

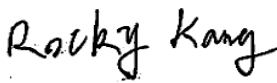
FCC PART 27
FCC PART 22H, PART 24E
TEST REPORT

For

ROKIT Corp Limited

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FCC ID: 2AQNZ-IO3D

Report Type: Original Report	Product Type: Mobile phone
Report Number: RSZ180725001-00D	
Report Date: 2018-08-15	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *ROKIT Corp Limited's* product, model number: IO 3D (*FCC ID: 2AQNZ-IO3D*) or the "EUT" in this report was a *Mobile phone*, which was measured approximately: 14.6 cm (L) * 6.9 cm (W) * 0.9 cm (H), rated with input voltage: DC 3.8 V from battery.

**All measurement and test data in this report was gathered from production sample serial number: 180725001 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-07-25.*

Objective

This test report is prepared on behalf of *ROKIT Corp Limited* 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 and FCC Part 15B JBP submissions with FCC ID: 2AQNZ-IO3D.

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 °C
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.

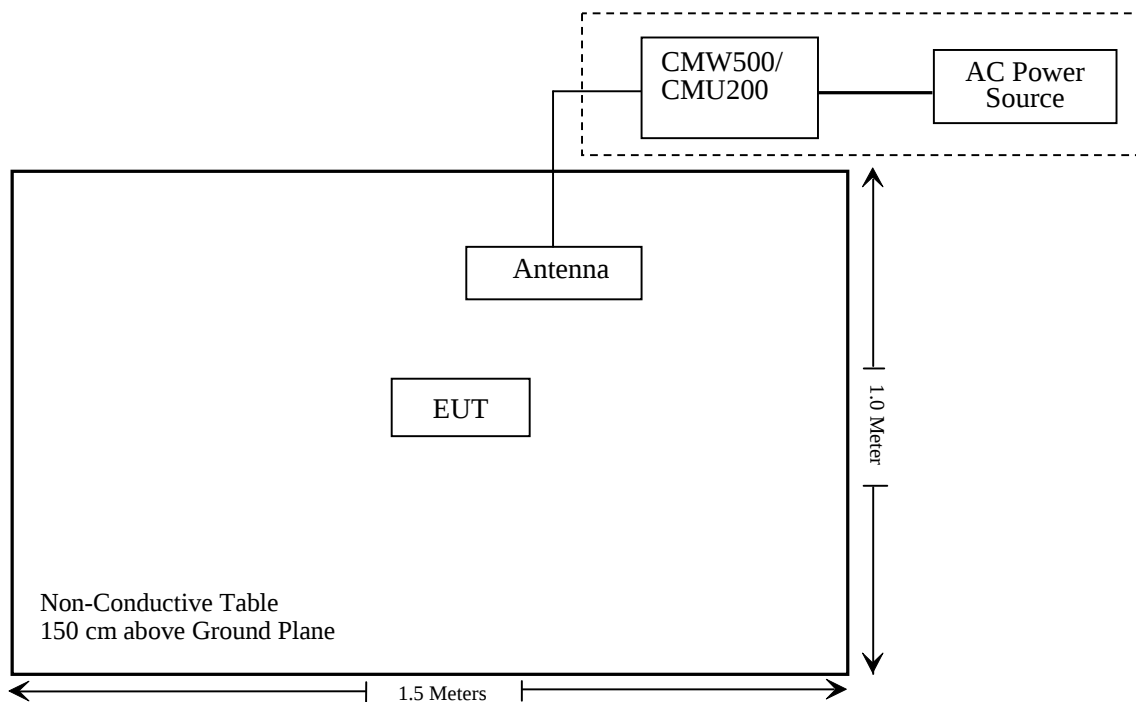
Equipment Modifications

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)	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: RSZ180725001-20A.

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	2018-04-24	2019-04-24
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	2017-12-29	2020-12-28
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2017-12-29	2020-12-28
Ducommun technologies	Pre-amplifier	ALN-22093530-01	991373-01	2017-08-03	2018-08-03

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2017-08-19	2018-08-19
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	2018-04-24	2019-04-24
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: RSZ180725001-20A.

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) - 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.

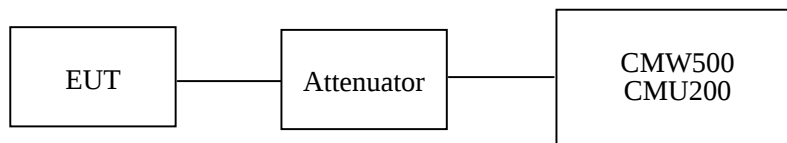
According to §27.50(c), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

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

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:	26 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2018-08-09.

Conducted Power**Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.37	38.45
	190	836.6	32.30	38.45
	251	848.8	32.16	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.34	31.45	29.45	28.27	38.45
	190	836.6	32.29	31.38	29.36	28.13	38.45
	251	848.8	32.17	31.23	29.20	27.98	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	25.83	24.75	22.56	21.38	38.45
	190	836.6	25.67	24.60	22.41	21.28	38.45
	251	848.8	25.35	24.25	22.02	20.80	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		22.58	22.50	22.41
		HSDPA	1	21.56	21.46	21.42
			2	21.47	21.42	21.35
			3	21.63	21.55	21.50
			4	21.45	21.40	21.36
		HSUPA	1	21.20	21.15	21.13
			2	21.10	21.02	21.02
			3	21.32	21.24	21.25
			4	21.10	21.04	21.08
			5	21.25	21.19	21.20
		HSPA+	1	21.22	21.12	21.10

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	28.12	33
	661	1880.0	28.33	33
	810	1909.8	28.36	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	28.18	27.25	25.32	24.17	33
	661	1880.0	28.35	27.45	25.53	24.37	33
	810	1909.8	28.37	27.47	25.68	24.57	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	23.55	22.45	20.43	19.11	33
	661	1880.0	23.83	22.70	20.63	19.41	33
	810	1909.8	24.05	22.87	20.79	19.53	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		20.91	20.98	21.03
		HSDPA	1	20.36	20.42	20.41
			2	20.32	20.32	20.34
			3	20.41	20.52	20.45
			4	20.27	20.39	20.34
		HSUPA	1	20.44	20.44	20.42
			2	20.35	20.41	20.30
			3	20.48	20.52	20.54
			4	20.32	20.31	20.32
			5	20.52	20.48	20.53
		HSPA+	1	20.35	20.41	20.36

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		20.90	20.80	20.92
		HSDPA	1	20.47	20.36	20.45
			2	20.39	20.32	20.36
			3	20.59	20.42	20.53
			4	20.44	20.23	20.39
		HSUPA	1	20.51	20.37	20.45
			2	20.44	20.35	20.33
			3	20.58	20.47	20.56
			4	20.42	20.32	20.41
			5	20.61	20.48	20.56
		HSPA+	1	20.53	20.37	20.42

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.48	13
	Middle	0.36	13
	High	0.48	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.57	13
	Middle	2.42	13
	High	2.55	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.39	13
	Middle	3.21	13
	High	3.33	13
HSDPA (16QAM)	Low	3.37	13
	Middle	3.24	13
	High	3.39	13
HSUPA (BPSK)	Low	3.36	13
	Middle	3.23	13
	High	3.38	13
HSPA+	Low	3.11	13
	Middle	3.25	13
	High	3.85	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.44	13
	Middle	0.32	13
	High	0.46	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.58	13
	Middle	2.42	13
	High	2.57	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.65	13
	Middle	3.52	13
	High	3.69	13
HSDPA (16QAM)	Low	3.67	13
	Middle	3.56	13
	High	3.64	13
HSUPA (BPSK)	Low	3.69	13
	Middle	3.55	13
	High	3.67	13
HSPA+	Low	3.33	13
	Middle	3.41	13
	High	3.31	13

AWS Band (Part 27)

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	2.84	13
	Middle	2.71	13
	High	2.87	13
HSDPA (16QAM)	Low	2.82	13
	Middle	2.73	13
	High	2.89	13
HSUPA (BPSK)	Low	2.85	13
	Middle	2.76	13
	High	2.83	13
HSPA+	Low	3.44	13
	Middle	3.22	13
	High	3.63	13

Radiated Power**GSM Mode:**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H/24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dBi)		Limit (dBm)	Margin (dB)
ERP for Cellular Band (Part 22H), Middle Channel										
836.60	91.42	57	1.1	H	29.4	0.70	0.0	28.70	38.45	9.75
836.60	85.62	238	2.4	V	25.6	0.70	0.0	24.90	38.45	13.55
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	90.32	126	1.6	H	20.3	1.30	9.40	28.40	33	4.6
1880.00	89.16	343	1.8	V	18.9	1.30	9.40	27.00	33	6.0

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 (dBi)			
ERP, Cellular Band (Part 22H), Middle Channel										
836.60	86.59	36	2.0	H	24.6	0.70	0.0	23.90	38.45	14.55
836.60	82.65	6	2.2	V	22.7	0.70	0.0	22.00	38.45	16.45
EIRP, PCS Band (Part 24E), Middle Channel										
1880.00	85.78	21	1.9	H	15.7	1.30	9.40	23.80	33	9.2
1880.00	83.52	292	2.3	V	13.3	1.30	9.40	21.40	33	11.6

WCDMA Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H/24E/27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dBi)		Limit (dBm)	Margin (dB)
ERP for WCDMA Band V (Part 22H), Middle Channel										
836.60	84.52	318	2.0	H	22.5	0.70	0.0	21.80	38.45	16.65
836.60	79.72	122	1.7	V	19.7	0.70	0.0	19.00	38.45	19.45
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	83.08	175	1.9	H	13.0	1.30	9.40	21.10	33	11.9
1880.00	86.31	76	1.7	V	16.0	1.30	9.40	20.10	33	12.9
EIRP for WCDMA Band IV (Part 27), Middle Channel										
1732.60	86.48	91	2.4	H	13.9	1.30	8.90	21.50	30	8.5
1732.60	85.17	45	2.4	V	12.0	1.30	8.90	19.60	30	10.4

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	21.63	20.72	21.15
		RB Size=1, RB Offset=2	21.51	21.64	21.47
		RB Size=1, RB Offset=5	21.48	20.72	21.57
		RB Size=3, RB Offset=0	21.45	21.33	20.91
		RB Size=3, RB Offset=1	21.24	21.28	21.14
		RB Size=3, RB Offset=2	21.21	21.24	21.57
		RB Size=6, RB Offset=0	21.20	21.34	20.91
	16QAM	RB Size=1, RB Offset=0	21.18	20.90	21.68
		RB Size=1, RB Offset=2	21.16	21.04	21.61
		RB Size=1, RB Offset=5	21.01	21.25	20.90
		RB Size=3, RB Offset=0	20.96	20.77	20.80
		RB Size=3, RB Offset=1	20.95	21.58	21.01
		RB Size=3, RB Offset=2	20.75	21.19	20.89
		RB Size=6, RB Offset=0	20.72	21.42	21.16
3.0	QPSK	RB Size=1, RB Offset=0	21.68	21.01	21.35
		RB Size=1, RB Offset=7	21.65	21.23	20.72
		RB Size=1, RB Offset=14	21.55	20.93	21.69
		RB Size=8, RB Offset=0	21.51	21.54	20.78
		RB Size=8, RB Offset=4	21.44	20.91	20.78
		RB Size=8, RB Offset=7	21.42	20.98	21.68
		RB Size=15, RB Offset=0	21.22	21.62	20.72
	16QAM	RB Size=1, RB Offset=0	21.20	21.38	21.36
		RB Size=1, RB Offset=7	21.19	21.01	21.12
		RB Size=1, RB Offset=14	21.10	20.96	20.82
		RB Size=8, RB Offset=0	21.03	21.16	21.29
		RB Size=8, RB Offset=4	21.03	20.83	21.39
		RB Size=8, RB Offset=7	20.88	21.00	21.55
		RB Size=15, RB Offset=0	20.75	20.98	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	21.65	20.72	21.53
		RB Size=1, RB Offset=12	21.60	21.67	20.78
		RB Size=1, RB Offset=24	21.48	21.09	21.03
		RB Size=12, RB Offset=0	21.47	21.69	20.84
		RB Size=12, RB Offset=6	21.35	20.77	21.61
		RB Size=12, RB Offset=11	21.29	21.07	21.13
		RB Size=25, RB Offset=0	21.29	21.65	20.72
	16QAM	RB Size=1, RB Offset=0	21.25	21.41	20.99
		RB Size=1, RB Offset=12	21.20	20.87	21.58
		RB Size=1, RB Offset=24	21.18	20.99	21.67
		RB Size=12, RB Offset=0	21.01	21.30	21.65
		RB Size=12, RB Offset=6	20.96	21.66	20.78
		RB Size=12, RB Offset=11	20.90	20.71	21.27
		RB Size=25, RB Offset=0	20.71	21.12	21.31
10.0	QPSK	RB Size=1, RB Offset=0	21.68	21.22	20.98
		RB Size=1, RB Offset=24	21.64	20.85	21.66
		RB Size=1, RB Offset=49	21.64	20.83	20.78
		RB Size=25, RB Offset=0	21.53	21.59	21.36
		RB Size=25, RB Offset=12	21.46	21.55	21.51
		RB Size=25, RB Offset=24	21.42	21.12	21.26
		RB Size=50, RB Offset=0	21.41	21.33	20.70
	16QAM	RB Size=1, RB Offset=0	21.38	21.05	21.05
		RB Size=1, RB Offset=24	21.29	20.75	21.47
		RB Size=1, RB Offset=49	21.25	21.50	20.90
		RB Size=25, RB Offset=0	21.19	21.61	20.77
		RB Size=25, RB Offset=12	21.08	21.63	21.45
		RB Size=25, RB Offset=24	21.06	21.15	20.96
		RB Size=50, RB Offset=0	20.90	21.58	21.28

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	21.69	21.15	20.95
		RB Size=1, RB Offset=37	21.66	21.32	21.31
		RB Size=1, RB Offset=74	21.59	20.91	20.74
		RB Size=36, RB Offset=0	21.49	21.70	21.33
		RB Size=36, RB Offset=18	21.37	21.46	21.31
		RB Size=36, RB Offset=37	21.35	20.73	20.94
		RB Size=75, RB Offset=0	21.35	21.50	20.86
	16QAM	RB Size=1, RB Offset=0	21.31	20.77	21.30
		RB Size=1, RB Offset=37	21.26	21.04	21.27
		RB Size=1, RB Offset=74	21.23	20.97	21.62
		RB Size=36, RB Offset=0	21.13	21.08	20.83
		RB Size=36, RB Offset=18	20.99	20.83	21.23
		RB Size=36, RB Offset=37	20.91	21.30	21.43
		RB Size=75, RB Offset=0	20.88	21.57	21.53
20.0	QPSK	RB Size=1, RB Offset=0	21.66	21.64	21.62
		RB Size=1, RB Offset=49	21.62	21.07	21.47
		RB Size=1, RB Offset=99	21.38	21.10	21.17
		RB Size=50, RB Offset=0	21.33	21.38	20.97
		RB Size=50, RB Offset=24	21.33	21.07	21.36
		RB Size=50, RB Offset=49	21.25	21.13	21.19
		RB Size=100, RB Offset=0	21.16	21.31	21.45
	16QAM	RB Size=1, RB Offset=0	21.15	20.89	21.08
		RB Size=1, RB Offset=49	21.02	21.55	20.70
		RB Size=1, RB Offset=99	20.97	21.54	21.65
		RB Size=50, RB Offset=0	20.90	21.21	21.30
		RB Size=50, RB Offset=24	20.90	21.66	21.05
		RB Size=50, RB Offset=49	20.86	21.55	21.22
		RB Size=100, RB Offset=0	20.80	21.22	20.72

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.52	13	Pass
QPSK (100RB Size)	6.10	13	Pass
16QAM (1RB Size)	6.89	13	Pass
16QAM (100RB Size)	6.08	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 (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	83.41	235	1.3	H	13.4	1.30	9.40	21.50	33
1880.00	83.87	70	1.6	V	13.6	1.30	9.40	21.70	33
3 MHz Bandwidth									
1880.00	83.12	356	2.0	H	13.1	1.30	9.40	21.20	33
1880.00	83.16	306	1.8	V	12.9	1.30	9.40	21.00	33
5 MHz Bandwidth									
1880.00	82.42	164	1.0	H	12.4	1.30	9.40	20.50	33
1880.00	81.42	74	1.4	V	11.2	1.30	9.40	19.30	33
10 MHz Bandwidth									
1880.00	82.21	98	1.4	H	12.2	1.30	9.40	20.30	33
1880.00	81.13	280	1.9	V	10.9	1.30	9.40	19.00	33
15 MHz Bandwidth									
1880.00	82.06	21	1.2	H	12.0	1.30	9.40	20.10	33
1880.00	81.05	117	2.4	V	10.8	1.30	9.40	18.90	33
20 MHz Bandwidth									
1880.00	82.01	300	1.4	H	12.0	1.30	9.40	20.10	33
1880.00	80.24	27	1.1	V	10.0	1.30	9.40	18.10	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 (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	84.52	109	2.0	H	14.5	1.30	9.40	22.60	33
1880.00	83.42	15	1.1	V	13.2	1.30	9.40	21.30	33
3 MHz Bandwidth									
1880.00	84.26	327	1.2	H	14.2	1.30	9.40	22.30	33
1880.00	83.17	324	2.3	V	12.9	1.30	9.40	21.00	33
5 MHz Bandwidth									
1880.00	84.02	198	1.2	H	14.0	1.30	9.40	22.10	33
1880.00	83.07	71	2.1	V	12.8	1.30	9.40	20.90	33
10 MHz Bandwidth									
1880.00	83.84	25	1.3	H	13.8	1.30	9.40	21.90	33
1880.00	82.72	261	1.7	V	12.5	1.30	9.40	20.60	33
15 MHz Bandwidth									
1880.00	83.45	190	2.1	H	13.4	1.30	9.40	21.50	33
1880.00	82.37	269	1.9	V	12.1	1.30	9.40	20.20	33
20 MHz Bandwidth									
1880.00	83.27	268	1.6	H	13.2	1.30	9.40	21.30	33
1880.00	82.13	171	1.4	V	11.9	1.30	9.40	20.00	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	21.57	20.92	21.15
		RB Size=1, RB Offset=2	21.42	21.01	21.40
		RB Size=1, RB Offset=5	21.42	20.86	21.29
		RB Size=3, RB Offset=0	21.39	21.01	21.11
		RB Size=3, RB Offset=1	21.36	20.75	20.87
		RB Size=3, RB Offset=2	21.36	21.21	21.14
		RB Size=6, RB Offset=0	21.29	21.52	20.89
	16QAM	RB Size=1, RB Offset=0	21.27	21.64	21.66
		RB Size=1, RB Offset=2	21.16	21.20	20.84
		RB Size=1, RB Offset=5	20.95	21.14	21.06
		RB Size=3, RB Offset=0	20.91	20.76	21.68
		RB Size=3, RB Offset=1	20.91	20.97	21.17
		RB Size=3, RB Offset=2	20.83	20.85	20.72
		RB Size=6, RB Offset=0	20.76	21.21	21.64
3.0	QPSK	RB Size=1, RB Offset=0	21.64	21.54	21.16
		RB Size=1, RB Offset=7	21.64	21.47	20.73
		RB Size=1, RB Offset=14	21.57	21.00	21.38
		RB Size=8, RB Offset=0	21.54	21.55	21.36
		RB Size=8, RB Offset=4	21.52	20.75	20.84
		RB Size=8, RB Offset=7	21.41	20.97	21.07
		RB Size=15, RB Offset=0	21.24	21.49	21.58
	16QAM	RB Size=1, RB Offset=0	21.17	21.37	21.57
		RB Size=1, RB Offset=7	21.07	20.89	21.43
		RB Size=1, RB Offset=14	21.05	21.68	21.60
		RB Size=8, RB Offset=0	20.99	20.85	21.39
		RB Size=8, RB Offset=4	20.97	20.94	20.88
		RB Size=8, RB Offset=7	20.94	21.04	21.53
		RB Size=15, RB Offset=0	20.71	20.96	21.23

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	21.52	21.41	20.78
		RB Size=1, RB Offset=12	21.51	20.94	21.23
		RB Size=1, RB Offset=24	21.47	20.85	20.75
		RB Size=12, RB Offset=0	21.46	21.12	21.43
		RB Size=12, RB Offset=6	21.46	20.85	21.18
		RB Size=12, RB Offset=11	21.39	21.65	21.05
		RB Size=25, RB Offset=0	21.34	21.53	21.18
	16QAM	RB Size=1, RB Offset=0	21.32	20.89	20.71
		RB Size=1, RB Offset=12	21.27	20.80	20.92
		RB Size=1, RB Offset=24	20.98	20.75	21.14
		RB Size=12, RB Offset=0	20.77	21.52	21.67
		RB Size=12, RB Offset=6	20.76	21.50	21.61
		RB Size=12, RB Offset=11	20.74	21.49	21.54
		RB Size=25, RB Offset=0	20.73	21.15	21.30
10.0	QPSK	RB Size=1, RB Offset=0	21.69	21.28	21.64
		RB Size=1, RB Offset=24	21.60	21.35	21.03
		RB Size=1, RB Offset=49	21.60	20.79	21.68
		RB Size=25, RB Offset=0	21.47	21.15	21.54
		RB Size=25, RB Offset=12	21.38	21.14	21.30
		RB Size=25, RB Offset=24	21.30	21.34	21.00
		RB Size=50, RB Offset=0	21.25	21.52	21.53
	16QAM	RB Size=1, RB Offset=0	21.22	21.06	21.04
		RB Size=1, RB Offset=24	21.19	21.63	21.67
		RB Size=1, RB Offset=49	21.15	21.15	21.30
		RB Size=25, RB Offset=0	20.97	20.96	21.29
		RB Size=25, RB Offset=12	20.93	20.93	20.80
		RB Size=25, RB Offset=24	20.84	21.64	20.77
		RB Size=50, RB Offset=0	20.71	21.18	21.26

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	21.70	21.40	21.10
		RB Size=1, RB Offset=37	21.59	21.57	21.36
		RB Size=1, RB Offset=74	21.54	21.01	21.22
		RB Size=36, RB Offset=0	21.46	21.65	20.77
		RB Size=36, RB Offset=18	21.44	21.61	21.08
		RB Size=36, RB Offset=37	21.38	21.69	21.34
		RB Size=75, RB Offset=0	21.37	20.85	21.36
	16QAM	RB Size=1, RB Offset=0	21.36	21.67	21.12
		RB Size=1, RB Offset=37	21.29	21.19	21.37
		RB Size=1, RB Offset=74	21.17	20.89	21.00
		RB Size=36, RB Offset=0	21.10	21.63	21.52
		RB Size=36, RB Offset=18	21.09	20.79	21.55
		RB Size=36, RB Offset=37	21.08	20.90	21.00
		RB Size=75, RB Offset=0	21.03	21.50	20.88
20.0	QPSK	RB Size=1, RB Offset=0	21.68	21.65	21.08
		RB Size=1, RB Offset=49	21.57	21.09	21.22
		RB Size=1, RB Offset=99	21.50	21.16	21.14
		RB Size=50, RB Offset=0	21.43	20.70	21.14
		RB Size=50, RB Offset=24	21.39	21.17	21.44
		RB Size=50, RB Offset=49	21.37	21.62	21.29
		RB Size=100, RB Offset=0	21.37	20.84	21.25
	16QAM	RB Size=1, RB Offset=0	21.27	21.06	21.13
		RB Size=1, RB Offset=49	21.14	21.44	21.52
		RB Size=1, RB Offset=99	21.10	20.98	21.09
		RB Size=50, RB Offset=0	20.84	21.38	20.84
		RB Size=50, RB Offset=24	20.82	21.37	21.29
		RB Size=50, RB Offset=49	20.80	21.61	20.98
		RB Size=100, RB Offset=0	20.74	21.43	20.72

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.94	13	Pass
QPSK (100RB Size)	5.53	13	Pass
16QAM (1RB Size)	6.27	13	Pass
16QAM (100RB Size)	5.91	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 (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	85.86	101	1.7	H	12.7	1.30	8.90	20.30	30
1732.50	83.41	72	2.5	V	10.8	1.30	8.90	18.40	30
3 MHz Bandwidth									
1732.50	85.41	277	1.9	H	12.2	1.30	8.90	19.80	30
1732.50	84.16	114	1.0	V	11.6	1.30	8.90	19.20	30
5 MHz Bandwidth									
1732.50	85.01	217	1.6	H	11.8	1.30	8.90	19.40	30
1732.50	83.24	222	1.7	V	10.7	1.30	8.90	18.30	30
10 MHz Bandwidth									
1732.50	84.58	199	1.1	H	11.4	1.30	8.90	19.00	30
1732.50	83.03	210	2.3	V	10.5	1.30	8.90	18.10	30
15 MHz Bandwidth									
1732.50	84.11	45	1.2	H	10.9	1.30	8.90	18.50	30
1732.50	82.86	91	2.5	V	10.3	1.30	8.90	17.90	30
20 MHz Bandwidth									
1732.50	84.03	220	1.2	H	10.9	1.30	8.90	18.50	30
1732.50	82.24	24	1.8	V	9.7	1.30	8.90	17.30	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 (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	86.45	341	1.6	H	13.3	1.30	8.90	20.90	30
1732.50	84.85	279	1.6	V	12.3	1.30	8.90	19.90	30
3 MHz Bandwidth									
1732.50	86.23	39	2.4	H	13.1	1.30	8.90	20.70	30
1732.50	84.53	298	1.1	V	12.0	1.30	8.90	19.60	30
5 MHz Bandwidth									
1732.50	86.04	153	1.3	H	12.9	1.30	8.90	20.50	30
1732.50	84.26	245	2.1	V	11.7	1.30	8.90	19.30	30
10 MHz Bandwidth									
1732.50	85.76	312	1.6	H	12.6	1.30	8.90	20.20	30
1732.50	84.12	109	2.1	V	11.6	1.30	8.90	19.20	30
15 MHz Bandwidth									
1732.50	85.42	207	2.0	H	12.3	1.30	8.90	19.90	30
1732.50	84.01	210	1.4	V	11.4	1.30	8.90	19.00	30
20 MHz Bandwidth									
1732.50	85.27	328	2.1	H	12.1	1.30	8.90	19.70	30
1732.50	83.85	157	1.2	V	11.3	1.30	8.90	18.90	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	21.91	21.39	21.32
		RB Size=1, RB Offset=2	22.22	22.22	21.54
		RB Size=1, RB Offset=5	22.21	21.61	21.55
		RB Size=3, RB Offset=0	22.19	22.18	21.65
		RB Size=3, RB Offset=1	22.16	21.74	22.09
		RB Size=3, RB Offset=2	22.07	21.58	21.58
		RB Size=6, RB Offset=0	22.03	22.14	22.09
	16QAM	RB Size=1, RB Offset=0	21.98	21.40	21.65
		RB Size=1, RB Offset=2	21.92	21.77	22.03
		RB Size=1, RB Offset=5	21.89	21.52	22.11
		RB Size=3, RB Offset=0	21.80	21.52	21.60
		RB Size=3, RB Offset=1	21.62	21.54	21.86
		RB Size=3, RB Offset=2	21.55	21.41	21.31
		RB Size=6, RB Offset=0	21.25	22.13	21.45
3.0	QPSK	RB Size=1, RB Offset=0	21.60	21.96	22.08
		RB Size=1, RB Offset=7	22.24	21.30	21.95
		RB Size=1, RB Offset=14	21.98	22.10	22.12
		RB Size=8, RB Offset=0	21.71	22.15	21.39
		RB Size=8, RB Offset=4	21.70	21.74	21.81
		RB Size=8, RB Offset=7	21.52	21.88	21.83
		RB Size=15, RB Offset=0	21.49	21.93	21.52
	16QAM	RB Size=1, RB Offset=0	21.47	21.65	21.54
		RB Size=1, RB Offset=7	21.45	21.82	21.92
		RB Size=1, RB Offset=14	21.44	21.41	21.46
		RB Size=8, RB Offset=0	21.43	22.07	21.59
		RB Size=8, RB Offset=4	21.34	21.80	22.23
		RB Size=8, RB Offset=7	21.33	21.61	21.26
		RB Size=15, RB Offset=0	21.25	21.84	21.80

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	21.45	21.48	21.48
		RB Size=1, RB Offset=12	22.15	21.97	22.13
		RB Size=1, RB Offset=24	21.97	21.61	21.46
		RB Size=12, RB Offset=0	21.96	21.30	21.48
		RB Size=12, RB Offset=6	21.93	21.82	22.12
		RB Size=12, RB Offset=11	21.92	21.83	22.07
		RB Size=25, RB Offset=0	21.84	21.70	21.99
	16QAM	RB Size=1, RB Offset=0	21.75	21.86	21.99
		RB Size=1, RB Offset=12	21.73	21.34	21.67
		RB Size=1, RB Offset=24	21.73	22.15	21.75
		RB Size=12, RB Offset=0	21.55	22.20	21.93
		RB Size=12, RB Offset=6	21.46	21.49	22.10
		RB Size=12, RB Offset=11	21.40	21.59	21.81
		RB Size=25, RB Offset=0	21.25	21.30	22.11
10.0	QPSK	RB Size=1, RB Offset=0	22.10	21.43	21.36
		RB Size=1, RB Offset=24	22.00	22.15	21.94
		RB Size=1, RB Offset=49	21.98	21.86	21.26
		RB Size=25, RB Offset=0	21.80	22.16	21.50
		RB Size=25, RB Offset=12	21.80	21.65	21.56
		RB Size=25, RB Offset=24	21.78	21.25	21.53
		RB Size=50, RB Offset=0	21.76	22.06	21.78
	16QAM	RB Size=1, RB Offset=0	21.72	21.72	21.69
		RB Size=1, RB Offset=24	21.65	21.58	21.32
		RB Size=1, RB Offset=49	21.52	21.29	21.78
		RB Size=25, RB Offset=0	21.51	22.23	21.70
		RB Size=25, RB Offset=12	21.43	22.01	21.52
		RB Size=25, RB Offset=24	21.35	21.29	22.16
		RB Size=50, RB Offset=0	21.28	21.30	22.05

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.13	13	Pass
QPSK (50RB Size)	6.55	13	Pass
16QAM (1RB Size)	6.16	13	Pass
16QAM (50RB Size)	6.55	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 (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	84.21	146	1.1	H	22.2	0.70	0.0	21.50	38.45
836.5	82.45	53	1.2	V	22.5	0.70	0.0	21.80	38.45
3 MHz Bandwidth									
836.5	84.06	104	1.1	H	22.1	0.70	0.0	21.40	38.45
836.5	82.02	297	2.0	V	22.0	0.70	0.0	21.30	38.45
5 MHz Bandwidth									
836.5	83.84	184	1.0	H	21.8	0.70	0.0	21.10	38.45
836.5	81.56	176	1.2	V	21.6	0.70	0.0	20.90	38.45
10 MHz Bandwidth									
836.5	83.52	51	1.4	H	21.5	0.70	0.0	20.80	38.45
836.5	81.13	204	2.0	V	21.1	0.70	0.0	20.40	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 (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	84.75	6	1.7	H	22.8	0.70	0.0	22.10	38.45
836.5	82.85	203	2.5	V	22.9	0.70	0.0	22.20	38.45
3 MHz Bandwidth									
836.5	84.42	331	2.3	H	22.4	0.70	0.0	21.70	38.45
836.5	82.32	7	1.6	V	22.3	0.70	0.0	21.60	38.45
5 MHz Bandwidth									
836.5	84.21	296	1.3	H	22.2	0.70	0.0	21.50	38.45
836.5	82.13	232	1.8	V	22.1	0.70	0.0	21.40	38.45
10 MHz Bandwidth									
836.5	84.01	279	1.3	H	22.0	0.70	0.0	21.30	38.45
836.5	81.76	216	1.0	V	21.8	0.70	0.0	21.10	38.45

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	22.50	23.48	22.71
		RB Size=1, RB Offset=2	22.63	23.29	22.95
		RB Size=1, RB Offset=5	23.03	22.61	22.77
		RB Size=3, RB Offset=0	22.91	22.99	23.40
		RB Size=3, RB Offset=1	22.89	23.30	22.63
		RB Size=3, RB Offset=2	22.21	22.96	22.76
		RB Size=6, RB Offset=0	22.13	21.84	22.29
	16QAM	RB Size=1, RB Offset=0	22.08	22.38	21.57
		RB Size=1, RB Offset=2	22.01	21.82	21.78
		RB Size=1, RB Offset=5	22.27	21.36	22.02
		RB Size=3, RB Offset=0	21.87	22.38	22.01
		RB Size=3, RB Offset=1	21.68	22.00	22.08
		RB Size=3, RB Offset=2	22.19	21.99	21.67
		RB Size=6, RB Offset=0	20.89	20.61	21.38
3.0	QPSK	RB Size=1, RB Offset=0	22.82	23.06	22.51
		RB Size=1, RB Offset=7	22.92	22.84	22.68
		RB Size=1, RB Offset=14	22.80	23.08	22.88
		RB Size=8, RB Offset=0	21.79	21.90	21.99
		RB Size=8, RB Offset=4	22.12	21.50	21.86
		RB Size=8, RB Offset=7	21.62	21.32	21.85
		RB Size=15, RB Offset=0	22.39	21.58	21.86
	16QAM	RB Size=1, RB Offset=0	22.01	22.72	22.42
		RB Size=1, RB Offset=7	21.86	22.01	22.98
		RB Size=1, RB Offset=14	21.91	22.04	22.23
		RB Size=8, RB Offset=0	21.00	20.66	20.71
		RB Size=8, RB Offset=4	21.49	20.56	21.50
		RB Size=8, RB Offset=7	20.75	21.18	21.28
		RB Size=15, RB Offset=0	21.25	21.28	21.45

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	22.24	22.46	21.62
		RB Size=1, RB Offset=12	21.55	22.13	21.92
		RB Size=1, RB Offset=24	21.79	21.61	21.88
		RB Size=12, RB Offset=0	21.56	21.16	21.45
		RB Size=12, RB Offset=6	21.29	21.56	21.41
		RB Size=12, RB Offset=11	20.68	21.44	20.83
		RB Size=25, RB Offset=0	21.61	22.14	22.38
	16QAM	RB Size=1, RB Offset=0	22.15	21.48	21.66
		RB Size=1, RB Offset=12	21.73	21.86	22.09
		RB Size=1, RB Offset=24	22.04	21.93	21.86
		RB Size=12, RB Offset=0	21.16	21.06	21.45
		RB Size=12, RB Offset=6	21.16	21.12	20.66
		RB Size=12, RB Offset=11	21.23	20.64	20.44
		RB Size=25, RB Offset=0	20.80	20.83	21.24
10.0	QPSK	RB Size=1, RB Offset=0	23.40	23.31	23.11
		RB Size=1, RB Offset=24	23.47	23.38	22.84
		RB Size=1, RB Offset=49	23.13	23.33	22.50
		RB Size=25, RB Offset=0	21.58	21.77	21.98
		RB Size=25, RB Offset=12	21.96	21.92	22.38
		RB Size=25, RB Offset=24	22.07	21.42	22.09
		RB Size=50, RB Offset=0	22.46	21.62	21.98
	16QAM	RB Size=1, RB Offset=0	22.16	22.95	22.30
		RB Size=1, RB Offset=24	22.61	22.08	22.32
		RB Size=1, RB Offset=49	22.49	22.61	22.65
		RB Size=25, RB Offset=0	20.95	21.37	21.14
		RB Size=25, RB Offset=12	20.96	21.51	21.43
		RB Size=25, RB Offset=24	21.07	21.31	20.99
		RB Size=50, RB Offset=0	20.87	20.74	20.66

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.49	13	Pass
QPSK (100RB Size)	6.39	13	Pass
16QAM (1RB Size)	6.70	13	Pass
16QAM(50RB Size)	6.71	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									
707.50	86.47	111	1.9	H	22.5	0.62	0.0	21.88	34.77
707.50	83.74	210	1.9	V	20.7	0.62	0.0	20.08	34.77
3 MHz Bandwidth									
707.50	86.24	323	1.1	H	22.2	0.62	0.0	21.58	34.77
707.50	83.16	79	2.1	V	20.2	0.62	0.0	19.58	34.77
5 MHz Bandwidth									
707.50	86.03	257	2.4	H	22.0	0.62	0.0	21.38	34.77
707.50	83.08	19	1.0	V	20.1	0.62	0.0	19.48	34.77
10 MHz Bandwidth									
707.50	85.84	140	1.9	H	21.8	0.62	0.0	21.18	34.77
707.50	82.81	214	1.0	V	19.8	0.62	0.0	19.18	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									
707.50	86.79	132	2.0	H	22.8	0.62	0.0	22.18	34.77
707.50	84.84	332	2.3	V	21.8	0.62	0.0	21.18	34.77
3 MHz Bandwidth									
707.50	86.37	8	1.2	H	22.4	0.62	0.0	21.78	34.77
707.50	84.52	251	1.2	V	21.5	0.62	0.0	20.88	34.77
5 MHz Bandwidth									
707.50	86.12	168	1.6	H	22.1	0.62	0.0	21.48	34.77
707.50	84.21	247	1.8	V	21.2	0.62	0.0	20.58	34.77
10 MHz Bandwidth									
707.50	85.72	314	2.1	H	21.7	0.62	0.0	21.08	34.77
707.50	84.05	71	1.8	V	21.1	0.62	0.0	20.48	34.77

LTE Band 17:

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	21.78	22.00	21.97
		RB Size=1, RB Offset=12	21.08	22.25	21.67
		RB Size=1, RB Offset=24	21.56	21.83	21.45
		RB Size=12, RB Offset=0	21.95	21.52	21.15
		RB Size=12, RB Offset=6	21.04	21.60	21.66
		RB Size=12, RB Offset=11	20.59	21.11	20.40
		RB Size=25, RB Offset=0	21.17	21.72	22.35
	16QAM	RB Size=1, RB Offset=0	22.15	21.66	21.82
		RB Size=1, RB Offset=12	21.77	22.25	21.74
		RB Size=1, RB Offset=24	22.16	22.26	22.16
		RB Size=12, RB Offset=0	21.26	21.45	21.11
		RB Size=12, RB Offset=6	21.56	21.12	20.68
		RB Size=12, RB Offset=11	21.01	20.50	20.43
		RB Size=25, RB Offset=0	20.46	21.16	21.72
10.0	QPSK	RB Size=1, RB Offset=0	22.95	23.53	22.67
		RB Size=1, RB Offset=24	23.75	23.61	22.76
		RB Size=1, RB Offset=49	22.82	23.27	22.76
		RB Size=25, RB Offset=0	21.47	22.24	21.69
		RB Size=25, RB Offset=12	22.06	21.69	22.86
		RB Size=25, RB Offset=24	21.62	21.84	22.43
		RB Size=50, RB Offset=0	22.92	21.20	21.54
	16QAM	RB Size=1, RB Offset=0	22.58	22.80	21.87
		RB Size=1, RB Offset=24	22.15	21.81	22.65
		RB Size=1, RB Offset=49	22.04	22.45	22.95
		RB Size=25, RB Offset=0	21.11	21.01	21.10
		RB Size=25, RB Offset=12	21.09	21.11	21.63
		RB Size=25, RB Offset=24	21.56	21.43	20.81
		RB Size=50, RB Offset=0	21.20	20.94	20.72

Peak-to-average ratio (PAR):

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.34	13	Pass
QPSK (50RB Size)	5.97	13	Pass
16QAM (1RB Size)	6.81	13	Pass
16QAM (50RB Size)	6.15	13	Pass

EIRP:**QPSK:**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
5 MHz Bandwidth									
710.00	85.94	326	1.3	H	21.9	0.62	0.0	21.28	34.77
710.00	83.75	191	2.0	V	20.8	0.62	0.0	20.18	34.77
10 MHz Bandwidth									
710.00	85.42	238	1.6	H	21.4	0.62	0.0	20.78	34.77
710.00	83.31	299	1.6	V	20.3	0.62	0.0	19.68	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									
710.00	86.75	135	1.6	H	22.8	0.62	0.0	22.18	34.77
710.00	84.65	69	2.0	V	21.7	0.62	0.0	21.08	34.77
10 MHz Bandwidth									
710.00	86.34	72	1.5	H	22.3	0.62	0.0	21.68	34.77
710.00	84.26	195	1.3	V	21.3	0.62	0.0	20.68	34.77

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

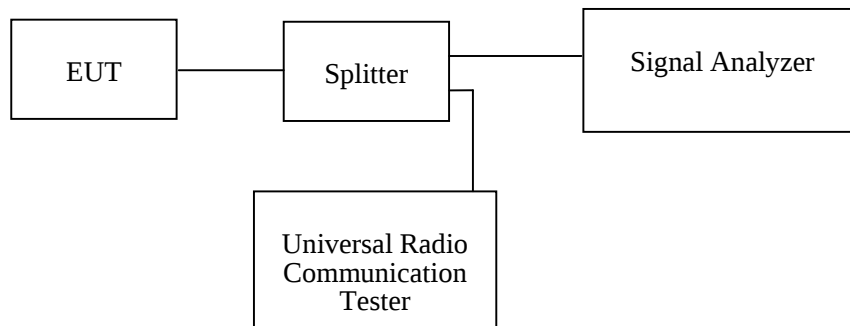
Applicable Standard

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:	25~26 °C
Relative Humidity:	52~55 %
ATM Pressure:	100.5~101.0 kPa

The testing was performed by Haiguo Li from 2018-07-27 to 2018-08-08.

EUT operation mode: Transmitting

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

Cellular Band (Part 22H)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	836.6	243.13	318.40
EGPRS(8PSK)	836.6	251.81	324.20

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.182	4.776
HSUPA (BPSK)	836.6	4.197	4.848
HSDPA (16QAM)	836.6	4.211	4.964

PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	243.13	321.30
EGPRS(8PSK)	1880.0	251.81	324.20

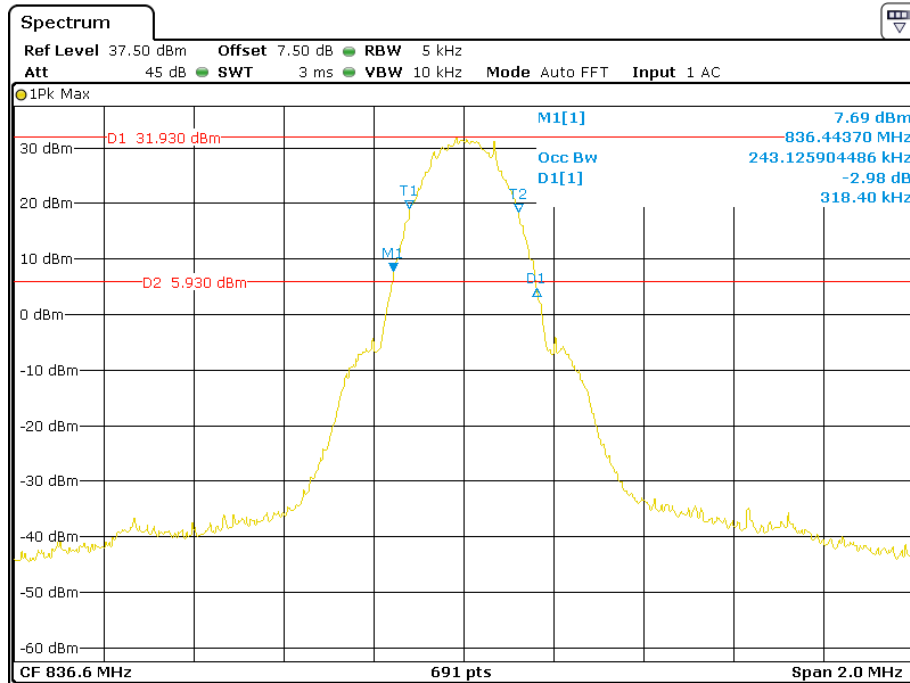
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.168	4.718
HSUPA (BPSK)	1880.0	4.168	4.718
HSDPA (16QAM)	1880.0	4.168	4.718

AWS Band (Part27)

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1732.6	4.211	4.819
HSUPA (BPSK)	1732.6	4.197	4.993
HSDPA (16QAM)	1732.6	4.240	5.658

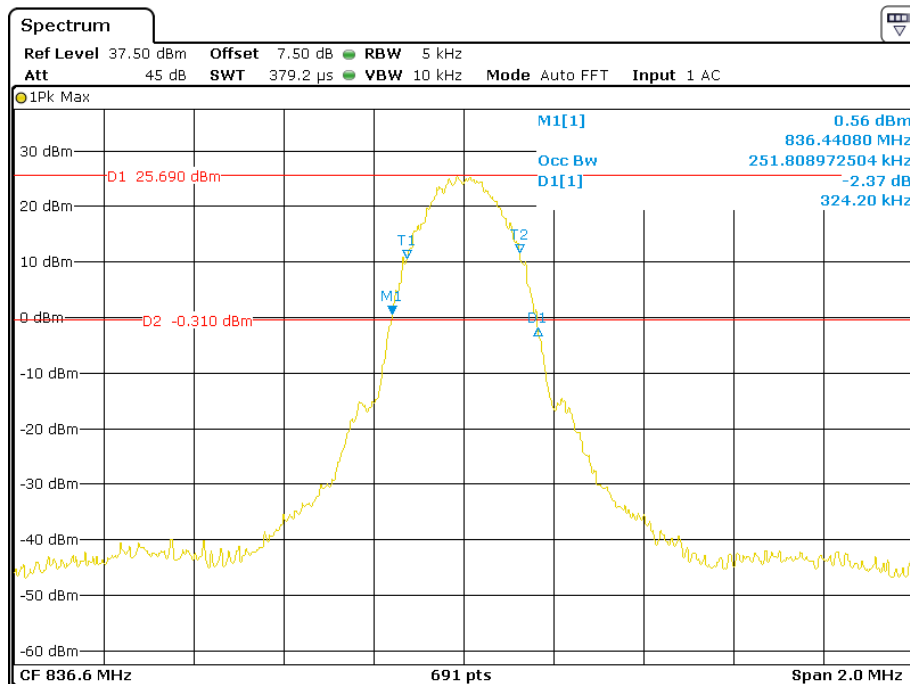
Cellular Band (Part 22H)

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

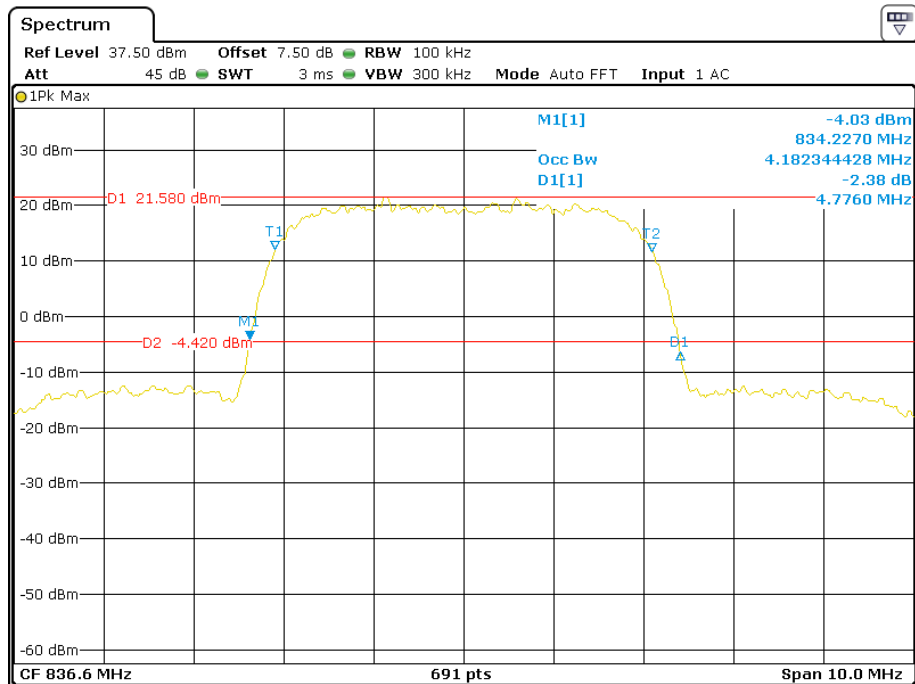


Date: 8.AUG.2018 13:58:22

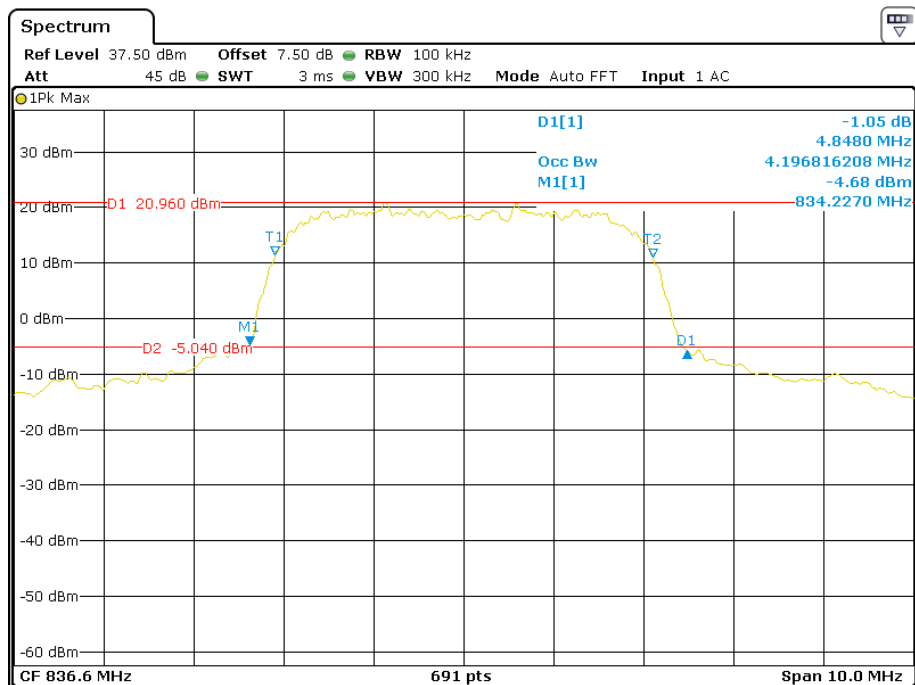
26 dB Emissions & 99% Occupied Bandwidth for EDGE Mode



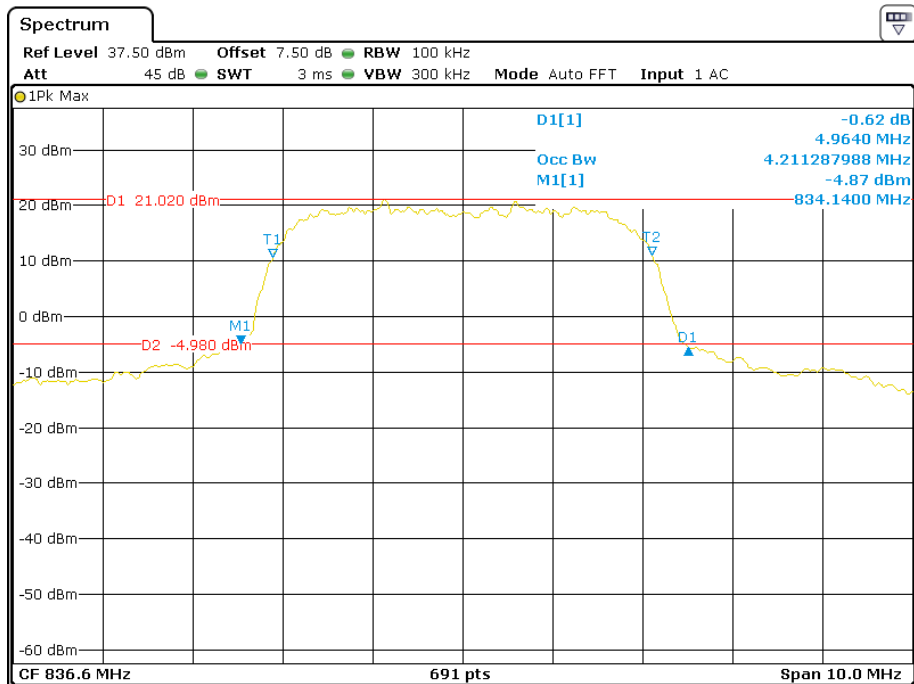
Date: 8.AUG.2018 14:16:46

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

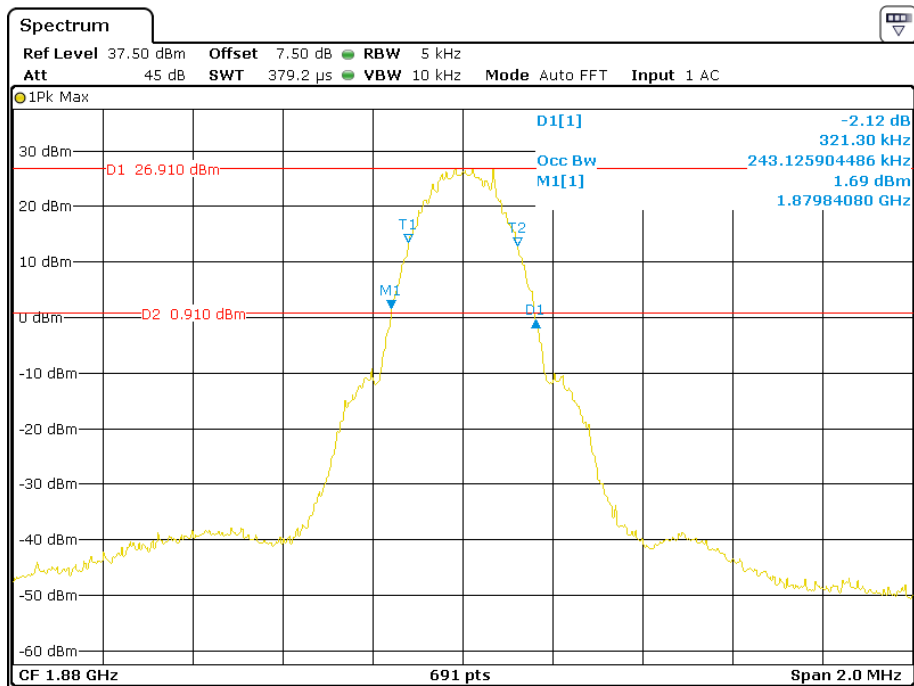
Date: 8.AUG.2018 15:07:41

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

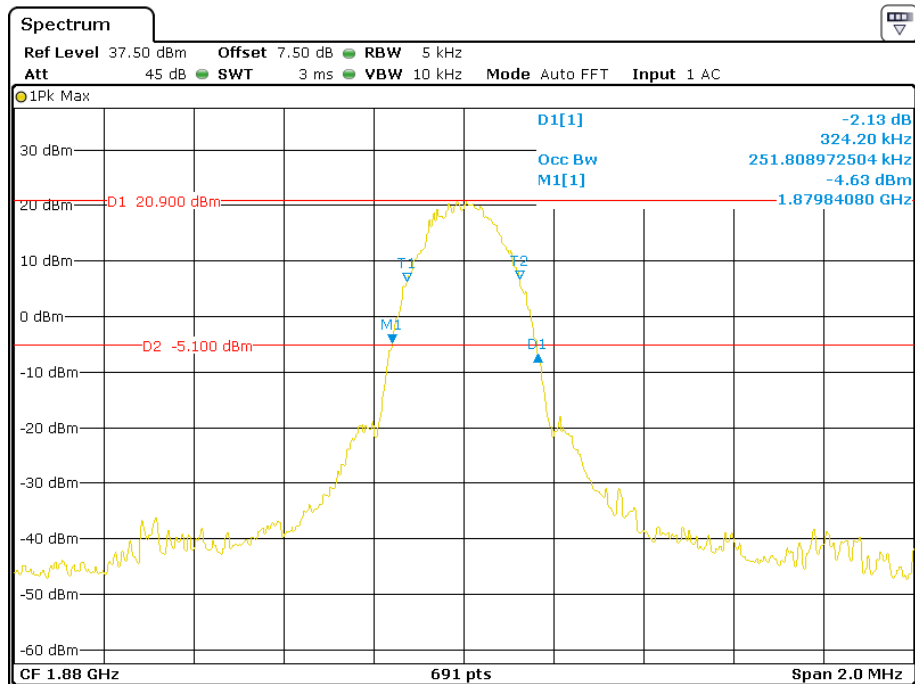
Date: 8.AUG.2018 15:32:56

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

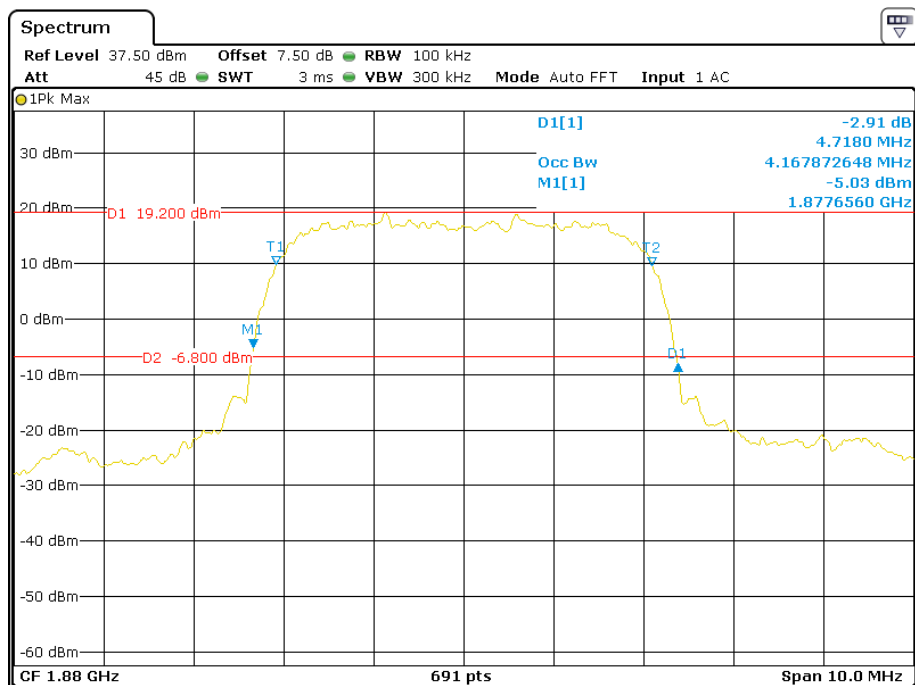
Date: 8.AUG.2018 15:23:36

PCS Band (Part 24E)**26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode**

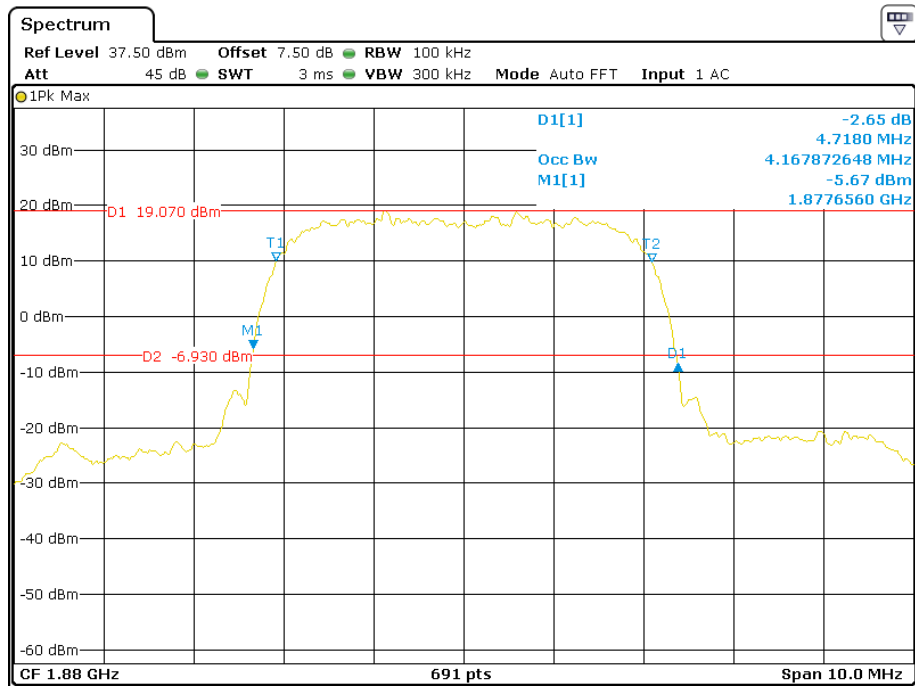
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26 dB Emissions & 99% Occupied Bandwidth for EDGE Mode

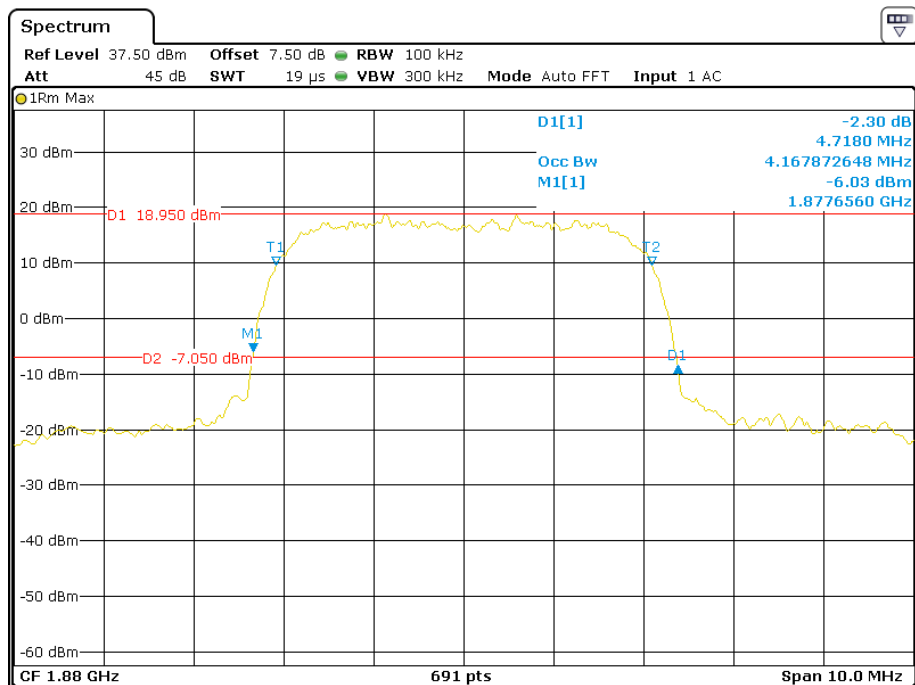
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26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode

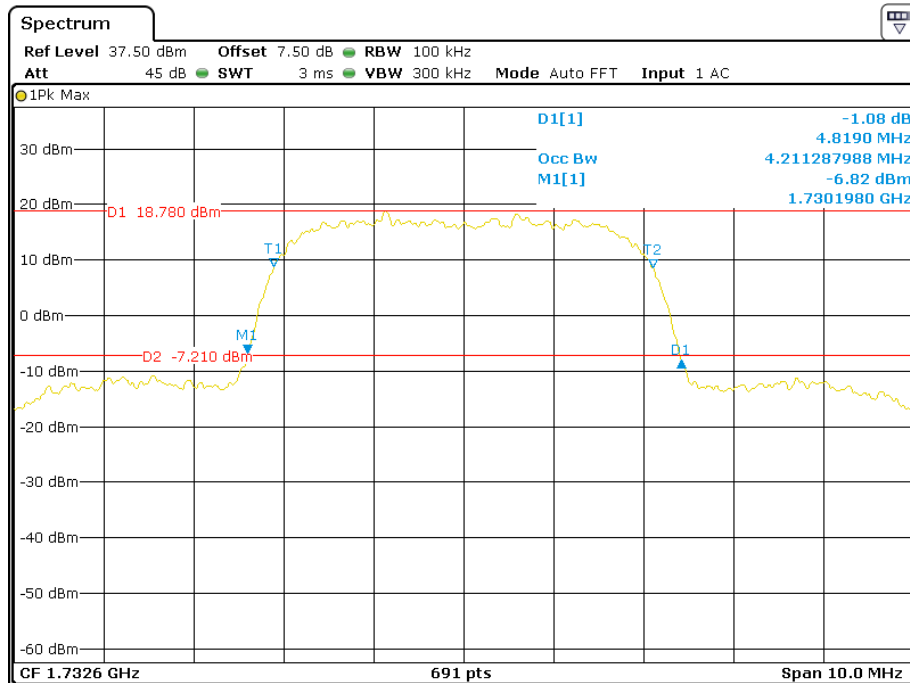
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26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode

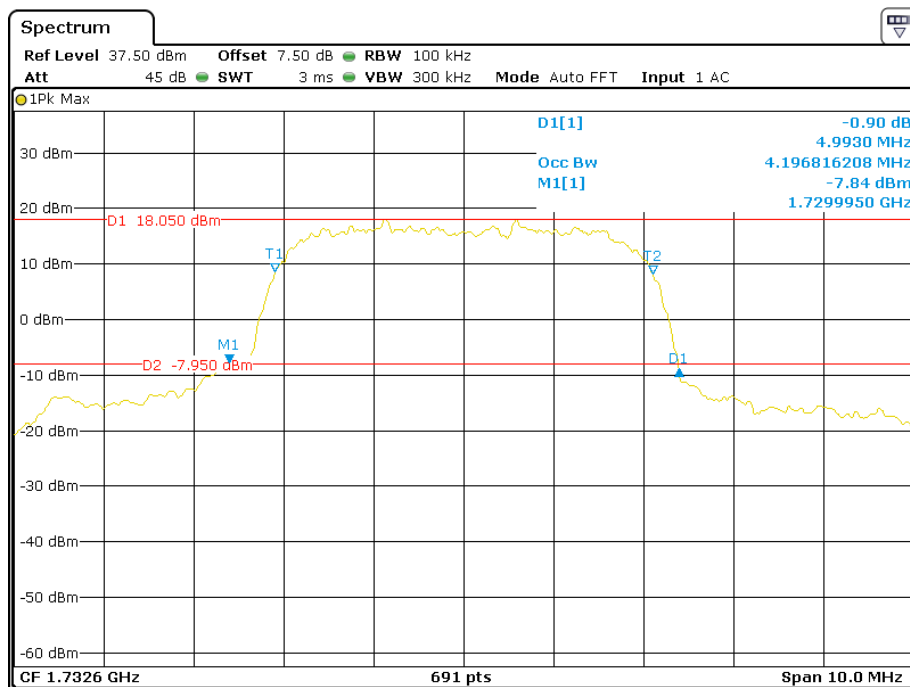
Date: 8.AUG.2018 14:59:57

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

Date: 8.AUG.2018 15:15:23

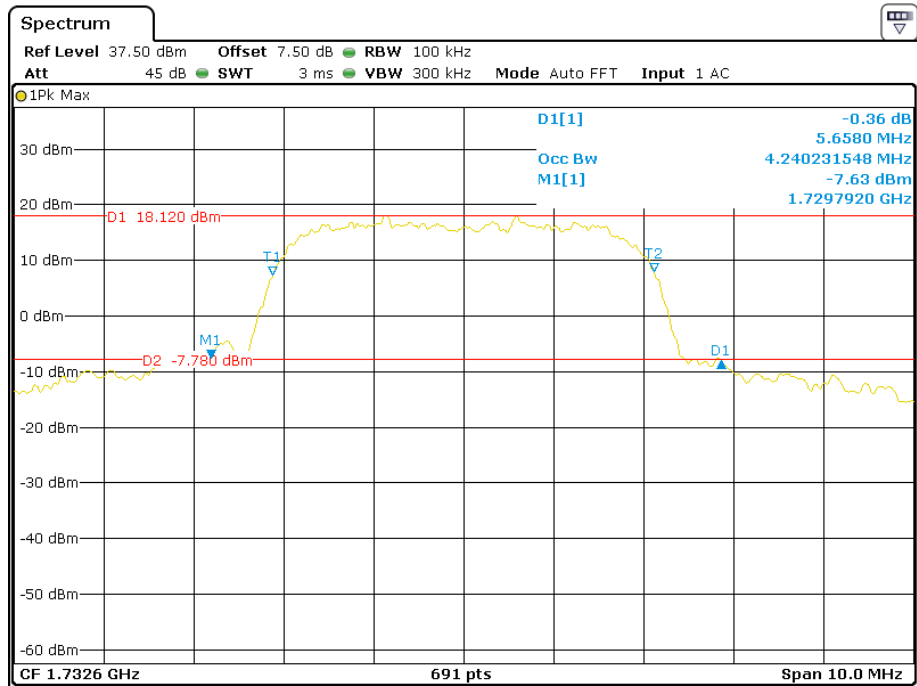
AWS Band (Part 27)**26 dB Emissions & 99% Occupied Bandwidth for RMC (BPSK) Mode**

Date: 8.AUG.2018 15:02:50

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

Date: 8.AUG.2018 15:34:08

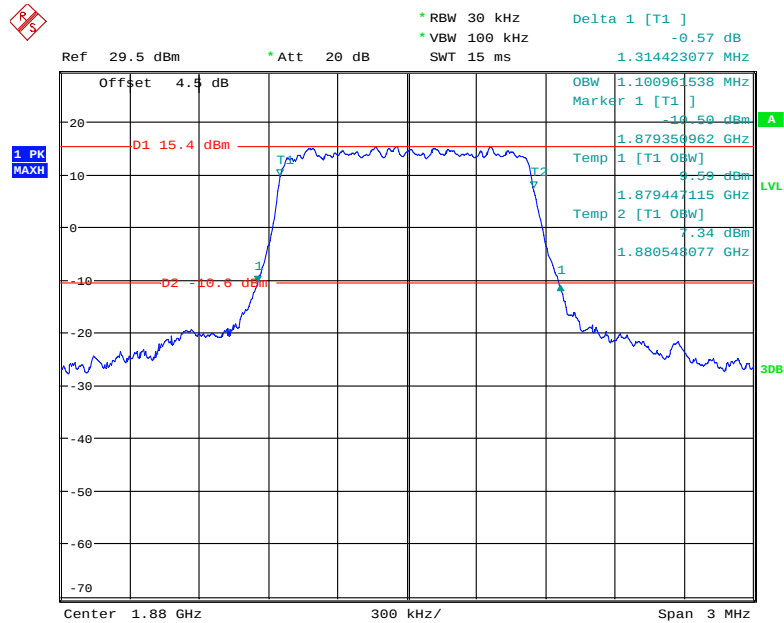
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode



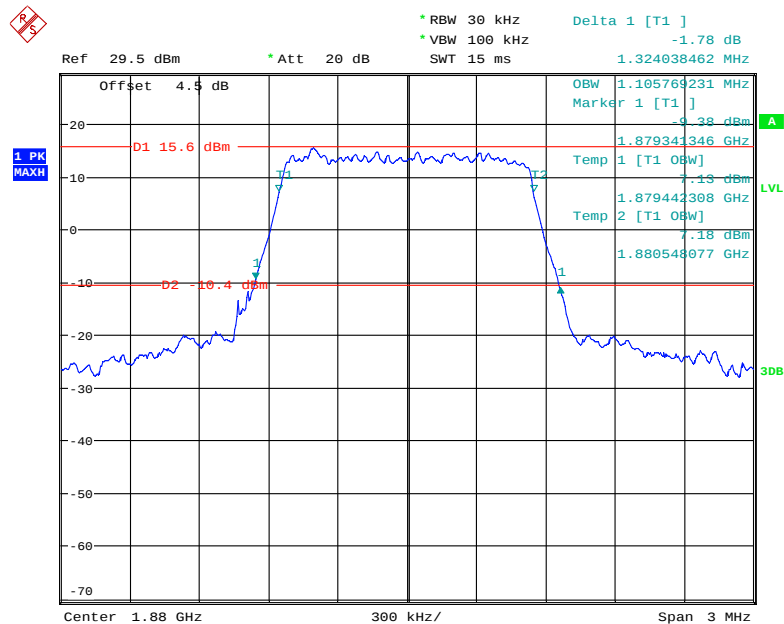
Date: 8.AUG.2018 15:19:36

LTE Band 2: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.314
	16QAM	1.106	1.324
3.0	QPSK	2.683	2.877
	16QAM	2.683	2.887
5.0	QPSK	4.551	5.204
	16QAM	4.535	5.252
10.0	QPSK	9.006	9.996
	16QAM	8.974	9.771
15.0	QPSK	13.558	15.076
	16QAM	13.558	14.979
20.0	QPSK	17.949	19.499
	16QAM	17.949	19.563

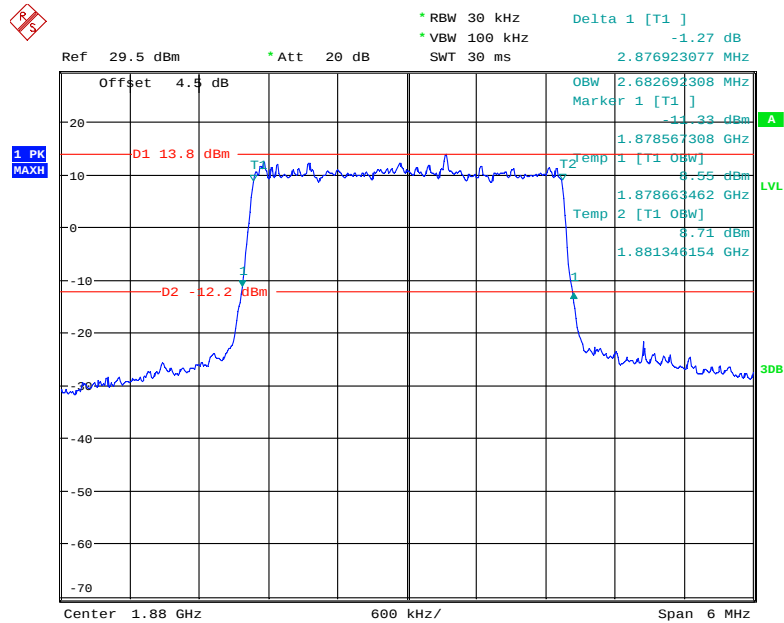
QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 27.JUL.2018 10:36:05

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

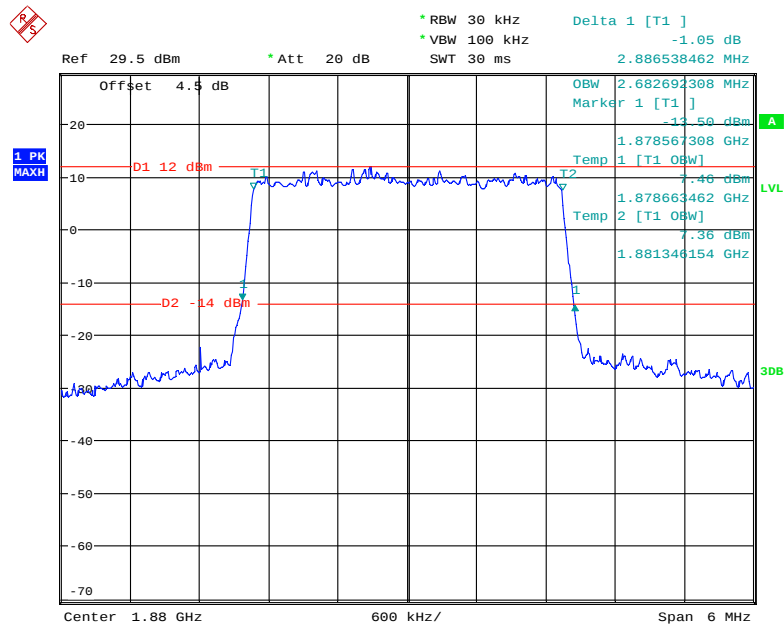
Date: 27.JUL.2018 10:31:55

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



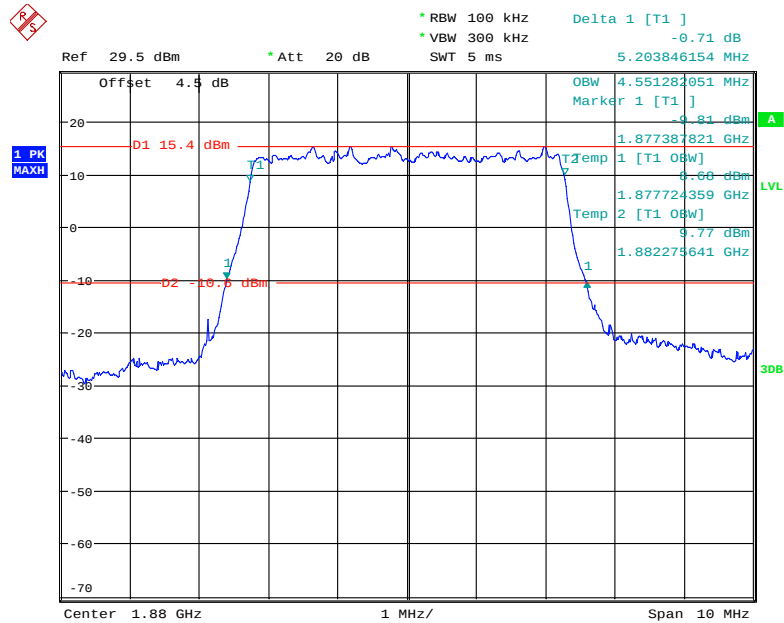
Date: 27.JUL.2018 10:39:00

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



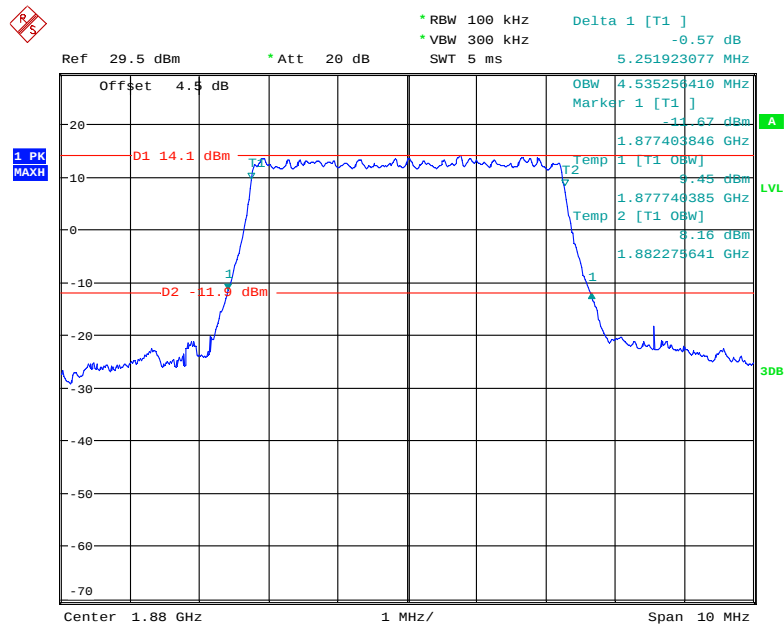
Date: 27.JUL.2018 10:40:21

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

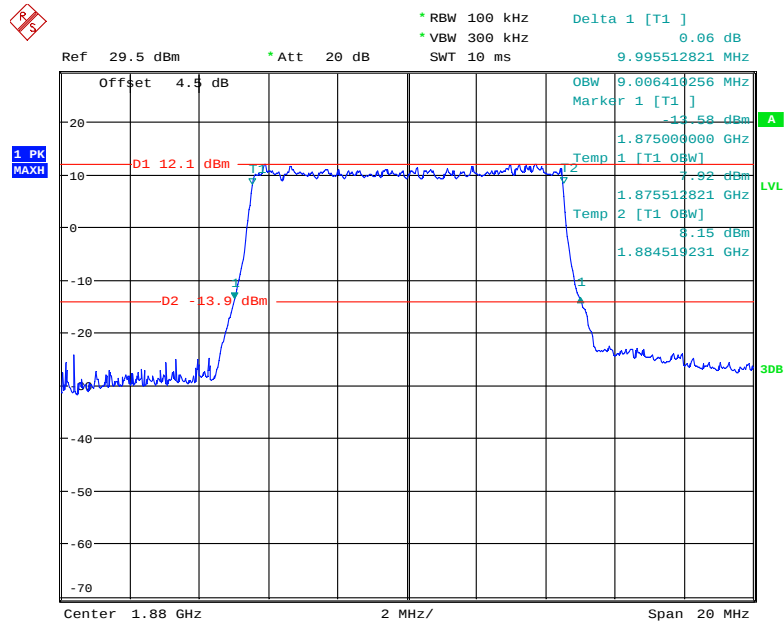


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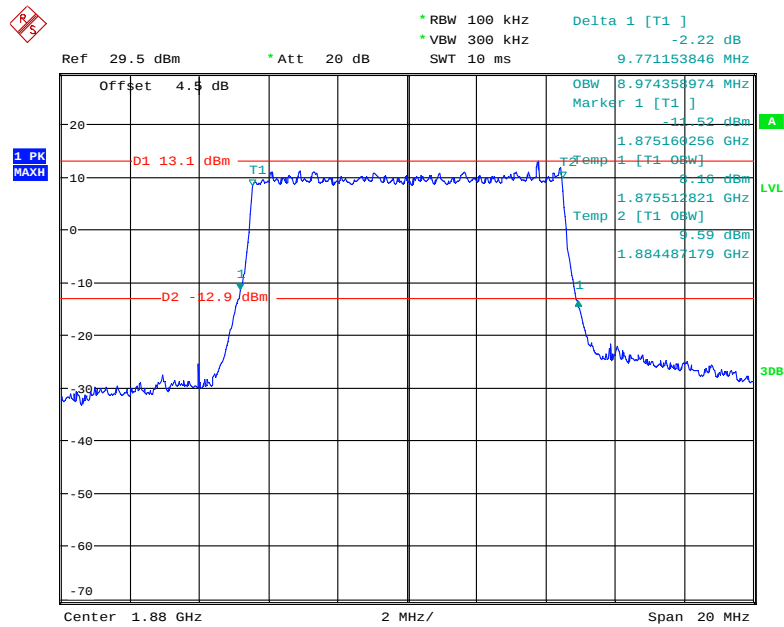
16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



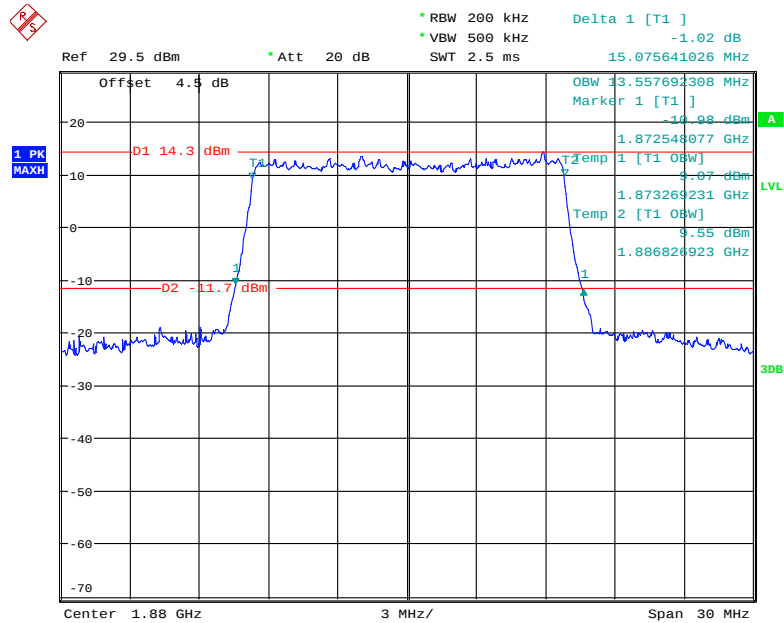
Date: 27.JUL.2018 10:43:56

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

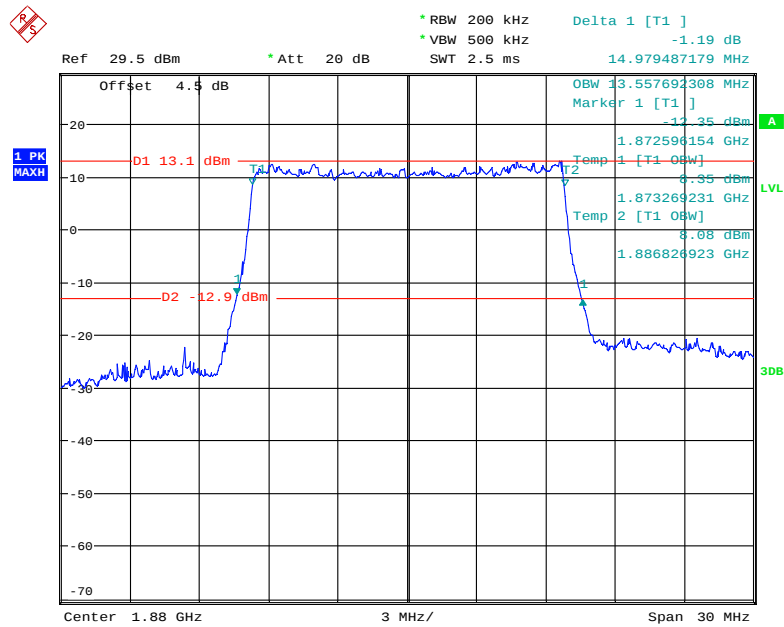
Date: 27.JUL.2018 10:46:52

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

Date: 27.JUL.2018 10:48:51

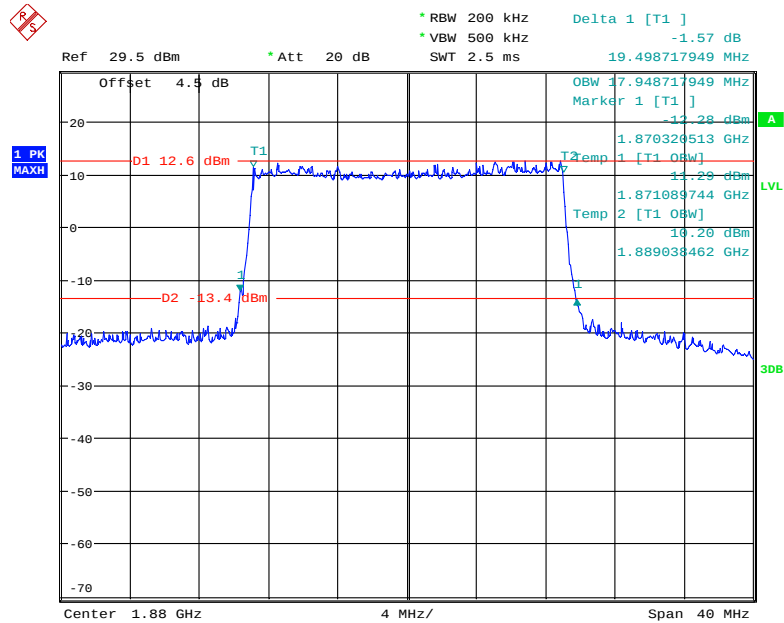
QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 27.JUL.2018 10:53:26

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

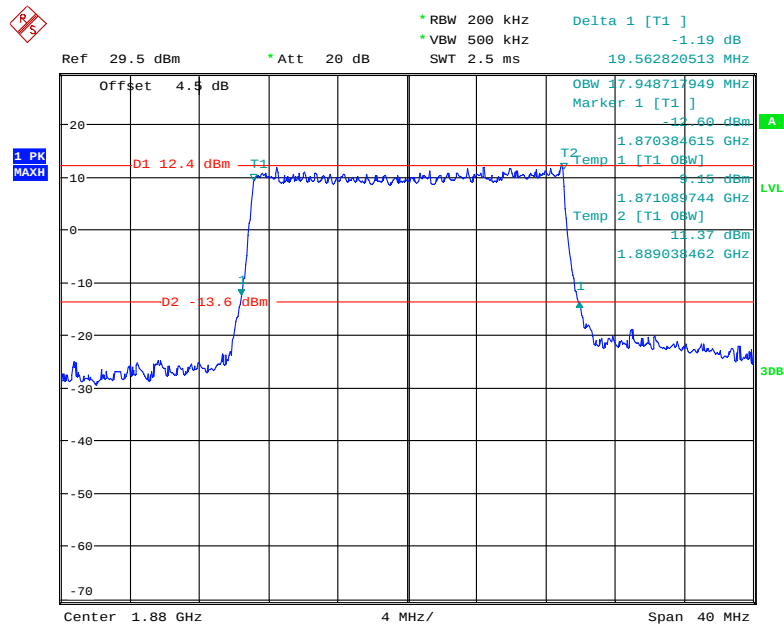
Date: 27.JUL.2018 10:54:40

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



Date: 27.JUL.2018 10:56:03

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

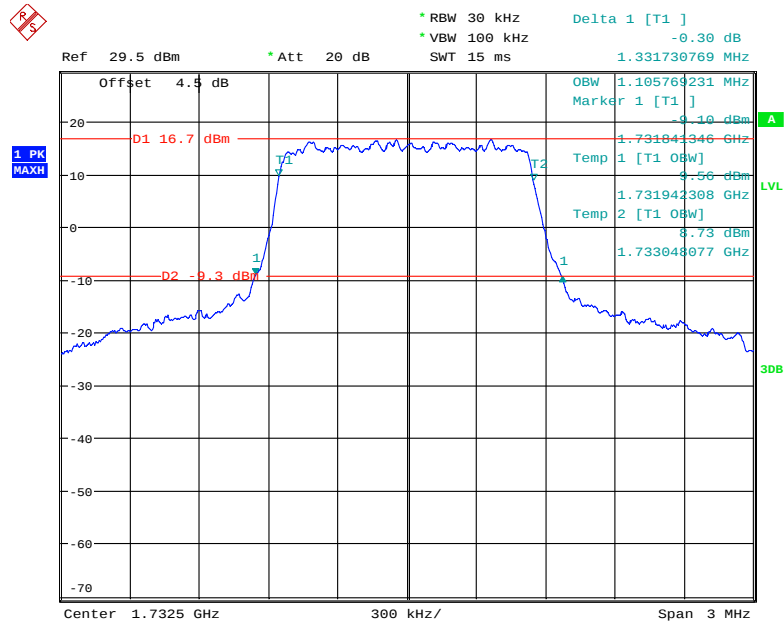


Date: 27.JUL.2018 10:58:42

LTE Band 4: (Middle Channel)

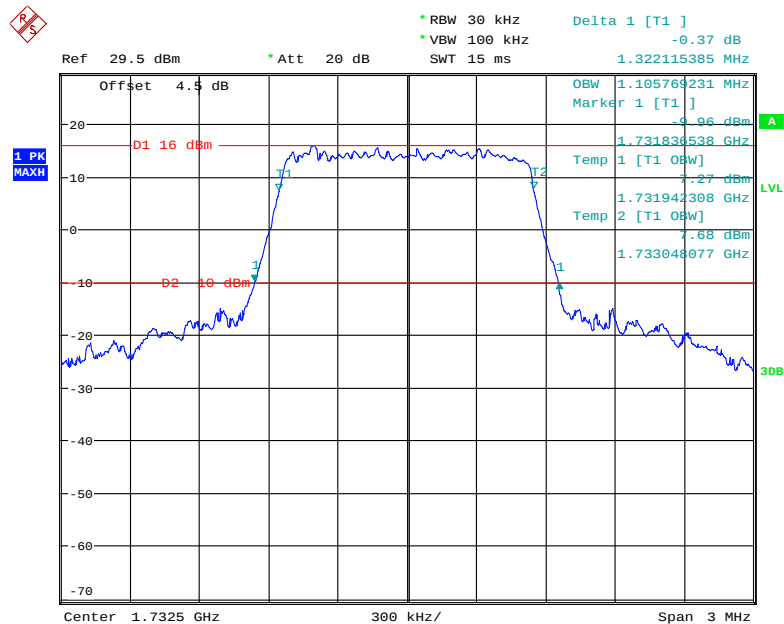
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.106	1.332
	16QAM	1.106	1.322
3.0	QPSK	2.683	2.880
	16QAM	2.683	2.889
5.0	QPSK	4.535	5.229
	16QAM	4.535	5.229
10.0	QPSK	8.974	10.069
	16QAM	8.974	9.748
15.0	QPSK	13.461	15.037
	16QAM	13.462	14.893
20.0	QPSK	17.949	19.316
	16QAM	17.885	19.508

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



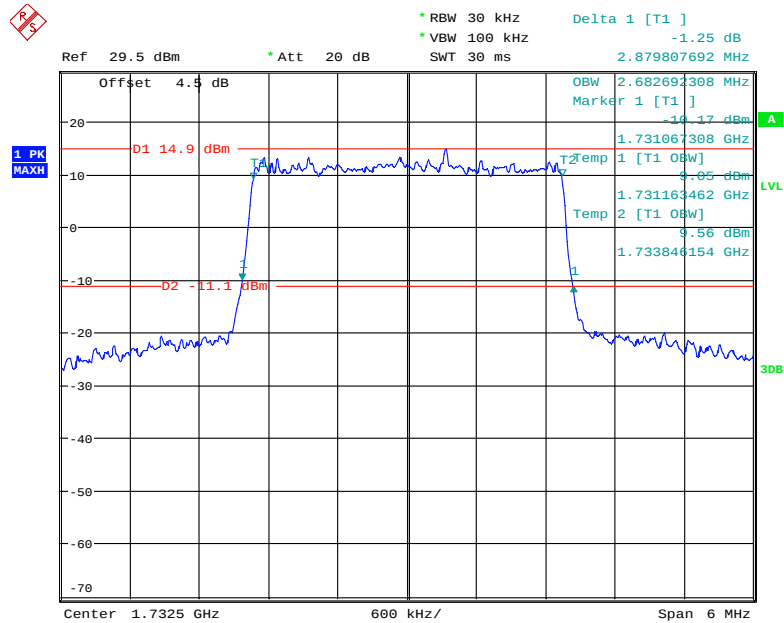
Date: 27.JUL.2018 11:04:13

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



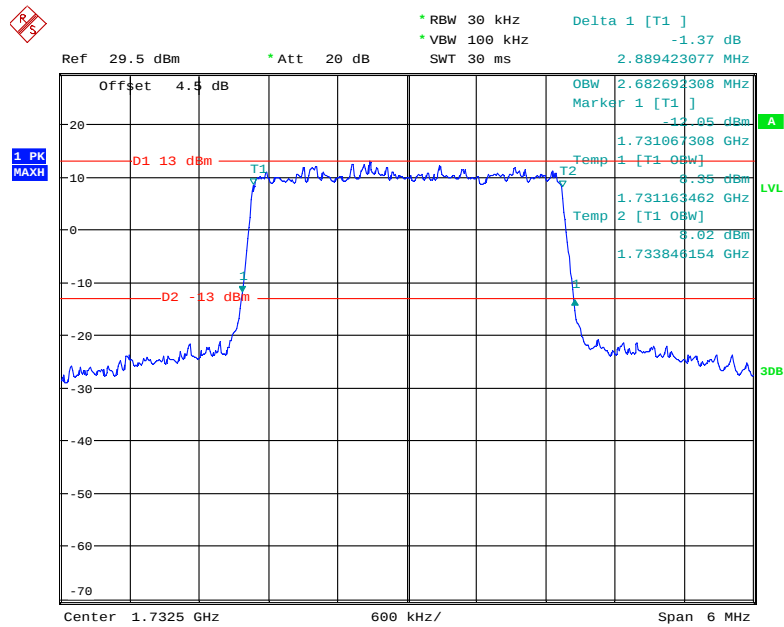
Date: 27.JUL.2018 11:05:14

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



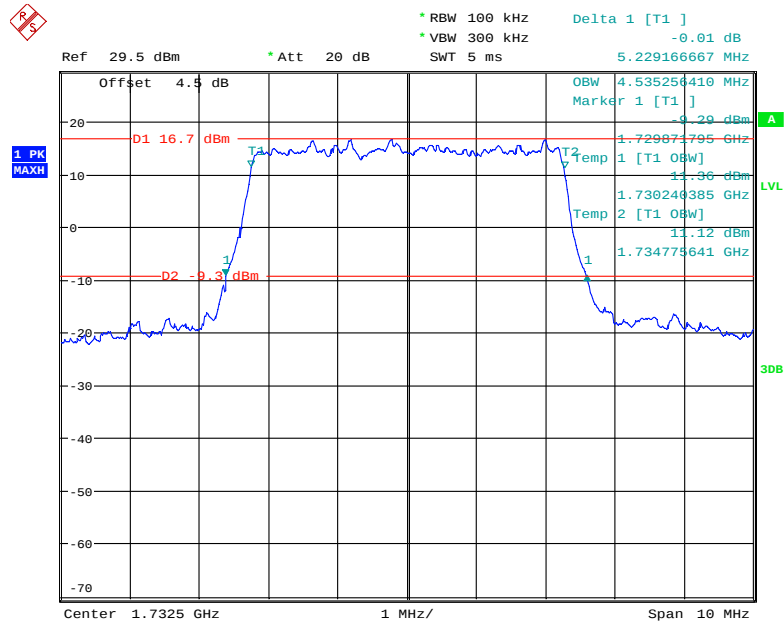
Date: 27.JUL.2018 11:09:05

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



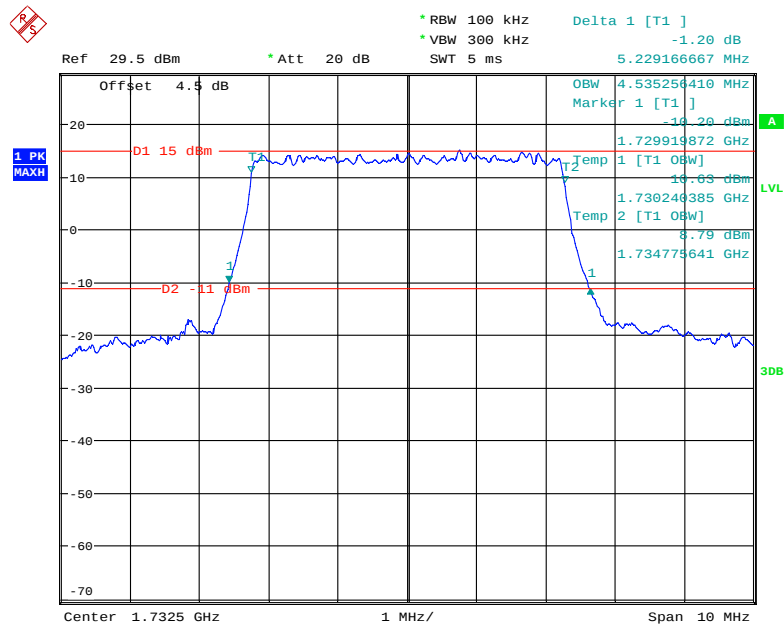
Date: 27.JUL.2018 11:06:15

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

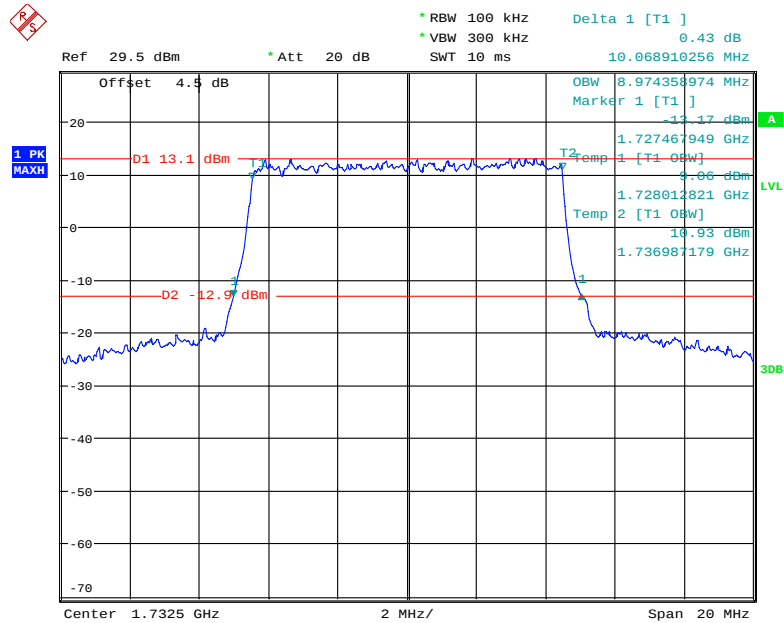


Date: 27.JUL.2018 11:13:00

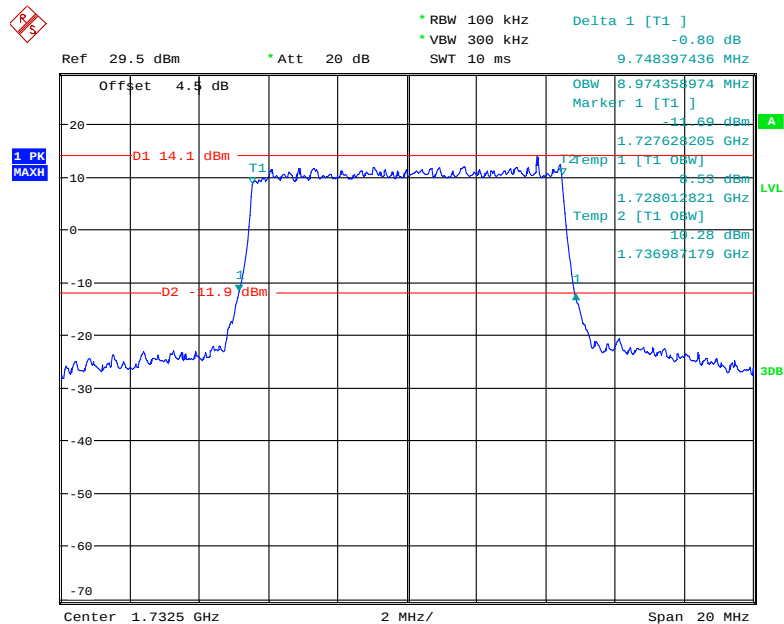
16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



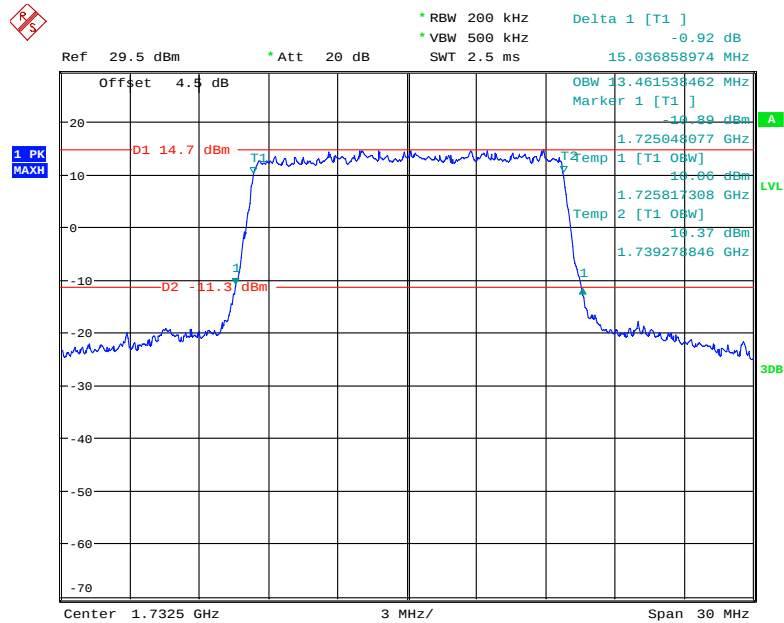
Date: 27.JUL.2018 11:11:21

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

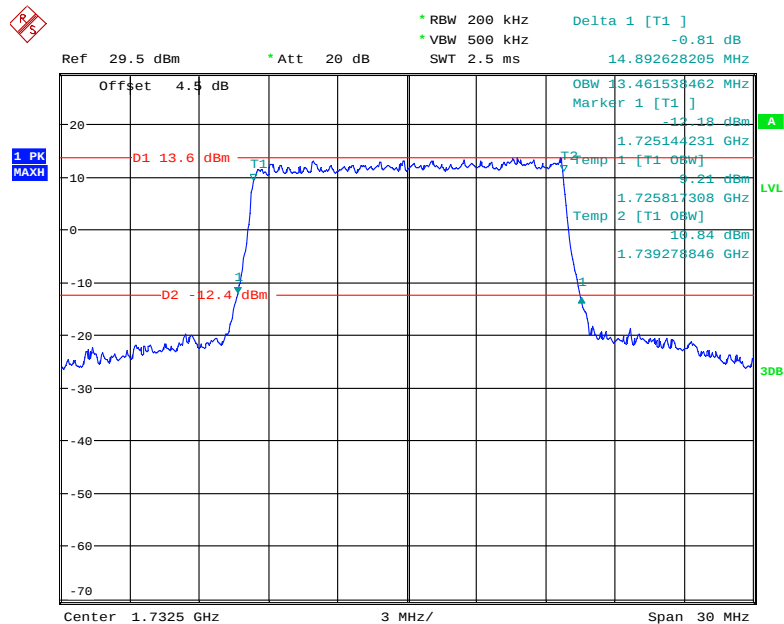
Date: 27.JUL.2018 11:20:40

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

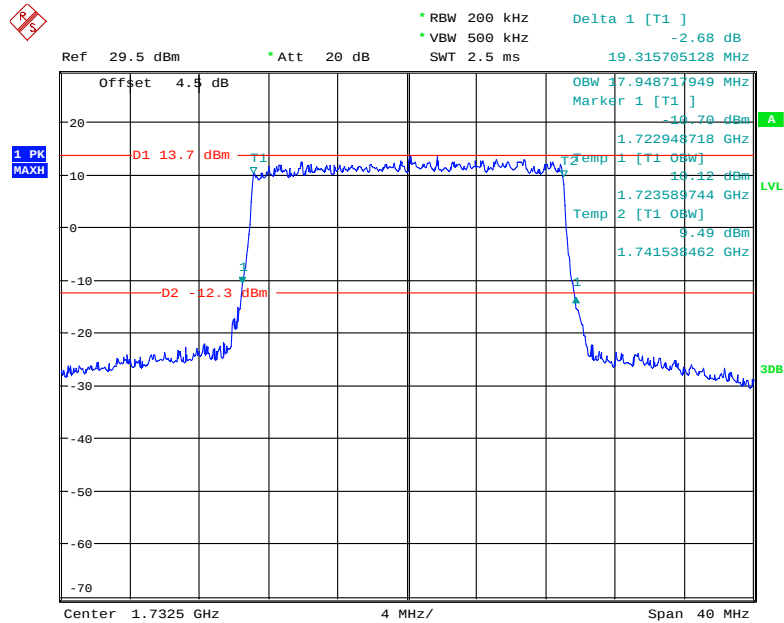
Date: 27.JUL.2018 11:16:10

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

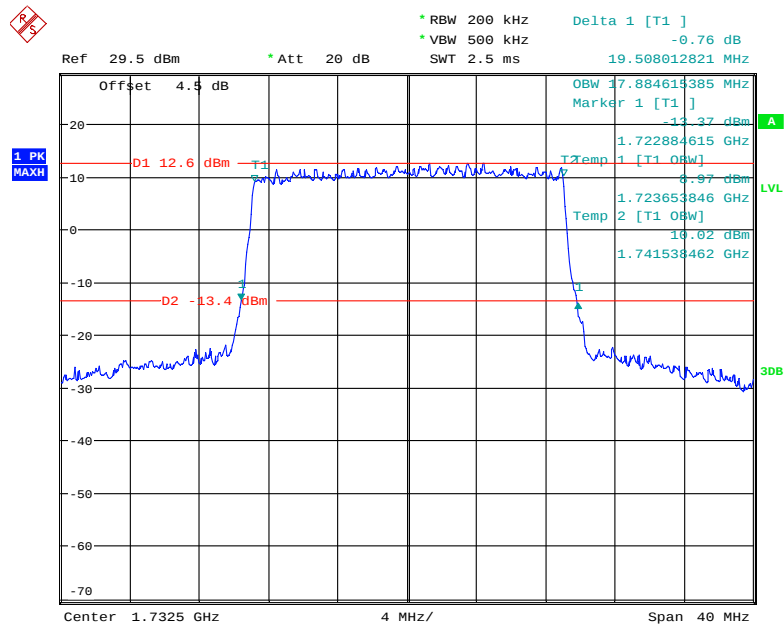
Date: 27.JUL.2018 11:26:32

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

Date: 27.JUL.2018 11:23:45

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

Date: 27.JUL.2018 11:30:58

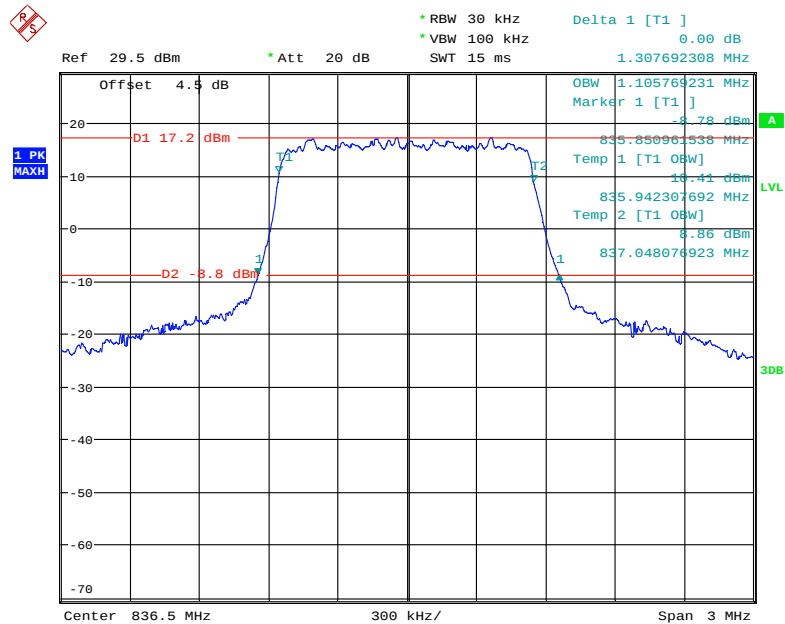
16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 27.JUL.2018 11:28:37

LTE Band 5: (Middle Channel)

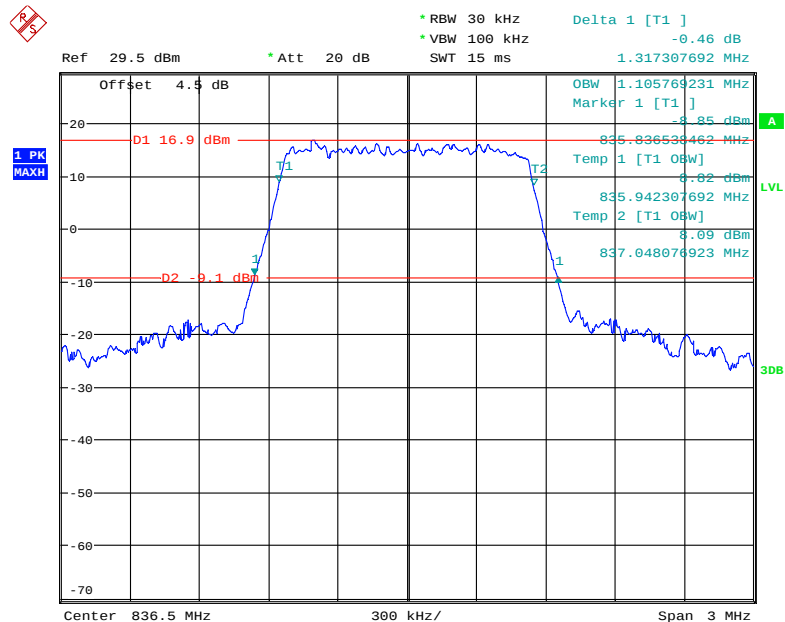
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.106	1.308
	16QAM	1.106	1.317
3.0	QPSK	2.683	2.880
	16QAM	2.692	2.889
5.0	QPSK	4.551	5.159
	16QAM	4.519	5.223
10.0	QPSK	8.974	9.982
	16QAM	8.974	9.854

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

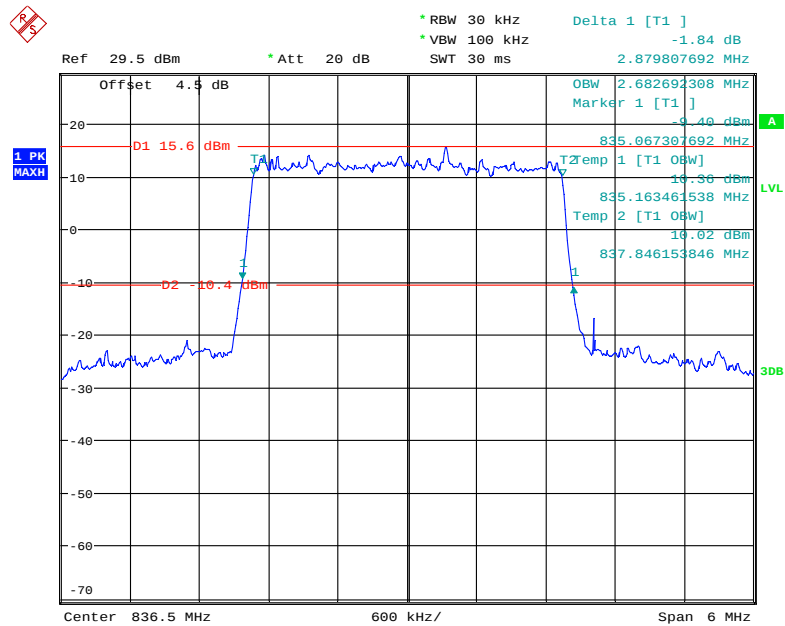


Date: 27.JUL.2018 11:47:40

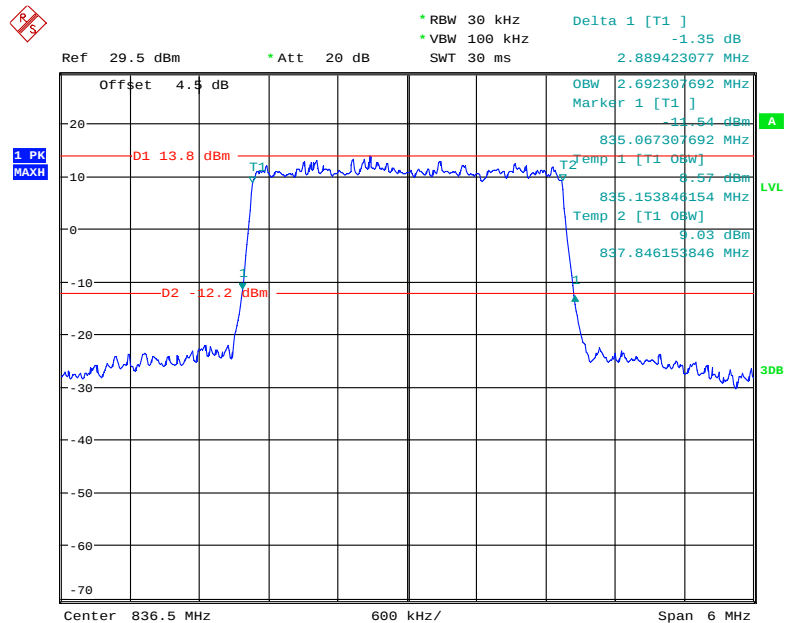
16-QAM (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 27.JUL.2018 11:43:11

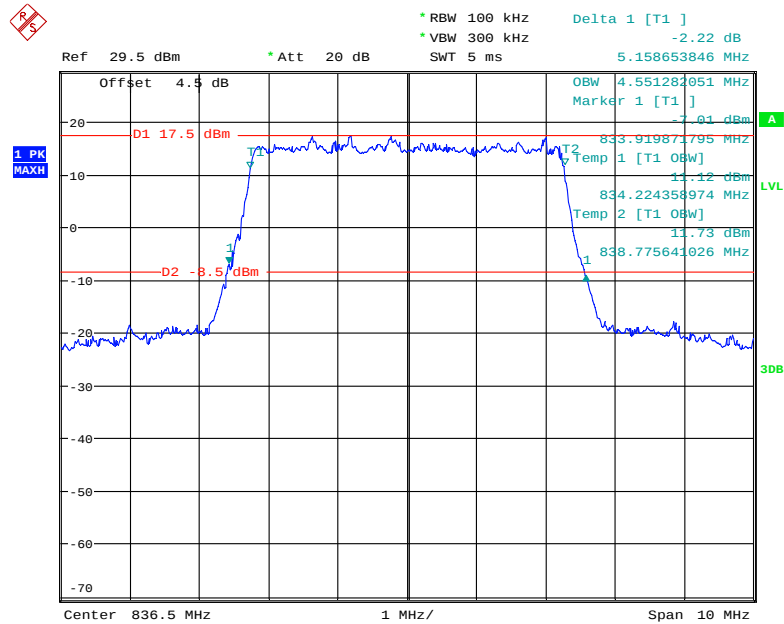
QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 27.JUL.2018 11:49:42

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

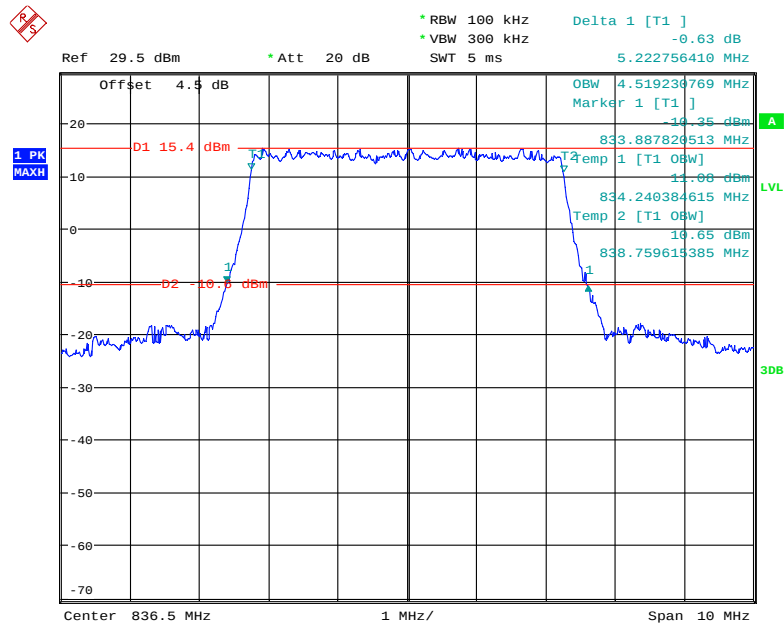
Date: 27.JUL.2018 11:50:53

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



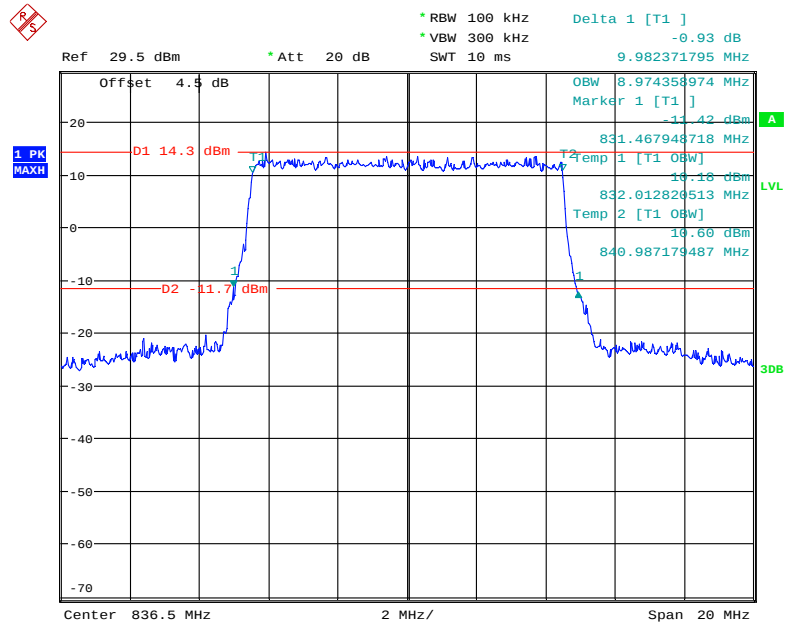
Date: 27.JUL.2018 11:53:44

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



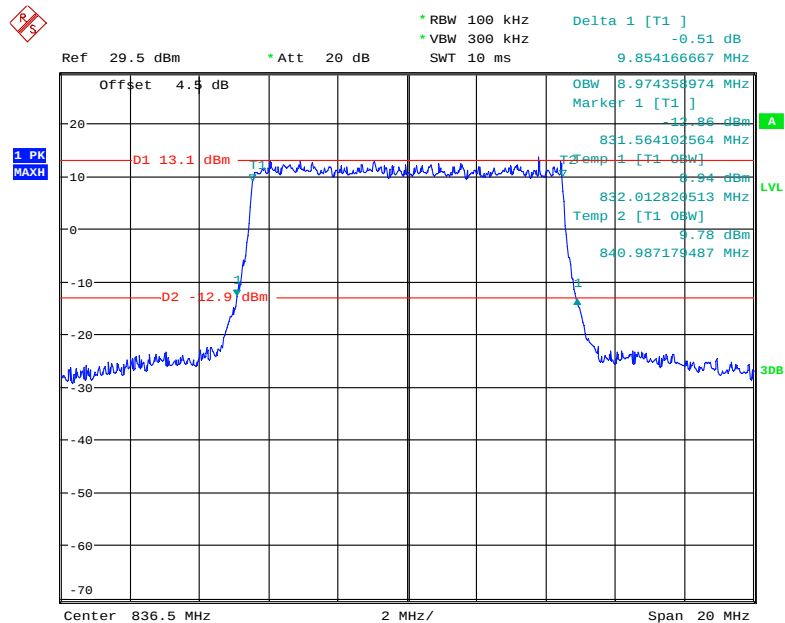
Date: 27.JUL.2018 11:55:19

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



Date: 27.JUL.2018 11:56:39

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

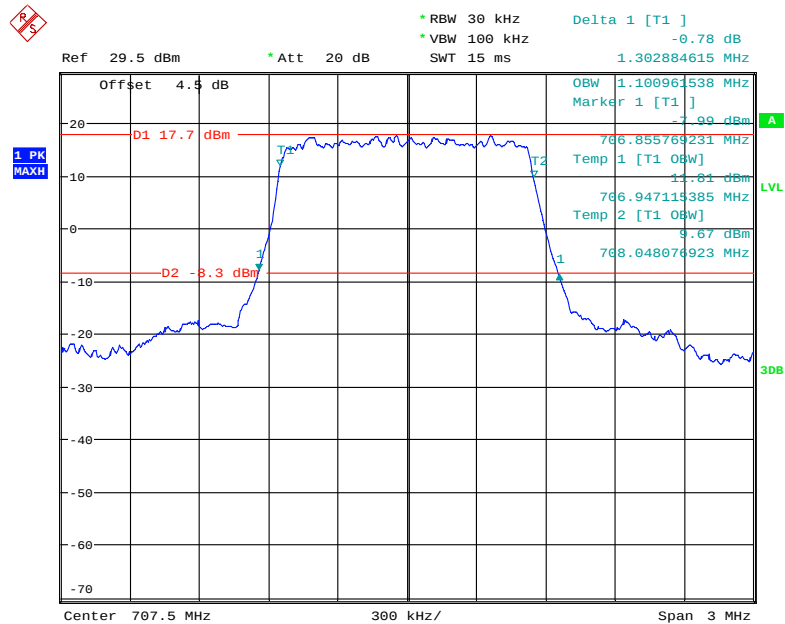


Date: 27.JUL.2018 11:58:19

LTE Band 12: (Middle Channel)

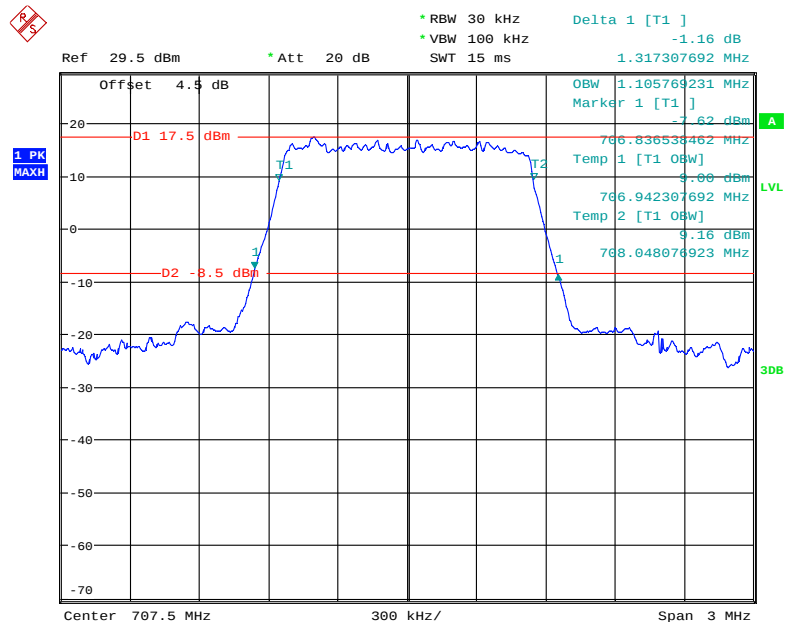
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.303
	16QAM	1.106	1.317
3.0	QPSK	2.683	2.875
	16QAM	2.683	2.885
5.0	QPSK	4.535	5.176
	16QAM	4.519	5.208
10.0	QPSK	8.974	9.968
	16QAM	8.974	9.744

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



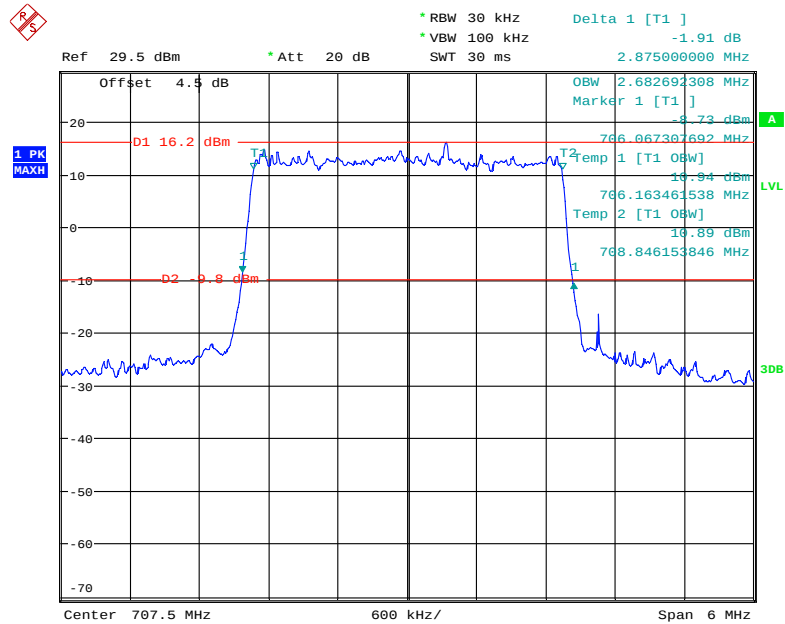
Date: 27.JUL.2018 13:21:43

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



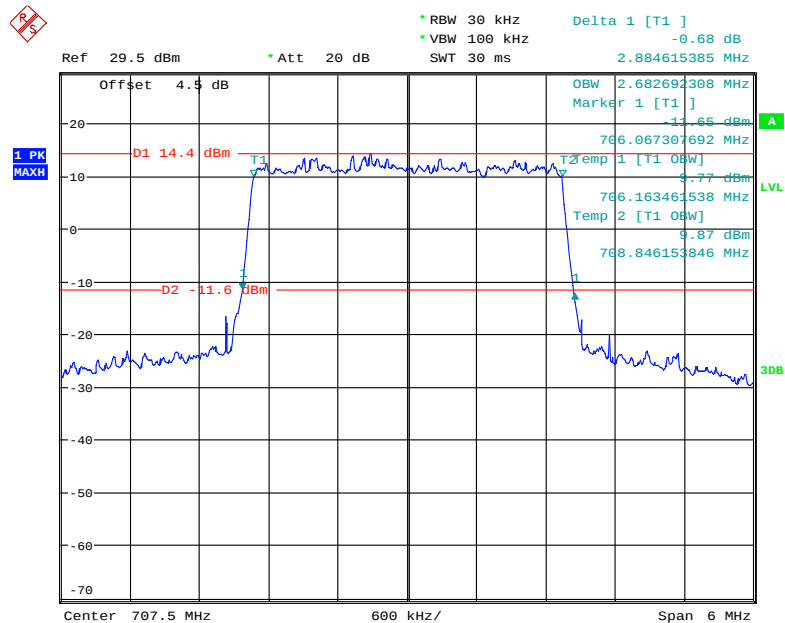
Date: 27.JUL.2018 13:23:37

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

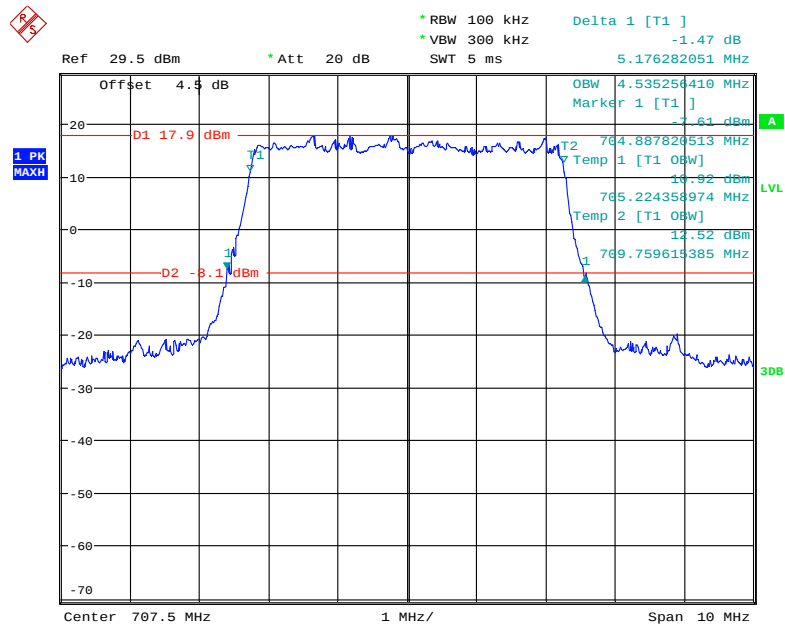


Date: 27.JUL.2018 13:29:22

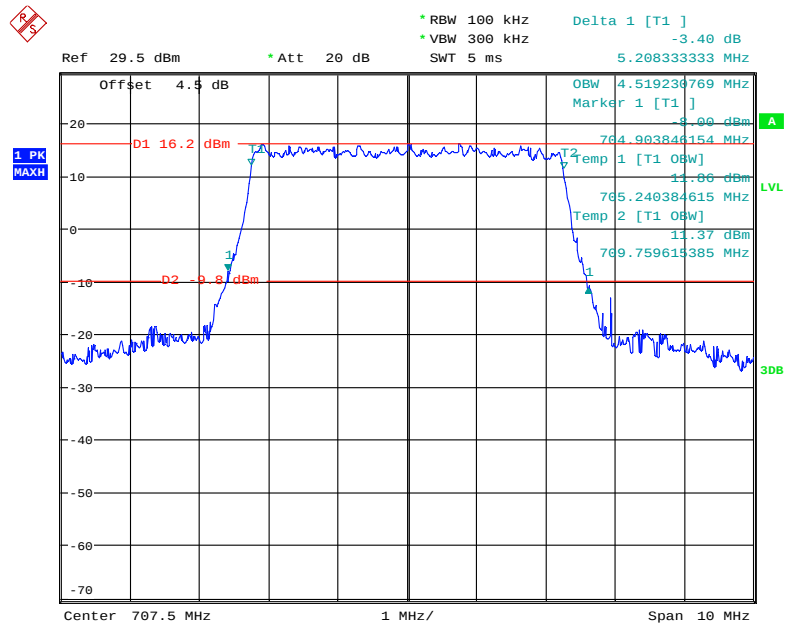
16-QAM (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 27.JUL.2018 13:27:15

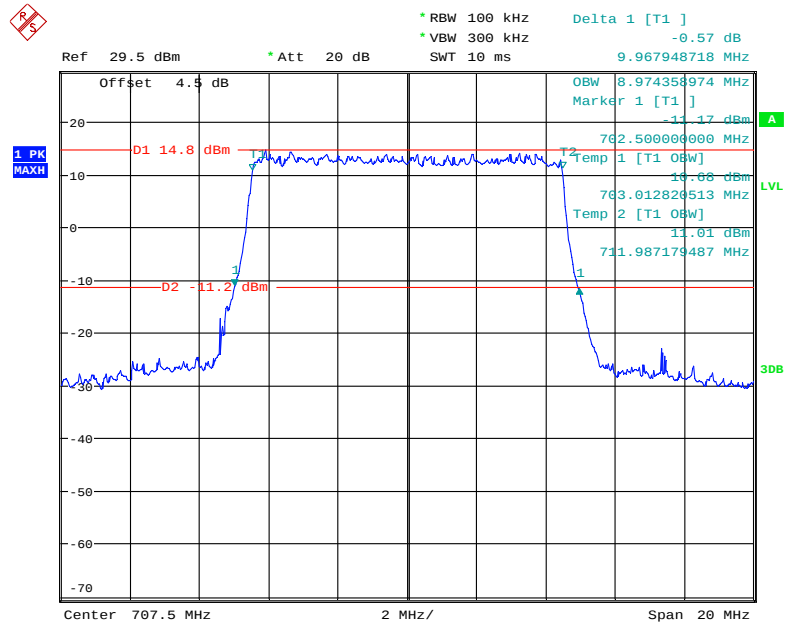
QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 27.JUL.2018 13:34:29

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

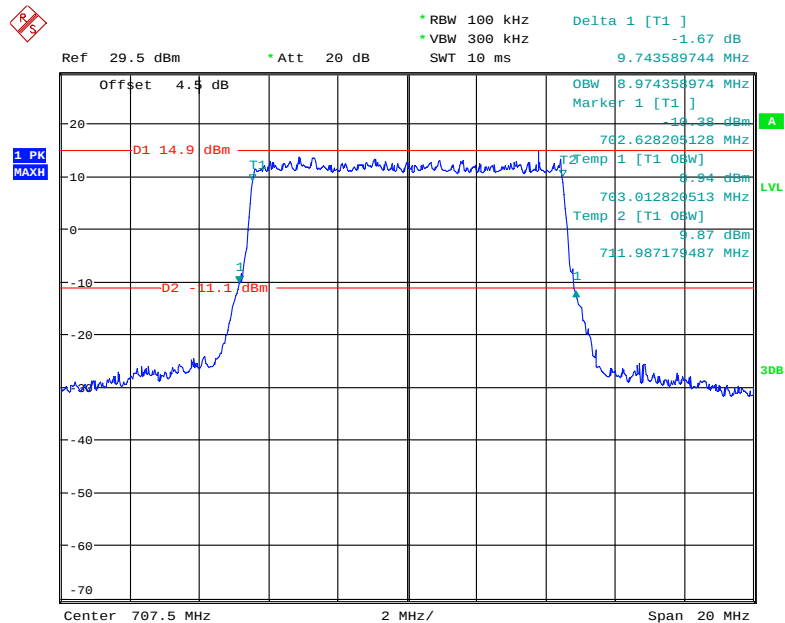
Date: 27.JUL.2018 13:31:20

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



Date: 27.JUL.2018 13:39:15

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

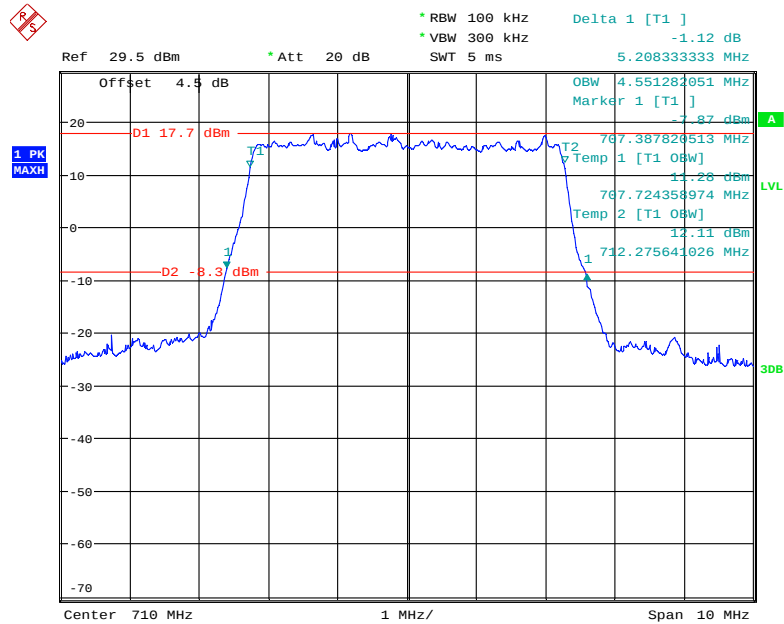


Date: 27.JUL.2018 13:37:15

LTE Band 17: (Middle Channel)

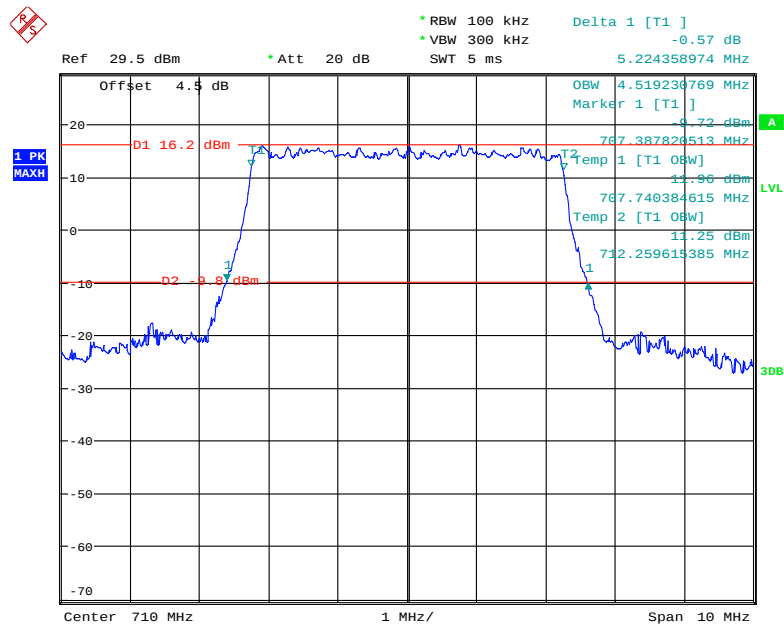
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.551	5.208
	16QAM	4.519	5.224
10.0	QPSK	8.974	9.920
	16QAM	8.974	9.792

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

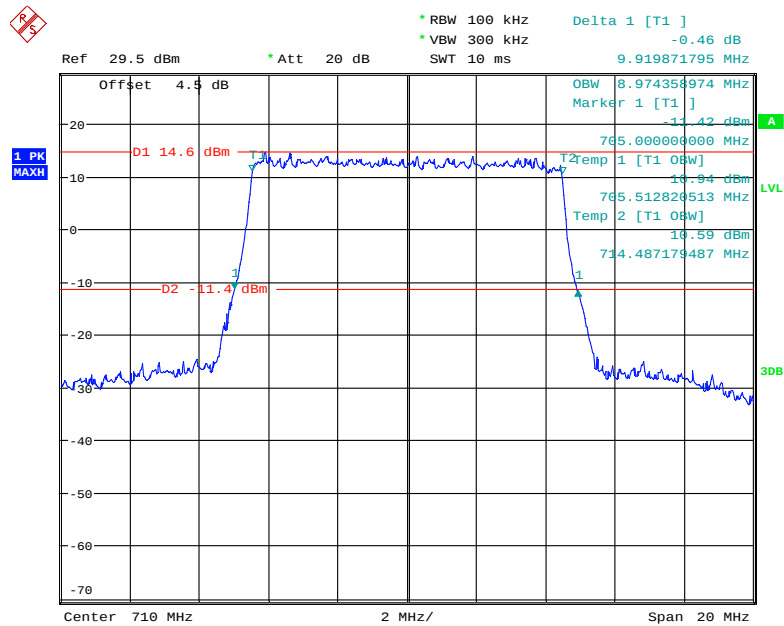


Date: 27.JUL.2018 13:43:21

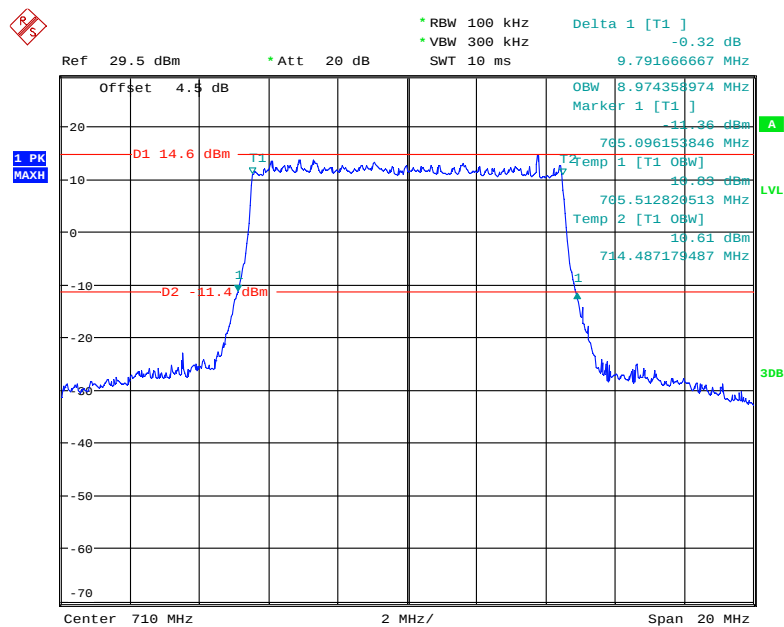
16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 27.JUL.2018 13:44:24

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

Date: 27.JUL.2018 13:45:43

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

Date: 27.JUL.2018 13:47:55

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

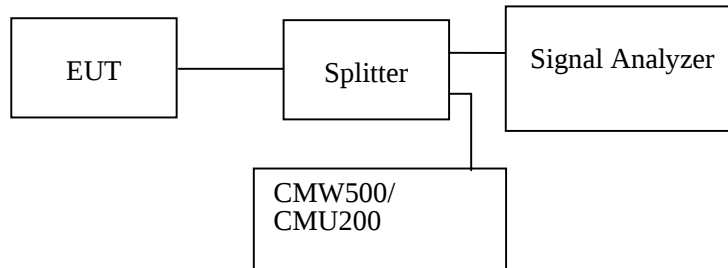
Applicable Standard

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 10th harmonic.



Test Data

Environmental Conditions

Temperature:	24~25 °C
Relative Humidity:	50~55 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Haiguo Li from 2018-07-27 to 2018-08-13.

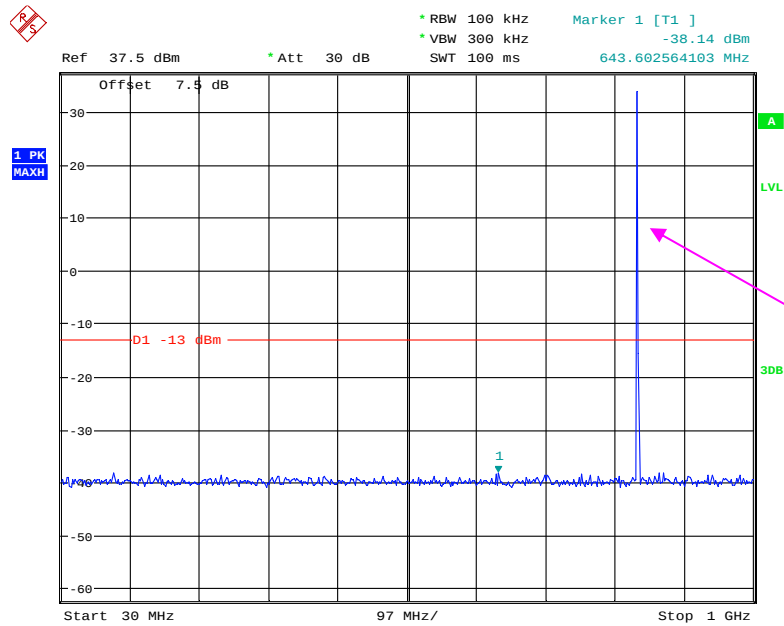
Test result: Compliance

EUT operation mode: transmitting

Please refer to the following plots.

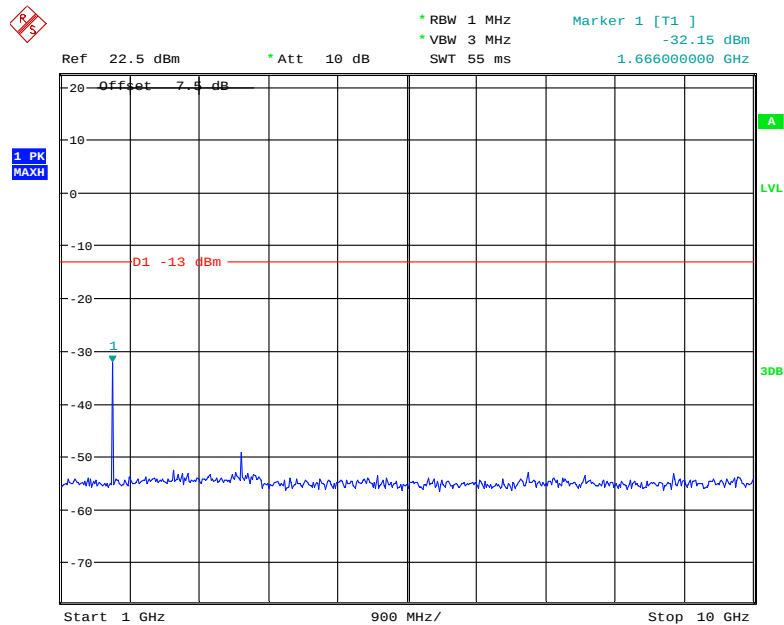
Cellular Band (Part 22H)

30 MHz – 1 GHz (GSM Mode)



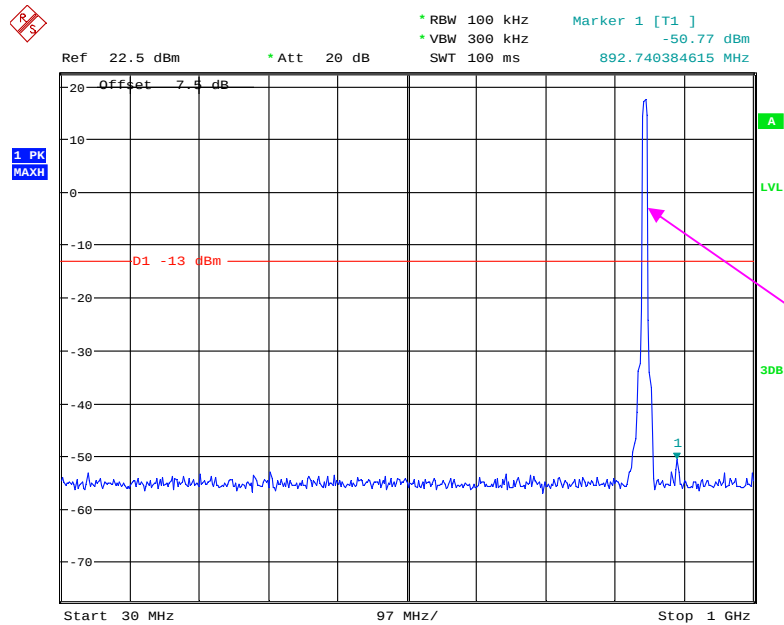
Date: 31.JUL.2018 10:37:10

1 GHz – 10 GHz (GSM Mode)



Date: 31.JUL.2018 11:01:16

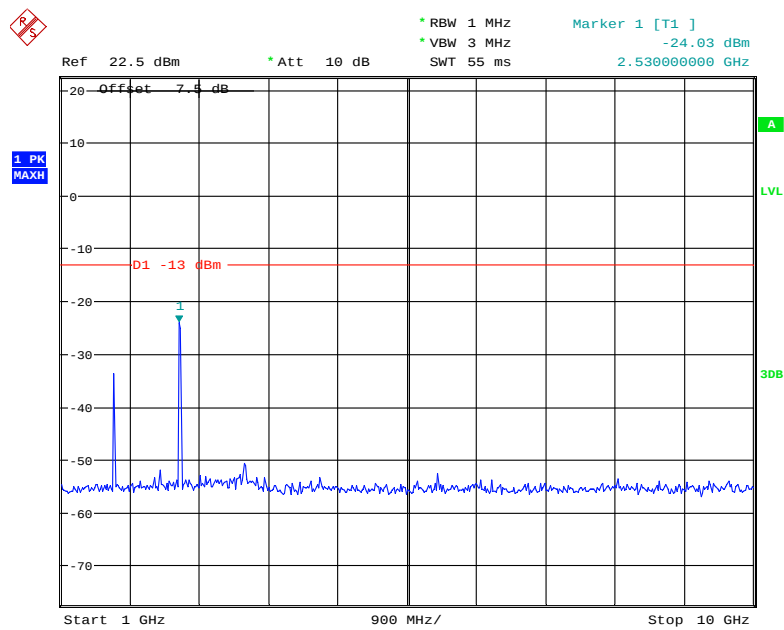
30 MHz – 1 GHz (WCDMA Mode)



Fundamental test

Date: 31.JUL.2018 11:33:37

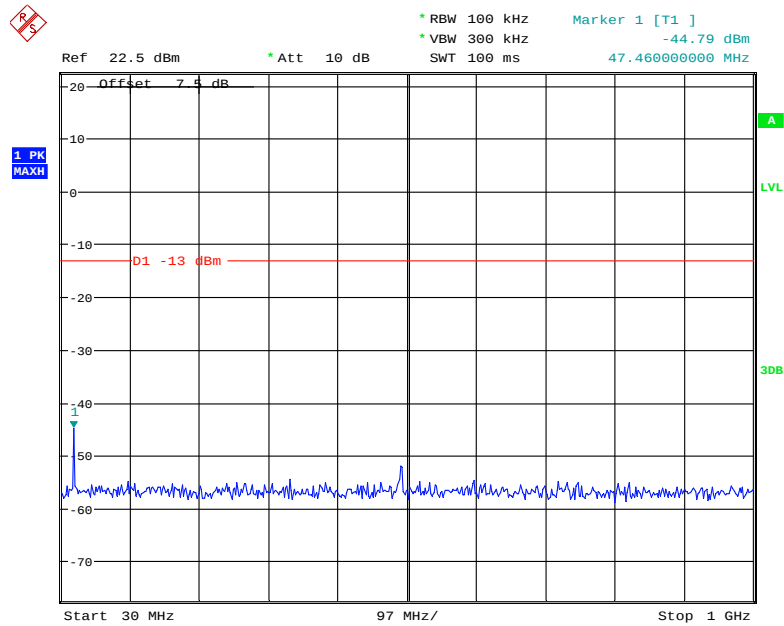
1 GHz – 10 GHz (WCDMA Mode)



Date: 31.JUL.2018 11:34:40

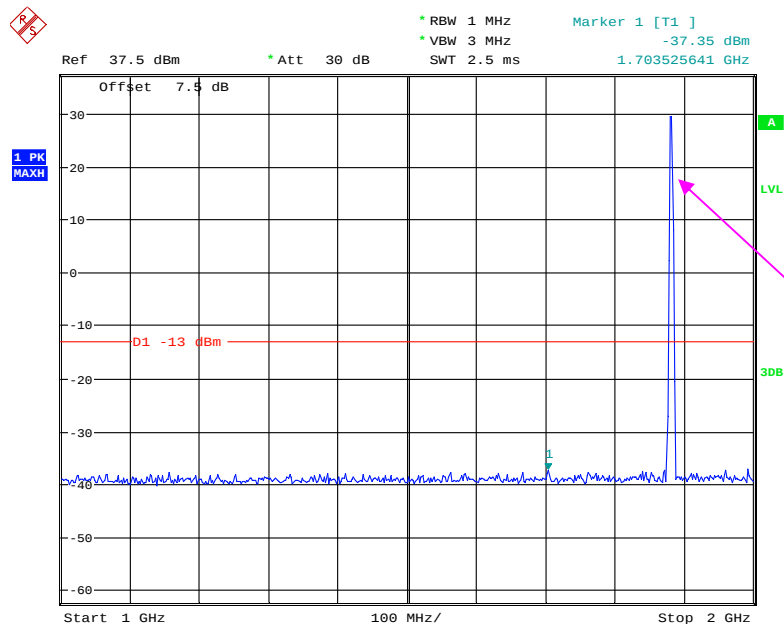
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)



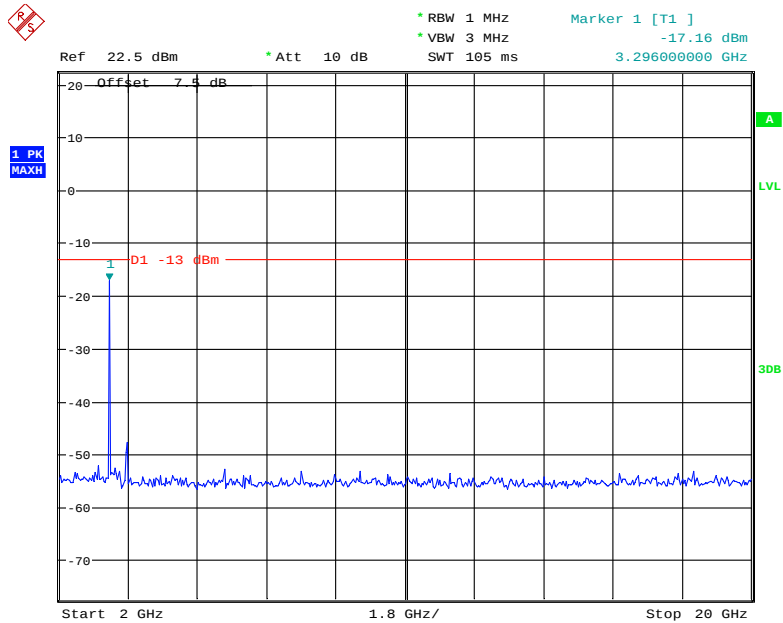
Date: 31.JUL.2018 10:51:22

1 GHz – 2 GHz (GSM Mode)



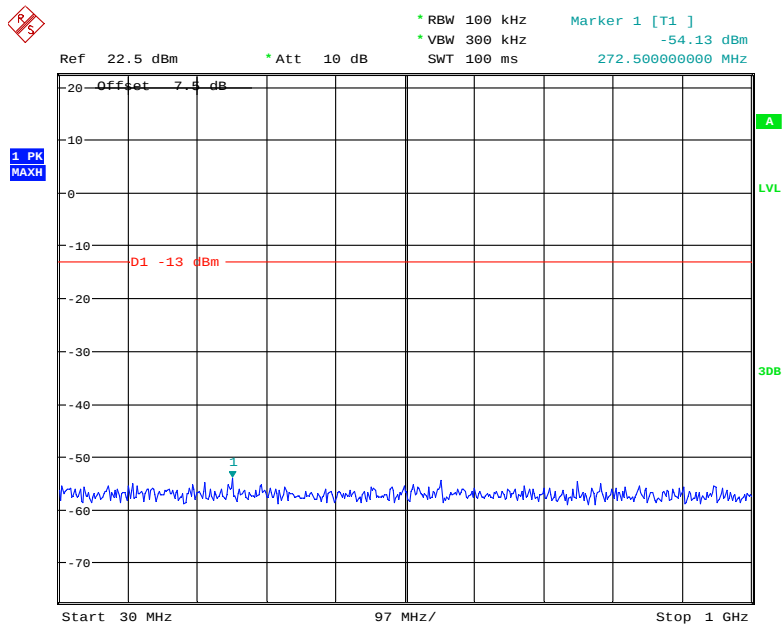
Date: 31.JUL.2018 10:53:02

2 GHz – 20 GHz (GSM Mode)



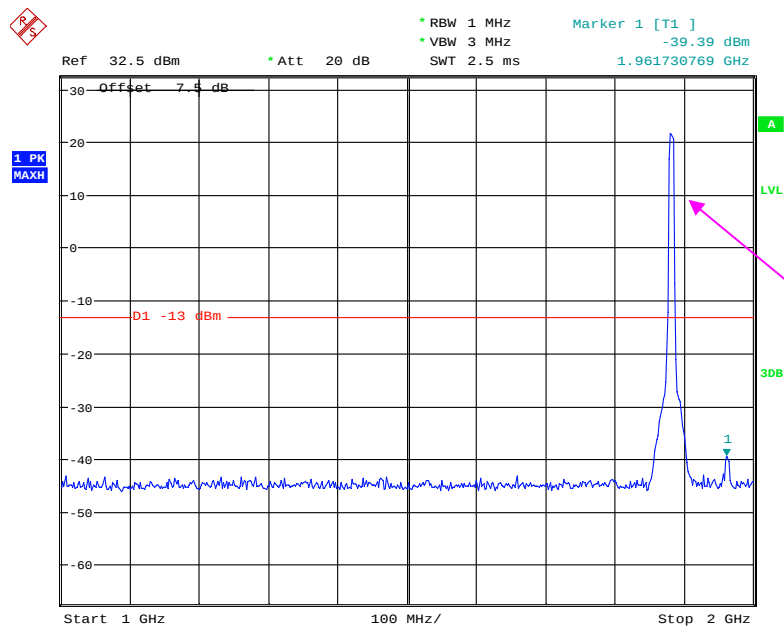
Date: 31.JUL.2018 10:53:30

30 MHz – 1 GHz (WCDMA Mode)



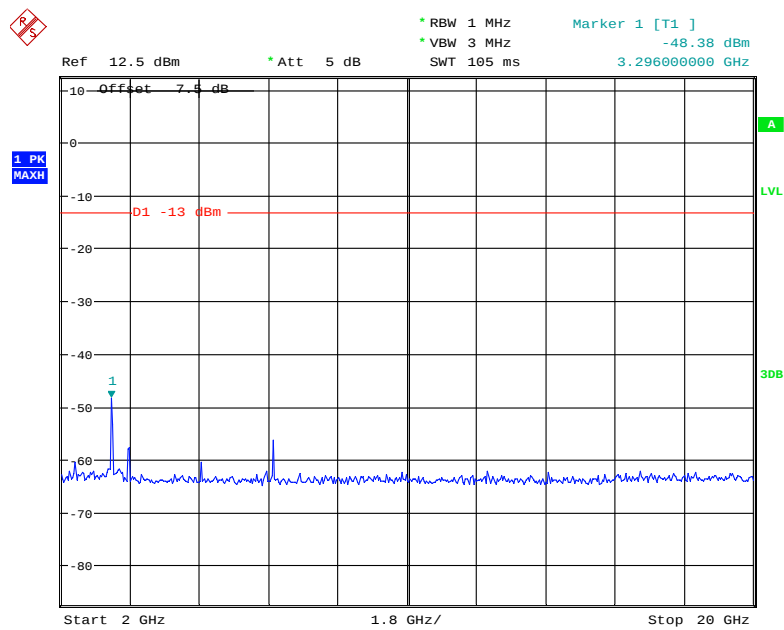
Date: 31.JUL.2018 11:38:12

1 GHz – 2 GHz (WCDMA Mode)



Date: 31.JUL.2018 11:39:07

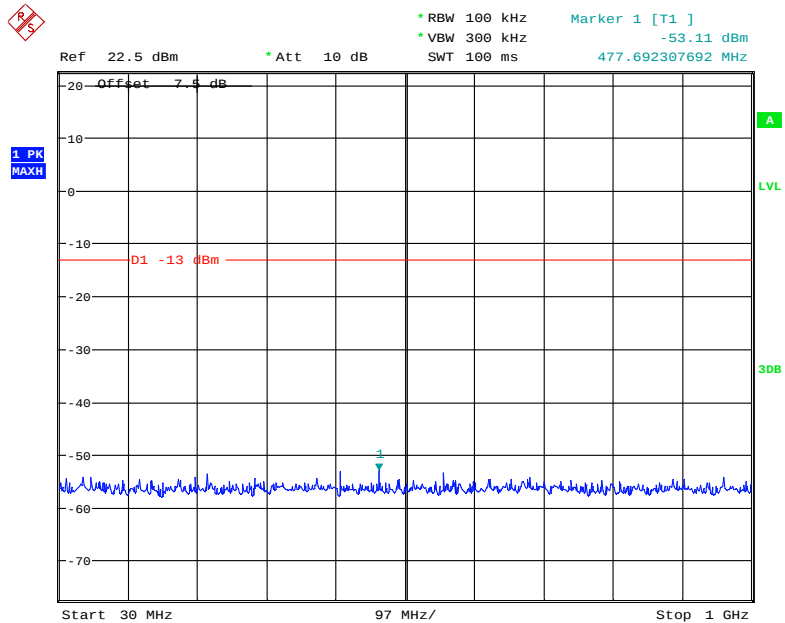
2 GHz – 20 GHz (WCDMA Mode)



Date: 31.JUL.2018 14:58:09

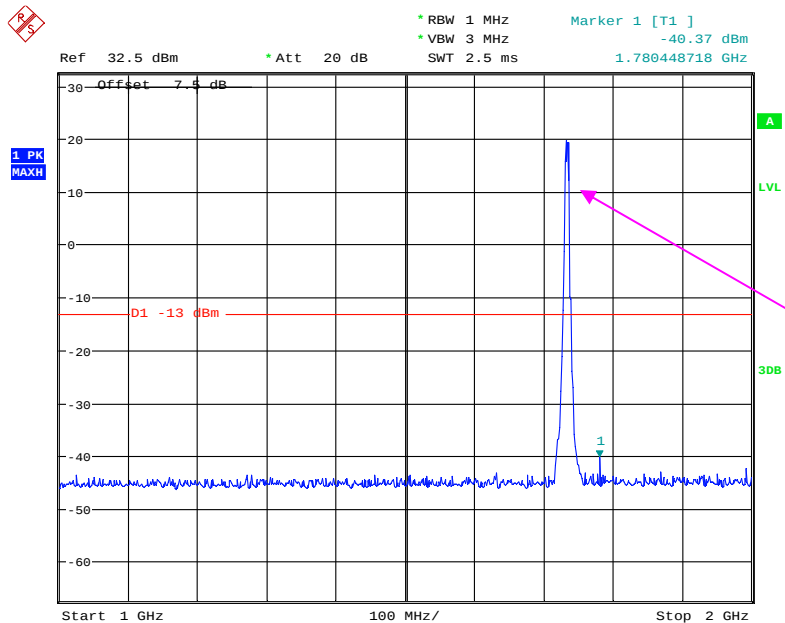
AWS Band (Part 27)

30 MHz – 1 GHz (WCDMA Mode)



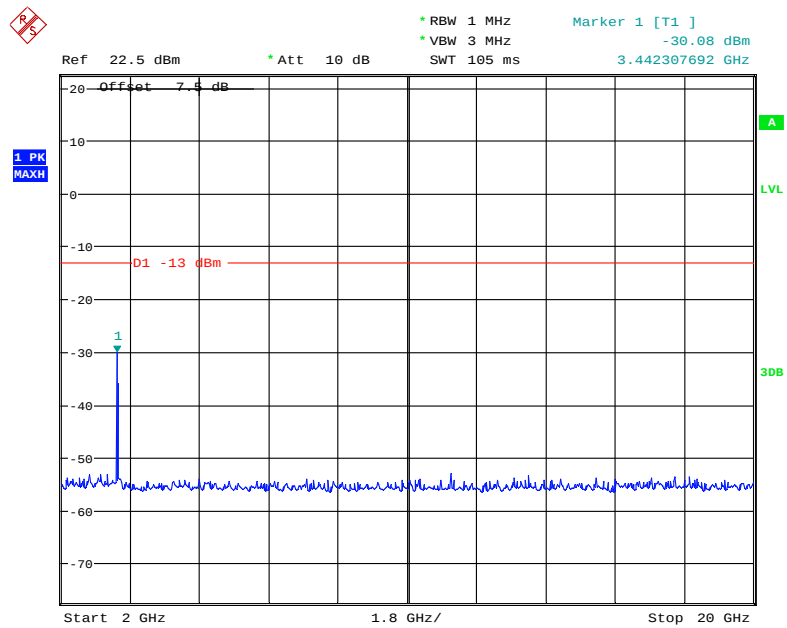
Date: 13.AUG.2018 19:20:25

1 GHz – 2 GHz (WCDMA Mode)



Date: 13.AUG.2018 19:19:39

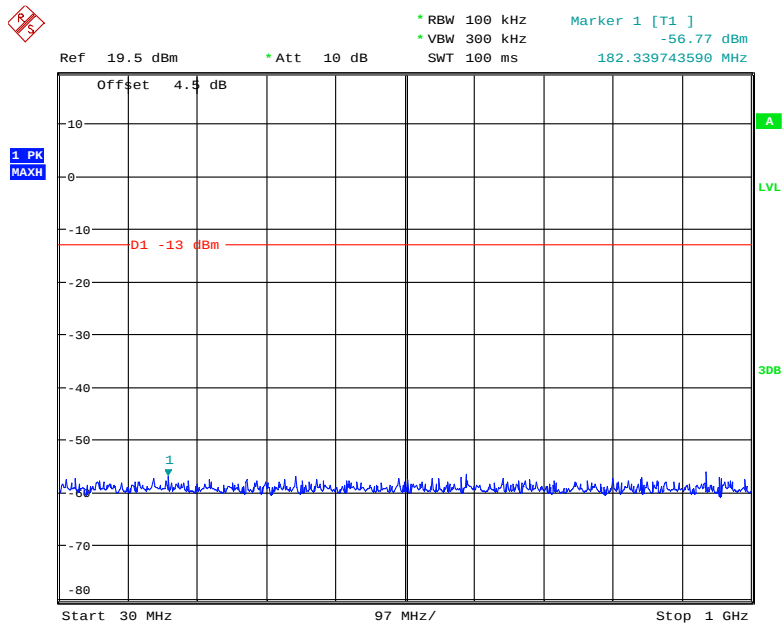
2 GHz – 20 GHz (WCDMA Mode)



Date: 13.AUG.2018 19:18:16

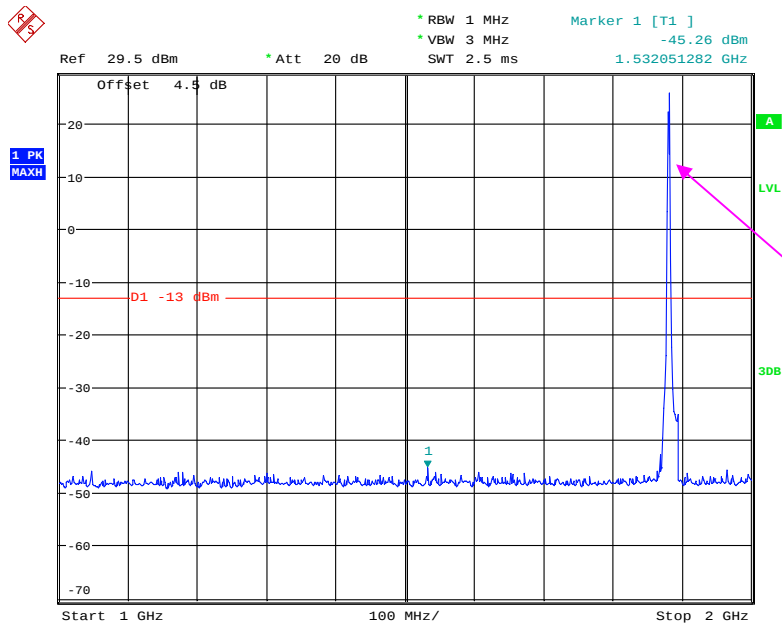
LTE Band 2: (QPSK)

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



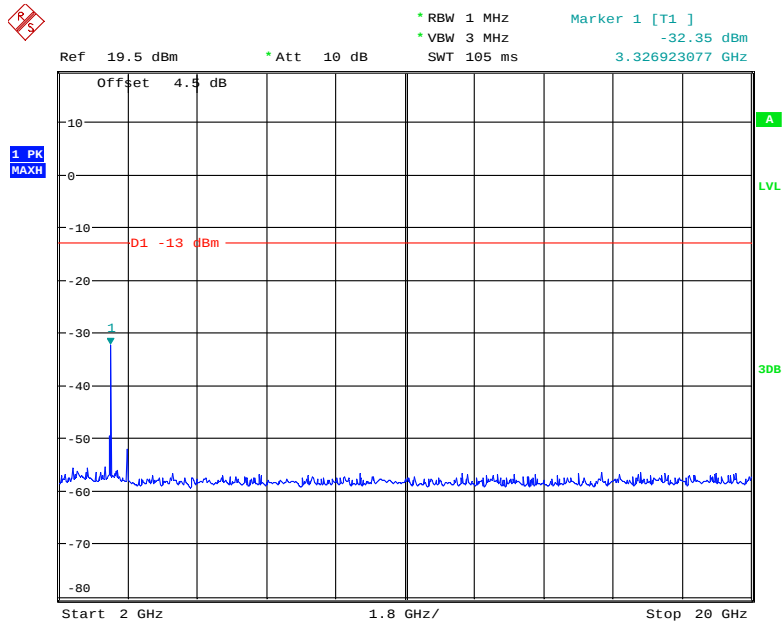
Date: 27.JUL.2018 13:59:51

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



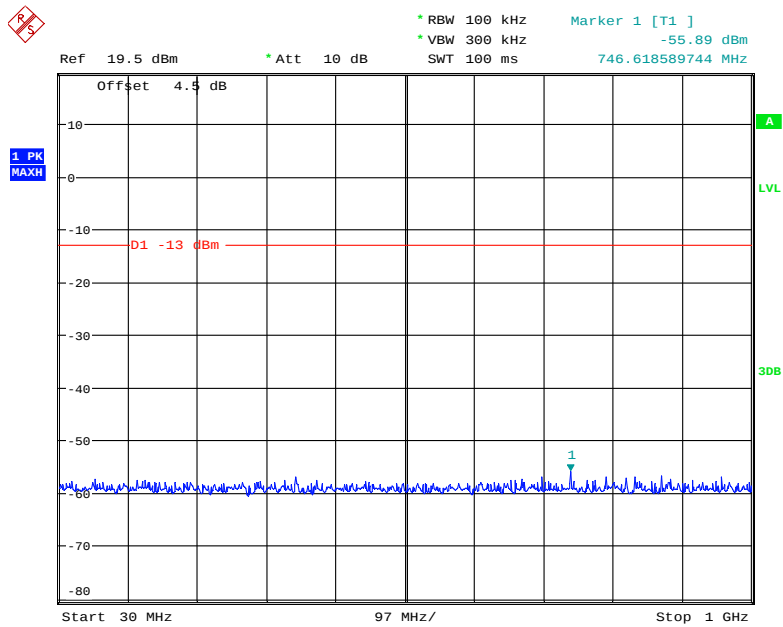
Date: 27.JUL.2018 14:02:43

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



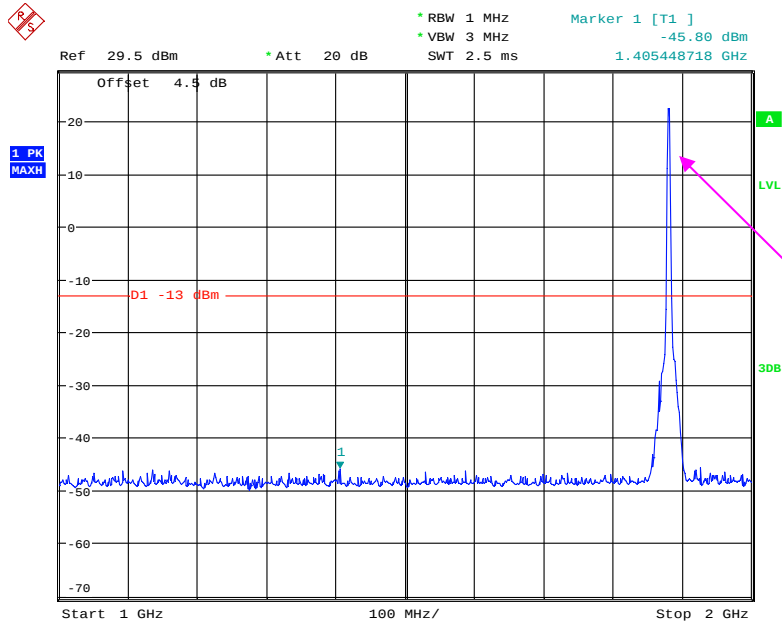
Date: 27.JUL.2018 14:03:40

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



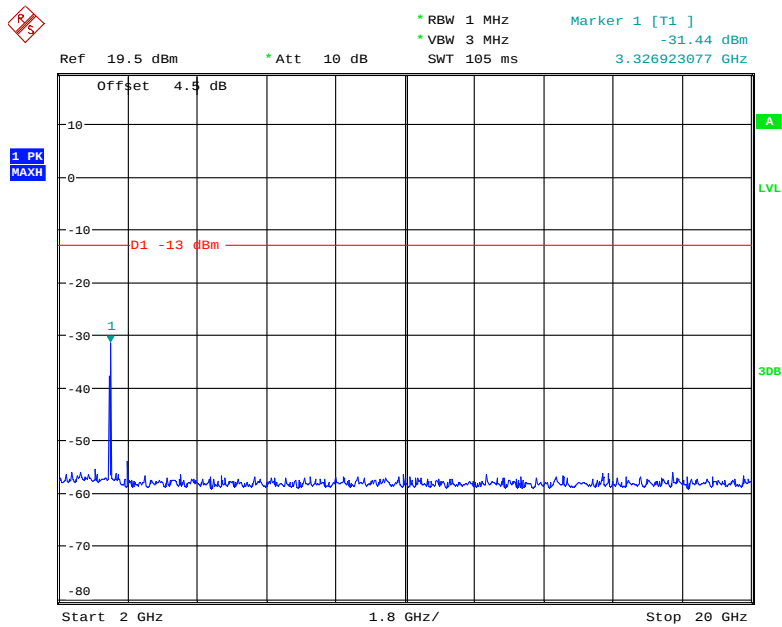
Date: 27.JUL.2018 14:12:22

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



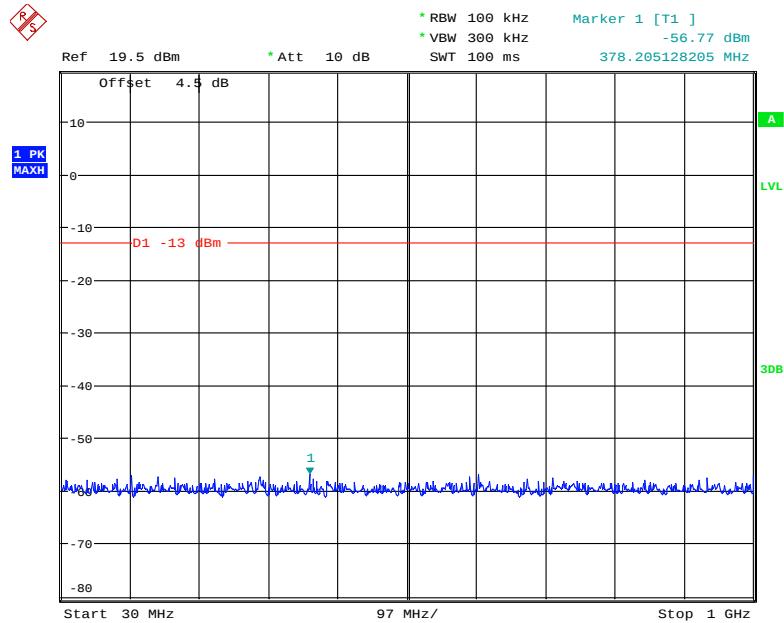
Date: 27.JUL.2018 14:10:57

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



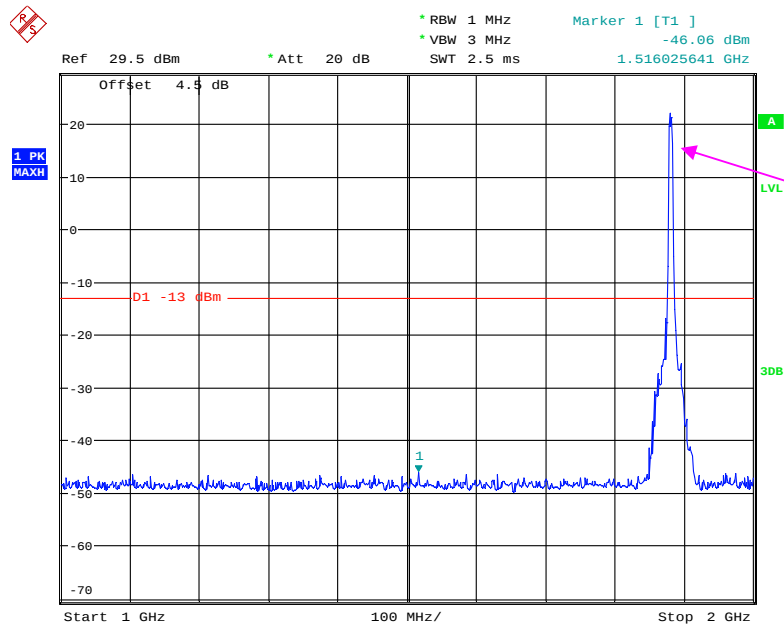
Date: 27.JUL.2018 14:05:35

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



Date: 27.JUL.2018 14:12:44

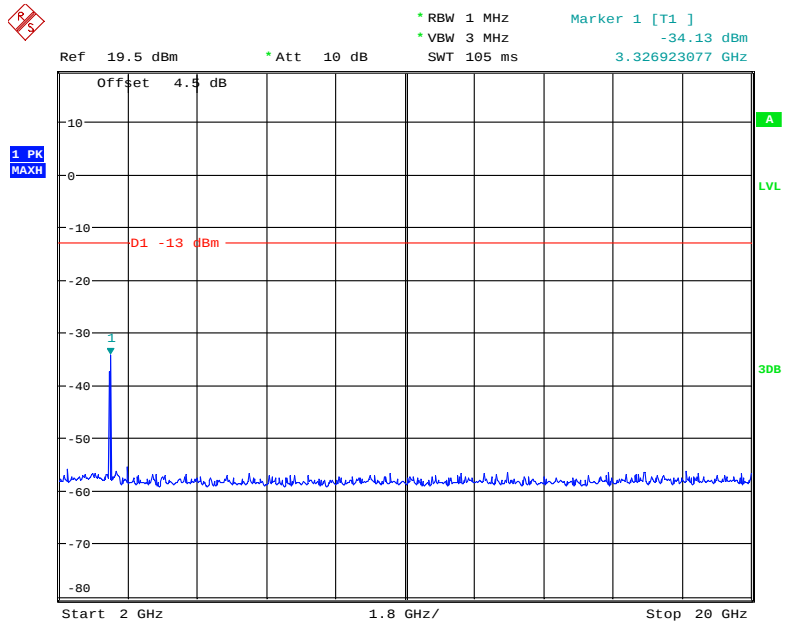
1 GHz - 2 GHz (5.0 MHz, Middle Channel)



Fundamental test

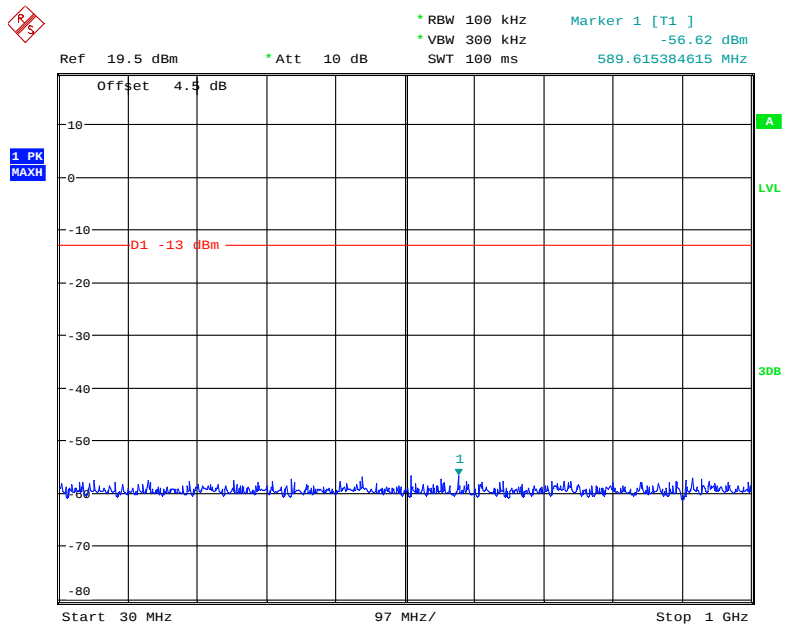
Date: 27.JUL.2018 14:10:31

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



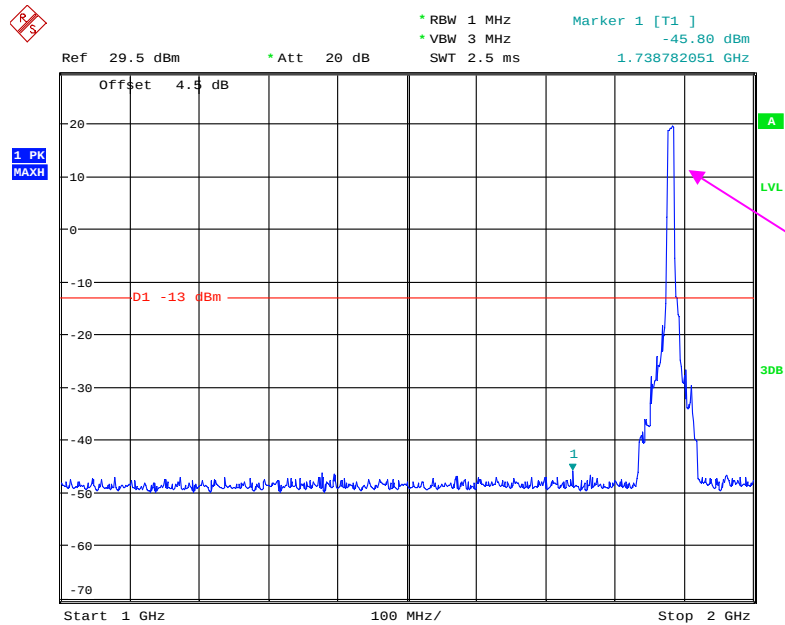
Date: 27.JUL.2018 14:06:34

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



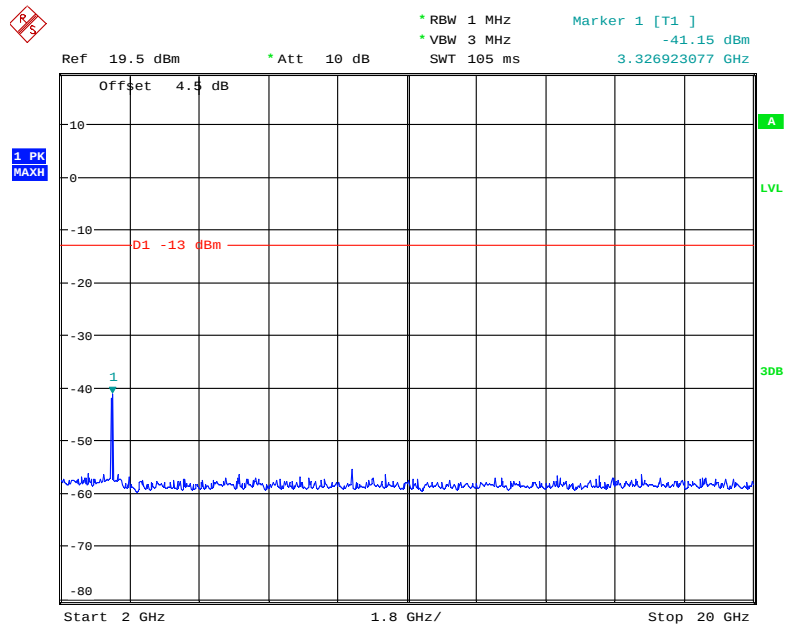
Date: 27.JUL.2018 14:13:02

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



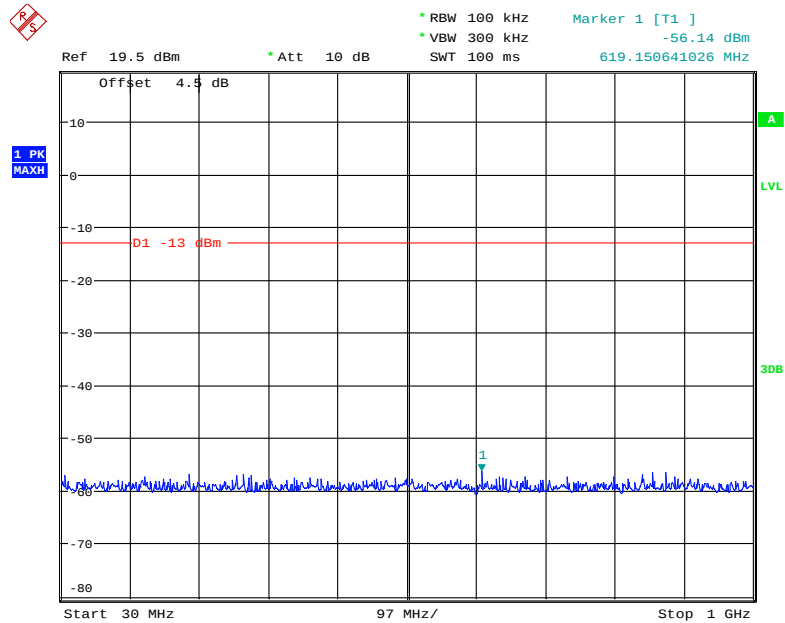
Date: 27.JUL.2018 14:10:06

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



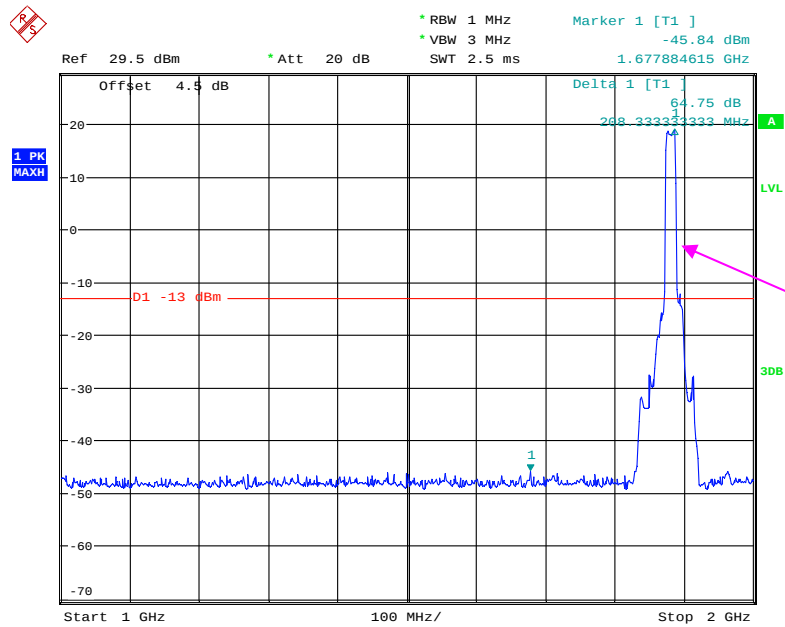
Date: 27.JUL.2018 14:06:52

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



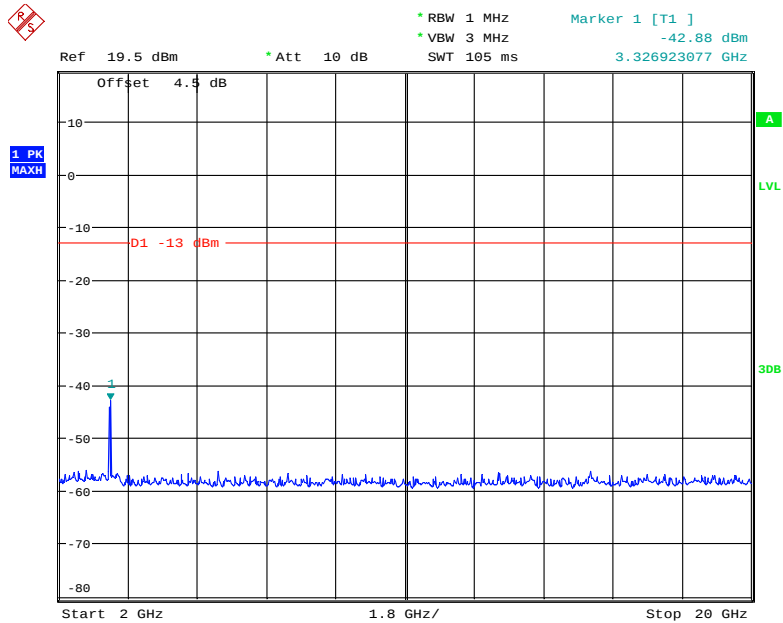
Date: 27.JUL.2018 14:13:23

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



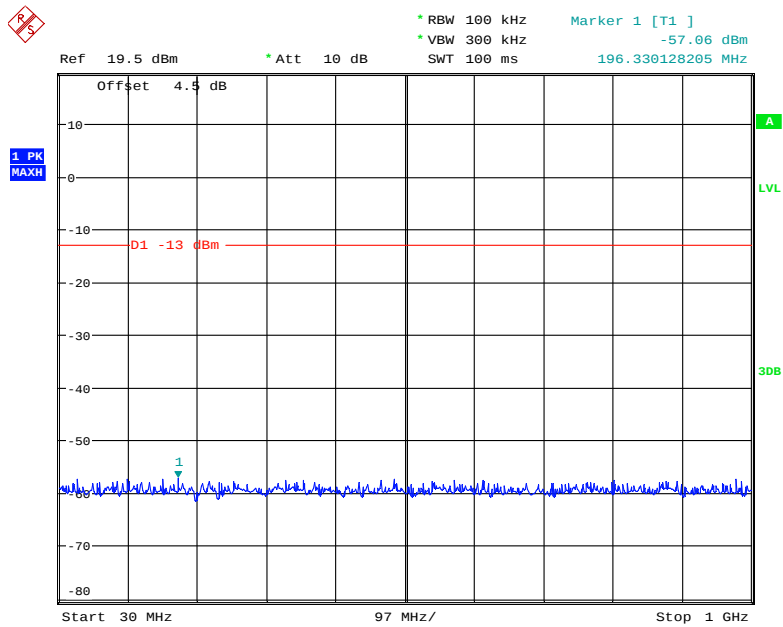
Date: 27.JUL.2018 14:09:34

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



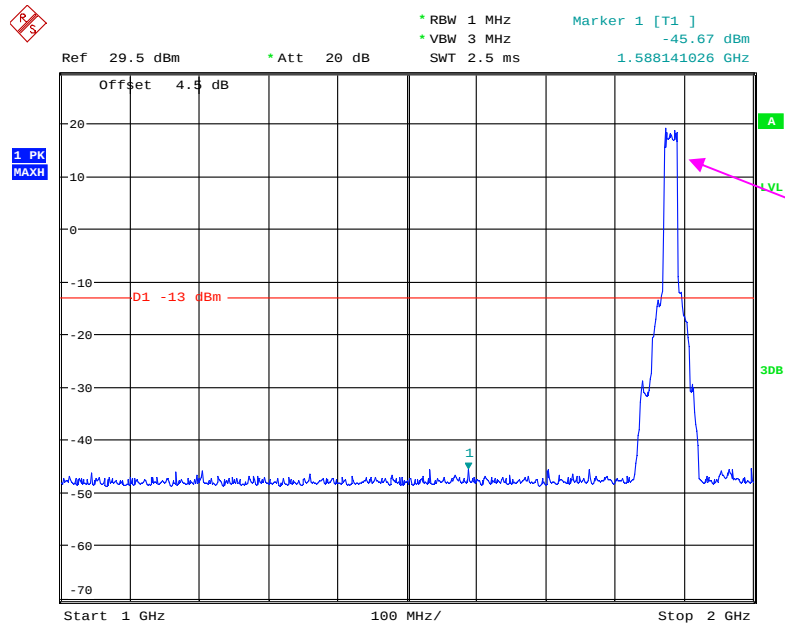
Date: 27.JUL.2018 14:07:13

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



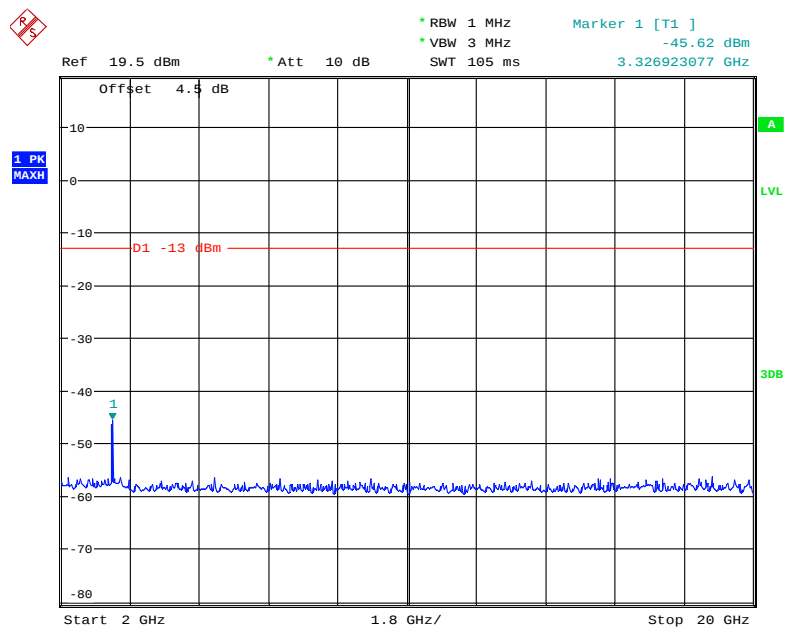
Date: 27.JUL.2018 14:13:49

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



Date: 27.JUL.2018 14:08:49

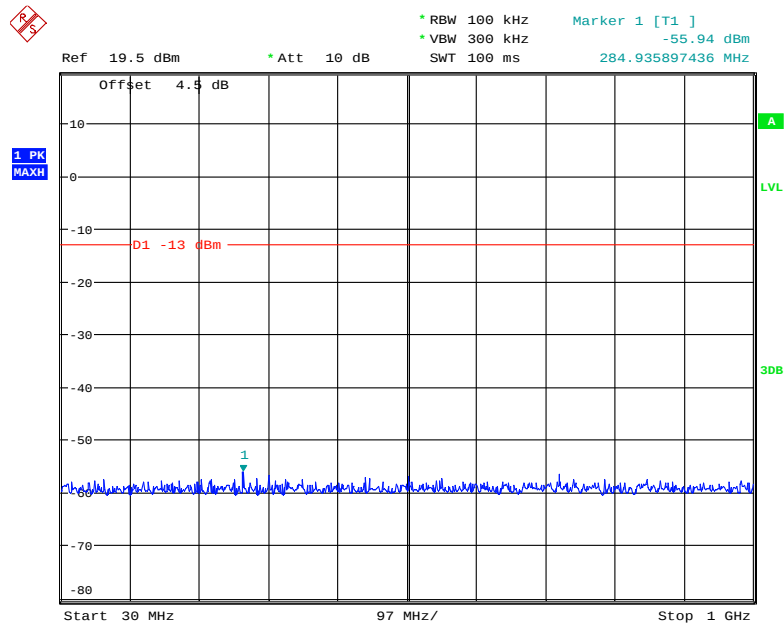
2 GHz - 20 GHz (20.0 MHz, Middle Channel)



Date: 27.JUL.2018 14:07:29

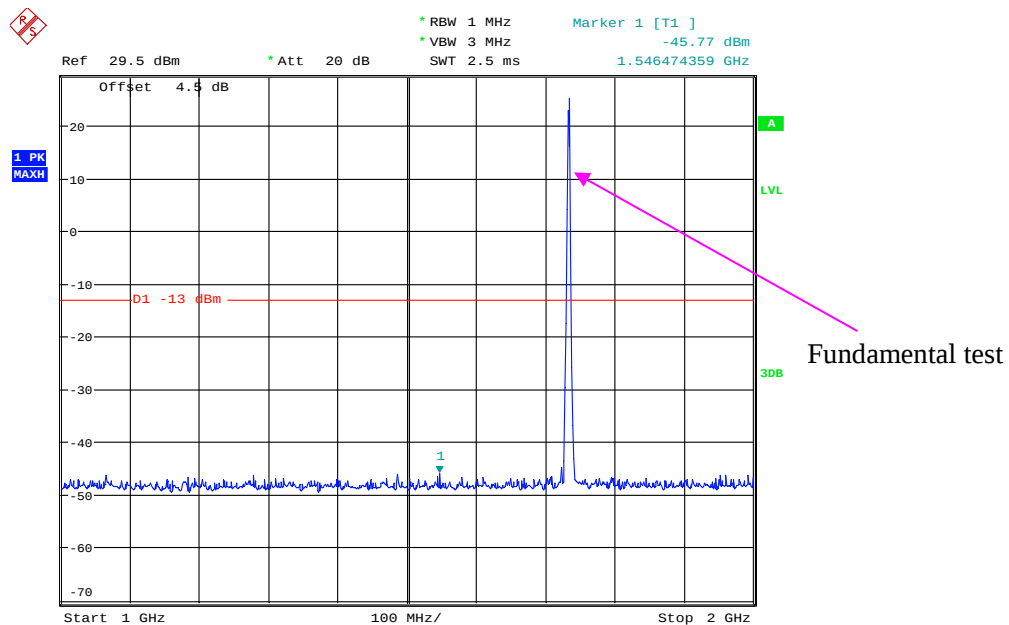
LTE Band 4: (QPSK)

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



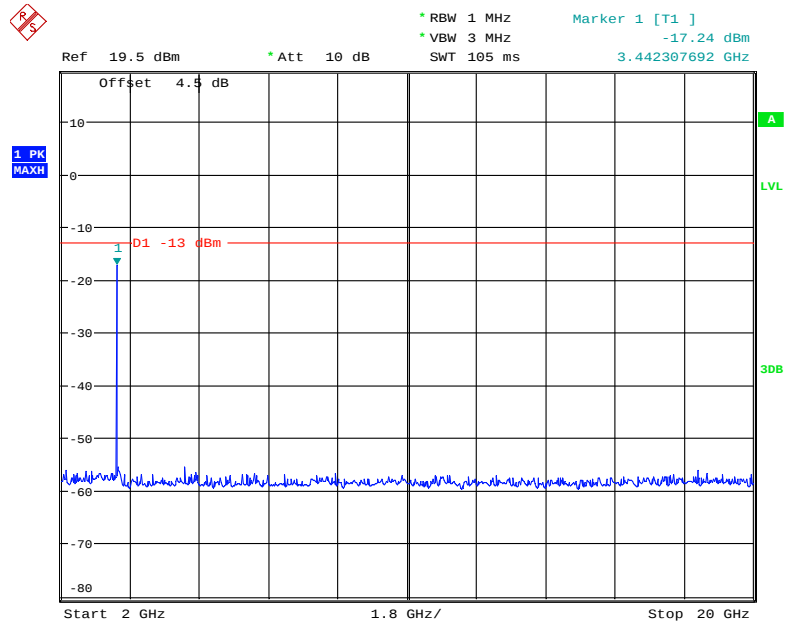
Date: 27.JUL.2018 14:15:21

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



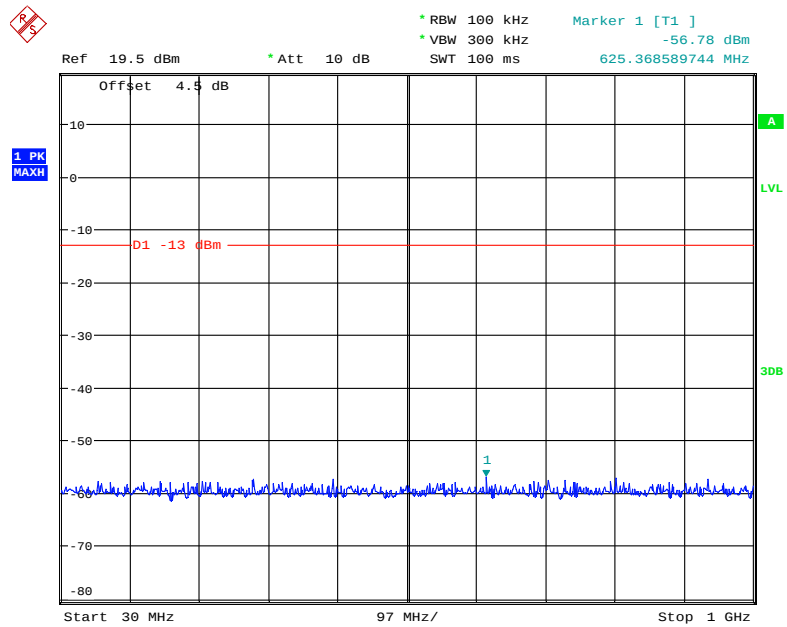
Date: 27.JUL.2018 14:20:51

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



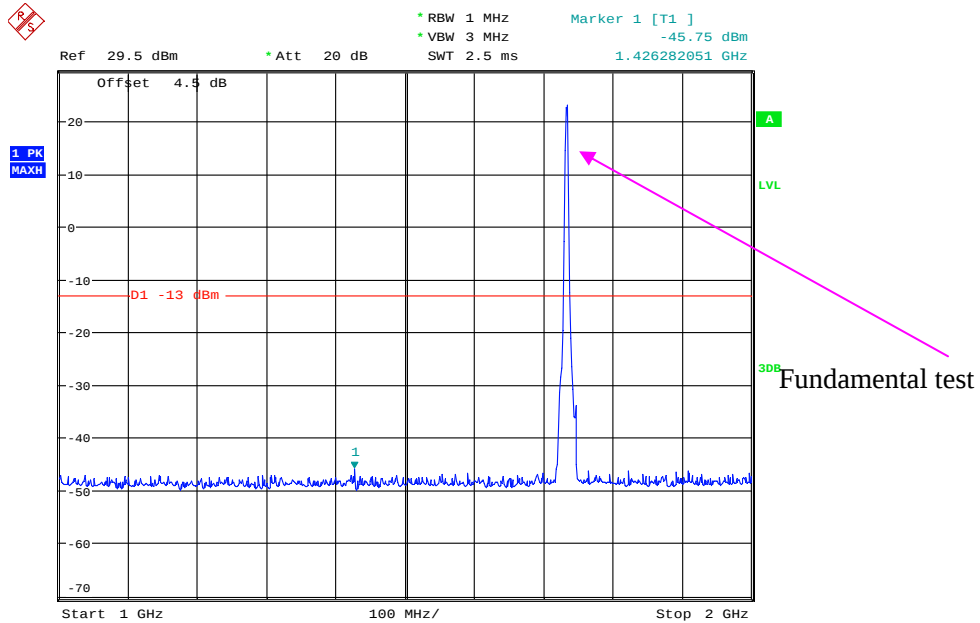
Date: 27.JUL.2018 14:22:32

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



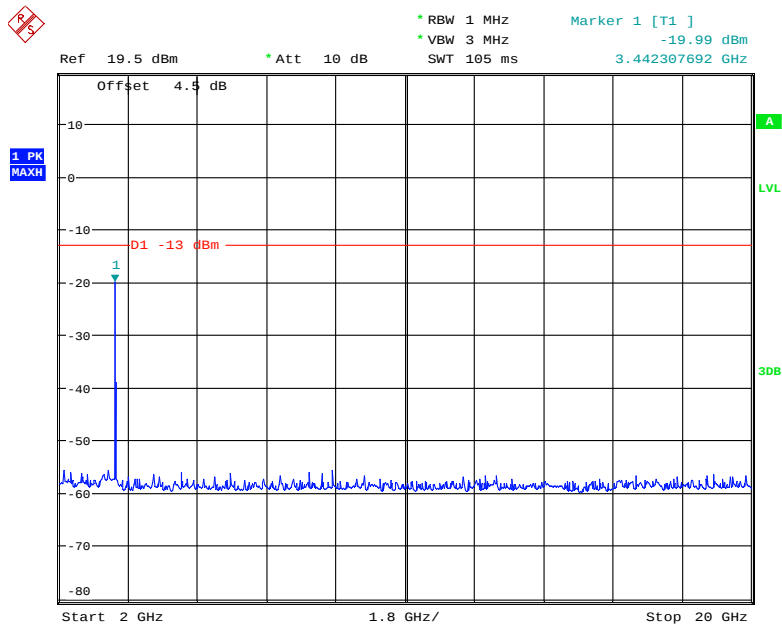
Date: 27.JUL.2018 14:15:58

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



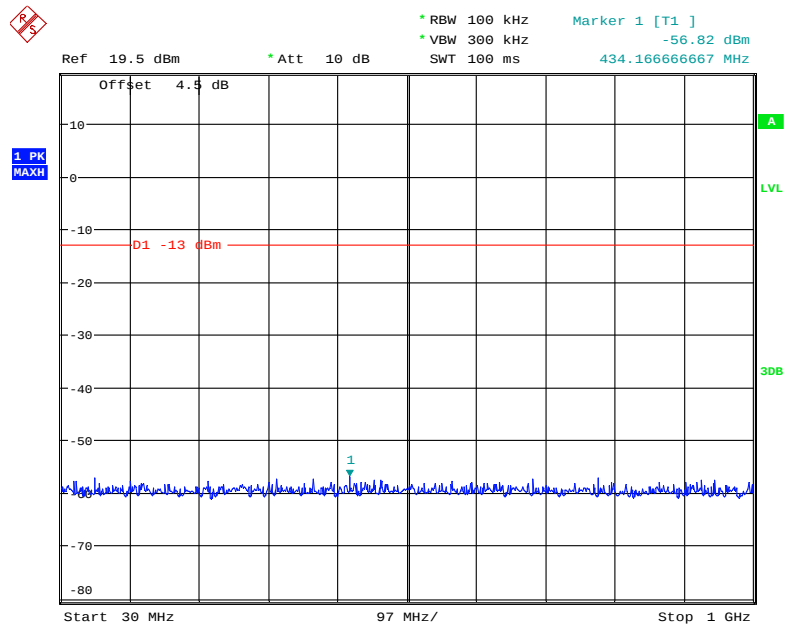
Date: 27.JUL.2018 14:20:20

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



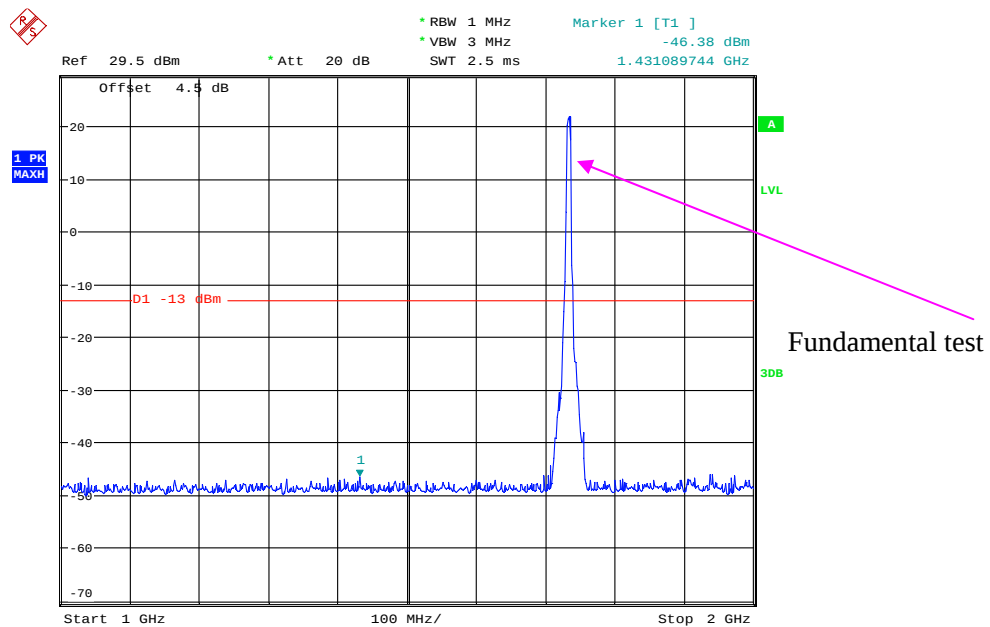
Date: 27.JUL.2018 14:22:52

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



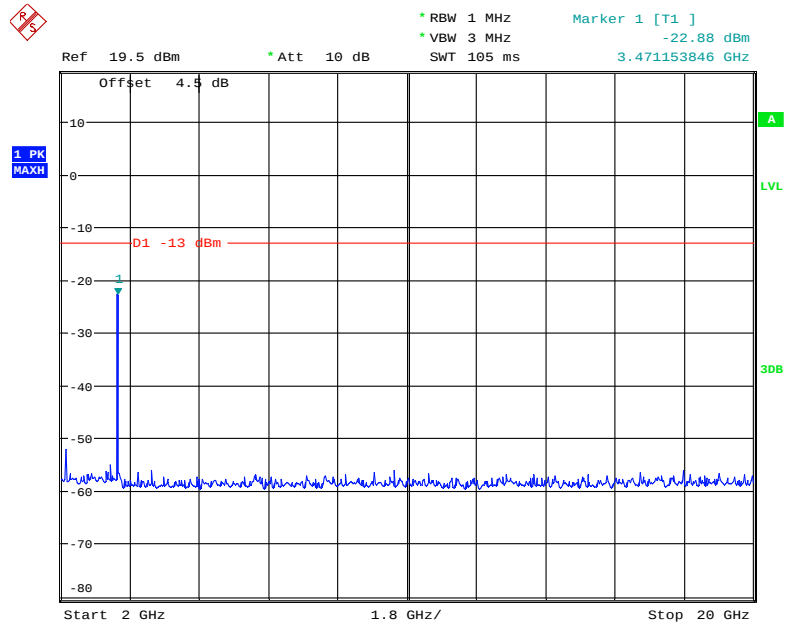
Date: 27.JUL.2018 14:16:14

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



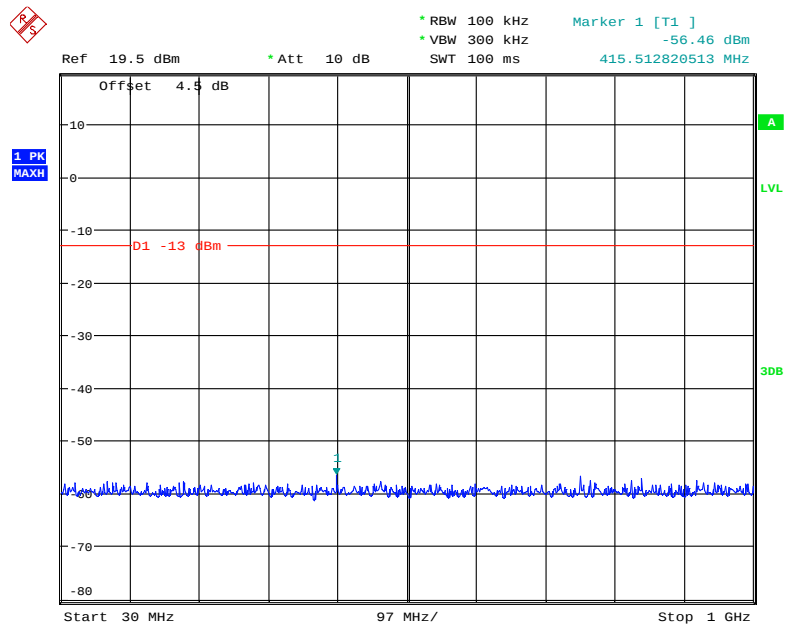
Date: 27.JUL.2018 14:20:00

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



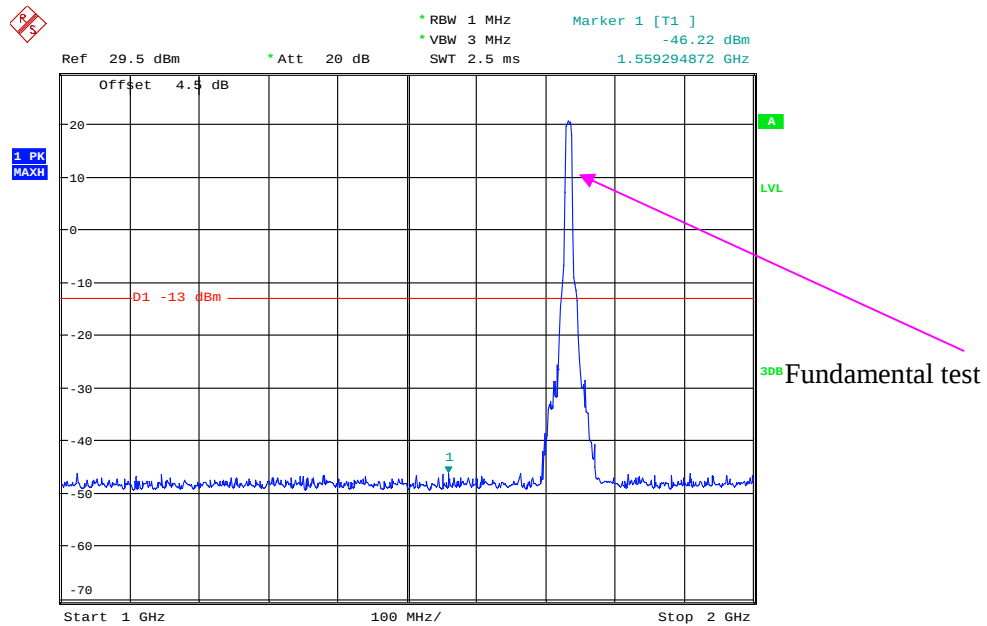
Date: 27.JUL.2018 14:23:16

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



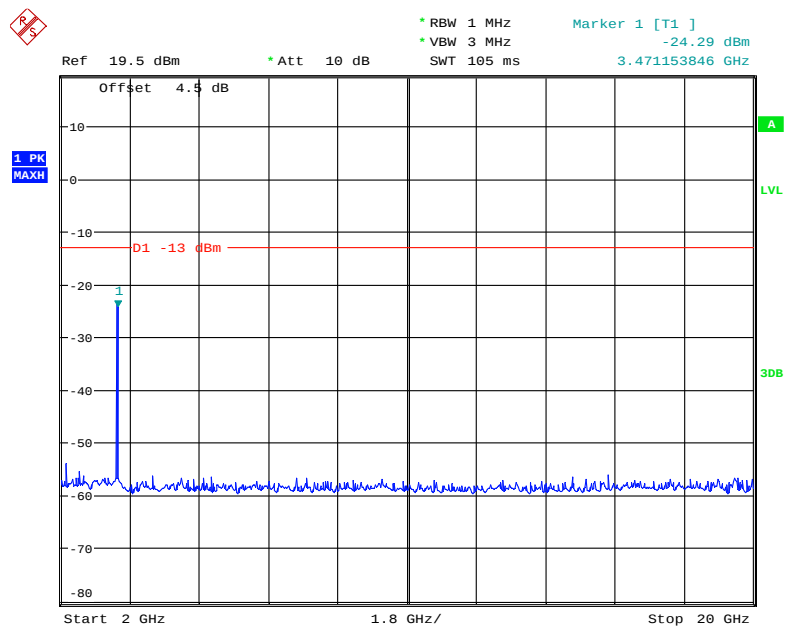
Date: 27.JUL.2018 14:16:29

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



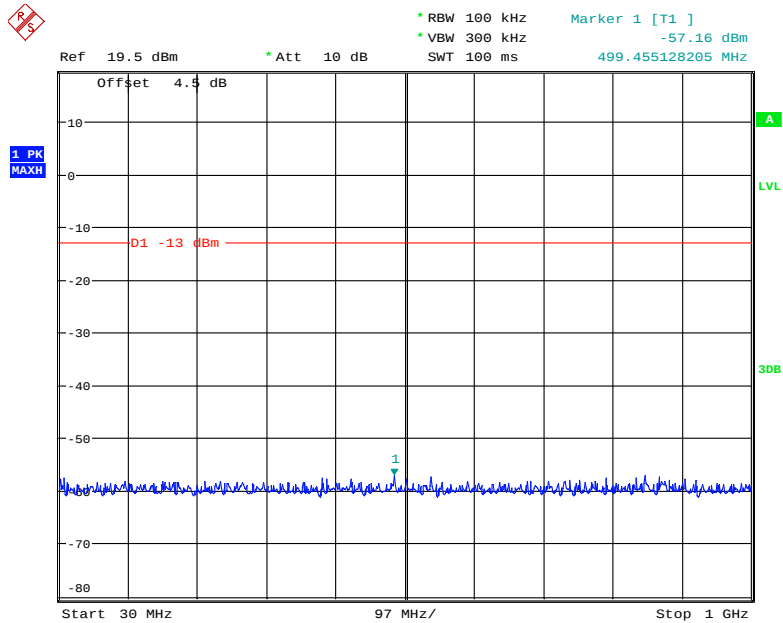
Date: 27.JUL.2018 14:19:40

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



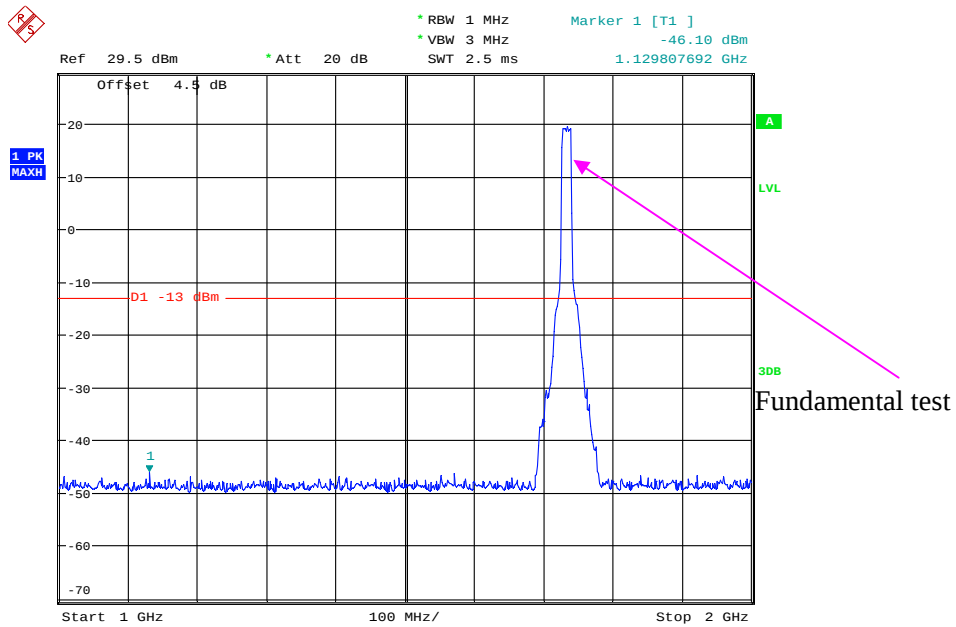
Date: 27.JUL.2018 14:23:29

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



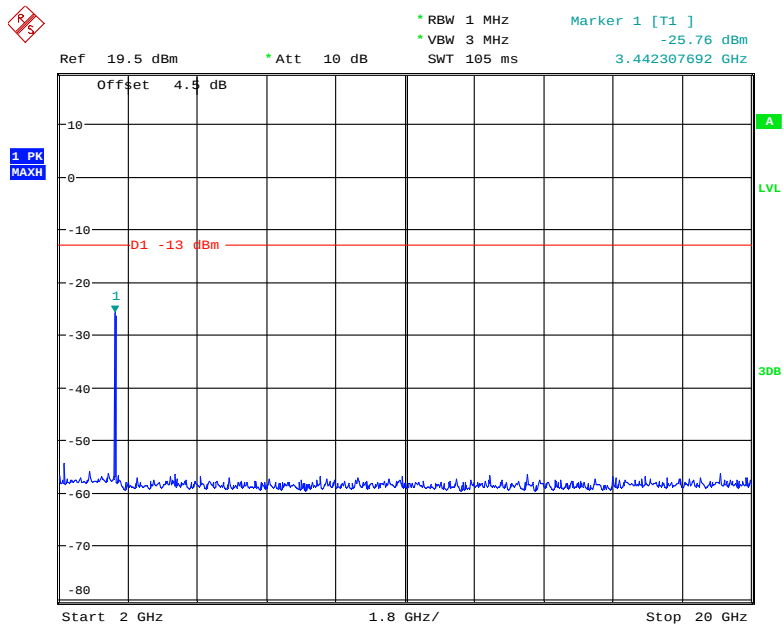
Date: 27.JUL.2018 14:16:45

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



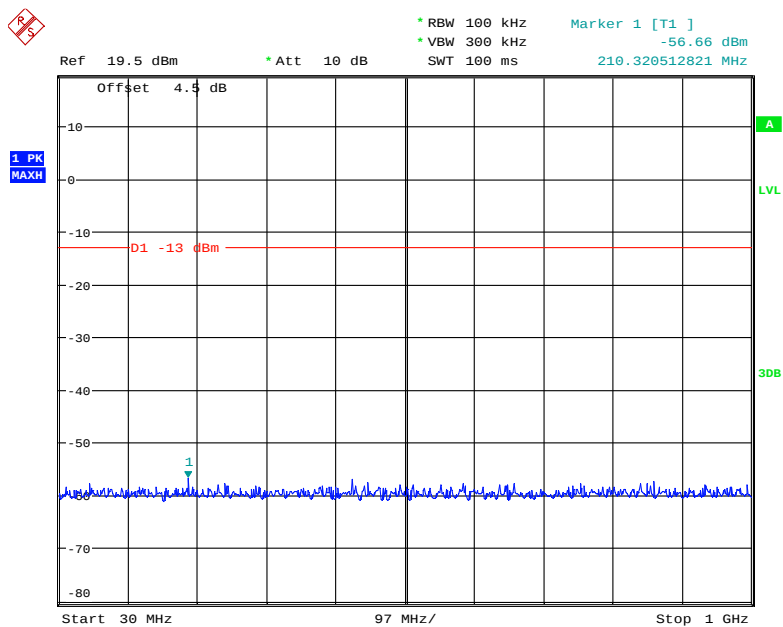
Date: 27.JUL.2018 14:19:14

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



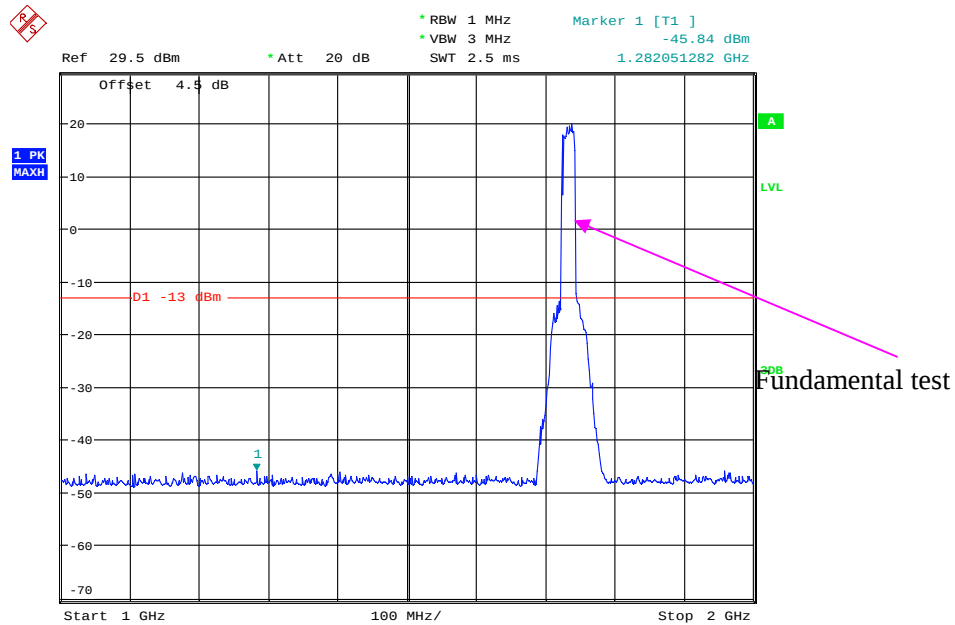
Date: 27.JUL.2018 14:23:41

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



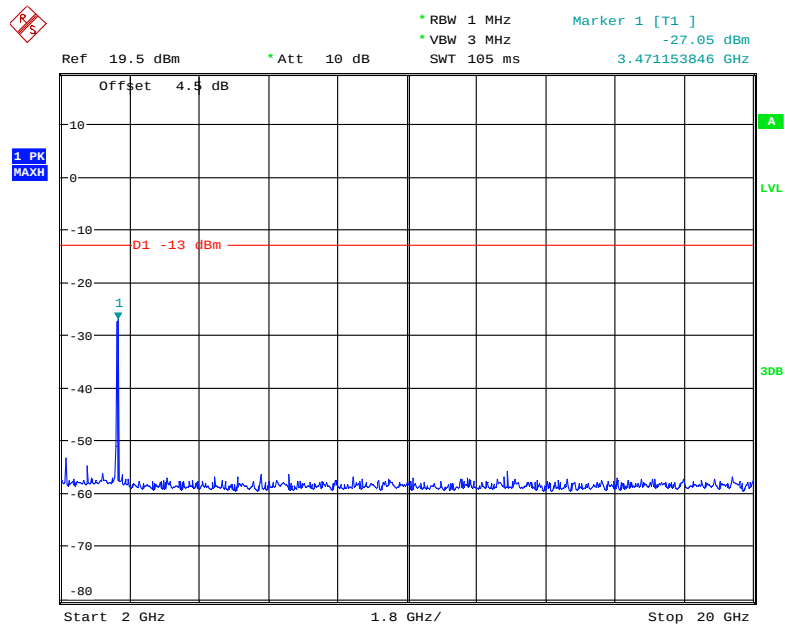
Date: 27.JUL.2018 14:17:03

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



Date: 27.JUL.2018 14:18:36

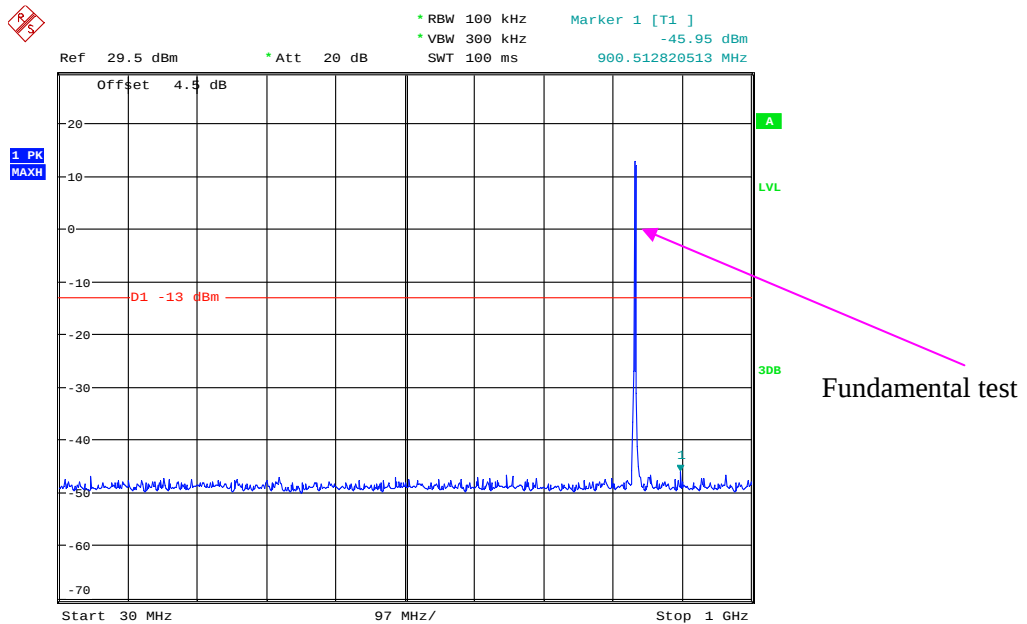
2 GHz - 20 GHz (20.0 MHz, Middle Channel)



Date: 27.JUL.2018 14:23:55

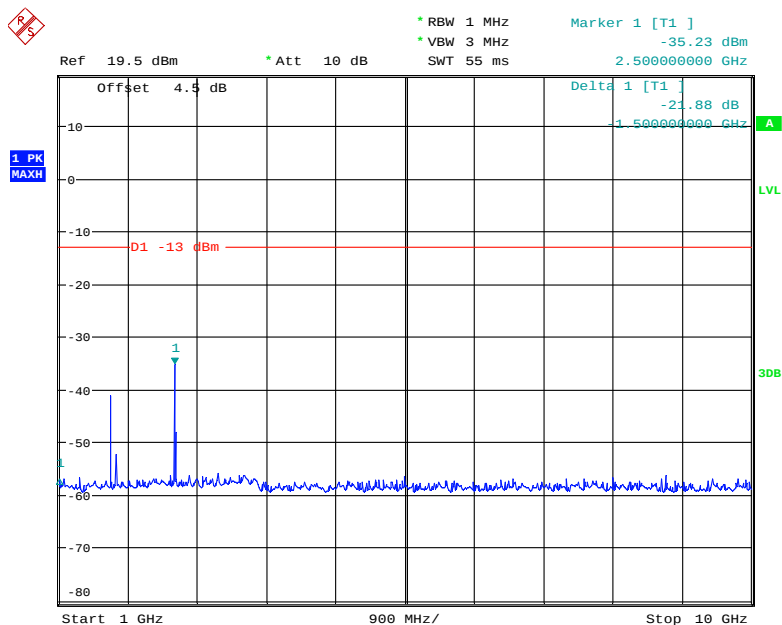
LTE Band 5:

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



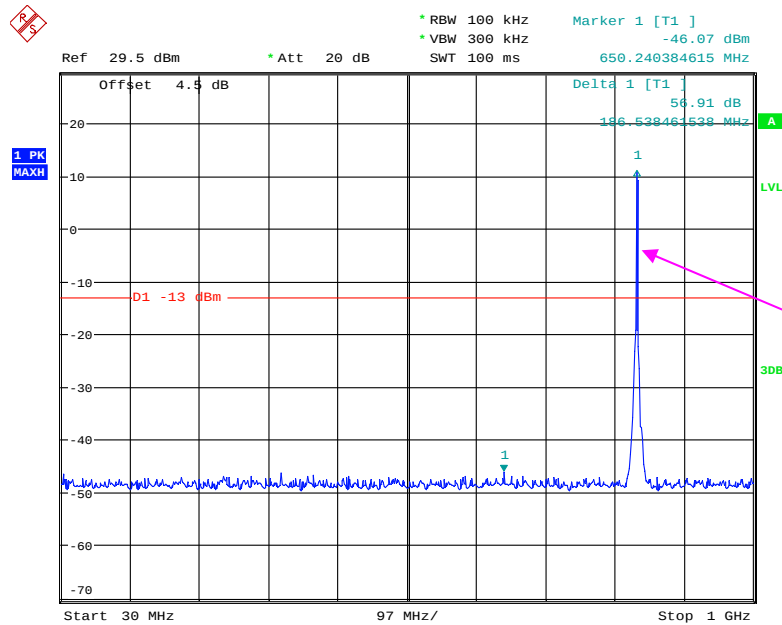
Date: 27.JUL.2018 14:27:16

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



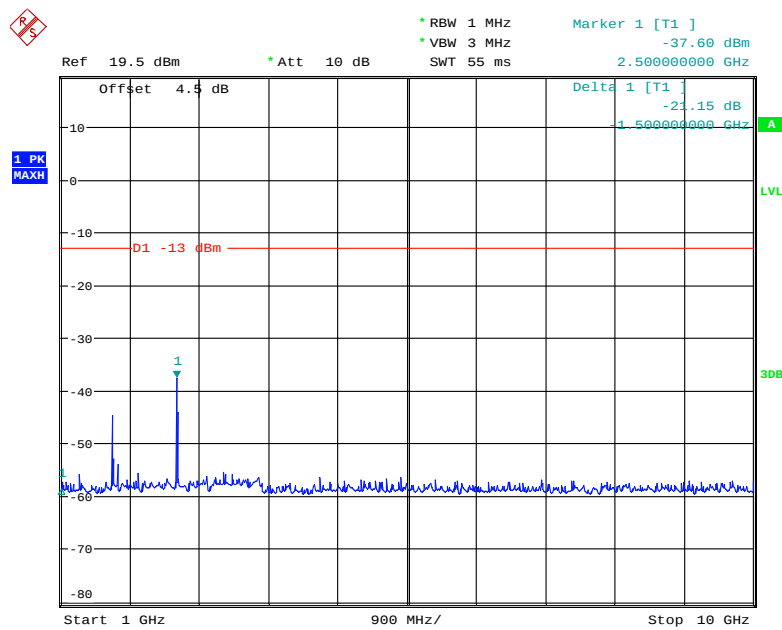
Date: 27.JUL.2018 14:30:56

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



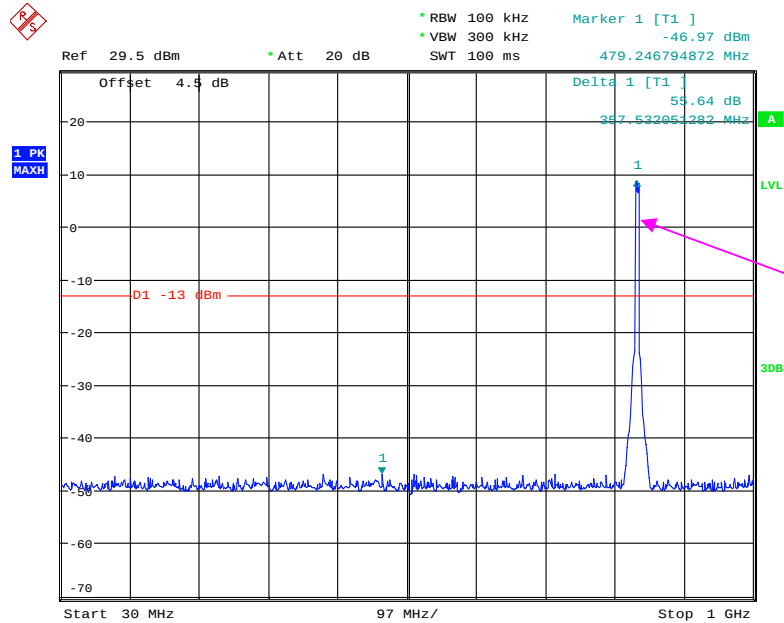
Date: 27.JUL.2018 14:28:53

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



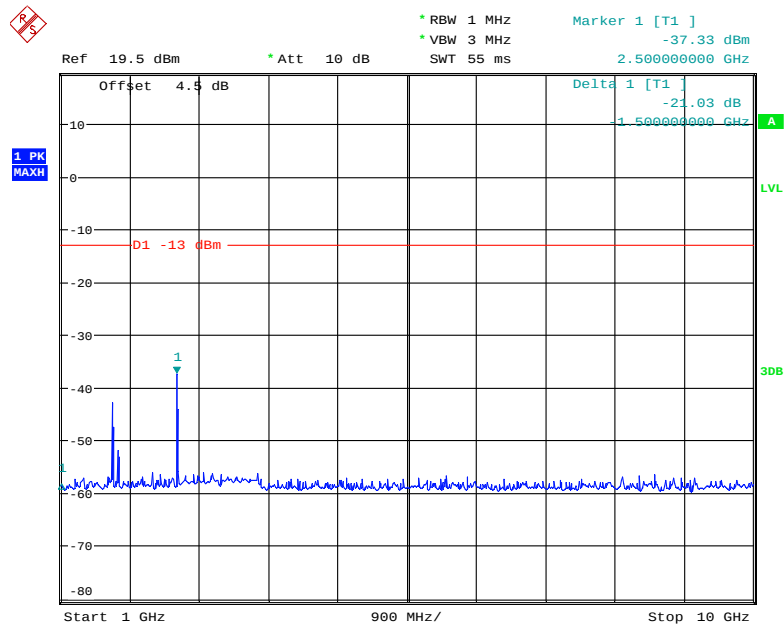
Date: 27.JUL.2018 14:30:39

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



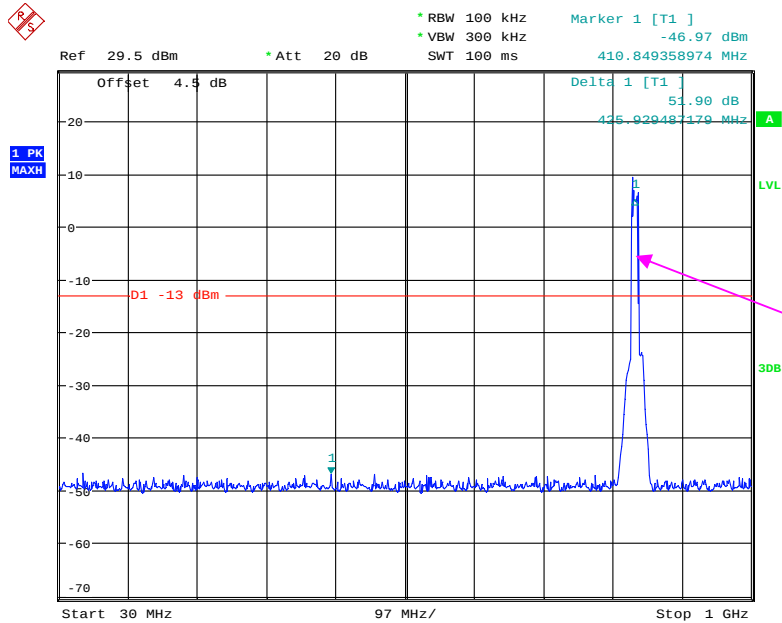
Date: 27.JUL.2018 14:29:14

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



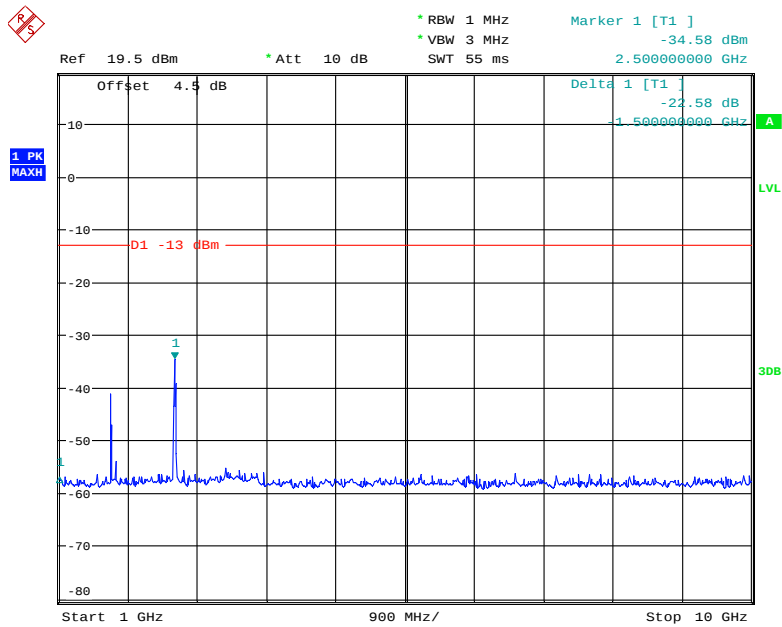
Date: 27.JUL.2018 14:30:23

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



Date: 27.JUL.2018 14:29:32

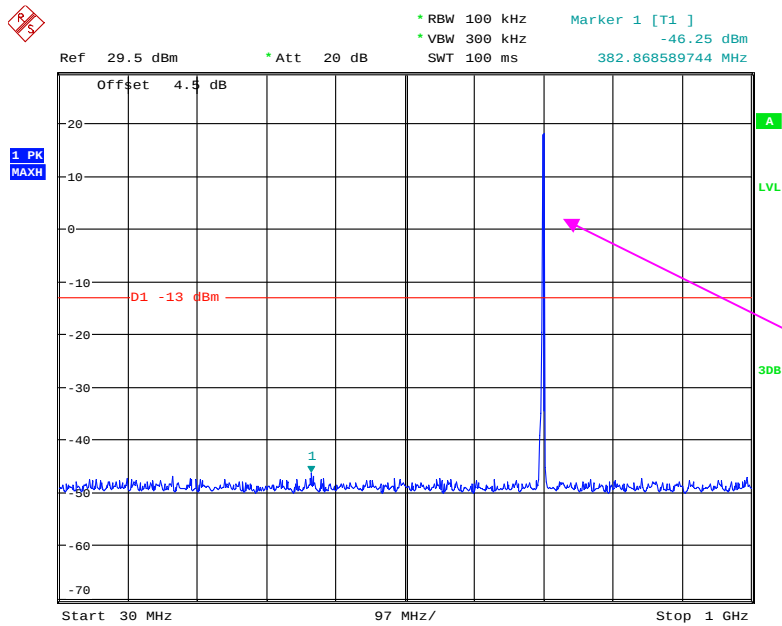
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 27.JUL.2018 14:30:08

LTE Band 12: (QPSK)

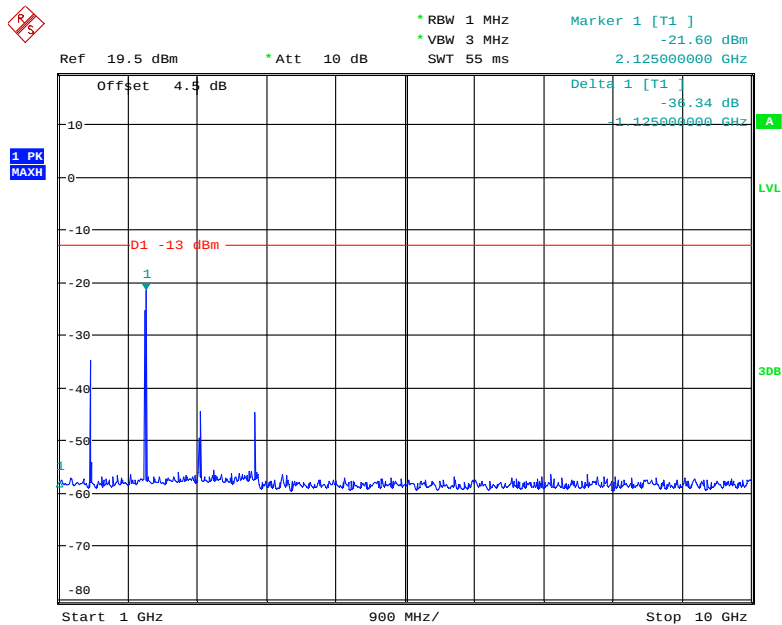
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

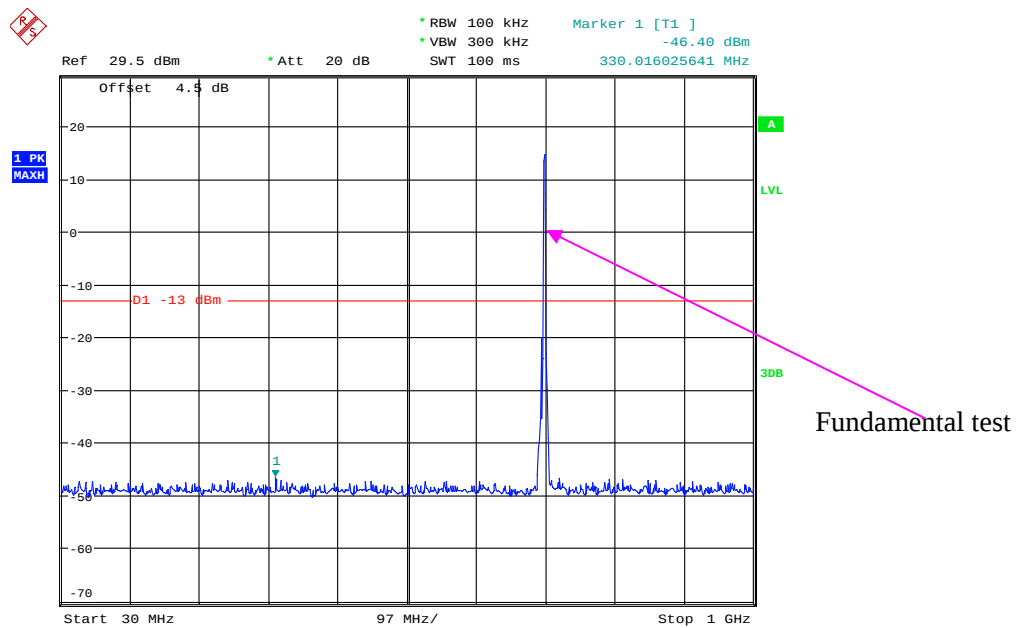
Date: 27.JUL.2018 14:35:16

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



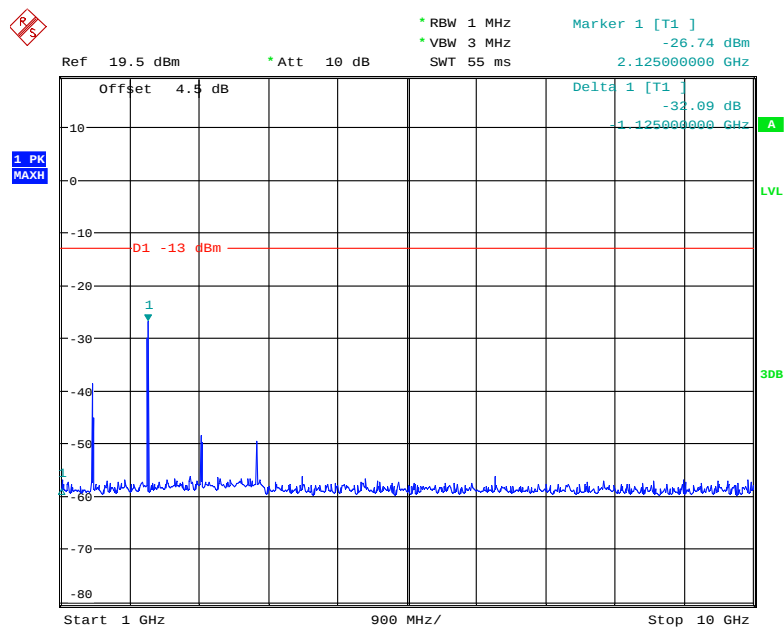
Date: 27.JUL.2018 14:31:52

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



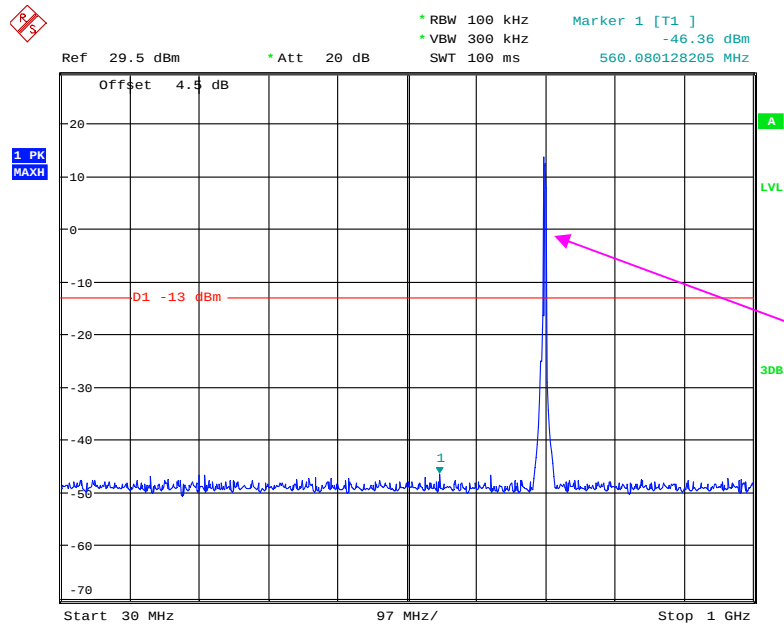
Date: 27.JUL.2018 14:34:54

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



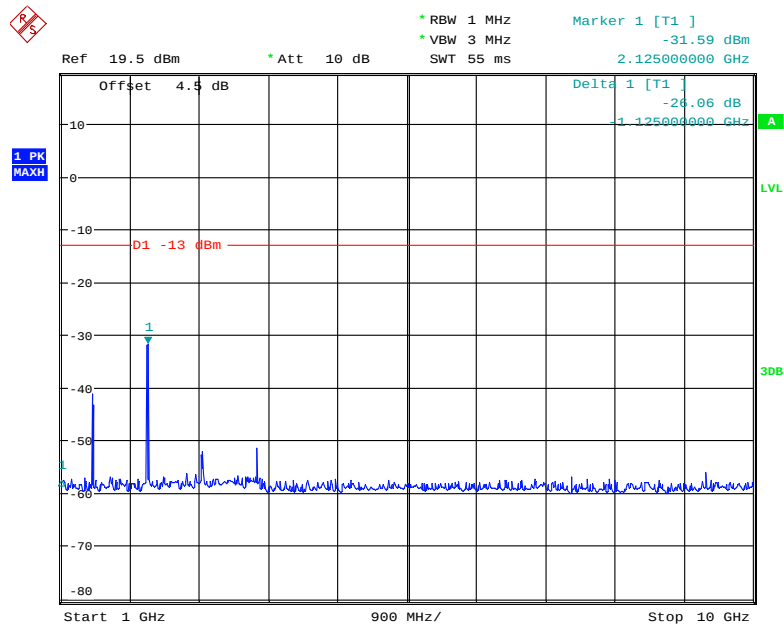
Date: 27.JUL.2018 14:32:17

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



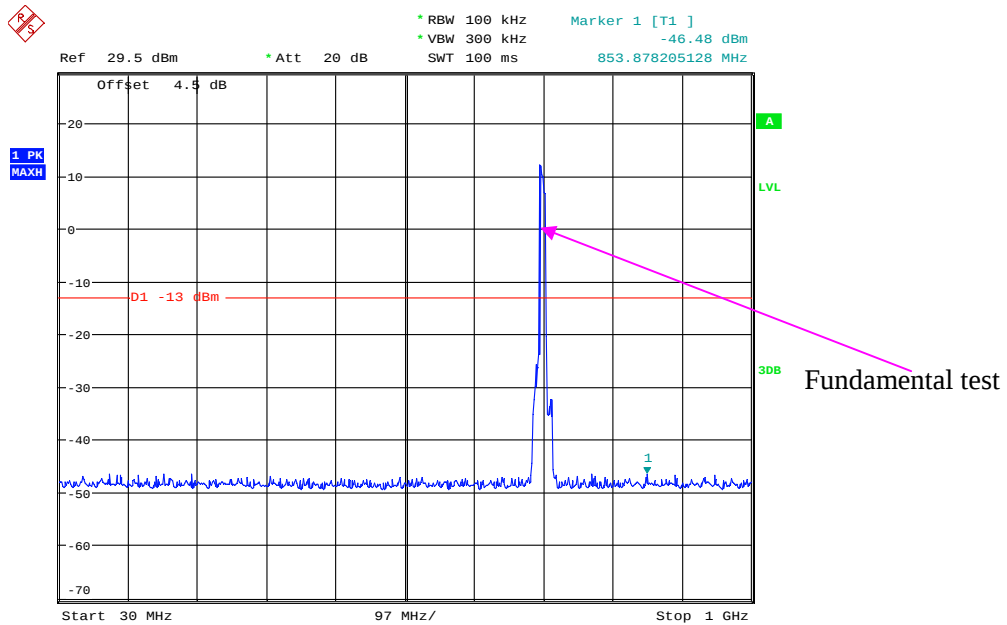
Date: 27.JUL.2018 14:34:33

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



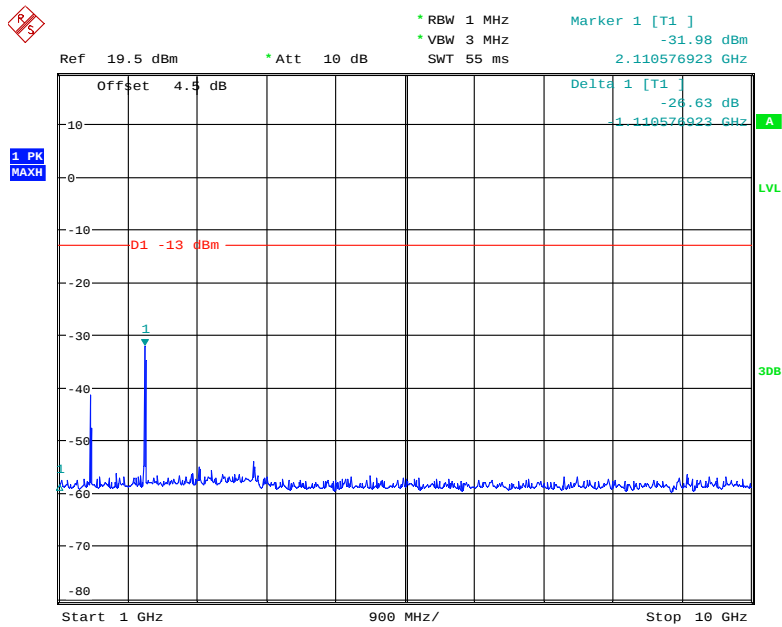
Date: 27.JUL.2018 14:32:32

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



Date: 27.JUL.2018 14:34:06

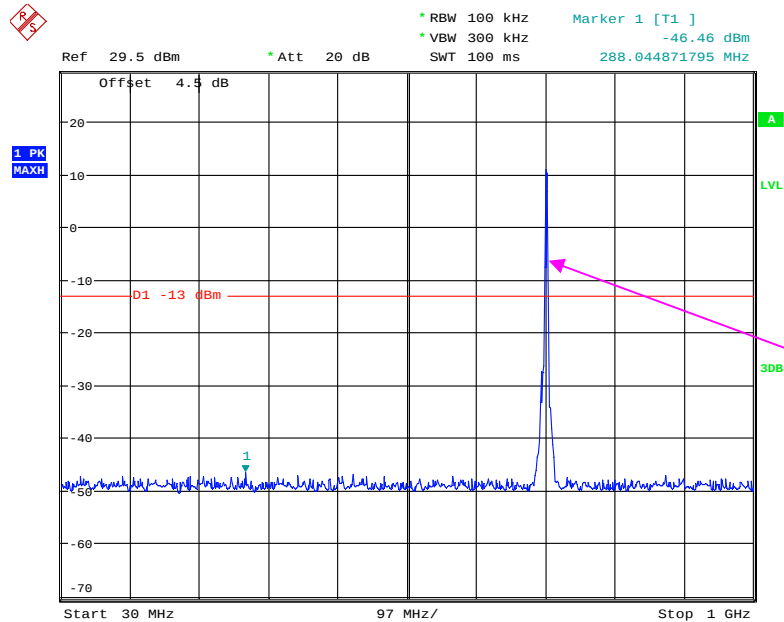
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 27.JUL.2018 14:32:51

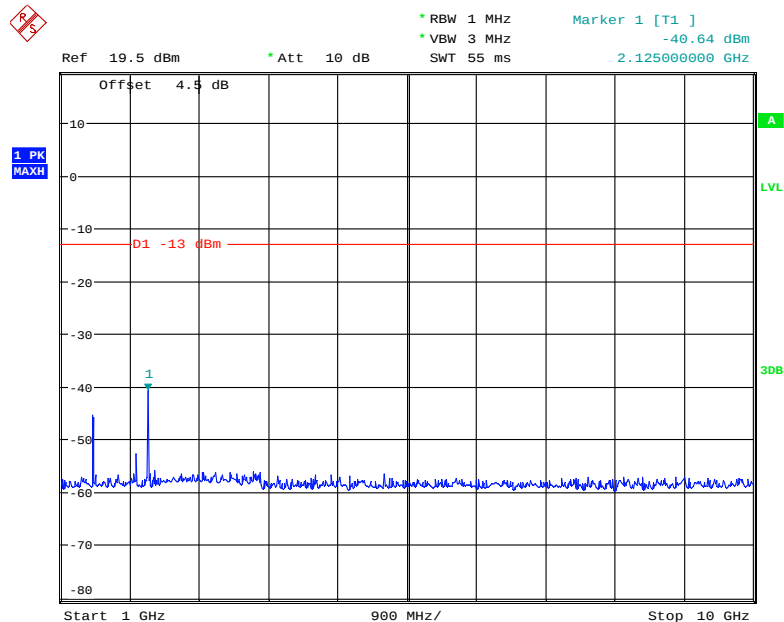
LTE Band 17:

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



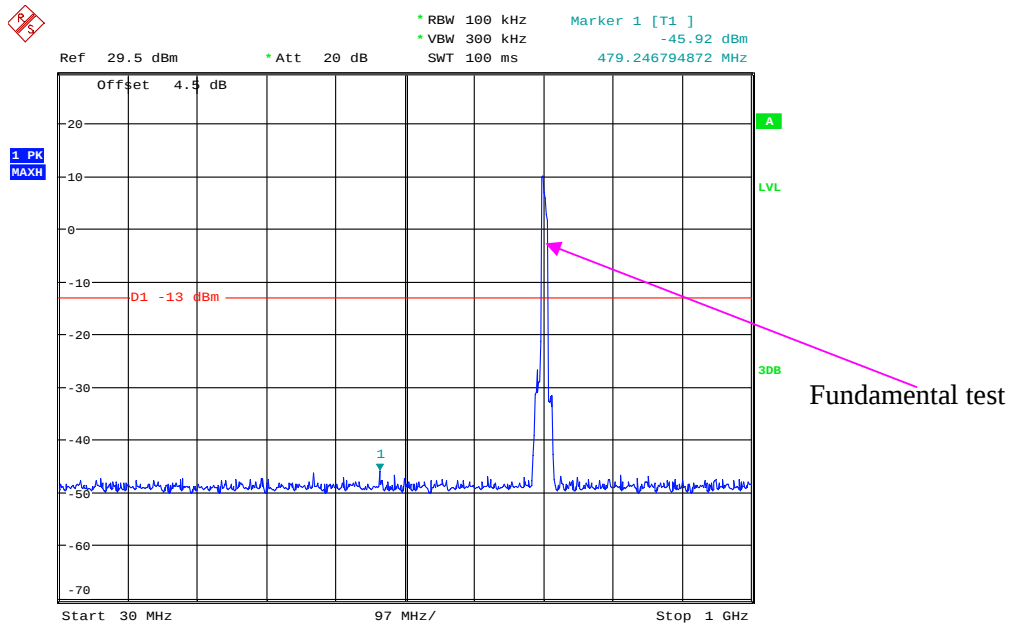
Date: 27.JUL.2018 14:36:32

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



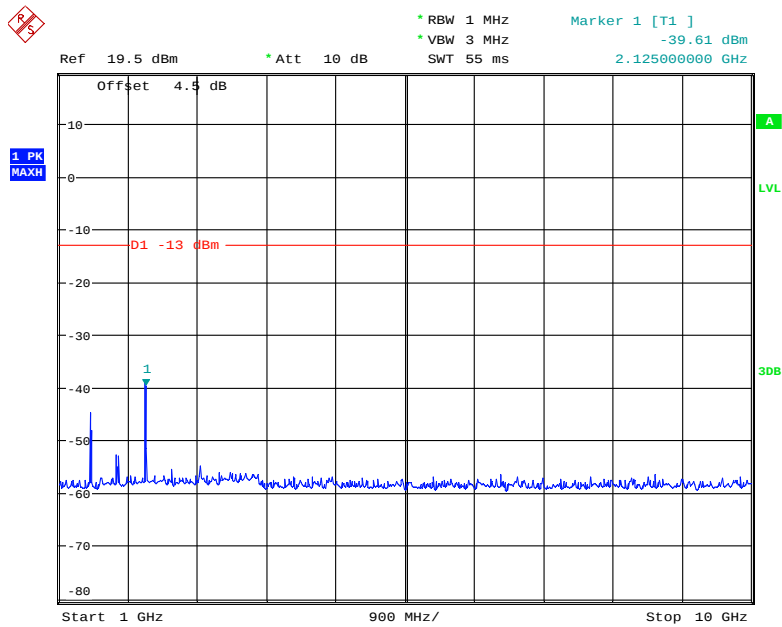
Date: 27.JUL.2018 14:37:57

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



Date: 27.JUL.2018 14:37:03

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



Date: 27.JUL.2018 14:37:38

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:	26 °C
Relative Humidity:	48 %
ATM Pressure:	110.0 kPa

The testing was performed by Haiguo Li on 2018-08-02.

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										
946.58	38.52	182	1.0	H	-58.5	0.70	0	-59.20	-13	46.20
946.58	36.41	33	1.6	V	-60.6	0.70	0	-61.30	-13	48.30
1673.20	51.53	94	1.9	H	-55.5	1.30	8.90	-47.90	-13	34.90
1673.20	49.34	309	1.5	V	-57.1	1.30	8.90	-49.50	-13	36.50
2509.80	53.31	70	1.2	H	-50.2	2.60	10.20	-42.60	-13	29.60
2509.80	49.52	225	1.3	V	-53.4	2.60	10.20	-45.80	-13	32.80
3346.40	44.97	284	1.5	H	-55.4	1.50	11.70	-45.20	-13	32.20
3346.40	43.38	102	1.3	V	-57.0	1.50	11.70	-46.80	-13	33.80
WCDMA Mode, Middle channel										
941.03	37.84	140	1.2	H	-59.2	0.70	0	-59.90	-13	46.90
941.03	36.26	59	2.1	V	-60.7	0.70	0	-61.40	-13	48.40
1673.20	43.11	92	1.0	H	-64.0	1.30	8.90	-56.40	-13	43.40
1673.20	43.08	78	2.4	V	-63.4	1.30	8.90	-55.80	-13	42.80
2509.80	43.3	64	2.2	H	-60.2	2.60	10.20	-52.60	-13	39.60
2509.80	42.93	144	1.4	V	-60.0	2.60	10.20	-52.40	-13	39.40
3346.40	43.07	80	1.9	H	-57.3	1.50	11.70	-47.10	-13	34.10
3346.40	42.45	261	2.4	V	-57.9	1.50	11.70	-47.70	-13	34.70

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										
946.58	38.03	201	1.5	H	-59.0	0.70	0	-59.70	-13	46.70
946.58	36.74	226	1.4	V	-60.3	0.70	0	-61.00	-13	48.00
3760.00	53.45	165	1.8	H	-47.8	1.50	11.80	-37.50	-13	24.50
3760.00	53.61	143	2.1	V	-47.1	1.50	11.80	-36.80	-13	23.80
WCDMA Mode, Middle channel										
941.03	37.62	30	1.1	H	-59.4	0.70	0	-60.10	-13	47.10
941.03	36.84	252	1.7	V	-60.2	0.70	0	-60.90	-13	47.90
3760.00	47.51	258	1.6	H	-53.7	1.50	11.80	-43.40	-13	30.40
3760.00	45.58	144	1.8	V	-55.2	1.50	11.80	-44.90	-13	31.90

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										
941.03	37.32	220	1.9	H	-59.7	0.70	0	-60.40	-13	47.40
941.03	36.45	345	2.4	V	-60.6	0.70	0	-61.30	-13	48.30
3465.20	43.84	225	1.1	H	-56.5	1.50	12.00	-46.00	-13	33.00
3465.20	43.76	96	2.0	V	-57.4	1.50	12.00	-46.90	-13	33.90

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										
943.57	37.62	337	2.2	H	-59.4	0.70	0	-60.10	-13	47.10
943.57	36.12	120	1.6	V	-60.9	0.70	0	-61.60	-13	48.60
3760.00	43.13	24	1.3	H	-58.1	1.50	11.80	-47.80	-13	34.80
3760.00	44.89	193	2.0	V	-55.9	1.50	11.80	-45.60	-13	32.60
Band 4, Middle channel										
Test frequency range: 30 MHz ~ 18 GHz										
943.57	37.67	55	1.4	H	-59.3	0.70	0	-60.00	-13	47.00
943.57	36.31	241	2.4	V	-60.7	0.70	0	-61.40	-13	48.40
3465.00	43.87	48	2.2	H	-56.5	1.50	12.00	-46.00	-13	33.00
3465.00	44.13	191	2.2	V	-57.0	1.50	12.00	-46.50	-13	33.50
Band 5, Middle channel										
Test frequency range: 30 MHz ~ 10 GHz										
943.57	37.52	304	2.1	H	-59.5	0.70	0	-60.20	-13	47.20
943.57	36.41	225	1.4	V	-60.6	0.70	0	-61.30	-13	48.30
1673.00	43.32	123	1.7	H	-63.8	1.30	8.90	-56.20	-13	43.20
1673.00	42.88	35	2.1	V	-63.6	1.30	8.90	-56.00	-13	43.00
2509.50	42.72	355	2.4	H	-60.8	2.60	10.20	-53.20	-13	40.20
2509.50	42.96	238	1.2	V	-60.0	2.60	10.20	-52.40	-13	39.40
3346.00	43.27	100	1.5	H	-57.1	1.50	11.70	-46.90	-13	33.90
3346.00	43	52	1.1	V	-57.4	1.50	11.70	-47.20	-13	34.20
Band 12										
Test frequency range: 30 MHz ~ 10GHz										
943.57	37.14	243	1.1	H	-59.9	0.70	0	-60.60	-13	47.60
943.57	36.36	286	2.2	V	-60.6	0.70	0	-61.30	-13	48.30
1415.00	43.65	289	1.7	H	-64.2	1.60	7.90	-57.90	-13	44.90
1415.00	44.26	312	2.3	V	-63.8	1.60	7.90	-57.50	-13	44.50
2122.50	43.8	139	1.1	H	-58.3	1.30	9.70	-49.90	-13	36.90
2122.50	43.58	257	1.7	V	-59.3	1.30	9.70	-50.90	-13	37.90
2830.00	43.13	216	1.5	H	-60.6	1.80	10.50	-51.90	-13	38.90
2830.00	42	121	2.4	V	-61.4	1.80	10.50	-52.70	-13	39.70
3537.50	43.16	301	1.4	H	-57.4	1.50	12.00	-46.90	-13	33.90
3537.50	42.04	218	1.5	V	-59.2	1.50	12.00	-48.70	-13	35.70

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 17, Middle channel										
Test frequency range:30 MHz ~ 10 GHz										
943.57	37.95	124	1.5	H	-59.1	0.70	0	-59.80	-13	46.80
943.57	36.42	94	1.3	V	-60.6	0.70	0	-61.30	-13	48.30
1420.00	43.23	250	2.5	H	-64.6	1.60	7.90	-58.30	-13	45.30
1420.00	43.46	208	2.3	V	-64.6	1.60	7.90	-58.30	-13	45.30
2130.00	43.7	294	1.8	H	-58.4	1.30	9.70	-50.00	-13	37.00
2130.00	43.3	307	1.7	V	-59.6	1.30	9.70	-51.20	-13	38.20
2840.00	42.96	68	1.4	H	-60.8	1.80	10.50	-52.10	-13	39.10
2840.00	42.37	142	1.5	V	-61.1	1.80	10.50	-52.40	-13	39.40
3550.00	43.19	29	1.6	H	-58.0	1.50	12.10	-47.40	-13	34.40
3550.00	43.03	221	1.9	V	-57.7	1.50	12.10	-47.10	-13	34.10

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.

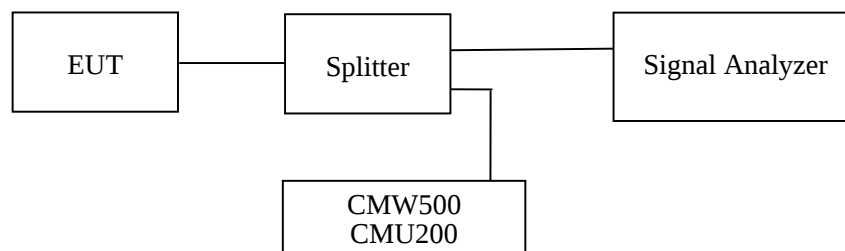
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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**

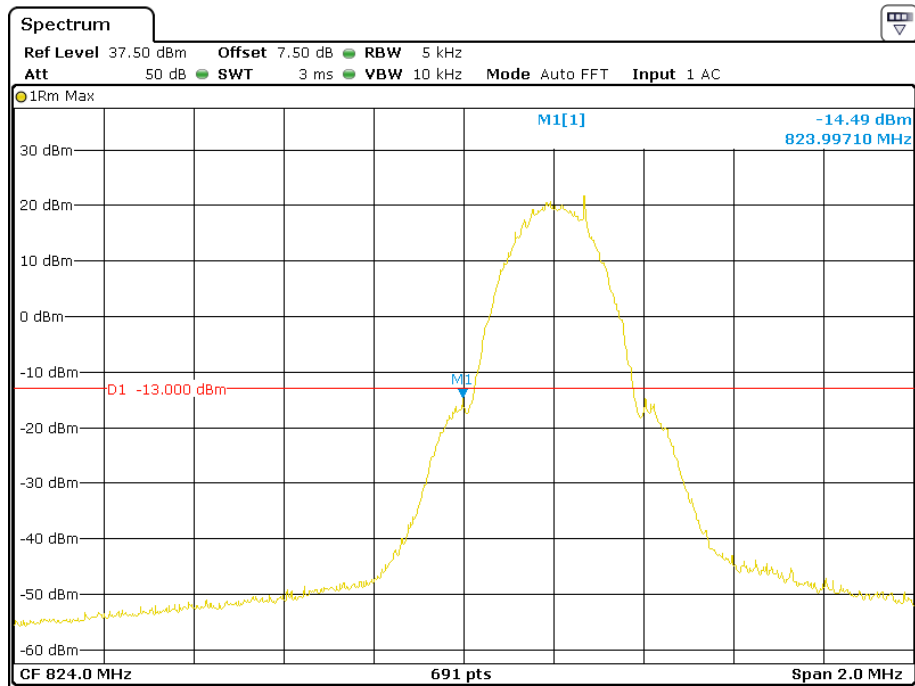
Temperature:	24~25 °C
Relative Humidity:	48~50 %
ATM Pressure:	100.5~101.0 kPa

The testing was performed by Haiguo Li from 2018-07-27 to 2018-08-08.

EUT operation mode: Transmitting

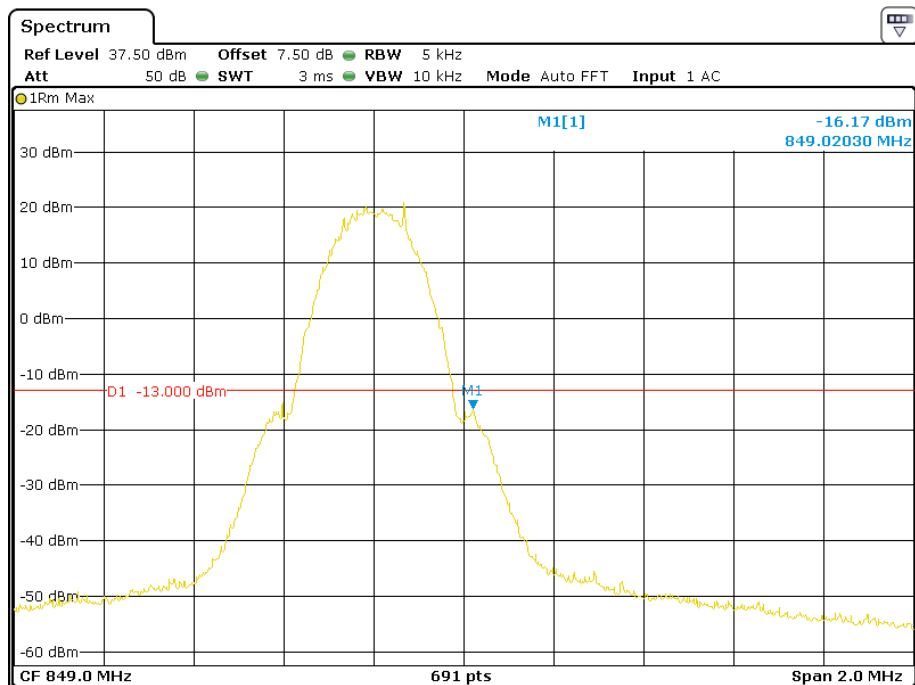
Test Result: Compliance. Please refer to the following plots.

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



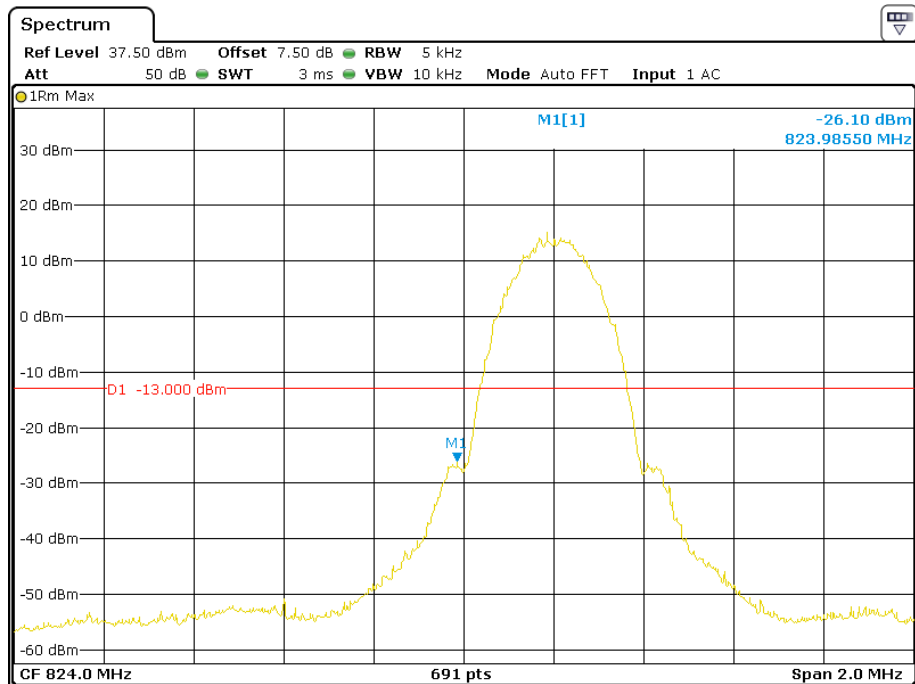
Date: 8.AUG.2018 13:54:56

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



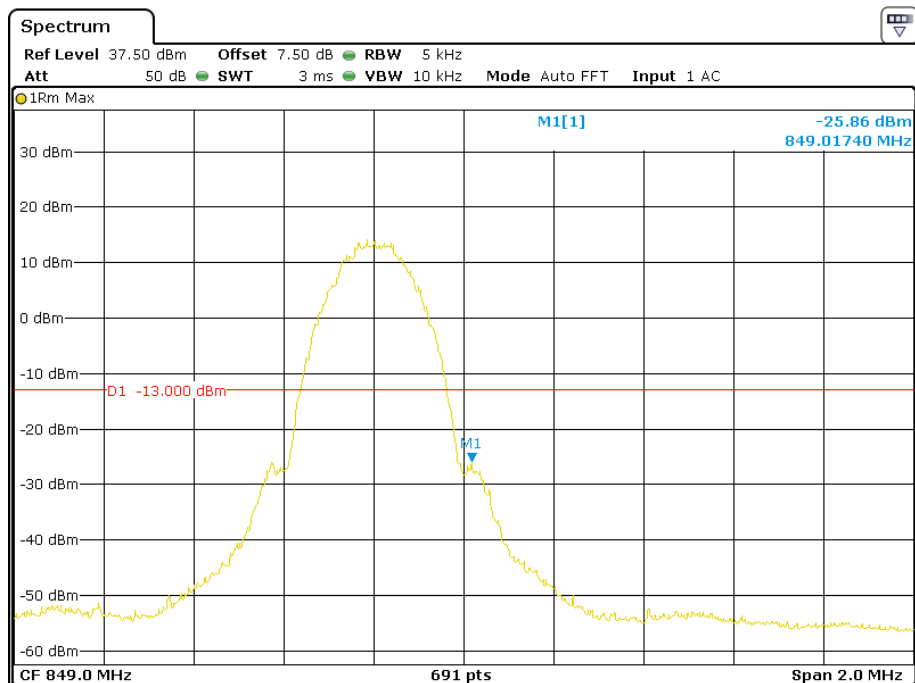
Date: 8.AUG.2018 13:55:33

Cellular Band, Left Band Edge for EDGE Mode



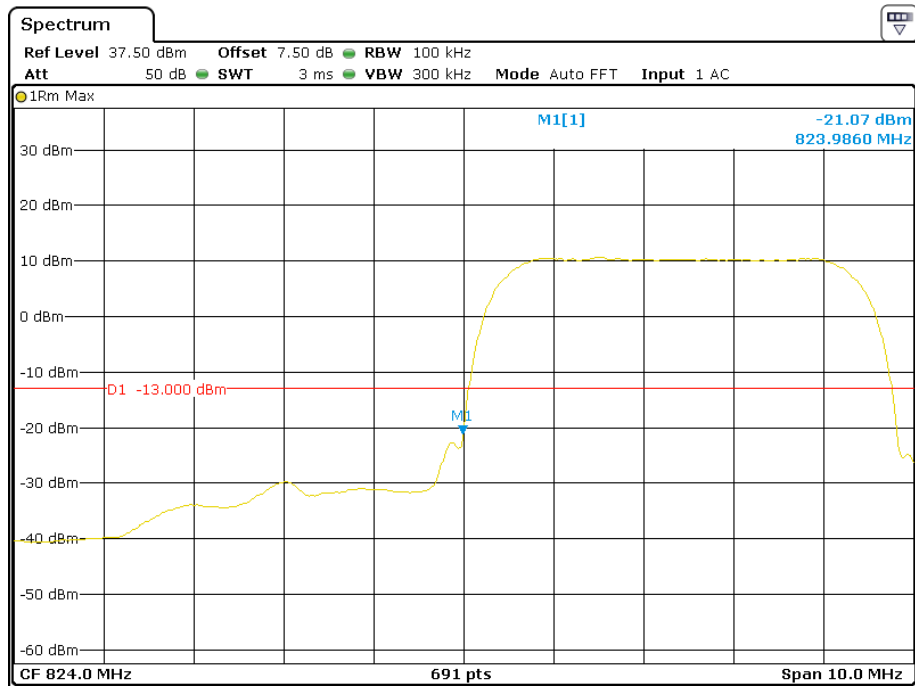
Date: 8.AUG.2018 14:08:44

Cellular Band, Right Band Edge for EDGE Mode



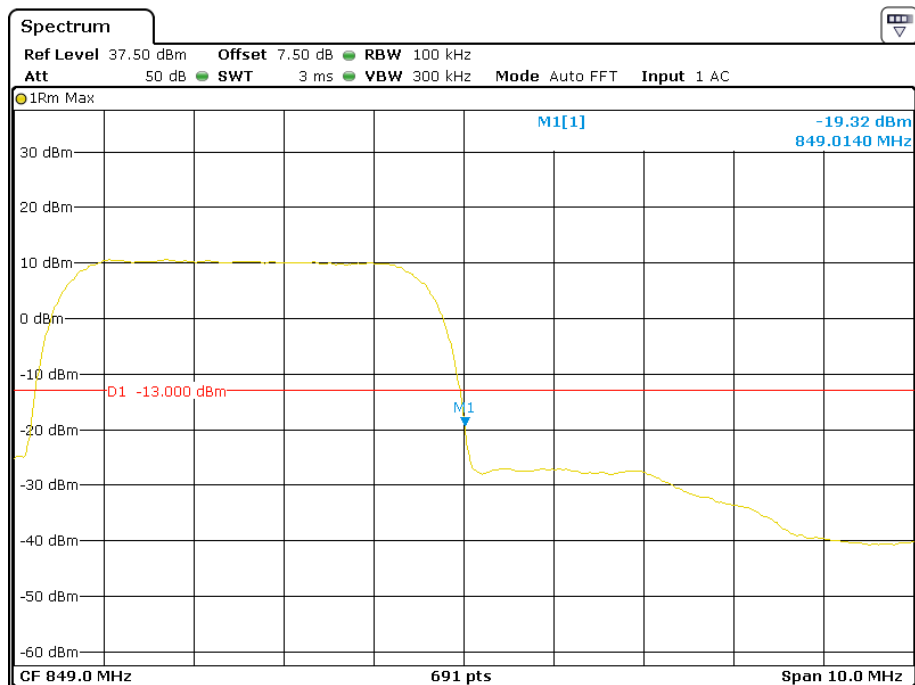
Date: 8.AUG.2018 14:08:15

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



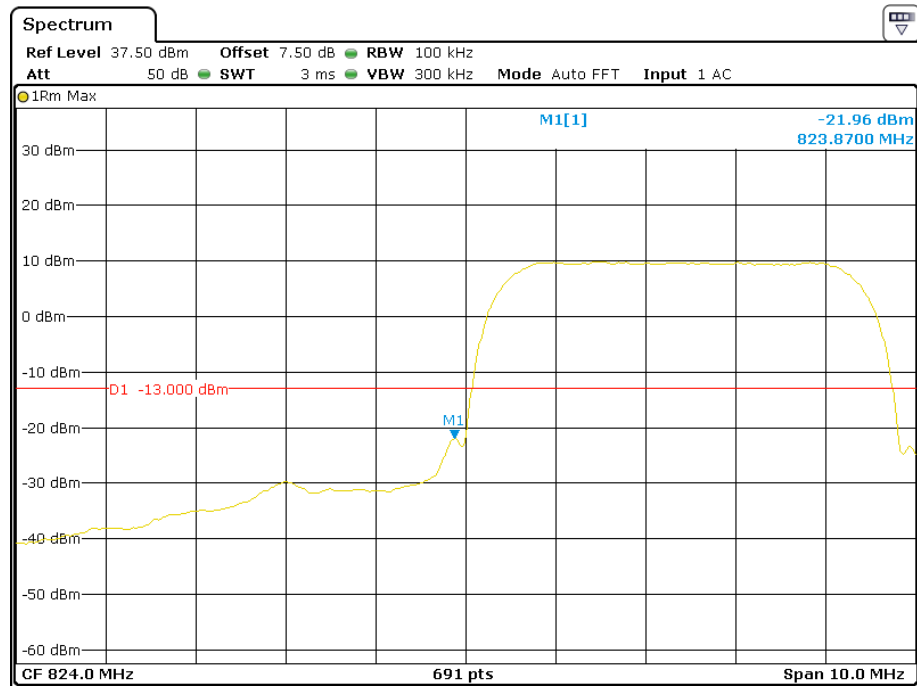
Date: 8.AUG.2018 15:05:18

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



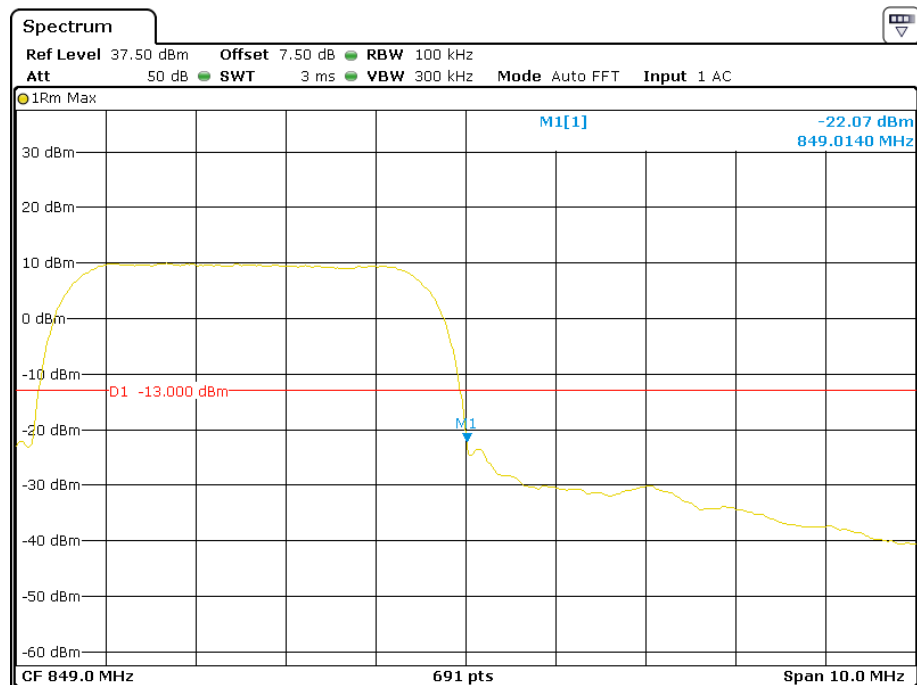
Date: 8.AUG.2018 15:05:41

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



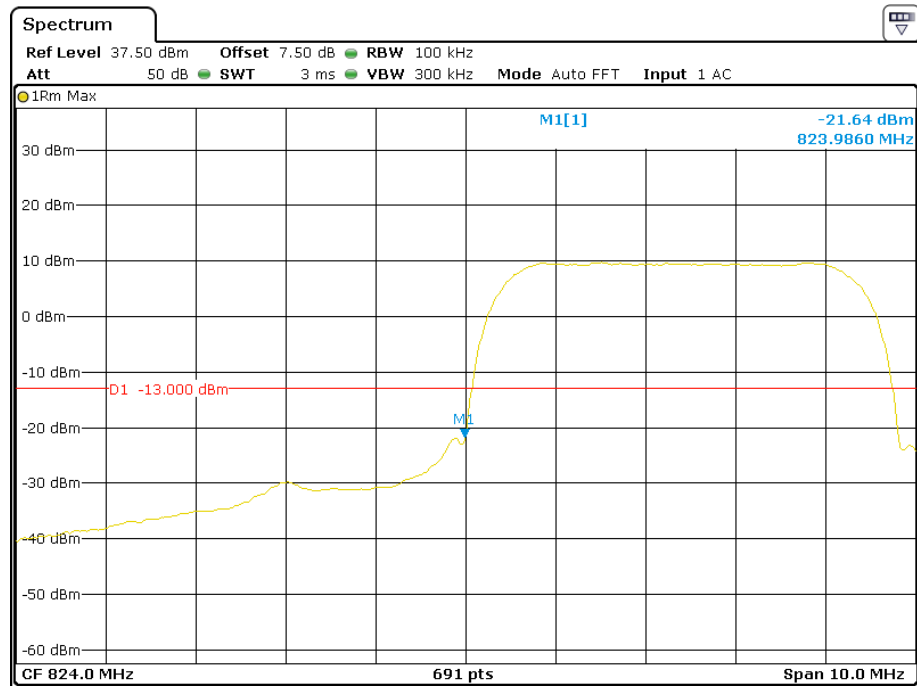
Date: 8.AUG.2018 15:22:12

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



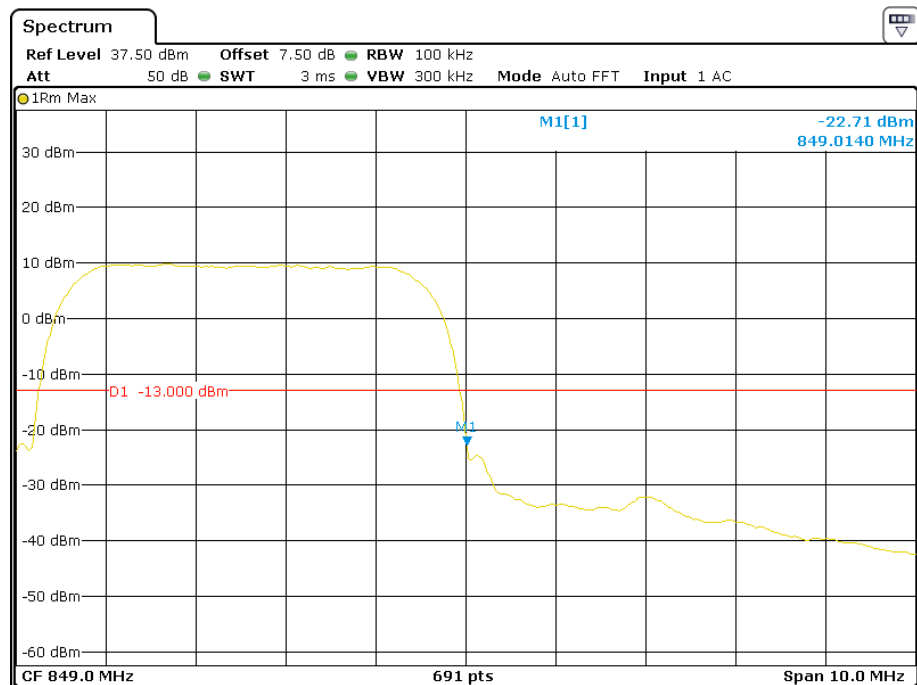
Date: 8.AUG.2018 15:21:40

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



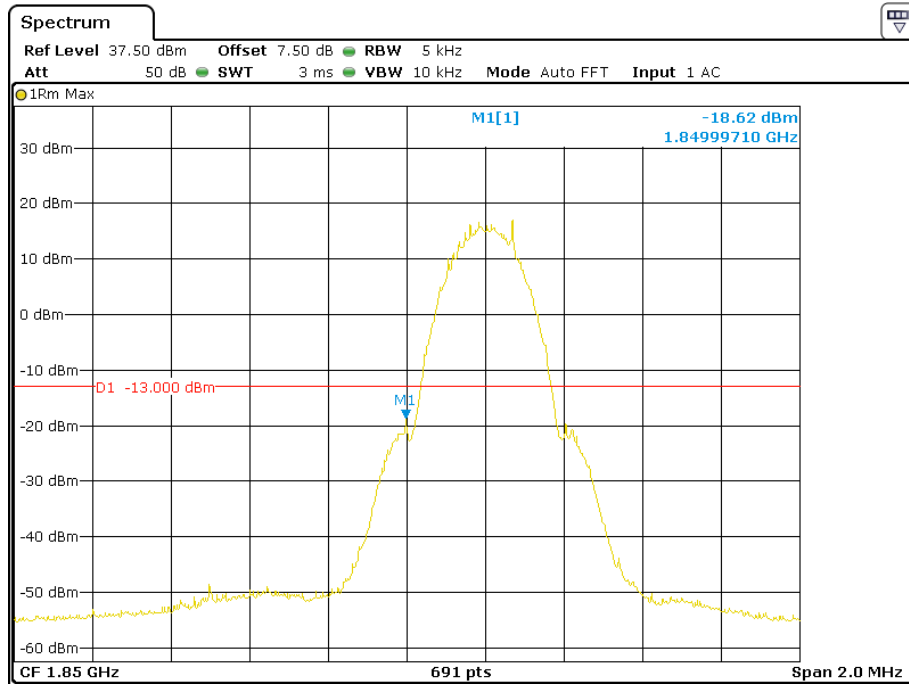
Date: 8.AUG.2018 15:31:25

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



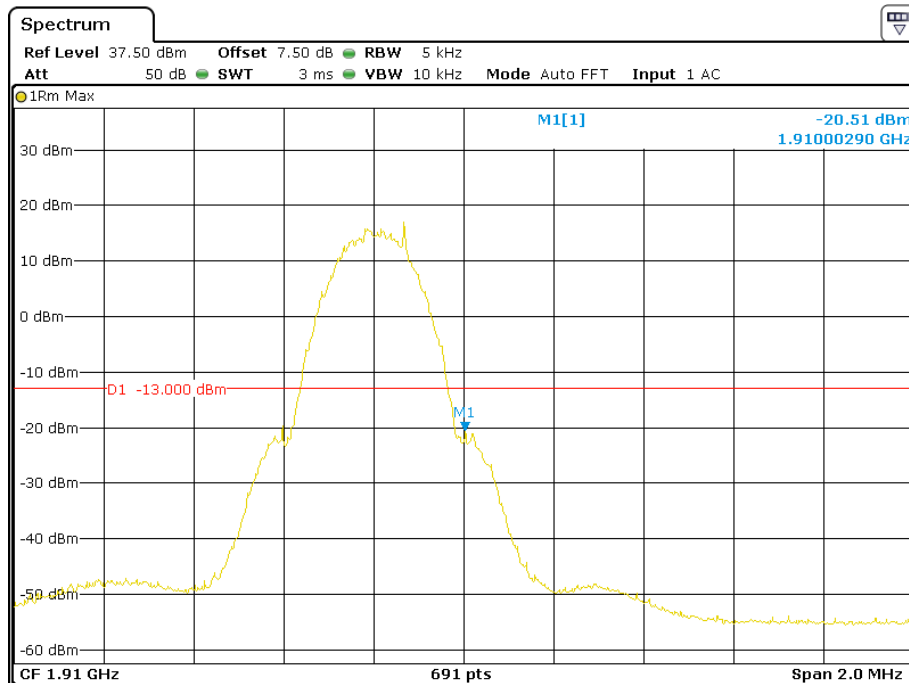
Date: 8.AUG.2018 15:31:47

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



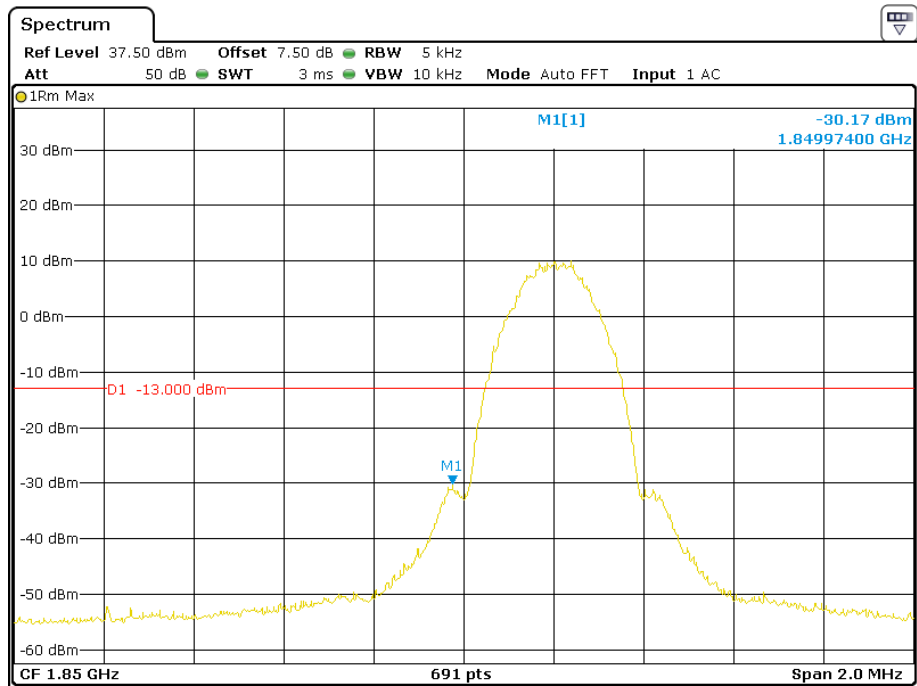
Date: 8.AUG.2018 14:24:15

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



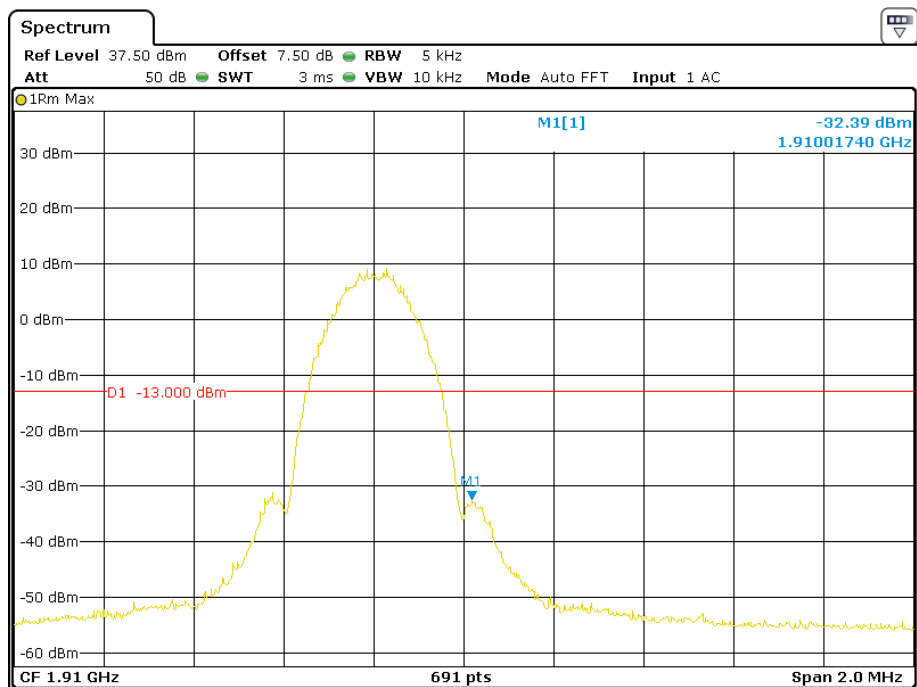
Date: 8.AUG.2018 14:25:43

PCS Band, Left Band Edge for EDGE Mode



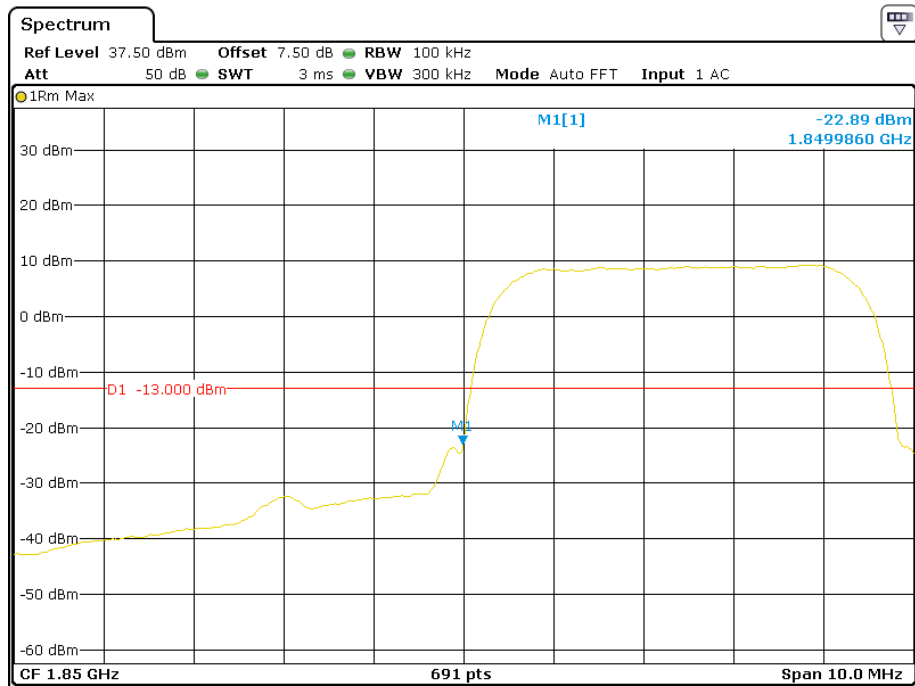
Date: 8.AUG.2018 14:29:18

PCS Band, Right Band Edge for EDGE Mode



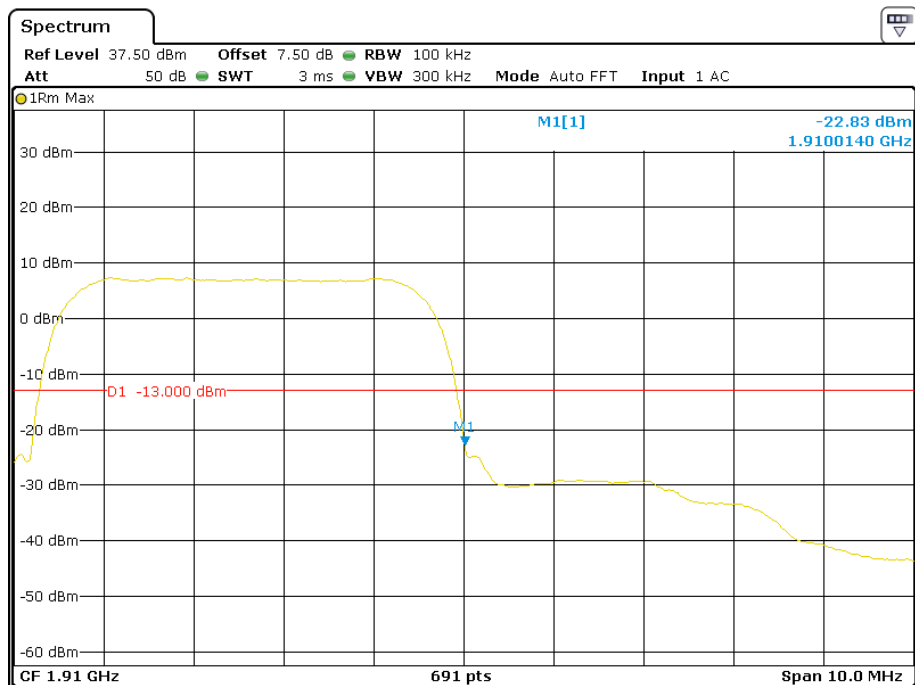
Date: 8.AUG.2018 14:30:04

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



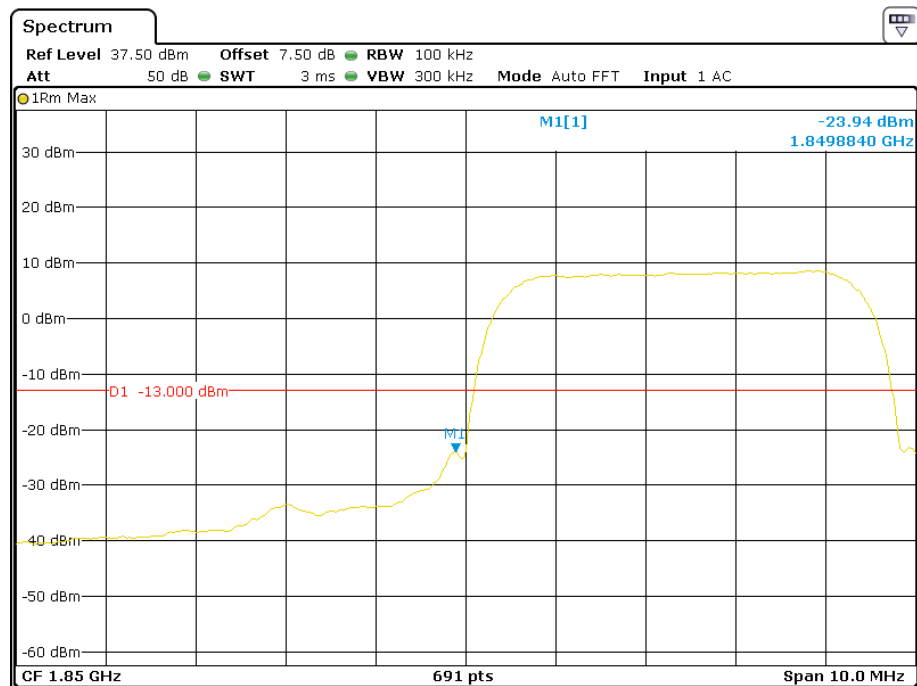
Date: 8.AUG.2018 14:58:25

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



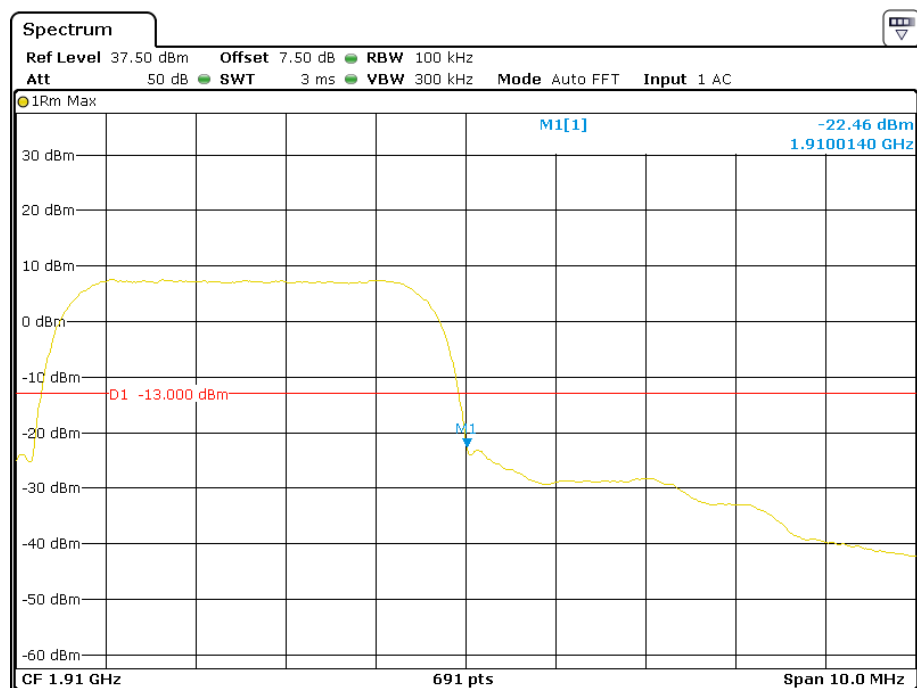
Date: 8.AUG.2018 14:58:50

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



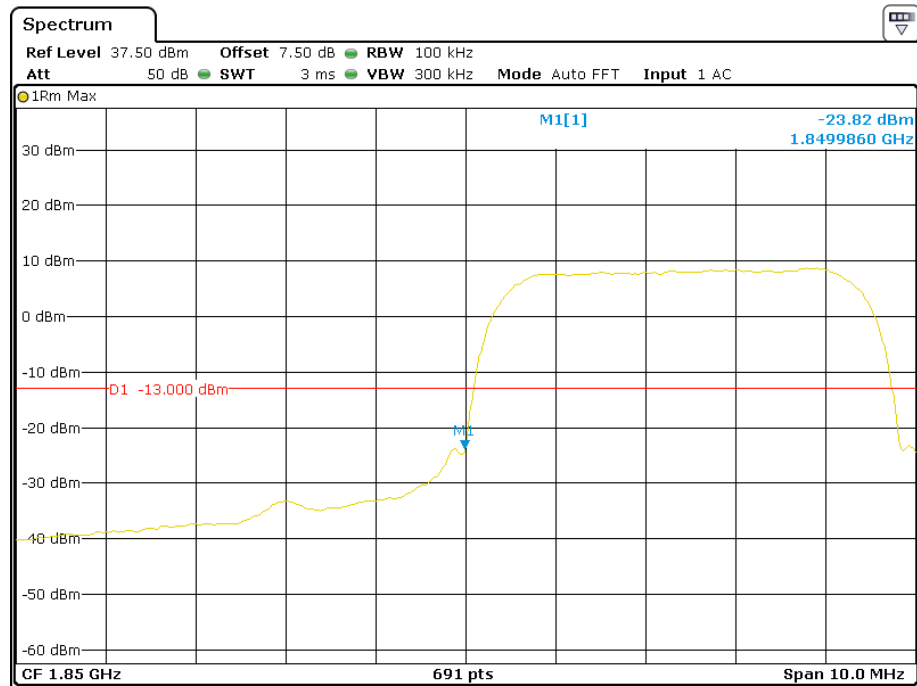
Date: 8.AUG.2018 15:12:57

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



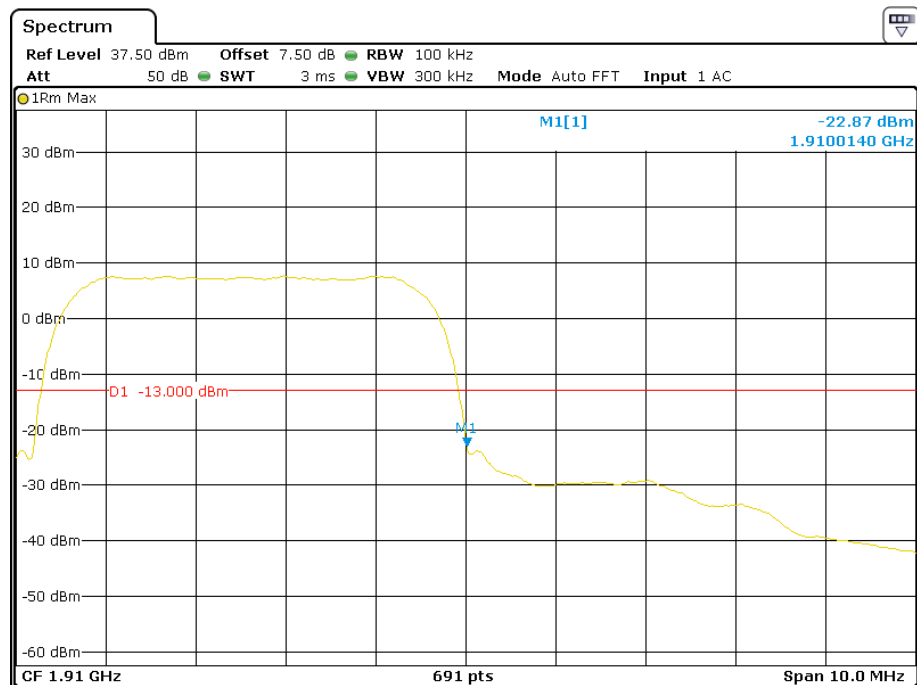
Date: 8.AUG.2018 15:13:32

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



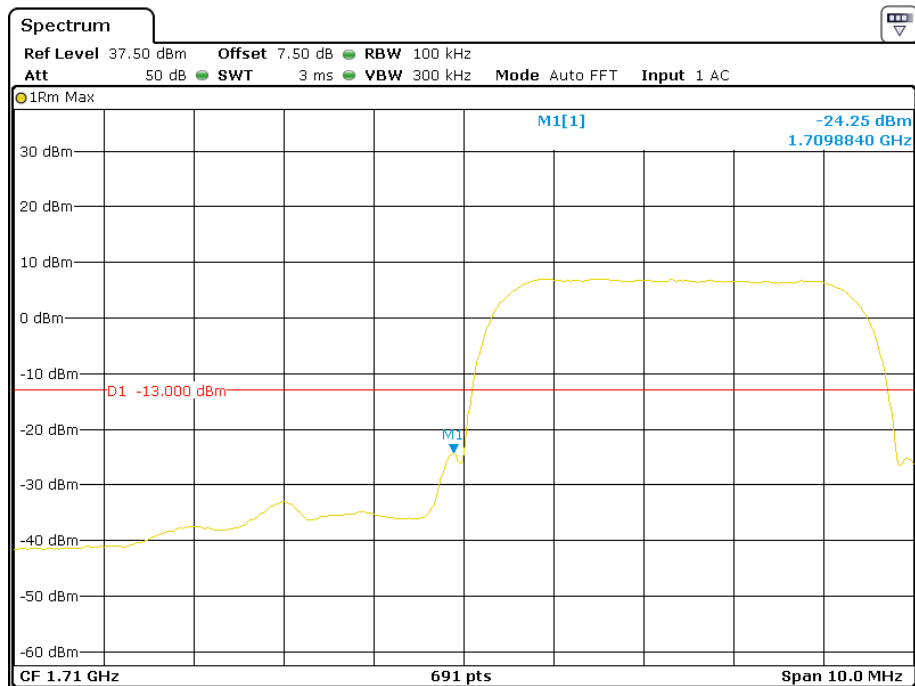
Date: 8.AUG.2018 15:29:13

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



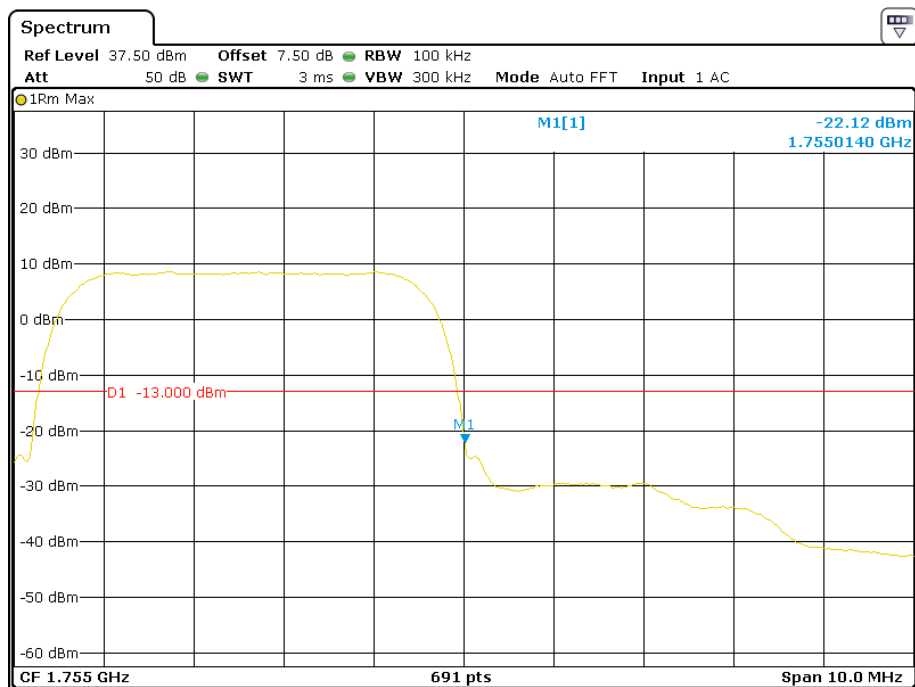
Date: 8.AUG.2018 15:28:41

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



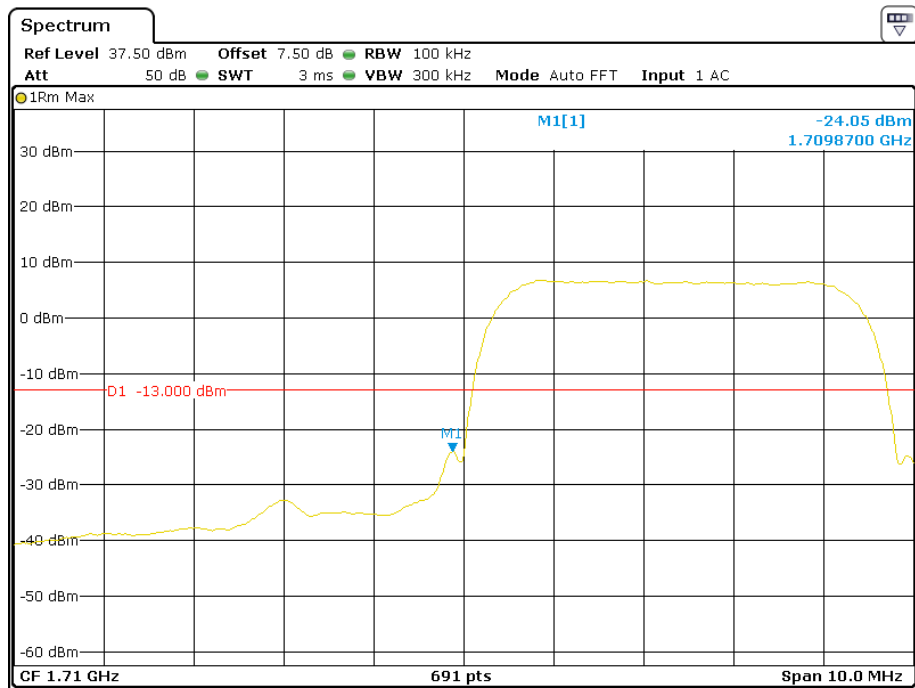
Date: 8.AUG.2018 15:03:55

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



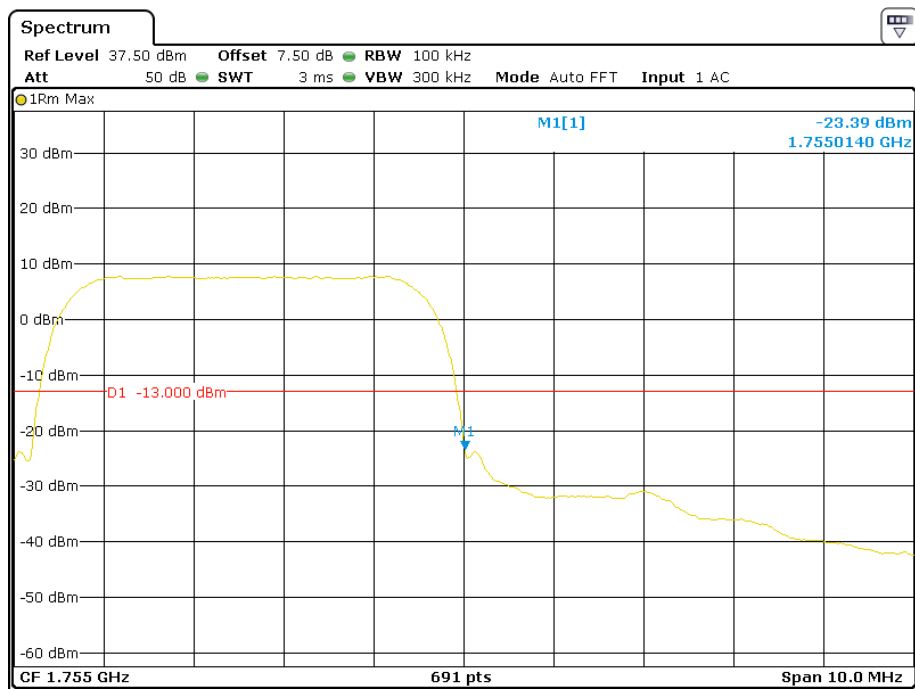
Date: 8.AUG.2018 15:04:20

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



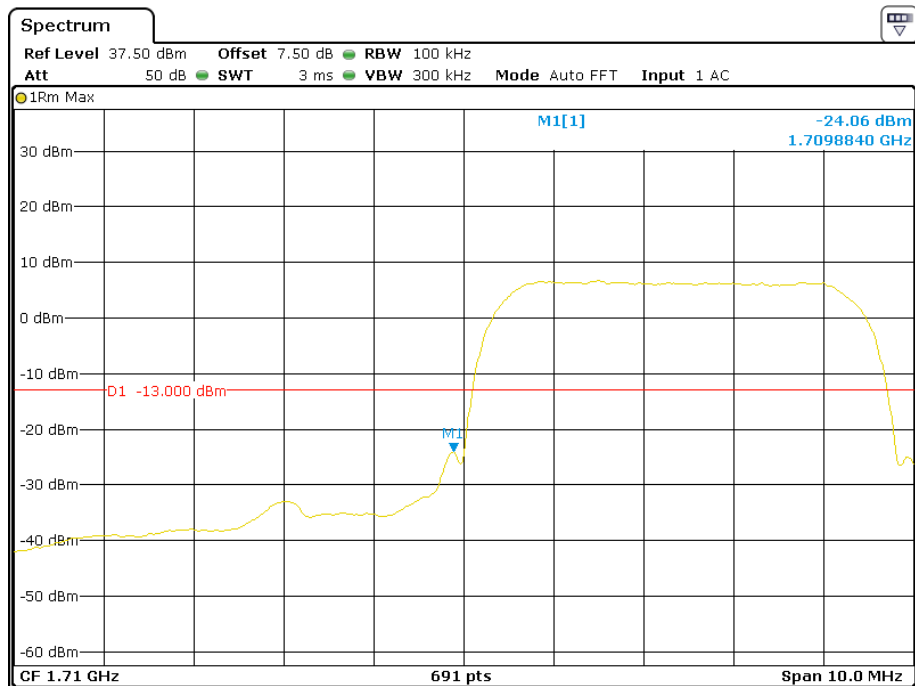
Date: 8.AUG.2018 15:20:20

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



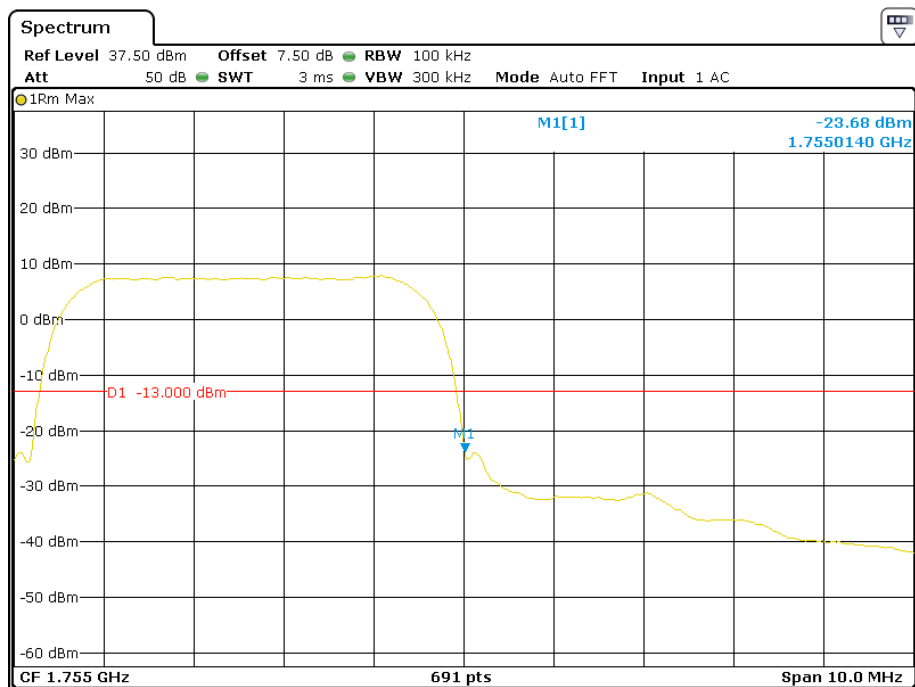
Date: 8.AUG.2018 15:20:45

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



Date: 8.AUG.2018 15:30:45

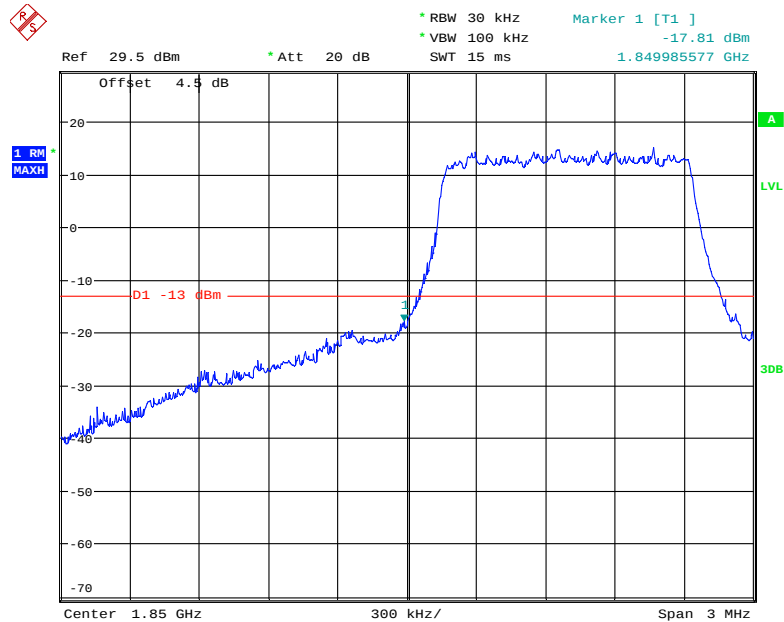
AWS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 8.AUG.2018 15:30:07

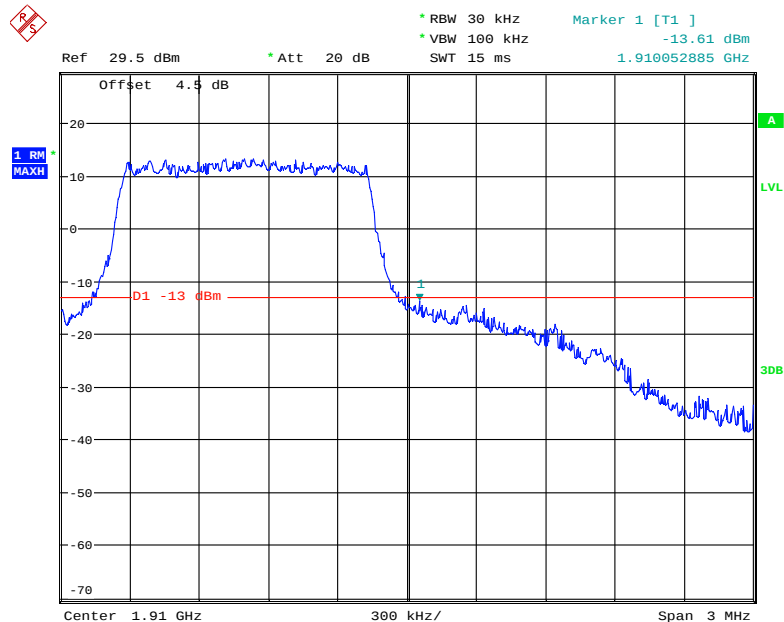
LTE Band 2:

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



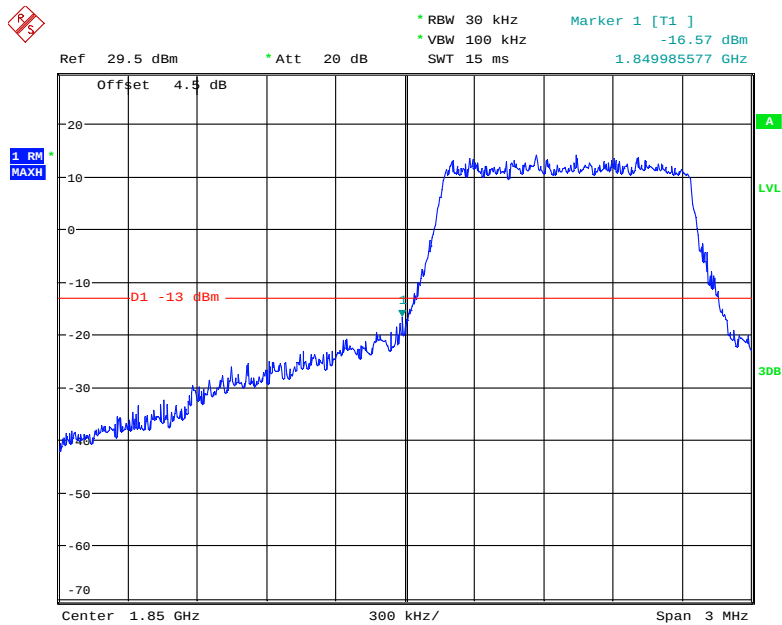
Date: 27.JUL.2018 15:10:50

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



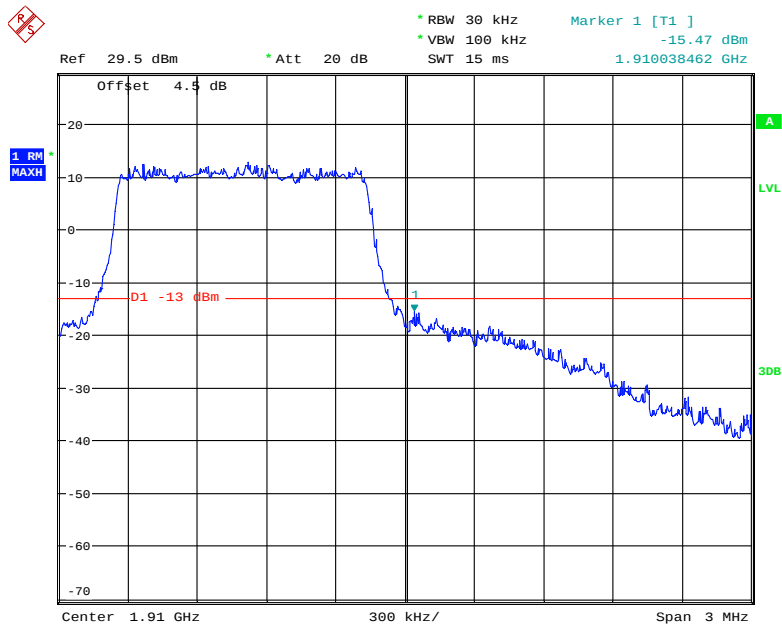
Date: 27.JUL.2018 15:14:15

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



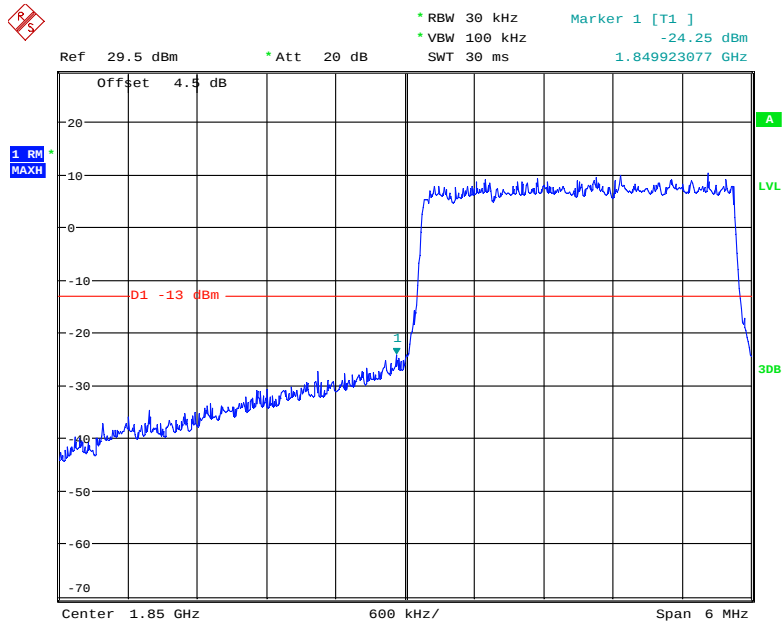
Date: 27.JUL.2018 15:12:26

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



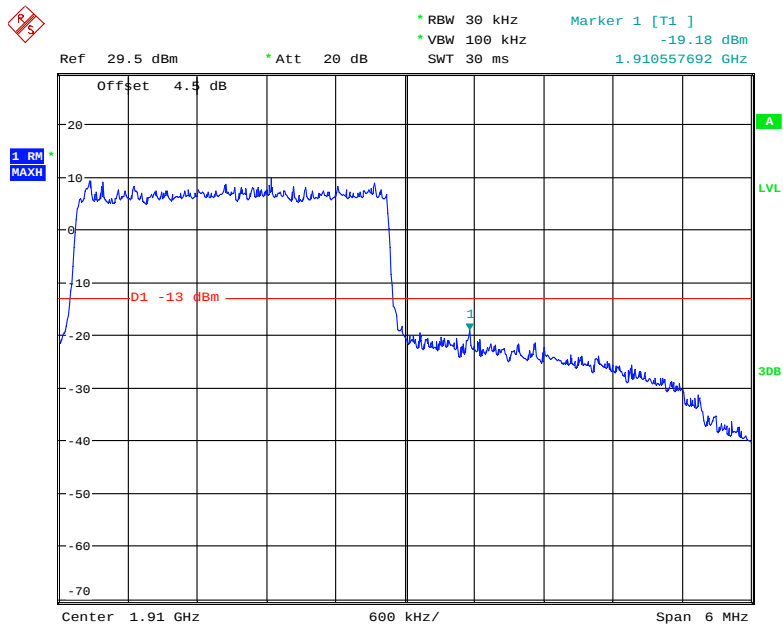
Date: 27.JUL.2018 15:13:40

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



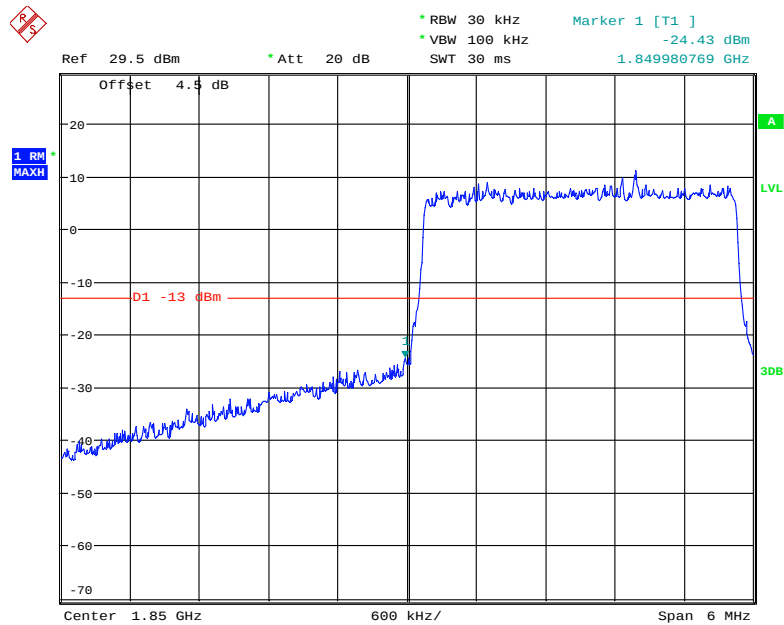
Date: 27.JUL.2018 15:18:52

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



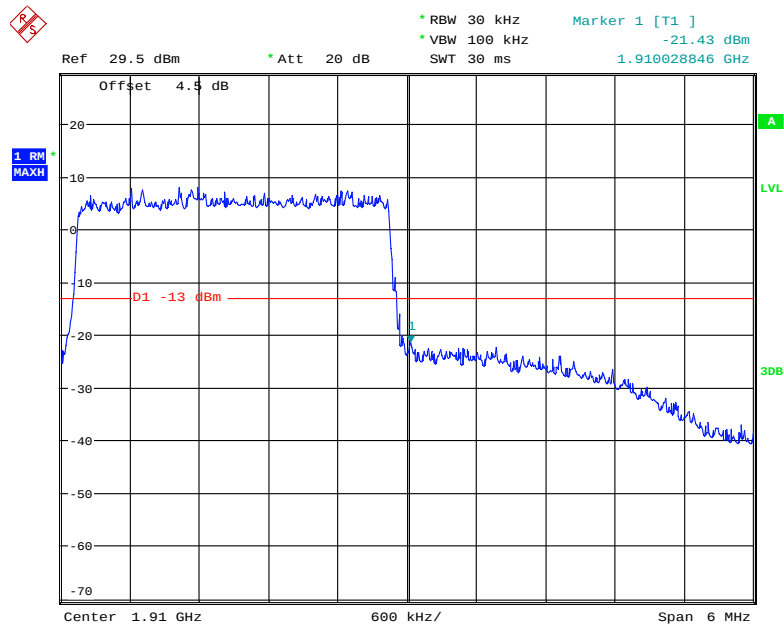
Date: 27.JUL.2018 15:15:55

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



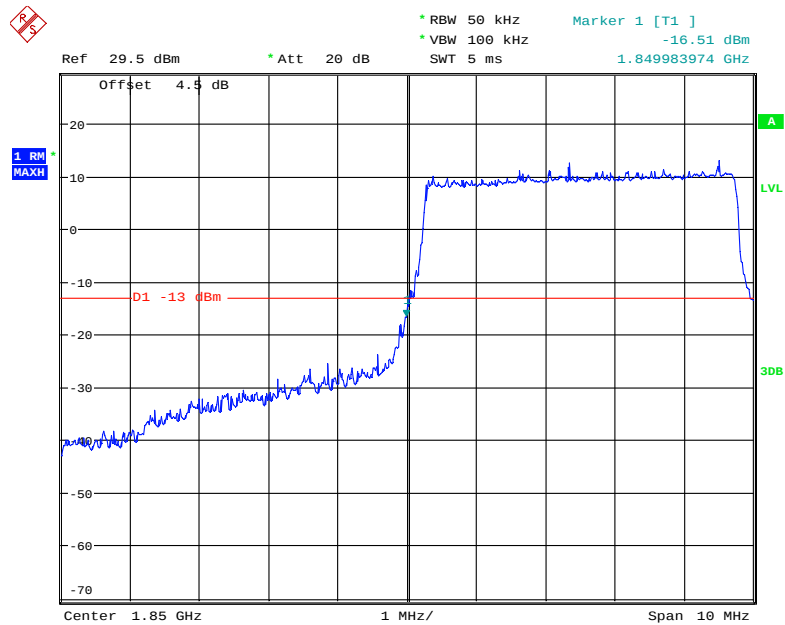
Date: 27.JUL.2018 15:18:20

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



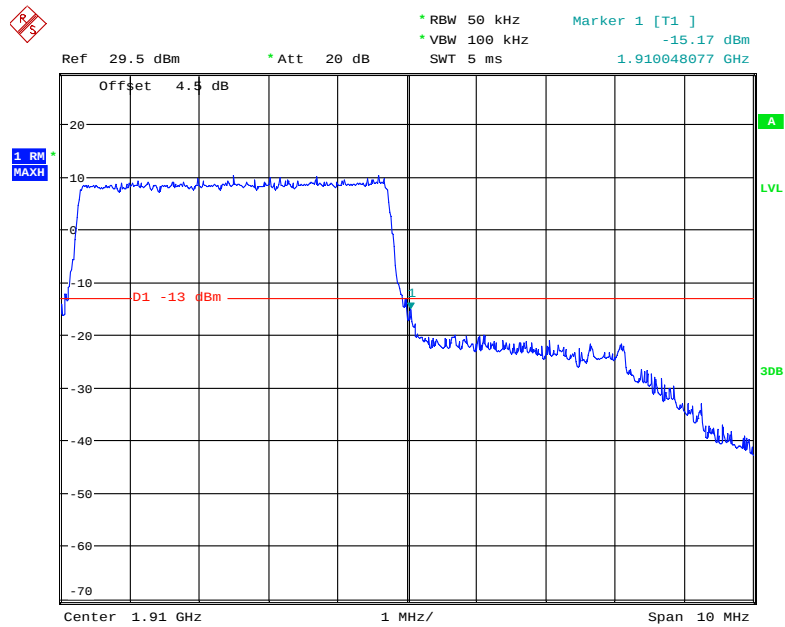
Date: 27.JUL.2018 15:16:32

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



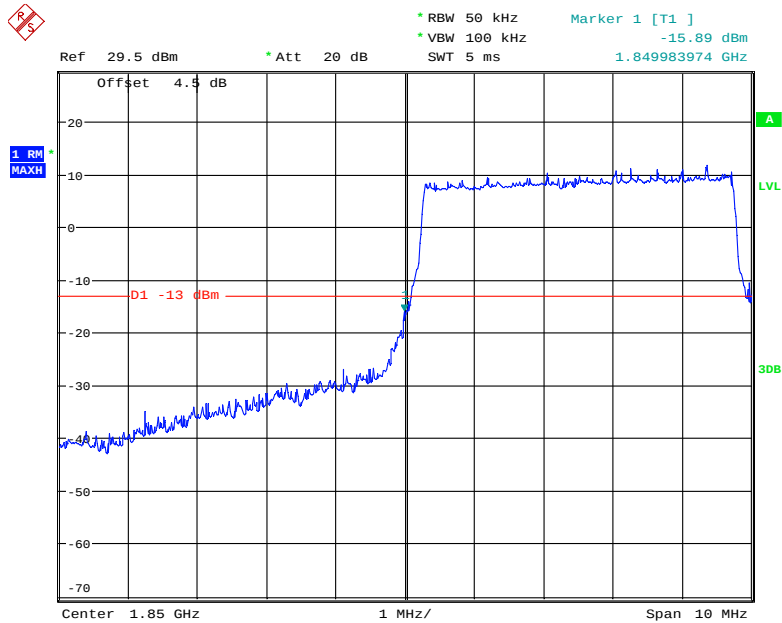
Date: 27.JUL.2018 15:20:28

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



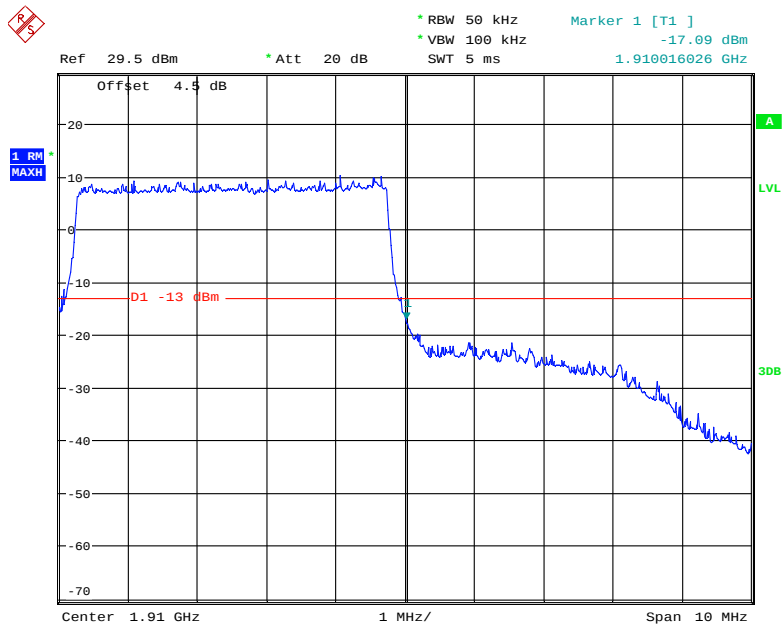
Date: 27.JUL.2018 15:22:31

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



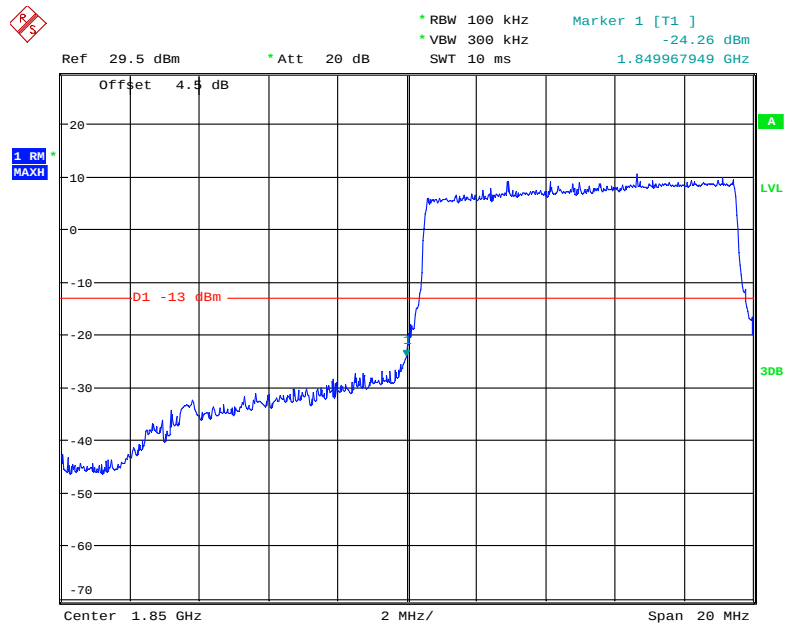
Date: 27.JUL.2018 15:20:56

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



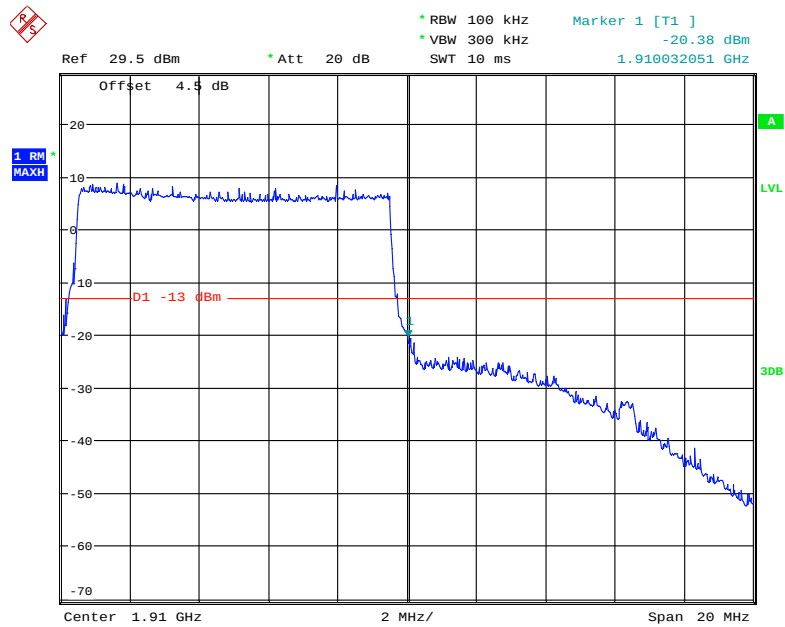
Date: 27.JUL.2018 15:21:58

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



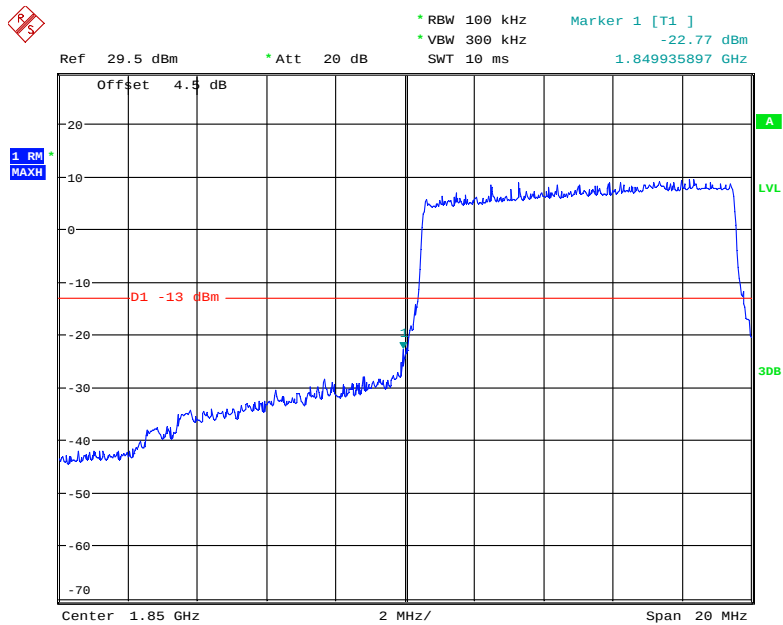
Date: 27.JUL.2018 15:26:34

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



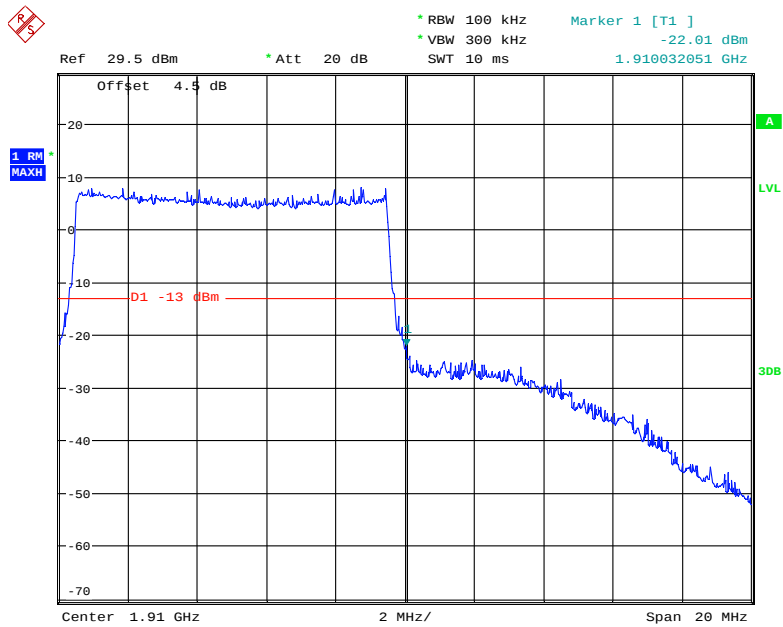
Date: 27.JUL.2018 15:24:00

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



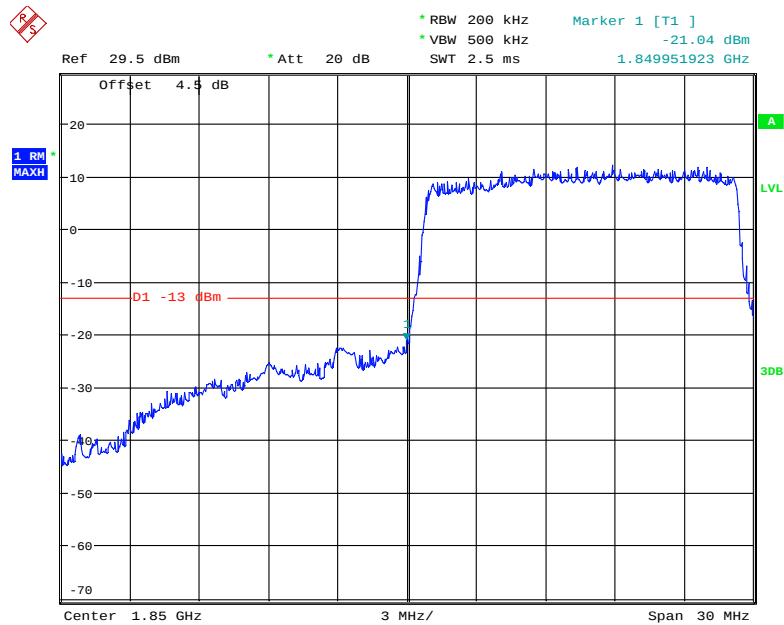
Date: 27.JUL.2018 15:26:05

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



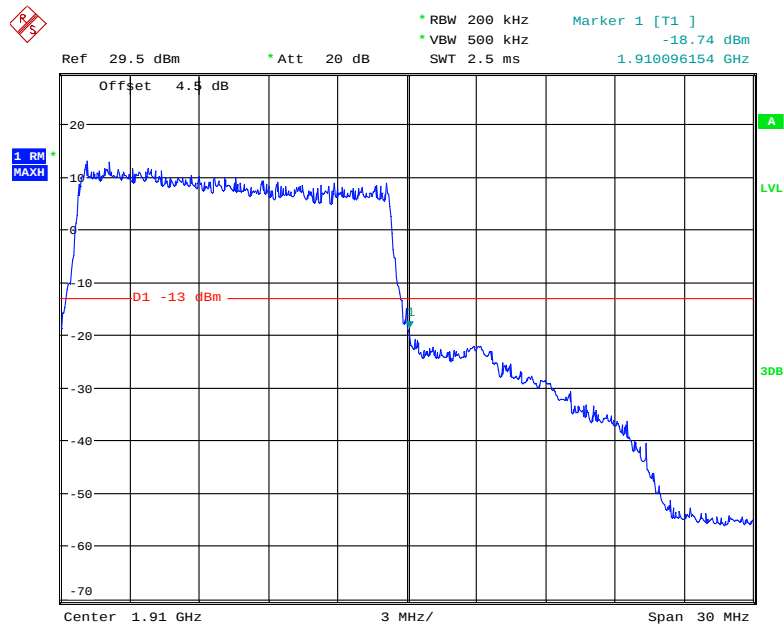
Date: 27.JUL.2018 15:24:28

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



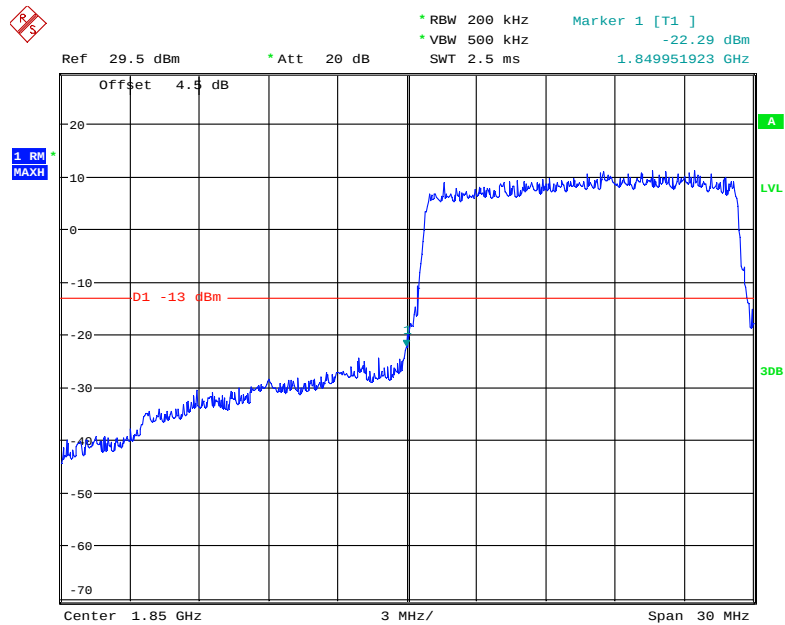
Date: 27.JUL.2018 15:29:09

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



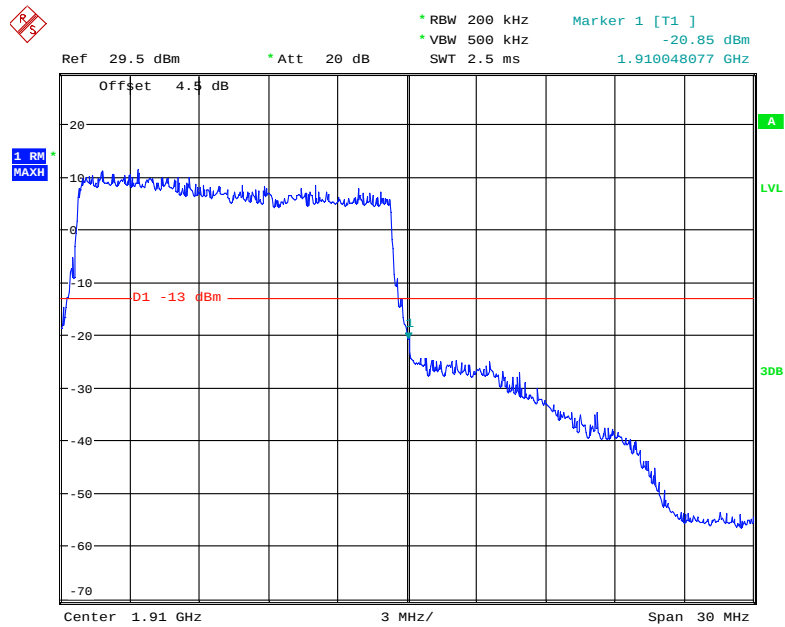
Date: 27.JUL.2018 15:32:48

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



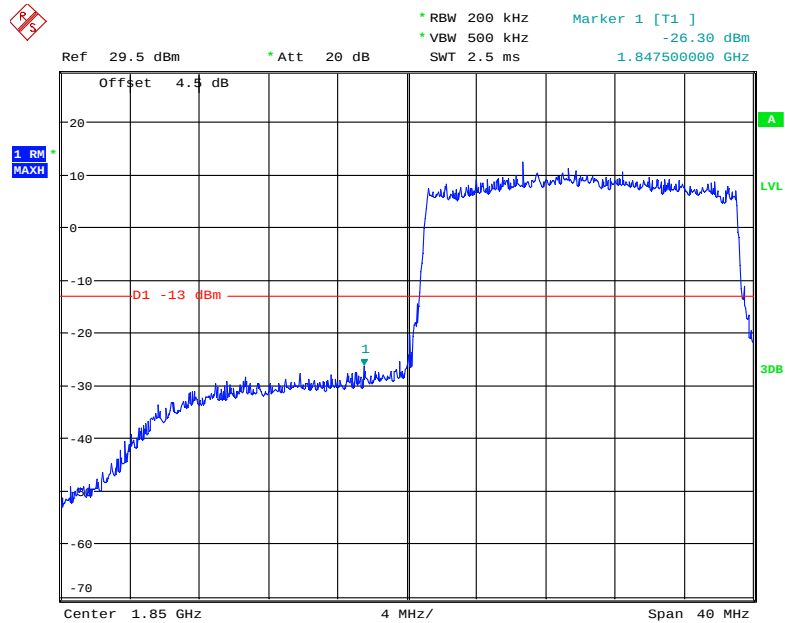
Date: 27.JUL.2018 15:31:38

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



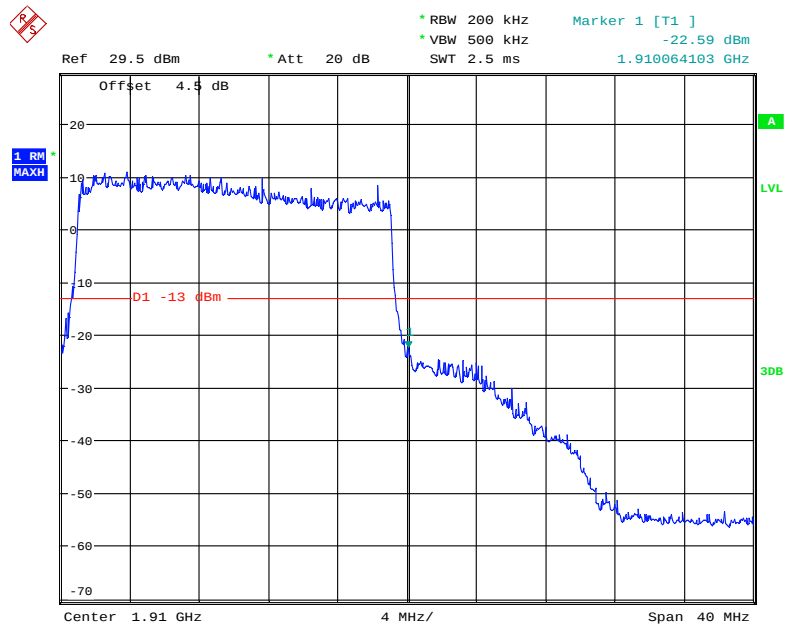
Date: 27.JUL.2018 15:32:16

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



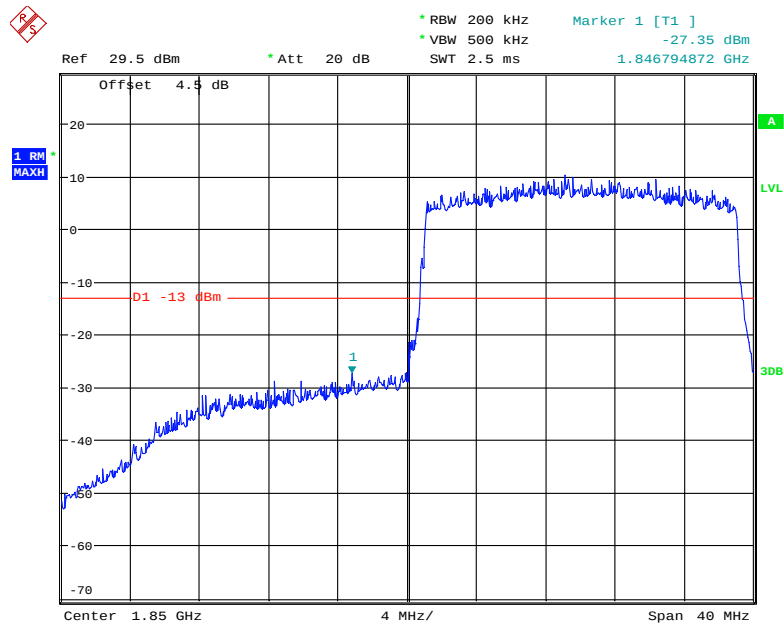
Date: 27.JUL.2018 15:37:18

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



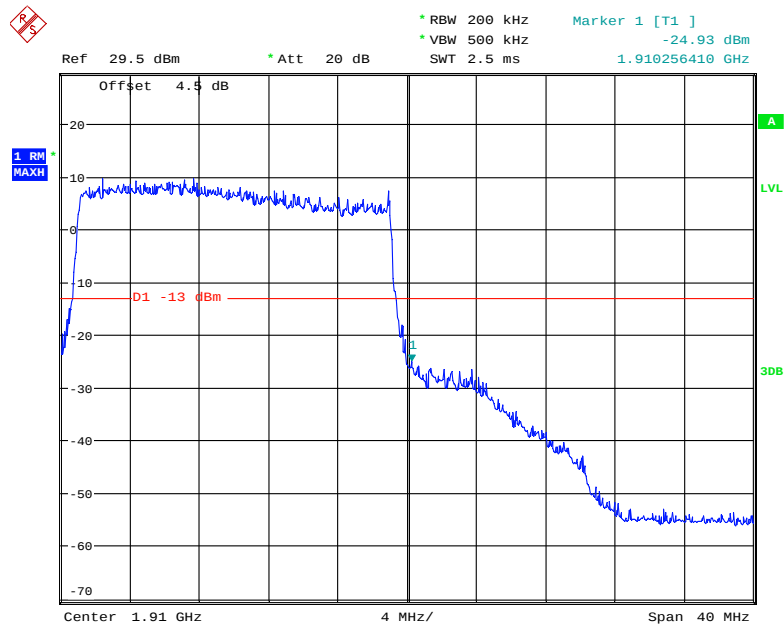
Date: 27.JUL.2018 15:33:43

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



Date: 27.JUL.2018 15:36:45

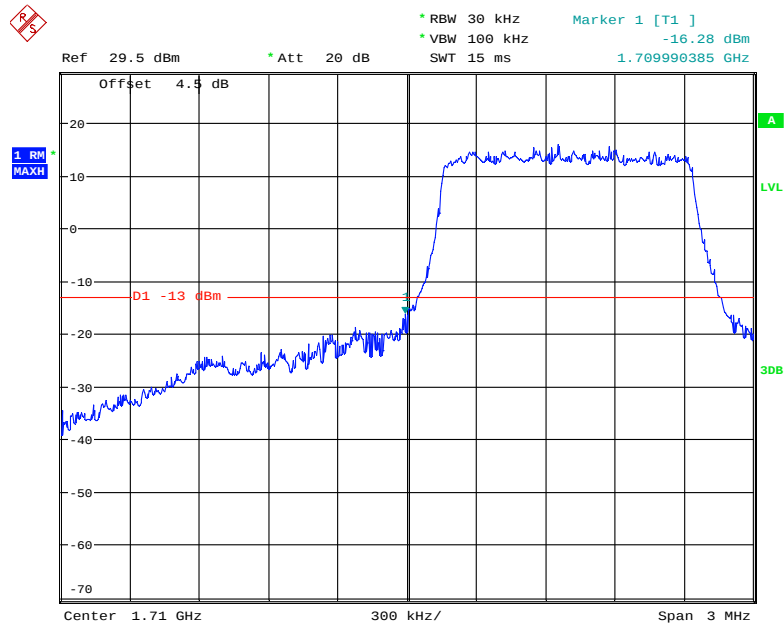
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 27.JUL.2018 15:36:03

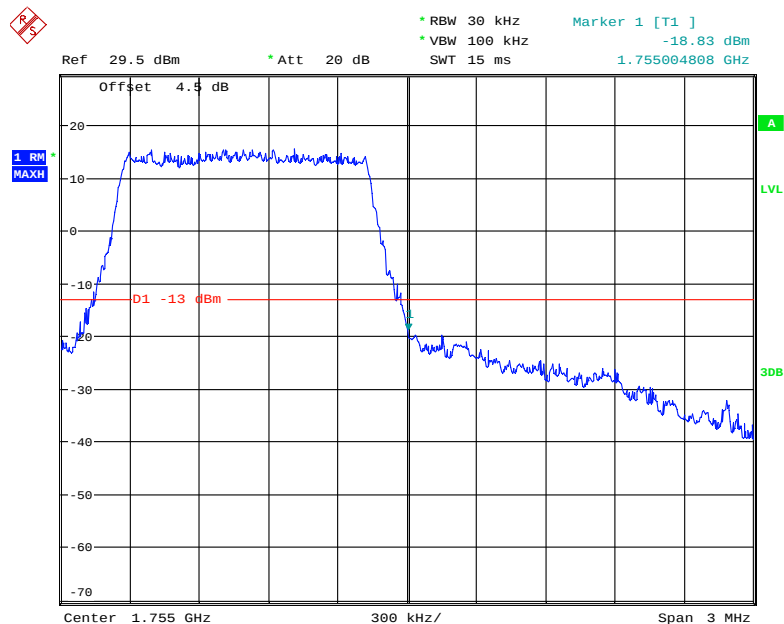
LTE Band 4:

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



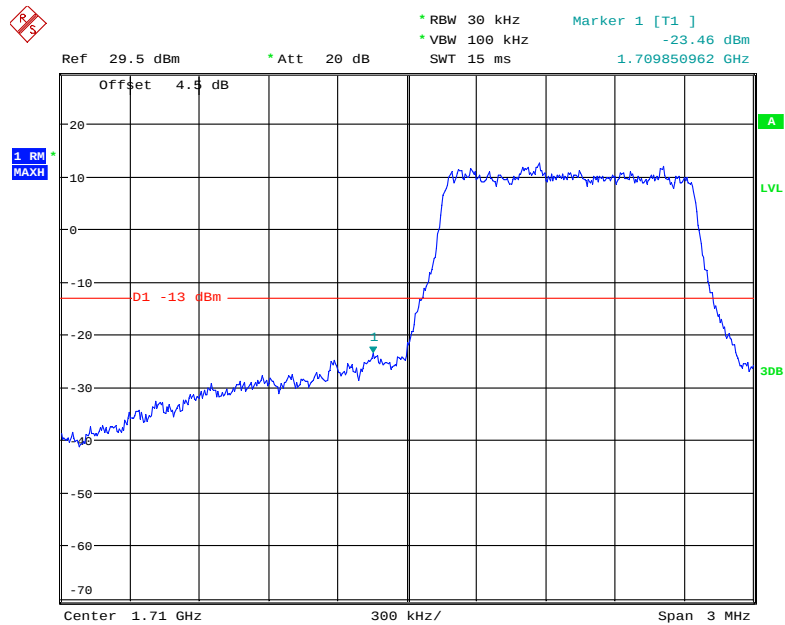
Date: 27.JUL.2018 16:25:34

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



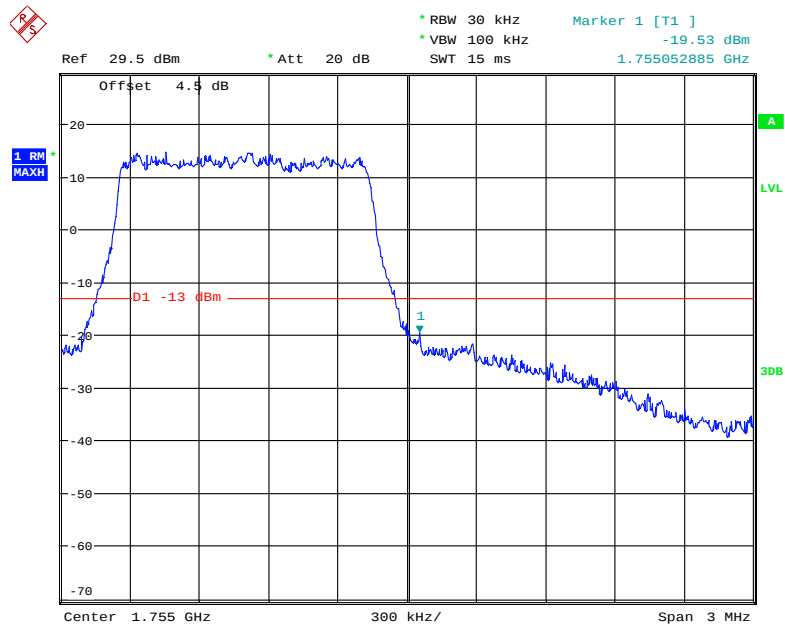
Date: 27.JUL.2018 16:27:43

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



Date: 31.JUL.2018 09:30:28

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



Date: 27.JUL.2018 16:27:13

Ref 29.5 dBm * Att 20 dB

* RBW 30 kHz
* VBW 100 kHz
SWT 30 ms

Marker 1 [T1]
-26.77 dBm
1.709990385 GHz

Offset 4.5 dB

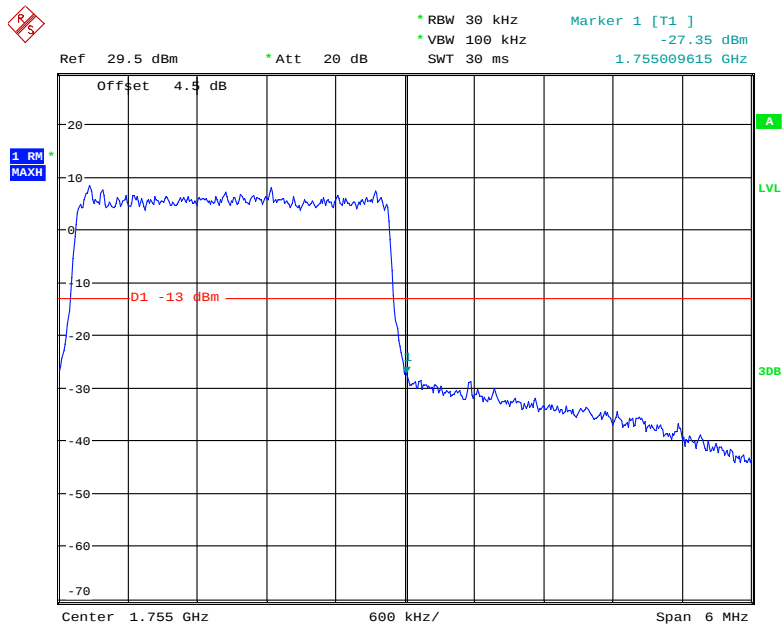
1 RM
MAXH

D1 -13 dBm

LVL
3DB

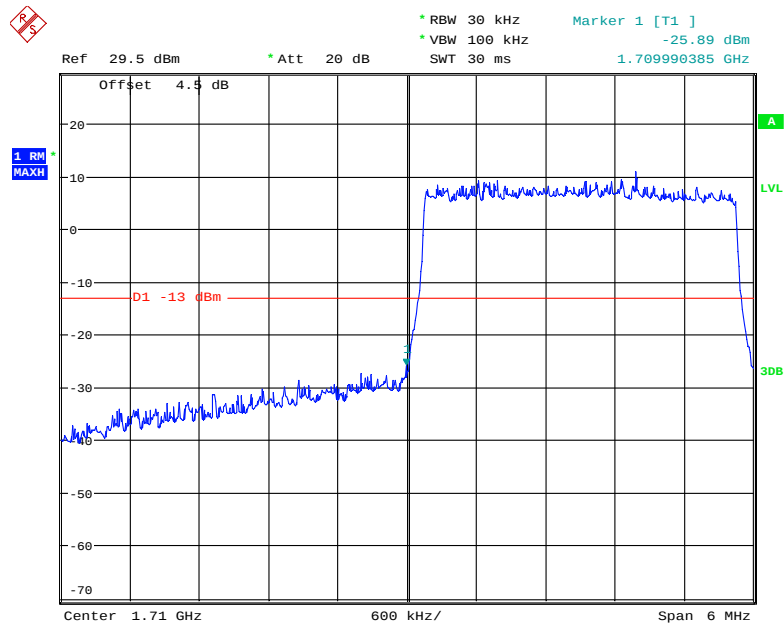
Center 1.71 GHz 600 kHz/ Span 6 MHz

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



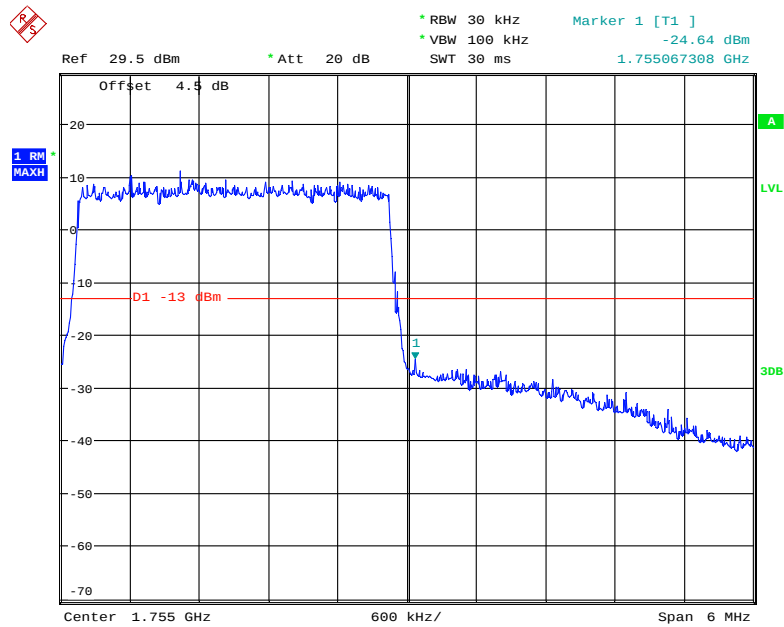
Page 144 of 183

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



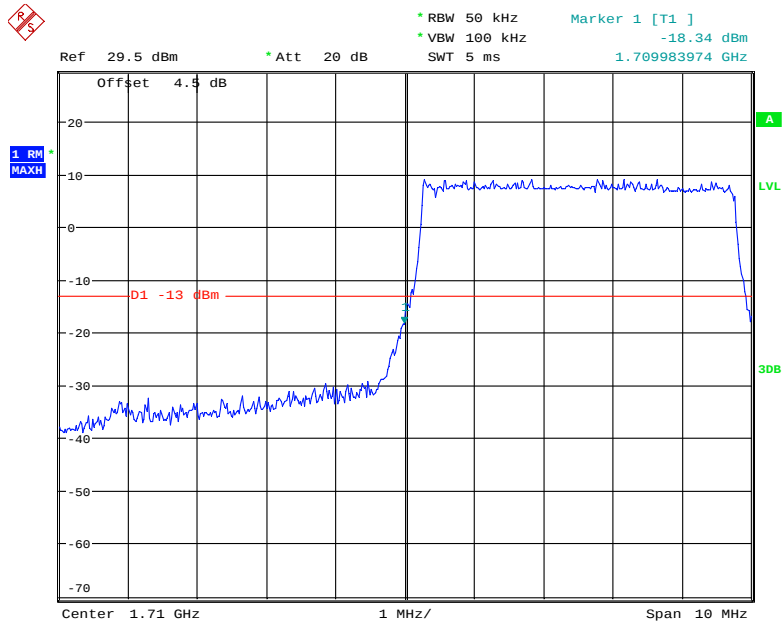
Date: 27.JUL.2018 16:29:54

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



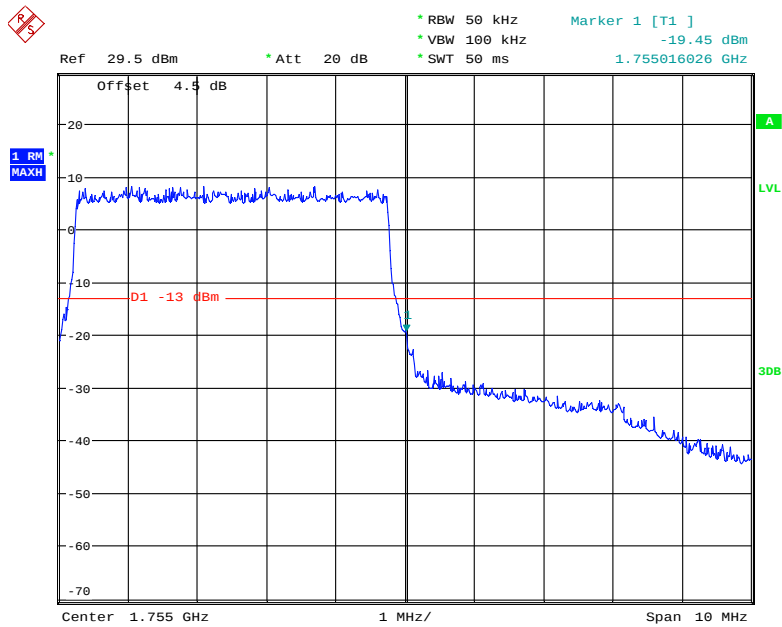
Date: 27.JUL.2018 16:29:14

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



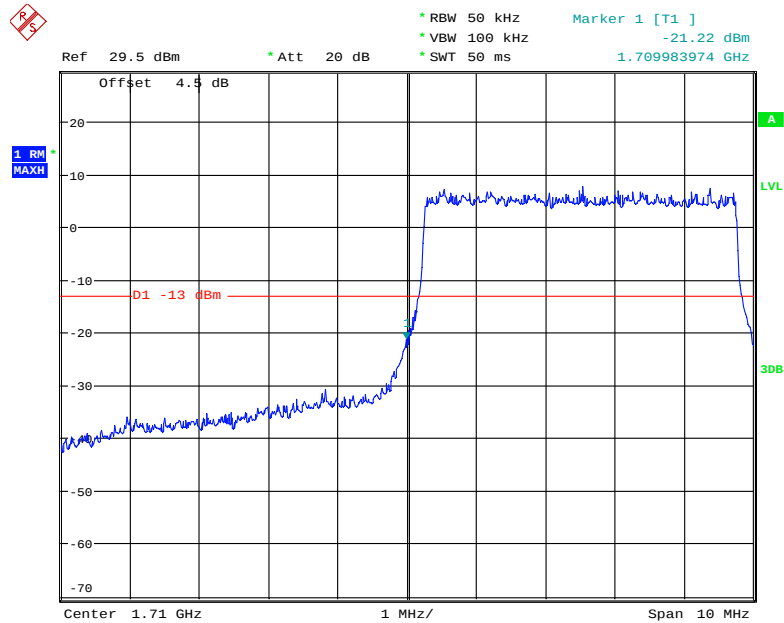
Date: 31.JUL.2018 09:38:26

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



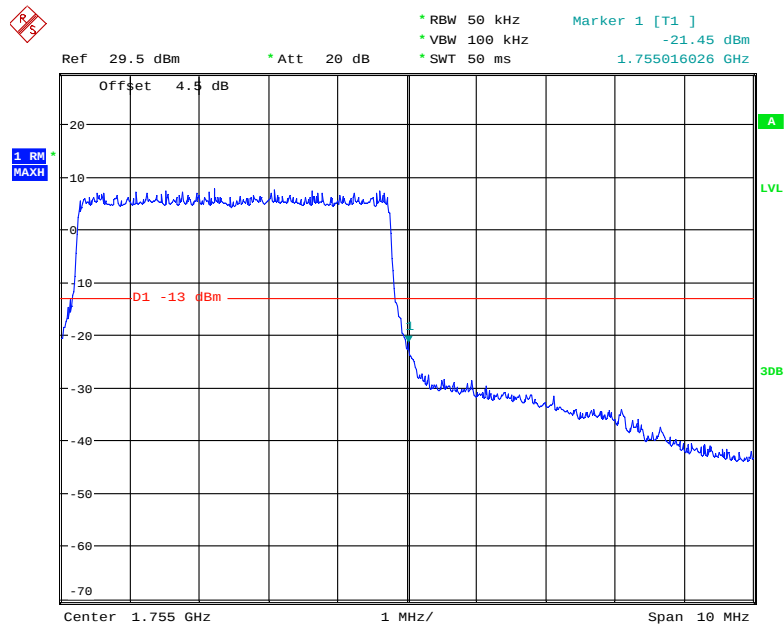
Date: 27.JUL.2018 16:36:01

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



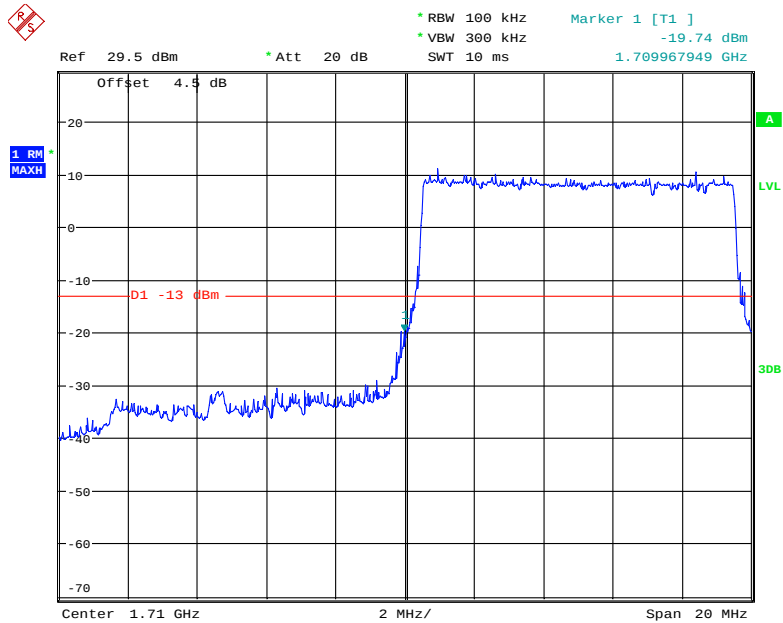
Date: 27.JUL.2018 16:35:06

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



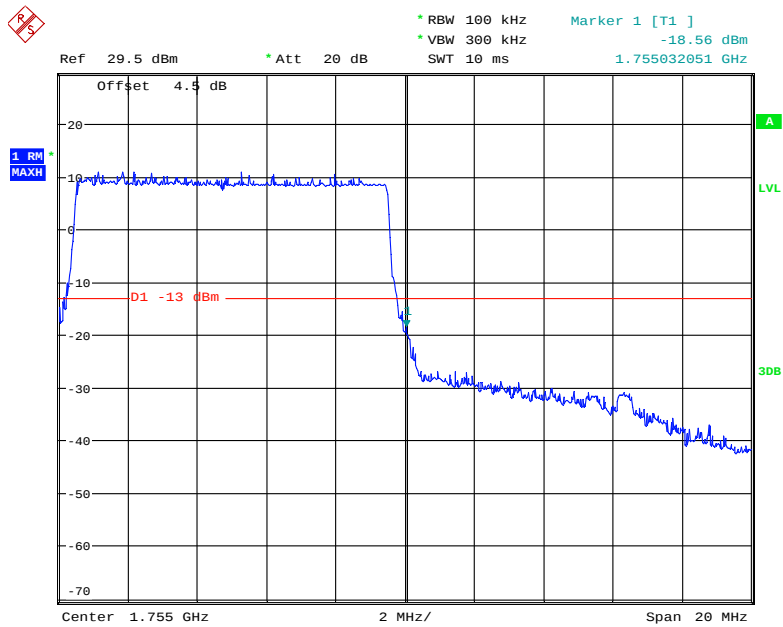
Date: 27.JUL.2018 16:35:40

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



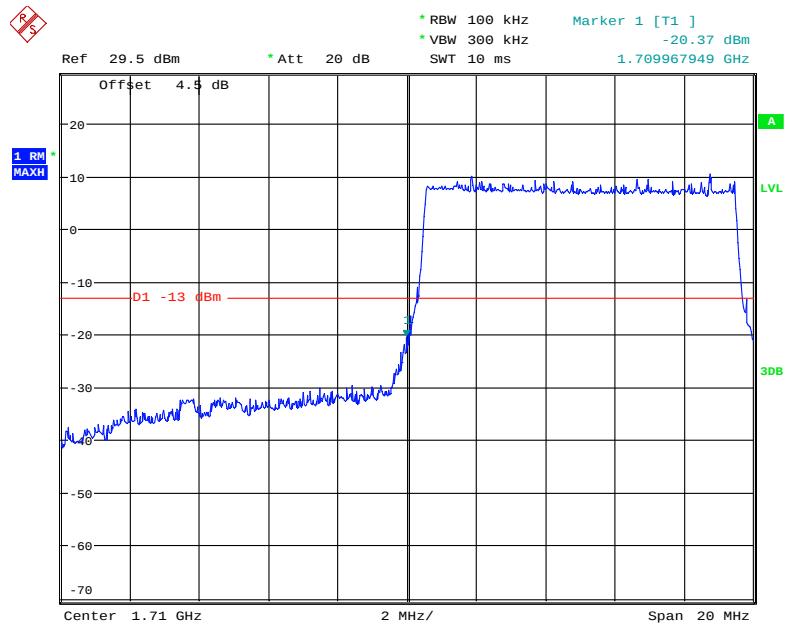
Date: 27.JUL.2018 16:39:27

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



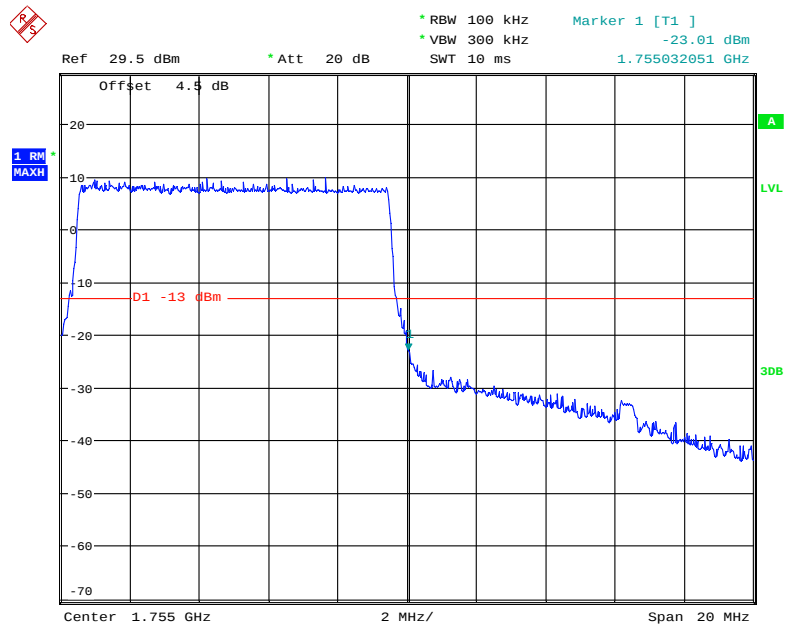
Date: 27.JUL.2018 16:37:12

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



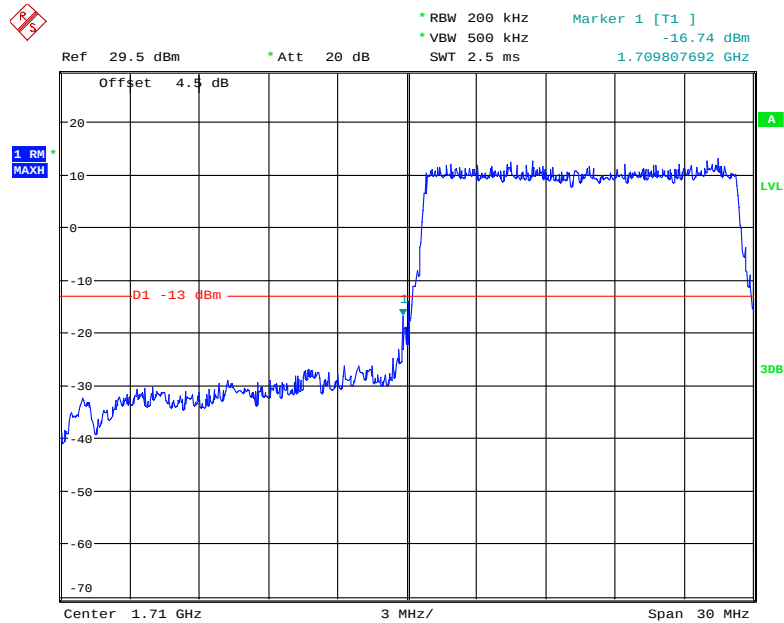
Date: 27.JUL.2018 16:39:06

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



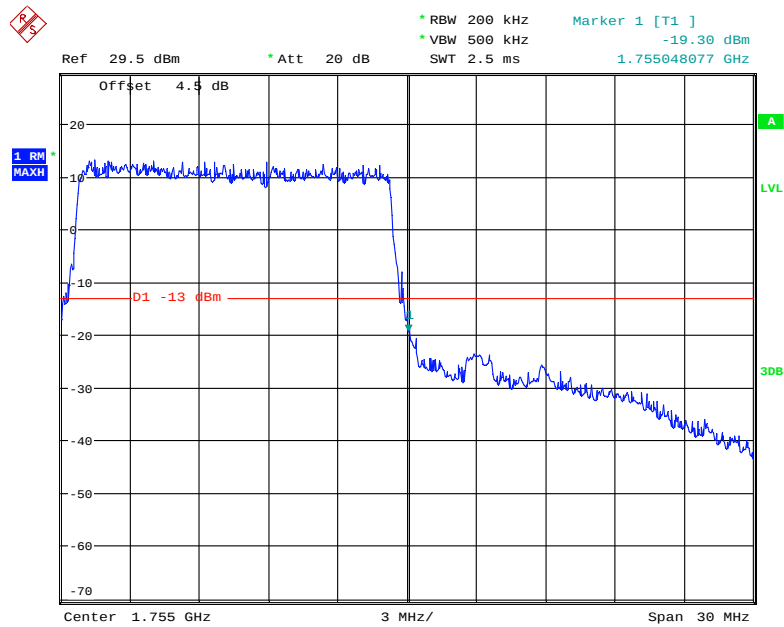
Date: 27.JUL.2018 16:37:37

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



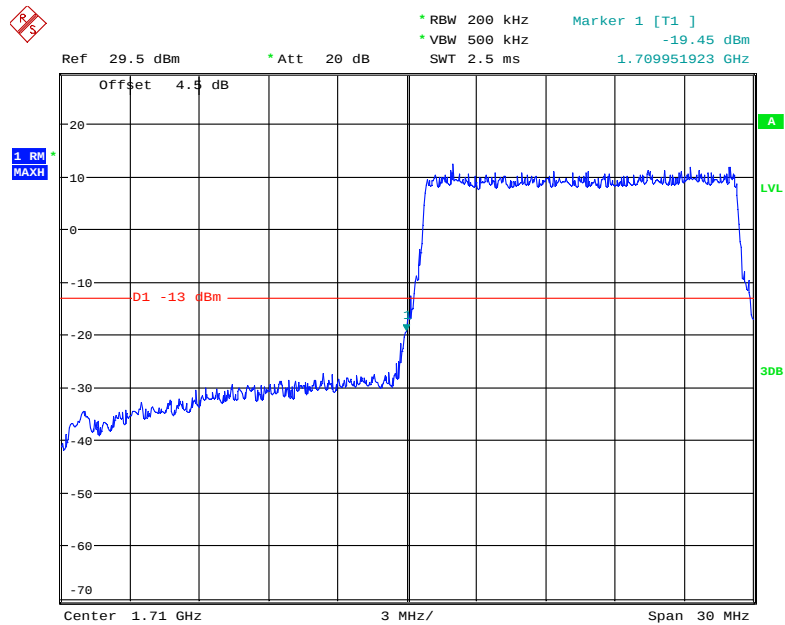
Date: 27.JUL.2018 16:40:35

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



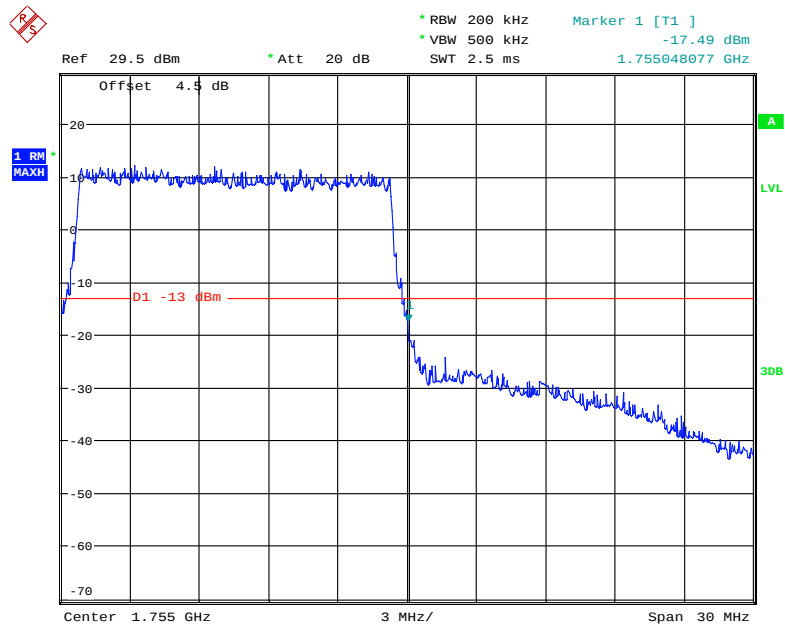
Date: 27.JUL.2018 16:42:09

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



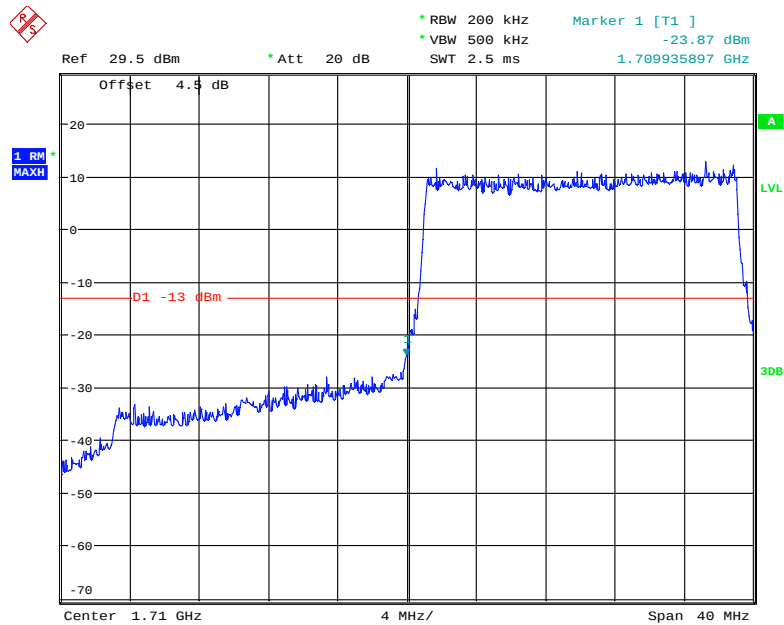
Date: 27.JUL.2018 16:41:09

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



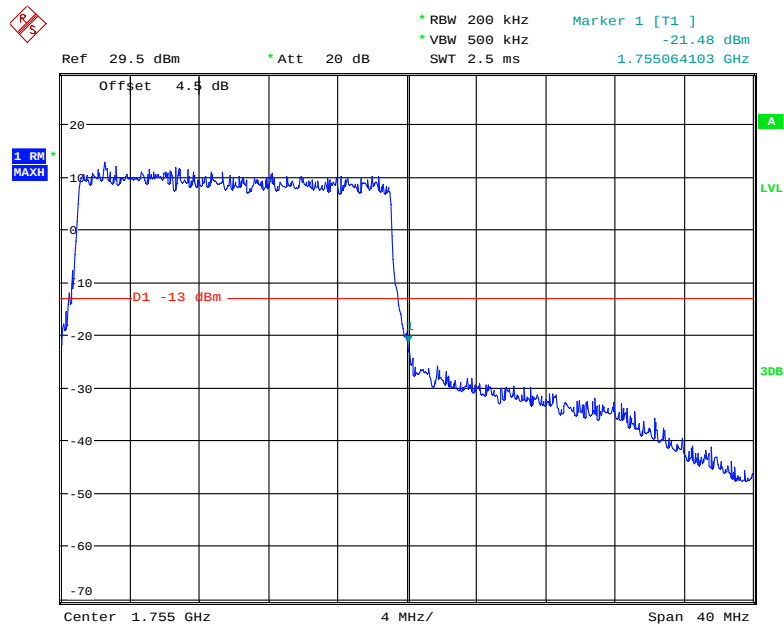
Date: 27.JUL.2018 16:41:43

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

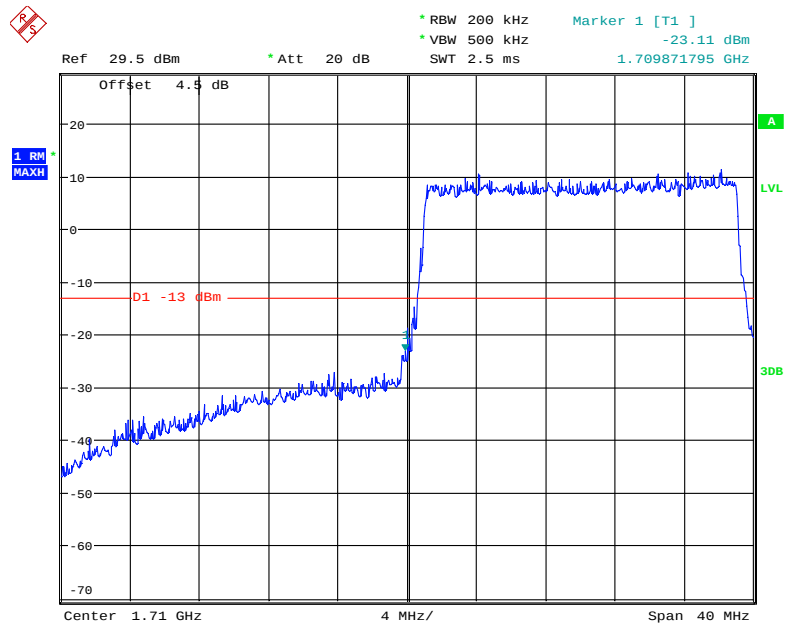


Date: 27.JUL.2018 16:44:46

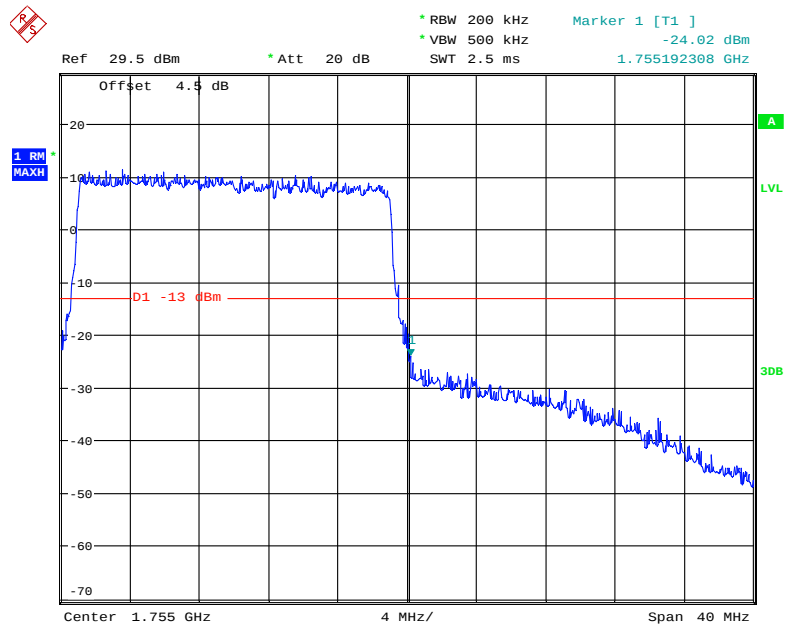
QPSK (20.0 MHz, FULL RB) - Right Band Edge



Date: 27.JUL.2018 16:42:55

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

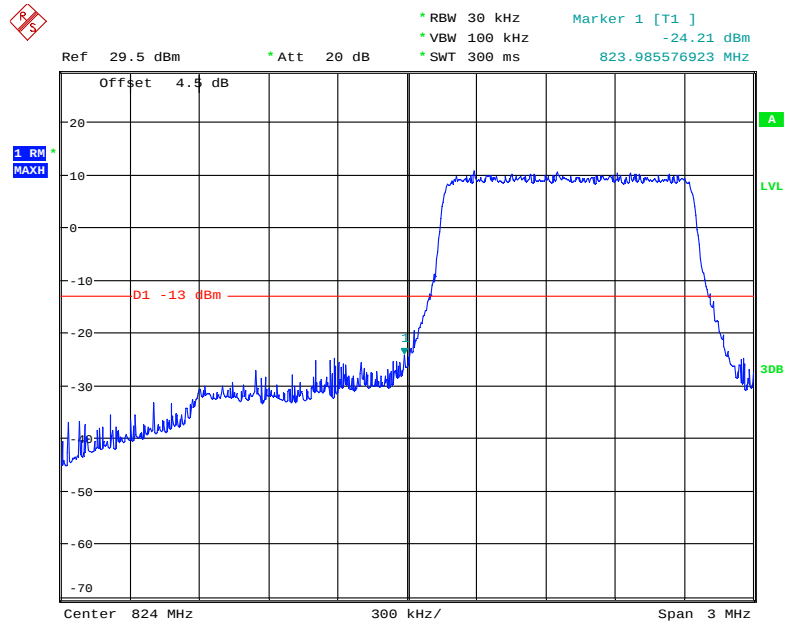
Date: 27.JUL.2018 16:44:18

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

Date: 27.JUL.2018 16:43:40

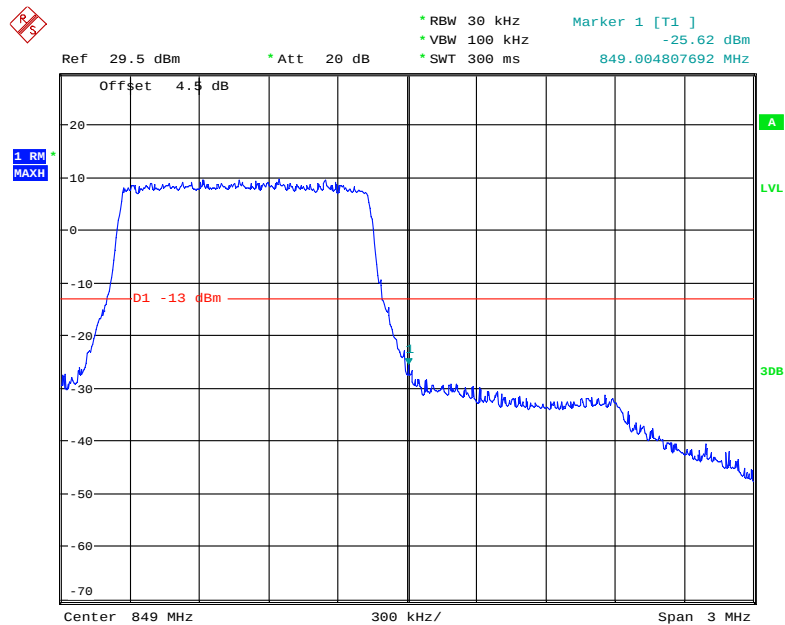
Band 5:

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



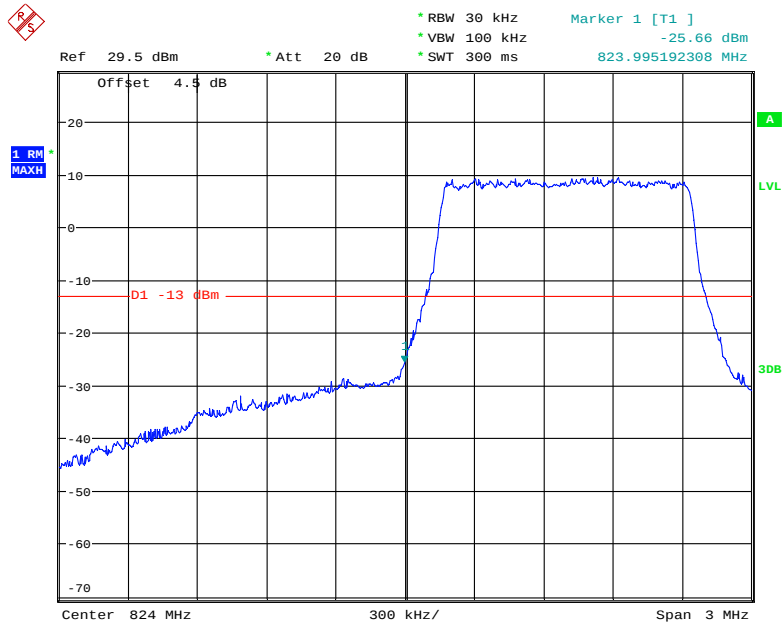
Date: 27.JUL.2018 16:49:34

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



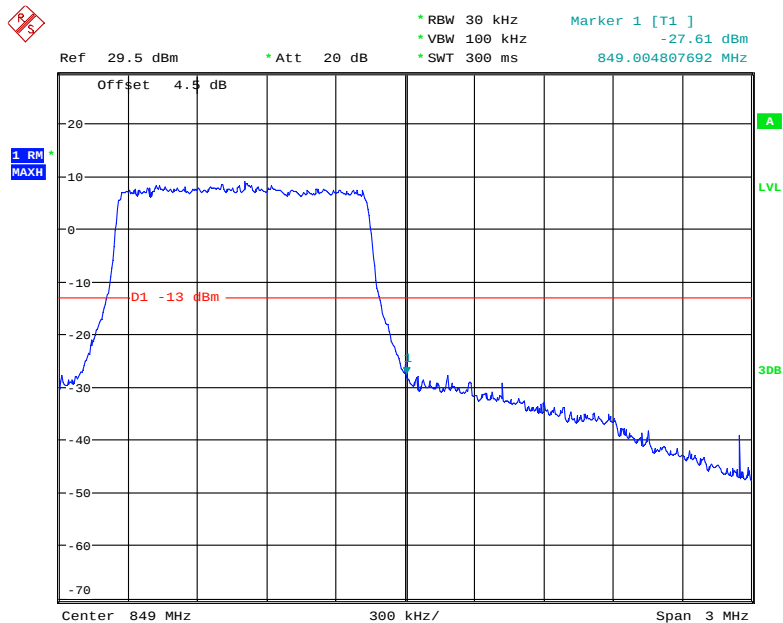
Date: 27.JUL.2018 16:51:02

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



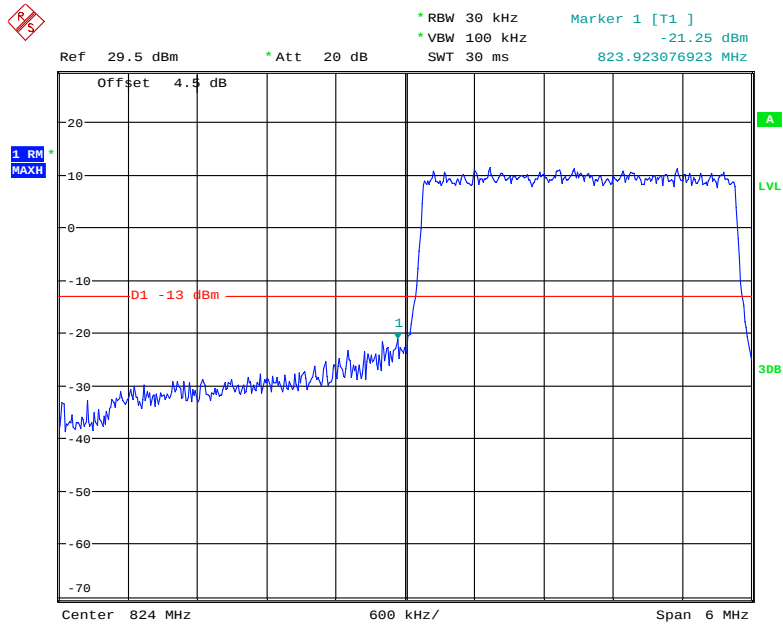
Date: 27.JUL.2018 16:50:07

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



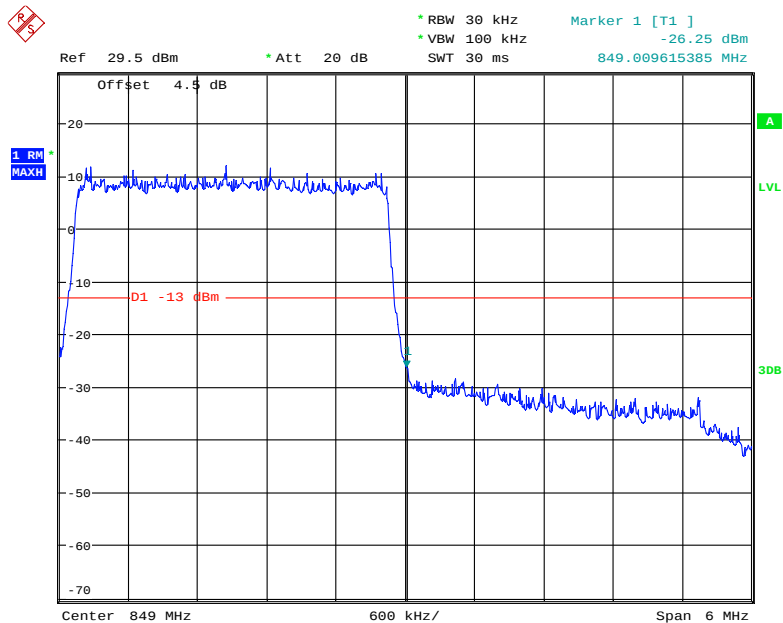
Date: 27.JUL.2018 16:50:40

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



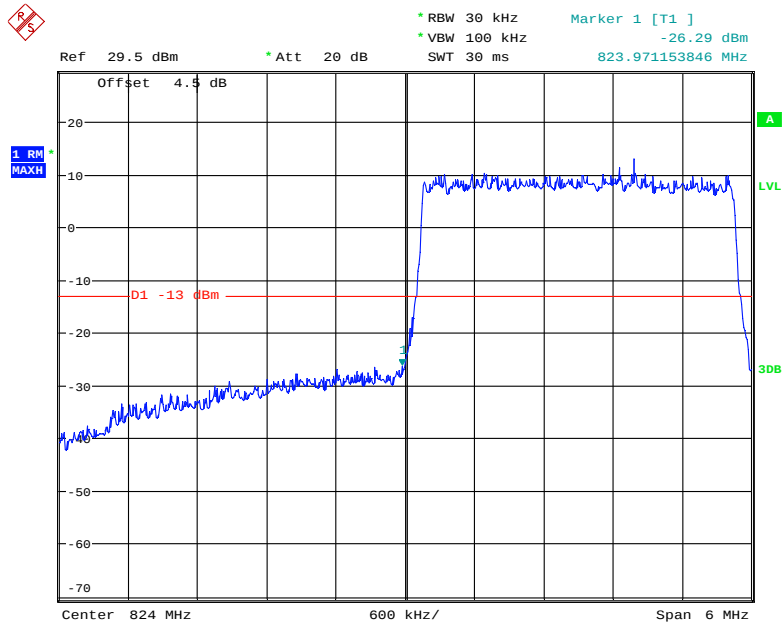
Date: 31.JUL.2018 10:09:13

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



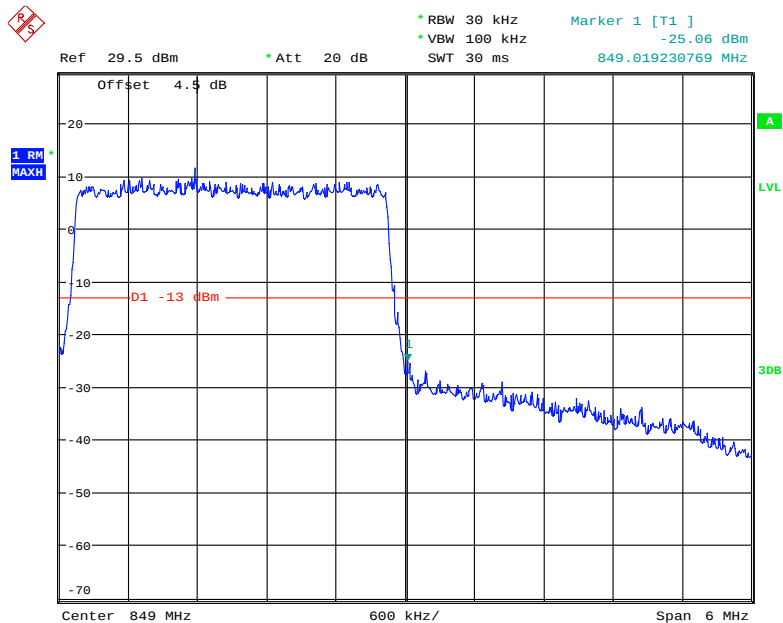
Date: 27.JUL.2018 16:52:03

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



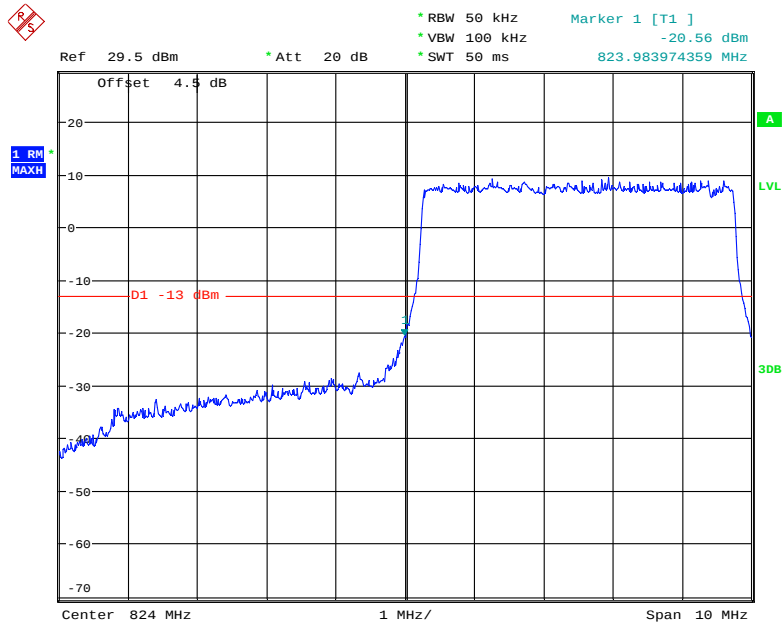
Date: 27.JUL.2018 16:53:05

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



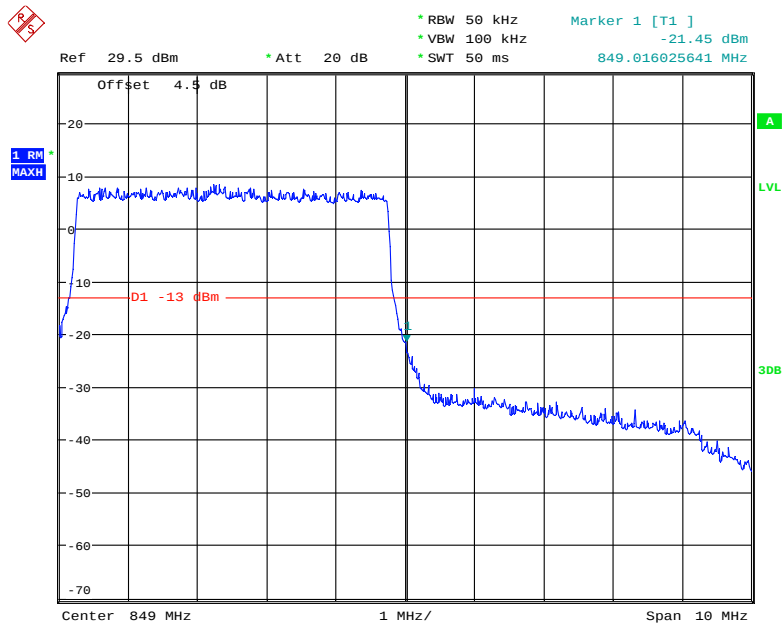
Date: 27.JUL.2018 16:52:31

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



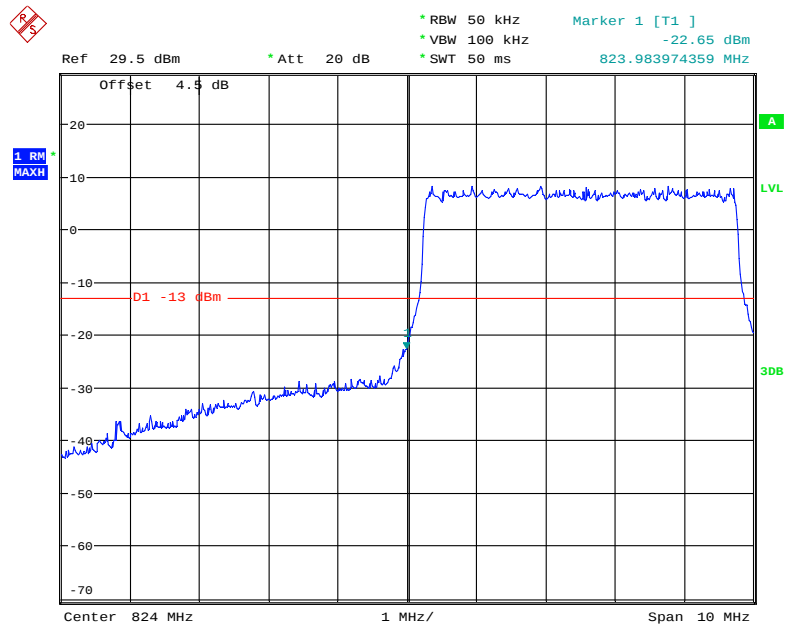
Date: 27.JUL.2018 16:55:33

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



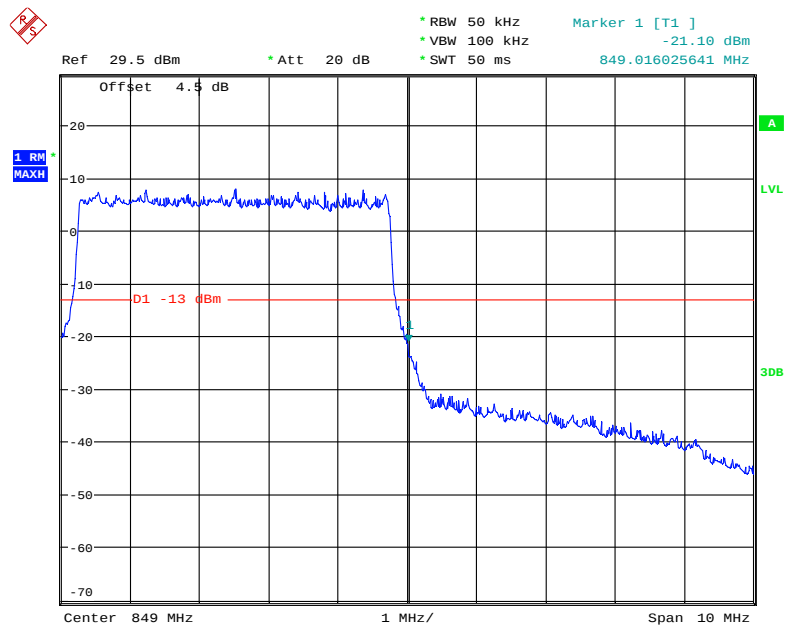
Date: 27.JUL.2018 16:57:32

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

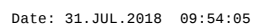
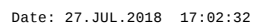


Date: 27.JUL.2018 16:56:21

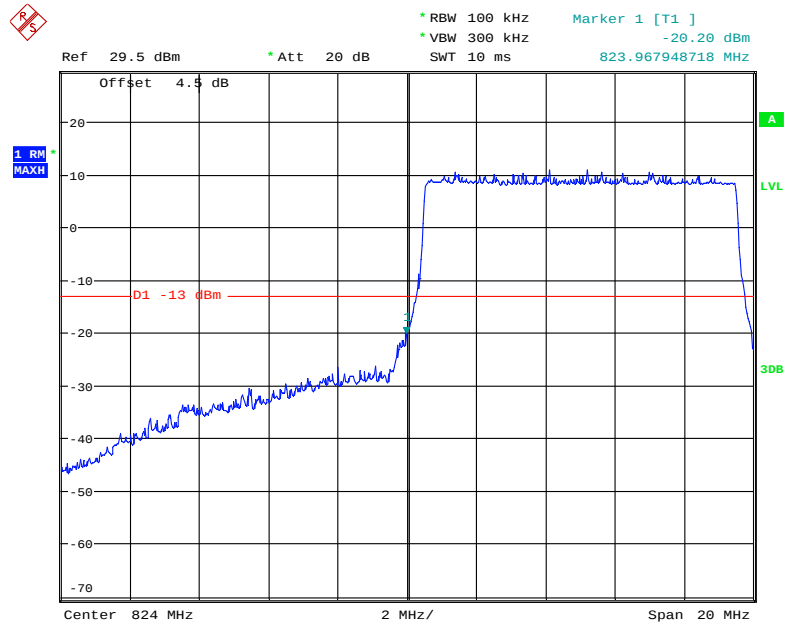
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



Date: 27.JUL.2018 16:57:11

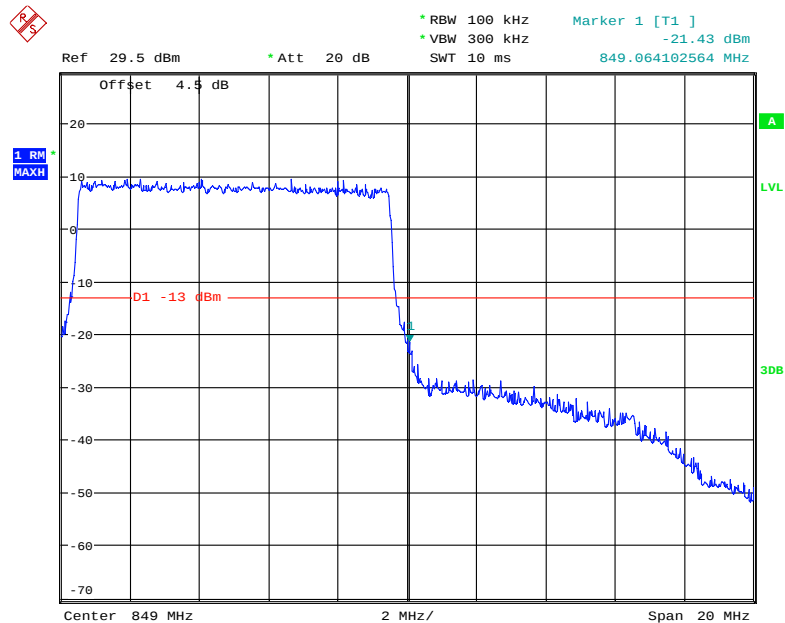


16-QAM (10.0 MHz, FULL RB) - Left Band Edge



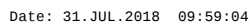
Date: 27.JUL.2018 17:00:57

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



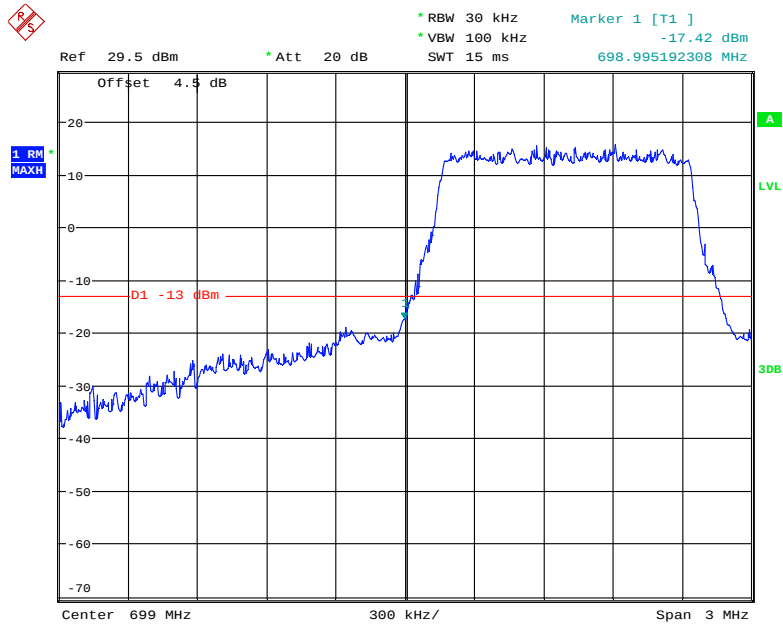
Date: 27.JUL.2018 16:59:57

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



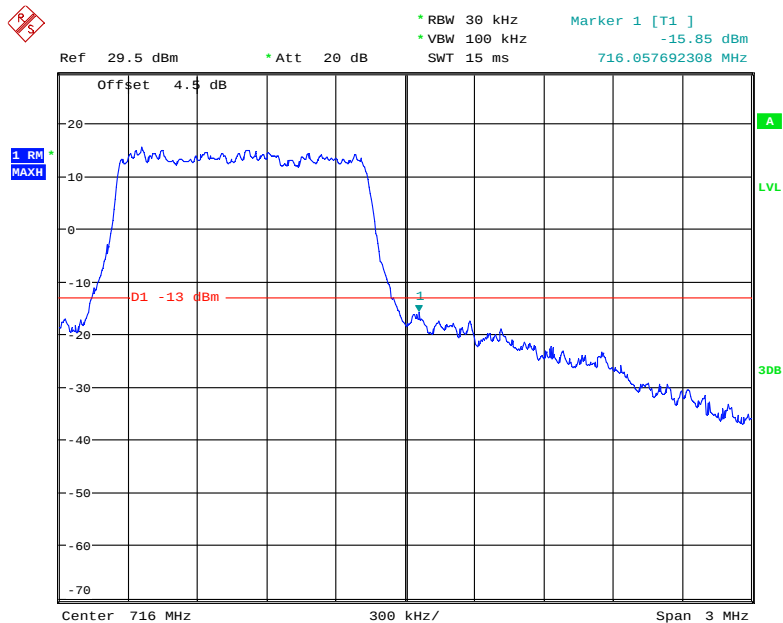
Date: 31.JUL.2018 10:00:32

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



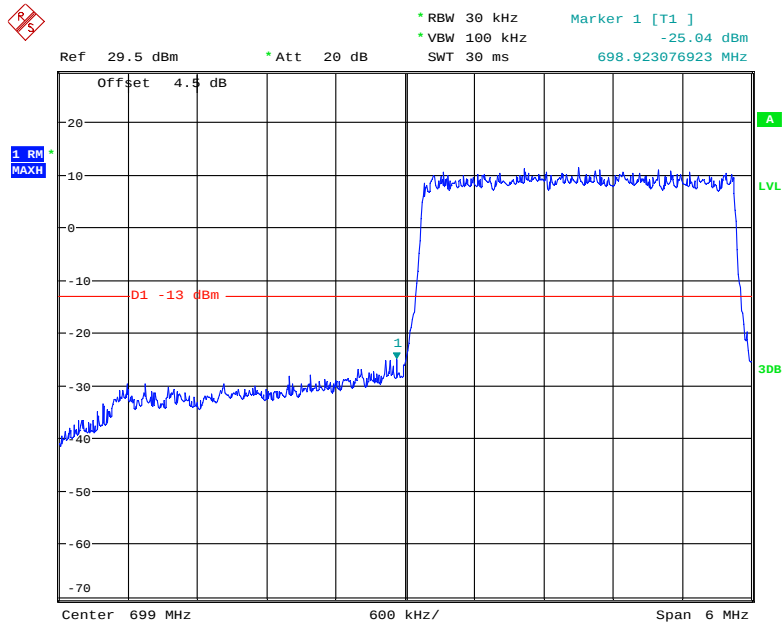
Date: 27.JUL.2018 17:06:02

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



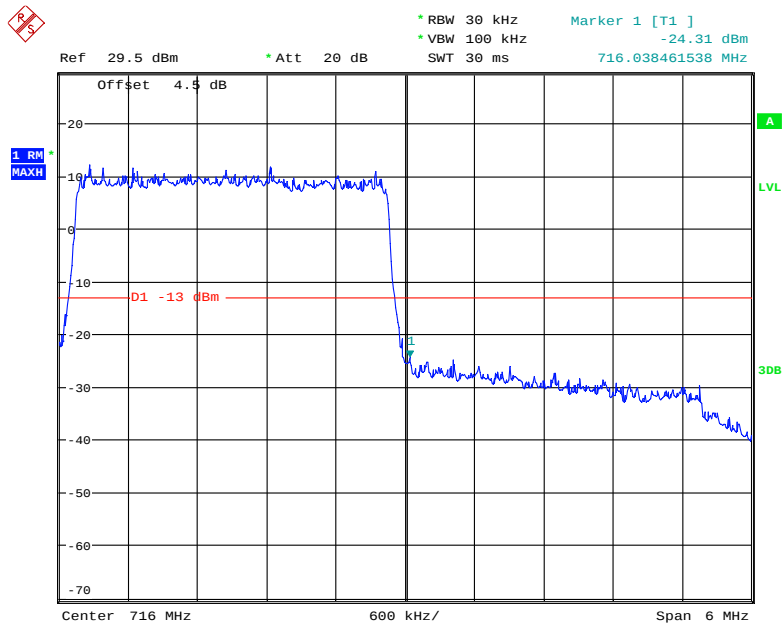
Date: 27.JUL.2018 17:07:19

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



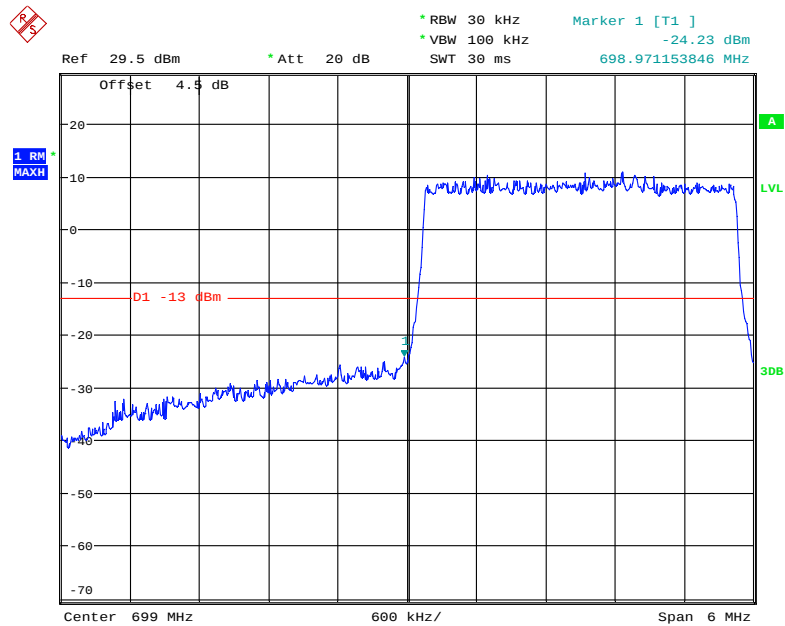
Date: 27.JUL.2018 17:10:23

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



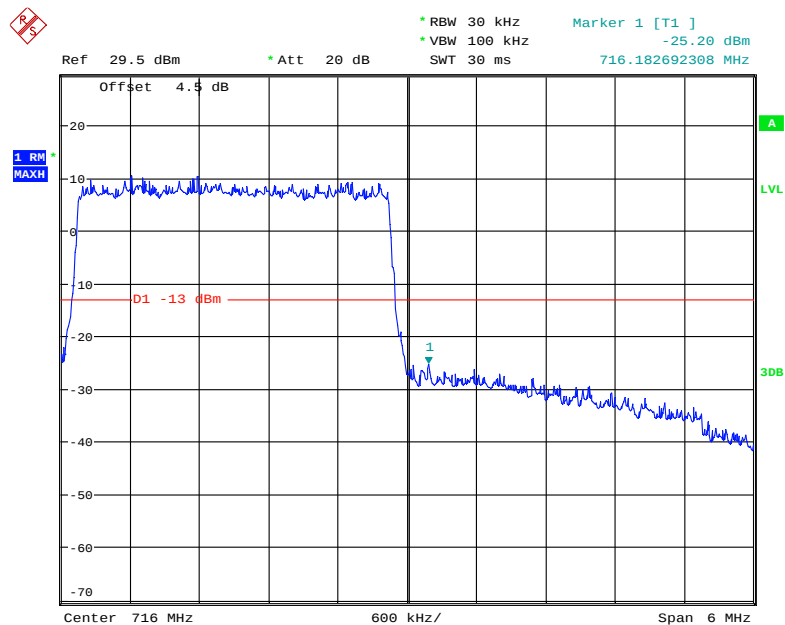
Date: 27.JUL.2018 17:09:05

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



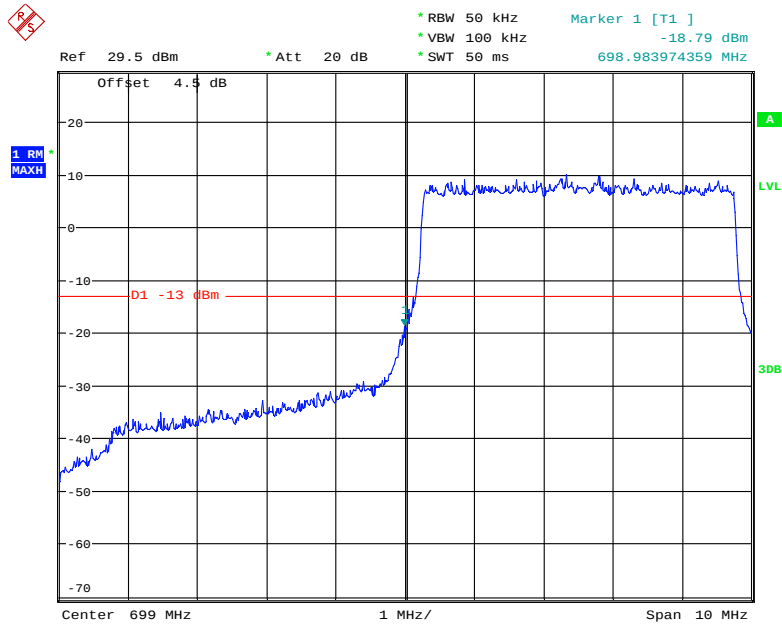
Date: 27.JUL.2018 17:10:03

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



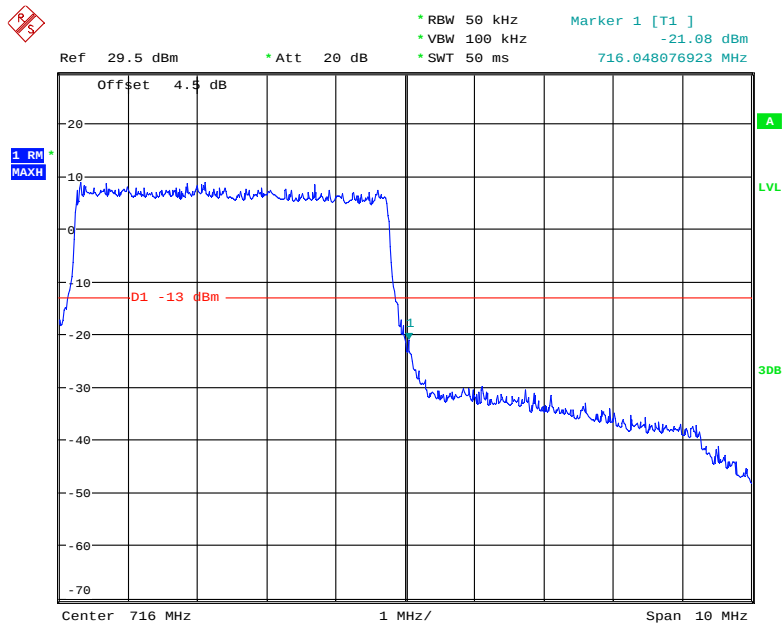
Date: 27.JUL.2018 17:09:26

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



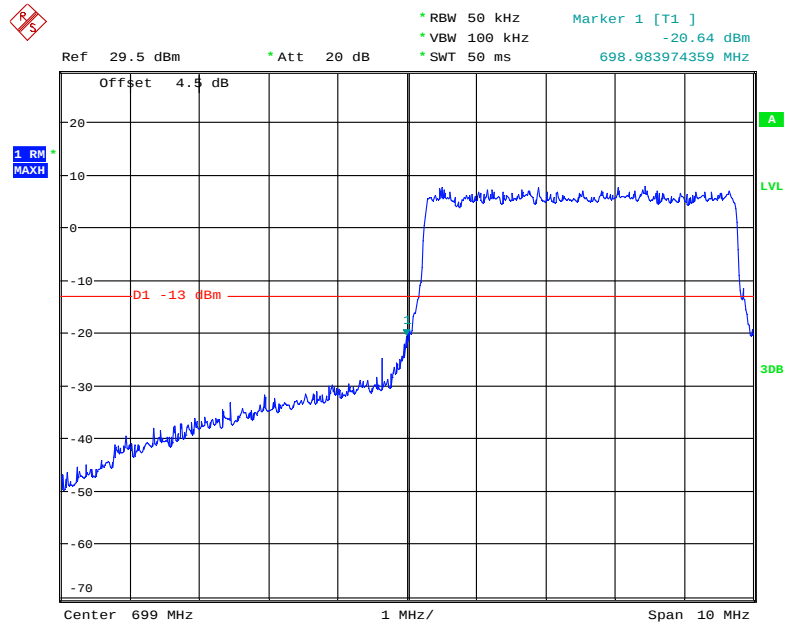
Date: 27.JUL.2018 17:11:51

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



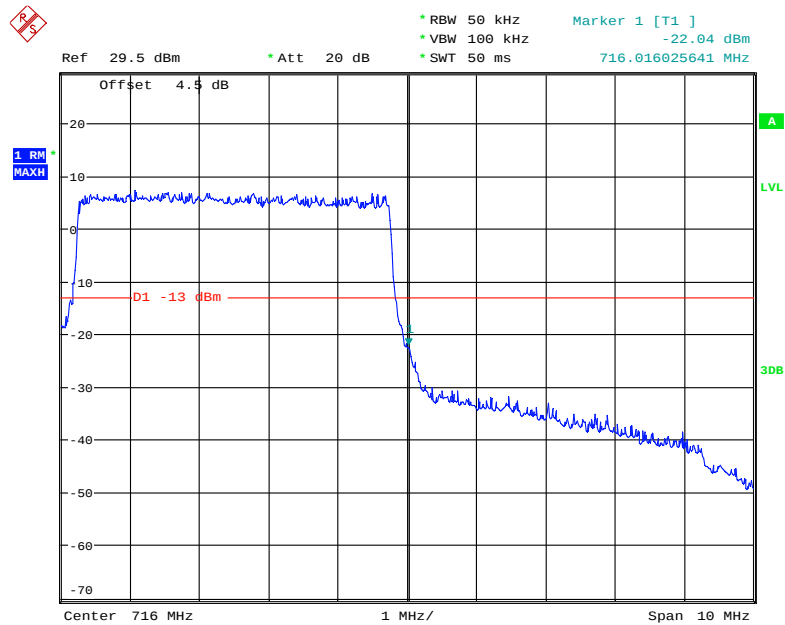
Date: 27.JUL.2018 17:13:05

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



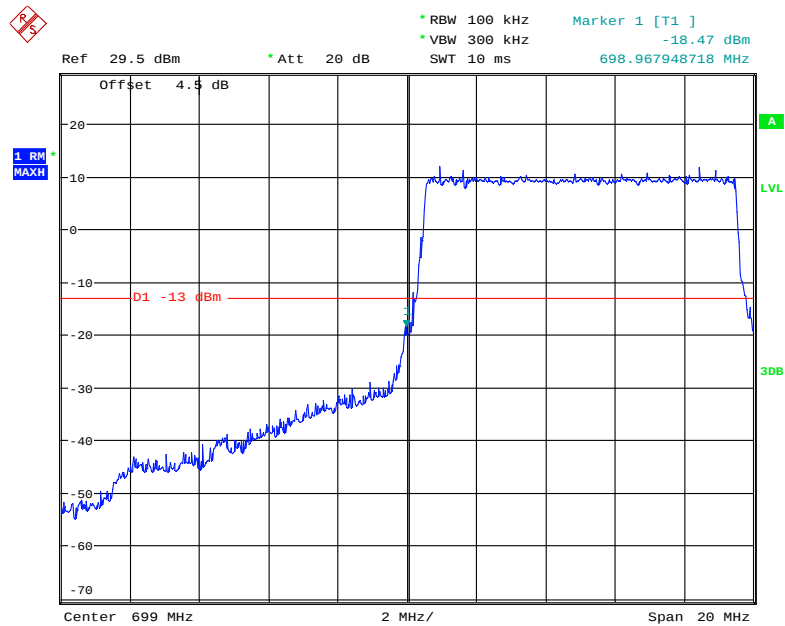
Date: 27.JUL.2018 17:12:11

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



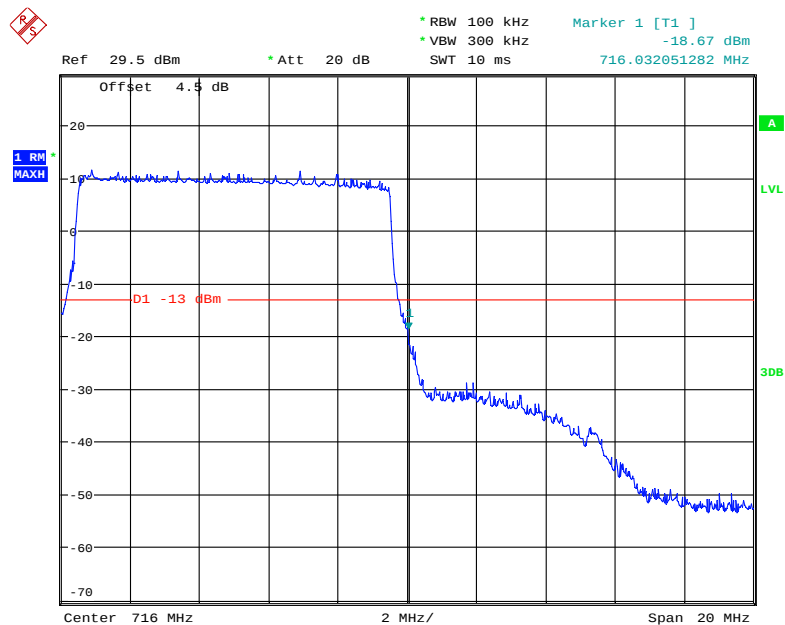
Date: 27.JUL.2018 17:12:43

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



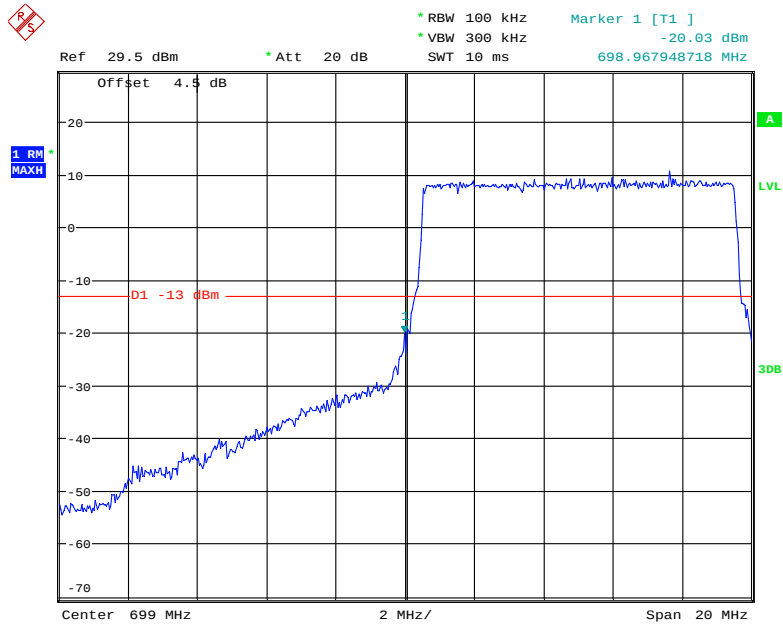
Date: 27.JUL.2018 17:18:11

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



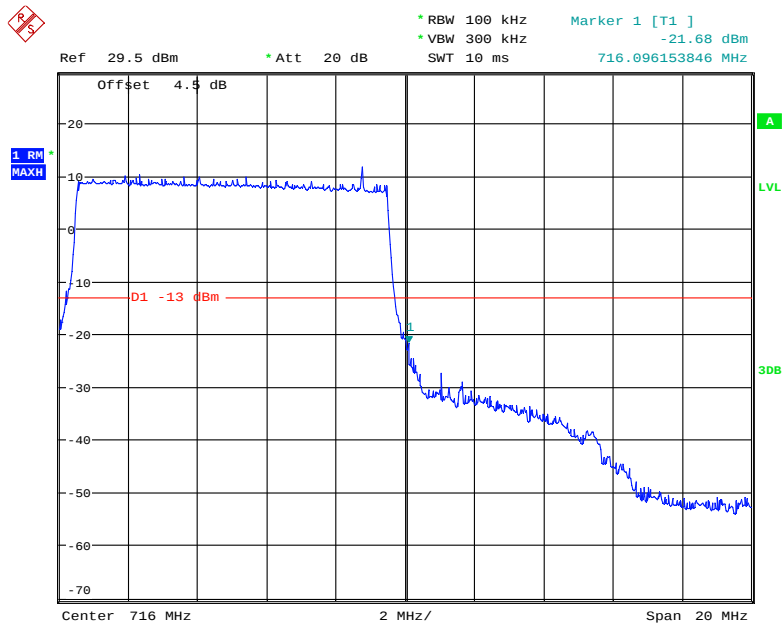
Date: 27.JUL.2018 17:16:26

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



Date: 31.JUL.2018 10:02:29

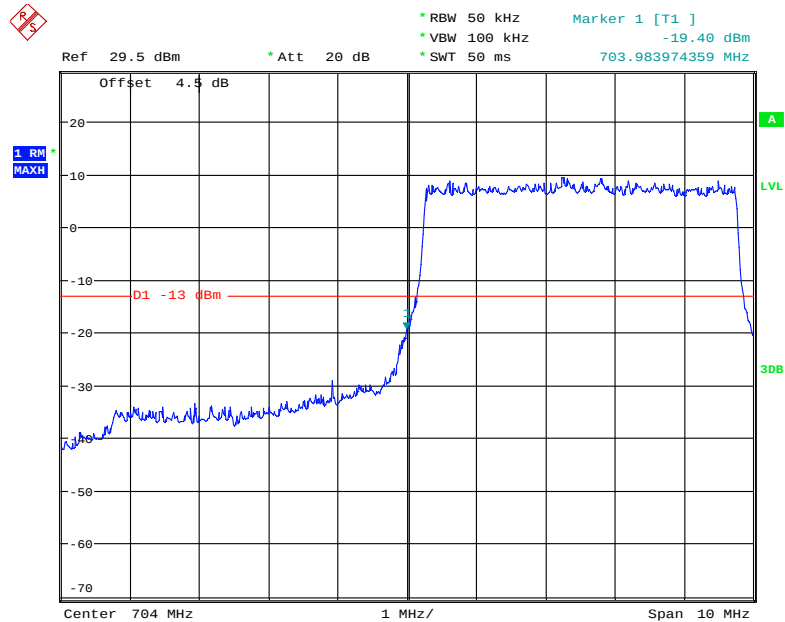
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 27.JUL.2018 17:16:57

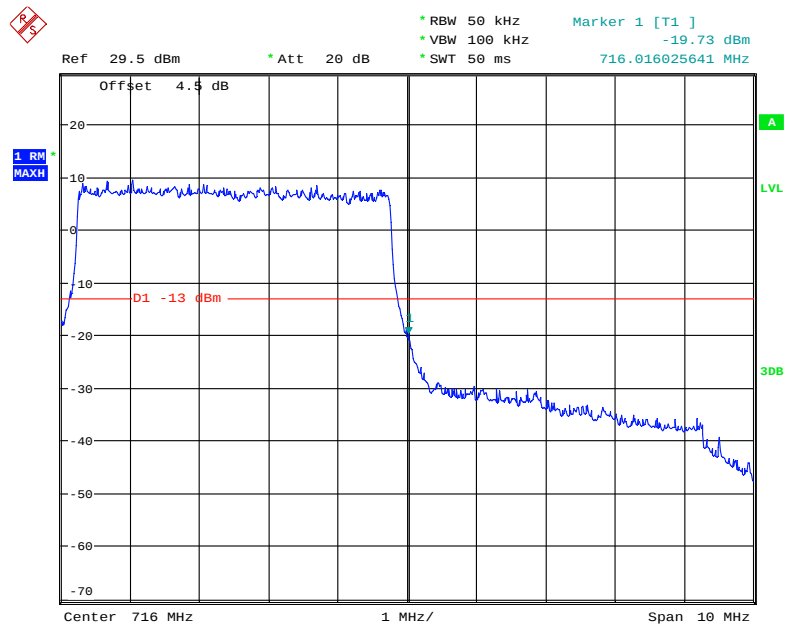
Band 17:

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



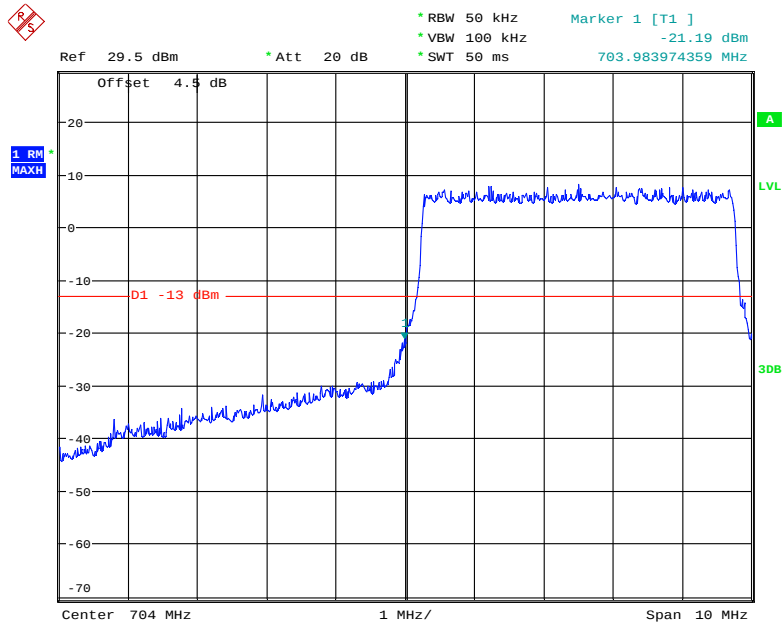
Date: 27.JUL.2018 17:22:39

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



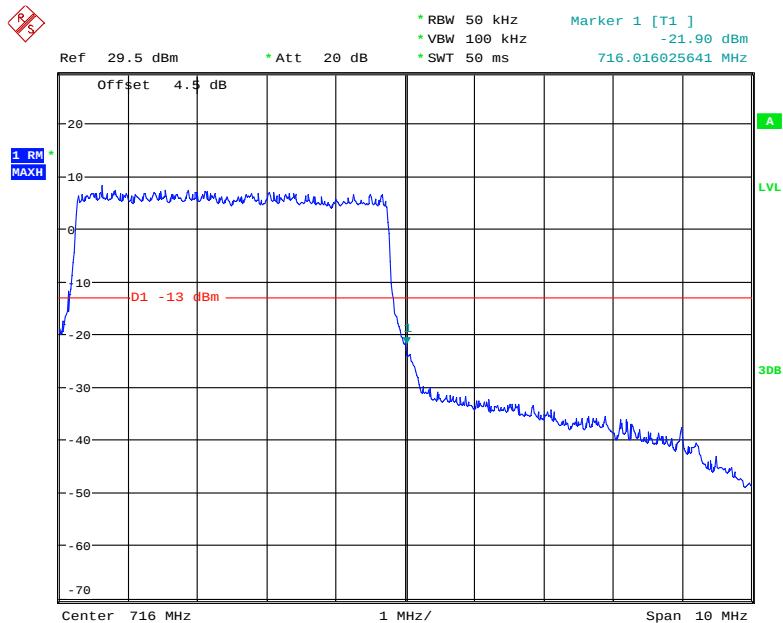
Date: 27.JUL.2018 17:24:15

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



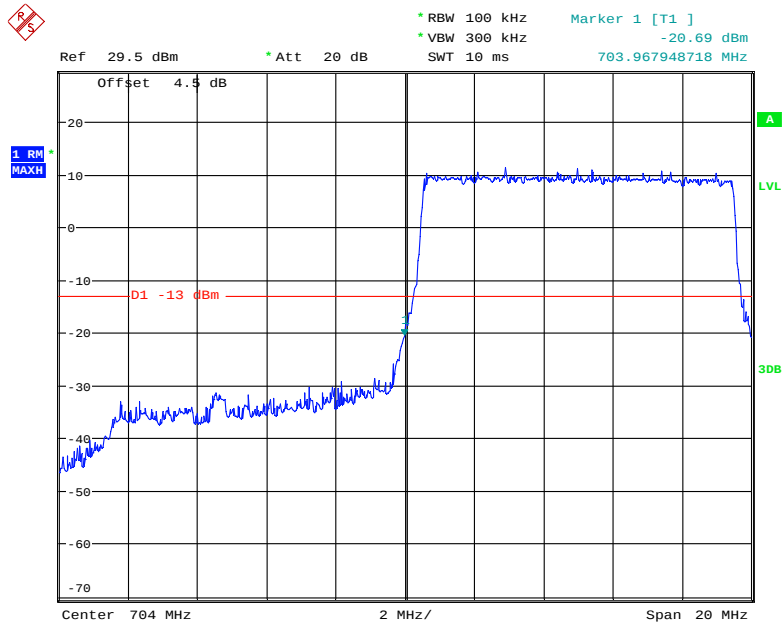
Date: 27.JUL.2018 17:23:02

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



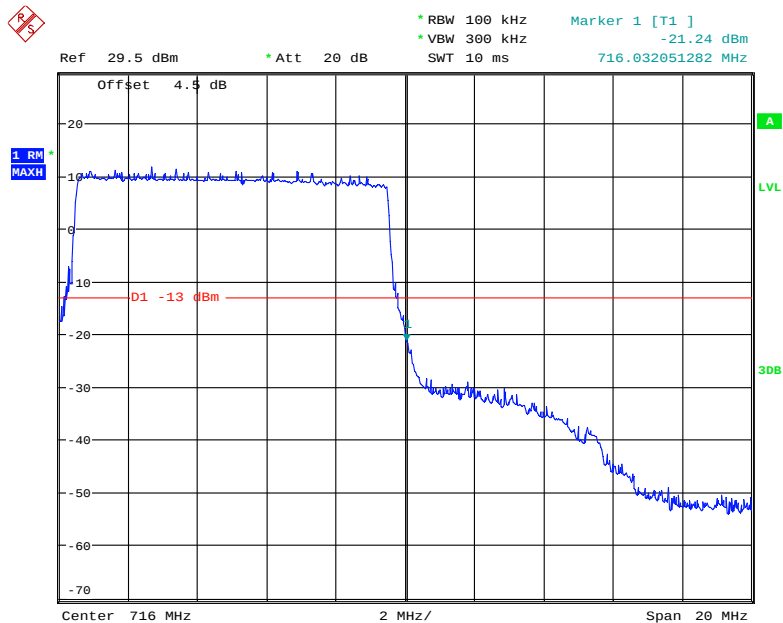
Date: 27.JUL.2018 17:23:34

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



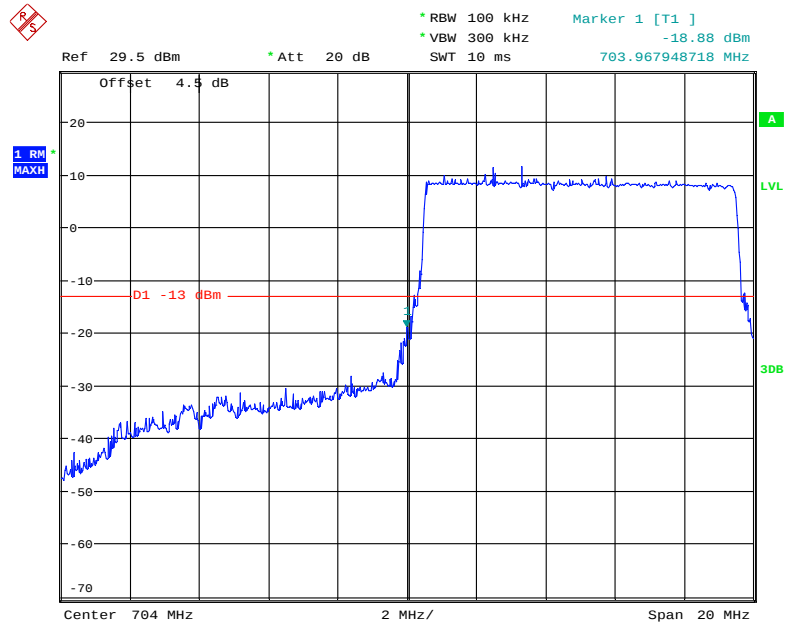
Date: 27.JUL.2018 17:27:06

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



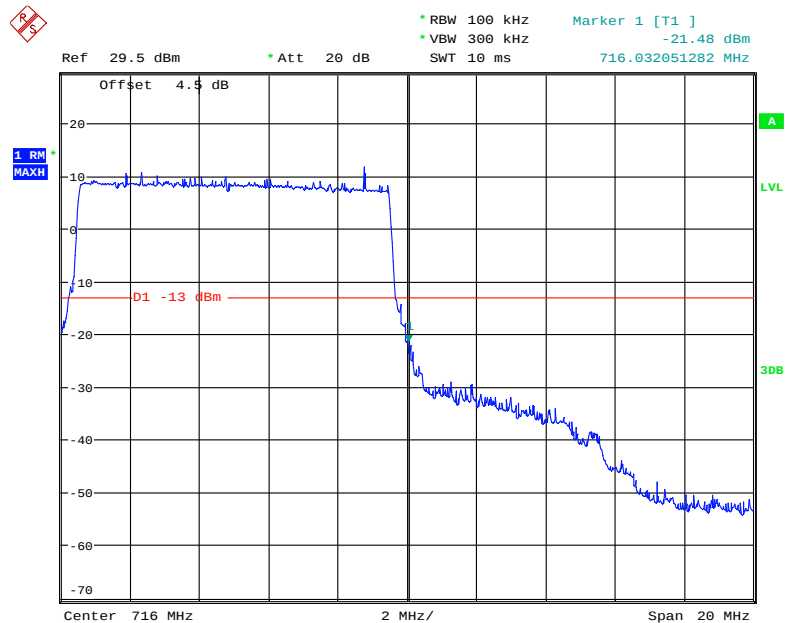
Date: 27.JUL.2018 17:25:33

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



Date: 27.JUL.2018 17:26:37

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



Date: 27.JUL.2018 17:26:00

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

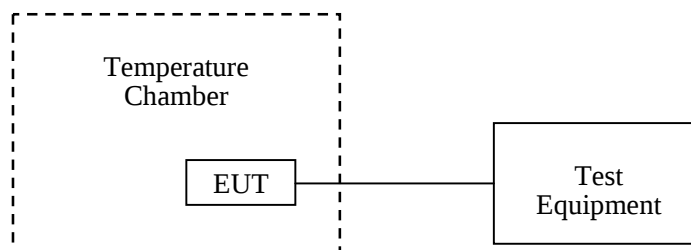
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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:	26 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2018-07-29.

EUT operation mode: Transmitting

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

Cellular Band (Part 22H)**GSM Mode**

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	23	0.02749	2.5
-20		23	0.02749	2.5
-10		22	0.02630	2.5
0		22	0.02630	2.5
10		22	0.02630	2.5
20		21	0.02510	2.5
30		22	0.02630	2.5
40		23	0.02749	2.5
50		25	0.02988	2.5
25	V min.= 3.6	27	0.03227	2.5
	V max.= 4.35	29	0.03466	2.5

EDGE Mode

Middle Channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	20	0.02391	2.5
-20		20	0.02391	2.5
-10		20	0.02391	2.5
0		16	0.01913	2.5
10		16	0.01913	2.5
20		14	0.01673	2.5
30		18	0.02152	2.5
40		20	0.02391	2.5
50		26	0.03108	2.5
25	V min.= 3.6	28	0.03347	2.5
	V max.= 4.35	29	0.03466	2.5

WCDMA Mode

Middle Channel, $f_0=836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-17	-0.02032	2.5
-20		-16	-0.01913	2.5
-10		-16	-0.01913	2.5
0		-16	-0.01913	2.5
10		-16	-0.01913	2.5
20		-15	-0.01793	2.5
30		-16	-0.01913	2.5
40		-17	-0.02032	2.5
50		-17	-0.02032	2.5
25	V min.= 3.6	-18	-0.02152	2.5
	V max.= 4.35	-18	-0.02152	2.5

PCS Band (Part 24E)**GSM Mode**

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	25	0.01330	pass
-20		25	0.01330	pass
-10		25	0.01330	pass
0		24	0.01277	pass
10		24	0.01277	pass
20		22	0.01170	pass
30		24	0.01277	pass
40		30	0.01596	pass
50		32	0.01702	pass
25	V min.= 3.6	35	0.01862	pass
	V max.= 4.35	37	0.01968	pass

EDGE Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	22	0.01170	pass
-20		22	0.01170	pass
-10		22	0.01170	pass
0		20	0.01064	pass
10		20	0.01064	pass
20		18	0.00957	pass
30		20	0.01064	pass
40		22	0.01170	pass
50		24	0.01277	pass
25	V min.= 3.6	25	0.01330	pass
	V max.= 4.35	26	0.01383	pass

WCDMA Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-18	-0.00957	pass
-20		-16	-0.00851	pass
-10		-16	-0.00851	pass
0		-16	-0.00851	pass
10		-16	-0.00851	pass
20		-12	-0.00638	pass
30		-16	-0.00851	pass
40		-18	-0.00957	pass
50		-20	-0.01064	pass
25	V min.= 3.6	-24	-0.01277	pass
	V max.= 4.35	-26	-0.01383	pass

AWS Band (Part 27)**WCDMA Mode**

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1710.3164	1754.6997	1710	1755
-20		1710.3161	1754.6998	1710	1755
-10		1710.3163	1754.6996	1710	1755
0		1710.3165	1754.6993	1710	1755
10		1710.3151	1754.6993	1710	1755
20		1710.3164	1754.6993	1710	1755
30		1710.3156	1754.6985	1710	1755
40		1710.3157	1754.6981	1710	1755
50		1710.3166	1754.6983	1710	1755
25	V min.= 3.6	1710.3163	1754.6981	1710	1755
	V max.= 4.35	1710.3161	1754.6983	1710	1755

LTE:
QPSK:

Band 2:

20.0 MHz Middle Channel, $f_o=1880$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-12	-0.00638	pass
-20		-12	-0.00638	pass
-10		-10	-0.00532	pass
0		-10	-0.00532	pass
10		-10	-0.00532	pass
20		-0	-0.00372	pass
30		-10	-0.00532	pass
40		-12	-0.00638	pass
50		-14	-0.00745	pass
25	V min.= 3.6	-16	-0.00851	pass
	V max.= 4.35	-21	-0.01117	pass

Band 4:

20 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1710.6495	1754.4881	1710	1755
-20		1710.6497	1754.4887	1710	1755
-10		1710.6499	1754.4879	1710	1755
0		1710.6457	1754.4814	1710	1755
10		1710.6476	1754.4841	1710	1755
20		1710.6410	1754.4872	1710	1755
30		1710.6427	1754.4846	1710	1755
40		1710.6482	1754.4862	1710	1755
50		1710.6422	1754.4813	1710	1755
25	V min.= 3.6	1710.6483	1754.4865	1710	1755
	V max.= 4.35	1710.6434	1754.4843	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0 = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-12	-0.00638	2.5
-20		-12	-0.00638	2.5
-10		-10	-0.00532	2.5
0		-10	-0.00532	2.5
10		-9	-0.00532	2.5
20		-7	-0.00372	2.5
30		-8	-0.00532	2.5
40		-12	-0.00638	2.5
50		-14	-0.00745	2.5
25	V min.= 3.6	-16	-0.00851	2.5
	V max.= 4.35	-21	-0.01117	2.5

Band 12:

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	699.2545	715.6737	699	716
-20		699.2542	715.6711	699	716
-10		699.2537	715.6765	699	716
0		699.2534	715.6759	699	716
10		699.2536	715.6759	699	716
20		699.2564	715.6795	699	716
30		699.2548	715.6730	699	716
40		699.2547	715.6789	699	716
50		699.2539	715.6765	699	716
25	V min.= 3.6	699.2519	715.6727	699	716
	V max.= 4.35	699.2526	715.6738	699	716

Band 17:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	704.2563	715.7106	704	716
-20		704.2587	715.7132	704	716
-10		704.2518	715.7166	704	716
0		704.2539	715.7182	704	716
10		704.2580	715.7198	704	716
20		704.2564	715.7115	704	716
30		704.2519	715.7125	704	716
40		704.2544	715.7134	704	716
50		704.2525	715.7145	704	716
25	V min.= 3.6	704.2512	715.7142	704	716
	V max.= 4.35	704.2514	715.7183	704	716

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

20.0 MHz Middle Channel, f ₀ =1880 MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-11	-0.00798	pass
-20		-13	-0.00532	pass
-10		-12	-0.00532	pass
0		-5	-0.00532	pass
10		-4	-0.00532	pass
20		1	-0.00266	pass
30		-10	-0.00532	pass
40		-16	-0.00798	pass
50		-11	-0.01064	pass
25	V min.= 3.6	-15	-0.01330	pass
	V max.= 4.35	-21	-0.01596	pass

Band 4:

20 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1710.6424	1754.4815	1710	1755
-20		1710.6403	1754.4881	1710	1755
-10		1710.6430	1754.4824	1710	1755
0		1710.6444	1754.4897	1710	1755
10		1710.6407	1754.4864	1710	1755
20		1710.6426	1754.4877	1710	1755
30		1710.6487	1754.4839	1710	1755
40		1710.6460	1754.4860	1710	1755
50		1710.6407	1754.4892	1710	1755
25	V min.= 3.6	1710.6486	1754.4805	1710	1755
	V max.= 4.35	1710.6457	1754.4869	1710	1755

Band 5:

10.0 MHz Middle Channel, f _o =836.5MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-6	-0.00798	2.5
-20		-15	-0.00532	2.5
-10		-8	-0.00532	2.5
0		-12	-0.00532	2.5
10		-8	-0.00532	2.5
20		-9	-0.00266	2.5
30		-6	-0.00532	2.5
40		-12	-0.00798	2.5
50		-17	-0.01064	2.5
25	V min.= 3.6	-19	-0.01330	2.5
	V max.= 4.35	-15	-0.01596	2.5

Band 12:

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	699.2513	715.6754	699	716
-20		699.2510	715.6757	699	716
-10		699.2553	715.6742	699	716
0		699.2502	715.6700	699	716
10		699.2513	715.6737	699	716
20		699.2531	715.6796	699	716
30		699.2528	715.6701	699	716
40		699.2537	715.6742	699	716
50		699.2555	715.6714	699	716
25	V min.= 3.4	699.2573	715.6742	699	716
	V max.= 4.2	699.2509	715.6799	699	716

Band 17

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	704.2543	715.7113	704	716
-20		704.2575	715.7140	704	716
-10		704.2581	715.7160	704	716
0		704.2547	715.7114	704	716
10		704.2522	715.7129	704	716
20		704.2541	715.7175	704	716
30		704.2583	715.7120	704	716
40		704.2507	715.7190	704	716
50		704.2562	715.7151	704	716
25	V min.= 3.6	704.2549	715.7108	704	716
	V max.= 4.35	704.2563	715.7142	704	716

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