FCC PART 27

FCC PART 22H, PART 24E

TEST REPORT

For

BLU Products, Inc.

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

FCC ID: YHLBLUG9PRO

Report Type:	**Product Type:**
Original Report	Mobile Phone

Report Number:	RSZ190513008-00D
Report Date:	2019-07-12
Reviewed By:	Nancy Wang RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Mobile Phone
Model	G9 PRO
Frequency Range	Cellular: 824-849 MHz PCS: 1850-1910 MHz WCDMA B2/LTE B2: 1850-1910 MHz WCDMA B5/LTE B5: 824-849 MHz WCDMA B4/LTE B4: 1710- 1755 MHz LTE B7: 2500-2570 MHz LTE B12: 699-716 MHz LTE B13: 777-787 MHz LTE B17: 704-716MH
Transmit Power	GSM850: 31.97dBm(GMSK), 26.36dBm(8PSK) PCS1900: 28.86dBm(GMSK), 26.15dBm(8PSK) WCDMA Band 2: 22.54dBm WCDMA Band 4: 22.49dBm WCDMA Band 5: 22.49dBm LTE Band 2: 22.95dBm LTE Band 4: 22.90dBm LTE Band 5: 22.82dBm LTE Band 7: 23.92dBm LTE Band 12: 23.18dBm LTE Band 13: 22.85dBm LTE Band 17: 22.84dBm
Modulation Technique	2G: GMSK,8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification	2G/3G/4G: FPC Antennas
Voltage Range	Powered: DC 3.85V by internal rechargeable Li-Polymer battery Recharged: DC 3.6-12V by adapter
Date of Test	2019/05/26~2019/07/09
Sample serial number	1234567890123 (Assigned by Applicant)
Received date	2019/05/13
Sample/EUT Status	Good condition
Adapter information	Model: US-KB-2000 Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 3.6-6V, 3000mA/ DC 6-9V, 2000mA/ DC 9-12V, 1500mA

Objective

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

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

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS, Part 15.247 DTS and Part 15B JBP submissions with FCC ID: YHLBLUG9PRO.

Test Methodology

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

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

Applicable Standards: TIA/EIA 603-D.

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

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±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: 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-D.

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

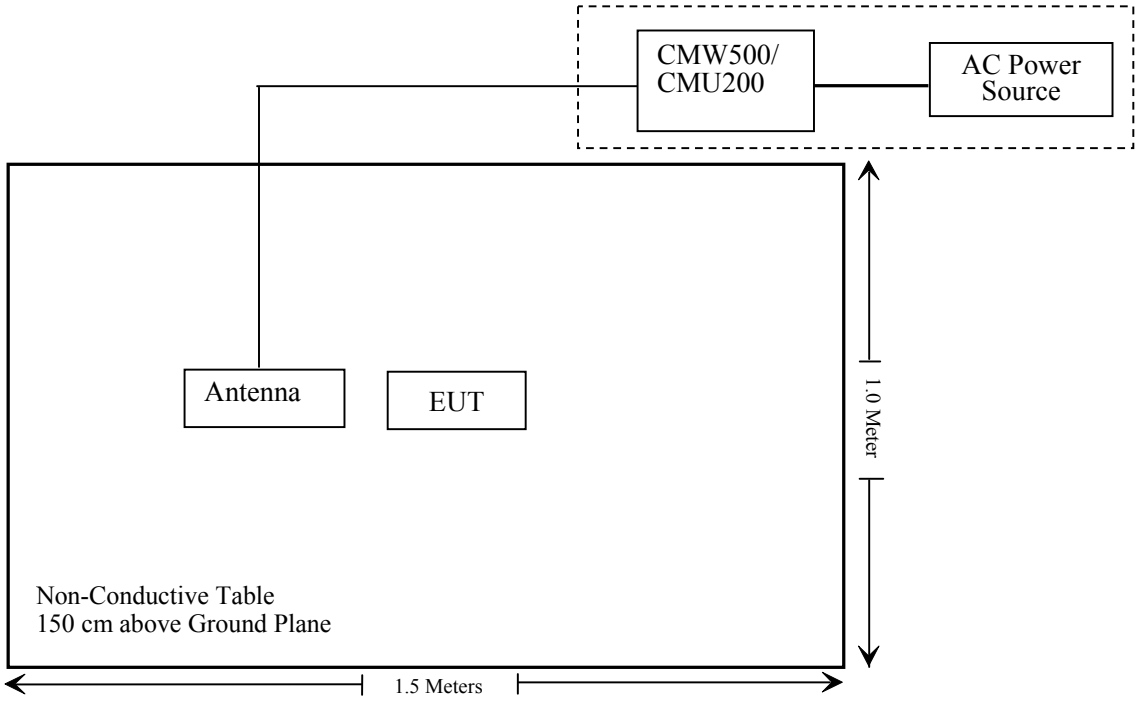
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

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

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§ 1.1307 , §2.1093	RF Exposure (SAR)	Compliance*
§2.1046; § 22.913 (a); § 24.232 (c); §27.50 (b (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	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53	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: RSZ190513008-20.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017-12-22	2020-12-21
Rohde & Schwarz	Signal Analyzer	FSEM	845987/005	2018-06-23	2019-06-23
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
COM-POWER	Pre-amplifier	PA-122	181919	2018-11-12	2019-11-12
Sonoma Instrument	Amplifier	310N	186238	2018-11-12	2019-11-12
Agilent	Signal Generator	N5183A	MY51040755	2018-12-03	2019-12-03
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2018-07-11	2019-07-11
COM-POWER	Dipole Antenna	AD-100	41000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2018-09-01	2021-08-31
UTiFLEX MICRO-C0AX	RF Cable	UFA147A-2362-100100	MFR64639 231029-003	2018-11-12	2019-11-12
Ducommun Technologies	RF Cable	104PEA	218124002	2018-11-12	2019-11-12
Ducommun technologies	RF Cable	RG-214	1	2019-05-21	2019-11-19
Ducommun technologies	RF Cable	RG-214	2	2018-11-12	2019-11-12
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-04	2017-12-29	2020-12-28
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2017-12-29	2020-12-28
Heatsink Required	Amplifier	QLW-18405536-J0	15964001002	2018-11-12	2019-11-12
Unknown	High Pass filter	2.8GHz	Unknown	2019-04-20	2020-04-20
Unknown	High Pass filter	1.3GHz	Unknown	2019-04-20	2020-04-20

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSU26	200120	2019-03-02	2020-03-01
ESPEC	Temperature & Humidity Chamber	EL-10KA	9107726	2019-01-05	2020-01-05
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2019-01-15	2020-01-15
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1316.3003K03-101746-zn	2018-08-19	2019-08-19
Ducommun Technologies	RF Cable	RG-214	3	Each Time	
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2018-11-12	2019-11-12
WEINSCHEL	3dB Attenuator	6231	666	Each Time	
Unknown	Power Splitter	1620	129	Each Time	

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

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

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ190513008-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

FCC § 2.1046, § 22.913 (a) & § 24.232 (c); §27.50 (b) (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(b), Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

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.

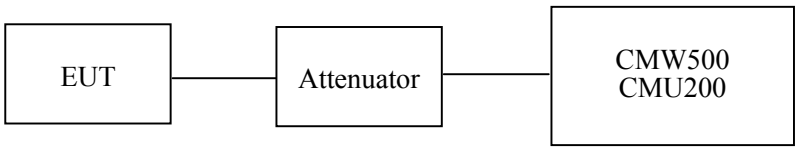
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

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:	50~60 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by James Fu & George Zhong from 2019-05-27 to 2019-07-09.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	31.97	38.45
	190	836.6	31.96	38.45
	251	848.8	31.85	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	31.82	30.48	28.57	26.92	38.45
	190	836.6	31.25	30.20	28.33	26.33	38.45
	251	848.8	31.67	30.31	28.42	26.65	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	26.01	24.56	22.15	20.41	38.45
	190	836.6	26.36	24.94	22.38	20.95	38.45
	251	848.8	26.24	24.85	22.24	20.85	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		22.45	22.41	22.49
		HSDPA	1	21.32	21.02	21.05
			2	21.37	21.07	21.11
			3	21.43	21.24	21.14
			4	21.48	21.16	21.20
			5	21.42	21.11	21.10
		HSUPA	1	21.42	21.18	21.03
			2	21.46	21.20	21.06
			3	21.53	21.23	21.11
			4	21.59	21.30	21.14
			5	21.65	21.37	21.16
		HSPA+	1	21.27	20.92	21.04

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	28.86	33
	661	1880.0	28.65	33
	810	1909.8	28.12	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	28.56	26.88	25.22	23.94	33
	661	1880.0	28.44	26.69	25.01	23.70	33
	810	1909.8	28.19	26.42	24.88	23.52	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	25.02	23.10	21.10	19.82	33
	661	1880.0	25.12	23.16	21.15	19.95	33
	810	1909.8	26.15	23.20	21.17	20.23	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		22.40	22.52	22.54
		HSDPA	1	21.49	21.52	21.37
			2	21.53	21.75	21.41
			3	21.36	21.83	21.45
			4	21.63	21.85	21.52
			5	21.63	21.85	21.55
		HSUPA	1	21.17	21.10	21.18
			2	21.21	21.36	21.19
			3	21.24	21.41	21.22
			4	21.34	21.44	21.30
			5	21.37	21.50	21.34
		HSPA+	1	21.20	21.24	21.32

AWS Band (Part 27)

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band IV)	Normal	RMC12.2k		22.37	22.47	22.49
		HSDPA	1	21.32	21.02	21.28
			2	21.37	21.07	21.11
			3	21.43	21.10	21.14
			4	21.48	21.64	21.20
			5	21.42	21.11	21.10
		HSUPA	1	21.86	21.14	21.03
			2	21.46	21.20	21.06
			3	21.53	21.23	21.11
			4	21.59	21.30	21.14
			5	21.65	21.37	21.16
		HSPA+	1	21.22	21.02	21.13

Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	1.25	13
	Middle	1.22	13
	High	1.25	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	1.23	13
	Middle	1.34	13
	High	1.27	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.04	13
	Middle	2.91	13
	High	2.73	13
HSDPA (16QAM)	Low	3.01	13
	Middle	3.04	13
	High	3.04	13
HSUPA (BPSK)	Low	2.94	13
	Middle	3.02	13
	High	2.98	13
HSPA+	Low	3.25	13
	Middle	3.36	13
	High	3.44	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	1.43	13
	Middle	1.46	13
	High	1.44	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	1.14	13
	Middle	1.62	13
	High	1.37	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.43	13
	Middle	3.35	13
	High	3.46	13
HSDPA (16QAM)	Low	3.76	13
	Middle	3.68	13
	High	3.82	13
HSUPA (BPSK)	Low	3.76	13
	Middle	3.91	13
	High	3.86	13
HSPA+	Low	3.62	13
	Middle	3.54	13
	High	3.47	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.24	13
	Middle	3.21	13
	High	3.11	13
HSDPA (16QAM)	Low	3.51	13
	Middle	3.36	13
	High	3.43	13
HSUPA (BPSK)	Low	3.22	13
	Middle	3.29	13
	High	3.45	13
HSPA+	Low	3.41	13
	Middle	3.22	13
	High	3.14	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	89.38	289	1.3	H	30.0	1.90	0.0	28.10	38.45	10.35
836.6	83.94	156	1.5	V	23.9	1.90	0.0	22.00	38.45	16.45
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	89.21	35	1.9	H	19.5	1.30	9.40	27.60	33	5.40
1880.00	82.16	1	2.2	V	12.3	1.30	9.40	20.40	33	12.60

EDGE Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dBi)			
ERP, Cellular Band (Part 22H), Middle Channel										
836.6	86.50	317	1.3	H	27.1	1.90	0.0	25.20	38.45	13.25
836.6	81.11	173	1.7	V	21.1	1.90	0.0	19.20	38.45	19.25
EIRP, PCS Band (Part 24E), Middle Channel										
1880.00	86.38	162	1.4	H	16.7	1.30	9.40	24.80	33	8.20
1880.00	79.87	282	2.4	V	10.0	1.30	9.40	18.10	33	14.90

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	80.64	329	2.4	H	21.3	1.90	0.0	19.40	38.45	19.05
836.6	74.50	339	1.1	V	14.5	1.90	0.0	12.60	38.45	25.85
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	68.52	38	2.1	H	-1.2	1.30	9.40	6.90	33	26.10
1880.00	79.21	148	1.2	V	9.3	1.30	9.40	17.40	33	15.60
EIRP for WCDMA Band IV (Part 27), Middle Channel										
1732.60	77.93	192	1.9	H	4.6	1.30	8.90	12.20	30	17.80
1732.60	82.31	304	2.0	V	9.6	1.30	8.90	17.20	30	12.80

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	22.74	22.64	22.66
		RB Size=1, RB Offset=2	22.66	22.63	22.67
		RB Size=1, RB Offset=5	22.34	22.60	22.68
		RB Size=3, RB Offset=0	22.47	22.34	22.31
		RB Size=3, RB Offset=1	22.28	22.34	22.32
		RB Size=3, RB Offset=2	22.31	22.19	22.23
		RB Size=6, RB Offset=0	22.18	22.24	22.17
	16QAM	RB Size=1, RB Offset=0	22.22	22.15	22.08
		RB Size=1, RB Offset=2	22.02	22.01	22.02
		RB Size=1, RB Offset=5	22.04	22.03	22.91
		RB Size=3, RB Offset=0	21.74	21.73	22.89
		RB Size=3, RB Offset=1	21.79	21.83	21.89
		RB Size=3, RB Offset=2	21.76	21.77	21.77
		RB Size=6, RB Offset=0	21.76	21.81	21.89
3.0	QPSK	RB Size=1, RB Offset=0	22.95	22.86	22.88
		RB Size=1, RB Offset=7	22.67	22.76	22.85
		RB Size=1, RB Offset=14	22.62	22.62	22.85
		RB Size=8, RB Offset=0	21.87	22.03	21.85
		RB Size=8, RB Offset=4	21.86	21.71	21.72
		RB Size=8, RB Offset=7	21.69	21.75	21.76
		RB Size=15, RB Offset=0	21.82	21.81	21.82
	16QAM	RB Size=1, RB Offset=0	22.20	22.21	22.04
		RB Size=1, RB Offset=7	22.15	22.11	22.10
		RB Size=1, RB Offset=14	22.16	21.69	21.87
		RB Size=8, RB Offset=0	20.98	20.86	20.87
		RB Size=8, RB Offset=4	20.73	20.68	21.03
		RB Size=8, RB Offset=7	20.49	20.63	20.75
		RB Size=15, RB Offset=0	20.83	20.83	20.79

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.81	22.94	22.94
		RB Size=1, RB Offset=12	22.81	22.67	22.72
		RB Size=1, RB Offset=24	22.48	22.78	22.52
		RB Size=12, RB Offset=0	21.81	21.87	22.00
		RB Size=12, RB Offset=6	21.80	21.71	21.72
		RB Size=12, RB Offset=11	21.78	21.61	21.72
		RB Size=25, RB Offset=0	21.74	21.68	21.82
	16QAM	RB Size=1, RB Offset=0	21.93	21.70	21.75
		RB Size=1, RB Offset=12	21.94	21.46	21.83
		RB Size=1, RB Offset=24	21.75	21.40	21.51
		RB Size=12, RB Offset=0	20.87	20.81	20.82
		RB Size=12, RB Offset=6	20.67	20.78	20.74
		RB Size=12, RB Offset=11	20.66	20.57	20.63
		RB Size=25, RB Offset=0	20.73	20.72	20.74
10.0	QPSK	RB Size=1, RB Offset=0	22.92	22.91	22.82
		RB Size=1, RB Offset=24	22.76	22.85	22.71
		RB Size=1, RB Offset=49	22.54	22.67	22.65
		RB Size=25, RB Offset=0	21.89	21.66	21.82
		RB Size=25, RB Offset=12	21.81	21.77	21.61
		RB Size=25, RB Offset=24	21.85	21.59	21.51
		RB Size=50, RB Offset=0	21.63	21.58	21.58
	16QAM	RB Size=1, RB Offset=0	21.78	21.69	21.67
		RB Size=1, RB Offset=24	21.57	21.52	21.70
		RB Size=1, RB Offset=49	21.43	21.40	21.61
		RB Size=25, RB Offset=0	22.61	20.77	20.86
		RB Size=25, RB Offset=12	22.60	20.53	20.57
		RB Size=25, RB Offset=24	22.62	20.19	20.38
		RB Size=50, RB Offset=0	20.41	20.54	20.49

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	22.24	22.15	22.51
		RB Size=1, RB Offset=37	22.09	21.90	22.16
		RB Size=1, RB Offset=74	22.02	22.07	22.33
		RB Size=36, RB Offset=0	22.05	21.98	22.05
		RB Size=36, RB Offset=18	22.02	22.02	22.01
		RB Size=36, RB Offset=37	22.06	21.75	21.75
		RB Size=75, RB Offset=0	21.90	21.99	22.06
	16QAM	RB Size=1, RB Offset=0	21.92	21.93	21.68
		RB Size=1, RB Offset=37	21.92	21.81	21.58
		RB Size=1, RB Offset=74	21.83	21.87	21.38
		RB Size=36, RB Offset=0	21.82	21.88	21.98
		RB Size=36, RB Offset=18	21.88	21.77	21.94
		RB Size=36, RB Offset=37	21.61	21.71	21.81
		RB Size=75, RB Offset=0	21.11	21.16	21.03
20.0	QPSK	RB Size=1, RB Offset=0	22.80	22.83	23.05
		RB Size=1, RB Offset=49	22.85	22.80	22.93
		RB Size=1, RB Offset=99	22.75	22.93	22.79
		RB Size=50, RB Offset=0	21.83	21.93	22.04
		RB Size=50, RB Offset=24	21.79	21.84	21.99
		RB Size=50, RB Offset=49	21.63	21.60	21.76
		RB Size=100, RB Offset=0	21.87	21.81	21.79
	16QAM	RB Size=1, RB Offset=0	21.97	21.99	22.02
		RB Size=1, RB Offset=49	21.94	21.95	22.03
		RB Size=1, RB Offset=99	21.92	21.65	21.92
		RB Size=50, RB Offset=0	20.81	20.93	20.91
		RB Size=50, RB Offset=24	20.72	20.92	20.94
		RB Size=50, RB Offset=49	20.64	20.63	20.93
		RB Size=100, RB Offset=0	20.86	20.84	20.95

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.48	13	Pass
QPSK (100RB Size)	5.56	13	Pass
16QAM (1RB Size)	6.75	13	Pass
16QAM (100RB Size)	6.59	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	83.04	168	1.3	H	13.4	1.30	9.40	21.50	33
1880.00	79.01	45	1.7	V	9.1	1.30	9.40	17.20	33
3 MHz Bandwidth									
1880.00	83.16	171	2.3	H	13.5	1.30	9.40	21.60	33
1880.00	79.63	230	2.3	V	9.7	1.30	9.40	17.80	33
5 MHz Bandwidth									
1880.00	82.96	143	1.2	H	13.3	1.30	9.40	21.40	33
1880.00	79.17	128	2.2	V	9.3	1.30	9.40	17.40	33
10 MHz Bandwidth									
1880.00	82.51	83	1.0	H	12.8	1.30	9.40	20.90	33
1880.00	78.84	197	1.5	V	8.9	1.30	9.40	17.00	33
15 MHz Bandwidth									
1880.00	82.11	331	2.2	H	12.4	1.30	9.40	20.50	33
1880.00	78.36	161	1.3	V	8.5	1.30	9.40	16.60	33
20 MHz Bandwidth									
1880.00	81.89	175	1.8	H	12.2	1.30	9.40	20.30	33
1880.00	78.28	26	1.1	V	8.4	1.30	9.40	16.50	33

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	83.15	227	2.3	H	13.5	1.30	9.40	21.60	33
1880.00	82.58	219	1.4	V	12.7	1.30	9.40	20.80	33
3 MHz Bandwidth									
1880.00	83.07	266	1.4	H	13.4	1.30	9.40	21.50	33
1880.00	82.19	173	2.1	V	12.3	1.30	9.40	20.40	33
5 MHz Bandwidth									
1880.00	83.20	30	1.2	H	13.5	1.30	9.40	21.60	33
1880.00	82.96	192	1.5	V	13.1	1.30	9.40	21.20	33
10 MHz Bandwidth									
1880.00	83.09	227	2.0	H	13.4	1.30	9.40	21.50	33
1880.00	82.41	193	1.4	V	12.5	1.30	9.40	20.60	33
15 MHz Bandwidth									
1880.00	82.64	328	1.7	H	13.0	1.30	9.40	21.10	33
1880.00	82.17	147	1.2	V	12.3	1.30	9.40	20.40	33
20 MHz Bandwidth									
1880.00	82.93	344	1.6	H	13.3	1.30	9.40	21.40	33
1880.00	81.10	150	2.2	V	11.2	1.30	9.40	19.30	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	22.47	22.38	22.44
		RB Size=1, RB Offset=2	22.49	22.28	22.49
		RB Size=1, RB Offset=5	22.45	22.07	22.67
		RB Size=3, RB Offset=0	22.75	22.62	22.81
		RB Size=3, RB Offset=1	22.55	22.67	22.61
		RB Size=3, RB Offset=2	22.57	22.48	22.54
		RB Size=6, RB Offset=0	21.53	21.46	21.36
	16QAM	RB Size=1, RB Offset=0	21.84	21.85	22.01
		RB Size=1, RB Offset=2	21.80	21.83	21.85
		RB Size=1, RB Offset=5	21.74	21.82	21.84
		RB Size=3, RB Offset=0	22.78	21.83	21.78
		RB Size=3, RB Offset=1	22.90	21.76	21.83
		RB Size=3, RB Offset=2	22.61	21.77	21.68
		RB Size=6, RB Offset=0	20.63	20.72	20.78
3.0	QPSK	RB Size=1, RB Offset=0	22.42	22.41	22.38
		RB Size=1, RB Offset=7	22.27	22.39	22.34
		RB Size=1, RB Offset=14	22.40	22.32	22.30
		RB Size=8, RB Offset=0	21.67	21.60	21.59
		RB Size=8, RB Offset=4	21.57	21.45	21.60
		RB Size=8, RB Offset=7	21.48	21.35	21.62
		RB Size=15, RB Offset=0	21.51	21.71	21.72
	16QAM	RB Size=1, RB Offset=0	21.76	21.61	21.53
		RB Size=1, RB Offset=7	21.81	21.72	21.43
		RB Size=1, RB Offset=14	21.62	21.53	21.40
		RB Size=8, RB Offset=0	20.69	20.62	20.71
		RB Size=8, RB Offset=4	20.53	20.69	20.74
		RB Size=8, RB Offset=7	20.67	20.80	20.58
		RB Size=15, RB Offset=0	20.84	20.82	20.68

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	22.57	22.73
		RB Size=1, RB Offset=12	22.57	22.56	22.68
		RB Size=1, RB Offset=24	22.62	22.49	22.69
		RB Size=12, RB Offset=0	21.93	21.61	21.73
		RB Size=12, RB Offset=6	21.71	21.72	21.75
		RB Size=12, RB Offset=11	21.48	21.64	21.74
		RB Size=25, RB Offset=0	21.79	21.78	21.80
	16QAM	RB Size=1, RB Offset=0	22.00	21.88	21.88
		RB Size=1, RB Offset=12	21.83	21.73	21.62
		RB Size=1, RB Offset=24	21.74	21.78	21.73
		RB Size=12, RB Offset=0	20.80	21.08	20.99
		RB Size=12, RB Offset=6	20.86	20.94	20.98
		RB Size=12, RB Offset=11	20.76	20.71	20.78
		RB Size=25, RB Offset=0	20.90	20.56	20.67
10.0	QPSK	RB Size=1, RB Offset=0	22.68	22.68	22.69
		RB Size=1, RB Offset=24	22.61	22.67	22.84
		RB Size=1, RB Offset=49	22.65	22.69	22.73
		RB Size=25, RB Offset=0	21.77	21.71	21.60
		RB Size=25, RB Offset=12	21.57	21.93	21.63
		RB Size=25, RB Offset=24	21.71	21.40	21.72
		RB Size=50, RB Offset=0	21.71	21.81	21.82
	16QAM	RB Size=1, RB Offset=0	22.25	22.15	22.33
		RB Size=1, RB Offset=24	22.11	22.12	22.29
		RB Size=1, RB Offset=49	22.18	22.03	22.05
		RB Size=25, RB Offset=0	20.74	20.91	20.79
		RB Size=25, RB Offset=12	20.60	20.64	20.89
		RB Size=25, RB Offset=24	20.66	20.79	20.71
		RB Size=50, RB Offset=0	20.95	20.90	20.80

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	22.80	22.64	22.68
		RB Size=1, RB Offset=37	22.65	22.32	22.45
		RB Size=1, RB Offset=74	22.61	22.41	22.49
		RB Size=36, RB Offset=0	21.92	21.90	21.91
		RB Size=36, RB Offset=18	21.99	21.83	21.81
		RB Size=36, RB Offset=37	22.02	21.75	21.82
		RB Size=75, RB Offset=0	21.83	21.55	21.61
	16QAM	RB Size=1, RB Offset=0	21.73	21.58	21.54
		RB Size=1, RB Offset=37	21.72	21.47	21.72
		RB Size=1, RB Offset=74	21.49	21.40	21.43
		RB Size=36, RB Offset=0	20.90	20.58	20.83
		RB Size=36, RB Offset=18	20.85	20.47	20.61
		RB Size=36, RB Offset=37	20.63	20.60	20.53
		RB Size=75, RB Offset=0	20.78	20.69	20.91
20.0	QPSK	RB Size=1, RB Offset=0	22.73	22.31	22.58
		RB Size=1, RB Offset=49	22.70	22.26	22.43
		RB Size=1, RB Offset=99	22.81	22.22	22.25
		RB Size=50, RB Offset=0	21.97	21.94	22.00
		RB Size=50, RB Offset=24	21.72	21.81	21.80
		RB Size=50, RB Offset=49	21.64	21.83	21.67
		RB Size=100, RB Offset=0	21.74	21.45	21.51
	16QAM	RB Size=1, RB Offset=0	22.25	22.23	22.24
		RB Size=1, RB Offset=49	22.20	22.20	22.42
		RB Size=1, RB Offset=99	22.15	22.18	22.47
		RB Size=50, RB Offset=0	20.95	21.06	21.04
		RB Size=50, RB Offset=24	20.99	21.02	21.11
		RB Size=50, RB Offset=49	20.73	21.08	21.11
		RB Size=100, RB Offset=0	20.86	20.84	20.75

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.31	13	Pass
QPSK (100RB Size)	6.44	13	Pass
16QAM (1RB Size)	7.27	13	Pass
16QAM (100RB Size)	7.43	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	86.35	291	1.1	H	13.0	1.30	8.90	20.60	30
1732.50	85.42	79	2.4	V	12.7	1.30	8.90	20.30	30
3 MHz Bandwidth									
1732.50	87.16	145	2.4	H	13.8	1.30	8.90	21.40	30
1732.50	86.03	101	1.1	V	13.3	1.30	8.90	20.90	30
5 MHz Bandwidth									
1732.50	85.93	176	1.2	H	12.6	1.30	8.90	20.20	30
1732.50	85.04	313	2.4	V	12.3	1.30	8.90	19.90	30
10 MHz Bandwidth									
1732.50	85.68	20	1.8	H	12.4	1.30	8.90	20.00	30
1732.50	84.82	77	1.7	V	12.1	1.30	8.90	19.70	30
15 MHz Bandwidth									
1732.50	85.43	100	1.2	H	12.1	1.30	8.90	19.70	30
1732.50	84.61	305	1.7	V	11.9	1.30	8.90	19.50	30
20 MHz Bandwidth									
1732.50	84.64	139	2.1	H	11.3	1.30	8.90	18.90	30
1732.50	84.11	193	1.7	V	11.4	1.30	8.90	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									
1.4 MHz Bandwidth									
1732.50	87.25	0	2.3	H	13.9	1.30	8.90	21.50	30
1732.50	86.11	185	1.5	V	13.4	1.30	8.90	21.00	30
3 MHz Bandwidth									
1732.50	86.93	89	2.2	H	13.6	1.30	8.90	21.20	30
1732.50	86.25	272	1.4	V	13.5	1.30	8.90	21.10	30
5 MHz Bandwidth									
1732.50	86.73	304	1.5	H	13.4	1.30	8.90	21.00	30
1732.50	85.67	289	1.3	V	12.9	1.30	8.90	20.50	30
10 MHz Bandwidth									
1732.50	86.97	108	1.5	H	13.6	1.30	8.90	21.20	30
1732.50	86.14	10	1.8	V	13.4	1.30	8.90	21.00	30
15 MHz Bandwidth									
1732.50	86.43	198	2.1	H	13.1	1.30	8.90	20.70	30
1732.50	85.88	158	1.8	V	13.2	1.30	8.90	20.80	30
20 MHz Bandwidth									
1732.50	85.98	165	2.3	H	12.7	1.30	8.90	20.30	30
1732.50	85.27	233	2.3	V	12.5	1.30	8.90	20.10	30

LTE Band 5:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.44	22.41	22.44
		RB Size=1, RB Offset=2	22.50	22.37	22.64
		RB Size=1, RB Offset=5	22.56	21.91	22.53
		RB Size=3, RB Offset=0	22.61	22.72	22.70
		RB Size=3, RB Offset=1	22.56	22.64	22.64
		RB Size=3, RB Offset=2	22.50	22.66	22.46
		RB Size=6, RB Offset=0	21.56	21.41	21.39
	16QAM	RB Size=1, RB Offset=0	21.82	21.88	21.99
		RB Size=1, RB Offset=2	21.70	21.89	21.87
		RB Size=1, RB Offset=5	21.67	21.97	21.80
		RB Size=3, RB Offset=0	22.81	21.89	21.78
		RB Size=3, RB Offset=1	22.82	21.69	21.79
		RB Size=3, RB Offset=2	22.64	21.70	21.65
		RB Size=6, RB Offset=0	20.64	20.74	20.74
3.0	QPSK	RB Size=1, RB Offset=0	22.49	22.56	22.42
		RB Size=1, RB Offset=7	22.33	22.43	22.19
		RB Size=1, RB Offset=14	22.35	22.34	22.17
		RB Size=8, RB Offset=0	21.65	21.67	21.68
		RB Size=8, RB Offset=4	21.49	21.49	21.59
		RB Size=8, RB Offset=7	21.34	21.37	21.63
		RB Size=15, RB Offset=0	21.65	21.53	21.60
	16QAM	RB Size=1, RB Offset=0	21.69	21.55	21.65
		RB Size=1, RB Offset=7	21.80	21.58	21.44
		RB Size=1, RB Offset=14	21.79	21.39	21.32
		RB Size=8, RB Offset=0	20.67	20.75	20.64
		RB Size=8, RB Offset=4	20.62	20.70	20.81
		RB Size=8, RB Offset=7	20.65	20.73	20.63
		RB Size=15, RB Offset=0	20.76	20.71	20.80

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.74	22.75	22.69
		RB Size=1, RB Offset=12	22.58	22.55	22.61
		RB Size=1, RB Offset=24	22.64	22.40	22.77
		RB Size=12, RB Offset=0	21.94	21.65	21.78
		RB Size=12, RB Offset=6	21.80	21.62	21.63
		RB Size=12, RB Offset=11	21.63	21.75	21.56
		RB Size=25, RB Offset=0	21.67	21.81	21.70
	16QAM	RB Size=1, RB Offset=0	21.87	21.89	21.82
		RB Size=1, RB Offset=12	21.76	21.65	21.71
		RB Size=1, RB Offset=24	21.82	21.73	21.72
		RB Size=12, RB Offset=0	20.93	20.90	21.05
		RB Size=12, RB Offset=6	20.88	21.01	20.86
		RB Size=12, RB Offset=11	20.80	20.64	20.87
		RB Size=25, RB Offset=0	20.80	20.72	20.70
10.0	QPSK	RB Size=1, RB Offset=0	22.69	22.80	22.69
		RB Size=1, RB Offset=24	22.64	22.74	22.69
		RB Size=1, RB Offset=49	22.55	22.84	22.72
		RB Size=25, RB Offset=0	21.70	21.74	21.77
		RB Size=25, RB Offset=12	21.54	21.90	21.80
		RB Size=25, RB Offset=24	21.58	21.51	21.58
		RB Size=50, RB Offset=0	21.81	21.88	21.80
	16QAM	RB Size=1, RB Offset=0	22.23	22.29	22.20
		RB Size=1, RB Offset=24	22.07	22.08	22.28
		RB Size=1, RB Offset=49	22.29	22.21	22.09
		RB Size=25, RB Offset=0	20.86	20.84	20.86
		RB Size=25, RB Offset=12	20.66	20.60	20.83
		RB Size=25, RB Offset=24	20.52	20.58	20.64
		RB Size=50, RB Offset=0	20.81	20.76	21.04

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.34	13	Pass
QPSK (50RB Size)	6.52	13	Pass
16QAM (1RB Size)	7.28	13	Pass
16QAM (50RB Size)	7.14	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	82.11	84	1.6	H	22.7	1.90	0.0	20.80	38.45
836.6	74.59	303	1.4	V	14.6	1.90	0.0	12.70	38.45
3 MHz Bandwidth									
836.5	82.34	3	2.3	H	23.0	1.90	0.0	21.10	38.45
836.6	74.26	196	1.4	V	14.3	1.90	0.0	12.40	38.45
5 MHz Bandwidth									
836.5	81.97	245	1.4	H	22.6	1.90	0.0	20.70	38.45
836.6	73.94	192	2.0	V	13.9	1.90	0.0	12.00	38.45
10 MHz Bandwidth									
836.5	81.62	143	2.2	H	22.2	1.90	0.0	20.30	38.45
836.6	73.81	69	1.8	V	13.8	1.90	0.0	11.90	38.45

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	82.69	260	1.7	H	22.9	1.90	0.0	21.00	38.45
836.5	74.83	161	1.0	V	14.8	1.90	0.0	12.90	38.45
3 MHz Bandwidth									
836.5	82.44	340	2.4	H	22.6	1.90	0.0	20.70	38.45
836.5	74.29	217	1.7	V	14.3	1.90	0.0	12.40	38.45
5 MHz Bandwidth									
836.5	82.07	24	1.7	H	22.3	1.90	0.0	20.40	38.45
836.5	74.31	71	1.2	V	14.3	1.90	0.0	12.40	38.45
10 MHz Bandwidth									
836.5	81.86	27	1.2	H	22.1	1.90	0.0	20.20	38.45
836.5	74.29	11	1.1	V	14.3	1.90	0.0	12.40	38.45

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	23.12	22.87	22.65
		RB Size=1, RB Offset=12	22.78	22.57	22.20
		RB Size=1, RB Offset=24	23.45	23.06	22.98
		RB Size=12, RB Offset=0	22.03	21.49	21.33
		RB Size=12, RB Offset=6	22.12	21.58	21.43
		RB Size=12, RB Offset=11	22.17	21.63	21.40
		RB Size=25, RB Offset=0	22.09	21.60	22.31
	16QAM	RB Size=1, RB Offset=0	22.59	21.89	22.19
		RB Size=1, RB Offset=12	22.57	21.79	22.10
		RB Size=1, RB Offset=24	22.67	21.96	22.32
		RB Size=12, RB Offset=0	21.85	21.01	21.31
		RB Size=12, RB Offset=6	21.67	21.07	21.22
		RB Size=12, RB Offset=11	21.67	20.99	21.40
		RB Size=25, RB Offset=0	21.06	20.75	20.64
10	QPSK	RB Size=1, RB Offset=0	22.68	22.47	22.87
		RB Size=1, RB Offset=24	22.86	22.44	22.62
		RB Size=1, RB Offset=49	22.50	22.22	22.71
		RB Size=25, RB Offset=0	21.86	21.61	22.14
		RB Size=25, RB Offset=12	21.91	21.82	21.90
		RB Size=25, RB Offset=24	21.80	21.80	22.18
		RB Size=50, RB Offset=0	22.14	21.43	21.63
	16QAM	RB Size=1, RB Offset=0	21.88	22.03	21.97
		RB Size=1, RB Offset=24	21.63	22.26	22.01
		RB Size=1, RB Offset=49	21.81	22.28	22.05
		RB Size=25, RB Offset=0	21.12	21.18	21.22
		RB Size=25, RB Offset=12	21.27	21.04	21.05
		RB Size=25, RB Offset=24	21.05	21.41	21.34
		RB Size=50, RB Offset=0	21.14	20.43	20.61

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15	QPSK	RB Size=1, RB Offset=0	22.75	22.58	23.92
		RB Size=1, RB Offset=37	22.65	22.78	23.46
		RB Size=1, RB Offset=74	22.76	22.70	23.91
		RB Size=36, RB Offset=0	21.98	21.97	22.89
		RB Size=36, RB Offset=18	22.01	21.76	23.11
		RB Size=36, RB Offset=37	22.18	21.94	22.98
		RB Size=75, RB Offset=0	22.14	21.21	22.14
	16QAM	RB Size=1, RB Offset=0	22.11	21.76	22.58
		RB Size=1, RB Offset=37	21.94	21.51	22.72
		RB Size=1, RB Offset=74	21.98	21.71	22.83
		RB Size=36, RB Offset=0	21.19	21.00	21.91
		RB Size=36, RB Offset=18	21.41	20.92	21.79
		RB Size=36, RB Offset=37	21.23	21.05	21.82
		RB Size=75, RB Offset=0	20.78	20.46	21.32
20	QPSK	RB Size=1, RB Offset=0	22.84	23.06	23.47
		RB Size=1, RB Offset=49	22.66	22.86	23.47
		RB Size=1, RB Offset=99	22.92	23.06	23.73
		RB Size=50, RB Offset=0	22.00	22.33	22.77
		RB Size=50, RB Offset=24	22.10	22.07	22.85
		RB Size=50, RB Offset=49	21.92	22.09	22.96
		RB Size=100, RB Offset=0	22.15	21.71	22.40
	16QAM	RB Size=1, RB Offset=0	22.14	22.38	22.83
		RB Size=1, RB Offset=49	21.96	22.37	22.65
		RB Size=1, RB Offset=99	22.13	22.23	22.91
		RB Size=50, RB Offset=0	21.26	21.39	21.96
		RB Size=50, RB Offset=24	21.27	21.51	22.07
		RB Size=50, RB Offset=49	21.18	21.49	21.97
		RB Size=100, RB Offset=0	21.27	20.84	21.51

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.71	13	Pass
QPSK (50RB Size)	5.83	13	Pass
16QAM (1RB Size)	7.59	13	Pass
16QAM (50RB Size)	7.40	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	81.17	285	1.0	H	11.0	2.60	10.20	18.60	33
2535.00	80.18	325	1.1	V	10.6	2.60	10.20	18.20	33
10 MHz Bandwidth									
2535.00	81.09	67	1.9	H	10.9	2.60	10.20	18.50	33
2535.00	78.96	121	2.1	V	9.4	2.60	10.20	17.00	33
15 MHz Bandwidth									
2535.00	80.82	243	2.1	H	10.7	2.60	10.20	18.30	33
2535.00	79.14	263	1.8	V	9.6	2.60	10.20	17.20	33
20 MHz Bandwidth									
2535.00	81.12	94	1.4	H	11.0	2.60	10.20	18.60	33
2535.00	78.22	137	1.5	V	8.7	2.60	10.20	16.30	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									
5 MHz Bandwidth									
2535.00	81.64	7	1.8	H	11.5	2.60	10.20	19.10	33
2535.00	80.73	45	1.6	V	11.2	2.60	10.20	18.80	33
10 MHz Bandwidth									
2535.00	81.26	169	1.1	H	11.1	2.60	10.20	18.70	33
2535.00	80.14	50	2.4	V	10.6	2.60	10.20	18.20	33
15 MHz Bandwidth									
2535.00	81.19	18	2.2	H	11.0	2.60	10.20	18.60	33
2535.00	79.31	272	1.7	V	9.8	2.60	10.20	17.40	33
20 MHz Bandwidth									
2535.00	81.08	116	1.8	H	10.9	2.60	10.20	18.50	33
2535.00	78.56	357	1.6	V	9.0	2.60	10.20	16.60	33

LTE Band 12:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.94	23.18	23.11
		RB Size=1, RB Offset=2	23.00	23.10	23.01
		RB Size=1, RB Offset=5	22.90	22.94	22.82
		RB Size=3, RB Offset=0	23.06	22.93	23.09
		RB Size=3, RB Offset=1	23.02	23.04	23.07
		RB Size=3, RB Offset=2	22.76	22.75	22.95
		RB Size=6, RB Offset=0	22.11	22.04	21.86
	16QAM	RB Size=1, RB Offset=0	22.08	22.09	21.95
		RB Size=1, RB Offset=2	22.02	21.95	21.92
		RB Size=1, RB Offset=5	21.94	21.83	21.65
		RB Size=3, RB Offset=0	22.31	22.20	22.15
		RB Size=3, RB Offset=1	22.03	22.27	22.05
		RB Size=3, RB Offset=2	21.83	22.19	22.11
		RB Size=6, RB Offset=0	21.04	21.01	21.11
3.0	QPSK	RB Size=1, RB Offset=0	22.87	22.92	22.97
		RB Size=1, RB Offset=7	22.79	23.00	22.88
		RB Size=1, RB Offset=14	22.53	22.78	22.77
		RB Size=8, RB Offset=0	22.15	22.09	22.12
		RB Size=8, RB Offset=4	22.08	21.96	21.98
		RB Size=8, RB Offset=7	22.15	21.77	21.75
		RB Size=15, RB Offset=0	22.08	22.01	22.04
	16QAM	RB Size=1, RB Offset=0	22.54	22.34	22.54
		RB Size=1, RB Offset=7	22.37	22.35	22.46
		RB Size=1, RB Offset=14	22.30	22.19	22.26
		RB Size=8, RB Offset=0	21.27	21.16	21.25
		RB Size=8, RB Offset=4	21.06	21.04	21.09
		RB Size=8, RB Offset=7	21.27	21.11	21.19
		RB Size=15, RB Offset=0	21.18	21.16	21.26

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.02	22.00	21.96
		RB Size=1, RB Offset=12	21.93	21.93	21.78
		RB Size=1, RB Offset=24	21.97	21.85	21.82
		RB Size=12, RB Offset=0	21.18	21.23	21.15
		RB Size=12, RB Offset=6	20.95	21.18	21.22
		RB Size=12, RB Offset=11	20.76	21.21	21.00
		RB Size=25, RB Offset=0	22.10	21.93	22.03
	16QAM	RB Size=1, RB Offset=0	22.06	21.90	22.09
		RB Size=1, RB Offset=12	21.91	21.72	22.01
		RB Size=1, RB Offset=24	22.05	21.70	22.08
		RB Size=12, RB Offset=0	21.25	21.12	21.35
		RB Size=12, RB Offset=6	21.03	21.06	21.24
		RB Size=12, RB Offset=11	21.04	21.02	20.93
		RB Size=25, RB Offset=0	21.05	21.05	21.00
10.0	QPSK	RB Size=1, RB Offset=0	23.02	23.09	23.13
		RB Size=1, RB Offset=24	23.11	23.12	23.03
		RB Size=1, RB Offset=49	22.92	22.98	22.79
		RB Size=25, RB Offset=0	22.09	21.95	21.99
		RB Size=25, RB Offset=12	22.15	22.12	22.14
		RB Size=25, RB Offset=24	21.88	21.89	21.89
		RB Size=50, RB Offset=0	22.13	22.13	22.02
	16QAM	RB Size=1, RB Offset=0	22.59	22.55	22.60
		RB Size=1, RB Offset=24	22.60	22.40	22.61
		RB Size=1, RB Offset=49	22.36	22.35	22.26
		RB Size=25, RB Offset=0	21.03	21.05	21.25
		RB Size=25, RB Offset=12	21.00	21.29	20.99
		RB Size=25, RB Offset=24	20.89	21.14	20.91
		RB Size=50, RB Offset=0	21.16	21.19	21.18

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.36	13	Pass
QPSK (50RB Size)	6.22	13	Pass
16QAM (1RB Size)	7.16	13	Pass
16QAM (50RB Size)	7.20	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									
707.5	90.76	207	1.5	H	23.0	1.56	0.0	21.44	34.77
707.5	79.31	64	1.7	V	13.0	1.56	0.0	11.44	34.77
3 MHz Bandwidth									
707.5	90.21	214	2.3	H	22.4	1.56	0.0	20.84	34.77
707.5	78.72	200	2.0	V	12.4	1.56	0.0	10.84	34.77
5 MHz Bandwidth									
707.5	90.04	325	1.8	H	22.3	1.56	0.0	20.74	34.77
707.5	78.69	314	2.1	V	12.4	1.56	0.0	10.84	34.77
10 MHz Bandwidth									
707.5	89.57	274	1.3	H	21.8	1.56	0.0	20.24	34.77
707.5	78.11	288	1.7	V	11.8	1.56	0.0	10.24	34.77

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
1.4 MHz Bandwidth									
707.5	91.02	39	2.4	H	23.2	1.56	0.0	21.64	34.77
707.5	80.08	199	1.7	V	13.7	1.56	0.0	12.14	34.77
3 MHz Bandwidth									
707.5	90.88	154	2.0	H	23.1	1.56	0.0	21.54	34.77
707.5	79.63	255	1.3	V	13.3	1.56	0.0	11.74	34.77
5 MHz Bandwidth									
707.5	90.52	119	1.9	H	22.7	1.56	0.0	21.14	34.77
707.5	79.11	327	2.5	V	12.8	1.56	0.0	11.24	34.77
10 MHz Bandwidth									
707.5	90.01	13	2.2	H	22.2	1.56	0.0	20.64	34.77
707.5	78.88	65	2.0	V	12.5	1.56	0.0	10.94	34.77

LTE Band 13:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB Size=1, RB Offset=0	22.78	22.65	22.85
		RB Size=1, RB Offset=12	22.56	22.59	22.70
		RB Size=1, RB Offset=24	22.53	22.48	22.73
		RB Size=12, RB Offset=0	21.89	21.72	21.76
		RB Size=12, RB Offset=6	21.69	21.66	21.72
		RB Size=12, RB Offset=11	21.41	21.78	21.60
		RB Size=25, RB Offset=0	21.88	21.64	21.84
	16QAM	RB Size=1, RB Offset=0	21.86	21.96	21.91
		RB Size=1, RB Offset=12	21.85	21.77	21.62
		RB Size=1, RB Offset=24	21.72	21.85	21.72
		RB Size=12, RB Offset=0	20.96	20.91	20.95
		RB Size=12, RB Offset=6	20.85	20.85	20.92
		RB Size=12, RB Offset=11	20.73	20.77	20.76
		RB Size=25, RB Offset=0	20.89	20.70	20.71
10	QPSK	RB Size=1, RB Offset=0	22.63	22.72	22.79
		RB Size=1, RB Offset=24	22.63	22.69	22.82
		RB Size=1, RB Offset=49	22.69	22.75	22.72
		RB Size=25, RB Offset=0	21.82	21.77	21.78
		RB Size=25, RB Offset=12	21.69	21.77	21.72
		RB Size=25, RB Offset=24	21.58	21.47	21.65
		RB Size=50, RB Offset=0	21.92	21.84	21.81
	16QAM	RB Size=1, RB Offset=0	22.19	22.14	22.20
		RB Size=1, RB Offset=24	22.25	22.09	22.28
		RB Size=1, RB Offset=49	22.27	22.21	22.05
		RB Size=25, RB Offset=0	20.80	20.87	20.89
		RB Size=25, RB Offset=12	20.60	20.57	20.96
		RB Size=25, RB Offset=24	20.66	20.78	20.62
		RB Size=50, RB Offset=0	20.98	20.91	20.82

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.83	13	Pass
QPSK (50RB Size)	5.64	13	Pass
16QAM (1RB Size)	6.77	13	Pass
16QAM (50RB Size)	6.79	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									
782	90.11	120	1.9	H	22.3	1.68	0.0	20.62	34.77
782	80.69	197	2.3	V	14.4	1.68	0.0	12.72	34.77
10 MHz Bandwidth									
782	89.72	102	1.2	H	21.9	1.68	0.0	20.22	34.77
782	80.38	160	1.2	V	14.0	1.68	0.0	12.32	34.77

16QAM:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
5 MHz Bandwidth									
782	90.56	90	2.1	H	22.8	1.68	0.0	21.12	34.77
782	80.62	13	2.3	V	14.3	1.68	0.0	12.62	34.77
10 MHz Bandwidth									
782	89.93	48	2.0	H	22.1	1.68	0.0	20.42	34.77
782	80.14	159	1.1	V	13.8	1.68	0.0	12.12	34.77

LTE Band 17:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB Size=1, RB Offset=0	22.82	22.64	22.78
		RB Size=1, RB Offset=12	22.59	22.59	22.60
		RB Size=1, RB Offset=24	22.63	22.47	22.71
		RB Size=12, RB Offset=0	21.90	21.56	21.65
		RB Size=12, RB Offset=6	21.83	21.60	21.61
		RB Size=12, RB Offset=11	21.49	21.82	21.59
		RB Size=25, RB Offset=0	21.73	21.65	21.82
	16QAM	RB Size=1, RB Offset=0	22.02	21.80	21.99
		RB Size=1, RB Offset=12	21.92	21.75	21.60
		RB Size=1, RB Offset=24	21.74	21.61	21.62
		RB Size=12, RB Offset=0	20.88	21.05	20.94
		RB Size=12, RB Offset=6	20.85	20.97	20.81
		RB Size=12, RB Offset=11	20.77	20.81	20.90
		RB Size=25, RB Offset=0	20.87	20.73	20.61
10	QPSK	RB Size=1, RB Offset=0	22.67	22.80	22.82
		RB Size=1, RB Offset=24	22.64	22.59	22.82
		RB Size=1, RB Offset=49	22.54	22.69	22.84
		RB Size=25, RB Offset=0	21.70	21.86	21.74
		RB Size=25, RB Offset=12	21.74	21.87	21.63
		RB Size=25, RB Offset=24	21.61	21.57	21.68
		RB Size=50, RB Offset=0	21.87	21.84	21.79
	16QAM	RB Size=1, RB Offset=0	22.18	22.17	22.23
		RB Size=1, RB Offset=24	22.17	22.13	22.31
		RB Size=1, RB Offset=49	22.21	22.16	22.10
		RB Size=25, RB Offset=0	20.74	20.89	20.78
		RB Size=25, RB Offset=12	20.78	20.75	20.95
		RB Size=25, RB Offset=24	20.63	20.73	20.66
		RB Size=50, RB Offset=0	20.91	20.93	21.01

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.04	13	Pass
QPSK (50RB Size)	6.20	13	Pass
16QAM (1RB Size)	7.31	13	Pass
16QAM (50RB Size)	7.29	13	Pass

EIRP:

QPSK:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
5 MHz Bandwidth									
710	89.48	275	1.5	H	21.7	1.56	0.0	20.14	34.77
710	82.53	143	1.1	V	16.2	1.56	0.0	14.64	34.77
10 MHz Bandwidth									
710.0	89.61	213	1.2	H	21.8	1.56	0.0	20.24	34.77
710.0	82.14	139	1.1	V	15.8	1.56	0.0	14.24	34.77

16QAM:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)		
Middle Channel									
5 MHz Bandwidth									
710	89.93	172	2.0	H	22.1	1.56	0.0	20.54	34.77
710	82.78	270	1.3	V	16.4	1.56	0.0	14.84	34.77
10 MHz Bandwidth									
710	89.52	20	1.3	H	21.7	1.56	0.0	20.14	34.77
710	82.33	134	1.2	V	16.0	1.56	0.0	14.44	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

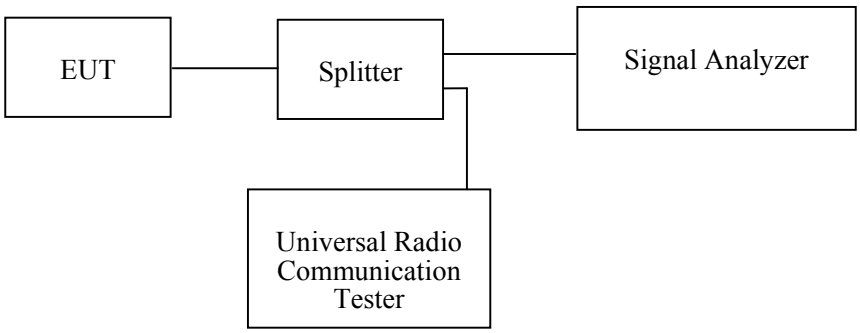
Applicable Standard

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:	50~55 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by James Fu & George Zhong from 2019-05-26 to 2019-05-30.

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	246.79	317.63
EGPRS(8PSK)	836.6	251.60	323.08

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.17	4.73
HSUPA (BPSK)	836.6	4.20	4.76
HSDPA (16QAM)	836.6	4.20	4.76

PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	246.79	317.63
EGPRS(8PSK)	1880.0	251.60	320.83

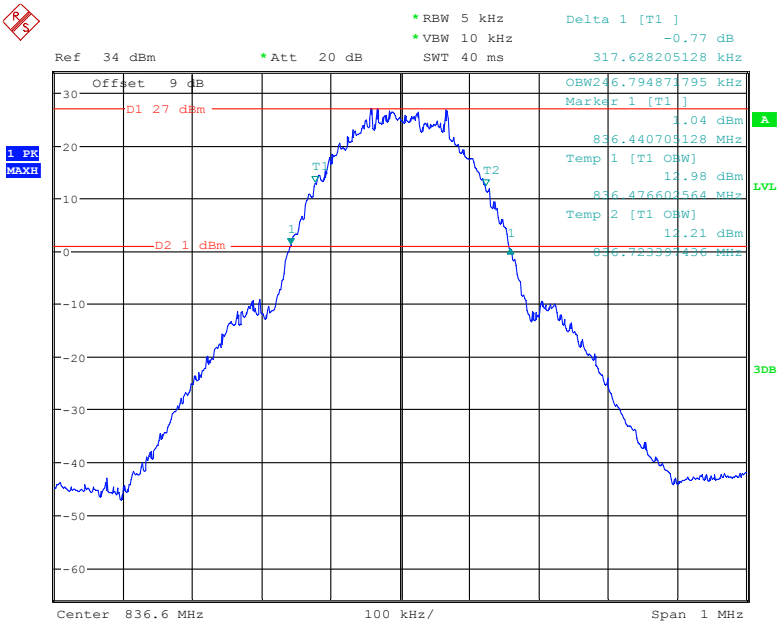
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.18	4.73
HSUPA (BPSK)	1880.0	4.17	4.74
HSDPA (16QAM)	1880.0	4.18	4.75

AWS Band (Part 27)

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1732.6	4.17	4.74
HSUPA (BPSK)	1732.6	4.20	4.77
HSDPA (16QAM)	1732.6	4.20	4.74

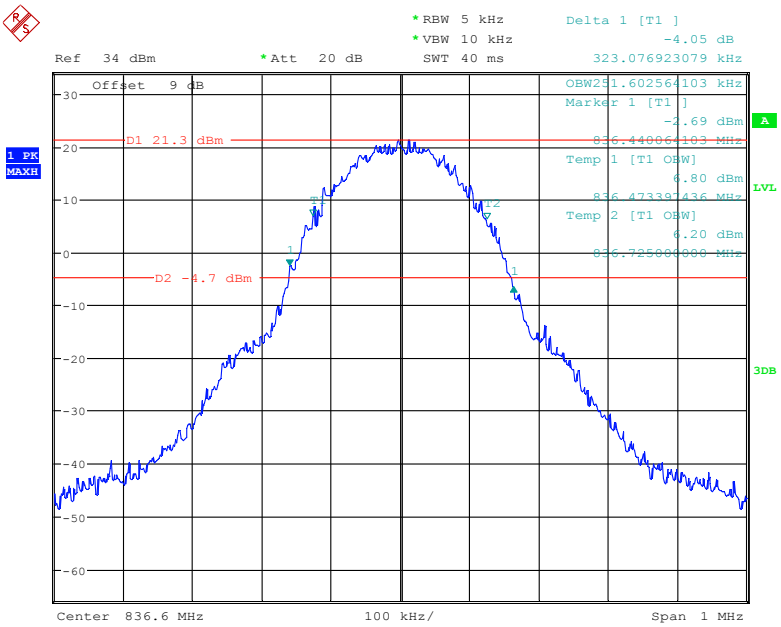
Cellular Band (Part 22H)

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



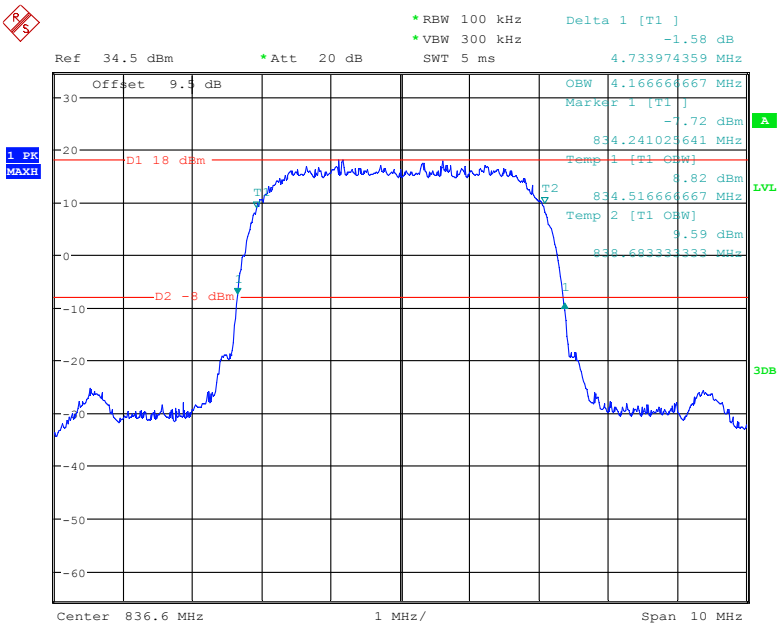
Date: 30.MAY.2019 14:17:16

26 dB Emissions &99% Occupied Bandwidth for EDGE Mode



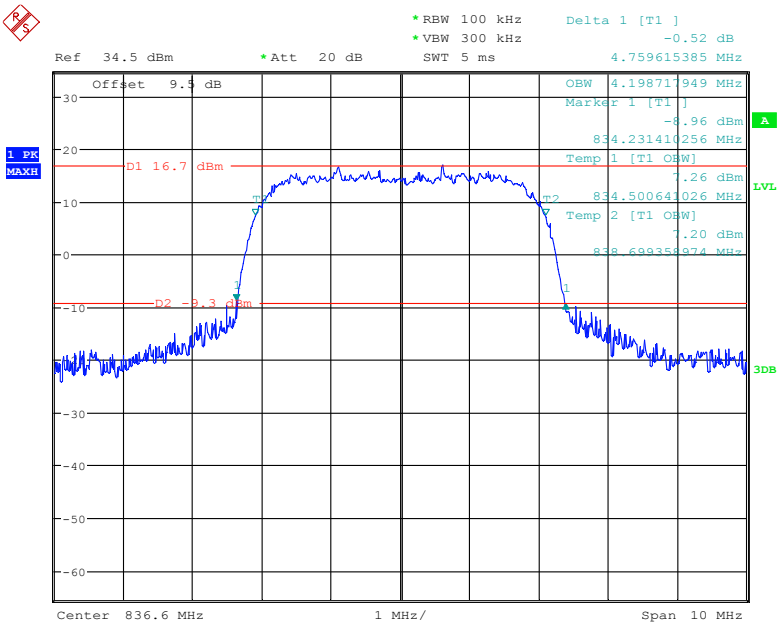
Date: 30.MAY.2019 14:59:42

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



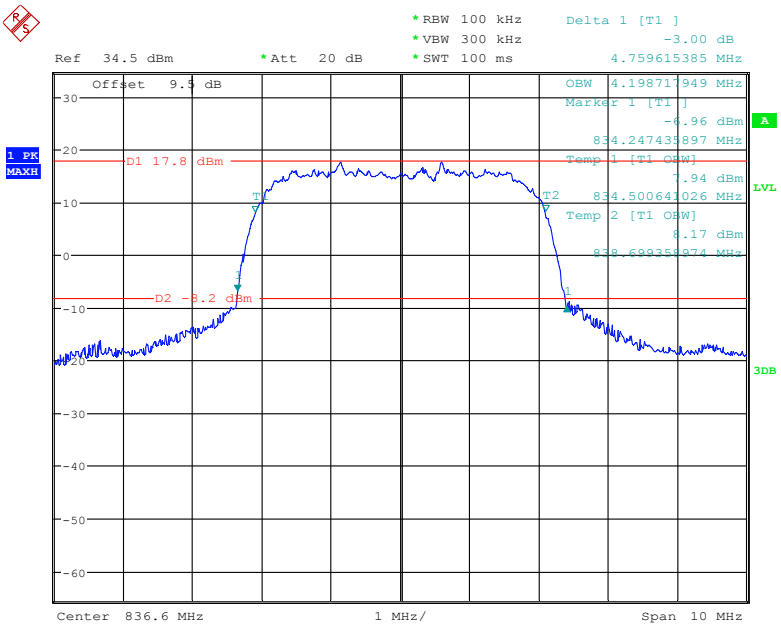
Date: 30.MAY.2019 16:27:26

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



Date: 30.MAY.2019 16:36:44

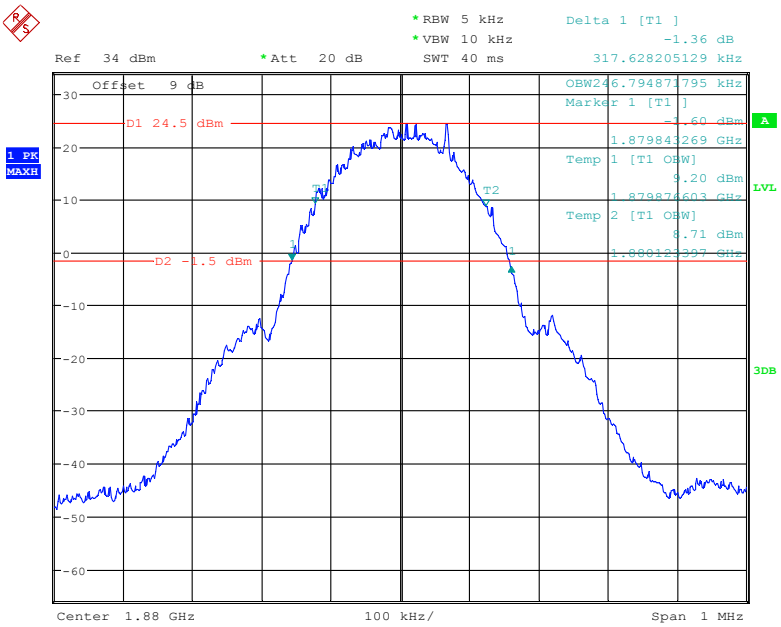
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode



Date: 30.MAY.2019 16:56:19

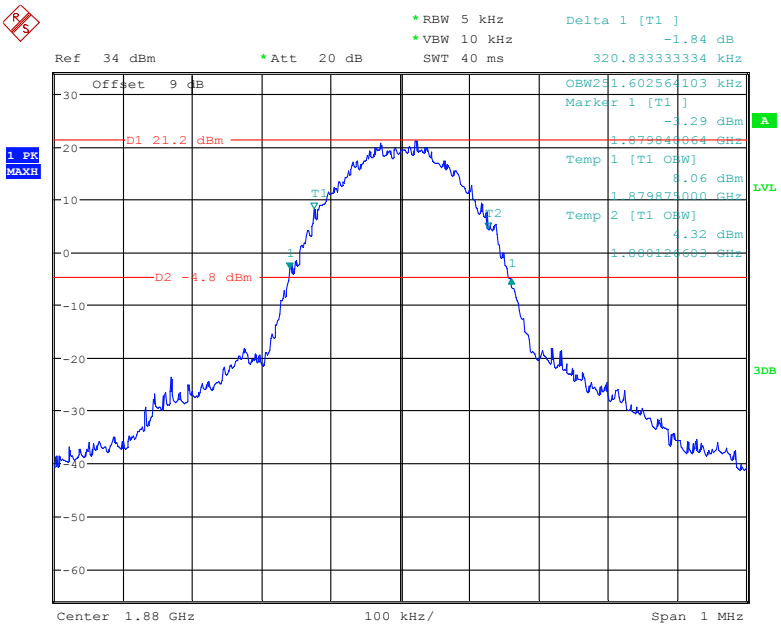
PCS Band (Part 24E)

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



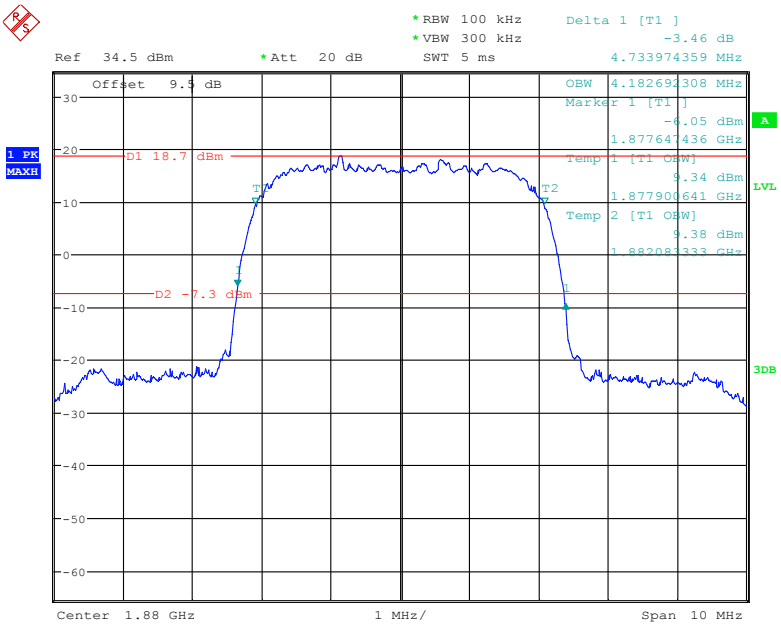
Date: 30.MAY.2019 14:36:56

26 dB Emissions &99% Occupied Bandwidth for EDGE Mode



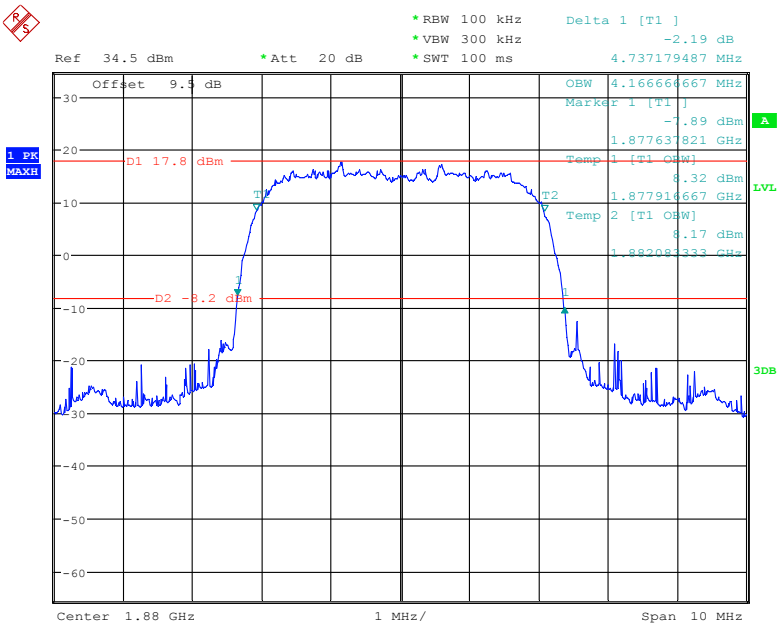
Date: 30.MAY.2019 15:07:25

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



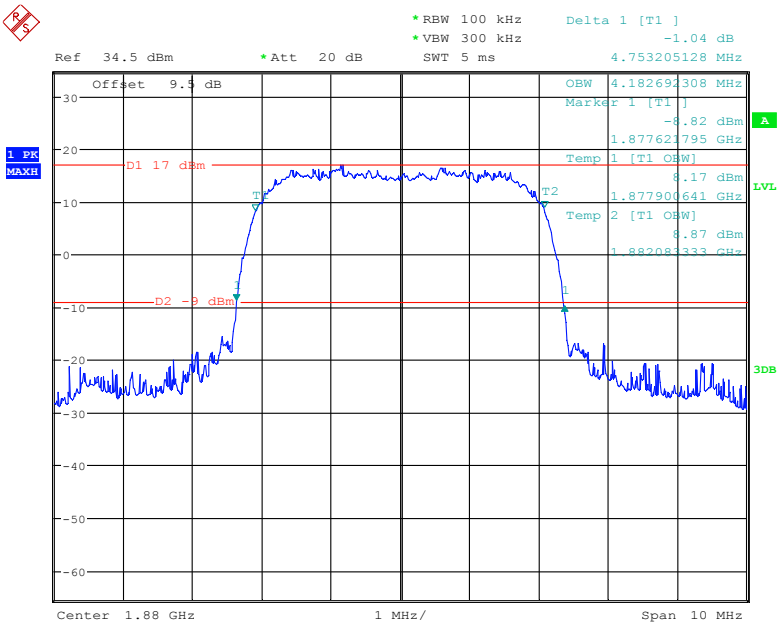
Date: 30.MAY.2019 15:52:38

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



Date: 30.MAY.2019 17:01:27

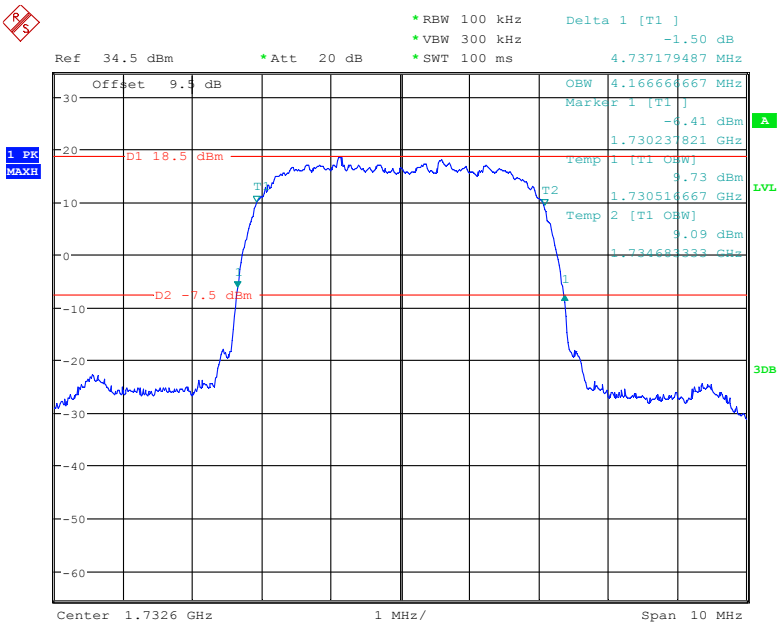
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode



Date: 30.MAY.2019 16:09:32

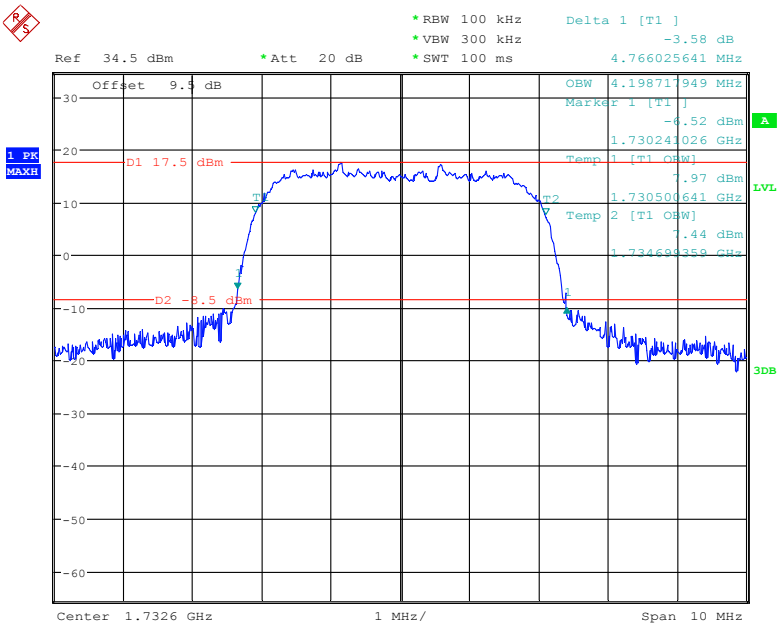
AWS Band (Part 27)

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



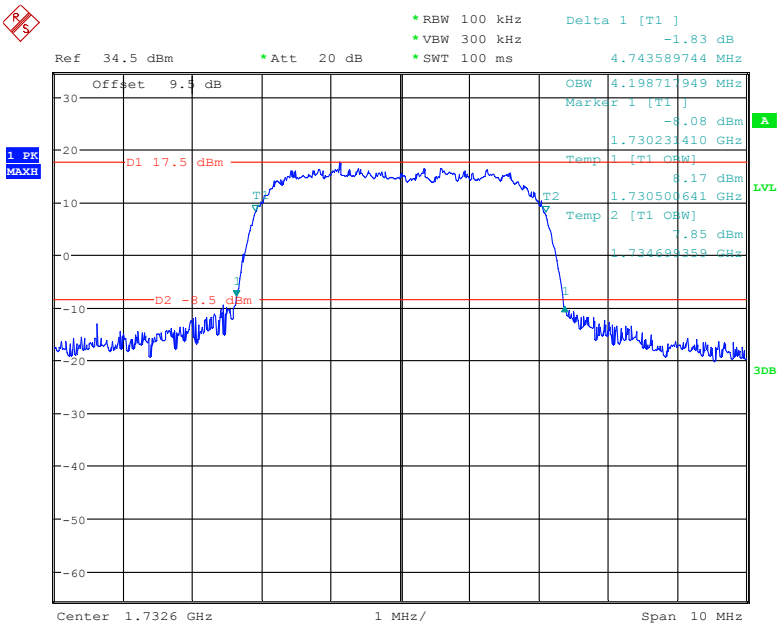
Date: 30.MAY.2019 17:05:50

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



Date: 30.MAY.2019 17:21:08

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

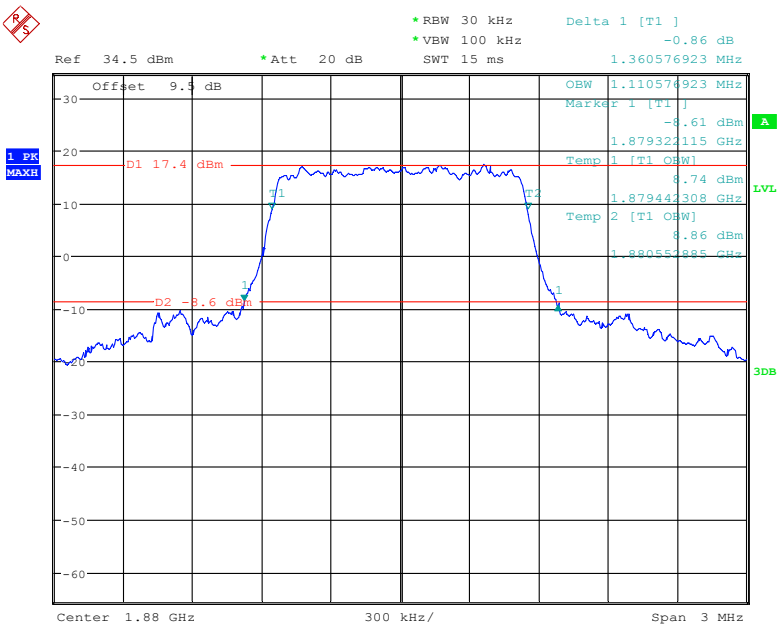


Date: 30.MAY.2019 17:29:31

LTE Band 2: (Middle Channel)

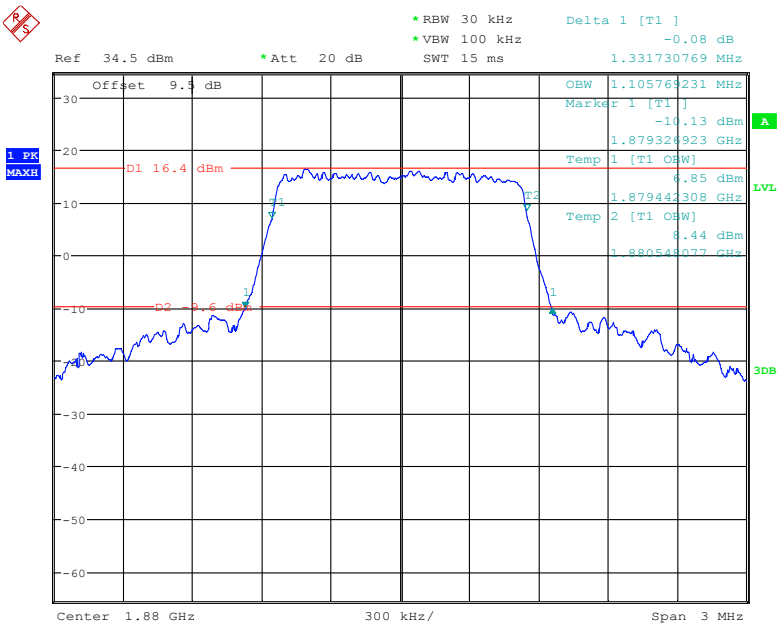
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.11	1.36
	16QAM	1.11	1.33
3.0	QPSK	2.69	2.91
	16QAM	2.69	2.88
5.0	QPSK	4.55	5.42
	16QAM	4.55	5.38
10.0	QPSK	8.97	10.00
	16QAM	8.97	9.84
15.0	QPSK	13.51	14.95
	16QAM	13.46	14.95
20.0	QPSK	17.88	19.29
	16QAM	17.88	19.62

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



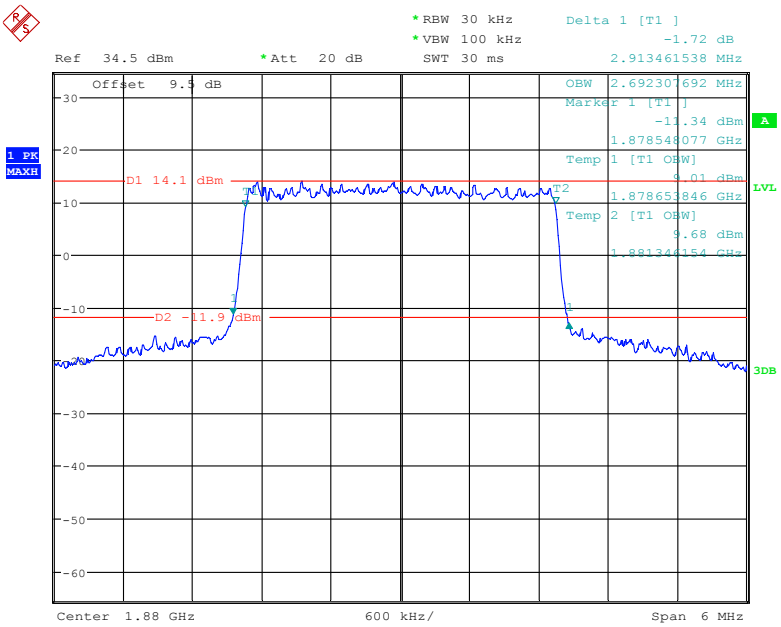
Date: 26.MAY.2019 14:09:35

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



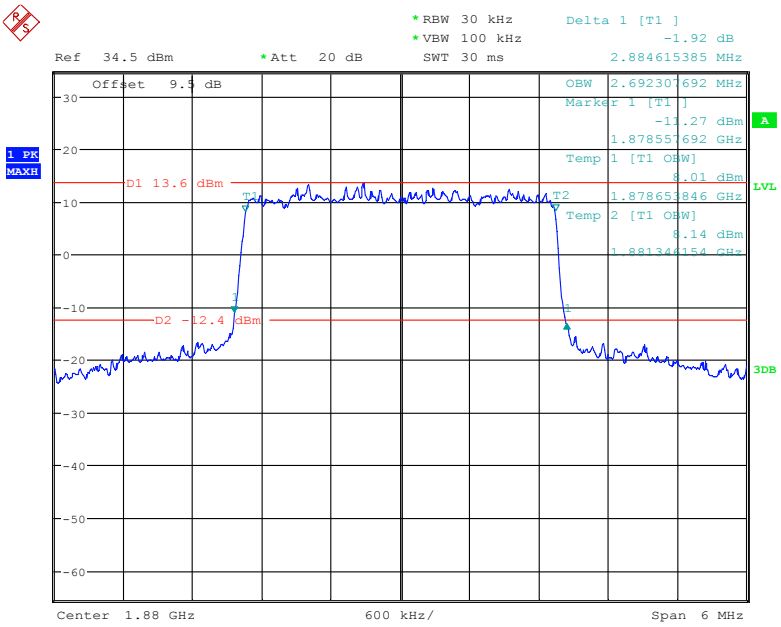
Date: 26.MAY.2019 14:18:08

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



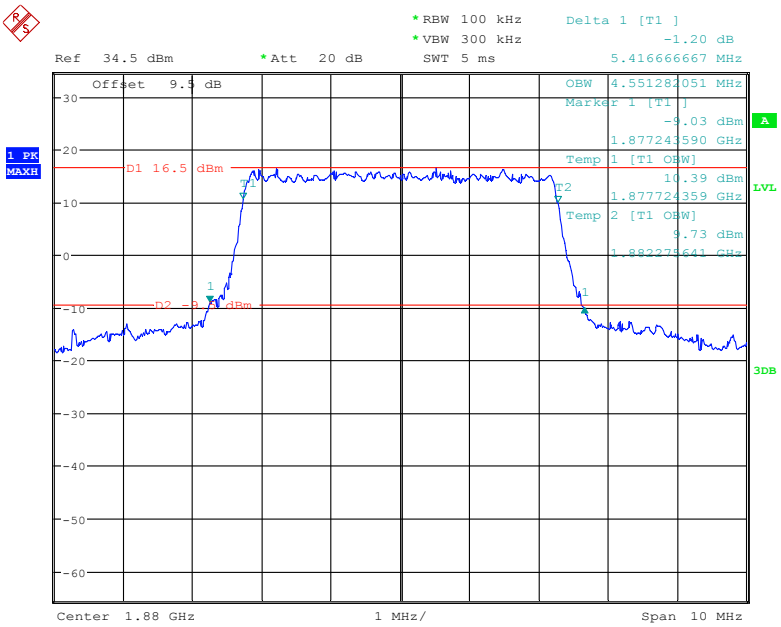
Date: 26.MAY.2019 14:19:42

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



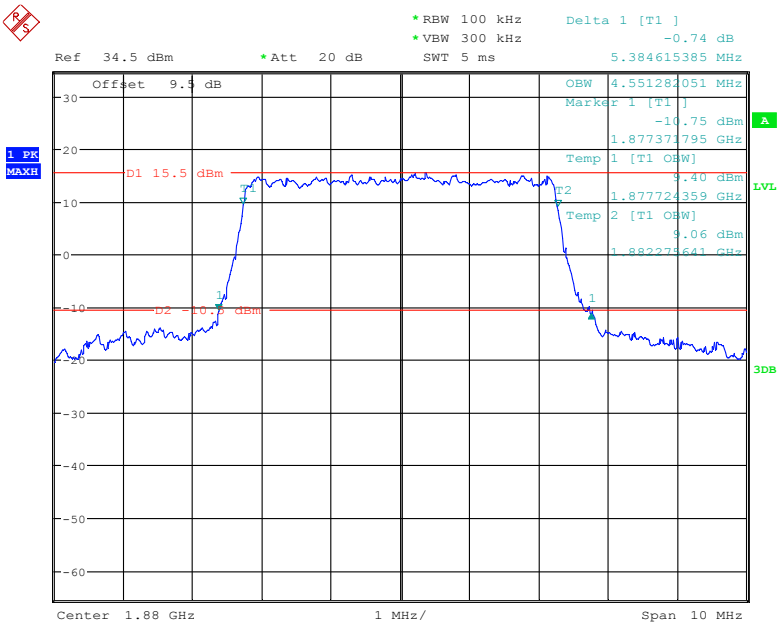
Date: 26.MAY.2019 14:20:38

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



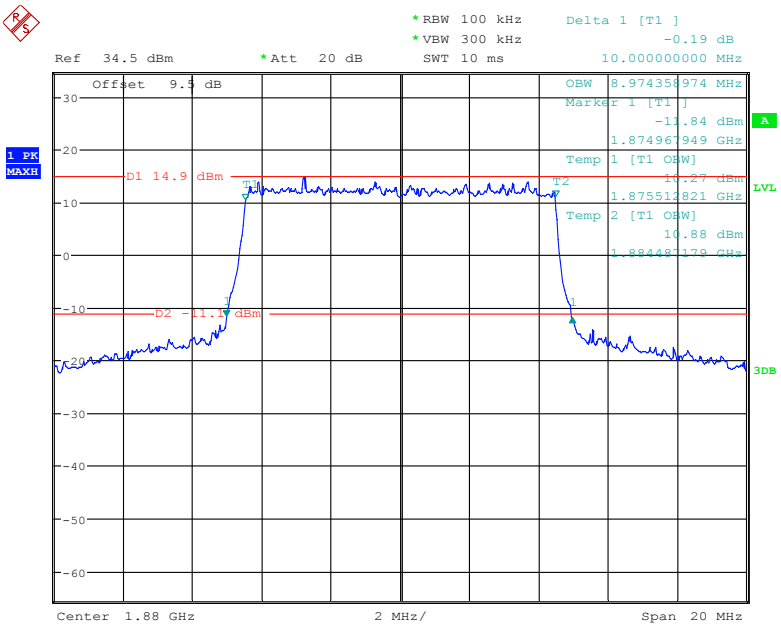
Date: 26.MAY.2019 14:21:47

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



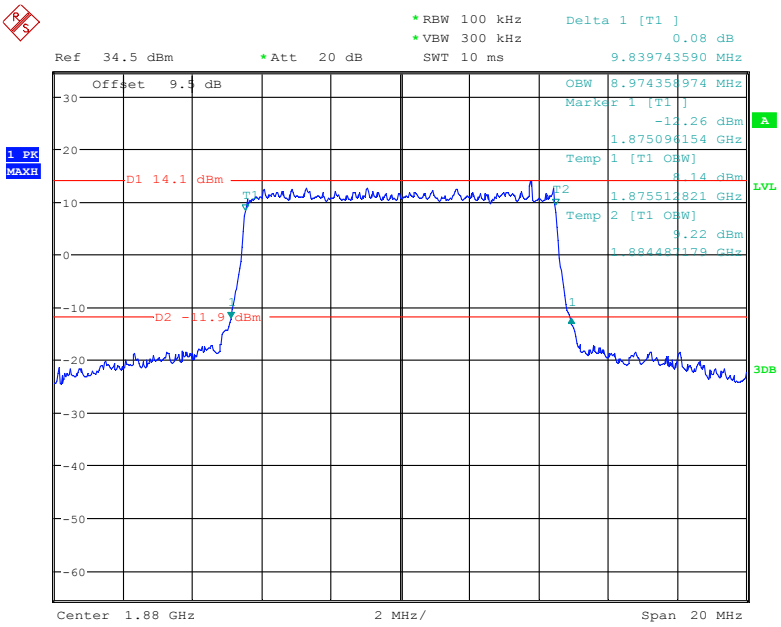
Date: 26.MAY.2019 14:22:53

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



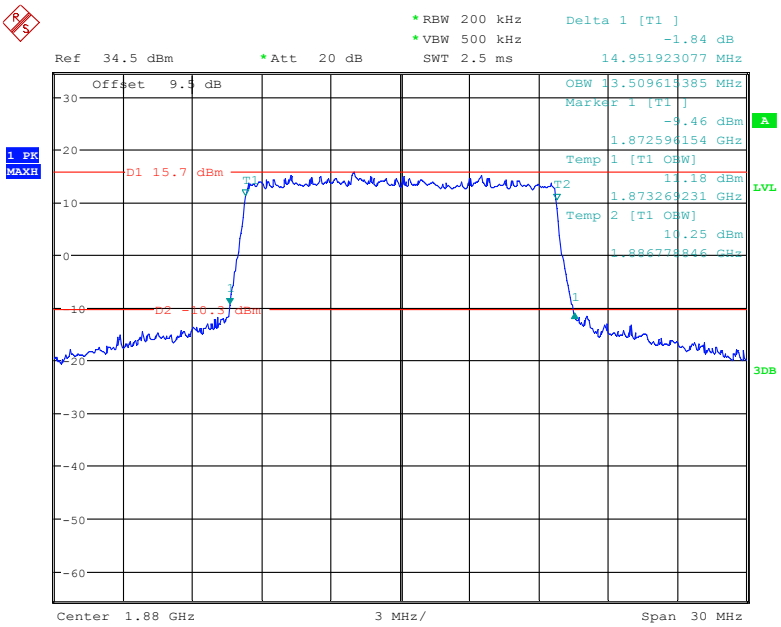
Date: 26.MAY.2019 14:24:14

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



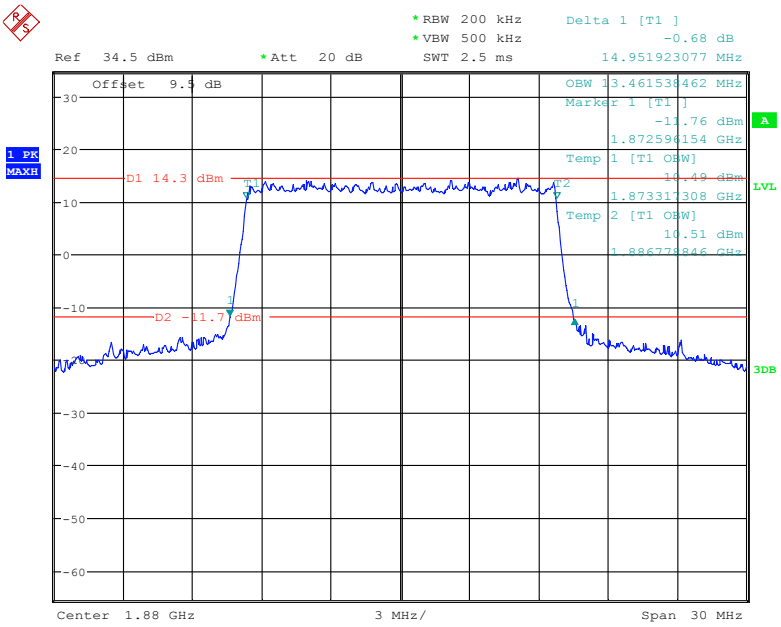
Date: 26.MAY.2019 14:25:30

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



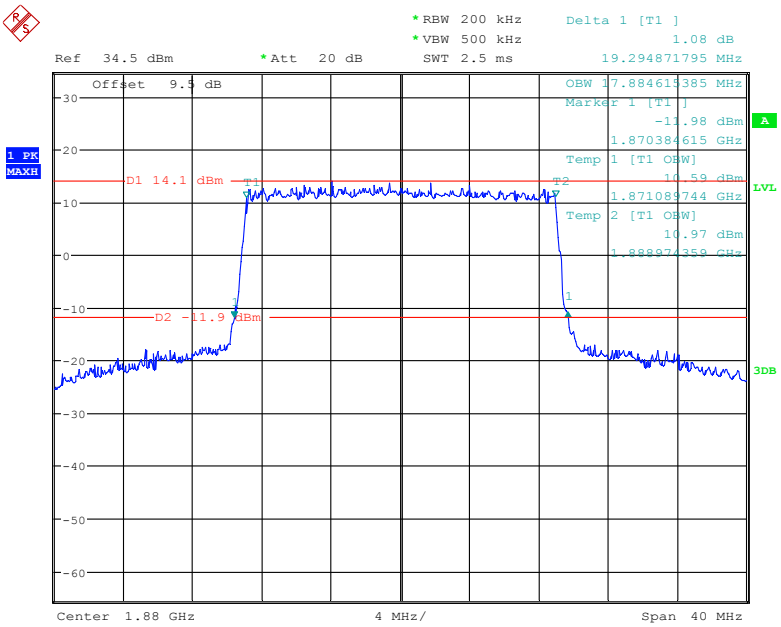
Date: 26.MAY.2019 14:26:38

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



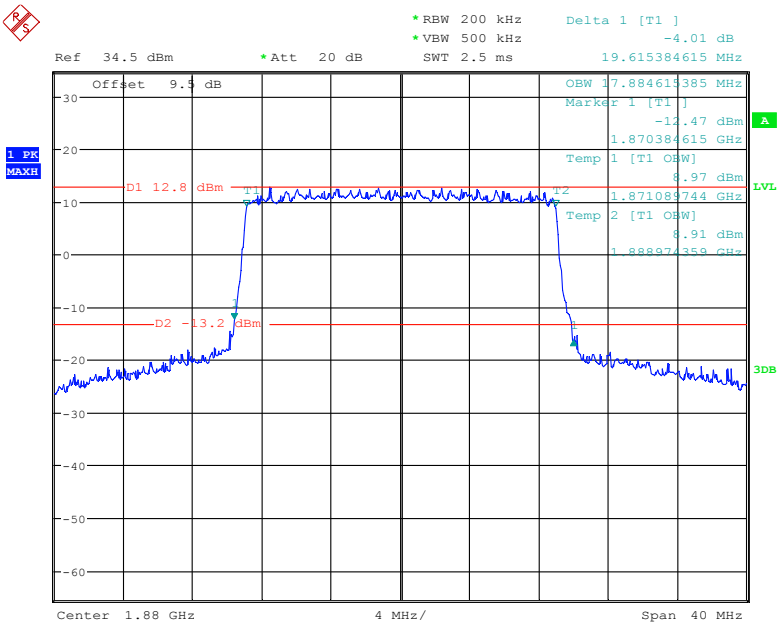
Date: 26.MAY.2019 14:27:49

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



Date: 26.MAY.2019 14:28:49

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

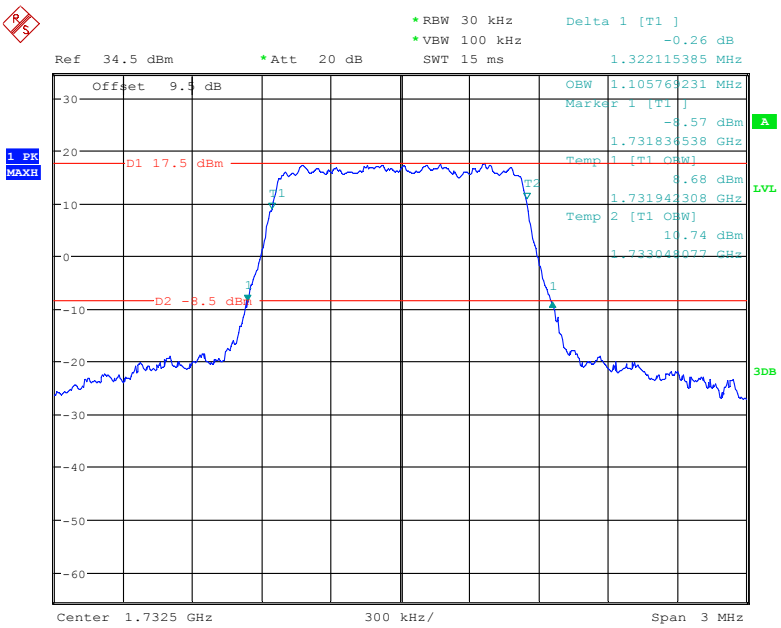


Date: 26.MAY.2019 14:30:19

LTE Band 4: (Middle Channel)

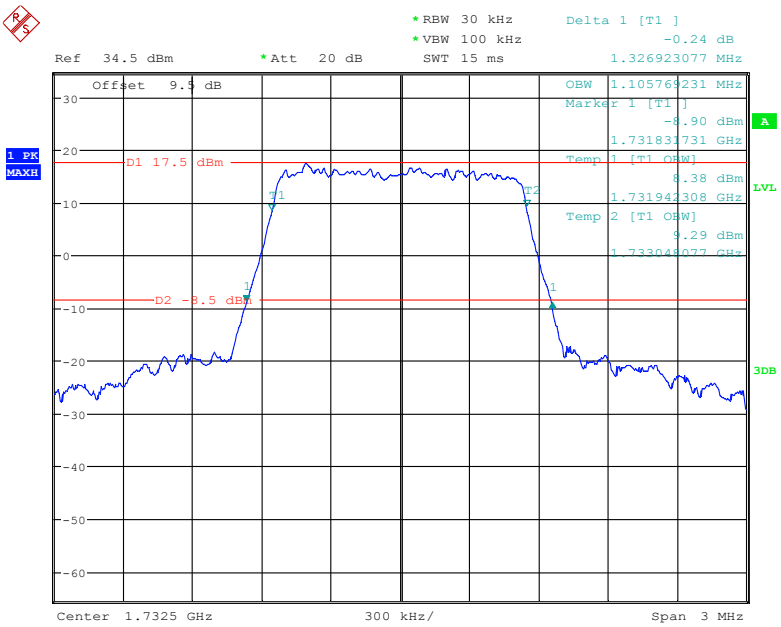
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.11	1.32
	16QAM	1.11	1.33
3.0	QPSK	2.68	2.89
	16QAM	2.68	2.88
5.0	QPSK	4.55	5.22
	16QAM	4.54	5.24
10.0	QPSK	9.01	9.94
	16QAM	8.97	9.84
15.0	QPSK	13.51	14.90
	16QAM	13.46	14.86
20.0	QPSK	17.95	19.36
	16QAM	17.95	19.49

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



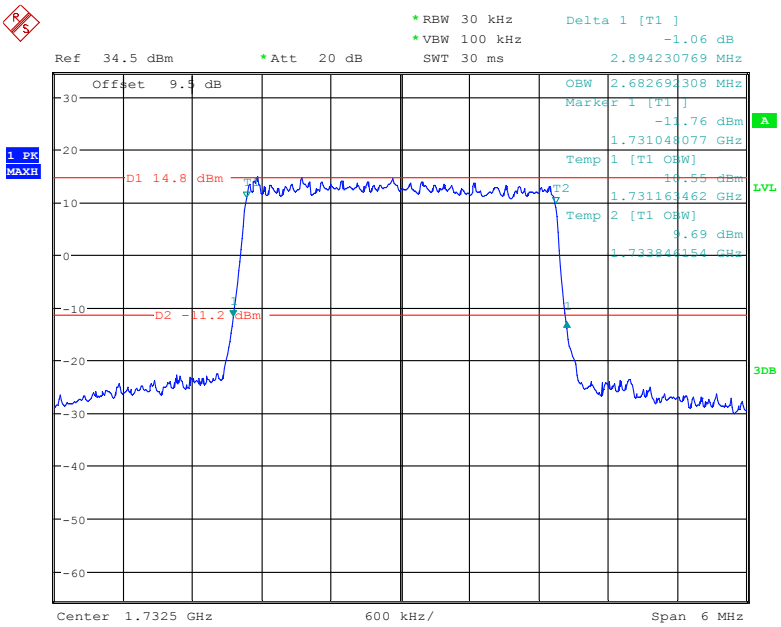
Date: 26.MAY.2019 14:38:13

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



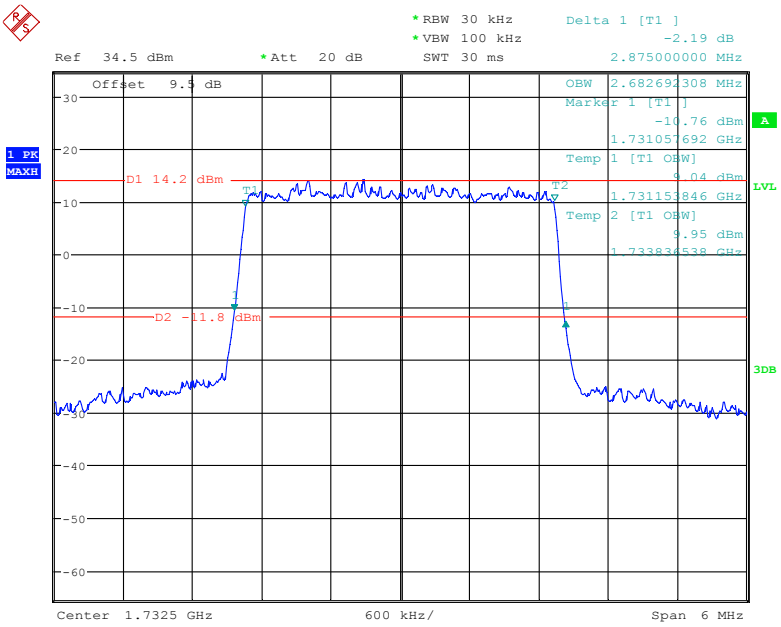
Date: 26.MAY.2019 14:36:56

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



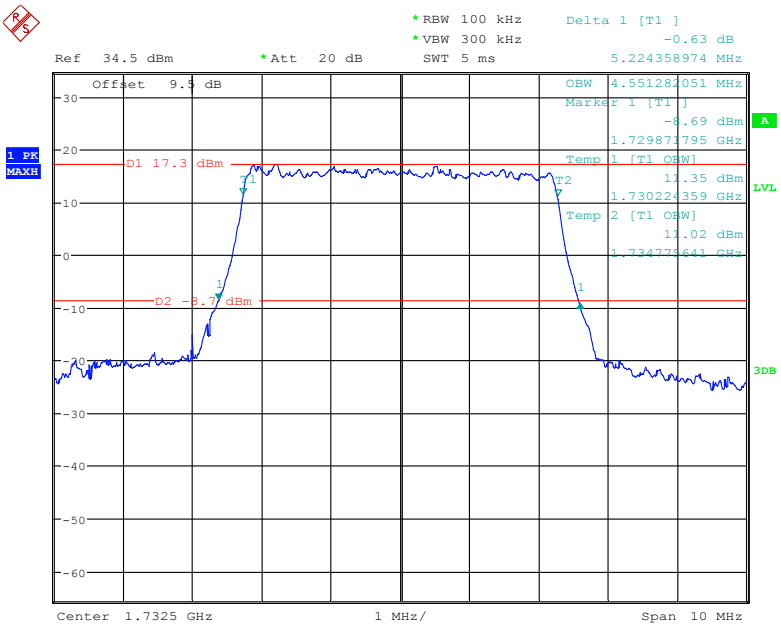
Date: 26.MAY.2019 14:40:59

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



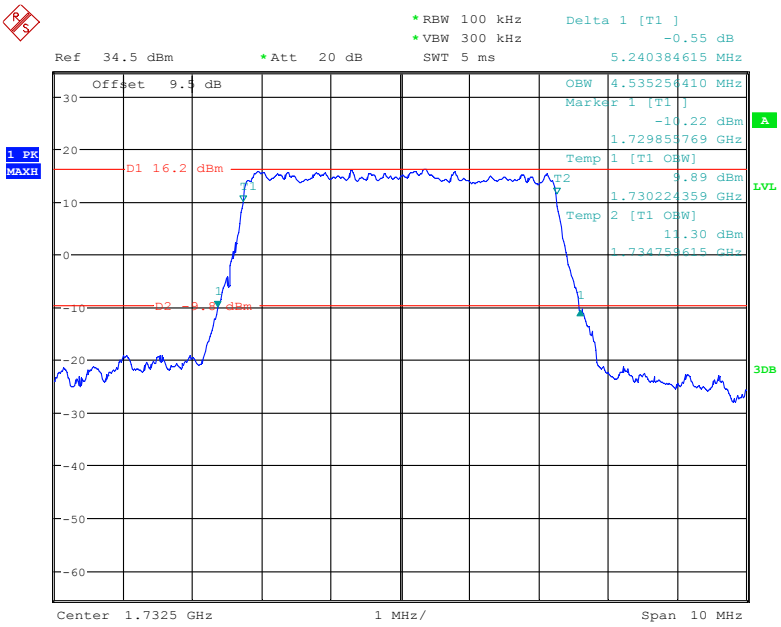
Date: 26.MAY.2019 14:39:32

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



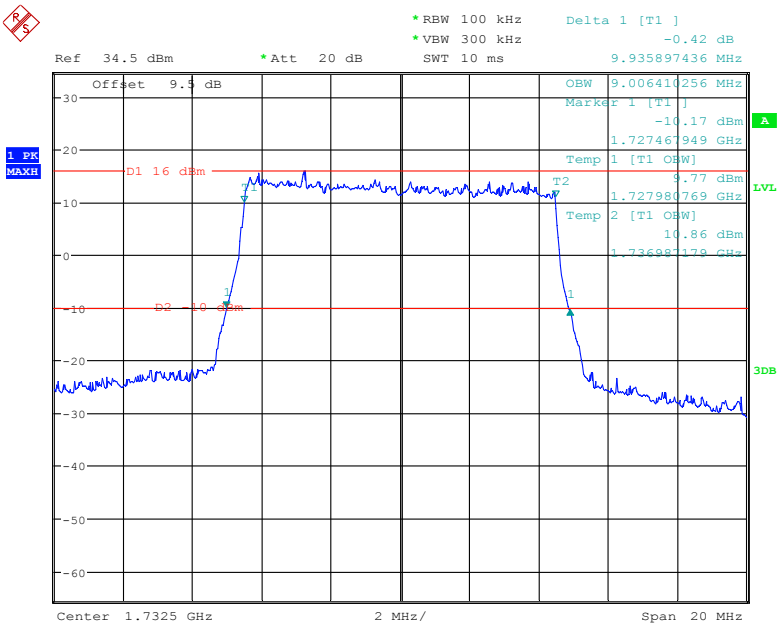
Date: 26.MAY.2019 14:44:19

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



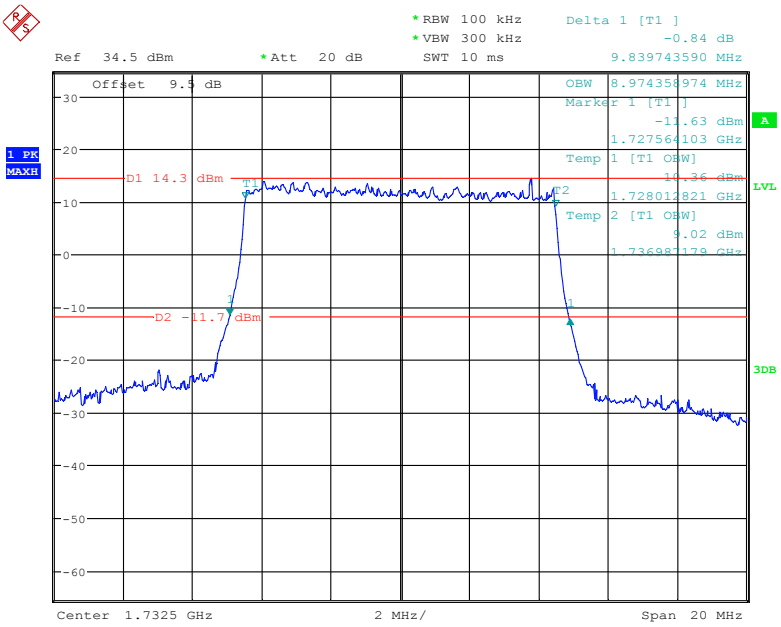
Date: 26.MAY.2019 14:42:32

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



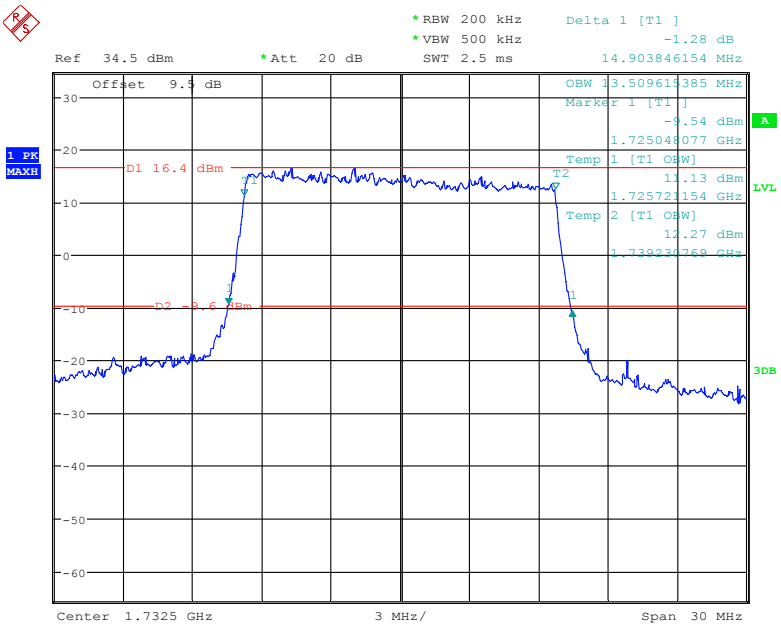
Date: 26.MAY.2019 14:47:02

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



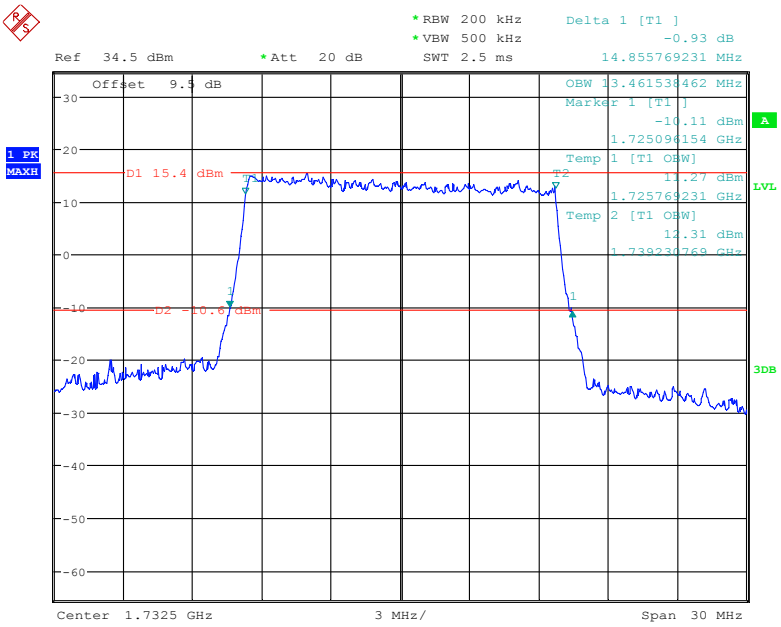
Date: 26.MAY.2019 14:46:11

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



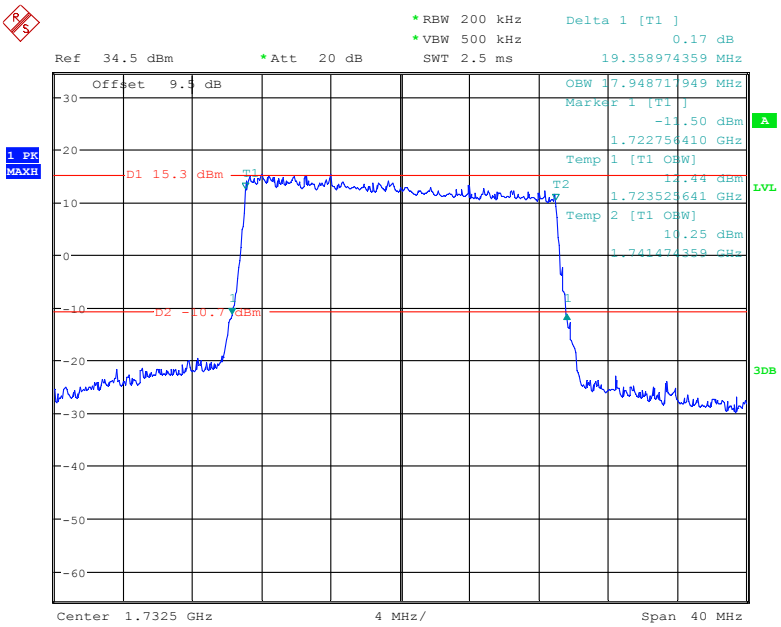
Date: 26.MAY.2019 14:50:10

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



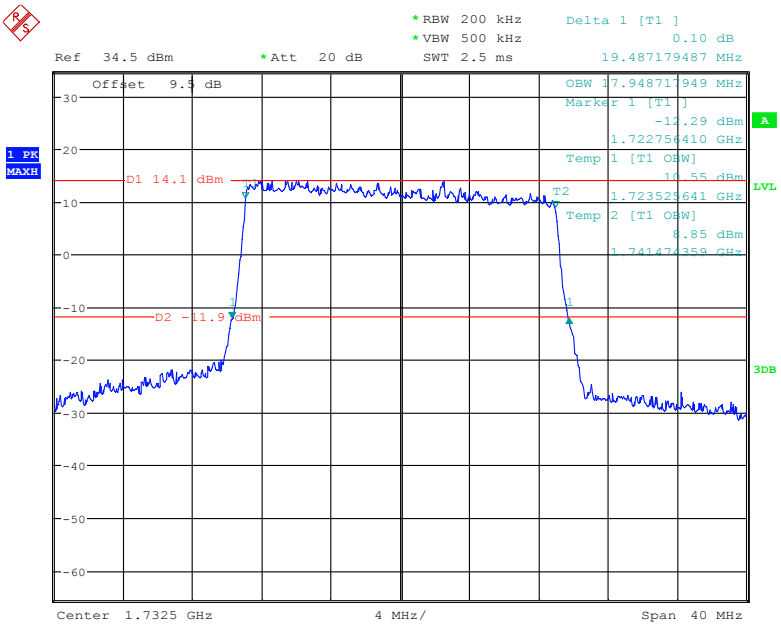
Date: 26.MAY.2019 14:48:37

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



Date: 26.MAY.2019 14:52:38

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

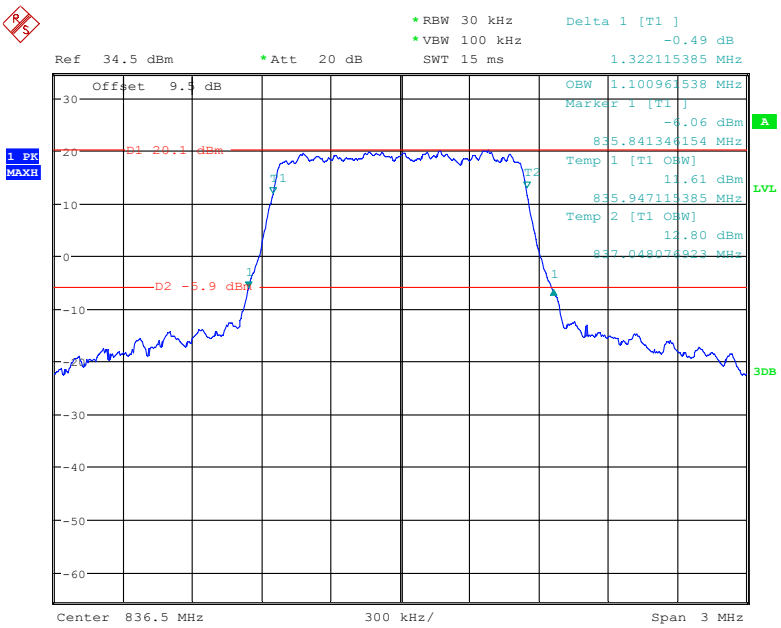


Date: 26.MAY.2019 14:51:25

LTE Band 5: (Middle Channel)

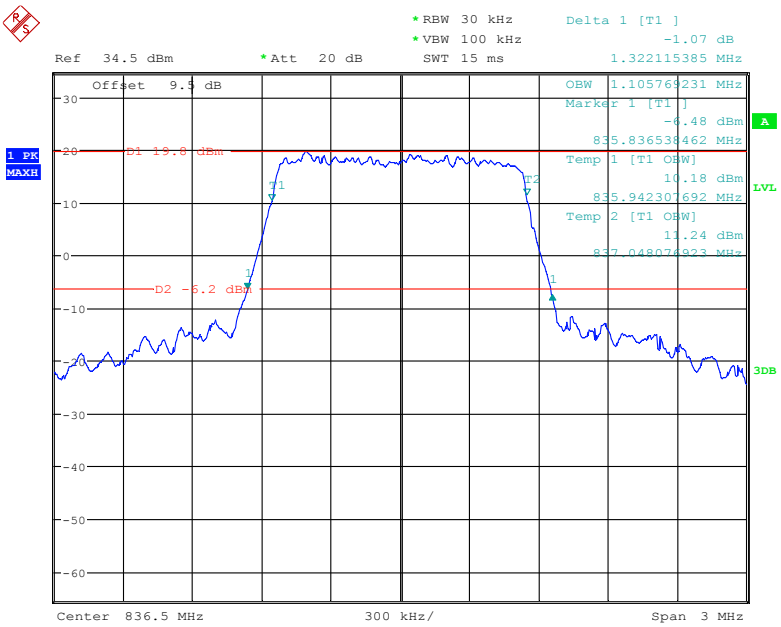
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.10	1.32
	16QAM	1.11	1.32
3.0	QPSK	2.68	2.89
	16QAM	2.68	2.88
5.0	QPSK	4.55	5.22
	16QAM	4.52	5.24
10.0	QPSK	8.97	9.97
	16QAM	8.97	9.84

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



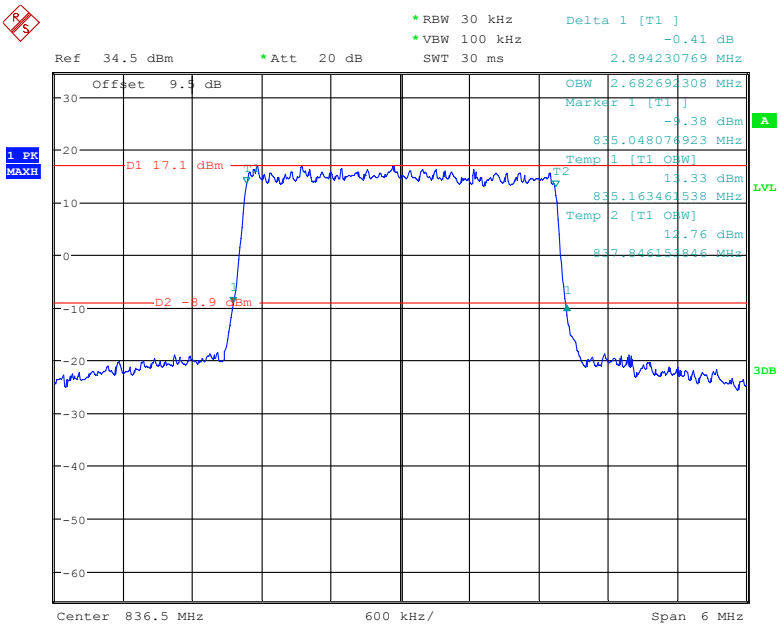
Date: 26.MAY.2019 14:55:00

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



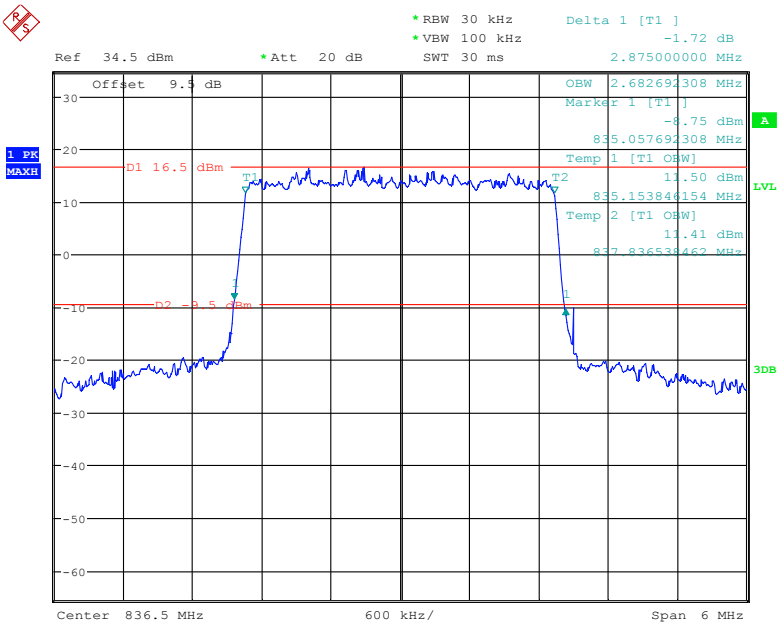
Date: 26.MAY.2019 14:56:33

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



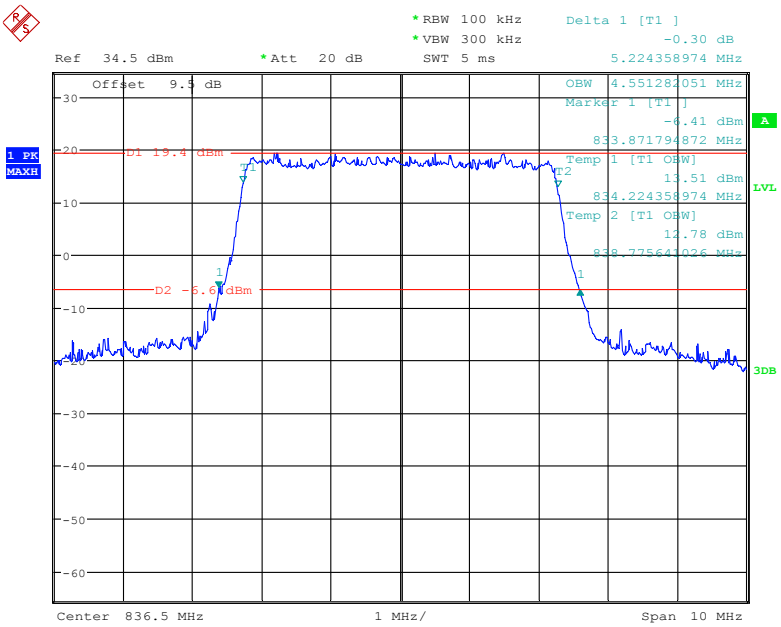
Date: 26.MAY.2019 14:58:00

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



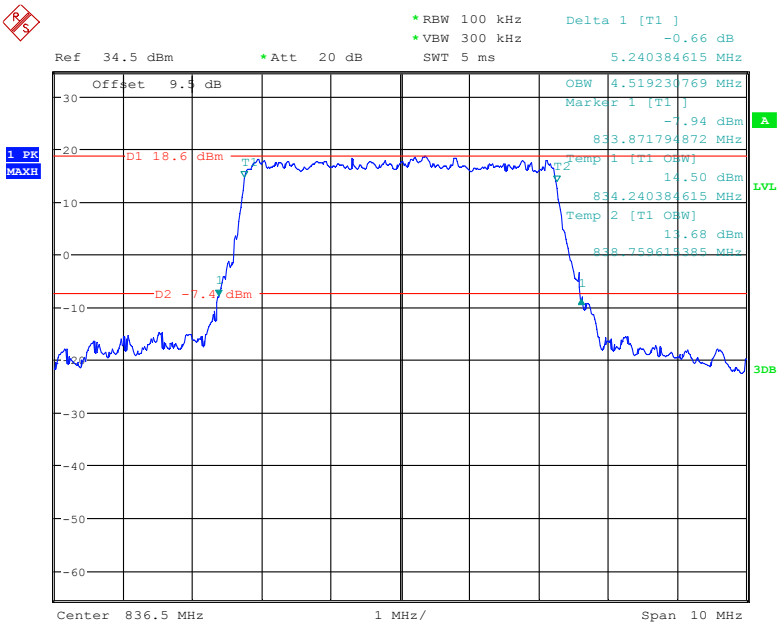
Date: 26.MAY.2019 14:59:29

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



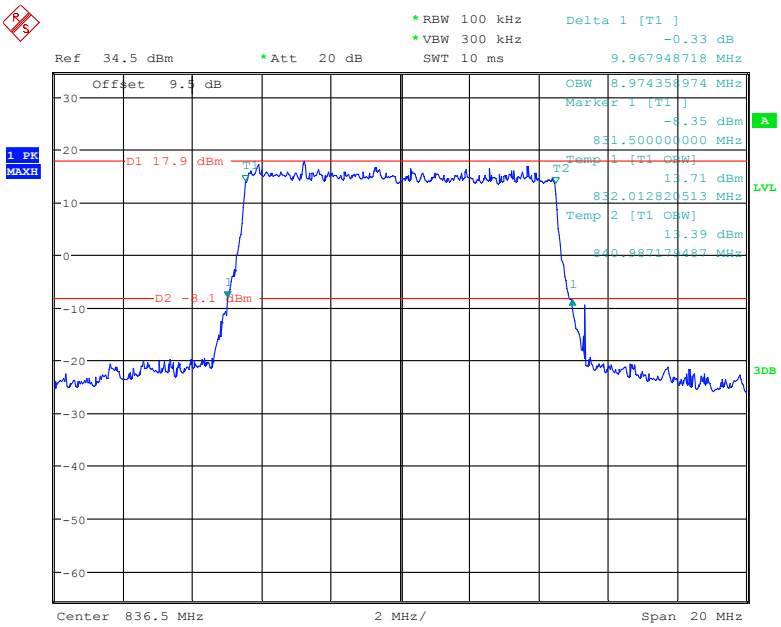
Date: 26.MAY.2019 15:00:37

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



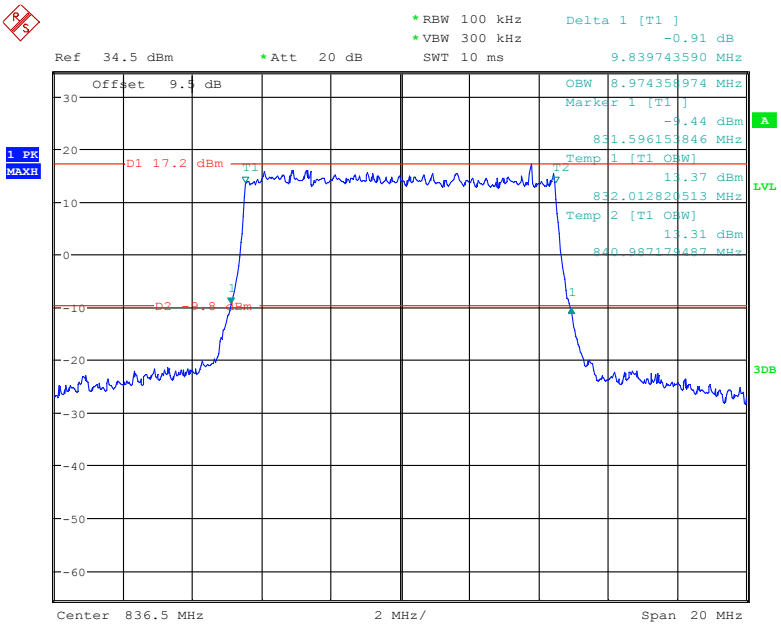
Date: 26.MAY.2019 15:02:45

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



Date: 26.MAY.2019 15:04:05

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

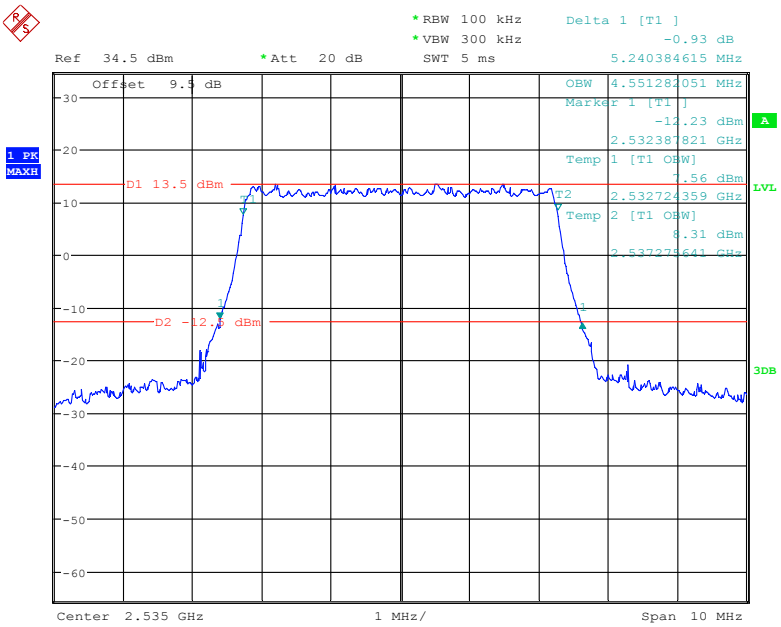


Date: 26.MAY.2019 15:06:37

LTE Band 7: (Middle Channel)

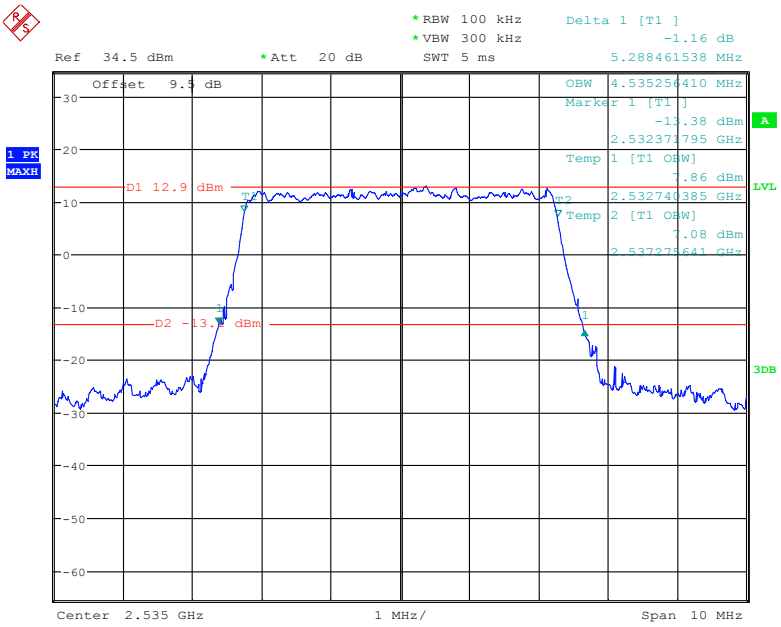
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.55	5.24
	16QAM	4.54	5.29
10.0	QPSK	8.97	10.03
	16QAM	8.97	9.82
15.0	QPSK	13.51	14.95
	16QAM	13.46	15.00
20.0	QPSK	17.95	19.49
	16QAM	17.89	19.55

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



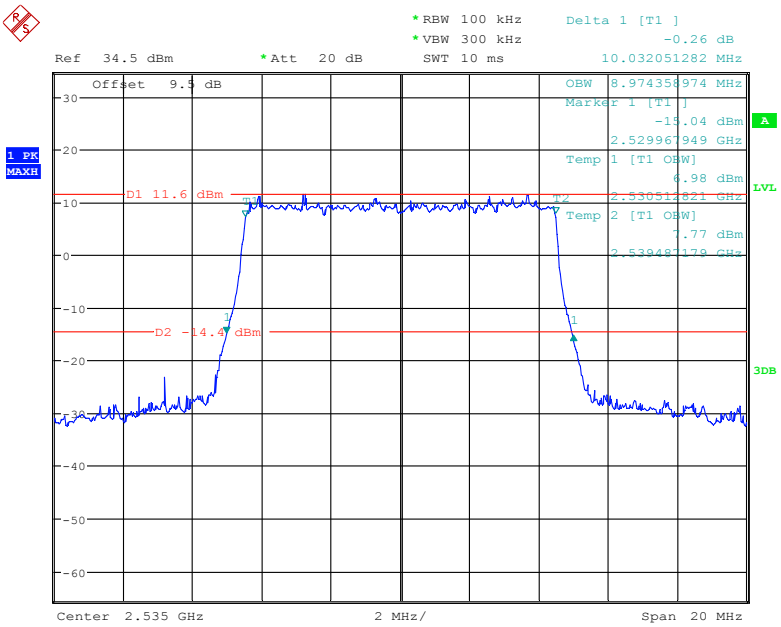
Date: 26.MAY.2019 15:25:50

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



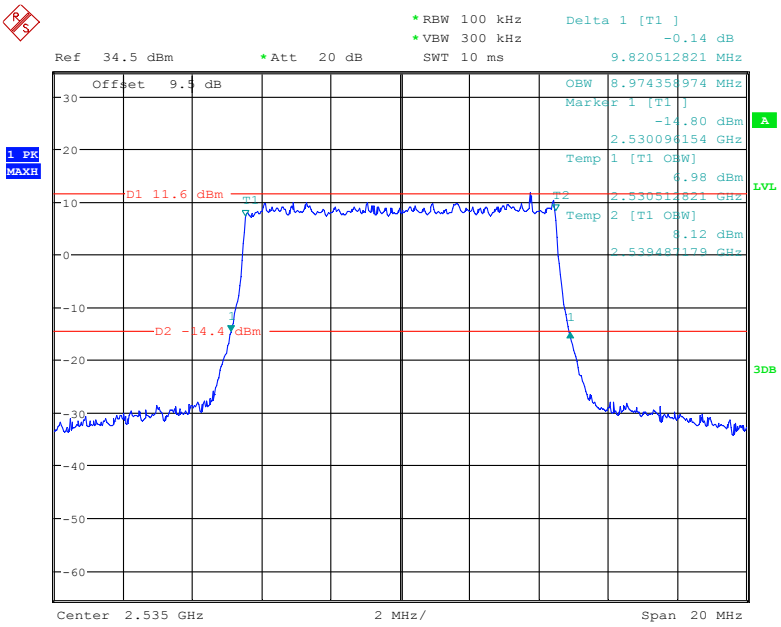
Date: 26.MAY.2019 15:22:20

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



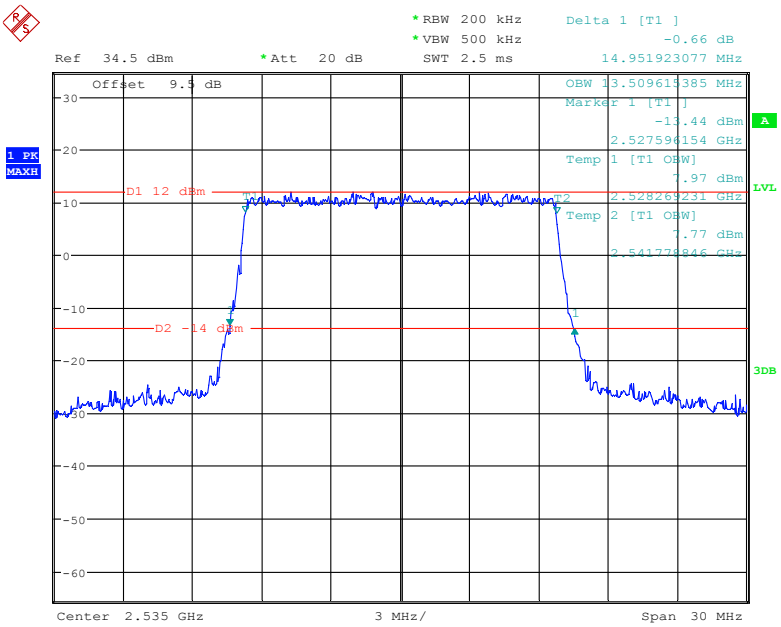
Date: 26.MAY.2019 15:30:08

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



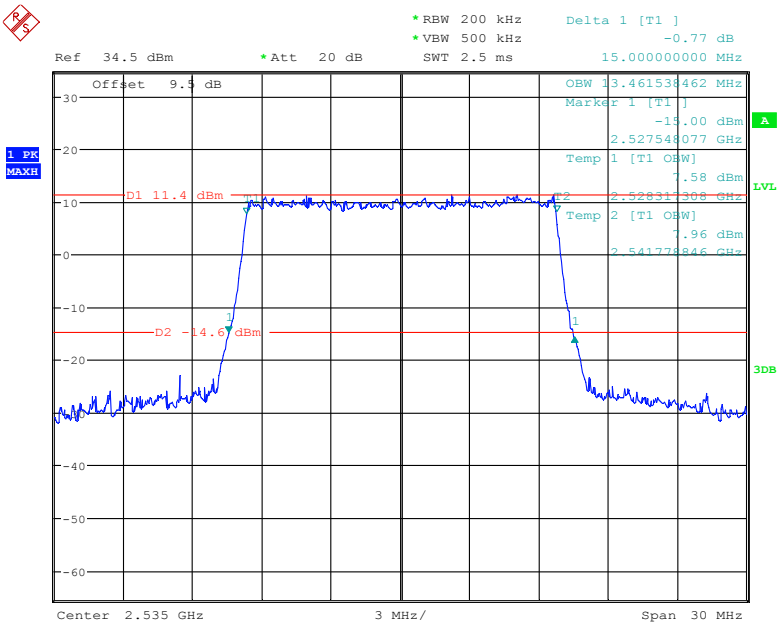
Date: 26.MAY.2019 15:27:30

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



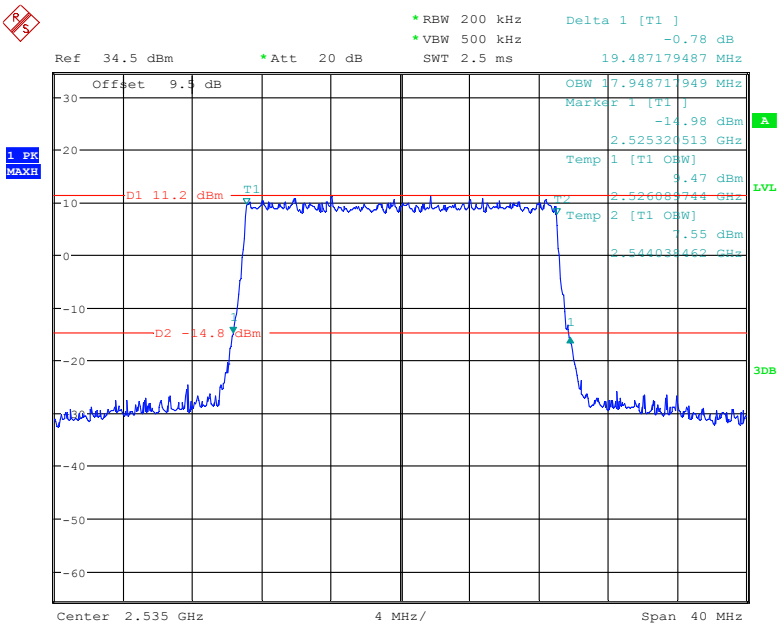
Date: 26.MAY.2019 15:31:33

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



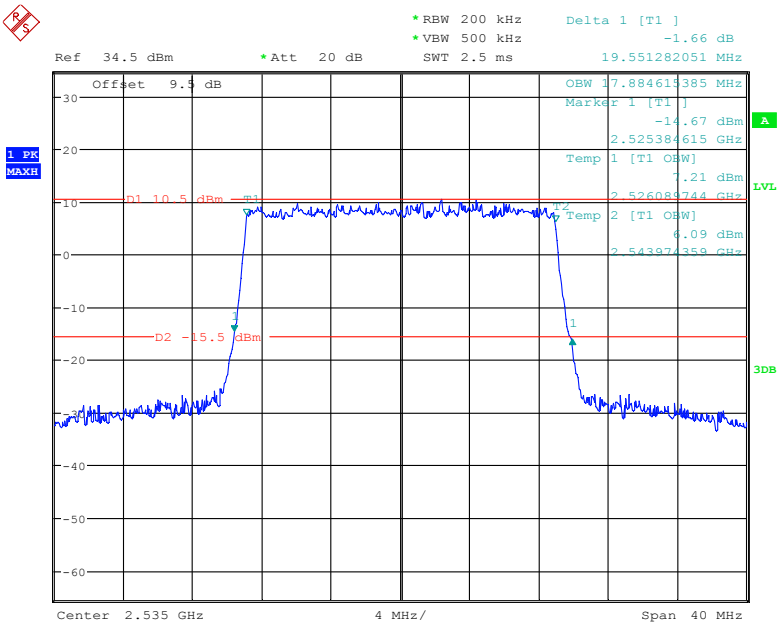
Date: 26.MAY.2019 15:33:29

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



Date: 26.MAY.2019 15:35:54

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

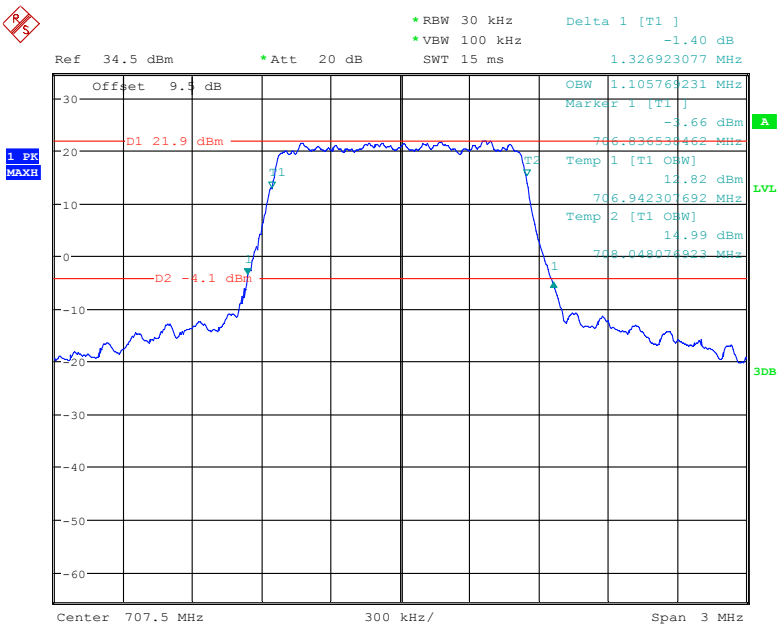


Date: 26.MAY.2019 15:37:24

LTE Band 12: (Middle Channel)

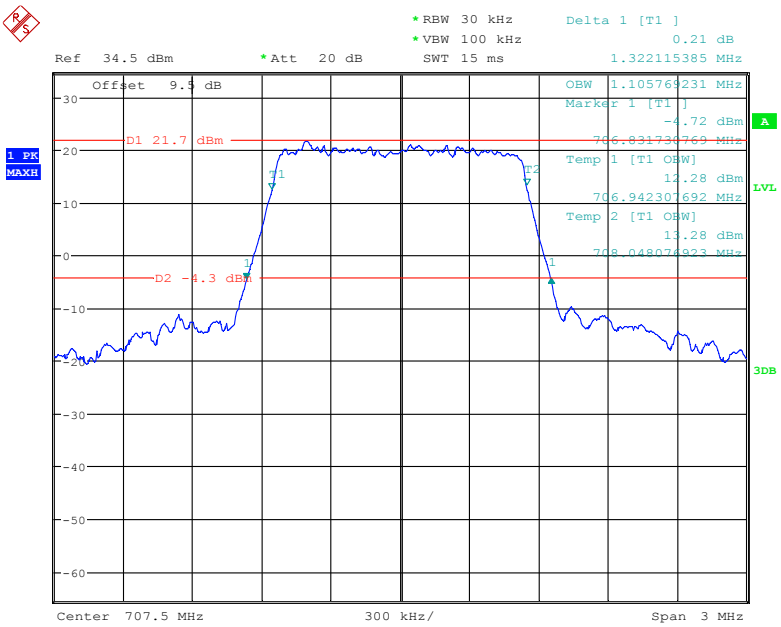
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.11	1.33
	16QAM	1.11	1.32
3.0	QPSK	2.68	2.88
	16QAM	2.68	2.88
5.0	QPSK	4.57	5.46
	16QAM	4.55	5.26
10.0	QPSK	9.01	10.00
	16QAM	8.97	9.74

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



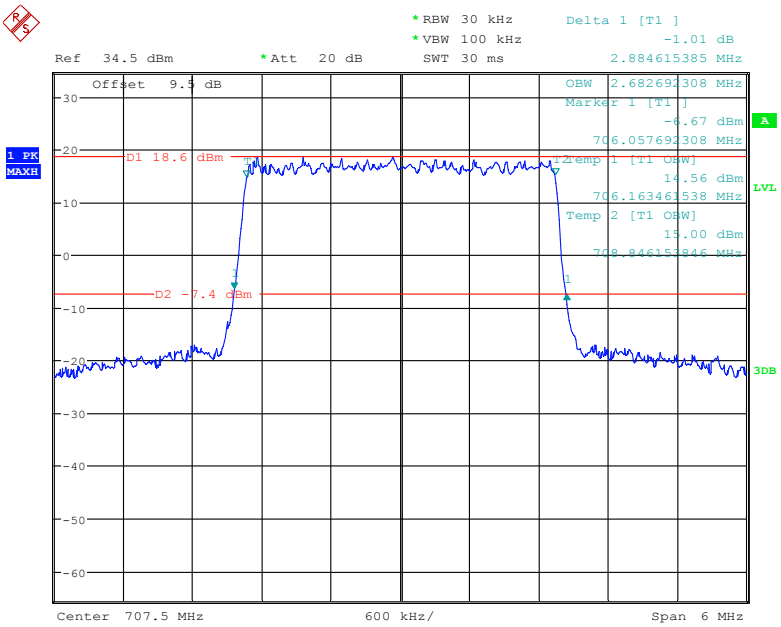
Date: 26.MAY.2019 15:42:15

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



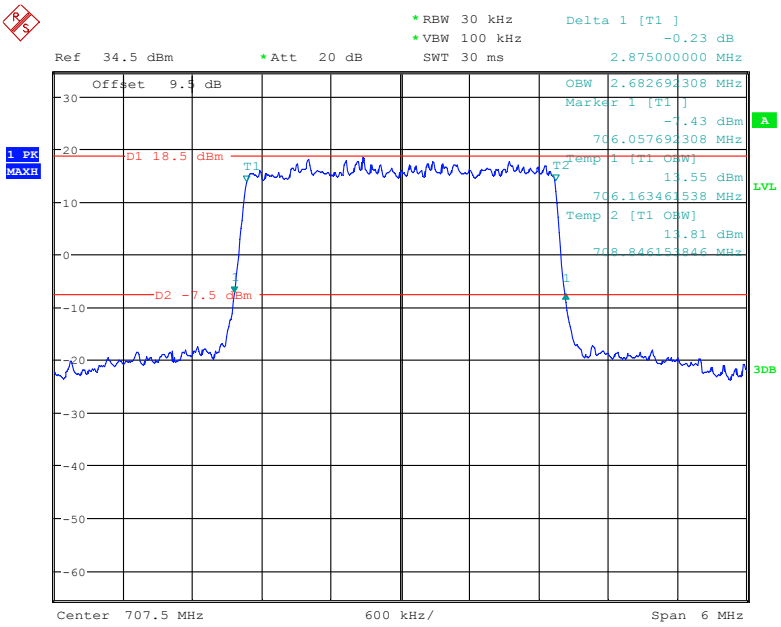
Date: 26.MAY.2019 15:40:21

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



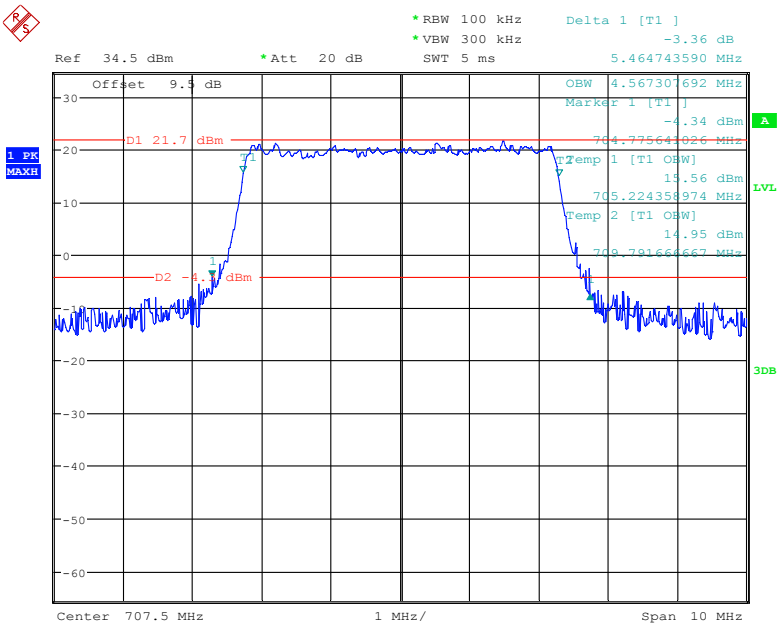
Date: 26.MAY.2019 15:46:35

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



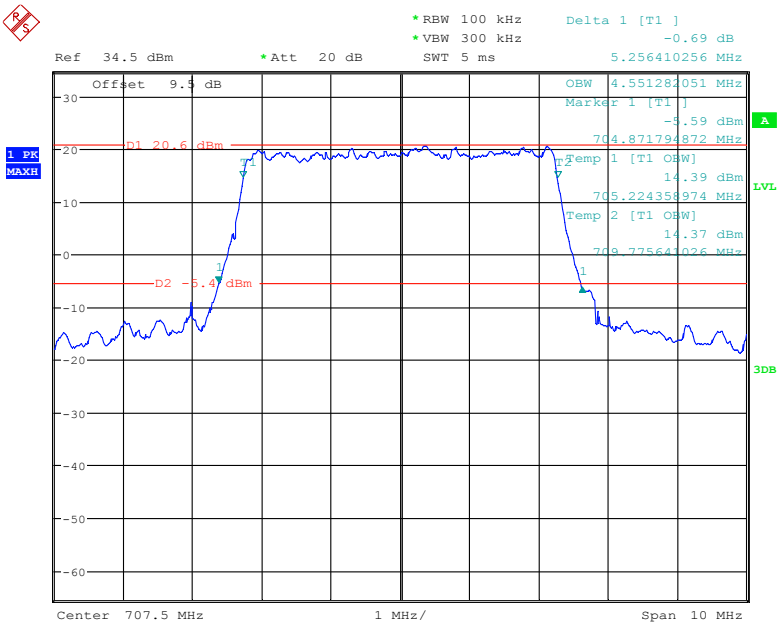
Date: 26.MAY.2019 15:43:44

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



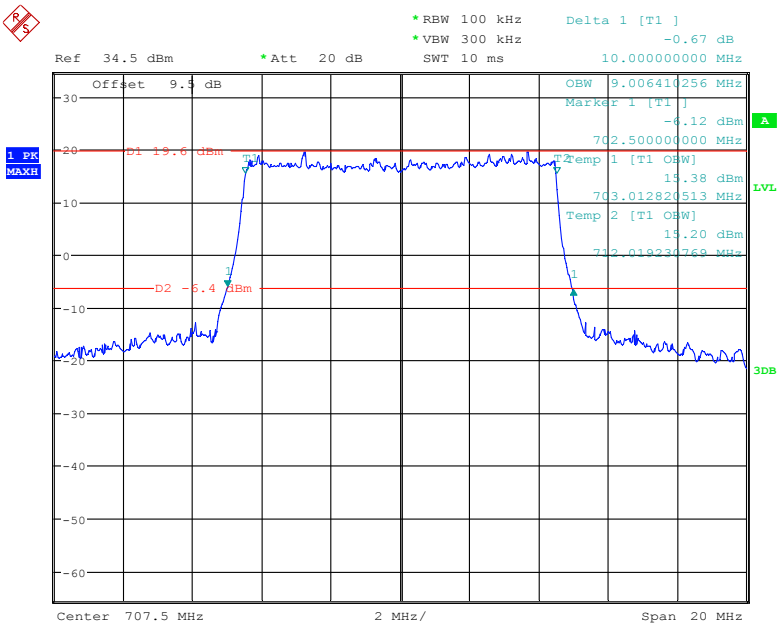
Date: 26.MAY.2019 15:50:38

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



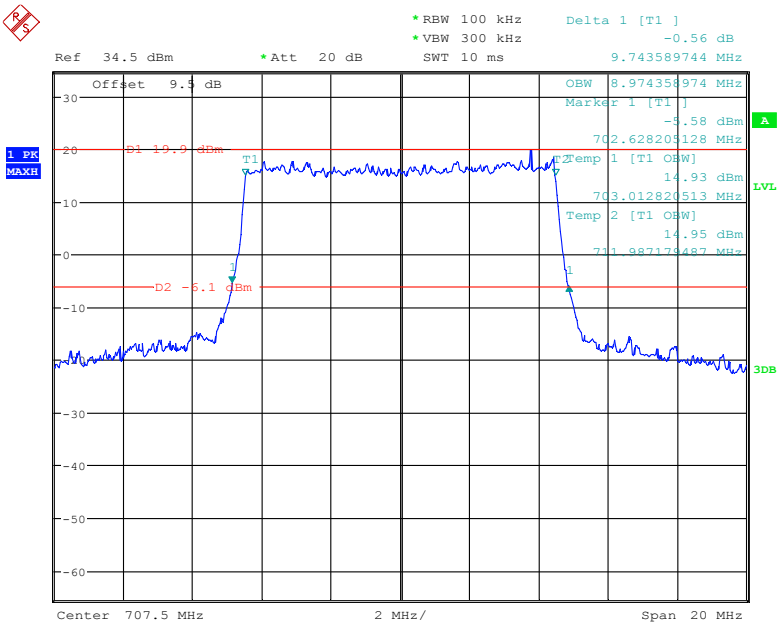
Date: 26.MAY.2019 15:53:48

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



Date: 26.MAY.2019 15:55:38

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

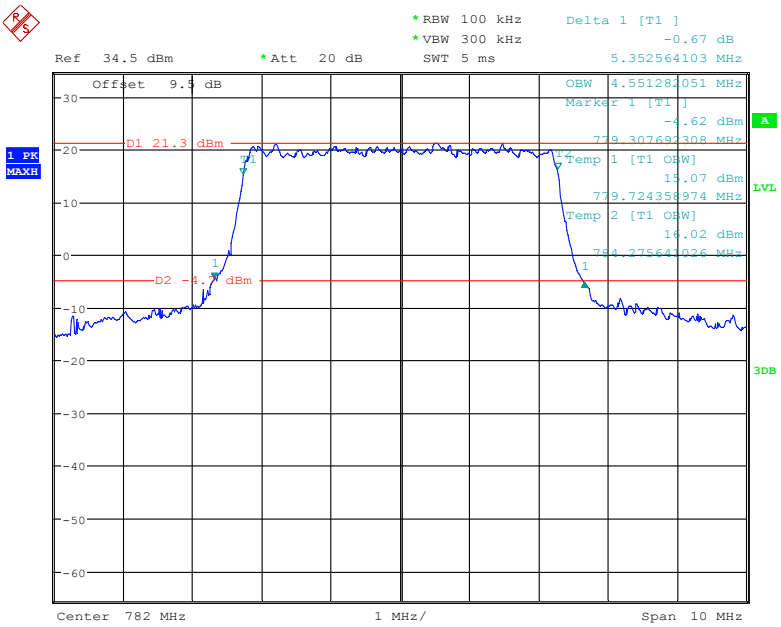


Date: 26.MAY.2019 15:57:21

LTE Band 13: (Middle Channel)

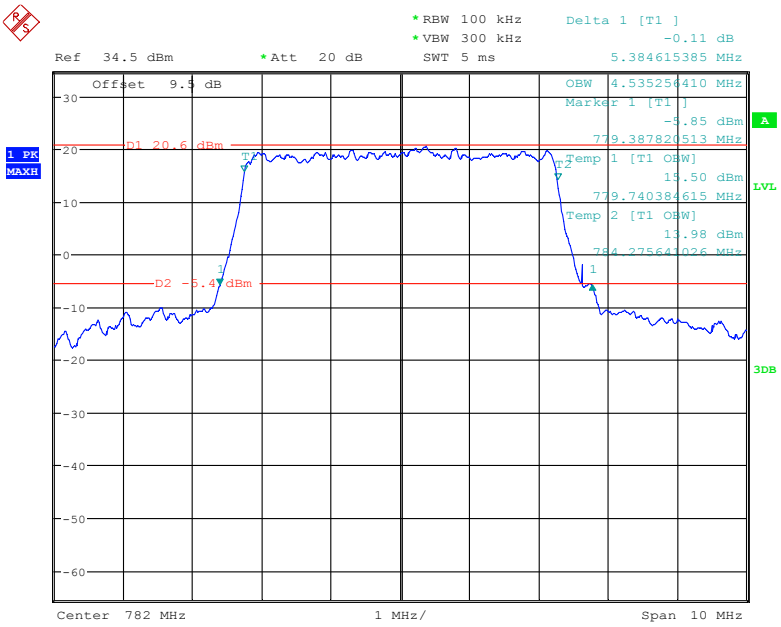
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.55	5.35
	16QAM	4.54	5.38
10.0	QPSK	8.97	9.90
	16QAM	8.97	9.81

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



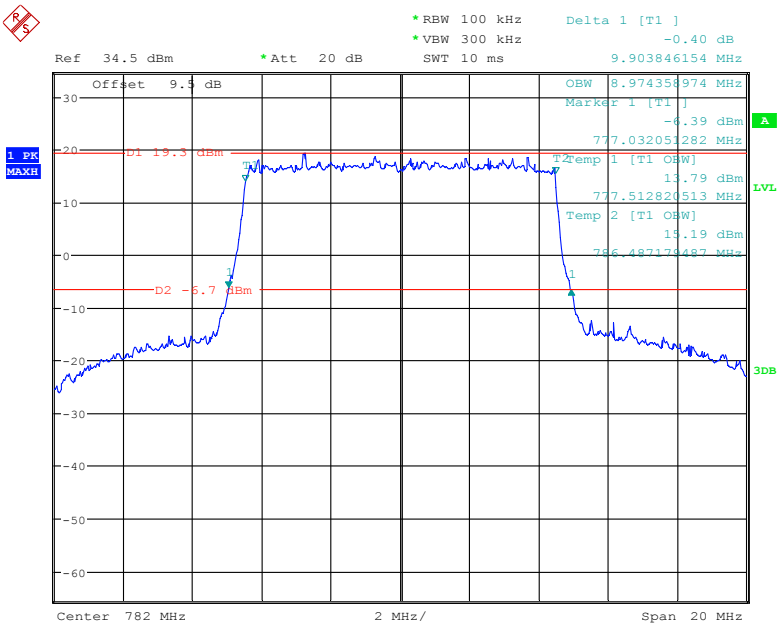
Date: 26.MAY.2019 16:01:27

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



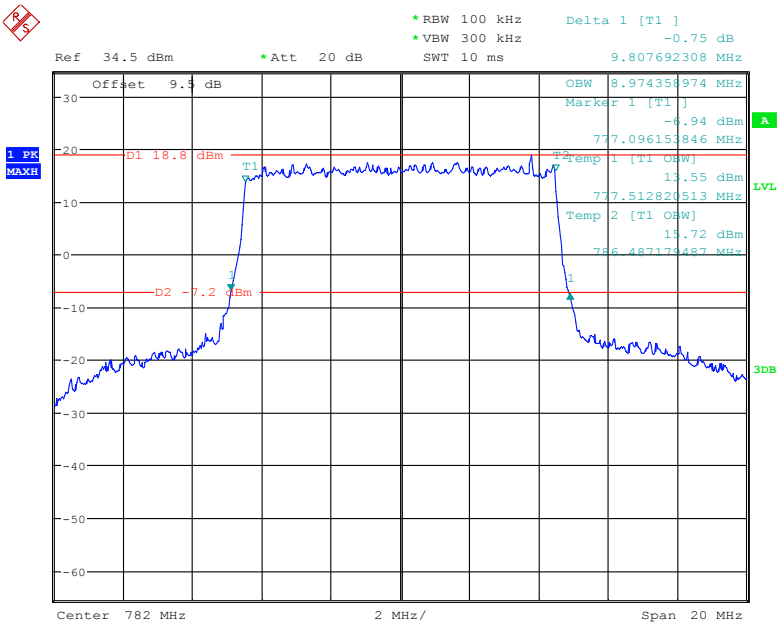
Date: 26.MAY.2019 15:59:54

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



Date: 26.MAY.2019 16:05:46

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

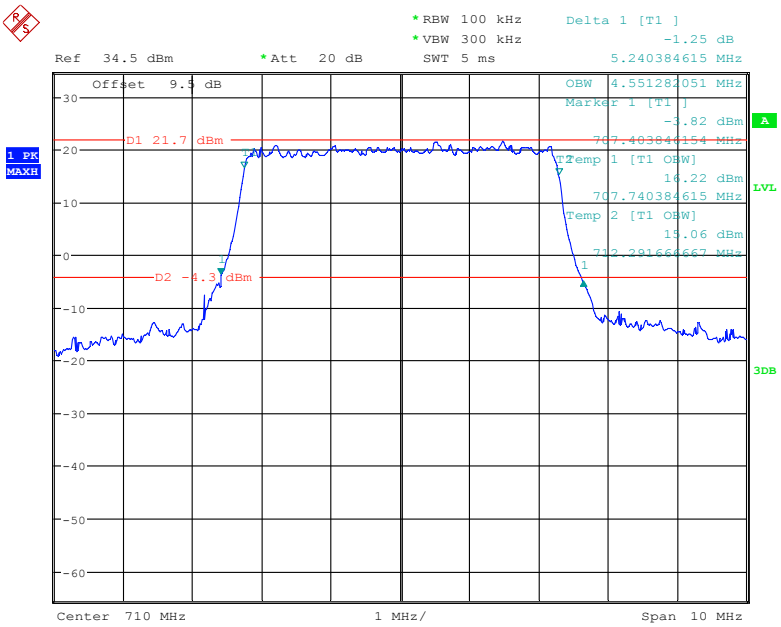


Date: 26.MAY.2019 16:03:06

LTE Band 17: (Middle Channel)

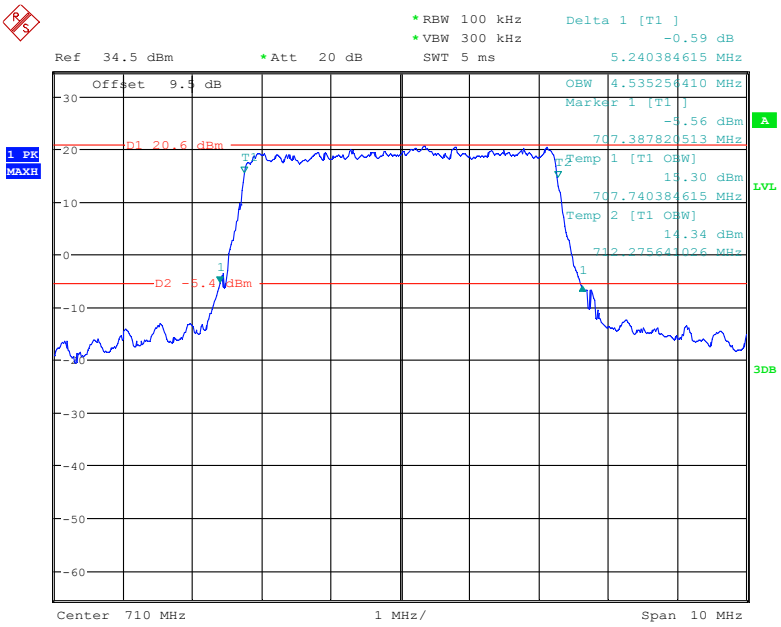
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.55	5.24
	16QAM	4.54	5.24
10.0	QPSK	8.97	10.00
	16QAM	8.97	9.74

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



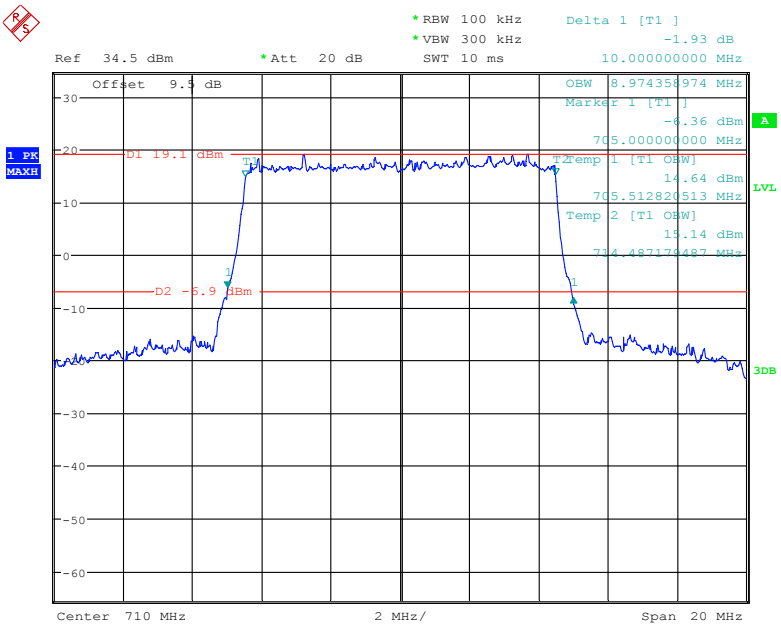
Date: 26.MAY.2019 16:07:36

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



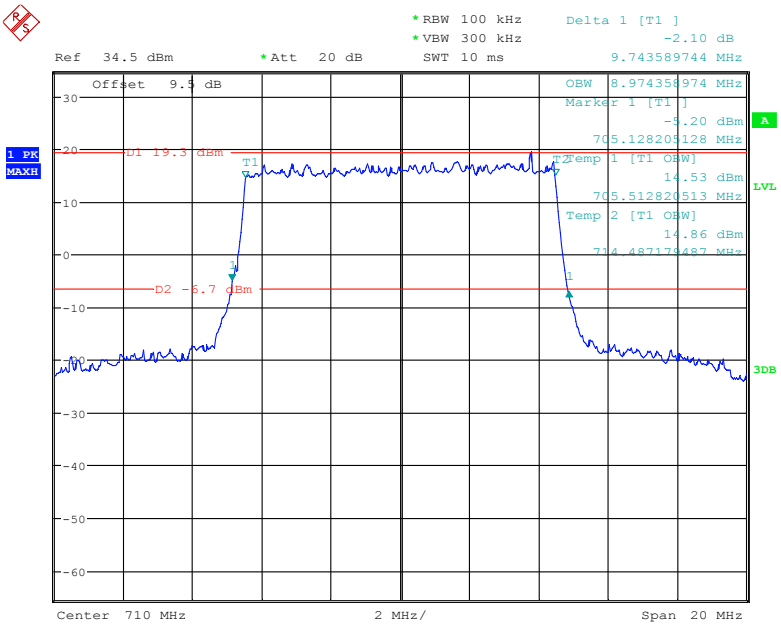
Date: 26.MAY.2019 16:09:28

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



Date: 26.MAY.2019 16:10:54

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



Date: 26.MAY.2019 16:13:08

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

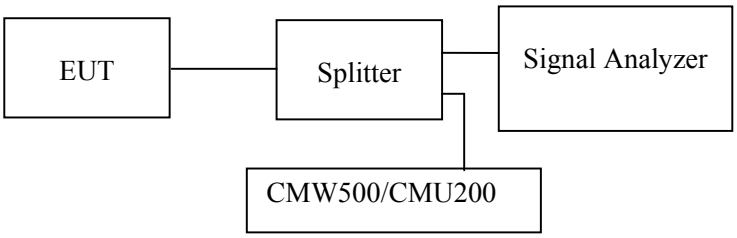
Applicable Standard

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

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:	50~60 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by James Fu & George Zhong from 2019-05-26 to 2019-06-20.

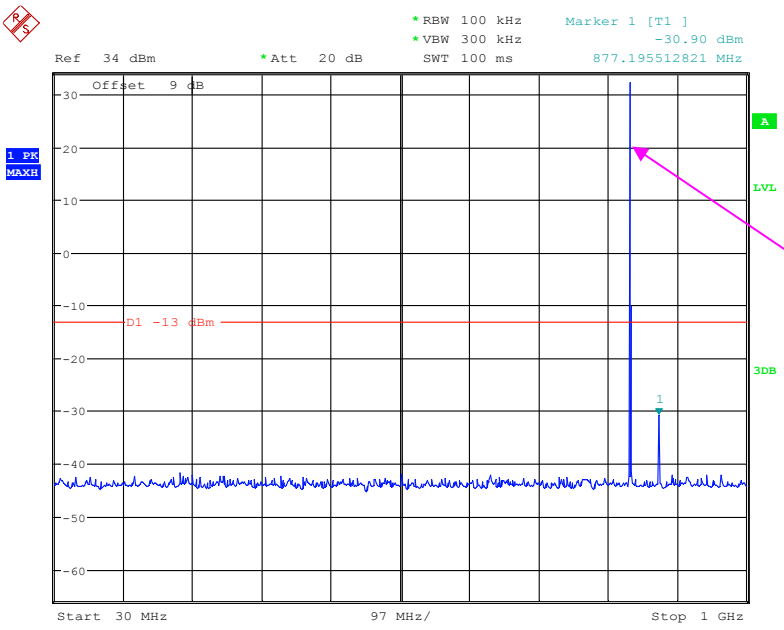
Test result: Compliance.

EUT operation mode: transmitting

Please refer to the following plots.

Cellular Band (Part 22H)

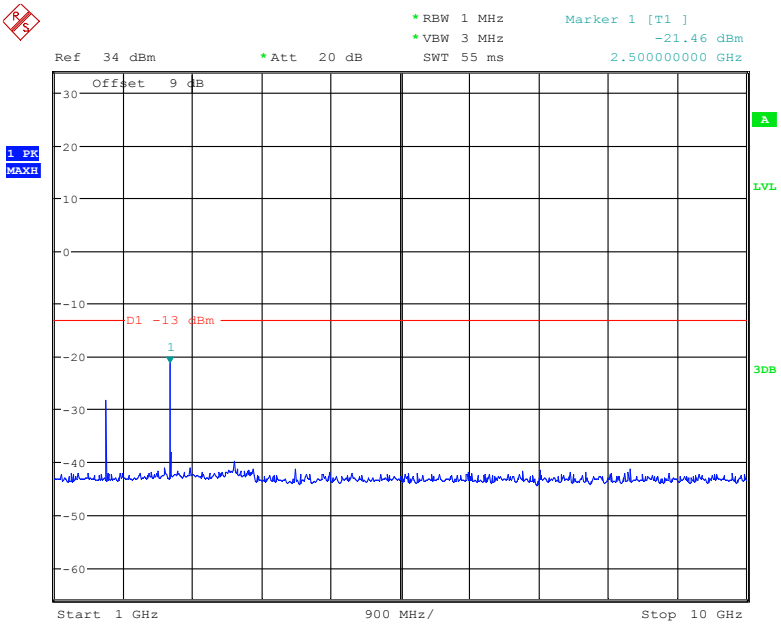
30 MHz – 1 GHz (GSM Mode)



Fundamental test

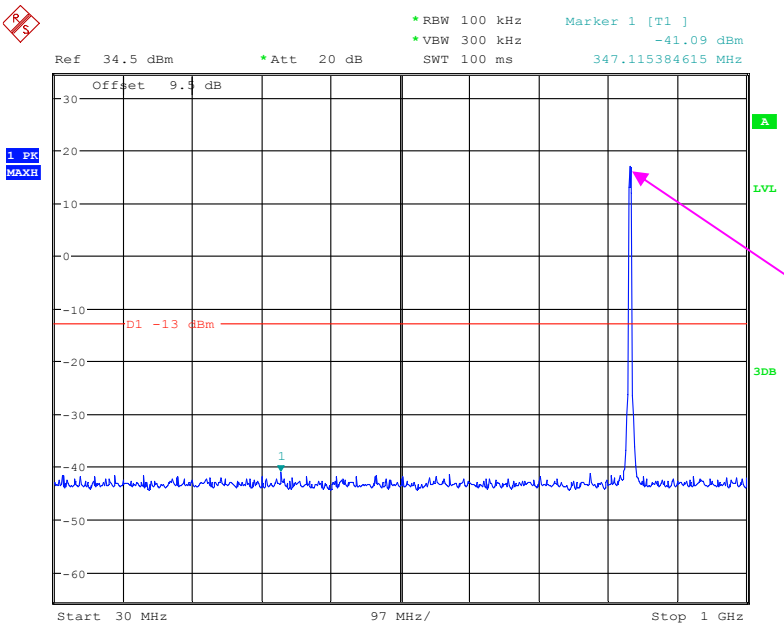
Date: 30.MAY.2019 14:25:16

1 GHz – 10 GHz (GSM Mode)



Date: 30.MAY.2019 14:23:36

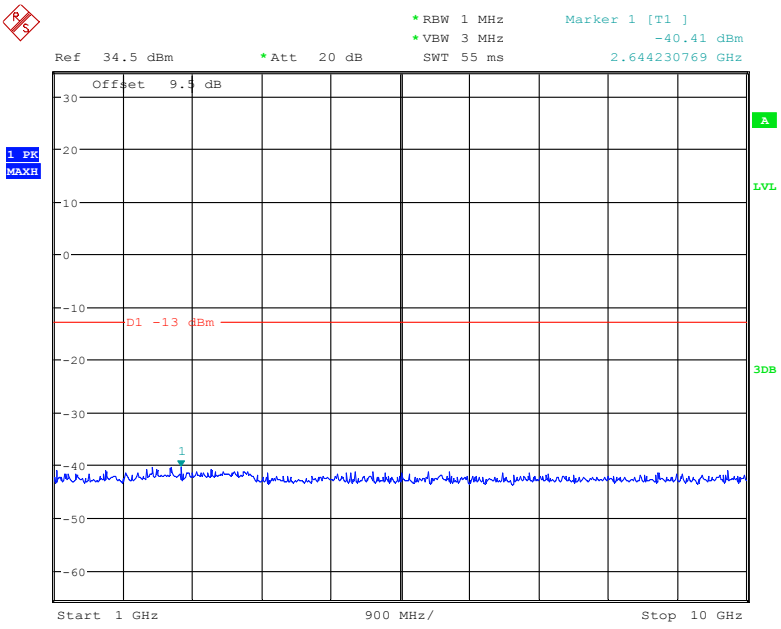
30 MHz – 1 GHz (WCDMA Mode)



Fundamental test

Date: 30.MAY.2019 16:30:34

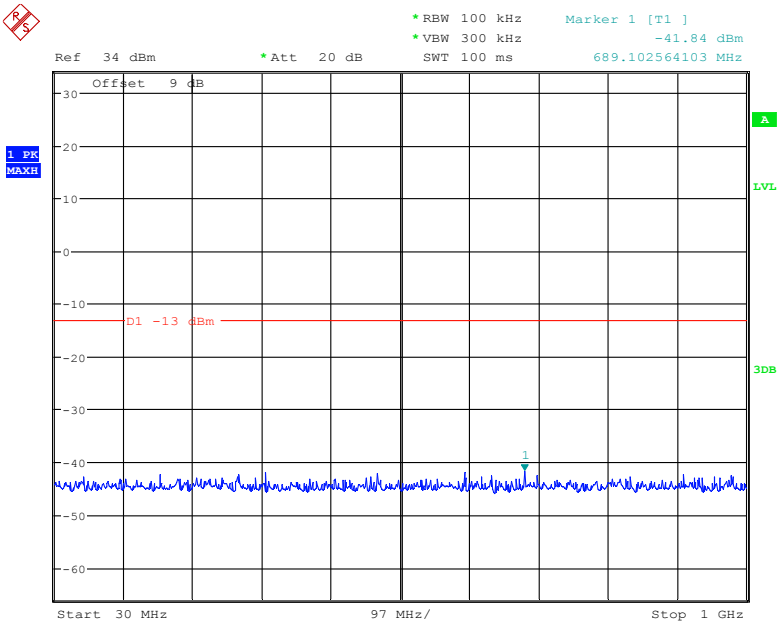
1 GHz – 10 GHz (WCDMA Mode)



Date: 30.MAY.2019 16:31:24

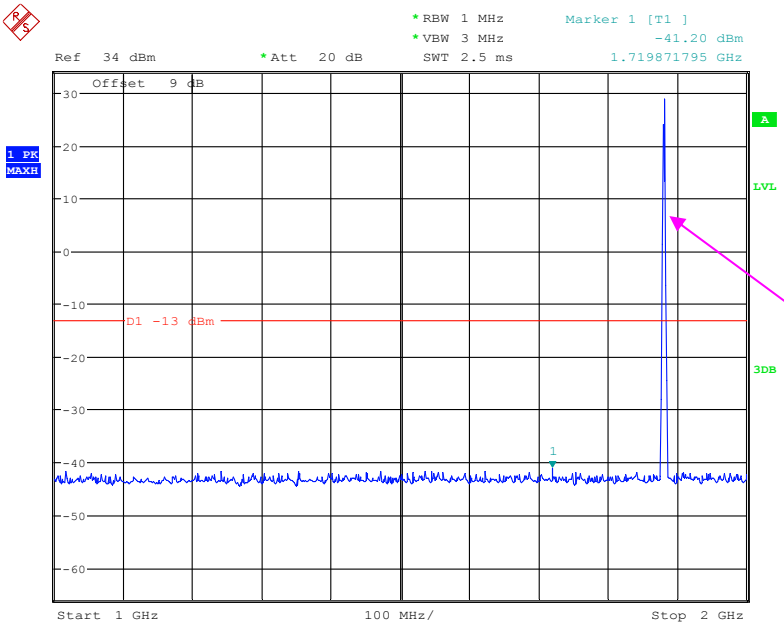
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)



Date: 30.MAY.2019 14:30:44

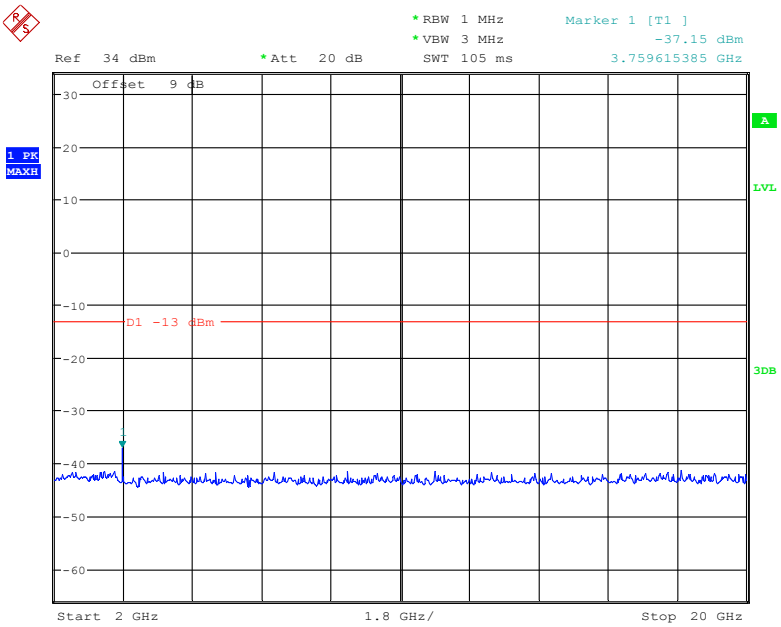
1 GHz – 2 GHz (GSM Mode)



Fundamental test

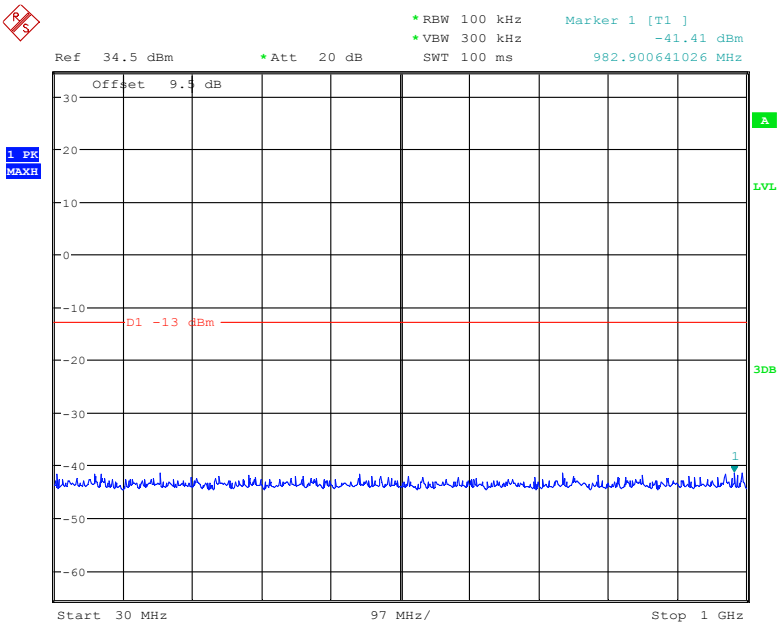
Date: 30.MAY.2019 14:31:39

2 GHz – 20 GHz (GSM Mode)



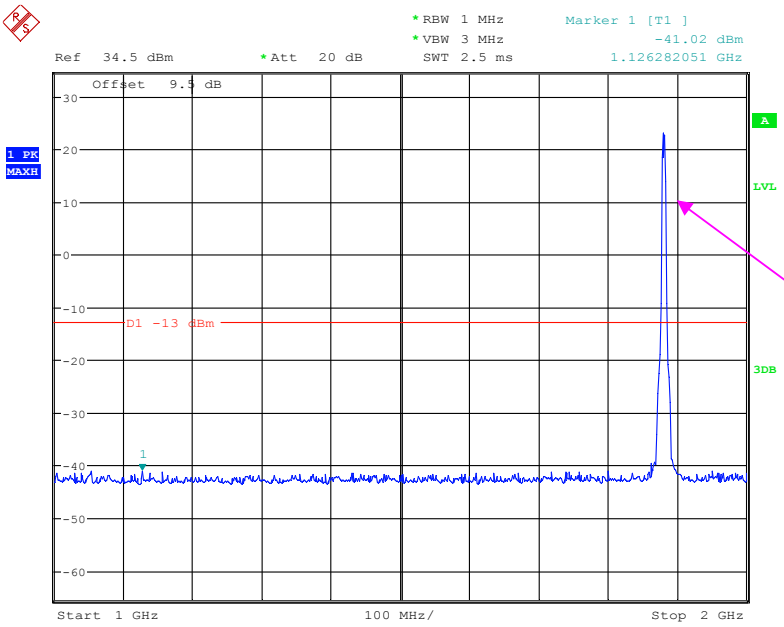
Date: 30.MAY.2019 14:32:16

30 MHz – 1 GHz (WCDMA Mode)



Date: 30.MAY.2019 16:00:54

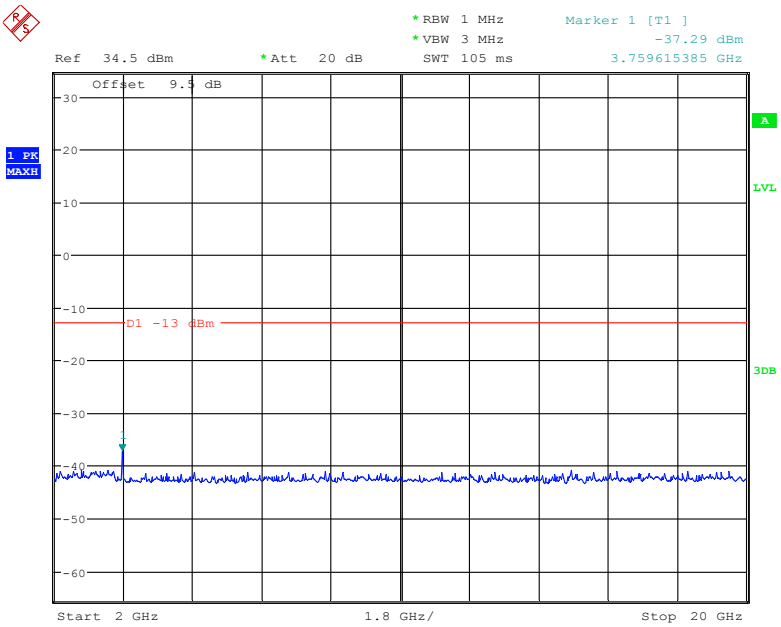
1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

Date: 30.MAY.2019 15:58:21

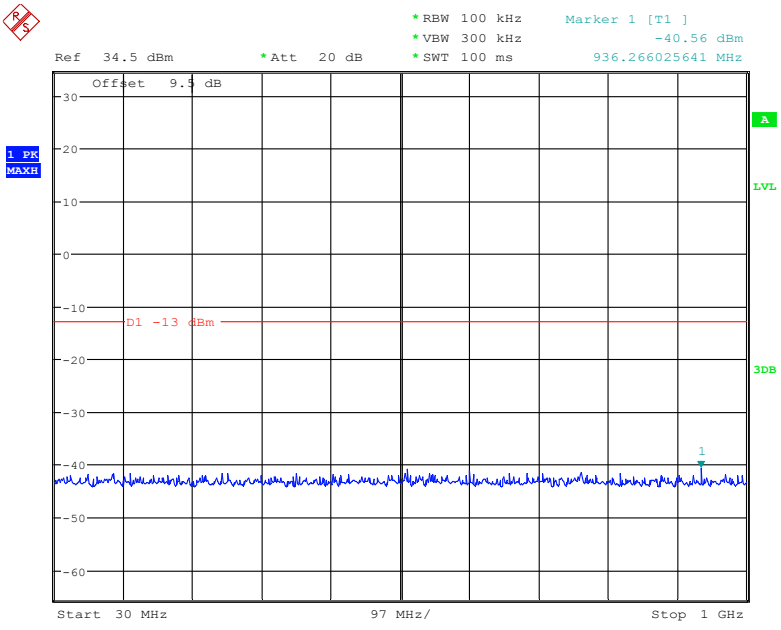
2 GHz – 20 GHz (WCDMA Mode)



Date: 30.MAY.2019 16:00:08

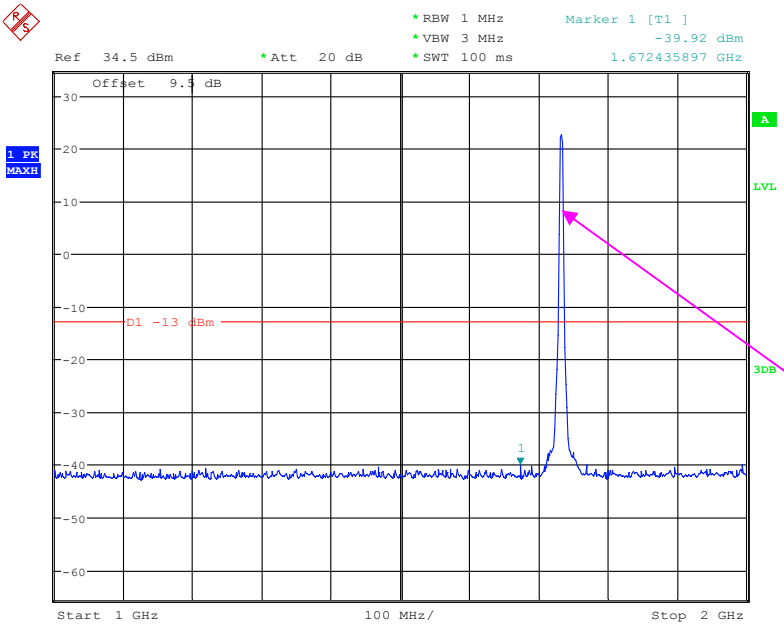
AWS Band (Part 27)

30 MHz – 1 GHz (WCDMA Mode)



Date: 30.MAY.2019 17:11:43

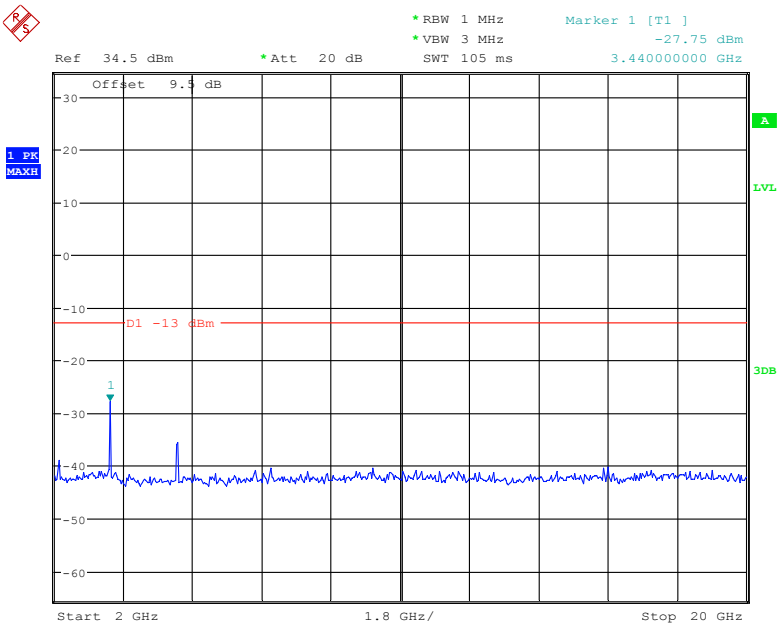
1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

Date: 30.MAY.2019 17:12:43

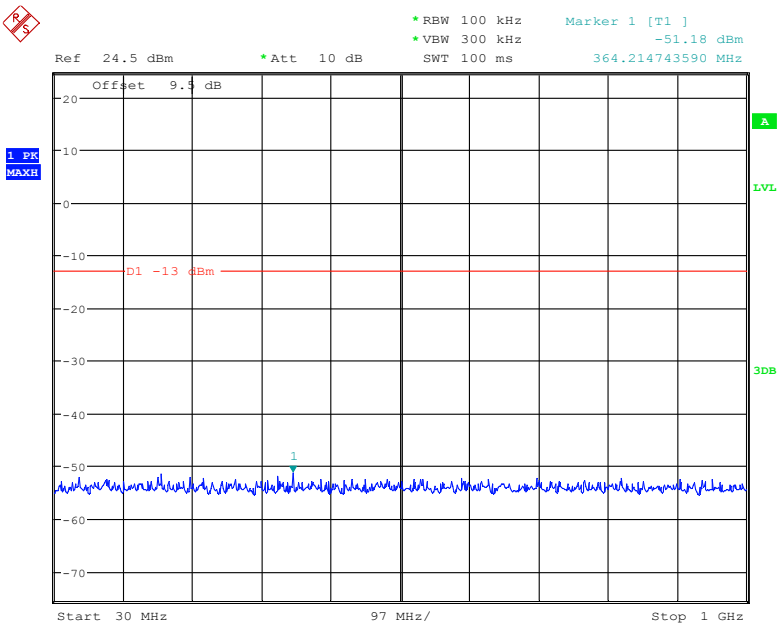
2 GHz – 20 GHz (WCDMA Mode)



Date: 18.JUN.2019 22:47:21

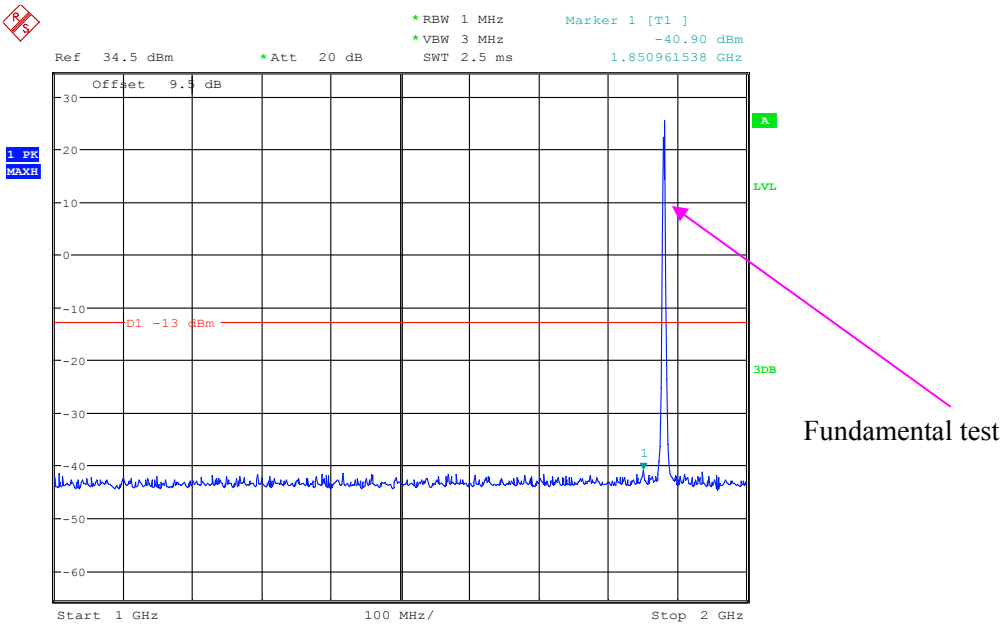
LTE Band 2:

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



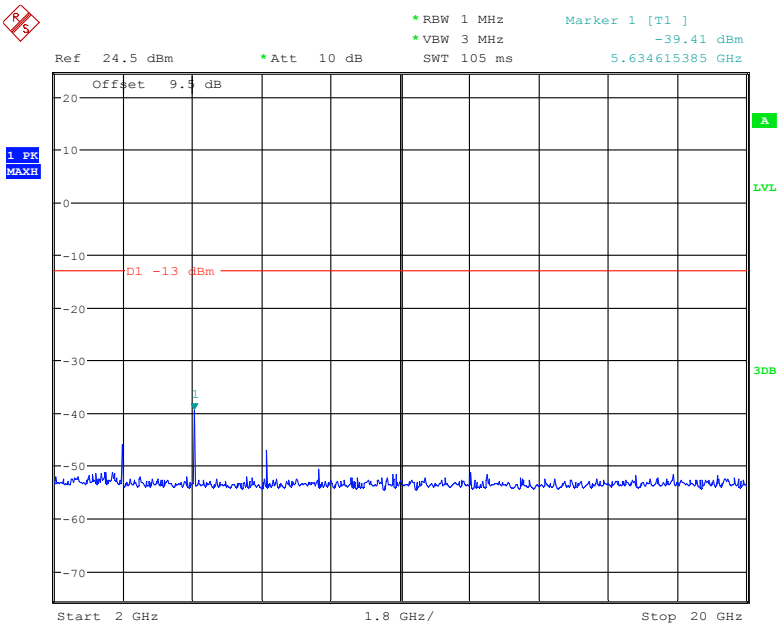
Date: 26.MAY.2019 17:38:29

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



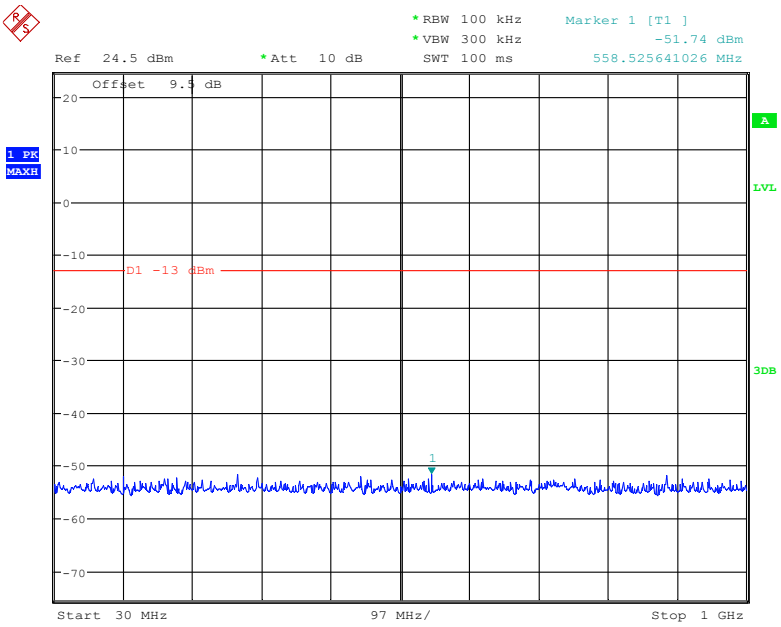
Date: 26.MAY.2019 17:38:56

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



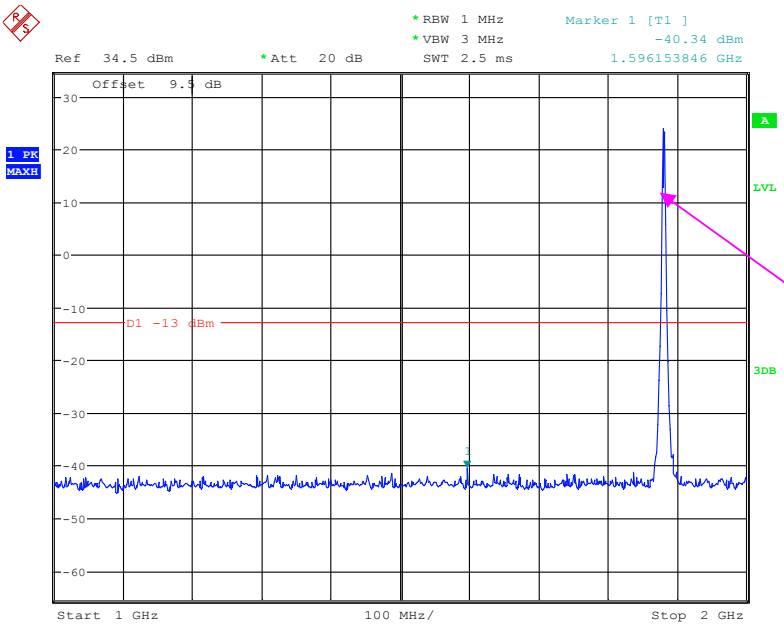
Date: 26.MAY.2019 17:42:13

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



Date: 26.MAY.2019 17:38:14

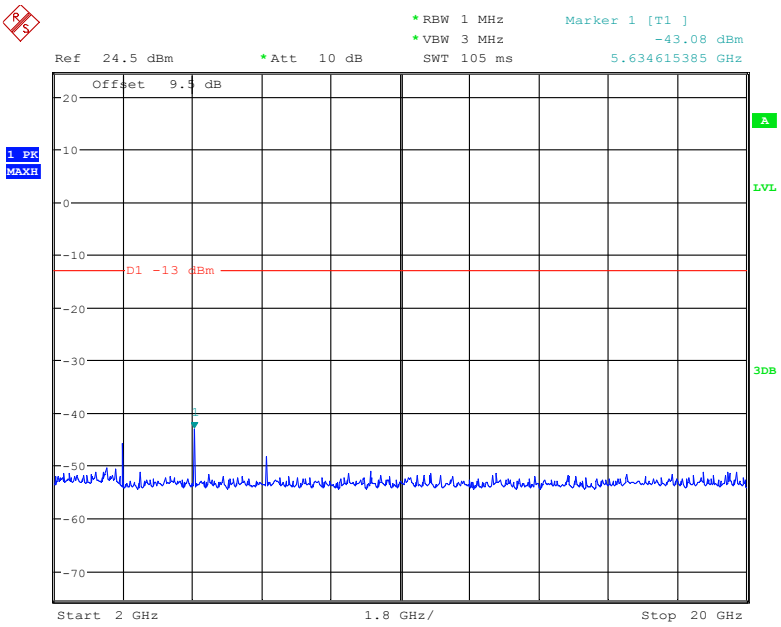
1 GHz – 2 GHz (3.0 MHz, Middle Channel)



Fundamental test

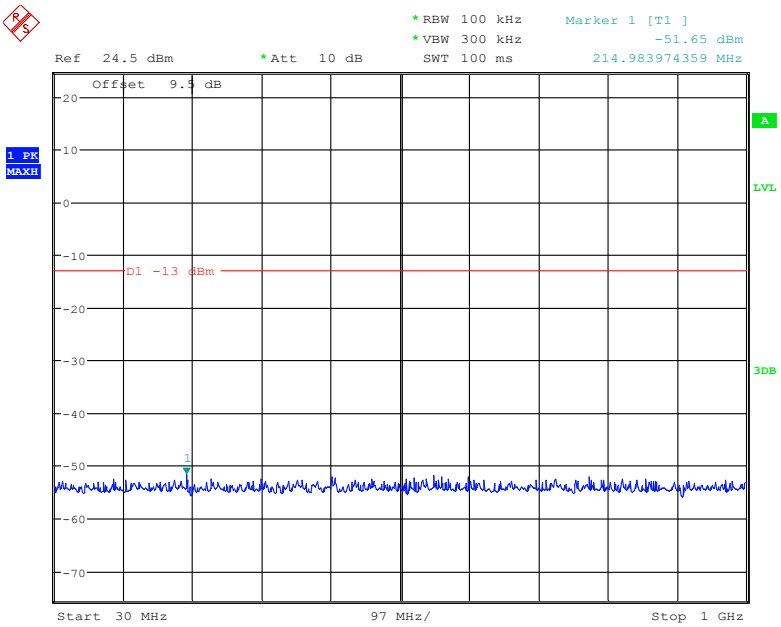
Date: 26.MAY.2019 17:39:20

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



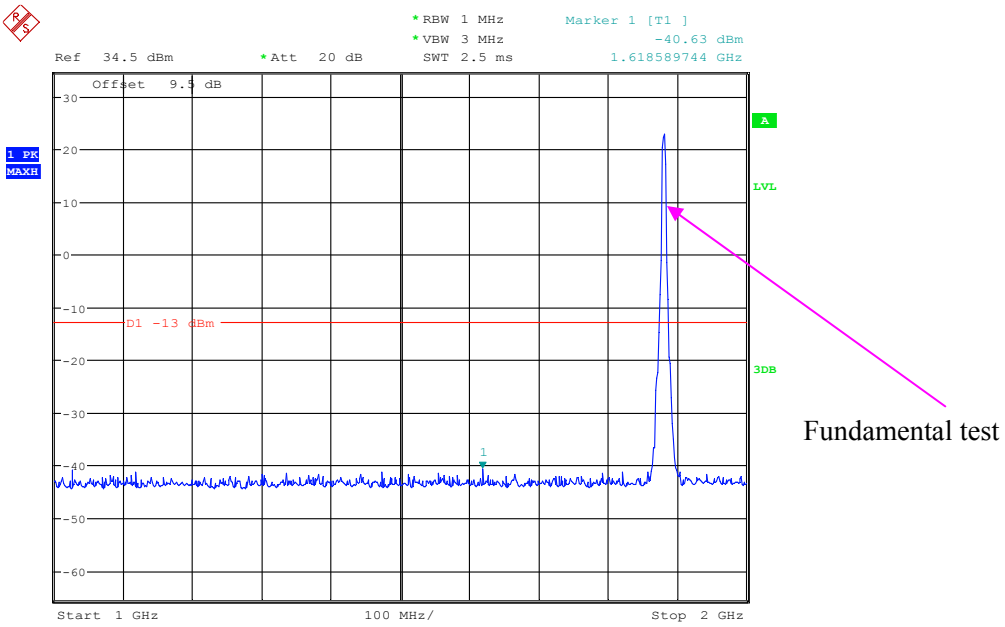
Date: 26.MAY.2019 17:42:03

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



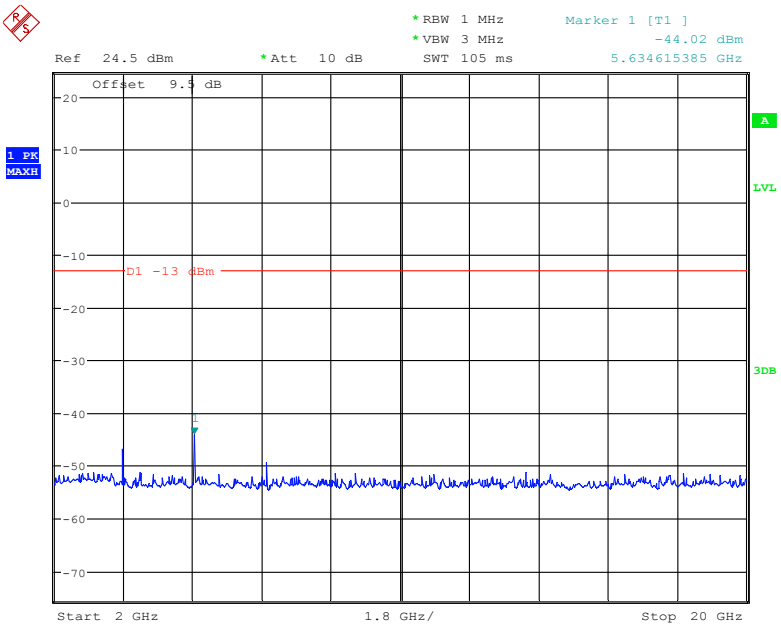
Date: 26.MAY.2019 17:38:00

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



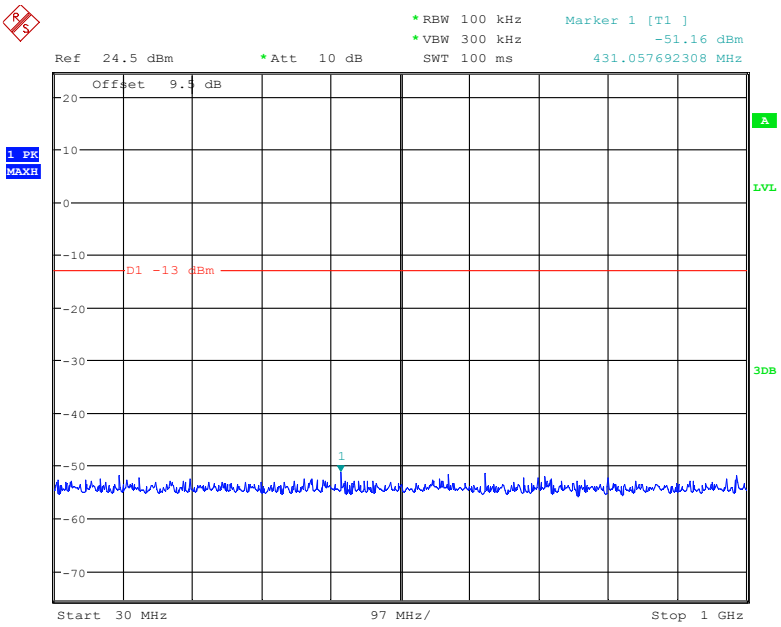
Date: 26.MAY.2019 17:39:43

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



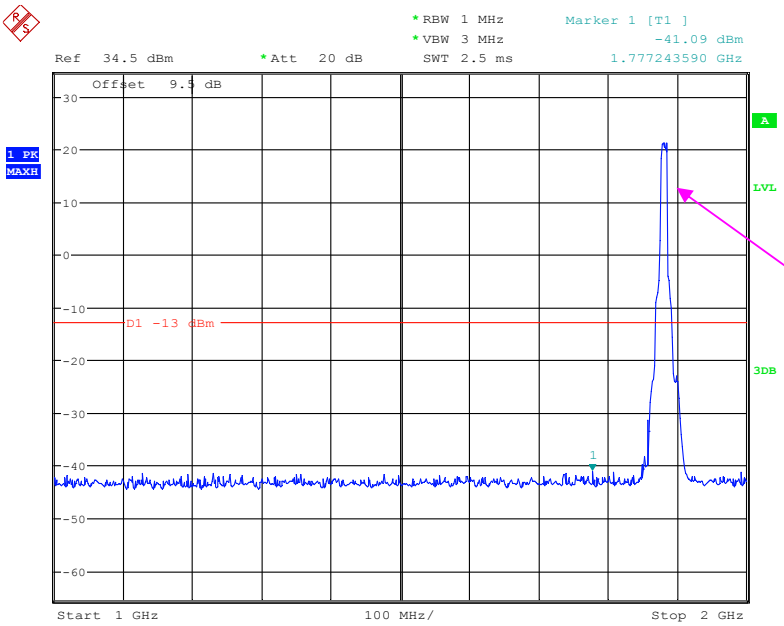
Date: 26.MAY.2019 17:41:51

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



Date: 26.MAY.2019 17:37:43

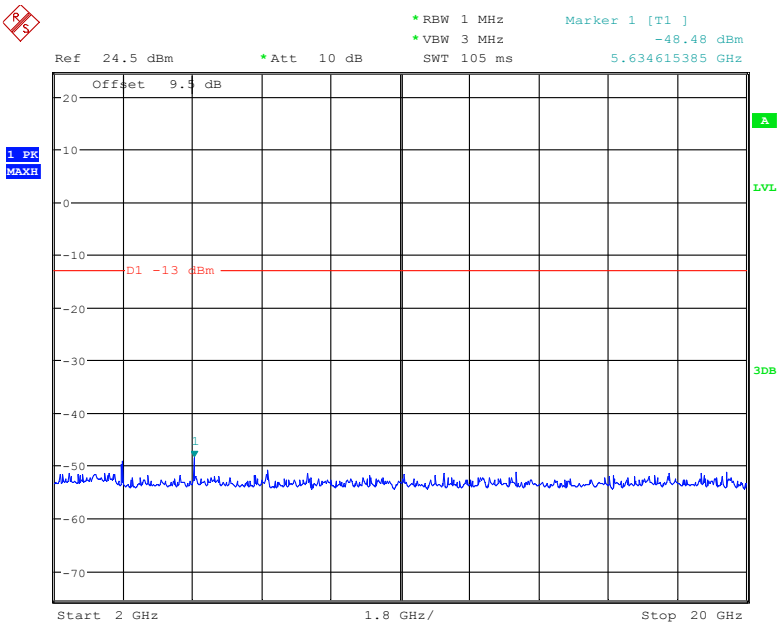
1 GHz – 2 GHz (10.0 MHz, Middle Channel)



Fundamental test

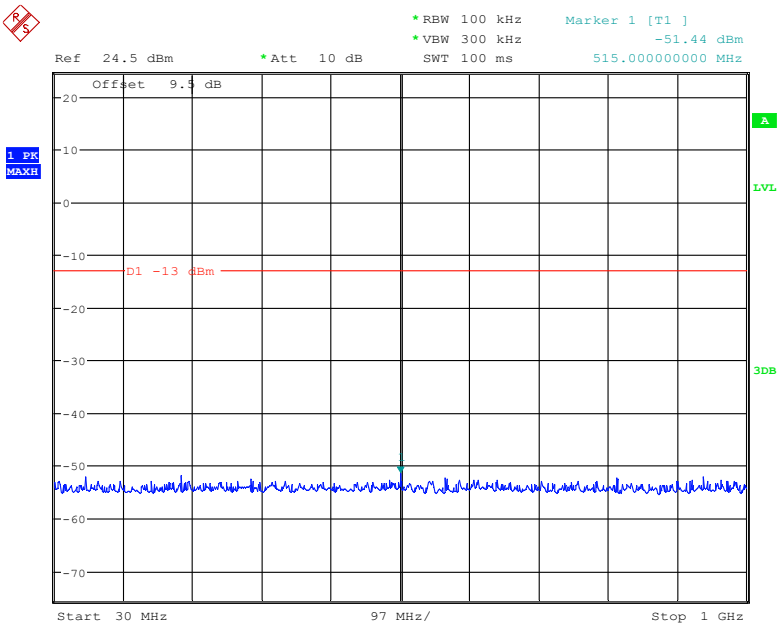
Date: 26.MAY.2019 17:40:05

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



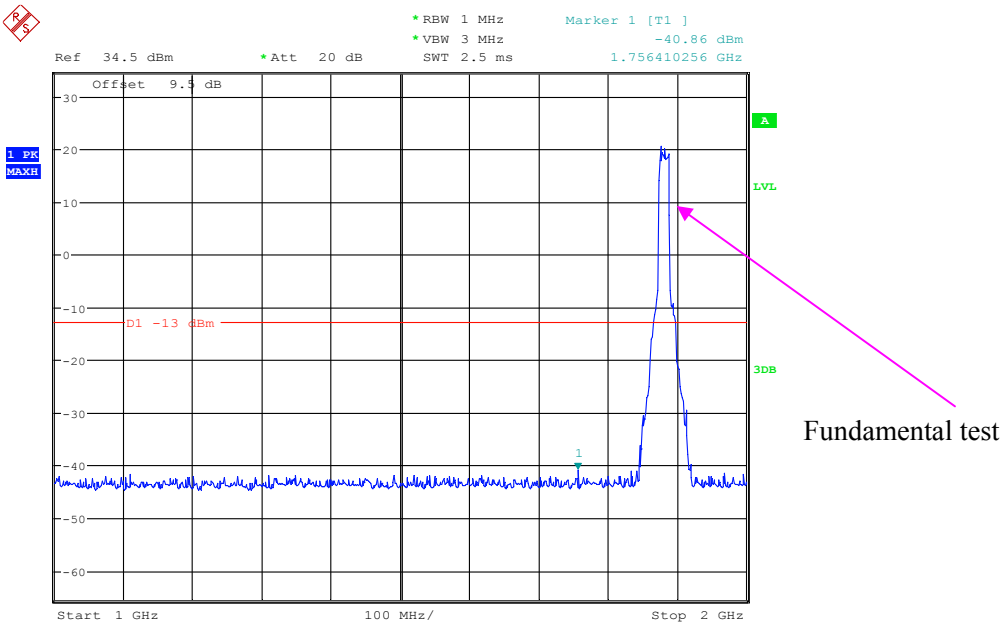
Date: 26.MAY.2019 17:41:39

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



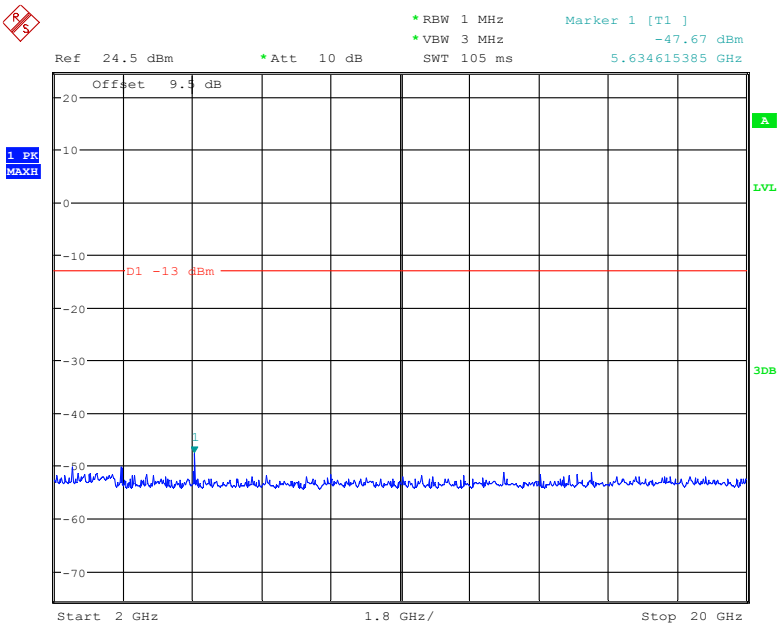
Date: 26.MAY.2019 17:37:29

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



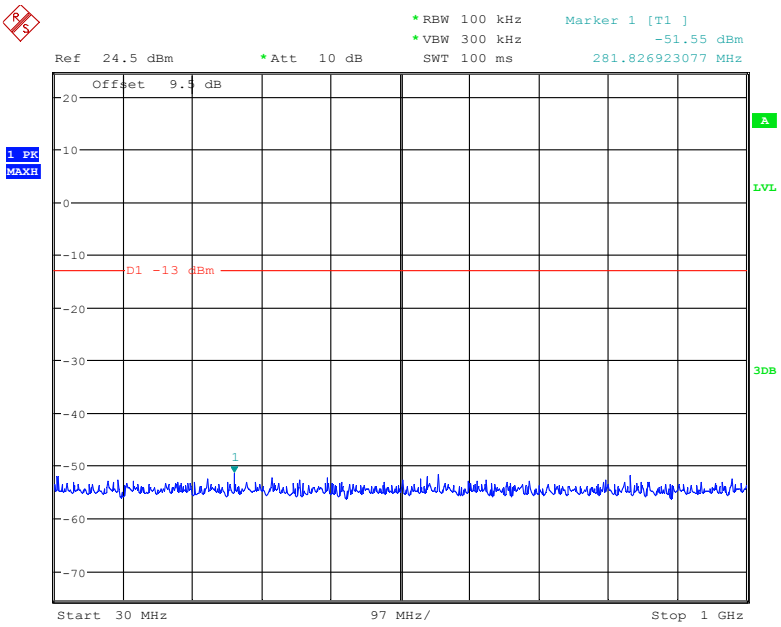
Date: 26.MAY.2019 17:40:25

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



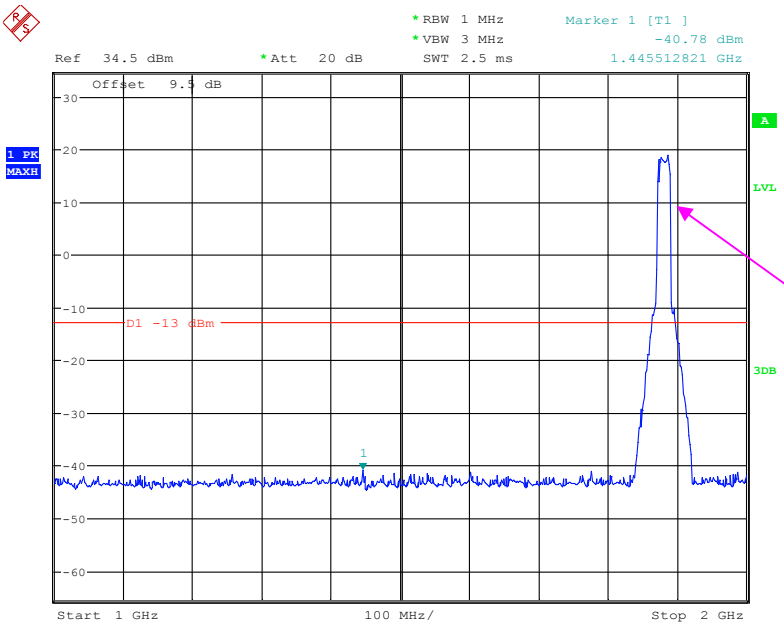
Date: 26.MAY.2019 17:41:26

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



Date: 26.MAY.2019 17:37:05

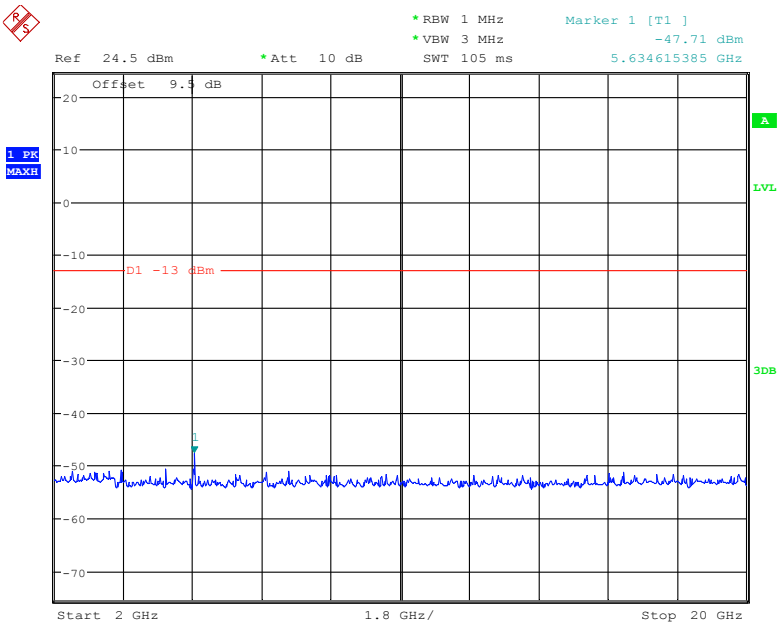
1 GHz – 2 GHz (20.0 MHz, Middle Channel)



Fundamental test

Date: 26.MAY.2019 17:40:48

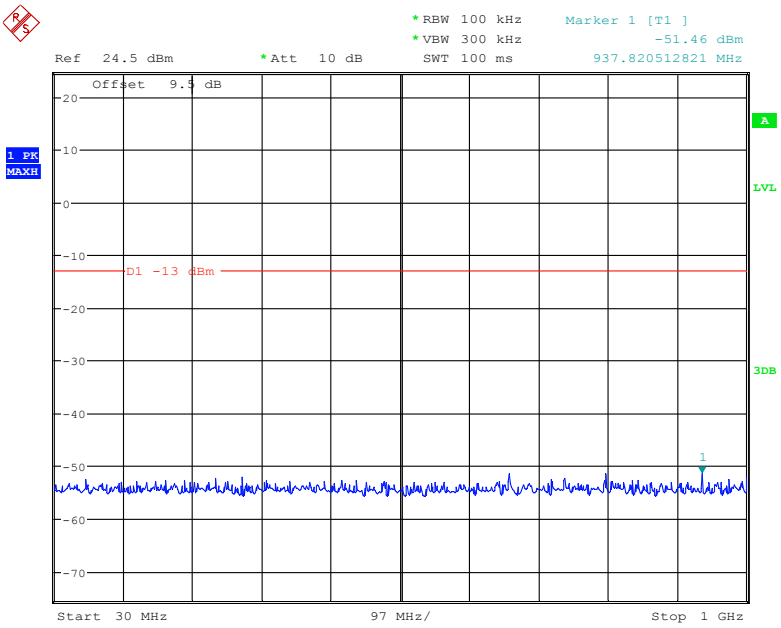
2 GHz - 20 GHz (20.0 MHz, Middle Channel)



Date: 26.MAY.2019 17:41:13

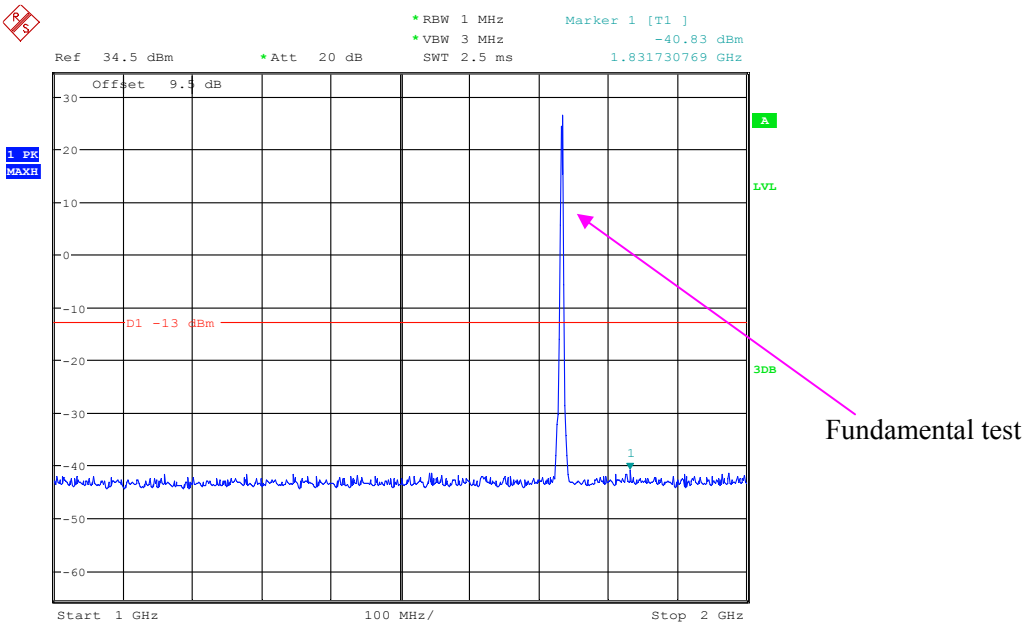
LTE Band 4:

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



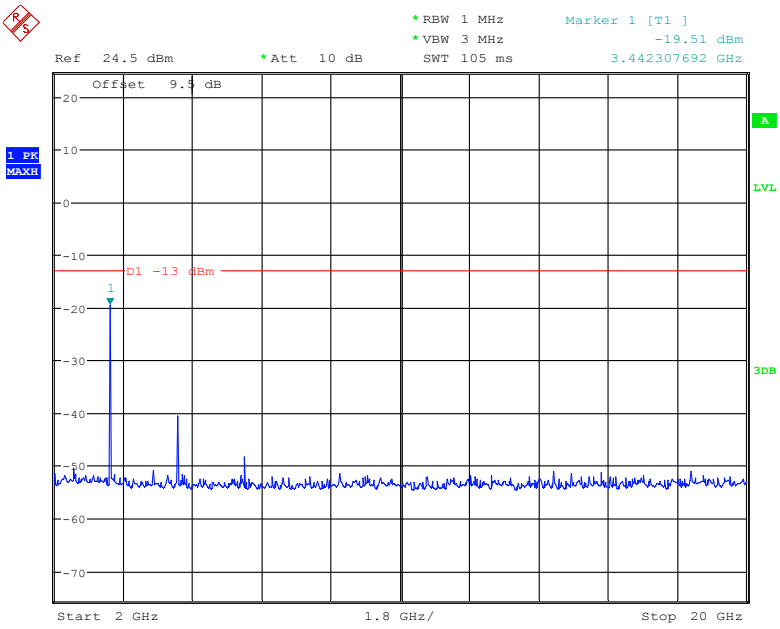
Date: 26.MAY.2019 17:29:25

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



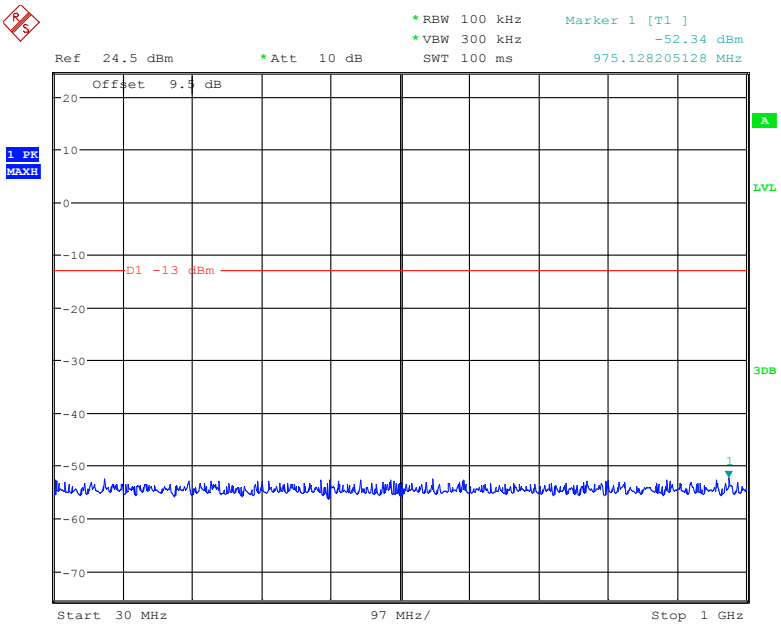
Date: 26.MAY.2019 17:34:24

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



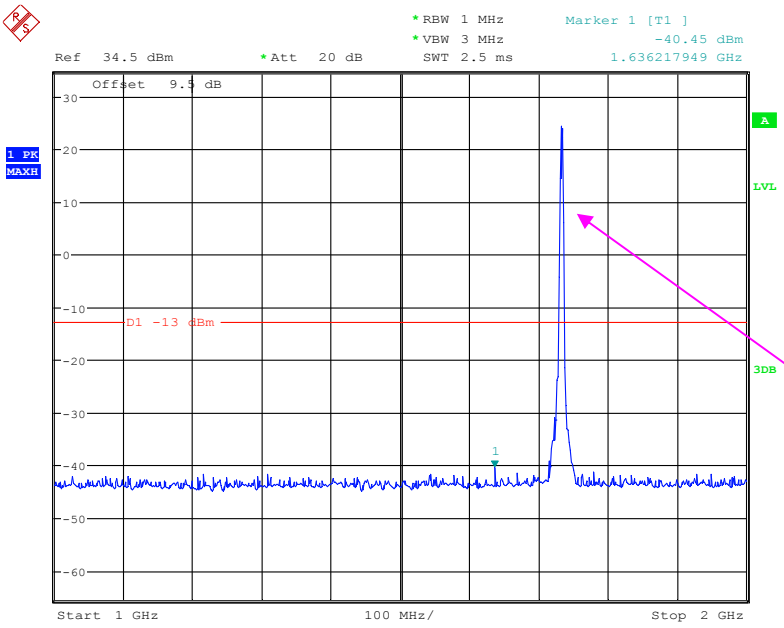
Date: 26.MAY.2019 17:34:47

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



Date: 26.MAY.2019 17:29:44

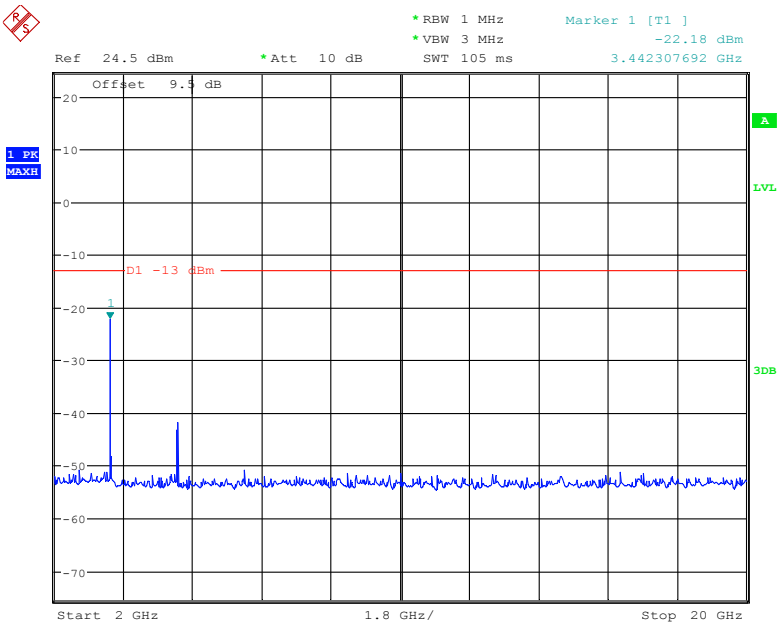
1 GHz – 2 GHz (3.0 MHz, Middle Channel)



Fundamental test

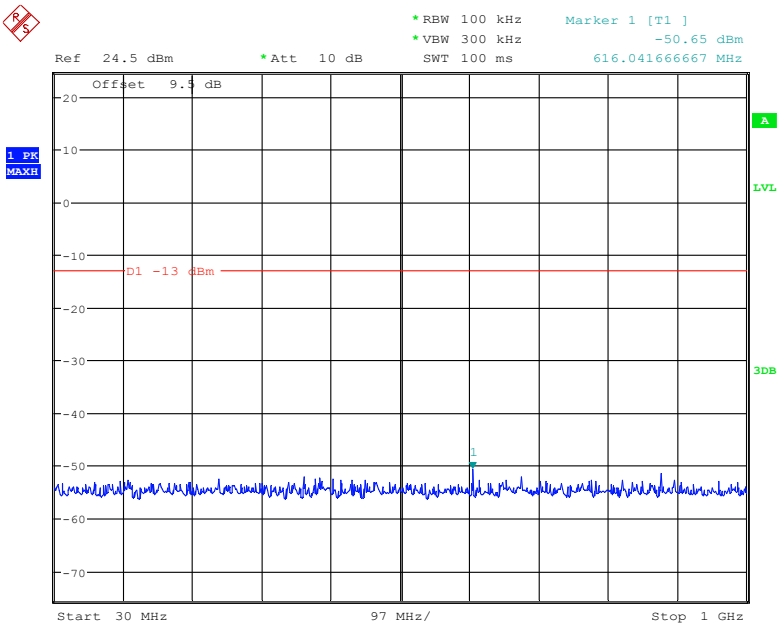
Date: 26.MAY.2019 17:34:01

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



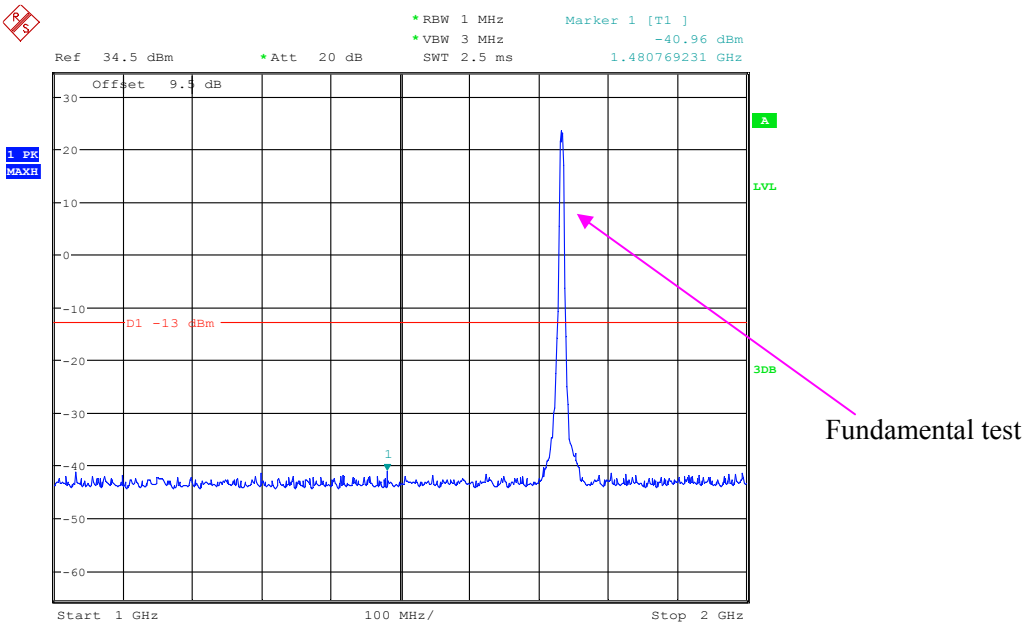
Date: 26.MAY.2019 17:35:01

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



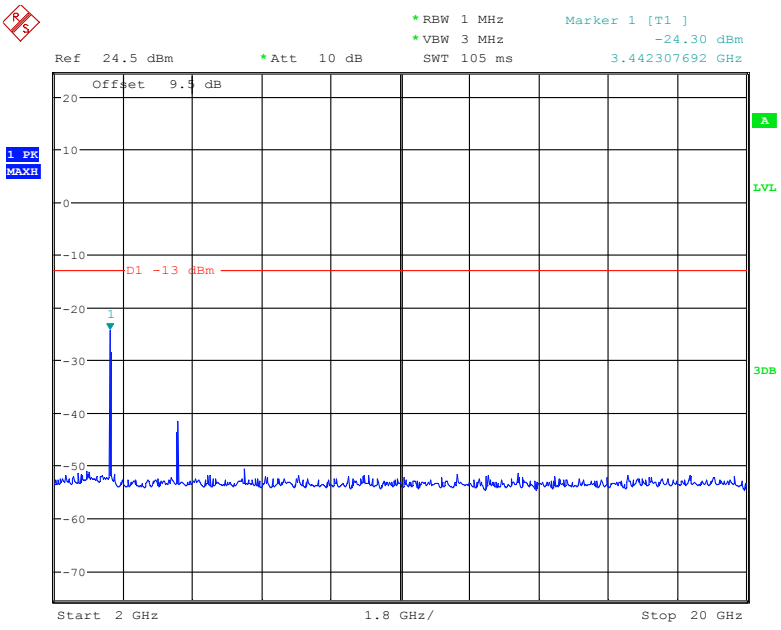
Date: 26.MAY.2019 17:29:56

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



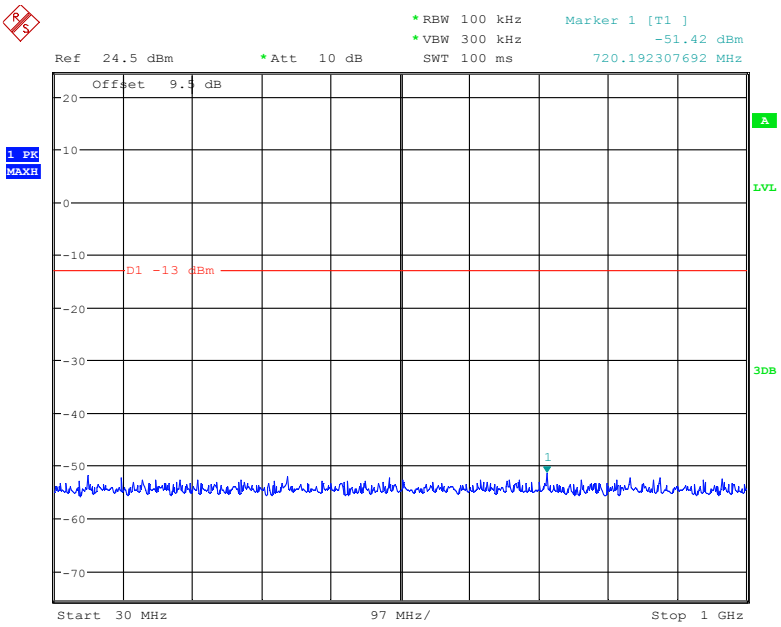
Date: 26.MAY.2019 17:33:41

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



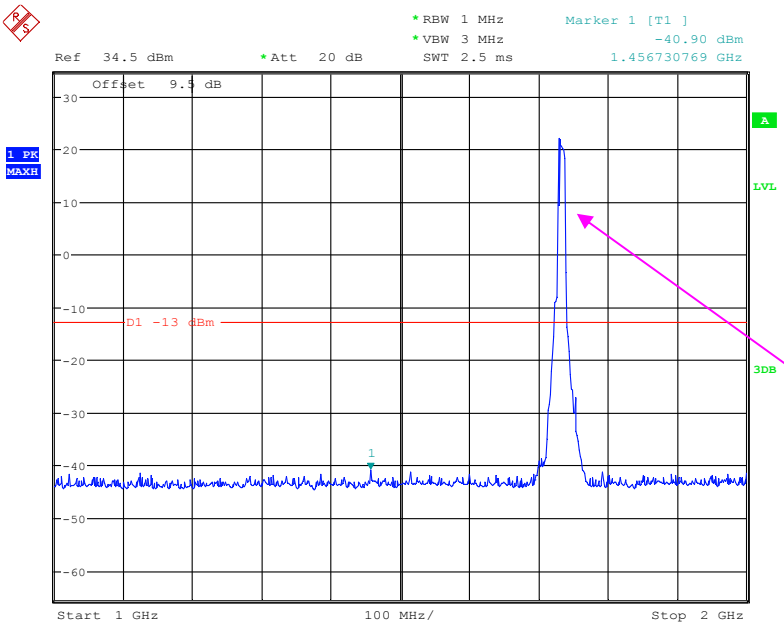
Date: 26.MAY.2019 17:35:12

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



Date: 26.MAY.2019 17:30:24

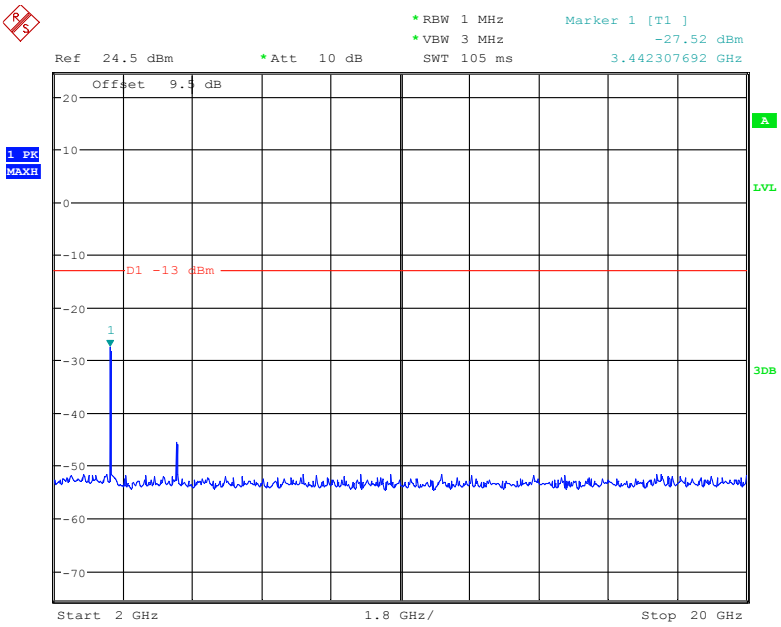
1 GHz – 2 GHz (10.0 MHz, Middle Channel)



Fundamental test

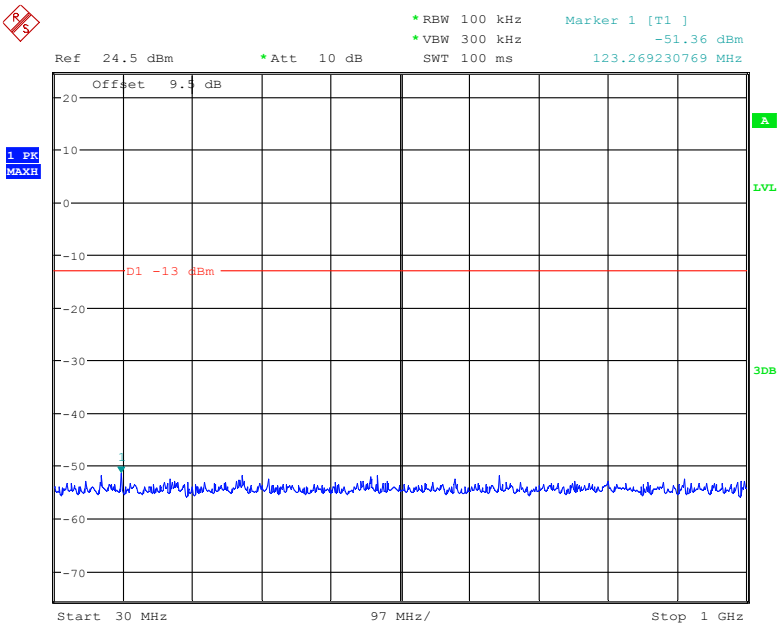
Date: 26.MAY.2019 17:32:48

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



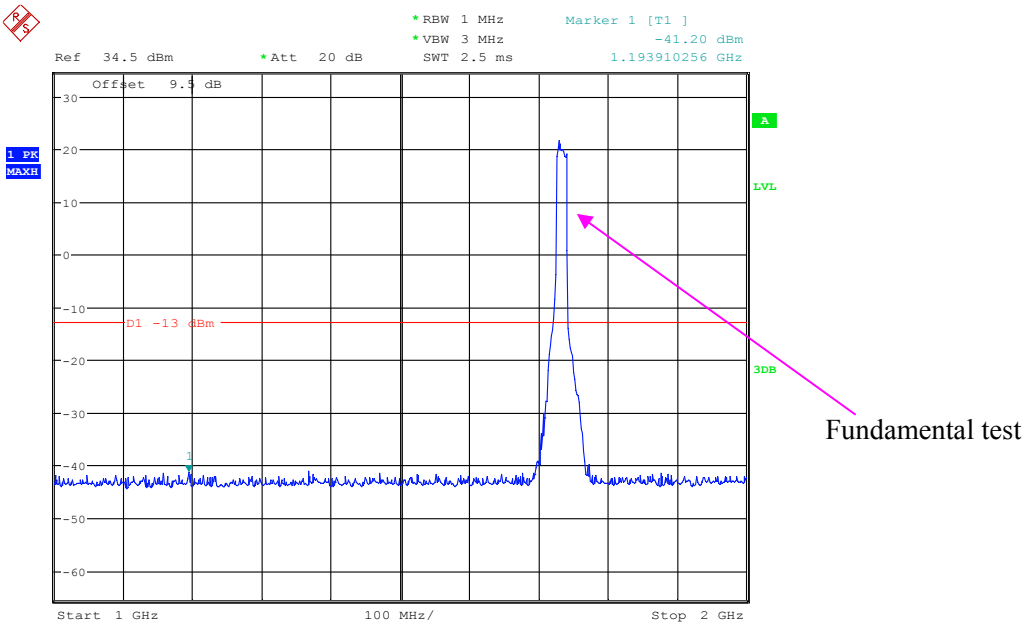
Date: 26.MAY.2019 17:35:25

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



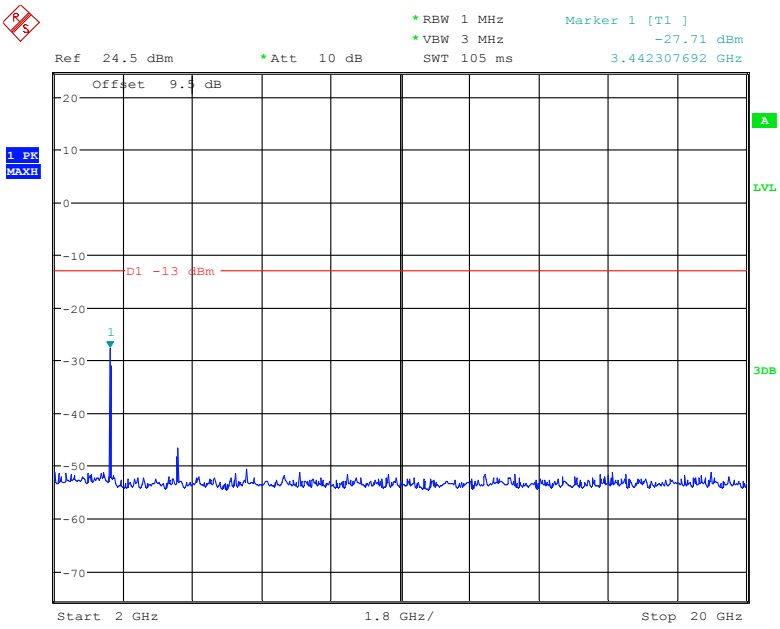
Date: 26.MAY.2019 17:30:38

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



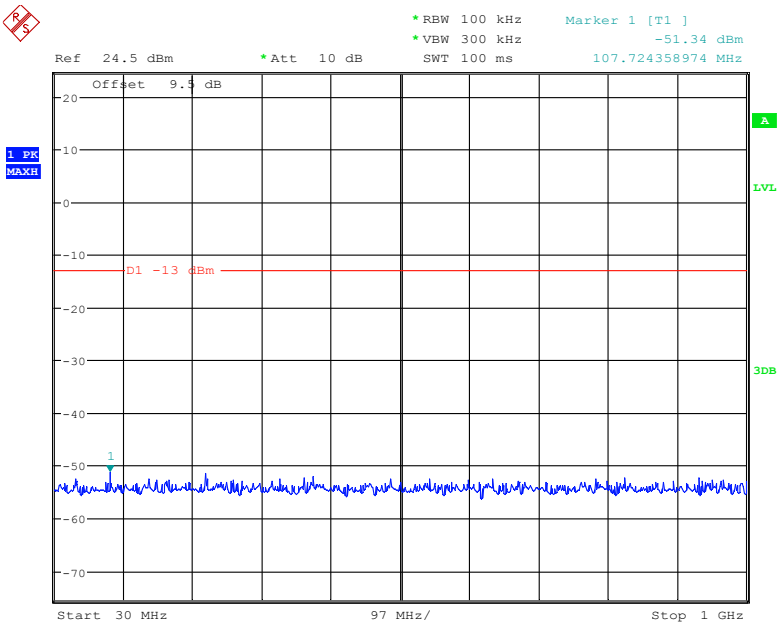
Date: 26.MAY.2019 17:32:26

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



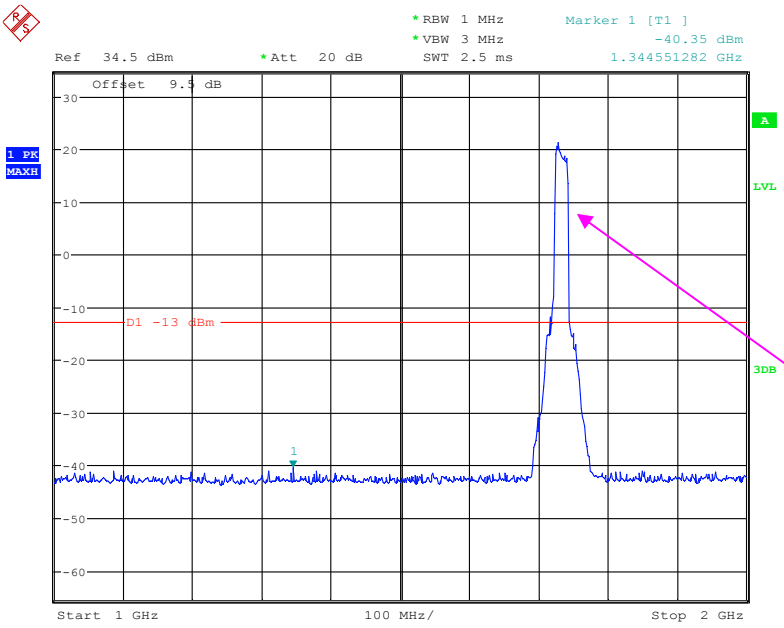
Date: 26.MAY.2019 17:35:37

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



Date: 26.MAY.2019 17:30:50

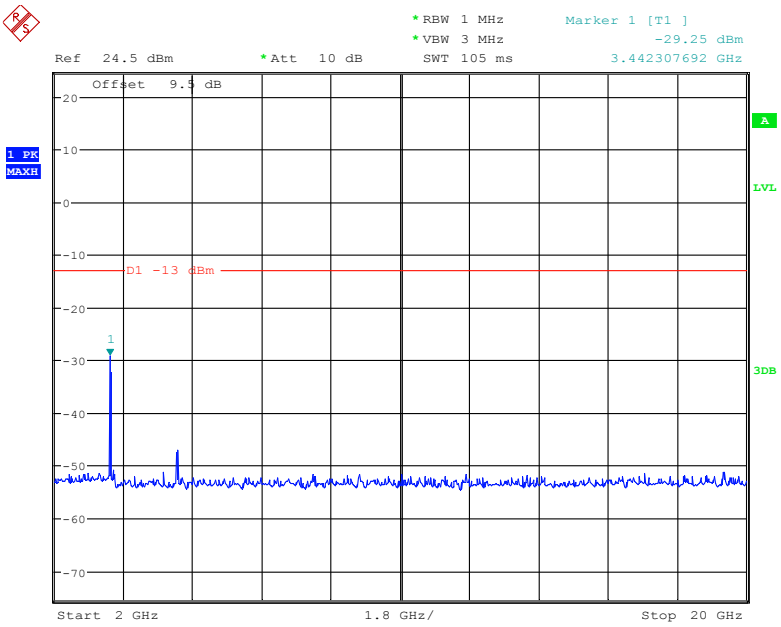
1 GHz – 2 GHz (20.0 MHz, Middle Channel)



Fundamental test

Date: 26.MAY.2019 17:31:55

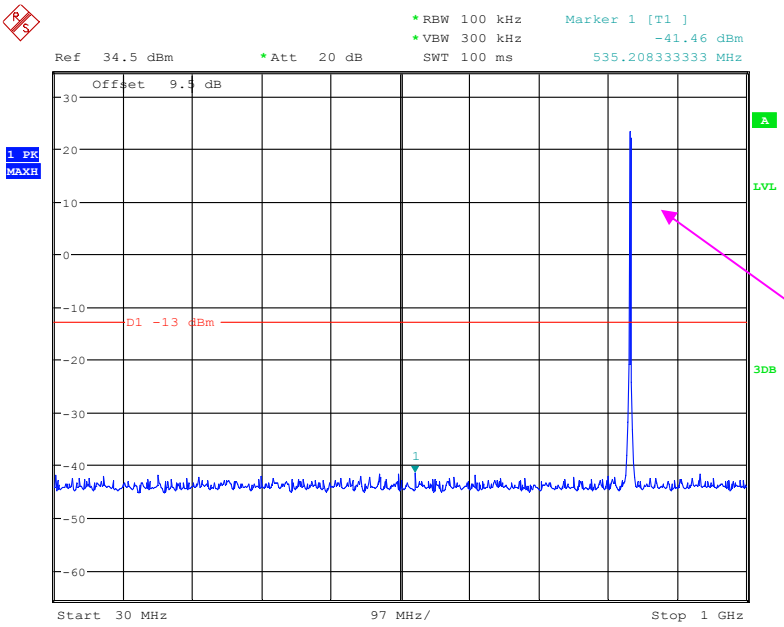
2 GHz – 20 GHz (20.0 MHz, Middle Channel)



Date: 26.MAY.2019 17:35:49

LTE Band 5:

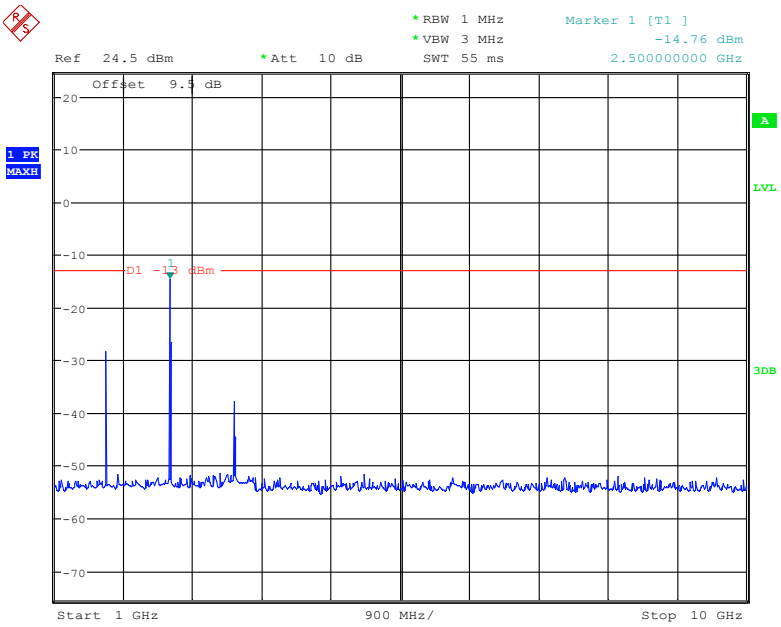
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

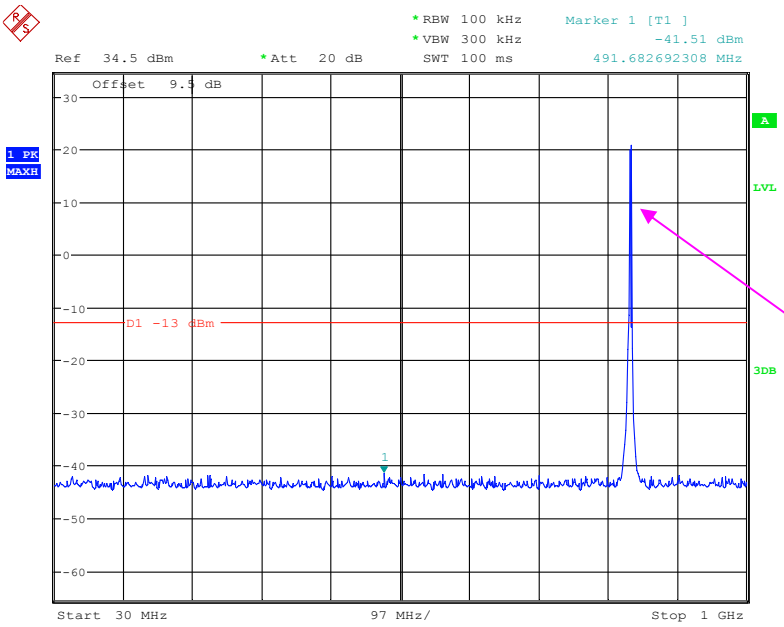
Date: 26.MAY.2019 17:24:53

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



Date: 26.MAY.2019 17:28:02

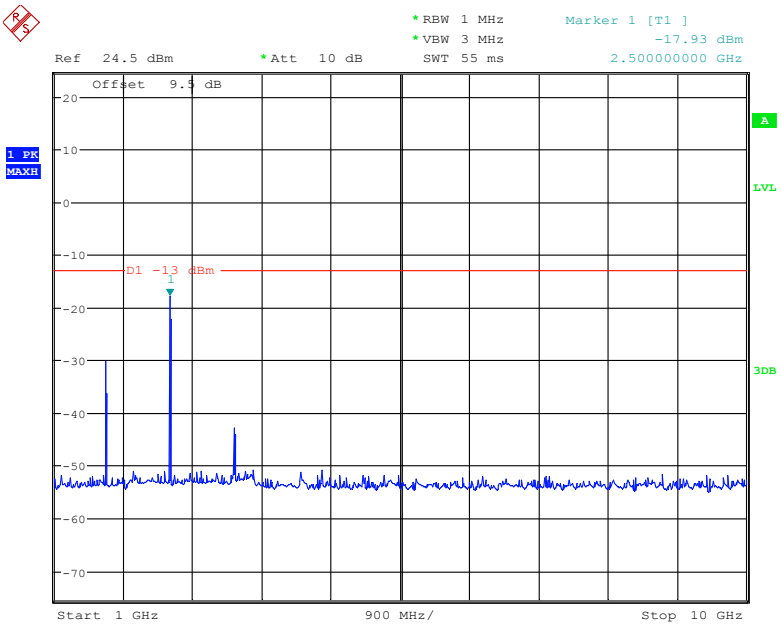
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



Fundamental test

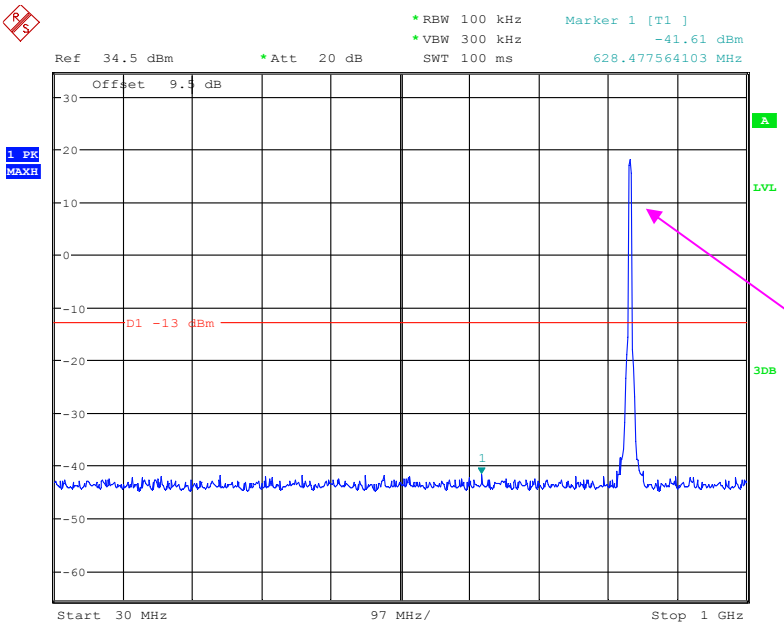
Date: 26.MAY.2019 17:25:31

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



Date: 26.MAY.2019 17:27:47

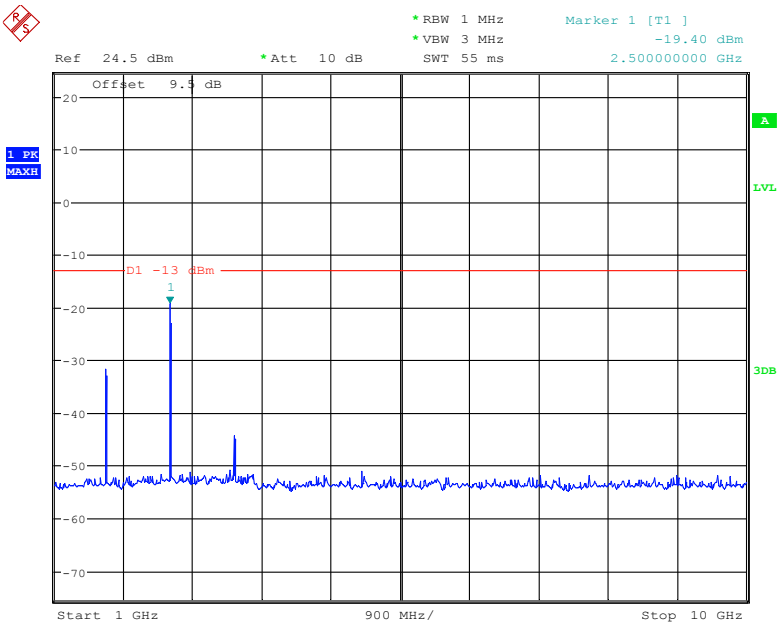
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

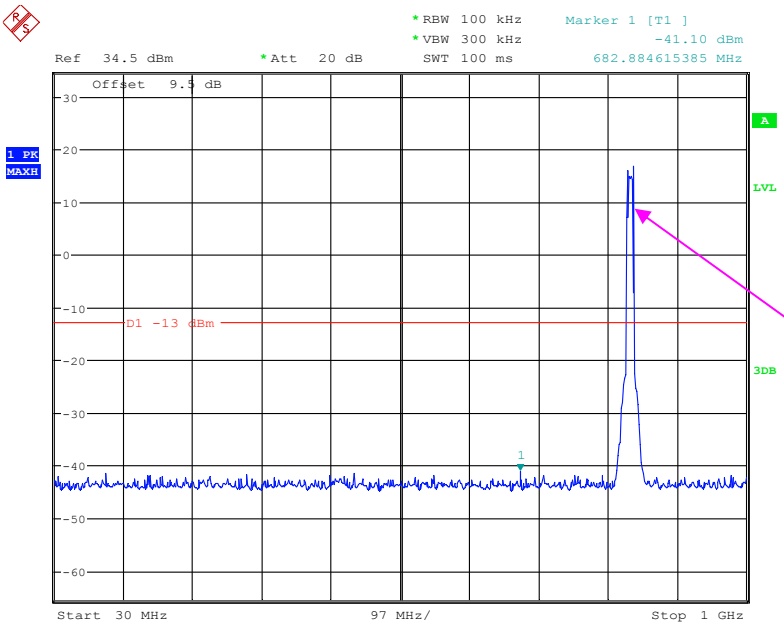
Date: 26.MAY.2019 17:26:16

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



Date: 26.MAY.2019 17:27:36

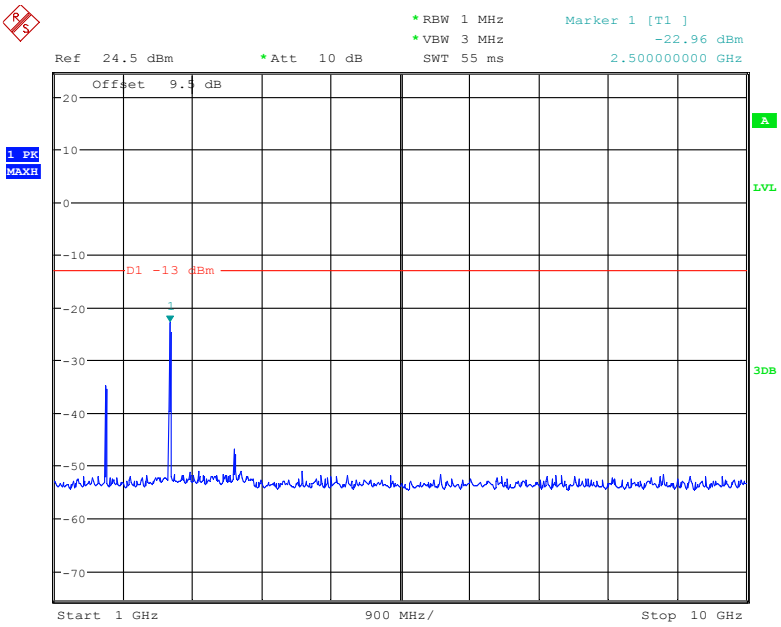
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 26.MAY.2019 17:26:57

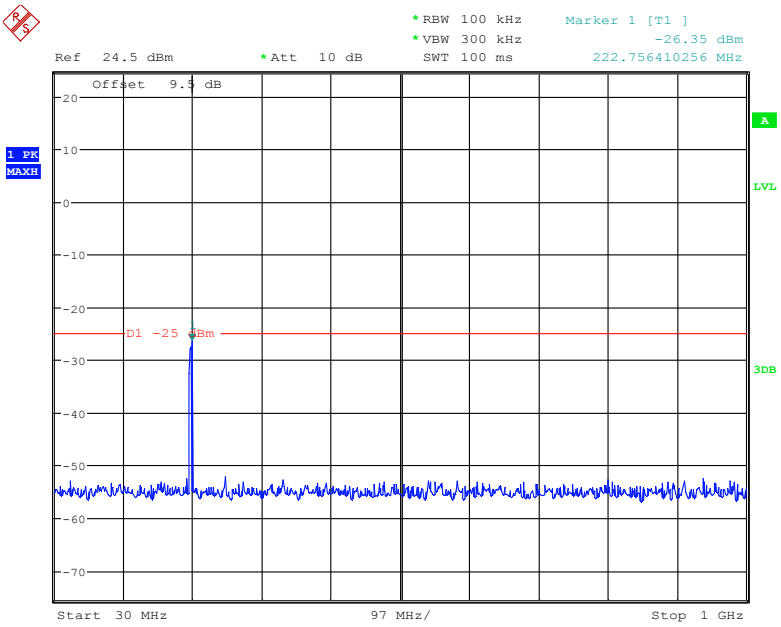
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 26.MAY.2019 17:27:15

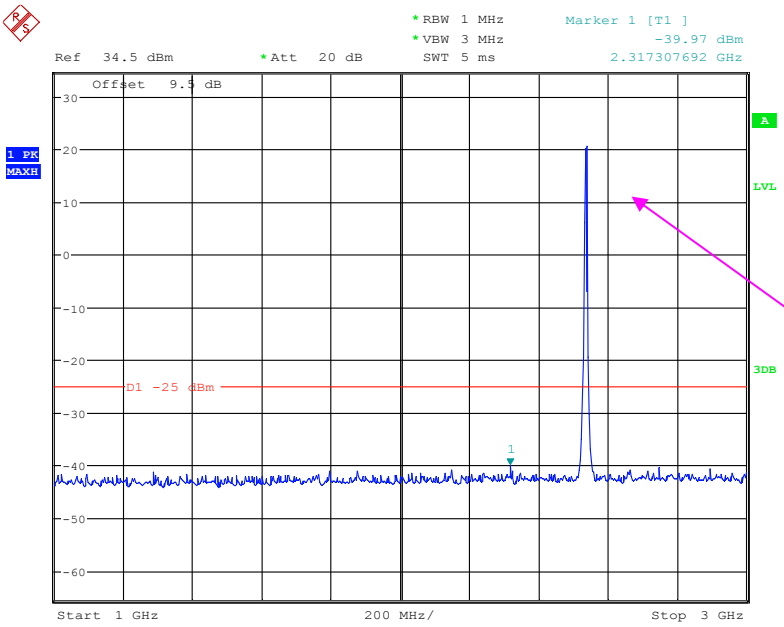
LTE Band 7:

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



Date: 26.MAY.2019 17:44:04

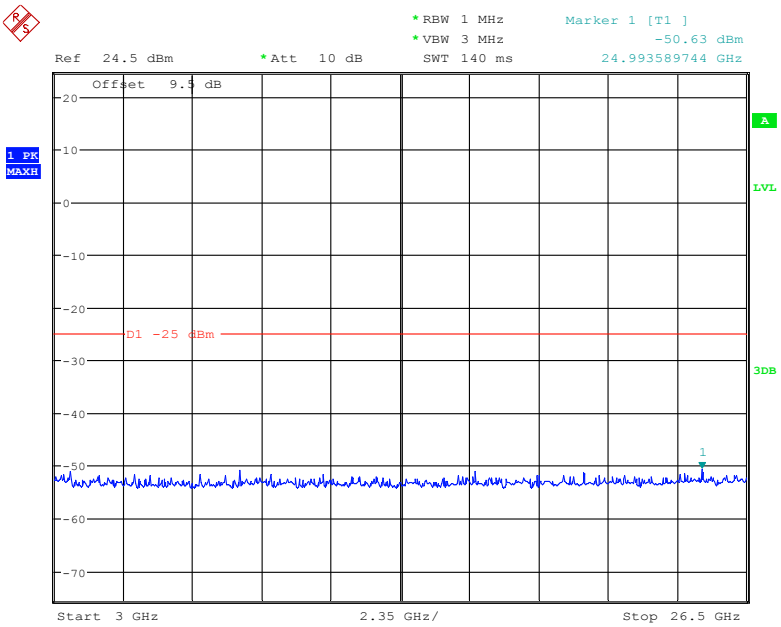
1 GHz – 3.0 GHz (5.0 MHz, Middle Channel)



Fundamental test

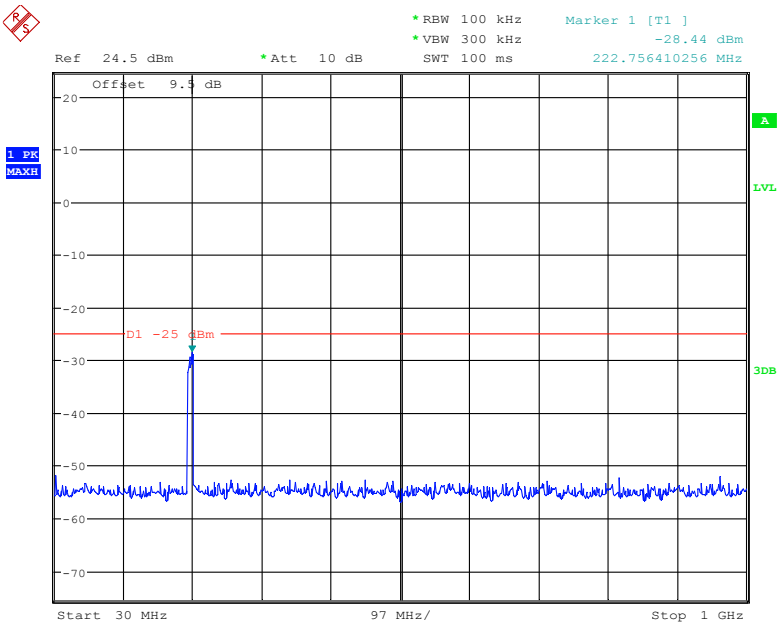
Date: 26.MAY.2019 17:46:42

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



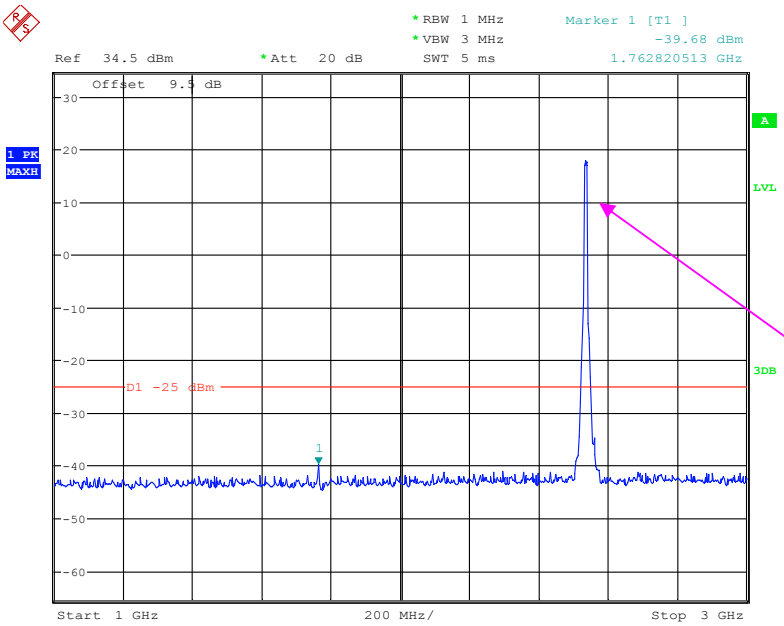
Date: 26.MAY.2019 17:47:01

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



Date: 26.MAY.2019 17:44:28

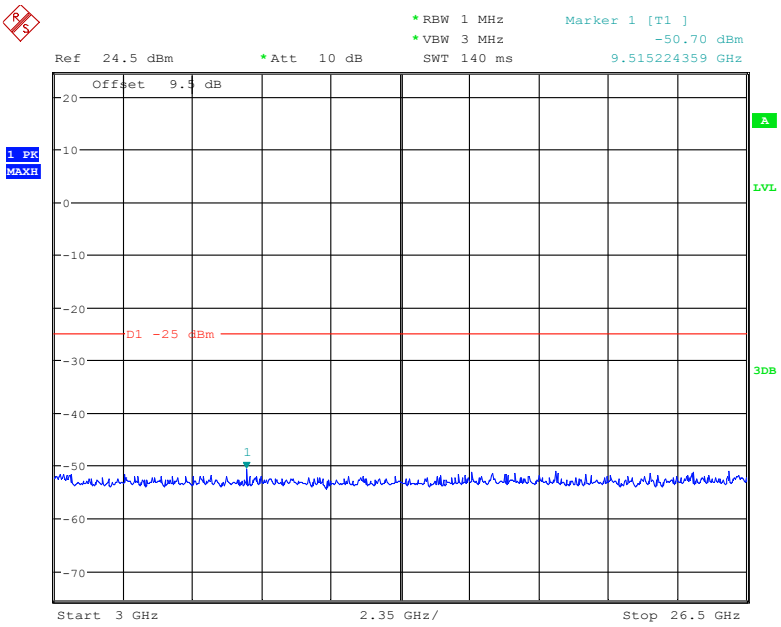
1 GHz – 3 GHz (10.0 MHz, Middle Channel)



Fundamental test

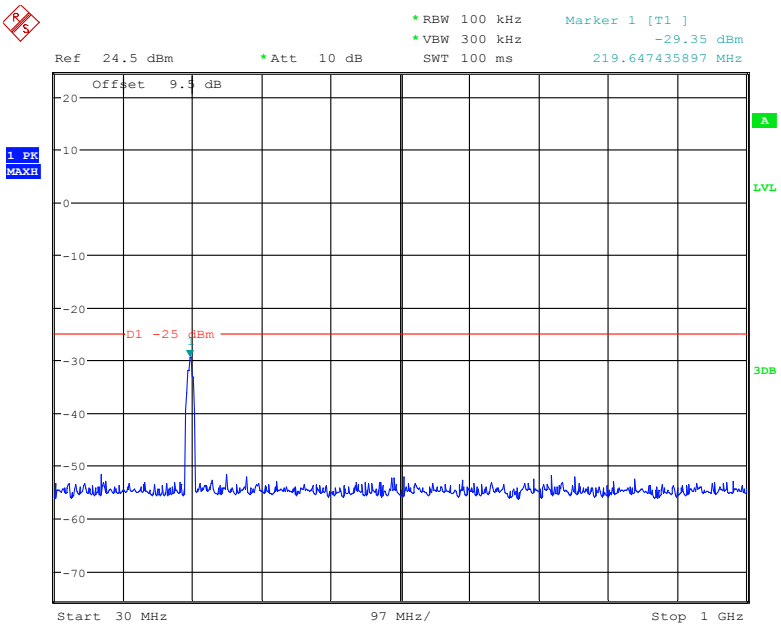
Date: 26.MAY.2019 17:46:19

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



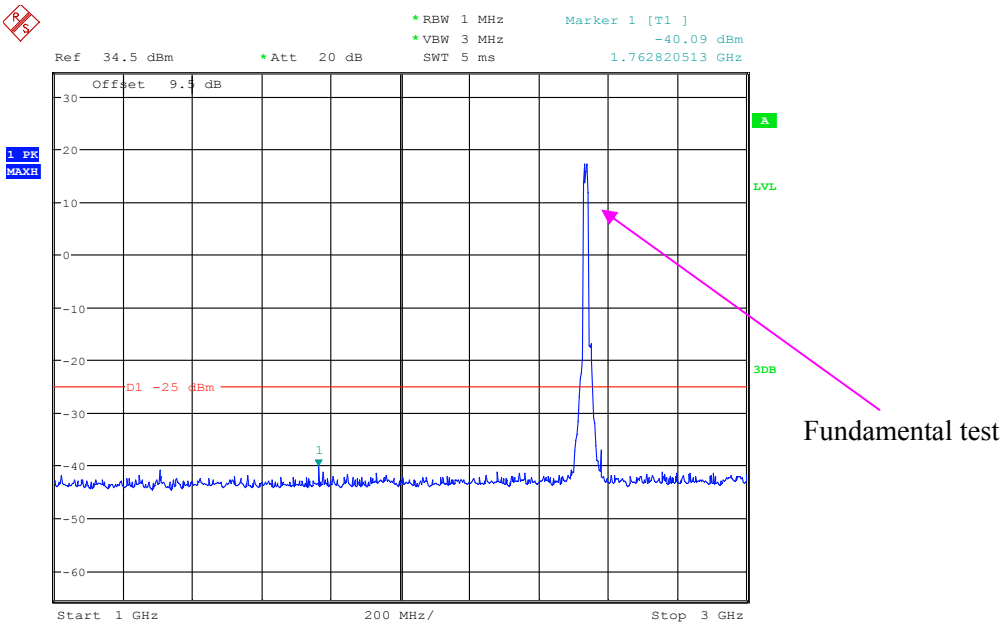
Date: 26.MAY.2019 17:47:18

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



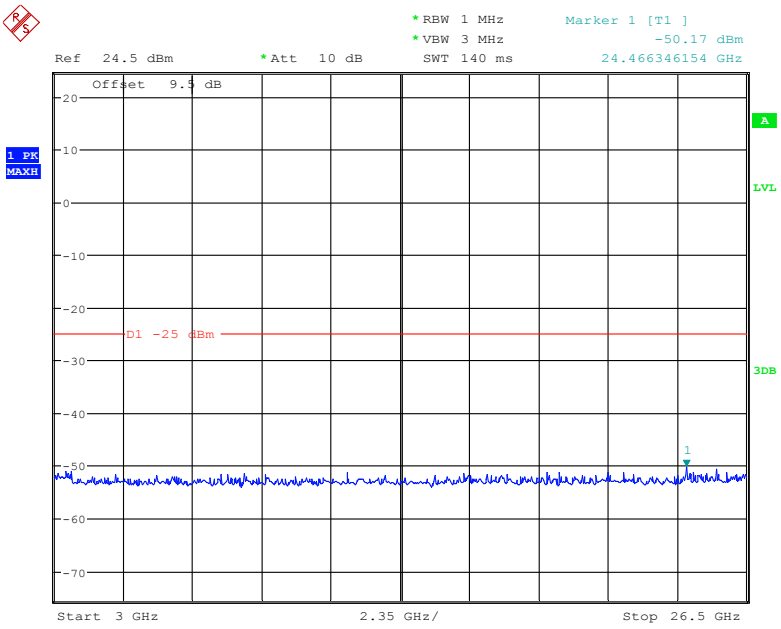
Date: 26.MAY.2019 17:44:41

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



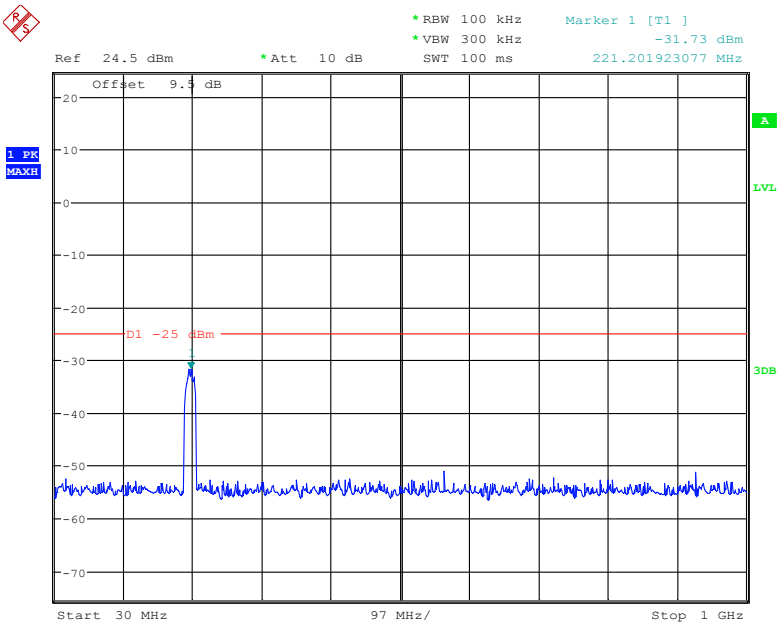
Date: 26.MAY.2019 17:46:03

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



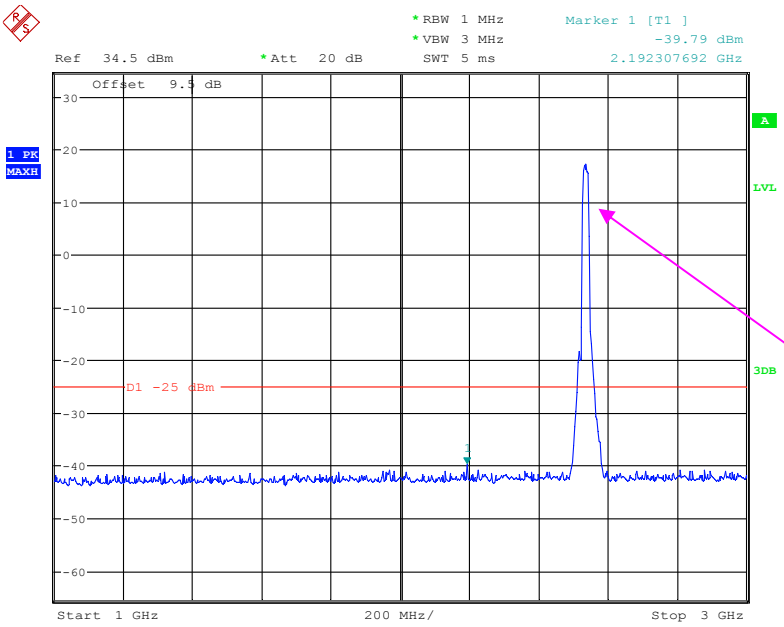
Date: 26.MAY.2019 17:47:35

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



Date: 26.MAY.2019 17:44:51

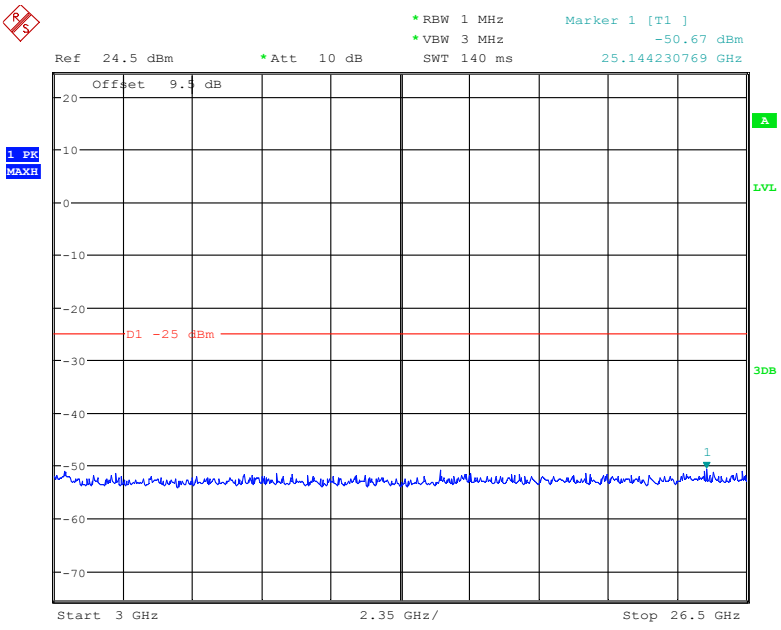
1 GHz – 3 GHz (20.0 MHz, Middle Channel)



Fundamental test

Date: 26.MAY.2019 17:45:48

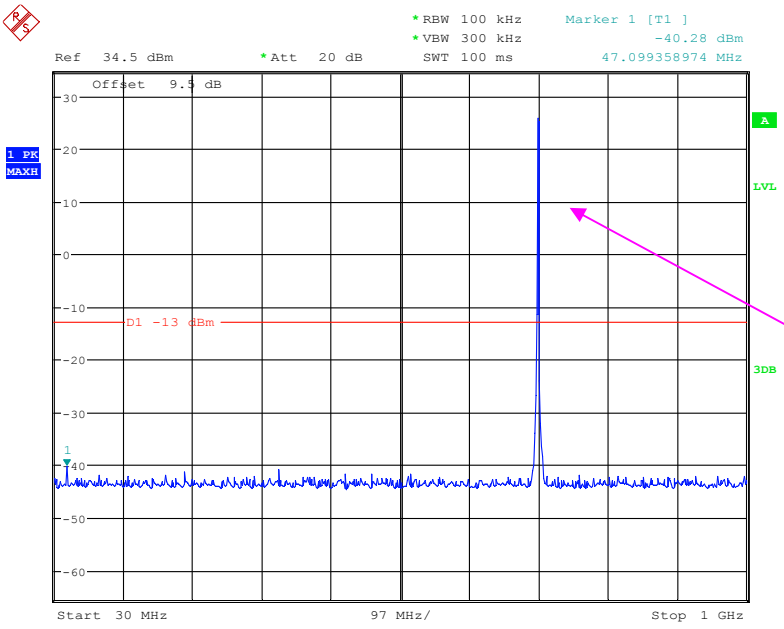
3 GHz – 26.5 GHz (20.0 MHz, Middle Channel)



Date: 26.MAY.2019 17:47:49

LTE Band 12:

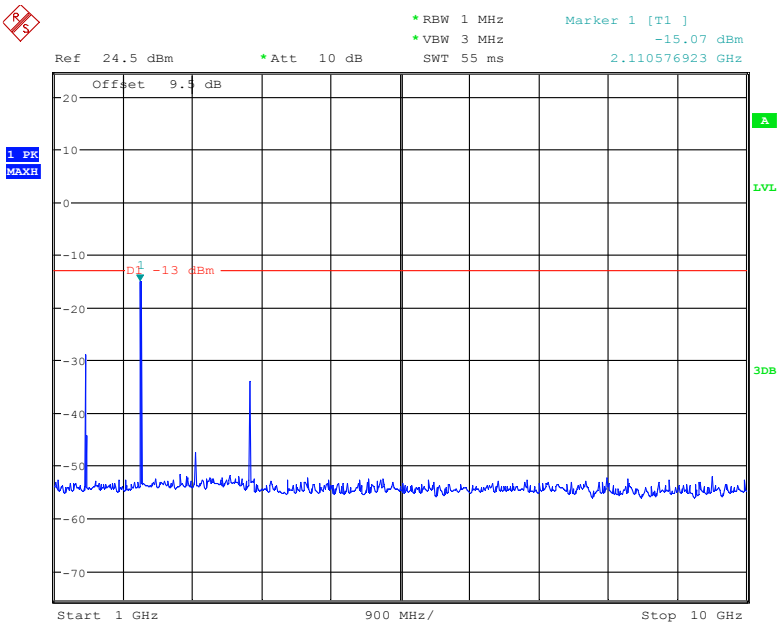
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

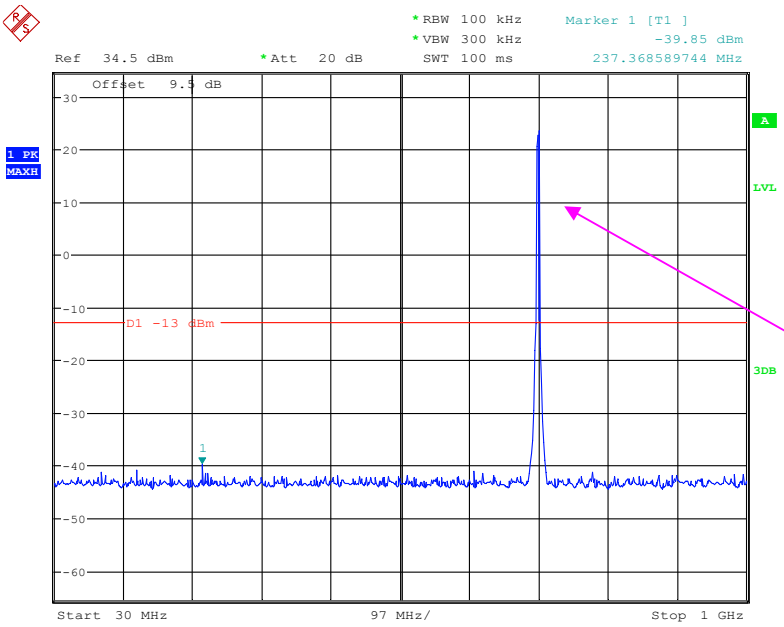
Date: 26.MAY.2019 16:35:16

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



Date: 26.MAY.2019 16:39:18

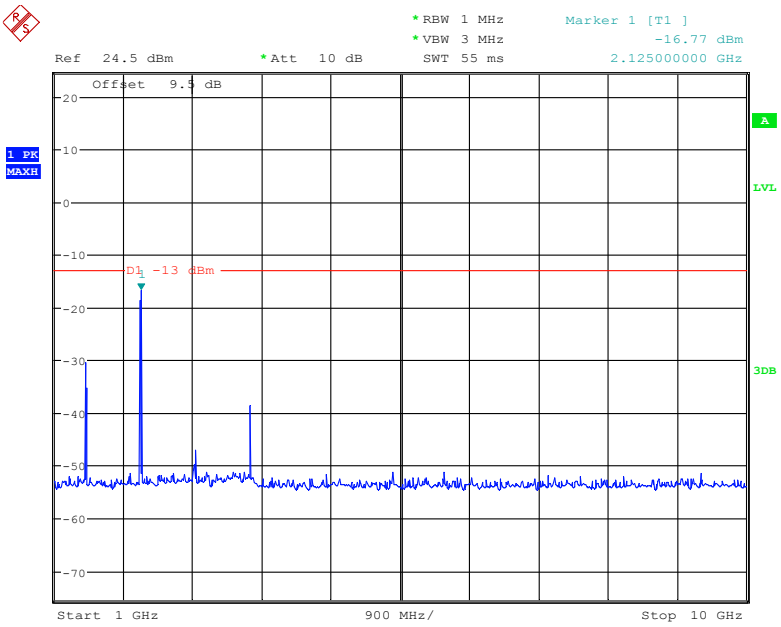
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



Fundamental test

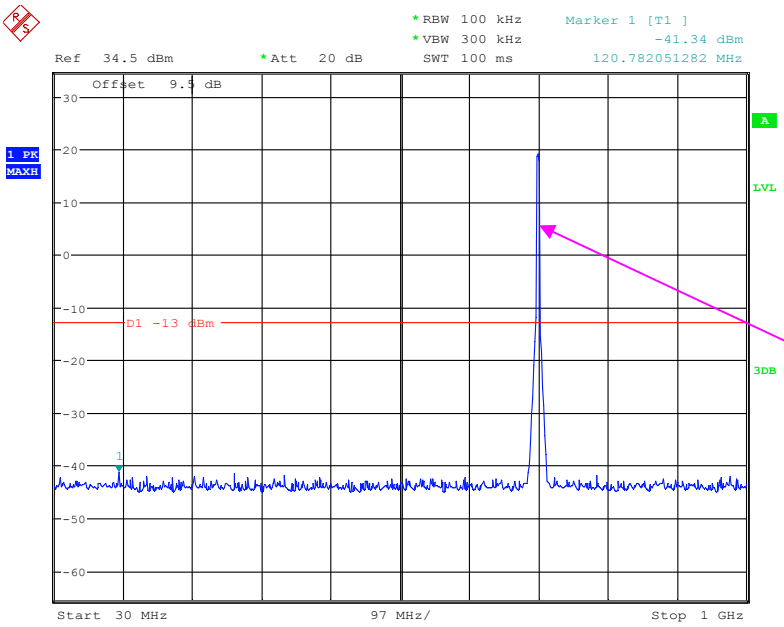
Date: 26.MAY.2019 16:36:05

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



Date: 26.MAY.2019 16:38:51

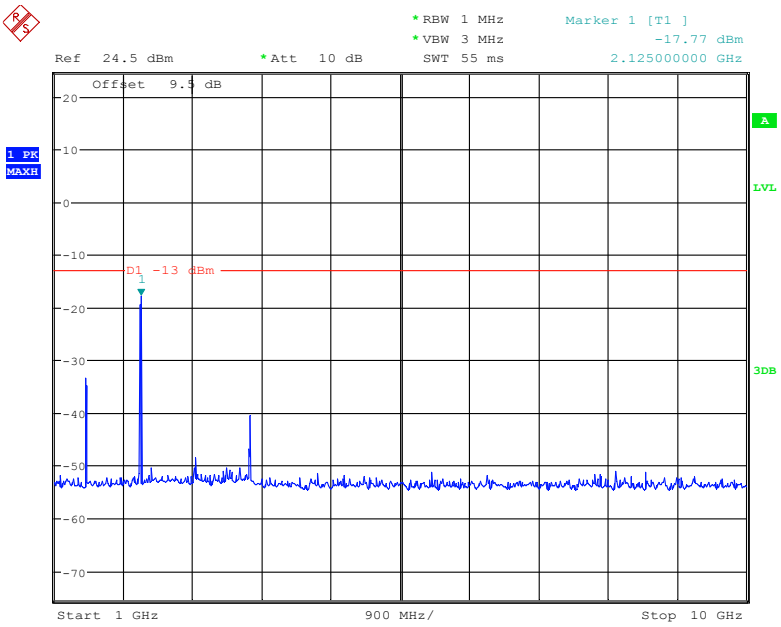
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

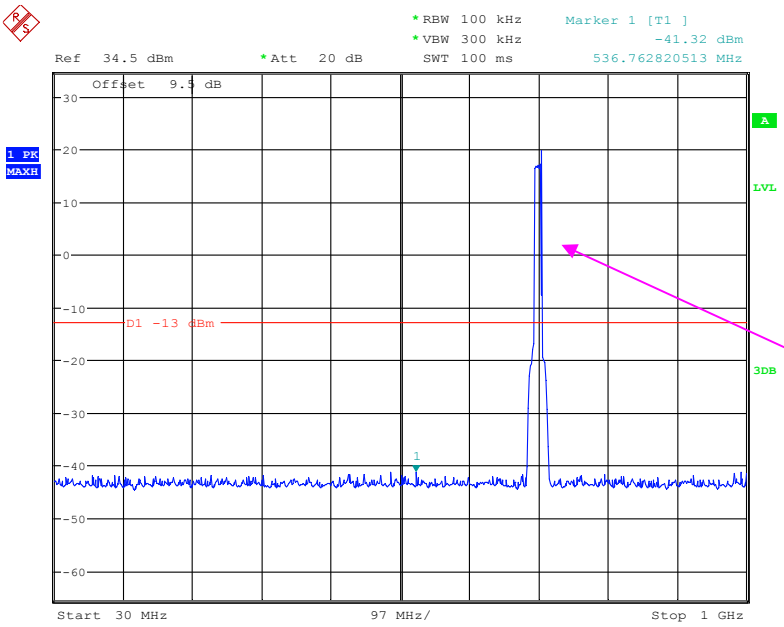
Date: 26.MAY.2019 16:36:59

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



Date: 26.MAY.2019 16:38:39

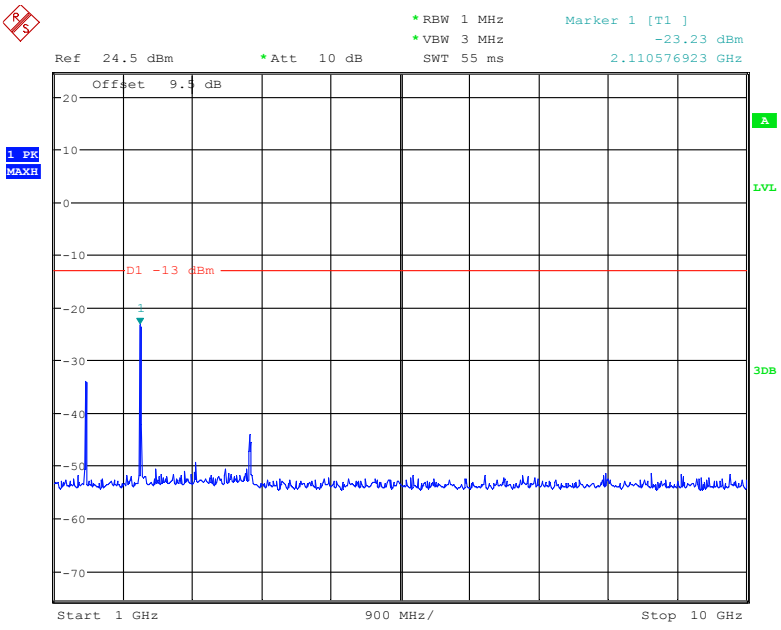
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 26.MAY.2019 16:37:37

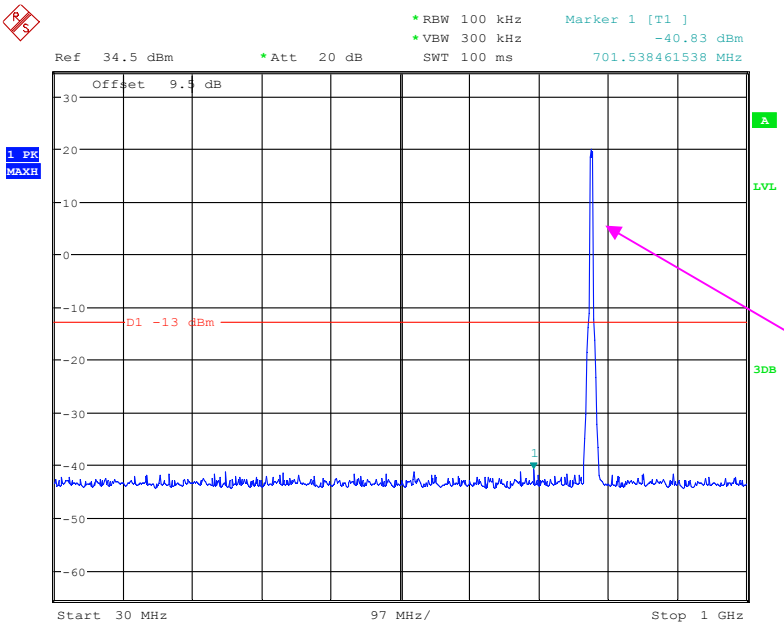
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 26.MAY.2019 16:38:16

LTE Band 13:

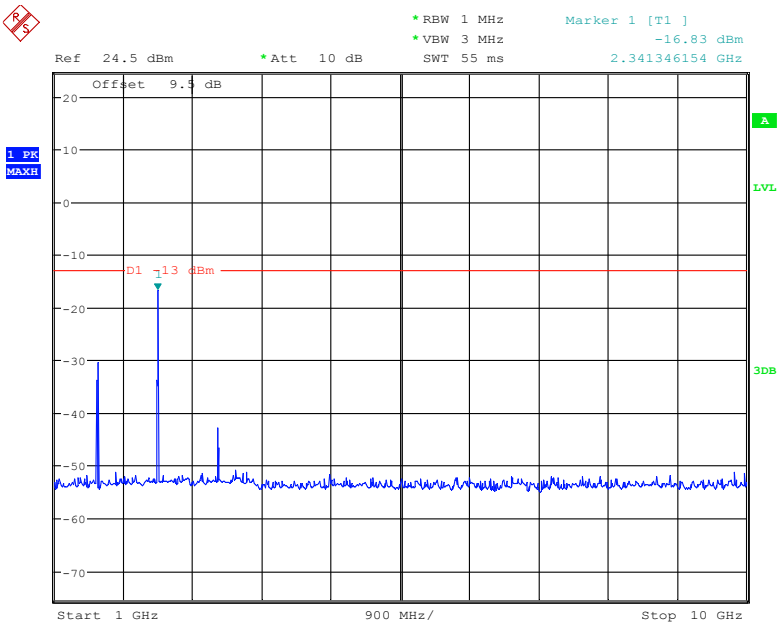
30 MHz – 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

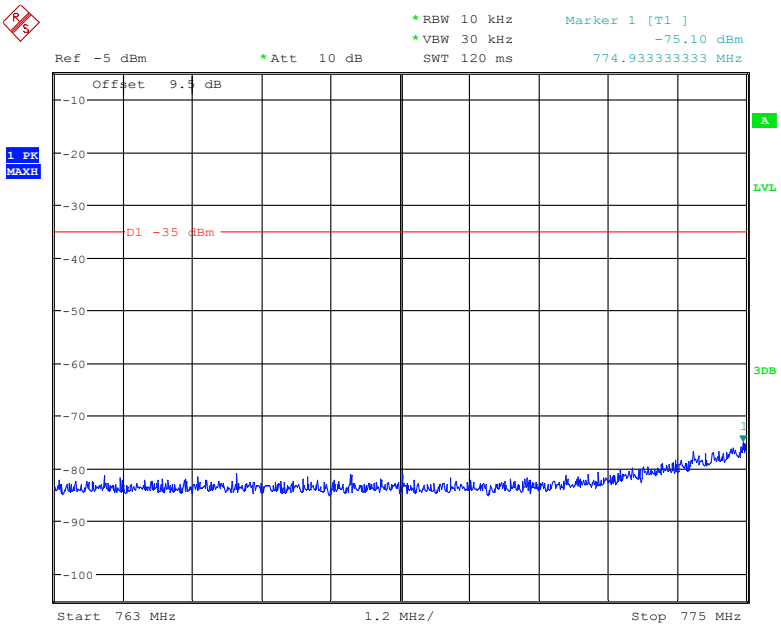
Date: 26.MAY.2019 16:33:52

1 GHz – 10.0 GHz (5.0 MHz, Middle Channel)



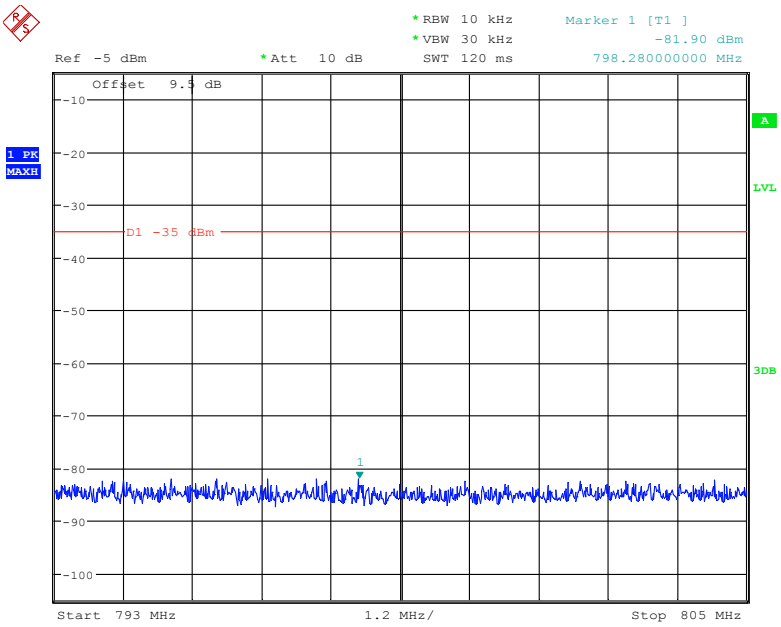
Date: 26.MAY.2019 16:33:10

763 MHz –775 MHz (5.0 MHz, Middle Channel)



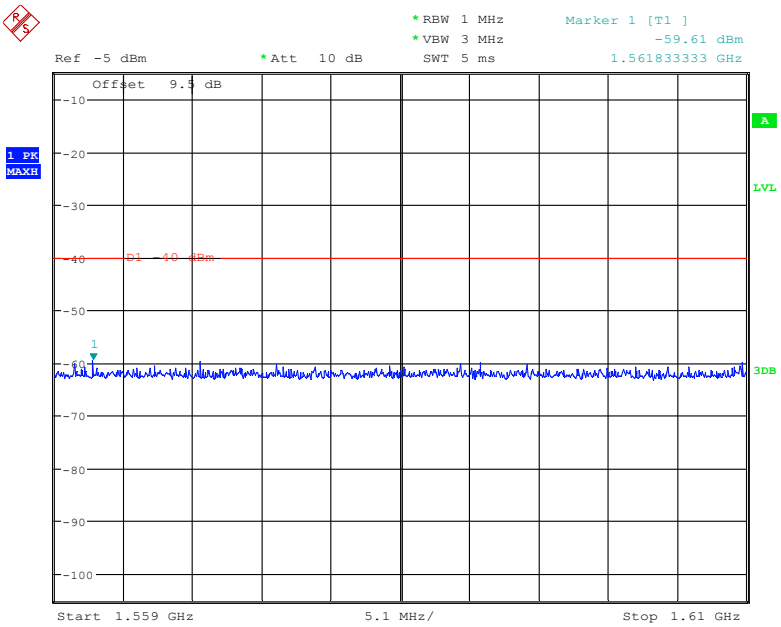
Date: 20.JUN.2019 10:16:59

793 MHz –806 MHz (5.0 MHz, Middle Channel)



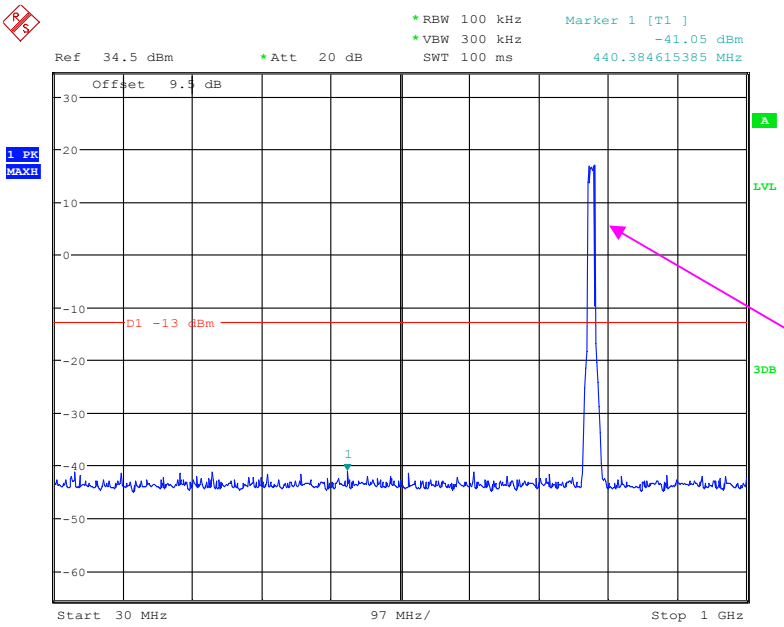
Date: 20.JUN.2019 10:24:47

1559 MHz –1610 MHz (5.0 MHz, Middle Channel)



Date: 20.JUN.2019 10:25:59

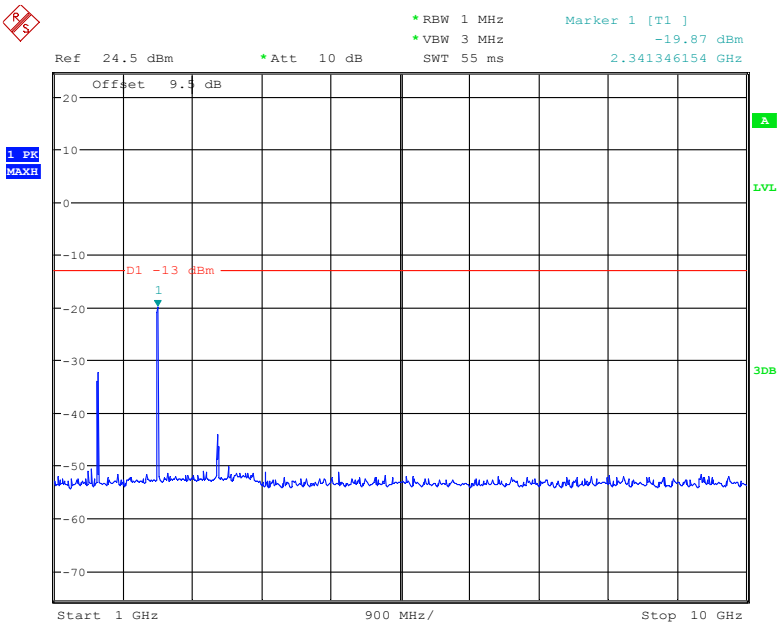
30 MHz – 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

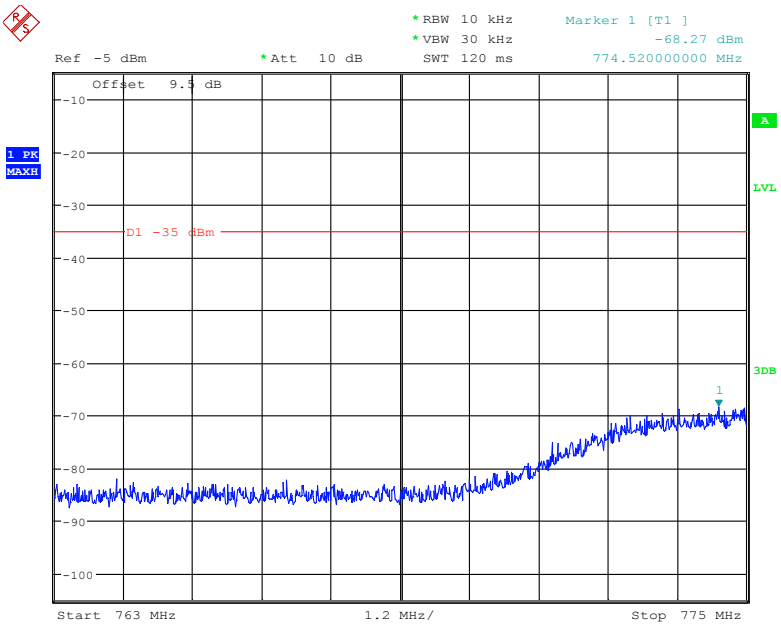
Date: 26.MAY.2019 16:34:21

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



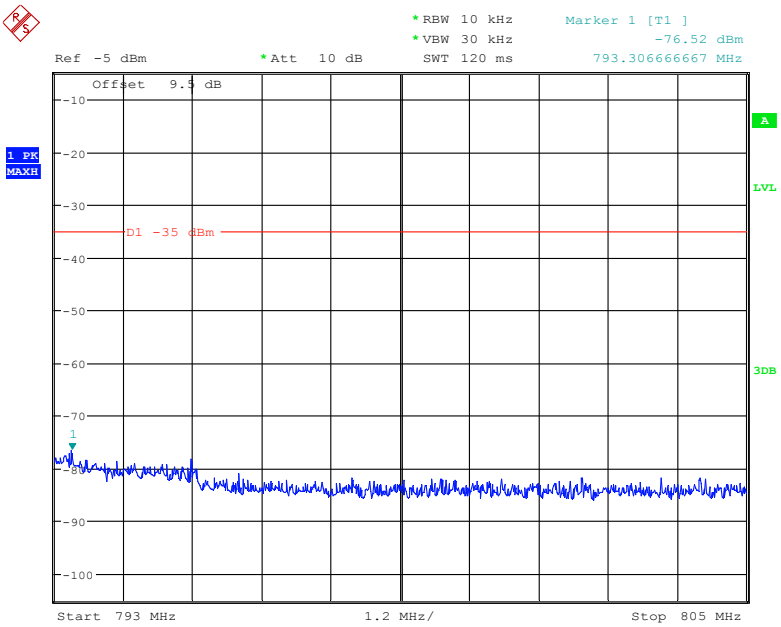
Date: 26.MAY.2019 16:32:57

763 MHz –775 MHz (10.0 MHz, Middle Channel)



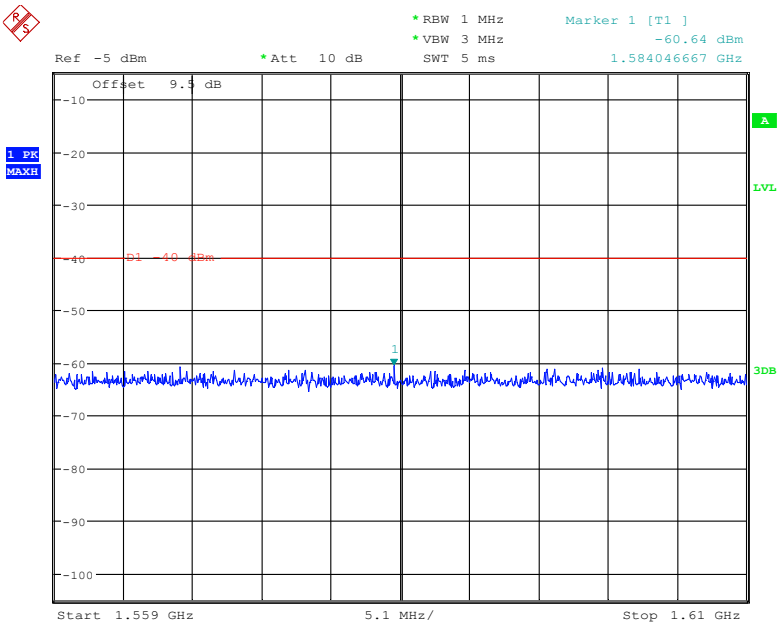
Date: 20.JUN.2019 10:22:15

793 MHz –806 MHz (10.0 MHz, Middle Channel)



Date: 20.JUN.2019 10:23:35

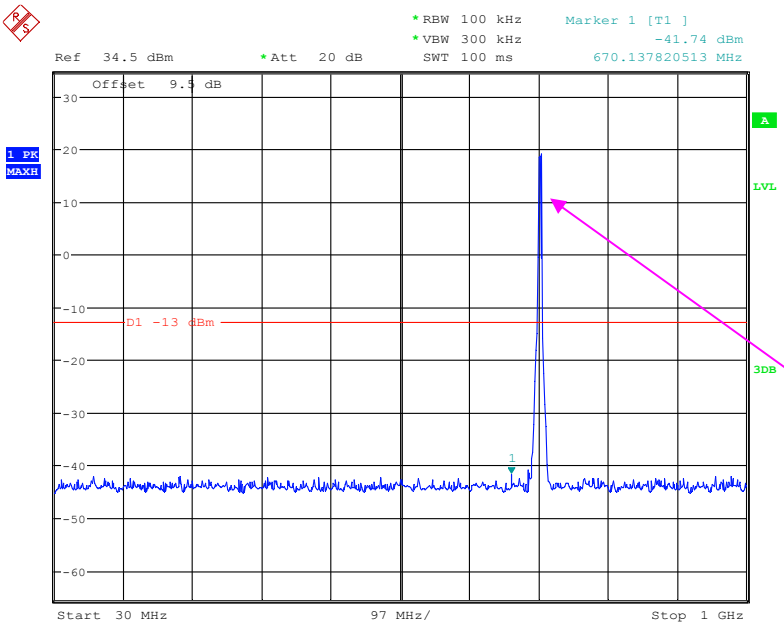
1559 MHz –1610 MHz (10.0 MHz, Middle Channel)



Date: 20.JUN.2019 10:26:30

LTE Band 17:

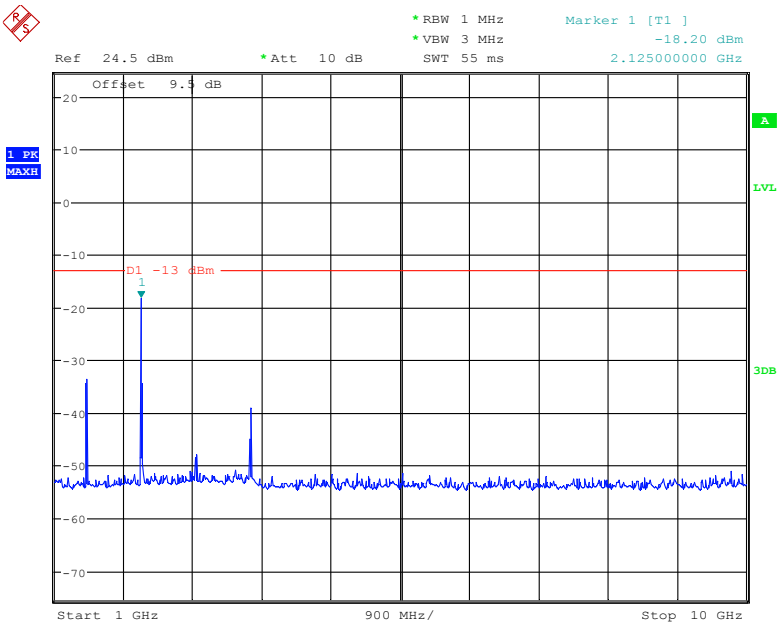
30 MHz – 1.0 GHz (5.0 MHz, Middle Channel)



Fundamental test

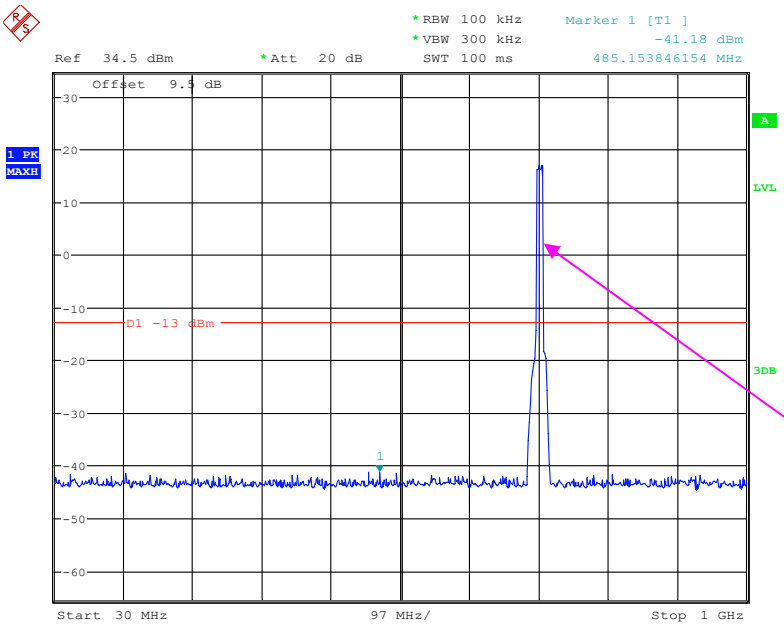
Date: 26.MAY.2019 16:30:09

1 GHz – 10GHz (5 MHz, Middle Channel)



Date: 26.MAY.2019 16:30:31

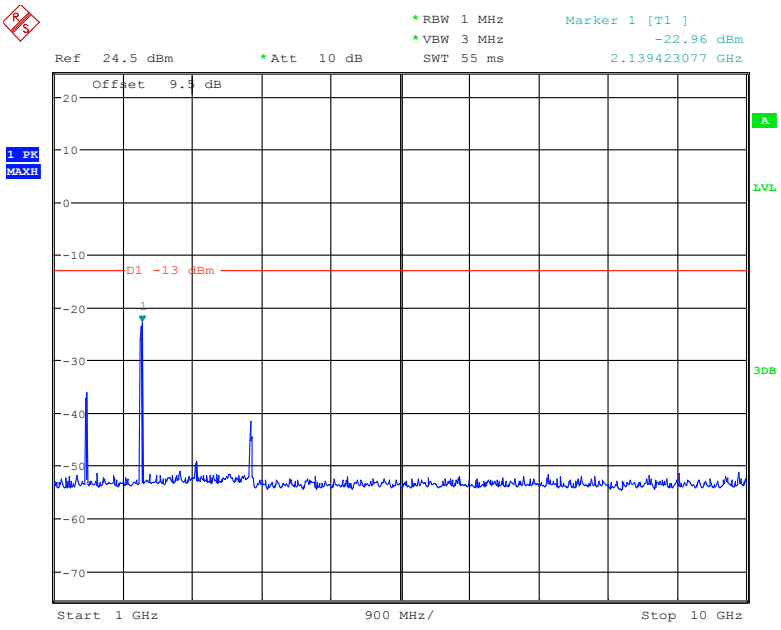
30 MHz – 1.0 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 26.MAY.2019 16:29:41

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



Date: 26.MAY.2019 16:30:46

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

Applicable Standard

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

Test Procedure

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

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

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

Test Data

Environmental Conditions

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

The testing was performed by Curry Xiang on 2019-07-09.

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										
251.38	34.52	145	1.6	H	-62.5	0.32	0	-62.82	-13	49.82
251.38	33.45	13	2.1	V	-63.5	0.32	0	-63.82	-13	50.82
1673.20	53.36	338	1.4	H	-53.0	1.30	8.90	-45.40	-13	32.40
1673.20	53.95	14	1.4	V	-51.8	1.30	8.90	-44.20	-13	31.20
2509.80	55.38	264	1.5	H	-48.0	2.60	10.20	-40.40	-13	27.40
2509.80	52.37	176	1.8	V	-50.4	2.60	10.20	-42.80	-13	29.80
3346.40	49.83	110	2.1	H	-51.1	1.50	11.70	-40.90	-13	27.90
3346.40	50.38	135	2.5	V	-50.5	1.50	11.70	-40.30	-13	27.30
WCDMA Mode, Middle channel										
251.38	34.02	167	2.0	H	-63.0	0.32	0	-63.32	-13	50.32
251.38	34.13	143	2.2	V	-62.9	0.32	0	-63.22	-13	50.22
1673.20	48.37	274	2.0	H	-58.0	1.30	8.90	-50.40	-13	37.40
1673.20	47.65	129	1.2	V	-58.1	1.30	8.90	-50.50	-13	37.50
2509.80	47.63	187	1.3	H	-55.7	2.60	10.20	-48.10	-13	35.10
2509.80	48.12	344	1.2	V	-54.6	2.60	10.20	-47.00	-13	34.00
3346.40	43.18	235	1.1	H	-57.7	1.50	11.70	-47.50	-13	34.50
3346.40	43.05	194	2.4	V	-57.9	1.50	11.70	-47.70	-13	34.70

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
251.38	34.53	16	1.7	H	-62.5	0.32	0	-62.82	-13	49.82
251.38	33.66	49	2.0	V	-63.3	0.32	0	-63.62	-13	50.62
3760.00	66.11	158	1.8	H	-35.9	1.50	11.80	-25.60	-13	12.60
3760.00	64.33	157	2.5	V	-37.3	1.50	11.80	-27.00	-13	14.00
WCDMA Mode Band II, Middle channel										
251.38	33.20	12	1.1	H	-63.8	0.32	0	-64.12	-13	51.12
251.38	33.57	345	2.5	V	-63.4	0.32	0	-63.72	-13	50.72
3760.00	57.01	56	2.2	H	-45.0	1.50	11.80	-34.70	-13	21.70
3760.00	54.84	288	1.4	V	-46.7	1.50	11.80	-36.40	-13	23.40

30 MHz ~ 20 GHz:

AWS Band (Part 27)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)		Limit (dBm)	Margin (dB)
WCDMA Mode Band IV, Middle channel										
251.38	33.24	311	1.6	H	-63.8	0.32	0	-64.12	-13	51.12
251.38	33.96	54	2.1	V	-63.0	0.32	0	-63.32	-13	50.32
3465.20	59.09	317	1.8	H	-41.7	1.50	12.00	-31.20	-13	18.20
3465.20	53.28	209	1.6	V	-48.2	1.50	12.00	-37.70	-13	24.70

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

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBμV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 2 (1.4 MHz, Middle Channel)										
Test frequency range:30 MHz ~ 20 GHz										
251.38	33.10	347	1.0	H	-63.9	0.32	0	-64.22	-13	51.22
251.38	34.80	332	1.5	V	-62.2	0.32	0	-62.52	-13	49.52
3760.00	56.15	151	1.1	H	-45.9	1.50	11.80	-35.60	-13	22.60
3760.00	51.88	227	1.1	V	-49.7	1.50	11.80	-39.40	-13	26.40
Band 4 (1.4 MHz, Middle Channel)										
Test frequency range:30 MHz ~ 20 GHz										
251.38	34.77	256	1.3	H	-62.2	0.32	0	-62.52	-13	49.52
251.38	34.48	96	1.3	V	-62.5	0.32	0	-62.82	-13	49.82
3465.00	52.11	204	1.8	H	-48.6	1.50	12.00	-38.10	-13	25.10
3465.00	48.68	31	1.4	V	-52.8	1.50	12.00	-42.30	-13	29.30
Band 5 (1.4 MHz, Middle Channel)										
Test frequency range:30 MHz ~ 10 GHz										
251.38	34.65	145	1.2	H	-62.3	0.32	0	-62.62	-13	49.62
251.38	34.17	343	1.9	V	-62.8	0.32	0	-63.12	-13	50.12
1673.00	49.05	46	1.6	H	-57.3	1.30	8.90	-49.70	-13	36.70
1673.00	49.17	19	1.6	V	-56.6	1.30	8.90	-49.00	-13	36.00
2509.50	46.63	343	2.0	H	-56.7	2.60	10.20	-49.10	-13	36.10
2509.50	46.68	190	1.9	V	-56.1	2.60	10.20	-48.50	-13	35.50
3346.00	42.82	203	1.1	H	-58.1	1.50	11.70	-47.90	-13	34.90
3346.00	43.02	341	1.6	V	-57.9	1.50	11.70	-47.70	-13	34.70
Band 7 (5 MHz, Middle Channel)										
Test frequency range: 30 MHz ~ 26.5GHz										
251.38	33.19	289	2.4	H	-63.8	0.32	0	-64.12	-25	39.12
251.38	34.74	139	2.2	V	-62.3	0.32	0	-62.62	-25	37.62
5070.00	44.75	332	1.4	H	-55.3	1.60	12.10	-44.80	-25	19.80
5070.00	44.52	180	2.3	V	-55.5	1.60	12.10	-45.00	-25	20.00
Band 12 (1.4 MHz, Middle Channel)										
Test frequency range: 30 MHz ~ 10GHz										
251.38	34.14	203	1.9	H	-62.9	0.32	0	-63.22	-13	50.22
251.38	34.61	287	1.8	V	-62.4	0.32	0	-62.72	-13	49.72
1415.00	43.28	36	1.3	H	-64.9	1.60	7.90	-58.60	-13	45.60
1415.00	43.42	165	2.1	V	-65.0	1.60	7.90	-58.70	-13	45.70
2122.50	44.15	181	1.5	H	-57.0	1.30	9.70	-48.60	-13	35.60
2122.50	44.29	28	2.2	V	-57.7	1.30	9.70	-49.30	-13	36.30
2830.00	42.83	213	2.1	H	-61.1	1.80	10.50	-52.40	-13	39.40
2830.00	43.47	9	1.2	V	-60.1	1.80	10.50	-51.40	-13	38.40
3537.50	43.46	342	1.8	H	-57.4	1.50	12.00	-46.90	-13	33.90
3537.50	43.98	35	2.4	V	-57.7	1.50	12.00	-47.20	-13	34.20

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 13 (5 MHz, Middle Channel)										
Test frequency range:30 MHz ~ 10 GHz										
251.38	34.33	93	1.3	H	-62.7	0.32	0	-63.02	-13	50.02
251.38	34.56	217	1.7	V	-62.4	0.32	0	-62.72	-13	49.72
1564.00	47.81	209	1.6	H	-60.3	1.40	8.70	-53.00	-13	40.00
1564.00	47.93	336	1.7	V	-59.9	1.40	8.70	-52.60	-13	39.60
2346.00	48.09	22	2.1	H	-57.2	1.30	10.00	-48.50	-13	35.50
2346.00	46.74	101	1.3	V	-58.4	1.30	10.00	-49.70	-13	36.70
3128.00	44.99	315	1.7	H	-56.6	1.70	11.30	-47.00	-13	34.00
3128.00	44.39	28	1.1	V	-57.1	1.70	11.30	-47.50	-13	34.50
3910.00	45.37	151	2.1	H	-56.5	1.60	11.90	-46.20	-13	33.20
3910.00	44.59	147	1.6	V	-57.2	1.60	11.90	-46.90	-13	33.90
Band 17 (5 MHz, Middle Channel)										
Test frequency range: 30 MHz ~ 10GHz										
251.38	34.83	88	1.0	H	-62.2	0.32	0	-62.52	-13	49.52
251.38	34.30	263	1.6	V	-62.7	0.32	0	-63.02	-13	50.02
1420.00	47.28	174	1.7	H	-60.9	1.60	7.90	-54.60	-13	41.60
1420.00	48.79	54	1.5	V	-59.6	1.60	7.90	-53.30	-13	40.30
2130.00	45.38	8	1.1	H	-55.7	1.30	9.70	-47.30	-13	34.30
2130.00	46.95	300	1.0	V	-55.0	1.30	9.70	-46.60	-13	33.60
2840.00	44.72	314	1.0	H	-59.2	1.80	10.50	-50.50	-13	37.50
2840.00	43.57	109	1.1	V	-60.0	1.80	10.50	-51.30	-13	38.30
3550.00	43.25	275	1.5	H	-58.5	1.50	12.10	-47.90	-13	34.90
3550.00	42.91	29	2.5	V	-58.3	1.50	12.10	-47.70	-13	34.70

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.

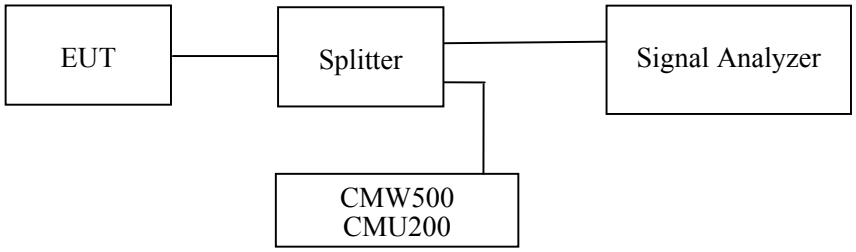
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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

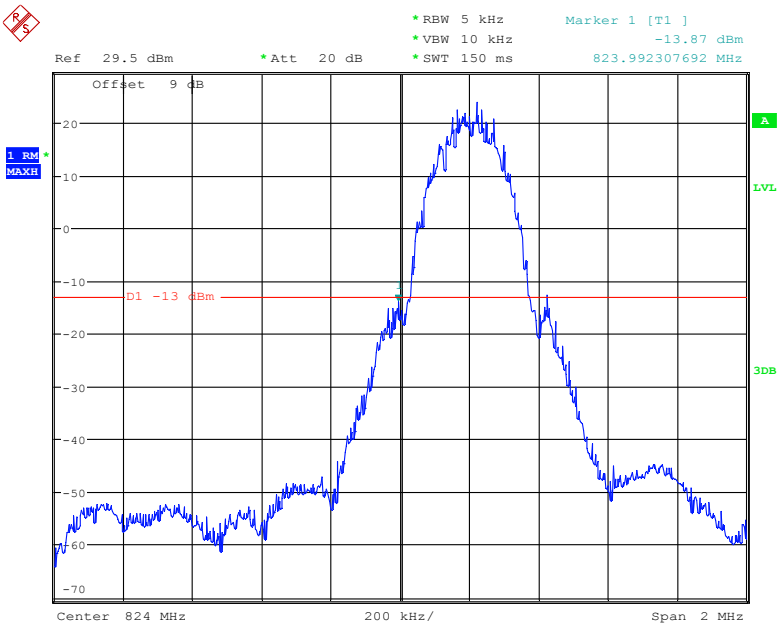
Temperature:	24~25 ℃
Relative Humidity:	55~60 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by James Fu & George Zhong on 2019-05-26 to 2019-05-30.

EUT operation mode: Transmitting

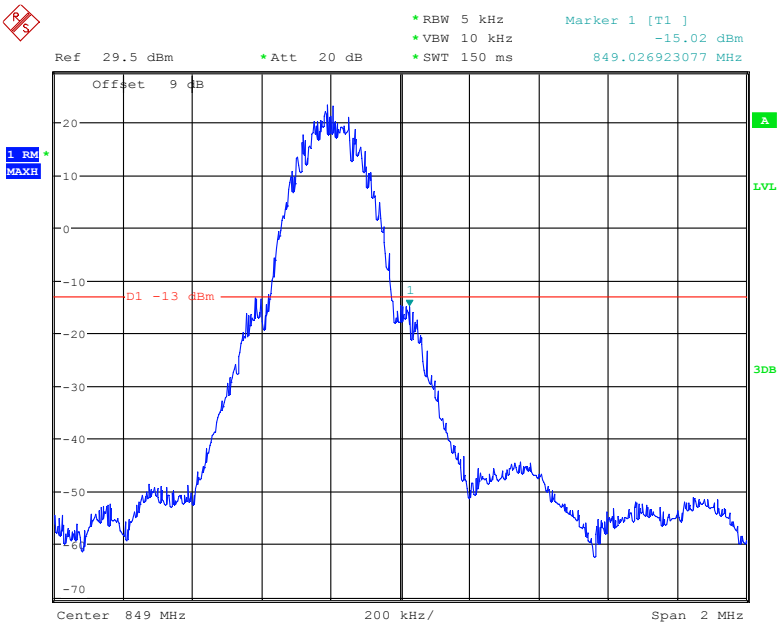
Test Result: Compliance. Please refer to the following plots.

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



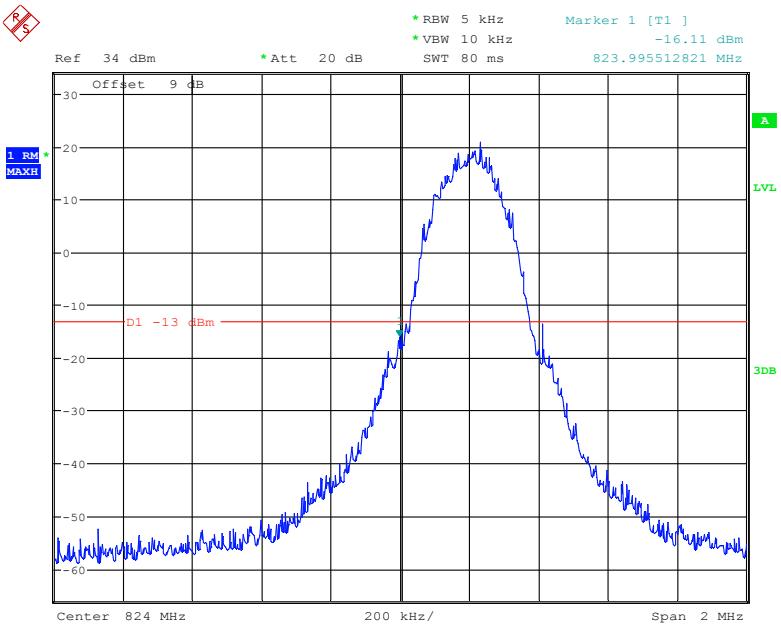
Date: 30.MAY.2019 14:09:06

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



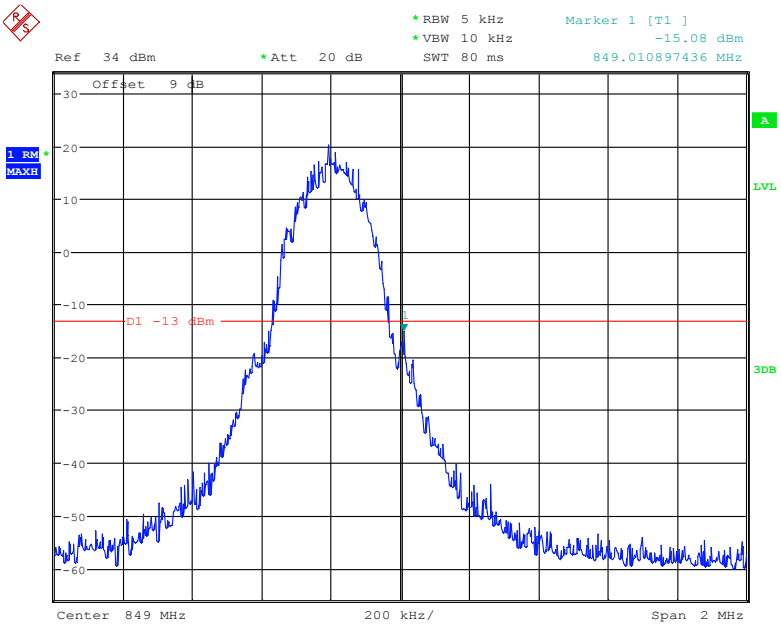
Date: 30.MAY.2019 14:11:32

Cellular Band, Left Band Edge for EDGE Mode



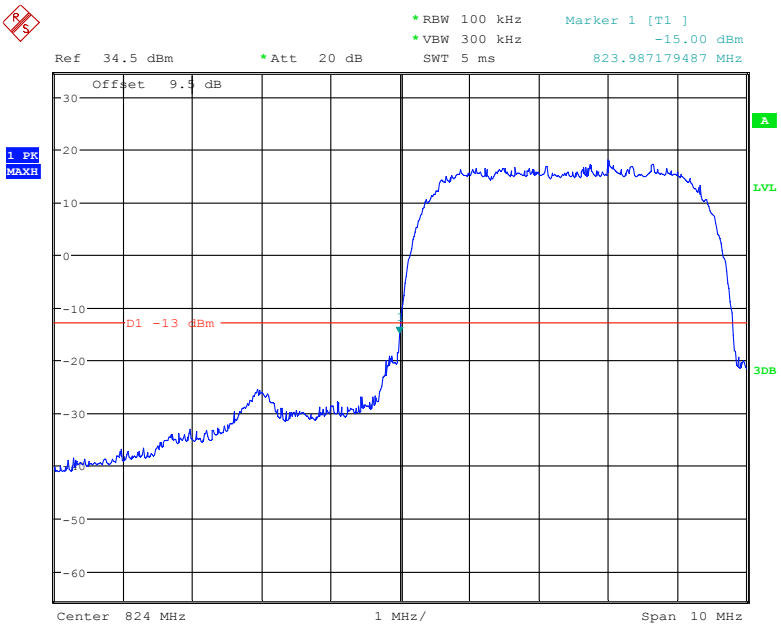
Date: 30.MAY.2019 14:55:43

Cellular Band, Right Band Edge for EDGE Mode



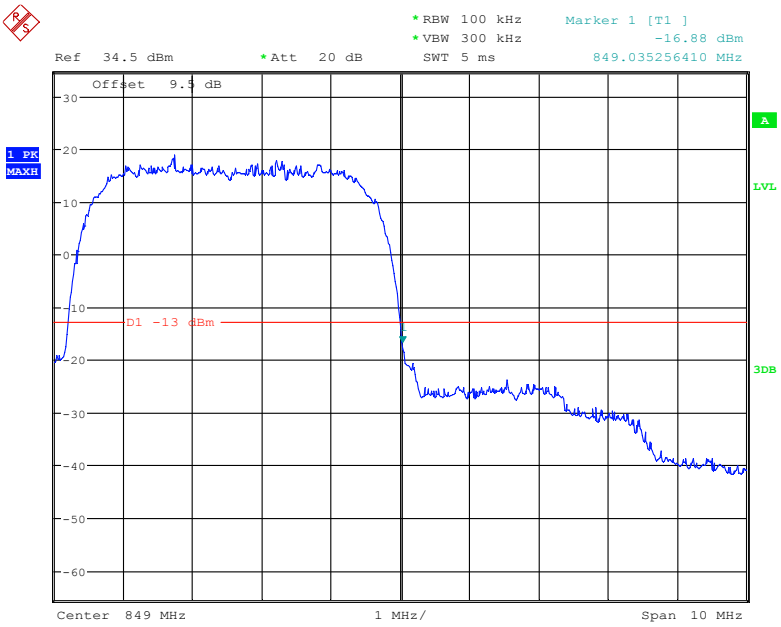
Date: 30.MAY.2019 14:56:44

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



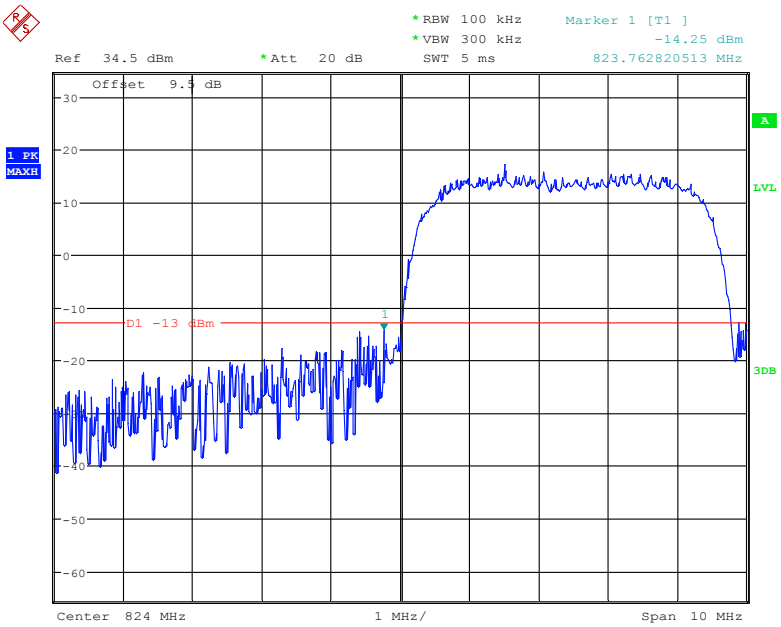
Date: 30.MAY.2019 16:24:07

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



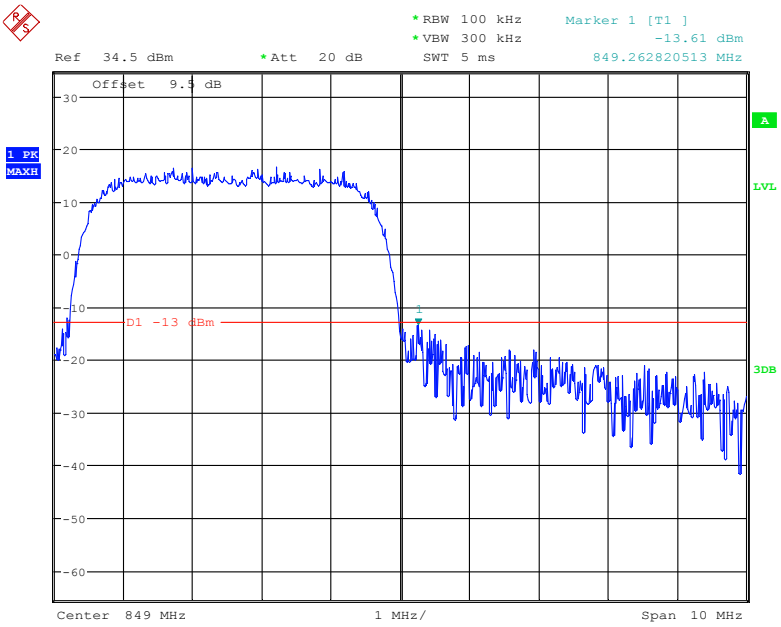
Date: 30.MAY.2019 16:25:05

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



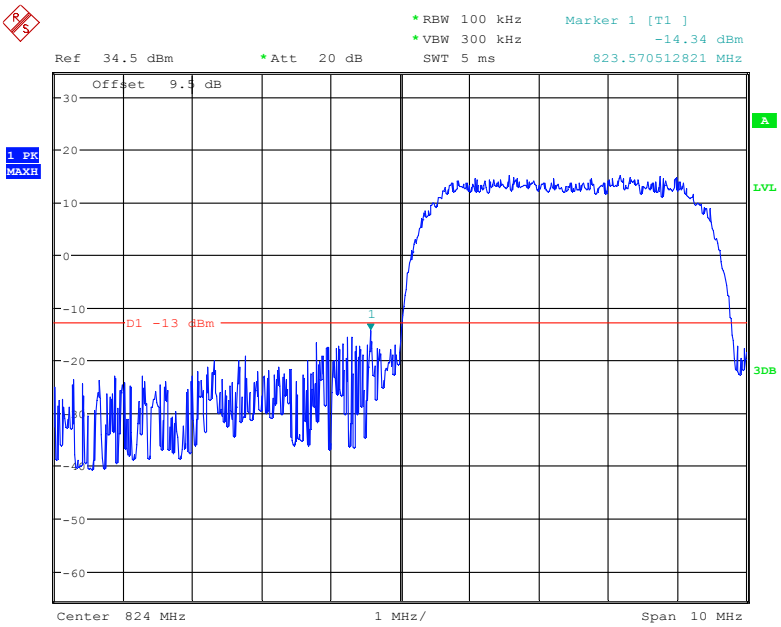
Date: 30.MAY.2019 16:43:55

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



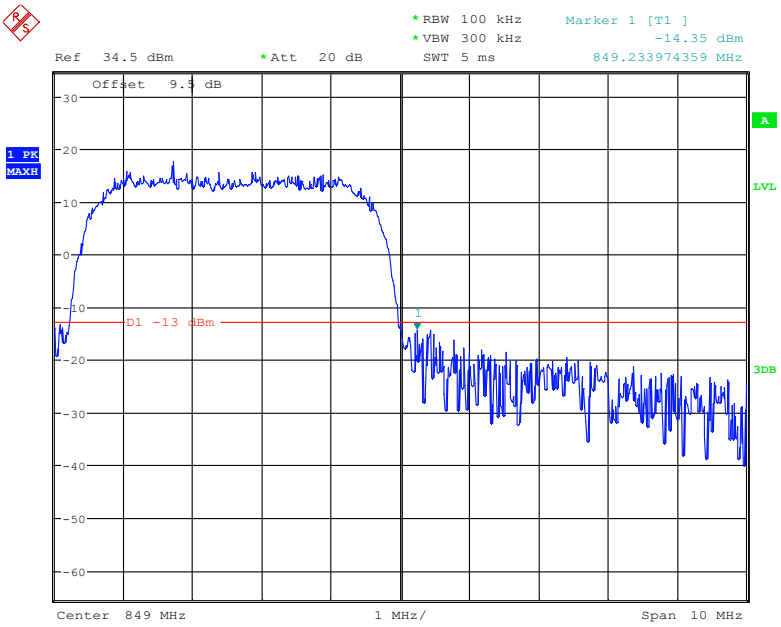
Date: 30.MAY.2019 16:52:54

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



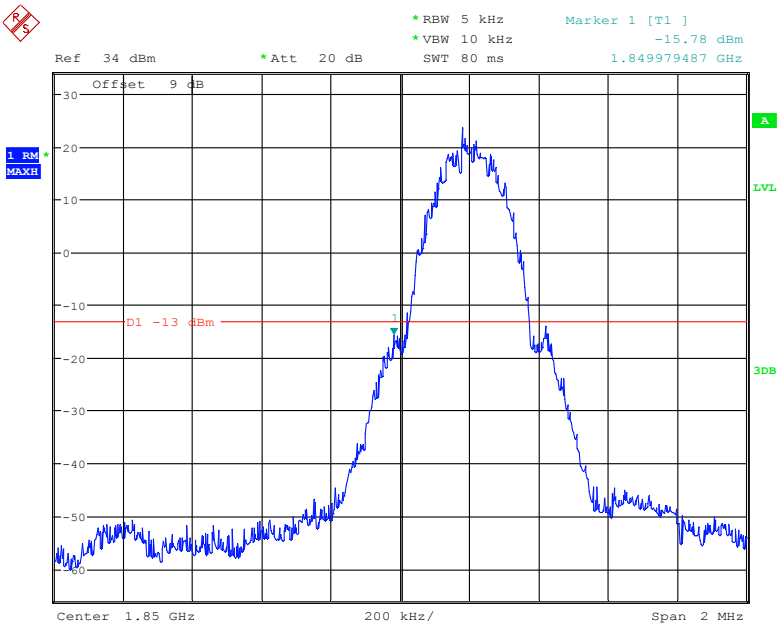
Date: 30.MAY.2019 16:41:56

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



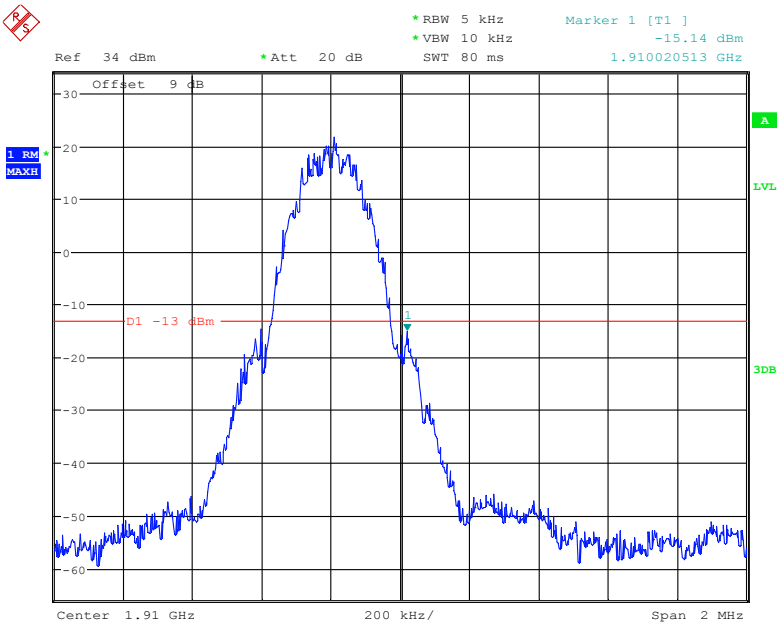
Date: 30.MAY.2019 16:39:28

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



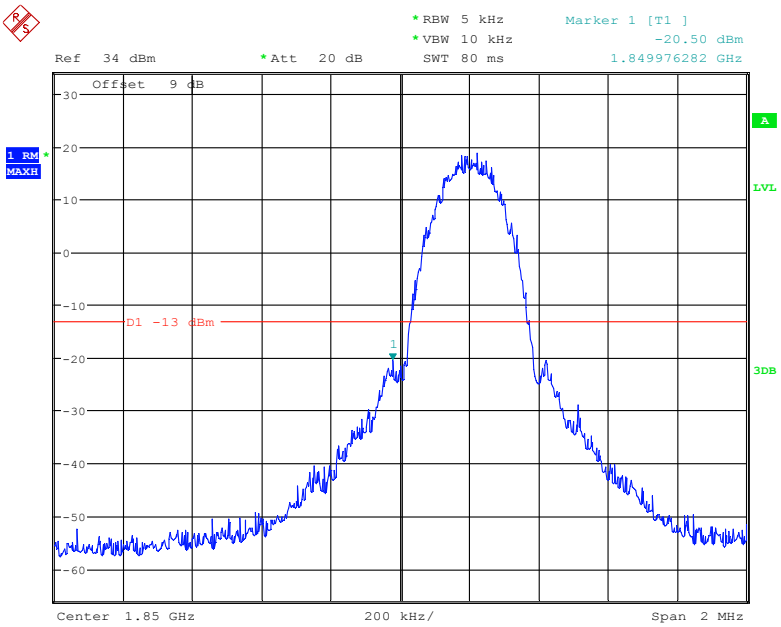
Date: 30.MAY.2019 14:38:52

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



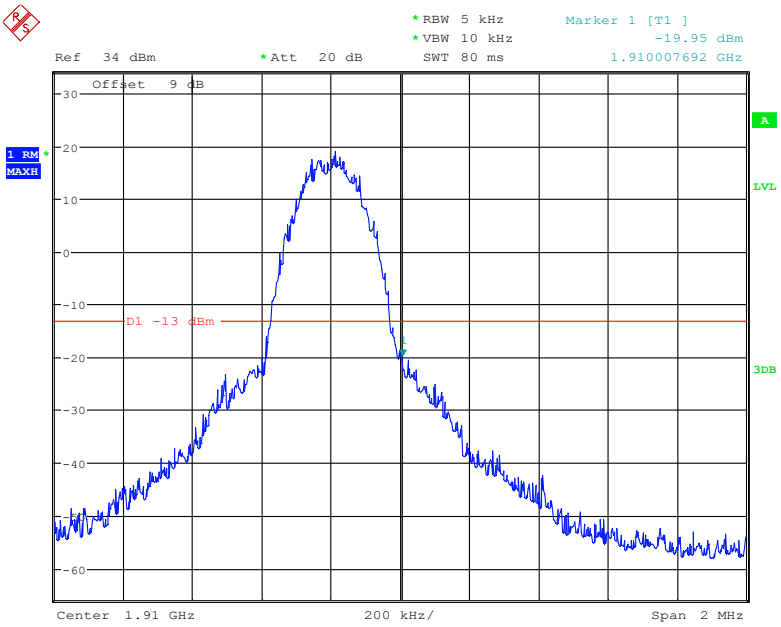
Date: 30.MAY.2019 14:39:51

PCS Band, Left Band Edge for EDGE Mode



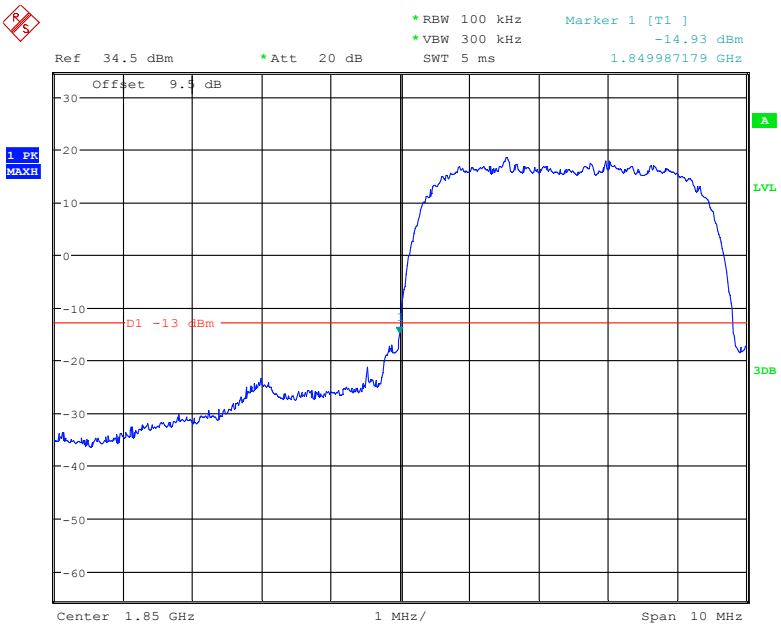
Date: 30.MAY.2019 15:12:49

PCS Band, Right Band Edge for EDGE Mode



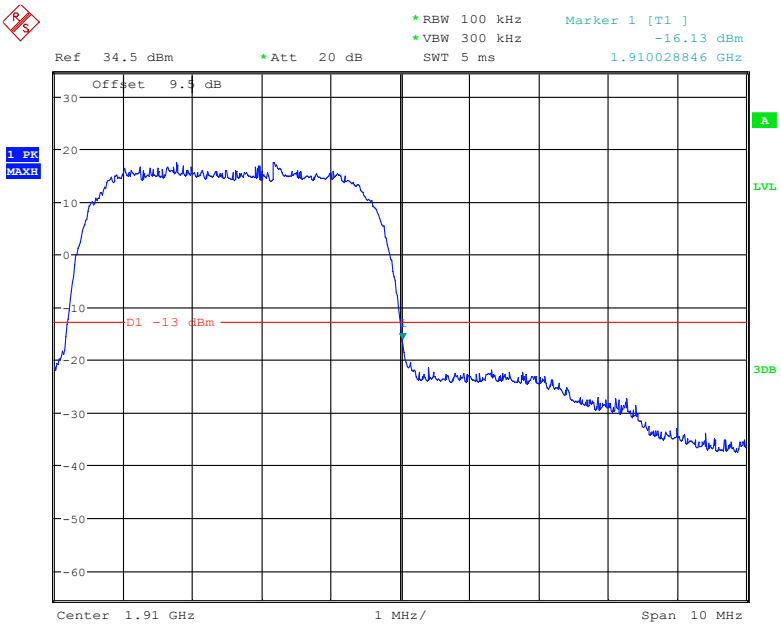
Date: 30.MAY.2019 15:14:44

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



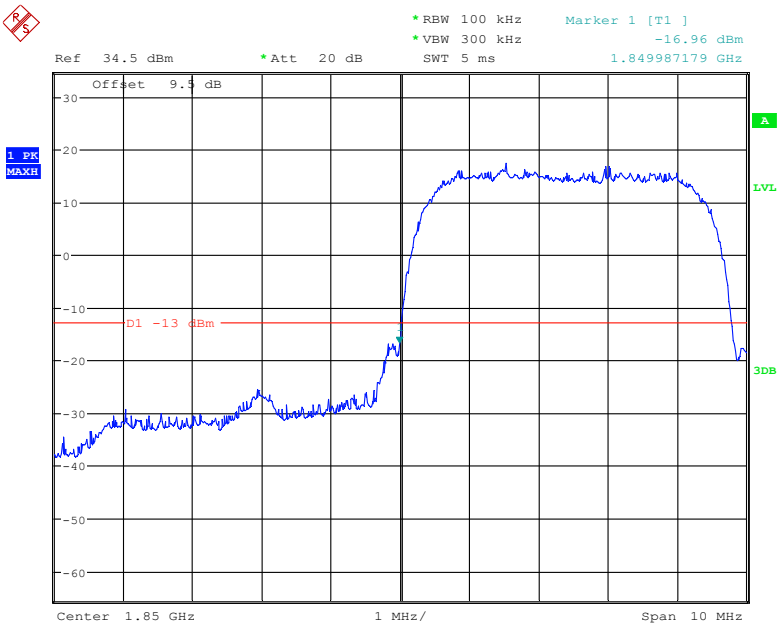
Date: 30.MAY.2019 15:49:01

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



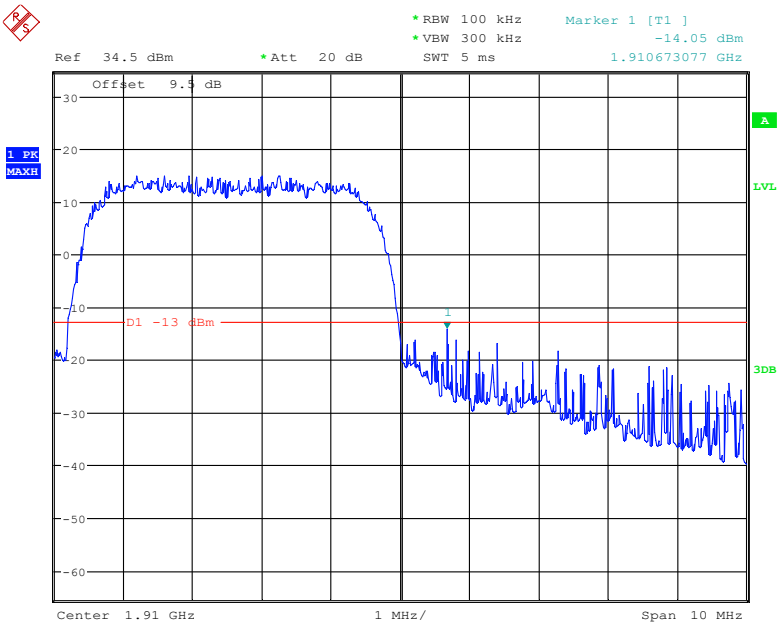
Date: 30.MAY.2019 15:50:07

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



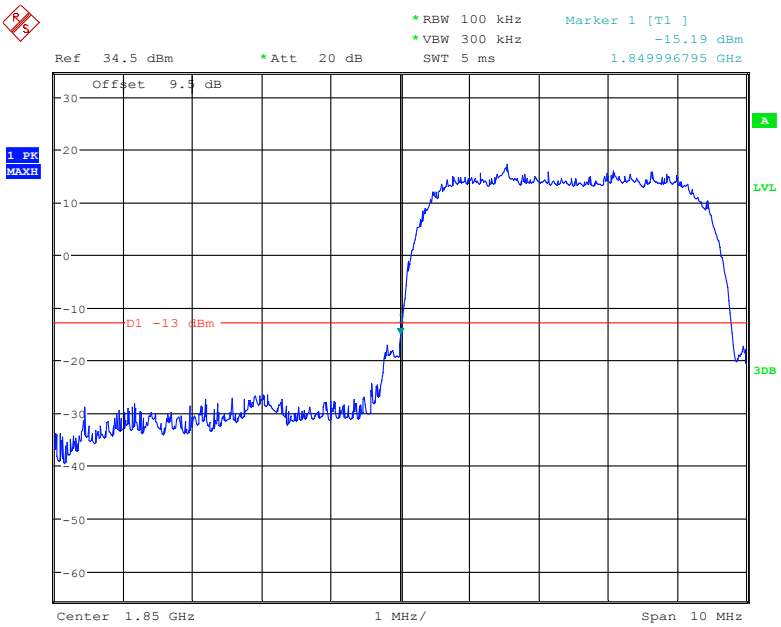
Date: 30.MAY.2019 16:03:33

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



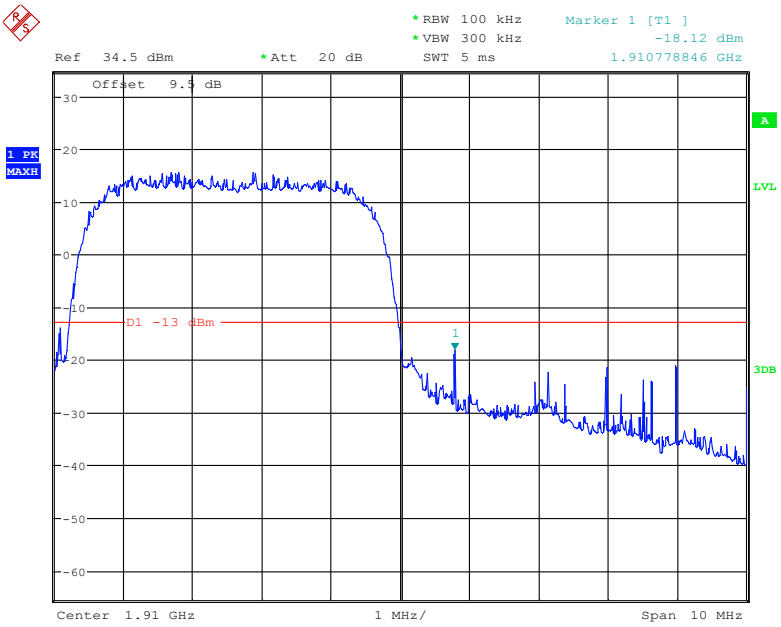
Date: 30.MAY.2019 16:07:00

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



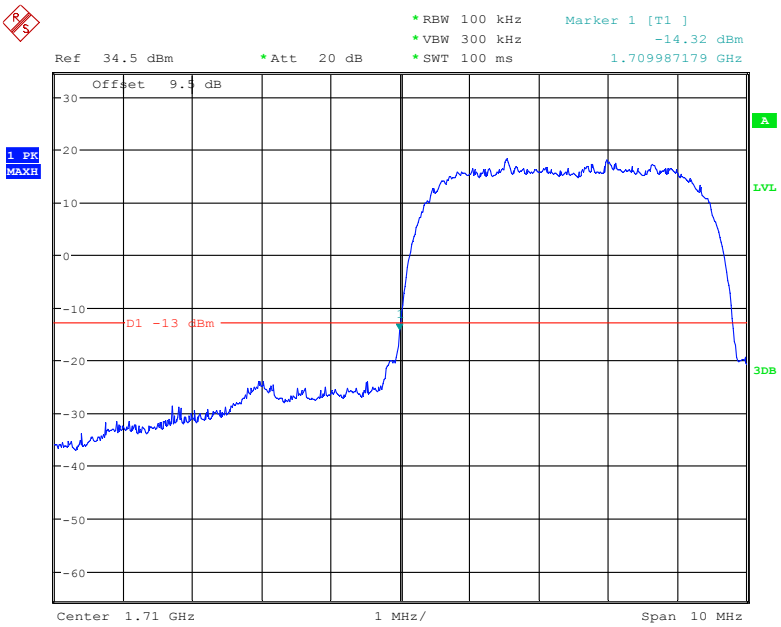
Date: 30.MAY.2019 16:15:58

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



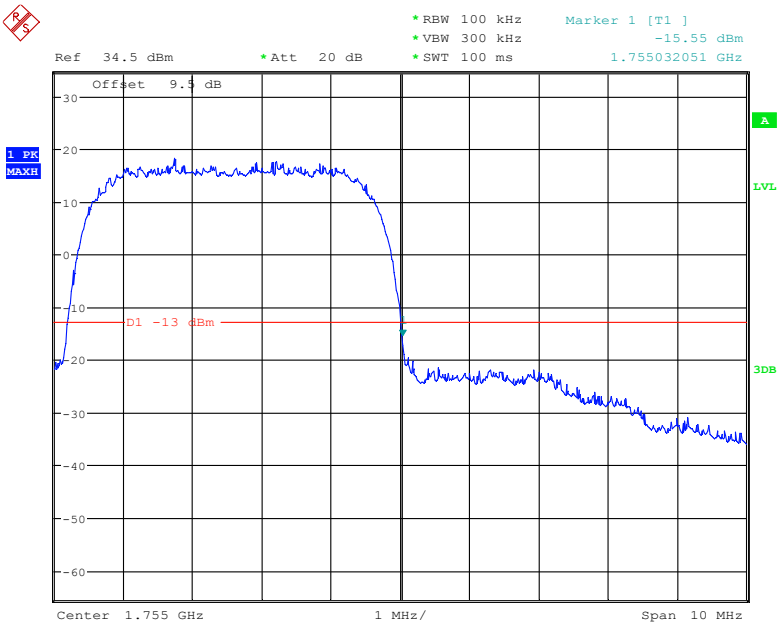
Date: 30.MAY.2019 16:17:40

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



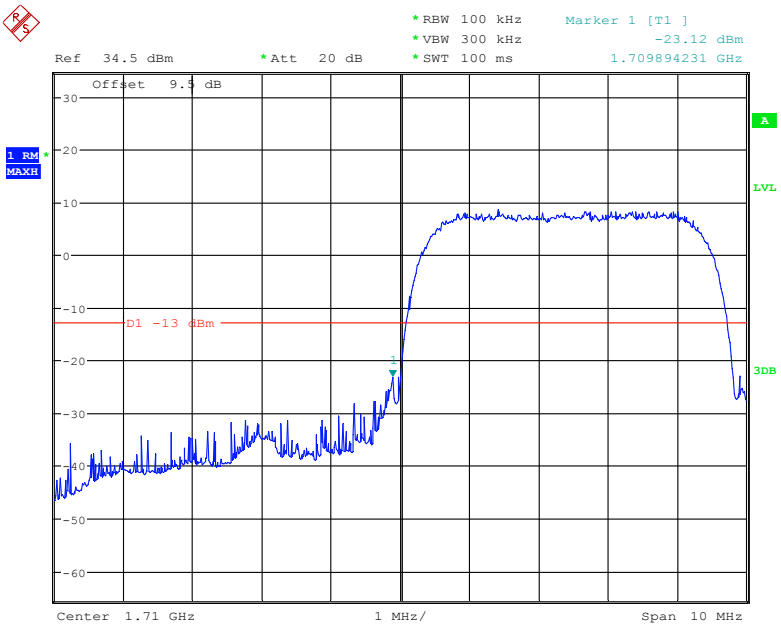
Date: 30.MAY.2019 17:08:11

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



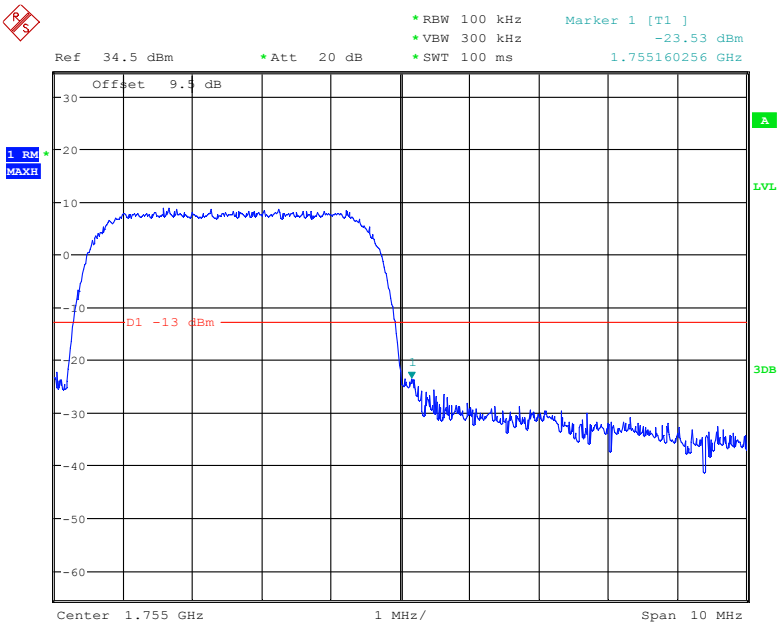
Date: 30.MAY.2019 17:08:59

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



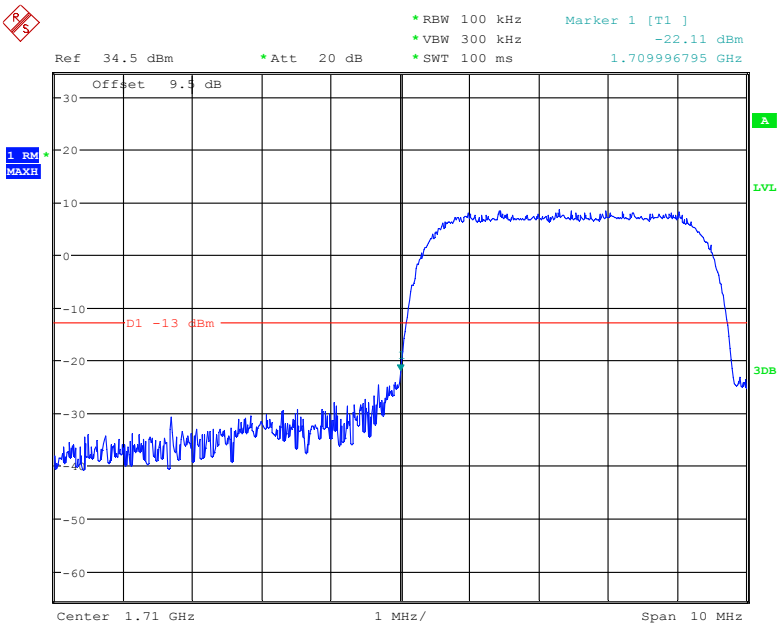
Date: 30.MAY.2019 17:26:32

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



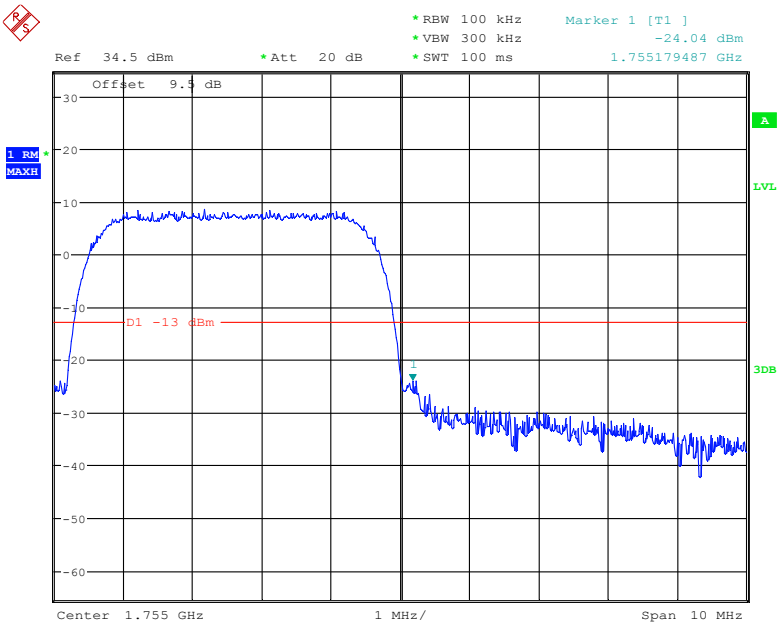
Date: 30.MAY.2019 17:27:14

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



Date: 30.MAY.2019 17:25:50

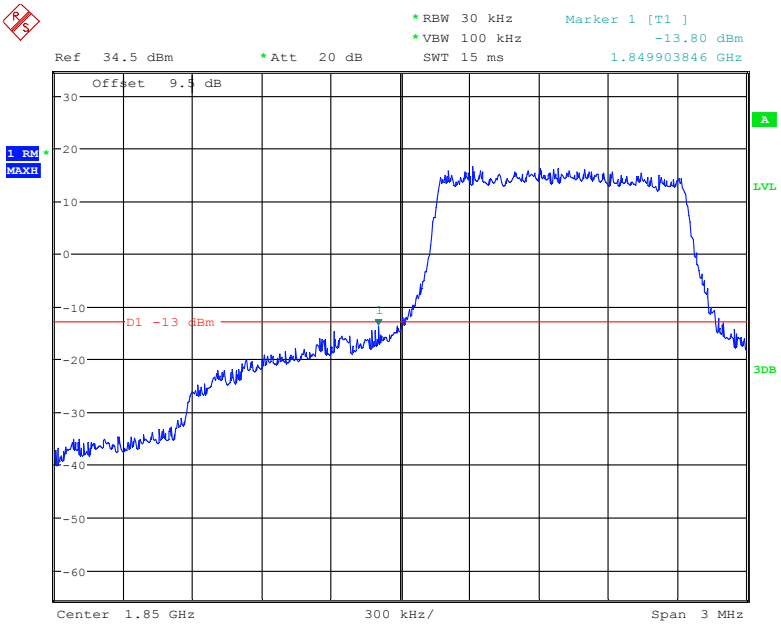
AWS Band, Right Band Edge for HSUPA (BPSK) Mode



Date: 30.MAY.2019 17:24:45

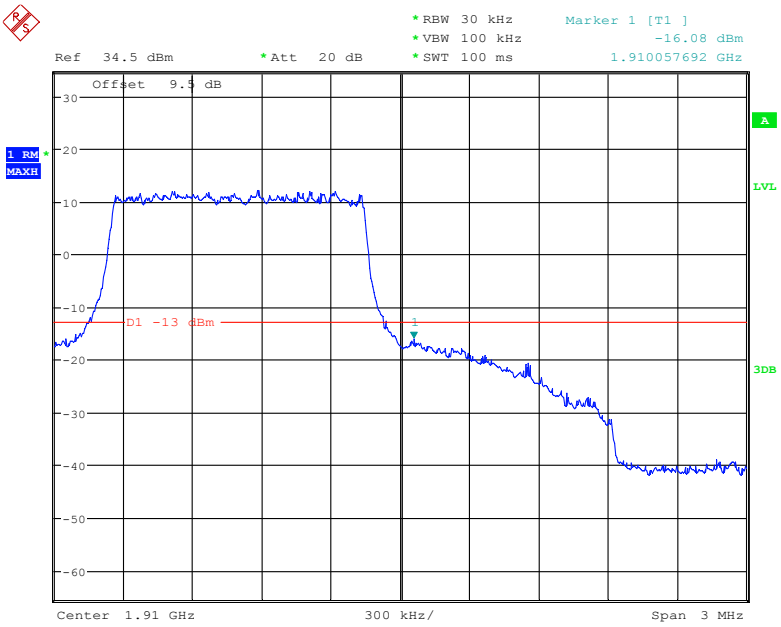
Band 2:

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



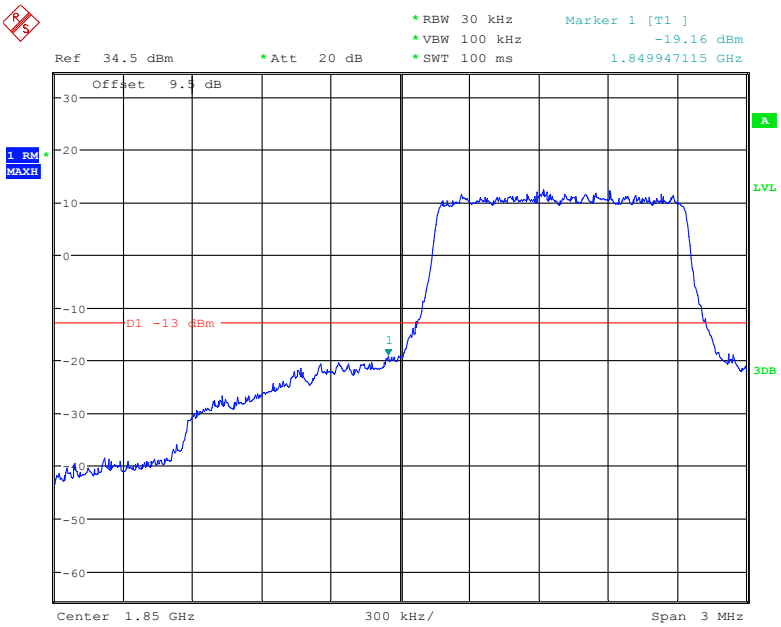
Date: 26.MAY.2019 17:51:30

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



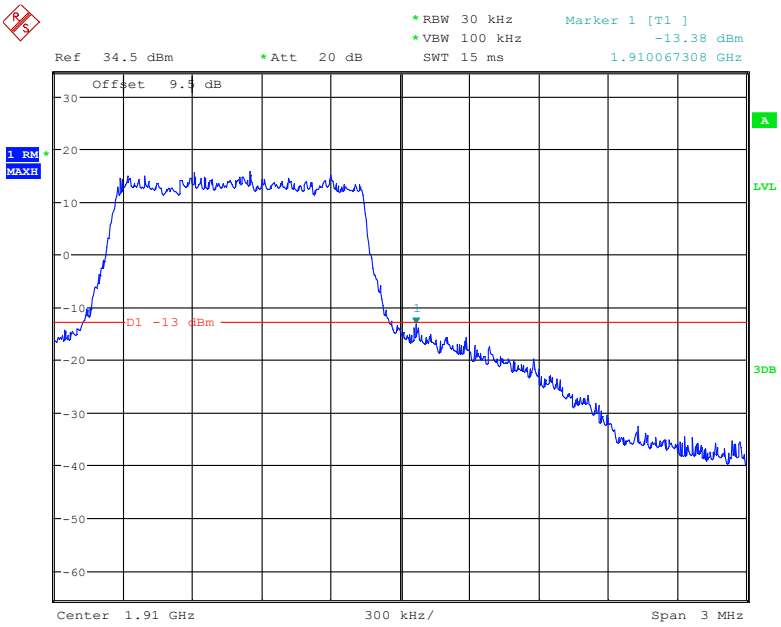
Date: 26.MAY.2019 17:54:51

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



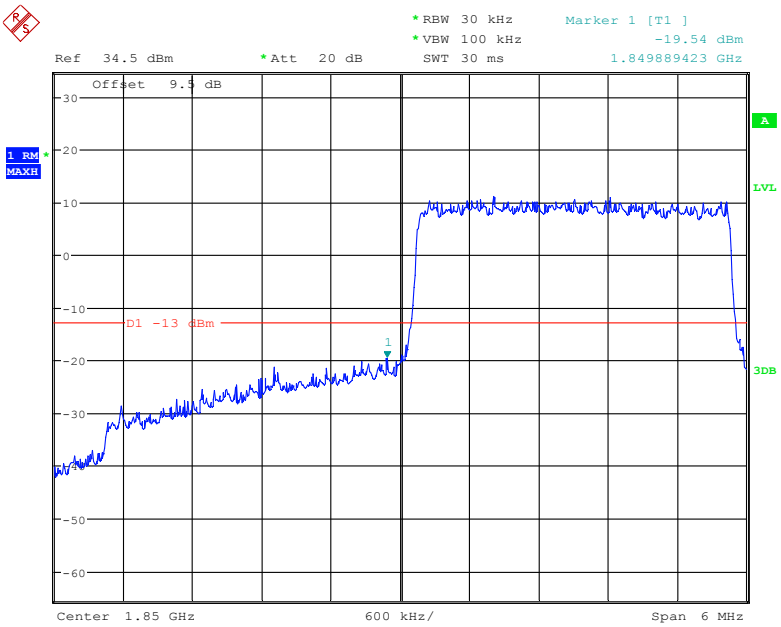
Date: 26.MAY.2019 17:56:12

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



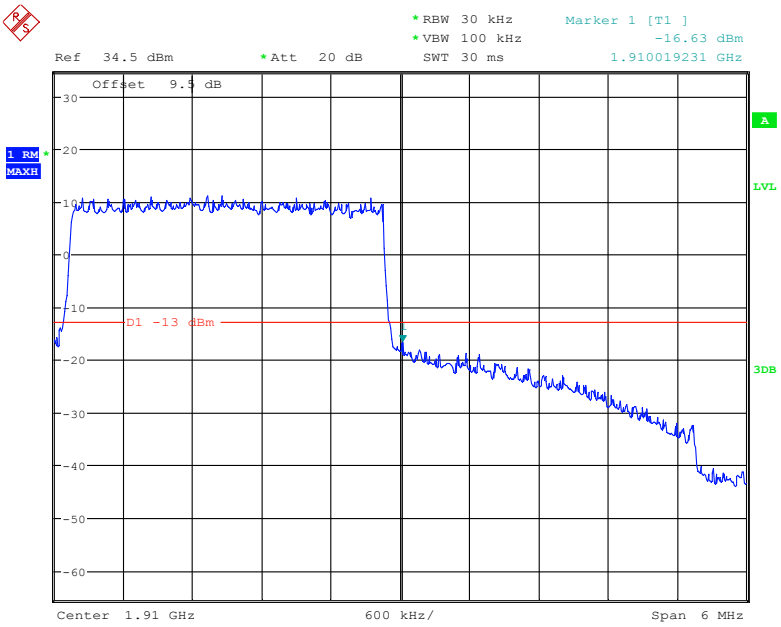
Date: 26.MAY.2019 17:53:52

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



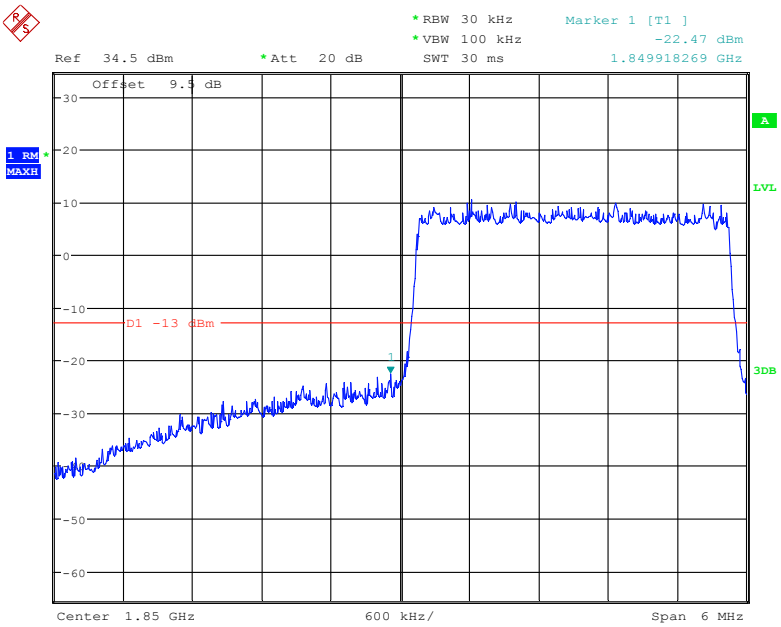
Date: 26.MAY.2019 17:57:12

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



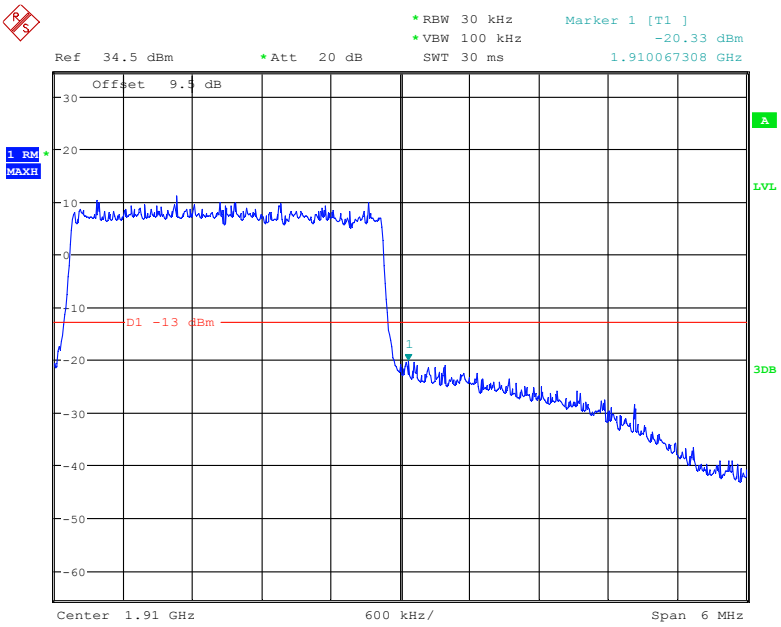
Date: 26.MAY.2019 17:58:49

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



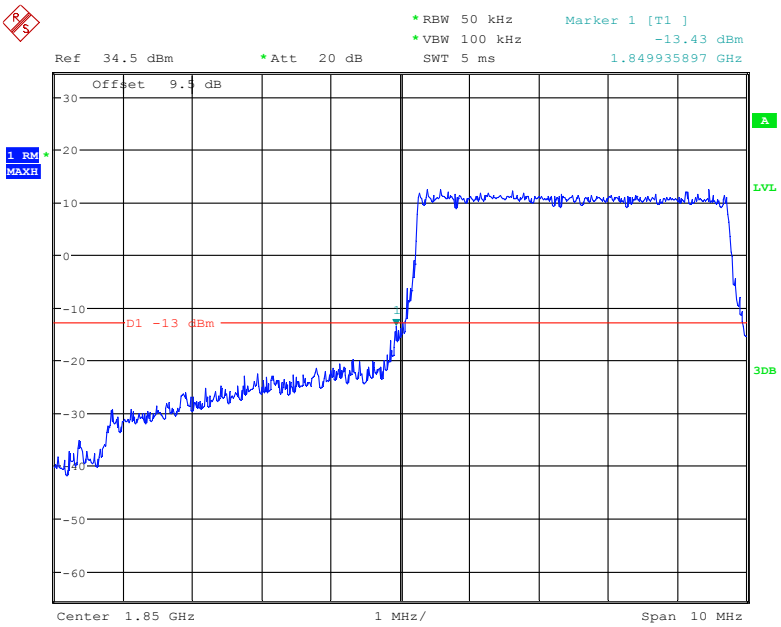
Date: 26.MAY.2019 17:57:39

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



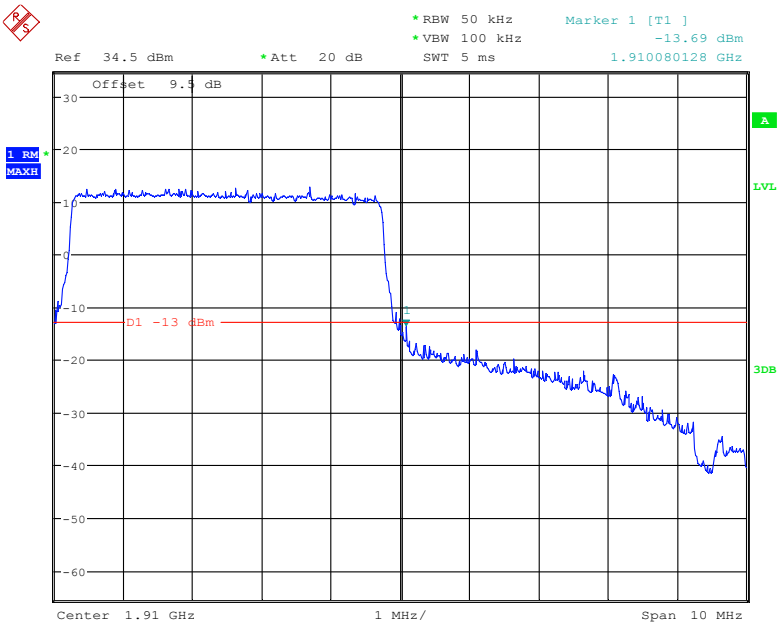
Date: 26.MAY.2019 17:58:11

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



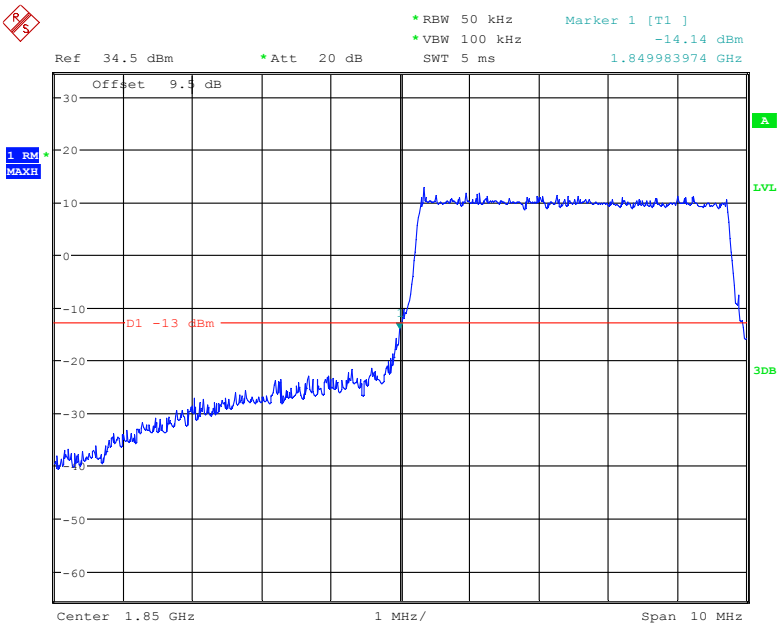
Date: 26.MAY.2019 18:00:05

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



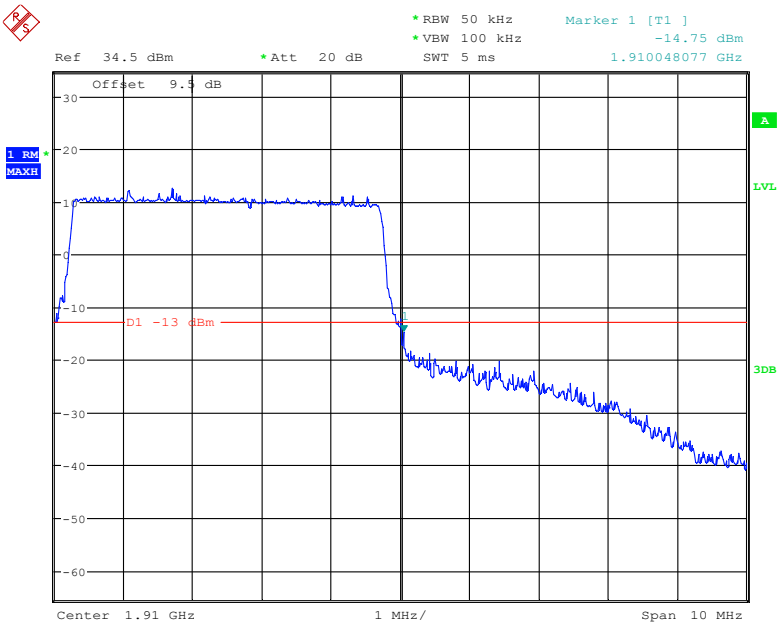
Date: 26.MAY.2019 18:01:02

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



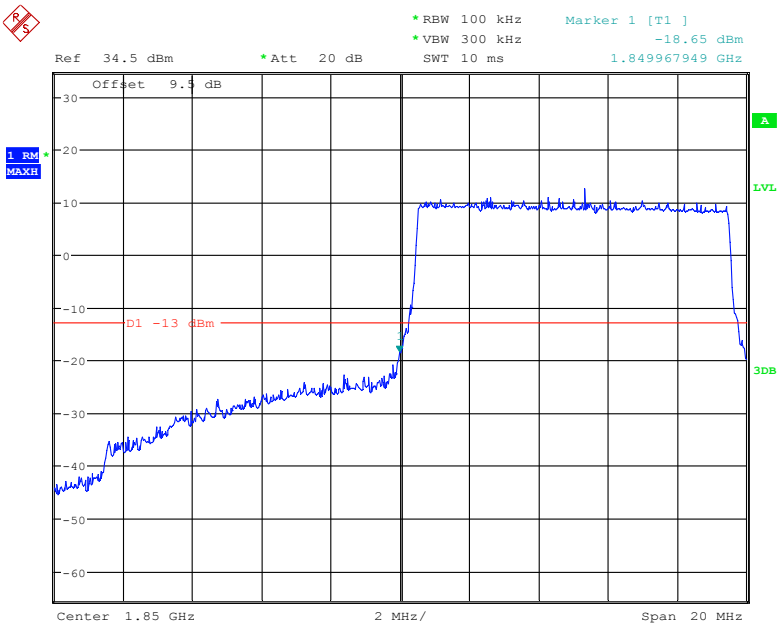
Date: 26.MAY.2019 17:59:35

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



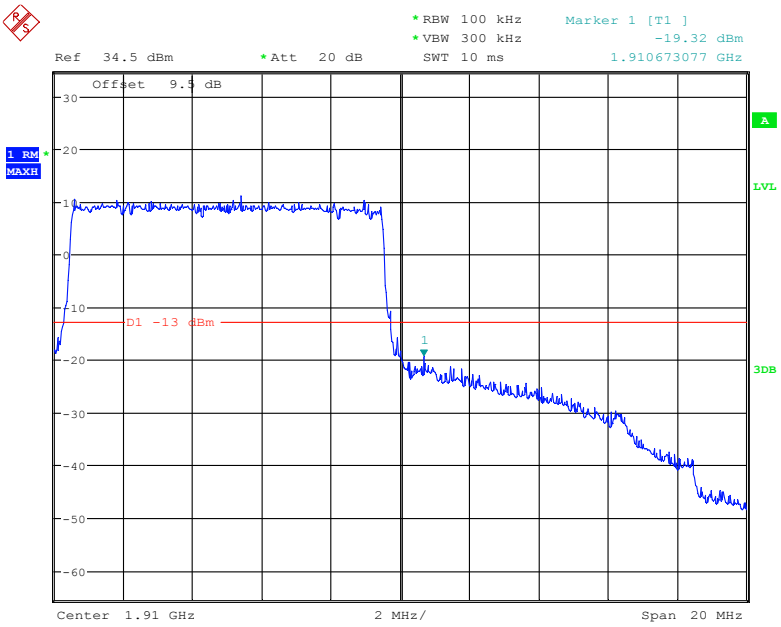
Date: 26.MAY.2019 18:02:46

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



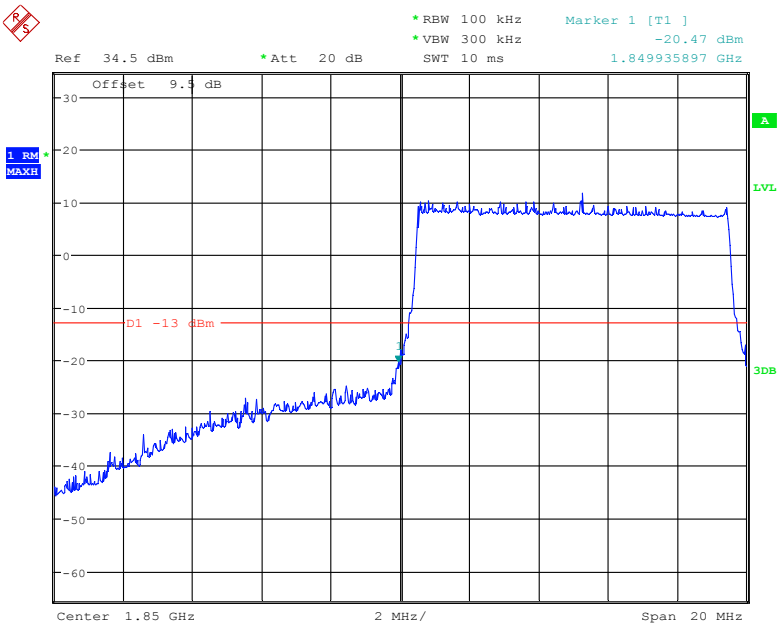
Date: 26.MAY.2019 18:06:06

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



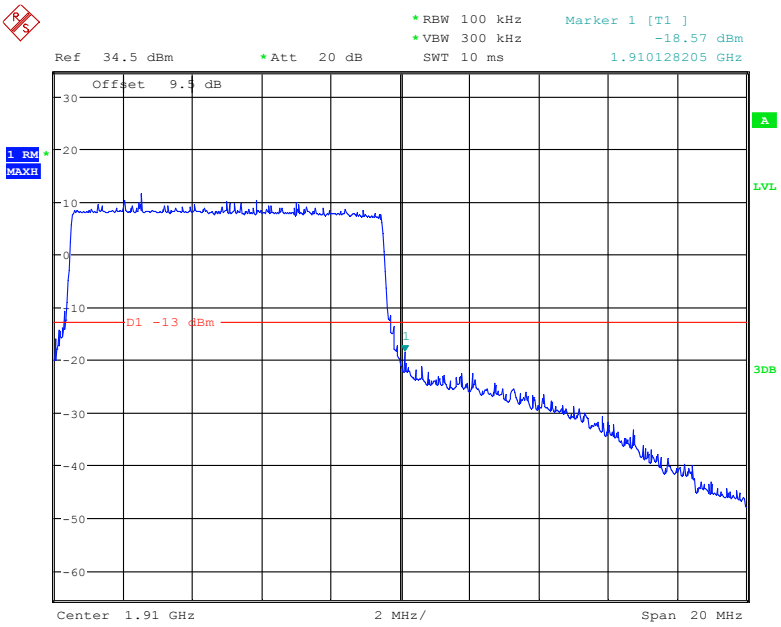
Date: 26.MAY.2019 18:05:33

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



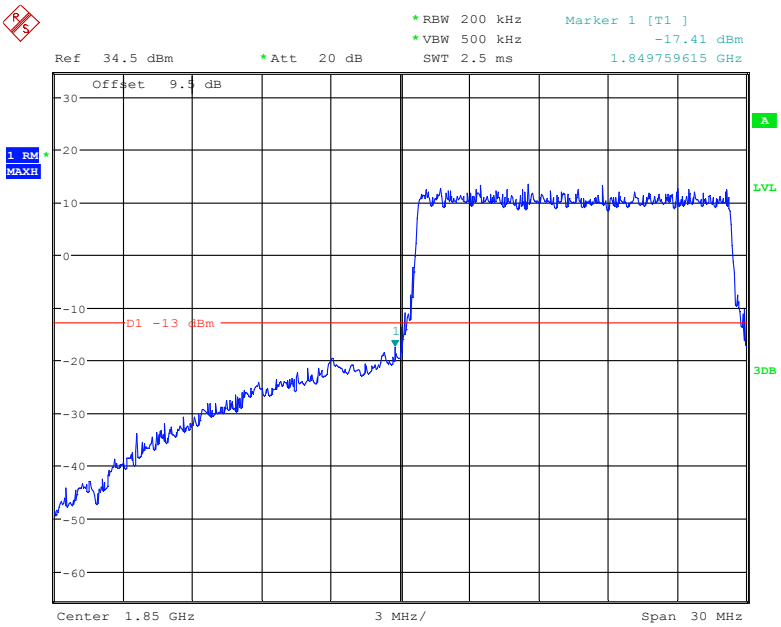
Date: 26.MAY.2019 18:06:44

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



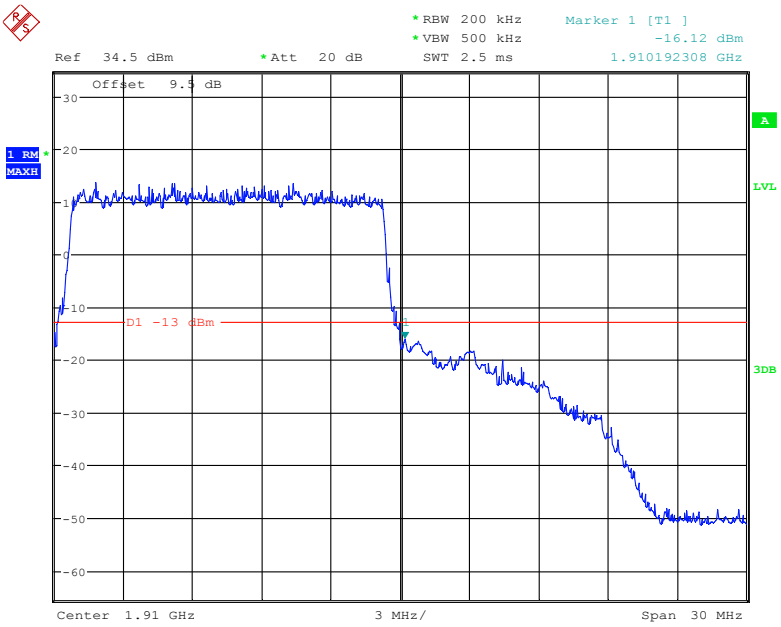
Date: 26.MAY.2019 18:05:11

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



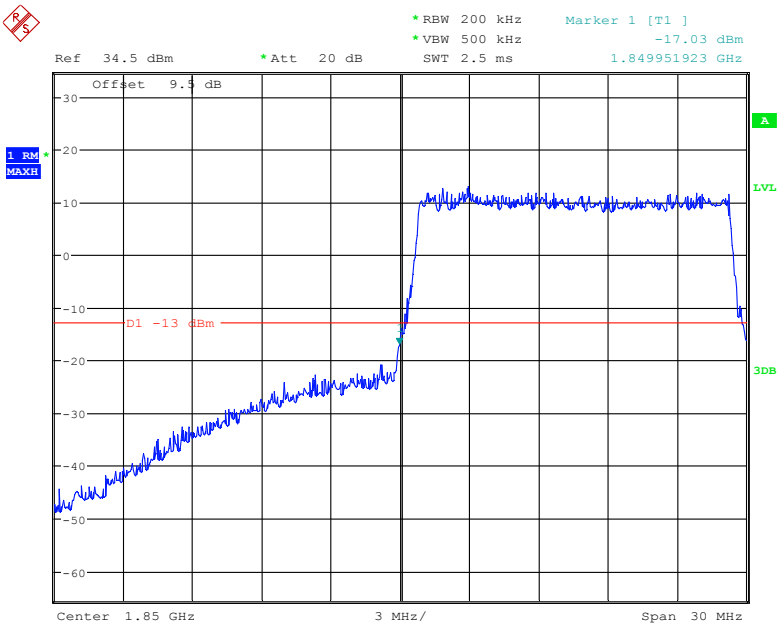
Date: 26.MAY.2019 18:08:58

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



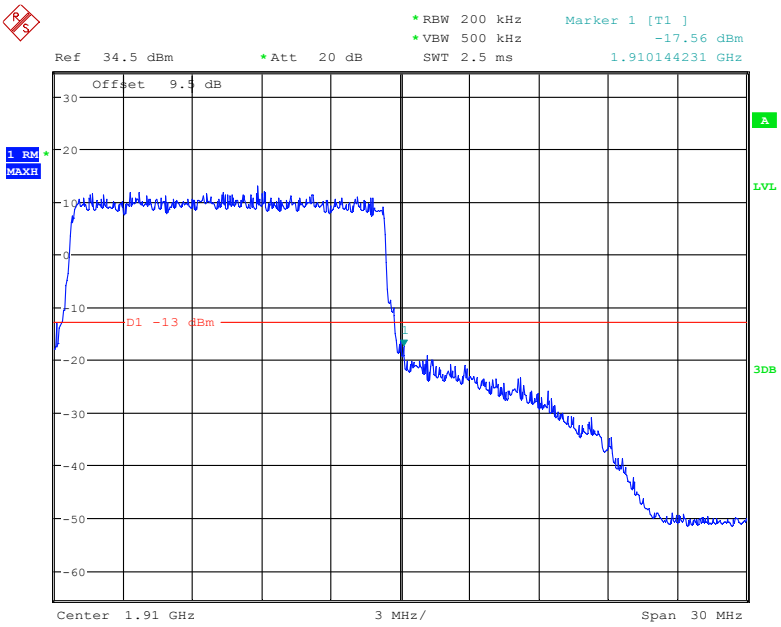
Date: 26.MAY.2019 18:09:33

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



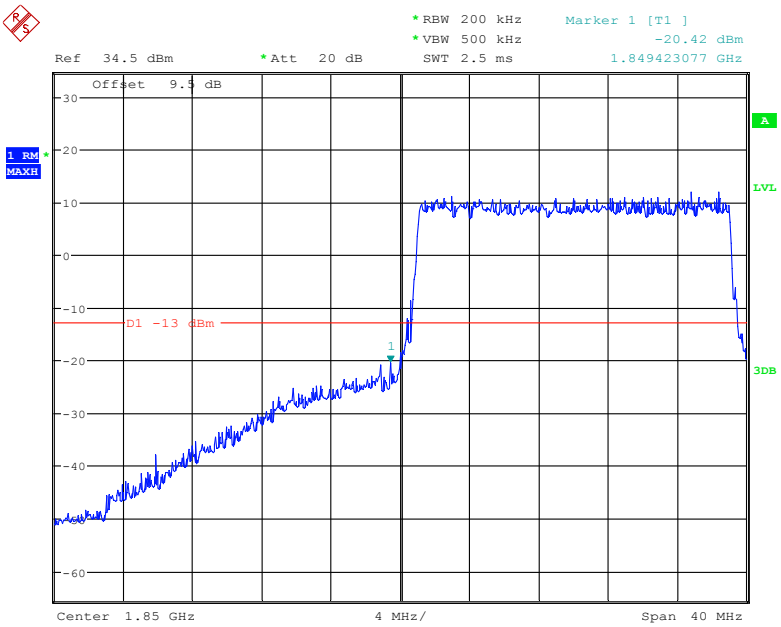
Date: 26.MAY.2019 18:08:29

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



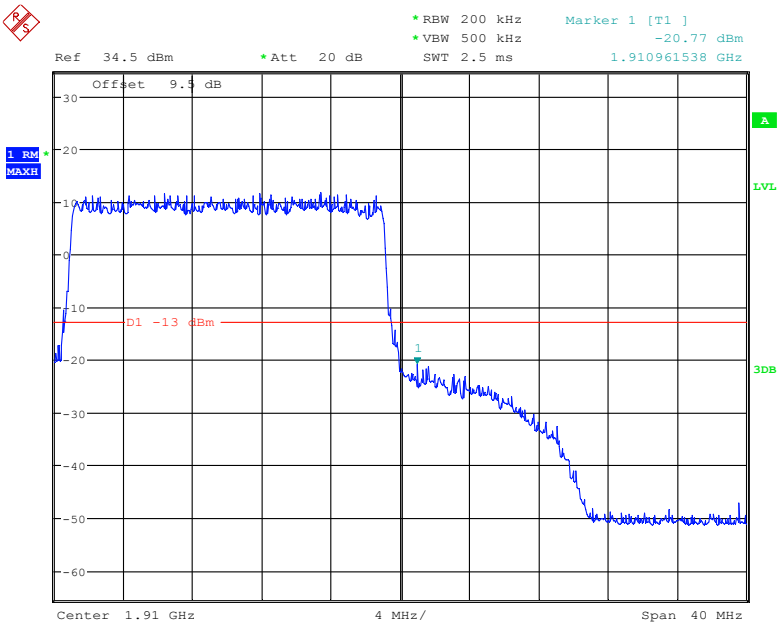
Date: 26.MAY.2019 18:10:06

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



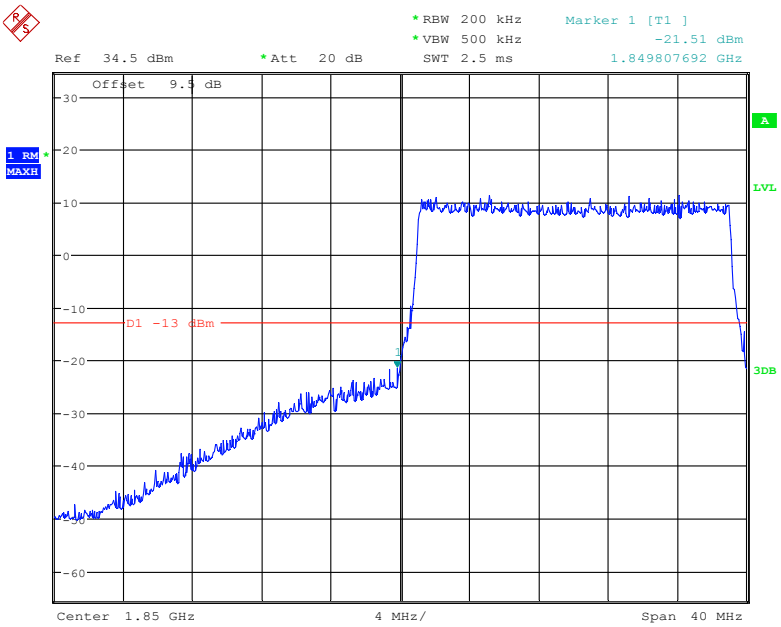
Date: 26.MAY.2019 18:12:25

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



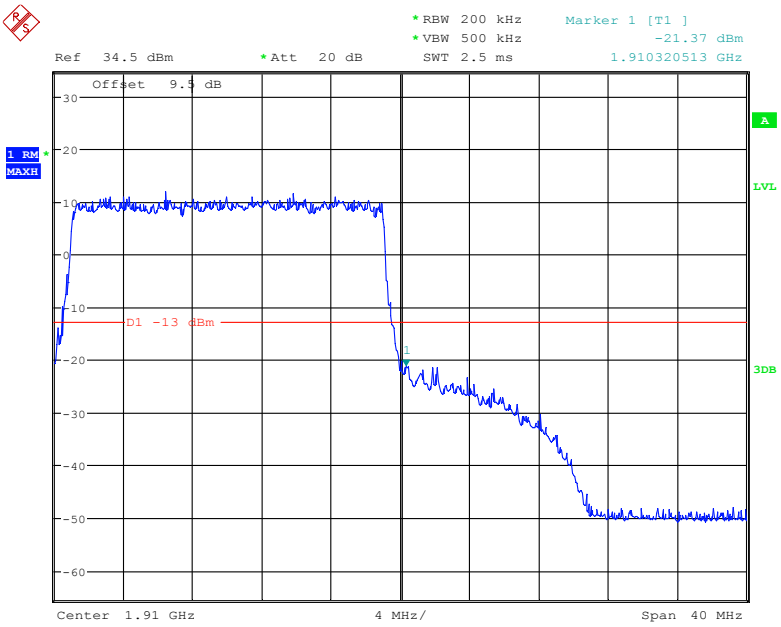
Date: 26.MAY.2019 18:11:57

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



Date: 26.MAY.2019 18:13:17

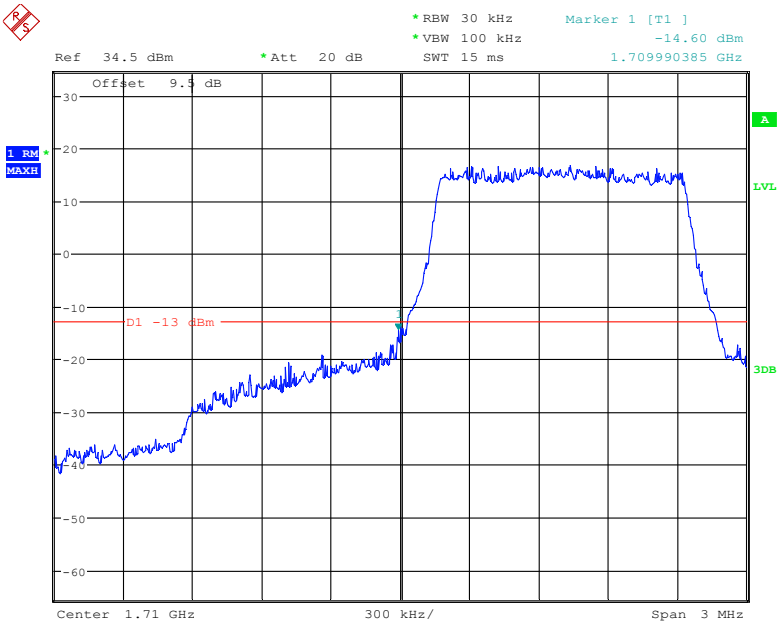
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 26.MAY.2019 18:11:30

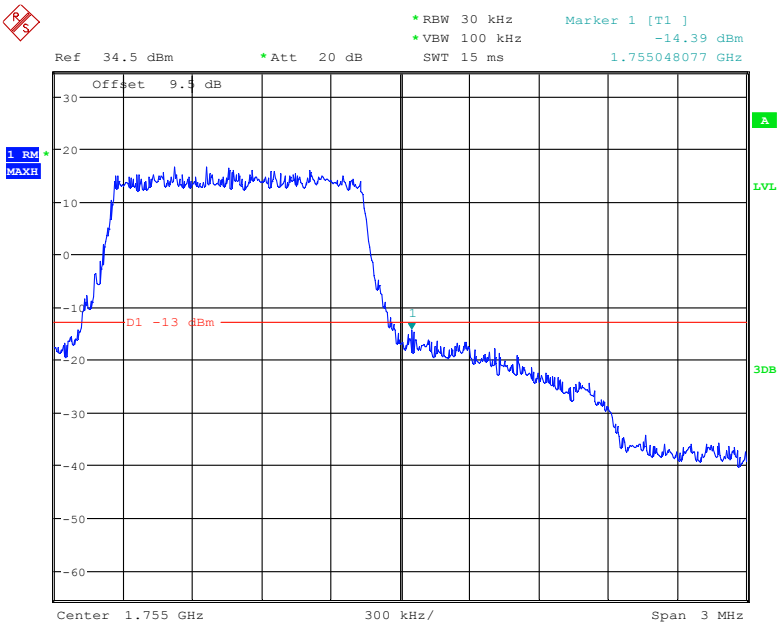
Band 4:

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



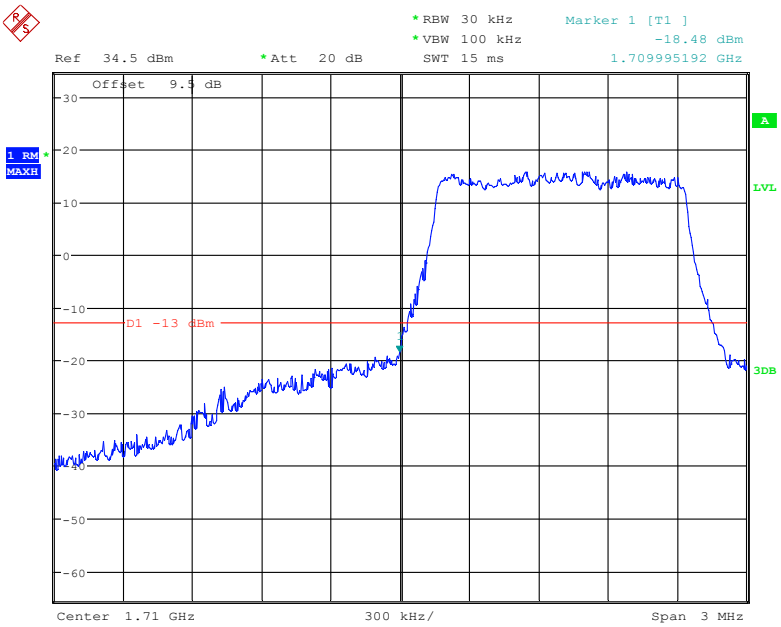
Date: 26.MAY.2019 18:14:53

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



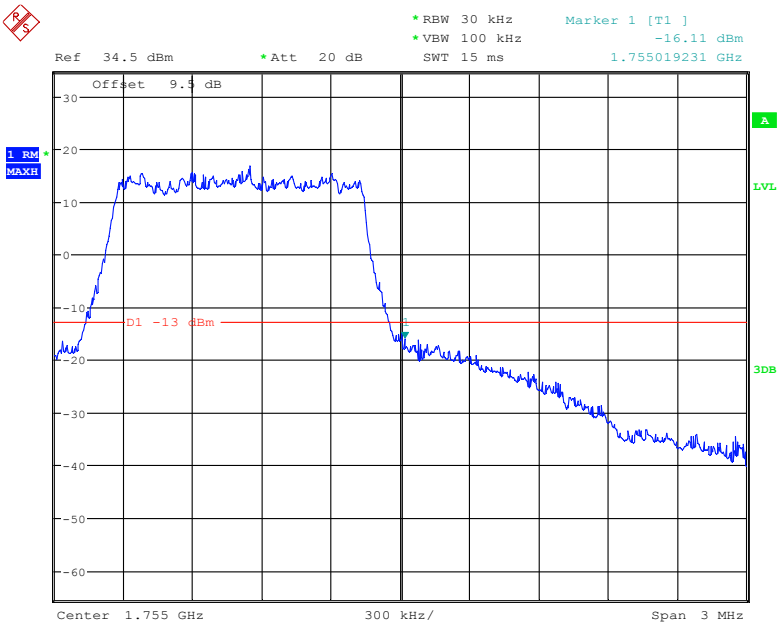
Date: 26.MAY.2019 18:17:31

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



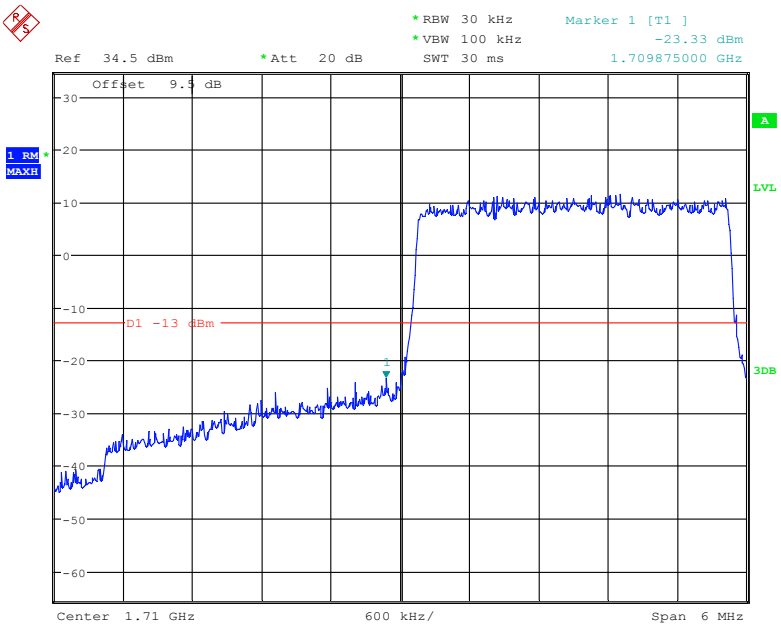
Date: 26.MAY.2019 18:15:54

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



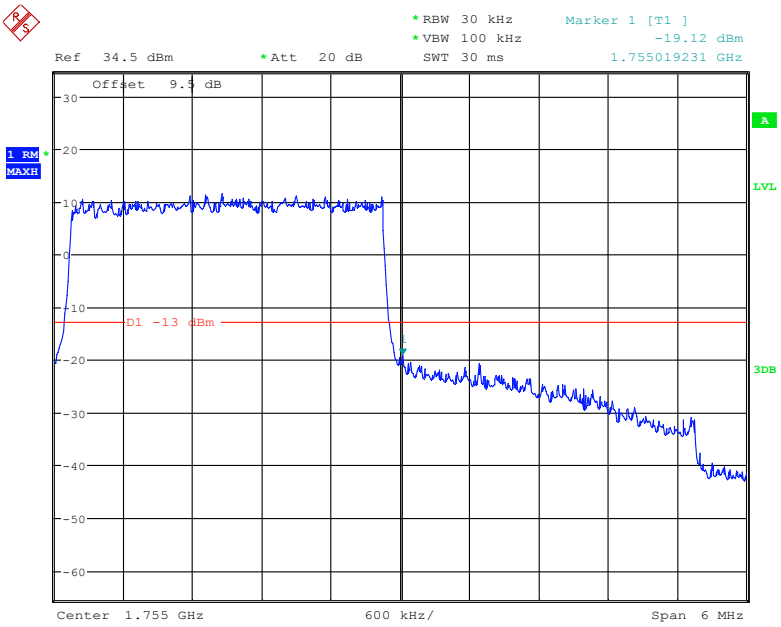
Date: 26.MAY.2019 18:16:35

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



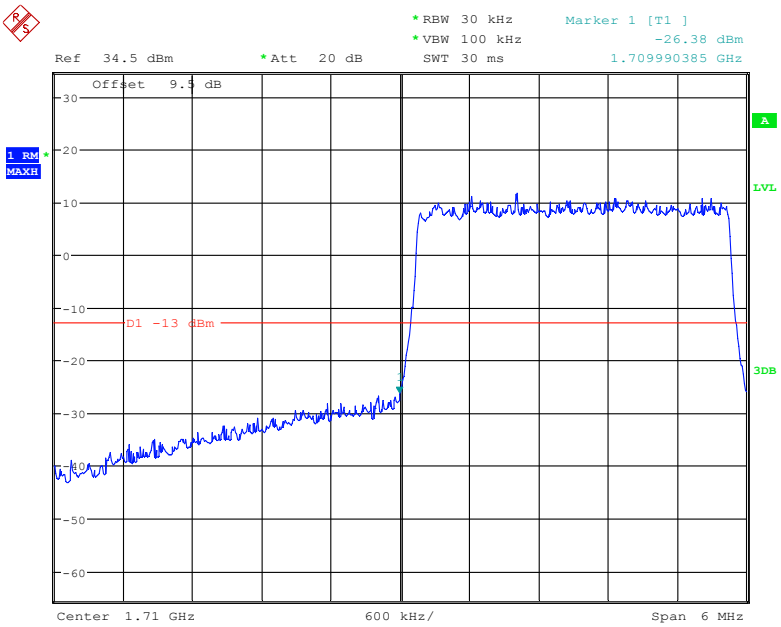
Date: 26.MAY.2019 18:18:13

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



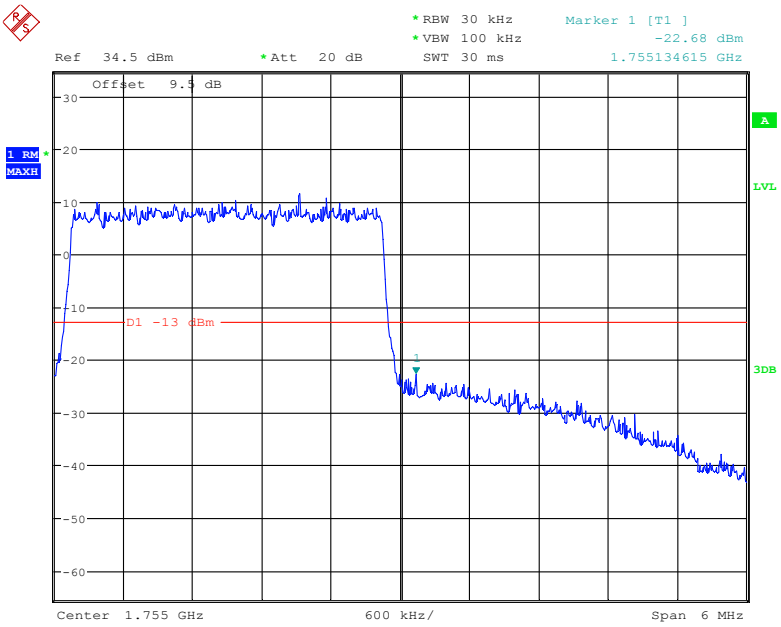
Date: 26.MAY.2019 18:21:11

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



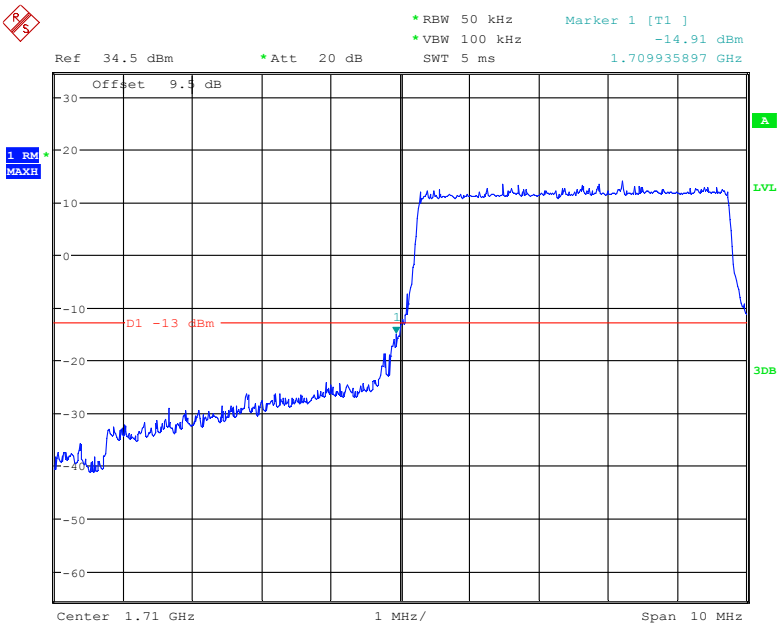
Date: 26.MAY.2019 18:18:55

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



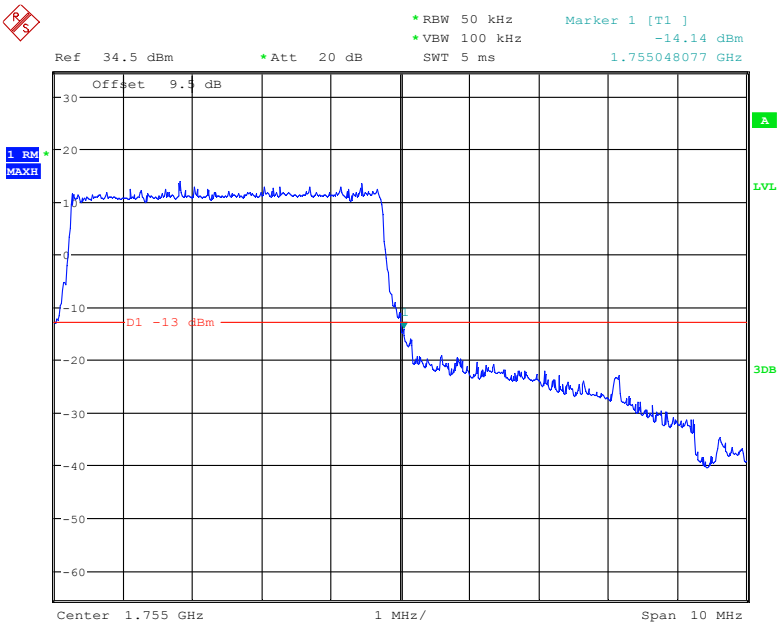
Date: 26.MAY.2019 18:20:41

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



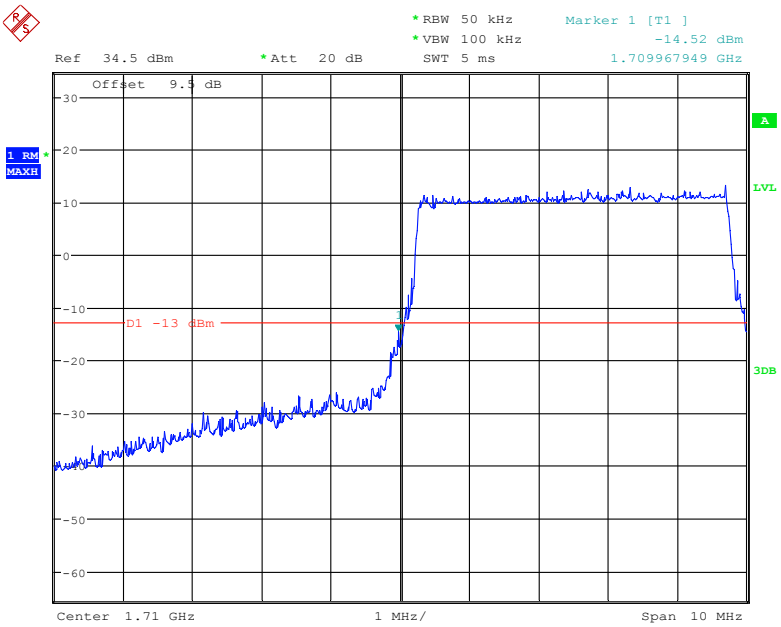
Date: 26.MAY.2019 18:23:09

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



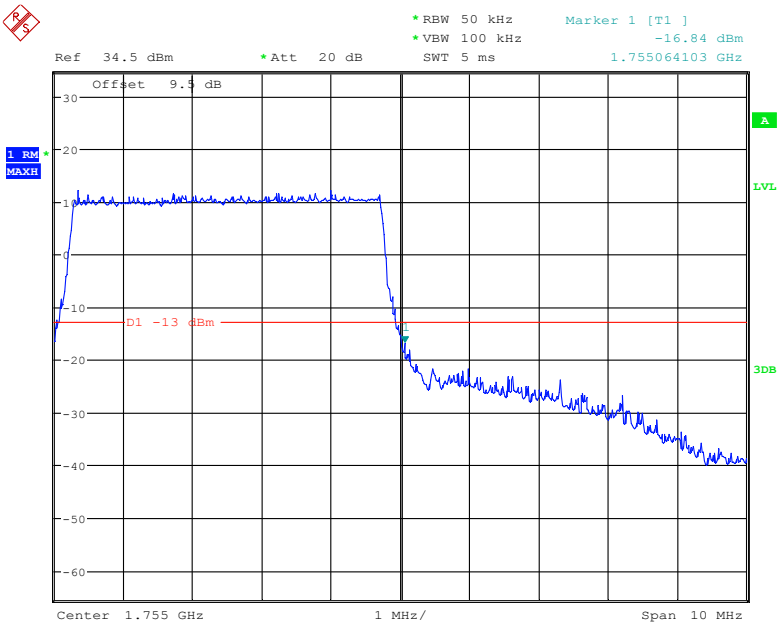
Date: 26.MAY.2019 18:23:53

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



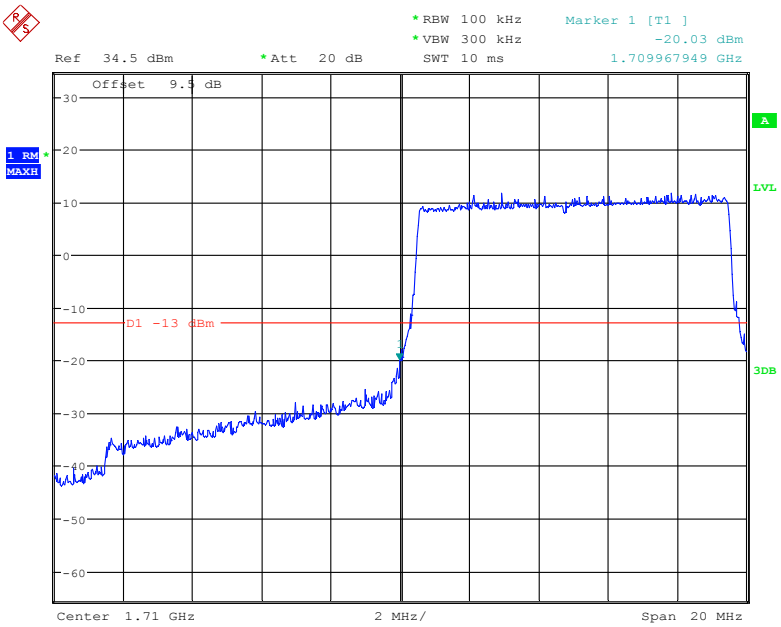
Date: 26.MAY.2019 18:22:16

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



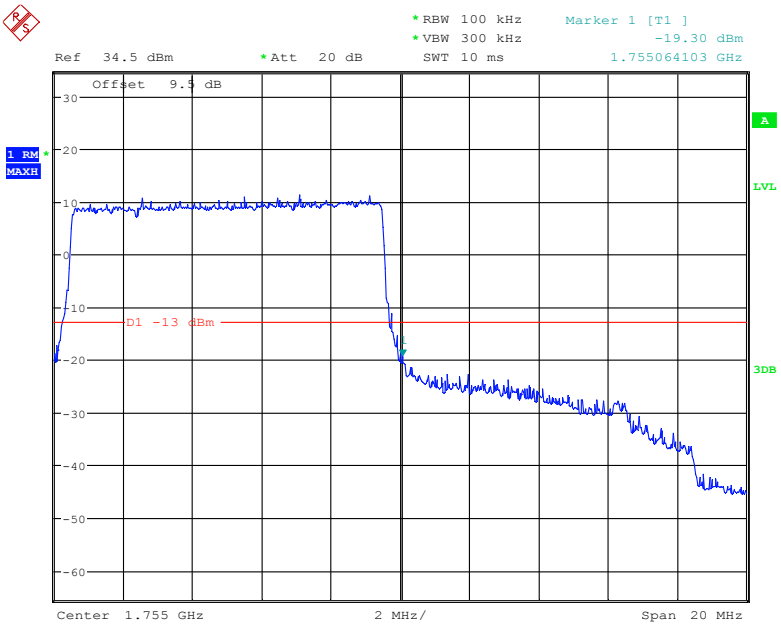
Date: 26.MAY.2019 18:24:25

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



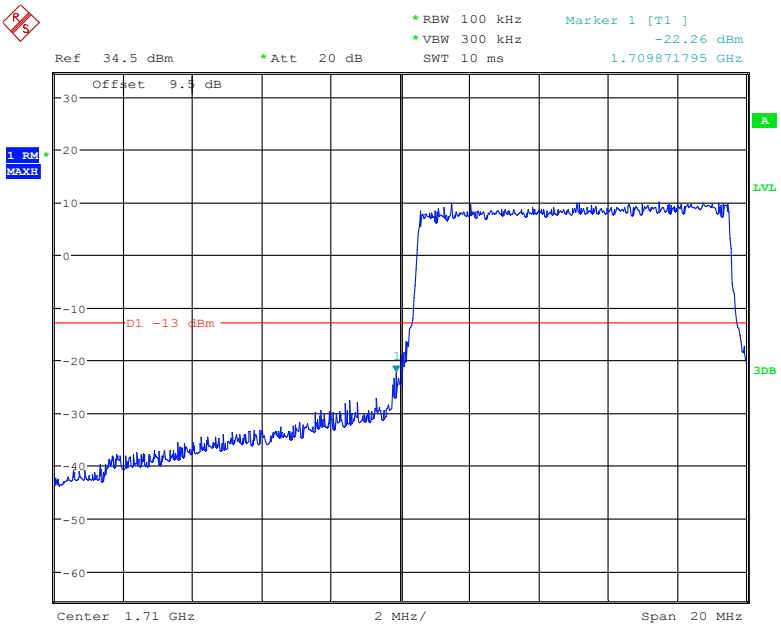
Date: 26.MAY.2019 18:26:30

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



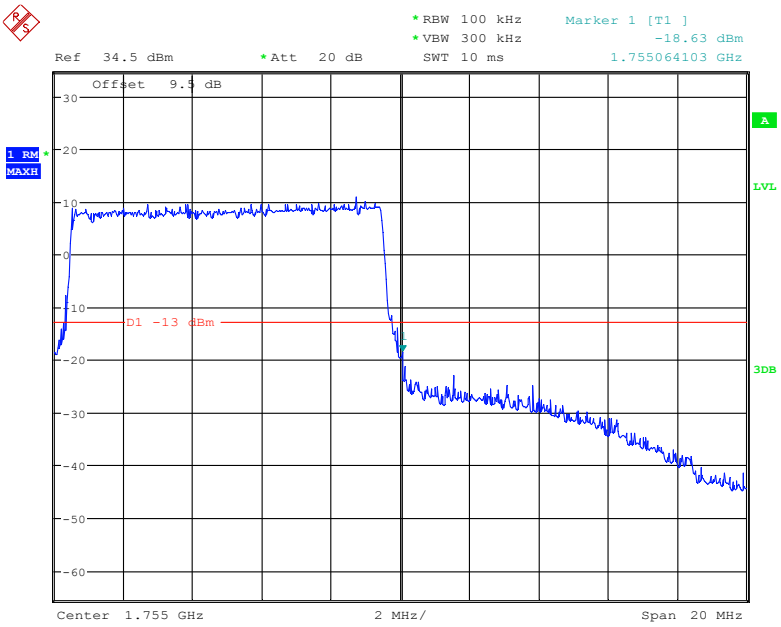
Date: 26.MAY.2019 18:35:56

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



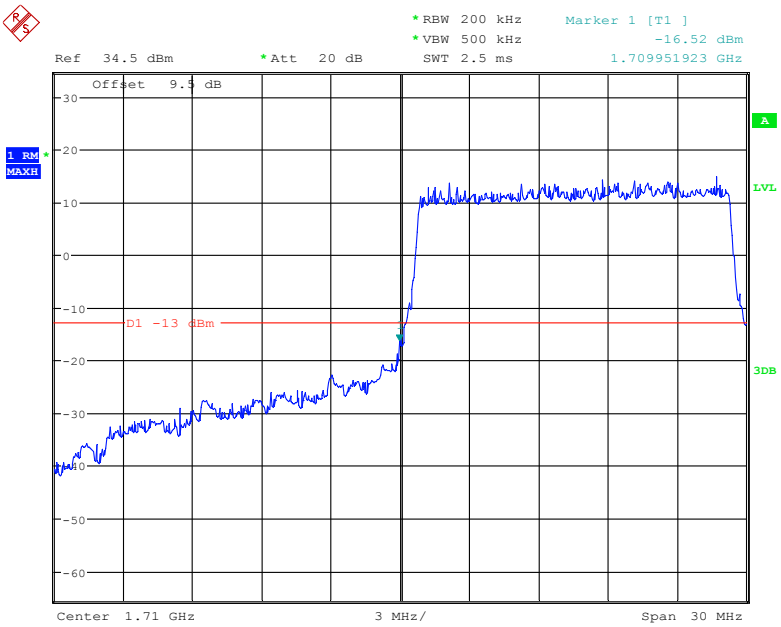
Date: 26.MAY.2019 18:25:37

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



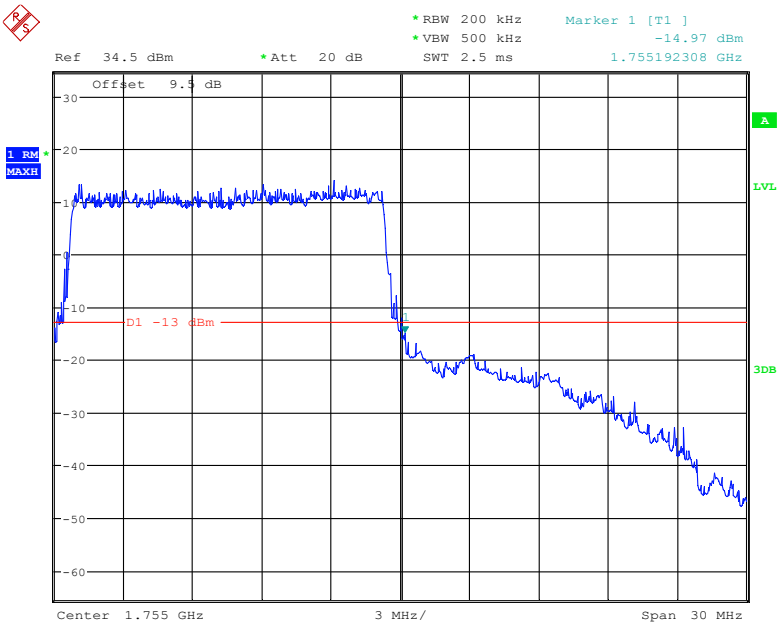
Date: 26.MAY.2019 18:36:18

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



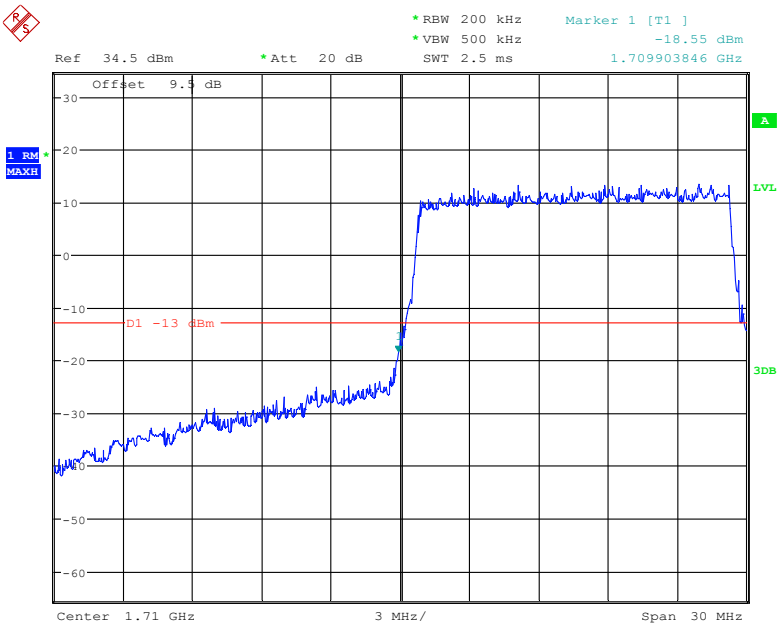
Date: 26.MAY.2019 18:38:51

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



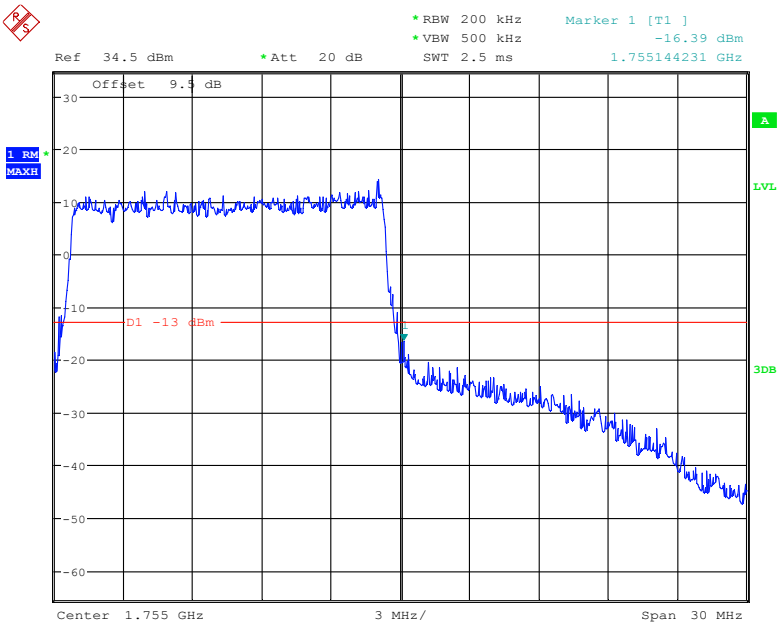
Date: 26.MAY.2019 18:40:35

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



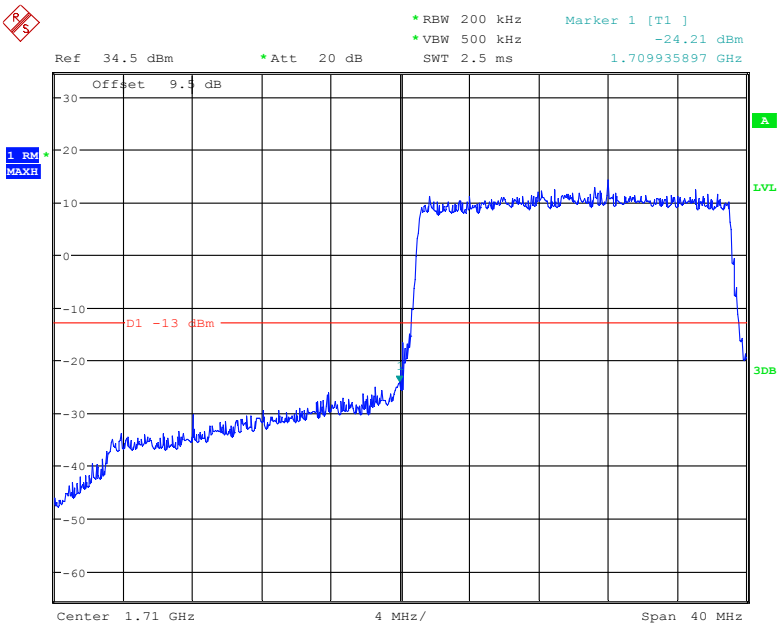
Date: 26.MAY.2019 18:38:16

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



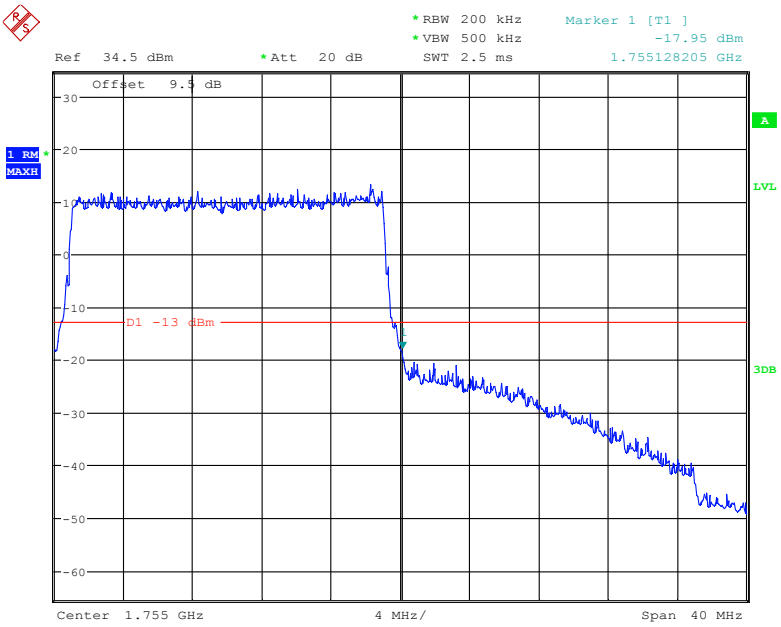
Date: 26.MAY.2019 18:41:32

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



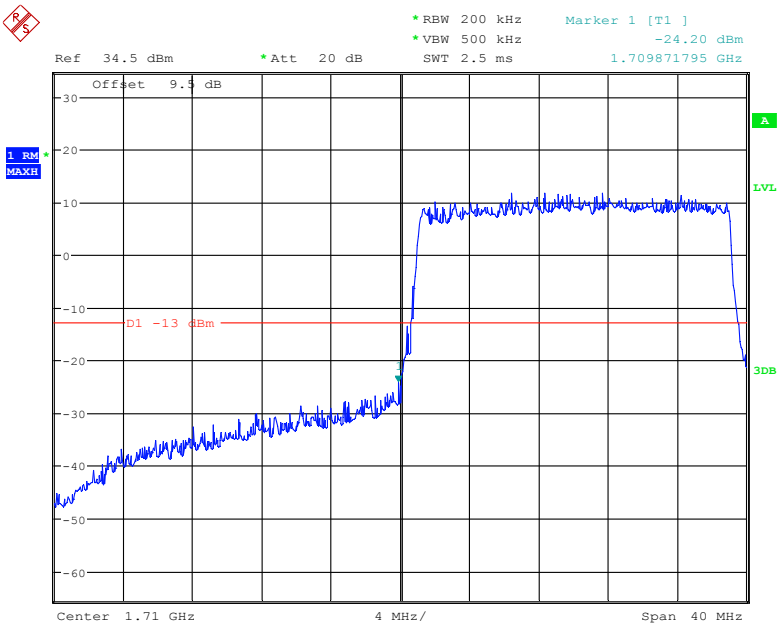
Date: 26.MAY.2019 18:43:24

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



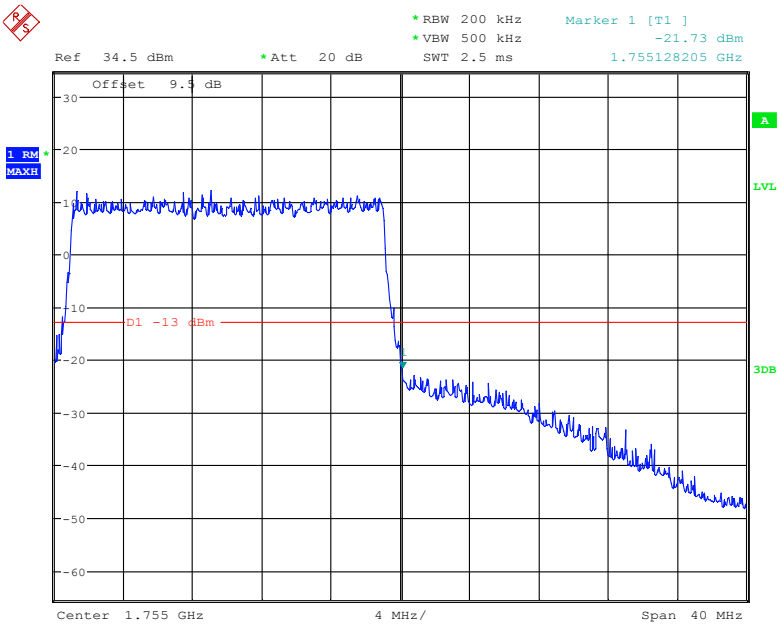
Date: 26.MAY.2019 18:44:14

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



Date: 26.MAY.2019 18:42:45

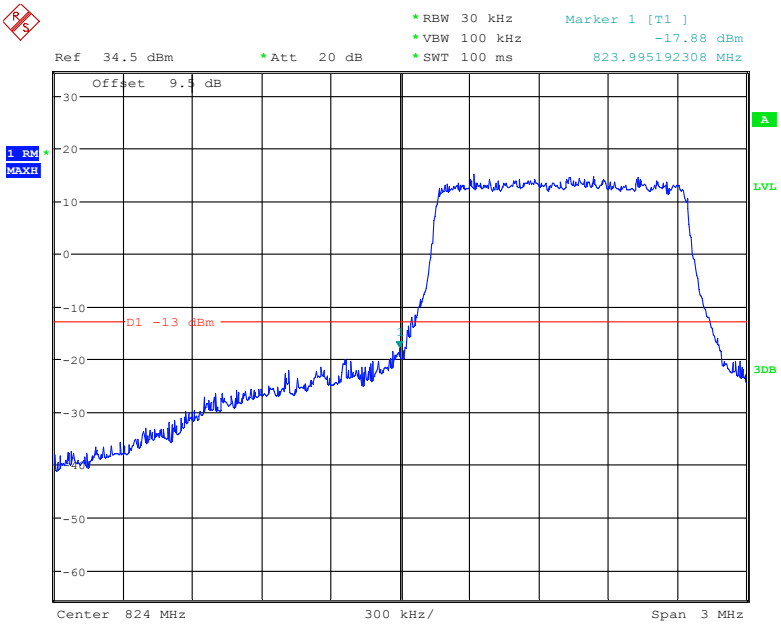
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 26.MAY.2019 18:44:49

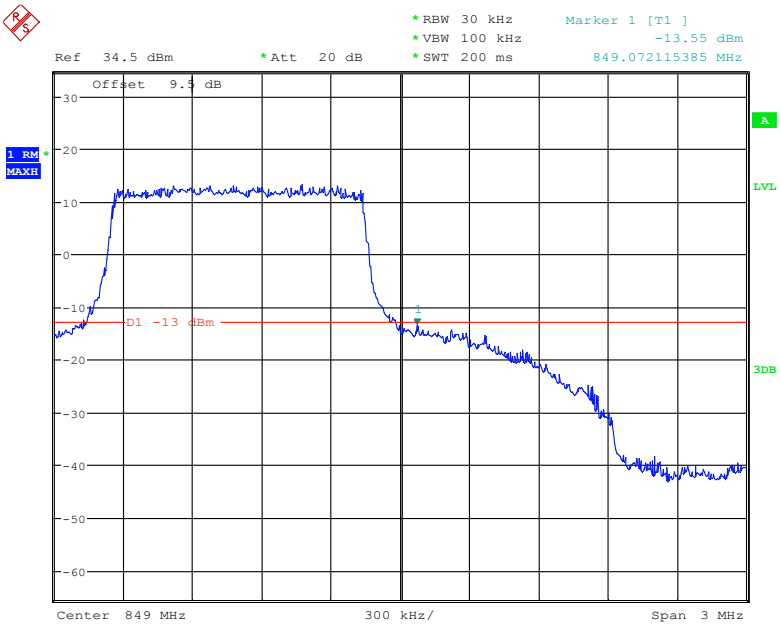
Band 5:

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



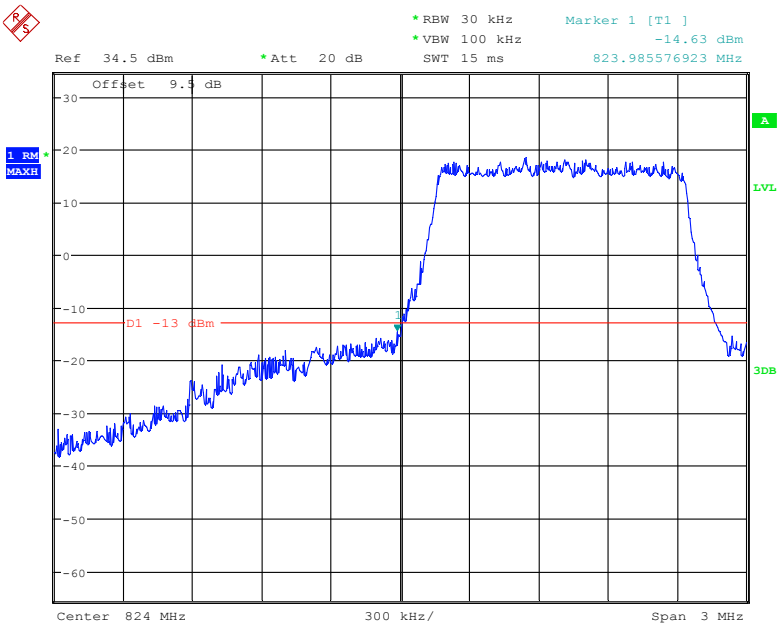
Date: 26.MAY.2019 18:46:17

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



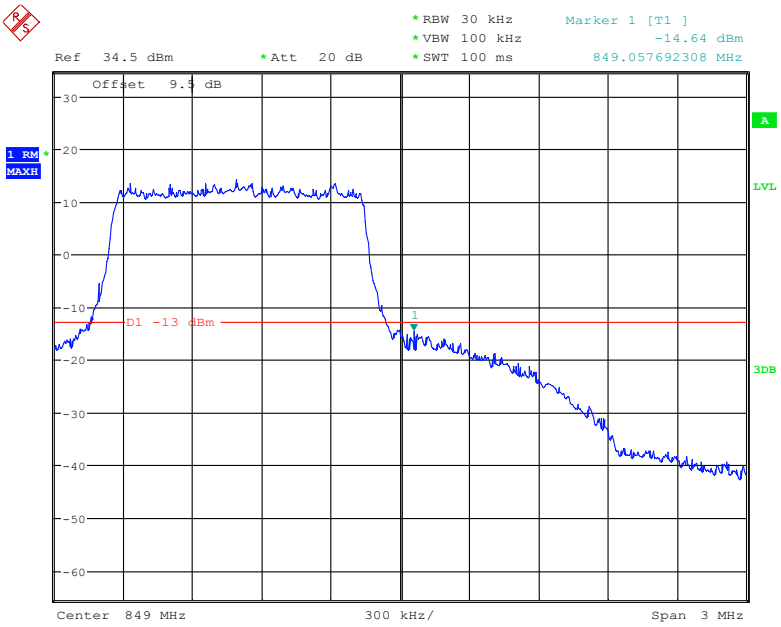
Date: 26.MAY.2019 18:47:56

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



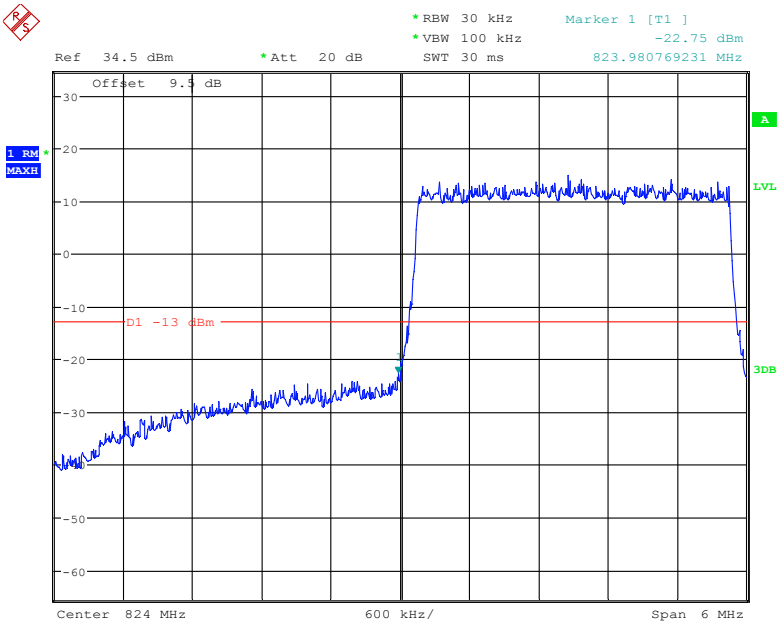
Date: 26.MAY.2019 18:46:58

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



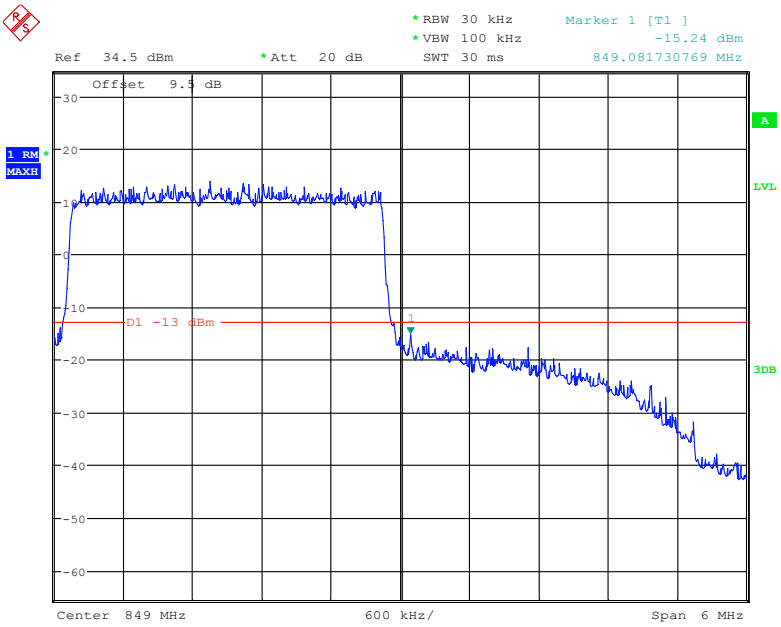
Date: 26.MAY.2019 18:47:34

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



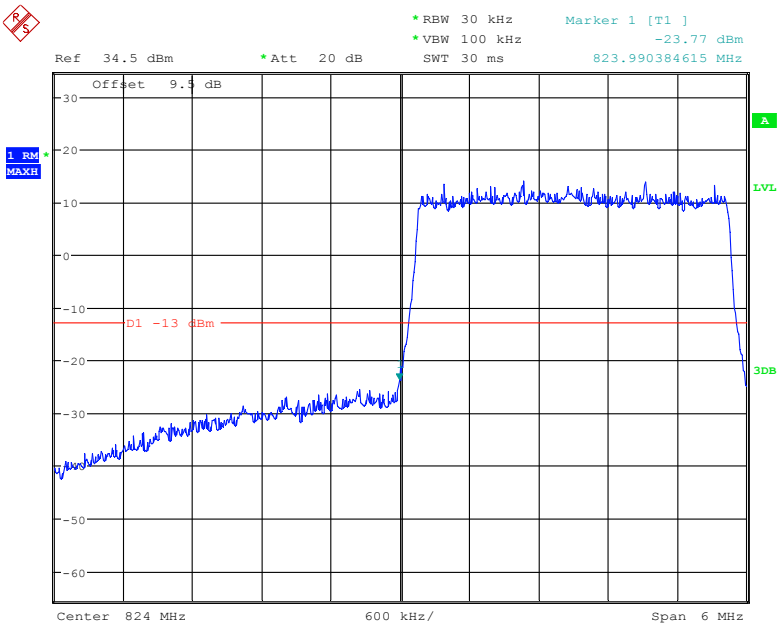
Date: 26.MAY.2019 18:50:54

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



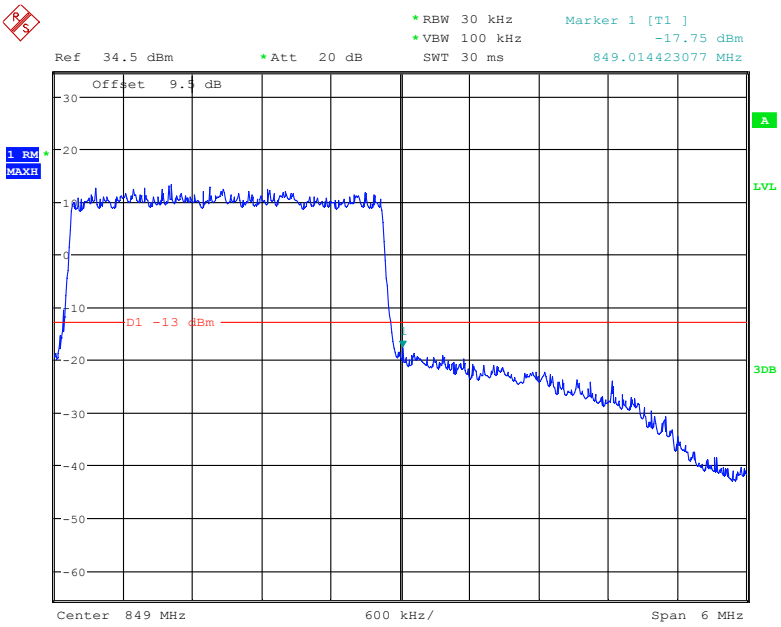
Date: 26.MAY.2019 18:49:08

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



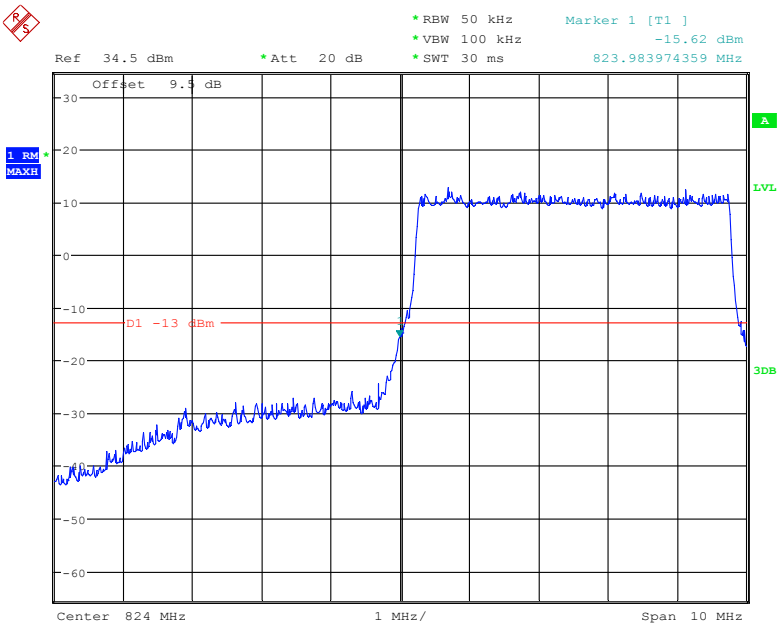
Date: 26.MAY.2019 18:50:32

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



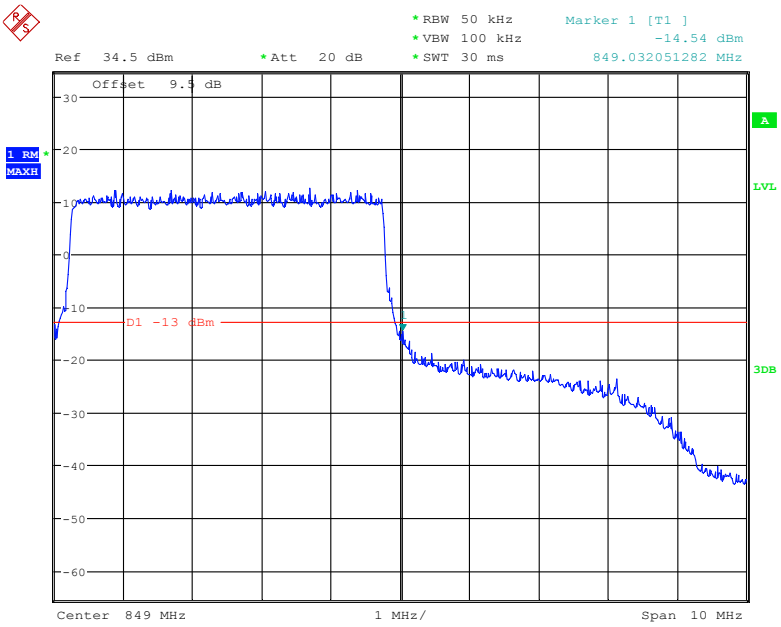
Date: 26.MAY.2019 18:49:37

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



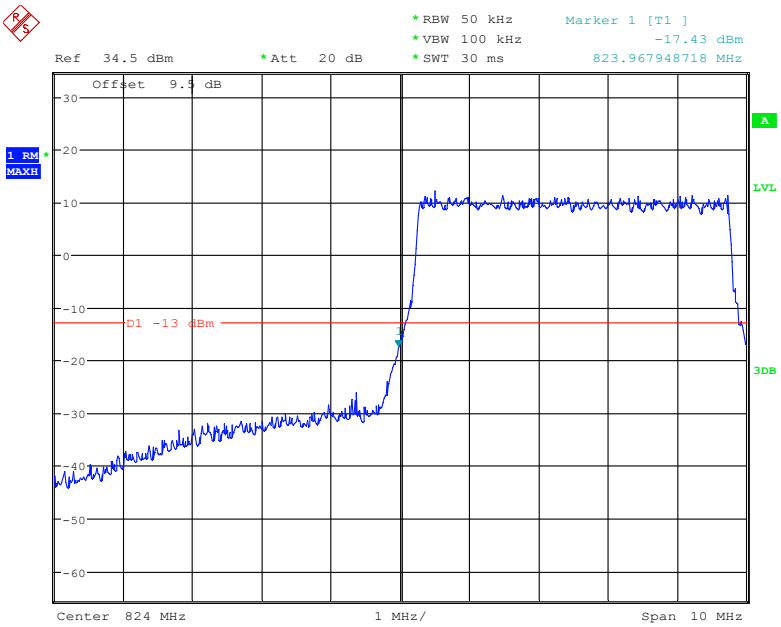
Date: 26.MAY.2019 18:52:45

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



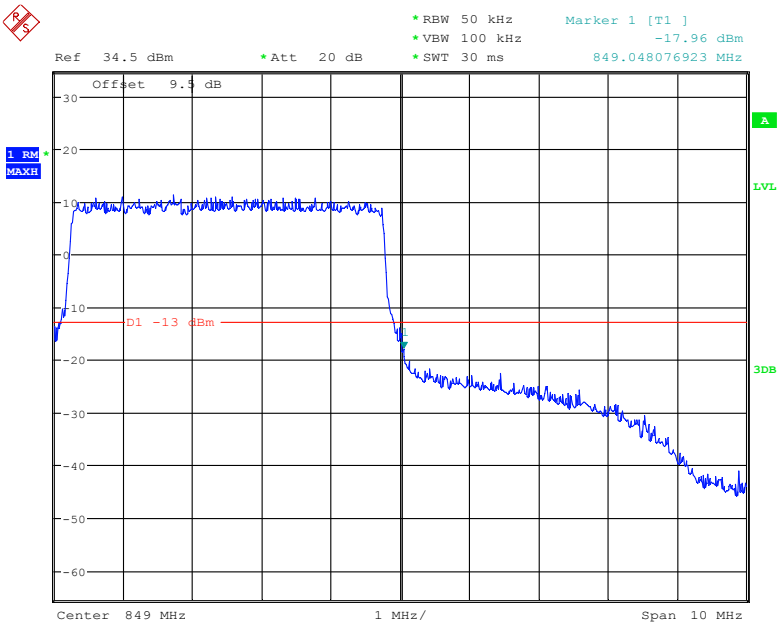
Date: 26.MAY.2019 18:53:24

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



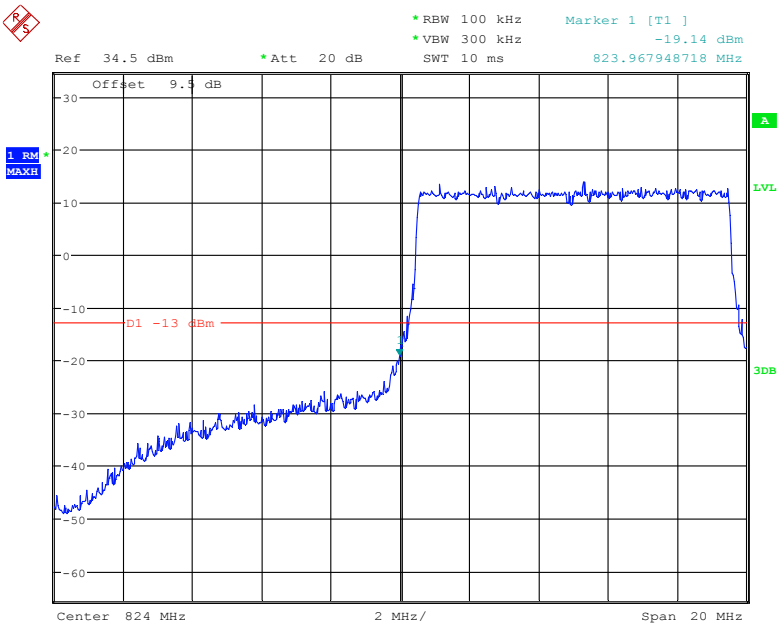
Date: 26.MAY.2019 18:52:17

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



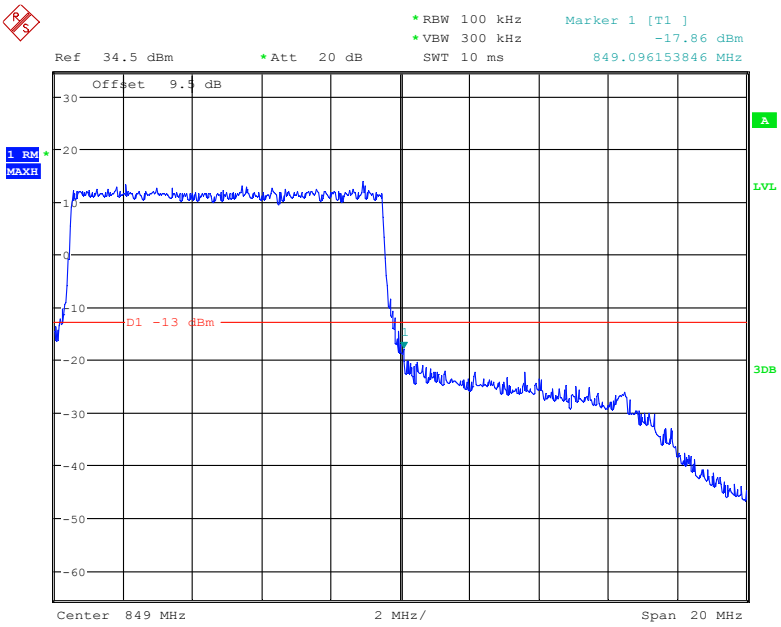
Date: 26.MAY.2019 18:53:44

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



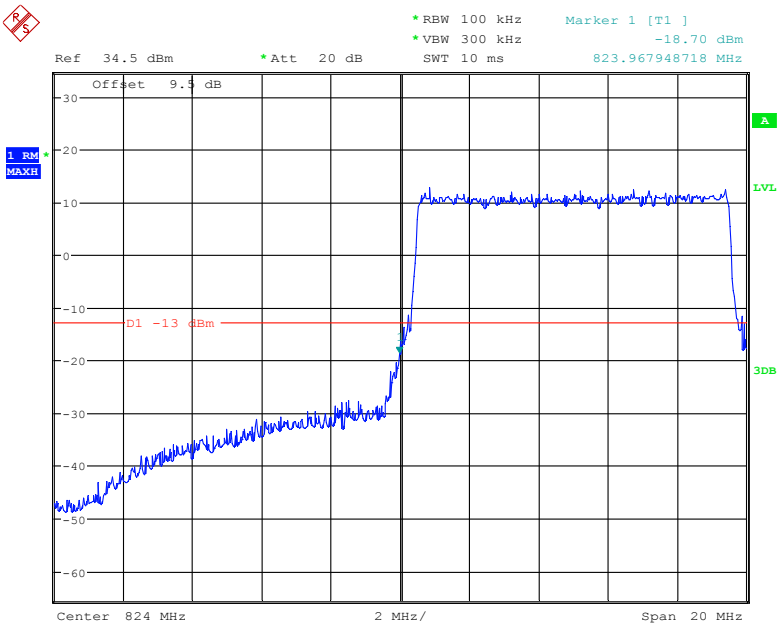
Date: 26.MAY.2019 18:55:14

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



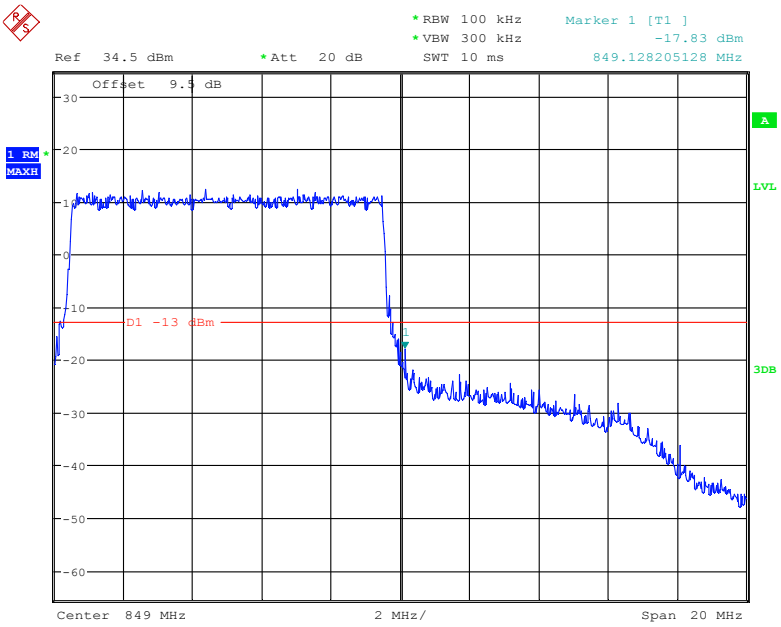
Date: 26.MAY.2019 18:54:51

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



Date: 26.MAY.2019 18:55:31

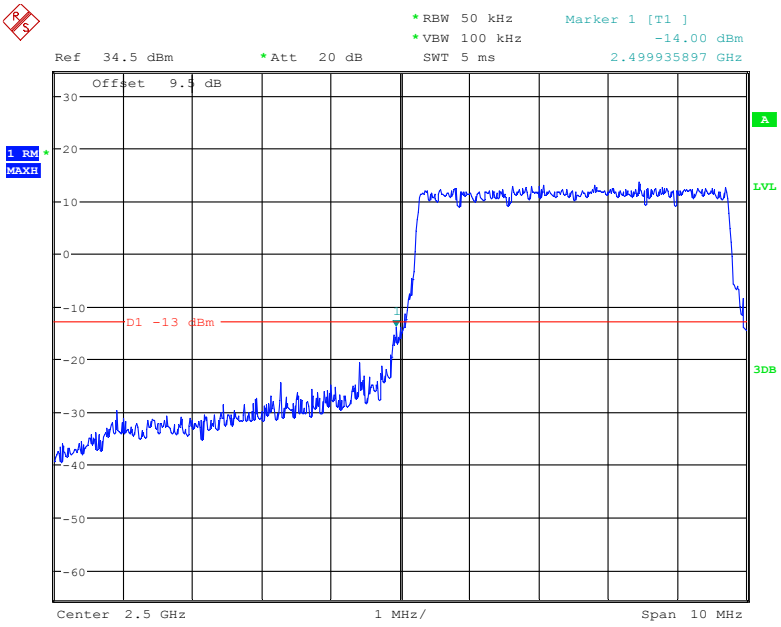
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 26.MAY.2019 18:54:30

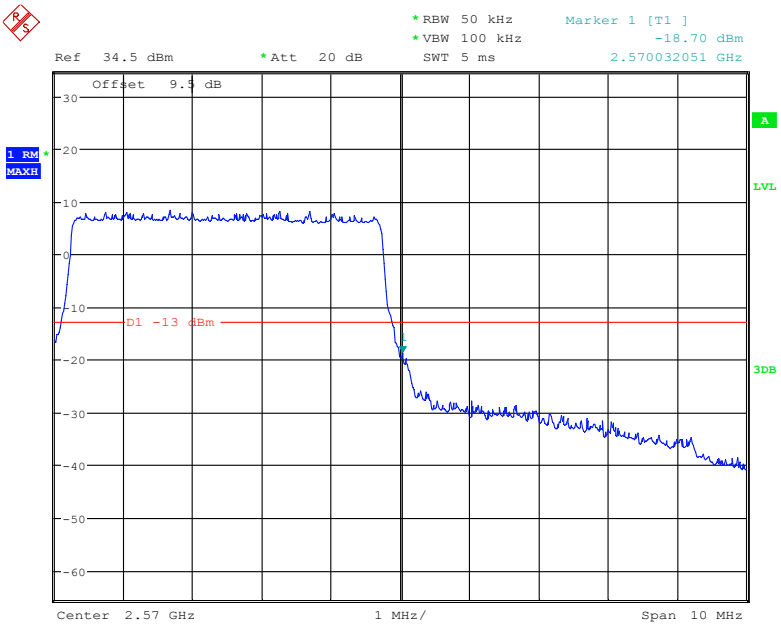
Band 7:

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



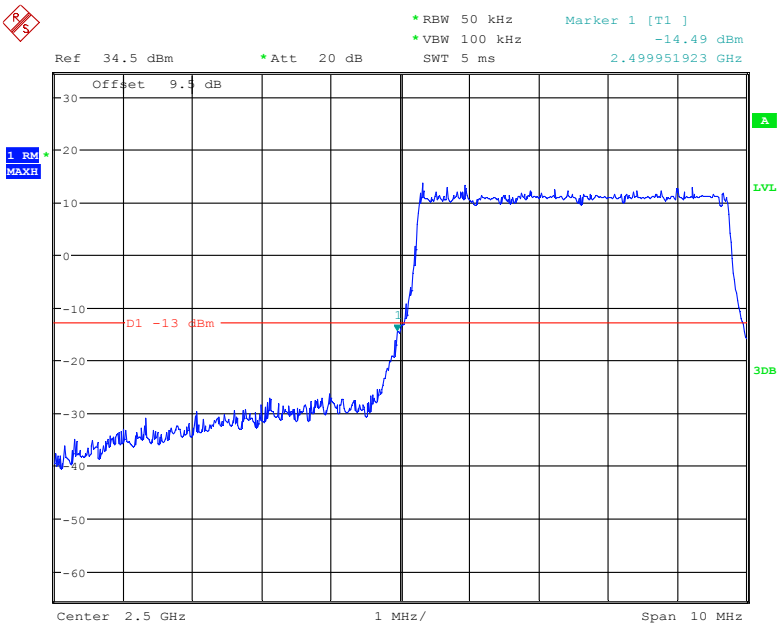
Date: 27.MAY.2019 19:08:01

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



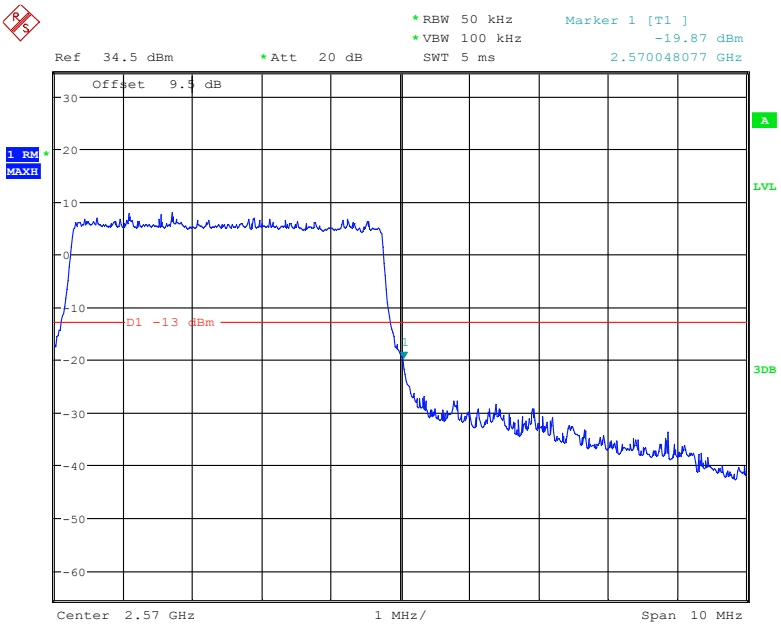
Date: 27.MAY.2019 19:11:04

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



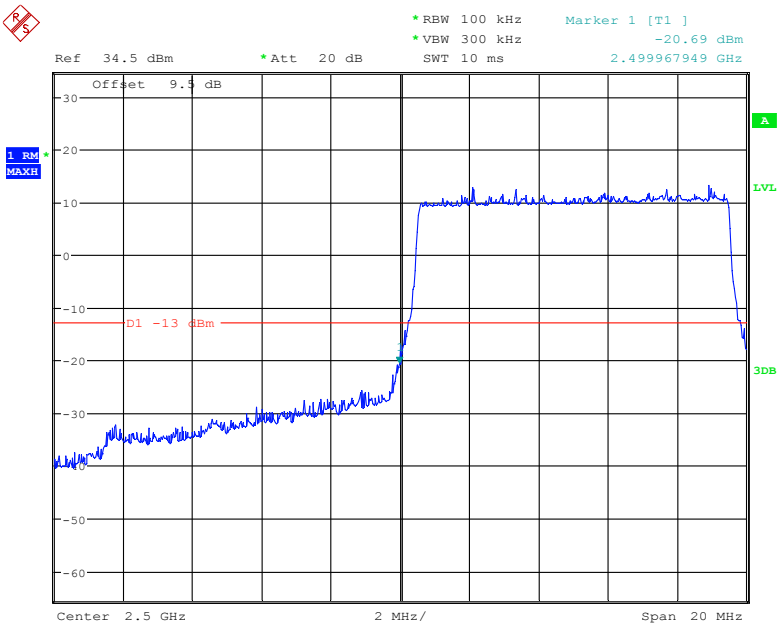
Date: 27.MAY.2019 19:06:58

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



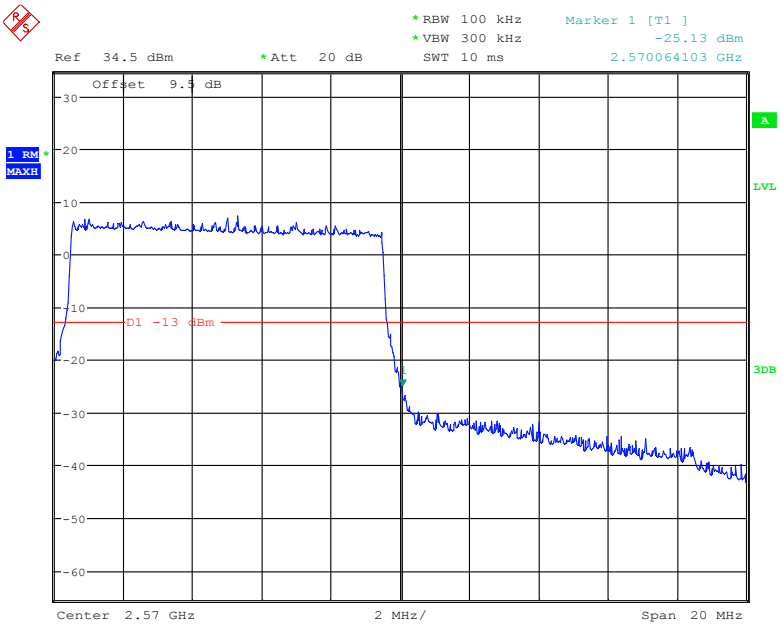
Date: 27.MAY.2019 19:12:20

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



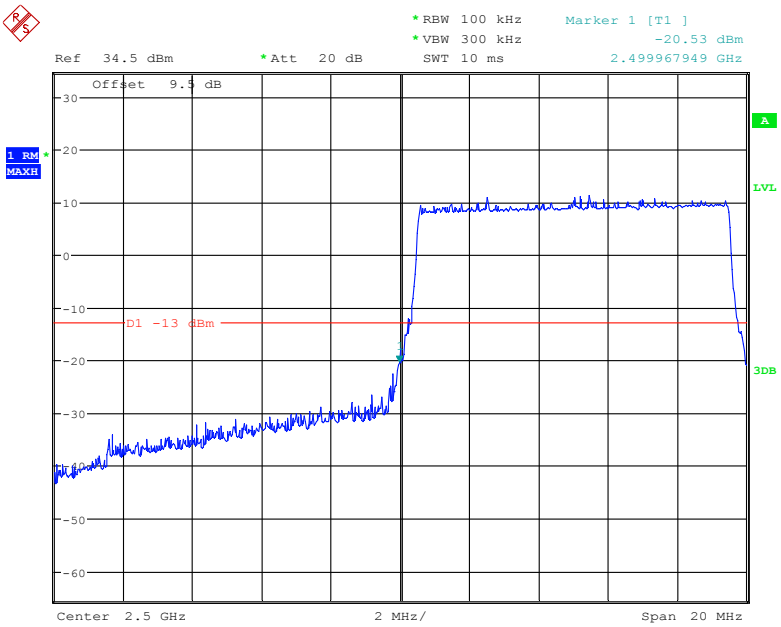
Date: 27.MAY.2019 19:14:57

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



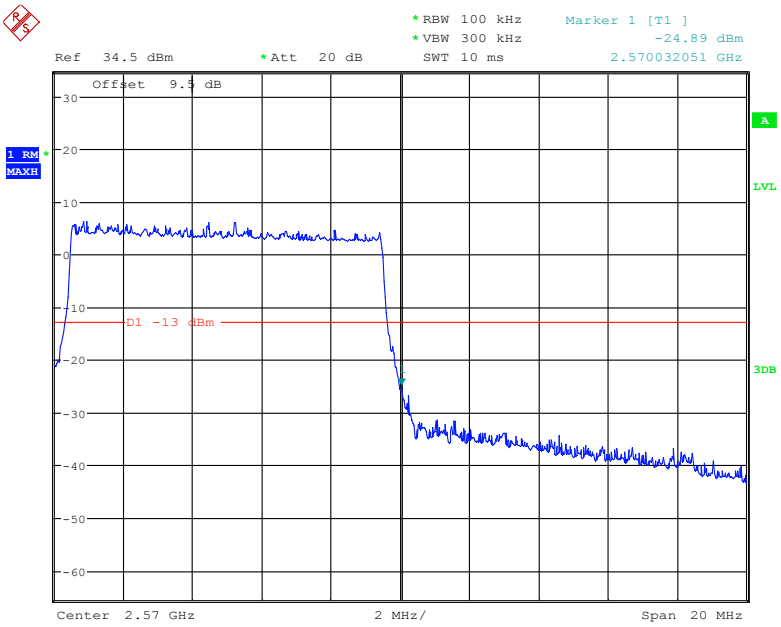
Date: 27.MAY.2019 19:20:35

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



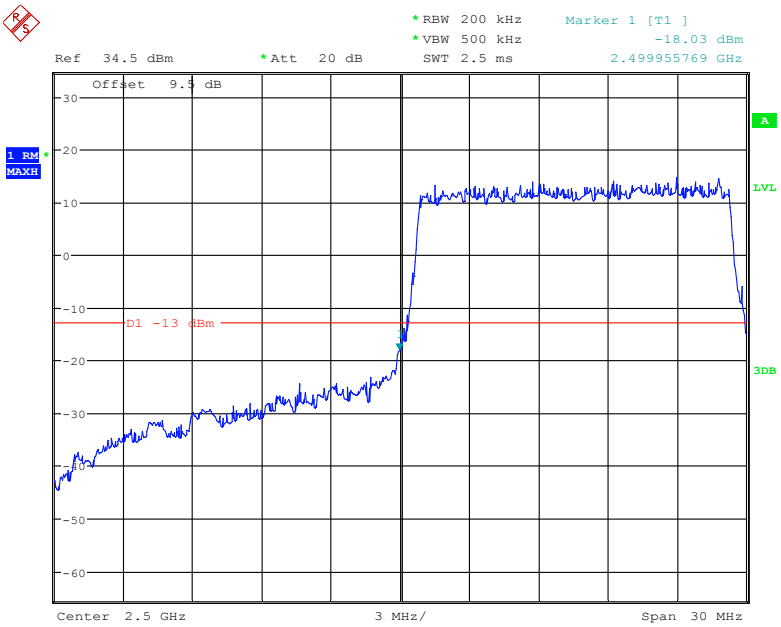
Date: 27.MAY.2019 19:15:43

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



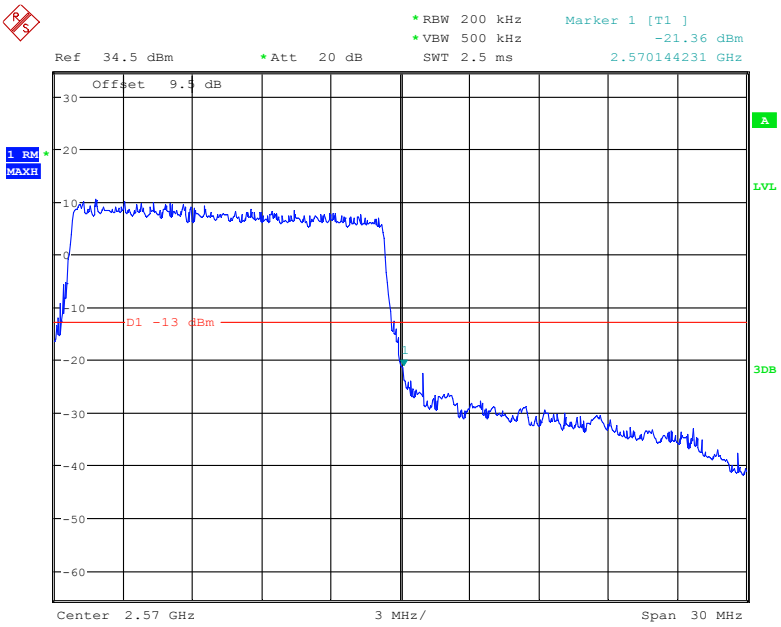
Date: 27.MAY.2019 19:18:28

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



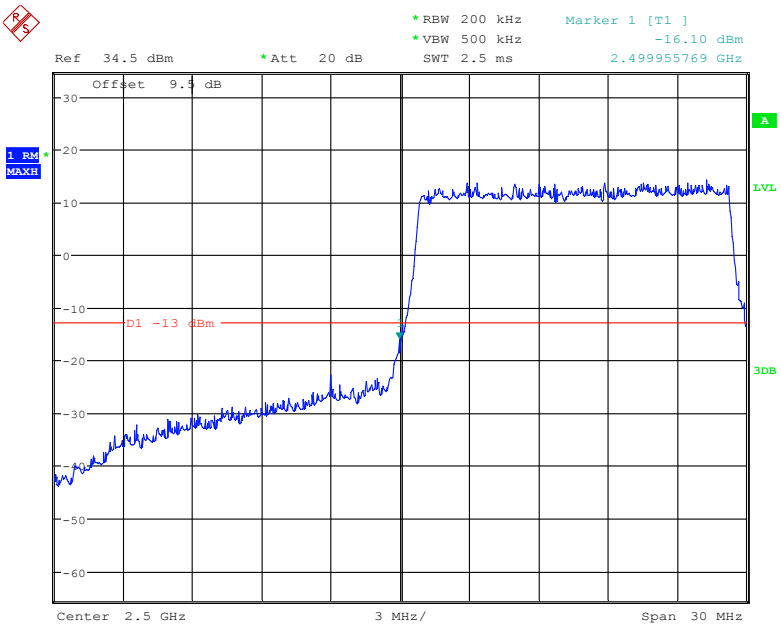
Date: 27.MAY.2019 19:23:19

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



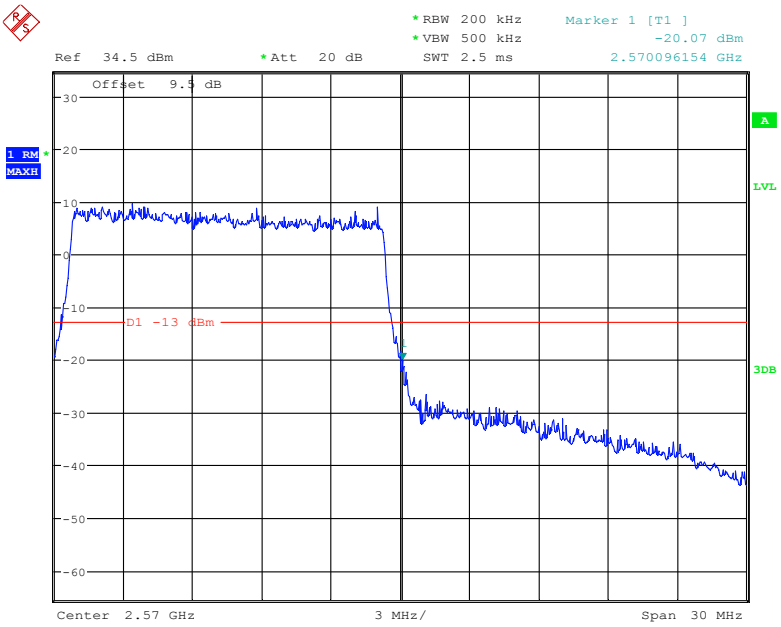
Date: 27.MAY.2019 19:24:58

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



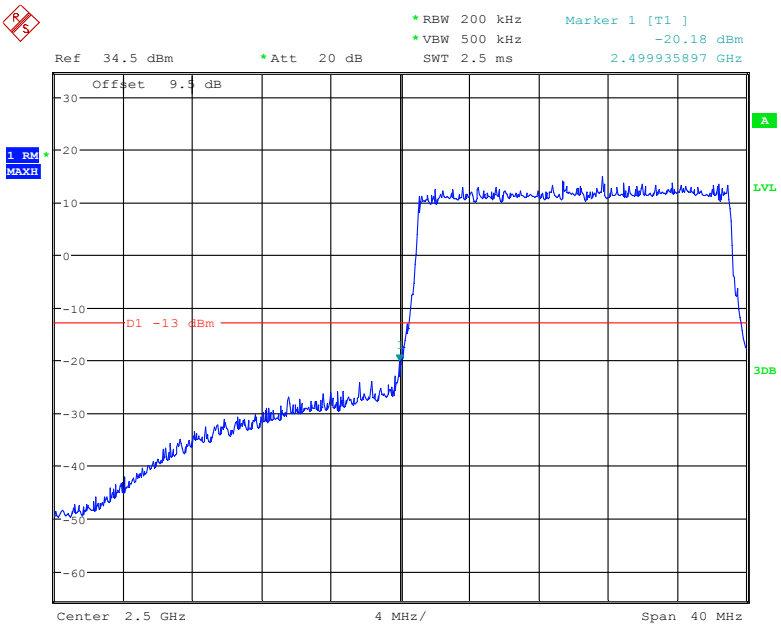
Date: 27.MAY.2019 19:22:46

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



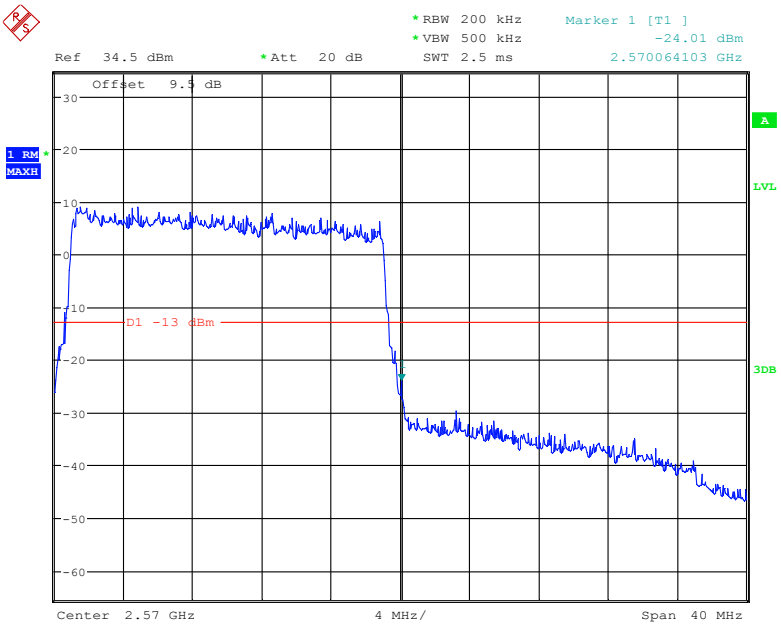
Date: 27.MAY.2019 19:25:56

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



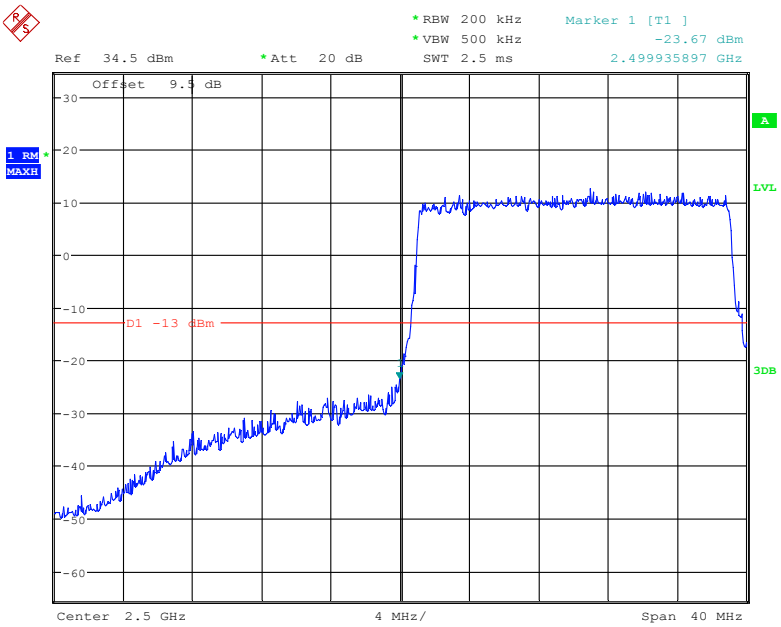
Date: 27.MAY.2019 19:35:28

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



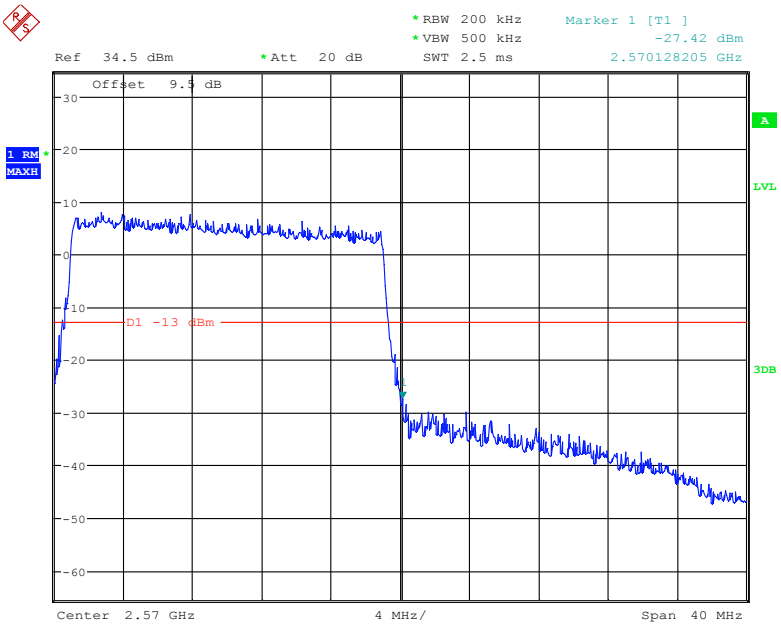
Date: 27.MAY.2019 19:39:31

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



Date: 27.MAY.2019 19:36:26

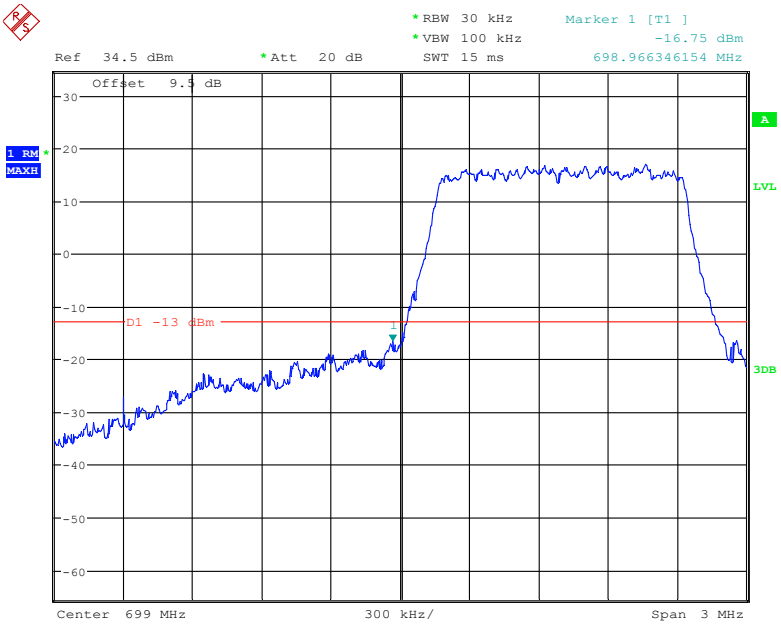
16-QAM (20.0 MHz, FULL RB) - Right Band Edge



Date: 27.MAY.2019 19:37:31

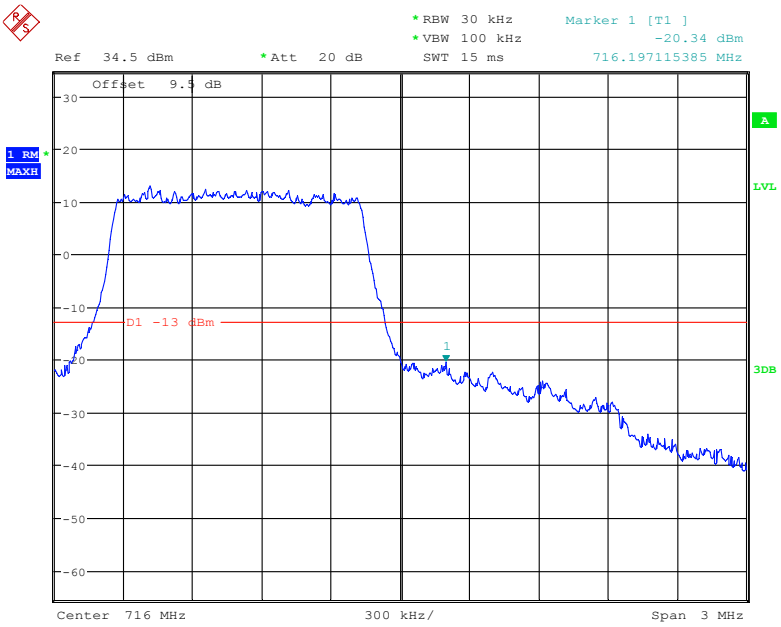
Band 12:

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



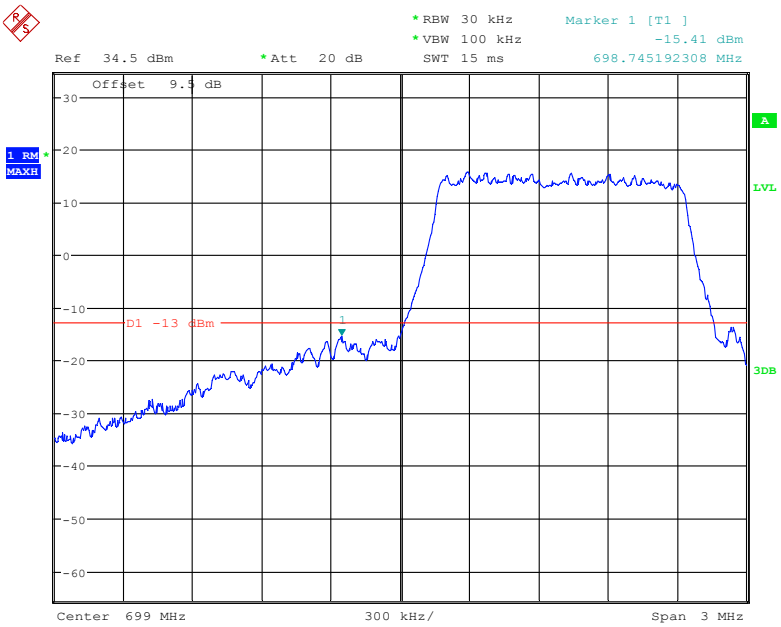
Date: 27.MAY.2019 19:42:02

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



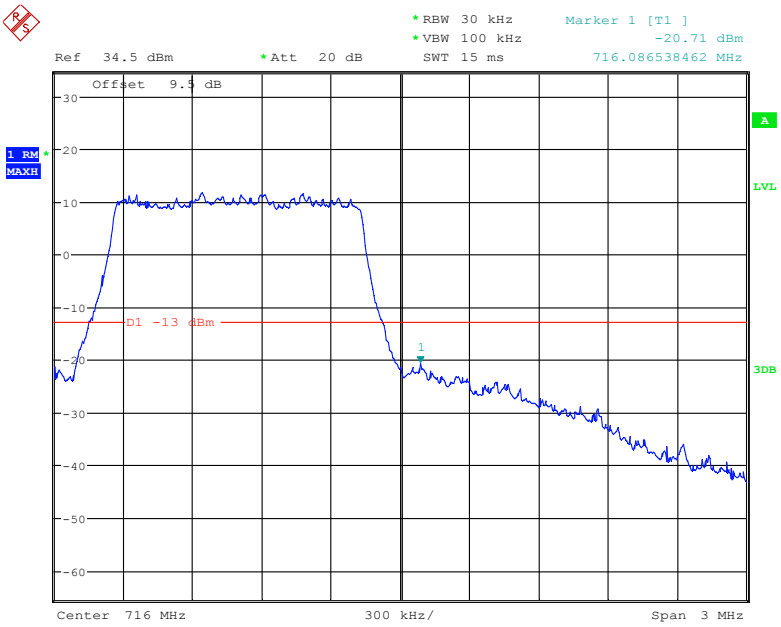
Date: 27.MAY.2019 19:46:04

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



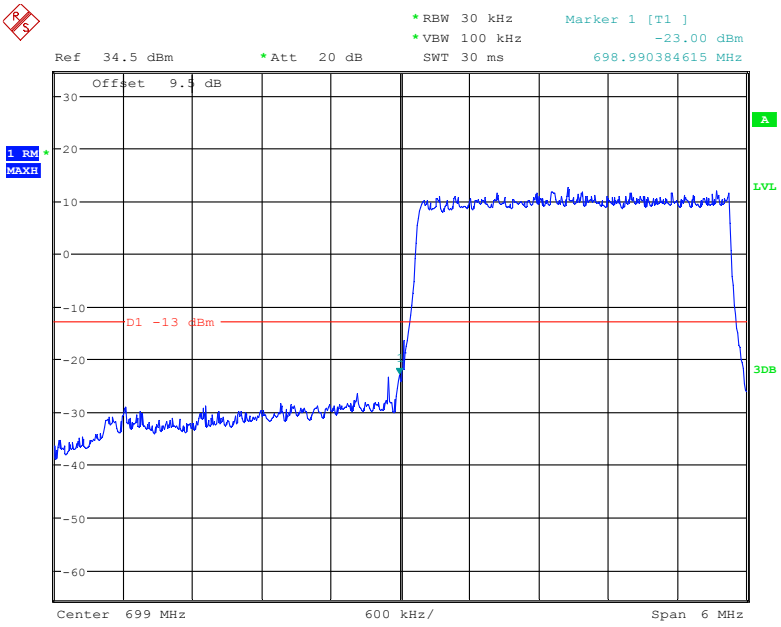
Date: 27.MAY.2019 19:44:04

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



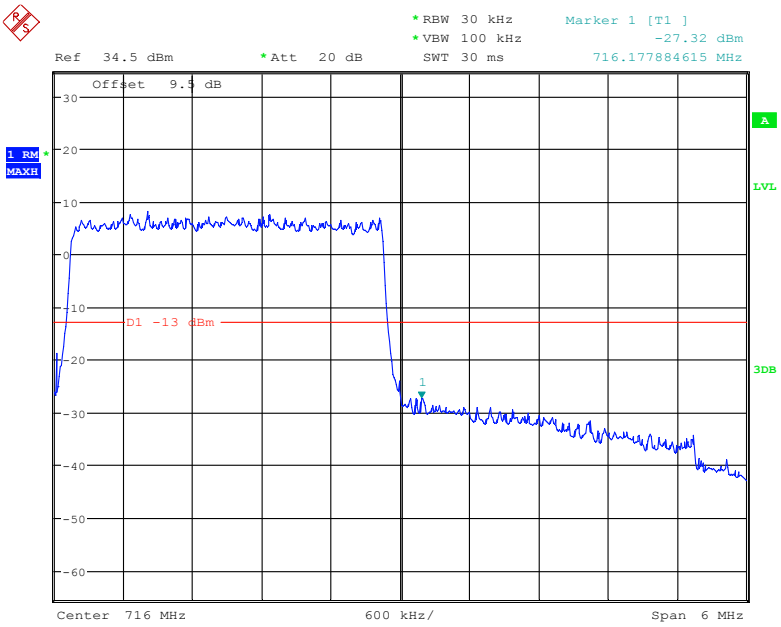
Date: 27.MAY.2019 19:45:10

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



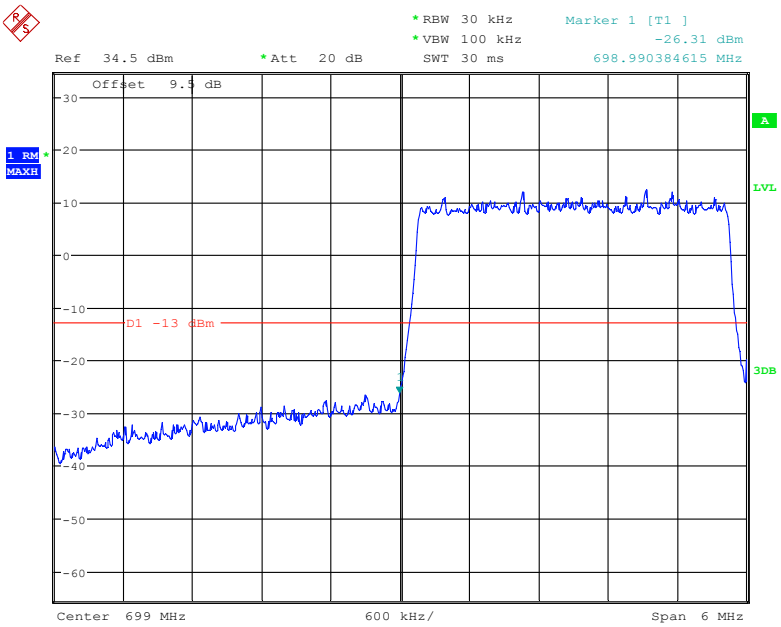
Date: 27.MAY.2019 19:59:41

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



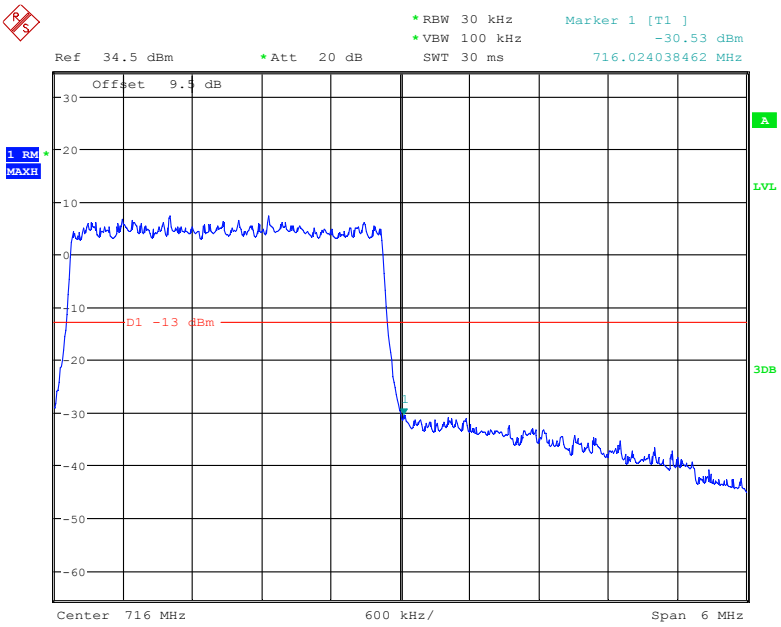
Date: 27.MAY.2019 19:48:31

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



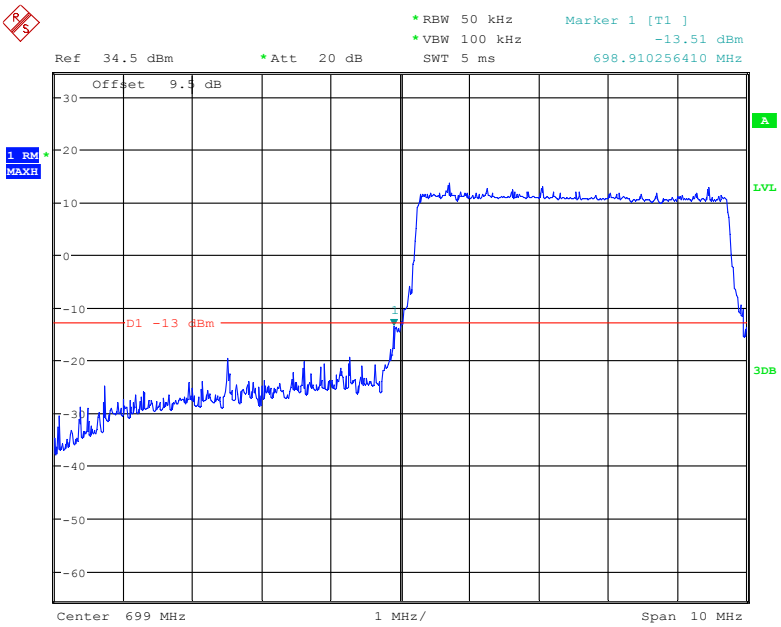
Date: 27.MAY.2019 19:51:59

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



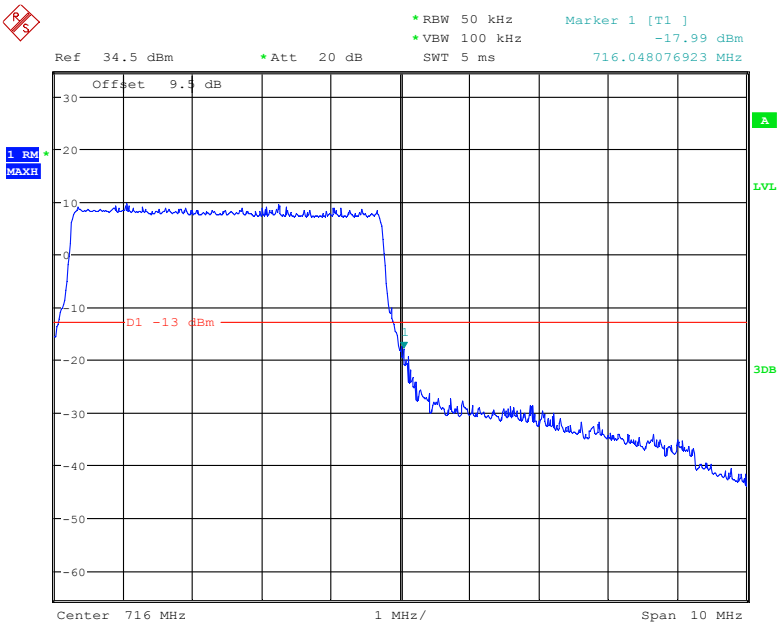
Date: 27.MAY.2019 19:49:42

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



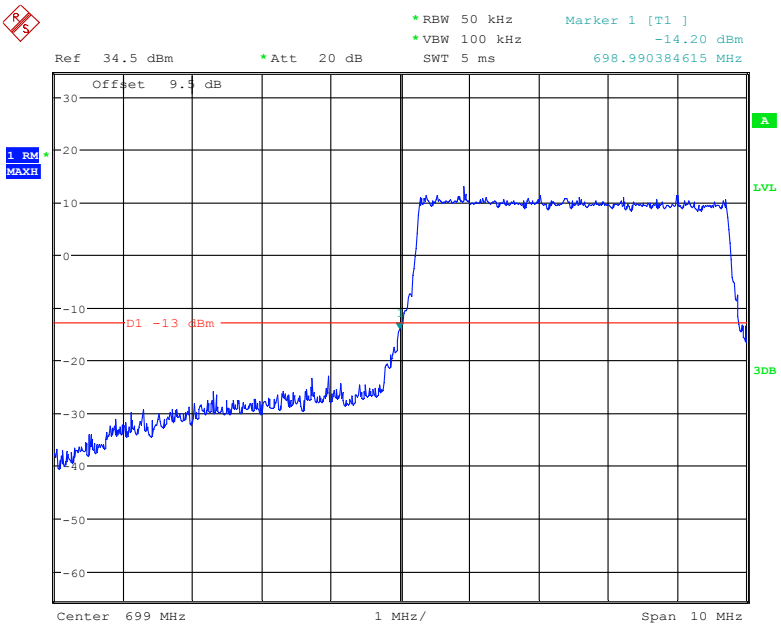
Date: 27.MAY.2019 20:02:07

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



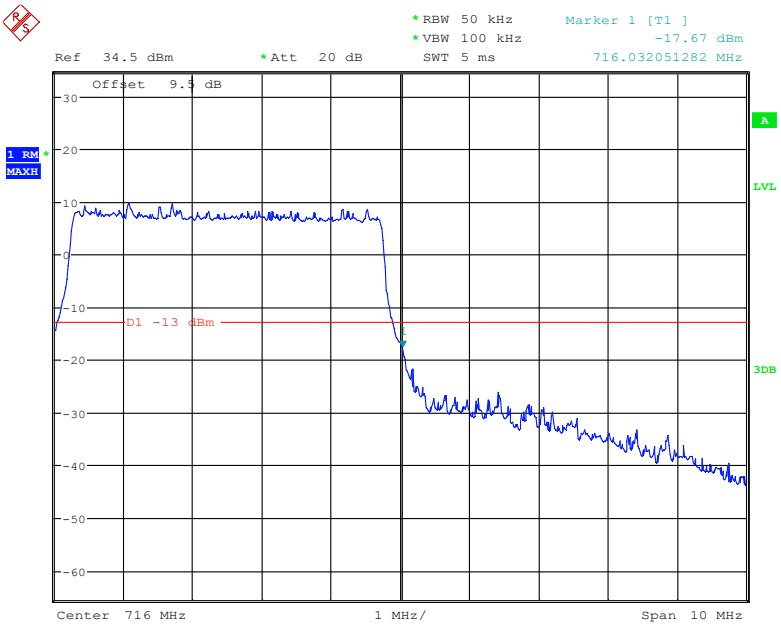
Date: 27.MAY.2019 20:02:49

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



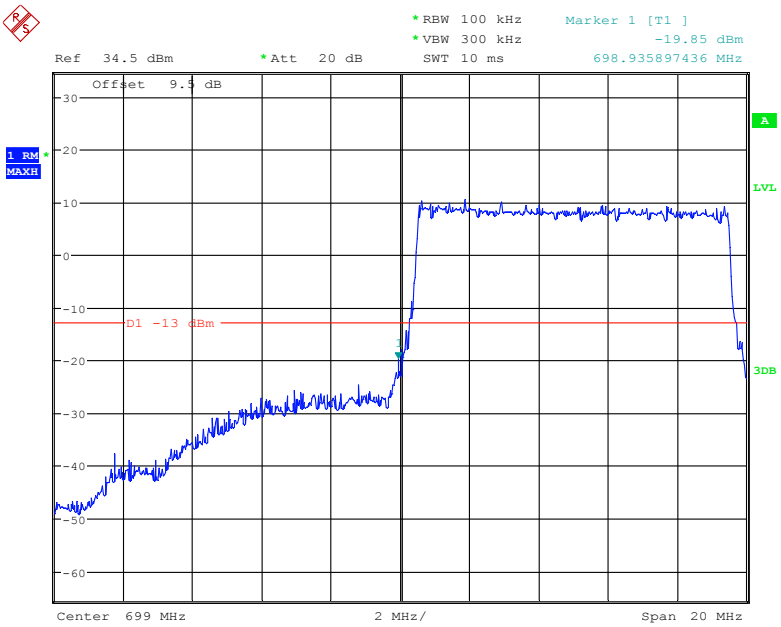
Date: 27.MAY.2019 20:00:47

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



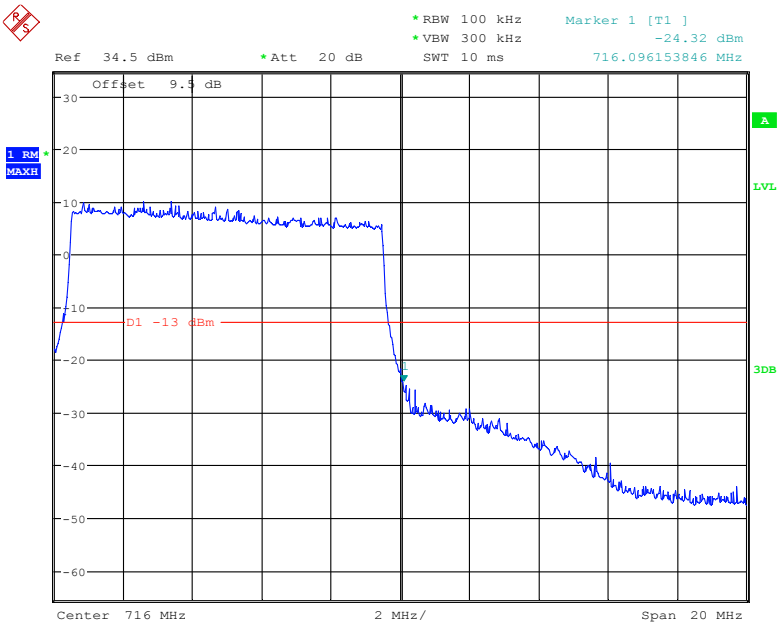
Date: 27.MAY.2019 20:04:28

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



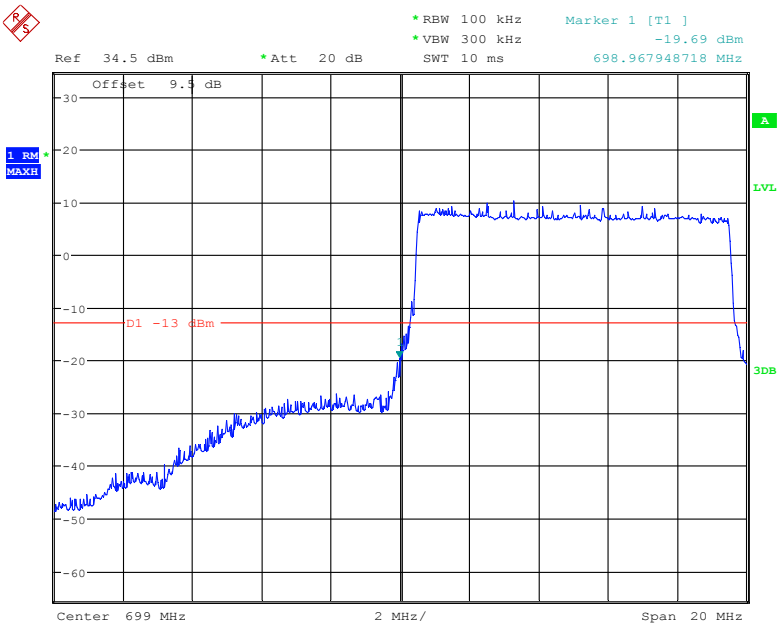
Date: 27.MAY.2019 20:05:26

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



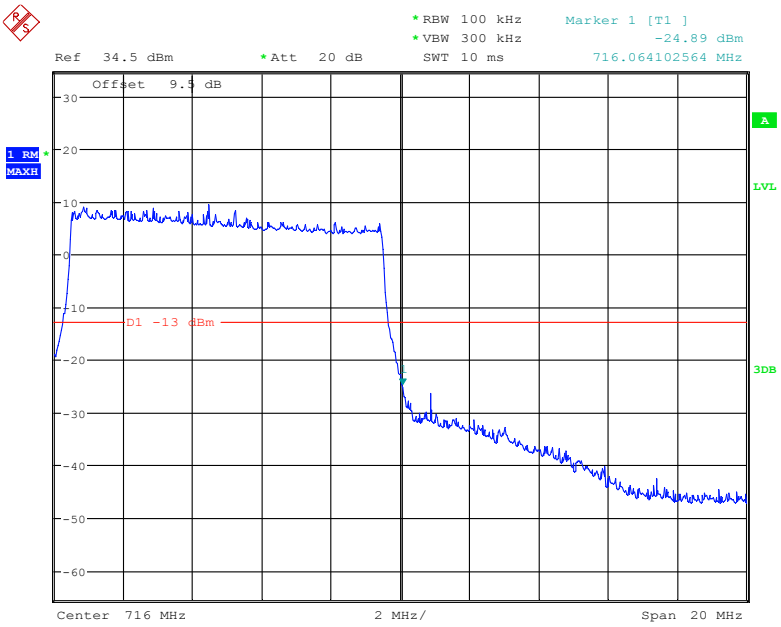
Date: 27.MAY.2019 20:11:44

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



Date: 27.MAY.2019 20:06:56

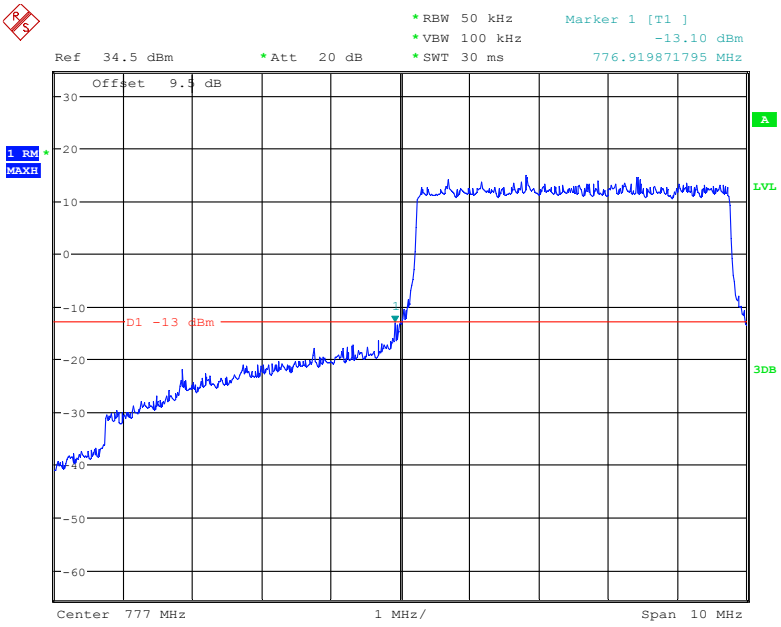
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 27.MAY.2019 20:09:54

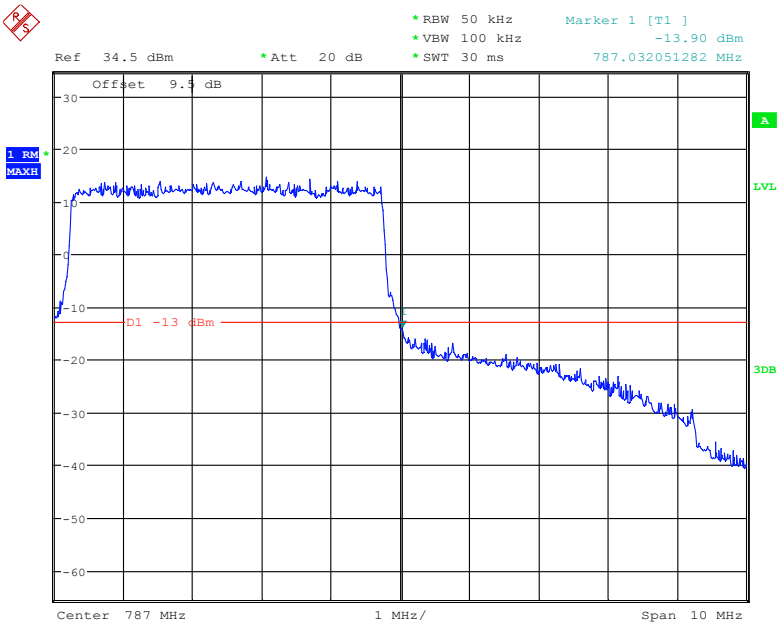
Band 13:

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



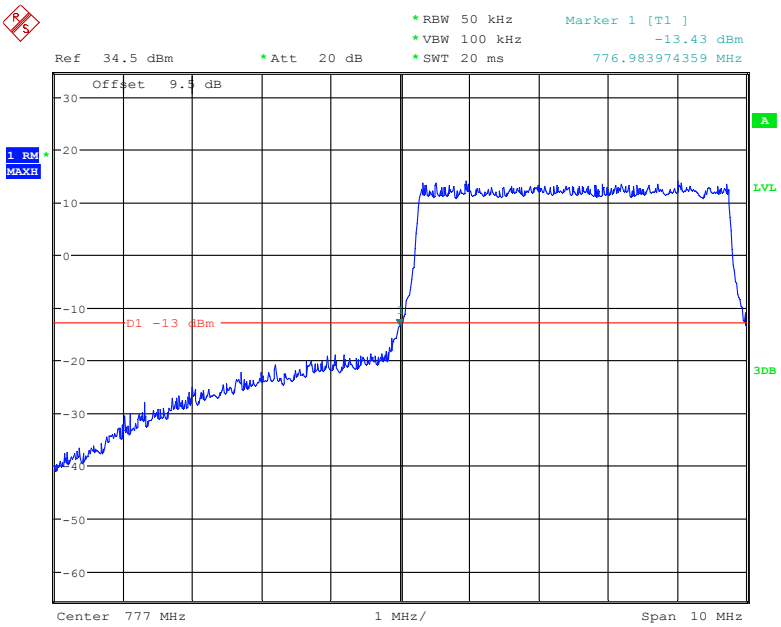
Date: 27.MAY.2019 20:20:16

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



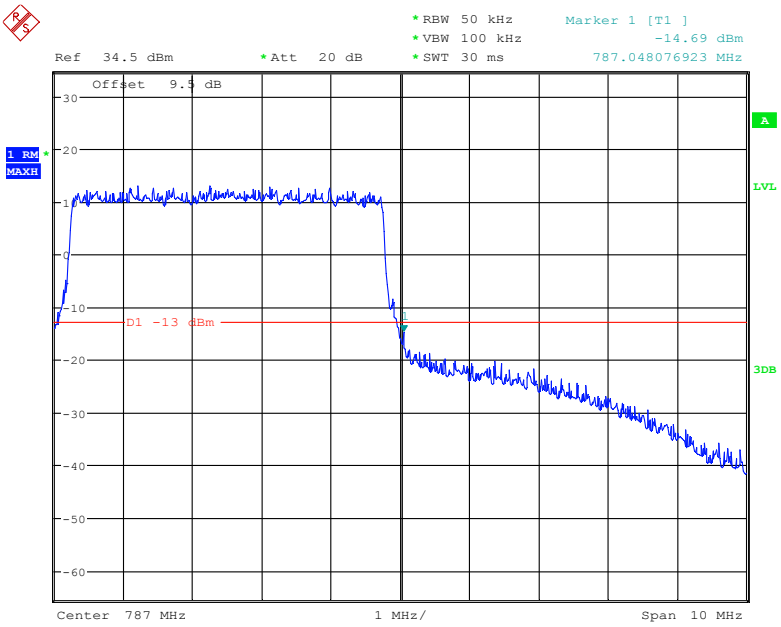
Date: 27.MAY.2019 20:20:55

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



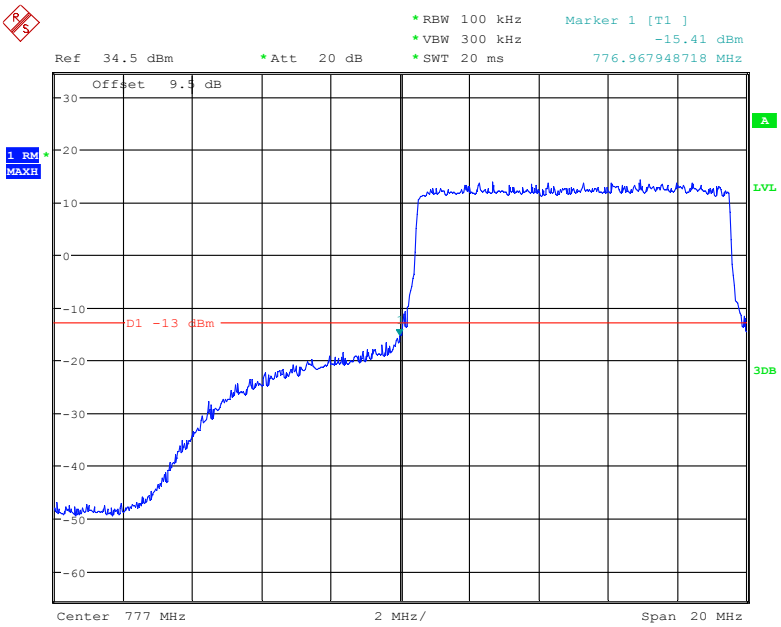
Date: 27.MAY.2019 20:19:34

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



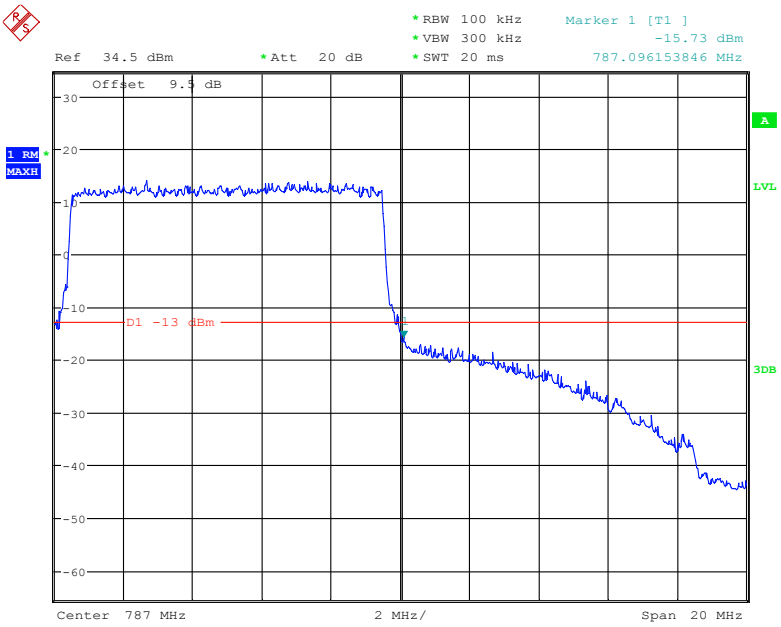
Date: 27.MAY.2019 20:21:17

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



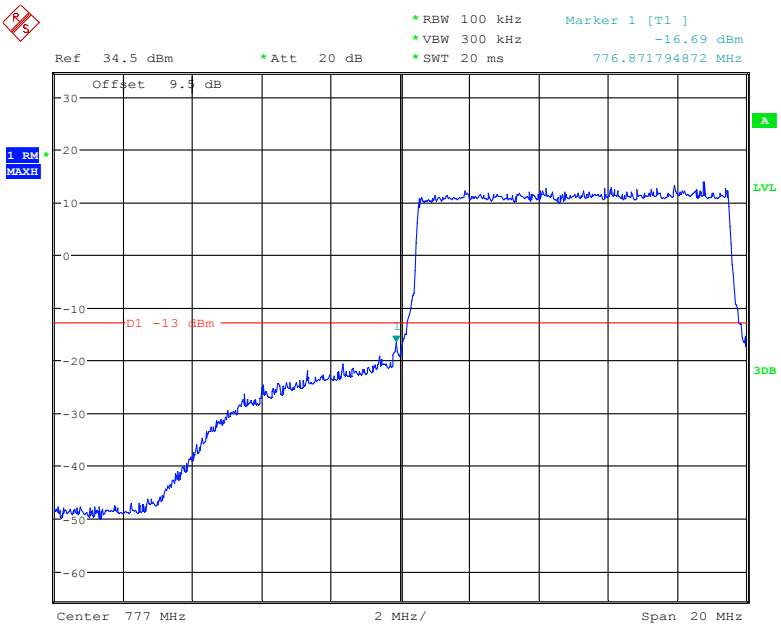
Date: 27.MAY.2019 20:18:42

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



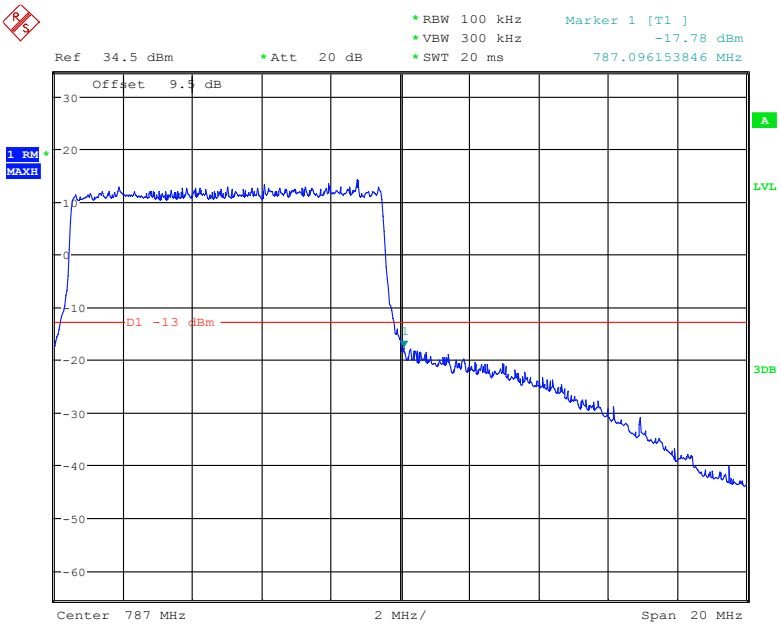
Date: 27.MAY.2019 20:17:26

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



Date: 27.MAY.2019 20:14:03

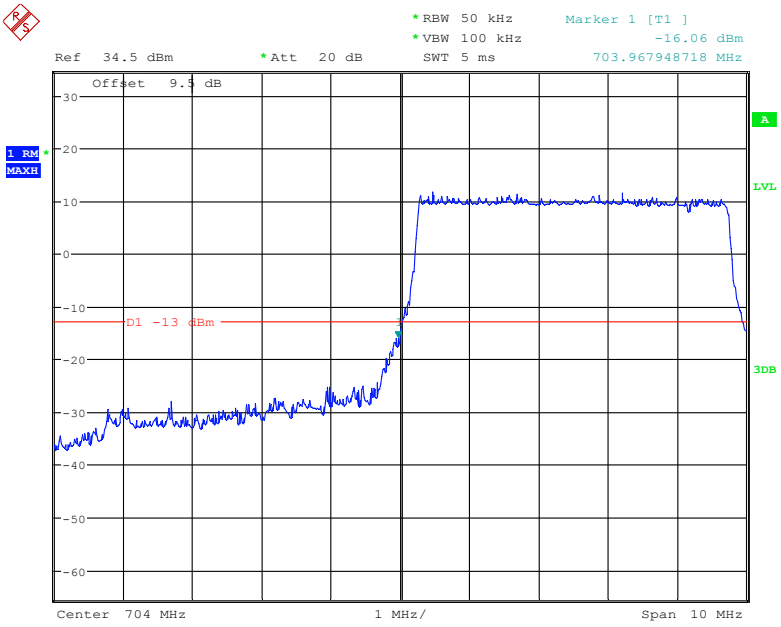
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 27.MAY.2019 20:15:43

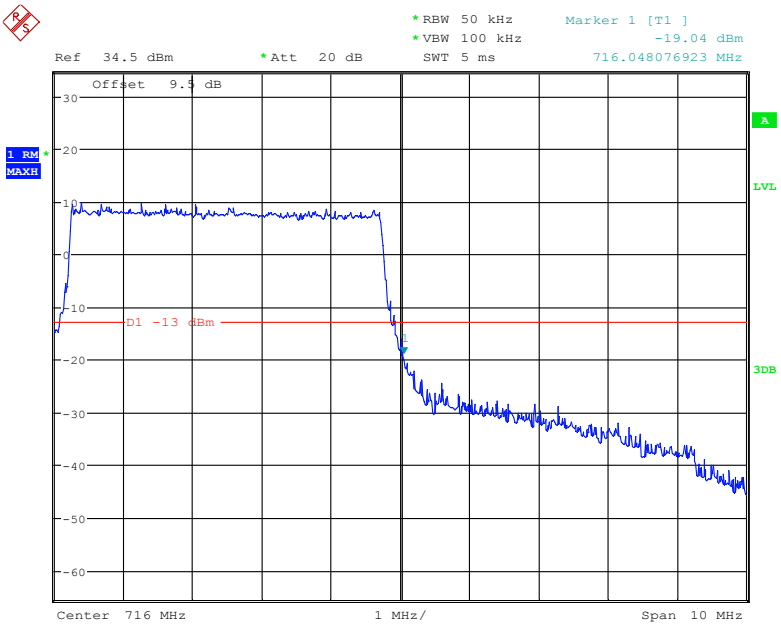
Band 17:

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



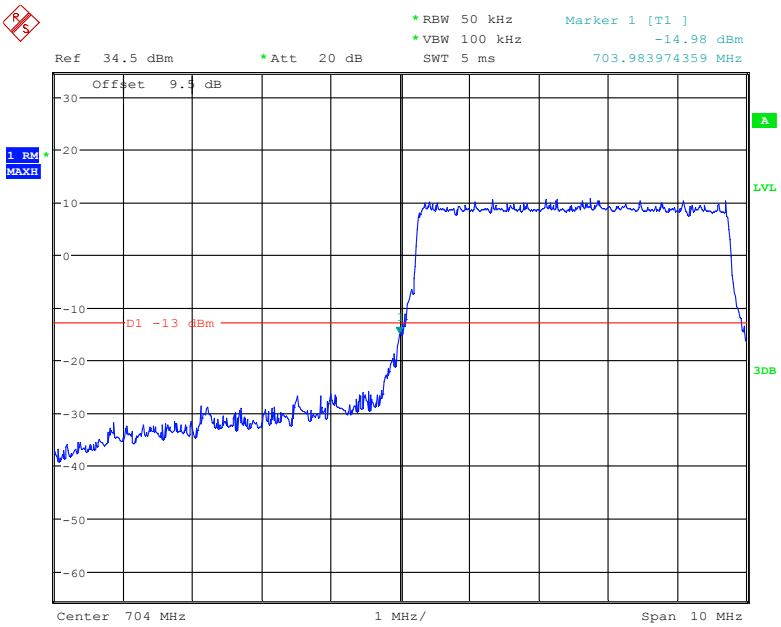
Date: 27.MAY.2019 20:24:27

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



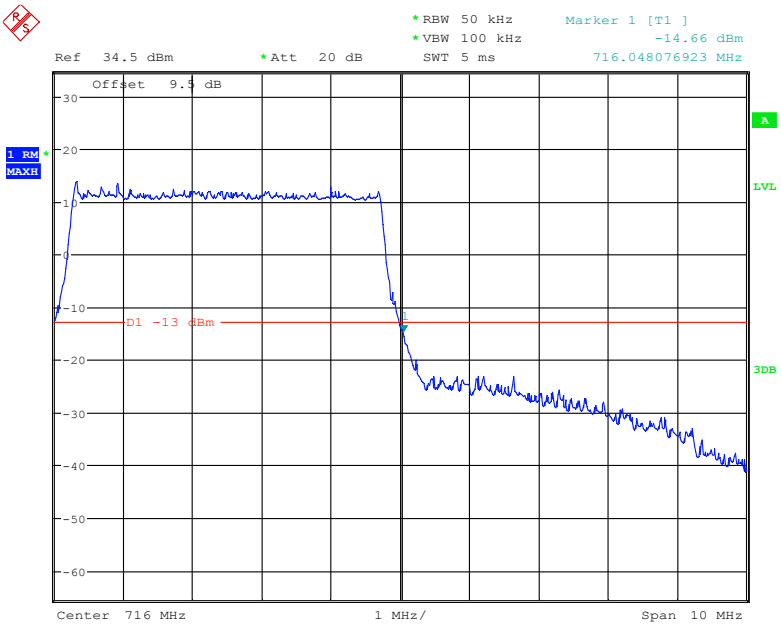
Date: 27.MAY.2019 20:25:05

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



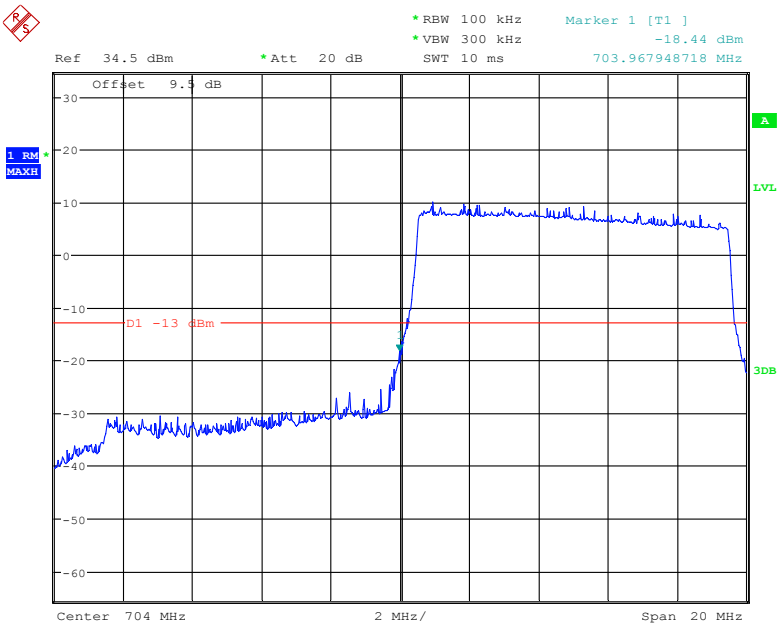
Date: 27.MAY.2019 20:23:27

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



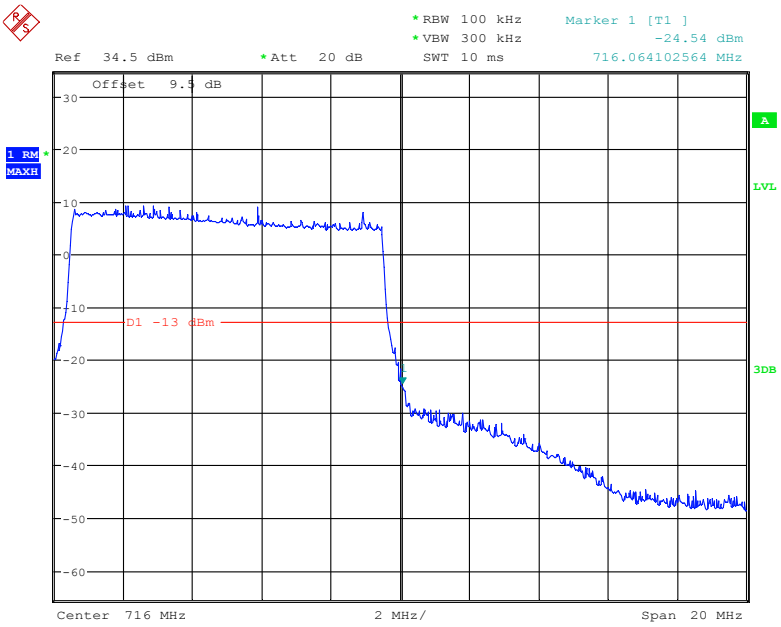
Date: 27.MAY.2019 20:26:14

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



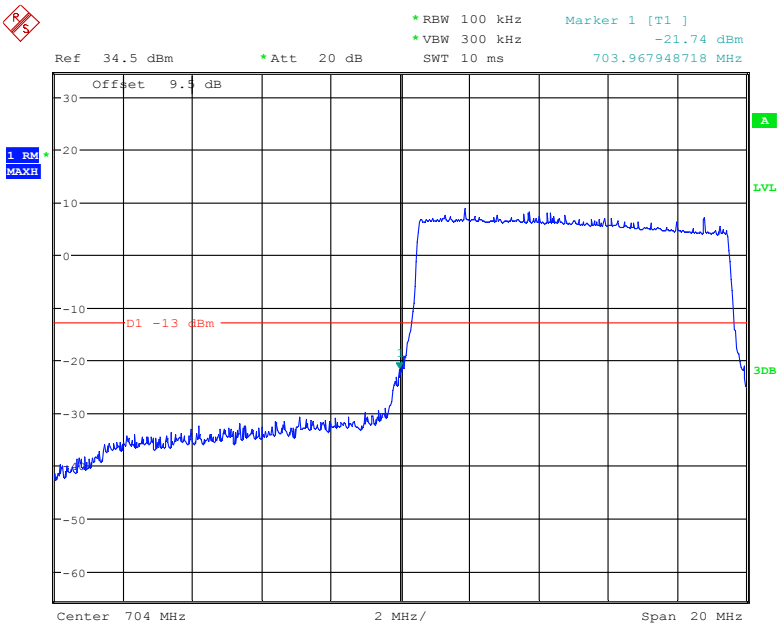
Date: 27.MAY.2019 20:33:45

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



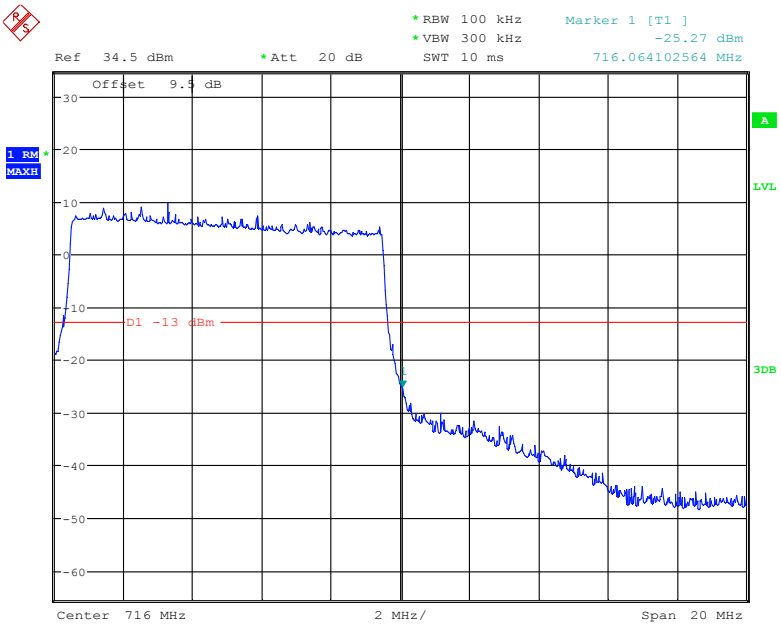
Date: 27.MAY.2019 20:27:45

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



Date: 27.MAY.2019 20:32:19

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



Date: 27.MAY.2019 20:30:41

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

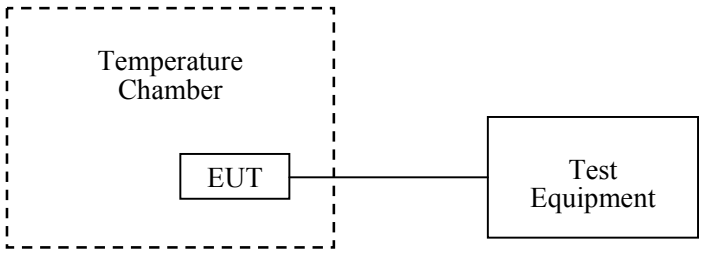
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by James Fu & George Zhong on 2019-06-07.

EUT operation mode: Transmitting

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

Cellular Band (Part 22H)

GSM Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	2	0.0024	2.5
-20		-1	-0.0012	2.5
-10		1	0.0012	2.5
0		-2	-0.0024	2.5
10		-3	-0.0036	2.5
20		2	0.0024	2.5
30		1	0.0012	2.5
40		2	0.0024	2.5
50		-2	-0.0024	2.5
20	V min.= 3.5	1	0.0012	2.5
	V max.= 4.4	2	0.0024	2.5

EDGE Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	5	0.0060	2.5
-20		3	0.0036	2.5
-10		4	0.0048	2.5
0		5	0.0060	2.5
10		9	0.0108	2.5
20		6	0.0072	2.5
30		5	0.0060	2.5
40		4	0.0048	2.5
50		3	0.0036	2.5
20	V min.= 3.5	8	0.0096	2.5
	V max.= 4.4	6	0.0072	2.5

WCDMA Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	-4	-0.0048	2.5
-20		-3	-0.0036	2.5
-10		-1	-0.0012	2.5
0		1	0.0012	2.5
10		0	0.0000	2.5
20		-1	-0.0012	2.5
30		-4	-0.0048	2.5
40		1	0.0012	2.5
50		5	0.0060	2.5
20	V min.= 3.5	-3	-0.0036	2.5
	V max.= 4.4	3	0.0036	2.5

PCS Band (Part 24E)

GSM Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	2	0.0011	pass
-20		4	0.0021	pass
-10		2	0.0011	pass
0		-4	-0.0021	pass
10		-3	-0.0016	pass
20		-3	-0.0016	pass
30		4	0.0021	pass
40		5	0.0027	pass
50		3	0.0016	pass
20	V min.= 3.5	2	0.0011	pass
	V max.= 4.4	-3	-0.0016	pass

EDGE Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	-1	-0.0005	pass
-20		-4	-0.0021	pass
-10		-7	-0.0037	pass
0		-5	-0.0027	pass
10		-3	-0.0016	pass
20		-2	-0.0011	pass
30		0	0.0000	pass
40		1	0.0005	pass
50		3	0.0016	pass
20	V min.= 3.5	-1	-0.0005	pass
	V max.= 4.4	2	0.0011	pass

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	4	0.0021	pass
-20		7	0.0037	pass
-10		8	0.0043	pass
0		6	0.0032	pass
10		4	0.0021	pass
20		6	0.0032	pass
30		5	0.0027	pass
40		6	0.0032	pass
50		-1	-0.0005	pass
20	V min.= 3.5	4	0.0021	pass
	V max.= 4.4	7	0.0037	pass

AWS Band (Part 27)

Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	1710.0071	1754.9974	1710	1755
-20		1710.0032	1754.9977	1710	1755
-10		1710.0058	1754.9973	1710	1755
0		1710.0021	1754.9954	1710	1755
10		1710.0021	1754.9973	1710	1755
20		1710.0047	1754.9989	1710	1755
30		1710.0054	1754.9966	1710	1755
40		1710.0031	1754.9975	1710	1755
50		1710.0070	1754.9985	1710	1755
20	V min.= 3.5	1710.0045	1754.9960	1710	1755
	V max.= 4.4	1710.0015	1754.9981	1710	1755

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	3.85	-2	-0.0011	pass
-20		-1	-0.0005	pass
-10		1	0.0005	pass
0		0	0.0000	pass
10		-2	-0.0011	pass
20		-3	-0.0016	pass
30		-1	-0.0005	pass
40		-2	-0.0011	pass
50		-5	-0.0027	pass
20	V min.= 3.5	-4	-0.0021	pass
	V max.= 4.4	1	0.0005	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	3.85	1710.4599	1754.6248	1710	1755
-20		1710.4628	1754.6236	1710	1755
-10		1710.4629	1754.6268	1710	1755
0		1710.4653	1754.6221	1710	1755
10		1710.4628	1754.6246	1710	1755
20		1710.4648	1754.6253	1710	1755
30		1710.4643	1754.6259	1710	1755
40		1710.4631	1754.6221	1710	1755
50		1710.4661	1754.6227	1710	1755
20	V min.= 3.5	1710.4586	1754.6234	1710	1755
	V max.= 4.4	1710.4634	1754.6242	1710	1755

Band 5:

10.0 MHz Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	4	0.0048	2.5
-20		6	0.0072	2.5
-10		5	0.0060	2.5
0		3	0.0036	2.5
10		2	0.0024	2.5
20		1	0.0012	2.5
30		-2	-0.0024	2.5
40		-4	-0.0048	2.5
50		-3	-0.0036	2.5
20	V min.= 3.5	-1	-0.0012	2.5
	V max.= 4.4	3	0.0036	2.5

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	3.85	2500.4739	2569.6955	2500	2570
-20		2500.4758	2569.6982	2500	2570
-10		2500.4729	2569.6957	2500	2570
0		2500.4764	2569.6985	2500	2570
10		2500.4734	2569.6952	2500	2570
20		2500.4736	2569.6941	2500	2570
30		2500.4743	2569.6953	2500	2570
40		2500.4731	2569.6942	2500	2570
50		2500.4732	2569.6982	2500	2570
20	V min.= 3.5	2500.4734	2569.6946	2500	2570
	V max.= 4.4	2500.4766	2569.6980	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	699.5234	715.5855	699	716
-20		699.5229	715.5869	699	716
-10		699.5241	715.5874	699	716
0		699.5225	715.5867	699	716
10		699.5228	715.5864	699	716
20		699.5232	715.5868	699	716
30		699.5217	715.5853	699	716
40		699.5241	715.5886	699	716
50		699.5237	715.5863	699	716
20	V min.= 3.5	699.5235	715.5886	699	716
	V max.= 4.4	699.5216	715.5876	699	716

Band 13:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	777.4621	786.6430	777	787
-20		777.4670	786.6437	777	787
-10		777.4663	786.6408	777	787
0		777.4656	786.6428	777	787
10		777.4642	786.6432	777	787
20		777.4639	786.6460	777	787
30		777.4629	786.6450	777	787
40		777.4646	786.6433	777	787
50		777.4646	786.6443	777	787
20	V min.= 3.5	777.4662	786.6434	777	787
	V max.= 4.4	777.4669	786.6444	777	787

Band 17:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	704.3887	715.7267	704	716
-20		704.3871	715.7268	704	716
-10		704.3885	715.7251	704	716
0		704.3869	715.7227	704	716
10		704.3878	715.7246	704	716
20		704.3881	715.7259	704	716
30		704.3867	715.7272	704	716
40		704.3889	715.7251	704	716
50		704.3887	715.7267	704	716
20	V min.= 3.5	704.3862	715.7252	704	716
	V max.= 4.4	704.3887	715.7260	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	3.85	-4	-0.0021	pass
-20		-2	-0.0011	pass
-10		0	0.0000	pass
0		-1	-0.0005	pass
10		-3	-0.0016	pass
20		-4	-0.0021	pass
30		-5	-0.0027	pass
40		-6	-0.0032	pass
50		-5	-0.0027	pass
20	V min.= 3.5	-5	-0.0027	pass
	V max.= 4.4	-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	3.85	1710.4369	1754.7815	1710	1755
-20		1710.4938	1754.6119	1710	1755
-10		1710.6126	1754.7065	1710	1755
0		1710.4804	1754.7922	1710	1755
10		1710.4949	1754.6215	1710	1755
20		1710.5622	1754.7247	1710	1755
30		1710.6061	1754.6662	1710	1755
40		1710.5229	1754.7558	1710	1755
50		1710.5337	1754.7968	1710	1755
20	V min.= 3.5	1710.5388	1754.6162	1710	1755
	V max.= 4.4	1710.5928	1754.6981	1710	1755

Band 5:

10.0 MHz Middle Channel, f_o =836.6MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.85	7	0.0084	2.5
-20		5	0.0060	2.5
-10		2	0.0024	2.5
0		6	0.0072	2.5
10		4	0.0048	2.5
20		3	0.0036	2.5
30		1	0.0012	2.5
40		2	0.0024	2.5
50		1	0.0012	2.5
20	V min.= 3.5	2	0.0024	2.5
	V max.= 4.4	6	0.0072	2.5

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	3.85	2500.5930	2569.7368	2500	2570
-20		2500.4515	2569.7009	2500	2570
-10		2500.5295	2569.7530	2500	2570
0		2500.5223	2569.7962	2500	2570
10		2500.5780	2569.8576	2500	2570
20		2500.5956	2569.6035	2500	2570
30		2500.5076	2569.6688	2500	2570
40		2500.4348	2569.7432	2500	2570
50		2500.6018	2569.8059	2500	2570
20	V min.= 3.5	2500.6120	2569.6607	2500	2570
	V max.= 4.4	2500.5657	2569.7848	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	699.5567	715.7606	699	716
-20		699.6145	715.6914	699	716
-10		699.5159	715.6317	699	716
0		699.4886	715.7504	699	716
10		699.6784	715.6617	699	716
20		699.5066	715.6872	699	716
30		699.6361	715.5904	699	716
40		699.4971	715.6486	699	716
50		699.4984	715.7296	699	716
20	V min.= 3.5	699.6715	715.5728	699	716
	V max.= 4.4	699.5924	715.6948	699	716

Band 13:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	777.4478	786.6315	777	787
-20		777.5613	786.7520	777	787
-10		777.5270	786.7898	777	787
0		777.6352	786.6852	777	787
10		777.5208	786.6357	777	787
20		777.5650	786.7877	777	787
30		777.5971	786.6364	777	787
40		777.6409	786.6859	777	787
50		777.5422	786.7423	777	787
20	V min.= 3.5	777.4758	786.7267	777	787
	V max.= 4.4	777.3974	786.7417	777	787

Band 17:

10 MHz Bandwidth					
Temperature (℃)	**Power Supplied (V_{DC})**	**F_L (MHz)**	**F_H (MHz)**	**F_L Limit (MHz)**	**F_H Limit (MHz)**
-30	3.85	704.4577	715.7194	704	716
-20		704.4222	715.7451	704	716
-10		704.4359	715.7131	704	716
0		704.3561	715.7117	704	716
10		704.5247	715.7726	704	716
20		704.4538	715.7951	704	716
30		704.4894	715.7742	704	716
40		704.4954	715.6794	704	716
50		704.4290	715.8014	704	716
20	V min.= 3.5	704.5479	715.8735	704	716
	V max.= 4.4	704.3855	715.8454	704	716

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