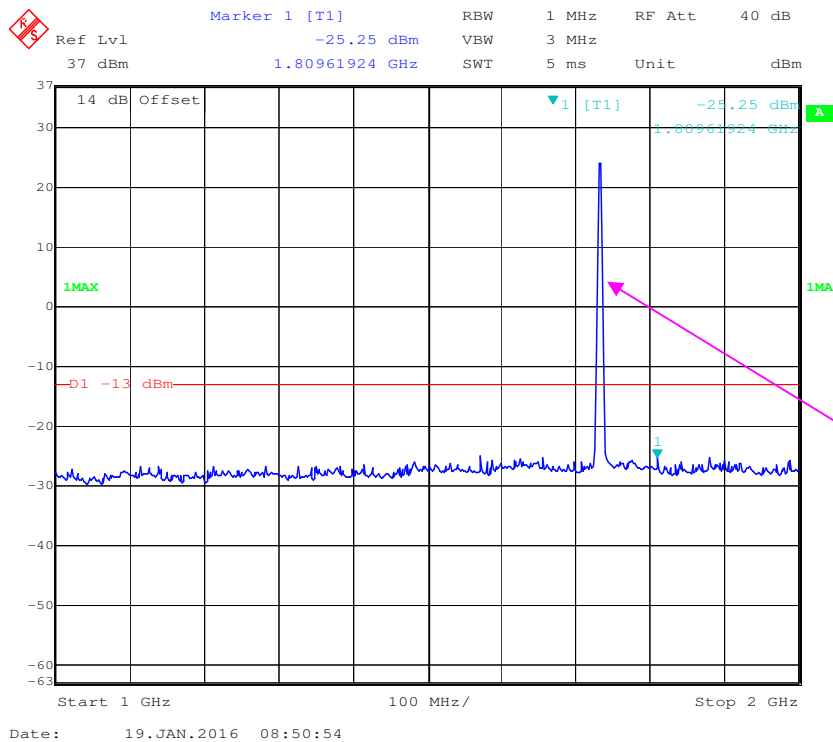
Date: 19.JAN.2016 08:09:54

AWS Band (Part 27)

30 MHz – 1 GHz (WCDMA Mode)

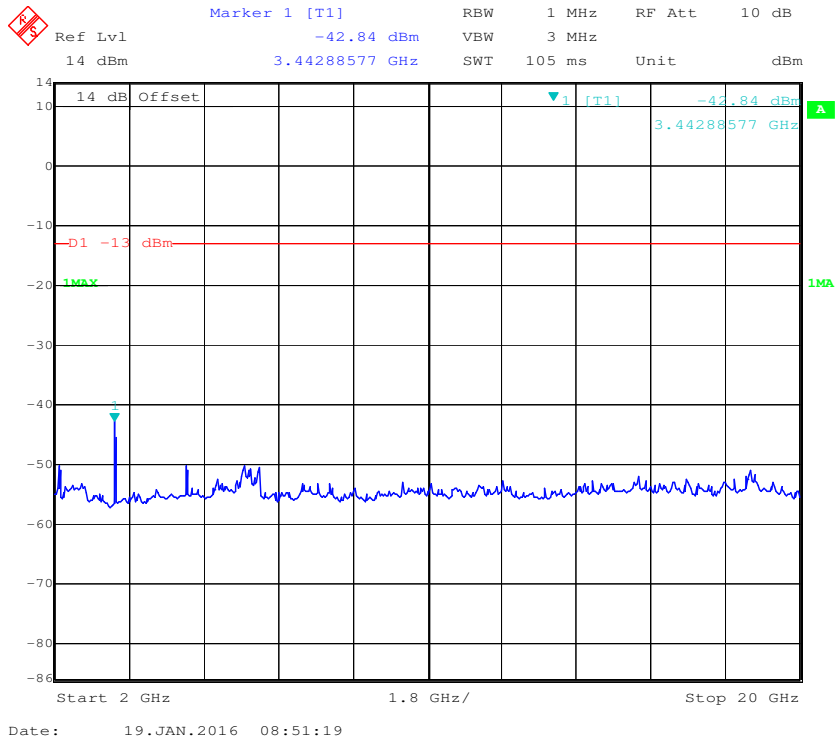


1 GHz – 2 GHz (WCDMA Mode)



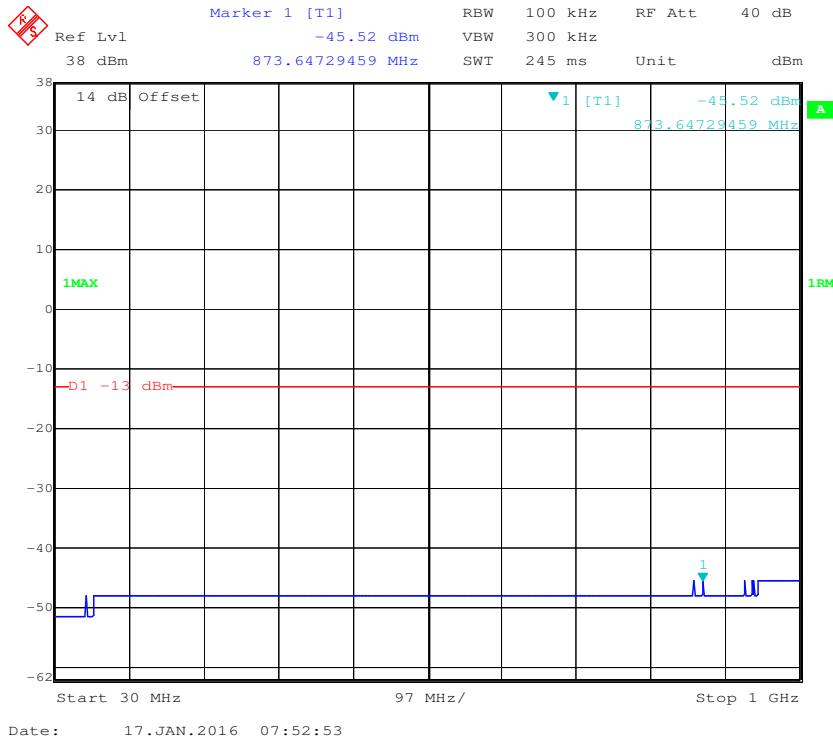


### 2 GHz – 20 GHz (WCDMA Mode)

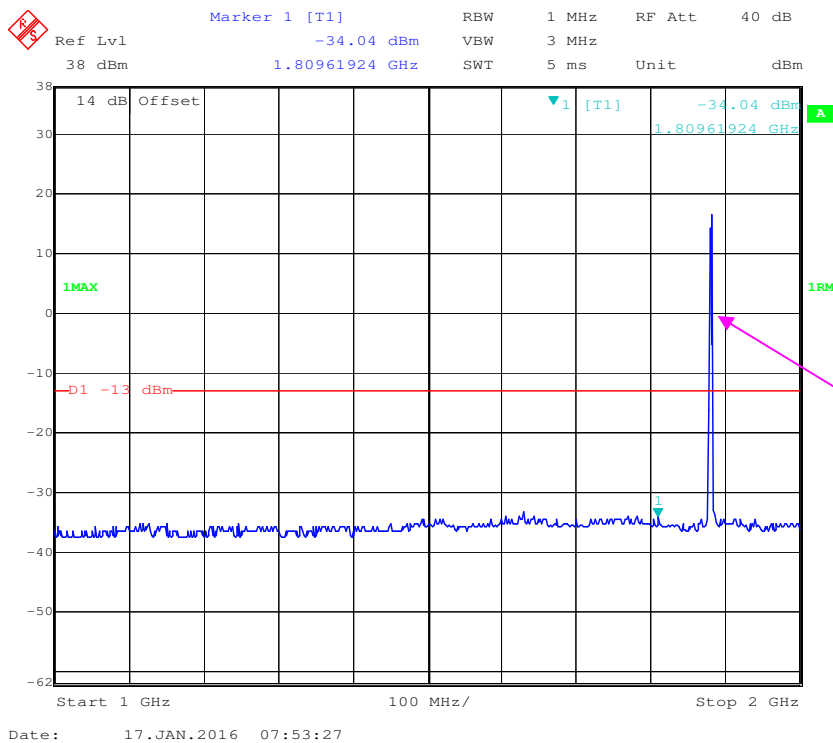


**LTE Band 2:**

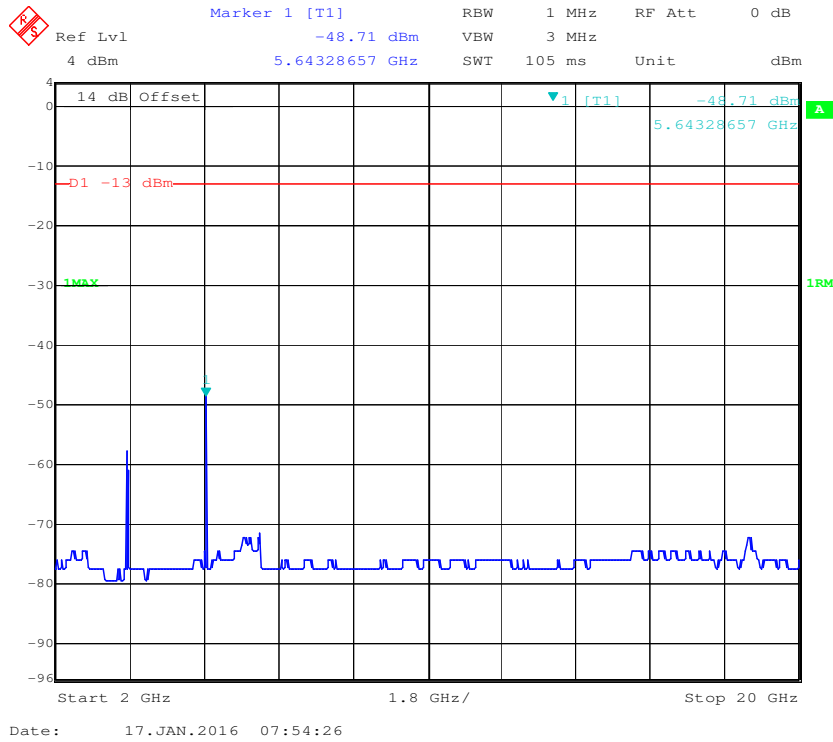
**30 MHz - 1 GHz (1.4 MHz, Middle Channel)**



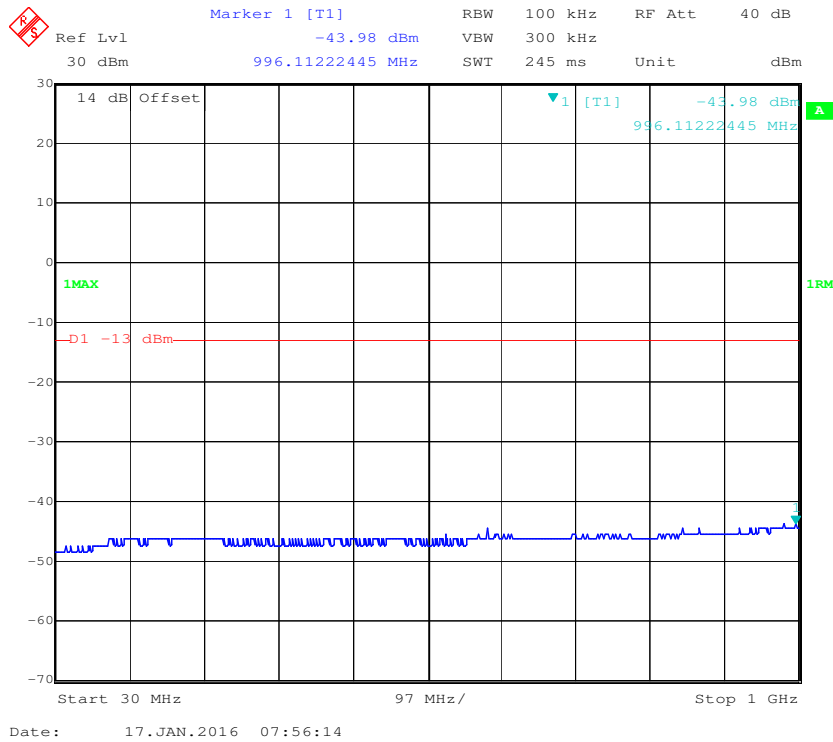
**1 GHz - 2 GHz (1.4 MHz, Middle Channel)**



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

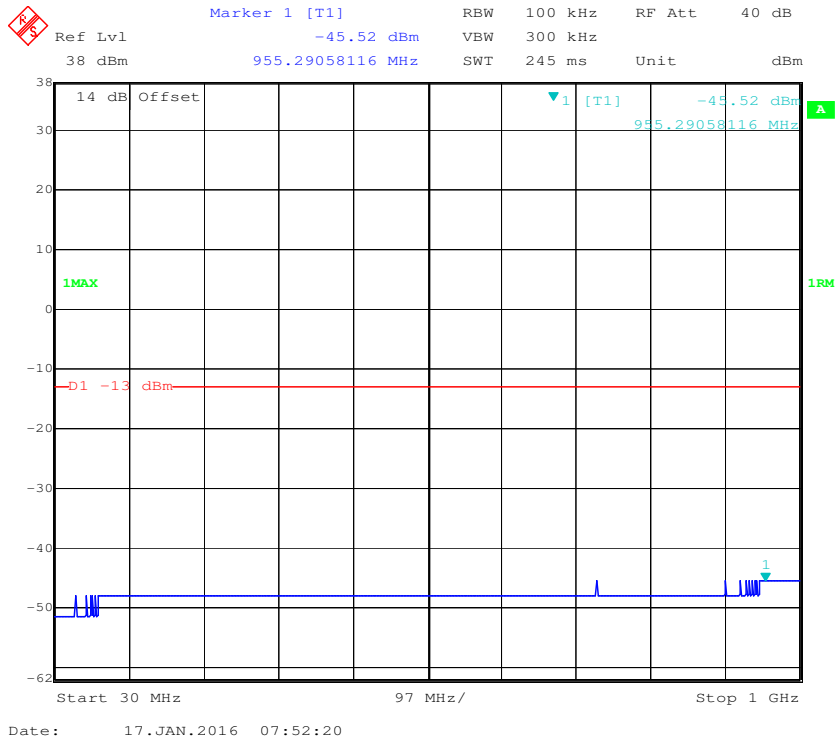


### 30 MHz - 1 GHz (3.0 MHz, Middle Channel)

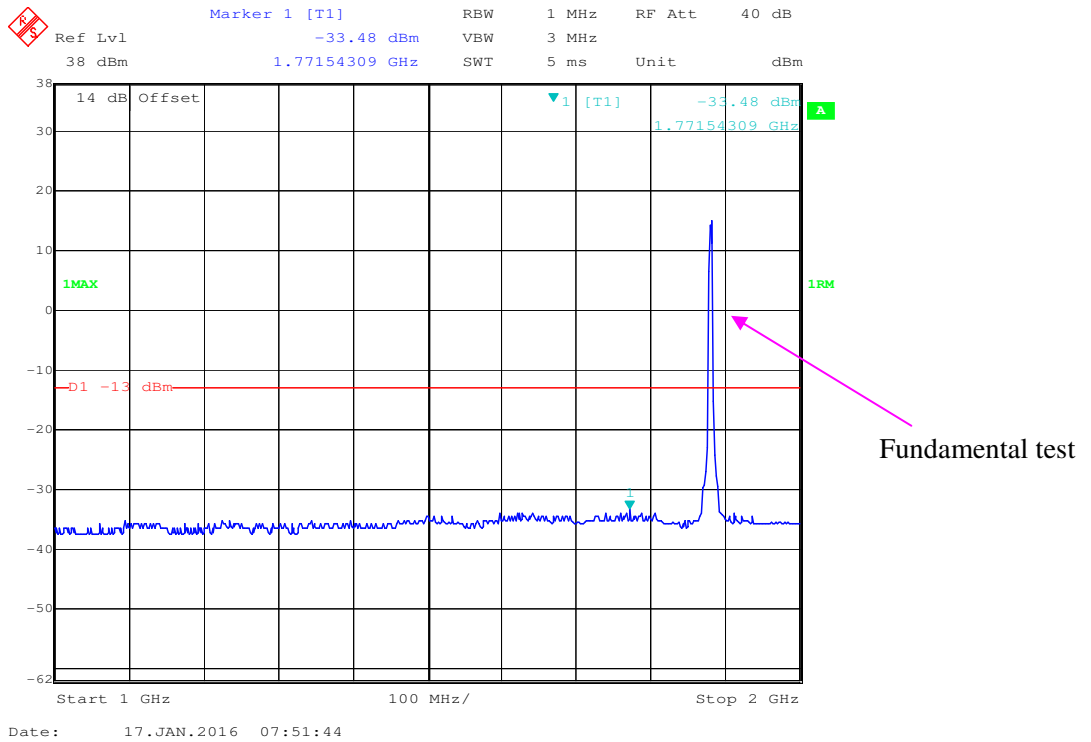




### 30 MHz - 1 GHz (5.0 MHz, Middle Channel)



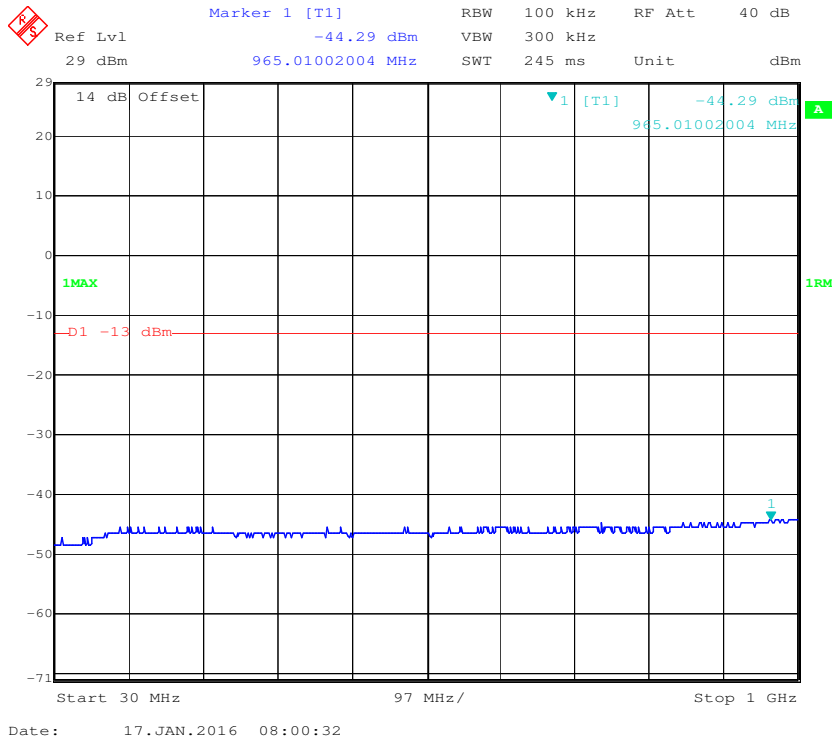
### 1 GHz - 2 GHz (5.0 MHz, Middle Channel)



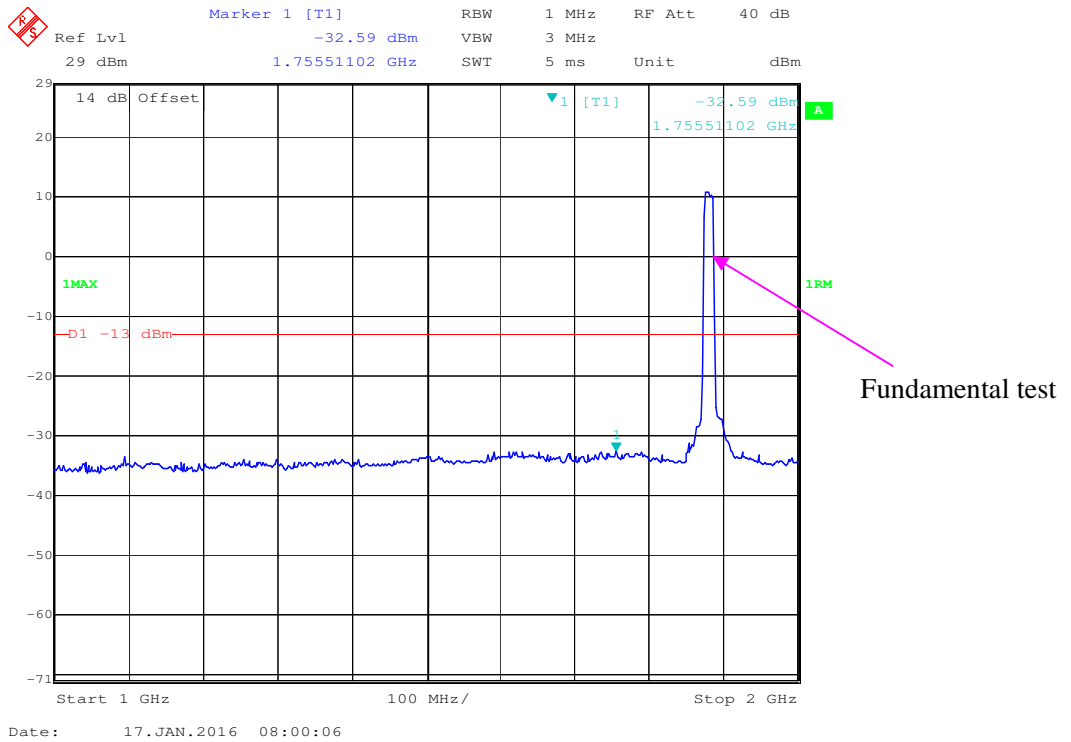




### 30 MHz - 1 GHz (15.0 MHz, Middle Channel)

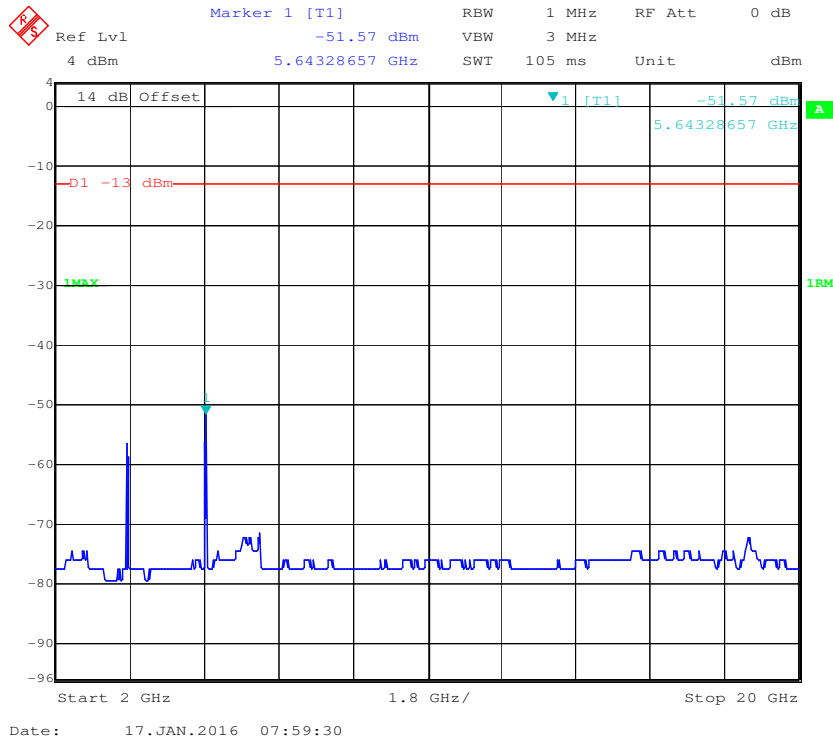


### 1 GHz - 2 GHz (15.0 MHz, Middle Channel)

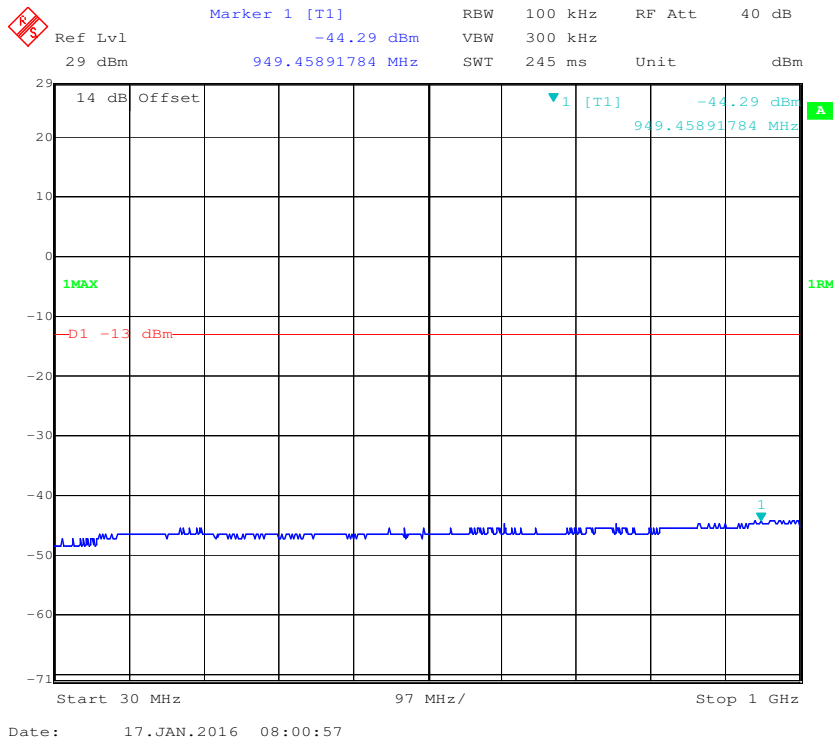




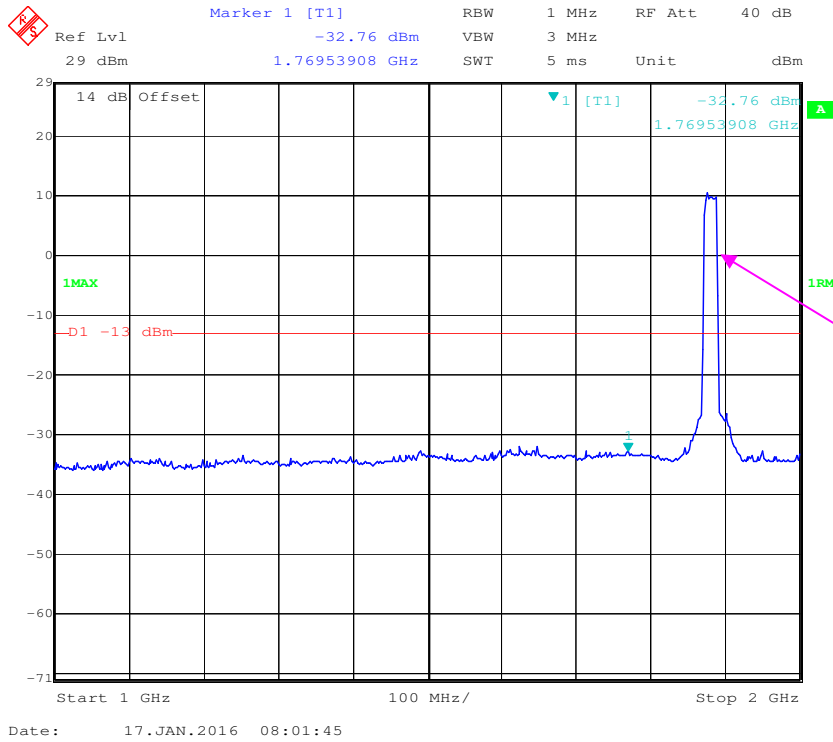
### 2 GHz –20 GHz (15.0 MHz, Middle Channel)



### 30 MHz - 1 GHz (20.0 MHz, Middle Channel)

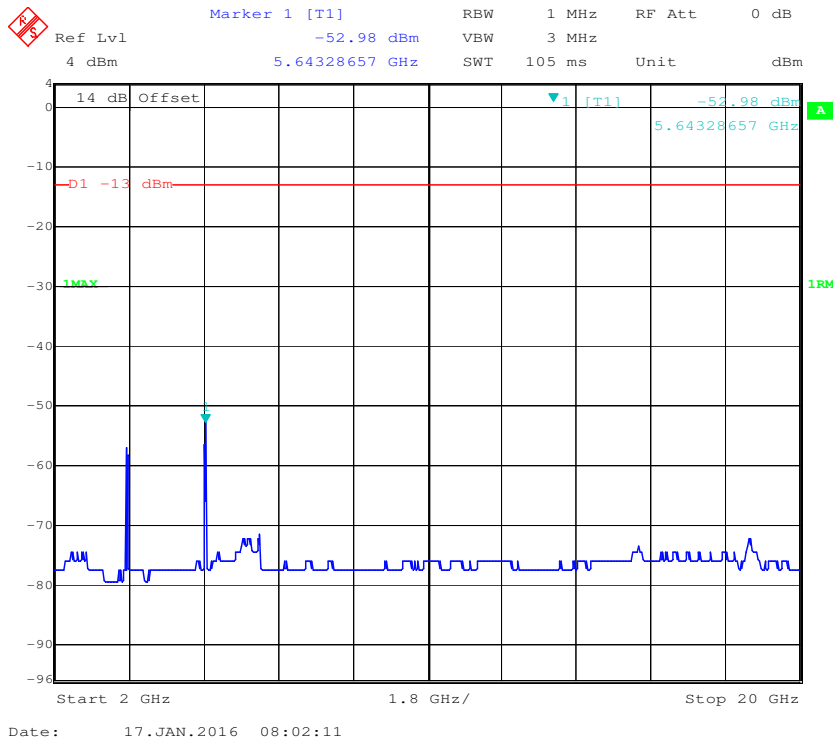


### 1 GHz –2 GHz (20.0 MHz, Middle Channel)



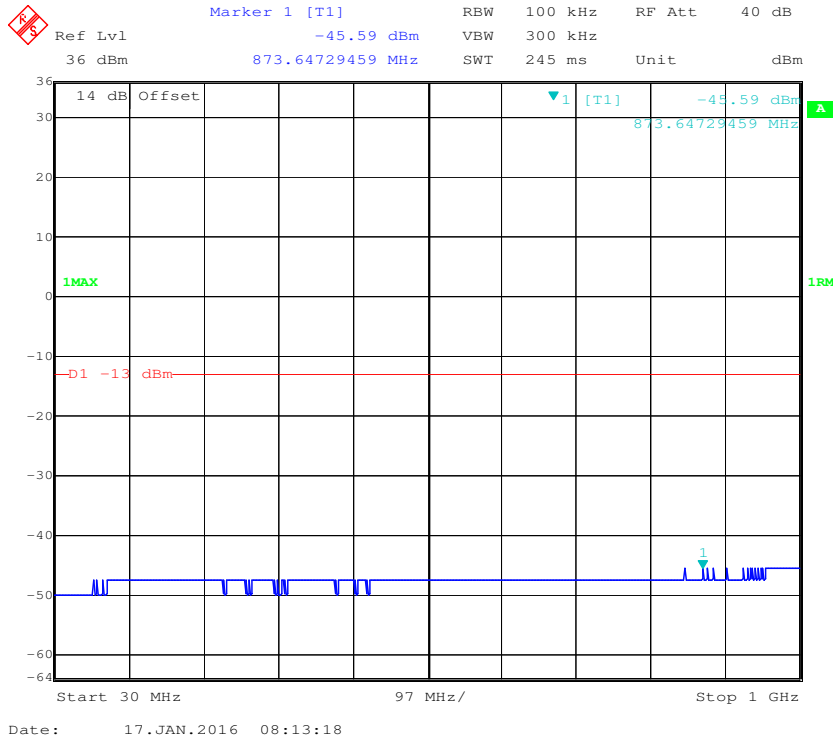
Fundamental test

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

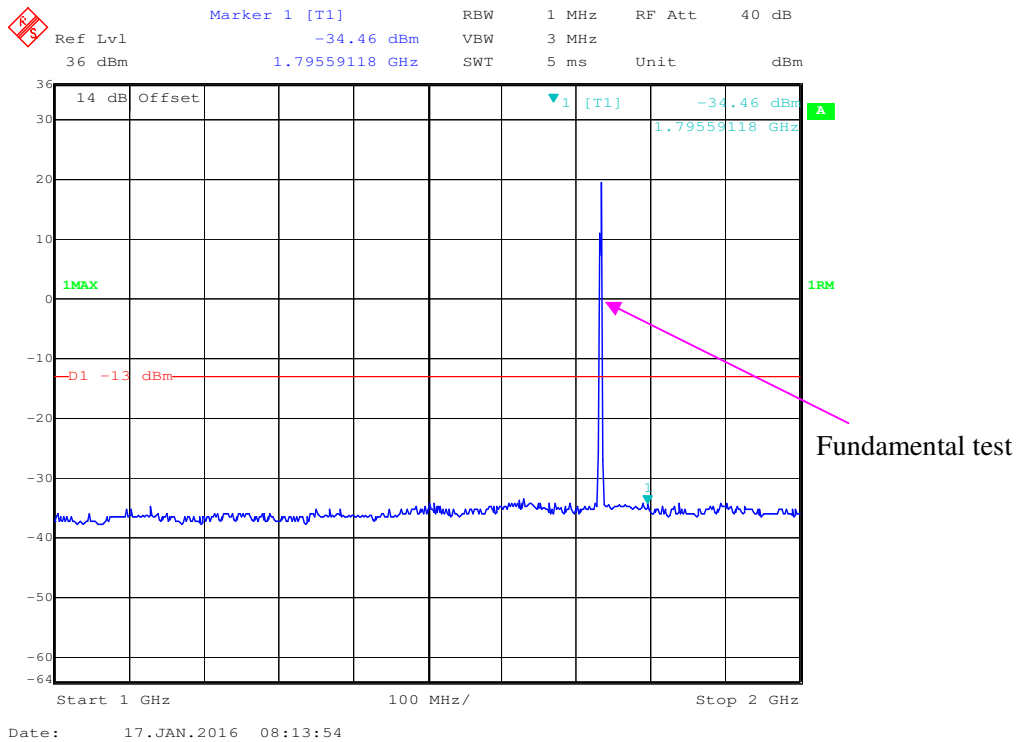


**LTE Band 4:**

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

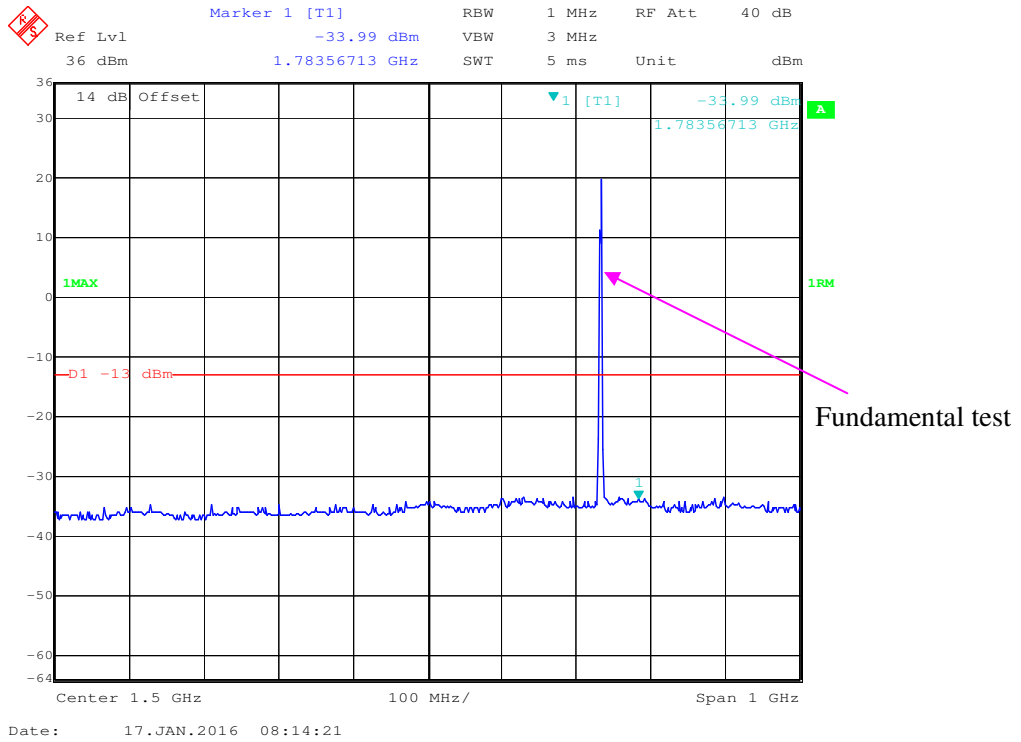


**1 GHz - 2 GHz (1.4 MHz, Middle Channel)**

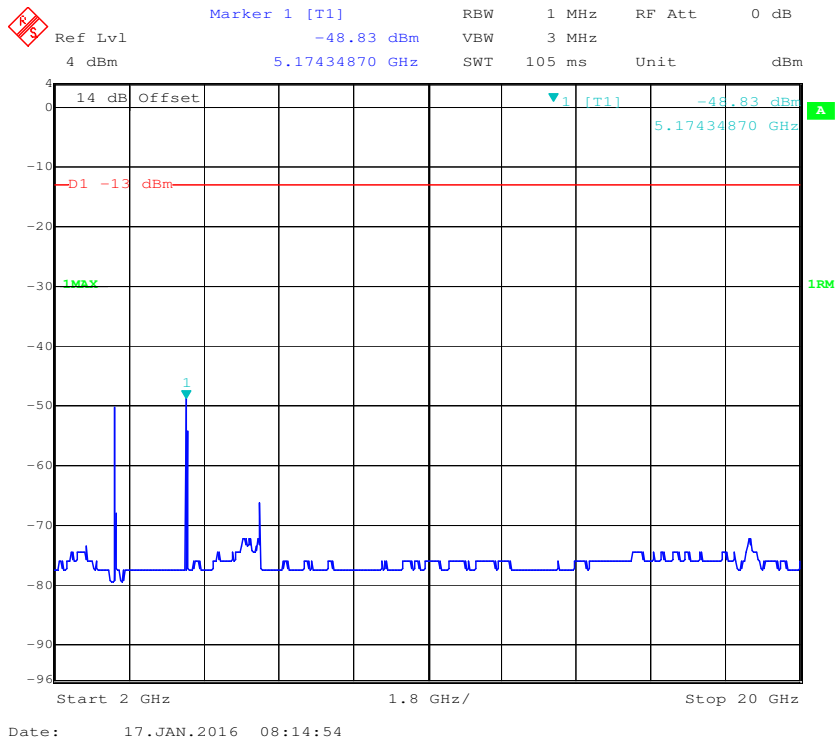




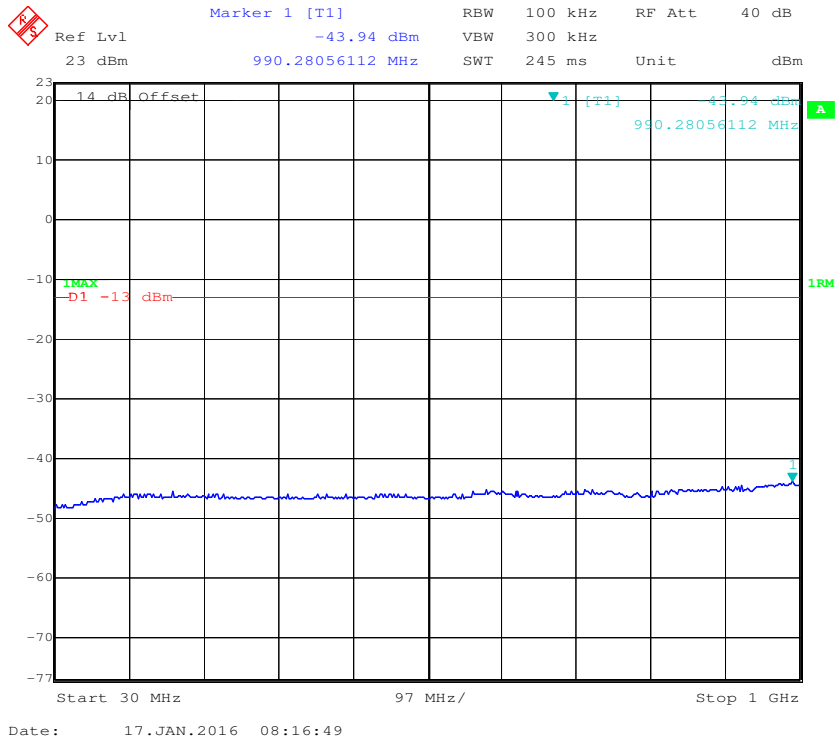
**1 GHz – 2 GHz (3.0 MHz, Middle Channel)**



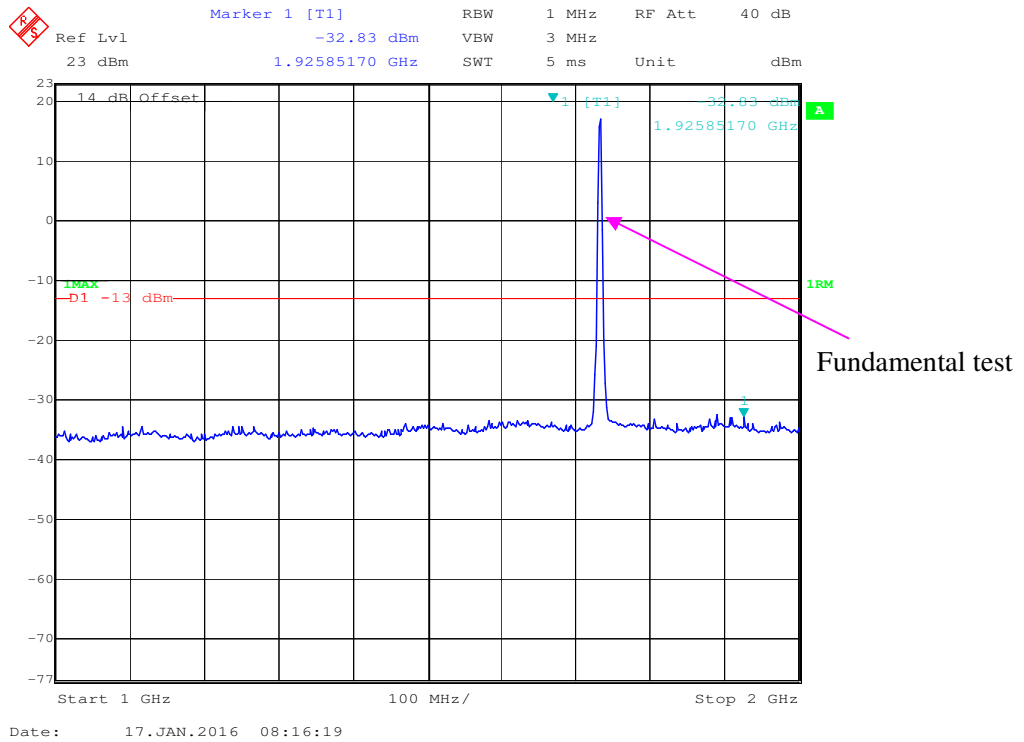
**2 GHz – 20 GHz (3.0 MHz, Middle Channel)**



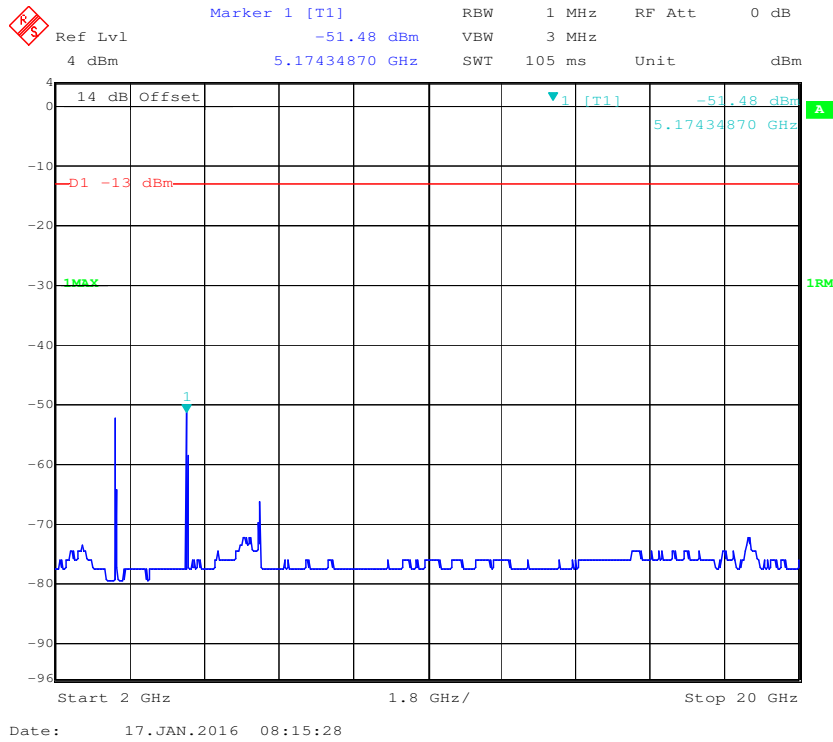
### 30 MHz - 1 GHz (5.0 MHz, Middle Channel)



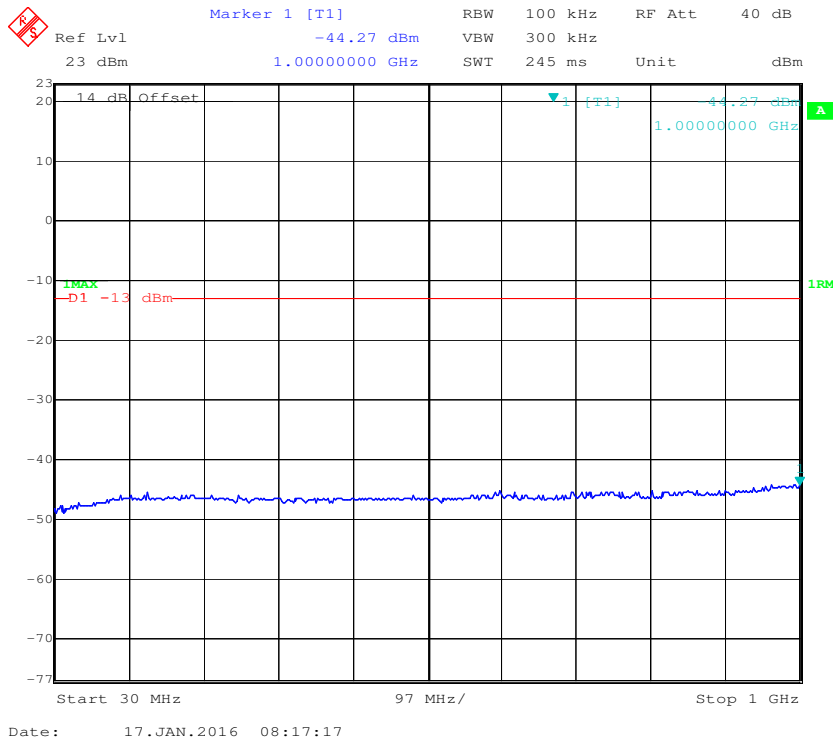
### 1 GHz - 2 GHz (5.0 MHz, Middle Channel)



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



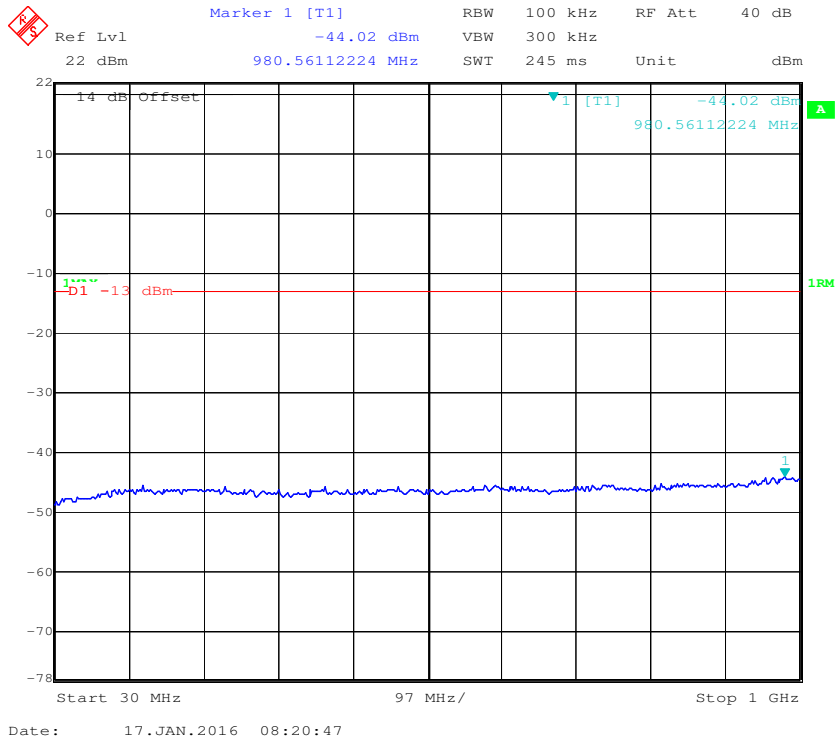
### 30 MHz - 1 GHz (10.0 MHz, Middle Channel)



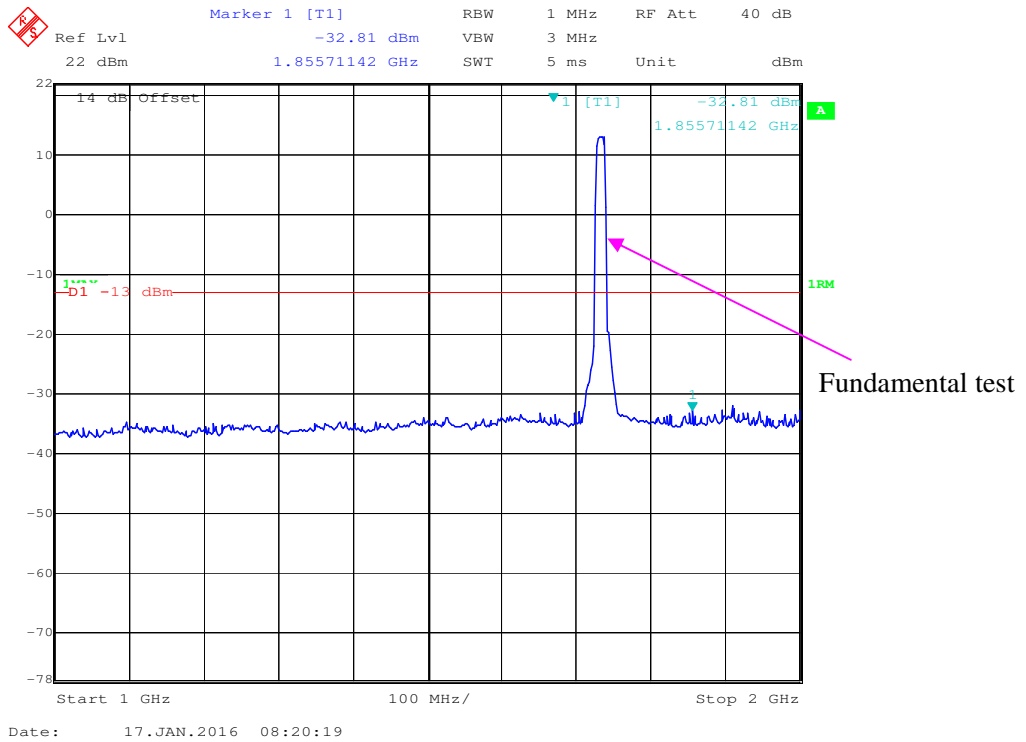




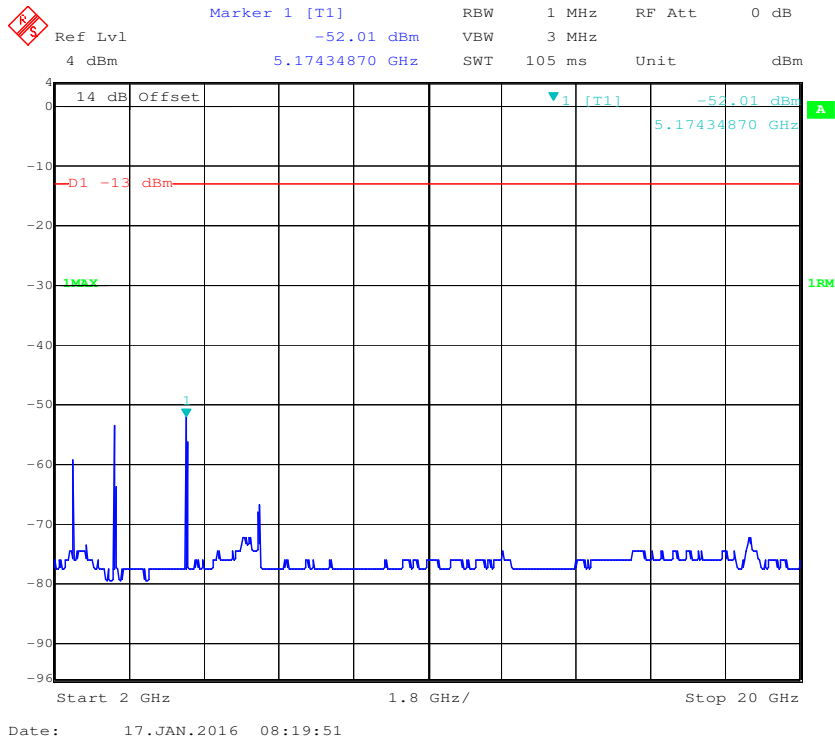
### 30 MHz - 1 GHz (15.0 MHz, Middle Channel)



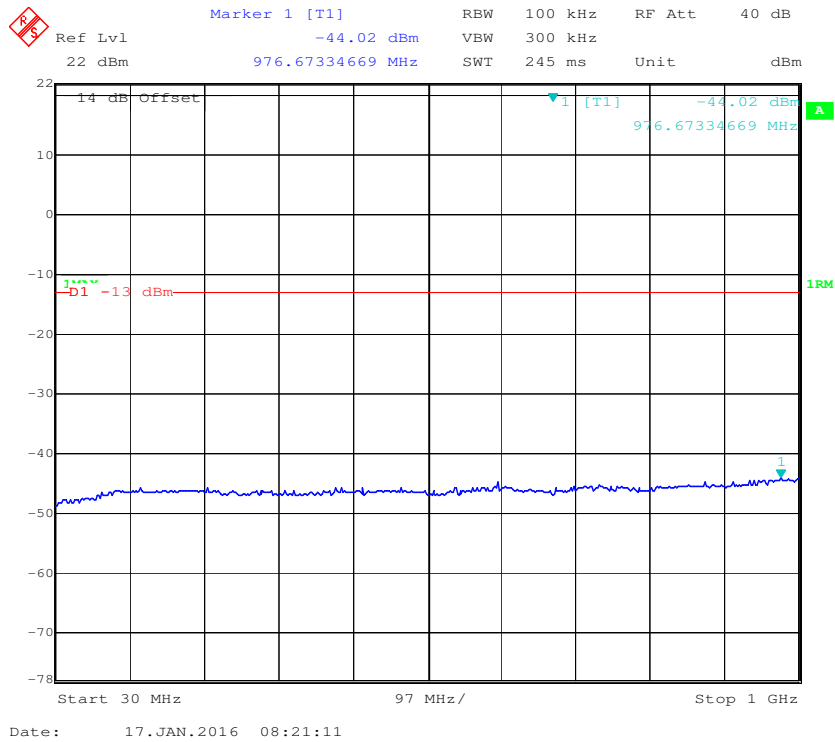
### 1 GHz - 2 GHz (15.0 MHz, Middle Channel)



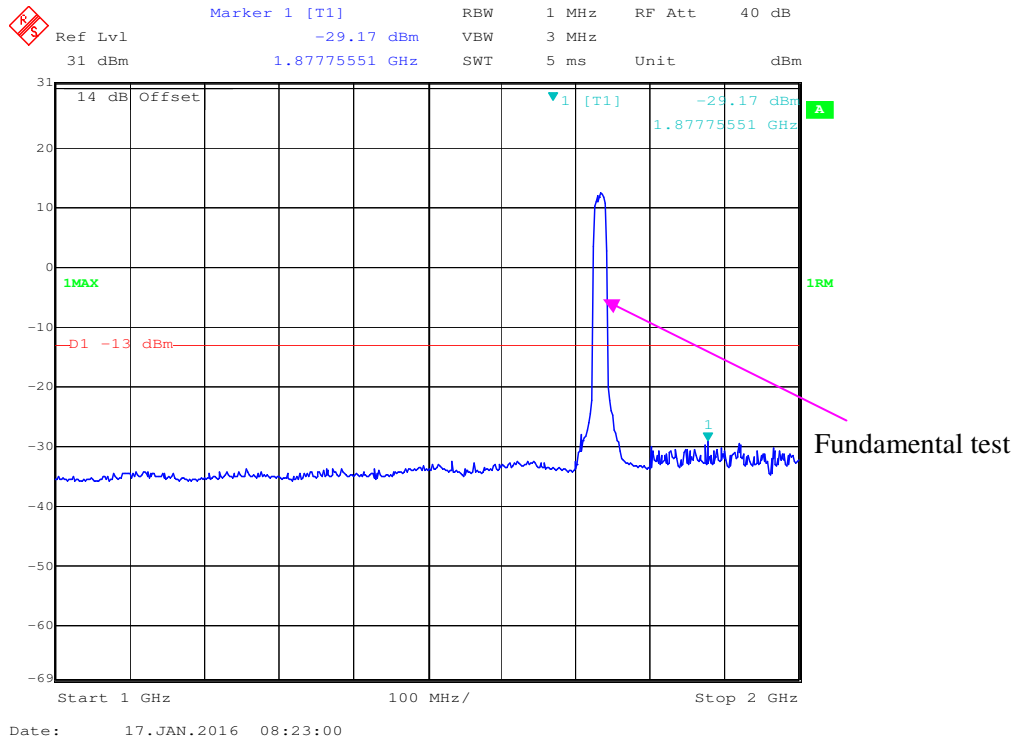
### 2 GHz –20GHz (15.0 MHz, Middle Channel)



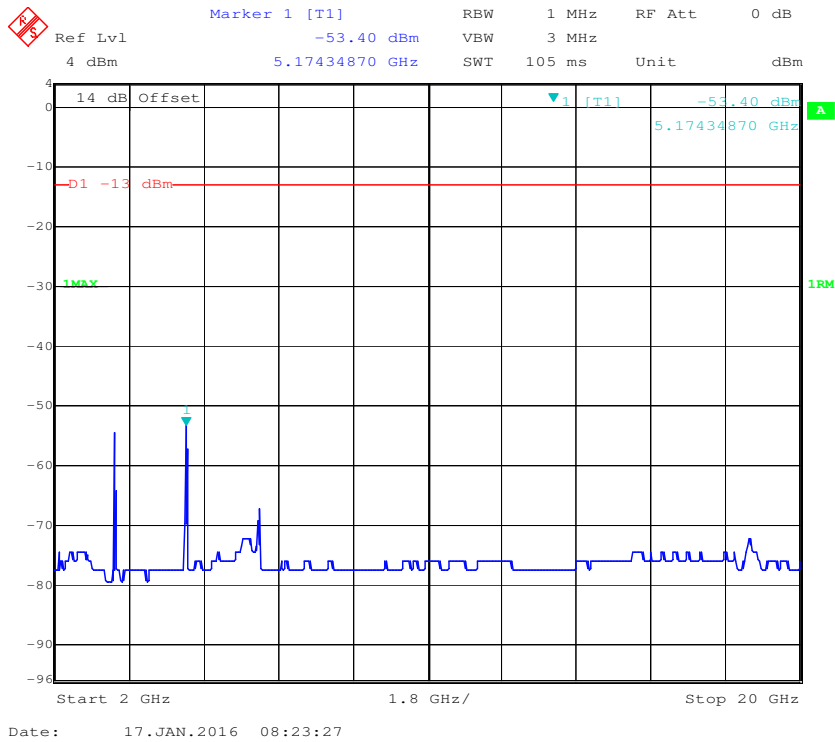
### 30 MHz - 1 GHz (20.0 MHz, Middle Channel)



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

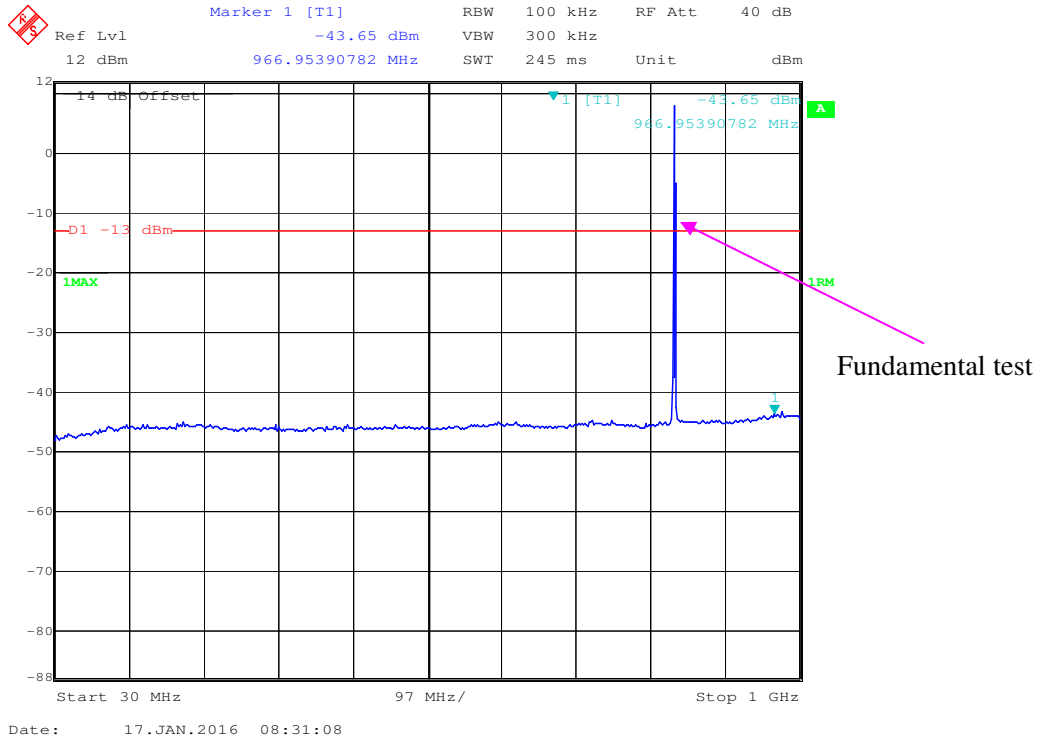


### 2 GHz –20 GHz (20.0 MHz, Middle Channel)

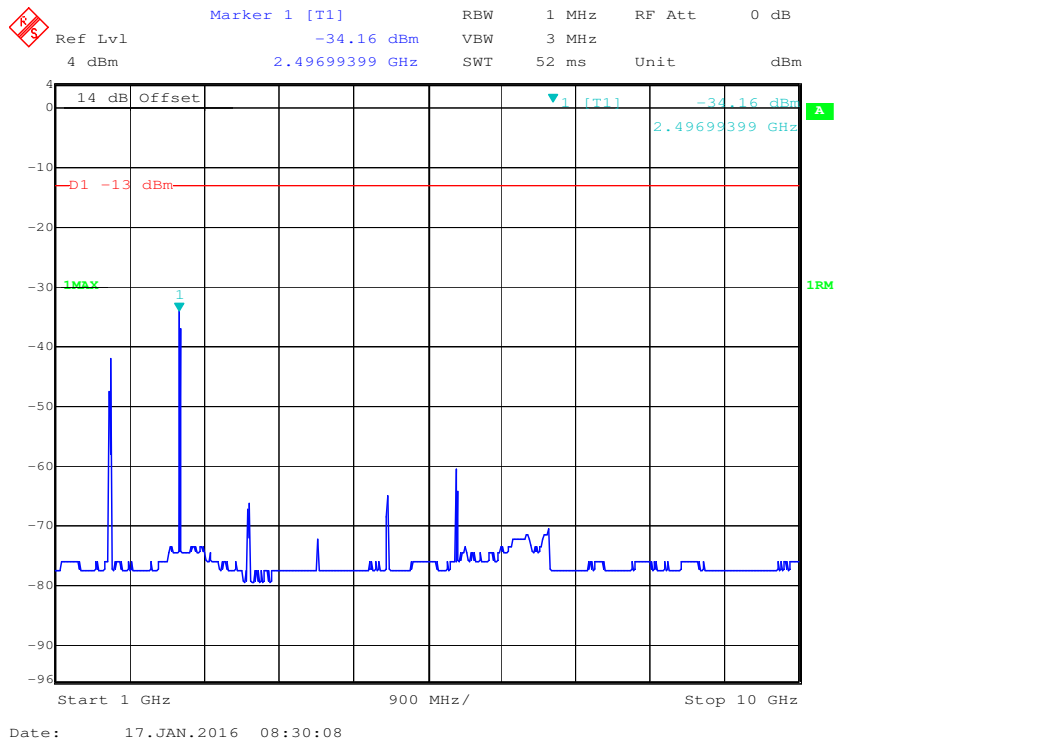


**LTE Band 5:**

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

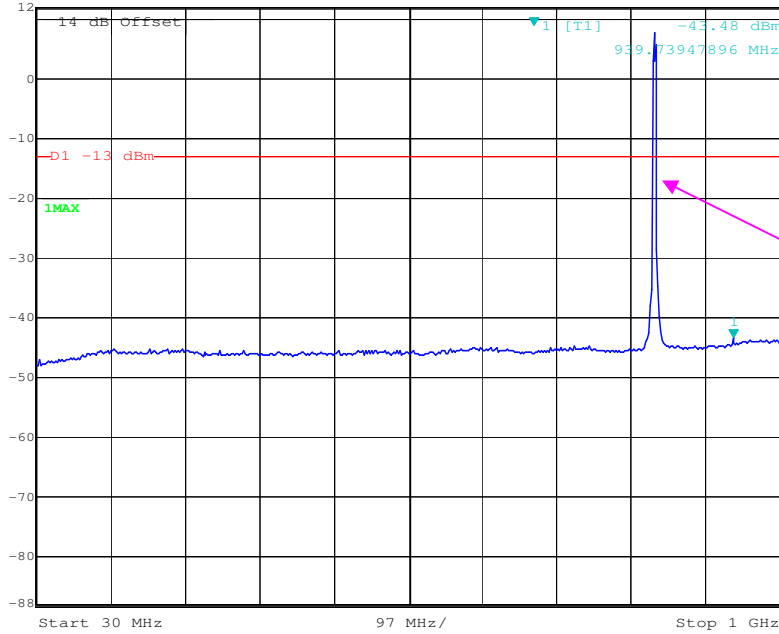


**1 GHz - 10 GHz (1.4 MHz, Middle Channel)**



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

Marker 1 [T1] RBW 100 kHz RF Att 40 dB  
Ref Lvl -43.48 dBm VBW 300 kHz  
12 dBm 939.73947896 MHz SWT 245 ms Unit dBm

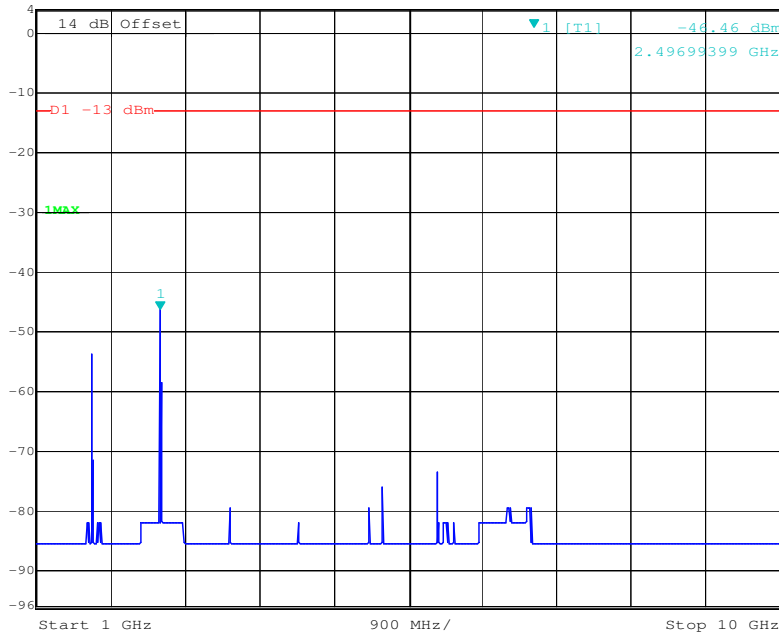


Fundamental test

Date: 17.JAN.2016 08:33:31


### 1 GHz - 10 GHz (3.0 MHz, Middle Channel)

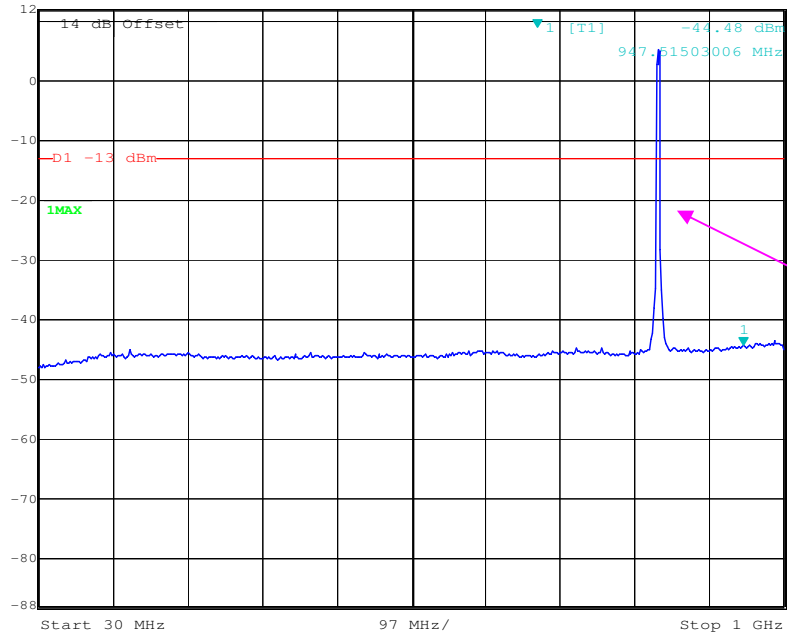
Marker 1 [T1] RBW 100 kHz RF Att 0 dB  
Ref Lvl -46.46 dBm VBW 300 kHz  
4 dBm 2.49699399 GHz SWT 2.25 s Unit dBm



Date: 17.JAN.2016 08:35:35


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

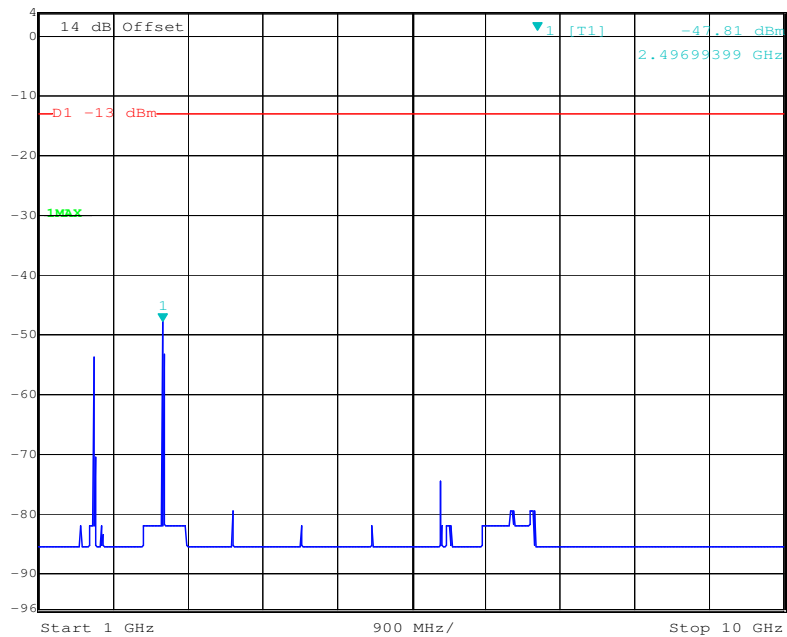
 Marker 1 [T1] RBW 100 kHz RF Att 40 dB  
Ref Lvl -44.48 dBm VBW 300 kHz  
12 dBm 947.51503006 MHz SWT 245 ms Unit dBm



Date: 17.JAN.2016 08:34:04

### 1 GHz - 10 GHz (5.0 MHz, Middle Channel)

 Marker 1 [T1] RBW 100 kHz RF Att 0 dB  
Ref Lvl -47.81 dBm VBW 300 kHz  
4 dBm 2.49699399 GHz SWT 2.25 s Unit dBm

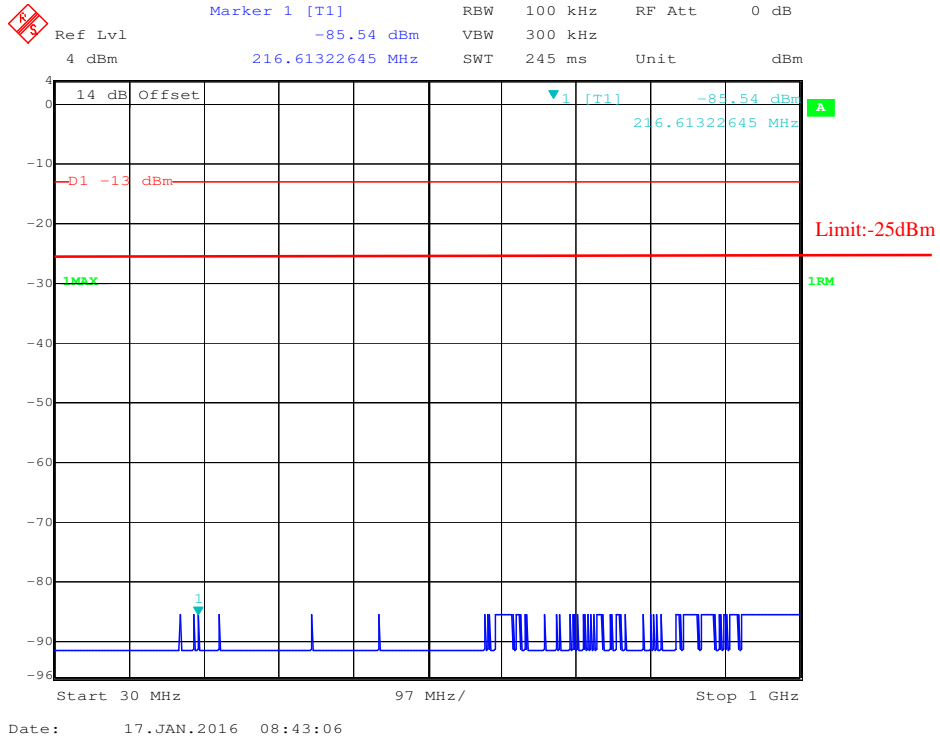


Date: 17.JAN.2016 08:36:05

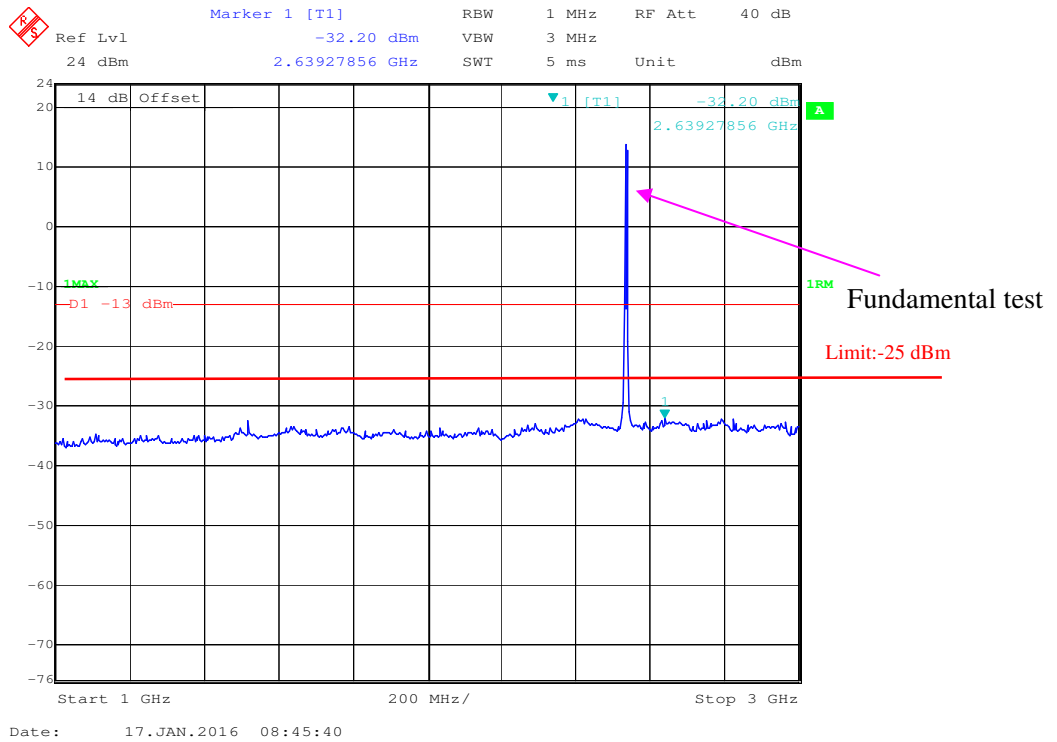


LTE Band 7:

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



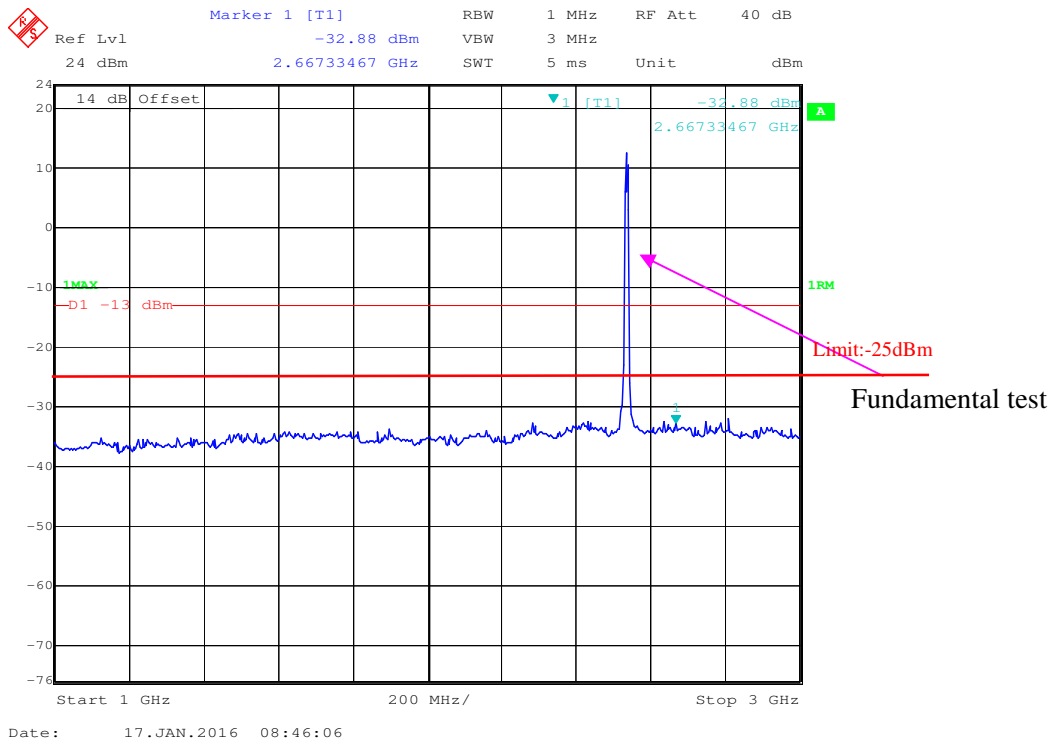
1 GHz - 2 GHz (5.0 MHz, Middle Channel)



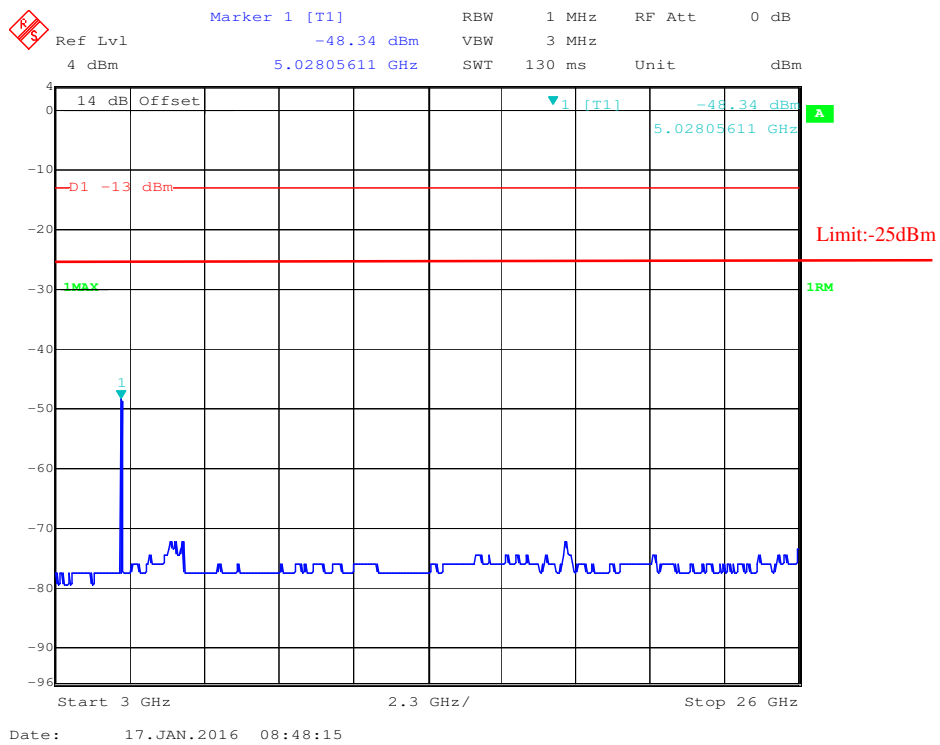




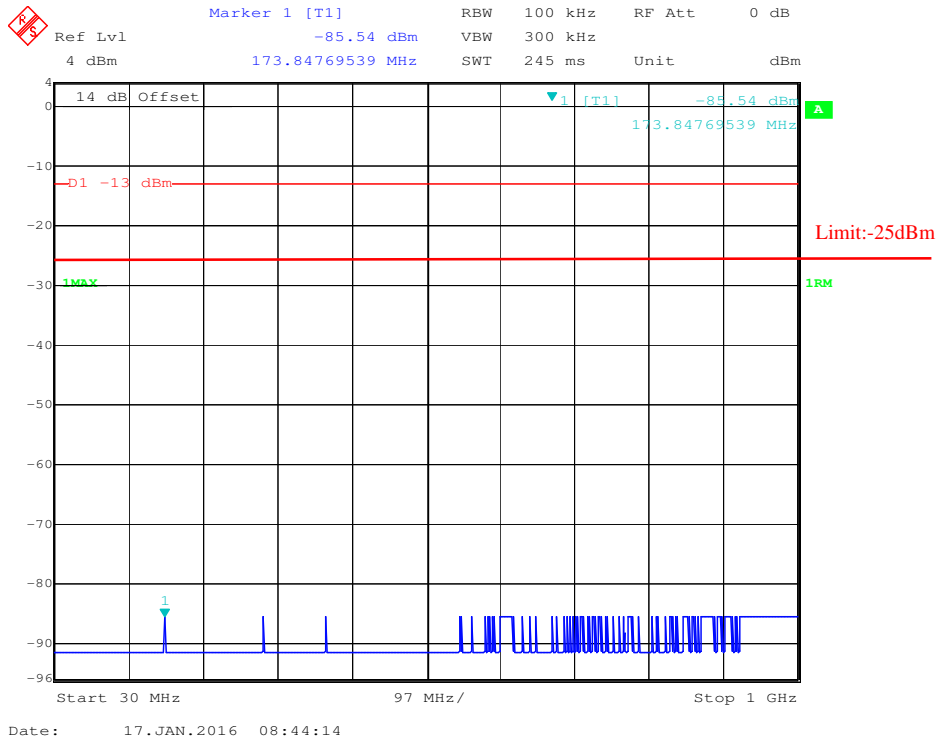
**1 GHz – 3 GHz (10.0 MHz, Middle Channel)**



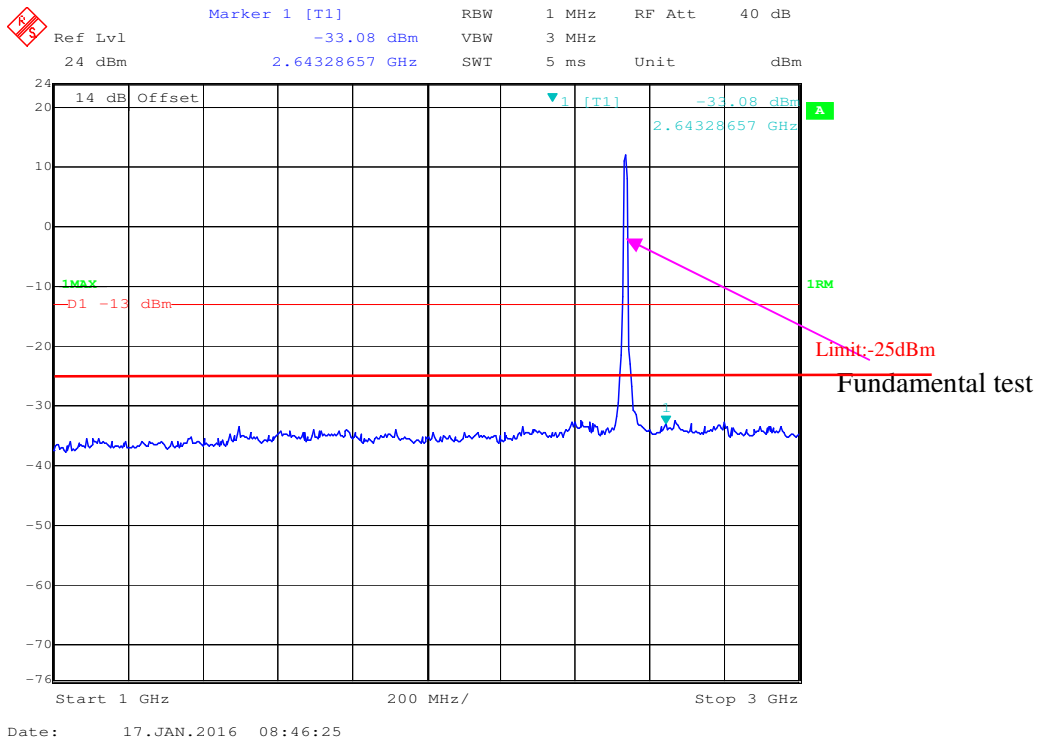
**3 GHz – 26 GHz (10.0 MHz, Middle Channel)**



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



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

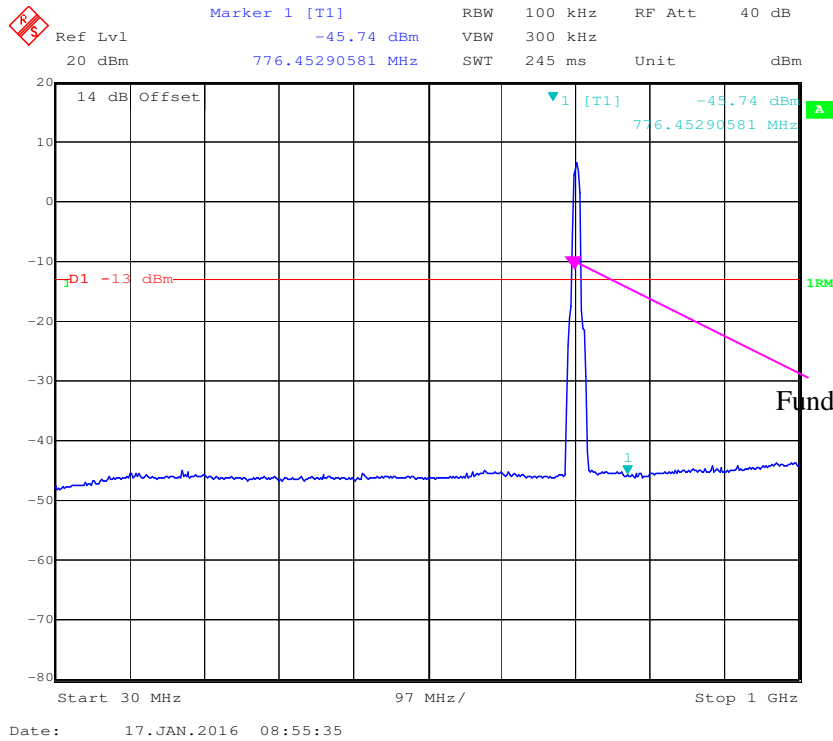




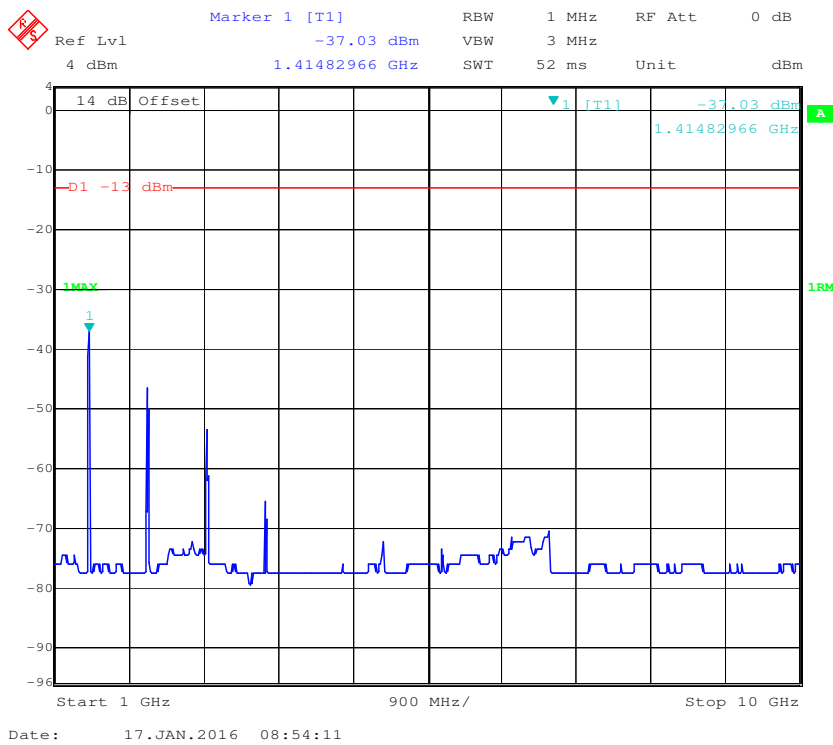


LTE Band 17:

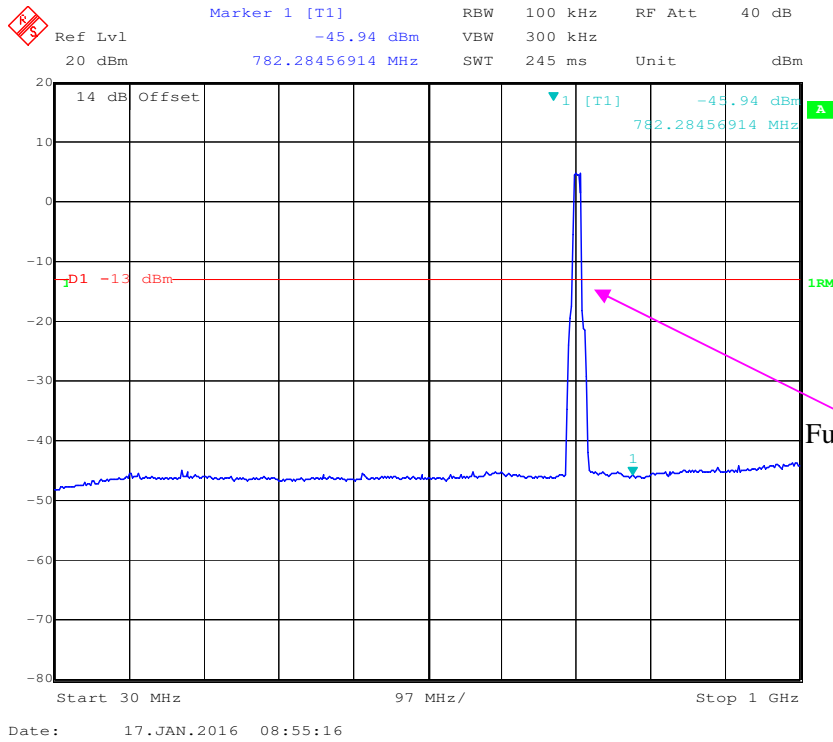
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



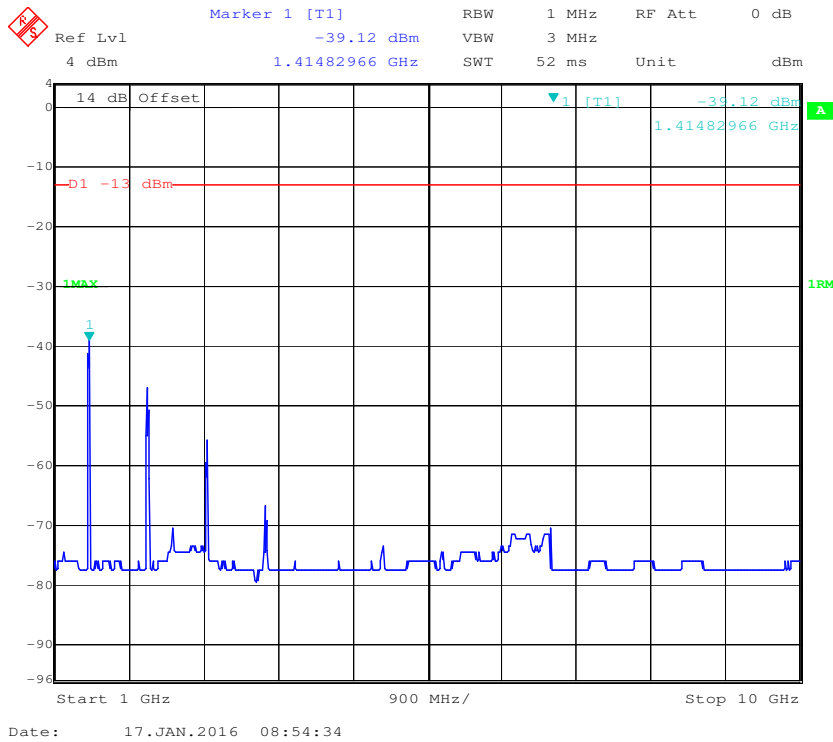
1 GHz - 10 GHz (5.0 MHz, Middle Channel)



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



### 1 GHz - 10 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	A052604	2014-12-29	2017-12-28
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
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	HP 8341B	2624A00116	2015-07-02	2016-07-01
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	2015-11-03	2016-11-03
Electro-Mechanics	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23

\* **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>	23 °C
<b>Relative Humidity:</b>	55 %
<b>ATM Pressure:</b>	101.0kPa

*The testing was performed by Haiguo Li on 2016-01-19.*

*Test mode: Transmitting*

Test mode: Transmitting (Pre-scan with Low, Middle, High channel, and the worse case data 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/24E/27	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
185.36	37.52	33	1.4	H	-59.5	0.29	0	-59.79	-13	46.79
185.36	36.89	55	1.3	V	-60.1	0.29	0	-60.39	-13	47.39
1673.20	52.36	45	1.2	H	-55.0	1.60	6.90	-49.70	-13	36.70
1673.20	47.03	270	2.2	V	-60.8	1.60	6.90	-55.50	-13	42.50
2509.80	56.27	125	2.1	H	-48.3	1.70	8.60	-41.40	-13	28.40
2509.80	55.48	152	1.8	V	-49.4	1.70	8.60	-42.50	-13	29.50
WCDMA Mode, Middle channel										
232.14	37.55	13	1.9	H	-59.4	0.31	0	-59.71	-13	46.71
232.14	36.42	153	1.5	V	-60.6	0.31	0	-60.91	-13	47.91
1673.20	50.36	283	1.2	H	-57.0	1.60	6.90	-51.70	-13	38.70
1673.20	47.25	339	2.5	V	-60.6	1.60	6.90	-55.30	-13	42.30

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

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)
GSM Mode, Middle channel										
185.36	37.12	356	1.9	H	-59.9	0.29	0	-60.19	-13	47.19
185.36	36.32	344	1.7	V	-60.7	0.29	0	-60.99	-13	47.99
3760.00	51.58	59	1.3	H	-47.9	1.90	9.90	-39.90	-13	26.90
3760.00	45.61	184	2.2	V	-53.5	1.90	9.90	-45.50	-13	32.50
5640.00	55.82	257	1.2	H	-40.6	2.10	10.30	-32.40	-13	19.40
5640.00	55.11	307	1.5	V	-40.7	2.10	10.30	-32.50	-13	19.50
WCDMA Mode, Middle channel										
232.14	37.24	304	1.6	H	-59.8	0.31	0	-60.11	-13	47.11
232.14	36.21	8	1.7	V	-60.8	0.31	0	-61.11	-13	48.11
3760.00	47.35	327	2.0	H	-52.1	1.90	9.90	-44.10	-13	31.10
3760.00	45.78	289	1.6	V	-53.3	1.90	9.90	-45.30	-13	32.30

AWS Band (Part 27)

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)
WCDMA Mode, Low channel										
232.14	37.75	261	1.6	H	-59.2	0.31	0	-59.51	-13	46.51
232.14	36.43	108	1.0	V	-60.6	0.31	0	-60.91	-13	47.91
3424.80	48.36	274	1.3	H	-40.9	1.90	9.90	-32.90	-13	19.90
3424.80	44.25	132	1.9	V	-45.1	1.90	9.90	-37.10	-13	24.10

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

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>										
225.64	37.78	181	2.4	H	-59.2	0.31	0	-59.51	-13	46.51
225.64	36.68	51	1.2	V	-60.3	0.31	0	-60.61	-13	47.61
3760.00	48.78	195	1.2	H	-50.7	1.90	9.90	-42.70	-13	29.70
3760.00	47.65	96	1.3	V	-51.4	1.90	9.90	-43.40	-13	30.40
5640.00	44.52	57	2.1	H	-51.9	2.10	10.30	-43.70	-13	30.70
5640.00	43.41	16	1.4	V	-52.4	2.10	10.30	-44.20	-13	31.20
<b>Band 4</b>										
225.64	37.71	253	1.9	H	-59.3	0.31	0	-59.61	-13	46.61
225.64	36.53	330	1.4	V	-60.5	0.31	0	-60.81	-13	47.81
3465.00	49.52	342	2.2	H	-46.0	1.90	10.00	-37.90	-13	24.90
3465.00	47.43	317	1.6	V	-48.3	1.90	10.00	-40.20	-13	27.20
5197.50	46.54	358	2.0	H	-47.3	1.80	10.10	-39.00	-13	26.00
5197.50	45.36	160	1.0	V	-47.8	1.80	10.10	-39.50	-13	26.50
<b>Band 5</b>										
225.64	37.36	89	1.8	H	-59.6	0.31	0	-59.91	-13	46.91
225.64	36.28	60	1.9	V	-60.7	0.31	0	-61.01	-13	48.01
1673.00	48.08	173	2.1	H	-59.3	1.60	6.90	-54.00	-13	41.00
1673.00	46.52	277	1.6	V	-61.3	1.60	6.90	-56.00	-13	43.00
2509.50	45.11	35	1.2	H	-59.5	1.70	8.60	-52.60	-13	39.60
2509.50	43.17	330	1.7	V	-61.7	1.70	8.60	-54.80	-13	41.80
<b>Band 7</b>										
225.64	37.46	158	1.5	H	-59.5	0.31	0	-59.81	-25	34.81
225.64	36.53	3	1.7	V	-60.5	0.31	0	-60.81	-25	35.81
5070.00	49.13	190	1.5	H	-47.1	2.30	10.10	-39.30	-25	14.30
5070.00	48.69	335	2.0	V	-46.8	2.30	10.10	-39.00	-25	14.00
7605.00	46.13	296	1.5	H	-44.2	4.70	10.80	-38.10	-25	13.10
7605.00	44.36	208	2.3	V	-46.9	4.70	10.80	-40.80	-25	15.80
<b>Band 17</b>										
225.64	37.83	49	2.3	H	-59.2	0.31	0	-59.51	-13	46.51
225.64	36.72	160	1.8	V	-60.3	0.31	0	-60.61	-13	47.61
1420.00	48.52	359	1.9	H	-59.9	1.20	6.40	-54.70	-13	41.70
1420.00	48.13	310	1.4	V	-60.3	1.20	6.40	-55.10	-13	42.10
2130.00	45.26	64	2.2	H	-58.9	1.60	7.80	-52.70	-13	39.70
2130.00	43.41	237	2.1	V	-60.4	1.60	7.80	-54.20	-13	41.20

**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.

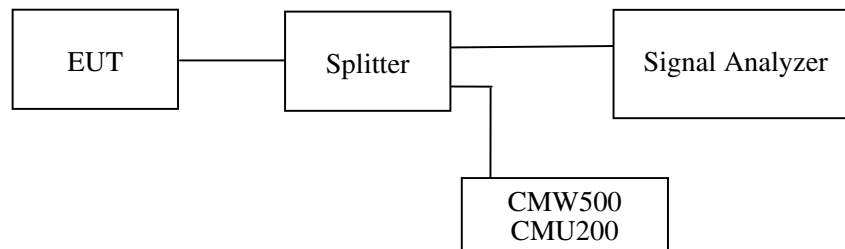
According to FCC §27.53, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

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	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23

\* **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**

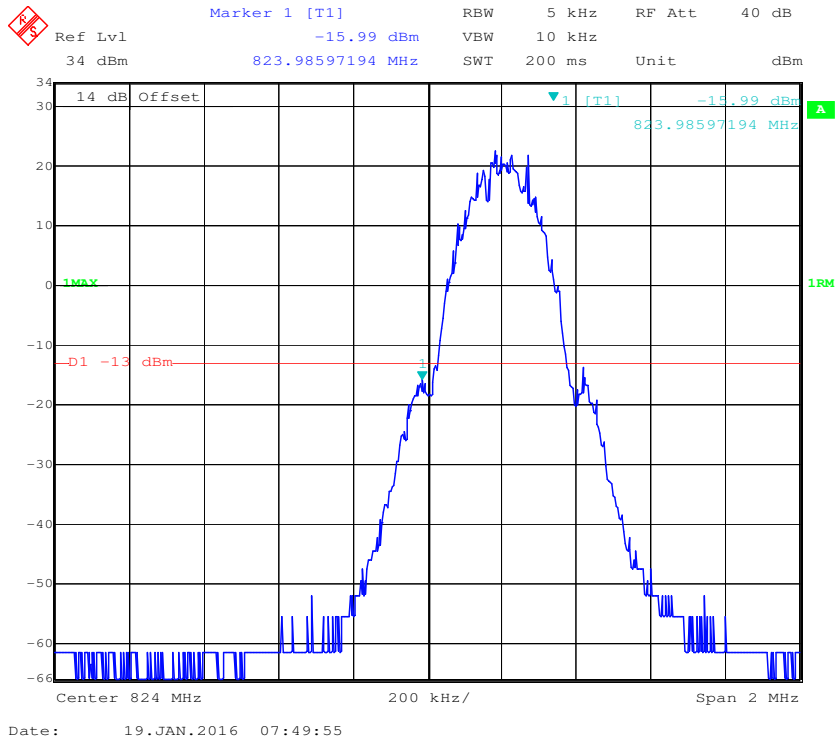
<b>Temperature:</b>	23~24 °C
<b>Relative Humidity:</b>	55~57 %
<b>ATM Pressure:</b>	101.0kPa

*The testing was performed by Haiguo Li from 2016-01-17 to 2016-01-19.*

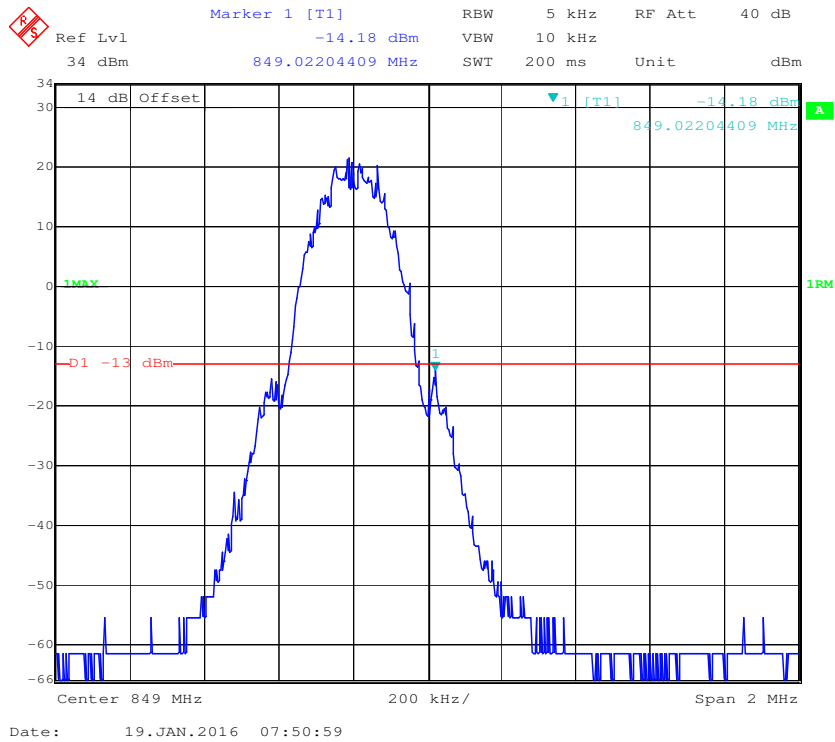
*EUT operation mode: Transmitting*

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

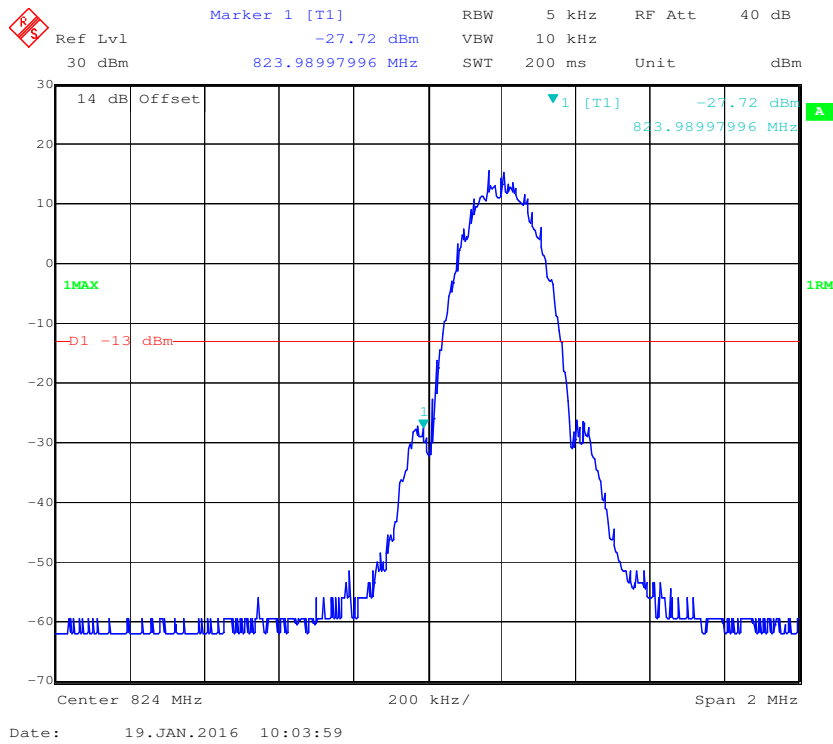
**Cellular Band, Left Band Edge for GSM (GMSK) Mode**



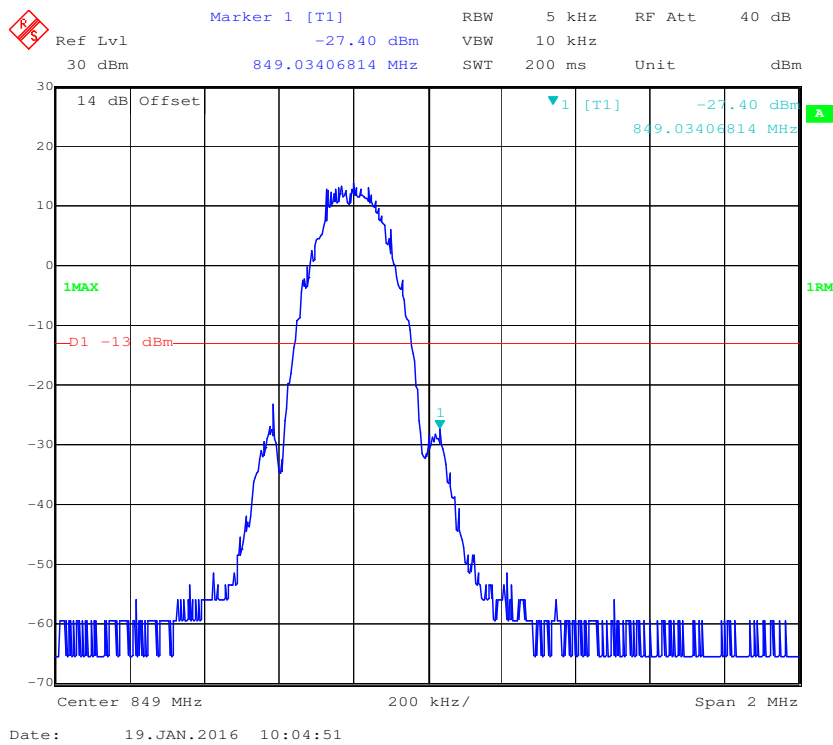
**Cellular Band, Right Band Edge for GSM (GMSK) Mode**



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

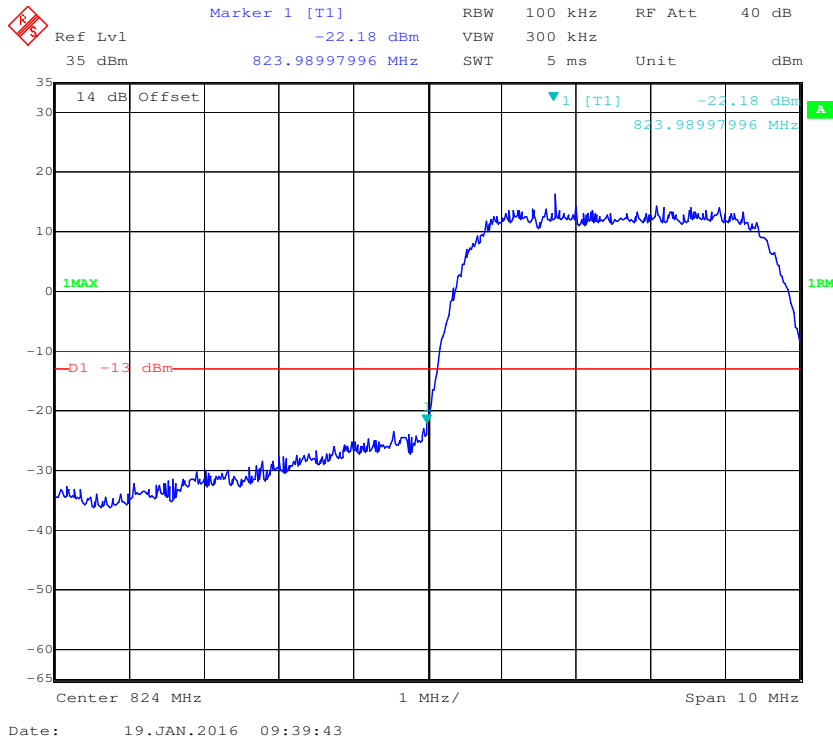


**Cellular Band, Right Band Edge for EGPRS Mode**

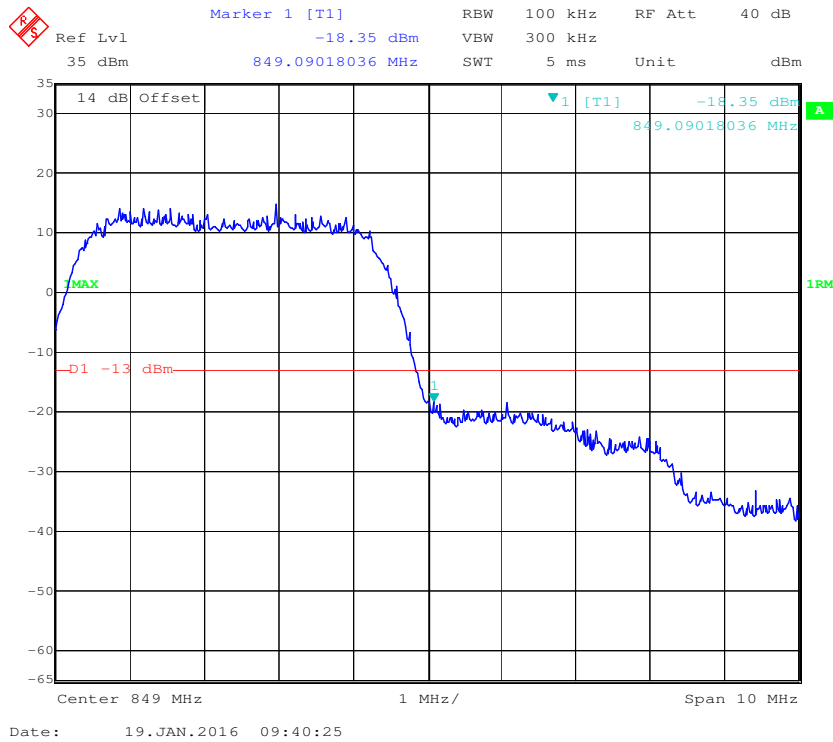




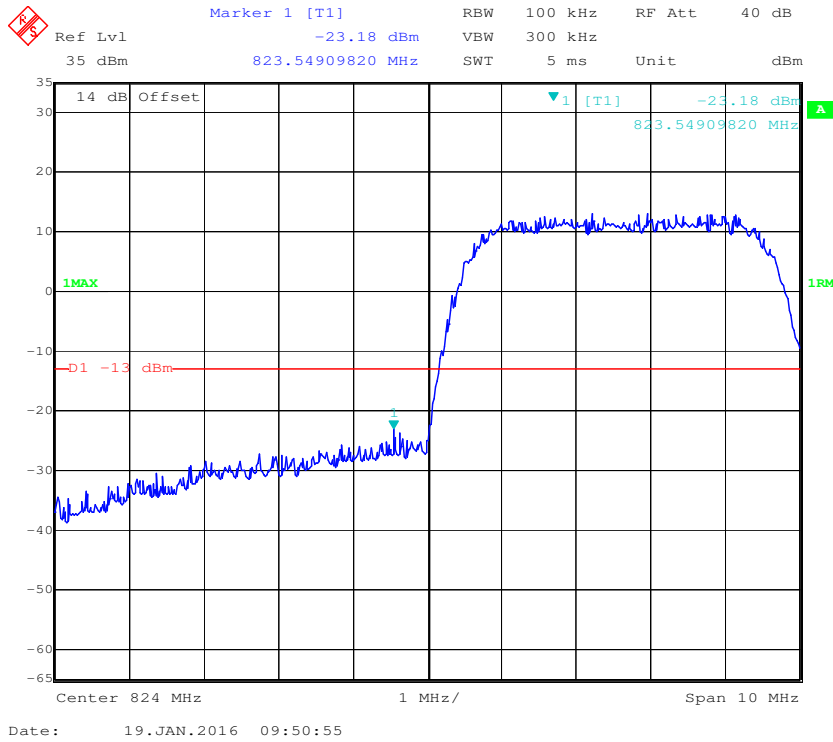
### Cellular Band, Left Band Edge for WCDMA (BPSK) Mode



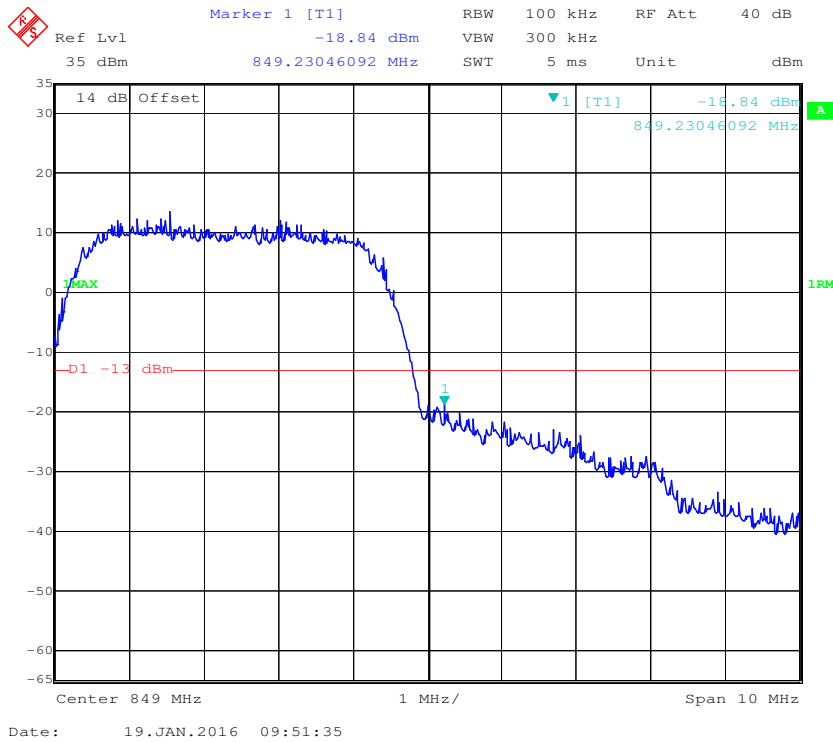
### Cellular Band, Right Band Edge for WCDMA (BPSK) Mode



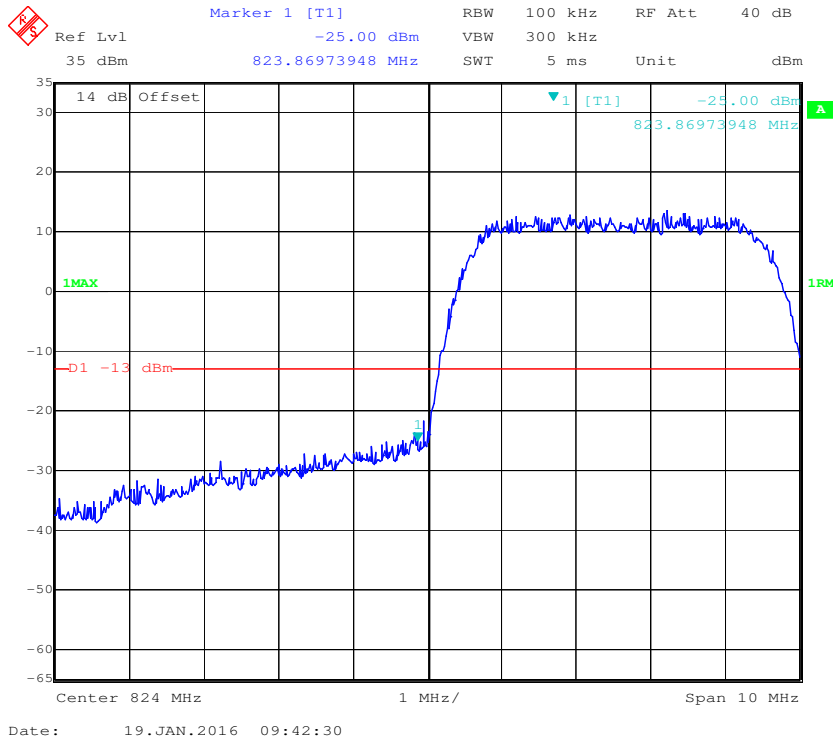
**Cellular Band, Left Band Edge for HSDPA (16QAM) Mode**



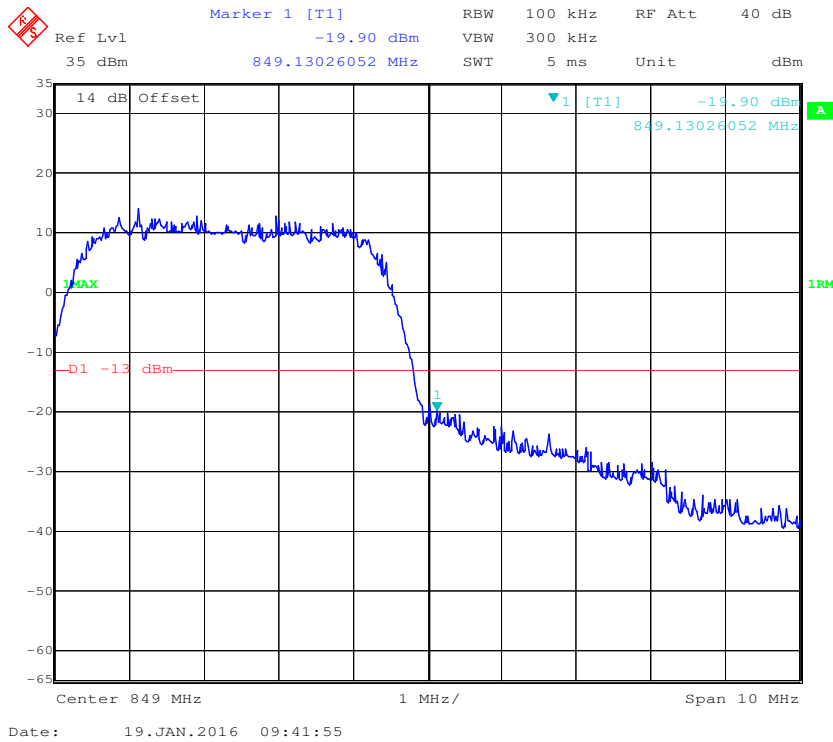
**Cellular Band, Right Band Edge for HSDPA (16QAM) Mode**



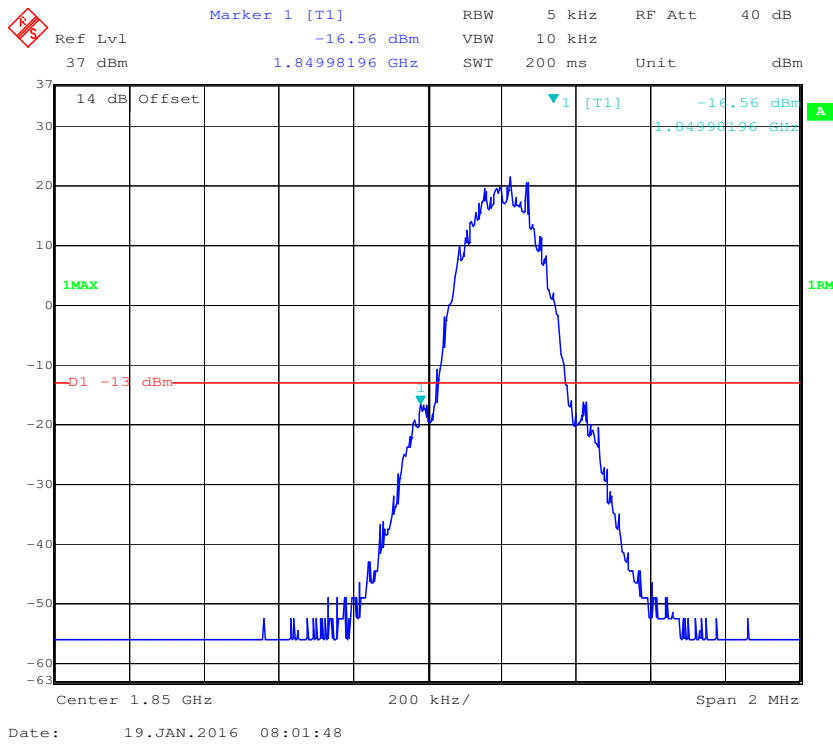
**Cellular Band, Left Band Edge for HSUPA (BPSK) Mode**



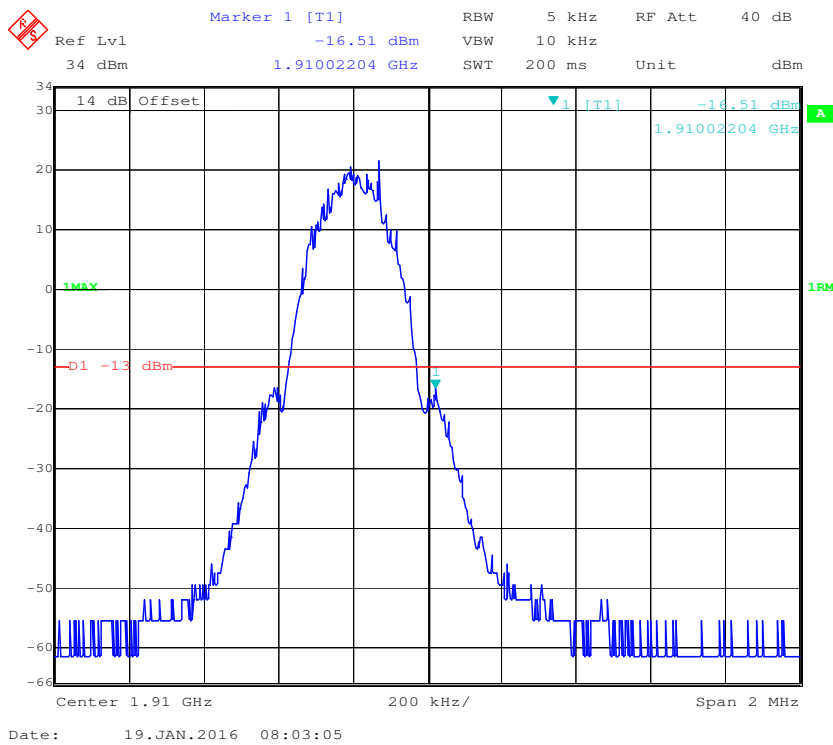
**Cellular Band, Right Band Edge for HSUPA (BPSK) Mode**



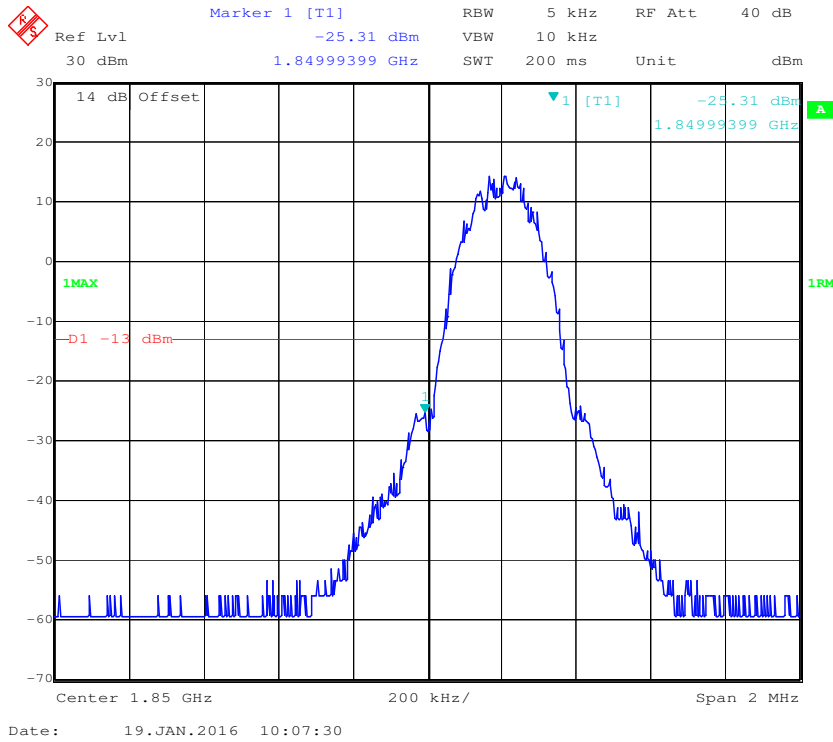
### PCS Band, Left Band Edge for GSM (GMSK) Mode



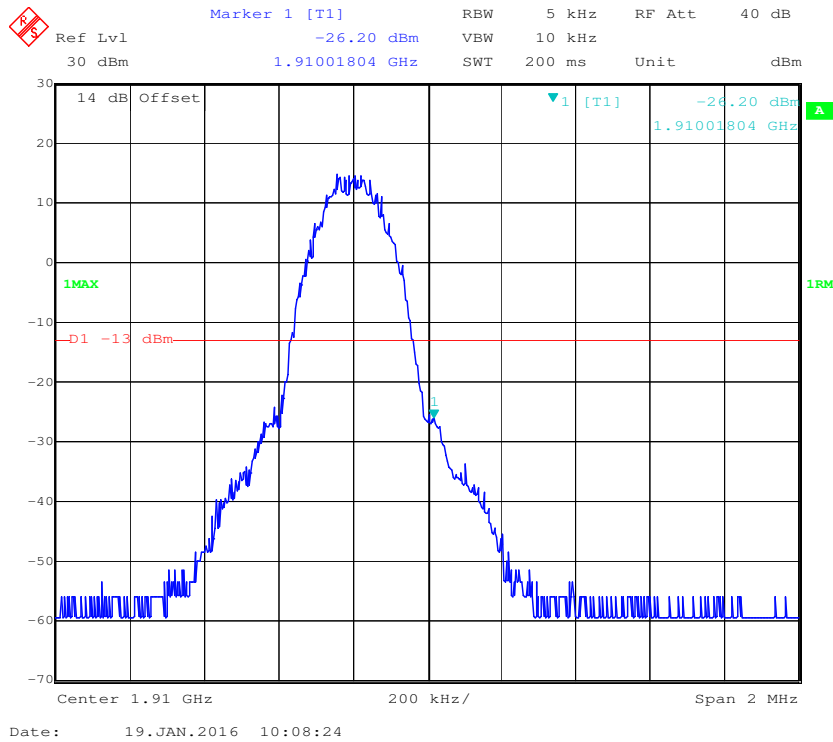
### PCS Band, Right Band Edge for GSM (GMSK) Mode



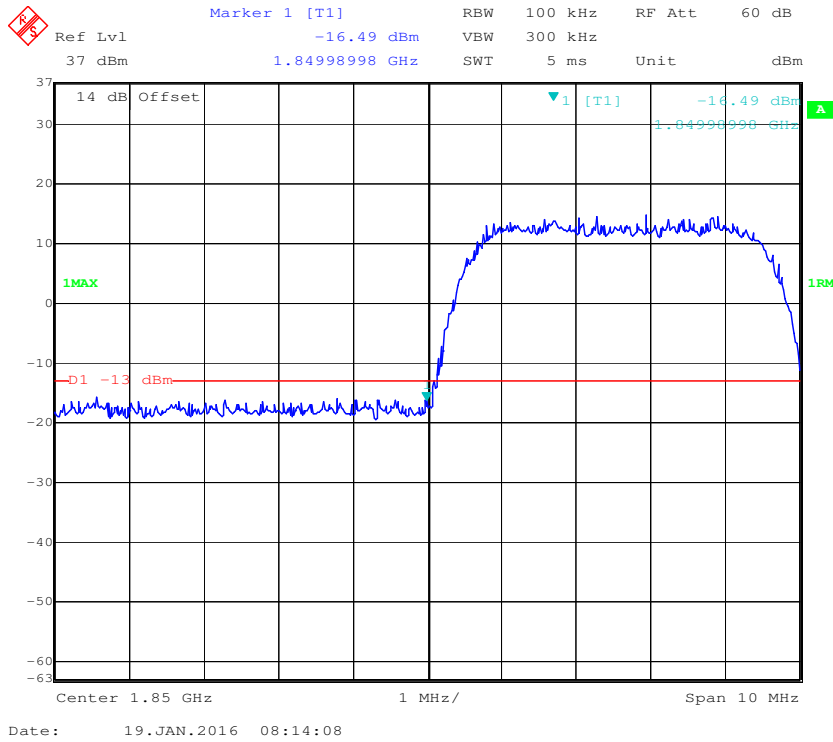
### PCS Band, Left Band Edge for EGPRS Mode



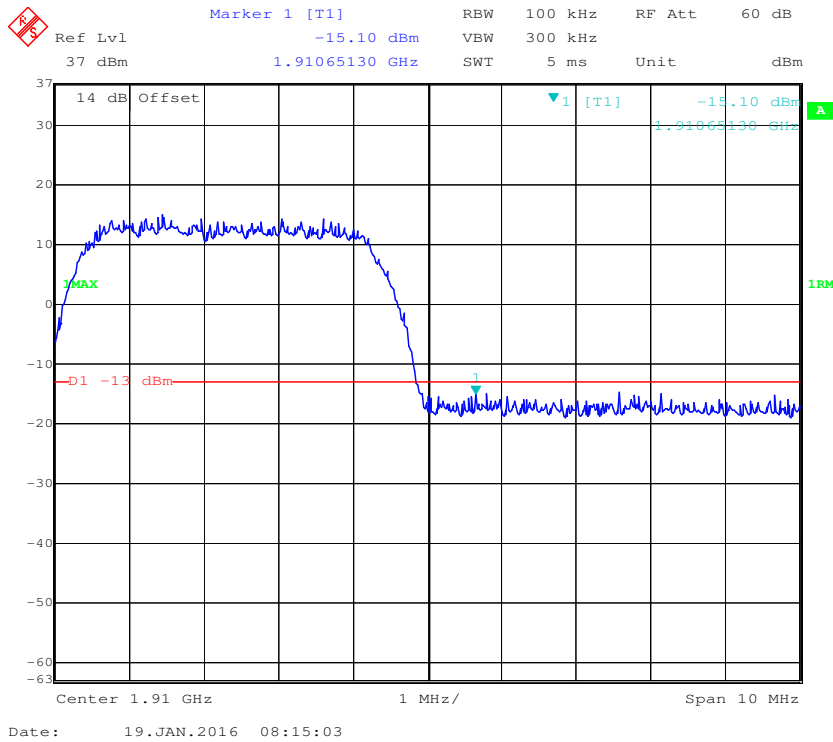
### PCS Band, Right Band Edge for EGPRS Mode



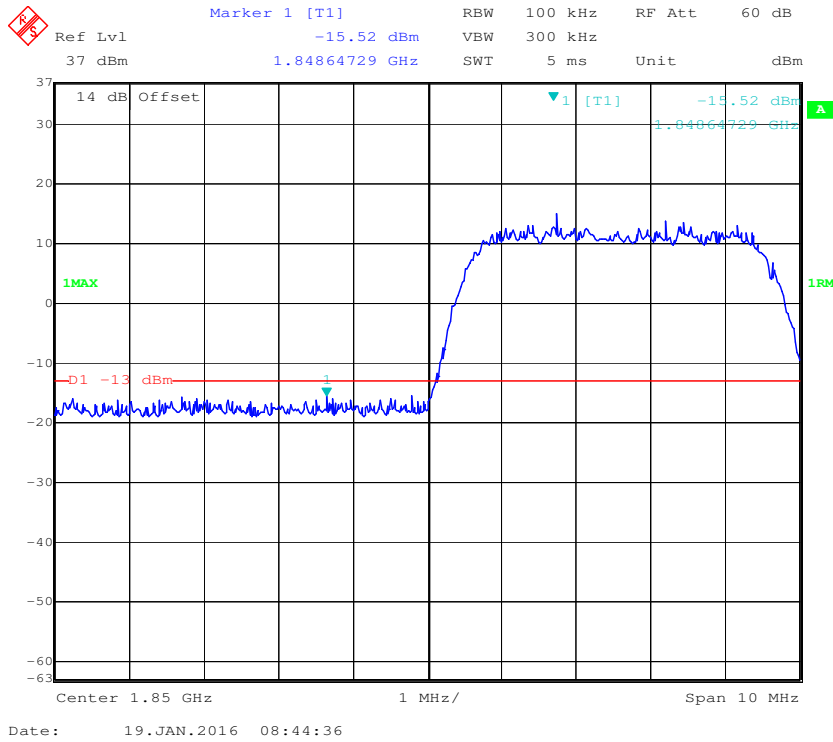
**PCS Band, Left Band Edge for WCDMA (BPSK) Mode**



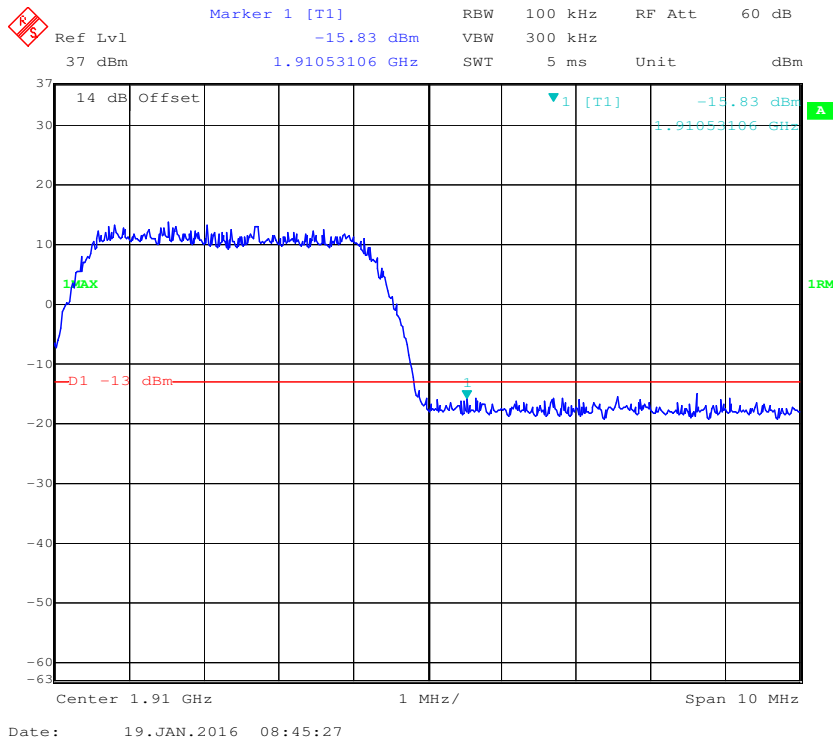
**PCS Band, Right Band Edge for WCDMA (BPSK) Mode**



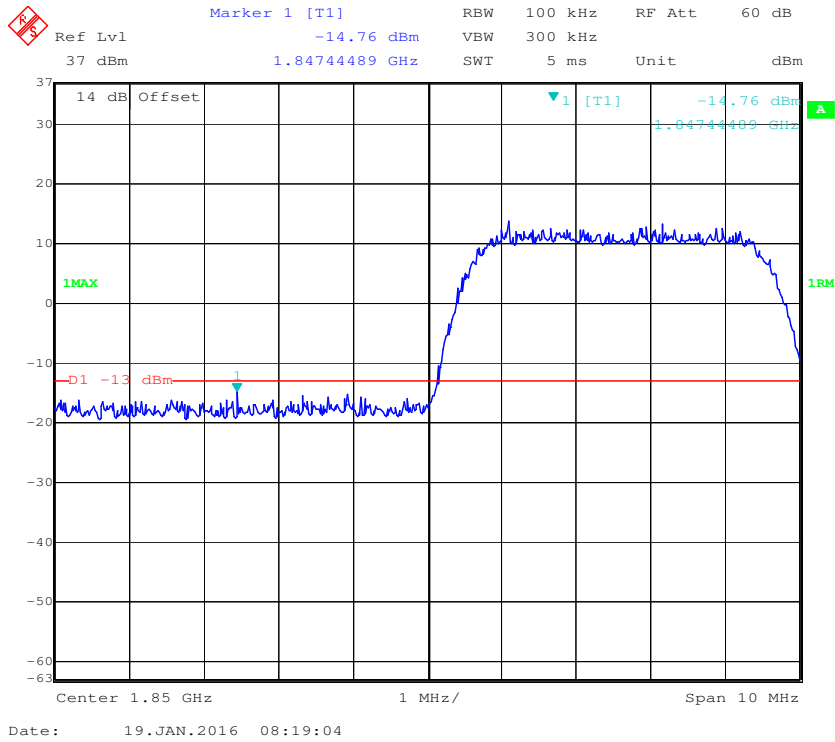
### PCS Band, Left Band Edge for HSDPA (16QAM) Mode



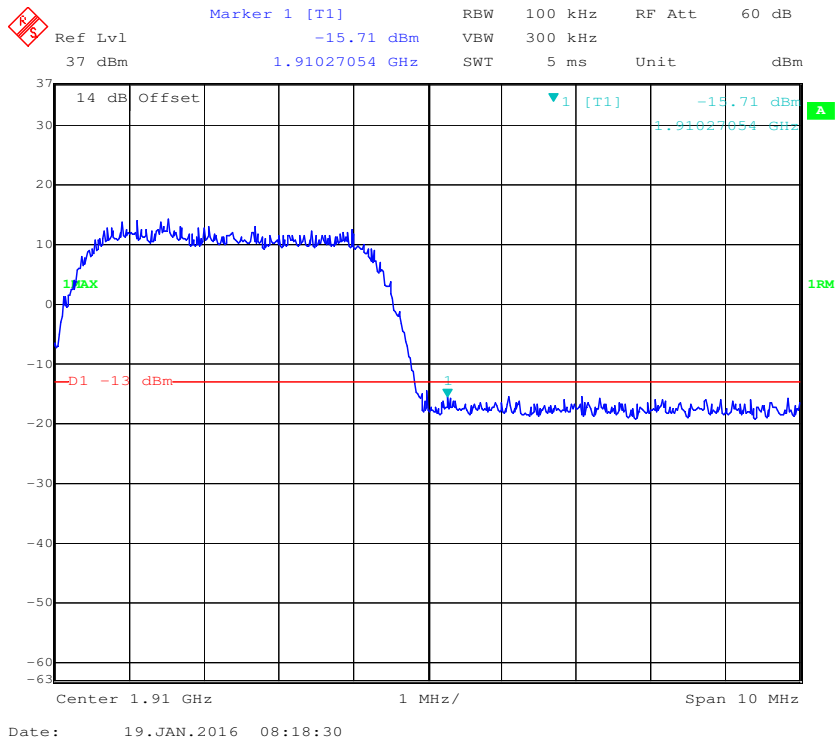
### PCS Band, Right Band Edge for HSDPA (16QAM) Mode



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

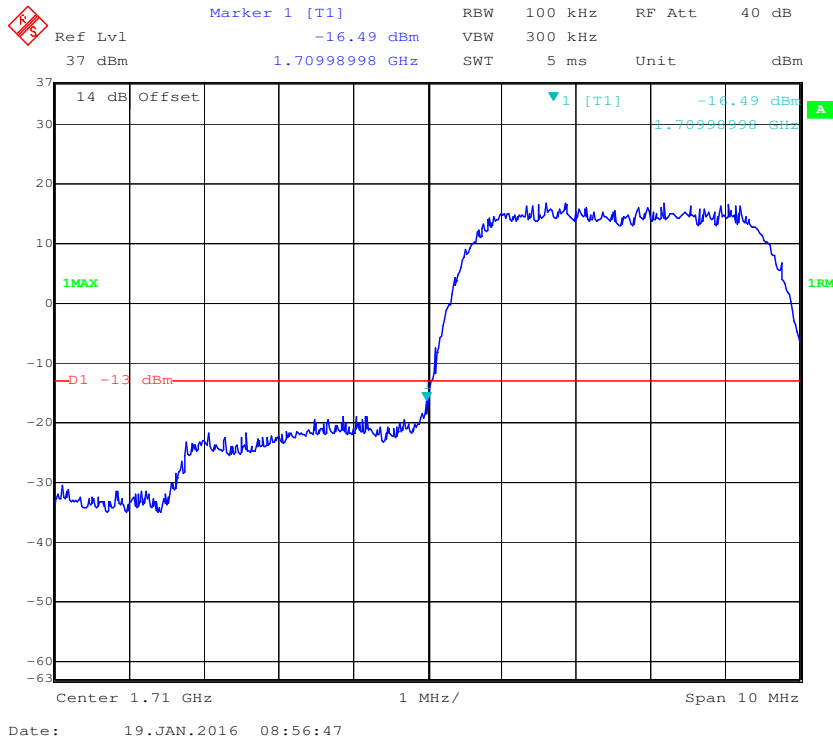


### PCS Band, Right Band Edge for HSUPA (BPSK) Mode

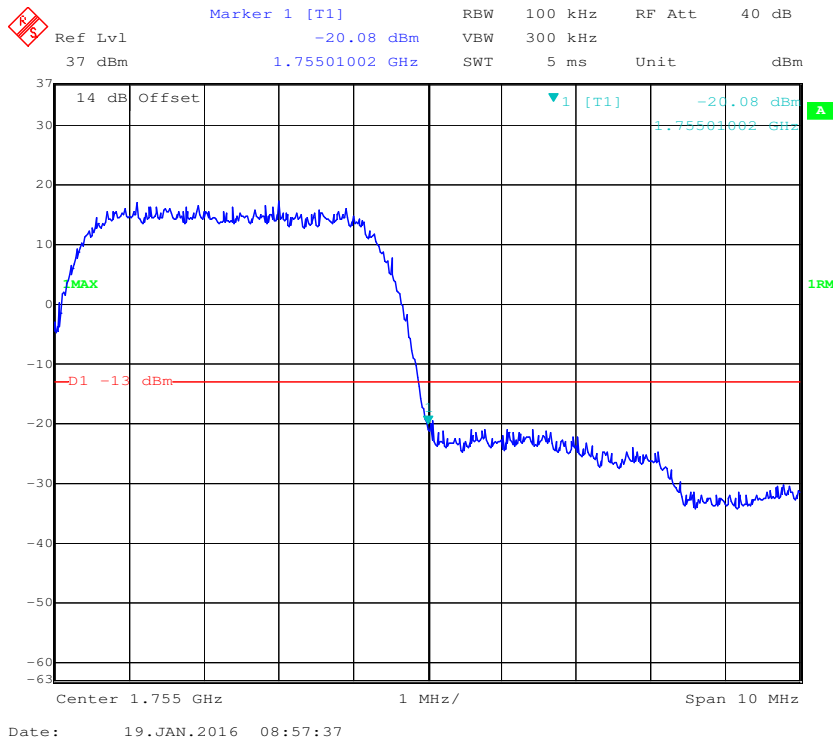




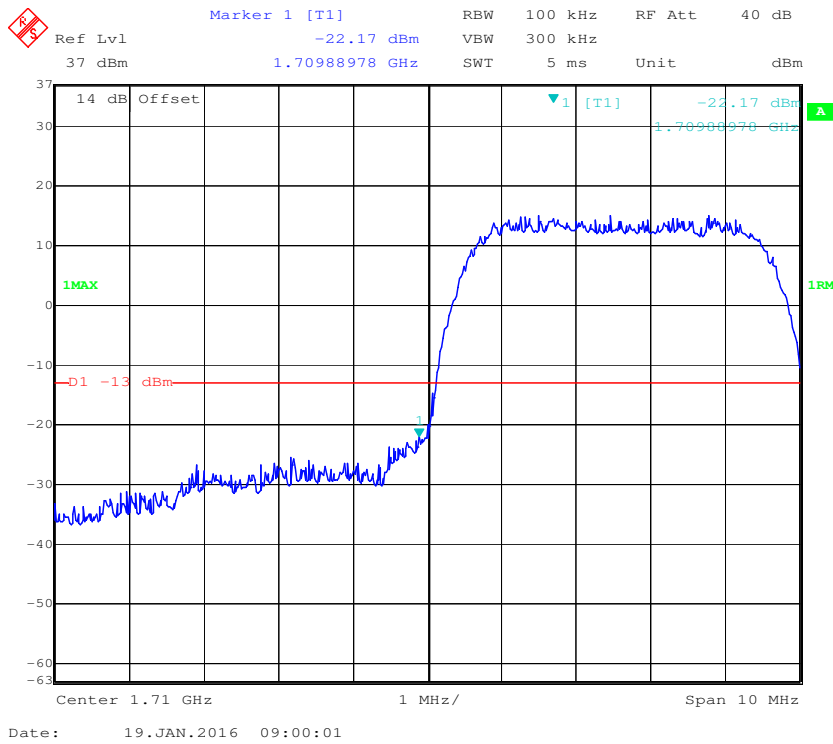
**AWS Band, Left Band Edge for WCDMA (BPSK) Mode**



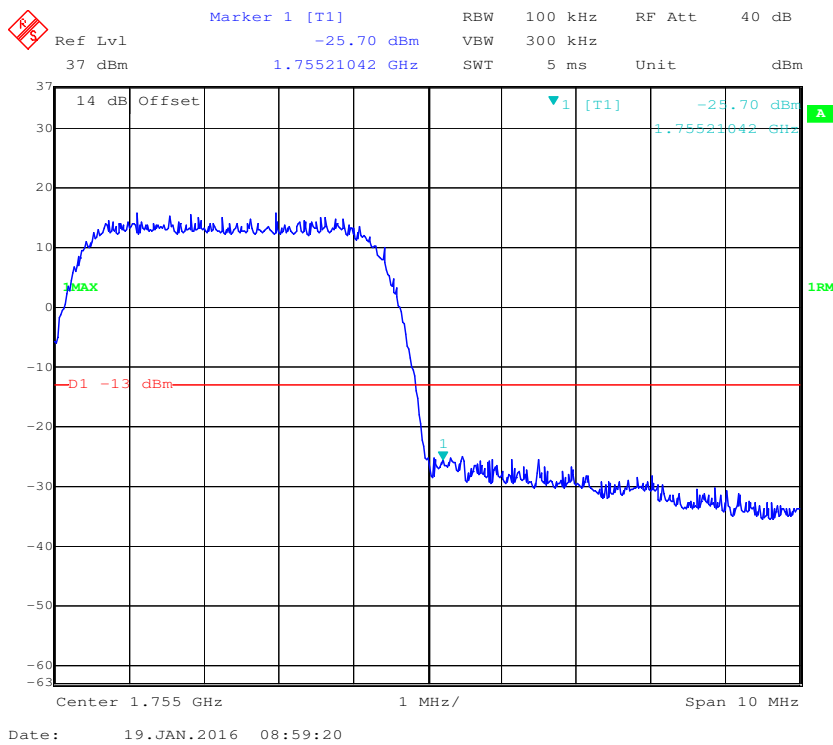
**AWS Band, Right Band Edge for WCDMA (BPSK) Mode**



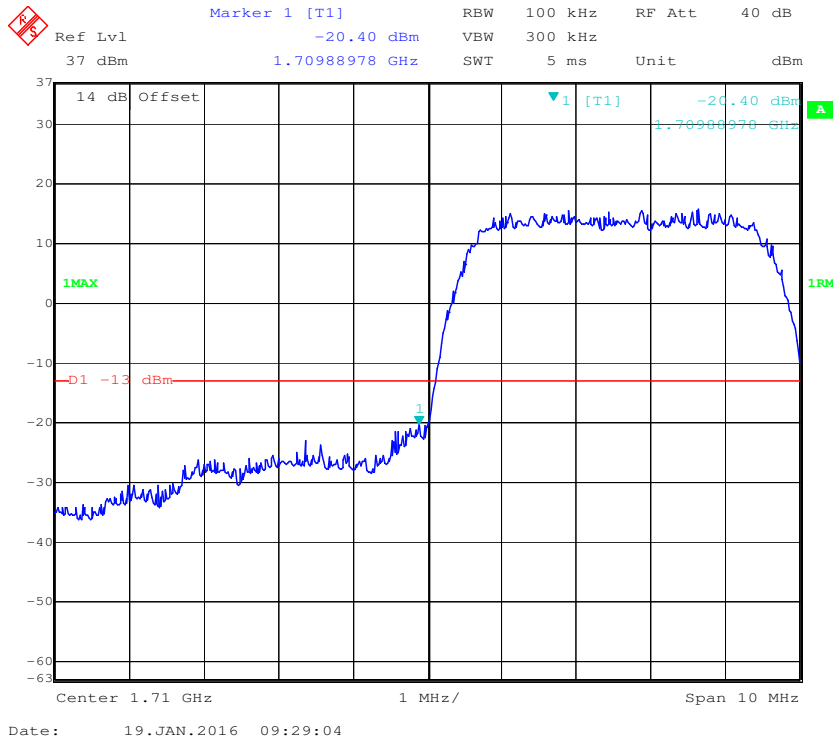
**AWS Band, Left Band Edge for HSDPA (16QAM) Mode**



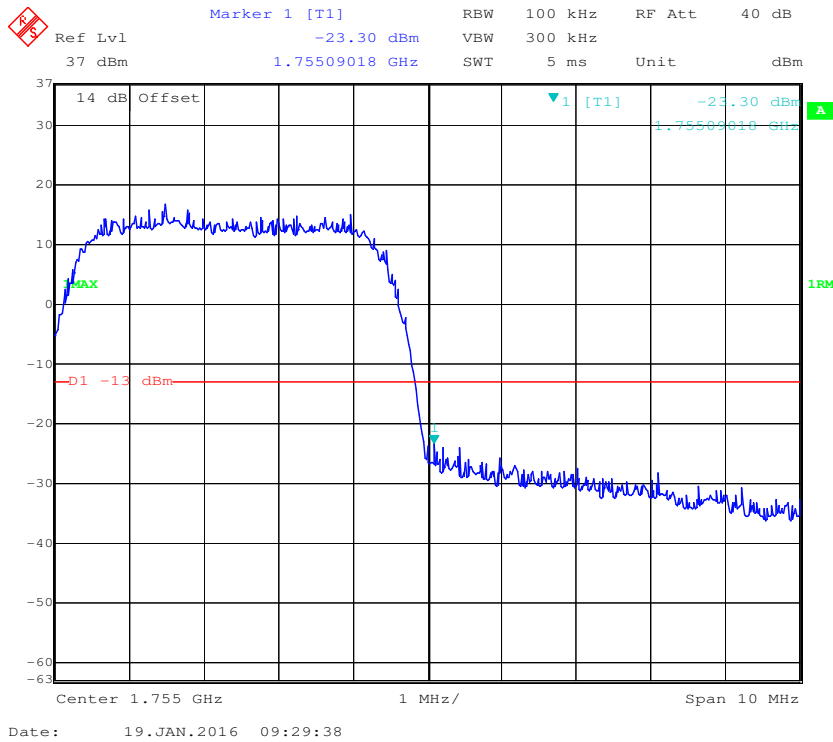
**AWS Band, Right Band Edge for HSDPA (16QAM) Mode**



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

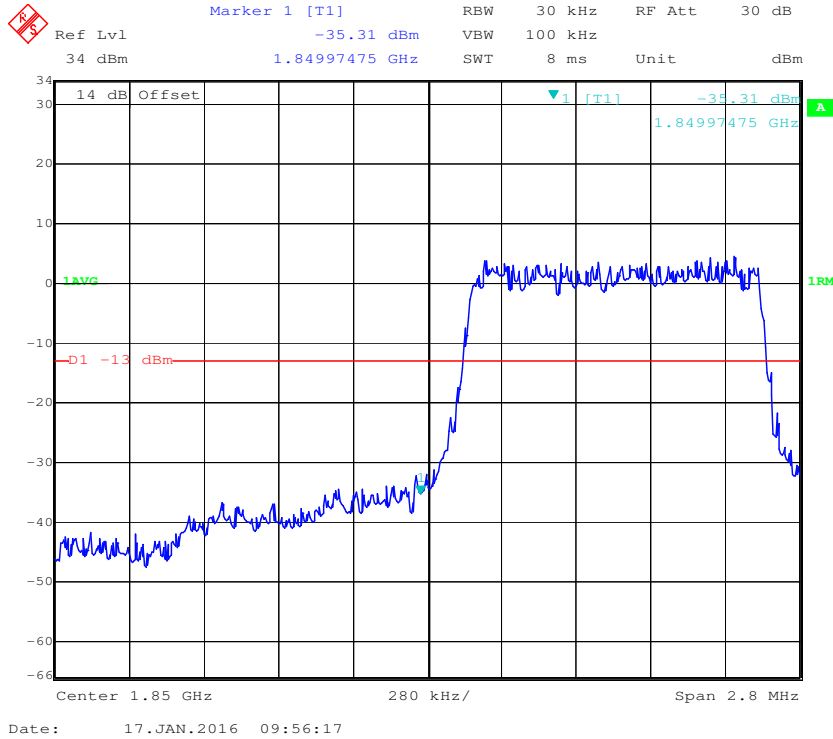


### AWS Band, Right Band Edge for HSUPA (BPSK) Mode

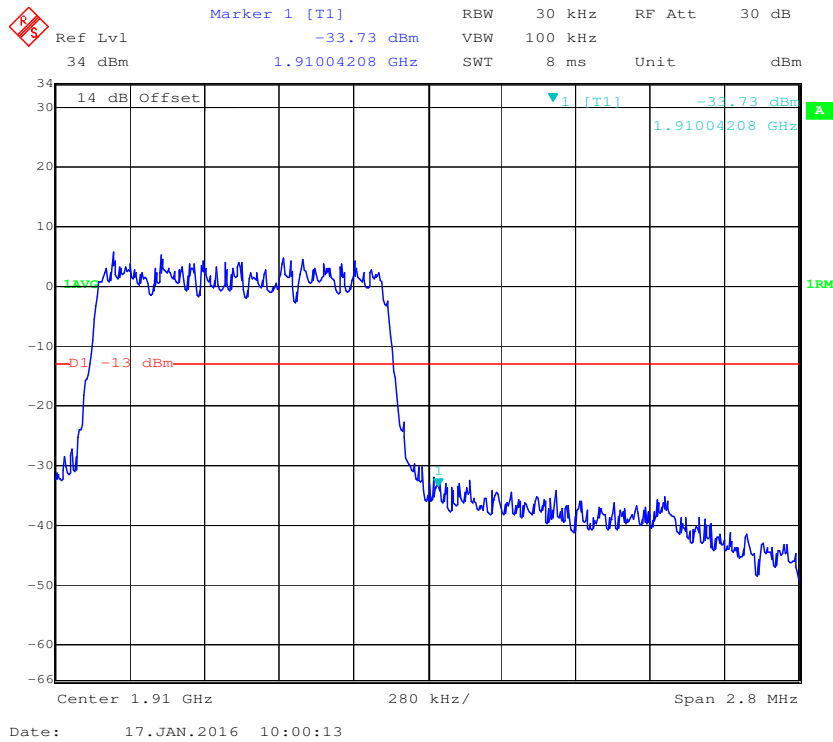


**Band 2:**

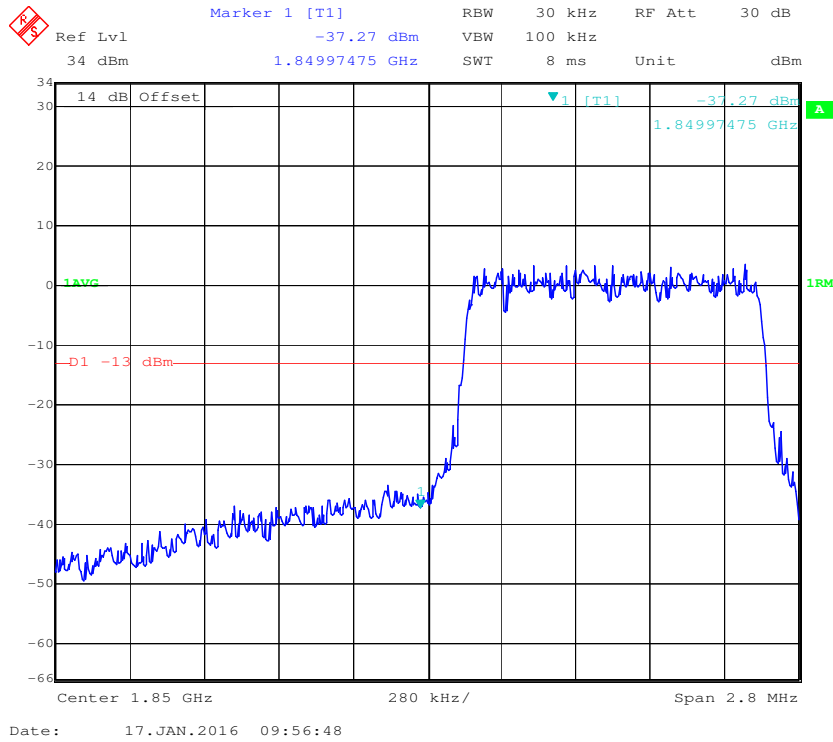
**QPSK (1.4 MHz, FULL RB) - Left Band Edge**



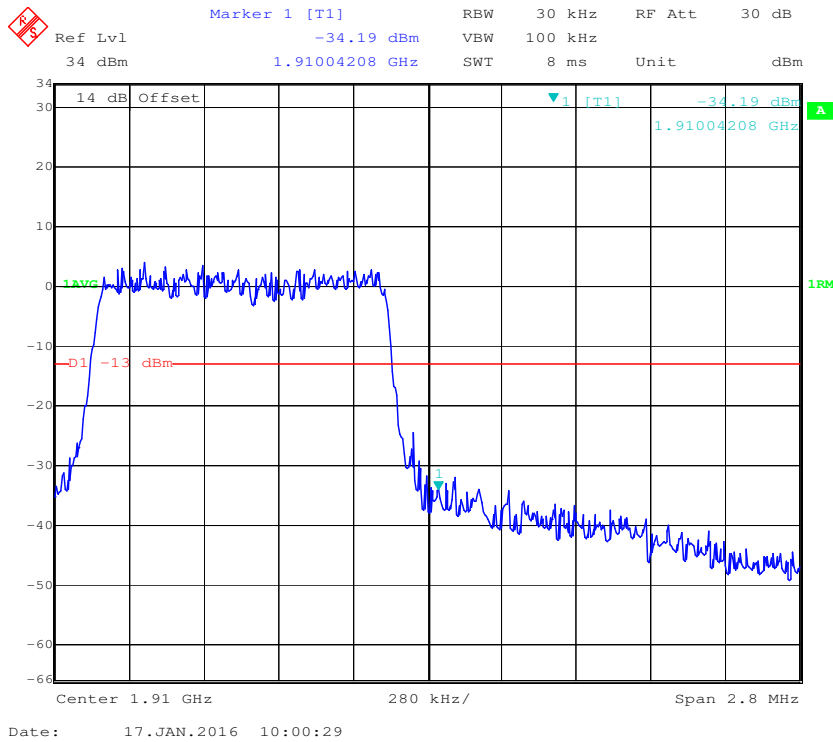
**QPSK (1.4 MHz, FULL RB) - Right Band Edge**



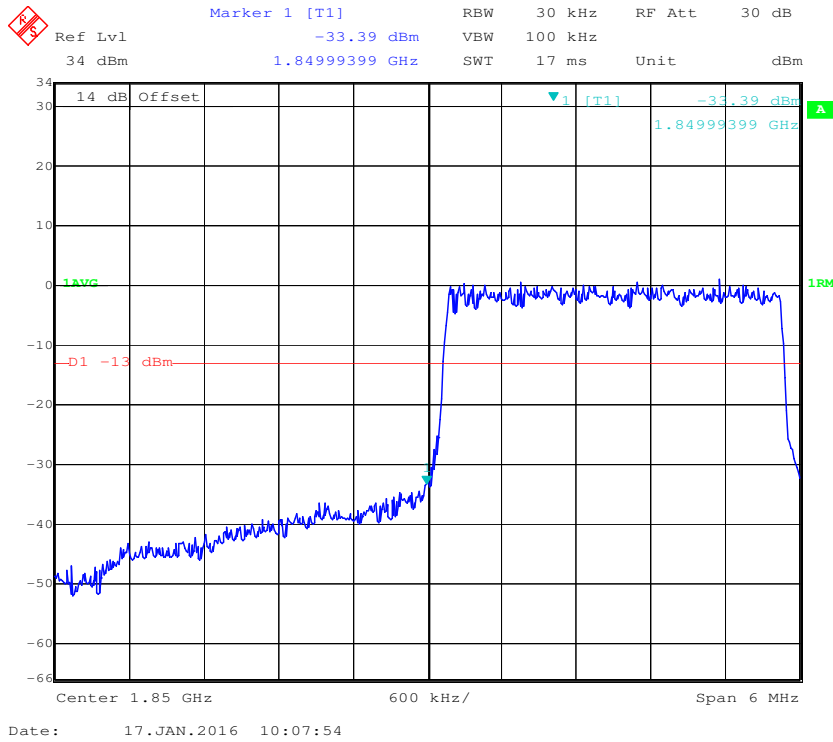
### 16-QAM (1.4 MHz, FULL RB) - Left Band Edge



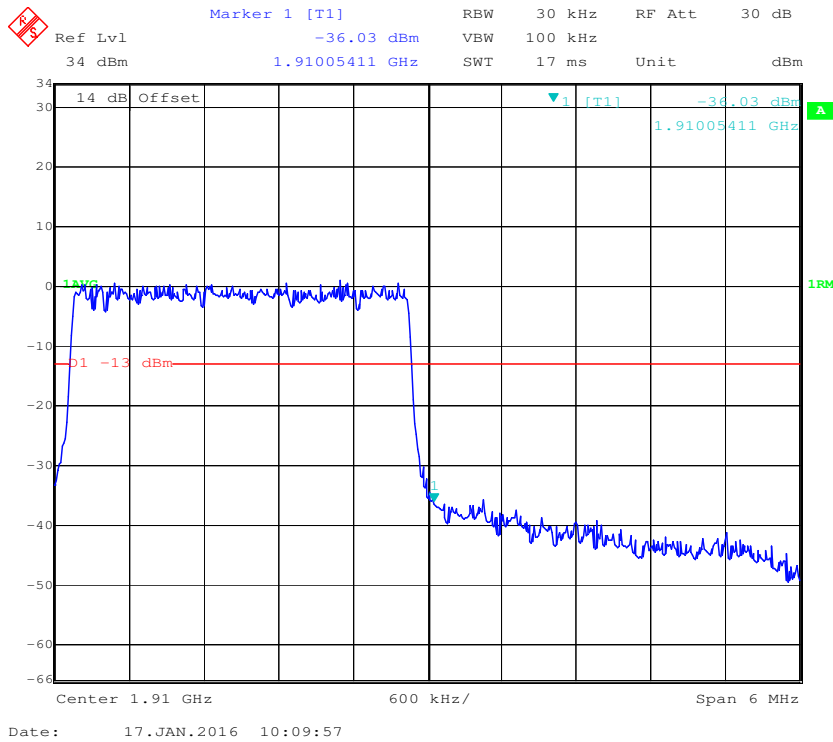
### 16-QAM (1.4 MHz, FULL RB) - Right Band Edge



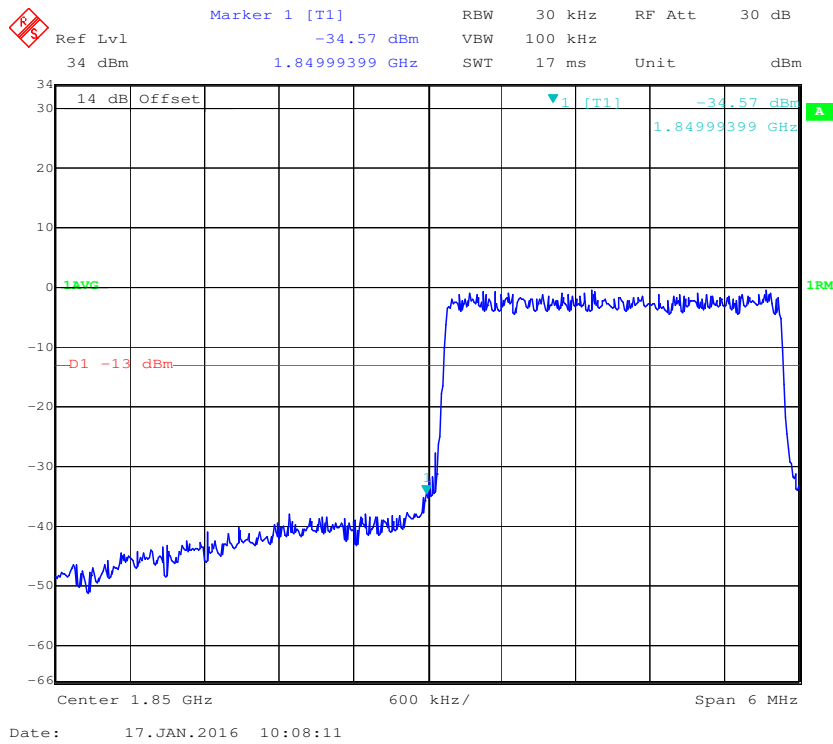
### QPSK (3.0 MHz, FULL RB) - Left Band Edge



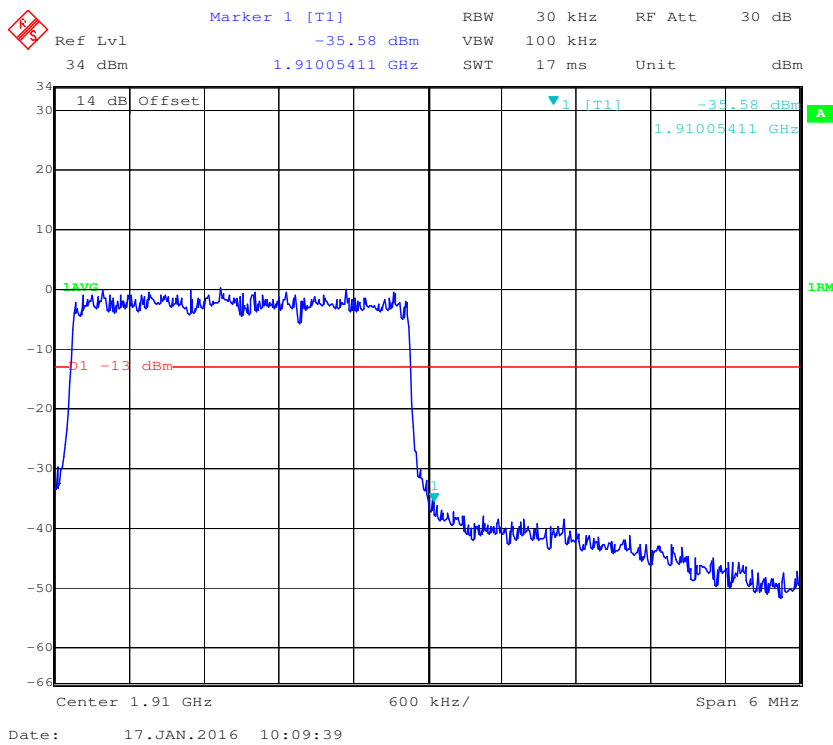
### QPSK (3.0 MHz, FULL RB) - Right Band Edge



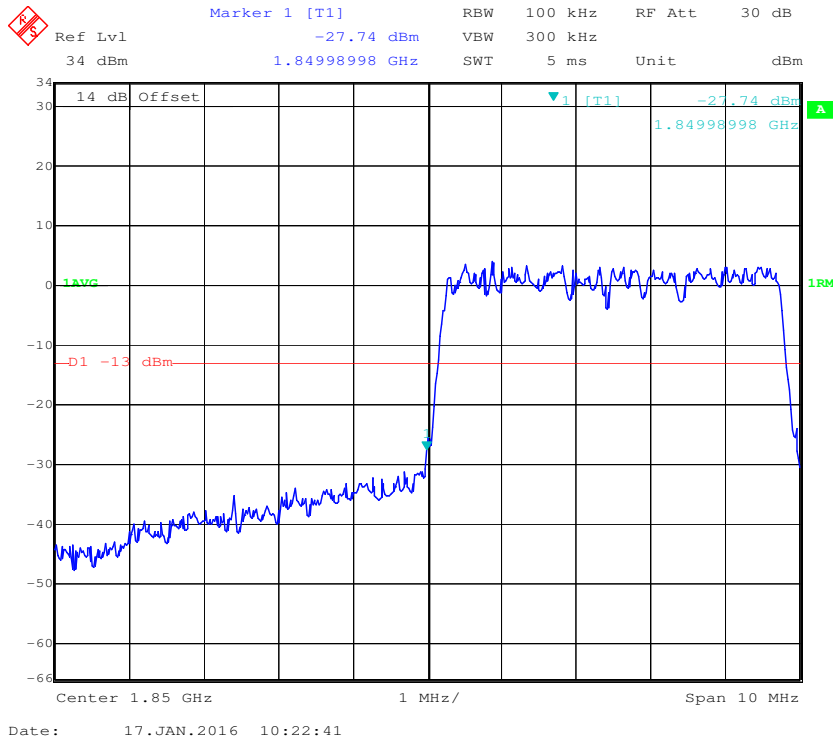
**16-QAM (3.0 MHz, FULL RB) - Left Band Edge**



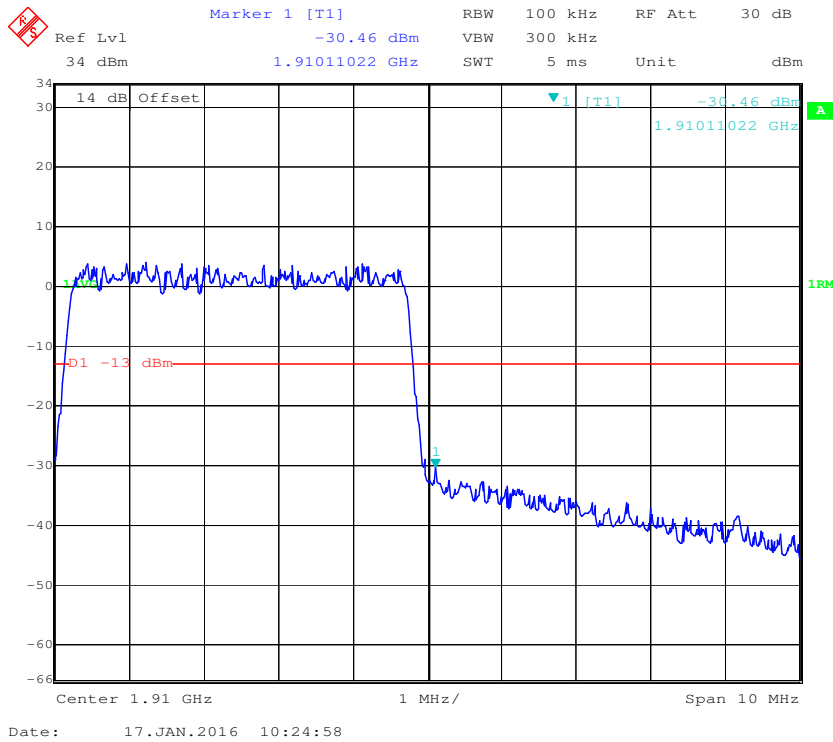
**16-QAM (3.0 MHz, FULL RB) - Right Band Edge**



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

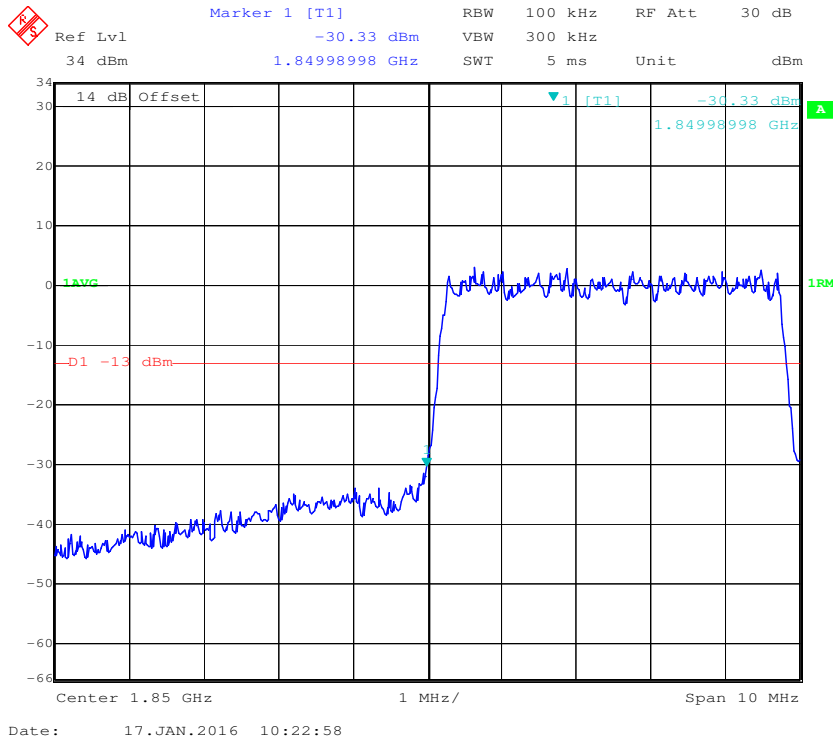


### QPSK (5.0 MHz, FULL RB) - Right Band Edge

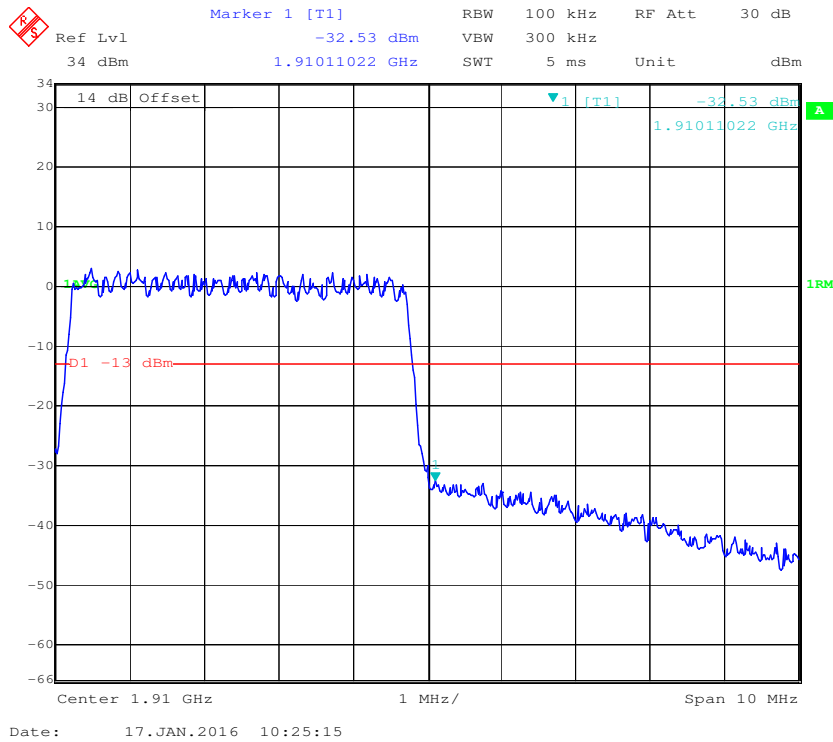




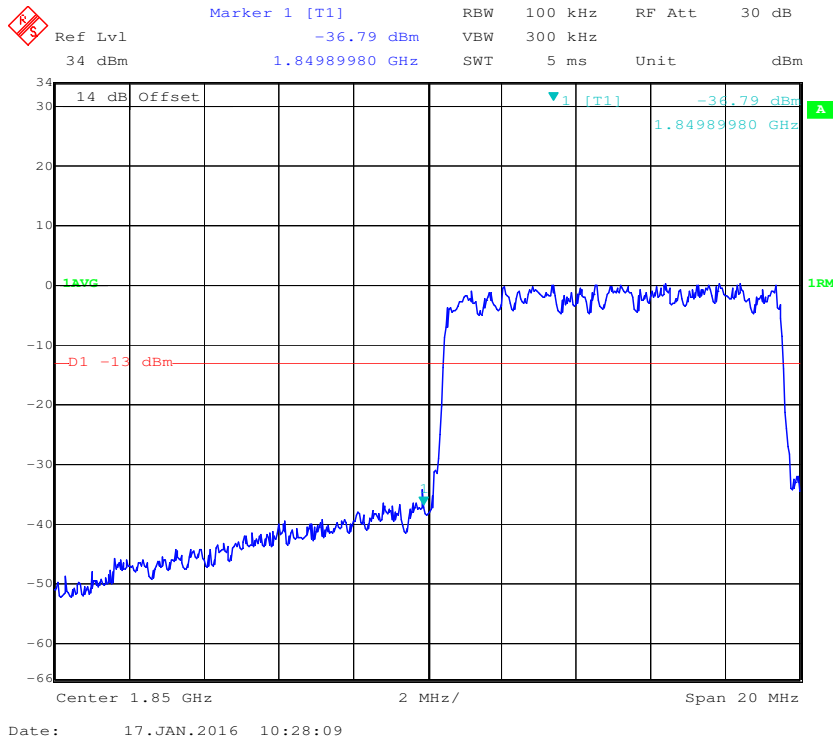
**16-QAM (5.0 MHz, FULL RB) - Left Band Edge**



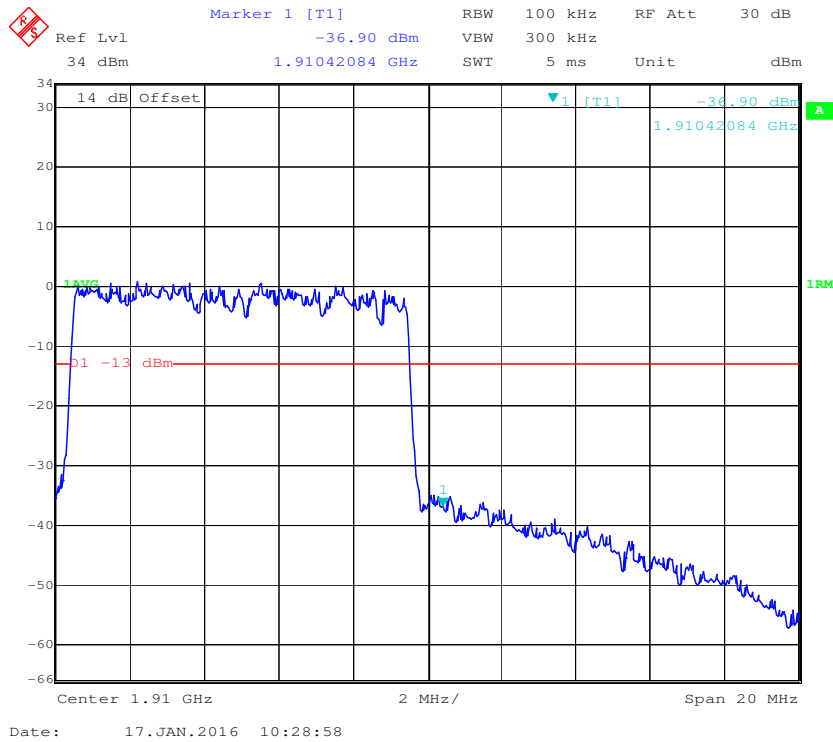
**16-QAM (5.0 MHz, FULL RB) - Right Band Edge**



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

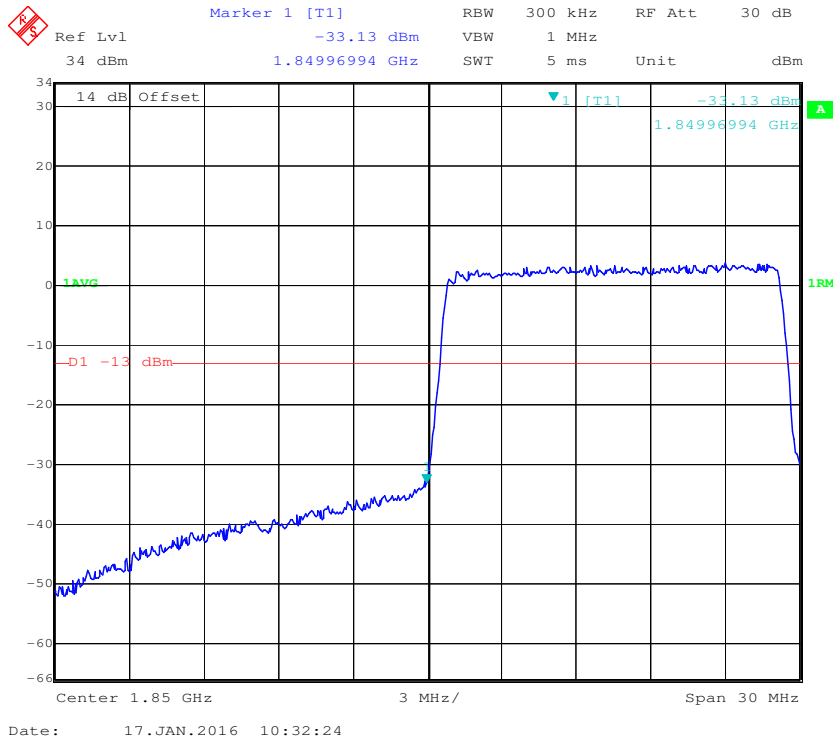


### QPSK (10.0 MHz, FULL RB) - Right Band Edge

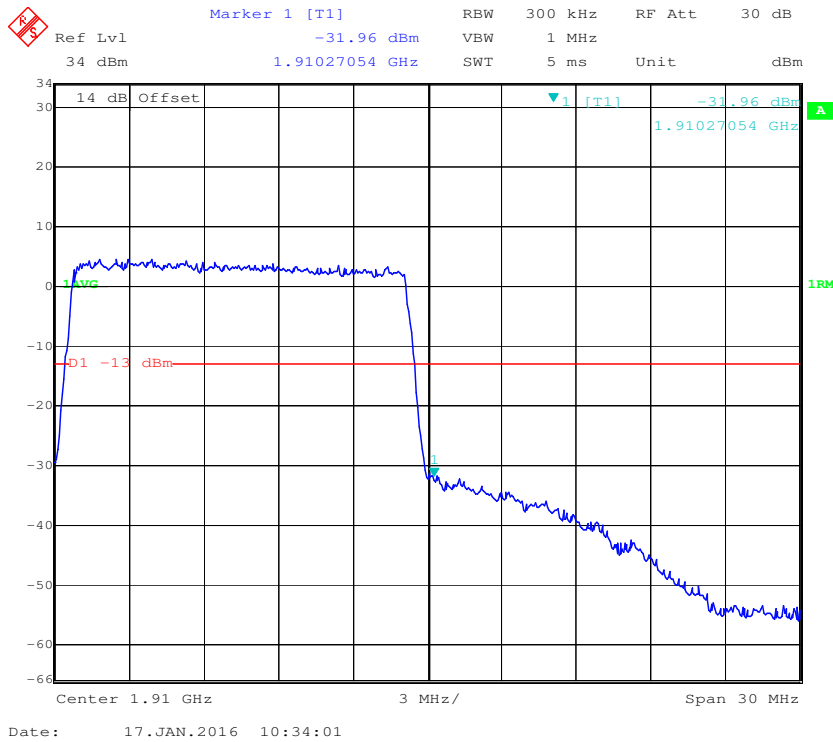




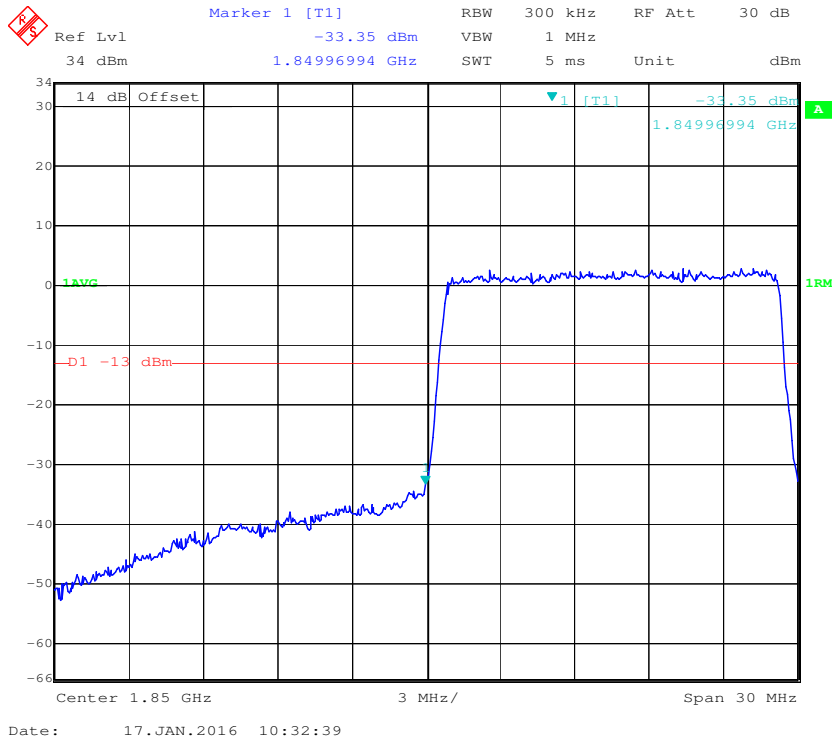
**QPSK (15.0 MHz, FULL RB) - Left Band Edge**



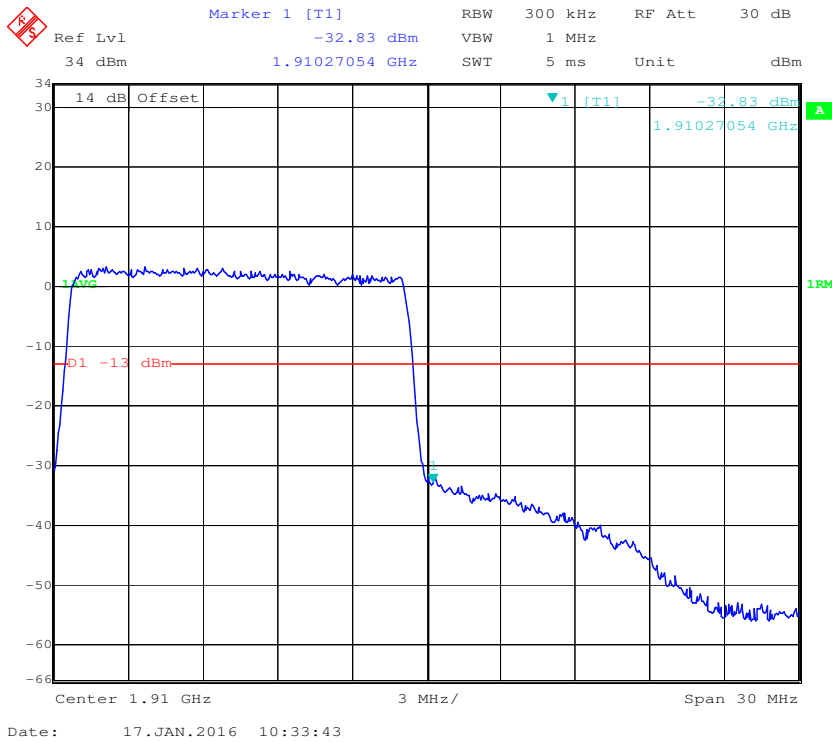
**QPSK (15.0 MHz, FULL RB) - Right Band Edge**



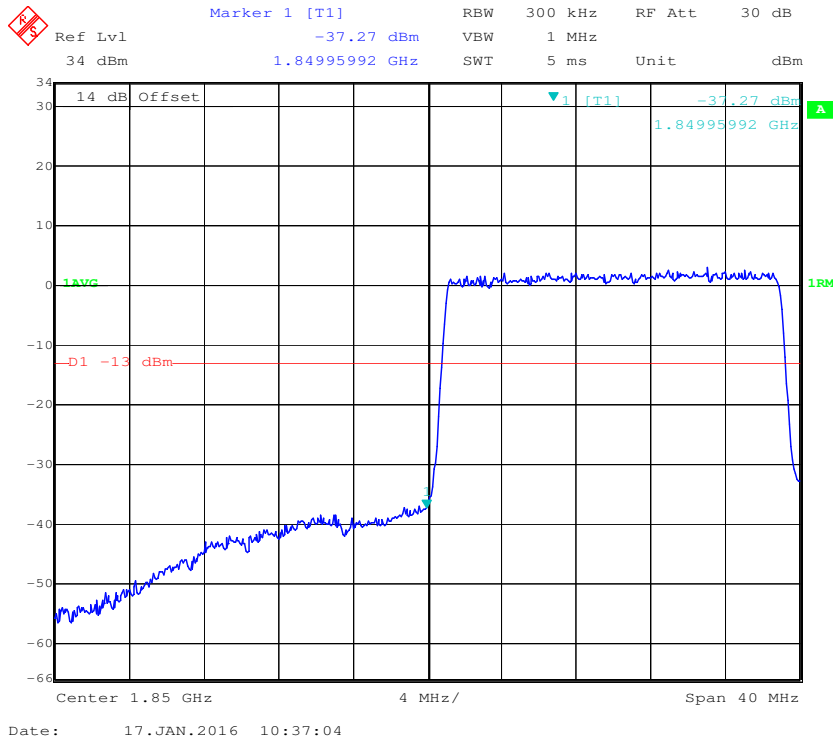
**16-QAM (15.0 MHz, FULL RB) - Left Band Edge**



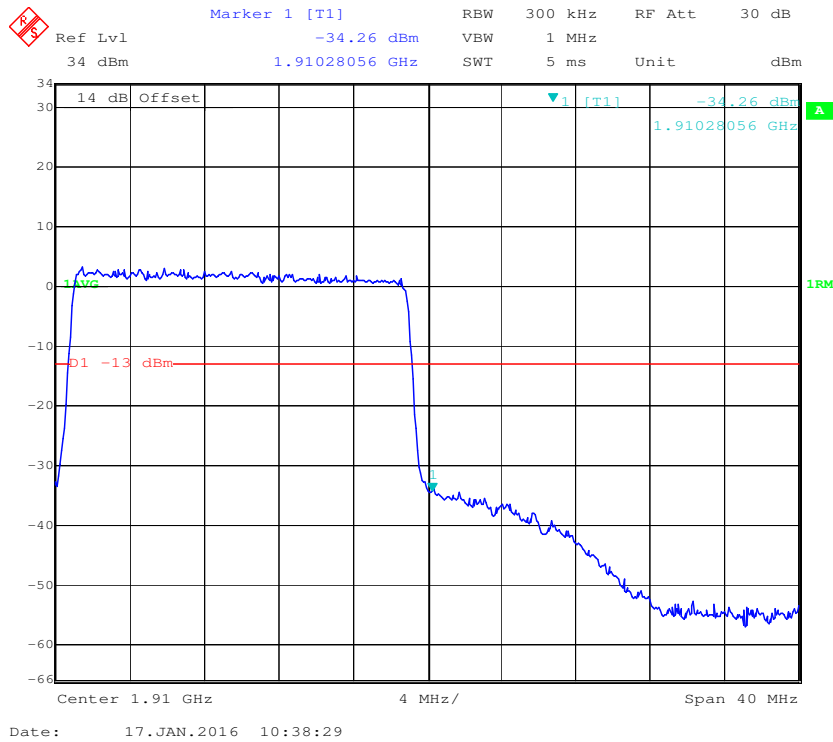
**16-QAM (15.0 MHz, FULL RB) - Right Band Edge**



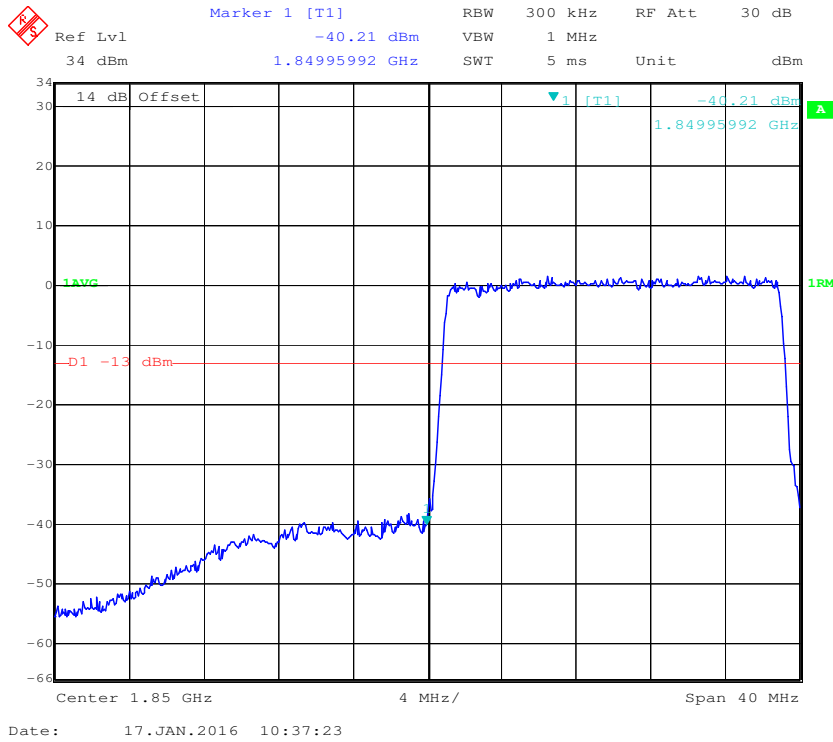
**QPSK (20.0 MHz, FULL RB) - Left Band Edge**



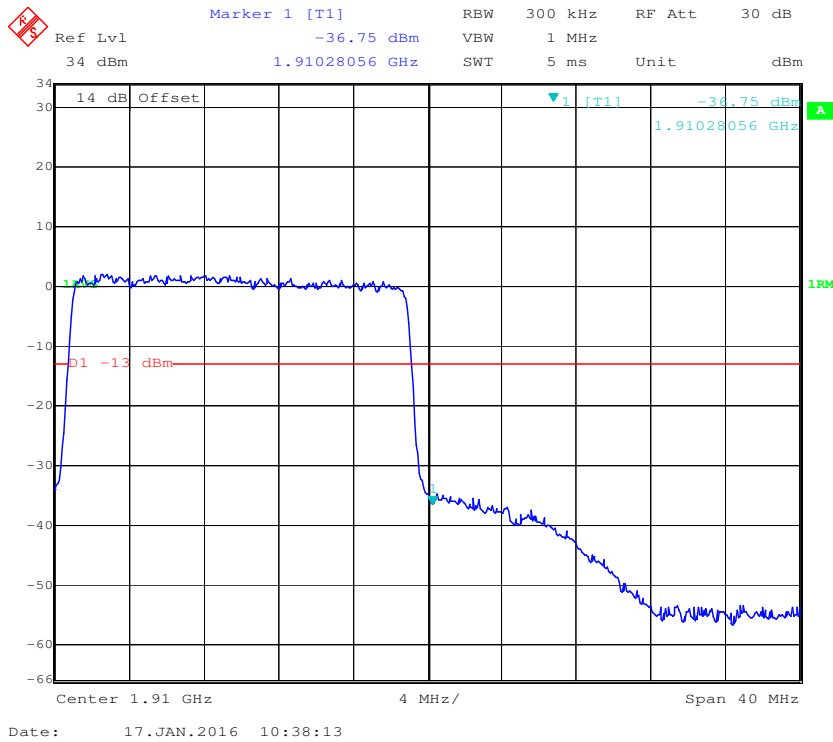
**QPSK (20.0 MHz, FULL RB) - Right Band Edge**



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

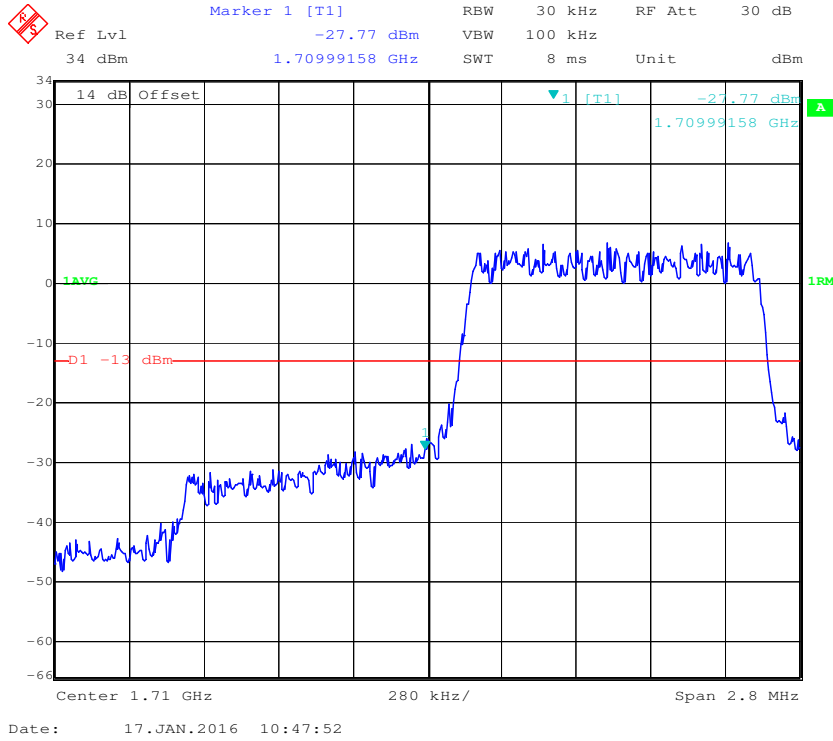


**16-QAM (20.0 MHz, FULL RB) - Right Band Edge**

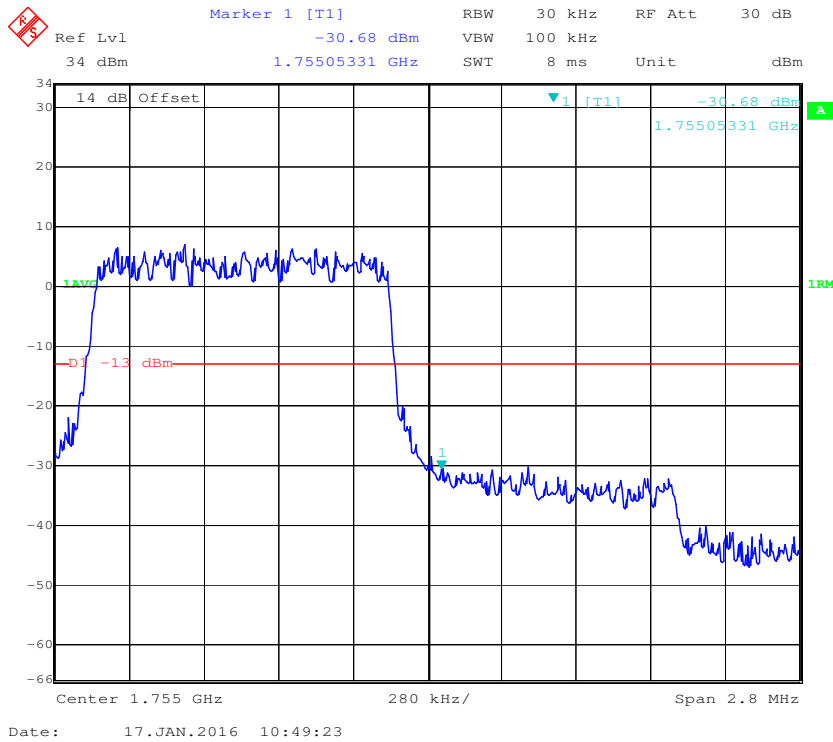


**Band 4:**

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

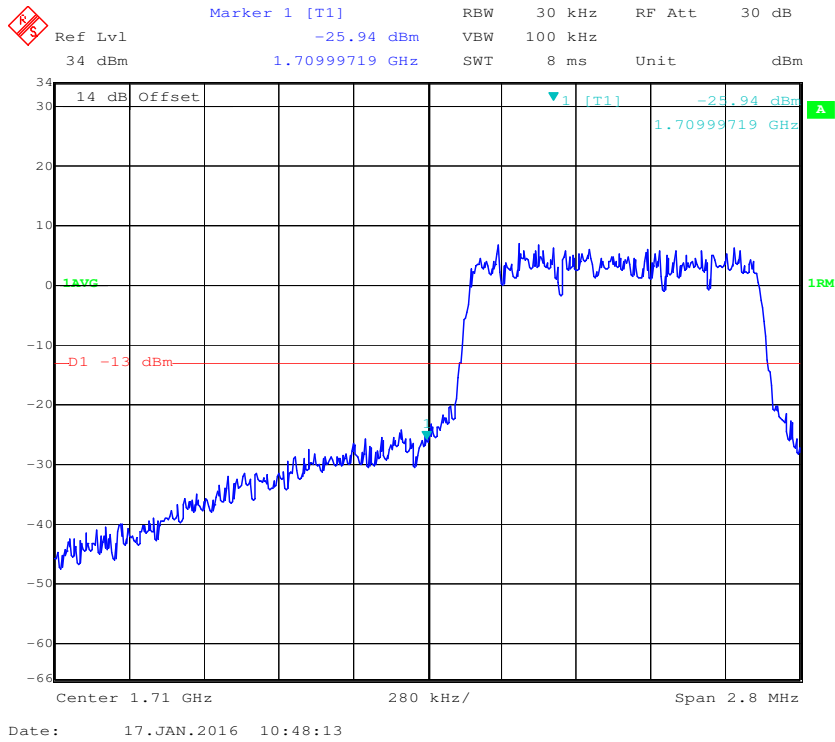


**QPSK (1.4 MHz, FULL RB) - Right Band Edge**

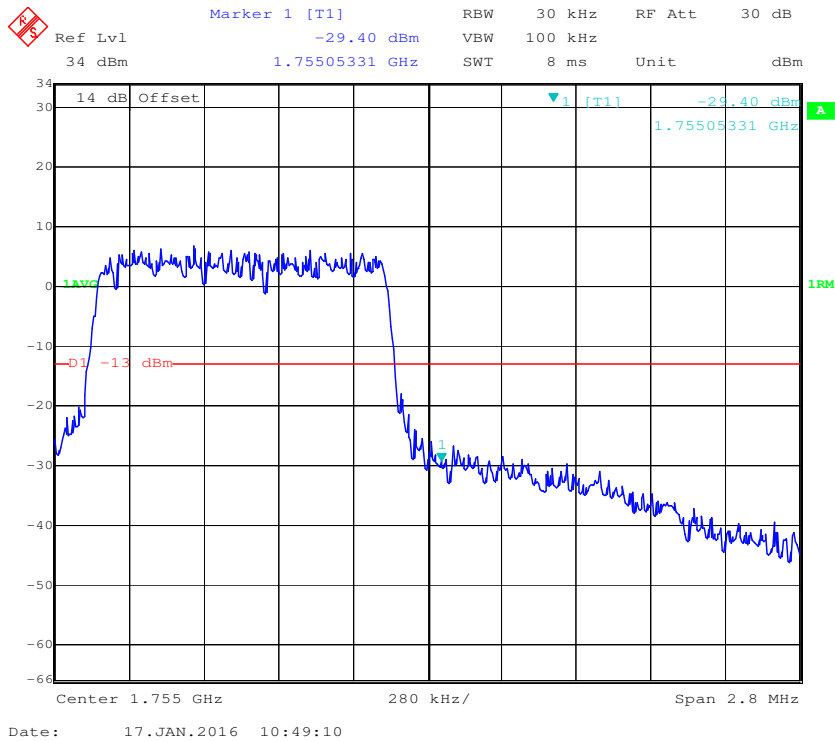




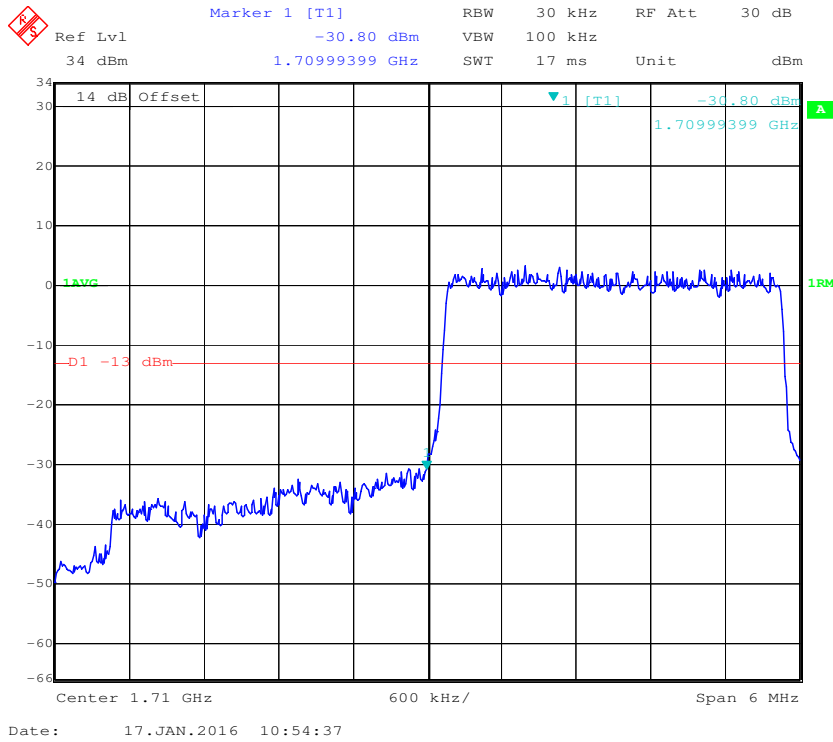
### 16-QAM (1.4 MHz, FULL RB) - Left Band Edge



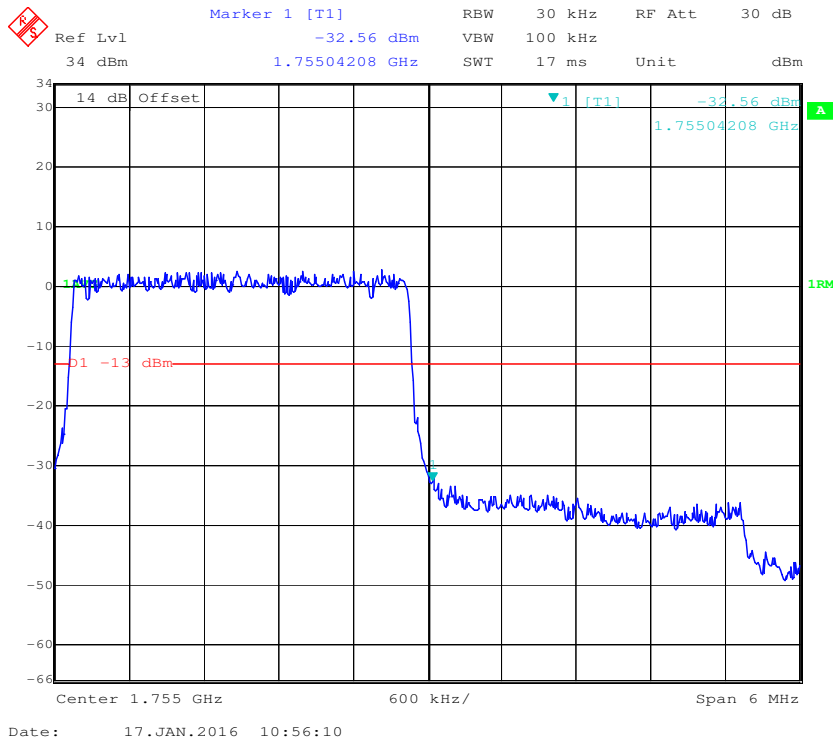
### 16-QAM (1.4 MHz, FULL RB) - Right Band Edge



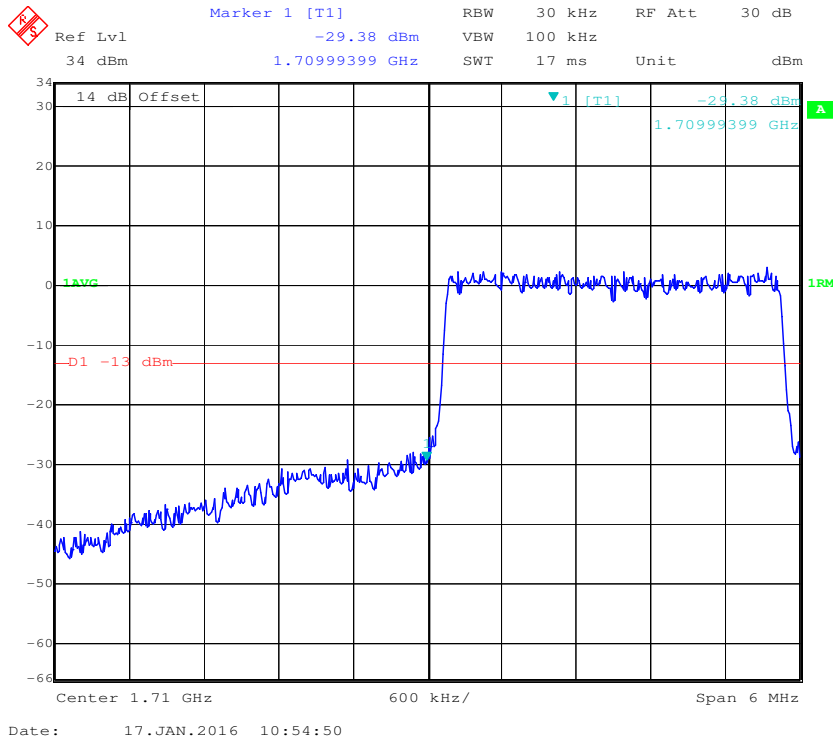
**QPSK (3.0 MHz, FULL RB) - Left Band Edge**



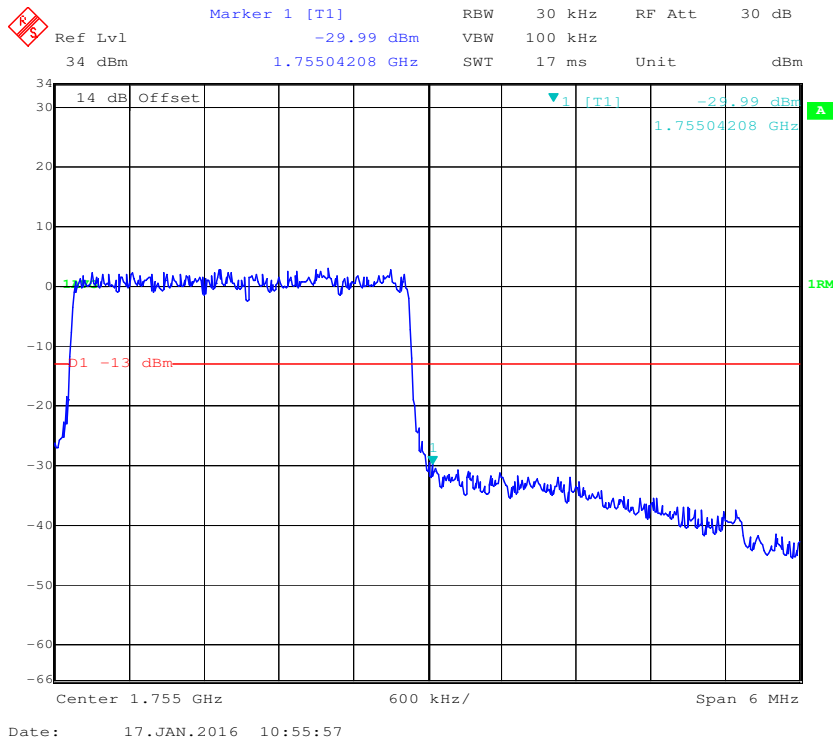
**QPSK (3.0 MHz, FULL RB) - Right Band Edge**



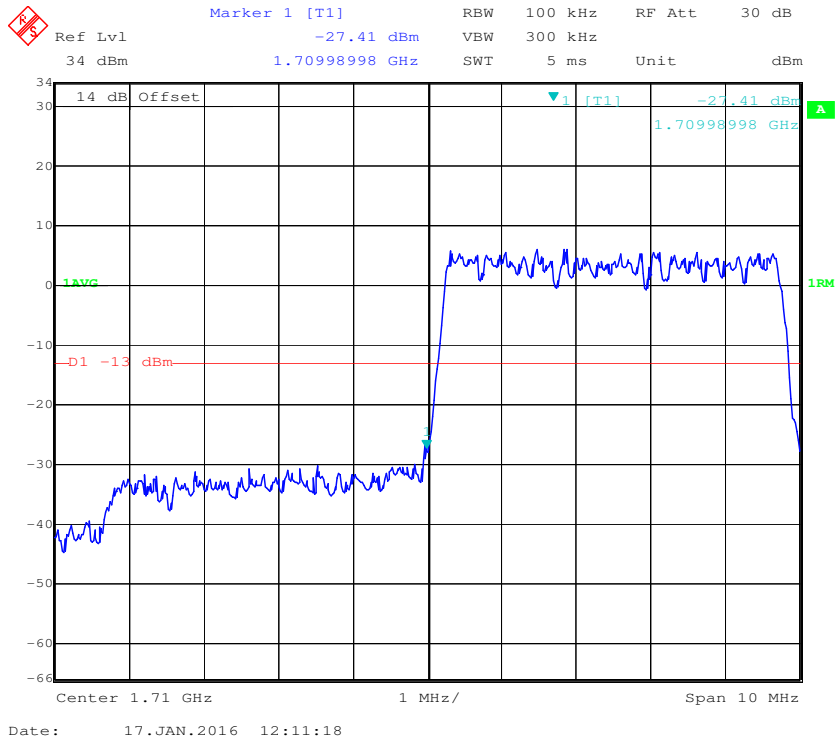
### 16-QAM (3.0 MHz, FULL RB) - Left Band Edge



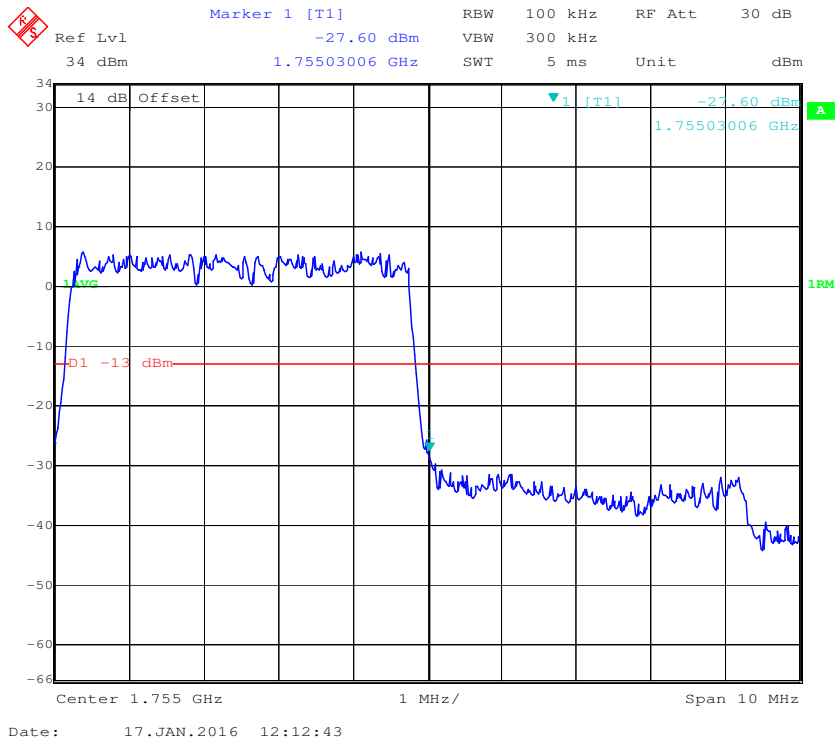
### 16-QAM (3.0 MHz, FULL RB) - Right Band Edge



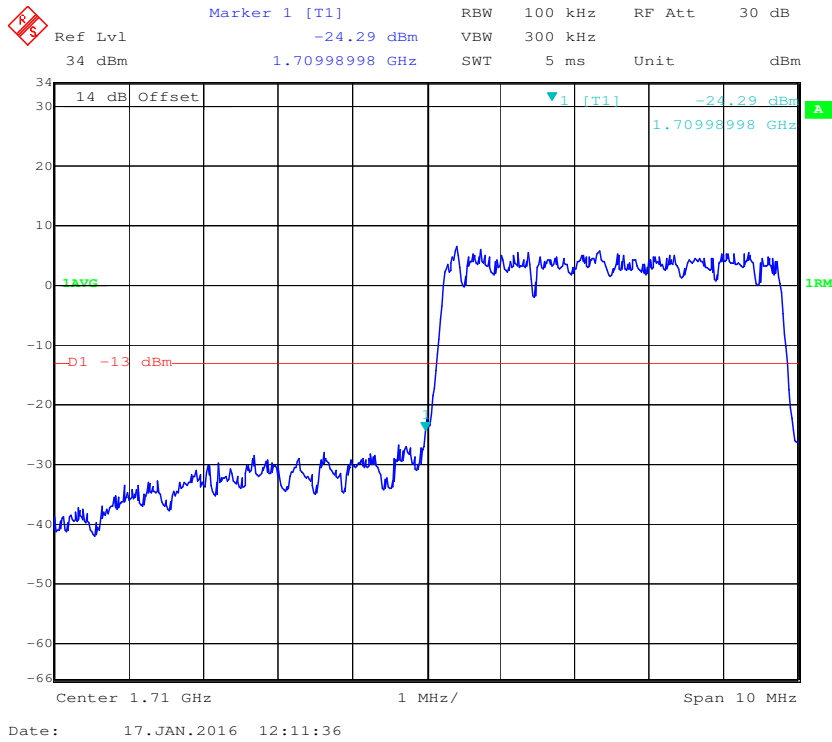
### QPSK (5.0 MHz, FULL RB) - Left Band Edge



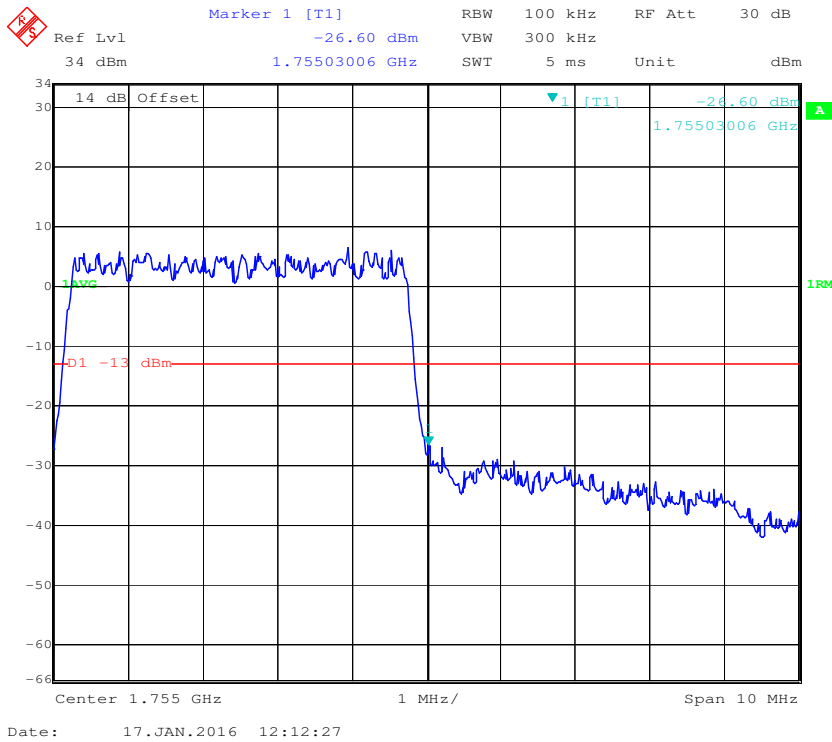
### QPSK (5.0 MHz, FULL RB) - Right Band Edge



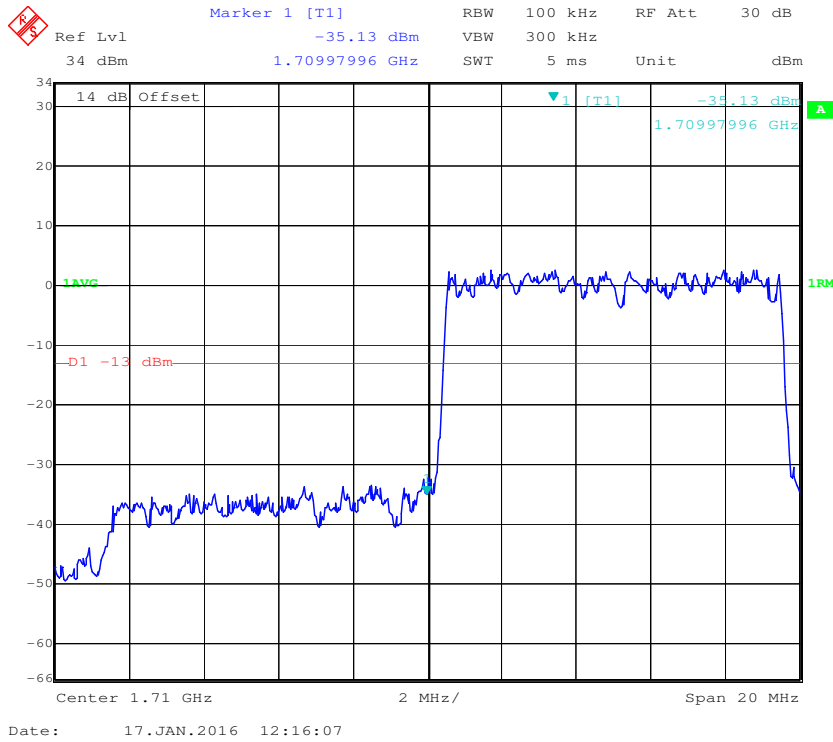
### 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



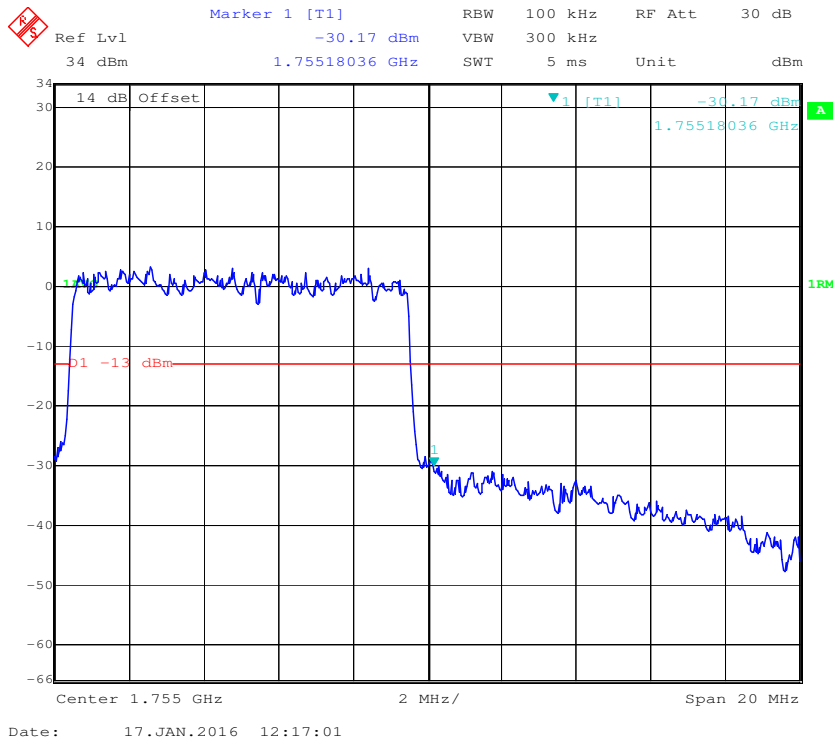
### 16-QAM (5.0 MHz, FULL RB) - Right Band Edge



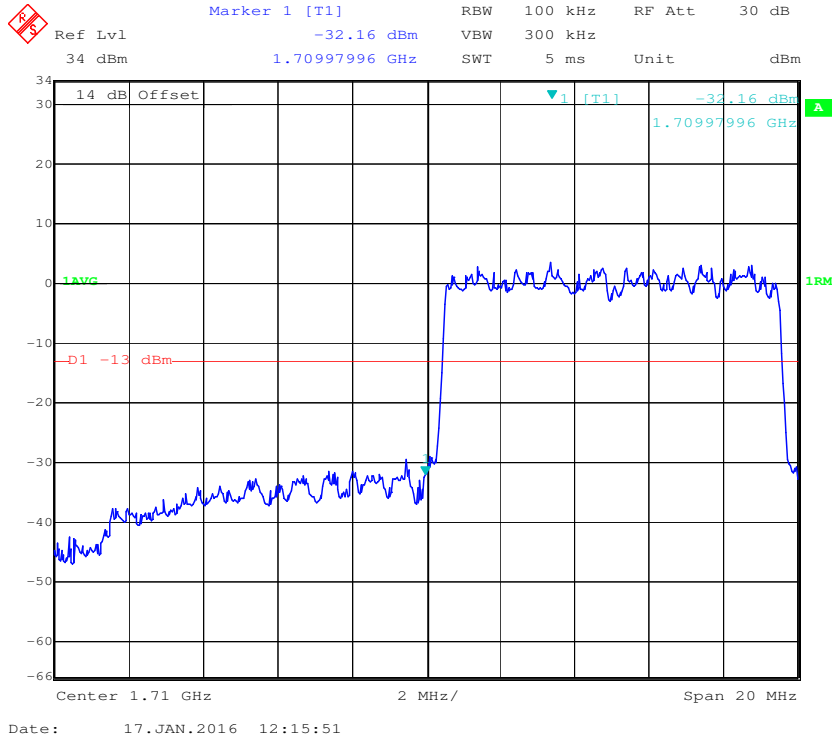
**QPSK (10.0 MHz, FULL RB) - Left Band Edge**



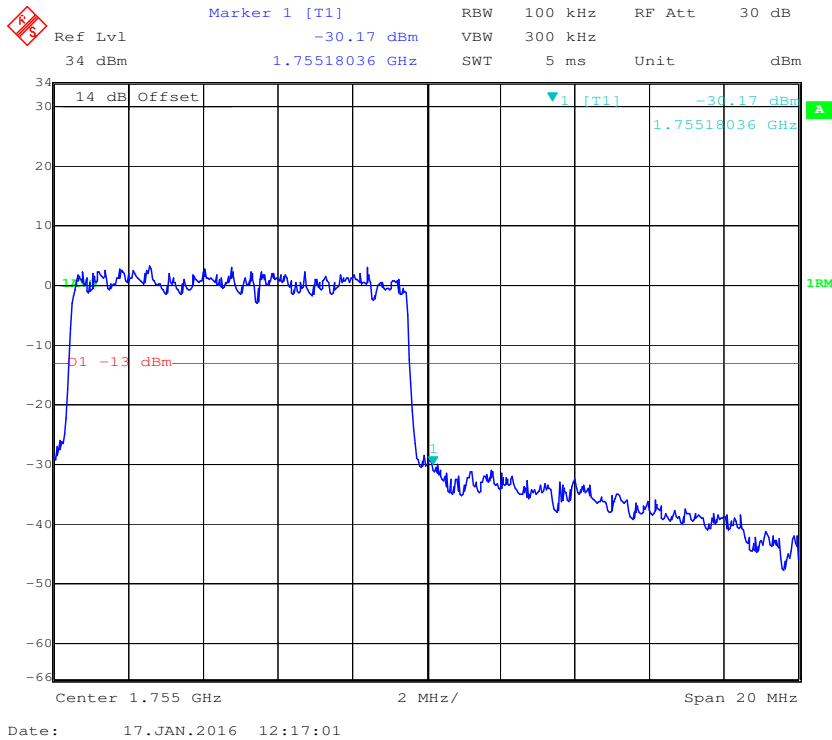
**QPSK (10.0 MHz, FULL RB) - Right Band Edge**



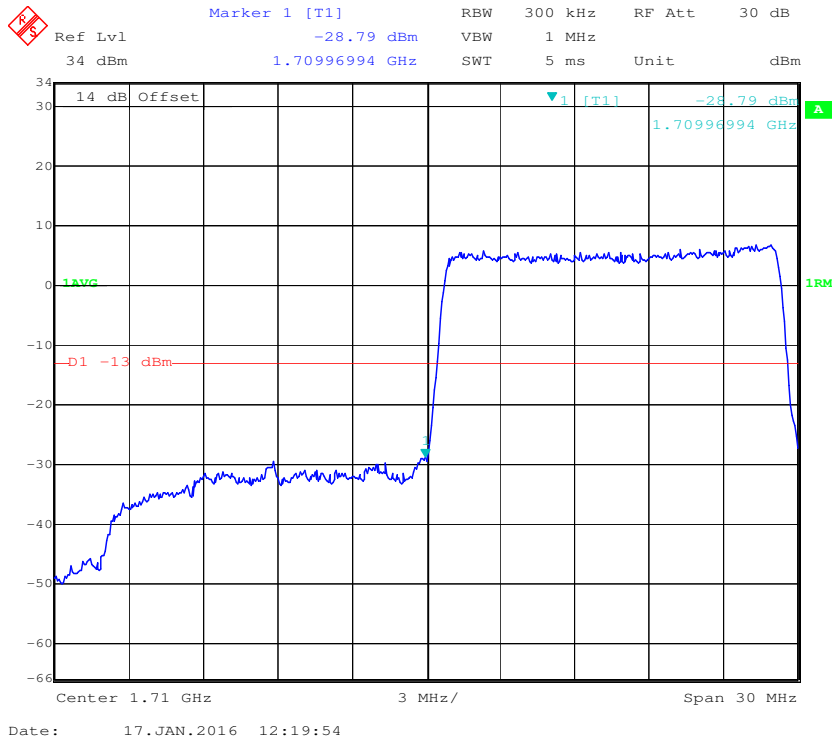
### 16-QAM (10.0 MHz, FULL RB) - Left Band Edge



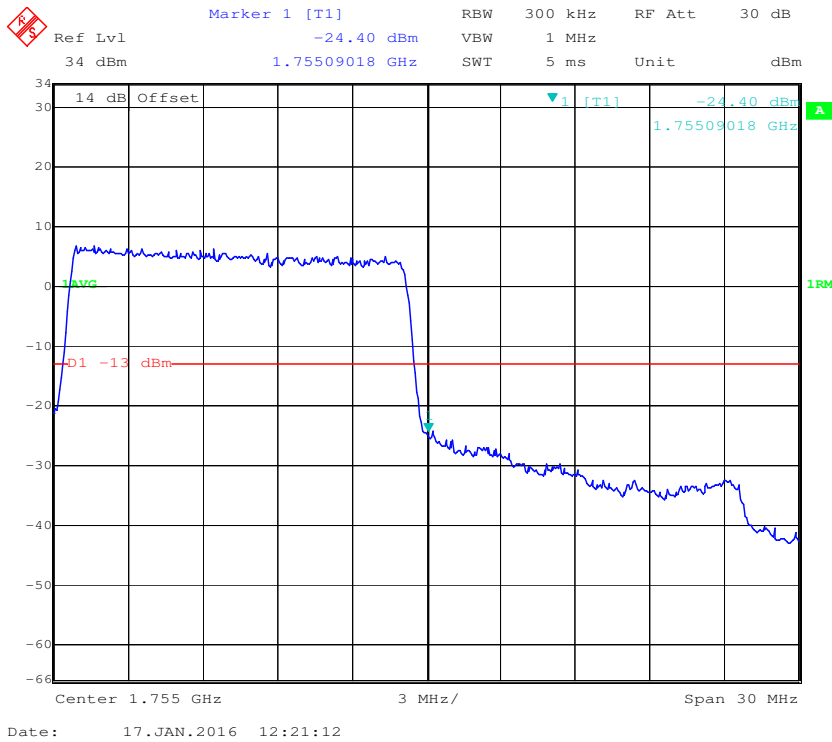
### 16-QAM (10.0 MHz, FULL RB) - Right Band Edge



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

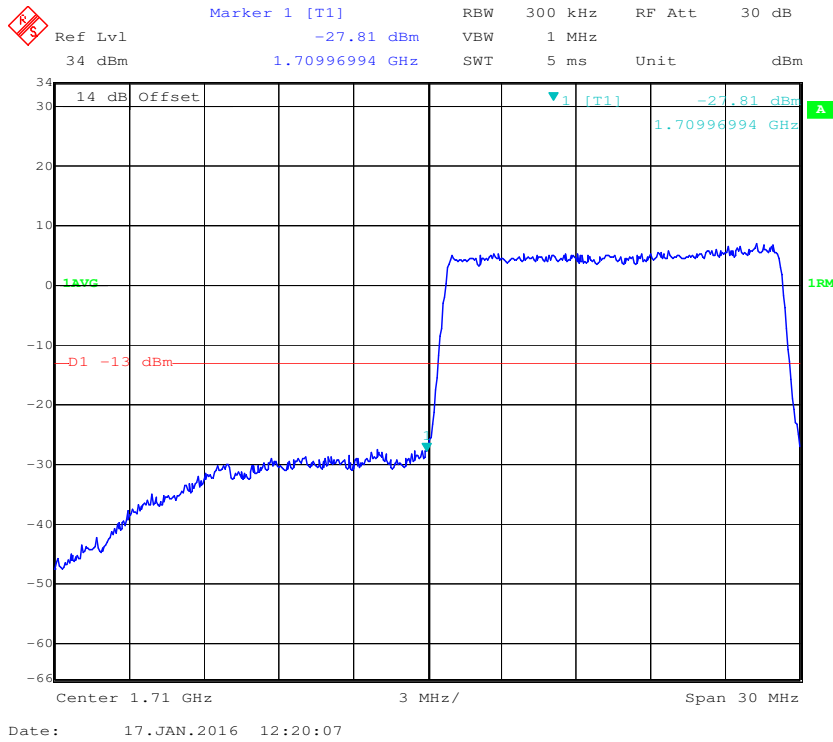


### QPSK (15.0 MHz, FULL RB) - Right Band Edge

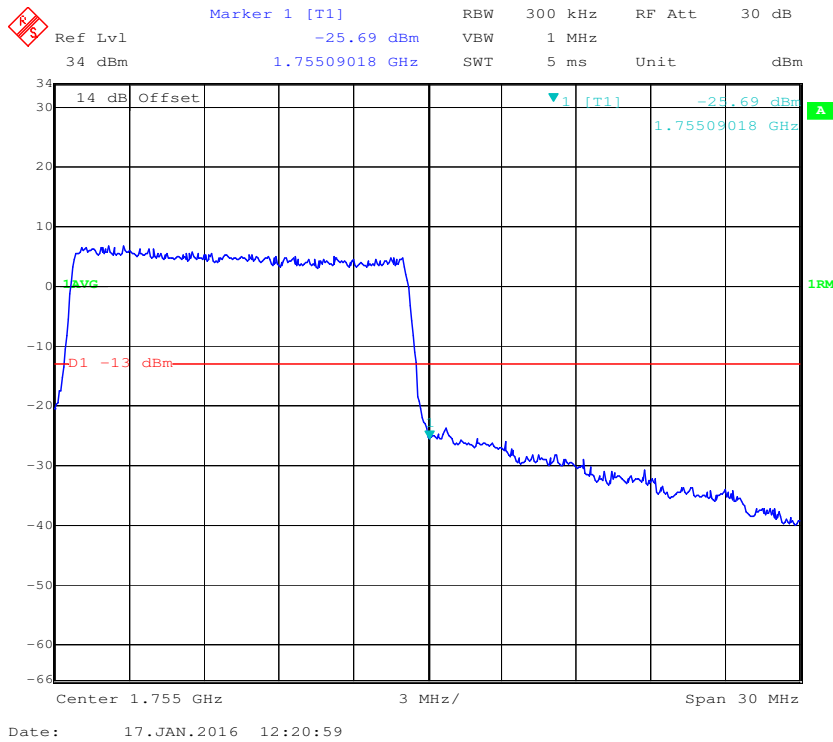




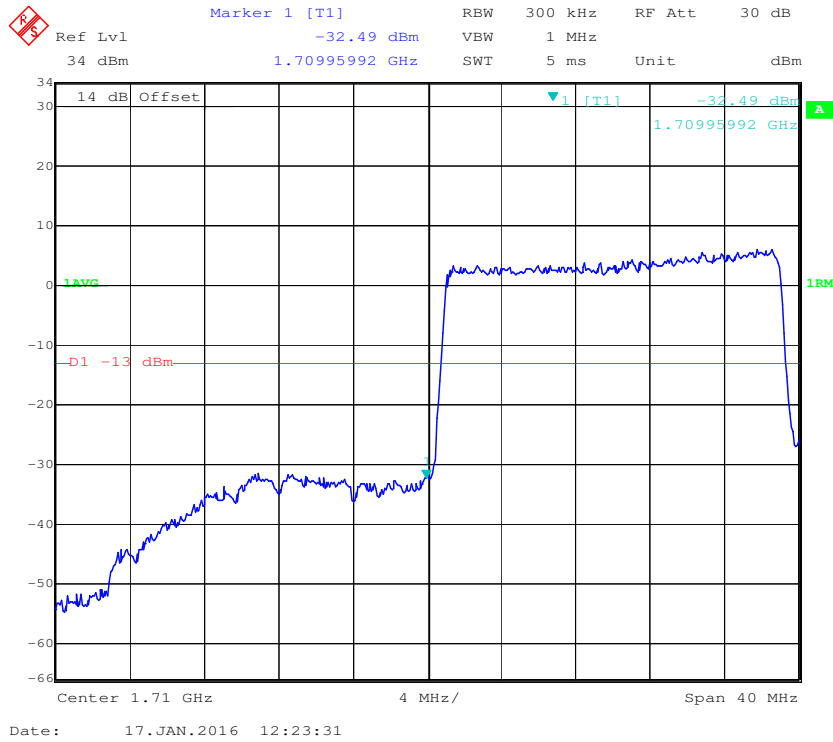
### 16-QAM (15.0 MHz, FULL RB) - Left Band Edge



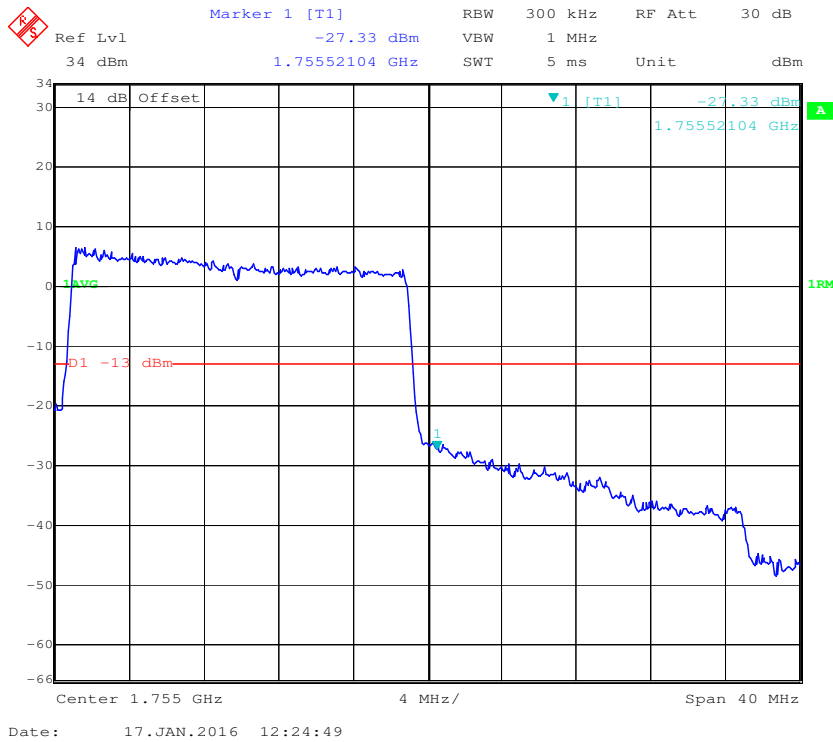
### 16-QAM (15.0 MHz, FULL RB) - Right Band Edge



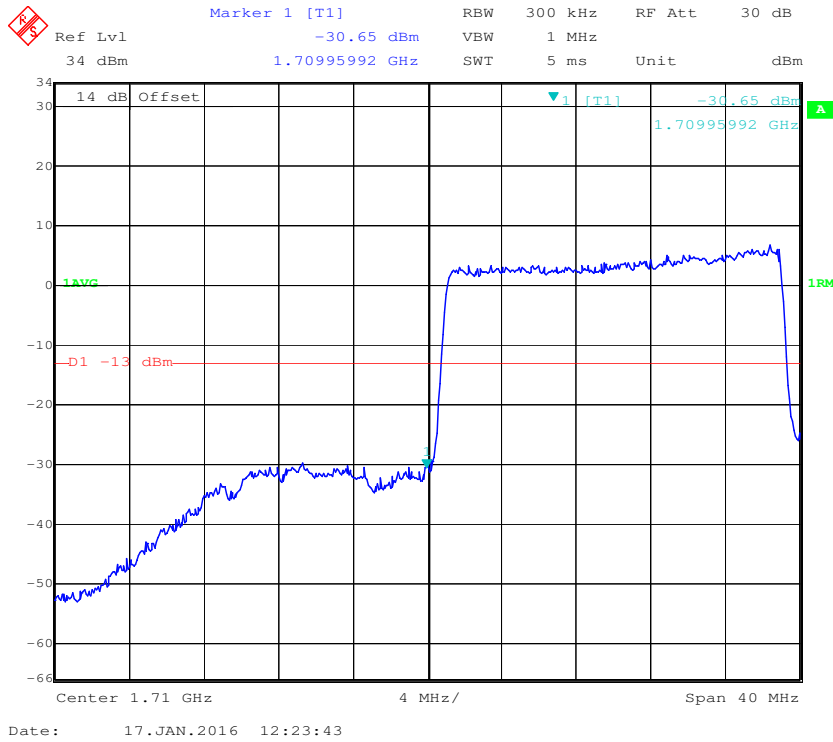
**QPSK (20.0 MHz, FULL RB) - Left Band Edge**



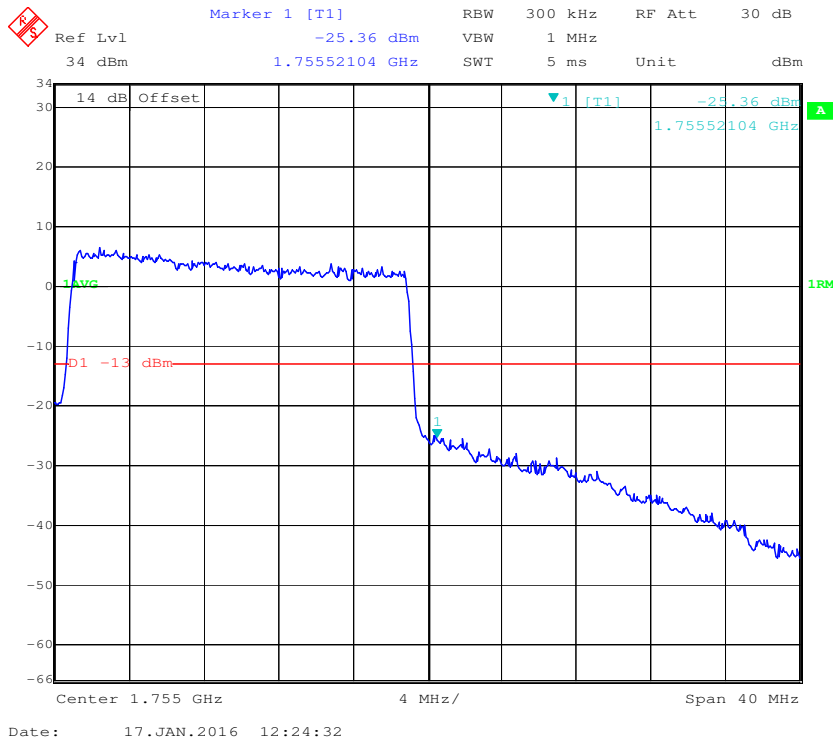
**QPSK (20.0 MHz, FULL RB) - Right Band Edge**



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

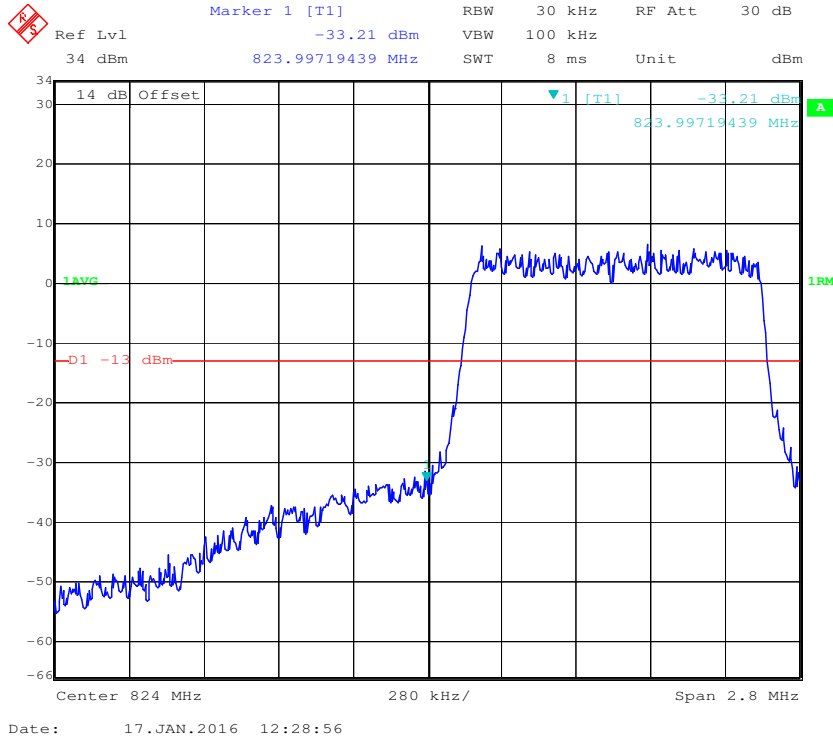


### 16-QAM (20.0 MHz, FULL RB) - Right Band Edge

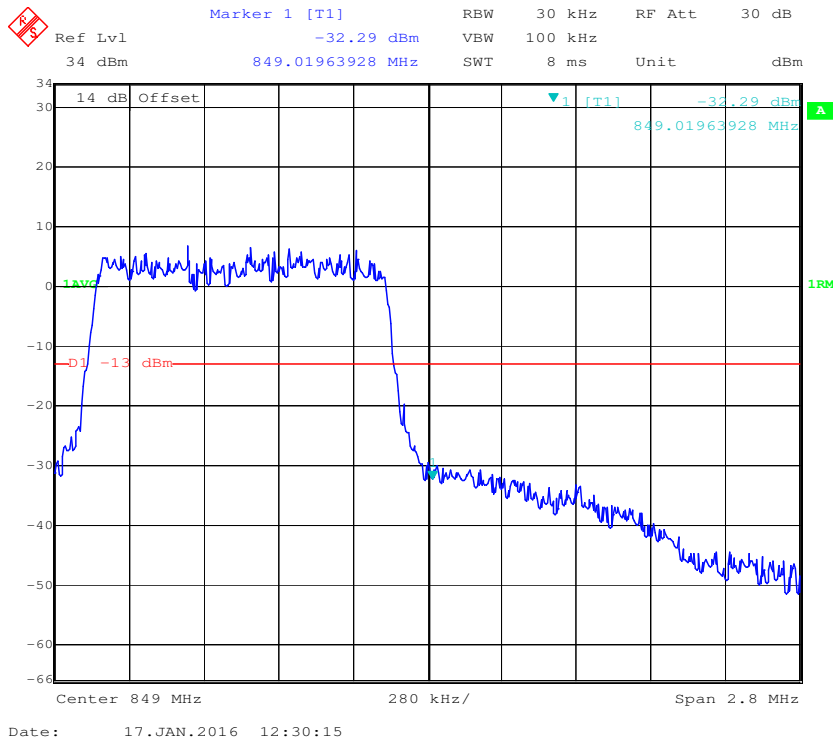


**Band 5:**

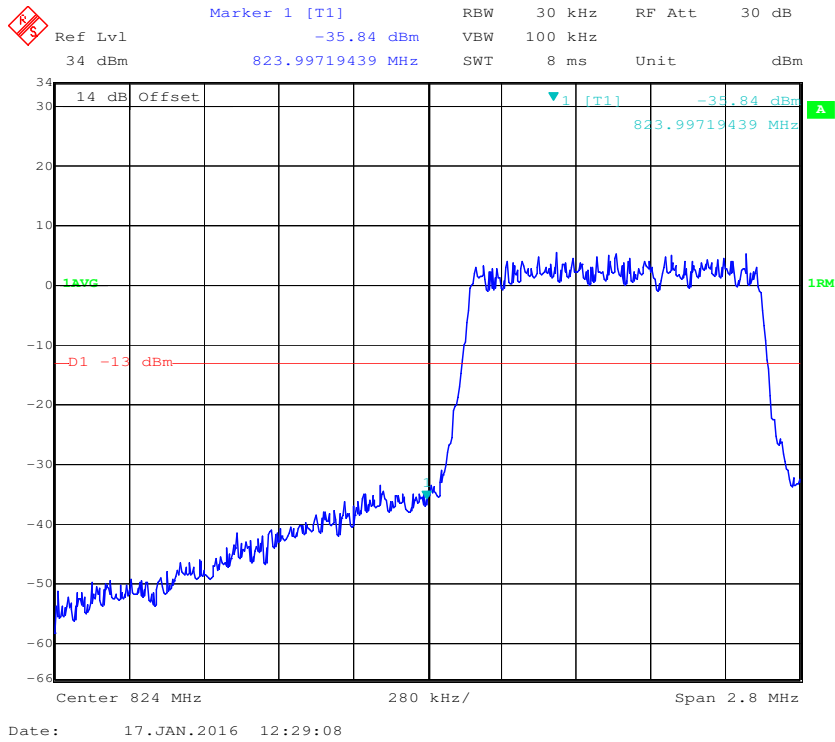
**QPSK (1.4 MHz, FULL RB) - Left Band Edge**



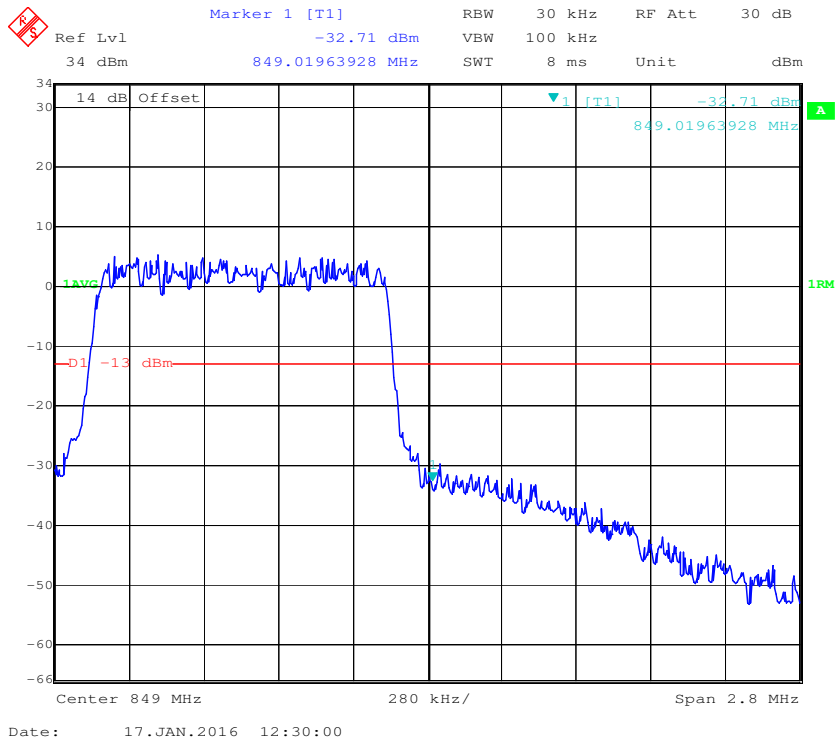
**QPSK (1.4 MHz, FULL RB) - Right Band Edge**



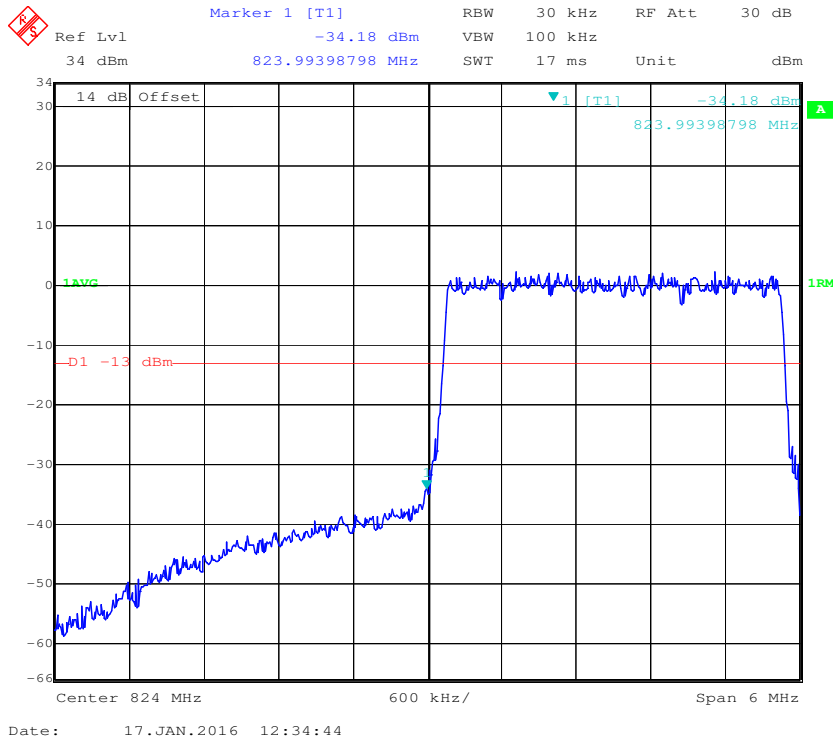
**16-QAM (1.4 MHz, FULL RB) - Left Band Edge**



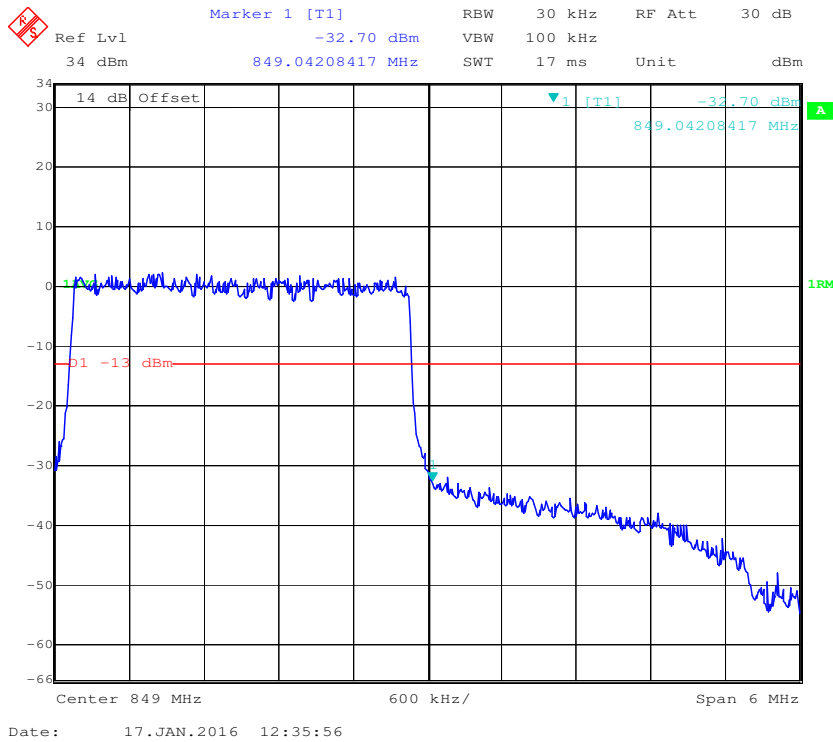
**16-QAM (1.4 MHz, FULL RB) - Right Band Edge**



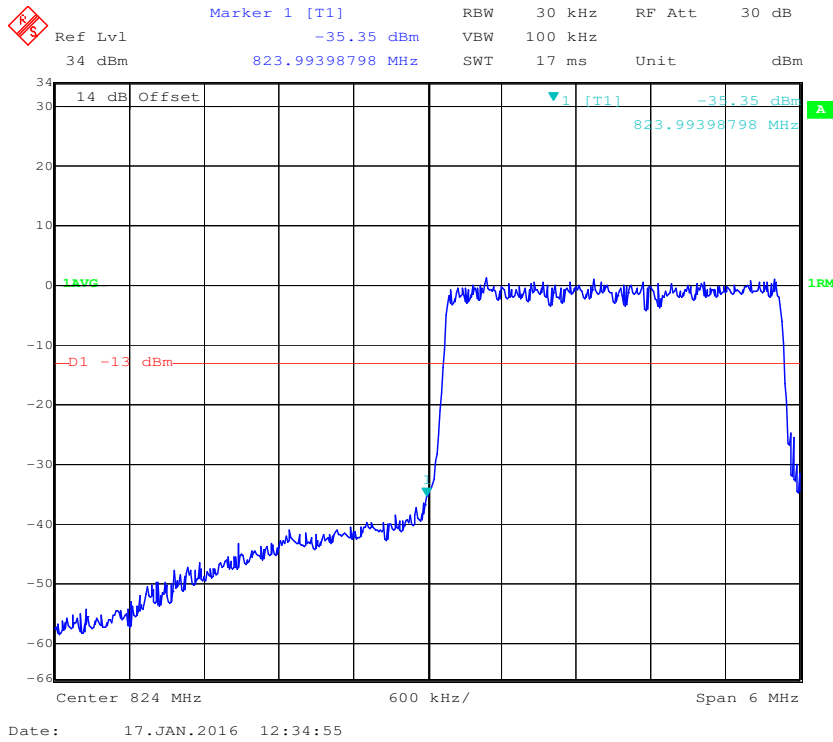
### QPSK (3.0 MHz, FULL RB) - Left Band Edge



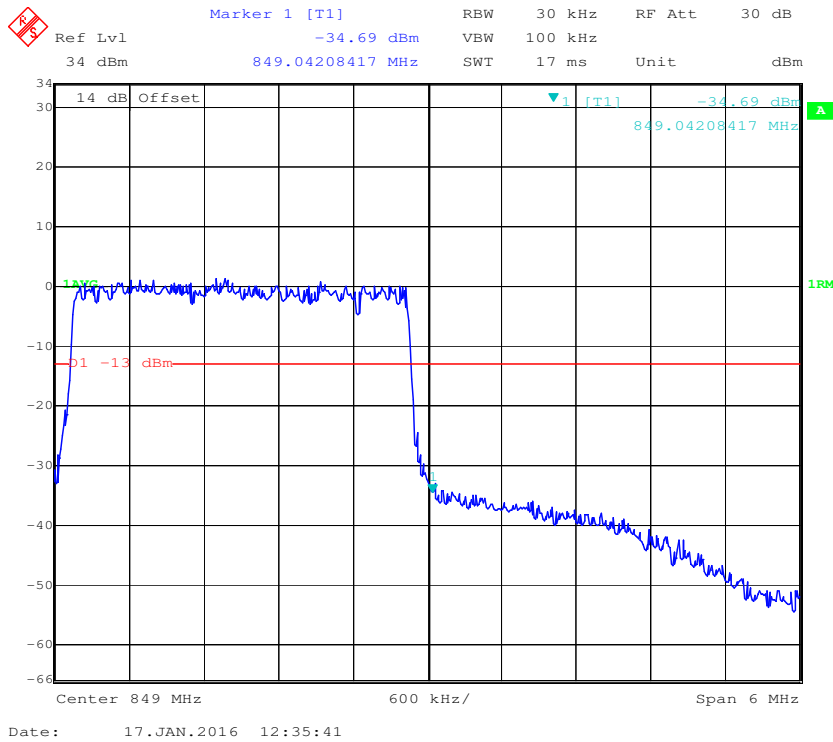
### QPSK (3.0 MHz, FULL RB) - Right Band Edge



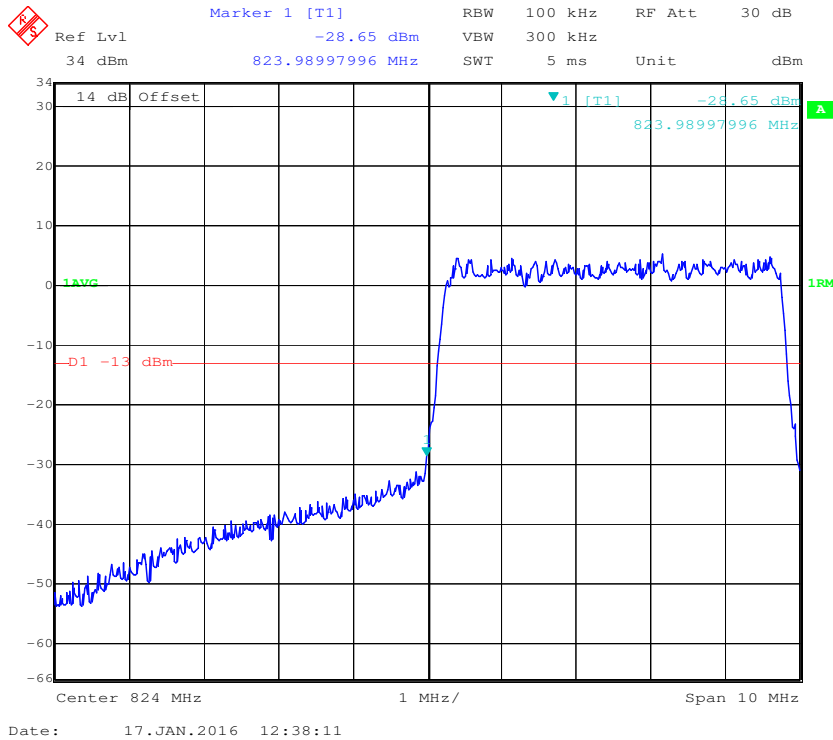
### 16-QAM (3.0 MHz, FULL RB) - Left Band Edge



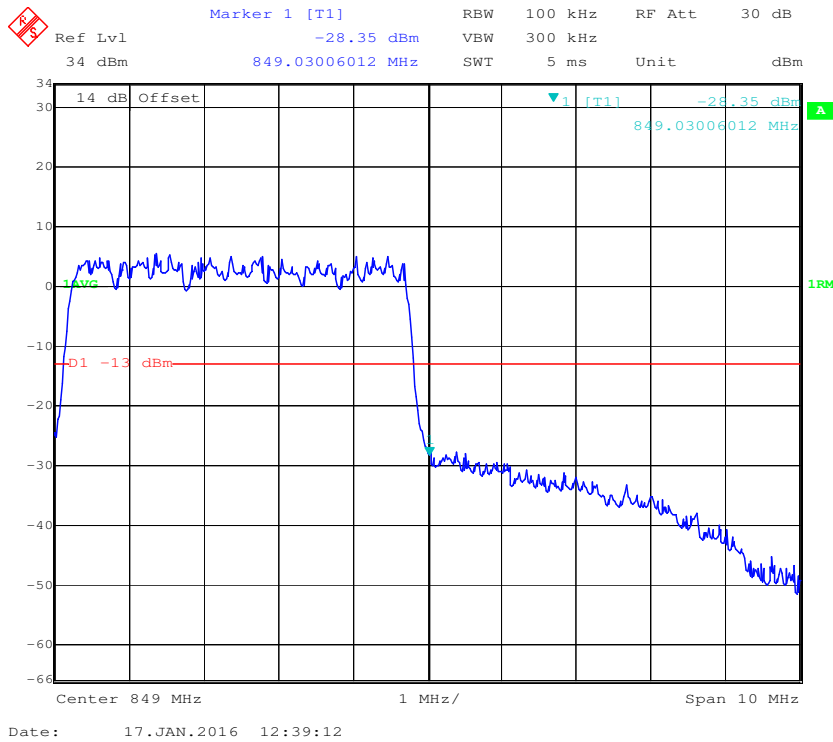
### 16-QAM (3.0 MHz, FULL RB) - Right Band Edge



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

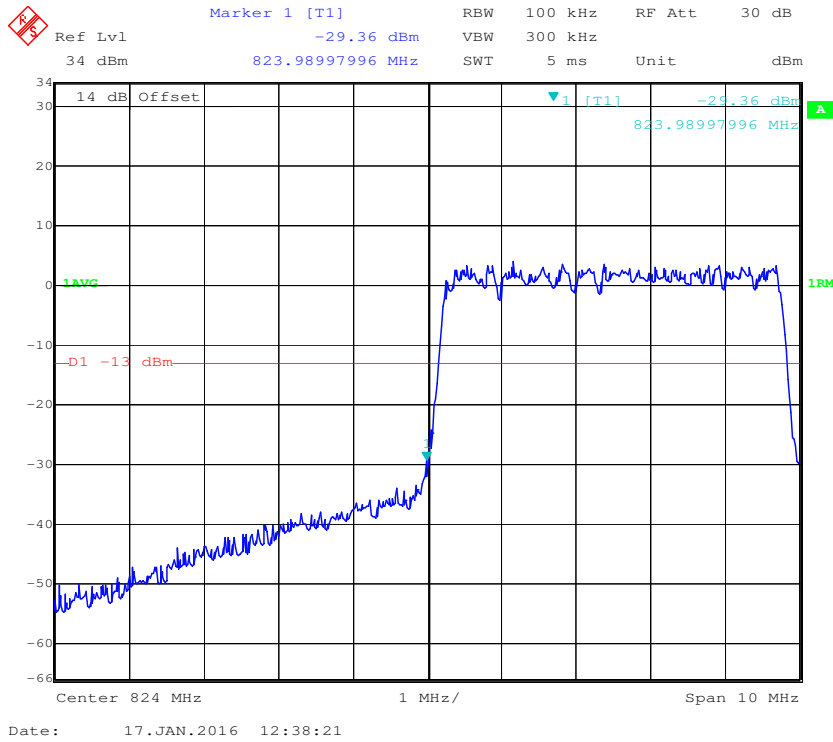


**QPSK (5.0 MHz, FULL RB) - Right Band Edge**

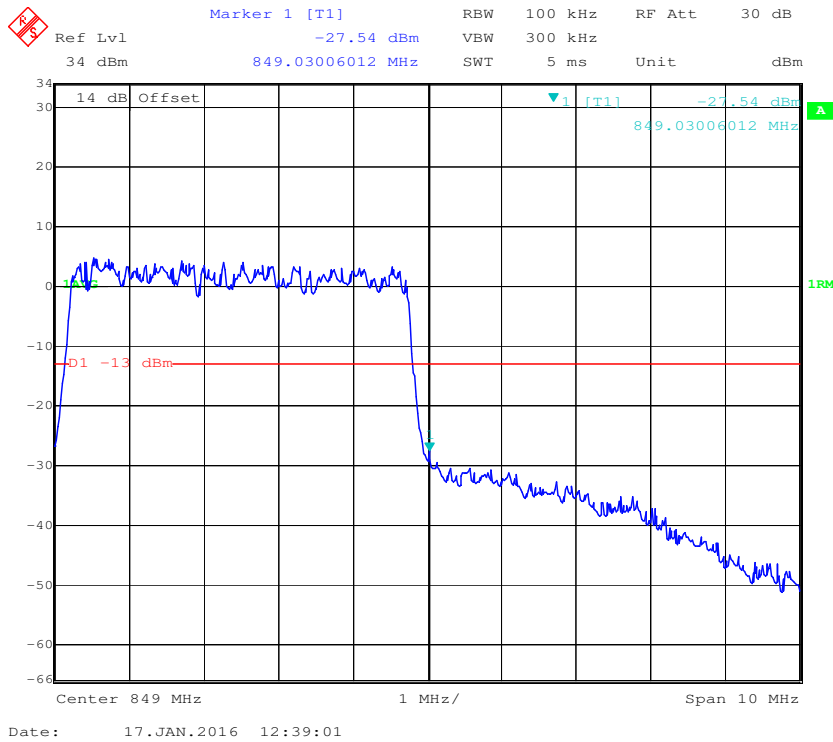




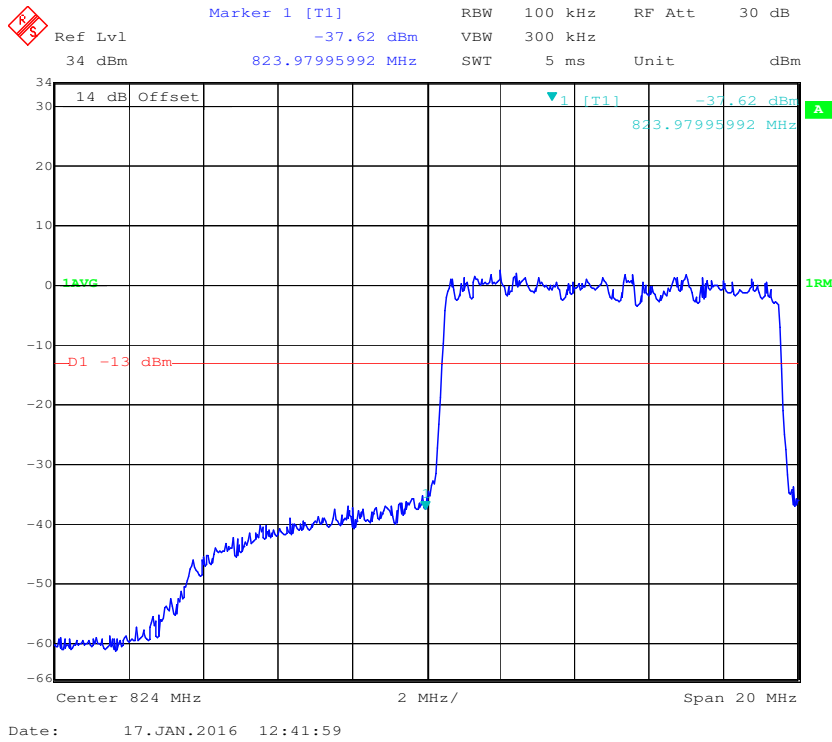
### 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



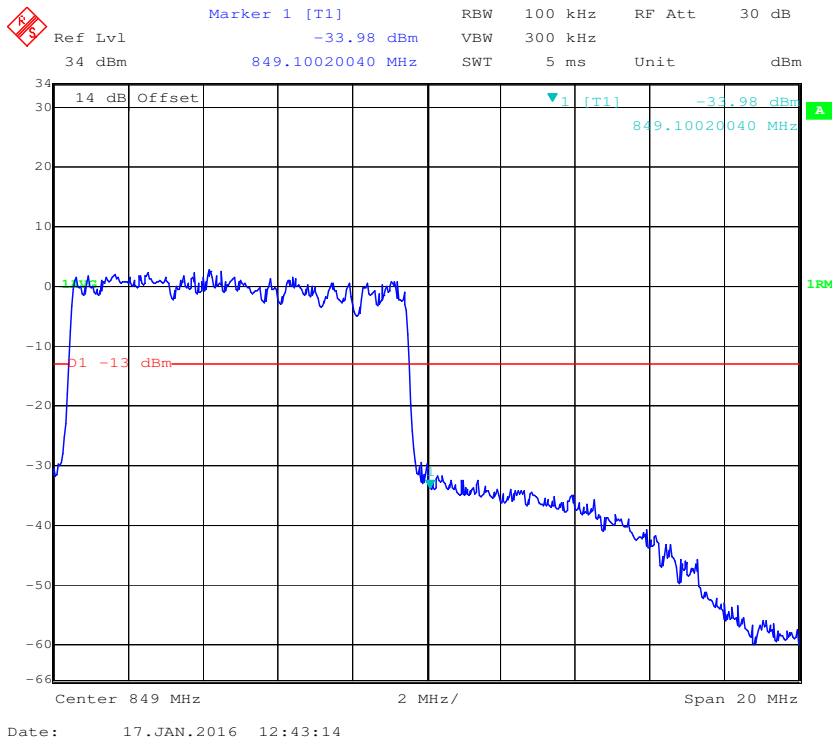
### 16-QAM (5.0 MHz, FULL RB) - Right Band Edge



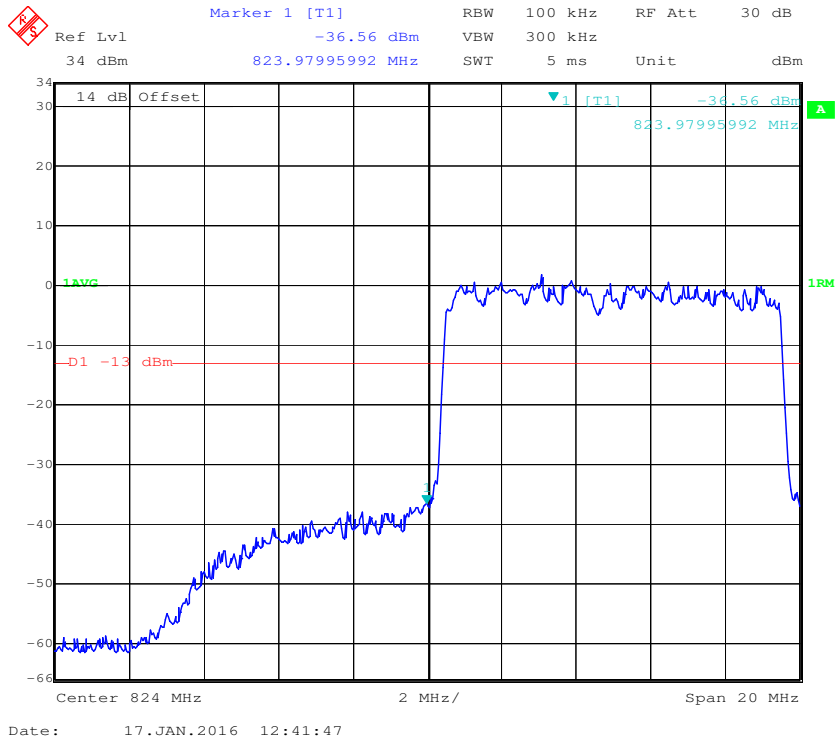
### QPSK (10.0 MHz, FULL RB) - Left Band Edge



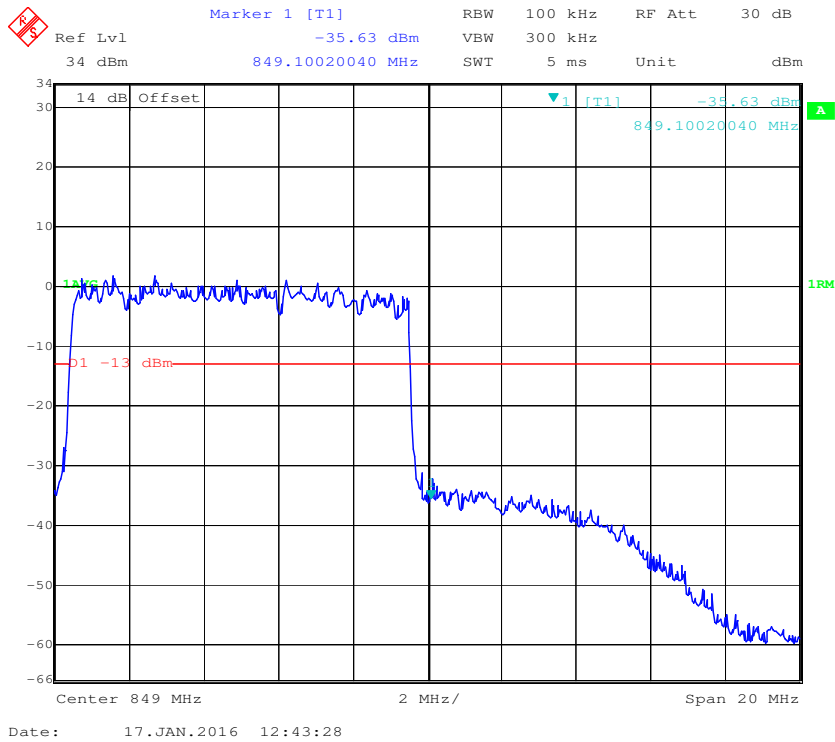
### QPSK (10.0 MHz, FULL RB) - Right Band Edge



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

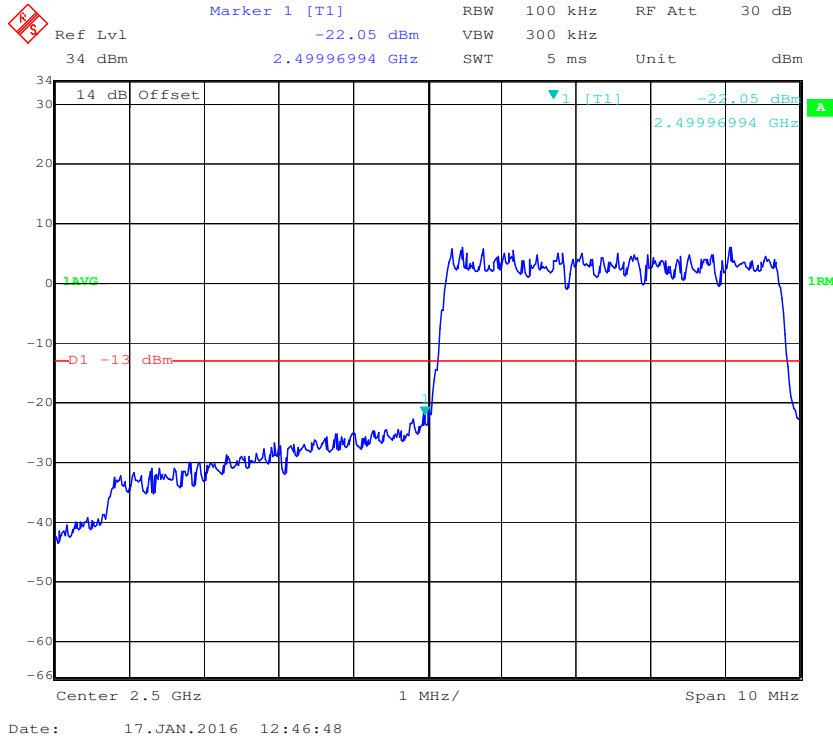


### 16-QAM (10.0 MHz, FULL RB) - Right Band Edge

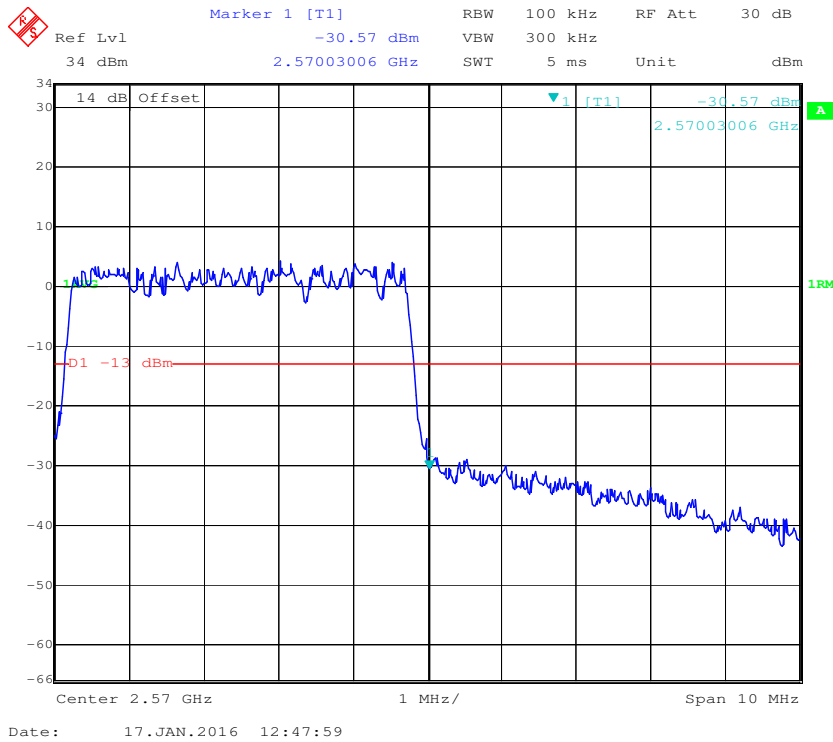


**Band 7:**

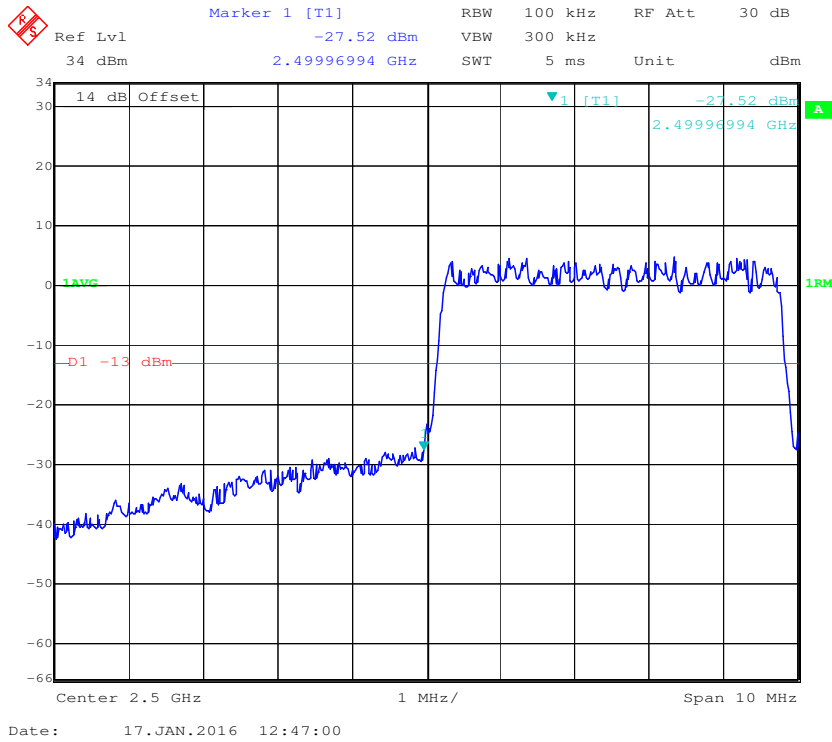
**QPSK (5.0 MHz, FULL RB) - Left Band Edge**



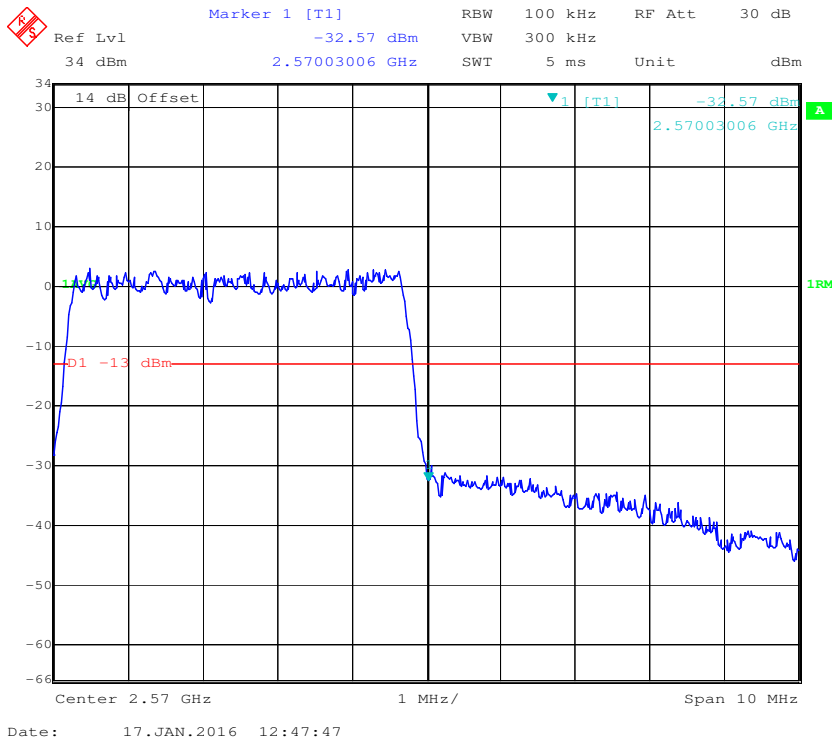
**QPSK (5.0 MHz, FULL RB) - Right Band Edge**



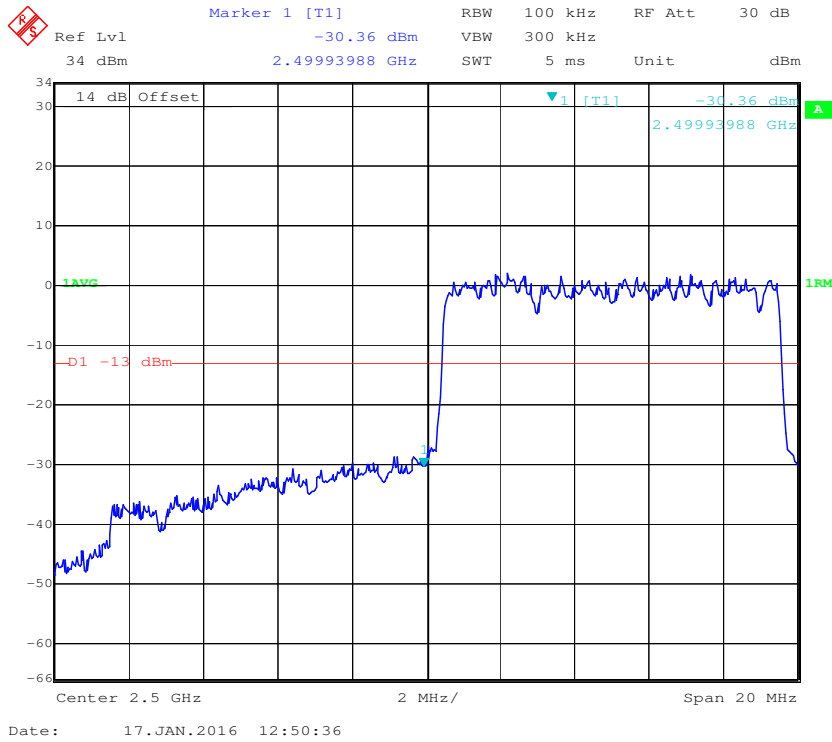
### 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



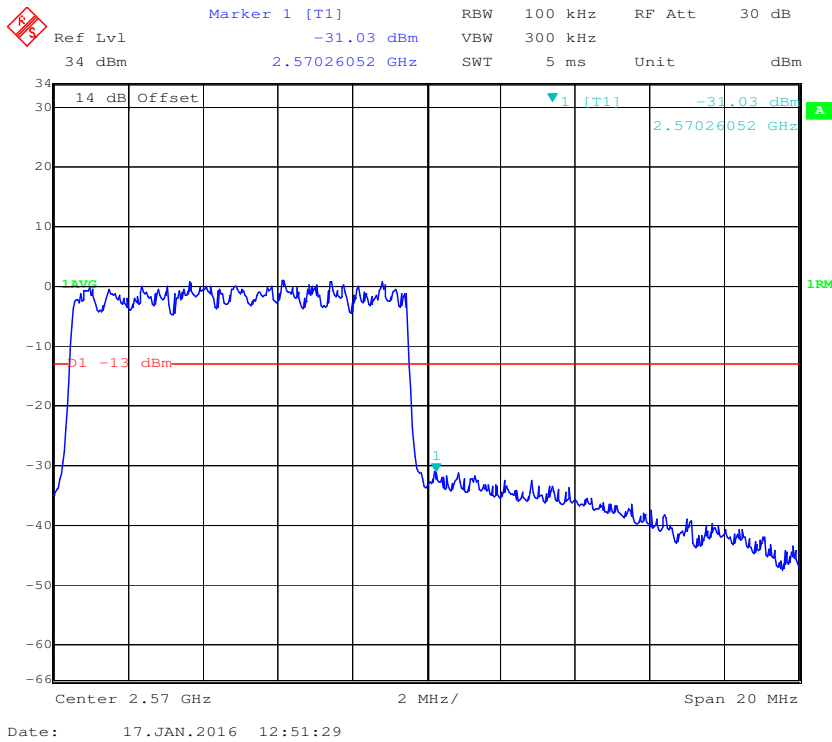
### 16-QAM (5.0 MHz, FULL RB) - Right Band Edge



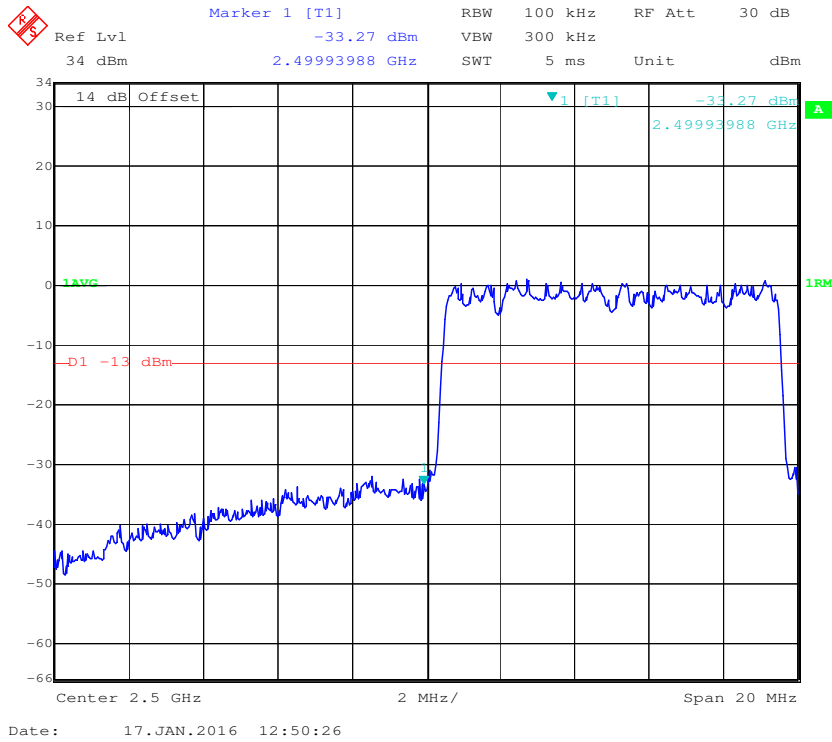
### QPSK (10.0 MHz, FULL RB) - Left Band Edge



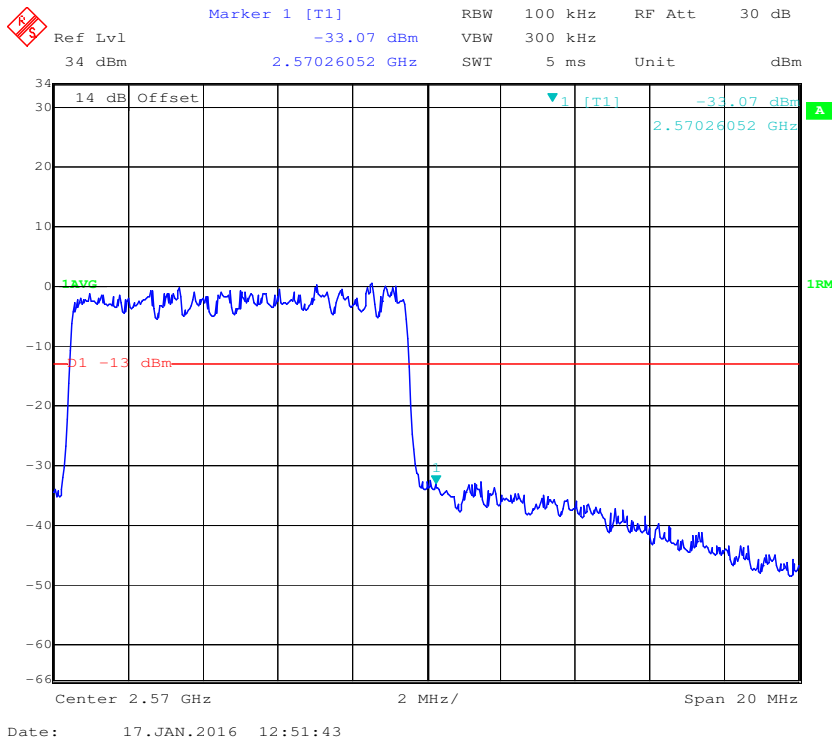
### QPSK (10.0 MHz, FULL RB) - Right Band Edge



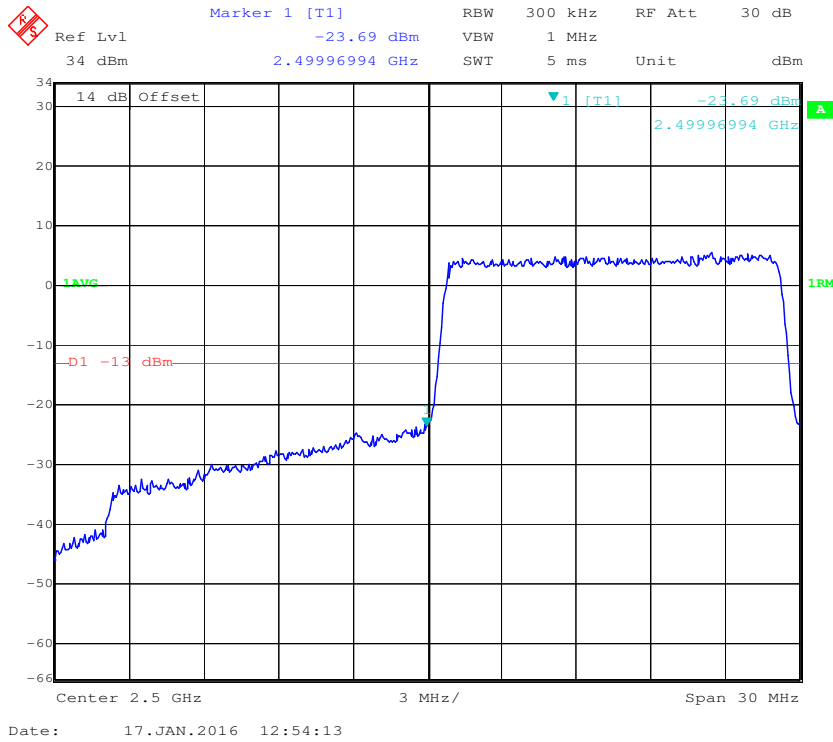
### 16-QAM (10.0 MHz, FULL RB) - Left Band Edge



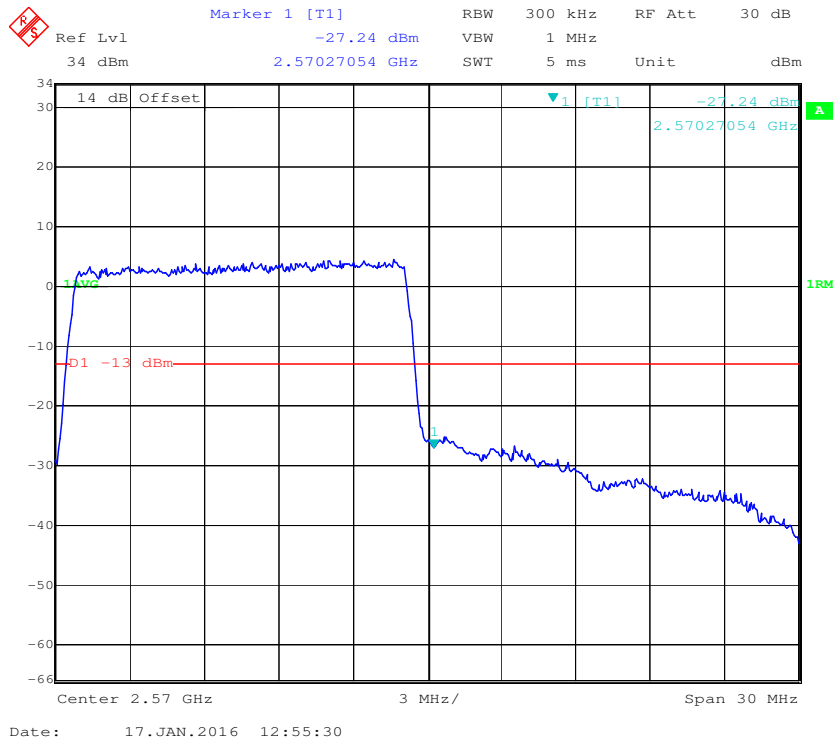
### 16-QAM (10.0 MHz, FULL RB) - Right Band Edge



### QPSK (15 MHz, FULL RB) - Left Band Edge

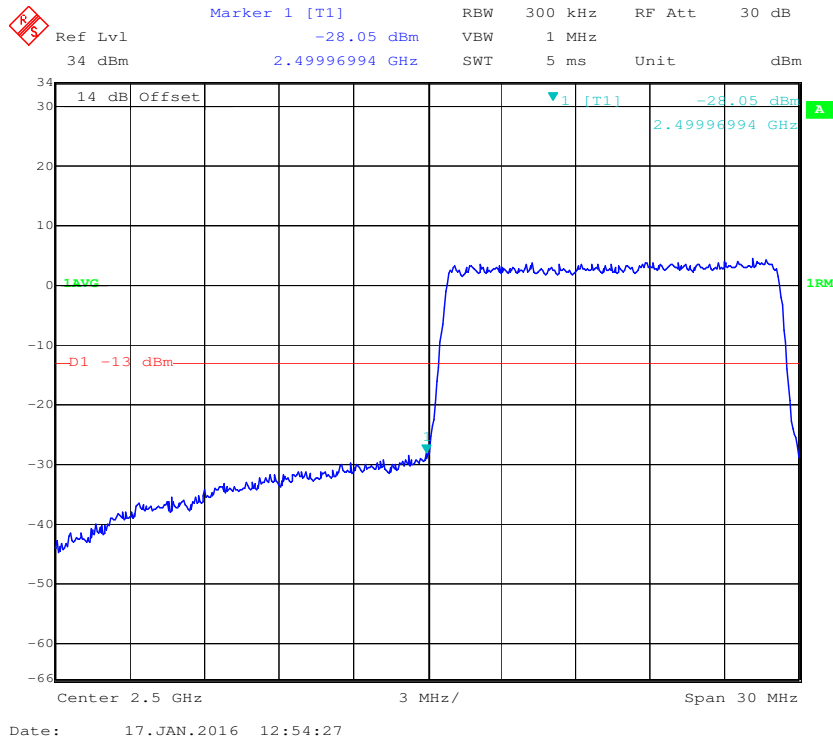


### QPSK (15 MHz, FULL RB) - Right Band Edge

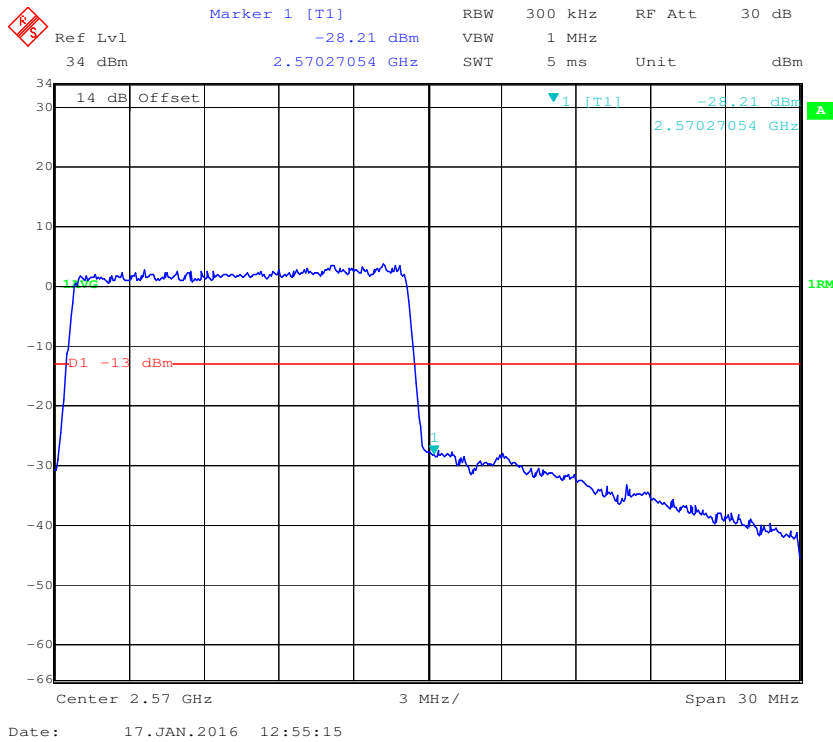




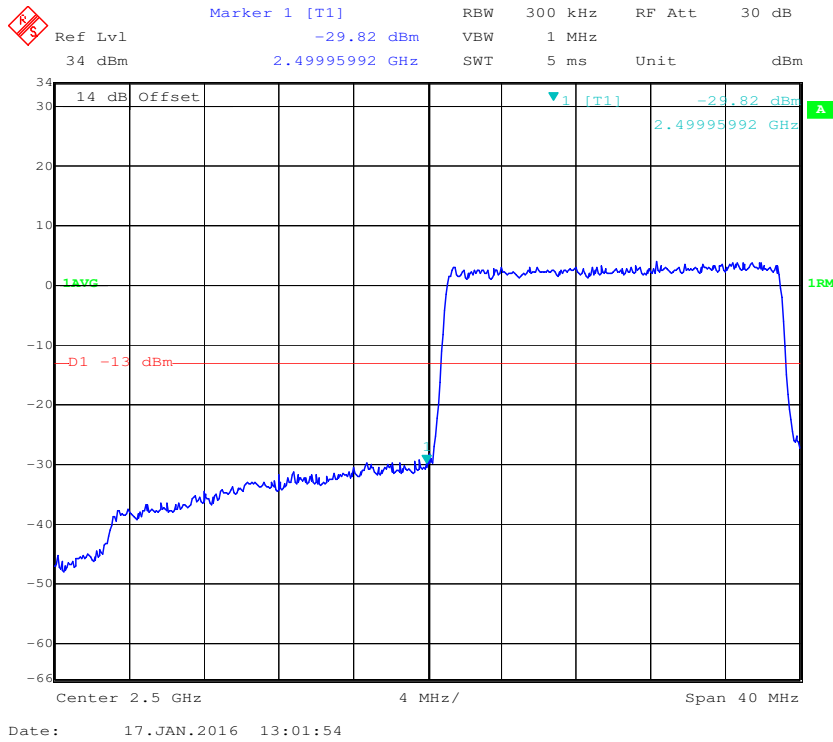
### 16-QAM (15 MHz, FULL RB) - Left Band Edge



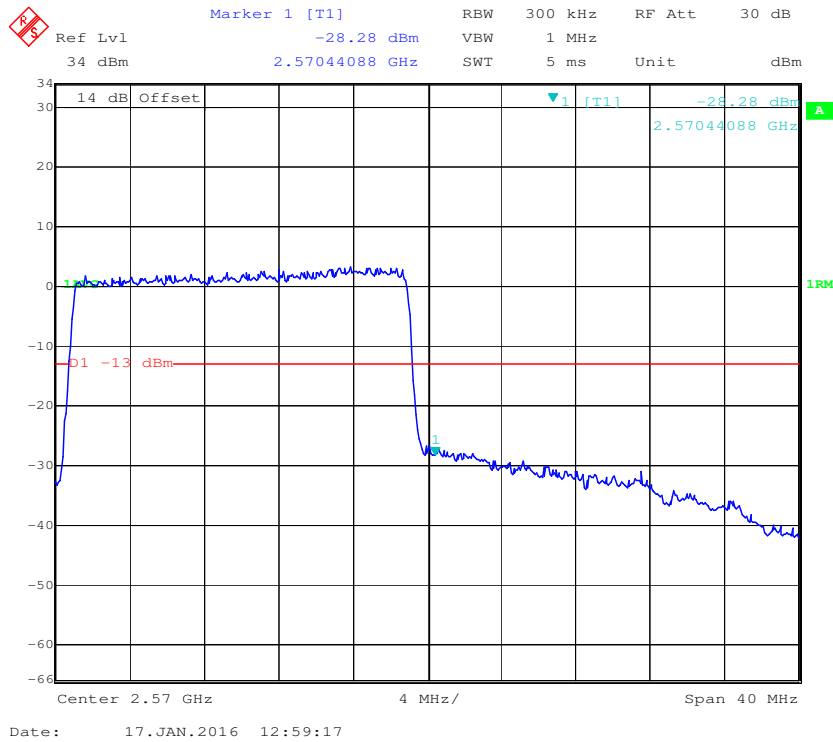
### 16-QAM (15 MHz, FULL RB) - Right Band Edge



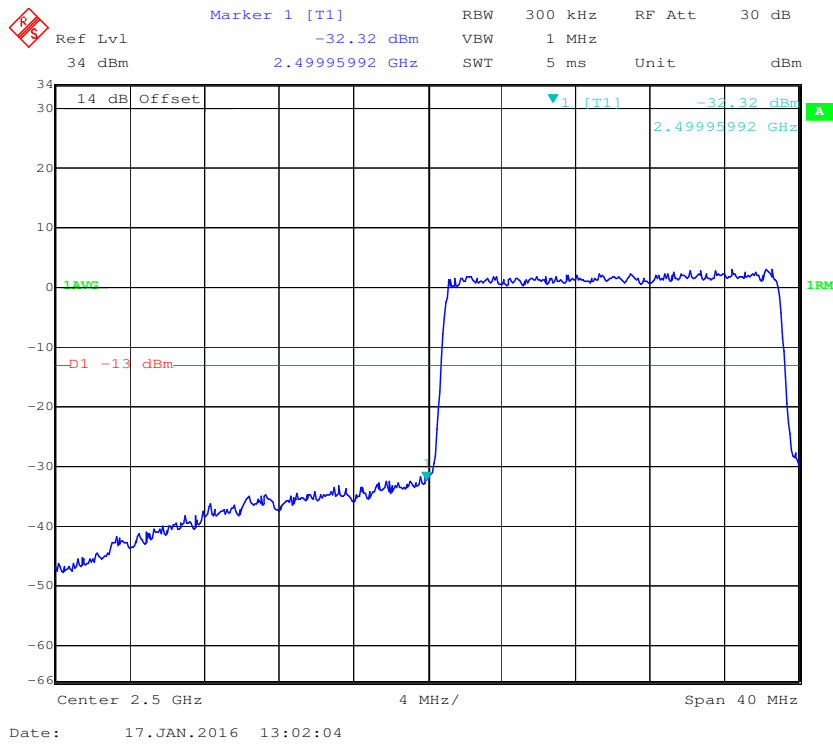
**QPSK (20 MHz, FULL RB) - Left Band Edge**



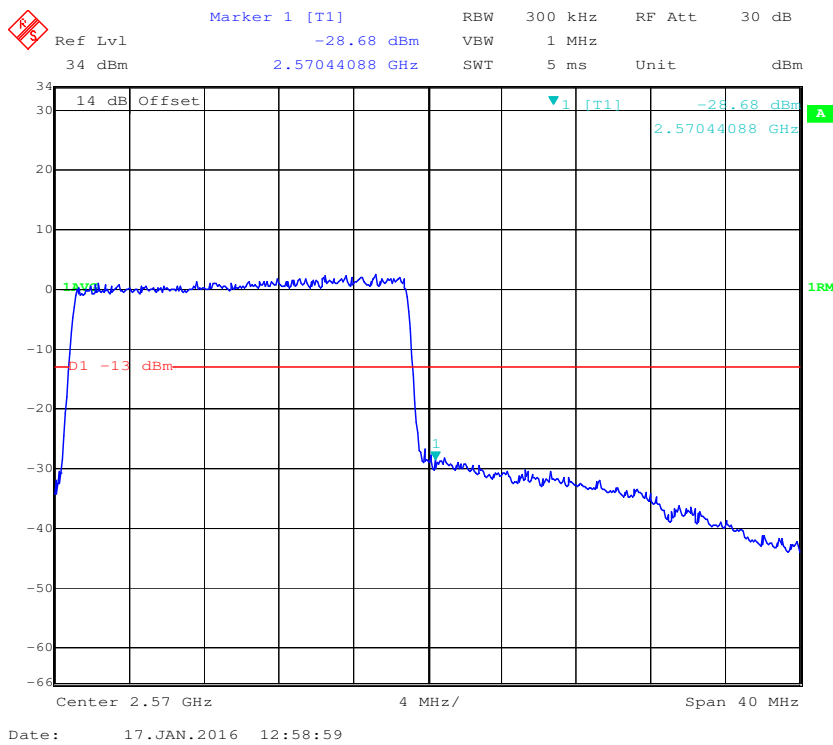
**QPSK (20 MHz, FULL RB) - Right Band Edge**



**16-QAM (20 MHz, FULL RB) - Left Band Edge**

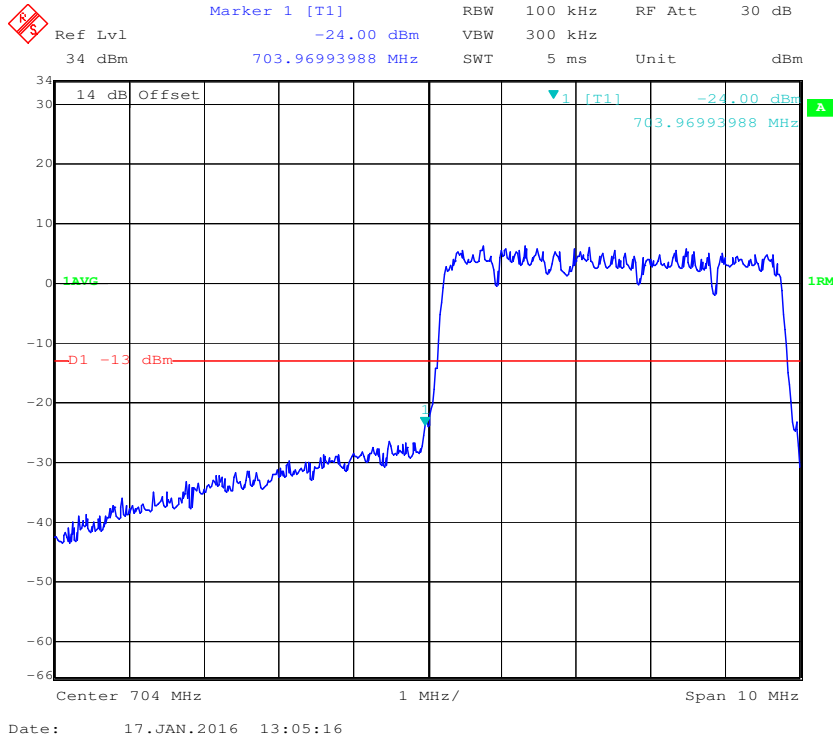


**16-QAM (20 MHz, FULL RB) - Right Band Edge**

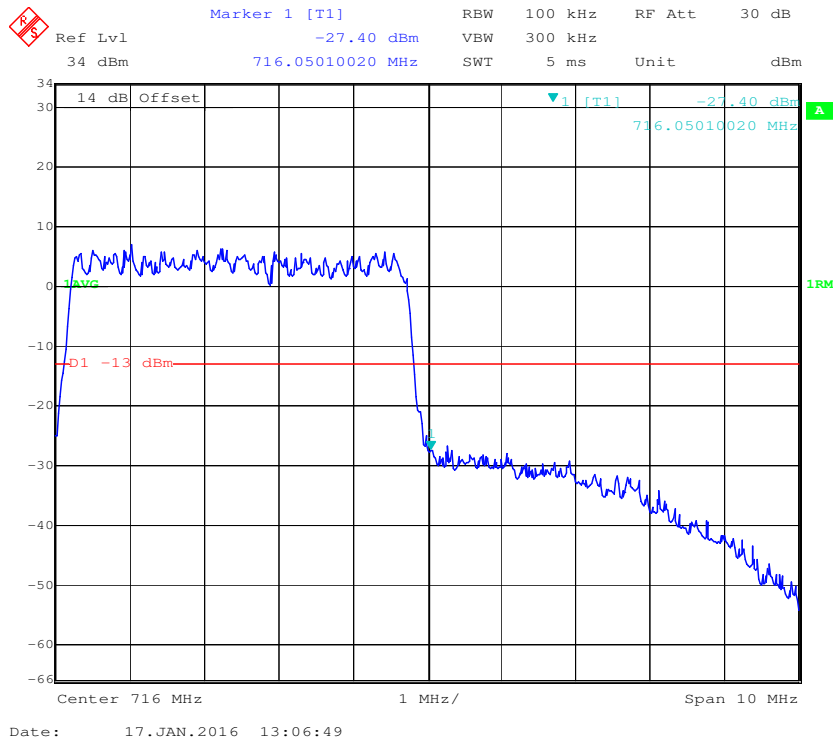


**Band 17:**

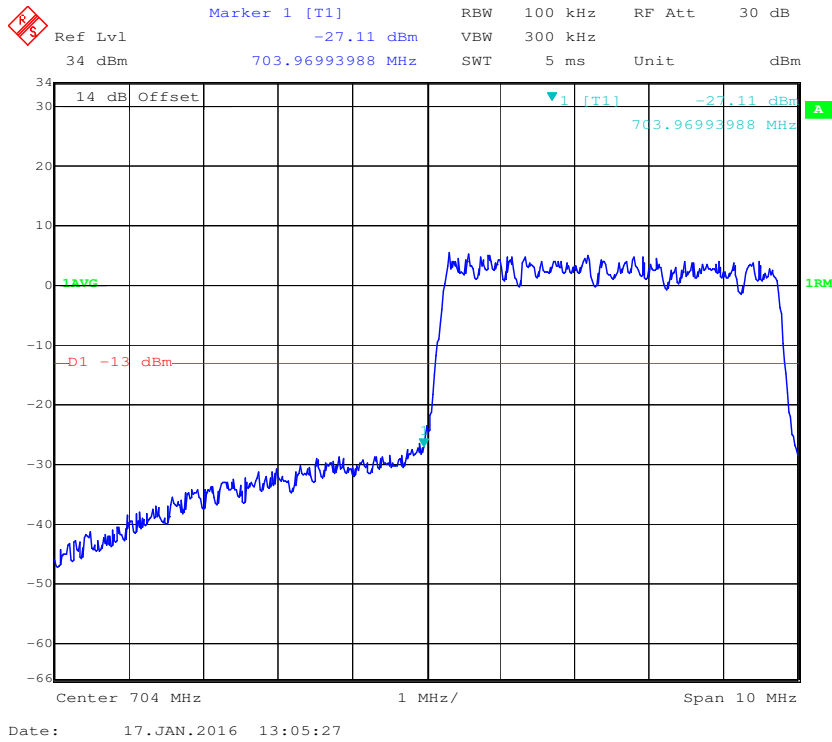
**QPSK (5.0 MHz, FULL RB) - Left Band Edge**



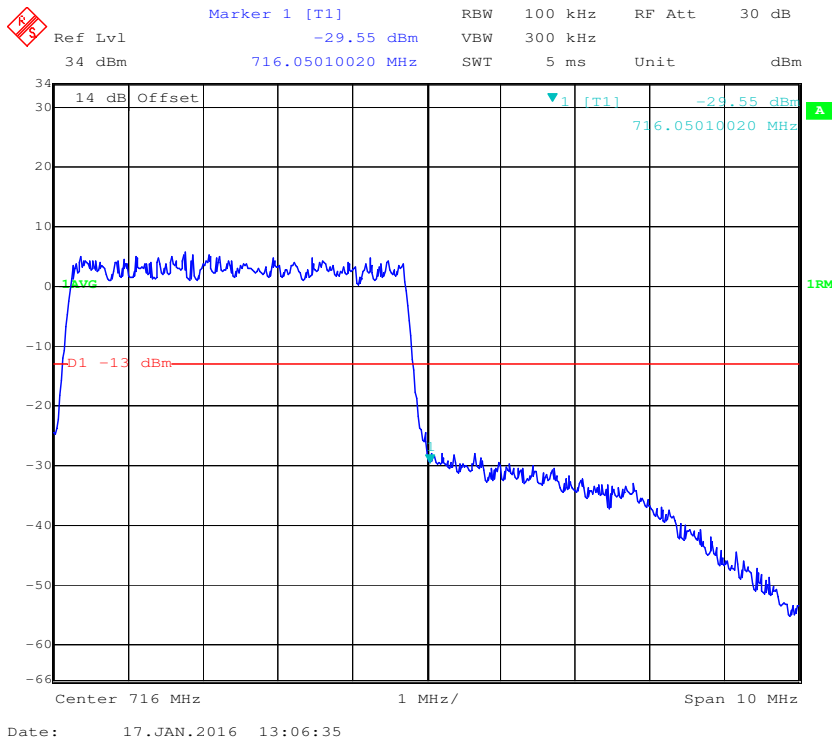
**QPSK (5.0 MHz, FULL RB) - Right Band Edge**



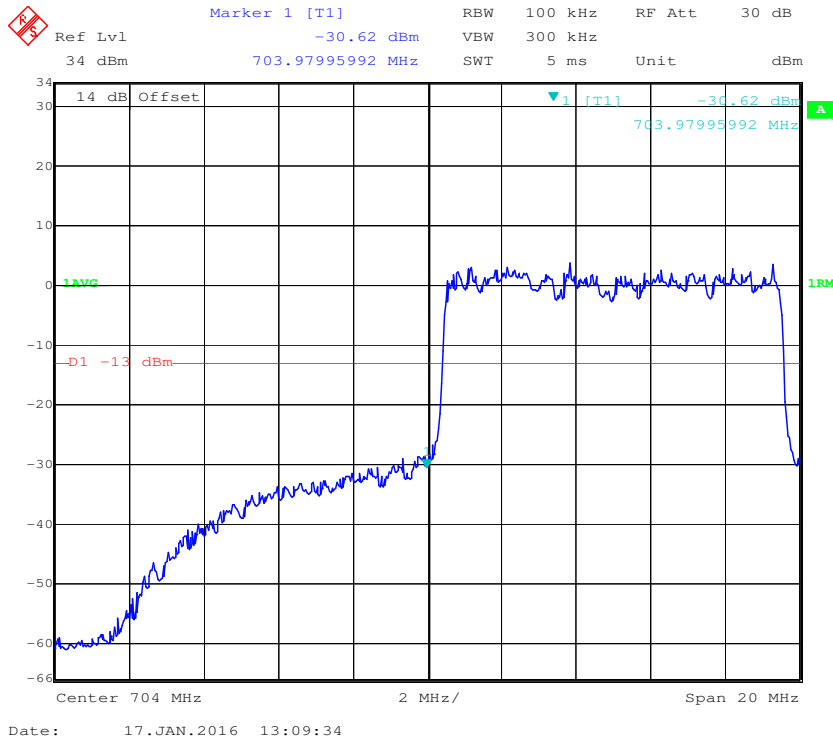
### 16-QAM (5.0 MHz, FULL RB) - Left Band Edge



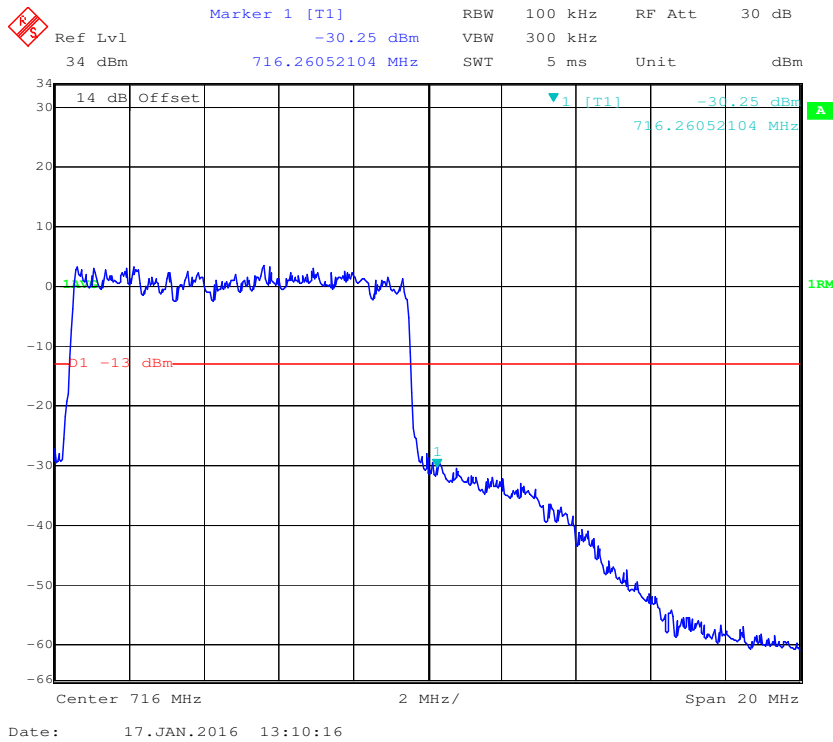
### 16-QAM (5.0 MHz, FULL RB) - Right Band Edge



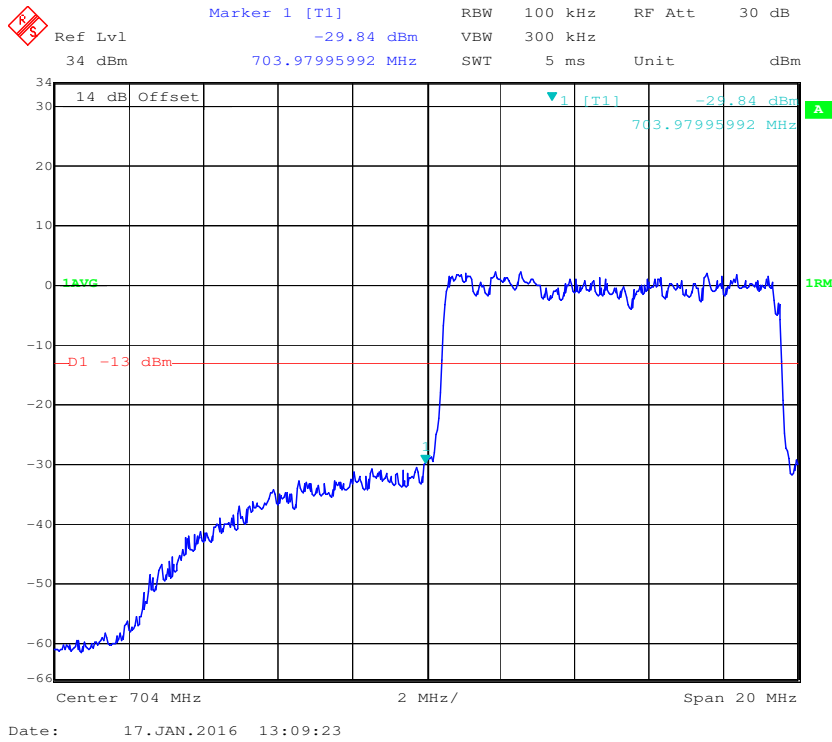
### QPSK (10.0 MHz, FULL RB) - Left Band Edge



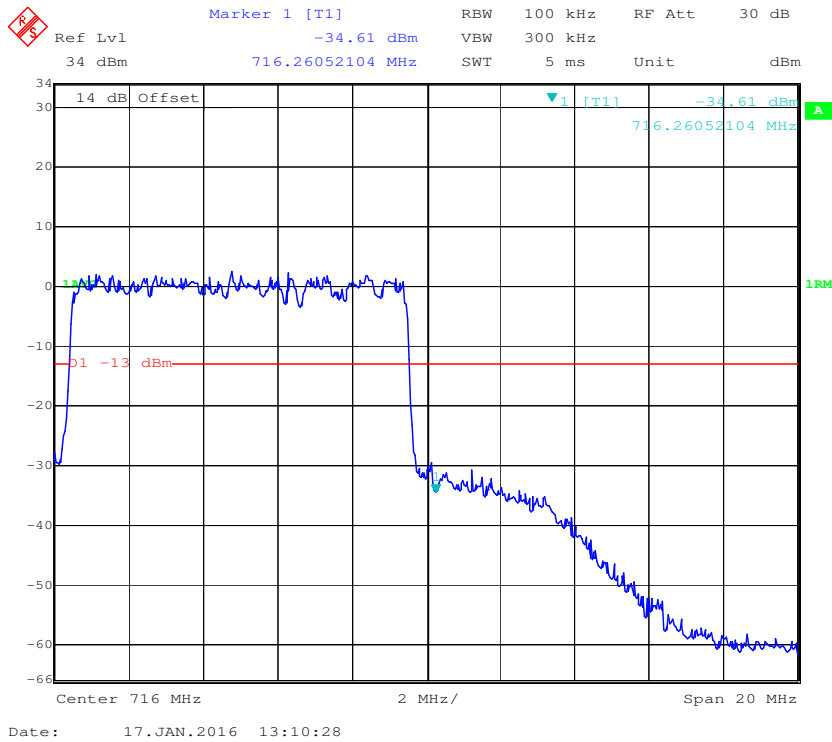
### QPSK (10.0 MHz, FULL RB) - Right Band Edge



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



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



## 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

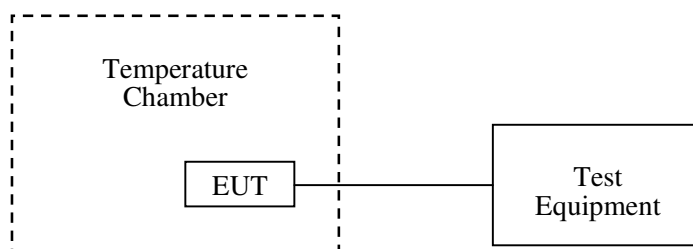
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### 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	2015-11-01	2016-11-01
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23

\* **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>	23 °C
<b>Relative Humidity:</b>	55 %
<b>ATM Pressure:</b>	101.0kPa

*The testing was performed by Haiguo Li on 2016-01-19.*

*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 (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	21	0.02510	2.5
-20		21	0.02510	2.5
-10		18	0.02152	2.5
0		18	0.02152	2.5
10		17	0.02032	2.5
20		17	0.02032	2.5
30		13	0.01554	2.5
40		18	0.02152	2.5
50		20	0.02391	2.5
25		V min.= 3.5	20	0.02391
25	V max.= 4.2	21	0.02510	2.5

**EDGE Mode**

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

**WCDMA Mode**

Middle Channel, $f_0 = 836.6$ MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	20	0.02391	2.5
-20		20	0.02391	2.5
-10		15	0.01793	2.5
0		11	0.01315	2.5
10		11	0.01315	2.5
20		15	0.01793	2.5
30		17	0.02032	2.5
40		17	0.02032	2.5
50		17	0.02032	2.5
25		V min.= 3.5	20	0.02391
25	V max.= 4.2	20	0.02391	2.5

**PCS Band (Part 24E)**

**GSM Mode**

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	30	0.01596	pass
-20		30	0.01596	pass
-10		29	0.01543	pass
0		29	0.01543	pass
10		28	0.01489	pass
20		23	0.01223	pass
30		28	0.01489	pass
40		28	0.01489	pass
50		29	0.01543	pass
25		V min.= 3.5	30	0.01596
25	V max.= 4.2	30	0.01596	pass

**EDGE Mode**

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	30	0.01596	pass
-20		30	0.01596	pass
-10		27	0.01436	pass
0		27	0.01436	pass
10		21	0.01117	pass
20		21	0.01117	pass
30		29	0.01543	pass
40		29	0.01543	pass
50		29	0.01543	pass
25	V min.= 3.5	30	0.01596	pass
25	V max.= 4.2	30	0.01596	pass

**WCDMA Mode**

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	23	0.01223	pass
-20		23	0.01223	pass
-10		21	0.01117	pass
0		21	0.01117	pass
10		18	0.00957	pass
20		15	0.00798	pass
30		15	0.00798	pass
40		15	0.00798	pass
50		18	0.00957	pass
25	V min.= 3.5	23	0.01223	pass
25	V max.= 4.2	23	0.01223	pass

**AWS Band**

<b>Middle Channel, <math>f_0 = 1732.6</math> MHz</b>				
<b>Temperature (°C)</b>	<b>Power Supplied (V<sub>DC</sub>)</b>	<b>Frequency Error (Hz)</b>	<b>Frequency Error (ppm)</b>	<b>Limit (ppm)</b>
-30	3.8	23	0.01327	pass
-20		23	0.01327	pass
-10		21	0.01212	pass
0		21	0.01212	pass
10		19	0.01097	pass
20		19	0.01097	pass
30		19	0.01097	pass
40		13	0.00750	pass
50		21	0.01212	pass
-30		21	0.01212	pass
25		V min.= 3.5	23	0.01327
25	V max.= 4.2	23	0.01327	pass

**Band 2:**

	Temperature (°C)	QPSK (Hz)	QPSK (ppm)	Result
<b>10.0 MHz, Middle Channel</b>	-30	32	0.01702	Pass
	-20	32	0.01702	Pass
	-10	25	0.01330	Pass
	0	26	0.01383	Pass
	10	26	0.01383	Pass
	20	28	0.01543	Pass
	30	31	0.01649	Pass
	40	31	0.01649	Pass
	50	32	0.01702	Pass
	Voltage (V <sub>DC</sub> )	QPSK (Hz)	QPSK (ppm)	Result
	3.8	25	0.01330	Pass
	3.5	32	0.01702	Pass
	4.2	32	0.01702	Pass

**Band 4:**

	Temperature (°C)	QPSK (Hz)	QPSK (ppm)	Result
<b>10.0 MHz, Middle Channel</b>	-30	30	0.01732	Pass
	-20	30	0.01732	Pass
	-10	28	0.01616	Pass
	0	28	0.01616	Pass
	10	24	0.01385	Pass
	20	24	0.01385	Pass
	30	21	0.01212	Pass
	40	21	0.01212	Pass
	50	21	0.01212	Pass
	Voltage (V <sub>DC</sub> )	QPSK (Hz)	QPSK (ppm)	Result
	3.8	30	0.01732	Pass
	3.5	30	0.01732	Pass
	4.2	30	0.01732	Pass

**Band 5:**

	Temperature (°C)	QPSK (Hz)	QPSK (ppm)	Result
<b>10.0 MHz, Middle Channel</b>	-30	20	0.02391	Pass
	-20	20	0.02391	Pass
	-10	18	0.02152	Pass
	0	18	0.02152	Pass
	10	16	0.01913	Pass
	20	16	0.01913	Pass
	30	12	0.01435	Pass
	40	12	0.01435	Pass
	50	12	0.01435	Pass
	Voltage (V <sub>DC</sub> )	QPSK (Hz)	QPSK (ppm)	Result
	3.8	20	0.02391	Pass
	3.5	20	0.02391	Pass
	4.2	20	0.02391	Pass

**Band 7:**

	Temperature (°C)	QPSK (Hz)	QPSK (ppm)	Result
<b>10.0 MHz, Middle Channel</b>	-30	28	0.01105	Pass
	-20	28	0.01105	Pass
	-10	28	0.01105	Pass
	0	23	0.00907	Pass
	10	23	0.00907	Pass
	20	23	0.00907	Pass
	30	21	0.00828	Pass
	40	21	0.00828	Pass
	50	21	0.00828	Pass
	Voltage (V <sub>DC</sub> )	QPSK (Hz)	QPSK (ppm)	Result
	3.8	25	0.00986	Pass
	3.5	28	0.01105	Pass
	4.2	28	0.01105	Pass

**Band 17:**

	Temperature (°C)	QPSK (Hz)	QPSK (ppm)	Result
<b>10.0 MHz, Middle Channel</b>	-30	17	0.02394	Pass
	-20	17	0.02394	Pass
	-10	17	0.02394	Pass
	0	11	0.00986	Pass
	10	11	0.01268	Pass
	20	11	0.01268	Pass
	30	13	0.01831	Pass
	40	13	0.01831	Pass
	50	13	0.01831	Pass
	Voltage (V <sub>DC</sub> )	QPSK (Hz)	QPSK (ppm)	Result
	3.8	13	0.01831	Pass
	3.5	17	0.02394	Pass
	4.2	17	0.02394	Pass



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## **PRODUCT SIMILARITY DECLARATION LETTER**

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Shenzhen Jingwah Information Technology Co., Ltd.  
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TEL: 0755-83975295 FAX: 0755-83204874

### **Product Similarity Declaration**

To Whom It May Concern,

We, Shenzhen Jingwah Information Technology Co., Ltd. , hereby declare that we have a product named as Smart Phone(Model no: S60L) was tested by BACL, meanwhile, for our marketing purpose, we would like to list a series model (S60, P600) on reports and certificate, all the models are identical schematics, except for the different Model No.

No other changes are made to them.

We confirm that all information above is true, and we'll be responsible for all the consequences. Please contact me if you have any question.

Signature:

Sun MingXue



Manager

2016/1/22

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