FCC PART 27

FCC PART 22H, PART 24E

TEST REPORT

For

BLU Products, Inc.

10814 NW 33rd St # 100 Doral, FL 33172, USA

FCC ID:YHLBLUC5L

Report Type:	**Product Type:**
Original Report	Mobile phone

Report Number:	RSZ181220004-00A
Report Date:	2019-01-07
Reviewed By:	Simon Wang RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

Note: This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA* or any agency of the Federal Government. * This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "*".

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *BLU Products, Inc.'s* product, model number: *C5L (FCC ID: YHLBLUC5L)* or the "EUT" in this report was a *Mobile phone*, which was measured approximately: 14.5 cm (L) * 7.3 cm (W) * 1.1 cm (H), rated with input voltage: DC 3.8 V from rechargeable li-ion battery or DC 5.0 V from adapter.

Adapter Information:
Model: US-NB-0751
Input: 100-240V, 50/60Hz, 0.2 A
Output: DC 5.0V, 750mA

**All measurement and test data in this report was gathered from production sample serial number: 181220004 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-12-20.*

Objective

This test report is prepared on behalf of *BLU Products, Inc.* 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)

Part 15.247 DSS & DTS submissions with FCC ID: YHLBLUC5L.

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

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

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±1.5dB
Unwanted Emission, conducted		±1.5dB
Emissions, radiated	Below 1GHz	±4.70dB
	Above 1GHz	±4.80dB
Temperature		±1℃
Supply voltages		±0.4%

Test Facility

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

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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

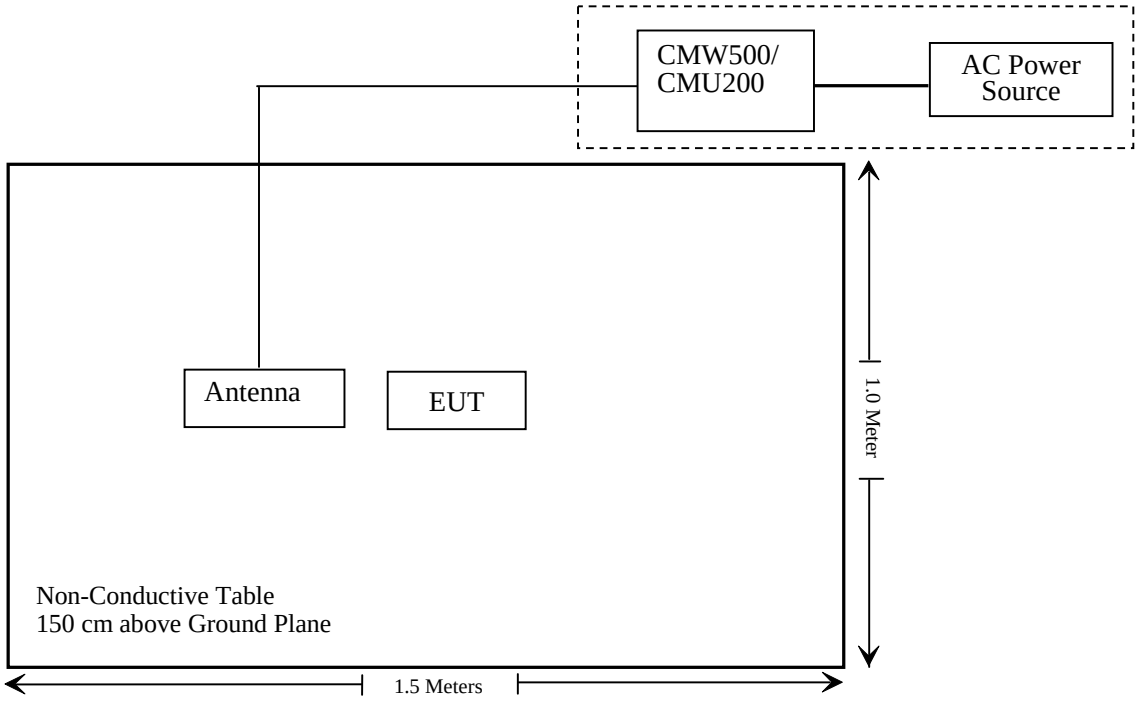
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-116218-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 (h) (c)	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)(g)	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53 (h) (g)	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a); § 24.238 (a); §27.53 (h) (g)	Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliance

Note: * Please refer to SAR report released by BACL, report number: RSZ181220004-SA.

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	2018-08-01	2019-02-01
Sonoma instrument	Amplifier	310 N	186238	2018-11-12	2019-05-12
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	2018-11-21	2019-05-21
Ducommun technologies	RF Cable	RG-214	1	2018-11-21	2019-05-21
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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSU26	200120	2018-12-24	2019-12-24
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2018-12-21	2019-12-21
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2018-12-14	2019-12-14
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2018-06-23	2019-06-23
Ducommun technologies	RF Cable	RG-214	3	Each Time	
WEINSCHEL	3dB Attenuator	6231	666	Each Time	
Un-known	Power Splitter	1620	129	2018-05-21	

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

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

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ181220004-SA.

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(h) (c)- 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.

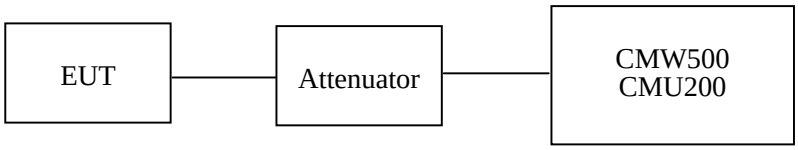
According to §27.50(h), Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

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.

Test Procedure

Conducted method:

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



Radiated method:

TIA 603-D section 2.2.17

Test Data

Environmental Conditions

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

The testing was performed by Shawn Xiao on 2018-12-24.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.36	38.45
	190	836.6	32.42	38.45
	251	848.8	32.62	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.36	30.40	28.52	26.49	38.45
	190	836.6	32.42	30.48	28.61	26.63	38.45
	251	848.8	32.59	30.54	28.65	26.69	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	25.16	24.81	23.58	21.25	21.24	38.45
	190	25.24	24.93	23.68	21.42	21.08	38.45
	251	25.00	24.72	23.43	21.19	21.03	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		22.55	22.30	21.96
		HSDPA	1	21.56	21.23	21.27
			2	21.73	21.93	21.34
			3	21.82	22.08	21.43
			4	21.74	21.96	21.35
		HSUPA	1	21.50	21.25	21.35
			2	21.72	21.92	21.26
			3	21.86	22.08	21.43
			4	21.66	21.92	21.27
			5	21.84	22.08	21.42
		HSPA+	/	21.76	21.82	21.79

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	29.29	33
	661	1880.0	29.56	33
	810	1909.8	29.31	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.13	28.04	26.59	24.81	33
	661	1880.0	28.62	27.29	25.82	23.99	33
	810	1909.8	28.23	26.57	25.03	23.26	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.63	25.67	24.02	23.25	33
	661	1880.0	26.96	26.03	24.15	23.55	33
	810	1909.8	26.68	25.80	24.75	22.80	33

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	RMC12.2k		22.20	22.45	22.18
		HSDPA	1	21.20	21.43	21.50
			2	21.38	21.33	21.37
			3	21.48	21.38	21.56
			4	21.36	21.35	21.34
		HSUPA	1	21.24	21.45	21.32
			2	21.34	21.39	21.34
			3	21.54	21.31	21.44
			4	21.31	21.36	21.34
			5	21.46	21.42	21.47
		HSPA+	/	21.86	21.84	21.80

AWS Band (Part27)

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	RMC12.2k		22.72	22.74	22.75
		HSDPA	1	21.32	21.54	21.47
			2	21.37	21.57	21.51
			3	21.42	21.64	21.54
			4	21.48	21.67	21.57
		HSUPA	1	21.44	21.36	21.69
			2	21.48	21.43	21.77
			3	21.53	21.47	21.80
			4	21.55	21.54	21.83
			5	21.57	21.57	21.86
		HSPA+	/	21.62	21.59	21.89

Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	7.85	13
	Middle	7.61	13
	High	7.78	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	7.84	13
	Middle	7.70	13
	High	7.67	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.56	13
	Middle	3.65	13
	High	3.85	13
HSDPA (16QAM)	Low	3.87	13
	Middle	3.66	13
	High	3.86	13
HSUPA (BPSK)	Low	3.67	13
	Middle	3.64	13
	High	3.64	13
HSPA+	Low	3.62	13
	Middle	3.44	13
	High	3.58	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	7.66	13
	Middle	7.95	13
	High	7.75	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	7.81	13
	Middle	7.84	13
	High	7.64	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.58	13
	Middle	3.61	13
	High	3.87	13
HSDPA (16QAM)	Low	3.84	13
	Middle	3.66	13
	High	3.65	13
HSUPA (BPSK)	Low	3.89	13
	Middle	3.63	13
	High	3.85	13
HSPA+	Low	3.72	13
	Middle	3.54	13
	High	3.56	13

AWS Band (Part27)

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.33	13
	Middle	3.28	13
	High	3.37	13
HSDPA (16QAM)	Low	3.65	13
	Middle	3.60	13
	High	3.71	13
HSUPA (BPSK)	Low	3.59	13
	Middle	3.57	13
	High	3.61	13
HSPA+	Low	3.27	13
	Middle	3.38	13
	High	3.32	13

Radiated Power

GSM Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP for Cellular Band (Part 22H), Middle Channel										
836.6	91.68	171	1.0	H	29.7	0.7	0.0	29.00	38.45	9.45
836.6	92.41	11	1.6	V	32.0	0.7	0.0	31.30	38.45	7.15
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	90.20	228	1.7	H	20.2	1.30	9.40	28.30	33	4.70
1880.00	89.14	128	1.3	V	18.9	1.30	9.40	27.00	33	6.00

EDGE Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP, Cellular Band (Part 22H), Middle Channel										
836.6	87.69	171	1.0	H	25.7	0.7	0.0	25.00	38.45	13.45
836.6	87.54	11	1.6	V	27.1	0.7	0.0	26.40	38.45	12.05
EIRP, PCS Band (Part 24E), Middle Channel										
1880.00	86.01	106	1.7	H	16.0	1.30	9.40	24.10	33	8.9
1880.00	86.19	330	1.4	V	15.9	1.30	9.40	24.00	33	9.0

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 (dB)			
EIRP for WCDMA Band V (Part 22H), Middle Channel										
836.6	84.21	320	2.4	H	22.2	0.7	0.0	21.50	38.45	16.95
836.6	83.19	272	1.6	V	22.8	0.7	0.0	22.10	38.45	16.35
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	83.01	106	1.7	H	13.0	1.30	9.40	21.10	33	11.9
1880.00	83.17	330	1.4	V	12.9	1.30	9.40	21.00	33	12.0
EIRP for WCDMA Band IV (Part 27), Middle Channel										
1732.60	86.50	216	2.2	H	13.3	1.30	8.90	20.90	30	9.1
1732.60	86.79	145	1.4	V	14.2	1.30	8.90	21.80	30	8.2

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	22.78	22.43	22.86
		RB Size=1, RB Offset=2	22.36	22.57	22.10
		RB Size=1, RB Offset=5	22.47	22.08	22.26
		RB Size=3, RB Offset=0	22.34	22.23	22.16
		RB Size=3, RB Offset=1	22.11	22.57	22.17
		RB Size=3, RB Offset=2	21.52	21.55	22.19
		RB Size=6, RB Offset=0	22.11	22.09	21.83
	16QAM	RB Size=1, RB Offset=0	22.09	21.58	21.75
		RB Size=1, RB Offset=2	22.06	22.09	22.00
		RB Size=1, RB Offset=5	22.03	21.97	23.02
		RB Size=3, RB Offset=0	21.81	21.75	22.94
		RB Size=3, RB Offset=1	21.81	21.90	21.85
		RB Size=3, RB Offset=2	21.81	21.82	21.80
		RB Size=6, RB Offset=0	21.76	21.72	21.84
3.0	QPSK	RB Size=1, RB Offset=0	22.80	22.74	22.82
		RB Size=1, RB Offset=7	22.73	22.64	22.74
		RB Size=1, RB Offset=14	22.55	22.61	22.76
		RB Size=8, RB Offset=0	21.86	21.84	21.90
		RB Size=8, RB Offset=4	21.77	21.68	21.77
		RB Size=8, RB Offset=7	21.56	21.58	21.70
		RB Size=15, RB Offset=0	21.77	21.72	21.76
	16QAM	RB Size=1, RB Offset=0	22.08	22.06	22.00
		RB Size=1, RB Offset=7	22.07	21.96	22.00
		RB Size=1, RB Offset=14	22.16	21.78	21.89
		RB Size=8, RB Offset=0	20.84	20.77	20.88
		RB Size=8, RB Offset=4	20.78	20.75	20.88
		RB Size=8, RB Offset=7	20.69	20.58	20.78
		RB Size=15, RB Offset=0	20.72	20.72	20.75

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.24	22.23	22.85
		RB Size=1, RB Offset=12	22.81	22.72	22.11
		RB Size=1, RB Offset=24	22.26	22.75	22.34
		RB Size=12, RB Offset=0	21.81	21.99	21.82
		RB Size=12, RB Offset=6	21.60	21.50	21.92
		RB Size=12, RB Offset=11	21.49	21.51	21.57
		RB Size=25, RB Offset=0	21.78	21.33	21.65
	16QAM	RB Size=1, RB Offset=0	21.48	21.73	21.46
		RB Size=1, RB Offset=12	21.82	21.42	21.72
		RB Size=1, RB Offset=24	21.85	21.41	21.58
		RB Size=12, RB Offset=0	20.84	20.76	20.78
		RB Size=12, RB Offset=6	20.80	20.73	20.71
		RB Size=12, RB Offset=11	20.62	20.52	20.62
		RB Size=25, RB Offset=0	20.78	20.75	20.77
10.0	QPSK	RB Size=1, RB Offset=0	22.59	22.34	22.31
		RB Size=1, RB Offset=24	22.14	22.44	22.78
		RB Size=1, RB Offset=49	22.10	22.80	22.90
		RB Size=25, RB Offset=0	21.68	21.72	21.69
		RB Size=25, RB Offset=12	21.49	21.03	21.96
		RB Size=25, RB Offset=24	21.61	21.60	21.38
		RB Size=50, RB Offset=0	21.38	21.23	21.43
	16QAM	RB Size=1, RB Offset=0	21.58	22.00	21.18
		RB Size=1, RB Offset=24	21.67	21.53	21.66
		RB Size=1, RB Offset=49	21.46	21.43	21.73
		RB Size=25, RB Offset=0	22.67	20.70	20.77
		RB Size=25, RB Offset=12	22.53	20.51	20.67
		RB Size=25, RB Offset=24	22.62	20.86	20.79
		RB Size=50, RB Offset=0	20.84	20.48	20.56

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	22.18	21.99	22.46
		RB Size=1, RB Offset=37	21.71	21.92	21.71
		RB Size=1, RB Offset=74	22.15	21.98	22.22
		RB Size=36, RB Offset=0	21.46	21.39	22.05
		RB Size=36, RB Offset=18	21.76	21.61	22.07
		RB Size=36, RB Offset=37	21.66	21.71	21.15
		RB Size=75, RB Offset=0	21.77	21.14	21.39
	16QAM	RB Size=1, RB Offset=0	21.68	21.33	21.44
		RB Size=1, RB Offset=37	21.87	21.87	21.57
		RB Size=1, RB Offset=74	21.79	21.85	21.45
		RB Size=36, RB Offset=0	21.84	21.82	22.08
		RB Size=36, RB Offset=18	21.83	21.75	22.02
		RB Size=36, RB Offset=37	21.58	21.60	21.84
		RB Size=75, RB Offset=0	21.19	21.13	21.01
20.0	QPSK	RB Size=1, RB Offset=0	22.38	23.07	22.94
		RB Size=1, RB Offset=49	22.96	22.38	22.74
		RB Size=1, RB Offset=99	22.93	22.78	22.42
		RB Size=50, RB Offset=0	21.67	21.74	21.81
		RB Size=50, RB Offset=24	22.04	21.74	21.29
		RB Size=50, RB Offset=49	21.53	21.91	21.84
		RB Size=100, RB Offset=0	21.77	21.11	21.72
	16QAM	RB Size=1, RB Offset=0	21.95	22.01	22.18
		RB Size=1, RB Offset=49	21.98	21.91	21.91
		RB Size=1, RB Offset=99	21.92	21.72	21.94
		RB Size=50, RB Offset=0	20.91	20.90	21.02
		RB Size=50, RB Offset=24	20.80	20.87	21.01
		RB Size=50, RB Offset=49	20.56	20.73	20.92
		RB Size=100, RB Offset=0	20.81	20.85	20.97

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.52	13	Pass
QPSK (50RB Size)	6.53	13	Pass
16QAM (1RB Size)	7.47	13	Pass
16QAM (50RB Size)	7.48	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	84.60	151	2.5	H	14.6	1.30	9.40	22.70	33
1880.00	82.15	323	2.1	V	11.9	1.30	9.40	20.00	33
3 MHz Bandwidth									
1880.00	84.5	44	1.3	H	14.5	1.3	9.4	22.60	33
1880.00	81.9	312	2.1	V	11.6	1.3	9.4	19.70	33
5 MHz Bandwidth									
1880.00	84.37	238	2.2	H	14.3	1.30	9.40	22.40	33
1880.00	82.57	346	2.0	V	12.3	1.30	9.40	20.40	33
10 MHz Bandwidth									
1880.00	84.29	321	1.9	H	14.2	1.3	9.4	22.30	33
1880.00	81.3	119	2.2	V	11	1.3	9.4	19.10	33
15 MHz Bandwidth									
1880.00	84.02	320	1.7	H	14.0	1.30	9.40	22.10	33
1880.00	81.79	98	1.7	V	11.5	1.30	9.40	19.60	33
20MHz Bandwidth									
1880.00	83.90	80	1.0	H	13.9	1.30	9.40	22.00	33
1880.00	81.62	286	1.7	V	11.4	1.30	9.40	19.50	33

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	84.51	230	2.4	H	14.5	1.30	9.40	22.60	33
1880.00	82.76	31	1.3	V	12.5	1.30	9.40	20.60	33
3 MHz Bandwidth									
1880.00	84.56	198	1.3	H	14.5	1.3	9.4	22.60	33
1880.00	81.29	183	1.2	V	11	1.3	9.4	19.10	33
5 MHz Bandwidth									
1880.00	84.3	247	1.1	H	14.3	1.3	9.4	22.40	33
1880.00	82.14	263	1.1	V	11.9	1.3	9.4	20.0	33
10 MHz Bandwidth									
1880.00	84.1	248	2.4	H	14.1	1.3	9.4	22.20	33
1880.00	82.76	58	1.8	V	12.5	1.3	9.4	20.60	33
15 MHz Bandwidth									
1880.00	84.06	279	1.4	H	14.0	1.30	9.40	22.10	33
1880.00	81.95	259	1.8	V	11.7	1.30	9.40	19.80	33
20MHz Bandwidth									
1880.00	83.58	156	1.2	H	13.5	1.30	9.40	21.60	33
1880.00	81.05	258	1.3	V	10.8	1.30	9.40	18.90	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	22.61	22.23	22.41
		RB Size=1, RB Offset=2	21.98	21.91	22.57
		RB Size=1, RB Offset=5	22.12	22.02	22.00
		RB Size=3, RB Offset=0	22.83	22.61	22.03
		RB Size=3, RB Offset=1	21.91	22.29	22.63
		RB Size=3, RB Offset=2	22.22	22.38	21.89
		RB Size=6, RB Offset=0	20.96	21.08	21.44
	16QAM	RB Size=1, RB Offset=0	21.62	21.38	21.37
		RB Size=1, RB Offset=2	21.82	21.82	21.80
		RB Size=1, RB Offset=5	22.42	22.44	22.52
		RB Size=3, RB Offset=0	22.50	22.26	22.59
		RB Size=3, RB Offset=1	22.45	22.01	22.62
		RB Size=3, RB Offset=2	22.68	22.67	22.70
		RB Size=6, RB Offset=0	22.56	22.63	22.65
3.0	QPSK	RB Size=1, RB Offset=0	21.90	22.52	22.45
		RB Size=1, RB Offset=7	22.46	22.00	22.20
		RB Size=1, RB Offset=14	22.34	21.98	21.89
		RB Size=8, RB Offset=0	21.60	21.66	21.85
		RB Size=8, RB Offset=4	21.32	21.23	21.93
		RB Size=8, RB Offset=7	21.32	21.50	21.70
		RB Size=15, RB Offset=0	21.43	21.69	21.36
	16QAM	RB Size=1, RB Offset=0	21.10	21.20	21.53
		RB Size=1, RB Offset=7	21.71	21.60	21.50
		RB Size=1, RB Offset=14	21.72	21.47	21.30
		RB Size=8, RB Offset=0	22.51	22.48	22.47
		RB Size=8, RB Offset=4	22.33	22.41	22.26
		RB Size=8, RB Offset=7	22.34	22.21	22.26
		RB Size=15, RB Offset=0	21.62	21.62	21.65

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.81	22.25	22.71
		RB Size=1, RB Offset=12	22.14	22.06	22.40
		RB Size=1, RB Offset=24	22.46	22.66	22.67
		RB Size=12, RB Offset=0	21.07	21.24	21.25
		RB Size=12, RB Offset=6	21.61	21.20	21.20
		RB Size=12, RB Offset=11	21.04	21.17	21.78
		RB Size=25, RB Offset=0	21.07	21.20	21.23
	16QAM	RB Size=1, RB Offset=0	21.91	21.92	21.76
		RB Size=1, RB Offset=12	21.84	21.78	21.71
		RB Size=1, RB Offset=24	22.71	22.60	22.70
		RB Size=12, RB Offset=0	22.61	22.52	22.60
		RB Size=12, RB Offset=6	22.55	22.54	22.66
		RB Size=12, RB Offset=11	21.82	21.65	21.69
		RB Size=25, RB Offset=0	21.73	21.69	21.71
10.0	QPSK	RB Size=1, RB Offset=0	22.27	22.30	22.90
		RB Size=1, RB Offset=24	22.78	22.30	22.71
		RB Size=1, RB Offset=49	22.62	22.51	22.58
		RB Size=25, RB Offset=0	21.96	21.87	21.49
		RB Size=25, RB Offset=12	21.11	21.67	21.60
		RB Size=25, RB Offset=24	21.71	21.26	21.79
		RB Size=50, RB Offset=0	21.44	21.59	21.35
	16QAM	RB Size=1, RB Offset=0	21.67	22.36	22.16
		RB Size=1, RB Offset=24	22.10	22.12	22.27
		RB Size=1, RB Offset=49	22.20	22.16	22.05
		RB Size=25, RB Offset=0	20.83	20.86	20.84
		RB Size=25, RB Offset=12	20.67	20.65	20.92
		RB Size=25, RB Offset=24	20.60	20.72	20.72
		RB Size=50, RB Offset=0	20.91	20.90	20.89

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	22.86	22.09	22.05
		RB Size=1, RB Offset=37	22.14	22.40	22.51
		RB Size=1, RB Offset=74	22.50	22.38	22.01
		RB Size=36, RB Offset=0	22.17	21.41	21.13
		RB Size=36, RB Offset=18	21.34	21.35	21.50
		RB Size=36, RB Offset=37	22.21	21.25	21.51
		RB Size=75, RB Offset=0	21.44	21.70	21.17
	16QAM	RB Size=1, RB Offset=0	21.43	21.16	21.05
		RB Size=1, RB Offset=37	21.63	21.48	21.69
		RB Size=1, RB Offset=74	21.55	21.45	21.51
		RB Size=36, RB Offset=0	20.84	20.70	20.71
		RB Size=36, RB Offset=18	20.83	20.53	20.64
		RB Size=36, RB Offset=37	20.56	20.58	20.49
		RB Size=75, RB Offset=0	20.76	20.75	20.76
20.0	QPSK	RB Size=1, RB Offset=0	22.74	22.05	22.61
		RB Size=1, RB Offset=49	22.10	21.64	21.73
		RB Size=1, RB Offset=99	22.07	21.95	21.90
		RB Size=50, RB Offset=0	21.50	21.68	21.35
		RB Size=50, RB Offset=24	21.58	21.55	21.53
		RB Size=50, RB Offset=49	21.36	21.44	21.48
		RB Size=100, RB Offset=0	21.63	21.08	21.59
	16QAM	RB Size=1, RB Offset=0	22.34	22.27	22.07
		RB Size=1, RB Offset=49	22.14	22.20	22.32
		RB Size=1, RB Offset=99	22.01	22.18	22.36
		RB Size=50, RB Offset=0	21.04	21.06	21.06
		RB Size=50, RB Offset=24	20.97	21.00	21.05
		RB Size=50, RB Offset=49	20.83	21.01	20.98
		RB Size=100, RB Offset=0	20.91	20.83	20.85

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.46	13	Pass
QPSK (50RB Size)	6.48	13	Pass
16QAM (1RB Size)	7.42	13	Pass
16QAM (50RB Size)	7.48	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	86.70	247	1.3	H	13.5	1.30	8.90	21.10	30
1732.50	82.59	306	1.7	V	10.0	1.30	8.90	17.60	30
3 MHz Bandwidth									
1732.50	86.45	217	1.5	H	13.3	1.30	8.90	20.90	30
1732.50	83.10	159	2.3	V	10.5	1.30	8.90	18.10	30
5 MHz Bandwidth									
1732.50	86.35	329	2.3	H	13.2	1.30	8.90	20.80	30
1732.50	82.54	58	1.7	V	10.0	1.30	8.90	17.60	30
10 MHz Bandwidth									
1732.50	86.40	110	1.0	H	13.2	1.30	8.90	20.80	30
1732.50	82.70	104	2.3	V	10.1	1.30	8.90	17.70	30
15 MHz Bandwidth									
1732.50	86.30	351	1.9	H	13.1	1.3	8.9	20.70	30
1732.50	82.10	333	2.1	V	9.5	1.3	8.9	17.10	30
20MHz Bandwidth									
1732.50	85.94	52	1.2	H	12.8	1.3	8.9	20.40	30
1732.50	82.14	234	1.9	V	9.6	1.3	8.9	17.20	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 (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	86.85	21	1.6	H	13.7	1.30	8.90	21.30	30
1732.50	82.60	36	2.4	V	10.0	1.30	8.90	17.60	30
3 MHz Bandwidth									
1732.50	86.16	99	2.1	H	13.0	1.30	8.90	20.60	30
1732.50	82.14	188	1.5	V	9.6	1.30	8.90	17.20	30
5 MHz Bandwidth									
1732.50	85.75	186	2.1	H	12.6	1.3	8.9	20.20	30
1732.50	82.4	91	1.5	V	9.8	1.3	8.9	17.40	30
10 MHz Bandwidth									
1732.50	85.47	68	1.2	H	12.3	1.3	8.9	19.90	30
1732.50	81.57	24	1.3	V	9	1.3	8.9	16.60	30
15 MHz Bandwidth									
1732.50	85.33	245	2	H	12.2	1.3	8.9	19.80	30
1732.50	81.85	350	1.5	V	9.3	1.3	8.9	16.90	30
20MHz Bandwidth									
1732.50	85.27	9	1.6	H	12.1	1.3	8.9	19.70	30
1732.50	81.01	49	1.2	V	8.4	1.3	8.9	16.00	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	22.43	22.42	22.52
		RB Size=1, RB Offset=2	22.49	22.28	22.58
		RB Size=1, RB Offset=5	22.45	22.01	22.60
		RB Size=3, RB Offset=0	22.65	22.71	22.67
		RB Size=3, RB Offset=1	22.57	22.61	22.65
		RB Size=3, RB Offset=2	22.51	22.50	22.46
		RB Size=6, RB Offset=0	21.48	21.44	21.44
	16QAM	RB Size=1, RB Offset=0	21.88	21.90	21.96
		RB Size=1, RB Offset=2	21.78	21.86	21.78
		RB Size=1, RB Offset=5	21.74	21.89	21.86
		RB Size=3, RB Offset=0	22.81	21.86	21.80
		RB Size=3, RB Offset=1	22.81	21.69	21.84
		RB Size=3, RB Offset=2	22.62	21.74	21.62
		RB Size=6, RB Offset=0	20.70	20.69	20.72
3.0	QPSK	RB Size=1, RB Offset=0	22.51	22.50	22.46
		RB Size=1, RB Offset=7	22.32	22.44	22.26
		RB Size=1, RB Offset=14	22.37	22.23	22.23
		RB Size=8, RB Offset=0	21.58	21.60	21.65
		RB Size=8, RB Offset=4	21.47	21.46	21.68
		RB Size=8, RB Offset=7	21.36	21.33	21.67
		RB Size=15, RB Offset=0	21.60	21.61	21.69
	16QAM	RB Size=1, RB Offset=0	21.72	21.64	21.61
		RB Size=1, RB Offset=7	21.72	21.60	21.47
		RB Size=1, RB Offset=14	21.72	21.48	21.32
		RB Size=8, RB Offset=0	20.69	20.68	20.74
		RB Size=8, RB Offset=4	20.61	20.61	20.76
		RB Size=8, RB Offset=7	20.63	20.76	20.54
		RB Size=15, RB Offset=0	20.73	20.74	20.73

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	22.71	22.64	22.75
		RB Size=1, RB Offset=12	22.62	22.52	22.62
		RB Size=1, RB Offset=24	22.56	22.53	22.66
		RB Size=12, RB Offset=0	21.77	21.62	21.68
		RB Size=12, RB Offset=6	21.76	21.68	21.69
		RB Size=12, RB Offset=11	21.52	21.75	21.63
		RB Size=25, RB Offset=0	21.75	21.68	21.72
	16QAM	RB Size=1, RB Offset=0	21.93	21.90	21.91
		RB Size=1, RB Offset=12	21.83	21.77	21.70
		RB Size=1, RB Offset=24	21.69	21.70	21.68
		RB Size=12, RB Offset=0	20.89	20.97	21.00
		RB Size=12, RB Offset=6	20.82	20.96	20.92
		RB Size=12, RB Offset=11	20.73	20.74	20.80
		RB Size=25, RB Offset=0	20.88	20.63	20.65
10.0	QPSK	RB Size=1, RB Offset=0	22.73	22.75	22.76
		RB Size=1, RB Offset=24	22.71	22.66	22.74
		RB Size=1, RB Offset=49	22.58	22.69	22.73
		RB Size=25, RB Offset=0	21.76	21.79	21.73
		RB Size=25, RB Offset=12	21.62	21.84	21.74
		RB Size=25, RB Offset=24	21.64	21.54	21.65
		RB Size=50, RB Offset=0	21.81	21.83	21.79
	16QAM	RB Size=1, RB Offset=0	22.19	22.20	22.30
		RB Size=1, RB Offset=24	22.13	22.14	22.30
		RB Size=1, RB Offset=49	22.20	22.12	22.09
		RB Size=25, RB Offset=0	20.84	20.86	20.87
		RB Size=25, RB Offset=12	20.67	20.65	20.91
		RB Size=25, RB Offset=24	20.60	20.71	20.67
		RB Size=50, RB Offset=0	20.94	20.87	20.92

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.31	13	Pass
QPSK (50RB Size)	6.34	13	Pass
16QAM (1RB Size)	7.21	13	Pass
16QAM (50RB Size)	7.25	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	90.20	127	1.7	H	20.2	0.67	0	19.53	38.45
836.5	89.71	338	1.8	V	19.7	0.67	0	19.03	38.45
3 MHz Bandwidth									
836.5	90.09	272	2.2	H	20.1	0.67	0	19.43	38.45
836.5	89.62	19	1.3	V	19.6	0.67	0	18.93	38.45
5 MHz Bandwidth									
836.5	89.87	267	1.9	H	19.9	0.67	0	19.23	38.45
836.5	89.57	96	1.4	V	19.6	0.67	0	18.93	38.45
10 MHz Bandwidth									
836.5	89.76	45	1.1	H	19.8	0.67	0	19.13	38.45
836.5	89.69	32	1.5	V	19.7	0.67	0	19.03	38.45

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	90.40	338	1.5	H	20.4	0.67	0	19.73	38.45
836.5	90.21	312	2.4	V	20.2	0.67	0	19.53	38.45
3 MHz Bandwidth									
836.5	90.18	338	1.5	H	20.2	0.67	0	19.53	38.45
836.5	90.10	312	2.4	V	20.1	0.67	0	19.43	38.45
5 MHz Bandwidth									
836.5	90.07	338	1.5	H	20.1	0.67	0	19.43	38.45
836.5	90.01	312	2.4	V	20	0.67	0	19.33	38.45
10 MHz Bandwidth									
836.5	89.93	338	1.5	H	19.9	0.67	0	19.23	38.45
836.5	88.76	312	2.4	V	18.8	0.67	0	18.13	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	22.67	22.35	23.03
		RB Size=1, RB Offset=2	22.85	22.67	22.72
		RB Size=1, RB Offset=5	23.02	22.91	22.97
		RB Size=3, RB Offset=0	23.05	22.59	22.82
		RB Size=3, RB Offset=1	23.03	22.43	22.63
		RB Size=3, RB Offset=2	22.59	22.86	22.46
		RB Size=6, RB Offset=0	21.83	21.74	21.88
	16QAM	RB Size=1, RB Offset=0	22.06	21.65	21.66
		RB Size=1, RB Offset=2	21.96	21.94	21.84
		RB Size=1, RB Offset=5	21.99	21.67	21.71
		RB Size=3, RB Offset=0	22.20	22.17	22.20
		RB Size=3, RB Offset=1	22.06	22.19	22.14
		RB Size=3, RB Offset=2	21.90	22.12	22.09
		RB Size=6, RB Offset=0	20.97	20.97	20.99
3.0	QPSK	RB Size=1, RB Offset=0	23.16	22.99	22.97
		RB Size=1, RB Offset=7	22.95	23.08	23.10
		RB Size=1, RB Offset=14	22.89	22.73	22.55
		RB Size=8, RB Offset=0	22.66	23.27	22.75
		RB Size=8, RB Offset=4	22.45	22.51	22.73
		RB Size=8, RB Offset=7	22.89	22.50	23.06
		RB Size=15, RB Offset=0	21.98	21.79	21.78
	16QAM	RB Size=1, RB Offset=0	21.34	21.87	21.38
		RB Size=1, RB Offset=7	23.01	22.99	22.99
		RB Size=1, RB Offset=14	22.80	23.06	22.87
		RB Size=8, RB Offset=0	22.54	22.77	22.73
		RB Size=8, RB Offset=4	22.11	22.05	22.07
		RB Size=8, RB Offset=7	22.06	21.93	22.09
		RB Size=15, RB Offset=0	22.12	21.84	21.88

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	21.75	22.09	21.78
		RB Size=1, RB Offset=12	22.22	21.95	21.88
		RB Size=1, RB Offset=24	21.97	21.43	21.54
		RB Size=12, RB Offset=0	20.80	20.89	20.53
		RB Size=12, RB Offset=6	20.42	21.31	20.77
		RB Size=12, RB Offset=11	20.96	20.63	20.58
		RB Size=25, RB Offset=0	21.98	21.93	21.46
	16QAM	RB Size=1, RB Offset=0	22.06	22.01	22.04
		RB Size=1, RB Offset=12	21.91	21.77	21.95
		RB Size=1, RB Offset=24	21.99	21.64	21.96
		RB Size=12, RB Offset=0	21.19	21.18	21.24
		RB Size=12, RB Offset=6	20.99	21.13	21.13
		RB Size=12, RB Offset=11	20.94	21.02	20.94
		RB Size=25, RB Offset=0	21.12	21.05	21.15
10.0	QPSK	RB Size=1, RB Offset=0	23.02	23.06	22.65
		RB Size=1, RB Offset=24	22.58	22.67	22.33
		RB Size=1, RB Offset=49	22.92	22.85	23.03
		RB Size=25, RB Offset=0	21.91	22.22	22.06
		RB Size=25, RB Offset=12	21.74	21.66	21.66
		RB Size=25, RB Offset=24	22.03	21.87	21.44
		RB Size=50, RB Offset=0	21.60	22.20	22.27
	16QAM	RB Size=1, RB Offset=0	22.63	22.66	22.75
		RB Size=1, RB Offset=24	22.56	22.46	22.47
		RB Size=1, RB Offset=49	22.51	22.27	22.27
		RB Size=25, RB Offset=0	21.13	21.13	21.18
		RB Size=25, RB Offset=12	21.04	21.23	21.00
		RB Size=25, RB Offset=24	20.99	21.28	20.95
		RB Size=50, RB Offset=0	21.15	21.08	21.13

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.38	13	Pass
QPSK (100RB Size)	6.43	13	Pass
16QAM (1RB Size)	7.53	13	Pass
16QAM (100RB Size)	7.55	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
707.50	83.11	94	1.1	H	23.7	1.88	0	21.85	34.77
707.50	84.61	87	2.1	V	24.6	1.88	0	22.73	34.77
10 MHz Bandwidth									
707.50	83.14	63	1.7	H	23.8	1.88	0	21.88	34.77
707.50	84.6	160	2.2	V	24.6	1.88	0	22.72	34.77
15 MHz Bandwidth									
707.50	83.14	3	1.6	H	23.8	1.88	0	21.88	34.77
707.50	84.54	51	2.3	V	24.5	1.88	0	22.66	34.77
20 MHz Bandwidth									
707.50	83.14	107	1	H	23.8	1.88	0	21.88	34.77
707.50	84.52	356	2.4	V	24.5	1.88	0	22.64	34.77

16QAM:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
707.50	83.15	257	1.5	H	23.8	1.88	0	21.89	34.77
707.50	84.67	127	1.2	V	24.7	1.88	0	22.79	34.77
10 MHz Bandwidth									
707.50	83.14	185	2.1	H	23.8	1.88	0	21.88	34.77
707.50	84.63	35	1.8	V	24.6	1.88	0	22.75	34.77
15 MHz Bandwidth									
707.50	83.14	185	2.1	H	23.8	1.88	0	21.88	34.77
707.50	84.63	35	1.8	V	24.6	1.88	0	22.75	34.77
20 MHz Bandwidth									
707.50	83.13	192	1.9	H	23.8	1.88	0	21.87	34.77
707.50	84.60	217	1.5	V	24.6	1.88	0	22.72	34.77

LTE Band 17:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.37	22.06	21.99
		RB Size=1, RB Offset=12	21.78	21.33	22.06
		RB Size=1, RB Offset=24	21.94	21.73	21.37
		RB Size=12, RB Offset=0	21.36	20.53	21.53
		RB Size=12, RB Offset=6	20.85	20.94	20.81
		RB Size=12, RB Offset=11	20.19	21.13	20.99
		RB Size=25, RB Offset=0	22.02	21.98	21.85
	16QAM	RB Size=1, RB Offset=0	21.82	21.72	21.53
		RB Size=1, RB Offset=12	21.86	21.80	21.94
		RB Size=1, RB Offset=24	21.98	21.64	21.97
		RB Size=12, RB Offset=0	21.20	21.16	21.20
		RB Size=12, RB Offset=6	20.98	21.13	21.16
		RB Size=12, RB Offset=11	20.96	21.00	20.95
		RB Size=25, RB Offset=0	21.12	21.07	21.15
10.0	QPSK	RB Size=1, RB Offset=0	22.57	22.77	22.83
		RB Size=1, RB Offset=24	22.54	22.74	22.82
		RB Size=1, RB Offset=49	23.18	22.93	22.91
		RB Size=25, RB Offset=0	21.73	21.64	21.98
		RB Size=25, RB Offset=12	22.04	22.03	21.50
		RB Size=25, RB Offset=24	21.36	21.79	21.87
		RB Size=50, RB Offset=0	21.41	21.94	21.64
	16QAM	RB Size=1, RB Offset=0	22.37	22.42	21.97
		RB Size=1, RB Offset=24	22.57	22.44	22.53
		RB Size=1, RB Offset=49	22.48	22.24	22.31
		RB Size=25, RB Offset=0	21.13	21.16	21.18
		RB Size=25, RB Offset=12	21.03	21.21	21.00
		RB Size=25, RB Offset=24	21.02	21.25	20.98
		RB Size=50, RB Offset=0	21.14	21.08	21.18

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.12	13	Pass
QPSK (100RB Size)	6.15	13	Pass
16QAM (1RB Size)	7.63	13	Pass
16QAM (100RB Size)	7.65	13	Pass

EIRP:

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
710	83.10	33	1.5	H	23.7	1.88	0	21.84	34.77
710	84.51	345	1.3	V	24.5	1.88	0	22.63	34.77
10 MHz Bandwidth									
710	83.15	14	1.2	H	23.8	1.88	0	21.89	34.77
710	84.55	24	2.2	V	24.5	1.88	0	22.67	34.77

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
5 MHz Bandwidth									
710	83.20	209	2.0	H	23.8	1.88	0	21.94	34.77
710	84.68	47	1.3	V	24.7	1.88	0	22.80	34.77
10 MHz Bandwidth									
710	83.07	15	1.8	H	23.7	1.88	0	21.81	34.77
710	84.64	173	1.8	V	24.6	1.88	0	22.76	34.77

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

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

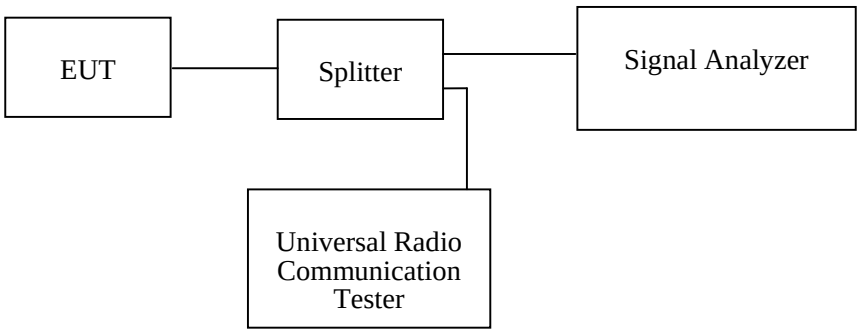
Applicable Standard

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

Test Procedure

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

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



Test Data

Environmental Conditions

Temperature:	24~25 ℃
Relative Humidity:	52~53 %
ATM Pressure:	101.0~101.2 kPa

*The testing was performed by Shawn Xiao on 2*018-12-26 and 2019-01-04.

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	314.10
EGPRS(8PSK)	836.6	243.59	309.29

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

PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	246.79	314.10
EGPRS(8PSK)	1880.0	245.19	309.29

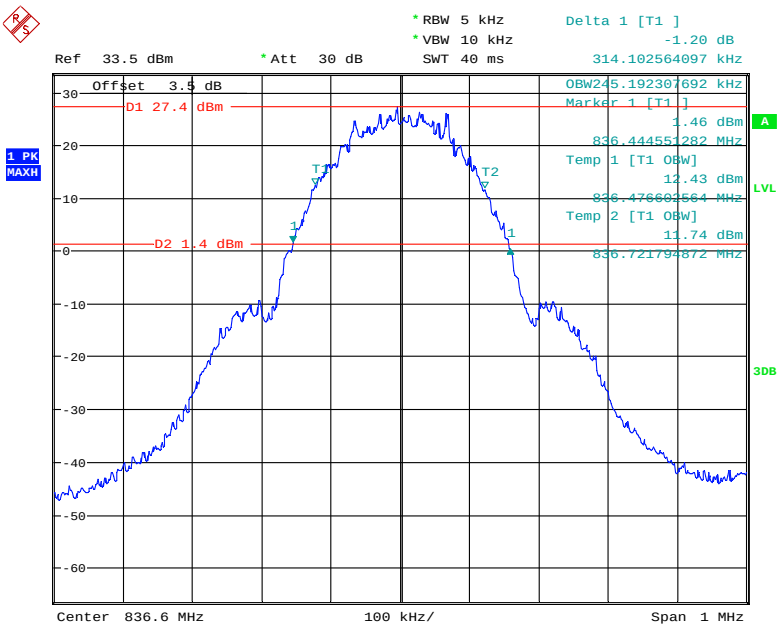
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.151	4.696
HSUPA (BPSK)	1880.0	4.167	4.679
HSDPA (16QAM)	1880.0	4.167	4.679

AWS Band (Part 27)

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1732.6	4.151	4.696
HSUPA (BPSK)	1732.6	4.167	4.696
HSDPA (16QAM)	1732.6	4.167	4.696

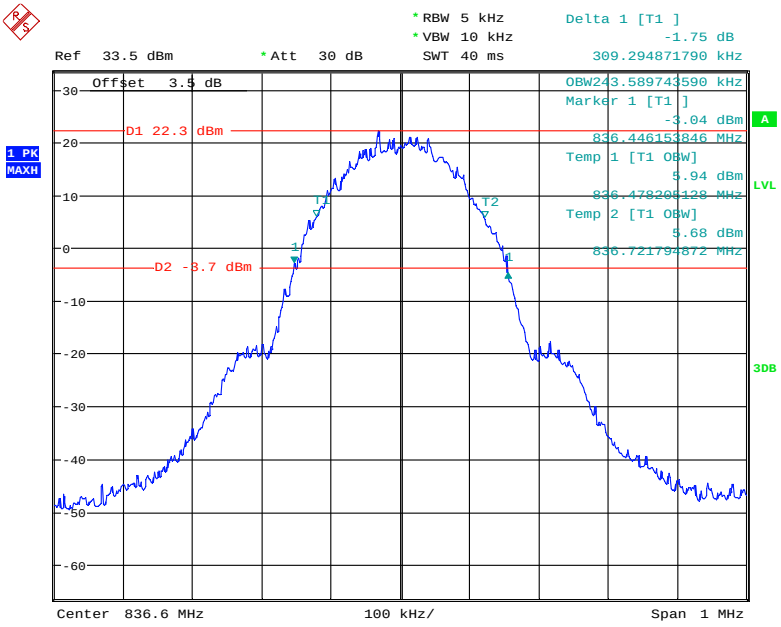
Cellular Band (Part 22H)

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



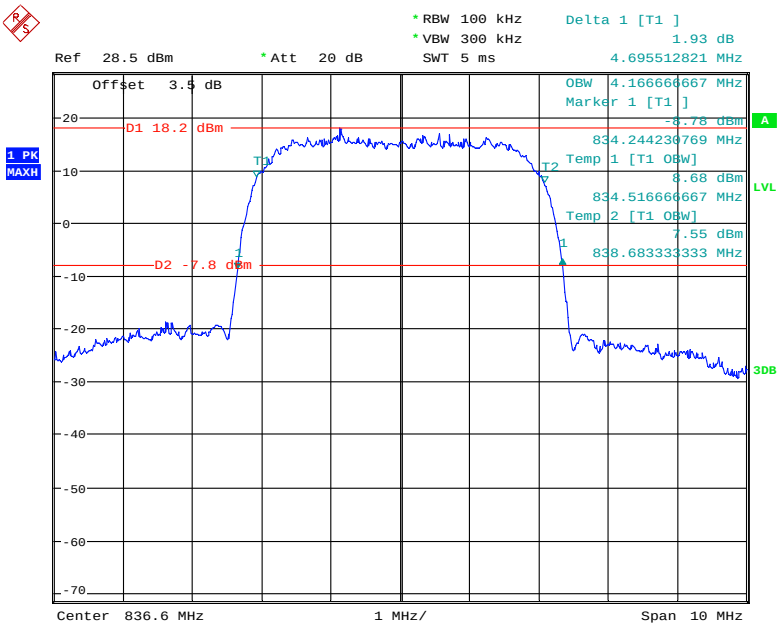
Date: 26.DEC.2018 16:17:11

26 dB Emissions &99% Occupied Bandwidth for EDGE(8PSK) Mode



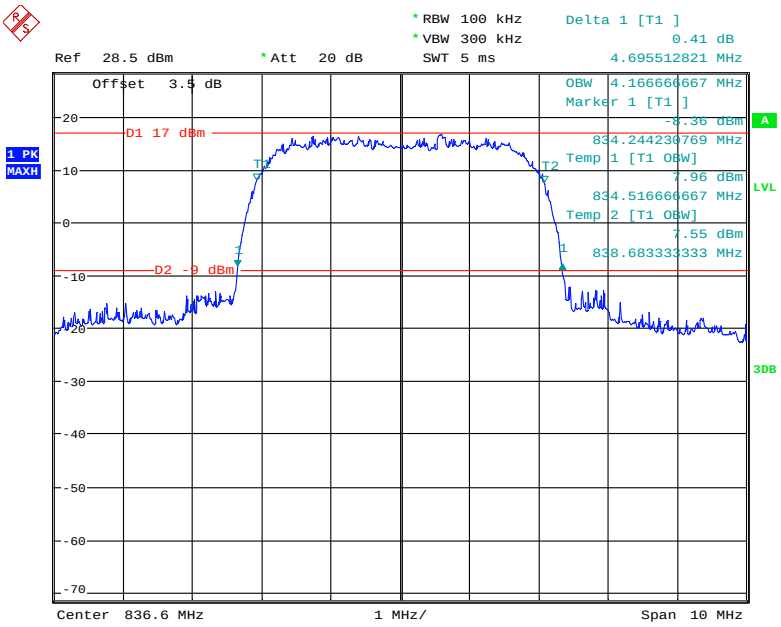
Date: 26.DEC.2018 16:23:10

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



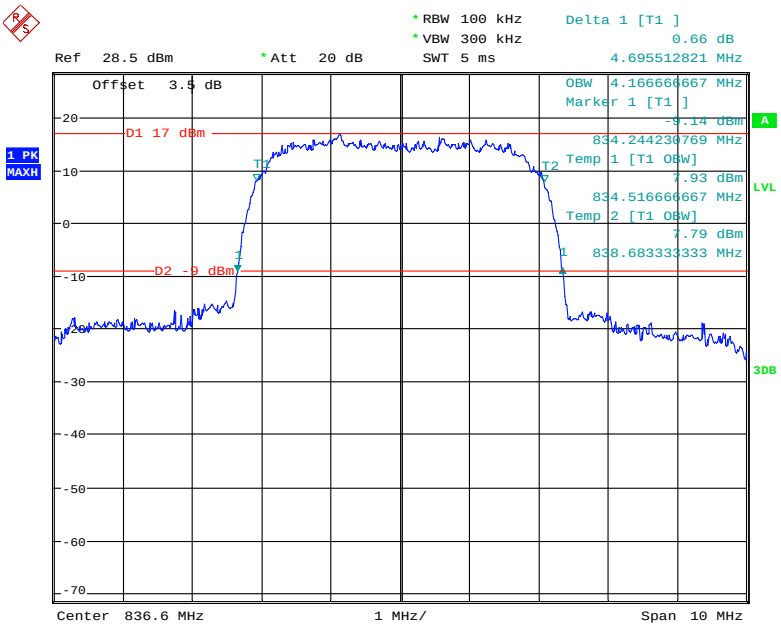
Date: 28.DEC.2018 15:50:15

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



Date: 28.DEC.2018 15:42:04

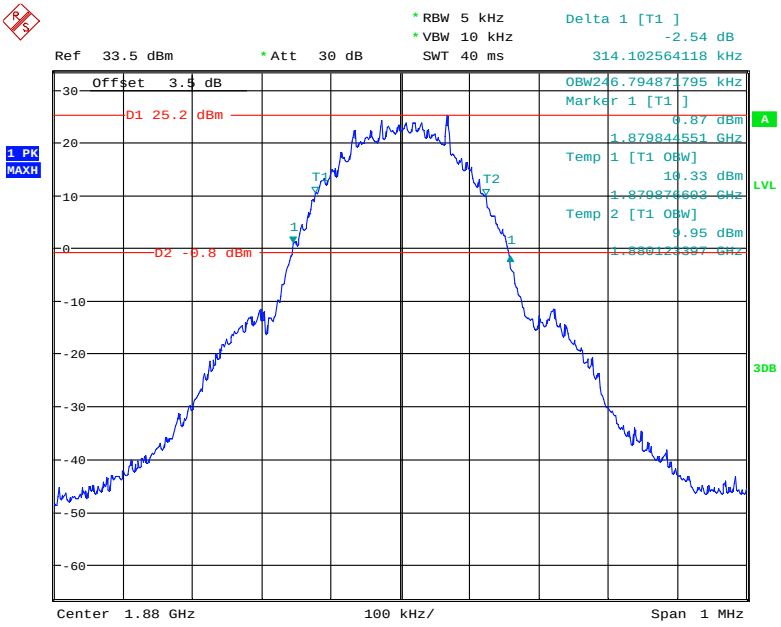
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode



Date: 28.DEC.2018 15:37:33

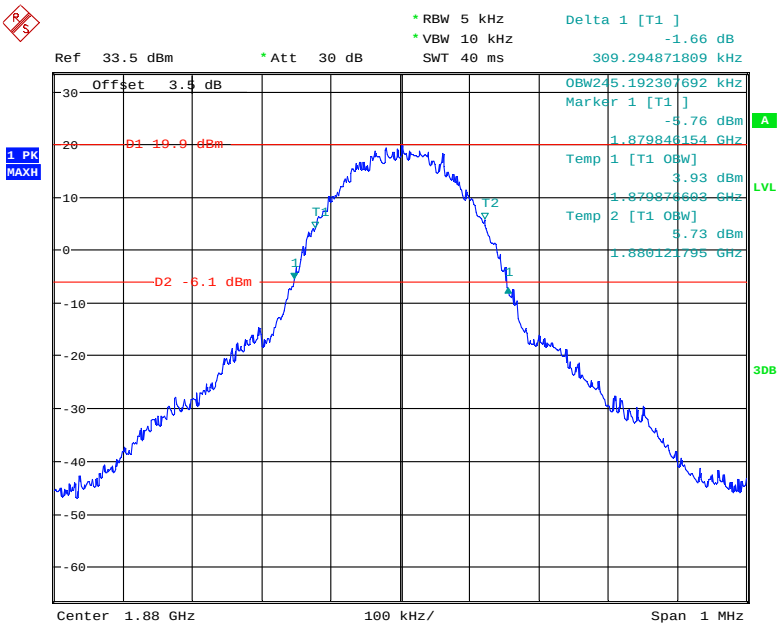
PCS Band (Part 24E)

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



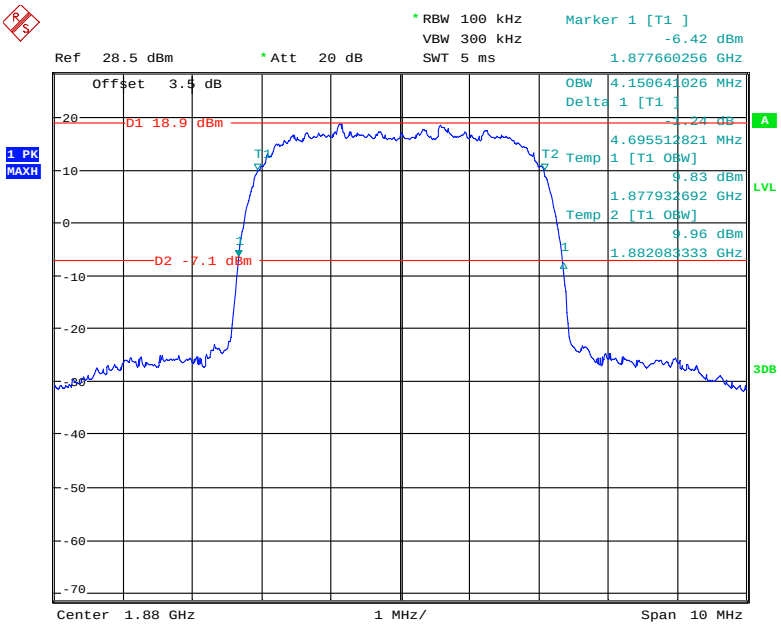
Date: 26.DEC.2018 16:31:49

26 dB Emissions &99% Occupied Bandwidth for EDGE(8PSK) Mode



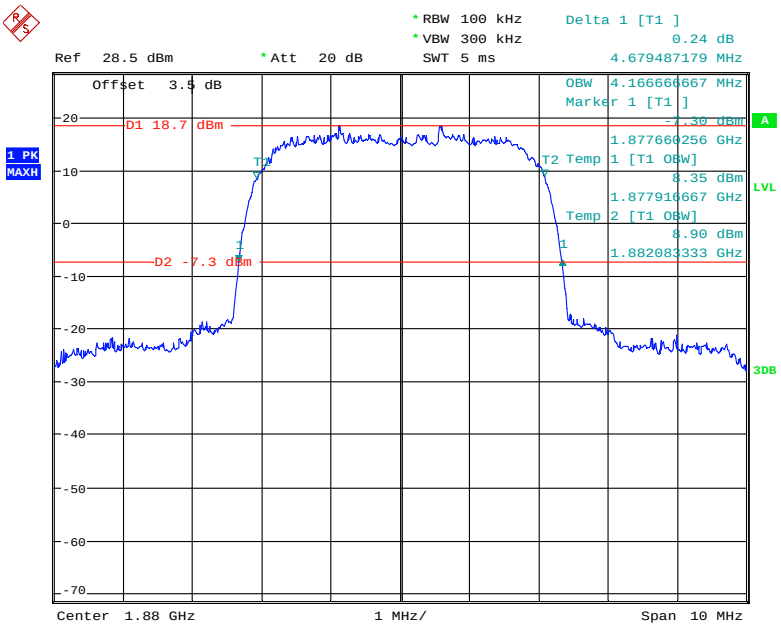
Date: 26.DEC.2018 16:26:20

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



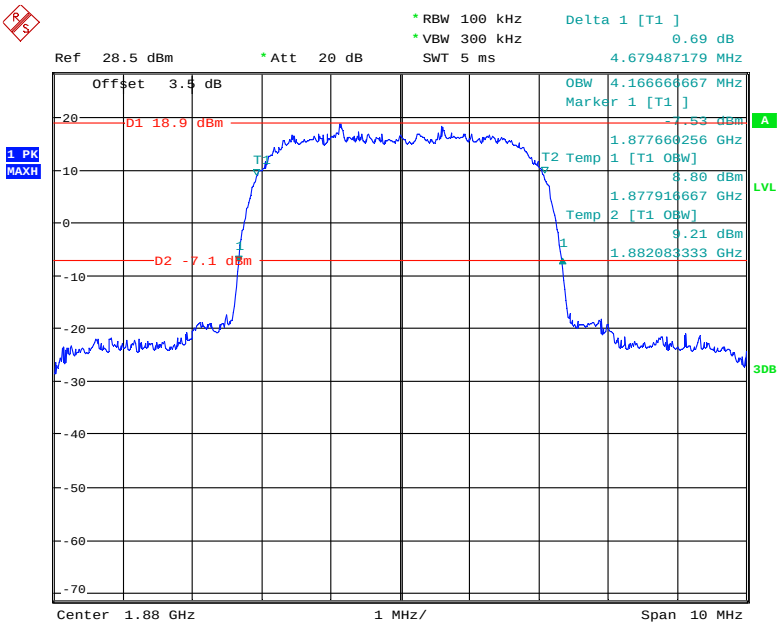
Date: 28.DEC.2018 14:57:35

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



Date: 28.DEC.2018 15:18:45

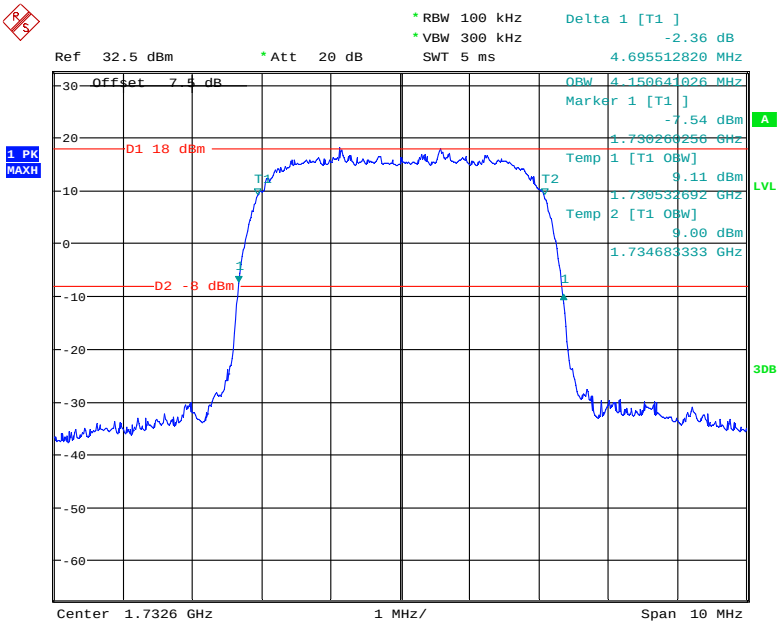
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode



Date: 28.DEC.2018 15:28:48

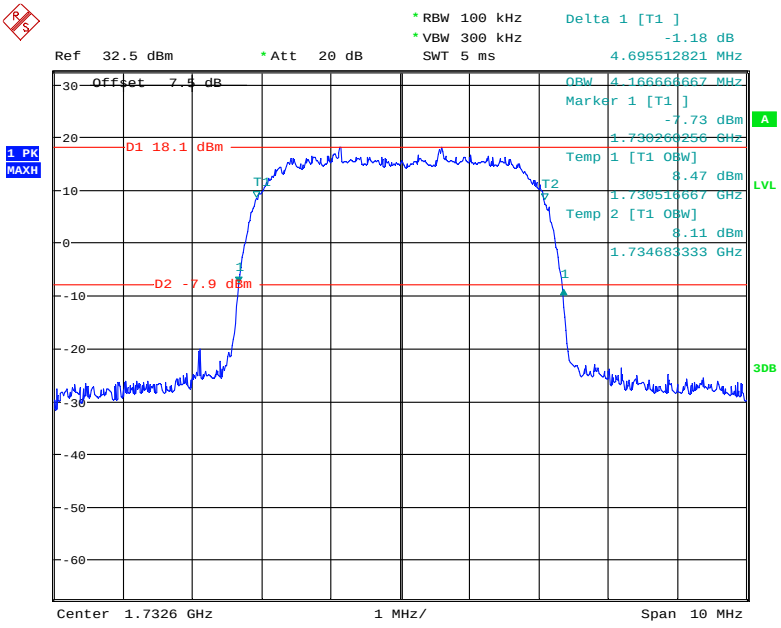
AWS Band (Part 27)

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



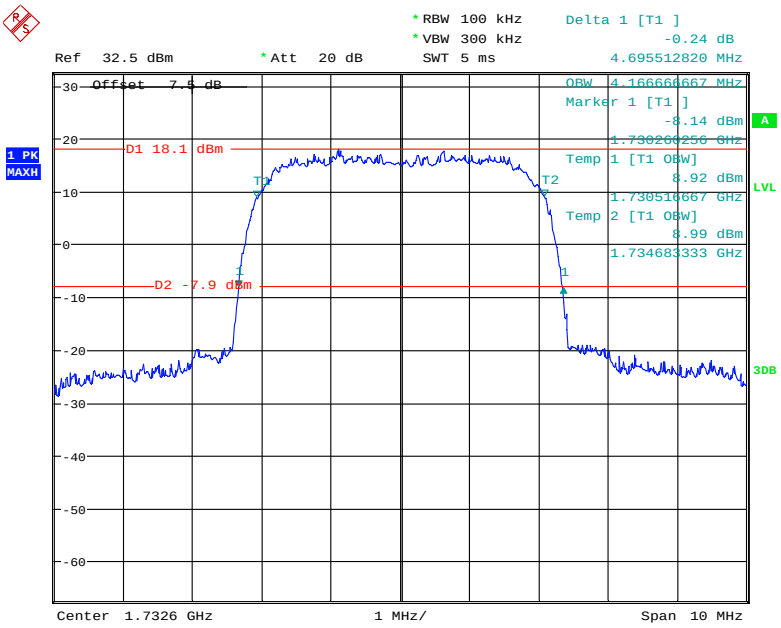
Date: 4.JAN.2019 18:57:02

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



Date: 4.JAN.2019 19:01:51

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

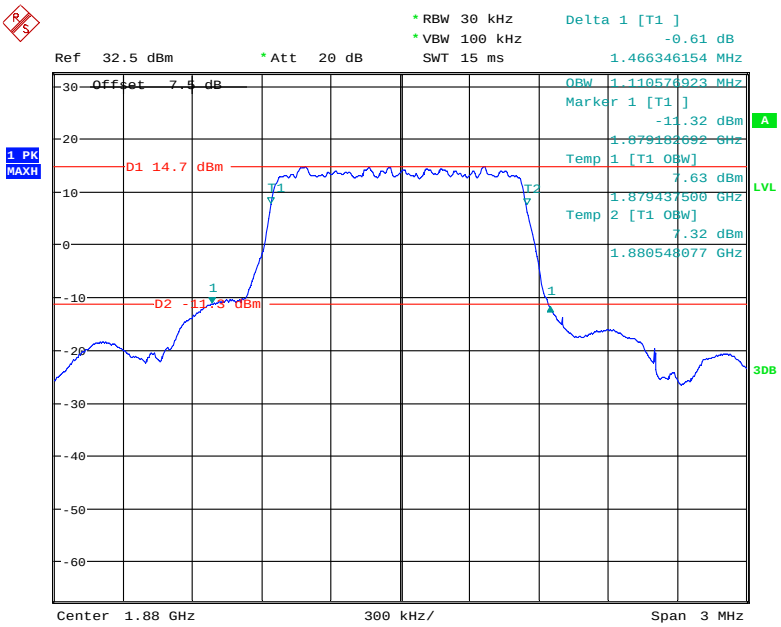


Date: 4.JAN.2019 18:59:52

LTE Band 2: (Middle Channel)

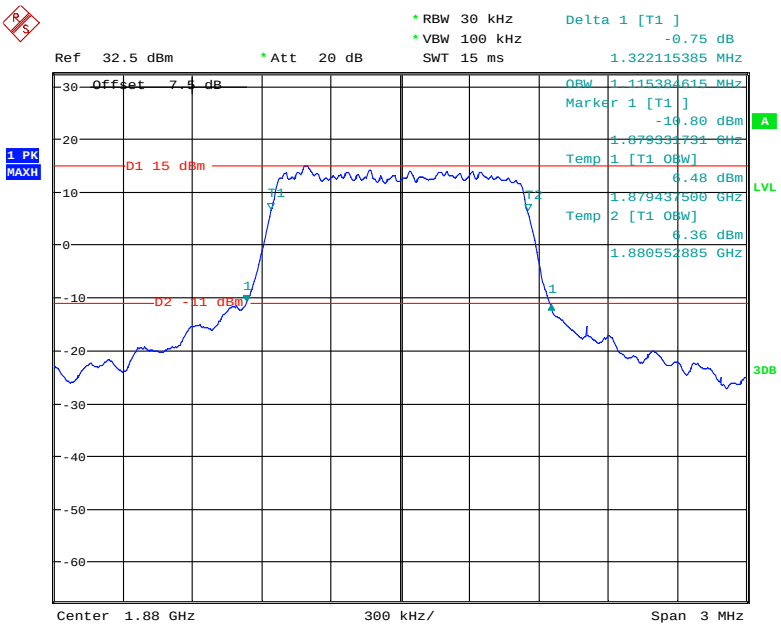
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.111	1.466
	16QAM	1.115	1.322
3.0	QPSK	2.712	3.038
	16QAM	2.712	3.048
5.0	QPSK	4.567	5.433
	16QAM	4.551	5.337
10.0	QPSK	8.974	9.872
	16QAM	8.974	9.840
15.0	QPSK	13.510	15.288
	16QAM	13.510	14.952
20.0	QPSK	17.949	19.551
	16QAM	17.949	19.679

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



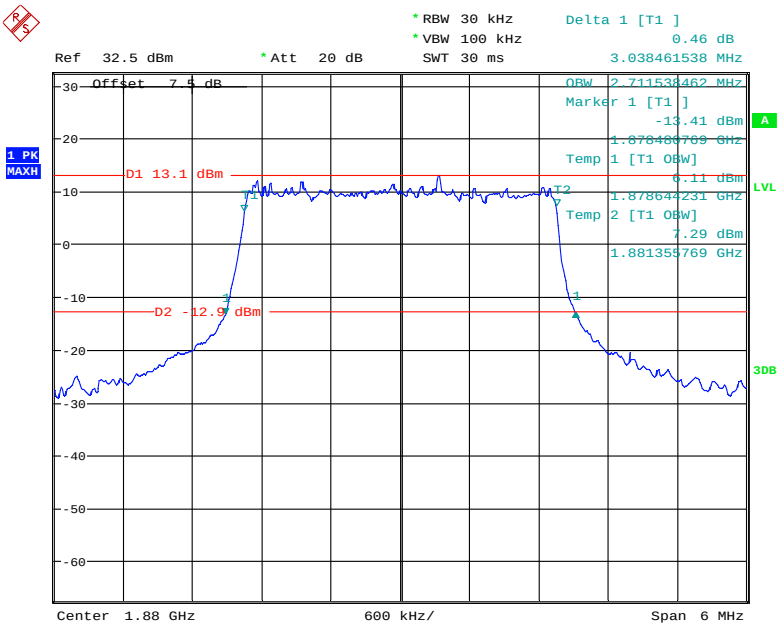
Date: 26.DEC.2018 19:18:37

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



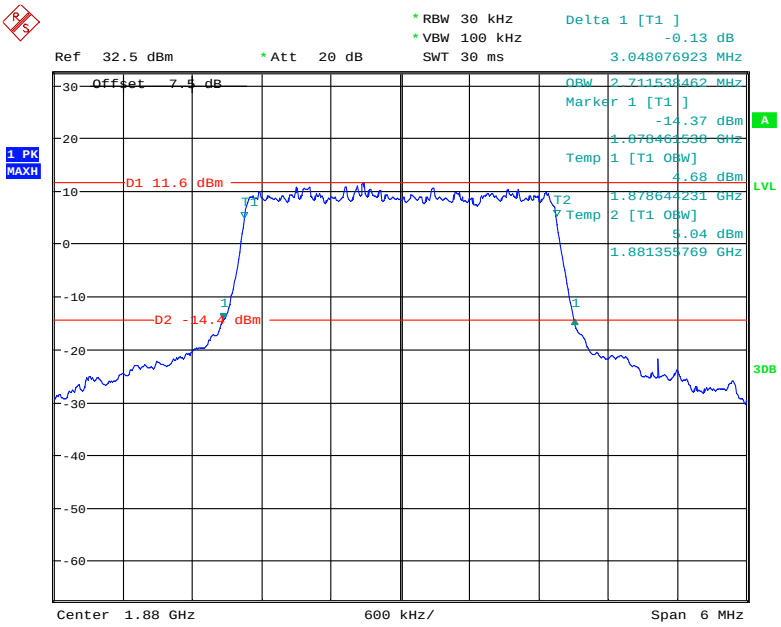
Date: 26.DEC.2018 19:23:01

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



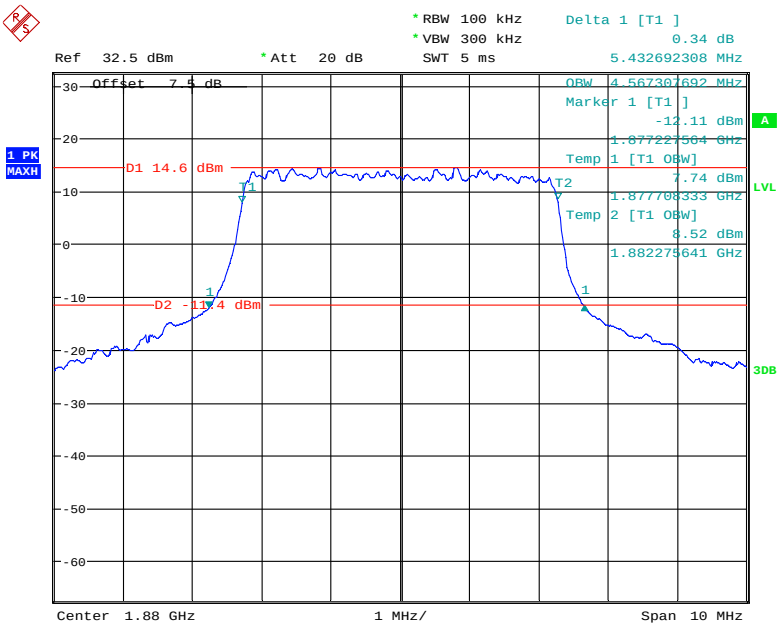
Date: 26.DEC.2018 19:25:33

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



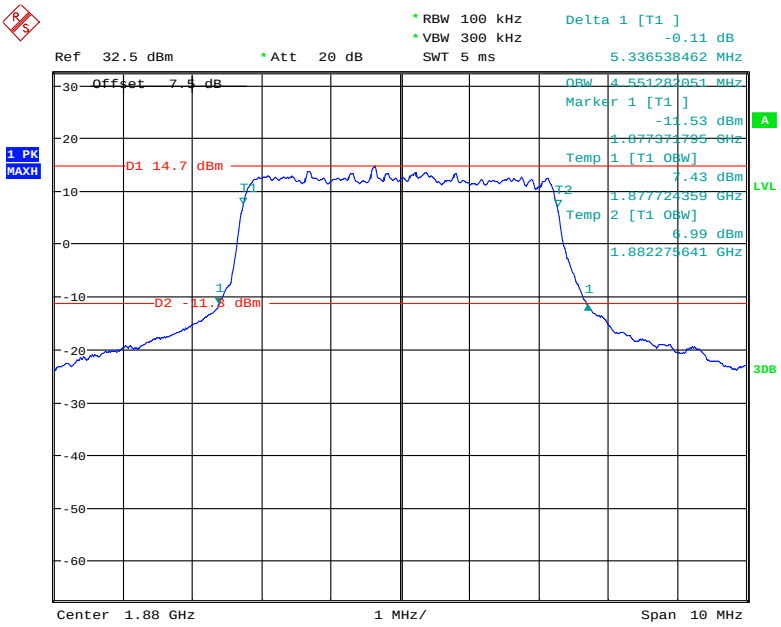
Date: 26.DEC.2018 19:27:18

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



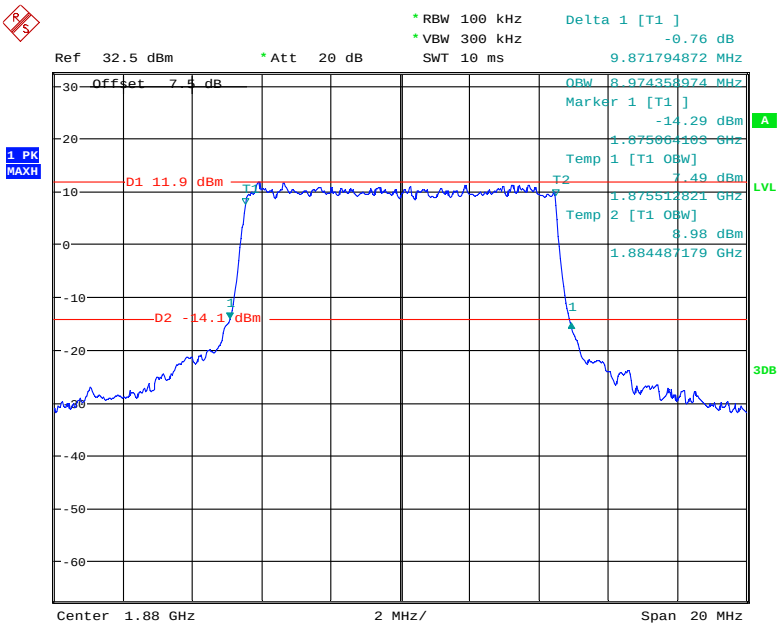
Date: 26.DEC.2018 19:29:51

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



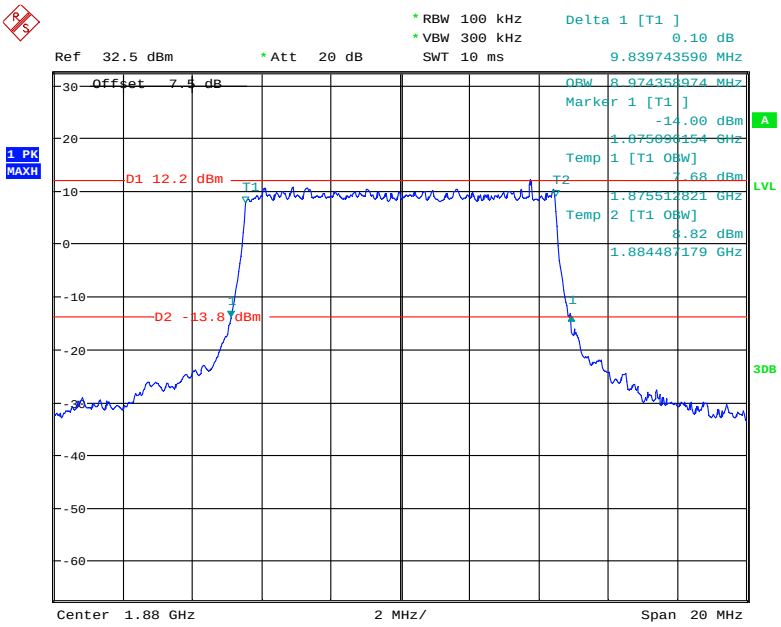
Date: 26.DEC.2018 19:32:03

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



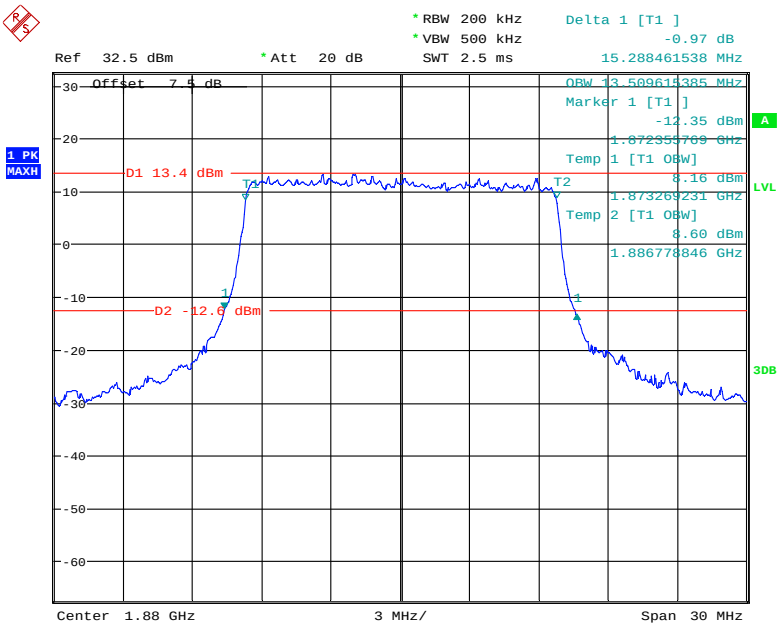
Date: 26.DEC.2018 19:35:35

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



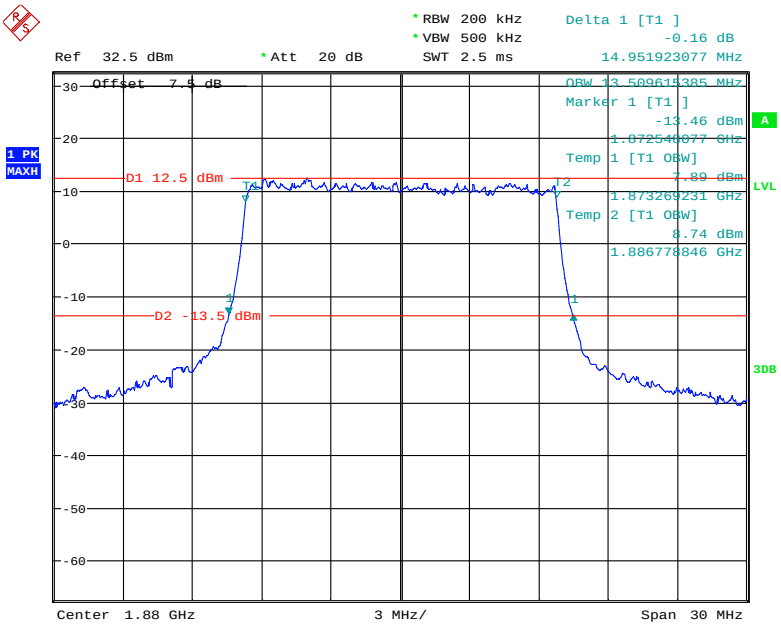
Date: 26.DEC.2018 19:37:51

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



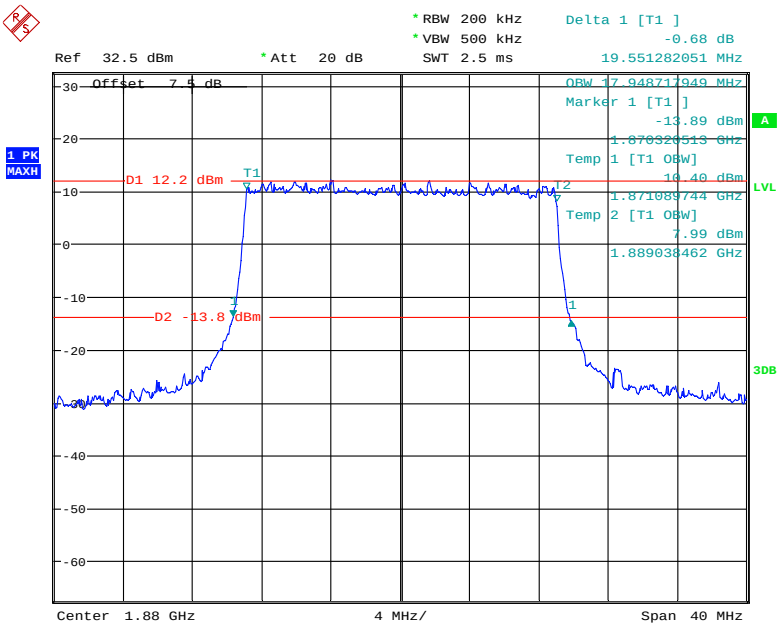
Date: 26.DEC.2018 19:40:31

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



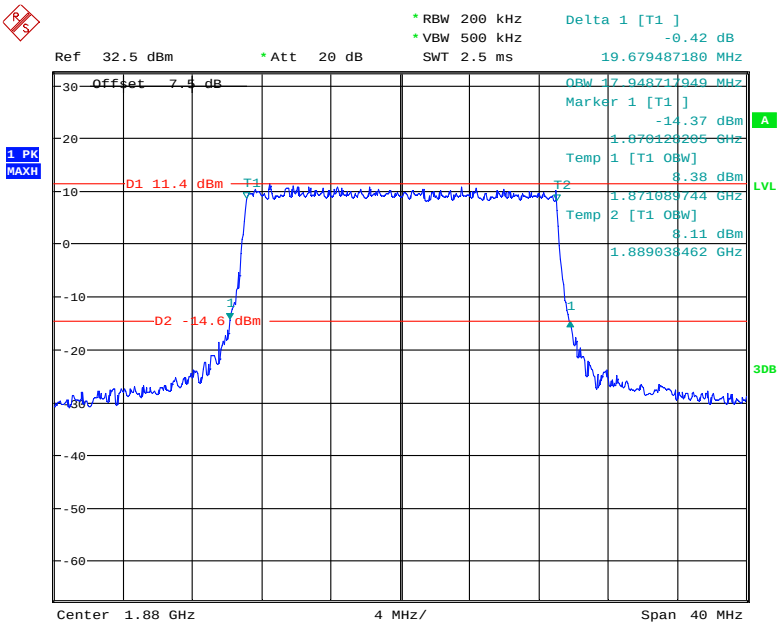
Date: 26.DEC.2018 19:42:29

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



Date: 26.DEC.2018 19:46:02

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

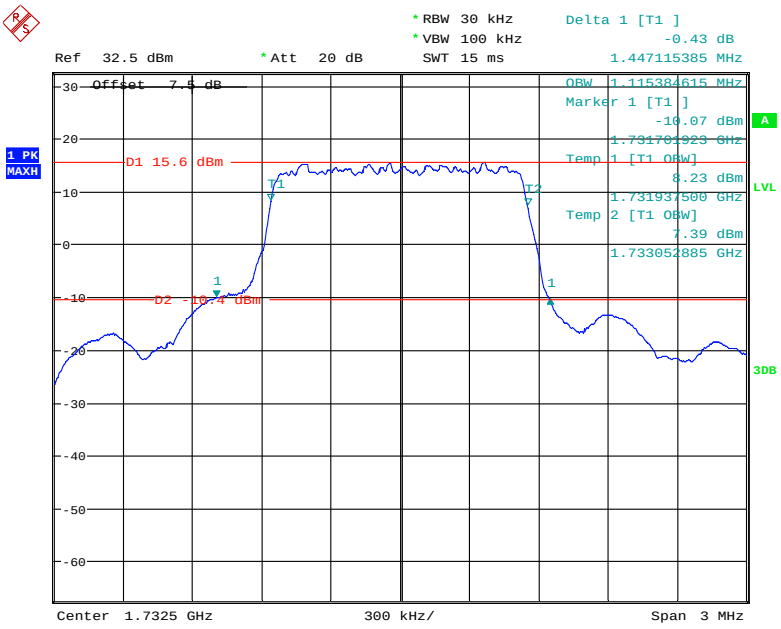


Date: 26.DEC.2018 19:49:12

LTE Band 4: (Middle Channel)

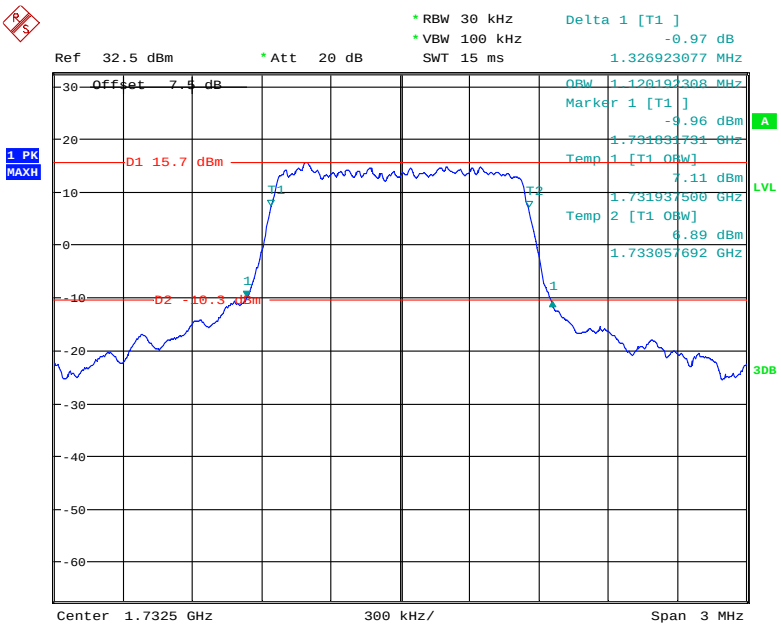
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.115	1.447
	16QAM	1.120	1.327
3.0	QPSK	2.712	3.058
	16QAM	2.702	3.048
5.0	QPSK	4.551	5.369
	16QAM	4.535	5.353
10.0	QPSK	8.974	9.840
	16QAM	8.974	9.840
15.0	QPSK	13.510	15.240
	16QAM	13.462	15.192
20.0	QPSK	17.949	19.487
	16QAM	17.949	19.744

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



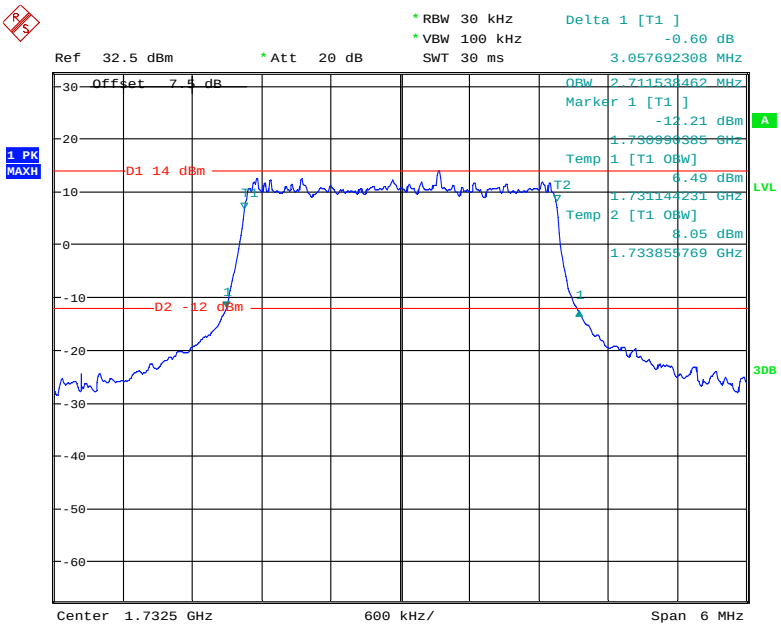
Date: 26.DEC.2018 19:54:57

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



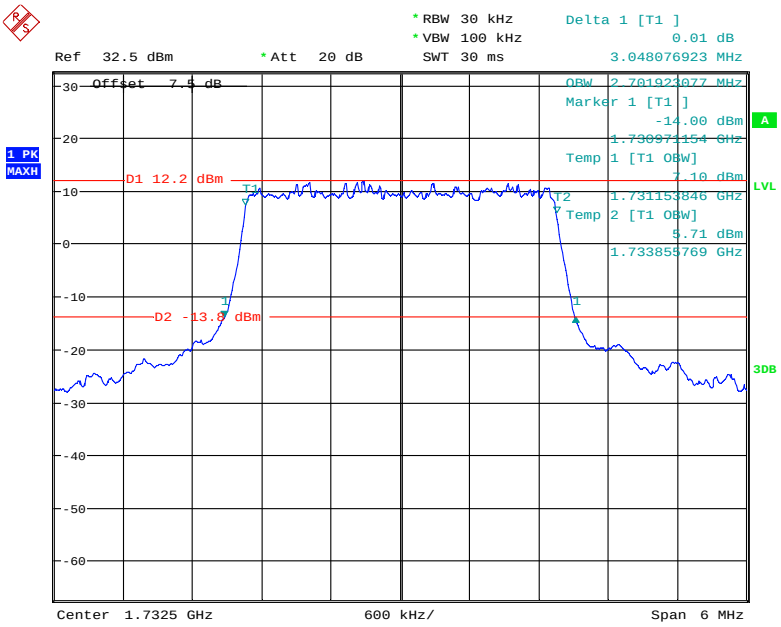
Date: 26.DEC.2018 19:52:35

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



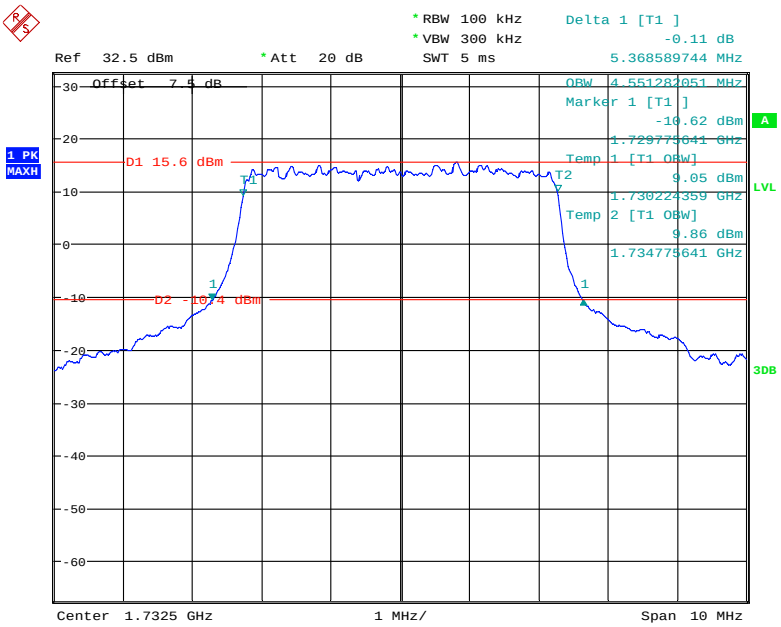
Date: 26.DEC.2018 20:02:19

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



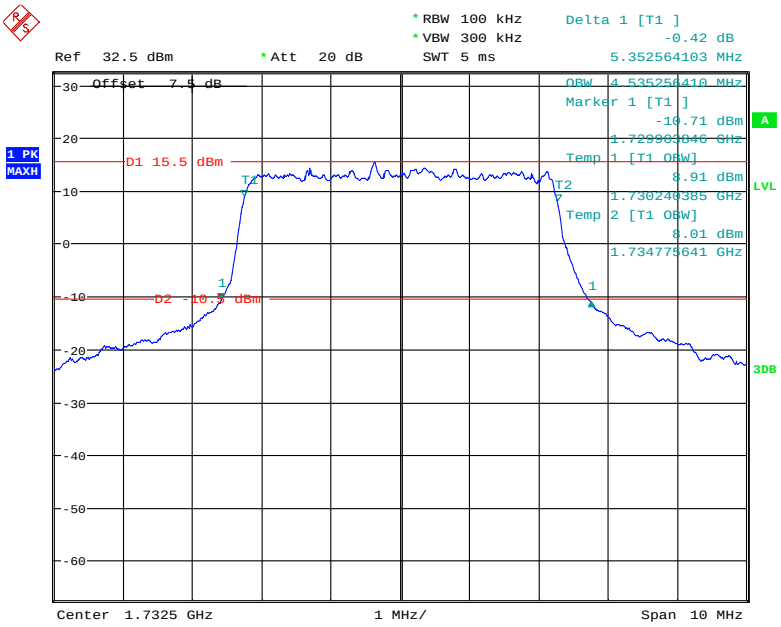
Date: 26.DEC.2018 19:58:26

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



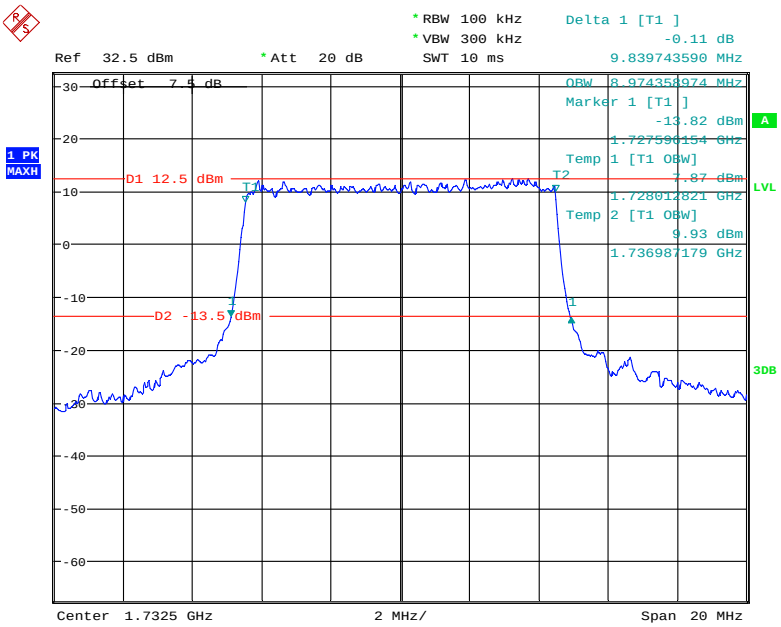
Date: 26.DEC.2018 20:06:45

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



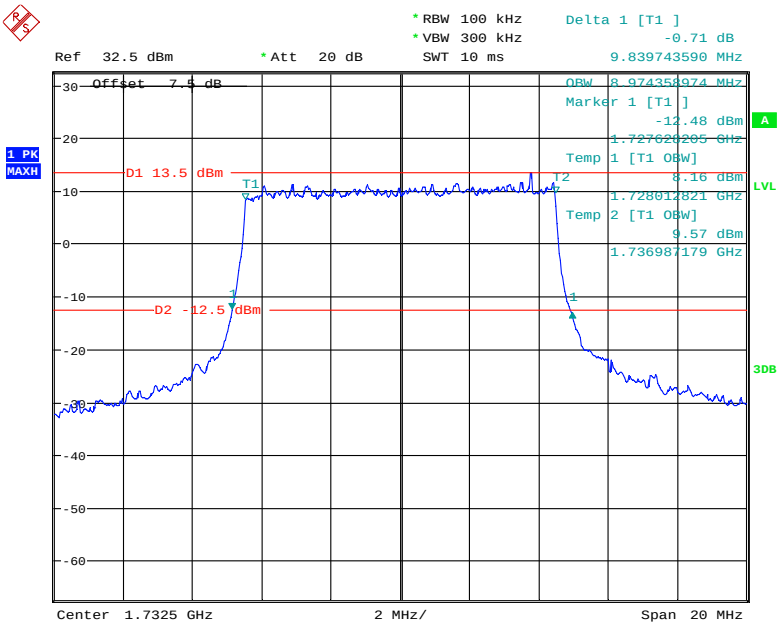
Date: 26.DEC.2018 20:04:45

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



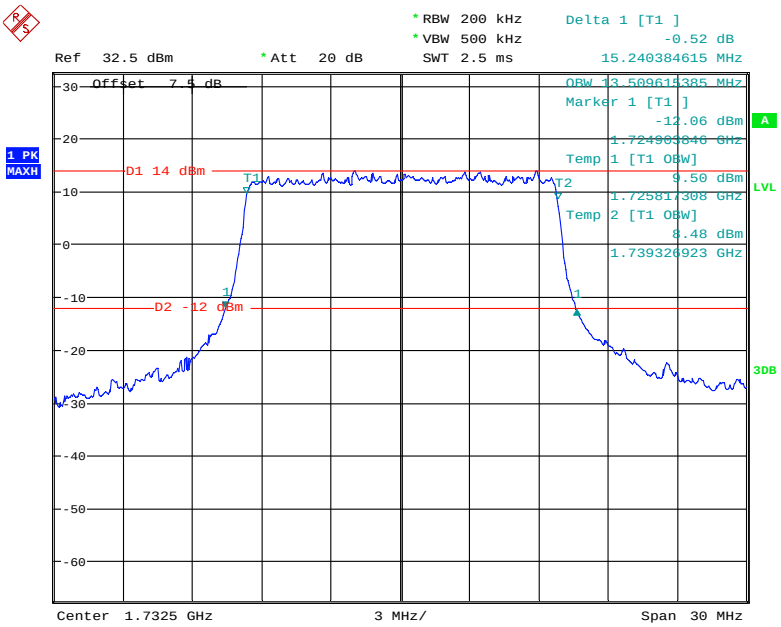
Date: 26.DEC.2018 20:12:26

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



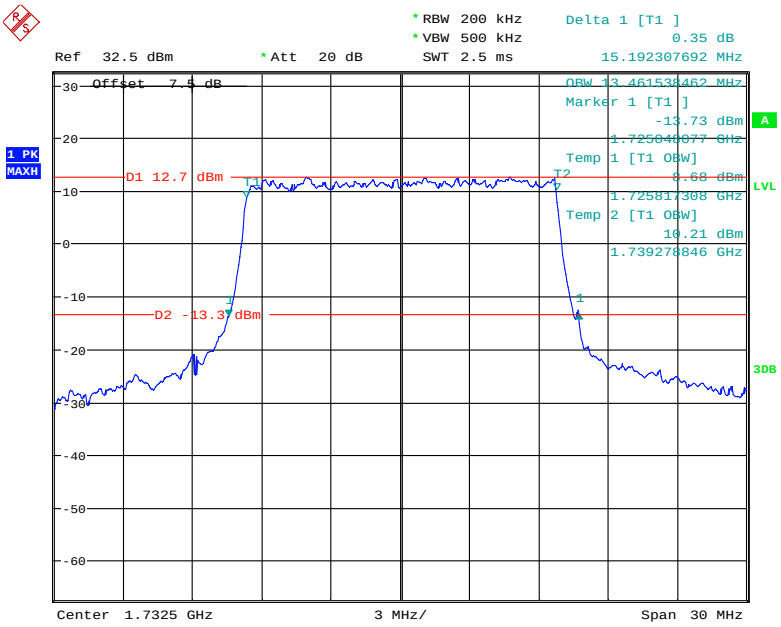
Date: 26.DEC.2018 20:08:55

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



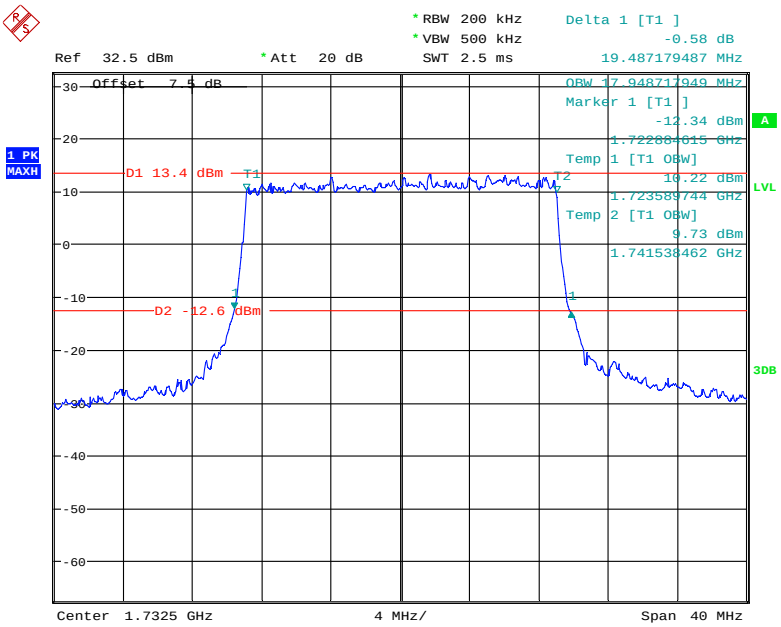
Date: 26.DEC.2018 20:20:40

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



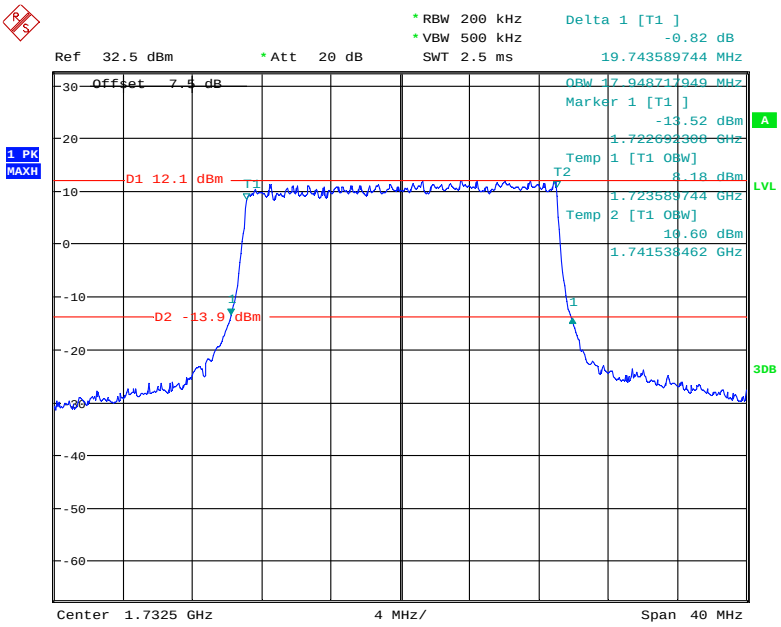
Date: 26.DEC.2018 20:17:32

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



Date: 26.DEC.2018 20:27:06

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

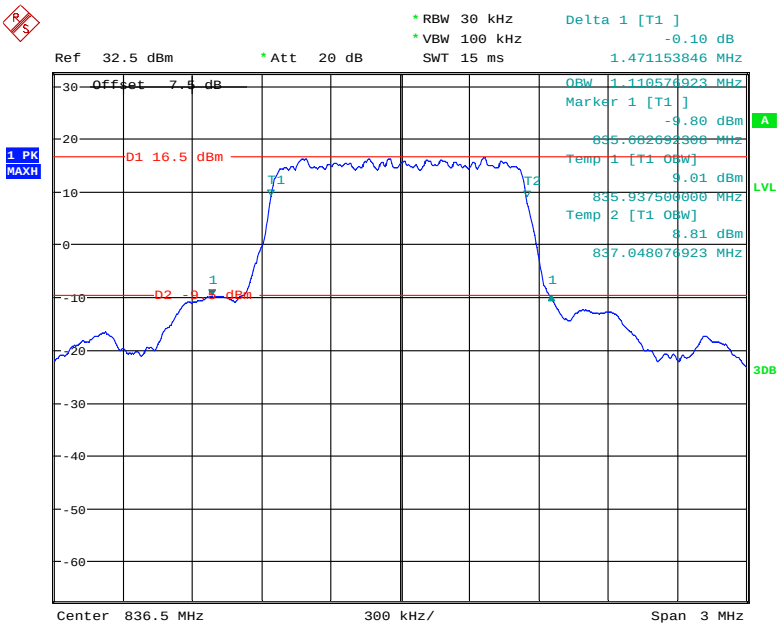


Date: 26.DEC.2018 20:24:13

LTE Band 5: (Middle Channel)

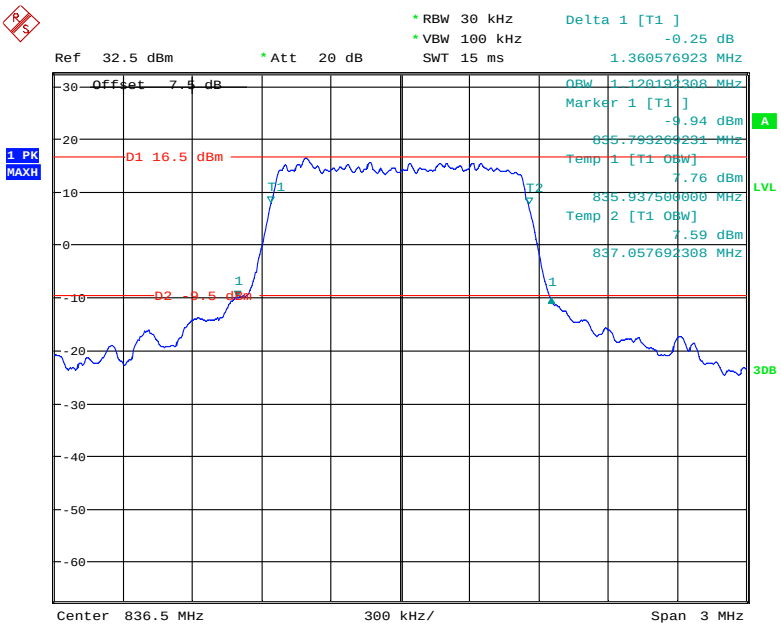
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.111	1.471
	16QAM	1.120	1.361
3.0	QPSK	2.712	3.048
	16QAM	2.702	3.058
5.0	QPSK	4.551	5.401
	16QAM	4.535	5.337
10.0	QPSK	8.974	9.872
	16QAM	8.974	9.872

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



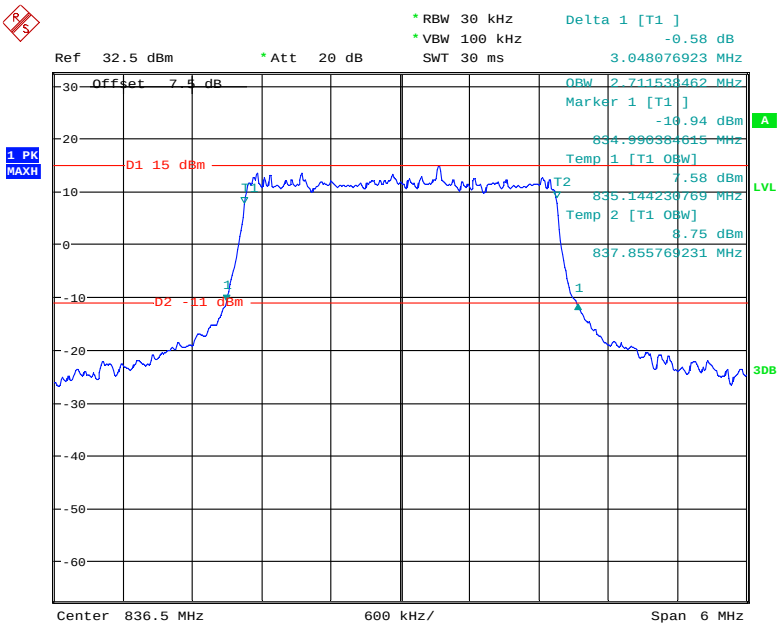
Date: 26.DEC.2018 20:30:03

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



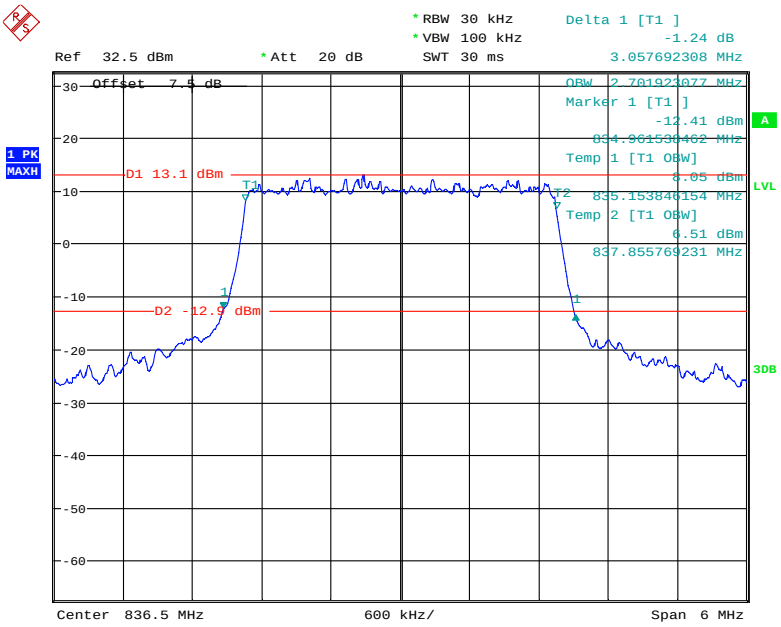
Date: 26.DEC.2018 20:32:21

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



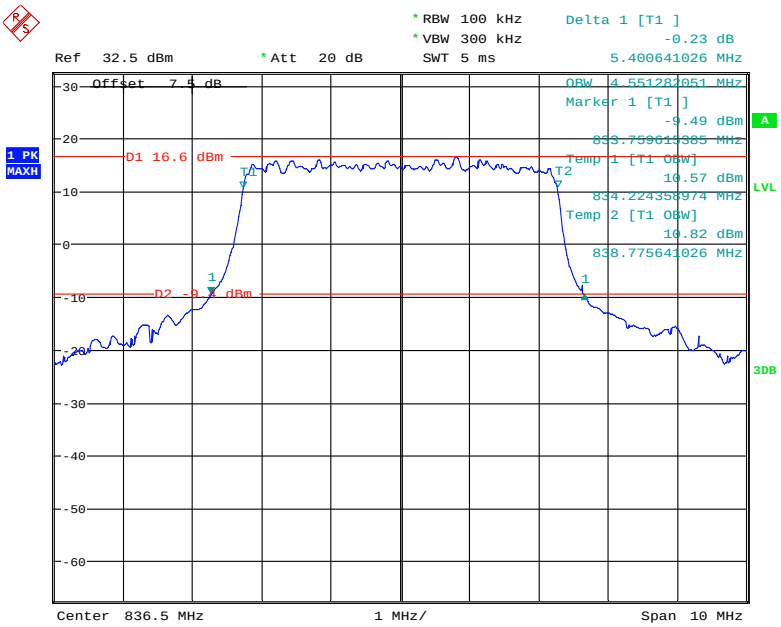
Date: 26.DEC.2018 20:34:15

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



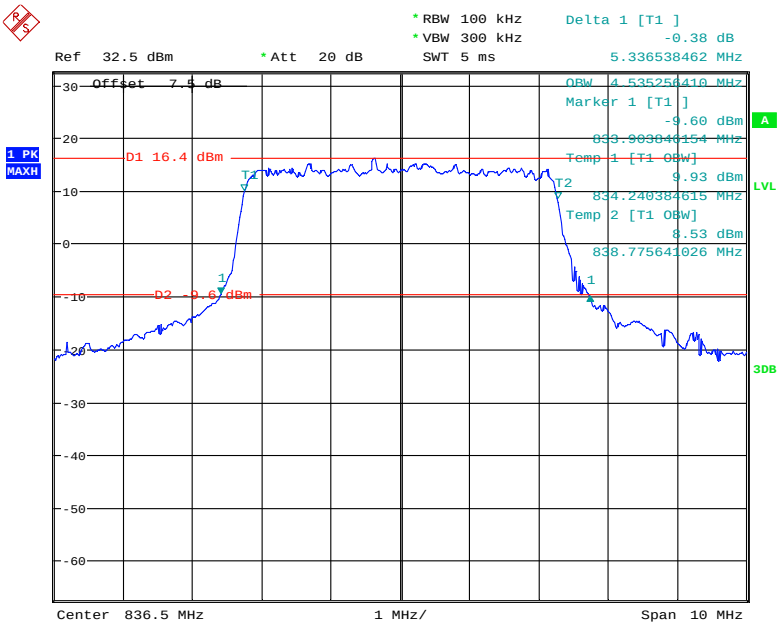
Date: 26.DEC.2018 20:36:52

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



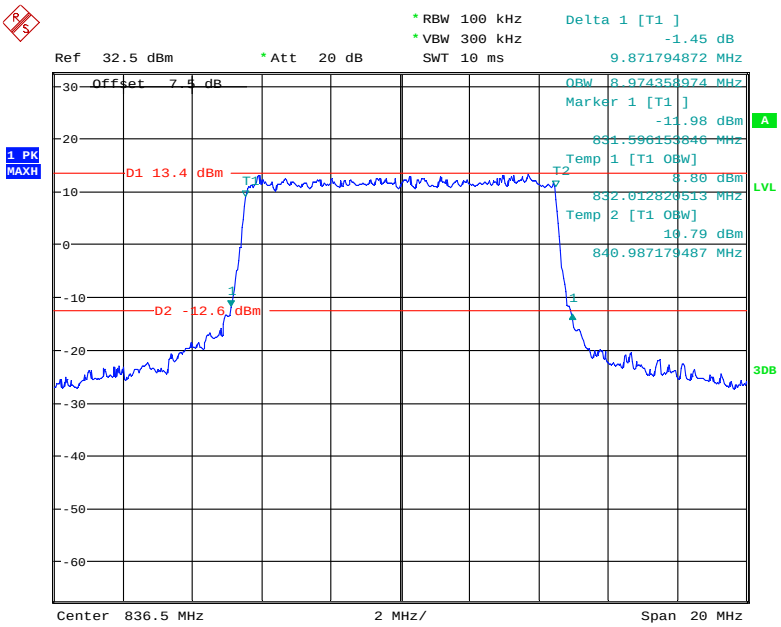
Date: 26.DEC.2018 20:42:37

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



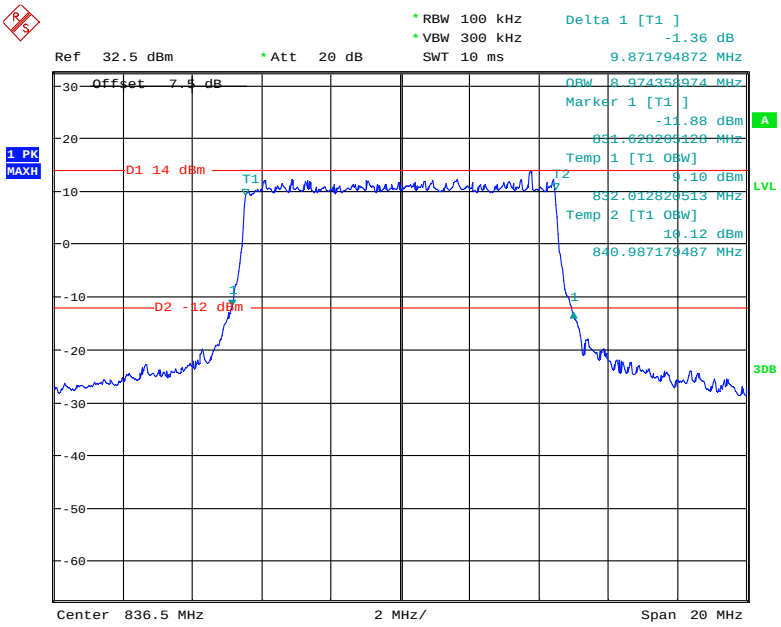
Date: 26.DEC.2018 20:46:59

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



Date: 26.DEC.2018 20:49:17

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

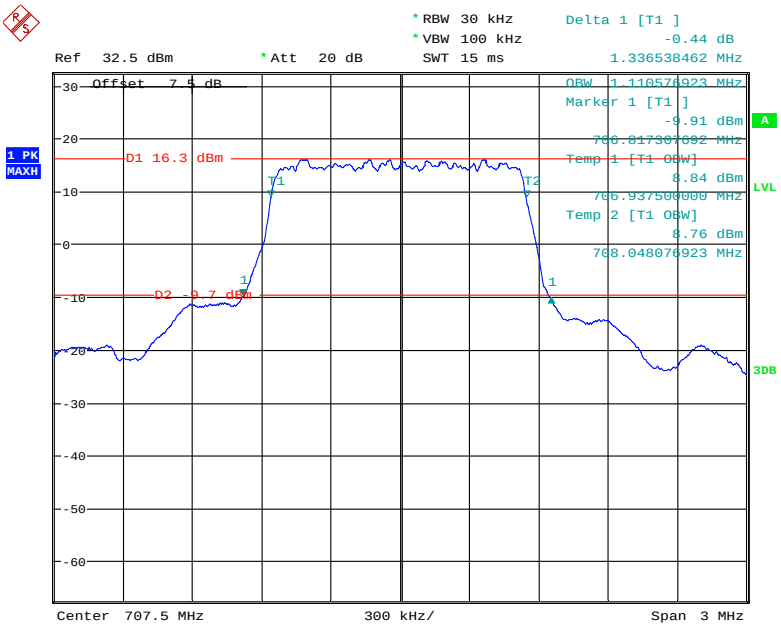


Date: 26.DEC.2018 20:51:24

LTE Band 12: (Middle Channel)

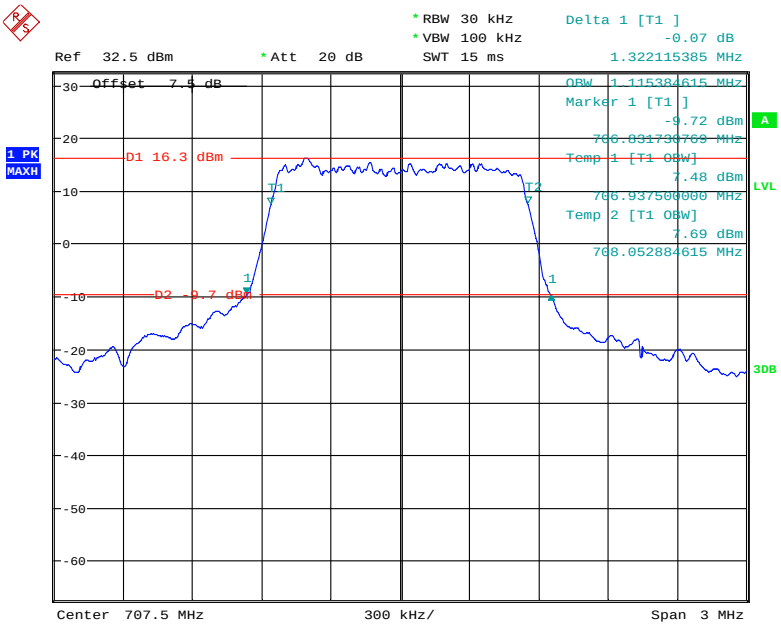
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.111	1.337
	16QAM	1.115	1.322
3.0	QPSK	2.712	3.058
	16QAM	2.712	3.077
5.0	QPSK	4.567	5.497
	16QAM	4.551	5.401
10.0	QPSK	9.038	9.968
	16QAM	9.006	9.904

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



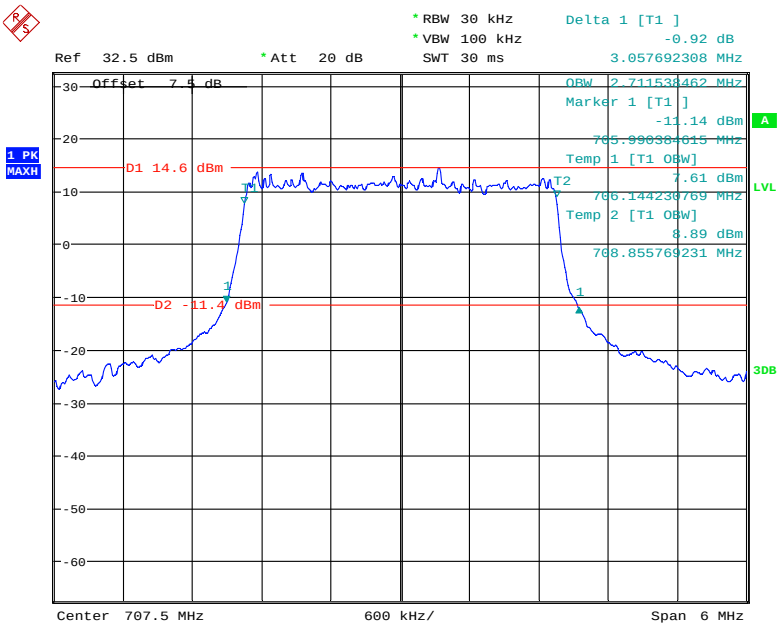
Date: 26.DEC.2018 21:04:28

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



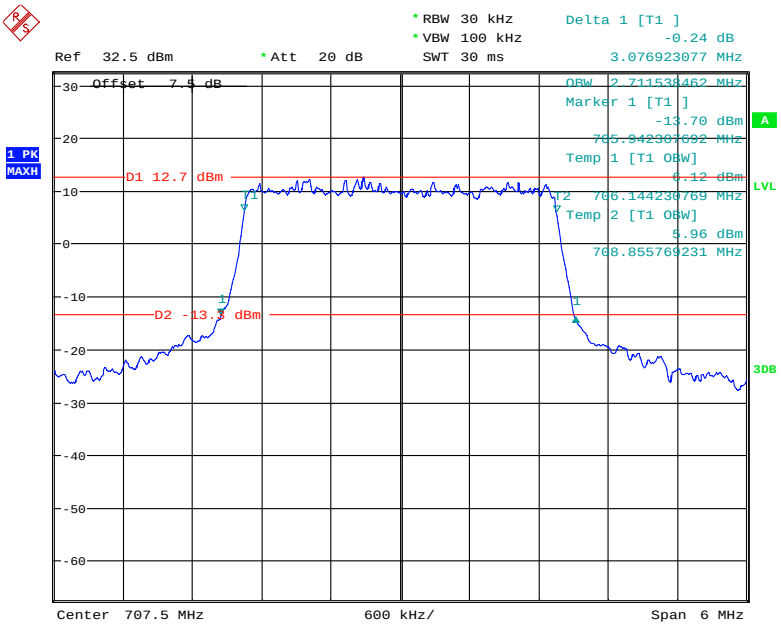
Date: 26.DEC.2018 21:02:47

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



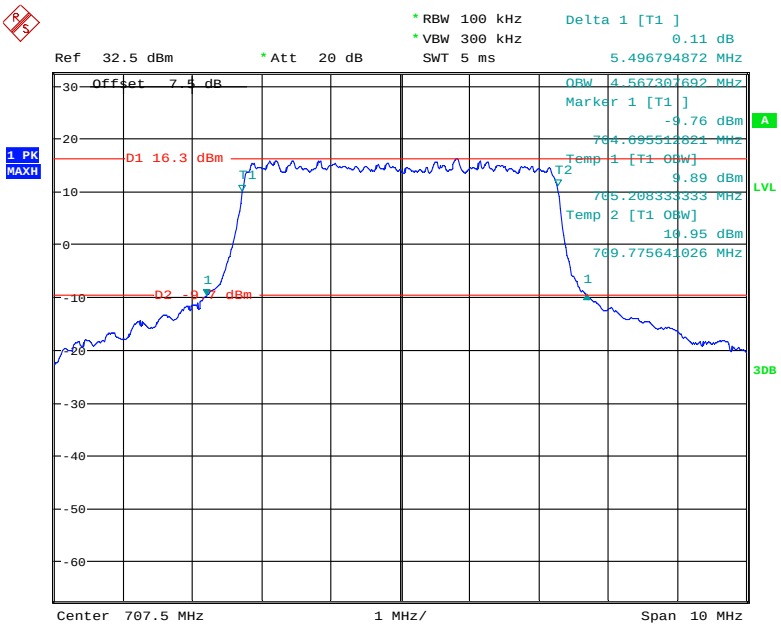
Date: 26.DEC.2018 21:08:05

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



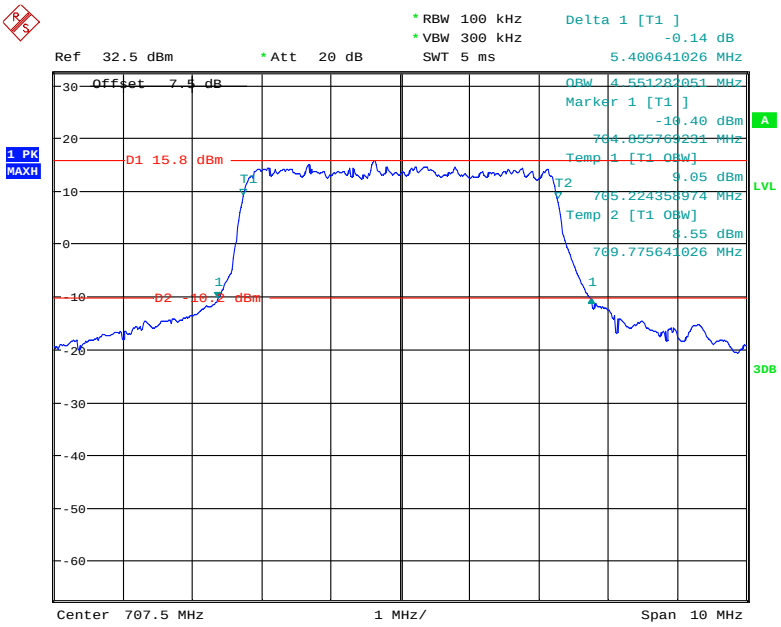
Date: 26.DEC.2018 21:06:06

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



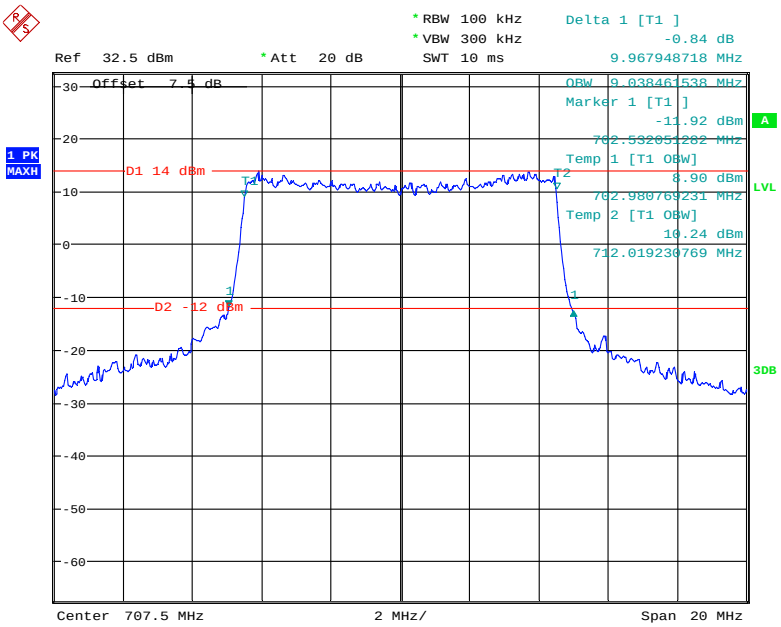
Date: 26.DEC.2018 21:13:11

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



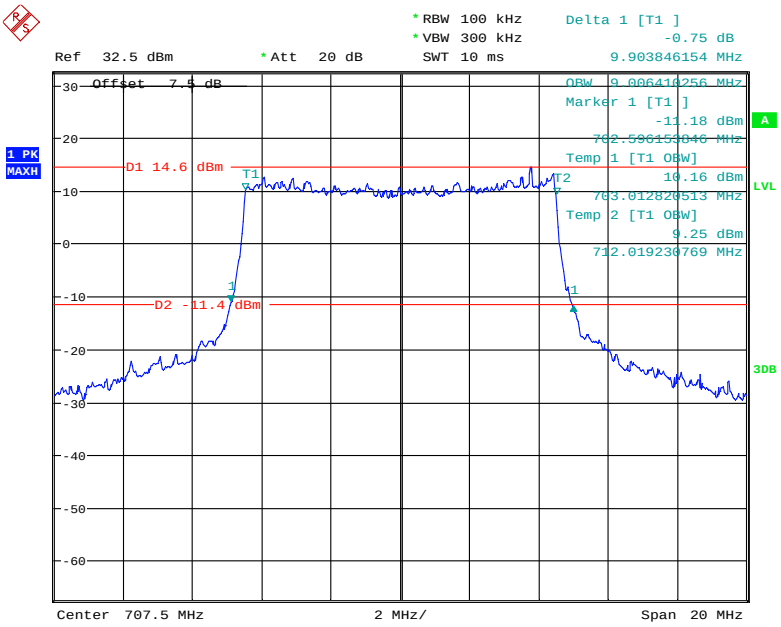
Date: 26.DEC.2018 21:10:32

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



Date: 26.DEC.2018 21:18:01

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

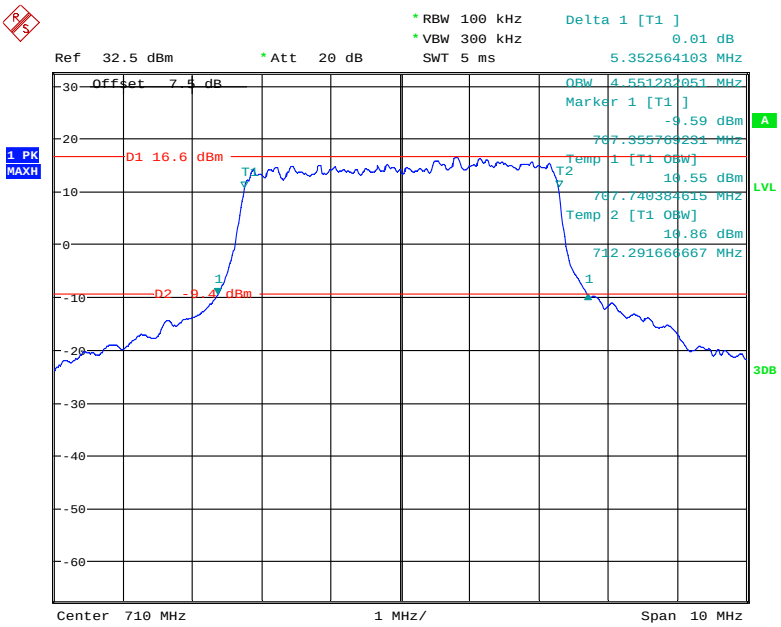


Date: 26.DEC.2018 21:15:31

LTE Band 17: (Middle Channel)

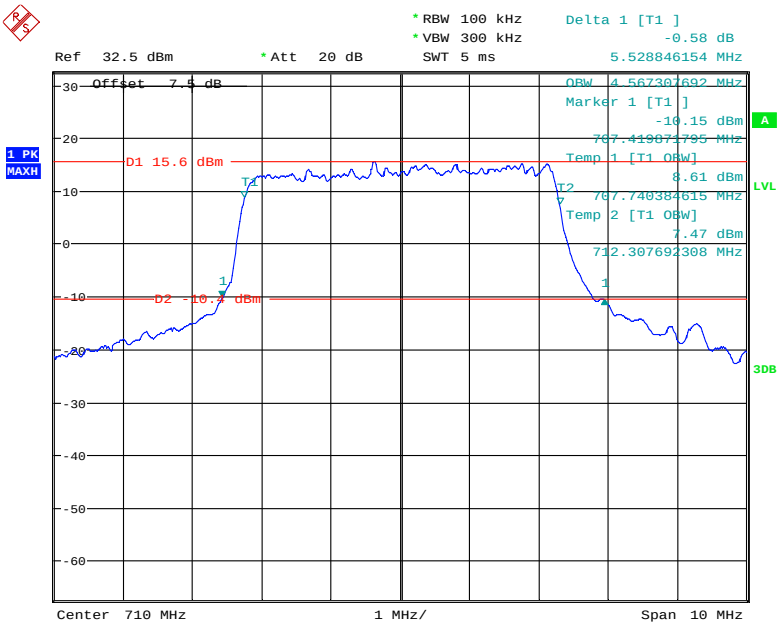
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.551	5.353
	16QAM	4.567	5.529
10.0	QPSK	8.974	9.776
	16QAM	8.942	9.744

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



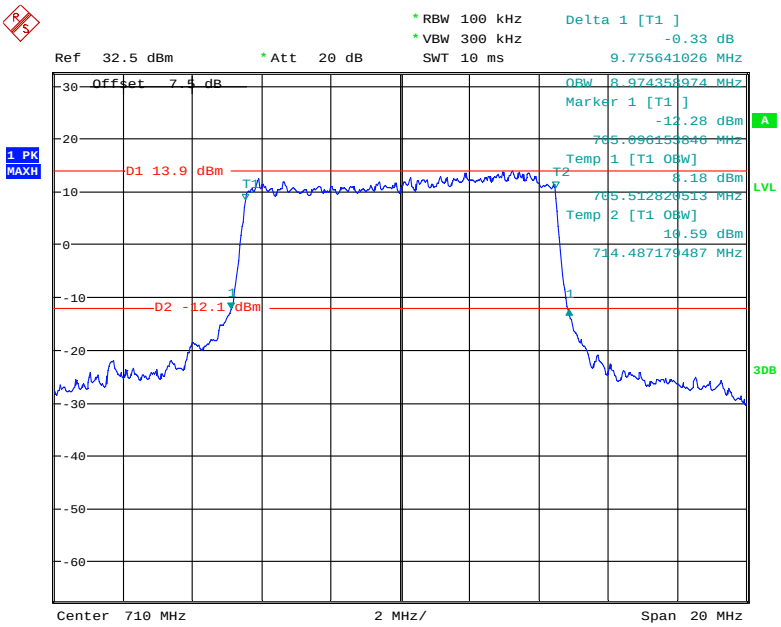
Date: 26.DEC.2018 21:22:29

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



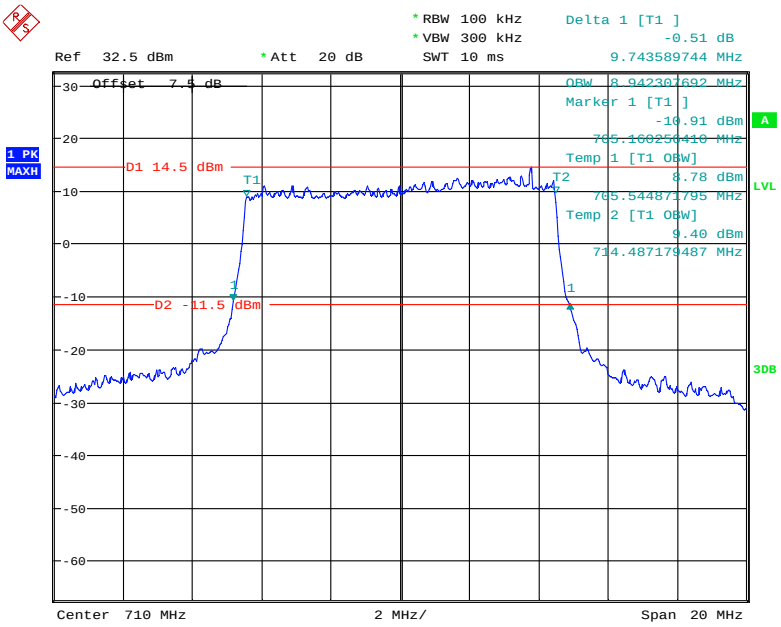
Date: 26.DEC.2018 21:24:40

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



Date: 26.DEC.2018 21:27:21

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



Date: 26.DEC.2018 21:29:17

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

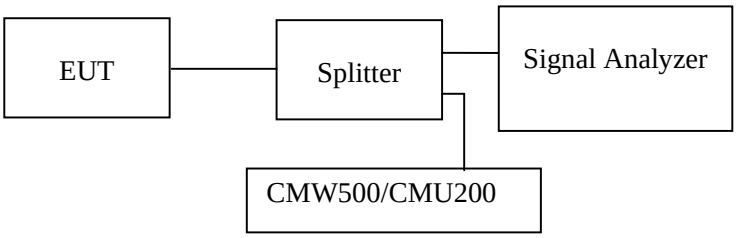
Applicable Standard

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

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

Test Procedure

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



Test Data

Environmental Conditions

Temperature:	25~26 ℃
Relative Humidity:	52~54 %
ATM Pressure:	101.0~101.5 kPa

The testing was performed by Shawn Xiao from 2018-12-26 to 2019-01-04.

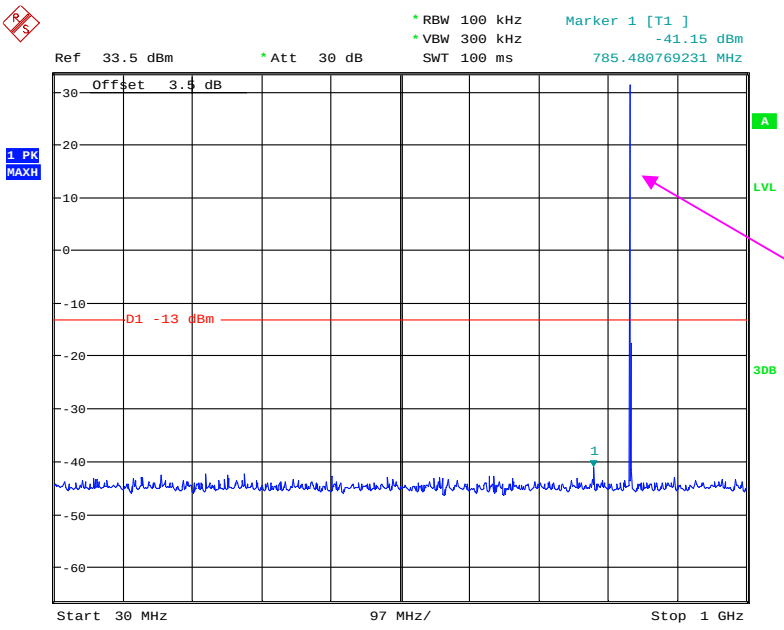
Test result: Compliance.

EUT operation mode: transmitting

Please refer to the following plots.

Cellular Band (Part 22H)

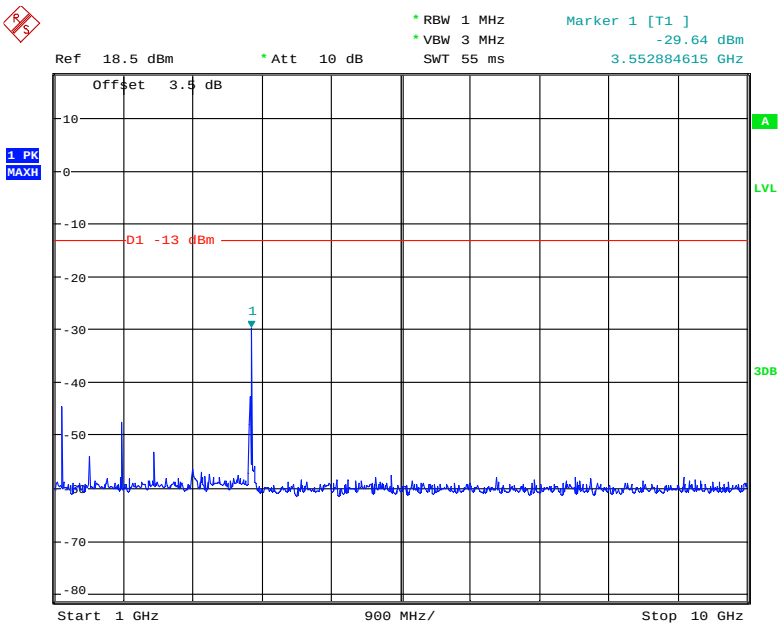
30 MHz – 1 GHz (GSM Mode)



Fundamental test

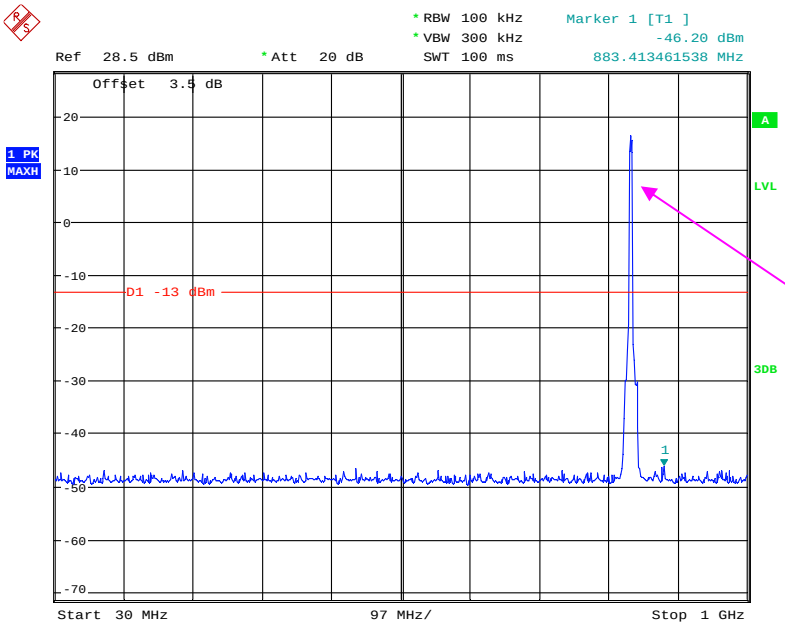
Date: 26.DEC.2018 16:55:34

1 GHz – 10 GHz (GSM Mode)



Date: 26.DEC.2018 16:54:24

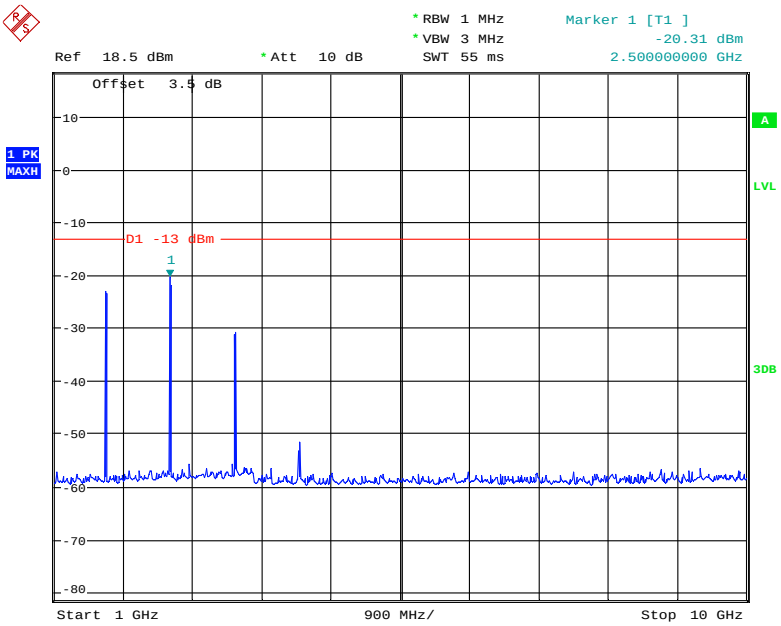
30 MHz – 1 GHz (WCDMA Mode)



Fundamental test

Date: 28.DEC.2018 15:52:18

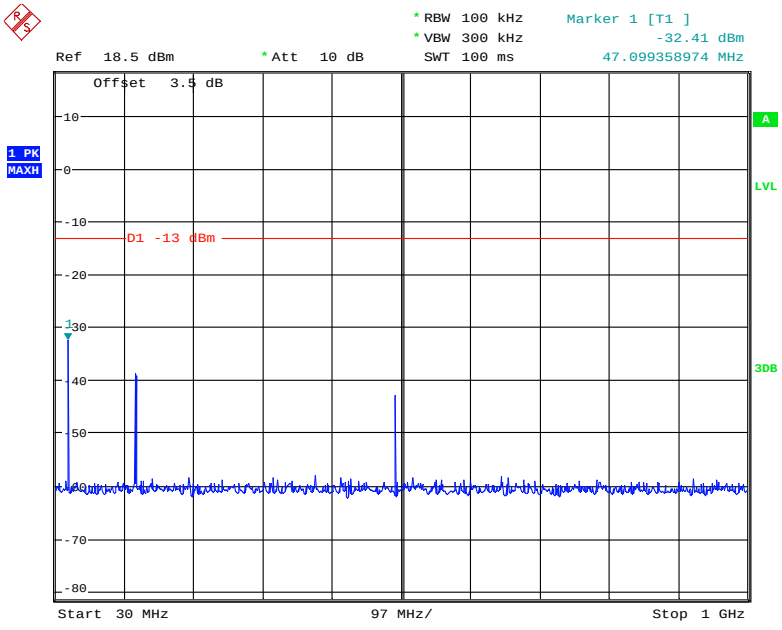
1 GHz – 10 GHz (WCDMA Mode)



Date: 28.DEC.2018 15:53:31

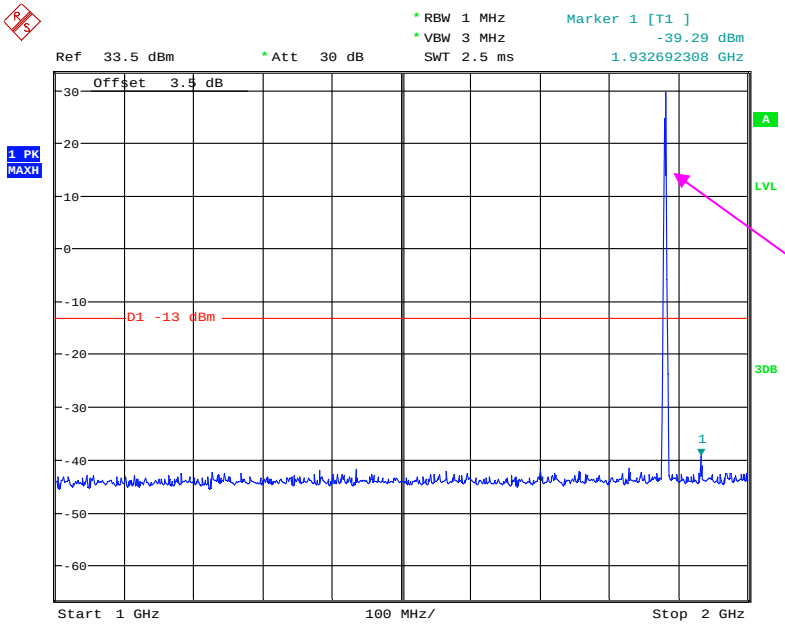
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)



Date: 26.DEC.2018 16:58:07

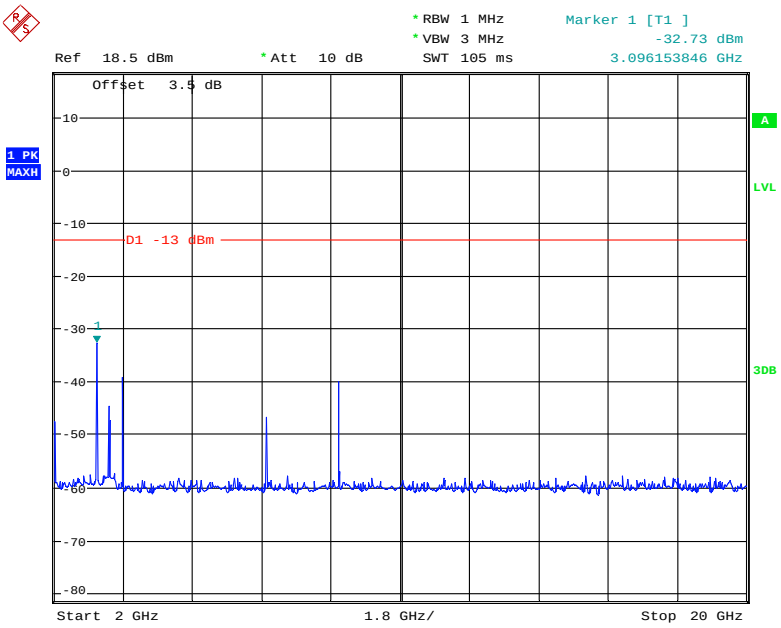
1 GHz – 2 GHz (GSM Mode)



Fundamental test

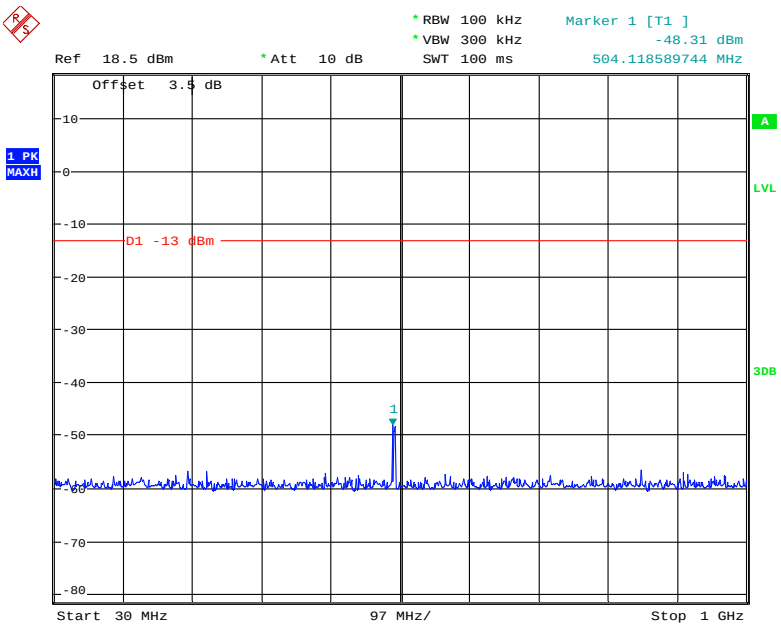
Date: 26.DEC.2018 16:59:36

2 GHz – 20 GHz (GSM Mode)



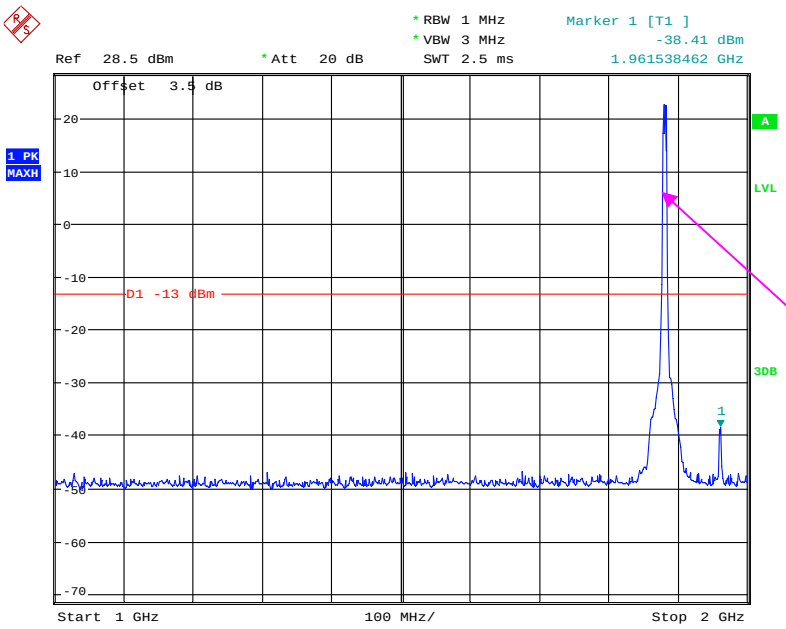
Date: 26.DEC.2018 17:00:09

30 MHz – 1 GHz (WCDMA Mode)



Date: 28.DEC.2018 15:13:22

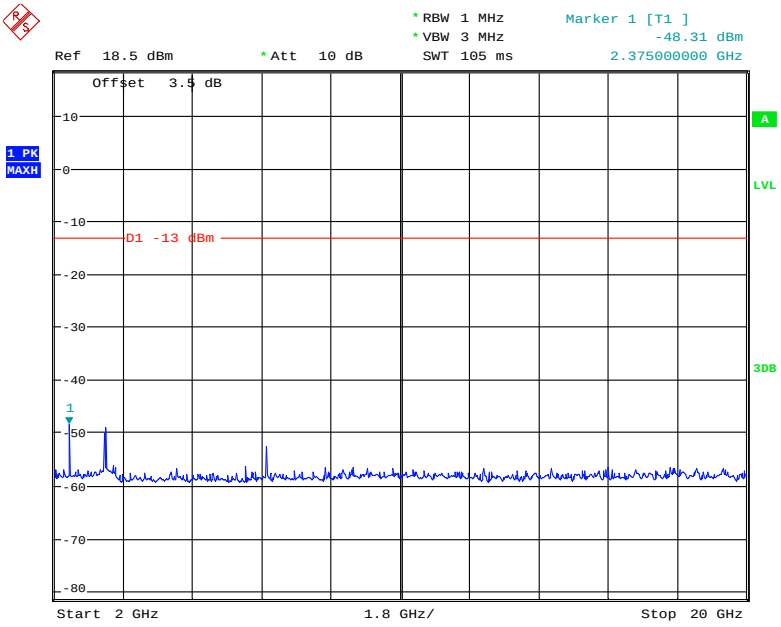
1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

Date: 28.DEC.2018 15:11:19

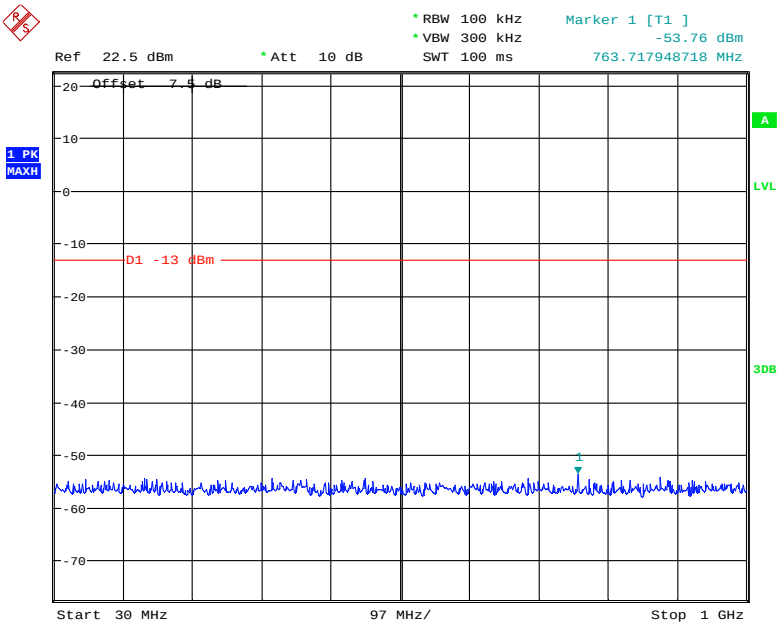
2 GHz – 20 GHz (WCDMA Mode)



Date: 28.DEC.2018 15:12:09

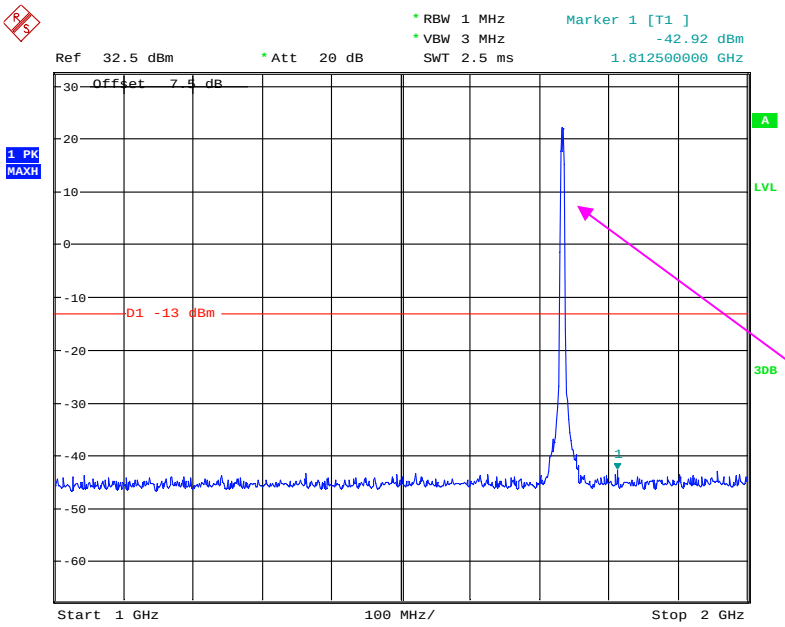
AWS Band (Part 27)

30 MHz – 1 GHz (WCDMA Mode)



Date: 4.JAN.2019 19:08:24

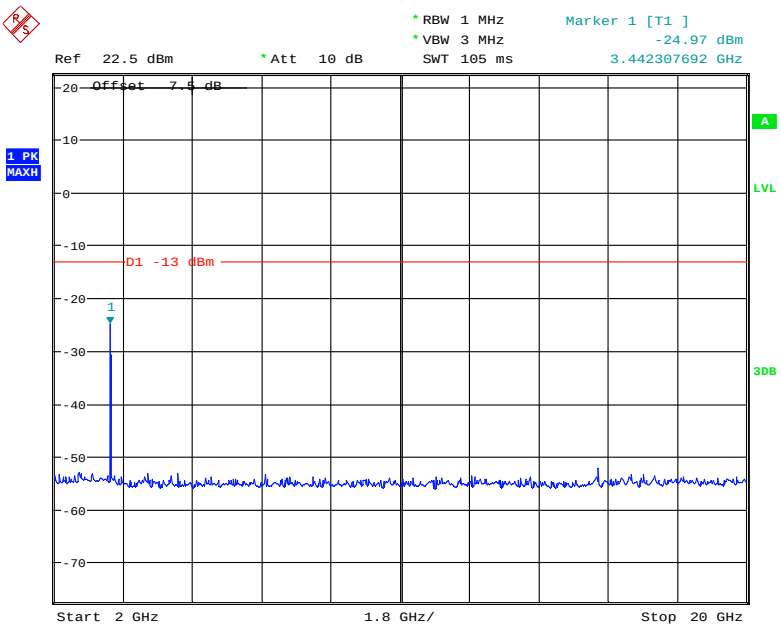
1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

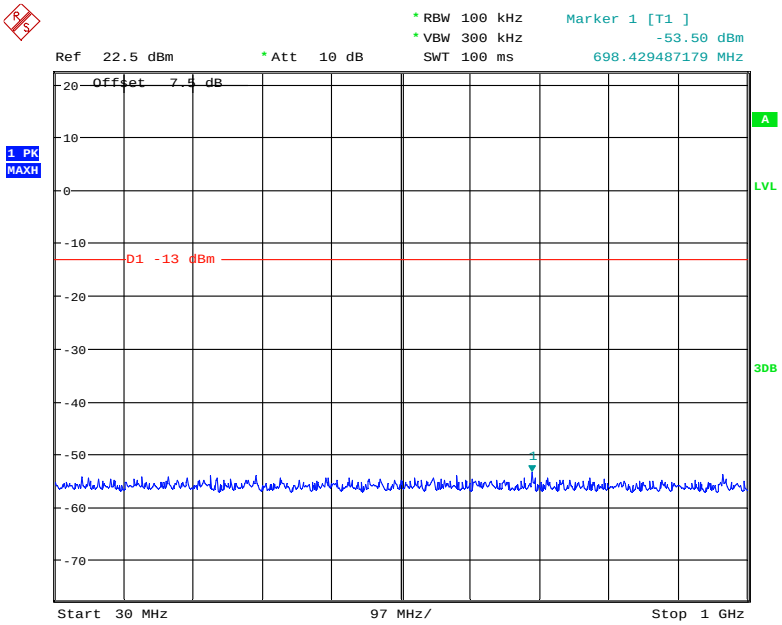
Date: 4.JAN.2019 19:09:10

2 GHz – 20 GHz (WCDMA Mode)



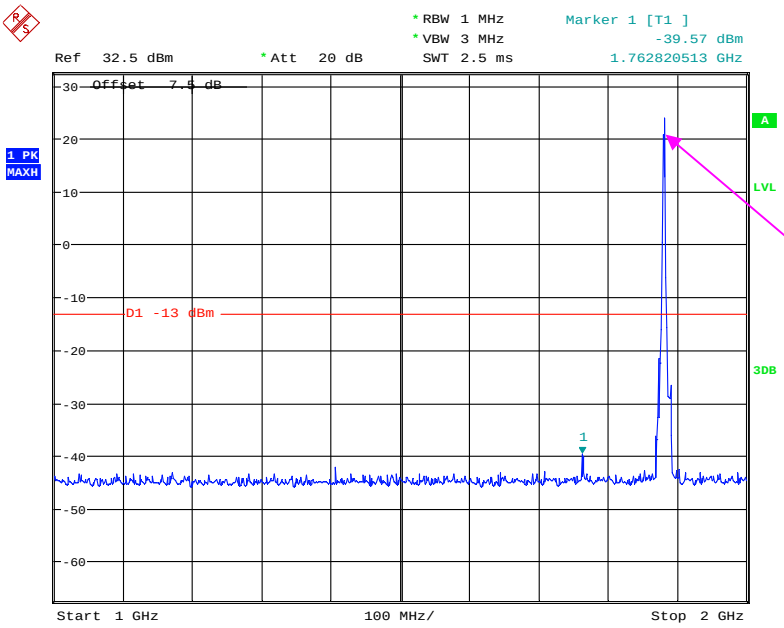
LTE Band 2:

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



Date: 27.DEC.2018 00:30:03

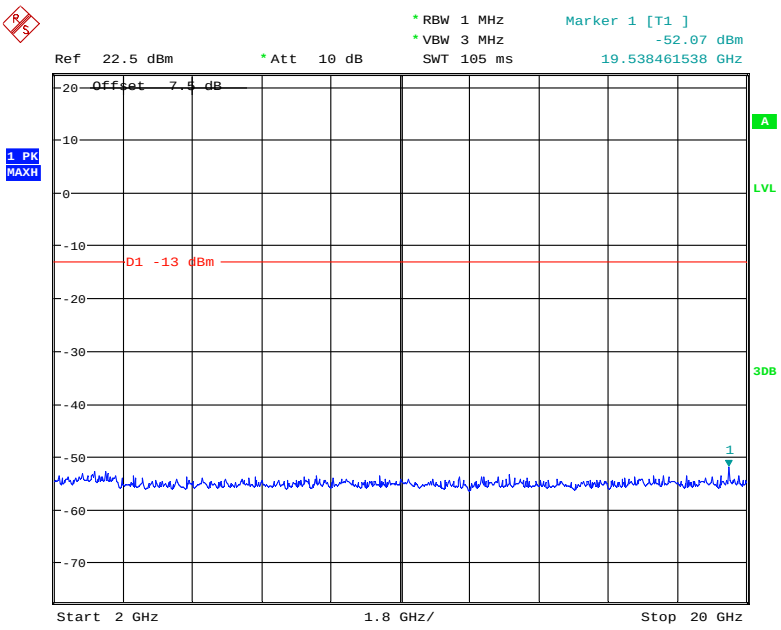
1 GHz – 2 GHz (1.4 MHz, Middle Channel)



Fundamental test

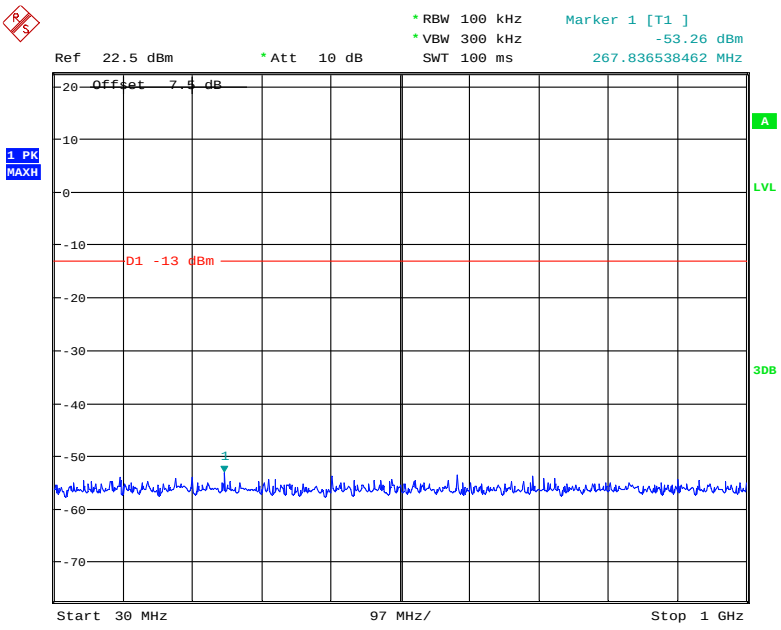
Date: 27.DEC.2018 00:23:51

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



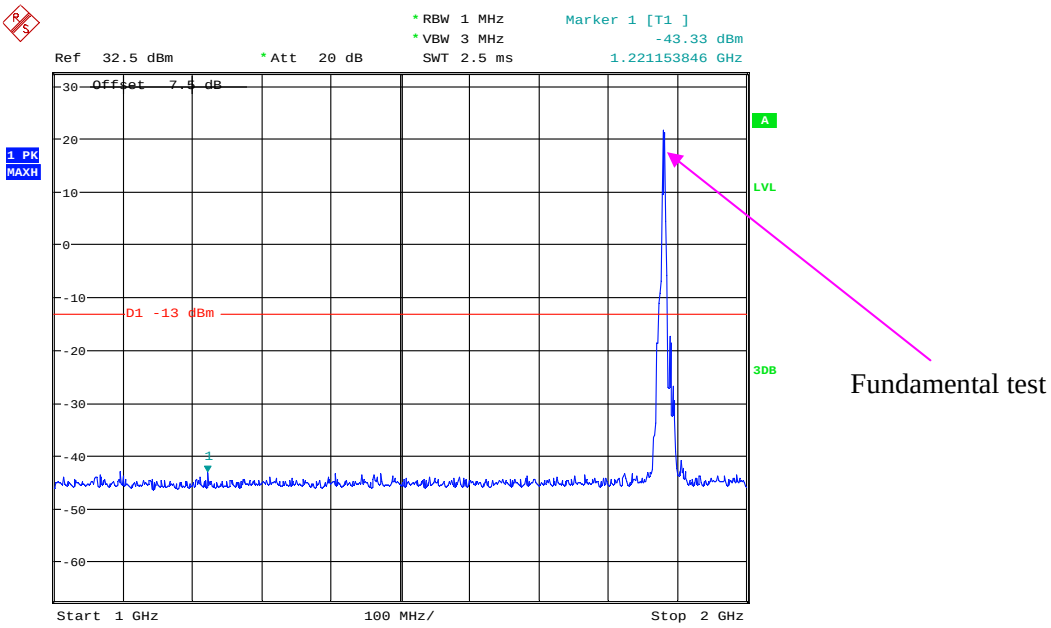
Date: 27.DEC.2018 00:22:58

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



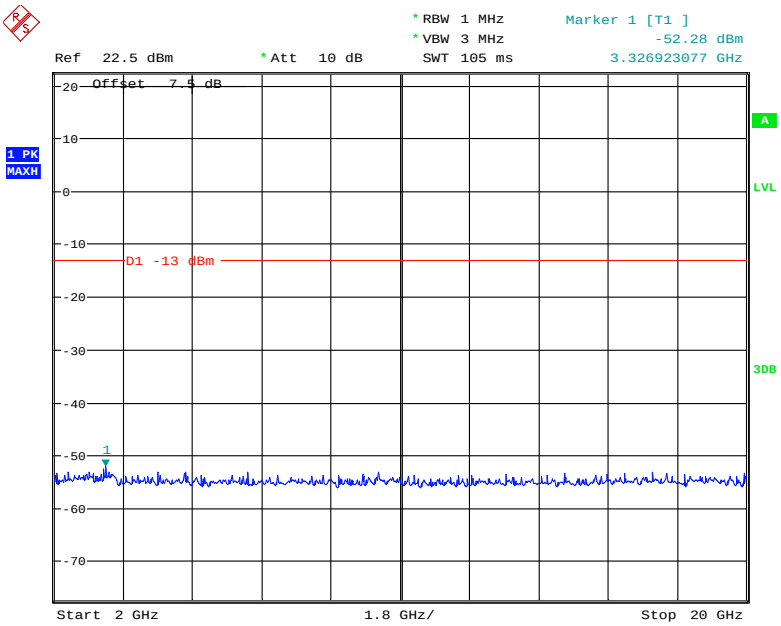
Date: 27.DEC.2018 00:29:41

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



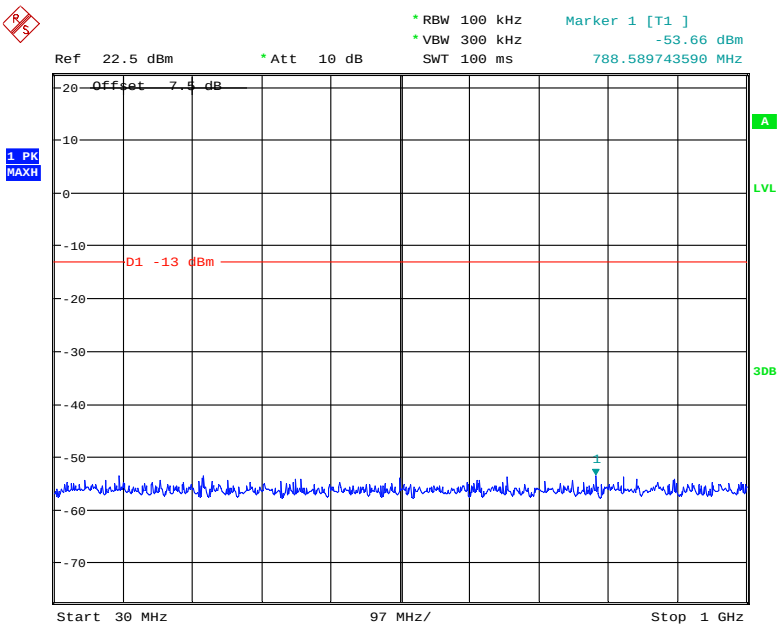
Date: 27.DEC.2018 00:24:19

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



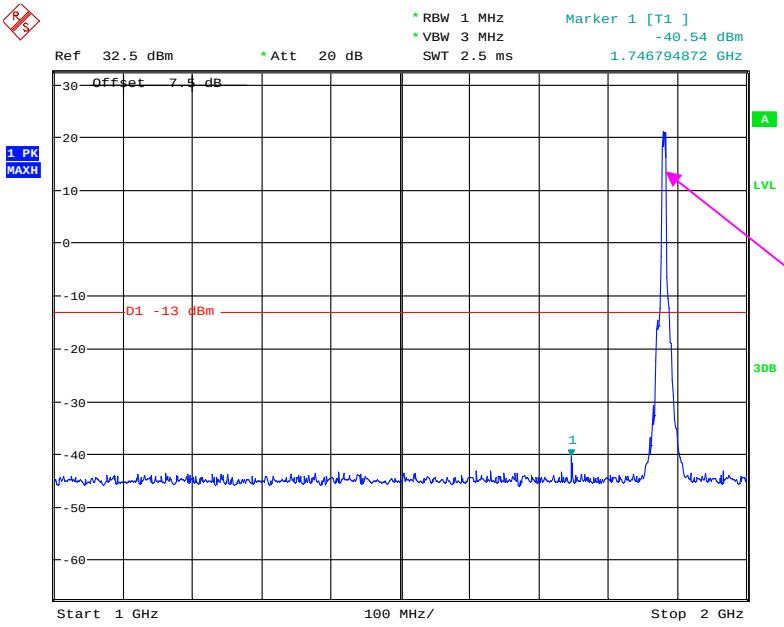
Date: 27.DEC.2018 00:22:38

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



Date: 27.DEC.2018 00:29:23

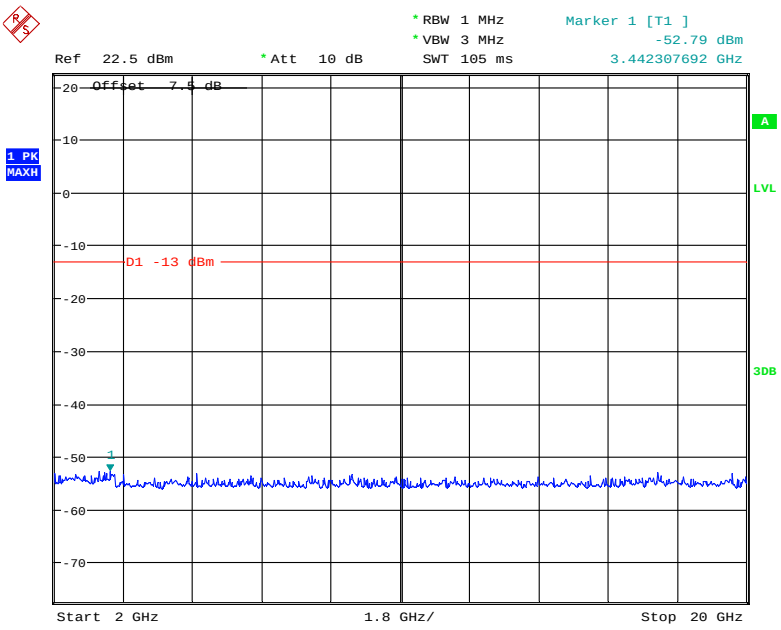
1 GHz – 2 GHz (5.0 MHz, Middle Channel)



Fundamental test

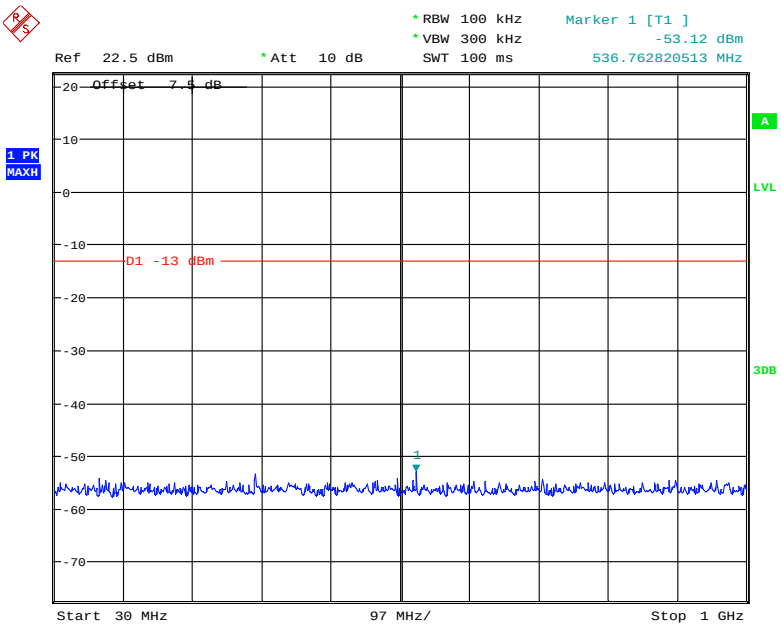
Date: 27.DEC.2018 00:24:58

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



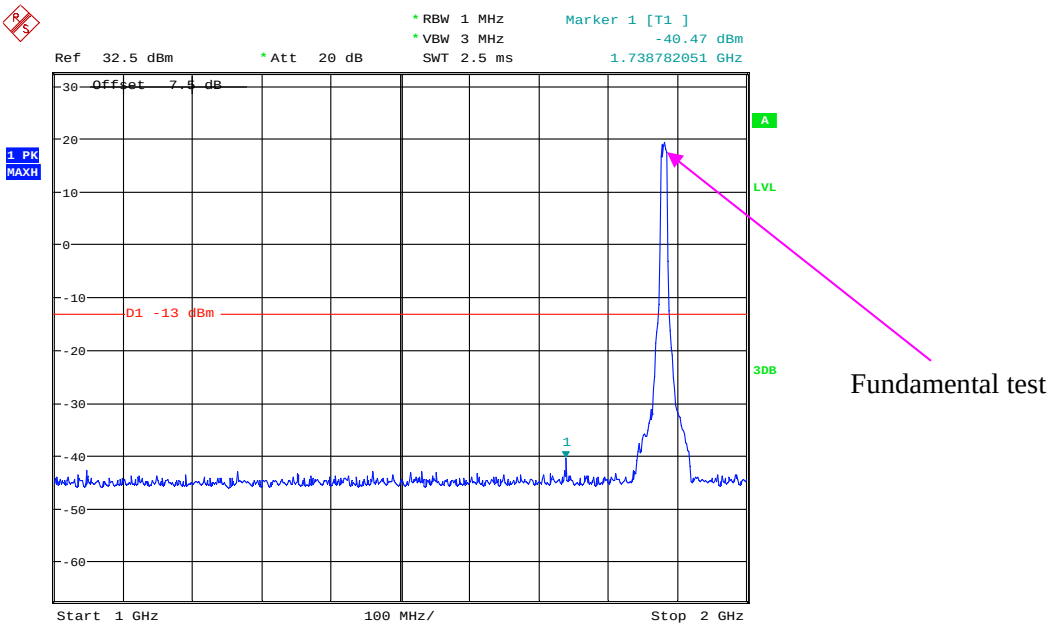
Date: 27.DEC.2018 00:22:19

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



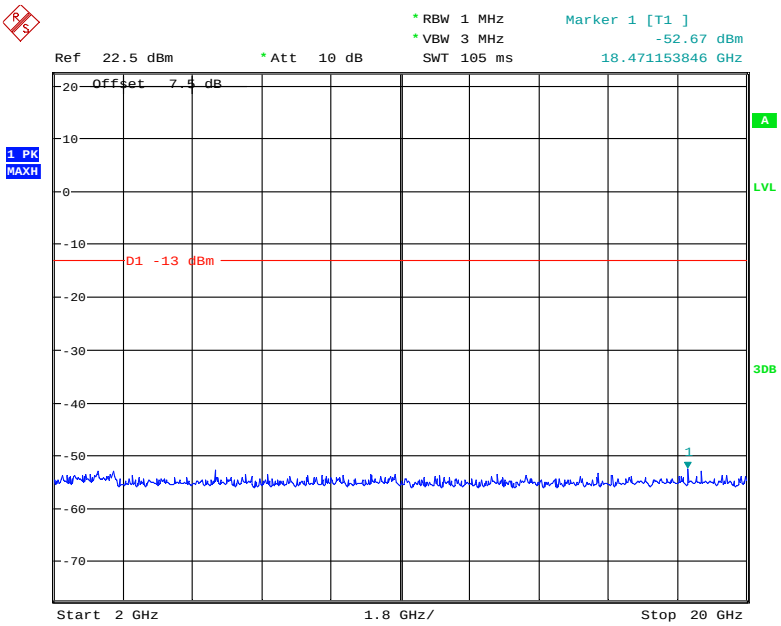
Date: 27.DEC.2018 00:29:05

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



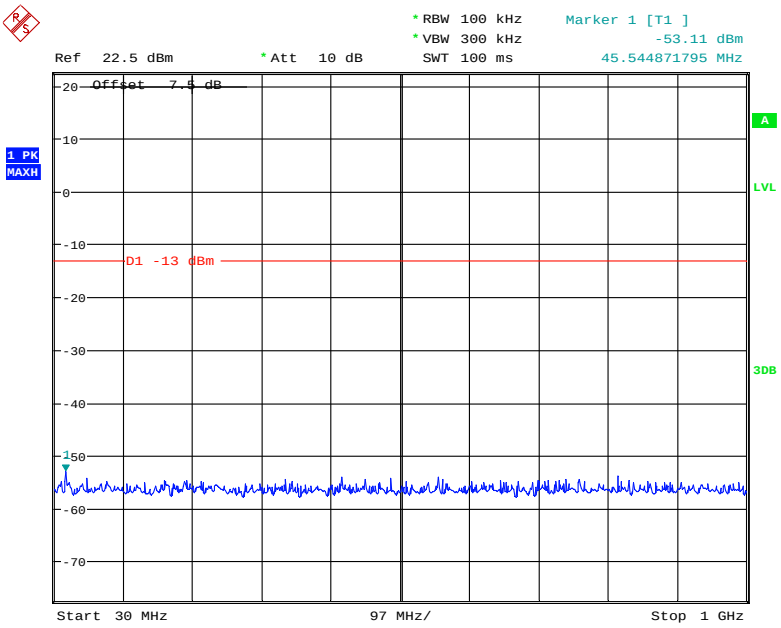
Date: 27.DEC.2018 00:26:13

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



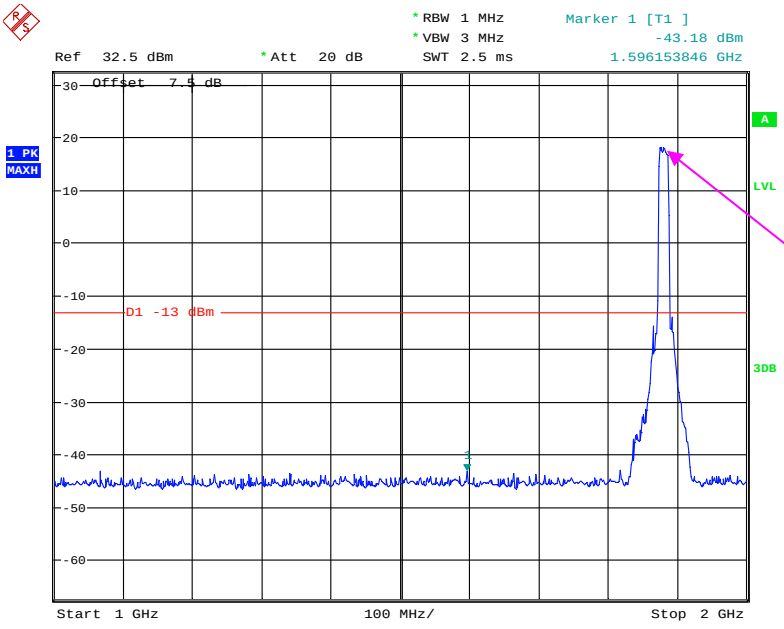
Date: 27.DEC.2018 00:21:57

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



Date: 27.DEC.2018 00:28:42

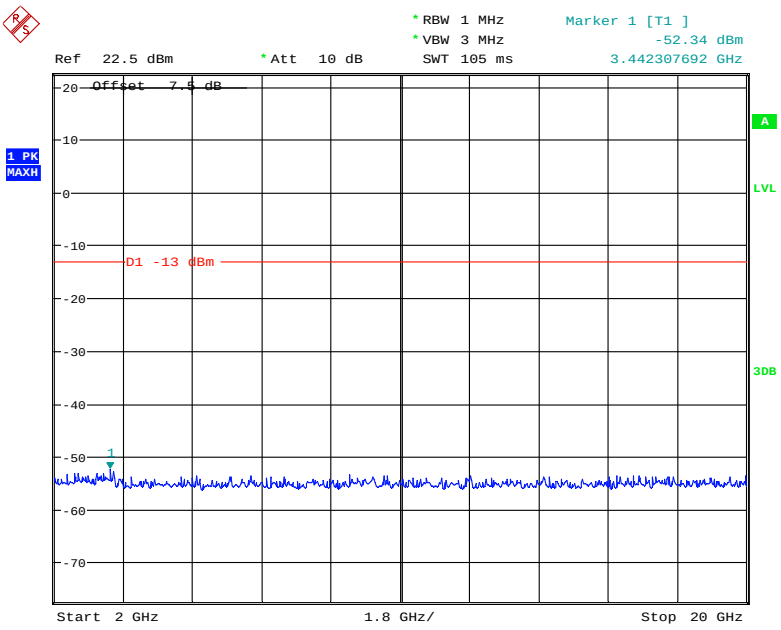
1 GHz – 2 GHz (15.0 MHz, Middle Channel)



Fundamental test

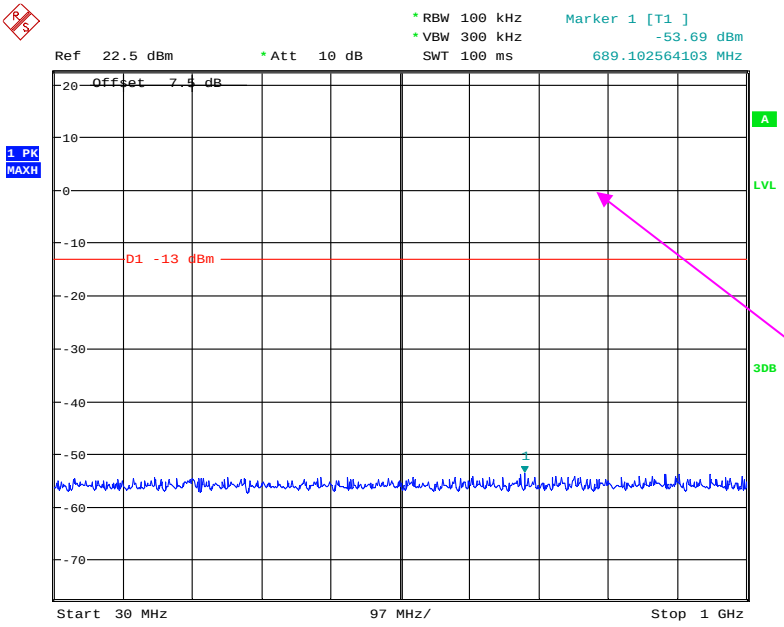
Date: 27.DEC.2018 00:27:13

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



Date: 27.DEC.2018 00:20:23

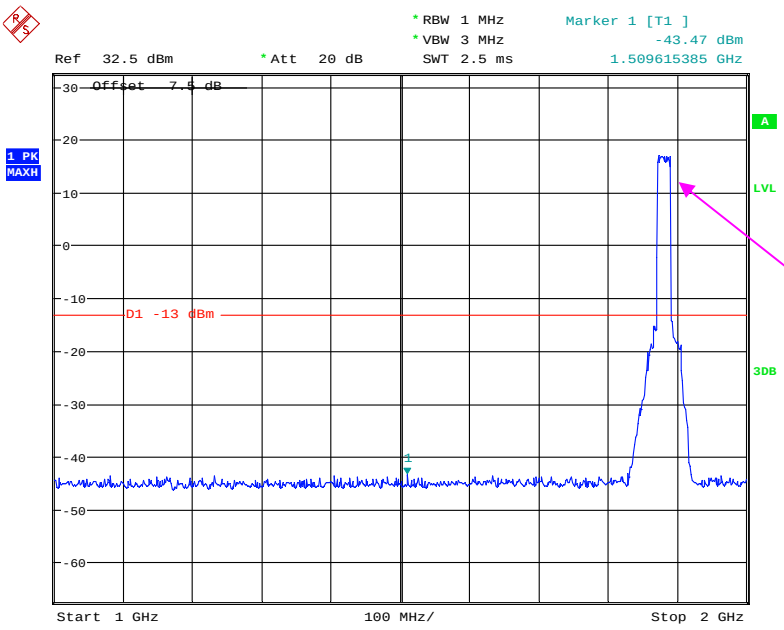
30 MHz - 1 GHz (20.0 MHz, Middle Channel)



Fundamental test

Date: 27.DEC.2018 00:17:39

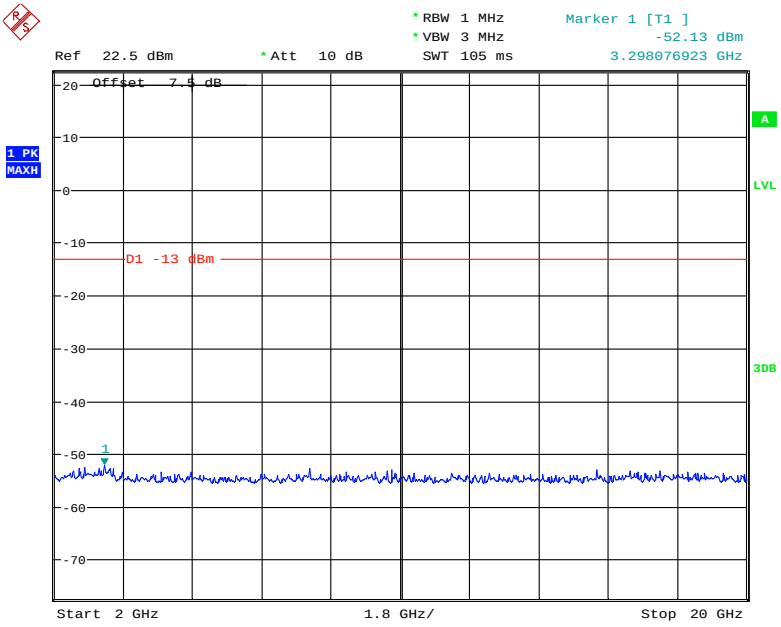
1 GHz – 2 GHz (20.0 MHz, Middle Channel)



Fundamental test

Date: 27.DEC.2018 00:18:23

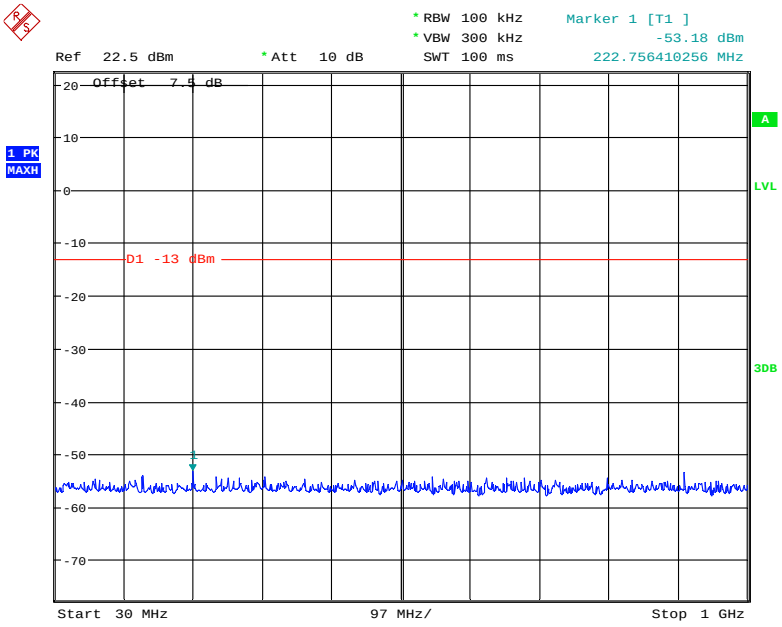
2 MHz - 20 GHz (20.0 MHz, Middle Channel)



Date: 27.DEC.2018 00:21:26

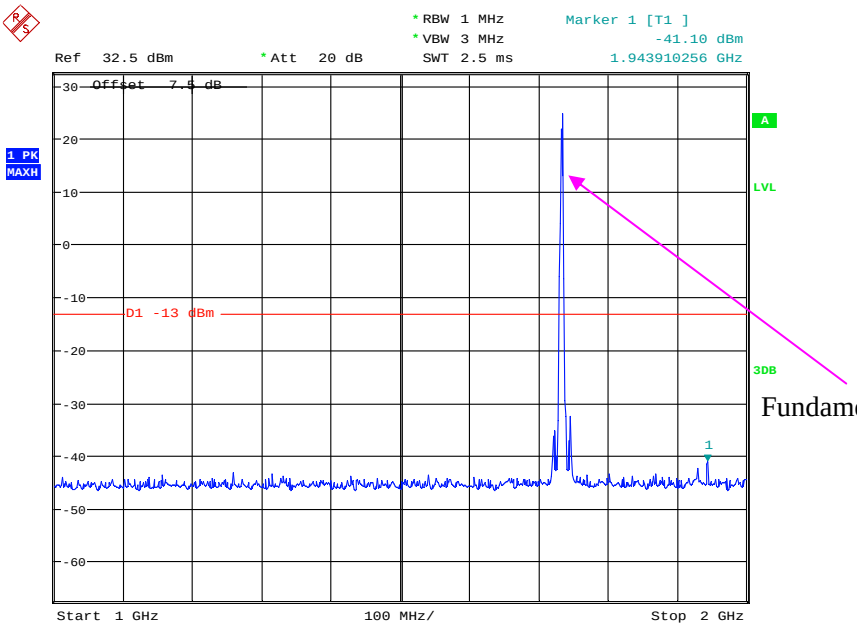
LTE Band 4:

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



Date: 27.DEC.2018 00:34:17

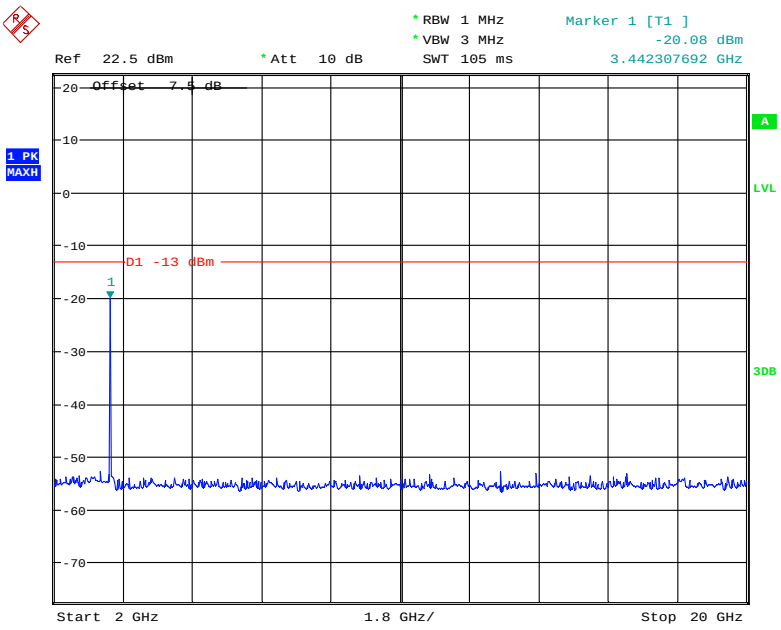
1 GHz – 2 GHz (1.4 MHz, Middle Channel)



Fundamental test

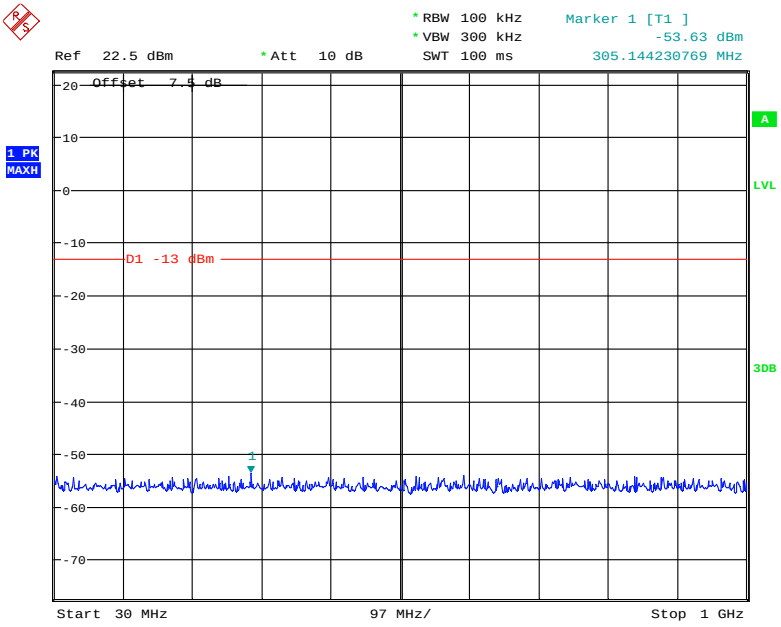
Date: 27.DEC.2018 00:42:27

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



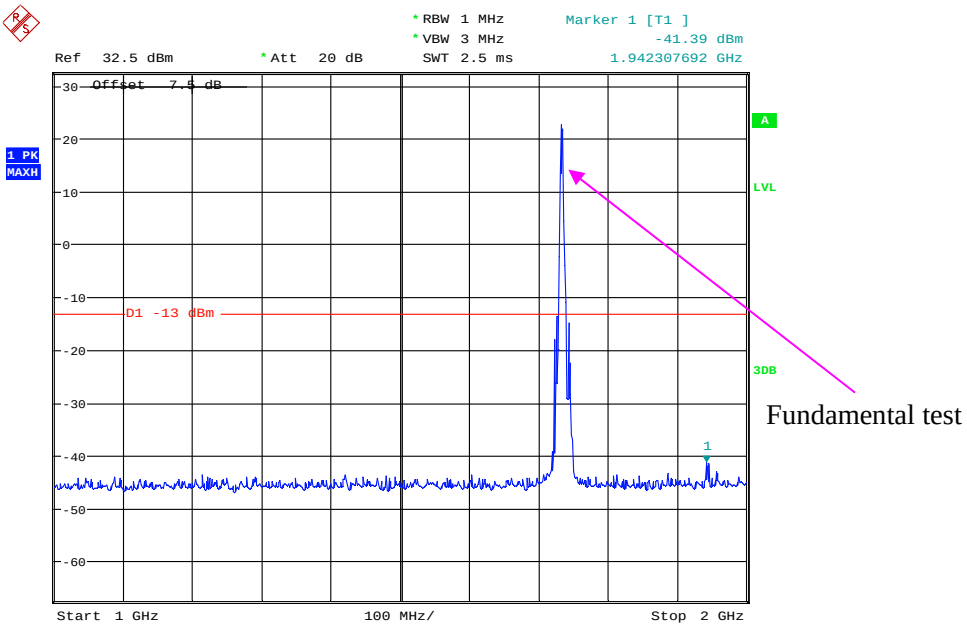
Date: 27.DEC.2018 00:43:29

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



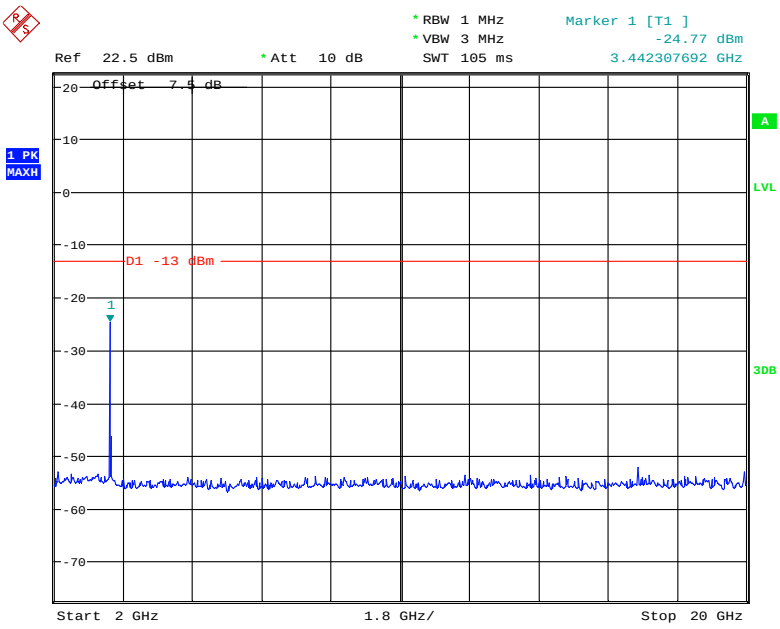
Date: 27.DEC.2018 00:34:38

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



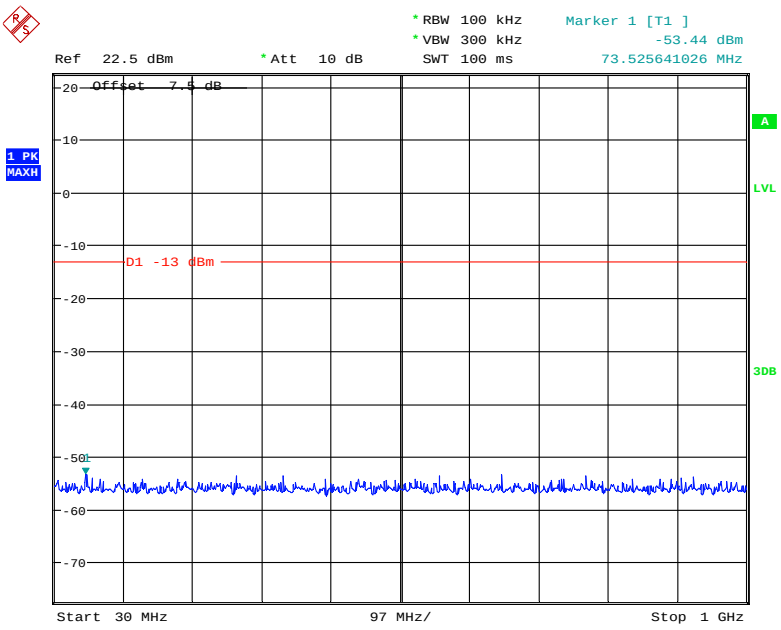
Date: 27.DEC.2018 00:42:04

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



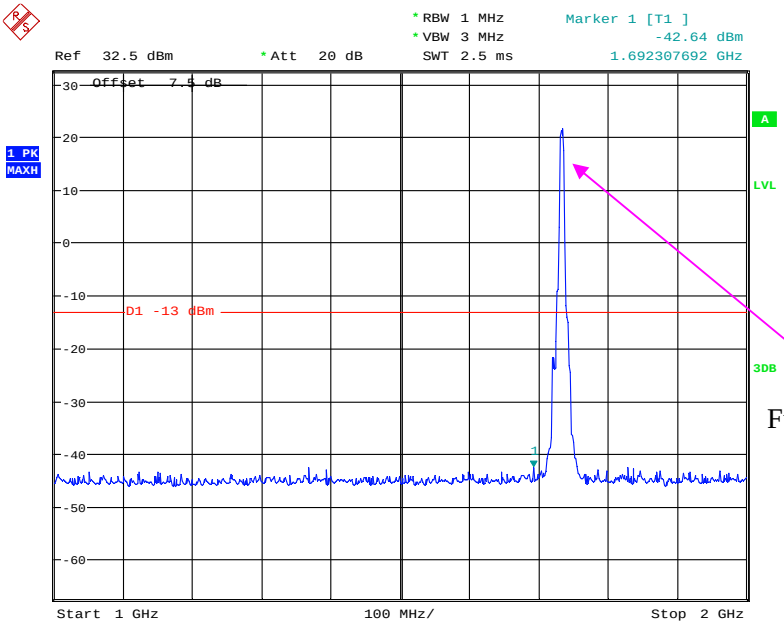
Date: 27.DEC.2018 00:43:51

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



Date: 27.DEC.2018 00:35:00

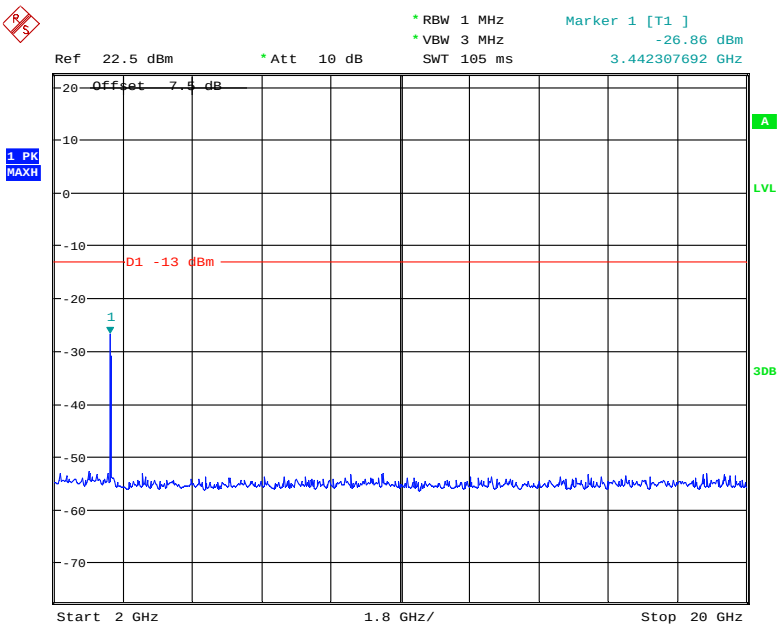
1 GHz – 2 GHz (5.0 MHz, Middle Channel)



Fundamental test

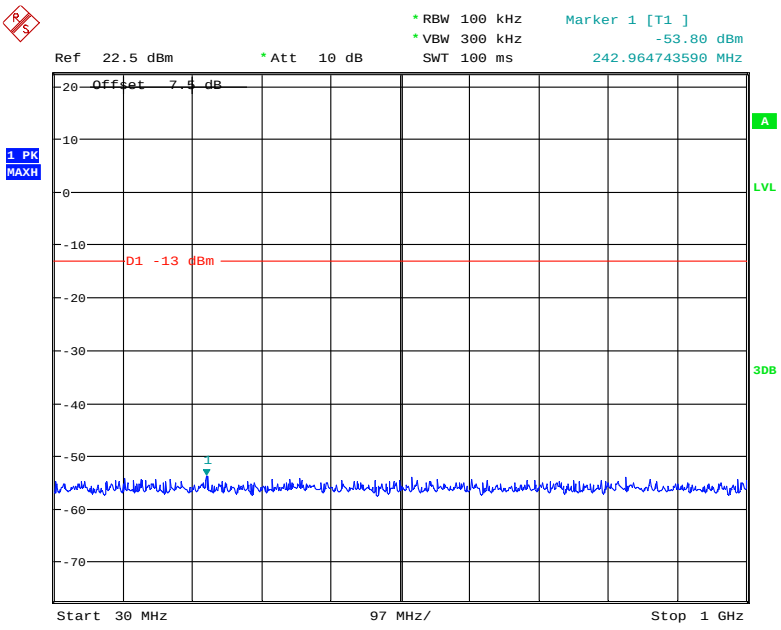
Date: 27.DEC.2018 00:41:39

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



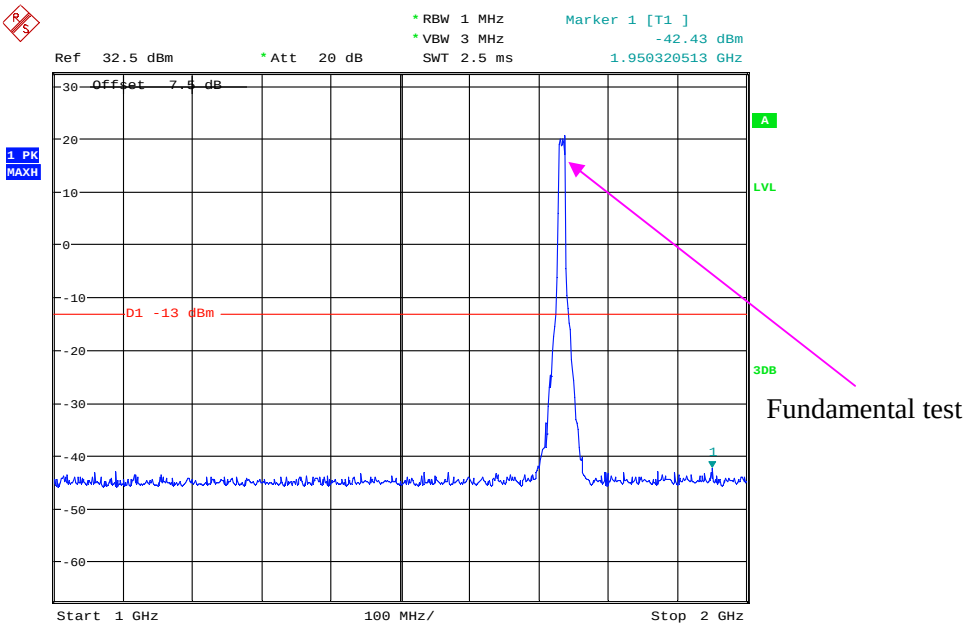
Date: 27.DEC.2018 00:44:09

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



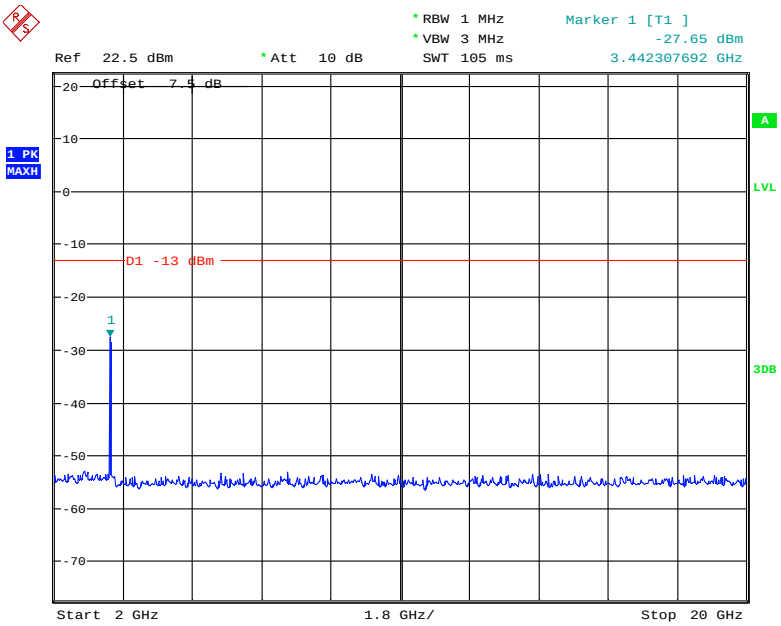
Date: 27.DEC.2018 00:35:20

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



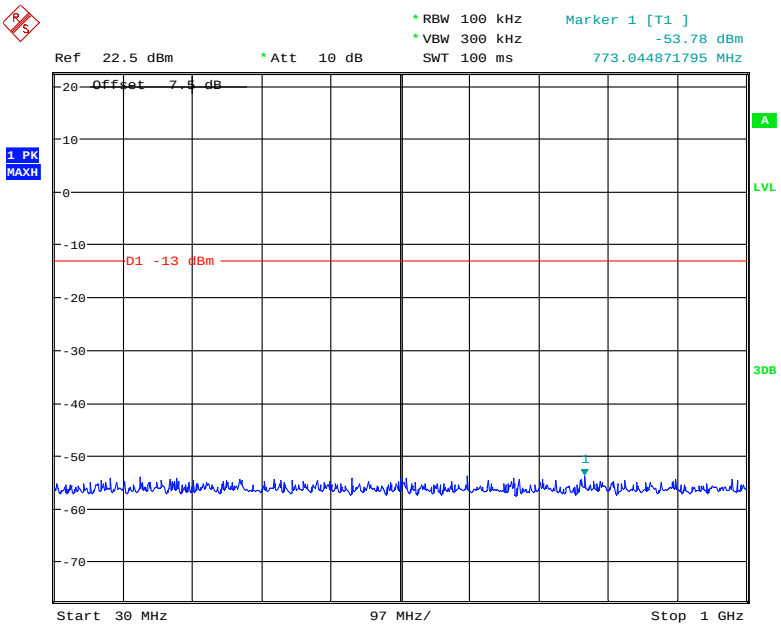
Date: 27.DEC.2018 00:41:04

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



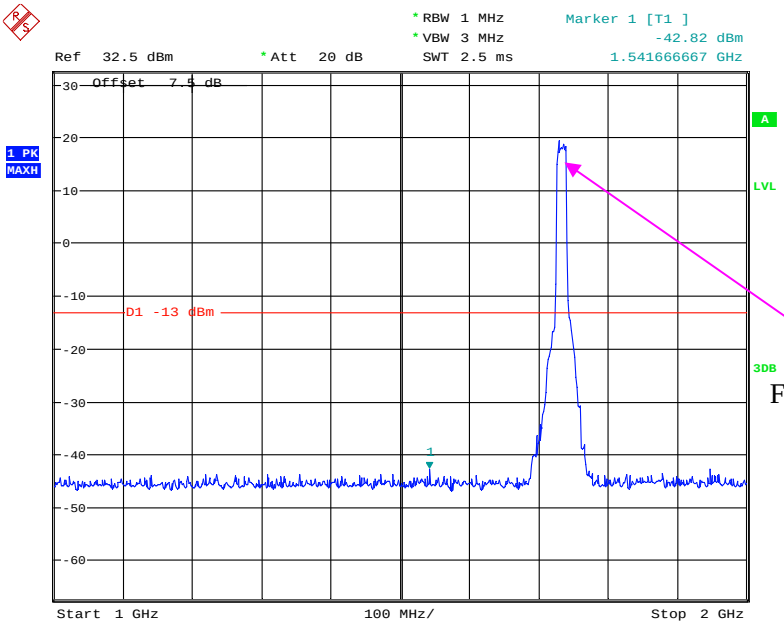
Date: 27.DEC.2018 00:45:04

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



Date: 27.DEC.2018 00:38:58

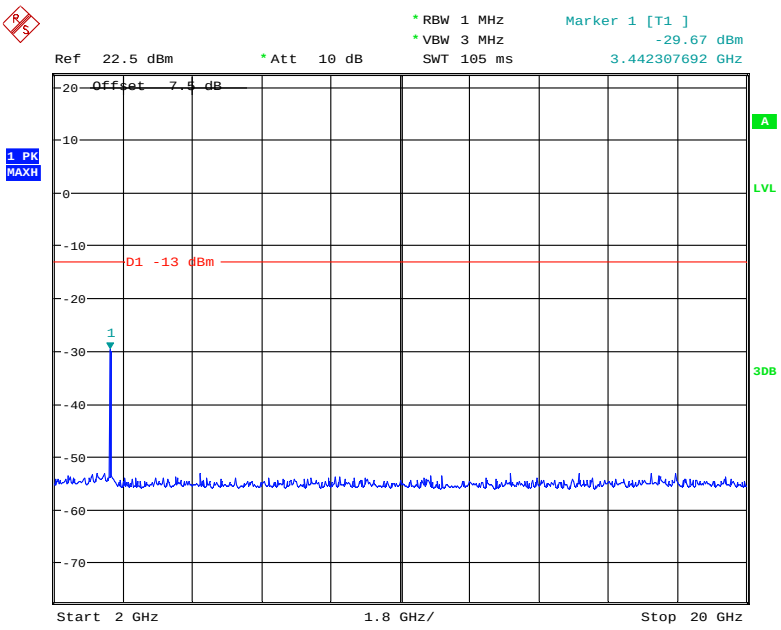
1 GHz – 2 GHz (15.0 MHz, Middle Channel)



Fundamental test

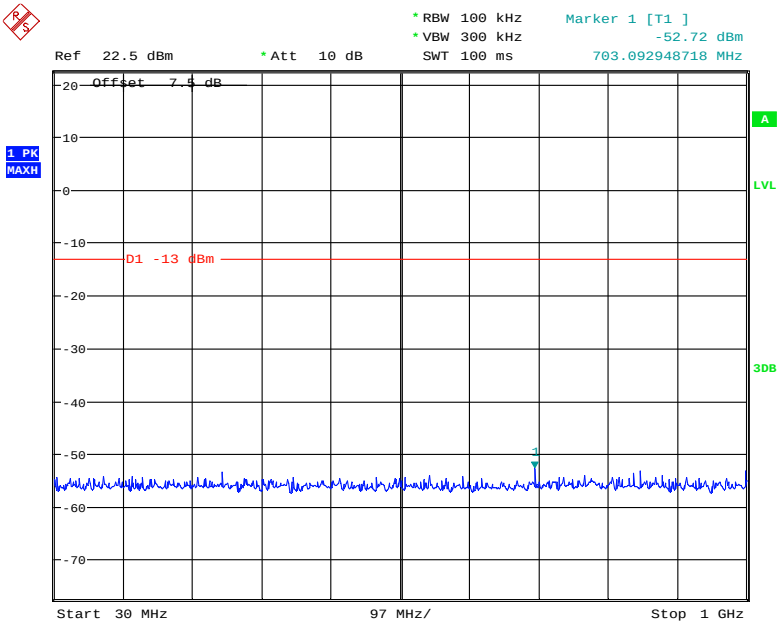
Date: 27.DEC.2018 00:40:22

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



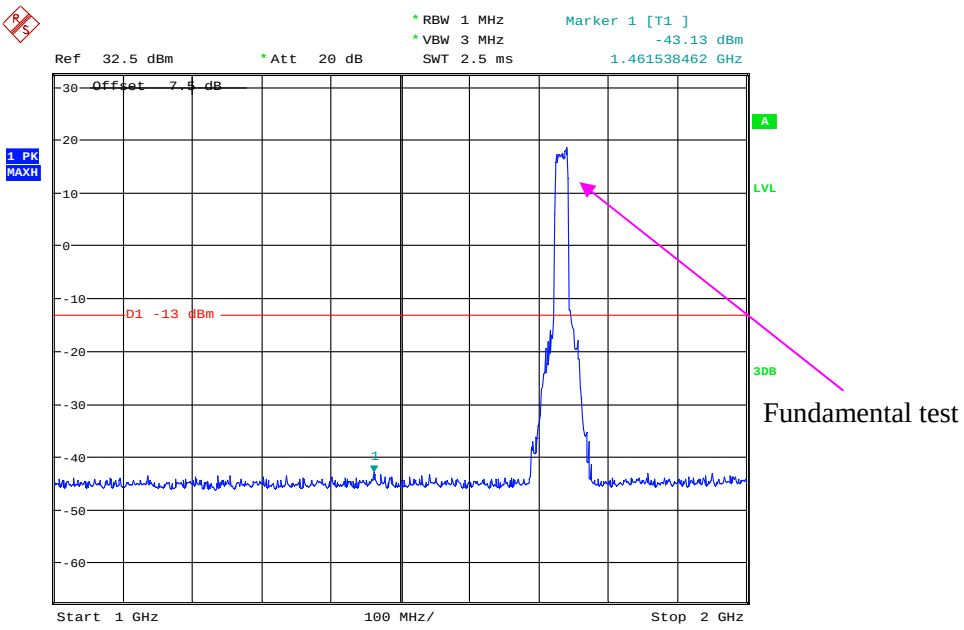
Date: 27.DEC.2018 00:45:22

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



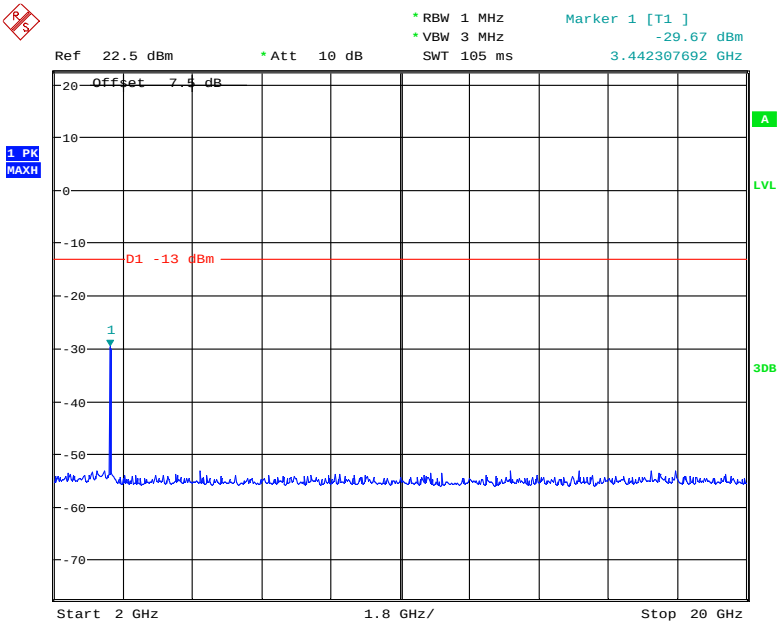
Date: 27.DEC.2018 00:39:20

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



Date: 27.DEC.2018 00:40:00

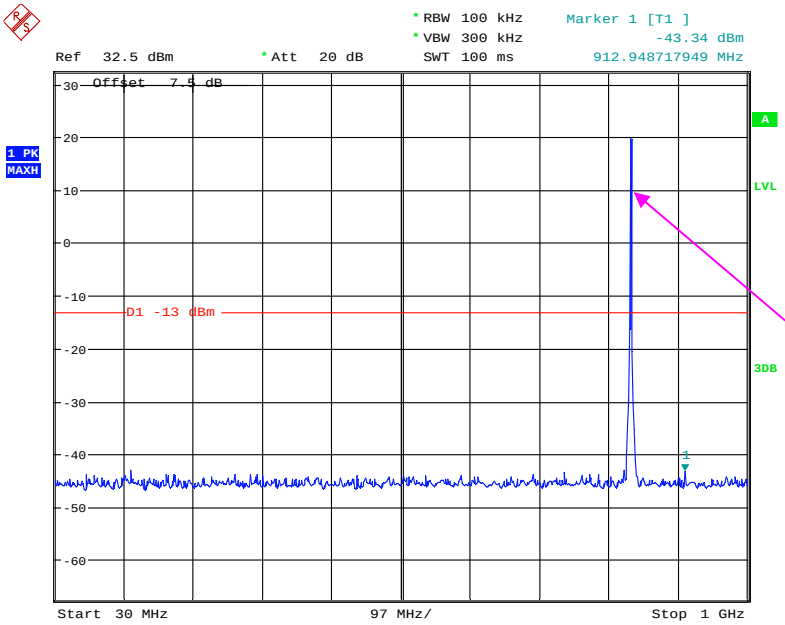
2 MHz - 20 GHz (20.0 MHz, Middle Channel)



Date: 27.DEC.2018 00:45:22

LTE Band 5:

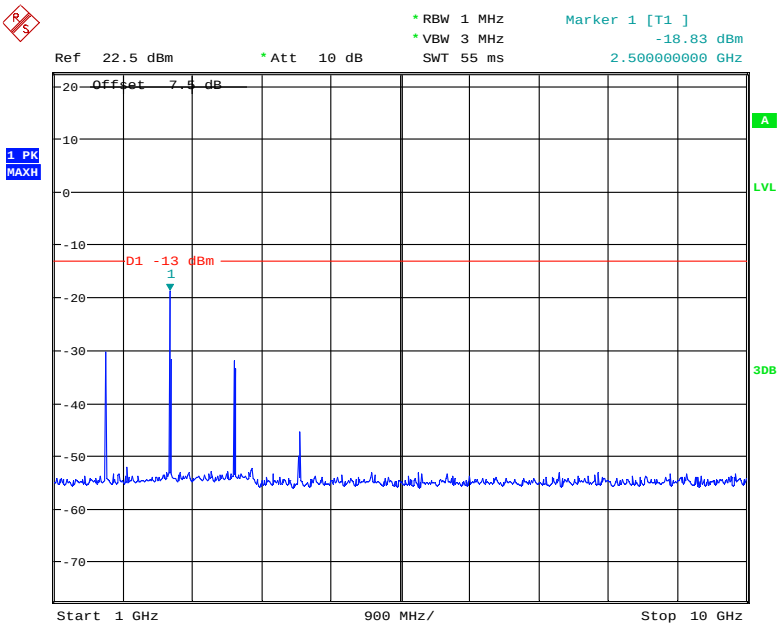
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

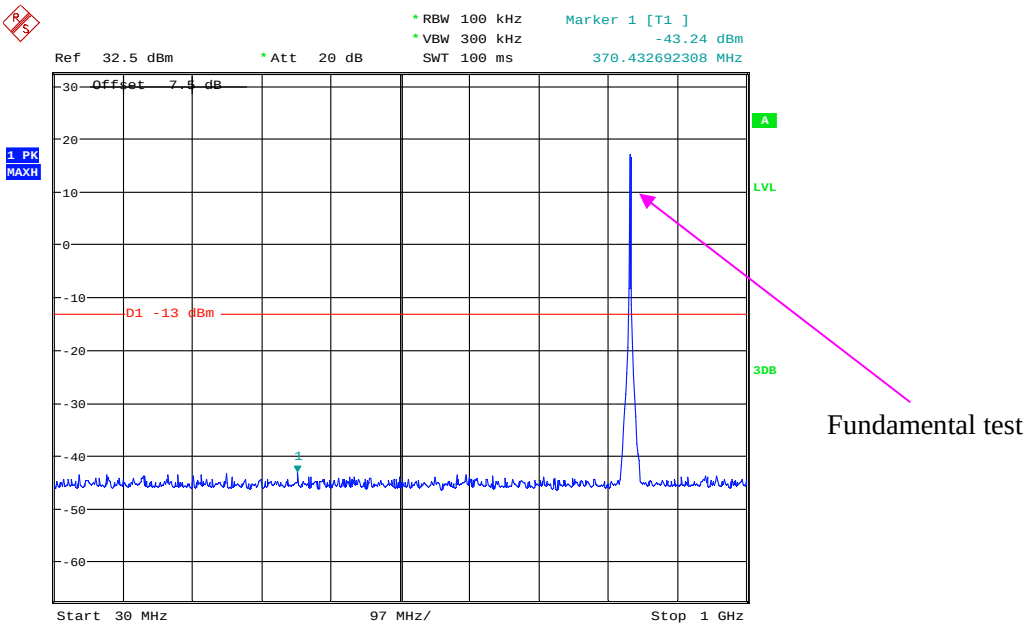
Date: 27.DEC.2018 00:49:54

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



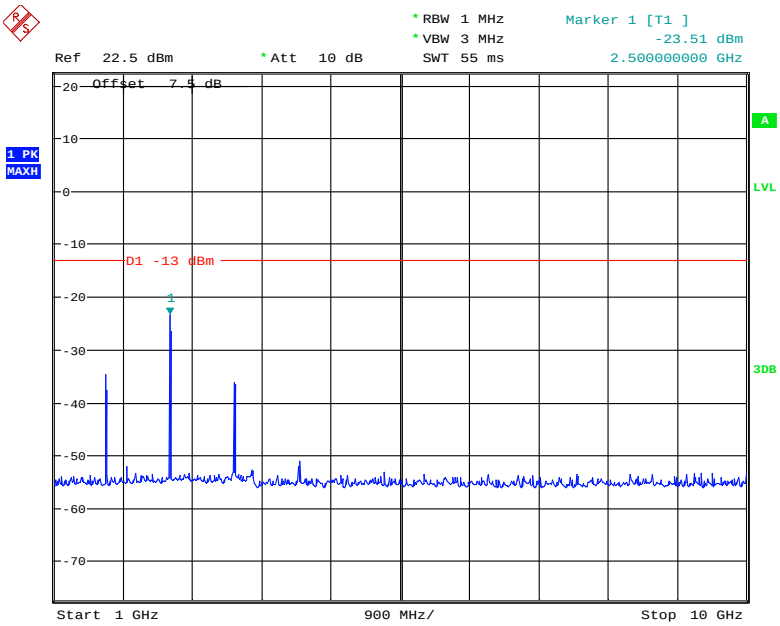
Date: 27.DEC.2018 00:46:42

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



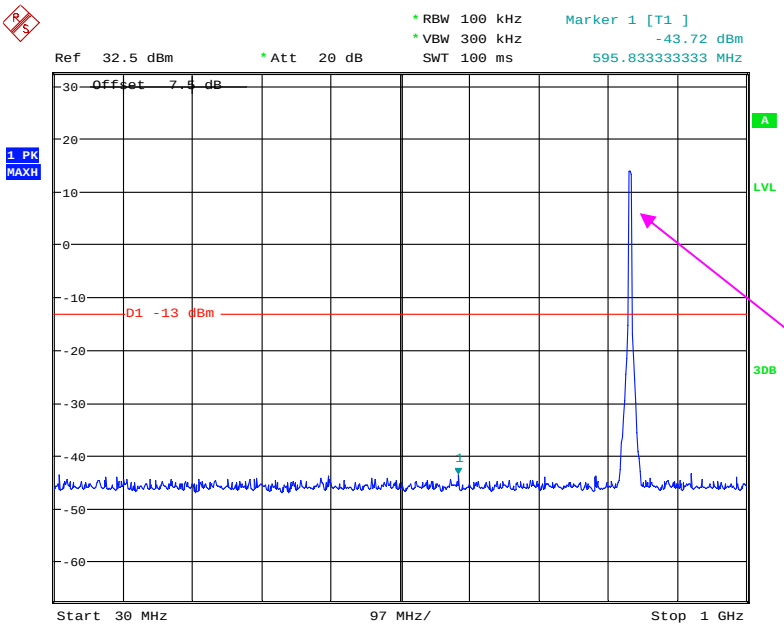
Date: 27.DEC.2018 00:49:21

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



Date: 27.DEC.2018 00:47:07

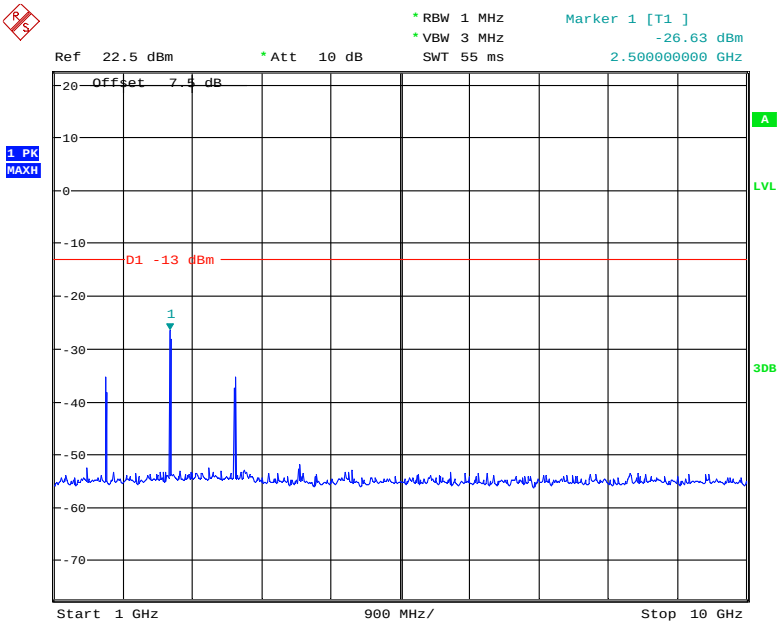
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

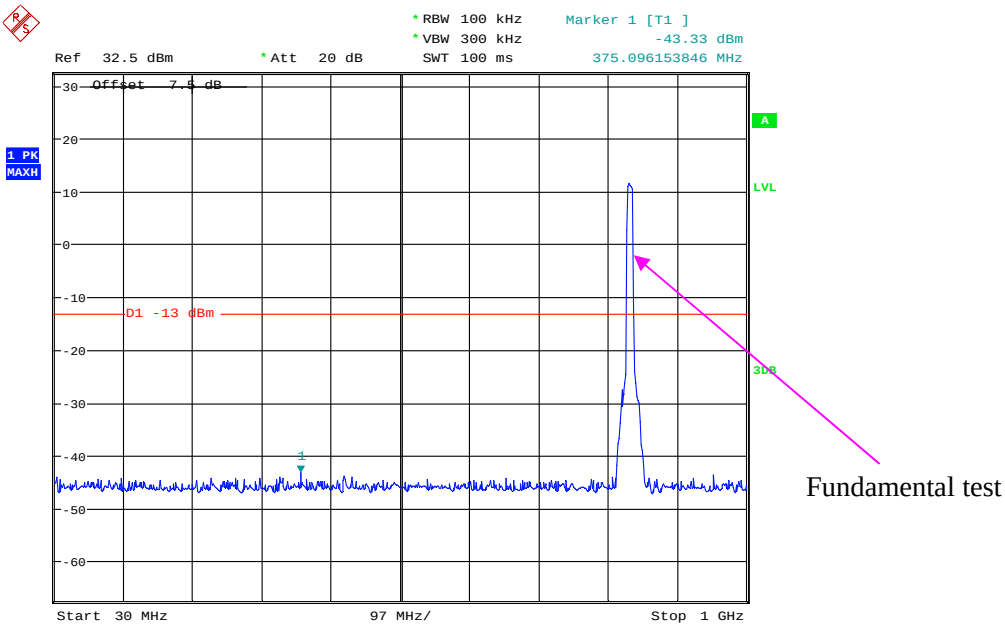
Date: 27.DEC.2018 00:48:39

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



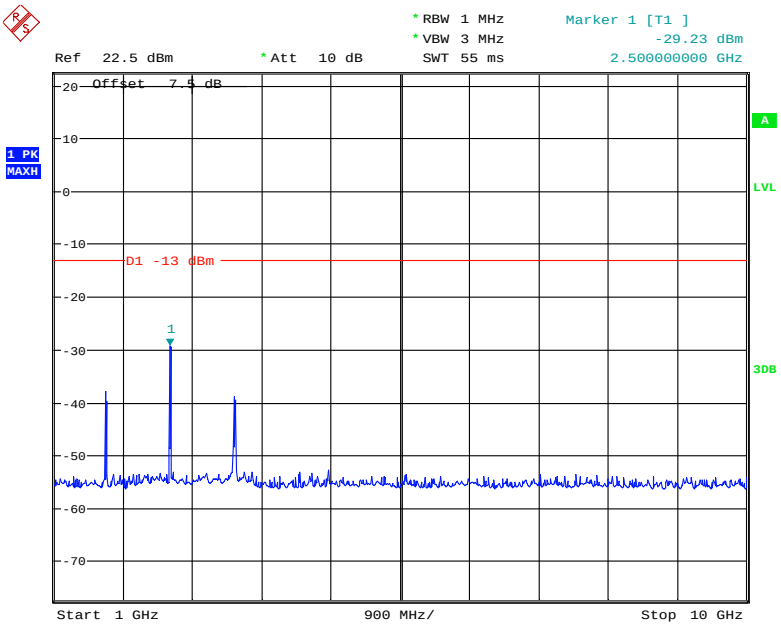
Date: 27.DEC.2018 00:47:24

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



Date: 27.DEC.2018 00:48:12

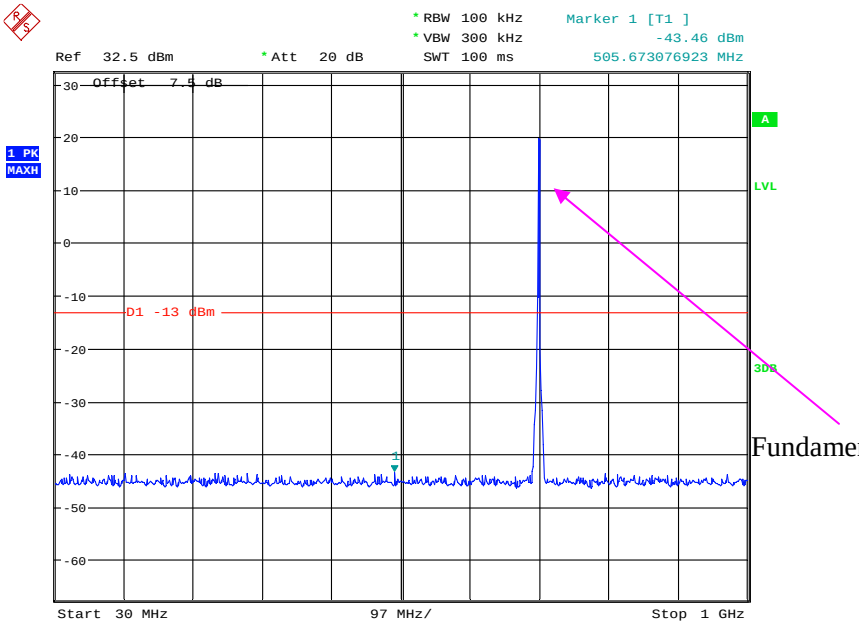
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 27.DEC.2018 00:47:40

LTE Band 12:

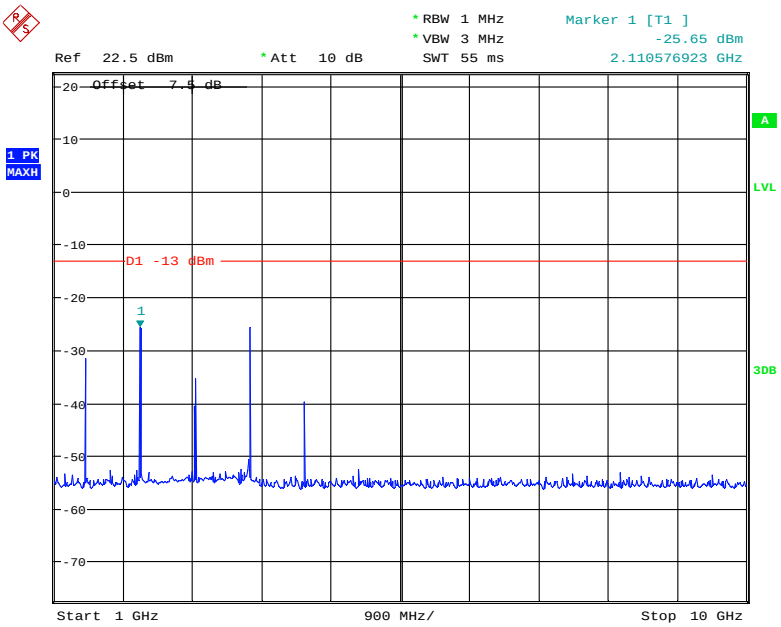
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

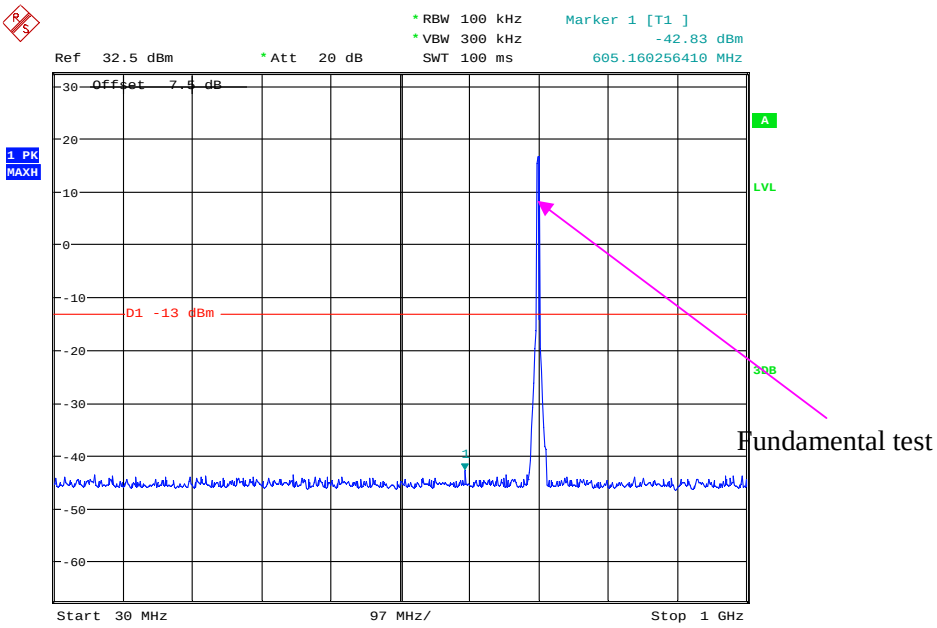
Date: 27.DEC.2018 00:50:56

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



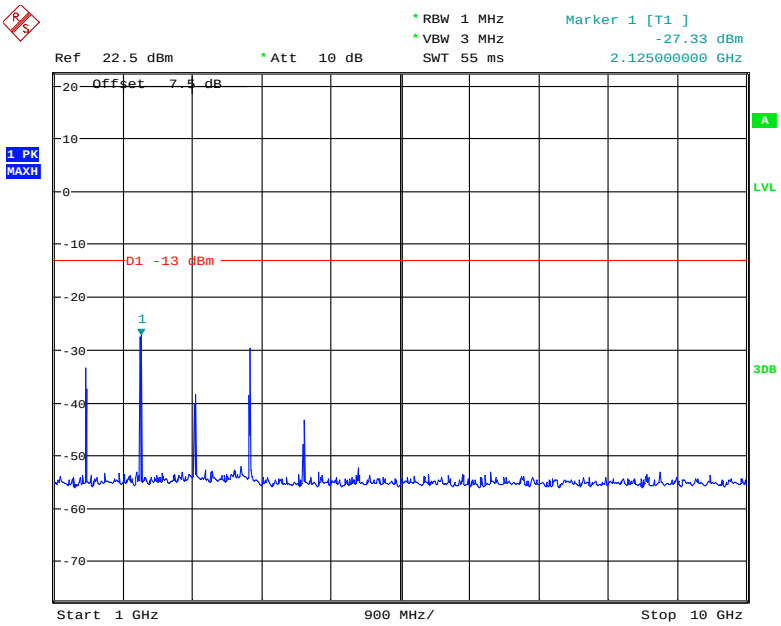
Date: 27.DEC.2018 00:55:02

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



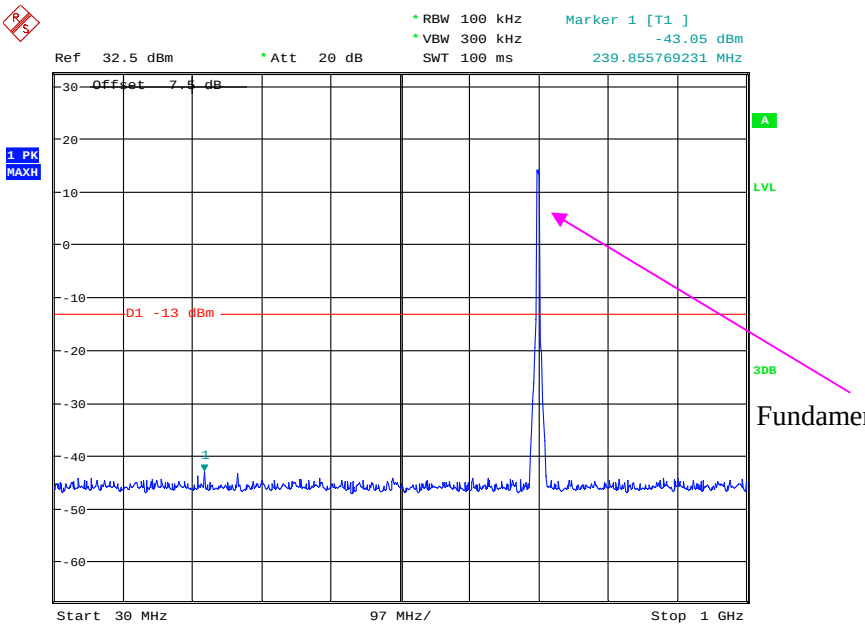
Date: 27.DEC.2018 00:52:28

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



Date: 27.DEC.2018 00:54:46

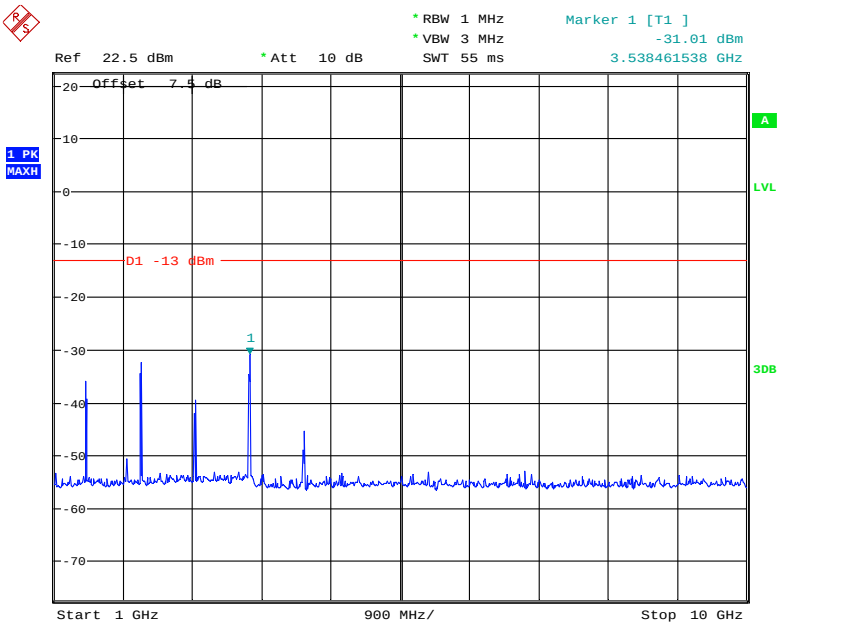
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

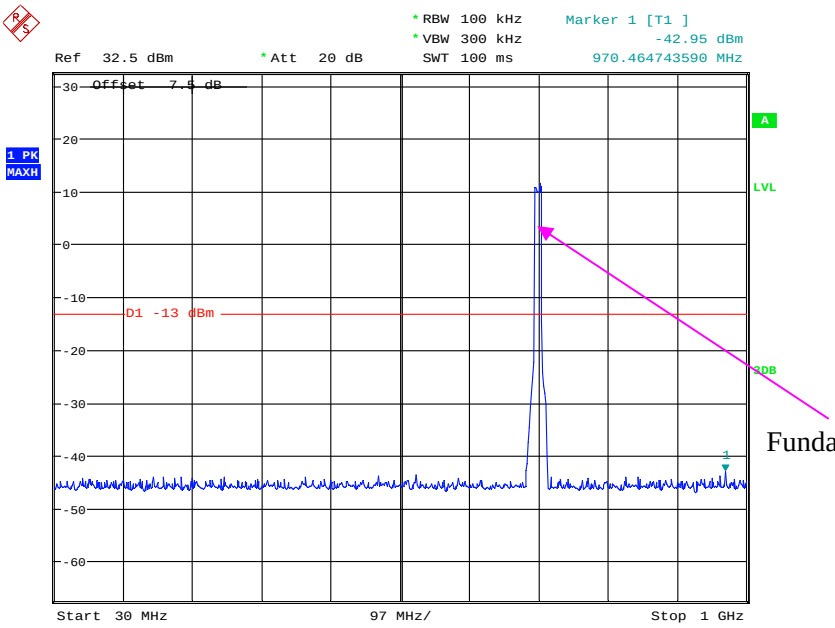
Date: 27.DEC.2018 00:53:05

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



Date: 27.DEC.2018 00:54:27

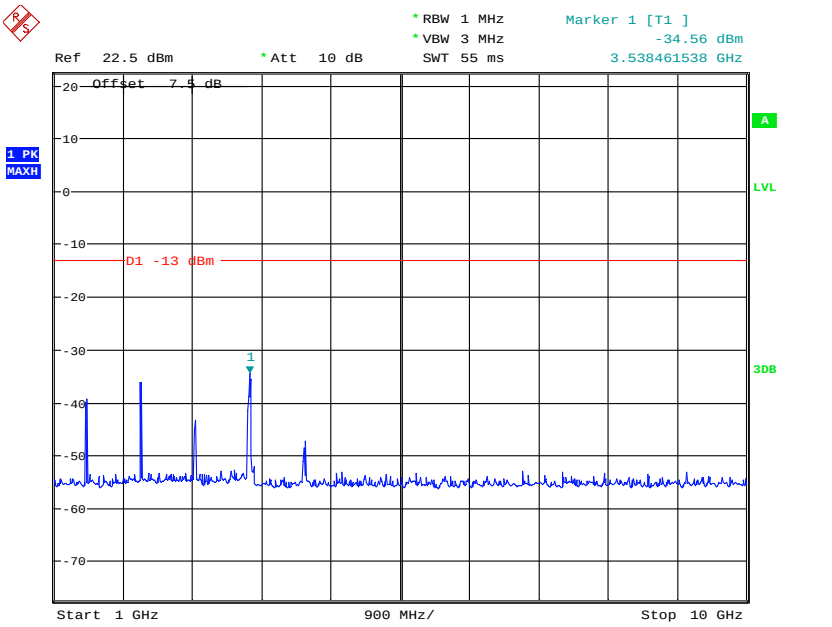
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 27.DEC.2018 00:53:42

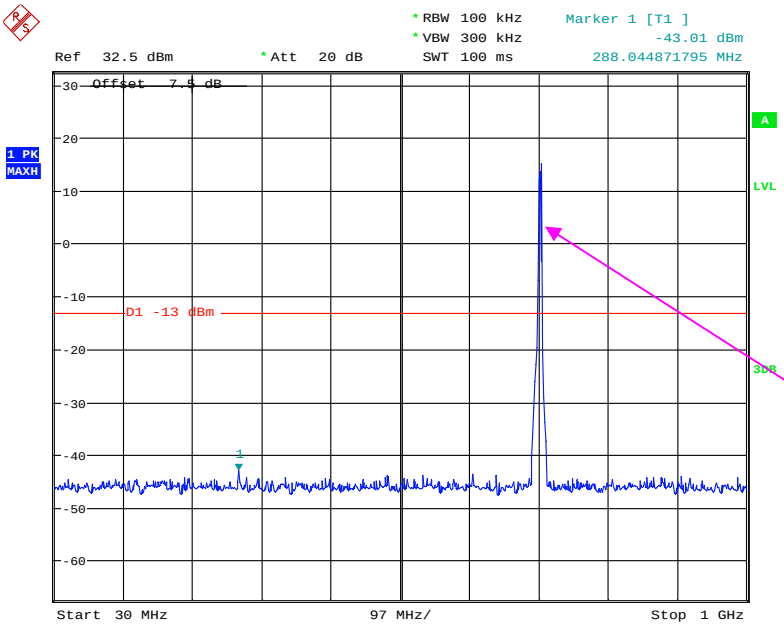
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 27.DEC.2018 00:54:07

LTE Band 17:

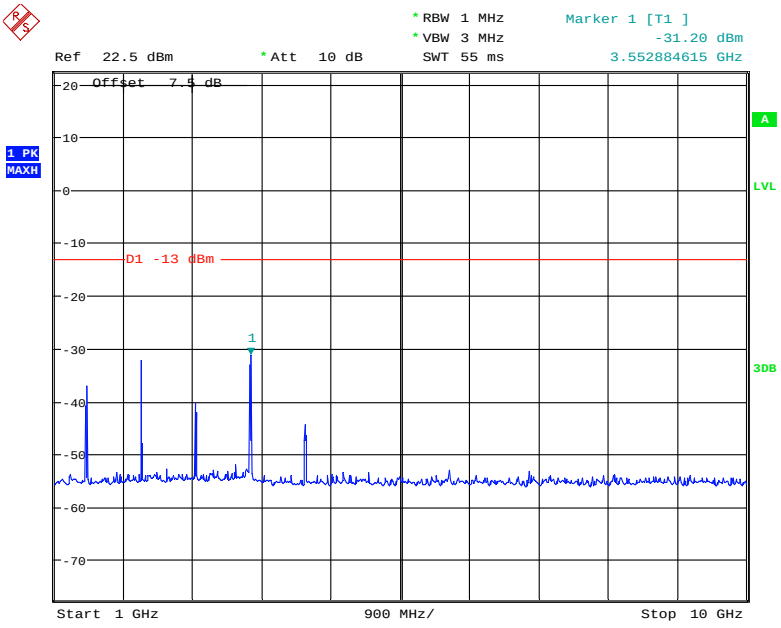
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

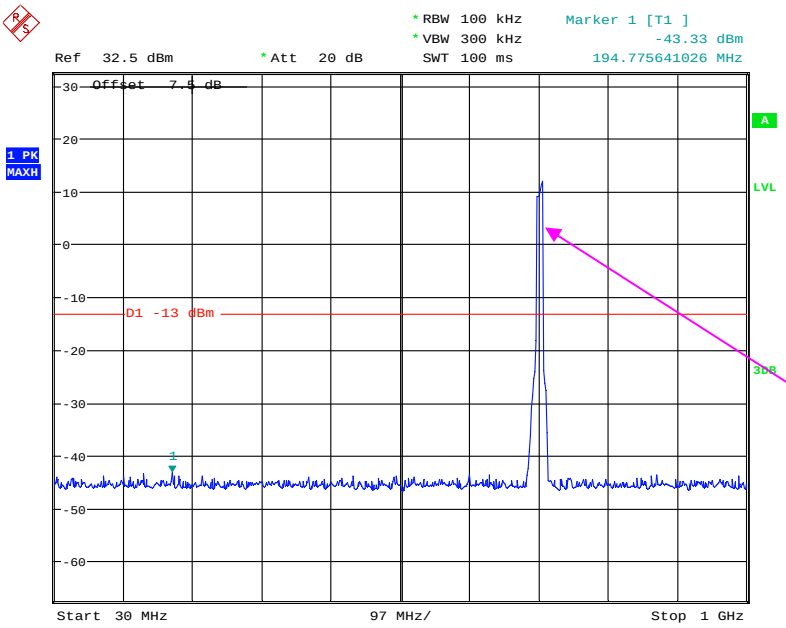
Date: 27.DEC.2018 00:57:09

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



Date: 27.DEC.2018 00:55:43

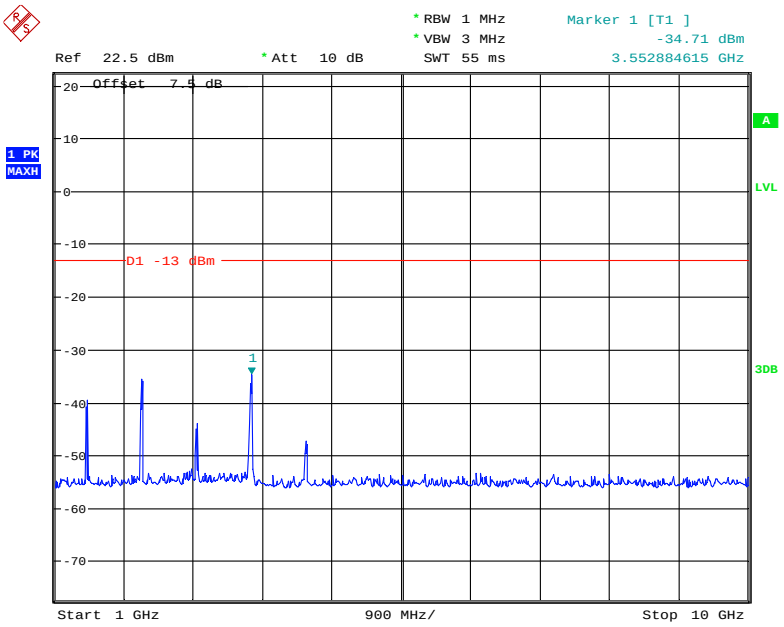
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 27.DEC.2018 00:56:45

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



Date: 27.DEC.2018 00:56:05

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

Applicable Standard

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

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 ℃
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Shawn Xiao on 2018-12-24.

EUT operation mode: Transmitting

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

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
232.91	38.97	42	2.2	H	-62.0	1.88	0	-63.89	-13	50.89
232.91	38.14	221	2.2	V	-61.7	1.88	0	-63.57	-13	50.57
1673.20	63.48	44	1.9	H	-43.6	1.30	8.90	-36.00	-13	23.00
1673.20	61.25	52	2.3	V	-45.2	1.30	8.90	-37.60	-13	24.60
2509.80	52.42	33	2.4	H	-51.1	2.60	10.20	-43.50	-13	30.50
2509.80	50.66	121	2.5	V	-52.3	2.60	10.20	-44.70	-13	31.70
4183.00	56.90	15	1.3	H	-44.5	1.50	11.80	-34.20	-13	21.20
4183.00	52.59	55	2.0	V	-48.0	1.50	11.80	-37.70	-13	24.70
WCDMA Mode, Middle channel										
232.91	39.93	125	1.6	H	-61.1	1.88	0	-62.93	-13	49.93
232.91	39.11	120	1.7	V	-60.7	1.88	0	-62.60	-13	49.60
1673.20	48.80	147	1.9	H	-58.3	1.30	8.90	-50.70	-13	37.70
1673.20	47.61	66	2.3	V	-58.9	1.30	8.90	-51.30	-13	38.30
2509.80	46.35	65	2.2	H	-57.2	2.60	10.20	-49.60	-13	36.60
2509.80	44.49	250	1.4	V	-58.4	2.60	10.20	-50.80	-13	37.80
3346.40	55.60	57	1.6	H	-44.7	1.50	11.70	-34.50	-13	21.50
3346.40	50.84	145	1.9	V	-49.5	1.50	11.70	-39.30	-13	26.30

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
232.91	38.03	178	2.0	H	-62.9	1.88	0	-64.83	-13	51.83
232.91	39.32	223	2.0	V	-60.5	1.88	0	-62.39	-13	49.39
3760.00	63.96	307	1.9	H	-37.3	1.50	11.80	-27.00	-13	14.00
3760.00	60.62	52	1.4	V	-40.1	1.50	11.80	-29.80	-13	16.80
5640.00	51.13	201	1.9	H	-46.5	1.70	12.40	-35.80	-13	22.80
5640.00	52.60	221	1.3	V	-44.7	1.70	12.40	-34.00	-13	21.00
9400.00	60.45	156	1.8	H	-34.8	2.20	11.50	-25.50	-13	12.50
9400.00	64.17	17	2.2	V	-31.4	2.20	11.50	-22.10	-13	9.10
WCDMA Mode, Middle channel										
232.91	38.45	116	1.1	H	-62.5	1.88	0	-64.41	-13	51.41
232.91	38.77	100	1.9	V	-61.1	1.88	0	-62.94	-13	49.94
3760.00	51.29	168	1.1	H	-49.9	1.50	11.80	-39.60	-13	26.60
3760.00	51.44	8	1.9	V	-49.3	1.50	11.80	-39.00	-13	26.00
5640.00	45.90	249	2.2	H	-51.7	1.70	12.40	-41.00	-13	28.00
5640.00	47.10	237	1.4	V	-50.2	1.70	12.40	-39.50	-13	26.50

AWS Band (Part 27)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
WCDMA Mode, Middle channel										
232.91	38.52	31	1.9	H	-62.4	1.88	0	-64.32	-13	51.32
232.91	38.08	121	1.7	V	-61.8	1.88	0	-63.63	-13	50.63
3465.20	44.90	94	2.0	H	-55.5	1.50	12.00	-45.00	-13	32.00
3465.20	45.30	326	2.2	V	-55.8	1.50	12.00	-45.30	-13	32.30

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

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Band 2										
Test frequency range:30 MHz ~ 20 GHz										
232.91	38.30	308	2.1	H	-62.7	1.88	0	-64.56	-13	51.56
232.91	39.57	85	1.4	V	-60.3	1.88	0	-62.14	-13	49.14
3760.00	51.98	96	1.2	H	-49.2	1.50	11.80	-38.90	-13	25.90
3760.00	51.83	100	2.0	V	-48.9	1.50	11.80	-38.60	-13	25.60
5640.00	49.50	310	2.2	H	-48.1	1.70	12.40	-37.40	-13	24.40
5640.00	46.96	354	2.3	V	-50.3	1.70	12.40	-39.60	-13	26.60
Band 4										
Test frequency range:30 MHz ~ 20 GHz										
232.91	38.74	31	1.9	H	-62.2	1.88	0	-64.12	-13	51.12
232.91	38.18	121	1.7	V	-61.7	1.88	0	-63.53	-13	50.53
3465.00	44.25	49	1.4	H	-56.1	1.50	12.00	-45.60	-13	32.60
3465.00	43.16	49	2.3	V	-58.0	1.50	12.00	-47.50	-13	34.50
Band 5										
Test frequency range: 30 MHz ~ 10 GHz										
232.91	39.62	59	1.8	H	-61.4	1.88	0	-63.24	-13	50.24
232.91	39.52	288	1.3	V	-60.3	1.88	0	-62.19	-13	49.19
1673.00	46.84	176	2.3	H	-60.2	1.30	8.90	-52.60	-13	39.60
1673.00	46.25	45	2.2	V	-60.2	1.30	8.90	-52.60	-13	39.60
2509.50	48.60	327	1.5	H	-54.9	2.60	10.20	-47.30	-13	34.30
2509.50	45.10	33	2.2	V	-57.8	2.60	10.20	-50.20	-13	37.20
3346.00	50.95	137	1.4	H	-49.4	1.50	11.70	-39.20	-13	26.20
3346.00	50.60	127	2.3	V	-49.8	1.50	11.70	-39.60	-13	26.60
Band 12										
Test frequency range: 30 MHz ~ 10GHz										
232.91	38.45	7	1.9	H	-62.5	1.88	0	-64.41	-13	51.41
232.91	39.23	351	1.7	V	-60.6	1.88	0	-62.48	-13	49.48
1415.00	48.50	133	2.2	H	-59.3	1.60	7.90	-53.00	-13	40.00
1415.00	49.36	202	2.0	V	-58.7	1.60	7.90	-52.40	-13	39.40
2830.00	52.60	119	2.0	H	-51.2	1.80	10.50	-42.50	-13	29.50
2830.00	54.60	130	1.7	V	-48.8	1.80	10.50	-40.10	-13	27.10
3537.50	56.30	307	1.1	H	-44.2	1.50	12.00	-33.70	-13	20.70
3537.50	57.32	339	2.3	V	-44.0	1.50	12.00	-33.50	-13	20.50
Band 17										
Test frequency range: 30 MHz ~ 10GHz										
232.91	38.58	193	2.4	H	-62.4	1.88	0	-64.28	-13	51.28
232.91	38.39	275	1.5	V	-61.4	1.88	0	-63.32	-13	50.32
1420.00	45.20	291	1.2	H	-62.6	1.60	7.90	-56.30	-13	43.30
1420.00	45.10	110	1.3	V	-63.0	1.60	7.90	-56.70	-13	43.70
2840.00	58.80	352	2.3	H	-45.0	1.80	10.50	-36.30	-13	23.30
2840.00	58.40	43	2.1	V	-45.0	1.80	10.50	-36.30	-13	23.30
4260.00	48.15	31	1.9	H	-53.3	1.50	11.70	-43.10	-13	30.10
4260.00	45.23	299	1.0	V	-55.5	1.50	11.70	-45.30	-13	32.30

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)(g) - 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.

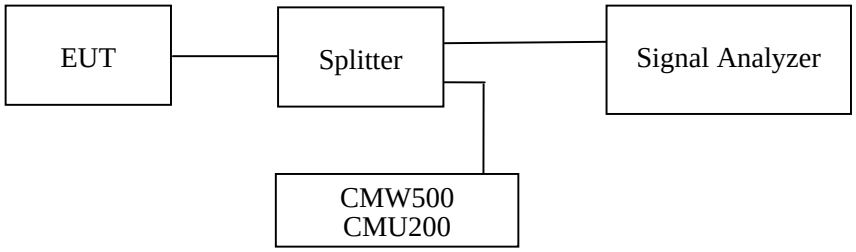
According to FCC §27.53 (h), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to FCC §27.53 (g), 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

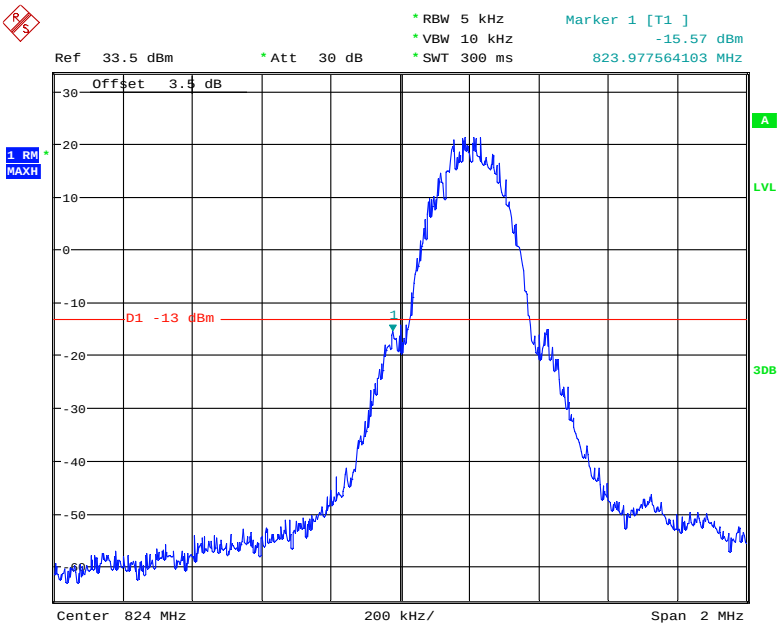
Temperature:	21~25 ℃
Relative Humidity:	51~52 %
ATM Pressure:	100.5~101.0 kPa

The testing was performed by Simon Wang from 2018-12-26 to 2019-01-04.

EUT operation mode: Transmitting

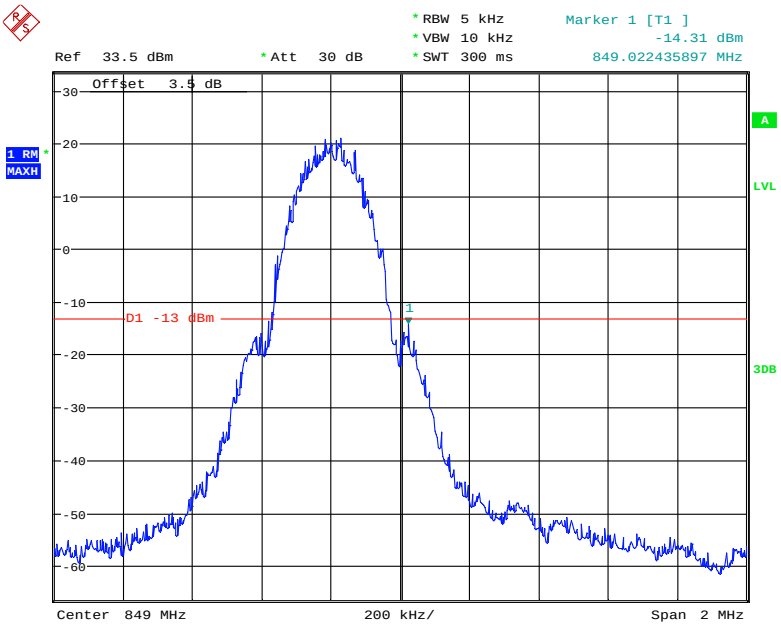
Test Result: Compliance. Please refer to the following plots.

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



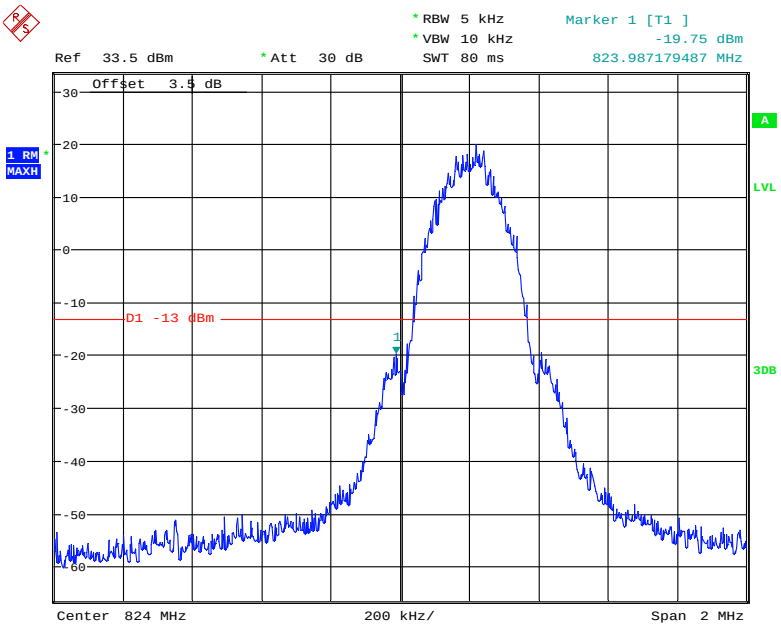
Date: 26.DEC.2018 16:48:03

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



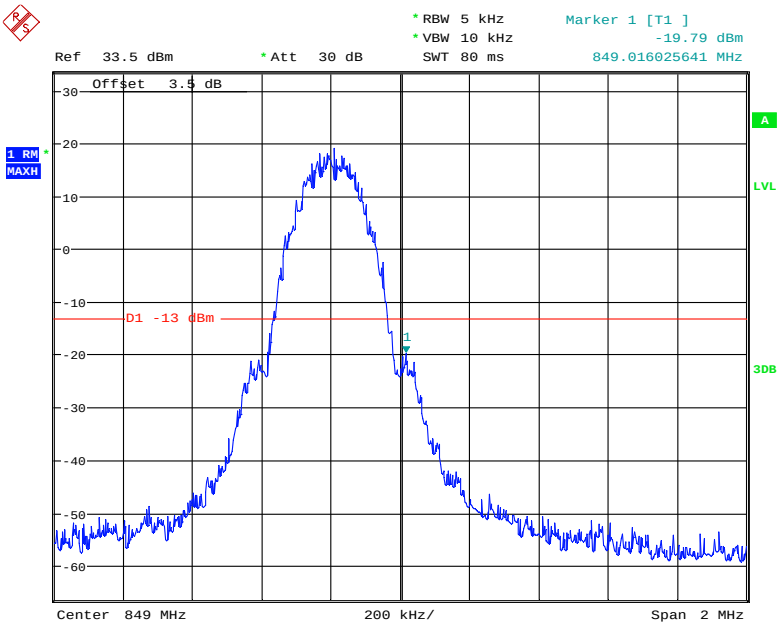
Date: 26.DEC.2018 16:46:49

Cellular Band, Left Band Edge for EDGE Mode



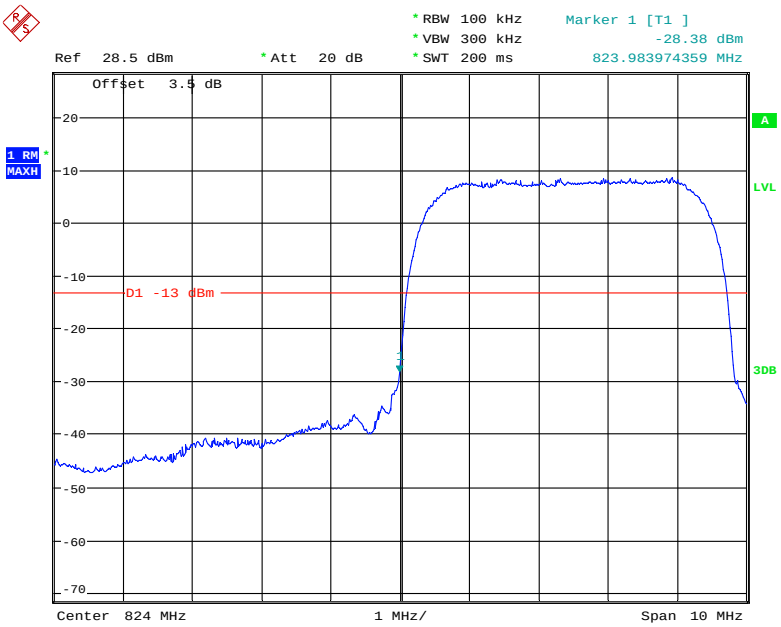
Date: 26.DEC.2018 16:43:27

Cellular Band, Right Band Edge for EDGE Mode



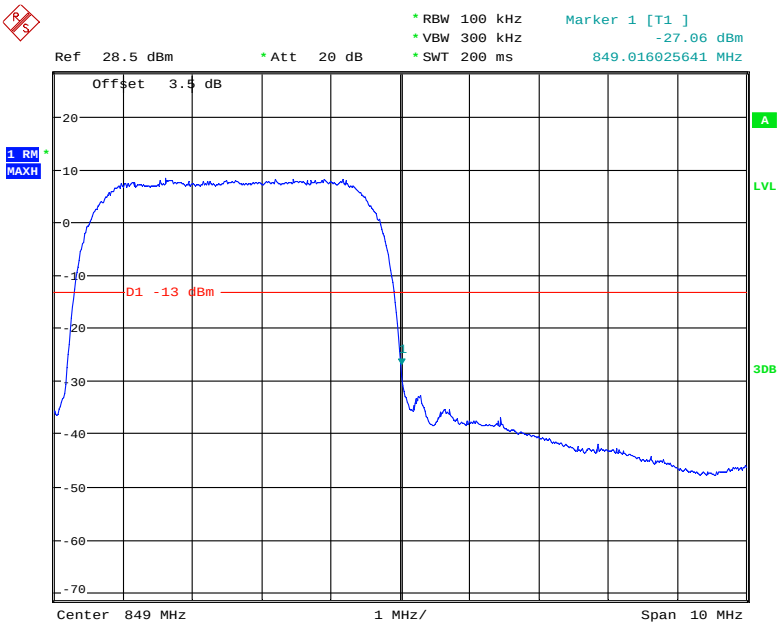
Date: 26.DEC.2018 16:44:18

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



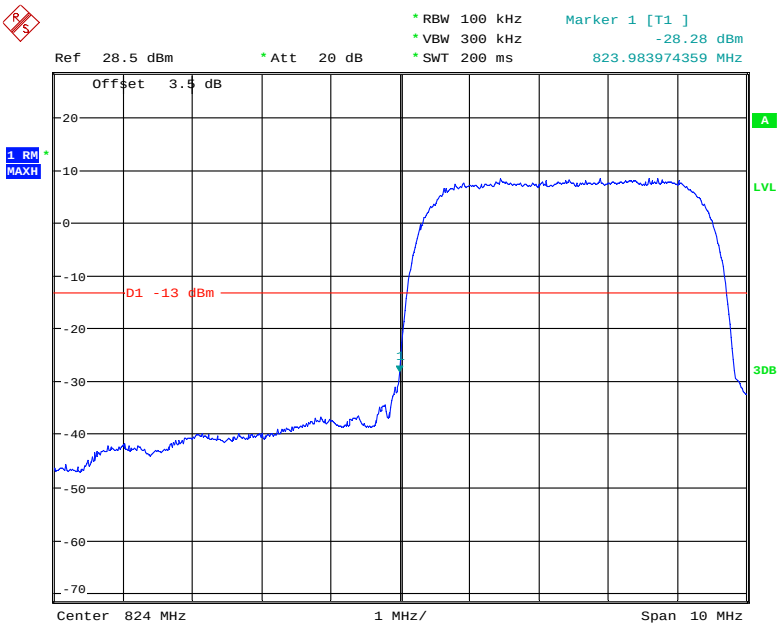
Date: 28.DEC.2018 15:46:38

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



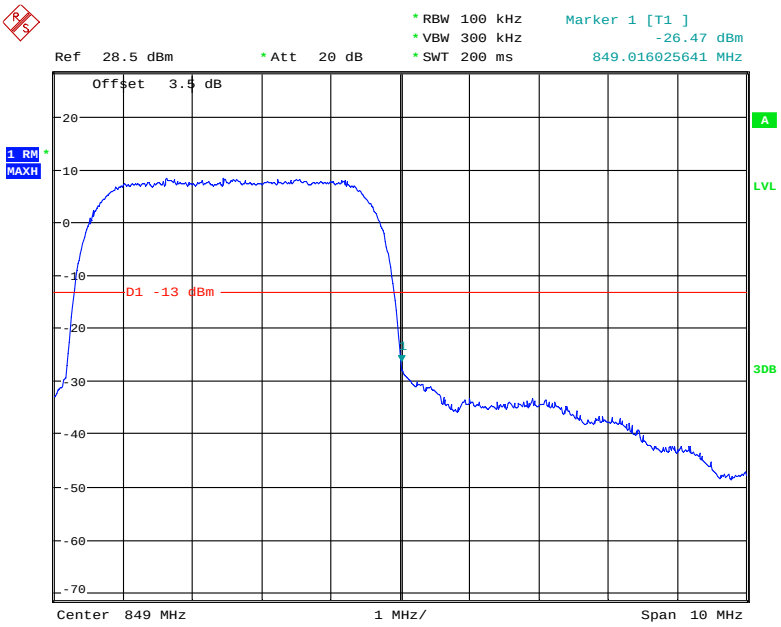
Date: 28.DEC.2018 15:45:52

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



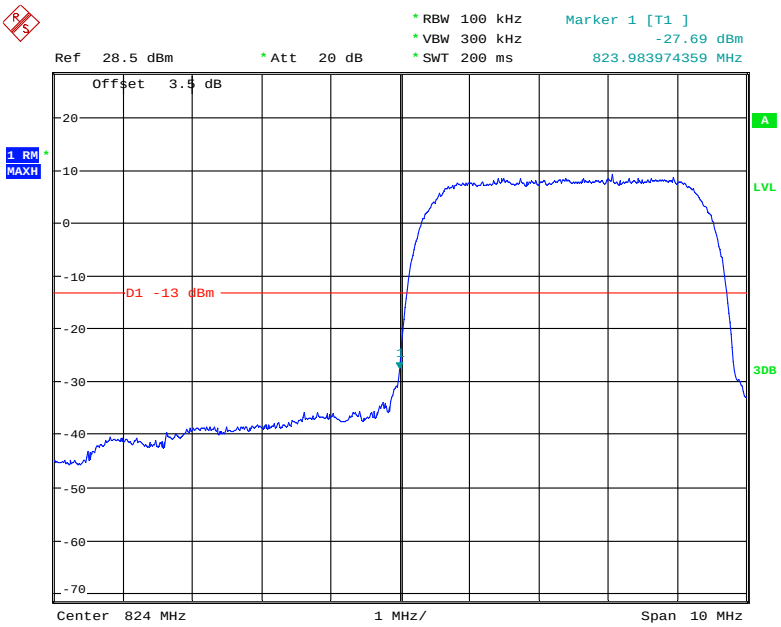
Date: 28.DEC.2018 15:32:16

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



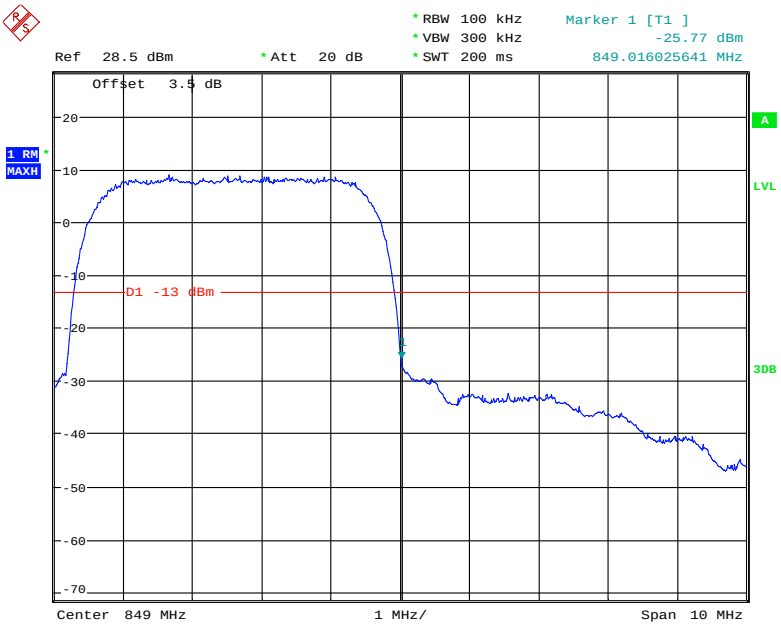
Date: 28.DEC.2018 15:33:29

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



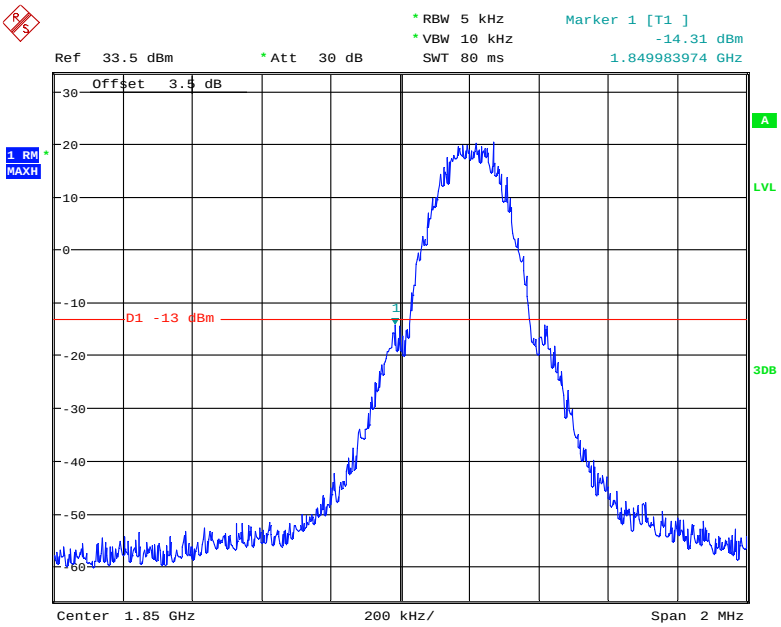
Date: 28.DEC.2018 15:44:13

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



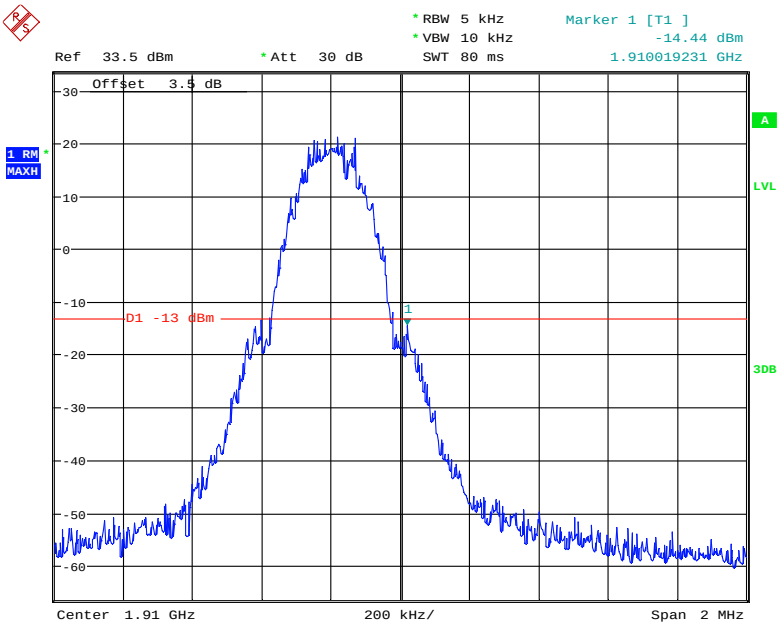
Date: 28.DEC.2018 15:45:07

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



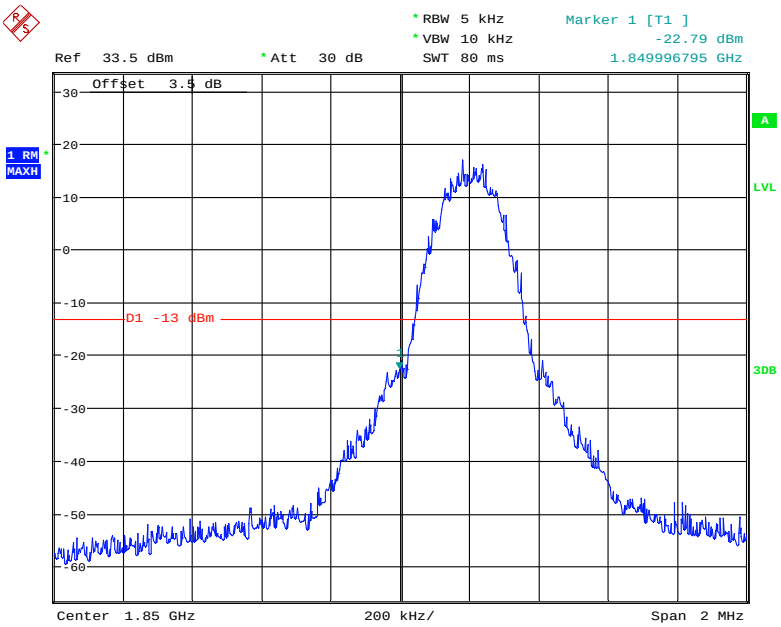
Date: 26.DEC.2018 16:37:13

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



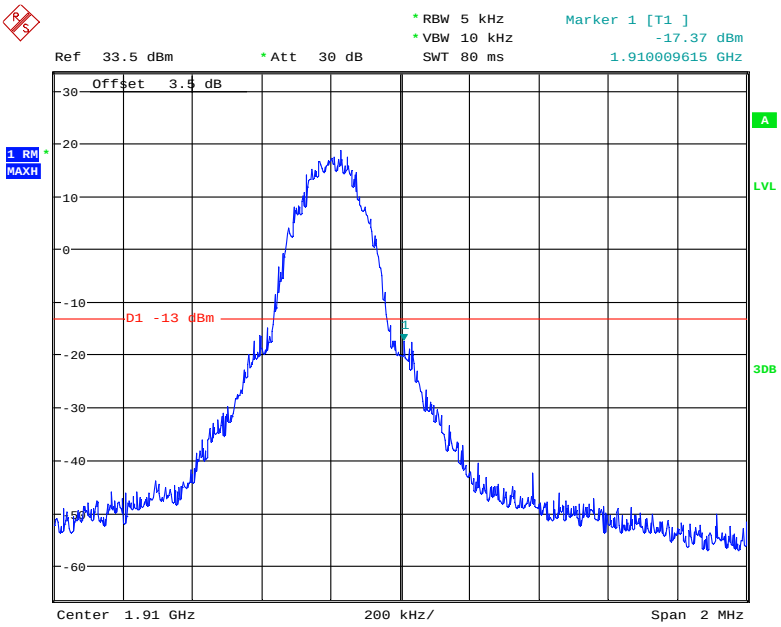
Date: 26.DEC.2018 16:35:49

PCS Band, Left Band Edge for EDGE Mode



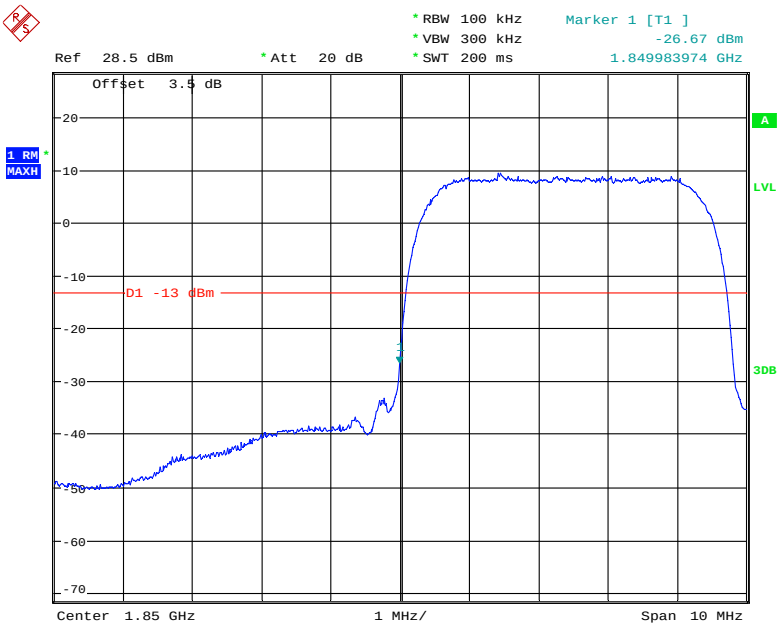
Date: 26.DEC.2018 16:39:28

PCS Band, Right Band Edge for EDGE Mode



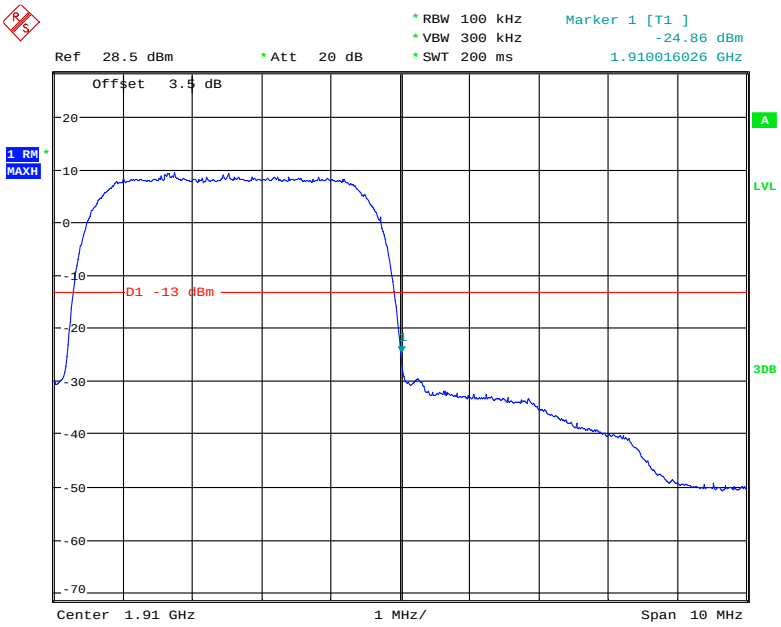
Date: 26.DEC.2018 16:40:43

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



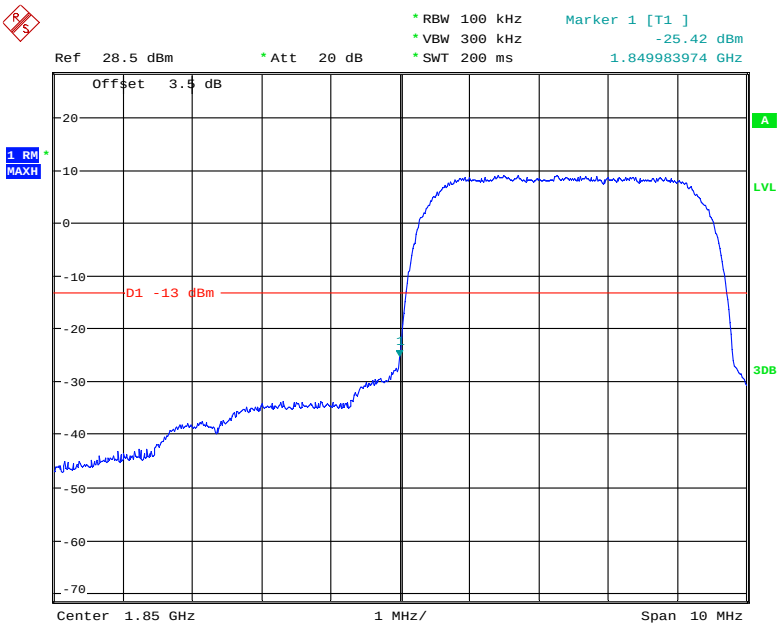
Date: 28.DEC.2018 15:05:51

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



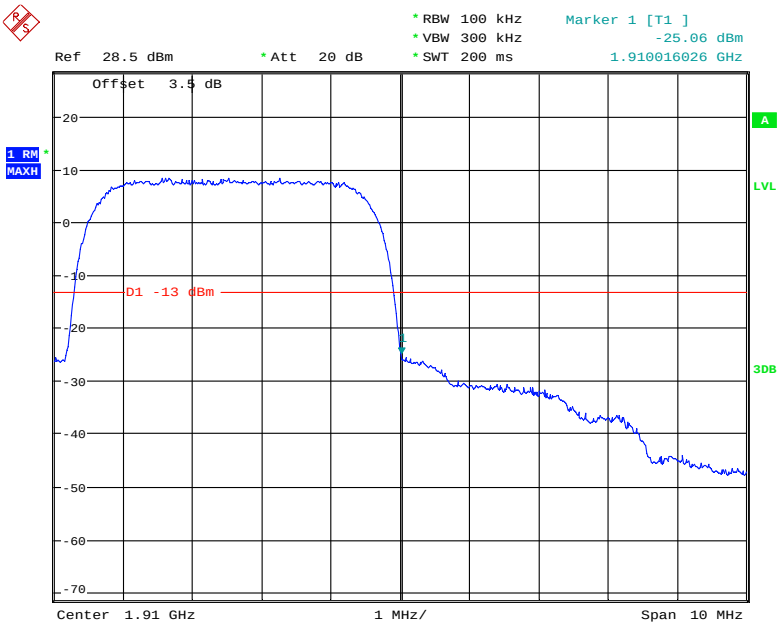
Date: 28.DEC.2018 15:07:34

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



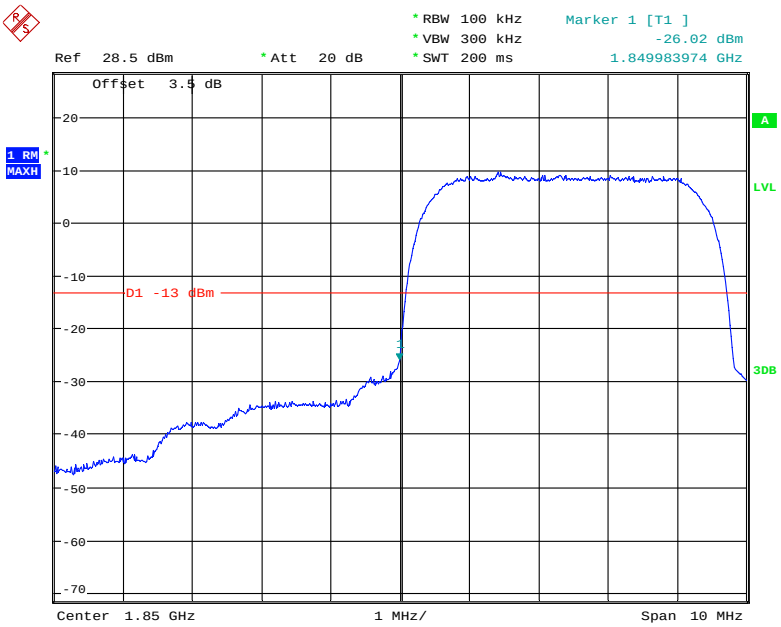
Date: 28.DEC.2018 15:25:02

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



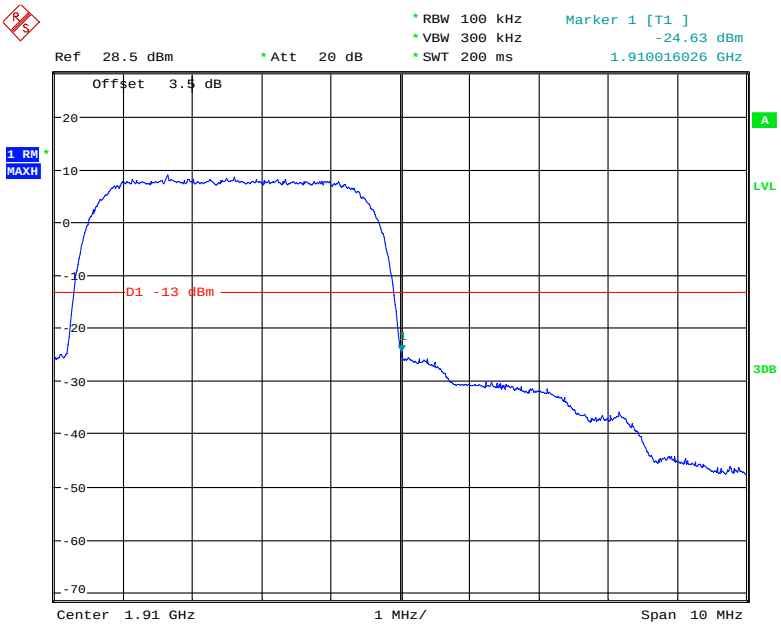
Date: 28.DEC.2018 15:24:30

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



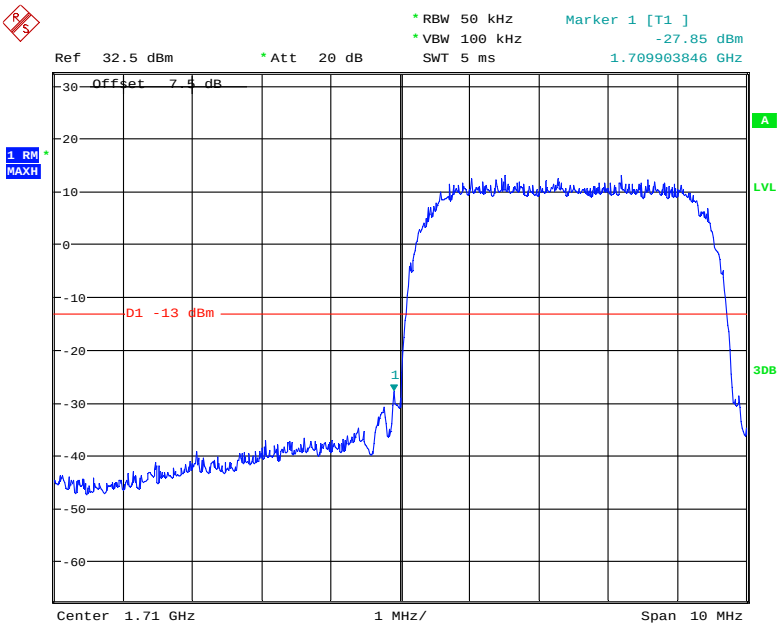
Date: 28.DEC.2018 15:20:54

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



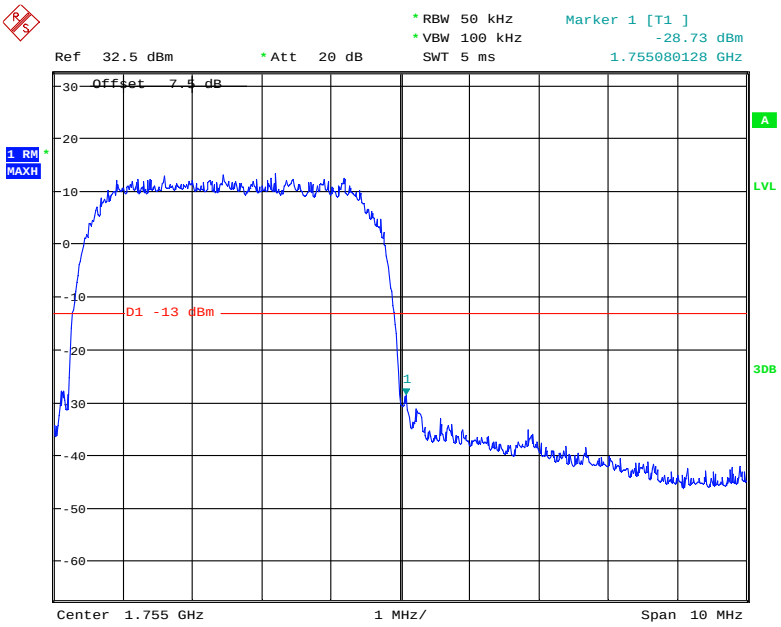
Date: 28.DEC.2018 15:22:21

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



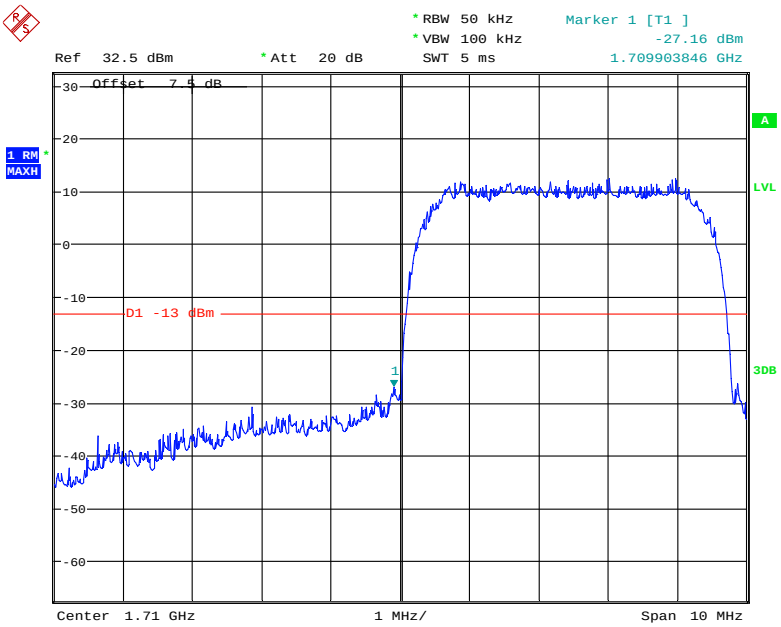
Date: 4.JAN.2019 19:06:17

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



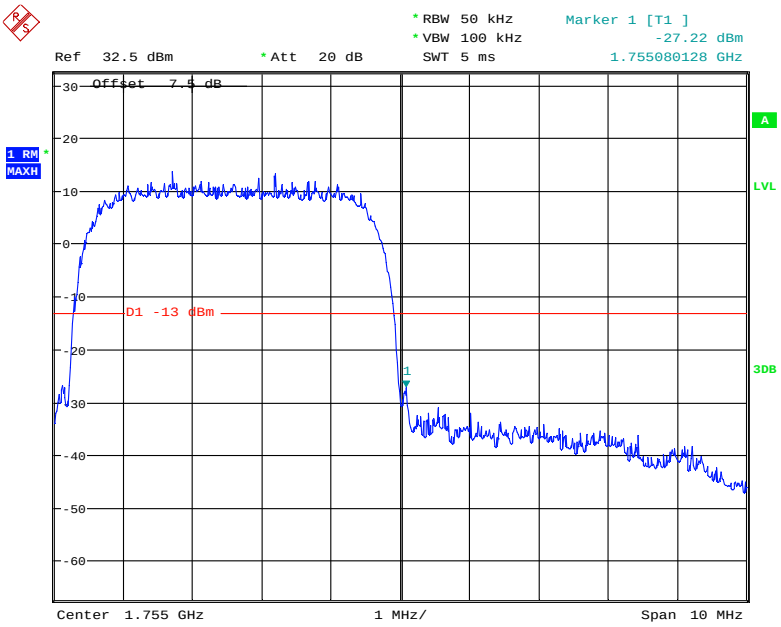
Date: 4.JAN.2019 19:07:37

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



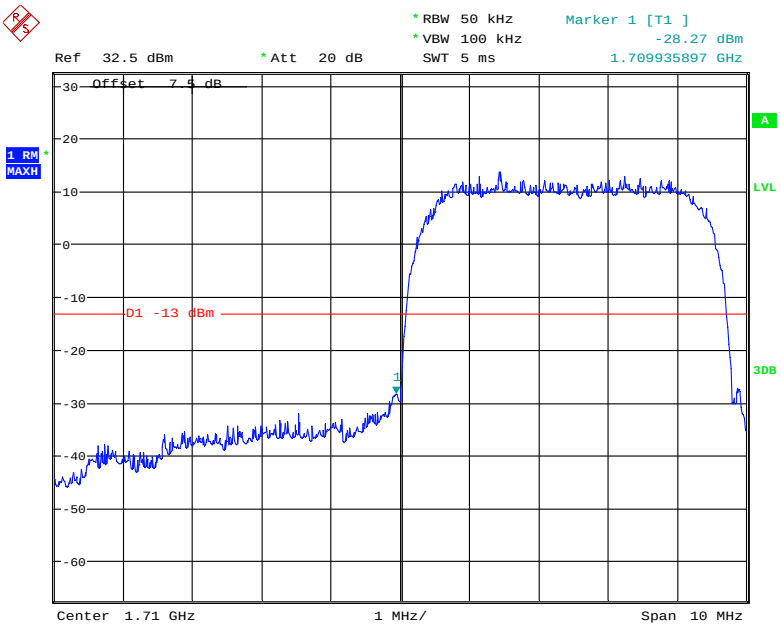
Date: 4.JAN.2019 19:05:37

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



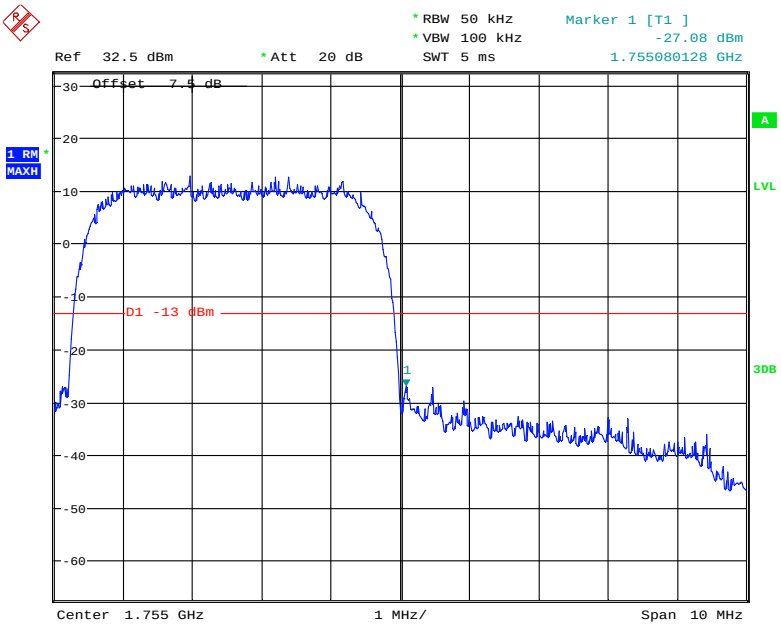
Date: 4.JAN.2019 19:05:10

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



Date: 4.JAN.2019 19:03:14

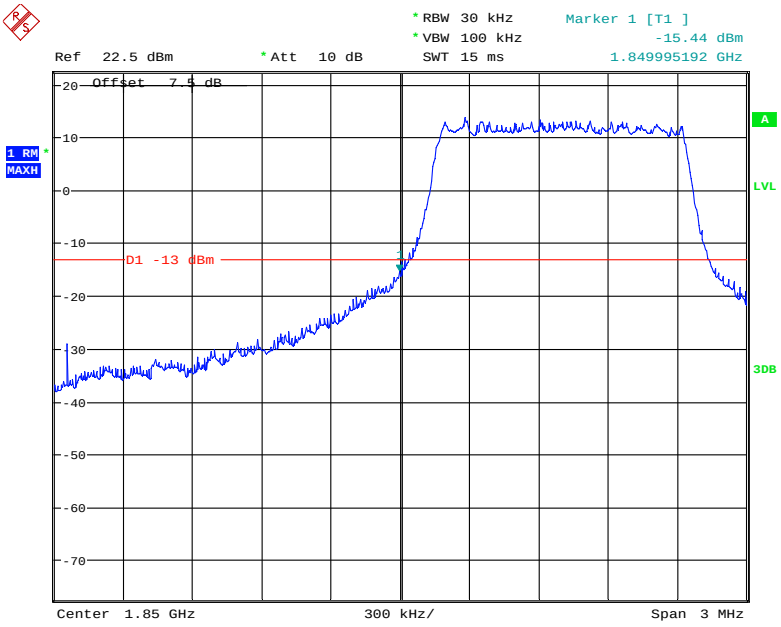
AWS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 4.JAN.2019 19:03:43

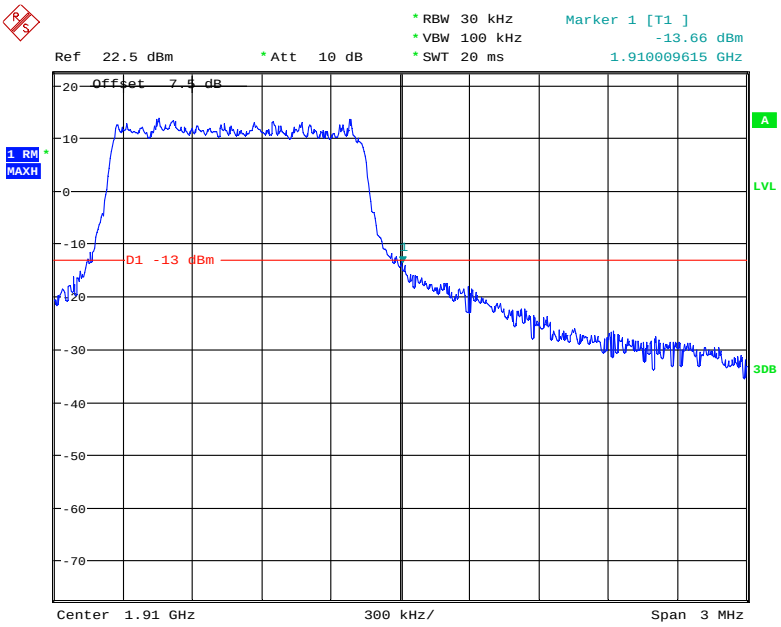
Band 2:

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



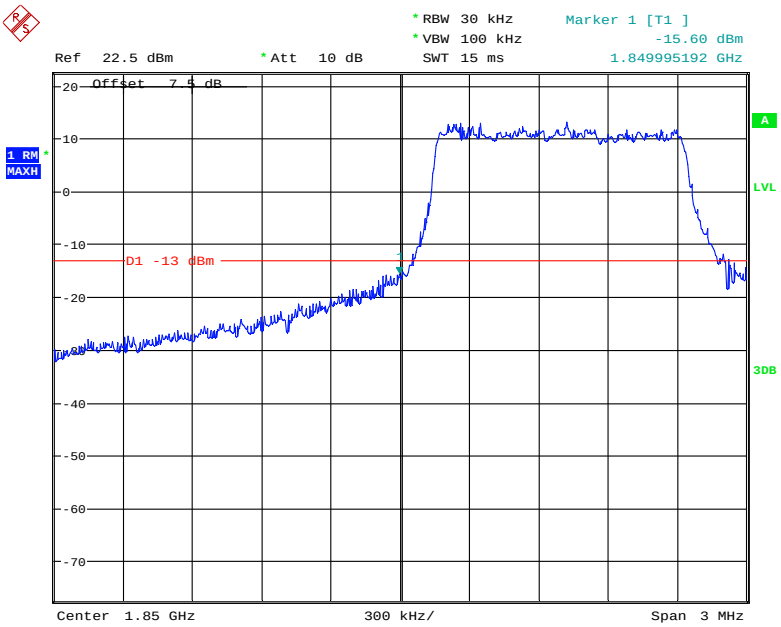
Date: 26.DEC.2018 23:27:48

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



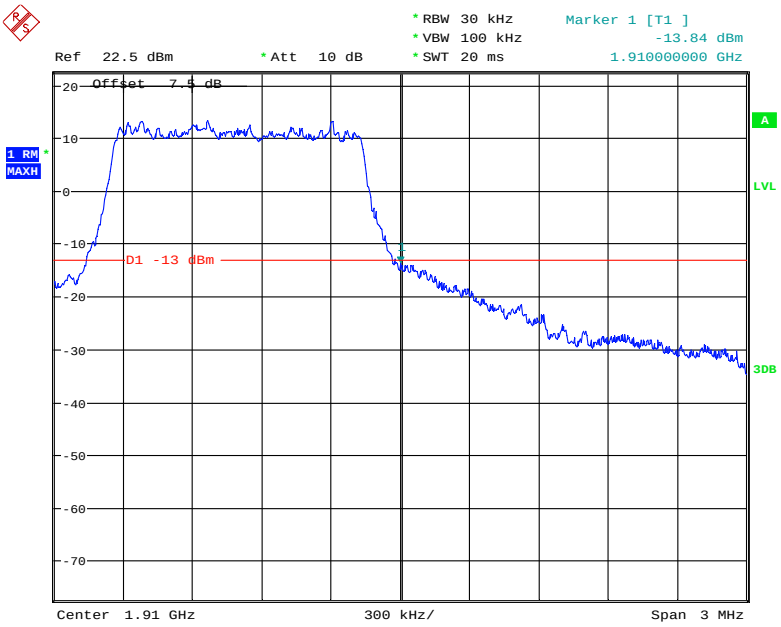
Date: 26.DEC.2018 23:31:51

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



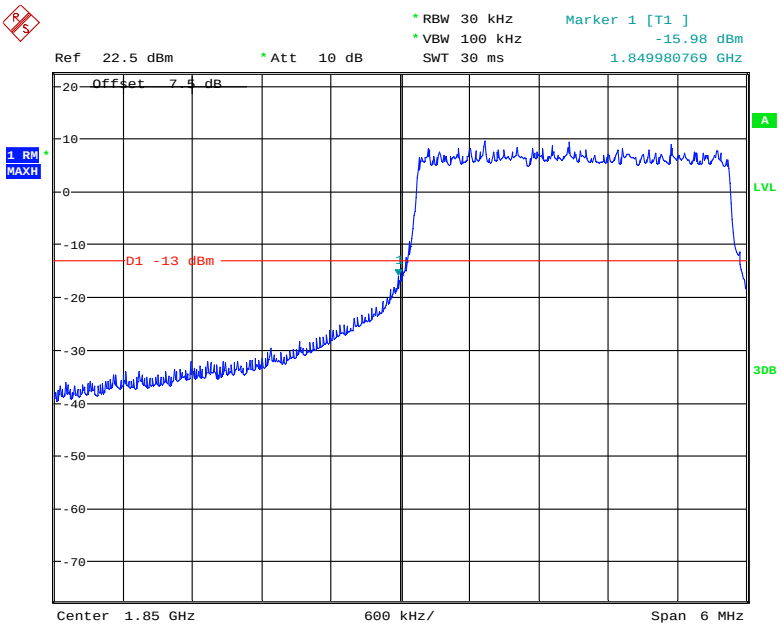
Date: 26.DEC.2018 23:28:42

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



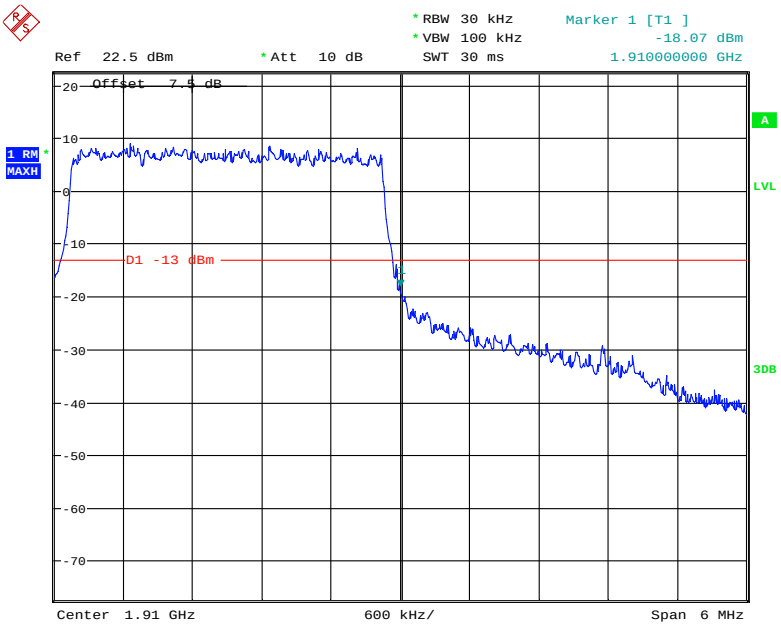
Date: 26.DEC.2018 23:31:06

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



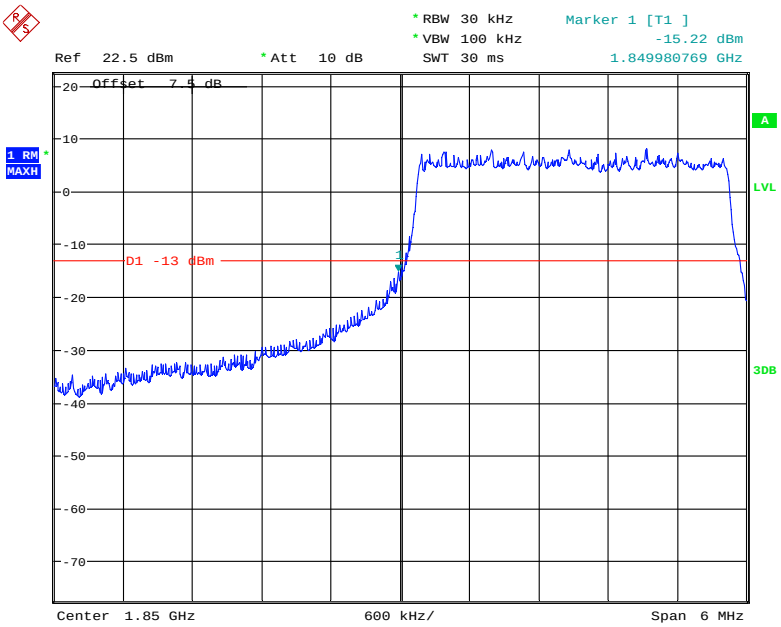
Date: 26.DEC.2018 23:37:05

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



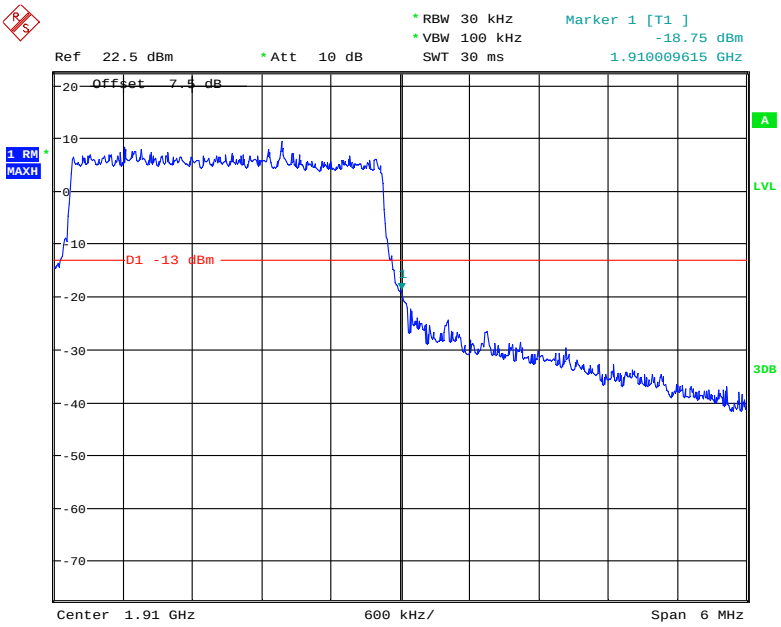
Date: 26.DEC.2018 23:33:06

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



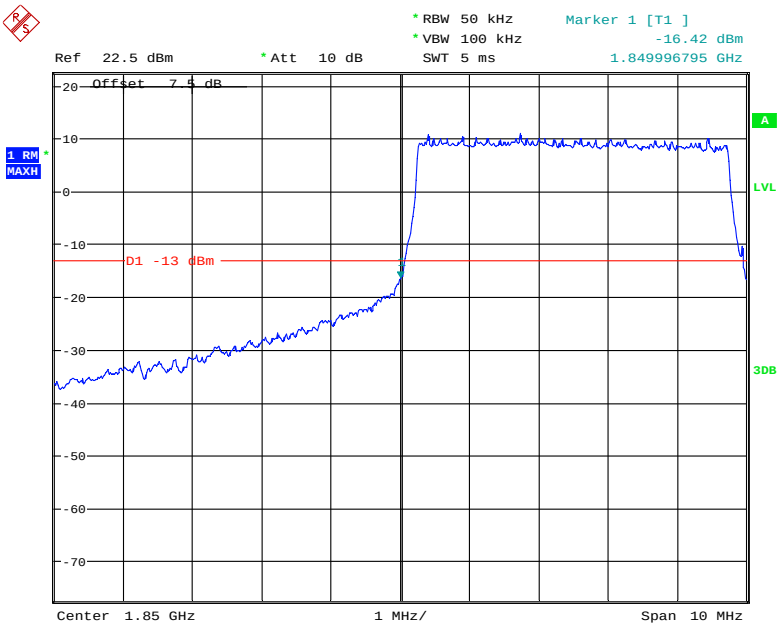
Date: 26.DEC.2018 23:36:19

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



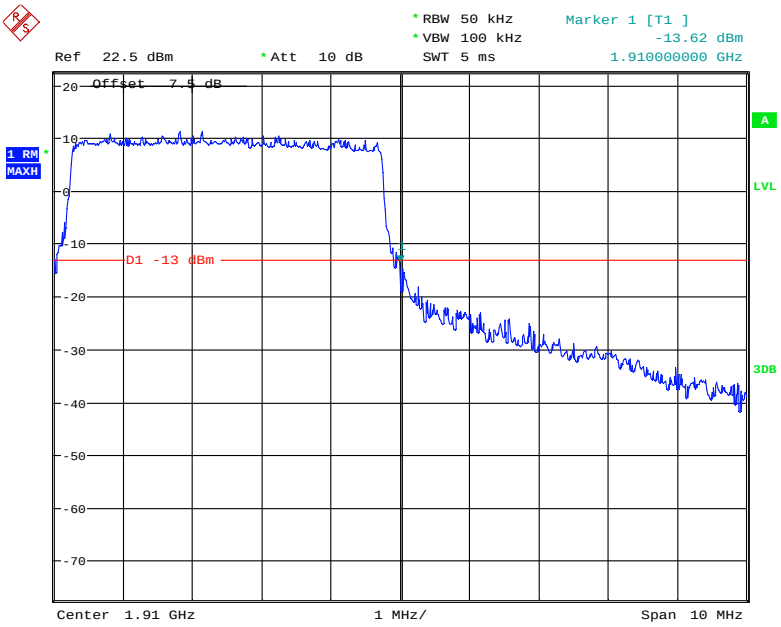
Date: 26.DEC.2018 23:35:01

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



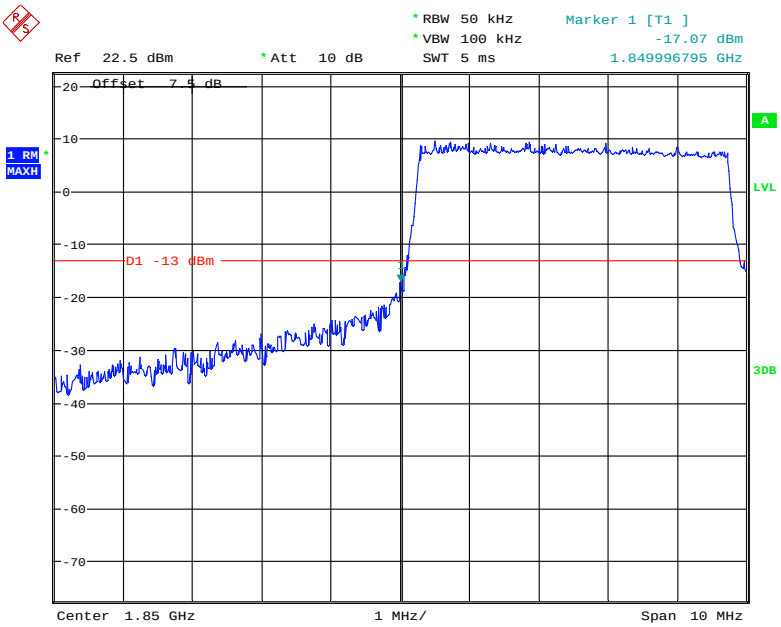
Date: 26.DEC.2018 23:46:27

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



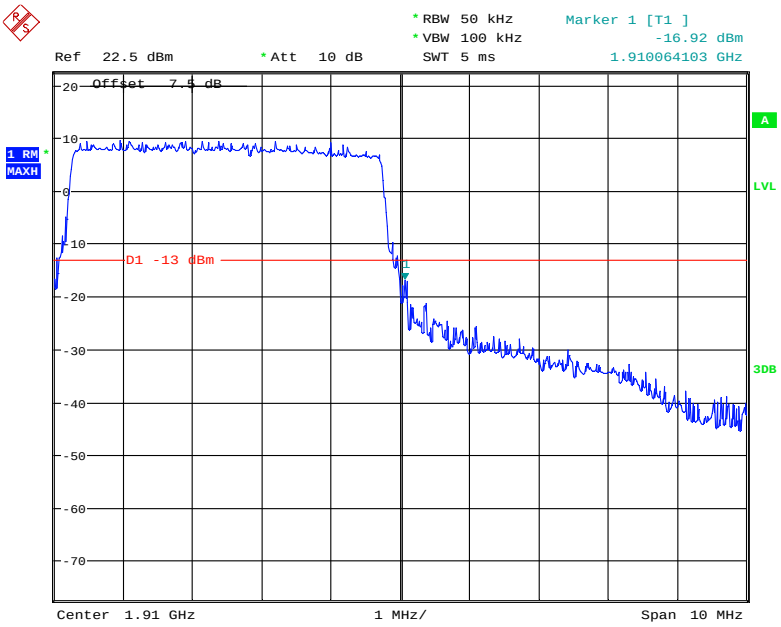
Date: 26.DEC.2018 23:47:59

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



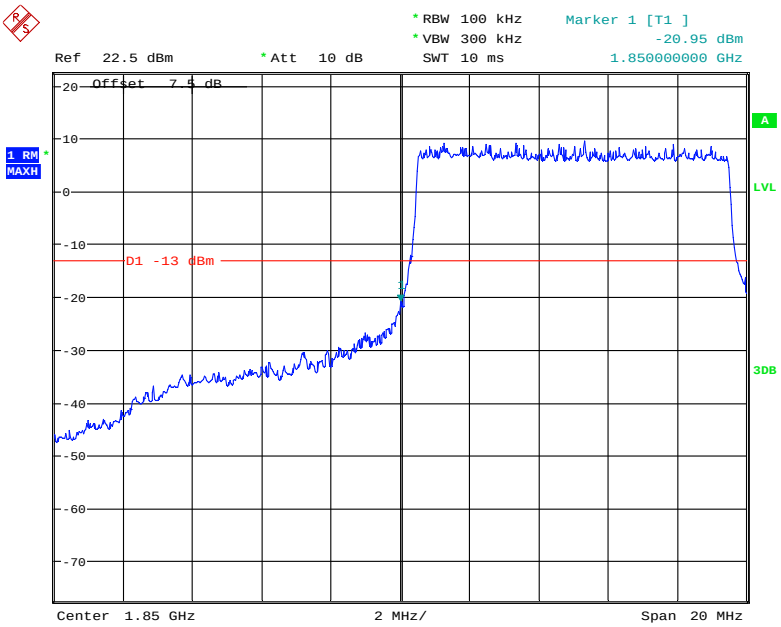
Date: 26.DEC.2018 23:38:19

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



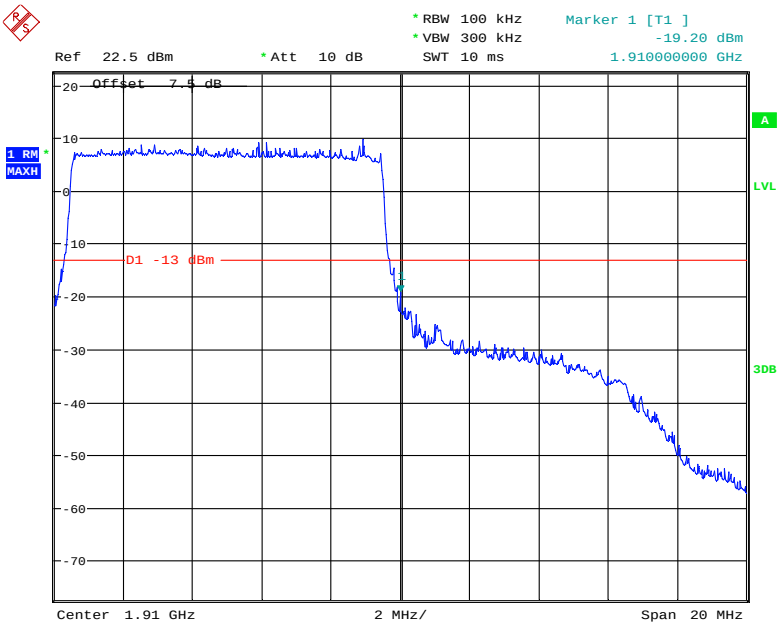
Date: 26.DEC.2018 23:48:38

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



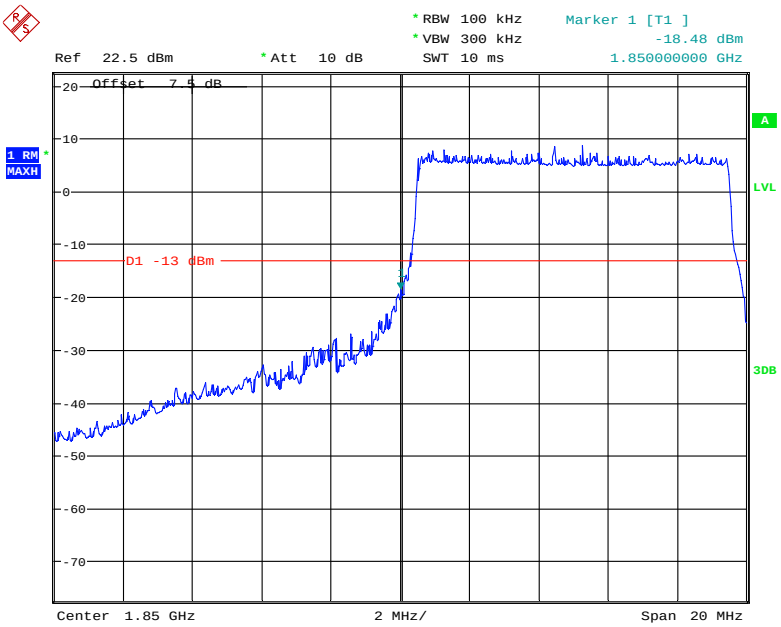
Date: 26.DEC.2018 23:59:05

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



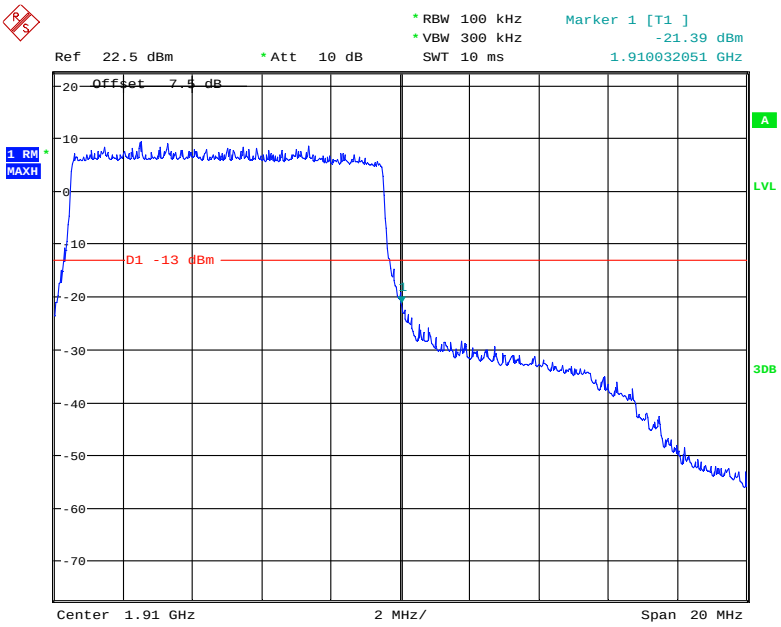
Date: 26.DEC.2018 23:54:01

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



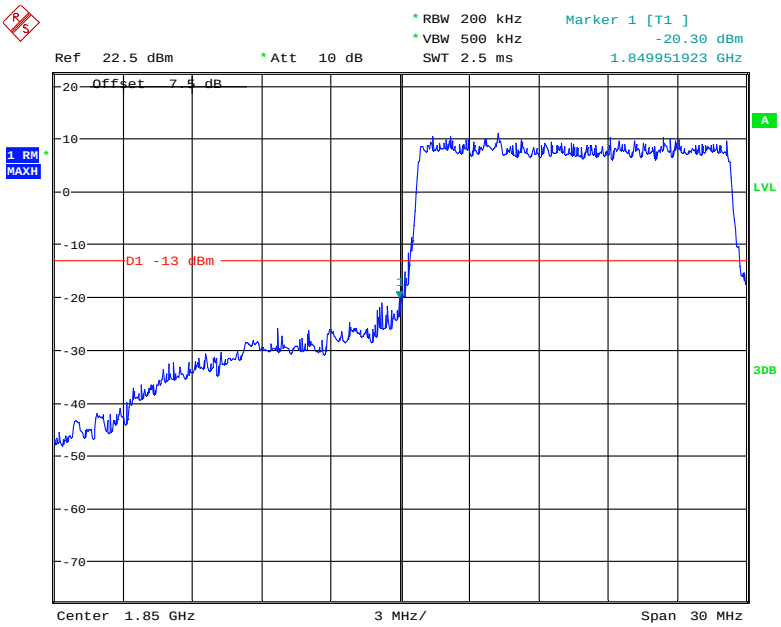
Date: 27.DEC.2018 00:00:28

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



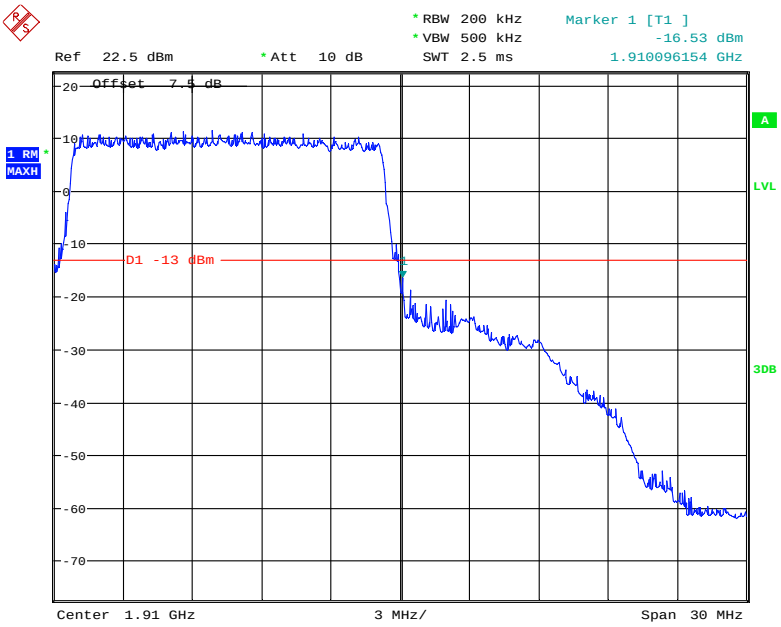
Date: 26.DEC.2018 23:52:56

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



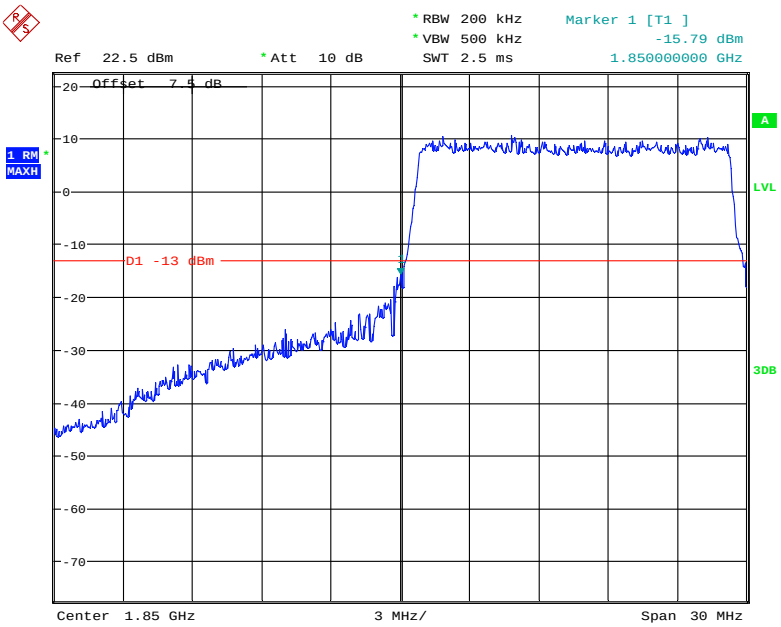
Date: 27.DEC.2018 00:03:07

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



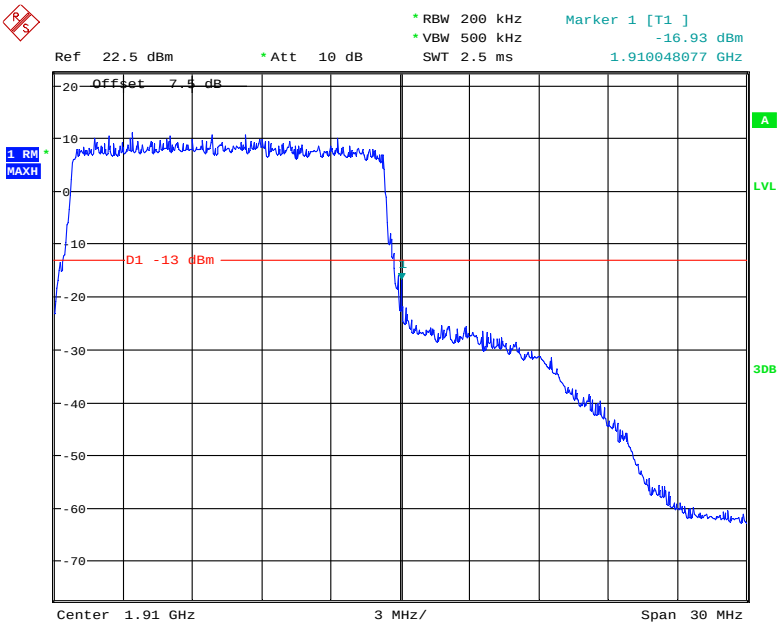
Date: 27.DEC.2018 00:08:25

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



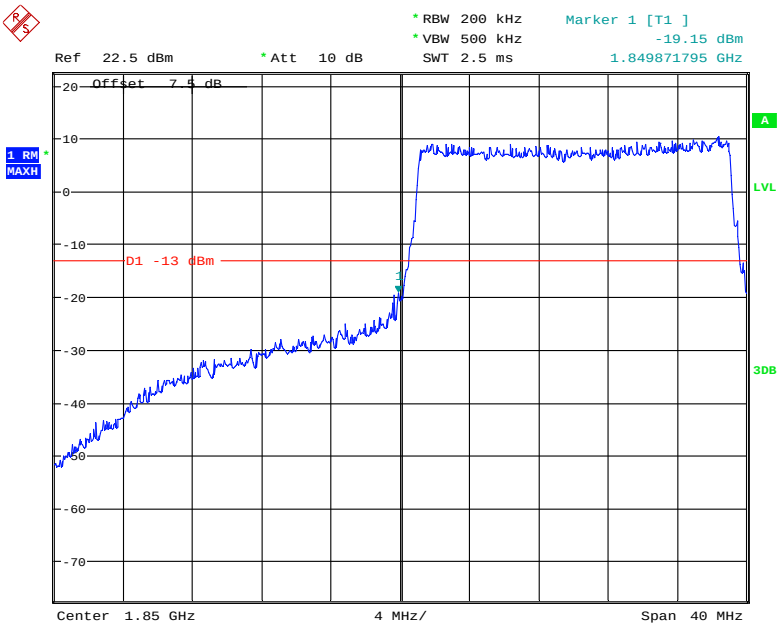
Date: 27.DEC.2018 00:04:52

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



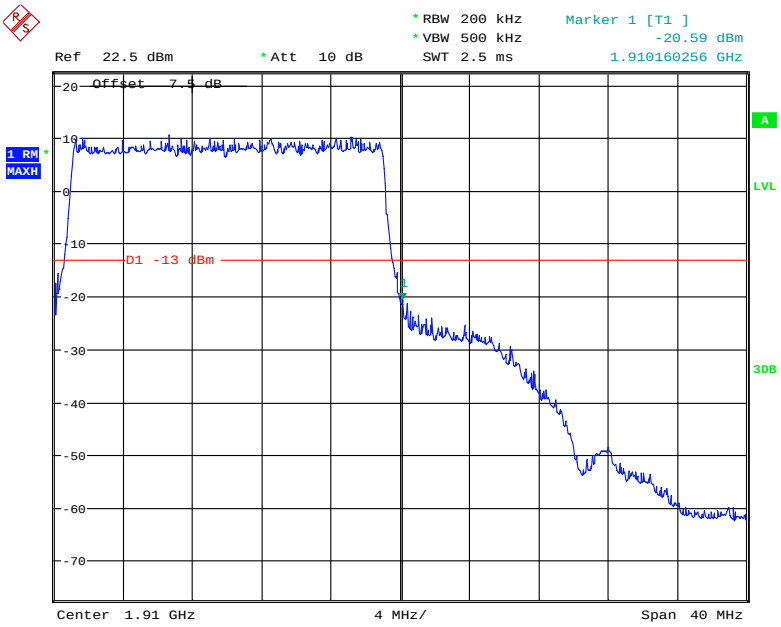
Date: 27.DEC.2018 00:05:38

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



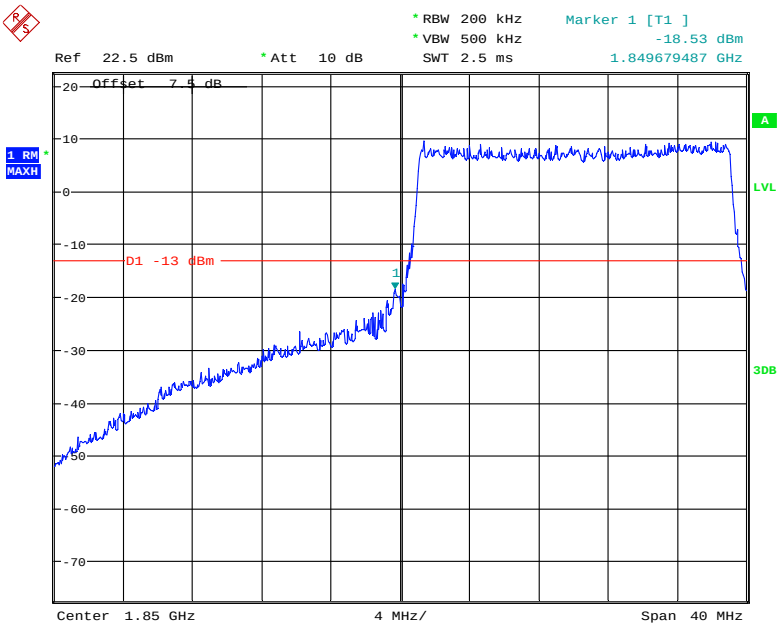
Date: 27.DEC.2018 00:16:07

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



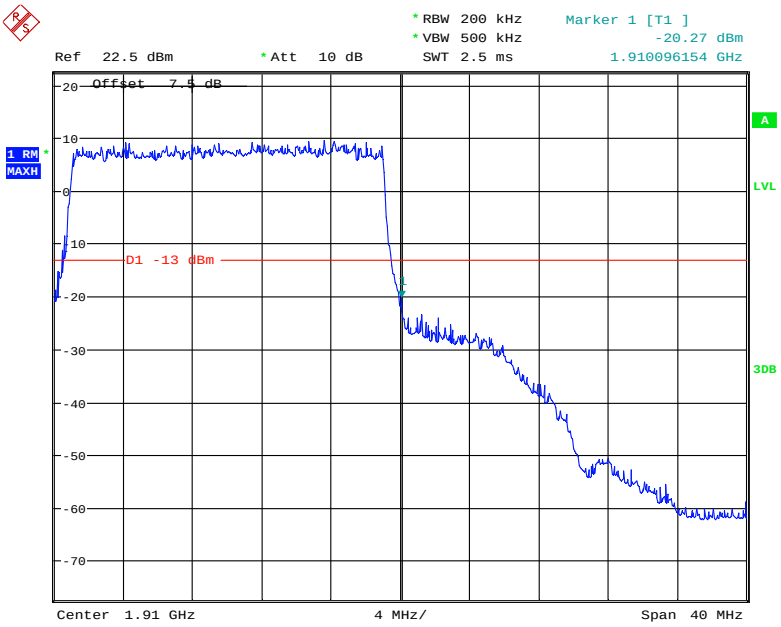
Date: 27.DEC.2018 00:09:45

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



Date: 27.DEC.2018 00:14:21

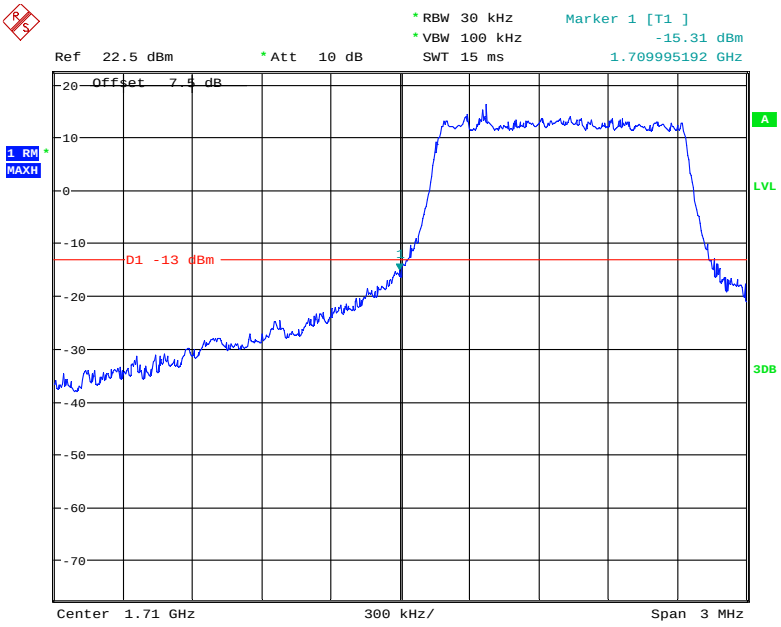
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 27.DEC.2018 00:11:31

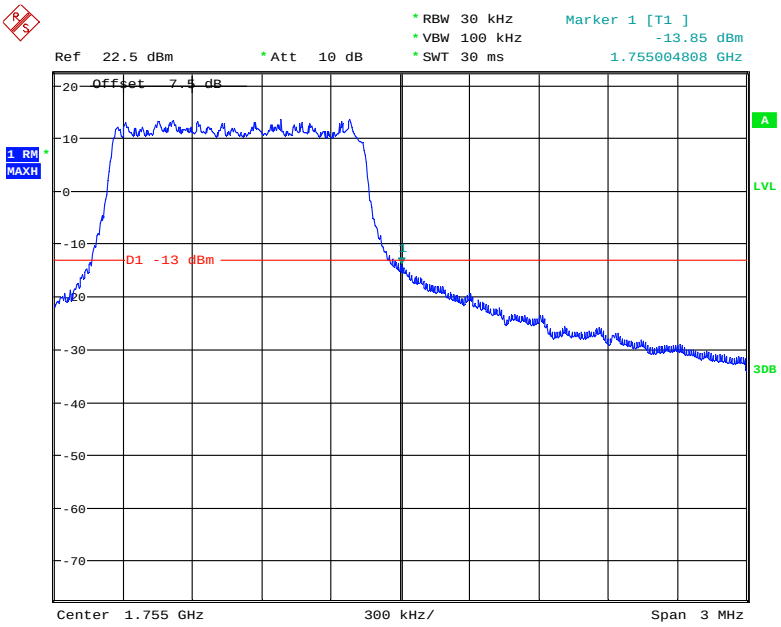
Band 4:

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



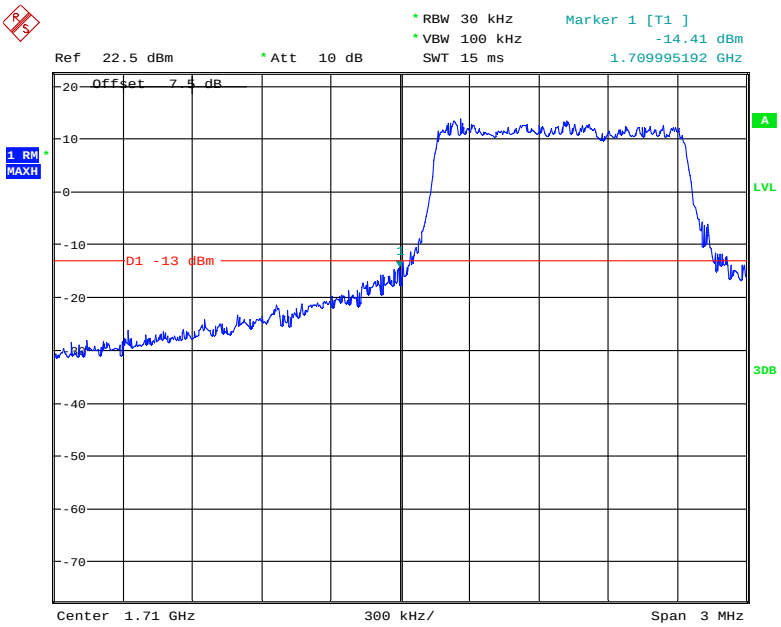
Date: 26.DEC.2018 22:48:00

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



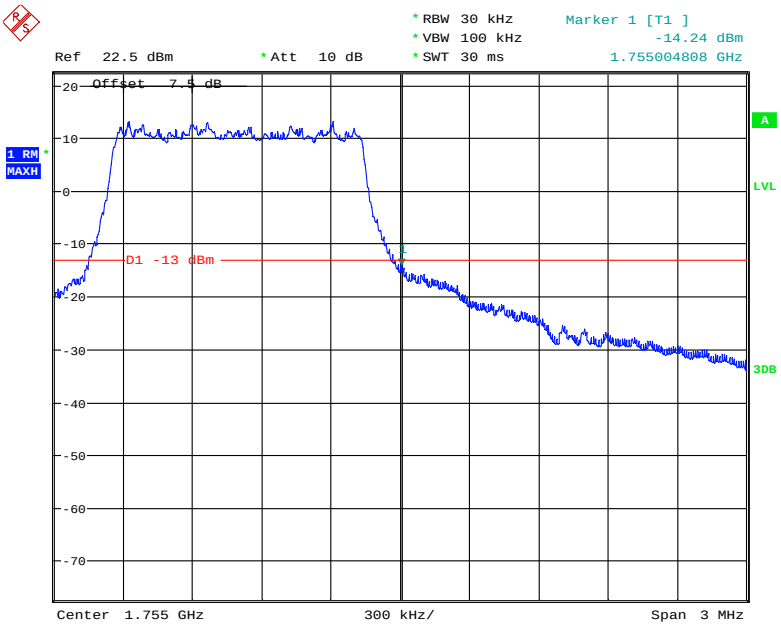
Date: 26.DEC.2018 22:59:46

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



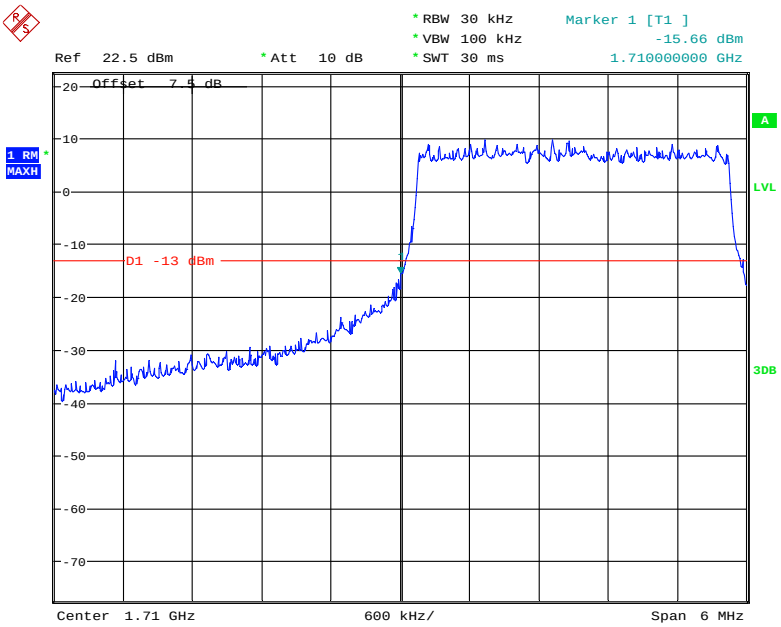
Date: 26.DEC.2018 22:50:11

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



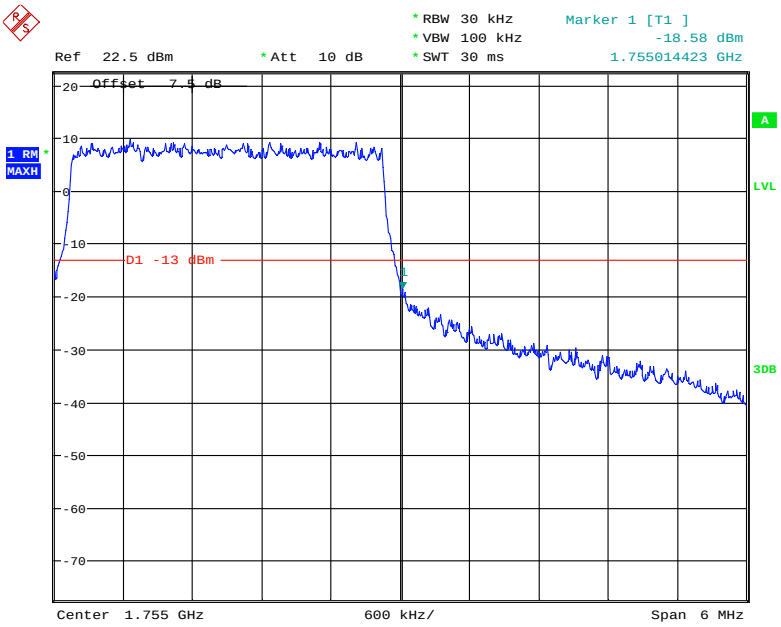
Date: 26.DEC.2018 22:54:11

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



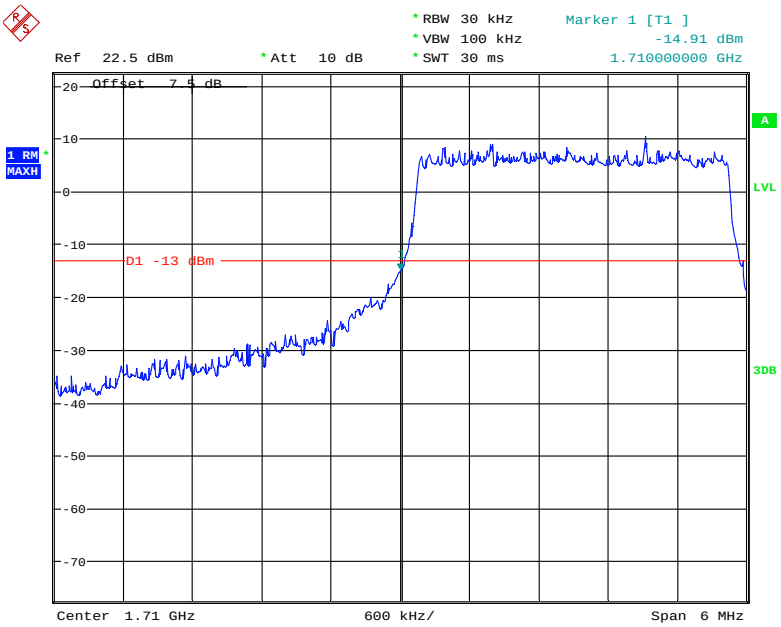
Date: 26.DEC.2018 23:03:18

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



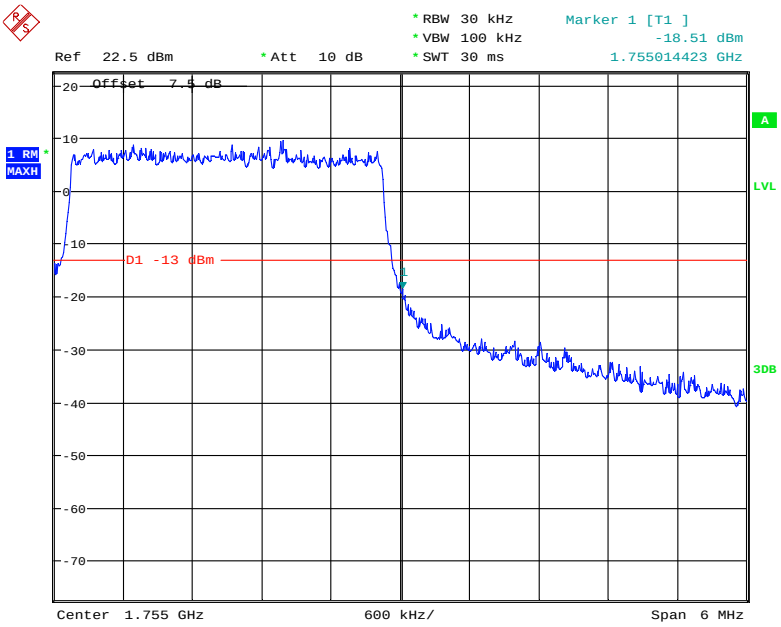
Date: 26.DEC.2018 23:01:16

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



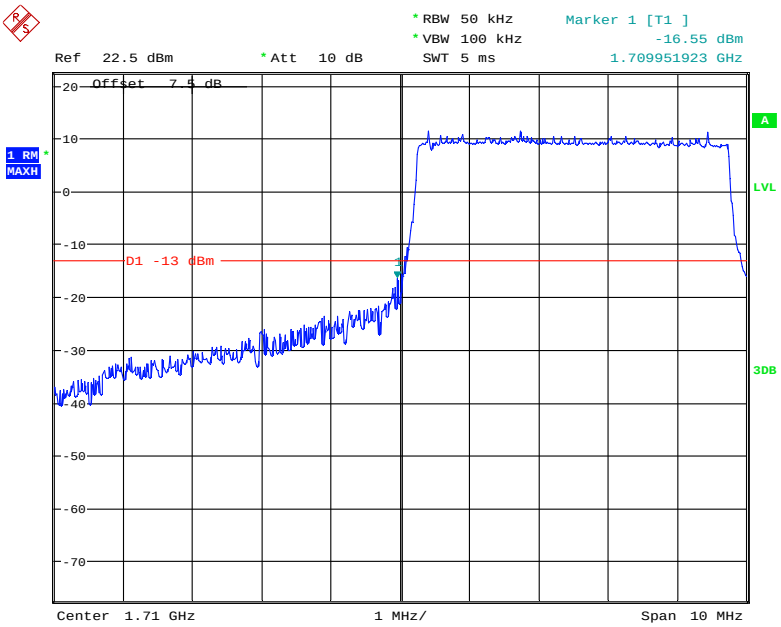
Date: 26.DEC.2018 23:02:36

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



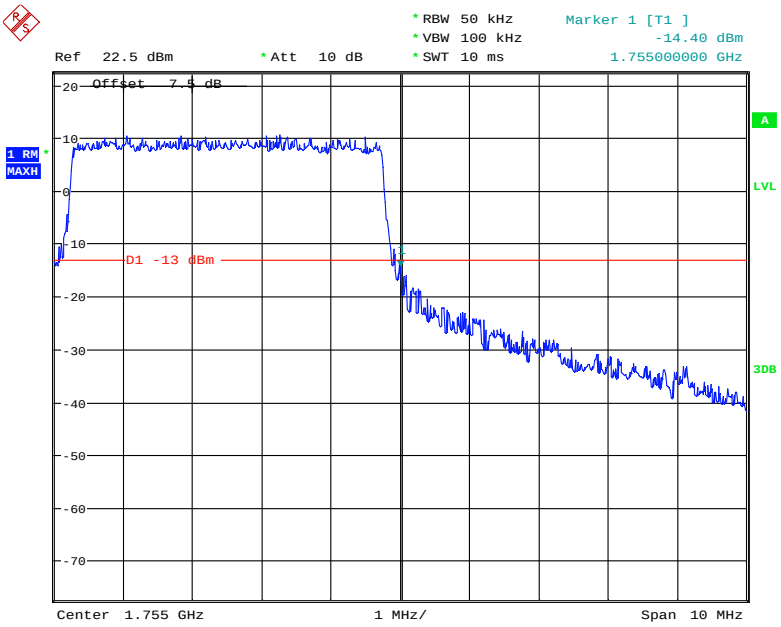
Date: 26.DEC.2018 23:01:45

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



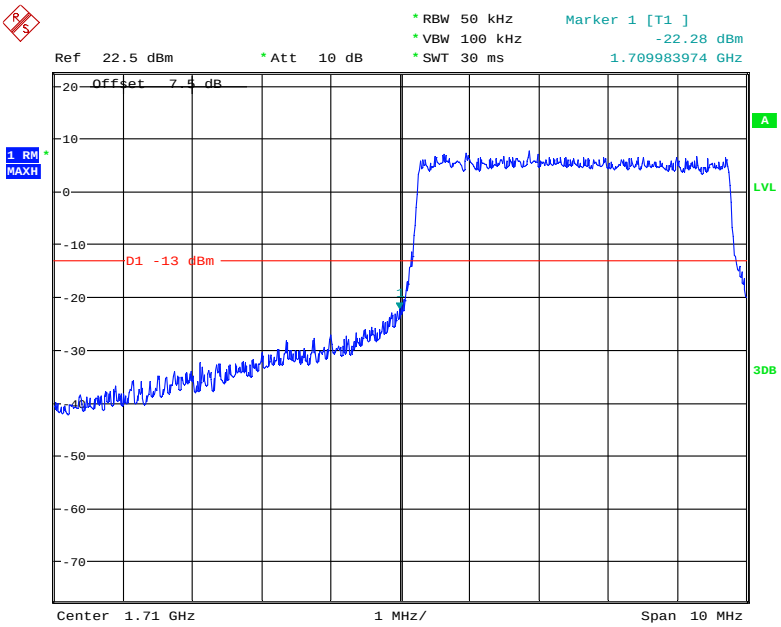
Date: 26.DEC.2018 23:05:20

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



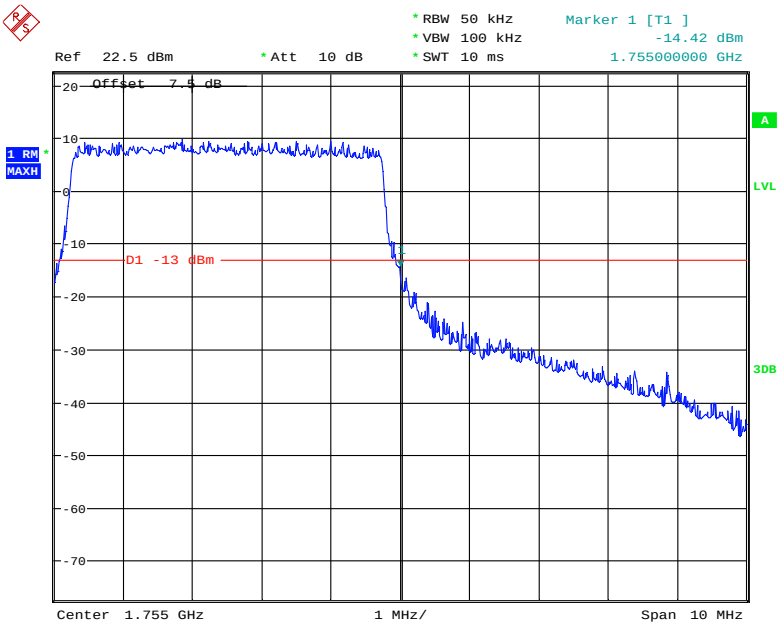
Date: 26.DEC.2018 23:07:10

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



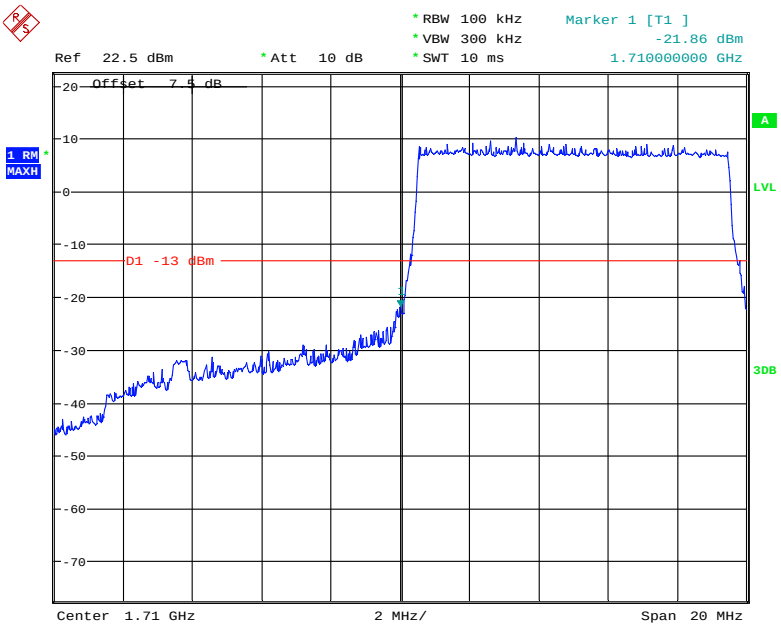
Date: 26.DEC.2018 23:04:26

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



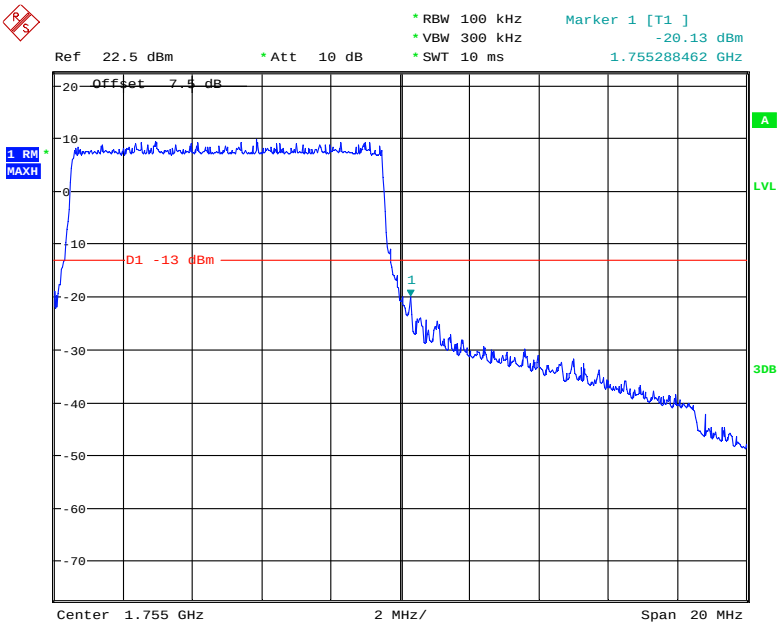
Date: 26.DEC.2018 23:08:07

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



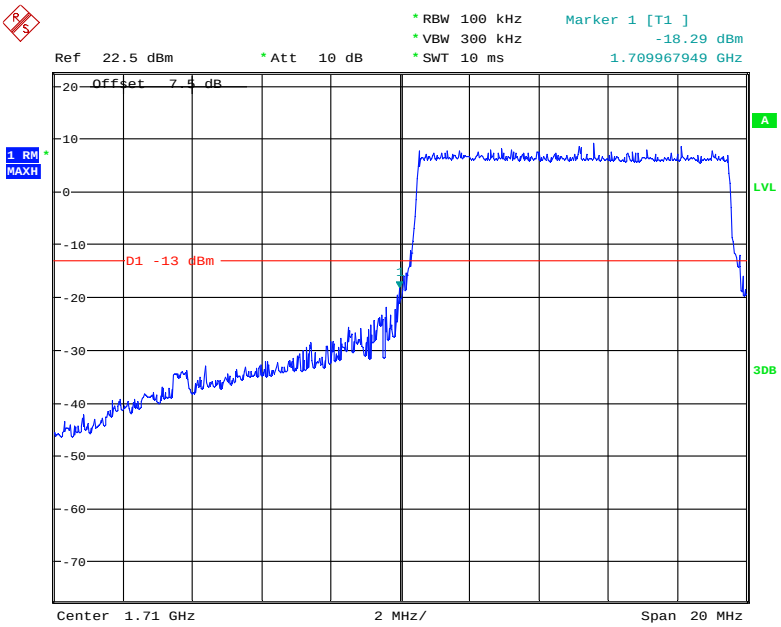
Date: 26.DEC.2018 23:13:46

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



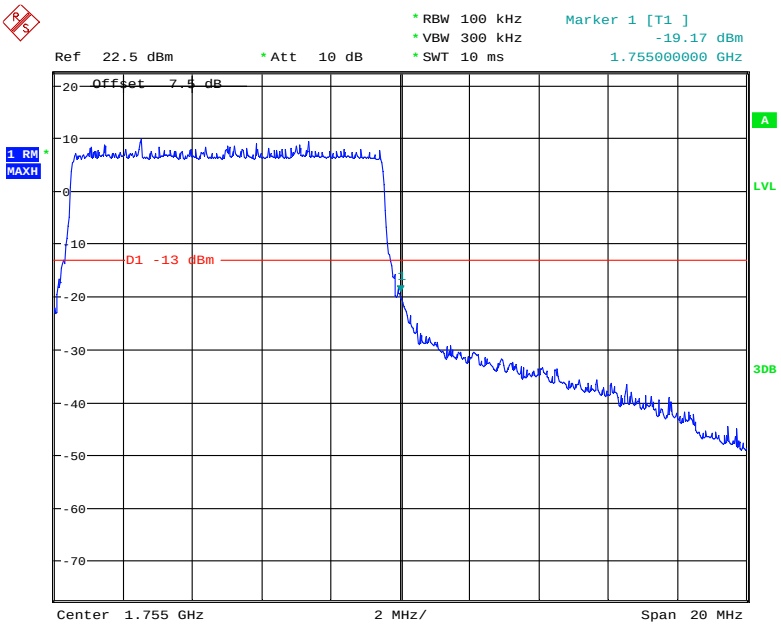
Date: 26.DEC.2018 23:12:42

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



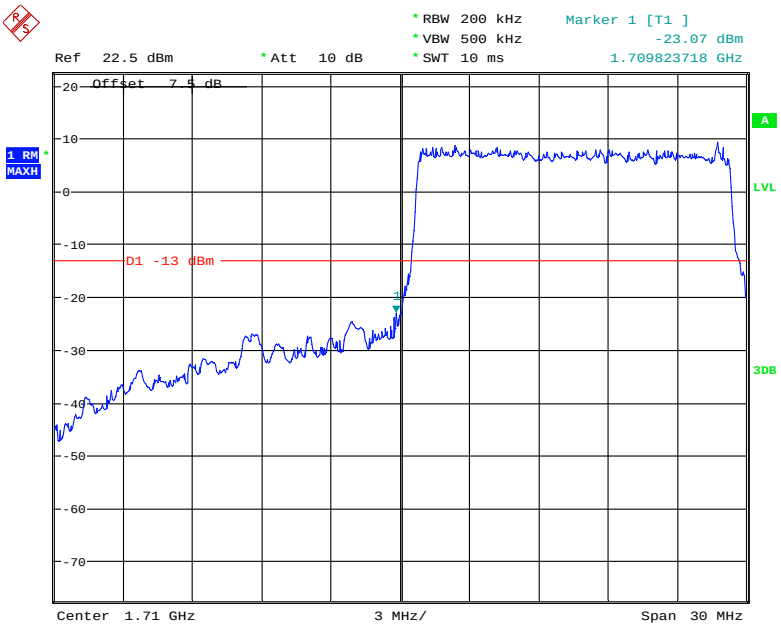
Date: 26.DEC.2018 23:14:27

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



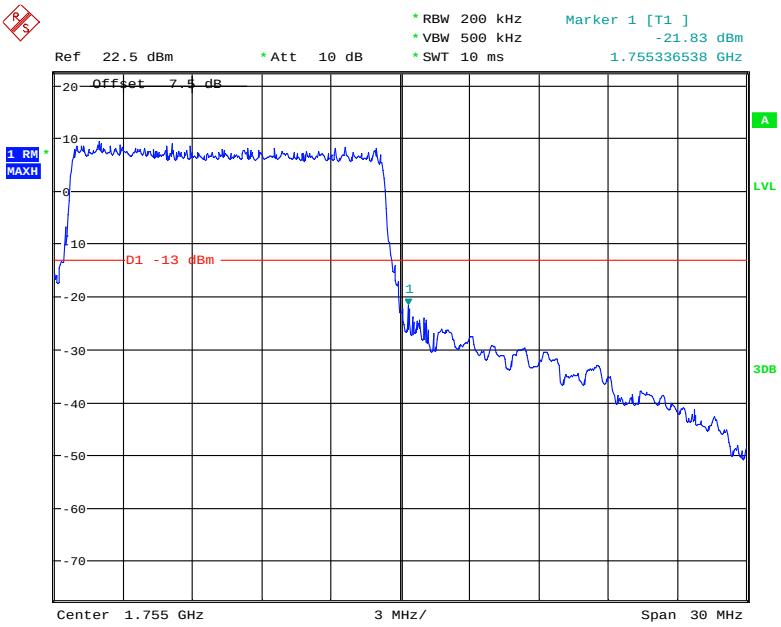
Date: 26.DEC.2018 23:10:46

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



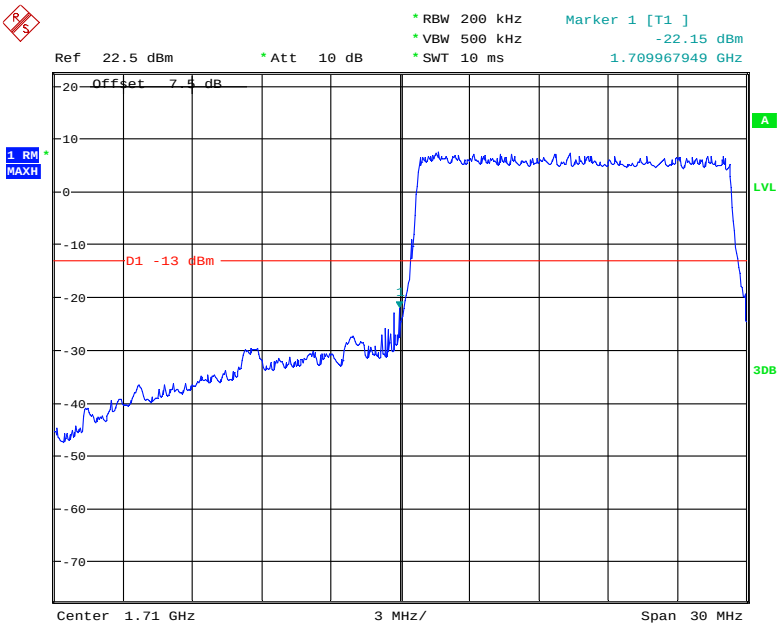
Date: 26.DEC.2018 23:15:48

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



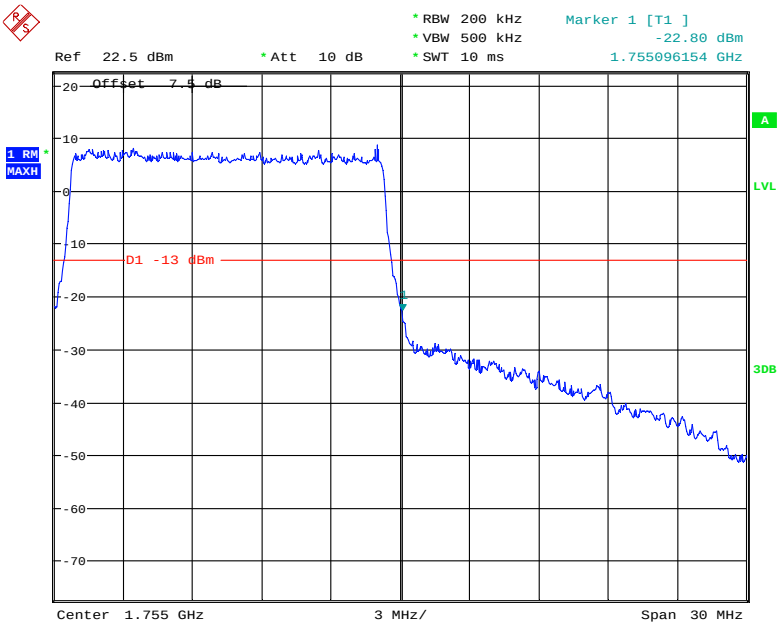
Date: 26.DEC.2018 23:18:25

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



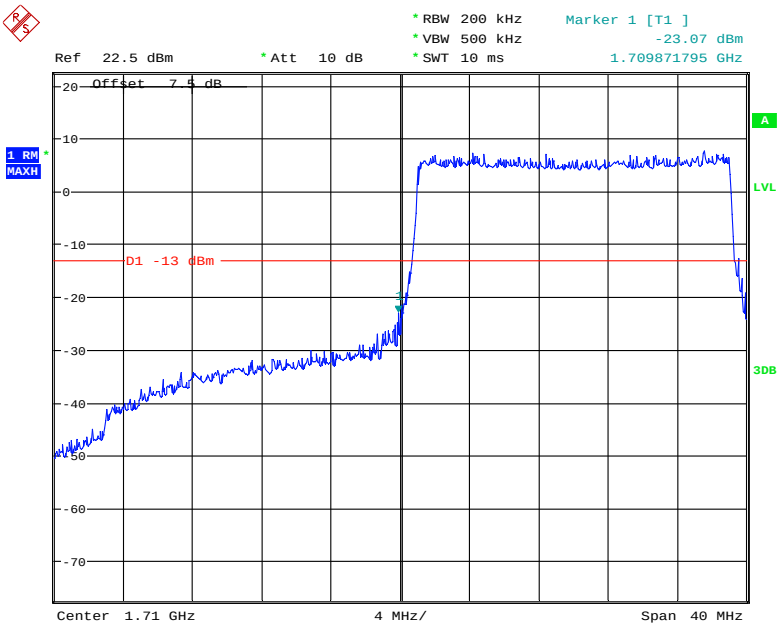
Date: 26.DEC.2018 23:16:37

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



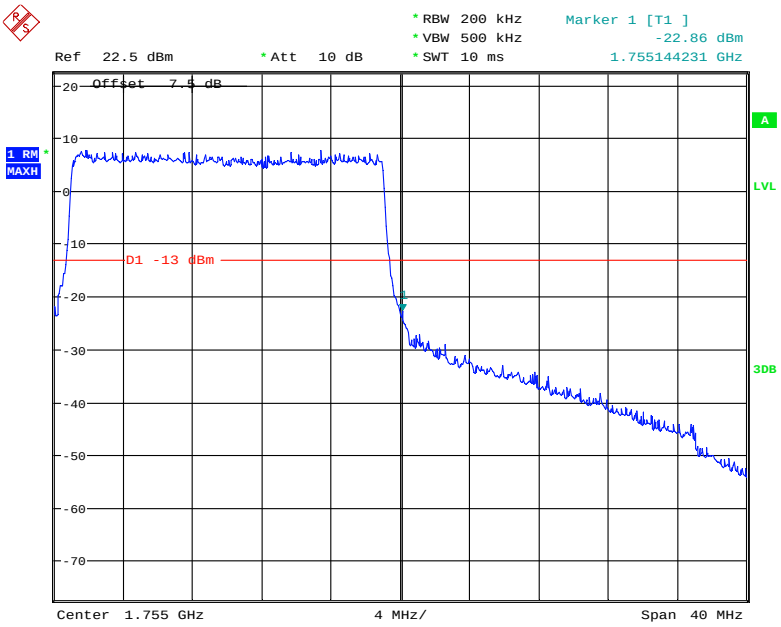
Date: 26.DEC.2018 23:17:49

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



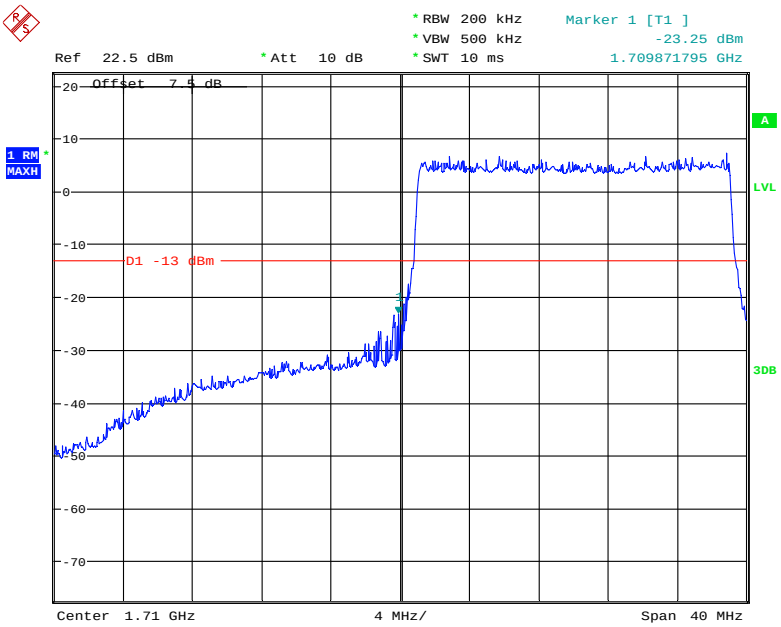
Date: 26.DEC.2018 23:23:48

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



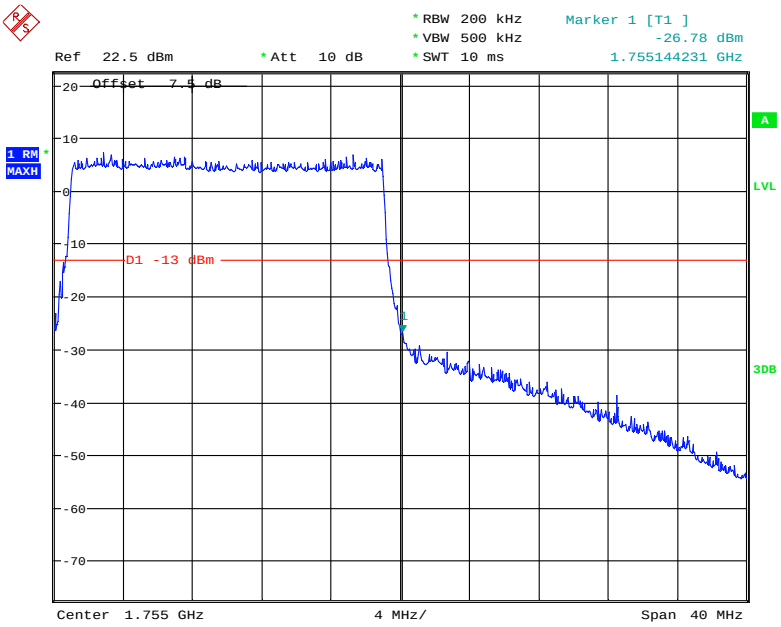
Date: 26.DEC.2018 23:20:55

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



Date: 26.DEC.2018 23:23:04

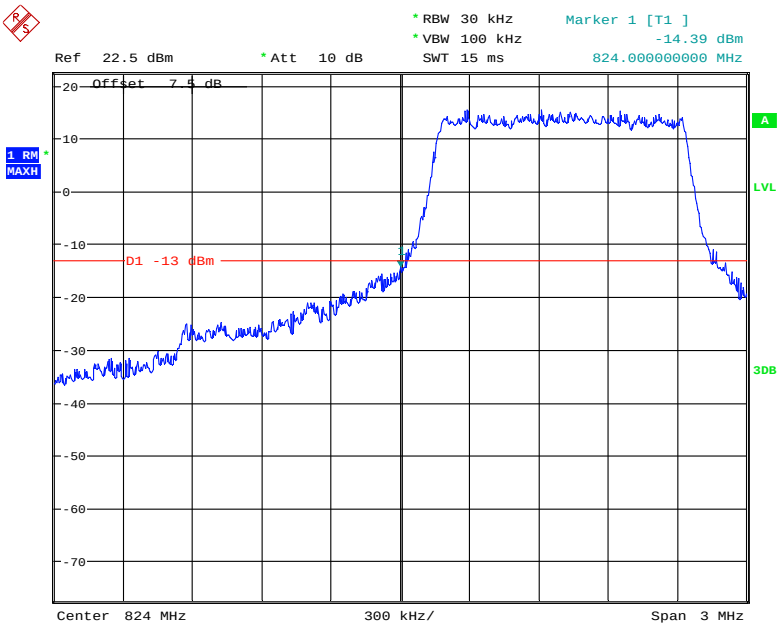
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 26.DEC.2018 23:22:08

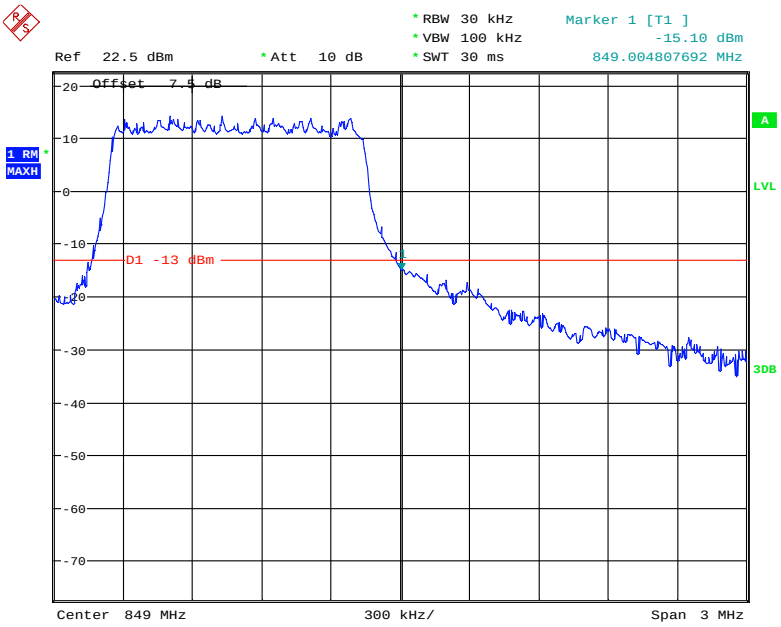
Band 5:

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



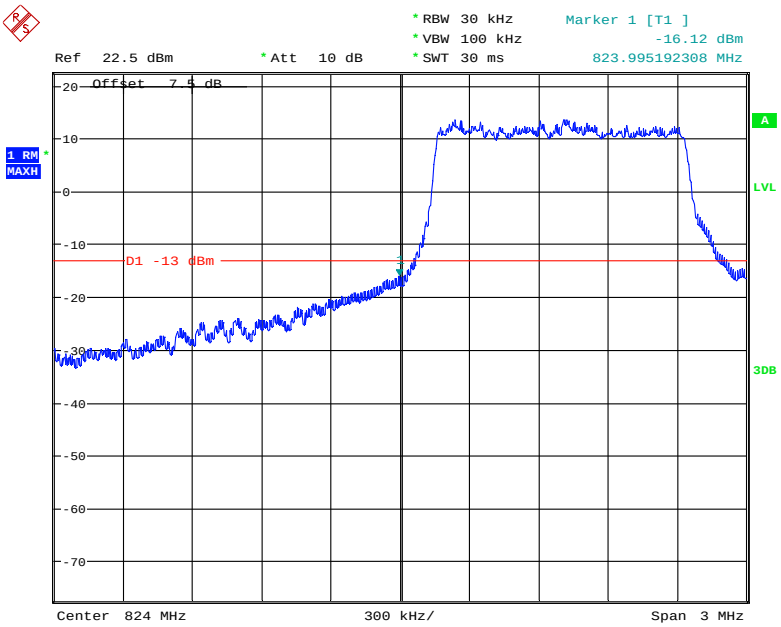
Date: 26.DEC.2018 22:23:04

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



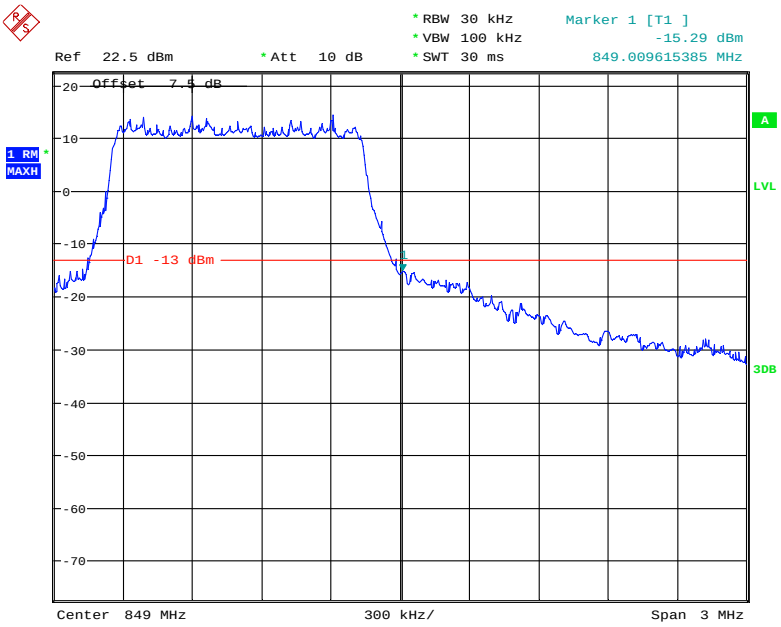
Date: 26.DEC.2018 22:31:09

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



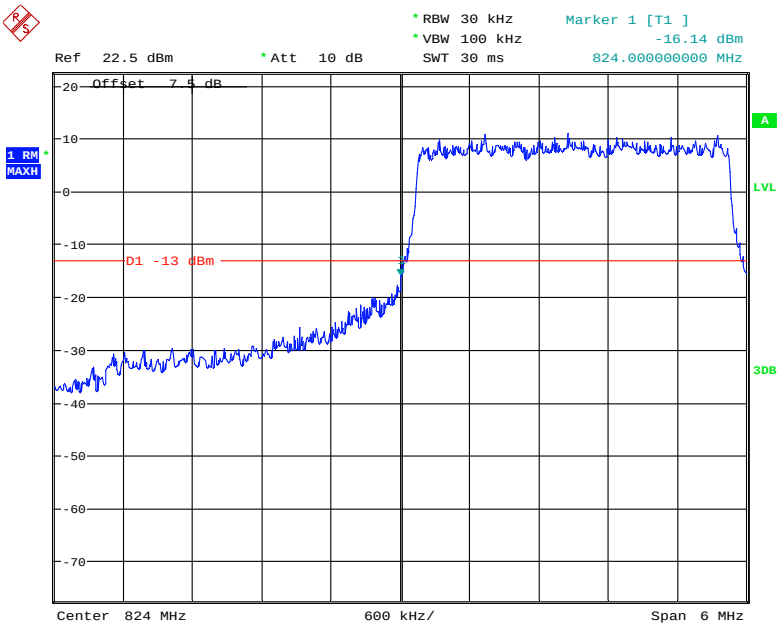
Date: 26.DEC.2018 22:29:19

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



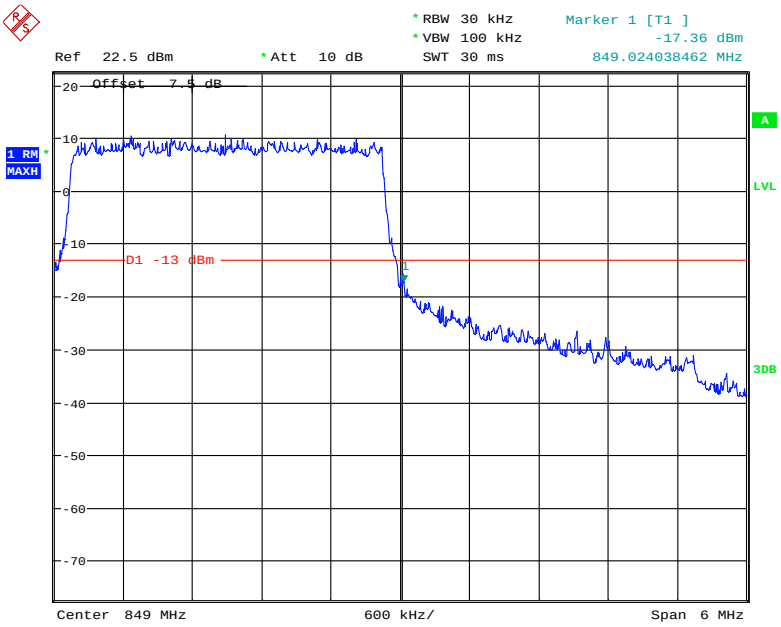
Date: 26.DEC.2018 22:30:31

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



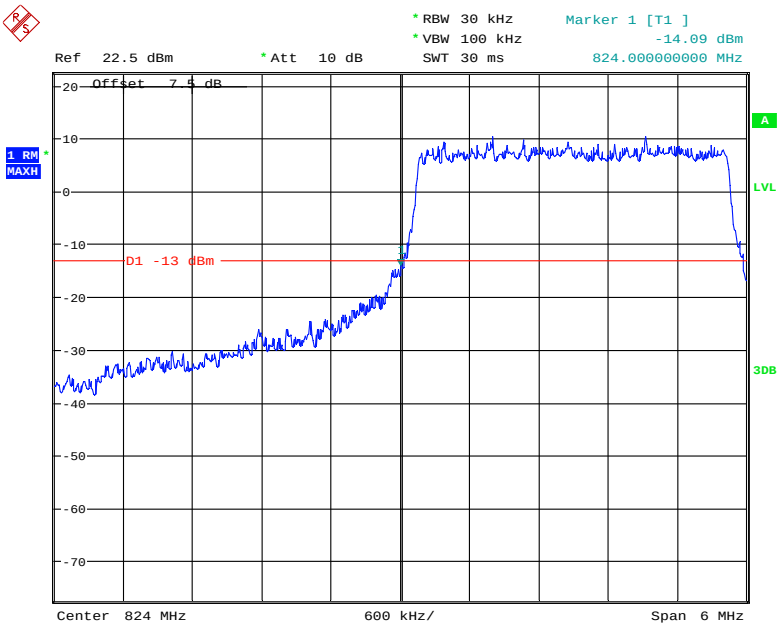
Date: 26.DEC.2018 22:34:46

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



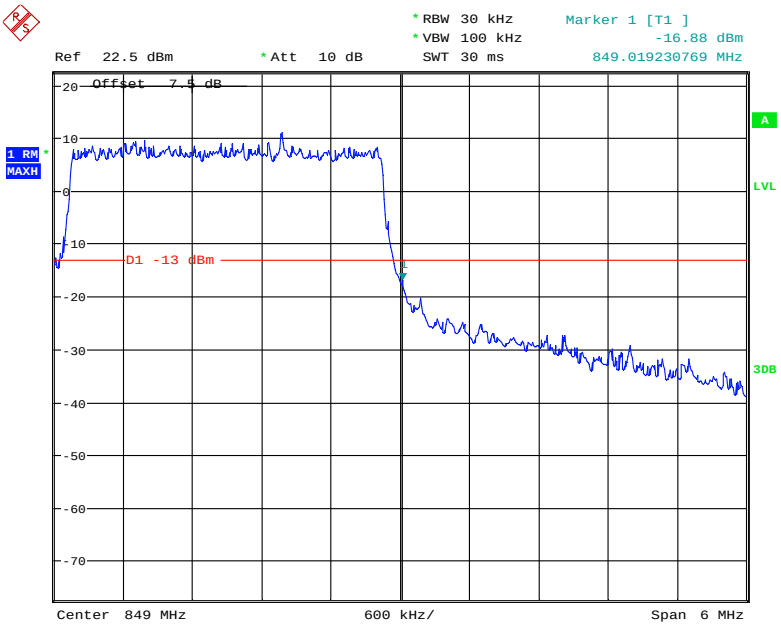
Date: 26.DEC.2018 22:32:03

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



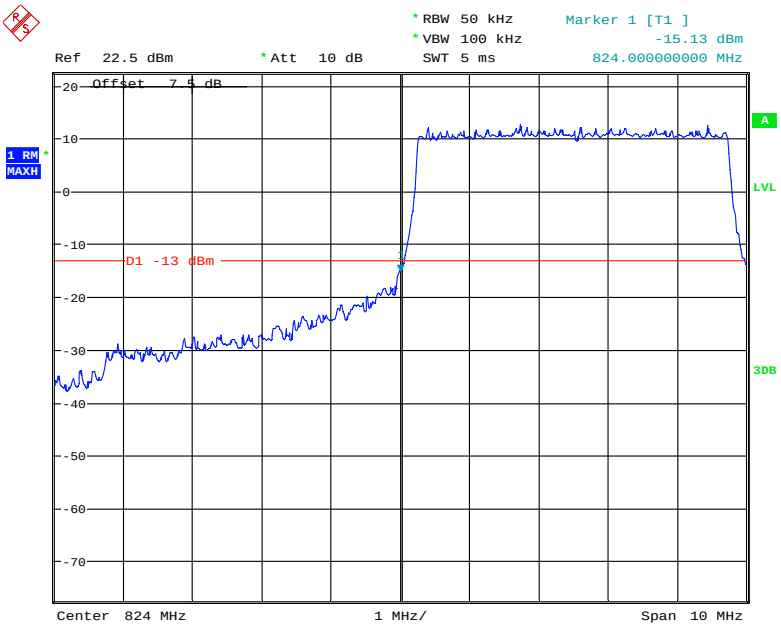
Date: 26.DEC.2018 22:34:16

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



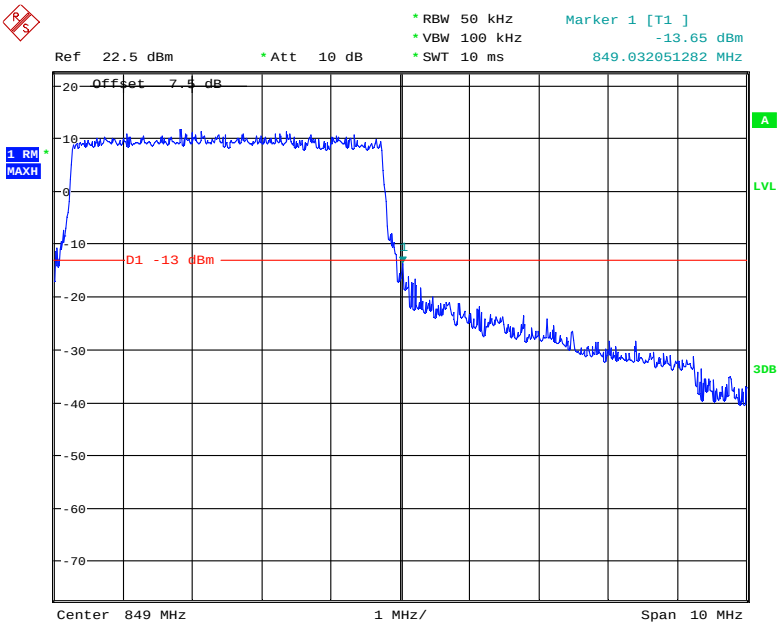
Date: 26.DEC.2018 22:32:58

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



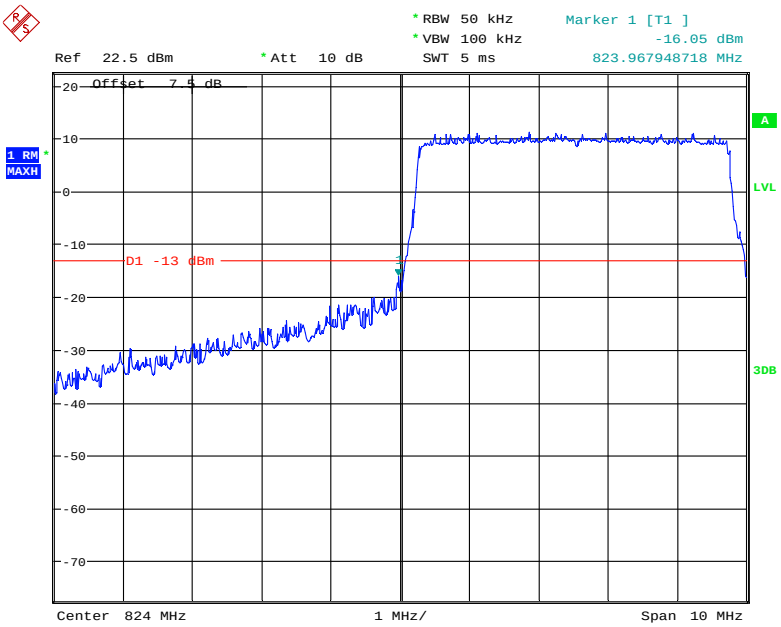
Date: 26.DEC.2018 22:37:21

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



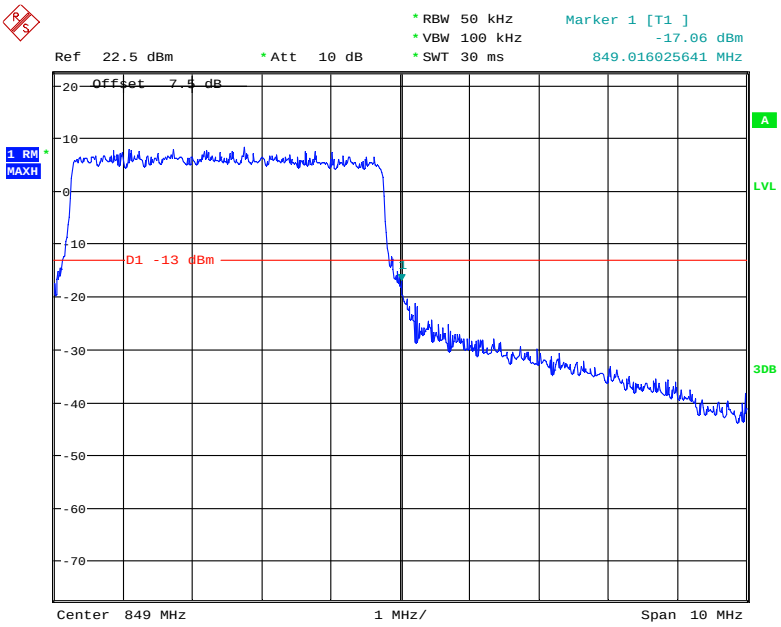
Date: 26.DEC.2018 22:38:31

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



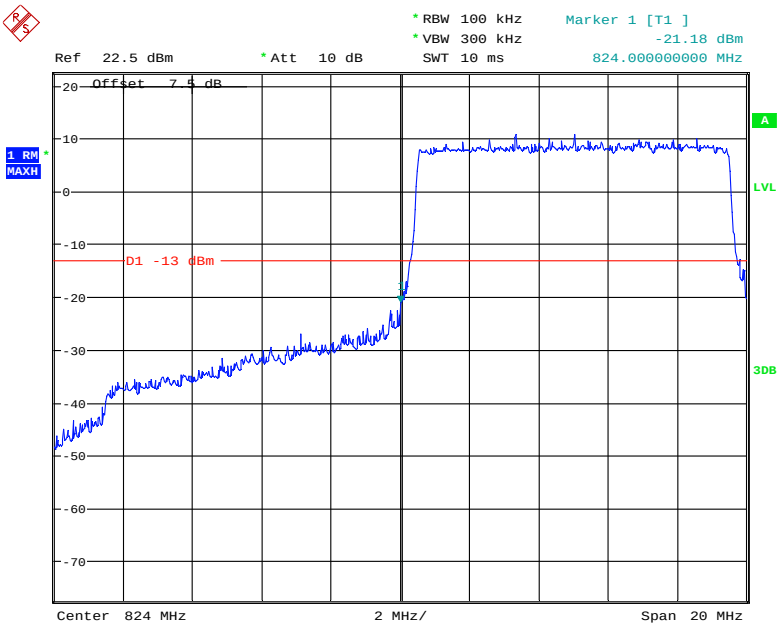
Date: 26.DEC.2018 22:35:37

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



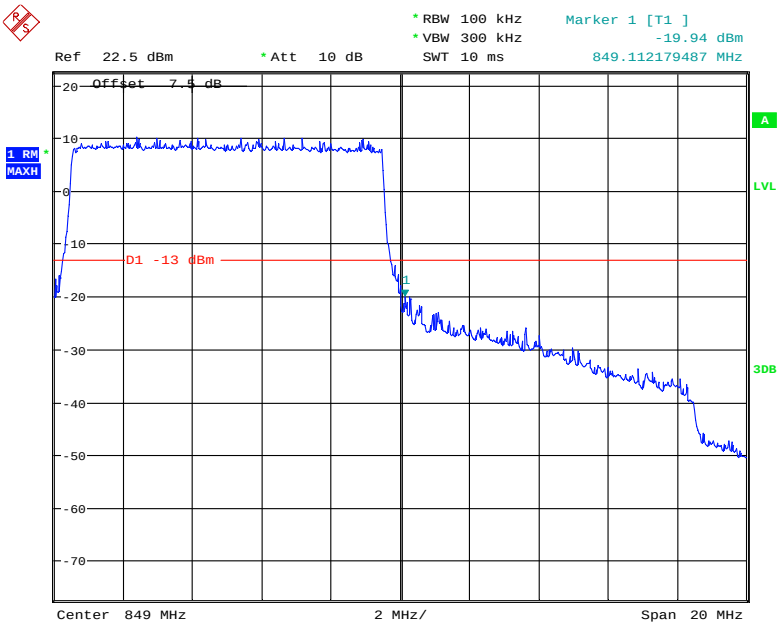
Date: 26.DEC.2018 22:39:27

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



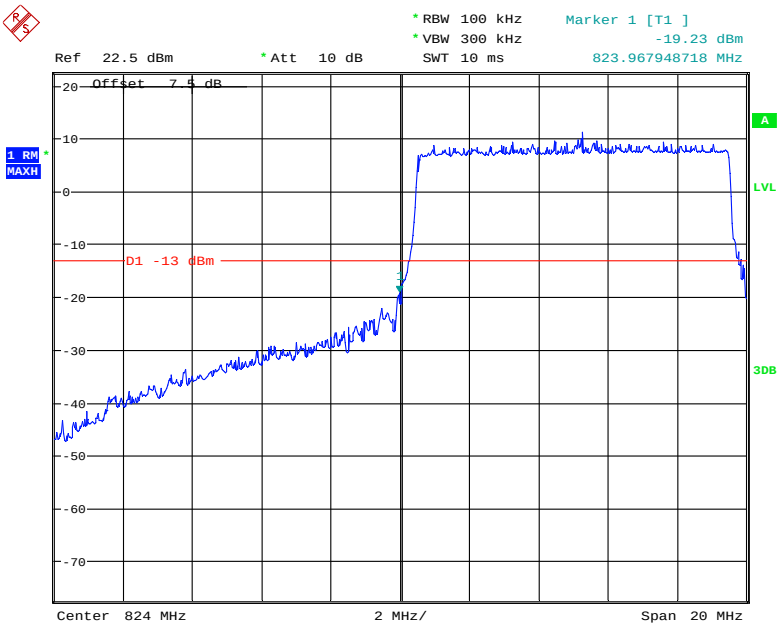
Date: 26.DEC.2018 22:42:53

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



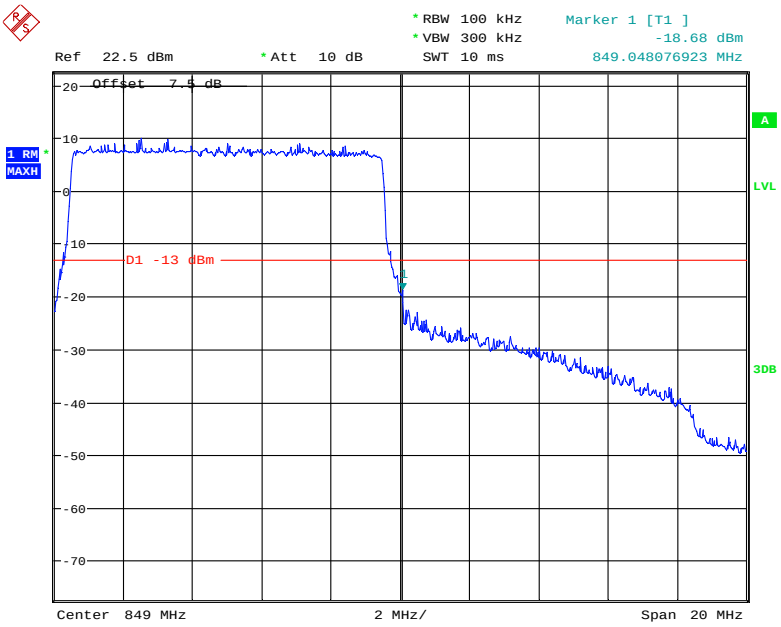
Date: 26.DEC.2018 22:41:53

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



Date: 26.DEC.2018 22:44:05

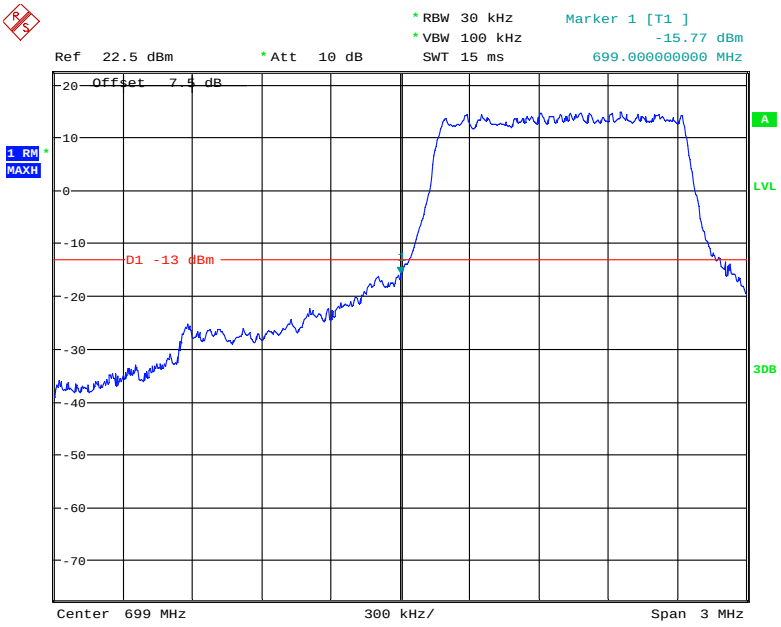
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 26.DEC.2018 22:41:15

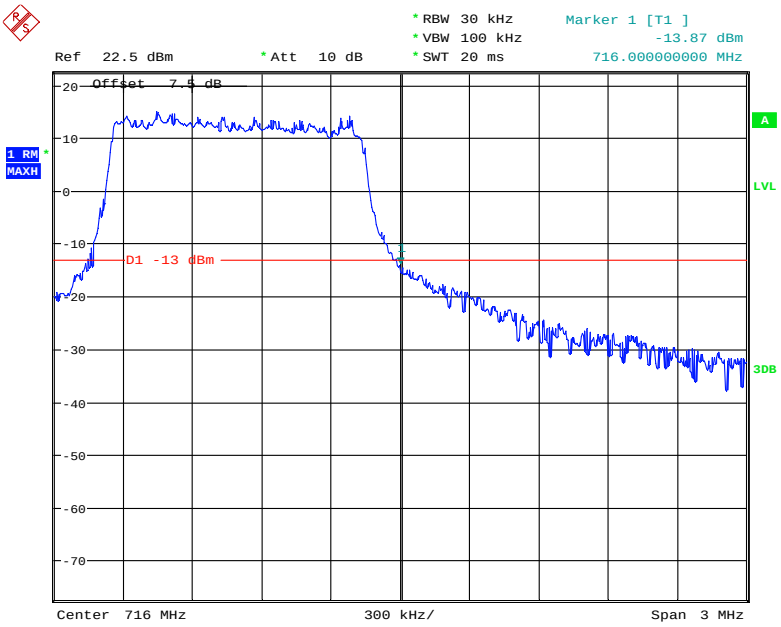
Band 12:

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



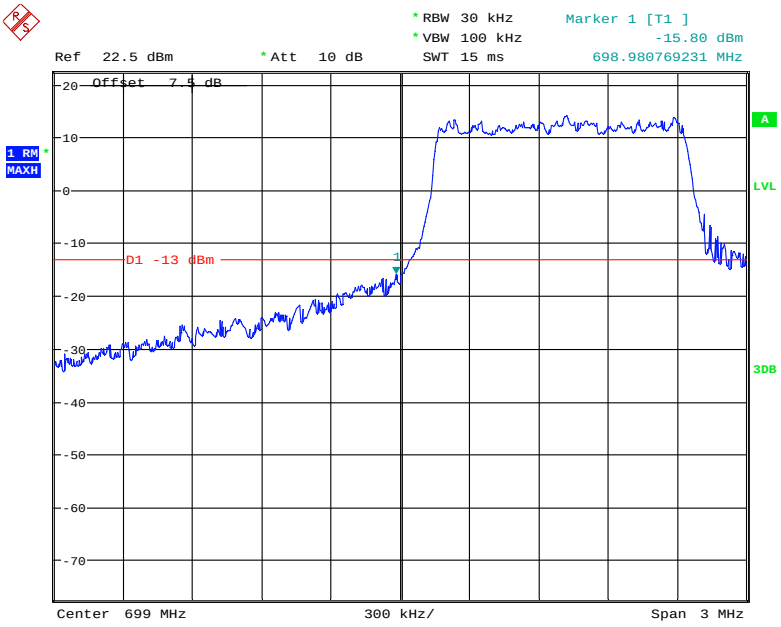
Date: 26.DEC.2018 21:51:23

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



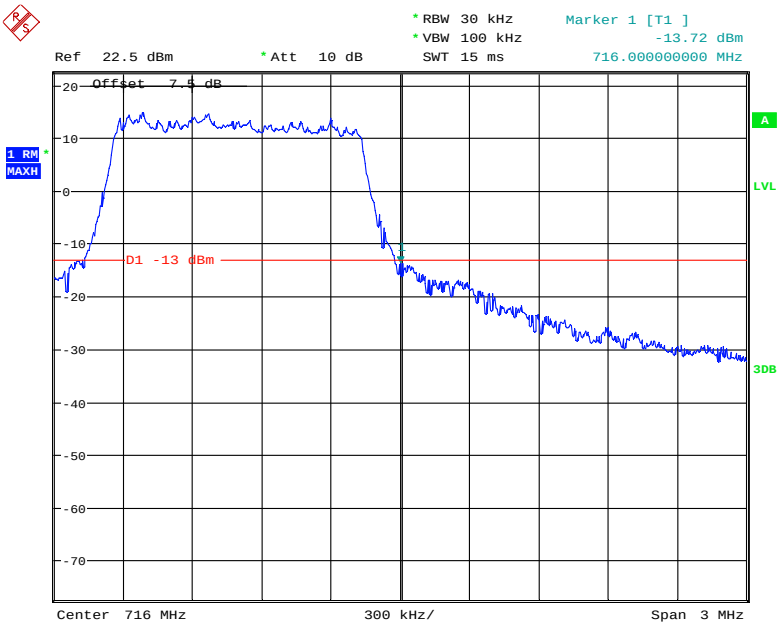
Date: 26.DEC.2018 21:57:17

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



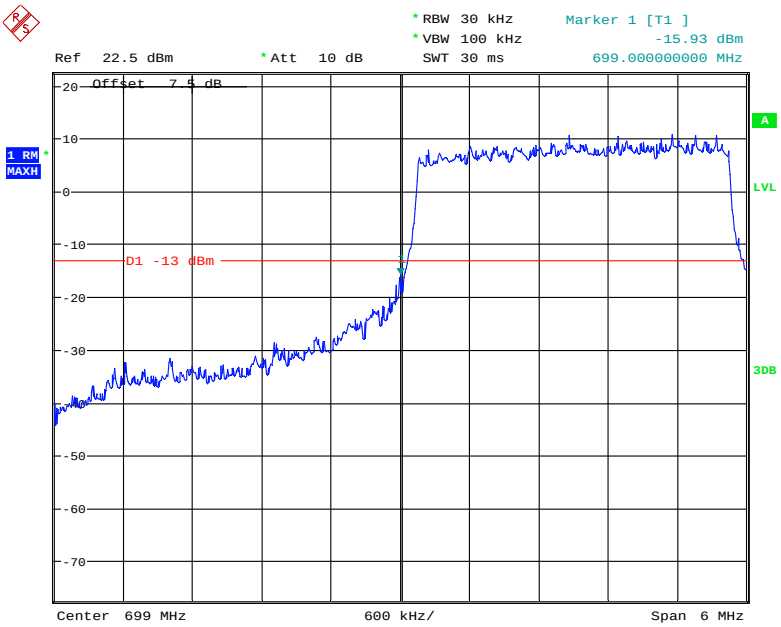
Date: 26.DEC.2018 21:52:20

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



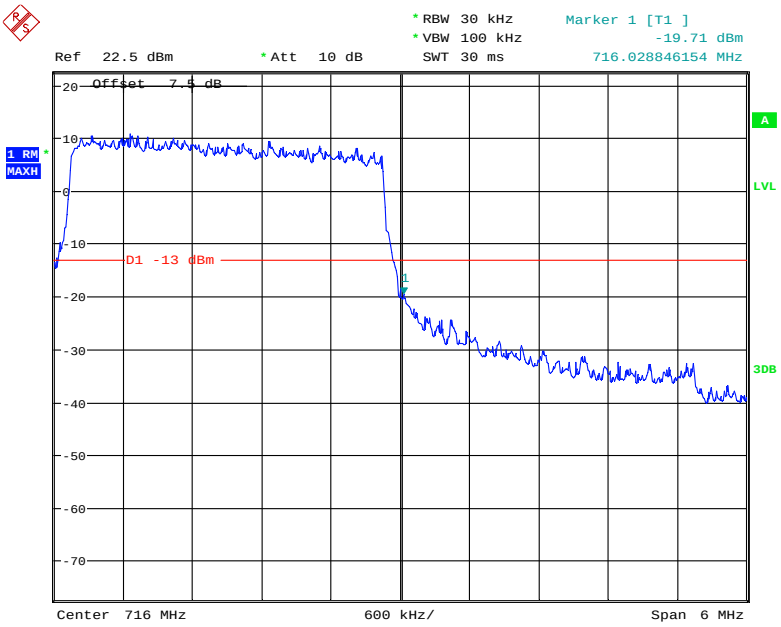
Date: 26.DEC.2018 21:55:56

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



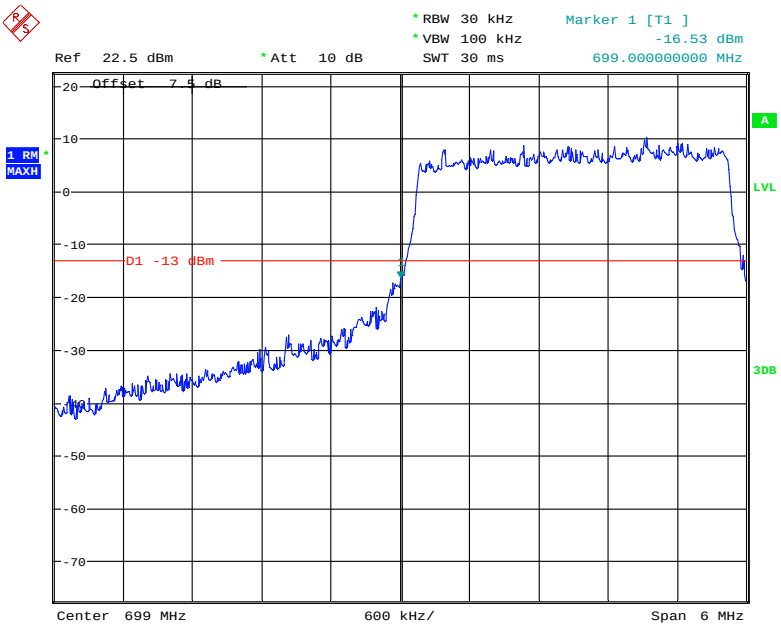
Date: 26.DEC.2018 22:01:15

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



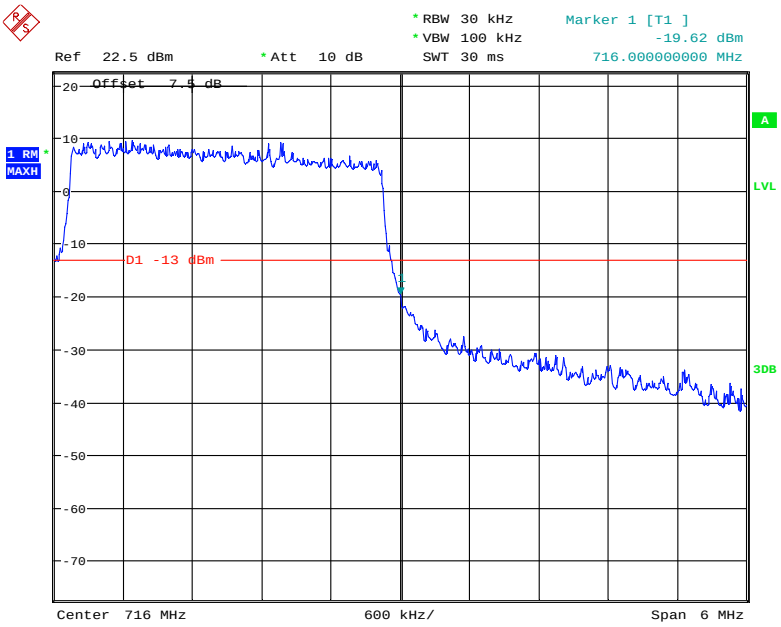
Date: 26.DEC.2018 21:58:24

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



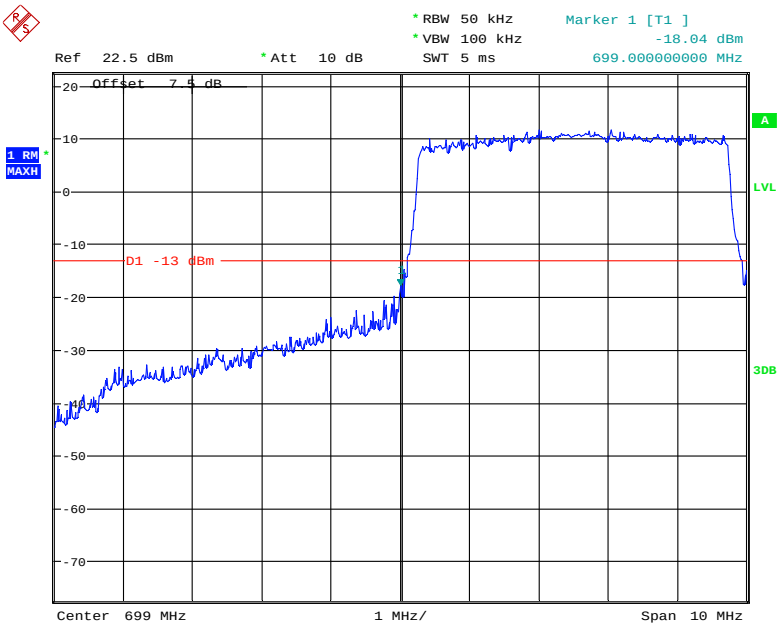
Date: 26.DEC.2018 22:00:41

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



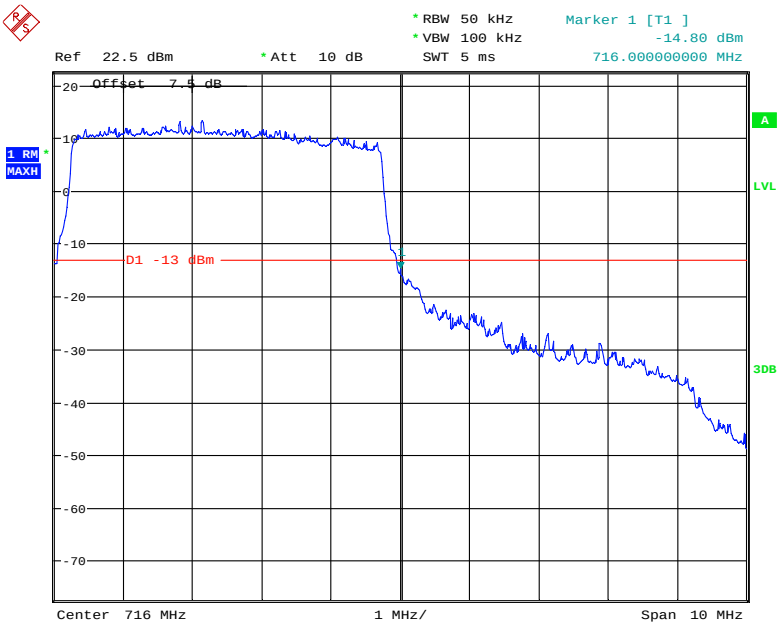
Date: 26.DEC.2018 21:59:55

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



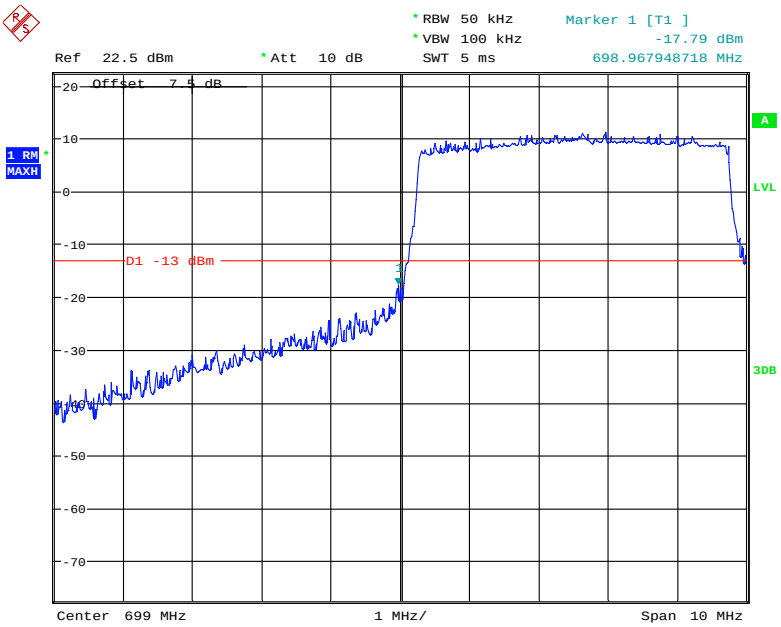
Date: 26.DEC.2018 22:03:32

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



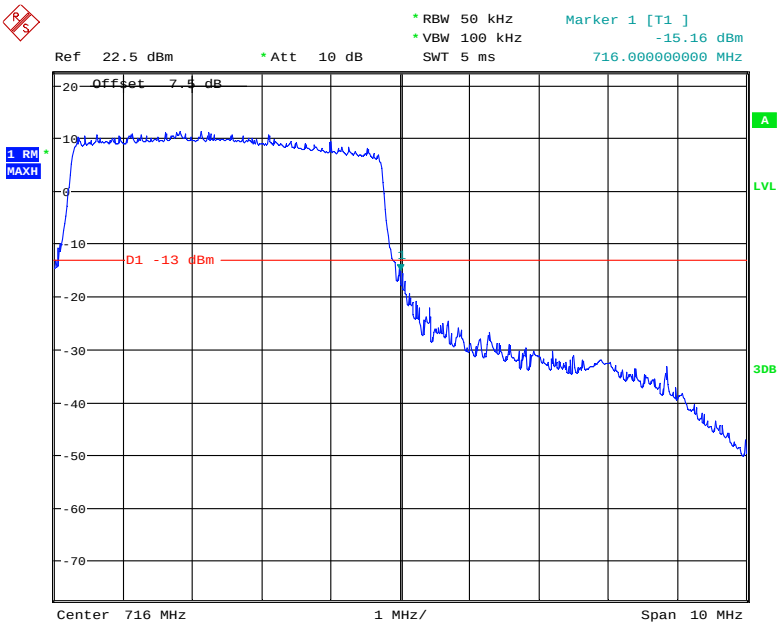
Date: 26.DEC.2018 22:05:12

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



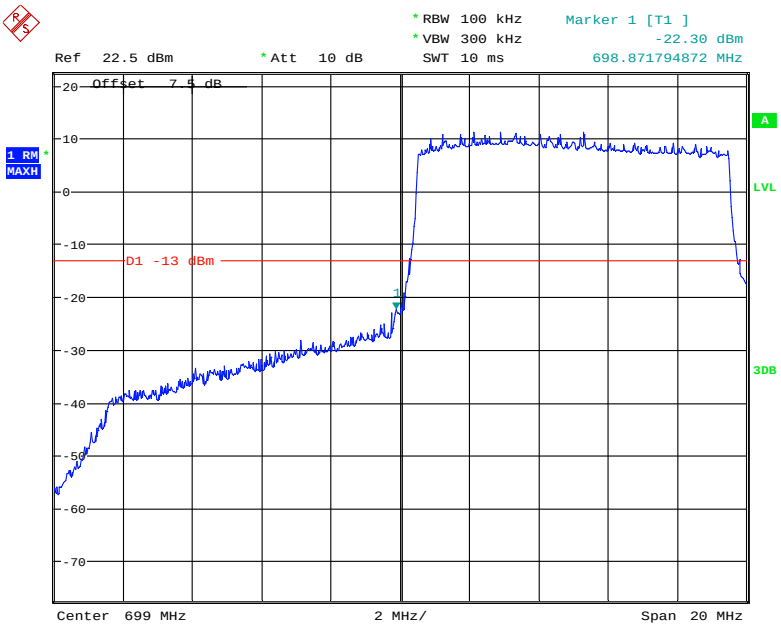
Date: 26.DEC.2018 22:02:25

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



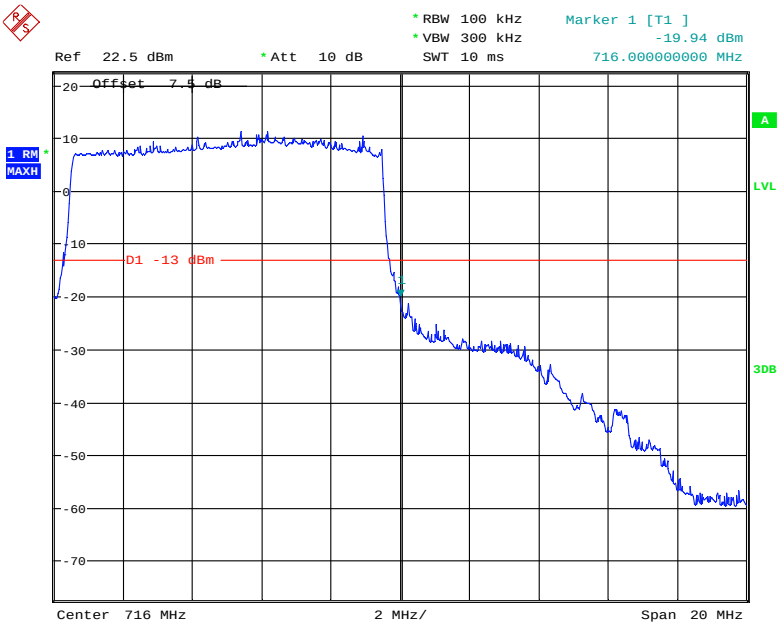
Date: 26.DEC.2018 22:05:50

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



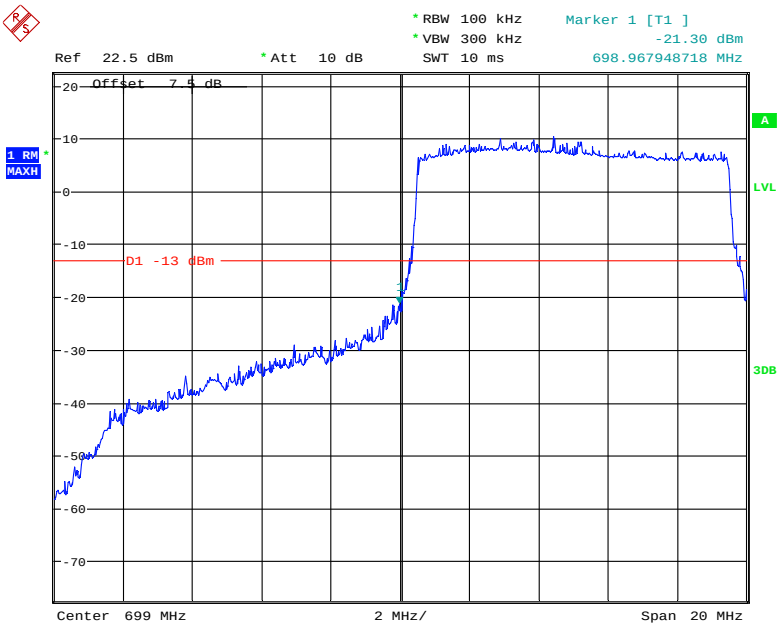
Date: 26.DEC.2018 22:12:34

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



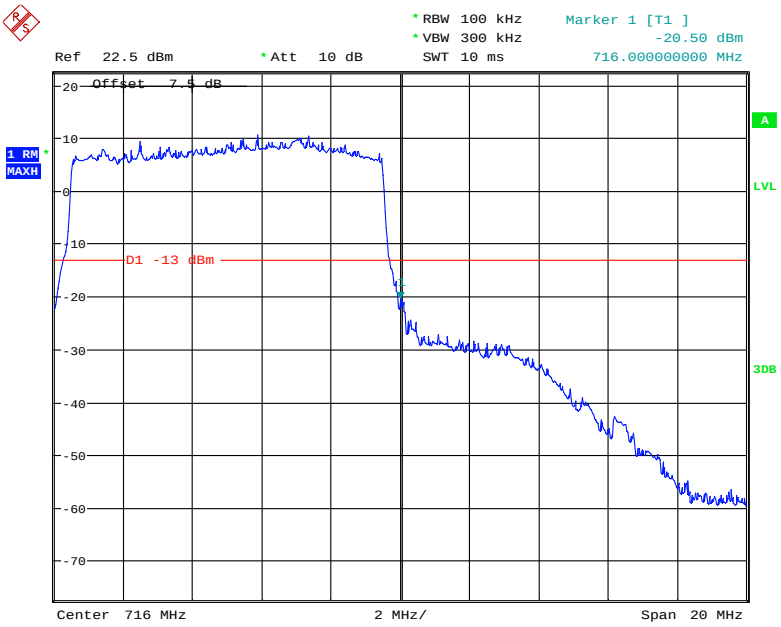
Date: 26.DEC.2018 22:09:49

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



Date: 26.DEC.2018 22:13:48

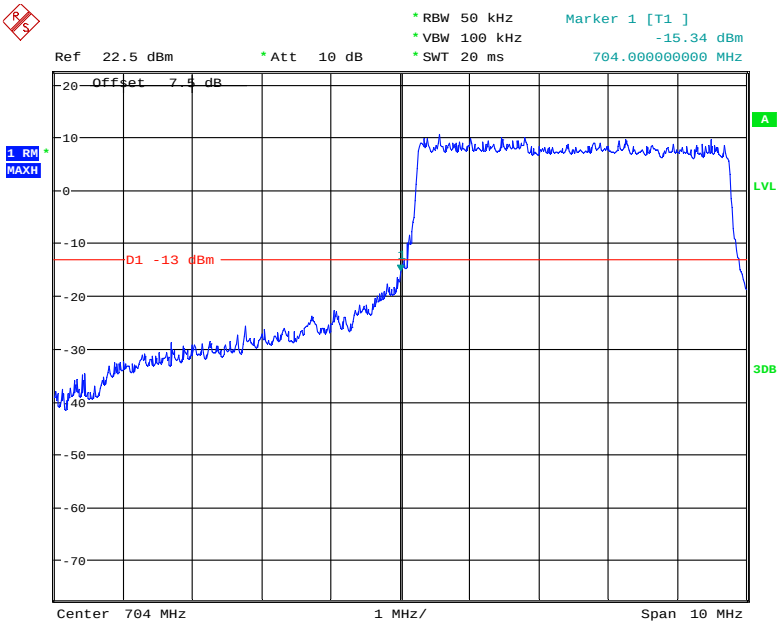
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 26.DEC.2018 22:08:23

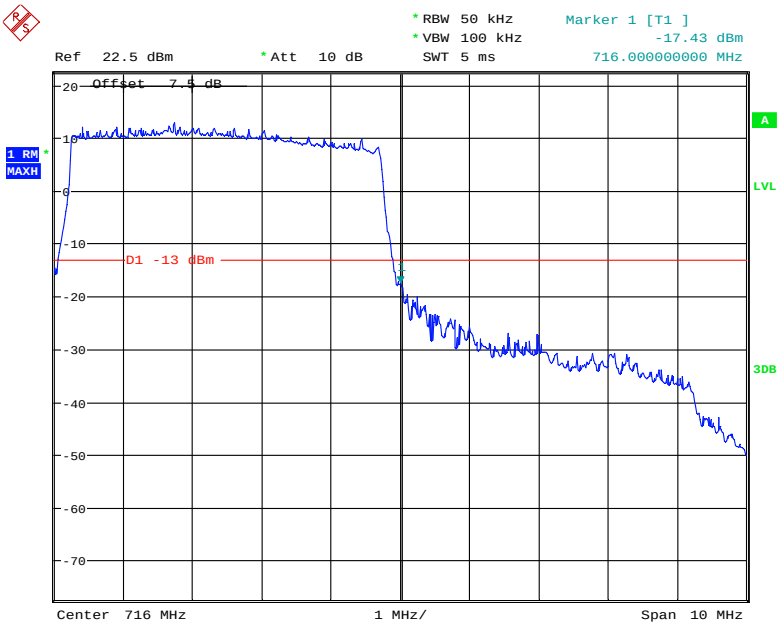
Band 17:

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



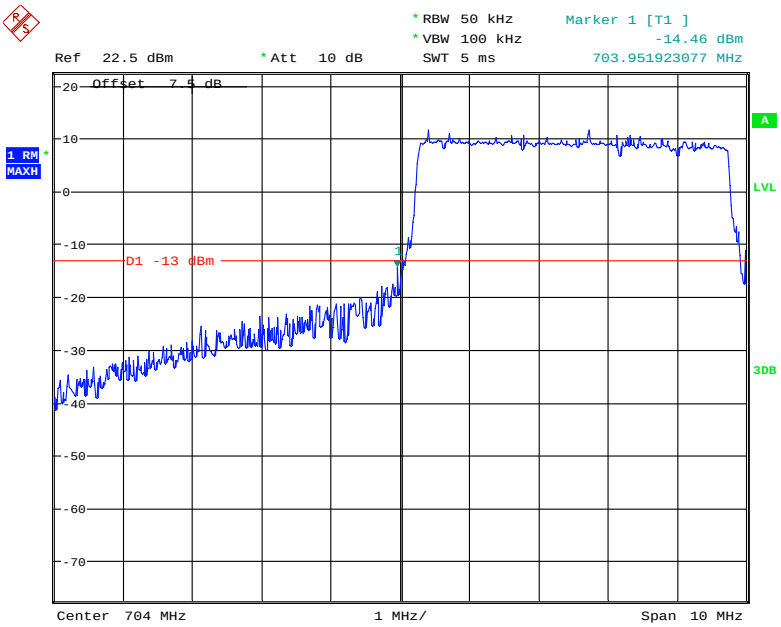
Date: 26.DEC.2018 21:43:39

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



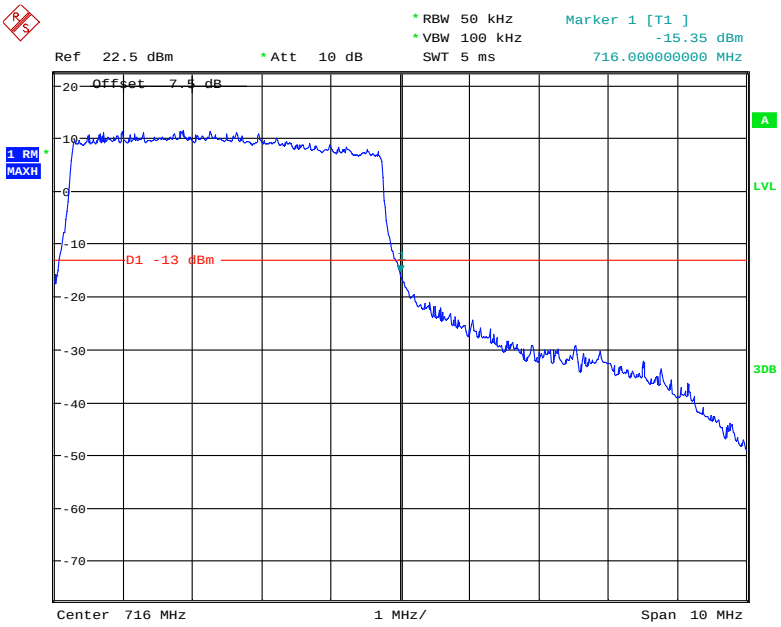
Date: 26.DEC.2018 21:45:03

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



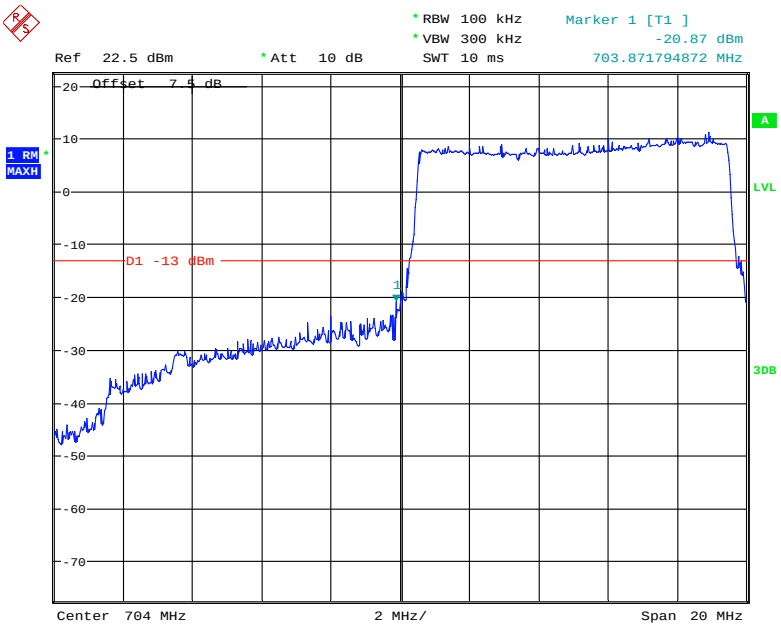
Date: 26.DEC.2018 21:42:33

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



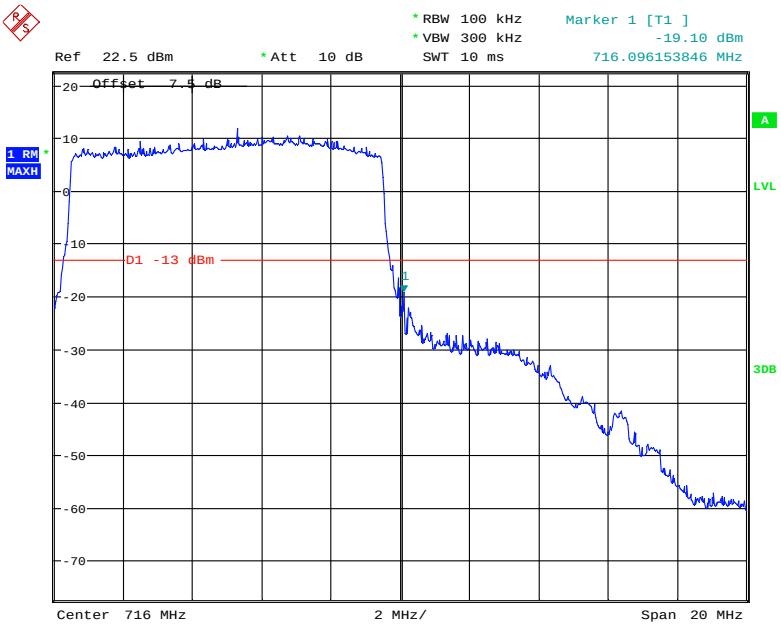
Date: 26.DEC.2018 21:45:51

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



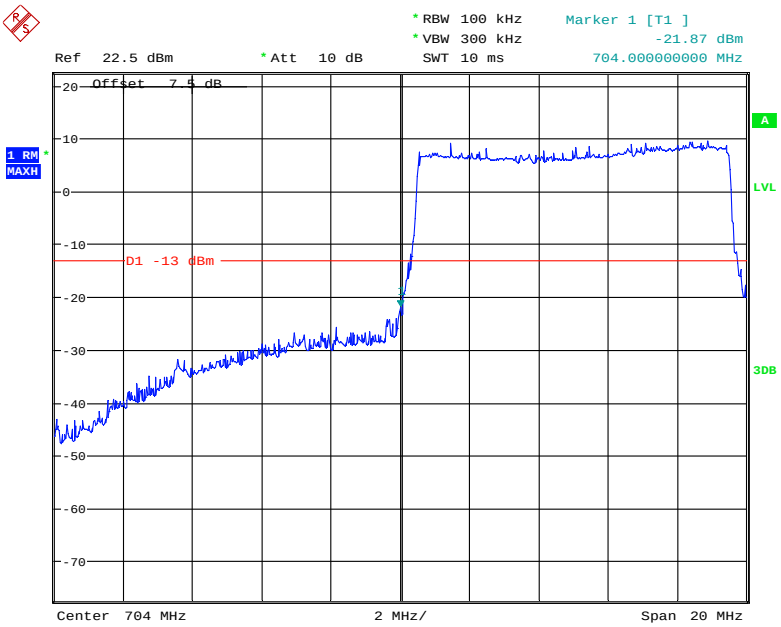
Date: 26.DEC.2018 21:33:33

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



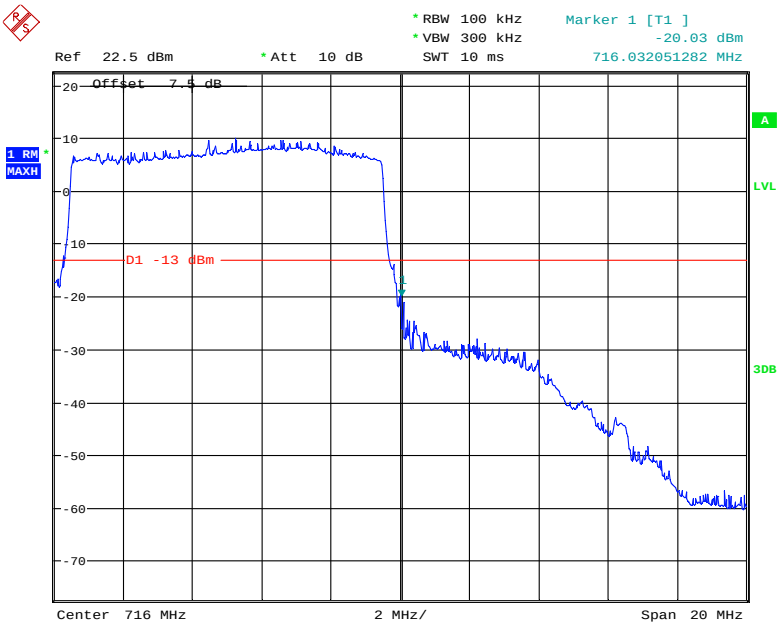
Date: 26.DEC.2018 21:34:20

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



Date: 26.DEC.2018 21:32:37

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



Date: 26.DEC.2018 21:35:20

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

Applicable Standard

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

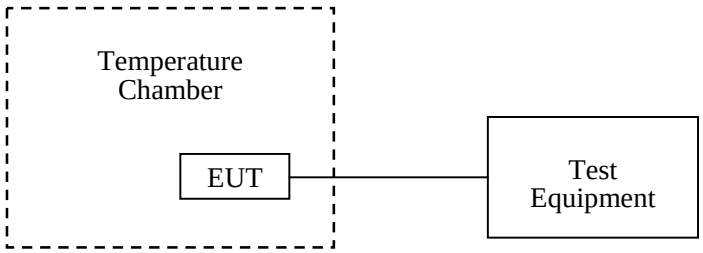
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Data

Environmental Conditions

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

The testing was performed by Shawn Xiao on 2018-12-24.

EUT operation mode: Transmitting

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

Cellular Band (Part 22H)

GSM Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	-14	-0.016734	2.5
-20		-14	-0.016734	2.5
-10		-3	-0.003586	2.5
0		-8	-0.009563	2.5
10		-8	-0.009563	2.5
20		-9	-0.010758	2.5
30		-7	-0.008367	2.5
40		-17	-0.020320	2.5
50		-5	-0.005977	2.5
25	V min.= 3.6	-13	-0.015539	2.5
	V max.= 4.35	-6	-0.007172	2.5

EDGE Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	-7	-0.008367	2.5
-20		-6	-0.007172	2.5
-10		-6	-0.007172	2.5
0		-12	-0.014344	2.5
10		-1	-0.001195	2.5
20		-8	-0.009563	2.5
30		-5	-0.005977	2.5
40		-9	-0.010758	2.5
50		-5	-0.005977	2.5
25	V min.= 3.6	-4	-0.004781	2.5
	V max.= 4.35	-8	-0.009563	2.5

WCDMA Mode

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

PCS Band (Part 24E)

GSM Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	-5	-0.002660	pass
-20		-5	-0.002660	pass
-10		-1	-0.000532	pass
0		-4	-0.002128	pass
10		3	0.001596	pass
20		-2	-0.001064	pass
30		2	0.001064	pass
40		-3	-0.001596	pass
50		1	0.000532	pass
25	V min.= 3.6	-1	-0.000532	pass
	V max.= 4.35	0	0.000000	pass

EDGE Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	-3	-0.0016	pass
-20		1	0.0005	pass
-10		2	0.0011	pass
0		4	0.0021	pass
10		3	0.0016	pass
20		1	0.0005	pass
30		-2	-0.0011	pass
40		3	0.0016	pass
50		-1	-0.0005	pass
25	V min.= 3.6	2	0.0011	pass
	V max.= 4.35	1	0.0005	pass

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.8	4	0.0021	pass
-20		7	0.0037	pass
-10		5	0.0027	pass
0		3	0.0016	pass
10		2	0.0011	pass
20		-1	-0.0005	pass
30		1	0.0005	pass
40		-3	-0.0016	pass
50		-2	-0.0011	pass
25	V min.= 3.6	-5	-0.0027	pass
	V max.= 4.35	-4	-0.0021	pass

AWS Band (Part 27)

Temperature (℃)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	3.8	1710.4637	1754.4885	1710	1755
-20		1710.4589	1754.5054	1710	1755
-10		1710.4577	1754.4860	1710	1755
0		1710.4483	1754.4991	1710	1755
10		1710.4495	1754.4800	1710	1755
20		1710.4669	1754.4875	1710	1755
30		1710.4624	1754.4919	1710	1755
40		1710.4548	1754.5089	1710	1755
50		1710.4653	1754.4959	1710	1755
25	V min.= 3.6	1710.4533	1754.4899	1710	1755
	V max.= 4.35	1710.4626	1754.5040	1710	1755

LTE:
QPSK:
Band 2:

10.0 MHz Middle Channel, f_o = 1880.0 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-26	-0.01383	2.5
-20		-25	-0.013298	2.5
-10		-22	-0.011702	2.5
0		-24	-0.012766	2.5
10		-23	-0.012234	2.5
20		-21	-0.01117	2.5
30		-19	-0.010106	2.5
40		-20	-0.010638	2.5
50		-17	-0.009043	2.5
20	V min.= 3.6	-14	-0.007447	2.5
	V max.= 4.35	-13	-0.006915	2.5

Band 4:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	1710.099274	1754.939610	1710.0000	1755.0000
-20		1710.105714	1754.935580	1710.0000	1755.0000
-10		1710.100475	1754.939463	1710.0000	1755.0000
0		1710.099445	1754.933996	1710.0000	1755.0000
10		1710.102420	1754.938441	1710.0000	1755.0000
20		1710.100769	1754.936897	1710.0000	1755.0000
30		1710.101776	1754.934086	1710.0000	1755.0000
40		1710.097962	1754.941031	1710.0000	1755.0000
50		1710.105204	1754.941767	1710.0000	1755.0000
25	V min.= 3.6	1710.101768	1754.937886	1710.0000	1755.0000
	V max.= 4.35	1710.098952	1754.937957	1710.0000	1755.0000

Band 5:

10.0 MHz Middle Channel, f_o = 836.5MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	20	0.0239091	2.5
-20		23	0.0274955	2.5
-10		21	0.0251046	2.5
0		19	0.0227137	2.5
10		18	0.0215182	2.5
20		16	0.0191273	2.5
30		14	0.0167364	2.5
40		12	0.0143455	2.5
50		11	0.01315	2.5
20	V min.= 3.6	15	0.0179319	2.5
	V max.= 4.35	10	0.0119546	2.5

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	699.4594	715.4941	699	716
-20		699.4618	715.4996	699	716
-10		699.4609	715.4953	699	716
0		699.4555	715.4865	699	716
10		699.4626	715.4931	699	716
20		699.4642	715.5022	699	716
30		699.4579	715.4957	699	716
40		699.4622	715.5021	699	716
50		699.4607	715.4920	699	716
25	V min.= 3.6	699.4540	715.4929	699	716
	V max.= 4.35	699.4567	715.5012	699	716

Band 17:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	704.4675	715.5015	704	716
-20		704.4630	715.5039	704	716
-10		704.4601	715.4967	704	716
0		704.4582	715.5032	704	716
10		704.4650	715.4843	704	716
20		704.4583	715.4863	704	716
30		704.4523	715.4836	704	716
40		704.4540	715.4943	704	716
50		704.4669	715.5008	704	716
25	V min.= 3.6	704.4515	715.4880	704	716
	V max.= 4.35	704.4457	715.4988	704	716

16QAM:

Band 2:

10.0 MHz Middle Channel, f_o = 1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	-27	-0.014362	2.5
-20		-25	-0.013298	2.5
-10		-21	-0.01117	2.5
0		-19	-0.010106	2.5
10		-23	-0.012234	2.5
20		-18	-0.009574	2.5
30		-17	-0.009043	2.5
40		-11	-0.005851	2.5
50		-14	-0.007447	2.5
20	V min.= 3.6	-16	-0.008511	2.5
	V max.= 4.35	-12	-0.006383	2.5

Band 4:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	1710.058585	1754.939495	1710.0000	1755.0000
-20		1710.060854	1754.936674	1710.0000	1755.0000
-10		1710.062908	1754.937719	1710.0000	1755.0000
0		1710.062974	1754.933494	1710.0000	1755.0000
10		1710.059761	1754.936968	1710.0000	1755.0000
20		1710.061032	1754.935897	1710.0000	1755.0000
30		1710.065190	1754.939461	1710.0000	1755.0000
40		1710.060154	1754.939738	1710.0000	1755.0000
50		1710.058496	1754.938847	1710.0000	1755.0000
25	V min.= 3.6	1710.064149	1754.935801	1710.0000	1755.0000
	V max.= 4.35	1710.063604	1754.939362	1710.0000	1755.0000

Band 5:

10.0 MHz Middle Channel, f_o = 836.5MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.8	27	0.0322773	2.5
-20		26	0.0310819	2.5
-10		24	0.028691	2.5
0		21	0.0251046	2.5
10		25	0.0298864	2.5
20		23	0.0274955	2.5
30		19	0.0227137	2.5
40		15	0.0179319	2.5
50		17	0.0203228	2.5
20	V min.= 3.6	16	0.0191273	2.5
	V max.= 4.35	14	0.0167364	2.5

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	699.4672	715.5023	699	716
-20		699.4676	715.5067	699	716
-10		699.4585	715.5099	699	716
0		699.4546	715.4832	699	716
10		699.4667	715.4949	699	716
20		699.4683	715.5130	699	716
30		699.4556	715.4939	699	716
40		699.4622	715.5044	699	716
50		699.4728	715.4927	699	716
25	V min.= 3.6	699.4633	715.4889	699	716
	V max.= 4.35	699.4534	715.5069	699	716

Band 17:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.8	704.4661	715.5042	704	716
-20		704.4724	715.5112	704	716
-10		704.4712	715.4926	704	716
0		704.4563	715.5068	704	716
10		704.4700	715.4924	704	716
20		704.4558	715.4888	704	716
30		704.4536	715.4804	704	716
40		704.4597	715.5002	704	716
50		704.4700	715.5093	704	716
25	V min.= 3.6	704.4513	715.4949	704	716
	V max.= 4.35	704.4568	715.5052	704	716

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