

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

For

Xwireless LLC

11565 Old Georgetown Road, Rockville, MD 20852, USA

FCC ID: 2ADLJSYNQ

Report Type: Original Report	Product Type: 4G smart phone
Report Number: RSZ180917004-00D	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Xwireless LLC*'s product, model number: *SYNQ (FCC ID: 2ADLJSYNQ)* or the "EUT" in this report was a *4G smart phone*, which was measured approximately: 141 mm (L) × 71 mm (W) × 9 mm (H), rated with input voltage: DC 3.7 V battery or DC 5.0V from adapter.

Adapter Information:

Model: *SYNQ*

Input: AC 100-240V, 50/60Hz, 0.15 A

Output: DC 5.0 V, 1.0A

**All measurement and test data in this report was gathered from production sample serial number: 180917004. (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-09-17.*

Objective

This test report is prepared on behalf of *Xwireless LLC* 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 15B JBP and FCC Part 15.247 DSS & DTS submissions with FCC ID: 2ADLJSYNQ.

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.

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.

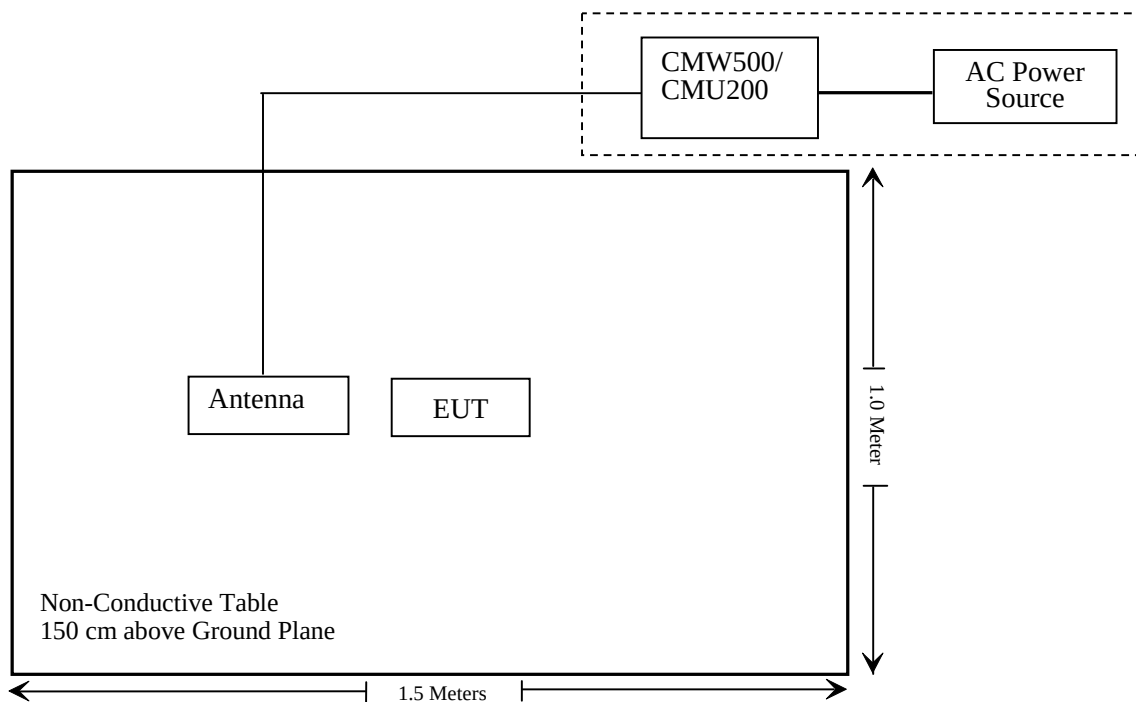
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-116218-UY
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

Note: * Please refer to SAR report released by BACL, report number: RSZ180917004-20.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017-12-22	2020-12-21
Rohde & Schwarz	Signal Analyzer	FSEM	845987/005	2018-06-23	2019-06-23
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
COM-POWER	Pre-amplifier	PA-122	181919	2018-05-22	2018-11-22
Sonoma instrument	Amplifier	310N	186238	2018-05-12	2018-11-12
Anritsu	Signal Generator	68369B	004114	2017-12-24	2018-12-24
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2018-08-01	2019-02-01
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2018-08-18	2021-08-17
Ducommun technologies	RF Cable	UFA147A-2362-100100	MFR64639 231029-003	2018-08-01	2019-02-01
Ducommun technologies	RF Cable	104PEA	218124002	2018-05-21	2018-11-21
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
Heatsink Required	Amplifier	QLW-18405536-J0	15964001002	2018-08-01	2019-02-01
MICRO-TRONICS	High Pass filter	1.3GHz	101120	2018-08-01	2019-02-01
MICRO-TRONICS	High pass filter	3.5GHz	N/A	2018-08-01	2019-02-01

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2017-12-24	2018-12-24
Rohde Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2018-07-11	2019-07-11
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2017-12-21	2018-12-21
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
Agilent	Vector signal source	N5182B	MY53051503	2018-06-23	2019-06-23
Rohde & Schwarz	Wideband Radio Communication Tester	CMU200	106891	2017-12-14	2018-12-14
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2018-06-23	2019-06-23
Ducommun technologies	RF Cable	RG-214	3	Each Time	
WEINSCHTEL	3dB Attenuator	N/A	N/A	Each Time	
N/A	Power Splitter	N/A	N/A	Each Time	

* 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: RSZ180917004-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

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

Applicable Standard

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

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

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

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

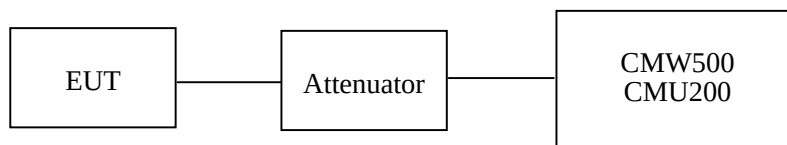
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

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

Test Procedure

Conducted method:

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



Radiated method:

TIA 603-D section 2.2.17

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2018-09-28.

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

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.47	38.45
	190	836.6	32.43	38.45
	251	848.8	32.39	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.45	30.49	28.30	27.20	38.45
	190	836.6	32.44	30.42	28.29	27.07	38.45
	251	848.8	32.37	30.36	28.21	27.06	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	26.43	24.11	22.56	21.02	38.45
	190	836.6	26.63	24.26	22.64	21.24	38.45
	251	848.8	26.72	24.34	22.73	21.06	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		21.40	21.22	21.32
		HSDPA	1	20.83	20.72	20.66
			2	20.79	20.62	20.56
			3	20.90	20.77	20.75
			4	20.75	20.65	20.59
		HSUPA	1	20.99	20.84	20.76
			2	20.95	20.81	20.67
			3	20.97	20.96	20.80
			4	20.94	20.74	20.71
			5	20.96	20.89	20.87
		HSPA+	1	21.08	21.04	21.12

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	29.27	33
	661	1880.0	29.73	33
	810	1909.8	29.60	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.05	27.18	24.86	23.77	33
	661	1880.0	29.52	27.61	25.35	24.29	33
	810	1909.8	29.80	27.96	25.88	24.70	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	24.57	22.41	20.52	19.23	33
	661	1880.0	24.90	22.61	20.71	19.48	33
	810	1909.8	25.25	22.93	21.01	19.76	33

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	RMC12.2k		21.54	21.64	21.87
		HSDPA	1	20.57	20.71	20.74
			2	20.62	20.65	20.63
			3	20.66	20.80	20.86
			4	20.61	20.69	20.68
		HSUPA	1	20.84	20.92	20.65
			2	20.76	20.81	20.55
			3	20.78	20.97	20.73
			4	20.71	20.82	20.52
			5	20.92	20.90	20.76
		HSPA+	1	20.86	20.84	20.89

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	10.52	13
	Middle	10.32	13
	High	10.15	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	11.54	13
	Middle	11.36	13
	High	11.62	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.78	13
	Middle	3.53	13
	High	3.73	13
HSDPA (16QAM)	Low	3.72	13
	Middle	3.57	13
	High	3.76	13
HSUPA (BPSK)	Low	3.76	13
	Middle	3.51	13
	High	3.74	13
HSPA+	Low	3.94	13
	Middle	3.81	13
	High	3.91	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	10.62	13
	Middle	10.42	13
	High	10.26	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	11.72	13
	Middle	11.52	13
	High	11.67	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.18	13
	Middle	2.92	13
	High	3.17	13
HSDPA (16QAM)	Low	3.14	13
	Middle	2.92	13
	High	3.16	13
HSUPA (BPSK)	Low	3.18	13
	Middle	2.96	13
	High	3.15	13
HSPA+	Low	3.54	13
	Middle	3.21	13
	High	3.51	13

**Radiated Power
GSM Mode:**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dBi)			
ERP for Cellular Band (Part 22H), Middle Channel										
836.6	91.79	80	1.6	H	29.8	0.70	0.0	29.10	38.45	9.35
836.6	85.42	304	2.5	V	25.4	0.70	0.0	24.70	38.45	13.75
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	88.30	293	1.7	H	18.3	1.30	9.40	26.40	33	6.6
1880.00	85.30	321	2.1	V	15.0	1.30	9.40	23.10	33	9.9

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 for Cellular Band (Part 22H), Middle Channel										
836.60	87.35	188	2.3	H	25.4	0.70	0.0	24.70	38.45	13.75
836.60	84.32	267	2.1	V	24.3	0.70	0.0	23.60	38.45	14.85
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	86.24	178	1.8	H	16.2	1.30	9.40	24.30	33	8.7
1880.00	84.15	232	1.2	V	13.9	1.30	9.40	22.00	33	11.0

WCDMA Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dBi)			
ERP for WCDMA Band V (Part 22H), Middle Channel										
836.60	85.34	293	1.9	H	23.3	0.70	0.0	22.60	38.45	15.85
836.60	82.18	69	2.2	V	22.2	0.70	0.0	21.50	38.45	16.95
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	83.96	9	1.8	H	13.9	1.30	9.40	22.00	33	11.0
1880.00	79.48	13	1.9	V	9.2	1.30	9.40	17.30	33	15.7

Note:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

LTE Band 2:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.81	22.51	22.26
		RB Size=1, RB Offset=2	22.52	23.16	22.84
		RB Size=1, RB Offset=5	22.36	22.71	22.87
		RB Size=3, RB Offset=0	22.58	22.81	23.29
		RB Size=3, RB Offset=1	22.70	23.34	22.94
		RB Size=3, RB Offset=2	22.33	22.92	23.52
		RB Size=6, RB Offset=0	21.44	22.15	22.27
	16QAM	RB Size=1, RB Offset=0	21.86	21.58	21.75
		RB Size=1, RB Offset=2	21.87	22.09	22.22
		RB Size=1, RB Offset=5	21.91	22.12	21.85
		RB Size=3, RB Offset=0	22.92	22.21	21.45
		RB Size=3, RB Offset=1	22.98	21.42	21.85
		RB Size=3, RB Offset=2	21.73	22.21	21.91
		RB Size=6, RB Offset=0	20.69	21.00	20.91
3.0	QPSK	RB Size=1, RB Offset=0	22.20	21.77	21.54
		RB Size=1, RB Offset=7	22.77	22.84	22.46
		RB Size=1, RB Offset=14	22.87	22.93	22.53
		RB Size=8, RB Offset=0	21.60	22.02	22.01
		RB Size=8, RB Offset=4	21.79	22.03	21.78
		RB Size=8, RB Offset=7	21.75	22.23	21.26
		RB Size=15, RB Offset=0	21.99	22.10	21.75
	16QAM	RB Size=1, RB Offset=0	21.67	21.63	21.84
		RB Size=1, RB Offset=7	21.93	21.77	21.86
		RB Size=1, RB Offset=14	21.95	21.47	22.01
		RB Size=8, RB Offset=0	21.03	21.37	21.16
		RB Size=8, RB Offset=4	20.93	21.20	21.15
		RB Size=8, RB Offset=7	21.09	20.83	21.23
		RB Size=15, RB Offset=0	21.42	20.66	20.81

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	22.49	22.44	22.81
		RB Size=1, RB Offset=12	23.28	22.73	23.50
		RB Size=1, RB Offset=24	22.95	22.74	22.83
		RB Size=12, RB Offset=0	21.71	21.95	22.29
		RB Size=12, RB Offset=6	22.09	21.86	21.73
		RB Size=12, RB Offset=11	22.17	21.70	21.66
		RB Size=25, RB Offset=0	21.88	21.89	22.18
	16QAM	RB Size=1, RB Offset=0	21.59	21.86	21.82
		RB Size=1, RB Offset=12	21.74	22.06	21.89
		RB Size=1, RB Offset=24	21.66	22.02	22.26
		RB Size=12, RB Offset=0	21.03	20.99	20.98
		RB Size=12, RB Offset=6	20.99	21.08	21.17
		RB Size=12, RB Offset=11	21.25	20.83	21.11
		RB Size=25, RB Offset=0	20.97	21.07	20.77
10.0	QPSK	RB Size=1, RB Offset=0	22.37	22.63	22.59
		RB Size=1, RB Offset=24	23.09	23.13	22.82
		RB Size=1, RB Offset=49	22.93	22.90	22.61
		RB Size=25, RB Offset=0	21.91	21.83	22.22
		RB Size=25, RB Offset=12	21.76	22.02	21.54
		RB Size=25, RB Offset=24	21.51	22.07	21.72
		RB Size=50, RB Offset=0	21.64	21.84	21.98
	16QAM	RB Size=1, RB Offset=0	21.94	21.67	21.85
		RB Size=1, RB Offset=24	22.90	22.69	22.79
		RB Size=1, RB Offset=49	22.54	22.62	22.71
		RB Size=25, RB Offset=0	21.00	21.07	21.10
		RB Size=25, RB Offset=12	21.08	20.95	20.97
		RB Size=25, RB Offset=24	20.81	21.16	21.00
		RB Size=50, RB Offset=0	21.07	21.18	20.99

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	22.55	22.45	22.75
		RB Size=1, RB Offset=37	22.62	22.81	23.21
		RB Size=1, RB Offset=74	22.89	23.00	22.73
		RB Size=36, RB Offset=0	21.93	22.08	21.26
		RB Size=36, RB Offset=18	22.09	22.07	22.26
		RB Size=36, RB Offset=37	22.35	21.97	21.89
		RB Size=75, RB Offset=0	21.76	22.19	21.35
	16QAM	RB Size=1, RB Offset=0	21.55	21.91	21.74
		RB Size=1, RB Offset=37	21.91	22.20	21.96
		RB Size=1, RB Offset=74	22.19	21.94	21.98
		RB Size=36, RB Offset=0	21.03	20.80	21.38
		RB Size=36, RB Offset=18	20.91	20.84	21.25
		RB Size=36, RB Offset=37	20.98	21.03	20.93
		RB Size=75, RB Offset=0	20.93	20.94	23.20
20.0	QPSK	RB Size=1, RB Offset=0	22.75	22.51	22.45
		RB Size=1, RB Offset=49	22.53	22.69	23.22
		RB Size=1, RB Offset=99	23.25	22.70	22.94
		RB Size=50, RB Offset=0	22.50	21.84	21.87
		RB Size=50, RB Offset=24	21.57	21.94	22.05
		RB Size=50, RB Offset=49	21.87	22.19	21.59
		RB Size=100, RB Offset=0	21.61	22.15	21.84
	16QAM	RB Size=1, RB Offset=0	21.85	21.49	21.66
		RB Size=1, RB Offset=49	22.80	22.44	23.29
		RB Size=1, RB Offset=99	21.99	22.78	22.66
		RB Size=50, RB Offset=0	21.54	21.11	21.94
		RB Size=50, RB Offset=24	21.43	21.06	20.87
		RB Size=50, RB Offset=49	21.31	21.60	20.87
		RB Size=100, RB Offset=0	21.10	21.05	21.14

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.14	13	Pass
QPSK (100RB Size)	6.43	13	Pass
16QAM (1RB Size)	6.95	13	Pass
16QAM (100RB Size)	6.84	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	84.52	157	1.1	H	14.5	1.30	9.40	22.60	33
1880.00	83.17	133	1.9	V	12.9	1.30	9.40	21.00	33
3 MHz Bandwidth									
1880.00	84.21	91	2.2	H	14.2	1.30	9.40	22.30	33
1880.00	82.54	106	1.8	V	12.3	1.30	9.40	20.40	33
5 MHz Bandwidth									
1880.00	83.52	91	2.3	H	13.5	1.30	9.40	21.60	33
1880.00	82.23	37	1.9	V	12.0	1.30	9.40	20.10	33
10 MHz Bandwidth									
1880.00	83.14	34	1.5	H	13.1	1.30	9.40	21.20	33
1880.00	81.72	65	1.7	V	11.5	1.30	9.40	19.60	33
15 MHz Bandwidth									
1880.00	82.51	204	1.8	H	12.5	1.30	9.40	20.60	33
1880.00	81.42	14	2.4	V	11.2	1.30	9.40	19.30	33
20 MHz Bandwidth									
1880.00	82.12	140	1.7	H	12.1	1.30	9.40	20.20	33
1880.00	81.26	4	1.3	V	11.0	1.30	9.40	19.10	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	84.32	143	1.5	H	14.3	1.30	9.40	22.40	33
1880.00	83.24	339	1.1	V	13.0	1.30	9.40	21.10	33
3 MHz Bandwidth									
1880.00	84.12	201	2.3	H	14.1	1.30	9.40	22.20	33
1880.00	83.02	129	1.8	V	12.8	1.30	9.40	20.90	33
5 MHz Bandwidth									
1880.00	83.65	326	1.9	H	13.6	1.30	9.40	21.70	33
1880.00	82.84	53	2.0	V	12.6	1.30	9.40	20.70	33
10 MHz Bandwidth									
1880.00	83.42	198	1.5	H	13.4	1.30	9.40	21.50	33
1880.00	82.53	32	1.9	V	12.3	1.30	9.40	20.40	33
15 MHz Bandwidth									
1880.00	83.26	280	2.0	H	13.2	1.30	9.40	21.30	33
1880.00	82.27	10	1.4	V	12.0	1.30	9.40	20.10	33
20 MHz Bandwidth									
1880.00	83.15	99	1.5	H	13.1	1.30	9.40	21.20	33
1880.00	82.06	314	1.6	V	11.8	1.30	9.40	19.90	33

LTE Band 4:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.00	22.24	22.20
		RB Size=1, RB Offset=2	22.59	22.66	22.80
		RB Size=1, RB Offset=5	22.63	22.80	23.05
		RB Size=3, RB Offset=0	22.65	22.89	23.52
		RB Size=3, RB Offset=1	22.84	23.01	23.00
		RB Size=3, RB Offset=2	22.61	23.06	23.29
		RB Size=6, RB Offset=0	21.37	21.95	22.23
	16QAM	RB Size=1, RB Offset=0	21.22	21.05	21.16
		RB Size=1, RB Offset=2	22.03	22.09	21.98
		RB Size=1, RB Offset=5	21.71	22.16	22.37
		RB Size=3, RB Offset=0	22.70	22.33	21.23
		RB Size=3, RB Offset=1	23.16	21.57	21.80
		RB Size=3, RB Offset=2	22.08	21.97	21.73
		RB Size=6, RB Offset=0	21.01	20.85	21.18
3.0	QPSK	RB Size=1, RB Offset=0	21.97	21.98	22.12
		RB Size=1, RB Offset=7	22.68	23.00	22.66
		RB Size=1, RB Offset=14	23.27	22.74	22.76
		RB Size=8, RB Offset=0	21.45	21.79	22.02
		RB Size=8, RB Offset=4	22.05	21.97	21.83
		RB Size=8, RB Offset=7	21.71	22.14	21.59
		RB Size=15, RB Offset=0	21.64	21.65	21.85
	16QAM	RB Size=1, RB Offset=0	21.20	20.97	21.23
		RB Size=1, RB Offset=7	22.16	21.73	22.10
		RB Size=1, RB Offset=14	22.10	21.85	21.72
		RB Size=8, RB Offset=0	21.03	21.08	21.18
		RB Size=8, RB Offset=4	20.75	21.03	20.88
		RB Size=8, RB Offset=7	21.00	20.82	21.42
		RB Size=15, RB Offset=0	21.13	21.23	20.93

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	21.97	22.08	21.92
		RB Size=1, RB Offset=12	22.96	22.80	23.61
		RB Size=1, RB Offset=24	23.02	22.82	22.85
		RB Size=12, RB Offset=0	21.56	22.16	21.79
		RB Size=12, RB Offset=6	21.78	21.76	22.02
		RB Size=12, RB Offset=11	21.89	21.81	21.85
		RB Size=25, RB Offset=0	22.06	21.84	22.08
	16QAM	RB Size=1, RB Offset=0	21.29	21.73	20.95
		RB Size=1, RB Offset=12	21.54	22.00	21.84
		RB Size=1, RB Offset=24	21.39	22.22	22.24
		RB Size=12, RB Offset=0	20.80	20.89	21.16
		RB Size=12, RB Offset=6	21.18	20.94	21.14
		RB Size=12, RB Offset=11	20.97	20.91	20.73
		RB Size=25, RB Offset=0	20.81	20.94	20.95
10.0	QPSK	RB Size=1, RB Offset=0	21.81	22.20	22.21
		RB Size=1, RB Offset=24	23.00	23.14	22.88
		RB Size=1, RB Offset=49	22.88	22.96	22.44
		RB Size=25, RB Offset=0	21.76	21.75	21.68
		RB Size=25, RB Offset=12	21.86	21.95	21.56
		RB Size=25, RB Offset=24	21.56	21.80	21.79
		RB Size=50, RB Offset=0	21.94	21.44	22.08
	16QAM	RB Size=1, RB Offset=0	20.75	38.84	21.18
		RB Size=1, RB Offset=24	22.68	22.66	22.82
		RB Size=1, RB Offset=49	22.54	22.55	23.00
		RB Size=25, RB Offset=0	21.03	21.32	20.62
		RB Size=25, RB Offset=12	21.19	20.98	20.85
		RB Size=25, RB Offset=24	20.91	20.87	21.10
		RB Size=50, RB Offset=0	21.35	21.27	21.00

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	21.57	21.68	21.85
		RB Size=1, RB Offset=37	22.40	22.77	23.26
		RB Size=1, RB Offset=74	23.26	22.98	22.94
		RB Size=36, RB Offset=0	21.51	21.75	21.48
		RB Size=36, RB Offset=18	21.99	21.99	22.19
		RB Size=36, RB Offset=37	22.43	22.23	21.61
		RB Size=75, RB Offset=0	21.81	22.27	21.65
	16QAM	RB Size=1, RB Offset=0	20.87	21.08	21.47
		RB Size=1, RB Offset=37	21.88	21.81	21.52
		RB Size=1, RB Offset=74	22.24	21.50	22.20
		RB Size=36, RB Offset=0	21.23	21.11	21.20
		RB Size=36, RB Offset=18	21.13	20.80	21.40
		RB Size=36, RB Offset=37	20.73	20.85	20.85
		RB Size=75, RB Offset=0	20.82	21.05	22.98
20.0	QPSK	RB Size=1, RB Offset=0	22.00	22.05	22.05
		RB Size=1, RB Offset=49	22.75	22.65	22.90
		RB Size=1, RB Offset=99	22.80	22.75	22.96
		RB Size=50, RB Offset=0	22.38	21.57	21.68
		RB Size=50, RB Offset=24	21.66	21.70	22.29
		RB Size=50, RB Offset=49	22.18	22.19	21.62
		RB Size=100, RB Offset=0	21.39	22.35	21.87
	16QAM	RB Size=1, RB Offset=0	21.08	26.56	21.30
		RB Size=1, RB Offset=49	22.74	22.23	23.22
		RB Size=1, RB Offset=99	21.86	23.08	23.03
		RB Size=50, RB Offset=0	21.24	21.23	22.27
		RB Size=50, RB Offset=24	20.96	20.74	20.96
		RB Size=50, RB Offset=49	21.32	21.47	21.23
		RB Size=100, RB Offset=0	21.14	20.83	20.93

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.23	13	Pass
QPSK (100RB Size)	6.43	13	Pass
16QAM (1RB Size)	5.24	13	Pass
16QAM (100RB Size)	5.75	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	87.51	155	1.7	H	14.3	1.30	8.90	21.90	30
1732.50	85.34	12	1.6	V	12.8	1.30	8.90	20.40	30
3 MHz Bandwidth									
1732.50	87.15	250	2.2	H	14.0	1.30	8.90	21.60	30
1732.50	85.21	205	1.2	V	12.6	1.30	8.90	20.20	30
5 MHz Bandwidth									
1732.50	86.78	257	2.3	H	13.6	1.30	8.90	21.20	30
1732.50	85.07	196	1.2	V	12.5	1.30	8.90	20.10	30
10 MHz Bandwidth									
1732.50	85.48	159	1.3	H	12.3	1.30	8.90	19.90	30
1732.50	84.68	228	1.5	V	12.1	1.30	8.90	19.70	30
15 MHz Bandwidth									
1732.50	85.21	244	2.4	H	12.0	1.30	8.90	19.60	30
1732.50	84.42	212	2.0	V	11.9	1.30	8.90	19.50	30
20 MHz Bandwidth									
1732.50	85.07	273	1.1	H	11.9	1.30	8.90	19.50	30
1732.50	84.13	158	2.0	V	11.6	1.30	8.90	19.20	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	86.71	15	2.1	H	13.5	1.30	8.90	21.10	30
1732.50	85.86	186	2.1	V	13.3	1.30	8.90	20.90	30
3 MHz Bandwidth									
1732.50	86.42	245	1.5	H	13.3	1.30	8.90	20.90	30
1732.50	85.52	1	1.8	V	13.0	1.30	8.90	20.60	30
5 MHz Bandwidth									
1732.50	86.21	181	1.3	H	13.0	1.30	8.90	20.60	30
1732.50	85.27	7	1.3	V	12.7	1.30	8.90	20.30	30
10 MHz Bandwidth									
1732.50	86.04	317	1.3	H	12.9	1.30	8.90	20.50	30
1732.50	85.03	159	2.2	V	12.5	1.30	8.90	20.10	30
15 MHz Bandwidth									
1732.50	85.83	198	1.9	H	12.7	1.30	8.90	20.30	30
1732.50	84.76	285	1.2	V	12.2	1.30	8.90	19.80	30
20 MHz Bandwidth									
1732.50	85.42	166	2.4	H	12.3	1.30	8.90	19.90	30
1732.50	84.31	96	2.1	V	11.7	1.30	8.90	19.30	30

LTE Band 5:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.28	22.44	22.42
		RB Size=1, RB Offset=2	22.90	22.69	23.08
		RB Size=1, RB Offset=5	22.87	23.31	23.24
		RB Size=3, RB Offset=0	21.88	22.15	22.34
		RB Size=3, RB Offset=1	22.07	22.09	21.88
		RB Size=3, RB Offset=2	22.09	22.13	21.52
		RB Size=6, RB Offset=0	22.00	21.95	22.00
	16QAM	RB Size=1, RB Offset=0	21.45	27.36	21.51
		RB Size=1, RB Offset=2	22.96	21.92	23.25
		RB Size=1, RB Offset=5	23.36	21.96	23.15
		RB Size=3, RB Offset=0	21.90	20.94	22.14
		RB Size=3, RB Offset=1	22.17	22.27	22.11
		RB Size=3, RB Offset=2	22.04	21.14	21.85
		RB Size=6, RB Offset=0	21.25	20.88	21.18
3.0	QPSK	RB Size=1, RB Offset=0	22.19	22.41	22.69
		RB Size=1, RB Offset=7	23.20	22.65	22.86
		RB Size=1, RB Offset=14	23.21	22.66	23.15
		RB Size=8, RB Offset=0	22.15	22.06	22.46
		RB Size=8, RB Offset=4	22.30	21.93	22.43
		RB Size=8, RB Offset=7	22.21	22.18	22.60
		RB Size=15, RB Offset=0	22.71	21.86	21.89
	16QAM	RB Size=1, RB Offset=0	21.40	40.70	21.54
		RB Size=1, RB Offset=7	22.40	22.51	22.40
		RB Size=1, RB Offset=14	21.82	22.74	22.35
		RB Size=8, RB Offset=0	21.45	21.73	21.78
		RB Size=8, RB Offset=4	21.90	21.32	21.35
		RB Size=8, RB Offset=7	21.25	21.59	21.71
		RB Size=15, RB Offset=0	21.74	21.00	21.26

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	22.51	22.10	22.27
		RB Size=1, RB Offset=12	22.47	22.63	22.61
		RB Size=1, RB Offset=24	22.38	23.14	22.74
		RB Size=12, RB Offset=0	22.18	22.15	22.06
		RB Size=12, RB Offset=6	22.37	22.42	22.49
		RB Size=12, RB Offset=11	22.56	22.77	22.63
		RB Size=25, RB Offset=0	22.62	22.76	23.00
	16QAM	RB Size=1, RB Offset=0	21.56	23.07	21.87
		RB Size=1, RB Offset=12	22.24	22.28	22.29
		RB Size=1, RB Offset=24	21.63	21.84	21.27
		RB Size=12, RB Offset=0	21.69	22.04	22.32
		RB Size=12, RB Offset=6	21.43	21.68	21.83
		RB Size=12, RB Offset=11	22.41	21.70	22.11
		RB Size=25, RB Offset=0	20.77	21.29	22.07
10.0	QPSK	RB Size=1, RB Offset=0	22.66	22.33	22.50
		RB Size=1, RB Offset=24	22.99	23.10	23.16
		RB Size=1, RB Offset=49	22.62	22.82	22.82
		RB Size=25, RB Offset=0	21.38	22.71	23.22
		RB Size=25, RB Offset=12	22.55	22.93	22.79
		RB Size=25, RB Offset=24	21.64	22.68	22.76
		RB Size=50, RB Offset=0	22.80	22.23	22.87
	16QAM	RB Size=1, RB Offset=0	21.75	23.29	21.66
		RB Size=1, RB Offset=24	22.63	23.02	22.88
		RB Size=1, RB Offset=49	22.86	23.31	23.23
		RB Size=25, RB Offset=0	21.80	21.78	23.20
		RB Size=25, RB Offset=12	21.89	22.01	22.92
		RB Size=25, RB Offset=24	21.62	22.02	22.30
		RB Size=50, RB Offset=0	22.19	21.10	22.12

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.35	13	Pass
QPSK (100RB Size)	6.37	13	Pass
16QAM (1RB Size)	7.64	13	Pass
16QAM (100RB Size)	7.45	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									
1.4 MHz Bandwidth									
836.60	84.58	157	2.2	H	22.6	0.70	0.0	21.90	38.45
836.60	81.87	270	1.6	V	21.9	0.70	0.0	21.20	38.45
3 MHz Bandwidth									
836.60	84.21	151	2.0	H	22.2	0.70	0.0	21.50	38.45
836.60	81.45	319	1.5	V	21.5	0.70	0.0	20.80	38.45
5 MHz Bandwidth									
836.60	84.03	243	2.3	H	22.0	0.70	0.0	21.30	38.45
836.60	81.02	344	1.0	V	21.0	0.70	0.0	20.30	38.45
10 MHz Bandwidth									
836.60	83.54	11	2.1	H	21.5	0.70	0.0	20.80	38.45
836.60	80.84	36	2.5	V	20.8	0.70	0.0	20.10	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 (dBi)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
836.60	84.42	347	2.2	H	22.4	0.70	0.0	21.70	38.45
836.60	82.21	78	2.0	V	22.2	0.70	0.0	21.50	38.45
3 MHz Bandwidth									
836.60	84.21	347	1.5	H	22.2	0.70	0.0	21.50	38.45
836.60	81.52	351	2.1	V	21.5	0.70	0.0	20.80	38.45
5 MHz Bandwidth									
836.60	84.03	236	2.1	H	22.0	0.70	0.0	21.30	38.45
836.60	81.25	29	1.3	V	21.3	0.70	0.0	20.60	38.45
10 MHz Bandwidth									
836.60	83.65	356	2.3	H	21.7	0.70	0.0	21.00	38.45
836.60	81.12	3	1.4	V	21.1	0.70	0.0	20.40	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	22.72	22.69	22.82
		RB Size=1, RB Offset=2	22.81	22.75	23.02
		RB Size=1, RB Offset=5	23.48	22.85	23.20
		RB Size=3, RB Offset=0	21.97	21.80	22.25
		RB Size=3, RB Offset=1	22.14	22.48	22.06
		RB Size=3, RB Offset=2	21.69	22.33	21.52
		RB Size=6, RB Offset=0	21.76	22.08	22.07
	16QAM	RB Size=1, RB Offset=0	21.86	21.99	21.94
		RB Size=1, RB Offset=2	22.03	22.19	21.85
		RB Size=1, RB Offset=5	22.26	21.85	22.03
		RB Size=3, RB Offset=0	20.81	21.22	21.47
		RB Size=3, RB Offset=1	20.96	21.35	21.08
		RB Size=3, RB Offset=2	21.17	20.81	21.72
		RB Size=6, RB Offset=0	21.42	20.87	21.32
3.0	QPSK	RB Size=1, RB Offset=0	22.83	22.88	22.71
		RB Size=1, RB Offset=7	23.19	22.80	23.67
		RB Size=1, RB Offset=14	23.25	22.85	22.86
		RB Size=8, RB Offset=0	21.97	22.35	22.21
		RB Size=8, RB Offset=4	21.73	21.93	21.97
		RB Size=8, RB Offset=7	22.04	22.10	21.82
		RB Size=15, RB Offset=0	21.66	21.69	22.30
	16QAM	RB Size=1, RB Offset=0	21.81	21.58	21.76
		RB Size=1, RB Offset=7	21.75	22.38	22.08
		RB Size=1, RB Offset=14	21.59	22.29	22.48
		RB Size=8, RB Offset=0	20.93	21.05	21.39
		RB Size=8, RB Offset=4	21.11	20.89	21.15
		RB Size=8, RB Offset=7	21.36	21.23	21.26
		RB Size=15, RB Offset=0	20.96	21.15	20.91

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	22.94	22.66	22.56
		RB Size=1, RB Offset=12	23.41	23.25	23.15
		RB Size=1, RB Offset=24	22.80	22.98	22.57
		RB Size=12, RB Offset=0	21.90	22.28	21.87
		RB Size=12, RB Offset=6	22.02	21.96	21.61
		RB Size=12, RB Offset=11	21.66	22.04	21.75
		RB Size=25, RB Offset=0	21.95	21.95	22.03
	16QAM	RB Size=1, RB Offset=0	22.01	21.57	21.87
		RB Size=1, RB Offset=12	23.28	22.95	23.16
		RB Size=1, RB Offset=24	22.93	22.76	23.26
		RB Size=12, RB Offset=0	20.98	21.47	20.68
		RB Size=12, RB Offset=6	21.22	20.83	20.87
		RB Size=12, RB Offset=11	21.14	20.97	21.14
		RB Size=25, RB Offset=0	21.17	21.58	21.23
10.0	QPSK	RB Size=1, RB Offset=0	22.85	22.79	22.62
		RB Size=1, RB Offset=24	23.42	23.39	22.89
		RB Size=1, RB Offset=49	23.00	23.30	22.47
		RB Size=25, RB Offset=0	22.15	22.31	22.05
		RB Size=25, RB Offset=12	22.07	22.25	21.53
		RB Size=25, RB Offset=24	21.60	21.93	21.85
		RB Size=50, RB Offset=0	21.90	21.82	22.17
	16QAM	RB Size=1, RB Offset=0	21.91	21.77	21.61
		RB Size=1, RB Offset=24	23.24	22.60	23.21
		RB Size=1, RB Offset=49	22.97	22.82	23.43
		RB Size=25, RB Offset=0	20.91	21.54	20.92
		RB Size=25, RB Offset=12	20.93	20.86	20.93
		RB Size=25, RB Offset=24	21.16	20.86	21.35
		RB Size=50, RB Offset=0	21.35	21.30	21.29

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.34	13	Pass
QPSK (100RB Size)	6.38	13	Pass
16QAM (1RB Size)	7.56	13	Pass
16QAM (100RB Size)	7.42	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									
1.4 MHz Bandwidth									
707.50	88.52	199	1.9	H	22.5	0.62	0.0	21.88	30
707.50	87.62	78	2.4	V	21.6	0.62	0.0	20.98	30
3 MHz Bandwidth									
707.50	88.24	61	2.0	H	22.2	0.62	0.0	21.58	30
707.50	87.32	188	2.3	V	21.3	0.62	0.0	20.68	30
5 MHz Bandwidth									
707.50	87.52	69	2.4	H	21.5	0.62	0.0	20.88	30
707.50	86.54	224	1.9	V	20.5	0.62	0.0	19.88	30
10 MHz Bandwidth									
707.50	87.24	312	2.0	H	21.2	0.62	0.0	20.58	30
707.50	86.16	346	1.3	V	20.2	0.62	0.0	19.58	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 (dBi)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
707.50	88.48	194	2.4	H	22.5	0.62	0.0	21.88	30
707.50	87.26	319	1.7	V	21.3	0.62	0.0	20.68	30
3 MHz Bandwidth									
707.50	88.21	301	1.7	H	22.2	0.62	0.0	21.58	30
707.50	86.86	333	1.7	V	20.9	0.62	0.0	20.28	30
5 MHz Bandwidth									
707.50	87.75	91	1.4	H	21.8	0.62	0.0	21.18	30
707.50	86.57	327	2.0	V	20.6	0.62	0.0	19.98	30
10 MHz Bandwidth									
707.50	87.27	229	2.0	H	21.3	0.62	0.0	20.68	30
707.50	86.13	244	2.4	V	20.1	0.62	0.0	19.48	30

Note:

All above data were tested with no amplifier

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

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

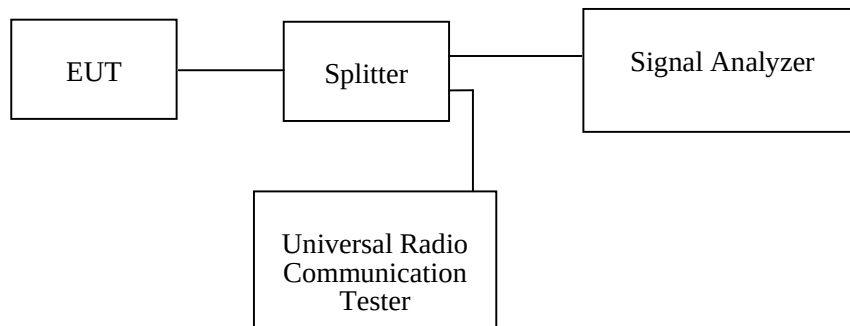
Applicable Standard

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

Test Procedure

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

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



Test Data

Environmental Conditions

Temperature:	25~26 °C
Relative Humidity:	52~53 %
ATM Pressure:	101.0~101.2 kPa

The testing was performed by Haiguo Li from 2018-09-19 to 2018-10-15.

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	245.19	312.50
EGPRS(8PSK)	836.6	244.57	318.40

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.171	4.711
HSUPA (BPSK)	836.6	4.215	5.657
HSDPA (16QAM)	836.6	4.231	5.545

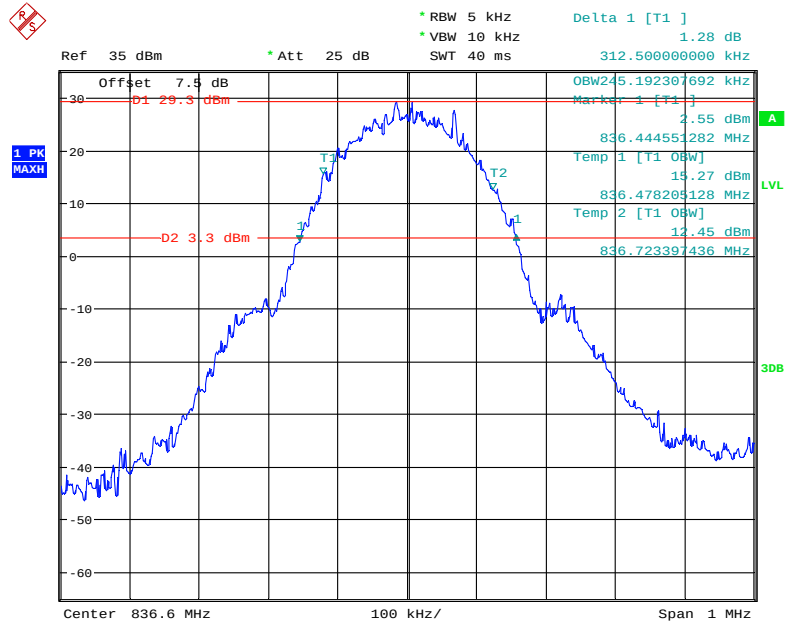
PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	245.71	317.31
EGPRS(8PSK)	1880.0	244.29	310.05

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.167	4.728
HSUPA (BPSK)	1880.0	4.153	4.689
HSDPA (16QAM)	1880.0	4.186	4.725

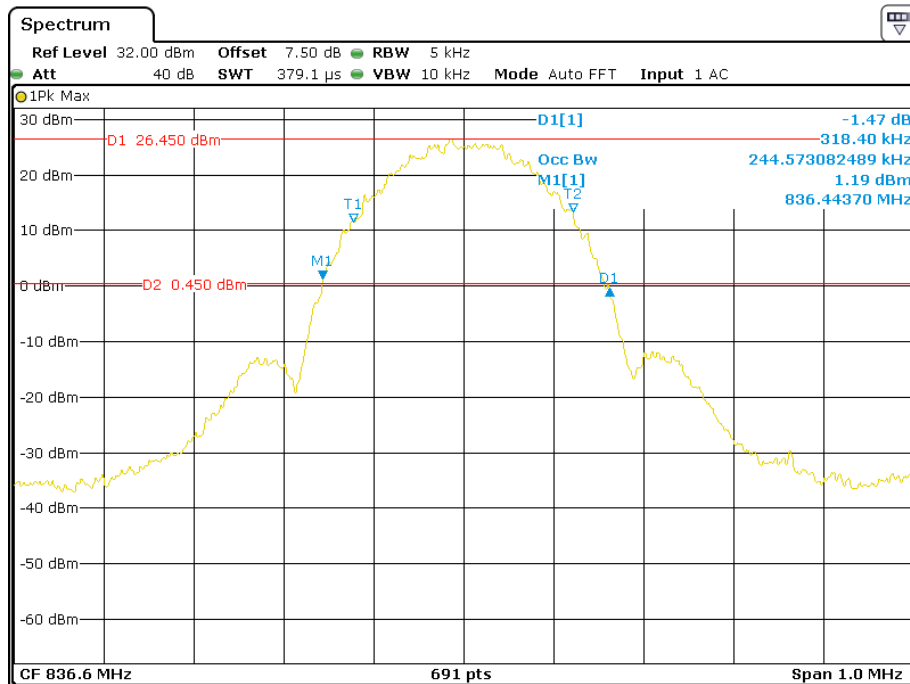
Cellular Band (Part 22H)

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



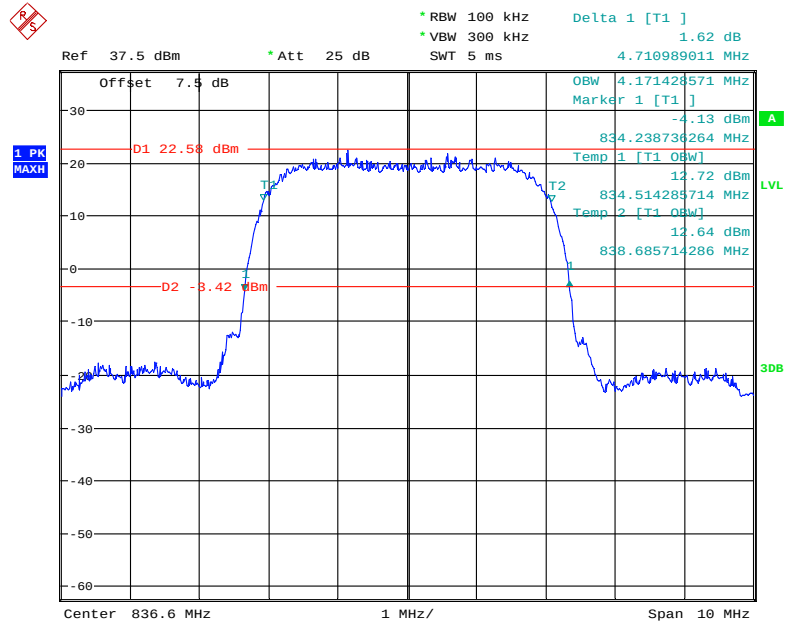
Date: 28.SEP.2018 15:01:20

26 dB Emissions & 99% Occupied Bandwidth for EDGE Mode



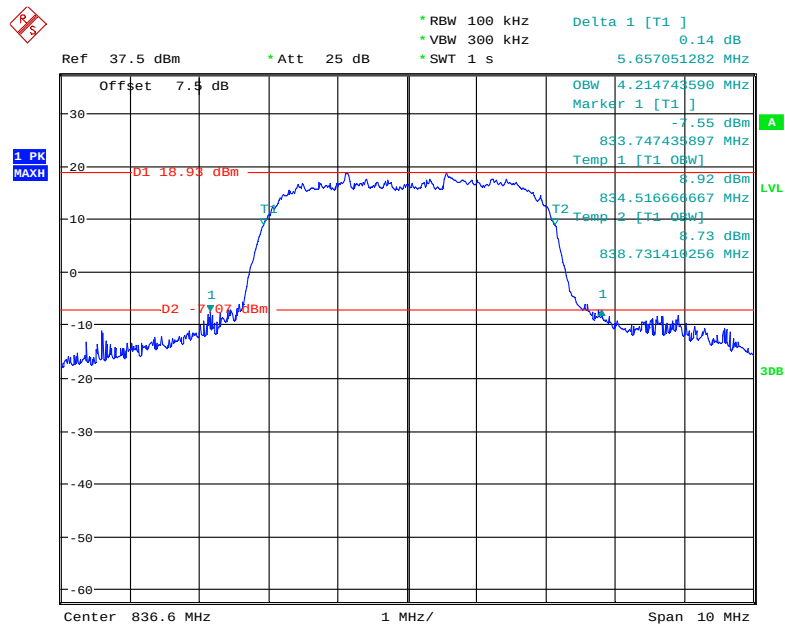
Date: 30.SEP.2018 16:17:22

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

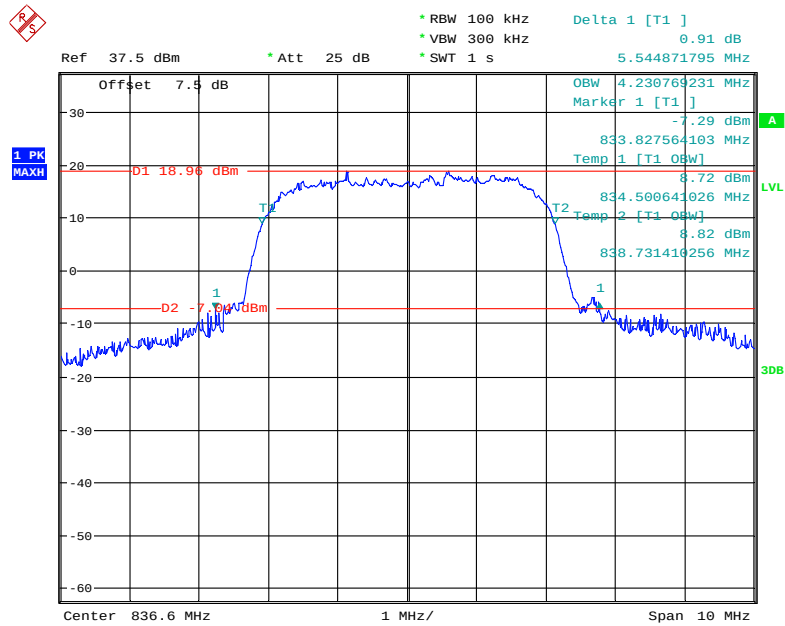


Date: 20.SEP.2018 16:24:09

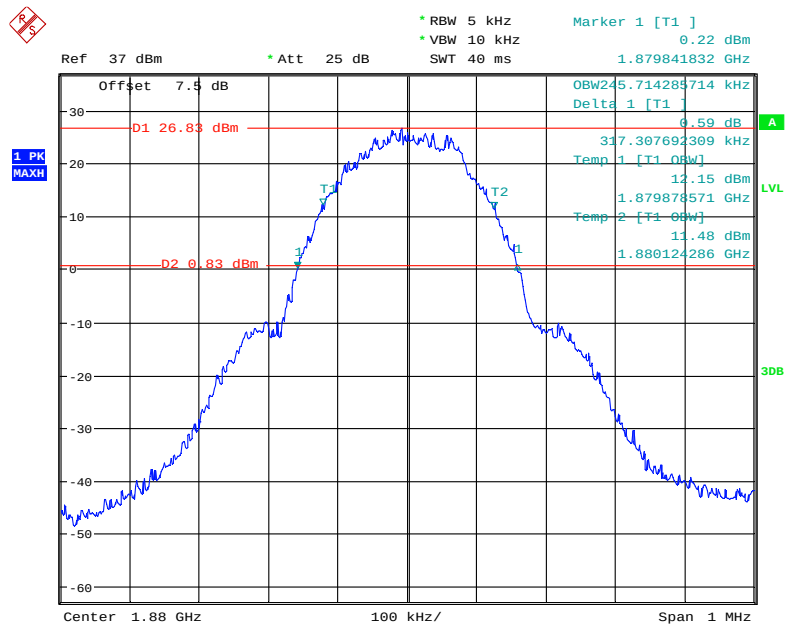
26 dB Emissions & 99% Occupied Bandwidth for HSUPA (BPSK) Mode



Date: 28.SEP.2018 15:20:18

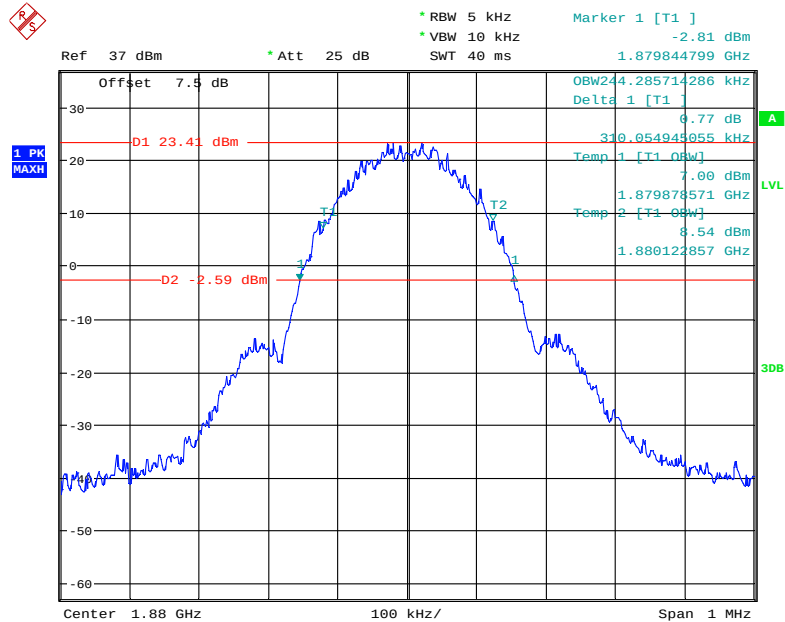
26 dB Emissions & 99% Occupied Bandwidth for HSDPA (16QAM) Mode

Date: 28.SEP.2018 15:21:57

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

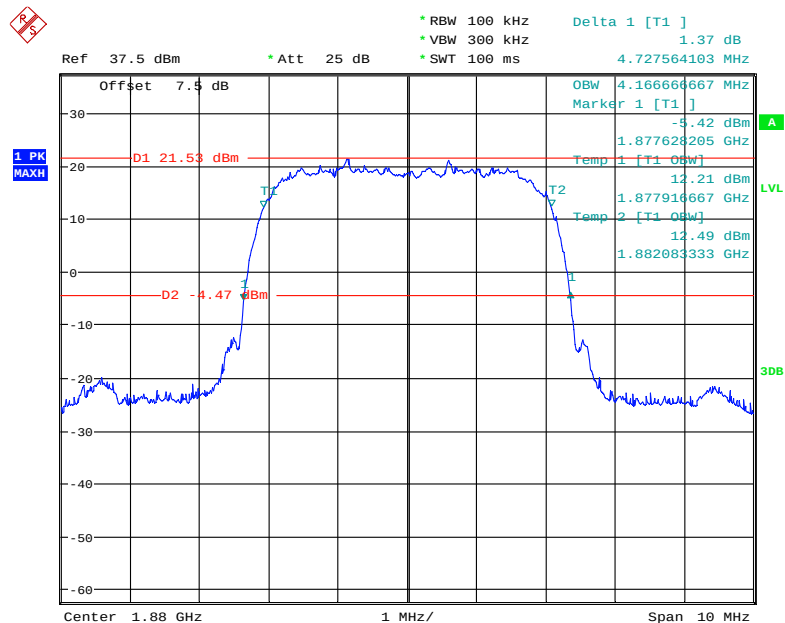
Date: 20.SEP.2018 14:46:01

26 dB Emissions & 99% Occupied Bandwidth for EDGE Mode



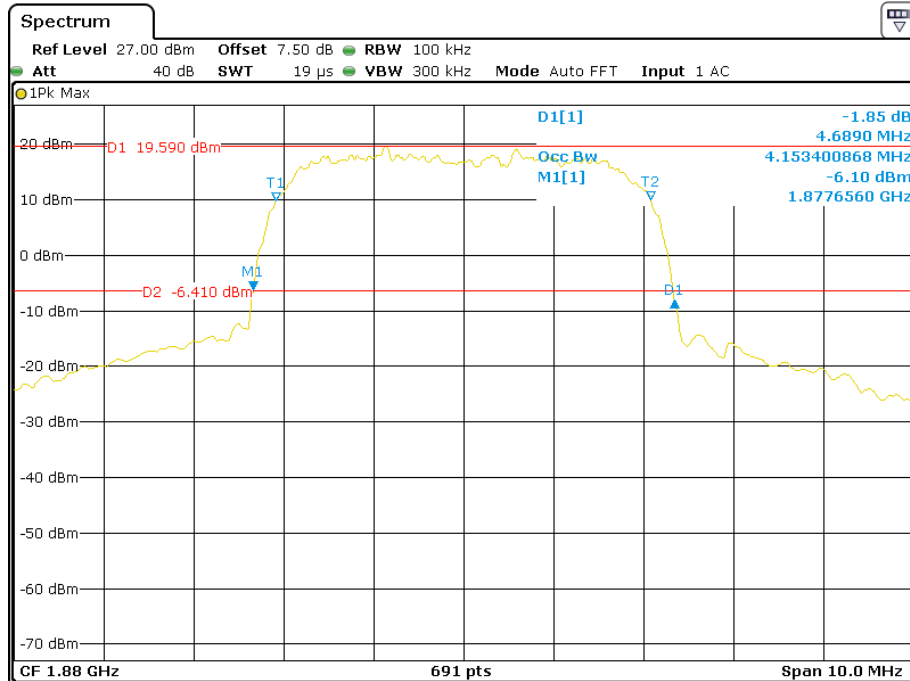
Date: 20.SEP.2018 14:52:11

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



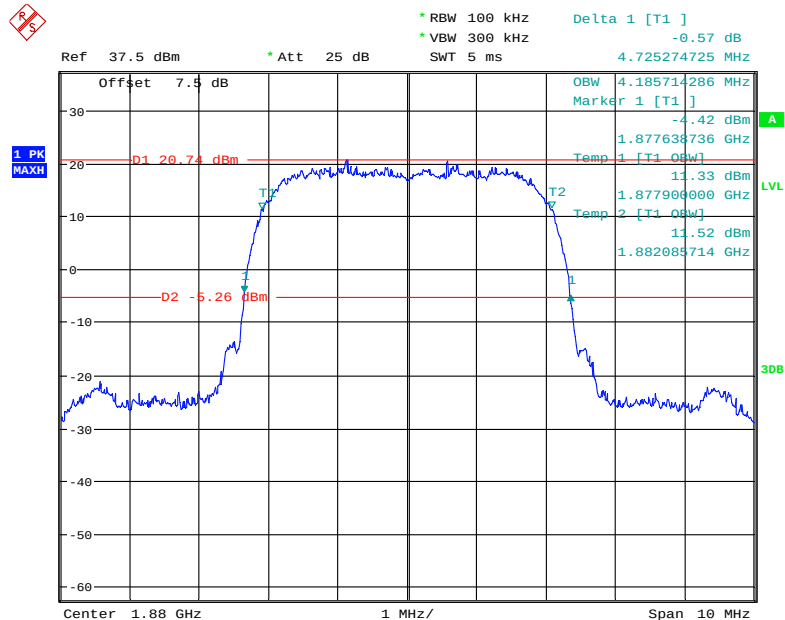
Date: 28.SEP.2018 15:10:21

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



Date: 15.OCT.2018 16:11:10

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

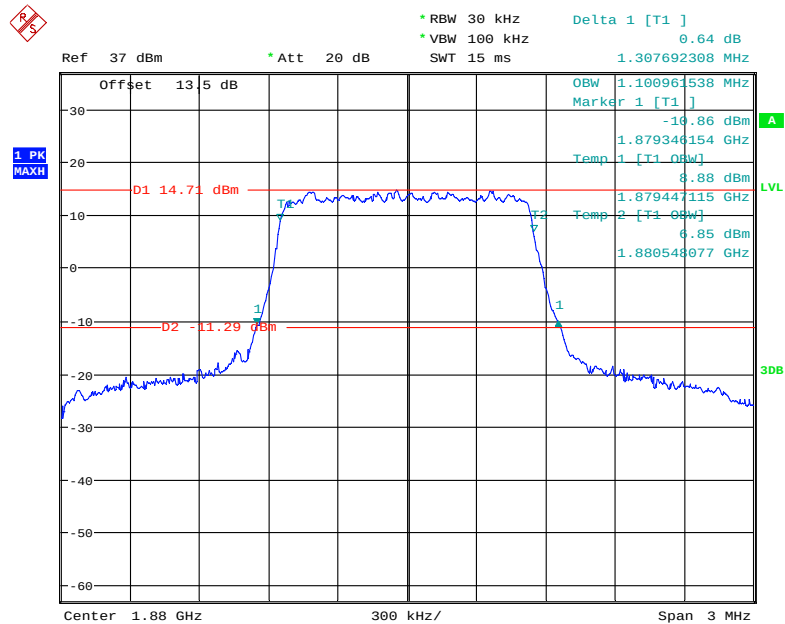


Date: 20.SEP.2018 16:17:10

LTE Band 2: (Middle Channel)

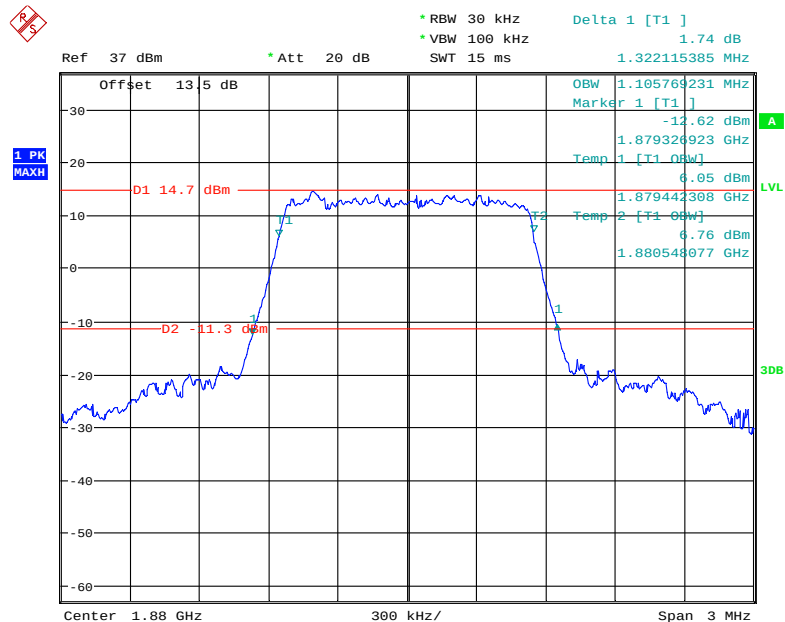
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.308
	16QAM	1.106	1.322
3.0	QPSK	2.683	2.875
	16QAM	2.683	2.894
5.0	QPSK	4.503	5.032
	16QAM	4.503	5.064
10.0	QPSK	9.006	10.096
	16QAM	8.974	9.872
15.0	QPSK	13.558	15.000
	16QAM	13.510	14.952
20.0	QPSK	17.949	19.615
	16QAM	17.949	19.615

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

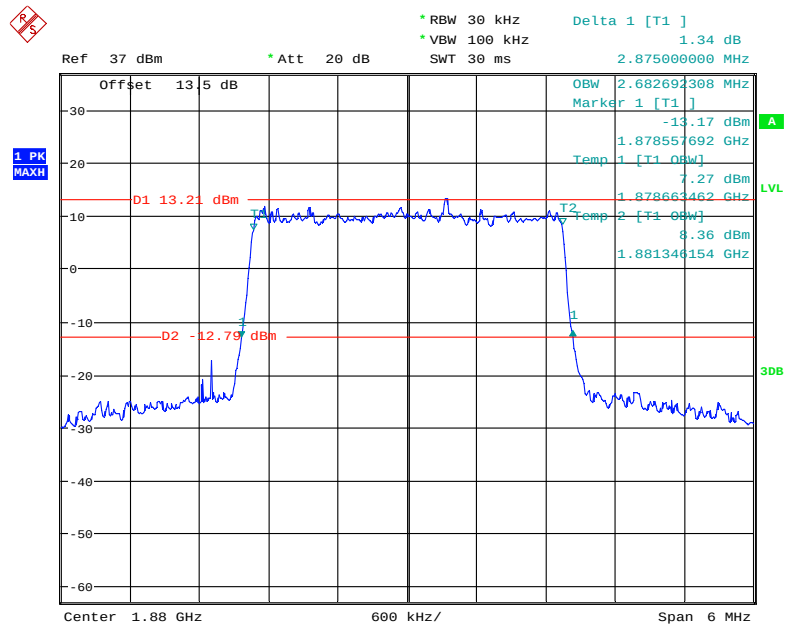


Date: 19.SEP.2018 08:52:48

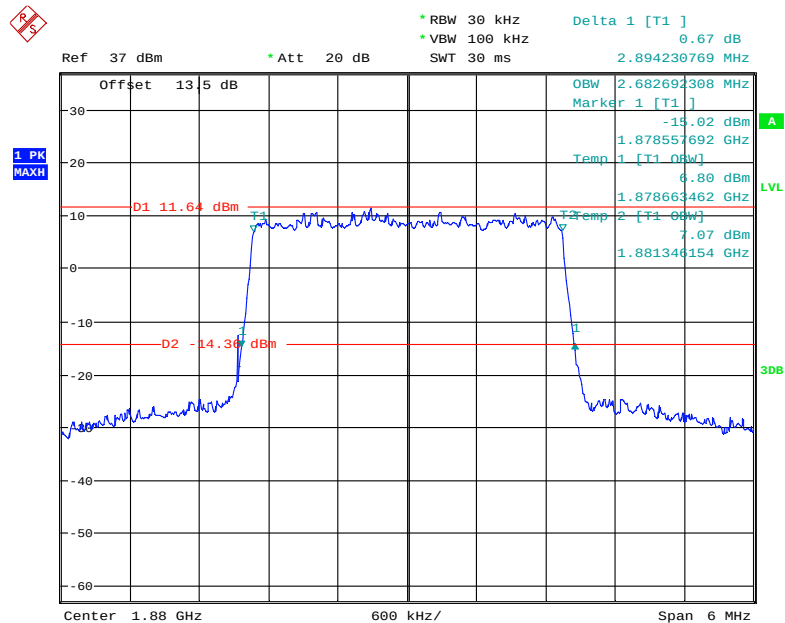
16-QAM (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 19.SEP.2018 08:55:34

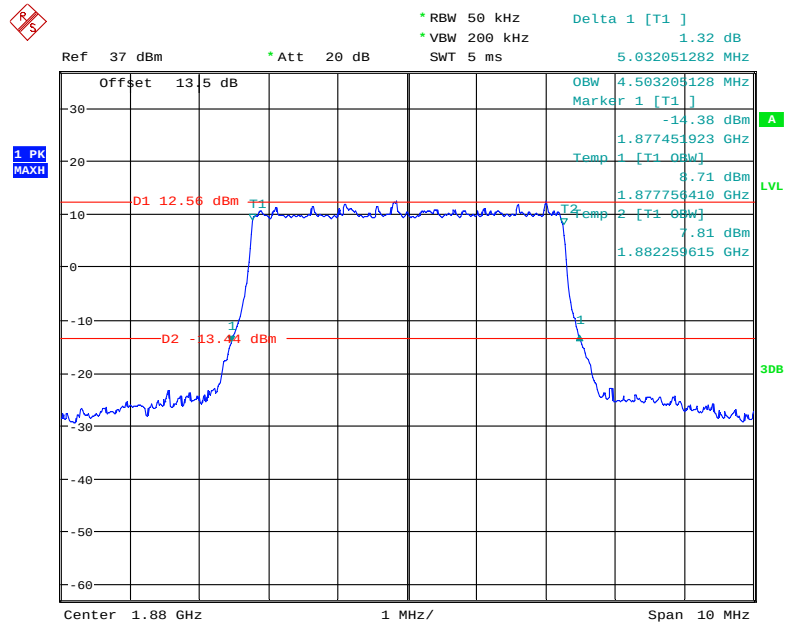
QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 19.SEP.2018 08:57:57

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

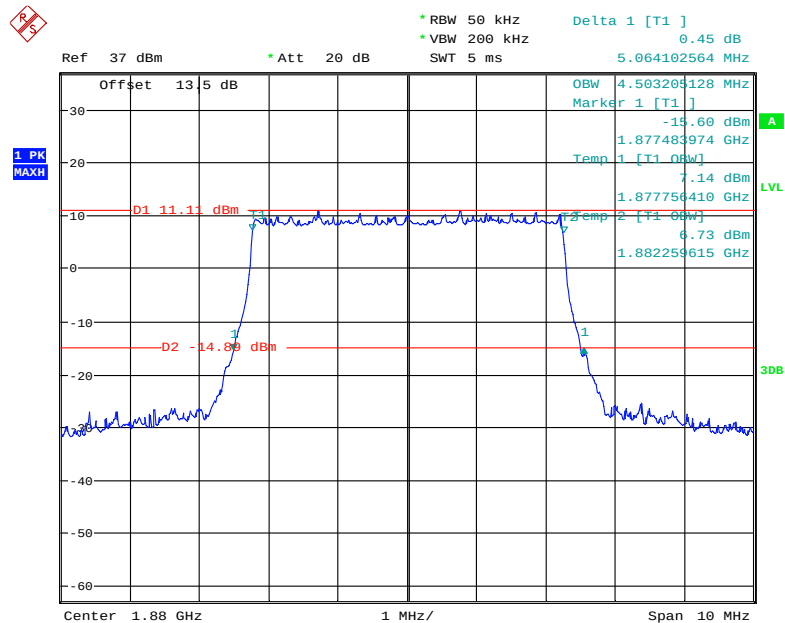
Date: 19.SEP.2018 08:59:04

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



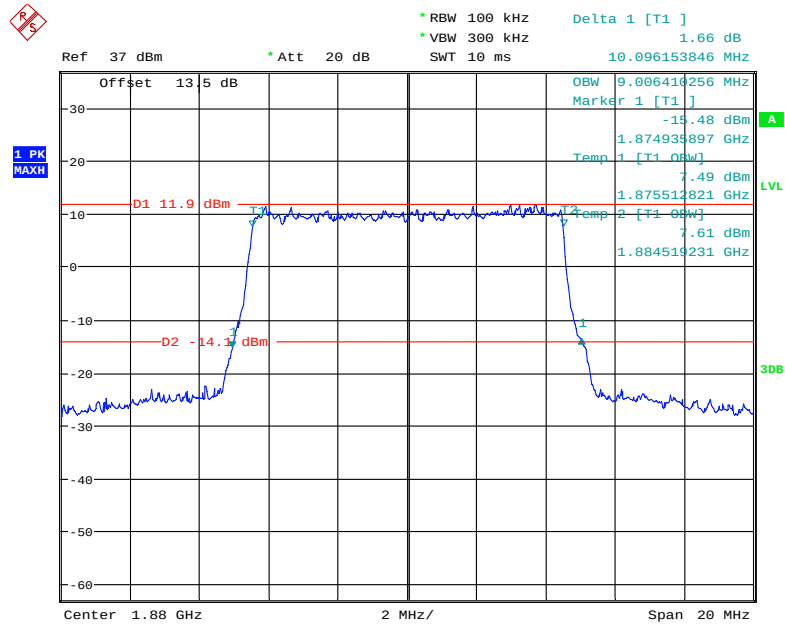
Date: 19.SEP.2018 09:03:49

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



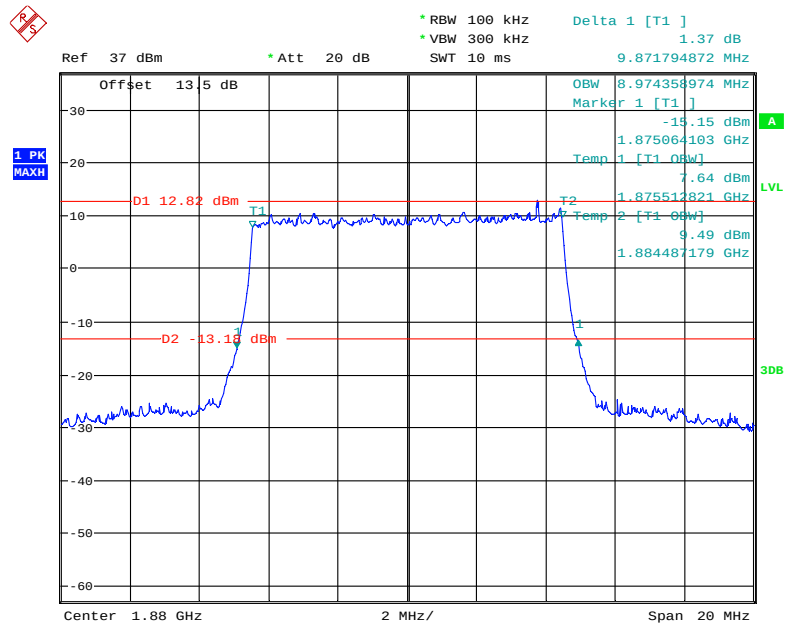
Date: 19.SEP.2018 09:01:07

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

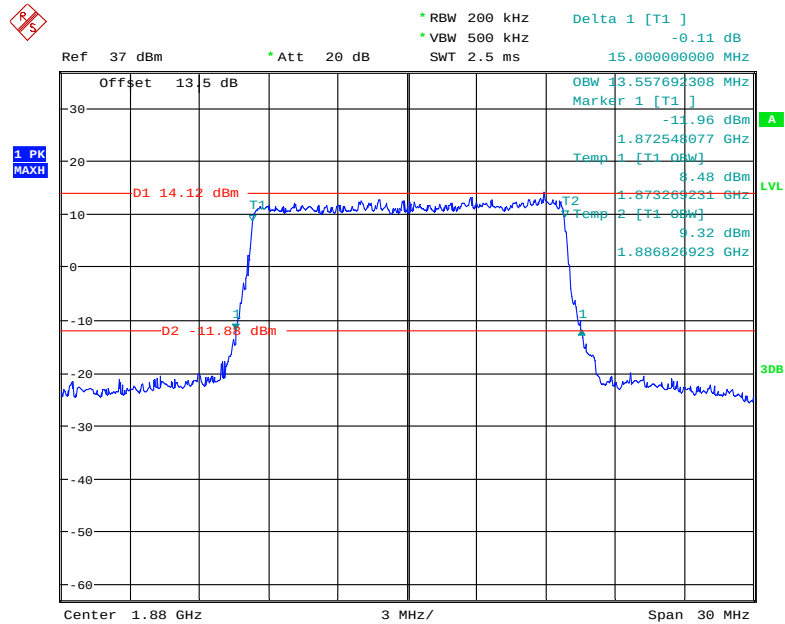


Date: 19.SEP.2018 09:11:38

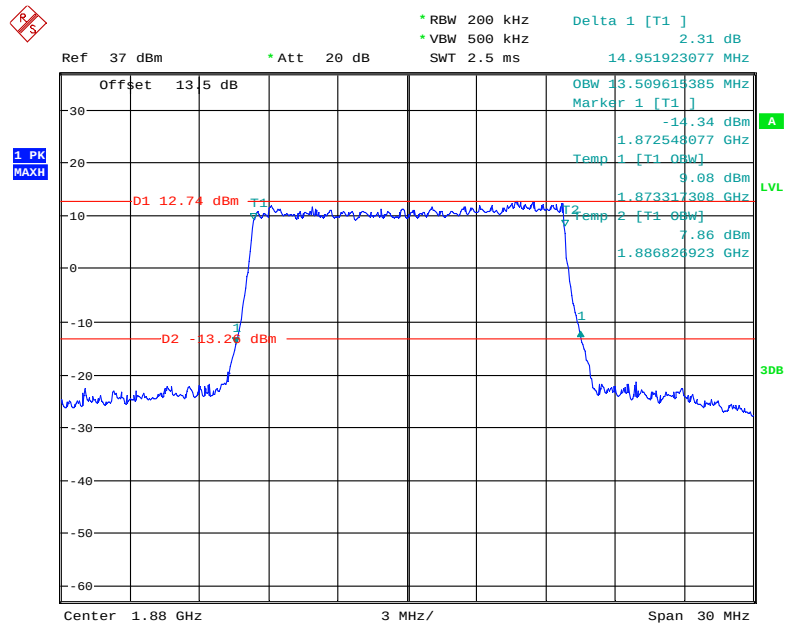
16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



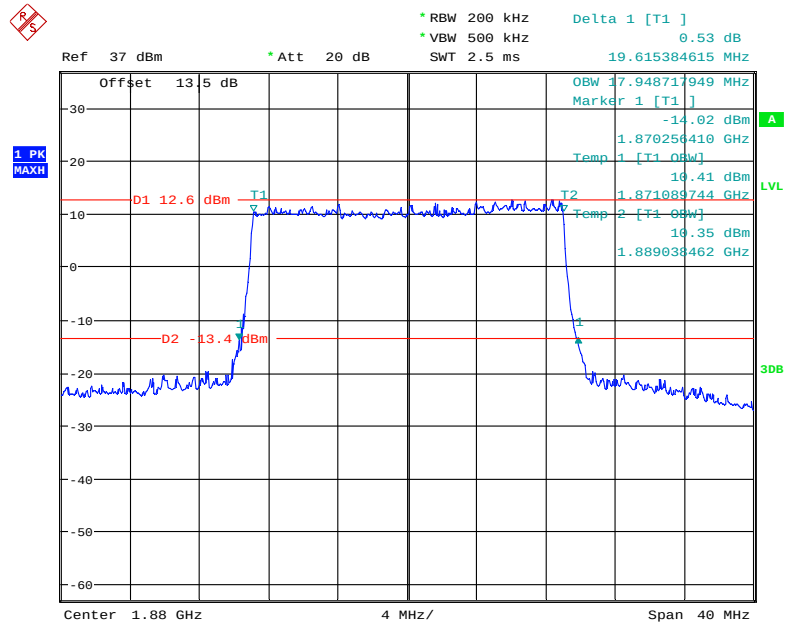
Date: 19.SEP.2018 09:13:36

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

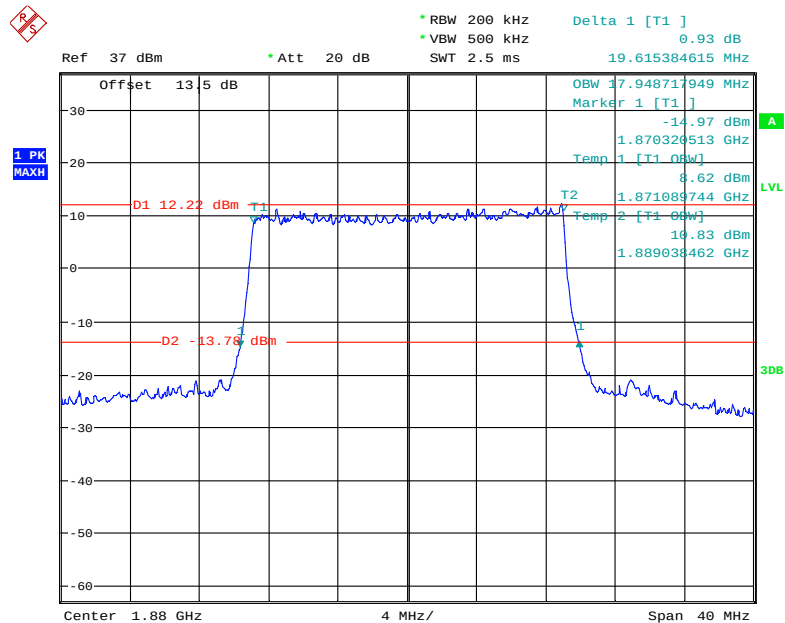
Date: 19.SEP.2018 09:17:00

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

Date: 19.SEP.2018 09:15:59

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

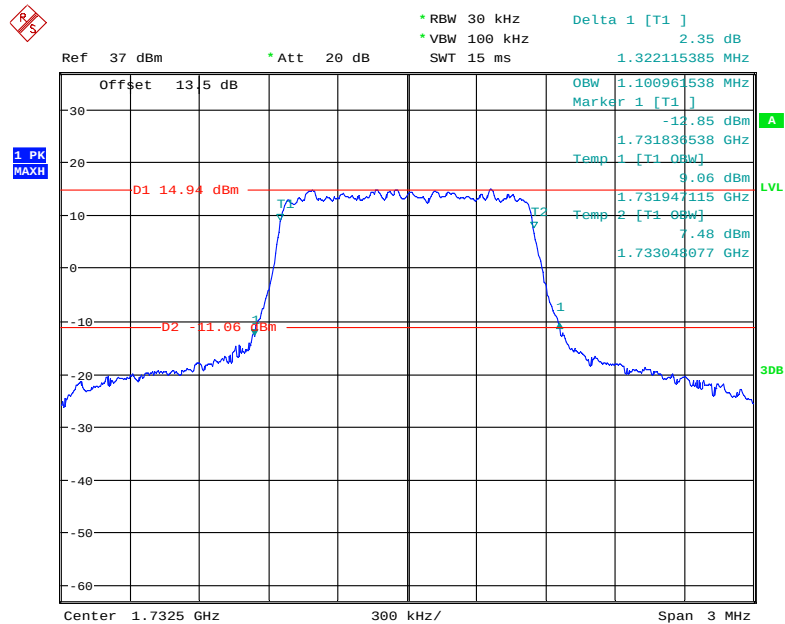
Date: 19.SEP.2018 09:20:38

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

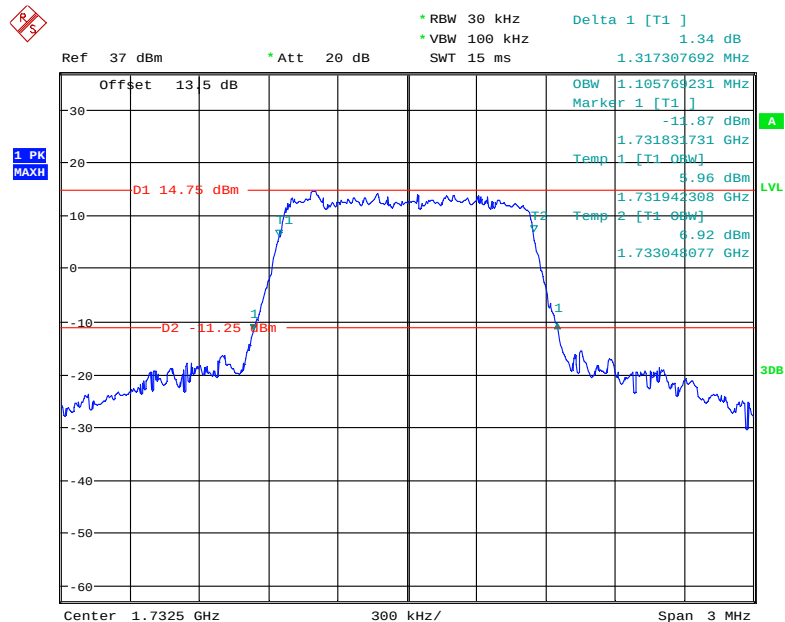
Date: 19.SEP.2018 09:28:23

LTE Band 4: (Middle Channel)

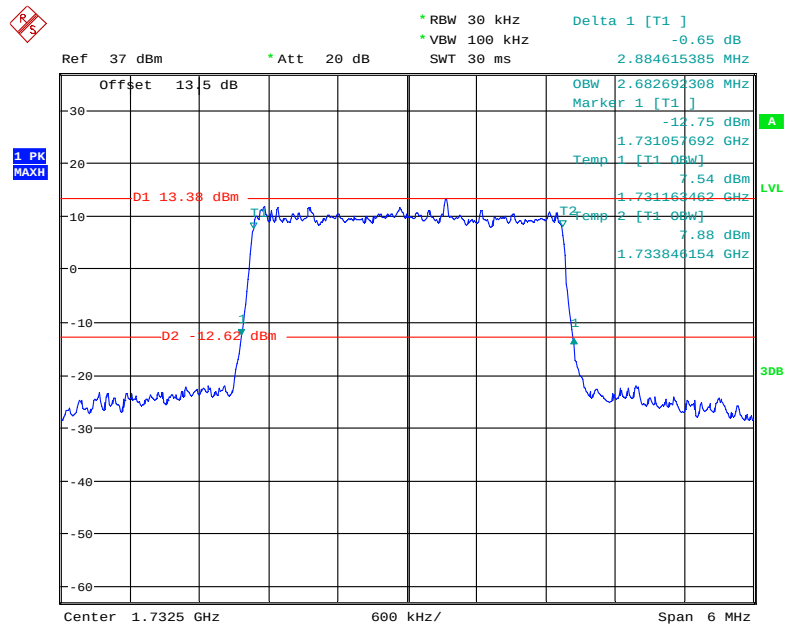
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.322
	16QAM	1.106	1.317
3.0	QPSK	2.683	2.885
	16QAM	2.683	2.894
5.0	QPSK	4.487	4.968
	16QAM	4.487	5.016
10.0	QPSK	8.974	9.968
	16QAM	8.974	9.776
15.0	QPSK	13.510	14.760
	16QAM	13.462	14.952
20.0	QPSK	17.949	19.551
	16QAM	18.013	19.551

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

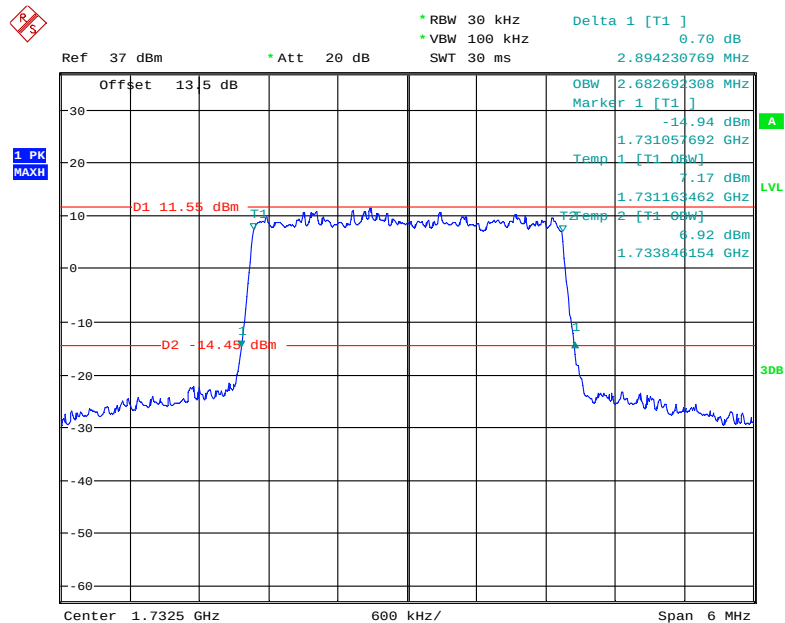
Date: 19.SEP.2018 09:31:22

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

Date: 19.SEP.2018 09:30:20

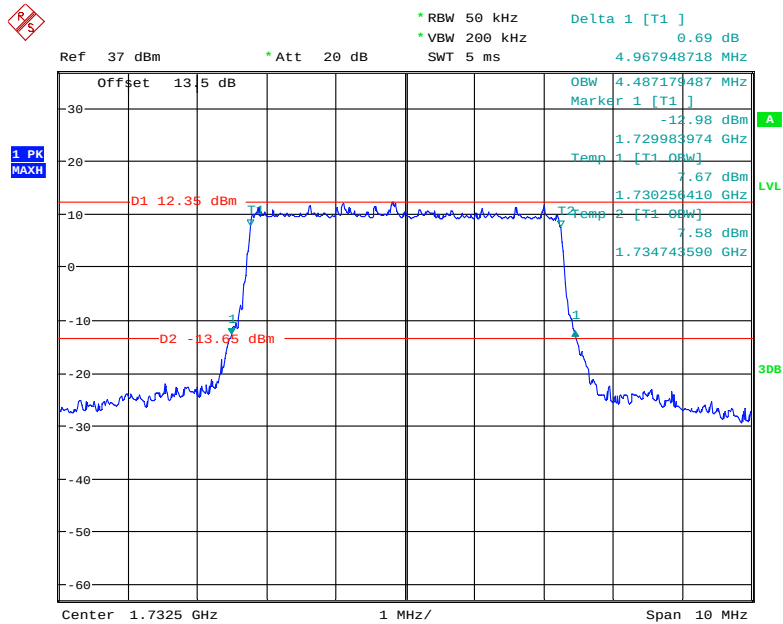
QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 19.SEP.2018 09:34:48

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

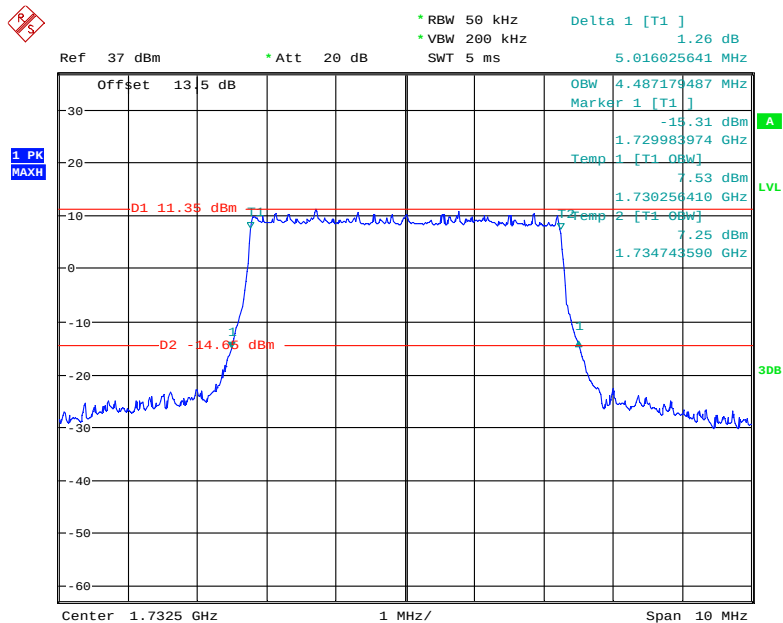
Date: 19.SEP.2018 09:32:16

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

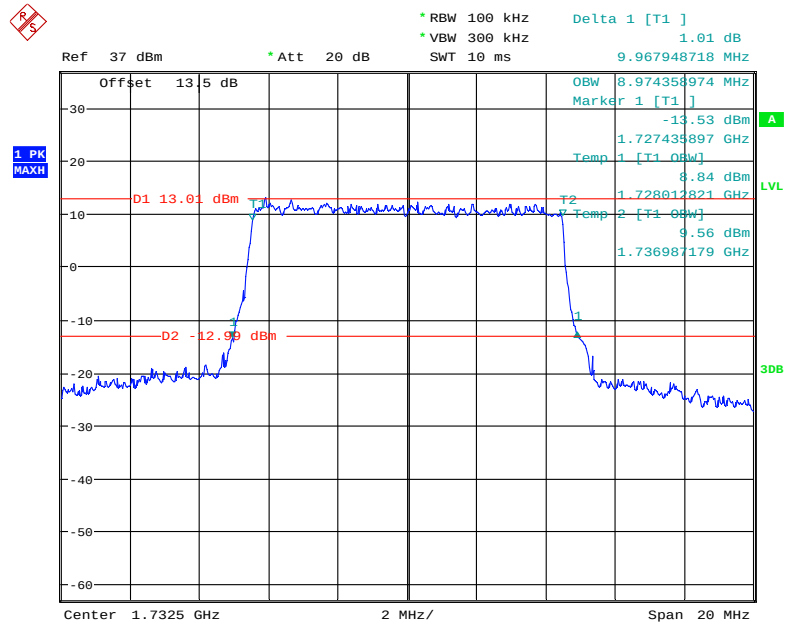


Date: 19.SEP.2018 09:36:04

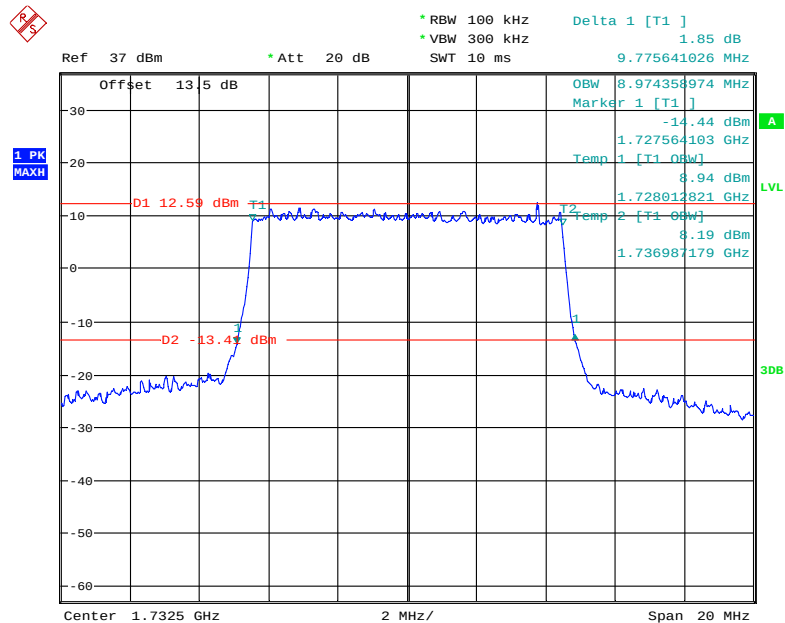
16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



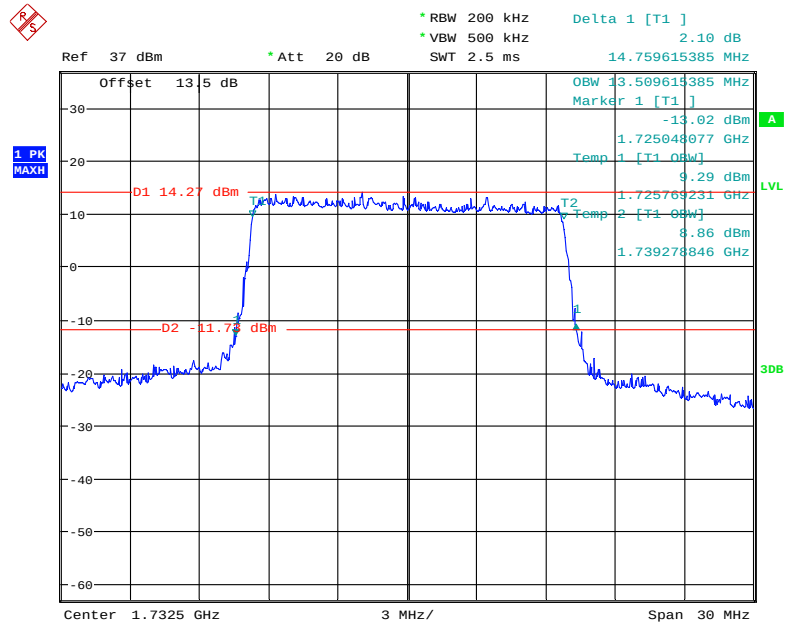
Date: 19.SEP.2018 09:37:42

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

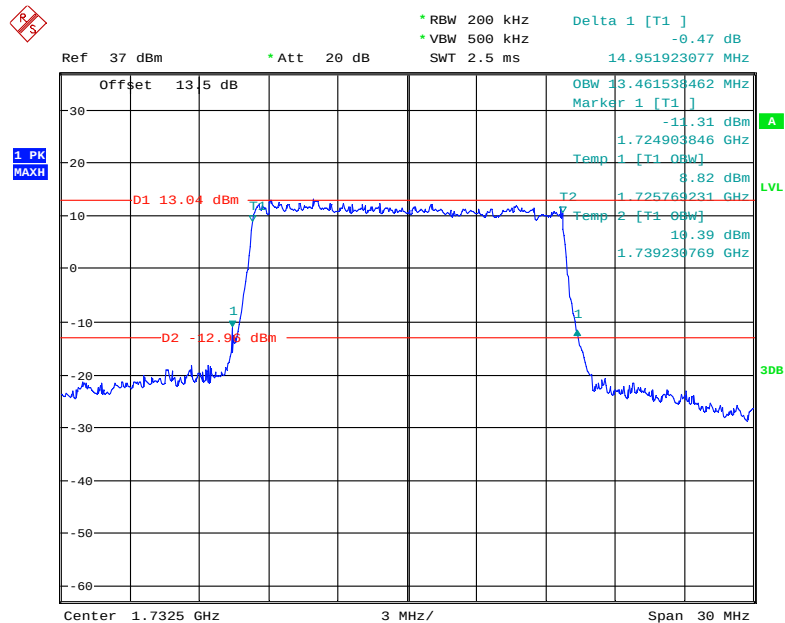
Date: 19.SEP.2018 09:51:55

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

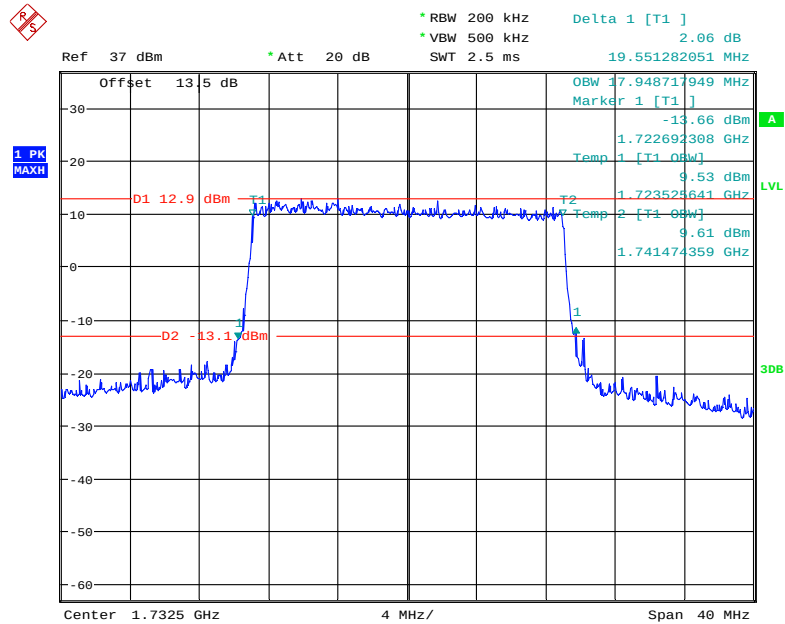
Date: 19.SEP.2018 09:44:50

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

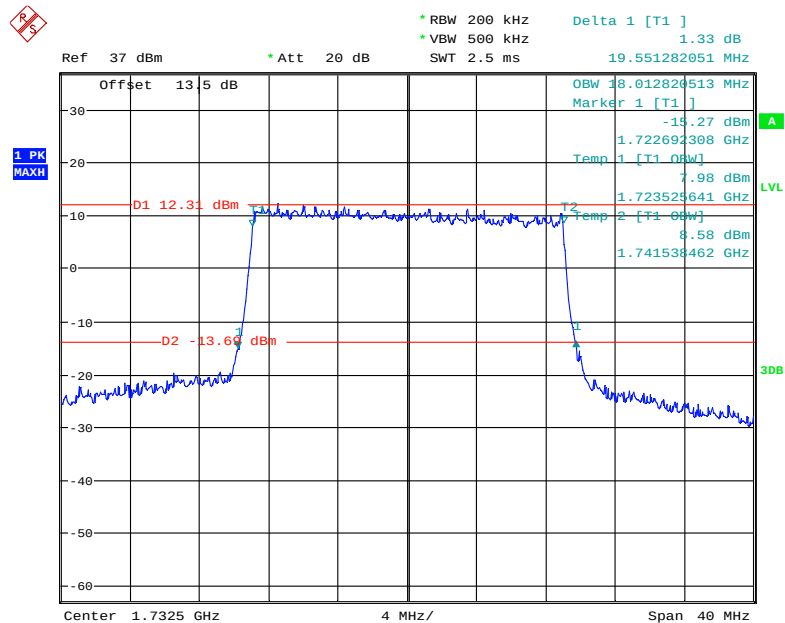
Date: 19.SEP.2018 09:52:52

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

Date: 19.SEP.2018 09:54:30

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

Date: 19.SEP.2018 09:57:10

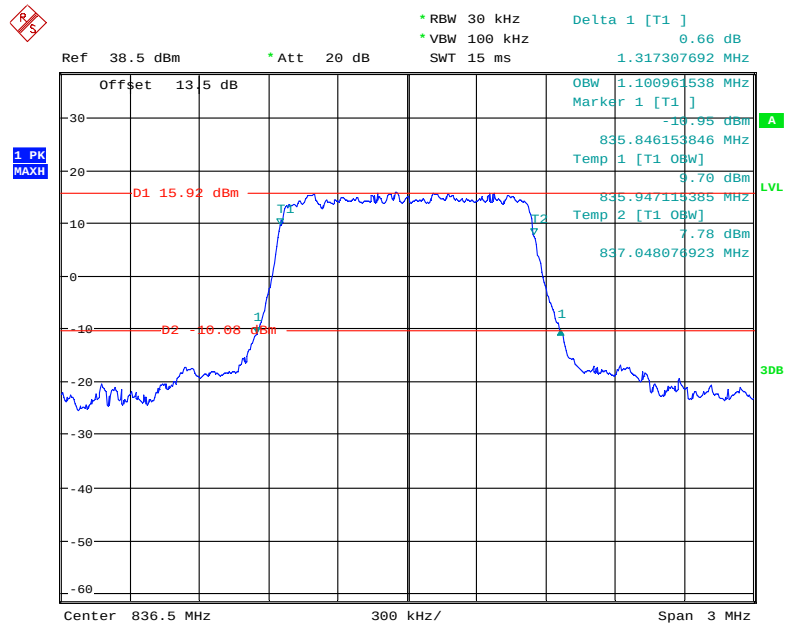
16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 19.SEP.2018 09:56:13

LTE Band 5: (Middle Channel)

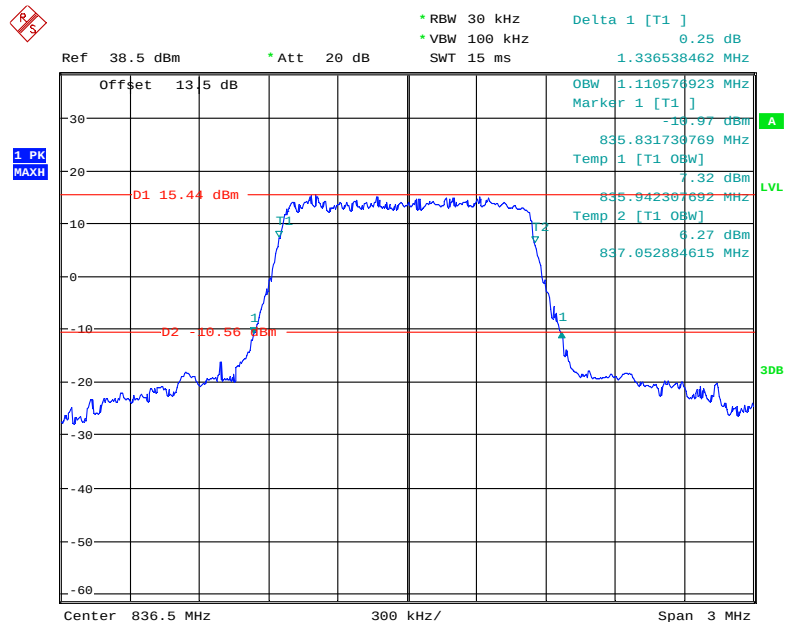
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.317
	16QAM	1.111	1.337
3.0	QPSK	2.683	2.875
	16QAM	2.683	2.894
5.0	QPSK	4.503	4.968
	16QAM	4.486	5.007
10.0	QPSK	8.974	9.904
	16QAM	8.942	9.776

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

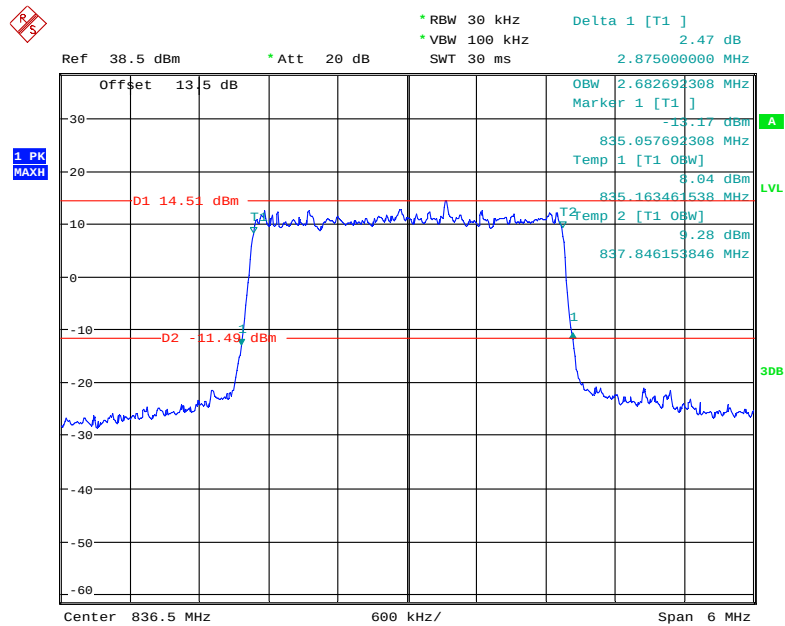


Date: 19.SEP.2018 09:58:50

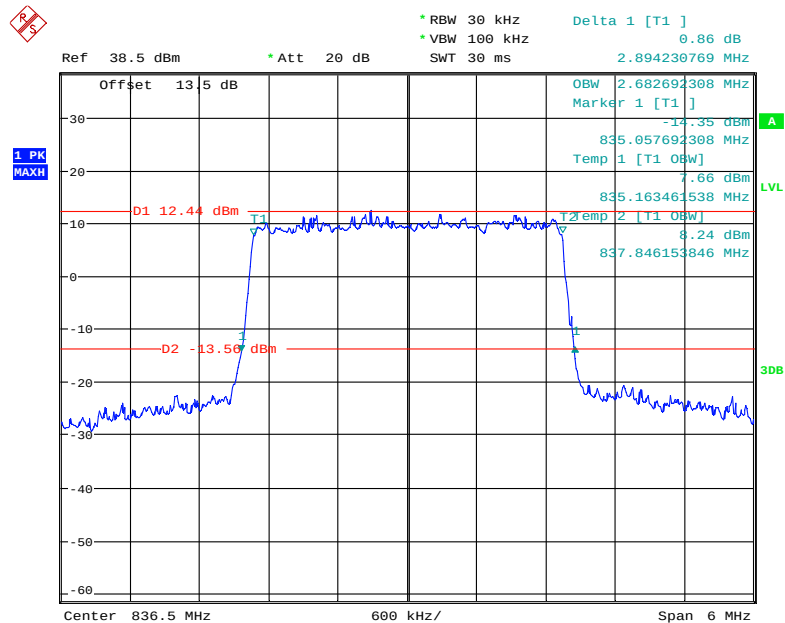
16-QAM (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 19.SEP.2018 09:59:47

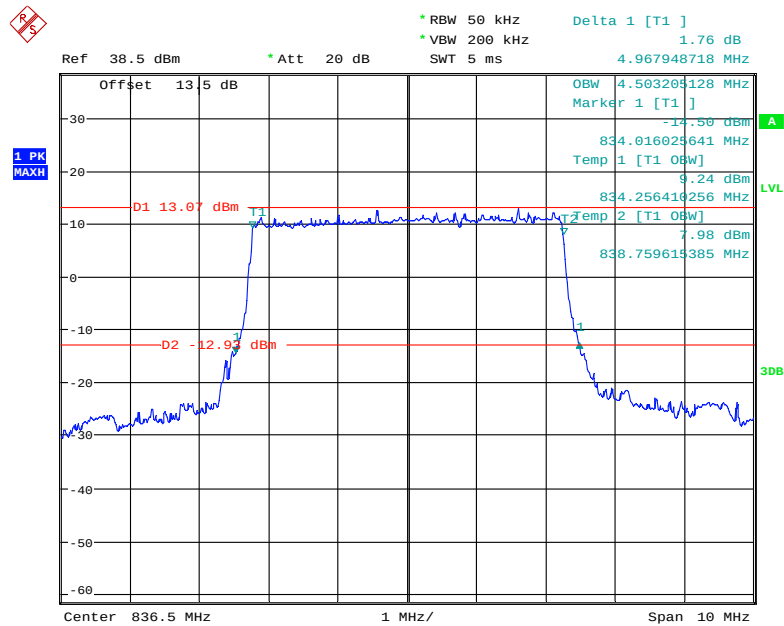
QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 19.SEP.2018 10:00:58

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

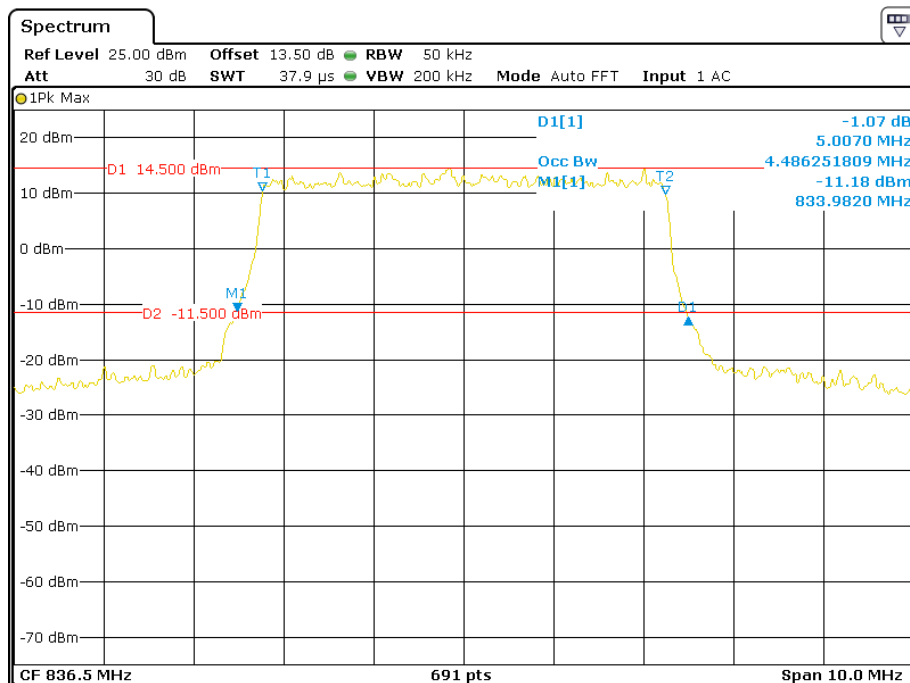
Date: 19.SEP.2018 10:02:01

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

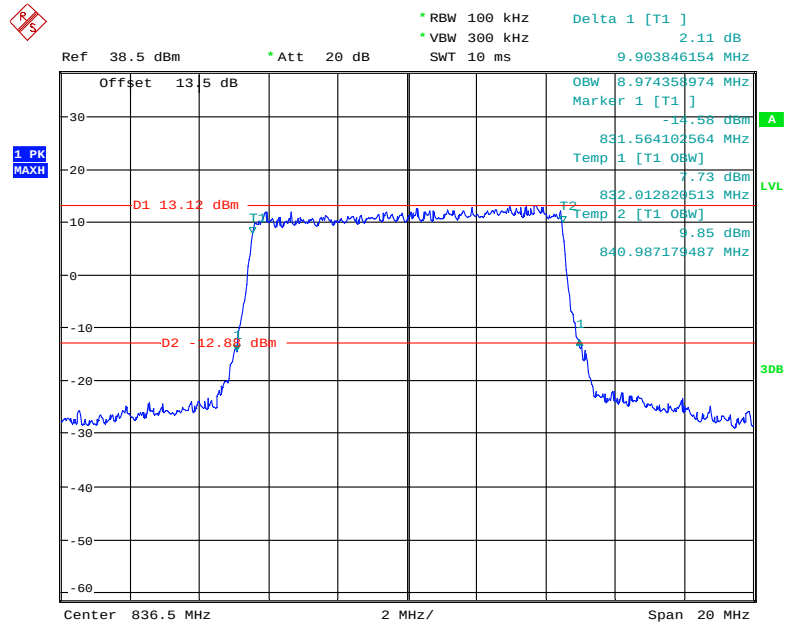


Date: 19.SEP.2018 10:08:37

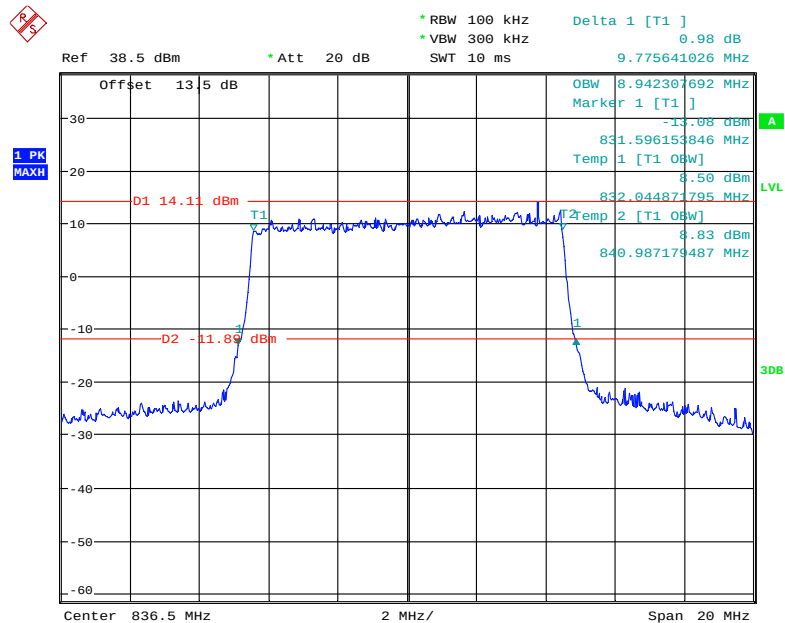
16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



Date: 9.OCT.2018 15:01:46

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

Date: 19.SEP.2018 10:17:29

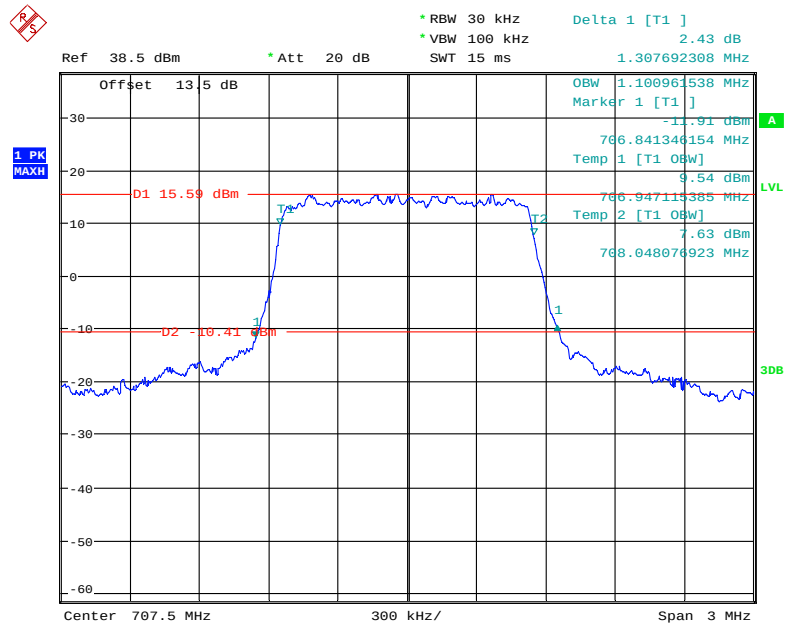
16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 19.SEP.2018 10:15:42

LTE Band 12: (Middle Channel)

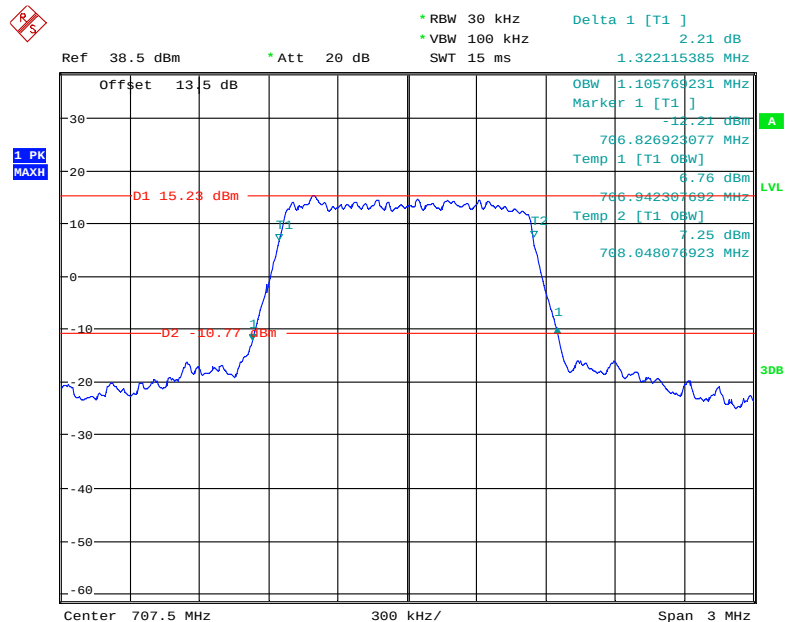
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.308
	16QAM	1.106	1.322
3.0	QPSK	2.683	2.875
	16QAM	2.683	2.885
5.0	QPSK	4.471	4.968
	16QAM	4.487	5.016
10.0	QPSK	8.974	9.936
	16QAM	8.942	9.808

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



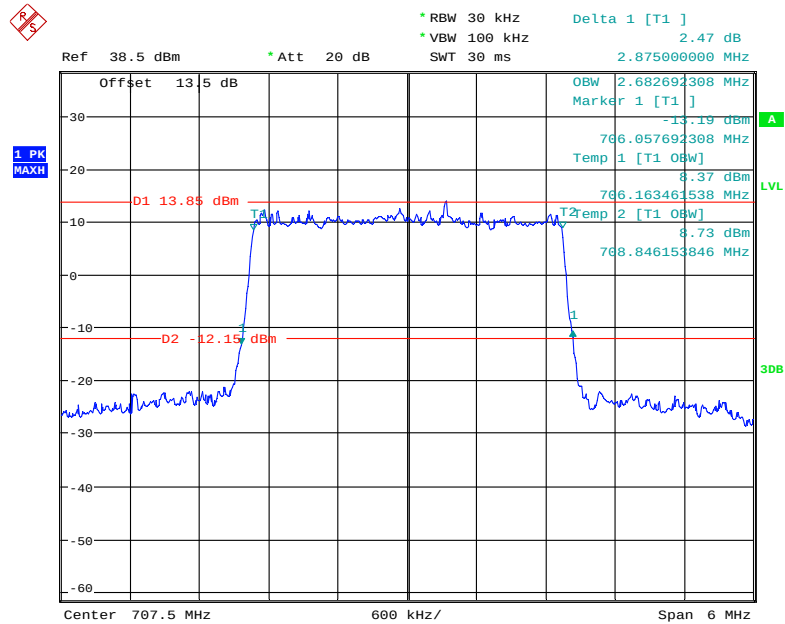
Date: 19.SEP.2018 10:41:57

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



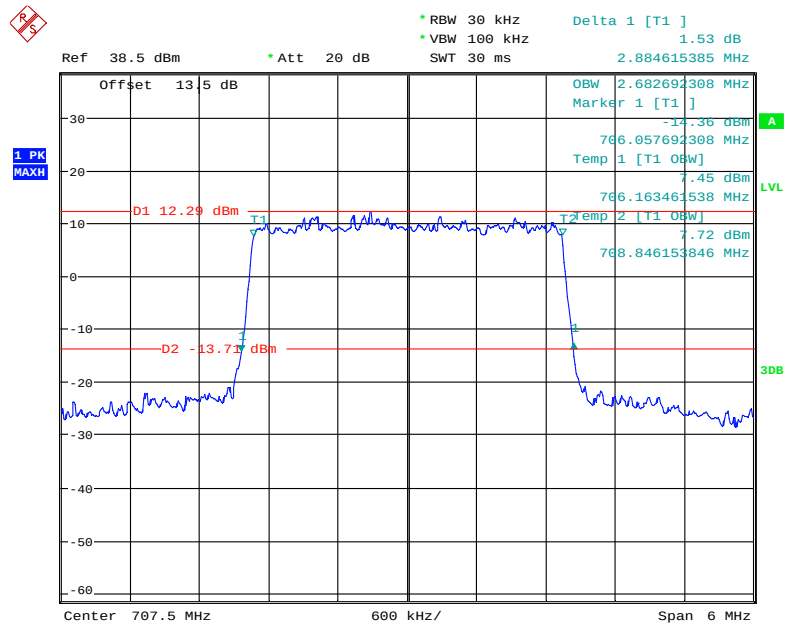
Date: 19.SEP.2018 10:40:47

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



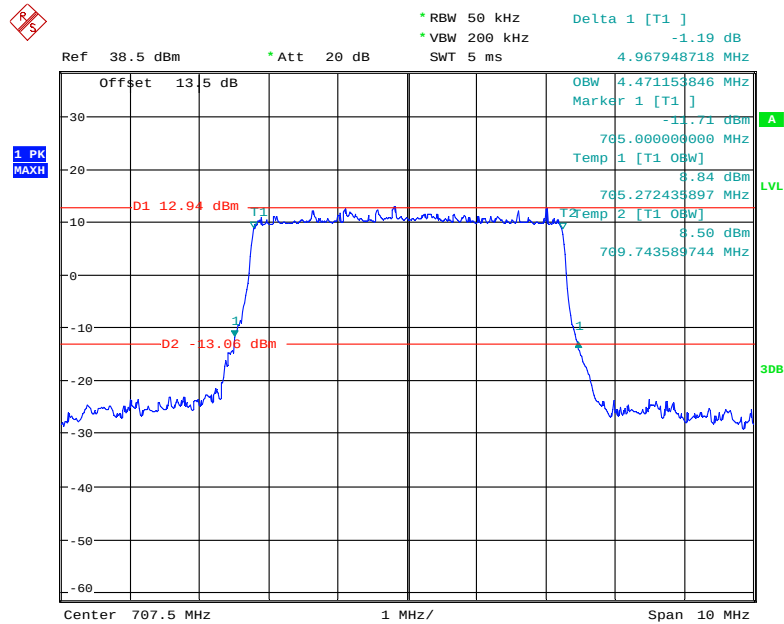
Date: 19.SEP.2018 10:44:35

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



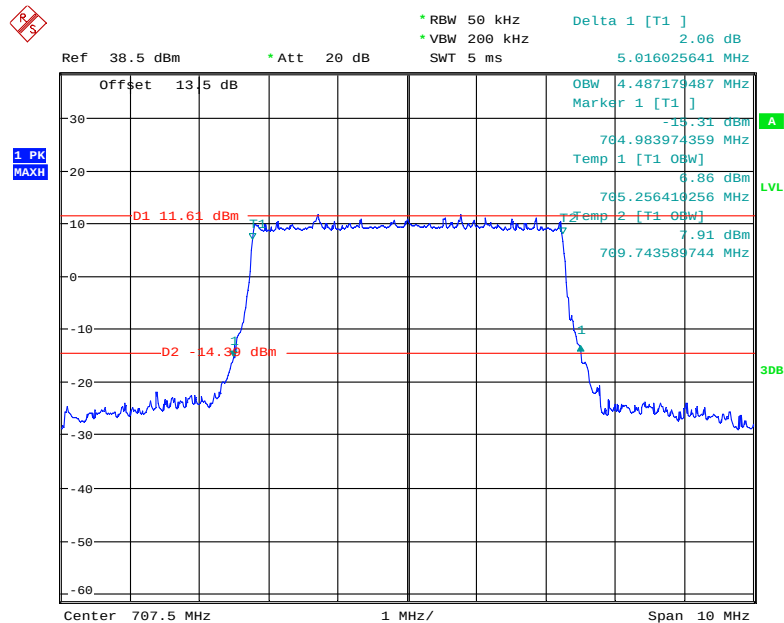
Date: 19.SEP.2018 10:43:48

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



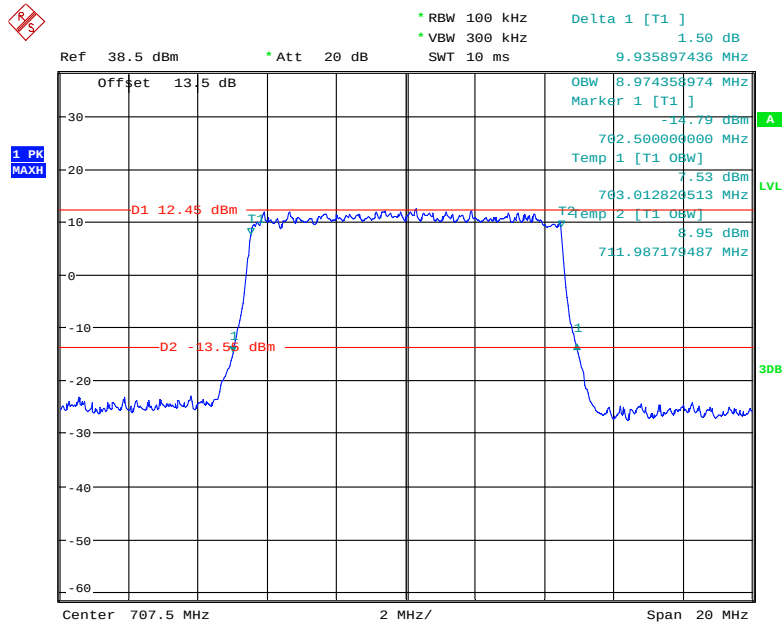
Date: 19.SEP.2018 10:46:15

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



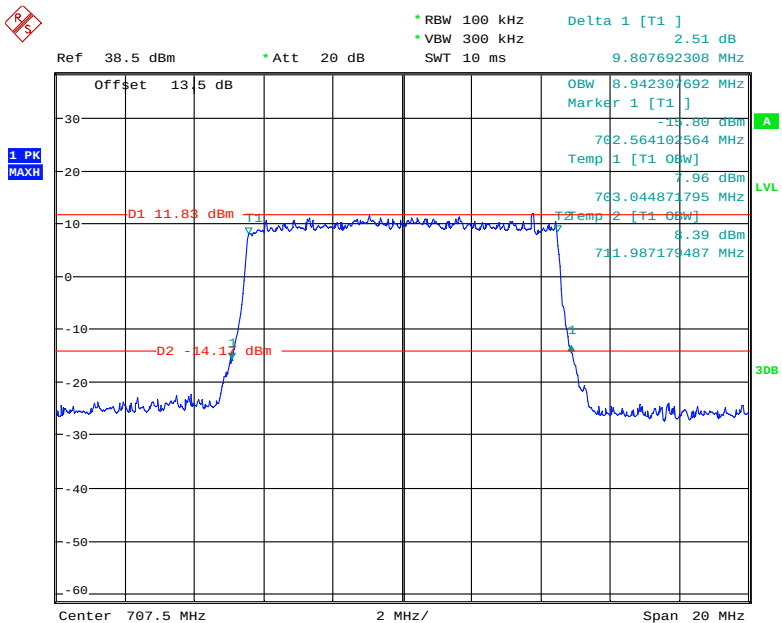
Date: 19.SEP.2018 10:47:51

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



Date: 19.SEP.2018 10:51:49

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



Date: 19.SEP.2018 10:53:28

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

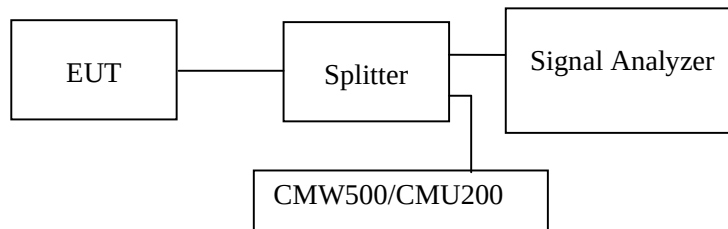
Applicable Standard

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 100KHz to below 1GHz and 1MHz to above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Data

Environmental Conditions

Temperature:	25~26 °C
Relative Humidity:	52~54 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li from 2018-09-20 to 2018-09-28.

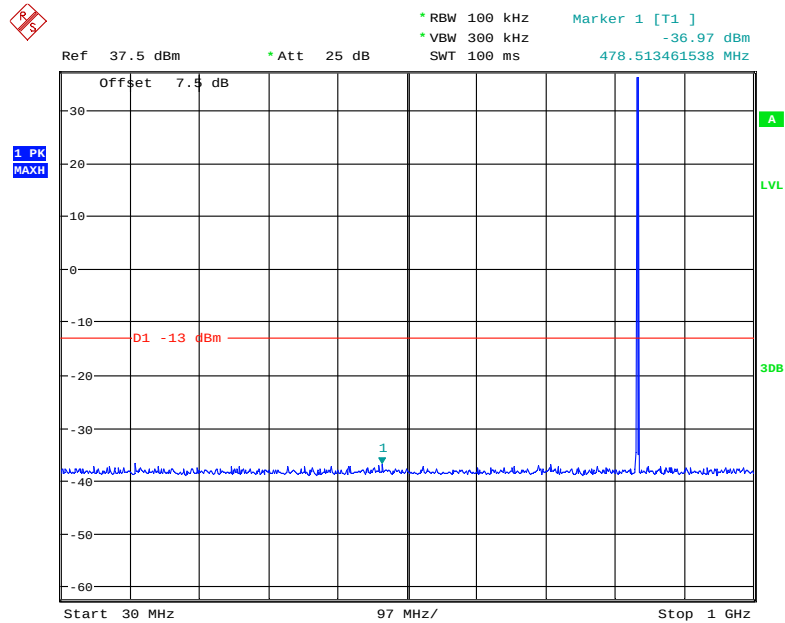
Test result: Compliance.

EUT operation mode: transmitting

Please refer to the following plots.

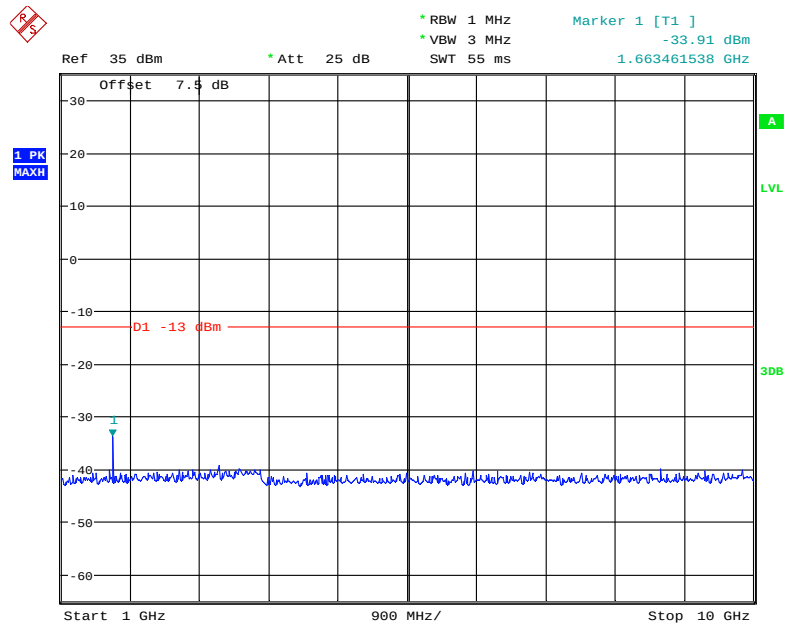
Cellular Band (Part 22H)

30 MHz – 1 GHz (GSM Mode)



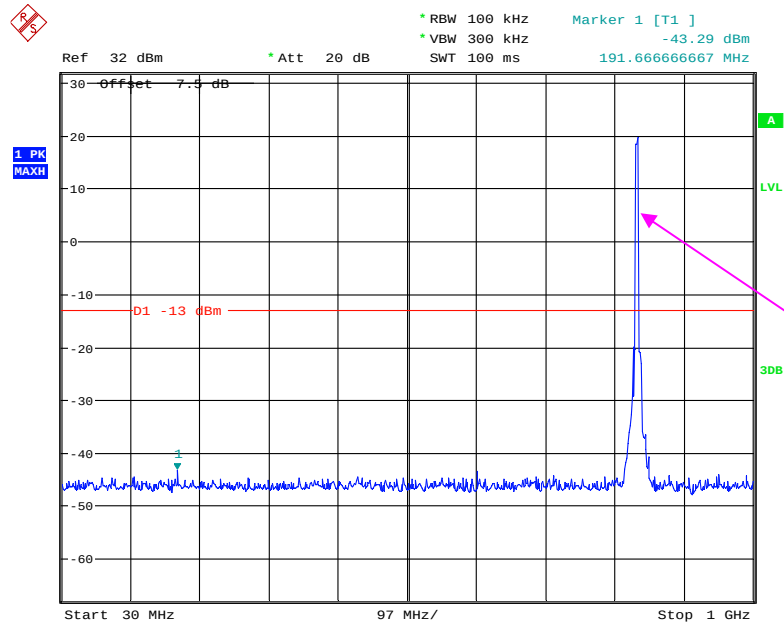
Date: 20.SEP.2018 16:10:13

1 GHz – 10 GHz (GSM Mode)



Date: 28.SEP.2018 15:03:18

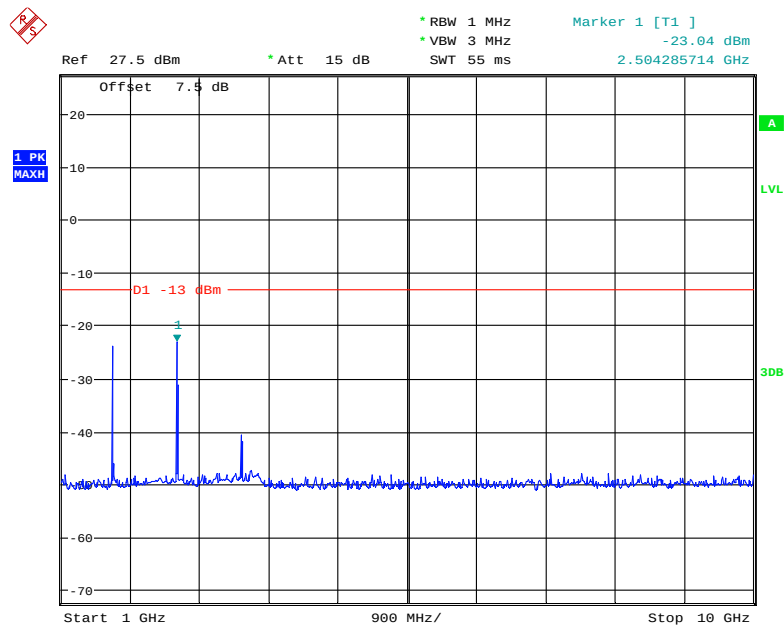
30 MHz – 1 GHz (WCDMA Mode)



Fundamental test

Date: 20.SEP.2018 16:59:34

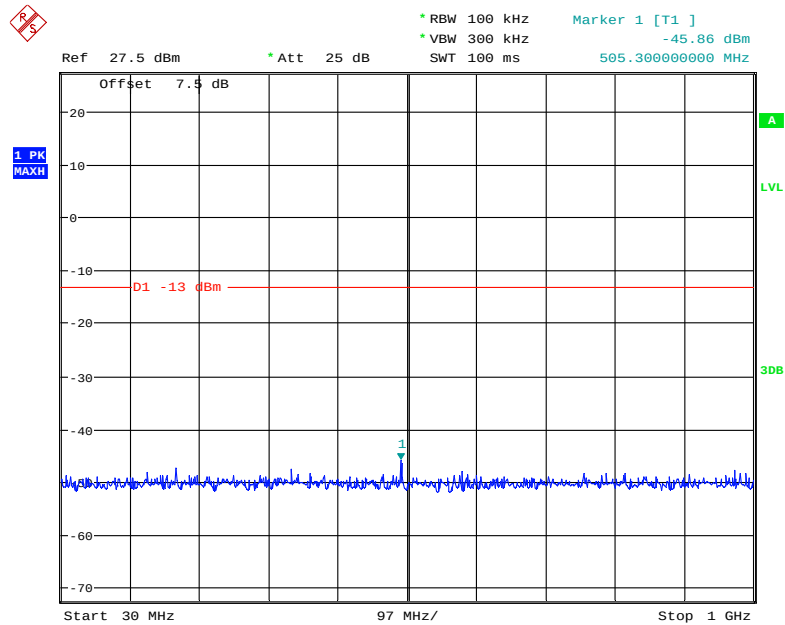
1 GHz – 10 GHz (WCDMA Mode)



Date: 20.SEP.2018 16:58:52

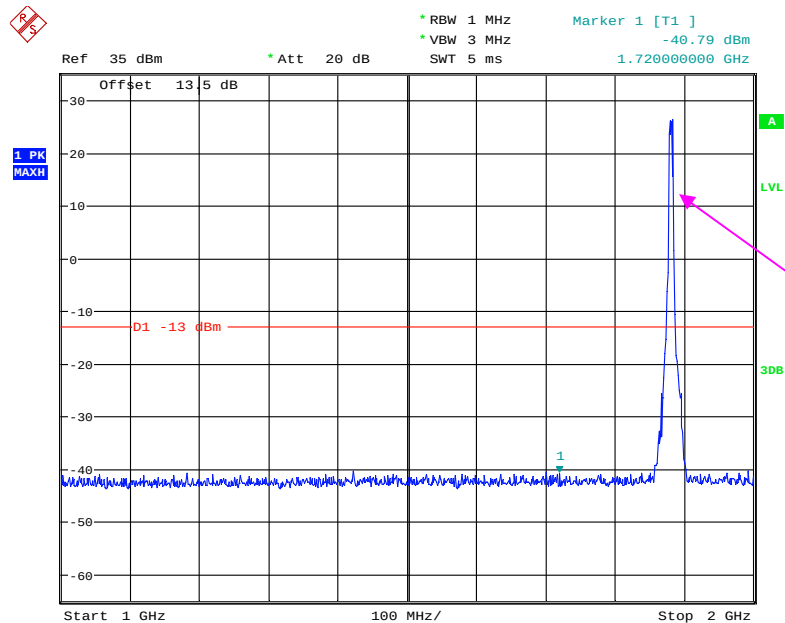
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)



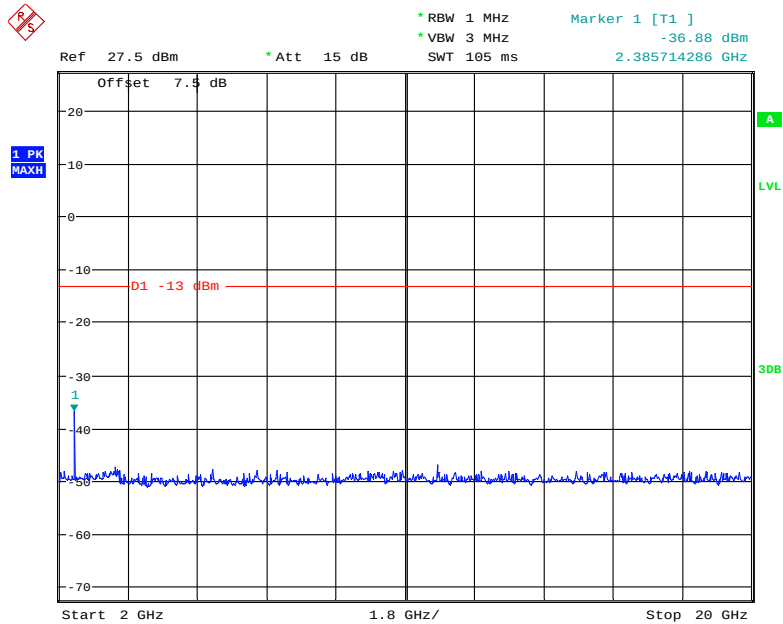
Date: 20.SEP.2018 16:13:09

1 GHz – 2 GHz (GSM Mode)



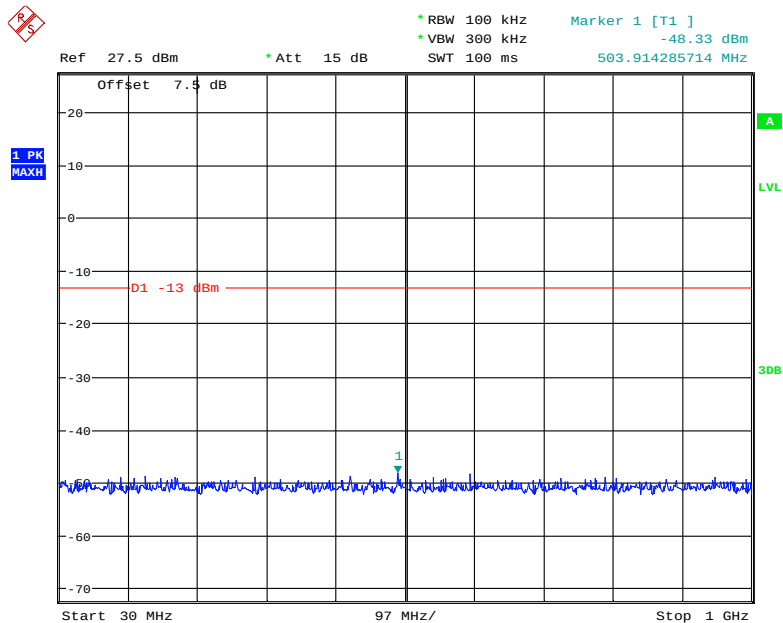
Date: 21.SEP.2018 10:22:01

2 GHz – 20 GHz (GSM Mode)



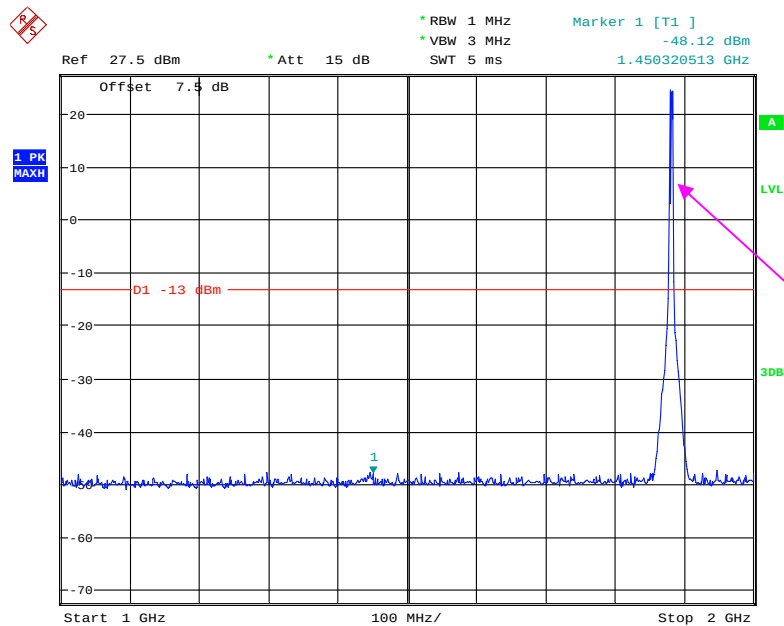
Date: 20.SEP.2018 16:12:45

30 MHz – 1 GHz (WCDMA Mode)



Date: 20.SEP.2018 16:54:27

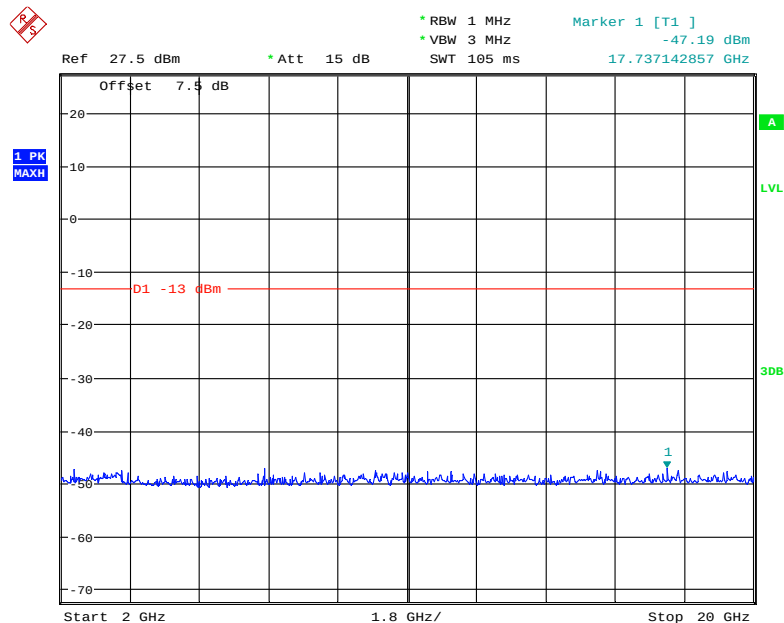
1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

Date: 20.SEP.2018 16:55:17

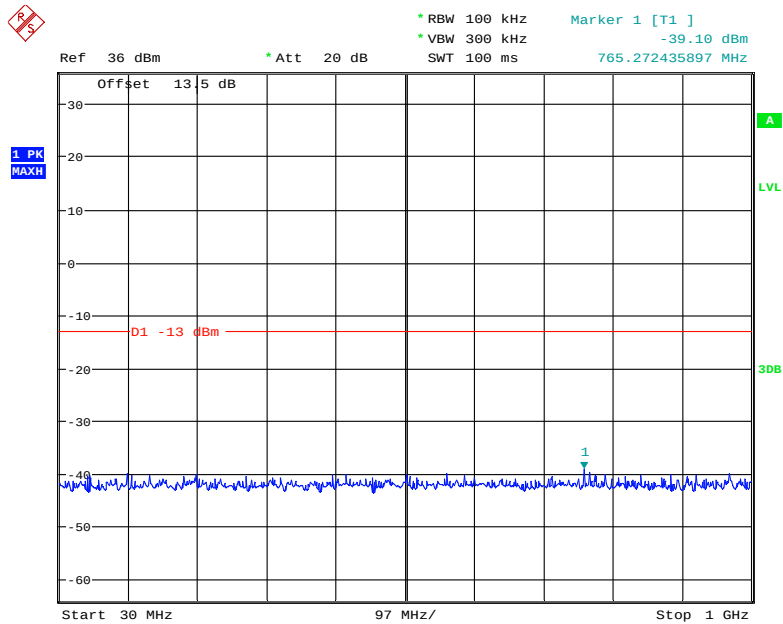
2 GHz – 20 GHz (WCDMA Mode)



Date: 20.SEP.2018 16:55:35

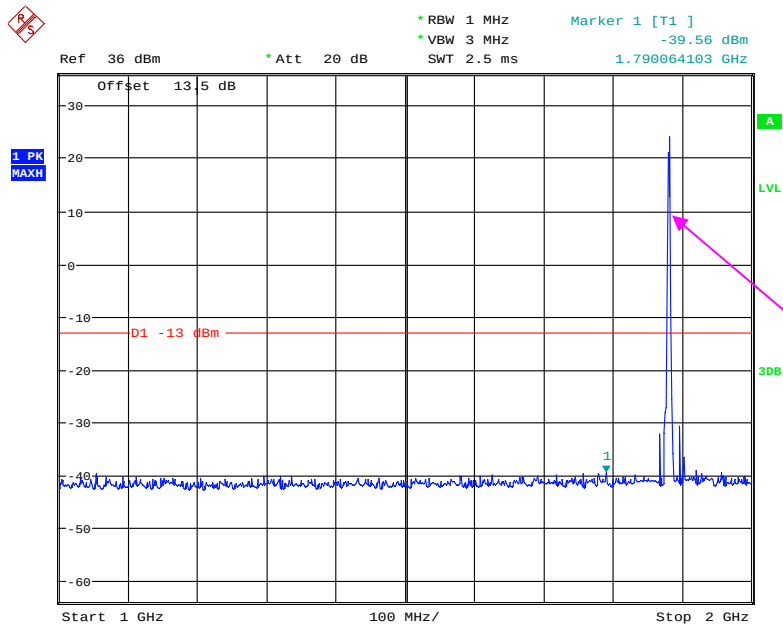
LTE Band 2:

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



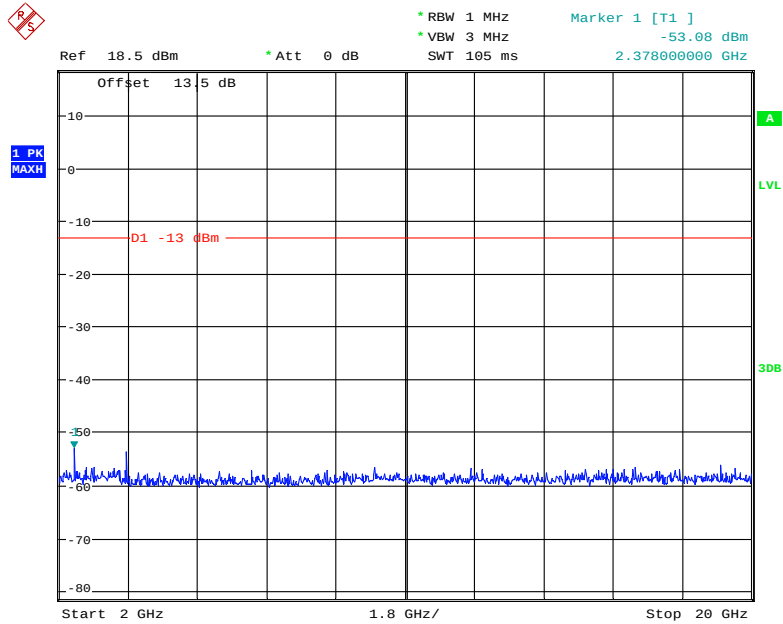
Date: 19.SEP.2018 16:27:07

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



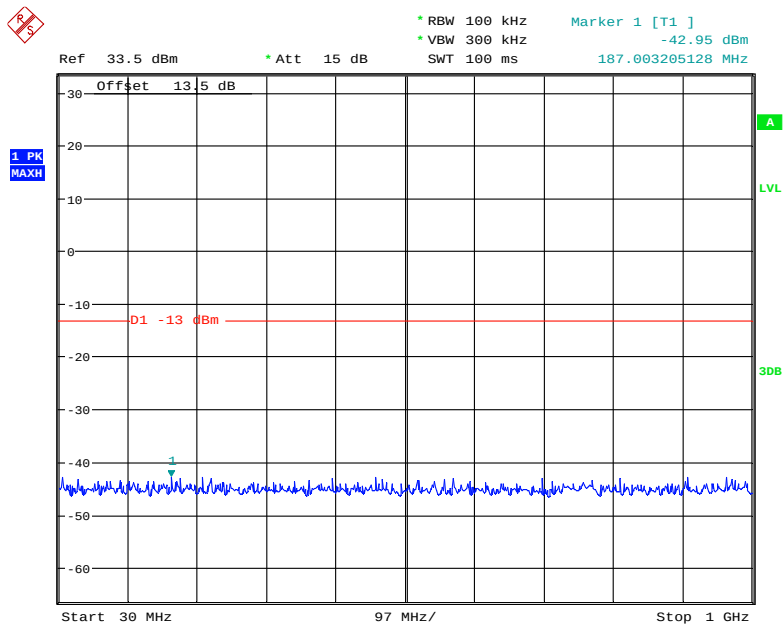
Date: 19.SEP.2018 16:28:49

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



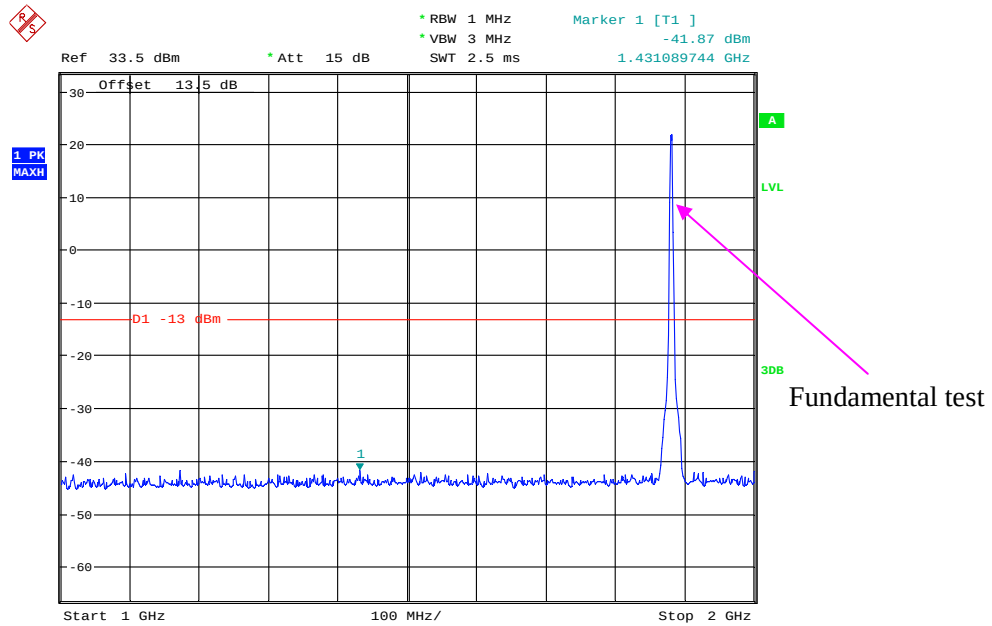
Date: 21.SEP.2018 09:58:33

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



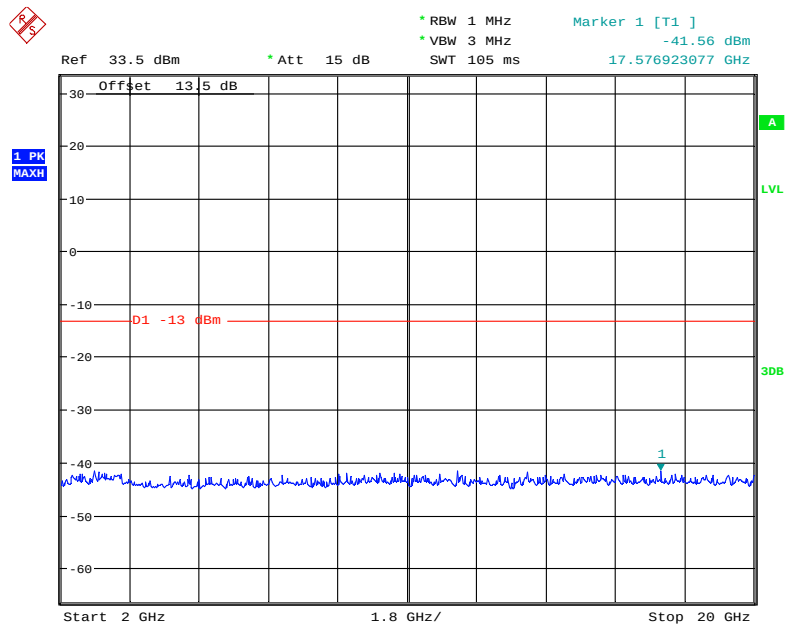
Date: 19.SEP.2018 16:32:20

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



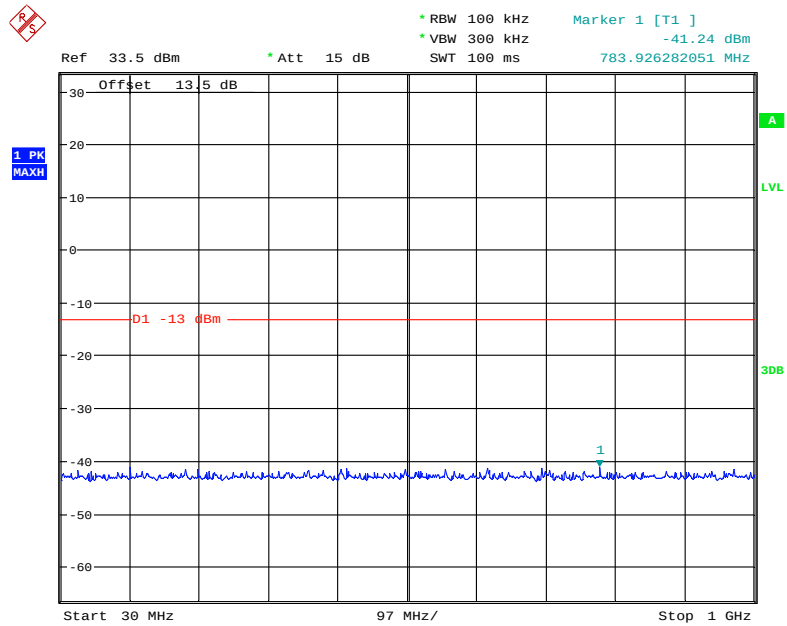
Date: 19.SEP.2018 16:31:58

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



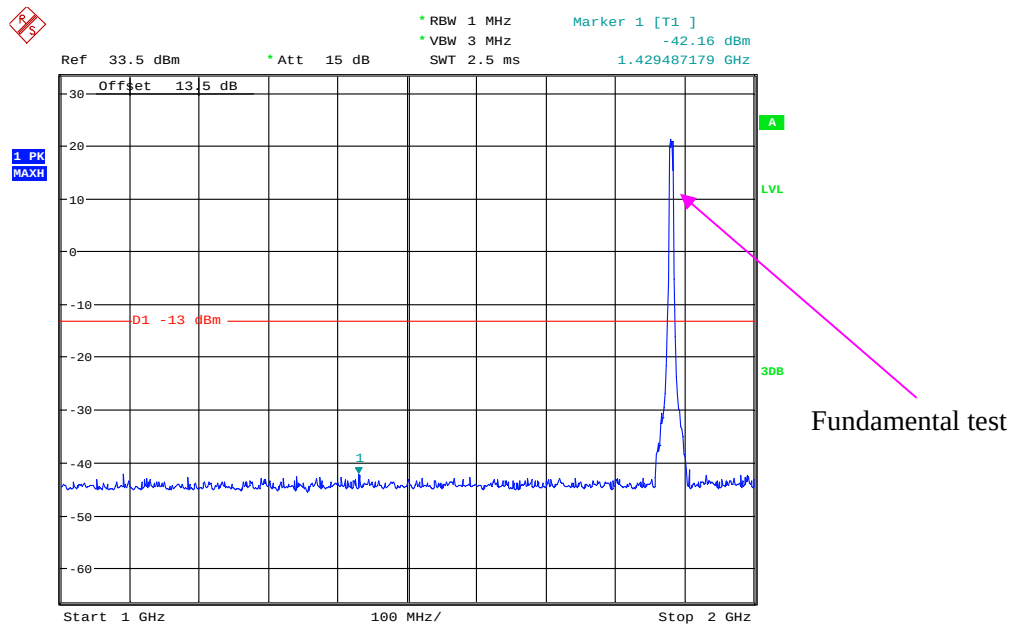
Date: 19.SEP.2018 16:31:05

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



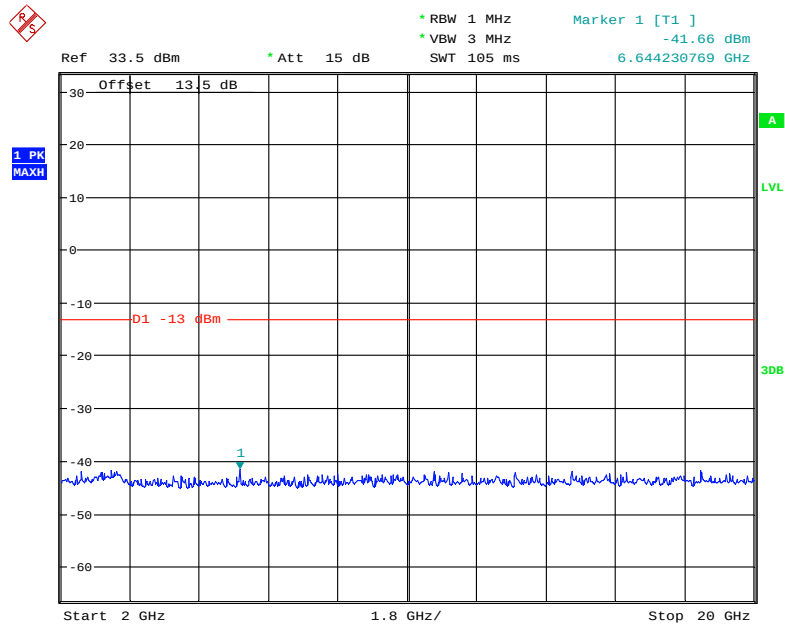
Date: 19.SEP.2018 16:39:25

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



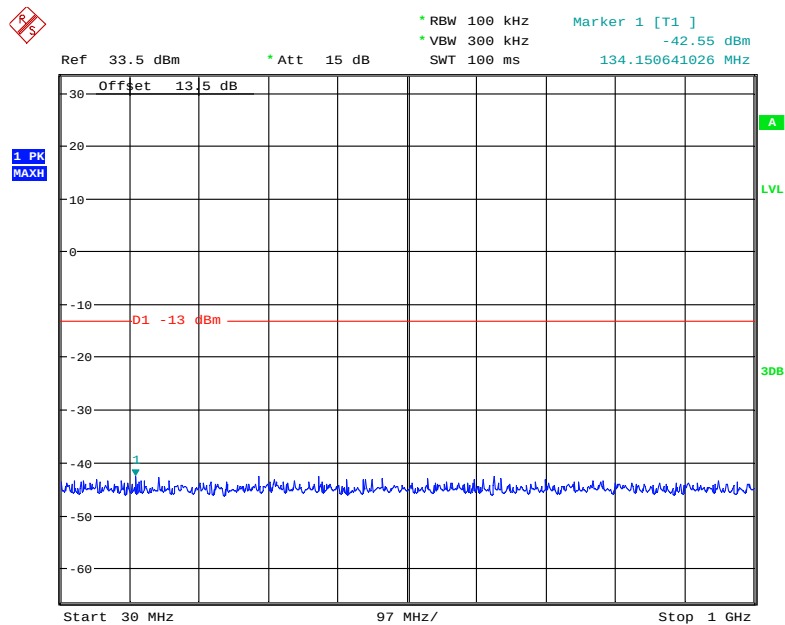
Date: 19.SEP.2018 16:39:54

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



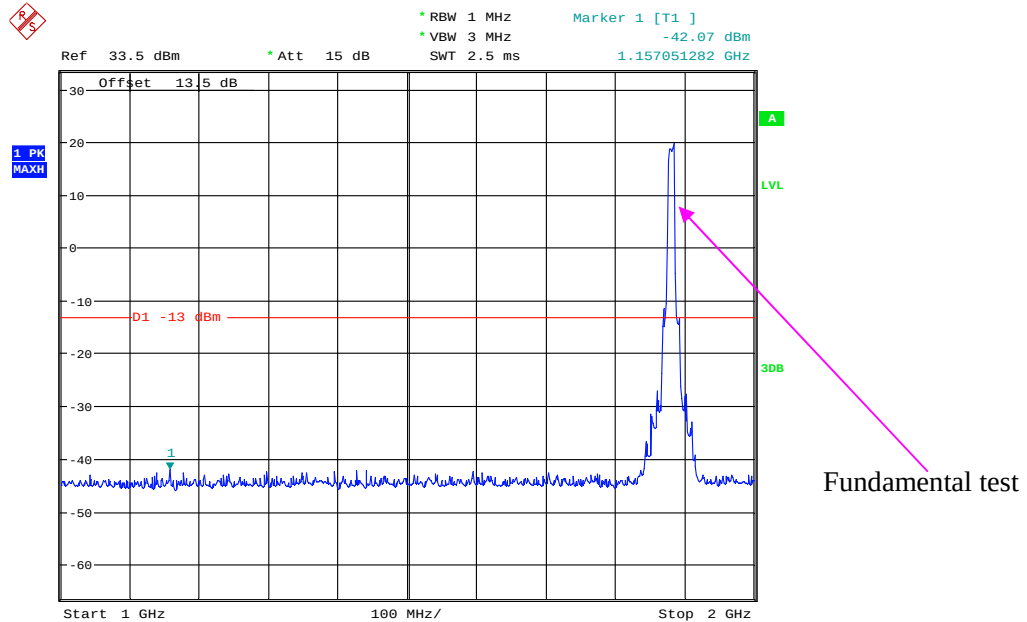
Date: 19.SEP.2018 16:40:12

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



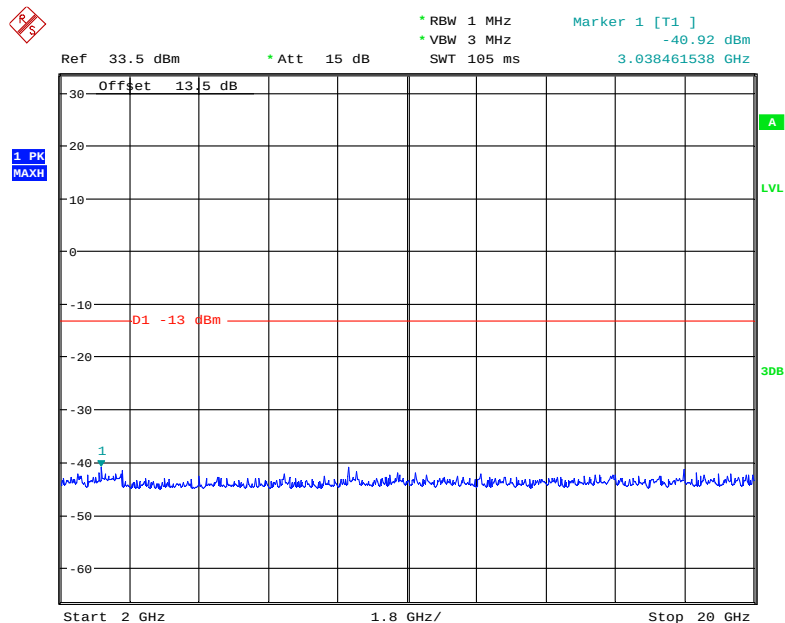
Date: 19.SEP.2018 16:46:30

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



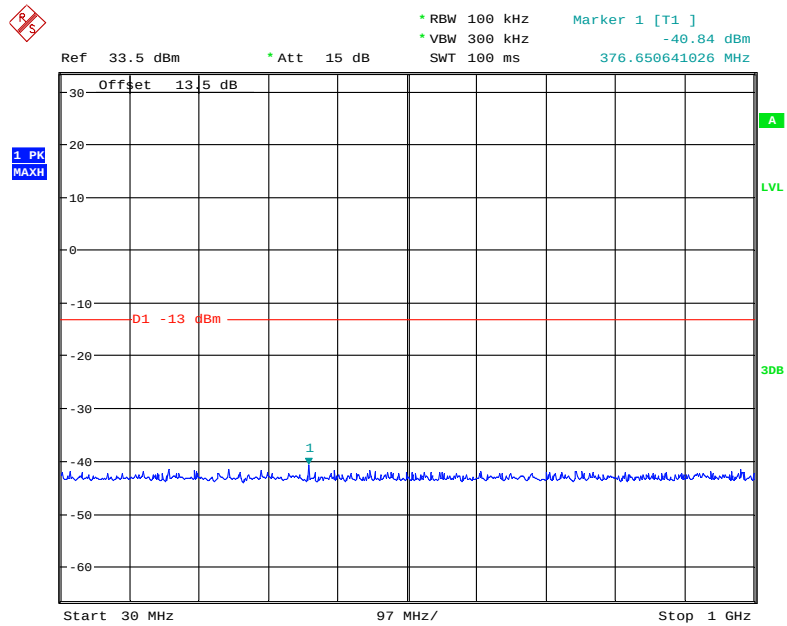
Date: 19.SEP.2018 16:46:08

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



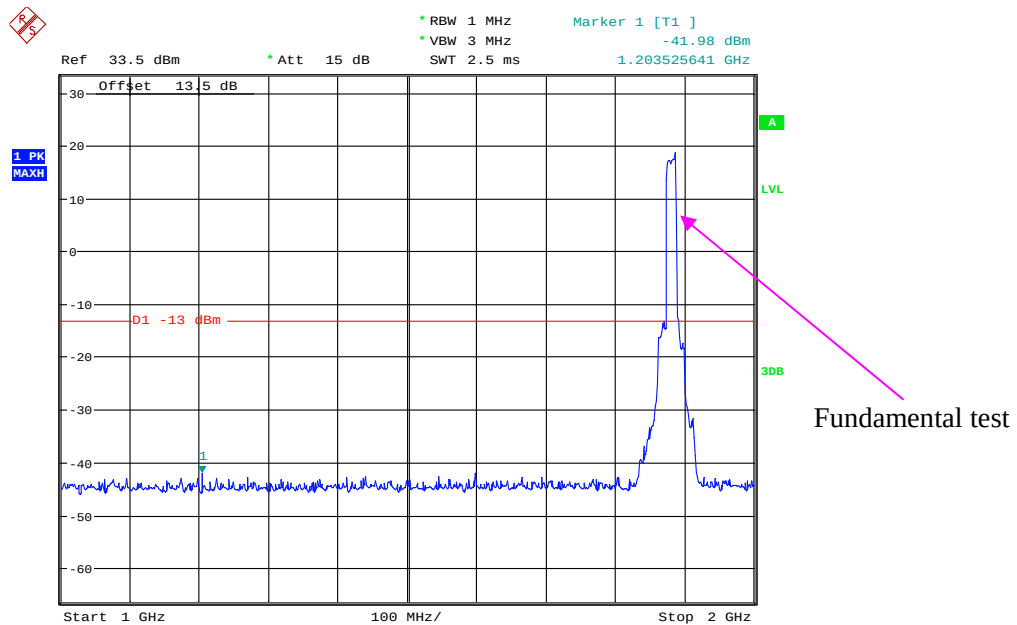
Date: 19.SEP.2018 16:45:47

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



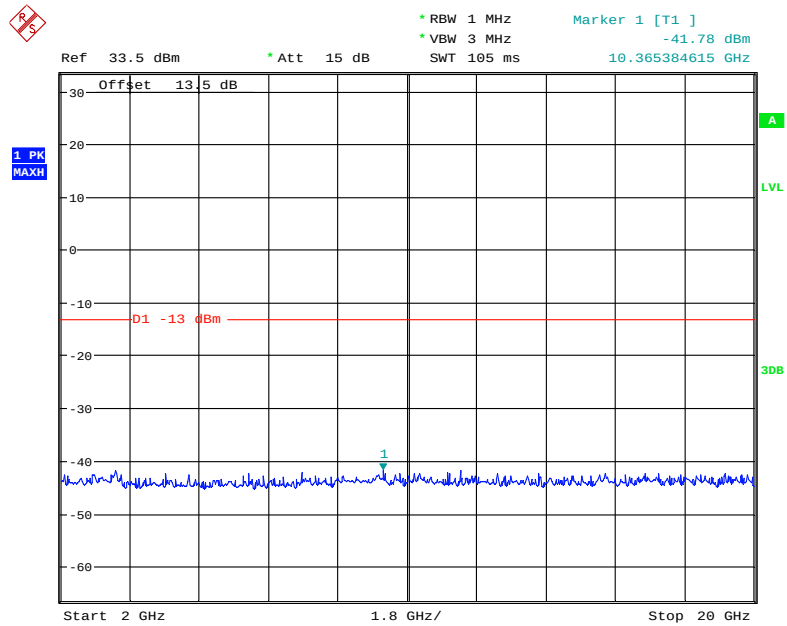
Date: 19.SEP.2018 16:50:46

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



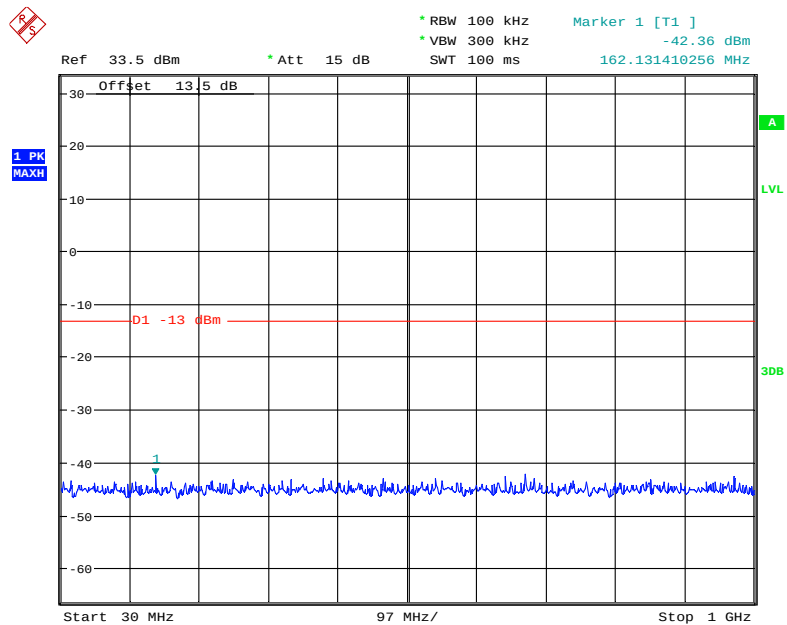
Date: 19.SEP.2018 16:51:11

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



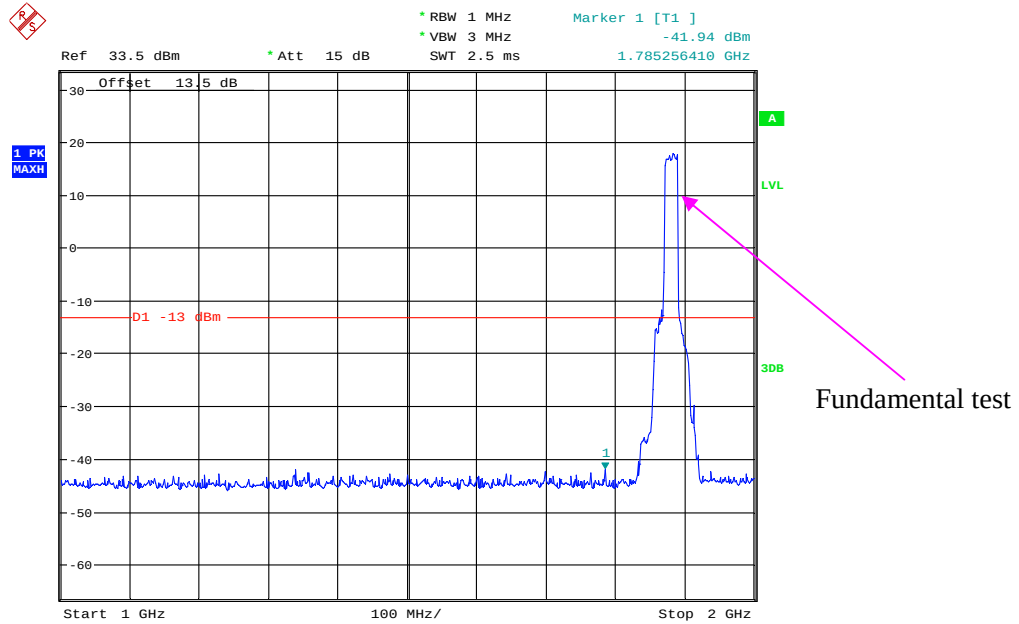
Date: 19.SEP.2018 16:51:26

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



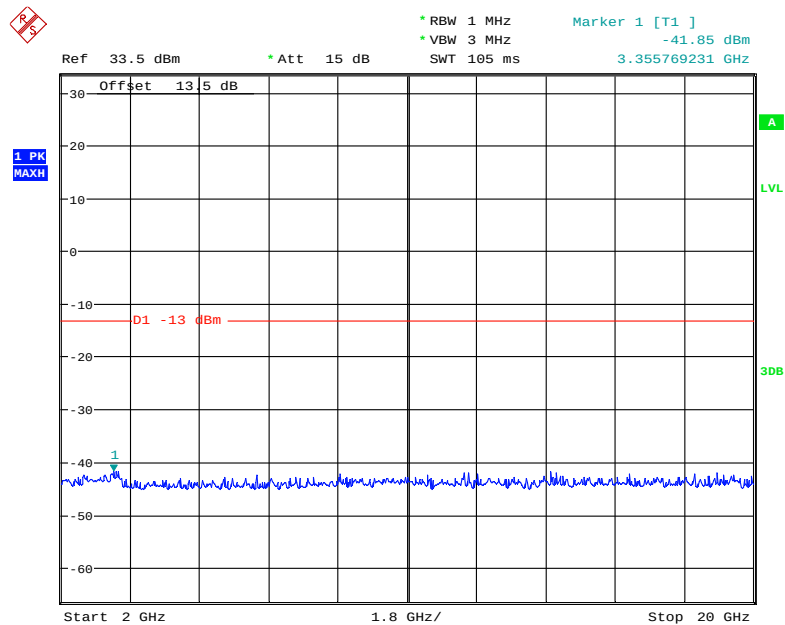
Date: 19.SEP.2018 16:56:38

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



Date: 19.SEP.2018 16:56:18

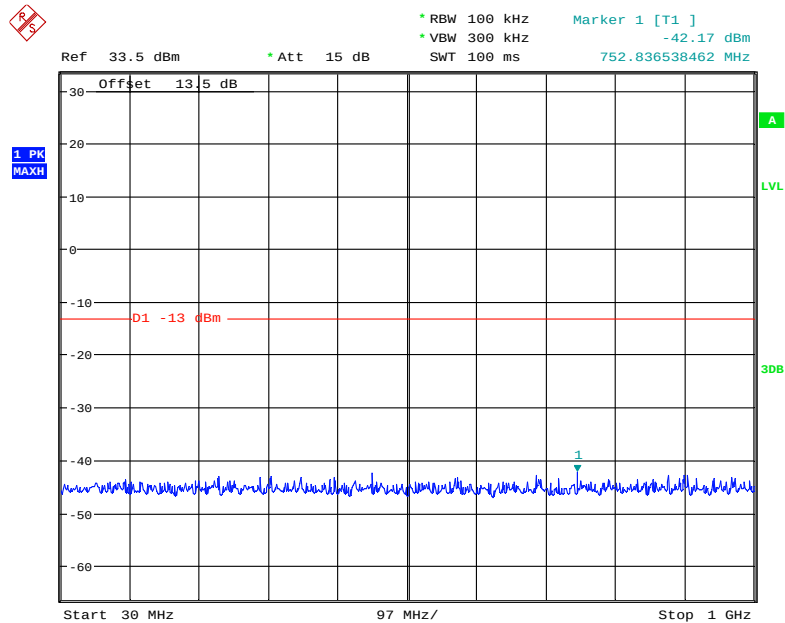
2 GHz –20 GHz (20.0 MHz, Middle Channel)



Date: 19.SEP.2018 16:55:56

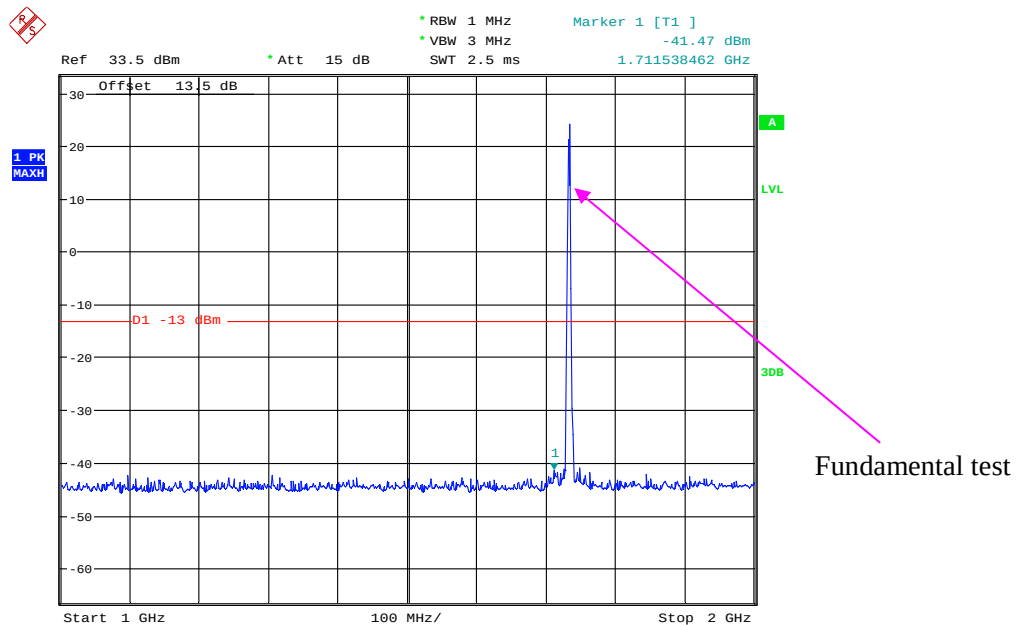
LTE Band 4:

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



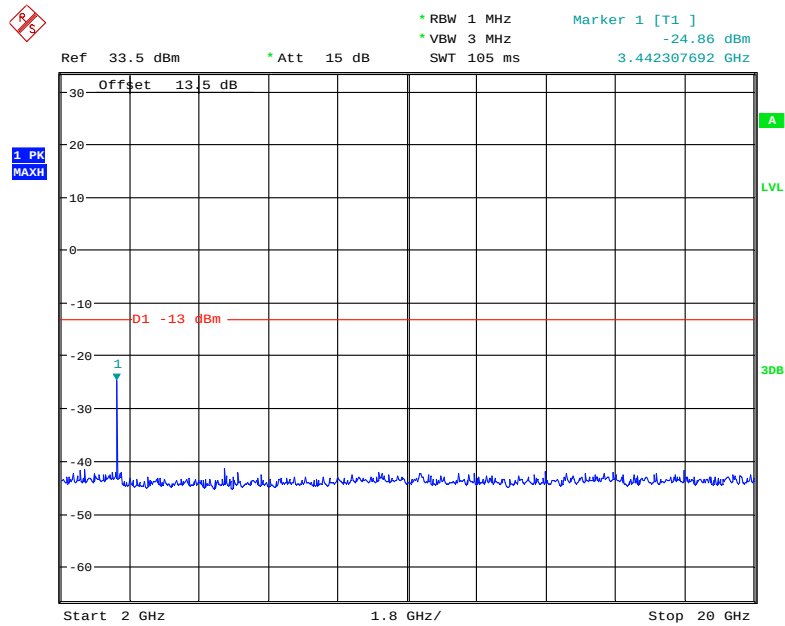
Date: 19.SEP.2018 17:14:13

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



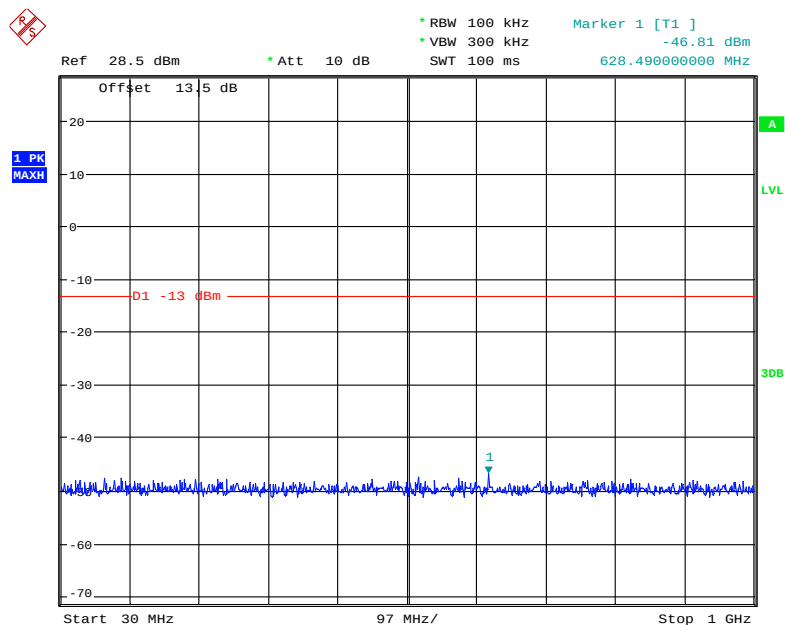
Date: 19.SEP.2018 17:14:43

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



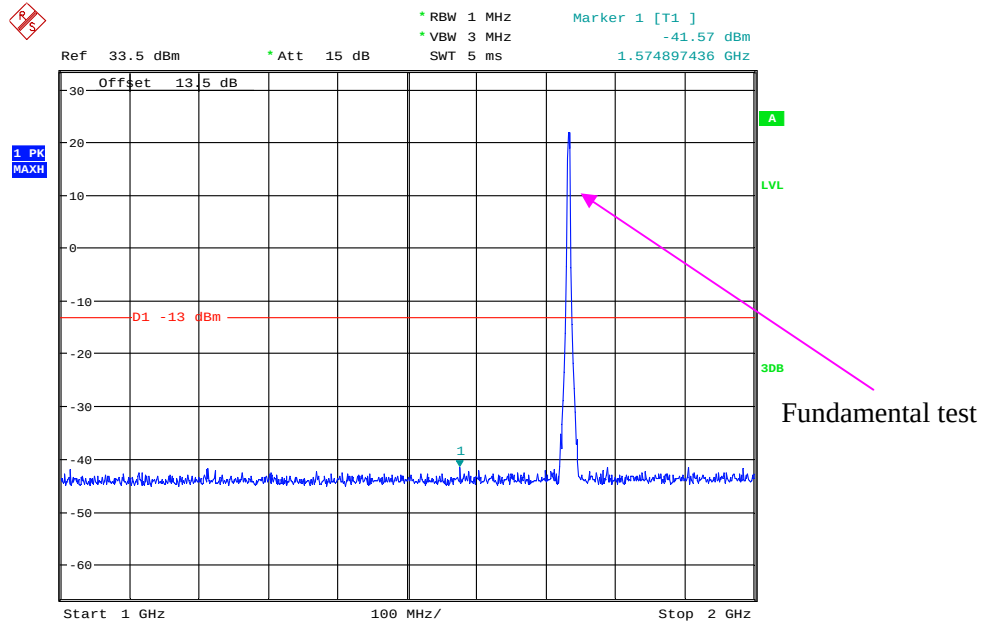
Date: 19.SEP.2018 17:15:02

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



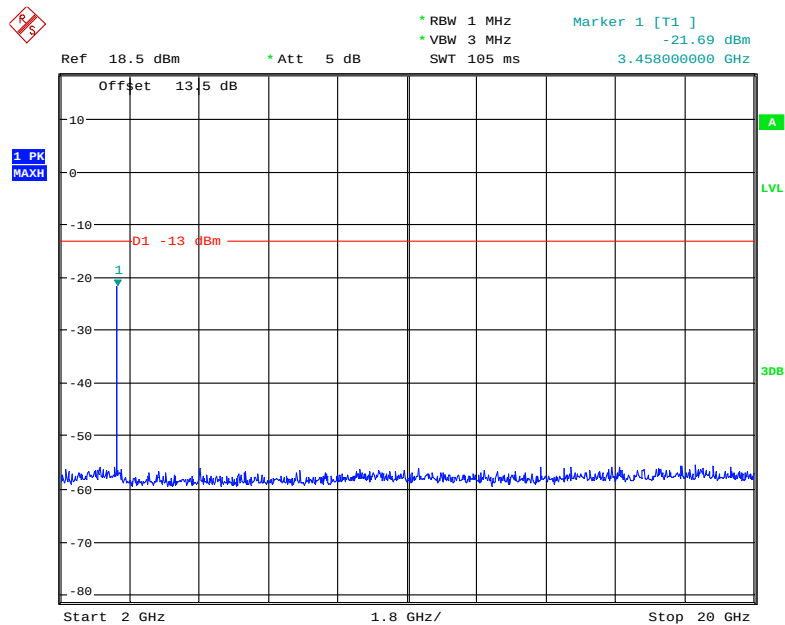
Date: 21.SEP.2018 10:02:08

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



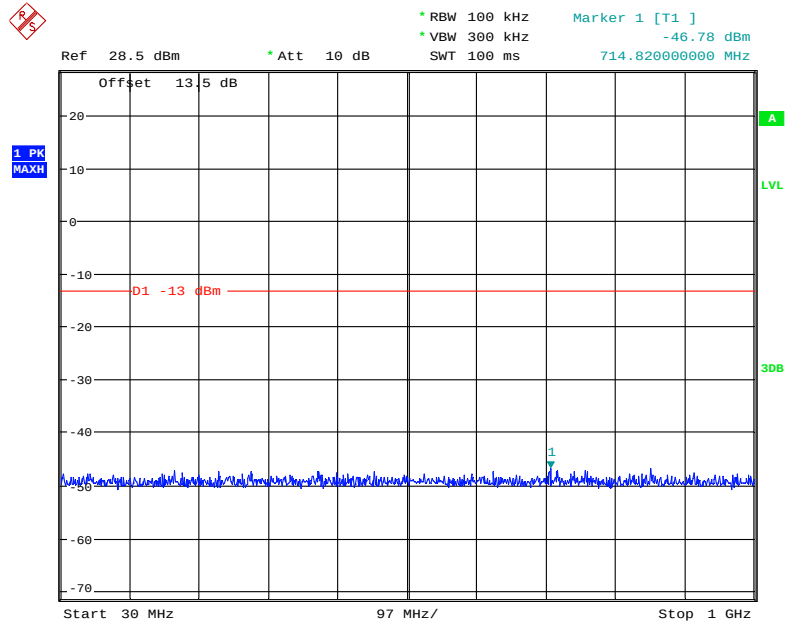
Date: 21.SEP.2018 10:01:30

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



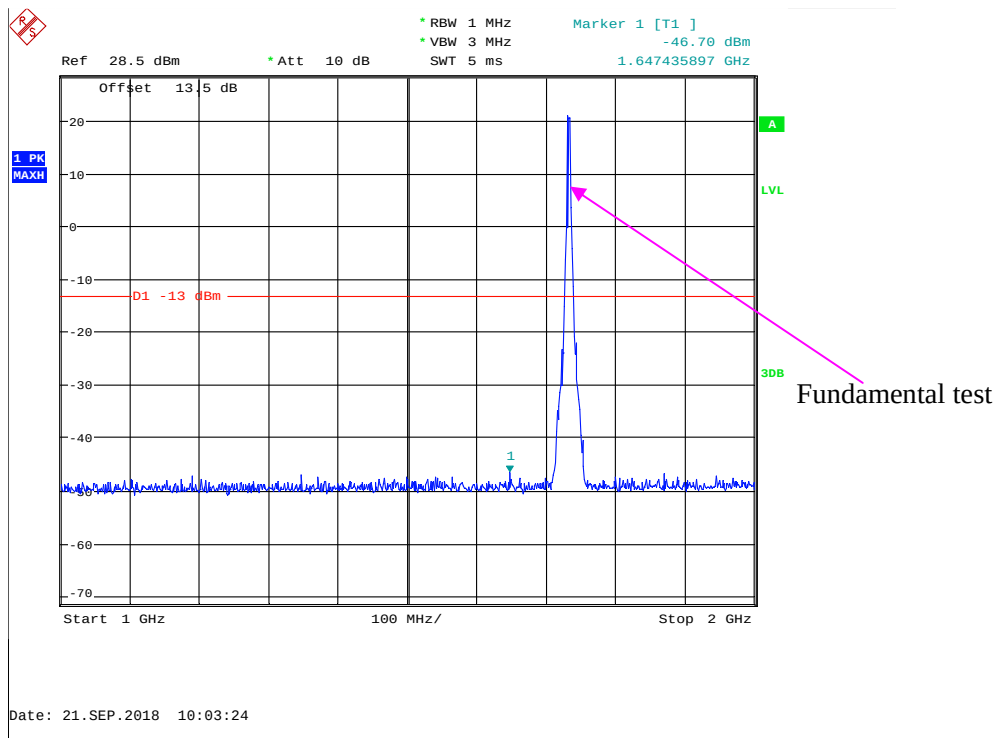
Date: 21.SEP.2018 10:00:21

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



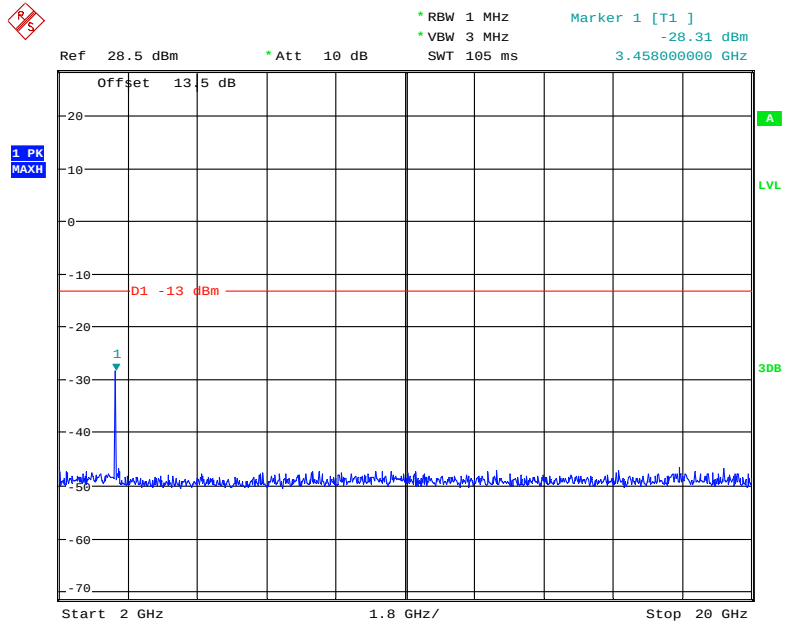
Date: 21.SEP.2018 10:02:58

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



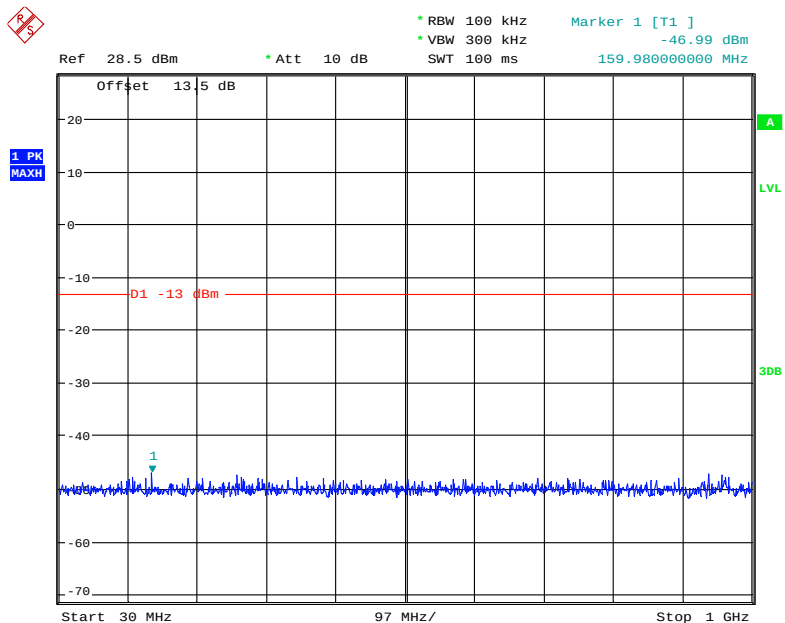
Date: 21.SEP.2018 10:03:24

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



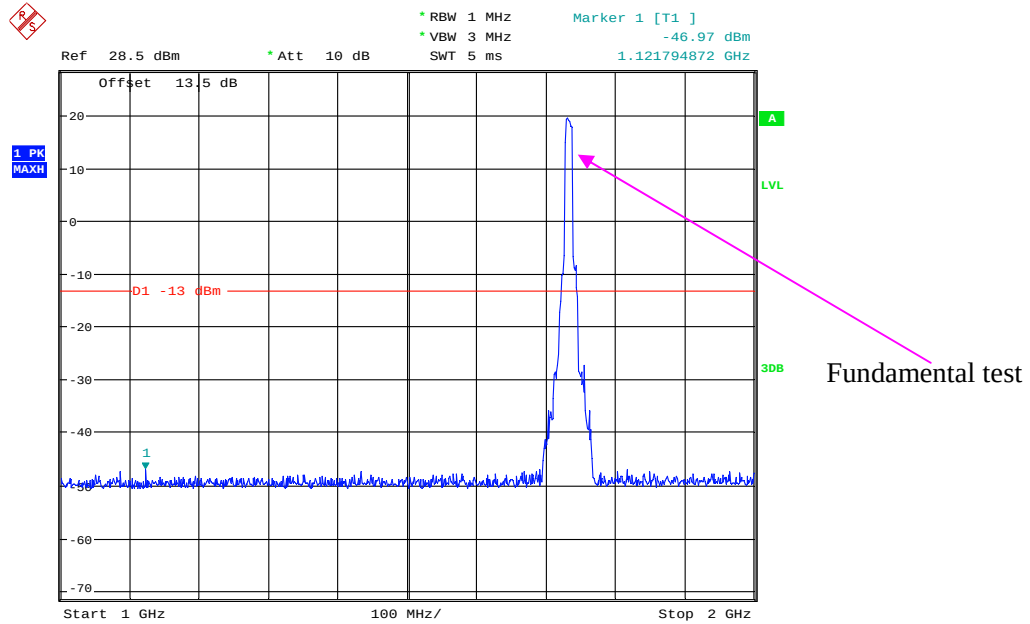
Date: 21.SEP.2018 10:03:40

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



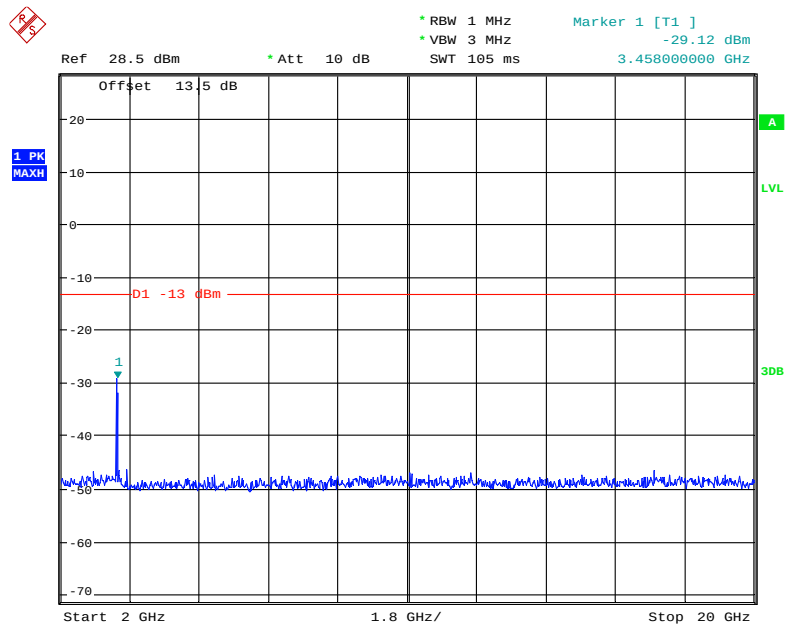
Date: 21.SEP.2018 10:04:46

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



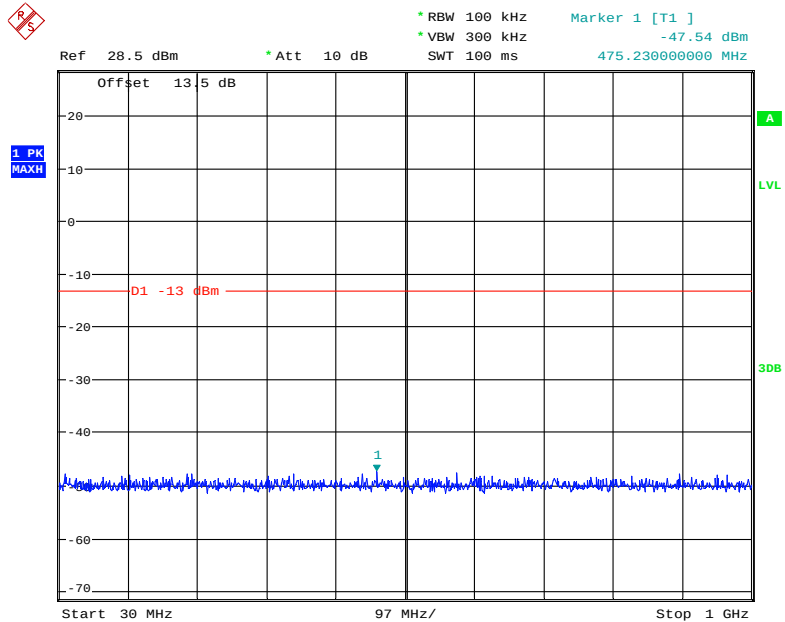
Date: 21.SEP.2018 10:04:23

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



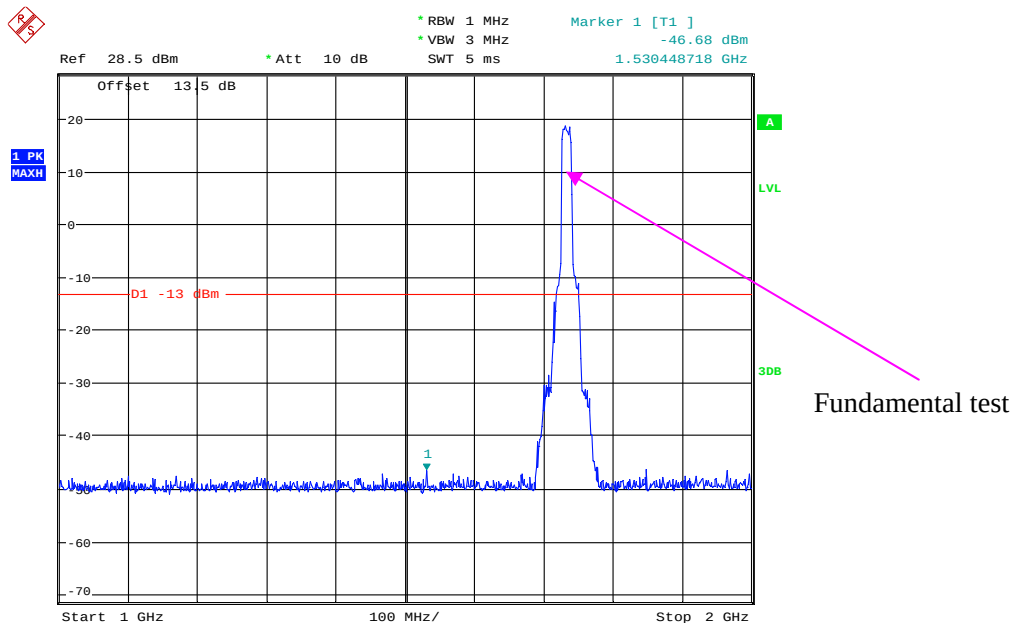
Date: 21.SEP.2018 10:04:01

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



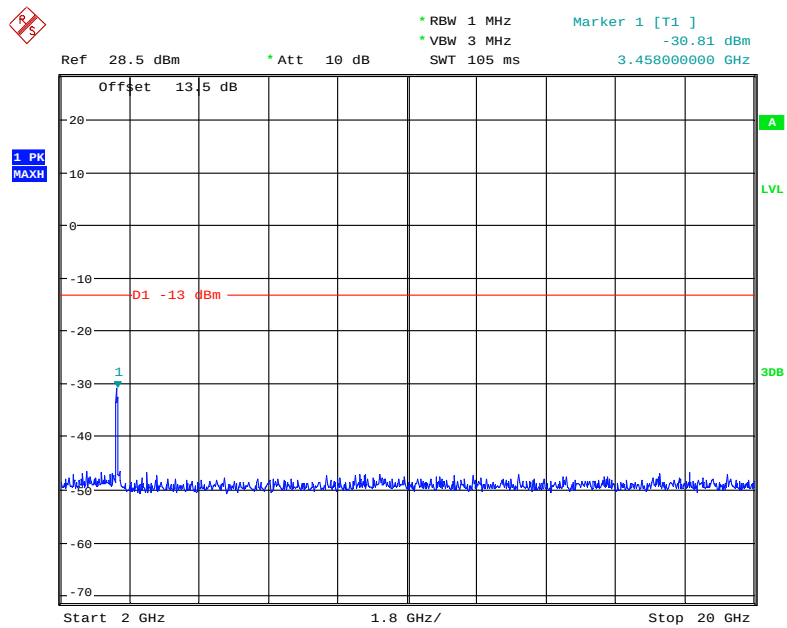
Date: 21.SEP.2018 10:05:07

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



Date: 21.SEP.2018 10:05:32

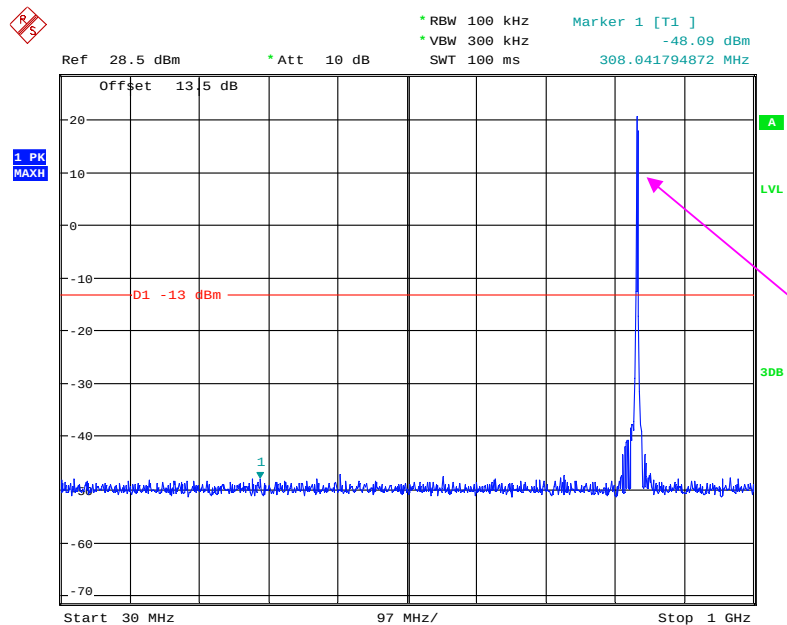
2 GHz – 20 GHz (15.0 MHz, Middle Channel)



Date: 21.SEP.2018 10:05:47

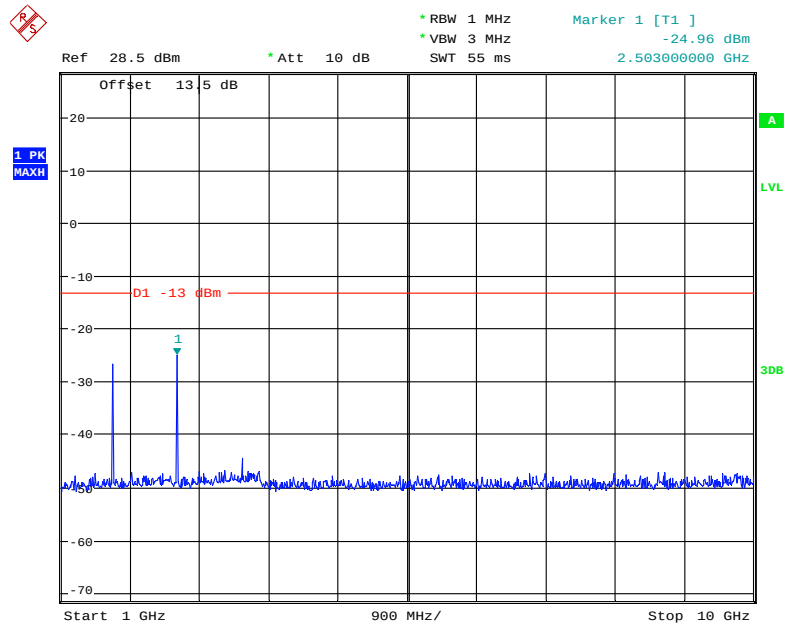
LTE Band 5:

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



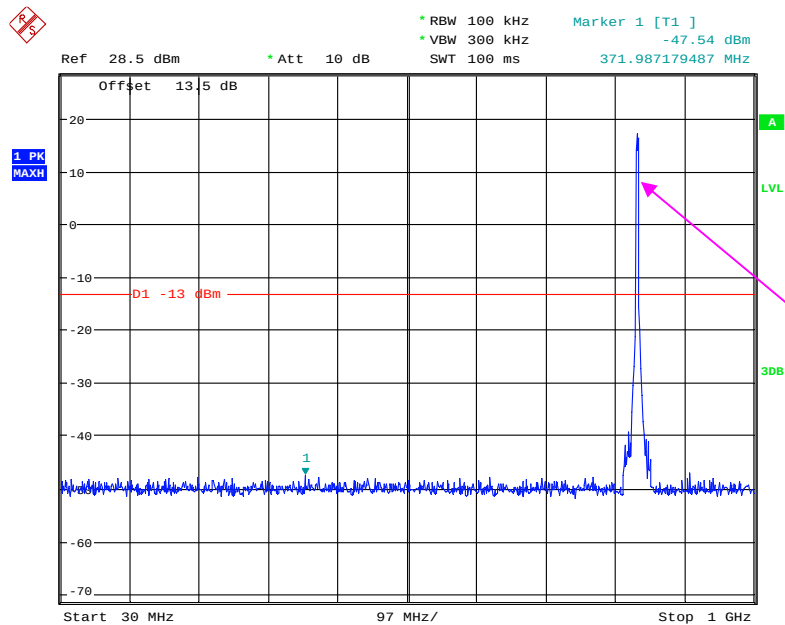
Date: 21.SEP.2018 10:09:08

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



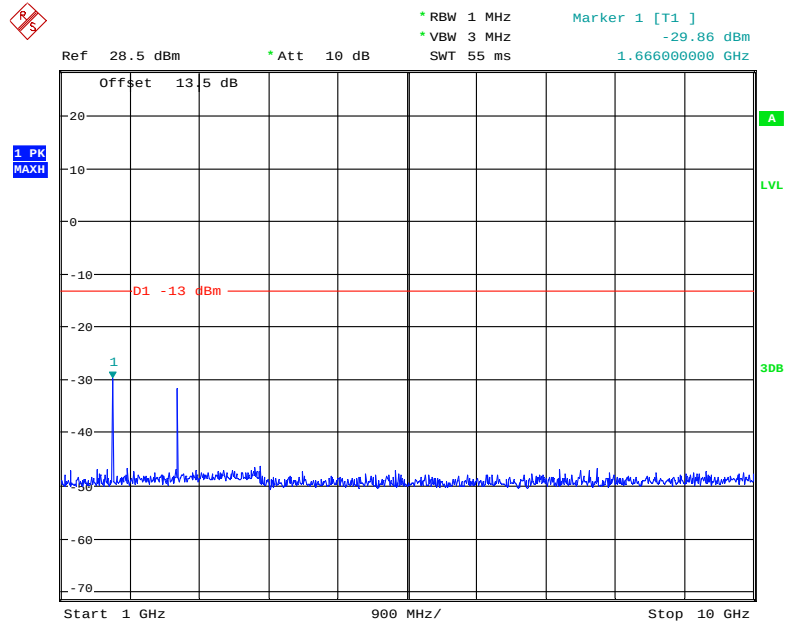
Date: 21.SEP.2018 10:09:33

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



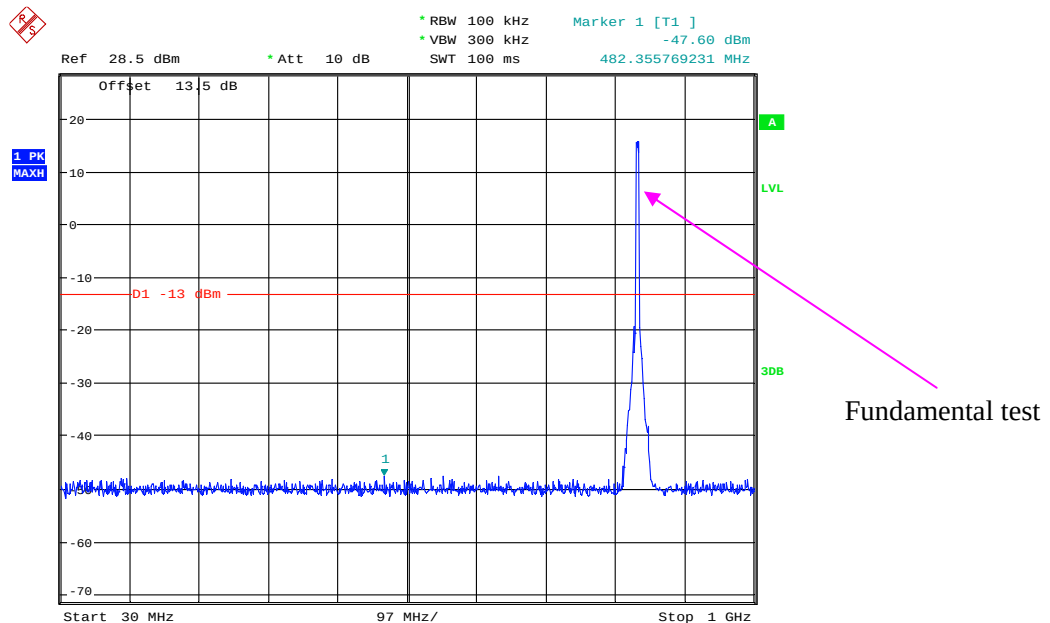
Date: 21.SEP.2018 10:10:27

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



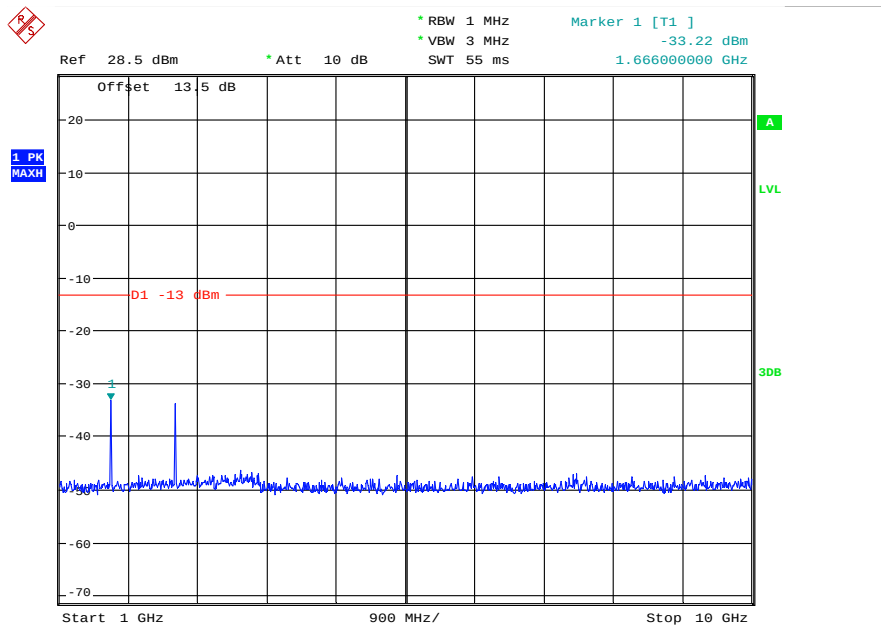
Date: 21.SEP.2018 10:10:00

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



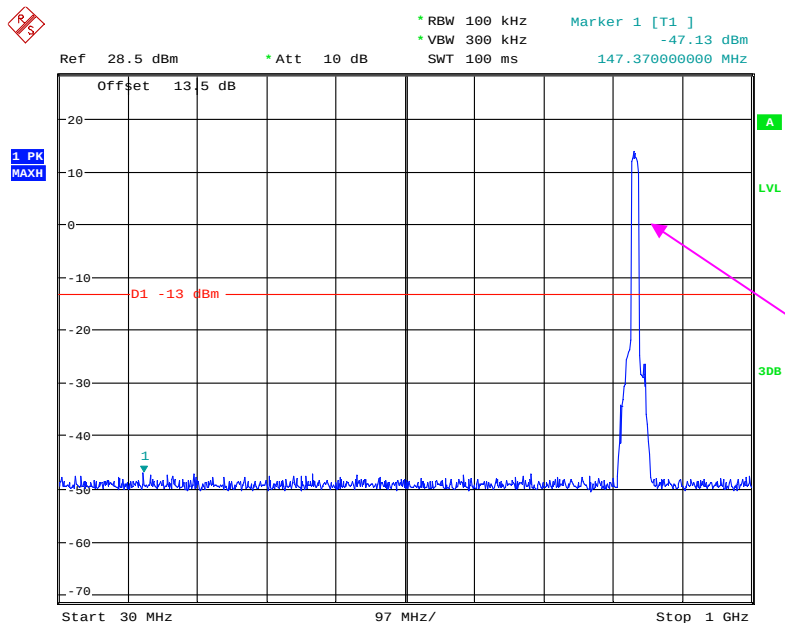
Date: 21.SEP.2018 10:10:47

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



Date: 21.SEP.2018 10:11:16

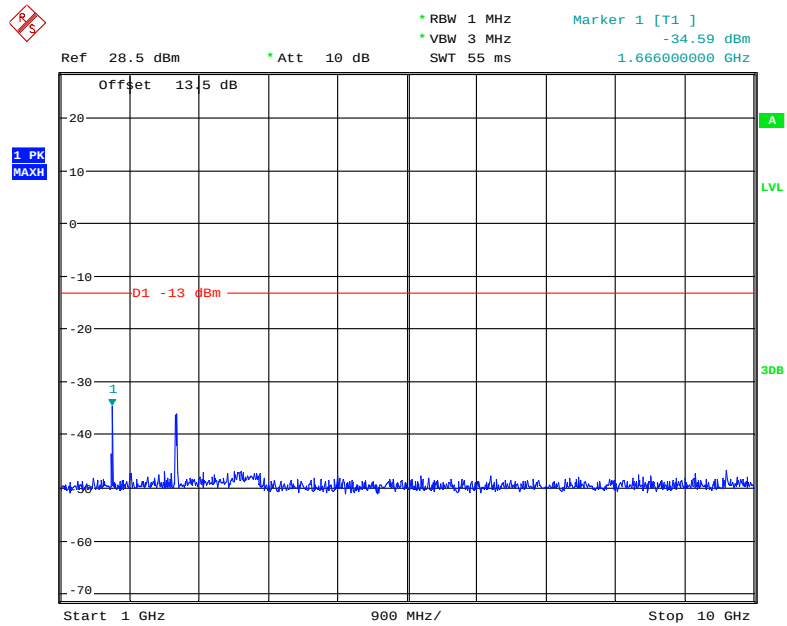
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 21.SEP.2018 10:12:17

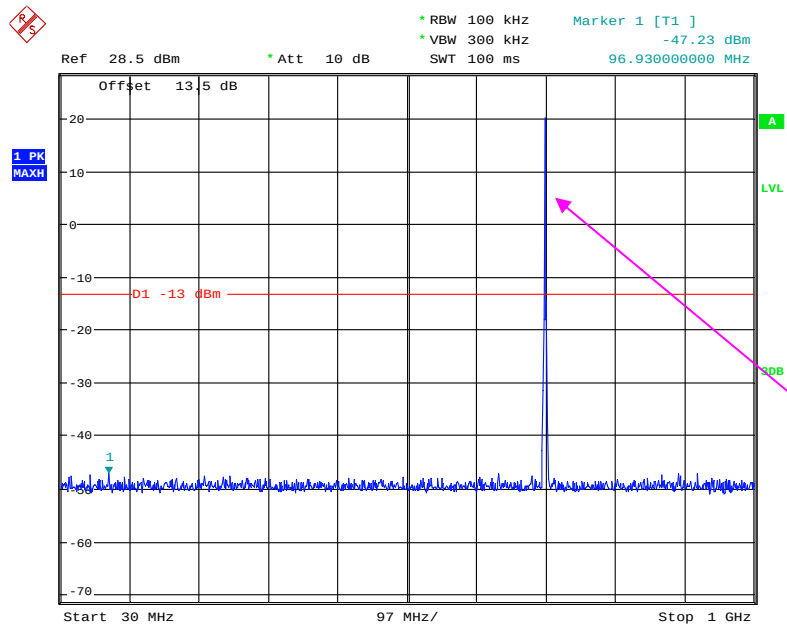
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 21.SEP.2018 10:11:34

LTE Band 12:

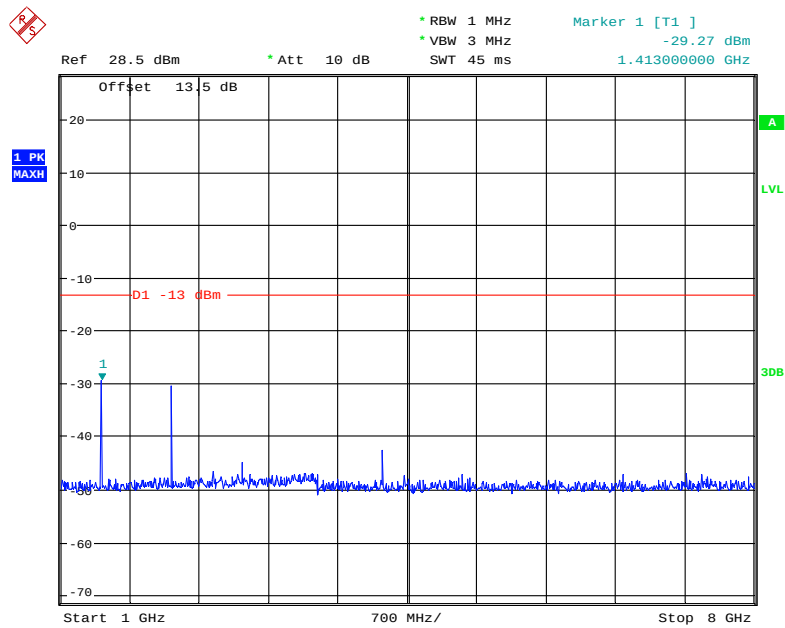
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

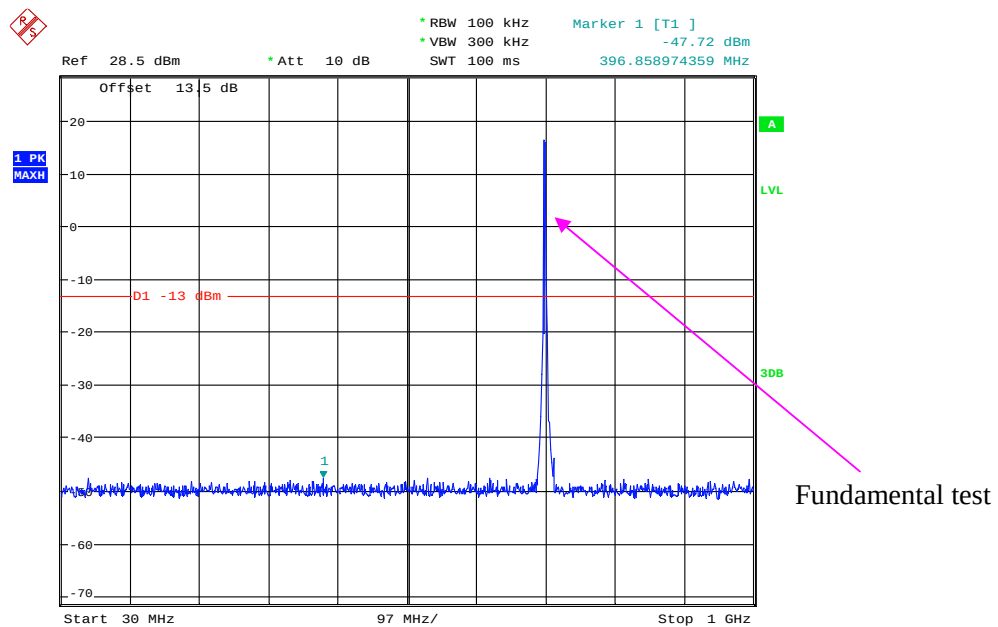
Date: 21.SEP.2018 10:13:31

1 GHz – 8 GHz (1.4 MHz, Middle Channel)



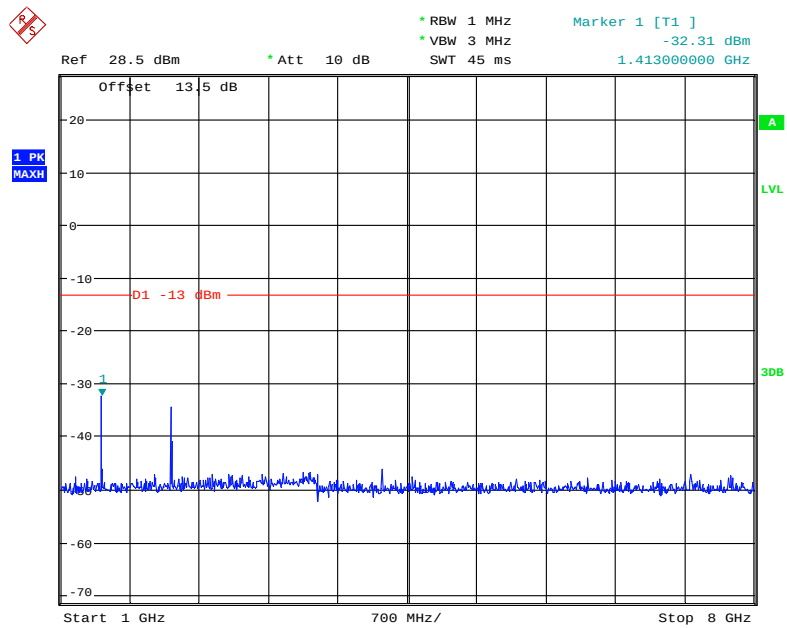
Date: 21.SEP.2018 10:13:57

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



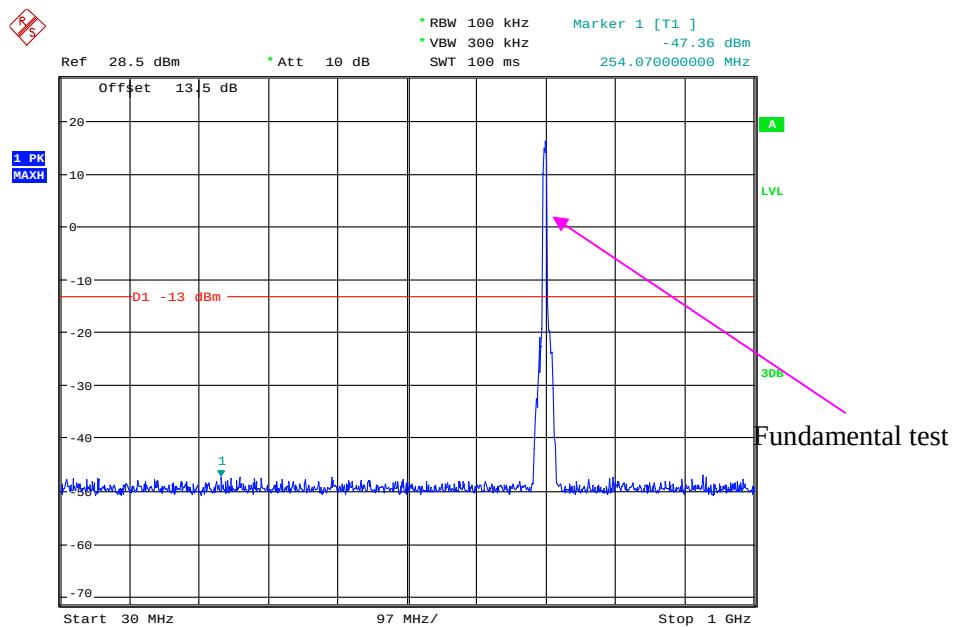
Date: 21.SEP.2018 10:14:42

1 GHz – 8 GHz (3.0 MHz, Middle Channel)



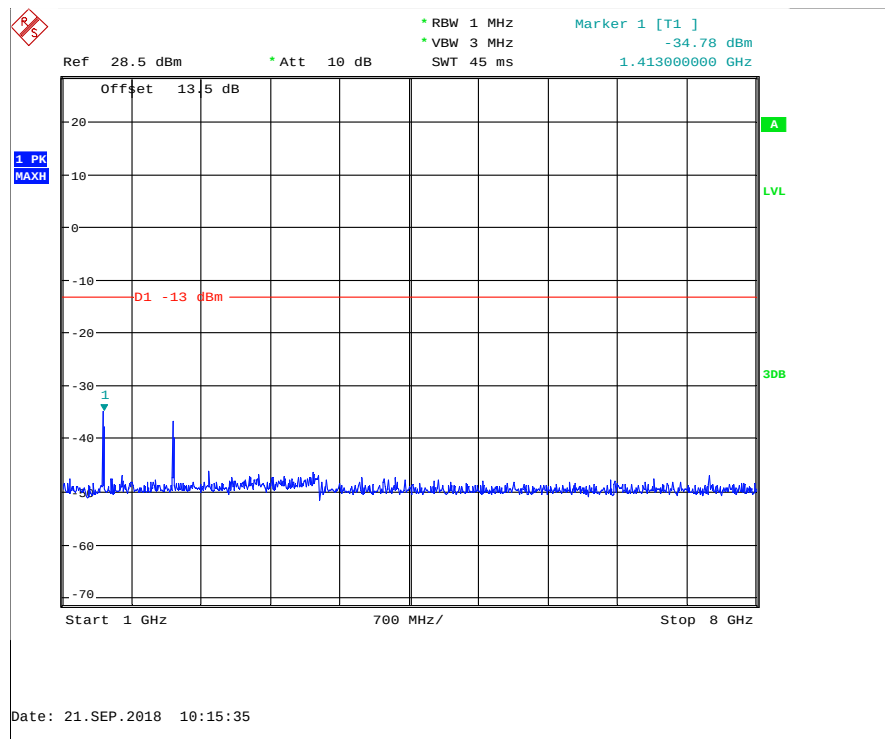
Date: 21.SEP.2018 10:14:18

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

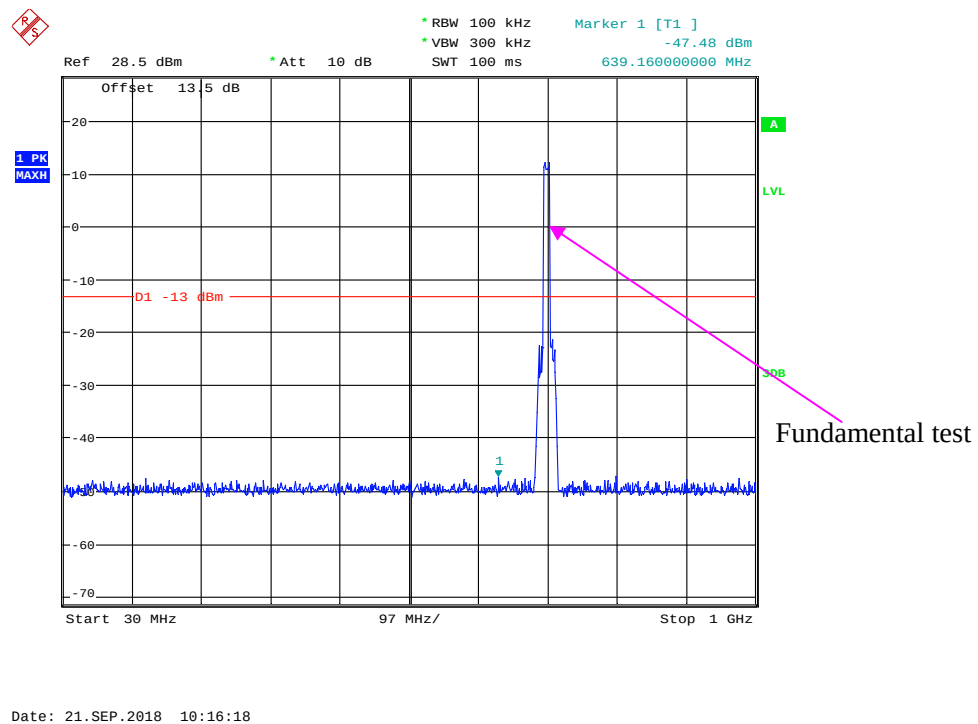


Date: 21.SEP.2018 10:15:13

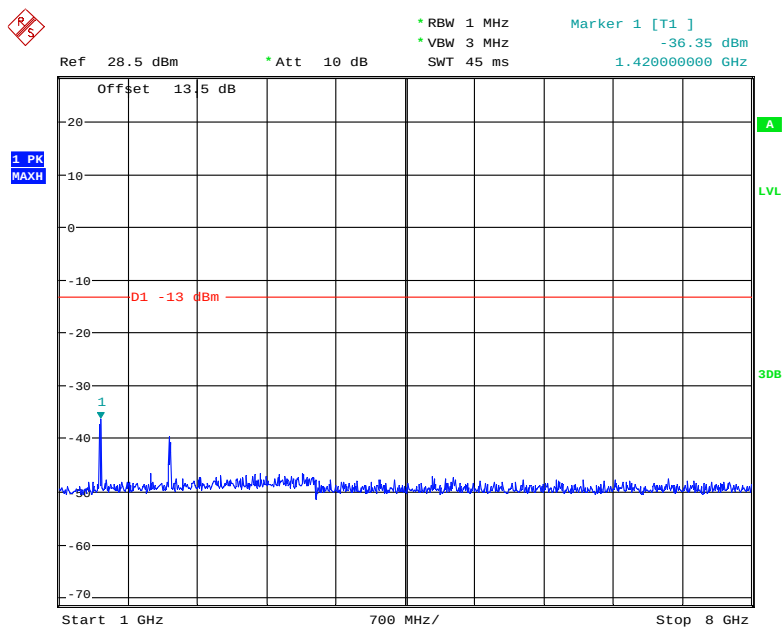
1 GHz – 8 GHz (5.0 MHz, Middle Channel)



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



1 GHz – 8 GHz (10.0 MHz, Middle Channel)



Date: 21.SEP.2018 10:15:50

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:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2018-09-21.

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 (dBi)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
967.25	38.24	44	1.5	H	-58.8	0.74	0	-59.54	-13	46.54
967.25	36.52	12	2.5	V	-60.5	0.74	0	-61.24	-13	48.24
1673.20	66.67	192	1.7	H	-40.4	1.30	8.90	-32.80	-13	19.80
1673.20	66.89	46	1.9	V	-39.6	1.30	8.90	-32.00	-13	19.00
2509.80	71.25	226	1.5	H	-32.3	2.60	10.20	-24.70	-13	11.70
2509.80	72.21	213	1.5	V	-30.7	2.60	10.20	-23.10	-13	10.10
3346.40	47.95	172	1.6	H	-52.4	1.50	11.70	-42.20	-13	29.20
3346.40	45.65	345	1.0	V	-54.7	1.50	11.70	-44.50	-13	31.50
WCDMA Mode, Middle channel										
963.14	38.52	217	1.0	H	-58.5	0.74	0	-59.24	-13	46.24
963.14	37.46	320	2.4	V	-59.5	0.74	0	-60.24	-13	47.24
1673.20	50.02	73	1.7	H	-57.1	1.30	8.90	-49.50	-13	36.50
1673.20	49.77	131	1.3	V	-56.7	1.30	8.90	-49.10	-13	36.10
2509.80	47.72	28	1.5	H	-55.8	2.60	10.20	-48.20	-13	35.20
2509.80	49.78	26	1.4	V	-53.1	2.60	10.20	-45.50	-13	32.50
3346.40	43.19	261	2.5	H	-57.2	1.50	11.70	-47.00	-13	34.00
3346.40	43.3	355	1.6	V	-57.1	1.50	11.70	-46.90	-13	33.90

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 (dBi)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
967.25	38.74	264	1.1	H	-58.3	0.74	0	-59.04	-13	46.04
967.25	36.18	356	1.3	V	-60.8	0.74	0	-61.54	-13	48.54
3760.00	46.02	358	1.8	H	-55.2	1.50	11.80	-44.90	-13	31.90
3760.00	46.59	234	2.4	V	-54.2	1.50	11.80	-43.90	-13	30.90
WCDMA Mode Band II, Middle channel										
963.14	38.17	7	1.3	H	-58.8	0.74	0	-59.54	-13	46.54
963.14	37.29	181	2.5	V	-59.7	0.74	0	-60.44	-13	47.44
3760.00	43.07	285	1.6	H	-58.2	1.50	11.80	-47.90	-13	34.90
3760.00	43.59	80	2.0	V	-57.2	1.50	11.80	-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 (dBi)			
Band 2										
Test frequency range: 30 MHz ~ 20 GHz										
961.29	38.41	228	2.4	H	-58.6	0.74	0	-59.34	-13	46.34
961.29	37.51	217	1.6	V	-59.5	0.74	0	-60.24	-13	47.24
3760.00	43.66	114	1.2	H	-57.6	1.50	11.80	-47.30	-13	34.30
3760.00	43.32	333	2.3	V	-57.4	1.50	11.80	-47.10	-13	34.10
Band 4										
Test frequency range: 30 MHz ~ 20 GHz										
961.29	38.57	158	1.2	H	-58.4	0.74	0	-59.14	-13	46.14
961.29	37.06	51	1.0	V	-59.9	0.74	0	-60.64	-13	47.64
3465.00	44.32	22	1.7	H	-56.1	1.50	12.00	-45.60	-13	32.60
3465.00	44.30	54	1.5	V	-56.8	1.50	12.00	-46.30	-13	33.30
Band 5										
Test frequency range: 30 MHz ~ 10 GHz										
961.29	38.62	9	1.6	H	-58.4	0.74	0	-59.14	-13	46.14
961.29	37.21	23	1.1	V	-59.8	0.74	0	-60.54	-13	47.54
1673.00	51.67	53	1.3	H	-55.4	1.30	8.90	-47.80	-13	34.80
1673.00	54.65	58	1.2	V	-51.8	1.30	8.90	-44.20	-13	31.20
2509.50	47.44	326	1.5	H	-56.1	2.60	10.20	-48.50	-13	35.50
2509.50	49.51	355	2.2	V	-53.4	2.60	10.20	-45.80	-13	32.80
3346.00	43.38	97	1.9	H	-57.0	1.50	11.70	-46.80	-13	33.80
3346.00	42.42	314	1.5	V	-58.0	1.50	11.70	-47.80	-13	34.80
Band 12										
Test frequency range: 30 MHz ~ 8 GHz										
961.29	38.92	324	1.1	H	-58.1	0.74	0	-58.84	-13	45.84
961.29	37.07	289	1.3	V	-59.9	0.74	0	-60.64	-13	47.64
1415.00	43.18	31	1.7	H	-64.7	1.60	7.90	-58.40	-13	45.40
1415.00	43.9	165	1.4	V	-64.2	1.60	7.90	-57.90	-13	44.90
2122.50	40.58	238	2.3	H	-61.5	1.30	9.70	-53.10	-13	40.10
2122.50	39.27	312	1.3	V	-63.6	1.30	9.70	-55.20	-13	42.20
2830.00	43.5	281	2.3	H	-60.3	1.80	10.50	-51.60	-13	38.60
2830.00	42.89	222	1.5	V	-60.5	1.80	10.50	-51.80	-13	38.80
3537.50	43.17	342	2.4	H	-57.3	1.50	12.00	-46.80	-13	33.80
3537.50	43.3	122	1.6	V	-58.0	1.50	12.00	-47.50	-13	34.50

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.

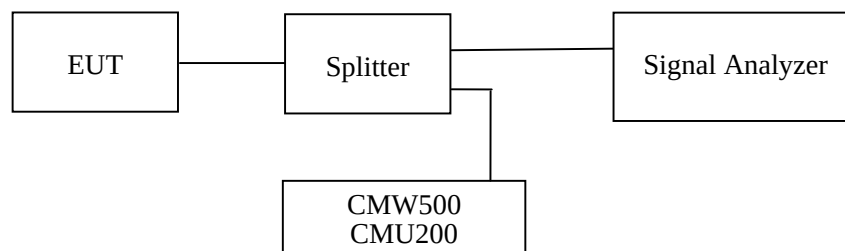
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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**

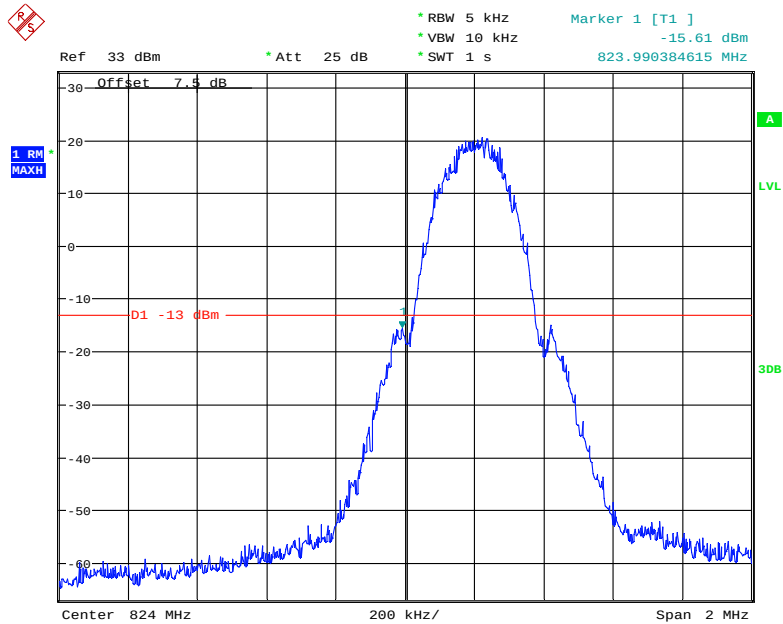
Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2018-09-19 to 2018-09-30.

EUT operation mode: Transmitting

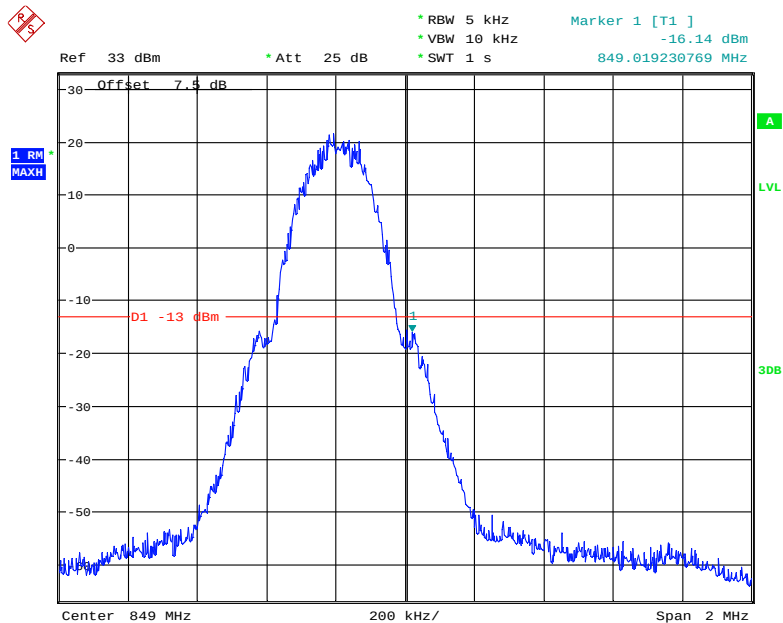
Test Result: Compliance. Please refer to the following plots.

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



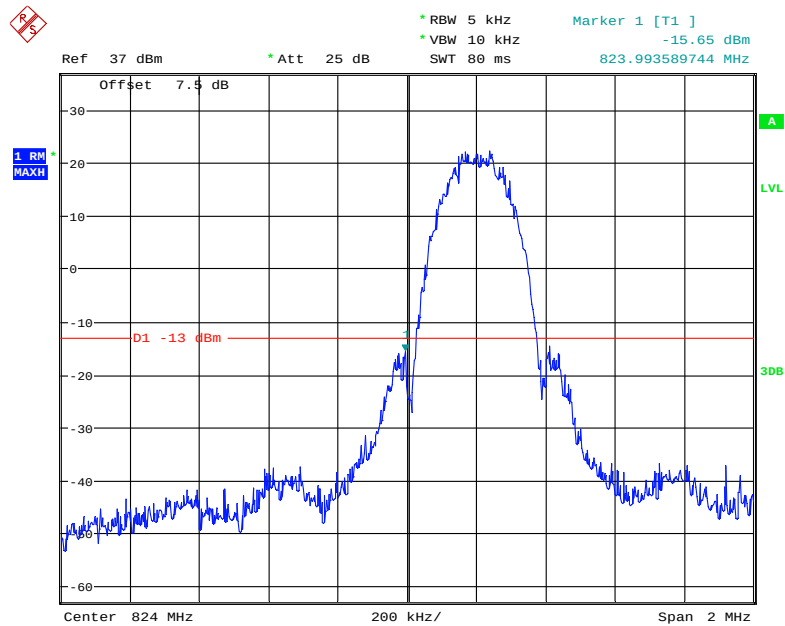
Date: 20.SEP.2018 15:23:21

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



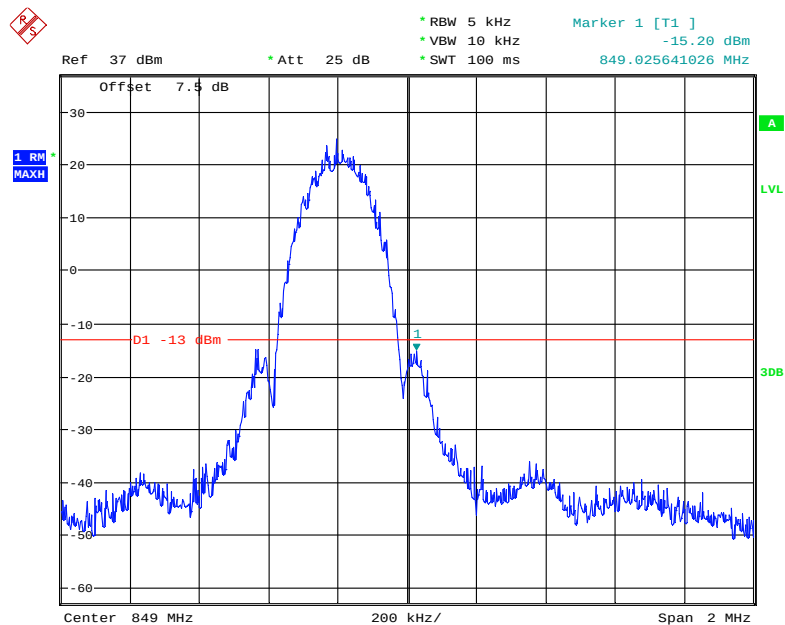
Date: 20.SEP.2018 15:24:08

Cellular Band, Left Band Edge for EDGE Mode



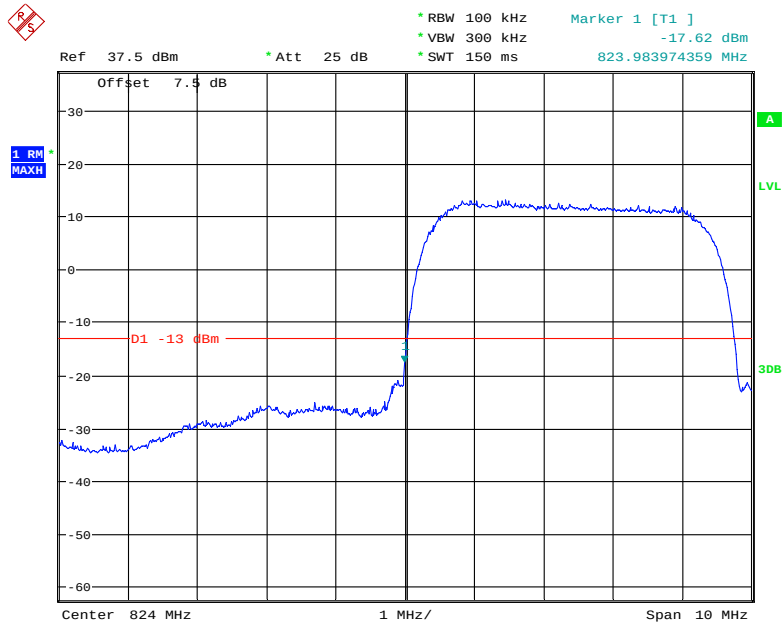
Date: 20.SEP.2018 14:58:31

Cellular Band, Right Band Edge for EDGE Mode



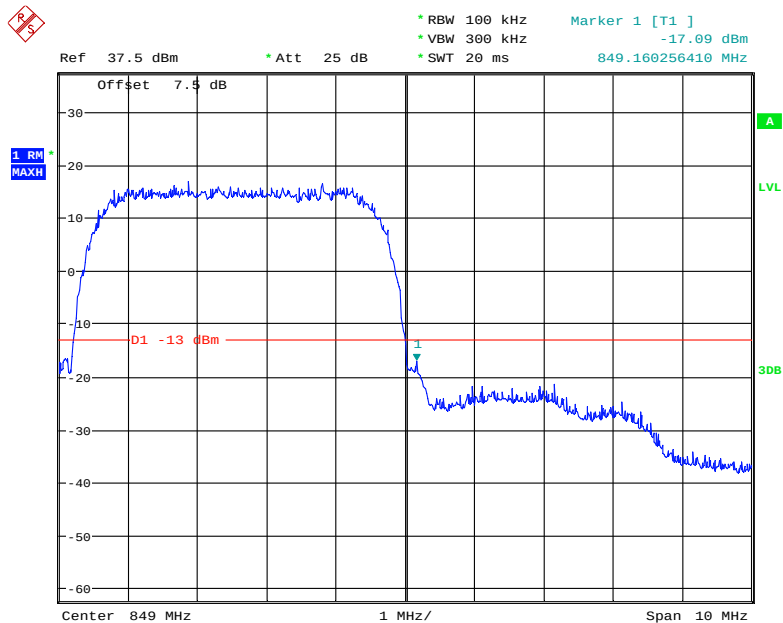
Date: 20.SEP.2018 15:02:35

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



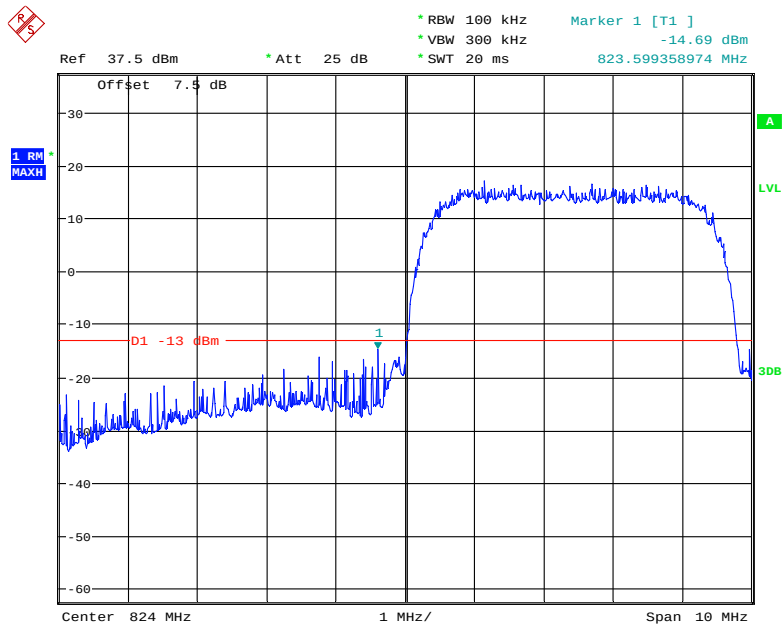
Date: 28.SEP.2018 15:13:06

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



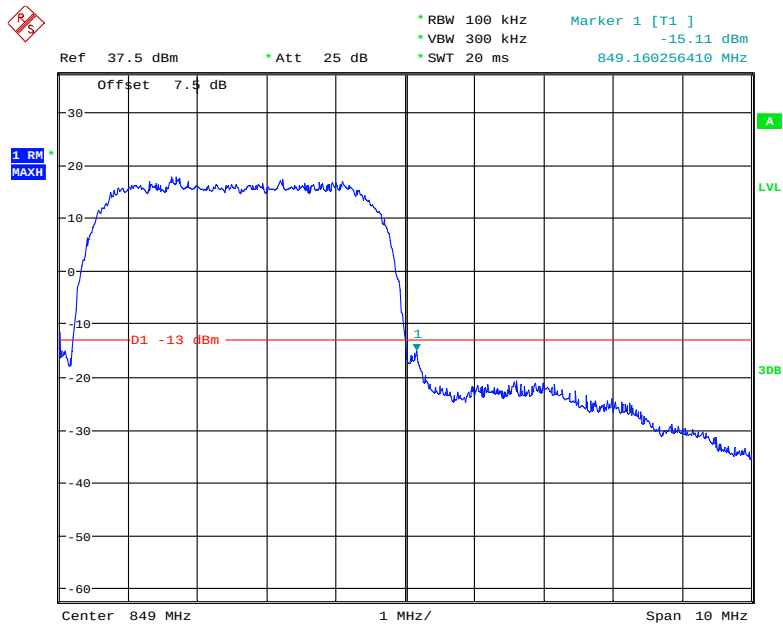
Date: 20.SEP.2018 16:34:39

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



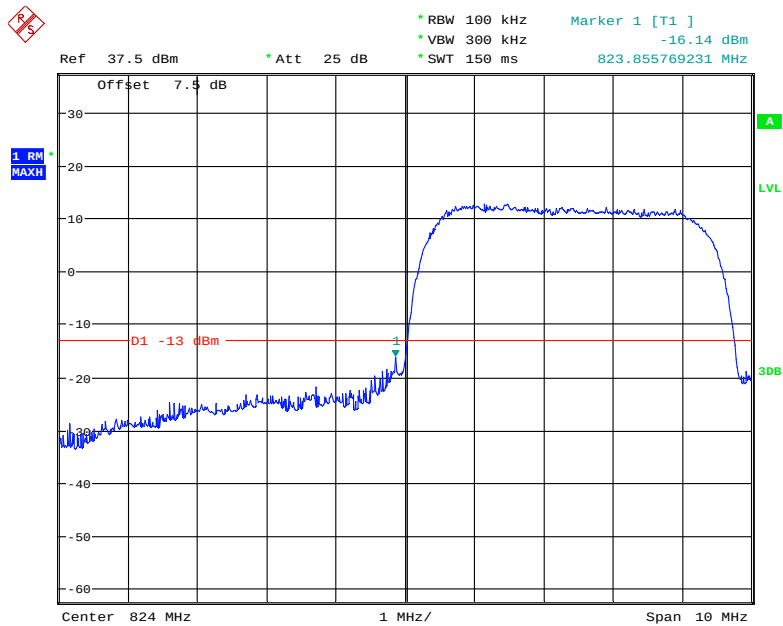
Date: 20.SEP.2018 16:39:18

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



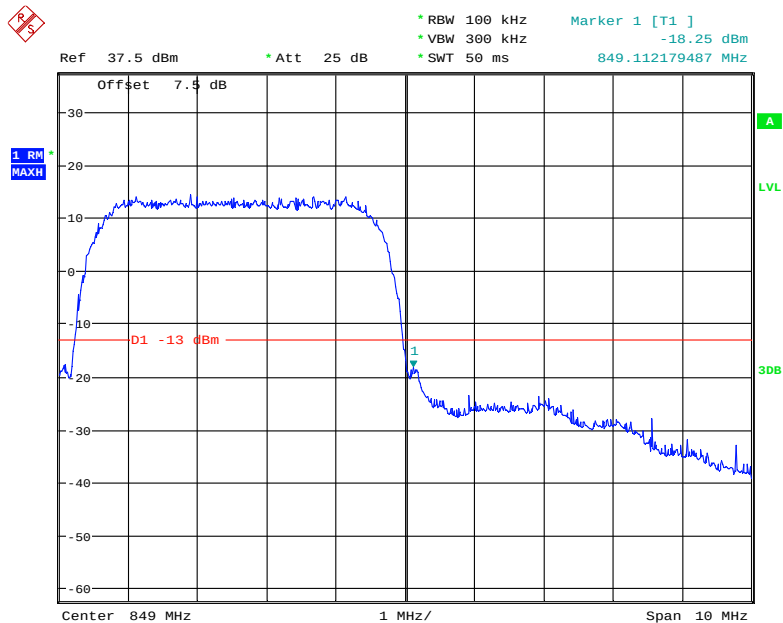
Date: 20.SEP.2018 16:38:43

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



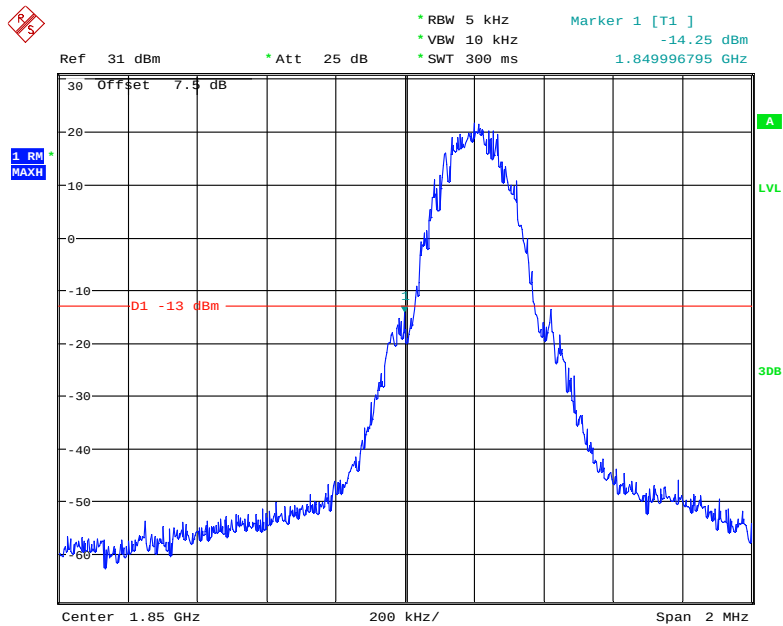
Date: 28.SEP.2018 15:12:02

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



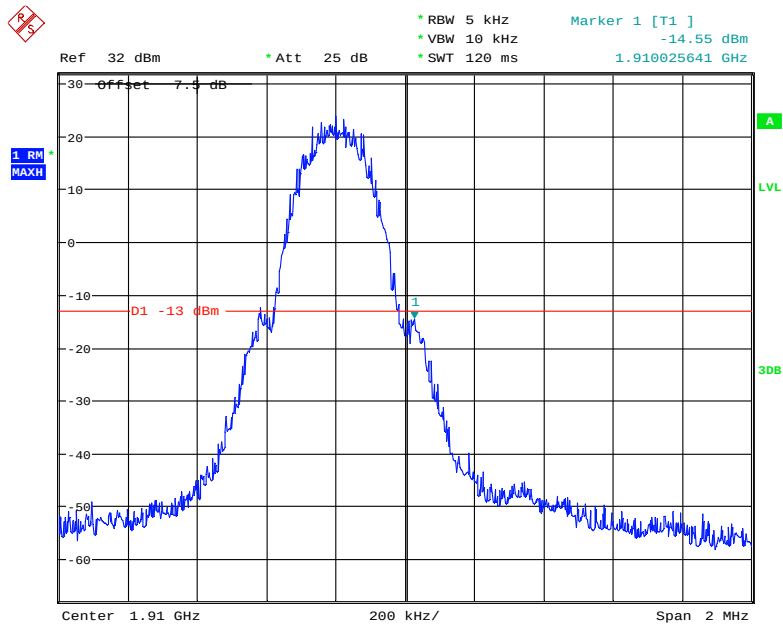
Date: 20.SEP.2018 16:42:13

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



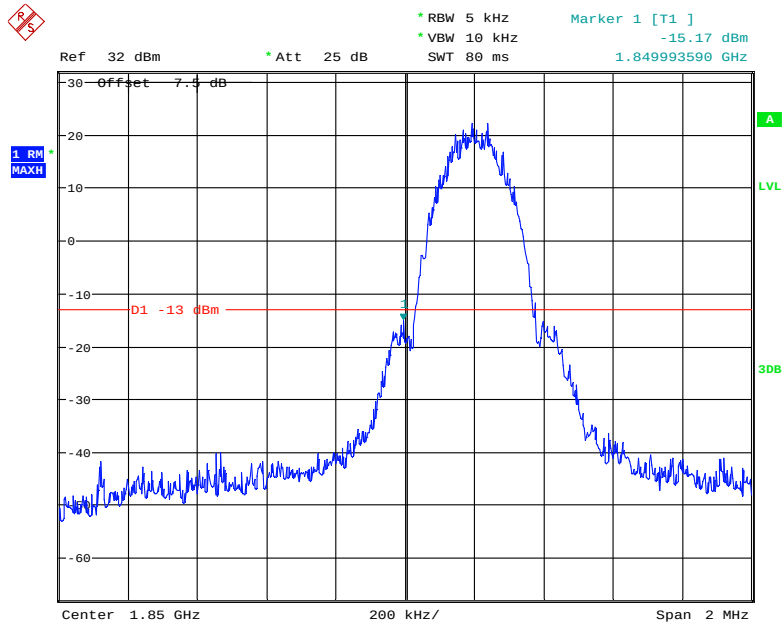
Date: 28.SEP.2018 15:05:10

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



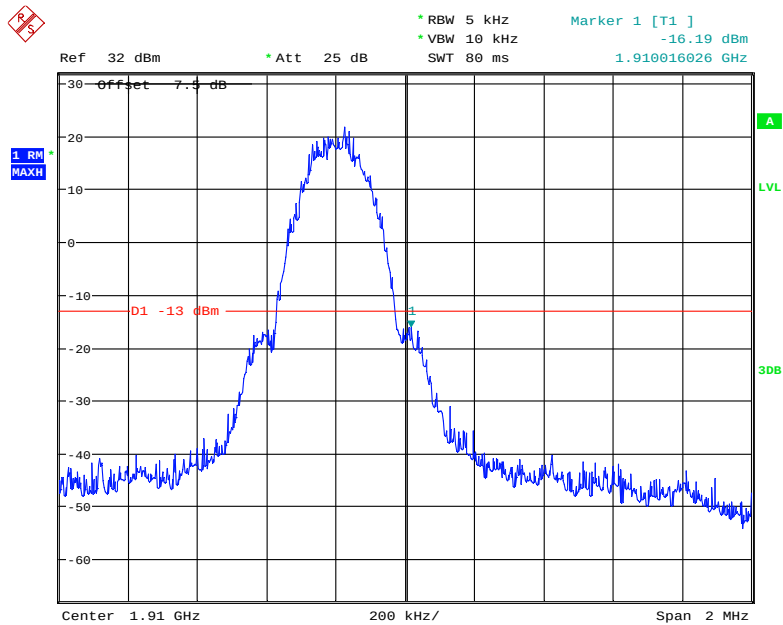
Date: 20.SEP.2018 15:16:00

PCS Band, Left Band Edge for EDGE Mode



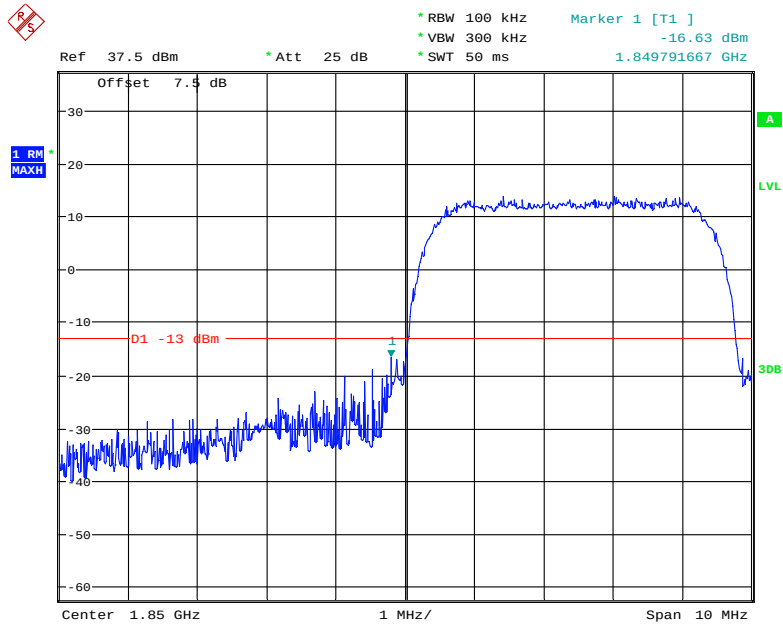
Date: 20.SEP.2018 15:05:24

PCS Band, Right Band Edge for EDGE Mode



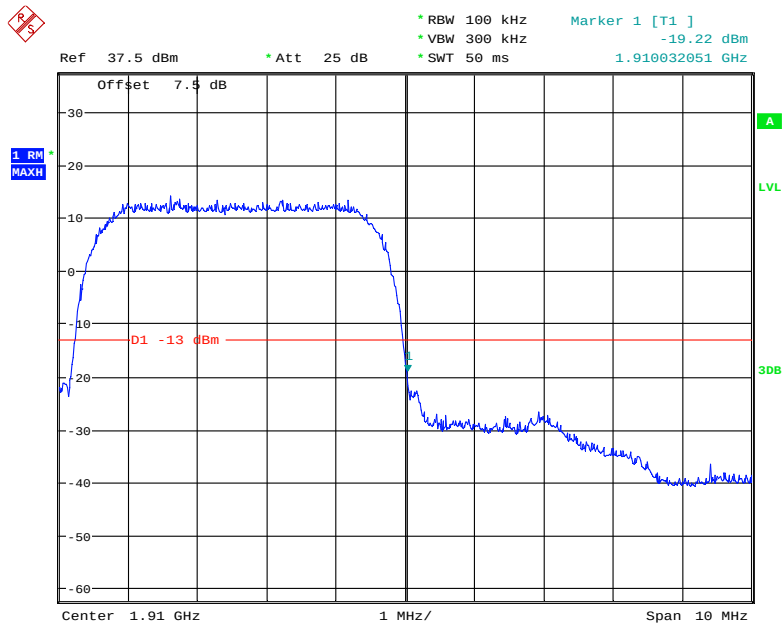
Date: 20.SEP.2018 15:06:37

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



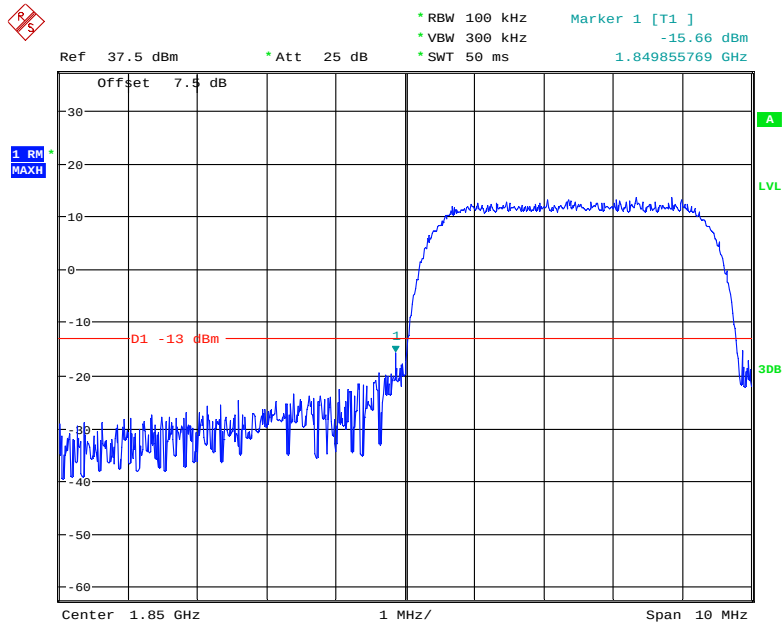
Date: 20.SEP.2018 16:44:13

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



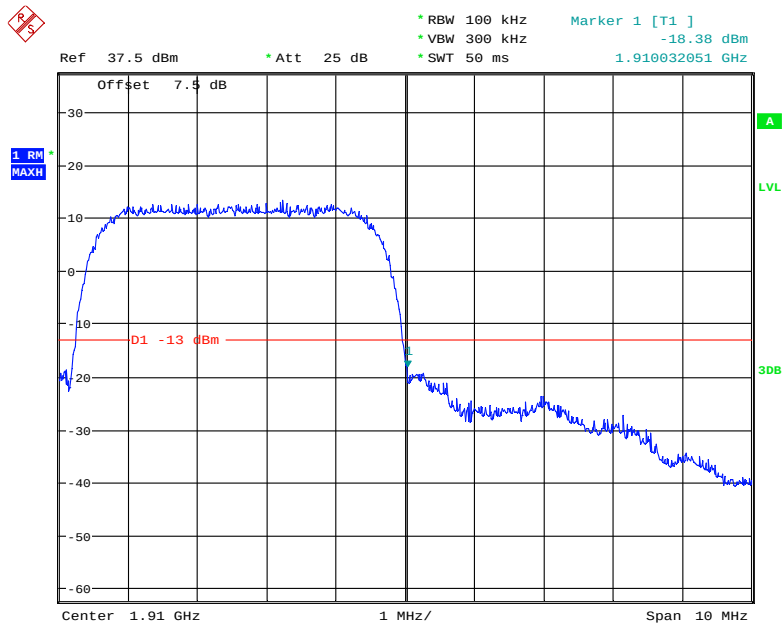
Date: 20.SEP.2018 16:44:43

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



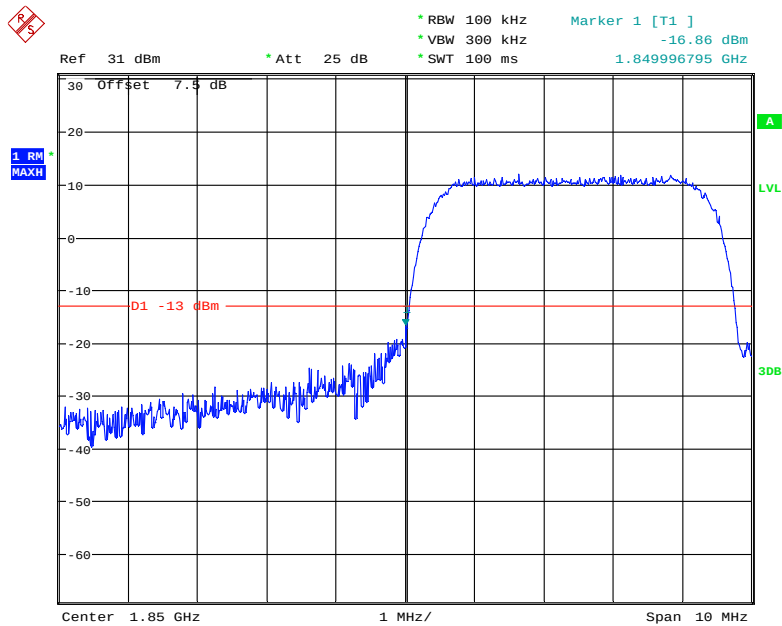
Date: 20.SEP.2018 16:52:19

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



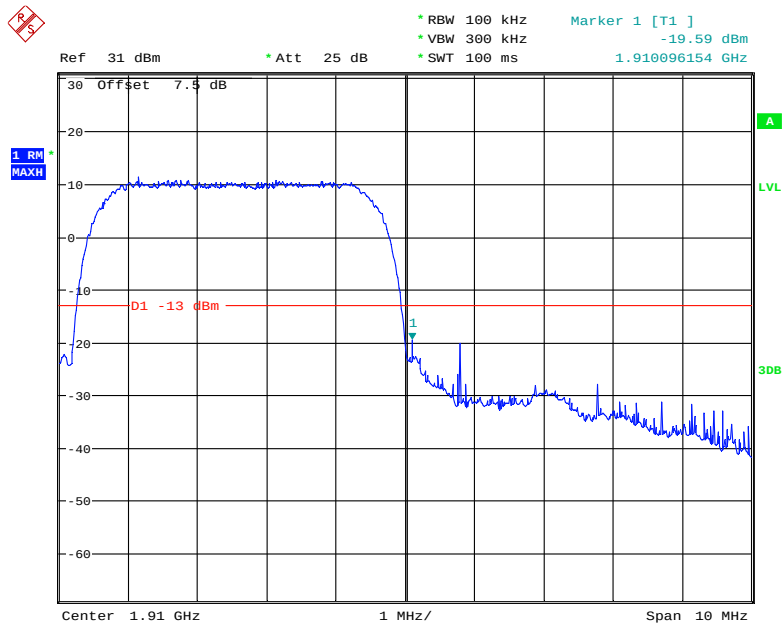
Date: 20.SEP.2018 16:52:36

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



Date: 28.SEP.2018 15:07:32

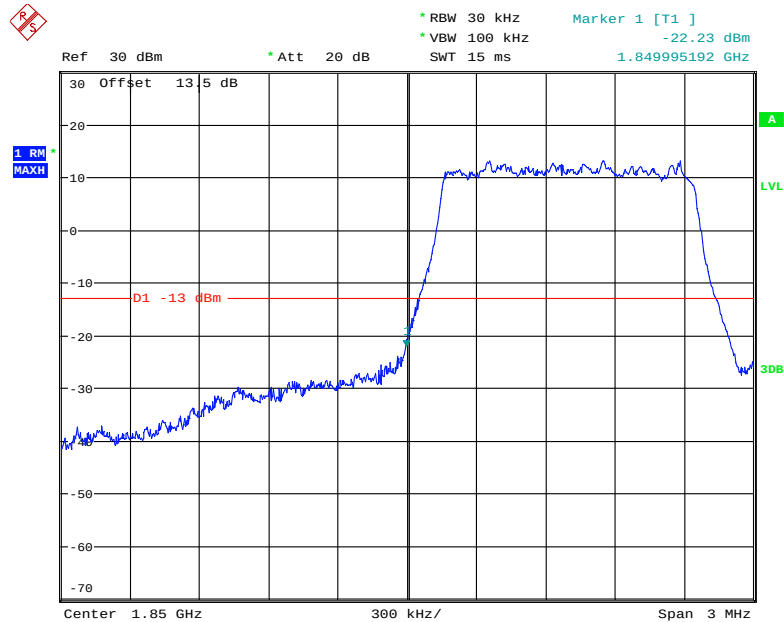
PCS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 28.SEP.2018 15:08:11

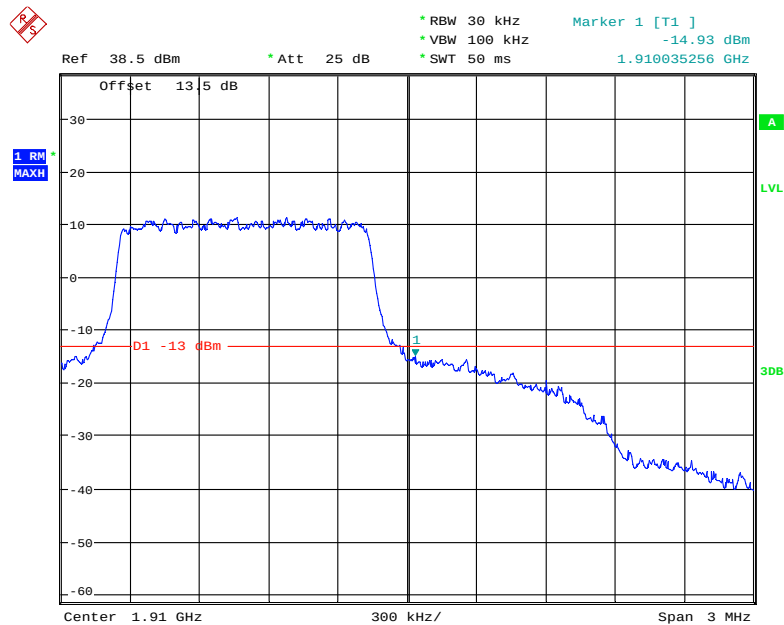
Band 2:

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



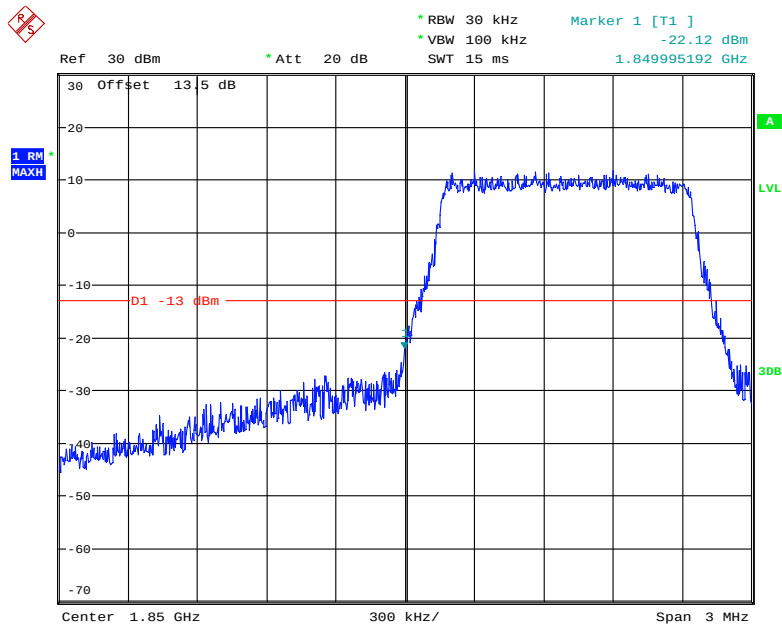
Date: 21.SEP.2018 09:10:49

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



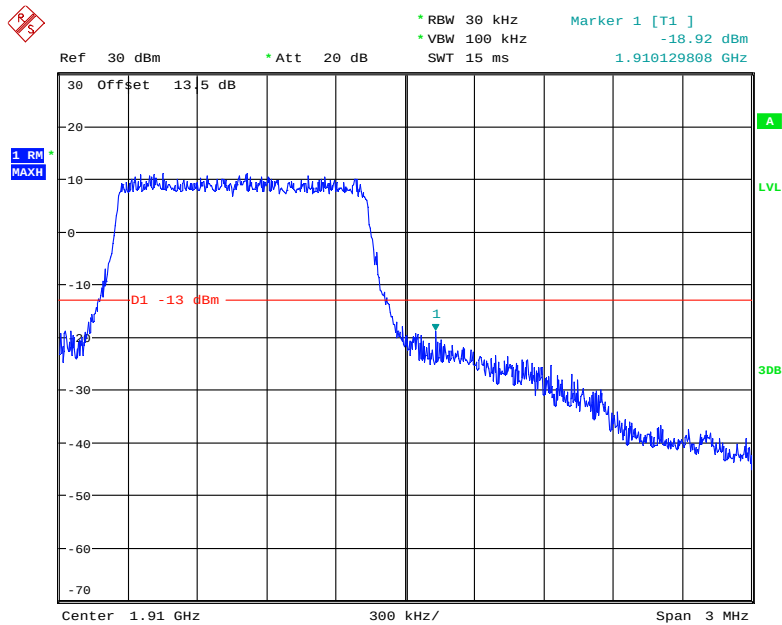
Date: 19.SEP.2018 13:25:41

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



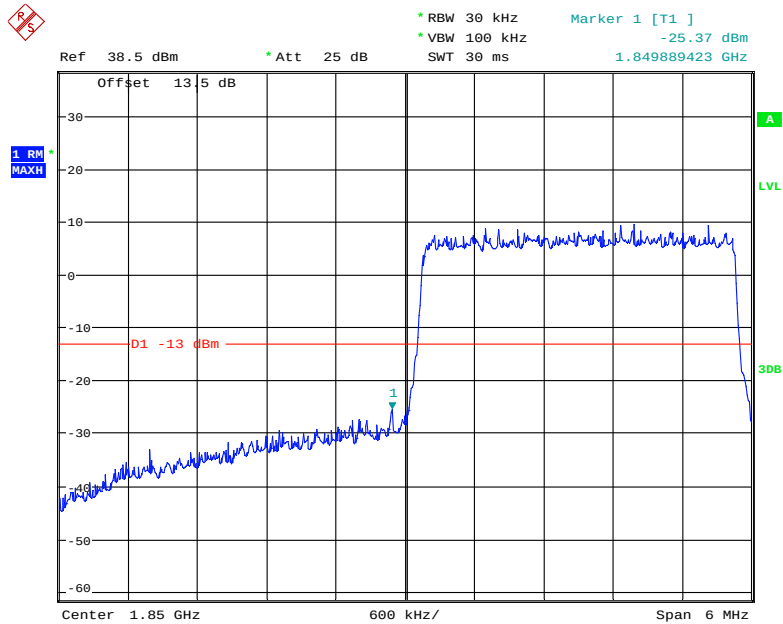
Date: 21.SEP.2018 09:07:37

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



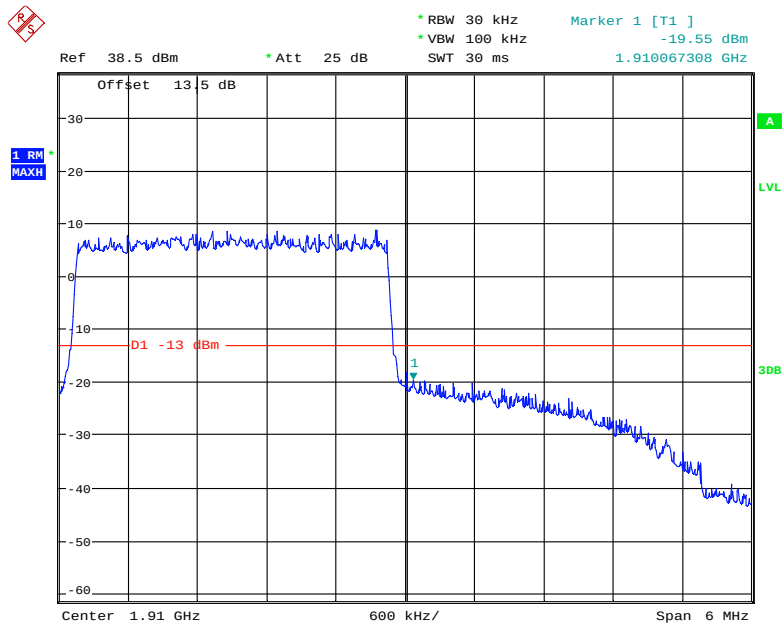
Date: 21.SEP.2018 09:08:44

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



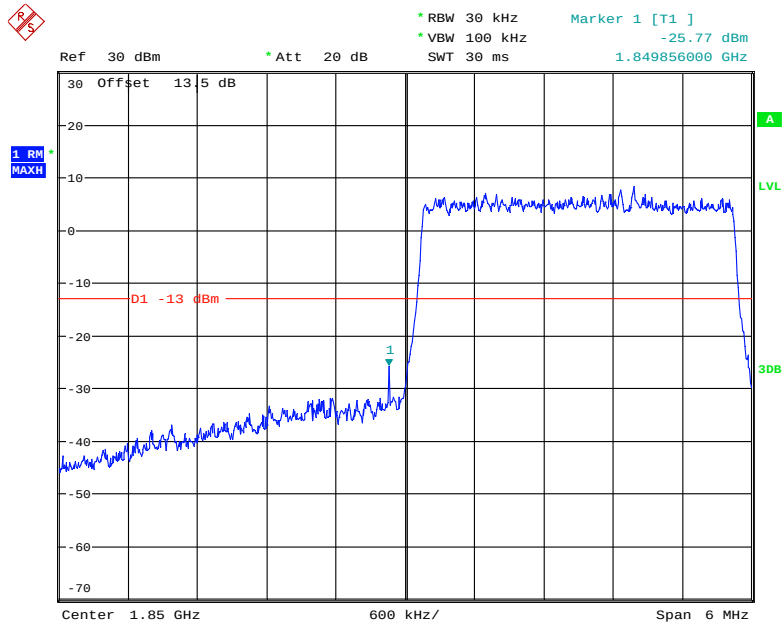
Date: 19.SEP.2018 13:28:23

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



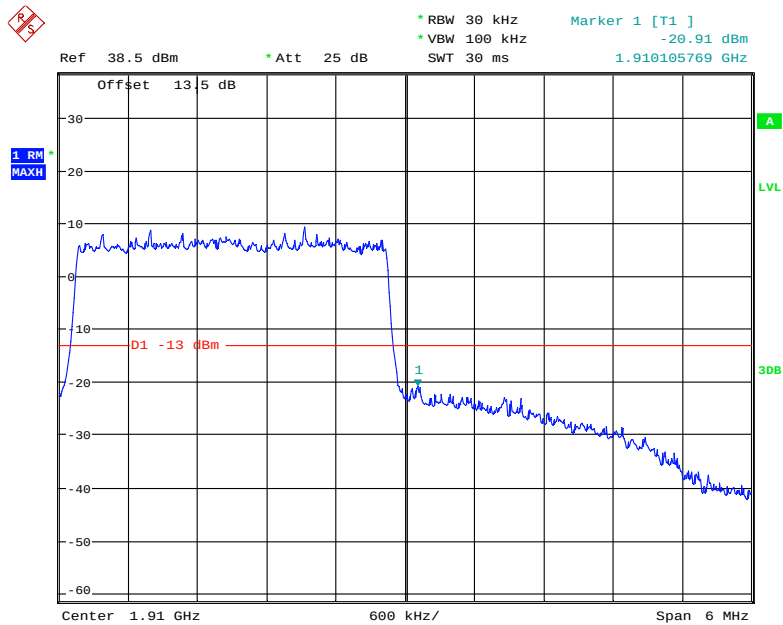
Date: 19.SEP.2018 13:32:01

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



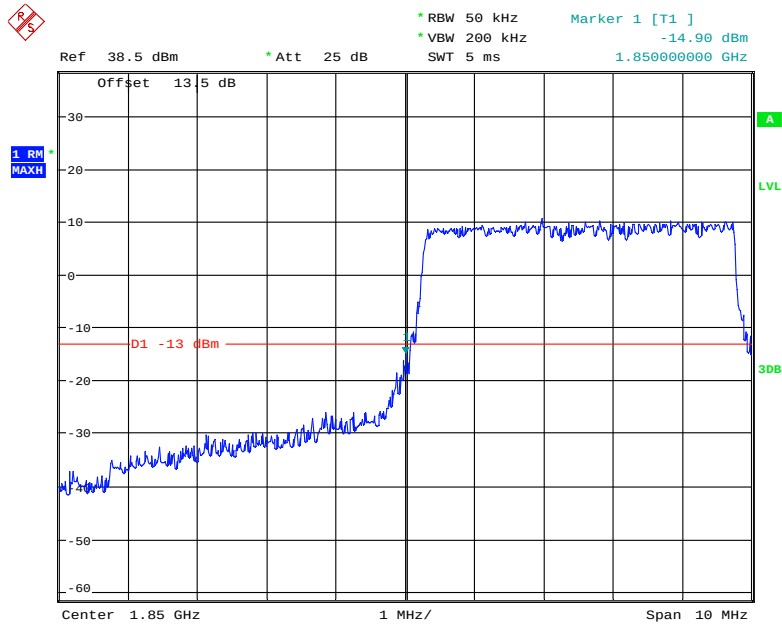
Date: 21.SEP.2018 09:26:31

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



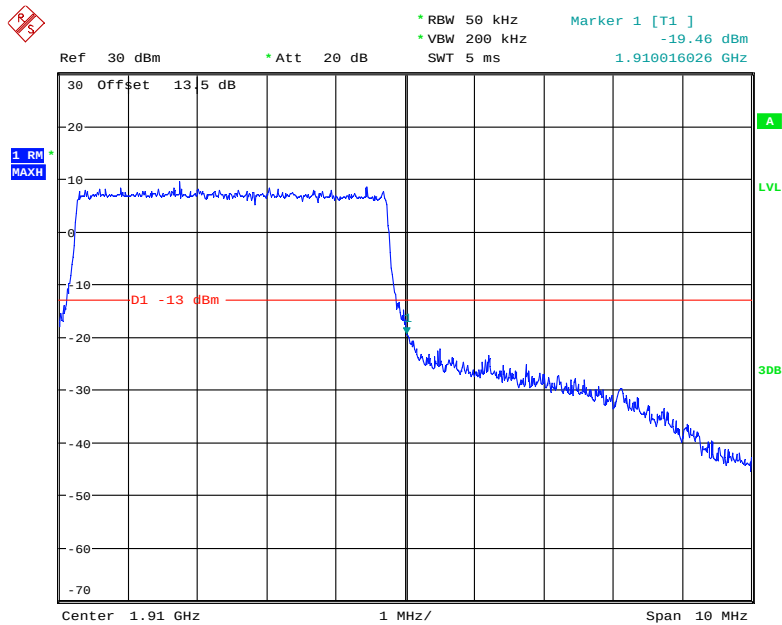
Date: 19.SEP.2018 13:31:10

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



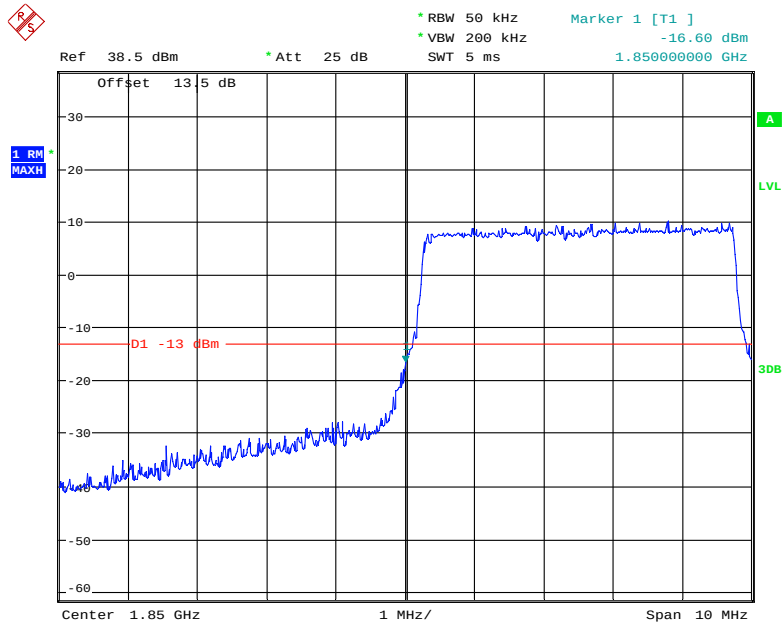
Date: 19.SEP.2018 13:34:46

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



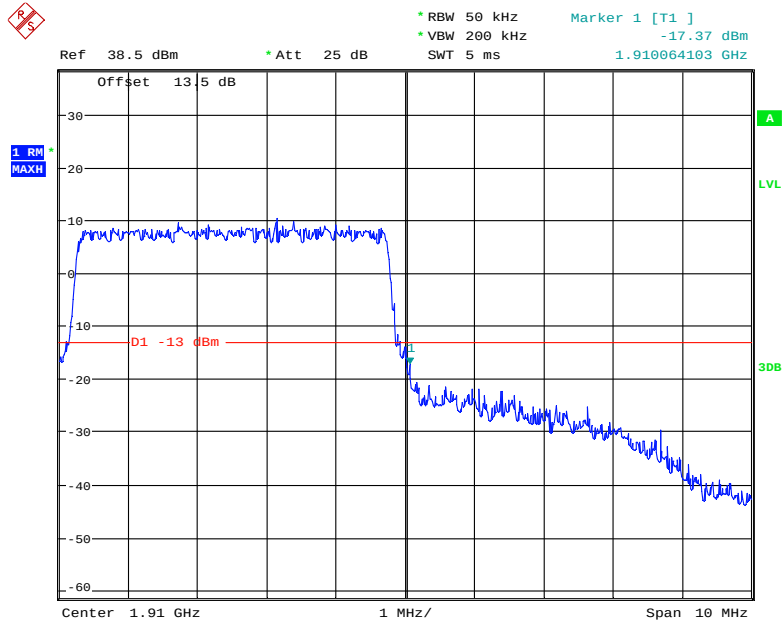
Date: 21.SEP.2018 09:29:46

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



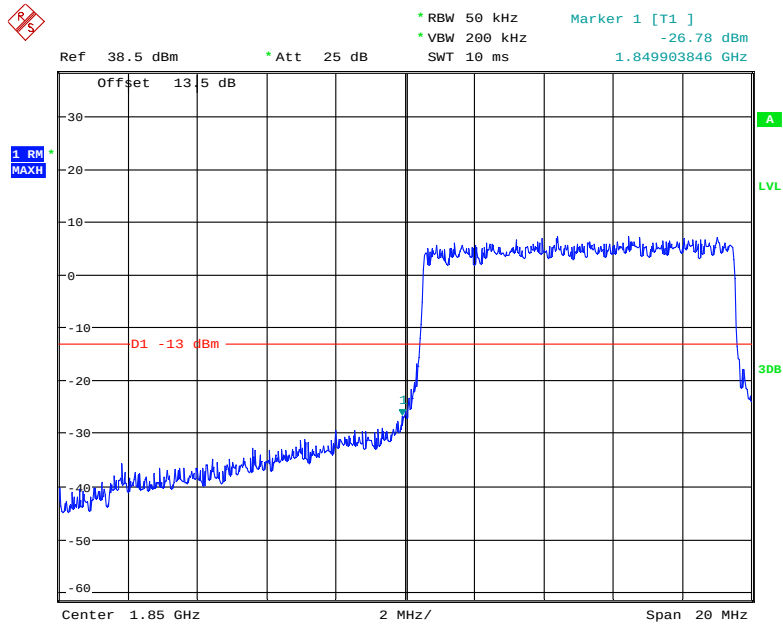
Date: 19.SEP.2018 13:34:14

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



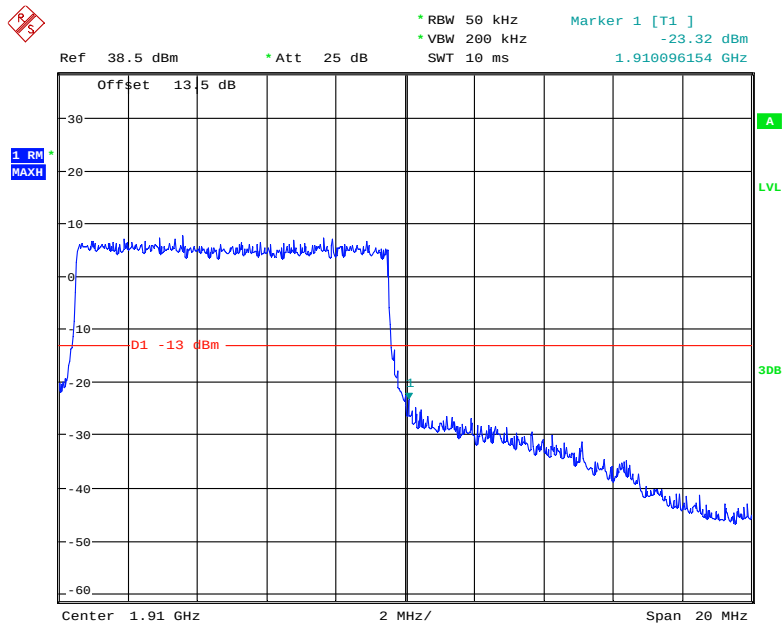
Date: 19.SEP.2018 13:36:55

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



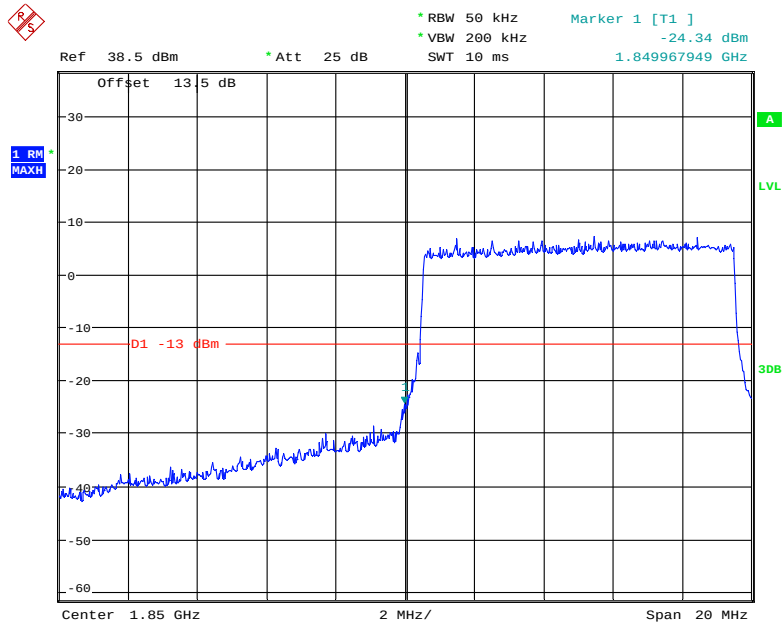
Date: 19.SEP.2018 13:39:46

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



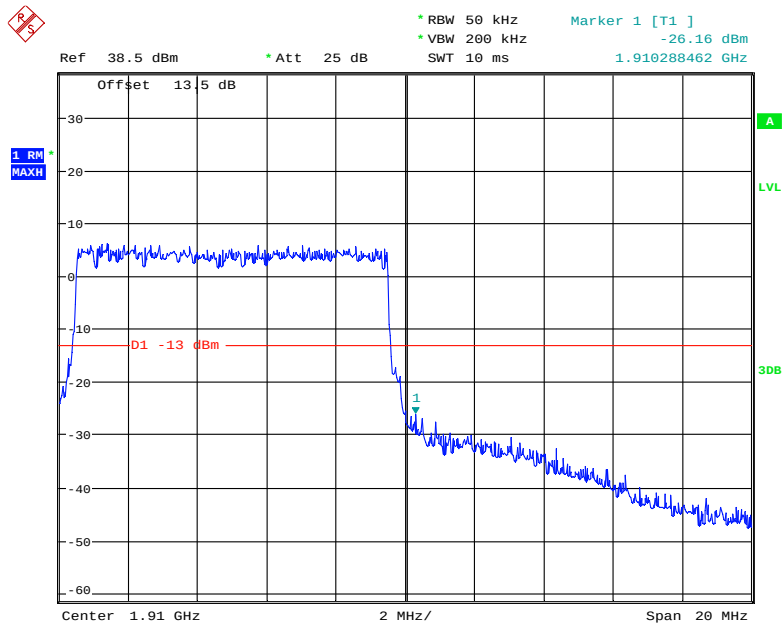
Date: 19.SEP.2018 13:40:28

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



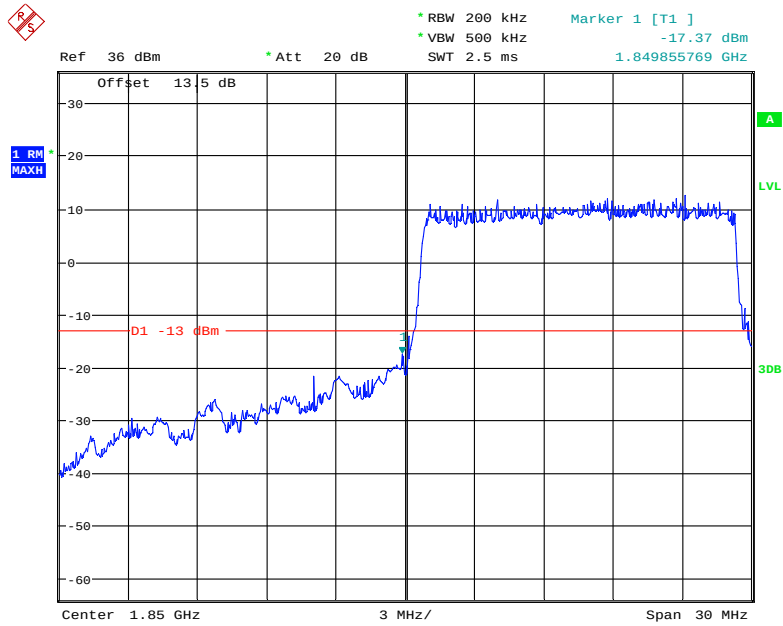
Date: 19.SEP.2018 13:39:13

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



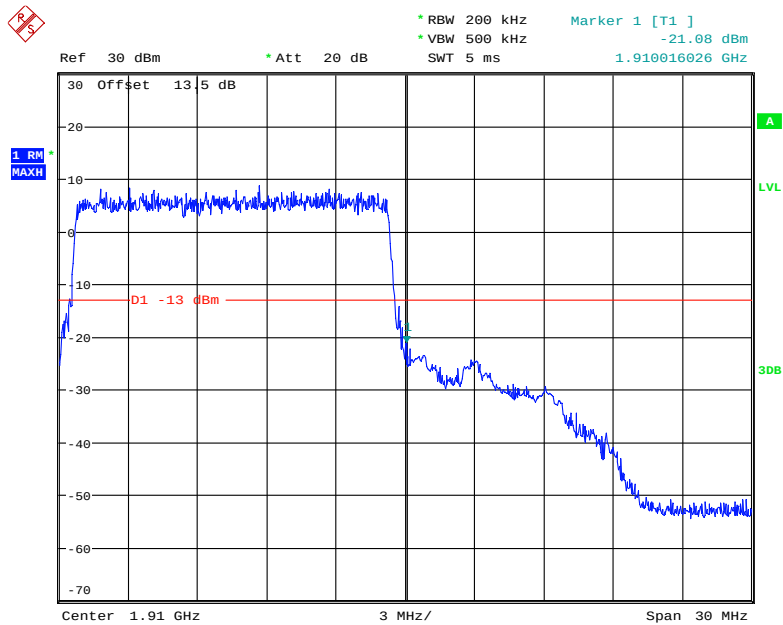
Date: 19.SEP.2018 13:41:01

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



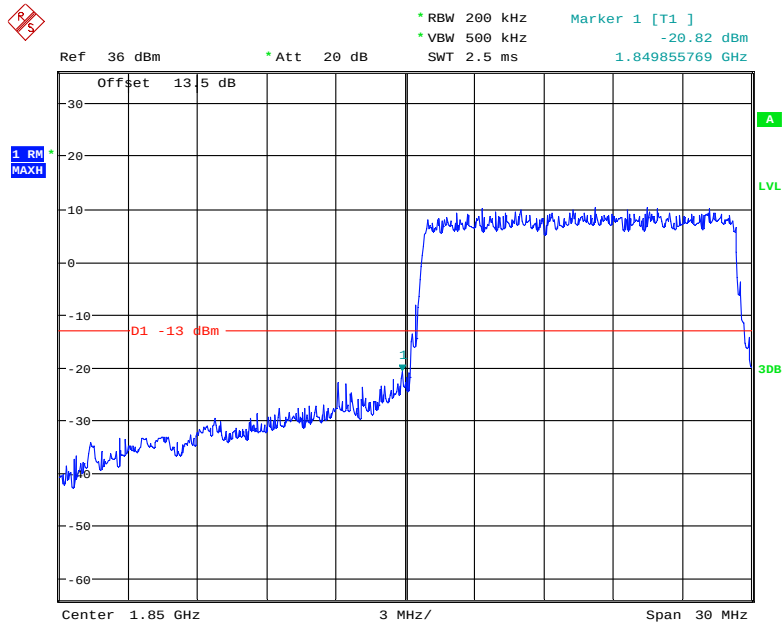
Date: 19.SEP.2018 14:49:36

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



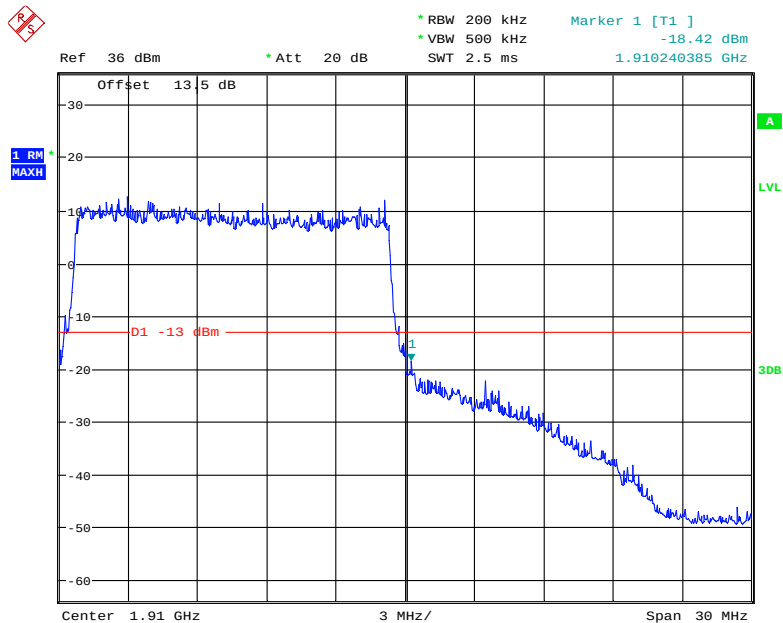
Date: 21.SEP.2018 09:31:22

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

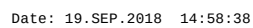
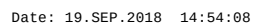


Date: 19.SEP.2018 14:50:24

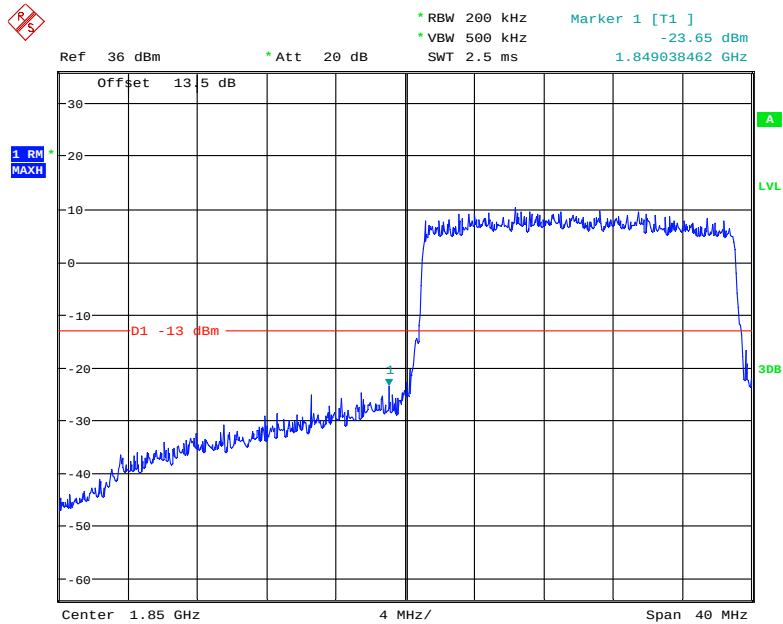
16-QAM (15.0 MHz, FULL RB) - Right Band Edge



Date: 19.SEP.2018 14:51:12

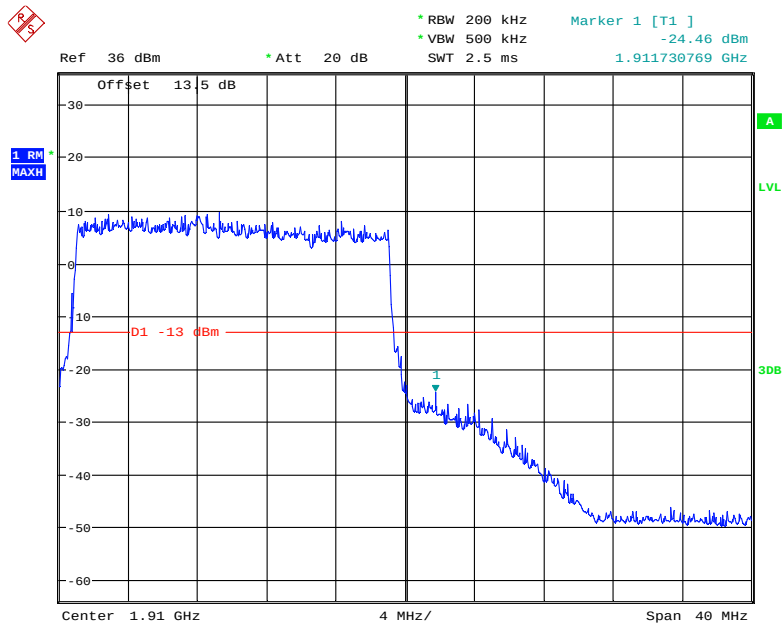


16-QAM (20.0 MHz, FULL RB) - Left Band Edge



Date: 19.SEP.2018 14:54:43

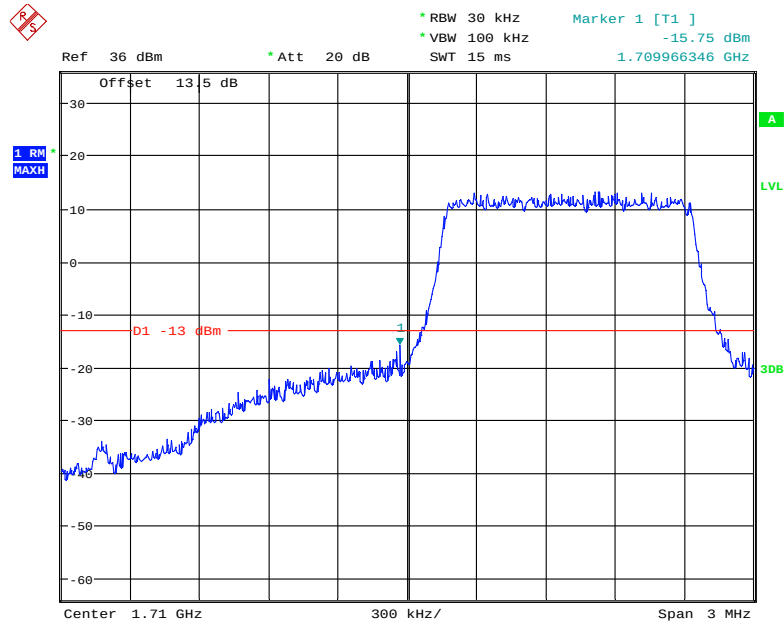
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 19.SEP.2018 14:58:05

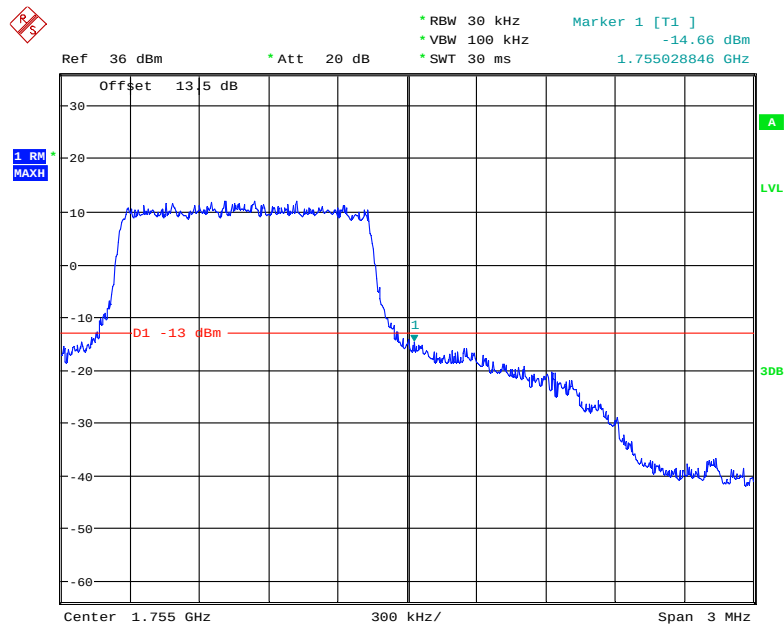
Band 4:

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



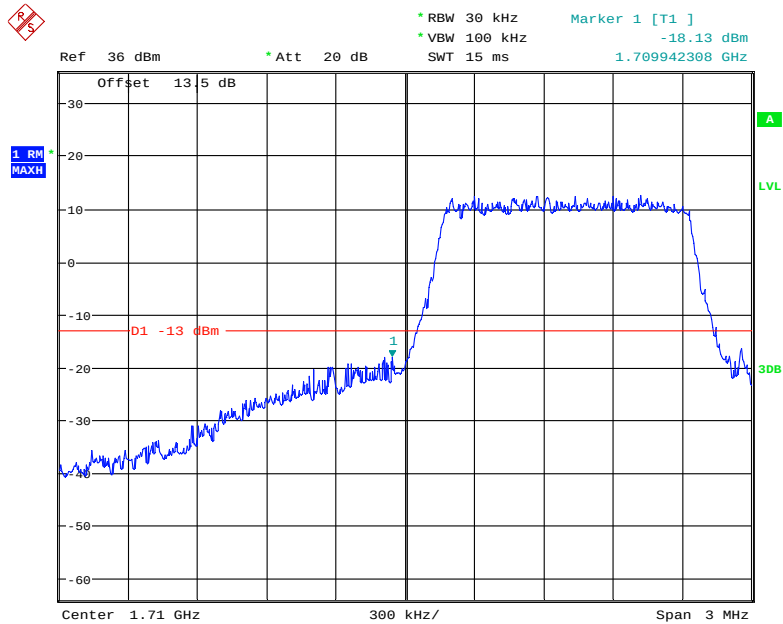
Date: 19.SEP.2018 15:02:28

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



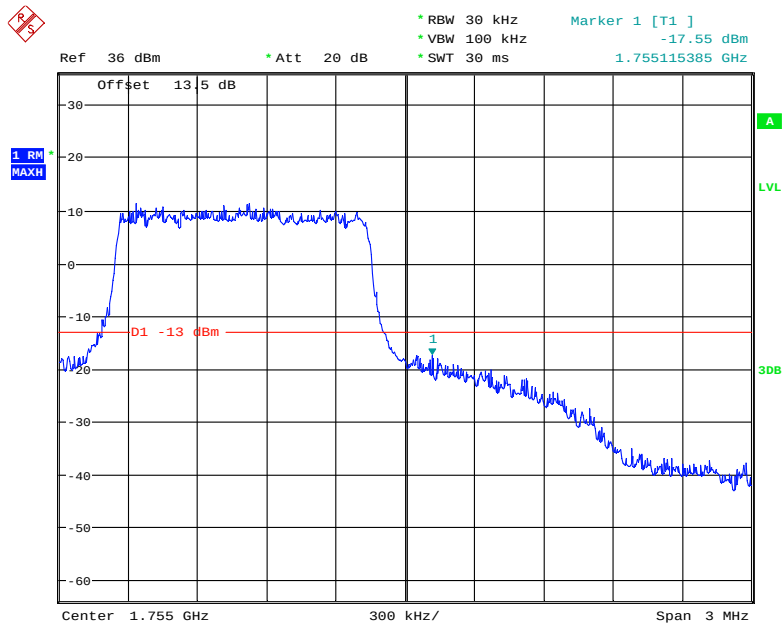
Date: 19.SEP.2018 15:04:28

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



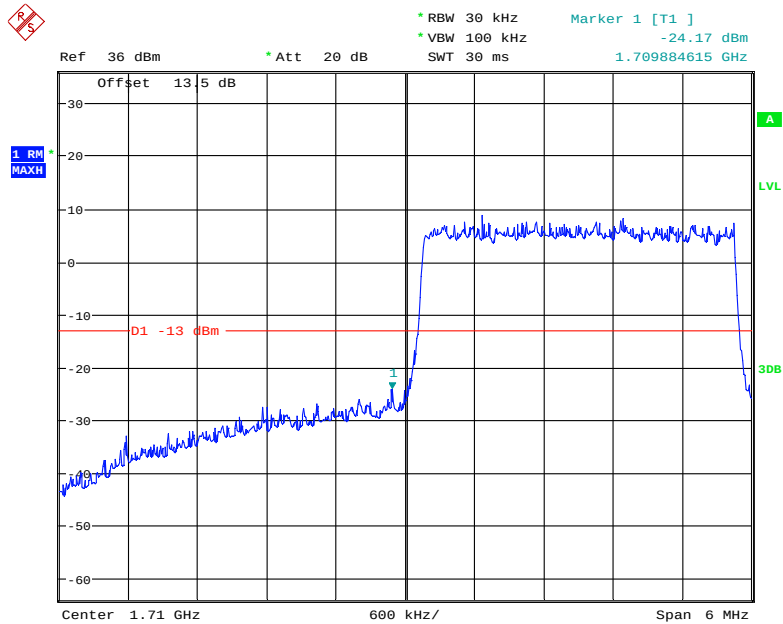
Date: 19.SEP.2018 15:03:10

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



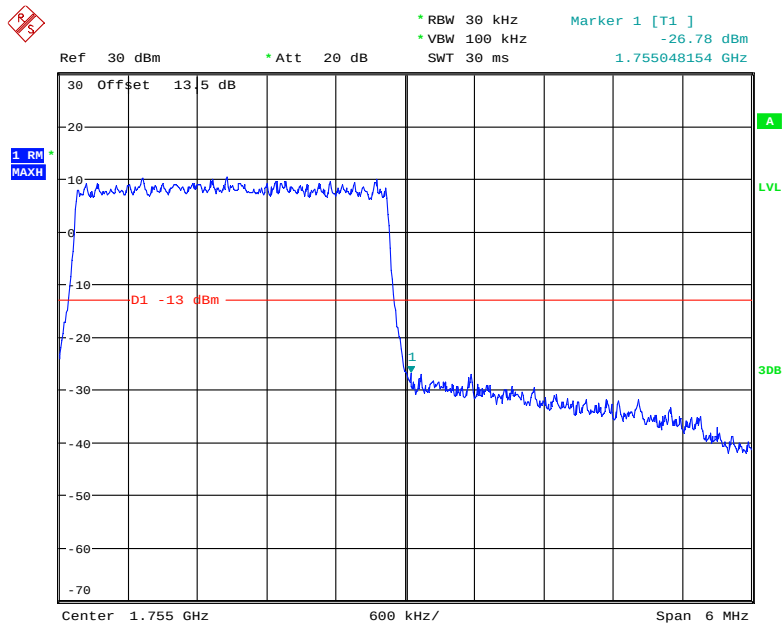
Date: 19.SEP.2018 15:04:00

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



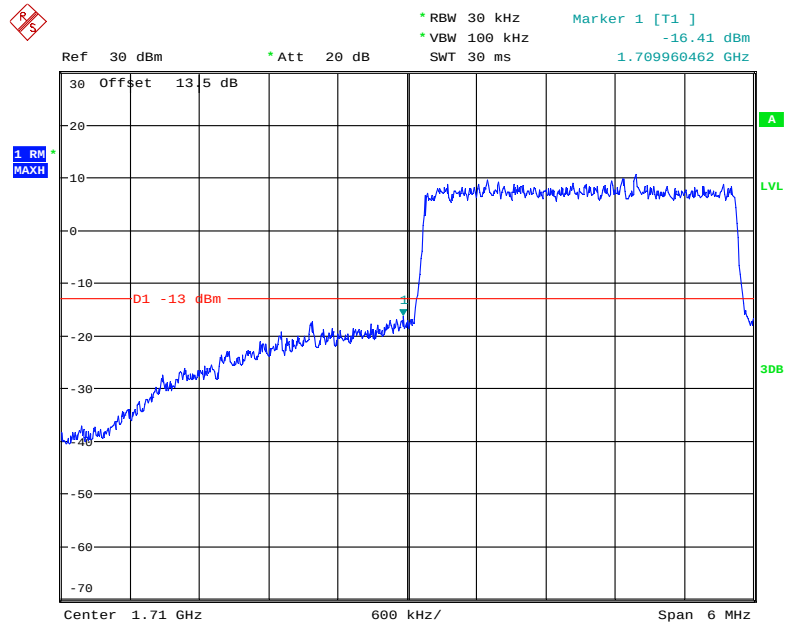
Date: 19.SEP.2018 15:05:35

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



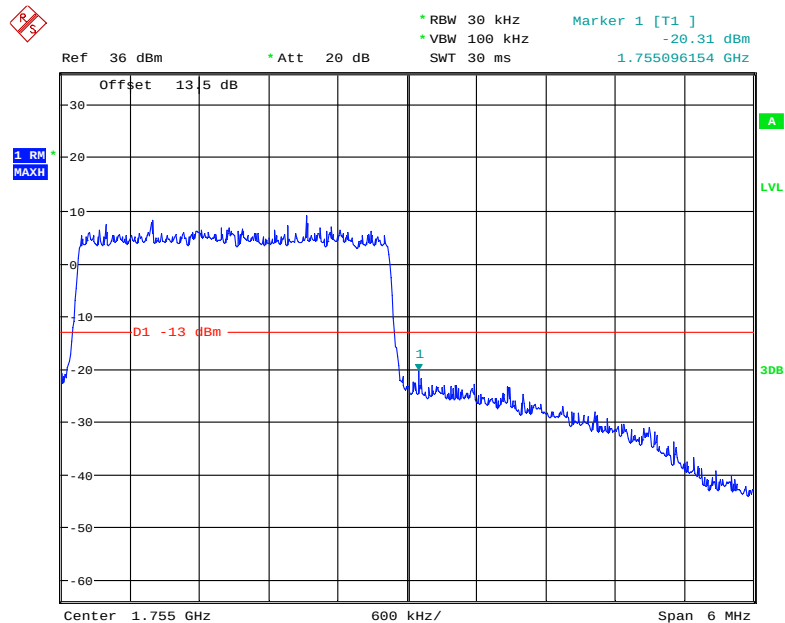
Date: 21.SEP.2018 09:43:56

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



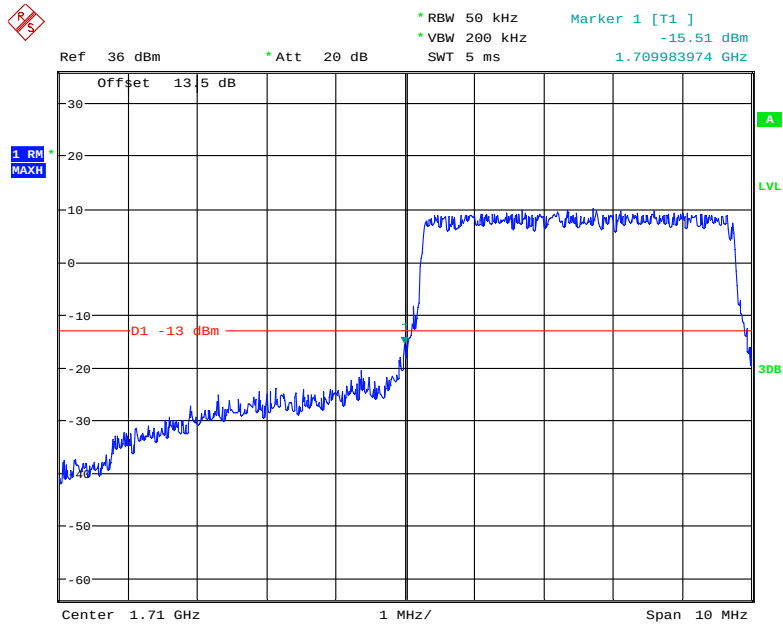
Date: 21.SEP.2018 09:37:24

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



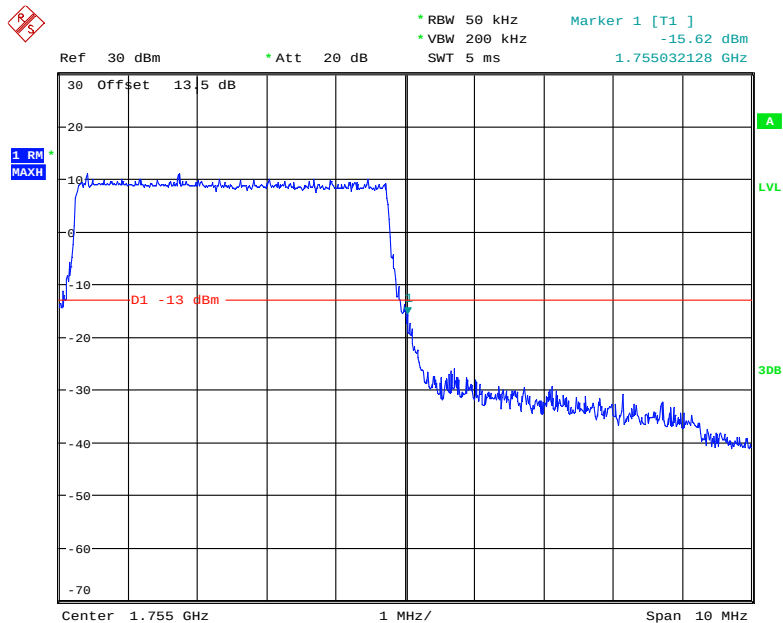
Date: 19.SEP.2018 15:06:51

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



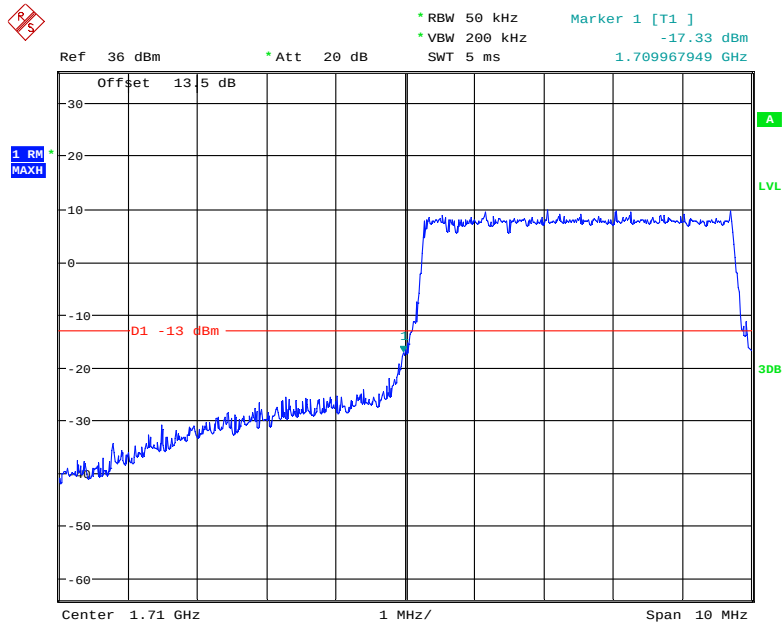
Date: 19.SEP.2018 15:10:06

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



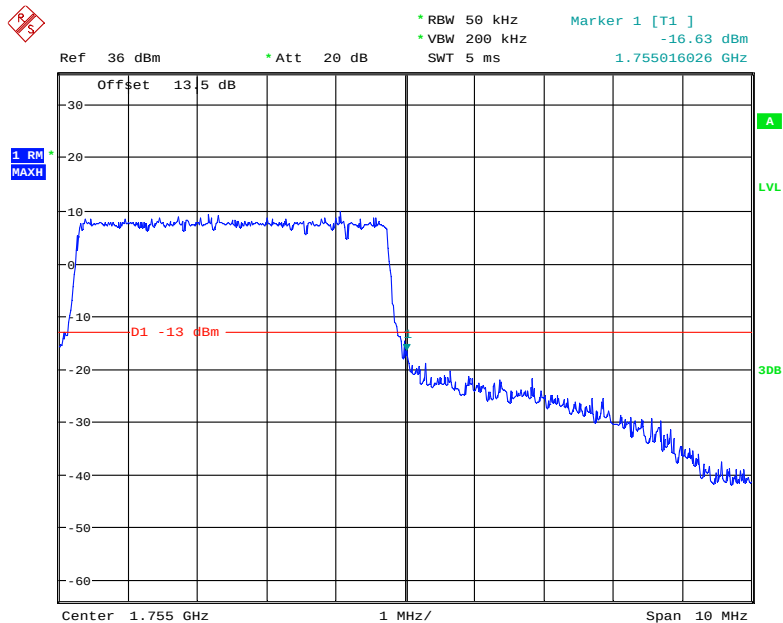
Date: 21.SEP.2018 09:45:16

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



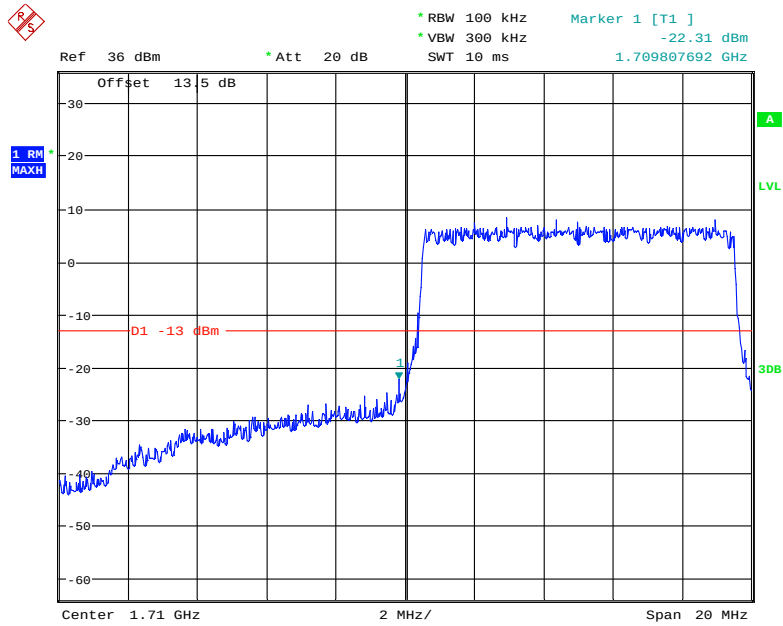
Date: 19.SEP.2018 15:09:25

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



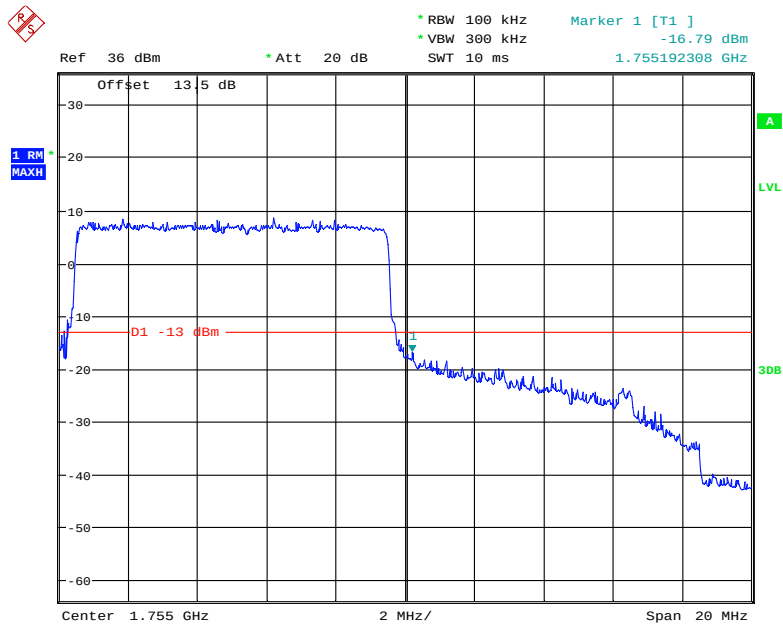
Date: 19.SEP.2018 15:11:14

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



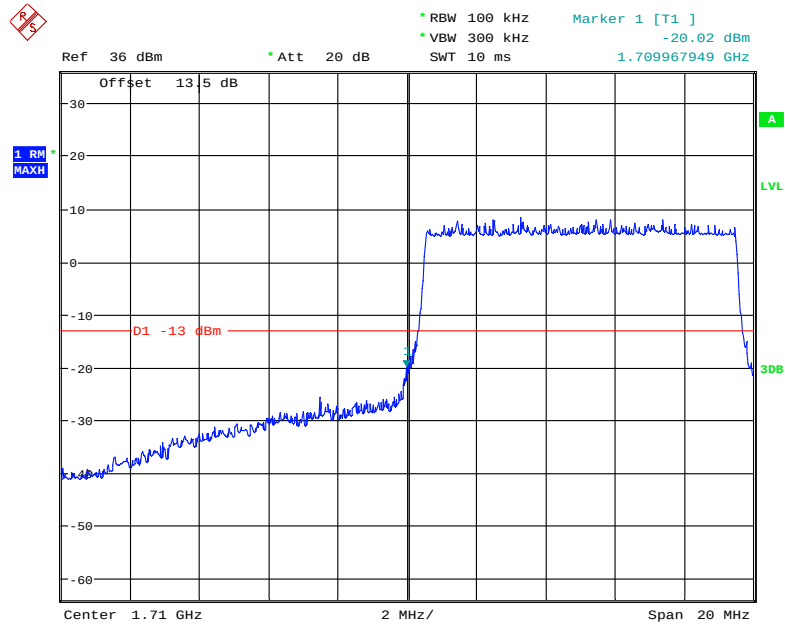
Date: 19.SEP.2018 15:17:32

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



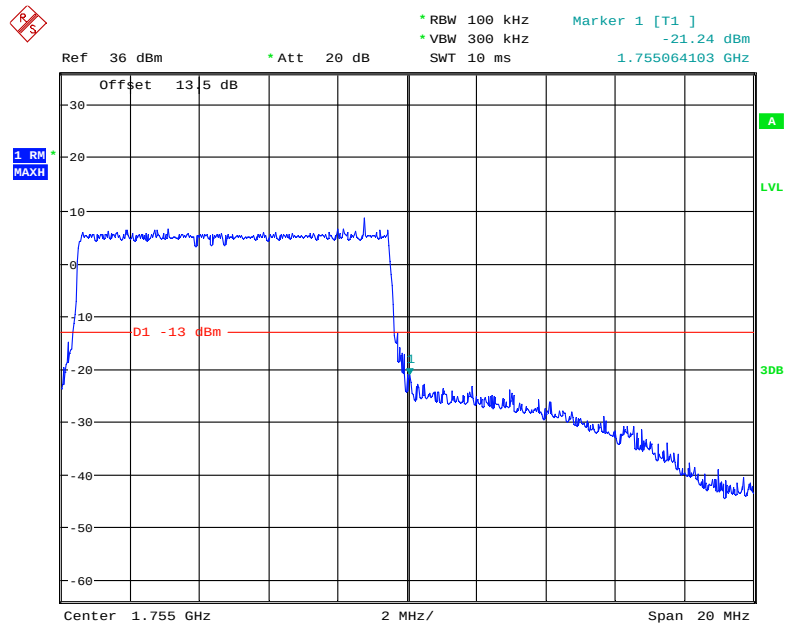
Date: 19.SEP.2018 15:18:51

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



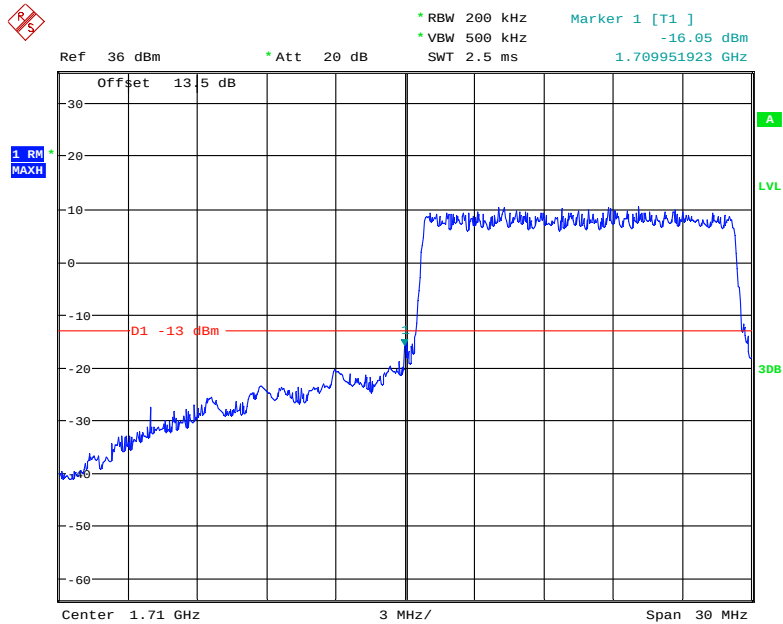
Date: 19.SEP.2018 15:17:09

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



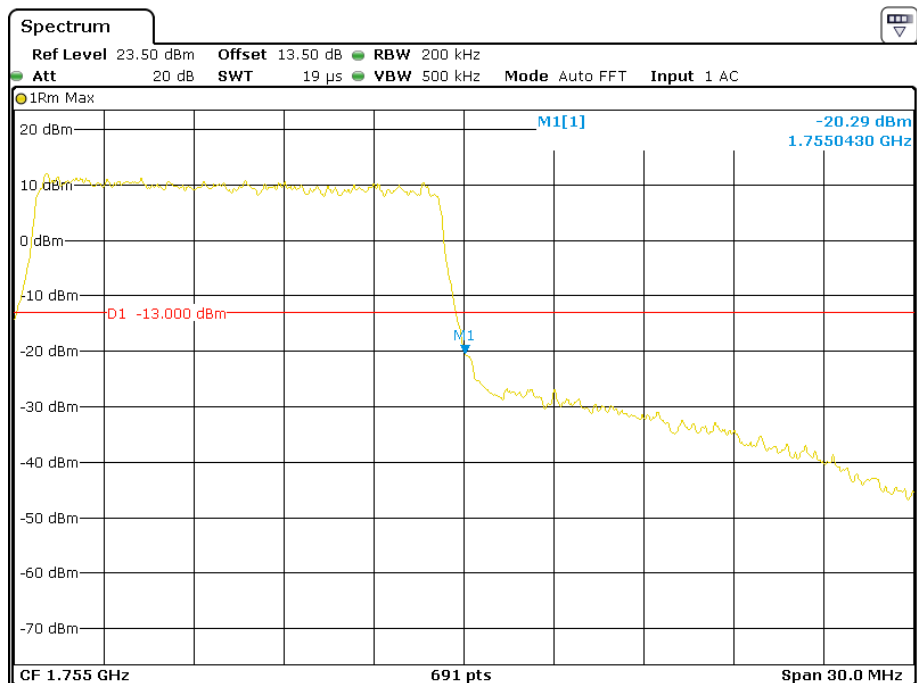
Date: 19.SEP.2018 15:19:21

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



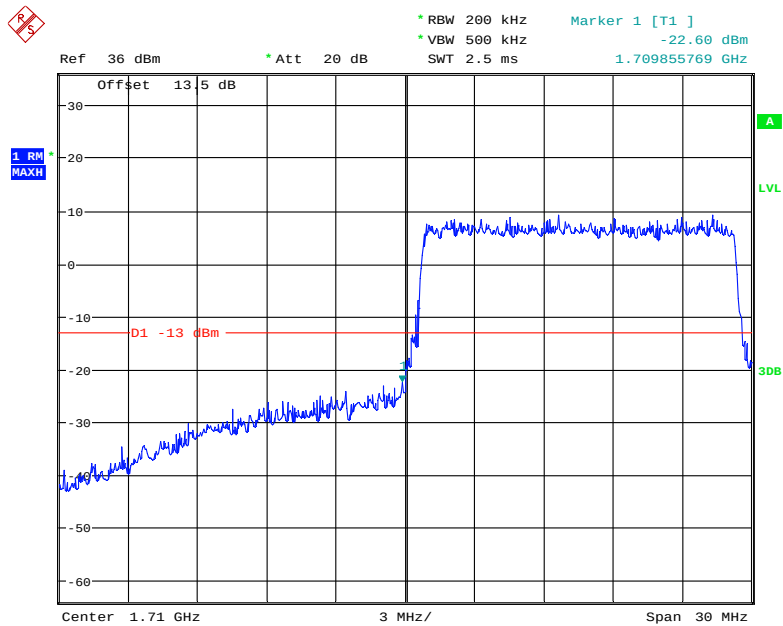
Date: 19.SEP.2018 15:20:34

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



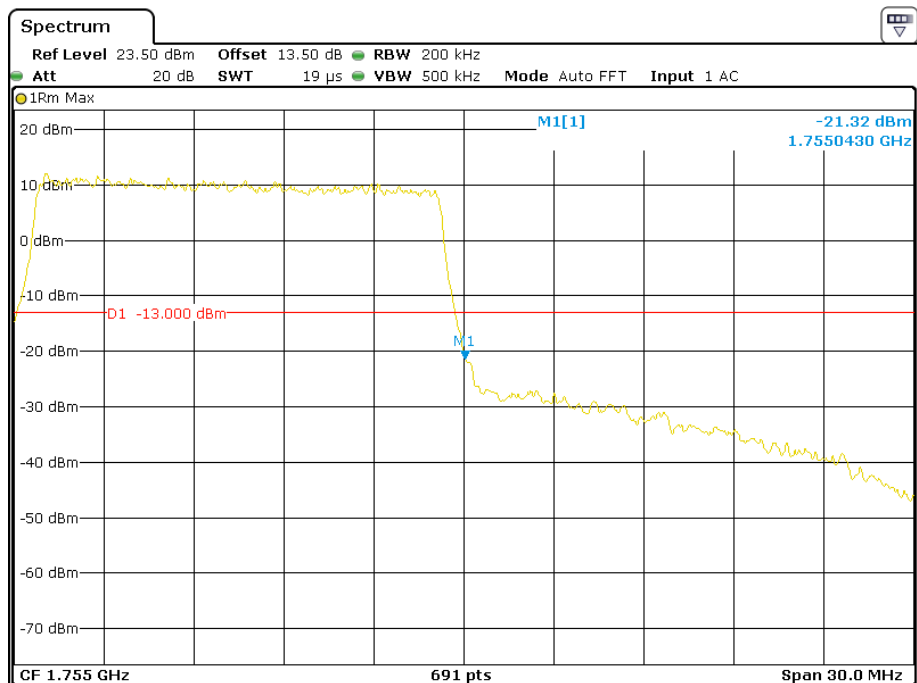
Date: 30.SEP.2018 16:48:53

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



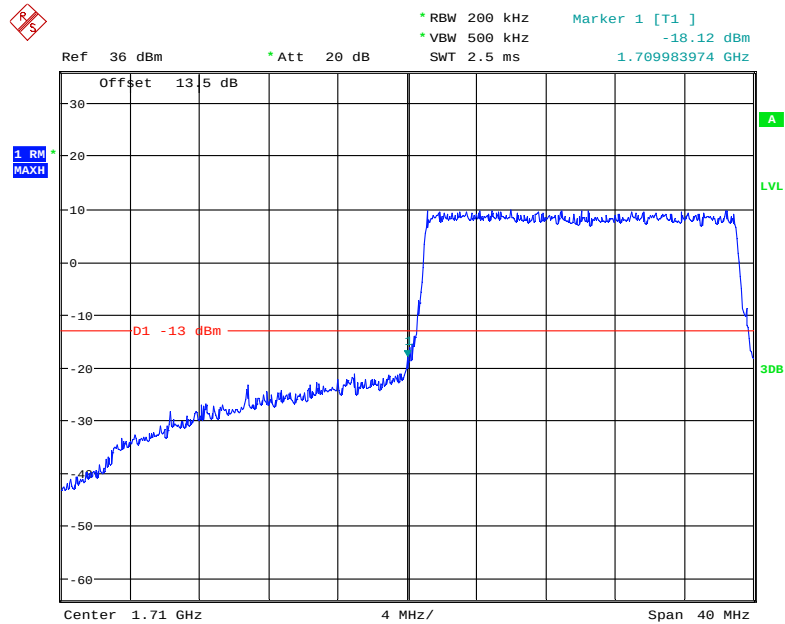
Date: 19.SEP.2018 15:21:14

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



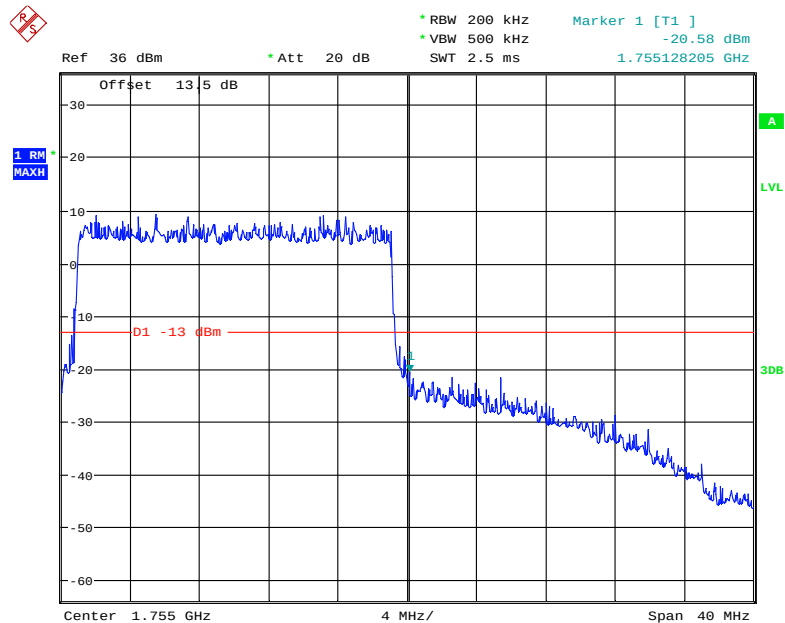
Date: 30.SEP.2018 16:45:35

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



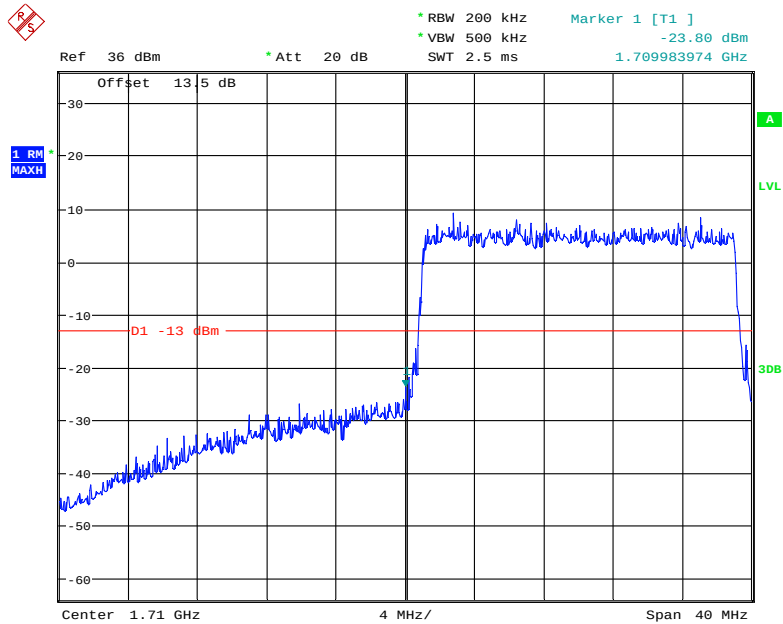
Date: 19.SEP.2018 15:27:01

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



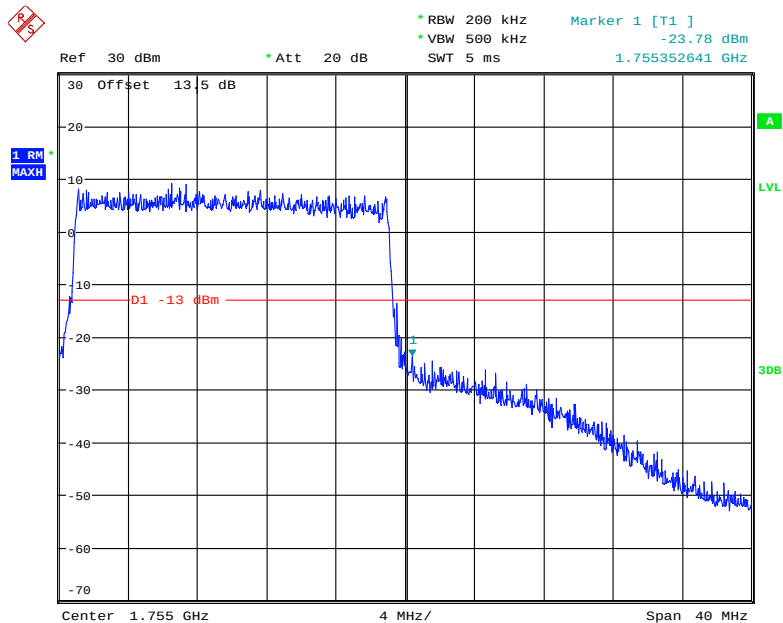
Date: 19.SEP.2018 15:28:23

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



Date: 19.SEP.2018 15:27:31

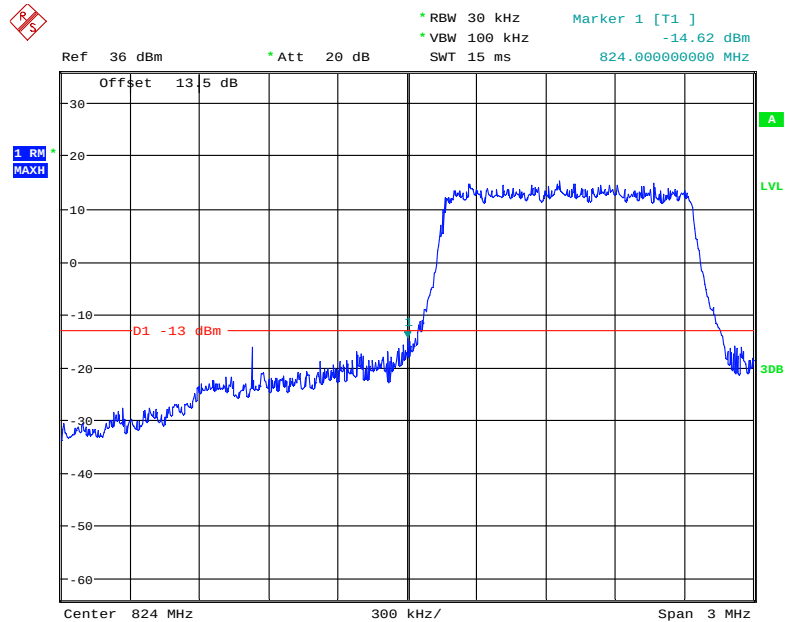
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 21.SEP.2018 09:46:57

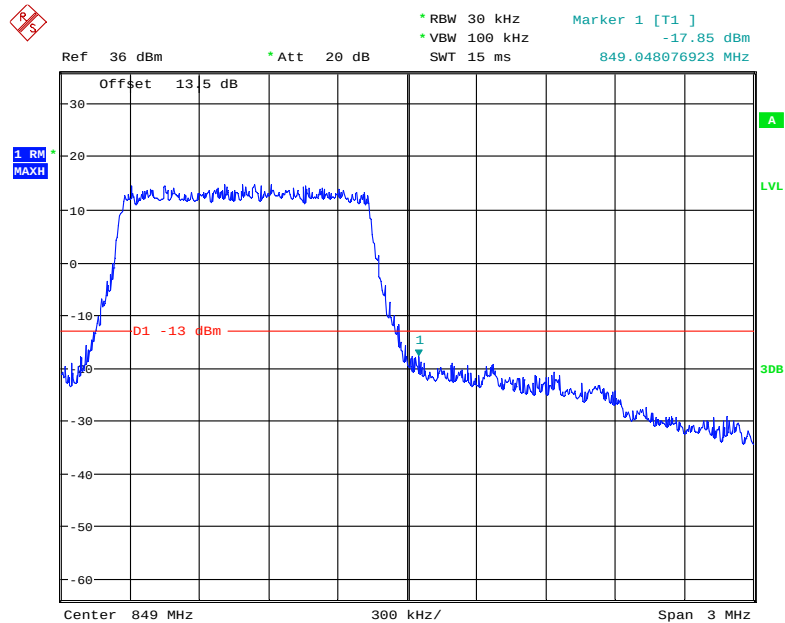
Band 5:

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



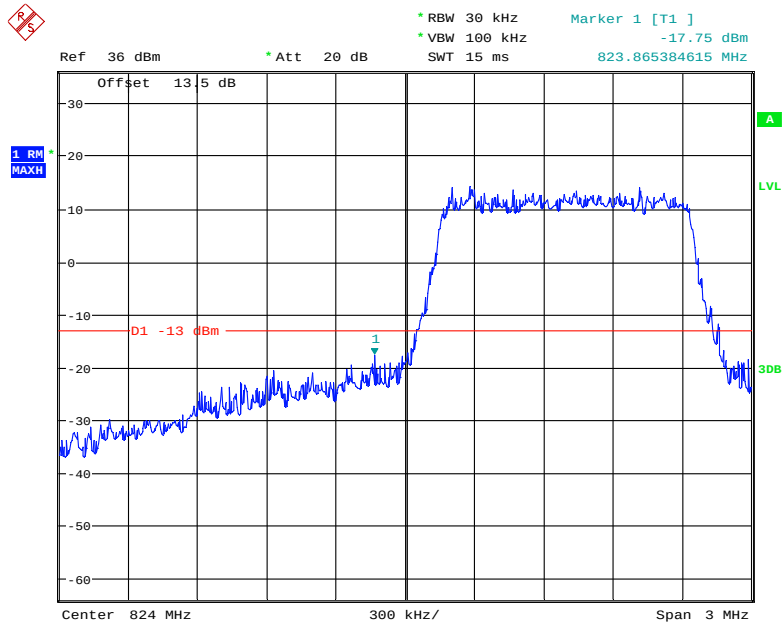
Date: 19.SEP.2018 15:31:13

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



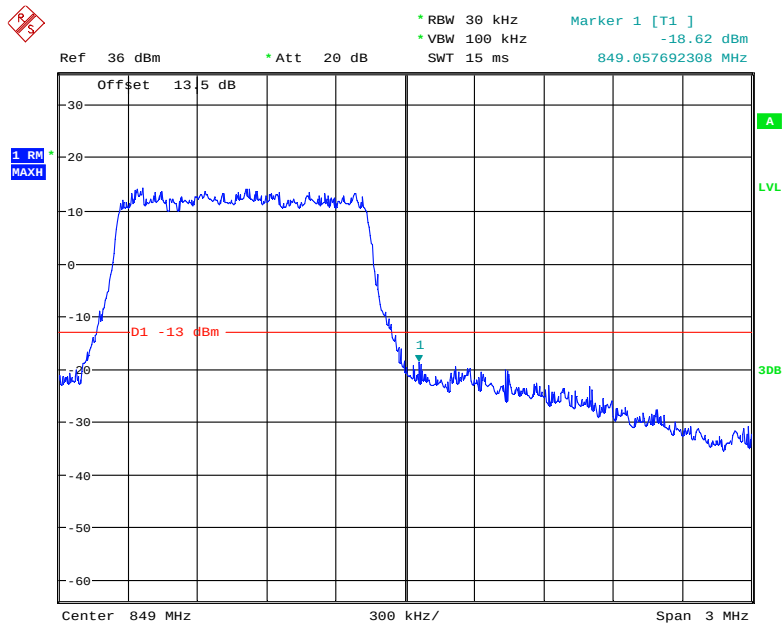
Date: 19.SEP.2018 15:32:45

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



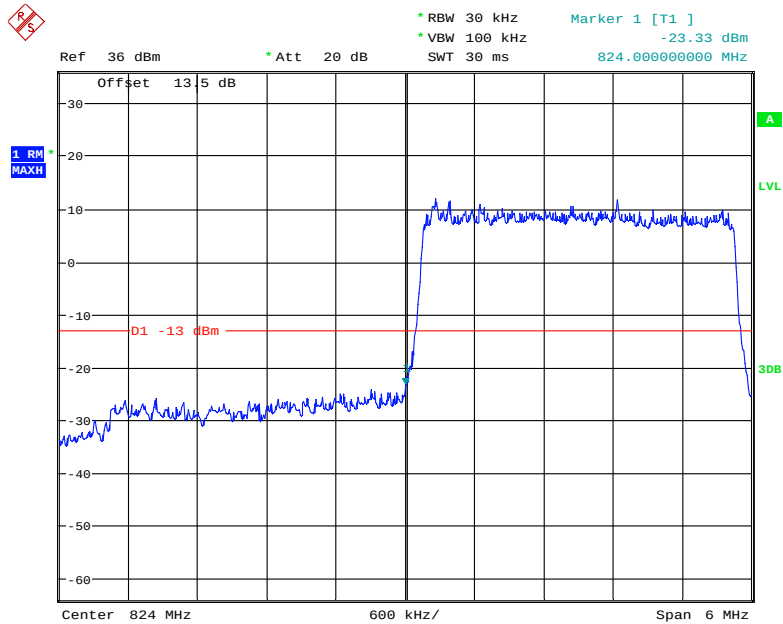
Date: 19.SEP.2018 15:31:42

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



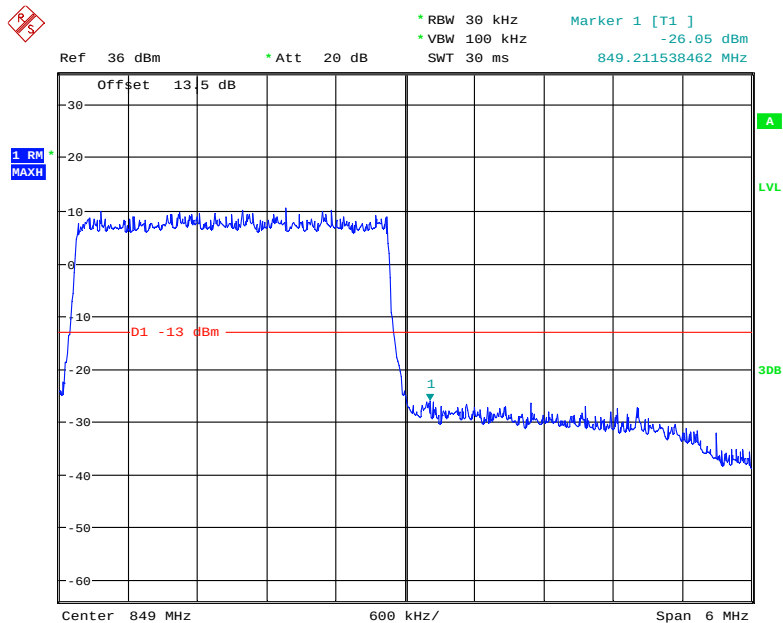
Date: 19.SEP.2018 15:32:20

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



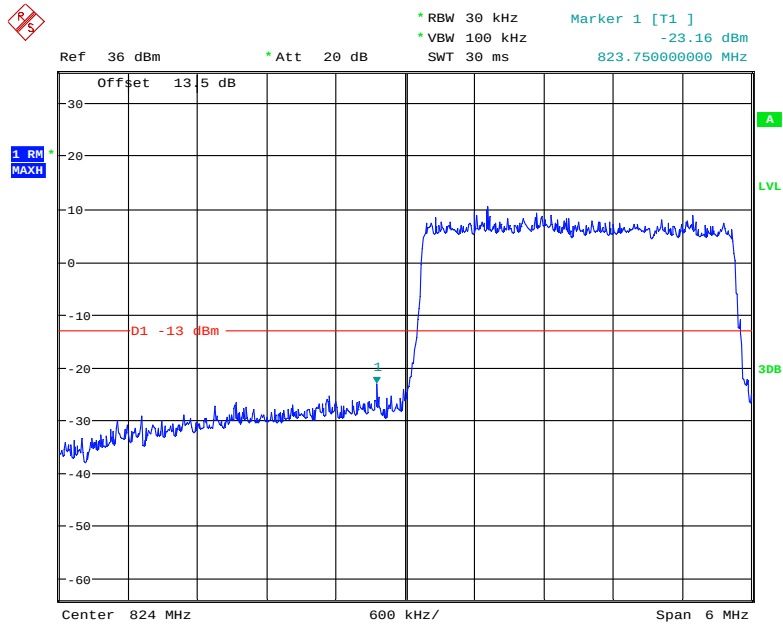
Date: 19.SEP.2018 15:35:13

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



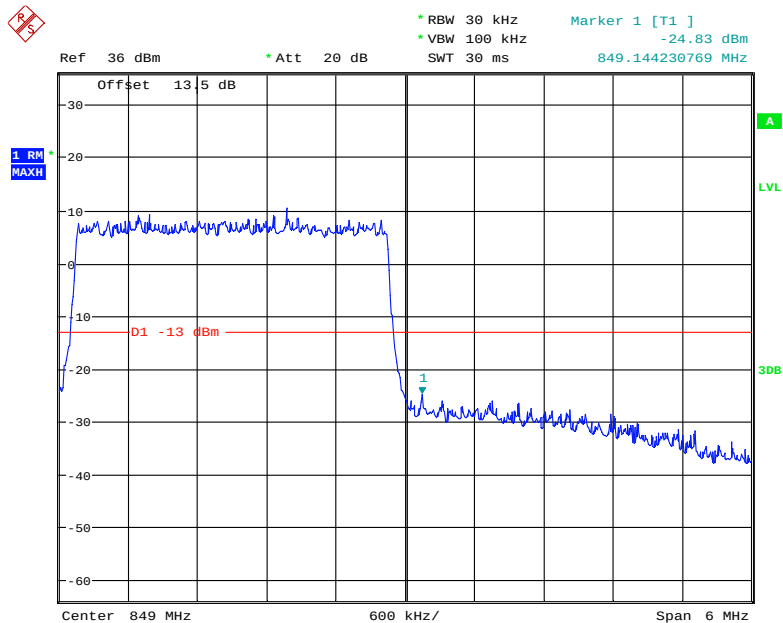
Date: 19.SEP.2018 15:36:55

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



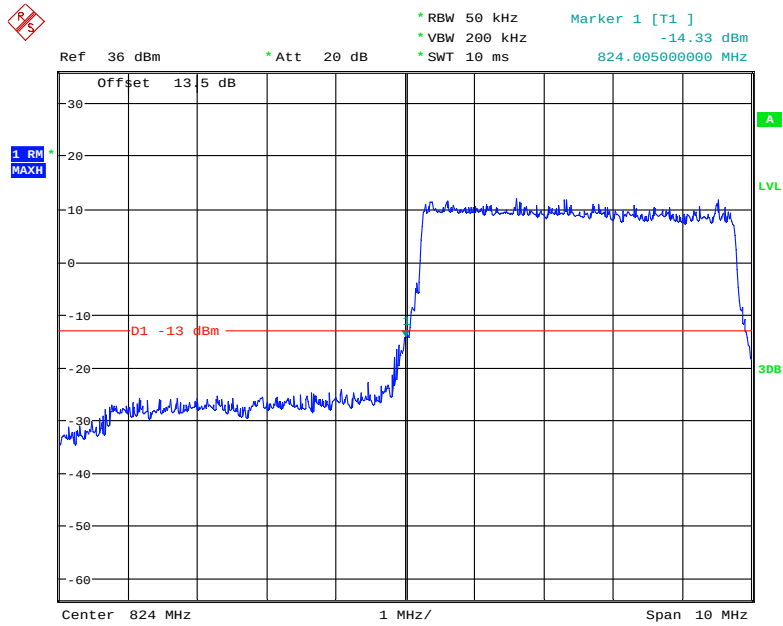
Date: 19.SEP.2018 15:35:44

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



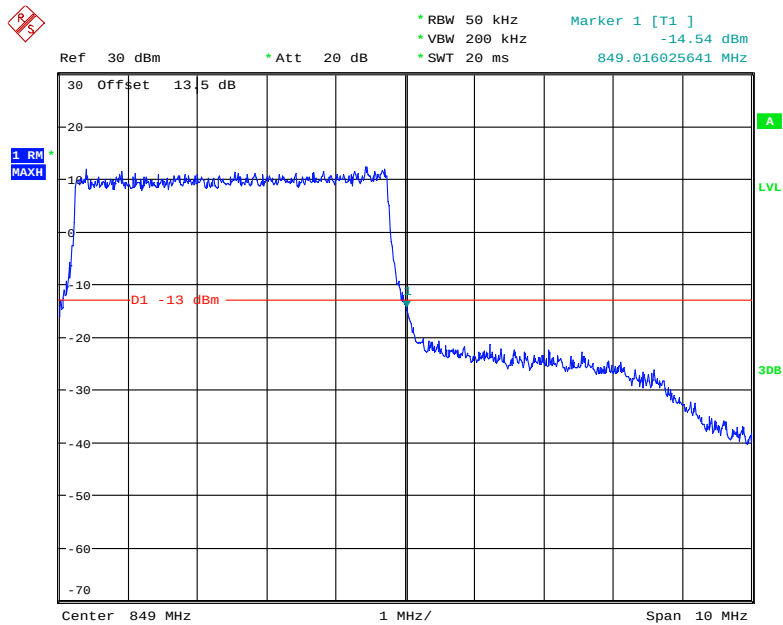
Date: 19.SEP.2018 15:36:30

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



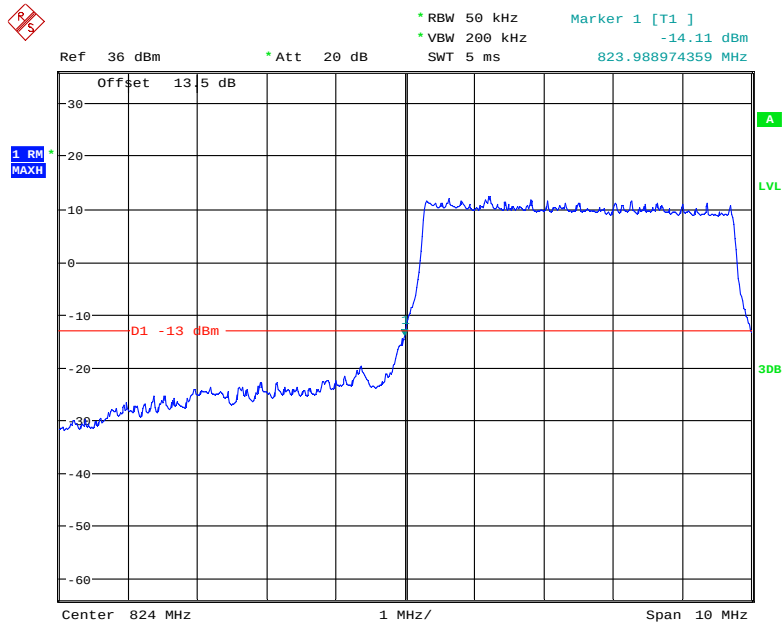
Date: 19.SEP.2018 15:46:10

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



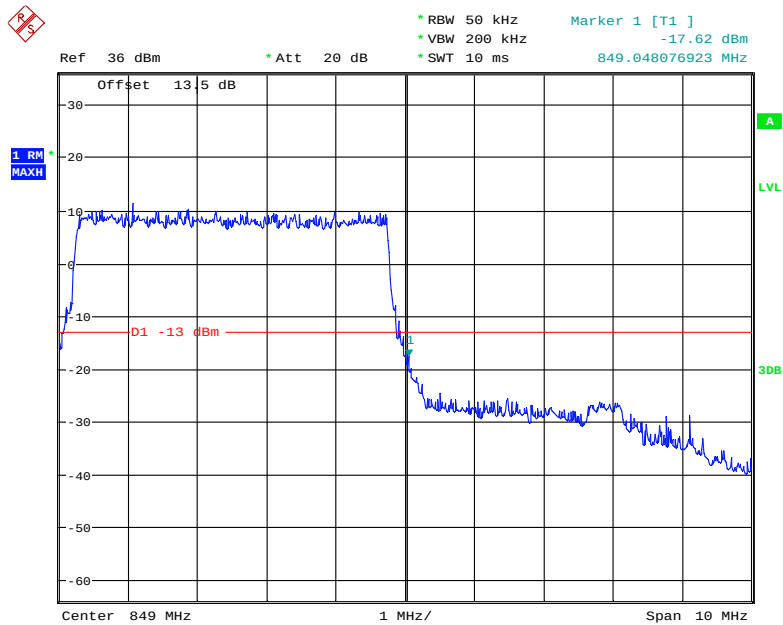
Date: 21.SEP.2018 09:56:04

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



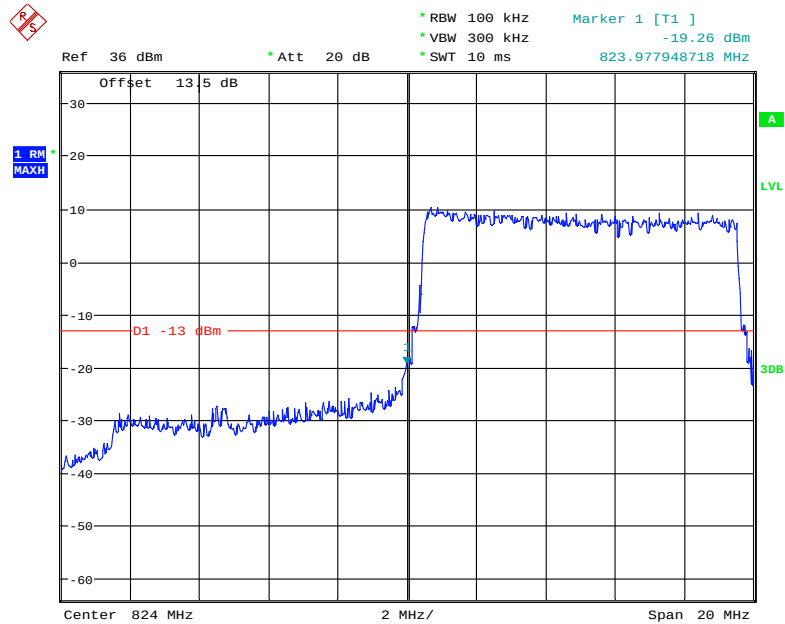
Date: 19.SEP.2018 15:45:05

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



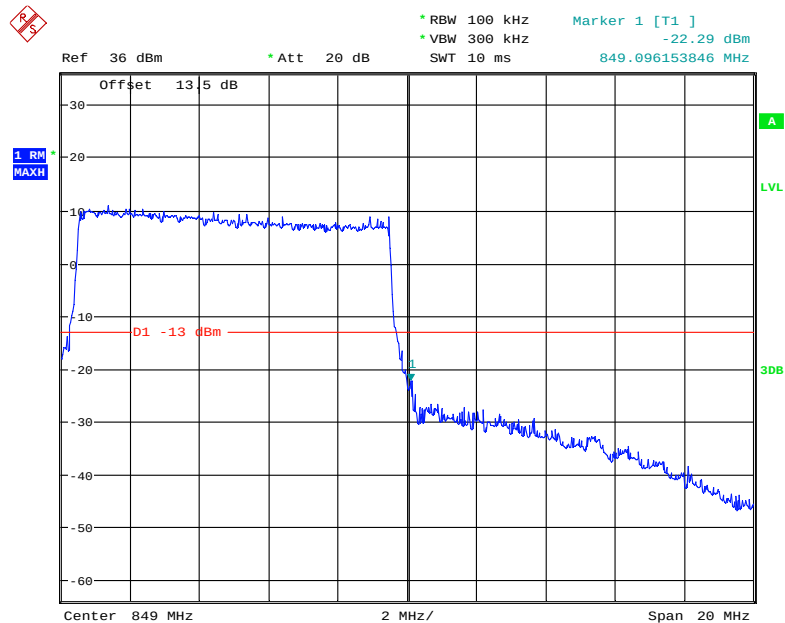
Date: 19.SEP.2018 15:49:33

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



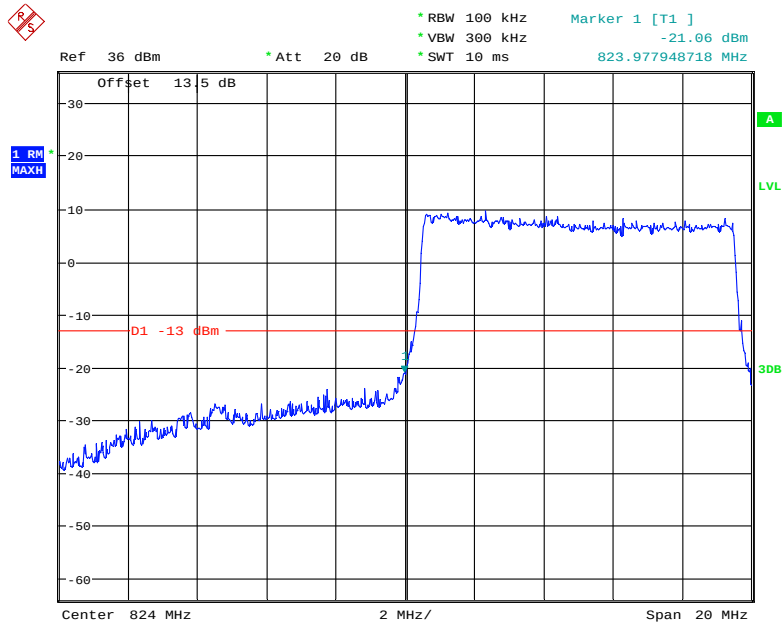
Date: 19.SEP.2018 15:52:08

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



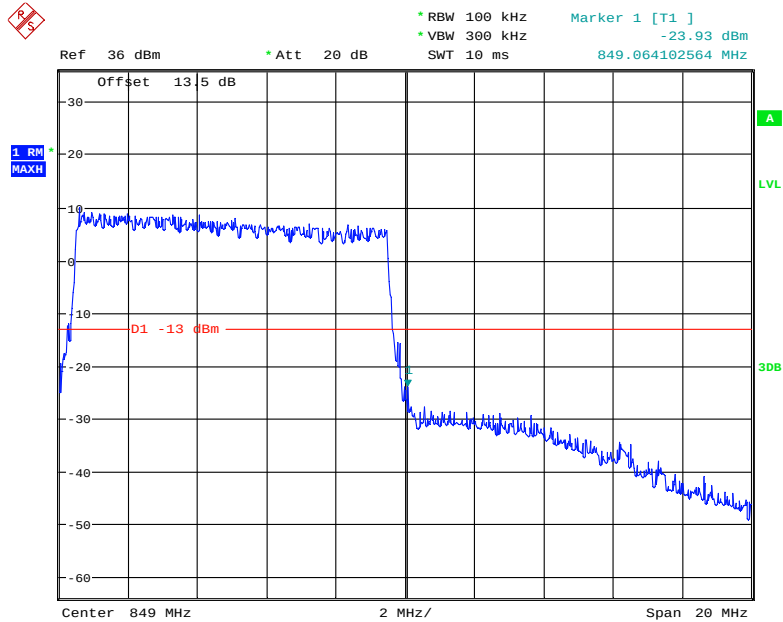
Date: 19.SEP.2018 15:53:02

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



Date: 19.SEP.2018 15:51:24

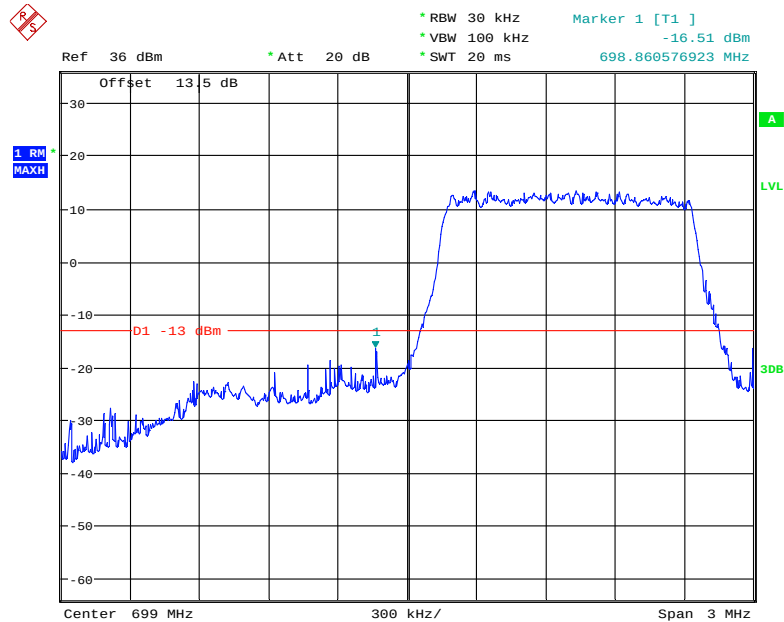
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 19.SEP.2018 15:53:28

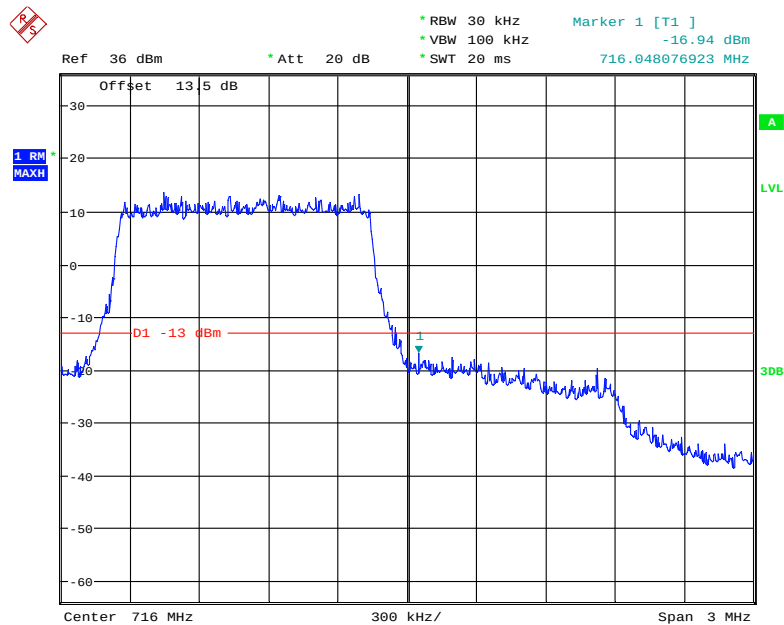
Band 12:

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



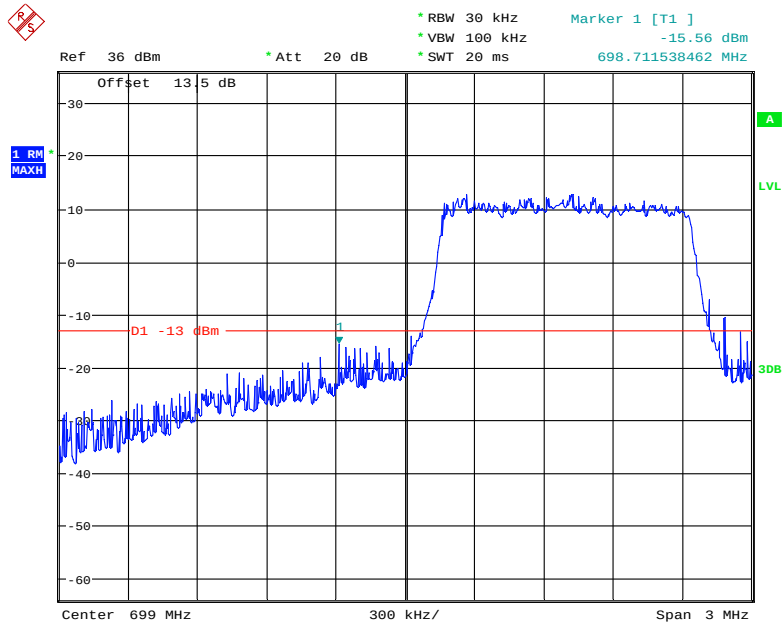
Date: 19.SEP.2018 15:56:21

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



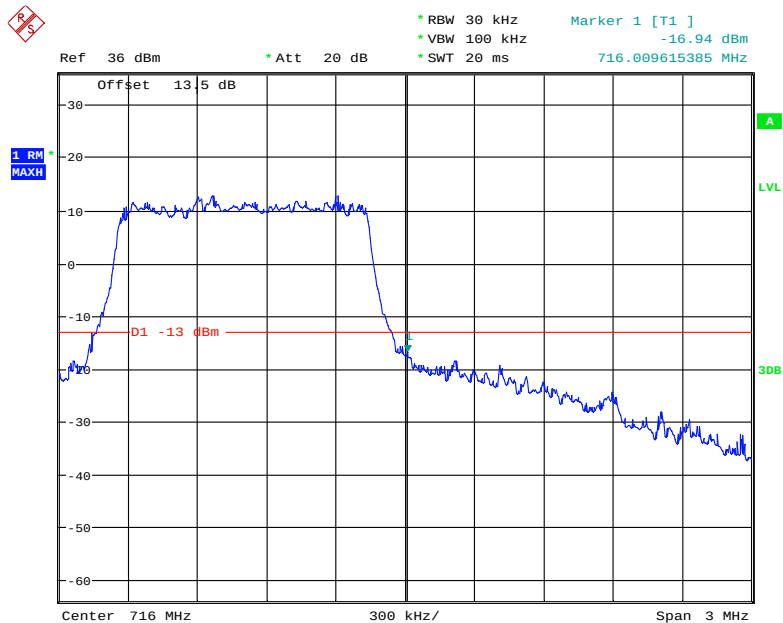
Date: 19.SEP.2018 15:58:09

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



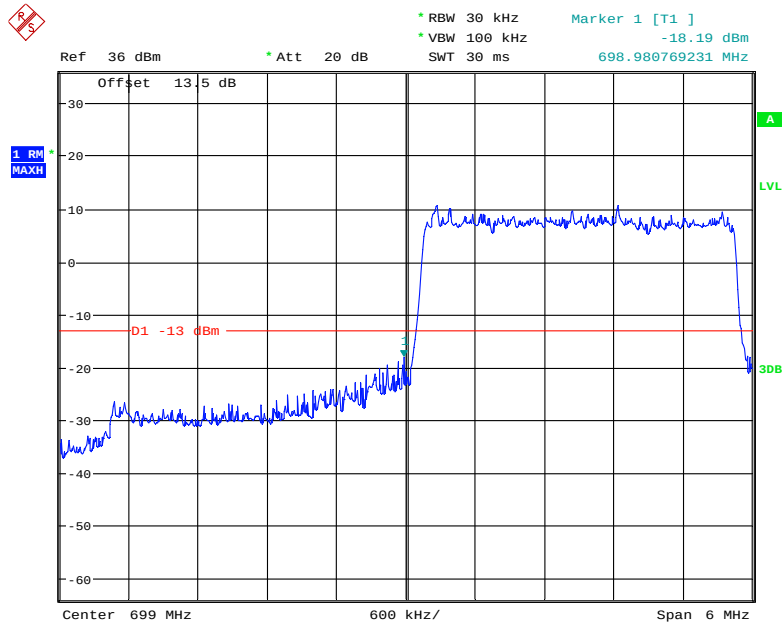
Date: 19.SEP.2018 15:56:55

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



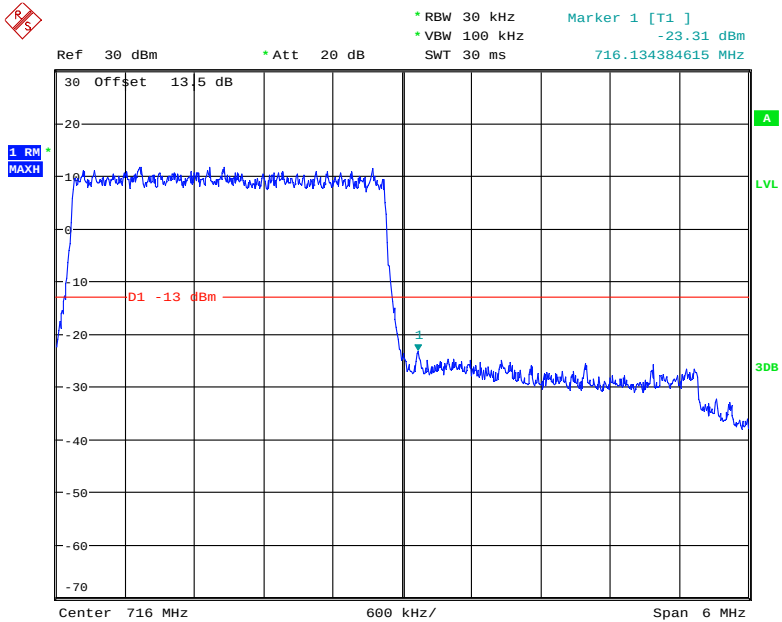
Date: 19.SEP.2018 15:57:46

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



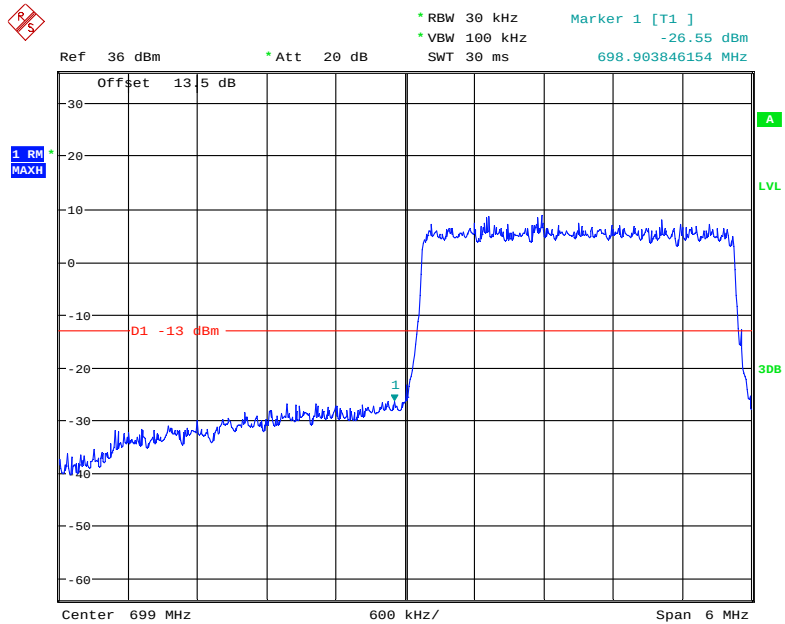
Date: 19.SEP.2018 16:05:15

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



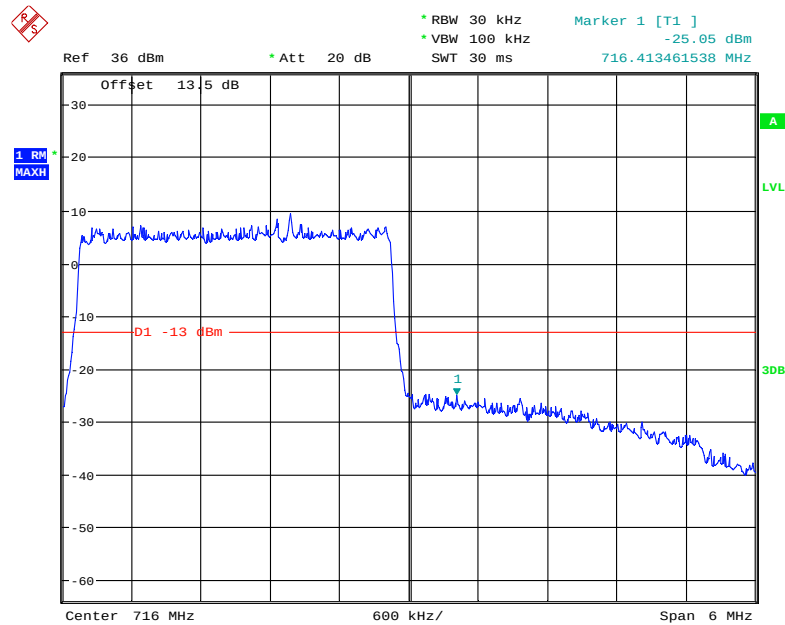
Date: 21.SEP.2018 09:52:04

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



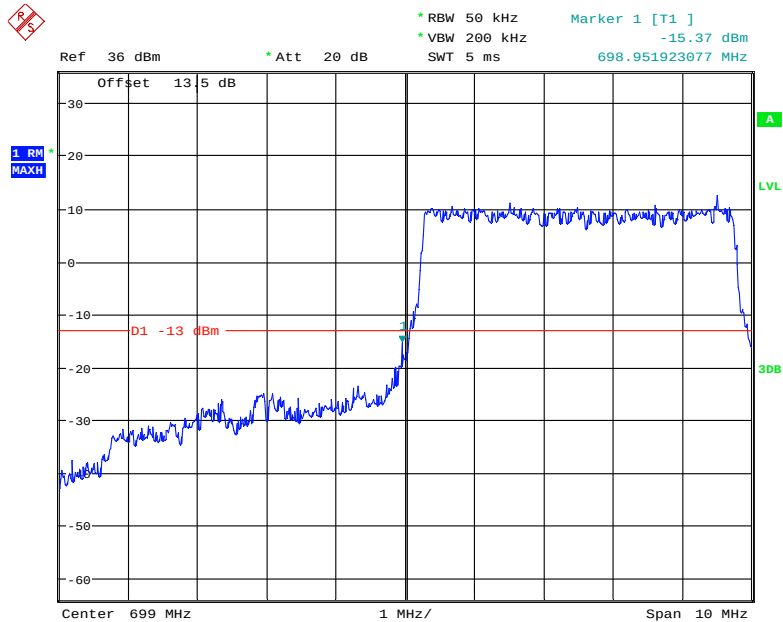
Date: 19.SEP.2018 16:05:48

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



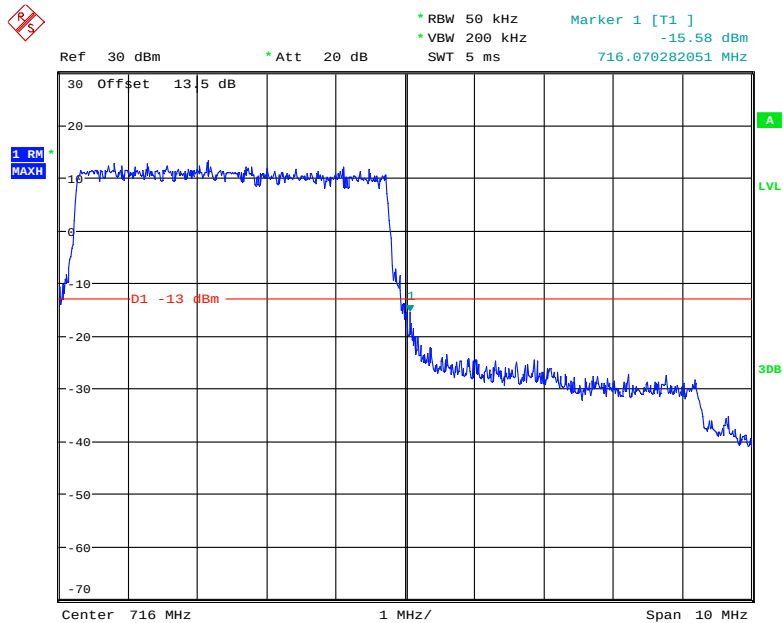
Date: 19.SEP.2018 16:09:22

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



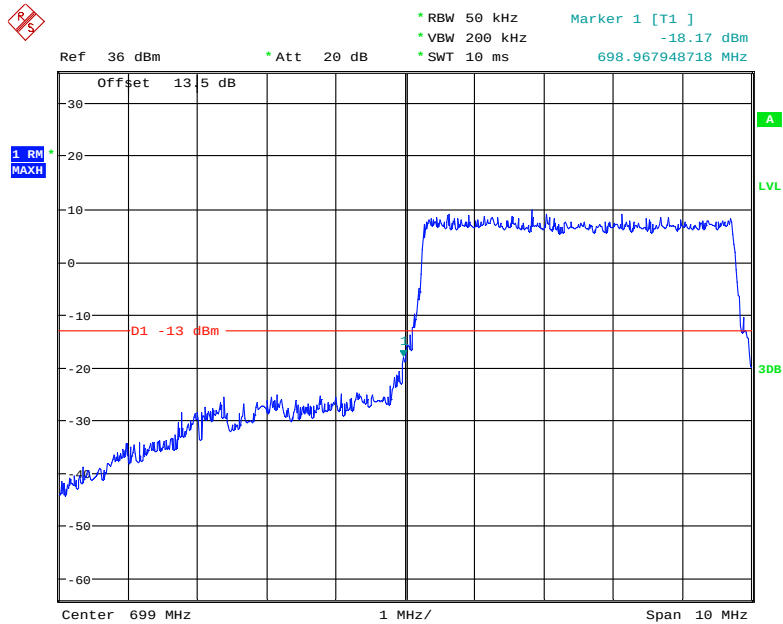
Date: 19.SEP.2018 16:14:20

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



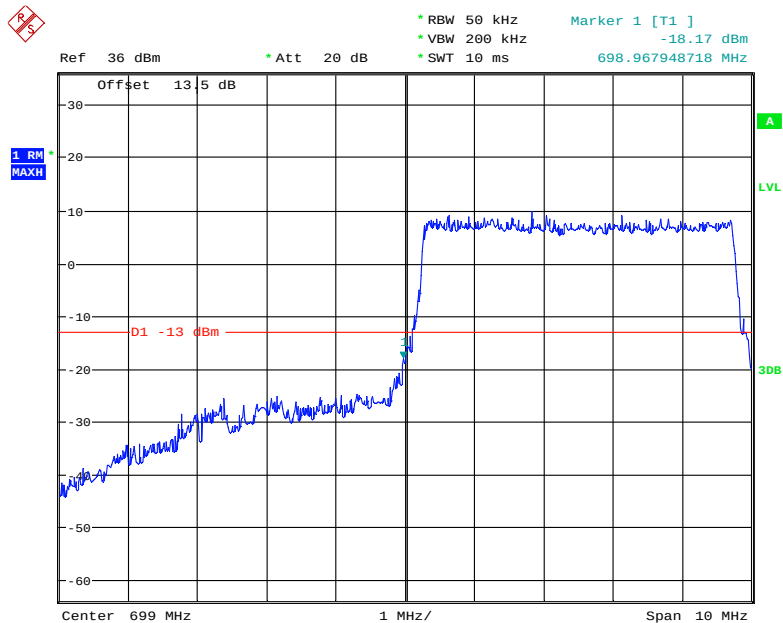
Date: 21.SEP.2018 09:53:35

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



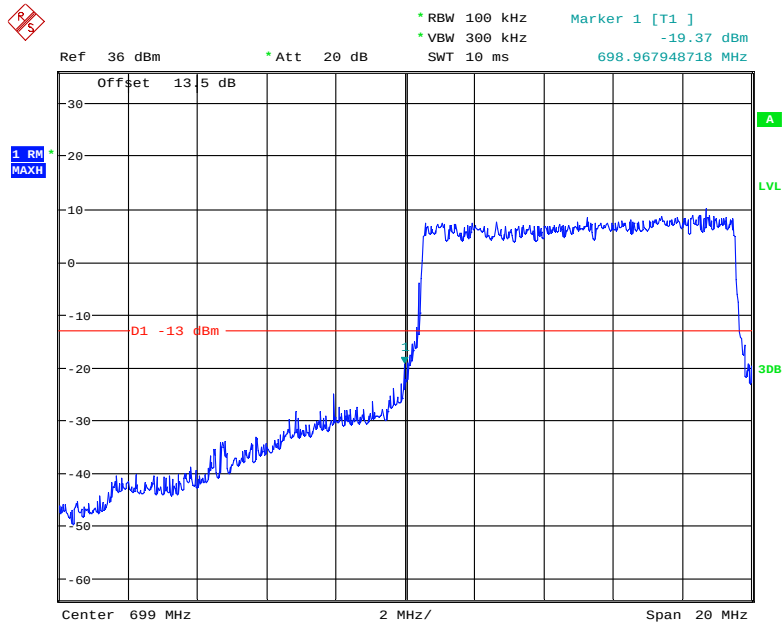
Date: 19.SEP.2018 16:11:54

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



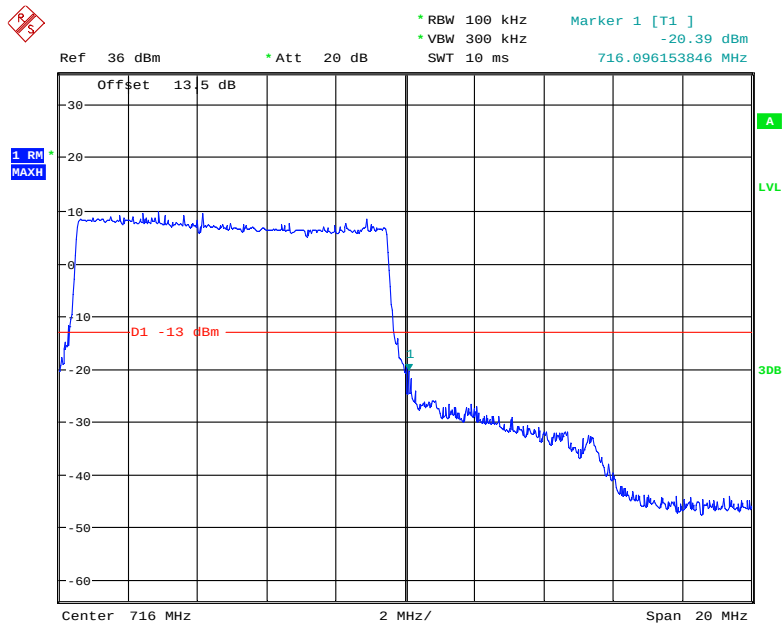
Date: 19.SEP.2018 16:11:54

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



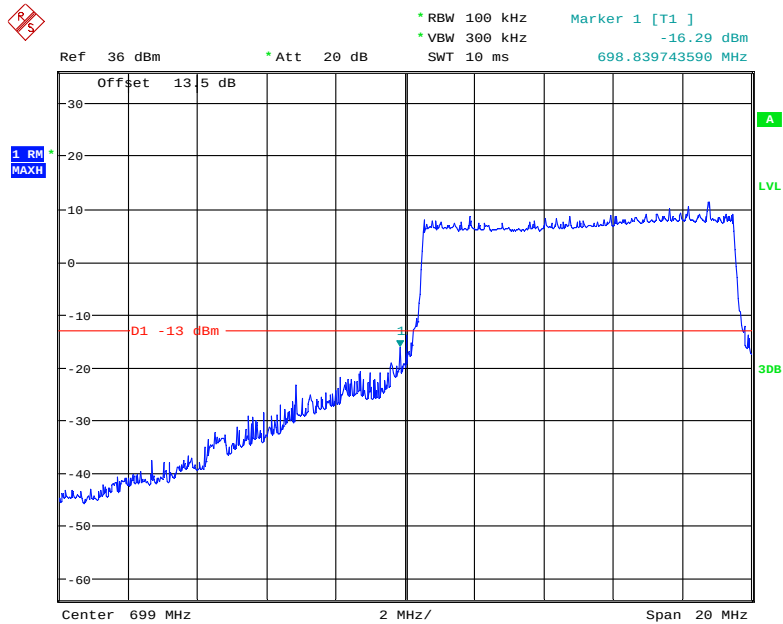
Date: 19.SEP.2018 16:23:27

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



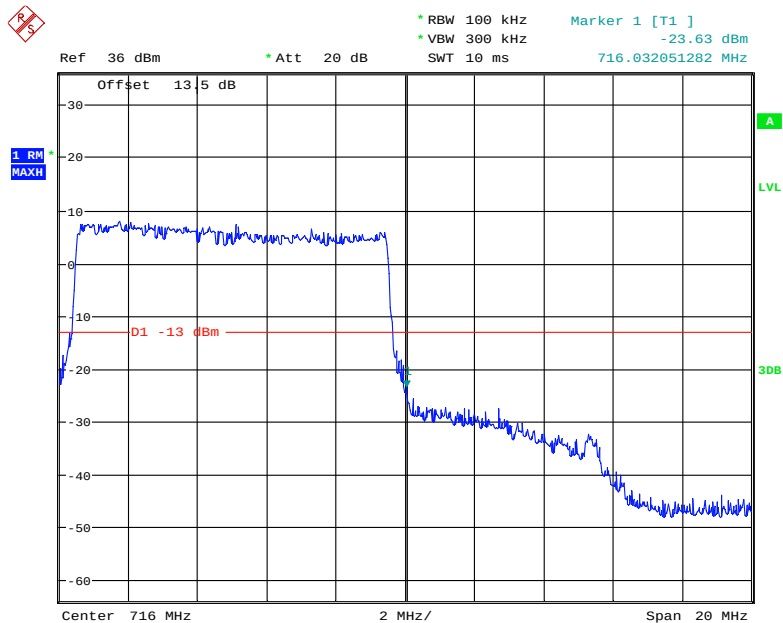
Date: 19.SEP.2018 16:24:02

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



Date: 19.SEP.2018 16:23:04

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



Date: 19.SEP.2018 16:24:25

FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY**Applicable Standard**

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

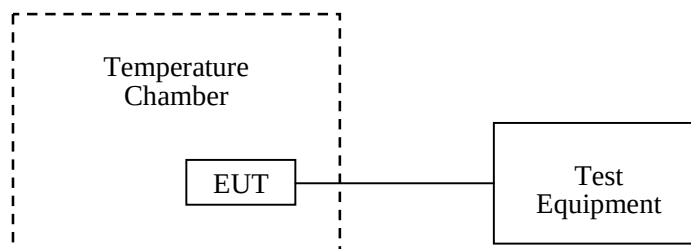
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Data**Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2018-09-28.

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	3.7	12	0.0143	2.5
-20		7	0.0084	2.5
-10		9	0.0108	2.5
0		6	0.0072	2.5
10		5	0.0060	2.5
20		4	0.0048	2.5
30		5	0.0060	2.5
40		7	0.0084	2.5
50		10	0.0120	2.5
25	V min.= 3.5	12	0.0143	2.5
	V max.= 4.2	13	0.0155	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	3.7	10	0.0120	2.5
-20		11	0.0131	2.5
-10		9	0.0108	2.5
0		4	0.0048	2.5
10		4	0.0048	2.5
20		2	0.0024	2.5
30		4	0.0048	2.5
40		6	0.0072	2.5
50		8	0.0096	2.5
25	V min.= 3.5	11	0.0131	2.5
	V max.= 4.2	17	0.0203	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	3.7	-11	-0.0131	2.5
-20		-15	-0.0179	2.5
-10		-17	-0.0203	2.5
0		-15	-0.0179	2.5
10		-15	-0.0179	2.5
20		-14	-0.0167	2.5
30		-15	-0.0179	2.5
40		-18	-0.0215	2.5
50		-19	-0.0227	2.5
25	V min.= 3.5	-20	-0.0239	2.5
	V max.= 4.2	-21	-0.0251	2.5

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

Middle Channel, $f_0 = 1880.0\text{ MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	7	0.0037	pass
-20		6	0.0032	pass
-10		6	0.0032	pass
0		6	0.0032	pass
10		5	0.0027	pass
20		5	0.0027	pass
30		6	0.0032	pass
40		7	0.0037	pass
50		10	0.0053	pass
25	V min.= 3.5	15	0.0080	pass
	V max.= 4.2	20	0.0106	pass

EDGE Mode

Middle Channel, $f_o=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	5	0.0027	pass
-20		5	0.0027	pass
-10		4	0.0021	pass
0		4	0.0021	pass
10		3	0.0016	pass
20		3	0.0016	pass
30		4	0.0021	pass
40		7	0.0037	pass
50		17	0.0090	pass
25	V min.= 3.5	20	0.0106	pass
	V max.= 4.2	23	0.0122	pass

WCDMA Mode

Middle Channel, $f_o=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	-12	-0.0064	pass
-20		-13	-0.0069	pass
-10		-19	-0.0101	pass
0		-14	-0.0074	pass
10		-18	-0.0096	pass
20		-17	-0.0090	pass
30		-18	-0.0096	pass
40		-19	-0.0101	pass
50		-20	-0.0106	pass
25	V min.= 3.5	-23	-0.0122	pass
	V max.= 4.2	-25	-0.0133	pass

LTE:
QPSK:

Band 2:

10.0 MHz Middle Channel, $f_o=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	-9	-0.00479	pass
-20		-10	-0.00532	pass
-10		-15	-0.00798	pass
0		-8	-0.00426	pass
10		-10	-0.00532	pass
20		-7	-0.00372	pass
30		-10	-0.00532	pass
40		-12	-0.00638	pass
50		-13	-0.00691	pass
20	V min.= 3.5	-16	-0.00851	pass
	V max.= 4.2	-17	-0.00904	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	3.7	1710.3228	1754.3169	1710.0000	1755.0000
-20		1710.3237	1754.3158	1710.0000	1755.0000
-10		1710.3242	1754.3191	1710.0000	1755.0000
0		1710.3245	1754.3189	1710.0000	1755.0000
10		1710.3245	1754.3160	1710.0000	1755.0000
20		1710.3229	1754.3132	1710.0000	1755.0000
30		1710.3290	1754.3137	1710.0000	1755.0000
40		1710.3239	1754.3172	1710.0000	1755.0000
50		1710.3282	1754.3135	1710.0000	1755.0000
25	V min.= 3.5	1710.3253	1754.3178	1710.0000	1755.0000
	V max.= 4.2	1710.3216	1754.3157	1710.0000	1755.0000

Band 5:

10.0 MHz Middle Channel, $f_o = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	14	0.016736	2.5
-20		10	0.011955	2.5
-10		12	0.014345	2.5
0		7	0.008368	2.5
10		8	0.009564	2.5
20		9	0.010759	2.5
30		4	0.004782	2.5
40		10	0.011955	2.5
50		15	0.017932	2.5
20	V min.= 3.5	20	0.023909	2.5
	V max.= 4.2	27	0.032277	2.5

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	3.7	699.2104	715.2366	699.0000	716.0000
-20		699.2207	715.3214	699.0000	716.0000
-10		699.2215	715.3356	699.0000	716.0000
0		699.2312	715.4523	699.0000	716.0000
10		699.2356	715.5623	699.0000	716.0000
20		699.3205	715.6474	699.0000	716.0000
30		699.3425	715.6574	699.0000	716.0000
40		699.3456	715.6658	699.0000	716.0000
50		699.3785	715.6752	699.0000	716.0000
25	V min.= 3.5	699.4211	715.6895	699.0000	716.0000
	V max.= 4.2	699.4266	715.6955	699.0000	716.0000

16QAM:**Band 2:**

10.0 MHz Middle Channel, $f_o=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	-14	-0.0074	pass
-20		-10	-0.0053	pass
-10		-8	-0.0043	pass
0		-9	-0.0048	pass
10		-7	-0.0037	pass
20		-5	-0.0027	pass
30		-7	-0.0037	pass
40		-11	-0.0059	pass
50		-15	-0.0080	pass
20	V min.= 3.5	-18	-0.0096	pass
	V max.= 4.2	-20	-0.0106	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	3.7	1710.5788	1754.3556	1710.0000	1755.0000
-20		1710.5728	1754.3570	1710.0000	1755.0000
-10		1710.5767	1754.3597	1710.0000	1755.0000
0		1710.5747	1754.3558	1710.0000	1755.0000
10		1710.574	1754.3562	1710.0000	1755.0000
20		1710.5718	1754.3575	1710.0000	1755.0000
30		1710.5772	1754.3550	1710.0000	1755.0000
40		1710.5785	1754.3559	1710.0000	1755.0000
50		1710.5778	1754.3558	1710.0000	1755.0000
25	V min.= 3.5	1710.5757	1754.3542	1710.0000	1755.0000
	V max.= 4.2	1710.5751	1754.3584	1710.0000	1755.0000

Band 5:

10.0 MHz Middle Channel, $f_o = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	9	0.010759	2.5
-20		8	0.009564	2.5
-10		14	0.016736	2.5
0		8	0.009564	2.5
10		4	0.004782	2.5
20		2	0.002391	2.5
30		4	0.004782	2.5
40		8	0.009564	2.5
50		10	0.011955	2.5
20	V min.= 3.5	20	0.023909	2.5
	V max.= 4.2	25	0.029886	2.5

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	3.7	699.2021	715.2305	699.0000	716.0000
-20		699.2102	715.3204	699.0000	716.0000
-10		699.2206	715.3312	699.0000	716.0000
0		699.2304	715.4230	699.0000	716.0000
10		699.2321	715.5012	699.0000	716.0000
20		699.3212	715.6462	699.0000	716.0000
30		699.3362	715.6555	699.0000	716.0000
40		699.3425	715.6623	699.0000	716.0000
50		699.3635	715.6731	699.0000	716.0000
25	V min.= 3.5	699.4012	715.6804	699.0000	716.0000
	V max.= 4.2	699.4125	715.6941	699.0000	716.0000

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