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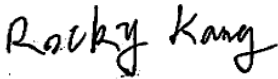
## TEST REPORT

For

**Shandong USR IOT Technology Limited**

Floor 11, Aosheng Building 1, Xinluo Street, Jinan, Shandong, China

**IC: 23410-G806**

<b>Report Type:</b> Original Report	<b>Product Type:</b> 4G Router
<b>Report Number:</b> RSZ171011002-08B	
<b>Report Date:</b> 2017-12-18	
<b>Reviewed By:</b> RF Engineer	Rocky Kang 
<b>Prepared By:</b> Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>	

**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Shenzhen).

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## GENERAL INFORMATION

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

The *Shandong USR IOT Technology Limited's* product, model number: *USR-G806 (IC: 23410-G806)* or the "EUT" in this report was a *4G Router*, which was measured approximately: 110 mm (L) × 99 mm (W) × 30 mm (H), rated with input voltage: DC 12V from adapter.

#### Adapter Information:

Model: SOY-1200100US

Input: AC 100-240V, 50/60Hz, 0.3A

Output: DC 12V, 1.0 A

*Notes: This series products model: USR-G800, USR-G807, USR-G808, USR-G781, USR-G805, USR-G809, USR-G786, USR-G788 and USR-G806 are electrically identical, and only are different for model name. Model USR-G806 was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.*

*\*All measurement and test data in this report was gathered from production sample serial number: 1702223 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2017-10-11.*

### Objective

This test report is prepared on behalf of *Shandong USR IOT Technology Limited* in accordance with RSS-130, RSS-132, RSS-133, RSS-139 of the Innovation, science and Economic Development Canada.

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

RSS-247 submissions with IC: 23410-G806 .

### Test Methodology

All tests and measurements indicated in this document were performed in accordance with the RSS-130, RSS-132, RSS-133, RSS-139, RSS-199 and TIA/EIA 603-D.

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

**Measurement Uncertainty**

Parameter		uncertainty
Occupied Channel Bandwidth		$\pm 5\%$
RF output power, conducted		$\pm 1.5\text{dB}$
Unwanted Emission, conducted		$\pm 1.5\text{dB}$
Emissions, radiated	Below 1GHz	$\pm 4.70\text{dB}$
	Above 1GHz	$\pm 4.80\text{dB}$
Temperature		$\pm 1^\circ\text{C}$
Supply voltages		$\pm 0.4\%$

**Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 382179, the FCC Designation No. : CN5001.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

## SYSTEM TEST CONFIGURATION

### Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

### Equipment Modifications

No modifications were made to the unit tested.

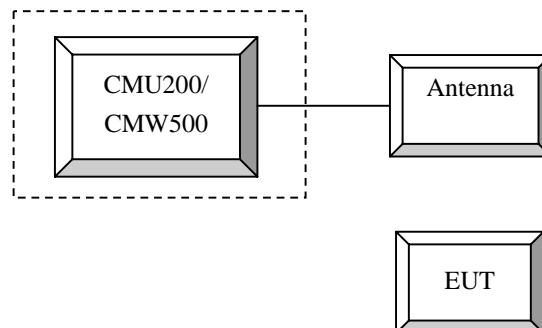
### EUT Exercise Software

No exercise software was used.

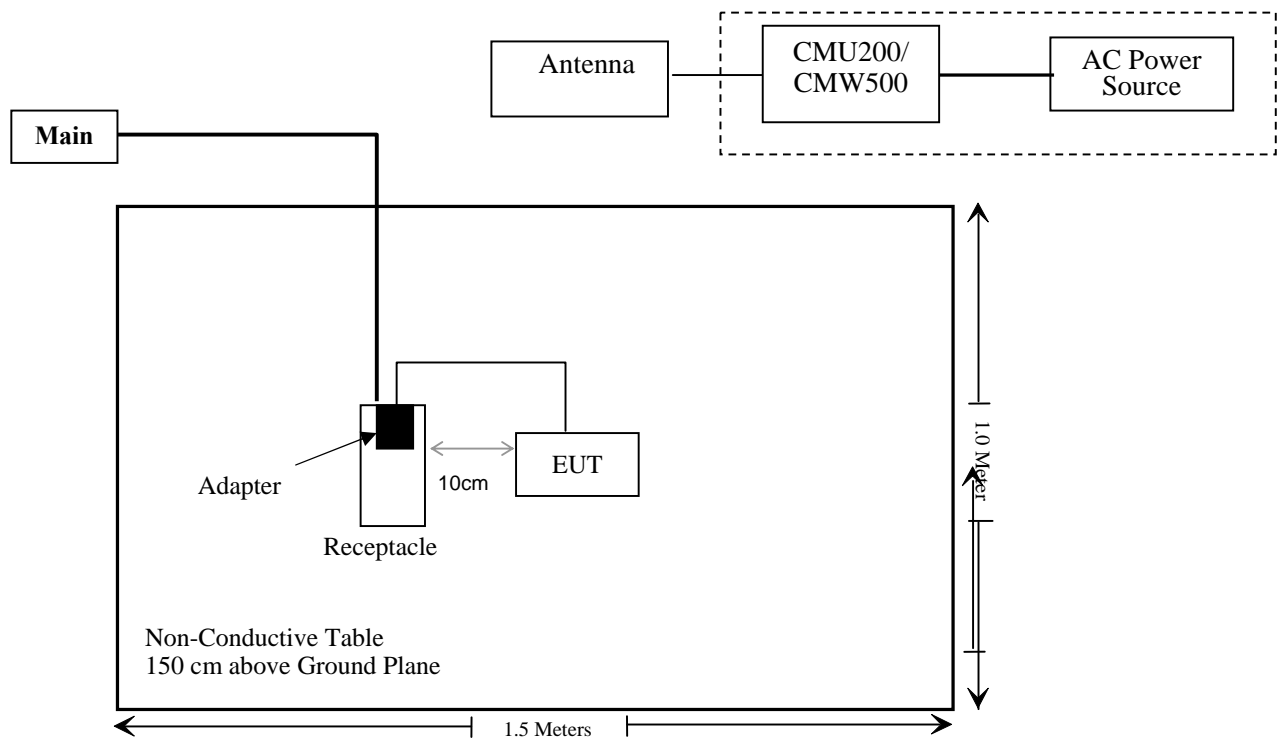
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891
Rohde & Schwarz	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh

### Configuration of Test Setup



## Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

<b>RSS-130/RSS-132/RSS-133/RSS-139 / RSS-Gen/RSS-102 Rules</b>	<b>Description of Test</b>	<b>Result</b>
RSS-102 § 4	Exposure Limits	Compliance
RSS-130 §4.2 RSS-132 §5.1 RSS-133 §6.1 RSS-139 §6.1	Channeling Arrangements Frequency Plan	Compliance
RSS-130 §4.1 RSS-132 §5.2 RSS-133 §6.2 RSS-139 §6.2	Types of Modulation	Compliance
RSS-130 §4.3 RSS-132 §5.3 RSS-133 §6.3 RSS-139 §6.4 RSS-Gen §6.11	Frequency Stability	Compliance
RSS-130 §4.4 RSS-132 §5.4 RSS-133 §6.4 RSS-139 §6.5 SRSP 503: §5.1.2 RSS-Gen §6.12	Transmitter Output Power	Compliance
RSS-Gen §6.6	Occupied Bandwidth	Compliance
RSS-130 §4.6 RSS-132 §5.5 RSS-133 §6.5 RSS-139 §6.6 RSS-Gen §6.13	Transmitter Unwanted Emissions	Compliance

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
<b>Radiated Emission Test</b>					
Sunol Sciences	Horn Antenna	DRH-118	A052604	2014-12-29	2017-12-28
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2017-04-24	2018-04-24
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-17	2017-12-16
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2017-05-21	2018-05-21
HP	Amplifier	HP8447E	1937A01046	2017-11-21	2018-05-19
Anritsu	Signal Generator	68369B	004114	2016-12-05	2017-12-05
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2016-12-07	2017-12-07
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	104PEA	218124002	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	RG-214	1	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	RG-214	2	2017-11-22	2018-05-22
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-04	2014-12-29	2017-12-28
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2014-12-29	2017-12-28
Ducommun technologies	Pre-amplifier	ALN-22093530-01	991373-01	2017-08-03	2018-08-03



Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
<b>RF Conducted Test</b>					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2016-12-05	2017-12-05
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2017-12-05	2018-12-05
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2017-11-22	2018-11-22
Fluke	Digital Multimeter	287	19000011	2017-04-09	2018-04-09
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
Rohde & Schwarz	Wideband Radio Communication Tester	CMU200	106891	2017-10-18	2018-10-18
Ducommun technologies	RF Cable	RG-214	3	2017-11-22	2018-05-22
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2017-08-19	2018-08-19
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2017-04-24	2018-04-24

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

## RSS-102 § 4 –EXPOSURE LIMITS

### Applicable Standard

According to RSS-102 §4:

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m <sup>2</sup> )	Reference Period (minutes)
0.003-10 <sup>21</sup>	83	90	-	Instantaneous*
0.1-10	-	0.73/ <i>f</i>	-	6**
1.1-10	87/ <i>f</i> <sup>0.5</sup>	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	58.07/ <i>f</i> <sup>0.25</sup>	0.1540/ <i>f</i> <sup>0.25</sup>	8.944/ <i>f</i> <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 <i>f</i> <sup>0.3417</sup>	0.008335 <i>f</i> <sup>0.3417</sup>	0.02619 <i>f</i> <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> <sup>1.2</sup>
150000-300000	0.158 <i>f</i> <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> <i>f</i> <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> <i>f</i>	616000/ <i>f</i> <sup>1.2</sup>

**Note:** *f* is frequency in MHz.  
 \* Based on nerve stimulation (NS).  
 \*\* Based on specific absorption rate (SAR).

### Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (m)	Power Density (W/m <sup>2</sup> )	MPE Limit (W/m <sup>2</sup> )
	(dBi)	(numeric)	(dBm)	(W)			
2412-2472 WIFI	3.0	2.00	15	0.032	0.2	0.127	5.37
1850-1910 WCDMA	3.5	2.24	23.5	0.224	0.2	0.999	4.48
1710-1755 WCDMA	3.5	2.24	23.5	0.224	0.2	0.999	4.24
824-849 WCDMA	3.5	2.24	23.5	0.224	0.2	0.999	2.58
1850-1910 LTE	3.5	2.24	24	0.251	0.2	1.119	4.48
1710-1755 LTE	3.5	2.24	24	0.251	0.2	1.119	4.24
699-716 LTE	3.5	2.24	24	0.251	0.2	1.119	2.30

Note: WIFI Data comes from the DTS report.

Simultaneous transmitting consideration for PCB & WIFI:

$$\sum_i \frac{S_i}{S_{Limit,i}} = 1.119/2.3 + 0.127/5.37 = 0.51 < 1.0$$

To maintain compliance with the RF exposure guidelines, place the equipment at least 20cm from nearby persons

**So the RF Exposure evaluation can be exempted.**

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## **RSS-130 §4.2 & RSS-132 §5.1 & RSS-133 §6.1 & RSS-139 §6.1 - CHANNELLING ARRANGEMENTS & FREQUENCY PLAN**

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### **Applicable Standard**

According to RSS-130 §4.2, the frequency bands 698-756 MHz and 777-787 MHz are divided into small frequency blocks as per SRSP-518. Equipment shall operate according to the frequency plan given in the SRSP.

According to RSS-132 §5.1, Equipment certified under this Standard may employ any channeling arrangement that which is deemed suitable by the service provider, however, such a channeling arrangement shall meet all relevant conditions specified in SRSP-503.

According to RSS-133 §6.1, the frequency plan can be found in Standard Radio System Plan 510 (SRSP-510).

According to RSS-139 §6.1, the frequency plan is described in SRSP-513.

### **Test Result**

Channeling arrangement meets all relevant conditions specified in SRSP-503, SRSP-510, SRSP-513, SRSP-517 and SRSP-518.

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## **RSS-130 §4.1 & RSS-132 §5.2 & RSS-133 §6.2 & RSS-139 §6.2 - TYPES OF MODULATION**

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### **Applicable Standard**

According to RSS-130 §4.1, equipment certified under this standard shall employ digital modulation.

According to RSS-132 §5.2, equipment certified under this standard shall use digital modulation.

According to RSS-133 §6.2, the devices shall employ digital modulation techniques.

According to RSS-139 §6.2, the devices may employ any type of modulation techniques. The type of modulation used must be reported.

### **Test Result**

The EUT uses GMSK & QPSK & BPSK & 16QAM modulation.

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**RSS-130 §4.3 & RSS-132 §5.3 & RSS-133 §6.3 & RSS-139 §6.4 & RSS-GEN §6.11 - FREQUENCY STABILITY**

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**Applicable Standard**

According to RSS-130 §4.3

The transmitter frequency stability limit shall be determined as follows:

- (a) The frequency offset shall be measured according to the procedure described in RSS-Gen and recorded;
- (b) Using a resolution bandwidth of 1% of the occupied bandwidth, a reference point at the unwanted emission level which complies with the attenuation of  $43 + 10 \log_{10} p$  (watts) on the emission mask of the lowest and highest channel shall be selected, and the frequency at these points shall be recorded as  $f_L$  and  $f_H$  respectively.

According to RSS-132 §5.3

The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations and  $\pm 1.5$  ppm for base stations.

In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the occupied bandwidth stays within each of the sub-bands (see Section 5.1) when tested to the temperature and supply voltage variations specified in RSS-Gen.

According to RSS-133 §6.3

The carrier frequency shall not depart from the reference frequency, in excess of  $\pm 2.5$  ppm for mobile stations and  $\pm 1.0$  ppm for base stations.

In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

According to RSS-139 §6.4

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

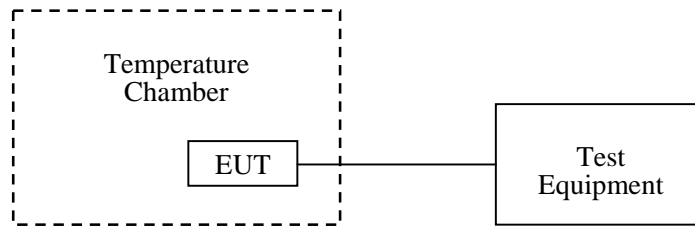
**Test Procedure**

**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:** An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then

decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



## Test Data

### Environmental Conditions

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

The testing was performed by Kobe Li on 2017-10-12.

### Cellular Band WCDMA Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (Vac)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	120	2	0.002391	2.5
-20		-1	-0.001195	2.5
-10		-3	-0.003586	2.5
0		1	0.001195	2.5
10		2	0.002391	2.5
20		0	0.000000	2.5
30		-1	-0.001195	2.5
40		3	0.003586	2.5
50		1	0.001195	2.5
25	V min.= 102	4	0.004781	2.5
	V max.= 138	6	0.007172	2.5

**PCS Band  
WCDMA Mode**

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (Vac)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	120	2	0.001064	2.5
-20		-1	-0.000532	2.5
-10		2	0.001064	2.5
0		-2	-0.001064	2.5
10		-3	-0.001596	2.5
20		2	0.001064	2.5
30		-1	-0.000532	2.5
40		4	0.002128	2.5
50		5	0.002660	2.5
25	V min.= 102	3	0.001596	2.5
	V max.= 138	6	0.003191	2.5

**AWS Band  
WCDMA Mode**

Temperature (°C)	Voltage Supplied (Vac)	$f_L$ (MHz)	$f_H$ (MHz)	Limit (MHz)	
-30	120	1710.0043	1754.9556	1710	1755
-20		1710.0048	1754.9555	1710	1755
-10		1710.0046	1754.9552	1710	1755
0		1710.0045	1754.9558	1710	1755
10		1710.0043	1754.9554	1710	1755
20		1710.0042	1754.9558	1710	1755
30		1710.0045	1754.9551	1710	1755
40		1710.0048	1754.9553	1710	1755
50		1710.0049	1754.9558	1710	1755
25	V min.= 102	1710.0053	1754.9557	1710	1755
	V max.= 138	1710.0039	1754.9552	1710	1755



**LTE:**  
**QPSK:**

**Band 2:**

QPSK 20.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (Vac)	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	120	2	0.001064	pass
-20		-4	-0.002128	pass
-10		2	0.001064	pass
0		-3	-0.001596	pass
10		-1	-0.000532	pass
20		1	0.000532	pass
30		-2	-0.001064	pass
40		3	0.001596	pass
50		6	0.003191	pass
20	V min.= 102	5	0.002660	pass
	V max.= 138	9	0.004787	pass

**Band 4:**

QPSK 20.0 MHz					
Temperature (°C)	Voltage Supplied (Vac)	$f_L$ (MHz)	$f_H$ (MHz)	Limit (MHz)	
-30	120	1710.5449	1754.4878	1710	1755
-20		1710.5445	1754.4875	1710	1755
-10		1710.5442	1754.4871	1710	1755
0		1710.5444	1754.4876	1710	1755
10		1710.5441	1754.4879	1710	1755
20		1710.5448	1754.4872	1710	1755
30		1710.5440	1754.4869	1710	1755
40		1710.5445	1754.4875	1710	1755
50		1710.5443	1754.4872	1710	1755
25	V min.= 102	1710.5439	1754.4865	1710	1755
	V max.= 138	1710.5452	1754.4883	1710	1755

**Band 12:**

QPSK 10.0 MHz Middle Channel, $f_{\text{offset}}=11\text{Hz}$					
Temperature (°C)	Voltage Supplied (Vac)	$f_L - f_{\text{offset}}$ (MHz)	$f_H + f_{\text{offset}}$ (MHz)	Limit (MHz)	
-30	120	699.0643	715.9677	699	716
-20		699.0645	715.9675	699	716
-10		699.0649	715.9671	699	716
0		699.0648	715.9674	699	716
10		699.0645	715.9672	699	716
20		699.0641	715.9679	699	716
30		699.0644	715.9676	699	716
40		699.0643	715.9674	699	716
50		699.0646	715.9675	699	716
25	V min.= 102	699.0639	715.9668	699	716
	V max.= 138	699.0648	715.9683	699	716

**16QAM:****Band 2:**

16QAM 20.0 MHz Middle Channel, $f_o=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (Vac)	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	120	1	0.000532	1
-20		2	0.001064	2
-10		-1	-0.000532	-1
0		1	0.000532	1
10		-2	-0.001064	-2
20		-1	-0.000532	-1
30		2	0.001064	2
40		-2	-0.001064	-2
50		-1	-0.000532	-1
20	V min.= 102	2	0.001064	pass
	V max.= 138	-1	-0.000532	pass

**Band 4:**

16QAM 20.0 MHz Middle Channel					
Temperature (°C)	Voltage Supplied (Vac)	$f_L$ (MHz)	$f_H$ (MHz)	Limit (MHz)	
-30	120	1710.5448	1754.4878	1710	1755
-20		1710.5444	1754.4874	1710	1755
-10		1710.5443	1754.4873	1710	1755
0		1710.5446	1754.4872	1710	1755
10		1710.5442	1754.4875	1710	1755
20		1710.5440	1754.4874	1710	1755
30		1710.5444	1754.4868	1710	1755
40		1710.5439	1754.4873	1710	1755
50		1710.5442	1754.4878	1710	1755
25	V min.= 102	1710.5436	1754.4864	1710	1755
	V max.= 138	1710.5454	1754.4882	1710	1755

**Band 12:**

16QAM 10.0 MHz Middle Channel, $f_{\text{offset}}=11\text{Hz}$					
Temperature (°C)	Voltage Supplied (Vac)	$f_L - f_{\text{offset}}$ (MHz)	$f_H + f_{\text{offset}}$ (MHz)	Limit (MHz)	
-30	120	699.1609	715.9035	699	716
-20		699.1608	715.9032	699	716
-10		699.1604	715.9034	699	716
0		699.1613	715.9037	699	716
10		699.1608	715.9036	699	716
20		699.1603	715.9038	699	716
30		699.1606	715.9032	699	716
40		699.1601	715.9031	699	716
50		699.1608	715.9032	699	716
25	V min.= 102	699.1616	715.9039	699	716
	V max.= 138	699.1601	715.9035	699	716

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**RSS-130 §4.4 & RSS-132 §5.4 & RSS-133 §6.4 & RSS-139 §6.5 & RSS-GEN §6.12 - TRANSMITTER OUTPUT POWER**

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**Applicable Standard**

According to RSS-130 §4.4

The transmitter output power shall be measured in terms of average power.

For base and fixed equipment, refer to SRSP-518 for power limits.

The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

According to RSS-132 §5.4

The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts. Refer to SRSP-503 for base station e.i.r.p. limits.

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

According to RSS-133 §6.4

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts. Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p.

In addition, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

According to RSS-139 §6.5

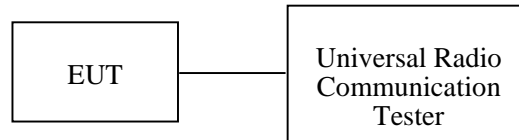
The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt. Consult SRSP-513 for e.i.r.p. limits on fixed and base stations operating in the band 2110-2180 MHz.

In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

## Test Procedure

### Conducted method:

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



### Radiated method:

TIA 603-D section 2.2.17

## Test Data

### Environmental Conditions

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

The testing was performed by Kobe Li on 2017-10-12.

## Conducted Power

### Cellular Band

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		22.36	22.54	22.40
		HSDPA	1	21.25	21.50	21.34
			2	21.43	21.66	21.46
			3	21.25	21.47	21.28
			4	21.40	21.59	21.48
		HSUPA	1	21.25	21.32	21.23
			2	21.17	21.20	21.16
			3	21.30	21.42	21.33
			4	21.13	21.27	21.20
			5	21.31	21.36	21.26
		HSPA+	1	21.67	21.85	21.82

**PCS Band**

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	RMC12.2k		22.16	22.05	22.29
		HSDPA	1	21.06	21.94	21.22
			2	21.21	21.11	21.35
			3	21.11	21.01	21.24
			4	21.26	21.09	21.37
		HSUPA	1	21.04	20.90	21.16
			2	21.00	20.79	21.11
			3	21.12	21.01	21.19
			4	20.95	20.86	21.09
			5	21.14	21.01	21.25
		HSPA+	1	20.46	20.37	20.62

**AWS Band**

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band IV)	Normal	RMC12.2k		21.15	21.32	21.66
		HSDPA	1	20.02	20.20	20.56
			2	20.22	20.44	20.74
			3	20.09	20.22	20.57
			4	20.20	20.41	20.75
		HSUPA	1	20.51	20.48	20.47
			2	20.43	20.39	20.44
			3	20.59	20.52	20.57
			4	20.40	20.35	20.36
			5	20.55	20.55	20.56
		HSPA+	1	20.65	20.78	20.88

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

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.15	13
	Middle	3.21	13
	High	3.13	13
HSDPA (16QAM)	Low	3.10	13
	Middle	3.18	13
	High	3.05	13
HSUPA (BPSK)	Low	3.01	13
	Middle	2.93	13
	High	2.85	13
HSPA+	Low	3.22	13
	Middle	3.01	13
	High	2.99	13

**PCS Band**

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.18	13
	Middle	2.92	13
	High	3.09	13
HSDPA (16QAM)	Low	3.16	13
	Middle	2.89	13
	High	3.02	13
HSUPA (BPSK)	Low	3.12	13
	Middle	2.86	13
	High	2.97	13
HSPA+	Low	2.68	13
	Middle	2.76	13
	High	2.93	13

**AWS Band**

<b>Mode</b>	<b>Channel</b>	<b>PAR (dB)</b>	<b>Limit (dB)</b>
RMC (BPSK)	Low	3.12	13
	Middle	3.16	13
	High	3.09	13
HSDPA (16QAM)	Low	3.05	13
	Middle	3.09	13
	High	3.03	13
HSUPA (BPSK)	Low	2.95	13
	Middle	2.98	13
	High	2.92	13
HSPA+	Low	3.12	13
	Middle	3.15	13
	High	3.25	13



**Radiated Power****WCDMA Mode:**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP, WCDMA Band V, Middle Channel										
836.6	82.04	262	1.0	H	15.4	0.8	0.0	14.5	38.45	23.95
836.6	85.02	32	1.0	V	20.8	0.8	0.0	20.0	38.45	18.45
EIRP, WCDMA Band II, Middle Channel										
1880.00	82.00	89	2.2	H	12.0	1.30	8.50	19.20	33	13.8
1880.00	84.49	48	1.2	V	14.2	1.30	8.50	21.40	33	11.6
EIRP for WCDMA Band IV, Middle Channel										
1732.60	85.44	265	2.2	H	12.3	1.30	9.10	20.10	30	9.9
1732.60	88.39	341	1.3	V	15.8	1.30	9.10	23.60	30	6.4

**Note:**

All above data were tested with no amplifier.

Absolute Level = Substituted 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	22.65	22.63	22.58
		RB Size=1, RB Offset=2	22.52	22.53	22.61
		RB Size=1, RB Offset=5	22.28	22.56	22.56
		RB Size=3, RB Offset=0	22.40	22.34	22.32
		RB Size=3, RB Offset=1	22.25	22.31	22.20
		RB Size=3, RB Offset=2	22.18	22.14	22.16
		RB Size=6, RB Offset=0	22.13	22.13	22.10
	16QAM	RB Size=1, RB Offset=0	22.17	22.15	22.08
		RB Size=1, RB Offset=2	22.02	22.02	21.94
		RB Size=1, RB Offset=5	21.99	21.92	22.95
		RB Size=3, RB Offset=0	21.75	21.70	22.86
		RB Size=3, RB Offset=1	21.77	21.84	21.81
		RB Size=3, RB Offset=2	21.78	21.78	21.75
		RB Size=6, RB Offset=0	21.70	21.65	21.76
3.0	QPSK	RB Size=1, RB Offset=0	22.80	22.74	22.82
		RB Size=1, RB Offset=7	22.73	22.64	22.74
		RB Size=1, RB Offset=14	22.55	22.61	22.76
		RB Size=8, RB Offset=0	21.86	21.84	21.90
		RB Size=8, RB Offset=4	21.77	21.68	21.77
		RB Size=8, RB Offset=7	21.56	21.58	21.70
		RB Size=15, RB Offset=0	21.77	21.72	21.76
	16QAM	RB Size=1, RB Offset=0	22.08	22.06	22.00
		RB Size=1, RB Offset=7	22.07	21.96	22.00
		RB Size=1, RB Offset=14	22.16	21.78	21.89
		RB Size=8, RB Offset=0	20.84	20.77	20.88
		RB Size=8, RB Offset=4	20.62	20.75	20.88
		RB Size=8, RB Offset=7	20.39	20.58	20.78
		RB Size=15, RB Offset=0	20.72	20.72	20.75

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	22.83	22.78	22.83
		RB Size=1, RB Offset=12	22.76	22.74	22.66
		RB Size=1, RB Offset=24	22.50	22.84	22.43
		RB Size=12, RB Offset=0	21.80	21.78	21.85
		RB Size=12, RB Offset=6	21.81	21.70	21.68
		RB Size=12, RB Offset=11	21.81	21.50	21.72
		RB Size=25, RB Offset=0	21.72	21.69	21.73
	16QAM	RB Size=1, RB Offset=0	21.98	21.56	21.64
		RB Size=1, RB Offset=12	21.79	21.36	21.68
		RB Size=1, RB Offset=24	21.80	21.37	21.53
		RB Size=12, RB Offset=0	20.78	20.74	20.75
		RB Size=12, RB Offset=6	20.76	20.67	20.64
		RB Size=12, RB Offset=11	20.55	20.46	20.56
		RB Size=25, RB Offset=0	20.73	20.68	20.72
10.0	QPSK	RB Size=1, RB Offset=0	22.79	22.76	22.69
		RB Size=1, RB Offset=24	22.73	22.79	22.62
		RB Size=1, RB Offset=49	22.60	22.68	22.58
		RB Size=25, RB Offset=0	21.77	21.73	21.70
		RB Size=25, RB Offset=12	21.75	21.67	21.63
		RB Size=25, RB Offset=24	21.82	21.54	21.50
		RB Size=50, RB Offset=0	21.53	21.51	21.53
	16QAM	RB Size=1, RB Offset=0	21.64	21.61	21.63
		RB Size=1, RB Offset=24	21.60	21.48	21.61
		RB Size=1, RB Offset=49	21.40	21.37	21.69
		RB Size=25, RB Offset=0	22.61	20.66	20.73
		RB Size=25, RB Offset=12	22.49	20.47	20.54
		RB Size=25, RB Offset=24	22.57	20.25	20.33
		RB Size=50, RB Offset=0	20.48	20.46	20.48

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	22.10	22.05	22.34
		RB Size=1, RB Offset=37	22.00	21.92	22.18
		RB Size=1, RB Offset=74	22.01	21.99	22.19
		RB Size=36, RB Offset=0	22.01	21.98	22.01
		RB Size=36, RB Offset=18	22.03	21.94	21.88
		RB Size=36, RB Offset=37	22.10	21.66	21.59
		RB Size=75, RB Offset=0	21.87	21.88	21.99
	16QAM	RB Size=1, RB Offset=0	21.82	21.84	21.70
		RB Size=1, RB Offset=37	21.80	21.83	21.54
		RB Size=1, RB Offset=74	21.76	21.80	21.38
		RB Size=36, RB Offset=0	21.79	21.79	22.02
		RB Size=36, RB Offset=18	21.79	21.68	21.97
		RB Size=36, RB Offset=37	21.53	21.56	21.81
		RB Size=75, RB Offset=0	21.16	21.1	20.97
20.0	QPSK	RB Size=1, RB Offset=0	22.89	22.87	22.95
		RB Size=1, RB Offset=49	22.90	22.85	22.83
		RB Size=1, RB Offset=99	22.77	22.80	22.76
		RB Size=50, RB Offset=0	21.82	21.79	21.93
		RB Size=50, RB Offset=24	21.79	21.83	21.84
		RB Size=50, RB Offset=49	21.65	21.64	21.64
		RB Size=100, RB Offset=0	21.76	21.75	21.83
	16QAM	RB Size=1, RB Offset=0	22.00	21.95	22.04
		RB Size=1, RB Offset=49	21.93	21.86	21.86
		RB Size=1, RB Offset=99	21.89	21.67	21.87
		RB Size=50, RB Offset=0	20.87	20.84	20.98
		RB Size=50, RB Offset=24	20.75	20.83	20.96
		RB Size=50, RB Offset=49	20.48	20.69	20.87
		RB Size=100, RB Offset=0	20.77	20.77	20.91

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

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.68	13	Pass
QPSK (100RB Size)	5.95	13	Pass
16QAM (1RB Size)	5.65	13	Pass
16QAM (100%RB Size)	6.15	13	Pass

**QPSK:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	76.08	250	2.3	H	6.0	1.30	8.50	13.20	33
1880.00	82.15	336	1.4	V	11.9	1.30	8.50	19.10	33
3 MHz Bandwidth									
1880.00	76.48	303	1.0	H	4.4	1.30	8.50	11.60	33
1880.00	82.37	147	2.1	V	10.7	1.30	8.50	17.90	33
5 MHz Bandwidth									
1880.00	75.95	5	1.6	H	5.9	1.30	8.50	13.10	33
1880.00	81.59	172	2.1	V	11.3	1.30	8.50	18.50	33
10 MHz Bandwidth									
1880.00	78.05	83	2.3	H	8.0	1.30	8.50	15.20	33
1880.00	81.49	288	2.1	V	11.2	1.30	8.50	18.40	33
15 MHz Bandwidth									
1880.00	76.59	250	2.2	H	4.5	1.30	8.50	11.70	33
1880.00	82.36	158	1.8	V	10.7	1.30	8.50	17.90	33
20 MHz Bandwidth									
1880.00	75.81	350	2.1	H	5.8	1.30	8.50	13.00	33
1880.00	81.09	175	2.3	V	10.8	1.30	8.50	18.00	33

**16QAM:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	78.65	20	1.9	H	8.6	1.30	8.50	15.80	33
1880.00	82.34	210	1.6	V	12.1	1.30	8.50	19.30	33
3 MHz Bandwidth									
1880.00	78.18	220	1.5	H	8.1	1.30	8.50	15.30	33
1880.00	83.21	349	2.4	V	12.9	1.30	8.50	20.10	33
5 MHz Bandwidth									
1880.00	78.65	157	2.4	H	8.6	1.30	8.50	15.80	33
1880.00	82.59	325	2.3	V	12.3	1.30	8.50	19.50	33
10 MHz Bandwidth									
1880.00	77.96	336	2.0	H	7.9	1.30	8.50	15.10	33
1880.00	83.12	7	1.8	V	12.9	1.30	8.50	20.10	33
15 MHz Bandwidth									
1880.00	78.38	177	2.5	H	8.3	1.30	8.50	15.50	33
1880.00	82.56	215	2.1	V	12.3	1.30	8.50	19.50	33
20 MHz Bandwidth									
1880.00	78.34	360	1.3	H	8.3	1.30	8.50	15.50	33
1880.00	82.51	211	2.1	V	12.2	1.30	8.50	19.40	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	22.38	22.38	22.49
		RB Size=1, RB Offset=2	22.42	22.22	22.51
		RB Size=1, RB Offset=5	22.39	21.96	22.56
		RB Size=3, RB Offset=0	22.62	22.63	22.64
		RB Size=3, RB Offset=1	22.54	22.58	22.62
		RB Size=3, RB Offset=2	22.43	22.48	22.44
		RB Size=6, RB Offset=0	21.43	21.4	21.39
	16QAM	RB Size=1, RB Offset=0	21.86	21.84	21.91
		RB Size=1, RB Offset=2	21.74	21.79	21.74
		RB Size=1, RB Offset=5	21.71	21.82	21.83
		RB Size=3, RB Offset=0	22.78	21.78	21.74
		RB Size=3, RB Offset=1	22.78	21.66	21.78
		RB Size=3, RB Offset=2	22.58	21.69	21.58
		RB Size=6, RB Offset=0	20.65	20.65	20.67
3.0	QPSK	RB Size=1, RB Offset=0	22.46	22.44	22.41
		RB Size=1, RB Offset=7	22.25	22.36	22.23
		RB Size=1, RB Offset=14	22.31	22.18	22.20
		RB Size=8, RB Offset=0	21.55	21.56	21.62
		RB Size=8, RB Offset=4	21.44	21.42	21.64
		RB Size=8, RB Offset=7	21.30	21.26	21.61
		RB Size=15, RB Offset=0	21.56	21.58	21.64
	16QAM	RB Size=1, RB Offset=0	21.66	21.60	21.55
		RB Size=1, RB Offset=7	21.68	21.57	21.45
		RB Size=1, RB Offset=14	21.67	21.41	21.27
		RB Size=8, RB Offset=0	20.67	20.65	20.71
		RB Size=8, RB Offset=4	20.56	20.56	20.69
		RB Size=8, RB Offset=7	20.59	20.68	20.52
		RB Size=15, RB Offset=0	20.70	20.69	20.70

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	22.66	22.58	22.67
		RB Size=1, RB Offset=12	22.55	22.49	22.56
		RB Size=1, RB Offset=24	22.49	22.48	22.61
		RB Size=12, RB Offset=0	21.75	21.58	21.64
		RB Size=12, RB Offset=6	21.69	21.62	21.63
		RB Size=12, RB Offset=11	21.45	21.67	21.58
		RB Size=25, RB Offset=0	21.71	21.65	21.68
	16QAM	RB Size=1, RB Offset=0	21.90	21.85	21.86
		RB Size=1, RB Offset=12	21.77	21.71	21.66
		RB Size=1, RB Offset=24	21.64	21.68	21.63
		RB Size=12, RB Offset=0	20.87	20.95	20.97
		RB Size=12, RB Offset=6	20.76	20.90	20.84
		RB Size=12, RB Offset=11	20.68	20.68	20.75
		RB Size=25, RB Offset=0	20.80	20.6	20.62
10.0	QPSK	RB Size=1, RB Offset=0	22.69	22.69	22.72
		RB Size=1, RB Offset=24	22.66	22.59	22.72
		RB Size=1, RB Offset=49	22.52	22.65	22.70
		RB Size=25, RB Offset=0	21.73	21.74	21.67
		RB Size=25, RB Offset=12	21.59	21.77	21.70
		RB Size=25, RB Offset=24	21.58	21.48	21.62
		RB Size=50, RB Offset=0	21.78	21.76	21.75
	16QAM	RB Size=1, RB Offset=0	22.13	22.13	22.22
		RB Size=1, RB Offset=24	22.06	22.07	22.23
		RB Size=1, RB Offset=49	22.14	22.09	22.03
		RB Size=25, RB Offset=0	20.80	20.80	20.81
		RB Size=25, RB Offset=12	20.62	20.62	20.86
		RB Size=25, RB Offset=24	20.53	20.65	20.64
		RB Size=50, RB Offset=0	20.88	20.84	20.87



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	22.64	22.54	22.53
		RB Size=1, RB Offset=37	22.62	22.34	22.42
		RB Size=1, RB Offset=74	22.45	22.35	22.42
		RB Size=36, RB Offset=0	21.95	21.86	21.82
		RB Size=36, RB Offset=18	21.85	21.70	21.73
		RB Size=36, RB Offset=37	21.93	21.61	21.69
		RB Size=75, RB Offset=0	21.69	21.53	21.56
	16QAM	RB Size=1, RB Offset=0	21.67	21.56	21.56
		RB Size=1, RB Offset=37	21.57	21.43	21.63
		RB Size=1, RB Offset=74	21.49	21.40	21.48
		RB Size=36, RB Offset=0	20.80	20.64	20.66
		RB Size=36, RB Offset=18	20.75	20.49	20.56
		RB Size=36, RB Offset=37	20.49	20.51	20.45
		RB Size=75, RB Offset=0	20.71	20.68	20.73
20.0	QPSK	RB Size=1, RB Offset=0	22.65	22.36	22.41
		RB Size=1, RB Offset=49	22.60	22.24	22.44
		RB Size=1, RB Offset=99	22.64	22.24	22.16
		RB Size=50, RB Offset=0	21.79	21.85	21.91
		RB Size=50, RB Offset=24	21.75	21.83	21.86
		RB Size=50, RB Offset=49	21.68	21.81	21.74
		RB Size=100, RB Offset=0	21.74	21.45	21.48
	16QAM	RB Size=1, RB Offset=0	22.27	22.16	22.26
		RB Size=1, RB Offset=49	22.11	22.16	22.29
		RB Size=1, RB Offset=99	21.98	22.11	22.32
		RB Size=50, RB Offset=0	21.01	20.98	21.01
		RB Size=50, RB Offset=24	20.95	20.97	20.99
		RB Size=50, RB Offset=49	20.77	20.98	20.96
		RB Size=100, RB Offset=0	20.84	20.75	20.77

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

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.11	13	Pass
QPSK (100RB Size)	5.63	13	Pass
16QAM (1RB Size)	4.93	13	Pass
16QAM (100%RB Size)	5.54	13	Pass

**QPSK:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	81.35	262	2.0	H	8.2	1.30	9.10	16.00	30
1732.50	87.48	40	2.2	V	14.9	1.30	9.10	22.70	30
3 MHz Bandwidth									
1732.50	82.26	77	2.2	H	9.1	1.30	9.10	16.90	30
1732.50	87.31	212	1.3	V	14.7	1.30	9.10	22.50	30
5 MHz Bandwidth									
1732.50	81.38	278	2.4	H	8.2	1.30	9.10	16.00	30
1732.50	86.83	54	2.0	V	14.3	1.30	9.10	22.10	30
10 MHz Bandwidth									
1732.50	82.13	251	1.4	H	9.0	1.30	9.10	16.80	30
1732.50	86.64	57	1.2	V	14.1	1.30	9.10	21.90	30
15 MHz Bandwidth									
1732.50	81.42	13	1.8	H	8.3	1.30	9.10	16.10	30
1732.50	86.78	70	1.1	V	14.2	1.30	9.10	22.00	30
20 MHz Bandwidth									
1732.50	81.59	138	1.0	H	8.4	1.30	9.10	16.20	30
1732.50	86.35	31	2.0	V	13.8	1.30	9.10	21.60	30

**16QAM:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	82.74	329	1.1	H	9.6	1.30	9.10	17.40	30
1732.50	86.78	108	2.1	V	14.2	1.30	9.10	22.00	30
3 MHz Bandwidth									
1732.50	83.45	93	1.2	H	10.3	1.30	9.10	18.10	30
1732.50	87.63	224	1.6	V	15.1	1.30	9.10	22.90	30
5 MHz Bandwidth									
1732.50	82.57	141	2.0	H	9.4	1.30	9.10	17.20	30
1732.50	87.33	288	2.3	V	14.8	1.30	9.10	22.60	30
10 MHz Bandwidth									
1732.50	83.38	92	2.2	H	10.2	1.30	9.10	18.00	30
1732.50	87.97	74	1.8	V	15.4	1.30	9.10	23.20	30
15 MHz Bandwidth									
1732.50	82.28	153	1.7	H	9.1	1.30	9.10	16.90	30
1732.50	87.02	73	1.6	V	14.5	1.30	9.10	22.30	30
20 MHz Bandwidth									
1732.50	83.26	249	1.9	H	10.1	1.30	9.10	17.90	30
1732.50	87.12	349	1.8	V	14.6	1.30	9.10	22.40	30

**LTE Band 12:**

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	22.97	22.99	22.96
		RB Size=1, RB Offset=2	22.97	23.03	23.01
		RB Size=1, RB Offset=5	22.88	22.87	22.83
		RB Size=3, RB Offset=0	23.01	23.02	23.09
		RB Size=3, RB Offset=1	22.91	23.01	23.06
		RB Size=3, RB Offset=2	22.70	22.77	22.96
		RB Size=6, RB Offset=0	21.99	21.97	21.95
	16QAM	RB Size=1, RB Offset=0	21.94	21.93	21.96
		RB Size=1, RB Offset=2	21.92	21.89	21.80
		RB Size=1, RB Offset=5	21.92	21.65	21.65
		RB Size=3, RB Offset=0	22.14	22.11	22.16
		RB Size=3, RB Offset=1	22.03	22.13	22.09
		RB Size=3, RB Offset=2	21.85	22.09	22.05
		RB Size=6, RB Offset=0	20.91	20.93	20.96
3	QPSK	RB Size=1, RB Offset=0	22.96	22.96	22.92
		RB Size=1, RB Offset=7	22.76	22.98	22.85
		RB Size=1, RB Offset=14	22.50	22.74	22.67
		RB Size=8, RB Offset=0	22.05	22.00	22.02
		RB Size=8, RB Offset=4	22.02	21.88	22.02
		RB Size=8, RB Offset=7	22.08	21.81	21.82
		RB Size=15, RB Offset=0	22.03	21.99	22.06
	16QAM	RB Size=1, RB Offset=0	22.41	22.42	22.52
		RB Size=1, RB Offset=7	22.27	22.30	22.52
		RB Size=1, RB Offset=14	22.18	22.10	22.31
		RB Size=8, RB Offset=0	21.14	21.10	21.11
		RB Size=8, RB Offset=4	21.05	21.04	21.09
		RB Size=8, RB Offset=7	21.10	21.01	21.17
		RB Size=15, RB Offset=0	21.09	21.04	21.07

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB Size=1, RB Offset=0	21.97	21.97	22.00
		RB Size=1, RB Offset=12	21.95	21.86	21.81
		RB Size=1, RB Offset=24	21.87	21.82	21.76
		RB Size=12, RB Offset=0	21.17	21.12	21.14
		RB Size=12, RB Offset=6	20.96	21.11	21.06
		RB Size=12, RB Offset=11	20.70	21.10	20.96
		RB Size=25, RB Offset=0	22.01	21.97	21.96
	16QAM	RB Size=1, RB Offset=0	21.93	21.93	21.97
		RB Size=1, RB Offset=12	21.84	21.73	21.92
		RB Size=1, RB Offset=24	21.95	21.59	21.93
		RB Size=12, RB Offset=0	21.17	21.12	21.17
		RB Size=12, RB Offset=6	20.96	21.05	21.10
		RB Size=12, RB Offset=11	20.90	20.96	20.91
		RB Size=25, RB Offset=0	21.07	21.03	21.08
10	QPSK	RB Size=1, RB Offset=0	23.04	23.01	23.02
		RB Size=1, RB Offset=24	23.05	22.96	22.89
		RB Size=1, RB Offset=49	22.95	23.00	22.80
		RB Size=25, RB Offset=0	22.03	21.99	21.94
		RB Size=25, RB Offset=12	21.97	21.95	22.02
		RB Size=25, RB Offset=24	21.74	21.86	21.83
		RB Size=50, RB Offset=0	22.04	22.02	22.06
	16QAM	RB Size=1, RB Offset=0	22.59	22.58	22.54
		RB Size=1, RB Offset=24	22.53	22.38	22.45
		RB Size=1, RB Offset=49	22.43	22.20	22.23
		RB Size=25, RB Offset=0	21.10	21.09	21.12
		RB Size=25, RB Offset=12	20.96	21.16	20.97
		RB Size=25, RB Offset=24	20.97	21.22	20.92
		RB Size=50, RB Offset=0	21.09	21.05	21.11

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

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.64	13	Pass
QPSK (50RB Size)	5.89	13	Pass
16QAM (1RB Size)	5.86	13	Pass
16QAM (100%RB Size)	6.15	13	Pass

**EIRP:****QPSK:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
707.5	76.21	53	2.2	H	16.2	0.6	0.0	15.6	37
707.5	80.15	323	2.3	V	21.1	0.6	0.0	20.5	37
3 MHz Bandwidth									
707.5	77.65	161	1.7	H	17.6	0.6	0.0	17.0	37
707.5	80.65	166	2.2	V	21.6	0.6	0.0	21.0	37
5 MHz Bandwidth									
707.5	78.36	355	2.4	H	18.3	0.6	0.0	17.7	37
707.5	81.21	249	1.5	V	22.1	0.6	0.0	21.5	37
10 MHz Bandwidth									
707.5	77.56	122	1.9	H	17.5	0.6	0.0	16.9	37
707.5	80.65	302	1.4	V	21.6	0.6	0.0	21.0	37

**16QAM:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
707.5	78.45	360	2.1	H	18.4	0.6	0.0	17.8	37
707.5	80.35	216	2.1	V	21.3	0.6	0.0	20.7	37
3 MHz Bandwidth									
707.5	77.56	136	1.8	H	17.5	0.6	0.0	16.9	37
707.5	81.02	190	1.5	V	22.0	0.6	0.0	21.4	37
5 MHz Bandwidth									
707.5	78.54	265	2.3	H	18.5	0.6	0.0	17.9	37
707.5	80.65	280	1.1	V	21.6	0.6	0.0	21.0	37
10 MHz Bandwidth									
707.5	77.55	45	2.0	H	17.5	0.6	0.0	16.9	37
707.5	80.21	70	1.7	V	21.1	0.6	0.0	20.5	37

**Note:**

All above data were tested with no amplifier

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

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**RSS-130 §4.6 & RSS-132 §5.5 & RSS-133 §6.5 & RSS-139 §6.6 & RSS-GEN §6.13 - TRANSMITTER UNWANTED EMISSIONS**

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**Applicable Standard**

According to RSS-130 §4.6

The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least  $43 + 10 \log_{10} p$  (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

In addition to the limit outlined in Section 4.6.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

- (i)  $76 + 10 \log_{10} p$  (watts), dB, for base and fixed equipment, and
- (ii)  $65 + 10 \log_{10} p$  (watts), dB, for mobile and portable equipment.

(b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

According to RSS-132 §5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

- (i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts).
- (ii) (ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

According to RSS-133 §6.5

Equipment shall comply with the limits in (i) and (ii) below.

- (i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts).
- (ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.



According to RSS-139 §6.6

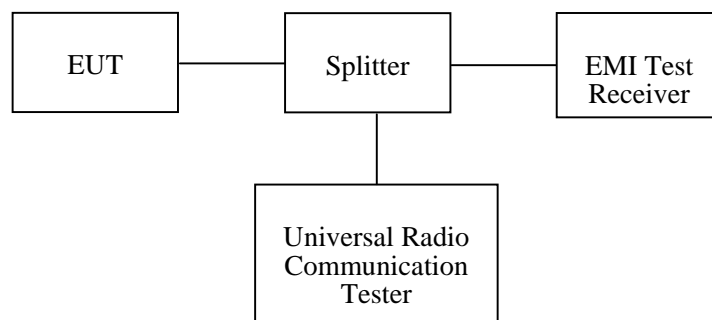
(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} P$  (watts) dB.

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} P$  (watts) dB.

## Test Procedure

### Conducted:

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



**Radiated:**

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 =  $10 \lg(\text{TXpwr in Watts}/0.001)$  – the absolute level

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

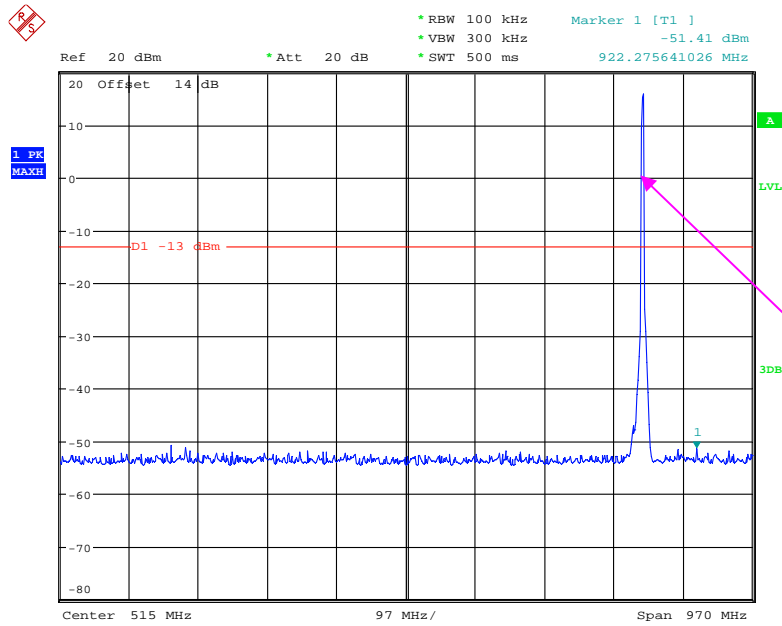
**Test Data****Environmental Conditions**

<b>Temperature:</b>	24~25 °C
<b>Relative Humidity:</b>	48~50 %
<b>ATM Pressure:</b>	100.0~101.0 kPa

*The testing was performed by Kobe Li from 2017-10-12 to 2017-12-20.*

# Cellular Band

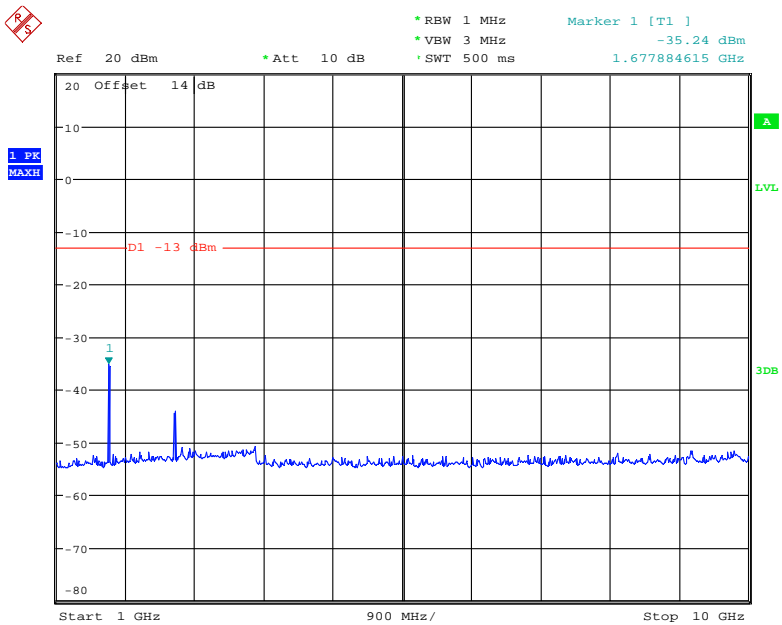
## 30 MHz – 1 GHz (WCDMA Mode)



Fundamental test

Date: 12.OCT.2017 22:12:30

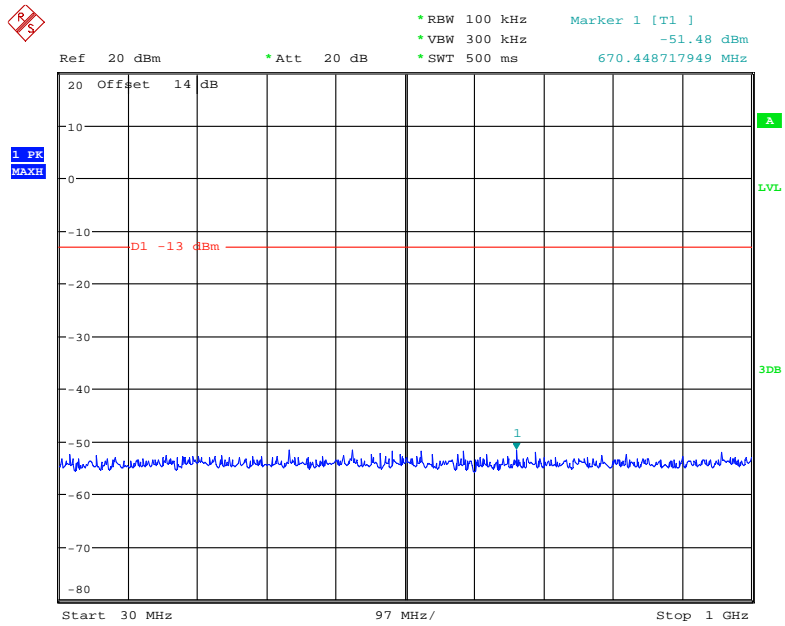
## 1 GHz – 10 GHz (WCDMA Mode)



Date: 12.OCT.2017 22:14:06

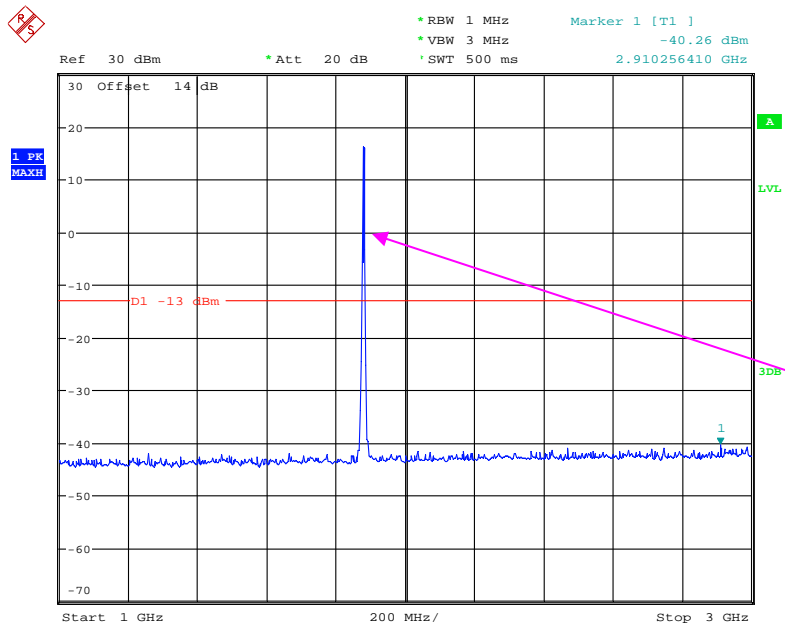
PCS Band

30 MHz – 1 GHz (WCDMA Mode)



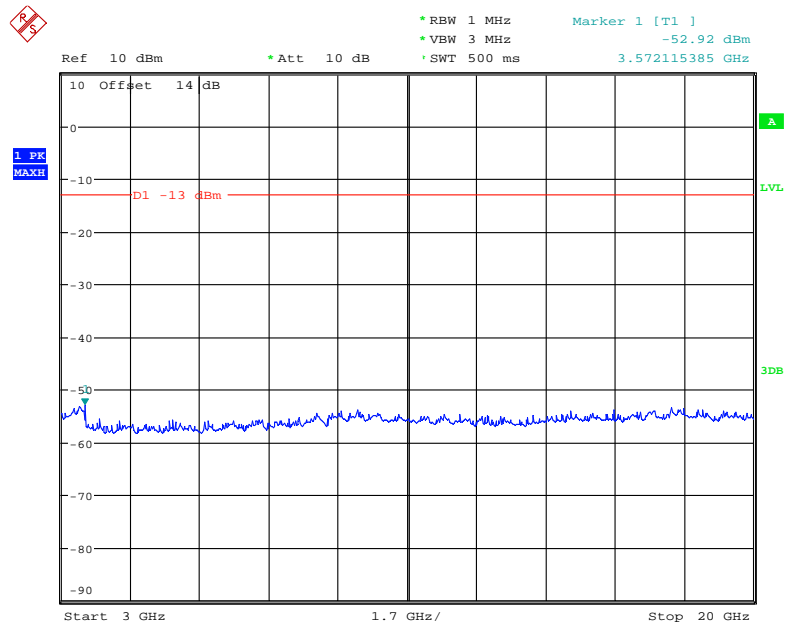
Date: 12.OCT.2017 22:08:05

1 GHz – 3 GHz (WCDMA Mode)



Date: 12.OCT.2017 22:18:11

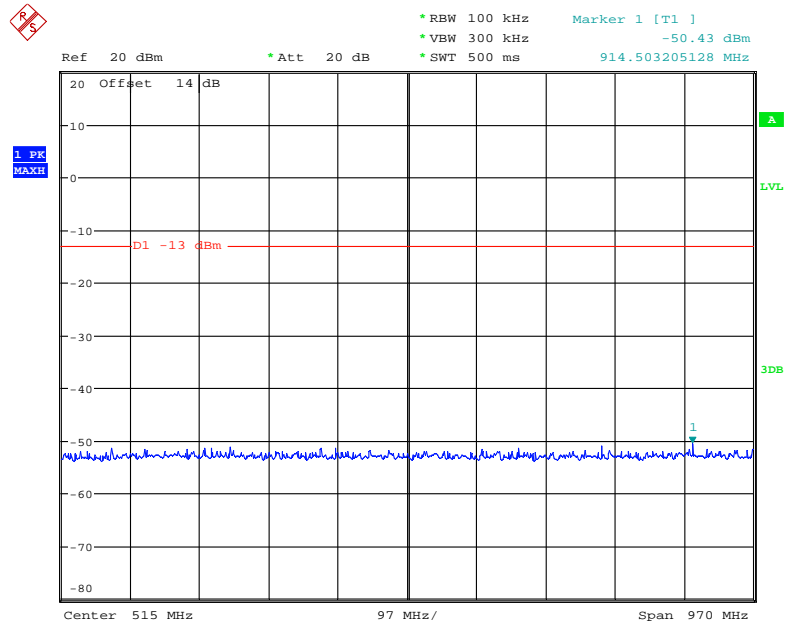
### 3 GHz – 20 GHz (WCDMA Mode)



Date: 12.OCT.2017 22:18:54

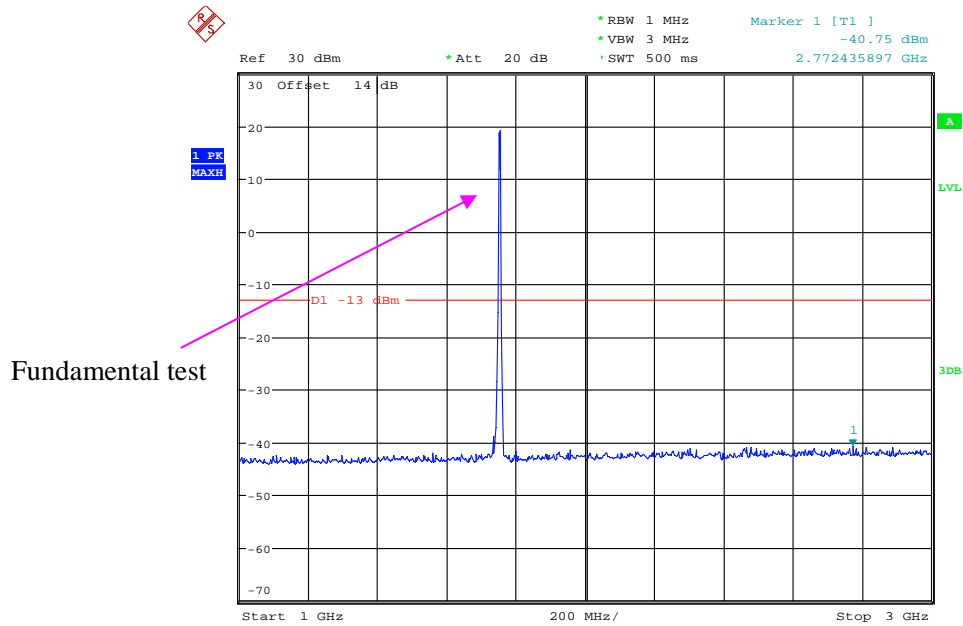
### AWS Band

### 30 MHz – 1 GHz (WCDMA Mode)



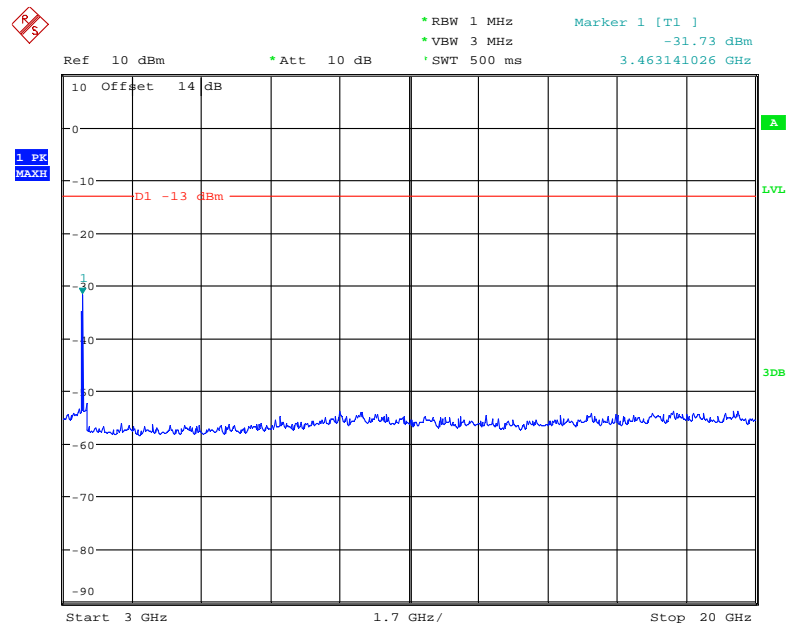
Date: 12.OCT.2017 22:10:07

### 1 GHz – 3 GHz (WCDMA Mode)



Date: 12.OCT.2017 22:15:16

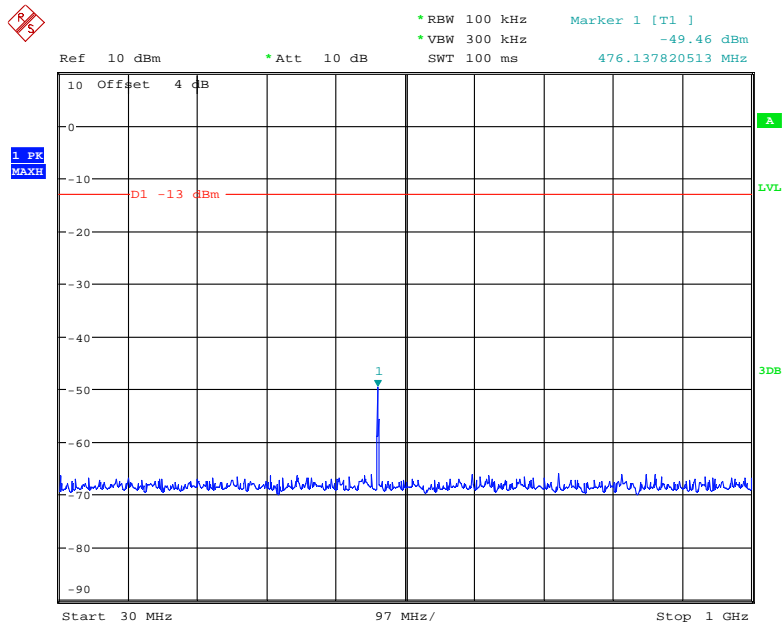
### 3 GHz – 20 GHz (WCDMA Mode)



Date: 12.OCT.2017 22:20:02

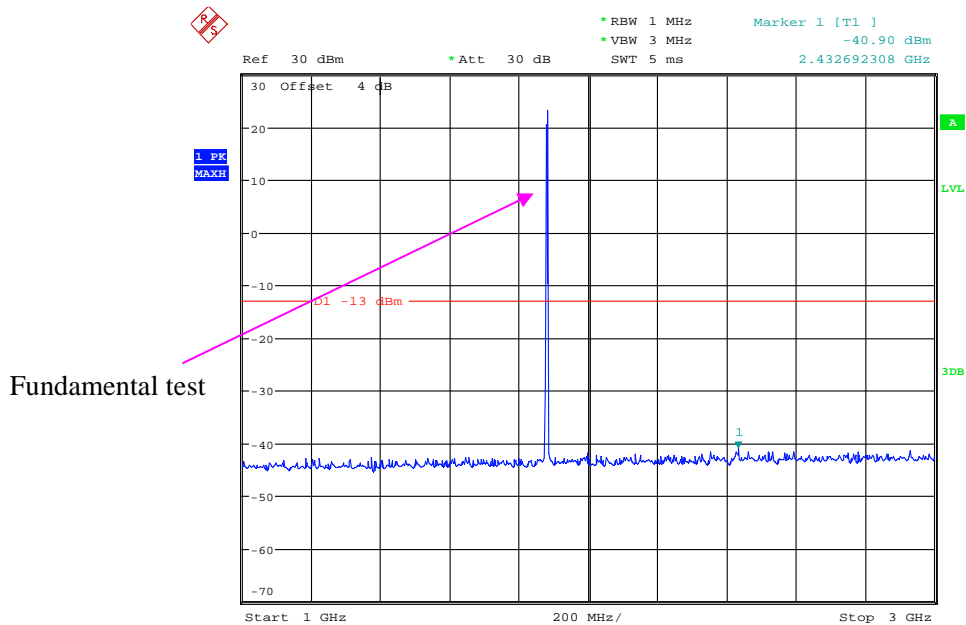
**LTE Band 2:**

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



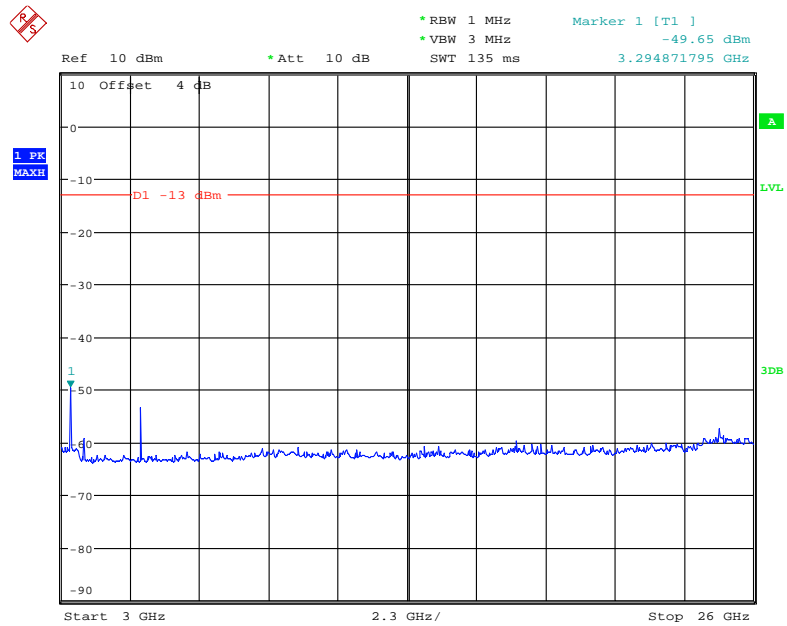
Date: 15.OCT.2017 16:52:42

**1 GHz - 3 GHz (1.4 MHz, Middle Channel)**



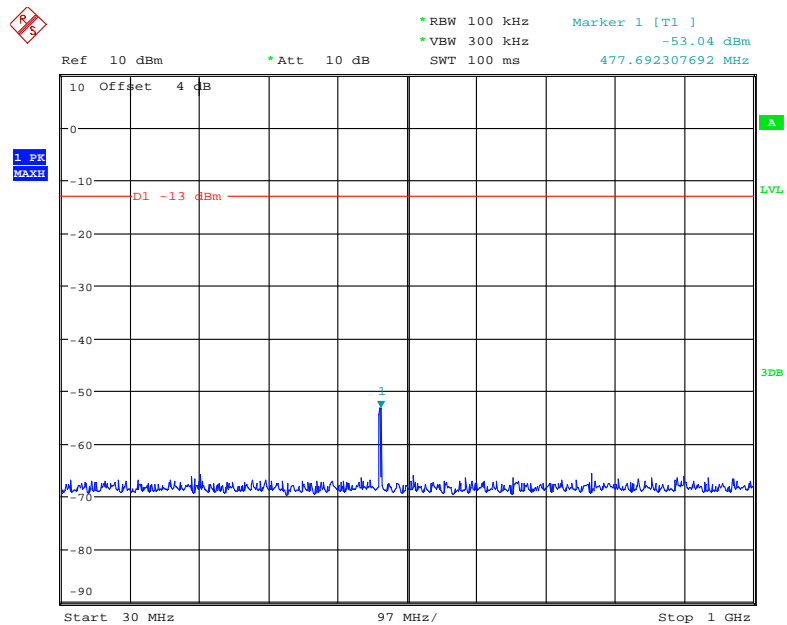
Date: 15.OCT.2017 17:00:03

### 3 GHz – 26 GHz (1.4 MHz, Middle Channel)



Date: 15.OCT.2017 17:08:46

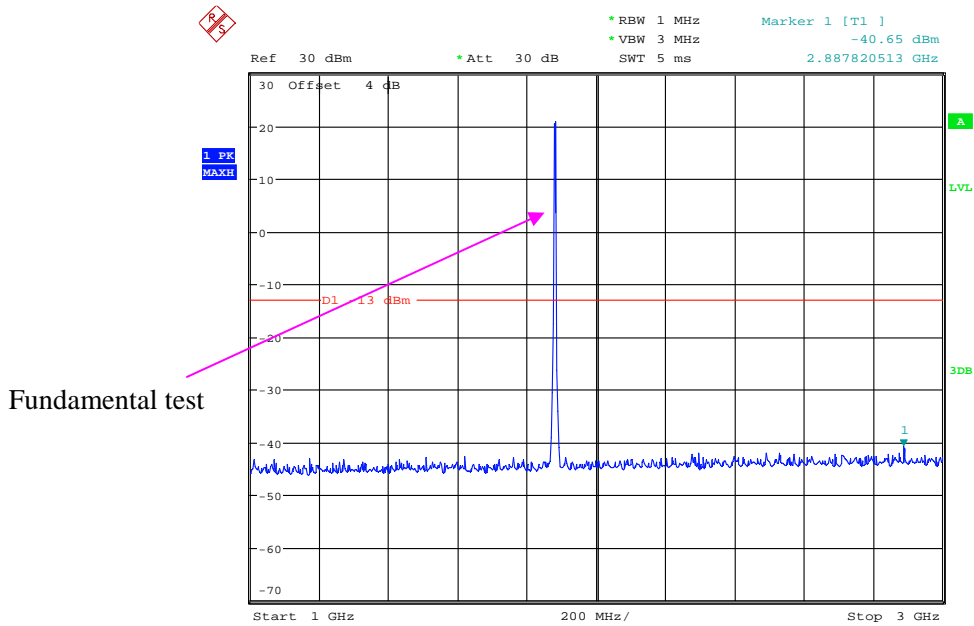
### 30 MHz - 1 GHz (3.0 MHz, Middle Channel)



Date: 15.OCT.2017 16:52:56

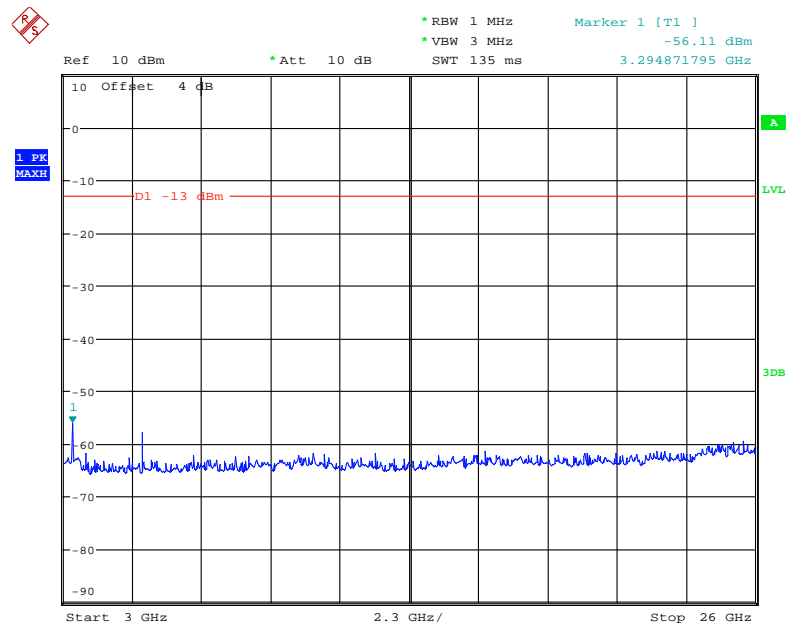


### 1 GHz – 3 GHz (3.0 MHz, Middle Channel)



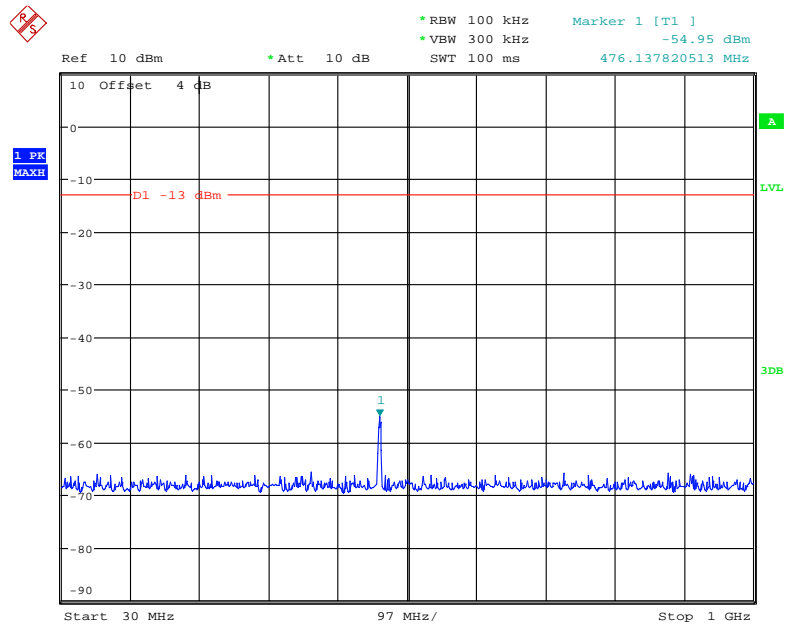
Date: 15.OCT.2017 17:00:31

### 3 GHz – 26 GHz (3.0 MHz, Middle Channel)



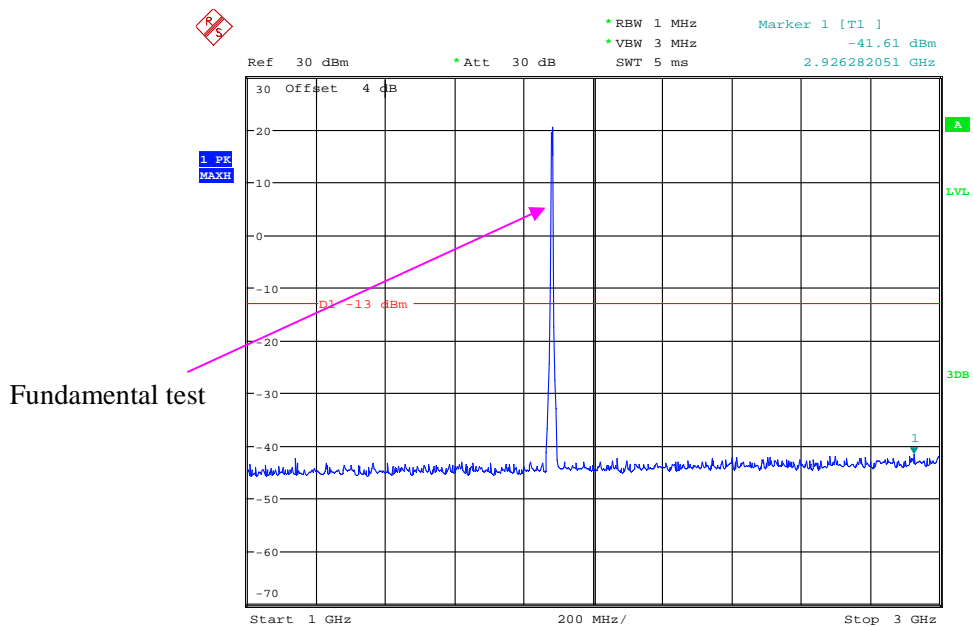
Date: 15.OCT.2017 17:07:10

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



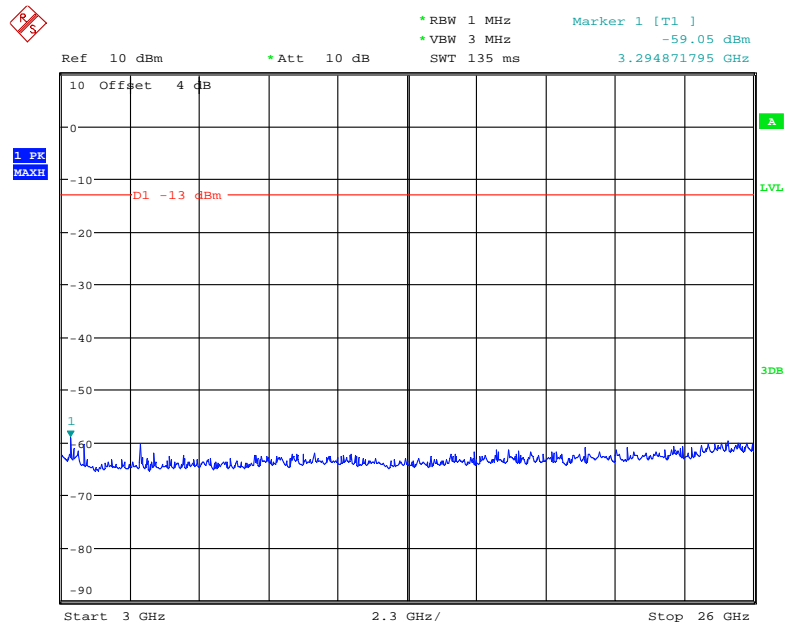
Date: 15.OCT.2017 16:53:09

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



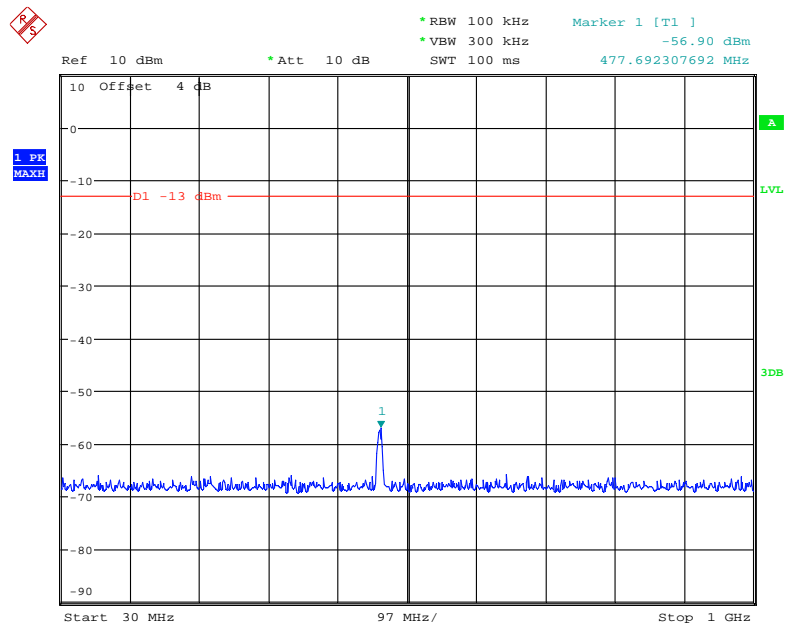
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### 3 GHz – 26 GHz (5.0 MHz, Middle Channel)



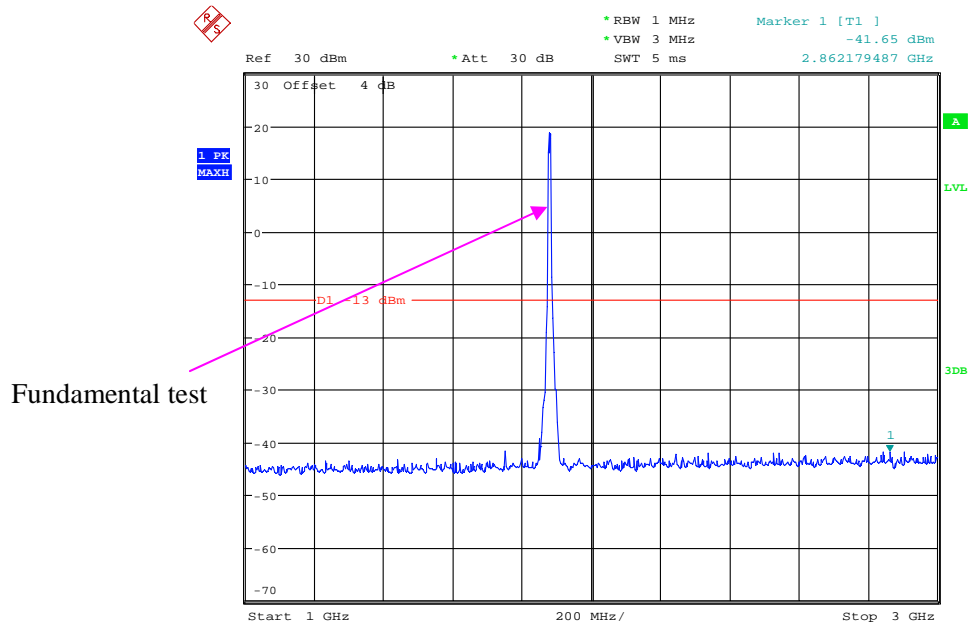
Date: 15.OCT.2017 17:07:00

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



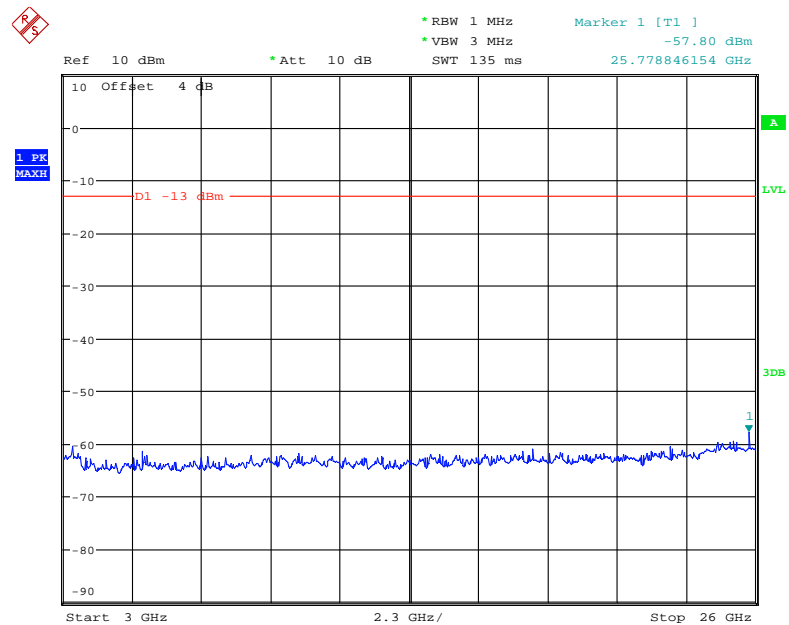
Date: 15.OCT.2017 16:53:24

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



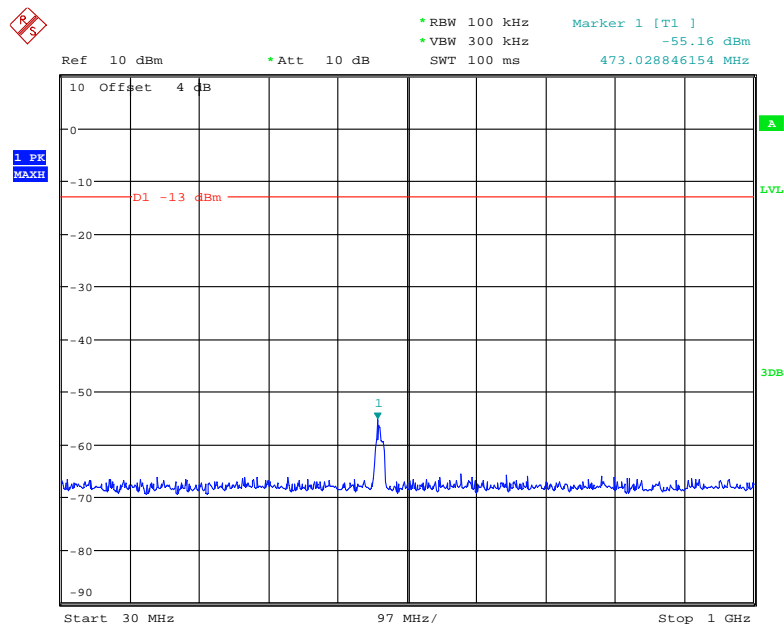
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### 3 GHz – 26 GHz (10.0 MHz, Middle Channel)



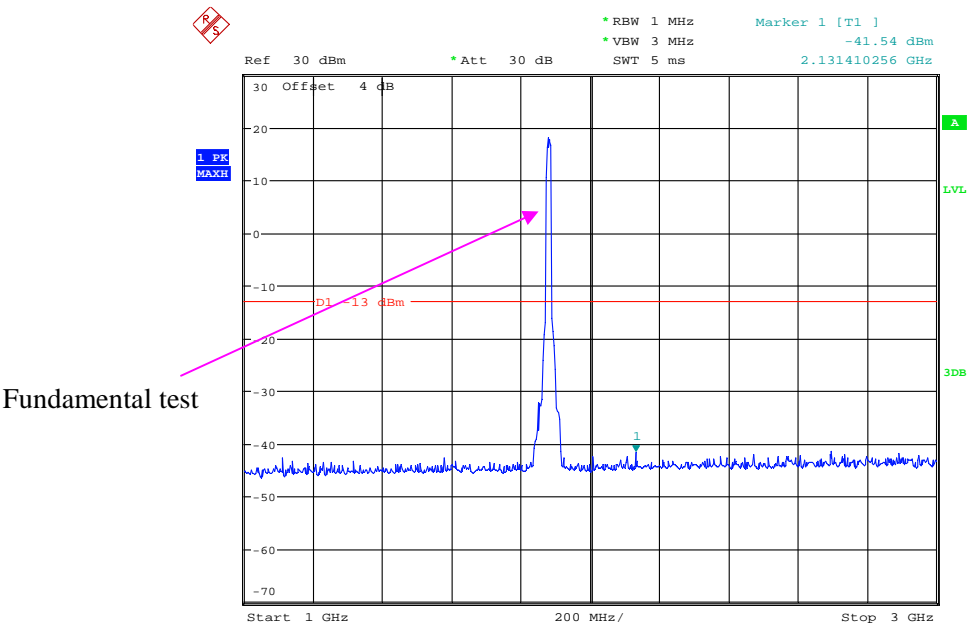
Date: 15.OCT.2017 17:06:48

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



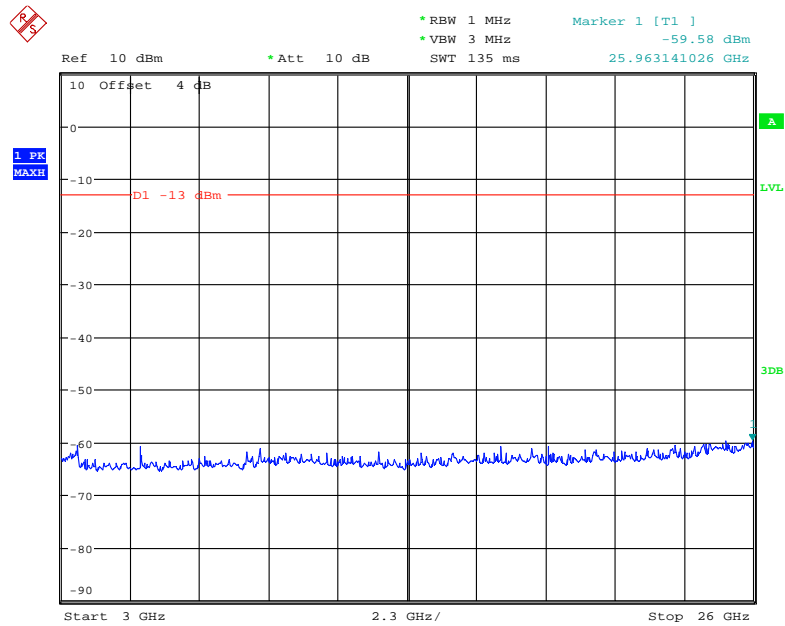
Date: 15.OCT.2017 16:53:40

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



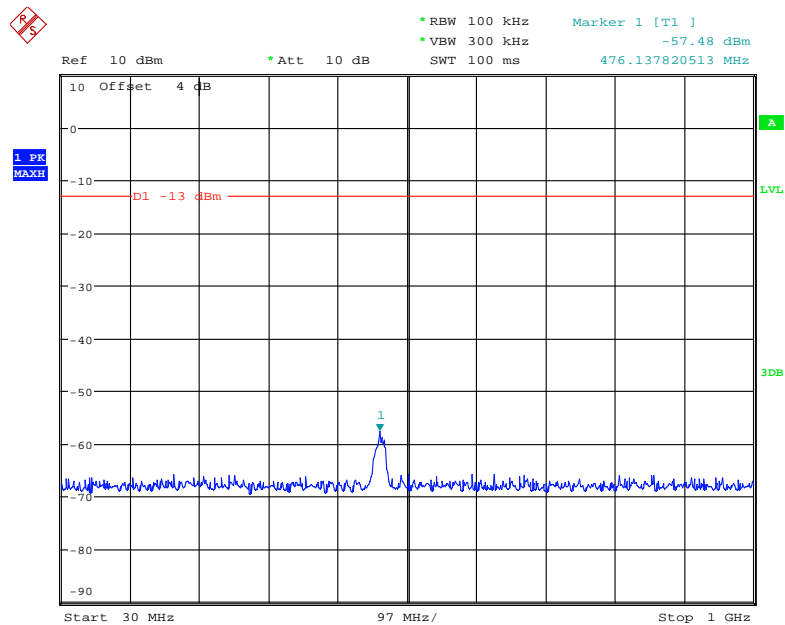
Date: 15.OCT.2017 17:01:26

### 3 GHz – 26 GHz (15.0 MHz, Middle Channel)



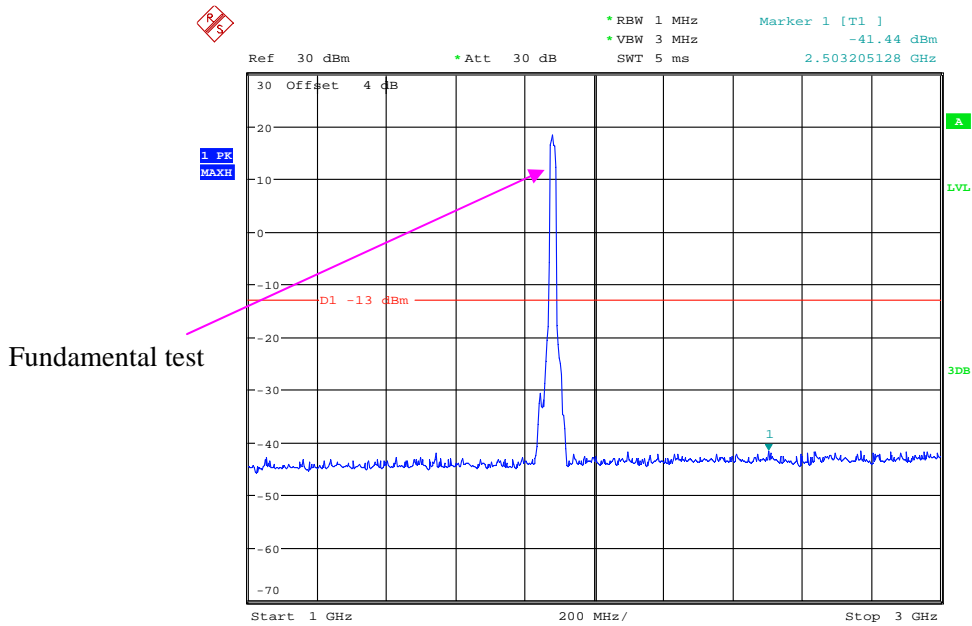
Date: 15.OCT.2017 17:06:34

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



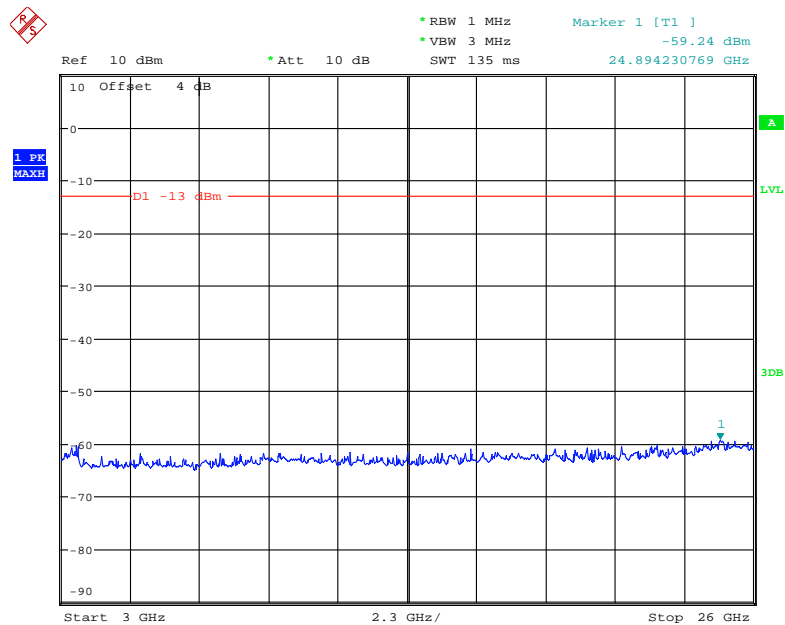
Date: 15.OCT.2017 16:53:56

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



Date: 15.OCT.2017 17:01:59

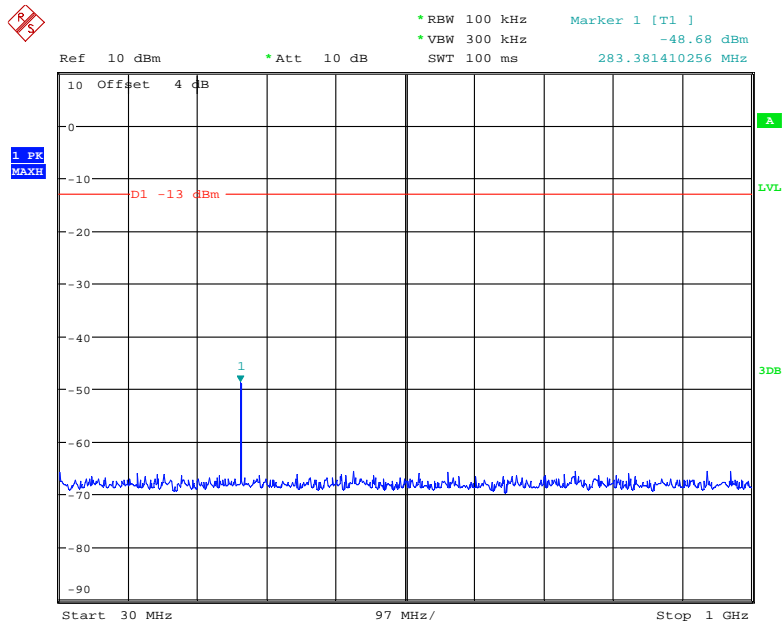
### 3 GHz – 26 GHz (20.0 MHz, Middle Channel)



Date: 15.OCT.2017 17:06:20

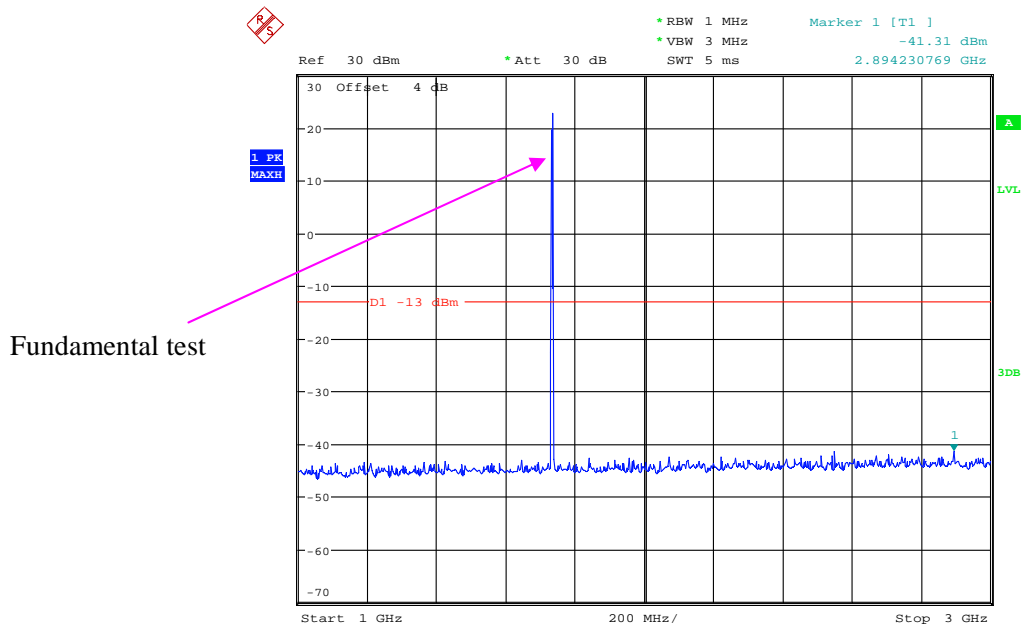
**LTE Band 4:**

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



Date: 15.OCT.2017 16:50:18

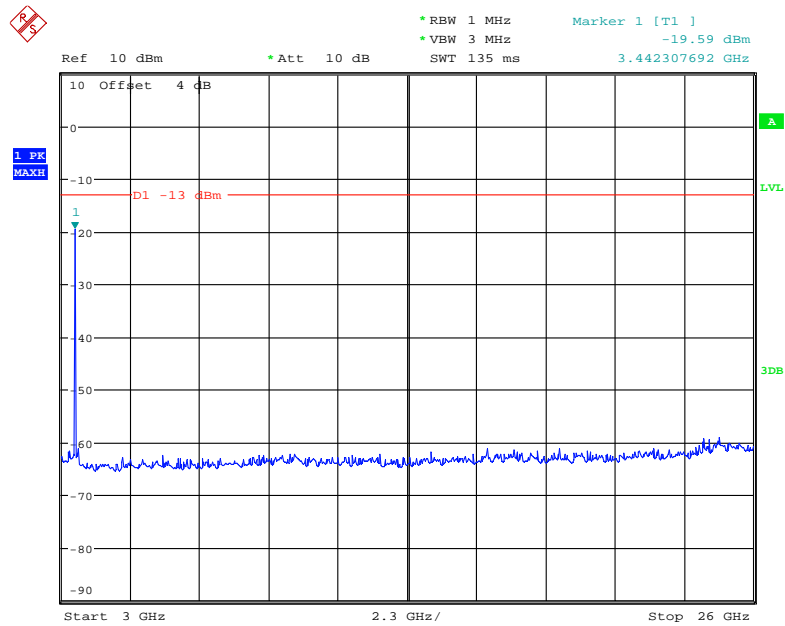
**1 GHz - 3 GHz (1.4 MHz, Middle Channel)**



Date: 15.OCT.2017 17:04:24

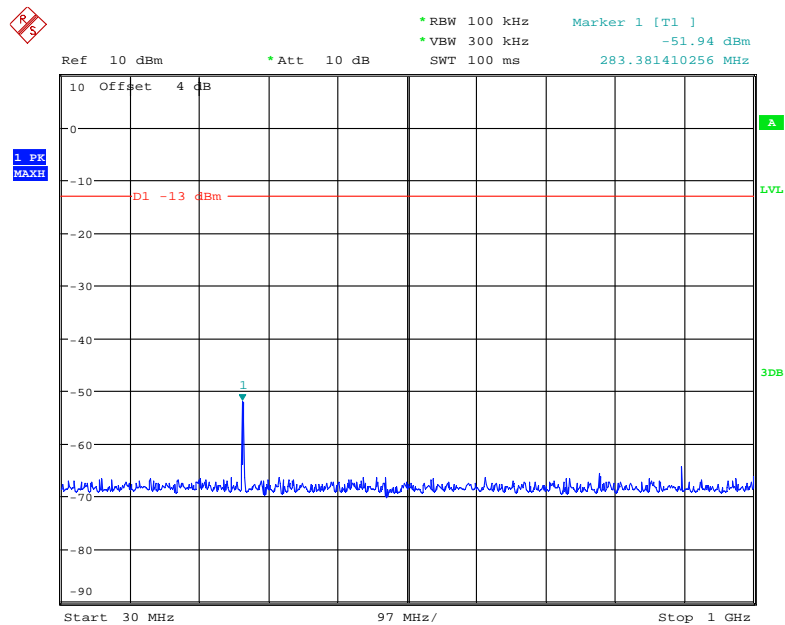


### 3 GHz – 26 GHz (1.4 MHz, Middle Channel)



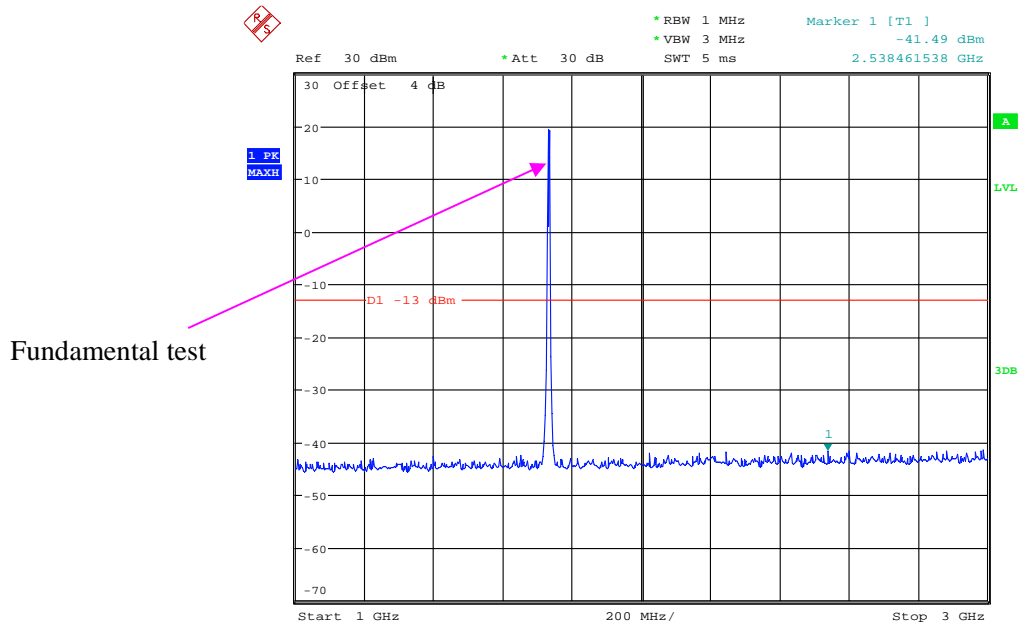
Date: 15.OCT.2017 17:04:48

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



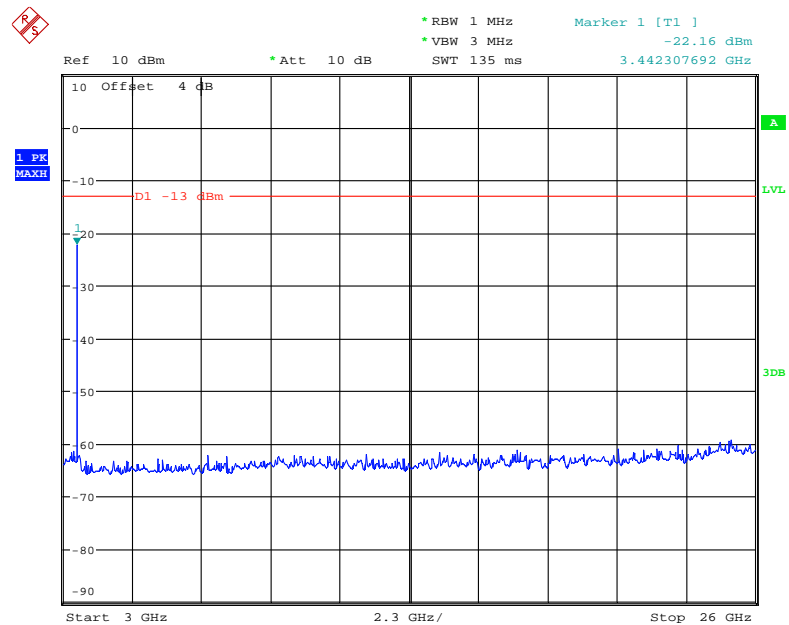
Date: 15.OCT.2017 16:50:55

### 1 GHz – 3 GHz (3.0 MHz, Middle Channel)



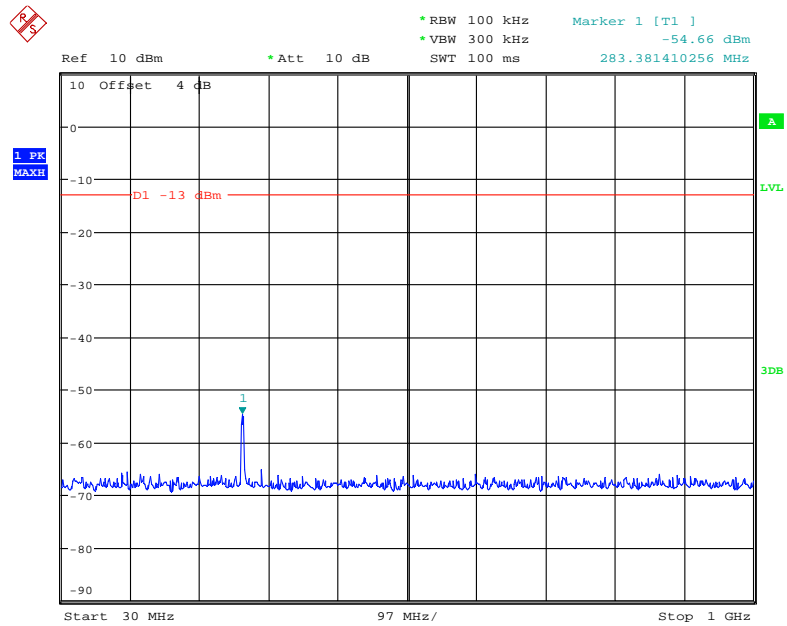
Date: 15.OCT.2017 17:03:52

### 3 GHz – 26 GHz (3.0 MHz, Middle Channel)



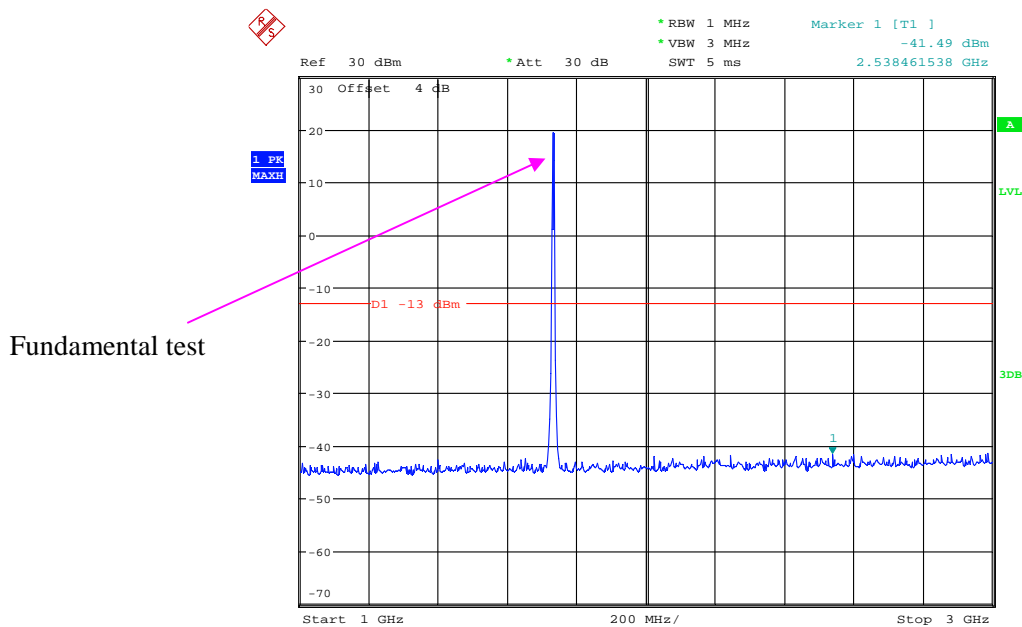
Date: 15.OCT.2017 17:05:04

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



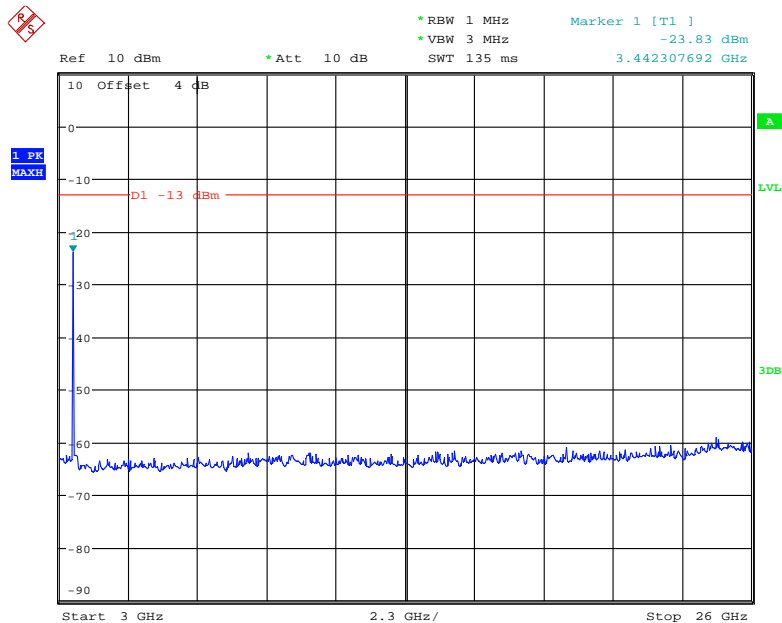
Date: 15.OCT.2017 16:51:12

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



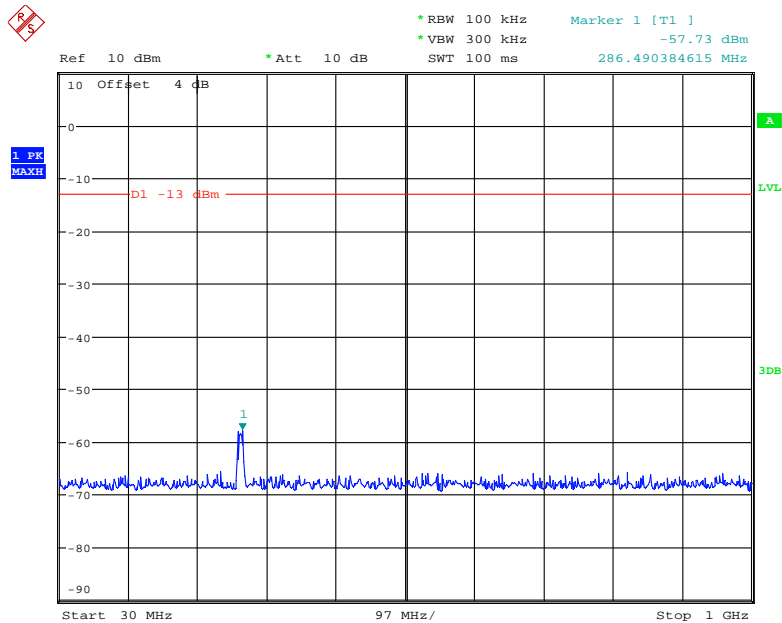
Date: 15.OCT.2017 17:03:52

3 GHz – 26 GHz (5.0 MHz, Middle Channel)



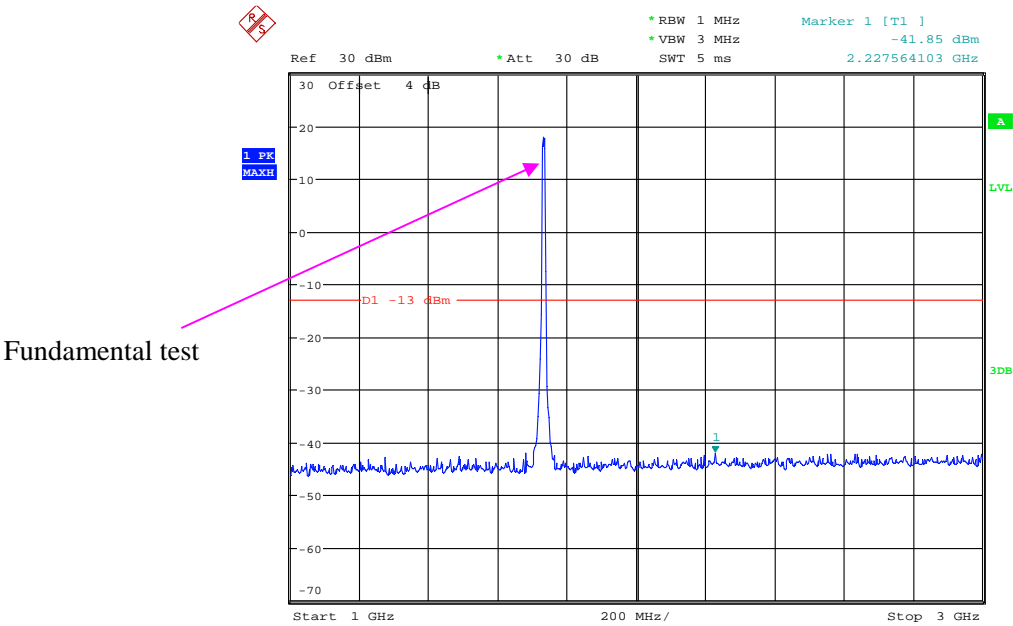
Date: 15.OCT.2017 17:05:17

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



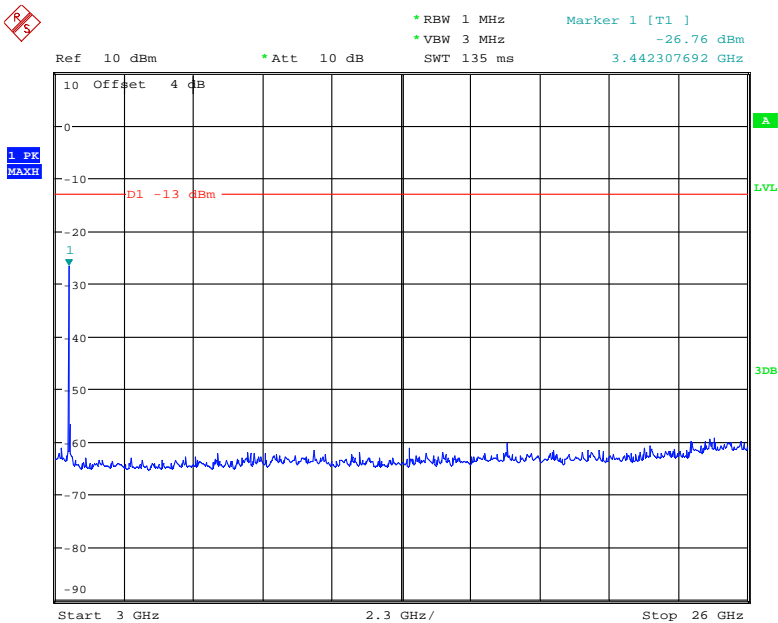
Date: 15.OCT.2017 16:51:30

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



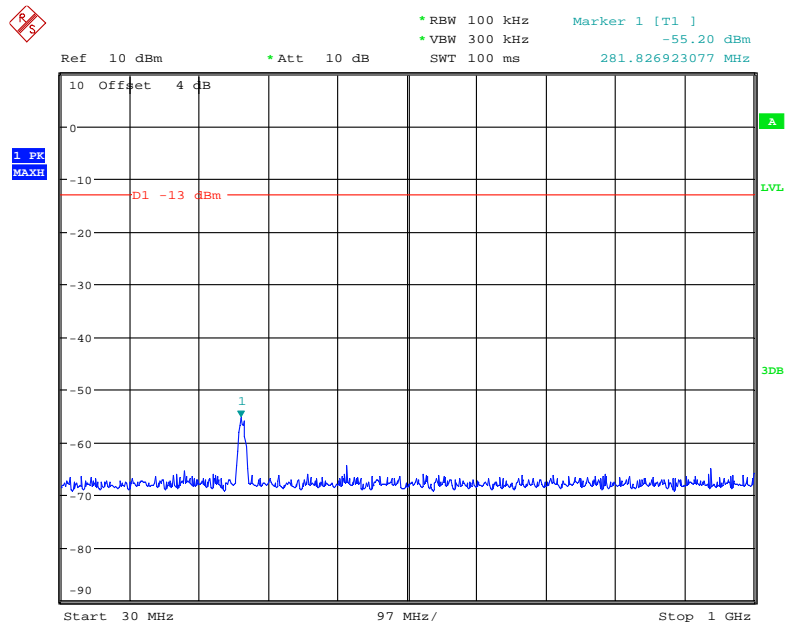
Date: 15.OCT.2017 17:03:04

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



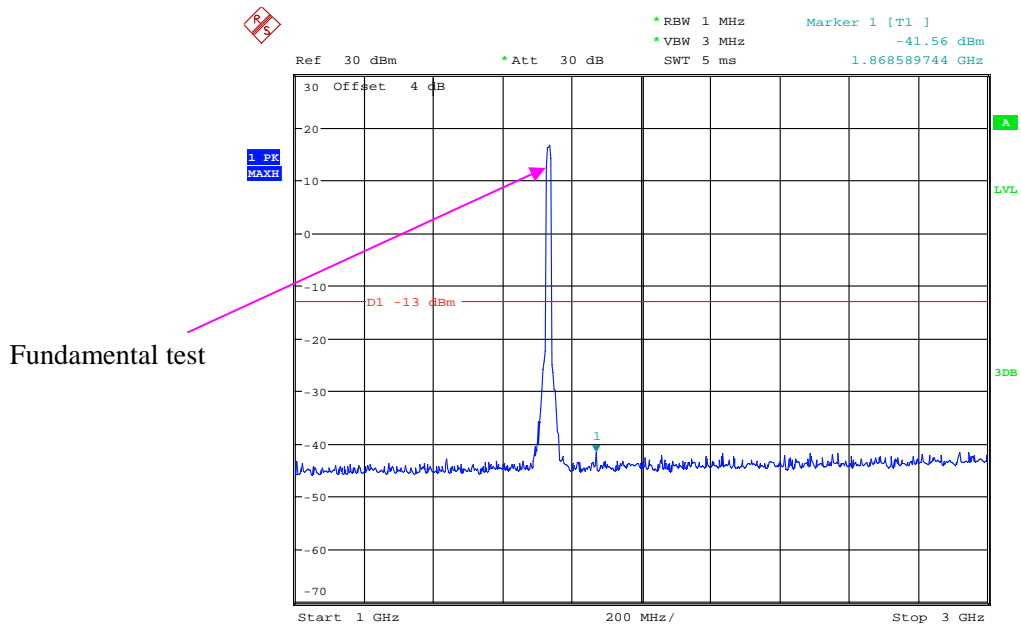
Date: 15.OCT.2017 17:05:28

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



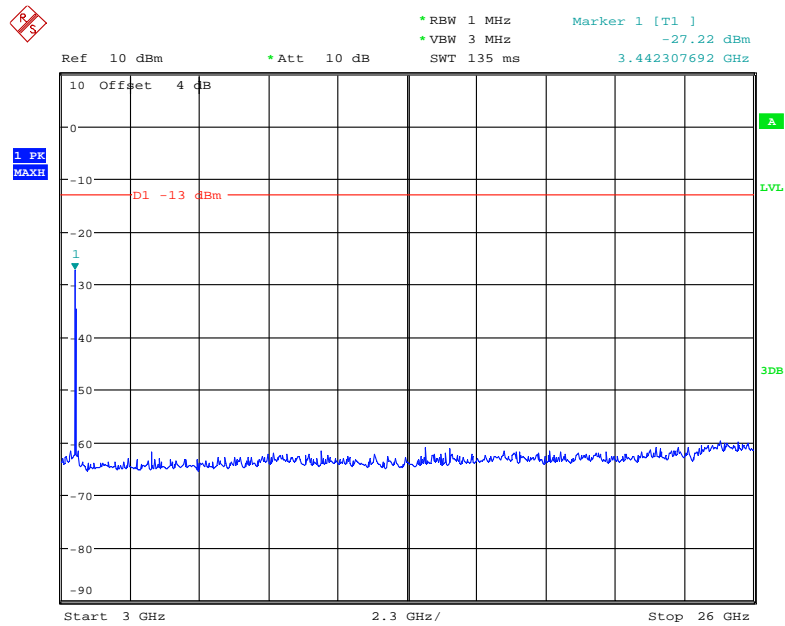
Date: 15.OCT.2017 16:51:47

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



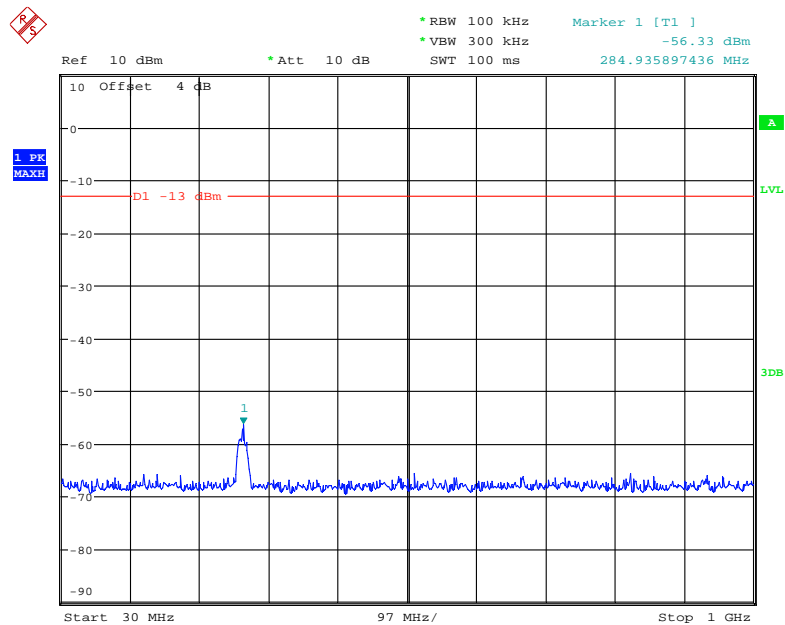
Date: 15.OCT.2017 17:02:49

### 3 GHz – 26 GHz (15.0 MHz, Middle Channel)



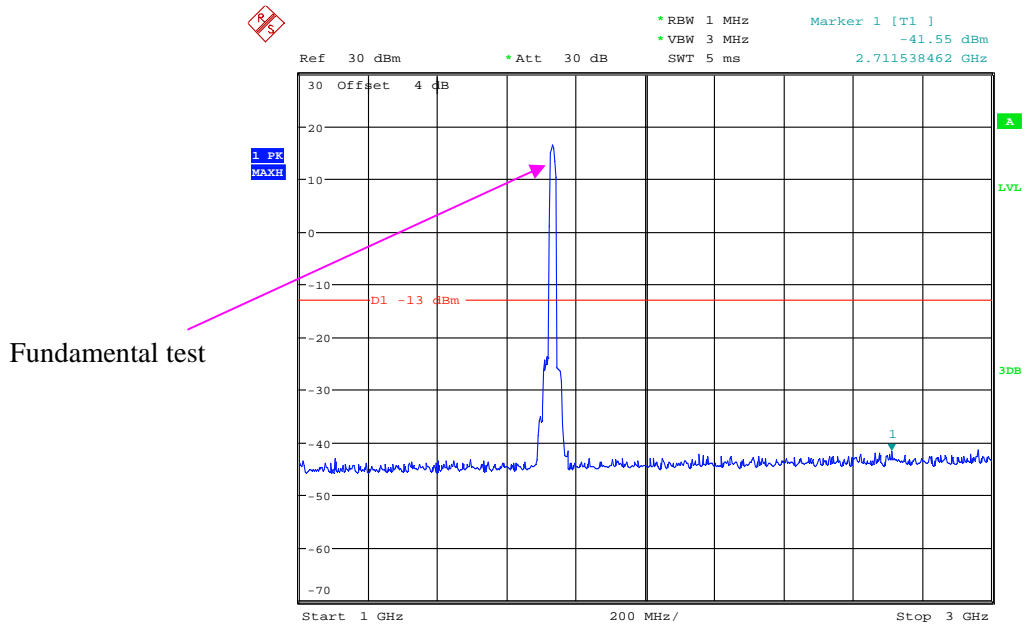
Date: 15.OCT.2017 17:05:40

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



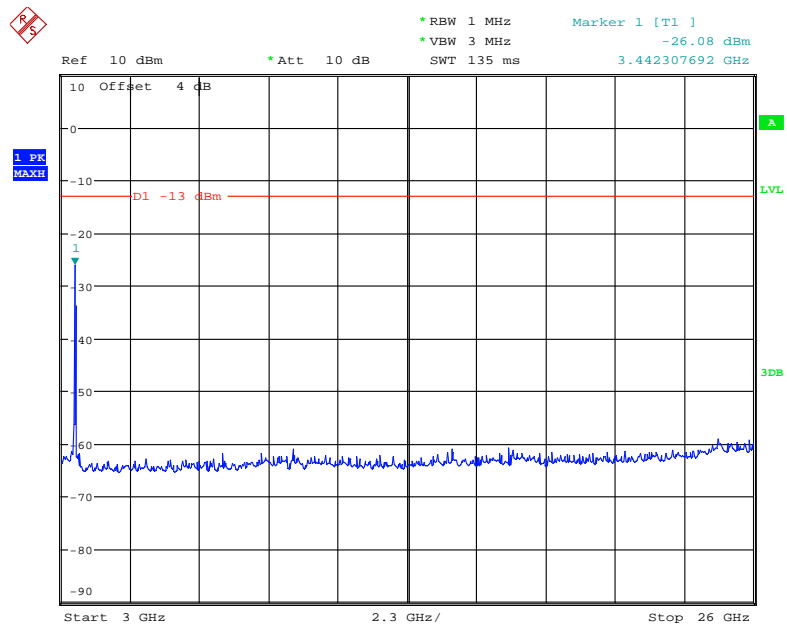
Date: 15.OCT.2017 16:52:03

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



Date: 15.OCT.2017 17:02:27

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

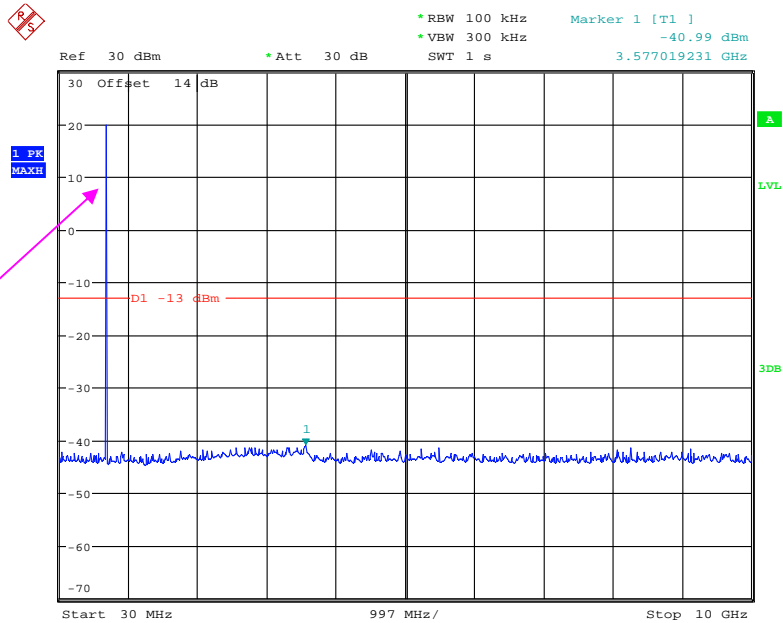


Date: 15.OCT.2017 17:05:52



**LTE Band 12:**

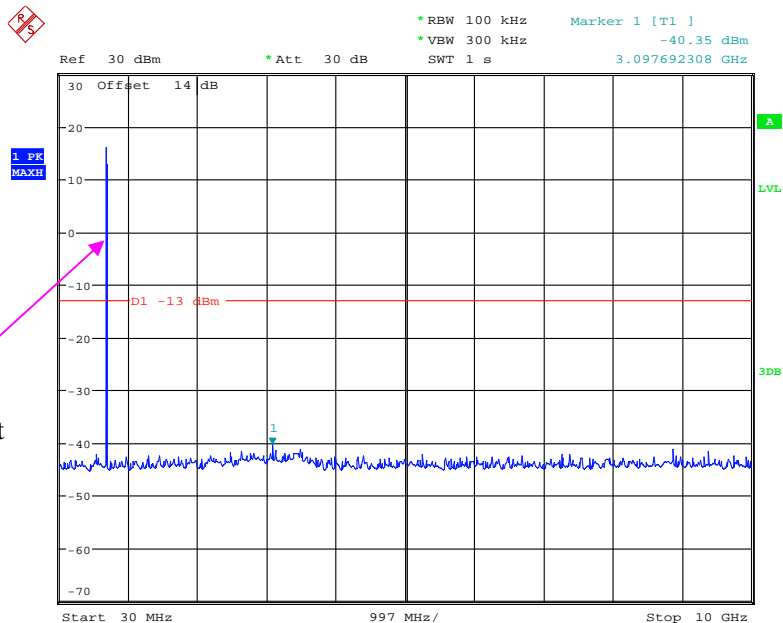
**30 MHz - 10 GHz (1.4 MHz, Middle Channel)**



Fundamental test

Date: 20.DEC.2017 22:03:31

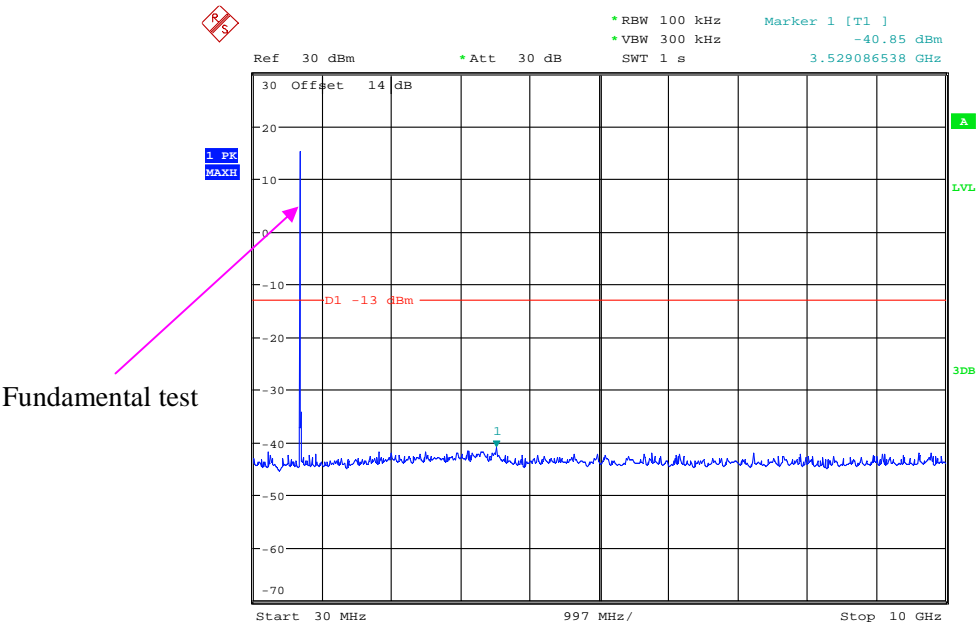
**30 MHz - 10 GHz (3.0 MHz, Middle Channel)**



Fundamental test

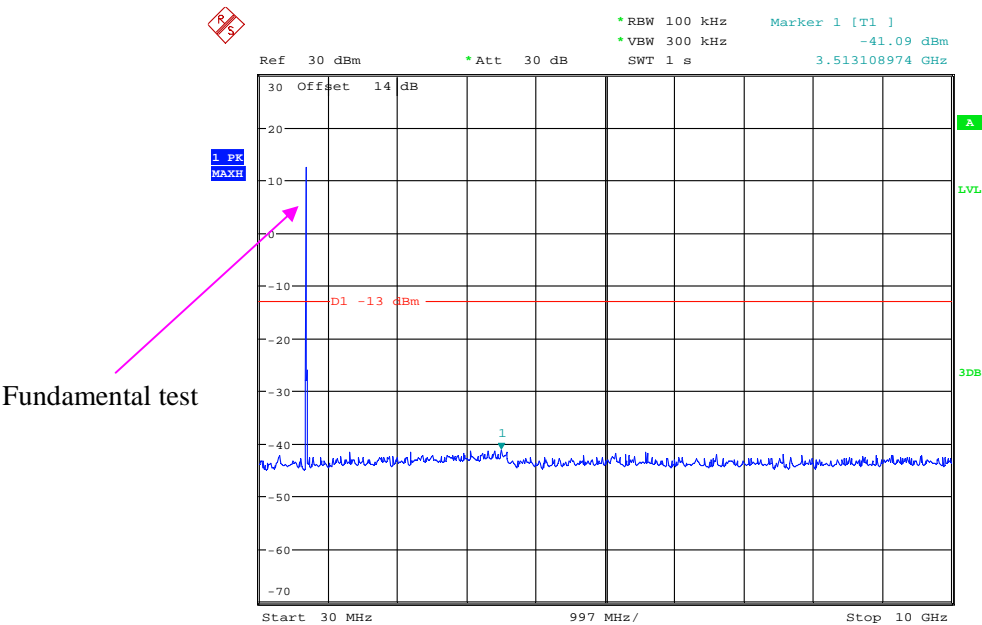
Date: 20.DEC.2017 22:02:09

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



Date: 20.DEC.2017 22:04:00

30 MHz - 10 GHz (10.0 MHz, Middle Channel)



Date: 20.DEC.2017 22:04:37

Test mode: Transmitting (Pre-scan with Low, Middle, High channel, and the worse case data as below)

**30 MHz ~ 10 GHz:**

**Cellular Band**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
WCDMA 850 Mode										
400.27	34.25	154	1.6	H	-33	0.67	0	-33.67	-13	20.67
400.27	33.45	219	1.0	V	-33.8	0.67	0	-34.47	-13	21.47
1673.20	51.53	96	1.5	H	-55.5	1.30	9.10	-47.70	-13	34.70
1673.20	53.33	141	2.3	V	-53.1	1.30	9.10	-45.30	-13	32.30
2509.80	51.91	78	1.9	H	-51.6	2.60	9.30	-44.90	-13	31.90
2509.80	47.32	50	1.1	V	-55.6	2.60	9.30	-48.90	-13	35.90
3346.40	44.65	345	1.8	H	-55.7	1.50	9.60	-47.60	-13	34.60
3346.40	45.38	281	1.2	V	-55.0	1.50	9.60	-46.90	-13	33.90

**30 MHz ~ 20 GHz:**

**PCS Band**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
WCDMA 1900 Mode										
400.27	33.29	111	1.5	H	-33.9	0.67	0	-34.57	-13	21.57
400.27	32.14	333	2.2	V	-35.1	0.67	0	-35.77	-13	22.77
3760.00	42.11	71	2.0	H	-59.1	1.50	9.70	-50.90	-13	37.90
3760.00	42.45	257	2.4	V	-58.3	1.50	9.70	-50.10	-13	37.10

**30 MHz ~ 18 GHz:****AWS Band**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
WCDMA Mode										
400.27	35.12	344	1.4	H	-32.1	0.67	0	-32.77	-13	19.77
400.27	34.16	297	2.2	V	-33.1	0.67	0	-33.77	-13	20.77
3465.20	43.03	249	2.4	H	-57.4	1.50	9.70	-49.20	-13	36.20
3465.20	44.37	291	1.8	V	-56.8	1.50	9.70	-48.60	-13	35.60

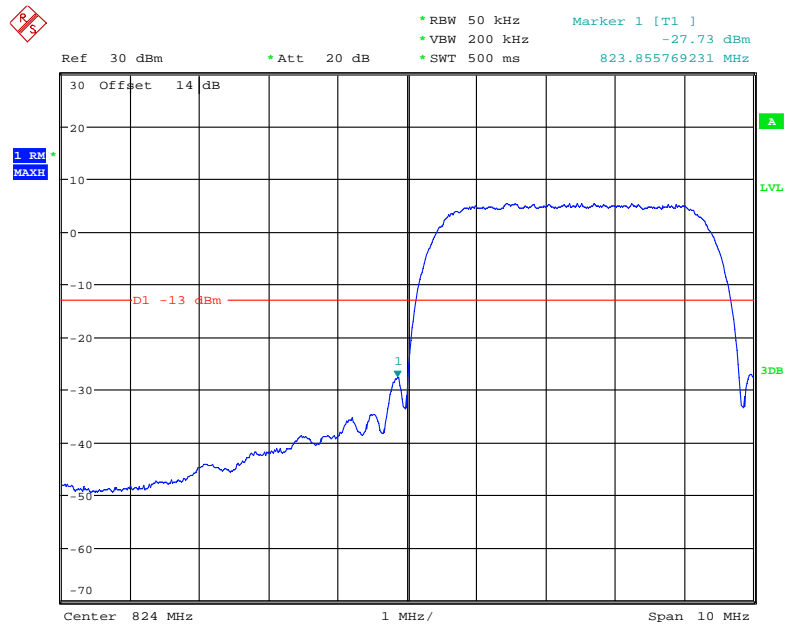
**LTE Band:** (Pre-scan with all the bandwidth, and worse case as below)

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Band 2										
Test frequency range:30 MHz ~ 20 GHz										
399.88	32.15	229	1.7	H	-35.1	0.67	0	-35.77	-13	22.77
399.88	33.45	12	2.2	V	-33.8	0.67	0	-34.47	-13	21.47
3760.00	42.81	227	2.3	H	-58.4	1.50	9.70	-50.20	-13	37.20
3760.00	43.22	123	1.1	V	-57.5	1.50	9.70	-49.30	-13	36.30
Band 4										
Test frequency range:30 MHz ~ 18 GHz										
399.88	32.45	192	1.7	H	-34.8	0.67	0	-35.47	-13	21.47
399.88	33.78	274	1.3	V	-33.5	0.67	0	-34.17	-13	21.17
3465.00	43.08	320	2.2	H	-57.3	1.50	9.70	-49.10	-13	36.10
3465.00	44.67	262	1.9	V	-56.5	1.50	9.70	-48.30	-13	35.30
Band 12										
Test frequency range: 30 MHz ~ 10 GHz										
399.88	32.24	261	2.0	H	-35	0.67	0	-35.67	-13	22.67
399.88	33.64	221	2.1	V	-33.6	0.67	0	-34.27	-13	21.27
1415.00	46.99	42	1.2	H	-60.8	1.60	8.30	-54.10	-13	41.10
1415.00	48.05	165	1.0	V	-60.0	1.60	8.30	-53.30	-13	40.30
2122.50	48.92	43	1.9	H	-53.2	1.30	8.80	-45.70	-13	32.70
2122.50	41.72	245	2.0	V	-61.2	1.30	8.80	-53.70	-13	40.70

**Note:**

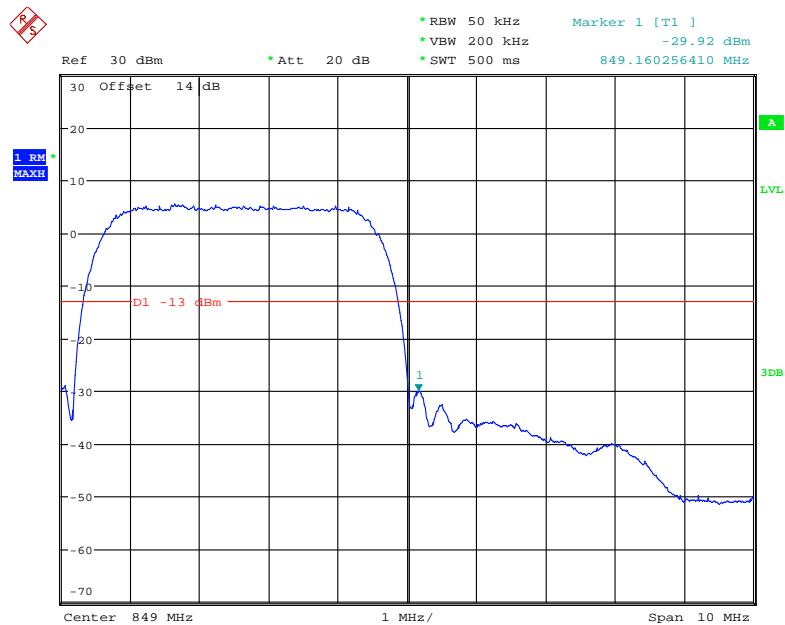
- 1) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level

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



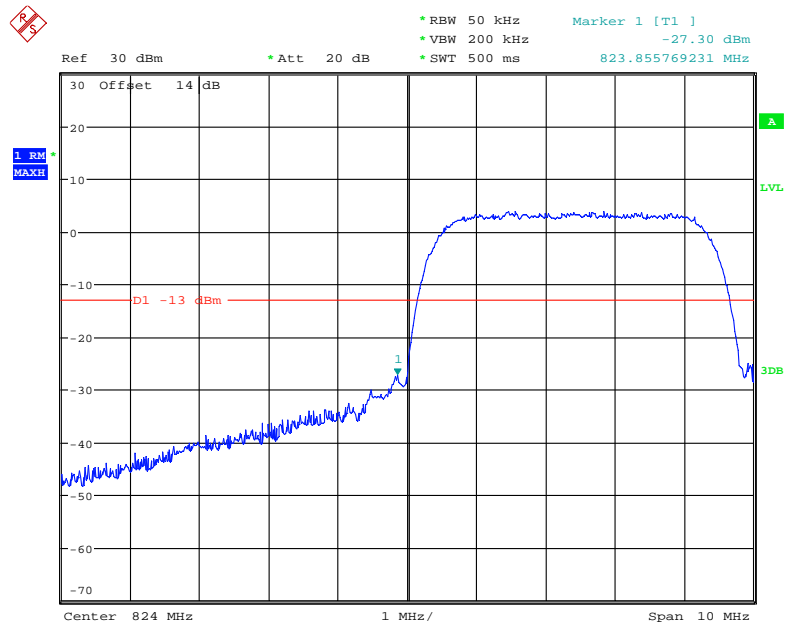
Date: 12.OCT.2017 21:23:36

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



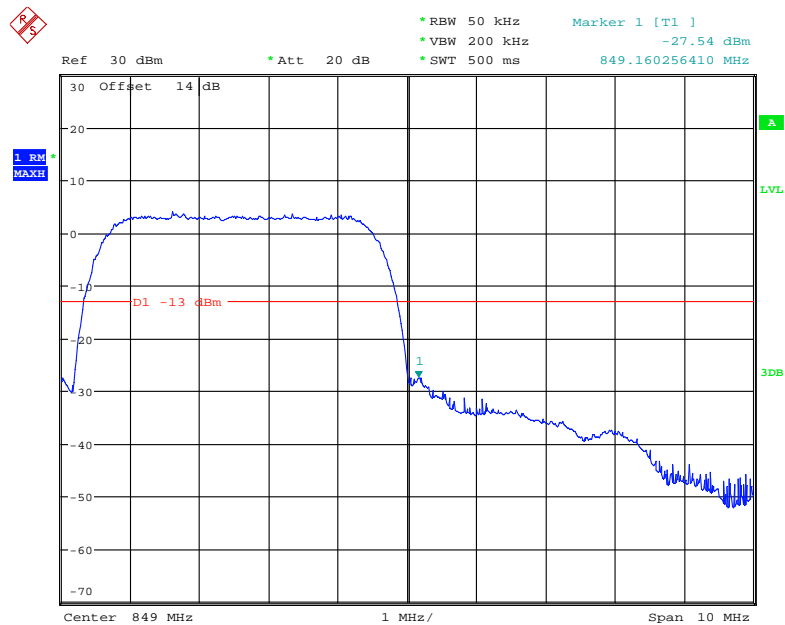
Date: 12.OCT.2017 21:26:17

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



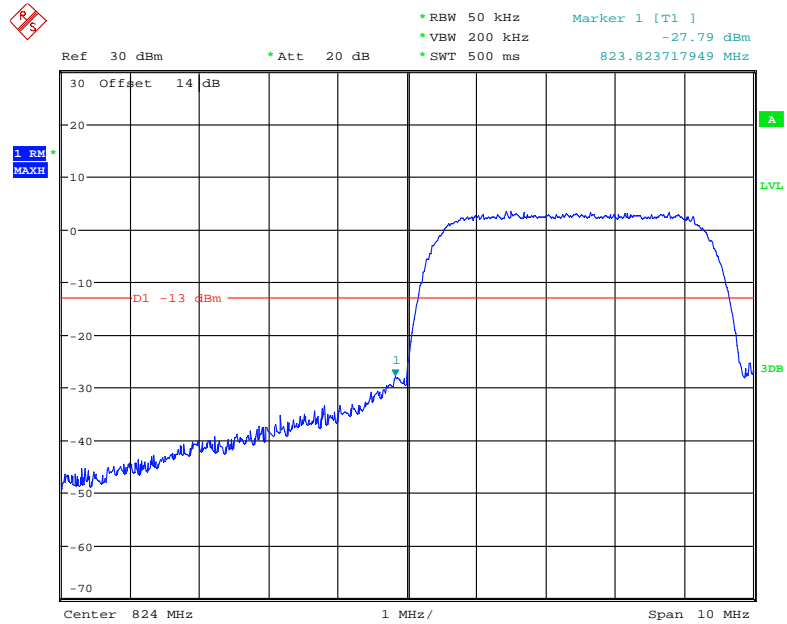
Date: 12.OCT.2017 21:14:56

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



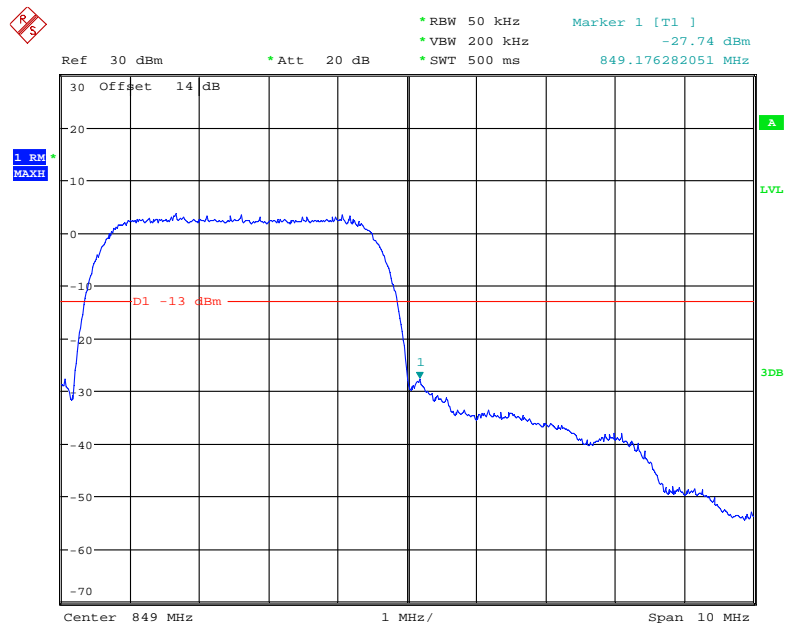
Date: 12.OCT.2017 21:50:08

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



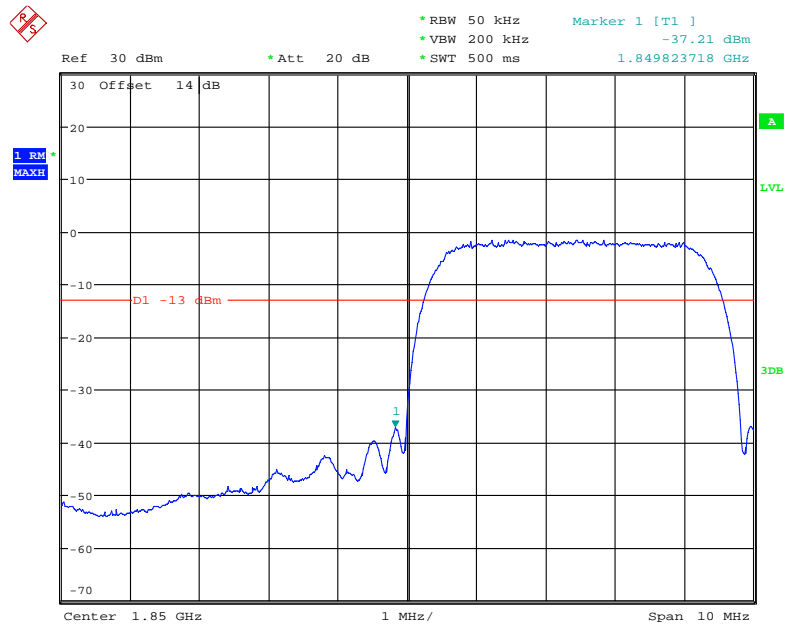
Date: 12.OCT.2017 21:18:15

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



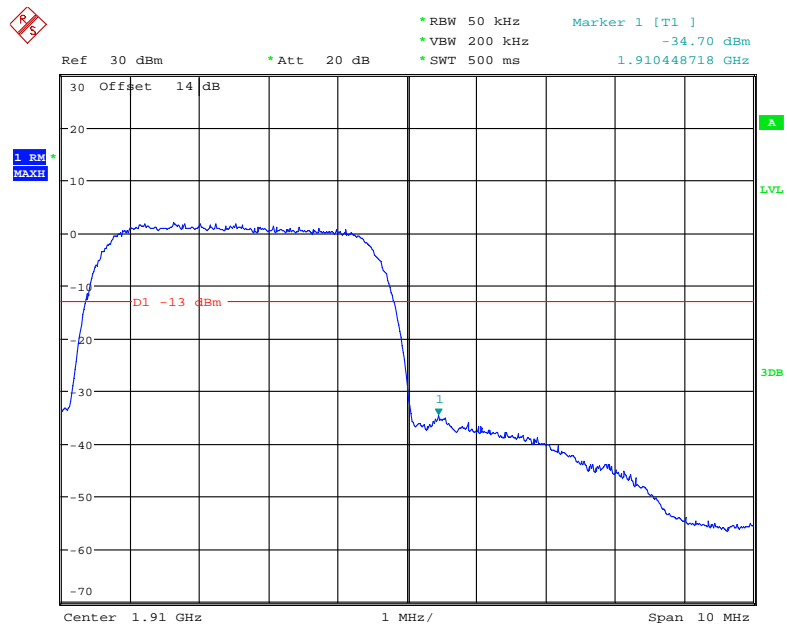
Date: 12.OCT.2017 21:17:36

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



Date: 12.OCT.2017 21:54:38

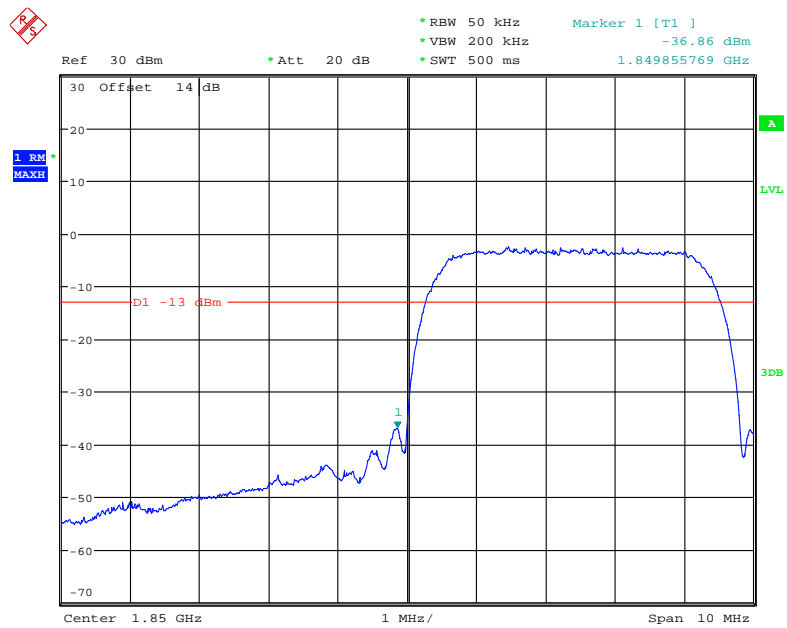
### PCS Band, Right Band Edge for RMC (BPSK) Mode



Date: 12.OCT.2017 21:55:07

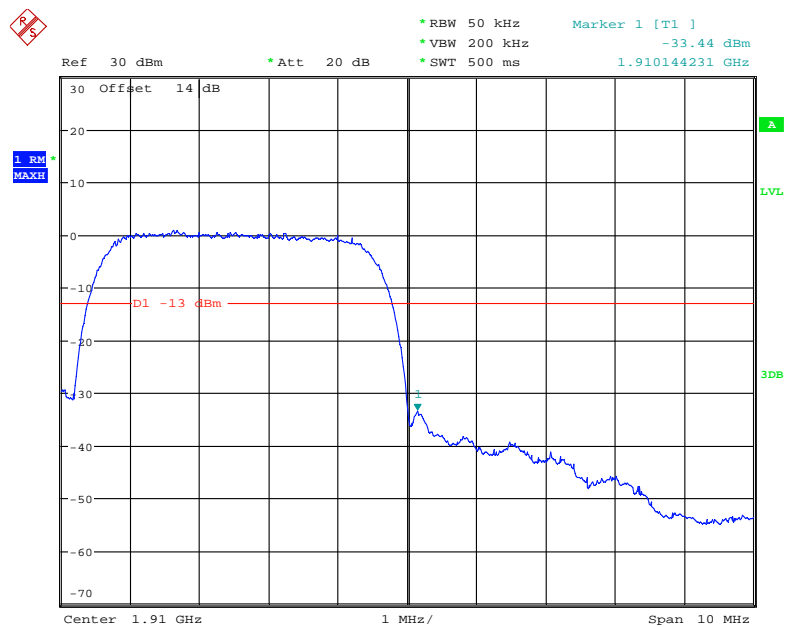


### PCS Band, Left Band Edge for HSDPA (16QAM) Mode



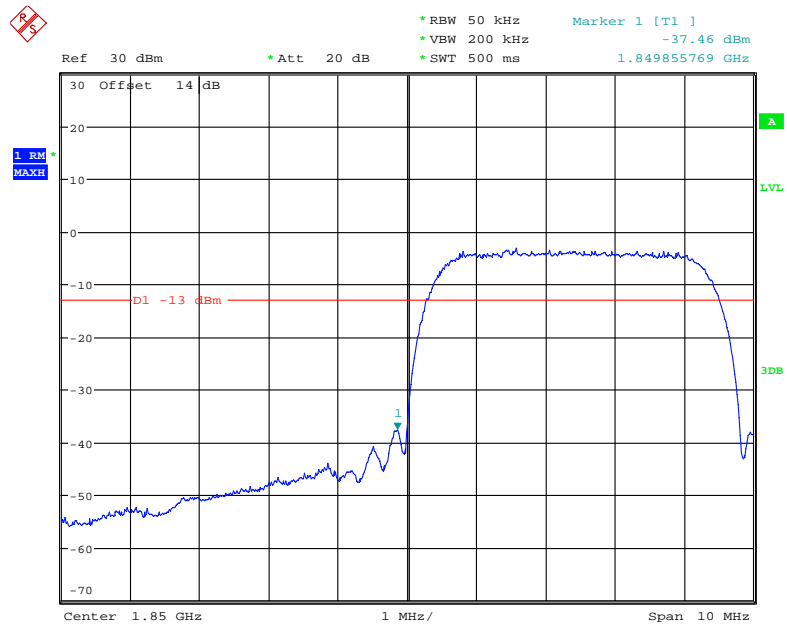
Date: 12.OCT.2017 22:01:40

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



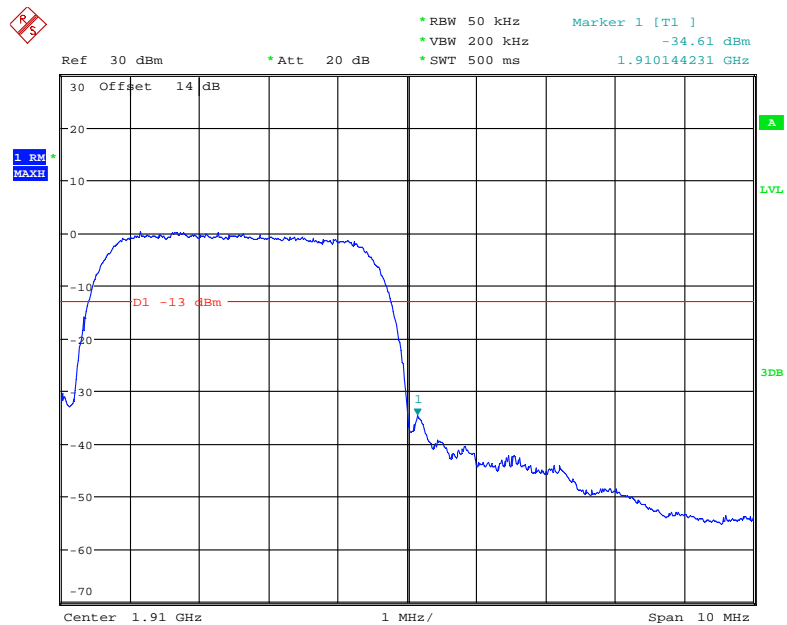
Date: 12.OCT.2017 22:00:29

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



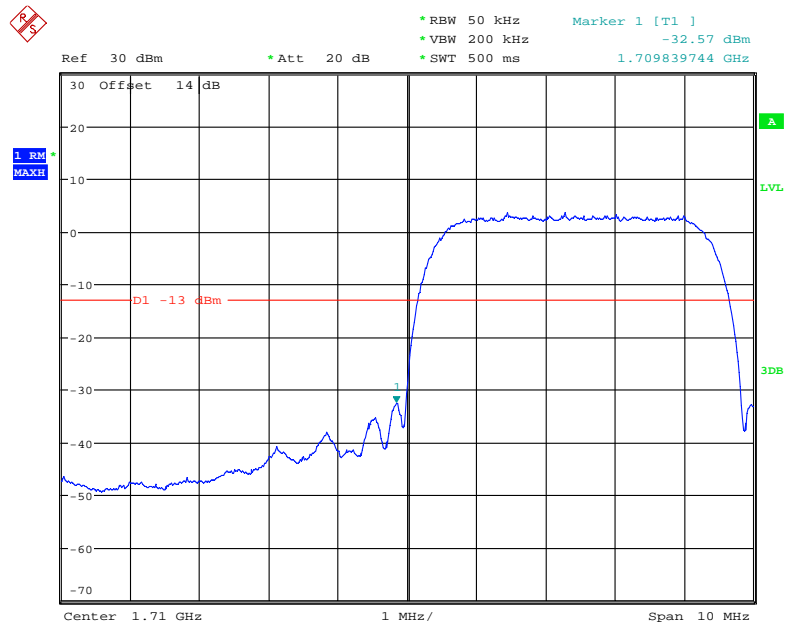
Date: 12.OCT.2017 22:03:09

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



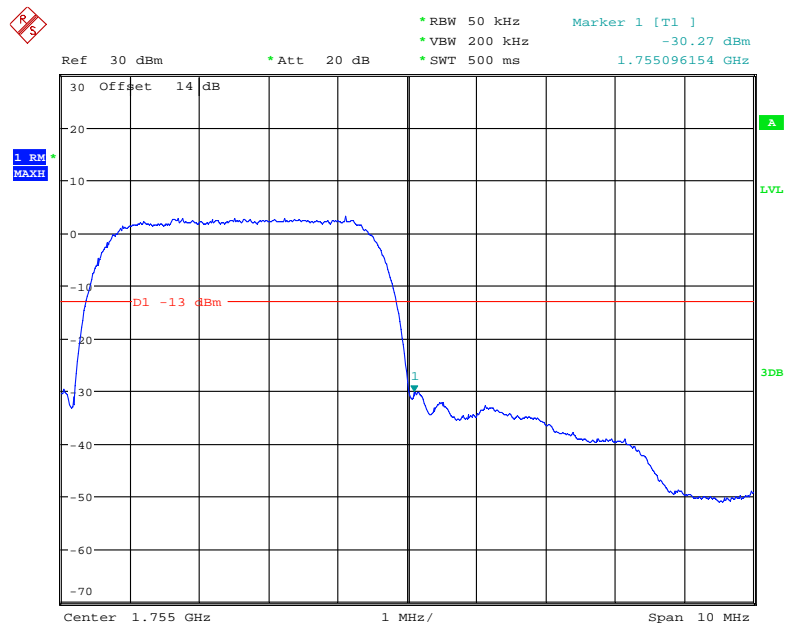
Date: 12.OCT.2017 22:06:21

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



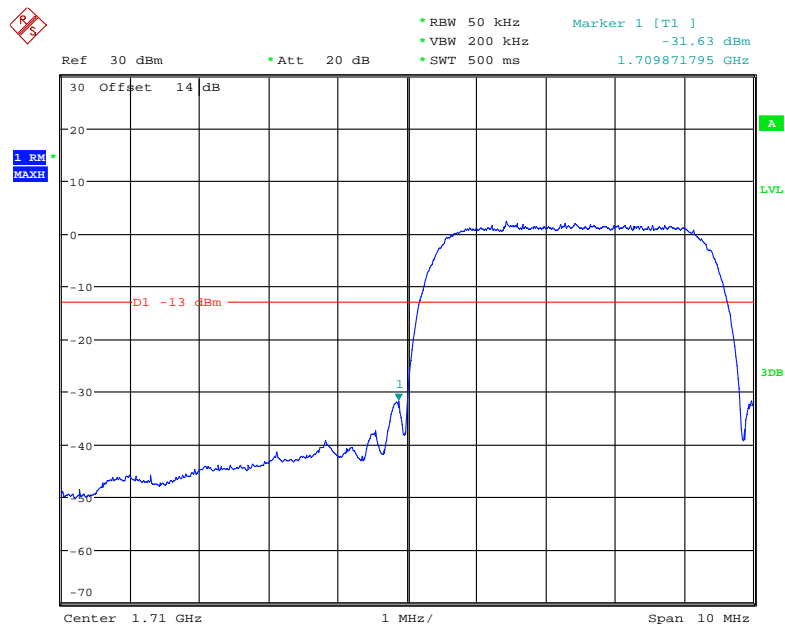
Date: 12.OCT.2017 21:30:56

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



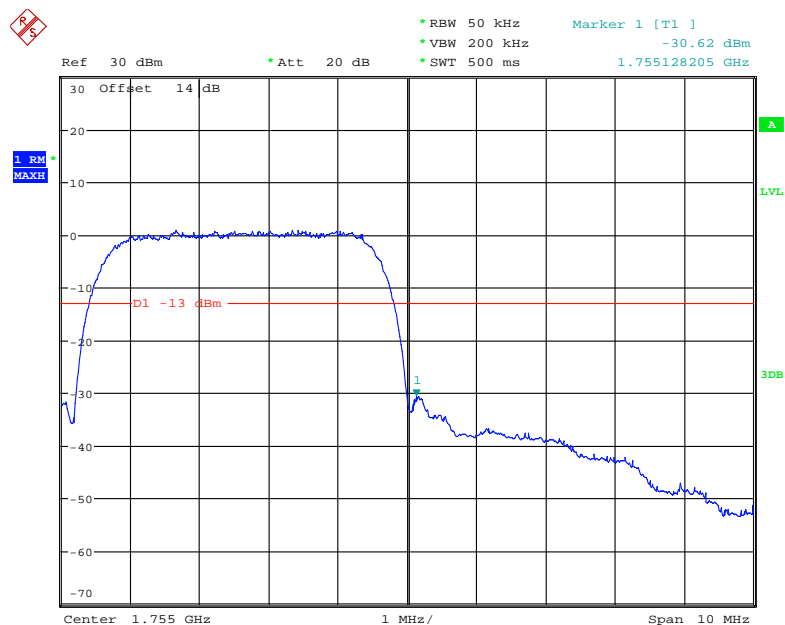
Date: 12.OCT.2017 21:32:53

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



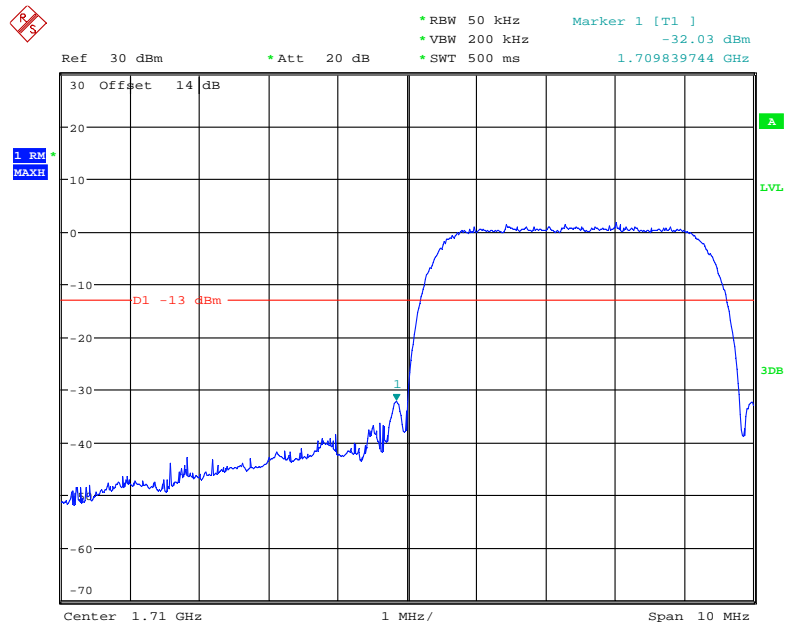
Date: 12.OCT.2017 21:44:37

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



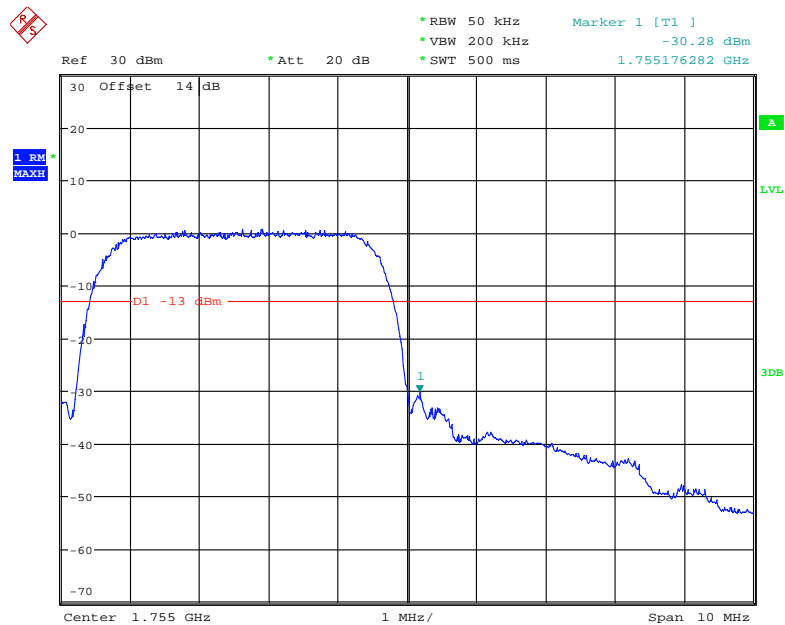
Date: 12.OCT.2017 21:45:11

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



Date: 12.OCT.2017 21:42:05

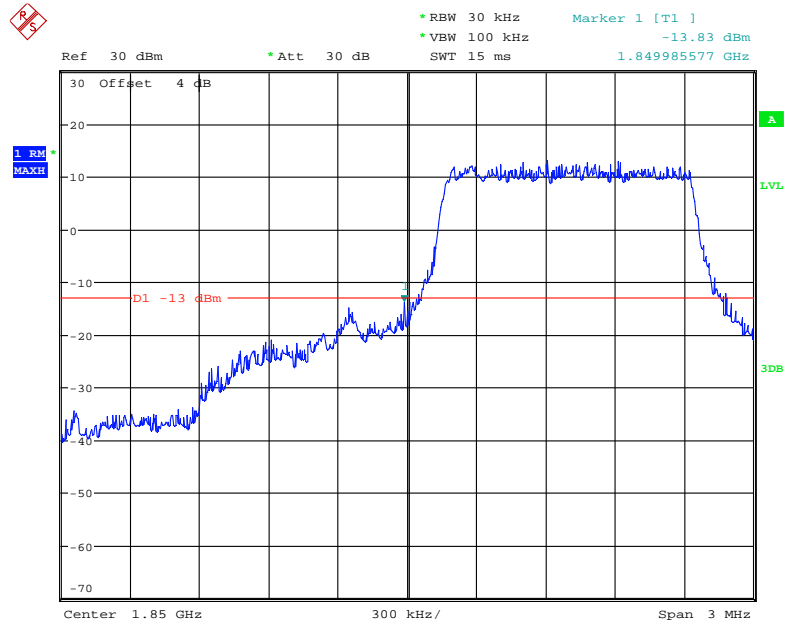
### AWS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 12.OCT.2017 21:41:17

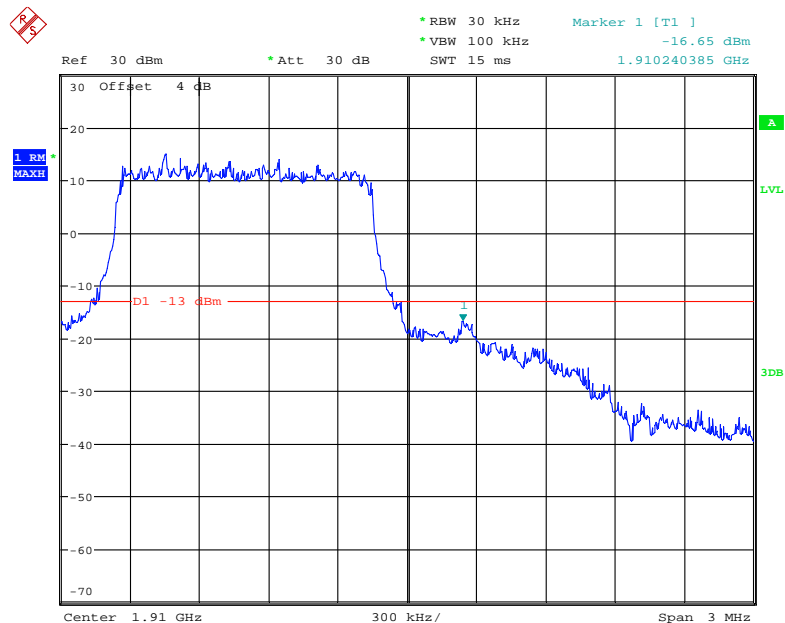
**Band 2:**

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



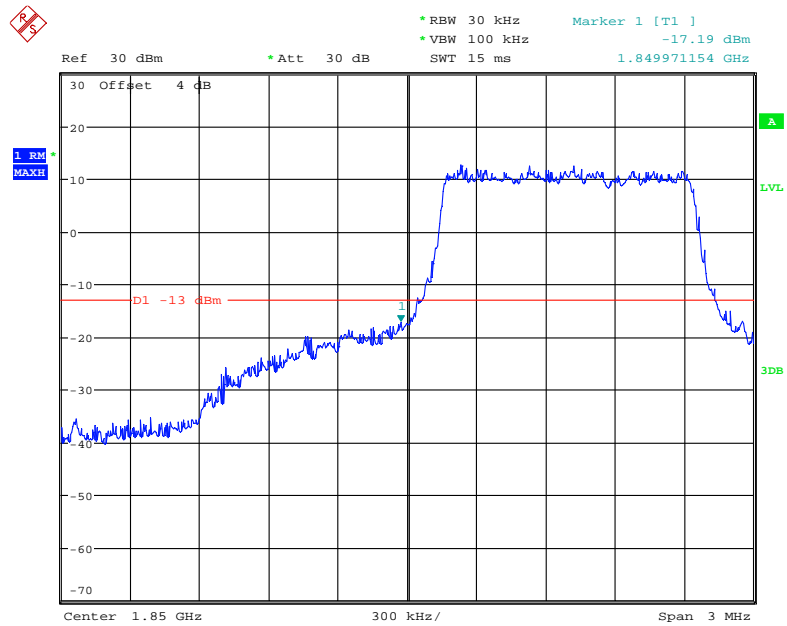
Date: 15.OCT.2017 16:21:03

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



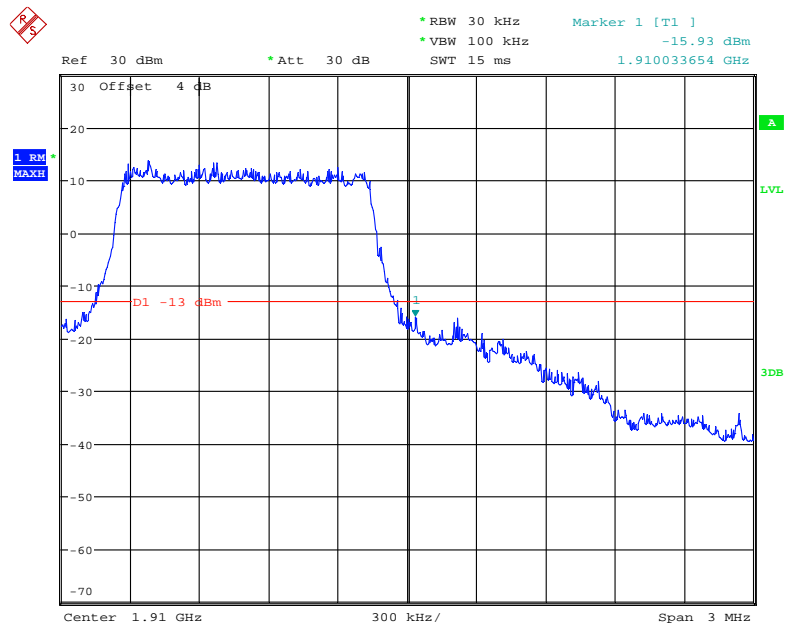
Date: 15.OCT.2017 16:21:33

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



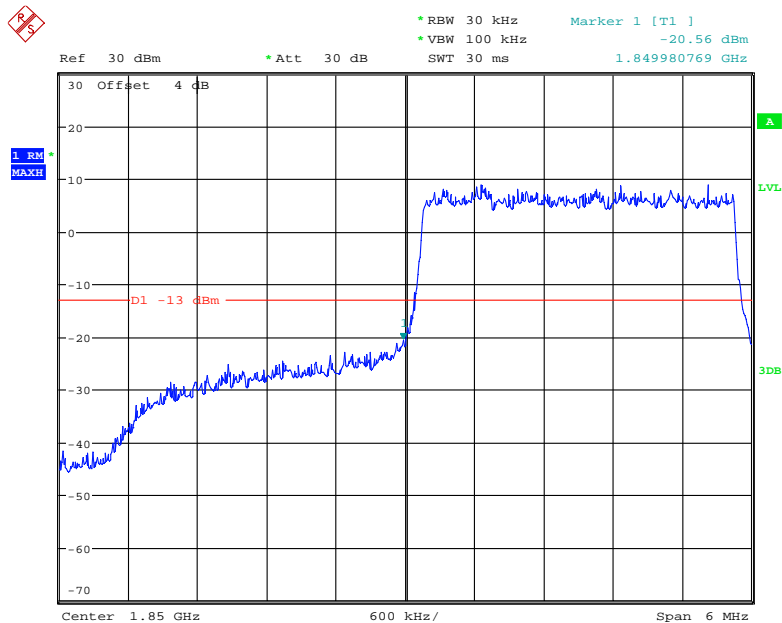
Date: 15.OCT.2017 16:20:36

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



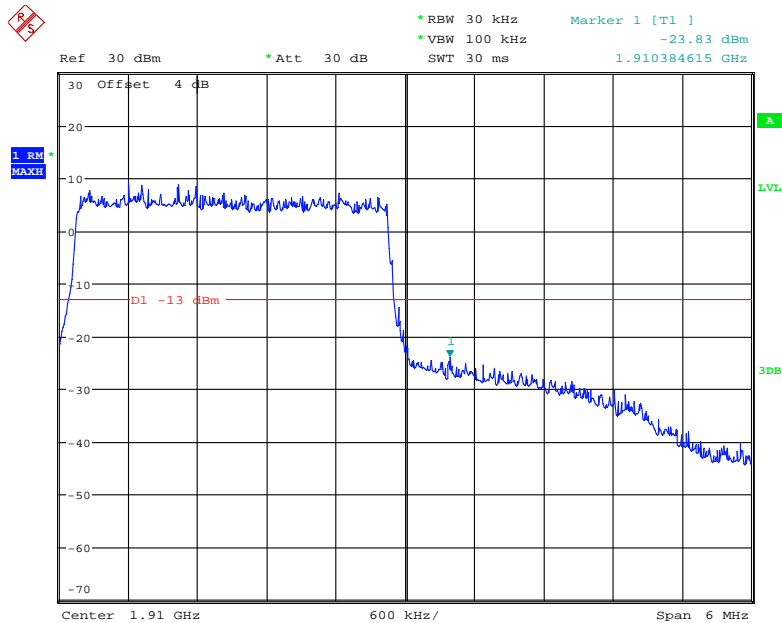
Date: 15.OCT.2017 16:22:03

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



Date: 15.OCT.2017 16:24:28

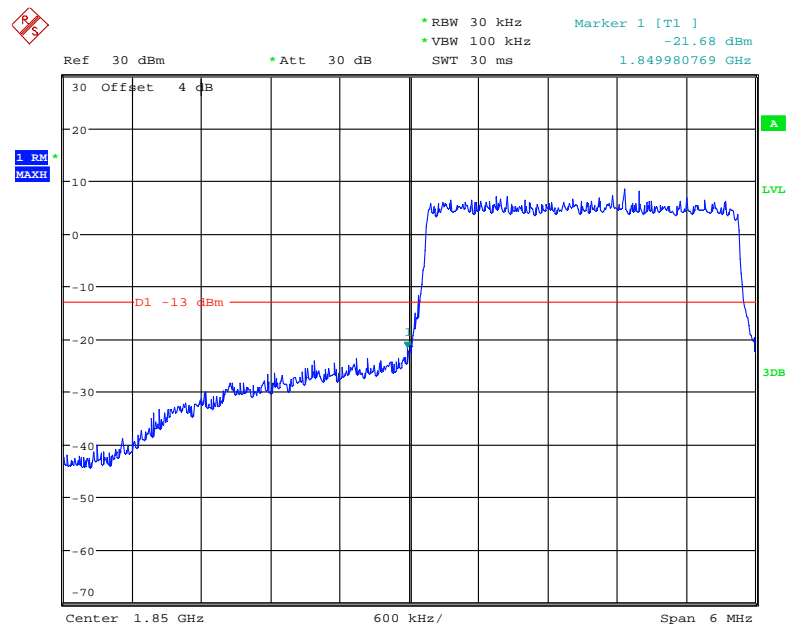
QPSK (3.0 MHz, FULL RB) - Right Band Edge



Date: 15.OCT.2017 16:23:05

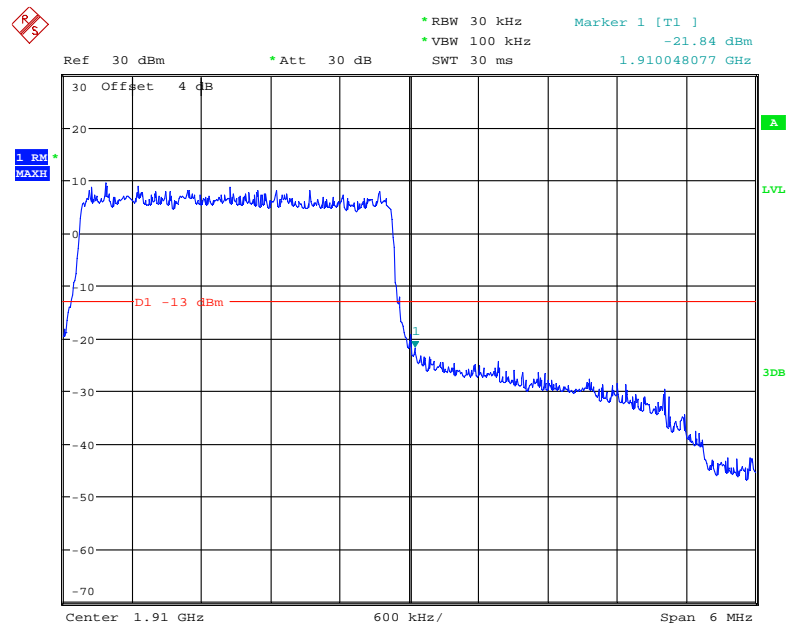


16-QAM (3.0 MHz, FULL RB) - Left Band Edge



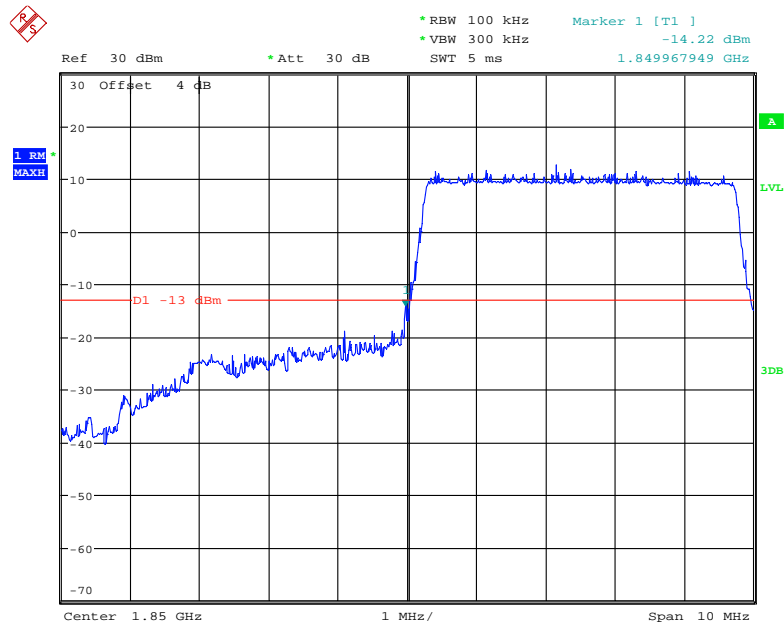
Date: 15.OCT.2017 16:23:54

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



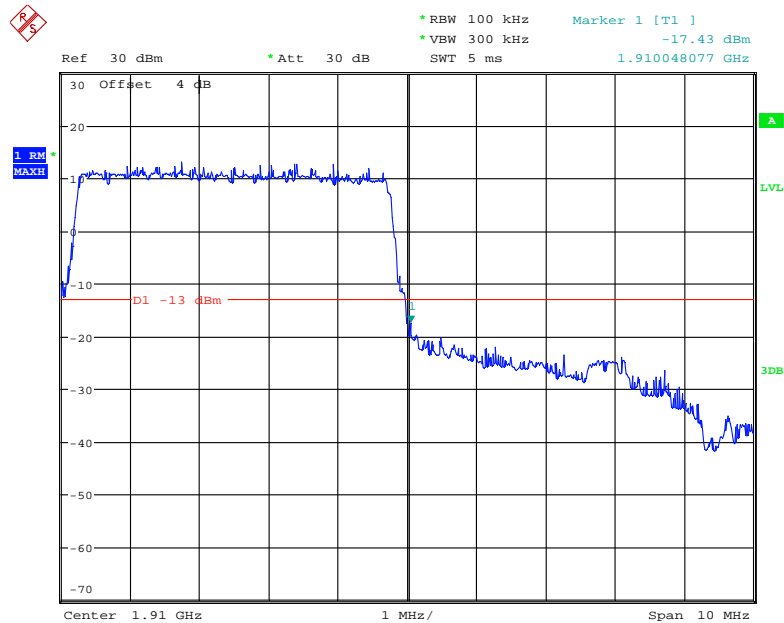
Date: 15.OCT.2017 16:22:41

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



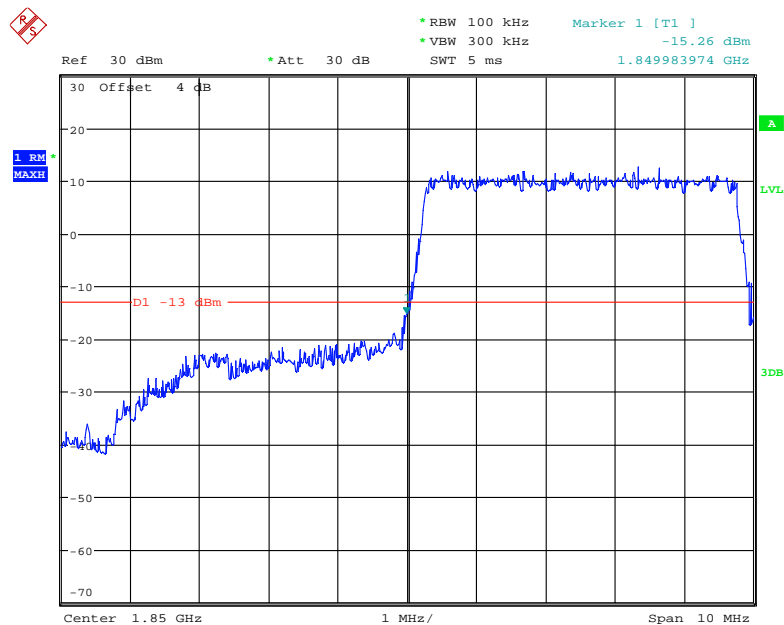
Date: 15.OCT.2017 16:25:06

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



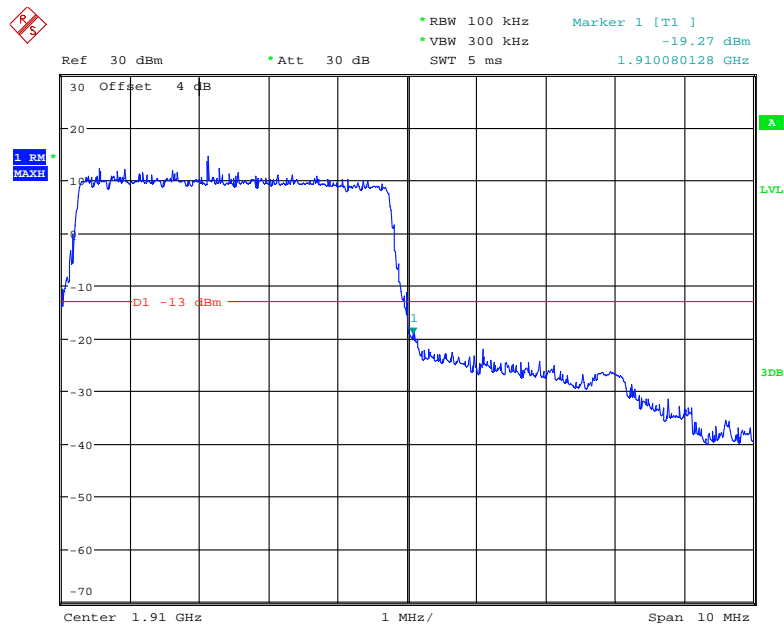
Date: 15.OCT.2017 16:25:51

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



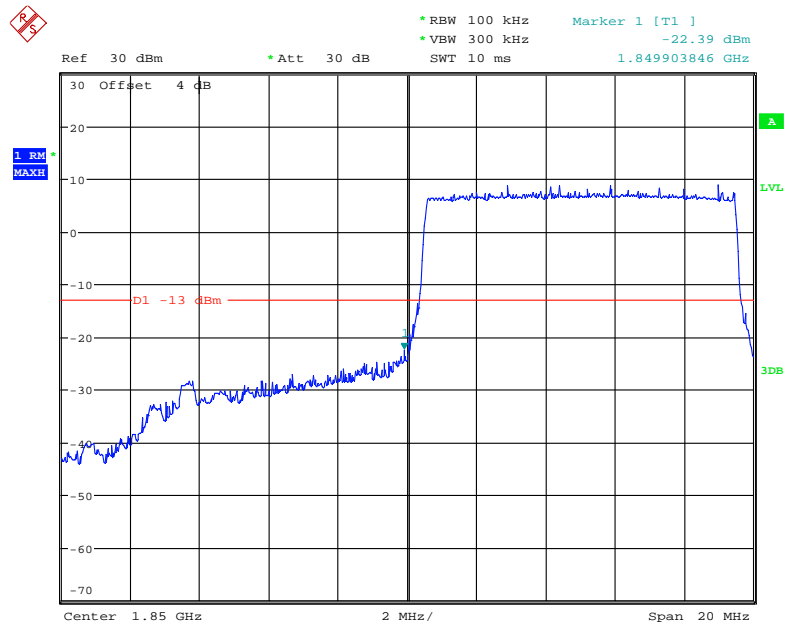
Date: 15.OCT.2017 16:25:25

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



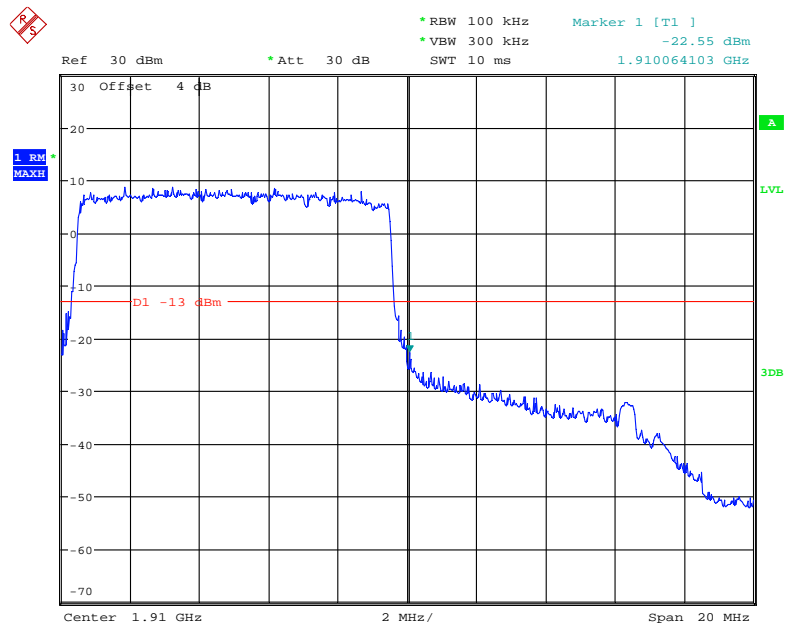
Date: 15.OCT.2017 16:26:46

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



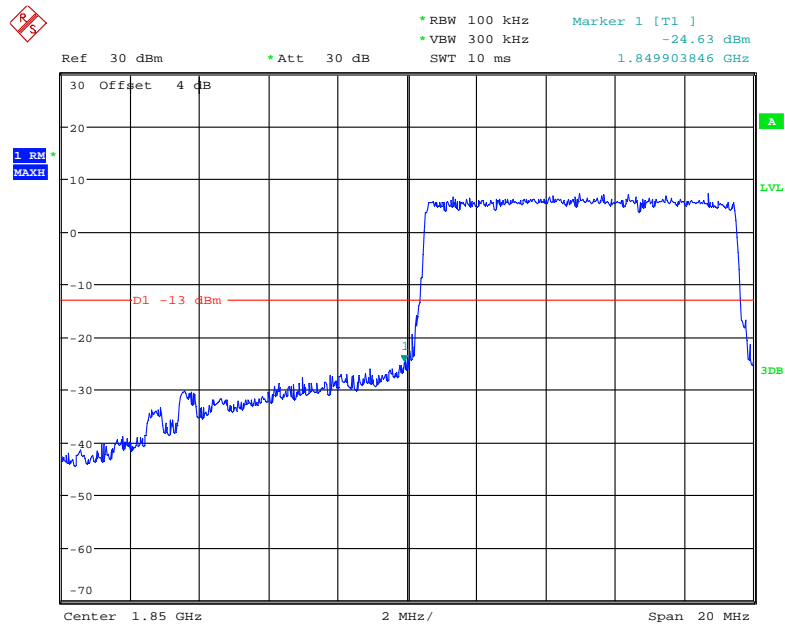
Date: 15.OCT.2017 16:28:40

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



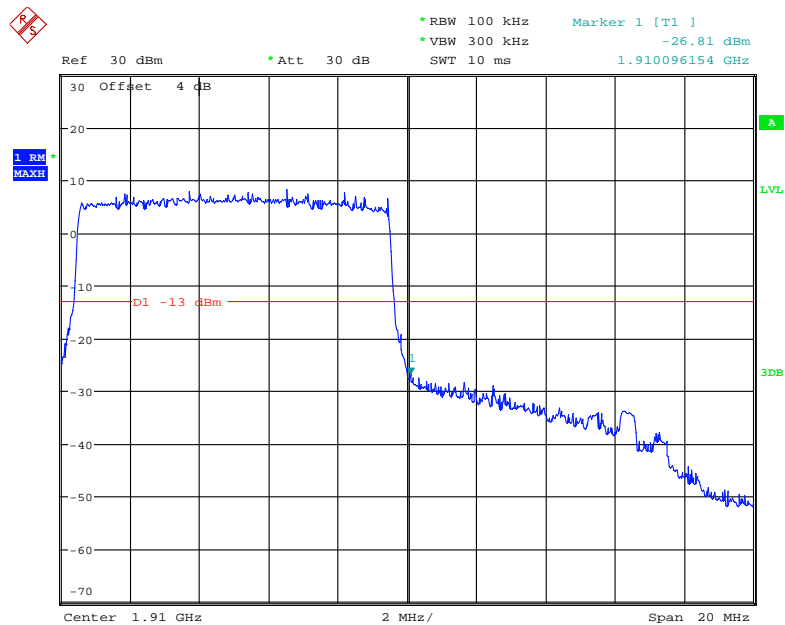
Date: 15.OCT.2017 16:28:01

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



Date: 15.OCT.2017 16:28:59

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



Date: 15.OCT.2017 16:27:19

[illegible]

Date: 15.OCT.2017 16:29:56

Ref 30 dBm      \* Att 30 dB      \* RBW 200 kHz      \* VBW 500 kHz      Marker 1 [T1 ] -24.65 dBm  
SWT 2.5 ms      1.910288462 GHz

30 Offset 4 dB

1 RM  
MAXII

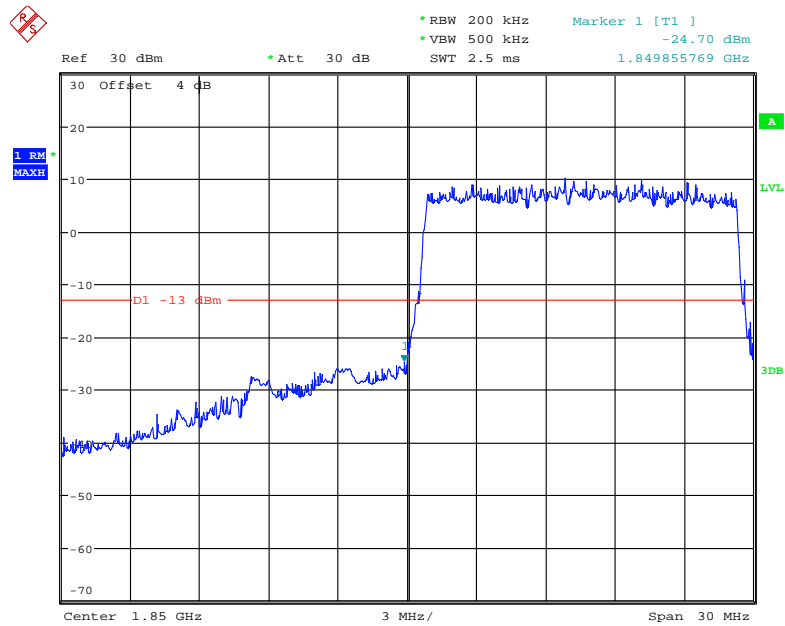
D1 -13 dBm

1

Center 1.91 GHz      3 MHz/      Span 30 MHz

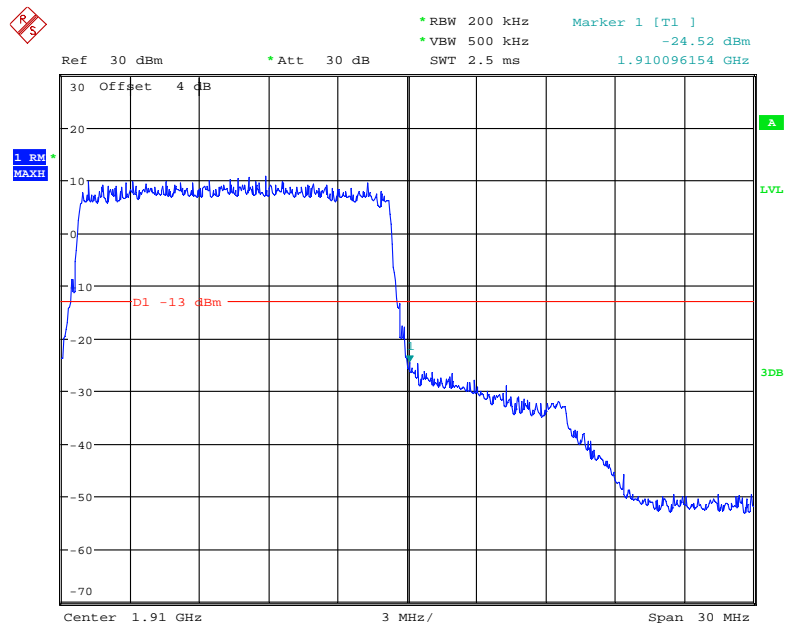
Date: 15.OCT.2017 16:31:15

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



Date: 15.OCT.2017 16:30:21

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



Date: 15.OCT.2017 16:30:59

Ref 30 dBm \* Att 30 dB \* RBW 200 kHz VBW 500 kHz SWT 2.5 ms Marker 1 [T1] -24.69 dBm 1.849679487 GHz

30 Offset 4 dB

1 RM MAXH

D1 -13 dBm

1

LVL

3DB

Center 1.85 GHz 4 MHz/ Span 40 MHz

Date: 15.OCT.2017 16:33:04

Ref 30 dBm

\* Att 30 dB

\* RBW 200 kHz

\* VBW 500 kHz

SWT 2.5 ms

Marker 1 [T1]

-26.75 dBm

1.910384615 GHz

30 Offset 4 dB

1 RM MAXII

D1 -13 dBm

1

Center 1.91 GHz

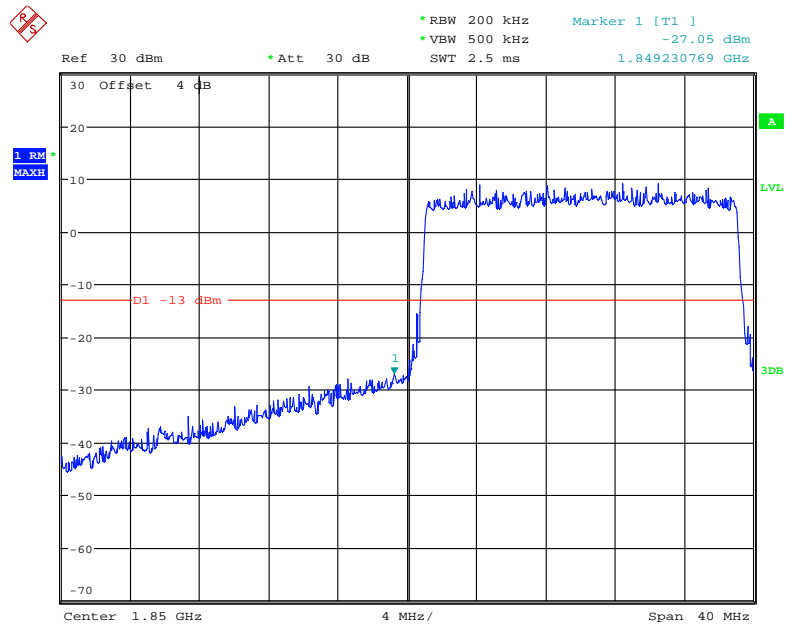
4 MHz/

Span 40 MHz

Date: 15.OCT.2017 16:31:37

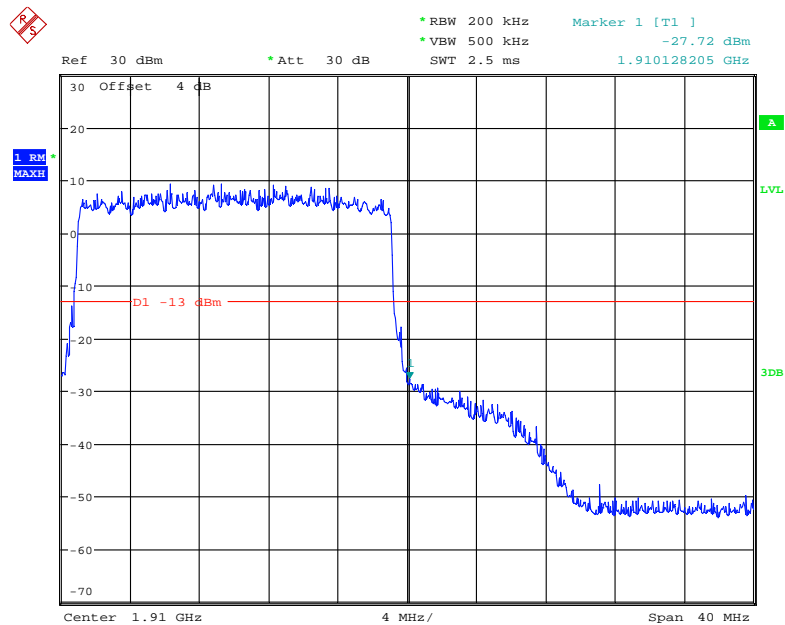


### 16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 15.OCT.2017 16:32:39

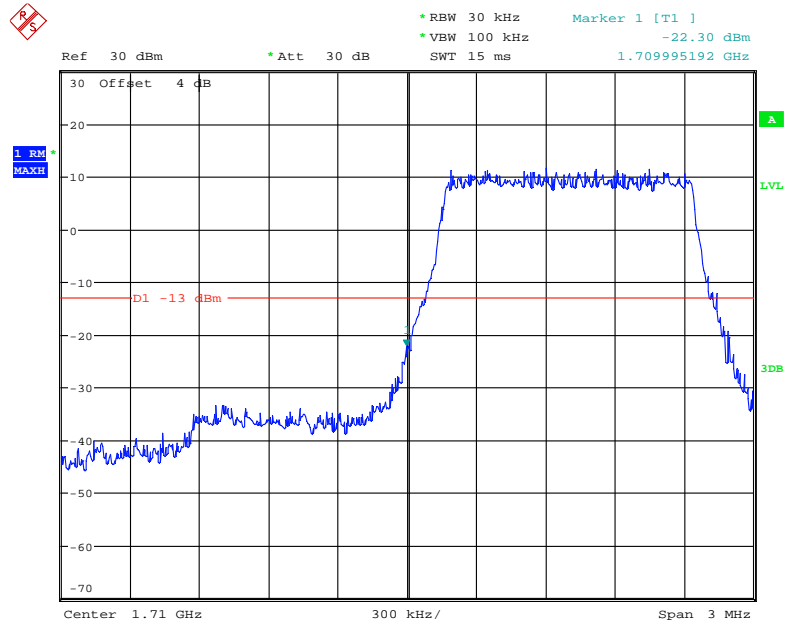
### 16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 15.OCT.2017 16:32:07

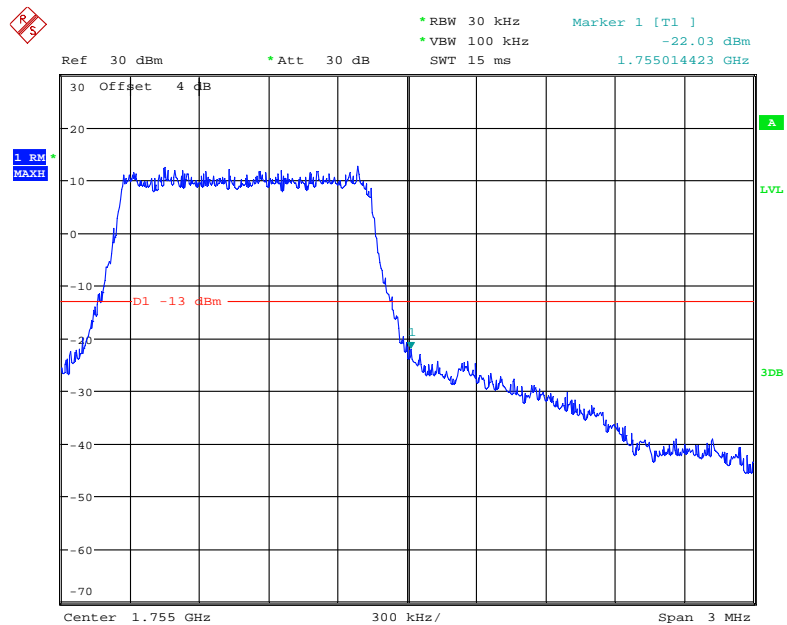
**Band 4:**

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



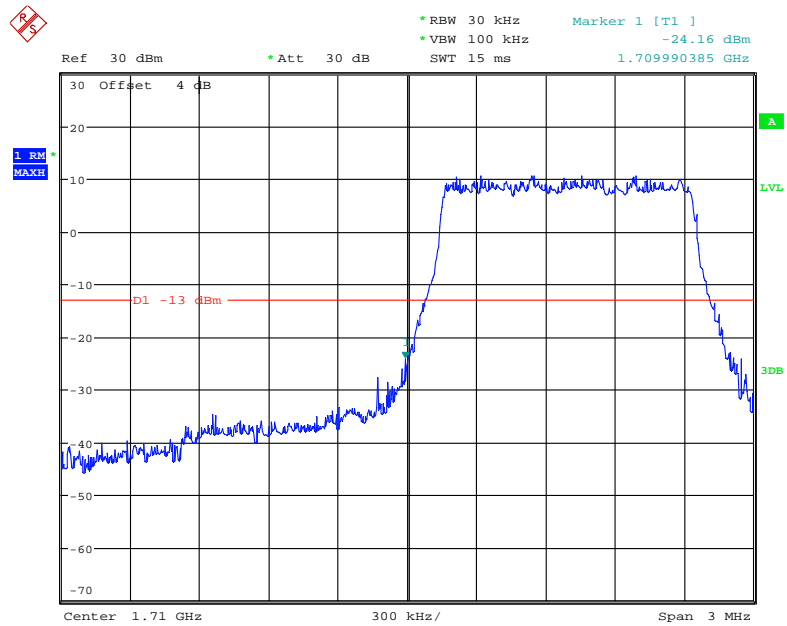
Date: 15.OCT.2017 16:34:55

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



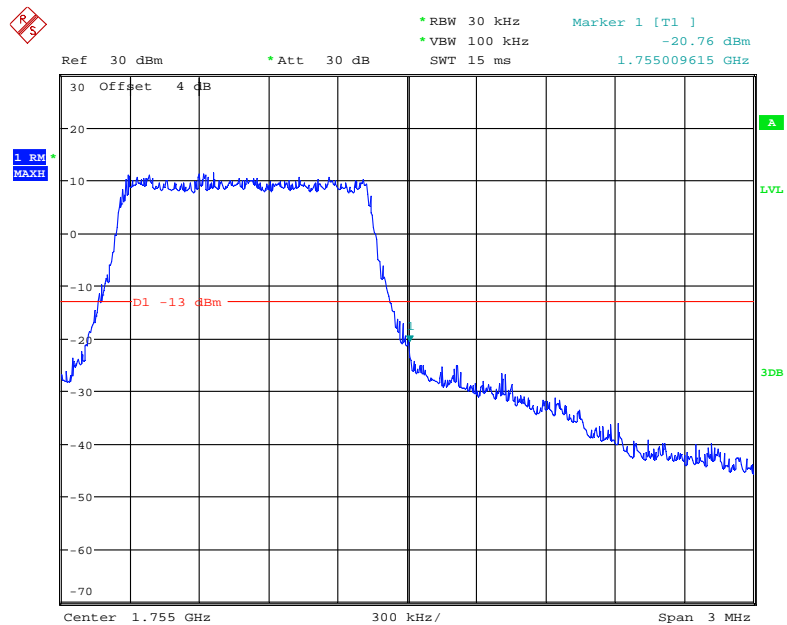
Date: 15.OCT.2017 16:35:20

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



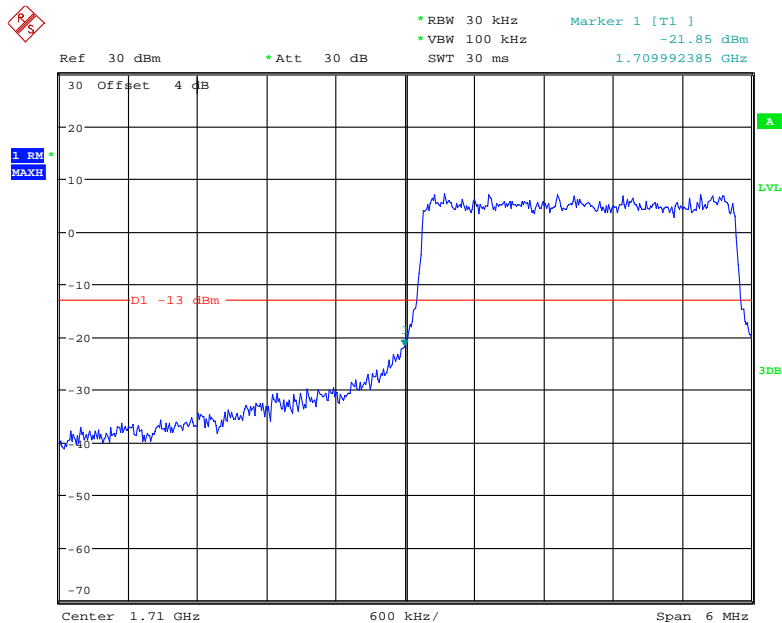
Date: 15.OCT.2017 16:34:32

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



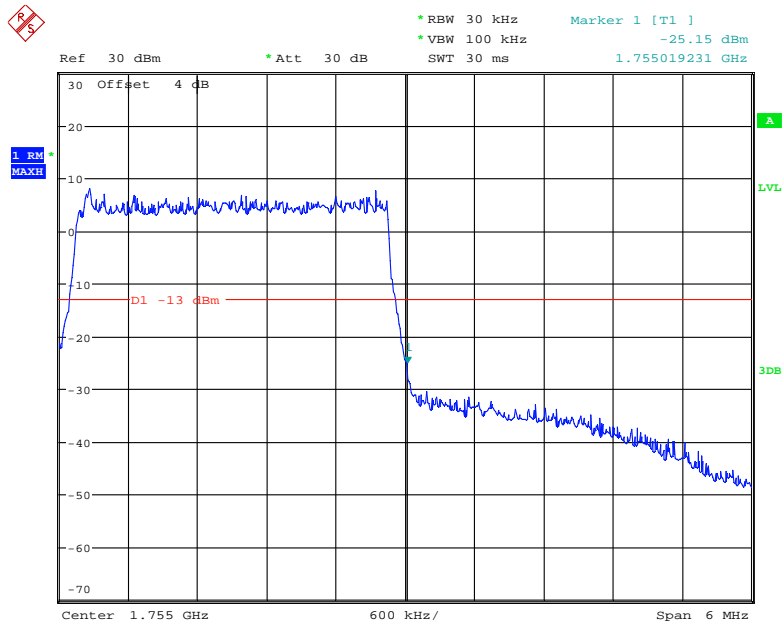
Date: 15.OCT.2017 16:35:42

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



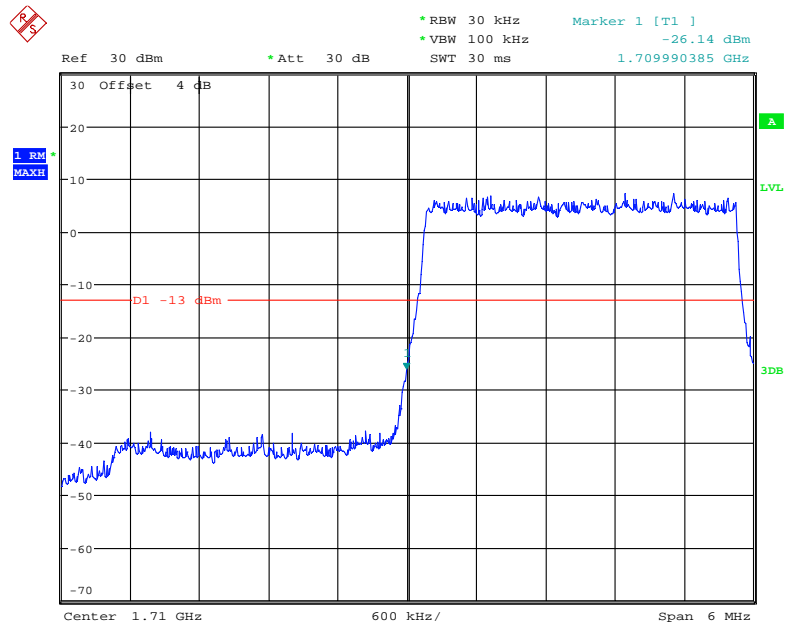
Date: 13.DEC.2017 21:49:50

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



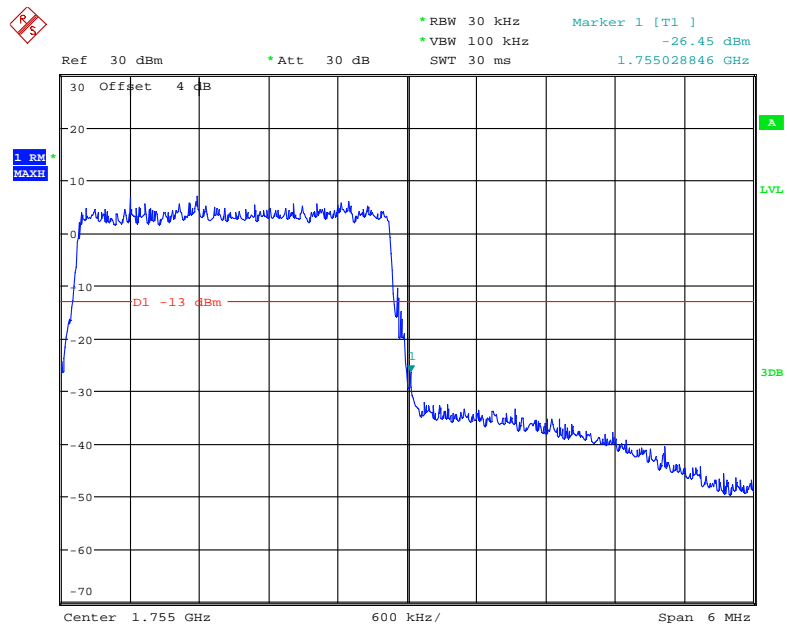
Date: 15.OCT.2017 16:36:19

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



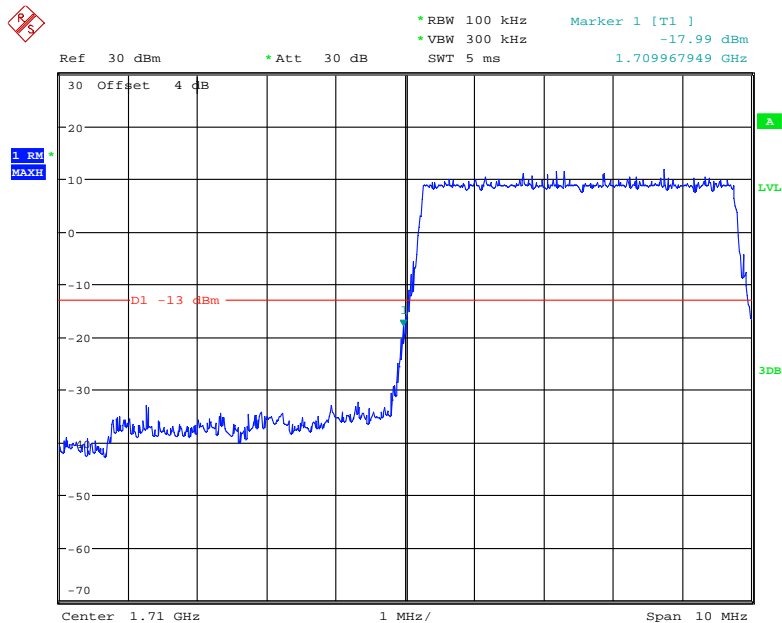
Date: 15.OCT.2017 16:38:04

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



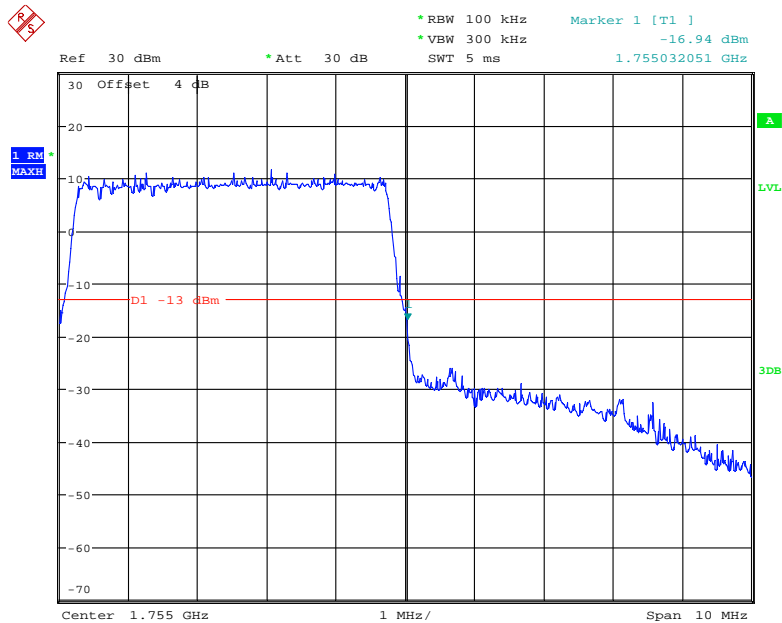
Date: 15.OCT.2017 16:36:45

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



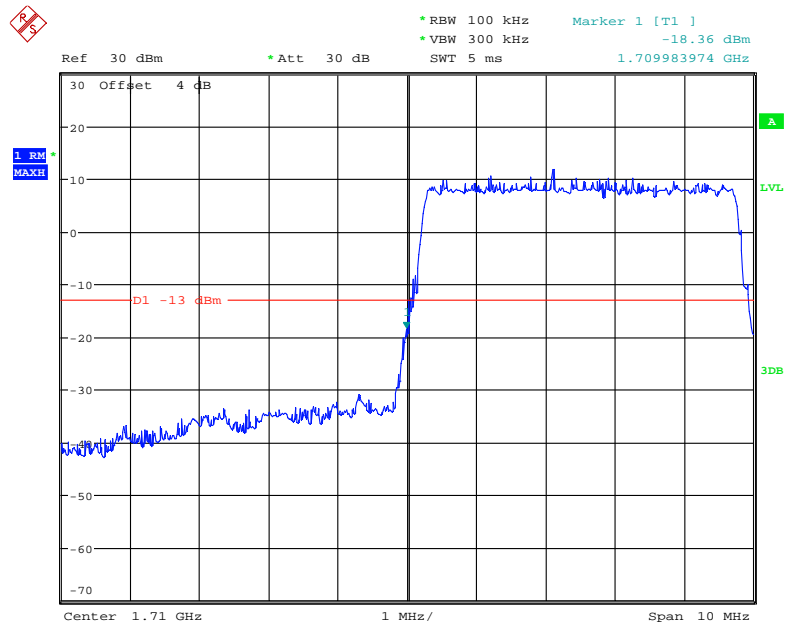
Date: 15.OCT.2017 16:39:08

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



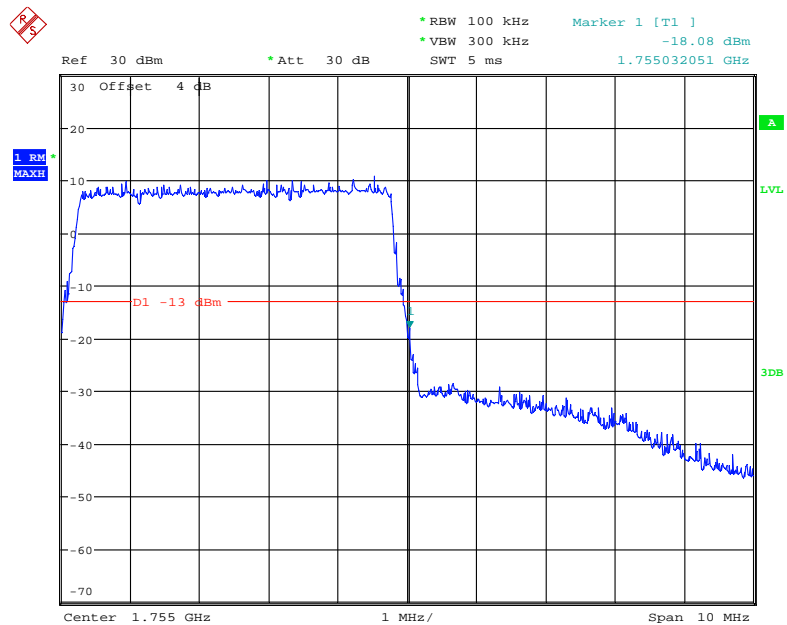
Date: 15.OCT.2017 16:39:36

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



Date: 15.OCT.2017 16:38:47

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



Date: 15.OCT.2017 16:39:54

Ref 30 dBm \* Att 30 dB

\* RBW 100 kHz \* VBW 300 kHz \* SWT 10 ms

Marker 1 [T1 ] -28.37 dBm 1.710000000 GHz

30 Offset 4 dB

1 RM \* MAXH

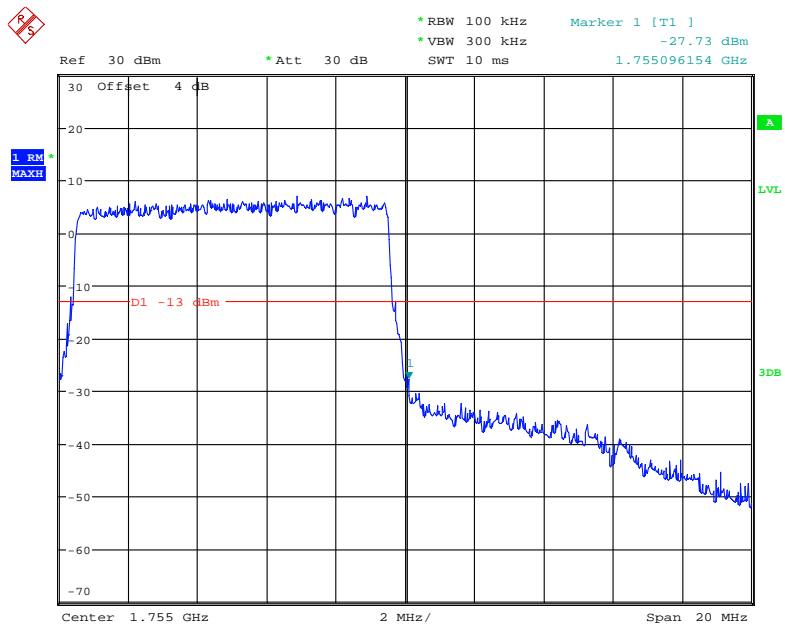
D1 -13 dBm

LVL

3DB

Center 1.71 GHz 2 MHz/ Span 20 MHz

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



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Ref 30 dBm \* Att 30 dB \* RBW 100 kHz Marker 1 [T1] -28.99 dBm  
 \* VBW 300 kHz SWT 10 ms 1.70935897 GHz

30 Offset 4 dB

1 RM  
 MAXH

D1 -13 dBm

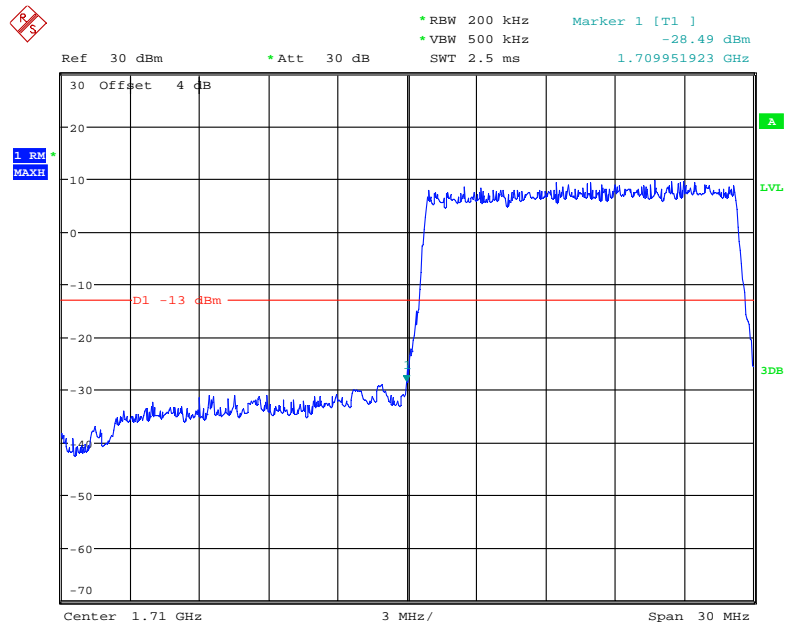
Center 1.71 GHz 2 MHz/ Span 20 MHz

Date: 15.OCT.2017 16:41:26

The screenshot displays a spectrum analyzer interface. The main plot shows a blue trace representing the signal spectrum. The x-axis is labeled 'Center' and 'Span', with a center frequency of 1.755 GHz and a span of 20 MHz. The y-axis represents power in dBm, ranging from -70 to 30. A red horizontal line is drawn at -13 dBm, labeled 'D1 -13 dBm'. The signal is relatively flat at approximately 0 dBm until it reaches a sharp drop at 2 MHz, where it falls to about -35 dBm and then continues to decrease with some noise. The interface includes various control elements: a top status bar with 'Ref 30 dBm', 'Att 30 dB', 'RBW 100 kHz', 'VBW 300 kHz', 'SWT 10 ms', and 'Marker 1 [T1] -25.95 dBm 1.755064103 GHz'. On the left, there are buttons for '1 RM' and 'MAXH'. On the right, there are buttons for 'A' and '3DB'. The plot area has a grid with major lines every 10 dB on the y-axis and every 10 MHz on the x-axis.

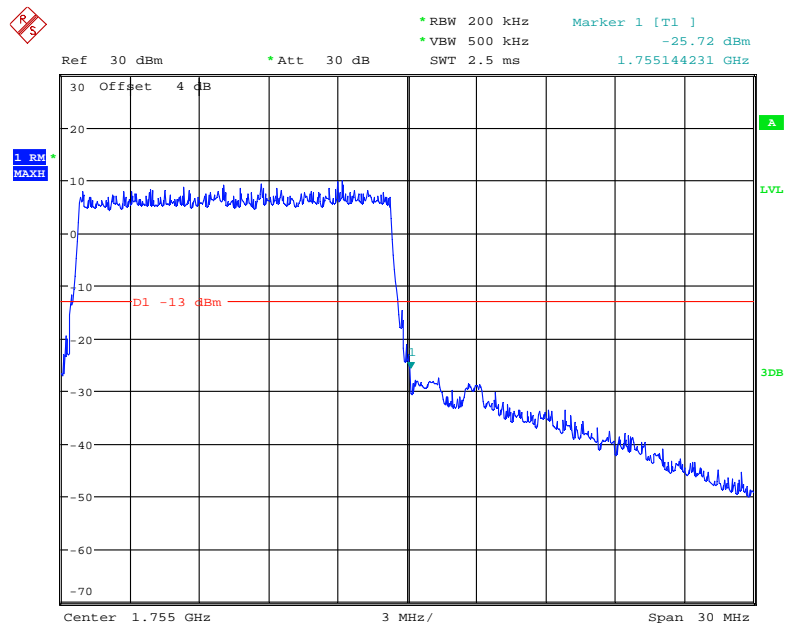
Date: 15.OCT.2017 16:40:20

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



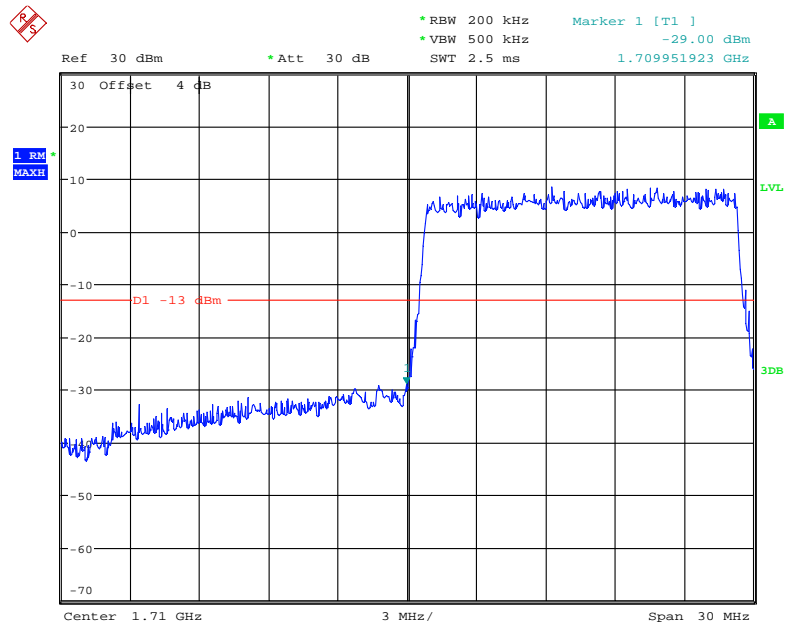
Date: 15.OCT.2017 16:42:13

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



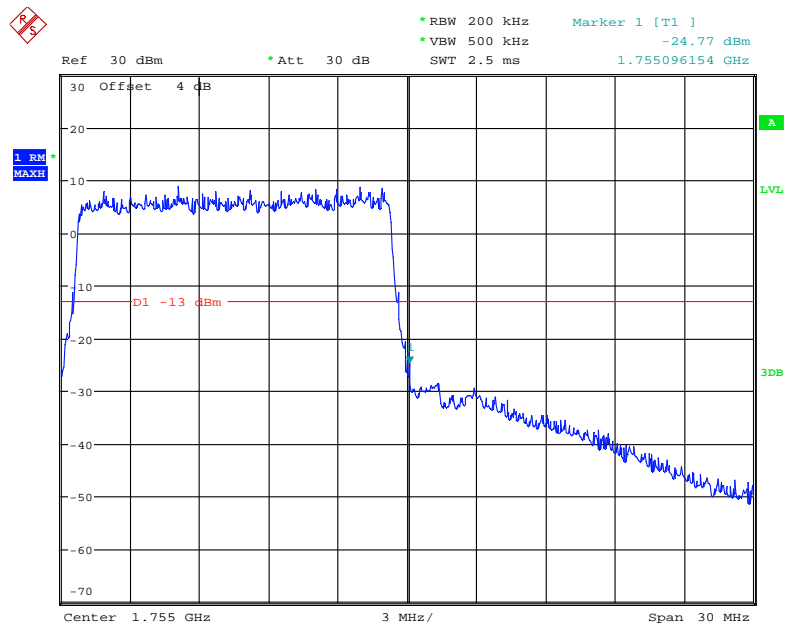
Date: 15.OCT.2017 16:44:19

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



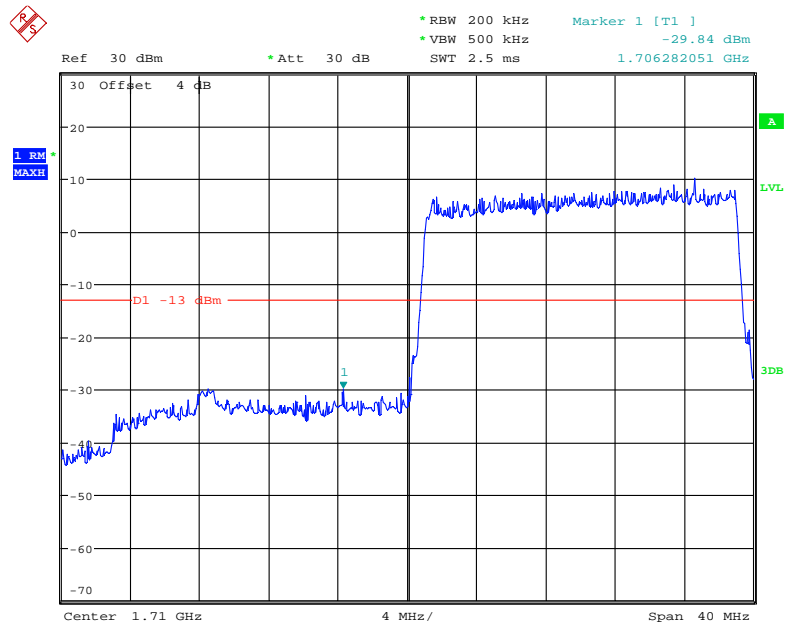
Date: 15.OCT.2017 16:42:42

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



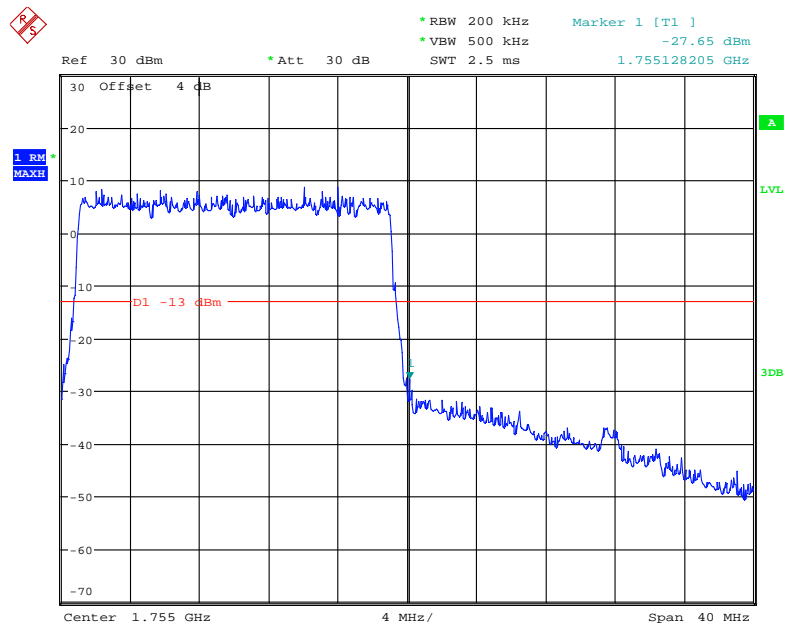
Date: 15.OCT.2017 16:43:49

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



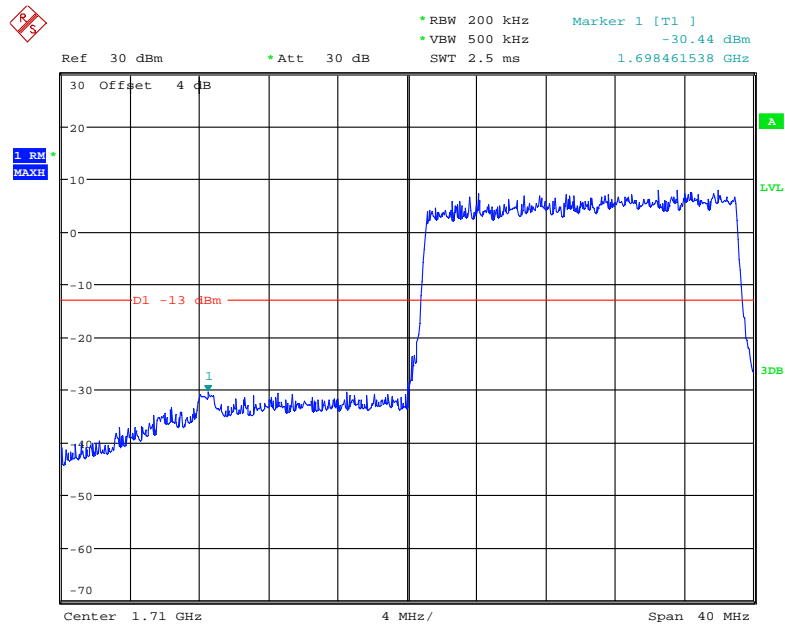
Date: 15.OCT.2017 16:46:13

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



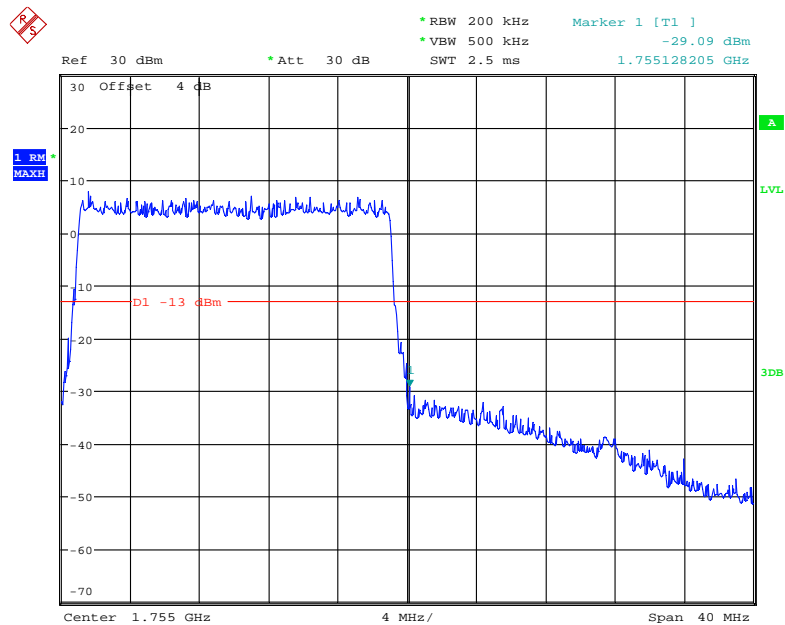
Date: 15.OCT.2017 16:44:45

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



Date: 15.OCT.2017 16:45:39

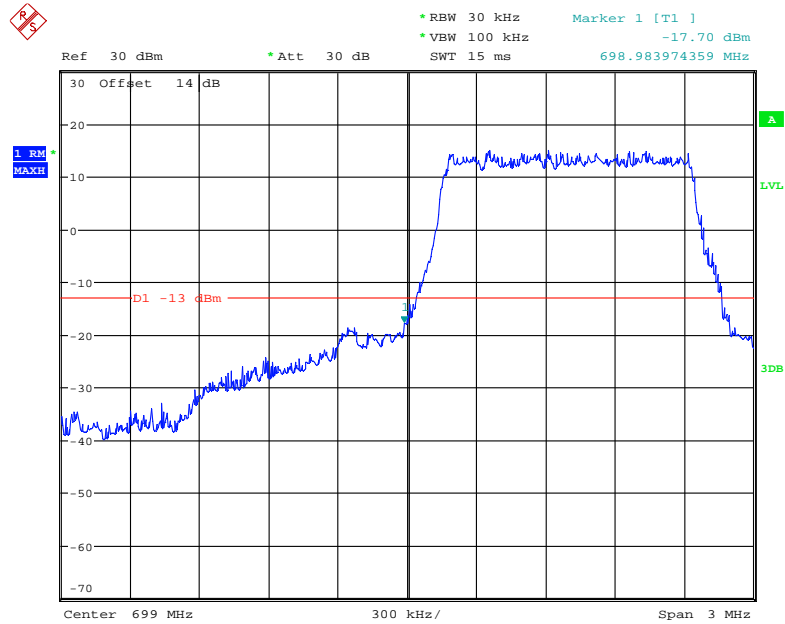
### 16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 15.OCT.2017 16:45:11

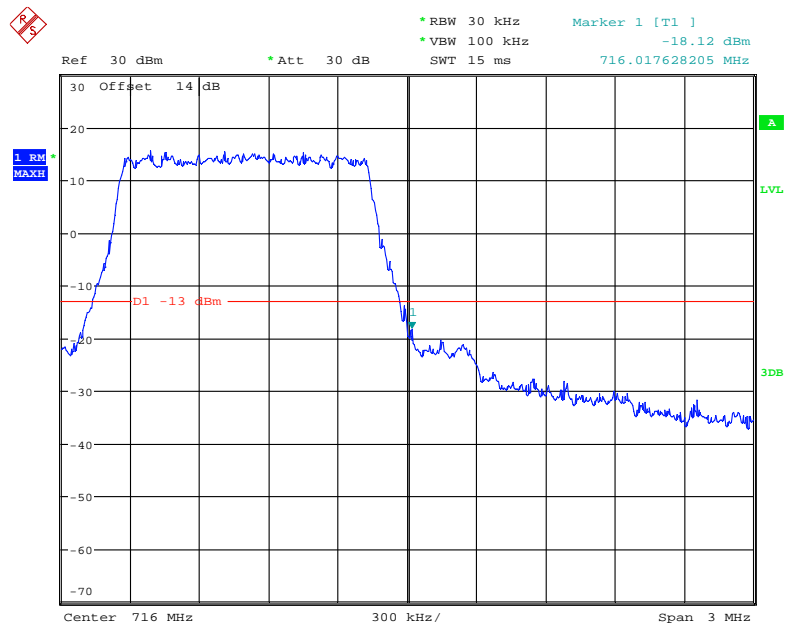
**Band 12:**

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



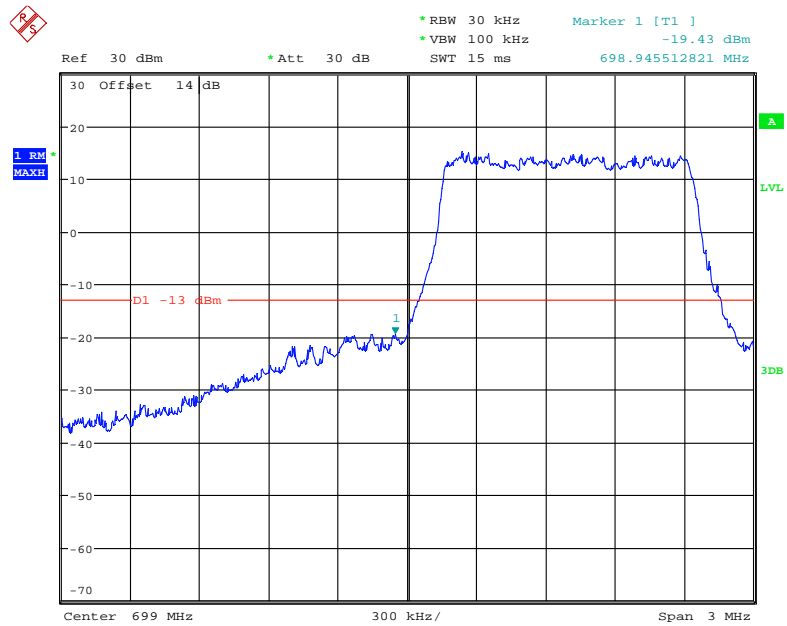
Date: 20.DEC.2017 21:44:04

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



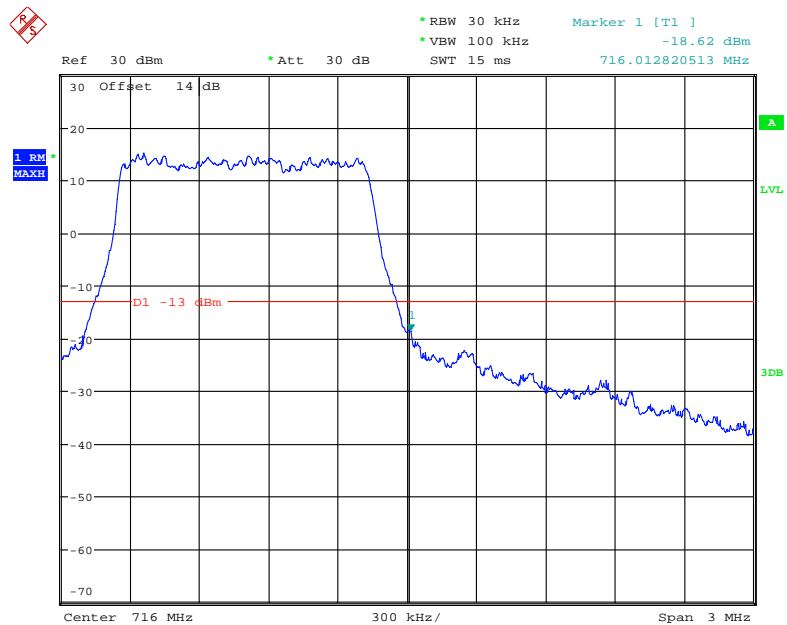
Date: 20.DEC.2017 21:59:55

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



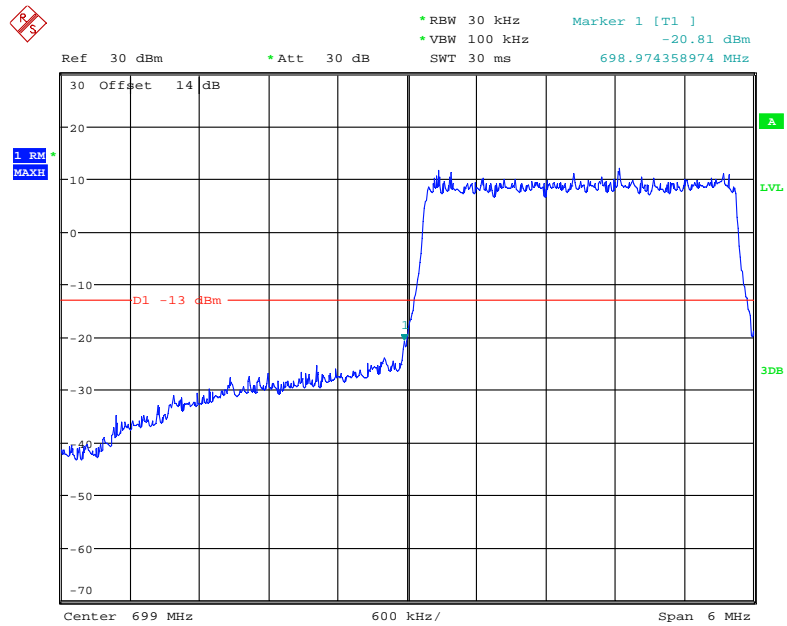
Date: 20.DEC.2017 21:44:56

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



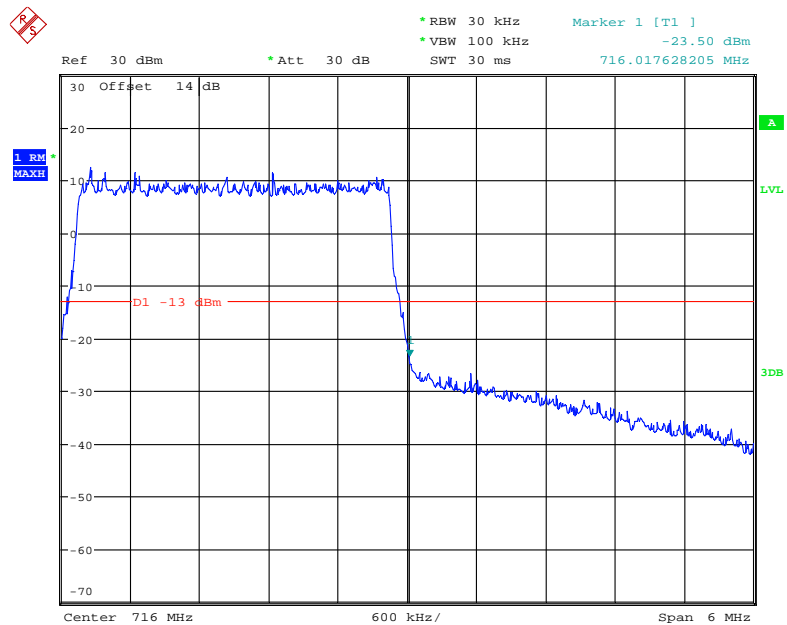
Date: 20.DEC.2017 21:59:00

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



Date: 20.DEC.2017 21:45:35

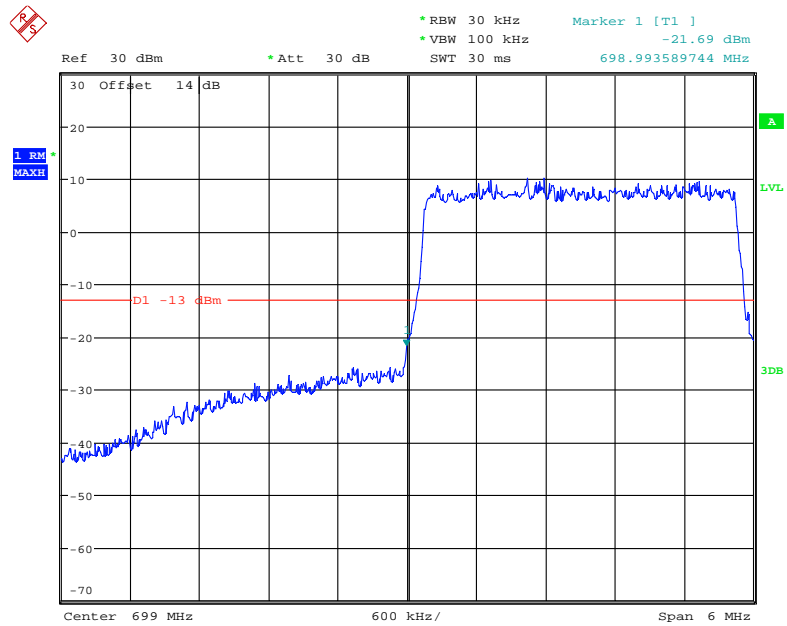
### QPSK (3.0 MHz, FULL RB) - Right Band Edge



Date: 20.DEC.2017 22:00:20

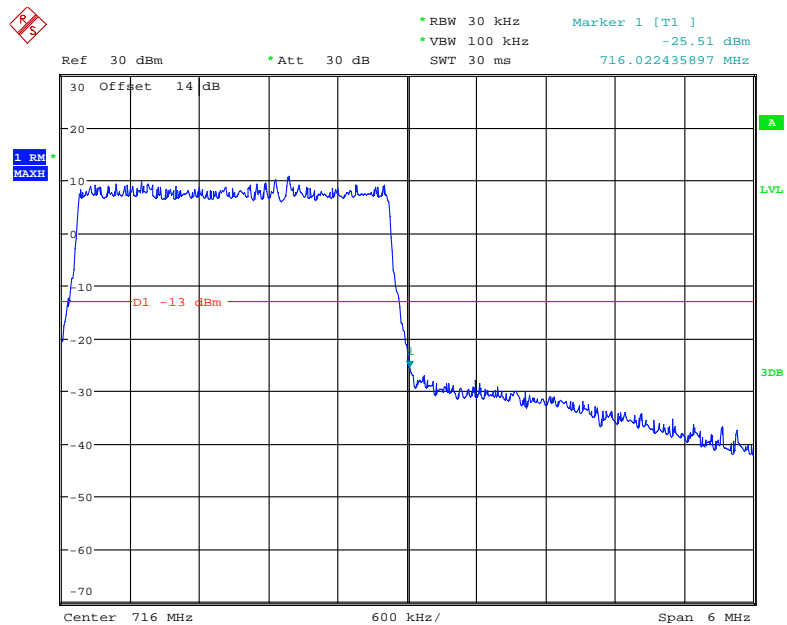


### 16-QAM (3.0 MHz, FULL RB) - Left Band Edge



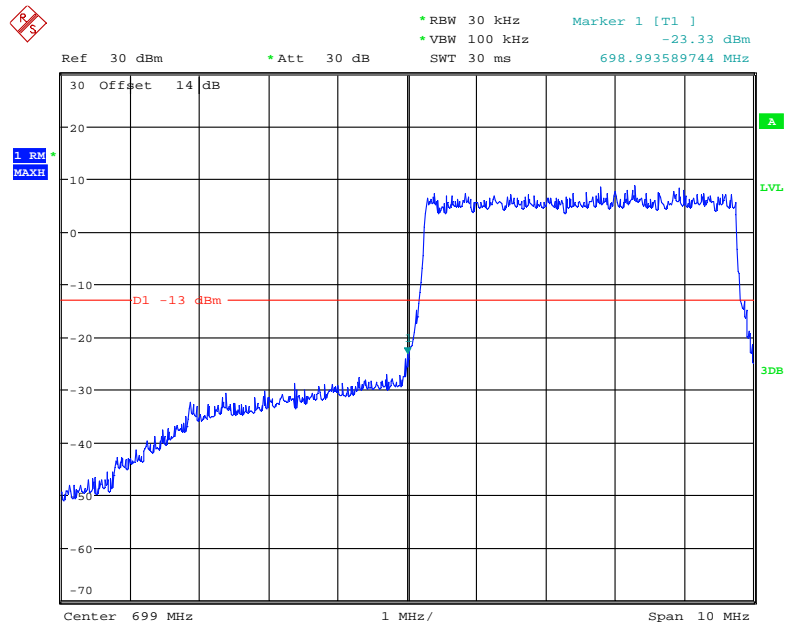
Date: 20.DEC.2017 21:46:06

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



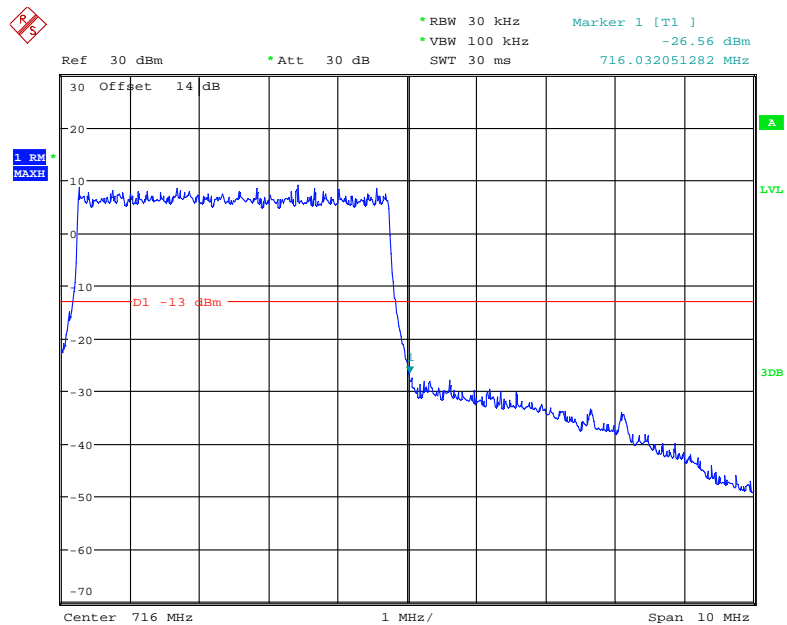
Date: 20.DEC.2017 21:55:31

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



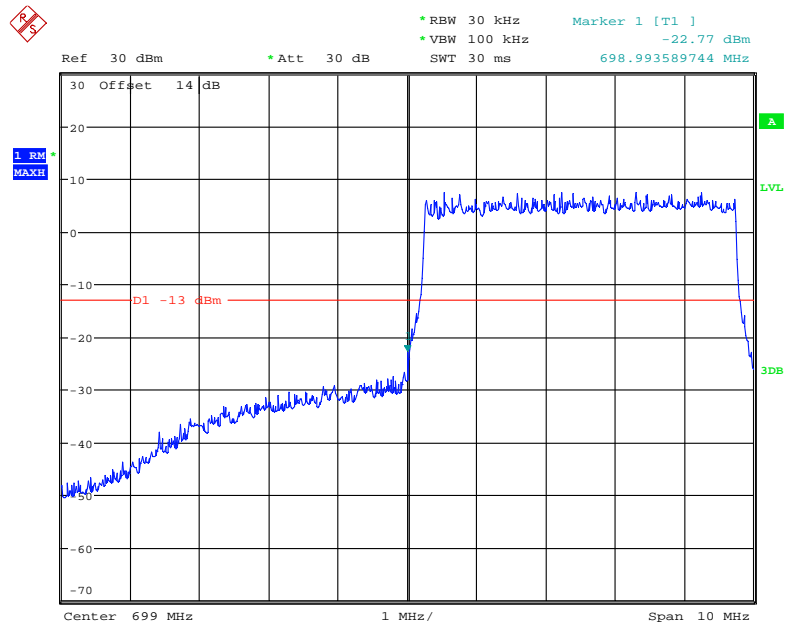
Date: 20.DEC.2017 21:46:28

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



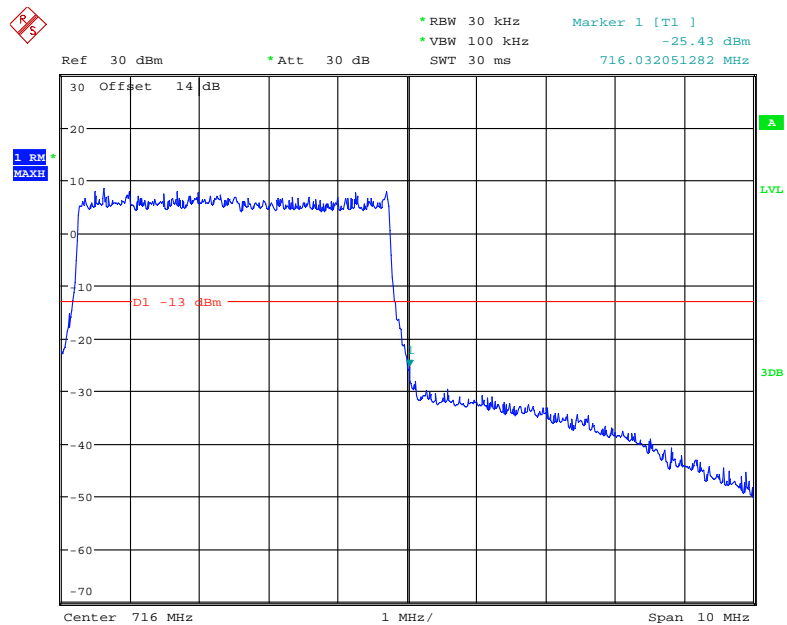
Date: 20.DEC.2017 21:55:03

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



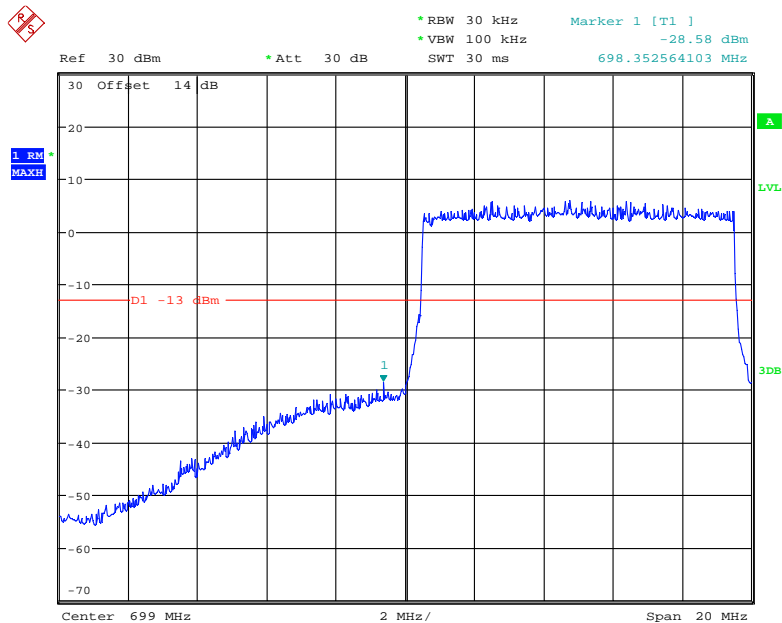
Date: 20.DEC.2017 21:46:51

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



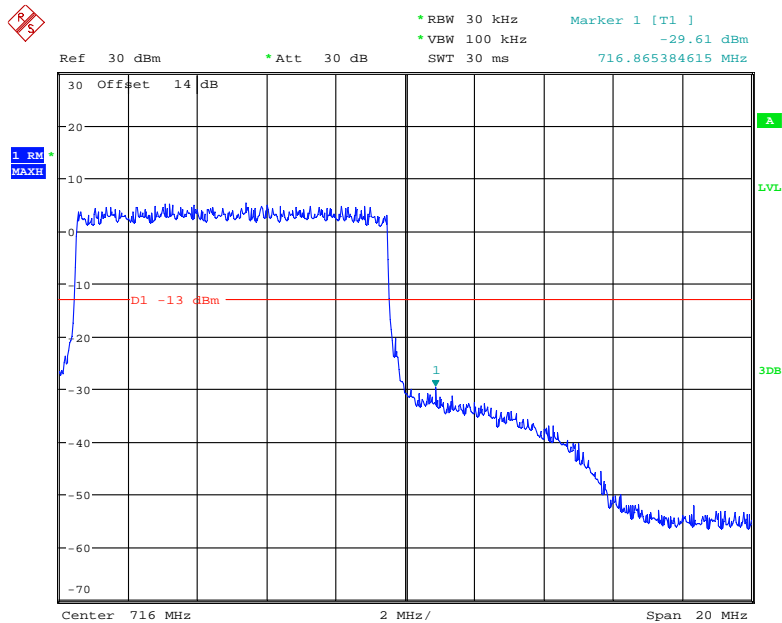
Date: 20.DEC.2017 21:54:32

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



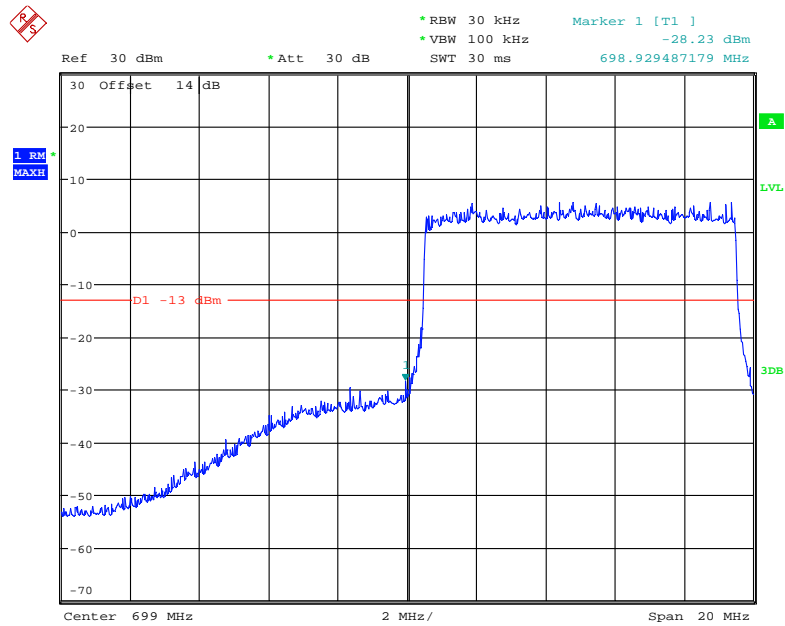
Date: 20.DEC.2017 21:47:28

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



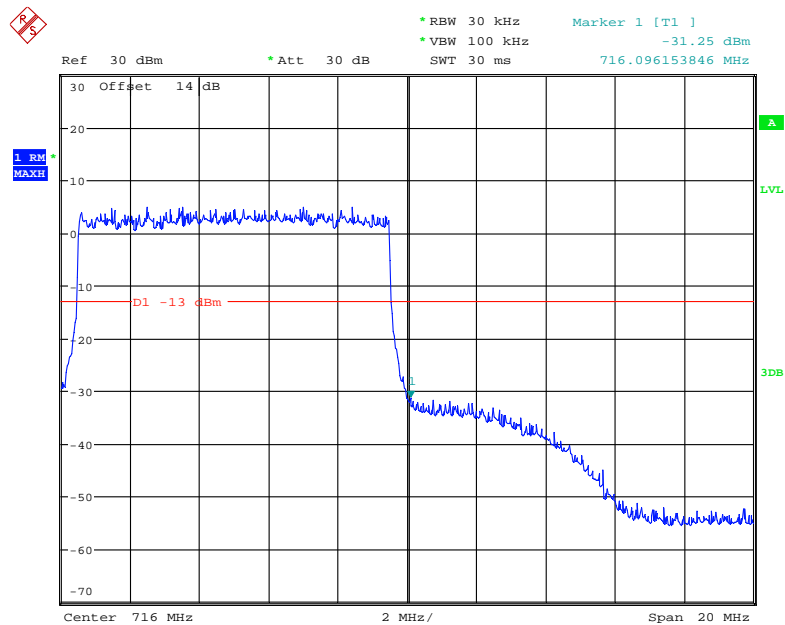
Date: 20.DEC.2017 21:53:28

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



Date: 20.DEC.2017 21:50:33

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



Date: 20.DEC.2017 21:53:03

## **RSS-GEN §6.6 – OCCUPIED BANDWIDTH**

### **Applicable Standard**

According to RSS-Gen §6.6

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% bandwidth, as calculated or measured.

### **Test Procedure**

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that indicated 99% Bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

### **Test Data**

#### **Environmental Conditions**

<b>Temperature:</b>	24~25 °C
<b>Relative Humidity:</b>	48~50 %
<b>ATM Pressure:</b>	100.0~101.0 kPa

*The testing was performed by Kobe Li from 2017-10-12 to 2017-10-15.*

*Test Mode: Transmitting*

*Test Result: Compliance. Please refer to the plot and tabular data sheet attached.*

**Cellular Band**

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.135	4.744
HSUPA (BPSK)	836.6	4.167	4.744
HSDPA (16QAM)	836.6	4.167	4.744

**PCS Band**

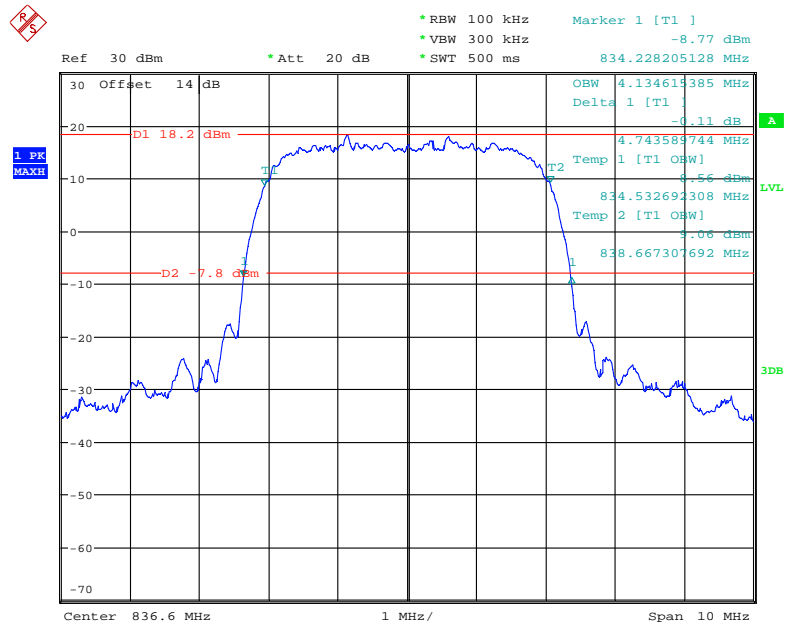
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.167	4.792
HSUPA (BPSK)	1880.0	4.151	4.776
HSDPA (16QAM)	1880.0	4.151	4.792

**AWS Band**

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.135	4.728
HSUPA (BPSK)	1880.0	4.135	4.712
HSDPA (16QAM)	1880.0	4.135	4.728

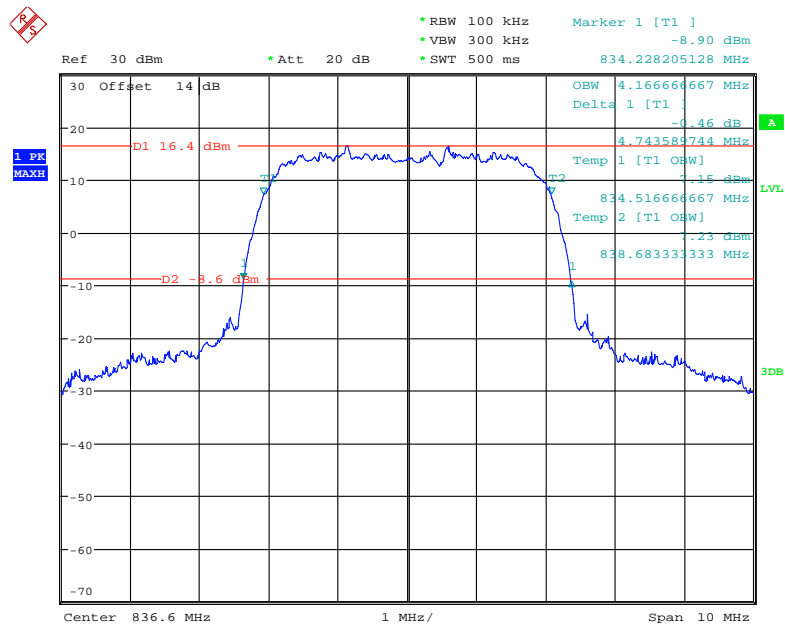
# Cellular Band

## 26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode



Date: 12.OCT.2017 21:02:33

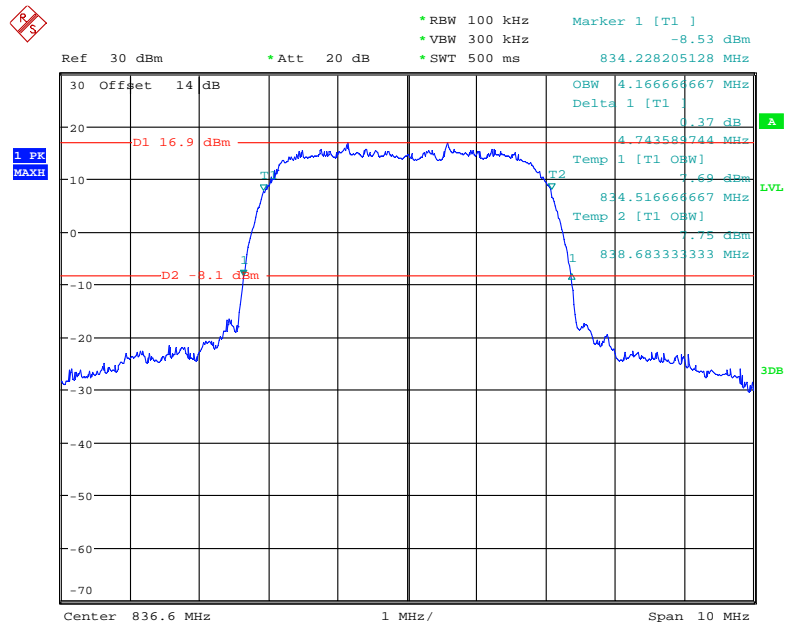
## 26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode



Date: 12.OCT.2017 21:05:58



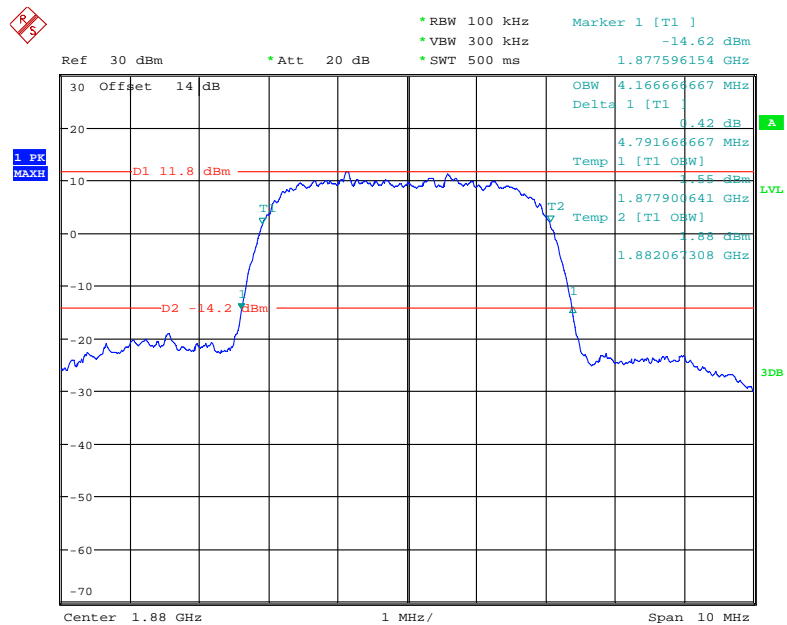
## 26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode



Date: 12.OCT.2017 21:07:17

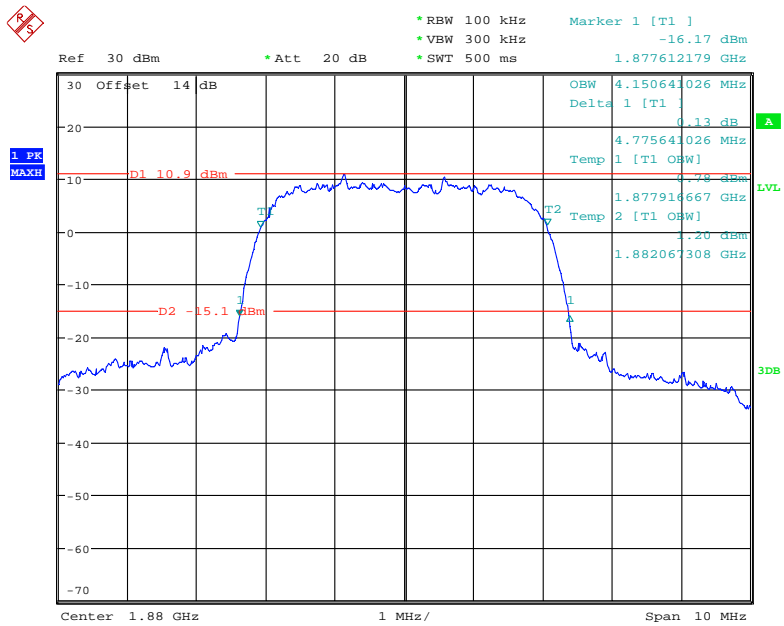
## PCS Band

## 26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode



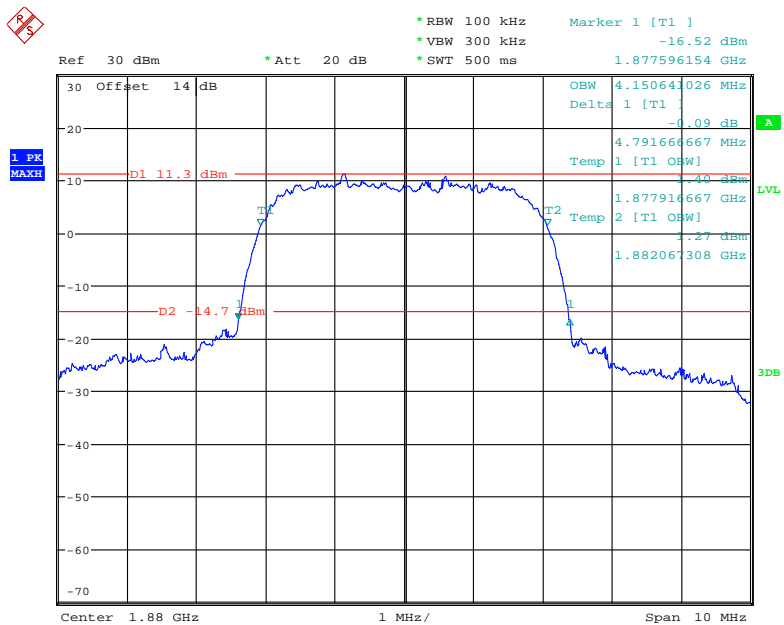
Date: 12.OCT.2017 20:43:37

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



Date: 12.OCT.2017 20:59:04

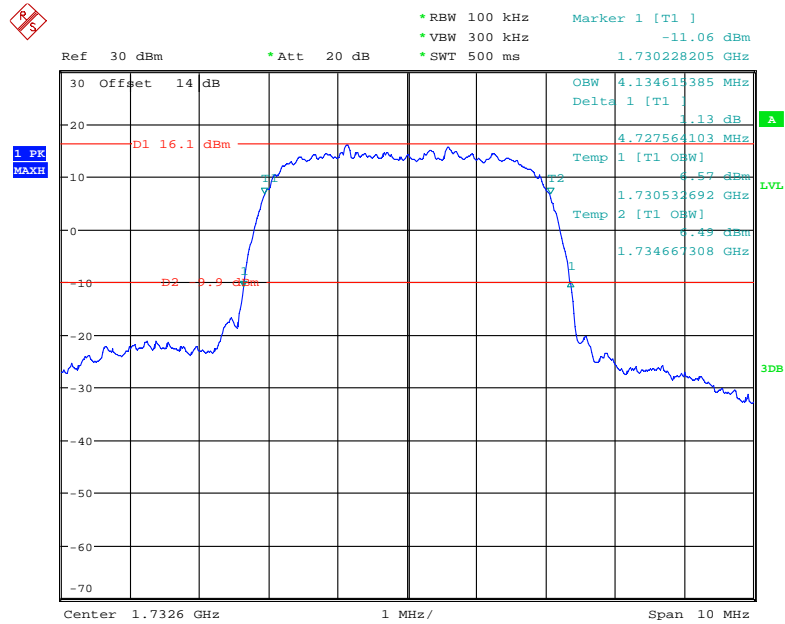
## 26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode



Date: 12.OCT.2017 20:49:05

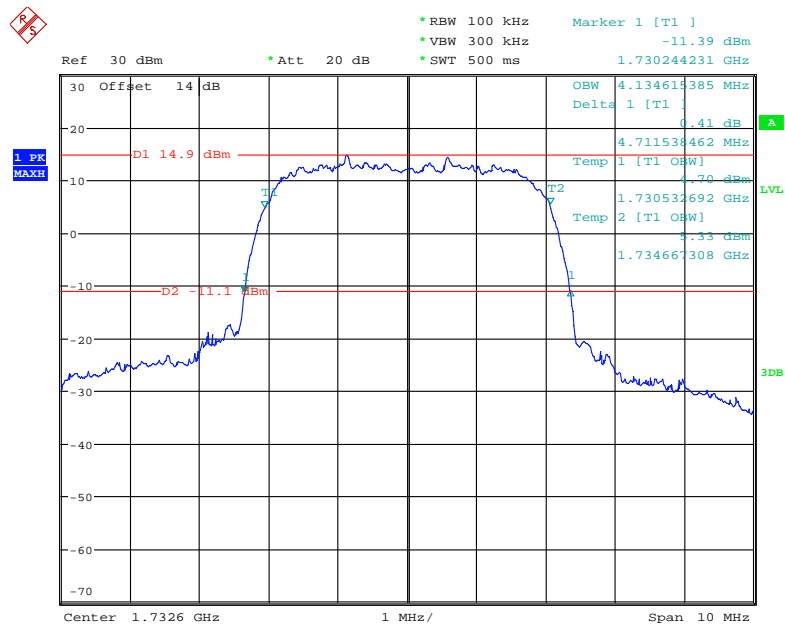
# AWS Band

## 26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode



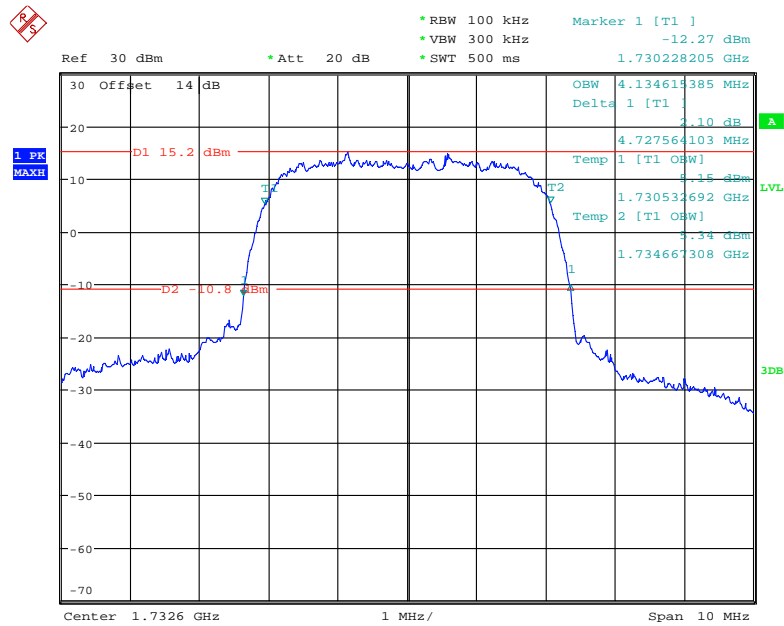
Date: 12.OCT.2017 20:32:20

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



Date: 12.OCT.2017 20:36:51

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



Date: 12.OCT.2017 20:40:14

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

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.115	1.336
	16QAM	1.106	1.341
3.0	QPSK	2.702	2.962
	16QAM	2.702	2.981
5.0	QPSK	4.535	5.045
	16QAM	4.519	5.061
10.0	QPSK	8.974	9.880
	16QAM	8.942	9.752
15.0	QPSK	13.462	14.704
	16QAM	13.413	14.702
20.0	QPSK	17.885	19.255
	16QAM	17.885	19.191

Ref 30 dBm      \* Att 30 dB      \* RBW 30 kHz      \* VBW 100 kHz      SWT 15 ms      Marker 1 [T1]

Offset 4 dB

1. PK  
MAXH

D1 15.4 dBm

D2 -10.6 dBm

T1

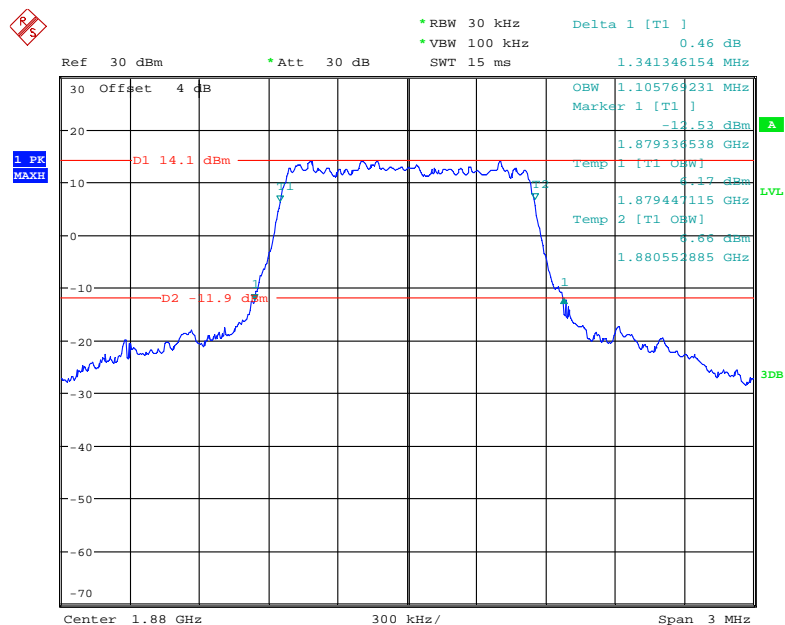
T2

OBW 1.115384615 MHz  
Delta 1 [T1] 0.78 dB  
1.336538462 MHz  
Temp 1 [T1 OBW] -1.31 dBm  
1.879437500 GHz  
Temp 2 [T1 OBW] -8.53 dBm  
1.880552885 GHz

3DB

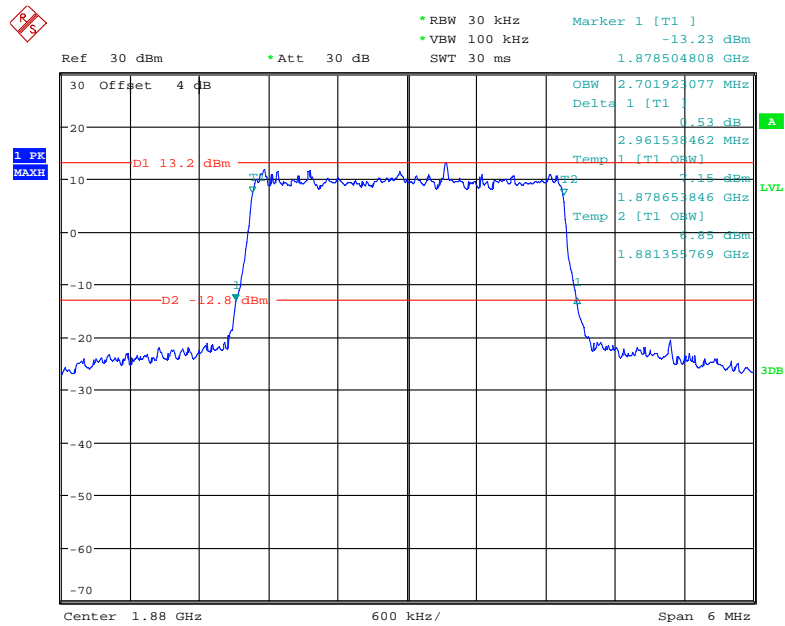
Center 1.88 GHz      300 kHz/      Span 3 MHz

**16-QAM (1.4 MHz) - 99% Occupied & 26 dB Bandwidth, Middle channel**



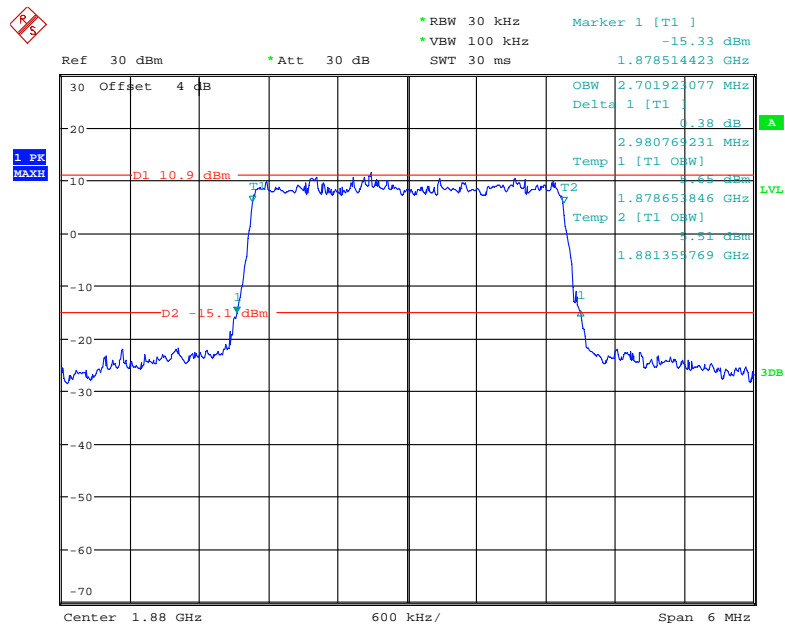
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### QPSK (3.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



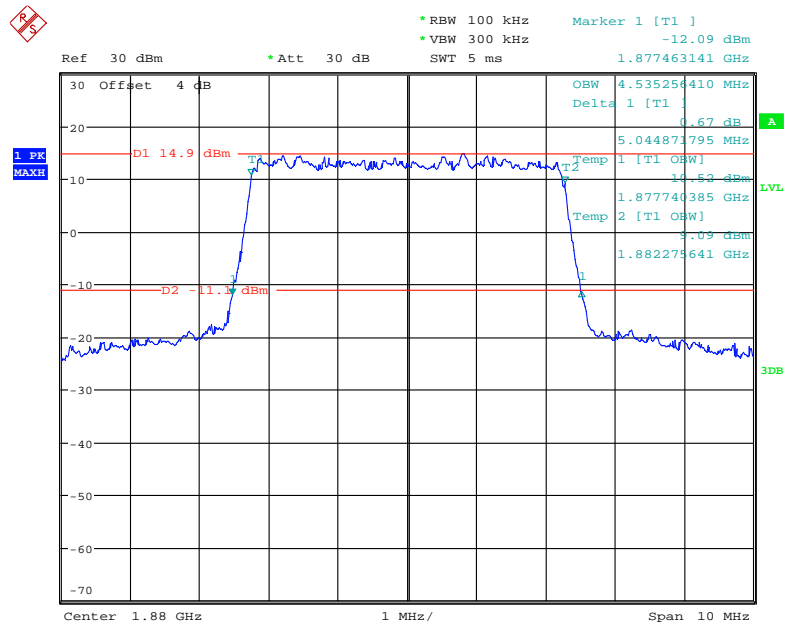
Date: 15.OCT.2017 15:10:47

### 16-QAM (3.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



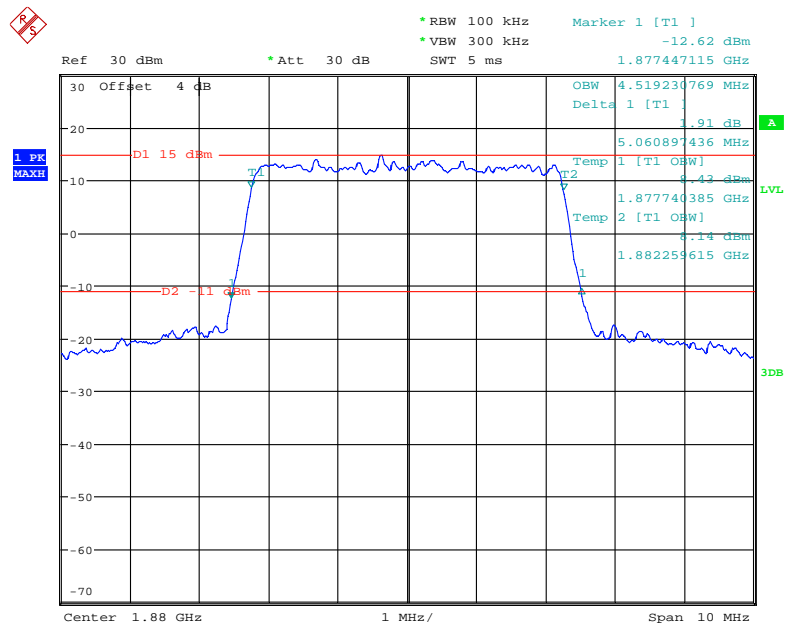
Date: 15.OCT.2017 15:10:00

### QPSK (5.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



Date: 15.OCT.2017 15:11:53

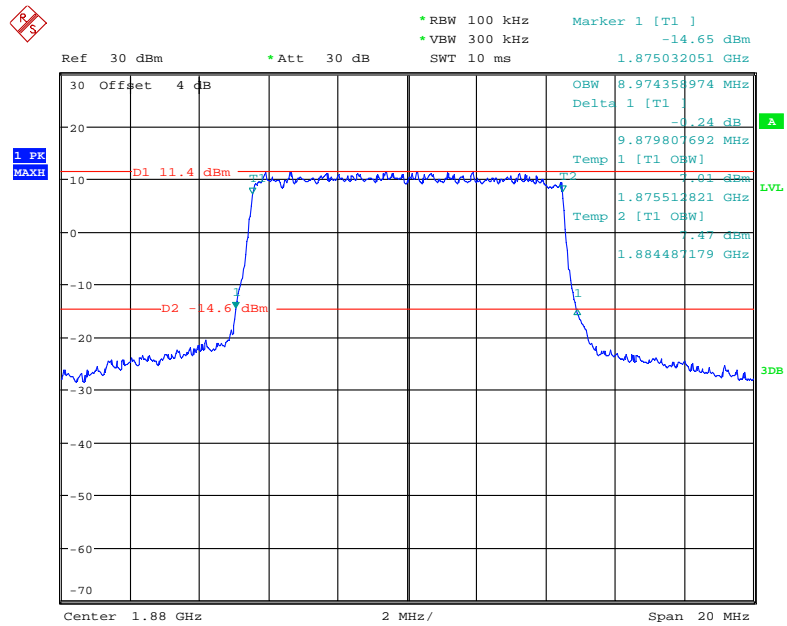
### 16-QAM (5.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



Date: 15.OCT.2017 15:45:31

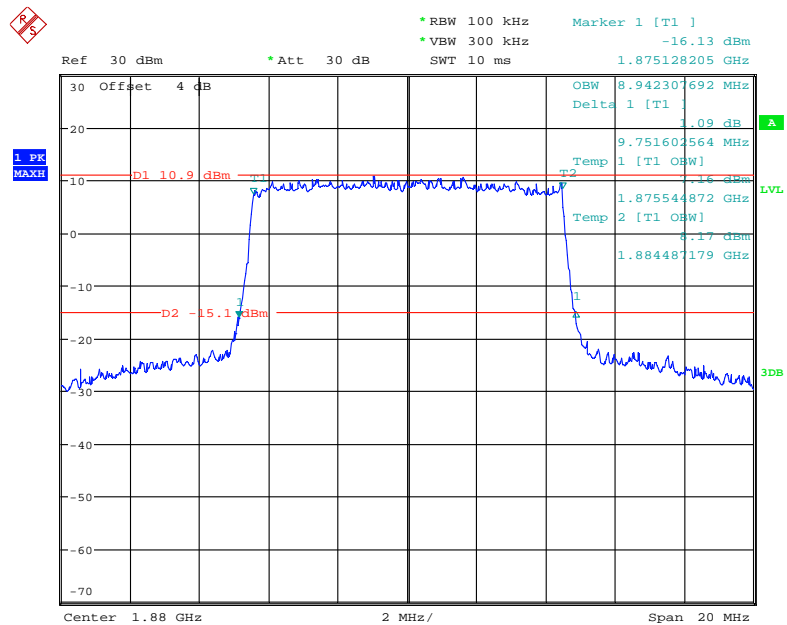


### QPSK (10.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



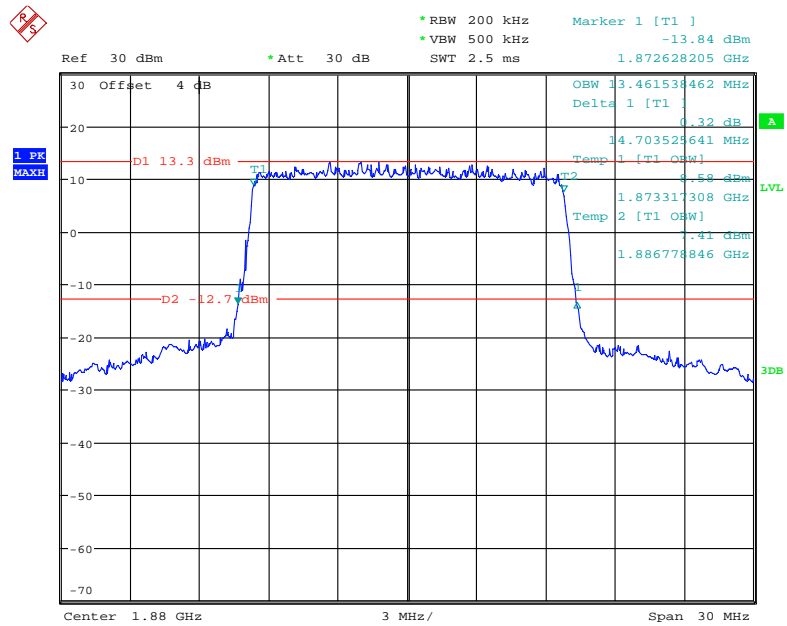
Date: 15.OCT.2017 15:54:56

### 16-QAM (10.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



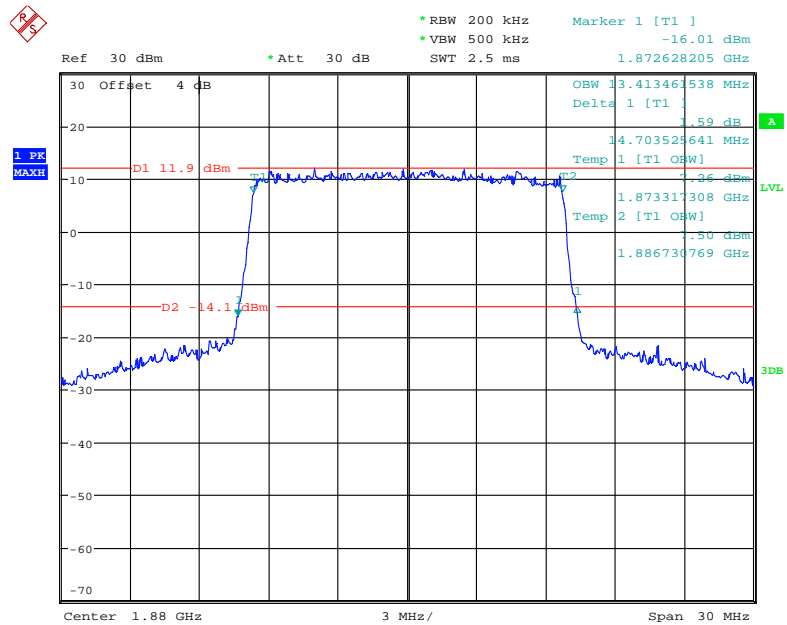
Date: 15.OCT.2017 15:55:30

### QPSK (15.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



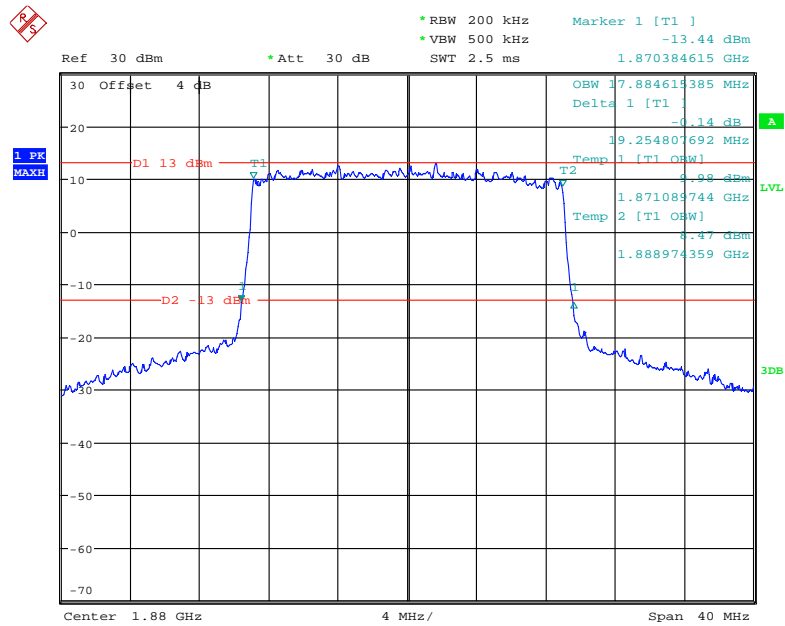
Date: 15.OCT.2017 15:57:24

### 16-QAM (15.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



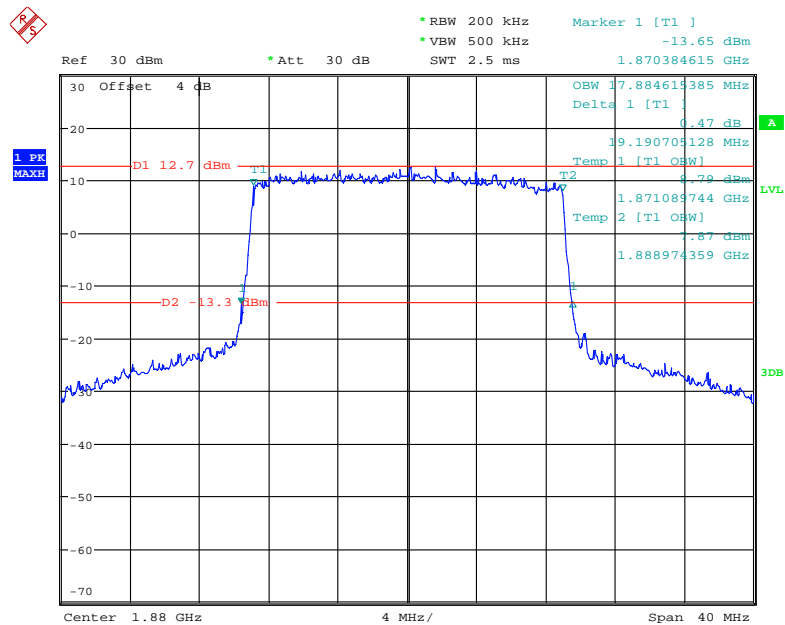
Date: 15.OCT.2017 15:56:39

### QPSK (20.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



Date: 15.OCT.2017 16:06:07

### 16-QAM (20.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel

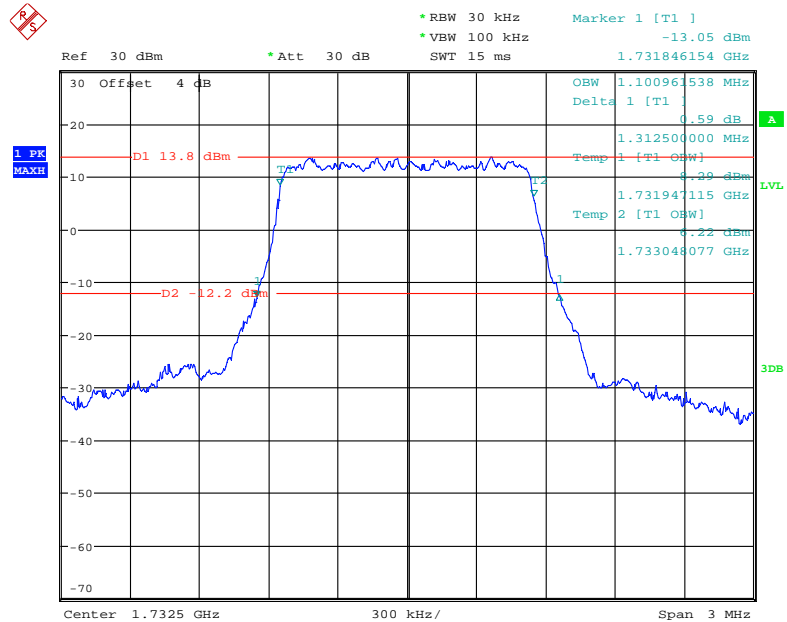


Date: 15.OCT.2017 15:59:33

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

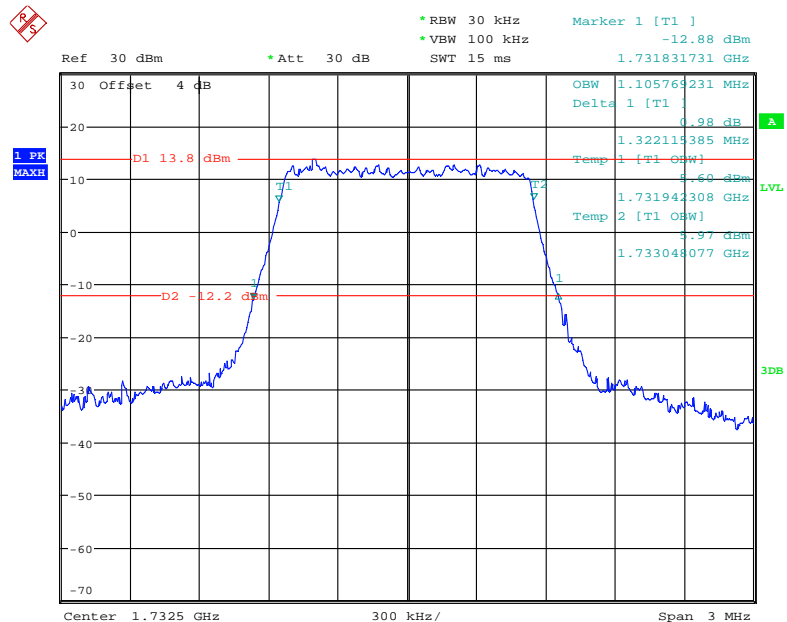
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.313
	16QAM	1.106	1.322
3.0	QPSK	2.692	2.947
	16QAM	2.692	2.976
5.0	QPSK	4.519	5.043
	16QAM	4.503	4.995
10.0	QPSK	8.974	9.785
	16QAM	8.910	9.689
15.0	QPSK	13.413	14.593
	16QAM	13.413	14.545
20.0	QPSK	17.821	19.032
	16QAM	17.821	19.160

### QPSK (1.4 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



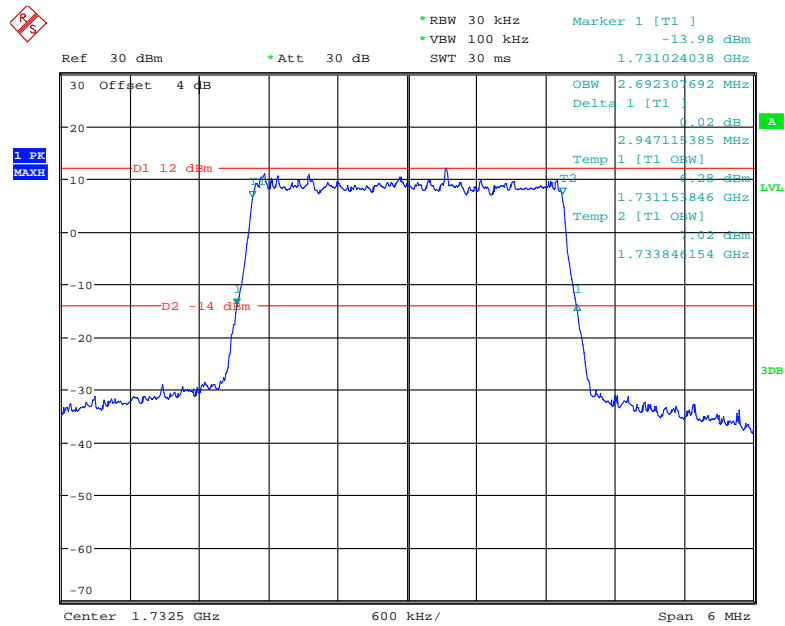
Date: 15.OCT.2017 14:53:17

### 16-QAM (1.4 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



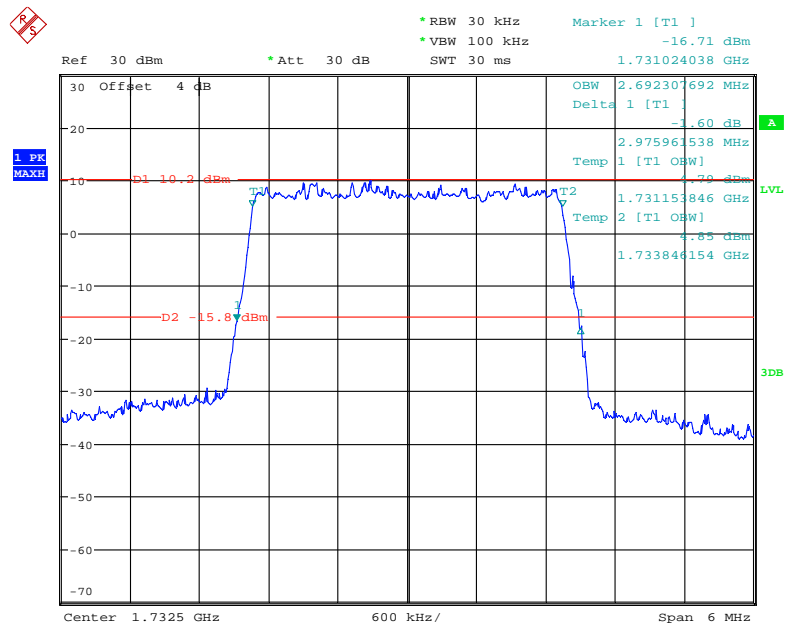
Date: 15.OCT.2017 14:54:28

### QPSK (3.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



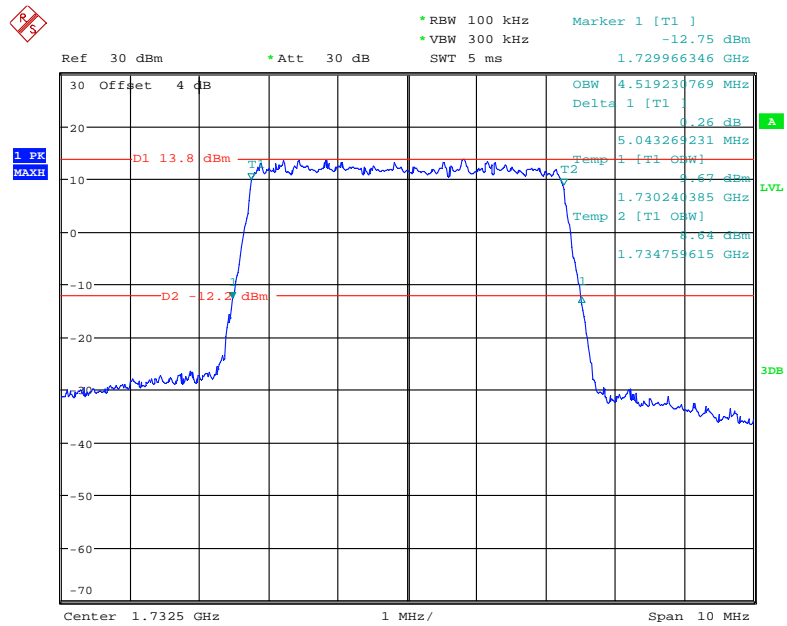
Date: 15.OCT.2017 14:55:51

### 16-QAM (3.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



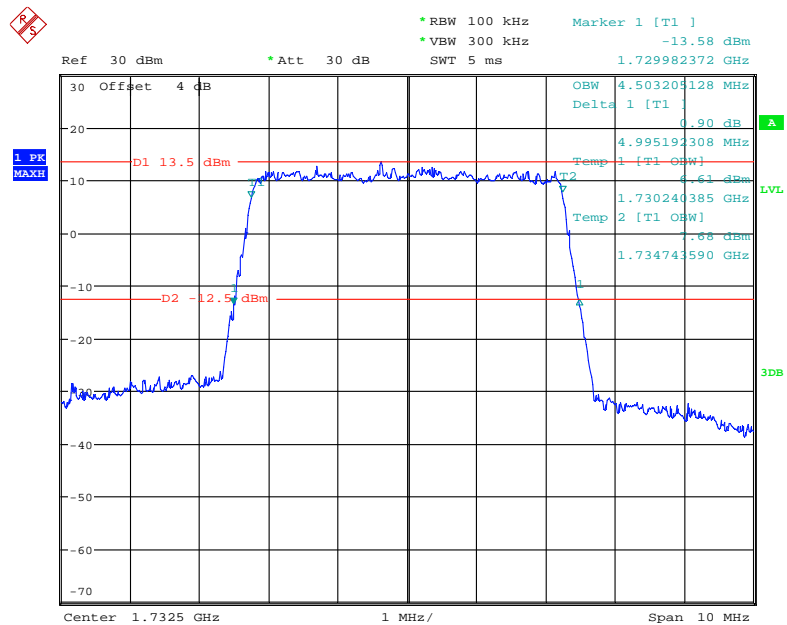
Date: 15.OCT.2017 14:56:37

### QPSK (5.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



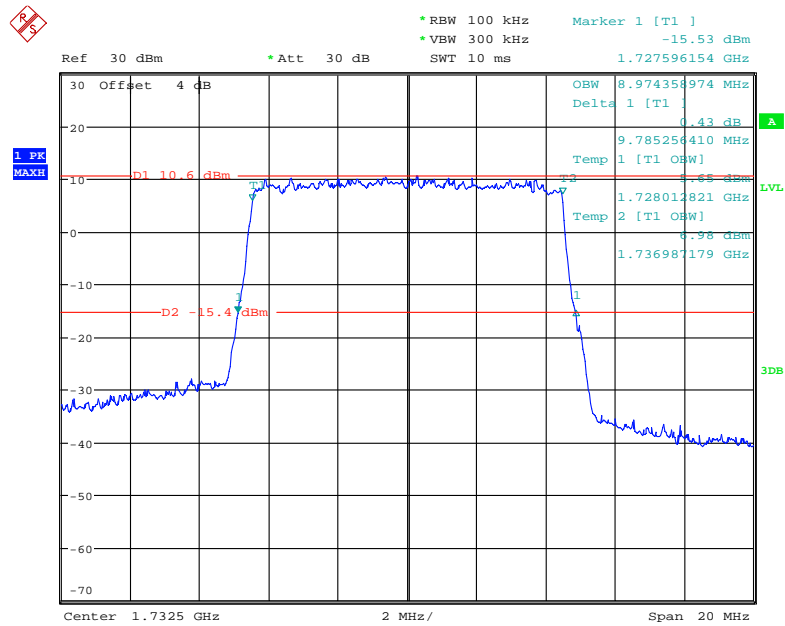
Date: 15.OCT.2017 14:58:29

### 16-QAM (5.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



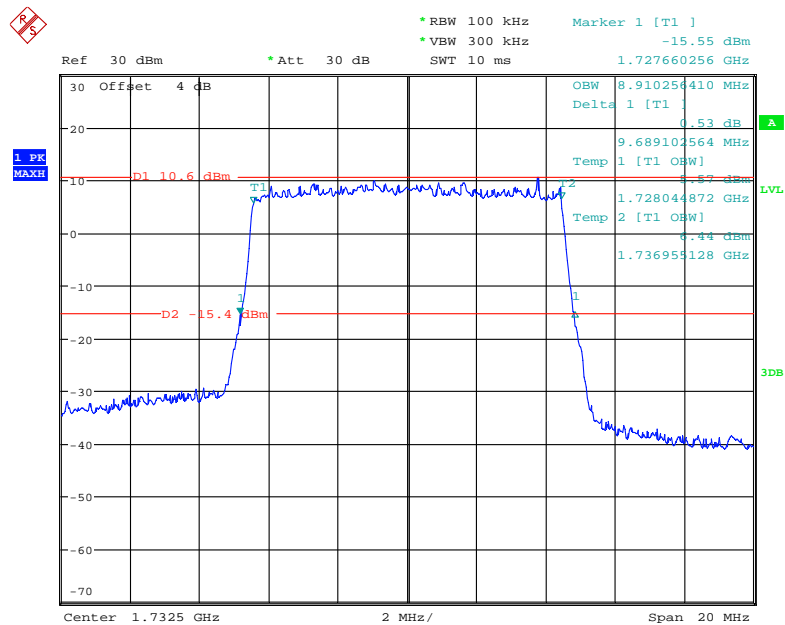
Date: 15.OCT.2017 14:57:34

### QPSK (10.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



Date: 15.OCT.2017 15:01:20

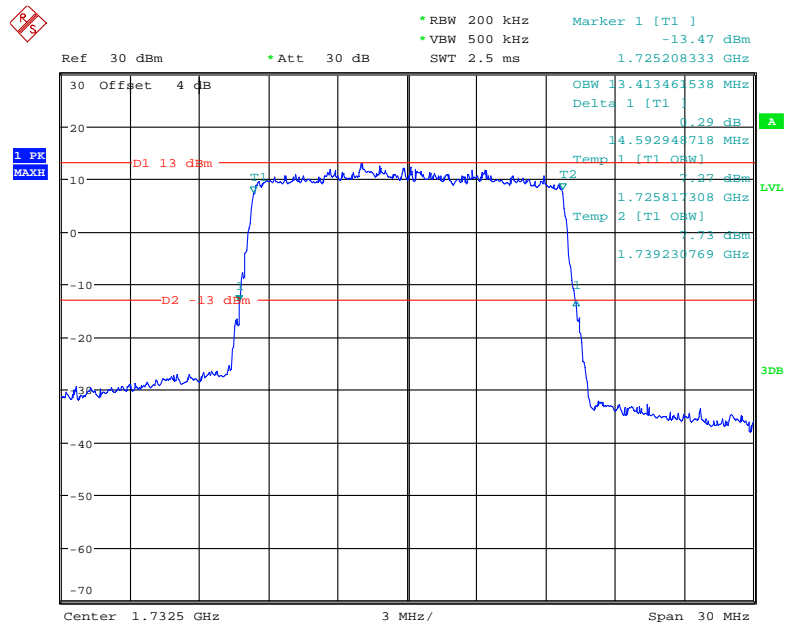
### 16-QAM (10.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



Date: 15.OCT.2017 15:02:09

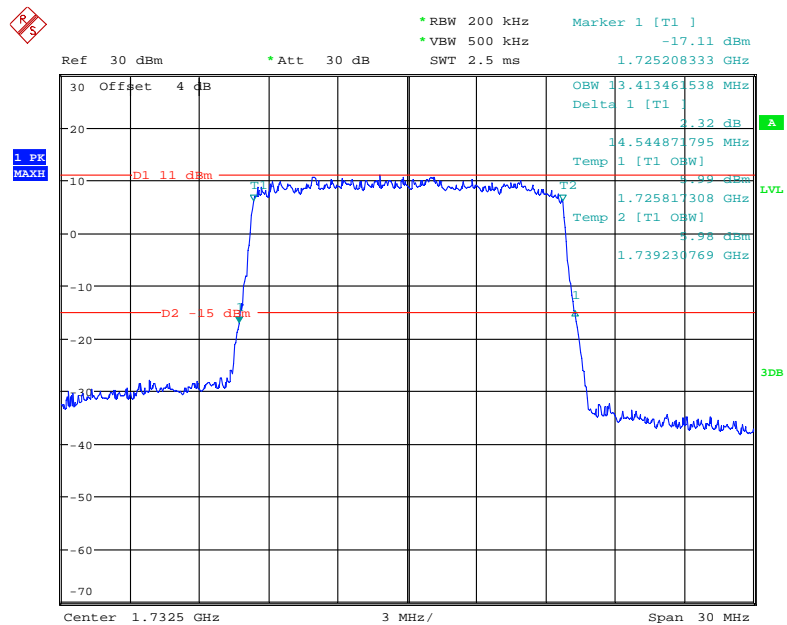


### QPSK (15.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



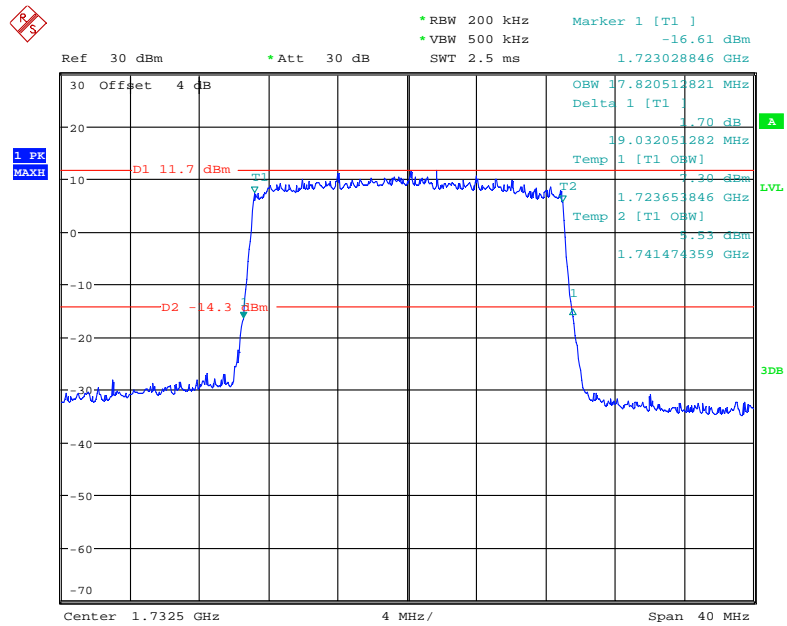
Date: 15.OCT.2017 15:03:47

### 16-QAM (15.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



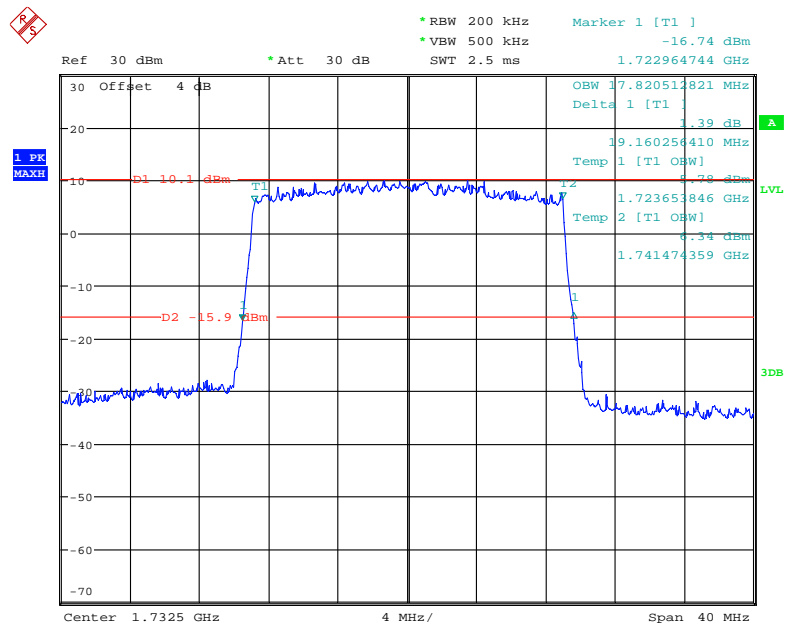
Date: 15.OCT.2017 15:04:32

### QPSK (20.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



Date: 15.OCT.2017 15:05:41

### 16-QAM (20.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel

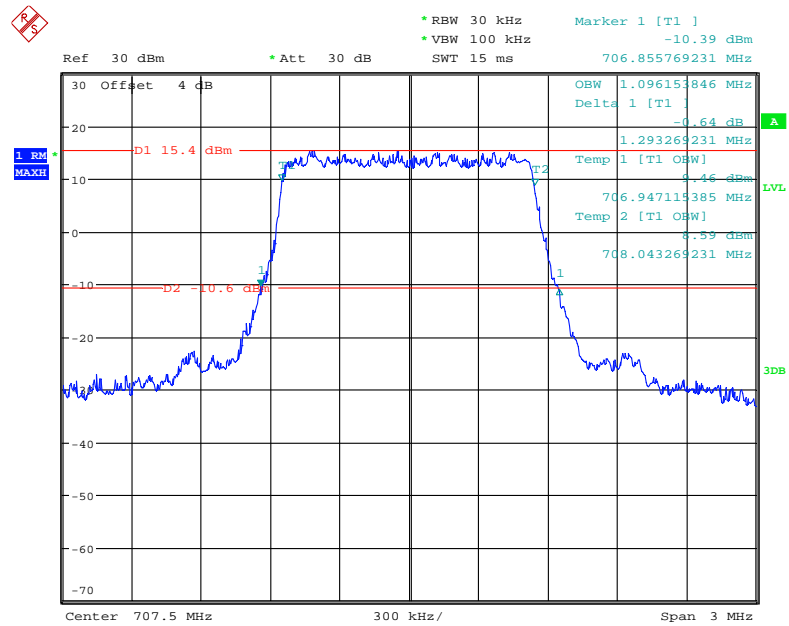


Date: 15.OCT.2017 15:06:53

**BAND 12:**

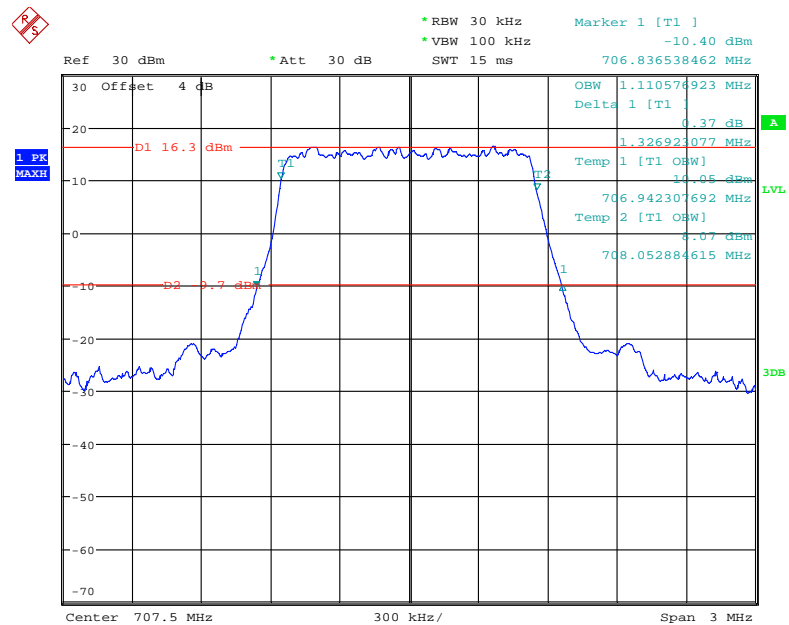
<b>Bandwidth (MHz)</b>	<b>Modulation</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>26 dB Emission Bandwidth (MHz)</b>
1.4	QPSK	1.096	1.293
	16QAM	1.111	1.327
3.0	QPSK	2.692	2.962
	16QAM	2.692	2.962
5.0	QPSK	4.519	5.071
	16QAM	4.519	5.022
10.0	QPSK	8.974	9.750
	16QAM	8.942	9.686

**QPSK (1.4 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel**



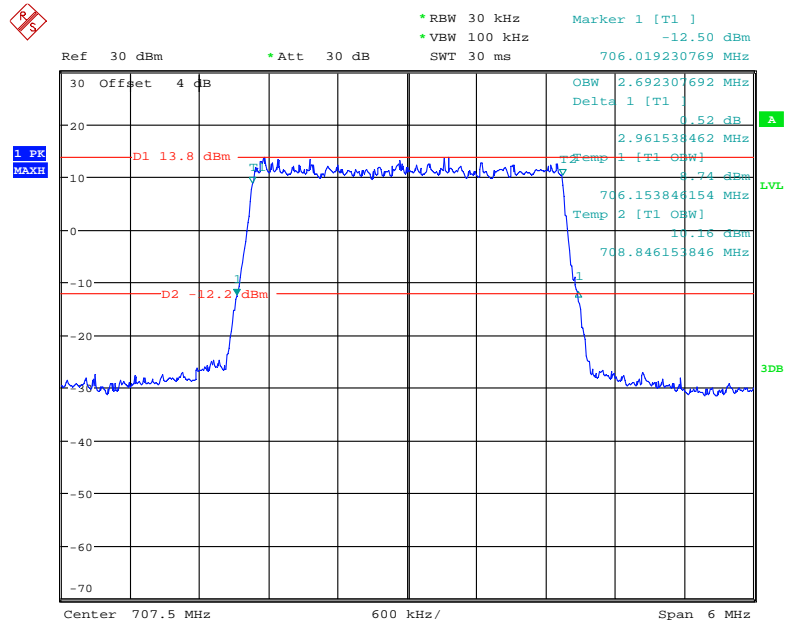
Date: 15.OCT.2017 14:43:02

### 16-QAM (1.4 MHz) - 99% Occupied & 26 dB Bandwidth, Middle channel



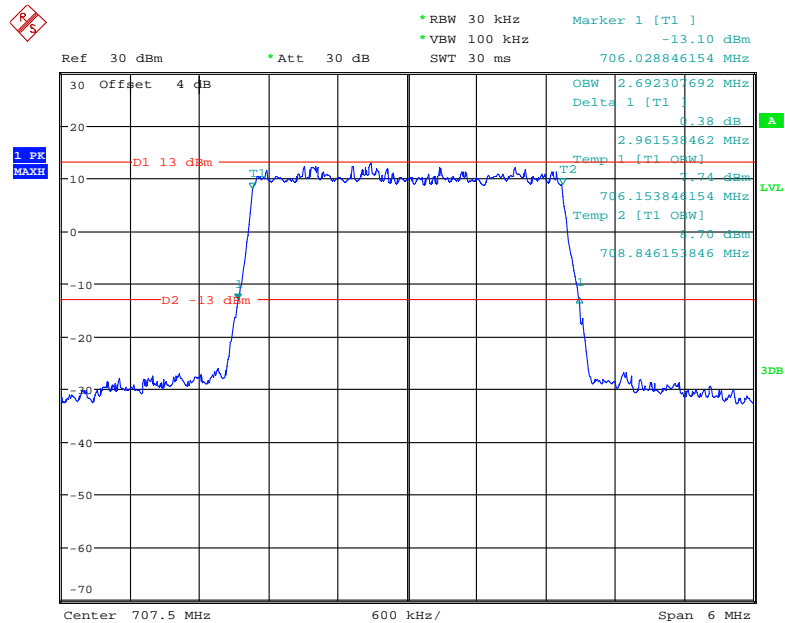
Date: 15.OCT.2017 14:47:11

### QPSK (3.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



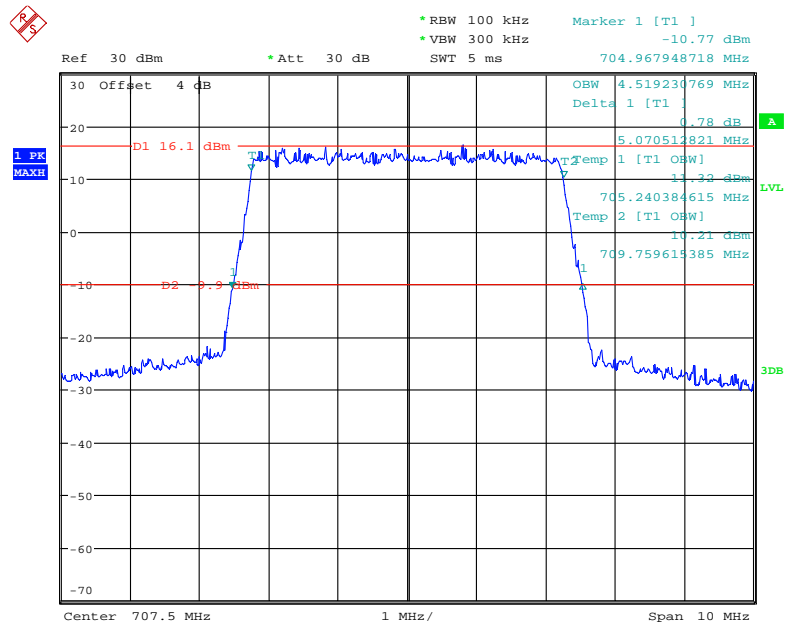
Date: 15.OCT.2017 14:49:03

### 16-QAM (3.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



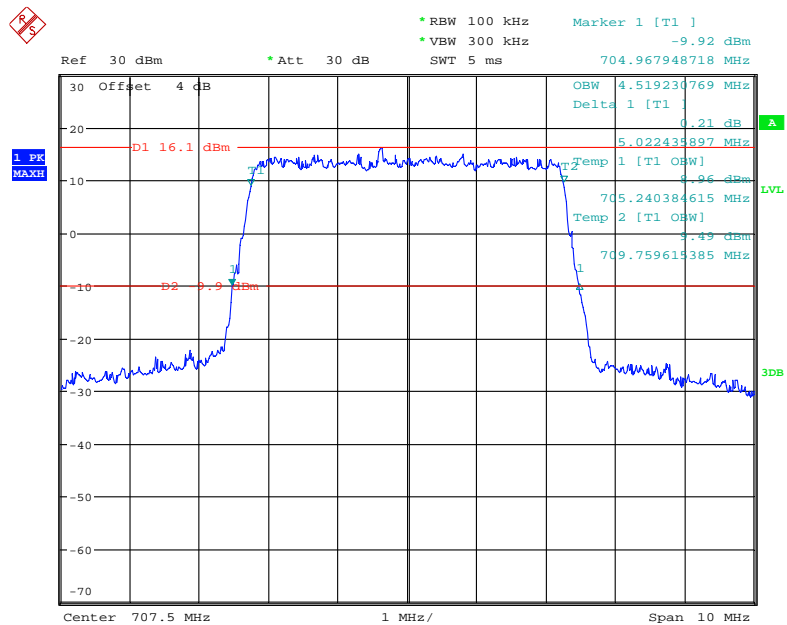
Date: 15.OCT.2017 14:48:18

### QPSK (5.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel

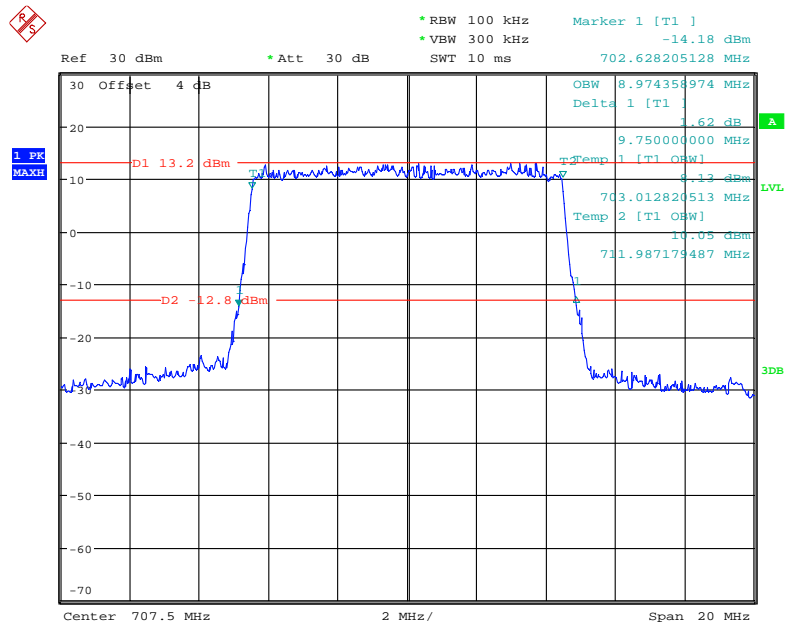


Date: 15.OCT.2017 14:50:43

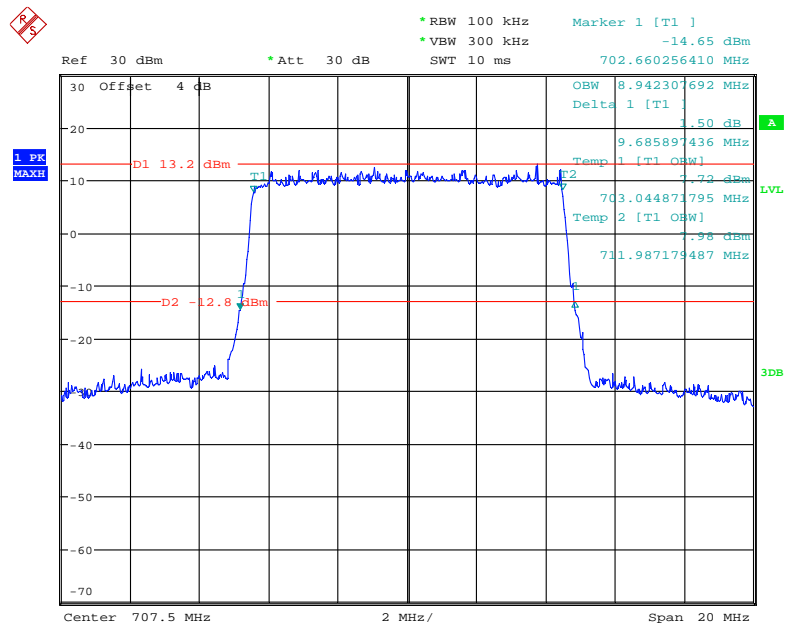
### 16-QAM (5.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel



Date: 15.OCT.2017 14:49:59

**QPSK (10.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel**

Date: 15.OCT.2017 14:52:07

**16-QAM (10.0 MHz) - 99% Occupied&26 dB Bandwidth, Middle channel**

Date: 15.OCT.2017 14:51:22

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