TESTING LABORATORY
CERTIFICATE # 4821.01

FCC PART 27

FCC PART 22H, PART 24E

TEST REPORT

For

Epik One America Corporation

170 Ocean Lane Dr. #705, Key Biscayne, FL 33149, United States

FCC ID: 2AO6ZRS550

Report Type:	**Product Type:**
Original Report	Smart phone

Report Number:	RSZ180724002-00D
Report Date:	2018-08-22
Reviewed By:	Rocky Kang RF Engineer Rocky Kang
Prepared By:	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 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Epik One America Corporation's* product, model number: *RS550 (FCC ID: 2AO6ZRS550)* or the "EUT" in this report was a *Smart phone*, which was measured approximately: 155.2 mm (L) × 74.6 mm (W) × 11.9 mm (H), rated with input voltage: DC 3.8V from battery or DC 5.0V from adapter.

Adapter Information:
Model: TPA-46B050100UU
Input: AC 100-240V, 50/60Hz, 0.2A
Output: DC 5.0V, 1000 mA

**All measurement and test data in this report was gathered from production sample serial number: 180724002 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-07-24.*

Objective

This test report is prepared on behalf of *Epik One America Corporation* in accordance with Part 2-Subpart J, Part 22-Subpart H and Part 24-Subpart E and Subpart 27 of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS & DSS, Part 15.225 DXX and Part 15.407 NII submissions with FCC ID: 2AO6ZRS550.

Test Methodology

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

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

Applicable Standards: TIA/EIA 603-D and KDB 971168 D01 v03.

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		±5%
RF output power, conducted		±1.5dB
Unwanted Emission, conducted		±1.5dB
Emissions, radiated	Below 1GHz	±4.70dB
	Above 1GHz	±4.80dB
Temperature		±1℃
Supply voltages		±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.: 342867, the FCC Designation No.: CN1221.

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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

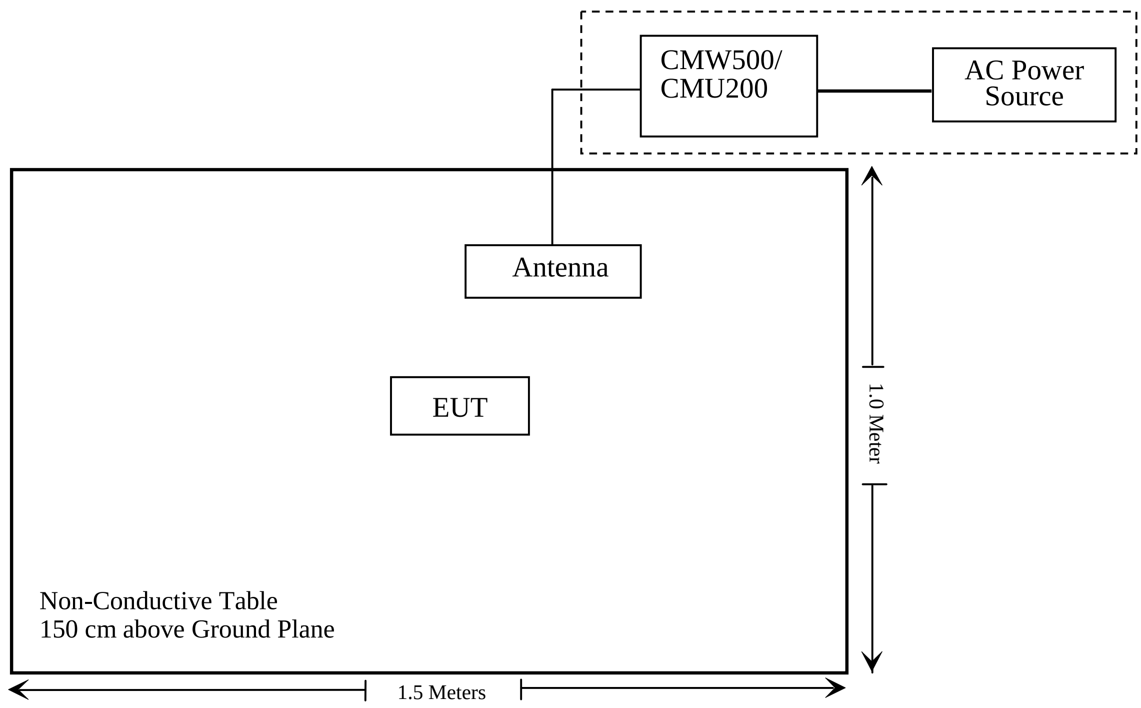
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

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

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307, §2.1093	RF Exposure (SAR)	Compliance*
§2.1046; § 22.913 (a); § 24.232 (c); §27.50(c) (d) (h)	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53	Occupied Bandwidth	Compliance
§ 2.1051; § 22.917 (a); § 24.238 (a); §27.53 (h)(m)	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53 (h)(m)	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a); § 24.238 (a); §27.53 (h)(m)	Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliance

Note: * Please refer to SAR report released by BACL, report number: RSZ180724002-20.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017-12-22	2020-12-21
Rohde & Schwarz	Signal Analyzer	FSEM	845987/005	2018-06-23	2019-06-23
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2018-05-21	2019-05-21
HP	Amplifier	HP8447E	1937A01046	2018-05-21	2018-11-19
Anritsu	Signal Generator	68369B	004114	2017-12-24	2018-12-24
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2018-01-11	2019-01-11
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	2018-05-21	2018-11-19
Ducommun technologies	RF Cable	104PEA	218124002	2018-05-21	2018-11-19
Ducommun technologies	RF Cable	RG-214	1	2018-05-21	2018-11-19
Ducommun technologies	RF Cable	RG-214	2	2018-05-22	2018-11-22
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-04	2016-11-18	2019-11-18
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2016-11-18	2019-11-18
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
RF Conducted Test					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2017-12-24	2018-12-24
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2017-12-21	2018-12-21
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
Fluke	Digital Multimeter	287	19000011	2018-04-12	2019-04-12
Rohde & Schwarz	Wideband Radio Communication Tester	CMU200	106891	2017-12-14	2018-12-14
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2018-06-23	2019-06-23
Ducommun technologies	RF Cable	RG-214	3	Each Time	
WEINSCHEL	10dB Attenuator	5324	AU 3842	Each Time	
N/A	Power Splitter	N/A	N/A	2018-05-21	2019-05-21

* 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).

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

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ180724002-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

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

Applicable Standard

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

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

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

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

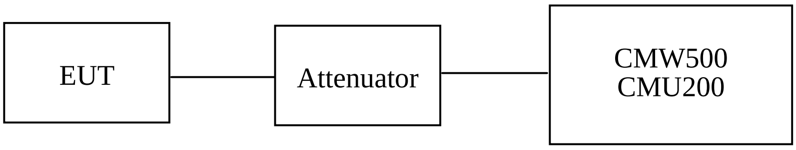
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

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

Test Procedure

Conducted method:

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



Radiated method:

TIA 603-D section 2.2.17

Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2018-08-04.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.46	38.45
	190	836.6	32.57	38.45
	251	848.8	32.55	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.37	31.42	29.35	28.27	38.45
	190	836.6	32.50	31.54	29.51	28.43	38.45
	251	848.8	32.45	31.52	29.51	28.45	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	24.43	23.34	21.11	20.16	38.45
	190	836.6	24.66	23.58	21.24	20.35	38.45
	251	848.8	25.02	23.68	21.33	20.42	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		21.49	21.40	21.18
		HSDPA	1	20.78	20.69	20.77
			2	20.86	20.73	20.90
			3	20.89	20.83	20.98
			4	20.90	20.90	20.94
		HSUPA	1	20.91	20.88	21.03
			2	20.96	20.90	20.98
			3	21.02	20.91	21.11
			4	20.97	20.89	21.18
			5	21.07	21.00	21.22
		HSPA+	1	21.04	21.06	21.34

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	28.29	33
	661	1880.0	28.31	33
	810	1909.8	28.20	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	28.30	27.42	25.63	24.80	33
	661	1880.0	28.28	27.44	25.65	24.84	33
	810	1909.8	28.23	27.38	25.62	24.44	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	23.74	22.69	20.59	19.45	33
	661	1880.0	23.72	22.79	20.63	19.48	33
	810	1909.8	23.71	22.71	20.65	19.43	33

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	RMC12.2k		21.57	21.85	21.41
		HSDPA	1	21.23	21.07	21.43
			2	21.37	21.25	21.55
			3	21.05	21.13	21.27
			4	21.09	21.22	21.29
		HSUPA	1	21.39	21.29	21.16
			2	21.35	21.27	21.31
			3	21.22	21.05	21.27
			4	21.17	21.19	21.15
			5	21.10	21.09	21.26
		HSPA+	1	21.25	21.11	21.33

AWS Band (Part 27)

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band IV)	Normal	RMC12.2k		20.45	20.24	20.26
		HSDPA	1	20.29	20.28	20.28
			2	20.26	20.26	20.43
			3	20.30	20.26	20.56
			4	20.45	20.25	20.57
		HSUPA	1	20.49	20.28	20.63
			2	20.53	20.39	20.77
			3	20.65	20.53	20.91
			4	20.68	20.55	20.99
			5	20.70	20.69	20.98
		HSPA+	1	20.33	20.19	20.21

Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	2.21	13
	Middle	2.13	13
	High	2.22	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.36	13
	Middle	2.34	13
	High	2.28	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.23	13
	Middle	3.59	13
	High	3.71	13
HSDPA (16QAM)	Low	3.69	13
	Middle	3.55	13
	High	3.21	13
HSUPA (BPSK)	Low	3.20	13
	Middle	3.19	13
	High	3.71	13
HSPA+	Low	3.15	13
	Middle	3.40	13
	High	3.15	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	2.23	13
	Middle	2.08	13
	High	2.14	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.32	13
	Middle	2.26	13
	High	2.44	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	4.35	13
	Middle	4.18	13
	High	4.26	13
HSDPA (16QAM)	Low	4.19	13
	Middle	4.36	13
	High	4.22	13
HSUPA (BPSK)	Low	4.17	13
	Middle	4.29	13
	High	4.33	13
HSPA+	Low	3.89	13
	Middle	3.77	13
	High	3.68	13

AWS Band (Part 27)

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	5.54	13
	Middle	5.59	13
	High	5.82	13
HSDPA (16QAM)	Low	4.97	13
	Middle	5.82	13
	High	4.74	13
HSUPA (BPSK)	Low	5.92	13
	Middle	5.60	13
	High	5.91	13
HSPA+	Low	6.06	13
	Middle	5.83	13
	High	5.58	13

Radiated Power

GSM 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 for Cellular Band (Part 22H), Middle Channel										
836.6	93.01	343	2.2	H	30.6	0.7	0.0	29.90	38.45	8.55
836.6	87.56	164	2.4	V	27.1	0.7	0.0	26.40	38.45	12.05
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	89.83	254	2.3	H	19.8	1.30	9.40	27.90	33	5.1
1880.00	77.65	235	1.9	V	7.4	1.30	9.40	15.50	33	17.5

EDGE 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, Cellular Band (Part 22H), Middle Channel										
836.6	85.03	195	2.4	H	22.6	0.7	0.0	21.90	38.45	16.55
836.6	80.16	24	2.3	V	19.7	0.7	0.0	19.00	38.45	19.45
EIRP, PCS Band (Part 24E), Middle Channel										
1880.00	83.51	302	1.7	H	13.5	1.30	9.40	21.60	33	11.4
1880.00	71.06	20	1.5	V	0.8	1.30	9.40	8.90	33	24.1

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 for WCDMA Band V (Part 22H), Middle Channel										
836.6	83.79	304	1.6	H	21.4	0.7	0.0	20.70	38.45	17.75
836.6	75.06	38	2.2	V	14.6	0.7	0.0	13.90	38.45	24.55
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	85.42	122	1.1	H	15.4	1.30	9.40	23.50	33	9.5
1880.00	84.49	342	1.1	V	14.2	1.30	9.40	22.30	33	10.7
EIRP for WCDMA Band IV (Part 27), Middle Channel										
1732.60	86.80	298	2.2	H	13.6	1.30	8.90	21.20	30	8.8
1732.60	87.27	304	2.3	V	14.7	1.30	8.90	22.30	30	7.7

Note:
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	21.70	20.64	20.74
		RB Size=1, RB Offset=2	21.58	21.70	21.60
		RB Size=1, RB Offset=5	21.10	20.93	21.12
		RB Size=3, RB Offset=0	21.49	21.24	21.12
		RB Size=3, RB Offset=1	21.14	20.93	21.42
		RB Size=3, RB Offset=2	20.90	21.44	21.82
		RB Size=6, RB Offset=0	21.46	21.31	20.90
	16QAM	RB Size=1, RB Offset=0	21.19	20.58	21.59
		RB Size=1, RB Offset=2	21.22	20.75	21.33
		RB Size=1, RB Offset=5	20.70	21.58	20.53
		RB Size=3, RB Offset=0	21.22	21.07	21.05
		RB Size=3, RB Offset=1	21.36	22.06	20.82
		RB Size=3, RB Offset=2	20.80	21.03	20.85
		RB Size=6, RB Offset=0	21.07	21.00	21.11
3.0	QPSK	RB Size=1, RB Offset=0	22.08	20.58	21.57
		RB Size=1, RB Offset=7	21.84	21.59	21.01
		RB Size=1, RB Offset=14	21.87	20.86	21.28
		RB Size=8, RB Offset=0	21.37	21.48	20.35
		RB Size=8, RB Offset=4	21.65	21.32	20.94
		RB Size=8, RB Offset=7	21.17	21.48	21.38
		RB Size=15, RB Offset=0	21.32	21.21	20.70
	16QAM	RB Size=1, RB Offset=0	20.72	21.22	21.06
		RB Size=1, RB Offset=7	21.65	20.99	20.91
		RB Size=1, RB Offset=14	20.75	21.21	20.35
		RB Size=8, RB Offset=0	21.31	21.66	20.86
		RB Size=8, RB Offset=4	21.00	21.01	21.61
		RB Size=8, RB Offset=7	20.90	20.64	21.24
		RB Size=15, RB Offset=0	20.74	20.68	20.98

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.29	20.41	21.58
		RB Size=1, RB Offset=12	21.14	21.28	20.54
		RB Size=1, RB Offset=24	21.51	20.87	21.38
		RB Size=12, RB Offset=0	20.97	21.88	21.15
		RB Size=12, RB Offset=6	20.91	20.57	21.36
		RB Size=12, RB Offset=11	21.31	21.02	20.86
		RB Size=25, RB Offset=0	21.03	20.99	20.75
	16QAM	RB Size=1, RB Offset=0	21.73	21.70	21.11
		RB Size=1, RB Offset=12	21.22	21.04	21.44
		RB Size=1, RB Offset=24	21.00	20.77	21.60
		RB Size=12, RB Offset=0	21.49	21.32	21.77
		RB Size=12, RB Offset=6	21.16	22.13	21.27
		RB Size=12, RB Offset=11	20.91	21.06	21.36
		RB Size=25, RB Offset=0	20.64	20.94	20.94
10.0	QPSK	RB Size=1, RB Offset=0	21.28	21.21	21.39
		RB Size=1, RB Offset=24	21.48	20.96	21.34
		RB Size=1, RB Offset=49	21.28	21.00	20.48
		RB Size=25, RB Offset=0	21.17	21.25	21.70
		RB Size=25, RB Offset=12	21.12	22.02	21.79
		RB Size=25, RB Offset=24	21.45	21.41	21.54
		RB Size=50, RB Offset=0	20.99	21.09	20.65
	16QAM	RB Size=1, RB Offset=0	20.89	20.81	21.30
		RB Size=1, RB Offset=24	21.70	20.74	21.88
		RB Size=1, RB Offset=49	21.22	21.07	20.93
		RB Size=25, RB Offset=0	21.60	21.79	20.42
		RB Size=25, RB Offset=12	20.96	21.84	21.84
		RB Size=25, RB Offset=24	20.91	20.99	21.15
		RB Size=50, RB Offset=0	21.19	21.48	20.91

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	21.74	21.49	21.17
		RB Size=1, RB Offset=37	21.81	20.88	20.94
		RB Size=1, RB Offset=74	21.65	20.56	20.95
		RB Size=36, RB Offset=0	21.04	21.87	21.41
		RB Size=36, RB Offset=18	21.00	21.81	21.55
		RB Size=36, RB Offset=37	21.40	21.08	20.96
		RB Size=75, RB Offset=0	21.16	21.02	20.94
	16QAM	RB Size=1, RB Offset=0	21.23	20.31	20.89
		RB Size=1, RB Offset=37	21.03	21.29	21.17
		RB Size=1, RB Offset=74	21.44	20.82	21.48
		RB Size=36, RB Offset=0	21.37	20.60	21.21
		RB Size=36, RB Offset=18	21.46	20.35	21.55
		RB Size=36, RB Offset=37	20.74	21.30	21.77
		RB Size=75, RB Offset=0	21.06	21.66	21.31
20.0	QPSK	RB Size=1, RB Offset=0	21.45	22.03	22.08
		RB Size=1, RB Offset=49	21.89	20.76	21.20
		RB Size=1, RB Offset=99	21.01	21.30	21.03
		RB Size=50, RB Offset=0	20.98	21.68	20.75
		RB Size=50, RB Offset=24	21.81	20.69	21.09
		RB Size=50, RB Offset=49	21.28	21.38	20.99
		RB Size=100, RB Offset=0	21.14	21.75	21.50
	16QAM	RB Size=1, RB Offset=0	21.26	20.96	20.83
		RB Size=1, RB Offset=49	21.46	21.07	20.94
		RB Size=1, RB Offset=99	21.29	21.22	22.07
		RB Size=50, RB Offset=0	20.57	21.48	21.02
		RB Size=50, RB Offset=24	20.54	21.98	21.17
		RB Size=50, RB Offset=49	20.52	21.62	21.16
		RB Size=100, RB Offset=0	20.70	20.96	20.46

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.60	13	Pass
QPSK (100RB Size)	5.83	13	Pass
16QAM (1RB Size)	5.54	13	Pass
16QAM (100RB Size)	6.06	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	87.25	221	1.9	H	17.2	1.30	9.40	25.30	33
1880.00	83.64	297	2.2	V	13.4	1.30	9.40	21.50	33
3 MHz Bandwidth									
1880.00	87.31	231	1.8	H	17.3	1.30	9.40	25.40	33
1880.00	83.20	20	1.5	V	12.9	1.30	9.40	21.00	33
5 MHz Bandwidth									
1880.00	86.95	257	2.2	H	16.9	1.30	9.40	25.00	33
1880.00	82.57	88	1.2	V	12.3	1.30	9.40	20.40	33
10 MHz Bandwidth									
1880.00	87.11	228	1.6	H	17.1	1.30	9.40	25.20	33
1880.00	82.84	321	2.1	V	12.6	1.30	9.40	20.70	33
15 MHz Bandwidth									
1880.00	87.29	56	2.1	H	17.2	1.30	9.40	25.30	33
1880.00	83.16	86	1.1	V	12.9	1.30	9.40	21.00	33
20 MHz Bandwidth									
1880.00	86.99	304	1.4	H	16.9	1.30	9.40	25.00	33
1880.00	83.04	225	1.7	V	12.8	1.30	9.40	20.90	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	87.06	71	2.1	H	17.0	1.30	9.40	25.10	33
1880.00	83.49	338	2.2	V	13.2	1.30	9.40	21.30	33
3 MHz Bandwidth									
1880.00	87.10	120	1.6	H	17.1	1.30	9.40	25.20	33
1880.00	84.06	149	1.1	V	13.8	1.30	9.40	21.90	33
5 MHz Bandwidth									
1880.00	87.25	352	1.4	H	17.2	1.30	9.40	25.30	33
1880.00	83.23	181	1.2	V	13.0	1.30	9.40	21.10	33
10 MHz Bandwidth									
1880.00	87.01	169	2.1	H	17.0	1.30	9.40	25.10	33
1880.00	83.15	147	1.8	V	12.9	1.30	9.40	21.00	33
15 MHz Bandwidth									
1880.00	87.29	233	1.1	H	17.2	1.30	9.40	25.30	33
1880.00	83.28	98	1.0	V	13.0	1.30	9.40	21.10	33
20 MHz Bandwidth									
1880.00	87.52	129	2.4	H	17.5	1.30	9.40	25.60	33
1880.00	83.33	280	2.2	V	13.1	1.30	9.40	21.20	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	21.67	21.14	21.49
		RB Size=1, RB Offset=2	21.51	20.88	21.20
		RB Size=1, RB Offset=5	21.04	20.84	21.09
		RB Size=3, RB Offset=0	21.56	21.34	20.92
		RB Size=3, RB Offset=1	21.48	20.84	20.91
		RB Size=3, RB Offset=2	20.90	21.01	20.70
		RB Size=6, RB Offset=0	20.80	21.20	21.08
	16QAM	RB Size=1, RB Offset=0	20.94	21.51	22.05
		RB Size=1, RB Offset=2	21.13	21.30	20.59
		RB Size=1, RB Offset=5	21.19	21.33	20.84
		RB Size=3, RB Offset=0	20.64	21.01	21.43
		RB Size=3, RB Offset=1	21.02	20.73	21.29
		RB Size=3, RB Offset=2	21.33	21.20	20.67
		RB Size=6, RB Offset=0	20.37	21.46	21.80
3.0	QPSK	RB Size=1, RB Offset=0	21.69	20.48	21.55
		RB Size=1, RB Offset=7	21.34	20.99	21.29
		RB Size=1, RB Offset=14	21.39	20.47	21.10
		RB Size=8, RB Offset=0	21.14	21.19	21.00
		RB Size=8, RB Offset=4	21.58	21.21	20.40
		RB Size=8, RB Offset=7	20.97	21.59	21.17
		RB Size=15, RB Offset=0	20.75	20.86	20.47
	16QAM	RB Size=1, RB Offset=0	21.30	22.13	21.65
		RB Size=1, RB Offset=7	20.74	21.34	20.74
		RB Size=1, RB Offset=14	20.71	21.28	21.14
		RB Size=8, RB Offset=0	20.70	20.79	21.45
		RB Size=8, RB Offset=4	21.32	20.52	20.74
		RB Size=8, RB Offset=7	20.68	20.66	20.76
		RB Size=15, RB Offset=0	20.40	20.95	20.72

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.25	21.02	21.53
		RB Size=1, RB Offset=12	21.59	20.91	21.66
		RB Size=1, RB Offset=24	21.03	20.61	21.69
		RB Size=12, RB Offset=0	21.34	20.92	20.94
		RB Size=12, RB Offset=6	21.04	20.32	20.75
		RB Size=12, RB Offset=11	21.05	21.28	20.87
		RB Size=25, RB Offset=0	20.60	20.73	20.72
	16QAM	RB Size=1, RB Offset=0	21.16	21.46	22.04
		RB Size=1, RB Offset=12	21.45	20.88	20.72
		RB Size=1, RB Offset=24	21.10	21.56	21.52
		RB Size=12, RB Offset=0	20.61	20.81	21.52
		RB Size=12, RB Offset=6	20.44	21.46	20.85
		RB Size=12, RB Offset=11	21.08	20.37	21.19
		RB Size=25, RB Offset=0	20.33	20.87	20.76
10.0	QPSK	RB Size=1, RB Offset=0	21.78	21.36	21.21
		RB Size=1, RB Offset=24	21.83	21.02	21.72
		RB Size=1, RB Offset=49	21.51	20.54	21.63
		RB Size=25, RB Offset=0	21.71	20.76	21.28
		RB Size=25, RB Offset=12	20.95	21.09	20.43
		RB Size=25, RB Offset=24	21.54	21.35	20.86
		RB Size=50, RB Offset=0	20.85	21.31	20.91
	16QAM	RB Size=1, RB Offset=0	21.26	21.24	21.27
		RB Size=1, RB Offset=24	20.68	21.08	20.54
		RB Size=1, RB Offset=49	21.33	20.85	20.84
		RB Size=25, RB Offset=0	20.42	20.31	22.06
		RB Size=25, RB Offset=12	21.18	20.83	21.66
		RB Size=25, RB Offset=24	20.90	20.89	20.99
		RB Size=50, RB Offset=0	20.41	20.58	20.51

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	21.63	20.59	21.10
		RB Size=1, RB Offset=37	21.67	20.93	21.44
		RB Size=1, RB Offset=74	21.30	20.86	20.90
		RB Size=36, RB Offset=0	21.17	21.18	20.75
		RB Size=36, RB Offset=18	21.71	21.14	20.85
		RB Size=36, RB Offset=37	21.28	21.21	21.25
		RB Size=75, RB Offset=0	20.76	20.78	20.52
	16QAM	RB Size=1, RB Offset=0	21.38	21.74	21.30
		RB Size=1, RB Offset=37	20.80	21.00	20.59
		RB Size=1, RB Offset=74	21.40	21.54	21.13
		RB Size=36, RB Offset=0	21.37	20.92	21.32
		RB Size=36, RB Offset=18	20.43	20.90	21.43
		RB Size=36, RB Offset=37	20.71	20.99	20.58
		RB Size=75, RB Offset=0	20.97	20.92	20.39
20.0	QPSK	RB Size=1, RB Offset=0	21.71	20.43	21.55
		RB Size=1, RB Offset=49	21.90	20.77	21.55
		RB Size=1, RB Offset=99	21.56	20.69	21.50
		RB Size=50, RB Offset=0	21.42	20.65	21.26
		RB Size=50, RB Offset=24	21.16	21.18	20.67
		RB Size=50, RB Offset=49	21.78	20.87	20.95
		RB Size=100, RB Offset=0	21.06	20.63	20.73
	16QAM	RB Size=1, RB Offset=0	21.78	21.40	22.00
		RB Size=1, RB Offset=49	21.65	21.47	20.94
		RB Size=1, RB Offset=99	21.25	20.82	21.33
		RB Size=50, RB Offset=0	21.06	20.32	21.62
		RB Size=50, RB Offset=24	21.33	21.47	21.15
		RB Size=50, RB Offset=49	20.80	20.95	20.80
		RB Size=100, RB Offset=0	20.56	20.86	20.76

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.73	13	Pass
QPSK (100RB Size)	5.41	13	Pass
16QAM (1RB Size)	5.69	13	Pass
16QAM (100RB Size)	5.82	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	89.27	277	2.0	H	16.1	1.30	8.90	23.70	30
1732.50	88.14	240	1.1	V	15.6	1.30	8.90	23.20	30
3 MHz Bandwidth									
1732.50	89.14	239	2.1	H	16.0	1.30	8.90	23.60	30
1732.50	88.02	25	1.0	V	15.5	1.30	8.90	23.10	30
5 MHz Bandwidth									
1732.50	88.96	23	1.7	H	15.8	1.30	8.90	23.40	30
1732.50	87.24	152	1.7	V	14.7	1.30	8.90	22.30	30
10 MHz Bandwidth									
1732.50	88.93	231	2.1	H	15.8	1.30	8.90	23.40	30
1732.50	87.75	168	1.5	V	15.2	1.30	8.90	22.80	30
15 MHz Bandwidth									
1732.50	88.90	212	2.1	H	15.7	1.30	8.90	23.30	30
1732.50	87.79	329	1.0	V	15.2	1.30	8.90	22.80	30
20 MHz Bandwidth									
1732.50	89.06	342	1.6	H	15.9	1.30	8.90	23.50	30
1732.50	87.95	237	2.2	V	15.4	1.30	8.90	23.00	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	89.83	263	1.2	H	16.7	1.30	8.90	24.30	30
1732.50	89.34	32	2.2	V	16.8	1.30	8.90	24.40	30
3 MHz Bandwidth									
1732.50	89.56	290	1.4	H	16.4	1.30	8.90	24.00	30
1732.50	89.02	325	1.8	V	16.5	1.30	8.90	24.10	30
5 MHz Bandwidth									
1732.50	89.92	187	1.1	H	16.8	1.30	8.90	24.40	30
1732.50	89.24	314	2.2	V	16.7	1.30	8.90	24.30	30
10 MHz Bandwidth									
1732.50	89.76	178	1.5	H	16.6	1.30	8.90	24.20	30
1732.50	89.05	204	1.5	V	16.5	1.30	8.90	24.10	30
15 MHz Bandwidth									
1732.50	89.85	8	2.0	H	16.7	1.30	8.90	24.30	30
1732.50	89.21	335	1.3	V	16.6	1.30	8.90	24.20	30
20 MHz Bandwidth									
1732.50	89.66	71	2.0	H	16.5	1.30	8.90	24.10	30
1732.50	89.16	92	1.4	V	16.6	1.30	8.90	24.20	30

LTE Band 5:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	21.86	20.91	21.24
		RB Size=1, RB Offset=2	22.27	22.61	21.86
		RB Size=1, RB Offset=5	21.87	21.75	21.22
		RB Size=3, RB Offset=0	22.59	21.74	21.15
		RB Size=3, RB Offset=1	22.38	21.40	22.11
		RB Size=3, RB Offset=2	21.88	21.12	21.30
		RB Size=6, RB Offset=0	20.82	20.58	20.90
	16QAM	RB Size=1, RB Offset=0	21.49	21.24	21.46
		RB Size=1, RB Offset=2	21.89	21.57	21.88
		RB Size=1, RB Offset=5	21.98	21.49	21.81
		RB Size=3, RB Offset=0	21.97	21.29	21.41
		RB Size=3, RB Offset=1	21.70	22.03	21.81
		RB Size=3, RB Offset=2	21.15	21.32	21.11
		RB Size=6, RB Offset=0	21.01	20.80	21.09
3.0	QPSK	RB Size=1, RB Offset=0	21.72	21.76	21.70
		RB Size=1, RB Offset=7	22.17	21.76	21.78
		RB Size=1, RB Offset=14	21.91	22.55	21.72
		RB Size=8, RB Offset=0	21.78	21.69	20.95
		RB Size=8, RB Offset=4	22.09	21.90	22.00
		RB Size=8, RB Offset=7	21.46	21.88	21.82
		RB Size=15, RB Offset=0	21.02	21.31	21.28
	16QAM	RB Size=1, RB Offset=0	21.63	22.11	21.45
		RB Size=1, RB Offset=7	21.19	21.64	21.42
		RB Size=1, RB Offset=14	21.26	21.91	21.04
		RB Size=8, RB Offset=0	21.00	22.55	21.87
		RB Size=8, RB Offset=4	21.61	21.67	22.43
		RB Size=8, RB Offset=7	20.94	21.41	20.90
		RB Size=15, RB Offset=0	20.37	20.55	20.85

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.58	21.92	21.77
		RB Size=1, RB Offset=12	22.54	22.14	21.83
		RB Size=1, RB Offset=24	21.99	22.09	20.97
		RB Size=12, RB Offset=0	21.63	21.23	21.81
		RB Size=12, RB Offset=6	22.39	21.81	21.69
		RB Size=12, RB Offset=11	21.92	21.70	21.91
		RB Size=25, RB Offset=0	21.03	21.04	21.05
	16QAM	RB Size=1, RB Offset=0	21.95	22.33	22.08
		RB Size=1, RB Offset=12	21.77	21.69	22.07
		RB Size=1, RB Offset=24	22.22	22.07	21.62
		RB Size=12, RB Offset=0	21.18	22.06	22.31
		RB Size=12, RB Offset=6	21.67	21.07	22.53
		RB Size=12, RB Offset=11	20.91	21.65	22.19
		RB Size=25, RB Offset=0	21.07	21.13	21.37
10.0	QPSK	RB Size=1, RB Offset=0	22.36	21.60	21.62
		RB Size=1, RB Offset=24	21.59	22.12	22.30
		RB Size=1, RB Offset=49	22.38	21.71	21.55
		RB Size=25, RB Offset=0	21.47	21.74	21.99
		RB Size=25, RB Offset=12	22.20	22.05	21.26
		RB Size=25, RB Offset=24	21.84	21.48	21.28
		RB Size=50, RB Offset=0	21.89	20.69	20.57
	16QAM	RB Size=1, RB Offset=0	21.43	21.57	21.85
		RB Size=1, RB Offset=24	22.12	21.40	21.34
		RB Size=1, RB Offset=49	21.18	20.97	21.42
		RB Size=25, RB Offset=0	21.64	21.73	22.15
		RB Size=25, RB Offset=12	21.26	21.63	21.57
		RB Size=25, RB Offset=24	21.26	21.68	22.30
		RB Size=50, RB Offset=0	20.68	21.08	21.17

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.87	13	Pass
QPSK (50RB Size)	2.24	13	Pass
16QAM (1RB Size)	5.45	13	Pass
16QAM (50RB Size)	4.44	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									
836.5	85.13	89	1.2	H	22.7	0.7	0.0	22.00	38.45
836.5	79.92	312	1.6	V	19.5	0.7	0.0	18.80	38.45
3 MHz Bandwidth									
836.5	85.34	317	2.5	H	22.9	0.7	0.0	22.20	38.45
836.5	79.95	163	1.6	V	19.5	0.7	0.0	18.80	38.45
5 MHz Bandwidth									
836.5	85.25	233	1.3	H	22.8	0.7	0.0	22.10	38.45
836.5	79.80	241	2.4	V	19.4	0.7	0.0	18.70	38.45
10 MHz Bandwidth									
836.5	85.10	213	1.4	H	22.7	0.7	0.0	22.00	38.45
836.5	80.08	333	1.1	V	19.6	0.7	0.0	18.90	38.45

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									
836.5	85.16	140	1.9	H	22.8	0.7	0.0	22.10	38.45
836.5	79.33	219	1.2	V	18.9	0.7	0.0	18.20	38.45
3 MHz Bandwidth									
836.5	85.15	243	1.5	H	22.7	0.7	0.0	22.00	38.45
836.5	79.26	266	1.3	V	18.8	0.7	0.0	18.10	38.45
5 MHz Bandwidth									
836.5	85.11	359	1.4	H	22.7	0.7	0.0	22.00	38.45
836.5	79.51	164	2.0	V	19.1	0.7	0.0	18.40	38.45
10 MHz Bandwidth									
836.5	85.04	197	1.5	H	22.6	0.7	0.0	21.90	38.45
836.5	79.33	61	2.0	V	18.9	0.7	0.0	18.20	38.45

LTE Band 7:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.77	22.55	22.98
		RB Size=1, RB Offset=12	23.14	22.21	21.86
		RB Size=1, RB Offset=24	23.19	22.82	22.67
		RB Size=12, RB Offset=0	21.68	21.92	20.98
		RB Size=12, RB Offset=6	22.29	21.33	21.41
		RB Size=12, RB Offset=11	21.66	21.52	21.30
		RB Size=25, RB Offset=0	21.01	21.03	21.36
	16QAM	RB Size=1, RB Offset=0	22.30	22.15	21.78
		RB Size=1, RB Offset=12	22.50	21.93	21.66
		RB Size=1, RB Offset=24	22.86	21.47	21.78
		RB Size=12, RB Offset=0	21.95	20.43	21.55
		RB Size=12, RB Offset=6	22.05	21.15	20.91
		RB Size=12, RB Offset=11	22.06	20.64	21.70
		RB Size=25, RB Offset=0	21.26	20.74	20.76
10.0	QPSK	RB Size=1, RB Offset=0	22.14	22.84	22.77
		RB Size=1, RB Offset=24	22.94	21.87	22.69
		RB Size=1, RB Offset=49	22.32	22.40	22.39
		RB Size=25, RB Offset=0	21.51	22.01	21.69
		RB Size=25, RB Offset=12	21.95	21.99	22.42
		RB Size=25, RB Offset=24	21.31	22.03	21.64
		RB Size=50, RB Offset=0	21.40	21.36	21.60
	16QAM	RB Size=1, RB Offset=0	22.27	21.97	21.56
		RB Size=1, RB Offset=24	21.96	22.49	21.89
		RB Size=1, RB Offset=49	22.14	21.88	22.39
		RB Size=25, RB Offset=0	20.97	20.91	21.32
		RB Size=25, RB Offset=12	21.06	21.53	21.13
		RB Size=25, RB Offset=24	20.57	21.48	21.62
		RB Size=50, RB Offset=0	20.77	20.57	20.65

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	22.52	22.41	24.19
		RB Size=1, RB Offset=37	22.54	22.92	23.16
		RB Size=1, RB Offset=74	22.93	22.19	23.37
		RB Size=36, RB Offset=0	22.22	21.57	22.54
		RB Size=36, RB Offset=18	21.91	21.71	22.96
		RB Size=36, RB Offset=37	21.86	22.28	22.62
		RB Size=75, RB Offset=0	21.43	21.36	21.15
	16QAM	RB Size=1, RB Offset=0	22.34	22.16	22.82
		RB Size=1, RB Offset=37	22.19	21.28	22.63
		RB Size=1, RB Offset=74	21.98	21.37	22.71
		RB Size=36, RB Offset=0	20.64	20.77	21.63
		RB Size=36, RB Offset=18	20.97	20.93	21.93
		RB Size=36, RB Offset=37	20.96	21.23	22.08
		RB Size=75, RB Offset=0	20.76	20.86	21.45
20.0	QPSK	RB Size=1, RB Offset=0	23.19	23.14	23.86
		RB Size=1, RB Offset=49	23.08	22.52	23.10
		RB Size=1, RB Offset=99	22.61	23.56	23.75
		RB Size=50, RB Offset=0	21.75	22.05	22.92
		RB Size=50, RB Offset=24	21.59	21.83	22.94
		RB Size=50, RB Offset=49	22.08	21.94	22.76
		RB Size=100, RB Offset=0	21.52	21.77	21.74
	16QAM	RB Size=1, RB Offset=0	22.32	22.50	22.55
		RB Size=1, RB Offset=49	22.10	22.73	22.52
		RB Size=1, RB Offset=99	22.27	22.23	22.64
		RB Size=50, RB Offset=0	21.06	21.22	22.26
		RB Size=50, RB Offset=24	21.60	21.10	21.62
		RB Size=50, RB Offset=49	21.03	21.78	22.22
		RB Size=100, RB Offset=0	21.42	20.77	21.93

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.31	13	Pass
QPSK (100RB Size)	4.70	13	Pass
16QAM (1RB Size)	5.61	13	Pass
16QAM (100RB Size)	5.97	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									
5 MHz Bandwidth									
2535.00	82.64	17	1.6	H	13.1	2.60	10.20	20.70	33
2535.00	78.74	3	1.8	V	9.9	2.60	10.20	17.50	33
10 MHz Bandwidth									
2535.00	82.70	165	2.3	H	13.2	2.60	10.20	20.80	33
2535.00	78.86	284	2.5	V	10.0	2.60	10.20	17.60	33
15 MHz Bandwidth									
2535.00	82.61	317	1.6	H	13.1	2.60	10.20	20.70	33
2535.00	78.33	348	1.6	V	9.5	2.60	10.20	17.10	33
20 MHz Bandwidth									
2535.00	82.78	321	1.3	H	13.3	2.60	10.20	20.90	33
2535.00	78.69	198	2.3	V	9.8	2.60	10.20	17.40	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									
5 MHz Bandwidth									
2535.00	82.33	45	2.2	H	12.8	2.60	10.20	20.40	33
2535.00	78.26	358	1.9	V	9.4	2.60	10.20	17.00	33
10 MHz Bandwidth									
2535.00	82.48	277	1.7	H	13.0	2.60	10.20	20.60	33
2535.00	78.80	58	1.7	V	9.9	2.60	10.20	17.50	33
15 MHz Bandwidth									
2535.00	83.05	14	2.4	H	13.6	2.60	10.20	21.20	33
2535.00	78.61	37	2.5	V	9.7	2.60	10.20	17.30	33
20 MHz Bandwidth									
2535.00	82.98	122	1.6	H	13.5	2.60	10.20	21.10	33
2535.00	78.81	170	1.9	V	9.9	2.60	10.20	17.50	33

LTE Band 12:

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	22.43	22.76	22.78
		RB Size=1, RB Offset=2	22.83	23.32	22.67
		RB Size=1, RB Offset=5	22.58	22.24	22.94
		RB Size=3, RB Offset=0	22.51	22.83	23.02
		RB Size=3, RB Offset=1	23.32	23.21	22.92
		RB Size=3, RB Offset=2	22.28	22.38	22.13
		RB Size=6, RB Offset=0	21.98	21.94	21.66
	16QAM	RB Size=1, RB Offset=0	22.00	21.89	21.90
		RB Size=1, RB Offset=2	21.98	21.59	21.53
		RB Size=1, RB Offset=5	22.67	20.97	22.30
		RB Size=3, RB Offset=0	21.78	22.53	22.18
		RB Size=3, RB Offset=1	22.17	21.83	22.16
		RB Size=3, RB Offset=2	22.56	21.69	21.27
		RB Size=6, RB Offset=0	20.91	20.59	21.47
3.0	QPSK	RB Size=1, RB Offset=0	22.53	22.45	22.81
		RB Size=1, RB Offset=7	22.50	23.07	22.36
		RB Size=1, RB Offset=14	22.36	23.00	22.77
		RB Size=8, RB Offset=0	21.59	22.39	21.60
		RB Size=8, RB Offset=4	21.94	21.89	22.26
		RB Size=8, RB Offset=7	21.51	20.86	21.96
		RB Size=15, RB Offset=0	21.08	20.89	21.36
	16QAM	RB Size=1, RB Offset=0	22.31	22.90	22.41
		RB Size=1, RB Offset=7	21.67	21.61	22.67
		RB Size=1, RB Offset=14	21.94	21.60	21.99
		RB Size=8, RB Offset=0	21.45	21.35	20.48
		RB Size=8, RB Offset=4	21.64	21.31	21.08
		RB Size=8, RB Offset=7	21.42	21.27	21.51
		RB Size=15, RB Offset=0	21.17	21.56	21.38

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	22.32	22.76	21.67
		RB Size=1, RB Offset=12	21.81	22.37	21.73
		RB Size=1, RB Offset=24	21.64	21.27	22.21
		RB Size=12, RB Offset=0	21.09	21.07	21.21
		RB Size=12, RB Offset=6	21.23	21.70	21.67
		RB Size=12, RB Offset=11	20.64	21.75	21.19
		RB Size=25, RB Offset=0	20.43	21.50	21.42
	16QAM	RB Size=1, RB Offset=0	21.90	21.05	22.13
		RB Size=1, RB Offset=12	21.47	21.52	22.37
		RB Size=1, RB Offset=24	22.48	21.46	22.26
		RB Size=12, RB Offset=0	21.42	21.54	21.19
		RB Size=12, RB Offset=6	21.44	21.61	20.85
		RB Size=12, RB Offset=11	21.25	20.15	20.49
		RB Size=25, RB Offset=0	20.63	20.69	21.58
10.0	QPSK	RB Size=1, RB Offset=0	22.95	22.85	22.68
		RB Size=1, RB Offset=24	22.89	22.98	22.14
		RB Size=1, RB Offset=49	22.33	22.97	22.22
		RB Size=25, RB Offset=0	21.96	21.51	22.73
		RB Size=25, RB Offset=12	22.11	22.16	22.15
		RB Size=25, RB Offset=24	21.33	21.15	21.43
		RB Size=50, RB Offset=0	21.23	22.11	21.19
	16QAM	RB Size=1, RB Offset=0	22.20	22.75	21.93
		RB Size=1, RB Offset=24	22.98	21.84	22.71
		RB Size=1, RB Offset=49	22.19	21.49	22.15
		RB Size=25, RB Offset=0	21.67	21.08	21.63
		RB Size=25, RB Offset=12	21.43	21.36	21.36
		RB Size=25, RB Offset=24	20.74	20.82	21.09
		RB Size=50, RB Offset=0	21.03	21.12	20.99

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.76	13	Pass
QPSK (50RB Size)	5.95	13	Pass
16QAM (1RB Size)	5.10	13	Pass
16QAM (50RB Size)	5.09	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									
707.5	84.96	76	2.1	H	22.6	0.7	0.0	21.90	34.77
707.5	79.37	127	1.9	V	18.9	0.7	0.0	18.20	34.77
3 MHz Bandwidth									
707.5	85.33	100	1.1	H	22.9	0.7	0.0	22.20	34.77
707.5	79.39	250	1.9	V	18.9	0.7	0.0	18.20	34.77
5 MHz Bandwidth									
707.5	84.96	111	1.4	H	22.6	0.7	0.0	21.90	34.77
707.5	79.30	311	2.0	V	18.9	0.7	0.0	18.20	34.77
10 MHz Bandwidth									
707.5	85.13	5	2.4	H	22.7	0.7	0.0	22.00	34.77
707.5	79.45	305	1.4	V	19.0	0.7	0.0	18.30	34.77

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	85.29	262	1.4	H	22.9	0.7	0.0	22.20	34.77
707.5	80.17	41	2.5	V	19.7	0.7	0.0	19.00	34.77
3 MHz Bandwidth									
707.5	85.21	253	2.4	H	22.8	0.7	0.0	22.10	34.77
707.5	80.17	134	2.1	V	19.7	0.7	0.0	19.00	34.77
5 MHz Bandwidth									
707.5	85.14	16	2.1	H	22.7	0.7	0.0	22.00	34.77
707.5	79.82	75	1.1	V	19.4	0.7	0.0	18.70	34.77
10 MHz Bandwidth									
707.5	85.29	300	2.4	H	22.9	0.7	0.0	22.20	34.77
707.5	79.75	133	2.0	V	19.3	0.7	0.0	18.60	34.77

LTE Band 17:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.01	21.91	22.29
		RB Size=1, RB Offset=12	20.84	22.35	21.30
		RB Size=1, RB Offset=24	21.48	21.95	21.65
		RB Size=12, RB Offset=0	21.86	21.72	21.52
		RB Size=12, RB Offset=6	21.41	21.85	22.14
		RB Size=12, RB Offset=11	21.00	20.88	21.45
		RB Size=25, RB Offset=0	20.75	20.74	20.79
	16QAM	RB Size=1, RB Offset=0	21.93	21.72	21.53
		RB Size=1, RB Offset=12	21.48	22.13	21.54
		RB Size=1, RB Offset=24	21.90	22.01	22.62
		RB Size=12, RB Offset=0	21.02	21.64	20.73
		RB Size=12, RB Offset=6	21.10	21.27	20.61
		RB Size=12, RB Offset=11	21.44	20.77	20.56
		RB Size=25, RB Offset=0	20.84	20.49	20.51
10.0	QPSK	RB Size=1, RB Offset=0	22.08	22.19	22.71
		RB Size=1, RB Offset=24	22.31	22.25	22.80
		RB Size=1, RB Offset=49	22.00	22.70	22.39
		RB Size=25, RB Offset=0	21.74	21.84	21.34
		RB Size=25, RB Offset=12	21.61	21.74	22.69
		RB Size=25, RB Offset=24	21.91	22.04	22.42
		RB Size=50, RB Offset=0	21.42	21.58	21.83
	16QAM	RB Size=1, RB Offset=0	22.50	22.71	21.77
		RB Size=1, RB Offset=24	21.66	21.95	23.01
		RB Size=1, RB Offset=49	22.52	22.84	23.41
		RB Size=25, RB Offset=0	21.03	20.92	21.34
		RB Size=25, RB Offset=12	21.57	21.42	21.39
		RB Size=25, RB Offset=24	21.50	21.63	20.95
		RB Size=50, RB Offset=0	21.16	20.80	20.76

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.47	13	Pass
QPSK (50RB Size)	5.40	13	Pass
16QAM (1RB Size)	5.25	13	Pass
16QAM (50RB Size)	5.26	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 (dBi)		
Middle Channel									
5 MHz Bandwidth									
710	85.19	202	2.4	H	22.8	0.7	0.0	22.10	34.77
710	80.06	343	1.5	V	19.6	0.7	0.0	18.90	34.77
10 MHz Bandwidth									
710	85.23	2	1.1	H	22.8	0.7	0.0	22.10	34.77
710	80.02	28	1.2	V	19.6	0.7	0.0	18.90	34.77

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 (dBi)		
Middle Channel									
5 MHz Bandwidth									
710	85.62	99	2.0	H	23.2	0.7	0.0	22.50	34.77
710	80.07	243	1.7	V	19.6	0.7	0.0	18.90	34.77
10 MHz Bandwidth									
710	85.36	195	1.3	H	23.0	0.7	0.0	22.30	34.77
710	80.29	109	1.8	V	19.8	0.7	0.0	19.10	34.77

Note:
All above data were tested with no amplifier
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

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

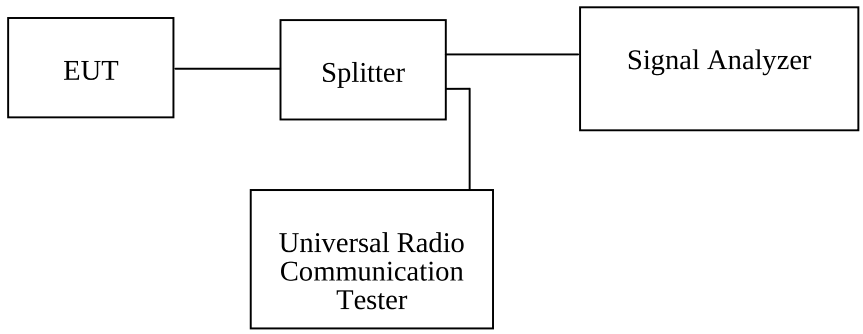
Applicable Standard

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

Test Procedure

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

The resolution bandwidth of the spectrum analyzer was set at 1% to 5% of the anticipated emission bandwidth and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2018-08-01 and 2018-08-02.

EUT operation mode: Transmitting

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

Cellular Band (Part 22H)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	836.6	243.59	314.10
EGPRS(8PSK)	836.6	250.00	315.71

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.167	4.696
HSUPA (BPSK)	836.6	4.183	4.713
HSDPA (16QAM)	836.6	4.167	4.728

PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	241.99	314.10
EGPRS(8PSK)	1880.0	246.79	318.91

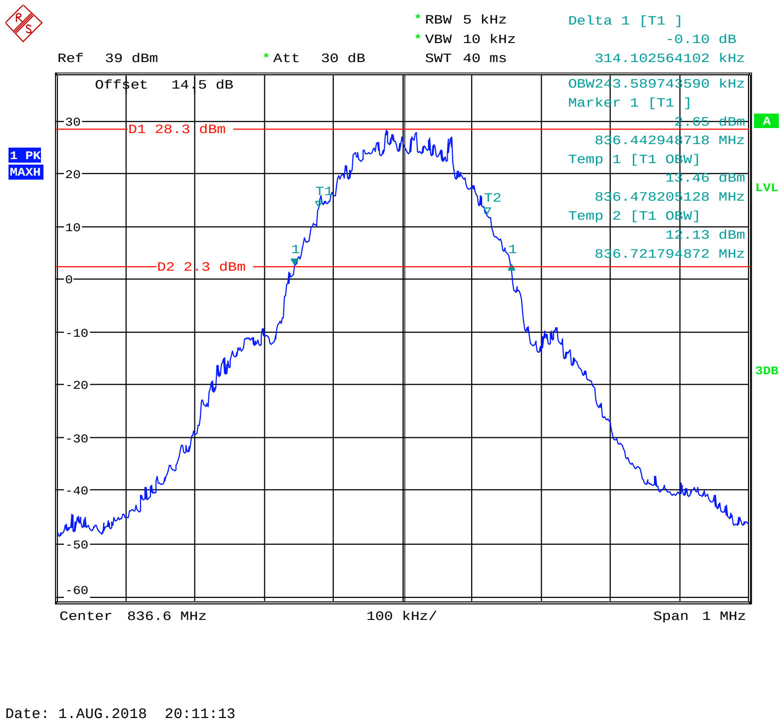
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.167	4.696
HSUPA (BPSK)	1880.0	4.183	4.728
HSDPA (16QAM)	1880.0	4.183	4.712

AWS Band (Part27)

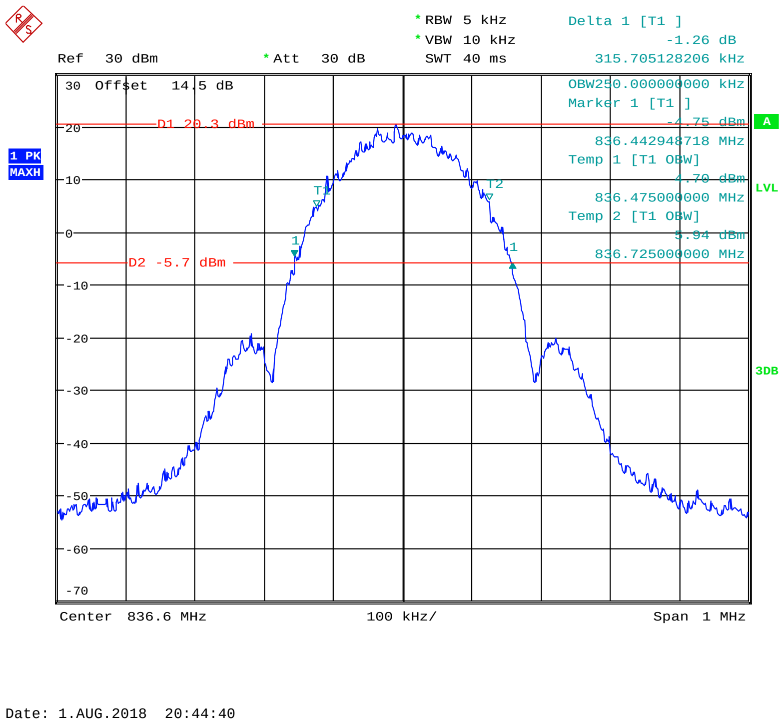
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1732.6	4.167	4.728
HSUPA (BPSK)	1732.6	4.167	4.712
HSDPA (16QAM)	1732.6	4.167	4.712

Cellular Band (Part 22H)

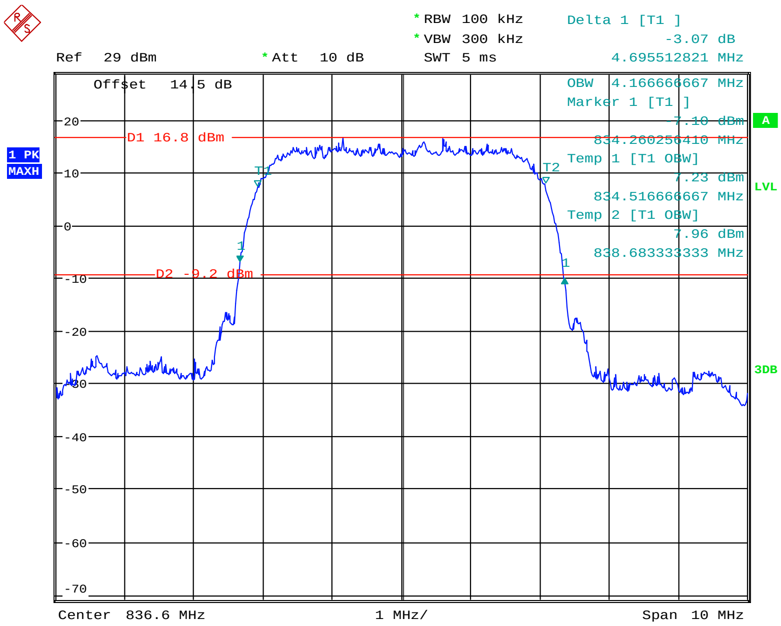
26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode



26 dB Emissions &99% Occupied Bandwidth for EDGE Mode

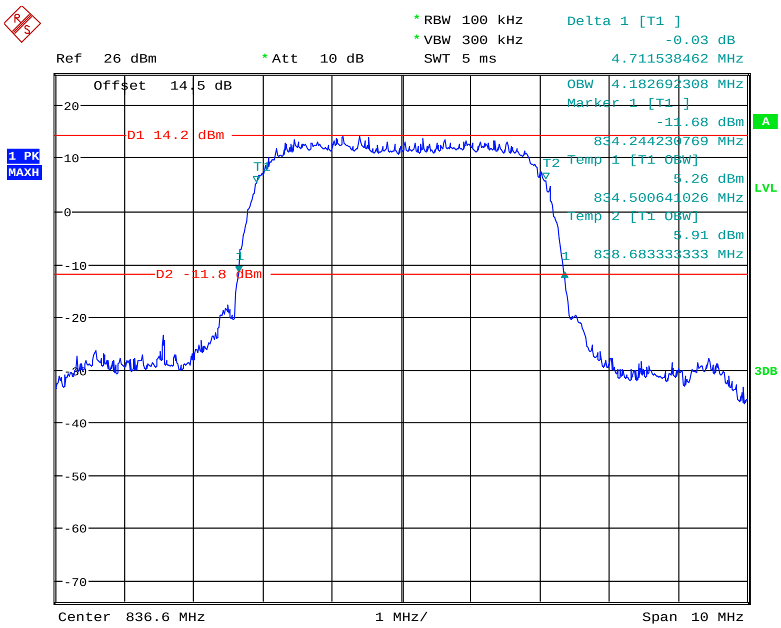


26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode



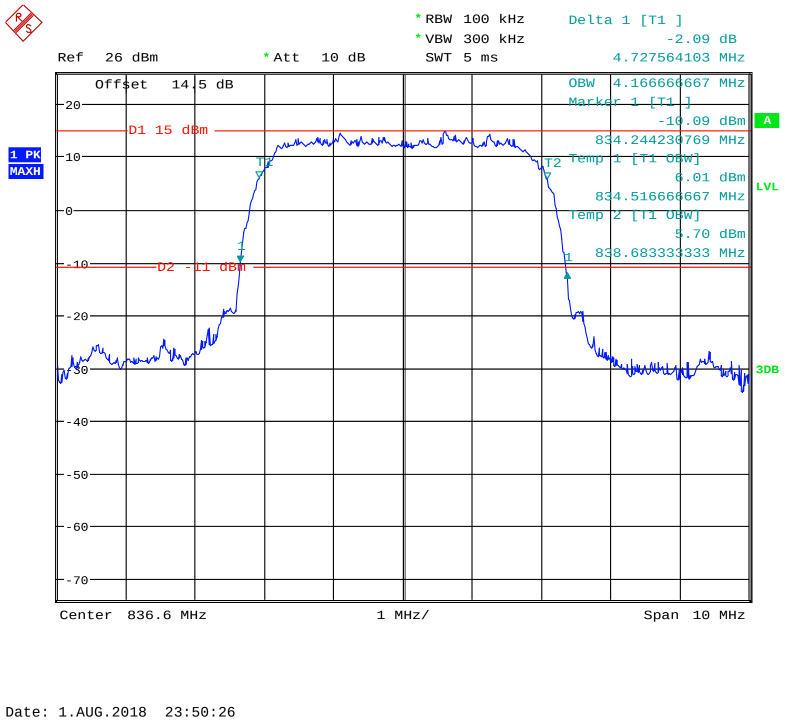
Date: 1.AUG.2018 23:07:21

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



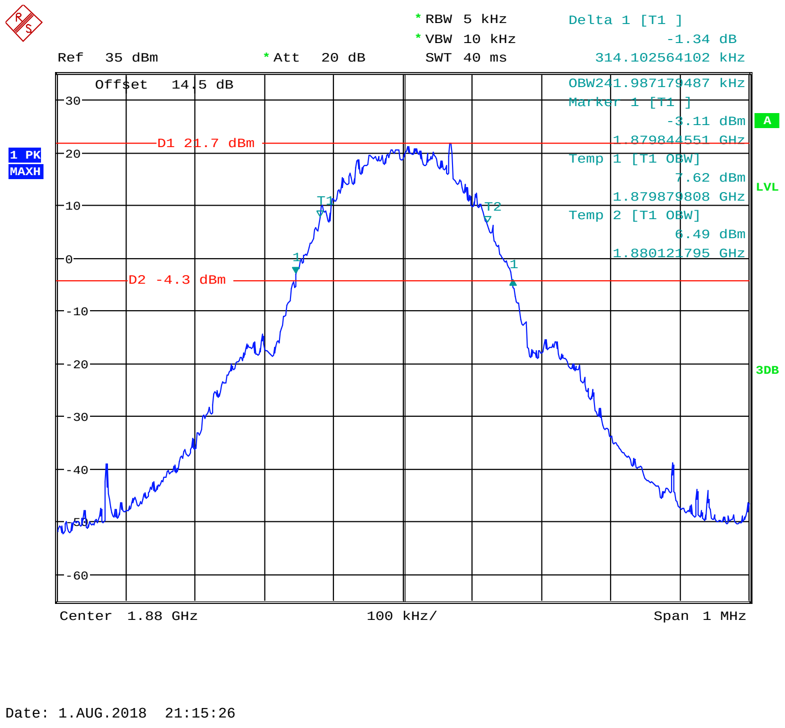
Date: 2.AUG.2018 00:17:31

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

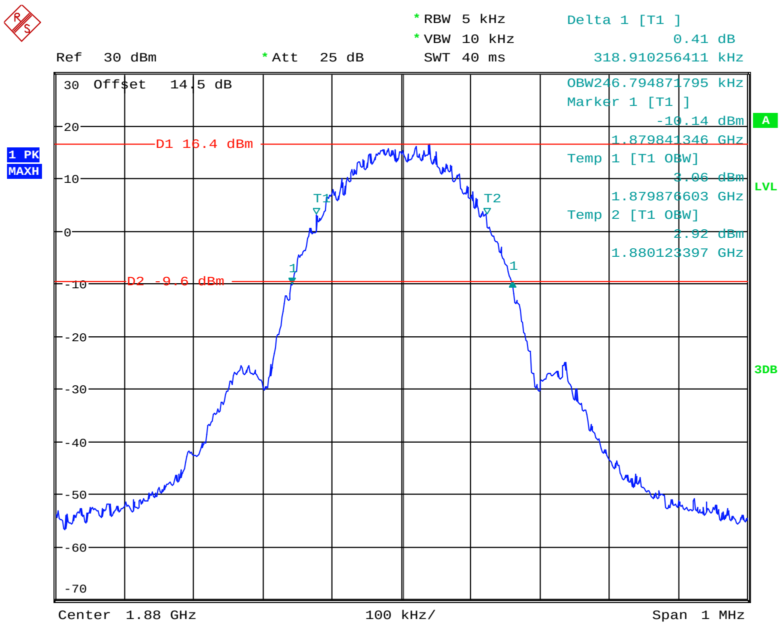


PCS Band (Part 24E)

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

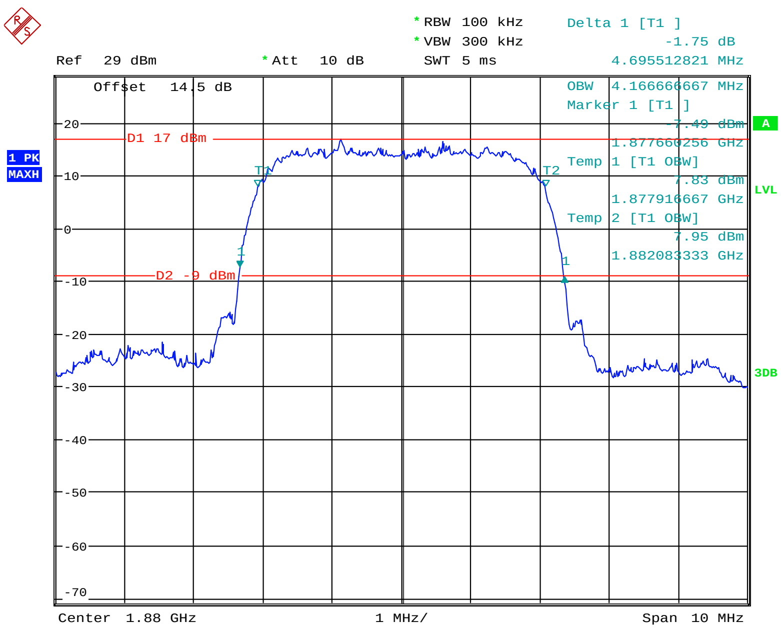


26 dB Emissions &99% Occupied Bandwidth for EDGE Mode



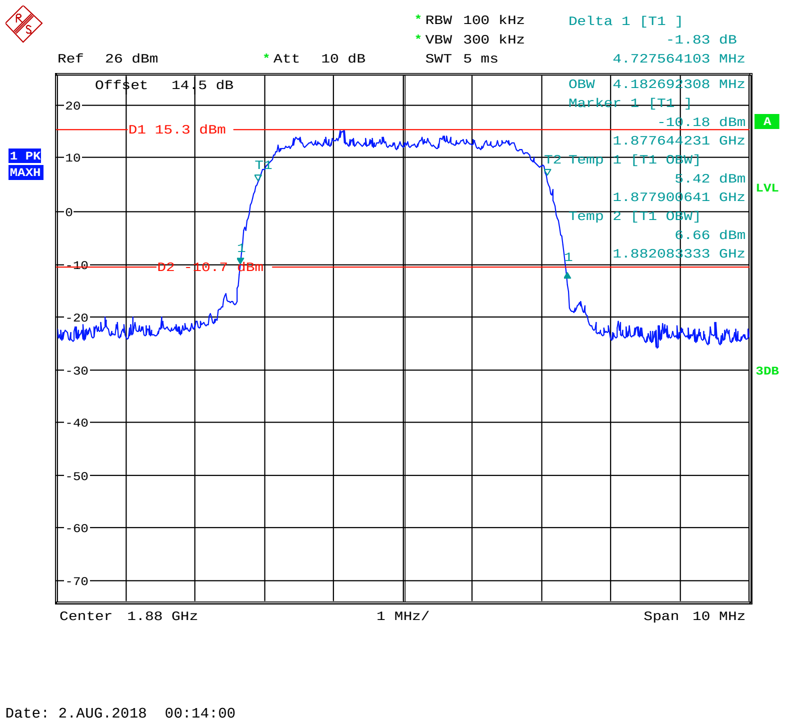
Date: 1.AUG.2018 21:41:46

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

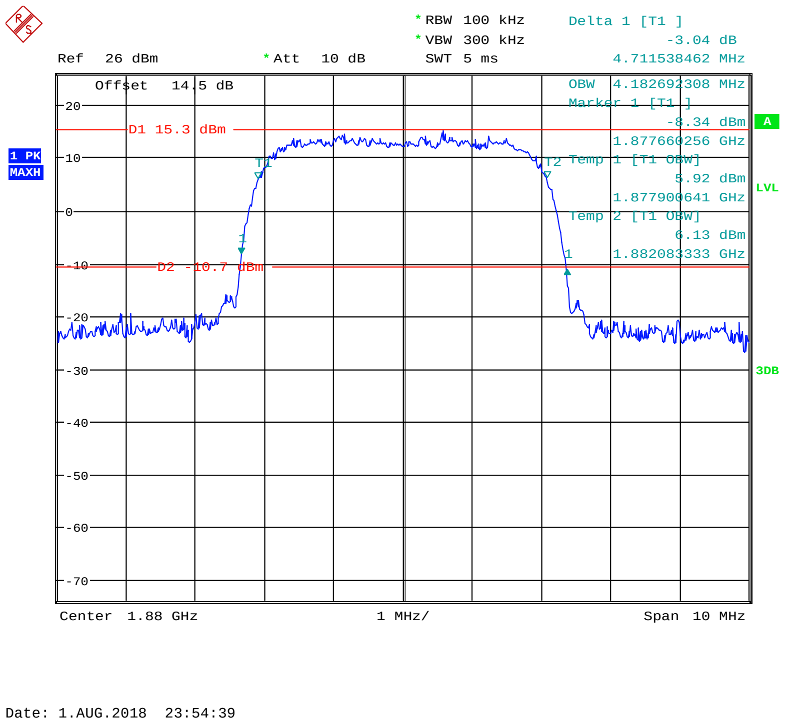


Date: 1.AUG.2018 23:00:42

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

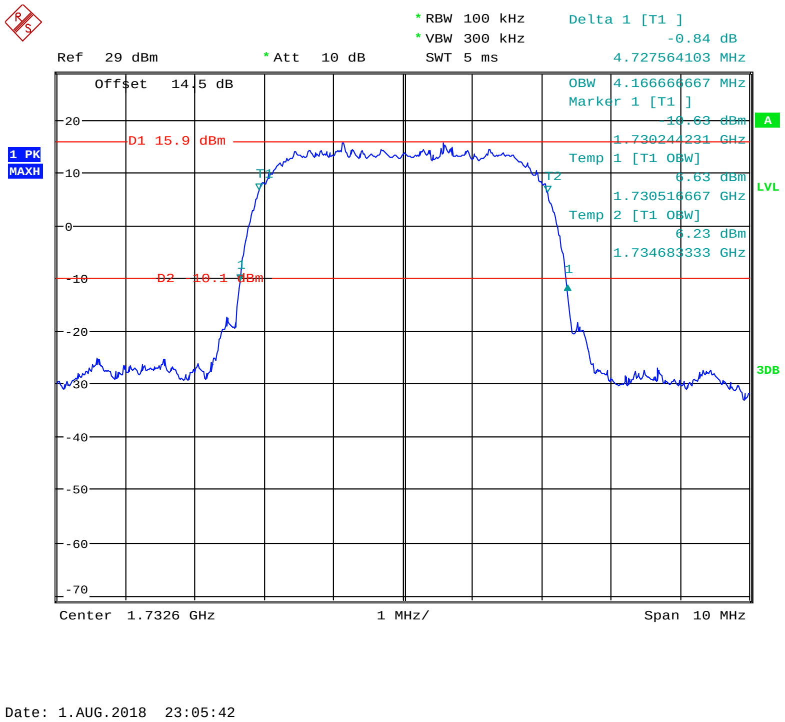


26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode

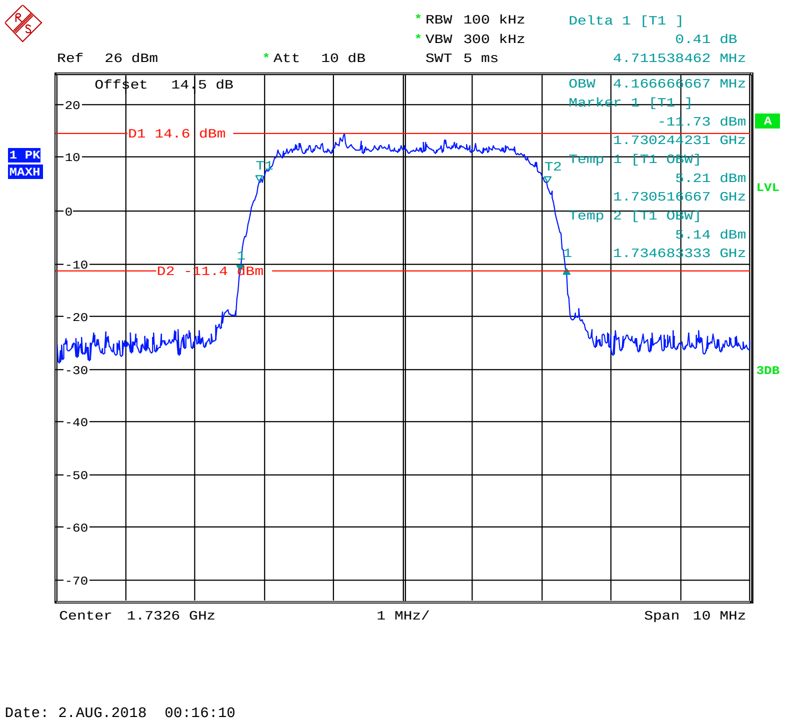


AWS Band (Part 27)

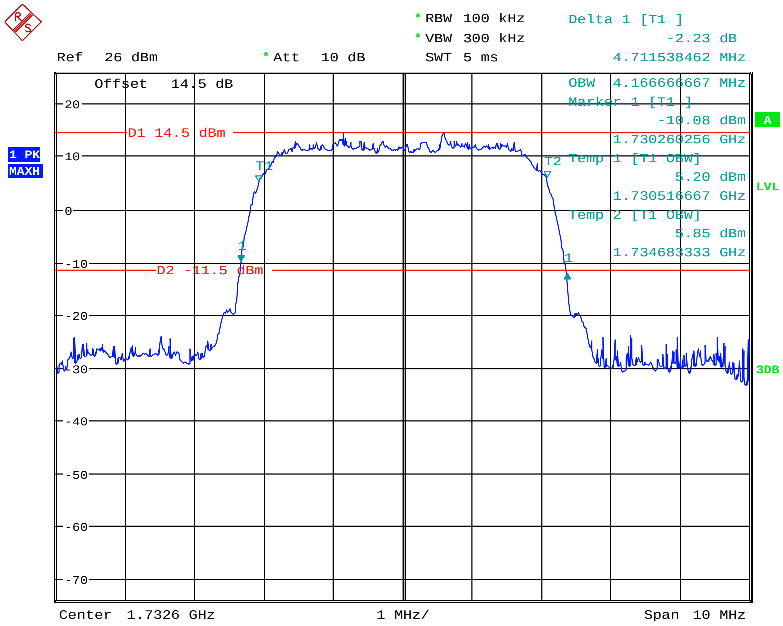
26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode



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



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

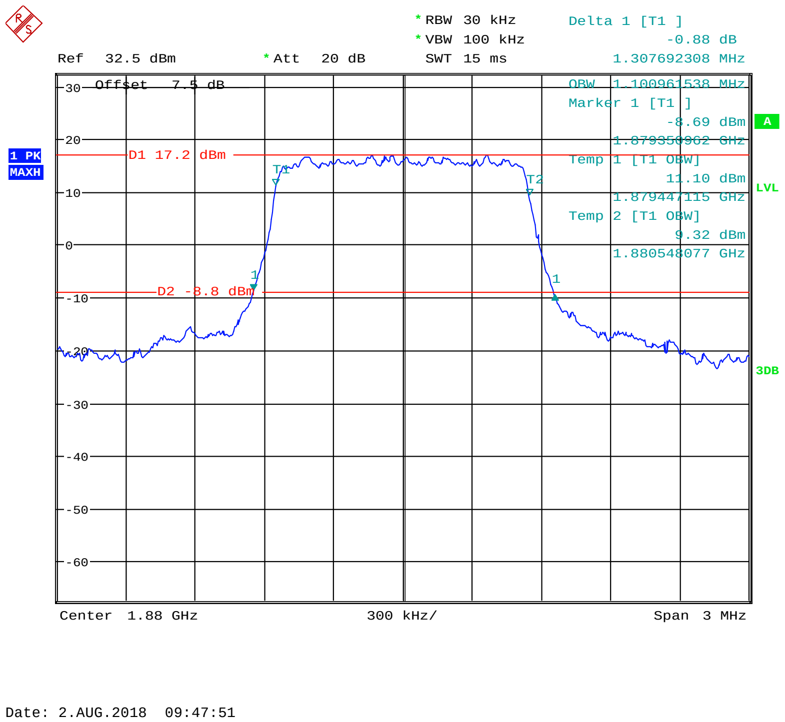


Date: 1.AUG.2018 23:51:58

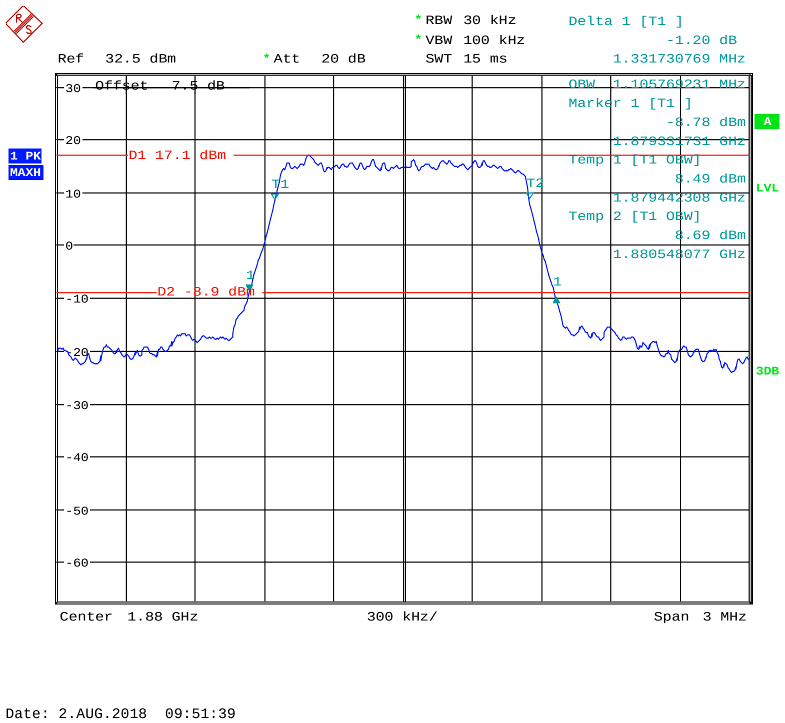
LTE Band 2: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.308
	16QAM	1.106	1.332
3.0	QPSK	2.683	2.875
	16QAM	2.683	2.885
5.0	QPSK	4.551	5.250
	16QAM	4.519	5.186
10.0	QPSK	8.974	10.010
	16QAM	8.974	9.785
15.0	QPSK	13.558	15.010
	16QAM	13.462	14.962
20.0	QPSK	17.885	19.353
	16QAM	17.949	19.545

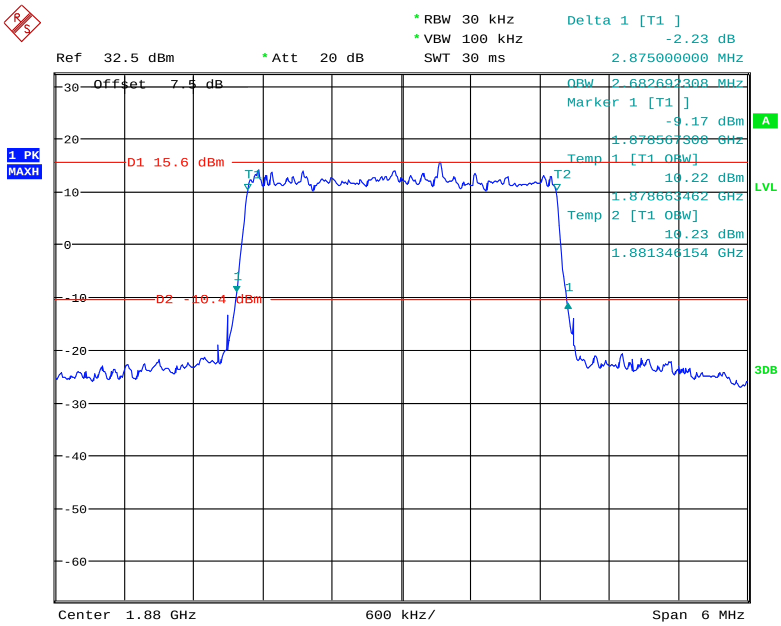
QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



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

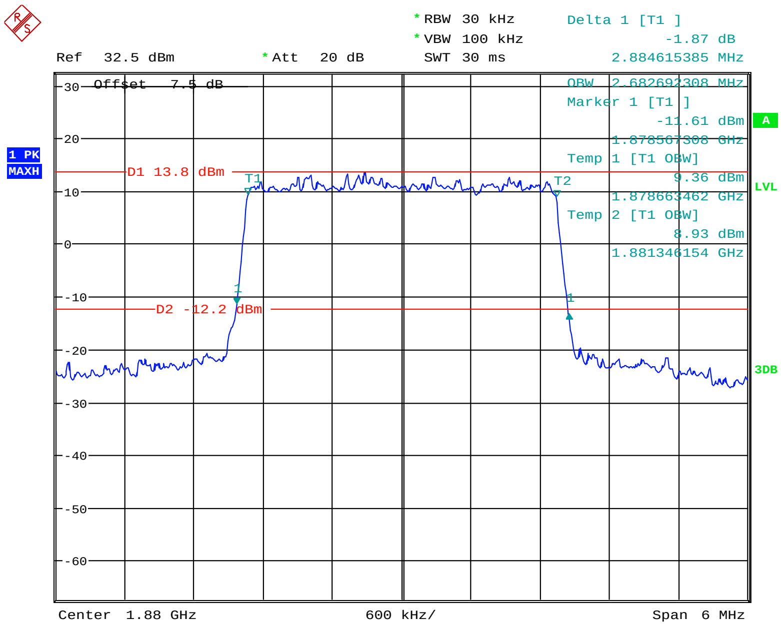


QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



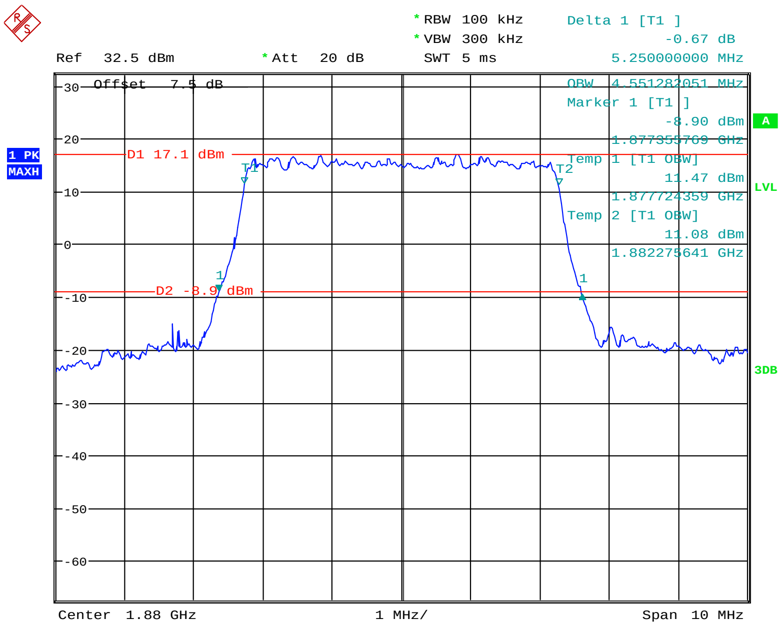
Date: 2.AUG.2018 09:53:41

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



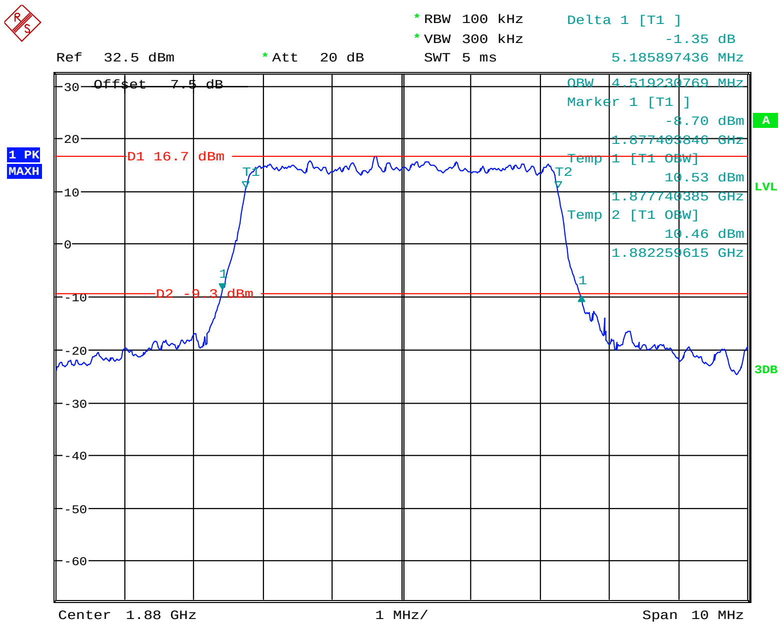
Date: 2.AUG.2018 09:55:30

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



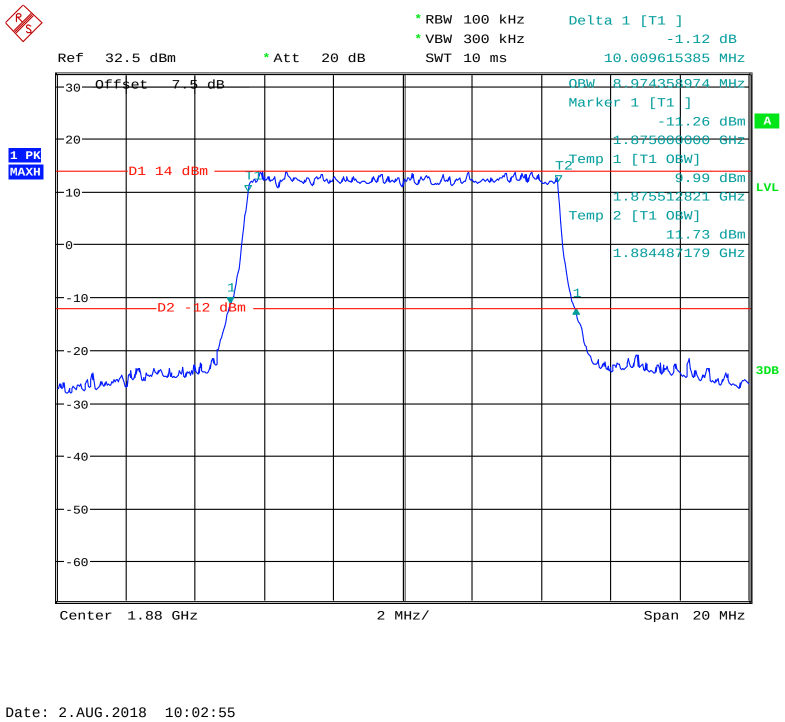
Date: 2.AUG.2018 09:59:53

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

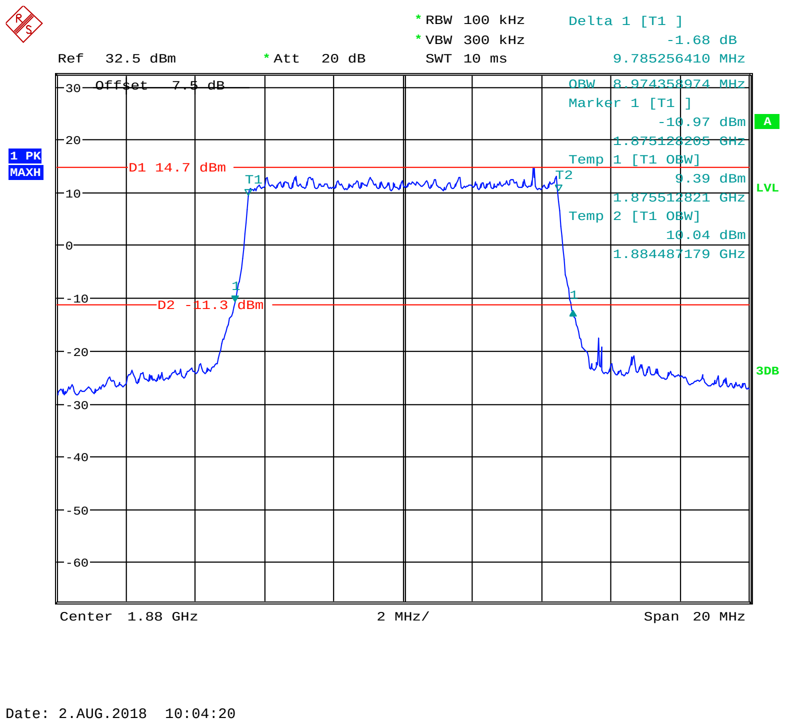


Date: 2.AUG.2018 09:58:27

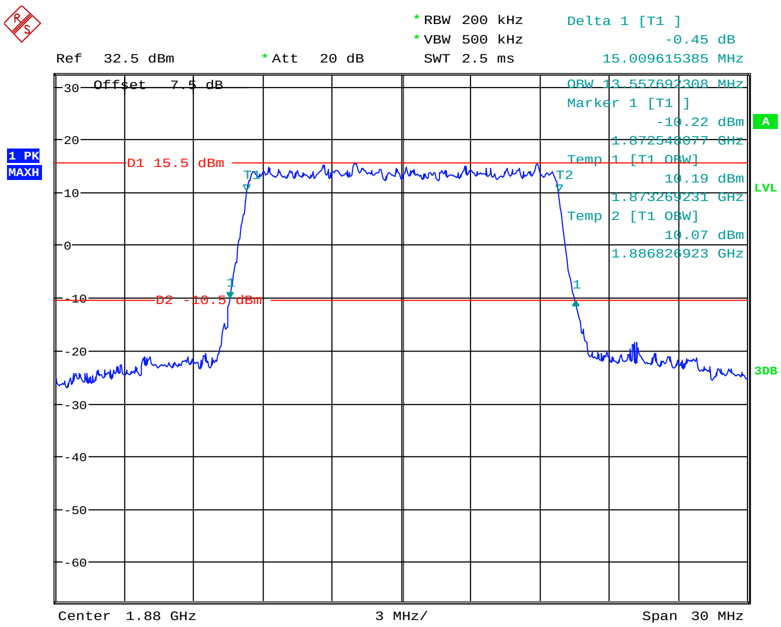
QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



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

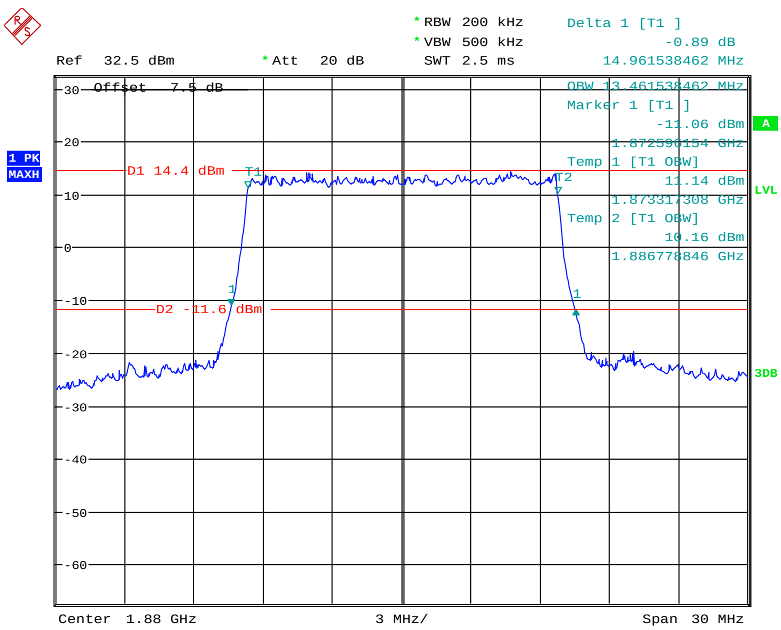


QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



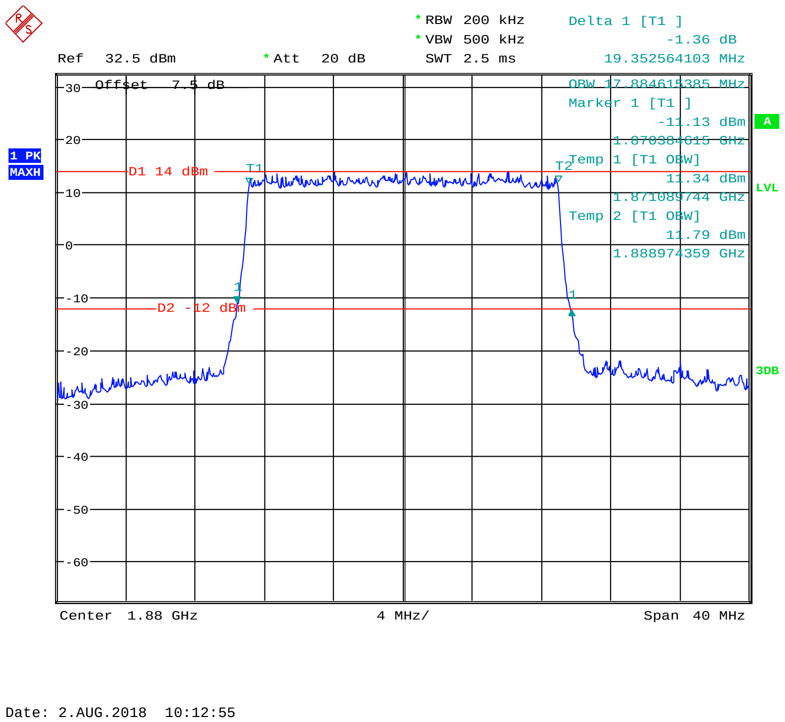
Date: 2.AUG.2018 10:11:30

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

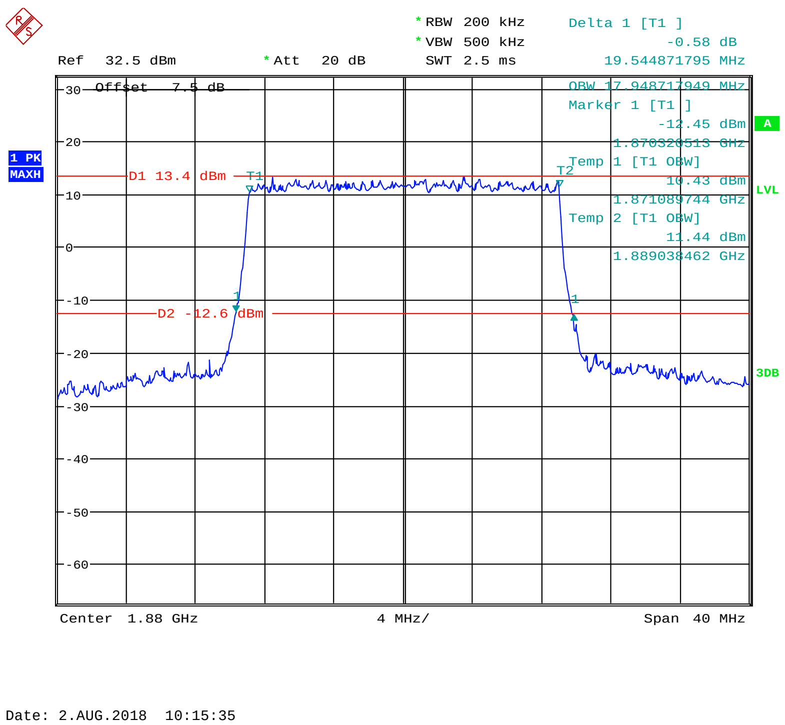


Date: 2.AUG.2018 10:10:20

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



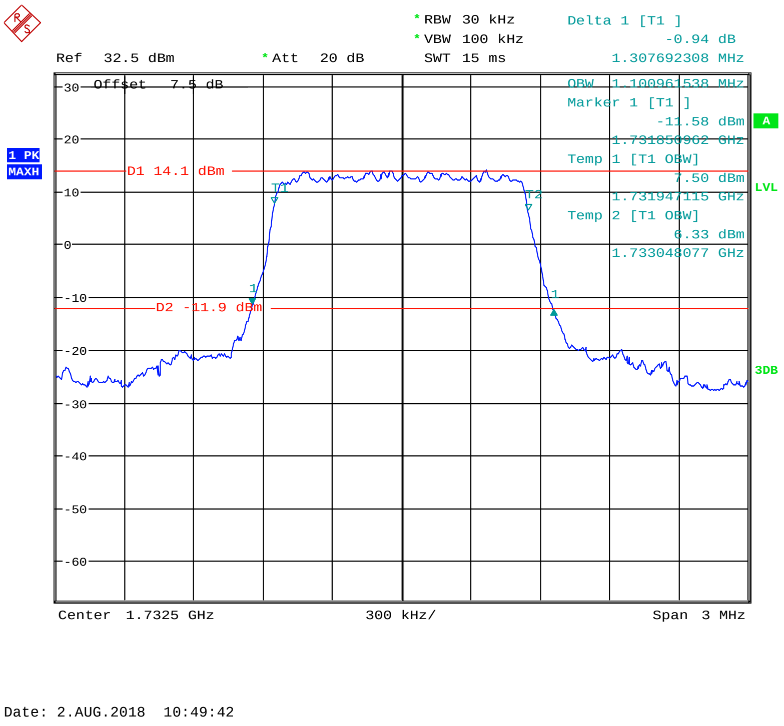
16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



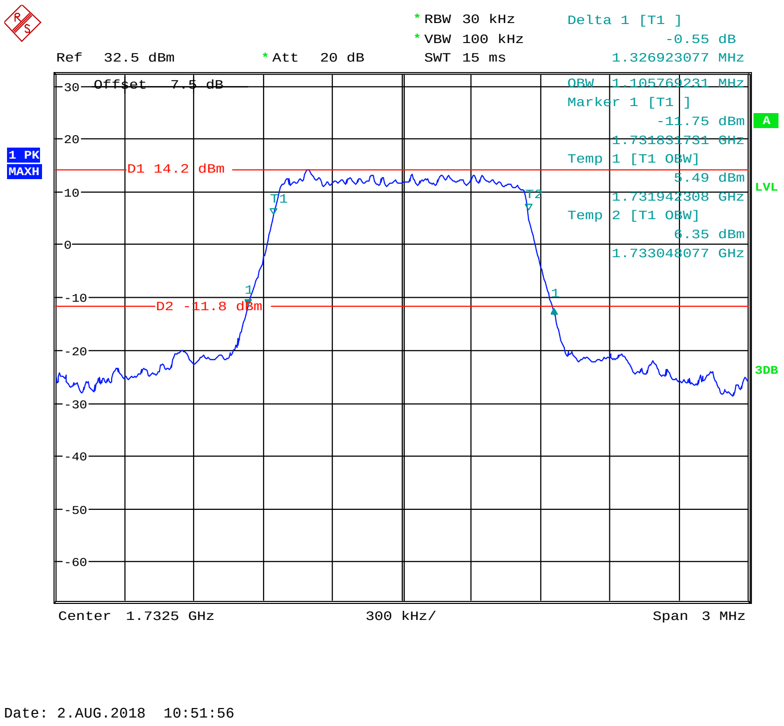
LTE Band 4: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.308
	16QAM	1.106	1.327
3.0	QPSK	2.683	2.880
	16QAM	2.683	2.880
5.0	QPSK	4.551	5.220
	16QAM	4.519	5.171
10.0	QPSK	8.974	10.011
	16QAM	8.974	9.819
15.0	QPSK	13.558	15.059
	16QAM	13.510	15.011
20.0	QPSK	17.949	19.482
	16QAM	17.949	19.611

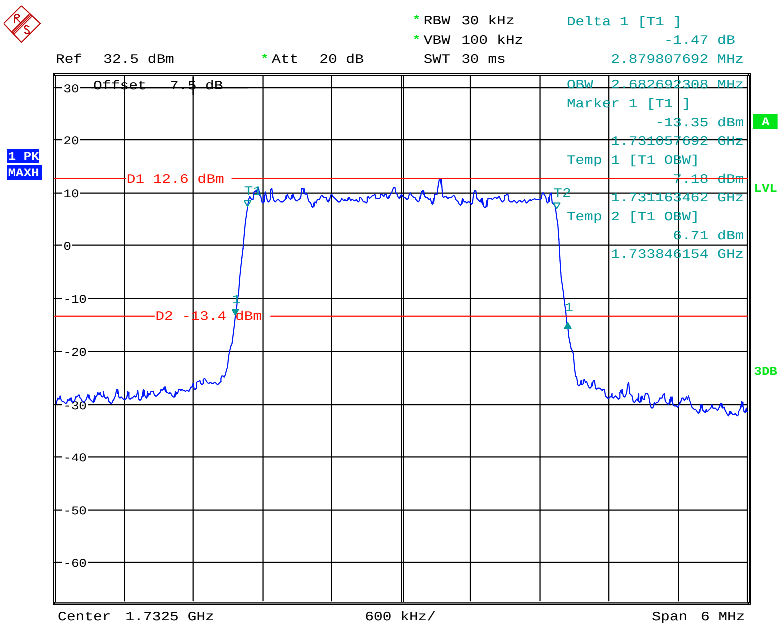
QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



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

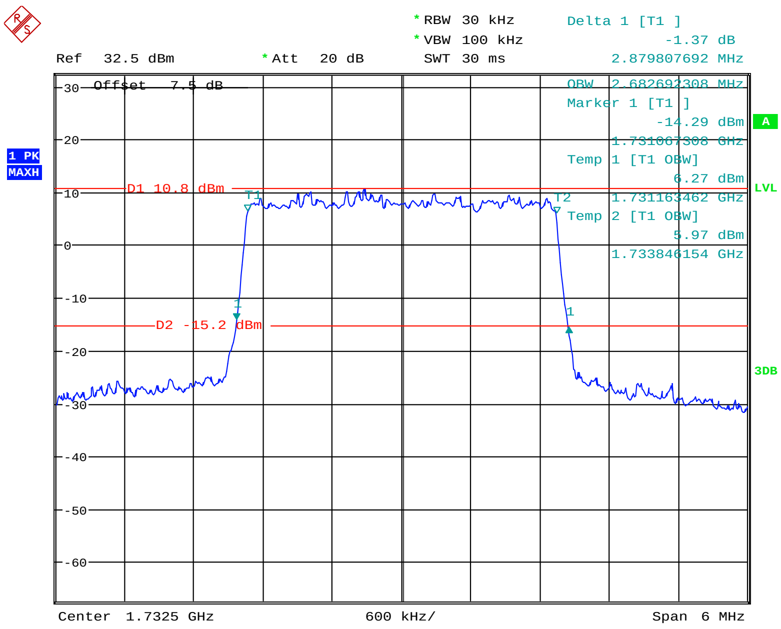


QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



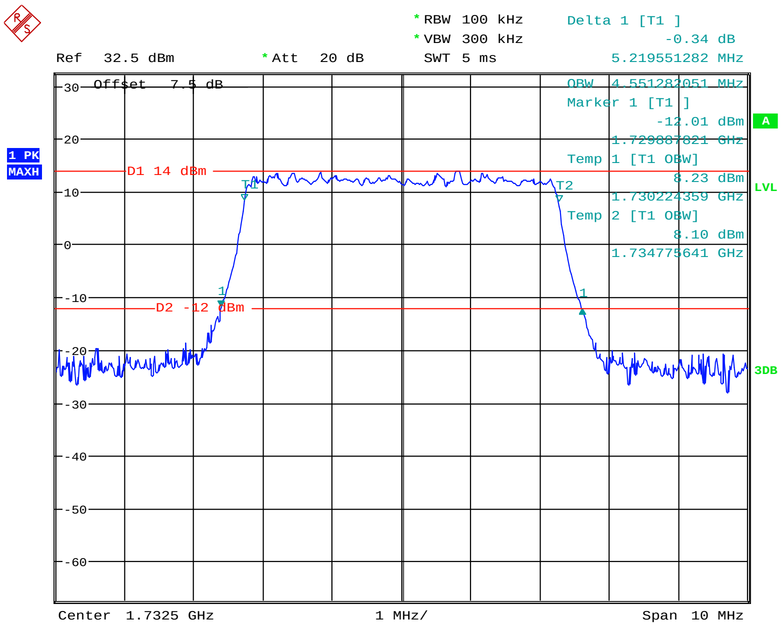
Date: 2.AUG.2018 10:54:32

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



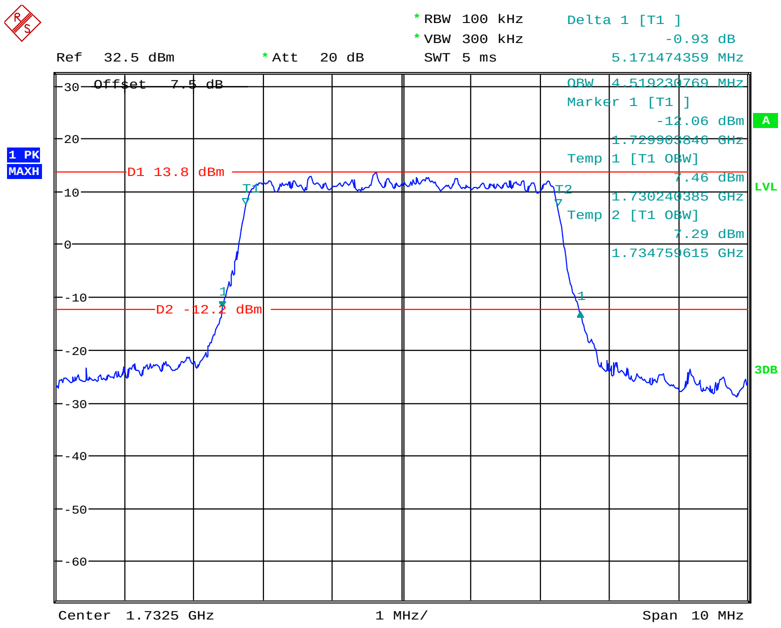
Date: 2.AUG.2018 10:53:26

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



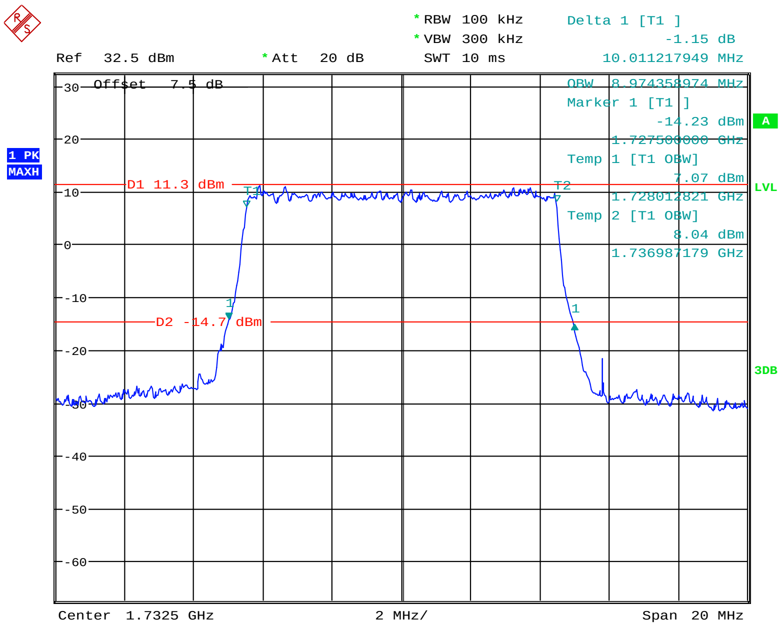
Date: 2.AUG.2018 10:55:52

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



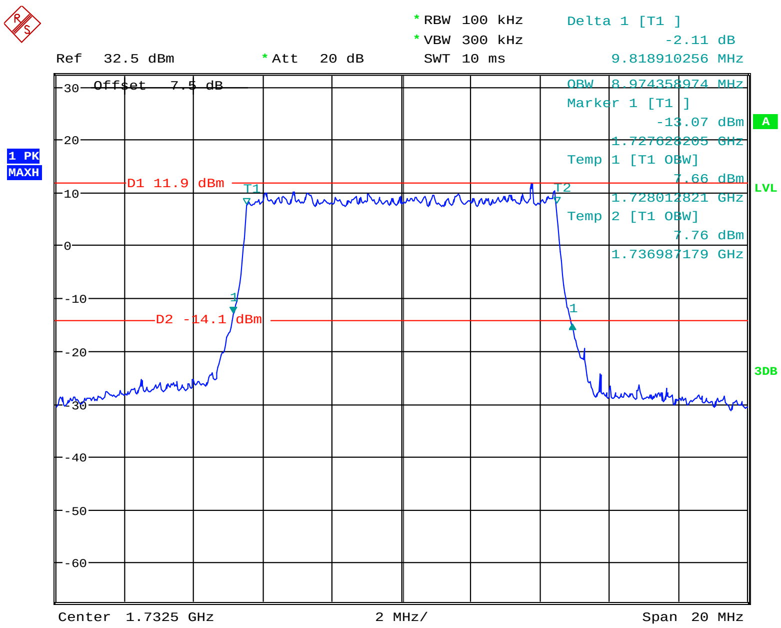
Date: 2.AUG.2018 10:56:44

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



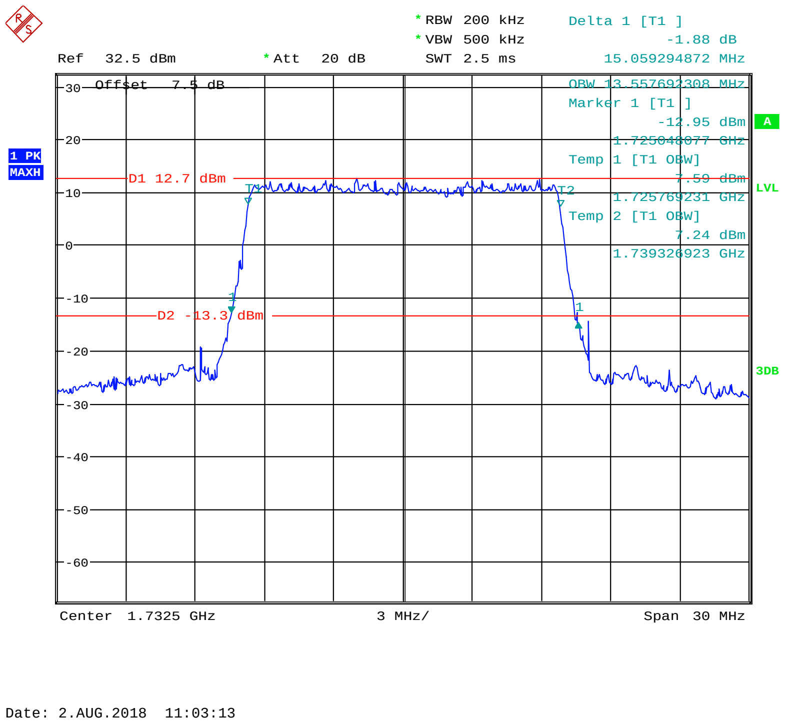
Date: 2.AUG.2018 11:00:18

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

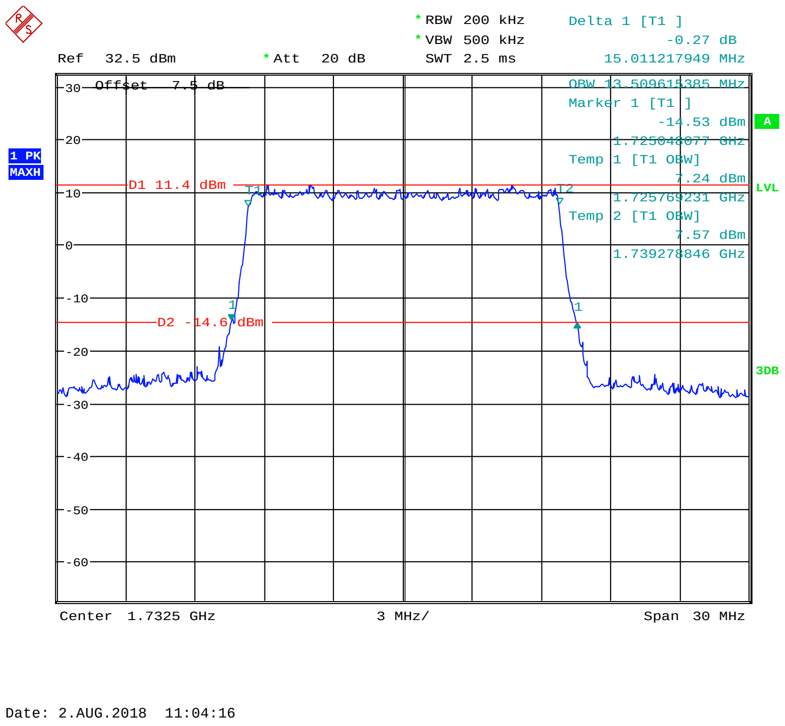


Date: 2.AUG.2018 10:58:26

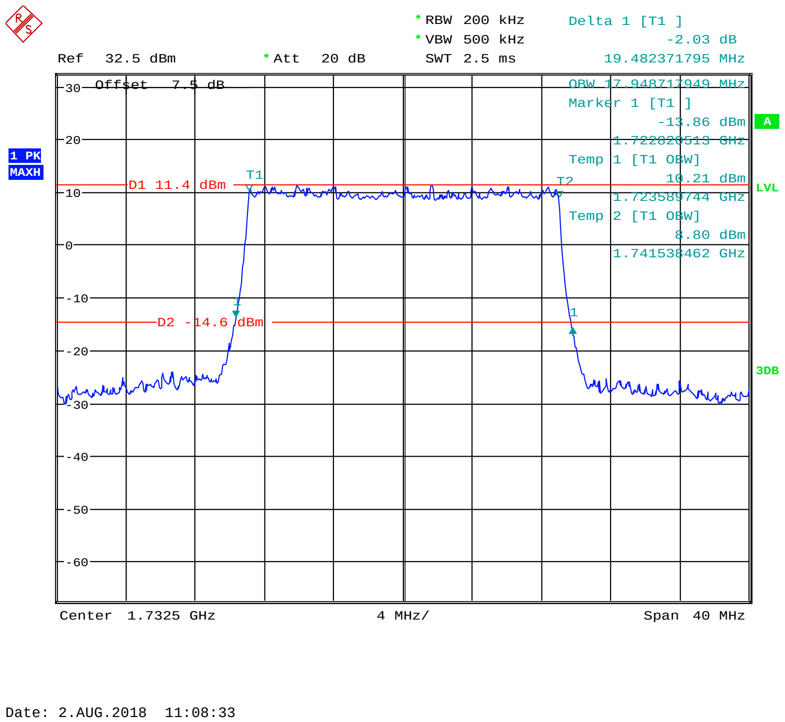
QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



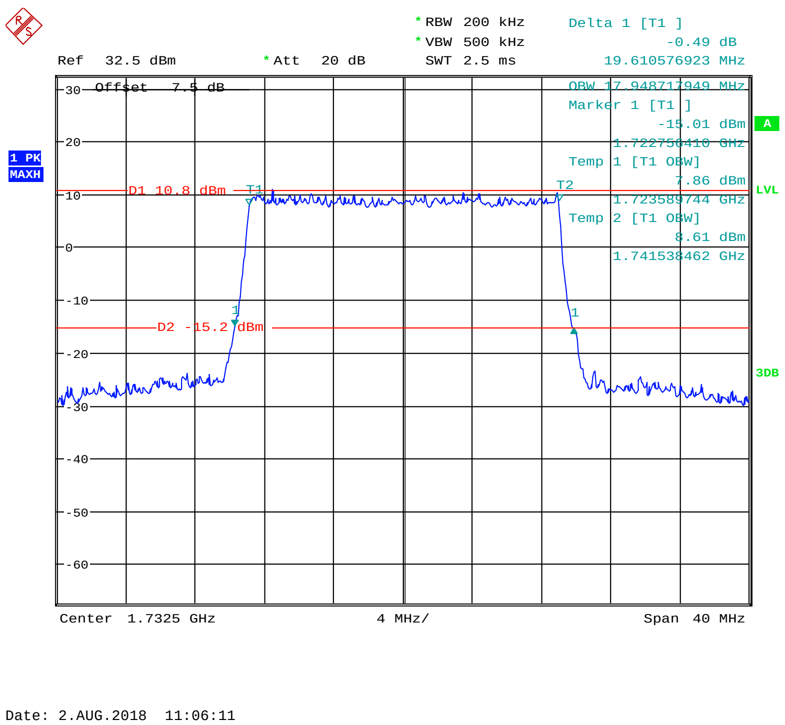
16-QAM (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



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



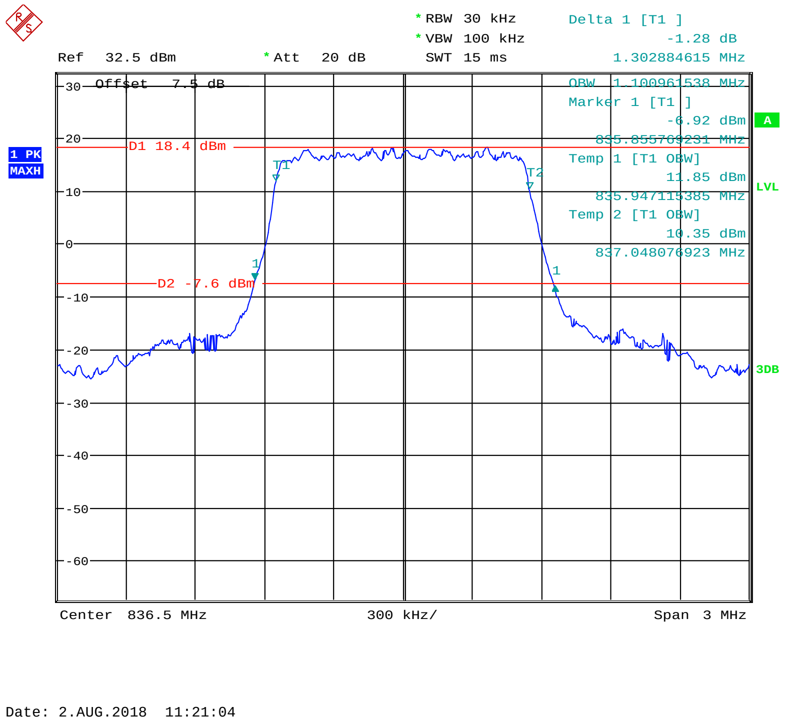
16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



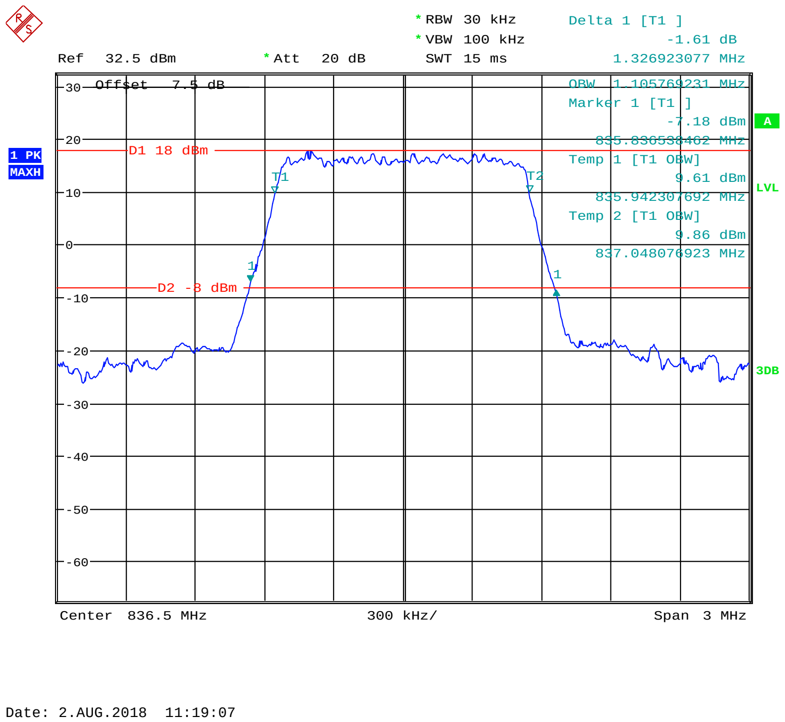
LTE Band 5: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.303
	16QAM	1.106	1.327
3.0	QPSK	2.683	2.870
	16QAM	2.683	2.889
5.0	QPSK	4.535	5.239
	16QAM	4.535	5.255
10.0	QPSK	9.006	10.014
	16QAM	9.006	9.758

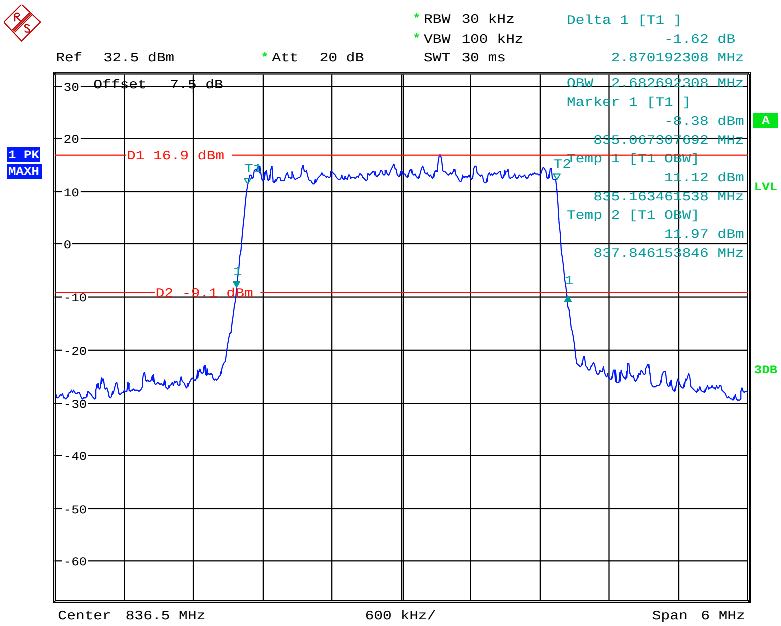
QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



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

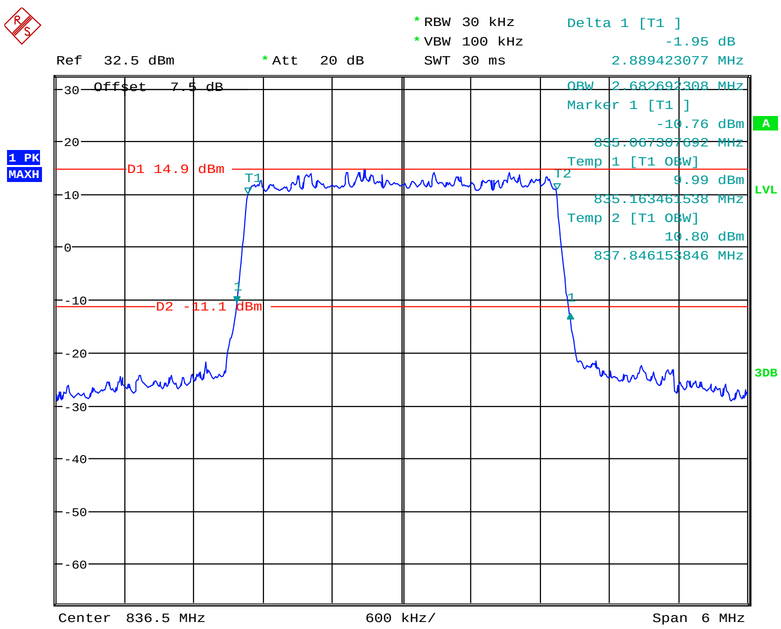


QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



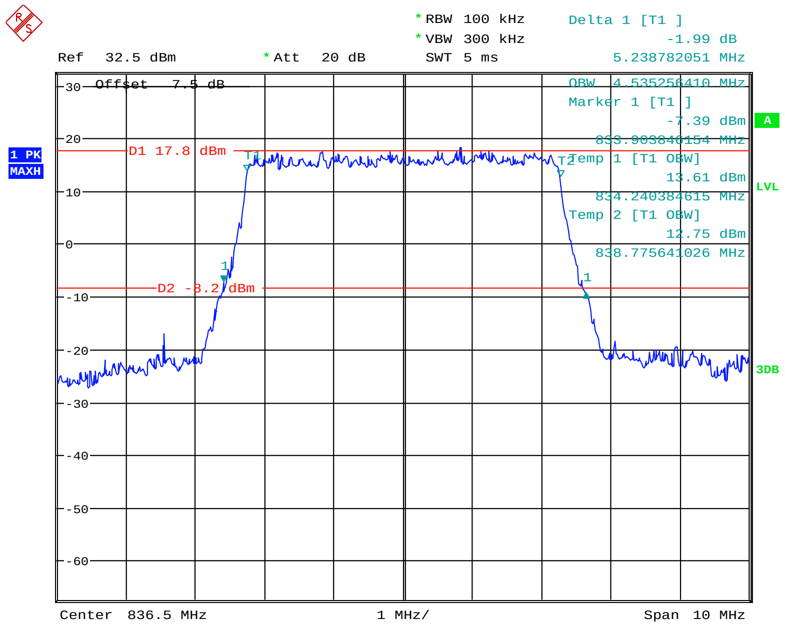
Date: 2.AUG.2018 11:22:03

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



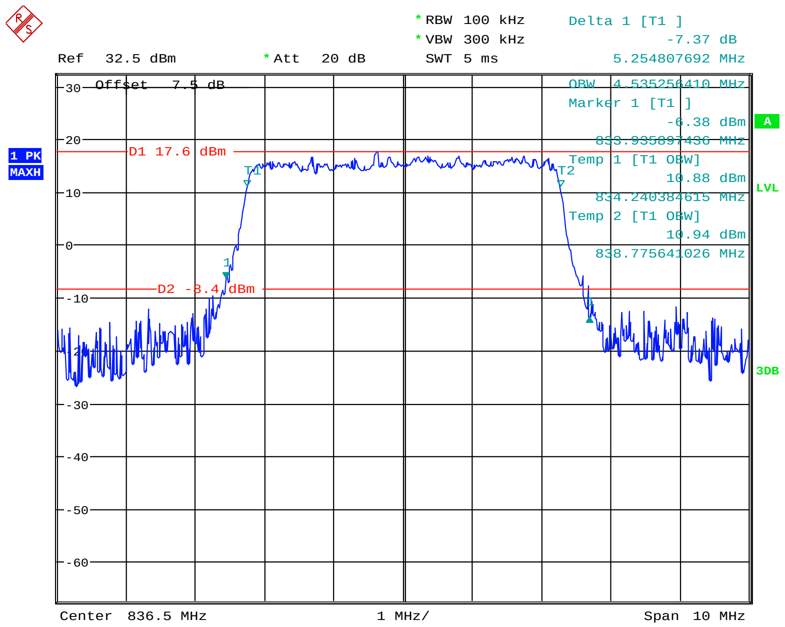
Date: 2.AUG.2018 11:23:00

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



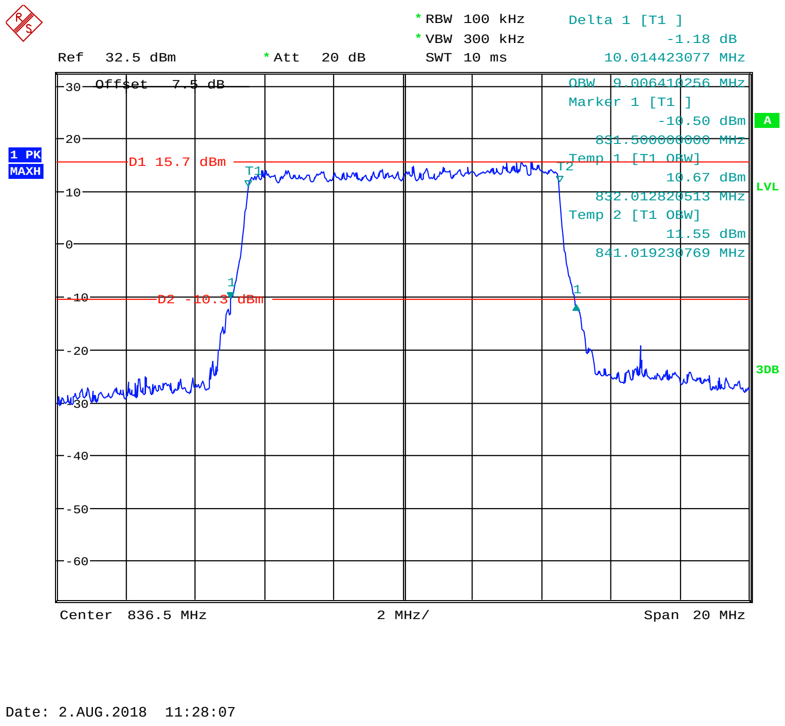
Date: 2.AUG.2018 11:26:26

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

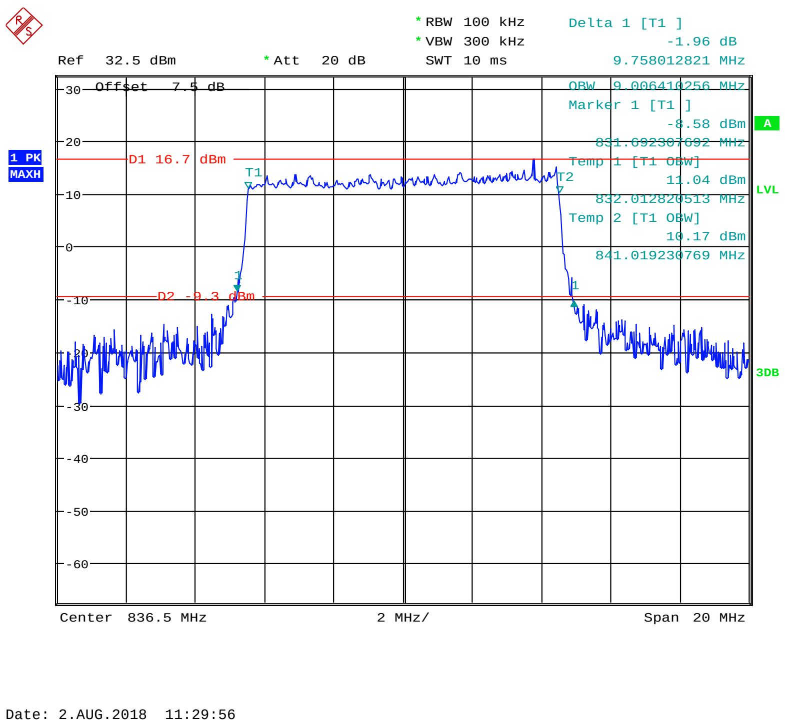


Date: 2.AUG.2018 11:25:28

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



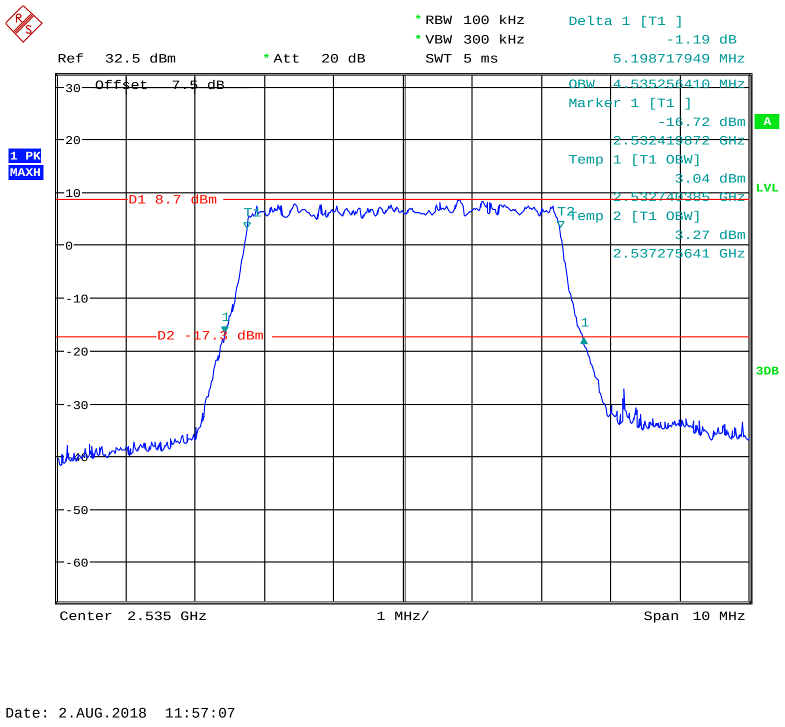
16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



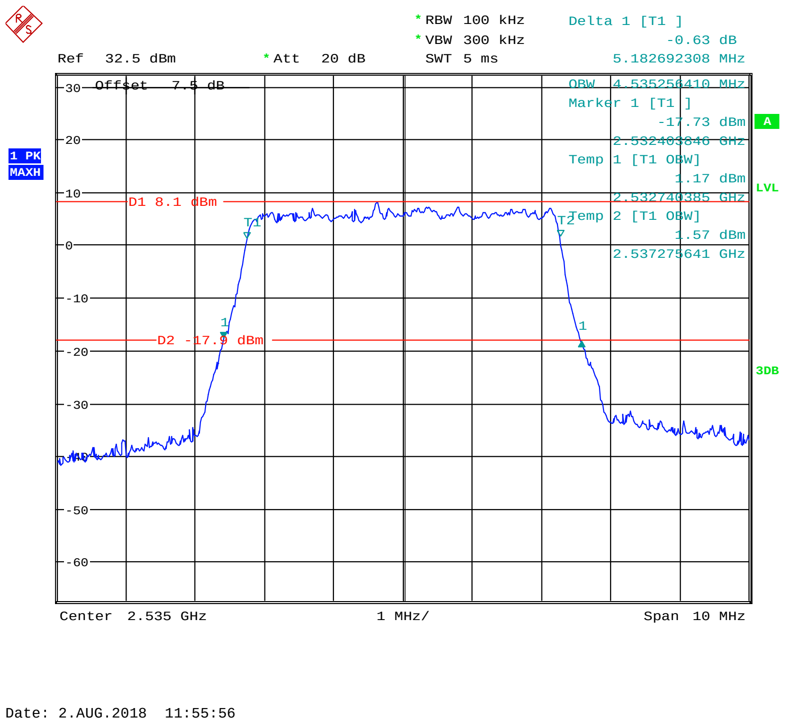
LTE Band 7: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.535	5.199
	16QAM	4.535	5.183
10.0	QPSK	9.006	9.958
	16QAM	8.974	9.734
15.0	QPSK	13.510	14.974
	16QAM	13.462	14.878
20.0	QPSK	17.949	19.237
	16QAM	17.949	19.558

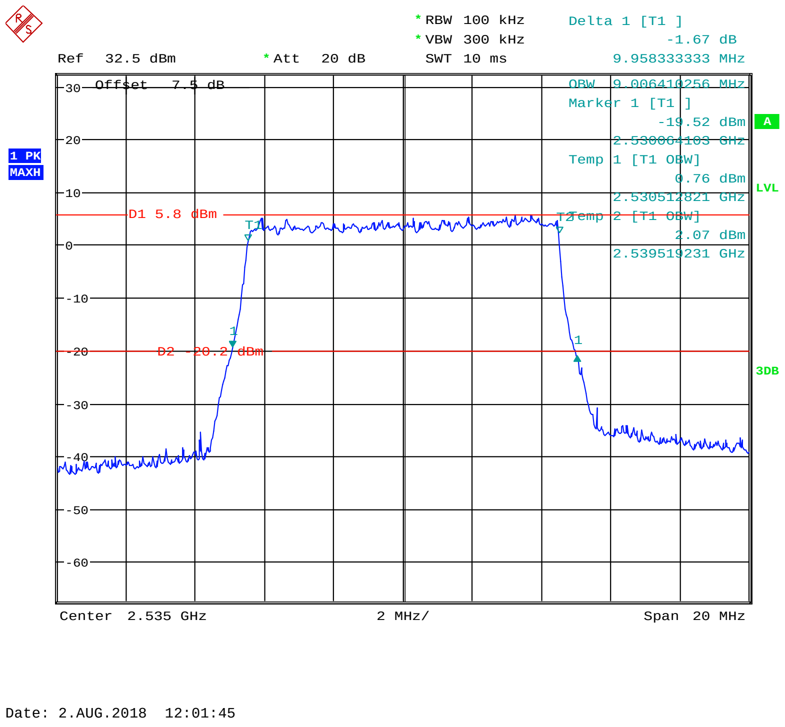
QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



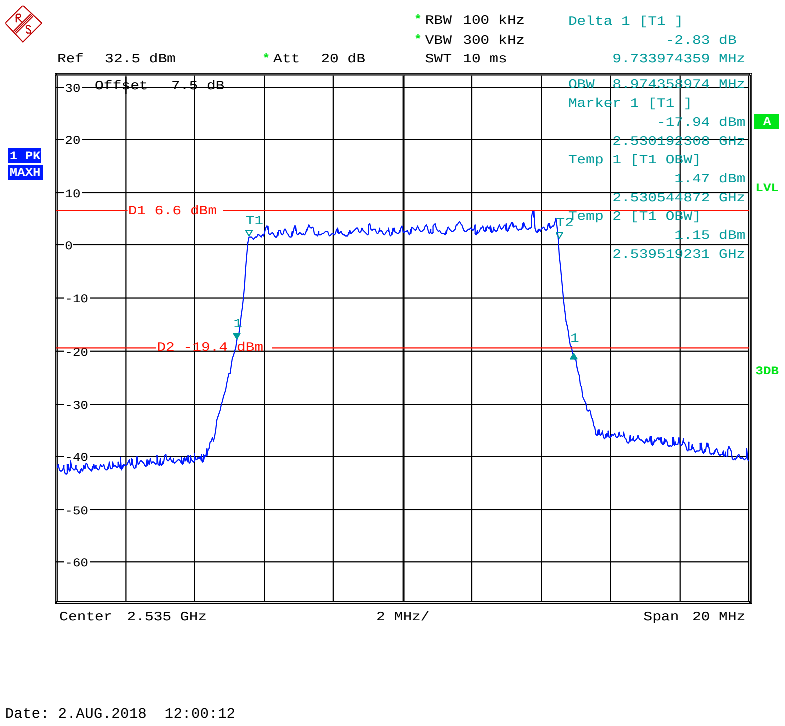
16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



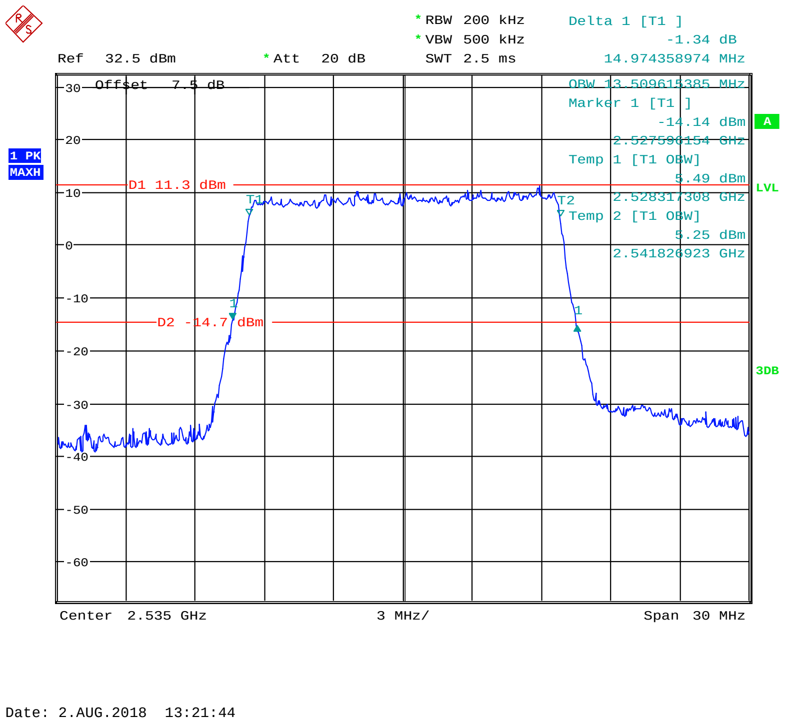
QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



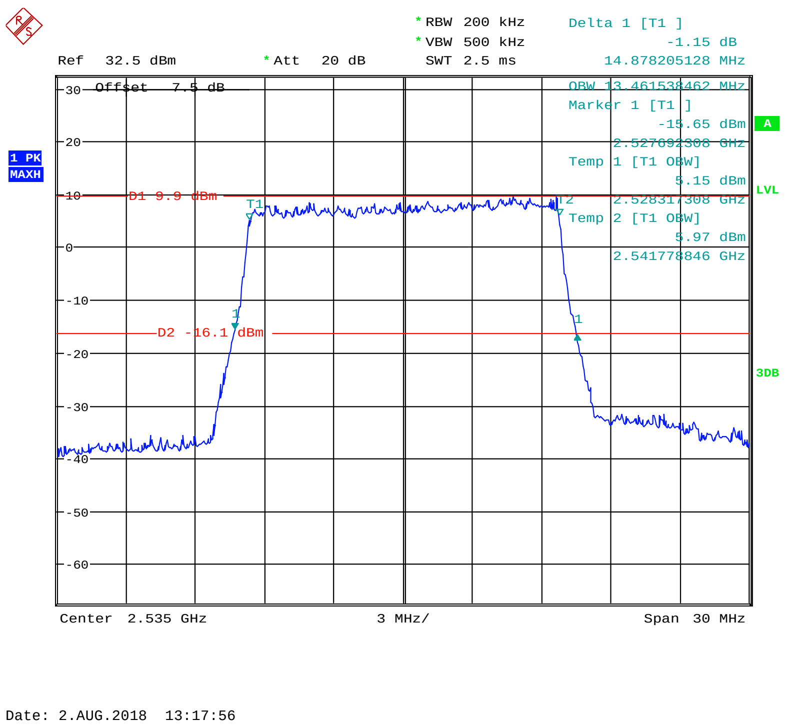
16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



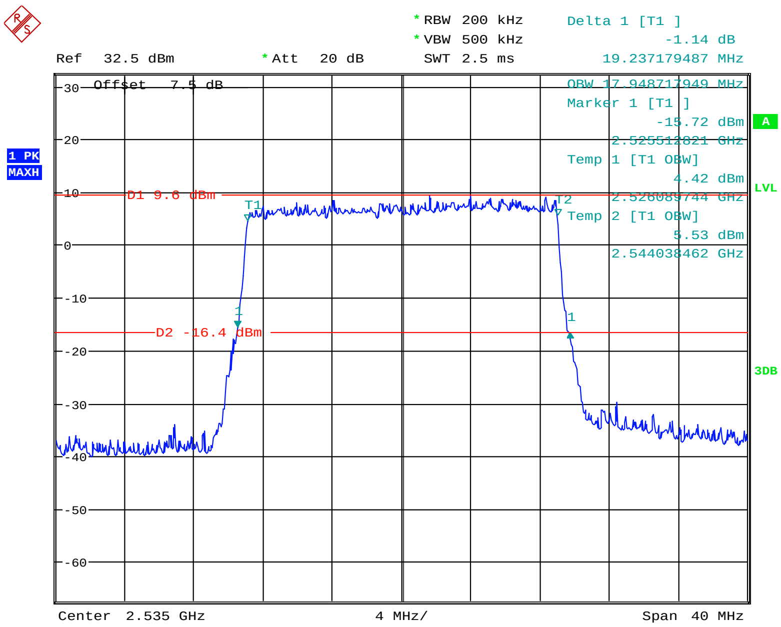
QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



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

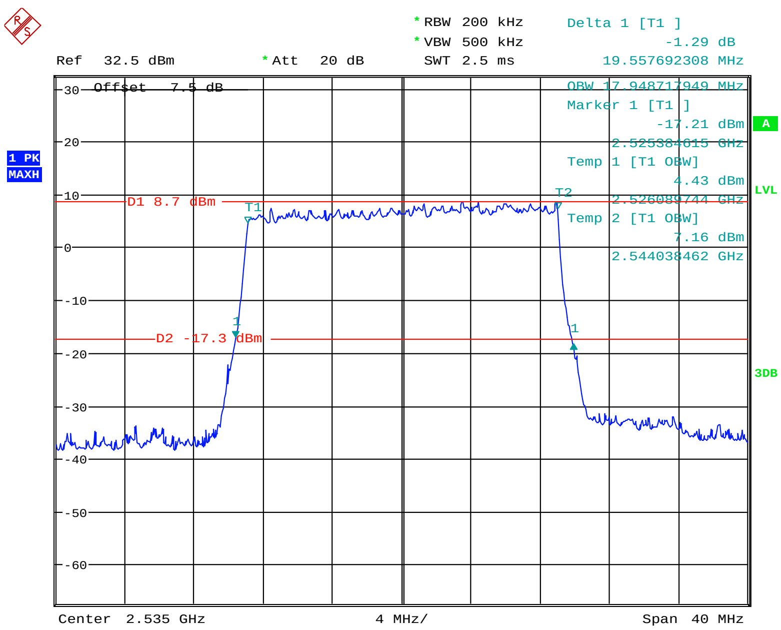


QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 2.AUG.2018 13:22:51

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

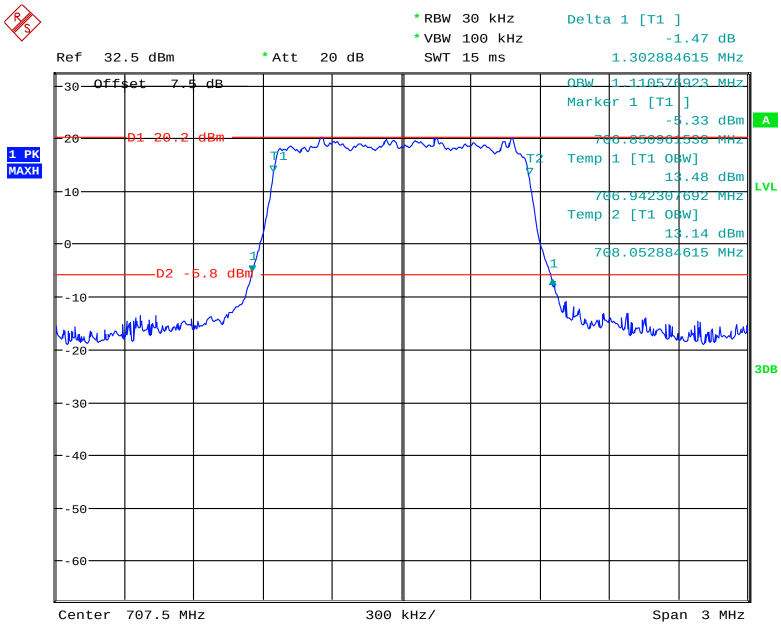


Date: 2.AUG.2018 13:30:05

LTE Band 12: (Middle Channel)

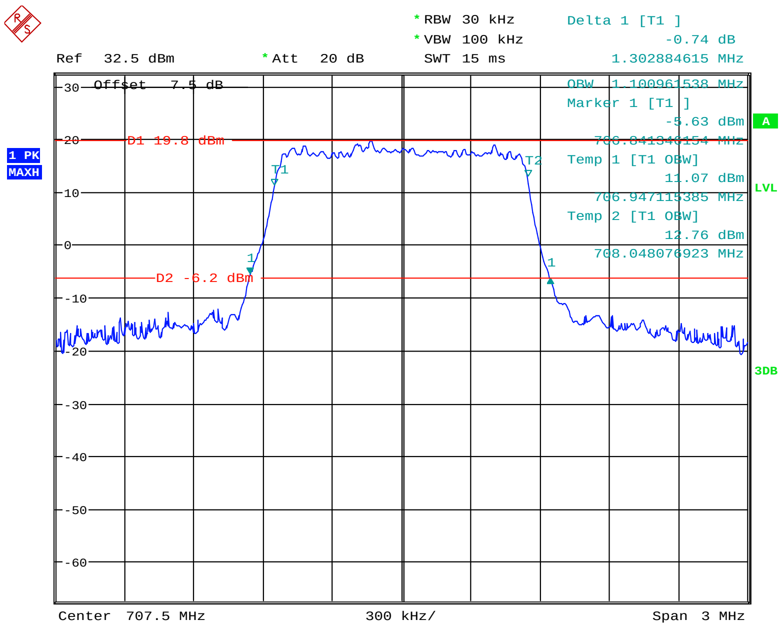
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.111	1.303
	16QAM	1.101	1.303
3.0	QPSK	2.683	2.875
	16QAM	2.683	2.885
5.0	QPSK	4.535	5.218
	16QAM	4.535	5.138
10.0	QPSK	8.974	10.042
	16QAM	8.942	9.753

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



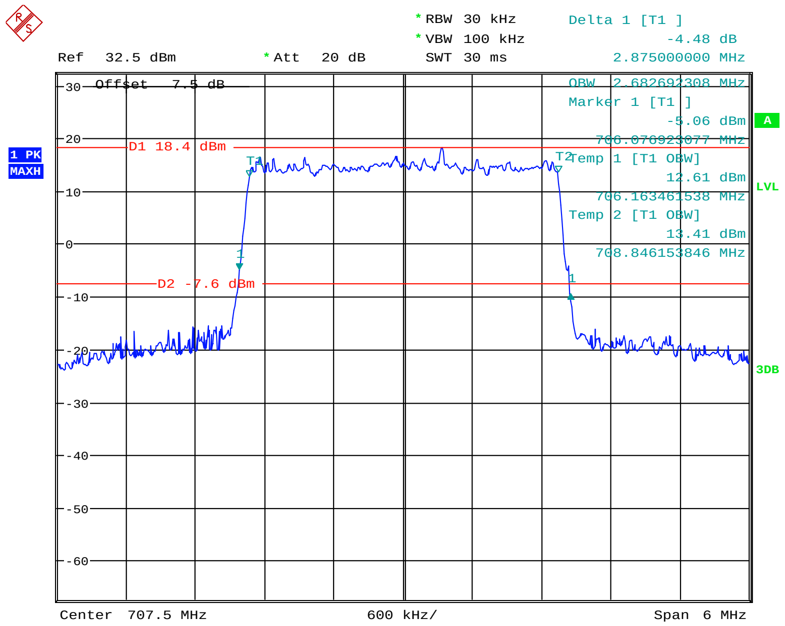
Date: 2.AUG.2018 13:42:36

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



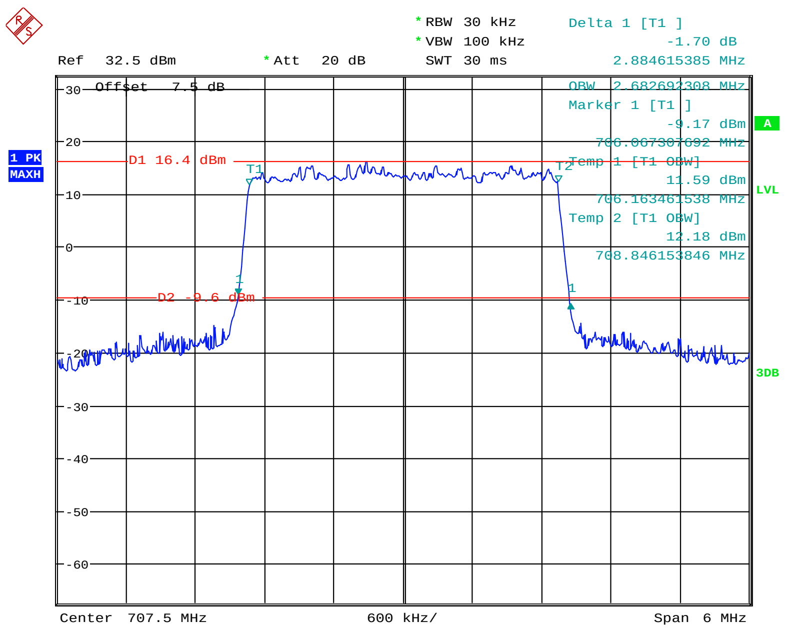
Date: 2.AUG.2018 13:44:13

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



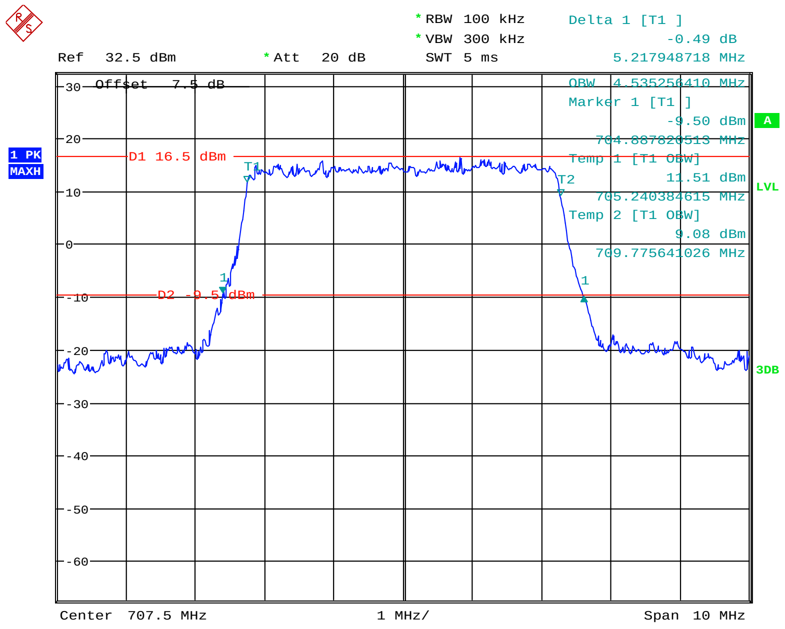
Date: 2.AUG.2018 13:49:45

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



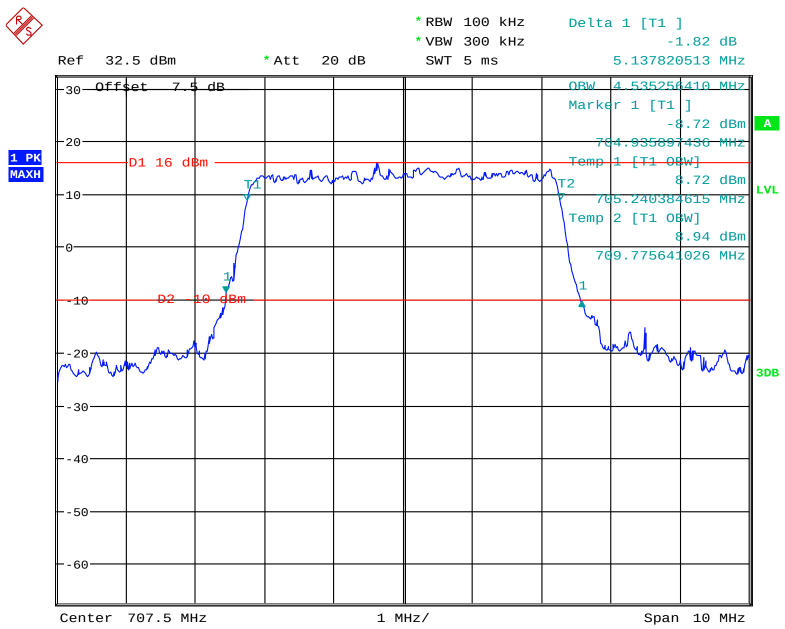
Date: 2.AUG.2018 13:47:57

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



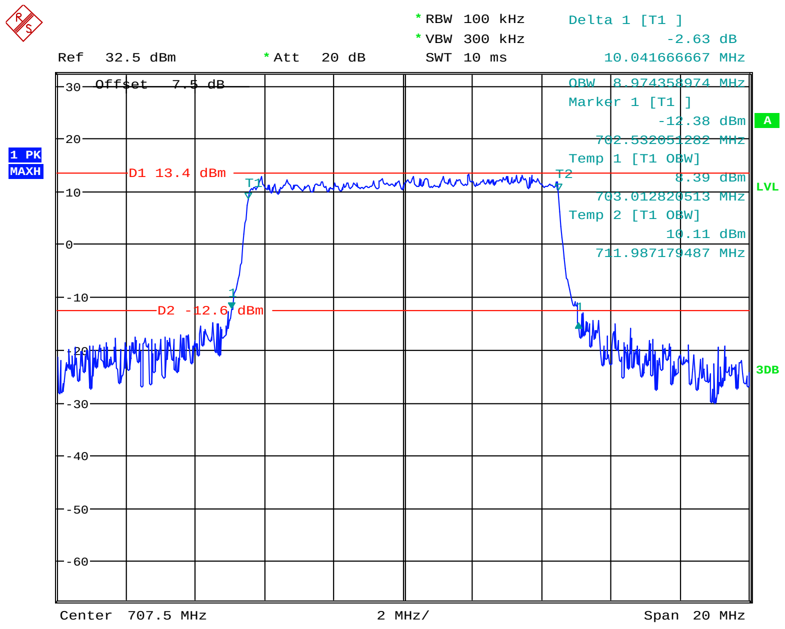
Date: 2.AUG.2018 13:54:11

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



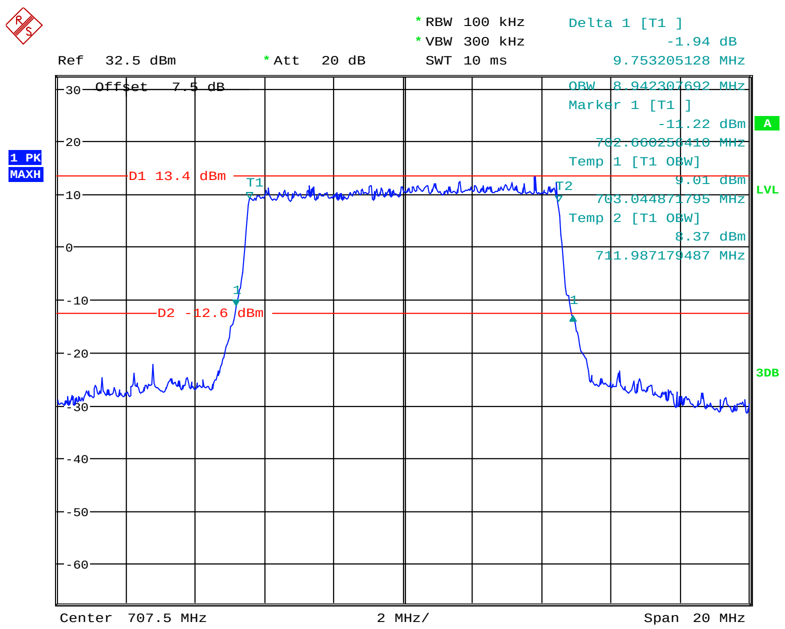
Date: 2.AUG.2018 13:55:26

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



Date: 2.AUG.2018 13:57:27

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

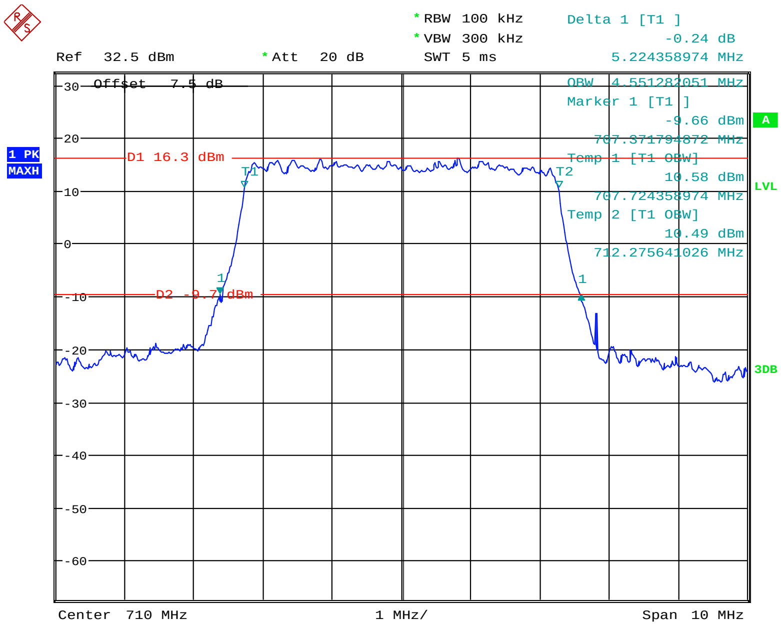


Date: 2.AUG.2018 13:59:11

LTE Band 17: (Middle Channel)

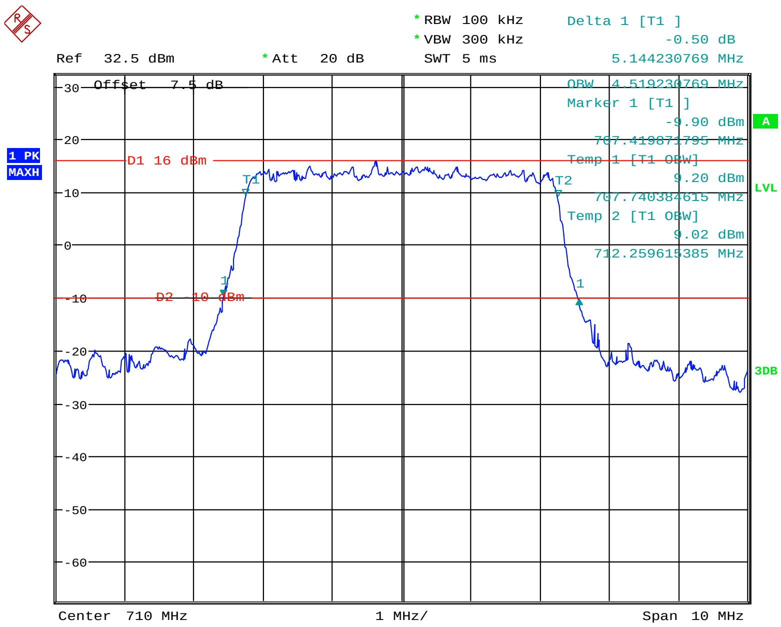
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.551	5.224
	16QAM	4.519	5.144
10.0	QPSK	8.974	9.904
	16QAM	8.974	9.840

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



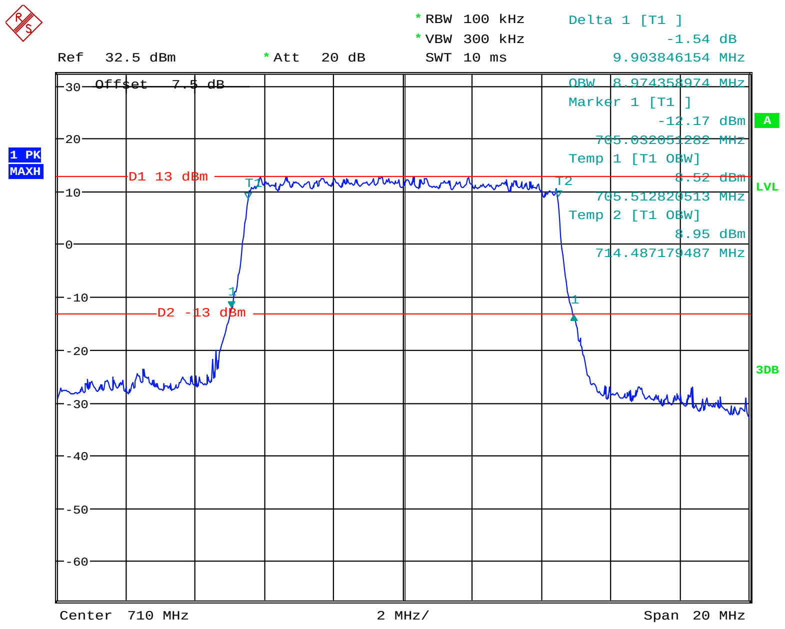
Date: 2.AUG.2018 14:06:29

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



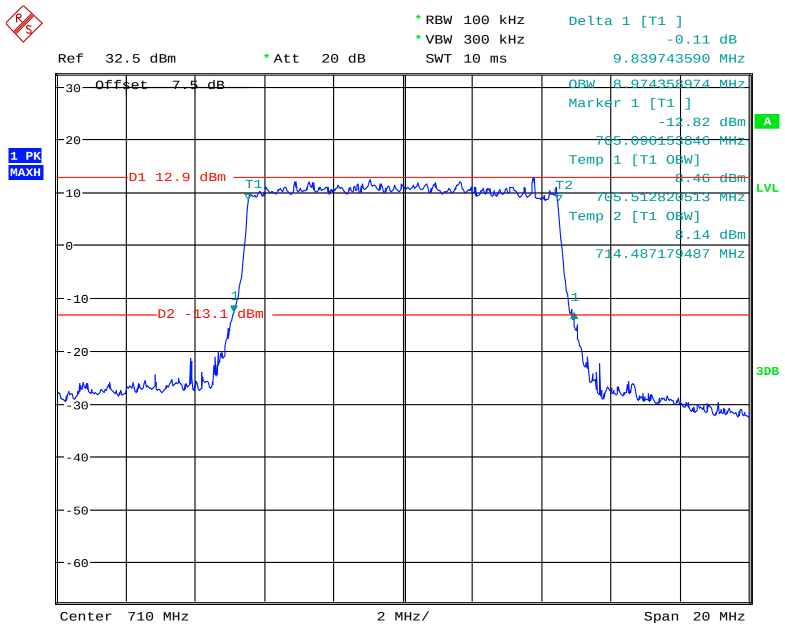
Date: 2.AUG.2018 14:04:47

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



Date: 2.AUG.2018 14:09:23

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



Date: 2.AUG.2018 14:08:09

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

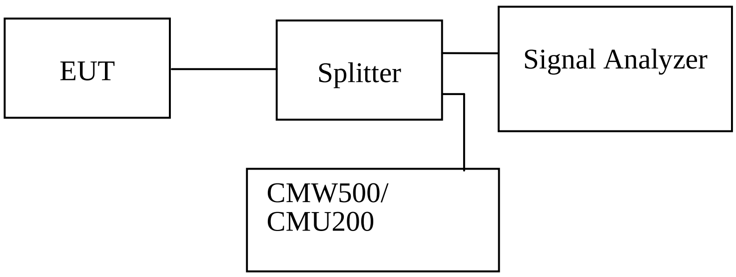
Applicable Standard

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

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

Test Procedure

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



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2018-08-01 and 2018-08-02.

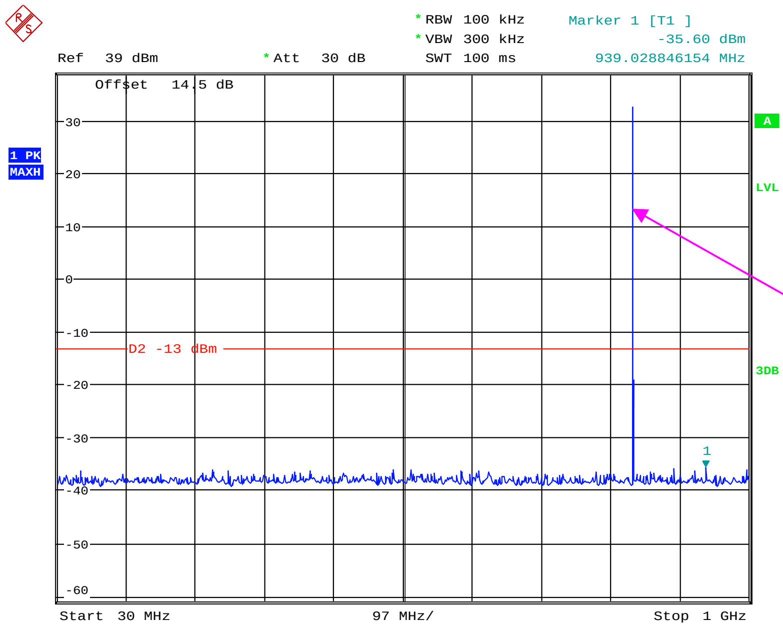
Test result: Compliance

EUT operation mode: transmitting

Please refer to the following plots.

Cellular Band (Part 22H)

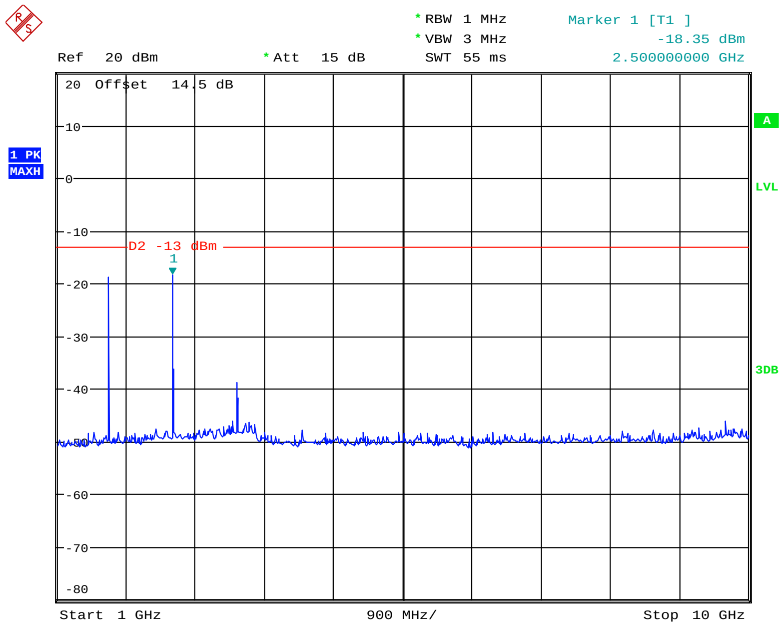
30 MHz – 1 GHz (GSM Mode)



Fundamental test

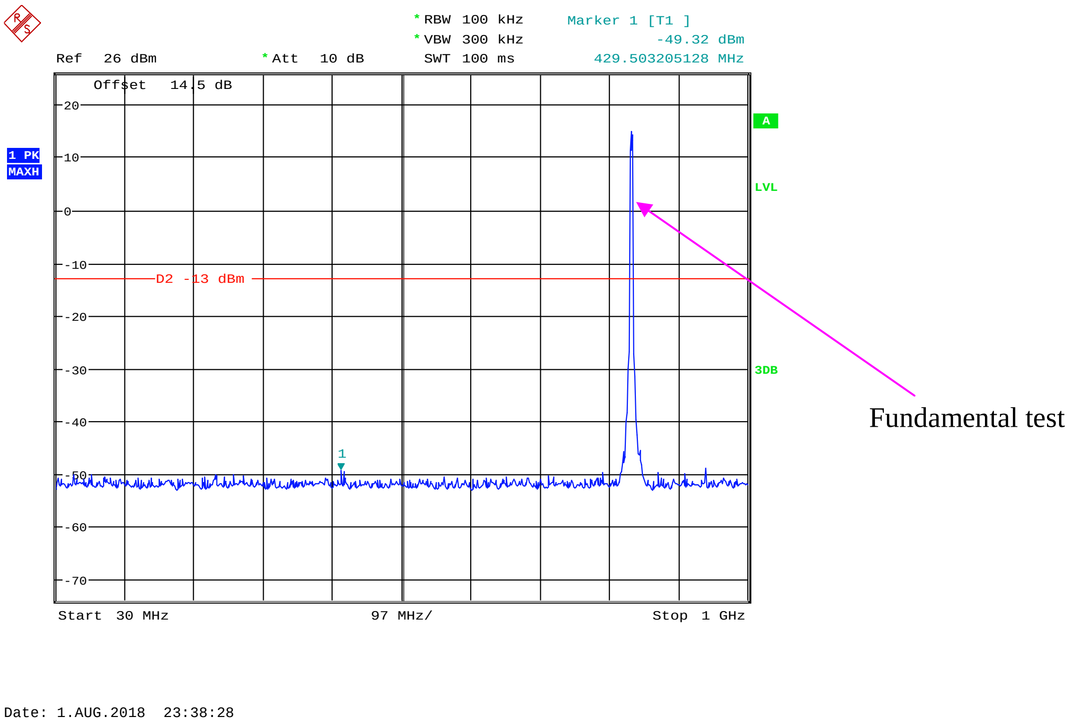
Date: 1.AUG.2018 20:23:24

1 GHz – 10 GHz (GSM Mode)

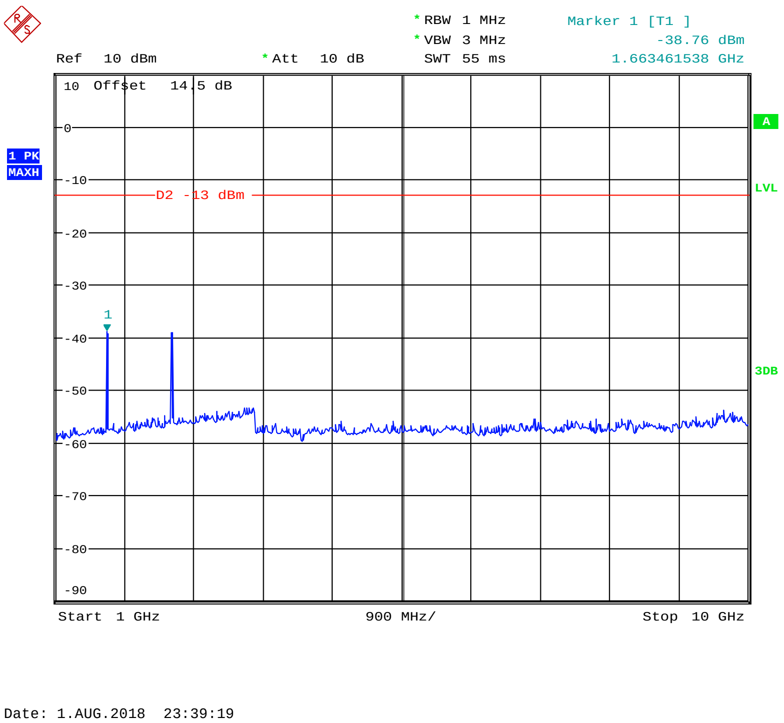


Date: 1.AUG.2018 20:26:03

30 MHz – 1 GHz (WCDMA Mode)

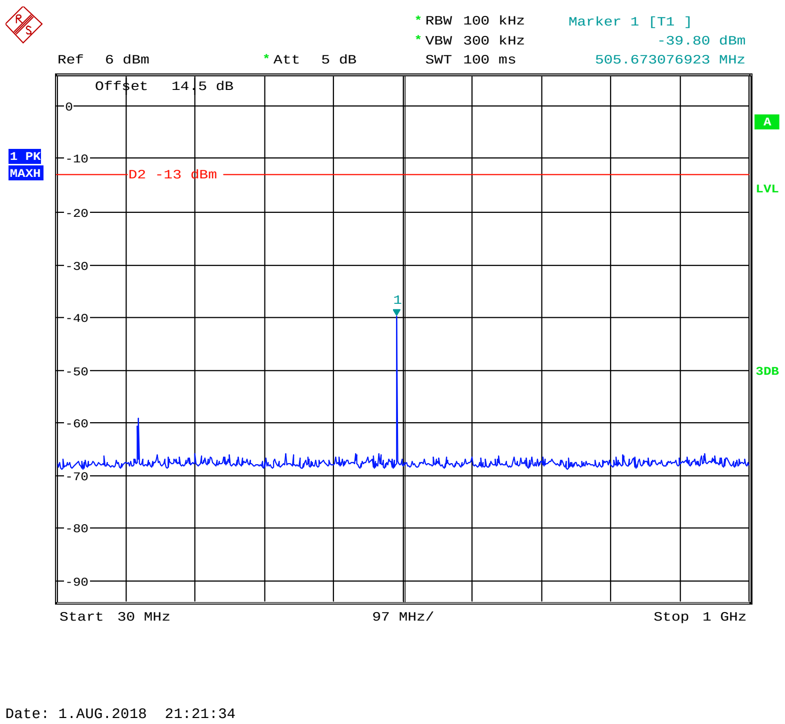


1 GHz – 10 GHz (WCDMA Mode)

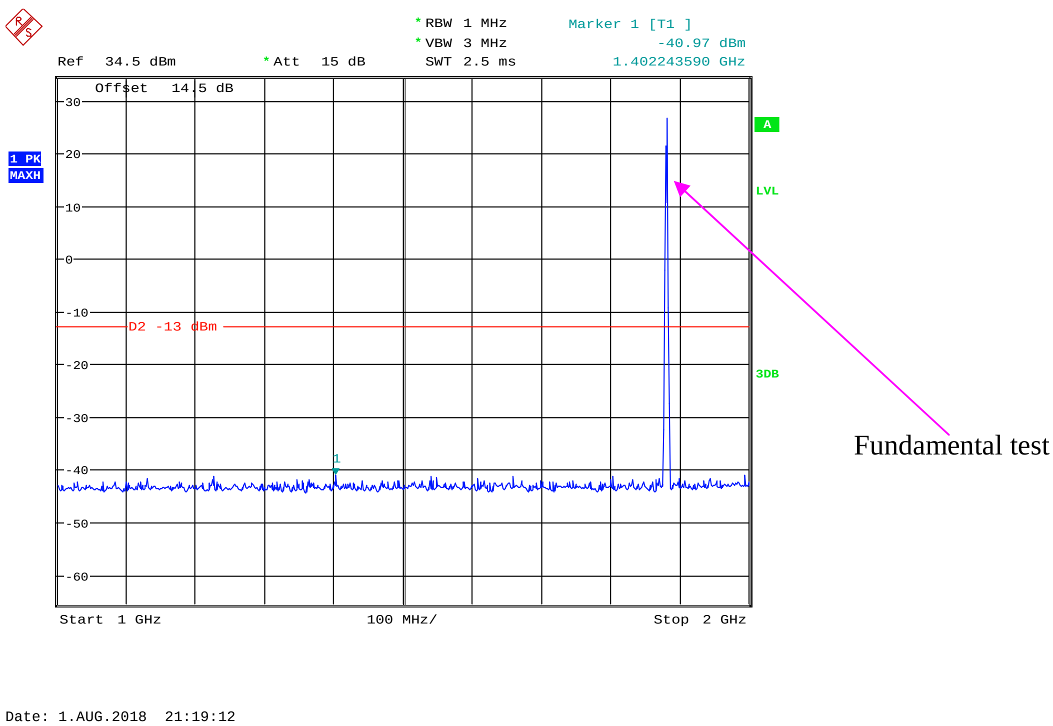


PCS Band (Part 24E)

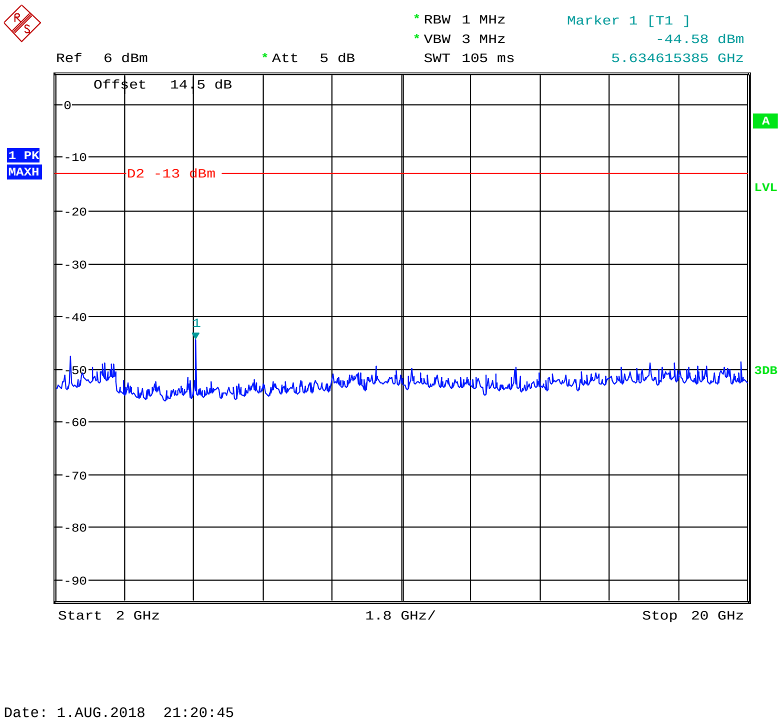
30 MHz – 1 GHz (GSM Mode)



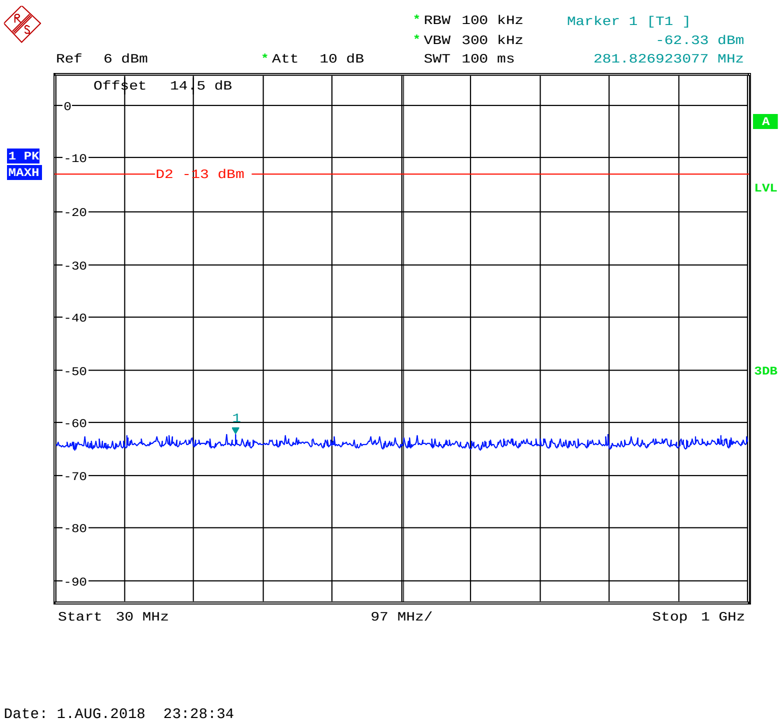
1 GHz – 2 GHz (GSM Mode)



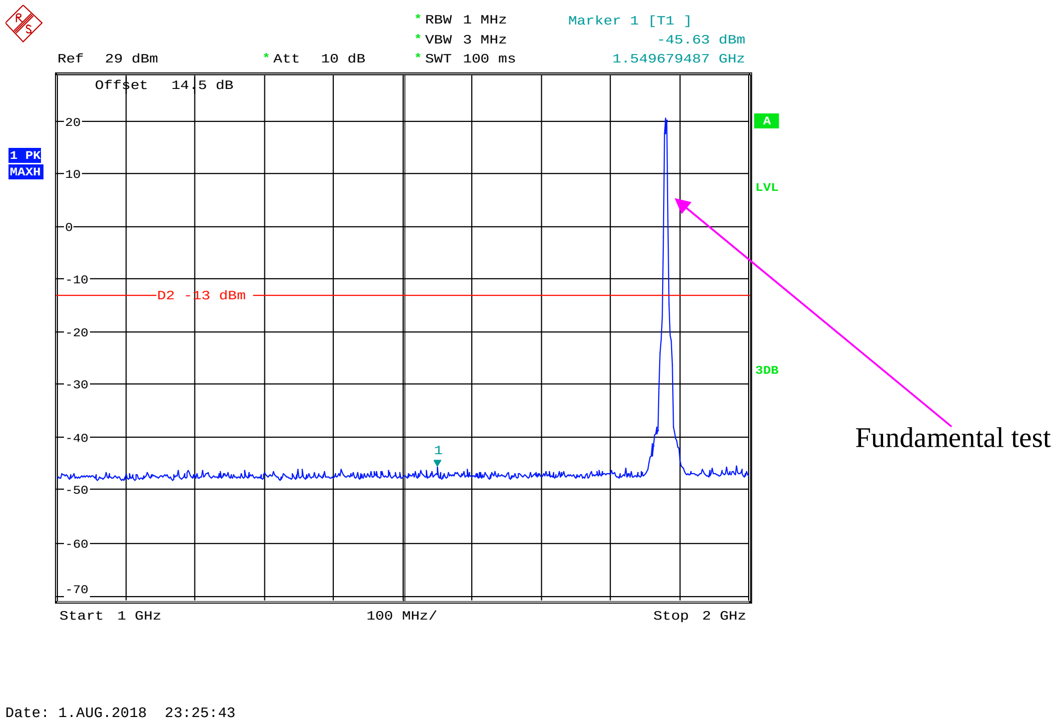
2 GHz – 20 GHz (GSM Mode)



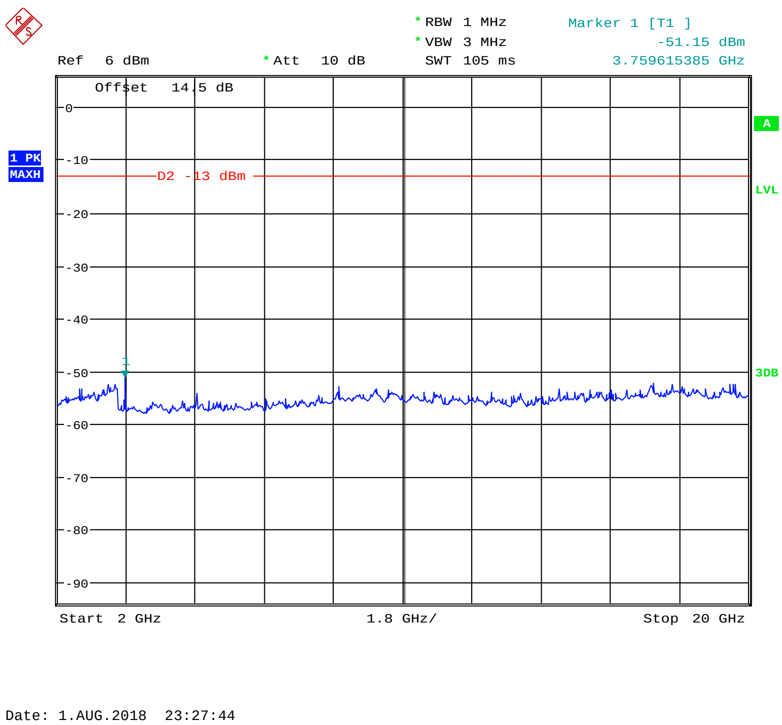
30 MHz – 1 GHz (WCDMA Mode)



1 GHz – 2 GHz (WCDMA Mode)

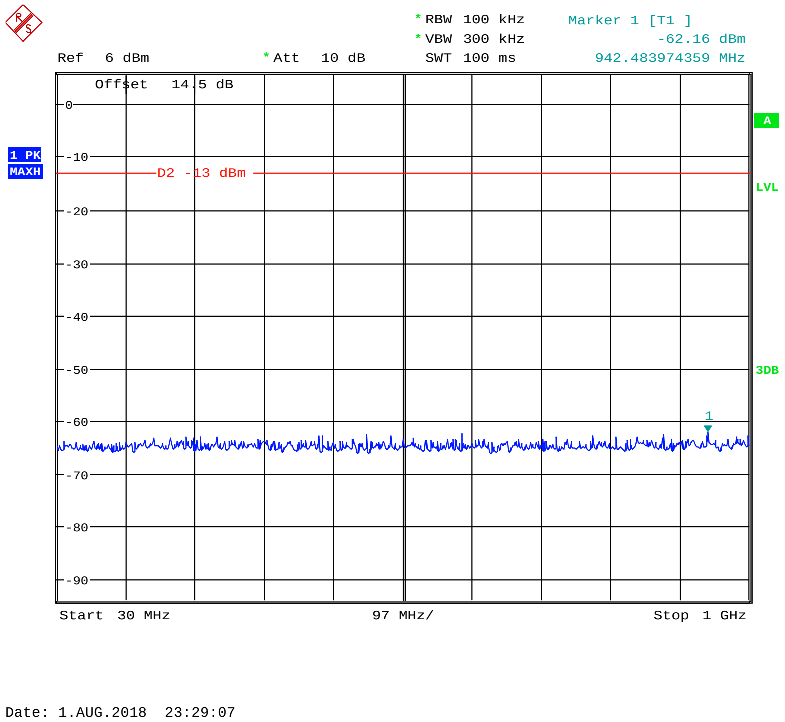


2 GHz – 20 GHz (WCDMA Mode)

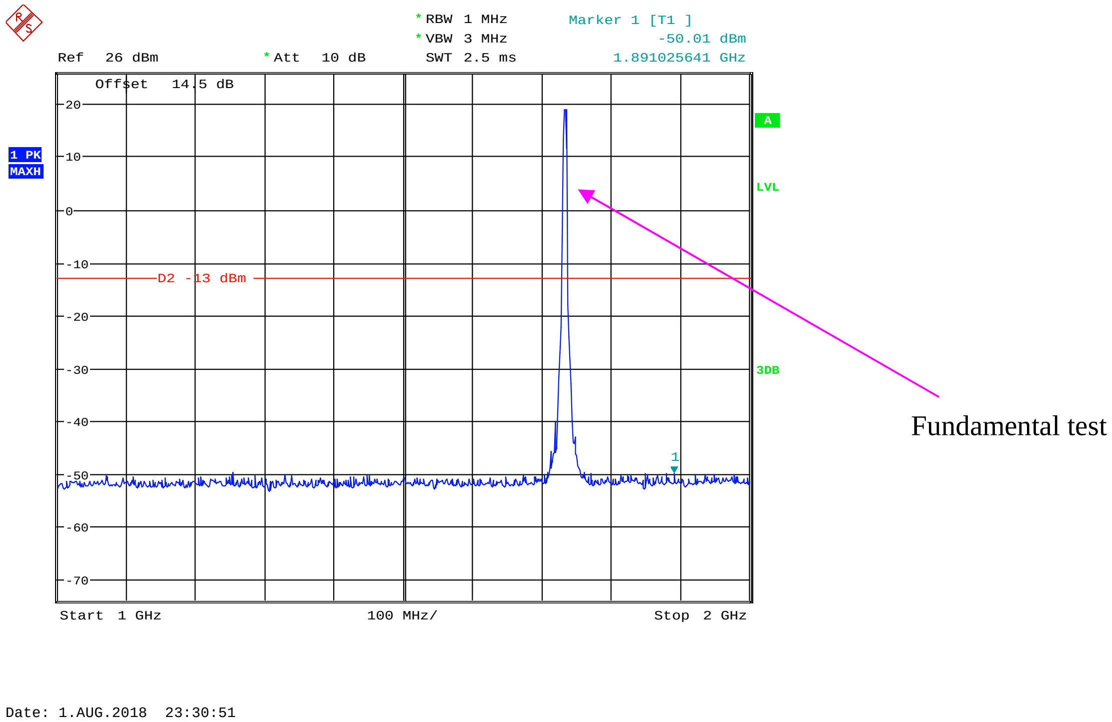


AWS Band (Part 27)

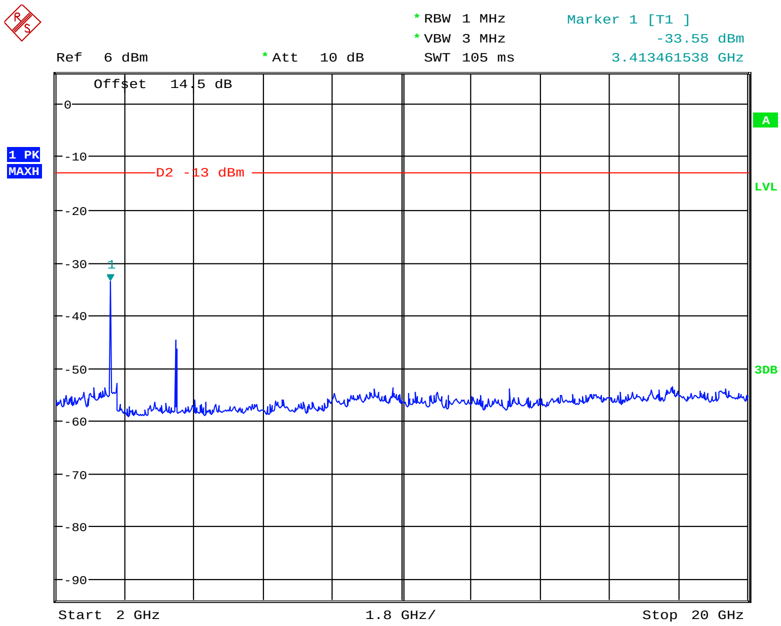
30 MHz – 1 GHz (WCDMA Mode)



1 GHz – 2 GHz (WCDMA Mode)



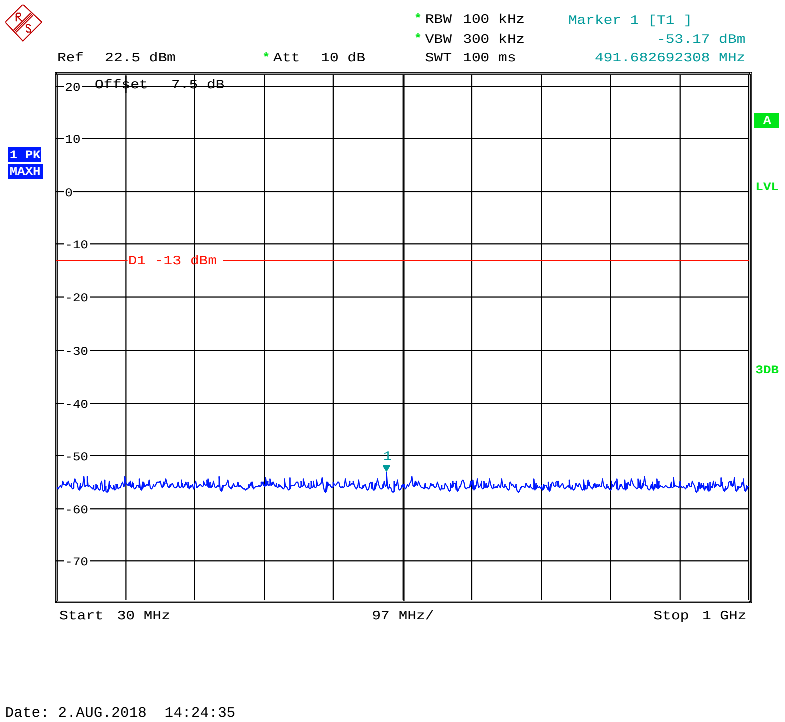
2 GHz – 20 GHz (WCDMA Mode)



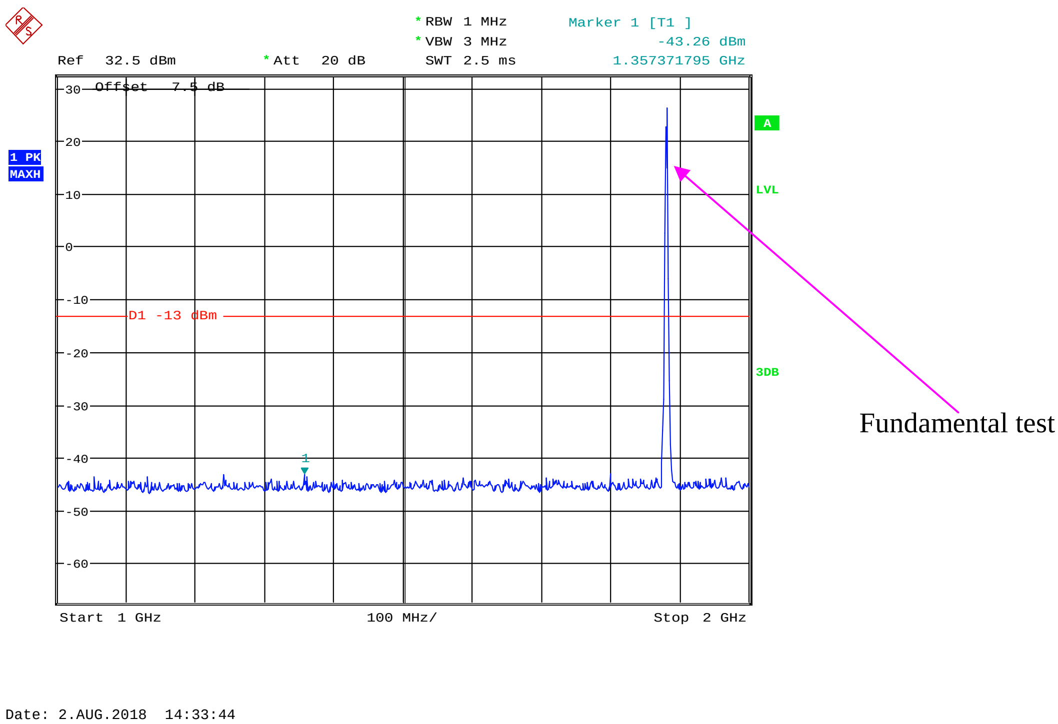
Date: 1.AUG.2018 23:29:38

LTE Band 2: (QPSK)

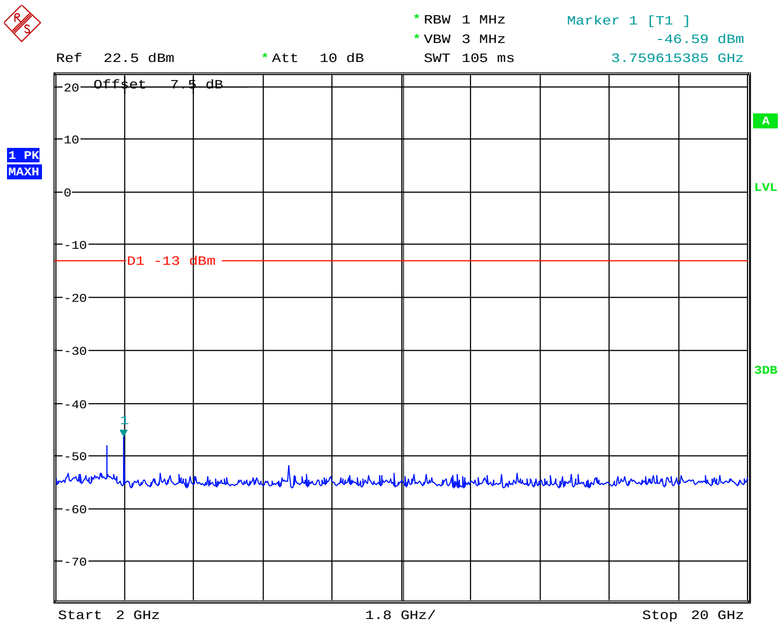
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



1 GHz – 2 GHz (1.4 MHz, Middle Channel)

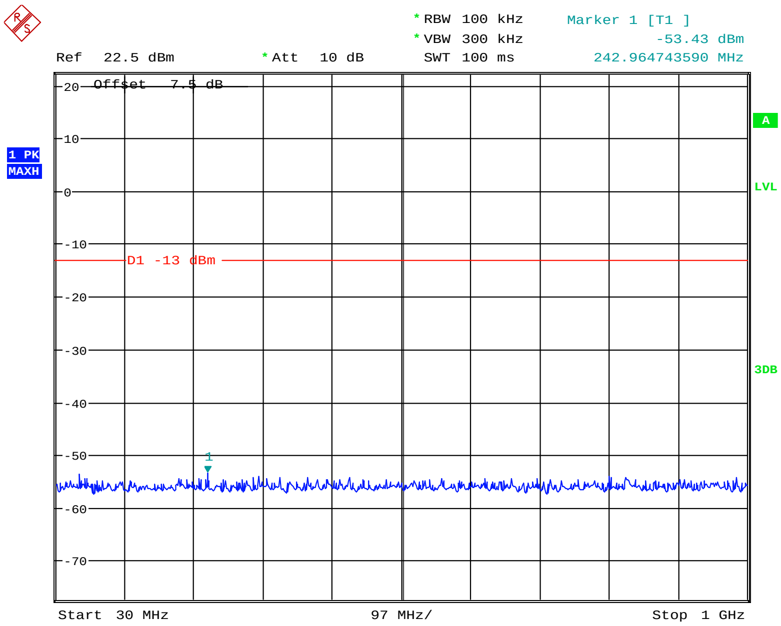


2 GHz – 20 GHz (1.4 MHz, Middle Channel)



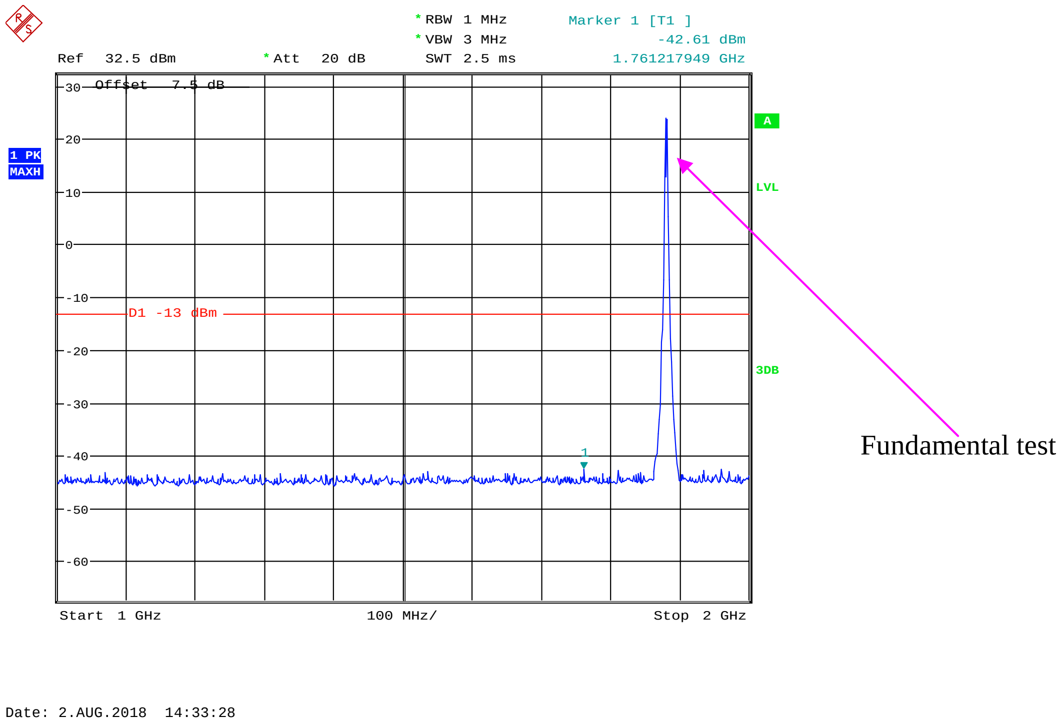
Date: 2.AUG.2018 14:34:29

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

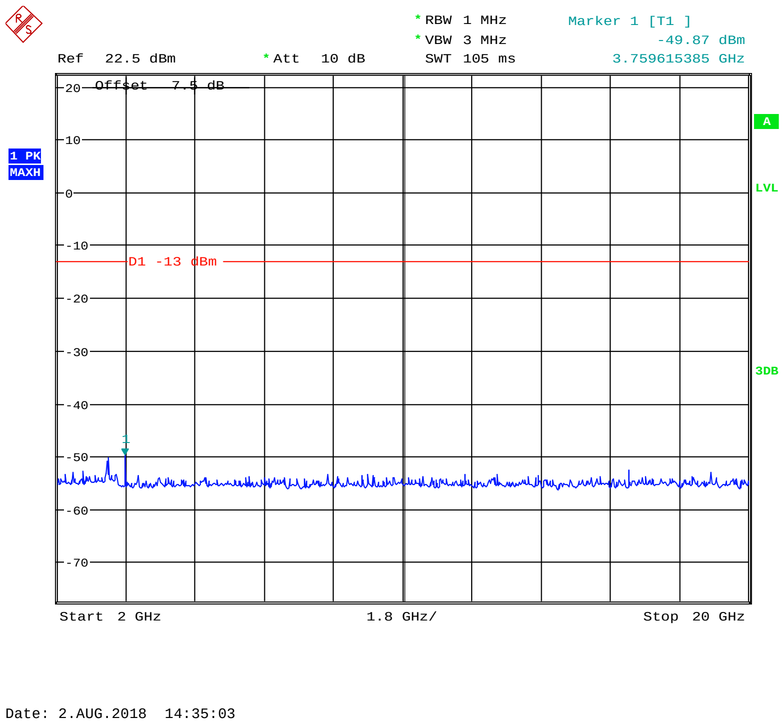


Date: 2.AUG.2018 14:25:35

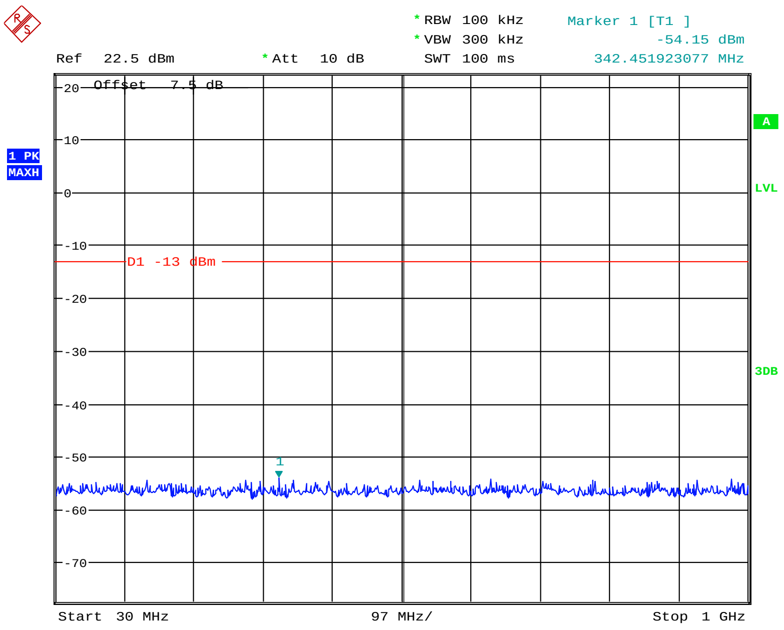
1 GHz – 2 GHz (3.0 MHz, Middle Channel)



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

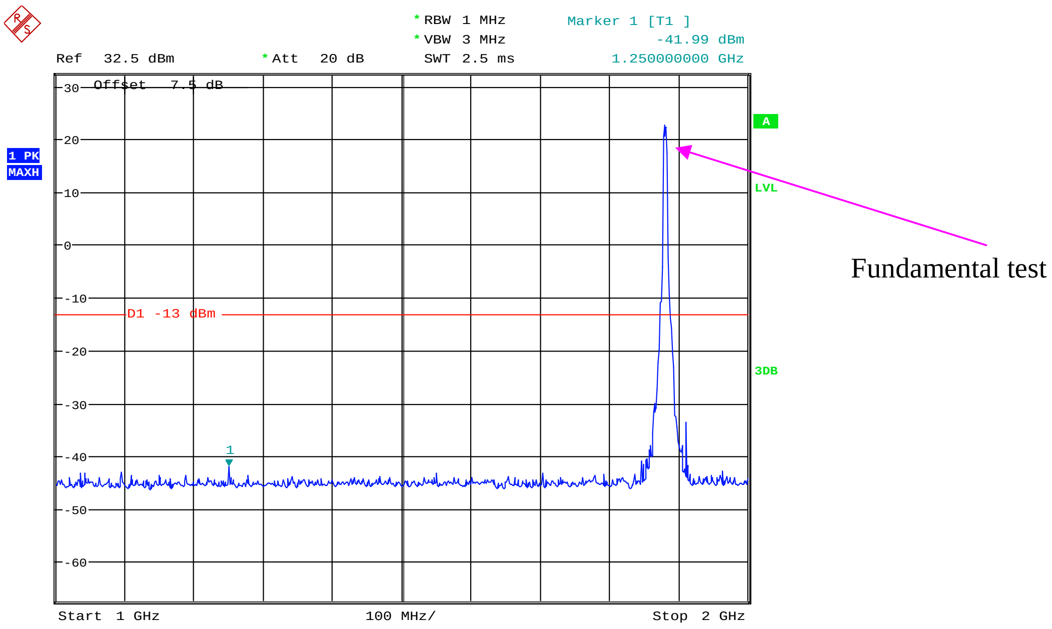


30 MHz - 1 GHz (5.0 MHz, Middle Channel)



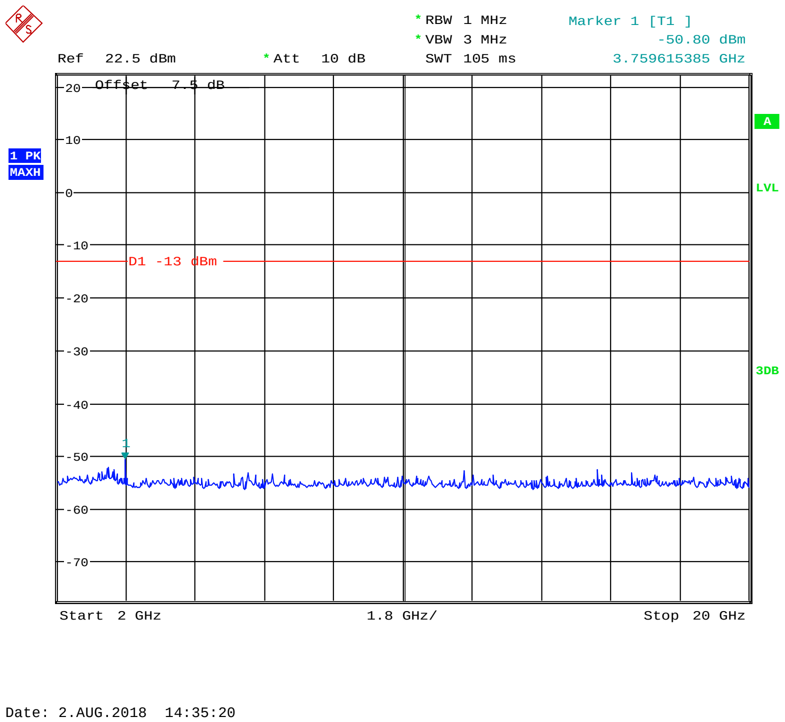
Date: 2.AUG.2018 14:25:56

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

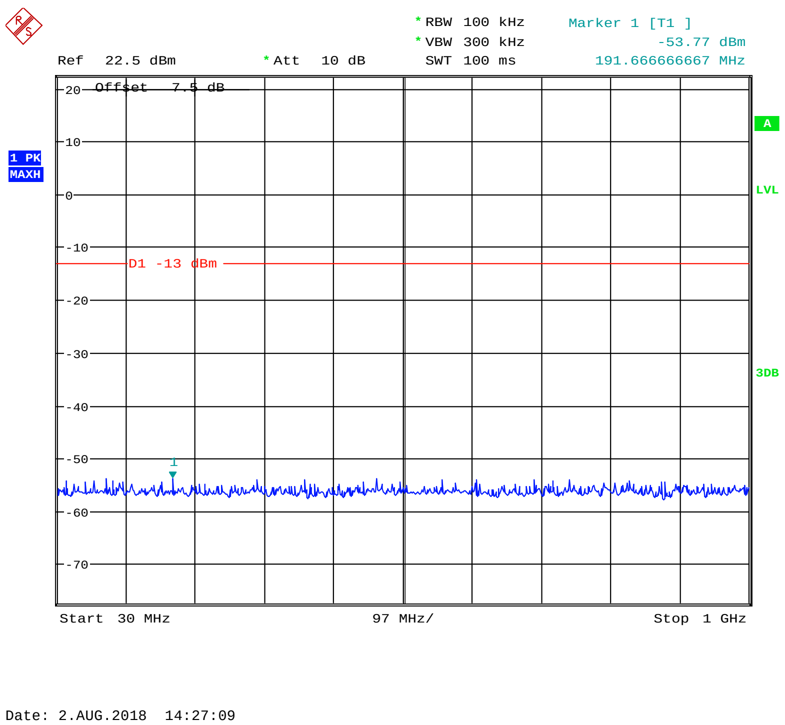


Date: 2.AUG.2018 14:32:40

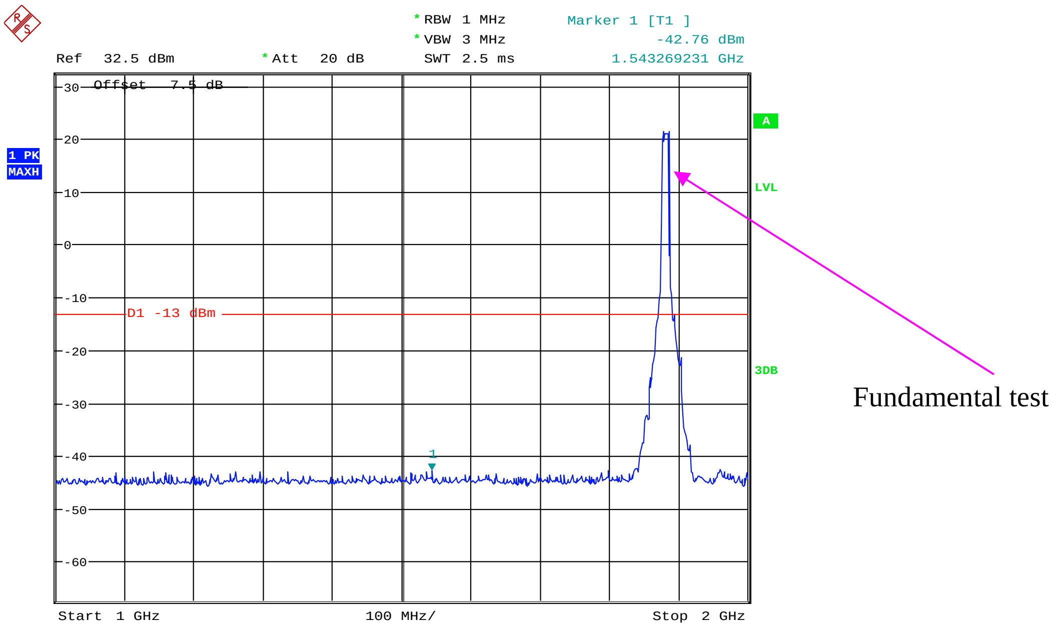
2 GHz – 20 GHz (5.0 MHz, Middle Channel)



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

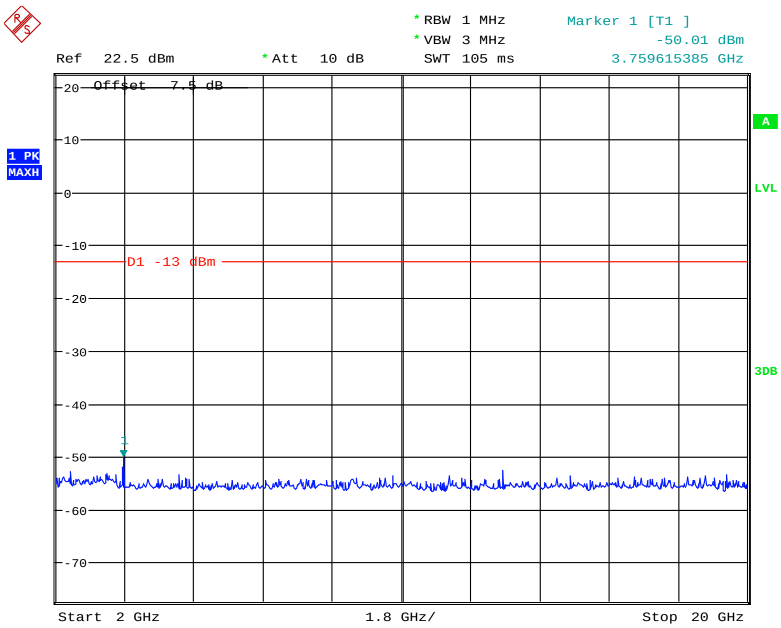


1 GHz – 2 GHz (10.0 MHz, Middle Channel)



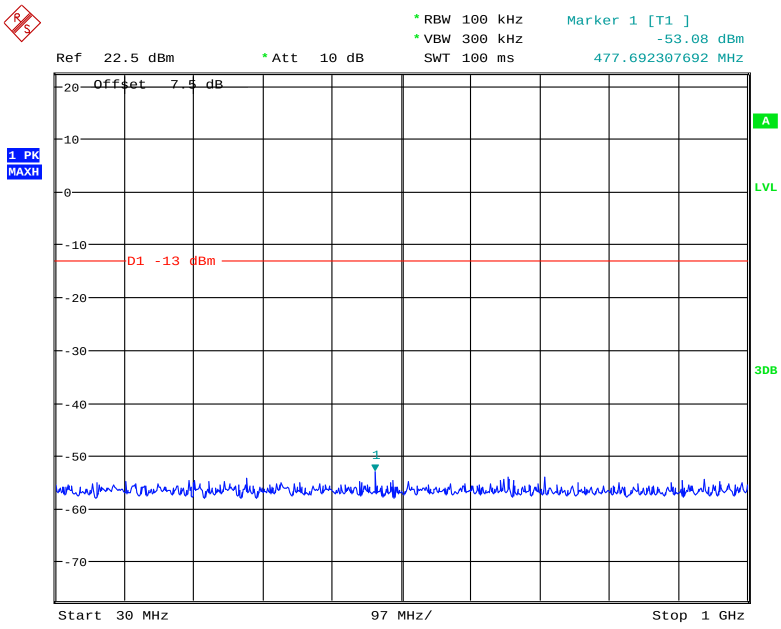
Date: 2.AUG.2018 14:31:57

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



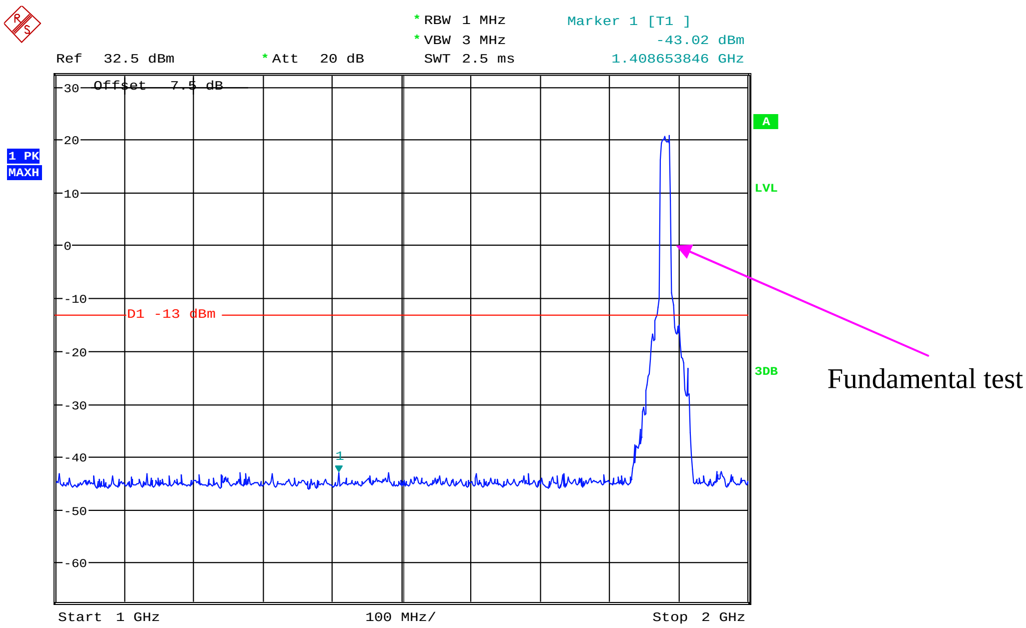
Date: 2.AUG.2018 14:35:33

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



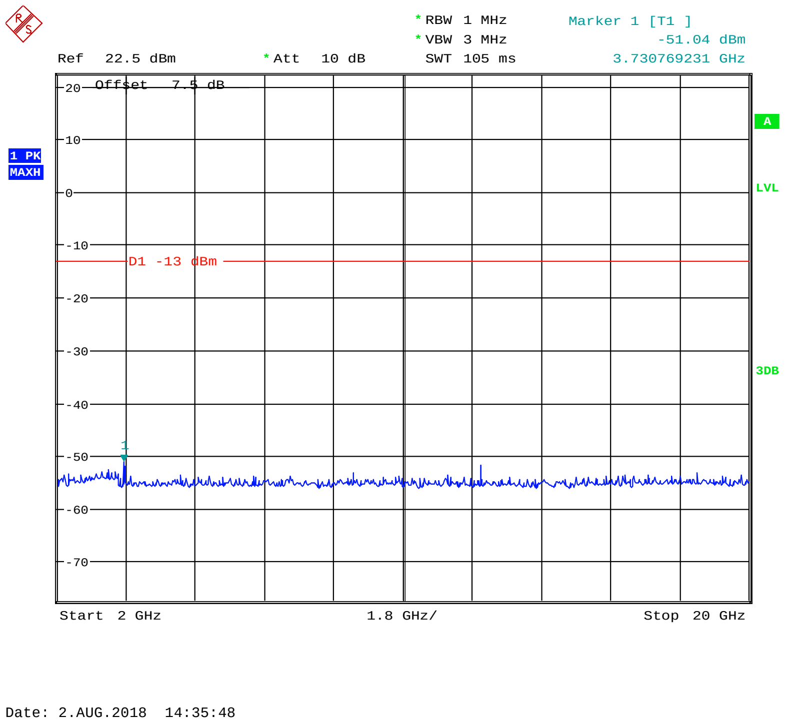
Date: 2.AUG.2018 14:27:31

1 GHz – 2 GHz (15.0 MHz, Middle Channel)

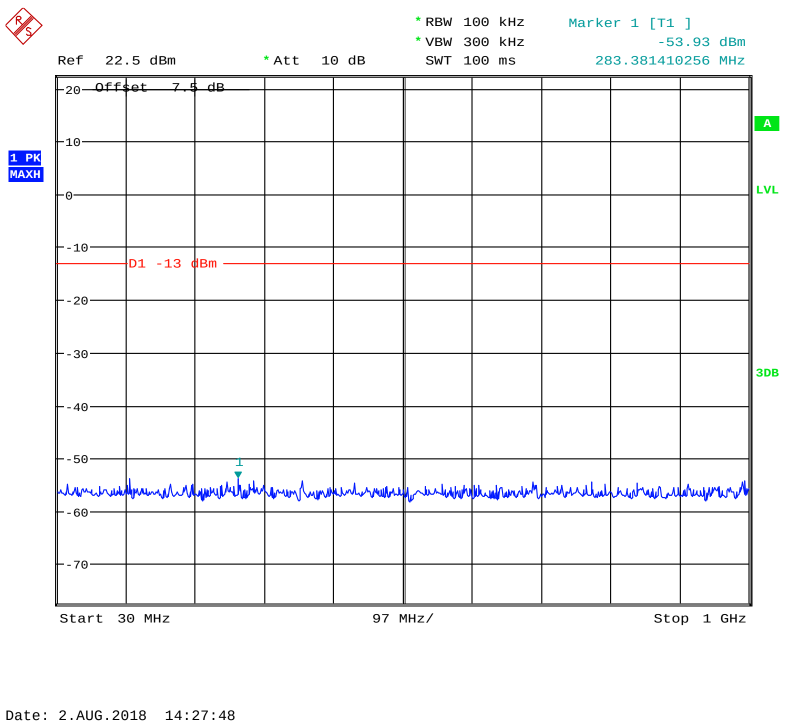


Date: 2.AUG.2018 14:30:57

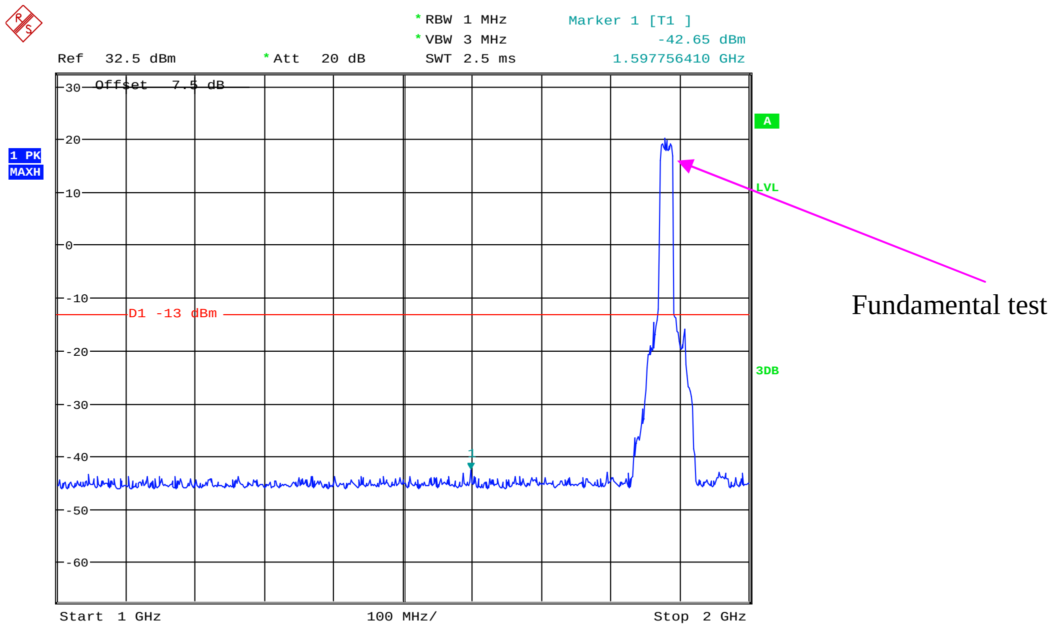
2 GHz – 20 GHz (15.0 MHz, Middle Channel)



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

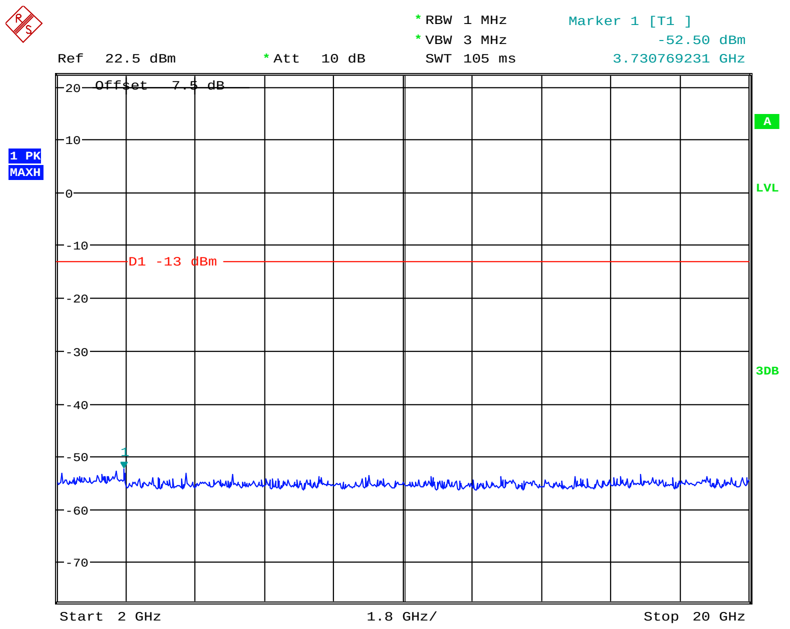


1 GHz – 2 GHz (20.0 MHz, Middle Channel)



Date: 2.AUG.2018 14:30:07

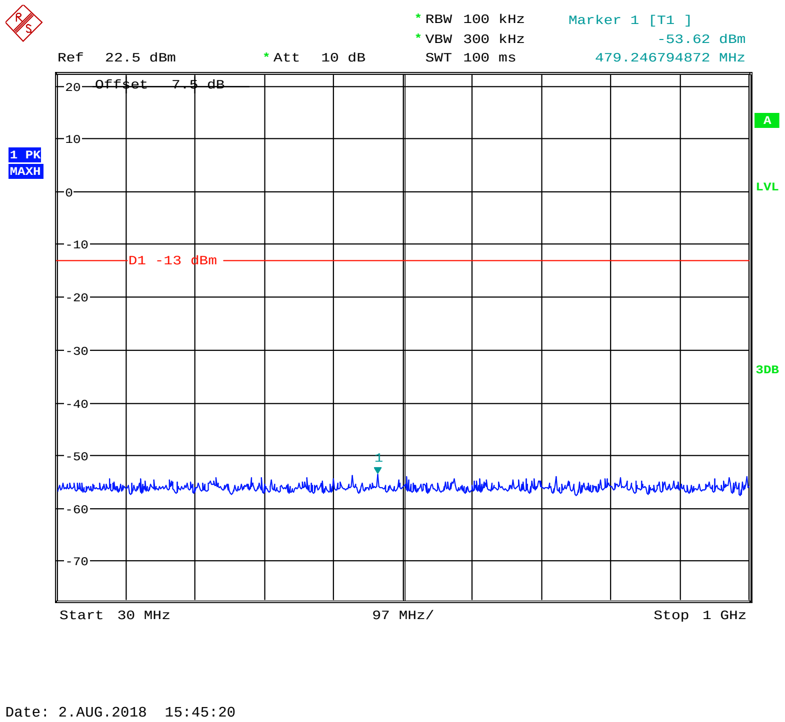
2 GHz – 20 GHz (20.0 MHz, Middle Channel)



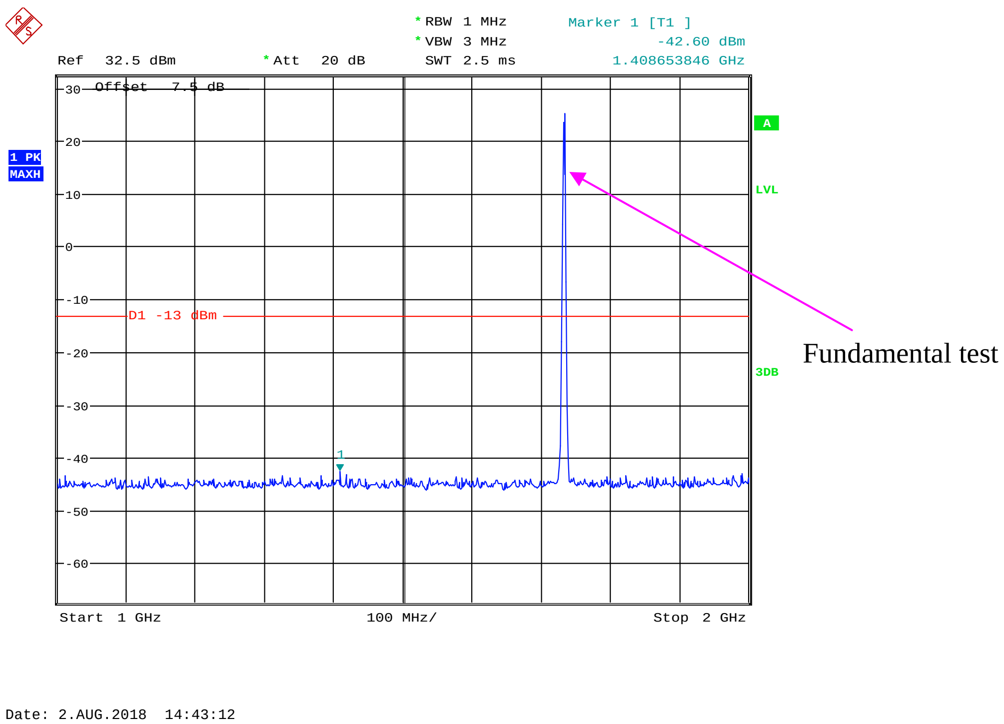
Date: 2.AUG.2018 14:36:03

LTE Band 4: (QPSK)

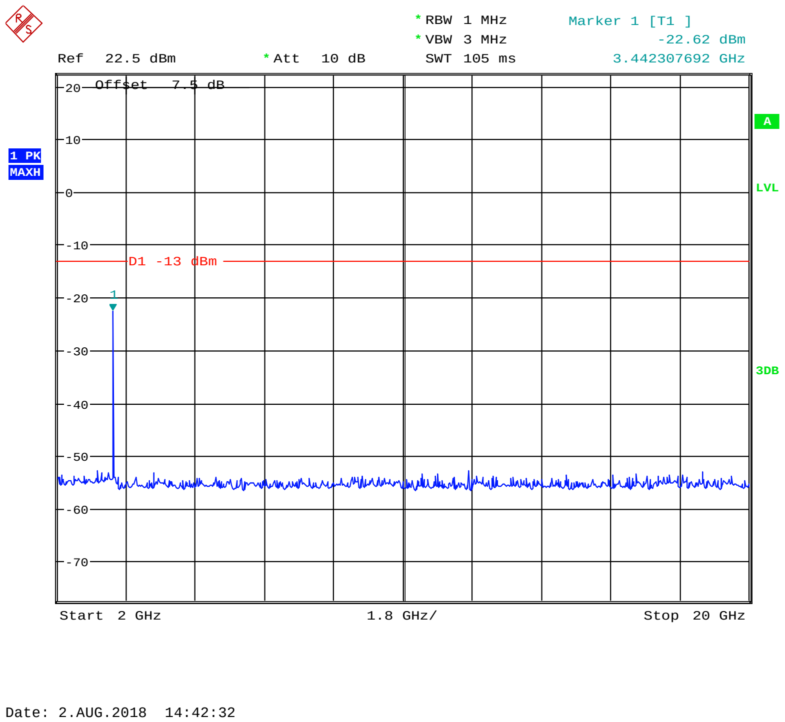
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



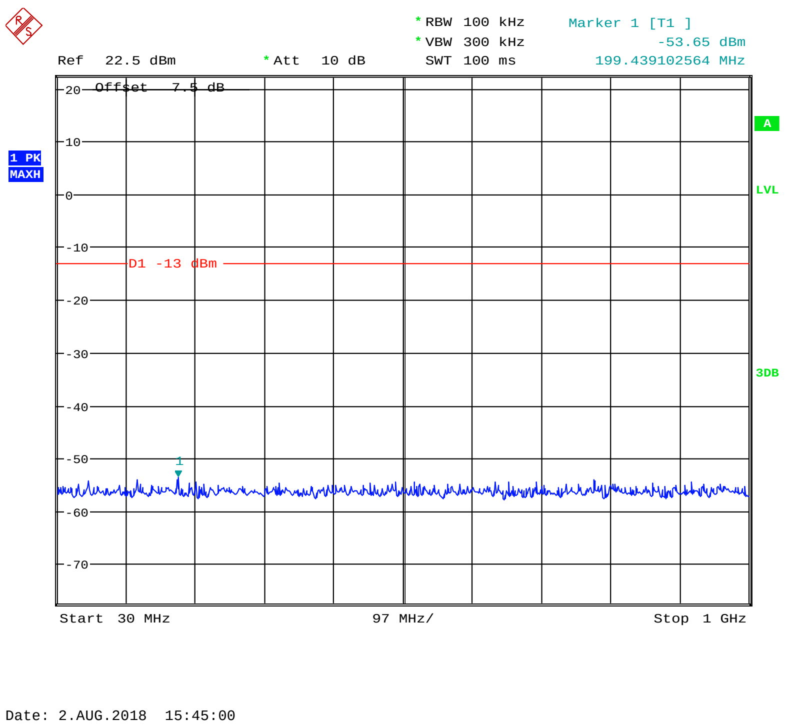
1 GHz – 2 GHz (1.4 MHz, Middle Channel)



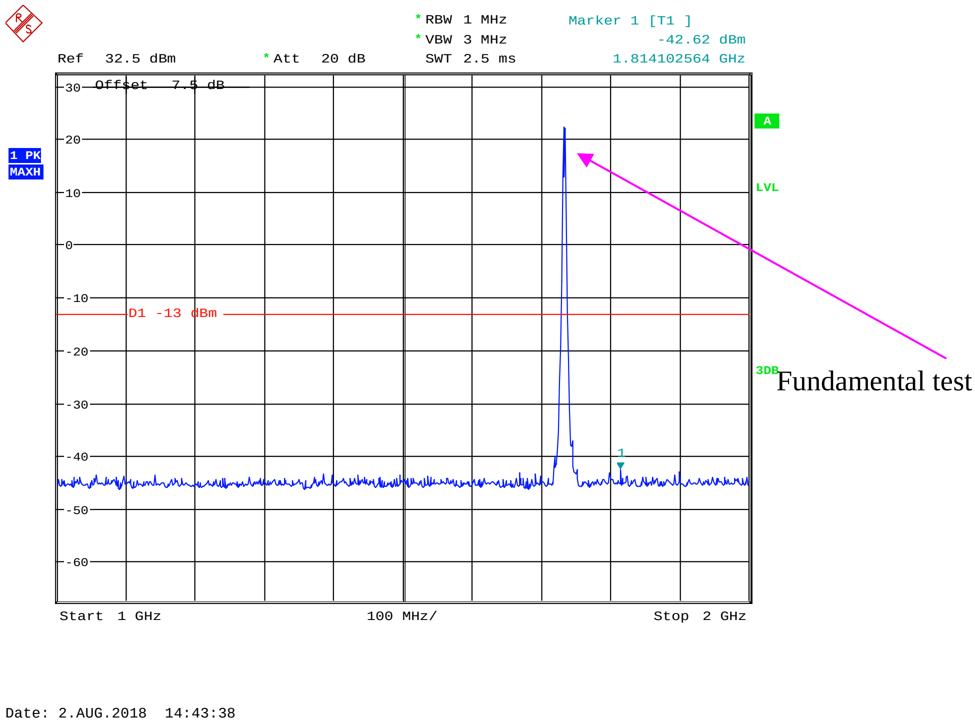
2 GHz – 20 GHz (1.4 MHz, Middle Channel)



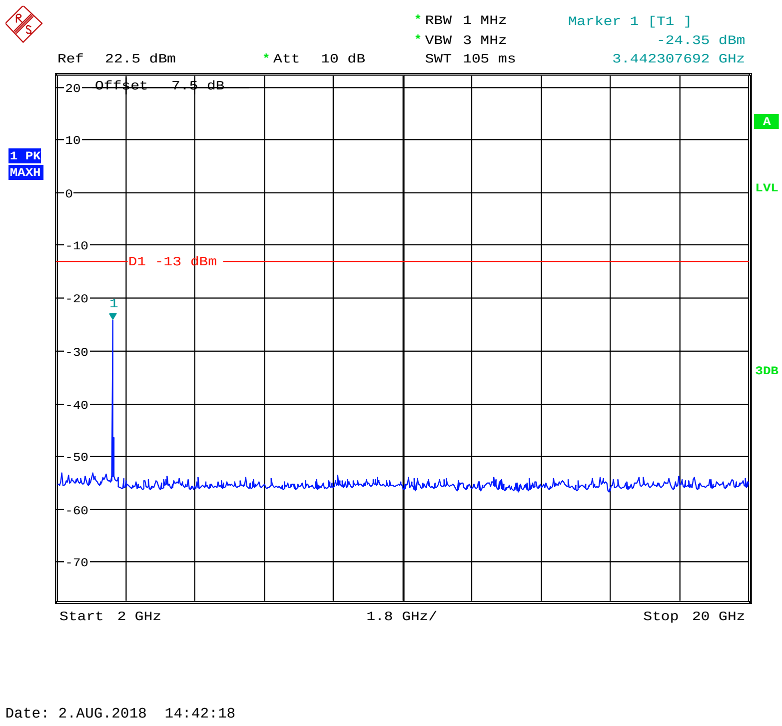
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



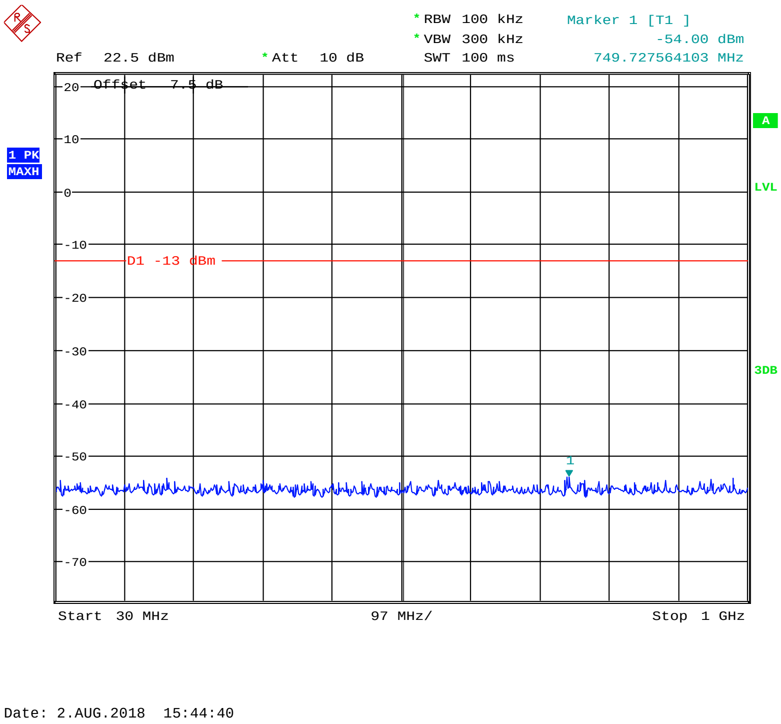
1 GHz – 2 GHz (3.0 MHz, Middle Channel)



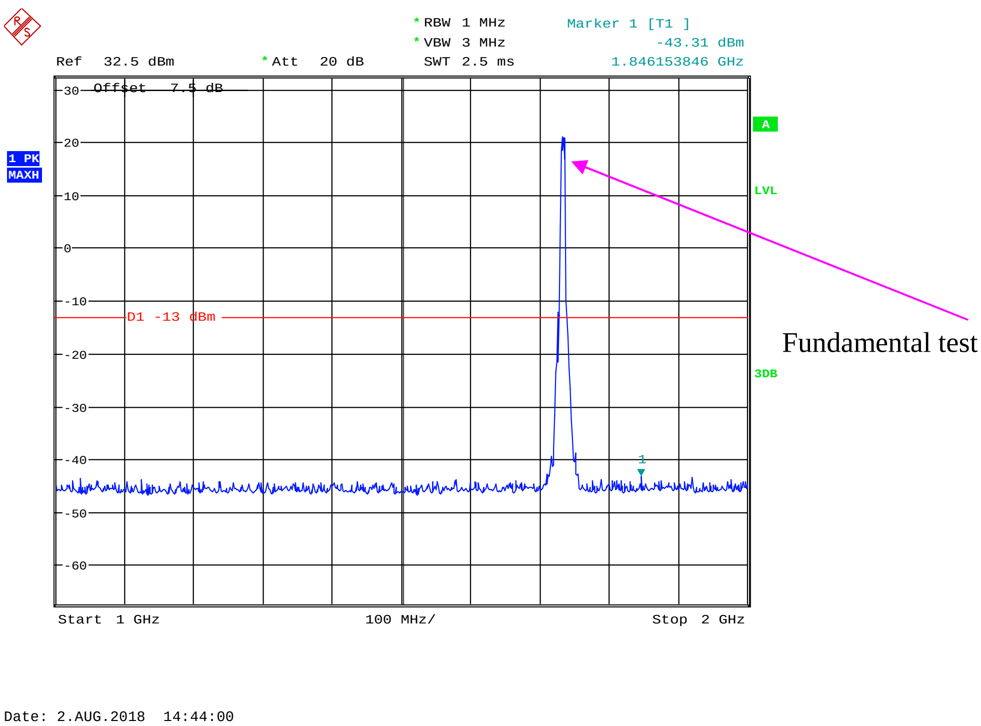
2 GHz – 20 GHz (3.0 MHz, Middle Channel)



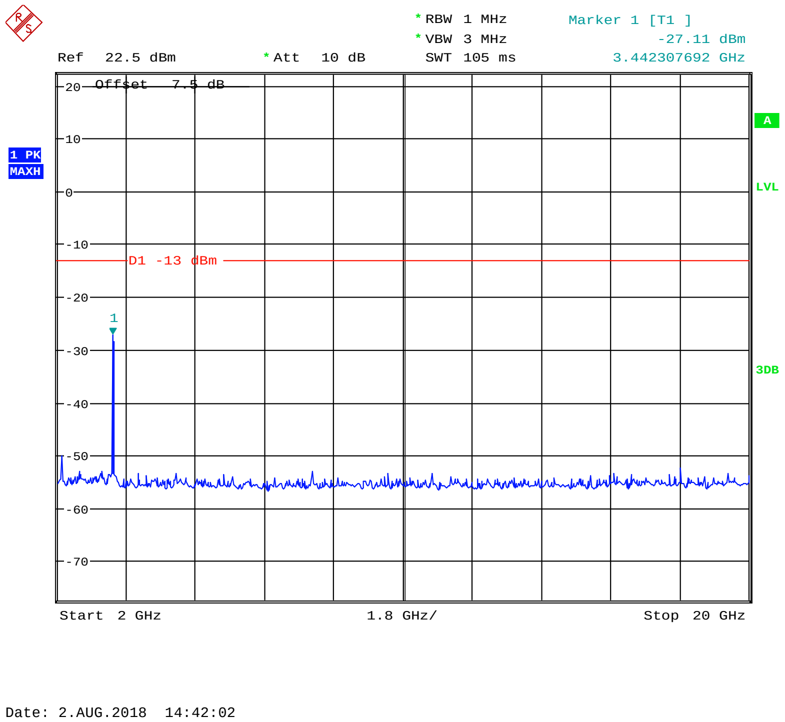
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



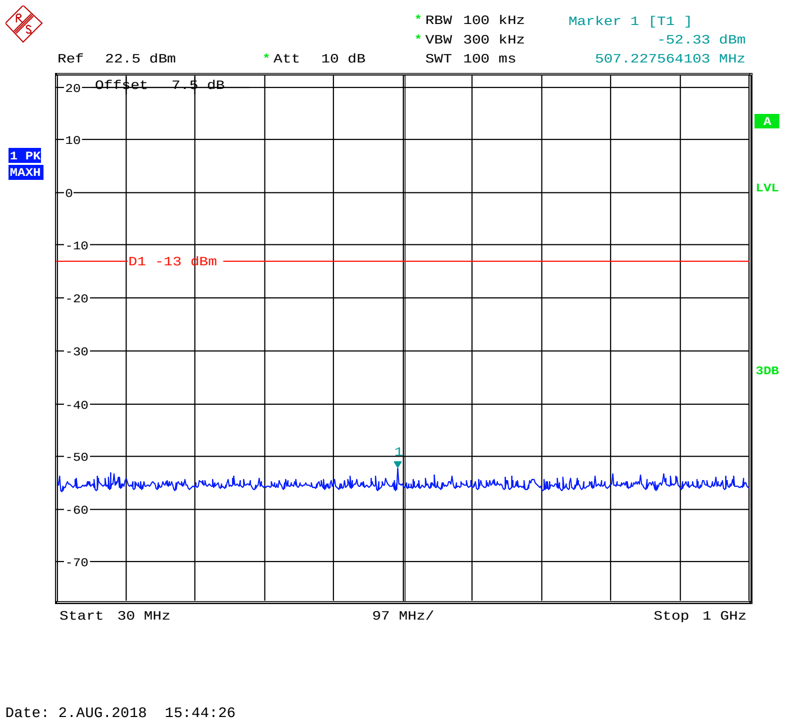
1 GHz – 2 GHz (5.0 MHz, Middle Channel)



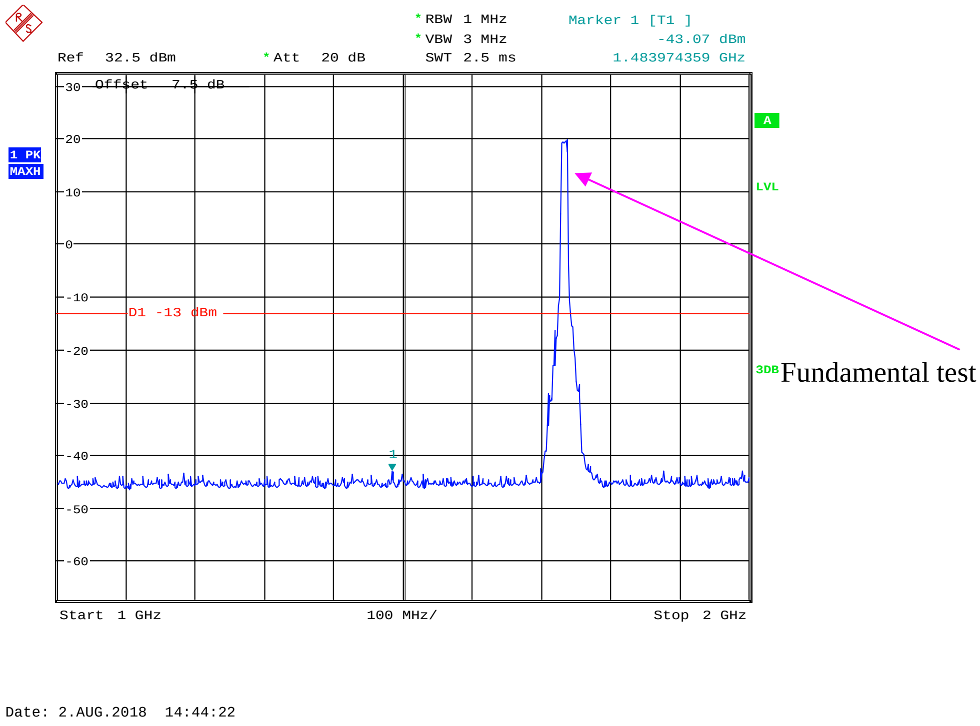
2 GHz – 20 GHz (5.0 MHz, Middle Channel)



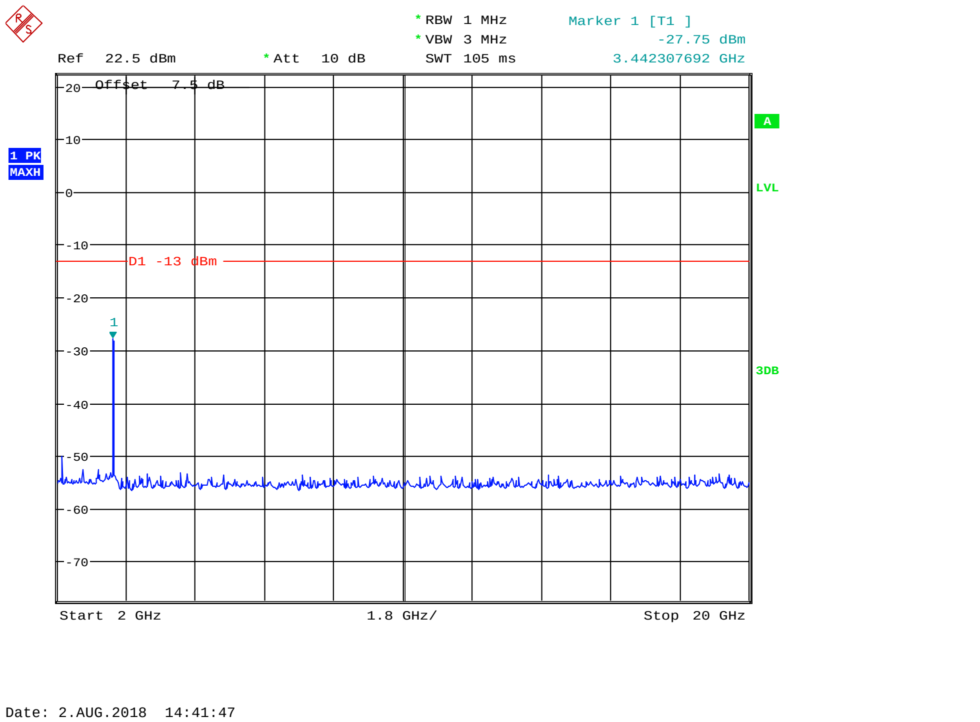
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



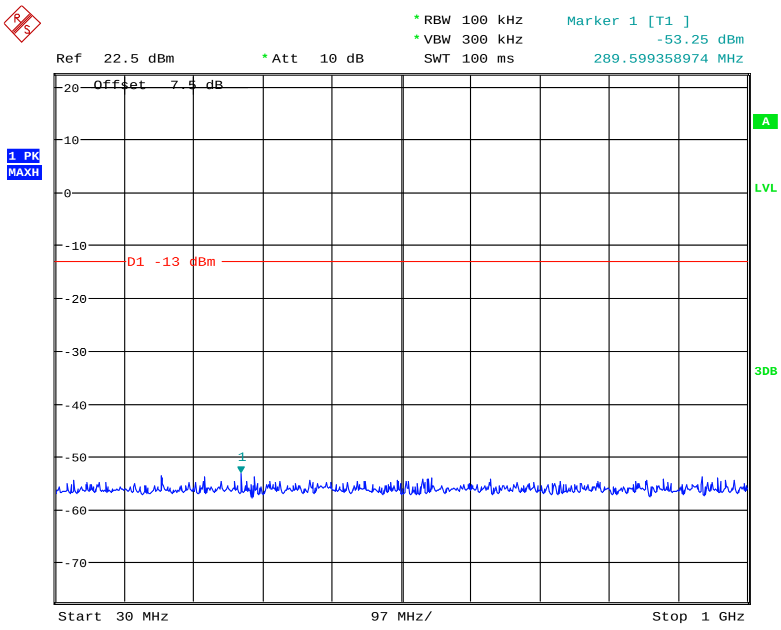
1 GHz – 2 GHz (10.0 MHz, Middle Channel)



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



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



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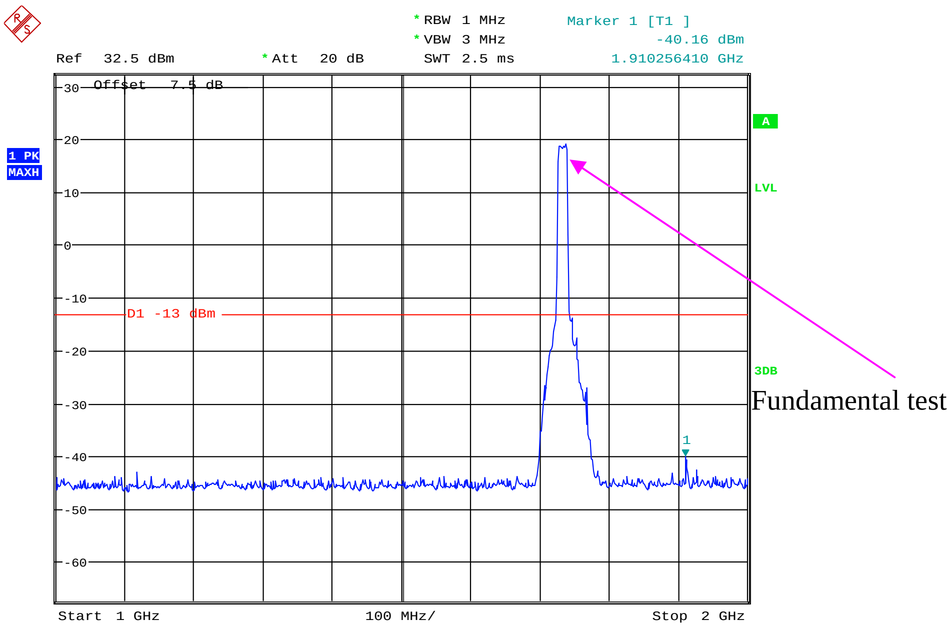
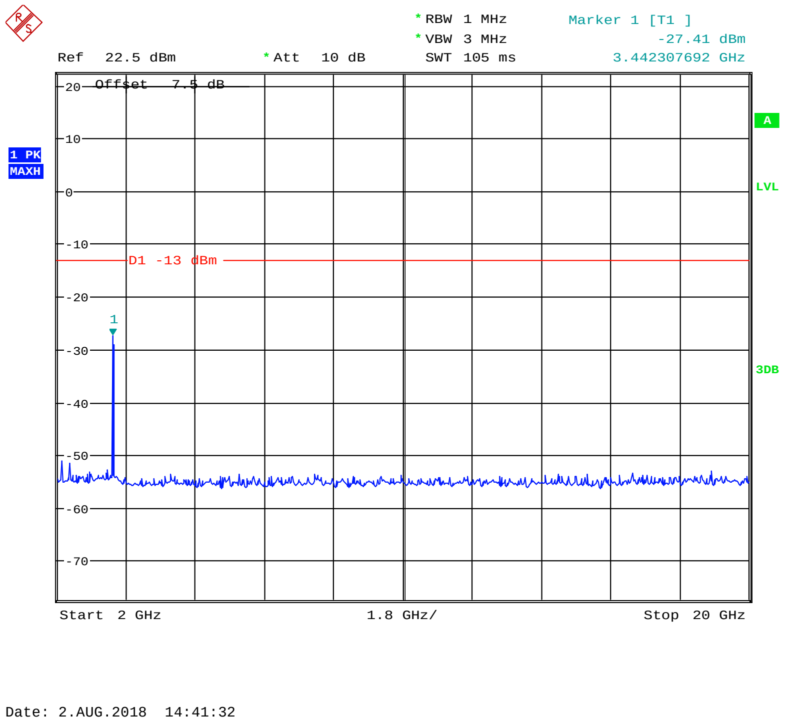
1 GHz – 2 GHz (15.0 MHz, Middle Channel)

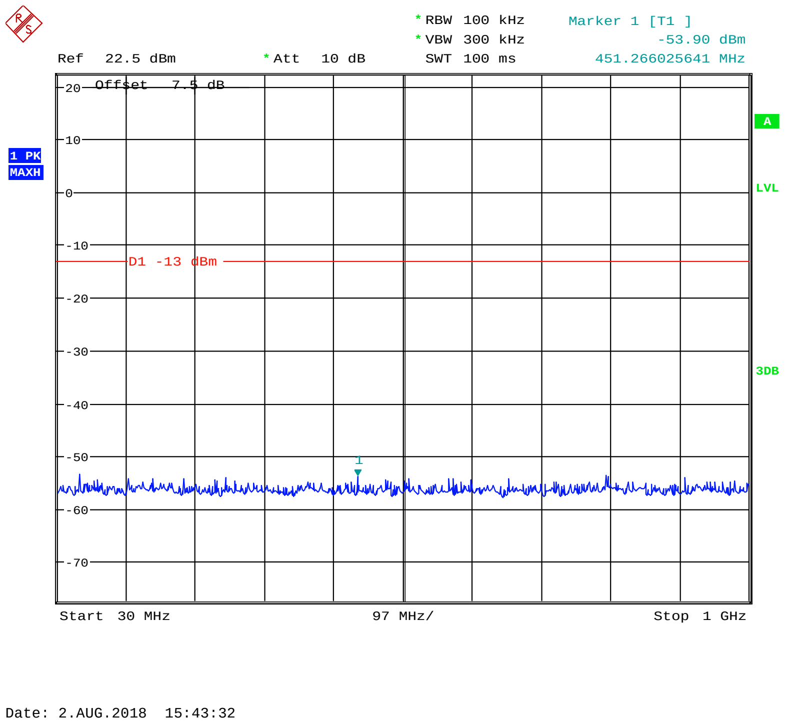


Date: 2.AUG.2018 14:44:44

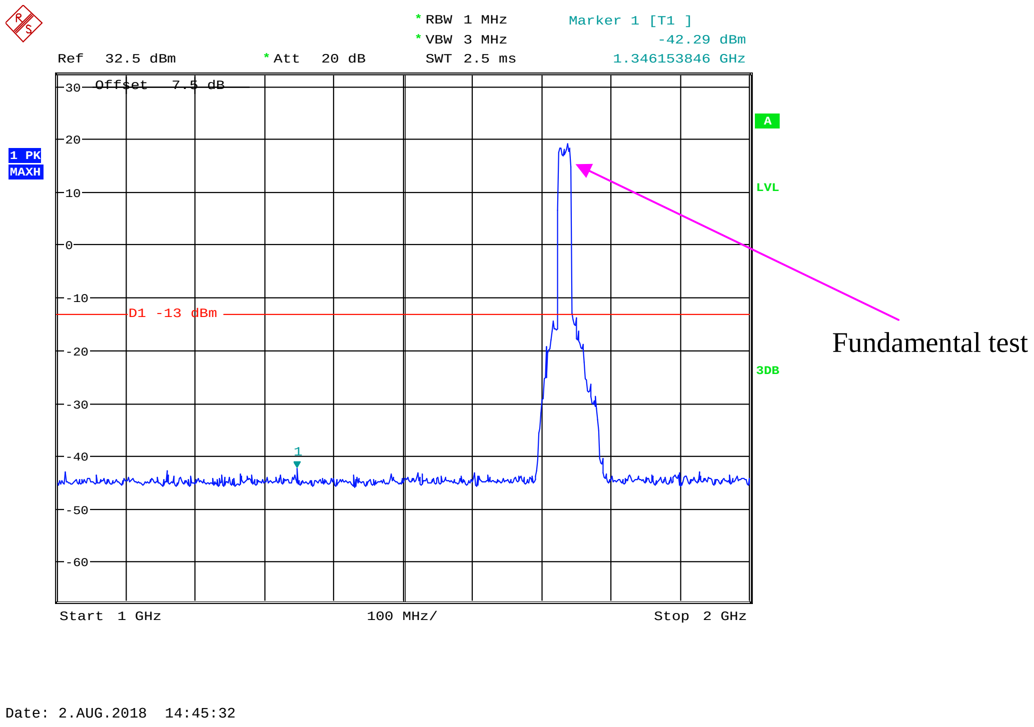
2 GHz – 20 GHz (15.0 MHz, Middle Channel)



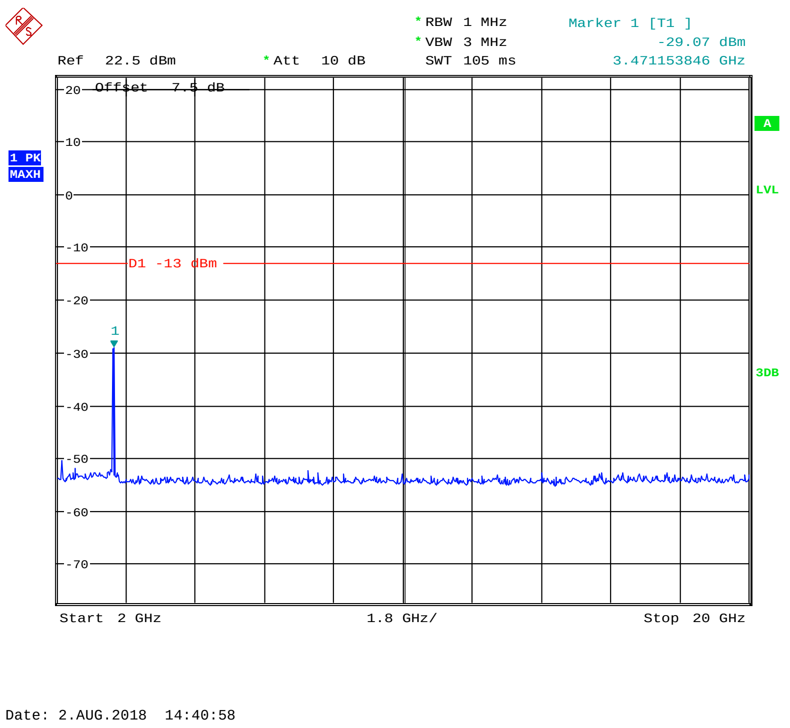
30 MHz - 1 GHz (20.0 MHz, Middle Channel)



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

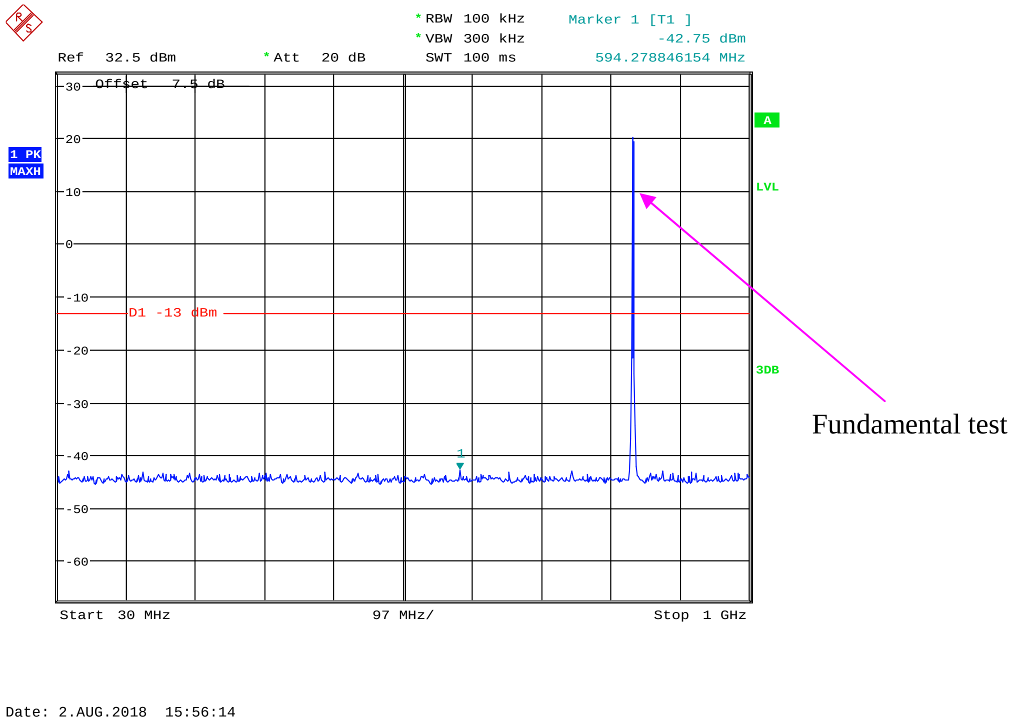


2 GHz – 20 GHz (20.0 MHz, Middle Channel)

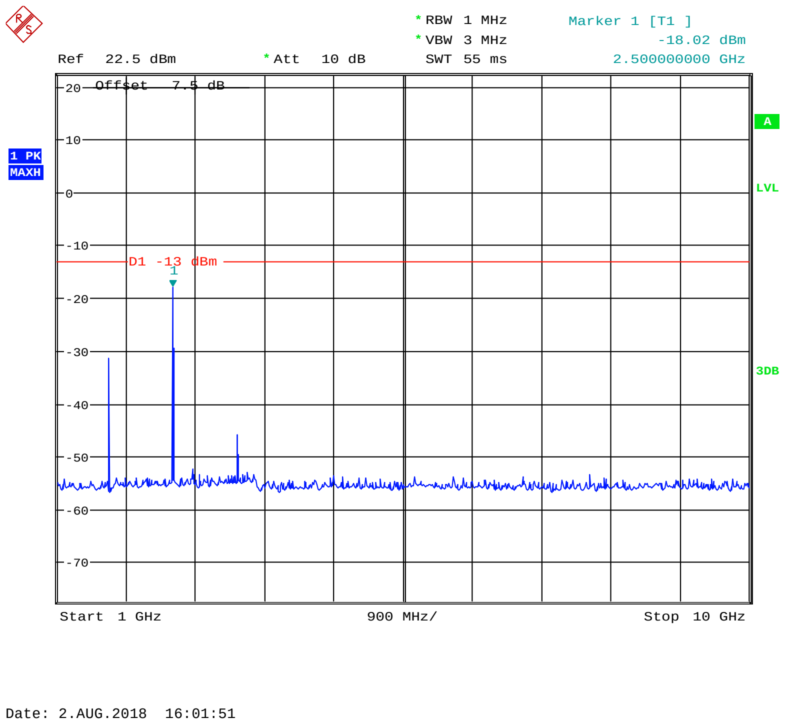


LTE Band 5:

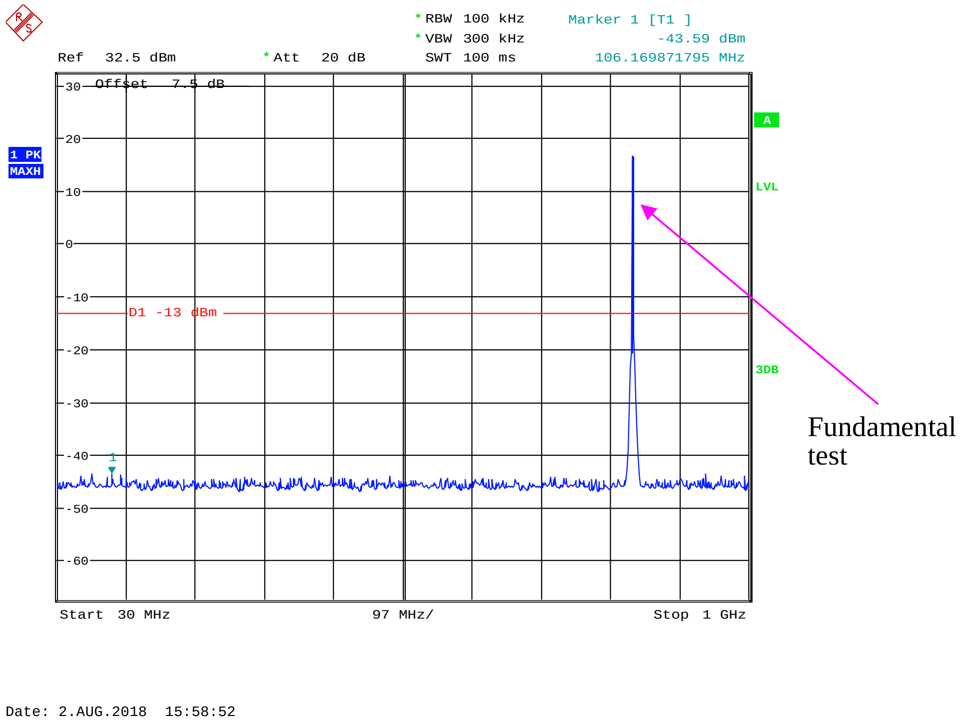
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



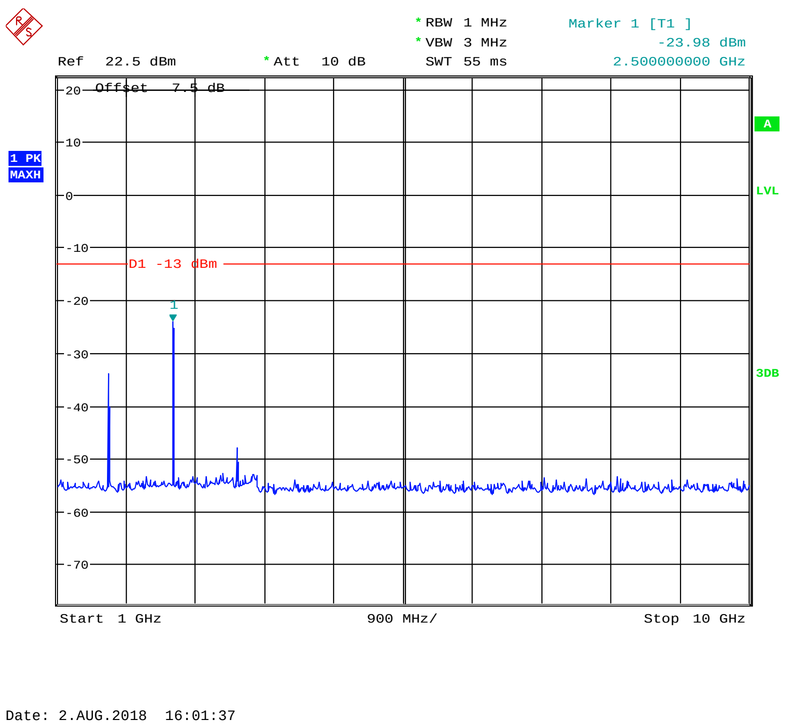
1 GHz – 10 GHz (1.4 MHz, Middle Channel)



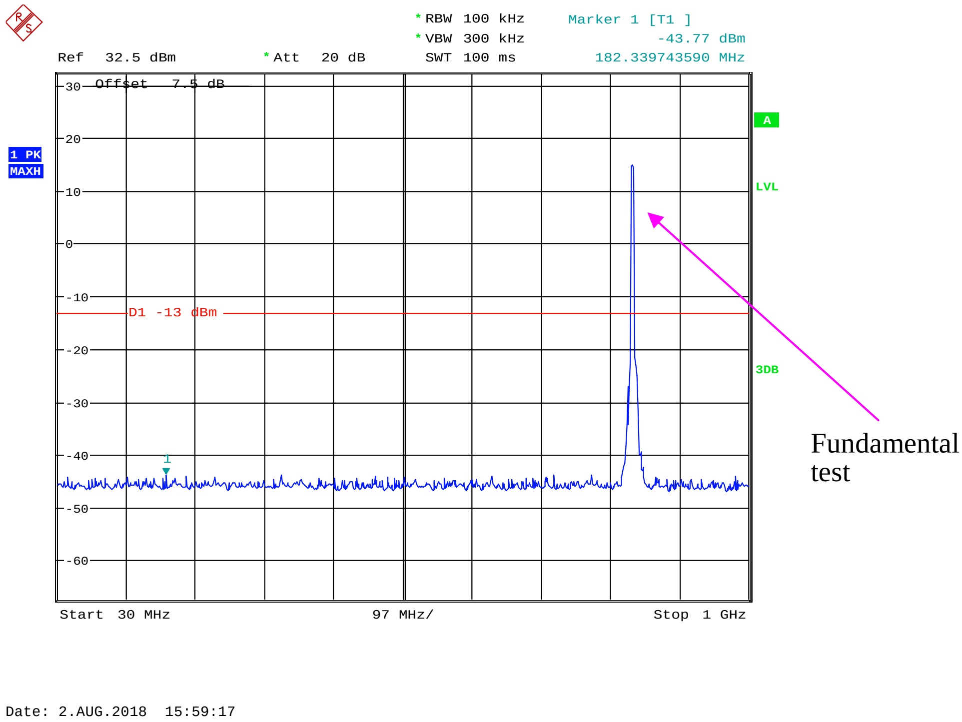
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



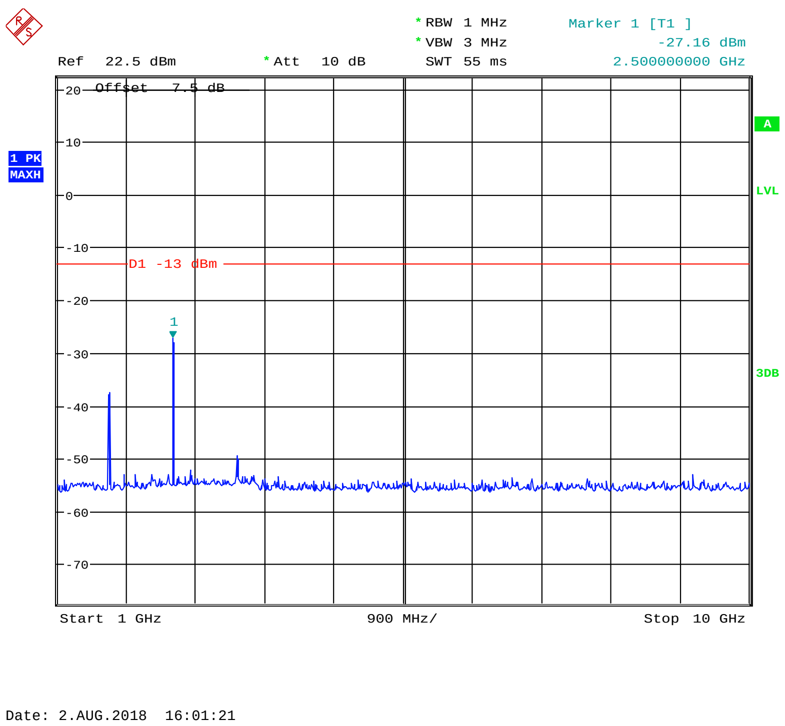
1 GHz – 10 GHz (3.0 MHz, Middle Channel)



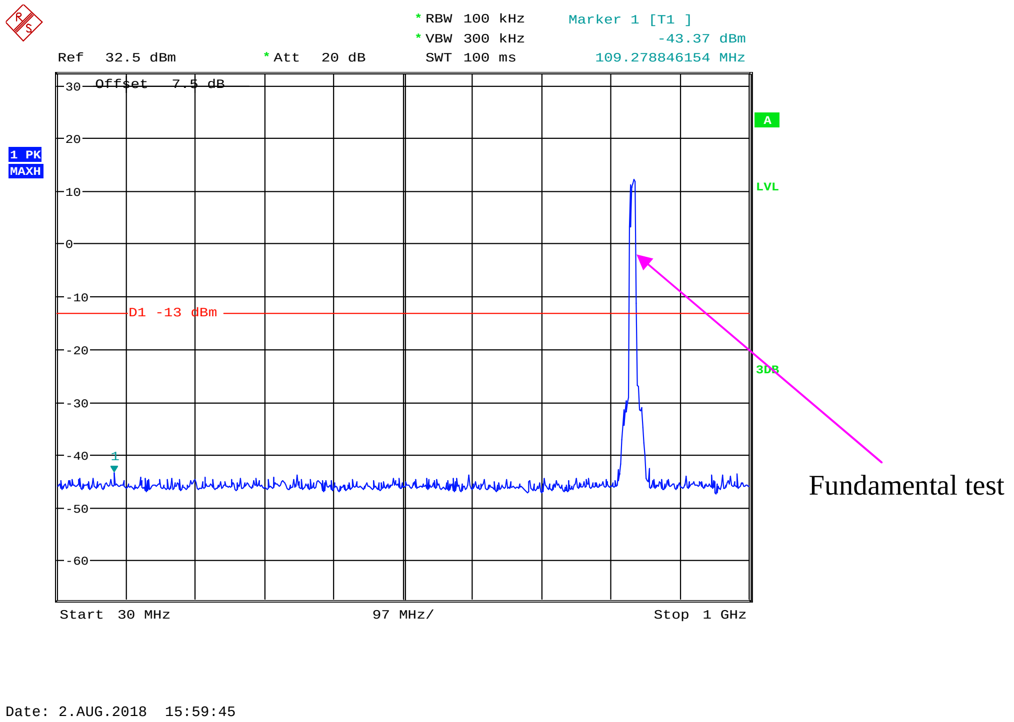
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



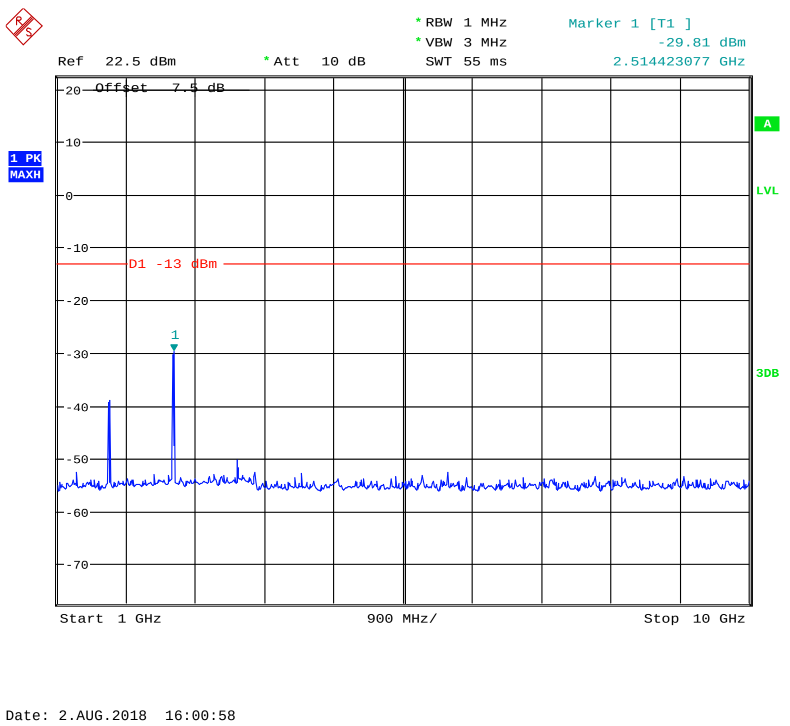
1 GHz – 10 GHz (5.0 MHz, Middle Channel)



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

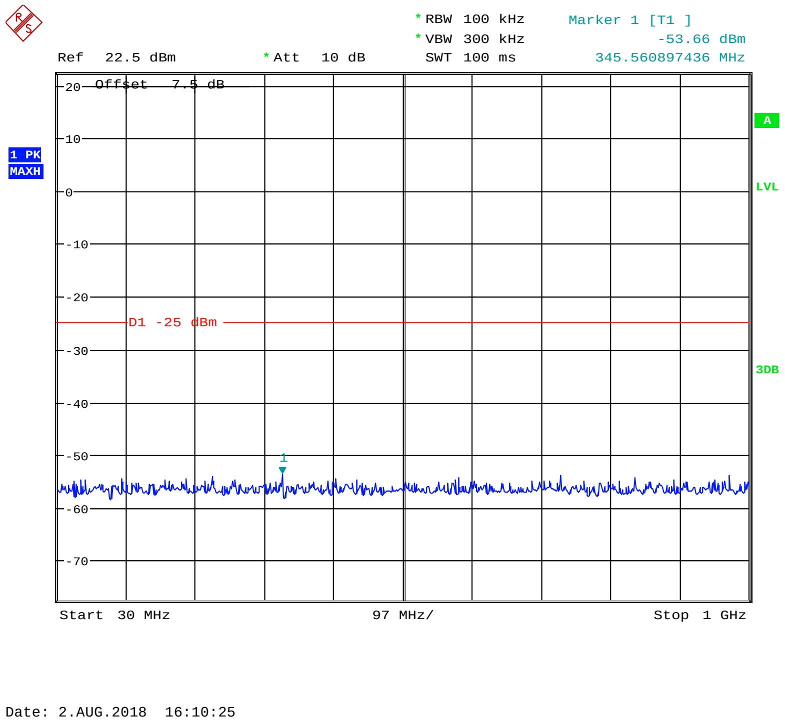


1 GHz – 10 GHz (10.0 MHz, Middle Channel)

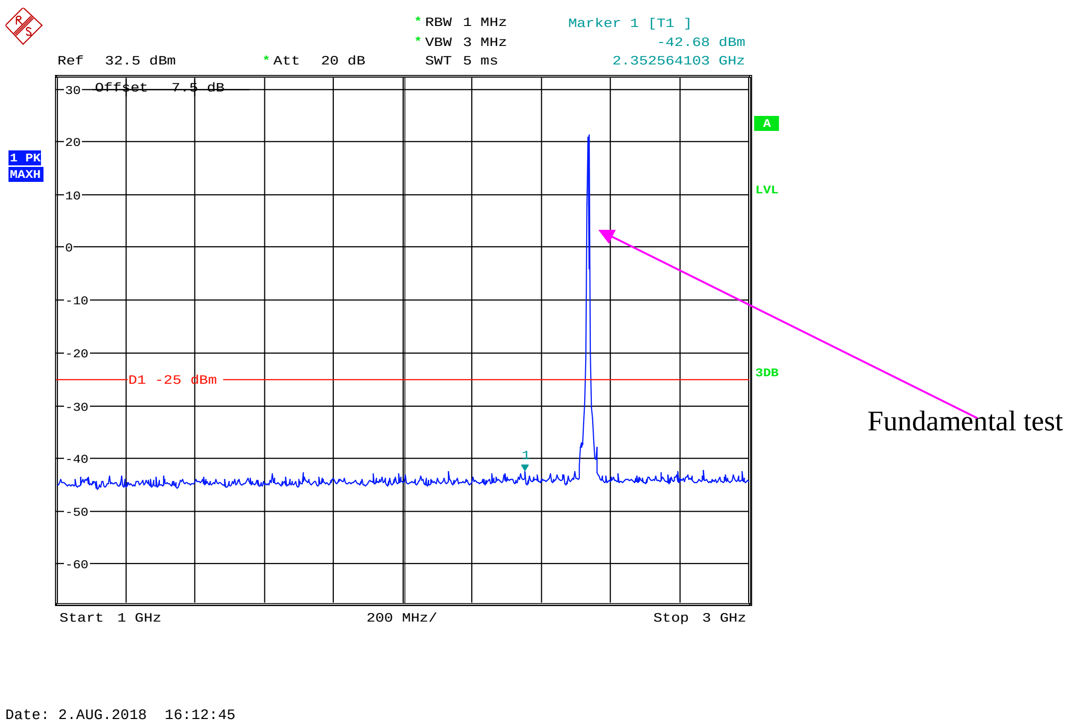


LTE Band 7: (QPSK)

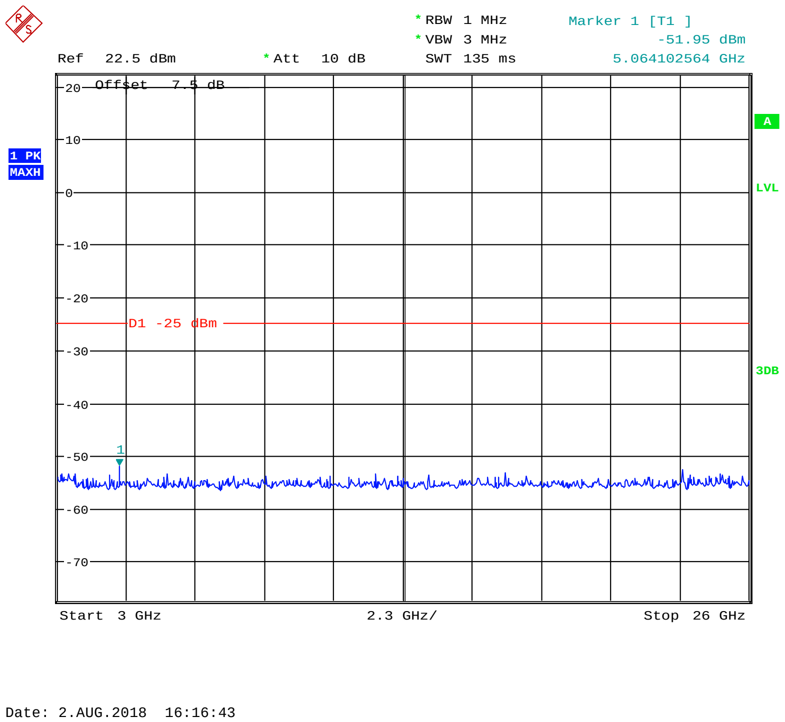
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



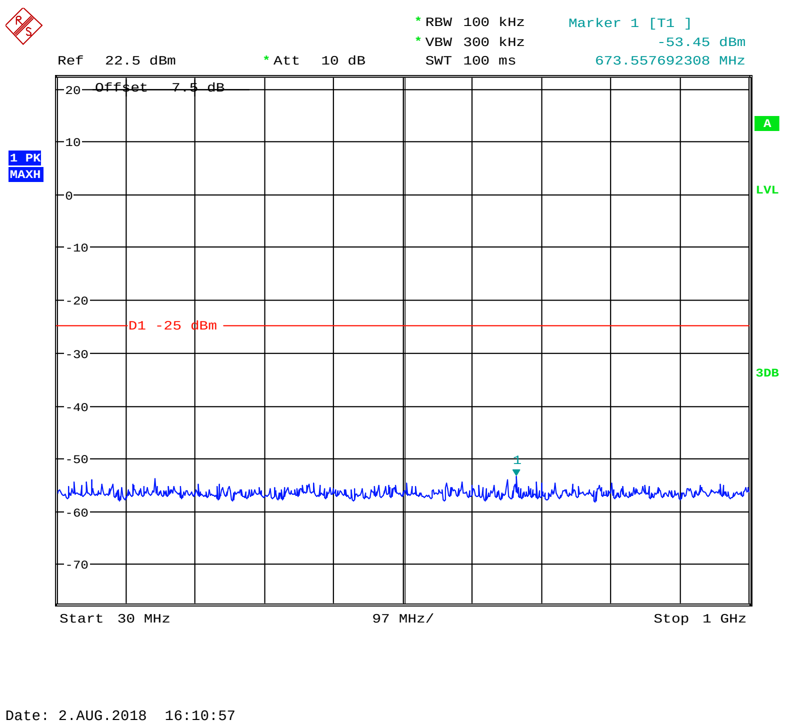
1 GHz – 3 GHz (5.0 MHz, Middle Channel)



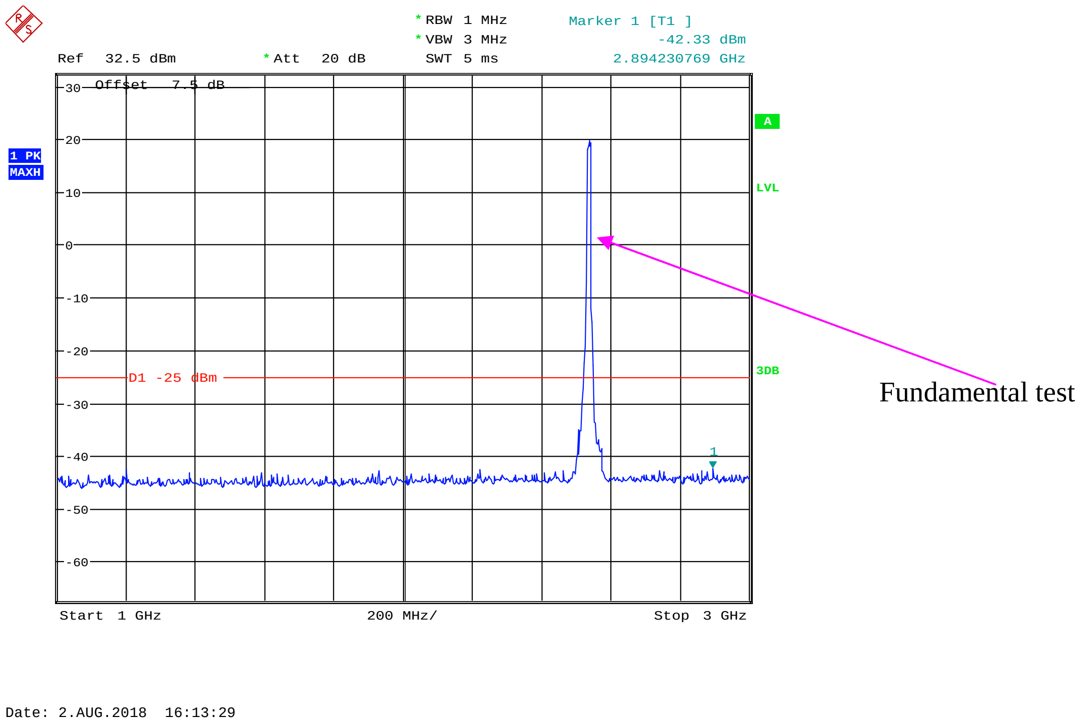
3 GHz – 26 GHz (5.0 MHz, Middle Channel)



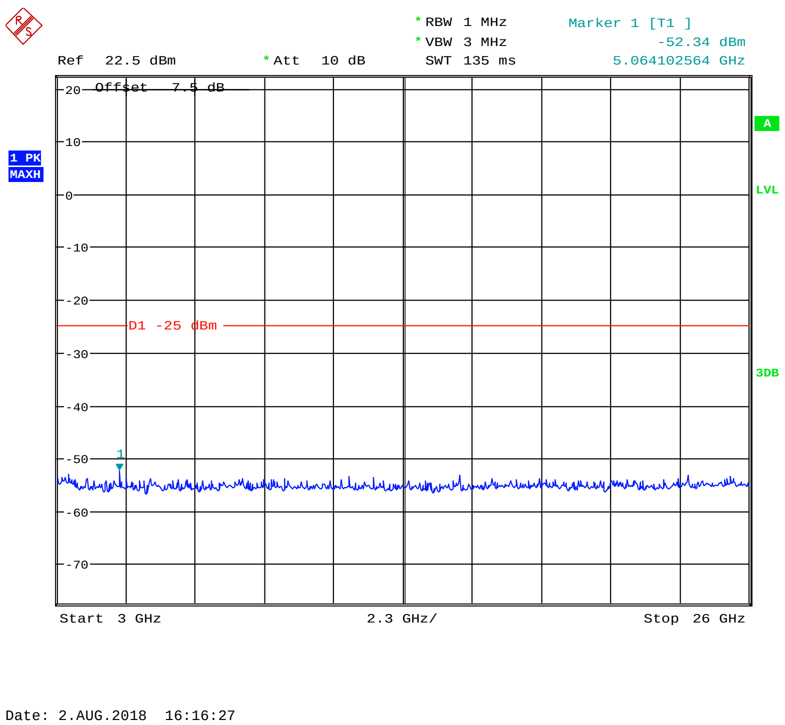
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



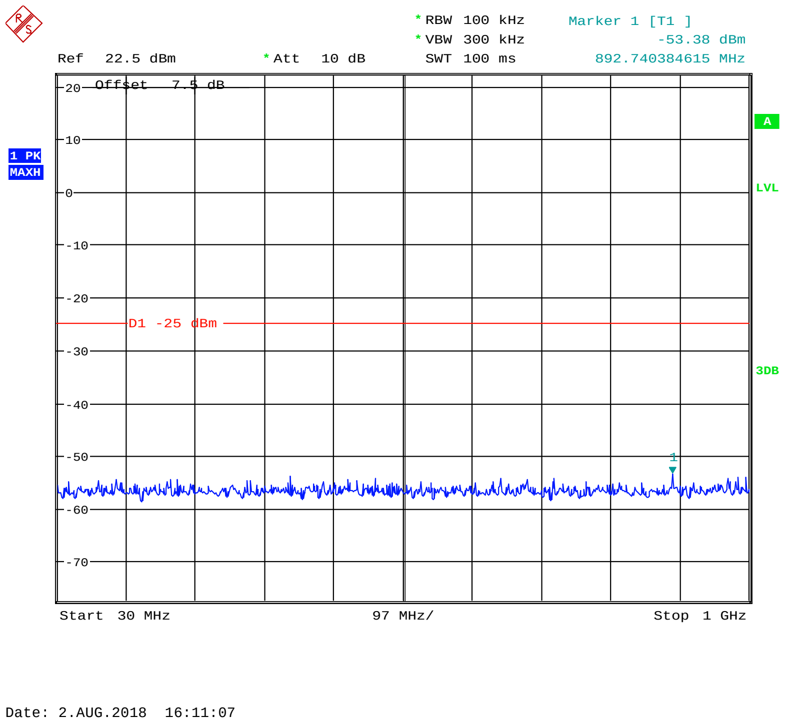
1 GHz – 3 GHz (10.0 MHz, Middle Channel)



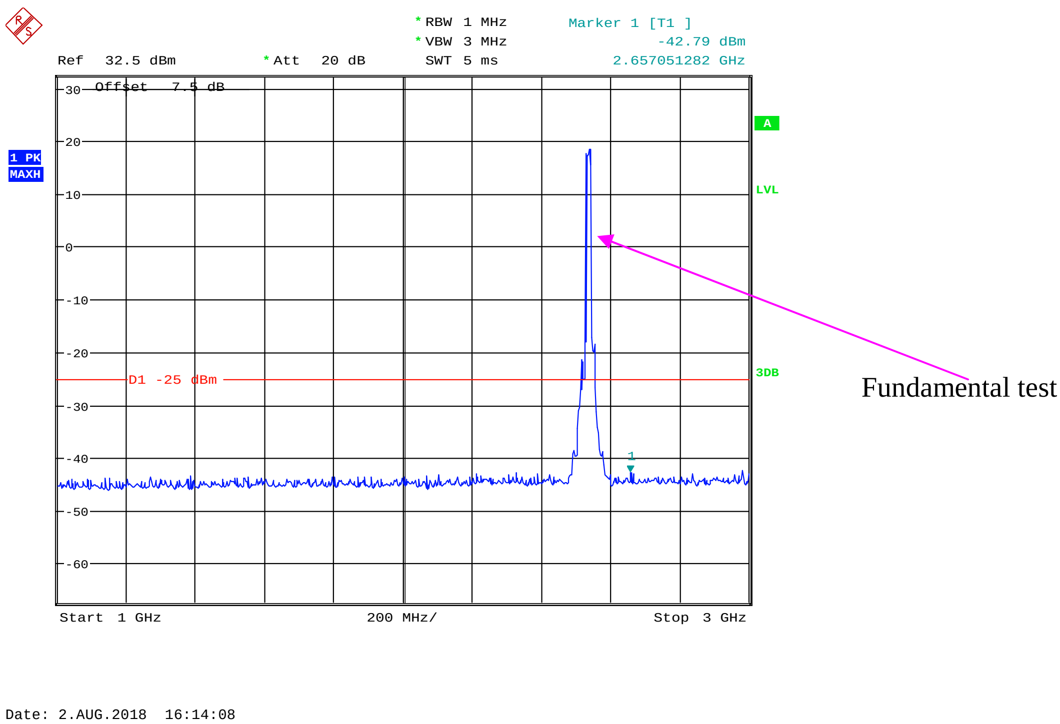
3 GHz – 26 GHz (10.0 MHz, Middle Channel)



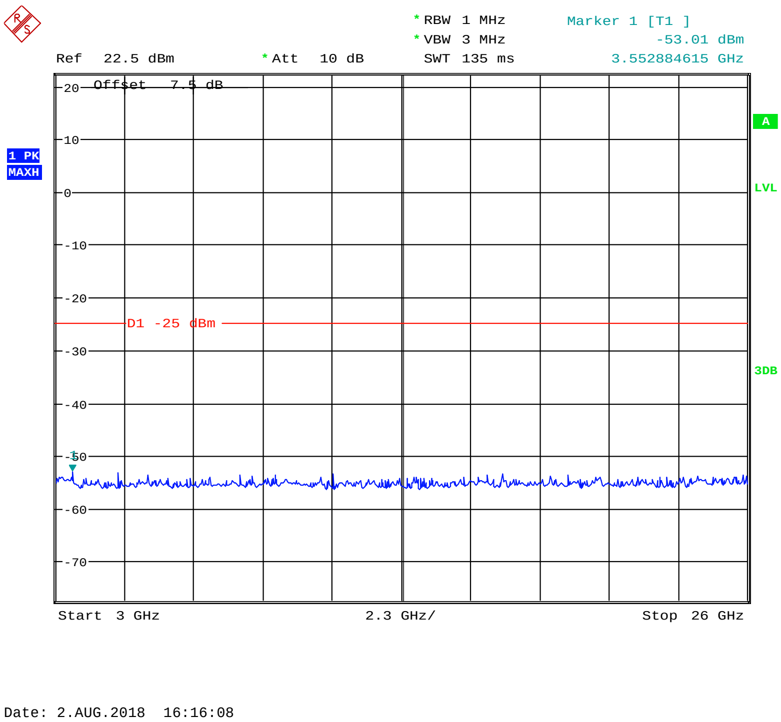
30 MHz - 1 GHz (15.0 MHz, Middle Channel)



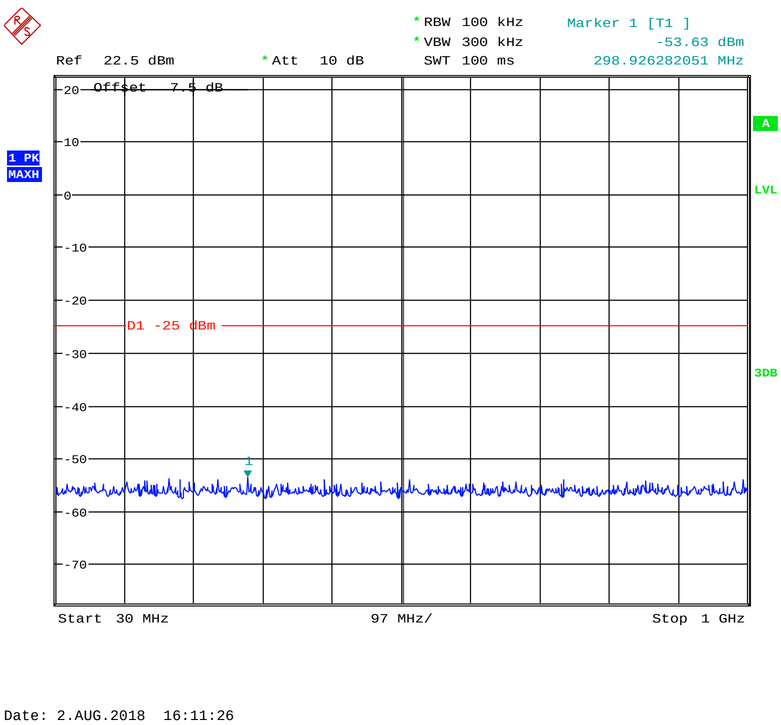
1 GHz – 3 GHz (15.0 MHz, Middle Channel)



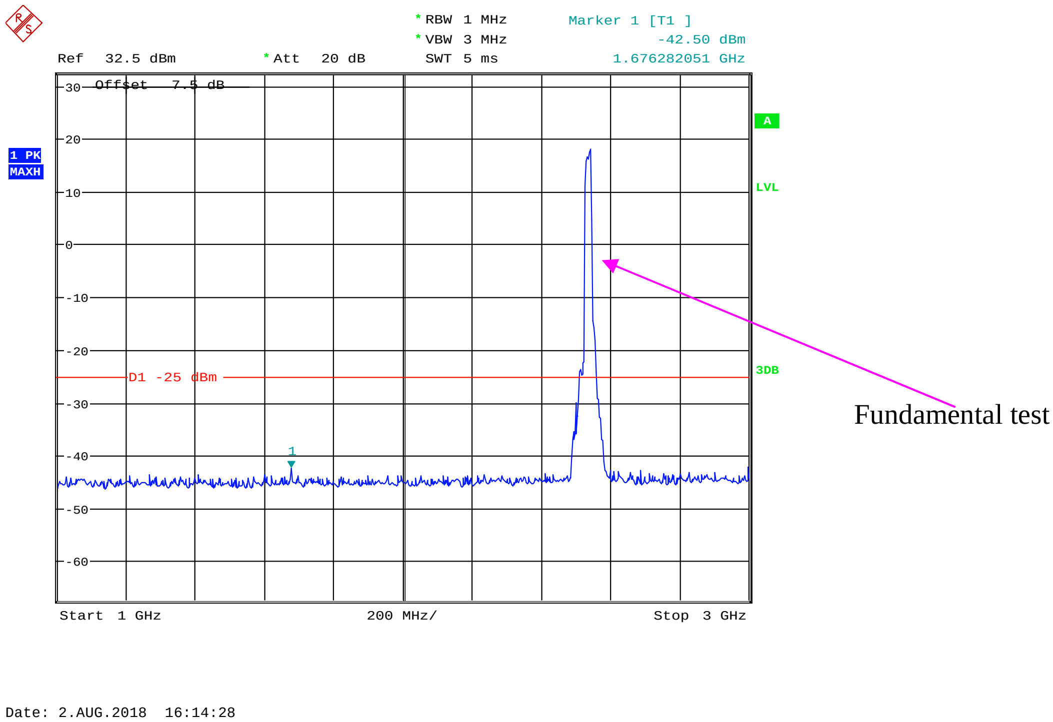
3 GHz – 26 GHz (15.0 MHz, Middle Channel)



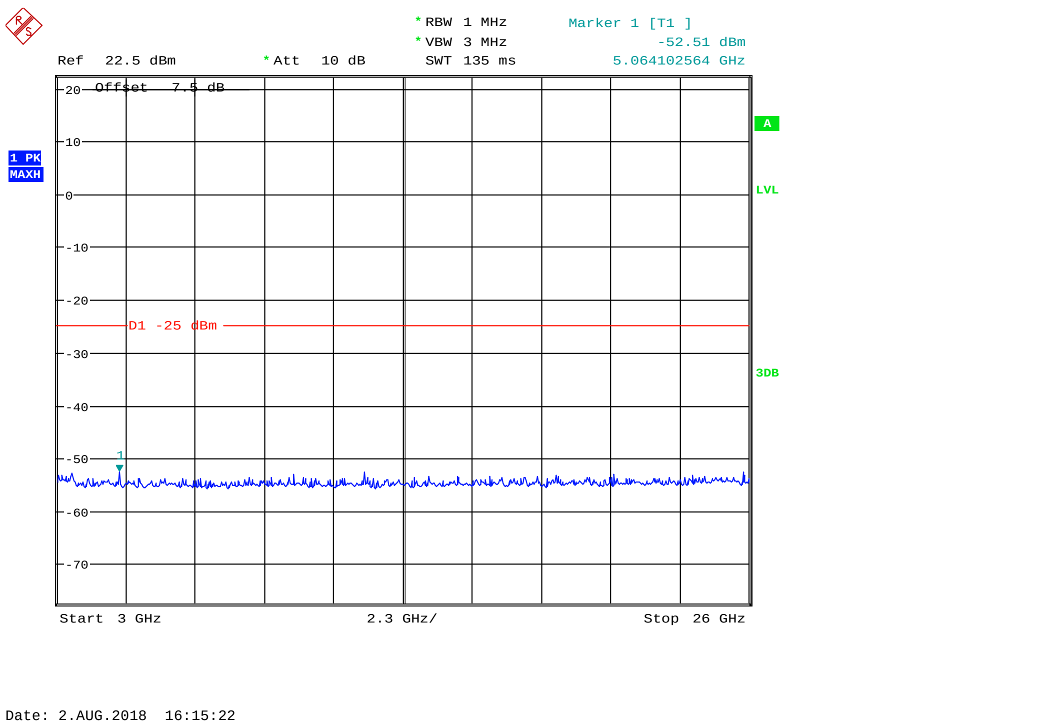
30 MHz - 1 GHz (20.0 MHz, Middle Channel)



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

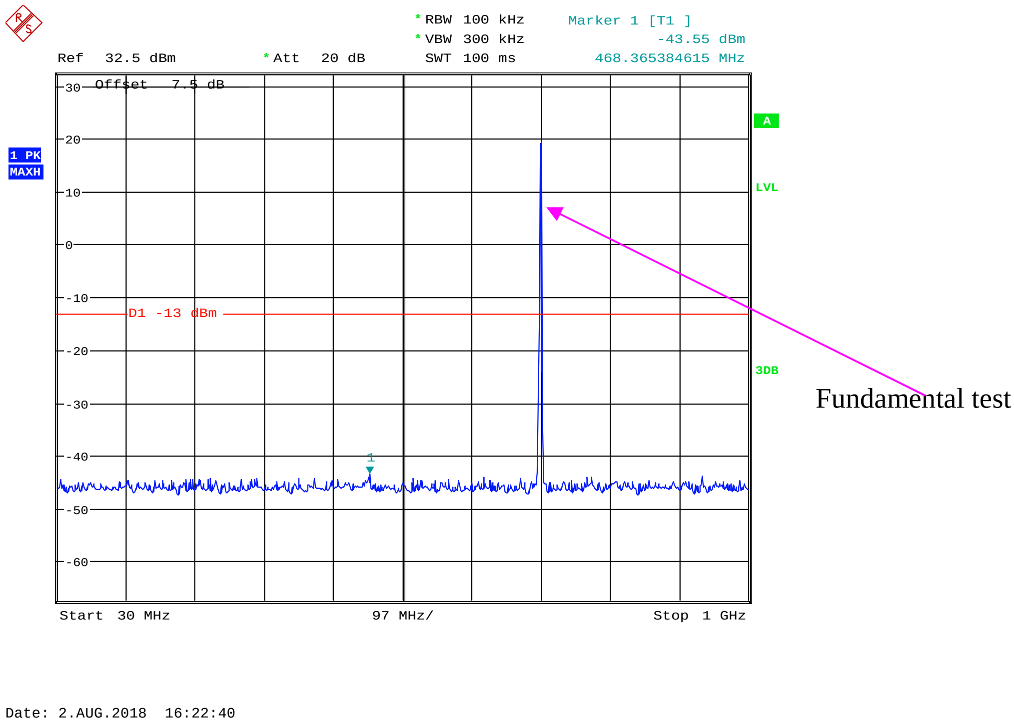


3 GHz – 26 GHz (20.0 MHz, Middle Channel)

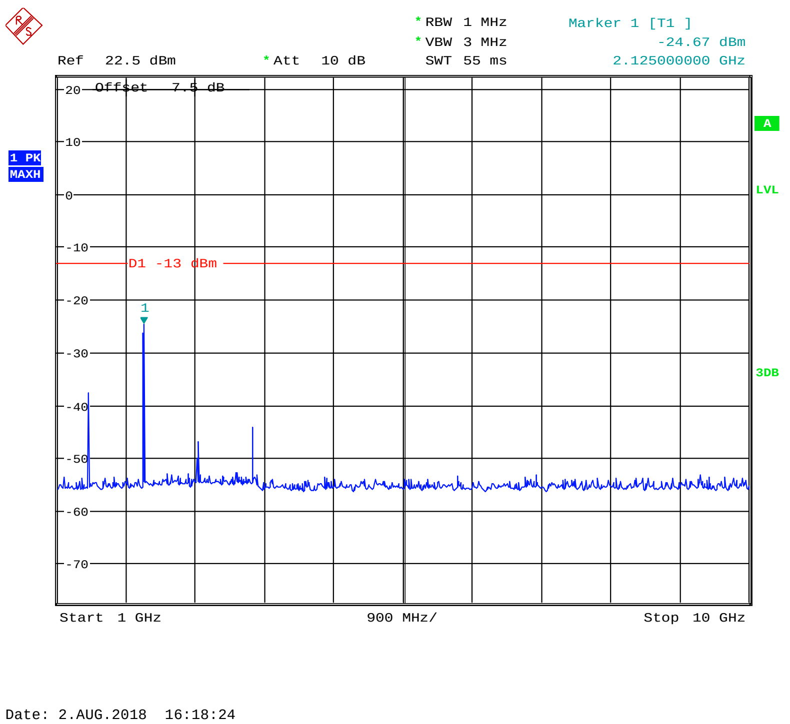


LTE Band 12: (QPSK)

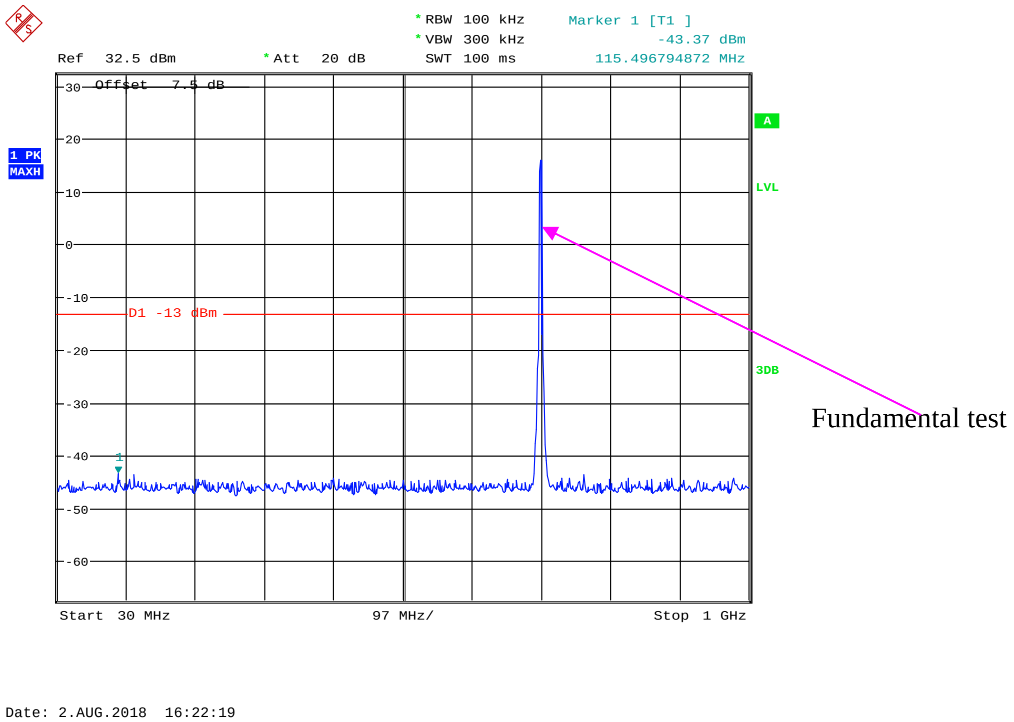
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



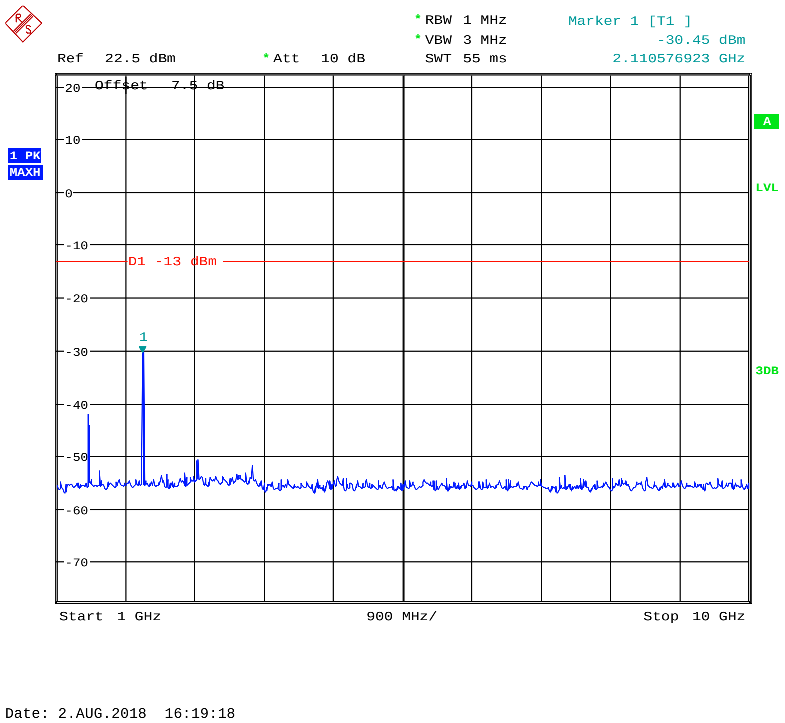
1 GHz – 10 GHz (1.4 MHz, Middle Channel)



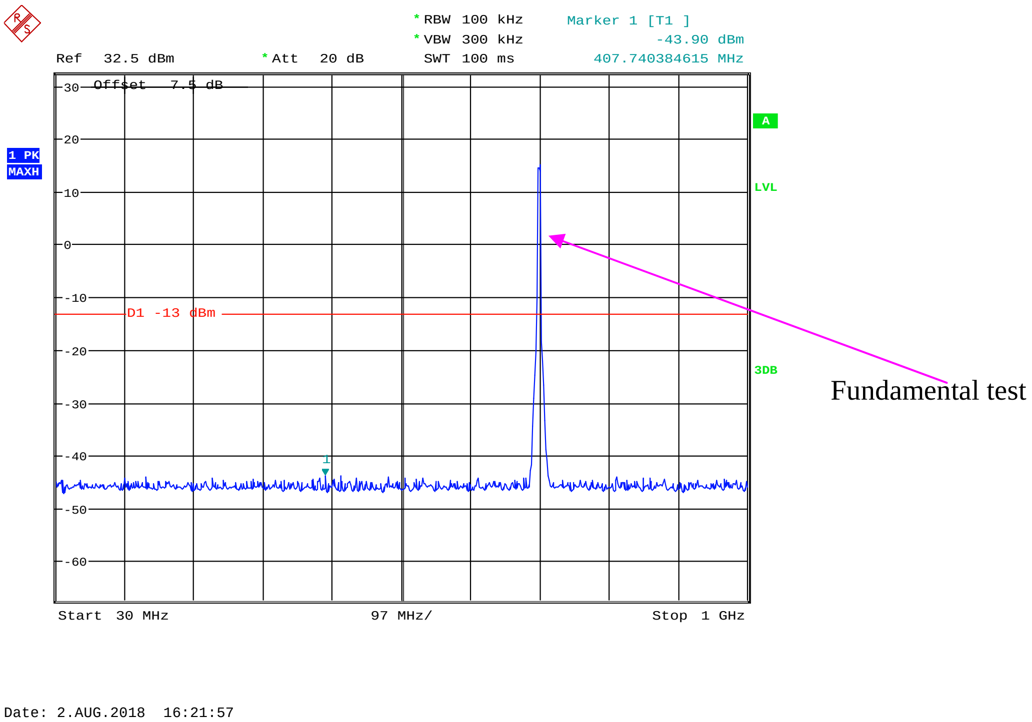
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



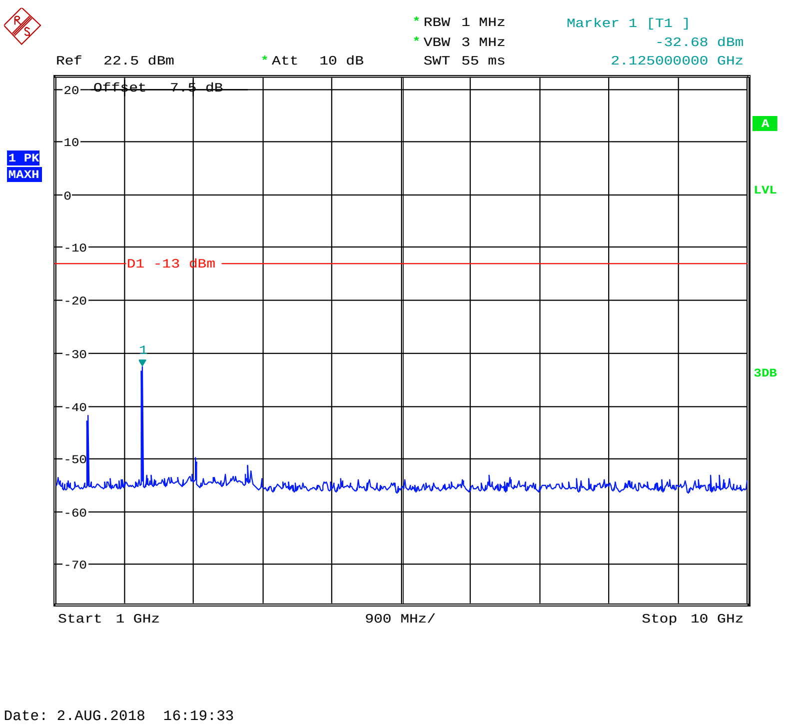
1 GHz – 10 GHz (3.0 MHz, Middle Channel)



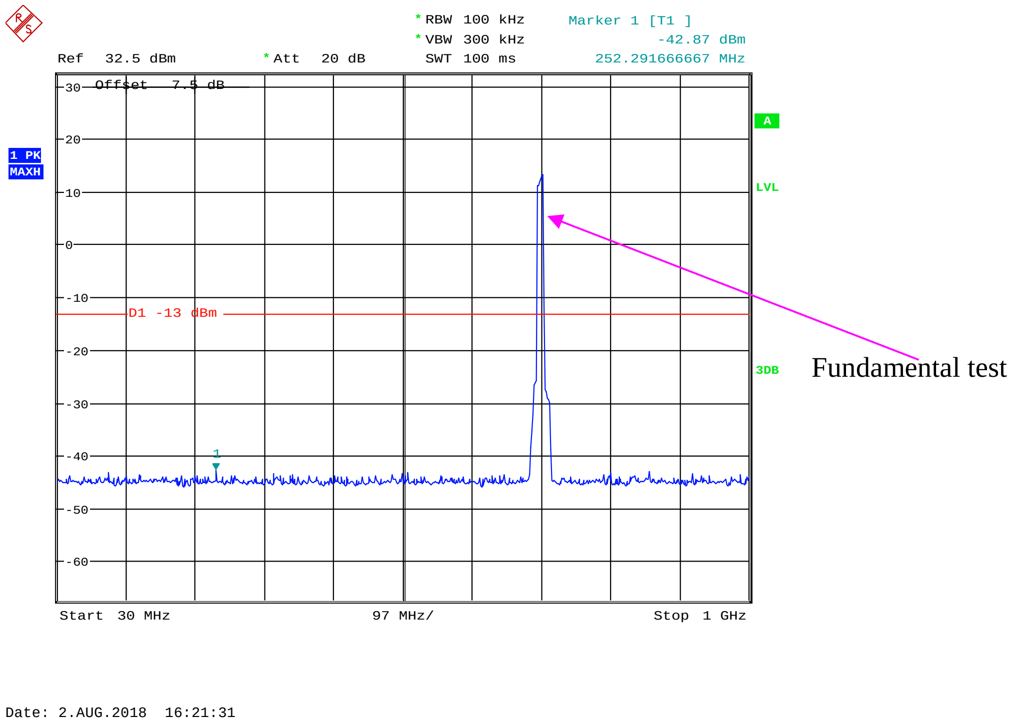
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



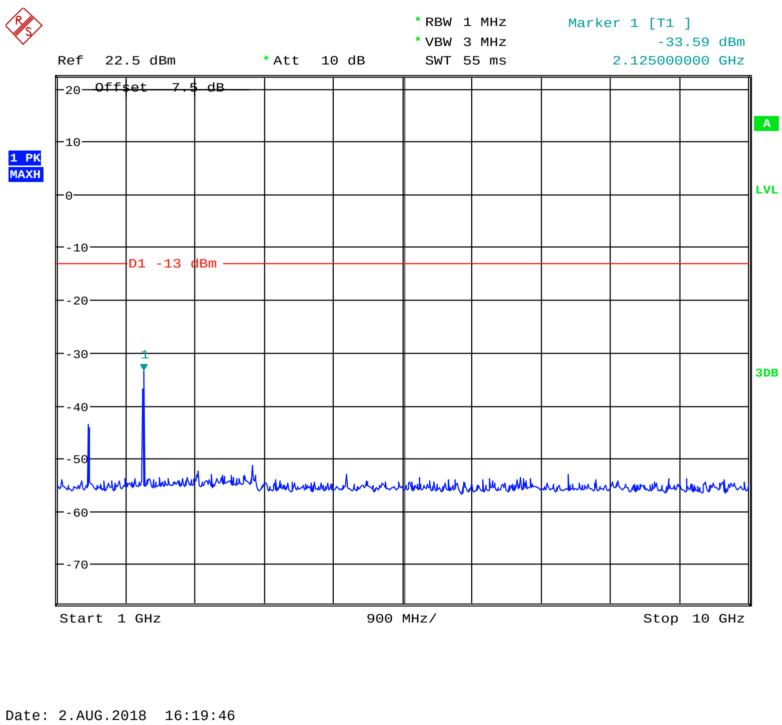
1 GHz – 10 GHz (5.0 MHz, Middle Channel)



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

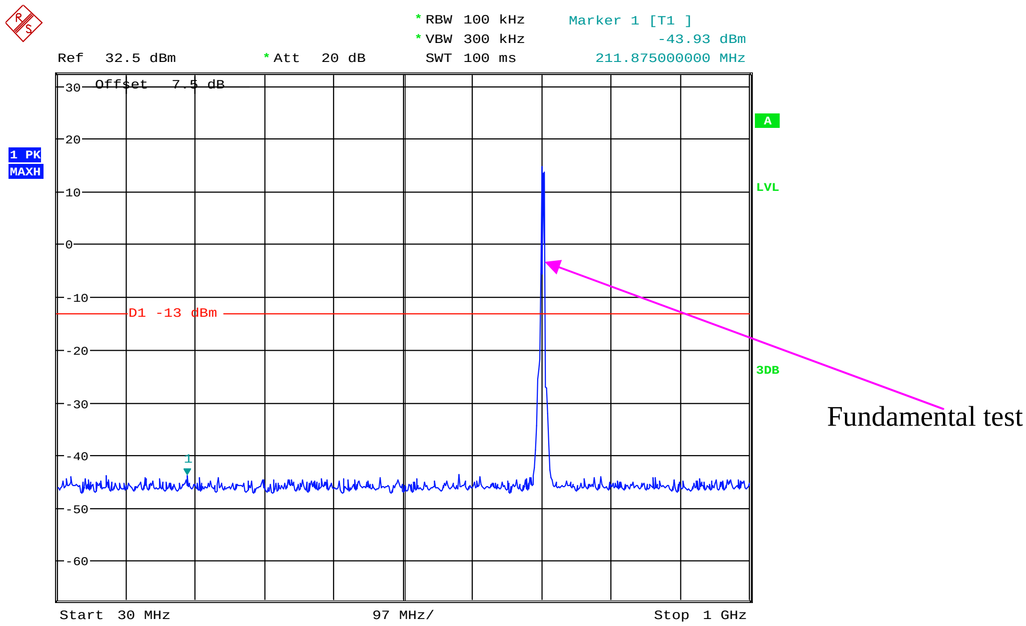


1 GHz – 10 GHz (10.0 MHz, Middle Channel)



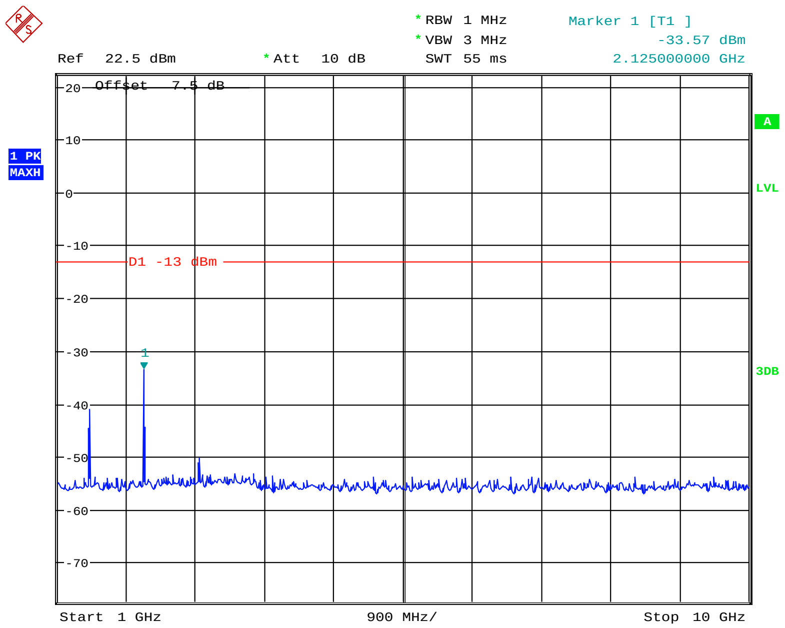
LTE Band 17:

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



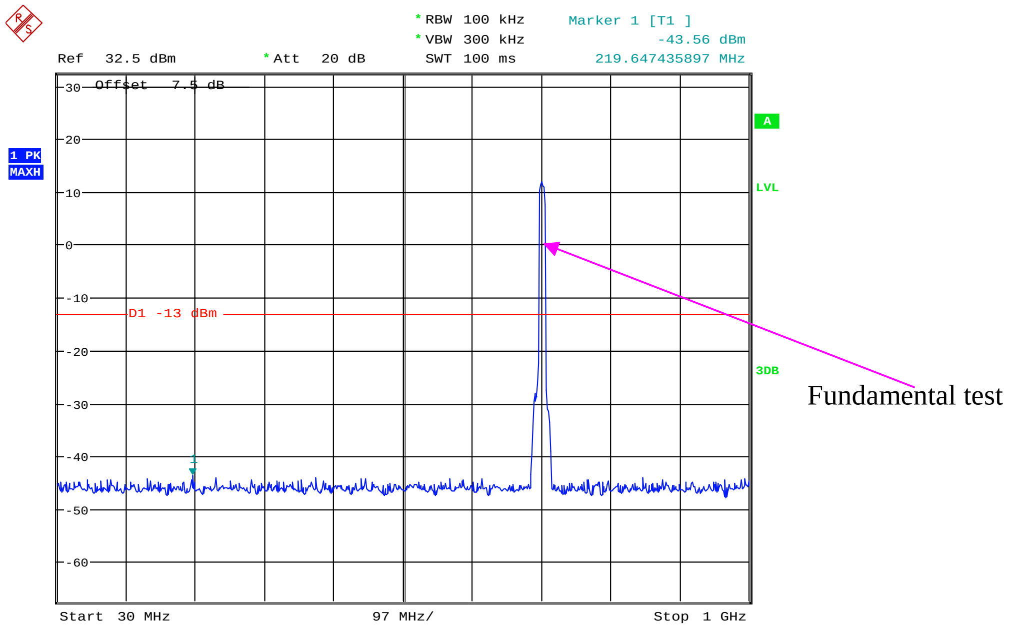
Date: 2.AUG.2018 16:23:51

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



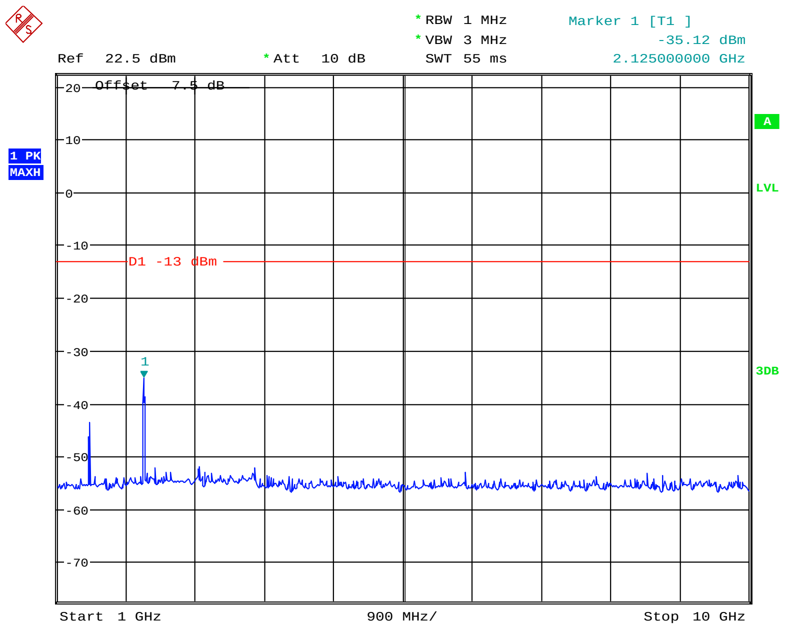
Date: 2.AUG.2018 16:25:04

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



Date: 2.AUG.2018 16:24:17

1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 2.AUG.2018 16:24:44

FCC § 2.1053; § 22.917 (a);§ 24.238 (a); §27.53 (h)(m) SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917(a) and § 24.238(a) and § 27.53(h)(m)

Test Procedure

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

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving 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.

Test Data

Environmental Conditions

Temperature:	23~25 ℃
Relative Humidity:	50~52 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Hill He from 2018-07-29 to 2018-07-31.

EUT operation mode: Transmitting

Pre-scan with Low, Middle and High channel, the worst case as below:

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
871.35	36.71	47	1.5	H	-60.3	0.70	0	-61.00	-13	48.00
871.35	37.56	239	1.9	V	-59.4	0.70	0	-60.10	-13	47.10
1673.20	53.56	207	1.1	H	-53.5	1.30	8.90	-45.90	-13	32.90
1673.20	55.54	174	1.3	V	-50.9	1.30	8.90	-43.30	-13	30.30
2509.80	64.31	34	2.5	H	-39.2	2.60	10.20	-31.60	-13	18.60
2509.80	62.04	128	1.7	V	-40.9	2.60	10.20	-33.30	-13	20.30
3346.40	44.31	317	2.3	H	-56.0	1.50	11.70	-45.80	-13	32.80
3346.40	43.56	61	1.3	V	-56.8	1.50	11.70	-46.60	-13	33.60
WCDMA Mode, Middle channel										
235.36	36.79	138	1.8	H	-60.2	0.31	0	-60.51	-13	47.51
235.36	37.38	257	1.2	V	-59.6	0.31	0	-59.91	-13	46.91
1673.20	49.32	110	1.3	H	-57.8	1.30	8.90	-50.20	-13	37.20
1673.20	47.96	58	1.6	V	-58.5	1.30	8.90	-50.90	-13	37.90
2509.80	45.79	283	1.7	H	-57.7	2.60	10.20	-50.10	-13	37.10
2509.80	49.9	9	2.1	V	-53.0	2.60	10.20	-45.40	-13	32.40
3346.40	43.45	25	1.0	H	-56.9	1.50	11.70	-46.70	-13	33.70
3346.40	43.96	326	2.4	V	-56.4	1.50	11.70	-46.20	-13	33.20

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
871.35	37.63	57	1.8	H	-59.4	0.70	0	-60.10	-13	47.10
871.35	37.76	315	1.7	V	-59.2	0.70	0	-59.90	-13	46.90
3760.00	44.37	49	1.9	H	-56.9	1.50	11.80	-46.60	-13	33.60
3760.00	44.5	86	2.3	V	-56.3	1.50	11.80	-46.00	-13	33.00
WCDMA Mode, Middle channel										
235.36	36.78	233	1.4	H	-60.2	0.31	0	-60.51	-13	47.51
235.36	37.31	277	1.5	V	-59.7	0.31	0	-60.01	-13	47.01
3760.00	45.15	25	2.4	H	-56.1	1.50	11.80	-45.80	-13	32.80
3760.00	44.55	76	1.6	V	-56.2	1.50	11.80	-45.90	-13	32.90

30 MHz ~ 20 GHz:

AWS Band (Part 27)

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
WCDMA Mode Band IV, Middle channel										
235.36	36.33	258	1.3	H	-60.7	0.31	0	-61.01	-13	48.01
235.36	36.11	143	1.5	V	-60.9	0.31	0	-61.21	-13	48.21
3465.20	44.11	99	2.4	H	-56.3	1.50	12.00	-45.80	-13	32.80
3465.20	43.98	224	1.4	V	-57.2	1.50	12.00	-46.70	-13	33.70

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, Middle channel										
Test frequency range: 30 MHz ~ 20 GHz										
239.17	36.01	73	1.2	H	-61.0	0.31	0	-61.31	-13	48.31
239.17	36.86	184	1.7	V	-60.1	0.31	0	-60.41	-13	47.41
3760.00	41.82	270	1.5	H	-59.4	1.50	11.80	-49.10	-13	36.10
3760.00	41.56	309	1.9	V	-59.2	1.50	11.80	-48.90	-13	35.90
Band 4, Middle channel,										
Test frequency range: 30 MHz ~ 18 GHz										
239.17	36.64	299	2.1	H	-60.4	0.31	0	-60.71	-13	47.71
239.17	35.64	294	1.1	V	-61.4	0.31	0	-61.71	-13	48.71
3465.00	43.97	24	2.4	H	-56.4	1.50	12.00	-45.90	-13	32.90
3465.00	42.65	260	2.0	V	-58.5	1.50	12.00	-48.00	-13	35.00
Band 5										
Test frequency range:30 MHz ~ 10 GHz										
239.17	36.43	336	1.8	H	-60.6	0.31	0	-60.91	-13	47.91
239.17	35.19	141	1.3	V	-61.8	0.31	0	-62.11	-13	49.11
1673.00	43.56	103	1.7	H	-63.5	1.30	8.90	-55.90	-13	42.90
1673.00	44.01	226	1.0	V	-62.5	1.30	8.90	-54.90	-13	41.90
Band 7, Middle channel										
Test frequency range: 30 MHz ~26 GHz										
239.17	35.29	317	1.0	H	-61.7	0.31	0	-62.01	-25	37.01
239.17	35.51	144	2.4	V	-61.5	0.31	0	-61.81	-25	36.81
5070.00	43.51	340	2.2	H	-54.4	1.60	12.10	-43.90	-25	18.90
5070.00	42.83	220	2.1	V	-55.0	1.60	12.10	-44.50	-25	19.50
Band 12										
Test frequency range:30 MHz ~ 10GHz										
239.17	36.22	224	1.4	H	-60.8	0.31	0	-61.11	-13	48.11
239.17	35.30	75	2.4	V	-61.7	0.31	0	-62.01	-13	49.01
1415.00	45.41	192	1.9	H	-62.4	1.60	7.90	-56.10	-13	43.10
1415.00	44.65	189	1.6	V	-63.4	1.60	7.90	-57.10	-13	44.10
Band 17, Middle channel										
Test frequency range:30 MHz ~ 10 GHz										
239.17	35.76	49	1.7	H	-61.2	0.31	0	-61.51	-13	48.51
239.17	36.41	268	2.2	V	-60.6	0.31	0	-60.91	-13	47.91
1420.00	44.05	226	1.6	H	-63.8	1.60	7.90	-57.50	-13	44.50
1420.00	43.75	181	1.5	V	-64.3	1.60	7.90	-58.00	-13	45.00

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

FCC § 22.917 (a); § 24.238 (a); §27.53 (h)(m) - BAND EDGES

Applicable Standard

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

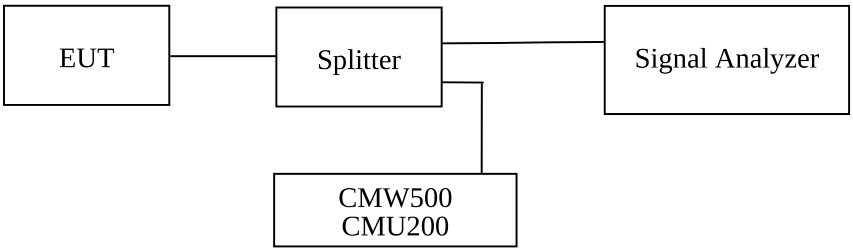
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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

Test Procedure

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

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



Test Data

Environmental Conditions

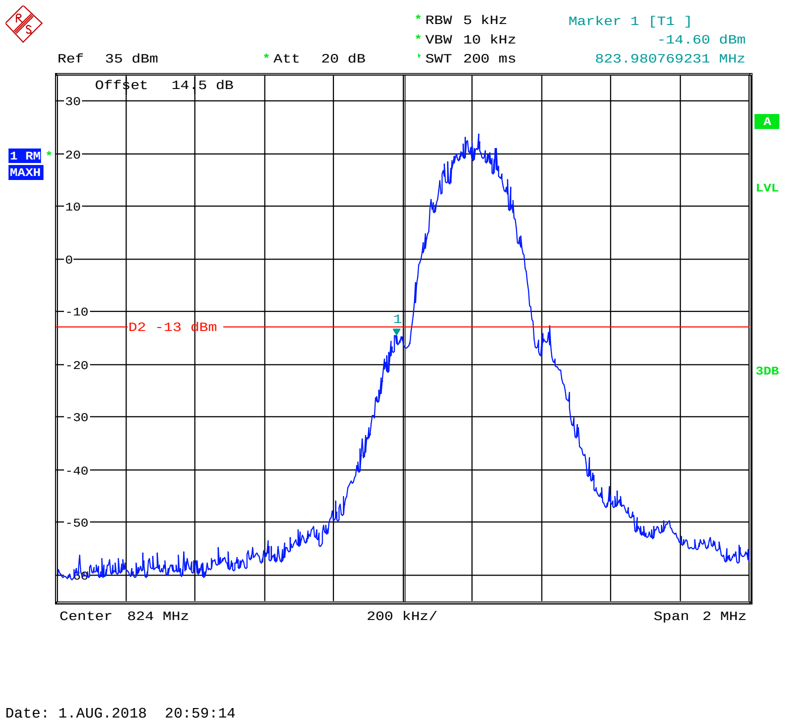
Temperature:	23~25 ℃
Relative Humidity:	50~52 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Hill He from 2018-08-01 to 2018-08-18.

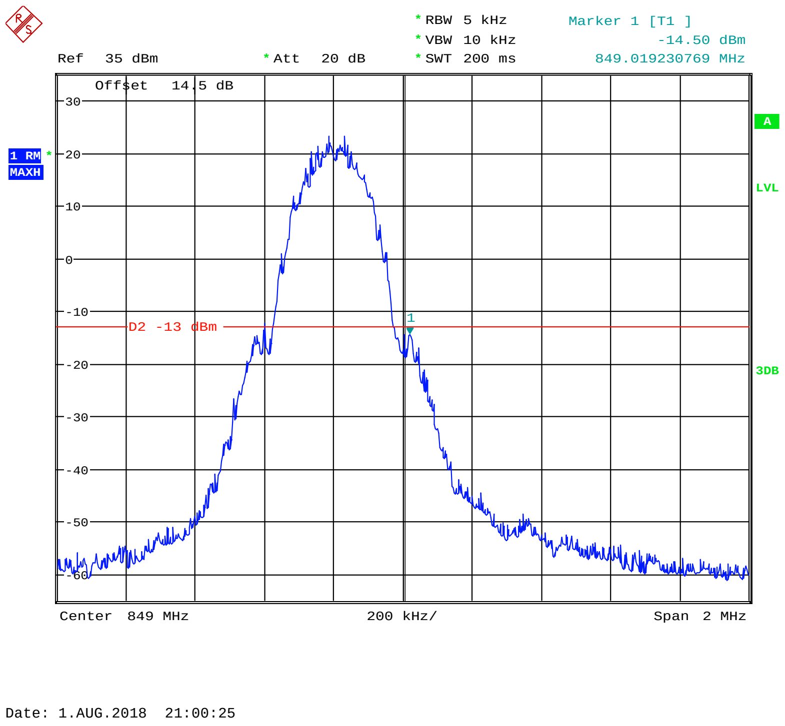
EUT operation mode: Transmitting

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

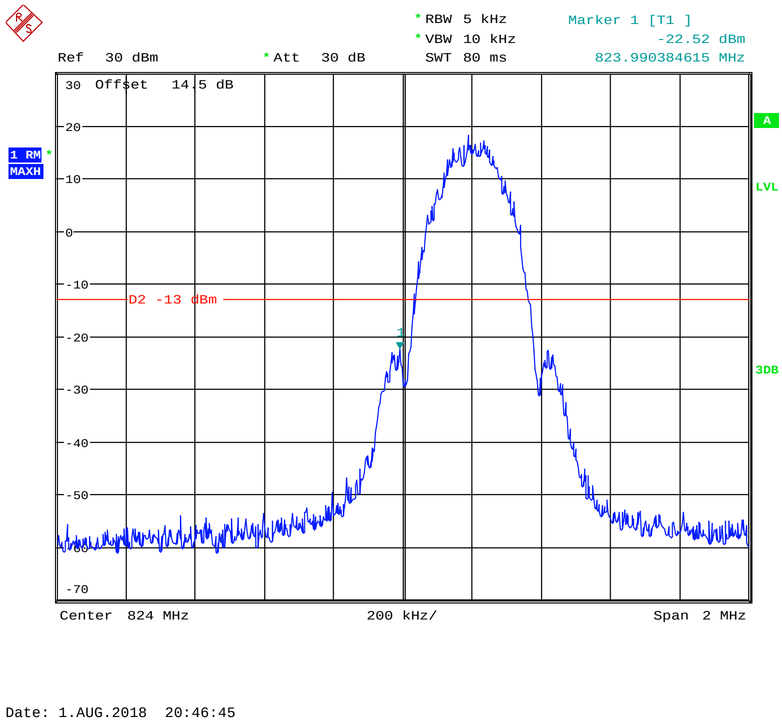
Cellular Band, Left Band Edge for GSM (GMSK) Mode



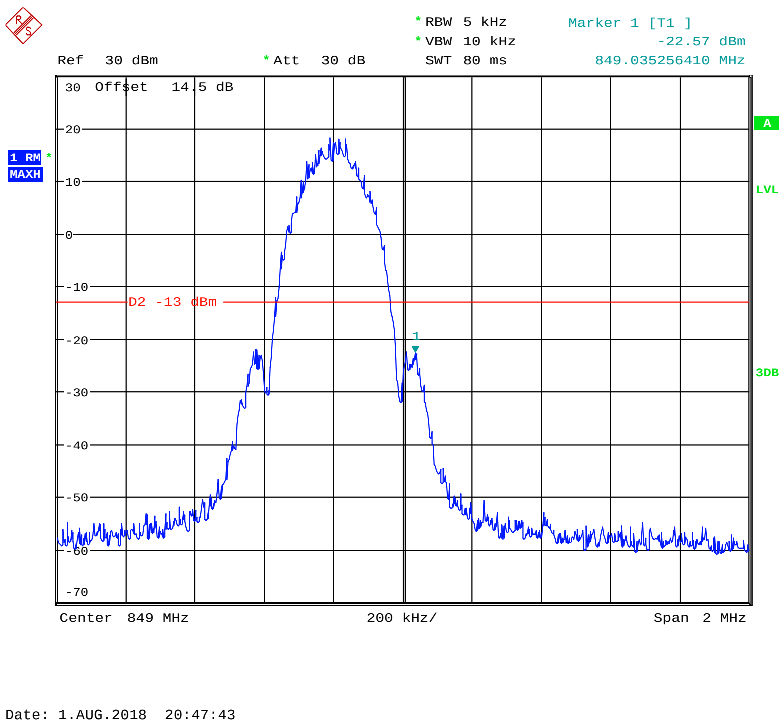
Cellular Band, Right Band Edge for GSM (GMSK) Mode



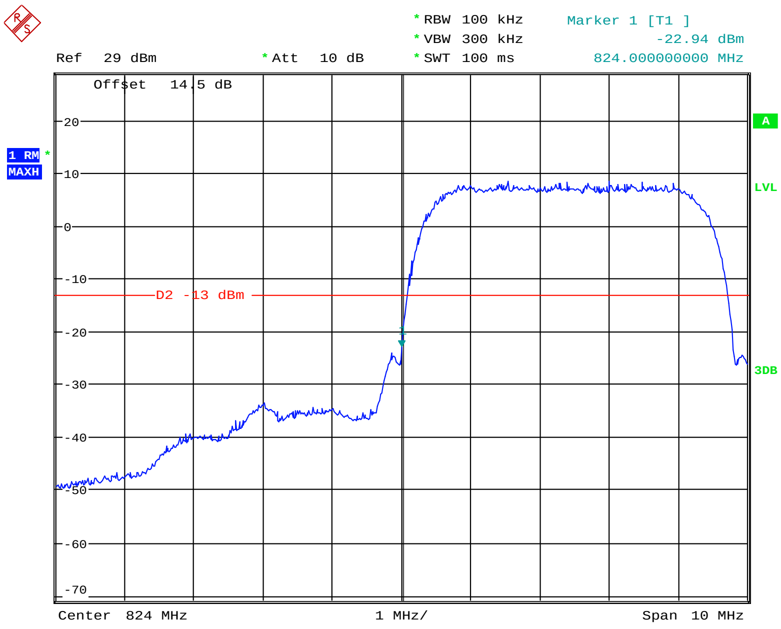
Cellular Band, Left Band Edge for EDGE Mode



Cellular Band, Right Band Edge for EDGE Mode

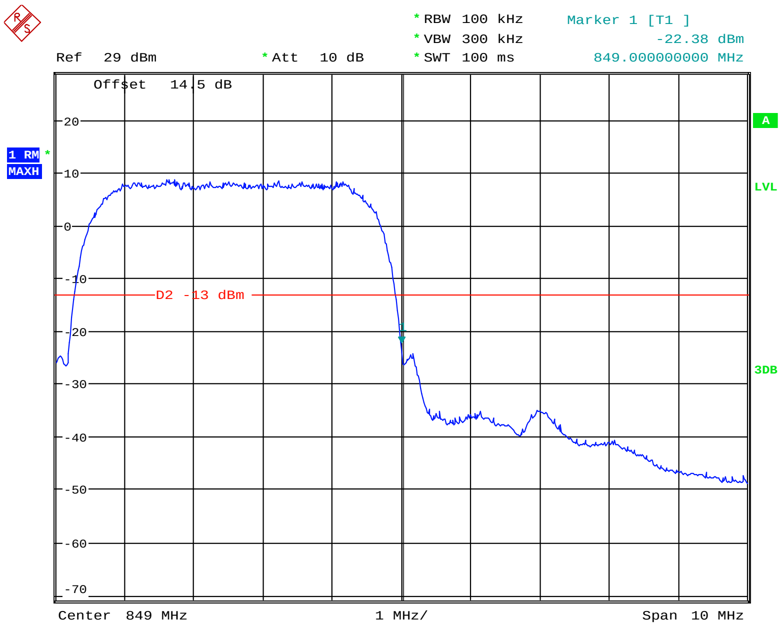


Cellular Band, Left Band Edge for WCDMA (BPSK) Mode



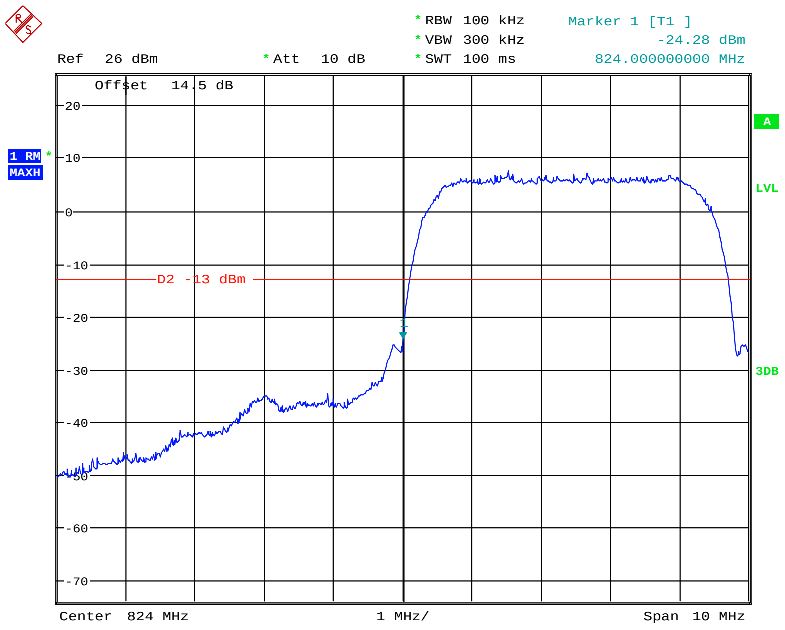
Date: 1.AUG.2018 23:11:30

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



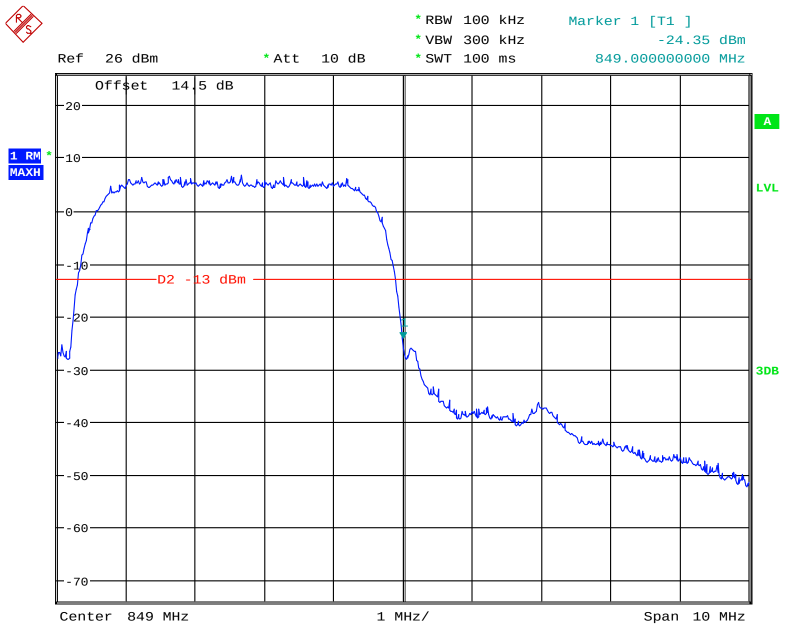
Date: 1.AUG.2018 23:15:13

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



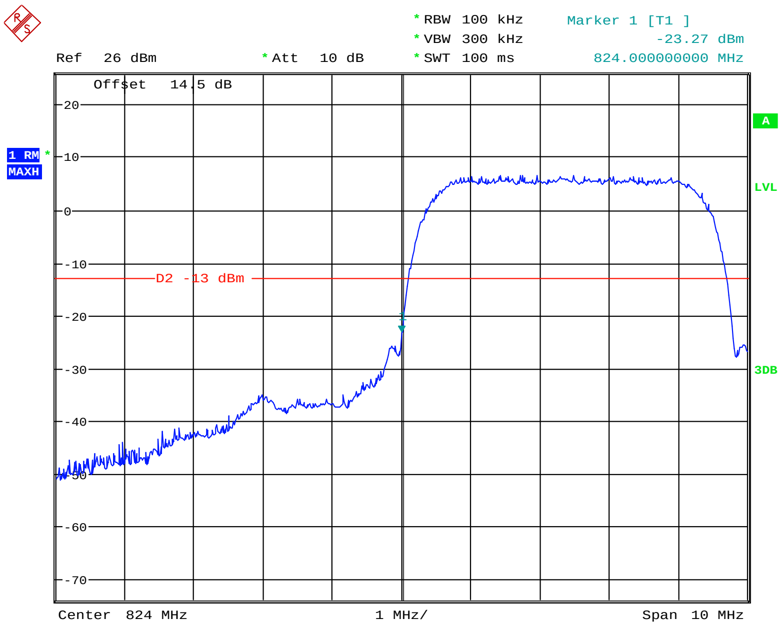
Date: 2.AUG.2018 00:00:11

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



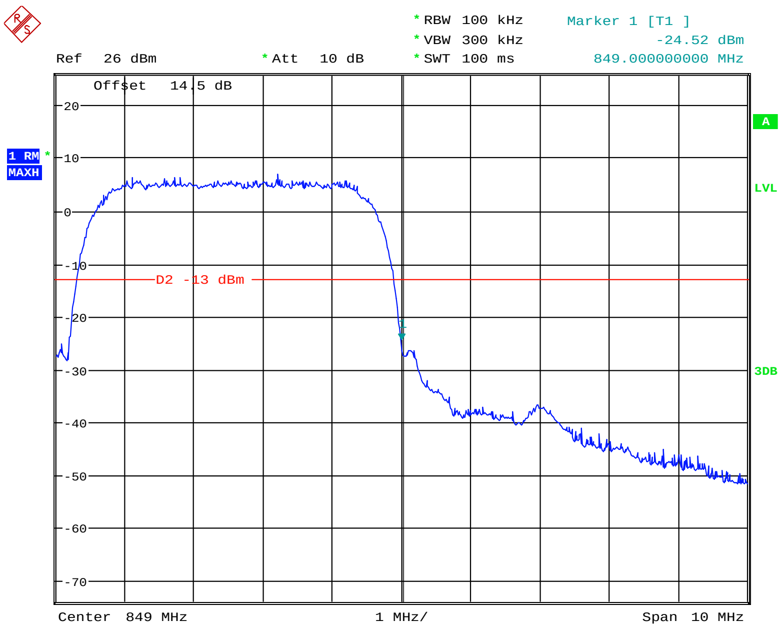
Date: 2.AUG.2018 00:00:40

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



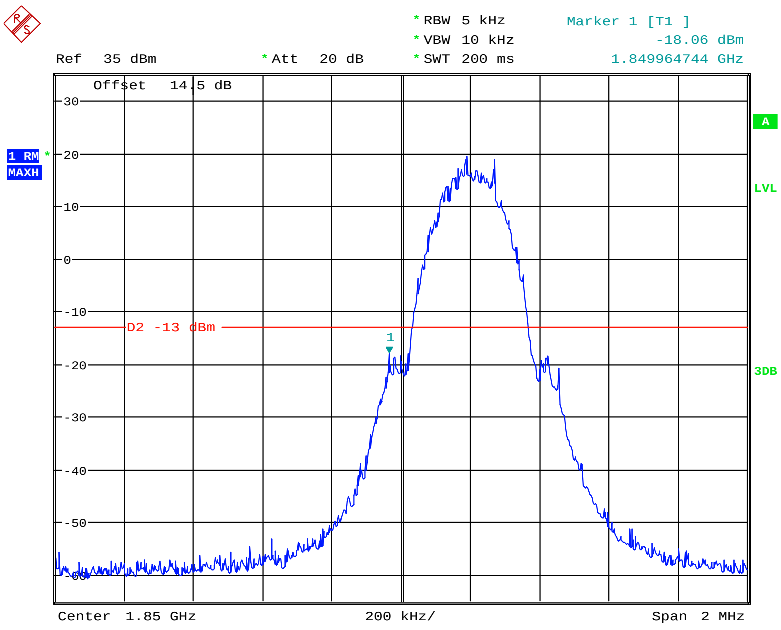
Date: 2.AUG.2018 00:05:24

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



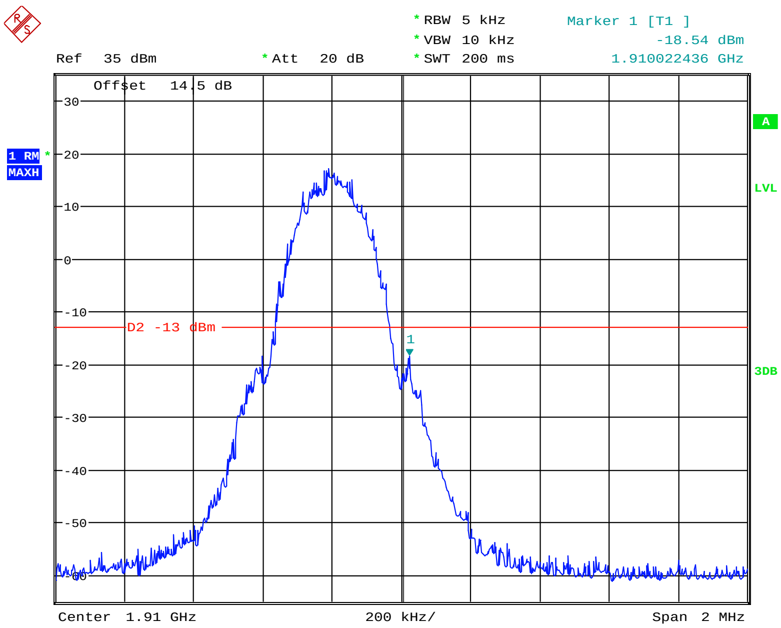
Date: 2.AUG.2018 00:04:34

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



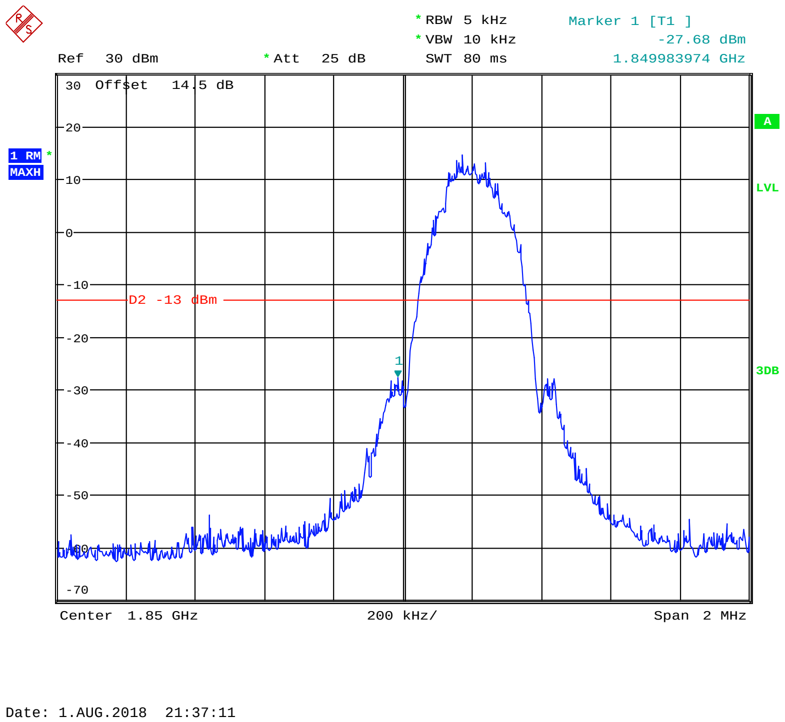
Date: 1.AUG.2018 21:11:58

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

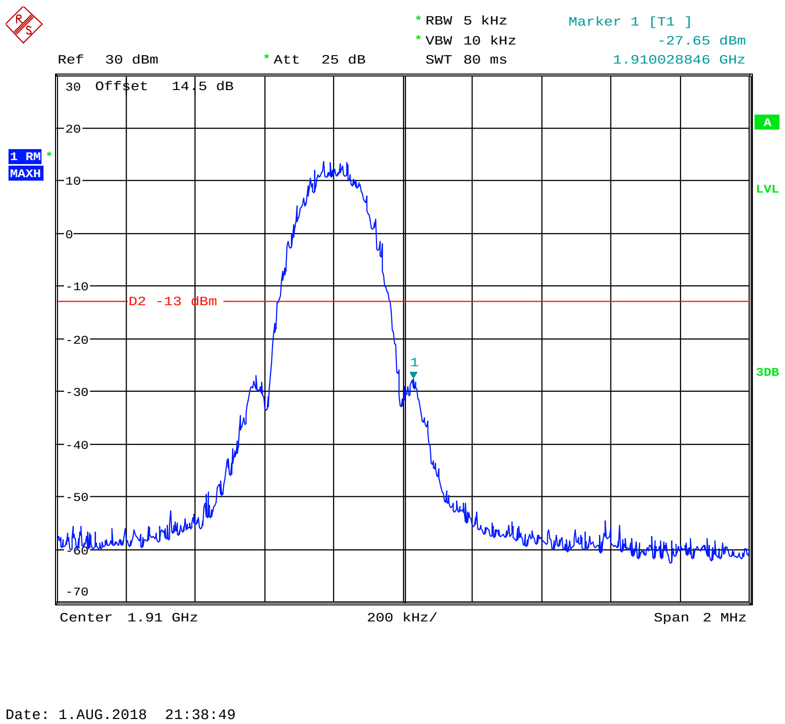


Date: 1.AUG.2018 21:12:37

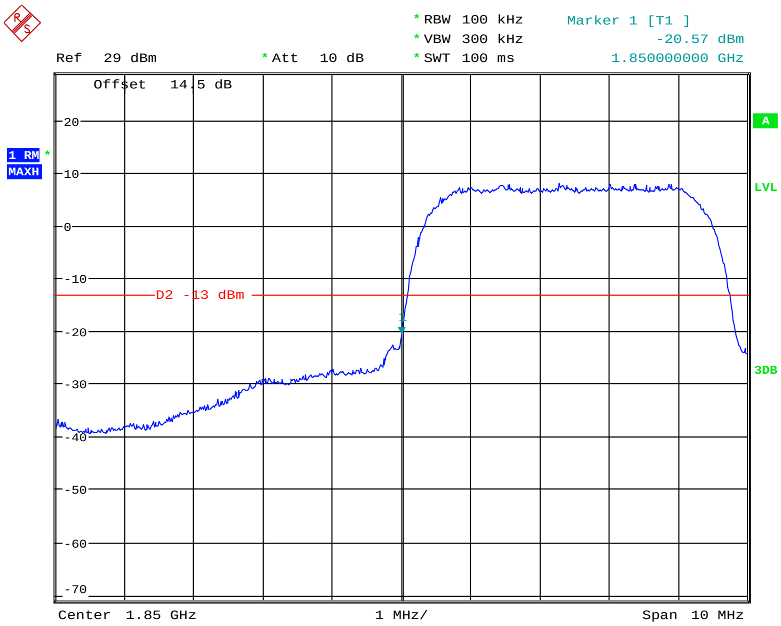
PCS Band, Left Band Edge for EDGE Mode



PCS Band, Right Band Edge for EDGE Mode

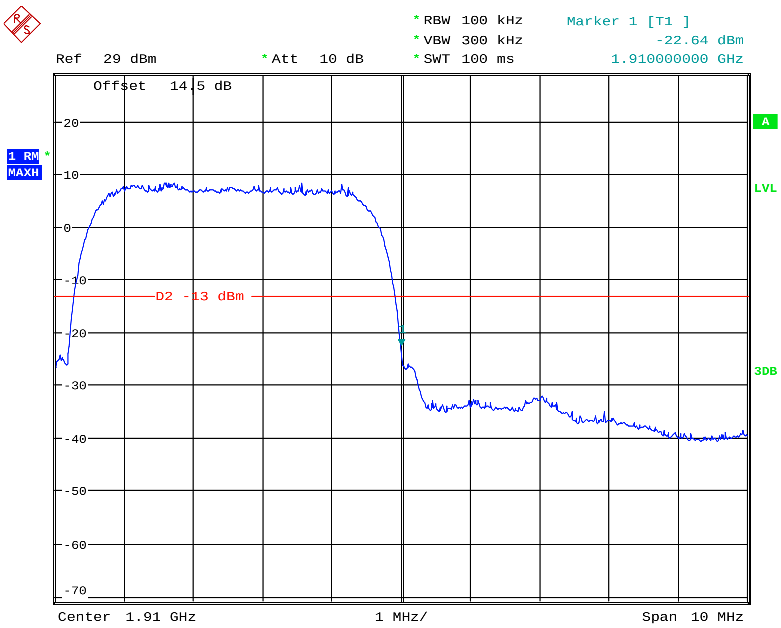


PCS Band, Left Band Edge for WCDMA (BPSK) Mode



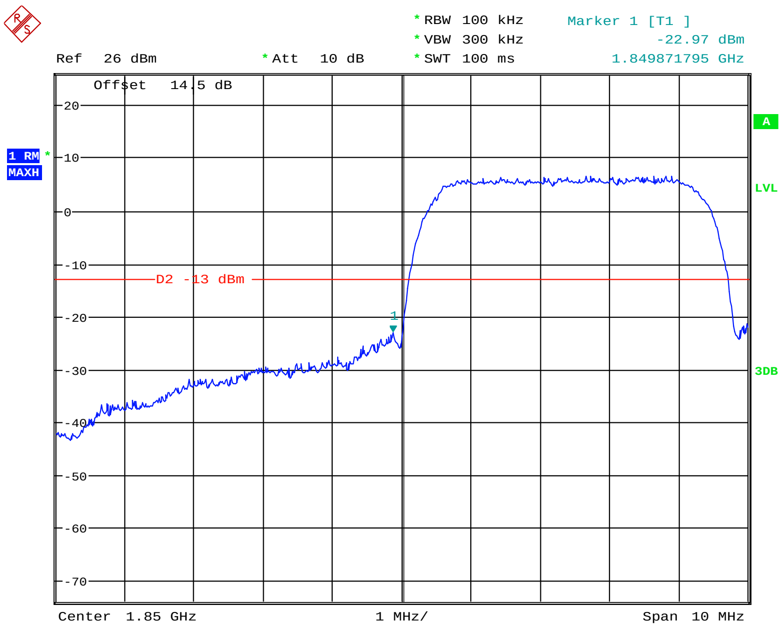
Date: 1.AUG.2018 23:17:57

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



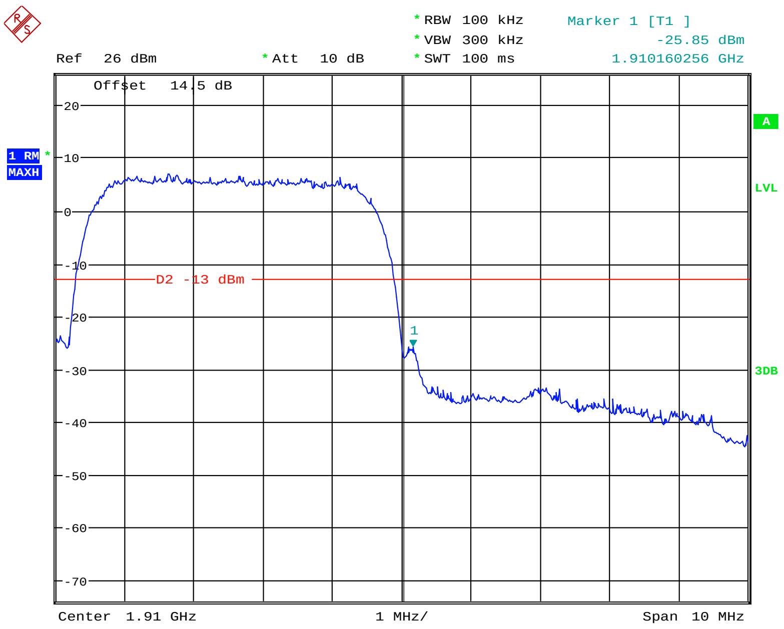
Date: 1.AUG.2018 23:18:34

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



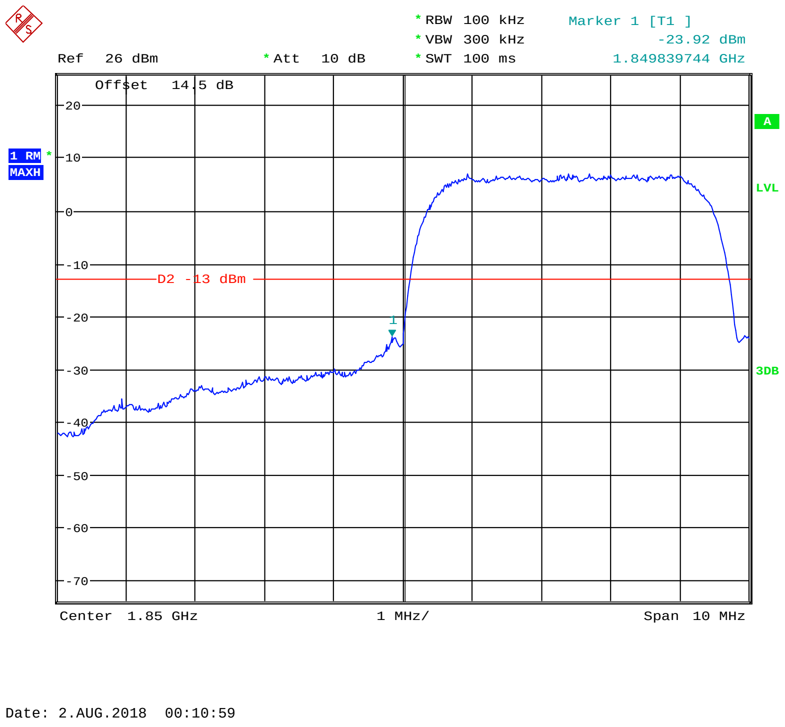
Date: 1.AUG.2018 23:56:41

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

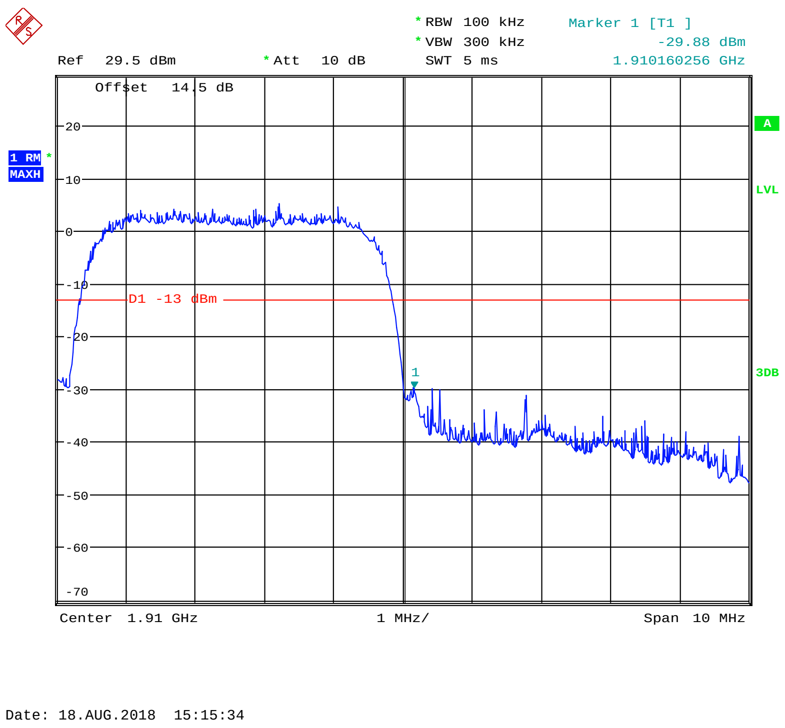


Date: 1.AUG.2018 23:57:45

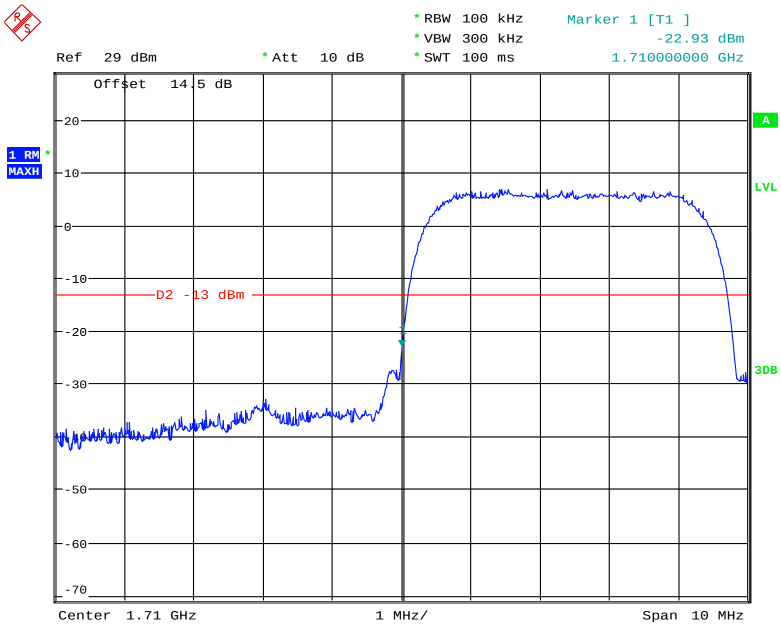
PCS Band, Left Band Edge for HSUPA (BPSK) Mode



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

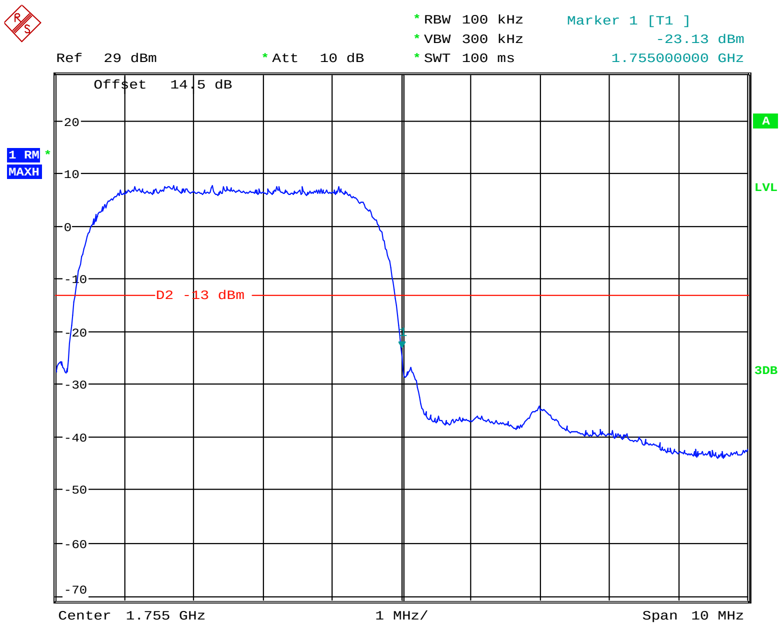


AWS Band, Left Band Edge for WCDMA (BPSK) Mode



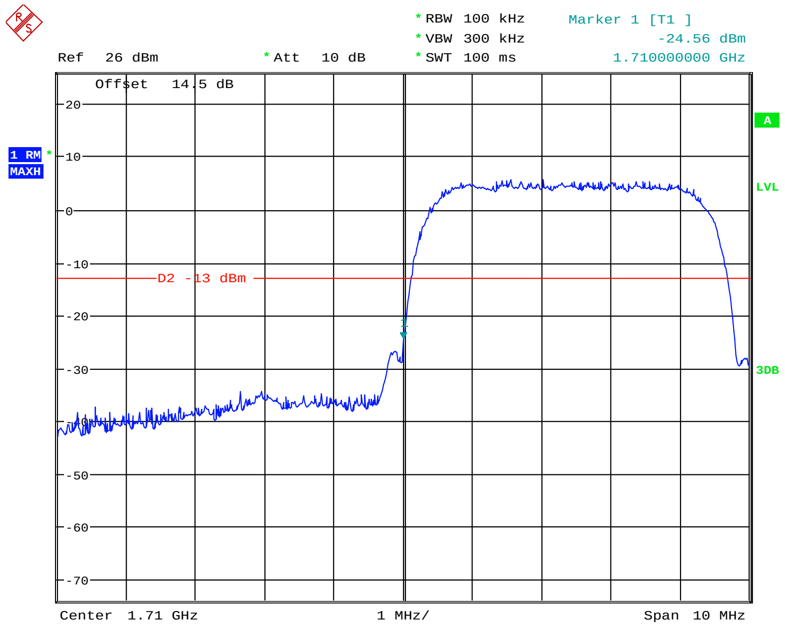
Date: 1.AUG.2018 23:17:02

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



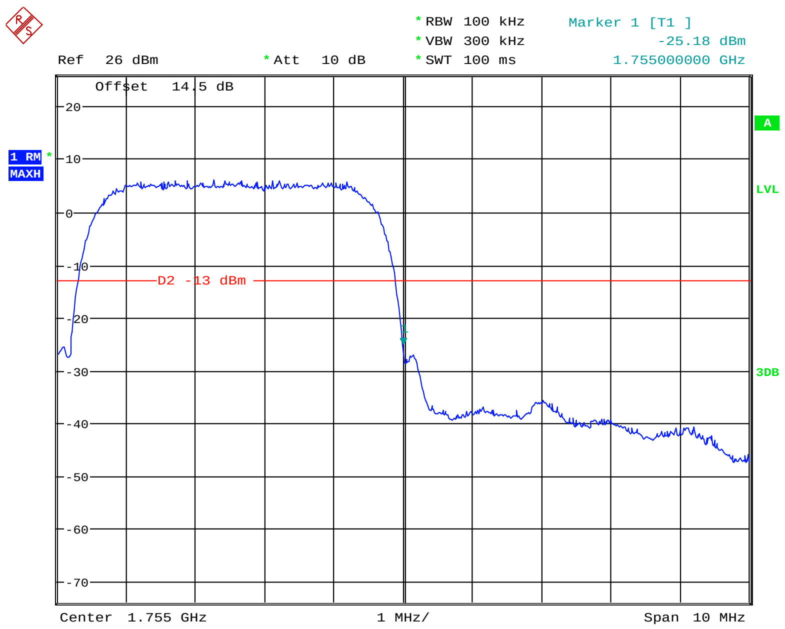
Date: 1.AUG.2018 23:16:19

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



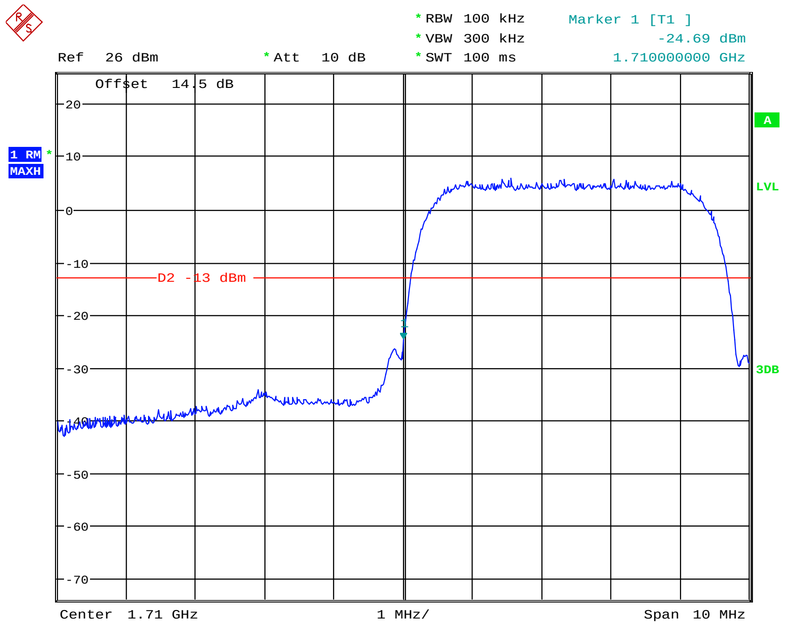
Date: 1.AUG.2018 23:58:44

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



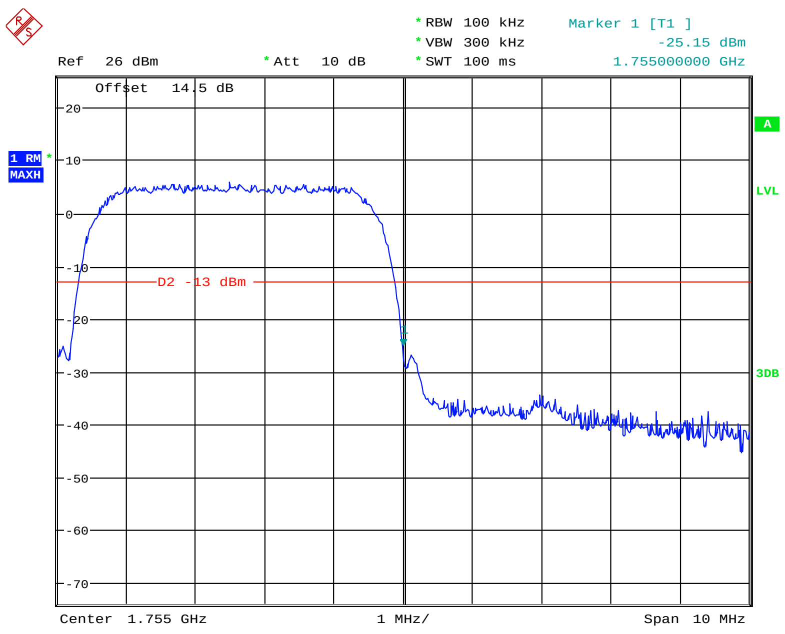
Date: 1.AUG.2018 23:59:28

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



Date: 2.AUG.2018 00:07:29

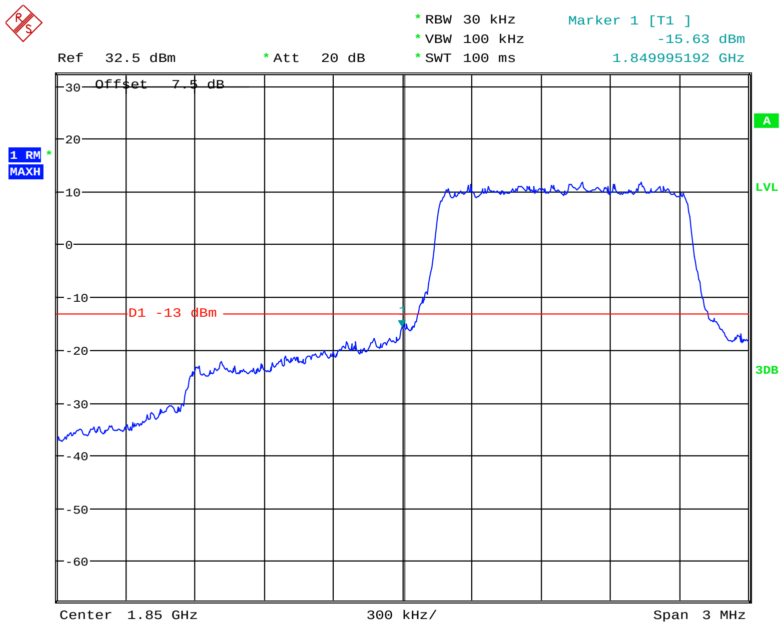
AWS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 2.AUG.2018 00:06:18

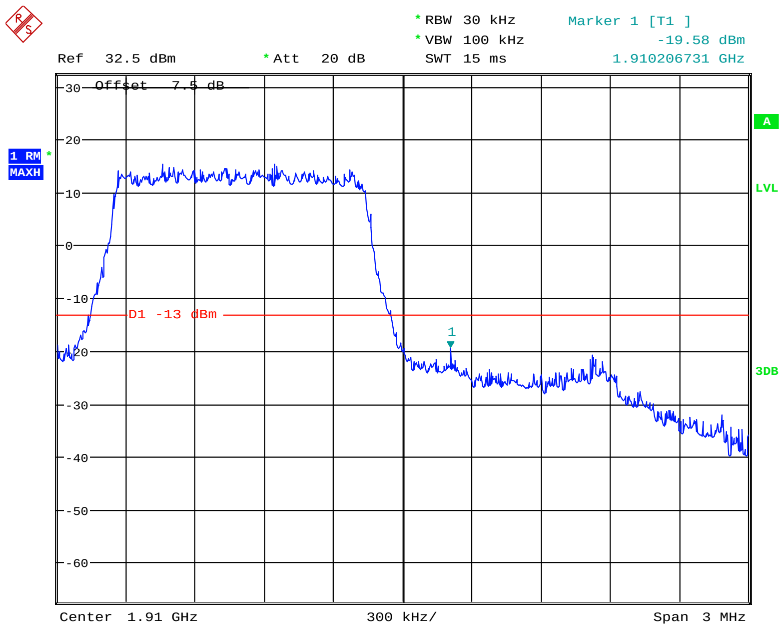
LTE Band 2:

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



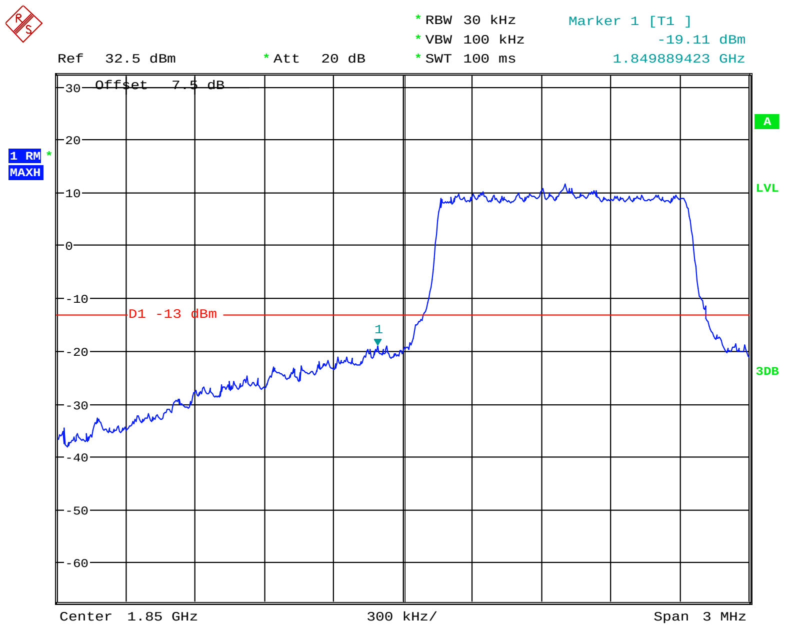
Date: 2.AUG.2018 16:30:31

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



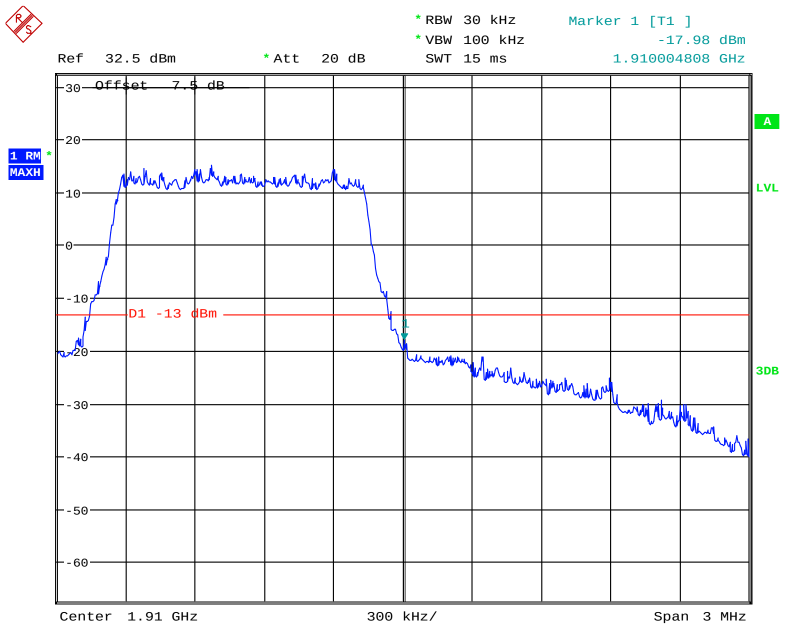
Date: 2.AUG.2018 16:39:34

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



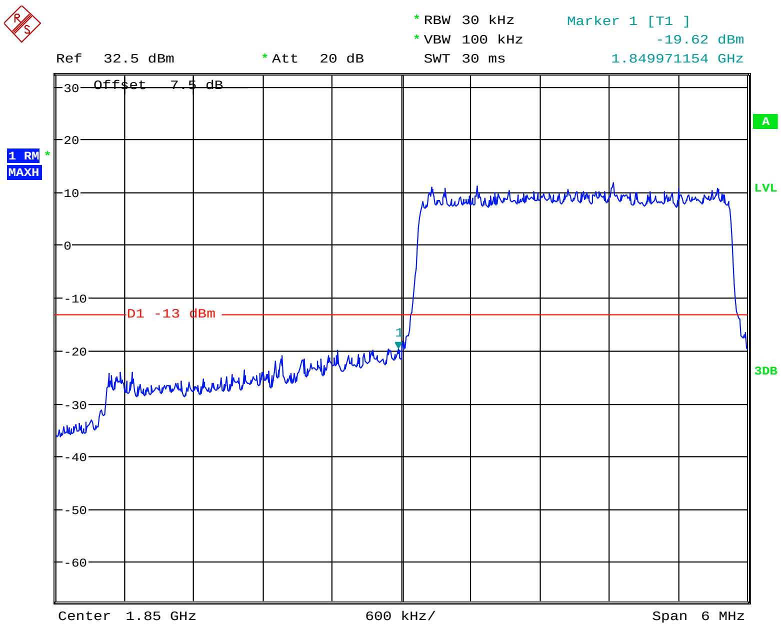
Date: 2.AUG.2018 16:31:47

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



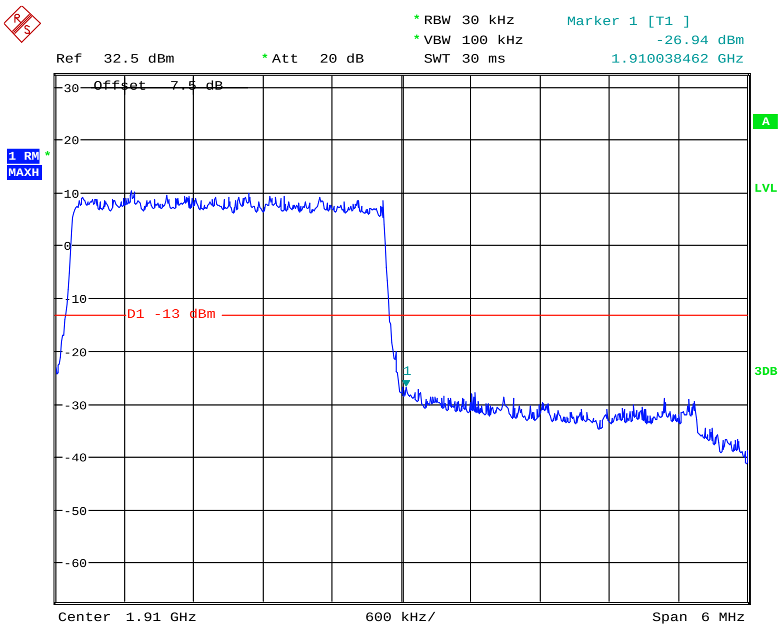
Date: 2.AUG.2018 16:38:54

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



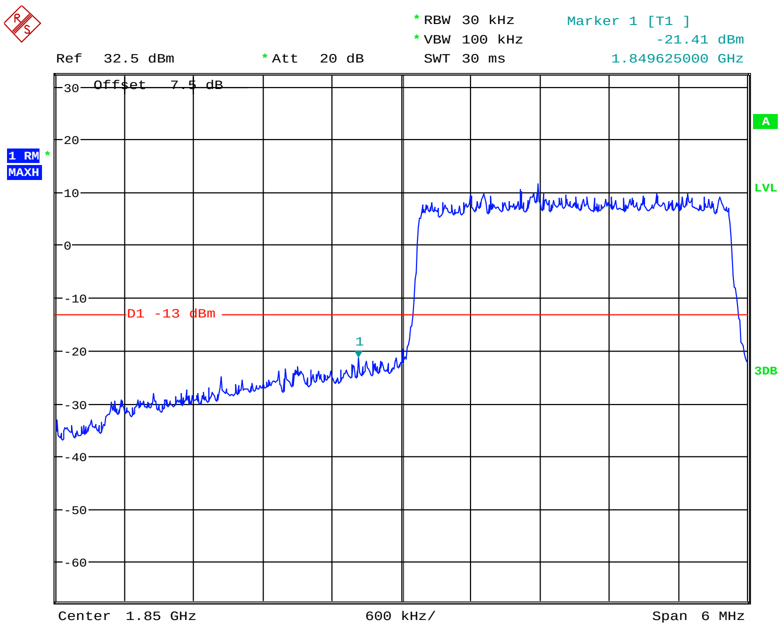
Date: 2.AUG.2018 16:35:05

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



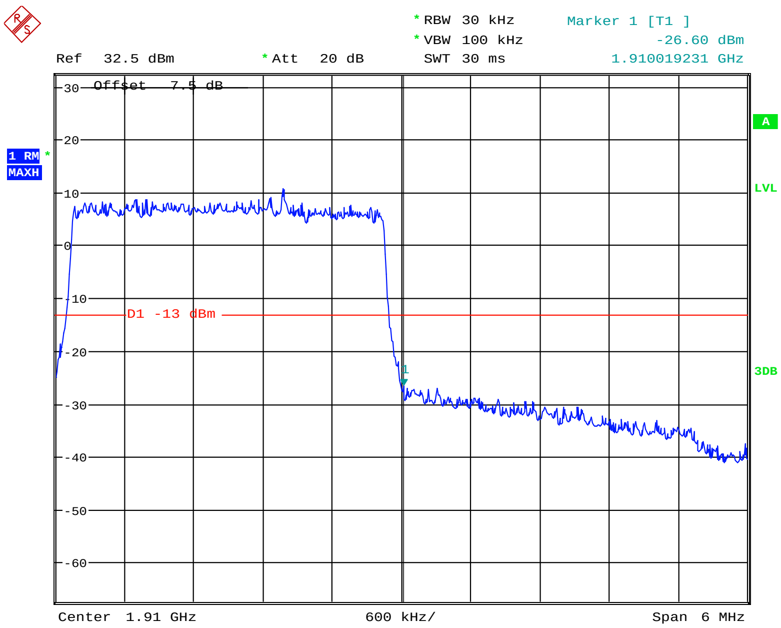
Date: 2.AUG.2018 16:37:27

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



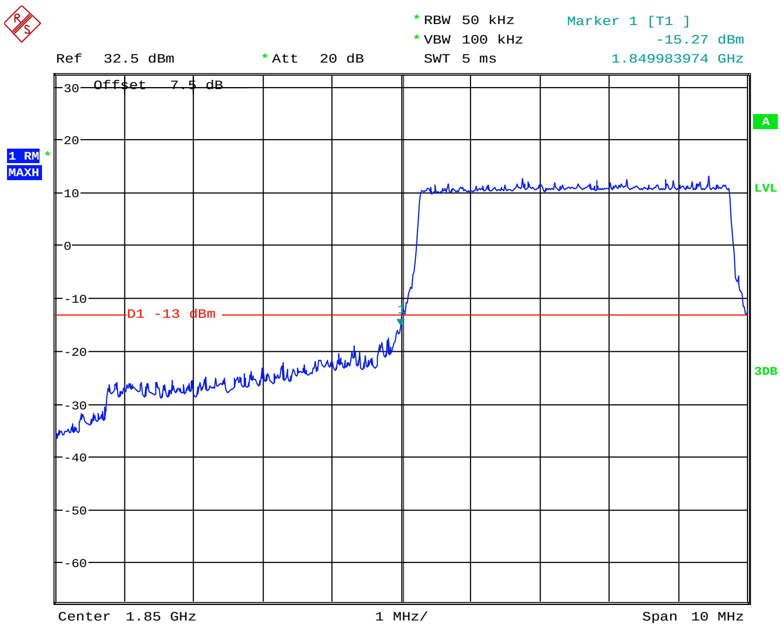
Date: 2.AUG.2018 16:35:45

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



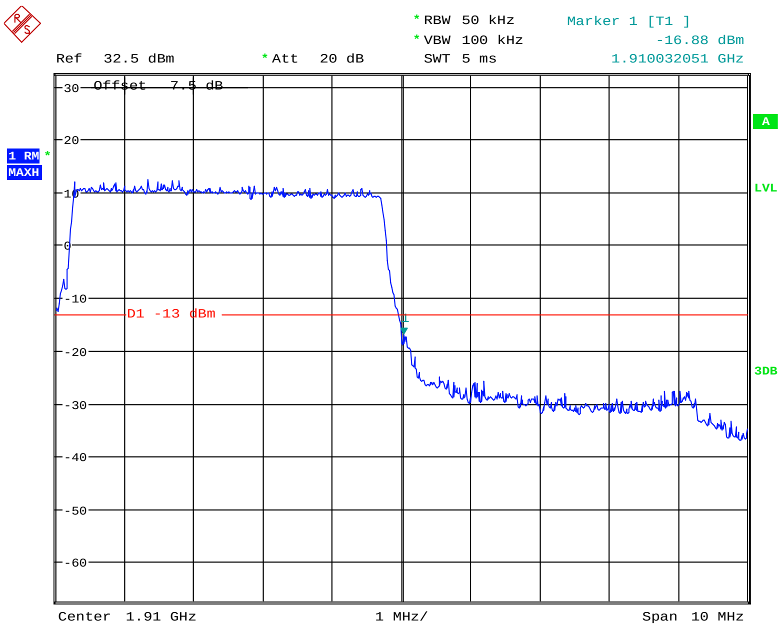
Date: 2.AUG.2018 16:36:45

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



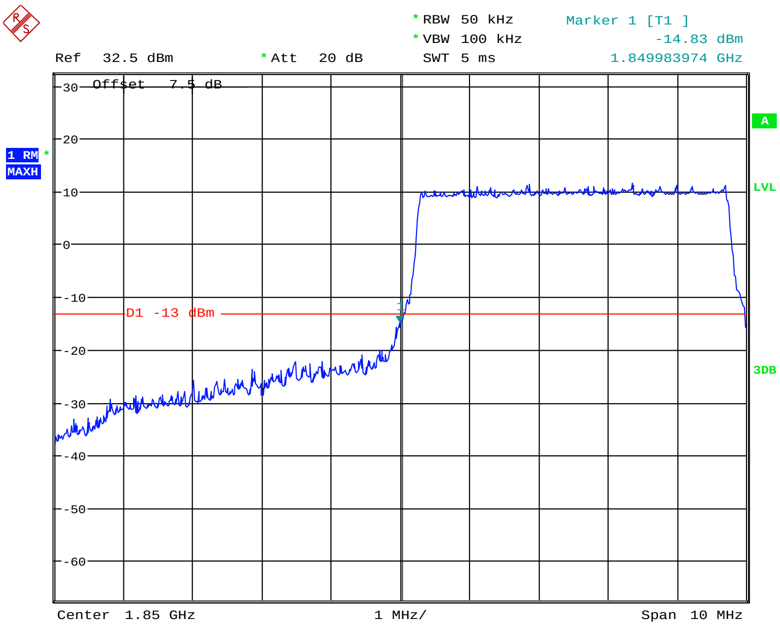
Date: 2.AUG.2018 16:44:30

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



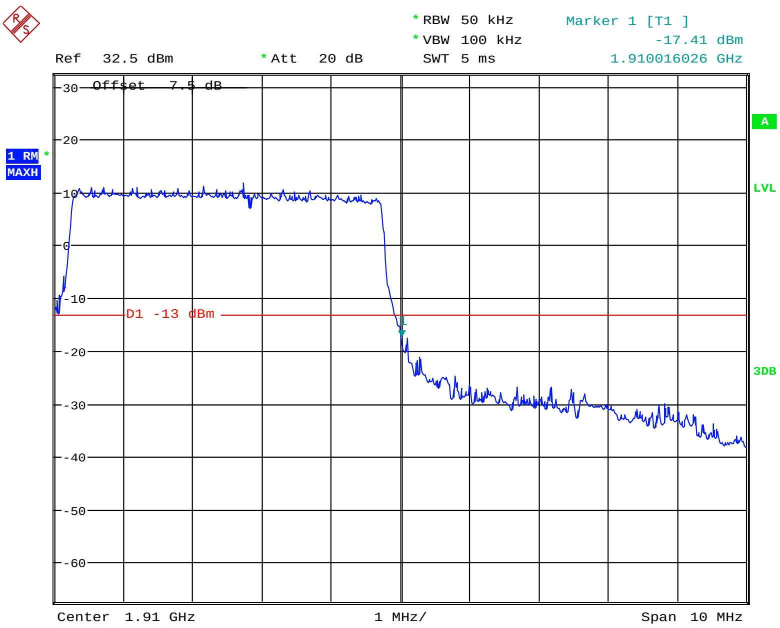
Date: 2.AUG.2018 16:41:45

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



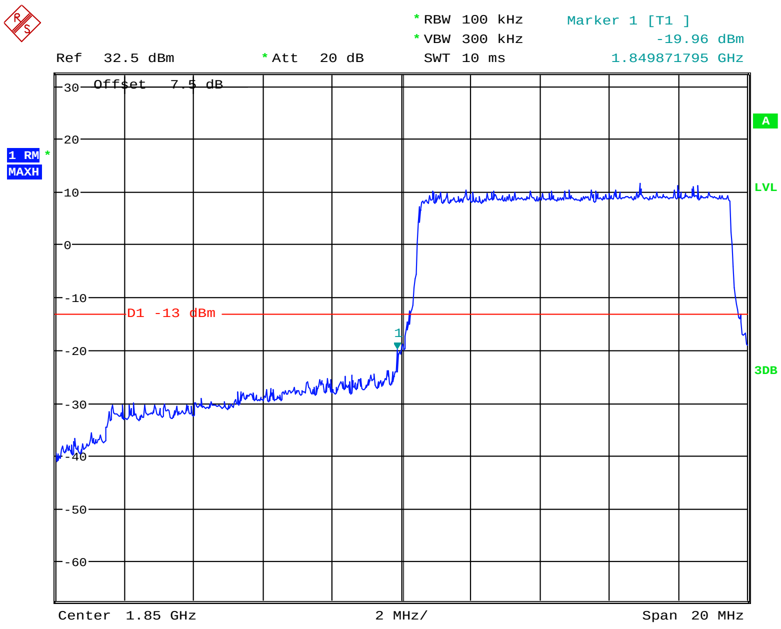
Date: 2.AUG.2018 16:43:44

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



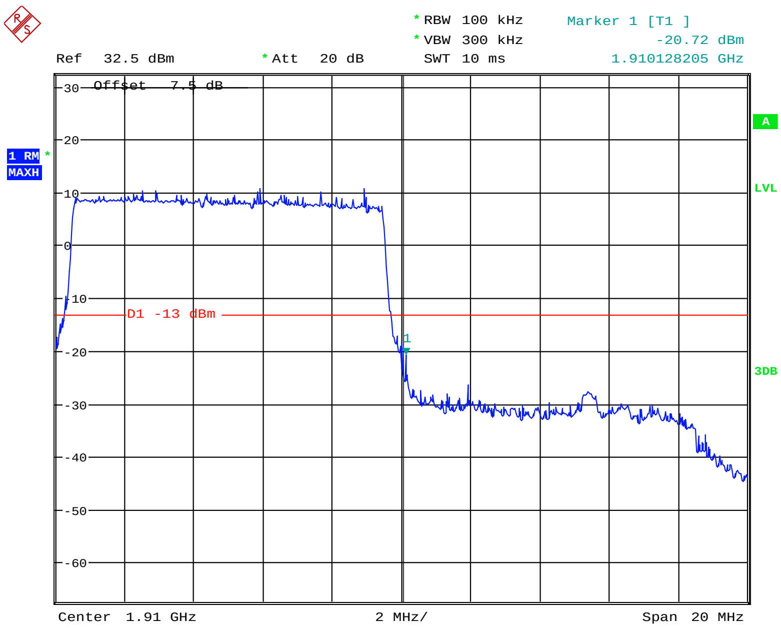
Date: 2.AUG.2018 16:42:58

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



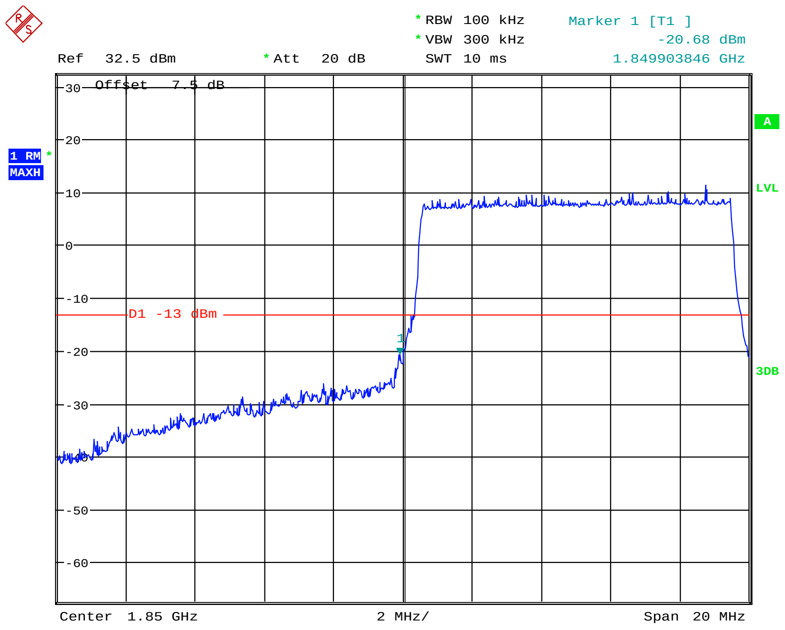
Date: 2.AUG.2018 16:45:53

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



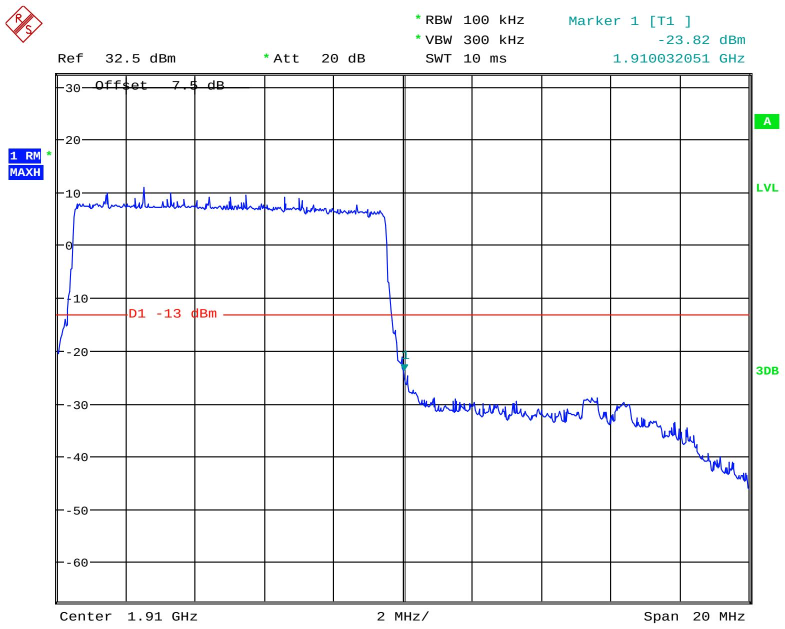
Date: 2.AUG.2018 16:48:00

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



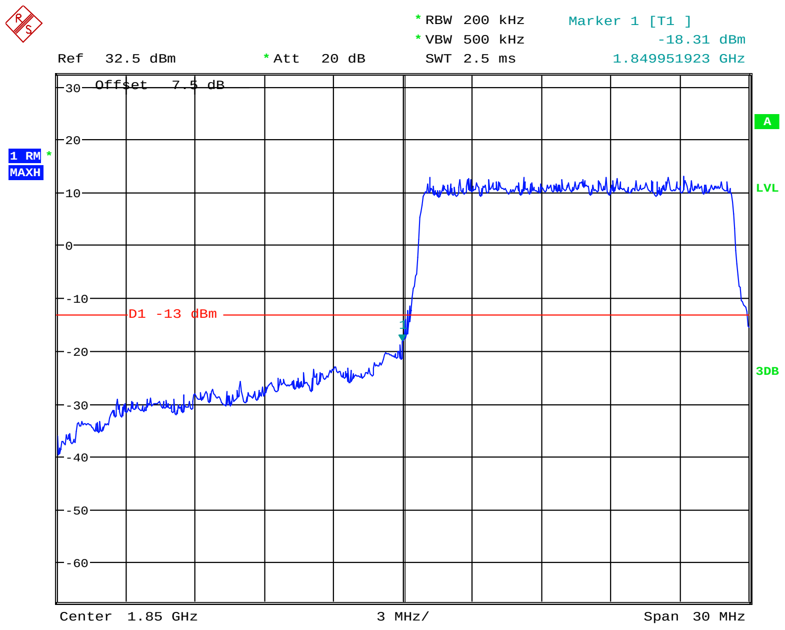
Date: 2.AUG.2018 16:46:38

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



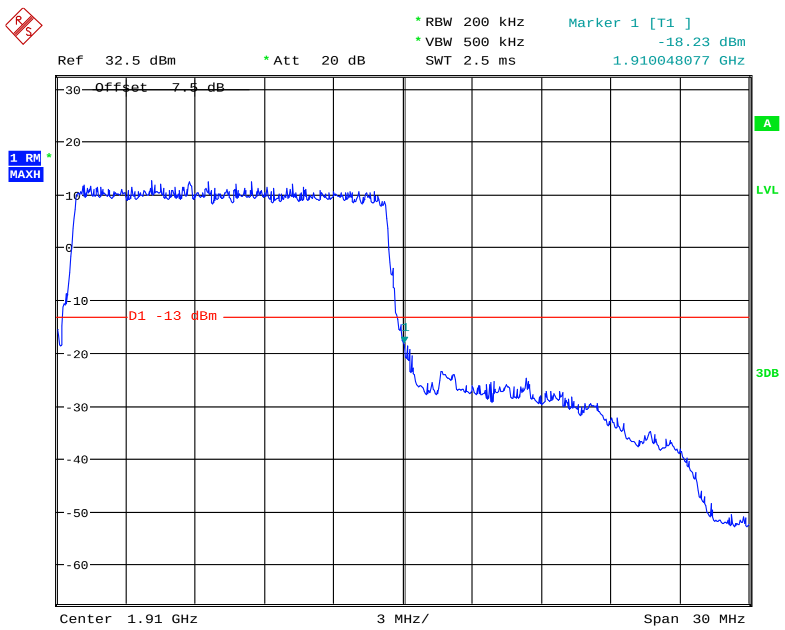
Date: 2.AUG.2018 16:47:29

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



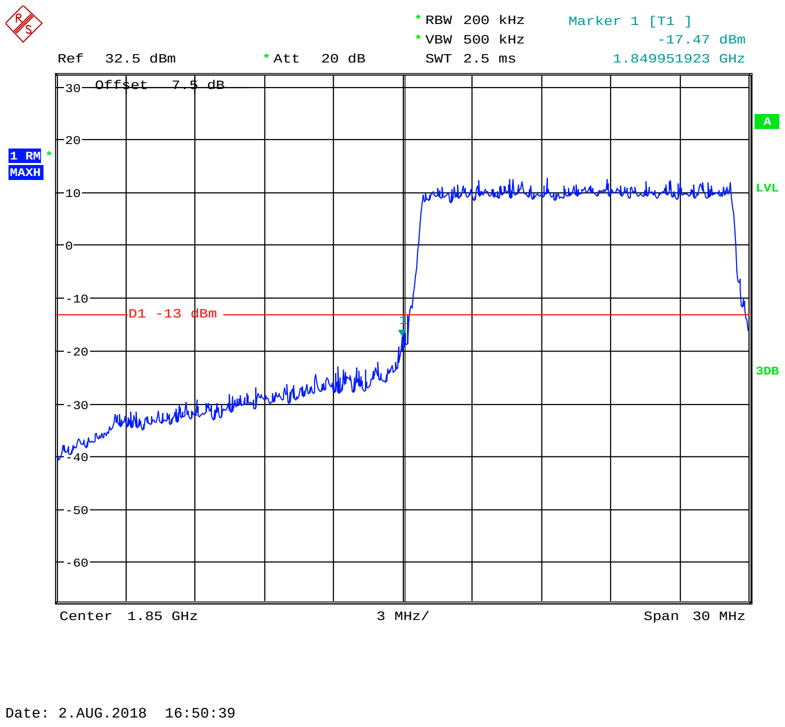
Date: 2.AUG.2018 16:51:07

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

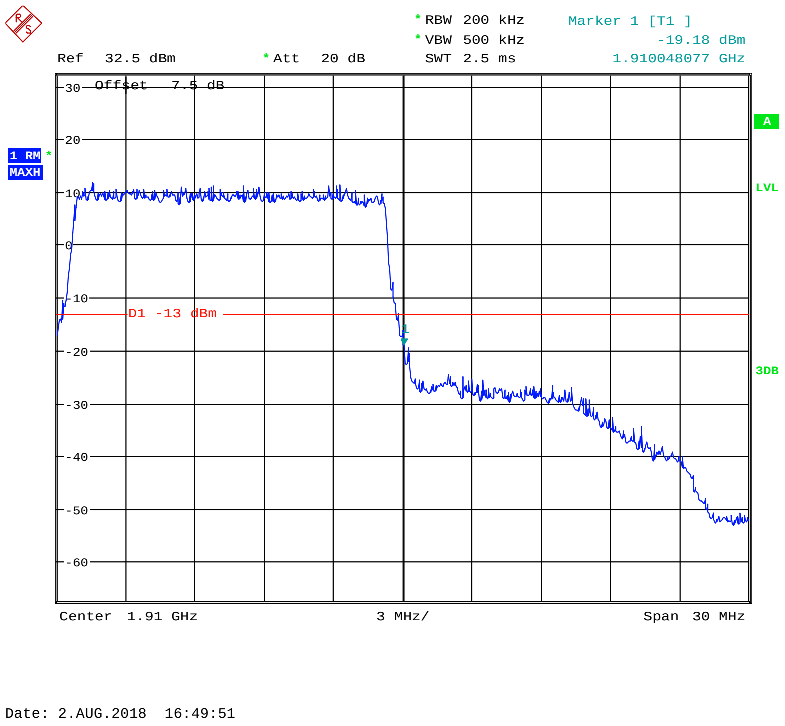


Date: 2.AUG.2018 16:49:14

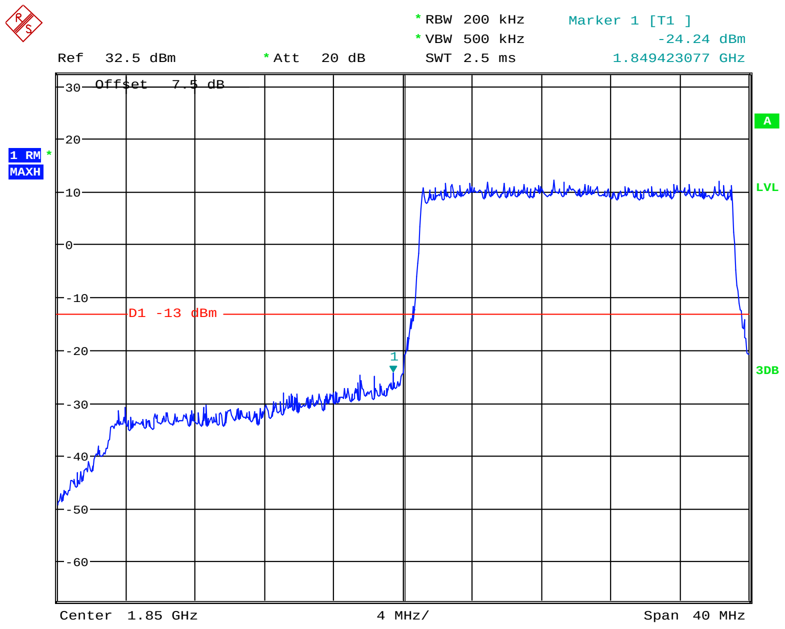
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



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

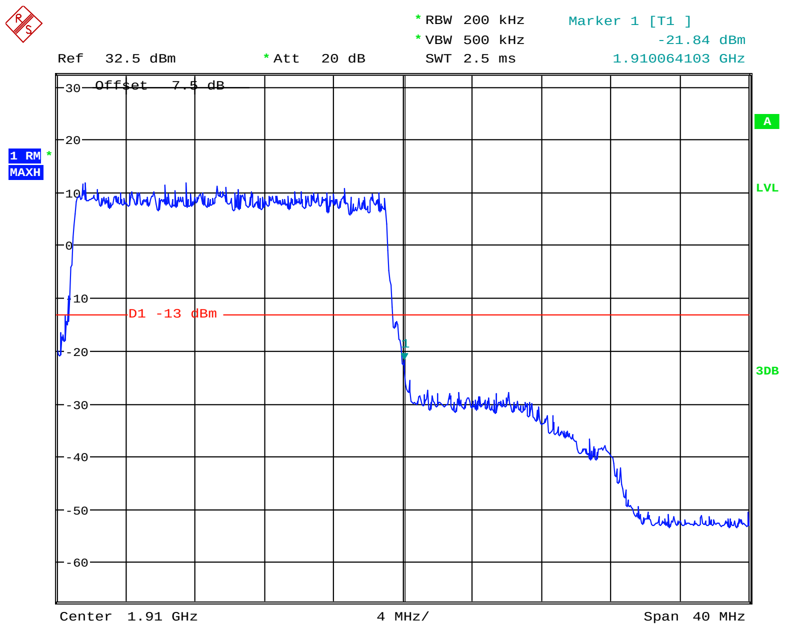


QPSK (20.0 MHz, FULL RB) - Left Band Edge



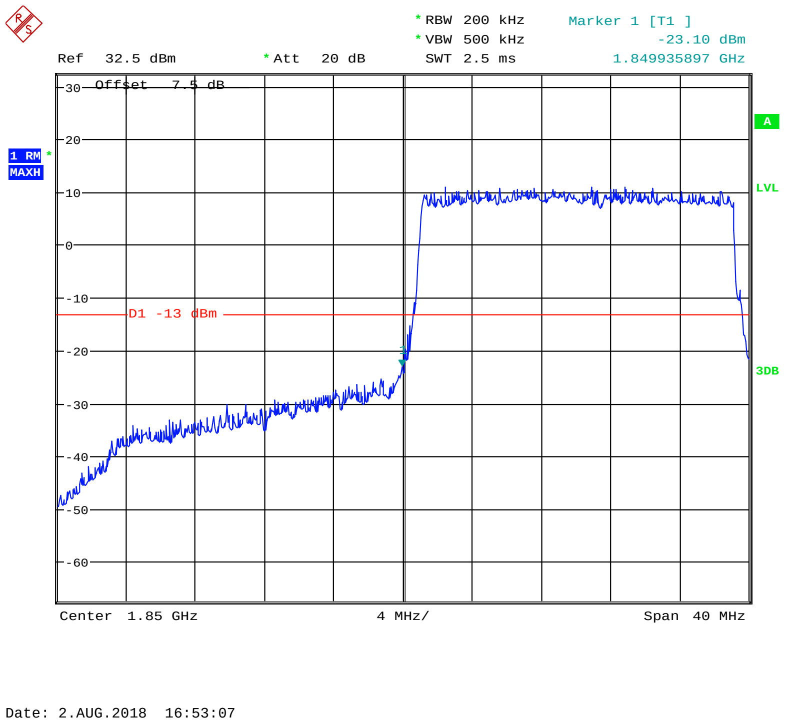
Date: 2.AUG.2018 16:52:22

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

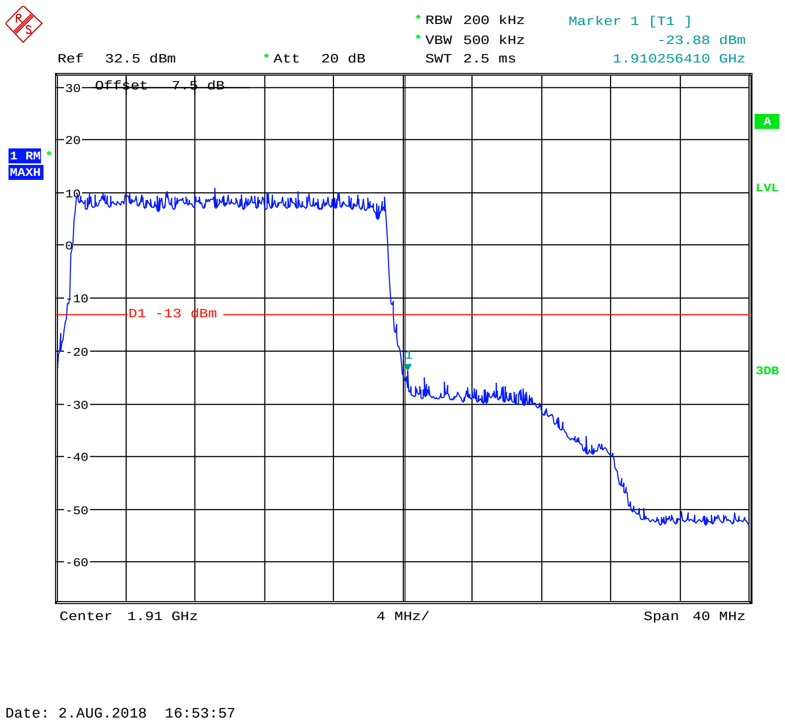


Date: 2.AUG.2018 16:54:20

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

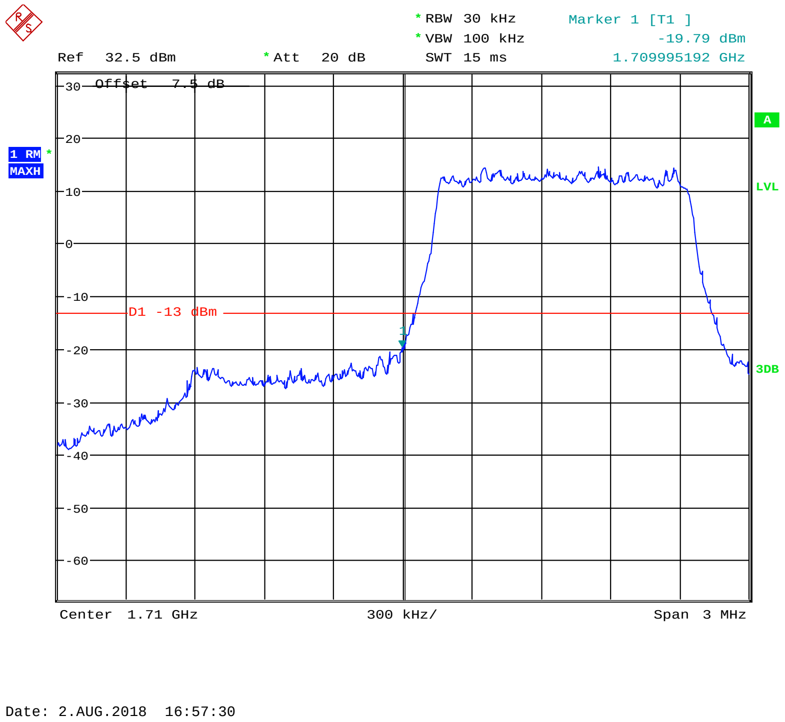


16-QAM (20.0 MHz, FULL RB) - Right Band Edge

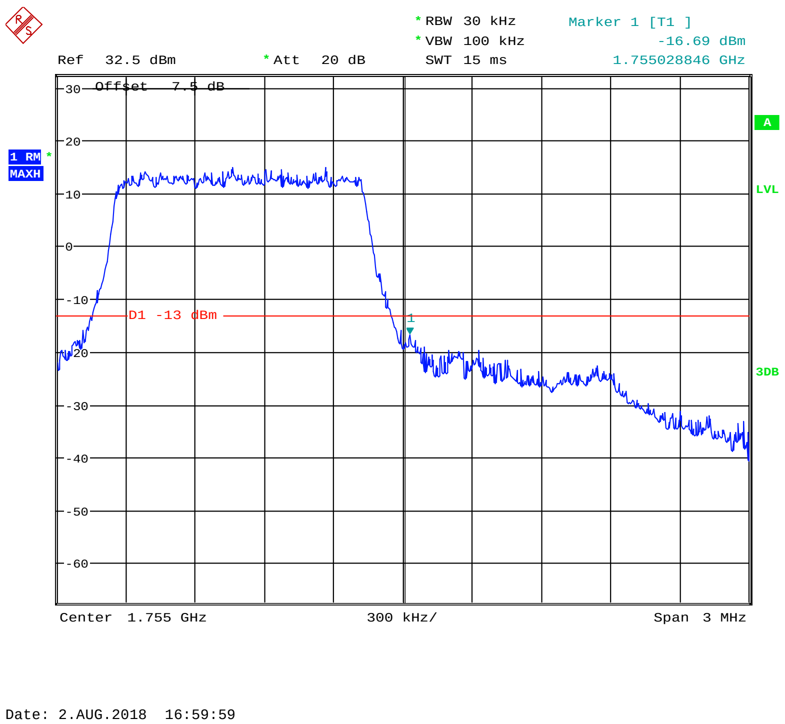


LTE Band 4:

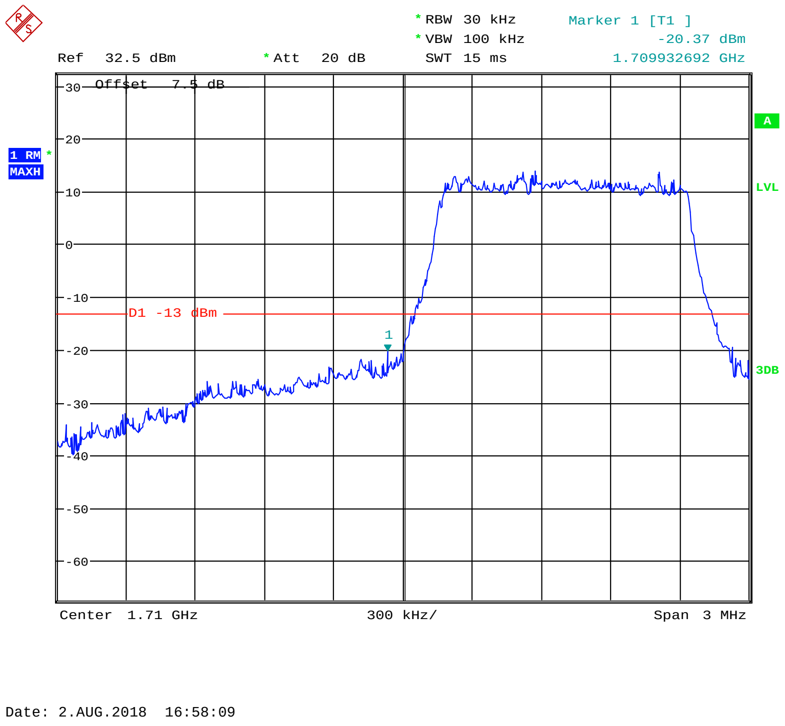
QPSK (1.4 MHz, FULL RB) - Left Band Edge



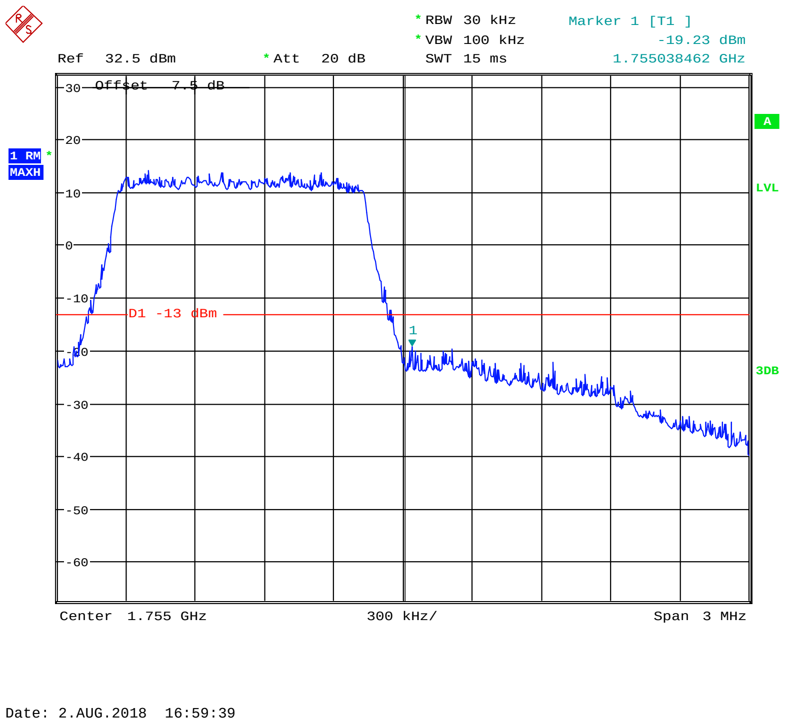
QPSK (1.4 MHz, FULL RB) - Right Band Edge



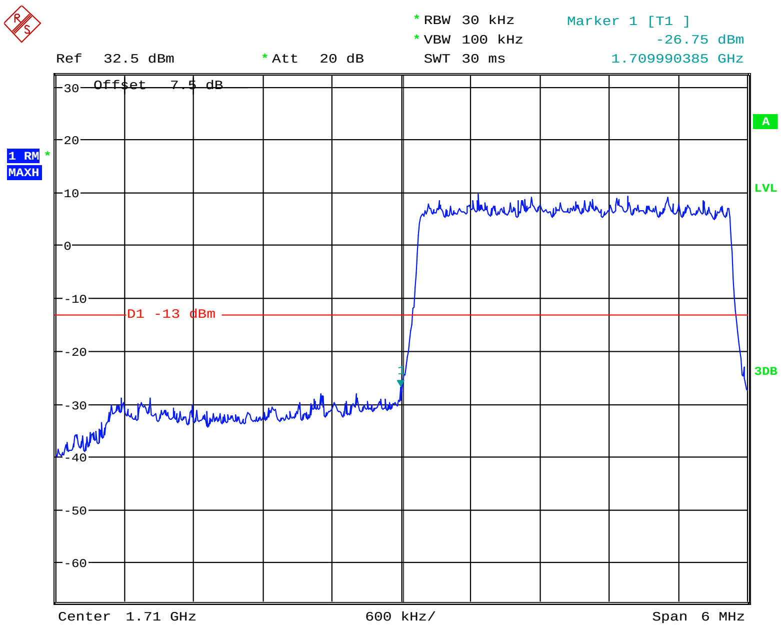
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



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

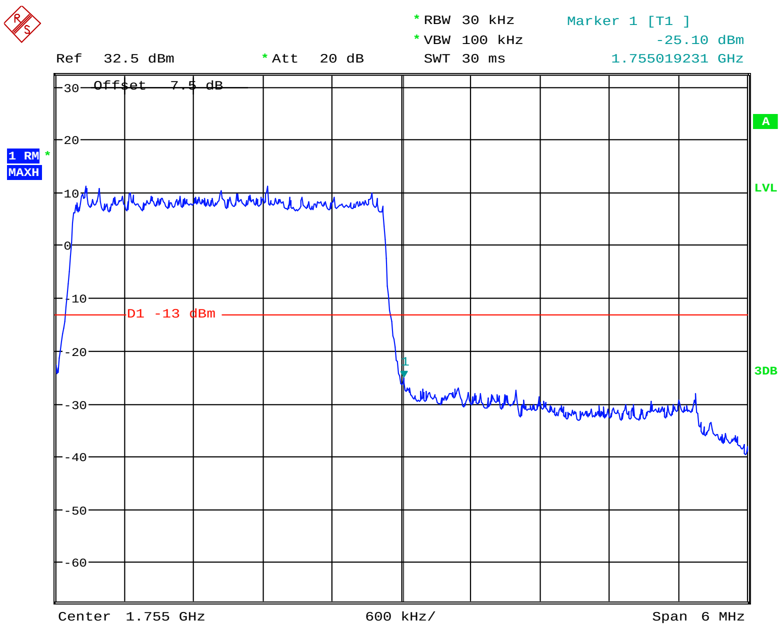


QPSK (3.0 MHz, FULL RB) - Left Band Edge



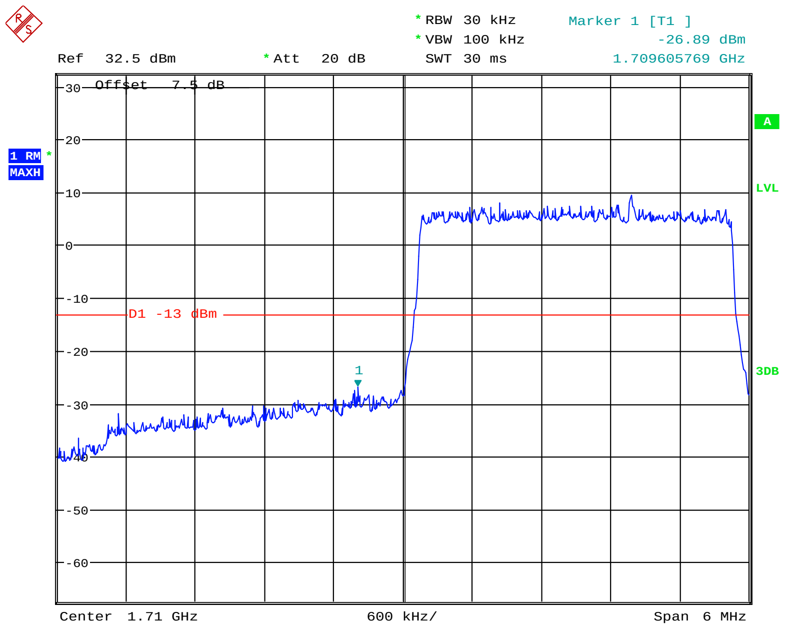
Date: 2.AUG.2018 17:04:46

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



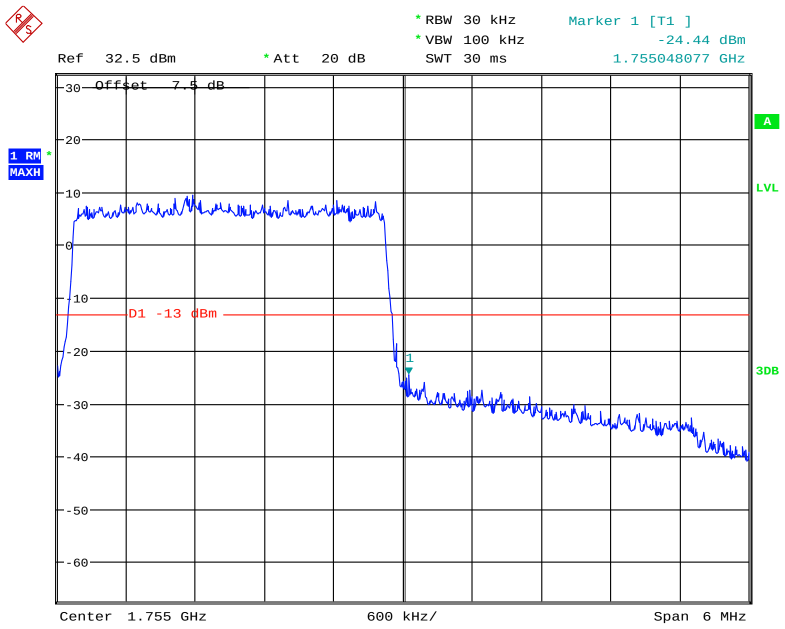
Date: 2.AUG.2018 17:03:07

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



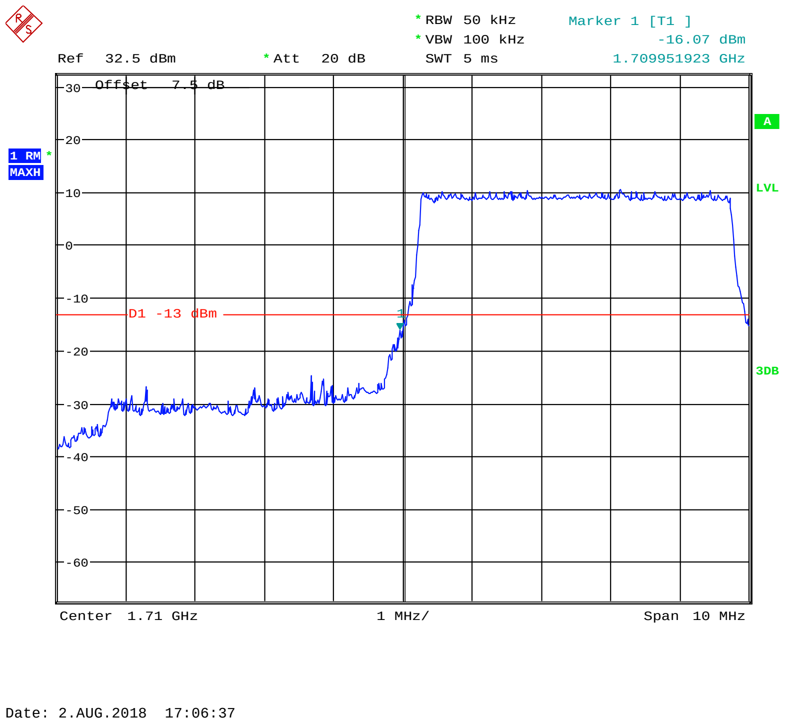
Date: 2.AUG.2018 17:04:05

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

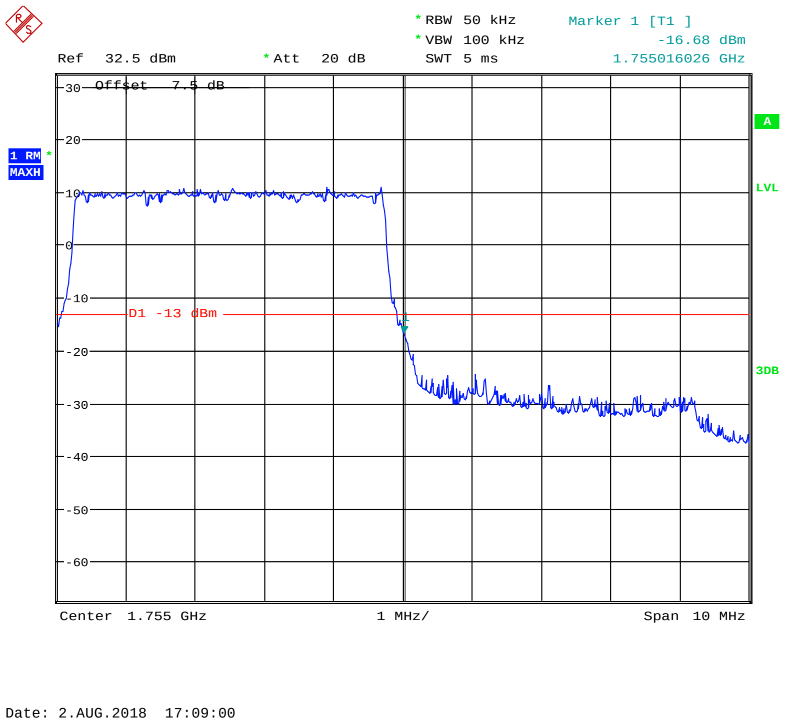


Date: 2.AUG.2018 17:03:24

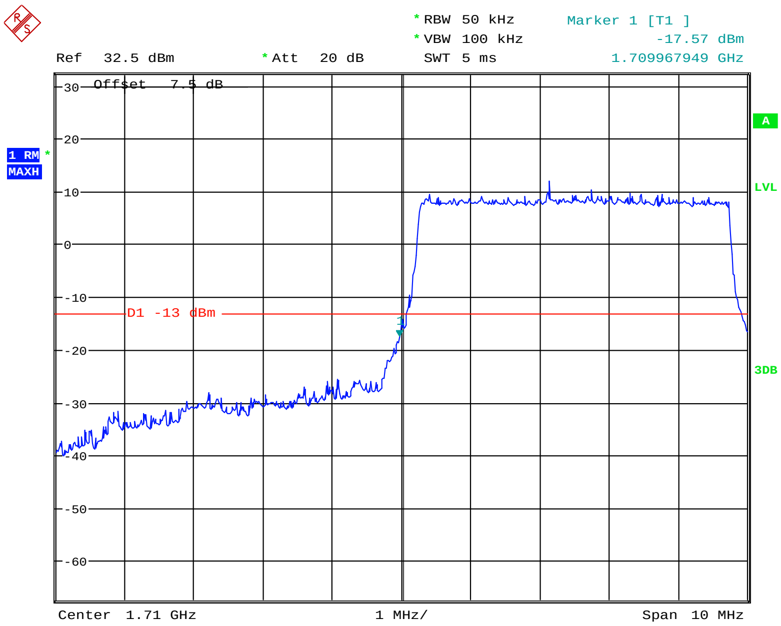
QPSK (5.0 MHz, FULL RB) - Left Band Edge



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

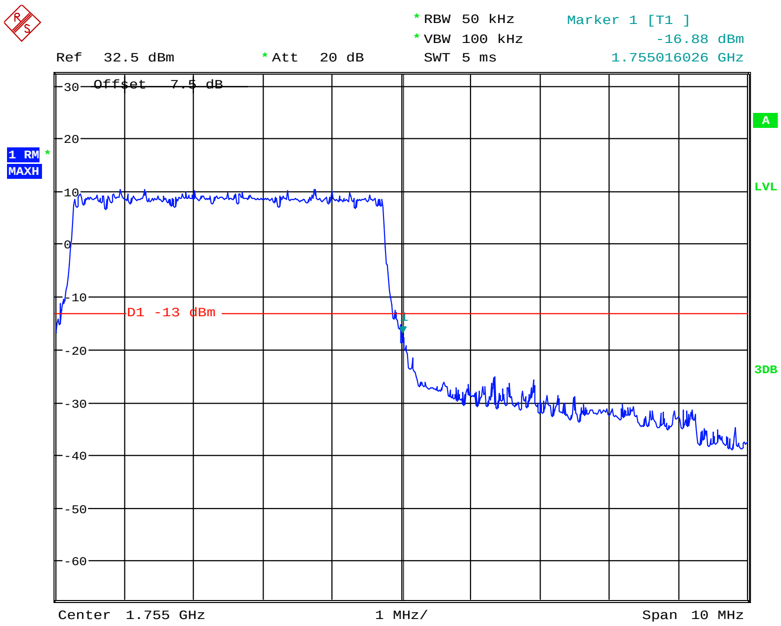


16-QAM (5.0 MHz, FULL RB) - Left Band Edge



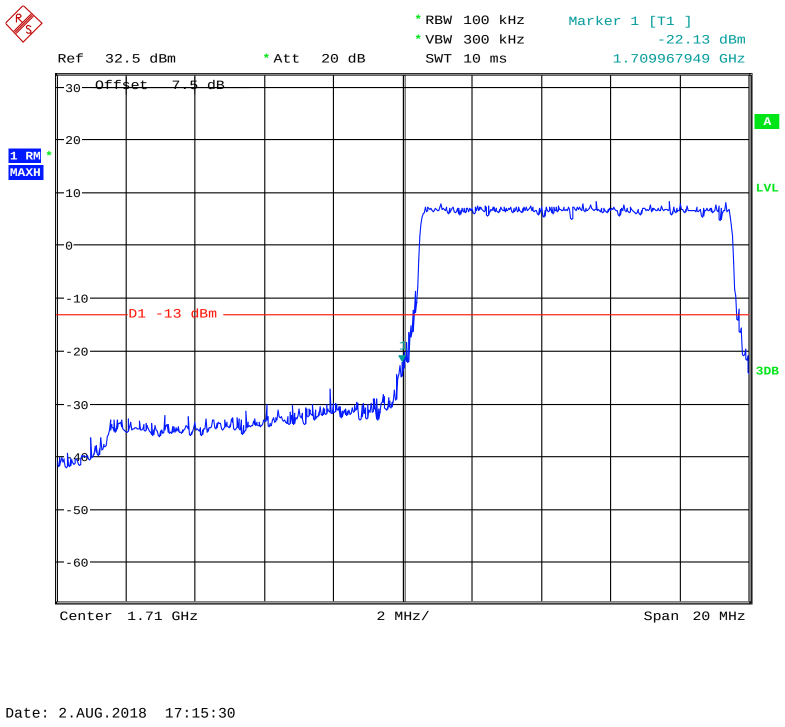
Date: 2.AUG.2018 17:07:28

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

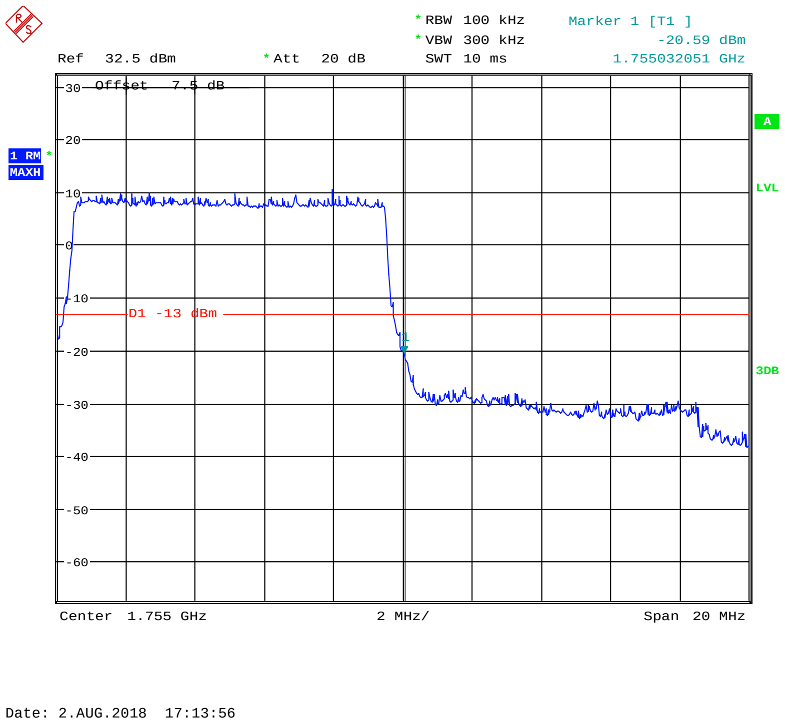


Date: 2.AUG.2018 17:08:33

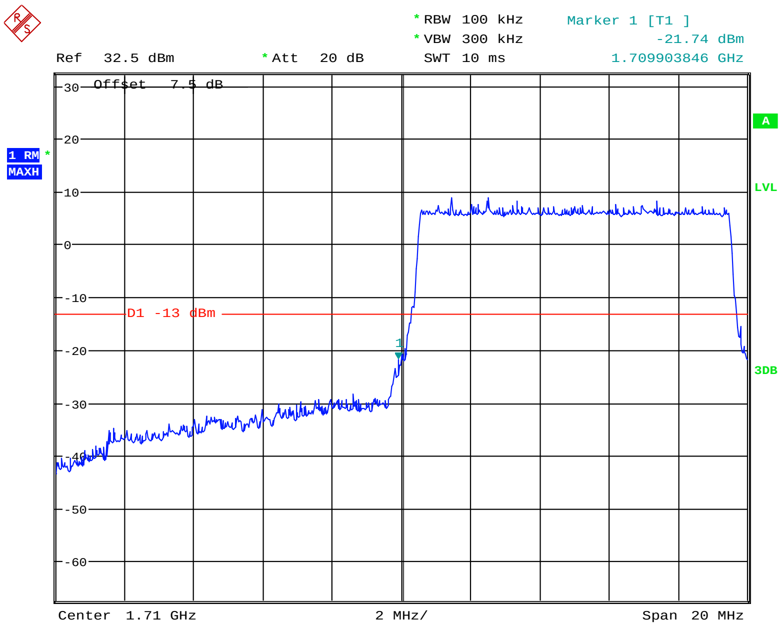
QPSK (10.0 MHz, FULL RB) - Left Band Edge



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

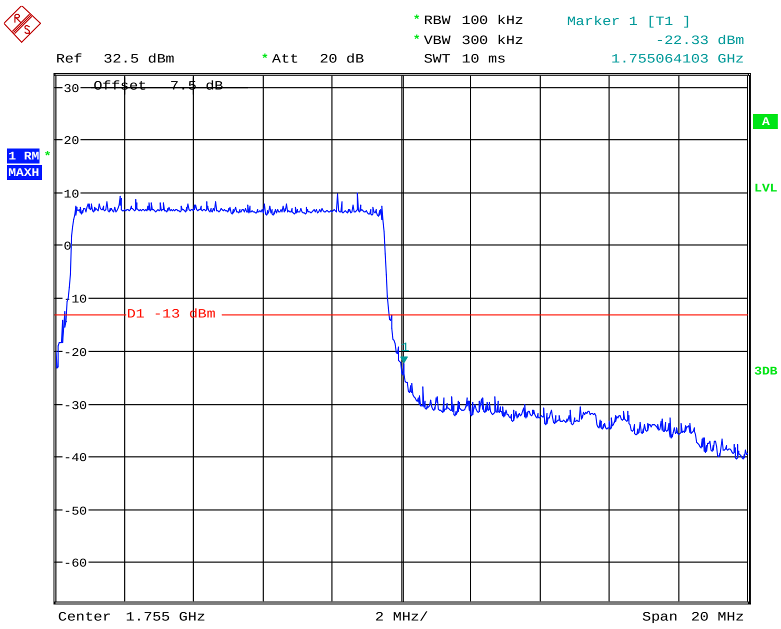


16-QAM (10.0 MHz, FULL RB) - Left Band Edge



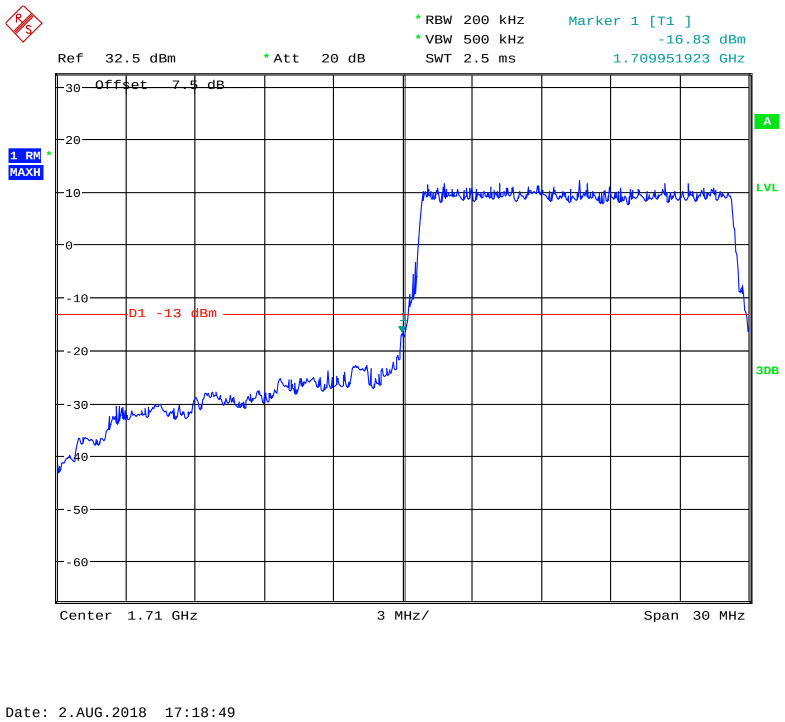
Date: 2.AUG.2018 17:15:06

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

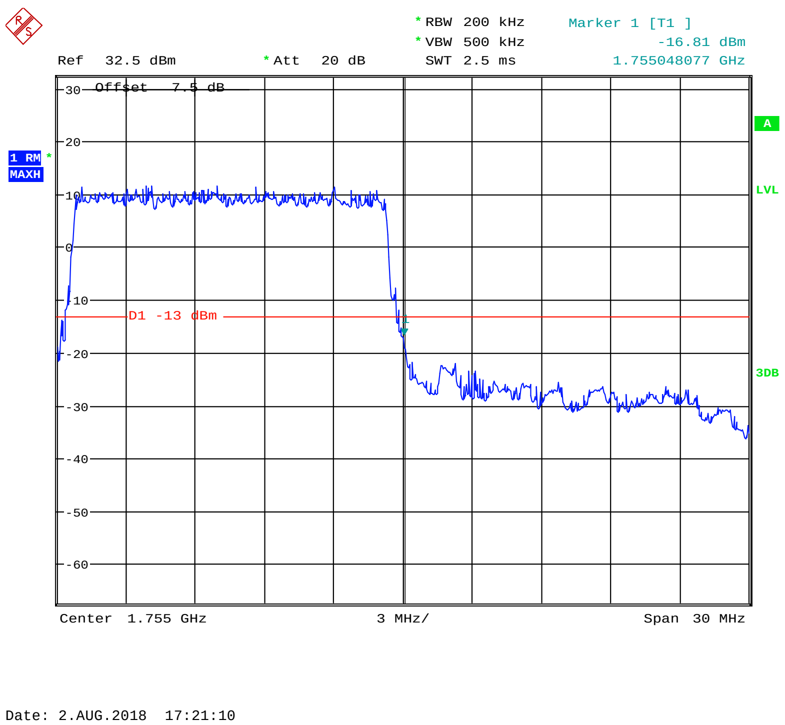


Date: 2.AUG.2018 17:14:18

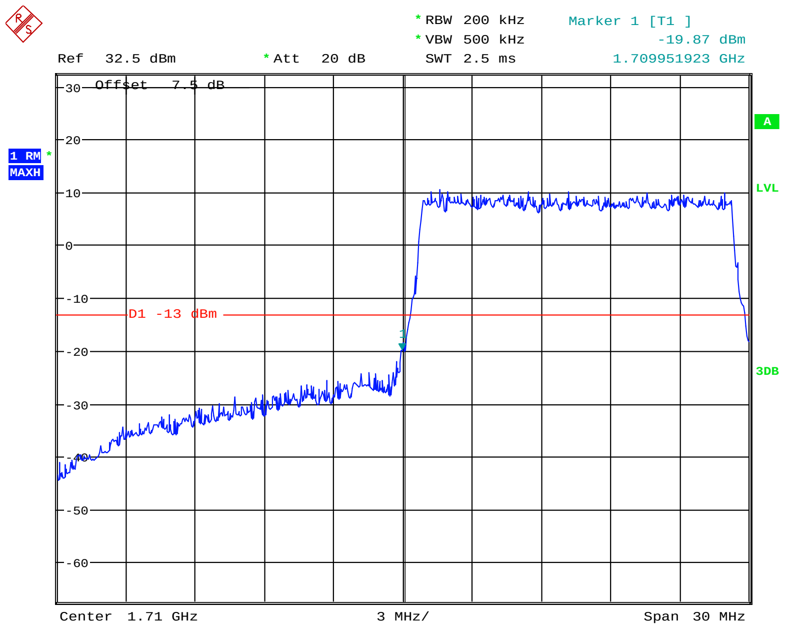
QPSK (15.0 MHz, FULL RB) - Left Band Edge



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

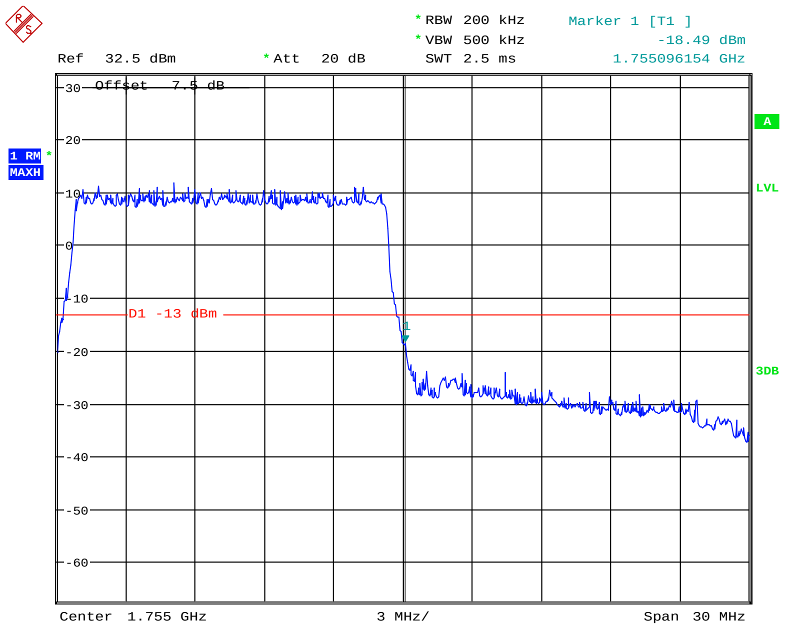


16-QAM (15.0 MHz, FULL RB) - Left Band Edge



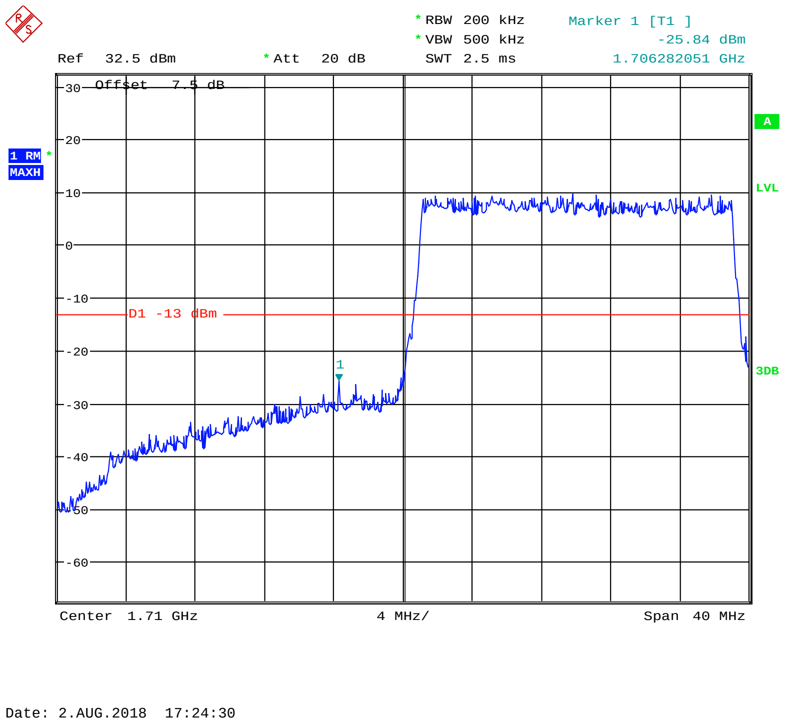
Date: 2.AUG.2018 17:19:19

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

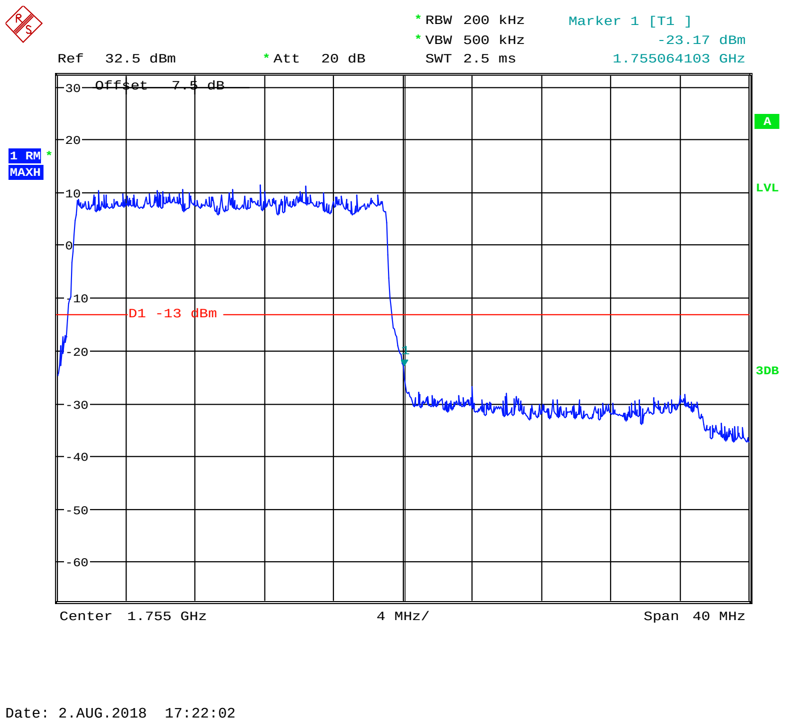


Date: 2.AUG.2018 17:20:47

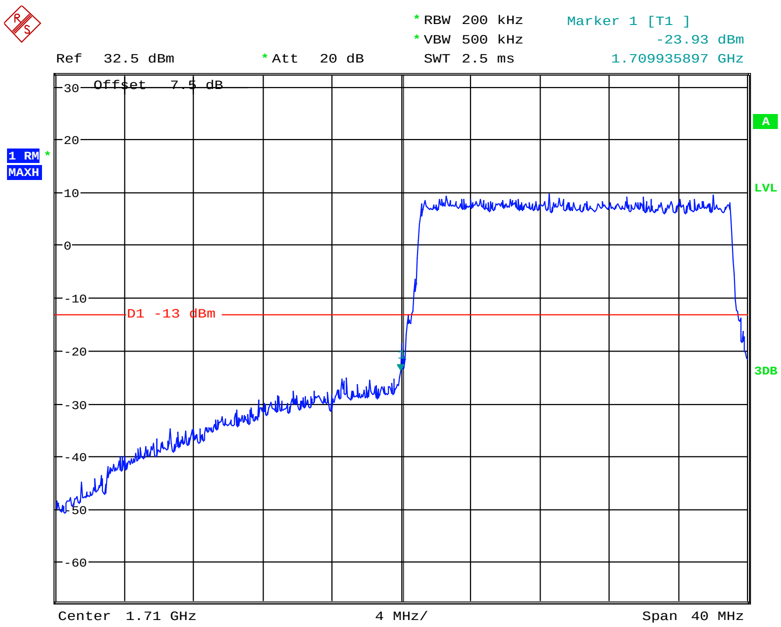
QPSK (20.0 MHz, FULL RB) - Left Band Edge



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

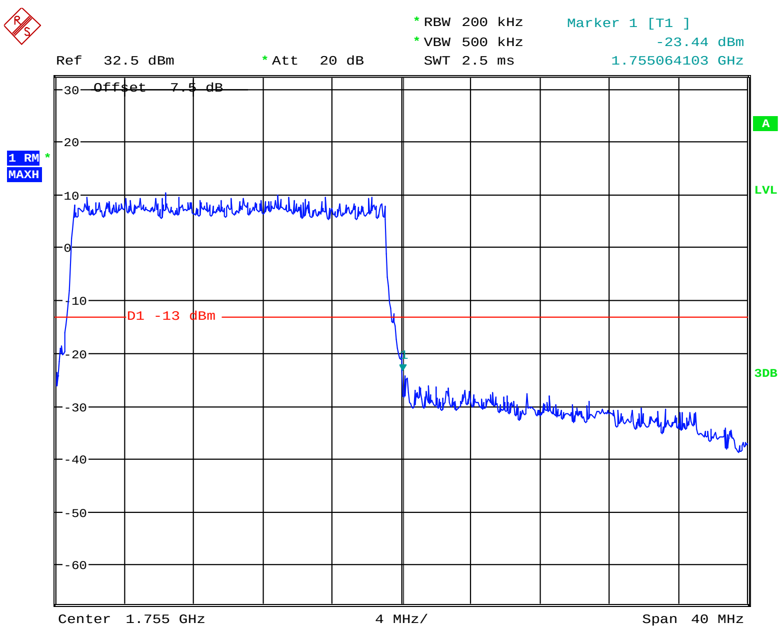


16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 2.AUG.2018 17:24:08

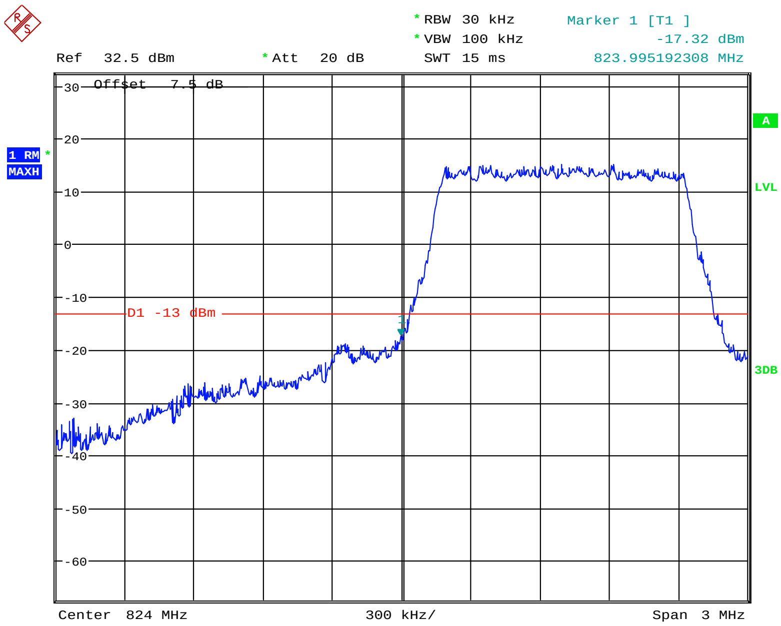
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 2.AUG.2018 17:22:33

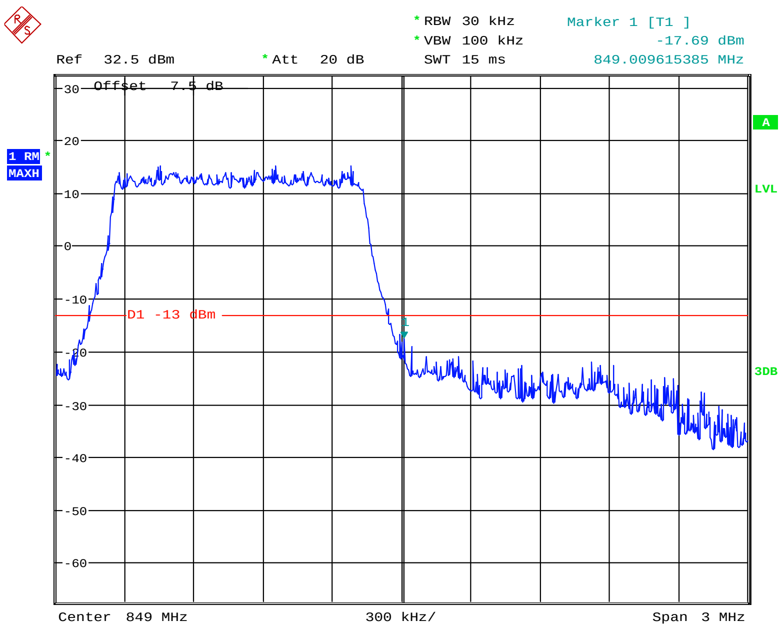
Band 5:

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



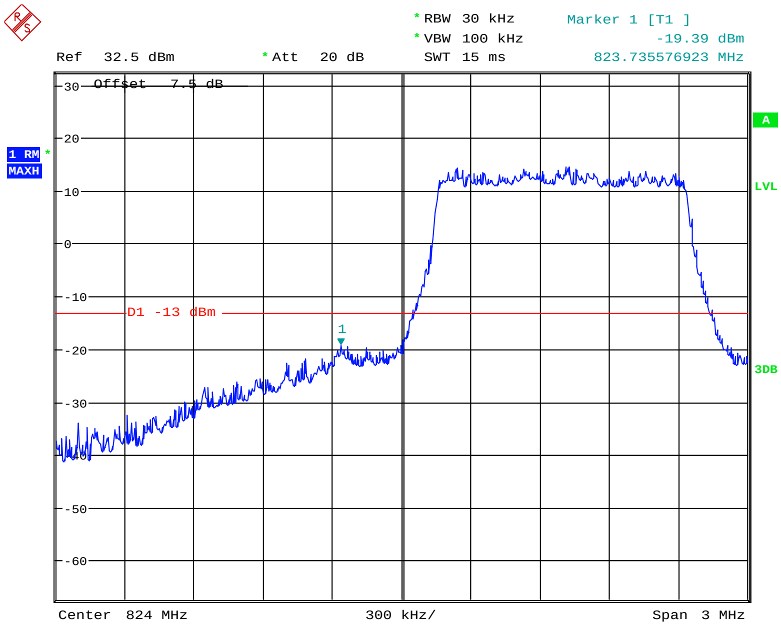
Date: 2.AUG.2018 17:27:20

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



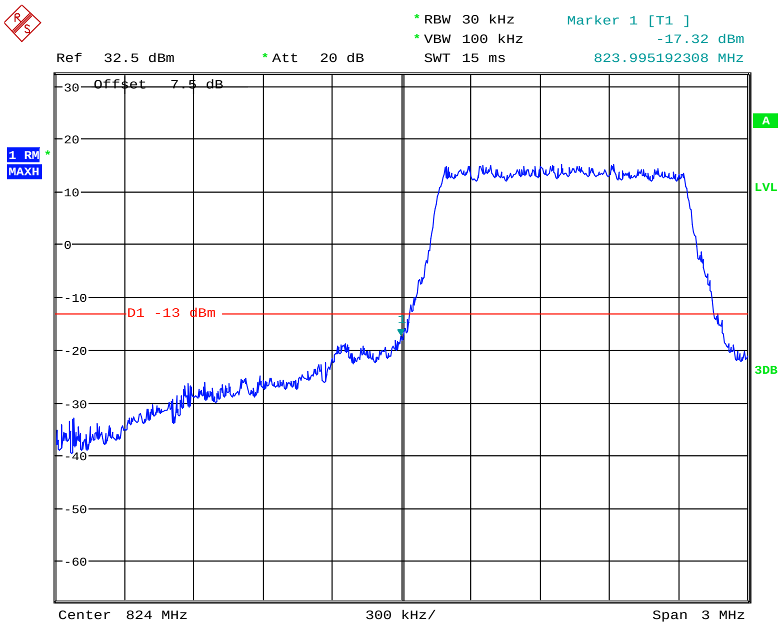
Date: 2.AUG.2018 17:29:08

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



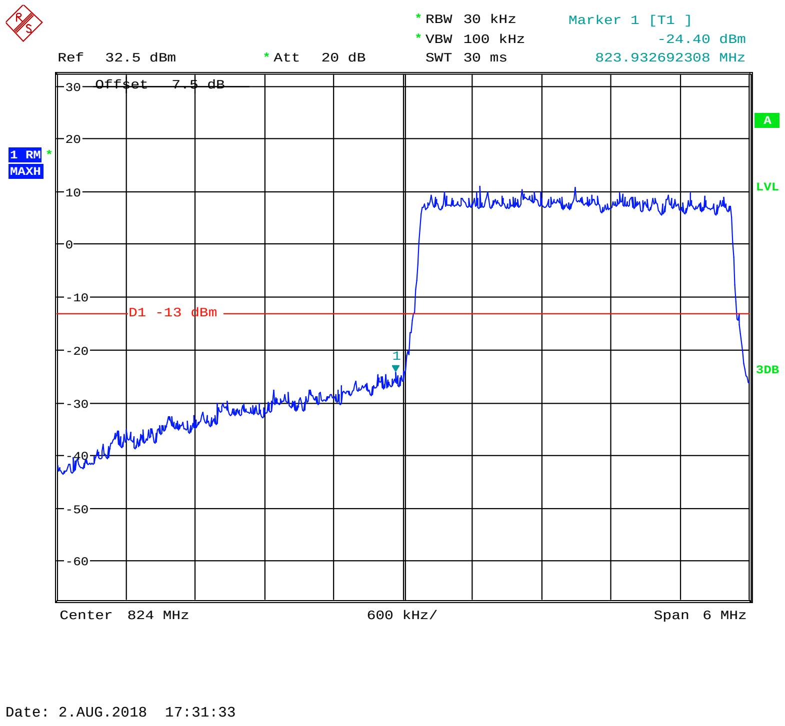
Date: 2.AUG.2018 17:27:56

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

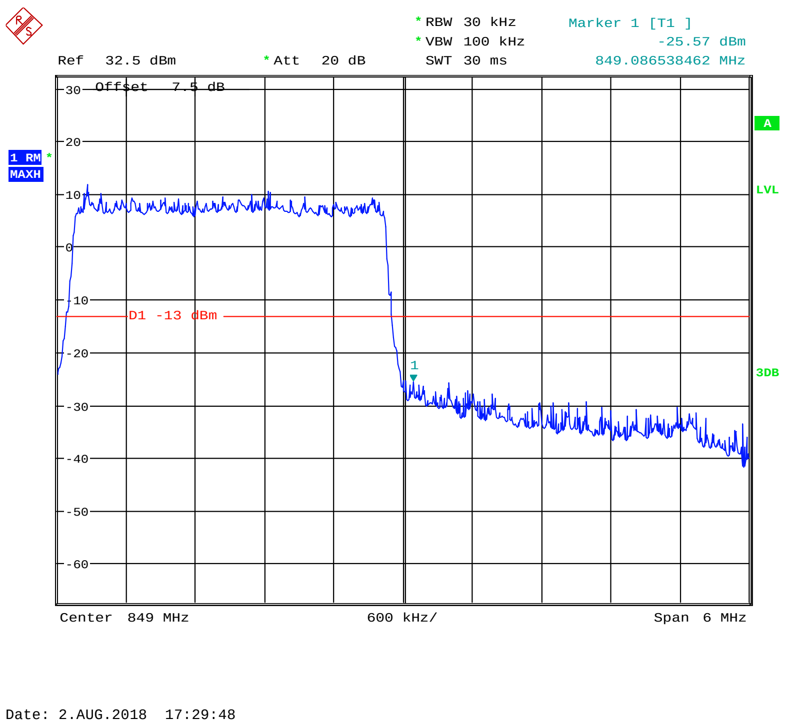


Date: 2.AUG.2018 17:27:20

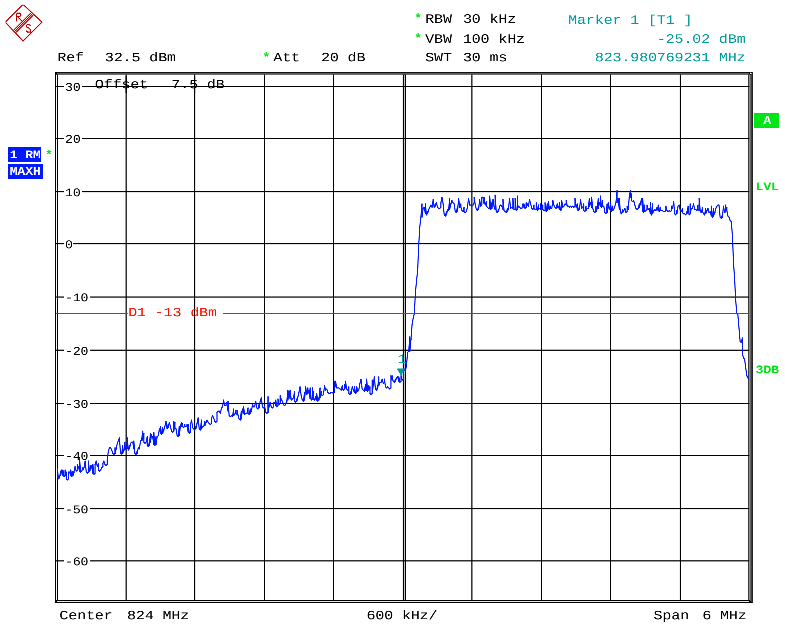
QPSK (3.0 MHz, FULL RB) - Left Band Edge



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

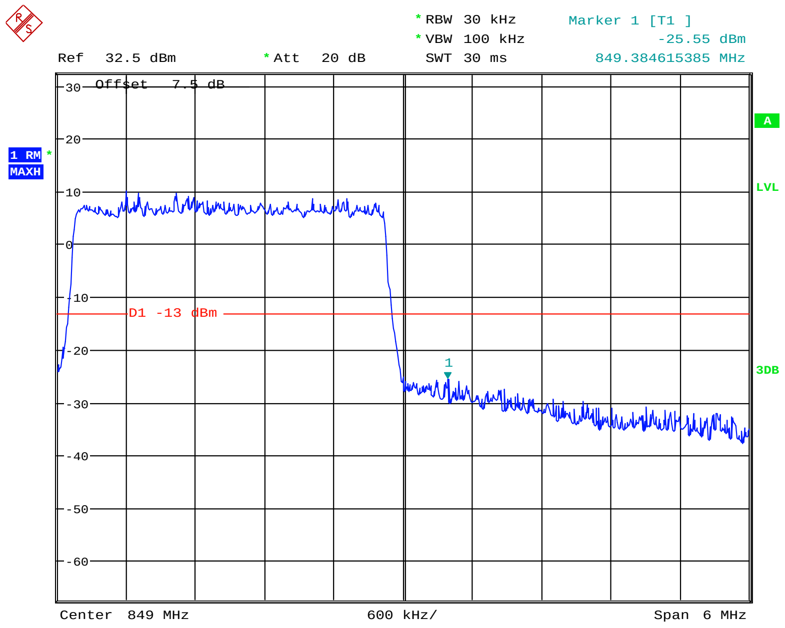


16-QAM (3.0 MHz, FULL RB) - Left Band Edge



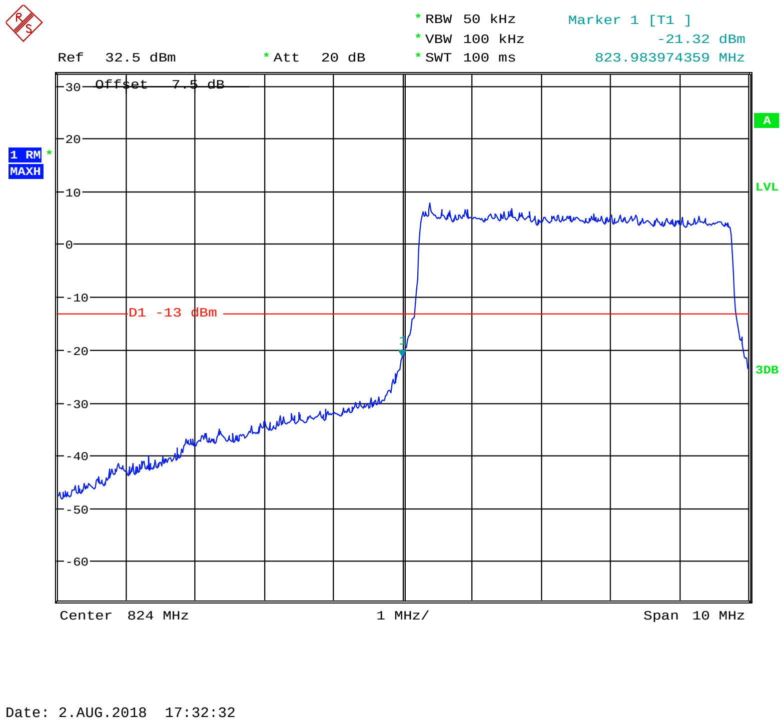
Date: 2.AUG.2018 17:31:15

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

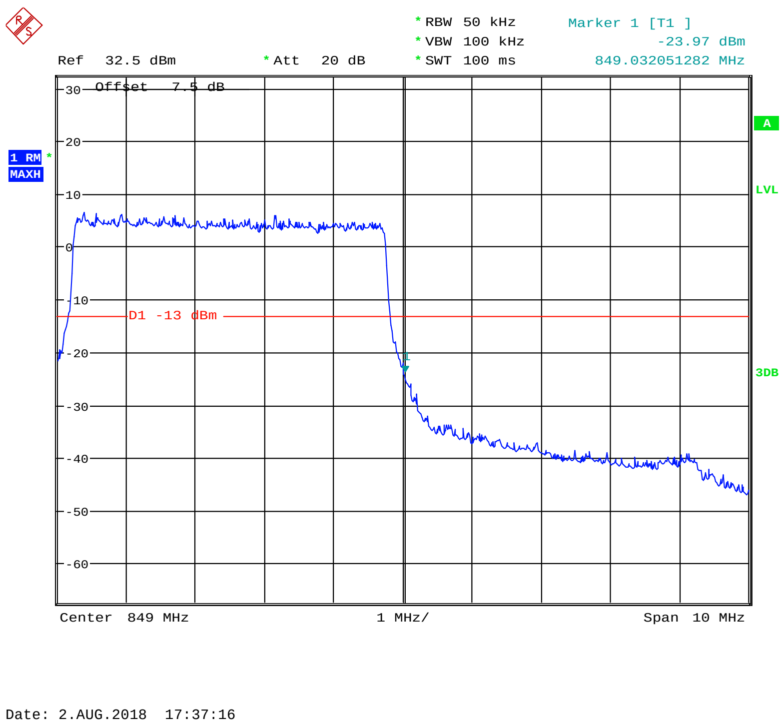


Date: 2.AUG.2018 17:30:29

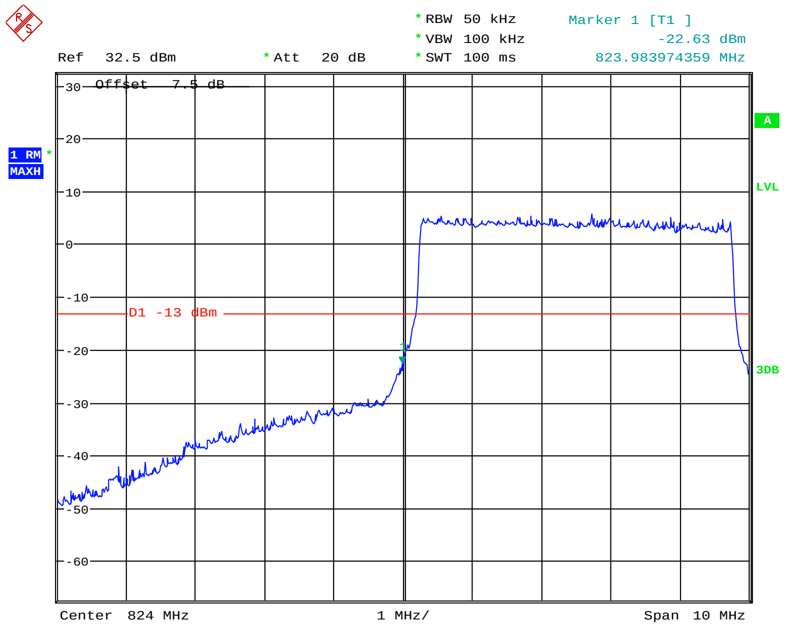
QPSK (5.0 MHz, FULL RB) - Left Band Edge



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

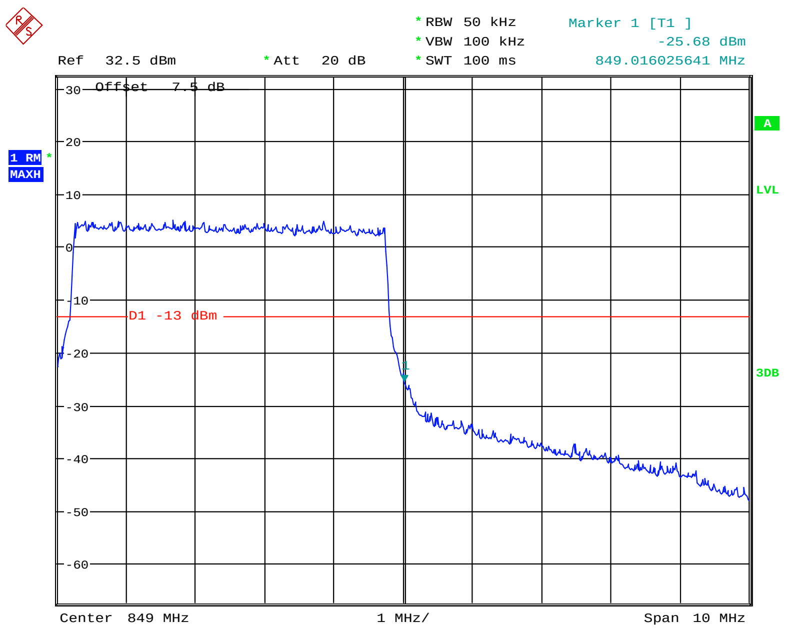


16-QAM (5.0 MHz, FULL RB) - Left Band Edge



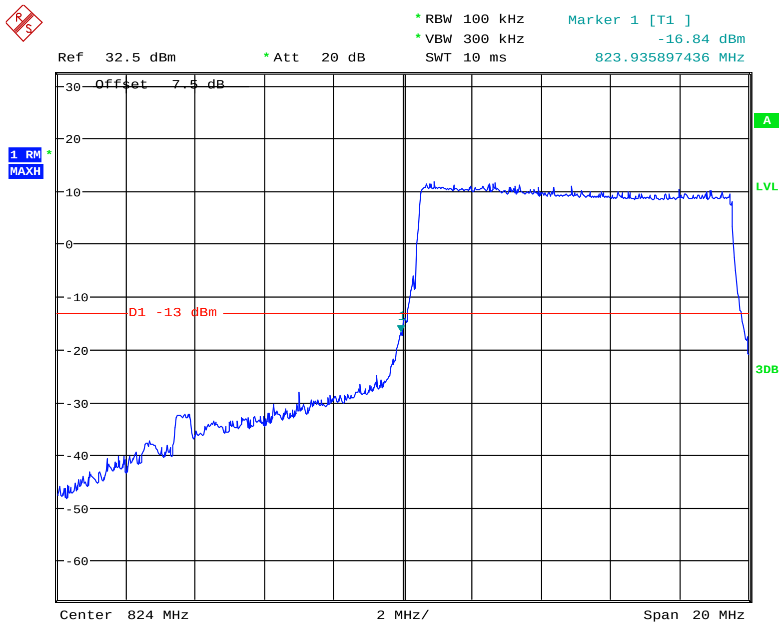
Date: 2.AUG.2018 17:32:55

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



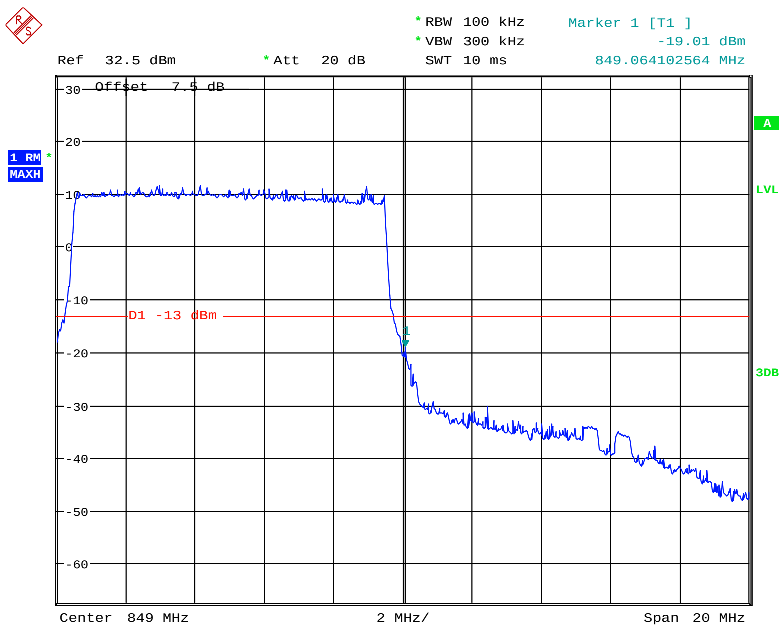
Date: 2.AUG.2018 17:36:54

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



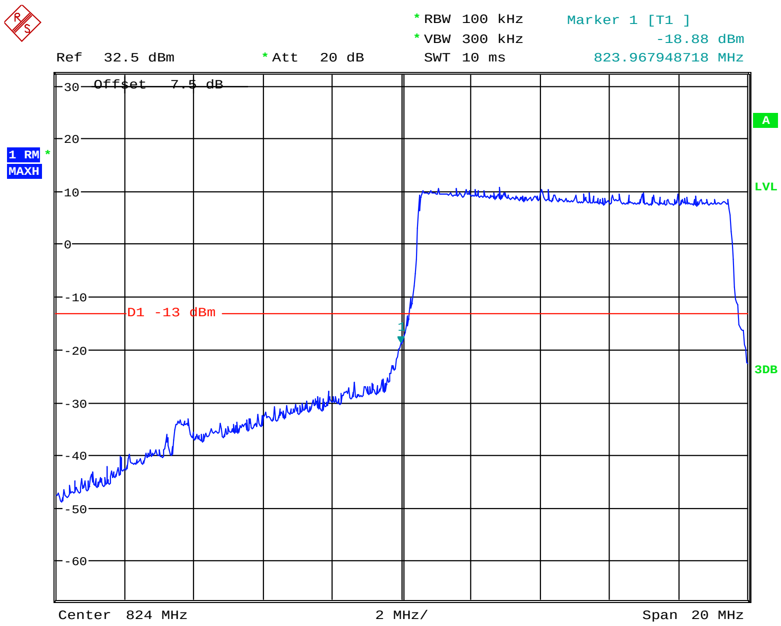
Date: 2.AUG.2018 19:05:14

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



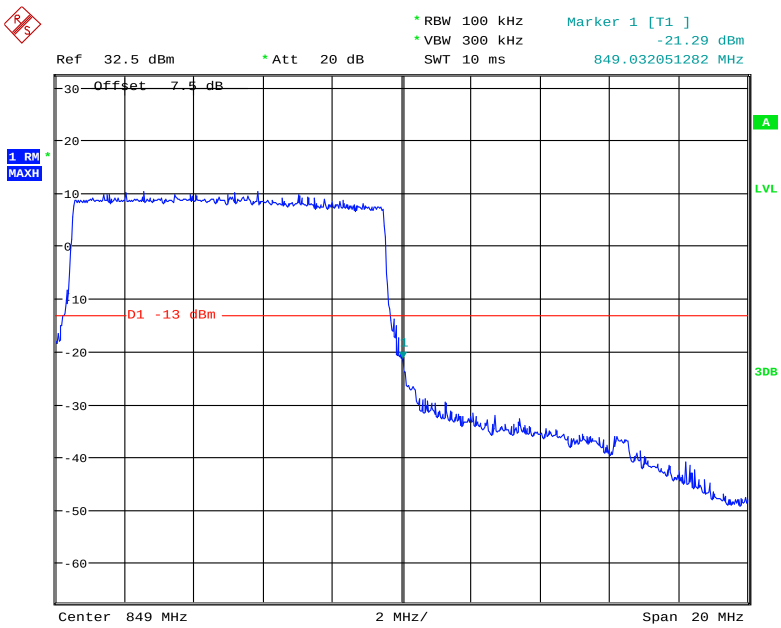
Date: 2.AUG.2018 19:07:42

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



Date: 2.AUG.2018 19:05:59

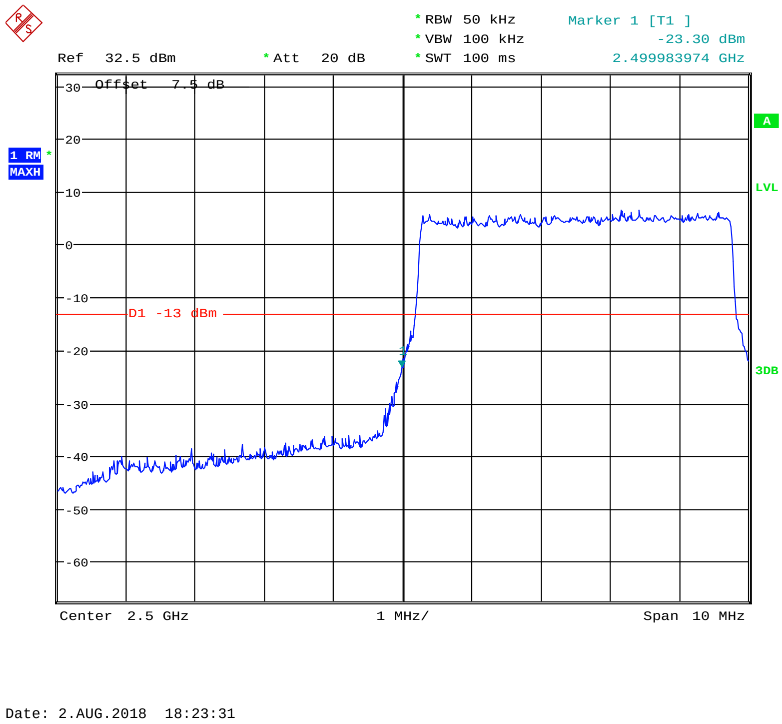
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



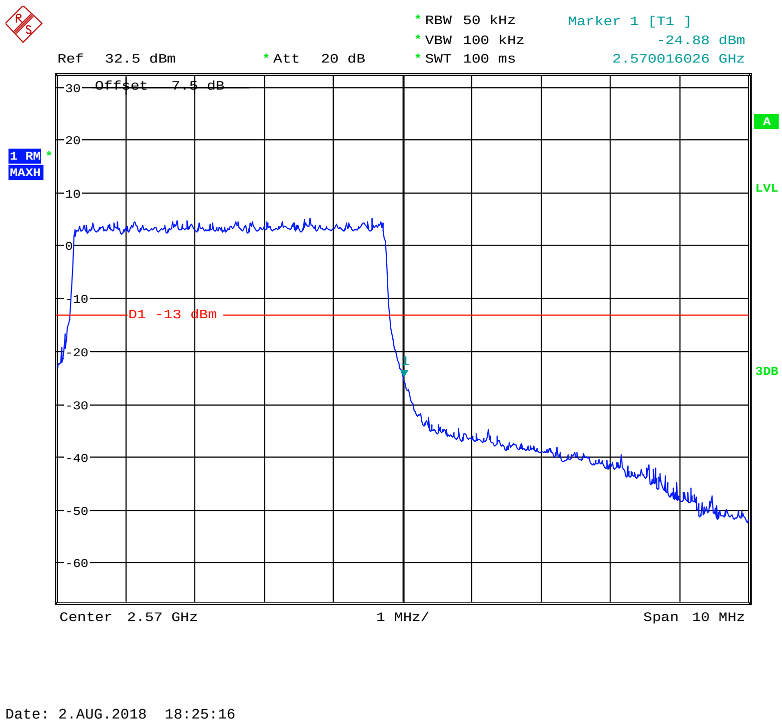
Date: 2.AUG.2018 19:06:44

LTE Band 7:

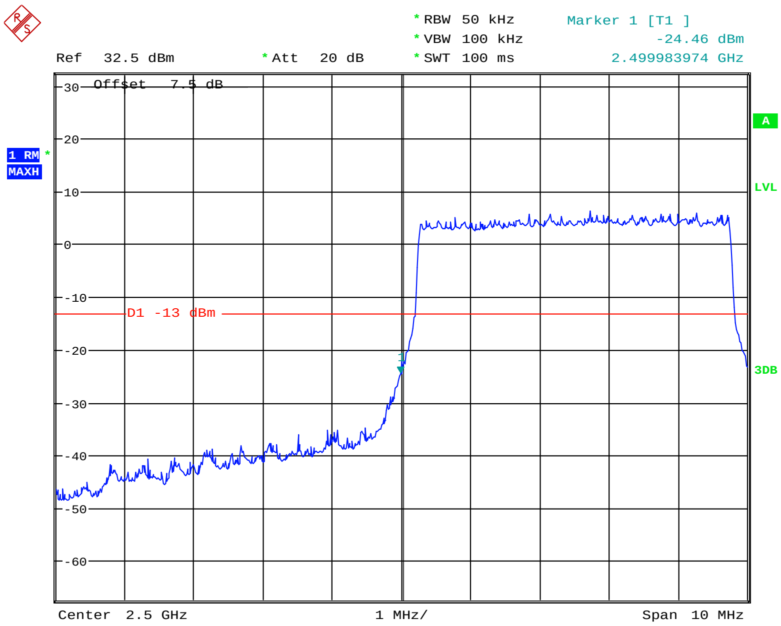
QPSK (5.0 MHz, FULL RB) - Left Band Edge



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

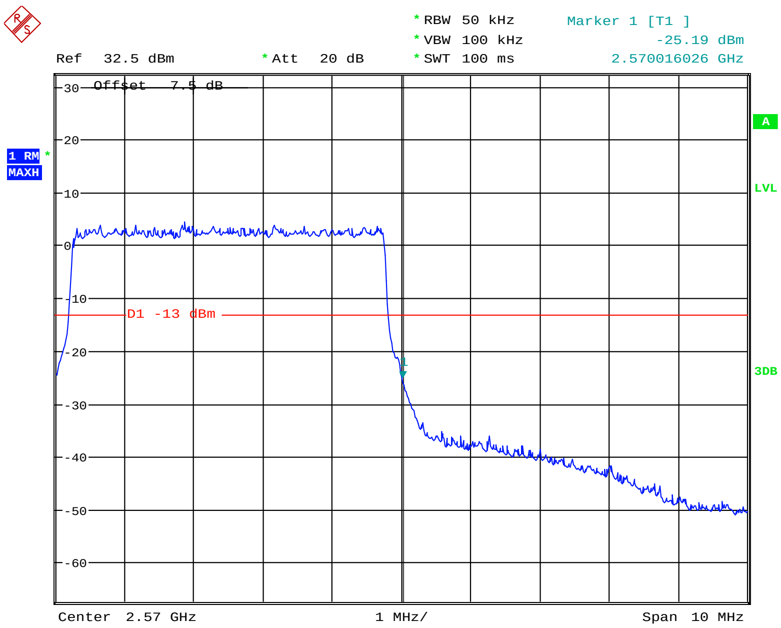


16-QAM (5.0 MHz, FULL RB) - Left Band Edge



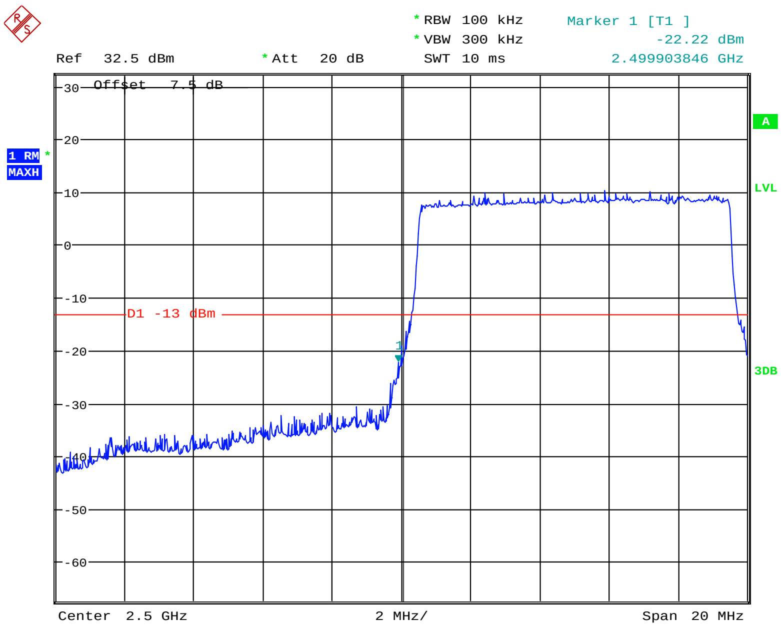
Date: 2.AUG.2018 18:24:15

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



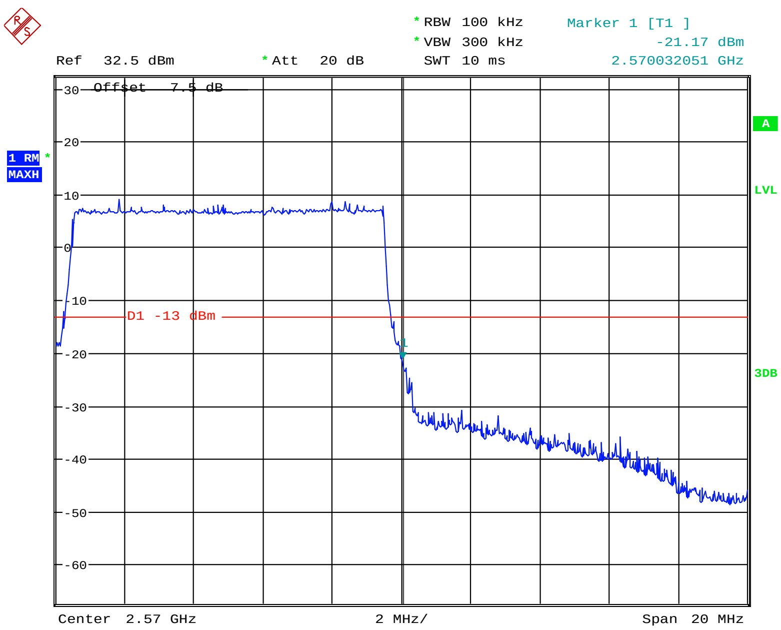
Date: 2.AUG.2018 18:24:53

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



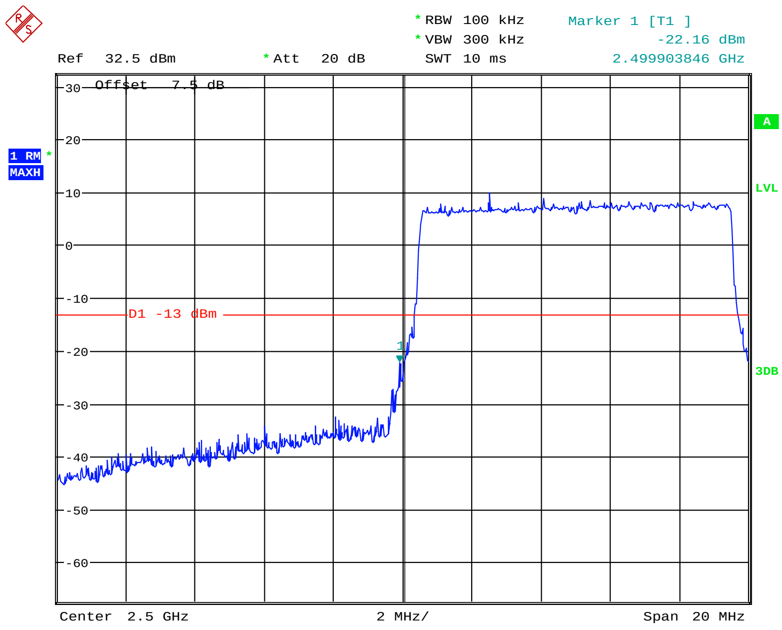
Date: 2.AUG.2018 18:27:56

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



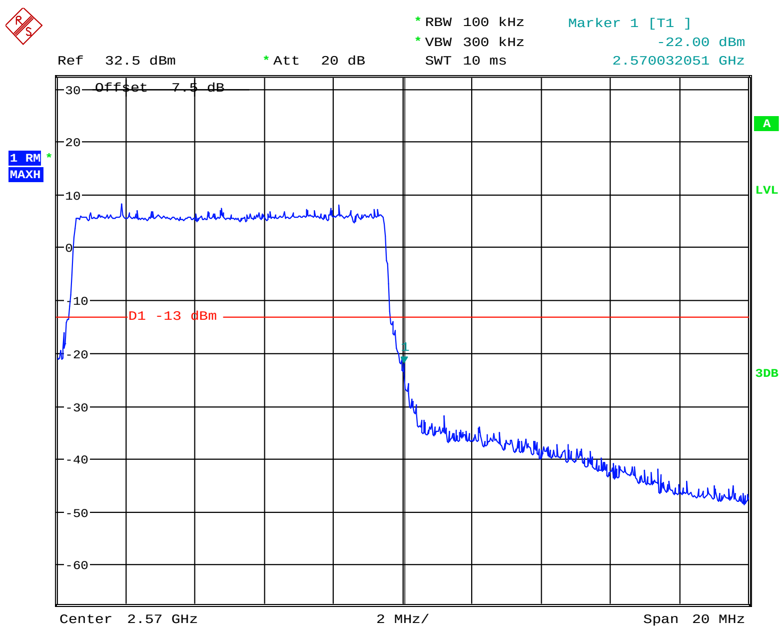
Date: 2.AUG.2018 18:26:26

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



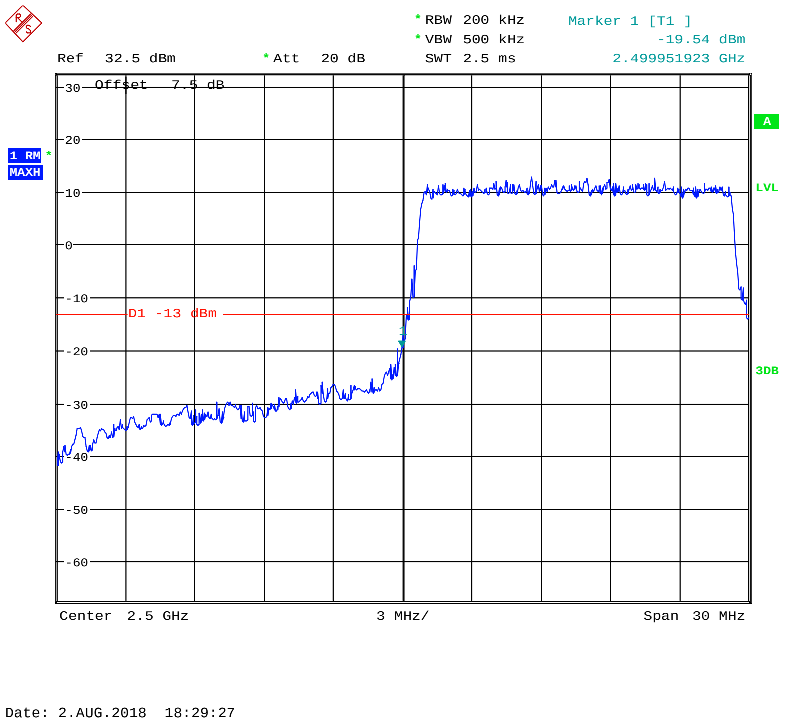
Date: 2.AUG.2018 18:27:30

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

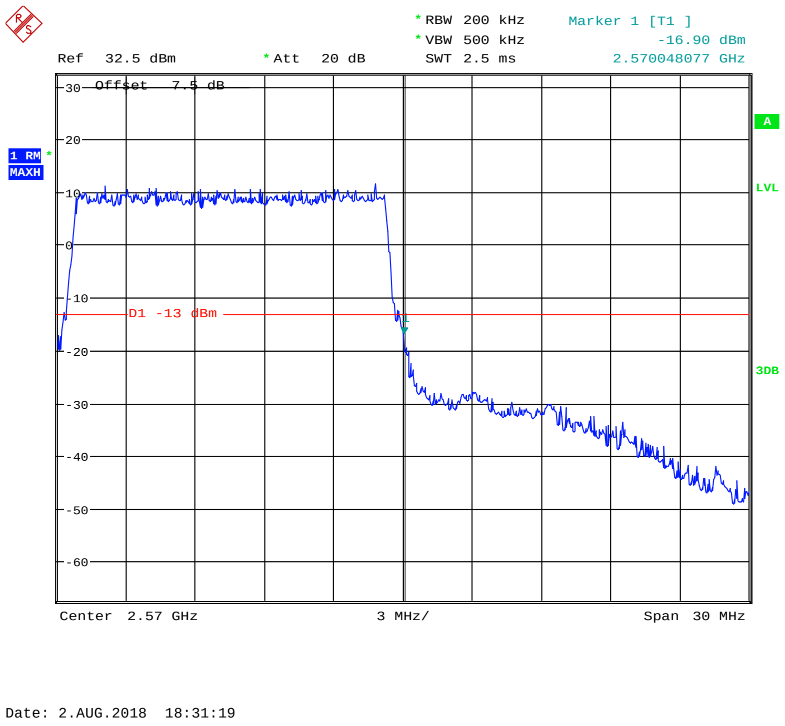


Date: 2.AUG.2018 18:27:06

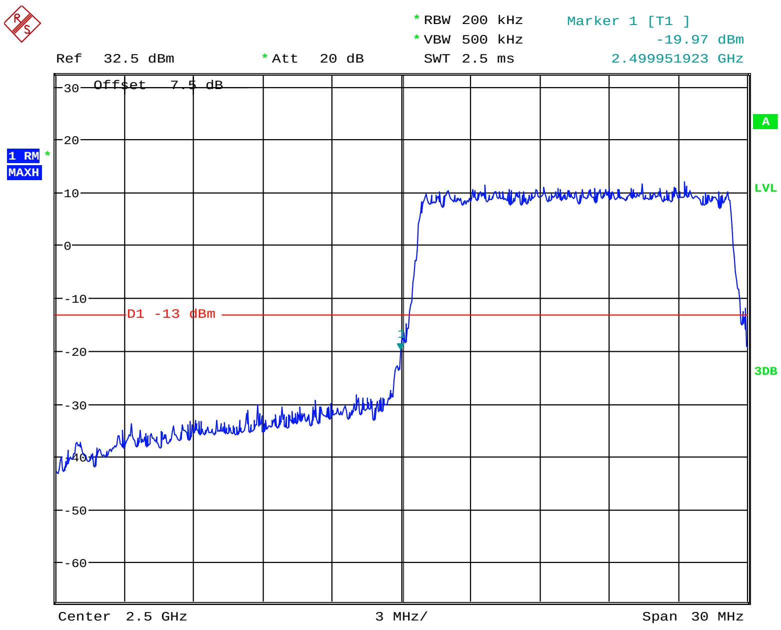
QPSK (15.0 MHz, FULL RB) - Left Band Edge



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

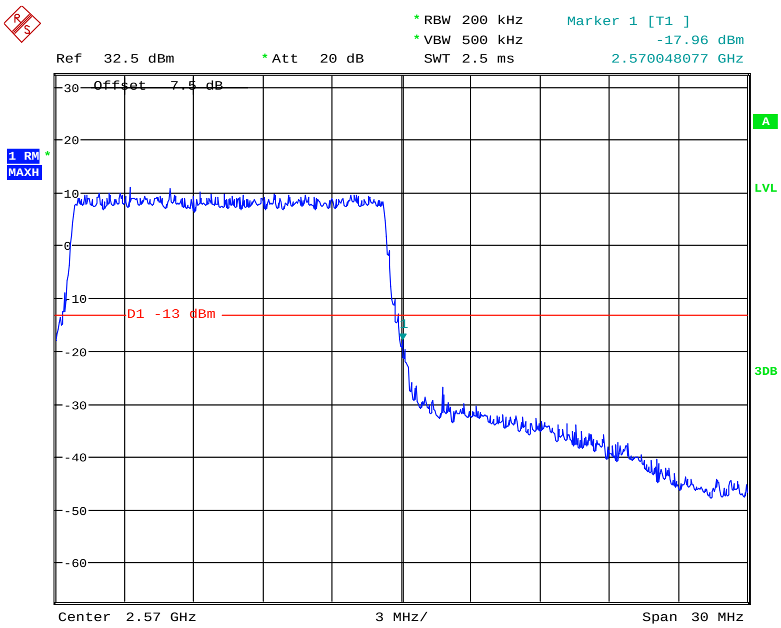


16-QAM (15.0 MHz, FULL RB) - Left Band Edge



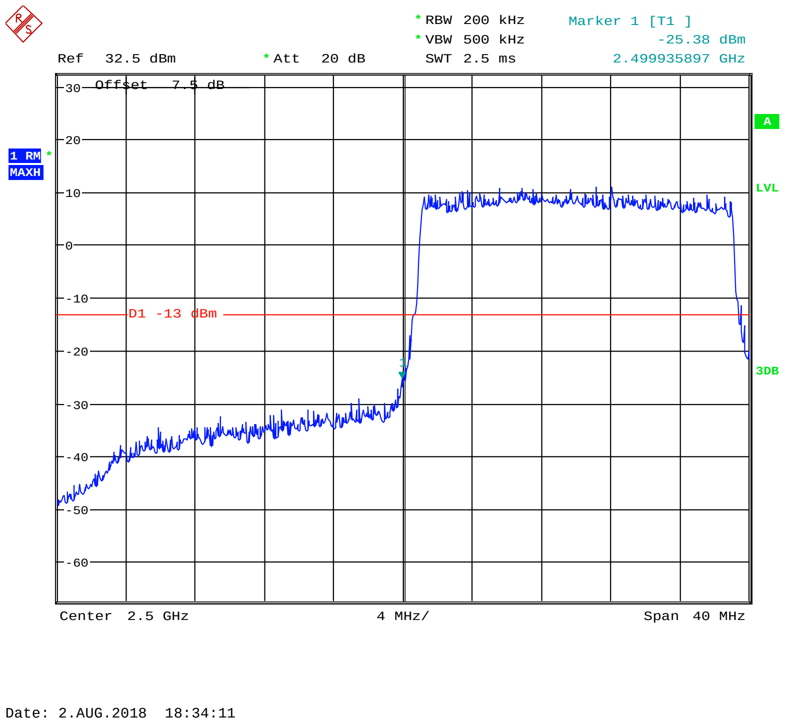
Date: 2.AUG.2018 18:29:56

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

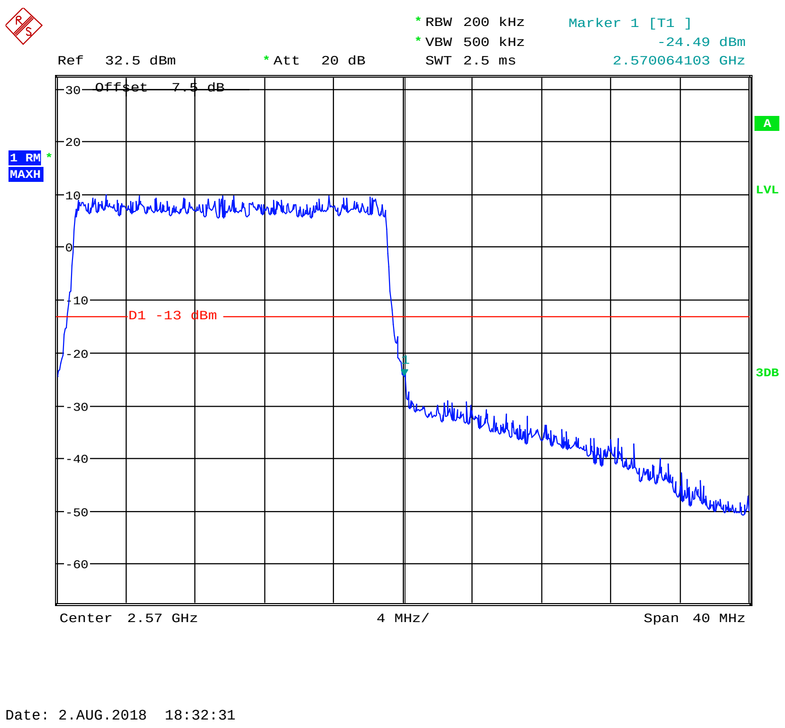


Date: 2.AUG.2018 18:30:55

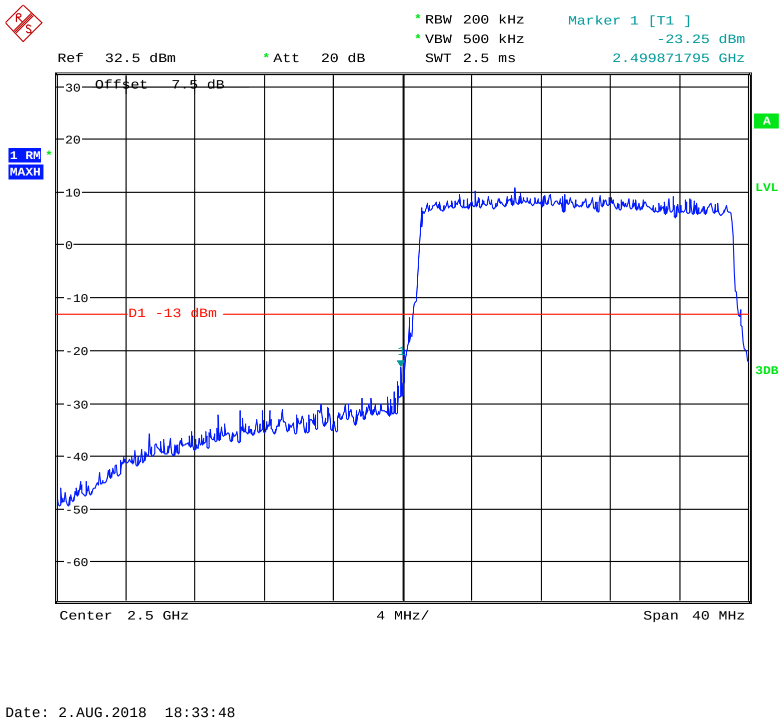
QPSK (20.0 MHz, FULL RB) - Left Band Edge



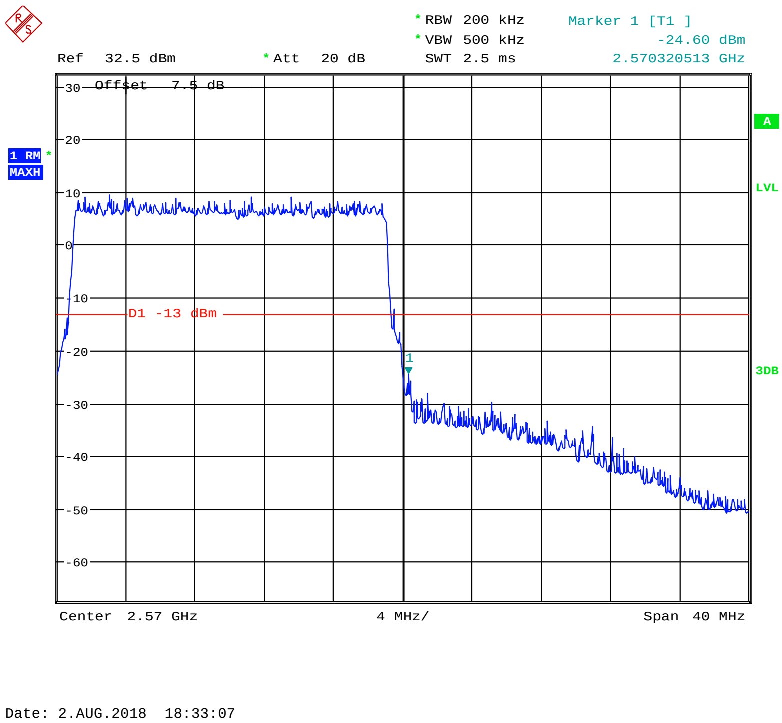
QPSK (20.0 MHz, FULL RB) - Right Band Edge



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

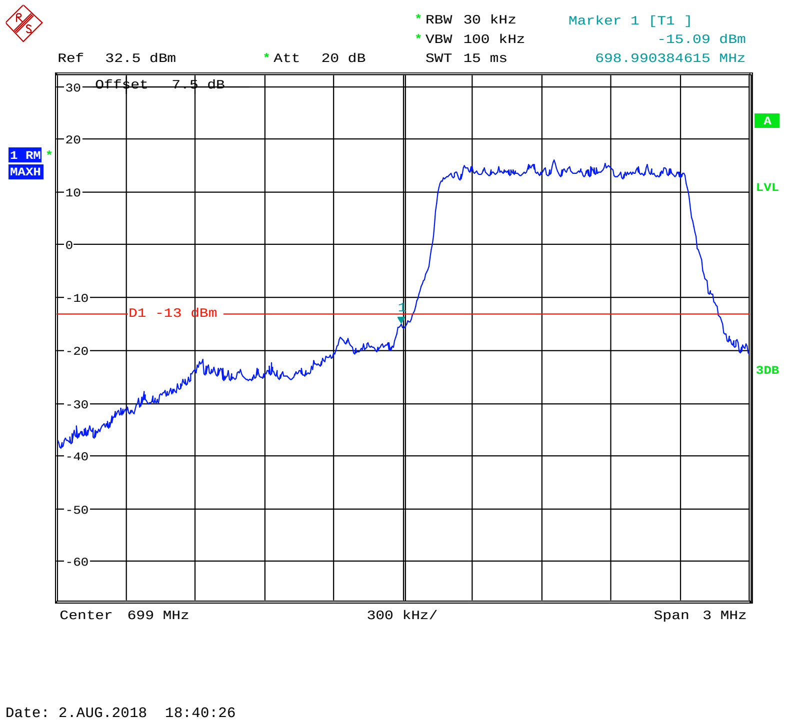


16-QAM (20.0 MHz, FULL RB) - Right Band Edge

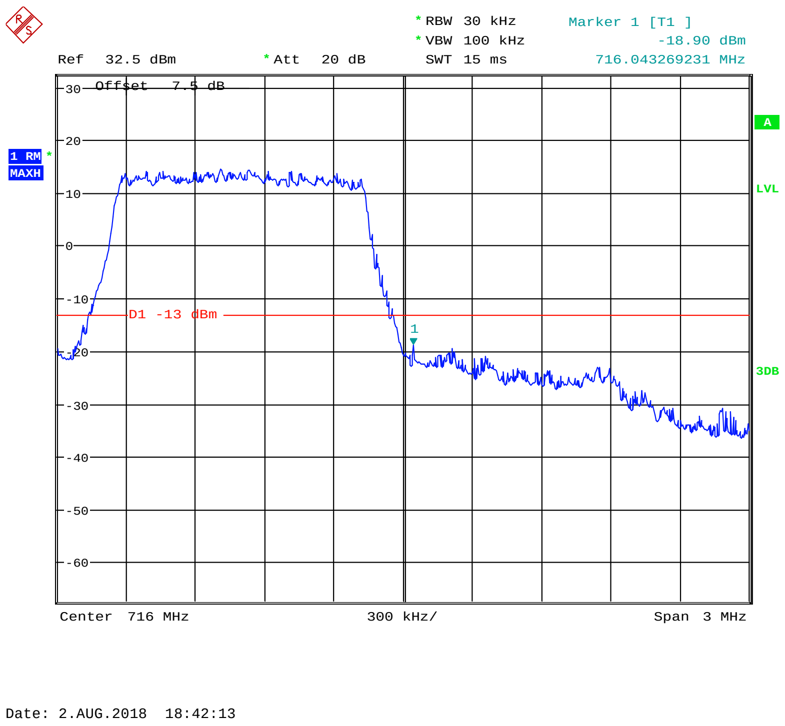


Band 12:

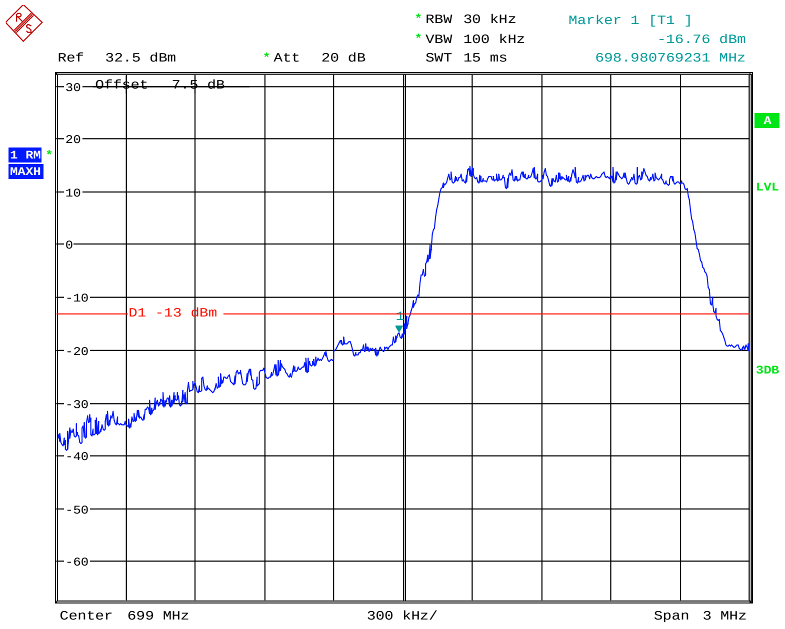
QPSK (1.4 MHz, FULL RB) - Left Band Edge



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

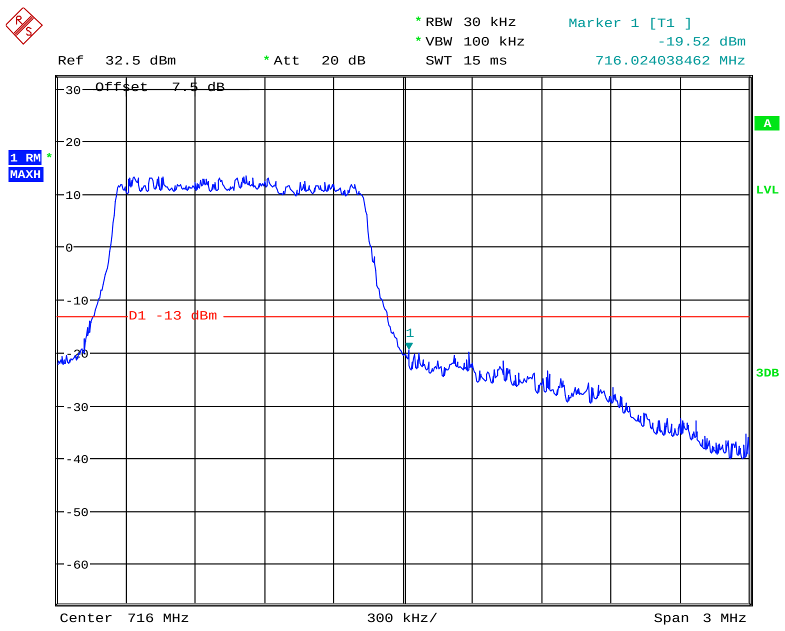


16-QAM (1.4 MHz, FULL RB) - Left Band Edge



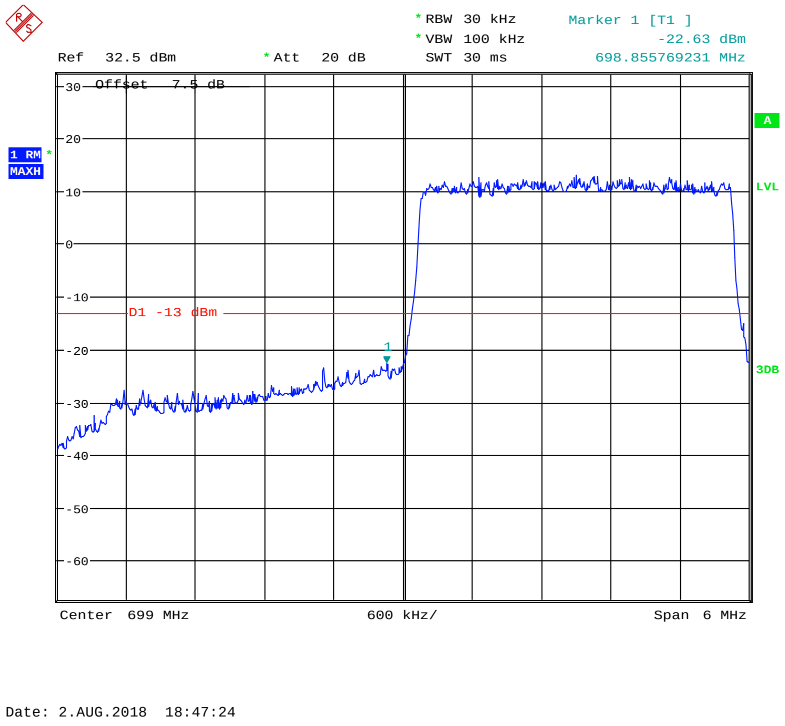
Date: 2.AUG.2018 18:41:15

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

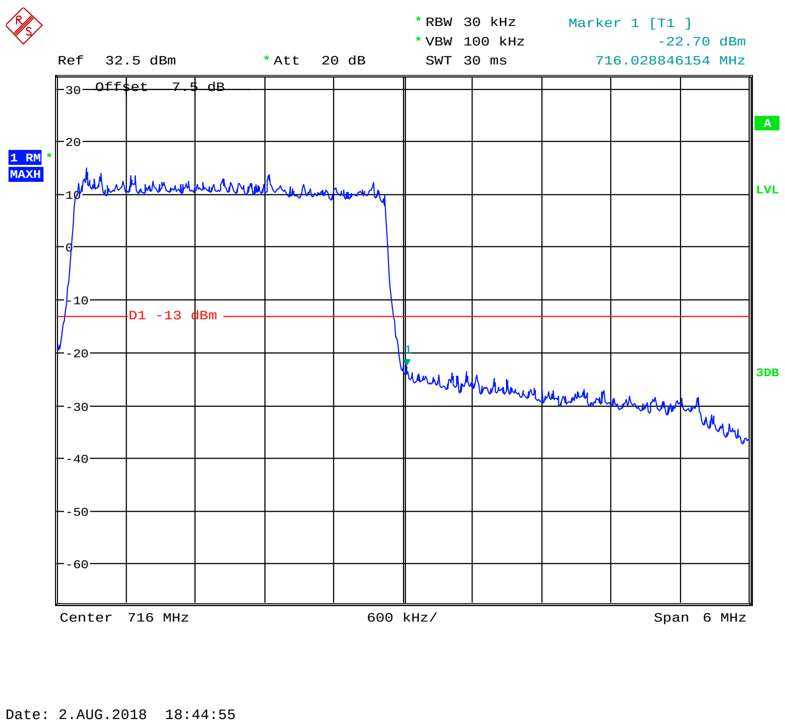


Date: 2.AUG.2018 18:41:49

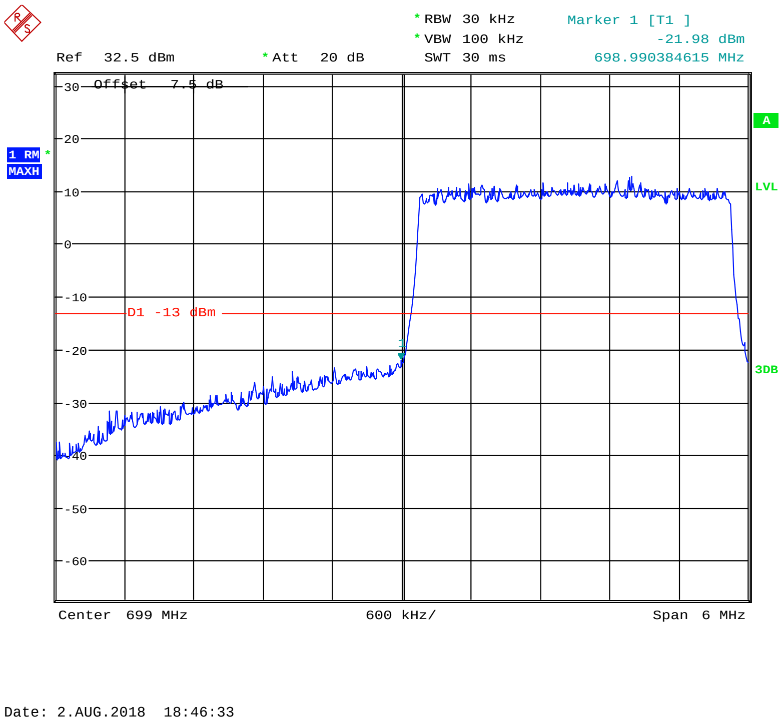
QPSK (3.0 MHz, FULL RB) - Left Band Edge



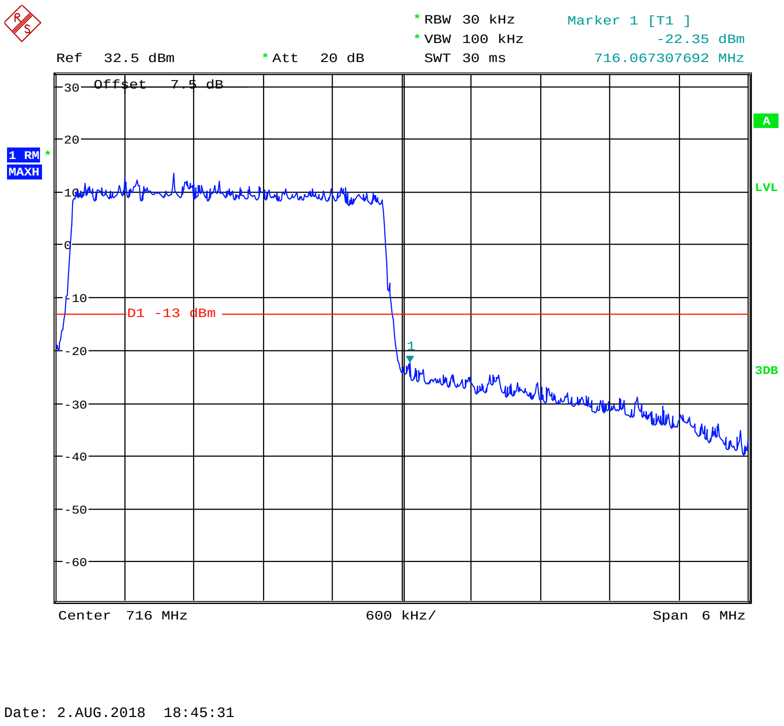
QPSK (3.0 MHz, FULL RB) - Right Band Edge



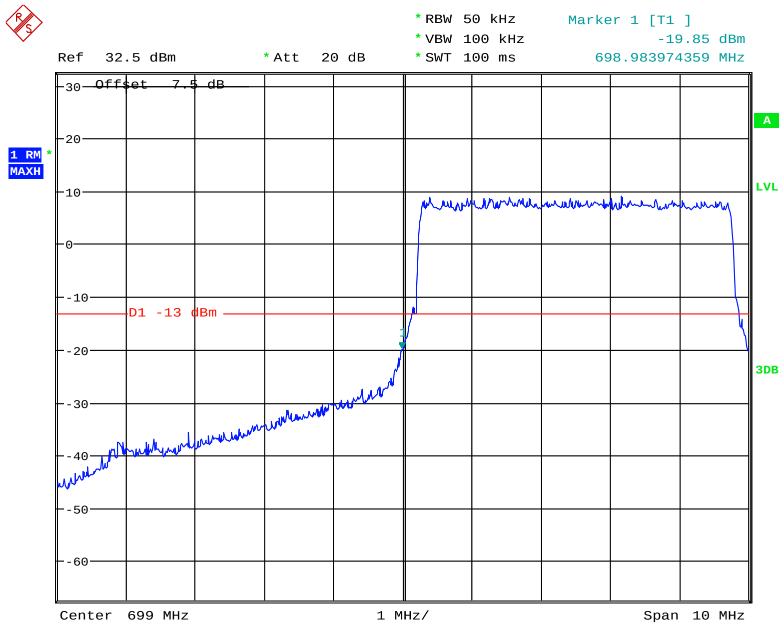
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



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

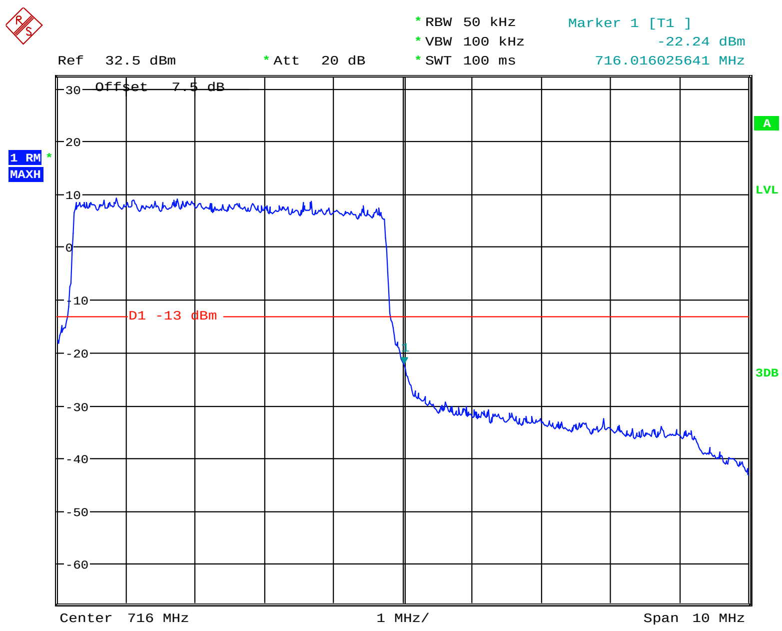


QPSK (5.0 MHz, FULL RB) - Left Band Edge



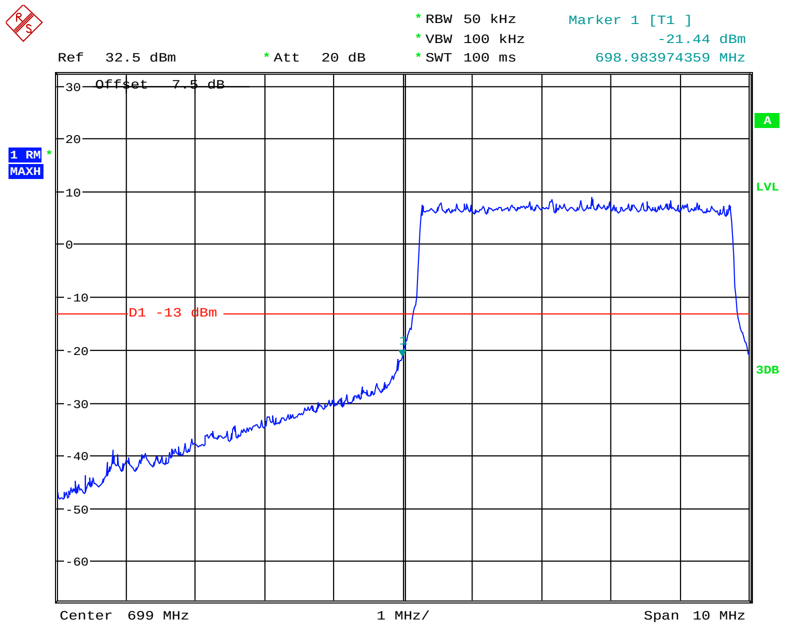
Date: 2.AUG.2018 18:48:46

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



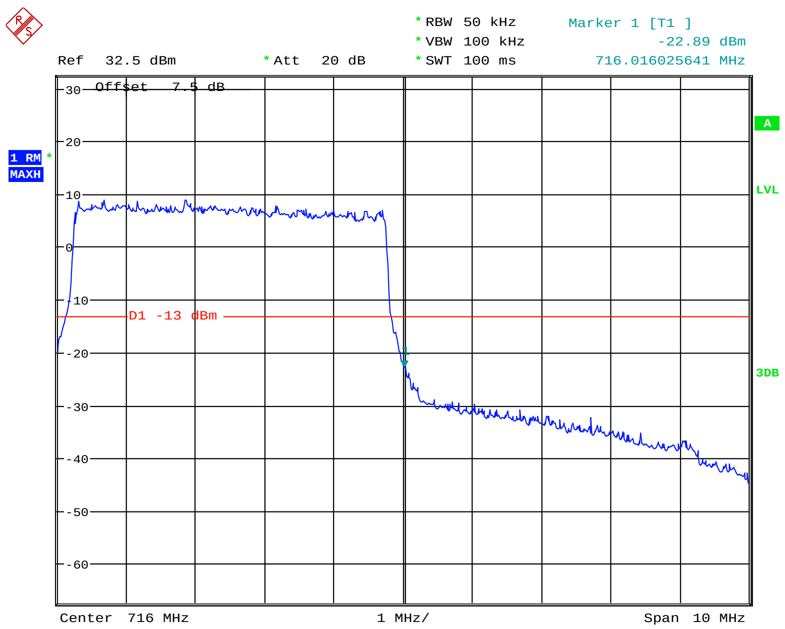
Date: 2.AUG.2018 18:50:08

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



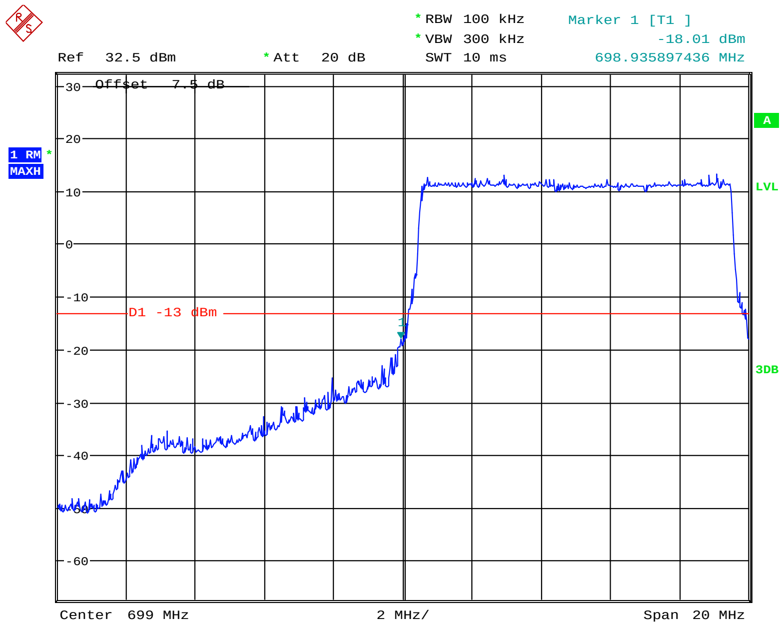
Date: 2.AUG.2018 18:49:13

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



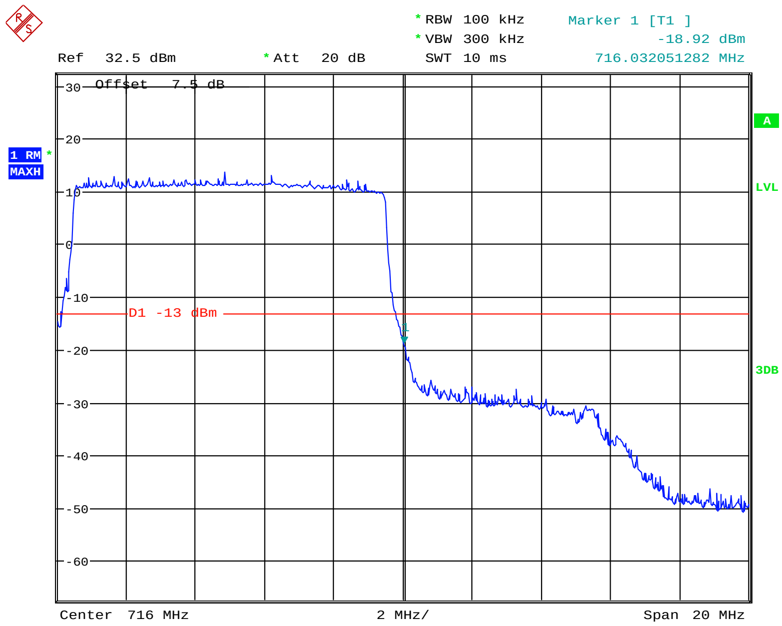
Date: 2.AUG.2018 18:49:50

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



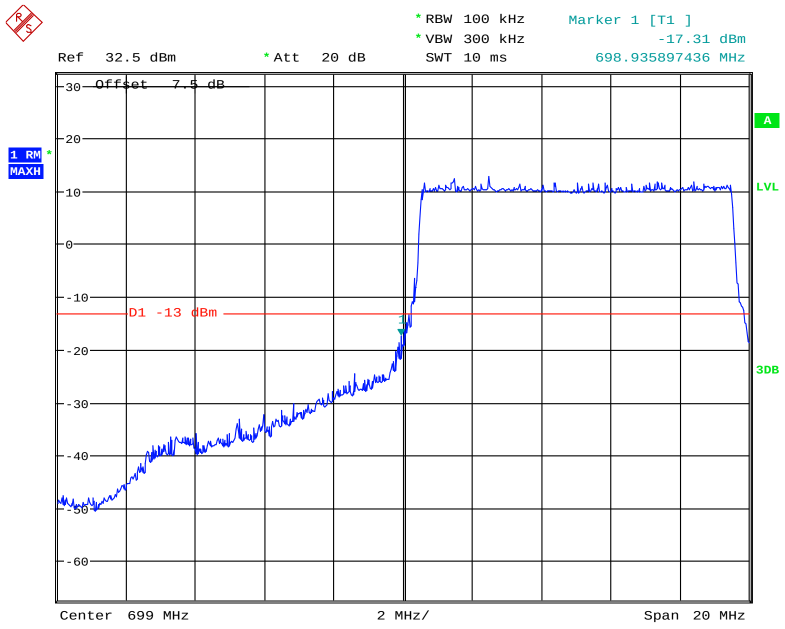
Date: 2.AUG.2018 18:53:06

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



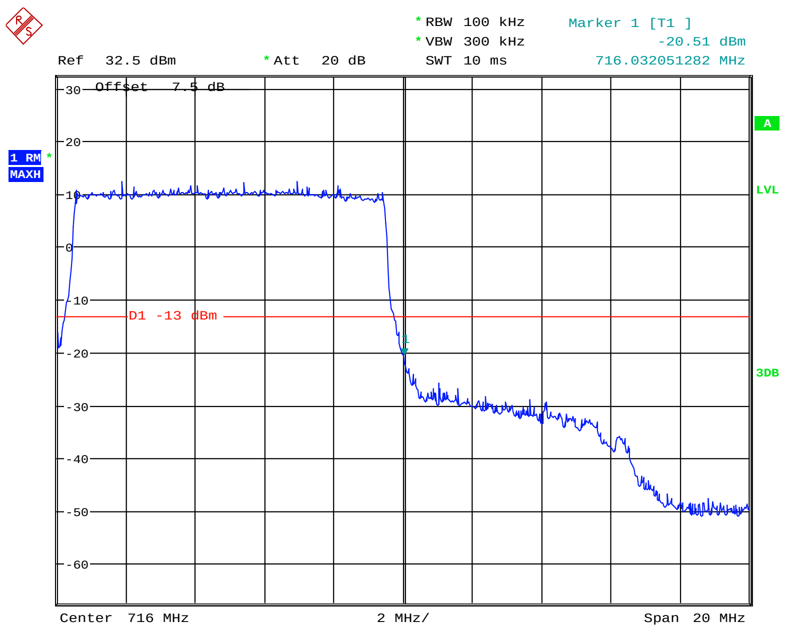
Date: 2.AUG.2018 18:51:05

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



Date: 2.AUG.2018 18:52:44

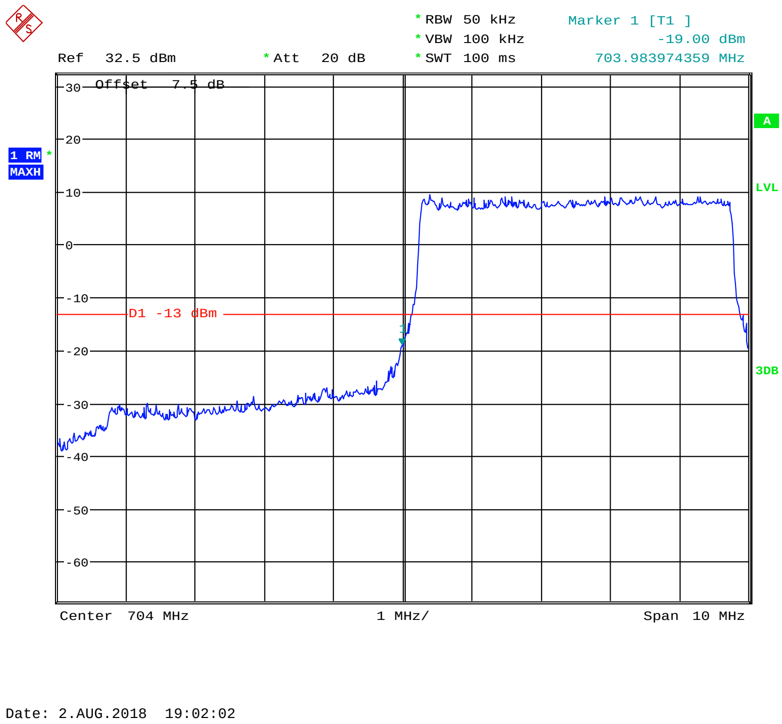
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



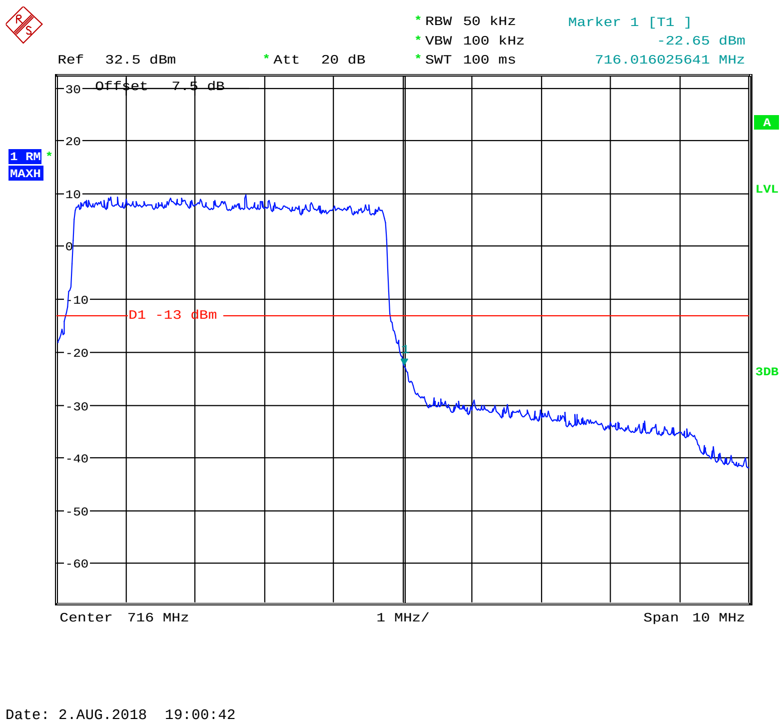
Date: 2.AUG.2018 18:51:49

Band 17:

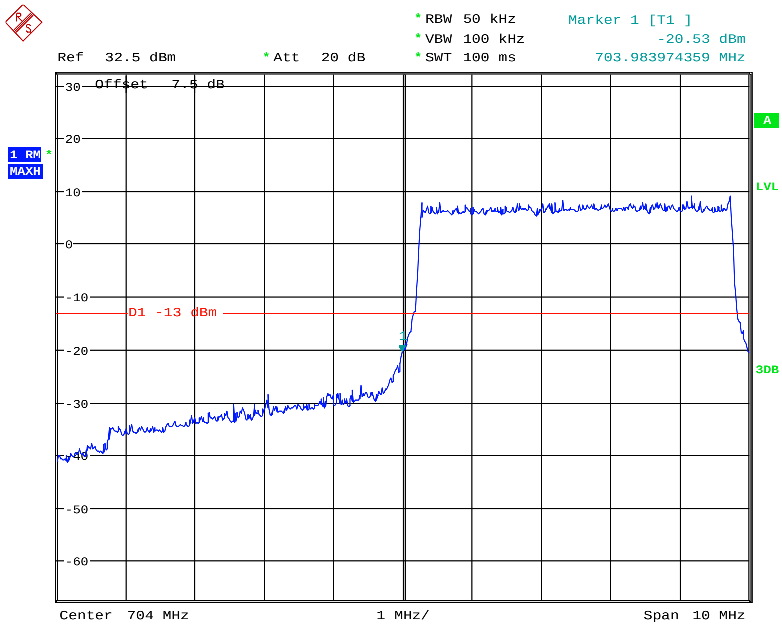
QPSK (5.0 MHz, FULL RB) - Left Band Edge



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

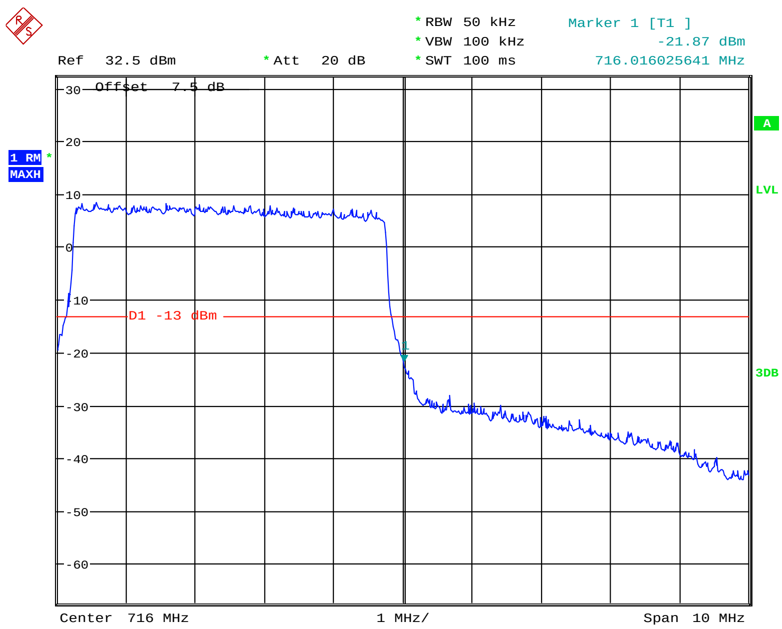


16-QAM (5.0 MHz, FULL RB) - Left Band Edge



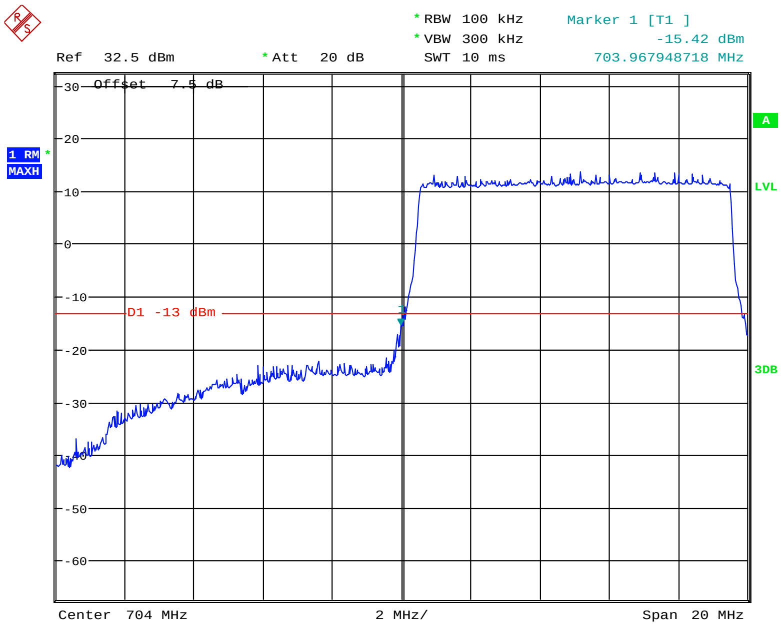
Date: 2.AUG.2018 19:01:38

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



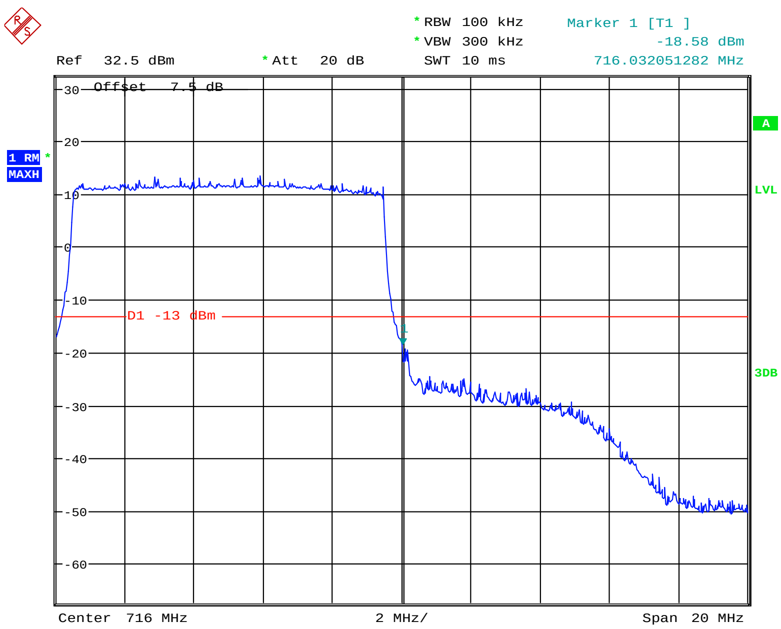
Date: 2.AUG.2018 19:01:07

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



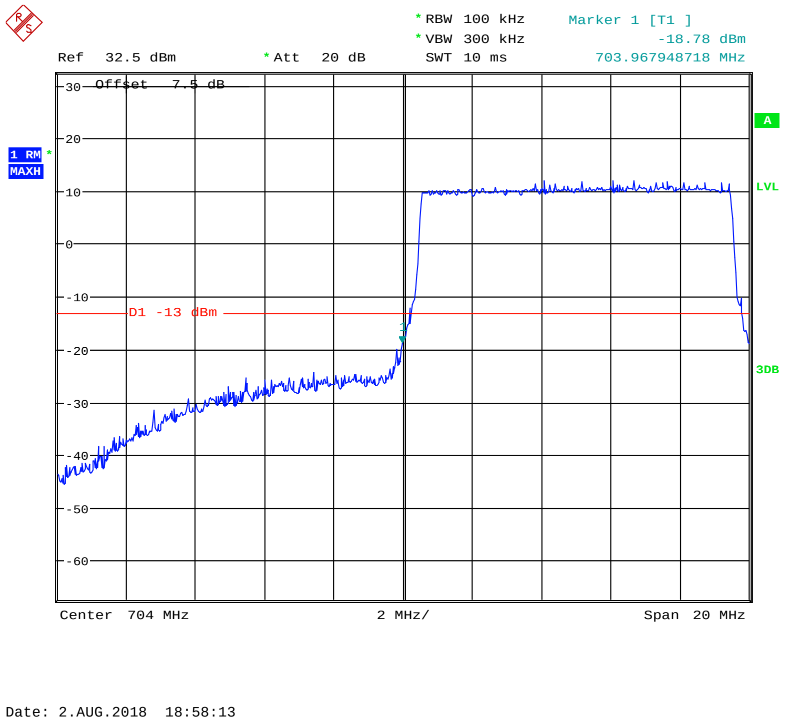
Date: 2.AUG.2018 18:57:39

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

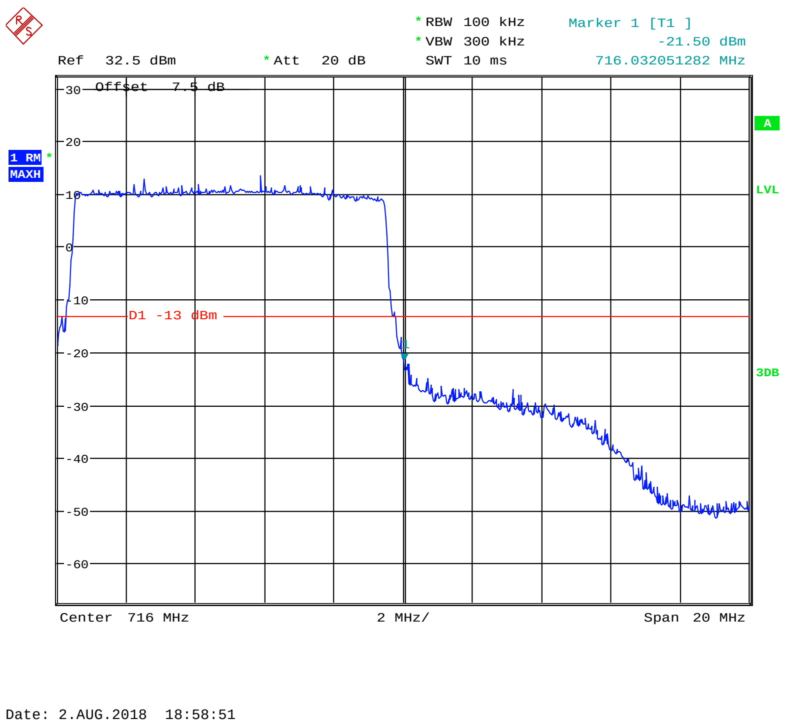


Date: 2.AUG.2018 18:59:21

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



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



FCC § 2.1055; § 22.355; § 24.235; §27.54; - FREQUENCY STABILITY

Applicable Standard

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

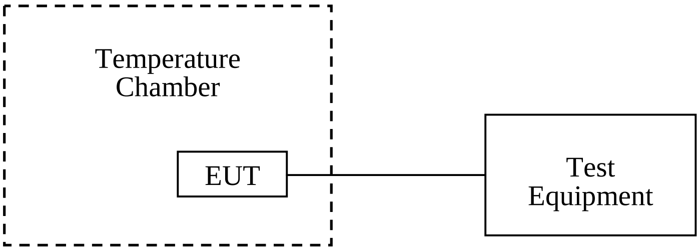
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2018-02-24.

EUT operation mode: Transmitting

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

Cellular Band (Part 22H)

GSM Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	-3	-0.0036	2.5
-20		-7	-0.0084	2.5
-10		-2	-0.0024	2.5
0		-5	-0.0060	2.5
10		-6	-0.0072	2.5
20		1	0.0012	2.5
30		-3	-0.0036	2.5
40		-4	-0.0048	2.5
50		7	0.0084	2.5
25	V min.= 3.6	-8	-0.0096	2.5
	V max.= 4.35	-6	-0.0072	2.5

EDGE Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	21	0.025102	2.5
-20		5	0.005977	2.5
-10		-4	-0.004781	2.5
0		3	0.003586	2.5
10		-2	-0.002391	2.5
20		-3	-0.003586	2.5
30		-7	-0.008367	2.5
40		-8	-0.009563	2.5
50		4	0.004781	2.5
25	V min.= 3.6	-6	-0.007172	2.5
	V max.= 4.35	-3	-0.003586	2.5

WCDMA Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	10	0.011953	2.5
-20		3	0.003586	2.5
-10		15	0.017930	2.5
0		-7	-0.008367	2.5
10		-1	-0.001195	2.5
20		5	0.005977	2.5
30		-10	-0.011953	2.5
40		7	0.008367	2.5
50		16	0.019125	2.5
25	V min.= 3.6	2	0.002391	2.5
	V max.= 4.35	-19	-0.022711	2.5

PCS Band (Part 24E)

GSM Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	12	0.006383	pass
-20		7	0.003723	pass
-10		15	0.007979	pass
0		11	0.005851	pass
10		9	0.004787	pass
20		-16	-0.008511	pass
30		8	0.004255	pass
40		6	0.003191	pass
50		5	0.002660	pass
25	V min.= 3.6	7	0.003723	pass
	V max.= 4.35	9	0.004787	pass

EDGE Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	13	0.006915	pass
-20		-14	-0.007447	pass
-10		-7	-0.003723	pass
0		-10	-0.005319	pass
10		-11	-0.005851	pass
20		-23	-0.012234	pass
30		-6	-0.003191	pass
40		-8	-0.004255	pass
50		-7	-0.003723	pass
25	V min.= 3.6	-2	-0.001064	pass
	V max.= 4.35	-6	-0.003191	pass

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	17	0.009043	pass
-20		1	0.000532	pass
-10		15	0.007979	pass
0		-7	-0.003723	pass
10		-9	-0.004787	pass
20		12	0.006383	pass
30		10	0.005319	pass
40		-5	-0.002660	pass
50		-3	-0.001596	pass
25	V min.= 3.6	2	0.001064	pass
	V max.= 4.35	-16	-0.008511	pass

AWS Band (Part 27)

WCDMA Mode

Temperature (℃)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	3.8	1710.166	1754.836	1710	1755
-20		1710.136	1754.855	1710	1755
-10		1710.143	1754.869	1710	1755
0		1710.133	1754.873	1710	1755
10		1710.161	1754.796	1710	1755
20		1710.169	1754.854	1710	1755
30		1710.154	1754.856	1710	1755
40		1710.164	1754.840	1710	1755
50		1710.185	1754.838	1710	1755
25	V min.= 3.6	1710.211	1754.821	1710	1755
	V max.= 4.35	1710.134	1754.868	1710	1755

LTE:
QPSK:

Band 2:

20.0 MHz Middle Channel, f_o =1880 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	-12	-0.00638	pass
-20		-13	-0.00638	pass
-10		-11	-0.00532	pass
0		-10	-0.00532	pass
10		-10	-0.00532	pass
20		-6	-0.00372	pass
30		-9	-0.00532	pass
40		-13	-0.00638	pass
50		-12	-0.00745	pass
25	V min.= 3.6	-17	-0.00851	pass
	V max.= 4.35	-20	-0.01117	pass

Band 4:

20 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	1710.7099	1754.7220	1710	1755
-20		1710.9030	1754.1064	1710	1755
-10		1710.7278	1754.0243	1710	1755
0		1710.3741	1754.5610	1710	1755
10		1710.8647	1754.7707	1710	1755
20		1710.4487	1754.4872	1710	1755
30		1710.7395	1754.0634	1710	1755
40		1710.8731	1754.0268	1710	1755
50		1710.1373	1754.2946	1710	1755
25	V min.= 3.6	1710.8874	1754.1138	1710	1755
25	V max.= 4.35	1710.9838	1754.1510	1710	1755

Band 5:

10.0 MHz Middle Channel, f_o = 836.5MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-13	-0.00638	2.5
-20		-12	-0.00638	2.5
-10		-9	-0.00532	2.5
0		-8	-0.00532	2.5
10		-9	-0.00532	2.5
20		-5	-0.00372	2.5
30		-9	-0.00532	2.5
40		-11	-0.00638	2.5
50		-15	-0.00745	2.5
25	V min.= 3.6	-15	-0.00851	2.5
	V max.= 4.35	-22	-0.01117	2.5

Band 7:

20 MHz Bandwidth					
Temperature (℃)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	3.8	2500.7745	2569.5602	2500	2570
-20		2500.7434	2569.8840	2500	2570
-10		2500.0030	2569.4075	2500	2570
0		2500.9716	2569.3585	2500	2570
10		2500.6771	2569.8512	2500	2570
20		2500.7051	2569.3590	2500	2570
30		2500.0394	2569.9580	2500	2570
40		2500.8131	2569.1758	2500	2570
50		2500.2253	2569.0414	2500	2570
25	V min.= 3.6	2500.8509	2569.7810	2500	2570
25	V max.= 4.35	2500.2211	2569.8843	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	699.6055	715.8108	699	716
-20		699.4135	715.4169	699	716
-10		699.9227	715.5073	699	716
0		699.5613	715.0229	699	716
10		699.6770	715.0357	699	716
20		699.1655	715.3569	699	716
30		699.4827	715.0756	699	716
40		699.9031	715.8553	699	716
50		699.3155	715.1151	699	716
25	V min.= 3.6	699.015	715.0784	699	716
	V max.= 4.35	699.3661	715.1063	699	716

Band 17:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	704.8530	715.2194	704	716
-20		704.9071	715.3416	704	716
-10		704.8183	715.6997	704	716
0		704.5096	715.5955	704	716
10		704.9993	715.3019	704	716
20		704.1282	715.8718	704	716
30		704.8402	715.1404	704	716
40		704.8936	715.4251	704	716
50		704.9158	715.8881	704	716
25	V min.= 3.6	704.4168	715.2389	704	716
	V max.= 4.35	704.4290	715.8503	704	716

LTE:
16QAM:

Band 2:

20.0 MHz Middle Channel, f_o =1880 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	13	0.006915	pass
-20		2	0.001064	pass
-10		5	0.002660	pass
0		-7	-0.003723	pass
10		6	0.003191	pass
20		15	0.007979	pass
30		-9	-0.004787	pass
40		-11	-0.005851	pass
50		10	0.005319	pass
25	V min.= 3.6	13	0.006915	pass
	V max.= 4.35	17	0.009043	pass

Band 4:

20 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	1710.6459	1754.5343	1710	1755
-20		1710.9630	1754.1258	1710	1755
-10		1710.2750	1754.6840	1710	1755
0		1710.5264	1754.0899	1710	1755
10		1710.0156	1754.6485	1710	1755
20		1710.7499	1754.8389	1710	1755
30		1710.5421	1754.6204	1710	1755
40		1710.4518	1754.8750	1710	1755
50		1710.7545	1754.5826	1710	1755
25	V min.= 3.6	1710.0800	1754.5912	1710	1755
25	V max.= 4.35	1710.2798	1754.8777	1710	1755

Band 5:

10.0 MHz Middle Channel, f_o =836.5MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	5	0.005977	2.5
-20		6	0.007172	2.5
-10		3	0.003586	2.5
0		2	0.002391	2.5
10		-7	-0.008367	2.5
20		-9	-0.010758	2.5
30		15	0.017930	2.5
40		7	0.008367	2.5
50		-8	-0.009563	2.5
25	V min.= 3.6	12	0.014344	2.5
	V max.= 4.35	17	0.020320	2.5

Band 7:

20 MHz Bandwidth					
Temperature (℃)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	3.8	2500.8245	2569.5530	2500	2570
-20		2500.3385	2569.8435	2500	2570
-10		2500.0398	2569.3249	2500	2570
0		2500.2685	2569.5027	2500	2570
10		2500.5320	2569.3032	2500	2570
20		2500.6985	2569.1447	2500	2570
30		2400.8794	2569.0468	2500	2570
40		2500.5536	2569.1398	2500	2570
50		2500.0747	2569.0067	2500	2570
25	V min.= 3.6	2500.3897	2569.6053	2500	2570
25	V max.= 4.35	2500.5176	2569.3547	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	699.6051	715.8198	699	716
-20		699.4121	715.4168	699	716
-10		699.9213	715.5066	699	716
0		699.5612	715.0265	699	716
10		699.6769	715.0147	699	716
20		699.1603	715.8397	699	716
30		699.4851	715.3375	699	716
40		699.9059	715.8602	699	716
50		699.3178	715.8551	699	716
25	V min.= 3.6	699.0025	715.0684	699	716
	V max.= 4.35	699.3761	715.0963	699	716

Band 17

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	704.8302	715.0048	704	716
-20		704.2518	715.6284	704	716
-10		704.0471	715.6688	704	716
0		704.4132	715.8755	704	716
10		704.7979	715.8600	704	716
20		704.0495	715.6118	704	716
30		704.1896	715.7963	704	716
40		704.8455	715.9046	704	716
50		704.7768	715.4060	704	716
25	V min.= 3.6	704.5590	715.2809	704	716
	V max.= 4.35	704.6625	715.1252	704	716

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