ACCREDITED
TESTING LABORATORY
CERTIFICATE # 4821.01

Bay Area Compliance Labs Corp.

FCC PART 27

FCC PART 22H, PART 24E

TEST REPORT

For

Bolt Modus Corp

Oficina N.33 Edificio Ofidepositos Central, Calidonia - Distrito Federal, Panama

FCC ID: 2APW4ART1P

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

Report Number:	RSZ200707001-00D
Report Date:	2020-07-23
Reviewed By:	Jimmy Xiao 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

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Smart phone
Model	ART1PRO
Frequency Range	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 4: 1710-1755 MHz(TX) ; 2110-2155 MHz(RX) LTE Band 7: 2500-2570 MHz(TX); 2620-2690 MHz(RX) LTE Band 12: 699-716 MHz(TX) ; 729-746 MHz(RX) LTE Band 17: 704-716 MHz(TX); 734-746 MHz(RX)
Maximum Target Output Power	GSM850: 33.0dBm (GMRK), 28.1dBm (8PSK) PCS1900: 30.4dBm (GMRK), 26.8dBm (8PSK) WCDMA Band 2: 23.1dBm WCDMA Band 5: 23.2dBm LTE Band 2: 23.4dBm LTE Band 4: 23.5dBm LTE Band 7: 21.3dBm LTE Band 12: 23.5dBm LTE Band 17: 23.4dBm
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification	2G/3G/4G: FPC Antennas
Voltage Range	DC 3.8 V from battery or DC 5.0V from adapter
Date of Test	2020-07-13 to 2020-07-15
Sample serial number	RSZ200707001-RF-S1 (Assigned by BACL, Shenzhen)
Received date	2020/07/07
Sample/EUT Status	Good condition
Normal/Extreme Condition	N.V.: Normal voltage: 3.8V_{DC} L.V.: Low Voltage: 3.6V_{DC} H.V.: High Voltage: 4.4V_{DC}
Adapter information	Model: CART1P Input: AC 100-240V, 50/60Hz Output: DC 5.0V, 2.0A

Objective

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

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

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS&DTS submissions with FCC ID: 2APW4ART1P.

Test Methodology

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

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

Applicable Standards: TIA/EIA 603-E.

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		±0.73dB
Unwanted Emission, conducted		±1.6dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1℃
Humidity		±6%
Supply voltages		±0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

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-E.

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

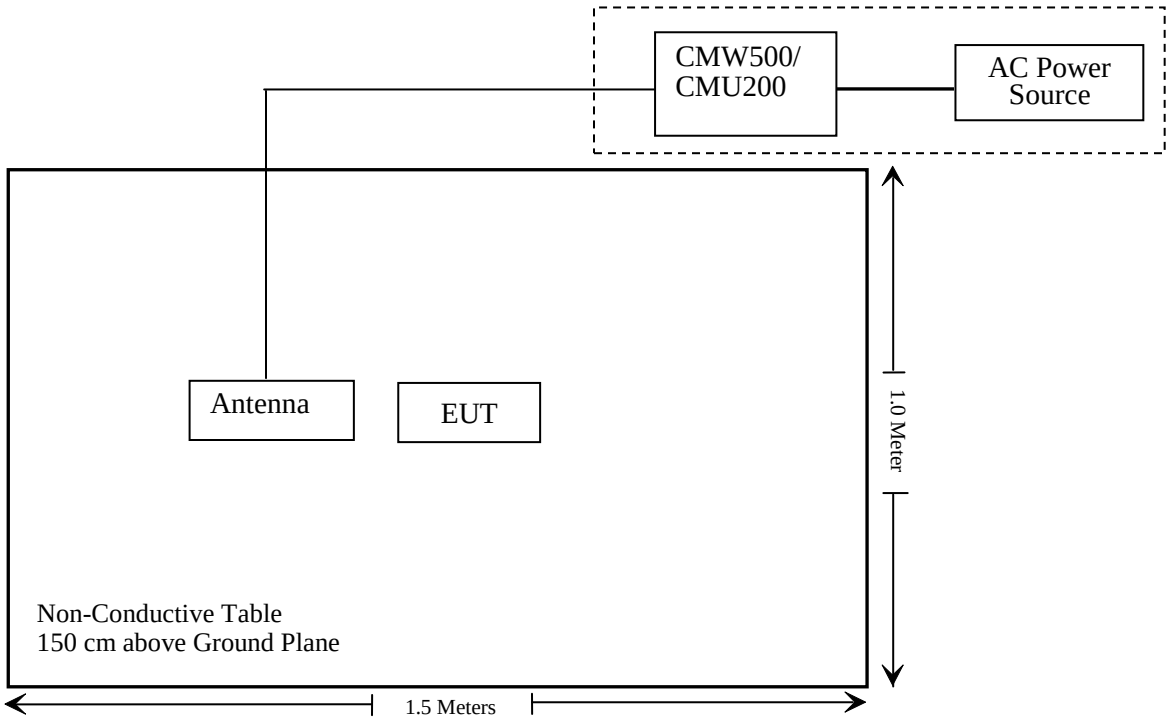
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

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

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

Note: * Please refer to SAR report released by BACL, report number: RSZ200707001-20A

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/7/8	2021/7/8
Sonoma instrument	Pre-amplifier	310 N	186238	2020/4/20	2021/4/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017/12/22	2020/12/21
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
Unknown	Cable 2	RF Cable 2	F-03-EM197	2019/11/29	2020/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2019/11/29	2020/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Agilent	Signal Generator	N5183A	MY51040755	2019/12/04	2020/12/04
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2019/7/22	2020/07/21
COM-POWER	Pre-amplifier	PA-122	181919	2019/11/29	2020/11/28
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2019/11/29	2020/11/28
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017/12/22	2020/12/21
A.H.System	Horn Antenna	SAS-200/571	135	2018/09/01	2021/08/31
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2019/11/29	2020/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2019/11/29	2020/11/28
Unknown	High Pass filter	2.8GHz	15989	2020/4/20	2021/4/20
Unknown	High Pass filter	1.3GHz	15963	2020/4/20	2021/4/20
Ducommun Technolagies	Horn antenna	ARH-4223-02	1007726-02 1304	2017/12/6	2020/12/5
Ducommun Technolagies	Horn antenna	ARH-4223-02	1007726-01 1304	2017/12/6	2020/12/5
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	115500	2019/7/22	2020/7/21
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/7/9	2021/7/8

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2020/3/1	2021/3/1
WEINSCHEL	3dB Attenuator	Unknown	F-03-EM121	2019/11/29	2020/11/28
Unknown	RF Cable	Unknown	2301 276	2019/11/29	2020/11/28
Unknown	RF Cable	Unknown	0501 067	2019/11/29	2020/11/28
Weinschel	Power divider	1515	RH386	2020/4/20	2021/4/20
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	115500	2019/7/22	2020/7/21
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/7/9	2021/7/8
ESPEC	Temperature & Humidity Chamber	EL-10KA	9107726	2020/01/05	2021/01/05
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR

* 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: RSZ200707001-20A.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

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

Applicable Standard

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

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

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

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

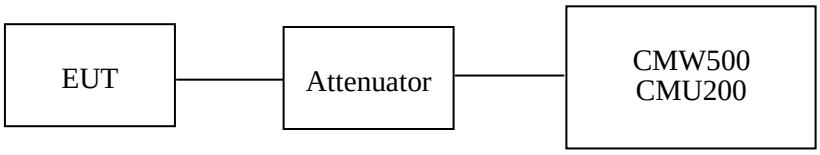
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

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

Test Procedure

Conducted method:

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



Radiated method:

TIA 603-D section 2.2.17

Test Data

Environmental Conditions

Temperature:	24~25 ℃
Relative Humidity:	50~52 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong from 2020-07-13 to 2020-07-15.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.68	38.45
	190	836.6	32.59	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	32.61	30.56	28.21	27.28	38.45
	190	836.6	32.68	30.57	28.27	27.11	38.45
	251	848.8	32.41	30.51	28.08	27.43	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	27.44	25.29	23.9	22.16	33
	661	1880.0	27.37	25.33	23.92	22.19	33
	810	1909.8	27.71	25.2	24.05	22.11	33

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		22.85	22.72	22.55
		HSDPA	1	21.68	21.57	21.72
			2	21.47	21.67	21.29
			3	21.46	21.84	21.53
			4	21.38	21.74	21.6
		HSUPA	1	21.14	2.03	21.24
			2	21.29	21.37	21.15
			3	21.28	21.41	21.23
			4	21.35	21.41	21.38
			5	21.3	21.58	21.31

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	30.05	33
	661	1880.0	30.10	33
	810	1909.8	30.09	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.85	28.28	26.88	24.73	33
	661	1880.0	29.68	28.21	27.03	24.80	33
	810	1909.8	29.77	28.14	26.90	24.80	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.46	24.66	22.19	21.63	33
	661	1880.0	26.53	24.63	22.45	21.56	33
	810	1909.8	26.39	24.64	22.25	21.41	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		22.66	22.77	22.58
		HSDPA	1	21.69	21.5	21.62
			2	21.6	21.65	21.37
			3	21.38	21.85	21.34
			4	21.52	21.74	21.61
		HSUPA	1	21.17	2.24	21.28
			2	21.2	21.23	21.28
			3	21.18	21.44	21.21
			4	21.32	21.5	21.38
			5	21.29	21.46	21.29

Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	1.57	13
	Middle	1.53	13
	High	1.32	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.31	13
	Middle	3.60	13
	High	3.43	13
HSDPA (16QAM)	Low	3.05	13
	Middle	3.17	13
	High	3.17	13
HSUPA (BPSK)	Low	3.02	13
	Middle	3.11	13
	High	3.04	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	1.47	13
	Middle	1.50	13
	High	1.45	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.29	13
	Middle	3.64	13
	High	3.48	13
HSDPA (16QAM)	Low	3.04	13
	Middle	3.08	13
	High	3.18	13
HSUPA (BPSK)	Low	3.11	13
	Middle	3.14	13
	High	3.08	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 (dBd/dBi)			
ERP for Cellular Band (Part 22H), Middle Channel										
836.6	83.08	314	2.0	H	23.7	1.90	0.0	21.80	38.45	16.65
836.6	88.43	127	1.2	V	28.4	1.90	0.0	26.50	38.45	11.95
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	87.66	207	1.5	H	18.0	1.30	9.40	26.10	33	6.90
1880.00	85.79	83	1.4	V	15.9	1.30	9.40	24.00	33	9.00

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 (dBd/dBi)			
ERP for Cellular Band (Part 22H), Middle Channel										
836.6	78.10	288	1.9	H	18.7	1.90	0.0	16.80	38.45	21.65
836.6	83.13	181	1.1	V	23.1	1.90	0.0	21.20	38.45	17.25
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	81.07	181	1.7	H	12.8	1.30	9.40	20.90	33	12.10
1880.00	78.66	36	1.8	V	9.7	1.30	9.40	17.80	33	15.20

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 (dBd/dBi)			
ERP for WCDMA Band V (Part 22H), Middle Channel										
836.6	74.93	322	2.2	H	15.6	1.90	0.0	13.70	38.45	24.75
836.6	80.01	138	1.3	V	20.0	1.90	0.0	18.10	38.45	20.35
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	81.74	23	2.2	H	12.1	1.30	9.40	20.20	33	12.80
1880.00	79.32	16	2.3	V	9.4	1.30	9.40	17.50	33	15.50

Note:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level
dBd is for the ERP, dBi is for EIRP.

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	22.66	22.74	22.67
		RB Size=1, RB Offset=2	22.53	22.79	22.68
		RB Size=1, RB Offset=5	22.49	22.55	22.72
		RB Size=3, RB Offset=0	22.13	22.48	22.36
		RB Size=3, RB Offset=1	22.42	22.31	22.43
		RB Size=3, RB Offset=2	21.97	22.33	22.12
		RB Size=6, RB Offset=0	22.06	22.06	22.03
	16QAM	RB Size=1, RB Offset=0	22.25	22.01	22.43
		RB Size=1, RB Offset=2	22.19	21.99	21.98
		RB Size=1, RB Offset=5	22.16	21.89	22.99
		RB Size=3, RB Offset=0	21.69	21.46	22.73
		RB Size=3, RB Offset=1	21.71	21.77	21.76
		RB Size=3, RB Offset=2	21.76	21.79	22.02
		RB Size=6, RB Offset=0	21.89	21.57	21.63
3.0	QPSK	RB Size=1, RB Offset=0	22.88	22.56	22.72
		RB Size=1, RB Offset=7	22.81	22.6	22.49
		RB Size=1, RB Offset=14	22.3	22.38	22.46
		RB Size=8, RB Offset=0	22.18	22.42	22.37
		RB Size=8, RB Offset=4	22.31	22.26	22.27
		RB Size=8, RB Offset=7	21.95	22.09	22.33
		RB Size=15, RB Offset=0	22.34	22.23	21.94
	16QAM	RB Size=1, RB Offset=0	22.16	22.23	22.24
		RB Size=1, RB Offset=7	22.08	22	22.01
		RB Size=1, RB Offset=14	21.88	21.82	22.9
		RB Size=8, RB Offset=0	21.66	21.53	22.96
		RB Size=8, RB Offset=4	21.88	21.9	22.07
		RB Size=8, RB Offset=7	21.79	21.87	21.6
		RB Size=15, RB Offset=0	21.87	21.61	21.66

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	22.59	22.65	22.94
		RB Size=1, RB Offset=12	22.69	22.63	22.6
		RB Size=1, RB Offset=24	22.48	22.5	22.43
		RB Size=12, RB Offset=0	22.42	22.52	22.31
		RB Size=12, RB Offset=6	22.42	22.36	22.38
		RB Size=12, RB Offset=11	22.04	22.31	22.13
		RB Size=25, RB Offset=0	22.13	22.15	22.06
	16QAM	RB Size=1, RB Offset=0	22.03	22.06	22.24
		RB Size=1, RB Offset=12	22.21	22.25	22.22
		RB Size=1, RB Offset=24	22.11	21.85	23.05
		RB Size=12, RB Offset=0	21.94	21.57	22.96
		RB Size=12, RB Offset=6	21.88	21.75	21.82
		RB Size=12, RB Offset=11	21.61	21.74	21.88
		RB Size=25, RB Offset=0	21.68	21.82	21.78
10.0	QPSK	RB Size=1, RB Offset=0	22.8	22.49	22.61
		RB Size=1, RB Offset=24	22.59	22.47	22.66
		RB Size=1, RB Offset=49	22.38	22.79	22.53
		RB Size=25, RB Offset=0	22.4	22.39	22.13
		RB Size=25, RB Offset=12	22.2	22.28	22.3
		RB Size=25, RB Offset=24	22.26	22.21	22.34
		RB Size=50, RB Offset=0	22.23	22.15	22.07
	16QAM	RB Size=1, RB Offset=0	22.23	22.13	22.2
		RB Size=1, RB Offset=24	22.14	21.93	21.76
		RB Size=1, RB Offset=49	21.97	21.82	23.08
		RB Size=25, RB Offset=0	21.98	21.61	22.97
		RB Size=25, RB Offset=12	21.73	21.83	22.01
		RB Size=25, RB Offset=24	21.74	21.88	21.84
		RB Size=50, RB Offset=0	22.01	21.77	21.87

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	22.66	22.78	22.62
		RB Size=1, RB Offset=37	22.76	22.54	22.4
		RB Size=1, RB Offset=74	22.22	22.51	22.63
		RB Size=36, RB Offset=0	22.31	22.42	22.54
		RB Size=36, RB Offset=18	22.3	22.35	22.35
		RB Size=36, RB Offset=37	22	22.24	22.47
		RB Size=75, RB Offset=0	22.02	22.28	22.11
	16QAM	RB Size=1, RB Offset=0	22.32	22.13	22.06
		RB Size=1, RB Offset=37	22.11	21.82	21.96
		RB Size=1, RB Offset=74	22.13	22.08	22.89
		RB Size=36, RB Offset=0	21.66	21.72	23.02
		RB Size=36, RB Offset=18	21.98	21.98	22.06
		RB Size=36, RB Offset=37	21.83	21.91	21.95
		RB Size=75, RB Offset=0	21.77	21.69	21.88
20.0	QPSK	RB Size=1, RB Offset=0	22.62	22.75	22.85
		RB Size=1, RB Offset=49	22.54	22.55	22.7
		RB Size=1, RB Offset=99	22.3	22.76	22.54
		RB Size=50, RB Offset=0	22.33	22.56	22.37
		RB Size=50, RB Offset=24	22.42	22.35	22.42
		RB Size=50, RB Offset=49	22.32	22.27	22.35
		RB Size=100, RB Offset=0	22.21	22.1	22.07
	16QAM	RB Size=1, RB Offset=0	22.3	22.12	22.14
		RB Size=1, RB Offset=49	22.09	21.92	21.92
		RB Size=1, RB Offset=99	22.01	21.92	22.89
		RB Size=50, RB Offset=0	22.02	21.58	23.06
		RB Size=50, RB Offset=24	21.86	21.88	21.89
		RB Size=50, RB Offset=49	21.81	21.94	21.87
		RB Size=100, RB Offset=0	21.76	21.68	21.68

Peak-to-average ratio (PAR)

20MHz Bandwidth

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.08	13	Pass
QPSK (100RB Size)	6.10	13	Pass
16QAM (1RB Size)	7.00	13	Pass
16QAM (100RB Size)	7.06	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	83.98	342	1.5	H	14.3	1.30	9.40	22.40	33
1880.00	82.12	359	2.0	V	12.2	1.30	9.40	20.30	33
3 MHz Bandwidth									
1880.00	83.68	187	1.8	H	14.0	1.30	9.40	22.10	33
1880.00	82.71	342	1.1	V	12.8	1.30	9.40	20.90	33
5 MHz Bandwidth									
1880.00	84.15	327	1.5	H	14.5	1.30	9.40	22.60	33
1880.00	83.21	203	2.1	V	13.3	1.30	9.40	21.40	33
10 MHz Bandwidth									
1880.00	83.56	66	1.3	H	13.9	1.30	9.40	22.00	33
1880.00	82.11	166	1.3	V	12.2	1.30	9.40	20.30	33
15 MHz Bandwidth									
1880.00	82.87	293	2.0	H	13.2	1.30	9.40	21.30	33
1880.00	81.99	23	1.8	V	12.1	1.30	9.40	20.20	33
20 MHz Bandwidth									
1880.00	83.10	94	2.1	H	13.4	1.30	9.40	21.50	33
1880.00	81.93	359	1.7	V	12.0	1.30	9.40	20.10	33

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	83.72	351	1.4	H	14.0	1.30	9.40	22.10	33
1880.00	80.85	277	1.9	V	12.0	1.30	9.40	20.10	33
3 MHz Bandwidth									
1880.00	84.42	190	2.5	H	14.7	1.30	9.40	22.80	33
1880.00	82.52	55	2.4	V	12.6	1.30	9.40	20.70	33
5 MHz Bandwidth									
1880.00	84.12	262	1.0	H	14.4	1.30	9.40	22.50	33
1880.00	82.11	34	1.1	V	12.2	1.30	9.40	20.30	33
10 MHz Bandwidth									
1880.00	84.20	61	1.1	H	13.5	1.30	9.40	21.60	33
1880.00	81.99	256	2.1	V	12.1	1.30	9.40	20.20	33
15 MHz Bandwidth									
1880.00	83.95	95	2.1	H	14.3	1.30	9.40	22.40	33
1880.00	81.77	129	1.6	V	11.9	1.30	9.40	20.00	33
20 MHz Bandwidth									
1880.00	83.81	320	2.4	H	14.1	1.30	9.40	22.20	33
1880.00	82.61	336	1.6	V	12.7	1.30	9.40	20.80	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	22.94	22.58	22.72
		RB Size=1, RB Offset=2	22.78	22.63	22.79
		RB Size=1, RB Offset=5	22.2	22.9	22.72
		RB Size=3, RB Offset=0	22.43	22.39	22.21
		RB Size=3, RB Offset=1	22.27	22.56	22.55
		RB Size=3, RB Offset=2	22.14	22.15	22.36
		RB Size=6, RB Offset=0	22.26	21.92	22.07
	16QAM	RB Size=1, RB Offset=0	22.24	22.25	22.24
		RB Size=1, RB Offset=2	22.01	21.93	21.77
		RB Size=1, RB Offset=5	22.05	21.74	23.09
		RB Size=3, RB Offset=0	21.88	21.64	22.92
		RB Size=3, RB Offset=1	21.82	21.73	21.75
		RB Size=3, RB Offset=2	21.89	21.73	22.01
		RB Size=6, RB Offset=0	21.93	21.46	21.84
3.0	QPSK	RB Size=1, RB Offset=0	22.57	22.76	22.54
		RB Size=1, RB Offset=7	22.75	22.51	22.51
		RB Size=1, RB Offset=14	22.15	22.71	22.41
		RB Size=8, RB Offset=0	22.32	22.5	22.26
		RB Size=8, RB Offset=4	22.3	22.31	22.47
		RB Size=8, RB Offset=7	22.37	21.97	22.15
		RB Size=15, RB Offset=0	22.18	22.08	22.19
	16QAM	RB Size=1, RB Offset=0	22.4	22.37	22.42
		RB Size=1, RB Offset=7	21.84	21.86	22.05
		RB Size=1, RB Offset=14	22.25	22.03	23.05
		RB Size=8, RB Offset=0	21.83	21.54	22.79
		RB Size=8, RB Offset=4	21.84	22.15	21.9
		RB Size=8, RB Offset=7	21.75	21.89	21.77
		RB Size=15, RB Offset=0	21.77	21.63	21.86

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	22.76	22.82	22.58
		RB Size=1, RB Offset=12	22.6	22.7	22.47
		RB Size=1, RB Offset=24	22.31	22.66	22.32
		RB Size=12, RB Offset=0	22.48	22.42	22.31
		RB Size=12, RB Offset=6	22.25	22.35	22.44
		RB Size=12, RB Offset=11	22.31	22.07	22.33
		RB Size=25, RB Offset=0	22.07	22.11	21.89
	16QAM	RB Size=1, RB Offset=0	22.14	22.17	22.13
		RB Size=1, RB Offset=12	22.03	22.21	21.73
		RB Size=1, RB Offset=24	22.21	21.65	23.14
		RB Size=12, RB Offset=0	21.89	21.71	23.06
		RB Size=12, RB Offset=6	21.64	21.91	21.62
		RB Size=12, RB Offset=11	21.77	21.87	22.01
		RB Size=25, RB Offset=0	21.61	21.65	21.85
10.0	QPSK	RB Size=1, RB Offset=0	22.93	22.58	22.66
		RB Size=1, RB Offset=24	22.52	22.56	22.65
		RB Size=1, RB Offset=49	22.34	22.9	22.53
		RB Size=25, RB Offset=0	22.34	22.23	22.31
		RB Size=25, RB Offset=12	22.09	22.48	22.44
		RB Size=25, RB Offset=24	22.24	22.17	22.04
		RB Size=50, RB Offset=0	21.99	22.31	22.15
	16QAM	RB Size=1, RB Offset=0	22.21	22.18	22.23
		RB Size=1, RB Offset=24	22.17	22.17	22
		RB Size=1, RB Offset=49	21.89	21.82	23.01
		RB Size=25, RB Offset=0	21.74	21.39	22.99
		RB Size=25, RB Offset=12	21.85	21.79	21.76
		RB Size=25, RB Offset=24	21.65	22.01	21.94
		RB Size=50, RB Offset=0	21.82	21.67	21.85

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	22.65	22.84	22.67
		RB Size=1, RB Offset=37	22.64	22.56	22.64
		RB Size=1, RB Offset=74	22.38	22.5	22.39
		RB Size=36, RB Offset=0	22.34	22.43	22.39
		RB Size=36, RB Offset=18	22.29	22.53	22.66
		RB Size=36, RB Offset=37	22.21	22.17	22.07
		RB Size=75, RB Offset=0	22.21	22.23	21.86
	16QAM	RB Size=1, RB Offset=0	22.22	22.19	22.1
		RB Size=1, RB Offset=37	21.89	22.21	22.12
		RB Size=1, RB Offset=74	21.91	21.93	23.1
		RB Size=36, RB Offset=0	21.79	21.86	22.95
		RB Size=36, RB Offset=18	21.9	21.98	22.05
		RB Size=36, RB Offset=37	21.82	21.84	21.81
		RB Size=75, RB Offset=0	21.71	21.64	21.71
20.0	QPSK	RB Size=1, RB Offset=0	22.73	22.73	22.81
		RB Size=1, RB Offset=49	22.49	22.55	22.73
		RB Size=1, RB Offset=99	22.16	22.84	22.47
		RB Size=50, RB Offset=0	22.33	22.4	22.32
		RB Size=50, RB Offset=24	22.44	22.35	22.42
		RB Size=50, RB Offset=49	22.15	21.93	22.29
		RB Size=100, RB Offset=0	21.95	22.21	22.04
	16QAM	RB Size=1, RB Offset=0	22.23	22.2	22.07
		RB Size=1, RB Offset=49	22.08	21.95	22.15
		RB Size=1, RB Offset=99	21.8	21.73	22.79
		RB Size=50, RB Offset=0	21.83	21.72	22.96
		RB Size=50, RB Offset=24	21.72	21.94	21.72
		RB Size=50, RB Offset=49	21.77	21.88	21.86
		RB Size=100, RB Offset=0	21.86	21.56	21.75

Peak-to-average ratio (PAR)

20MHz Bandwidth

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.04	13	Pass
QPSK (100RB Size)	6.44	13	Pass
16QAM (1RB Size)	7.22	13	Pass
16QAM (100RB Size)	7.03	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	88.48	89	2.3	H	15.2	1.30	8.90	22.80	30
1732.50	86.87	161	1.5	V	14.1	1.30	8.90	21.70	30
3 MHz Bandwidth									
1732.50	87.78	298	2.3	H	14.5	1.30	8.90	22.10	30
1732.50	86.25	85	2.3	V	13.5	1.30	8.90	21.10	30
5 MHz Bandwidth									
1732.50	87.32	17	1.1	H	14.0	1.30	8.90	21.60	30
1732.50	85.96	175	1.8	V	13.2	1.30	8.90	20.80	30
10 MHz Bandwidth									
1732.50	86.95	184	1.5	H	13.6	1.30	8.90	21.20	30
1732.50	85.41	182	1.5	V	12.7	1.30	8.90	20.30	30
15 MHz Bandwidth									
1732.50	87.35	286	1.1	H	14.0	1.30	8.90	21.60	30
1732.50	85.12	281	1.8	V	12.4	1.30	8.90	20.00	30
20 MHz Bandwidth									
1732.50	85.96	126	1.1	H	12.6	1.30	8.90	20.20	30
1732.50	84.79	227	1.6	V	12.1	1.30	8.90	19.70	30

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	87.98	110	1.0	H	14.7	1.30	8.90	22.30	30
1732.50	85.61	155	2.2	V	12.9	1.30	8.90	20.50	30
3 MHz Bandwidth									
1732.50	88.51	293	1.7	H	15.2	1.30	8.90	22.80	30
1732.50	86.15	154	1.4	V	13.4	1.30	8.90	21.00	30
5 MHz Bandwidth									
1732.50	87.75	26	1.8	H	14.4	1.30	8.90	22.00	30
1732.50	85.69	263	1.1	V	13.0	1.30	8.90	20.60	30
10 MHz Bandwidth									
1732.50	87.12	352	1.3	H	13.8	1.30	8.90	21.40	30
1732.50	85.25	294	1.5	V	12.5	1.30	8.90	20.10	30
15 MHz Bandwidth									
1732.50	86.98	175	1.3	H	13.7	1.30	8.90	21.30	30
1732.50	85.11	282	2.4	V	12.4	1.30	8.90	20.00	30
20 MHz Bandwidth									
1732.50	86.54	217	2.4	H	13.2	1.30	8.90	20.80	30
1732.50	84.89	169	1.8	V	12.2	1.30	8.90	19.80	30

LTE Band 7:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB Size=1, RB Offset=0	22.9	22.83	22.72
		RB Size=1, RB Offset=12	22.59	22.49	22.67
		RB Size=1, RB Offset=24	22.32	22.75	22.64
		RB Size=12, RB Offset=0	22.35	22.53	22.33
		RB Size=12, RB Offset=6	22.28	22.35	22.31
		RB Size=12, RB Offset=11	22.22	22.18	22.33
		RB Size=25, RB Offset=0	22.12	22.15	22.11
	16QAM	RB Size=1, RB Offset=0	21.94	22.4	22.13
		RB Size=1, RB Offset=12	22.19	22.29	21.81
		RB Size=1, RB Offset=24	22.04	22.14	23.11
		RB Size=12, RB Offset=0	21.97	21.81	22.75
		RB Size=12, RB Offset=6	21.85	22.11	21.67
		RB Size=12, RB Offset=11	21.98	21.98	21.76
		RB Size=25, RB Offset=0	21.89	21.58	21.71
10	QPSK	RB Size=1, RB Offset=0	22.65	22.69	22.96
		RB Size=1, RB Offset=24	22.59	22.67	22.53
		RB Size=1, RB Offset=49	22.03	22.87	22.67
		RB Size=25, RB Offset=0	22.47	22.32	22.25
		RB Size=25, RB Offset=12	22.35	22.34	22.16
		RB Size=25, RB Offset=24	22.04	22.19	22.29
		RB Size=50, RB Offset=0	22.17	22.15	22.01
	16QAM	RB Size=1, RB Offset=0	22.27	21.97	22.13
		RB Size=1, RB Offset=24	22.22	22.25	21.84
		RB Size=1, RB Offset=49	22.04	21.94	23.05
		RB Size=25, RB Offset=0	22.11	21.66	22.81
		RB Size=25, RB Offset=12	21.81	21.92	21.8
		RB Size=25, RB Offset=24	21.56	21.68	21.93
		RB Size=50, RB Offset=0	21.89	21.68	21.79

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15	QPSK	RB Size=1, RB Offset=0	22.91	22.67	22.7
		RB Size=1, RB Offset=37	22.51	22.72	22.35
		RB Size=1, RB Offset=74	22.44	22.85	22.68
		RB Size=36, RB Offset=0	22.31	22.45	22.41
		RB Size=36, RB Offset=18	22.14	22.32	22.48
		RB Size=36, RB Offset=37	22.24	22.26	22.28
		RB Size=75, RB Offset=0	22.24	22.27	22.00
	16QAM	RB Size=1, RB Offset=0	22.13	22.17	21.96
		RB Size=1, RB Offset=37	22.03	22.1	21.88
		RB Size=1, RB Offset=74	21.91	21.99	22.89
		RB Size=36, RB Offset=0	22.12	21.87	22.96
		RB Size=36, RB Offset=18	21.9	21.87	21.81
		RB Size=36, RB Offset=37	21.76	22.14	21.90
		RB Size=75, RB Offset=0	21.73	21.56	21.79
20	QPSK	RB Size=1, RB Offset=0	22.87	22.88	22.55
		RB Size=1, RB Offset=49	22.7	22.68	22.35
		RB Size=1, RB Offset=99	22.36	22.51	22.62
		RB Size=50, RB Offset=0	22.29	22.54	22.08
		RB Size=50, RB Offset=24	22.57	22.57	22.46
		RB Size=50, RB Offset=49	22.37	22.25	22.31
		RB Size=100, RB Offset=0	22	21.96	21.96
	16QAM	RB Size=1, RB Offset=0	22.25	22.26	22.32
		RB Size=1, RB Offset=49	21.85	21.94	21.93
		RB Size=1, RB Offset=99	22.07	21.72	23.10
		RB Size=50, RB Offset=0	21.71	21.59	22.96
		RB Size=50, RB Offset=24	21.93	21.69	21.72
		RB Size=50, RB Offset=49	21.94	22.05	21.64
		RB Size=100, RB Offset=0	21.83	21.51	21.74

Peak-to-average ratio (PAR)

20dB Bandwidth

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.90	13	Pass
QPSK (100RB Size)	6.01	13	Pass
16QAM (1RB Size)	7.17	13	Pass
16QAM (100RB Size)	7.06	13	Pass

EIRP:

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
5 MHz Bandwidth									
2535.00	85.15	309	1.3	H	15.0	2.60	10.20	22.60	30
2535.00	81.95	110	1.3	V	12.4	2.60	10.20	20.00	30
10 MHz Bandwidth									
2535.00	84.58	13	2.2	H	14.4	2.60	10.20	22.00	30
2535.00	83.41	58	2.1	V	13.9	2.60	10.20	21.50	30
15 MHz Bandwidth									
2535.00	82.91	13	1.8	H	12.7	2.60	10.20	20.30	30
2535.00	81.16	347	1.9	V	11.6	2.60	10.20	19.20	30
20 MHz Bandwidth									
2535.00	82.52	167	2.1	H	12.4	2.60	10.20	20.00	30
2535.00	80.96	46	2.1	V	11.4	2.60	10.20	19.00	30

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
5 MHz Bandwidth									
2535.00	85.15	309	1.3	H	15.0	2.60	10.20	22.60	30
2535.00	81.95	110	1.3	V	12.4	2.60	10.20	20.00	30
10 MHz Bandwidth									
2535.00	84.58	13	2.2	H	14.4	2.60	10.20	22.00	30
2535.00	83.41	58	2.1	V	13.9	2.60	10.20	21.50	30
15 MHz Bandwidth									
2535.00	84.91	244	1.3	H	14.7	2.60	10.20	22.30	30
2535.00	83.05	247	1.2	V	13.5	2.60	10.20	21.10	30
20 MHz Bandwidth									
2535.00	84.44	344	1.5	H	14.3	2.60	10.20	21.90	30
2535.00	82.58	46	1.4	V	13.0	2.60	10.20	20.60	30

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	22.9	22.69	22.67
		RB Size=1, RB Offset=2	22.69	22.63	22.8
		RB Size=1, RB Offset=5	22.14	22.72	22.46
		RB Size=3, RB Offset=0	22.09	22.46	22.26
		RB Size=3, RB Offset=1	22.24	22.37	22.35
		RB Size=3, RB Offset=2	22.39	21.97	22.22
		RB Size=6, RB Offset=0	22.31	22.33	22.12
	16QAM	RB Size=1, RB Offset=0	22.22	22.29	22.05
		RB Size=1, RB Offset=2	22.08	22.06	21.96
		RB Size=1, RB Offset=5	22.01	22.04	22.91
		RB Size=3, RB Offset=0	22.09	21.72	23.16
		RB Size=3, RB Offset=1	21.78	21.96	21.77
		RB Size=3, RB Offset=2	21.56	22.06	21.84
		RB Size=6, RB Offset=0	21.66	21.62	21.8
3.0	QPSK	RB Size=1, RB Offset=0	22.99	22.6	22.9
		RB Size=1, RB Offset=7	22.44	22.51	22.75
		RB Size=1, RB Offset=14	22.29	22.56	22.49
		RB Size=8, RB Offset=0	22.1	22.43	22.38
		RB Size=8, RB Offset=4	22.21	22.27	22.42
		RB Size=8, RB Offset=7	22.07	22.09	22.43
		RB Size=15, RB Offset=0	22.21	22.26	22.08
	16QAM	RB Size=1, RB Offset=0	22.09	22.28	22.44
		RB Size=1, RB Offset=7	22.04	22.11	21.72
		RB Size=1, RB Offset=14	21.97	21.95	22.81
		RB Size=8, RB Offset=0	21.94	21.41	22.71
		RB Size=8, RB Offset=4	21.82	21.84	21.83
		RB Size=8, RB Offset=7	21.89	21.9	21.82
		RB Size=15, RB Offset=0	21.65	21.72	21.53

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	22.92	22.86	22.83
		RB Size=1, RB Offset=12	22.61	22.77	22.61
		RB Size=1, RB Offset=24	22.41	22.69	22.53
		RB Size=12, RB Offset=0	22.61	22.59	22.4
		RB Size=12, RB Offset=6	22.34	22.47	22.43
		RB Size=12, RB Offset=11	22.32	22.14	22.3
		RB Size=25, RB Offset=0	22.32	22.03	22.12
	16QAM	RB Size=1, RB Offset=0	22.14	22.4	22.1
		RB Size=1, RB Offset=12	22.03	21.87	22.19
		RB Size=1, RB Offset=24	22.28	21.93	23
		RB Size=12, RB Offset=0	22.11	21.68	23
		RB Size=12, RB Offset=6	21.72	22.09	21.65
		RB Size=12, RB Offset=11	21.87	21.92	21.75
		RB Size=25, RB Offset=0	21.71	21.75	21.73
10.0	QPSK	RB Size=1, RB Offset=0	22.7	22.51	22.46
		RB Size=1, RB Offset=24	22.41	22.63	22.55
		RB Size=1, RB Offset=49	22.49	22.79	22.59
		RB Size=25, RB Offset=0	22.12	22.34	22.18
		RB Size=25, RB Offset=12	22.34	22.23	22.2
		RB Size=25, RB Offset=24	22.23	22.05	22.19
		RB Size=50, RB Offset=0	22.14	22.15	22.1
	16QAM	RB Size=1, RB Offset=0	22.19	22.23	22.11
		RB Size=1, RB Offset=24	21.8	21.85	21.96
		RB Size=1, RB Offset=49	22.12	21.86	23.17
		RB Size=25, RB Offset=0	21.98	21.69	23
		RB Size=25, RB Offset=12	21.87	22	21.88
		RB Size=25, RB Offset=24	21.91	21.65	21.76
		RB Size=50, RB Offset=0	21.82	21.64	21.74

Peak-to-average ratio (PAR)

10MHz Bandwidth

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.04	13	Pass
QPSK (50RB Size)	5.92	13	Pass
16QAM (1RB Size)	7.34	13	Pass
16QAM (50RB Size)	7.50	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 (dBd)		
Middle Channel									
1.4 MHz Bandwidth									
707.5	85.69	52	2.2	H	17.9	1.56	0.0	16.34	34.77
707.5	89.08	91	1.2	V	22.7	1.56	0.0	21.14	34.77
3 MHz Bandwidth									
707.5	85.65	193	1.7	H	17.9	1.56	0.0	16.34	34.77
707.5	87.79	19	2.3	V	21.5	1.56	0.0	19.94	34.77
5 MHz Bandwidth									
707.5	84.93	132	2.2	H	17.1	1.56	0.0	15.54	34.77
707.5	88.79	190	1.7	V	22.5	1.56	0.0	20.94	34.77
10 MHz Bandwidth									
707.5	84.44	41	2.1	H	16.7	1.56	0.0	15.14	34.77
707.5	88.31	170	1.2	V	22.0	1.56	0.0	20.44	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 (dBd)		
Middle Channel									
1.4 MHz Bandwidth									
707.5	85.76	121	2.3	H	18.0	1.56	0.0	16.44	34.77
707.5	89.13	321	1.9	V	22.8	1.56	0.0	21.24	34.77
3 MHz Bandwidth									
707.5	85.24	172	1.9	H	17.5	1.56	0.0	15.94	34.77
707.5	88.04	1	2.0	V	21.7	1.56	0.0	20.14	34.77
5 MHz Bandwidth									
707.5	84.82	290	1.2	H	17.0	1.56	0.0	15.44	34.77
707.5	87.66	105	1.4	V	21.3	1.56	0.0	19.74	34.77
10 MHz Bandwidth									
707.5	84.21	245	2.3	H	16.4	1.56	0.0	14.84	34.77
707.5	86.54	121	1.1	V	20.2	1.56	0.0	18.64	34.77

LTE Band 17:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.84	22.61	22.63
		RB Size=1, RB Offset=12	22.5	22.3	22.62
		RB Size=1, RB Offset=24	22.27	22.96	22.68
		RB Size=12, RB Offset=0	22.2	22.45	22.16
		RB Size=12, RB Offset=6	22.31	22.47	22.38
		RB Size=12, RB Offset=11	22.29	22.34	22.16
		RB Size=25, RB Offset=0	22.1	22.07	22.26
	16QAM	RB Size=1, RB Offset=0	22.22	22.29	22.06
		RB Size=1, RB Offset=12	22.03	22.16	22.03
		RB Size=1, RB Offset=24	21.84	21.72	23.16
		RB Size=12, RB Offset=0	22.06	21.61	22.88
		RB Size=12, RB Offset=6	21.77	22.09	21.68
		RB Size=12, RB Offset=11	21.83	21.91	21.76
		RB Size=25, RB Offset=0	21.64	21.5	21.74
10.0	QPSK	RB Size=1, RB Offset=0	22.68	22.73	22.48
		RB Size=1, RB Offset=24	22.71	22.75	22.52
		RB Size=1, RB Offset=49	22.32	22.66	22.47
		RB Size=25, RB Offset=0	22.43	22.34	22.48
		RB Size=25, RB Offset=12	22.26	22.33	22.44
		RB Size=25, RB Offset=24	22.14	22.16	22.45
		RB Size=50, RB Offset=0	22.15	21.98	21.97
	16QAM	RB Size=1, RB Offset=0	22.04	22.09	22.14
		RB Size=1, RB Offset=24	21.86	22.04	22.01
		RB Size=1, RB Offset=49	21.93	21.63	23
		RB Size=25, RB Offset=0	21.92	21.53	22.84
		RB Size=25, RB Offset=12	21.64	22.06	21.9
		RB Size=25, RB Offset=24	21.65	21.83	21.94
		RB Size=50, RB Offset=0	22.04	21.5	21.79

Peak-to-average ratio (PAR)

10MHz Bandwidth

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.85	13	Pass
QPSK (50RB Size)	5.84	13	Pass
16QAM (1RB Size)	7.32	13	Pass
16QAM (50RB Size)	7.18	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 (dBd)		
Middle Channel									
5 MHz Bandwidth									
710	84.94	282	2.1	H	17.2	1.56	0.0	15.64	34.77
710	88.49	204	2.3	V	22.2	1.56	0.0	20.64	34.77
10 MHz Bandwidth									
710	84.71	337	2.2	H	16.9	1.56	0.0	15.34	34.77
710	88.07	241	1.0	V	21.7	1.56	0.0	20.14	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 (dBd)		
Middle Channel									
5 MHz Bandwidth									
710	84.74	188	1.2	H	17.0	1.56	0.0	15.44	34.77
710	88.58	241	2.2	V	22.2	1.56	0.0	20.64	34.77
10 MHz Bandwidth									
710	84.41	209	1.2	H	16.6	1.56	0.0	15.04	34.77
710	88.29	170	2.3	V	22.0	1.56	0.0	20.44	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

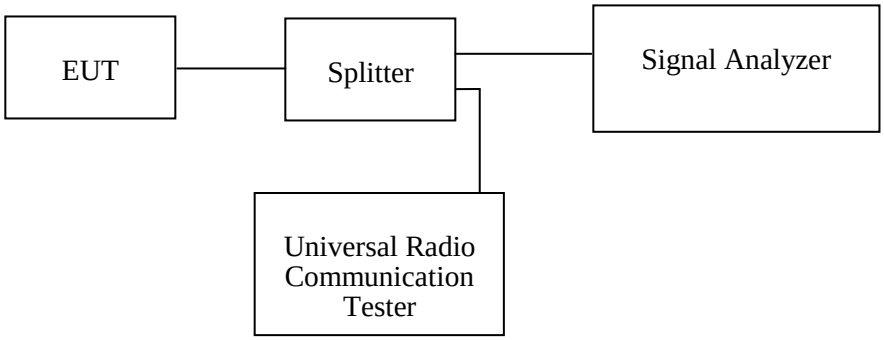
Applicable Standard

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:	50~52 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong from 2020-07-13 to 2020-07-29.

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	317.63
EDGE (GMSK)	836.6	246.79	315.06

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.20	4.77
HSUPA (BPSK)	836.6	4.20	4.74
HSDPA (16QAM)	836.6	4.20	4.82

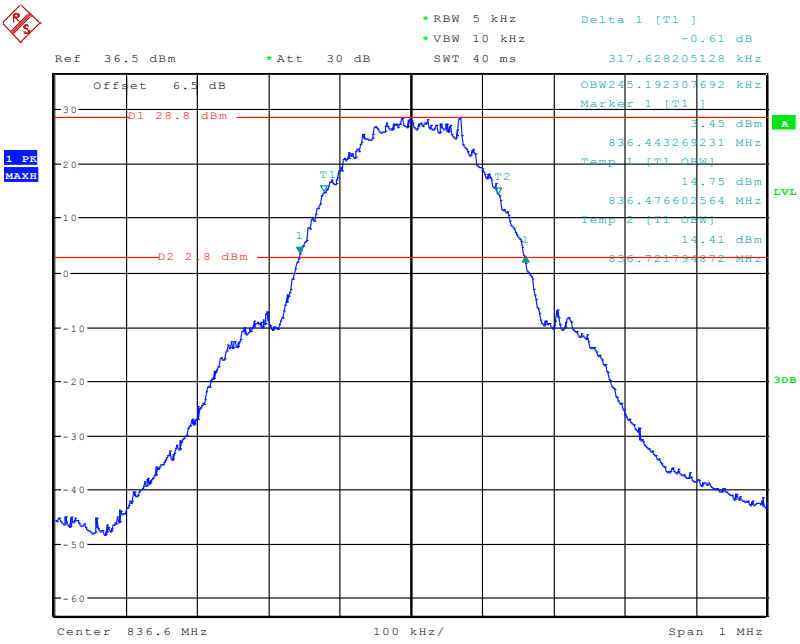
PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	245.19	323.08
EDGE (GMSK)	1880.0	250.00	318.27

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.17	4.73
HSUPA (BPSK)	1880.0	4.23	5.46
HSDPA (16QAM)	1880.0	4.23	5.16

Cellular Band (Part 22H)

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



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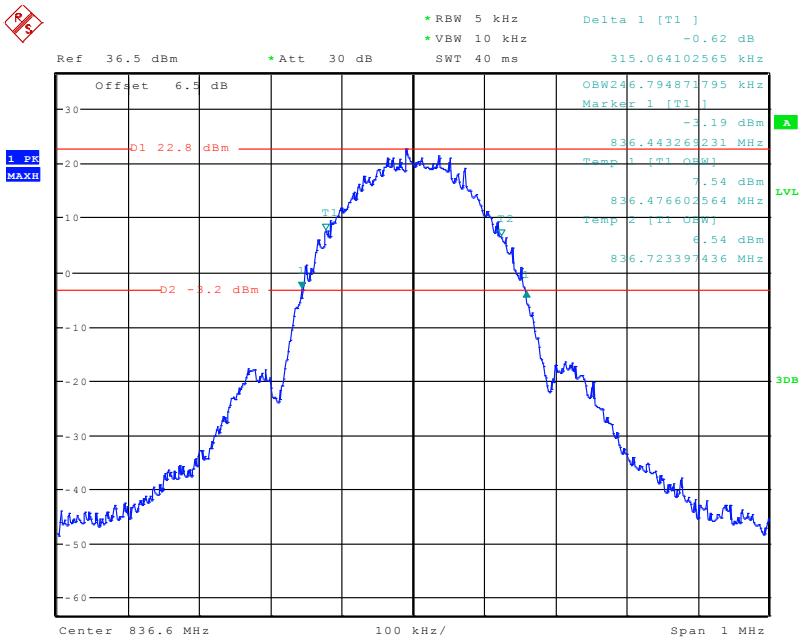
26 dB Emissions &99% Occupied Bandwidth for EDGE (GMSK) Mode



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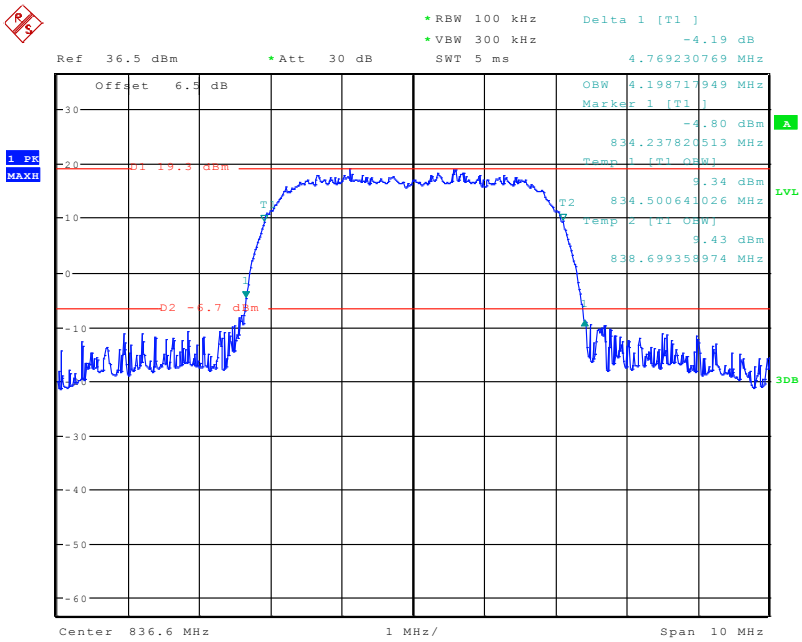
26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode



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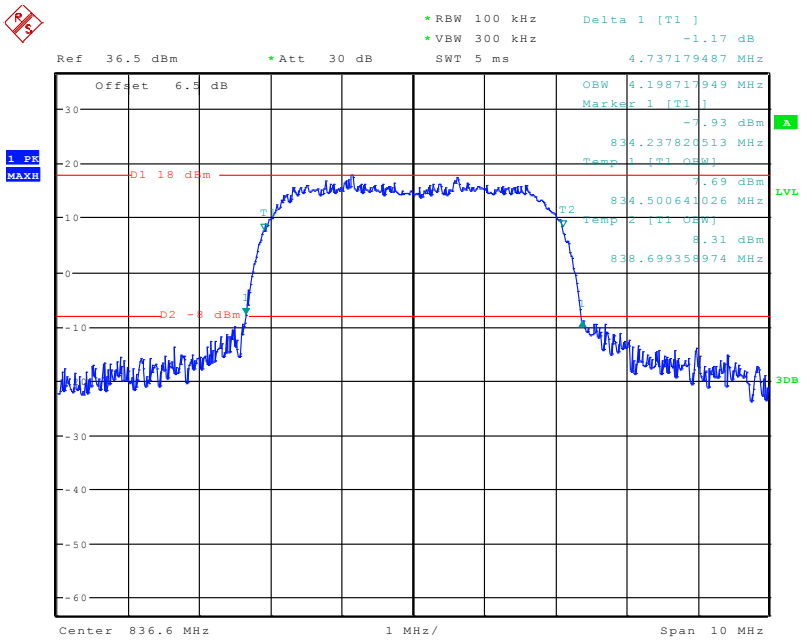
26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode



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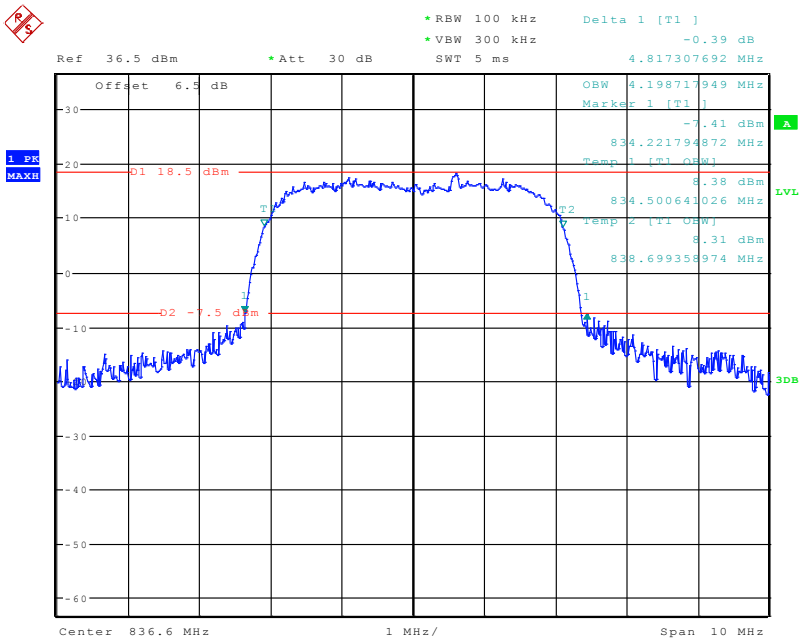
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode



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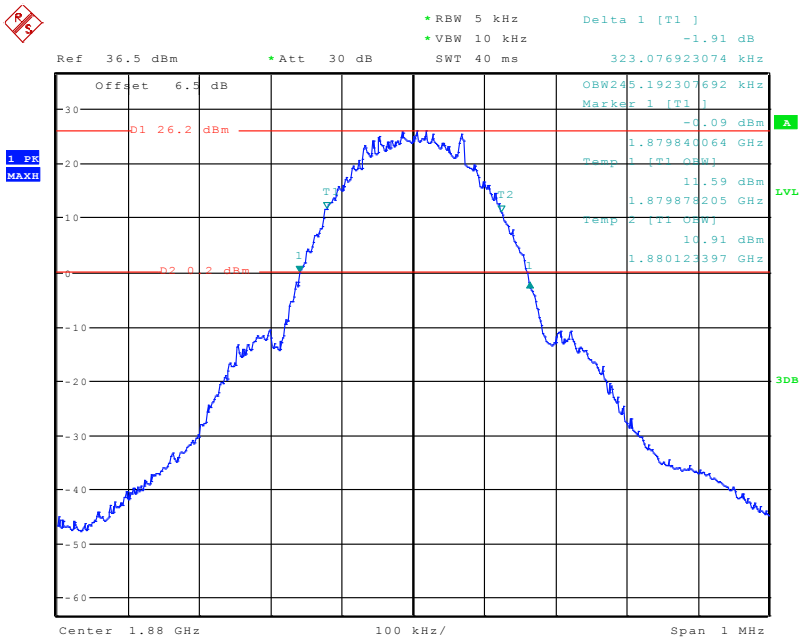
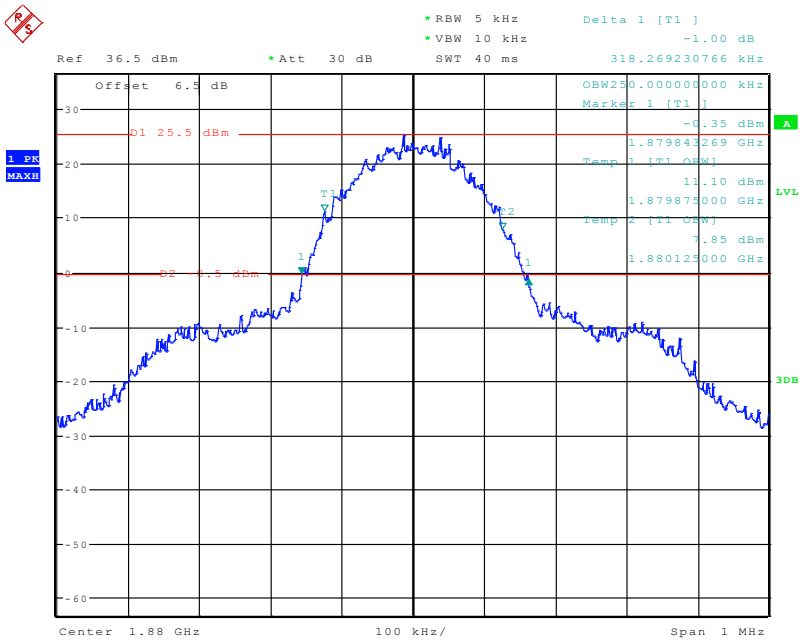
PCS Band (Part 24E)

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



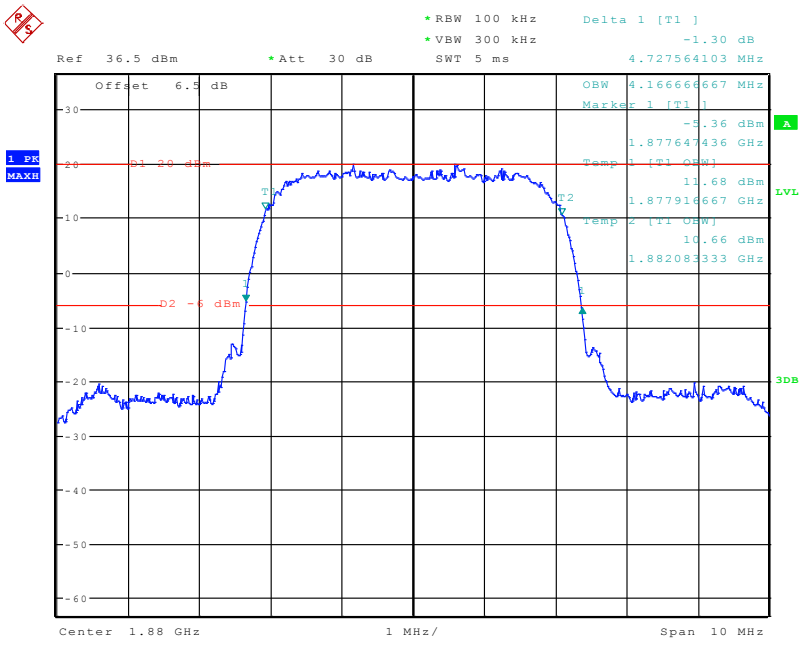
Date: 13.JUL.2020 21:20:46

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



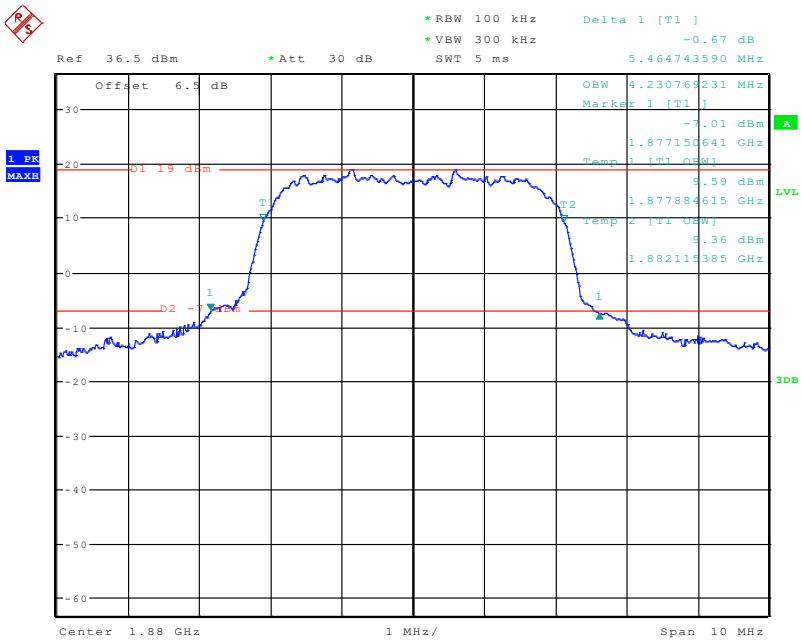
Date: 13.JUL.2020 22:08:22

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



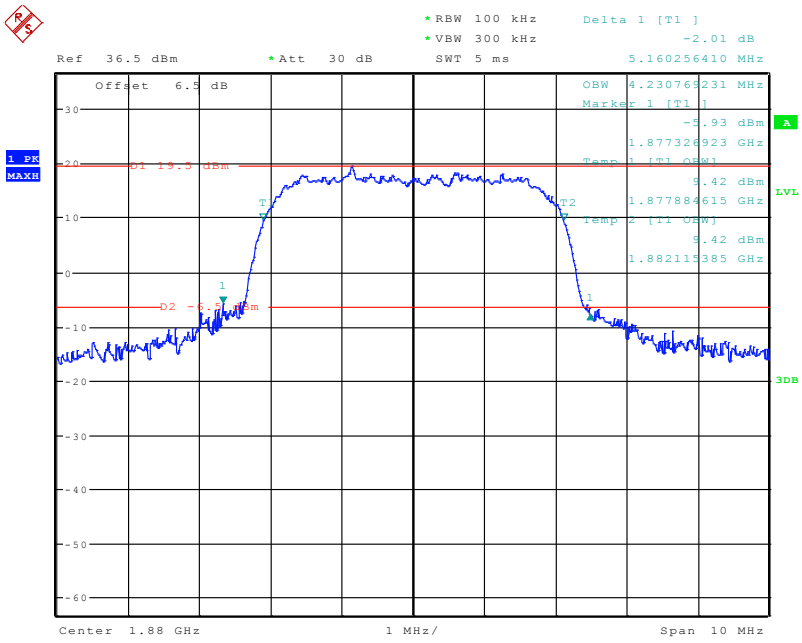
Date: 13.JUL.2020 20:28:53

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



Date: 13.JUL.2020 20:27:40

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

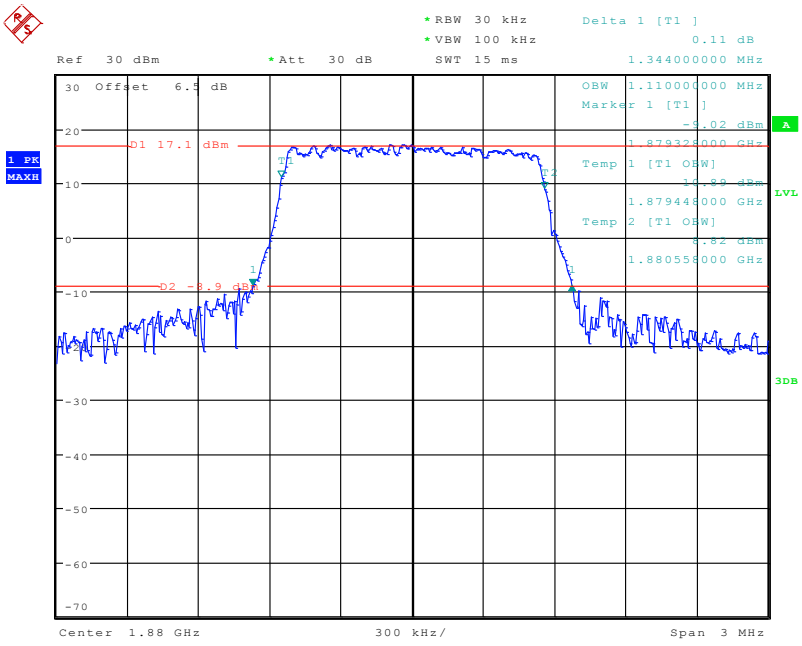


Date: 13.JUL.2020 20:02:06

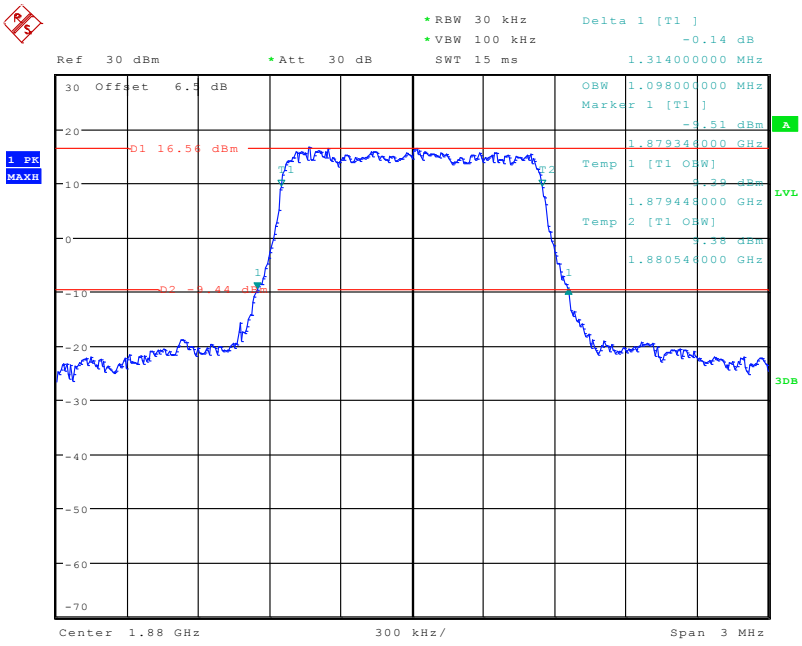
LTE Band 2: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.110	1.344
	16QAM	1.098	1.314
3.0	QPSK	2.688	2.880
	16QAM	2.688	2.892
5.0	QPSK	4.540	4.980
	16QAM	4.520	4.940
10.0	QPSK	8.960	9.640
	16QAM	8.960	9.520
15.0	QPSK	13.560	14.940
	16QAM	13.560	14.820
20.0	QPSK	18.000	19.360
	16QAM	18.000	19.440

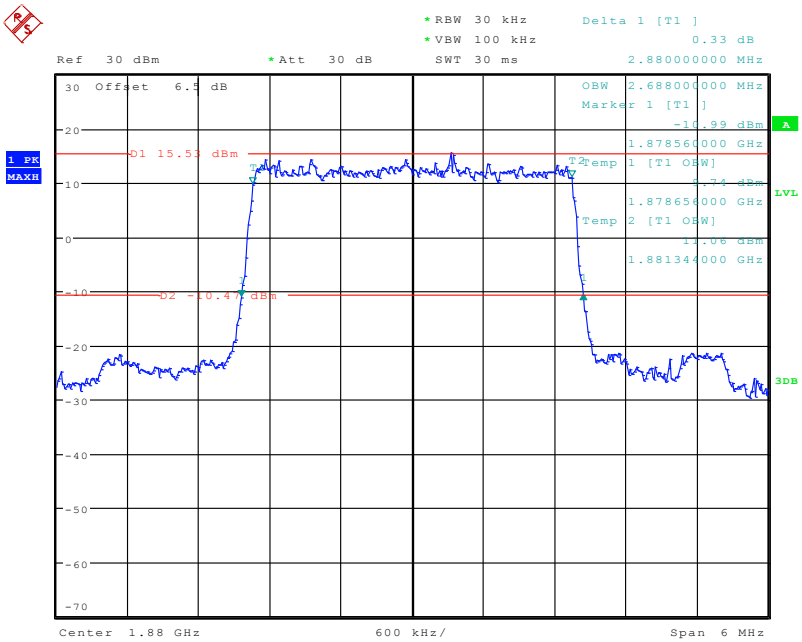
QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



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



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



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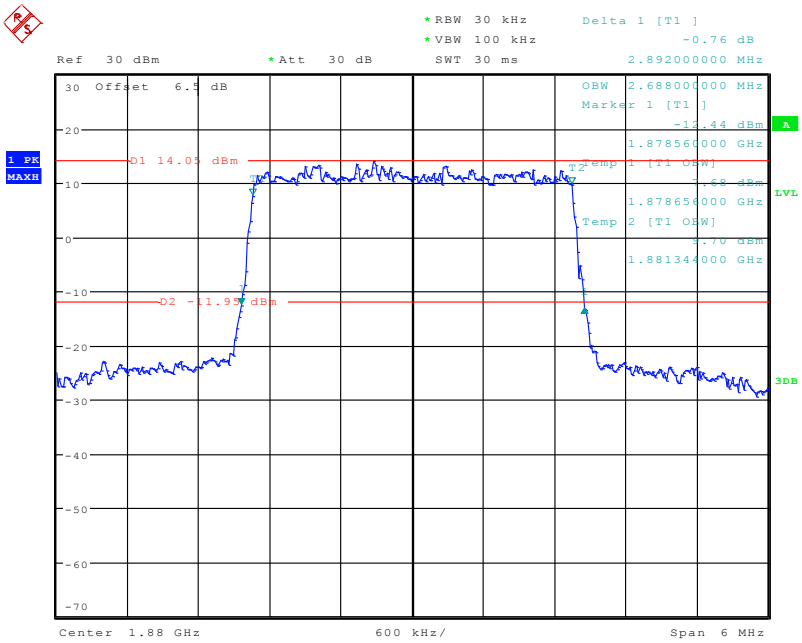
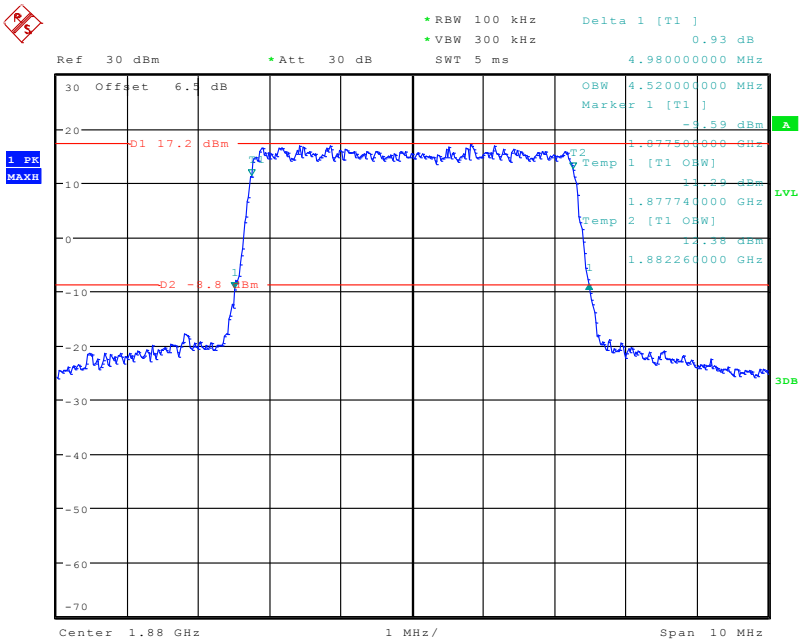
16-QAM (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



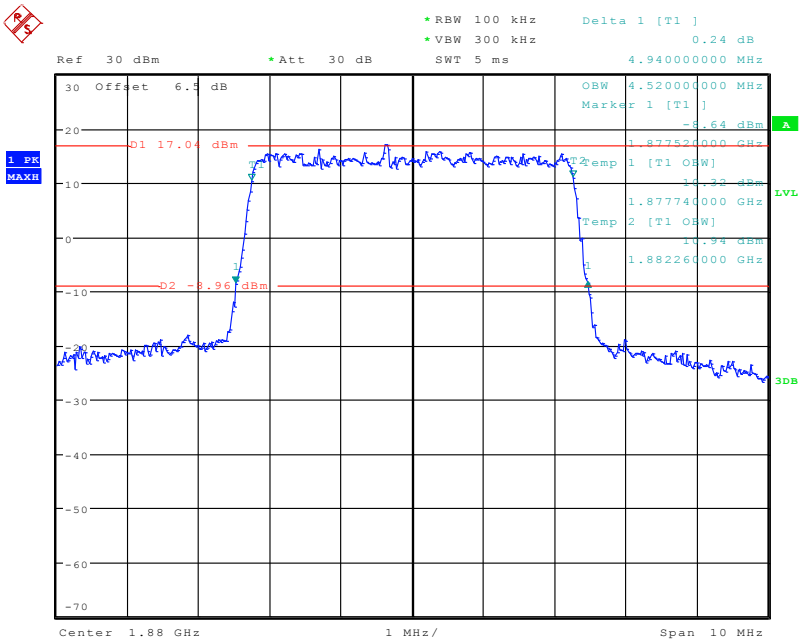
Date: 15.JUL.2020 20:07:14

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



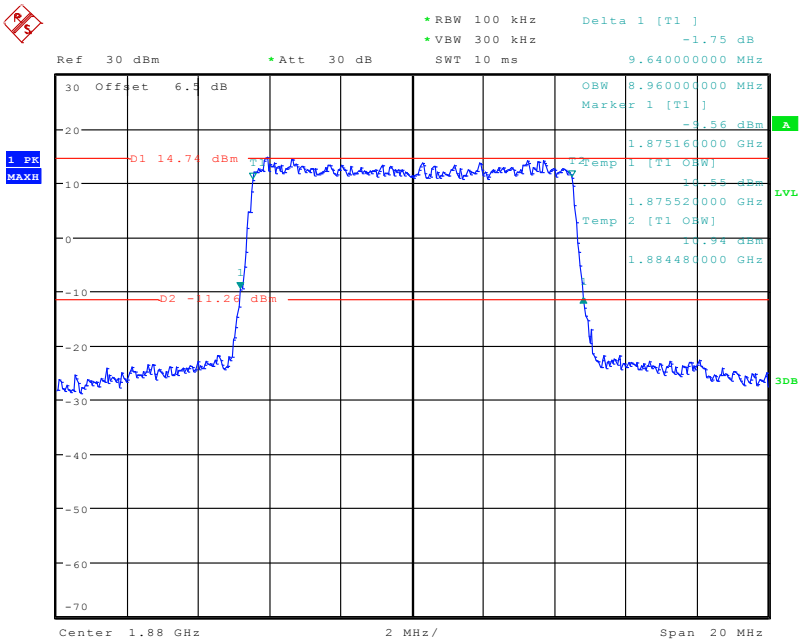
Date: 15.JUL.2020 20:07:36

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



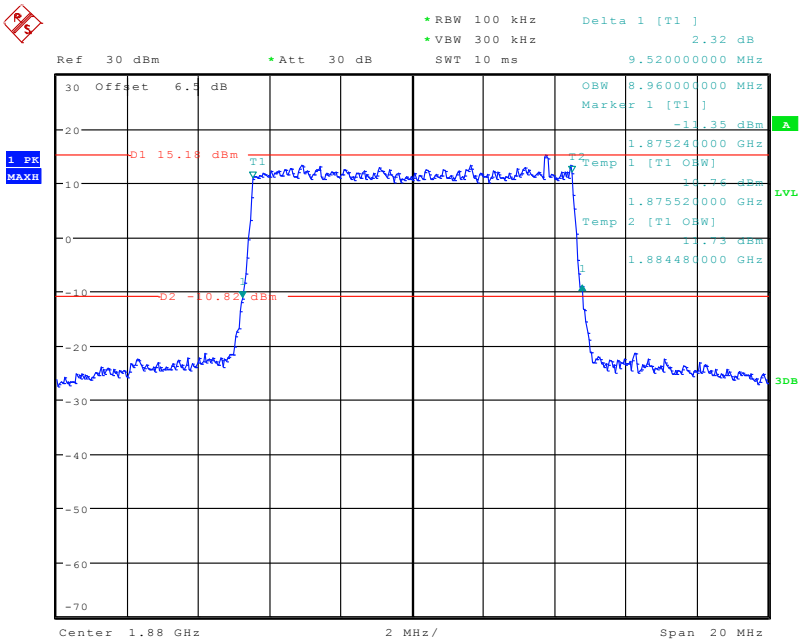
Date: 15.JUL.2020 20:07:52

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



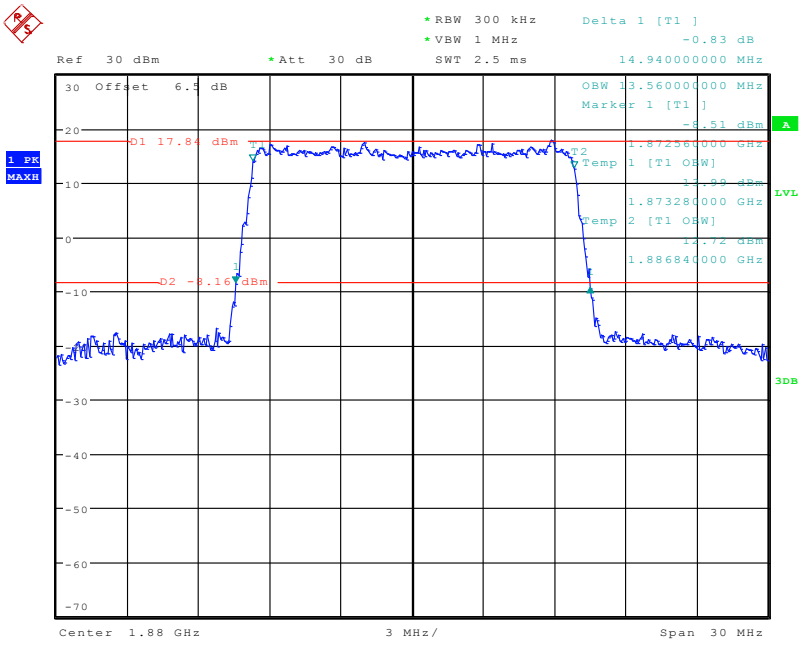
Date: 15.JUL.2020 20:08:15

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



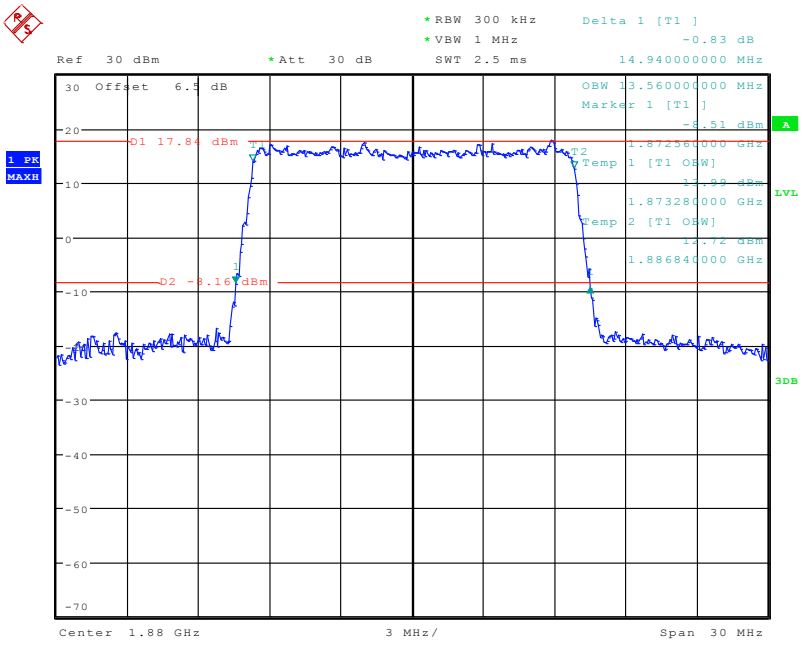
Date: 15.JUL.2020 20:08:35

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



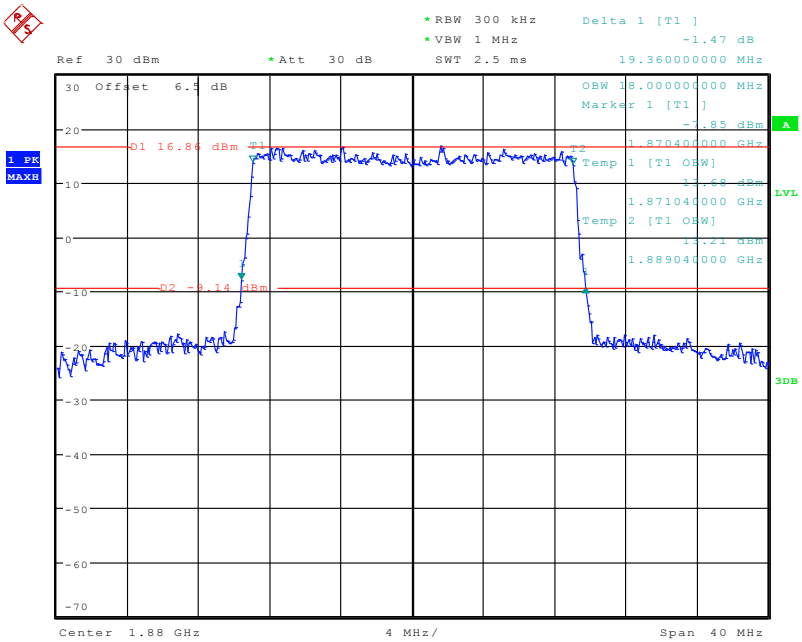
Date: 15.JUL.2020 20:09:03

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



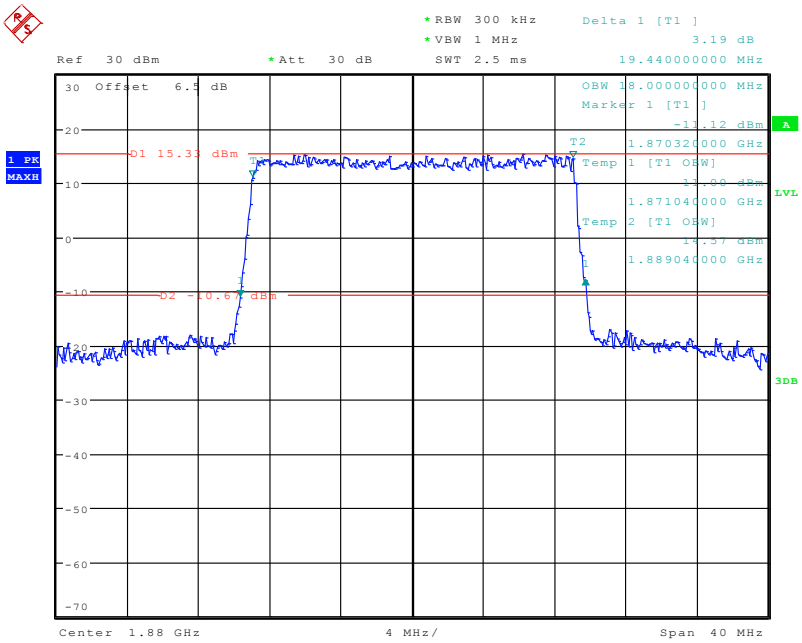
Date: 15.JUL.2020 20:09:03

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



Date: 15.JUL.2020 20:09:51

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

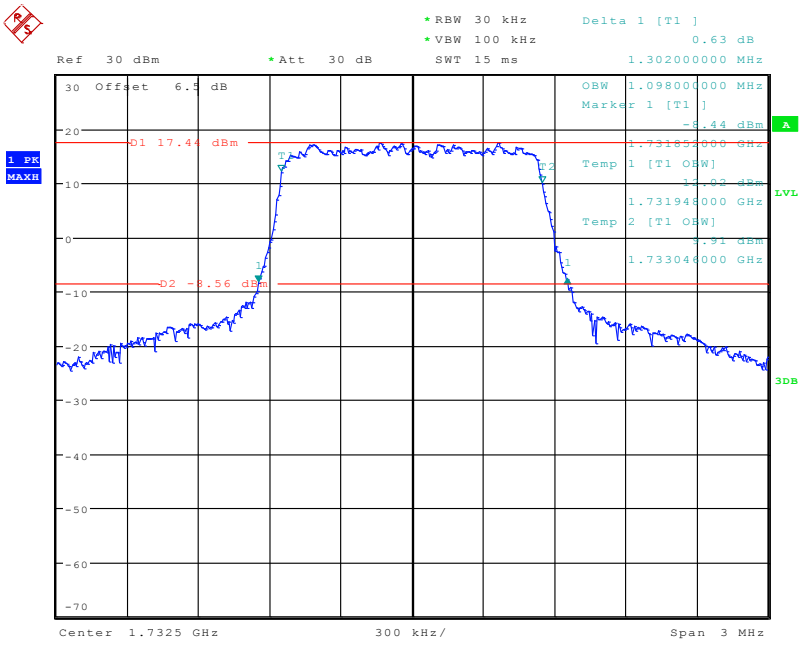


Date: 15.JUL.2020 20:10:14

LTE Band 4: (Middle Channel)

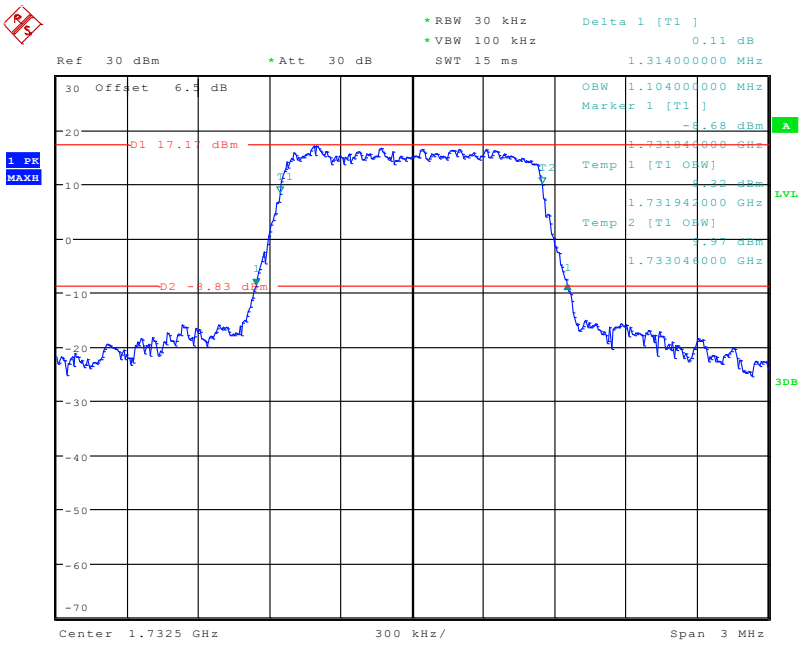
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.098	1.302
	16QAM	1.104	1.314
3.0	QPSK	2.688	2.880
	16QAM	2.688	2.892
5.0	QPSK	4.520	4.960
	16QAM	4.520	4.940
10.0	QPSK	8.960	9.680
	16QAM	8.960	9.600
15.0	QPSK	13.560	14.880
	16QAM	13.500	14.760
20.0	QPSK	18.000	19.280
	16QAM	18.000	19.520

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



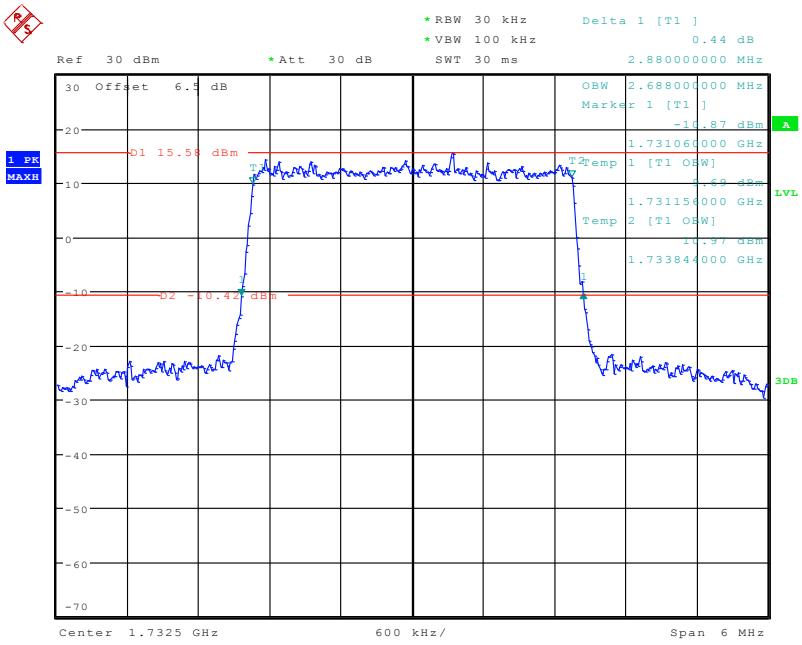
Date: 15.JUL.2020 20:10:36

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



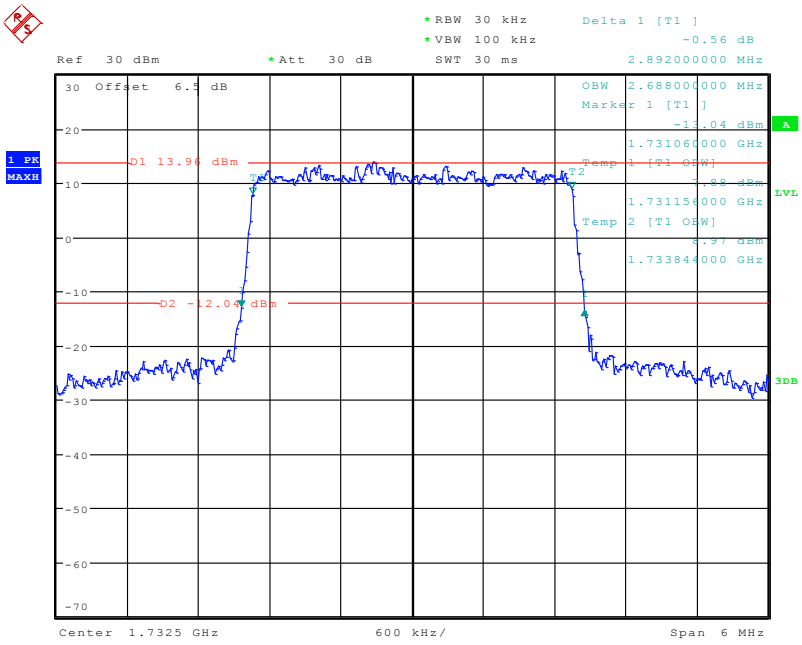
Date: 15.JUL.2020 20:10:56

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



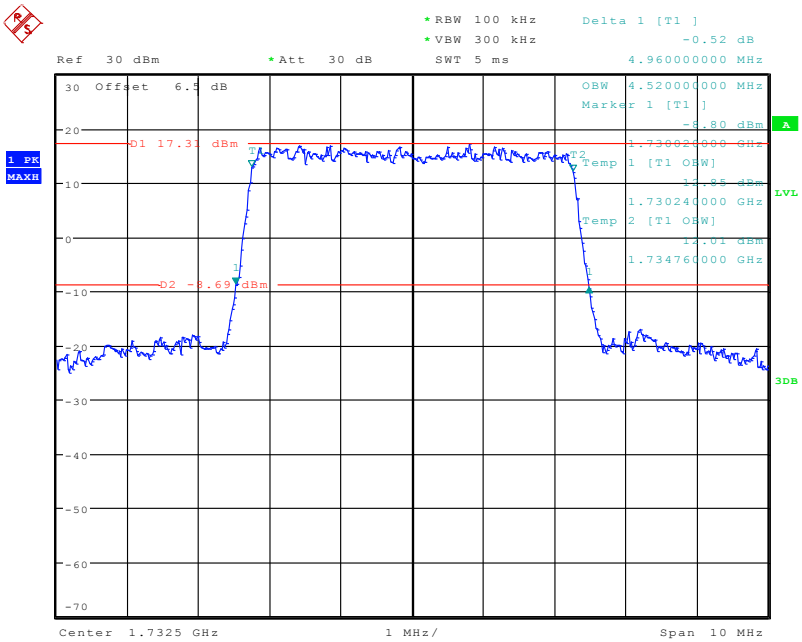
Date: 15.JUL.2020 20:11:14

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



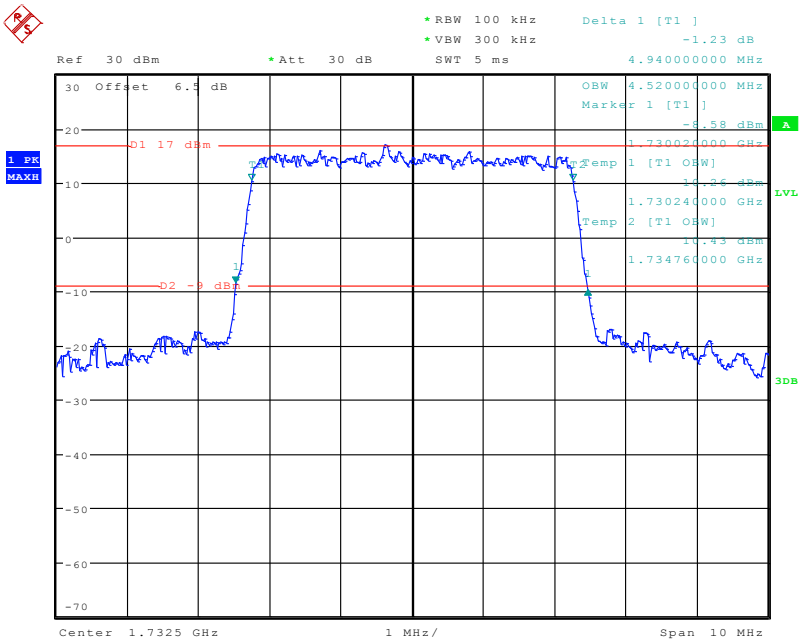
Date: 15.JUL.2020 20:11:30

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



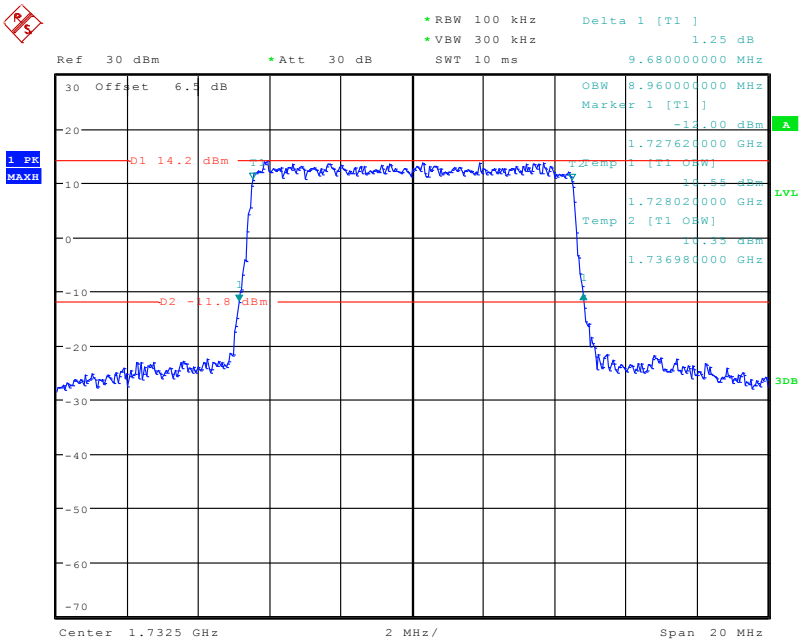
Date: 15.JUL.2020 20:11:52

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



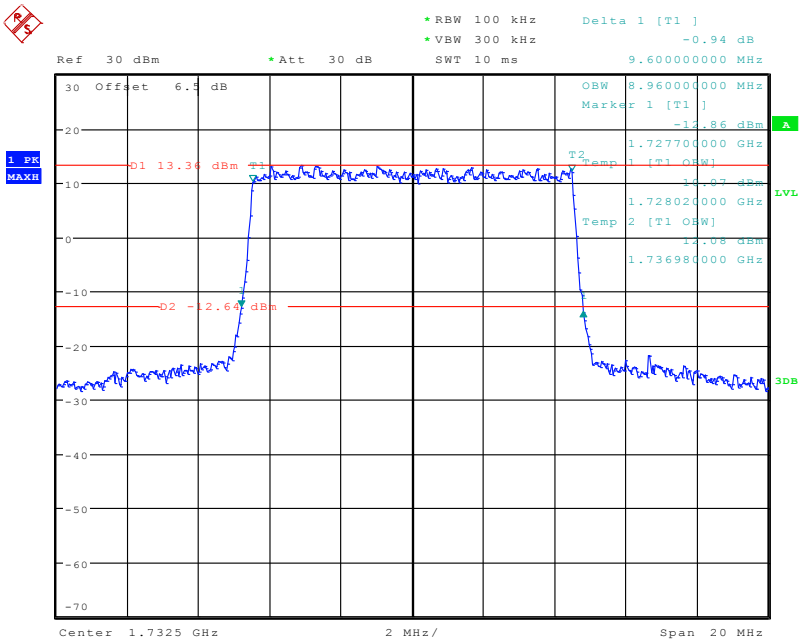
Date: 15.JUL.2020 20:12:11

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



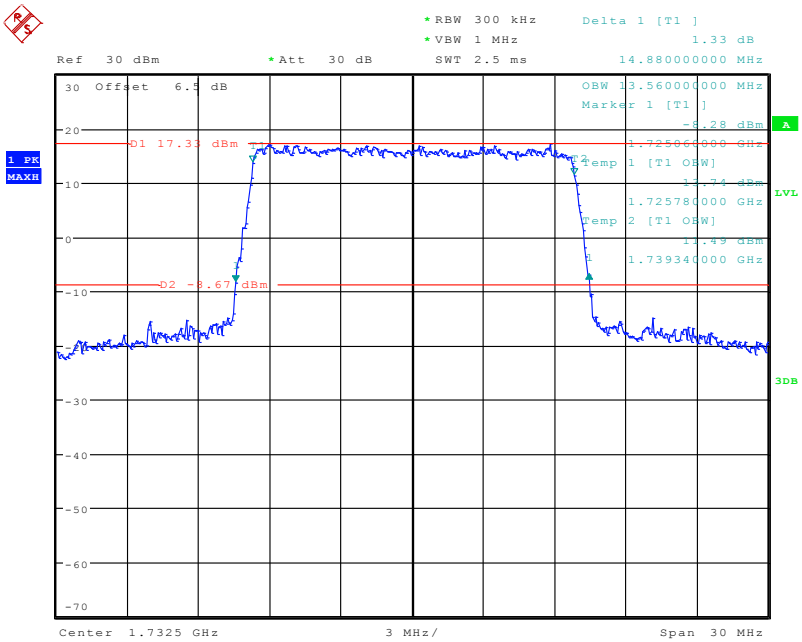
Date: 15.JUL.2020 20:12:34

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



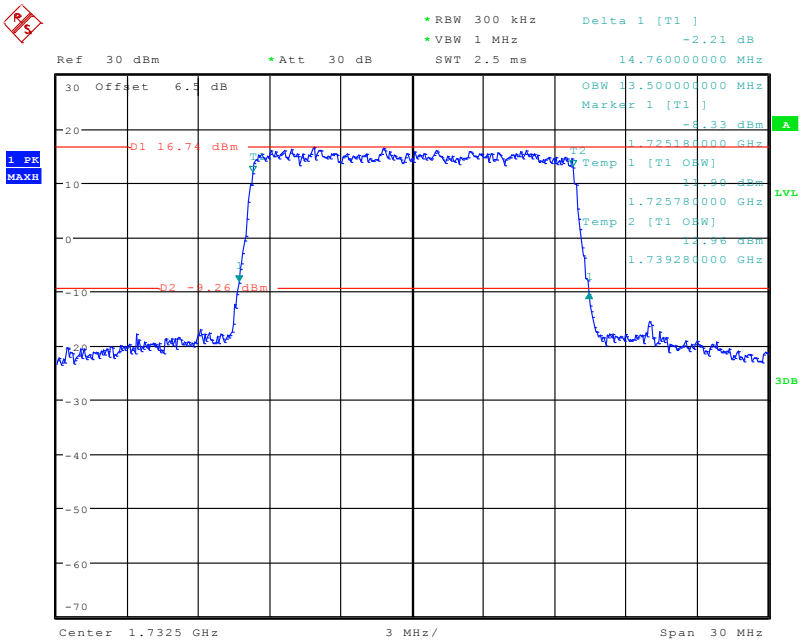
Date: 15.JUL.2020 20:12:55

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



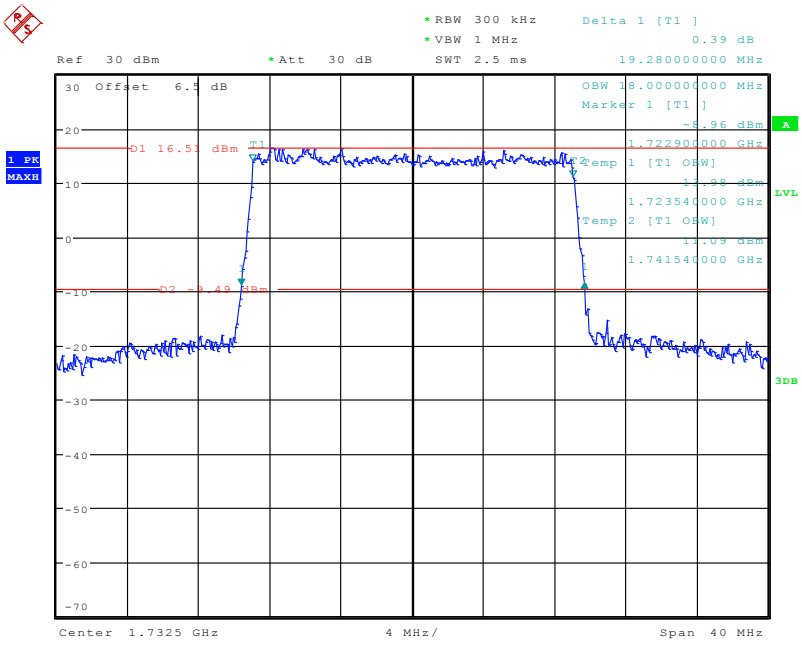
Date: 15.JUL.2020 20:13:23

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



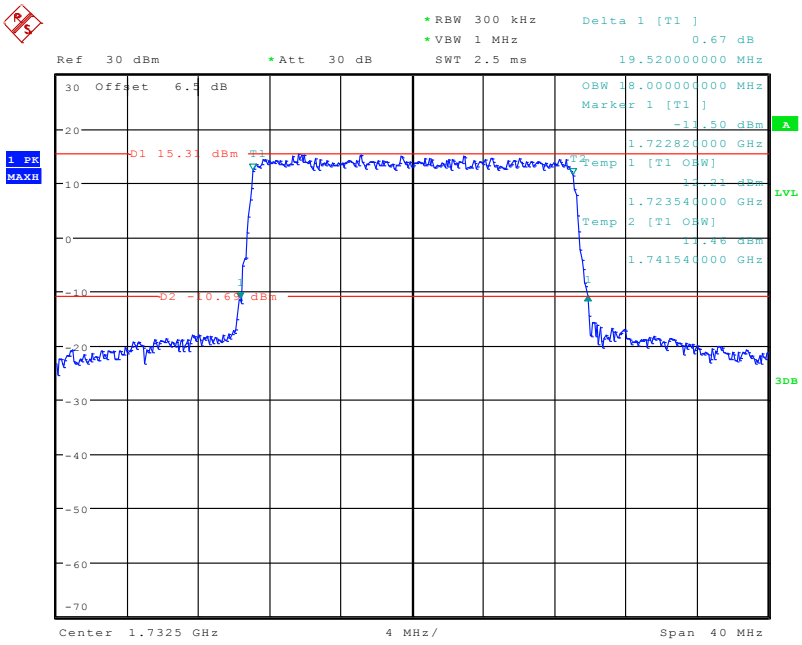
Date: 15.JUL.2020 20:13:46

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



Date: 15.JUL.2020 20:14:08

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

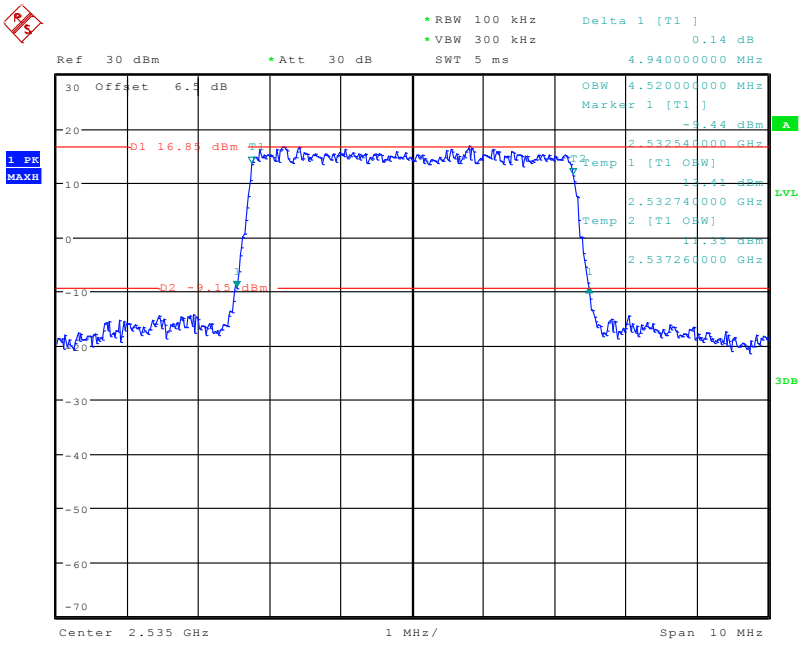


Date: 15.JUL.2020 20:14:31

LTE Band 7: (Middle Channel)

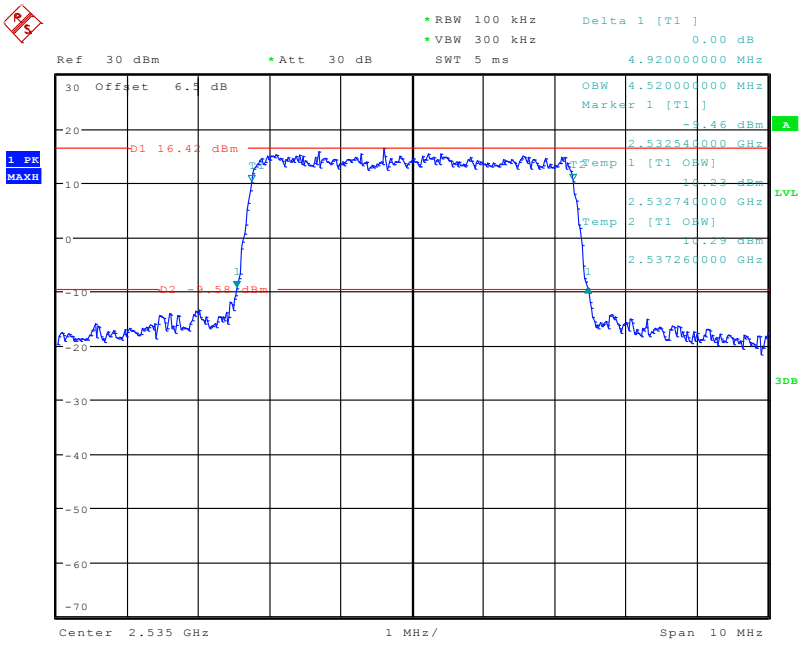
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.520	4.940
	16QAM	4.520	4.920
10.0	QPSK	8.960	9.880
	16QAM	8.960	9.760
15.0	QPSK	13.620	17.587
	16QAM	13.620	17.904
20.0	QPSK	18.000	25.440
	16QAM	18.000	25.120

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



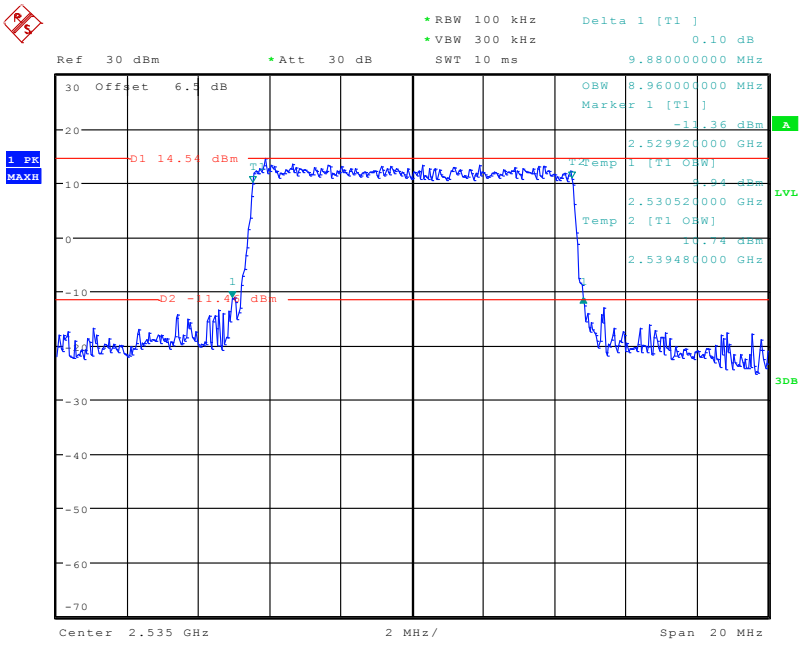
Date: 15.JUL.2020 20:14:59

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



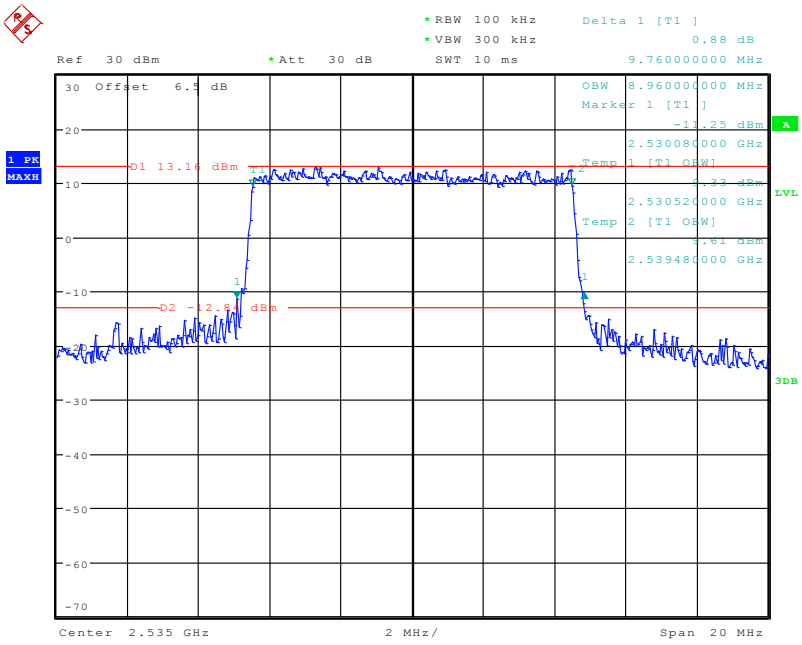
Date: 15.JUL.2020 20:15:24

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



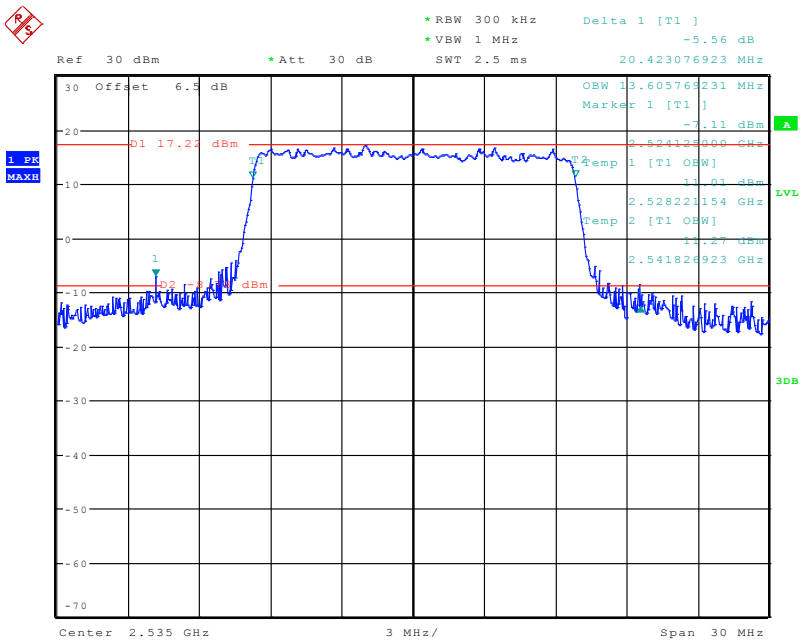
Date: 15.JUL.2020 20:15:50

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



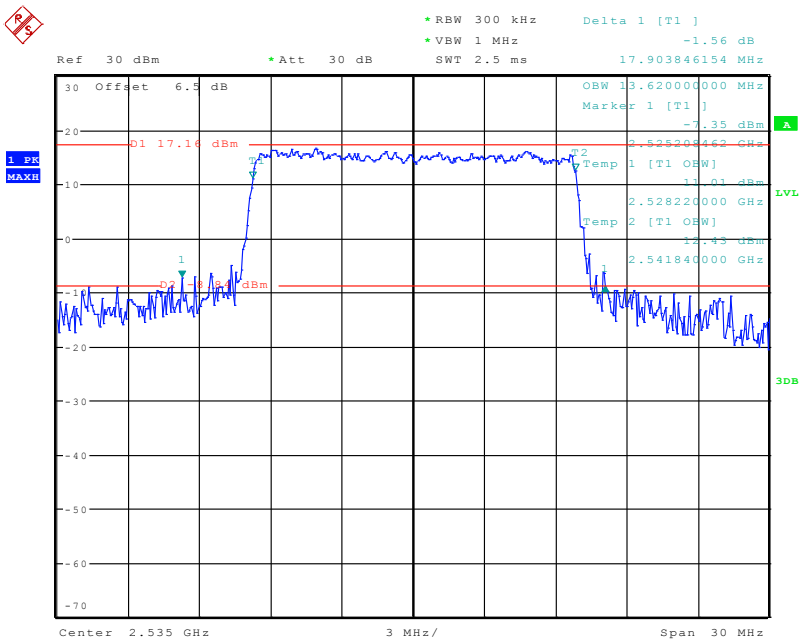
Date: 15.JUL.2020 20:16:11

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



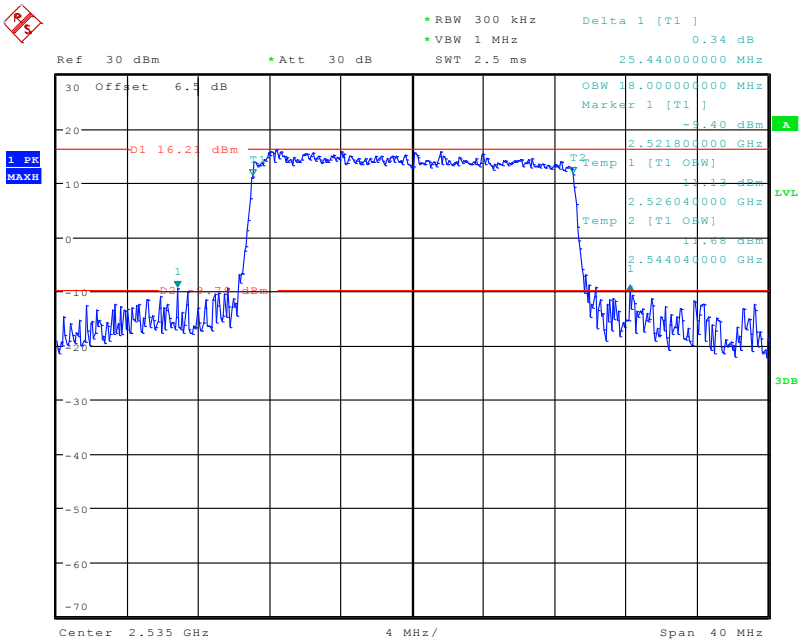
Date: 29.JUL.2020 18:53:29

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

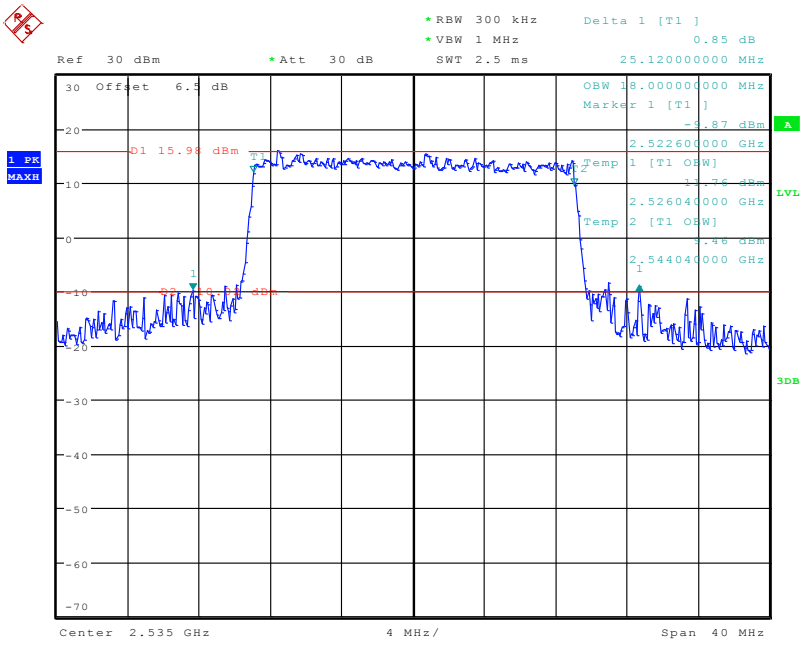


Date: 15.JUL.2020 20:59:26

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



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

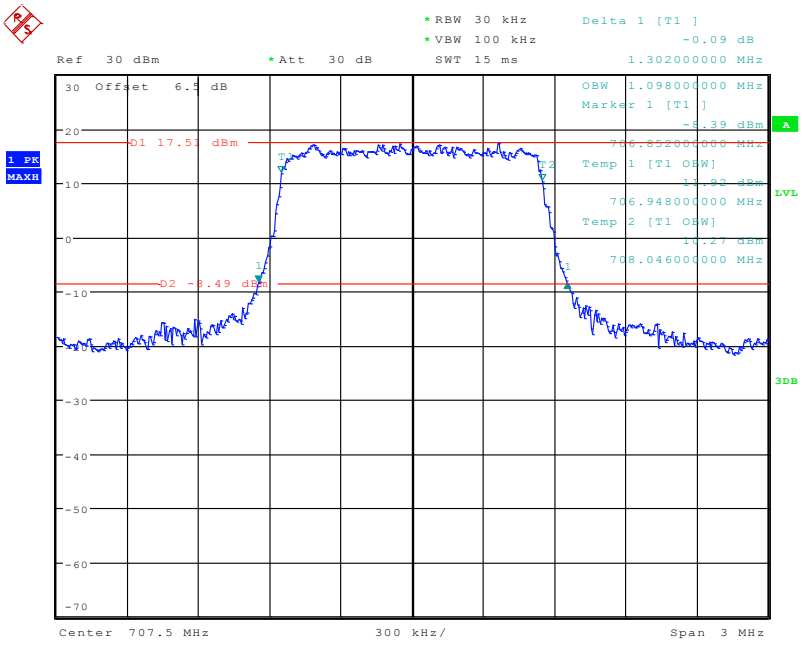


Date: 15.JUL.2020 20:18:18

LTE Band 12: (Middle Channel)

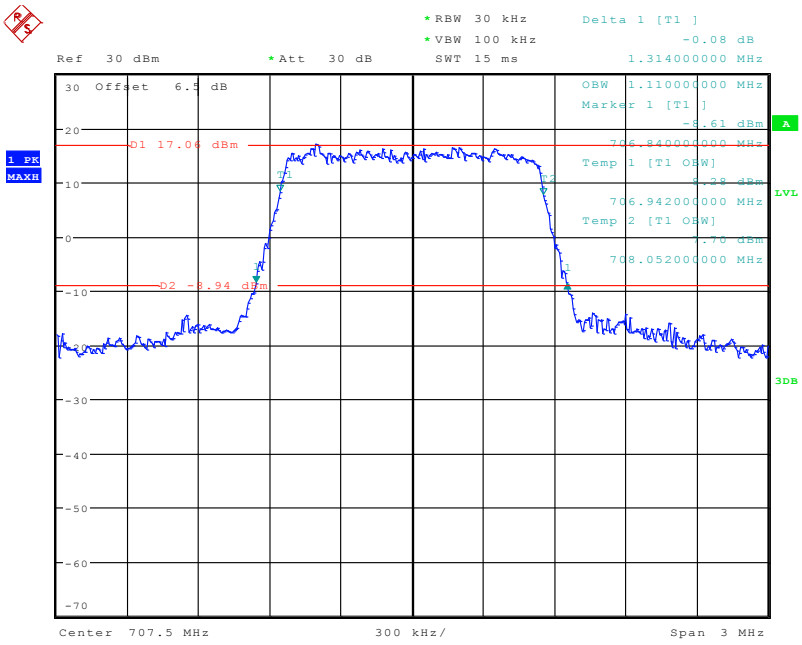
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.098	1.302
	16QAM	1.110	1.314
3.0	QPSK	2.688	2.880
	16QAM	2.688	2.880
5.0	QPSK	4.540	5.200
	16QAM	4.520	5.140
10.0	QPSK	8.960	9.960
	16QAM	9.000	9.920

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



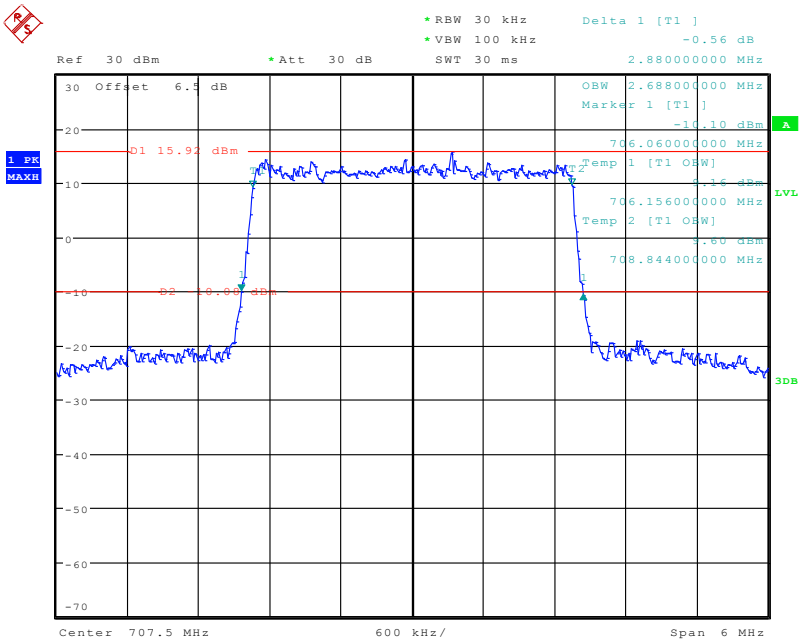
Date: 15.JUL.2020 20:18:37

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



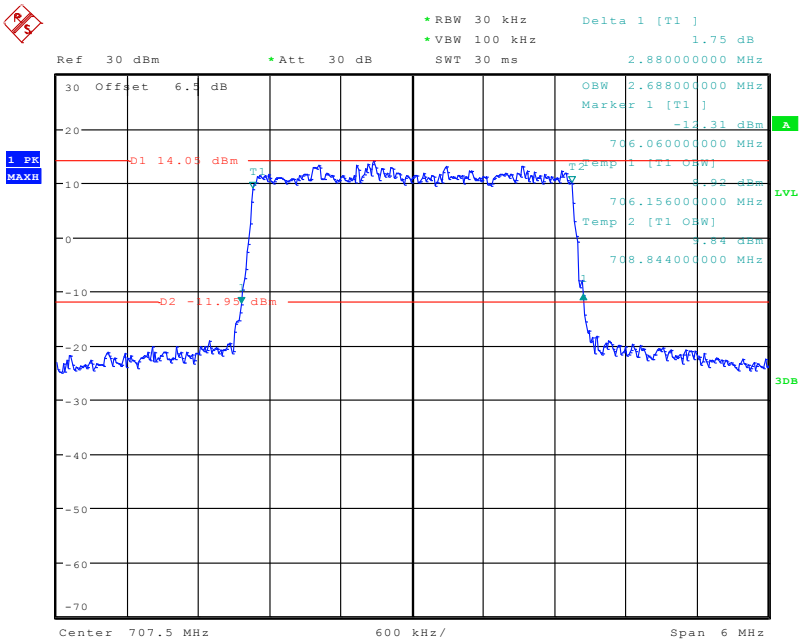
Date: 15.JUL.2020 20:18:53

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



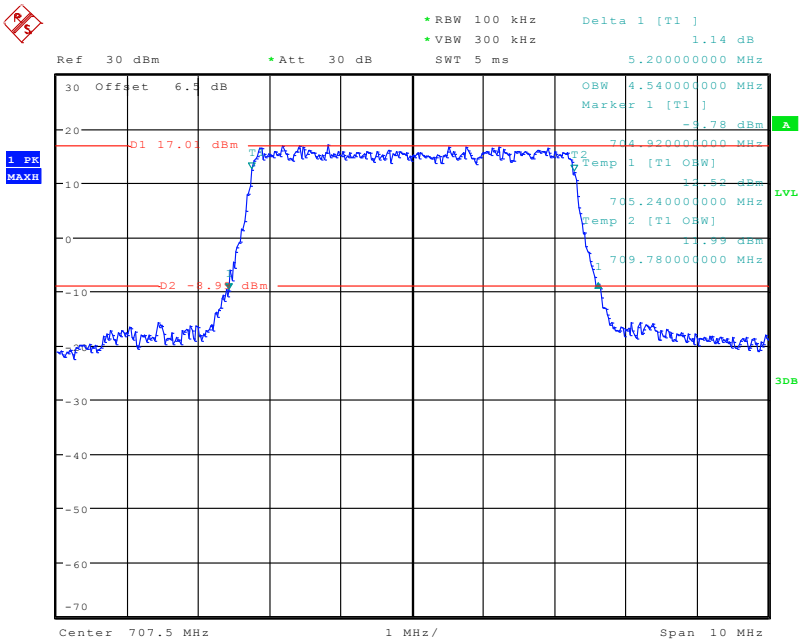
Date: 15.JUL.2020 20:19:12

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



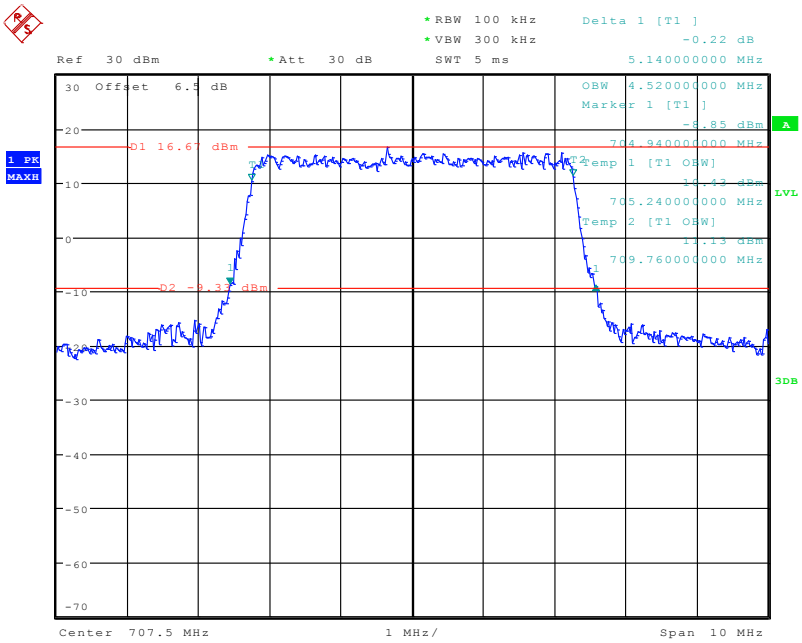
Date: 15.JUL.2020 20:19:28

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



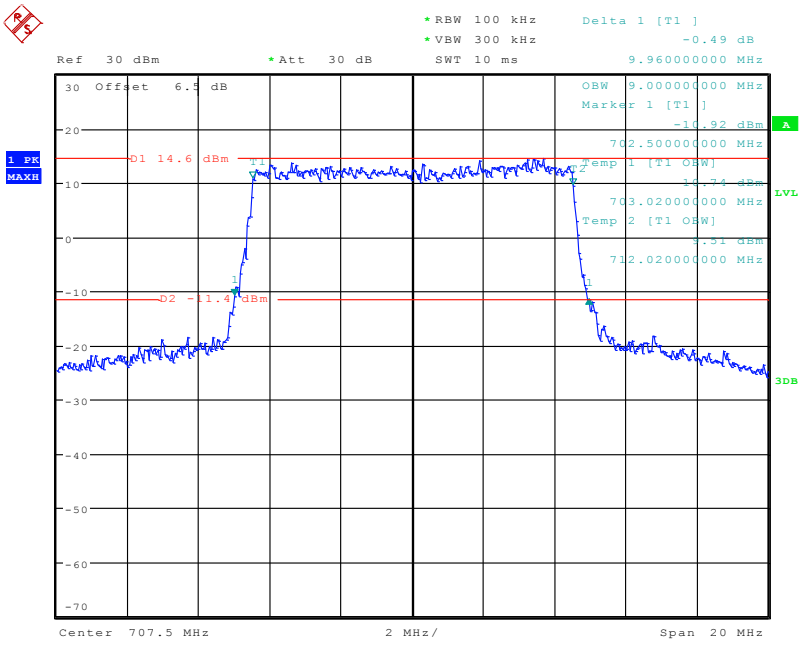
Date: 15.JUL.2020 20:19:56

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

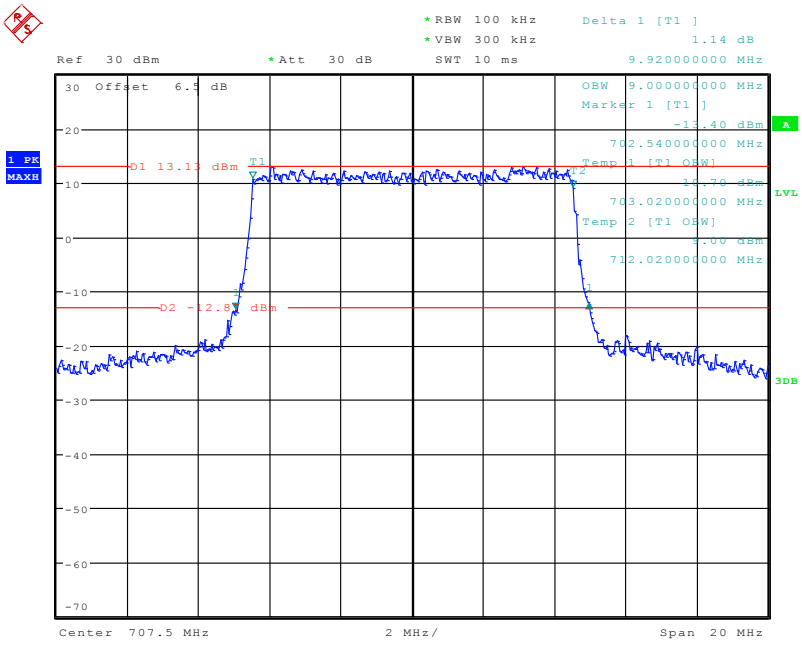


Date: 15.JUL.2020 20:20:15

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



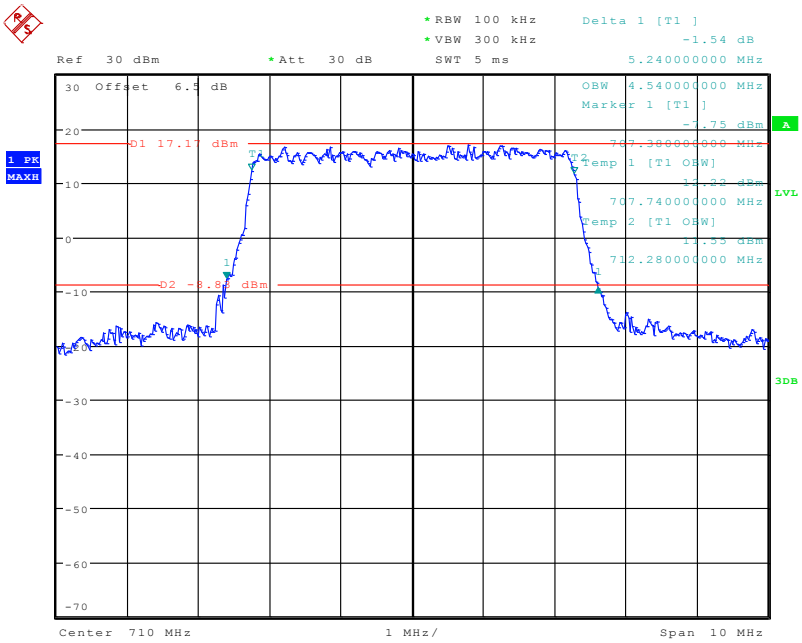
16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



LTE Band 17: (Middle Channel)

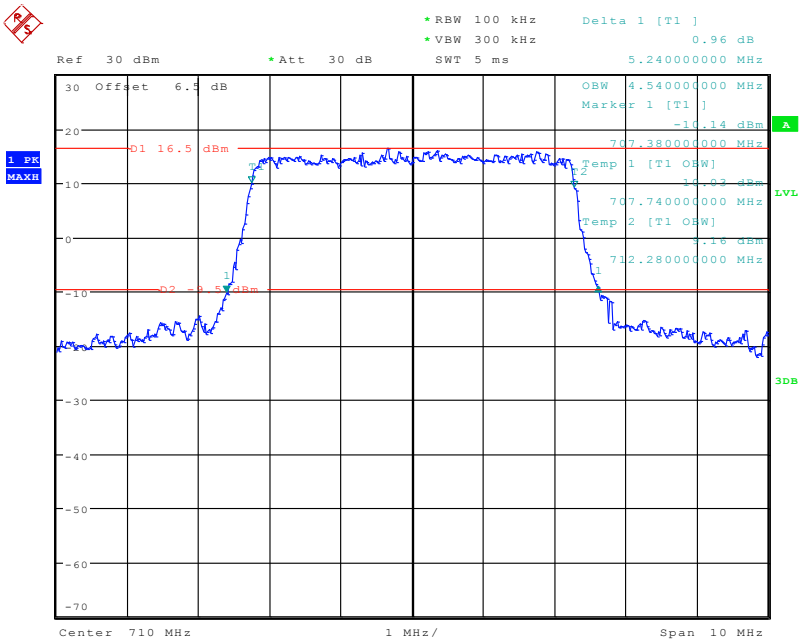
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.540	5.240
	16QAM	4.540	5.240
10.0	QPSK	8.960	9.920
	16QAM	8.960	9.680

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



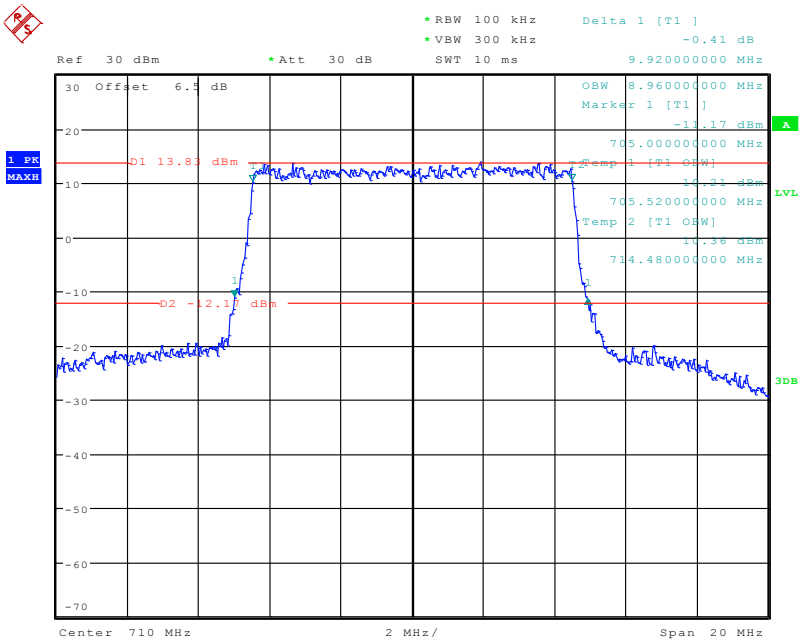
Date: 15.JUL.2020 20:21:24

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



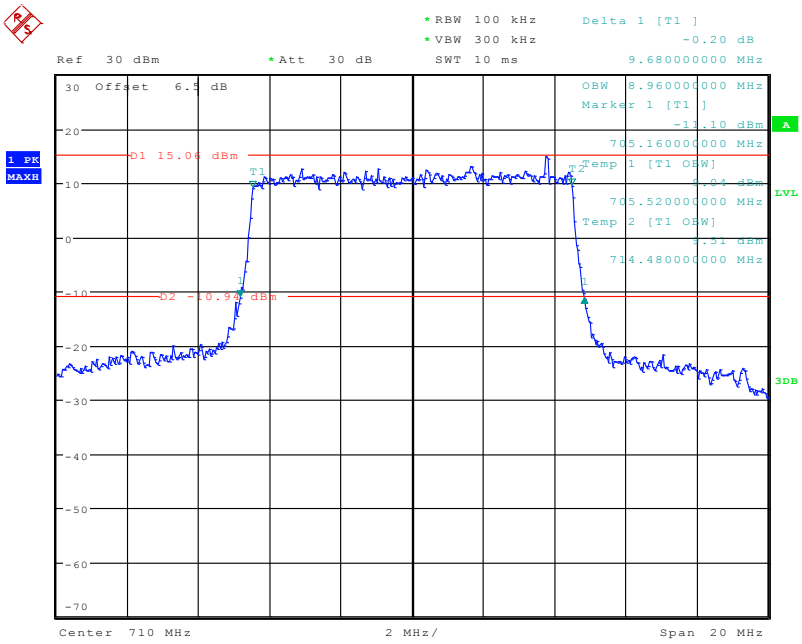
Date: 15.JUL.2020 20:21:52

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



Date: 15.JUL.2020 20:22:15

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



Date: 15.JUL.2020 20:22:33

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

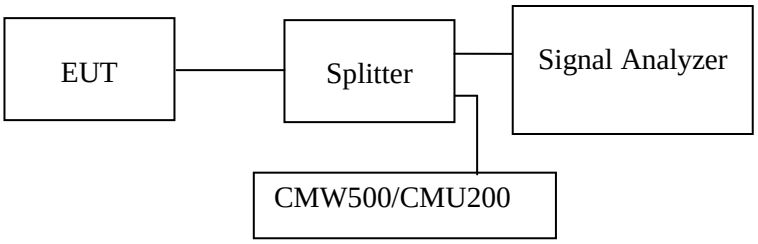
Applicable Standard

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

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

Test Procedure

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



Test Data

Environmental Conditions

Temperature:	24~25 ℃
Relative Humidity:	50~52 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong from 2020-07-13 to 2020-07-15.

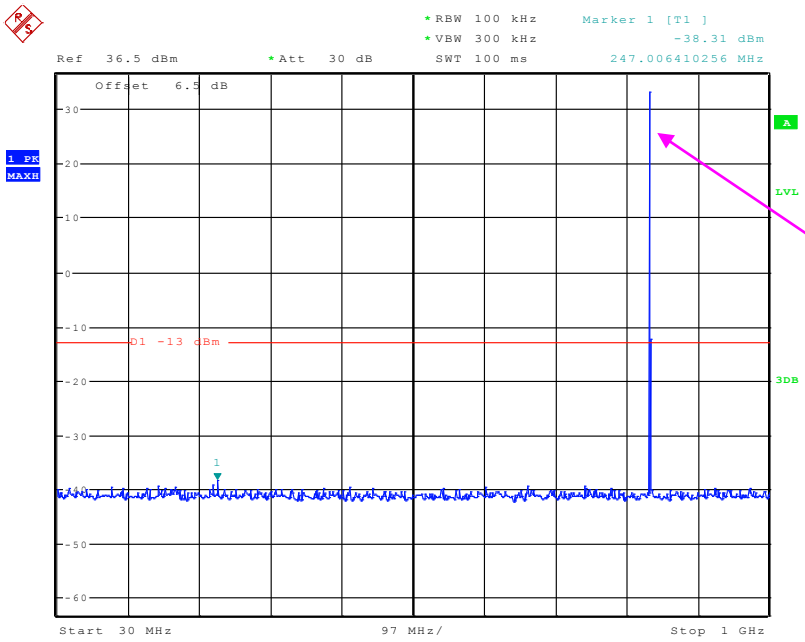
Test result: Compliance.

EUT operation mode: transmitting

Please refer to the following plots.

Cellular Band (Part 22H)

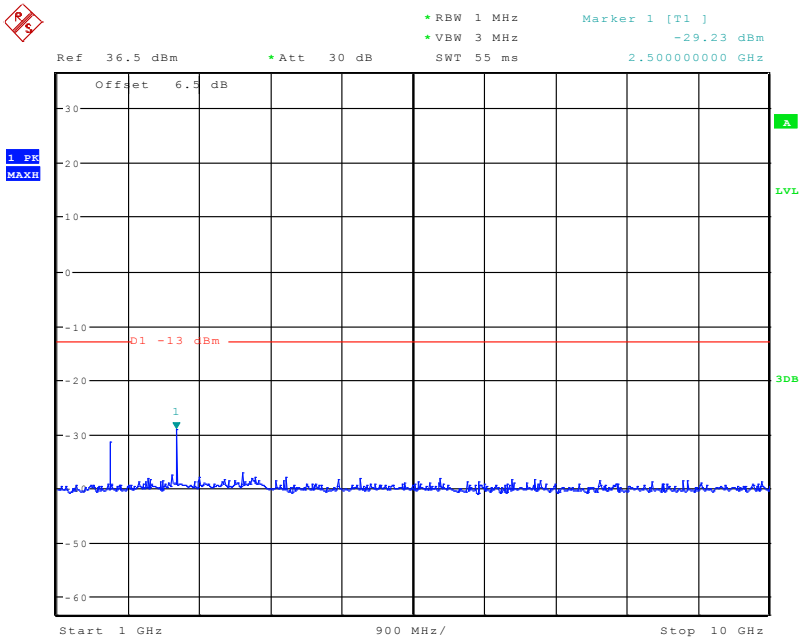
30 MHz – 1 GHz (GSM Mode)



Fundamental test

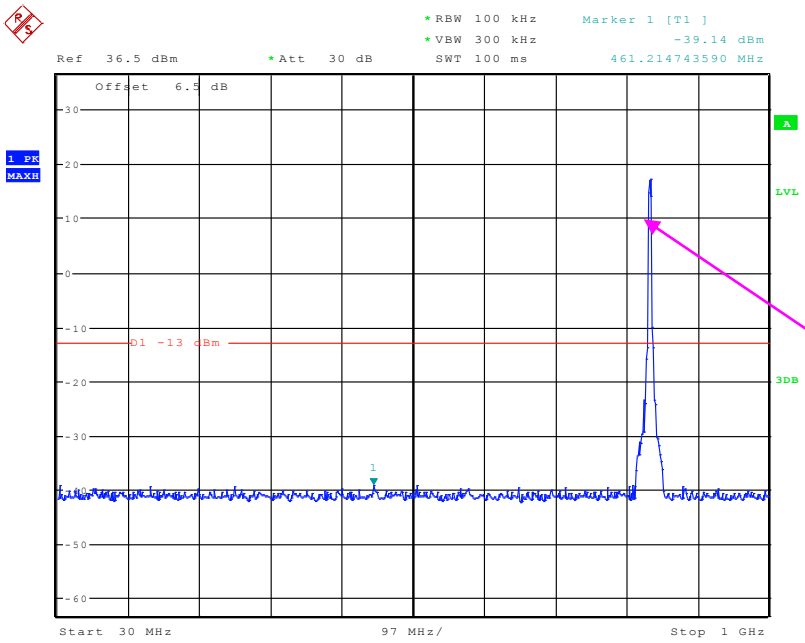
Date: 13.JUL.2020 21:44:09

1 GHz – 10 GHz (GSM Mode)



Date: 13.JUL.2020 21:44:43

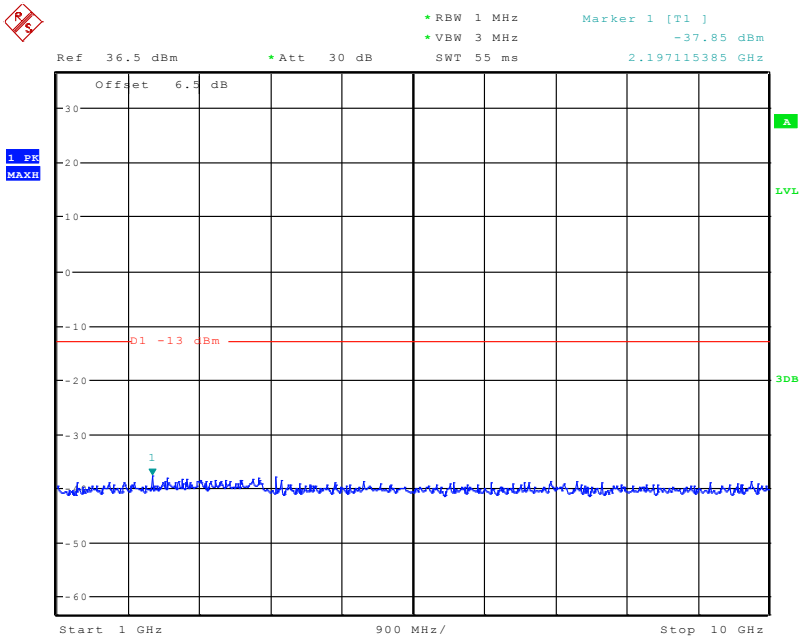
30 MHz – 1 GHz (WCDMA Mode)



Fundamental test

Date: 13.JUL.2020 20:41:19

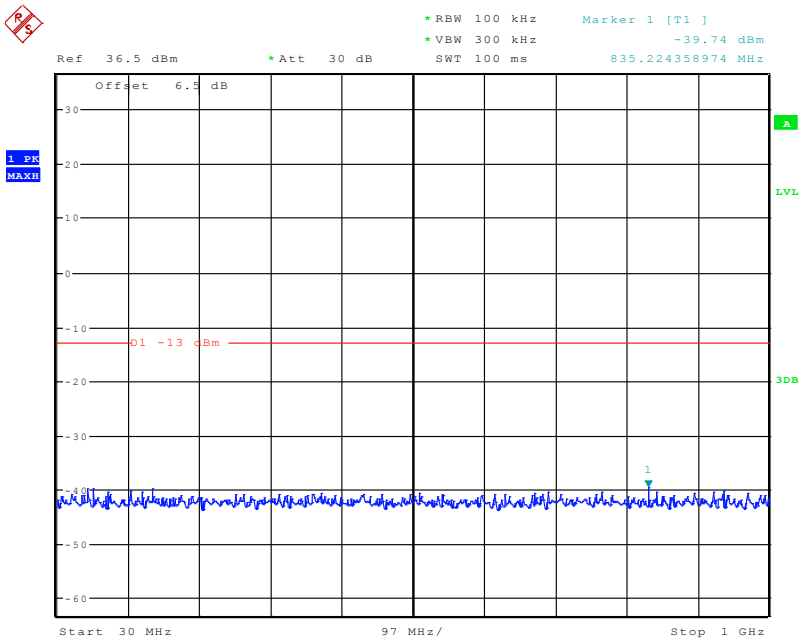
1 GHz – 10 GHz (WCDMA Mode)



Date: 13.JUL.2020 20:40:30

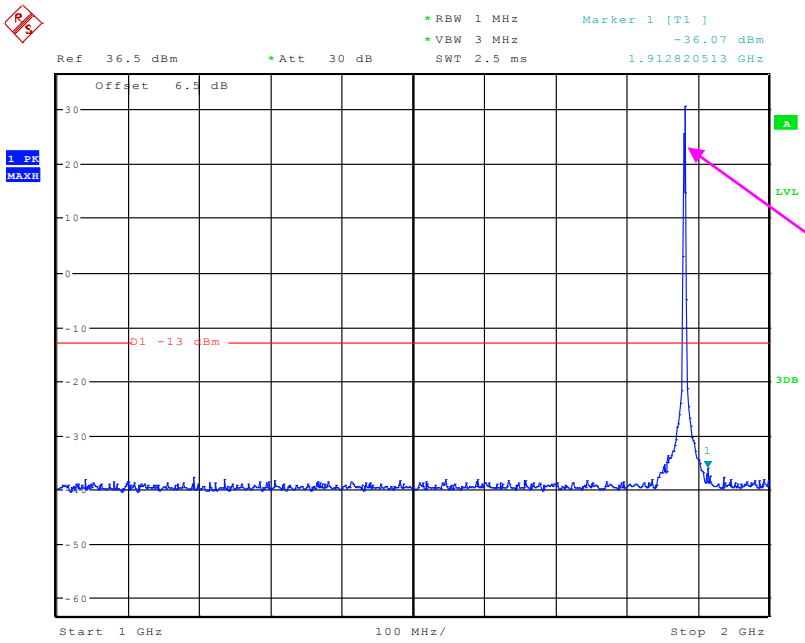
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)



Date: 13.JUL.2020 22:04:35

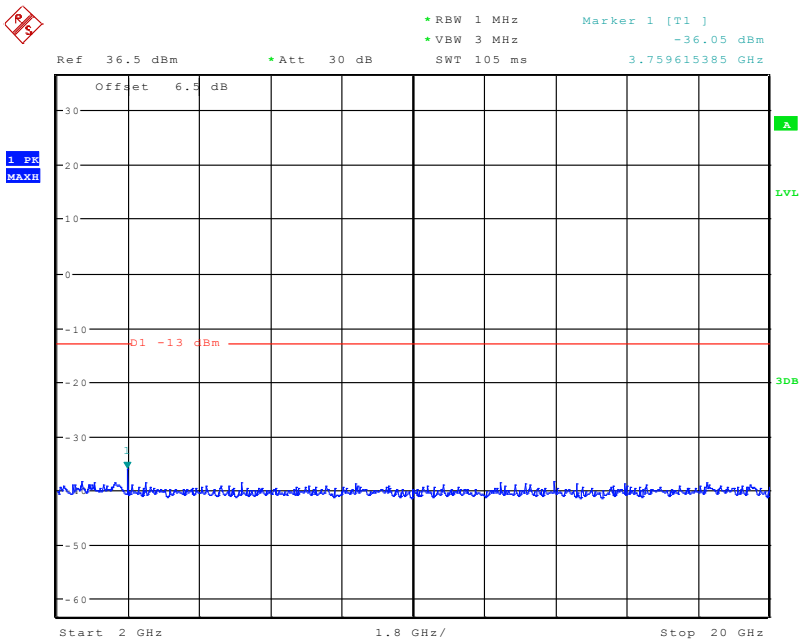
1 GHz – 2 GHz (GSM Mode)



Fundamental test

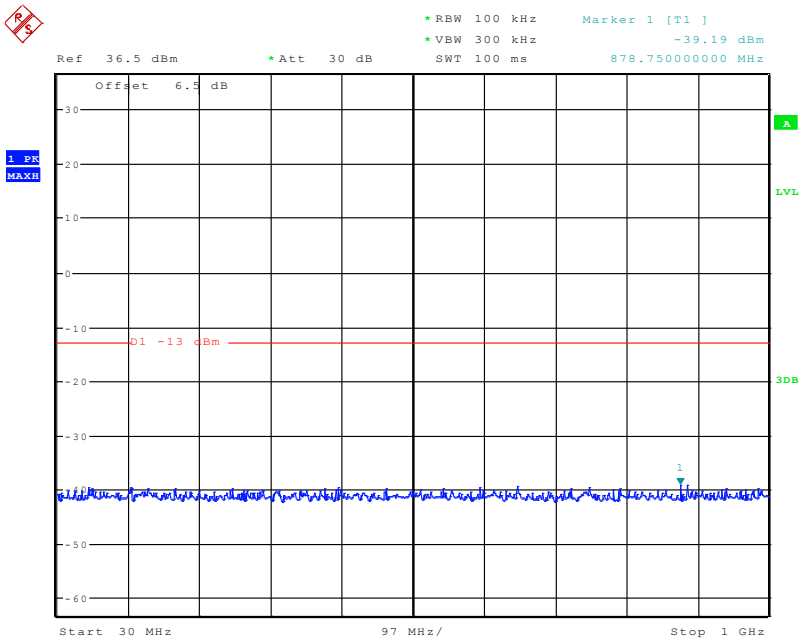
Date: 13.JUL.2020 22:03:44

2 GHz – 20 GHz (GSM Mode)



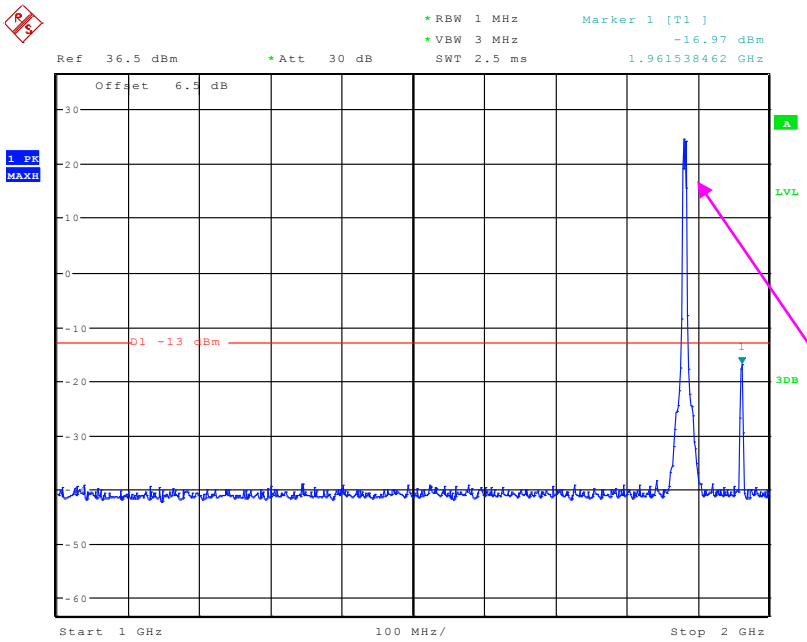
Date: 13.JUL.2020 22:04:16

30 MHz – 1 GHz (WCDMA Mode)



Date: 13.JUL.2020 20:31:40

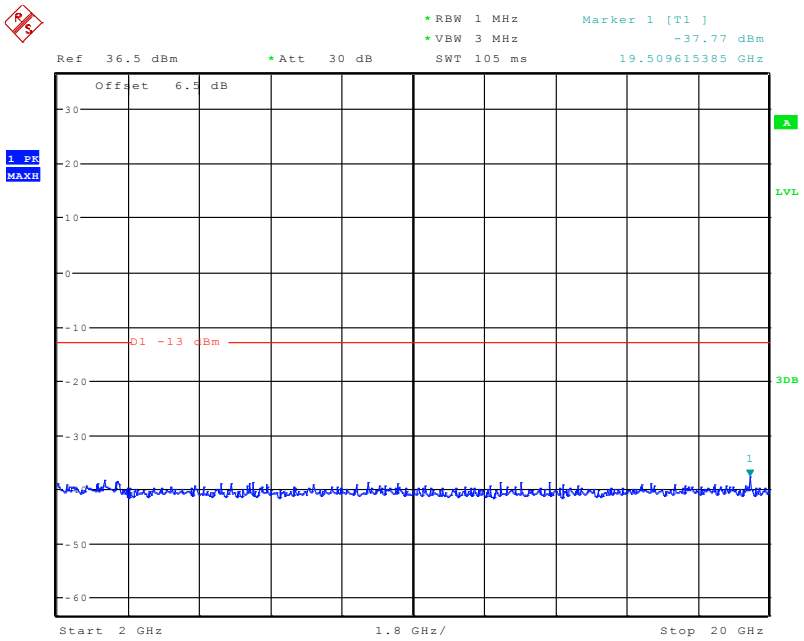
1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

Date: 13.JUL.2020 20:32:56

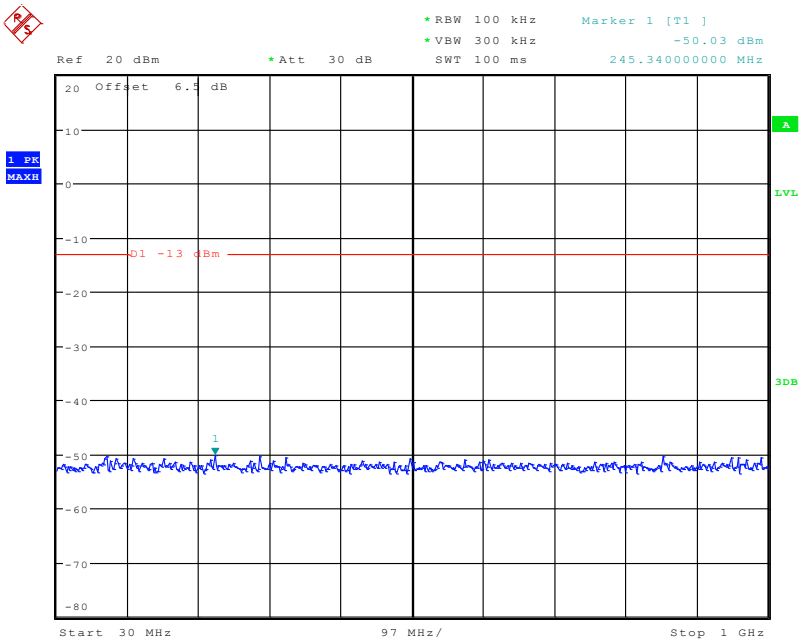
2 GHz – 20 GHz (WCDMA Mode)



Date: 13.JUL.2020 20:33:11

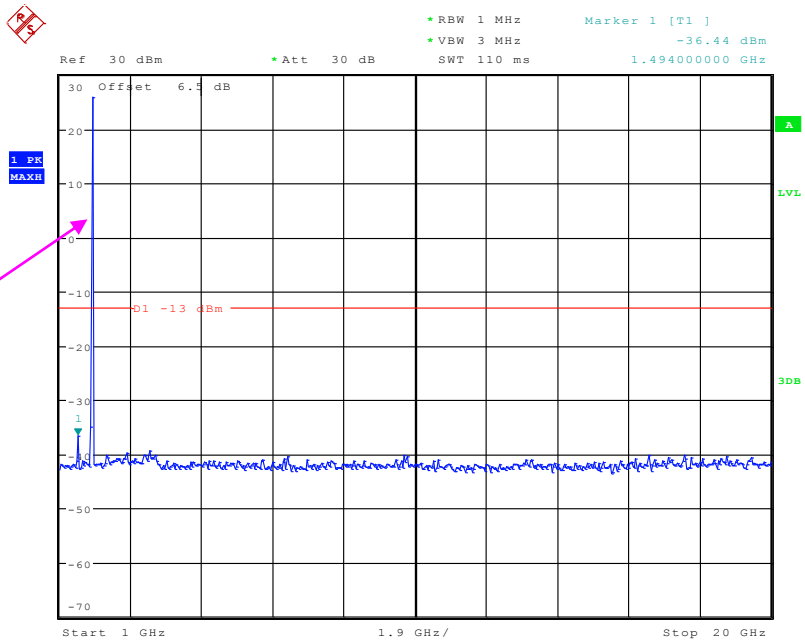
LTE Band 2:

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



Date: 15.JUL.2020 19:24:13

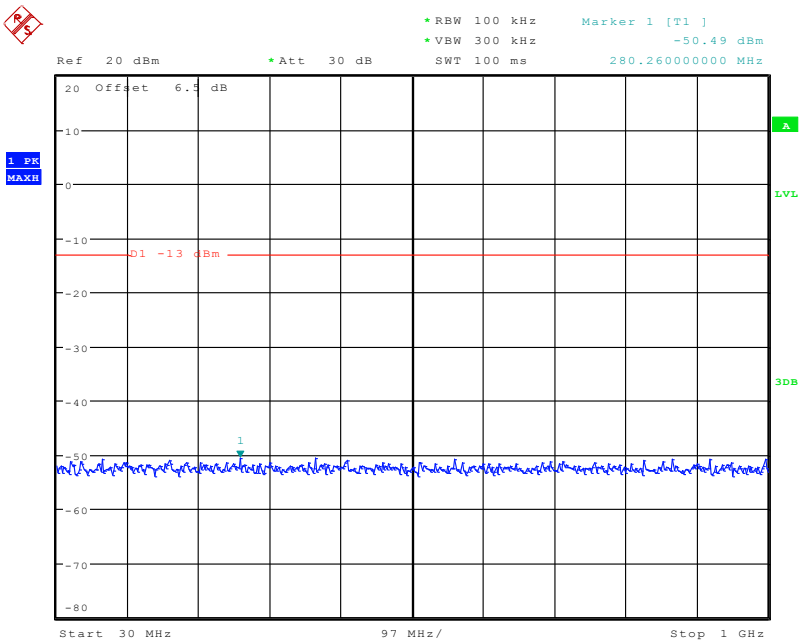
1 GHz – 20 GHz (1.4 MHz, Middle Channel)



Fundamental

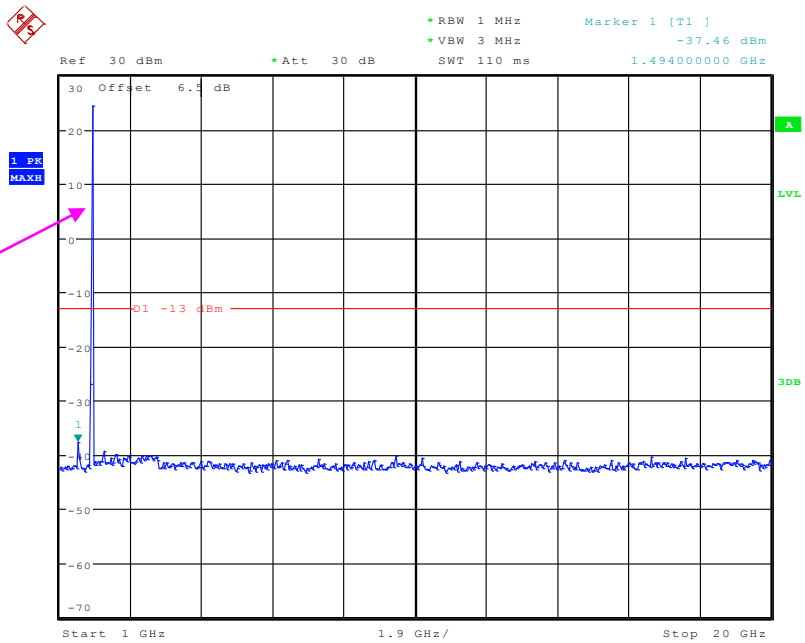
Date: 15.JUL.2020 19:24:24

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



Date: 15.JUL.2020 19:24:41

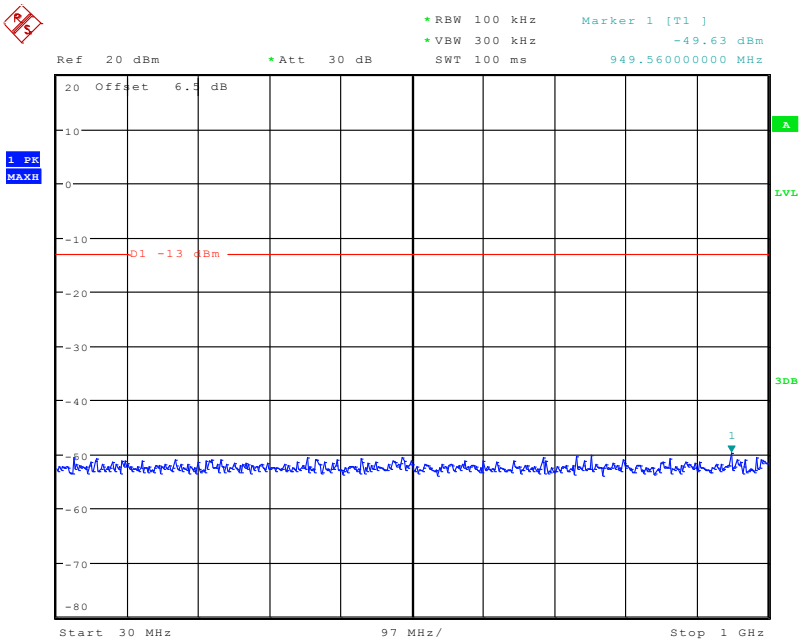
1 GHz – 20 GHz (3.0 MHz, Middle Channel)



Fundamental test

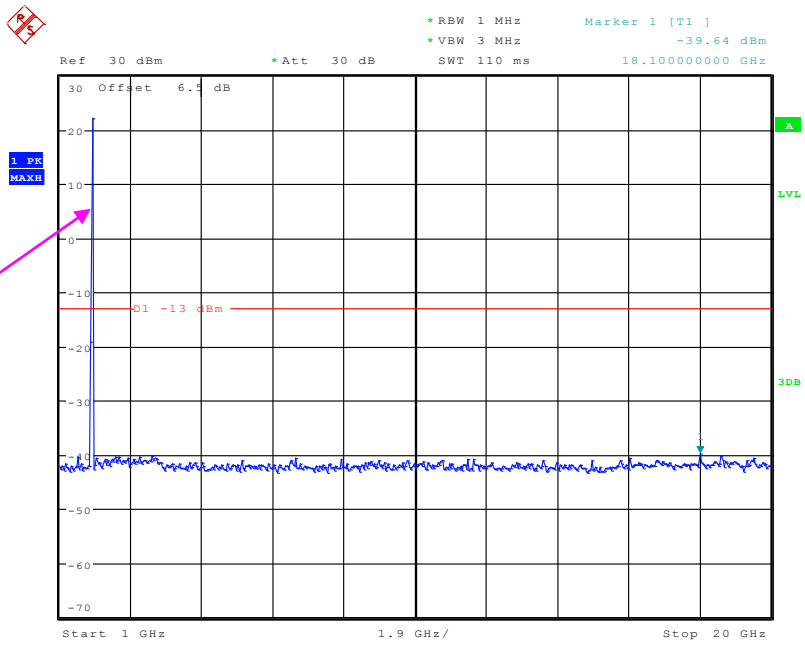
Date: 15.JUL.2020 19:24:52

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



Date: 15.JUL.2020 19:25:09

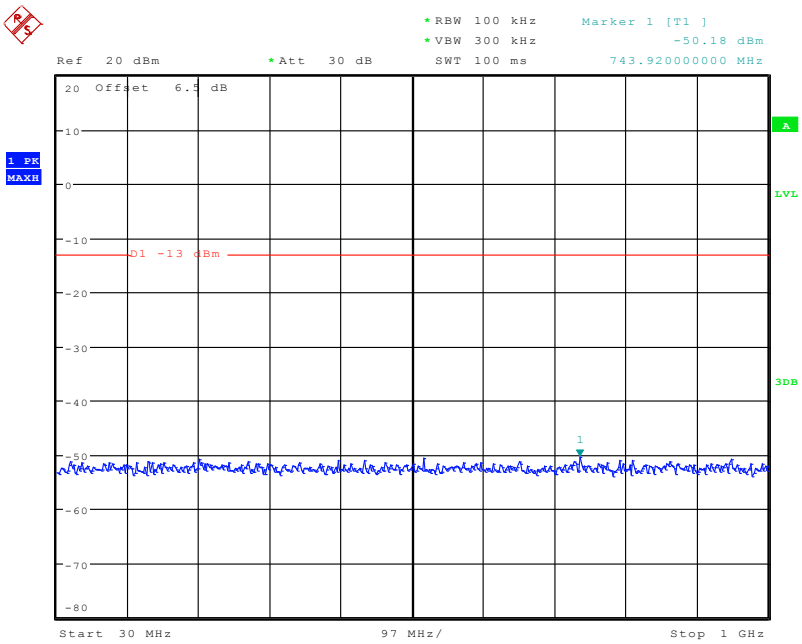
1 GHz – 20 GHz (5.0 MHz, Middle Channel)



Fundamental

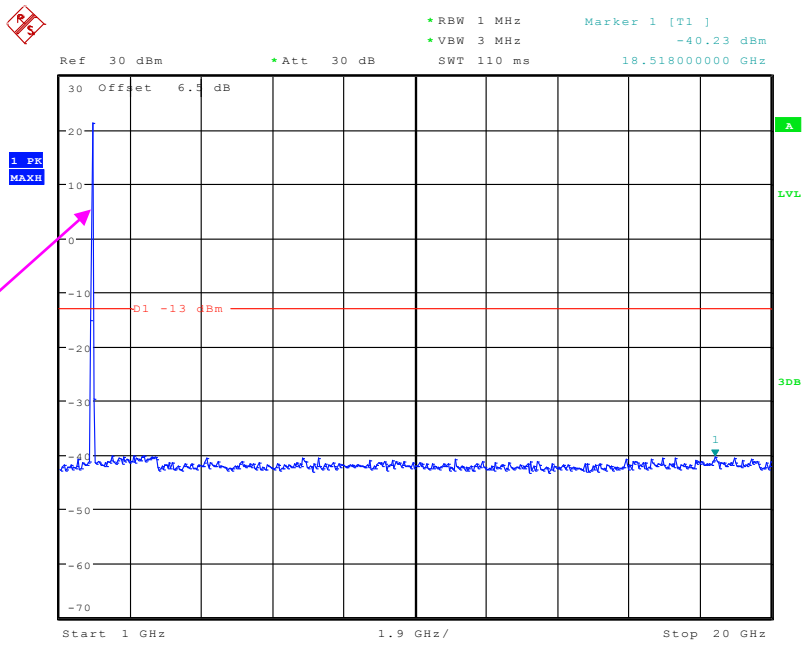
Date: 15.JUL.2020 19:25:20

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



Date: 15.JUL.2020 19:25:38

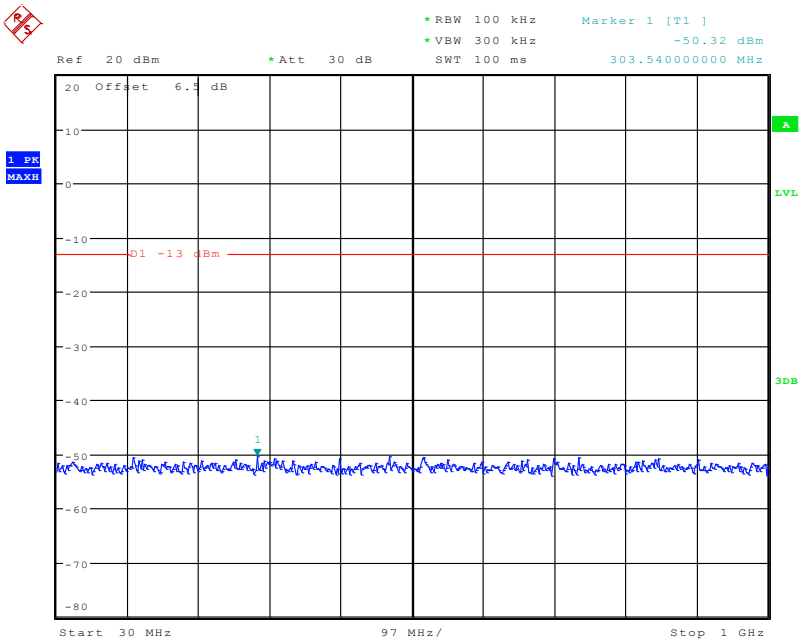
1 GHz – 20 GHz (10.0 MHz, Middle Channel)



Fundamental

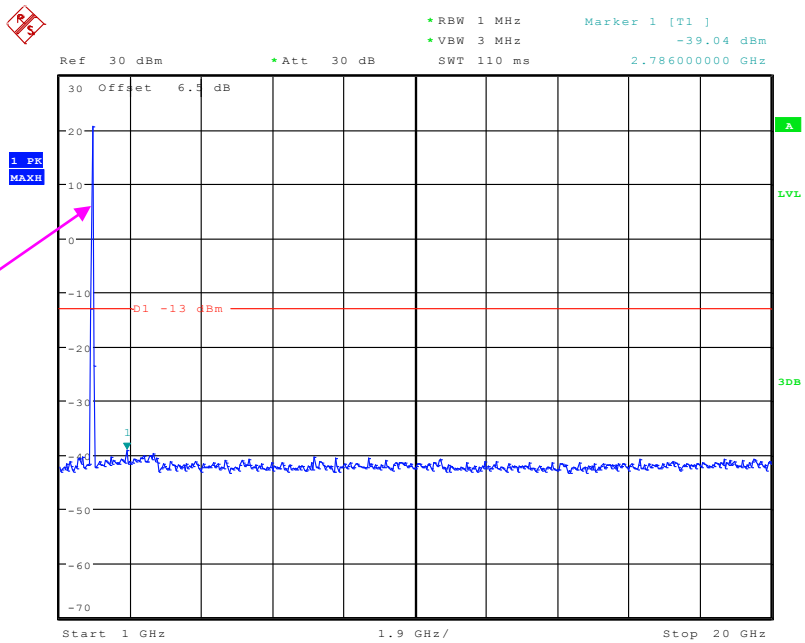
Date: 15.JUL.2020 19:25:49

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



Date: 15.JUL.2020 19:26:09

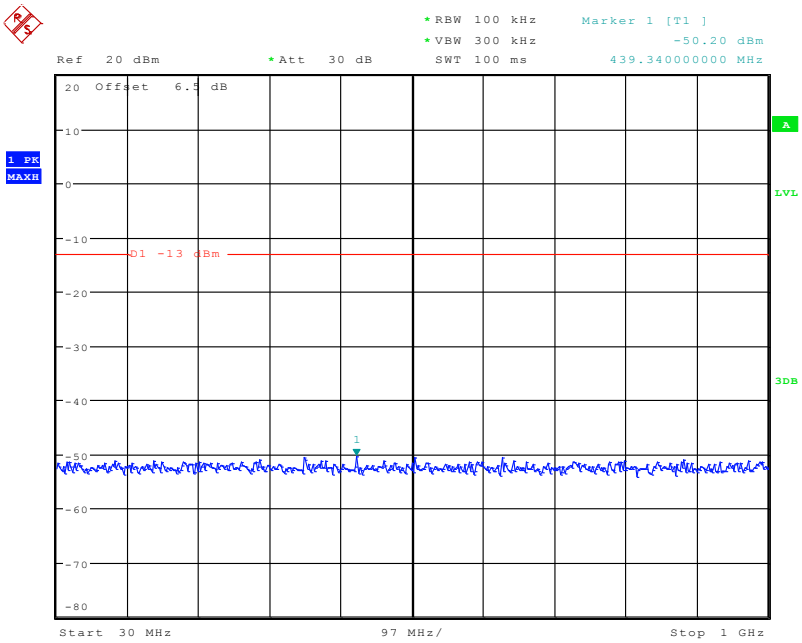
1 GHz – 20GHz (15.0 MHz, Middle Channel)



Fundamental

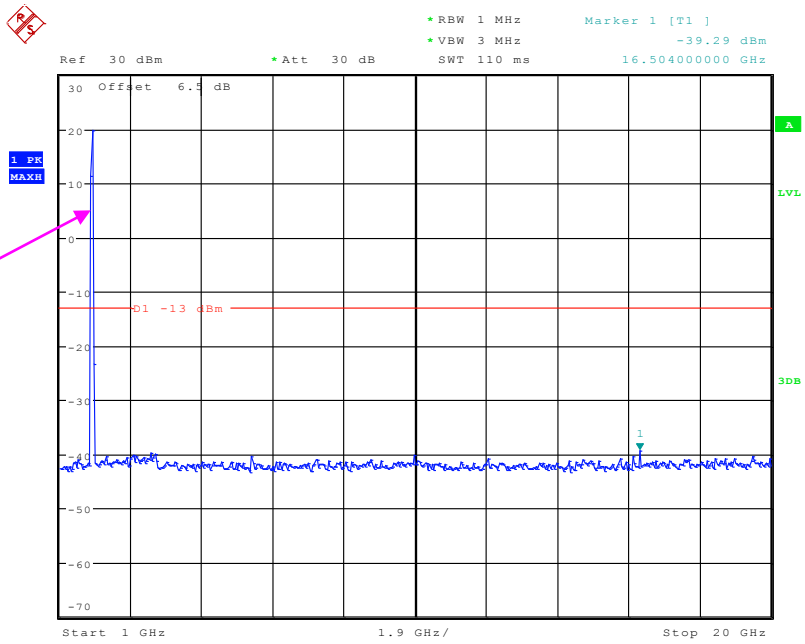
Date: 15.JUL.2020 19:26:20

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



Date: 15.JUL.2020 19:26:40

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

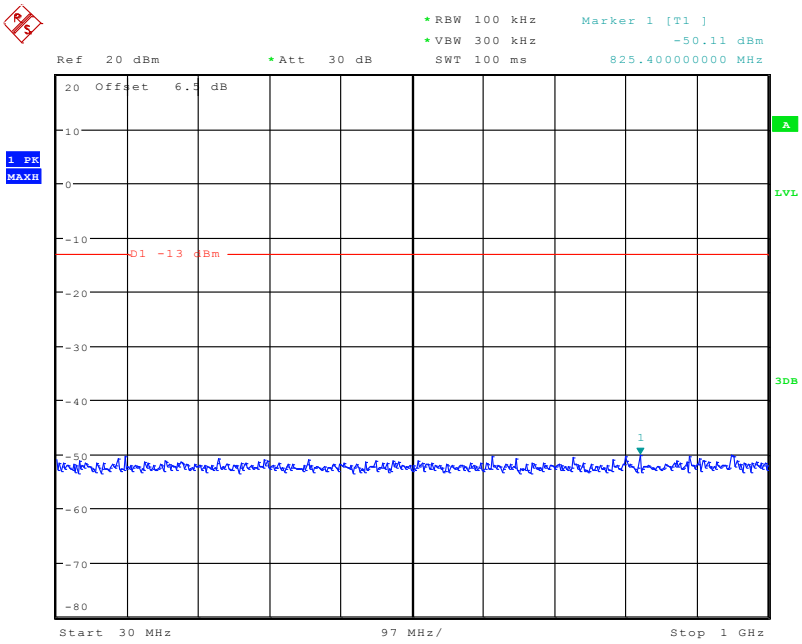


Fundamental

Date: 15.JUL.2020 19:26:51

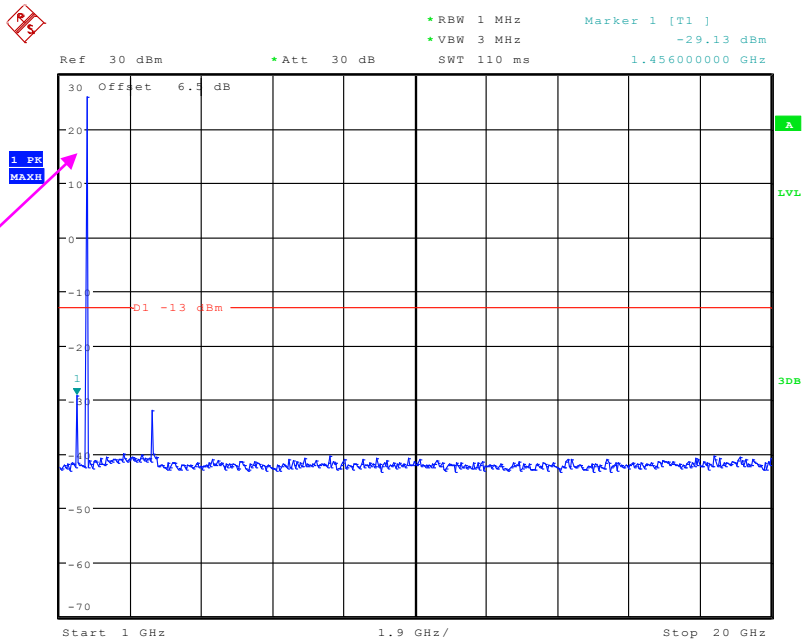
LTE Band 4:

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



Date: 15.JUL.2020 19:27:11

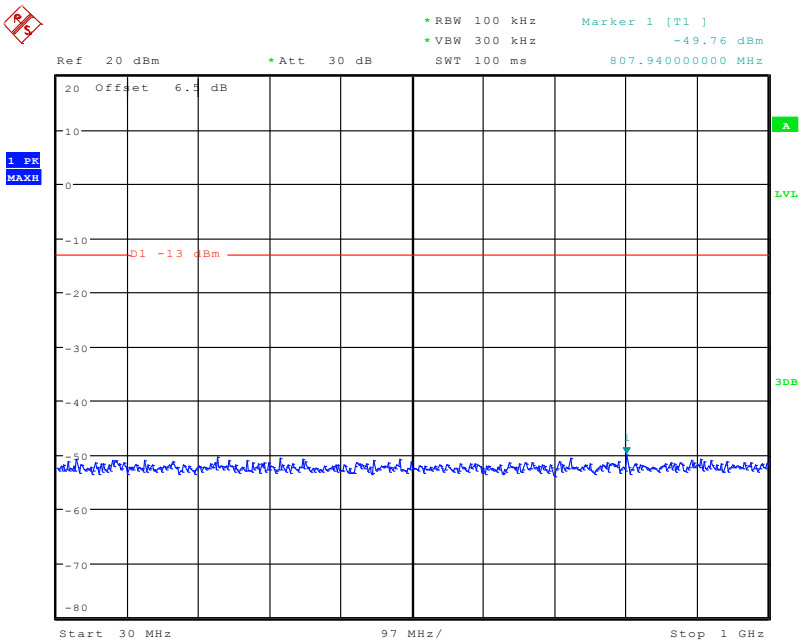
1 GHz – 20 GHz (1.4 MHz, Middle Channel)



Fundamental test

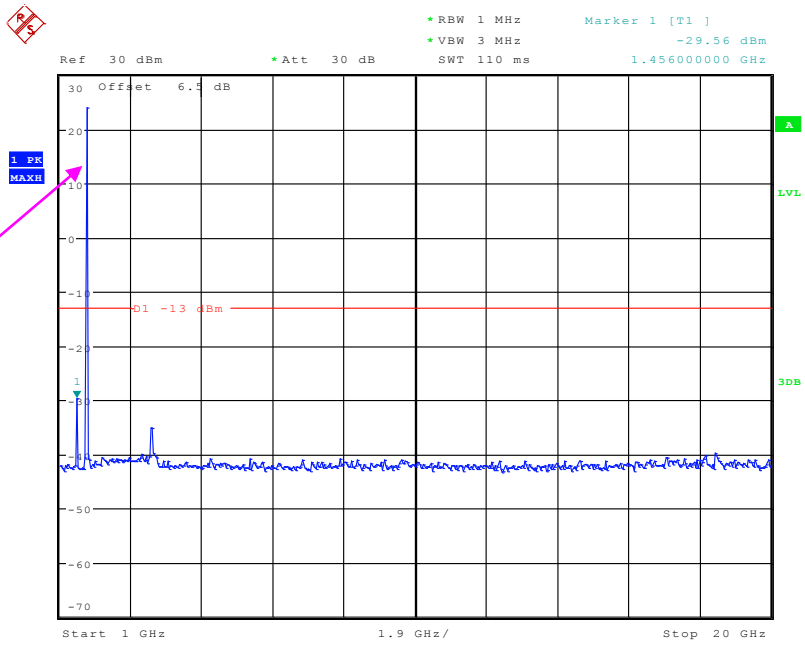
Date: 15.JUL.2020 19:27:22

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



Date: 15.JUL.2020 19:27:42

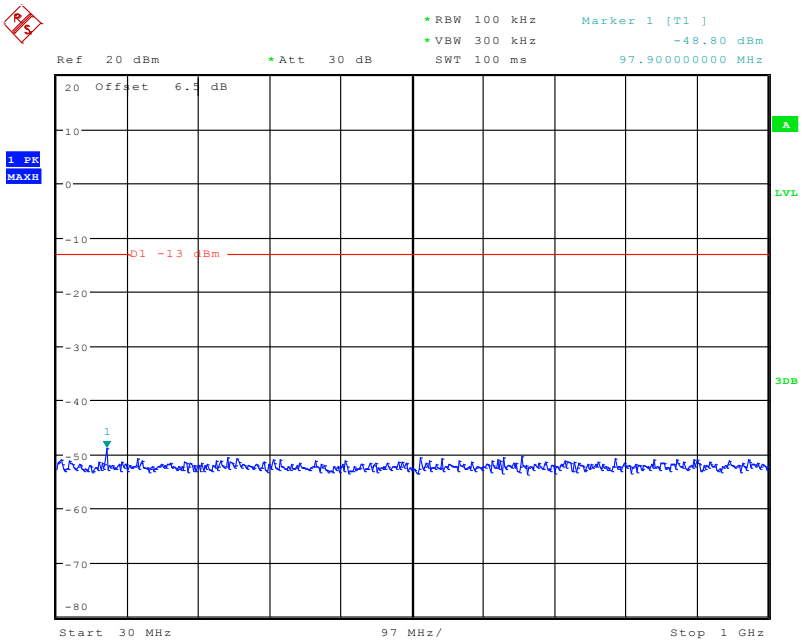
1 GHz – 20GHz (3.0 MHz, Middle Channel)



Fundamental test

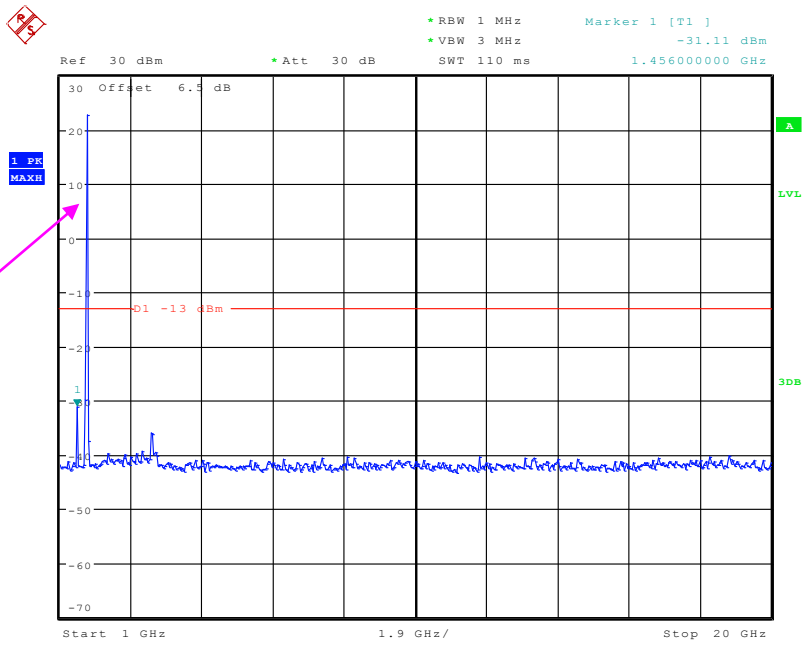
Date: 15.JUL.2020 19:27:53

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



Date: 15.JUL.2020 19:28:13

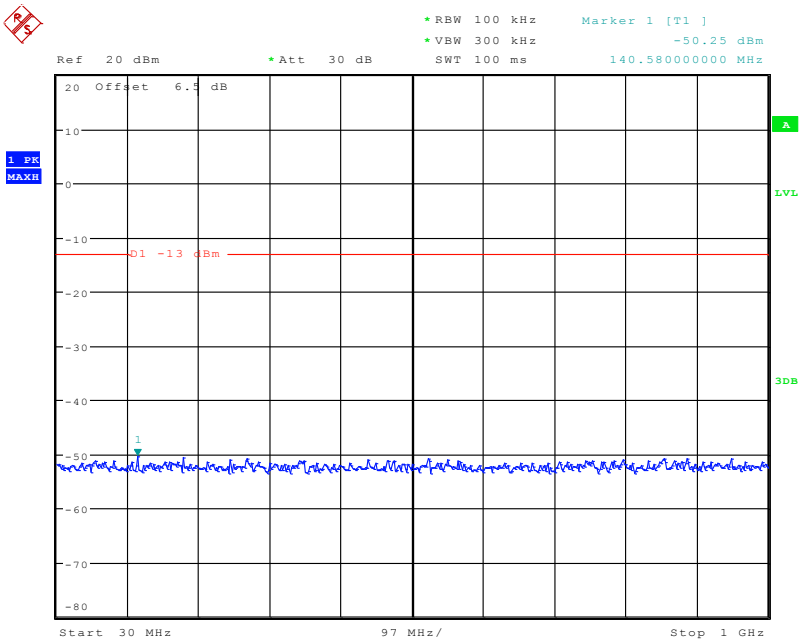
1 GHz – 20GHz (5.0 MHz, Middle Channel)



Fundamental test

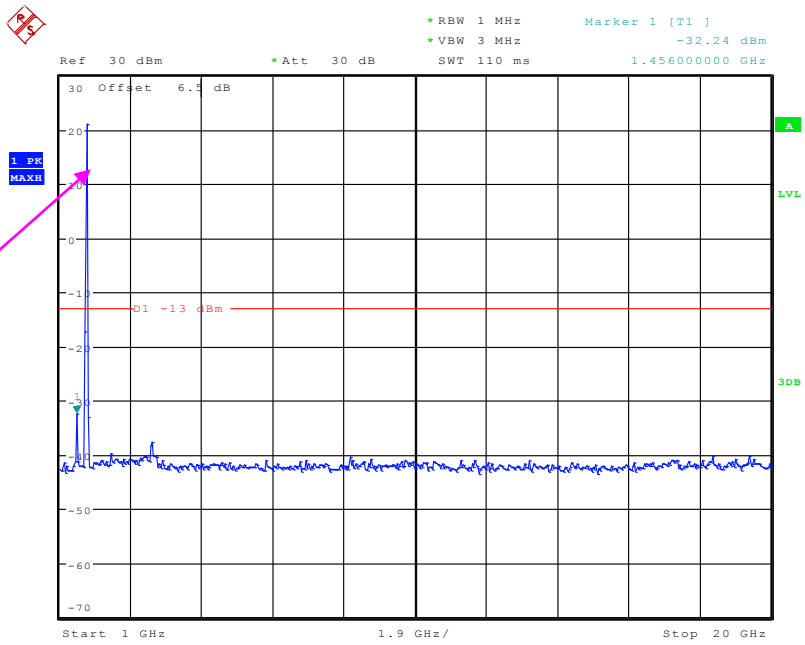
Date: 15.JUL.2020 19:28:24

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



Date: 15.JUL.2020 19:28:45

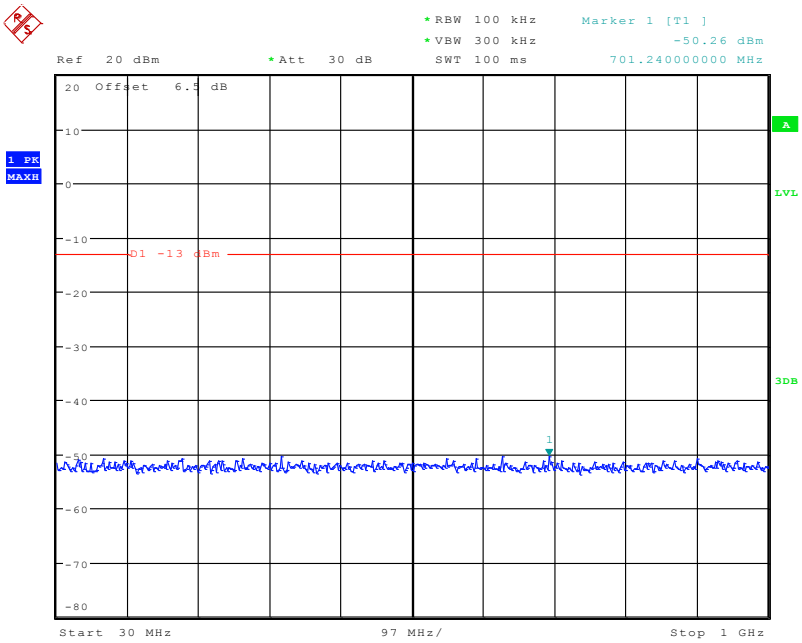
1 GHz – 20 GHz (10.0 MHz, Middle Channel)



Fundamental test

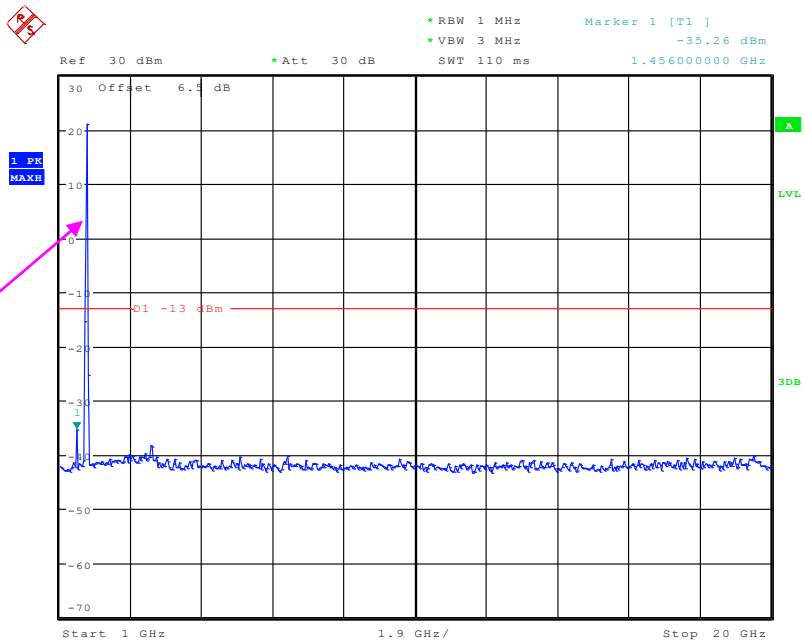
Date: 15.JUL.2020 19:28:55

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



Date: 15.JUL.2020 19:29:19

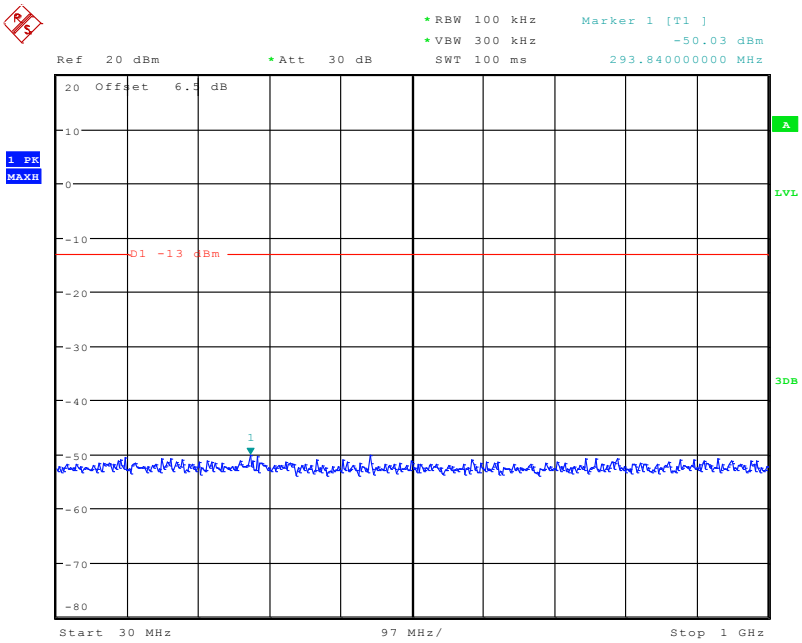
1 GHz – 20 GHz (15.0 MHz, Middle Channel)



Fundamental test

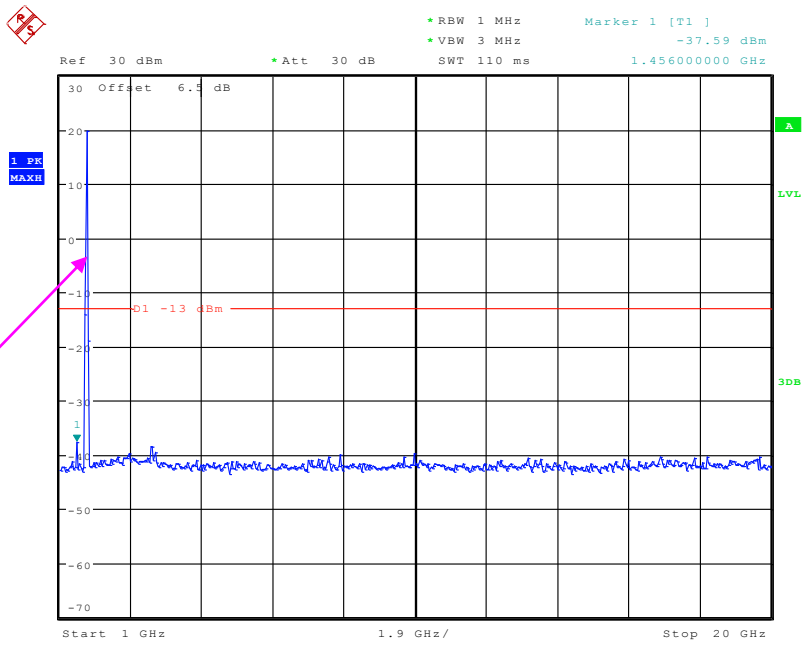
Date: 15.JUL.2020 19:29:29

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



Date: 15.JUL.2020 19:29:50

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

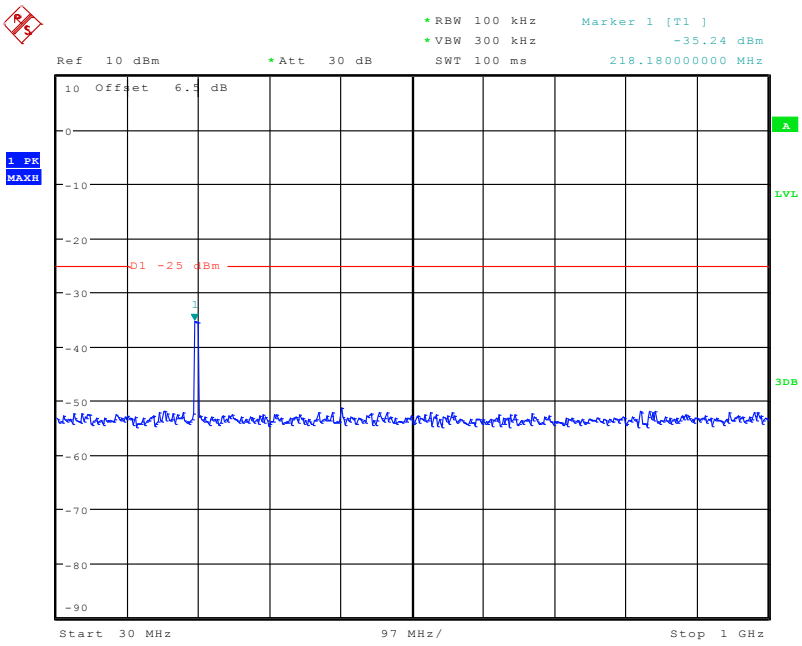


Fundamental test

Date: 15.JUL.2020 19:30:00

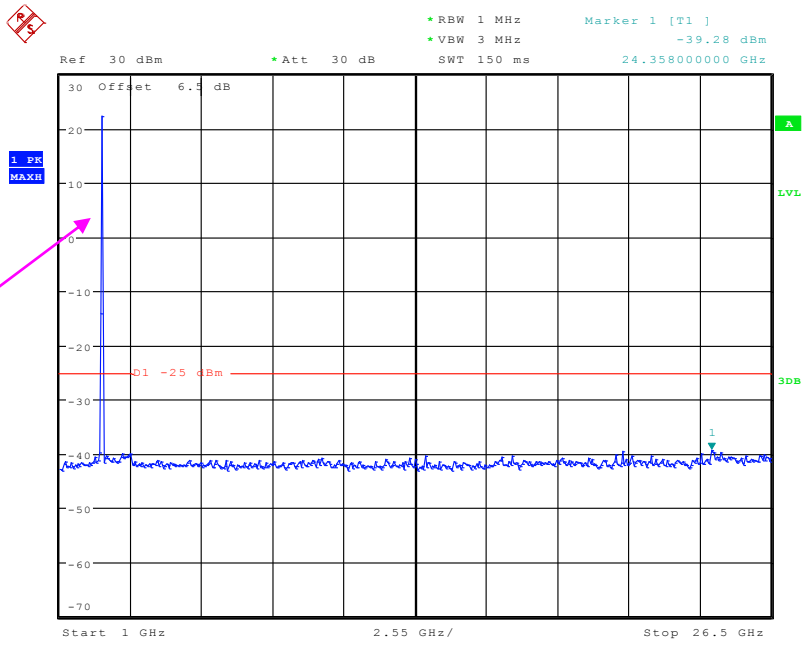
LTE Band 7:

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



Date: 15.JUL.2020 19:30:17

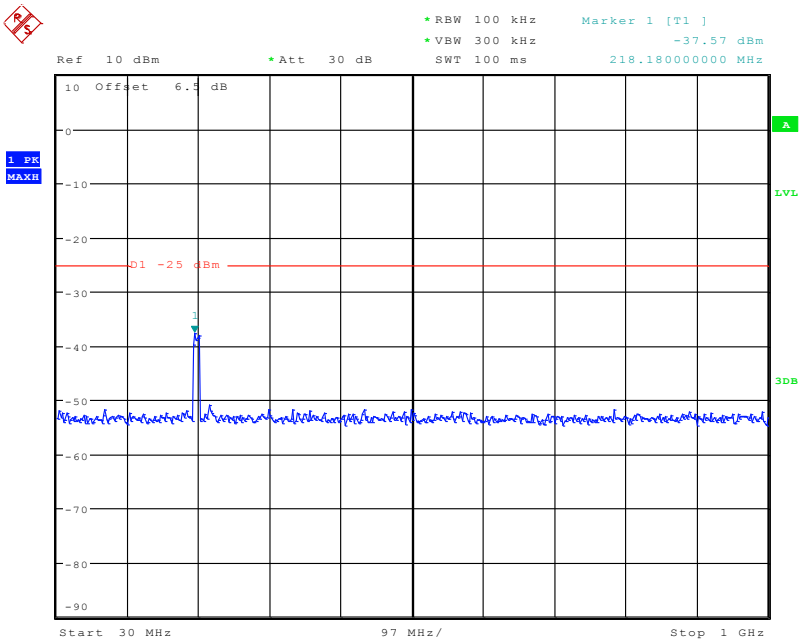
1 GHz – 26.5GHz (5.0 MHz, Middle Channel)



Fundamental

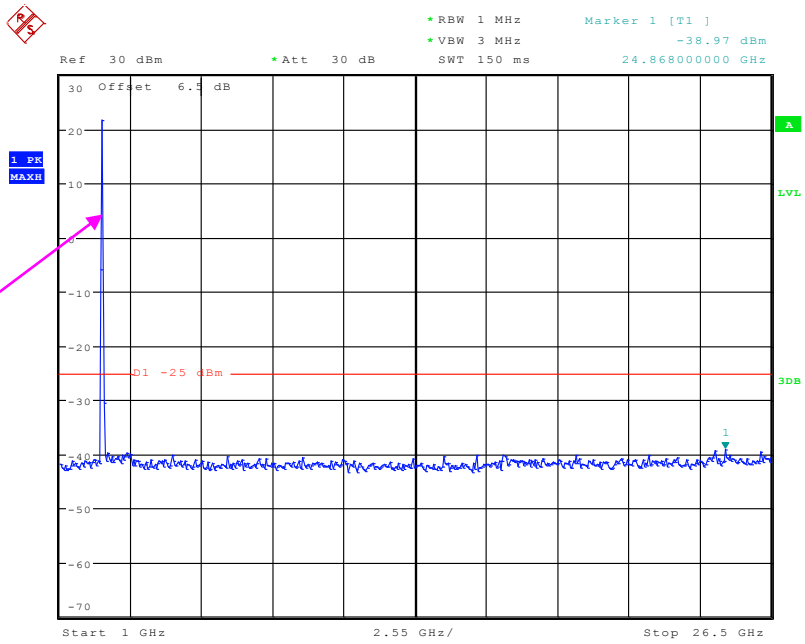
Date: 15.JUL.2020 19:30:28

30 MHz – 1.0 GHz (10.0 MHz, Middle Channel)



Date: 15.JUL.2020 19:30:49

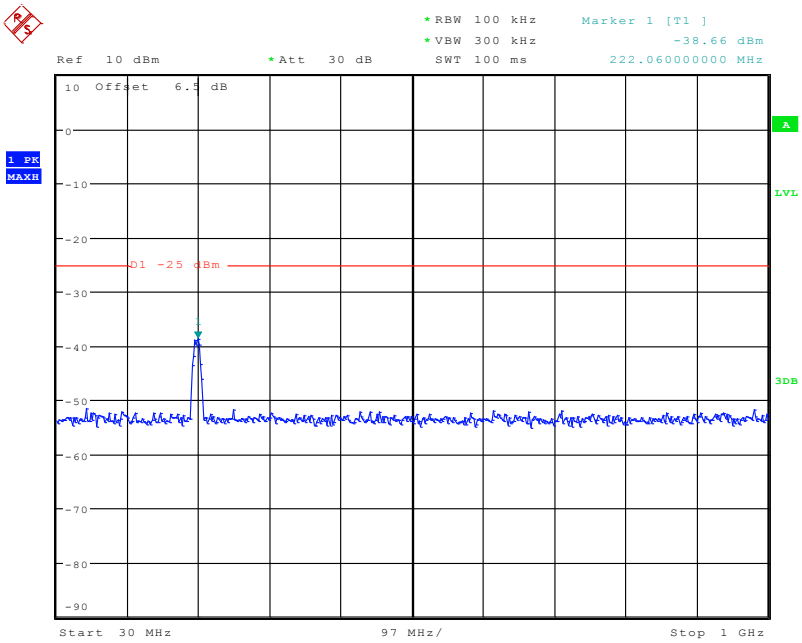
1 GHz – 26.5 GHz (10.0 MHz, Middle Channel)



Fundamental

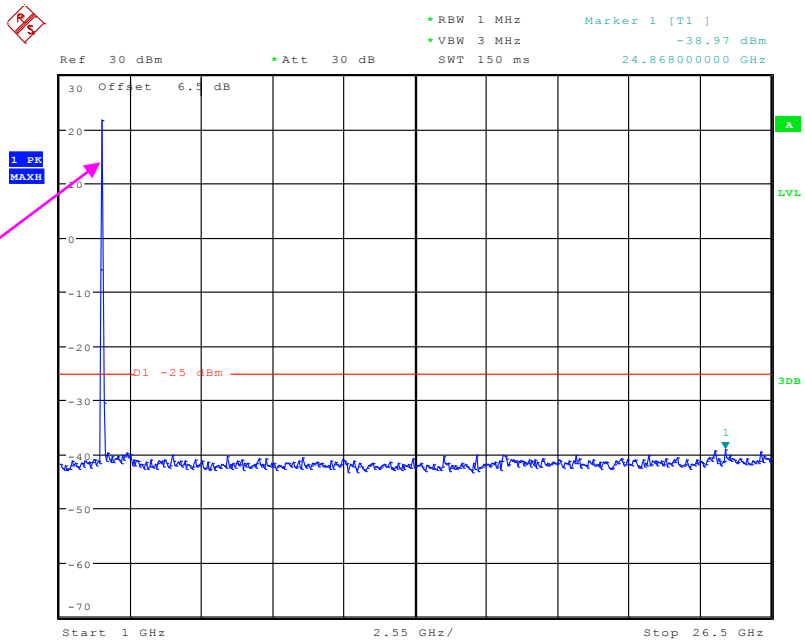
Date: 15.JUL.2020 19:31:00

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



Date: 15.JUL.2020 19:31:20

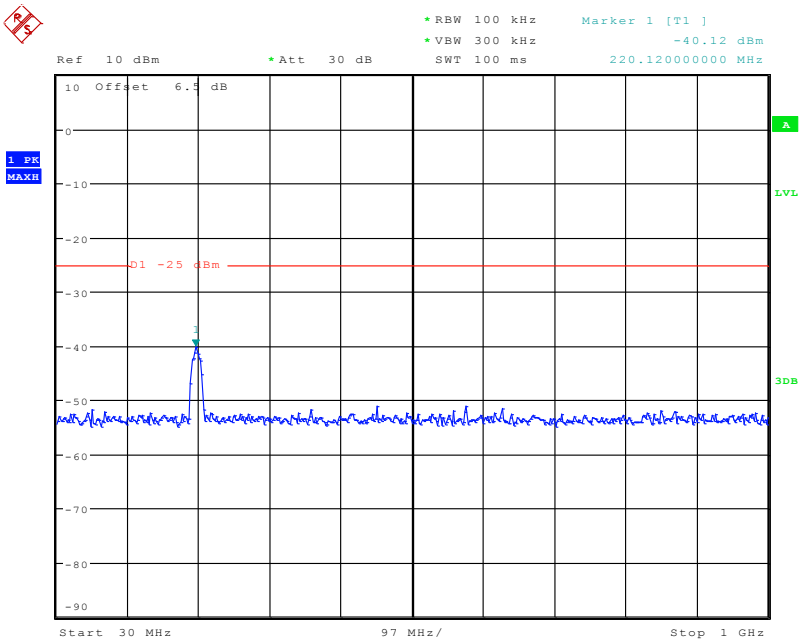
1 GHz – 26.5 GHz (15.0 MHz, Middle Channel)



Fundamental

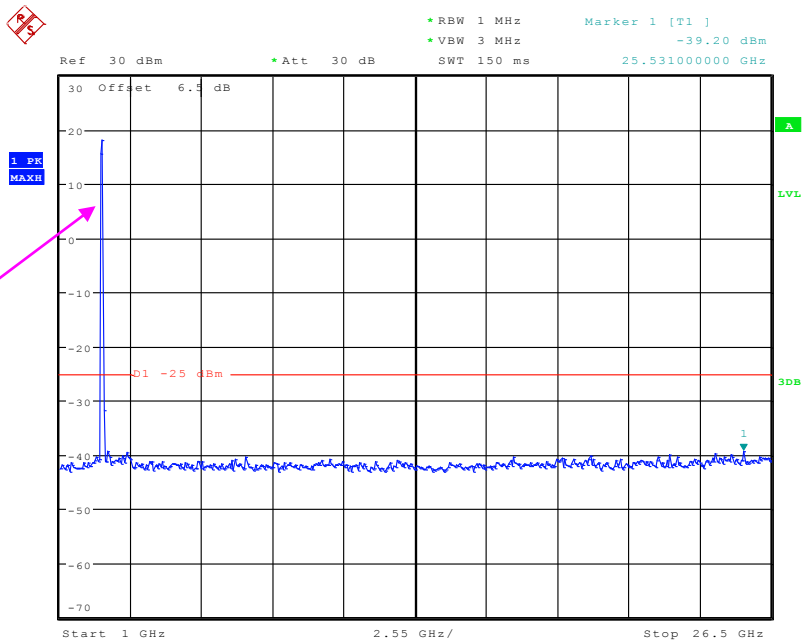
Date: 15.JUL.2020 19:31:00

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



Date: 15.JUL.2020 19:31:51

1 GHz – 26.5 GHz (20.0 MHz, Middle Channel)

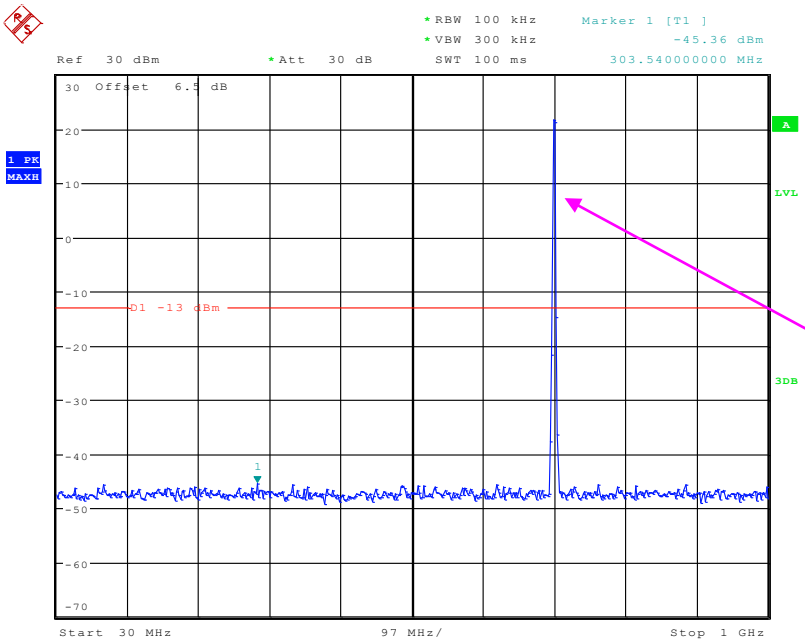


Fundamental

Date: 15.JUL.2020 19:32:02

LTE Band 12:

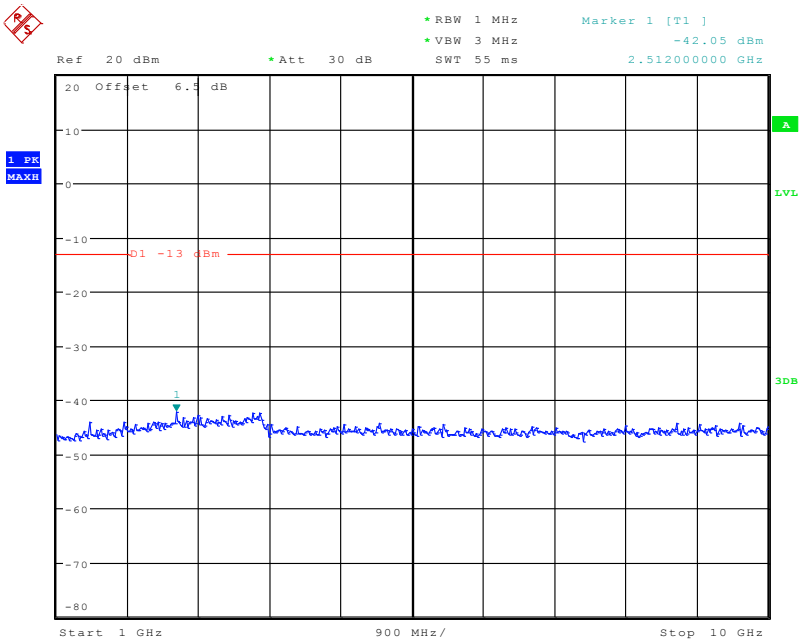
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

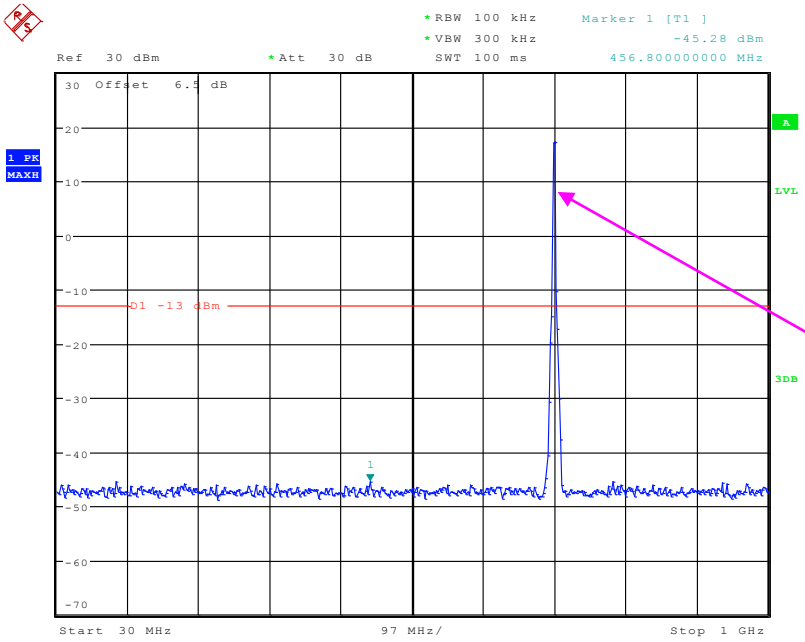
Date: 15.JUL.2020 19:32:19

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



Date: 15.JUL.2020 19:32:30

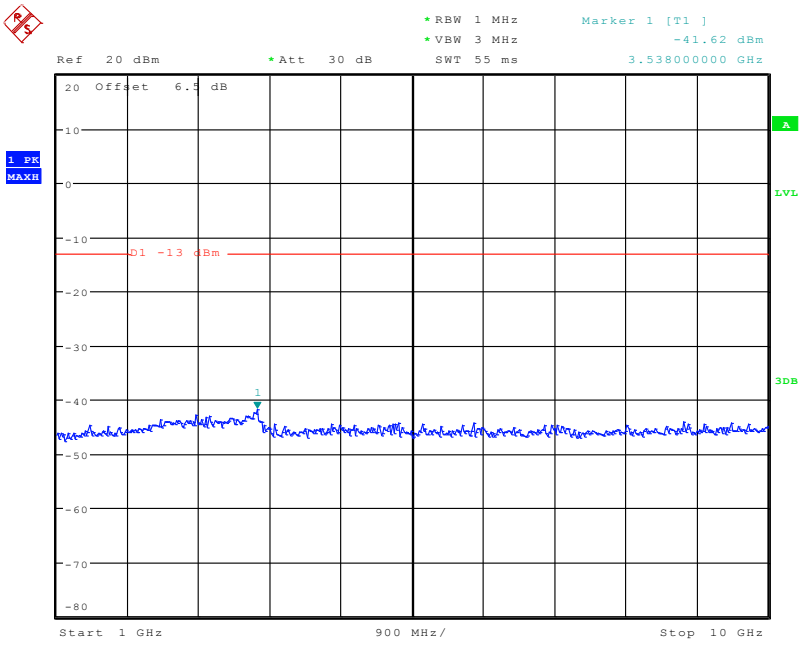
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



Fundamental test

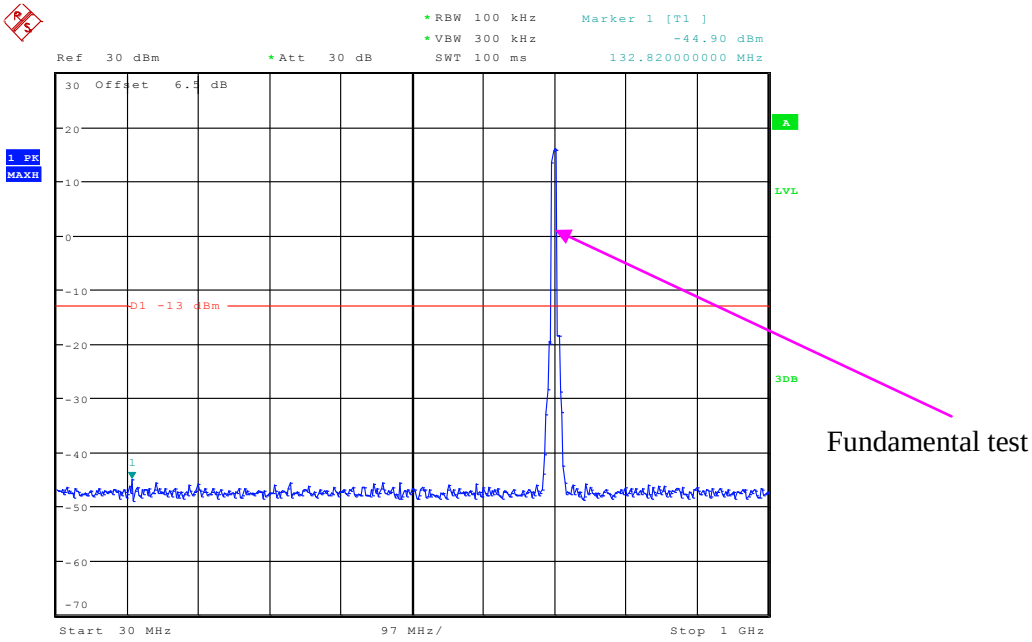
Date: 15.JUL.2020 19:32:50

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



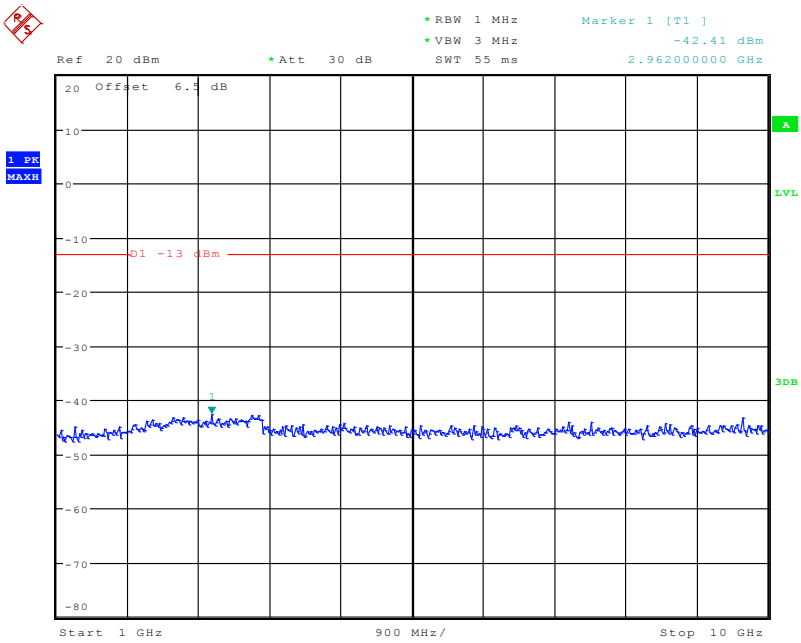
Date: 15.JUL.2020 19:33:00

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



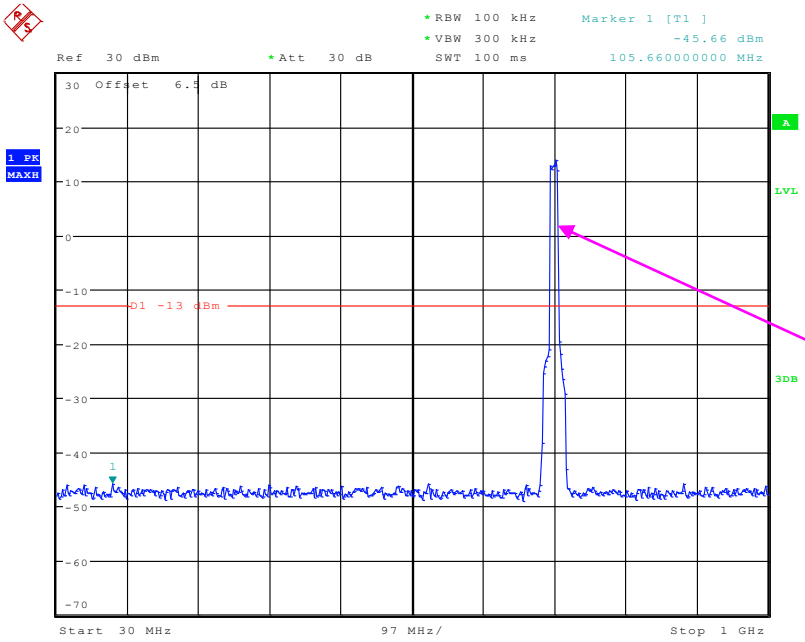
Date: 15.JUL.2020 19:33:17

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



Date: 15.JUL.2020 19:33:28

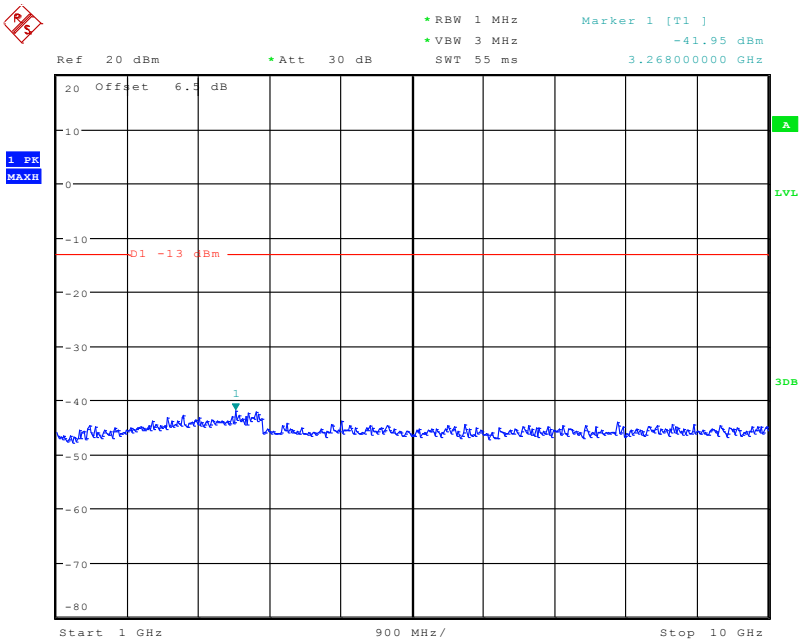
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 15.JUL.2020 19:33:46

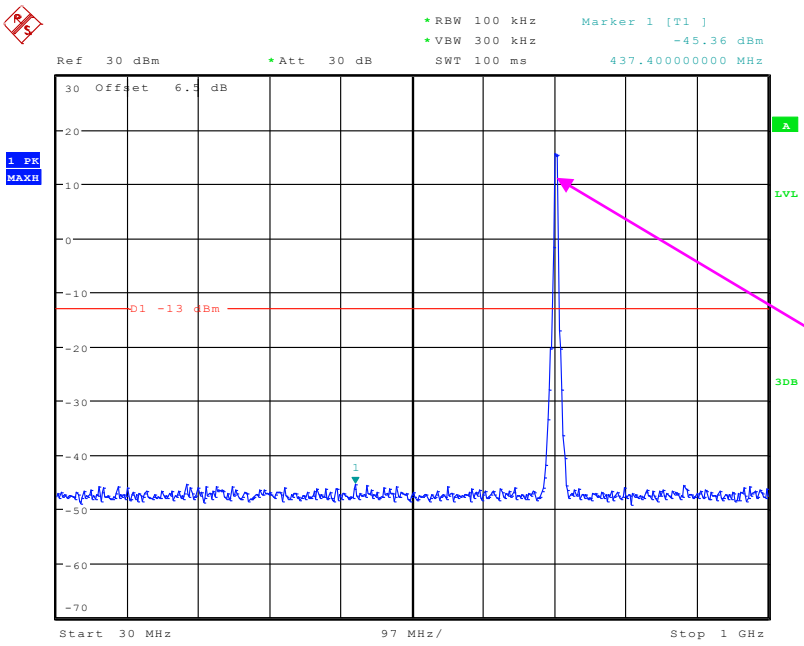
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 15.JUL.2020 19:33:57

LTE Band 17:

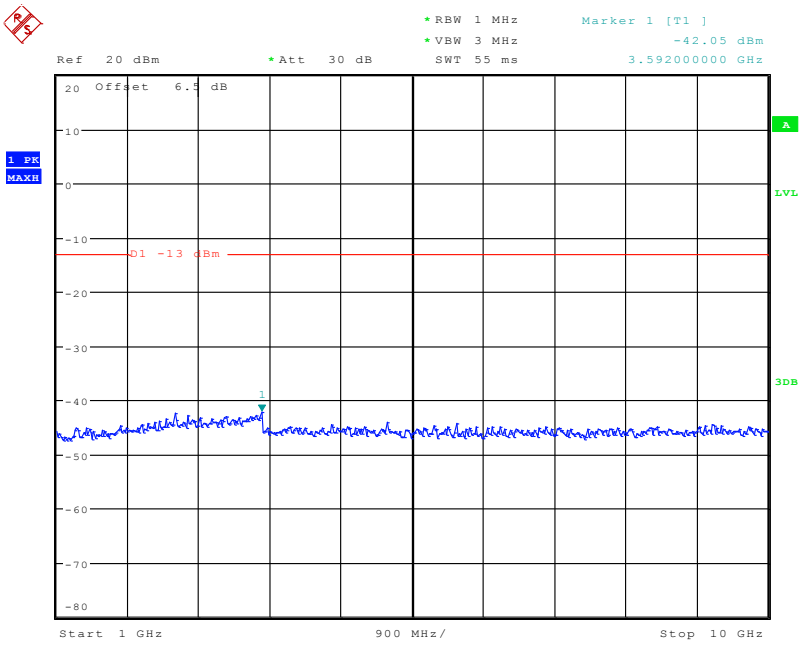
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

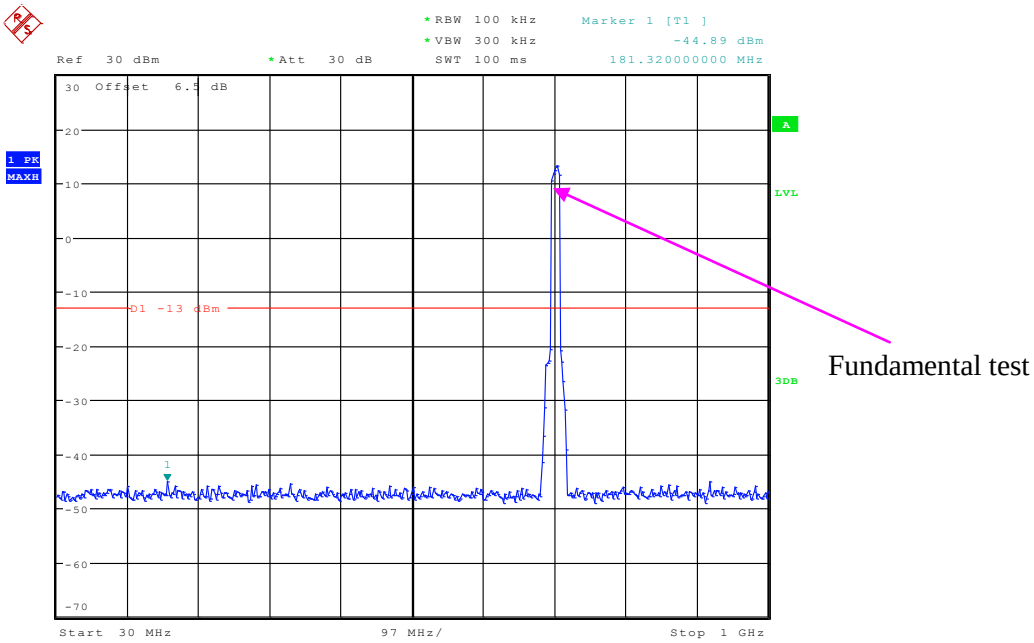
Date: 15.JUL.2020 19:34:14

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



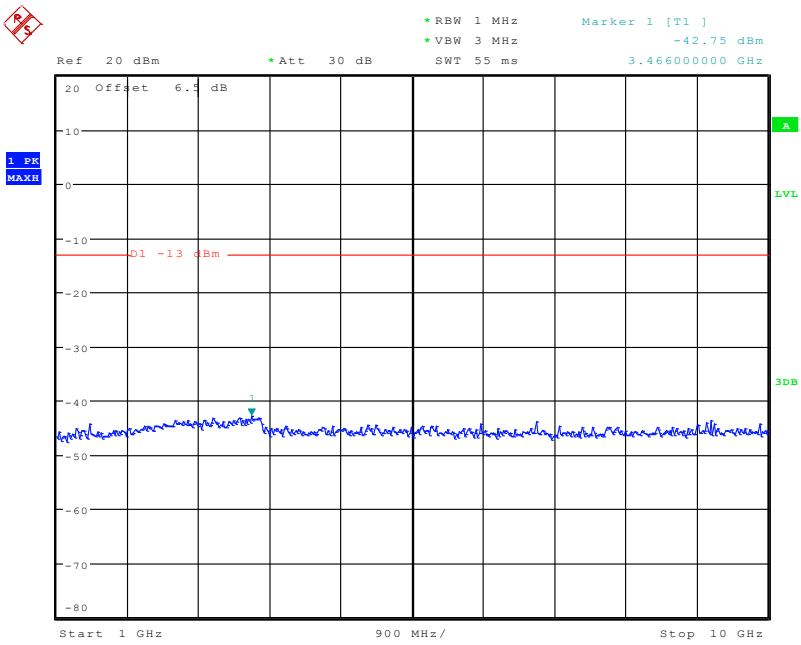
Date: 15.JUL.2020 19:34:24

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



Date: 15.JUL.2020 19:34:42

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



Date: 15.JUL.2020 19:34:53

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

Applicable Standard

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

Test Procedure

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

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Test Data

Environmental Conditions

Temperature:	24~25 ℃
Relative Humidity:	50~52 %
ATM Pressure:	101.0 kPa

The testing was performed by Holland Yang on 2020-07-14 for below 1GHz and Charlie Cha on 2020-07-13 for Above 1GHz.

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 (dBd/dBi)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
955.8	37.44	174	2.1	H	-63.2	1.37	0.0	-64.57	-13	51.57
955.8	38.23	114	1.7	V	-61.1	1.37	0.0	-62.47	-13	49.47
1673.20	48.62	319	1.2	H	-57.7	1.30	8.90	-50.10	-13	37.10
1673.20	50.25	99	1.6	V	-55.5	1.30	8.90	-47.90	-13	34.90
2509.80	57.88	138	2.1	H	-45.5	2.60	10.20	-37.90	-13	24.90
2509.80	57.52	189	1.3	V	-45.2	2.60	10.20	-37.60	-13	24.60
3346.40	43.97	266	2.5	H	-56.9	1.50	11.70	-46.70	-13	33.70
3346.40	43.85	103	1.9	V	-57.1	1.50	11.70	-46.90	-13	33.90
WCDMA Mode, Middle channel										
965.2	37.48	114	1.8	H	-63.1	1.37	0.0	-64.47	-13	51.47
965.2	37.62	268	2.4	V	-59.7	1.37	0.0	-61.07	-13	48.07
1673.20	45.32	210	1.2	H	-61.0	1.30	8.90	-53.40	-13	40.40
1673.20	44.85	106	2.0	V	-60.9	1.30	8.90	-53.30	-13	40.30
2509.80	44.62	335	1.8	H	-58.7	2.60	10.20	-51.10	-13	38.10
2509.80	44.61	189	1.5	V	-58.1	2.60	10.20	-50.50	-13	37.50
3346.40	43.56	266	2.0	H	-57.3	1.50	11.70	-47.10	-13	34.10
3346.40	43.66	70	2.2	V	-57.3	1.50	11.70	-47.10	-13	34.10

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 (dBd/dBi)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
959.6	37.47	105	1.4	H	-63.1	1.37	0.0	-64.47	-13	51.47
959.6	38.36	90	1.7	V	-61.0	1.37	0.0	-62.37	-13	49.37
3760.00	44.25	339	2.0	H	-57.8	1.50	11.80	-47.50	-13	34.50
3760.00	45.12	130	2.0	V	-56.5	1.50	11.80	-46.20	-13	33.20
5640.00	46.65	288	1.3	H	-53.0	1.70	12.40	-42.30	-13	29.30
5640.00	47.64	291	1.3	V	-51.7	1.70	12.40	-41.00	-13	28.00
7520.00	44.32	177	1.3	H	-51.6	1.90	10.70	-42.80	-13	29.80
7520.00	43.89	84	1.2	V	-51.6	1.90	10.70	-42.80	-13	29.80
WCDMA Mode Band II, Middle channel										
962.3	36.54	166	1.2	H	-64.1	1.37	0.0	-65.47	-13	52.47
962.3	38.69	308	1.0	V	-60.7	1.37	0.0	-62.07	-13	49.07
3760.00	47.89	327	2.4	H	-54.2	1.50	11.80	-43.90	-13	30.90
3760.00	46.32	269	1.2	V	-55.3	1.50	11.80	-45.00	-13	32.00

LTE Band: *(Pre-scan with all the bandwidth, and worse case is QPSK, lowest bandwidth 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 (dBd/dBi)			
Band 2										
Test frequency range: 30 MHz ~ 20 GHz										
Middle Channel(1880MHz)										
958.7	37.54	243	1.3	H	-63.1	1.37	0.0	-64.47	-13	51.47
958.7	38.26	120	1.8	V	-61.1	1.37	0.0	-62.47	-13	49.47
3760.00	47.79	17	1.1	H	-54.3	1.50	11.80	-44.00	-13	31.00
3760.00	48.35	334	2.0	V	-53.2	1.50	11.80	-42.90	-13	29.90
Band 4										
Test frequency range: 30 MHz ~ 20 GHz										
Middle Channel(1732.5MHz)										
959.4	37.63	284	2.0	H	-63.0	1.37	0.0	-64.37	-13	51.37
959.4	38.52	38	2.3	V	-60.8	1.37	0.0	-62.17	-13	49.17
3465.00	47.79	190	2.2	H	-53.0	1.50	12.00	-42.50	-13	29.50
3465.00	46.21	282	1.3	V	-55.3	1.50	12.00	-44.80	-13	31.80
Band 7										
Test frequency range: 30 MHz ~ 26.5 GHz										
Middle Channel(2535MHz)										
962.5	37.34	154	1.2	H	-63.3	1.37	0.0	-64.67	-25	39.67
962.5	38.78	159	2.3	V	-60.6	1.37	0.0	-61.97	-25	36.97
5070.00	45.52	349	1.3	H	-54.5	1.60	12.10	-44.00	-25	19.00
5070.00	44.85	257	1.8	V	-55.2	1.60	12.10	-44.70	-25	19.70
Band 12										
Test frequency range: 30 MHz ~ 10 GHz										
Middle Channel(707.5MHz)										
961.7	37.39	173	1.8	H	-63.2	1.37	0.0	-64.57	-13	51.57
961.7	38.46	5	1.8	V	-60.9	1.37	0.0	-62.27	-13	49.27
1415.00	46.52	69	1.5	H	-61.7	1.60	7.90	-55.40	-13	42.40
1415.00	45.12	7	2.4	V	-63.3	1.60	7.90	-57.00	-13	44.00
Band 17										
Test frequency range: 30 MHz ~ 10 GHz										
Middle Channel(710MHz)										
961.4	37.51	186	2.4	H	-63.1	1.37	0.0	-64.47	-13	51.47
961.4	38.62	360	1.1	V	-60.7	1.37	0.0	-62.07	-13	49.07
1420.00	48.89	85	1.1	H	-59.3	1.60	7.90	-53.00	-13	40.00
1420.00	46.85	95	1.2	V	-61.6	1.60	7.90	-55.30	-13	42.30

Note:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level
dBd is for the ERP, dBi is for EIRP.

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

Applicable Standard

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

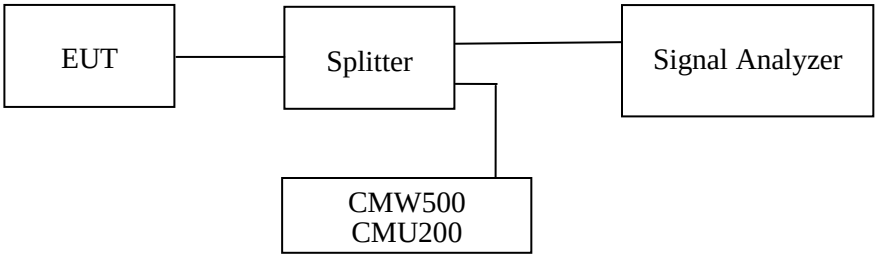
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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

Test Procedure

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

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



Test Data

Environmental Conditions

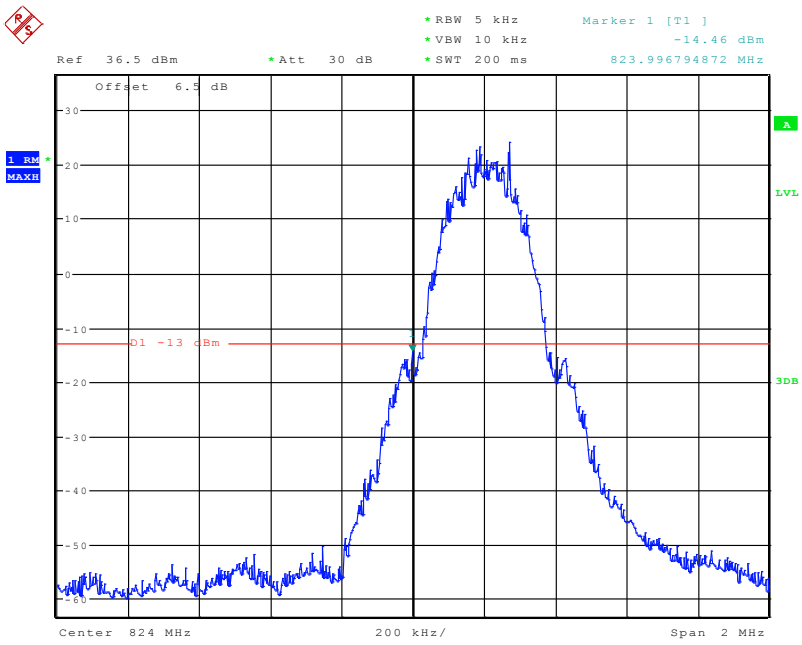
Temperature:	24~25 ℃
Relative Humidity:	50~52 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong from 2020-07-13 to 2020-07-15.

EUT operation mode: Transmitting

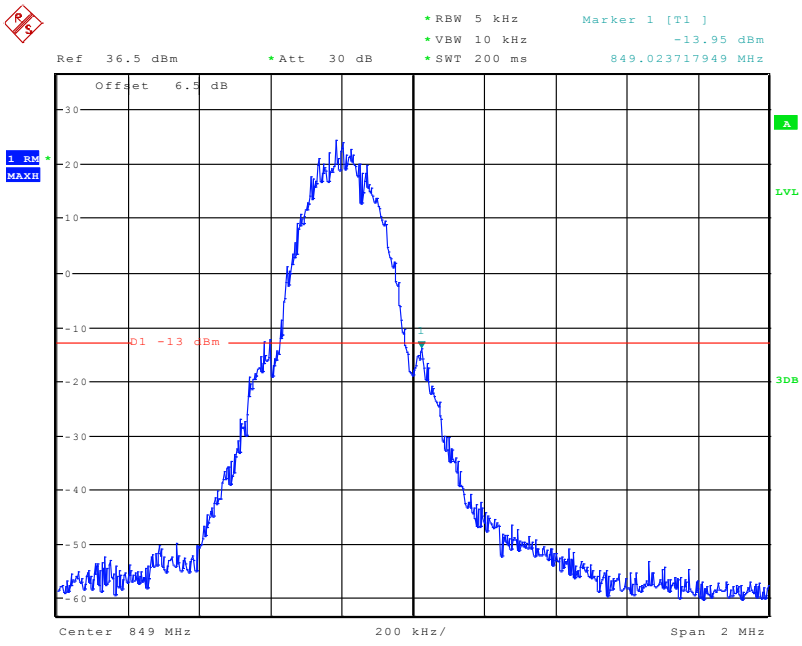
Test Result: Compliance. Please refer to the following plots.

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



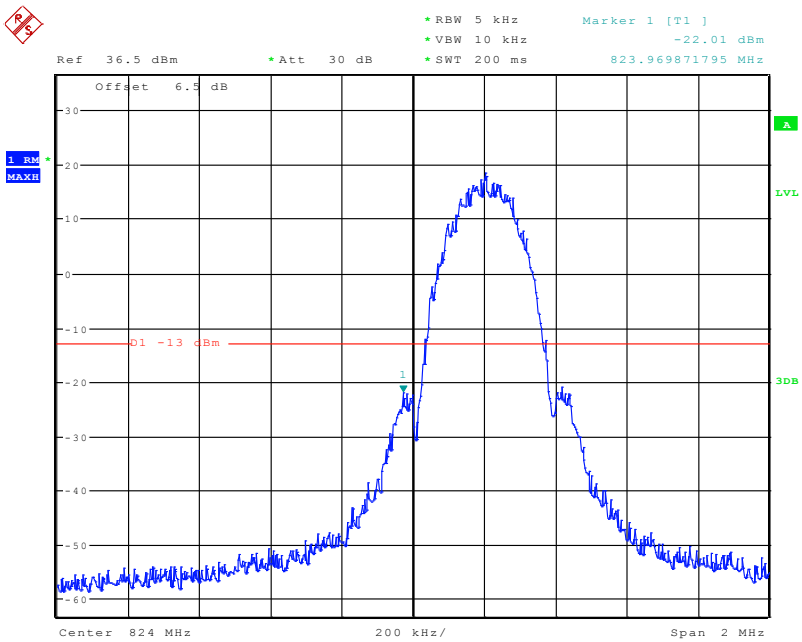
Date: 13.JUL.2020 21:06:55

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



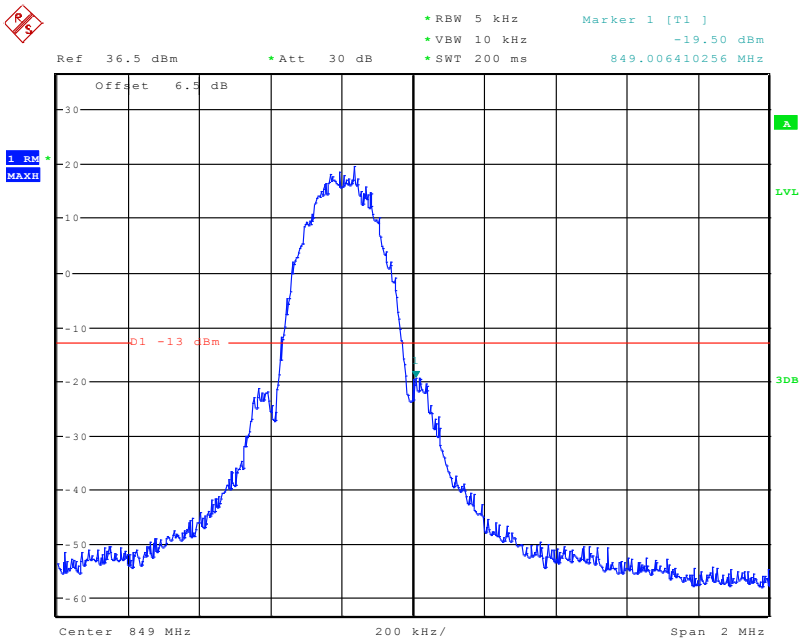
Date: 13.JUL.2020 21:09:32

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



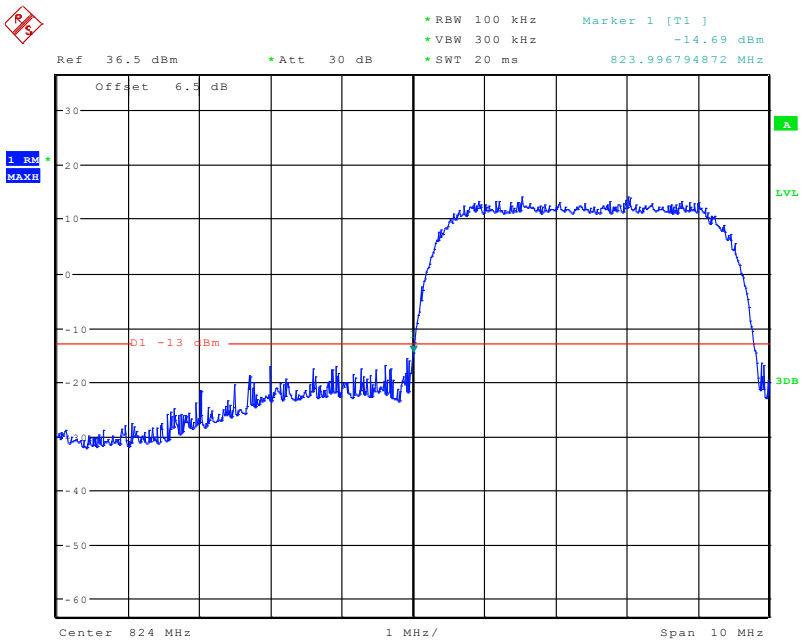
Date: 13.JUL.2020 22:29:03

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



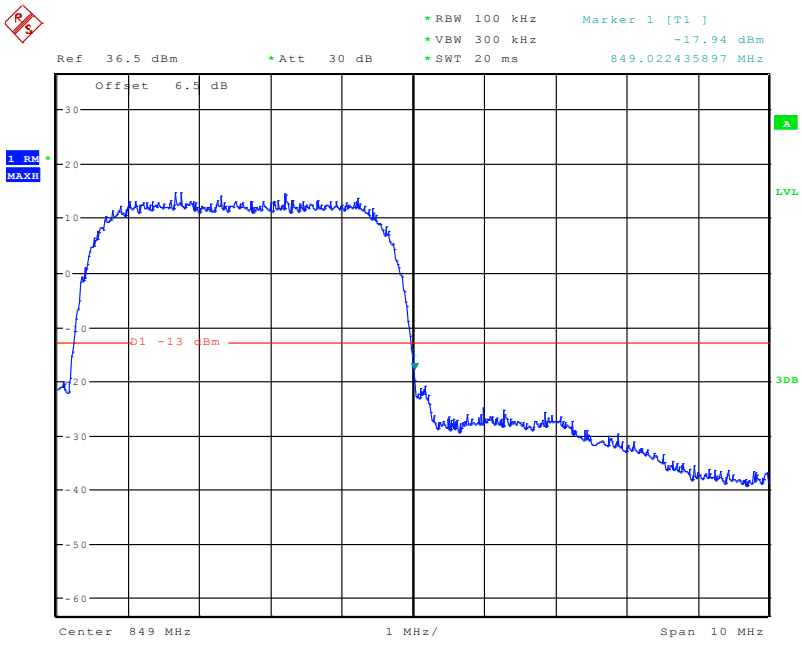
Date: 13.JUL.2020 22:30:29

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



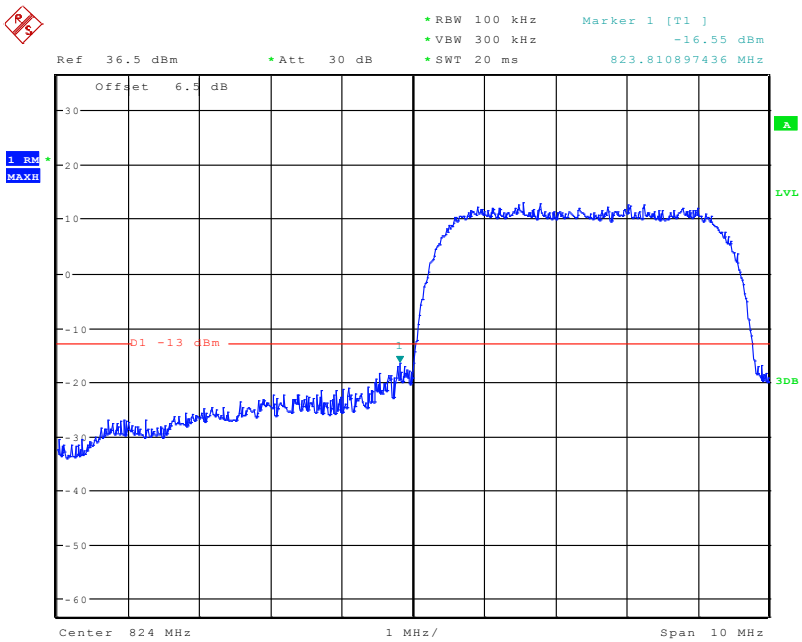
Date: 13.JUL.2020 20:55:21

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



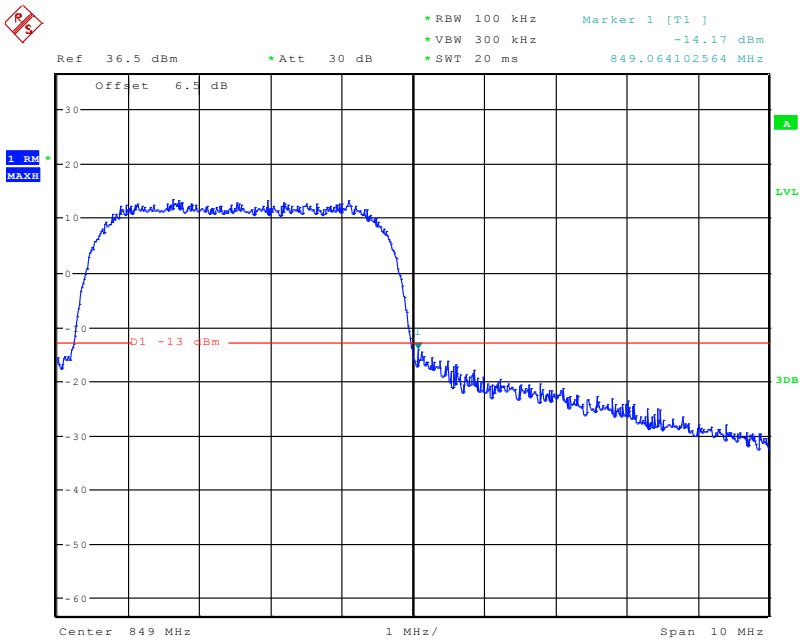
Date: 13.JUL.2020 20:55:58

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



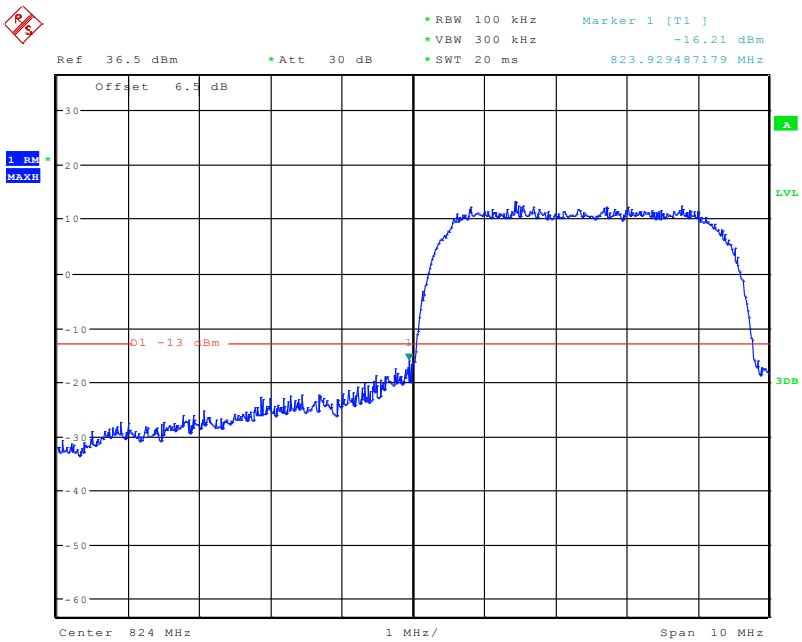
Date: 13.JUL.2020 20:49:59

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



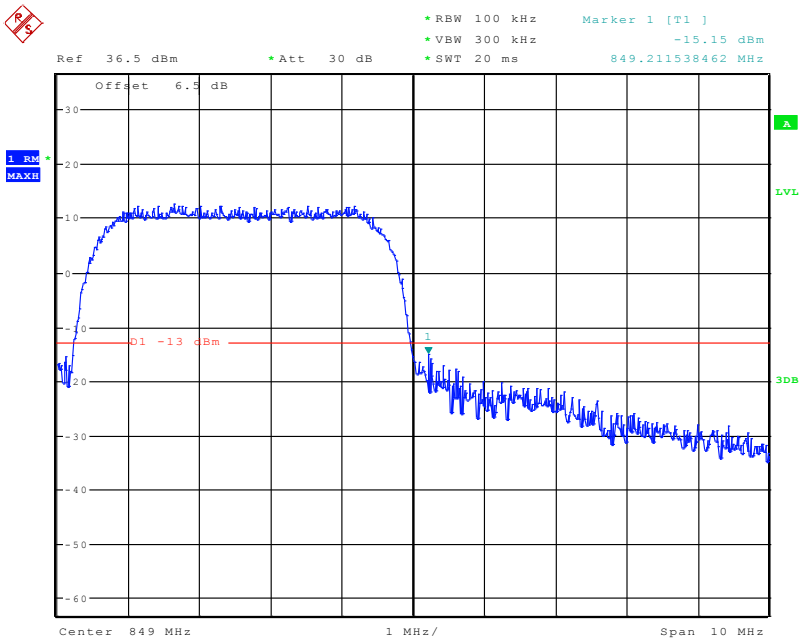
Date: 13.JUL.2020 20:51:32

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



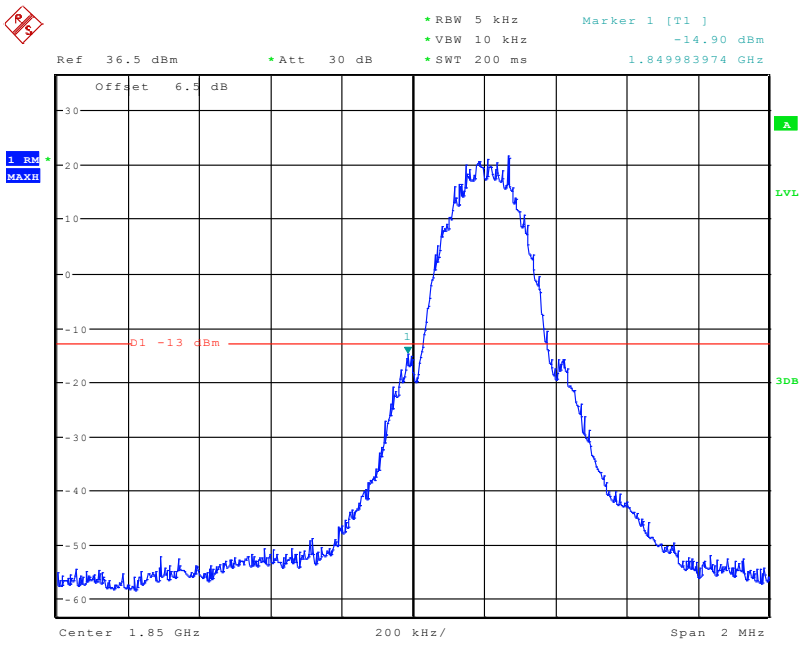
Date: 13.JUL.2020 20:54:37

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



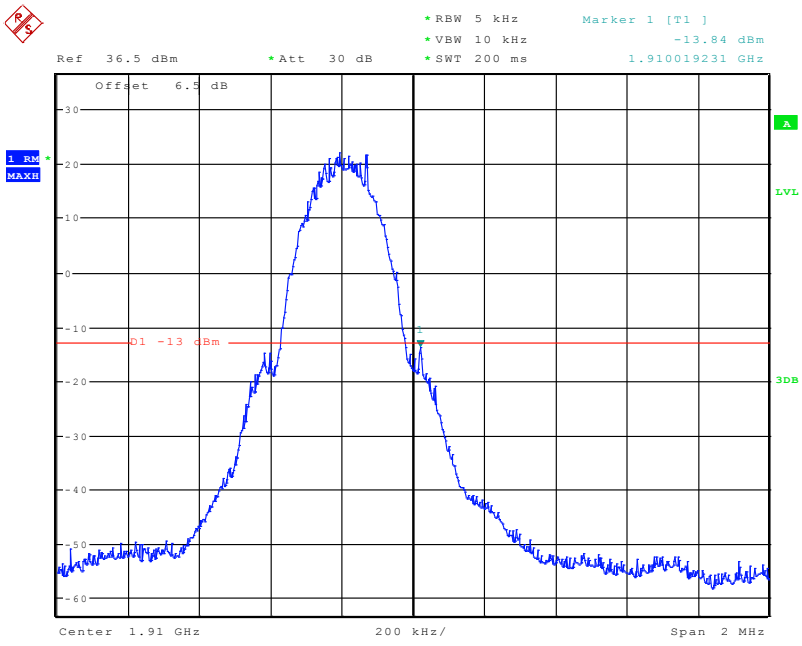
Date: 13.JUL.2020 20:52:56

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



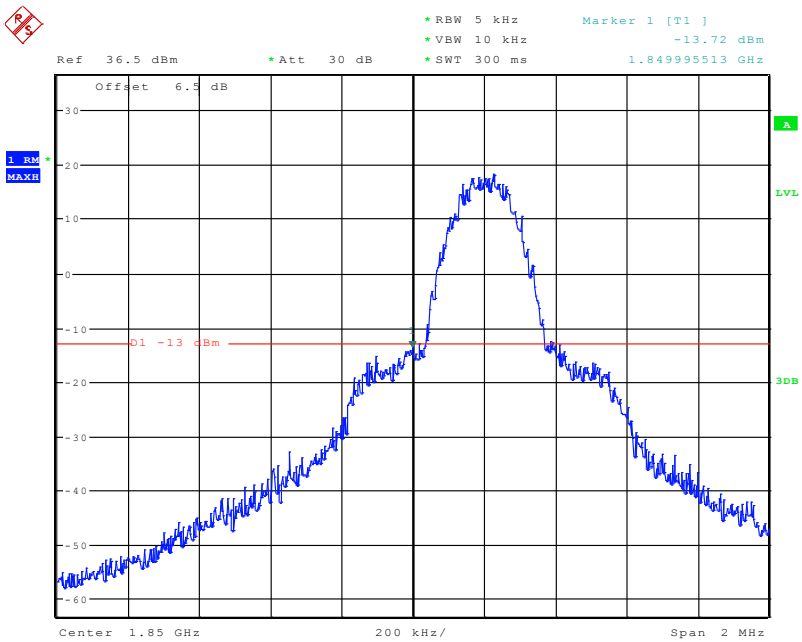
Date: 13.JUL.2020 21:14:24

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



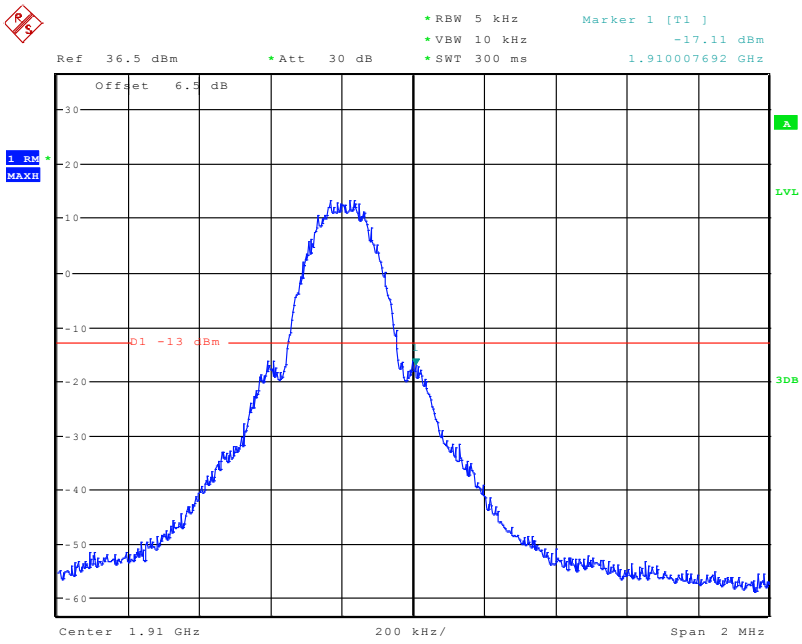
Date: 13.JUL.2020 21:16:38

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



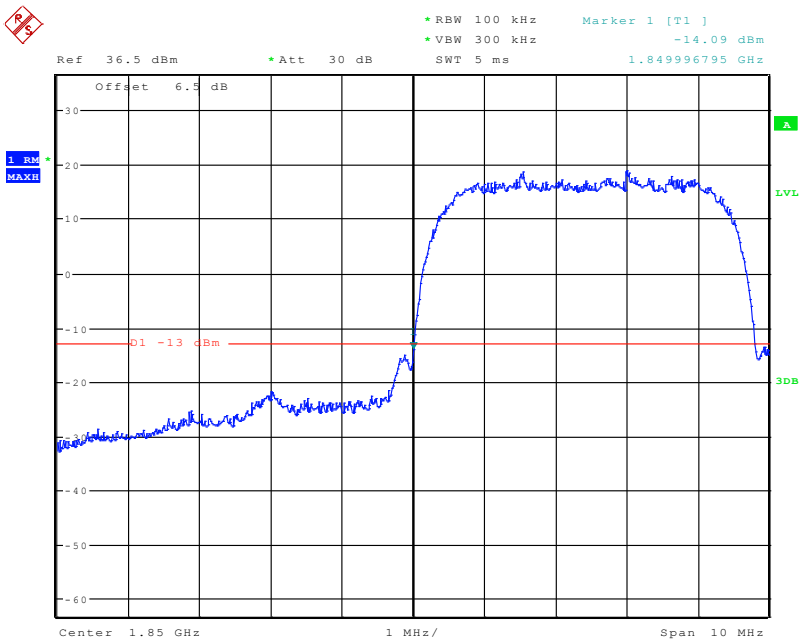
Date: 13.JUL.2020 22:12:11

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



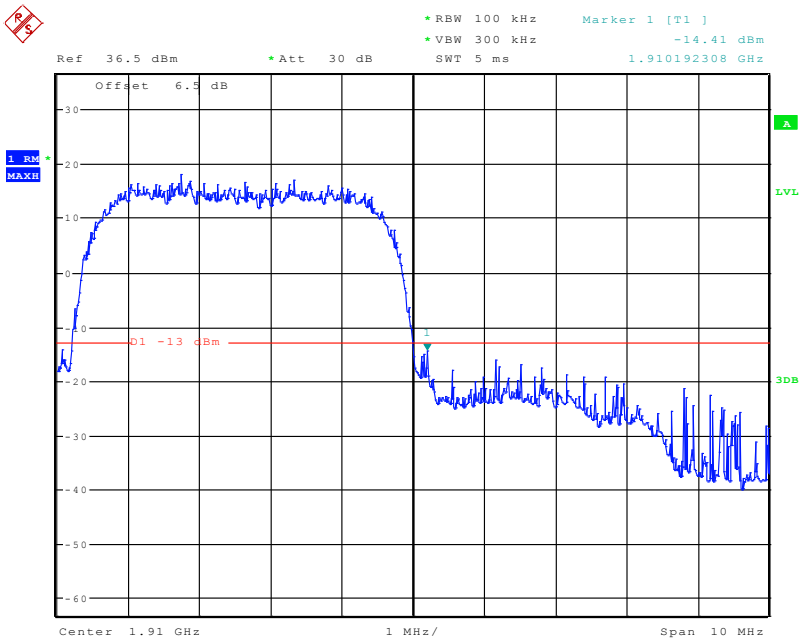
Date: 13.JUL.2020 22:23:00

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



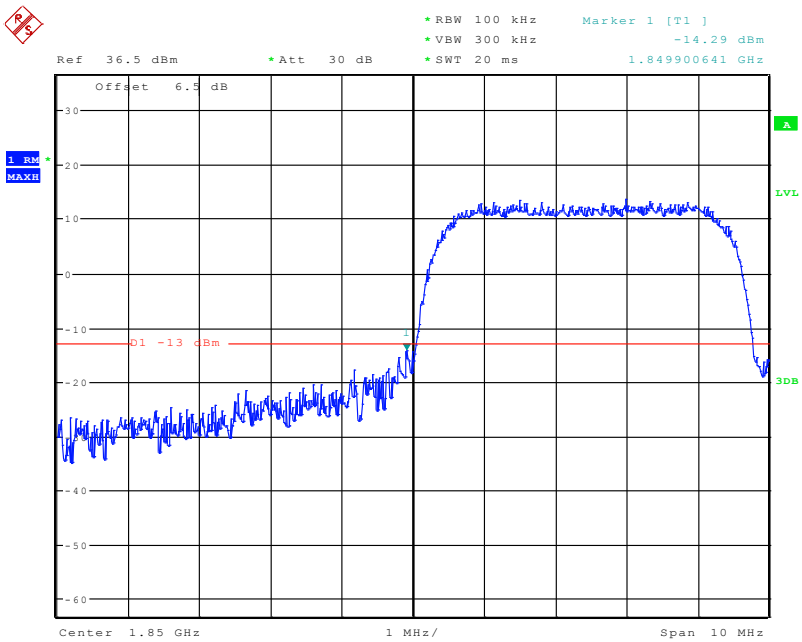
Date: 13.JUL.2020 19:32:02

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



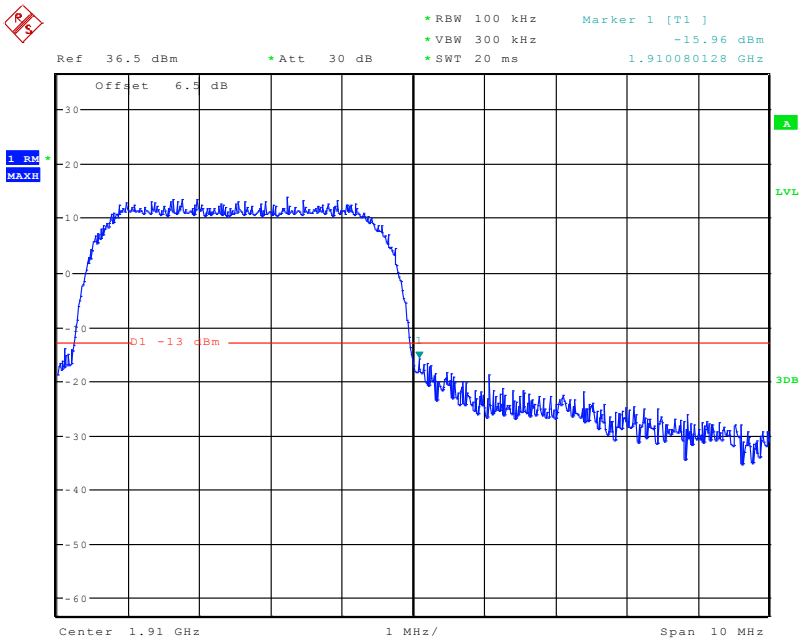
Date: 13.JUL.2020 19:33:40

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



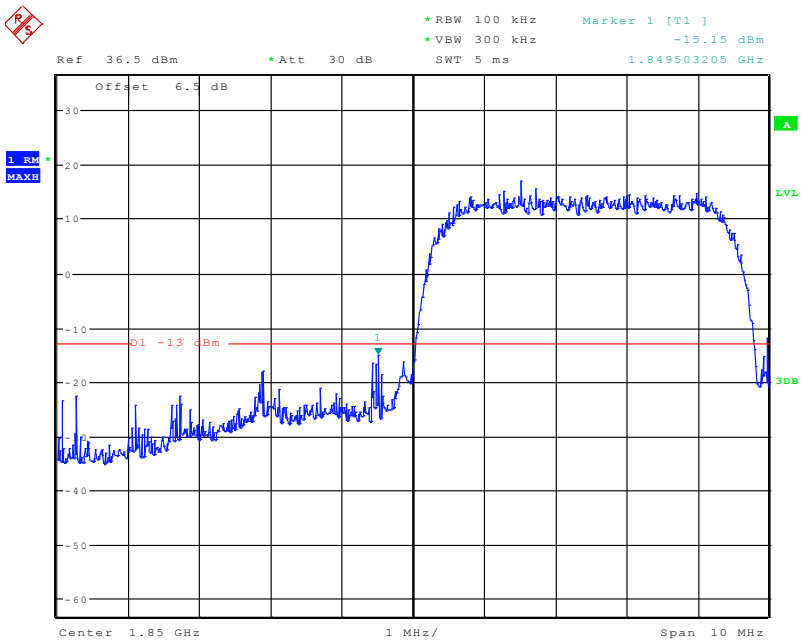
Date: 13.JUL.2020 19:37:13

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



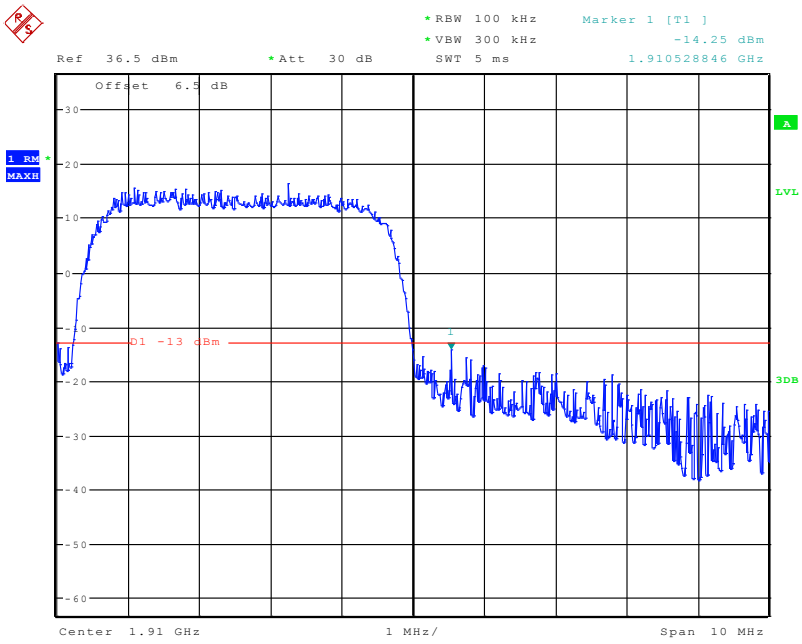
Date: 13.JUL.2020 19:37:52

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



Date: 13.JUL.2020 19:35:33

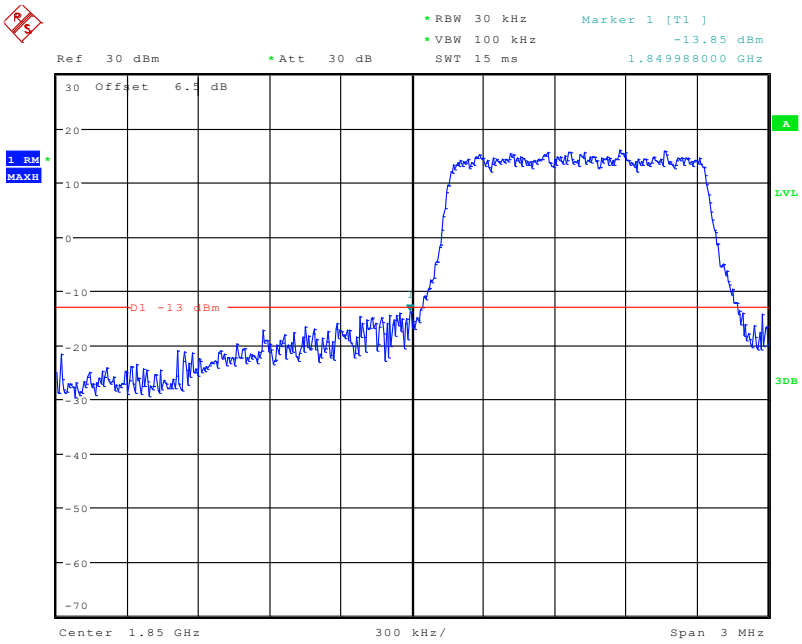
PCS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 13.JUL.2020 19:34:28

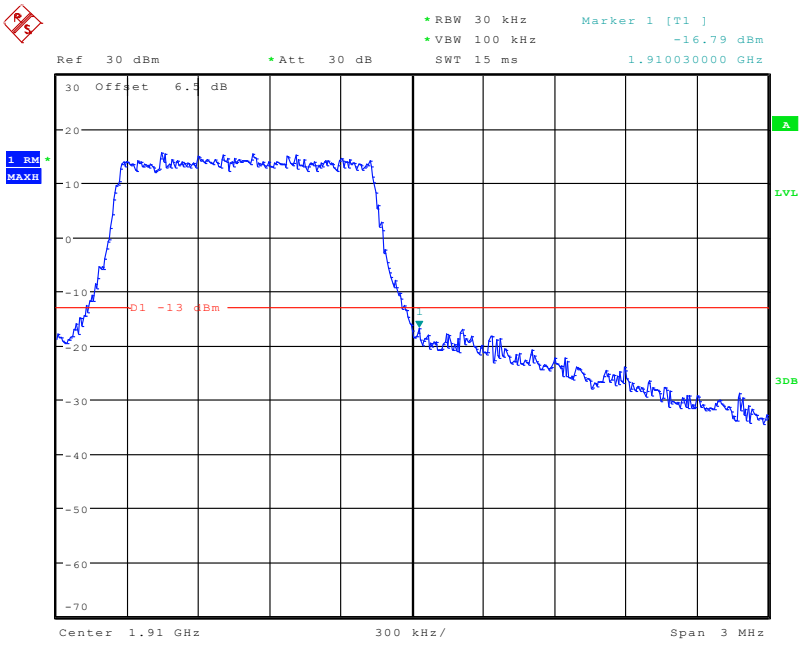
Band 2:

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



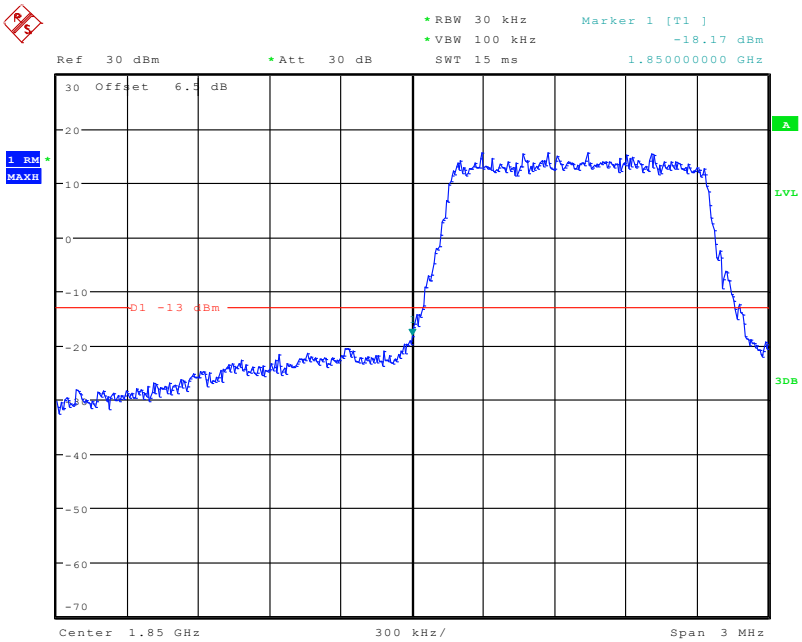
Date: 15.JUL.2020 19:37:45

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



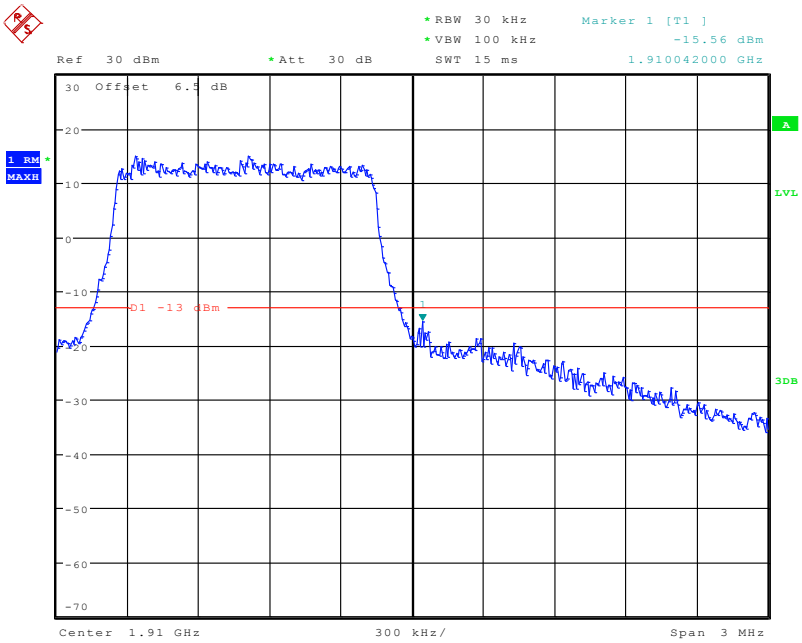
Date: 15.JUL.2020 19:38:20

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



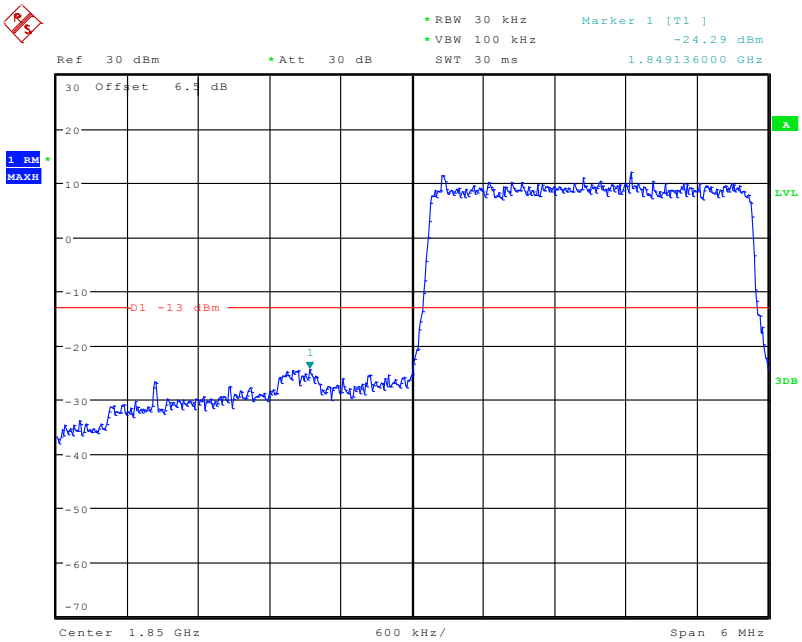
Date: 15.JUL.2020 19:38:01

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



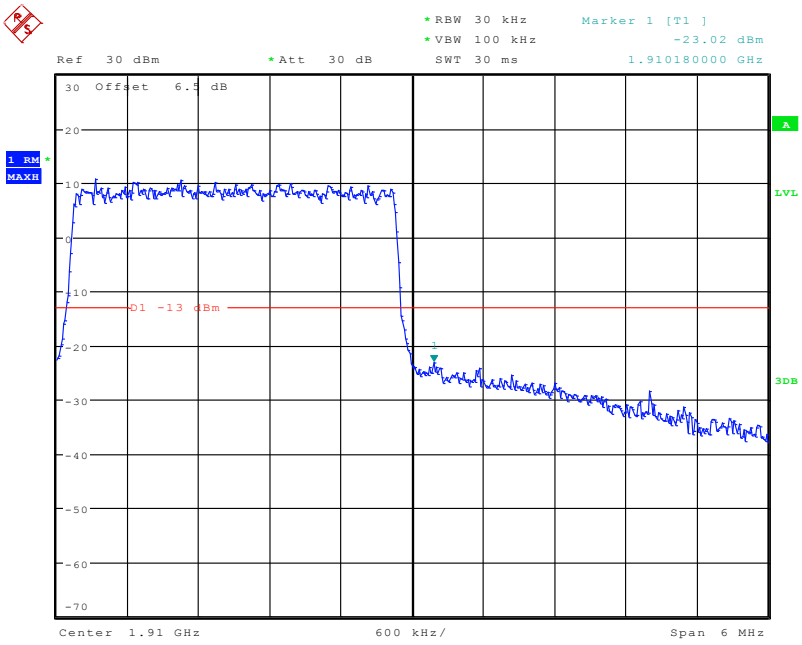
Date: 15.JUL.2020 19:38:36

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



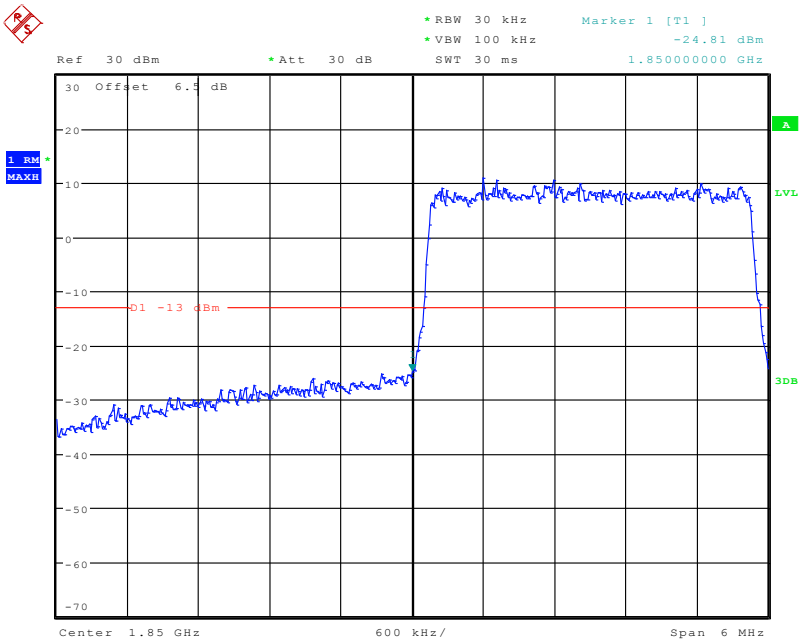
Date: 15.JUL.2020 19:38:54

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



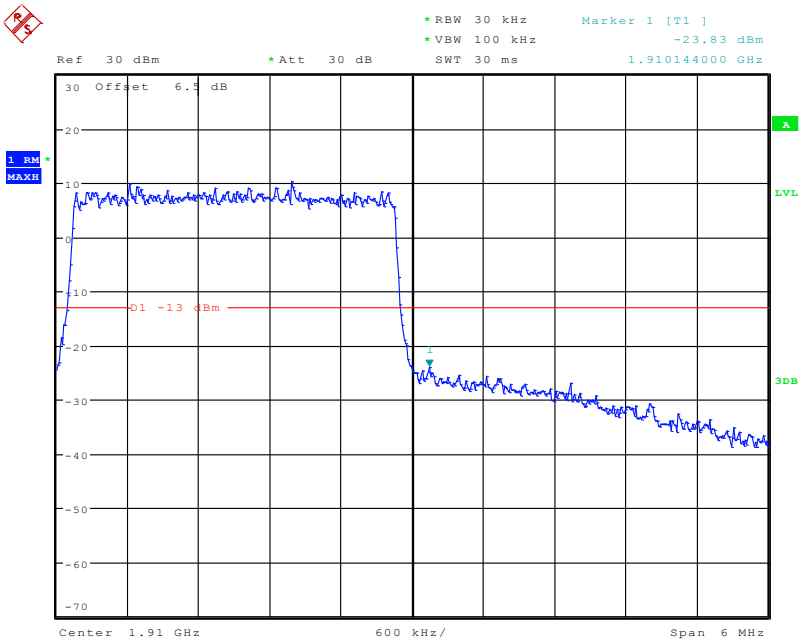
Date: 15.JUL.2020 19:39:26

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



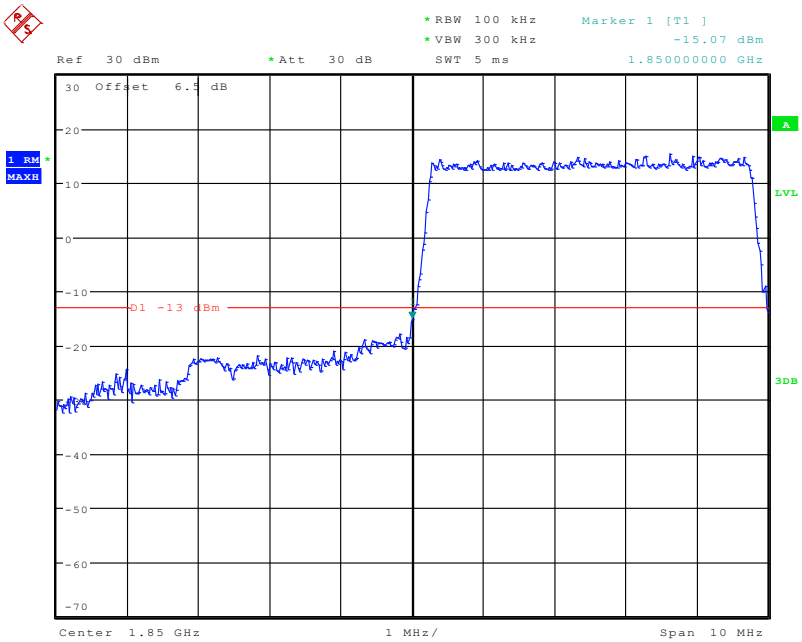
Date: 15.JUL.2020 19:39:10

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



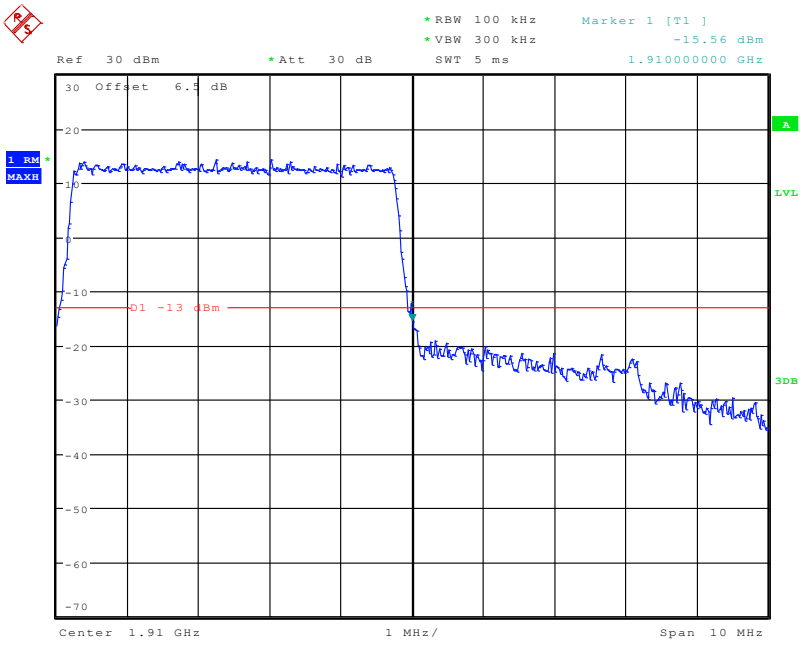
Date: 15.JUL.2020 19:39:41

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



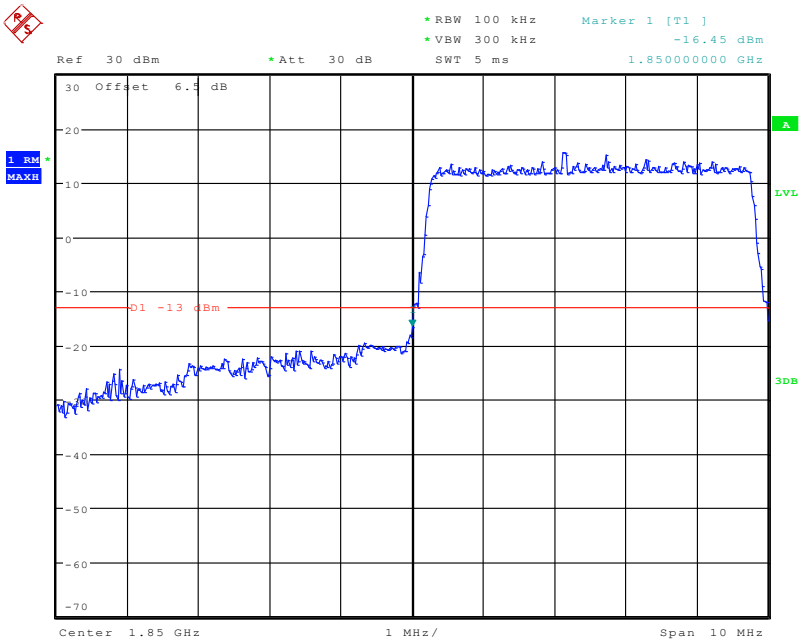
Date: 15.JUL.2020 19:39:59

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



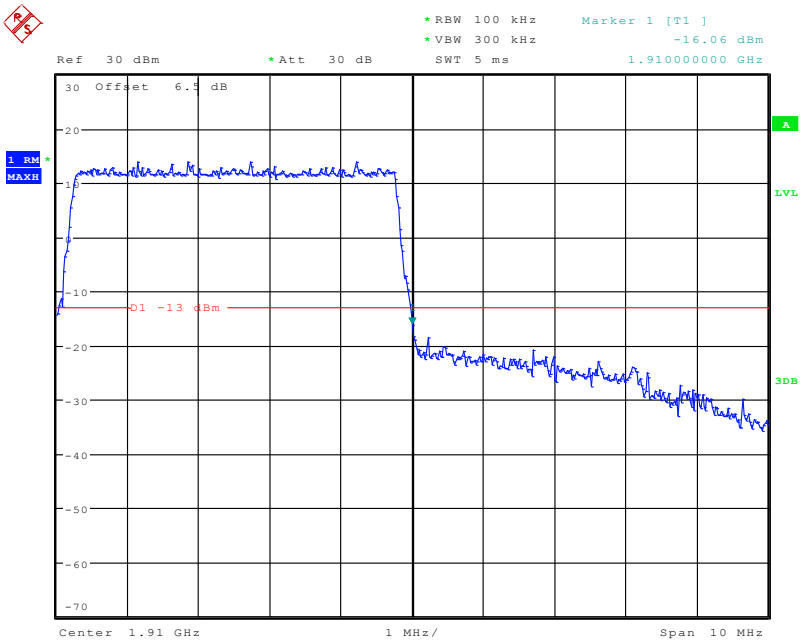
Date: 15.JUL.2020 19:40:31

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



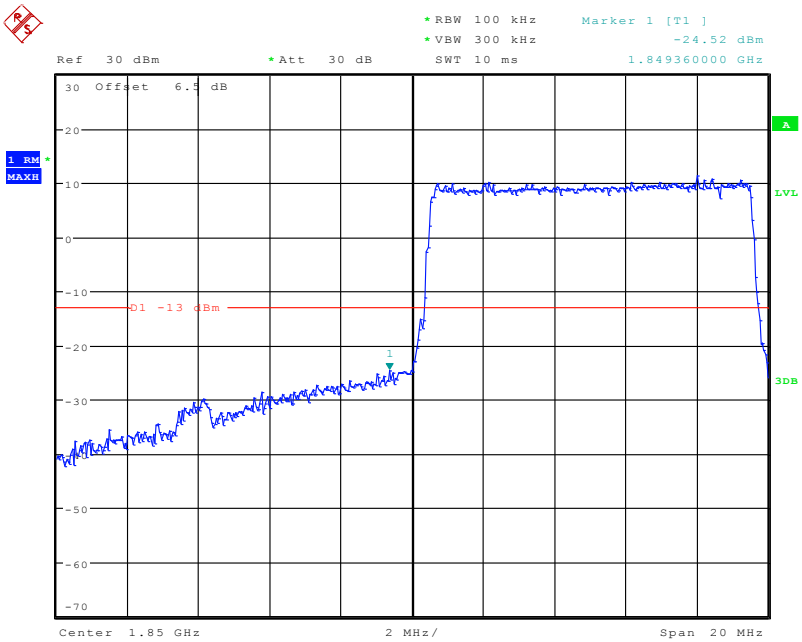
Date: 15.JUL.2020 19:40:15

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



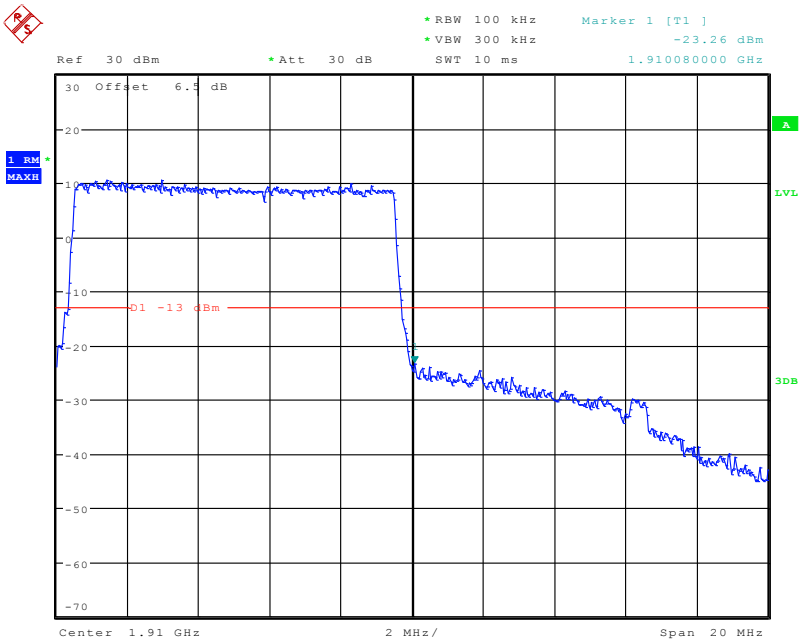
Date: 15.JUL.2020 19:40:50

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



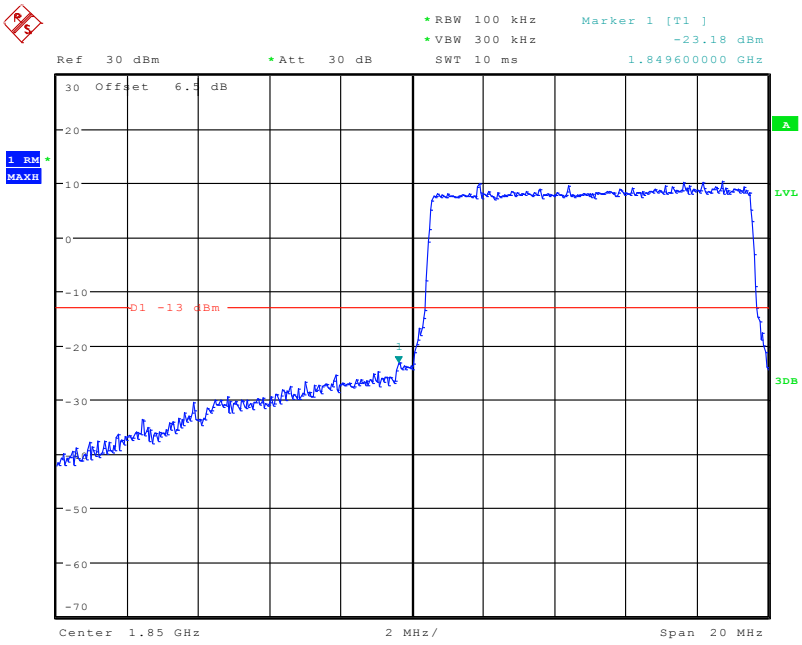
Date: 15.JUL.2020 19:41:09

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



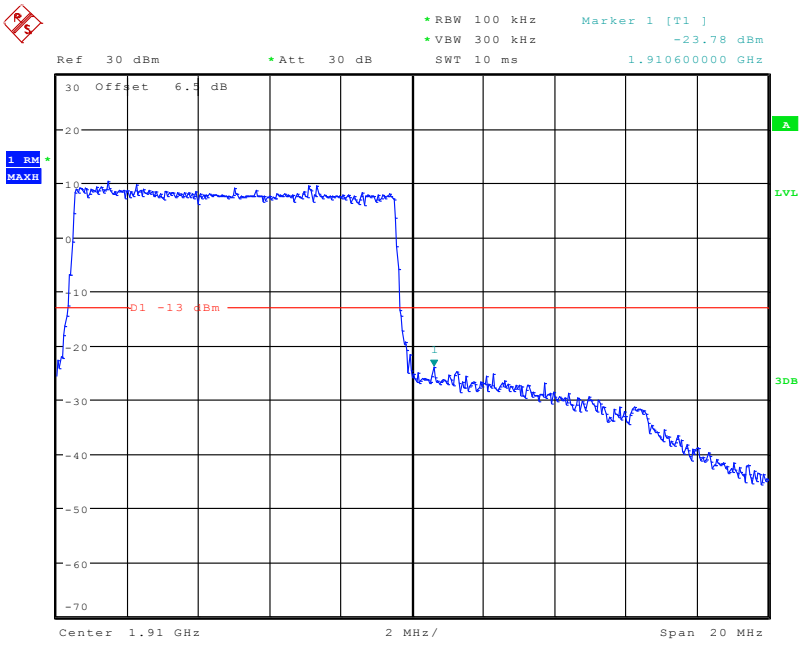
Date: 15.JUL.2020 19:41:43

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



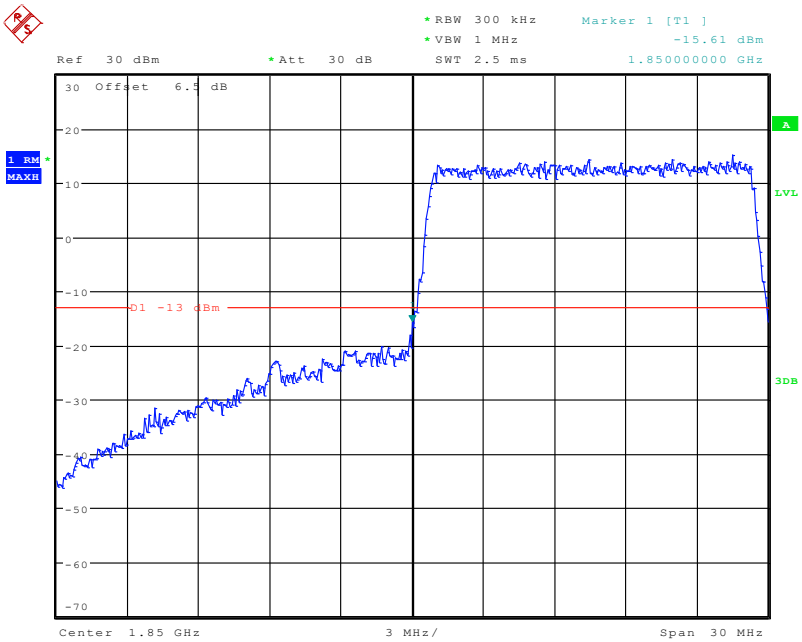
Date: 15.JUL.2020 19:41:26

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



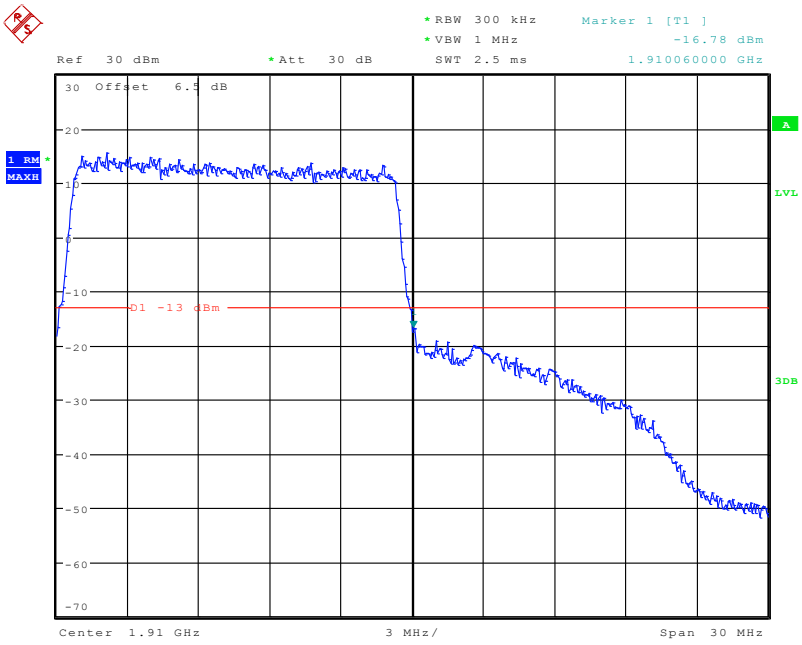
Date: 15.JUL.2020 19:42:00

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



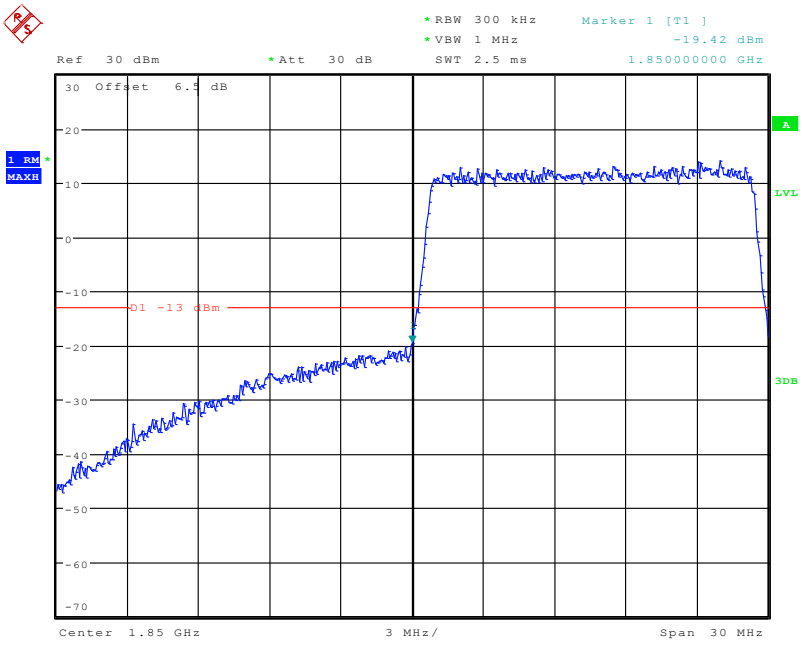
Date: 15.JUL.2020 19:42:21

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



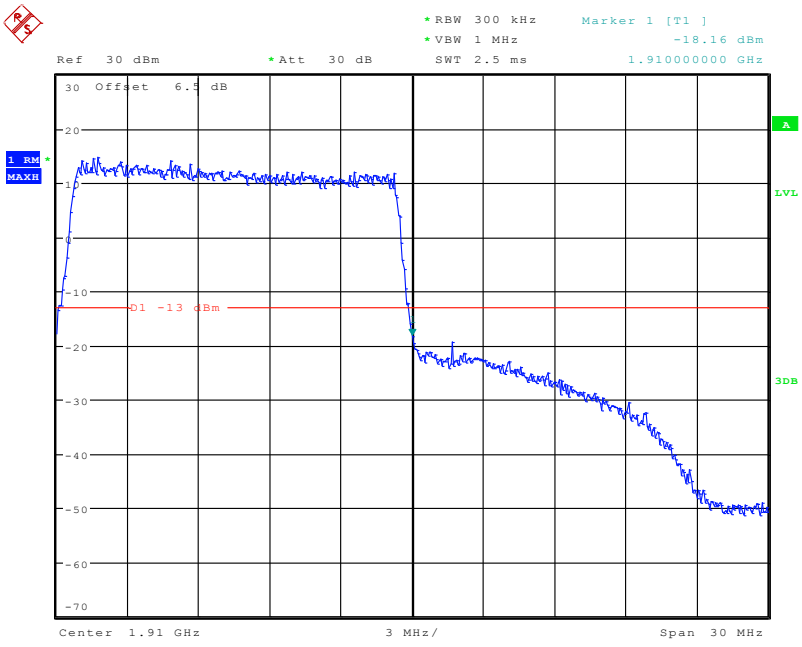
Date: 15.JUL.2020 19:42:59

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



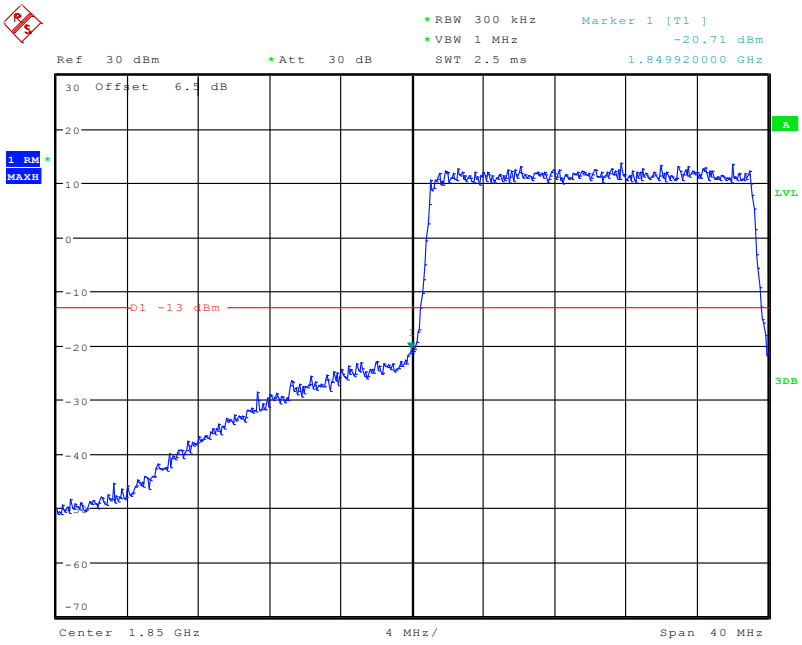
Date: 15.JUL.2020 19:42:40

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



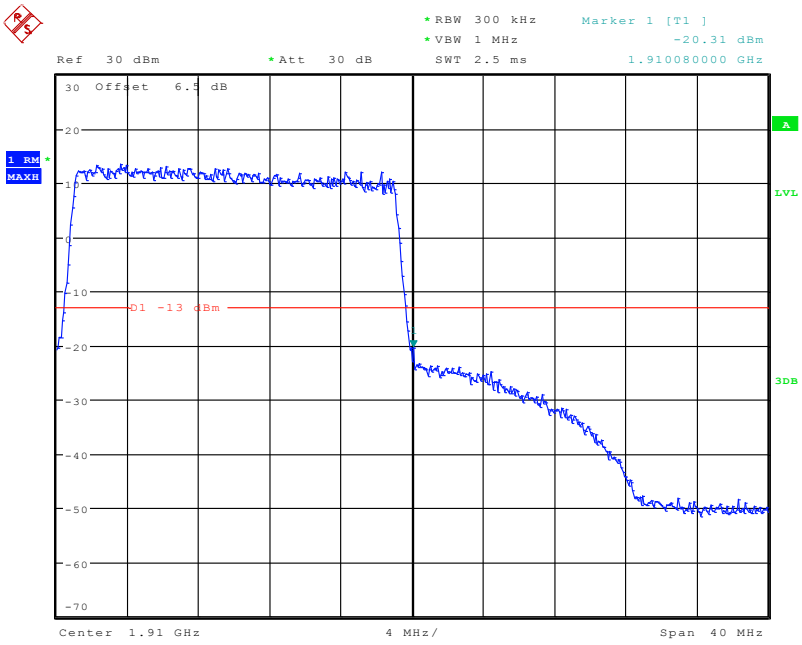
Date: 15.JUL.2020 19:43:18

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



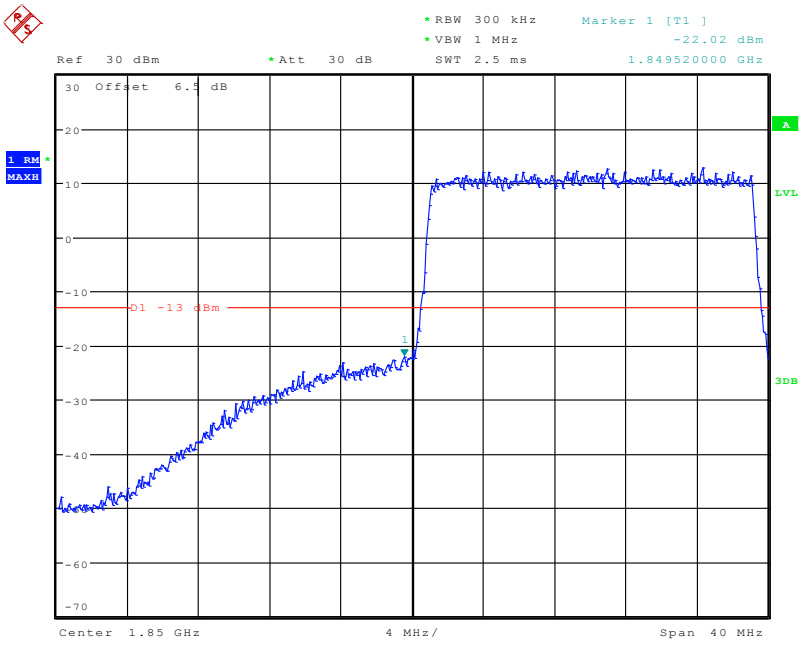
Date: 15.JUL.2020 19:43:40

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



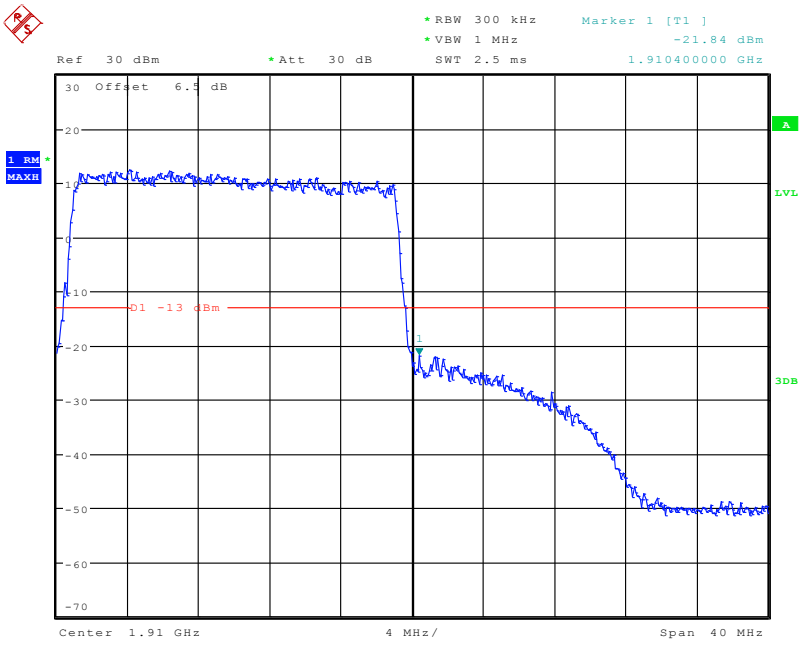
Date: 15.JUL.2020 19:44:19

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



Date: 15.JUL.2020 19:43:59

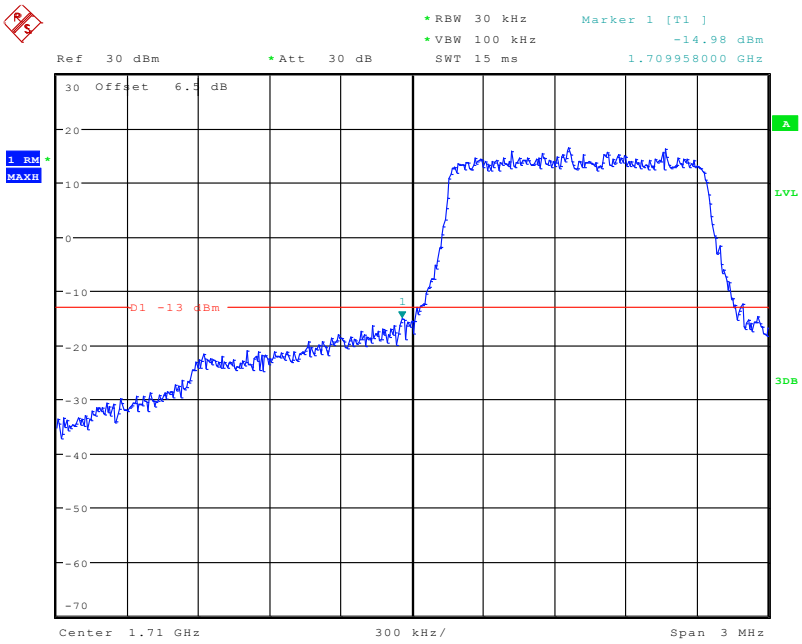
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 15.JUL.2020 19:44:38

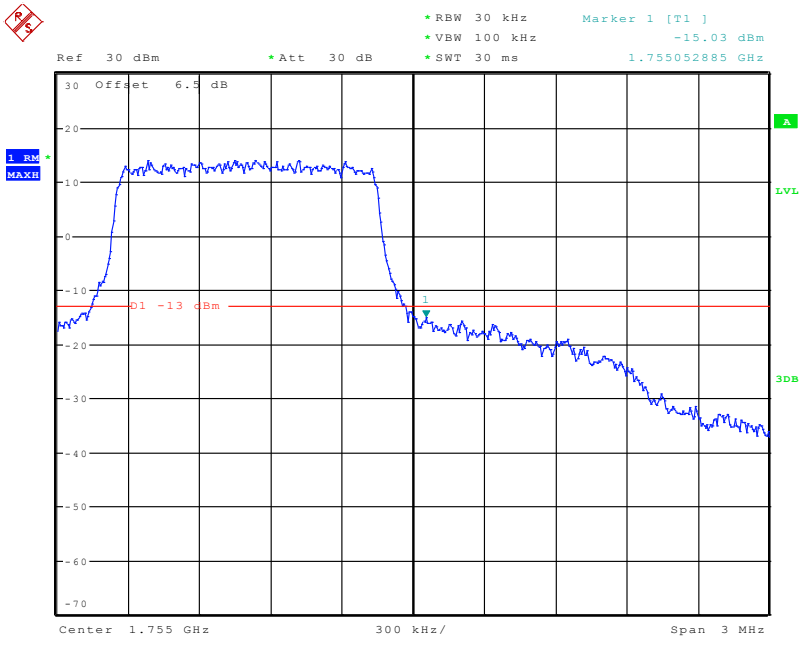
Band 4:

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



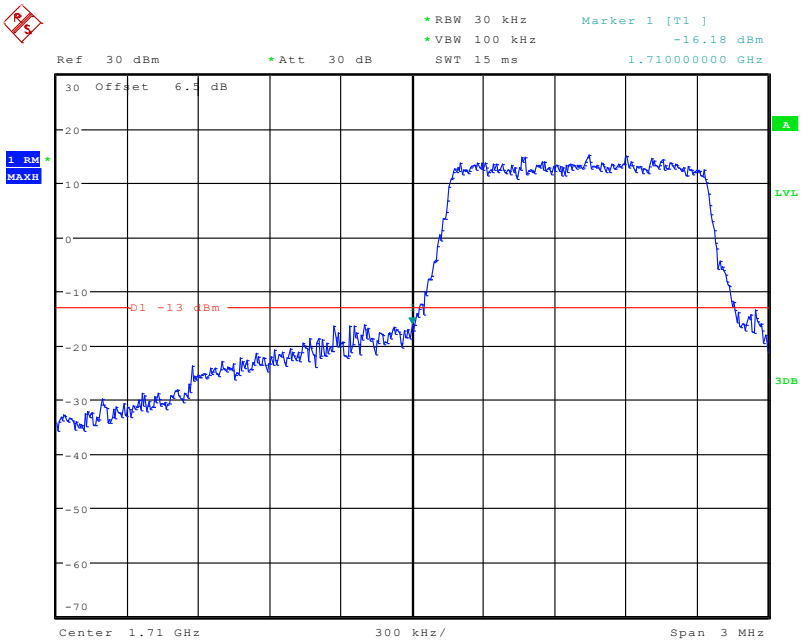
Date: 15.JUL.2020 19:44:55

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



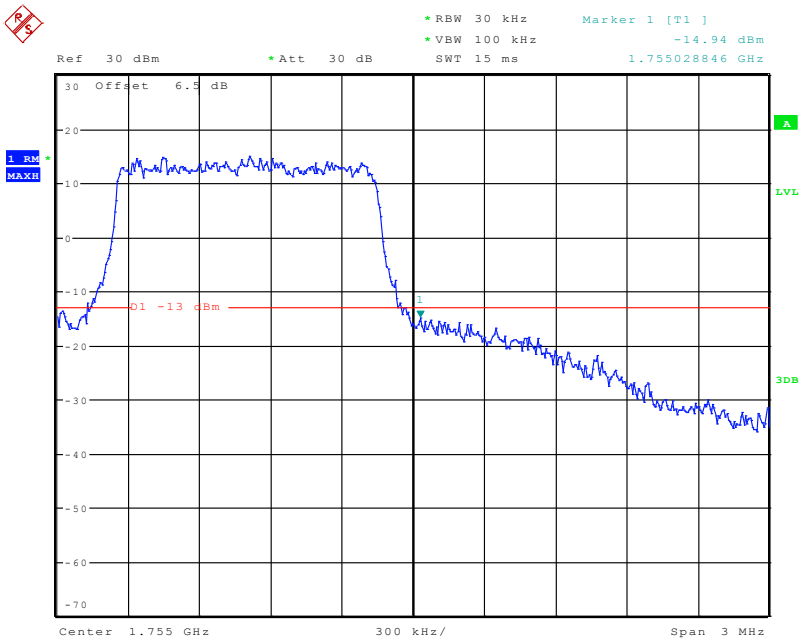
Date: 15.JUL.2020 21:09:45

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



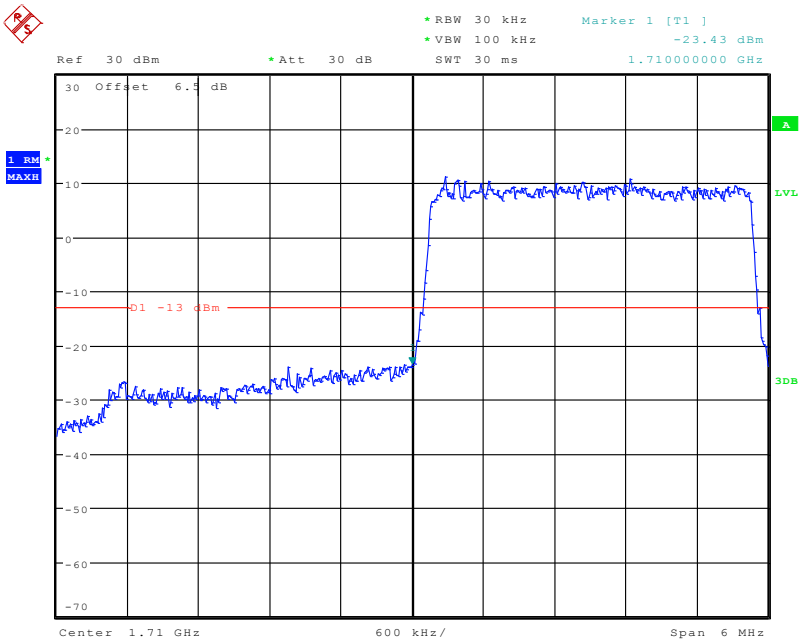
Date: 15.JUL.2020 19:45:14

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



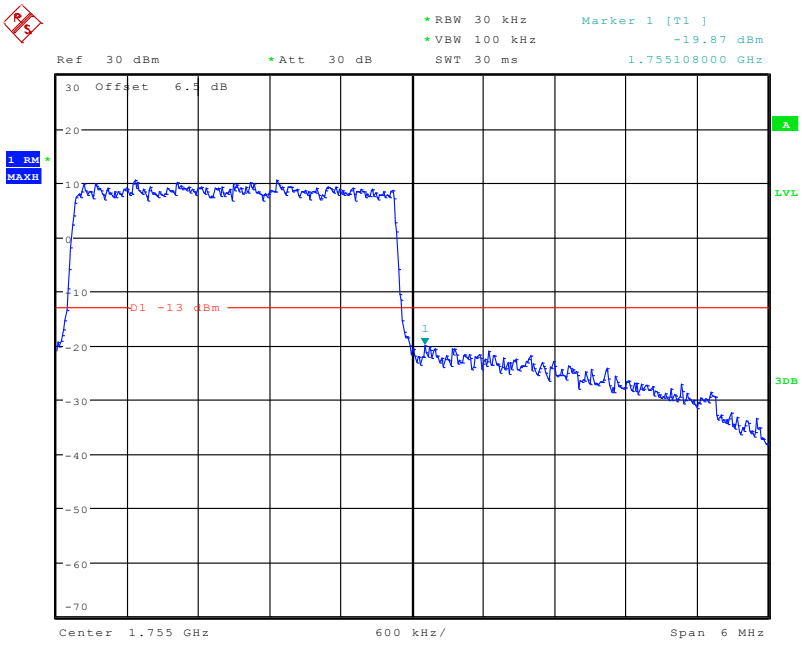
Date: 15.JUL.2020 21:08:35

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



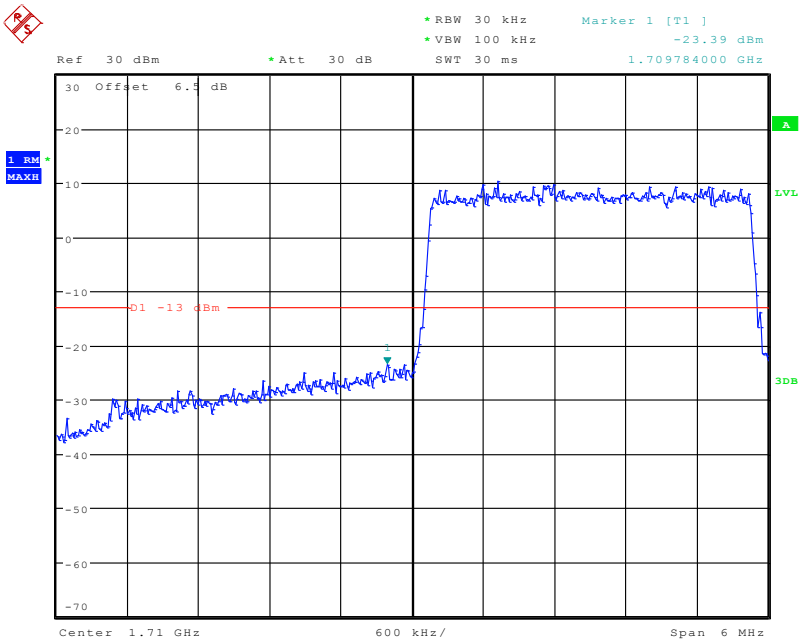
Date: 15.JUL.2020 19:46:04

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



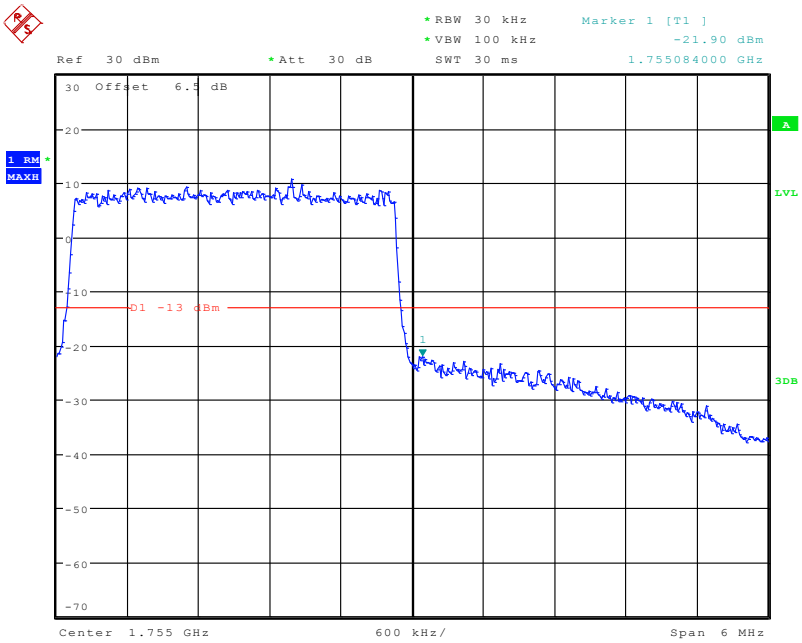
Date: 15.JUL.2020 19:46:36

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



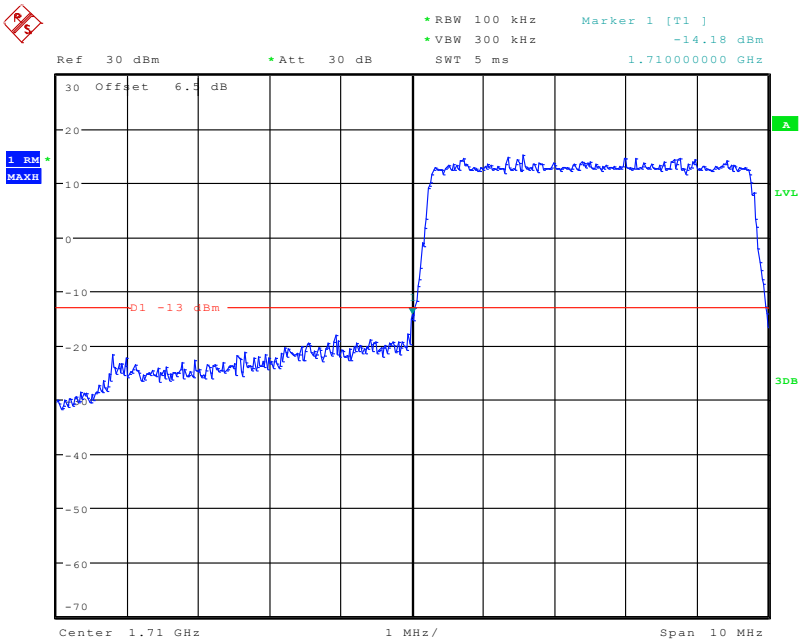
Date: 15.JUL.2020 19:46:20

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



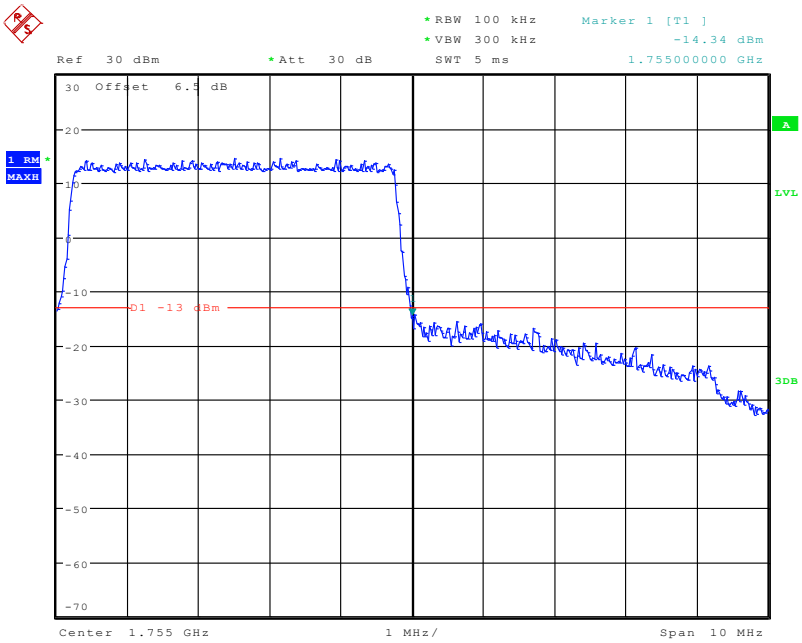
Date: 15.JUL.2020 19:46:55

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



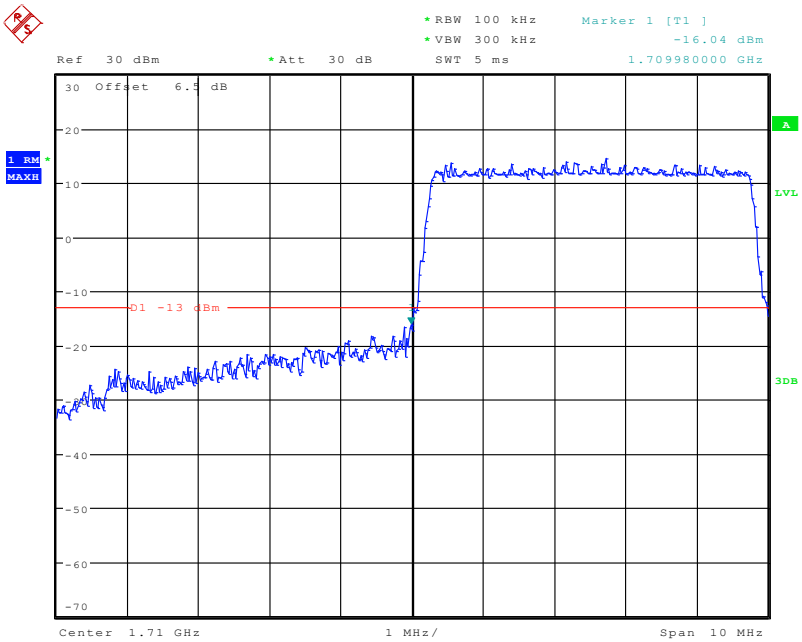
Date: 15.JUL.2020 19:47:16

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



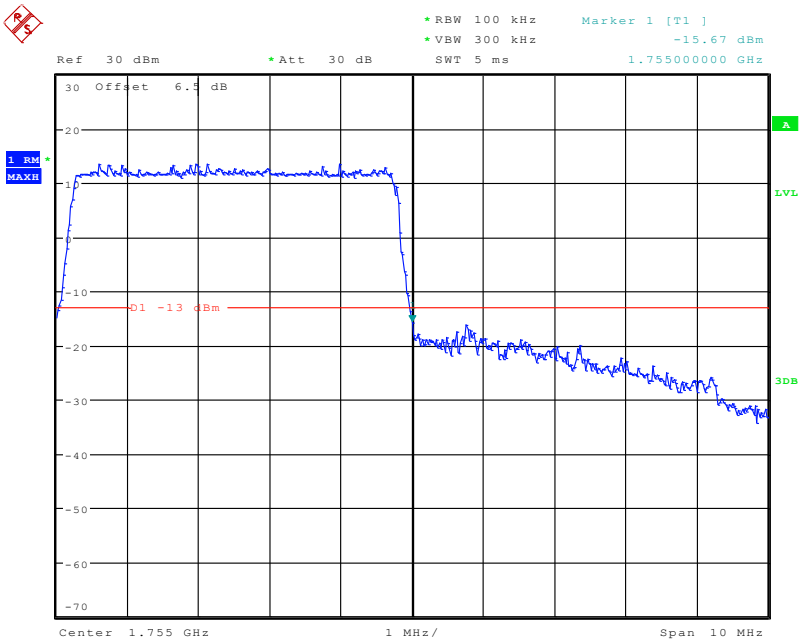
Date: 15.JUL.2020 19:47:54

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



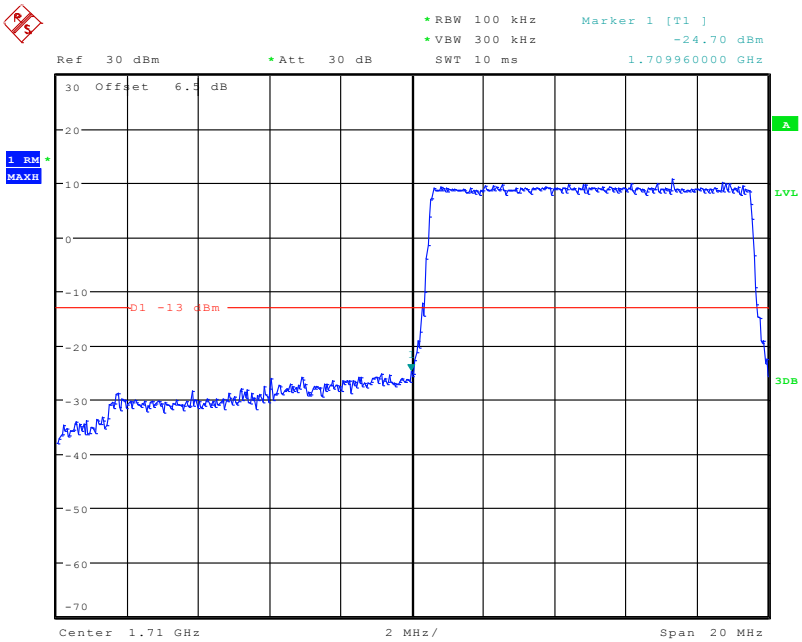
Date: 15.JUL.2020 19:47:35

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



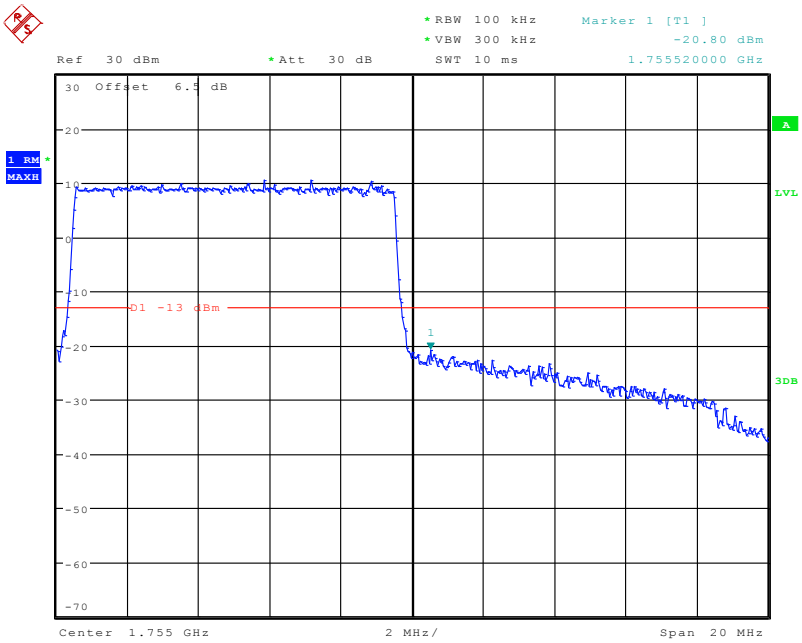
Date: 15.JUL.2020 19:48:13

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



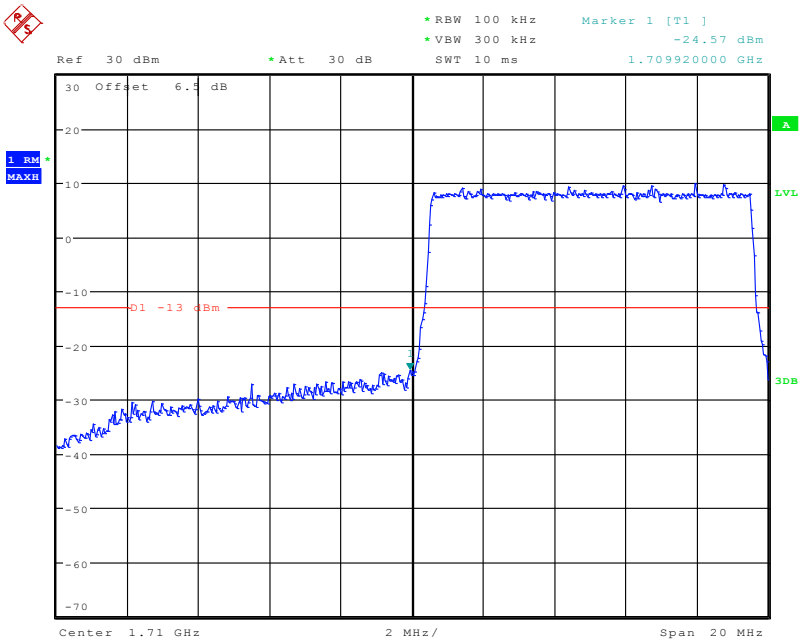
Date: 15.JUL.2020 19:48:32

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



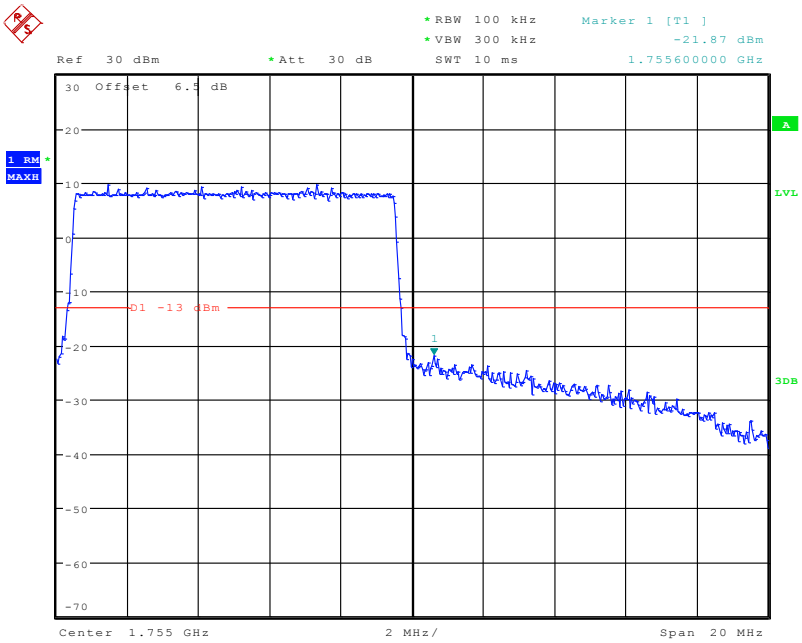
Date: 15.JUL.2020 19:49:06

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



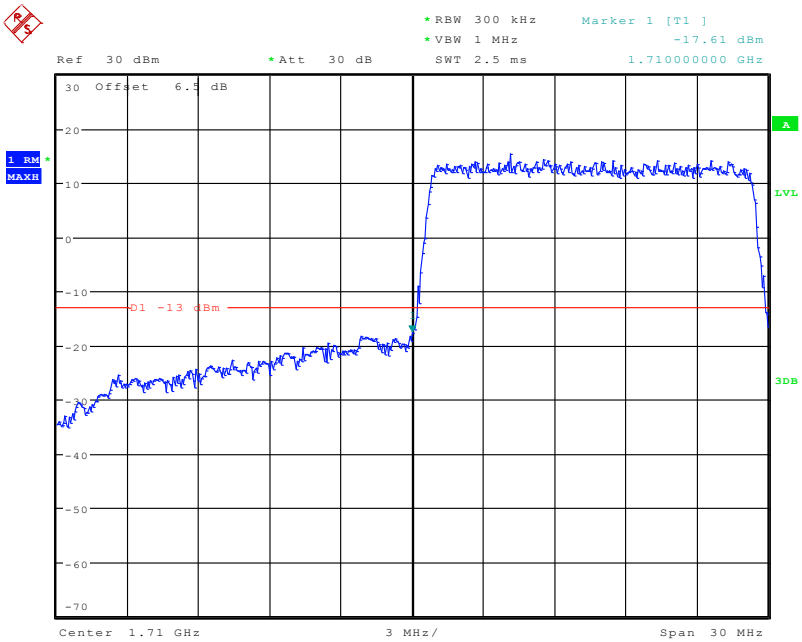
Date: 15.JUL.2020 19:48:49

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



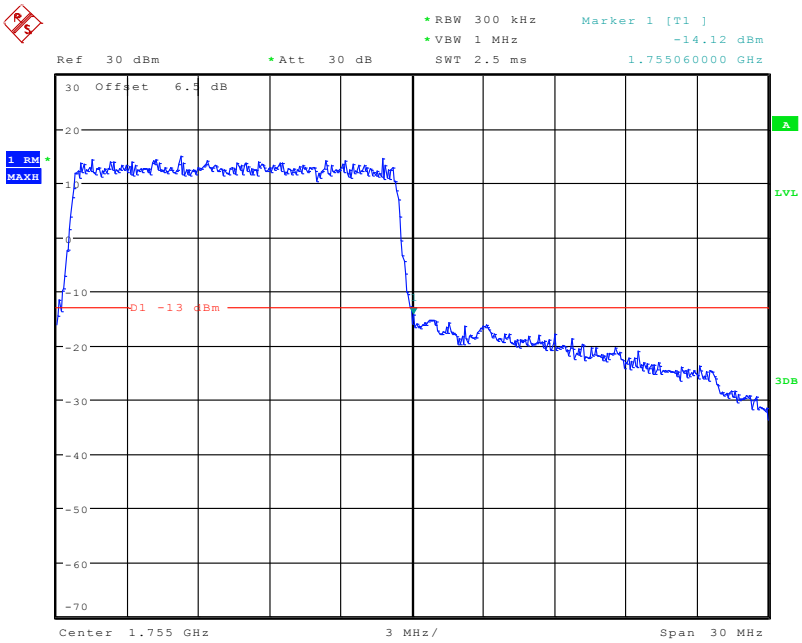
Date: 15.JUL.2020 19:49:26

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



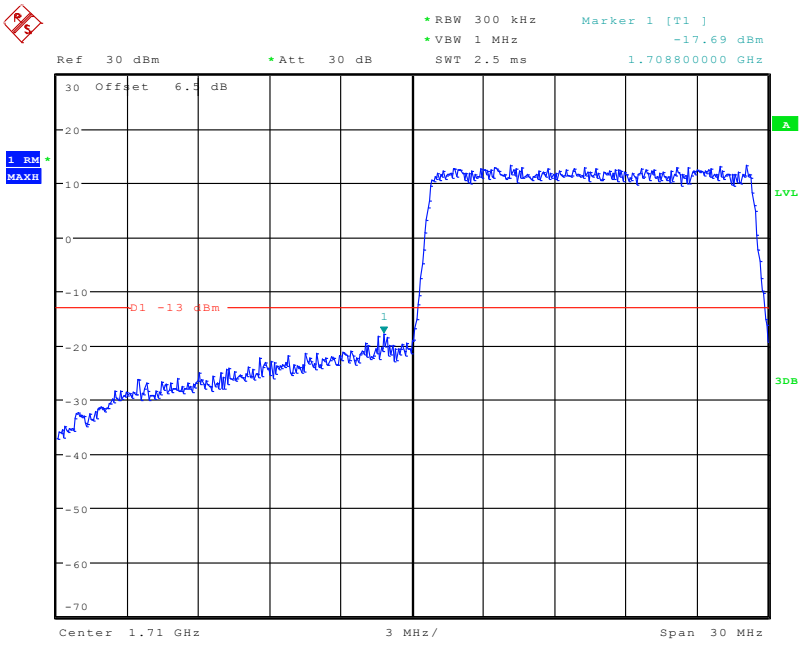
Date: 15.JUL.2020 19:49:48

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



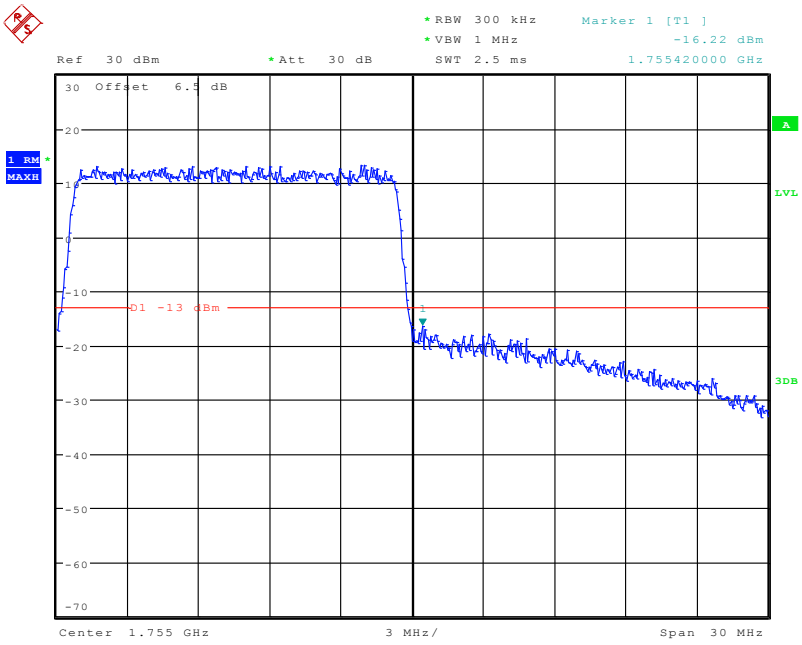
Date: 15.JUL.2020 19:50:26

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



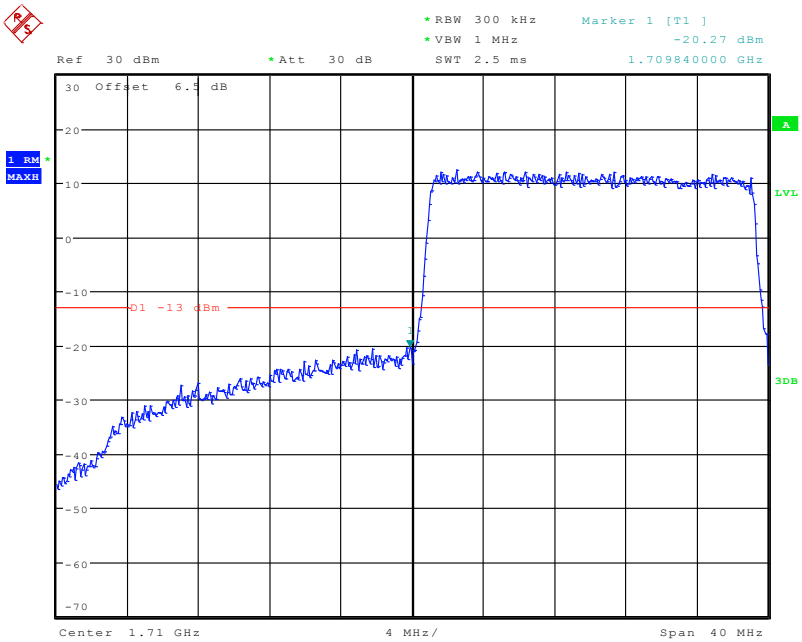
Date: 15.JUL.2020 19:50:07

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



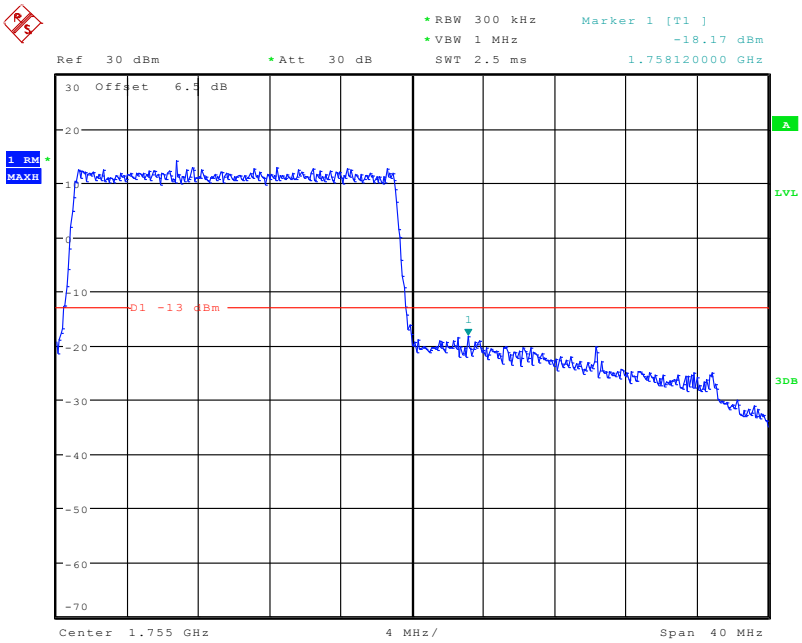
Date: 15.JUL.2020 19:50:45

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



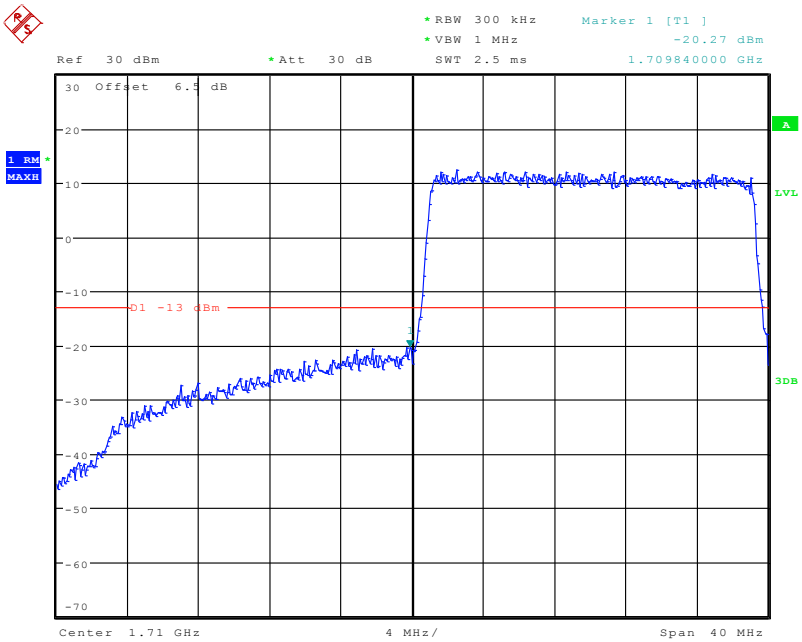
Date: 15.JUL.2020 19:51:29

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



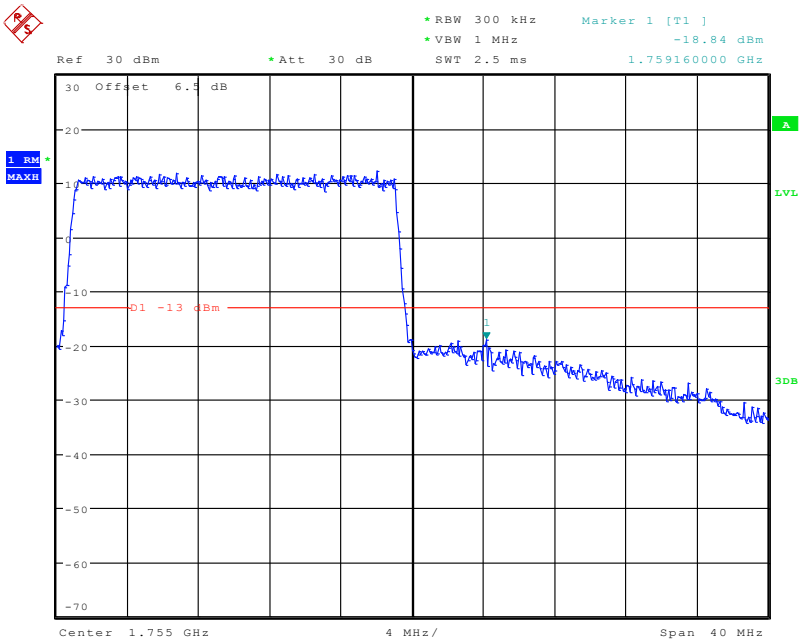
Date: 15.JUL.2020 19:51:49

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



Date: 15.JUL.2020 19:51:29

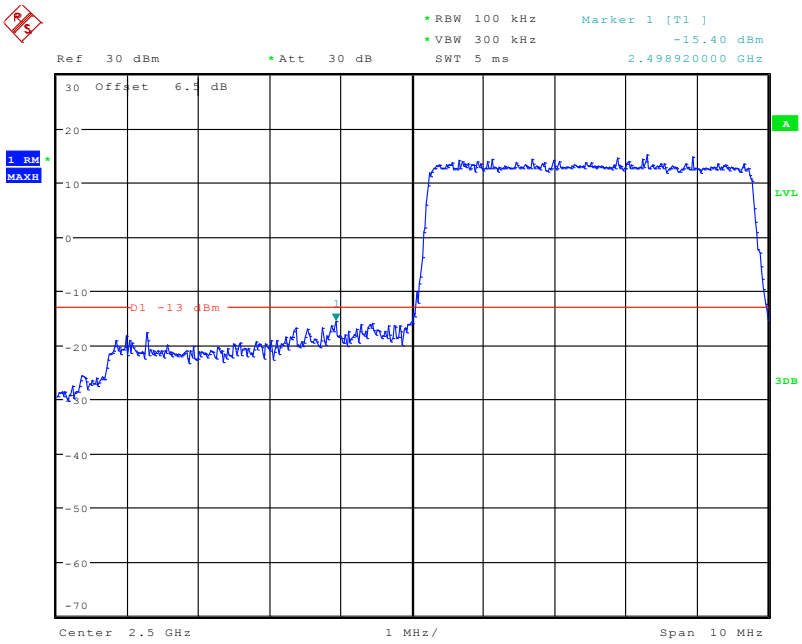
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 15.JUL.2020 19:52:08

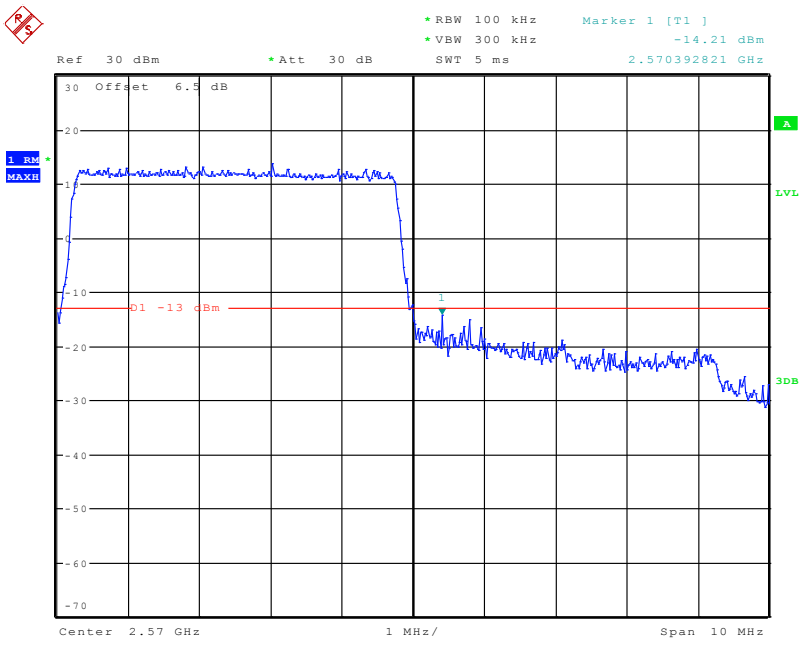
Band 7:

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



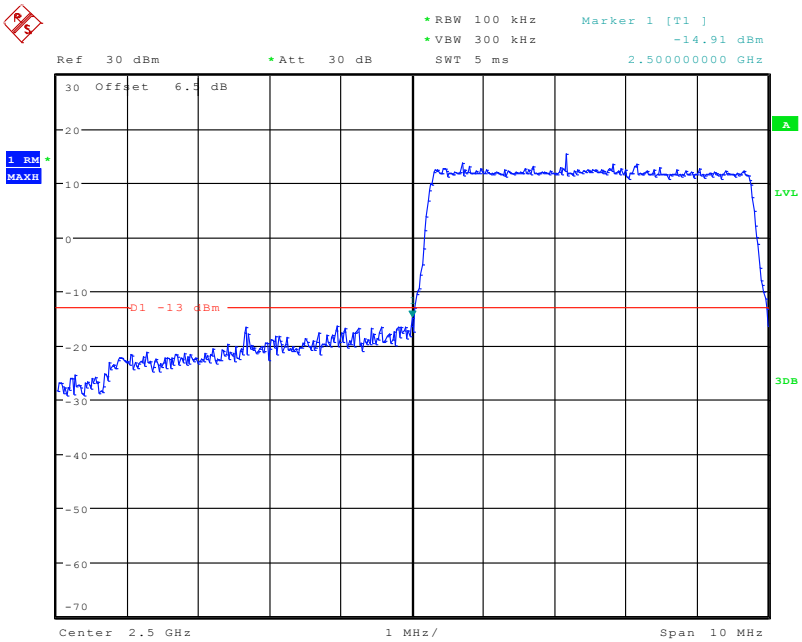
Date: 15.JUL.2020 19:52:26

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



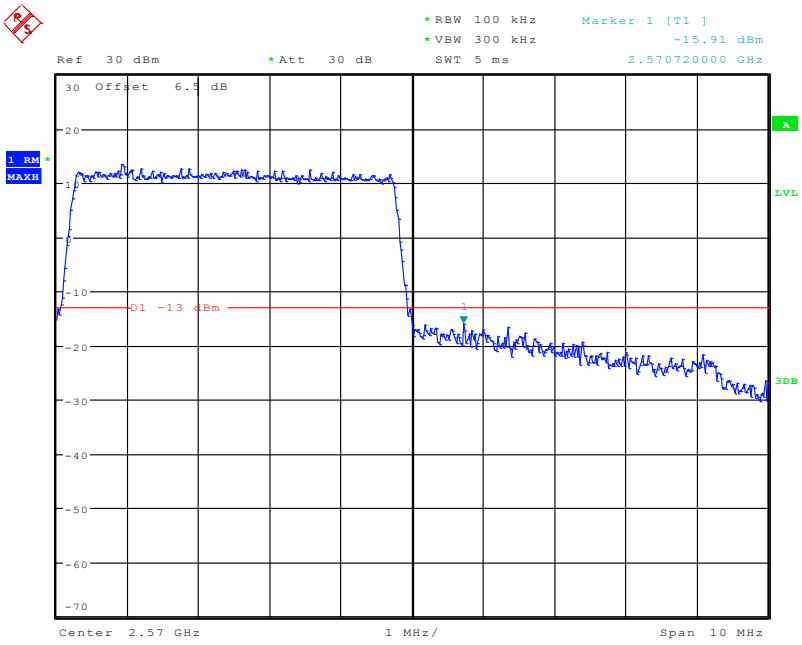
Date: 15.JUL.2020 21:06:52

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



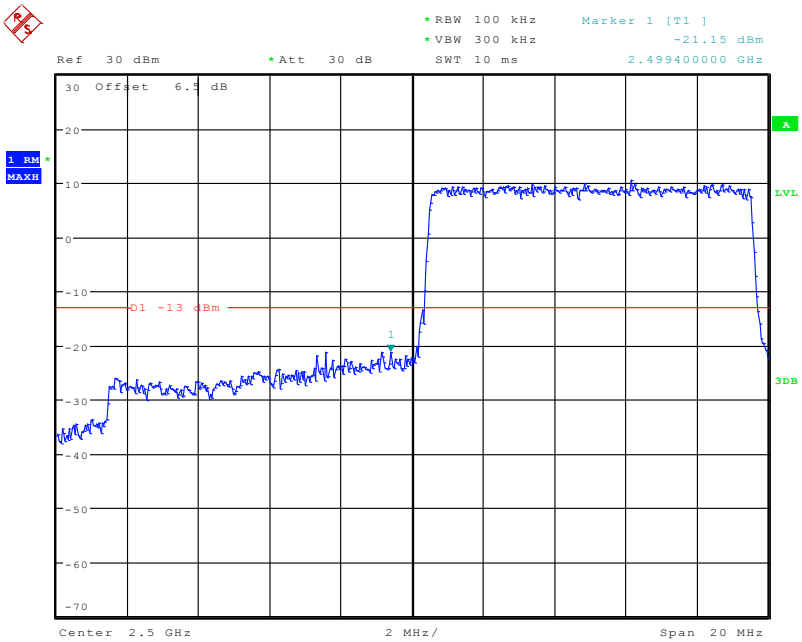
Date: 15.JUL.2020 19:52:42

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



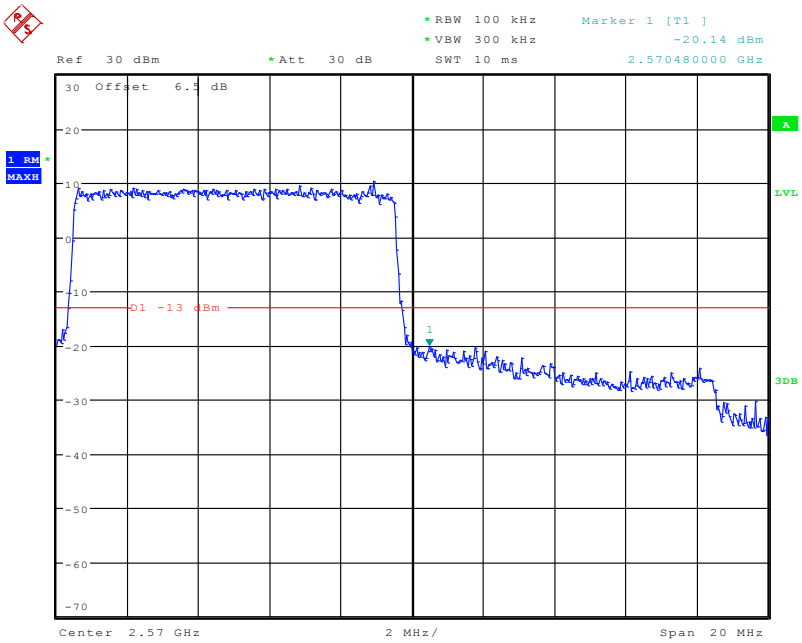
Date: 15.JUL.2020 19:53:17

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



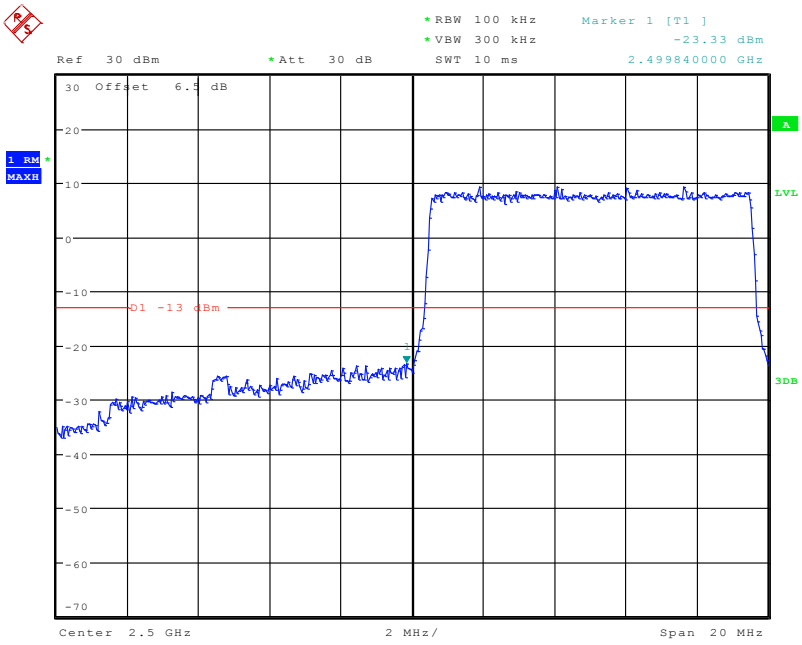
Date: 15.JUL.2020 19:53:33

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



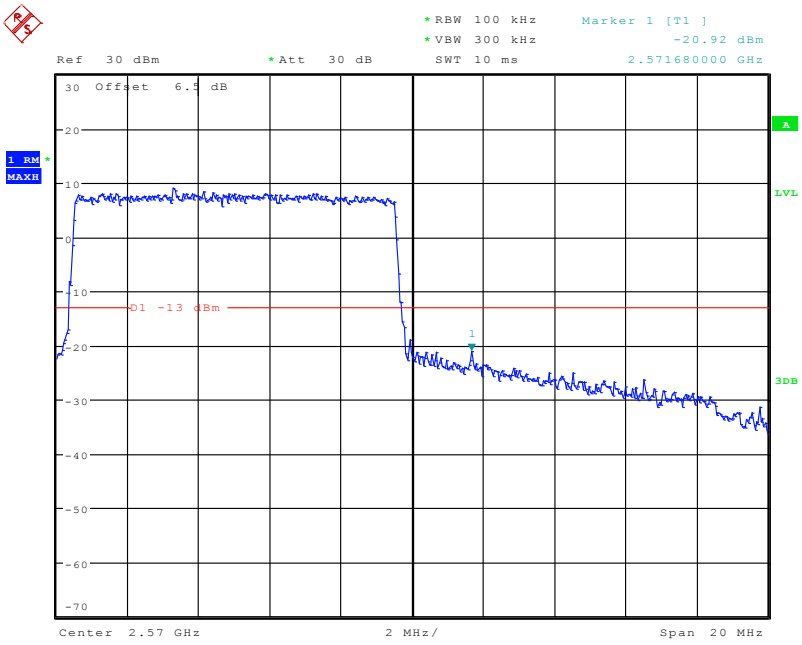
Date: 15.JUL.2020 19:54:07

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



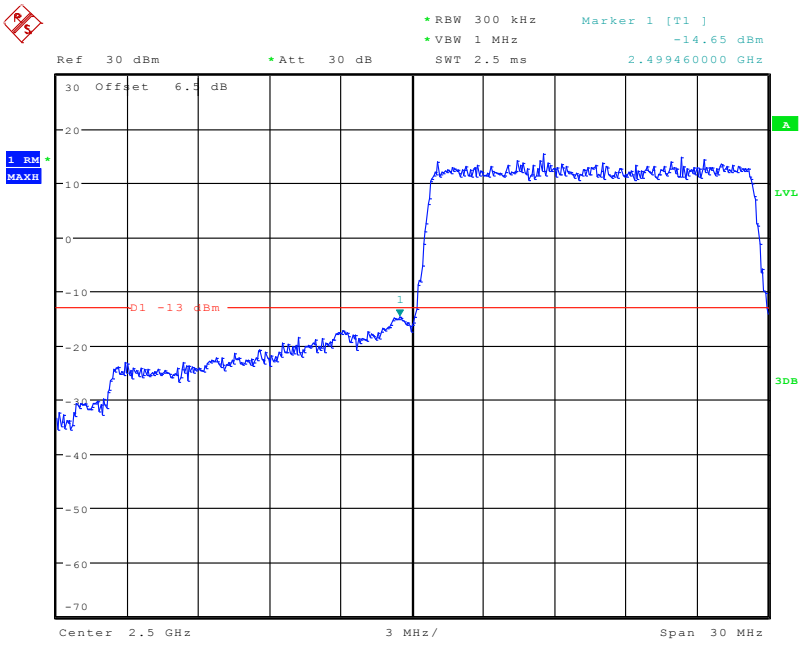
Date: 15.JUL.2020 19:53:50

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



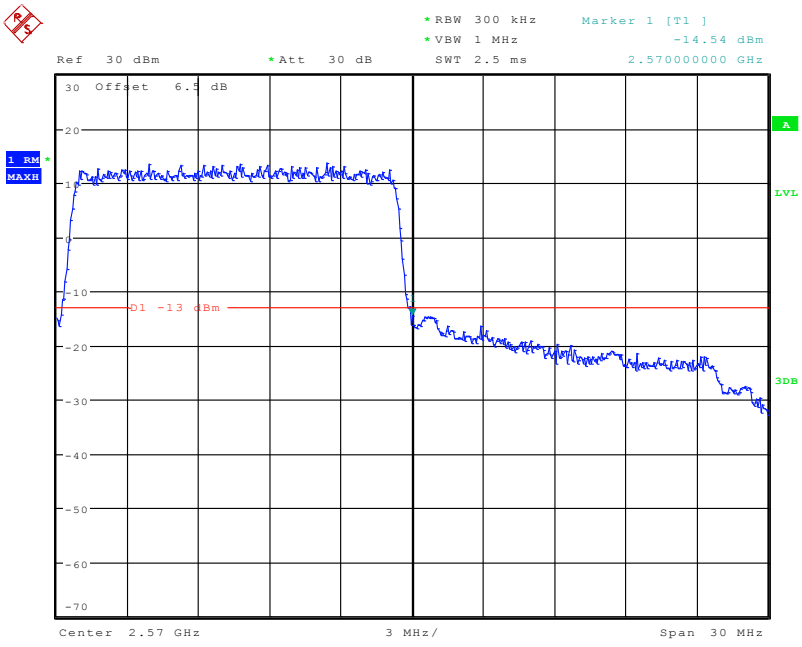
Date: 15.JUL.2020 19:54:24

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



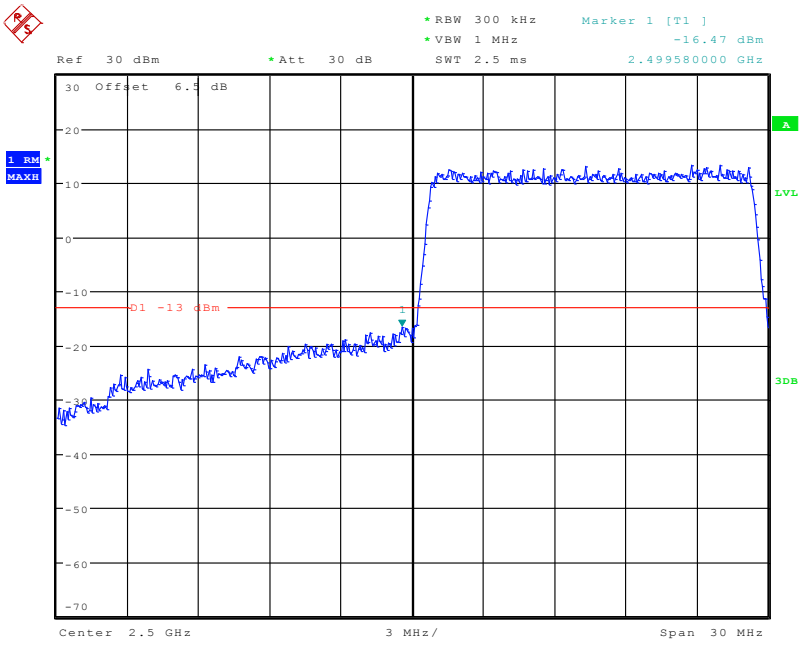
Date: 15.JUL.2020 19:54:45

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



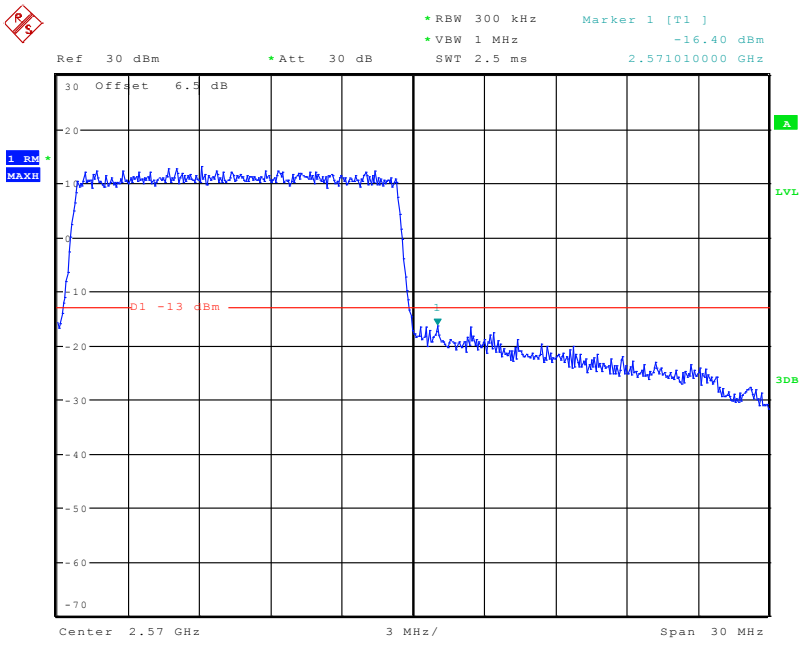
Date: 15.JUL.2020 19:55:24

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



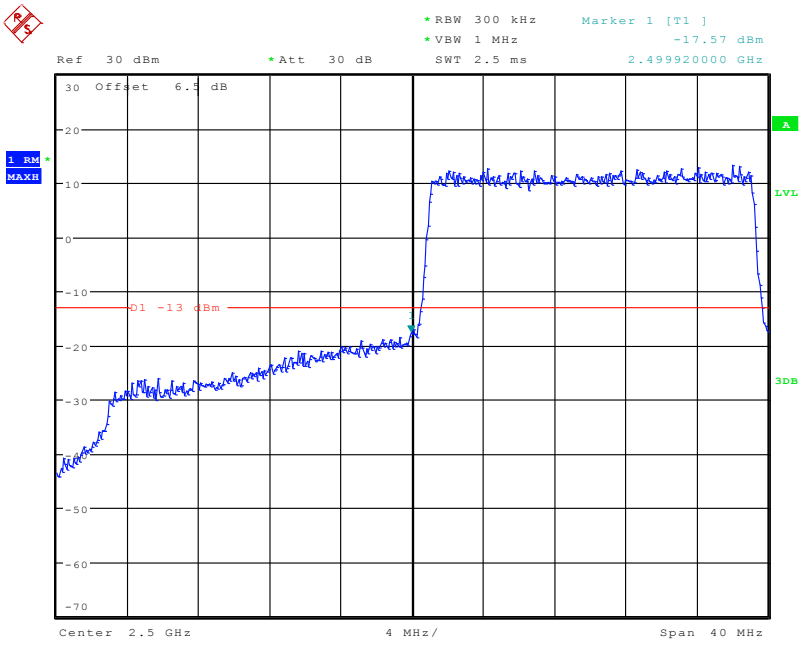
Date: 15.JUL.2020 19:55:04

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



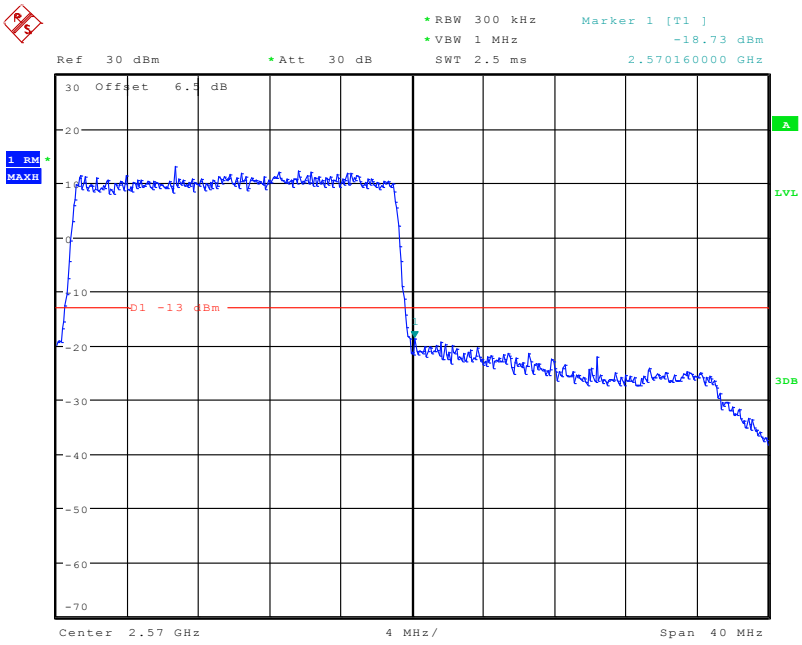
Date: 15.JUL.2020 21:04:58

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



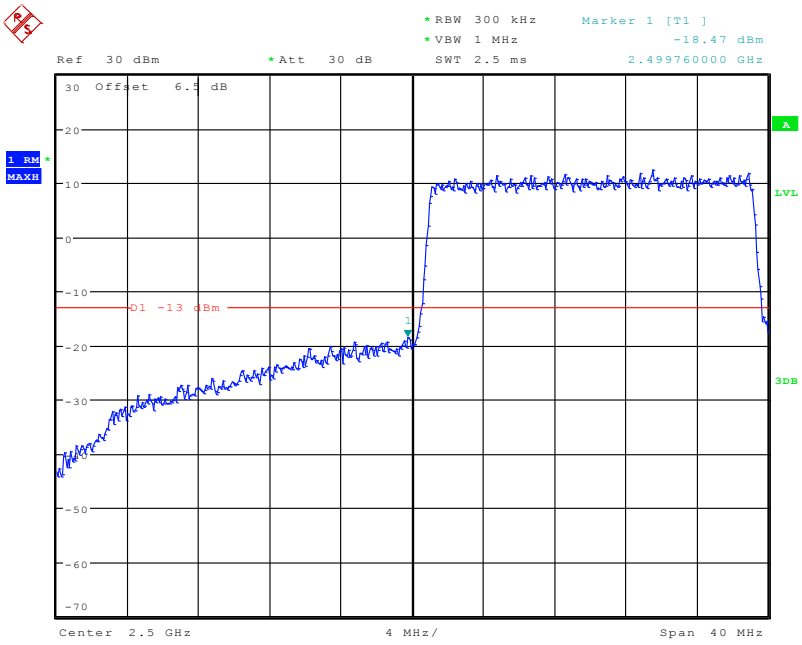
Date: 15.JUL.2020 19:56:07

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



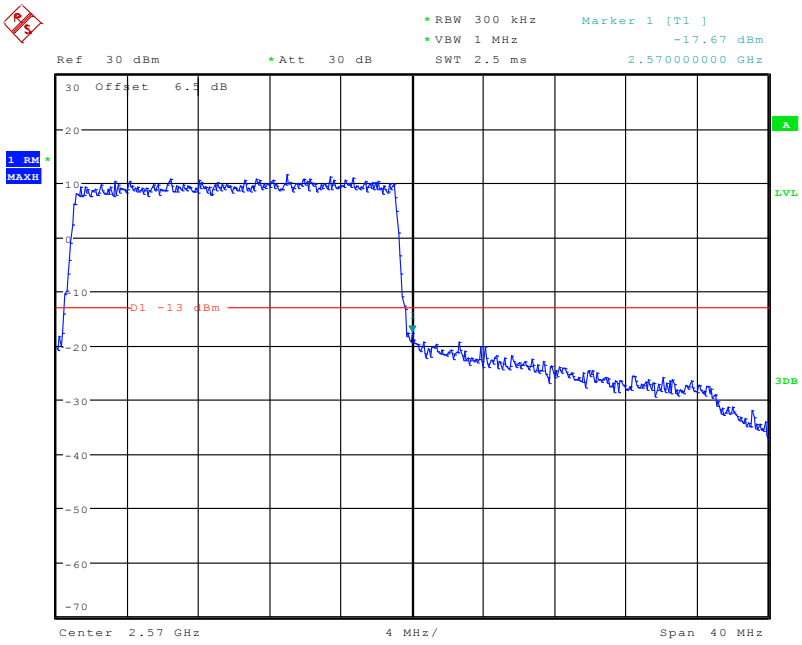
Date: 15.JUL.2020 19:56:46

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



Date: 15.JUL.2020 19:56:26

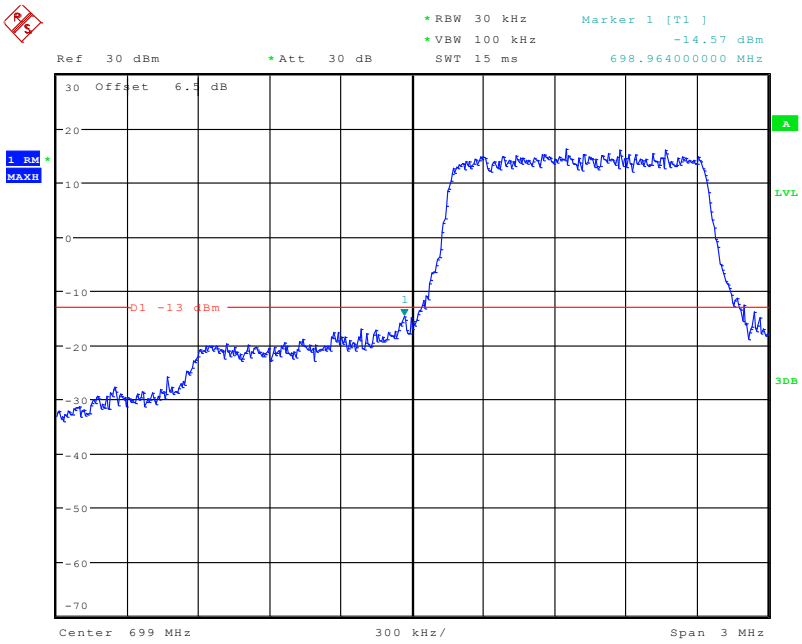
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 15.JUL.2020 19:57:08

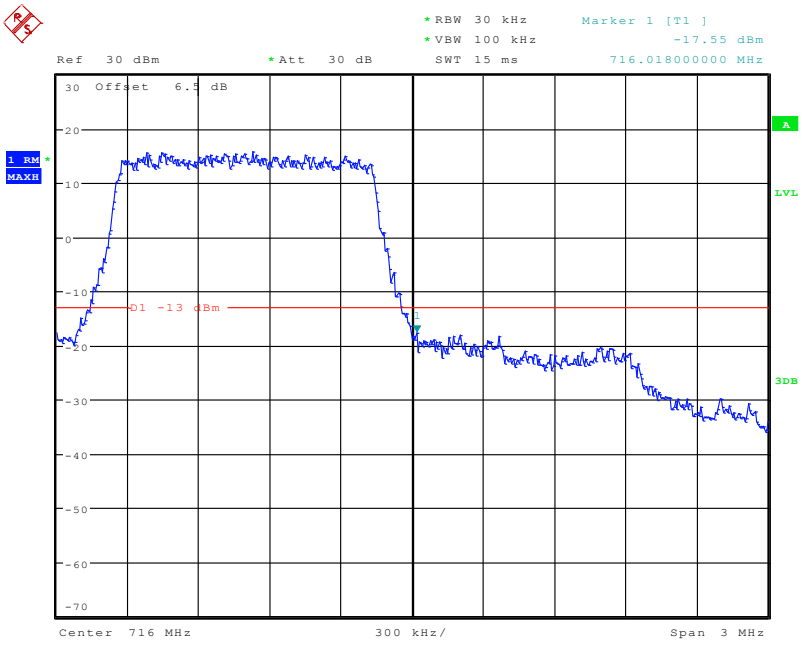
Band 12:

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



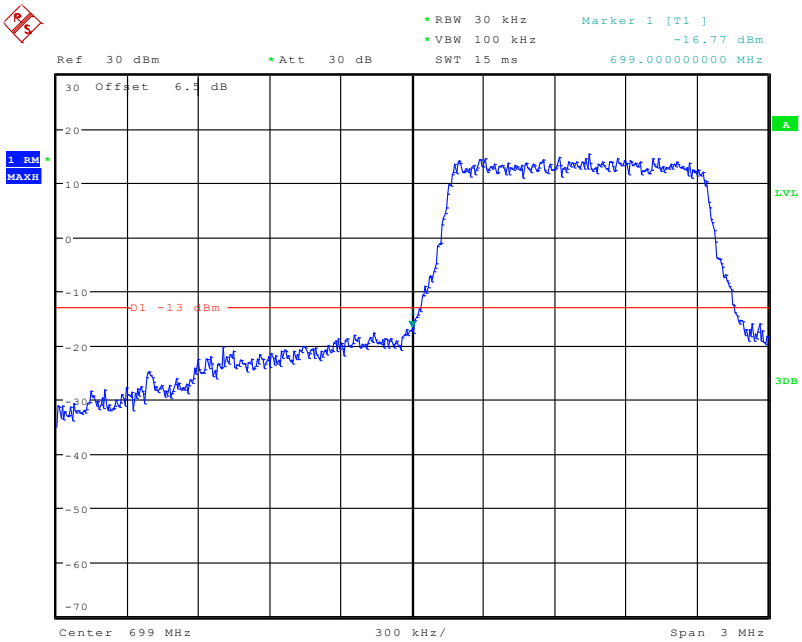
Date: 15.JUL.2020 19:57:26

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



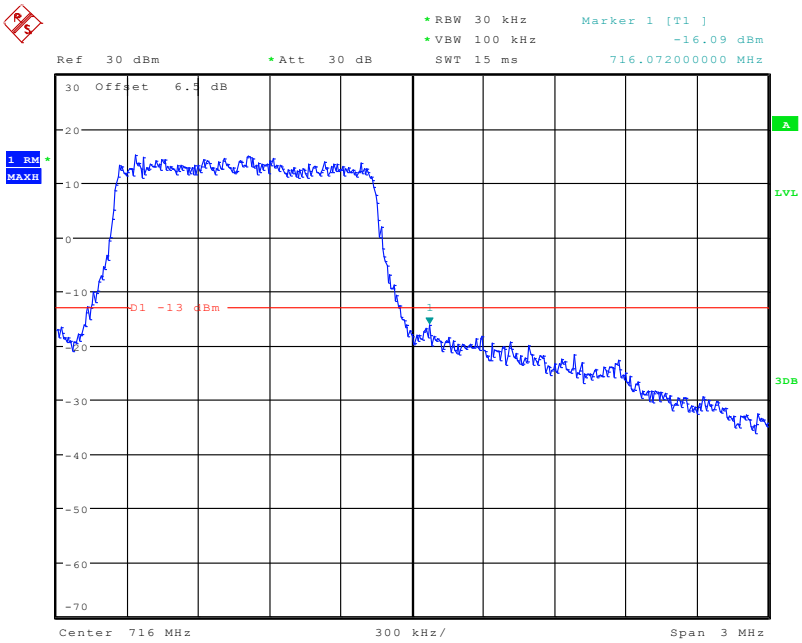
Date: 15.JUL.2020 19:58:01

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



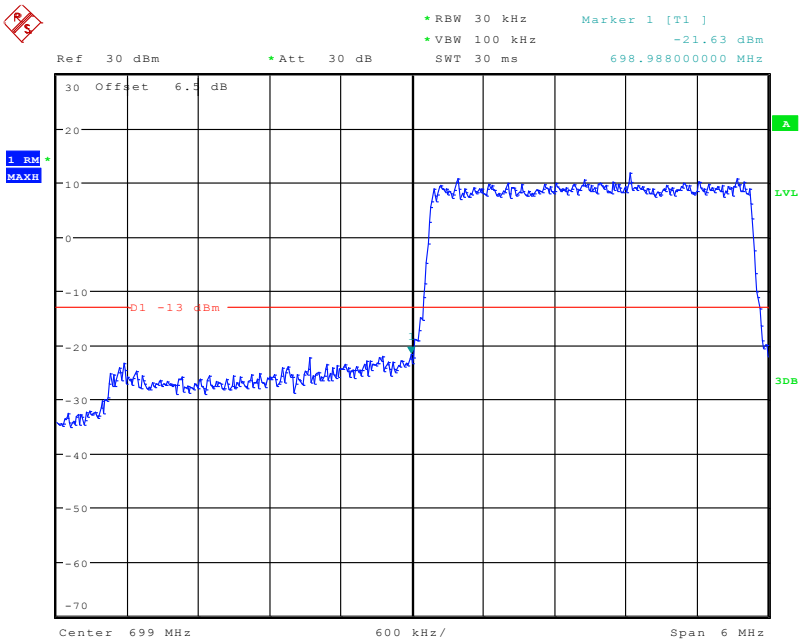
Date: 15.JUL.2020 19:57:42

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



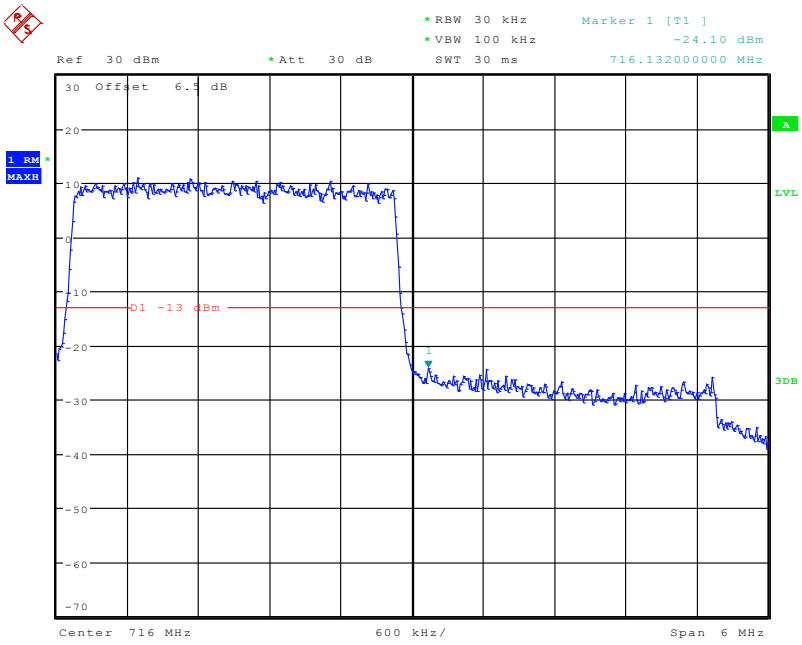
Date: 15.JUL.2020 19:58:17

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



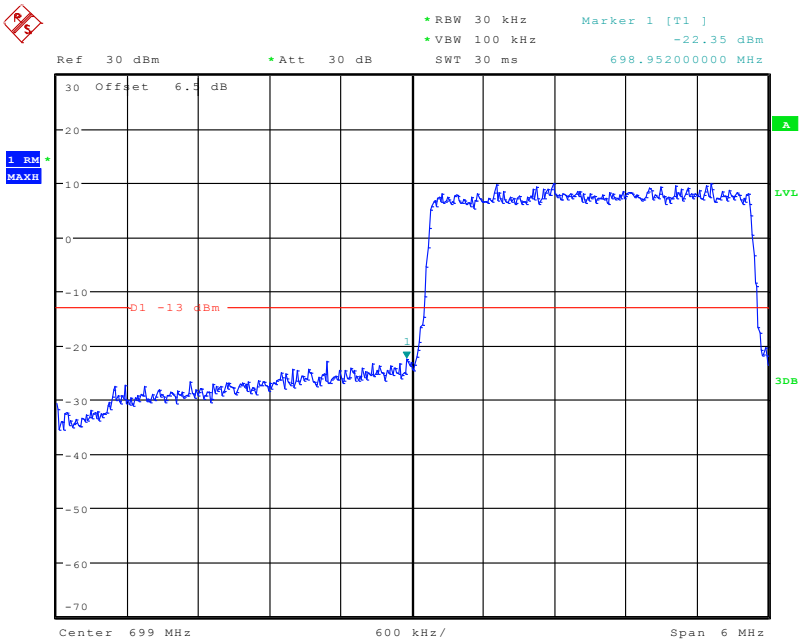
Date: 15.JUL.2020 19:58:38

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



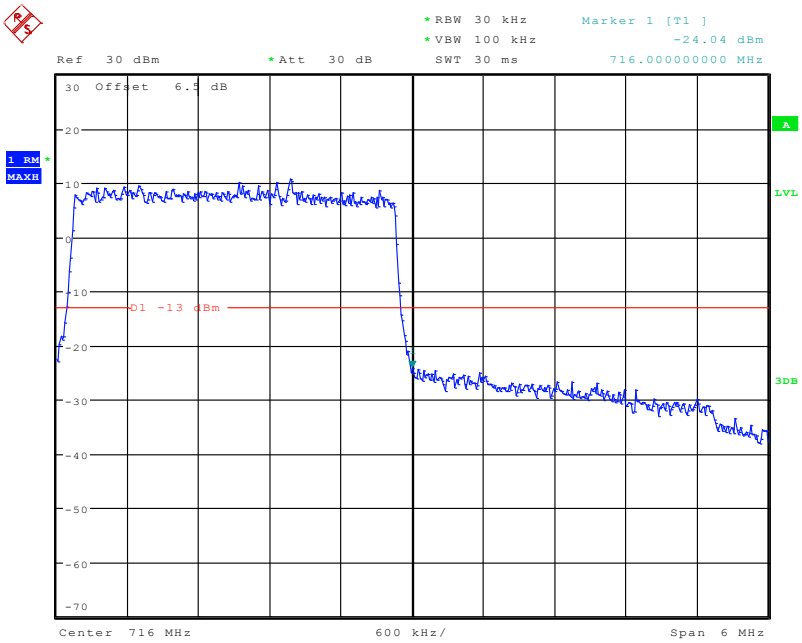
Date: 15.JUL.2020 19:59:10

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



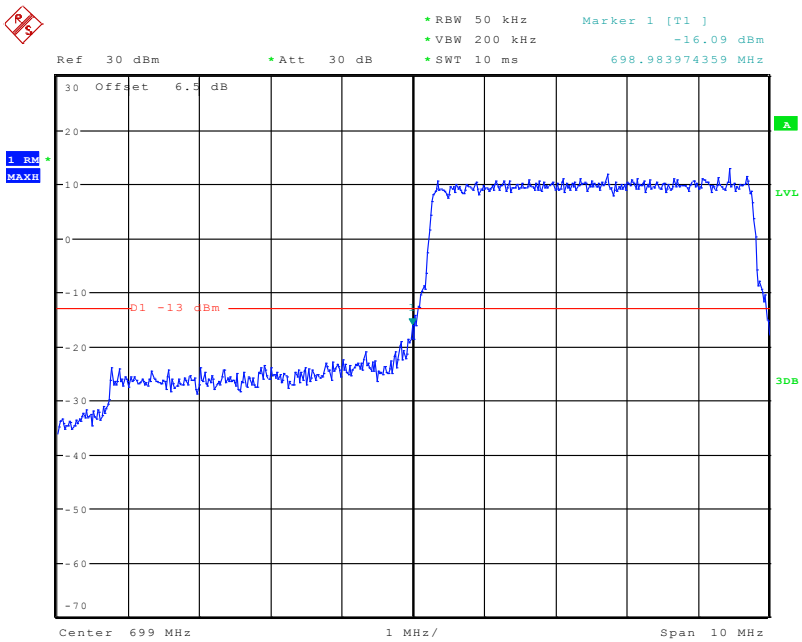
Date: 15.JUL.2020 19:58:53

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



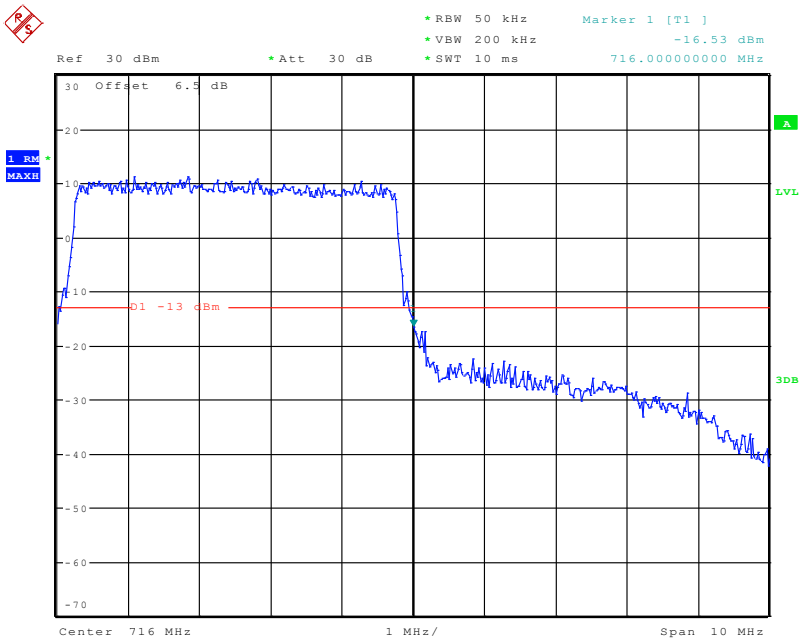
Date: 15.JUL.2020 19:59:25

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



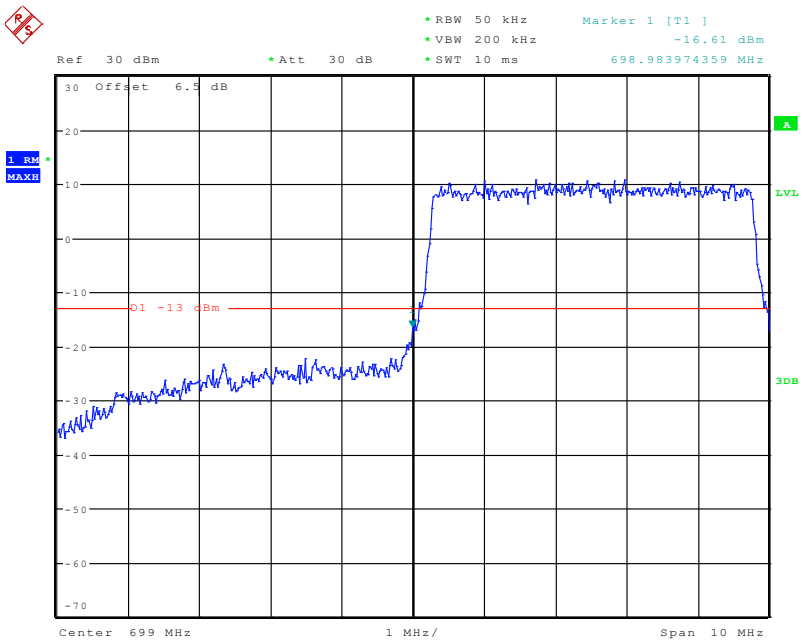
Date: 15.JUL.2020 21:29:59

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



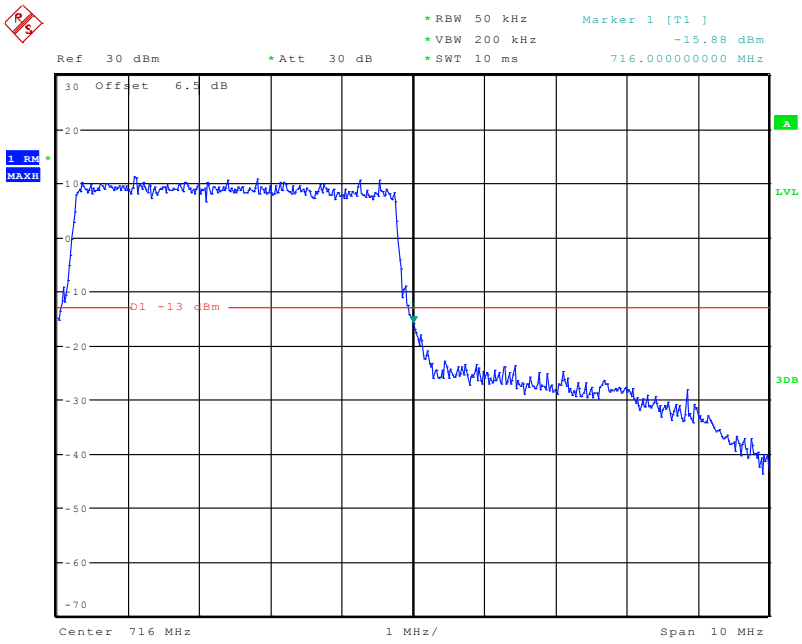
Date: 15.JUL.2020 21:28:10

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



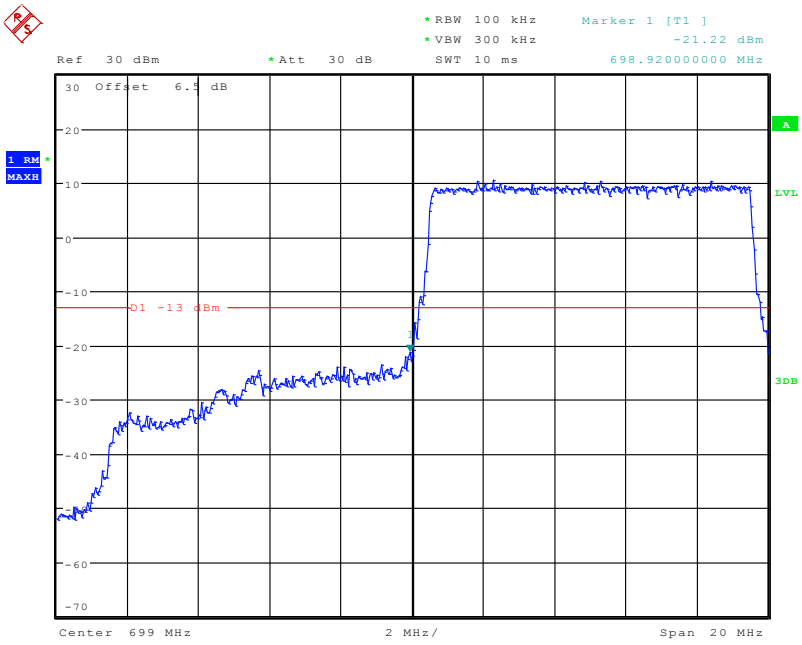
Date: 15.JUL.2020 21:29:33

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



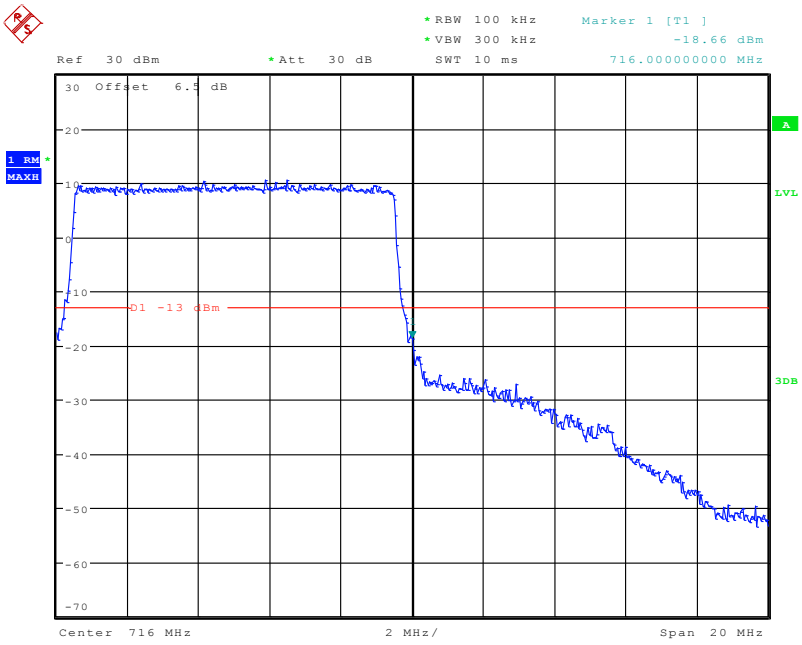
Date: 15.JUL.2020 21:28:55

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



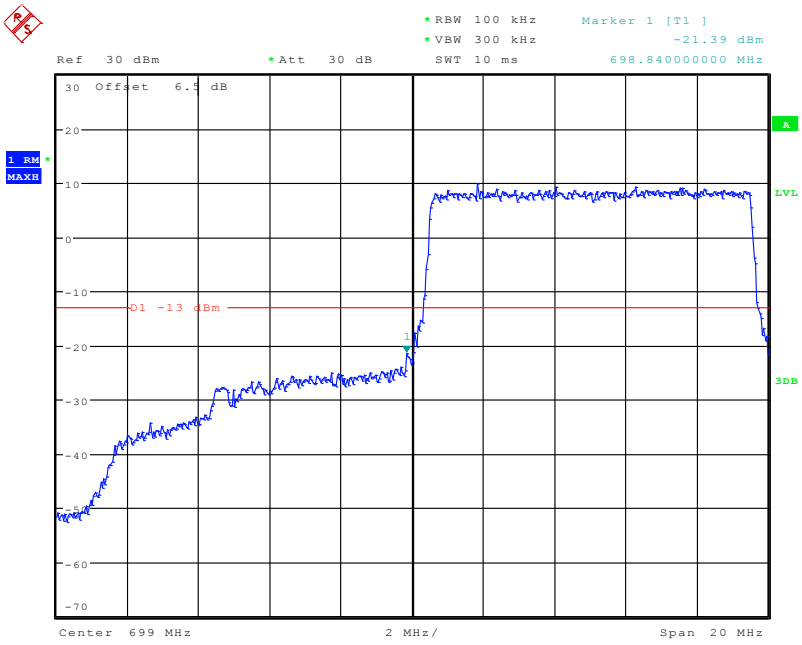
Date: 15.JUL.2020 20:00:56

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



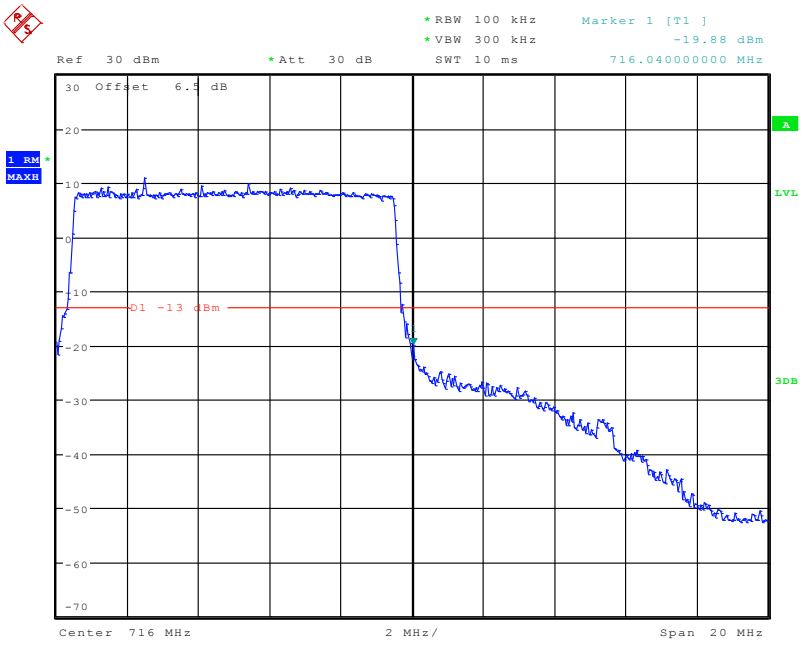
Date: 15.JUL.2020 20:01:30

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



Date: 15.JUL.2020 20:01:13

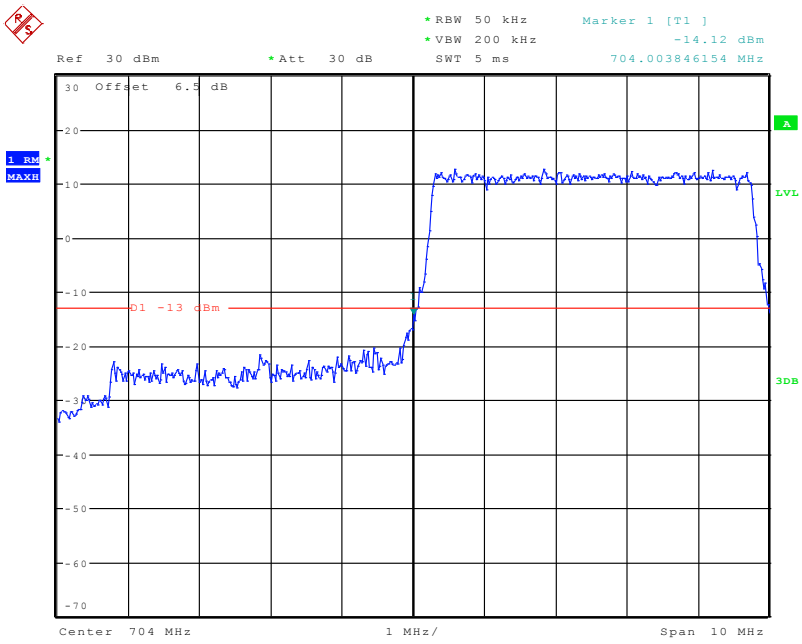
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 15.JUL.2020 20:01:47

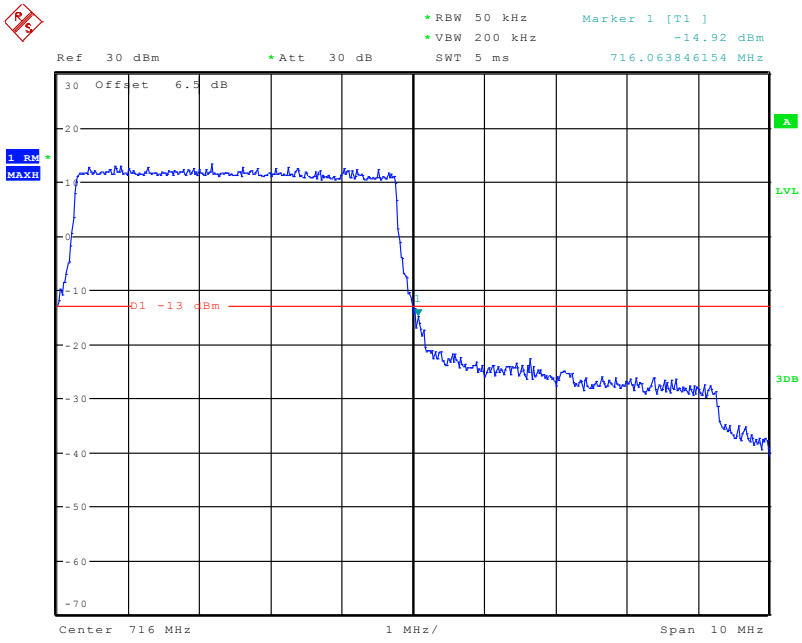
Band 17:

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



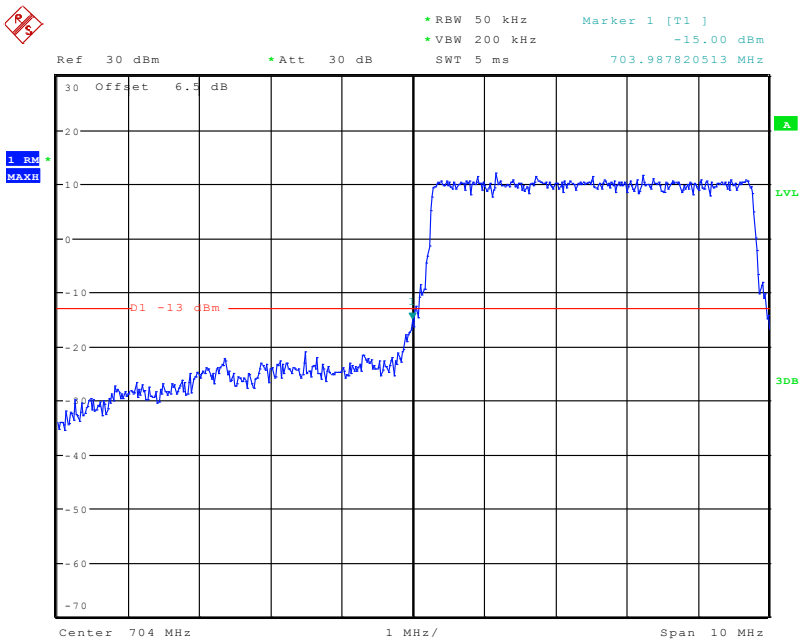
Date: 15.JUL.2020 21:20:28

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



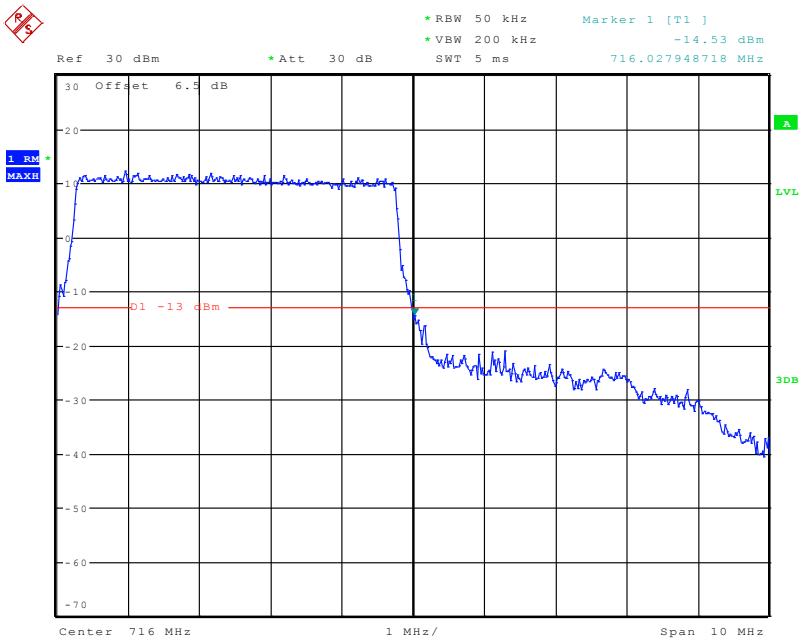
Date: 15.JUL.2020 21:22:18

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



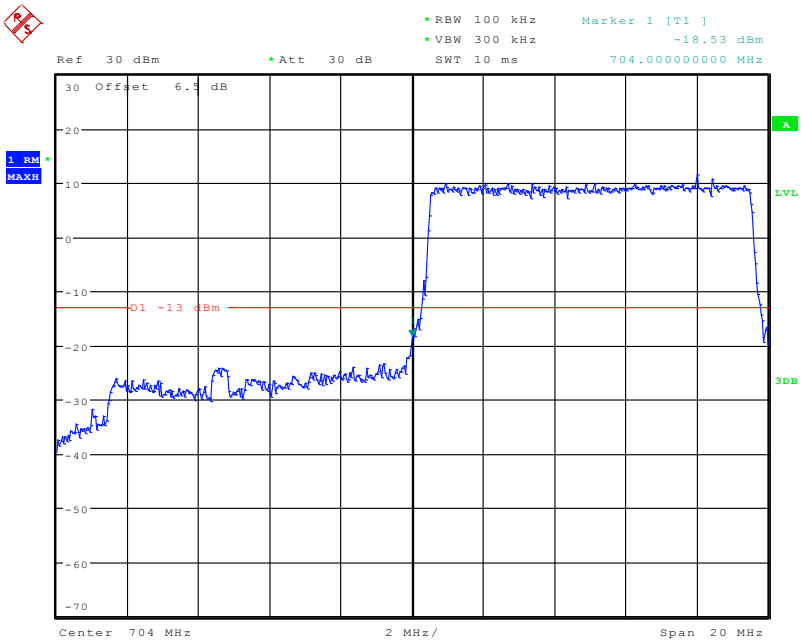
Date: 15.JUL.2020 21:21:04

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



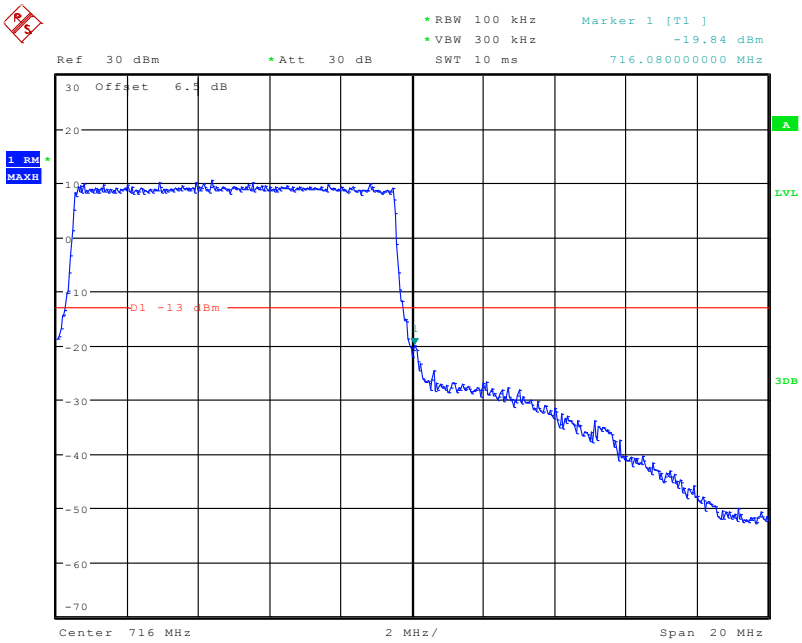
Date: 15.JUL.2020 21:21:37

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



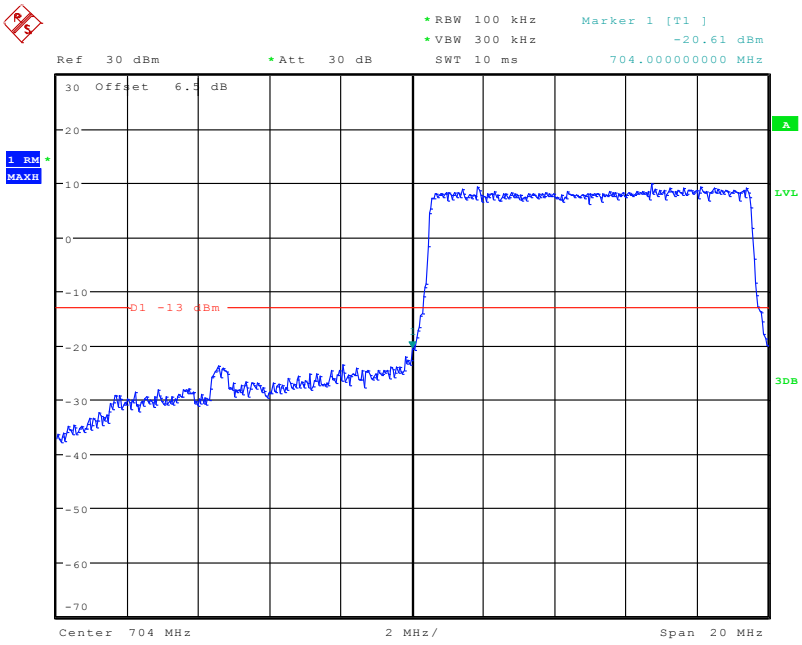
Date: 15.JUL.2020 20:03:12

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



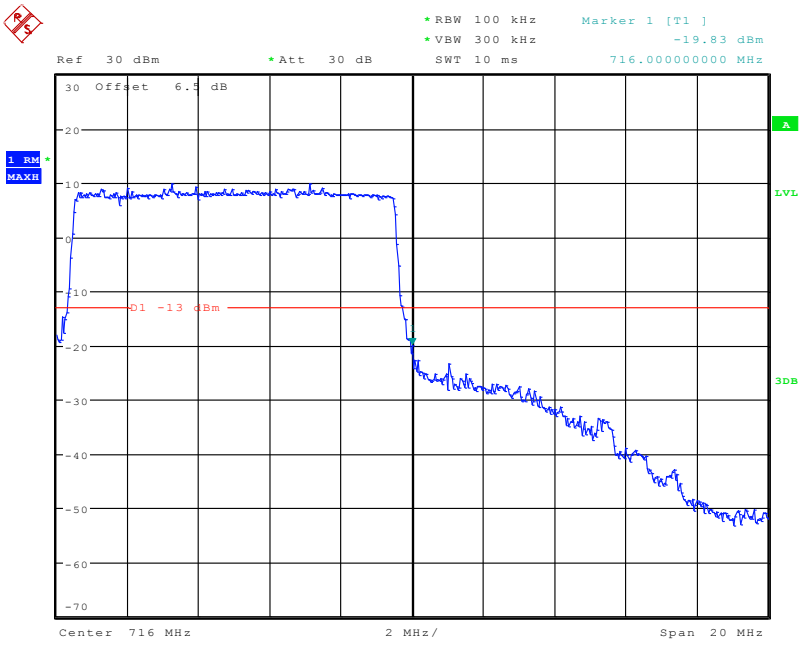
Date: 15.JUL.2020 20:03:46

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



Date: 15.JUL.2020 20:03:28

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



Date: 15.JUL.2020 20:04:02

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

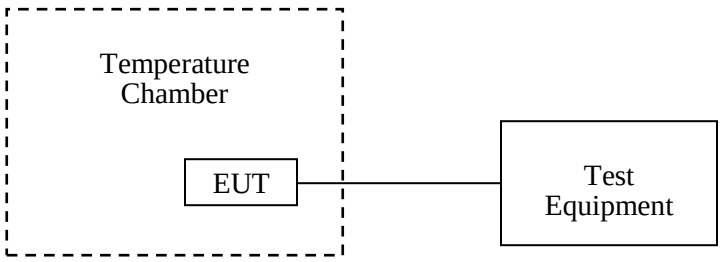
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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 George Zhong on 2020-07-15.

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	N.V.	2	0.002391	2.5
-20		-1	-0.001195	2.5
-10		-3	-0.003586	2.5
0		-8	-0.009563	2.5
10		-7	-0.008367	2.5
20		10	0.011953	2.5
30		-5	-0.005977	2.5
40		-3	-0.003586	2.5
50		1	0.001195	2.5
20	L.V.	5	0.005977	2.5
	H.V.	7	0.008367	2.5

EDGE Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	N.V.	8	0.009563	2.5
-20		4	0.004781	2.5
-10		4	0.004781	2.5
0		4	0.004781	2.5
10		-6	-0.007172	2.5
20		-6	-0.007172	2.5
30		9	0.010758	2.5
40		-3	-0.003586	2.5
50		2	0.002391	2.5
20	L.V.	-8	-0.009563	2.5
	H.V.	5	0.005977	2.5

WCDMA Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	N.V.	0	0.000000	2.5
-20		8	0.009563	2.5
-10		8	0.009563	2.5
0		-10	-0.011953	2.5
10		1	0.001195	2.5
20		0	0.000000	2.5
30		-9	-0.010758	2.5
40		3	0.003586	2.5
50		-9	-0.010758	2.5
20	L.V.	4	0.004781	2.5
	H.V.	0	0.000000	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	N.V.	0	0.000000	pass
-20		-6	-0.003191	pass
-10		0	0.000000	pass
0		4	0.002128	pass
10		-4	-0.002128	pass
20		-1	-0.000532	pass
30		-9	-0.004787	pass
40		-1	-0.000532	pass
50		-6	-0.003191	pass
20	L.V.	-2	-0.001064	pass
	H.V.	8	0.004255	pass

EDGE Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	N.V.	2	0.001064	pass
-20		-10	-0.005319	pass
-10		-2	-0.001064	pass
0		-4	-0.002128	pass
10		8	0.004255	pass
20		4	0.002128	pass
30		3	0.001596	pass
40		0	0.000000	pass
50		10	0.005319	pass
20	L.V.	-2	-0.001064	pass
	H.V.	0	0.000000	pass

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	N.V.	8	0.004255	pass
-20		-1	-0.000532	pass
-10		-10	-0.005319	pass
0		3	0.001596	pass
10		6	0.003191	pass
20		0	0.000000	pass
30		6	0.003191	pass
40		2	0.001064	pass
50		5	0.002660	pass
20	L.V.	-3	-0.001596	pass
	H.V.	-1	-0.000532	pass

LTE:
QPSK:
Band 2:

10.0 MHz Middle Channel, f_o =1880MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	N.V.	6	0.0032	pass
-20		3	0.0016	pass
-10		-2	-0.0011	pass
0		1	0.0005	pass
10		-4	-0.0021	pass
20		6	0.0032	pass
30		2	0.0011	pass
40		-10	-0.0053	pass
50		1	0.0005	pass
20	L.V.	-7	-0.0037	pass
	H.V.	2	0.0011	pass

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	N.V.	1710.5046	1754.6941	1710	1755
-20		1710.5006	1754.7082	1710	1755
-10		1710.5195	1754.7396	1710	1755
0		1710.4945	1754.7309	1710	1755
10		1710.4877	1754.7065	1710	1755
20		1710.4679	1754.7254	1710	1755
30		1710.4640	1754.7262	1710	1755
40		1710.4855	1754.7077	1710	1755
50		1710.4657	1754.7007	1710	1755
20	L.V.	1710.4627	1754.7174	1710	1755
	H.V.	1710.5036	1754.7566	1710	1755

Band 7:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	2500.4068	2569.6719	2500	2570
-20		2500.4536	2569.6753	2500	2570
-10		2500.4596	2569.6667	2500	2570
0		2500.4494	2569.6505	2500	2570
10		2500.4495	2569.6710	2500	2570
20		2500.4190	2569.6772	2500	2570
30		2500.4361	2569.6832	2500	2570
40		2500.3965	2569.6988	2500	2570
50		2500.4125	2569.6335	2500	2570
20	L.V.	2500.3943	2569.6483	2500	2570
	H.V.	2500.4270	2569.6881	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	699.3983	715.6159	699	716
-20		699.4634	715.6262	699	716
-10		699.4142	715.6342	699	716
0		699.4498	715.6248	699	716
10		699.4241	715.6200	699	716
20		699.4369	715.6173	699	716
30		699.4476	715.5967	699	716
40		699.4253	715.6609	699	716
50		699.4080	715.6194	699	716
20	L.V.	699.4084	715.6410	699	716
	H.V.	699.4416	715.6593	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	N.V.	704.3663	715.6315	704	716
-20		704.3551	715.6386	704	716
-10		704.3481	715.6391	704	716
0		704.3205	715.6639	704	716
10		704.2948	715.6573	704	716
20		704.3328	715.6403	704	716
30		704.3064	715.6682	704	716
40		704.3675	715.6797	704	716
50		704.2998	715.6339	704	716
20	L.V.	704.3162	715.6238	704	716
	H.V.	704.3271	715.6169	704	716

16QAM:
Band 2:

10.0 MHz Middle Channel, f_o =1880MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	N.V.	3	0.0016	pass
-20		6	0.0032	pass
-10		-3	-0.0016	pass
0		7	0.0037	pass
10		-8	-0.0043	pass
20		-8	-0.0043	pass
30		-10	-0.0053	pass
40		0	0.0000	pass
50		5	0.0027	pass
20	L.V.	6	0.0032	pass
	H.V.	9	0.0048	pass

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	N.V.	1710.4856	1754.7389	1710	1755
-20		1710.5064	1754.7338	1710	1755
-10		1710.5066	1754.7031	1710	1755
0		1710.4790	1754.7053	1710	1755
10		1710.4959	1754.6938	1710	1755
20		1710.5159	1754.7559	1710	1755
30		1710.4664	1754.7564	1710	1755
40		1710.4925	1754.7450	1710	1755
50		1710.4773	1754.7111	1710	1755
20	L.V.	1710.4770	1754.7518	1710	1755
	H.V.	1710.4735	1754.7605	1710	1755

Band 7:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	2500.4545	2569.6649	2500	2570
-20		2500.4039	2569.6842	2500	2570
-10		2500.4148	2569.6884	2500	2570
0		2500.4239	2569.6578	2500	2570
10		2500.4429	2569.7007	2500	2570
20		2500.4587	2569.6593	2500	2570
30		2500.4509	2569.6657	2500	2570
40		2500.4578	2569.6486	2500	2570
50		2500.4456	2569.6436	2500	2570
20	L.V.	2500.4235	2569.6387	2500	2570
	H.V.	2500.4405	2569.7014	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	N.V.	699.4420	715.6657	699	716
-20		699.4213	715.6699	699	716
-10		699.4503	715.6313	699	716
0		699.4503	715.6179	699	716
10		699.4372	715.6465	699	716
20		699.4546	715.6472	699	716
30		699.4344	715.6708	699	716
40		699.4380	715.6689	699	716
50		699.4272	715.6526	699	716
20	L.V.	699.4142	715.6426	699	716
	H.V.	699.4547	715.6440	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	N.V.	704.3134	715.6207	704	716
-20		704.2945	715.6201	704	716
-10		704.3449	715.6123	704	716
0		704.3382	715.6092	704	716
10		704.3136	715.6710	704	716
20		704.3419	715.6279	704	716
30		704.3000	715.6711	704	716
40		704.3097	715.6133	704	716
50		704.2993	715.6468	704	716
20	L.V.	704.2984	715.6568	704	716
	H.V.	704.3491	715.6422	704	716

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