FCC PART 27

FCC PART 22H, PART 24E

TEST REPORT

For

K2KONNECT LLC

2323 NW 82ND AVE, DORAL, FL 33122, USA

FCC ID: 2AMVGEPICT

Report Type:	**Product Type:**
Original Report	4G Phone

Report Number:	RSZ180301001-00D
Report Date:	2018-03-27
Reviewed By:	Rocky Kang 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

A2LA ACCREDITED TESTING LABORATORY CERTIFICATE # 4821.01

BACL Bay Area Compliance Labs Corp.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *K2KONNECT LLC's* product, model number: EPIC T *(FCC ID: 2AMVGEPICT)* or the "EUT" in this report was a *4G Phone,* which was measured approximately: 16.6 cm (L) × 8.8 cm (W) × 1.7 cm (H), rated with input voltage: DC 3.8V battery or DC 5.0V/ DC 9.0V/ DC 12.0V from adapter.

Adapter Information:
Model: A824-120150U-US1
Input: AC 100-240V, 50/60Hz, 0.5 A
Output: DC 5.0V, 2.0A/ DC 9.0V, 2.0A/ DC 12.0V, 1.5A

All measurement and test data in this report was gathered from production sample serial number: 1800240 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-03-01.

Objective

This test report is prepared on behalf of *K2KONNECT LLC* in accordance with Part 2-Subpart J, Part 22-Subpart H and Part 24-Subpart E and Subpart 27 of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS, Part 15.247 DTS and Part 15B JBP submissions with FCC ID: 2AMVGEPICT.

Test Methodology

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

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

Applicable Standards: TIA/EIA 603-D.

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

Measurement Uncertainty

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

Test Facility

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

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 382179, the FCC Designation No.: CN5001.

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

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

Block Diagram of Test Setup
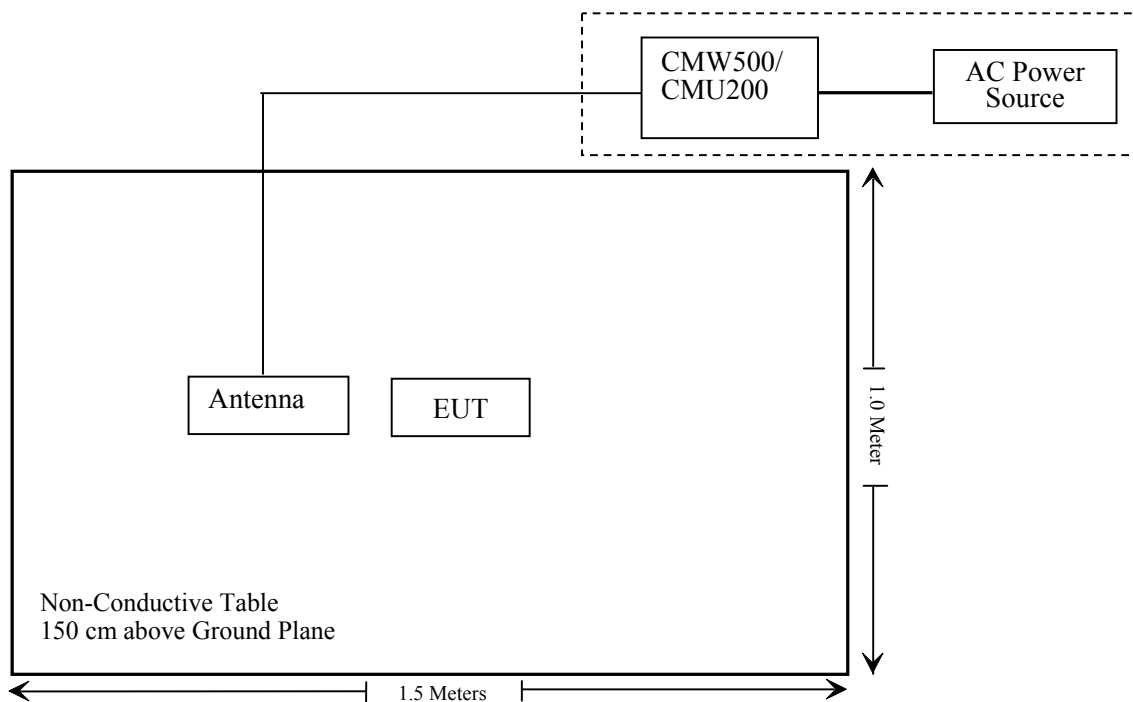
SUMMARY OF TEST RESULTS

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

Note: * Please refer to SAR report released by BACL, report number: RSZ180301001-20

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	FSIQ26	8386001028	2017-04-24	2018-04-24
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2017-11-19	2018-05-21
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2017-05-21	2018-05-21
HP	Amplifier	HP8447E	1937A01046	2017-11-19	2018-05-21
Anritsu	Signal Generator	68369B	004114	2017-12-07	2018-12-07
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2018-01-11	2019-01-11
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	104PEA	218124002	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	RG-214	1	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	RG-214	2	2017-11-22	2018-05-22
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-04	2017-12-29	2020-12-28
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2017-12-29	2020-12-28
Ducommun technologies	Pre-amplifier	ALN-22093530-01	991373-01	2017-08-03	2018-08-03

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2017-12-24	2018-12-24
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2017-12-21	2018-12-21
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
Aglient	ESG Vector Signal Generator	E4438C	MY42080875	2017-05-09	2018-05-09
Rohde & Schwarz	Wideband Radio Communication Tester	CMU200	106891	2017-12-14	2018-12-14
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2017-04-24	2018-04-24
Ducommun technologies	RF Cable	RG-214	3	2017-11-22	2018-05-22
WEINSCHEL	10dB Attenuator	5324	AU 3842	2017-11-22	2018-05-23
WEINSCHEL	3dB Attenuator	N/A	N/A	2017-11-22	2018-05-23
N/A	Power Splitter	N/A	N/A	2017-05-21	2018-05-21

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

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

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ180301001-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

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

Applicable Standard

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

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

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

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

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

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

Test Procedure

Conducted method:

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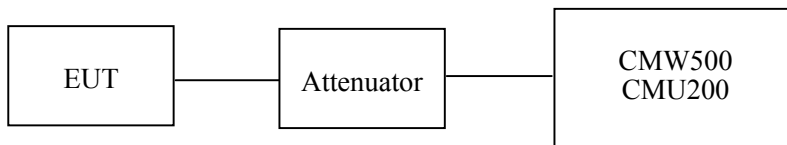
Radiated method:

TIA 603-D section 2.2.17

Test Data

Environmental Conditions

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

The testing was performed by Nancy Wang on 2018-03-08.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	31.66	38.45
	190	836.6	31.44	38.45
	251	848.8	31.28	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.38	31.48	29.71	28.22	38.45
	190	836.6	32.26	31.26	29.58	28.56	38.45
	251	848.8	32.12	31.18	29.42	28.73	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	25.66	24.30	22.07	20.74	38.45
	190	836.6	25.28	23.92	21.58	20.23	38.45
	251	848.8	25.00	23.62	21.26	19.92	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		21.82	21.83	21.71
		HSDPA	1	20.83	20.76	20.63
			2	20.64	20.39	20.48
			3	20.76	20.55	20.63
			4	20.66	20.48	20.47
		HSUPA	1	21.02	20.91	20.81
			2	20.77	20.61	20.84
			3	20.69	20.57	20.63
			4	20.59	20.42	20.59
			5	20.64	20.69	20.77
		HSPA+	1	20.22	20.58	20.12

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	28.49	33
	661	1880.0	28.45	33
	810	1909.8	28.46	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	28.64	27.92	26.23	25.13	33
	661	1880.0	28.59	27.84	26.18	25.35	33
	810	1909.8	28.58	27.85	26.14	25.43	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	25.73	24.55	23.52	22.37	33
	661	1880.0	25.88	24.64	23.85	22.53	33
	810	1909.8	25.63	24.52	23.46	22.43	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	22.32	22.44
		HSDPA	1	21.38	21.25	21.34
			2	21.68	21.49	21.43
			3	21.86	21.67	21.64
			4	21.74	21.59	21.74
		HSUPA	1	21.38	21.32	21.43
			2	21.63	21.46	21.39
			3	21.74	21.68	21.55
			4	21.52	21.44	21.43
			5	21.76	21.68	21.58
		HSPA+	1	21.22	21.17	21.43

Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.21	13
	Middle	3.08	13
	High	3.17	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.58	13
	Middle	3.22	13
	High	3.31	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.18	13
	Middle	3.22	13
	High	3.69	13
HSDPA (16QAM)	Low	3.68	13
	Middle	3.66	13
	High	3.52	13
HSUPA (BPSK)	Low	3.46	13
	Middle	3.28	13
	High	3.29	13
HSPA+	Low	3.32	13
	Middle	3.54	13
	High	3.72	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	2.57	13
	Middle	2.34	13
	High	2.19	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.67	13
	Middle	2.26	13
	High	2.32	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.43	13
	Middle	3.24	13
	High	3.46	13
HSDPA (16QAM)	Low	3.79	13
	Middle	3.68	13
	High	3.81	13
HSUPA (BPSK)	Low	3.75	13
	Middle	3.90	13
	High	3.85	13
HSPA+	Low	3.94	13
	Middle	3.45	13
	High	3.25	13

Radiated Power
GSM Mode:

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | FCC Part 22H/24E | |
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
ERP for Cellular Band (Part 22H), Middle Channel										
836.6	87.91	178	1.4	H	25.5	0.7	0.0	24.80	38.45	13.65
836.6	91.84	110	2.3	V	31.4	0.7	0.0	30.70	38.45	7.75
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	90.44	230	1.9	H	20.4	1.30	9.40	28.50	33	4.5
1880.00	90.09	212	2.3	V	19.8	1.30	9.40	27.90	33	5.1

EDGE Mode:

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP, Cellular Band (Part 22H), Middle Channel										
836.6	83.14	7	2.1	H	20.7	0.7	0.0	20.00	38.45	18.45
836.6	85.93	203	1.1	V	25.5	0.7	0.0	24.80	38.45	13.65
EIRP, PCS Band (Part 24E), Middle Channel										
1880.00	88.34	239	2.0	H	18.3	1.30	9.40	26.40	33	6.6
1880.00	85.61	36	1.8	V	15.3	1.30	9.40	23.40	33	9.6

WCDMA Mode:

| Frequency (MHz) | Receiver Reading (dBµV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | FCC Part 22H/24E | |
			Height (m)	Polar (H/V)	Level (dBm)	Cable loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
ERP for WCDMA Band V (Part 22H), Middle Channel										
836.6	76.55	18	1.8	H	14.5	0.7	0.0	13.80	38.45	24.65
836.6	79.38	255	1.9	V	18.9	0.7	0.0	18.20	38.45	20.25
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	83.07	47	1.0	H	13.0	1.30	9.40	21.10	33	11.9
1880.00	82.01	47	1.5	V	11.7	1.30	9.40	19.80	33	13.2

Note:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

LTE Band 2:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	21.45	21.52	21.48
		RB Size=1, RB Offset=2	21.75	21.83	21.75
		RB Size=1, RB Offset=5	21.99	22.00	21.21
		RB Size=3, RB Offset=0	21.86	21.88	21.98
		RB Size=3, RB Offset=1	21.96	21.22	21.92
		RB Size=3, RB Offset=2	21.89	21.92	21.86
		RB Size=6, RB Offset=0	21.97	21.58	22.02
	16QAM	RB Size=1, RB Offset=0	21.71	21.56	21.24
		RB Size=1, RB Offset=2	20.42	20.41	20.38
		RB Size=1, RB Offset=5	20.51	20.41	20.65
		RB Size=3, RB Offset=0	20.46	20.56	20.42
		RB Size=3, RB Offset=1	20.47	20.46	20.54
		RB Size=3, RB Offset=2	20.42	20.48	20.54
		RB Size=6, RB Offset=0	20.44	20.52	20.52
3.0	QPSK	RB Size=1, RB Offset=0	21.25	21.28	21.31
		RB Size=1, RB Offset=7	21.38	21.39	21.38
		RB Size=1, RB Offset=14	21.34	21.32	21.21
		RB Size=8, RB Offset=0	20.56	20.41	20.47
		RB Size=8, RB Offset=4	20.48	20.58	20.63
		RB Size=8, RB Offset=7	20.38	20.39	20.47
		RB Size=15, RB Offset=0	20.49	20.52	20.57
	16QAM	RB Size=1, RB Offset=0	21.37	21.21	21.43
		RB Size=1, RB Offset=7	21.38	21.19	21.38
		RB Size=1, RB Offset=14	21.33	21	21.44
		RB Size=8, RB Offset=0	20.58	20.48	20.58
		RB Size=8, RB Offset=4	20.46	20.57	20.66
		RB Size=8, RB Offset=7	20.48	20.57	20.63
		RB Size=15, RB Offset=0	20.49	20.57	20.46

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.22	21.18	21.53
		RB Size=1, RB Offset=12	21.22	21.35	22.36
		RB Size=1, RB Offset=24	21.38	21.39	21.39
		RB Size=12, RB Offset=0	20.93	20.58	20.69
		RB Size=12, RB Offset=6	20.48	20.67	20.65
		RB Size=12, RB Offset=11	20.44	20.54	20.36
		RB Size=25, RB Offset=0	20.52	20.47	20.54
	16QAM	RB Size=1, RB Offset=0	20.47	20.59	20.68
		RB Size=1, RB Offset=12	20.56	20.48	20.55
		RB Size=1, RB Offset=24	21.88	21.27	21.83
		RB Size=12, RB Offset=0	20.59	20.63	20.58
		RB Size=12, RB Offset=6	20.63	20.62	20.52
		RB Size=12, RB Offset=11	20.68	20.59	20.63
		RB Size=25, RB Offset=0	20.55	20.48	20.63
10.0	QPSK	RB Size=1, RB Offset=0	21.36	21.43	21.39
		RB Size=1, RB Offset=24	21.43	21.28	21.36
		RB Size=1, RB Offset=49	21.46	21.00	21.36
		RB Size=25, RB Offset=0	21.43	21.44	21.32
		RB Size=25, RB Offset=12	21.25	21.19	21.25
		RB Size=25, RB Offset=24	21.12	21.08	21.11
		RB Size=50, RB Offset=0	20.63	20.74	20.69
	16QAM	RB Size=1, RB Offset=0	20.76	20.74	20.63
		RB Size=1, RB Offset=24	20.62	20.67	20.59
		RB Size=1, RB Offset=49	20.58	20.47	20.56
		RB Size=25, RB Offset=0	20.56	20.62	20.47
		RB Size=25, RB Offset=12	20.48	20.48	20.43
		RB Size=25, RB Offset=24	20.42	20.54	20.48
		RB Size=50, RB Offset=0	20..39	20.40	20.47

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	21.68	21.59	21.65
		RB Size=1, RB Offset=37	21.76	21.67	21.59
		RB Size=1, RB Offset=74	21.59	21.63	21.55
		RB Size=36, RB Offset=0	21.62	21.57	21.42
		RB Size=36, RB Offset=18	21.57	21.43	21.32
		RB Size=36, RB Offset=37	21.43	21.39	21.26
		RB Size=75, RB Offset=0	20.84	21.79	21.74
	16QAM	RB Size=1, RB Offset=0	20.76	21.01	21.87
		RB Size=1, RB Offset=37	21	21.04	21.12
		RB Size=1, RB Offset=74	21.02	21.06	21.69
		RB Size=36, RB Offset=0	21.12	21.03	20.97
		RB Size=36, RB Offset=18	20.65	21.12	20.76
		RB Size=36, RB Offset=37	20.67	20.69	20.59
		RB Size=75, RB Offset=0	20.59	20.74	20.74
20.0	QPSK	RB Size=1, RB Offset=0	21.56	21.78	21.55
		RB Size=1, RB Offset=49	21.64	21.69	21.67
		RB Size=1, RB Offset=99	21.66	21.76	21.63
		RB Size=50, RB Offset=0	21.52	21.74	21.59
		RB Size=50, RB Offset=24	21.46	21.64	21.37
		RB Size=50, RB Offset=49	21.44	21.63	21.54
		RB Size=100, RB Offset=0	21.39	21.36	21.49
	16QAM	RB Size=1, RB Offset=0	21.10	21.78	21.42
		RB Size=1, RB Offset=49	21.67	21.68	21.69
		RB Size=1, RB Offset=99	21.62	21.58	21.51
		RB Size=50, RB Offset=0	20.69	20.81	20.78
		RB Size=50, RB Offset=24	20.54	20.74	20.88
		RB Size=50, RB Offset=49	20.48	20.52	20.75
		RB Size=100, RB Offset=0	20.43	20.49	20.49

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.23	13	Pass
QPSK (100RB Size)	6.11	13	Pass
16QAM (1RB Size)	6.09	13	Pass
16QAM (100RB Size)	6.38	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	83.96	294	1.7	H	13.9	1.30	9.40	22.00	33
1880.00	83.18	199	1.7	V	12.9	1.30	9.40	21.00	33
3 MHz Bandwidth									
1880.00	84.27	194	1.2	H	14.2	1.30	9.40	22.30	33
1880.00	83.68	210	1.8	V	13.4	1.30	9.40	21.50	33
5 MHz Bandwidth									
1880.00	84.52	295	2.3	H	14.5	1.30	9.40	22.60	33
1880.00	83.71	274	1.2	V	13.4	1.30	9.40	21.50	33
10 MHz Bandwidth									
1880.00	84.54	206	1.8	H	14.5	1.30	9.40	22.60	33
1880.00	83.61	296	1.0	V	13.3	1.30	9.40	21.40	33
15 MHz Bandwidth									
1880.00	84.60	118	2.0	H	14.6	1.30	9.40	22.70	33
1880.00	83.11	38	2.5	V	12.8	1.30	9.40	20.90	33
20 MHz Bandwidth									
1880.00	84.20	143	2.2	H	14.2	1.30	9.40	22.30	33
1880.00	83.11	302	1.9	V	12.8	1.30	9.40	20.90	33

16QAM:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	83.55	218	2.3	H	13.5	1.30	9.40	21.60	33
1880.00	83.67	140	1.7	V	13.4	1.30	9.40	21.50	33
3 MHz Bandwidth									
1880.00	84.64	160	1.1	H	14.6	1.30	9.40	22.70	33
1880.00	84.84	146	1.3	V	14.6	1.30	9.40	22.70	33
5 MHz Bandwidth									
1880.00	83.54	326	1.3	H	13.5	1.30	9.40	21.60	33
1880.00	84.04	131	1.0	V	13.8	1.30	9.40	21.90	33
10 MHz Bandwidth									
1880.00	83.69	333	2.4	H	13.6	1.30	9.40	21.70	33
1880.00	84.01	236	1.1	V	13.7	1.30	9.40	21.80	33
15 MHz Bandwidth									
1880.00	84.19	186	1.8	H	14.1	1.30	9.40	22.20	33
1880.00	84.31	16	1.4	V	14.0	1.30	9.40	22.10	33
20 MHz Bandwidth									
1880.00	84.29	92	1.3	H	14.2	1.30	9.40	22.30	33
1880.00	84.69	313	1.0	V	14.4	1.30	9.40	22.50	33

LTE Band 4:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	21.28	21.33	21.49
		RB Size=1, RB Offset=2	21.52	21.83	21.51
		RB Size=1, RB Offset=5	21.39	21.32	21.56
		RB Size=3, RB Offset=0	21.63	21.56	21.57
		RB Size=3, RB Offset=1	21.52	21.58	21.74
		RB Size=3, RB Offset=2	21.54	21.41	21.49
		RB Size=6, RB Offset=0	20.87	20.98	20.74
	16QAM	RB Size=1, RB Offset=0	20.67	20.82	20.81
		RB Size=1, RB Offset=2	20.64	20.59	20.98
		RB Size=1, RB Offset=5	20.49	20.59	20.48
		RB Size=3, RB Offset=0	21.69	21.78	21.74
		RB Size=3, RB Offset=1	21.74	21.38	21.58
		RB Size=3, RB Offset=2	21.08	20.65	20.55
		RB Size=6, RB Offset=0	20.61	20.54	20.37
3.0	QPSK	RB Size=1, RB Offset=0	21.66	21.78	21.76
		RB Size=1, RB Offset=7	21.68	21.83	21.67
		RB Size=1, RB Offset=14	21.58	21.71	21.59
		RB Size=8, RB Offset=0	21.42	21.36	21.42
		RB Size=8, RB Offset=4	21.41	21.33	21.32
		RB Size=8, RB Offset=7	21.34	21.28	21.54
		RB Size=15, RB Offset=0	21.5	21.62	21.42
	16QAM	RB Size=1, RB Offset=0	21.54	21.47	21.52
		RB Size=1, RB Offset=7	21.37	21.41	21.51
		RB Size=1, RB Offset=14	21.27	21.28	21.34
		RB Size=8, RB Offset=0	20.77	20.74	20.81
		RB Size=8, RB Offset=4	20.68	20.78	20.69
		RB Size=8, RB Offset=7	20.62	20.61	20.54
		RB Size=15, RB Offset=0	20.59	20.48	20.47

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.69	21.63	21.76
		RB Size=1, RB Offset=12	21.88	21.75	22.79
		RB Size=1, RB Offset=24	21.76	21.77	22.69
		RB Size=12, RB Offset=0	21.59	21.53	21.74
		RB Size=12, RB Offset=6	21.66	21.58	21.86
		RB Size=12, RB Offset=11	21.74	21.77	21.86
		RB Size=25, RB Offset=0	21.69	21.79	21.74
	16QAM	RB Size=1, RB Offset=0	21.86	21.68	21.67
		RB Size=1, RB Offset=12	21.75	21.59	21.89
		RB Size=1, RB Offset=24	21.28	21.34	21.38
		RB Size=12, RB Offset=0	20.67	20.85	20.86
		RB Size=12, RB Offset=6	20.87	20.87	20.72
		RB Size=12, RB Offset=11	20.72	20.86	20.71
		RB Size=25, RB Offset=0	20.68	20.62	20.63
10.0	QPSK	RB Size=1, RB Offset=0	21.43	22.43	22.4
		RB Size=1, RB Offset=24	21.23	22.09	22.33
		RB Size=1, RB Offset=49	21.34	22.03	21.92
		RB Size=25, RB Offset=0	21.31	21.8	21.61
		RB Size=25, RB Offset=12	21.54	21.68	21.63
		RB Size=25, RB Offset=24	21.62	21.64	21.73
		RB Size=50, RB Offset=0	21.59	21.6	21.59
	16QAM	RB Size=1, RB Offset=0	21.48	22.57	22.63
		RB Size=1, RB Offset=24	21.39	21.63	21.56
		RB Size=1, RB Offset=49	21.05	21.09	21.64
		RB Size=25, RB Offset=0	20.88	20.61	20.69
		RB Size=25, RB Offset=12	20.74	21.11	20.87
		RB Size=25, RB Offset=24	20.86	20.75	21.12
		RB Size=50, RB Offset=0	20.74	20.63	20.54

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	21.56	21.77	21.86
		RB Size=1, RB Offset=37	21.87	21.64	21.79
		RB Size=1, RB Offset=74	21.97	21.99	21.87
		RB Size=36, RB Offset=0	20.46	20.56	21.28
		RB Size=36, RB Offset=18	20.39	20.45	21.19
		RB Size=36, RB Offset=37	20.40	20.87	21.09
		RB Size=75, RB Offset=0	21.19	21.34	21.06
	16QAM	RB Size=1, RB Offset=0	21.14	20.78	21.21
		RB Size=1, RB Offset=37	21.06	21.12	20.87
		RB Size=1, RB Offset=74	21.01	20.64	20.88
		RB Size=36, RB Offset=0	20.84	20.76	20.68
		RB Size=36, RB Offset=18	20.69	20.69	20.49
		RB Size=36, RB Offset=37	20.73	20.72	20.74
		RB Size=75, RB Offset=0	20.66	20.69	20.59
20.0	QPSK	RB Size=1, RB Offset=0	21.84	21.97	21.87
		RB Size=1, RB Offset=49	21.98	21.79	21.79
		RB Size=1, RB Offset=99	21.97	21.50	22.01
		RB Size=50, RB Offset=0	20.58	21.54	21.49
		RB Size=50, RB Offset=24	20.36	21.46	21.43
		RB Size=50, RB Offset=49	20.49	20.47	21.04
		RB Size=100, RB Offset=0	20.52	20.87	21.11
	16QAM	RB Size=1, RB Offset=0	21.62	21.33	21.58
		RB Size=1, RB Offset=49	21.58	21.12	21.44
		RB Size=1, RB Offset=99	21.08	21.02	21.06
		RB Size=50, RB Offset=0	20.89	20.78	20.69
		RB Size=50, RB Offset=24	21.08	20.69	20.59
		RB Size=50, RB Offset=49	20.54	20.52	20.47
		RB Size=100, RB Offset=0	20.39	20.46	20.41

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.14	13	Pass
QPSK (100RB Size)	6.63	13	Pass
16QAM (1RB Size)	5.15	13	Pass
16QAM (100RB Size)	5.87	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	84.91	310	2.4	H	11.7	1.30	8.90	19.30	30
1732.50	85.74	235	1.9	V	13.2	1.30	8.90	20.80	30
3 MHz Bandwidth									
1732.50	84.72	68	2.1	H	11.6	1.30	8.90	19.20	30
1732.50	85.67	214	2.1	V	13.1	1.30	8.90	20.70	30
5 MHz Bandwidth									
1732.50	85.44	335	1.0	H	12.3	1.30	8.90	19.90	30
1732.50	85.50	92	1.6	V	12.9	1.30	8.90	20.50	30
10 MHz Bandwidth									
1732.50	85.74	86	2.3	H	12.6	1.30	8.90	20.20	30
1732.50	85.39	343	2.4	V	12.8	1.30	8.90	20.40	30
15 MHz Bandwidth									
1732.50	85.37	3	1.9	H	12.2	1.30	8.90	19.80	30
1732.50	85.76	73	1.8	V	13.2	1.30	8.90	20.80	30
20 MHz Bandwidth									
1732.50	85.61	309	1.3	H	12.4	1.30	8.90	20.00	30
1732.50	85.26	181	1.9	V	12.7	1.30	8.90	20.30	30

16QAM:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	84.25	11	1.8	H	11.1	1.30	8.90	18.70	30
1732.50	84.79	283	2.3	V	12.2	1.30	8.90	19.80	30
3 MHz Bandwidth									
1732.50	85.11	218	1.6	H	11.9	1.30	8.90	19.50	30
1732.50	84.39	352	1.5	V	11.8	1.30	8.90	19.40	30
5 MHz Bandwidth									
1732.50	84.44	57	1.0	H	11.3	1.30	8.90	18.90	30
1732.50	84.67	241	1.8	V	12.1	1.30	8.90	19.70	30
10 MHz Bandwidth									
1732.50	85.01	201	1.4	H	11.8	1.30	8.90	19.40	30
1732.50	84.69	278	1.8	V	12.1	1.30	8.90	19.70	30
15 MHz Bandwidth									
1732.50	85.38	323	1.7	H	12.2	1.30	8.90	19.80	30
1732.50	84.97	136	1.3	V	12.4	1.30	8.90	20.00	30
20 MHz Bandwidth									
1732.50	85.14	280	1.0	H	12.0	1.30	8.90	19.60	30
1732.50	85.33	43	1.5	V	12.8	1.30	8.90	20.40	30

LTE Band 7:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB Size=1, RB Offset=0	21.33	21.33	21.38
		RB Size=1, RB Offset=12	21.35	21.49	21.52
		RB Size=1, RB Offset=24	21.54	21.59	21.45
		RB Size=12, RB Offset=0	21.34	21.39	21.49
		RB Size=12, RB Offset=6	21.60	21.42	21.55
		RB Size=12, RB Offset=11	21.09	21.34	21.41
		RB Size=25, RB Offset=0	21.02	21.25	21.22
	16QAM	RB Size=1, RB Offset=0	21.22	21.03	21.02
		RB Size=1, RB Offset=12	21.41	21.14	21.05
		RB Size=1, RB Offset=24	21.52	21.89	21.23
		RB Size=12, RB Offset=0	20.73	20.86	20.62
		RB Size=12, RB Offset=6	20.60	20.74	20.62
		RB Size=12, RB Offset=11	20.54	20.69	20.47
		RB Size=25, RB Offset=0	20.49	20.57	20.62
10	QPSK	RB Size=1, RB Offset=0	21.52	21.63	21.65
		RB Size=1, RB Offset=24	21.47	21.66	21.41
		RB Size=1, RB Offset=49	21.46	21.35	21.64
		RB Size=25, RB Offset=0	21.34	21.45	21.37
		RB Size=25, RB Offset=12	21.66	21.74	21.65
		RB Size=25, RB Offset=24	21.72	21.76	21.68
		RB Size=50, RB Offset=0	21.71	21.48	21.54
	16QAM	RB Size=1, RB Offset=0	21.75	21.69	21.72
		RB Size=1, RB Offset=24	21.69	21.58	21.64
		RB Size=1, RB Offset=49	20.62	20.63	20.65
		RB Size=25, RB Offset=0	21.54	20.59	20.31
		RB Size=25, RB Offset=12	20.49	20.47	20.66
		RB Size=25, RB Offset=24	20.44	20.49	20.75
		RB Size=50, RB Offset=0	20.37	20.56	20.43

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15	QPSK	RB Size=1, RB Offset=0	21.36	21.42	21.23
		RB Size=1, RB Offset=37	21.33	21.49	21.37
		RB Size=1, RB Offset=74	21.39	21.38	21.25
		RB Size=36, RB Offset=0	21.49	21.6	21.44
		RB Size=36, RB Offset=18	21.45	21.01	21.51
		RB Size=36, RB Offset=37	21.33	21.17	21.28
		RB Size=75, RB Offset=0	21.27	21.58	21.14
	16QAM	RB Size=1, RB Offset=0	21.43	21.25	21.32
		RB Size=1, RB Offset=37	21.54	21.55	21.37
		RB Size=1, RB Offset=74	21.45	21.49	21.54
		RB Size=36, RB Offset=0	21.63	21.62	21.59
		RB Size=36, RB Offset=18	20.62	20.7	20.69
		RB Size=36, RB Offset=37	20.65	20.54	20.74
		RB Size=75, RB Offset=0	20.64	20.49	20.97
20	QPSK	RB Size=1, RB Offset=0	21.86	21.96	21.71
		RB Size=1, RB Offset=49	21.02	21.99	21.06
		RB Size=1, RB Offset=99	21.91	21.69	21.85
		RB Size=50, RB Offset=0	21.89	21.85	21.95
		RB Size=50, RB Offset=24	21.84	21.89	21.96
		RB Size=50, RB Offset=49	21.01	21.94	21.07
		RB Size=100, RB Offset=0	21.61	22.55	21.65
	16QAM	RB Size=1, RB Offset=0	21.18	22.28	21.19
		RB Size=1, RB Offset=49	21.84	21.87	21.81
		RB Size=1, RB Offset=99	21.94	21.84	21.94
		RB Size=50, RB Offset=0	20.85	20.72	20.97
		RB Size=50, RB Offset=24	20.87	20.87	20.84
		RB Size=50, RB Offset=49	20.81	20.94	20.96
		RB Size=100, RB Offset=0	20.71	20.77	20.74

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.41	13	Pass
QPSK (100RB Size)	5.36	13	Pass
16QAM (1RB Size)	6.17	13	Pass
16QAM (100RB Size)	6.08	13	Pass

EIRP:

QPSK:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
2535.00	77.55	352	1.1	H	6.1	2.60	10.20	15.70	33
2535.00	79.94	51	1.8	V	10.6	2.60	10.20	18.70	33
10 MHz Bandwidth									
2535.00	77.12	298	1.7	H	7.6	2.60	10.20	15.20	33
2535.00	80.44	32	1.3	V	10.6	2.60	10.20	19.20	33
15 MHz Bandwidth									
2535.00	76.28	223	1.2	H	6.8	2.60	10.20	14.40	33
2535.00	80.14	13	1.1	V	10.3	2.60	10.20	18.90	33
20 MHz Bandwidth									
2535.00	76.85	316	1.8	H	7.4	2.60	10.20	15.00	33
2535.00	80.51	174	1.4	V	10.6	2.60	10.20	19.20	33

16QAM:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
2535.00	76.64	44	2.4	H	7.2	2.60	10.20	14.80	33
2535.00	79.81	210	1.0	V	10.4	2.60	10.20	18.50	33
10 MHz Bandwidth									
2535.00	76.84	351	1.3	H	7.4	2.60	10.20	15.00	33
2535.00	80.23	74	2.4	V	10.4	2.60	10.20	19.00	33
15 MHz Bandwidth									
2535.00	77.11	319	1.1	H	7.6	2.60	10.20	15.20	33
2535.00	80.42	335	2.2	V	10.5	2.60	10.20	19.10	33
20 MHz Bandwidth									
2535.00	76.94	78	1.6	H	7.5	2.60	10.20	15.10	33
2535.00	80.28	267	1.9	V	10.4	2.60	10.20	19.00	33

LTE Band 17:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	21.41	21.47	21.47
		RB Size=1, RB Offset=12	21.39	21.59	21.57
		RB Size=1, RB Offset=24	21.49	21.62	21.64
		RB Size=12, RB Offset=0	21.44	21.44	21.51
		RB Size=12, RB Offset=6	21.58	21.52	21.48
		RB Size=12, RB Offset=11	21.12	21.37	21.45
		RB Size=25, RB Offset=0	21.05	21.26	21.28
	16QAM	RB Size=1, RB Offset=0	21.18	21.14	21.15
		RB Size=1, RB Offset=12	21.39	21.28	21.09
		RB Size=1, RB Offset=24	21.47	21.24	21.19
		RB Size=12, RB Offset=0	20.69	20.79	20.76
		RB Size=12, RB Offset=6	20.74	20.82	20.69
		RB Size=12, RB Offset=11	20.84	20.74	20.54
		RB Size=25, RB Offset=0	20.59	20.58	20.44
10.0	QPSK	RB Size=1, RB Offset=0	21.62	21.63	21.74
		RB Size=1, RB Offset=24	21.53	21.66	21.54
		RB Size=1, RB Offset=49	21.49	21.35	21.69
		RB Size=25, RB Offset=0	21.39	21.45	21.37
		RB Size=25, RB Offset=12	21.74	21.74	21.64
		RB Size=25, RB Offset=24	21.69	21.76	21.62
		RB Size=50, RB Offset=0	21.74	21.48	21.59
	16QAM	RB Size=1, RB Offset=0	21.63	21.69	21.72
		RB Size=1, RB Offset=24	21.58	21.74	21.64
		RB Size=1, RB Offset=49	20.74	20.74	20.69
		RB Size=25, RB Offset=0	21.41	20.76	20.42
		RB Size=25, RB Offset=12	20.68	20.68	20.76
		RB Size=25, RB Offset=24	20.59	20.58	20.75
		RB Size=50, RB Offset=0	20.42	20.64	20.46

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.66	13	Pass
QPSK (50RB Size)	5.69	13	Pass
16QAM (1RB Size)	6.48	13	Pass
16QAM (50RB Size)	6.35	13	Pass

ERP:

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
710	84.62	207	2.1	H	22.0	0.62	0.0	21.38	34.77
710	79.35	201	1.3	V	20.1	0.62	0.0	19.48	34.77
10 MHz Bandwidth									
710	84.83	307	1.5	H	22.2	0.62	0.0	21.58	34.77
710	79.54	105	1.8	V	20.3	0.62	0.0	19.68	34.77

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
710	84.52	93	1.4	H	21.9	0.62	0.0	21.28	34.77
710	79.66	234	1.7	V	20.5	0.62	0.0	19.88	34.77
10 MHz Bandwidth									
710	84.41	65	2.3	H	21.7	0.62	0.0	21.08	34.77
710	78.97	252	2.4	V	19.8	0.62	0.0	19.18	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.
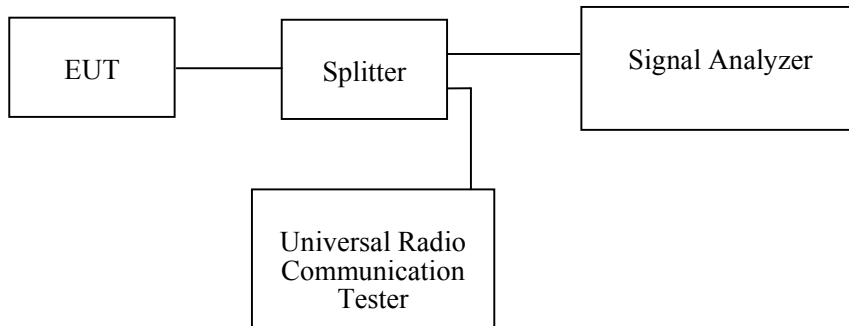
```
┌─────────┐      ┌──────────┐      ┌────────────────┐
│   EUT   │──────│ Splitter │──────│ Signal Analyzer │
└─────────┘      └──────────┘      └────────────────┘
                       │
                 ┌───────────────┐
                 │ Universal Radio│
                 │ Communication  │
                 │    Tester      │
                 └───────────────┘
```

Test Data

Environmental Conditions

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

The testing was performed by Nancy Wang on 2018-03-06 and 2018-03-07.

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	325.32
EGPRS(8PSK)	836.6	248.40	318.91

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.167	4.728
HSUPA (BPSK)	836.6	4.167	4.712
HSDPA (16QAM)	836.6	4.167	4.712

PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	241.99	312.50
EGPRS(8PSK)	1880.0	250.00	317.31

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.167	4.728
HSUPA (BPSK)	1880.0	4.167	4.712
HSDPA (16QAM)	1880.0	4.167	4.696

Cellular Band (Part 22H)
26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode
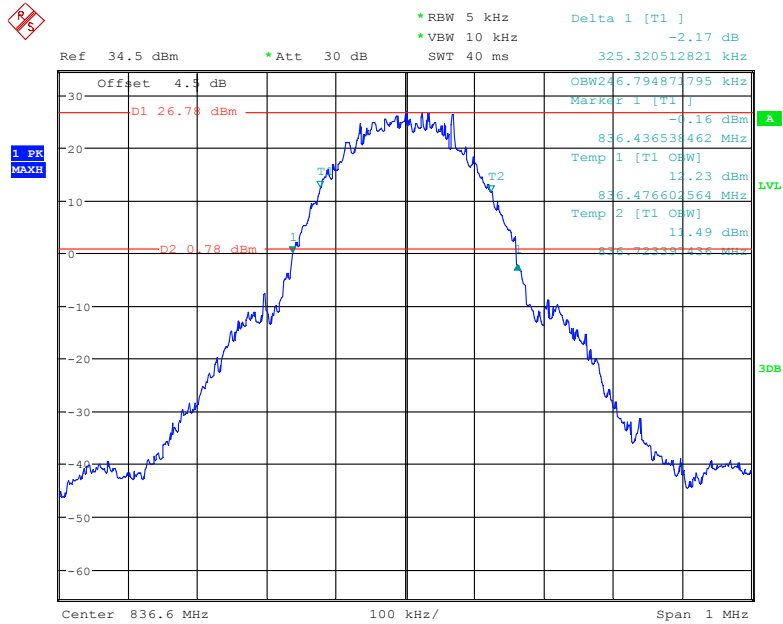
Date: 6.MAR.2018 14:20:40

26 dB Emissions &99% Occupied Bandwidth for EDGE Mode
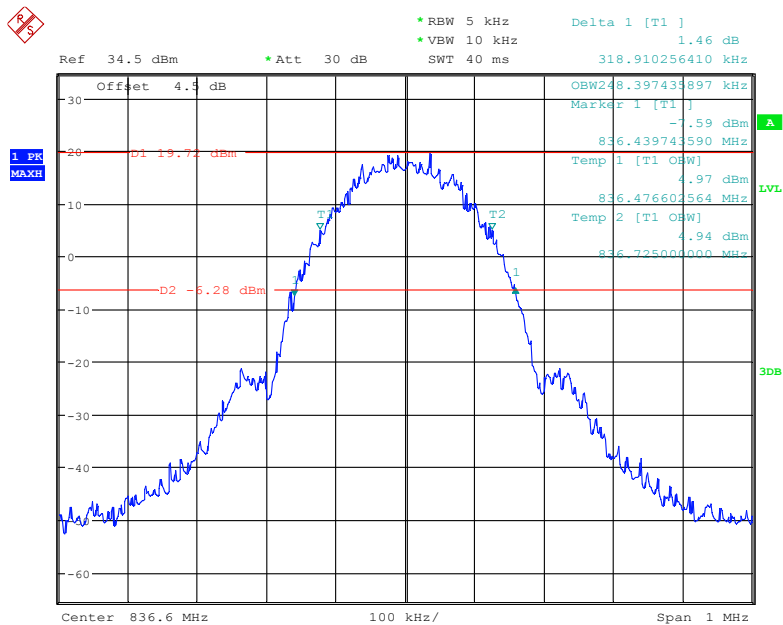
Date: 6.MAR.2018 14:50:07

26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode
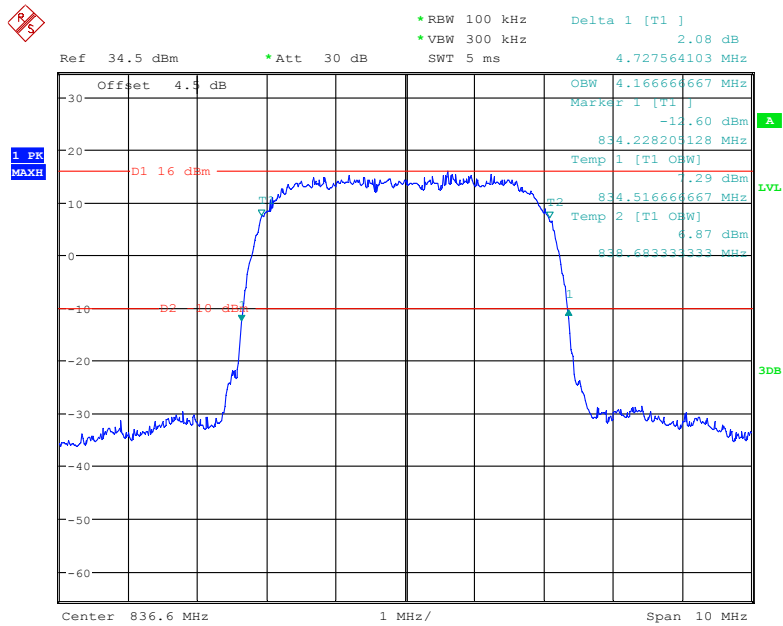
Date: 6.MAR.2018 15:05:43

26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode
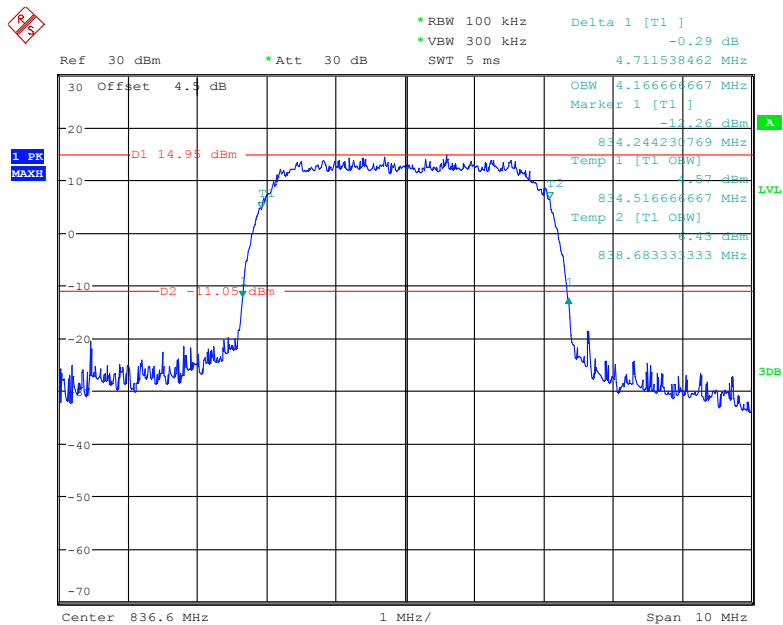
Date: 6.MAR.2018 15:23:43

26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode
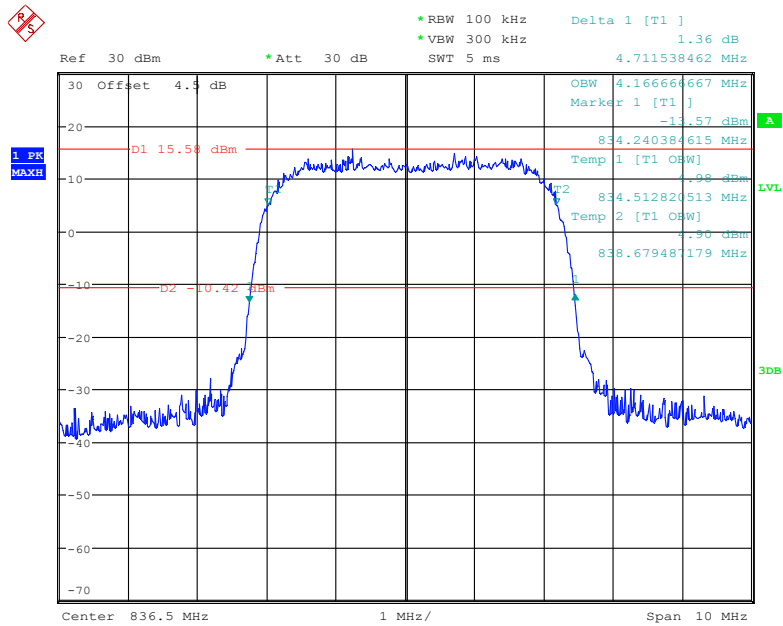
Date: 6.MAR.2018 15:28:31

PCS Band (Part 24E)
26 dB Emissions &99% Occupied Bandwidth for GSM (GMSK) Mode
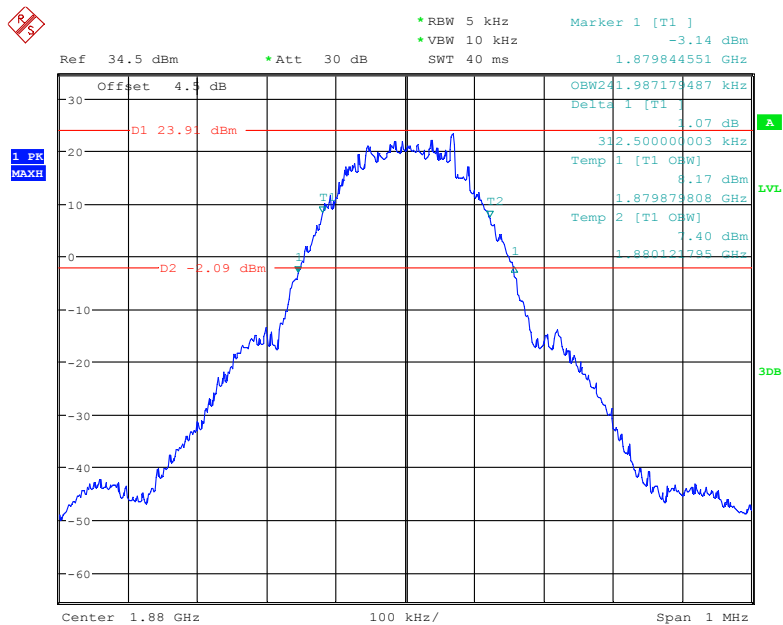
Date: 6.MAR.2018 14:34:41

26 dB Emissions &99% Occupied Bandwidth for EDGE Mode
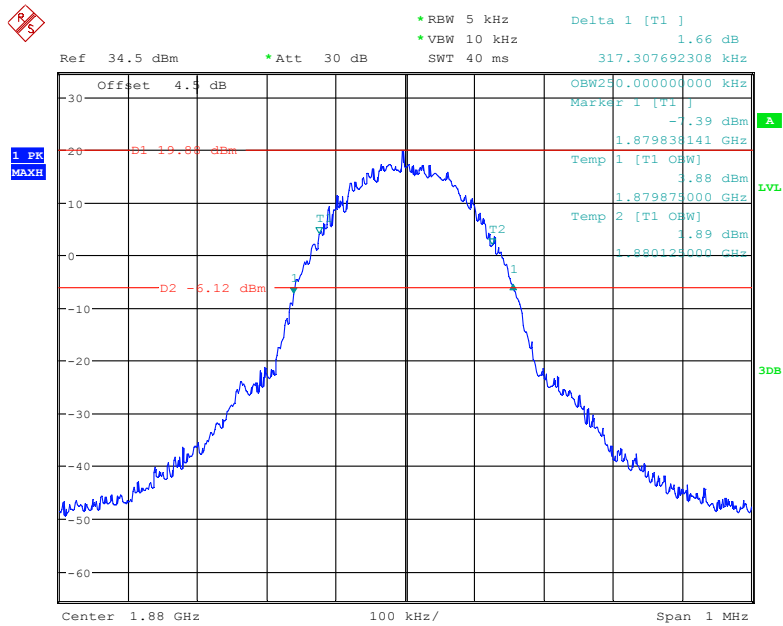
Date: 6.MAR.2018 14:41:54

26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode
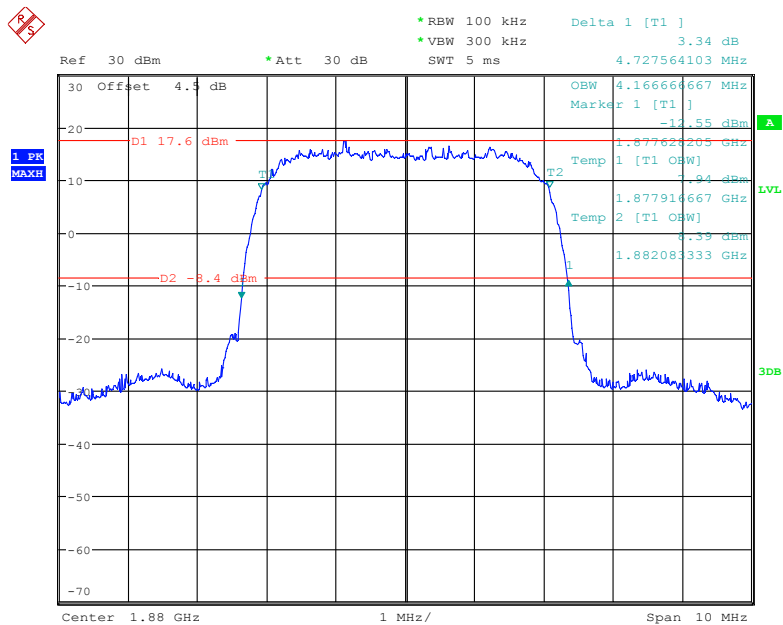
Date: 6.MAR.2018 15:18:40

26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode
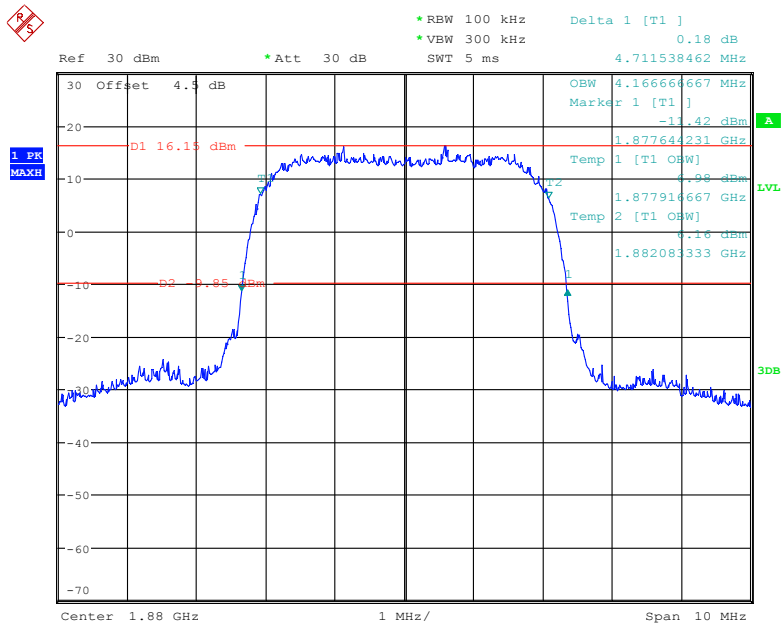
Date: 6.MAR.2018 15:22:08

26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode
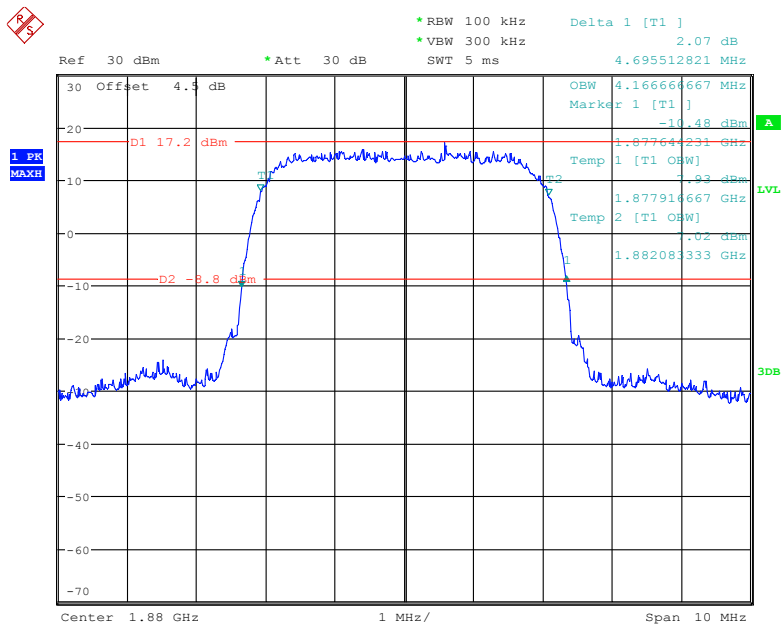
Date: 6.MAR.2018 15:29:51

LTE Band 2: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.293
	16QAM	1.101	1.200
3.0	QPSK	2.692	2.947
	16QAM	2.692	2.966
5.0	QPSK	4.519	5.120
	16QAM	4.535	5.104
10.0	QPSK	8.974	9.864
	16QAM	8.974	9.896
15.0	QPSK	13.462	14.880
	16QAM	13.510	14.832
20.0	QPSK	17.949	19.479
	16QAM	17.949	19.607

QPSK (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel
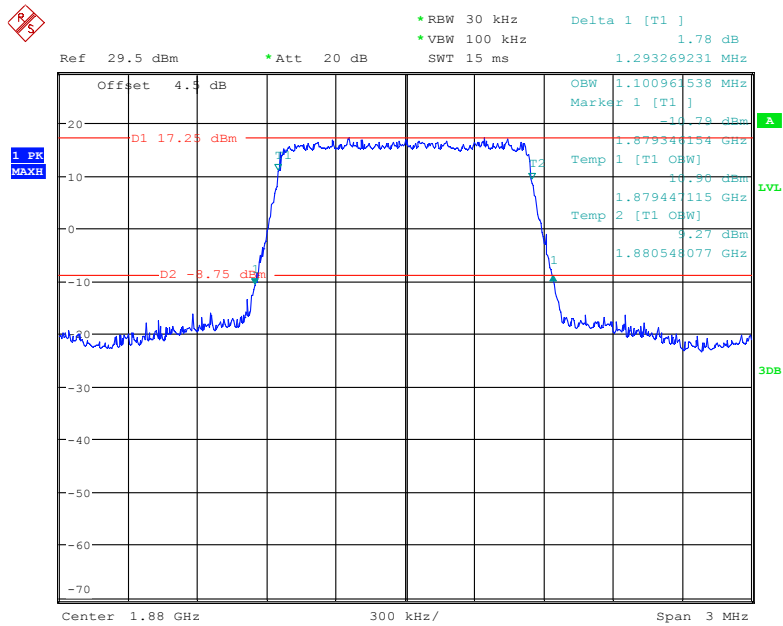
Date: 7.MAR.2018 10:25:00

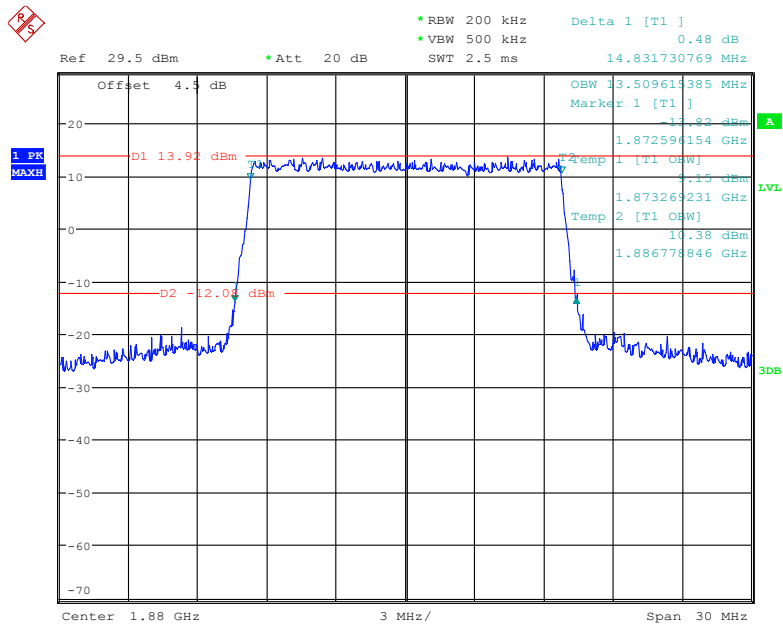**16-QAM (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel**
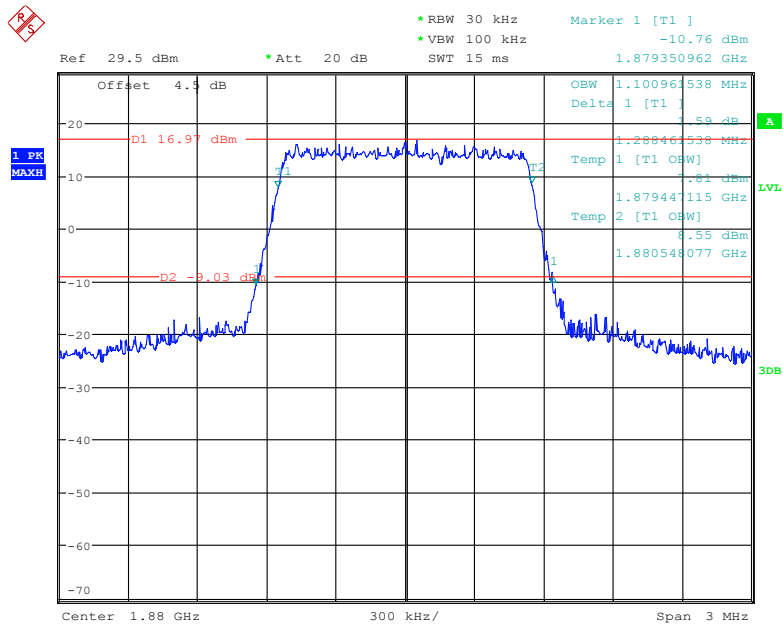
Date: 7.MAR.2018 10:27:01

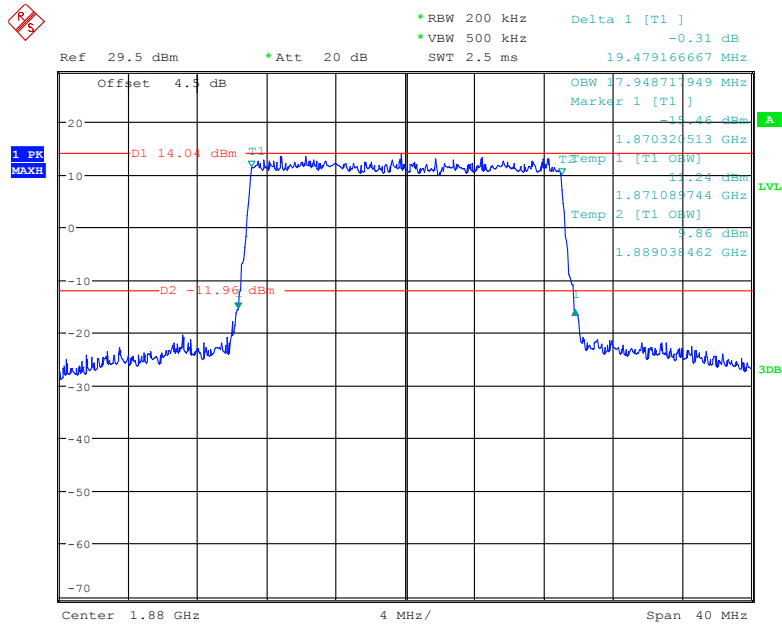## QPSK (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel
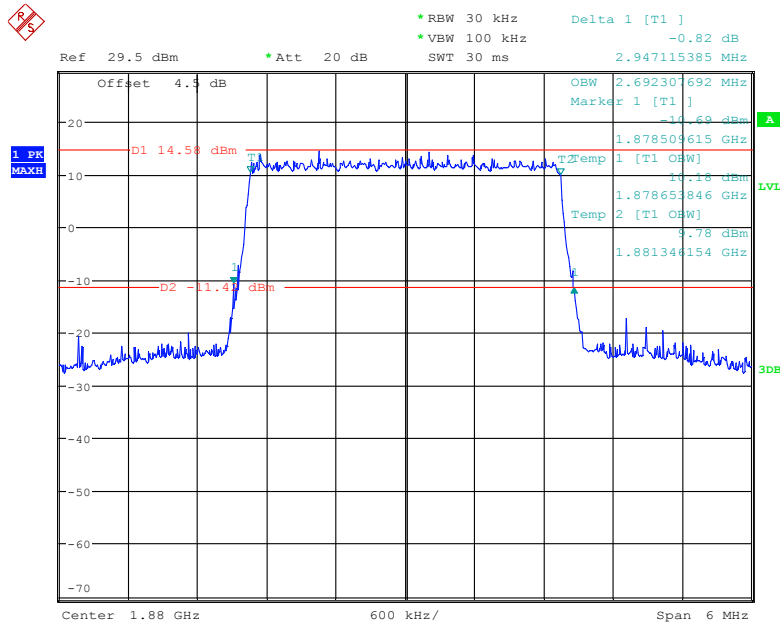
Date: 7.MAR.2018 10:28:31

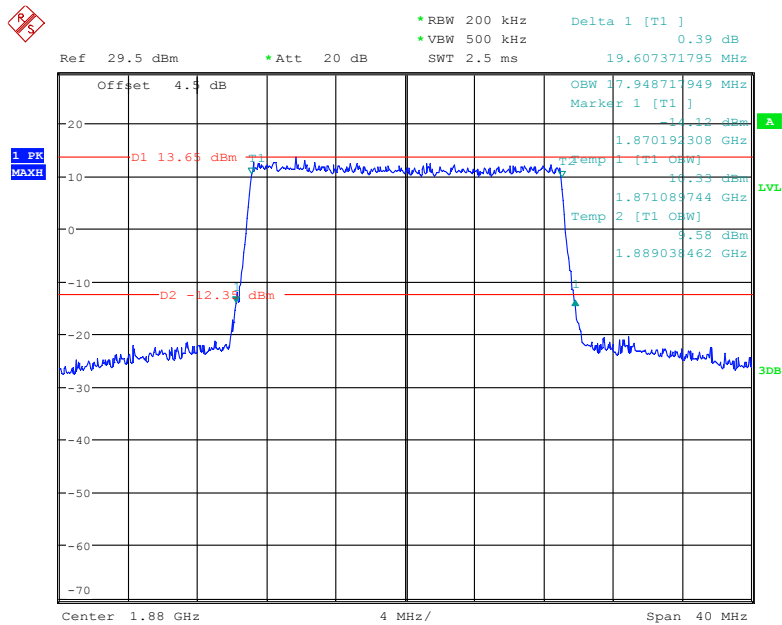## 16-QAM (3.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel
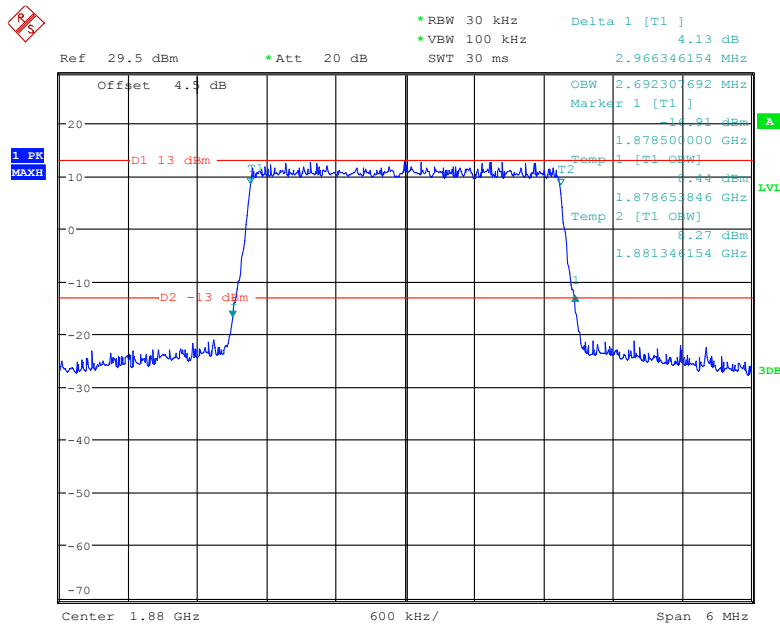
Date: 7.MAR.2018 10:29:57

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel
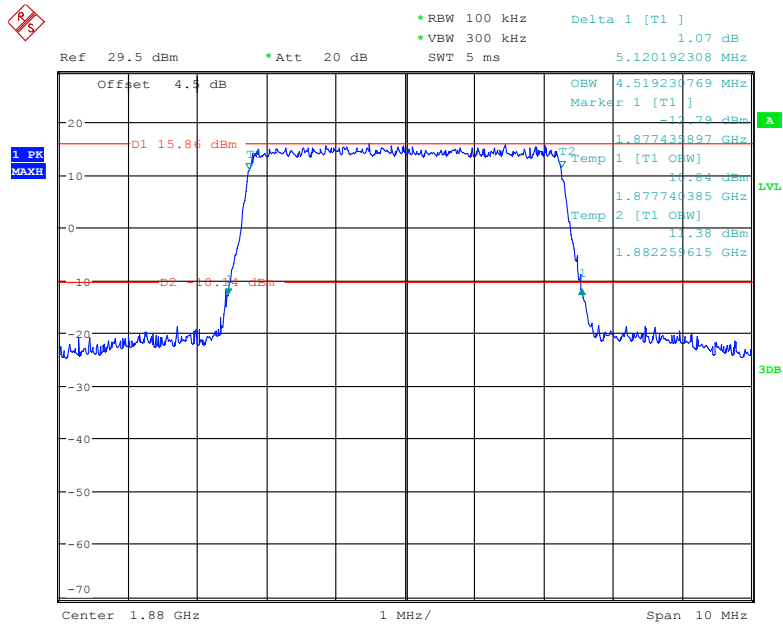
Date: 7.MAR.2018 10:31:24

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel
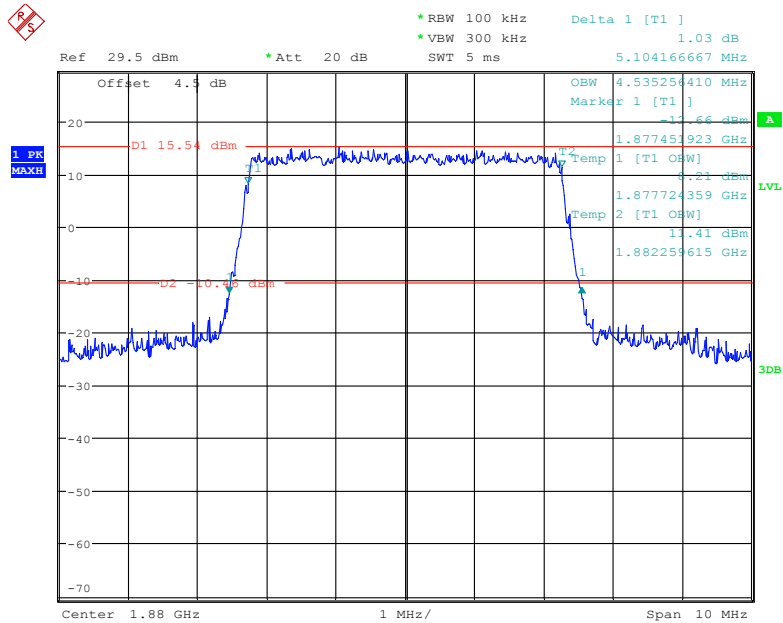
Date: 7.MAR.2018 10:32:57

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel
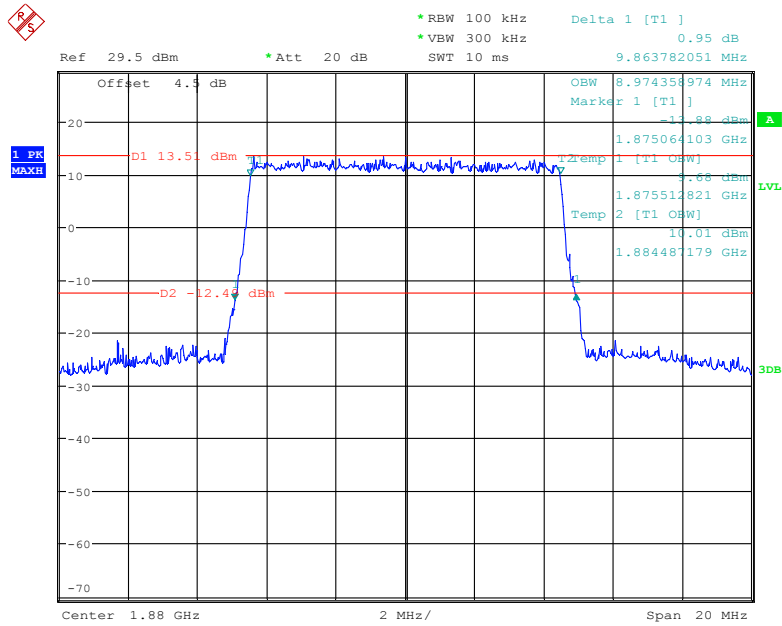
Date: 7.MAR.2018 10:34:21

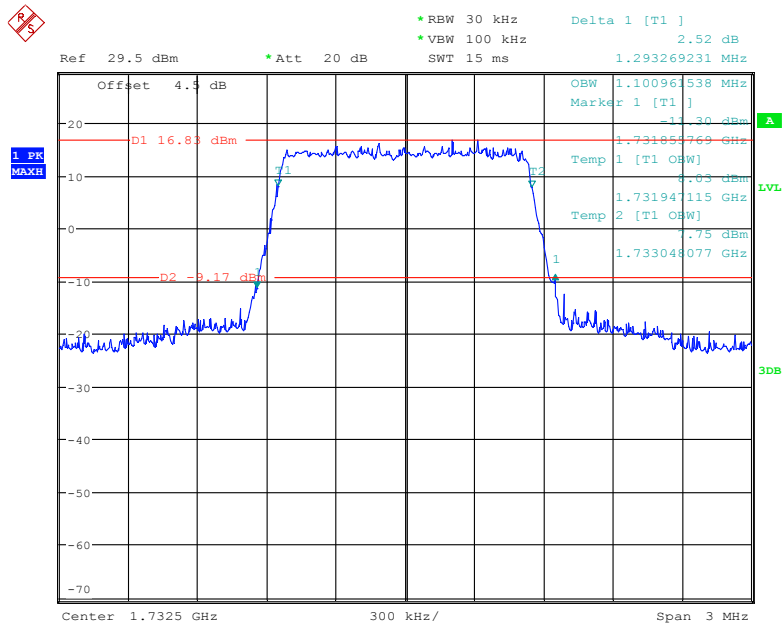## 16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel
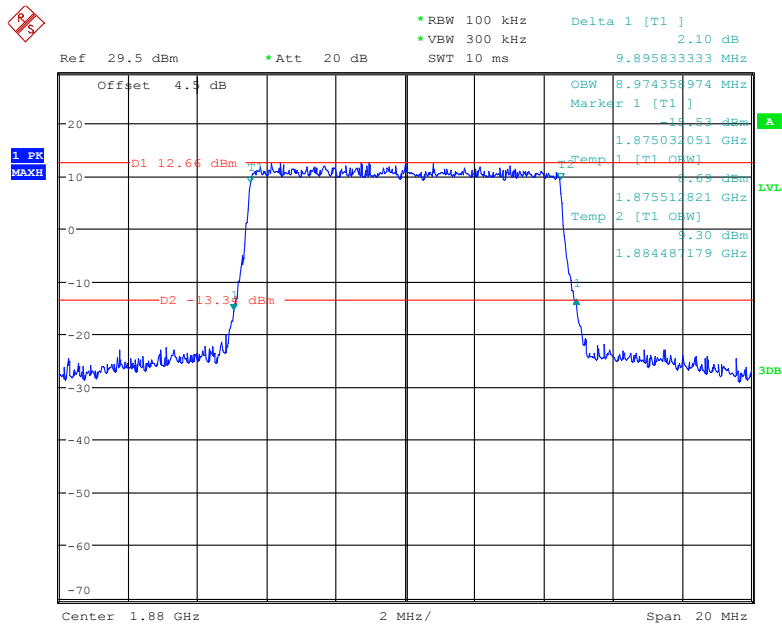
Date: 7.MAR.2018 10:36:09

QPSK (15.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel
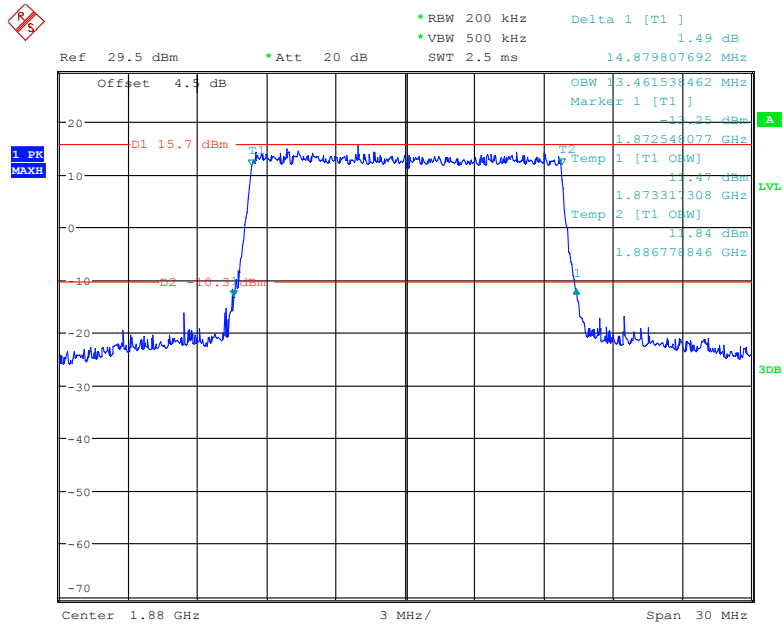
Date: 7.MAR.2018 10:37:47

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

Date: 7.MAR.2018 10:39:01

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

Date: 7.MAR.2018 10:40:37

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

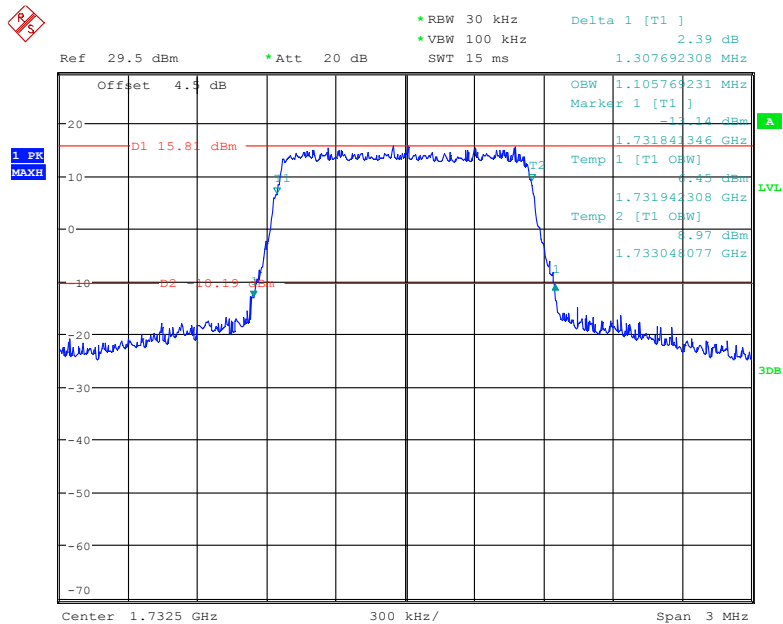
Date: 7.MAR.2018 10:45:28

LTE Band 4: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.101	1.293
	16QAM	1.106	1.308
3.0	QPSK	2.702	2.966
	16QAM	2.692	2.957
5.0	QPSK	4.535	5.104
	16QAM	4.519	5.072
10.0	QPSK	8.974	9.864
	16QAM	8.974	9.800
15.0	QPSK	13.510	14.896
	16QAM	13.510	14.896
20.0	QPSK	17.949	19.303
	16QAM	18.013	19.431

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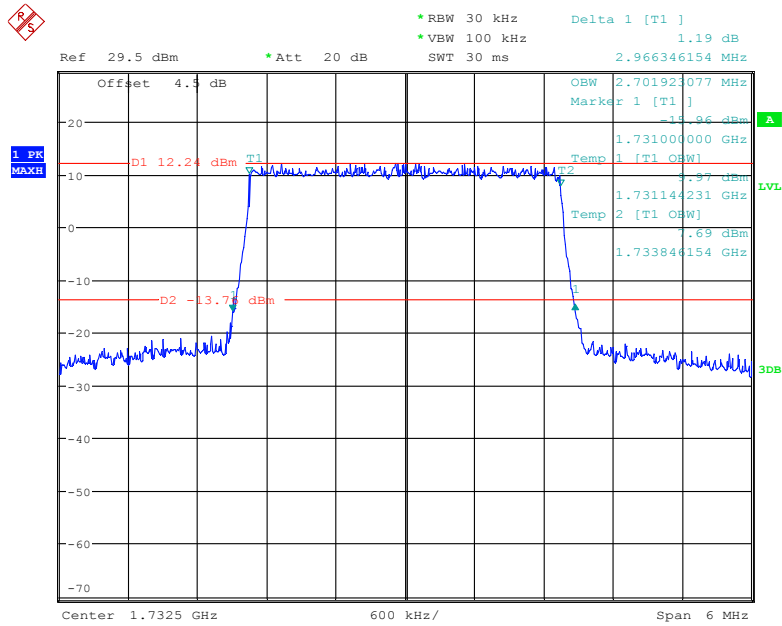

Date: 7.MAR.2018 10:49:06

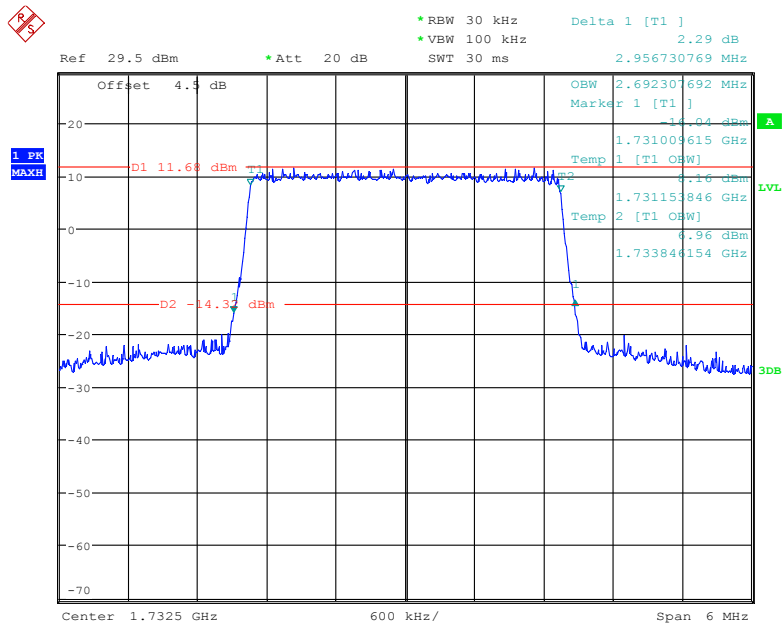## 16-QAM (1.4 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 7.MAR.2018 10:47:40

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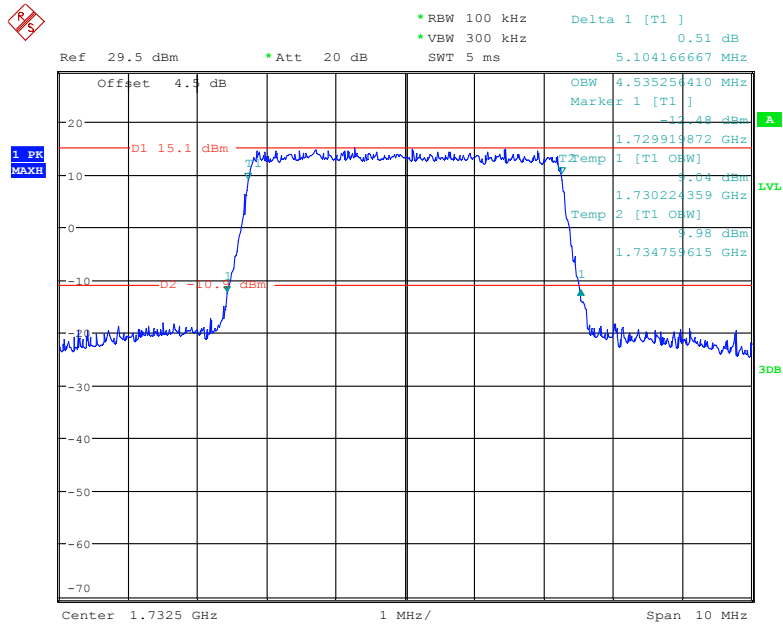

Date: 7.MAR.2018 10:51:32

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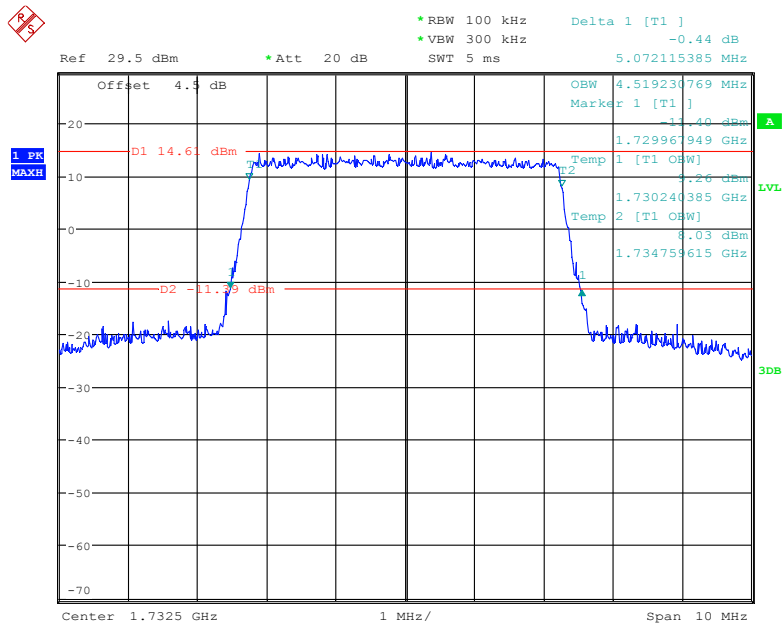

Date: 7.MAR.2018 10:50:26

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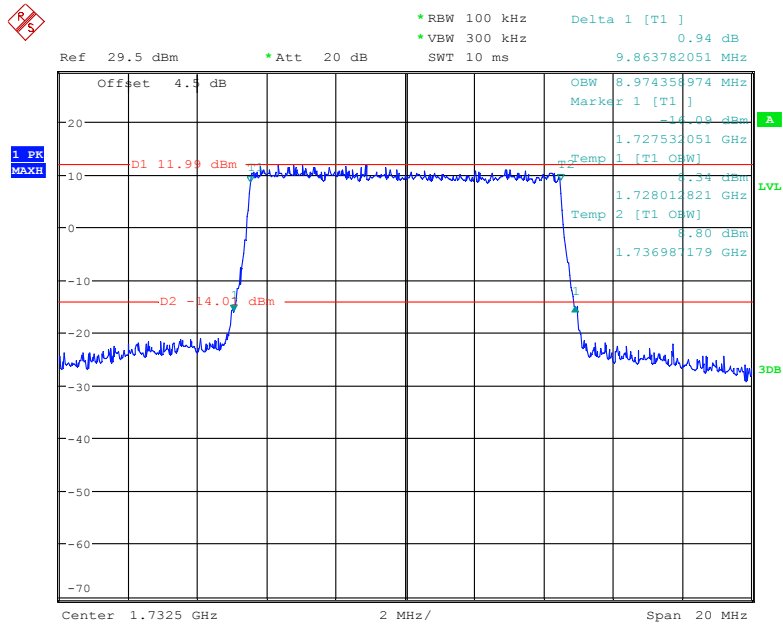

Date: 7.MAR.2018 10:54:20

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

Date: 7.MAR.2018 10:53:02

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

Date: 7.MAR.2018 10:58:58

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

Date: 7.MAR.2018 10:56:07

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

Date: 7.MAR.2018 11:01:33

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

Date: 7.MAR.2018 11:00:12

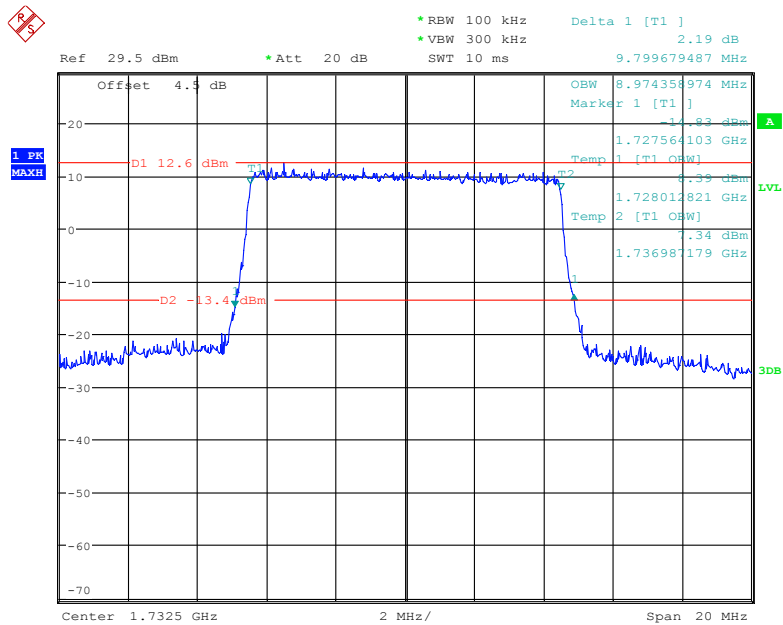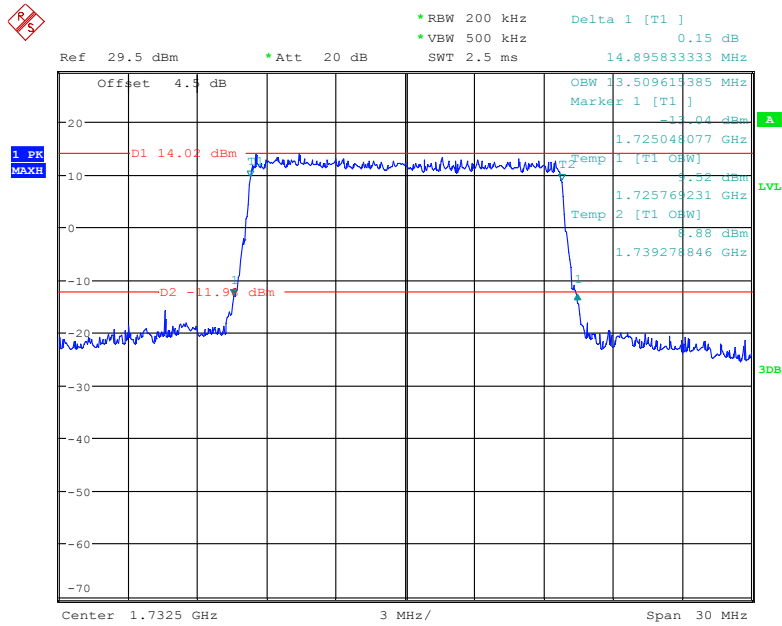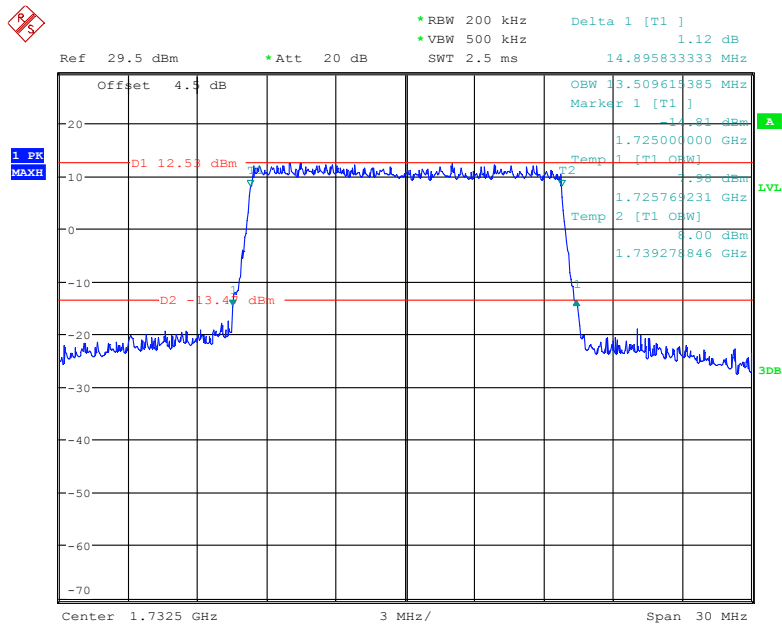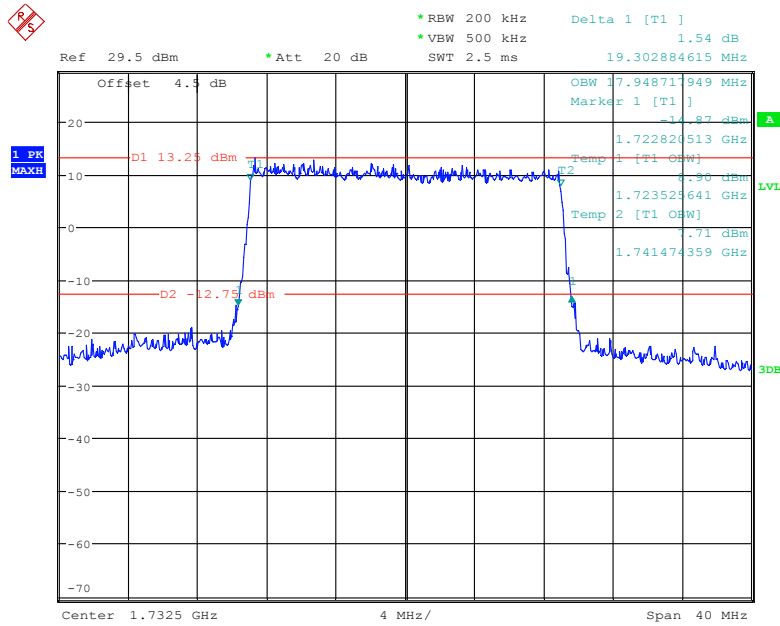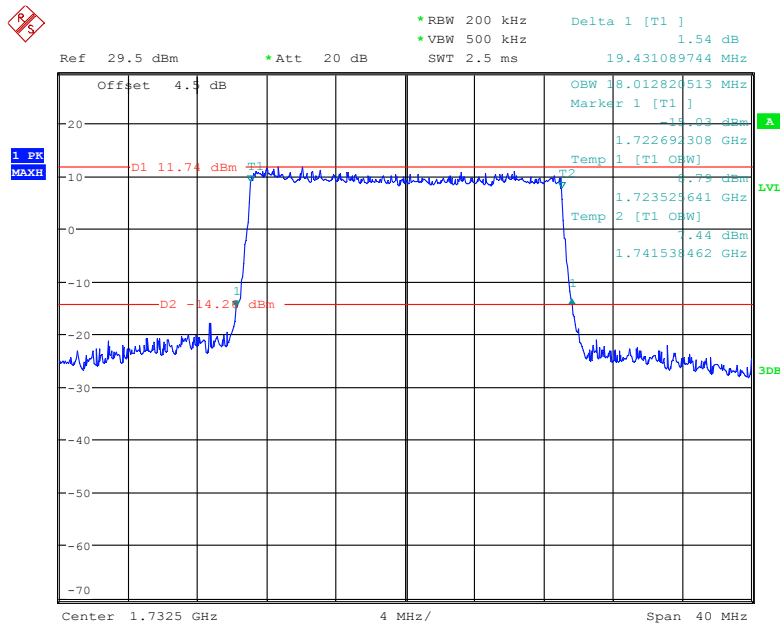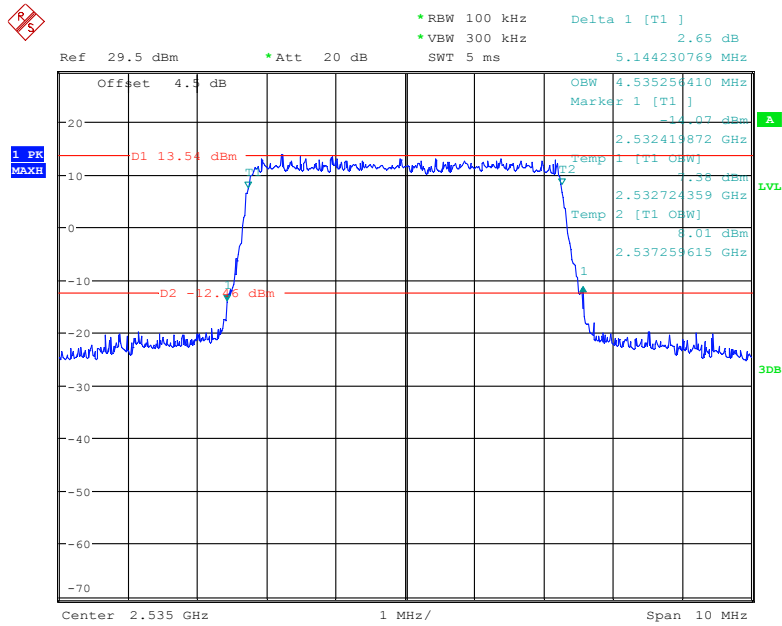## QPSK (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel


```
                                    *RBW 200 kHz    Delta 1 [T1 ]
                                    *VBW 500 kHz              1.54 dB
         Ref  29.5 dBm    *Att  20 dB   SWT 2.5 ms    19.302884615 MHz
            Offset  4.5 dB                       OBW 17.948717949 MHz
                                                 Marker 1 [T1 ]
     20                                                    -14.87 dBm      A
                                                   1.722820513 GHz
  1 PK   D1 13.25 dBm                            Temp 1 [T1 OBW]
  MAXH                                                      6.90 dBm    LVL
                                                   1.723525641 GHz
      0                                          Temp 2 [T1 OBW]
                                                           7.71 dBm
    -10  D2 -12.75 dBm                              1.741474359 GHz

    -20

    -30                                                                 3DB

    -40

    -50

    -60

    -70
         Center  1.7325 GHz        4 MHz/              Span 40 MHz
```

Date: 7.MAR.2018 11:04:05

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


```
                                    *RBW 200 kHz    Delta 1 [T1 ]
                                    *VBW 500 kHz              1.54 dB
         Ref  29.5 dBm    *Att  20 dB   SWT 2.5 ms    19.431089744 MHz
            Offset  4.5 dB                       OBW 18.012820513 MHz
                                                 Marker 1 [T1 ]
     20                                                    -15.03 dBm      A
                                                   1.722692308 GHz
  1 PK   D1 11.74 dBm                            Temp 1 [T1 OBW]
  MAXH                                                      6.79 dBm    LVL
                                                   1.723525641 GHz
      0                                          Temp 2 [T1 OBW]
                                                           7.44 dBm
    -10  D2 -14.26 dBm                              1.741538462 GHz

    -20

    -30                                                                 3DB

    -40

    -50

    -60

    -70
         Center  1.7325 GHz        4 MHz/              Span 40 MHz
```
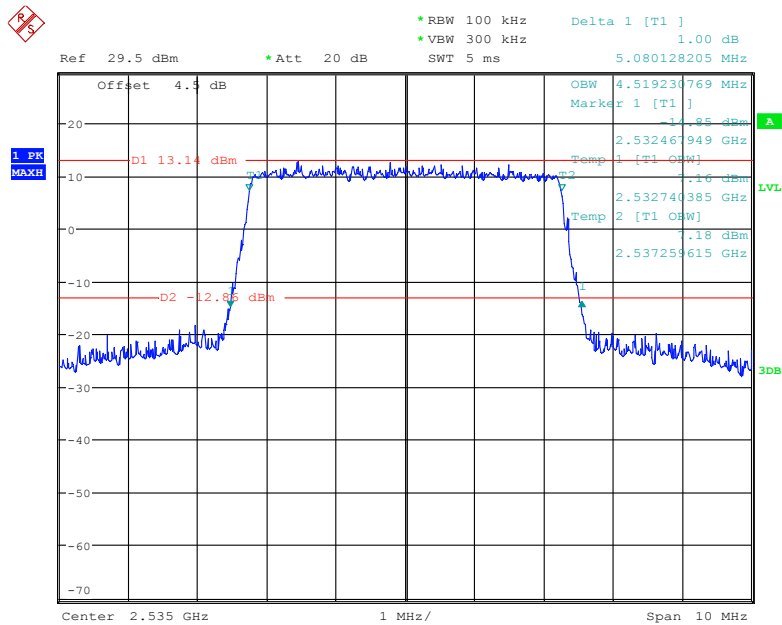
Date: 7.MAR.2018 11:02:50

LTE Band 7: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.535	5.144
	16QAM	4.519	5.080
10.0	QPSK	8.974	9.856
	16QAM	8.974	9.792
15.0	QPSK	13.510	14.776
	16QAM	13.510	14.872
20.0	QPSK	17.949	19.359
	16QAM	17.949	19.423

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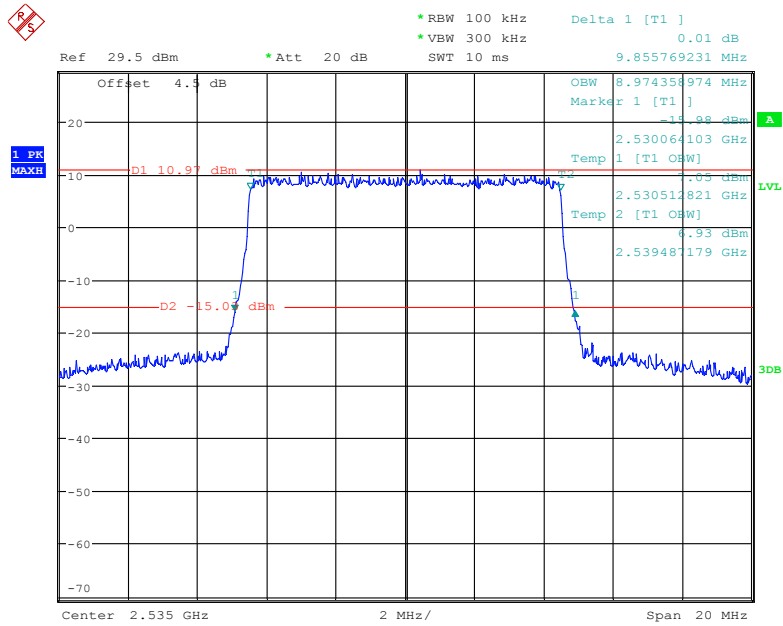

Date: 7.MAR.2018 11:06:04

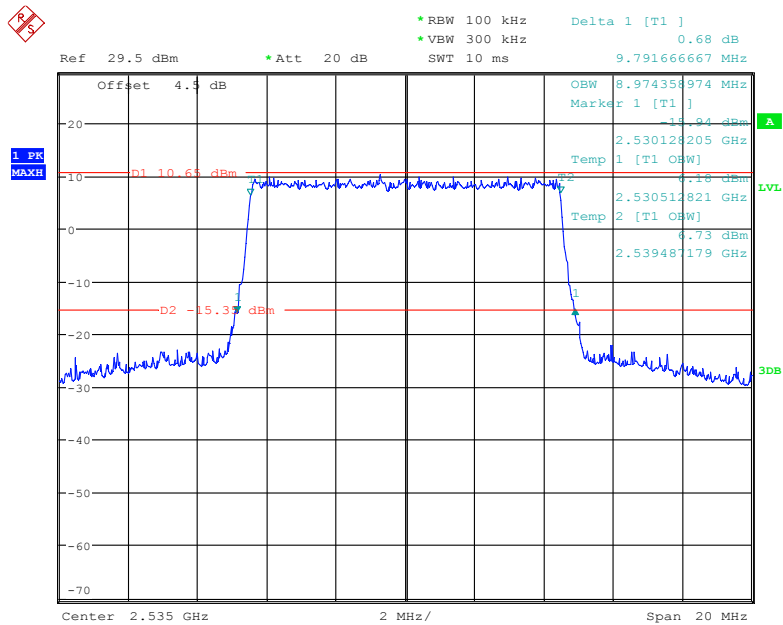**16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel**

Date: 7.MAR.2018 11:07:19

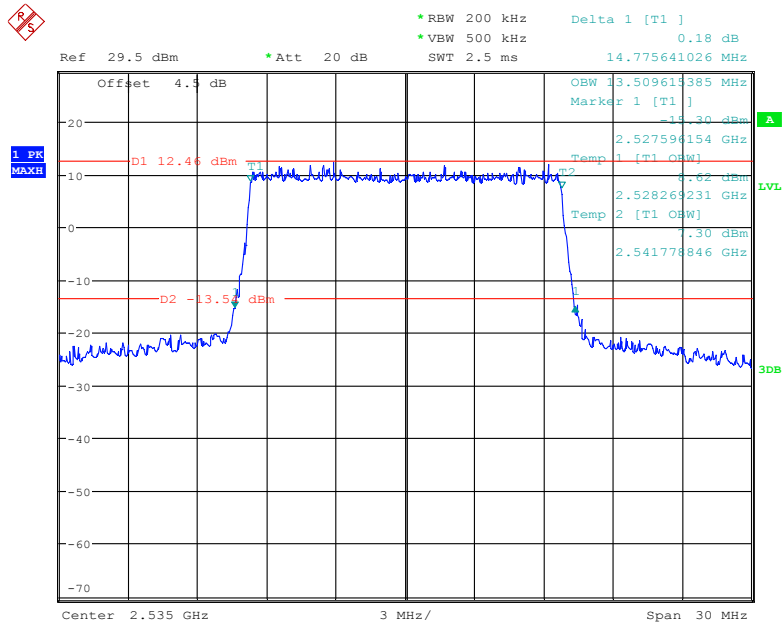## QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 7.MAR.2018 11:10:32

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

Date: 7.MAR.2018 11:09:39

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

Date: 7.MAR.2018 11:20:07

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

Date: 7.MAR.2018 11:19:01

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

Date: 7.MAR.2018 11:21:26

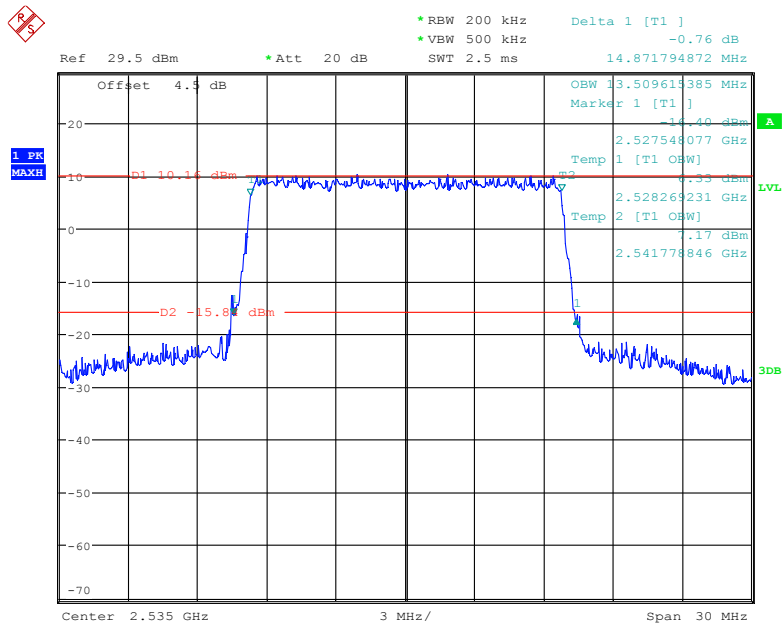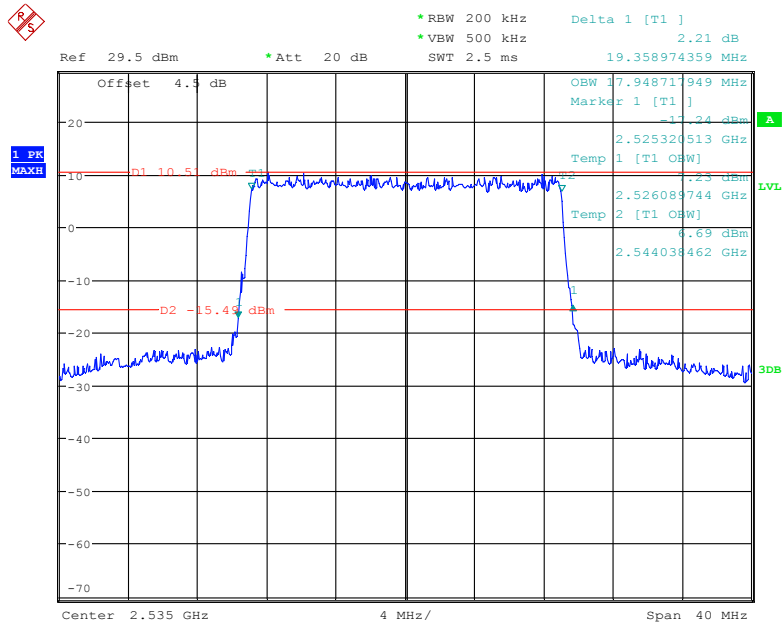## 16-QAM (20.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

Date: 7.MAR.2018 11:23:06

LTE Band 17: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.535	5.144
	16QAM	4.535	5.096
10.0	QPSK	8.974	9.792
	16QAM	8.974	9.856

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

Date: 7.MAR.2018 11:27:23

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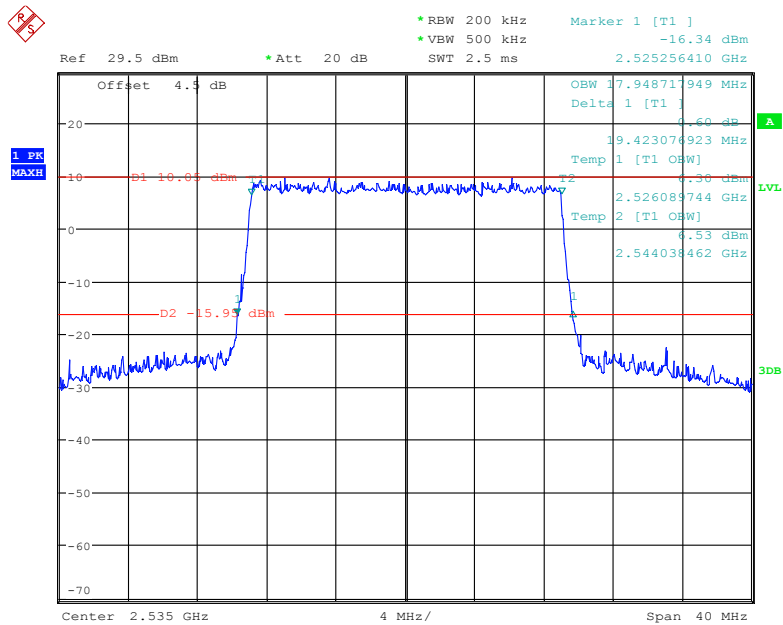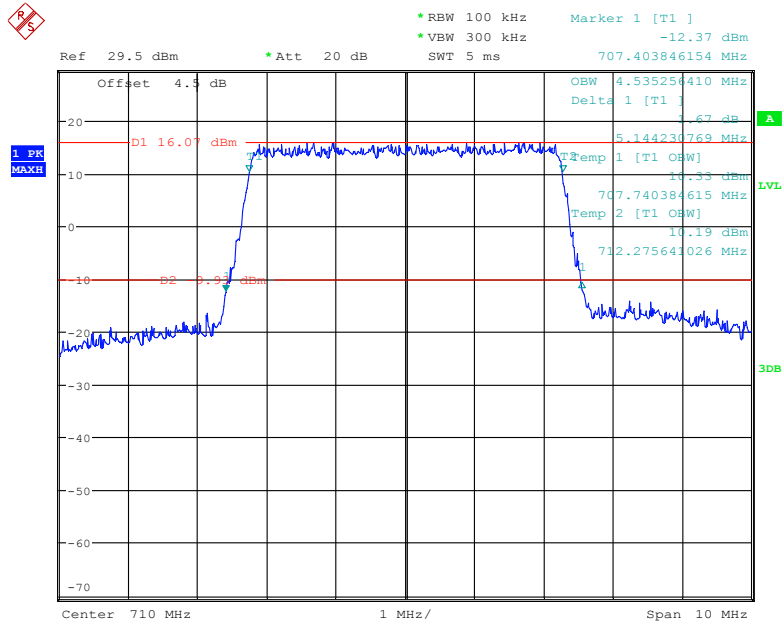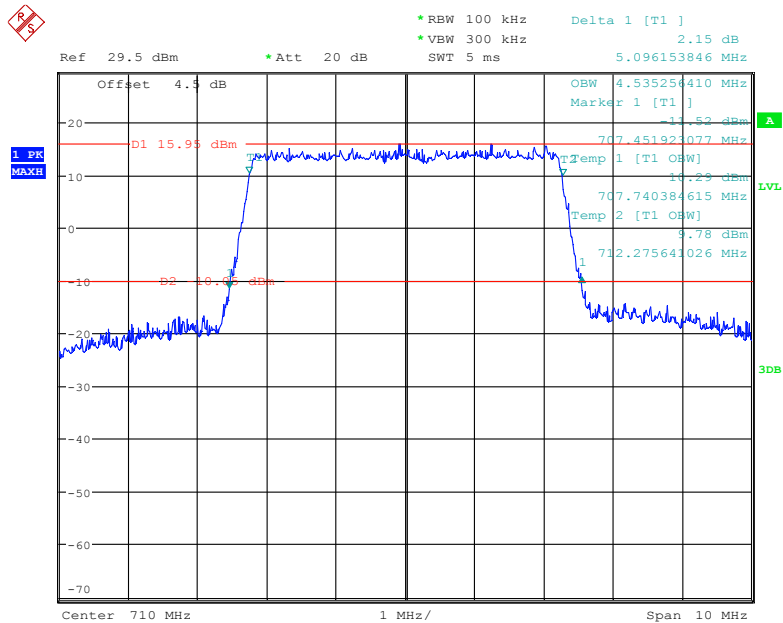

Date: 7.MAR.2018 11:26:07

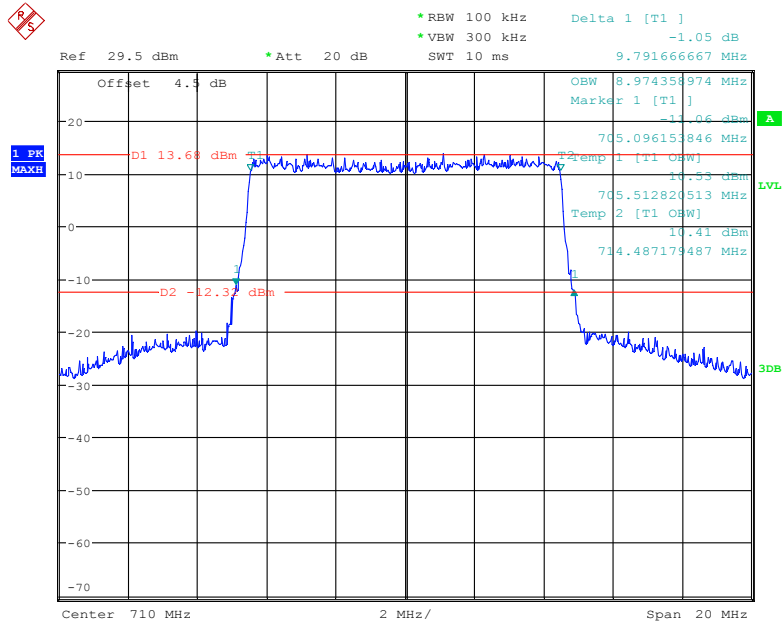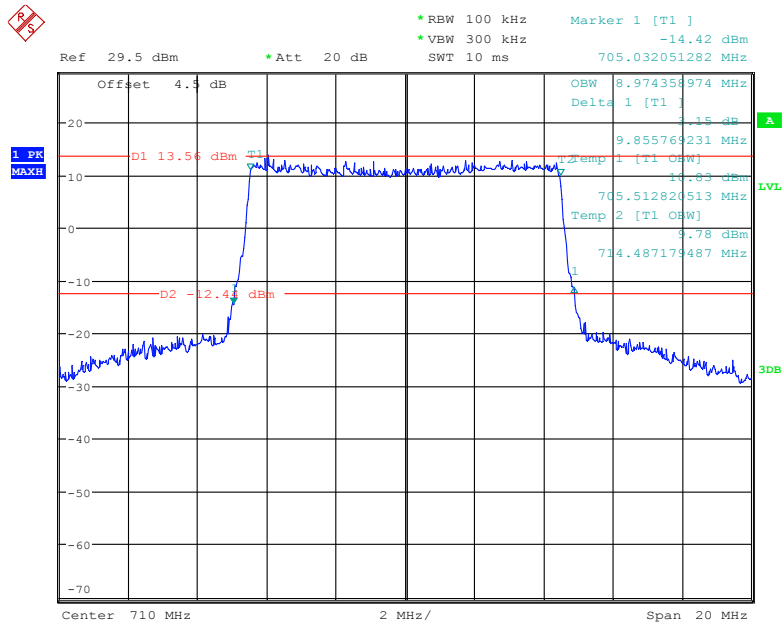## QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel

```
                                    *RBW 100 kHz      Delta 1 [T1 ]
                                    *VBW 300 kHz                -1.05 dB
       Ref  29.5 dBm    *Att  20 dB  SWT 10 ms         9.791666667 MHz
         Offset  4.5 dB                            OBW 8.974358974 MHz
                                                   Marker 1 [T1 ]
                                                            -11.06 dBm
  -20                                                  705.096153846 MHz
 1 PK  D1 13.68 dBm T1                              Temp 1 [T1 OBW]
 MAXH  10                                                     10.53 dBm
                                                       705.512820513 MHz
    0                                              Temp 2 [T1 OBW]
                                                             10.41 dBm
                                                       714.487179487 MHz
  -10    D2 -12.32 dBm
  -20
  -30                                                                  3DB
  -40
  -50
  -60
  -70
       Center  710 MHz          2 MHz/              Span  20 MHz
```

Date: 7.MAR.2018 11:28:44

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

```
                                    *RBW 100 kHz      Marker 1 [T1 ]
                                    *VBW 300 kHz                -14.42 dBm
       Ref  29.5 dBm    *Att  20 dB  SWT 10 ms         705.032051282 MHz
         Offset  4.5 dB                            OBW 8.974358974 MHz
                                                   Delta 1 [T1 ]
  -20                                                       -1.15 dB
 1 PK  D1 13.56 dBm T1                                 9.855769231 MHz
 MAXH  10                                          Temp 1 [T1 OBW]
                                                             10.83 dBm
    0                                                  705.512820513 MHz
                                                   Temp 2 [T1 OBW]
  -10    D2 -12.41 dBm                                        9.78 dBm
                                                       714.487179487 MHz
  -20
  -30                                                                  3DB
  -40
  -50
  -60
  -70
       Center  710 MHz          2 MHz/              Span  20 MHz
```

Date: 7.MAR.2018 11:30:21

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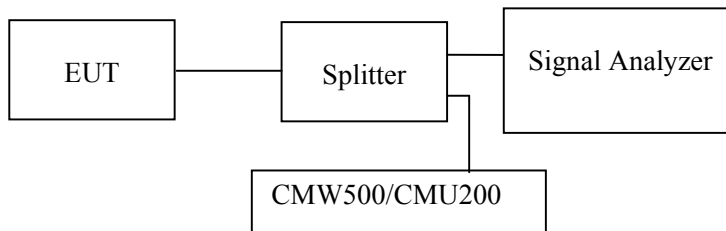
Applicable Standard

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

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

Test Procedure

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

```
┌─────────┐     ┌──────────┐     ┌──────────────────┐
│   EUT   │─────│ Splitter │─────│ Signal Analyzer  │
└─────────┘     └──────────┘     └──────────────────┘
                     │
                ┌──────────────┐
                │ CMW500/CMU200│
                └──────────────┘
```

Test Data

Environmental Conditions

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

The testing was performed by Nancy Wang from 2018-03-06 to 2018-03-27.
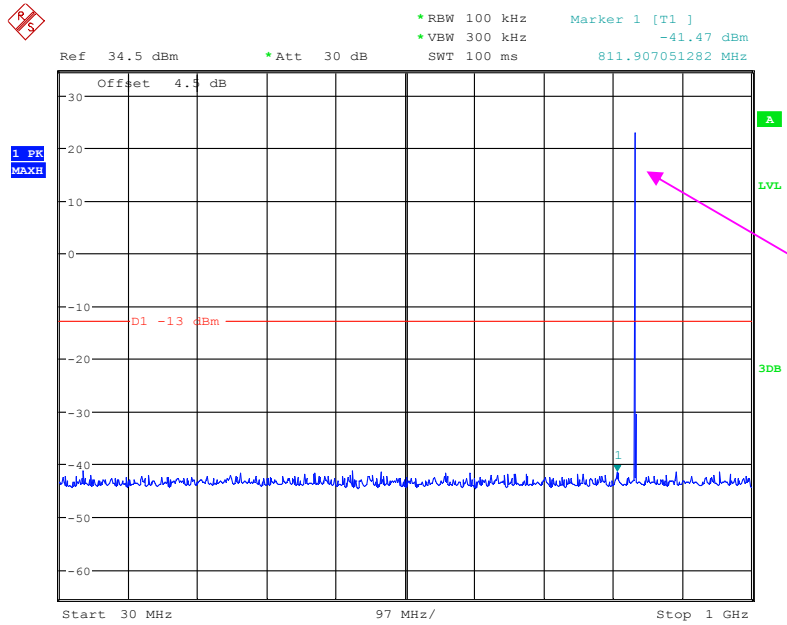
Test result: Compliance.

EUT operation mode: transmitting
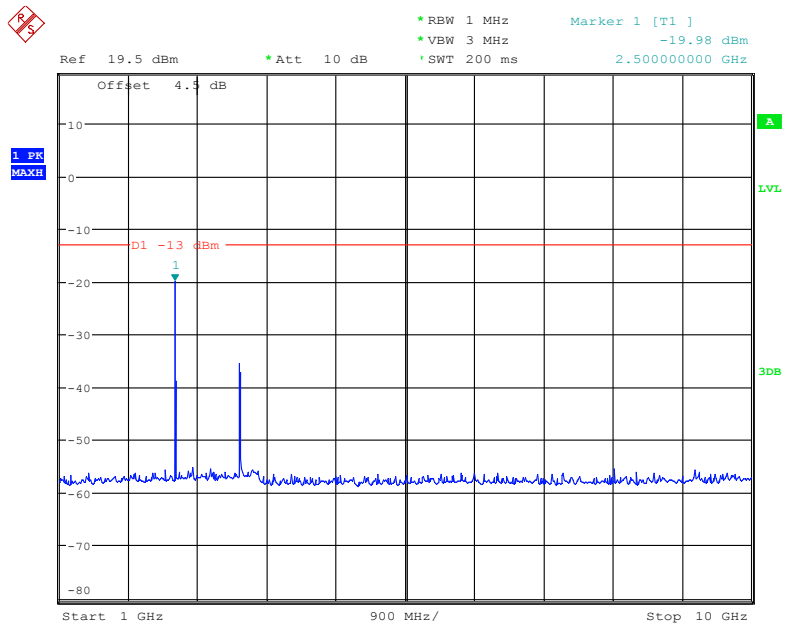
Please refer to the following plots.

Cellular Band (Part 22H)
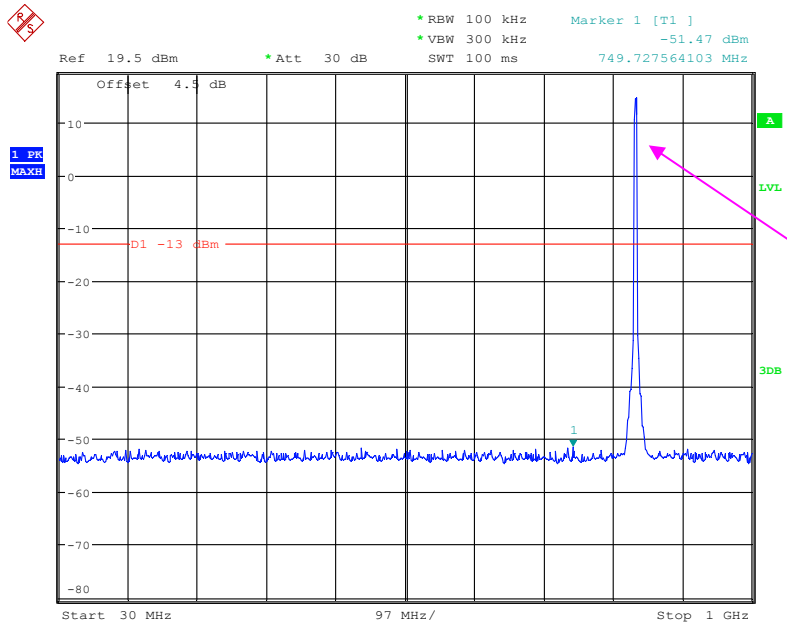
30 MHz – 1 GHz (GSM Mode)

```
                                    *RBW  100 kHz      Marker 1 [T1 ]
                                    *VBW  300 kHz                -41.47 dBm
        Ref   34.5 dBm      *Att  30 dB    SWT  100 ms     811.907051282 MHz
           Offset   4.5 dB
```

Fundamental test

```
        Date: 6.MAR.2018  14:28:37
```

1 GHz – 10 GHz (GSM Mode)

```
                                    *RBW  1 MHz       Marker 1 [T1 ]
                                    *VBW  3 MHz                -19.98 dBm
        Ref   19.5 dBm      *Att  10 dB    'SWT  200 ms     2.500000000 GHz
           Offset   4.5 dB
```

```
        Date: 6.MAR.2018  14:27:32
```

30 MHz – 1 GHz (WCDMA Mode)

```
                                    *RBW 100 kHz    Marker 1 [T1 ]
                                    *VBW 300 kHz              -51.47 dBm
        Ref  19.5 dBm   *Att  30 dB  SWT 100 ms    749.727564103 MHz
          Offset   4.5 dB                                              A

    -10                                                                LVL

    -0

   -10
          D1 -13 dBm
   -20

   -30
                                                                       3DB
   -40

   -50                                          1

   -60

   -70

   -80
        Start 30 MHz              97 MHz/                Stop 1 GHz
```

Fundamental test

```
Date: 6.MAR.2018  15:13:23
```

1 GHz – 10 GHz (WCDMA Mode)

```
                                    *RBW 1 MHz     Marker 1 [T1 ]
                                    *VBW 3 MHz                -25.07 dBm
        Ref  19.5 dBm   *Att  10 dB  SWT 55 ms     2.500000000 GHz
          Offset   4.5 dB                                              A

    -10                                                                LVL

    -0

   -10
          D1 -13 dBm
   -20
                1
   -30
                                                                       3DB
   -40

   -50

   -60

   -70

   -80
        Start 1 GHz               900 MHz/               Stop 10 GHz
```
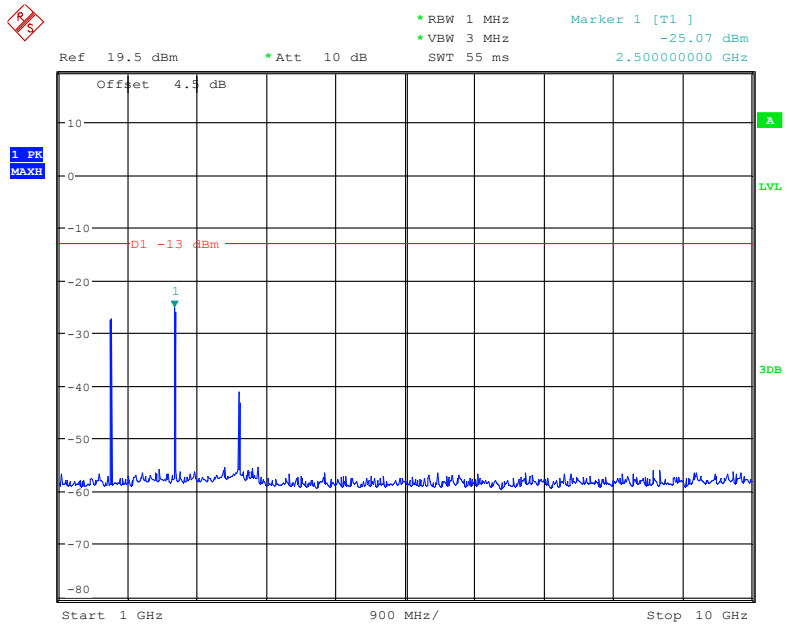
```
Date: 6.MAR.2018  15:12:18
```

PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)

```
                                    *RBW  100 kHz     Marker 1 [T1 ]
                                    *VBW  300 kHz              -32.04 dBm
     Ref   19.5 dBm    *Att  10 dB  SWT  100 ms       505.673076923 MHz
```
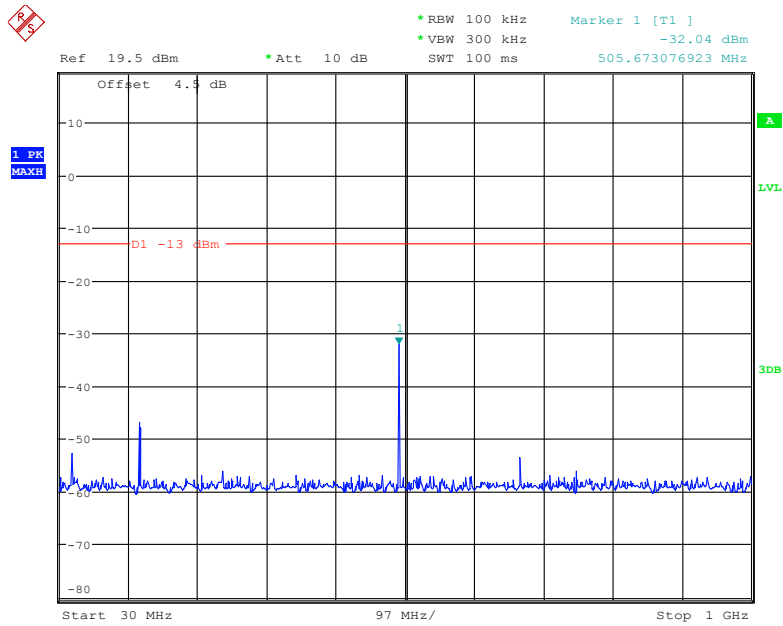


```
Date: 6.MAR.2018  14:32:13
```

1 GHz – 2 GHz (GSM Mode)

```
                                    *RBW  1 MHz      Marker 1 [T1 ]
                                    *VBW  3 MHz               -40.59 dBm
     Ref   34.5 dBm    *Att  30 dB  SWT  2.5 ms      1.596153846 GHz
```
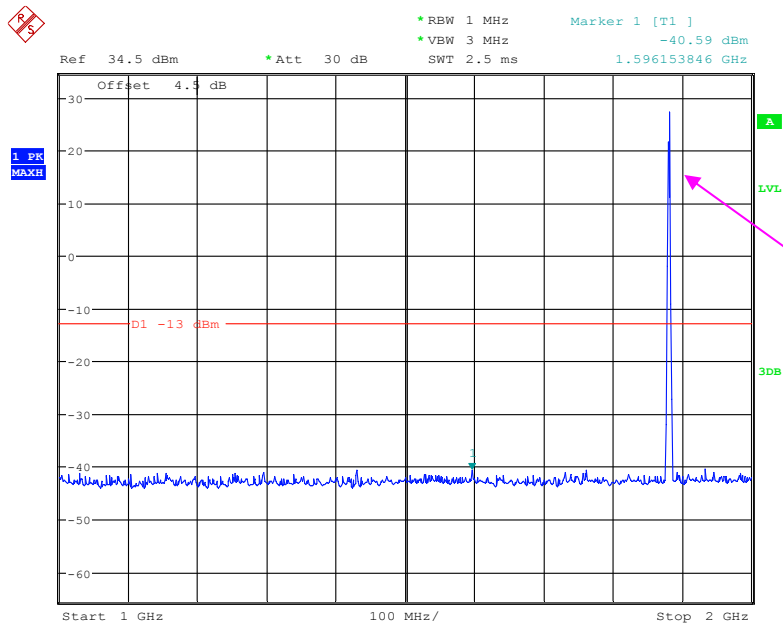

Fundamental test

```
Date: 6.MAR.2018  14:31:01
```

2 GHz – 20 GHz (GSM Mode)

```
                                        *RBW  1 MHz        Marker 1 [T1 ]
                                        *VBW  3 MHz               -30.58 dBm
          Ref  19.5 dBm    *Att  10 dB   SWT 105 ms       3.326923077 GHz
             Offset   4.5 dB                                                    A
      1 PK
      MAXH                                                                     LVL

                     D1 -13 dBm

                                                                              3DB


          Start  2 GHz              1.8 GHz/                Stop  20 GHz
```
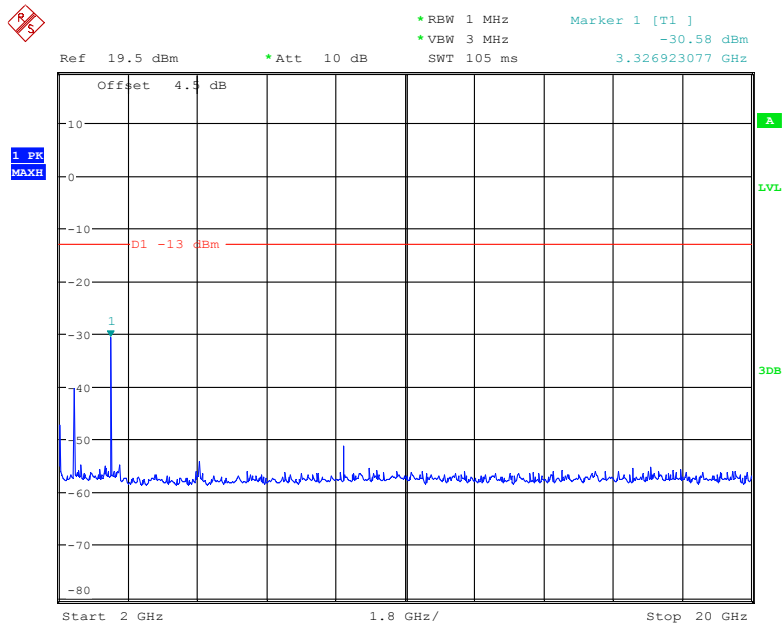
Date: 6.MAR.2018 14:31:43

30 MHz – 1 GHz (WCDMA Mode)

```
                                        *RBW  100 kHz      Marker 1 [T1 ]
                                        *VBW  300 kHz             -50.99 dBm
          Ref  19.5 dBm    *Att  10 dB   SWT 100 ms       504.118589744 MHz
             Offset   4.5 dB                                                    A
      1 PK
      MAXH                                                                     LVL

                     D1 -13 dBm

                                                                              3DB


          Start  30 MHz              97 MHz/                Stop  1 GHz
```
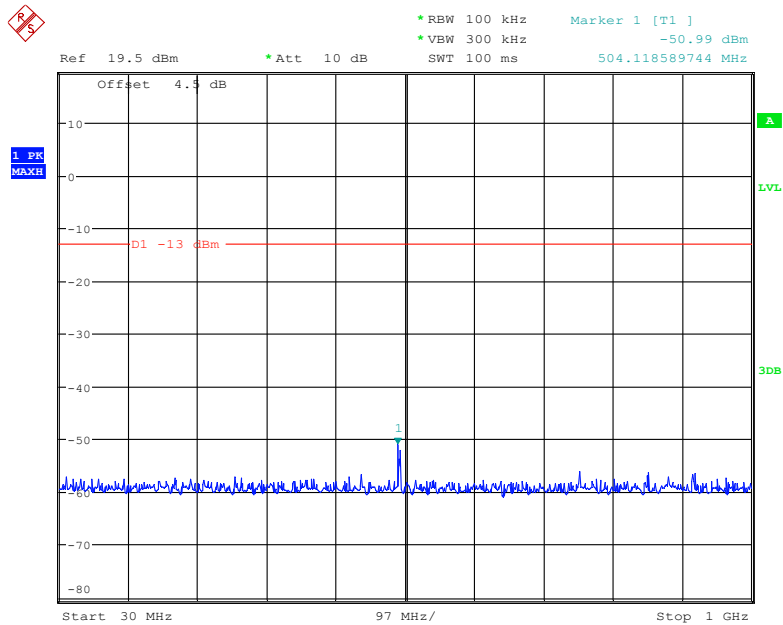
Date: 6.MAR.2018 15:16:19

1 GHz – 2 GHz (WCDMA Mode)

```
                                    *RBW 1 MHz        Marker 1 [T1 ]
                                    *VBW 3 MHz              -39.87 dBm
       Ref  34.5 dBm      *Att  30 dB      SWT 2.5 ms       1.379807692 GHz
           Offset   4.5 dB
```
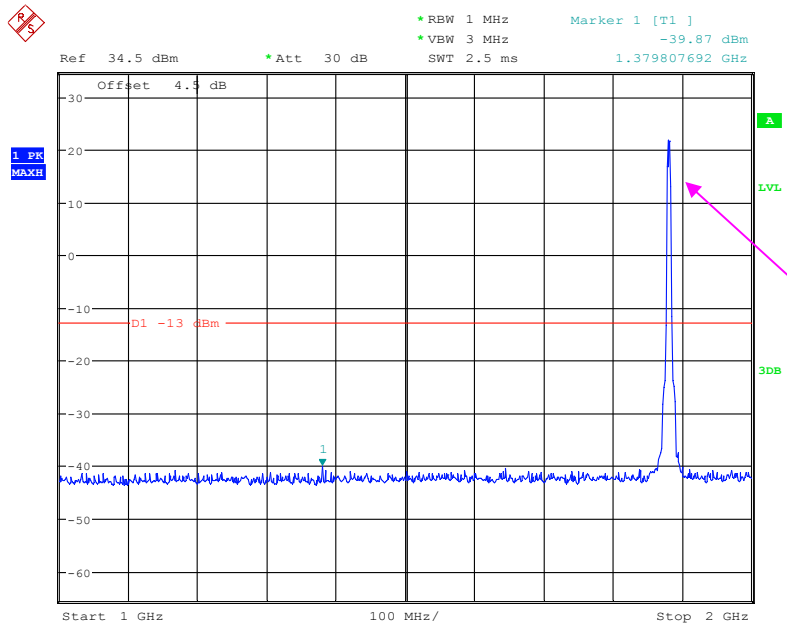
Fundamental test

```
Date: 6.MAR.2018  15:15:06
```

2 GHz – 20 GHz (WCDMA Mode)

```
                                    *RBW 1 MHz        Marker 1 [T1 ]
                                    *VBW 3 MHz              -51.39 dBm
       Ref  19.5 dBm      *Att  10 dB      SWT 105 ms       3.759615385 GHz
           Offset   4.5 dB
```
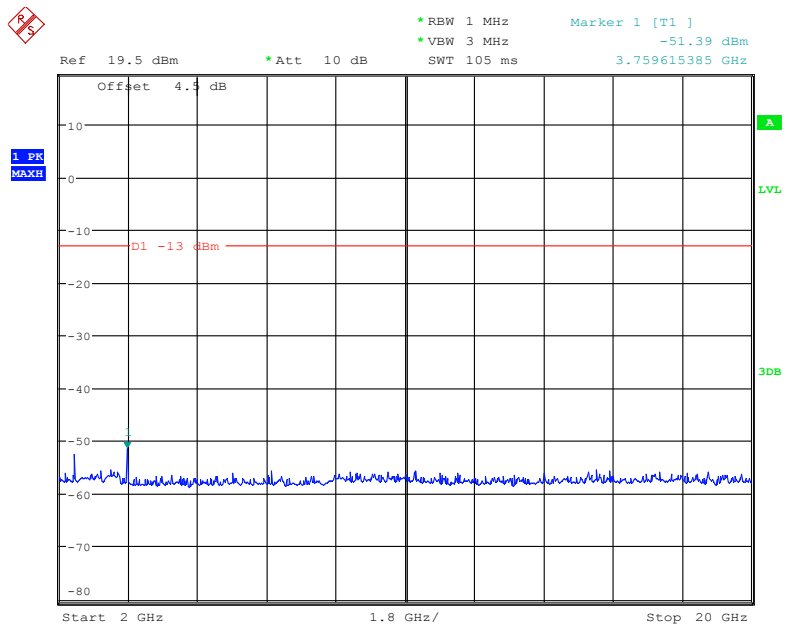
```
Date: 6.MAR.2018  15:15:39
```

LTE Band 2:

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

```
                                    *RBW 100 kHz    Marker 1 [T1 ]
                                    *VBW 300 kHz              -45.52 dBm
        Ref  19.5 dBm       *Att  10 dB    SWT 100 ms    505.673076923 MHz
          Offset   4.5 dB                                              A

      -10
1 PK
MAXH    0                                                            LVL

      -10
          D1 -13 dBm
      -20

      -30
                                                                    3DB
      -40
                          1
      -50

      -60
      -70
      -80
        Start 30 MHz              97 MHz/              Stop  1 GHz
```
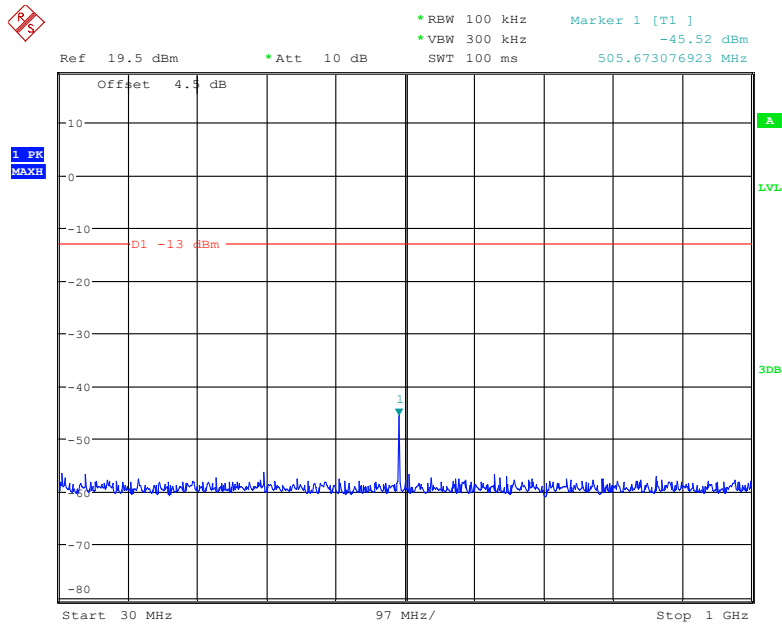
Date: 8.MAR.2018 10:01:39

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

```
                                    *RBW 1 MHz      Marker 1 [T1 ]
                                    *VBW 3 MHz                -45.70 dBm
        Ref  29.5 dBm       *Att  20 dB    SWT 2.5 ms    1.120192308 GHz
          Offset   4.5 dB                                              A
       20
1 PK
MAXH   10                                                            LVL

        0
      -10
          D1 -13 dBm
      -20

      -30                                                           3DB

      -40
          1
      -50
      -60
      -70
        Start  1 GHz              100 MHz/              Stop  2 GHz
```

Fundamental test
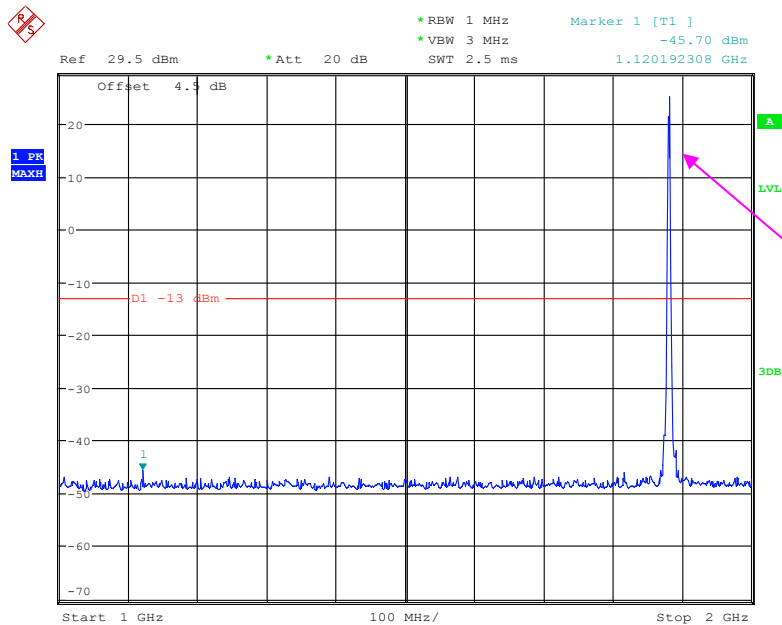
Date: 8.MAR.2018 09:47:04
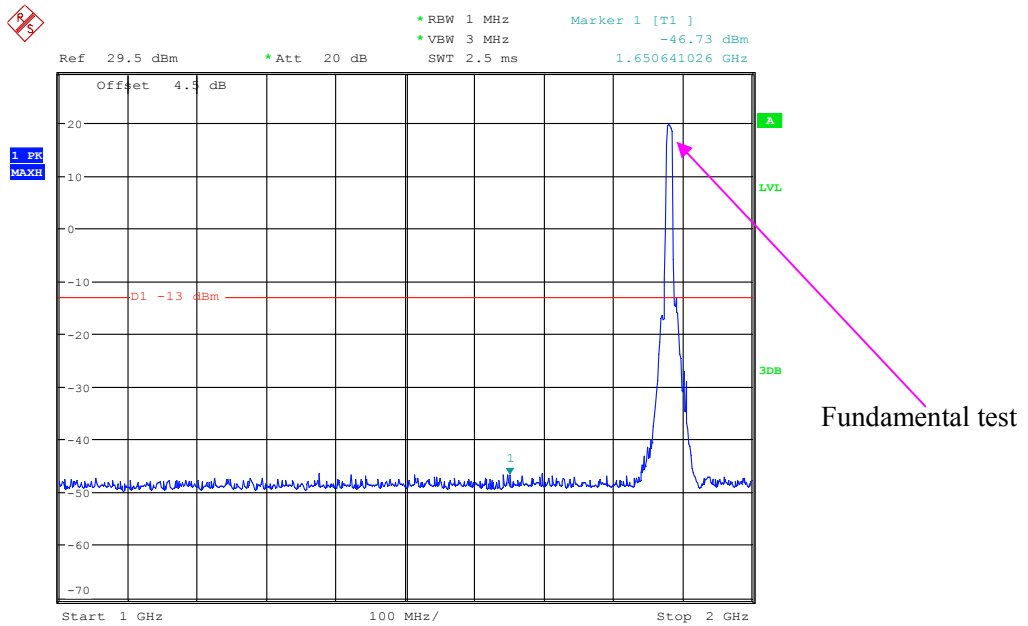
2 GHz – 20 GHz (1.4 MHz, Middle Channel)
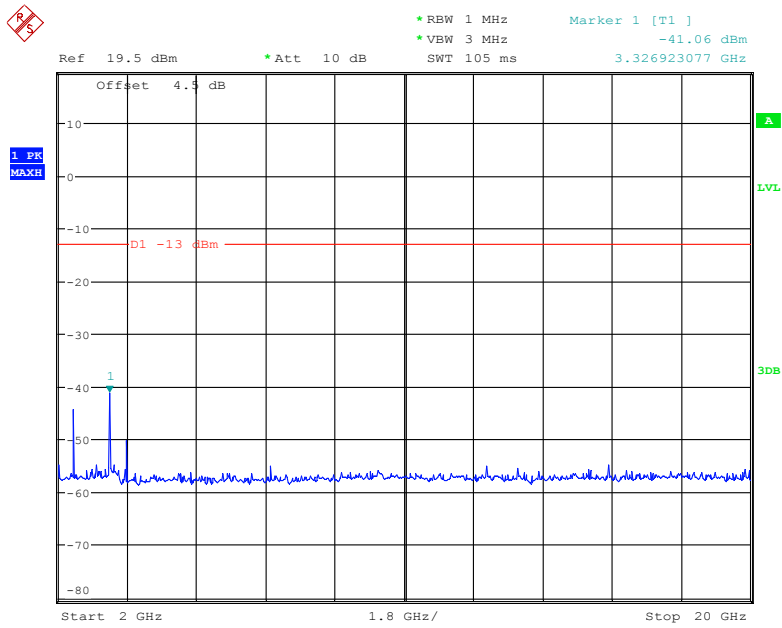
Date: 8.MAR.2018 09:56:48

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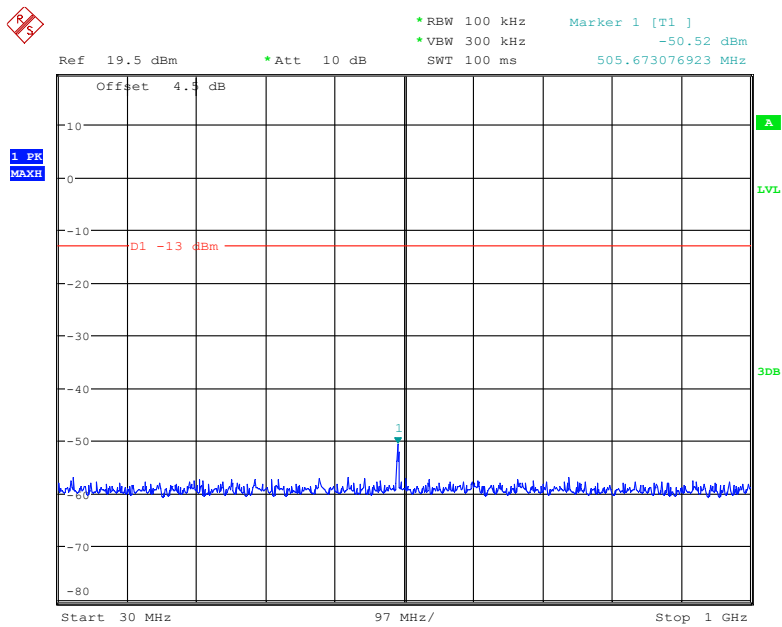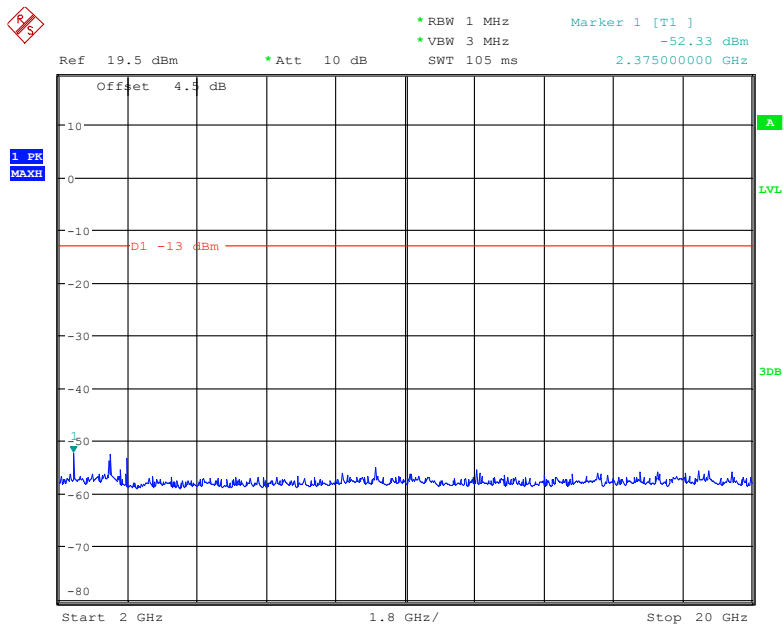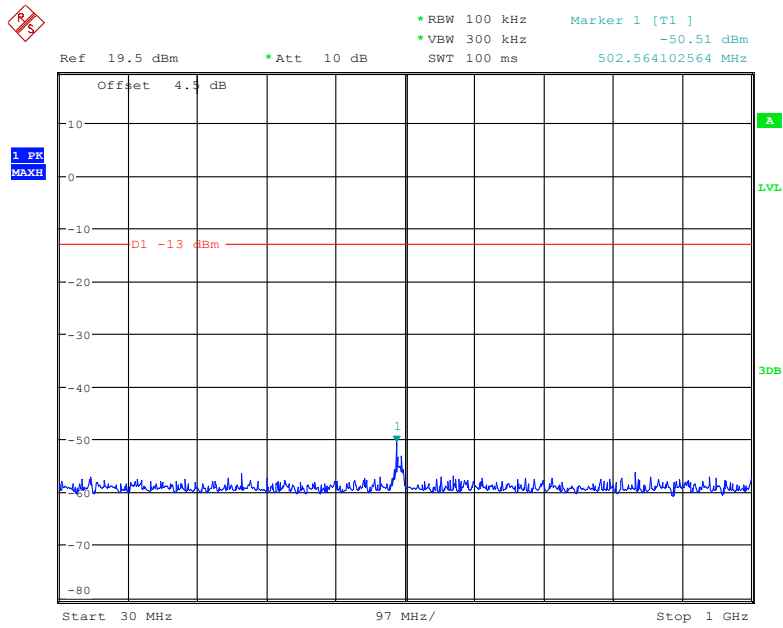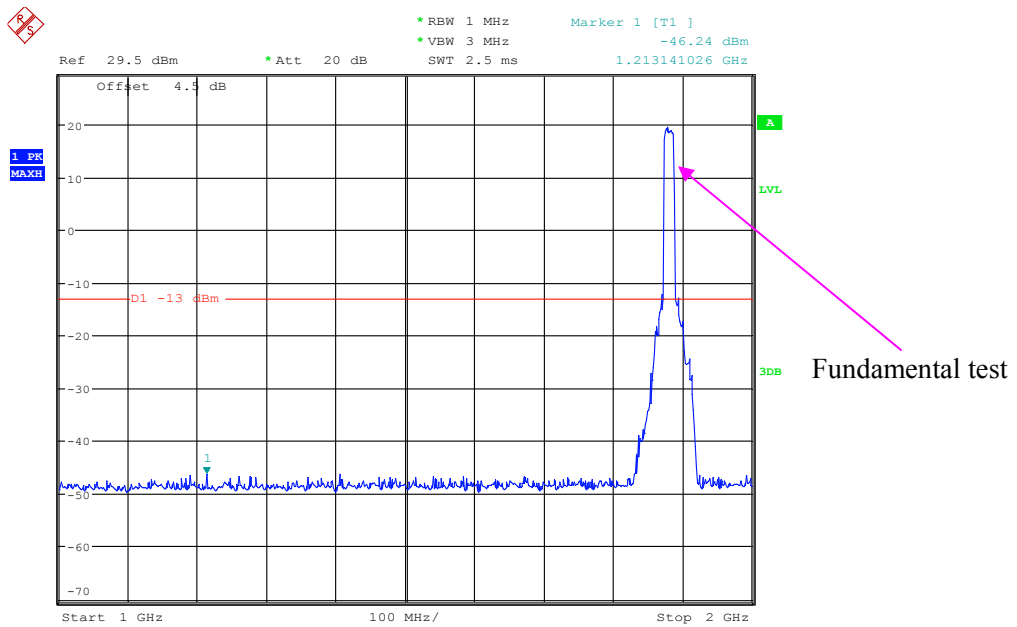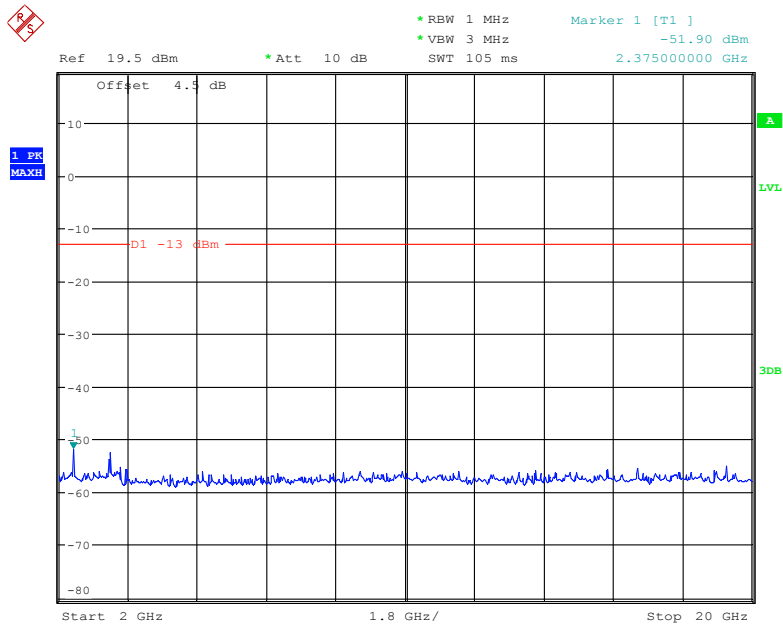

Date: 8.MAR.2018 10:01:57
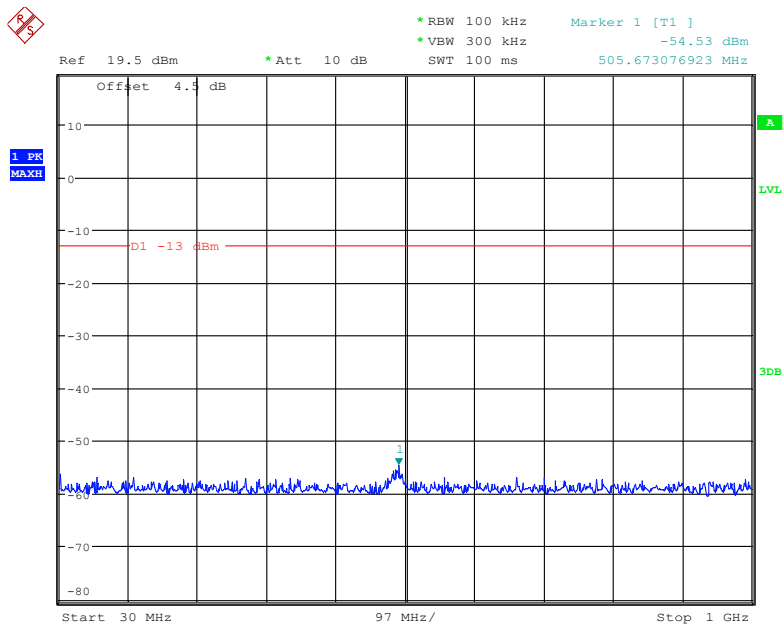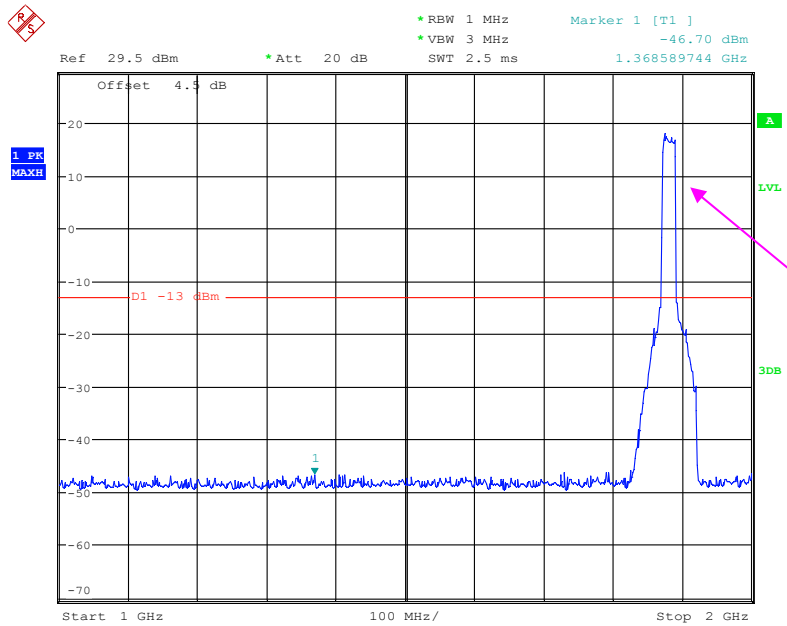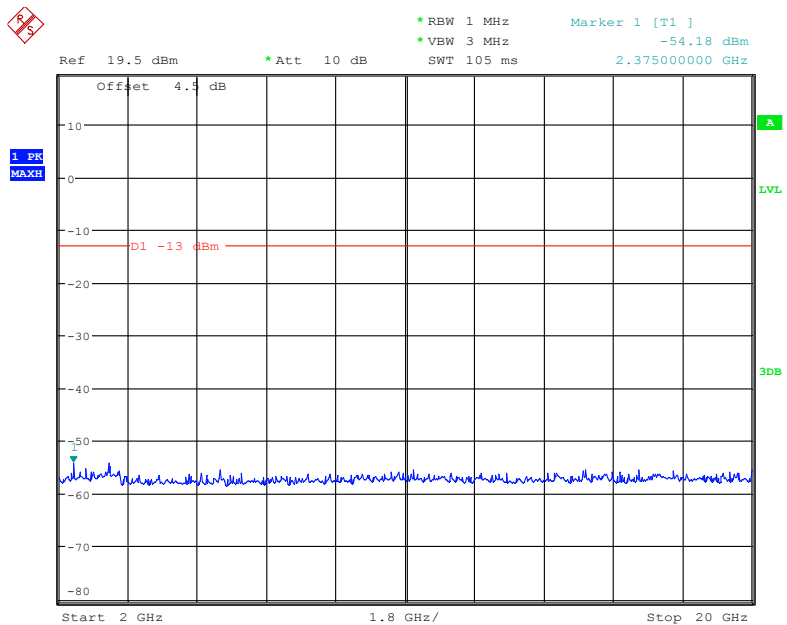
1 GHz – 2 GHz (3.0 MHz, Middle Channel)

```
                                    *RBW  1 MHz      Marker 1 [T1 ]
                                    *VBW  3 MHz              -46.75 dBm
        Ref   29.5 dBm    *Att  20 dB   SWT 2.5 ms    1.072115385 GHz
           Offset   4.5 dB
```

Fundamental test
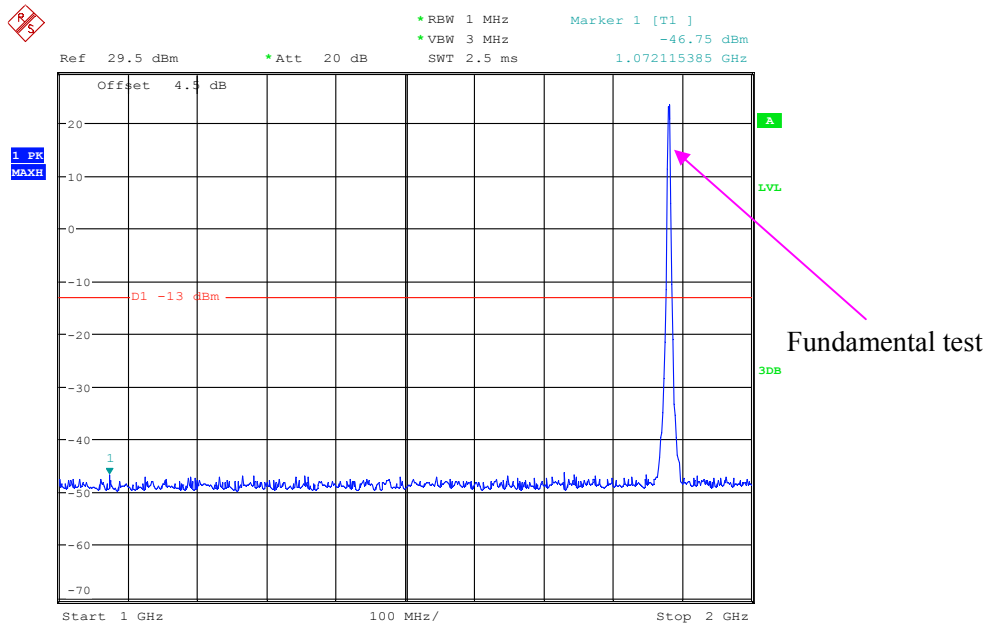
```
Date: 8.MAR.2018  09:48:02
```

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

```
                                    *RBW  1 MHz      Marker 1 [T1 ]
                                    *VBW  3 MHz              -48.52 dBm
        Ref   19.5 dBm    *Att  10 dB   SWT 105 ms    2.375000000 GHz
           Offset   4.5 dB
```
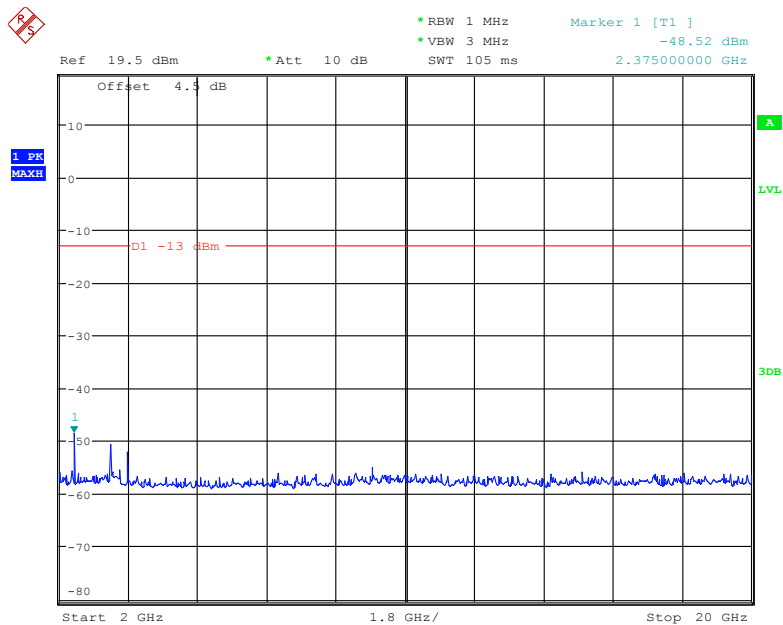
```
Date: 8.MAR.2018  09:57:11
```

30 MHz - 1 GHz (5.0 MHz, Middle Channel)
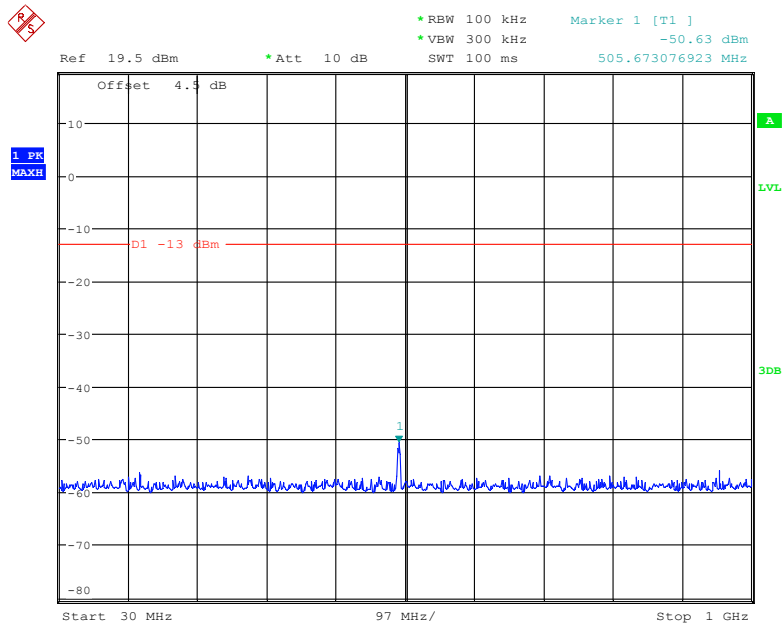
Date: 8.MAR.2018 10:02:17

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


Fundamental test
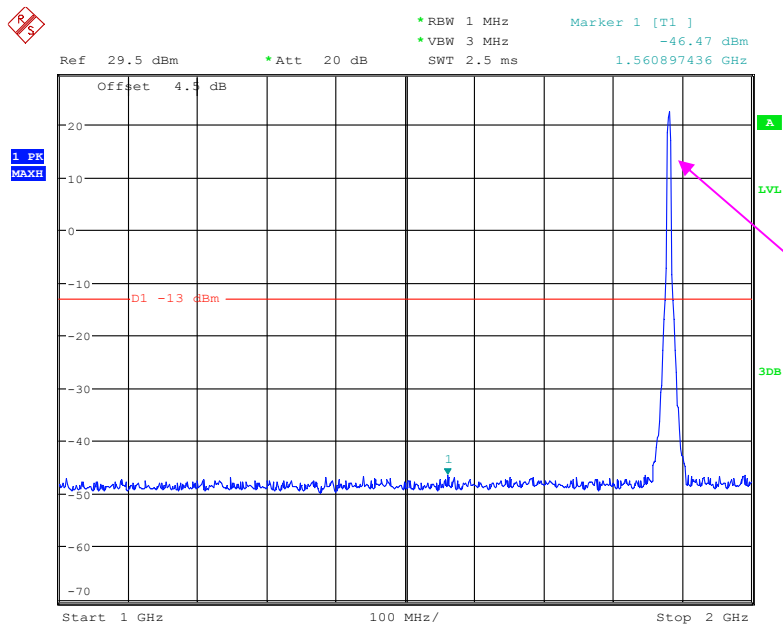
Date: 8.MAR.2018 09:54:41
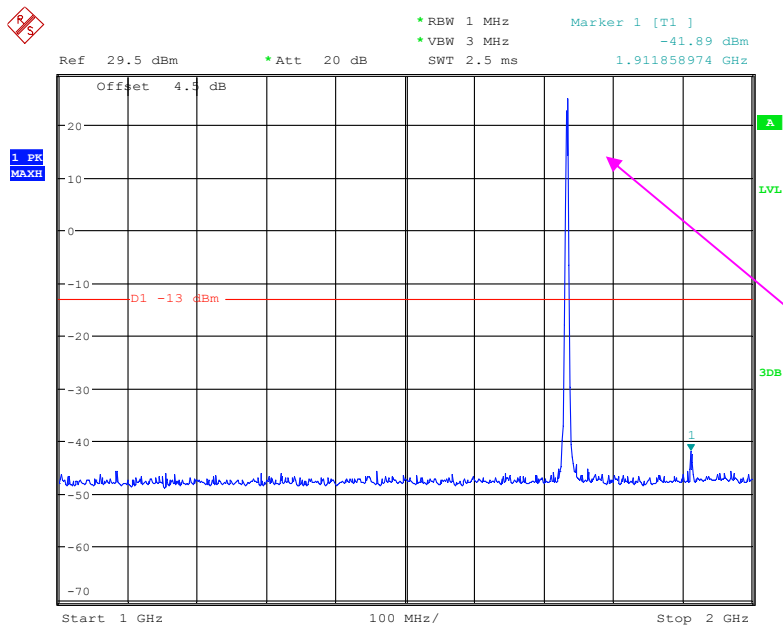
2 GHz – 20 GHz (5.0 MHz, Middle Channel)

```
                                      *RBW 1 MHz        Marker 1 [T1 ]
                                      *VBW 3 MHz                -49.25 dBm
         Ref  19.5 dBm    *Att  10 dB  SWT 105 ms       3.326923077 GHz
           Offset  4.5 dB
```
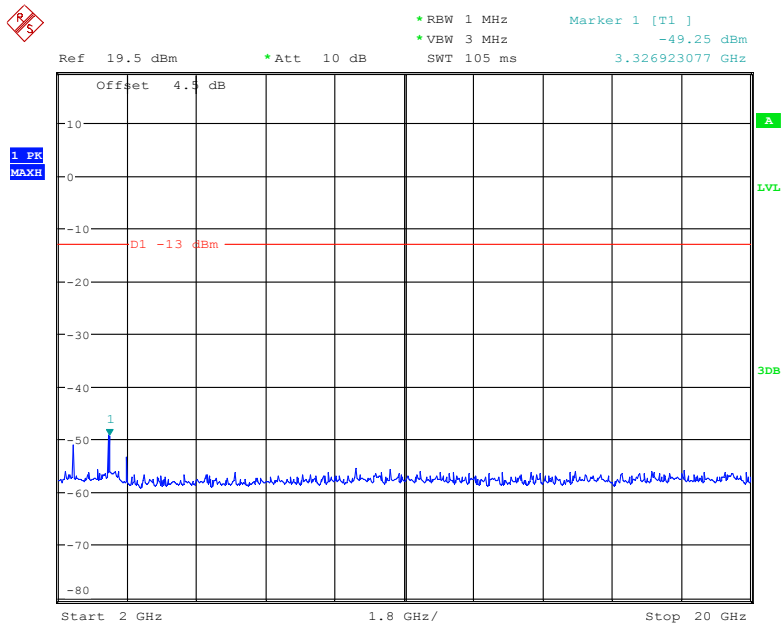
Date: 8.MAR.2018 09:57:27

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

```
                                      *RBW 100 kHz      Marker 1 [T1 ]
                                      *VBW 300 kHz              -53.53 dBm
         Ref  19.5 dBm    *Att  10 dB  SWT 100 ms      505.673076923 MHz
           Offset  4.5 dB
```
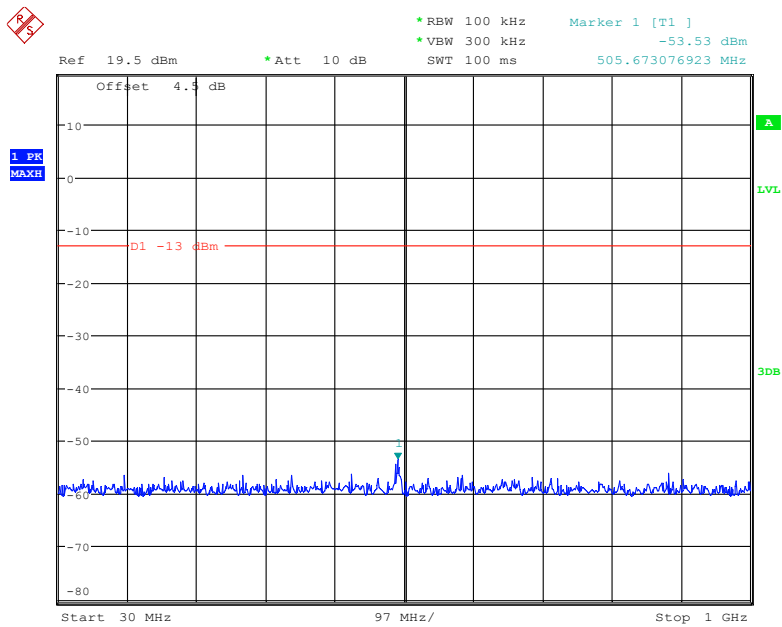
Date: 8.MAR.2018 10:02:33

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

```
                                    *RBW 1 MHz        Marker 1 [T1 ]
                                    *VBW 3 MHz                   -46.73 dBm
       Ref  29.5 dBm      *Att  20 dB    SWT 2.5 ms       1.650641026 GHz
          Offset  4.5 dB
```

Fundamental test

Date: 8.MAR.2018 09:55:06

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

```
                                    *RBW 1 MHz        Marker 1 [T1 ]
                                    *VBW 3 MHz                   -52.33 dBm
       Ref  19.5 dBm      *Att  10 dB    SWT 105 ms       2.375000000 GHz
          Offset  4.5 dB
```
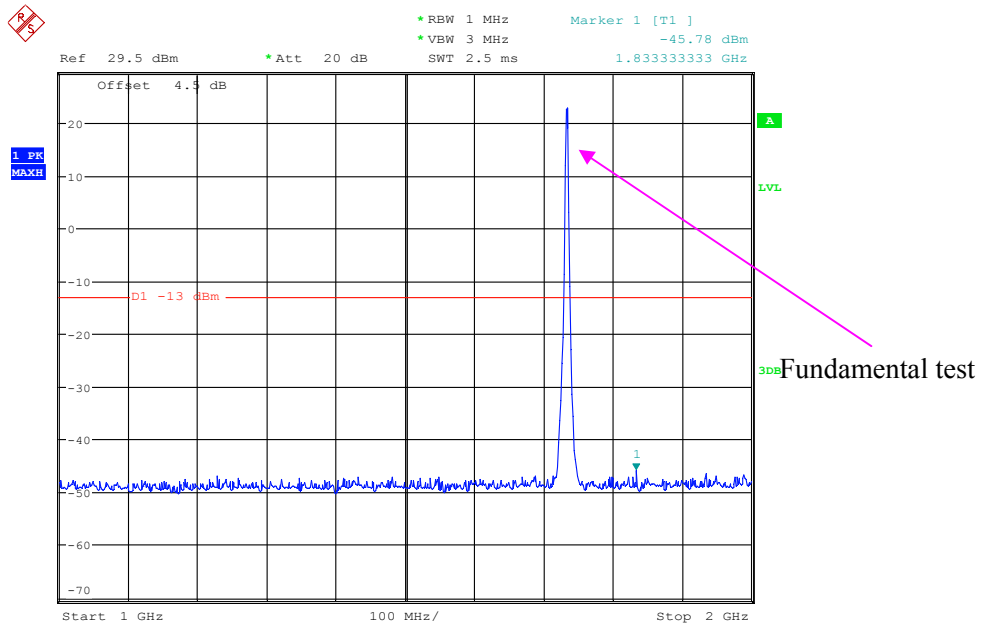
Date: 8.MAR.2018 09:57:42

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

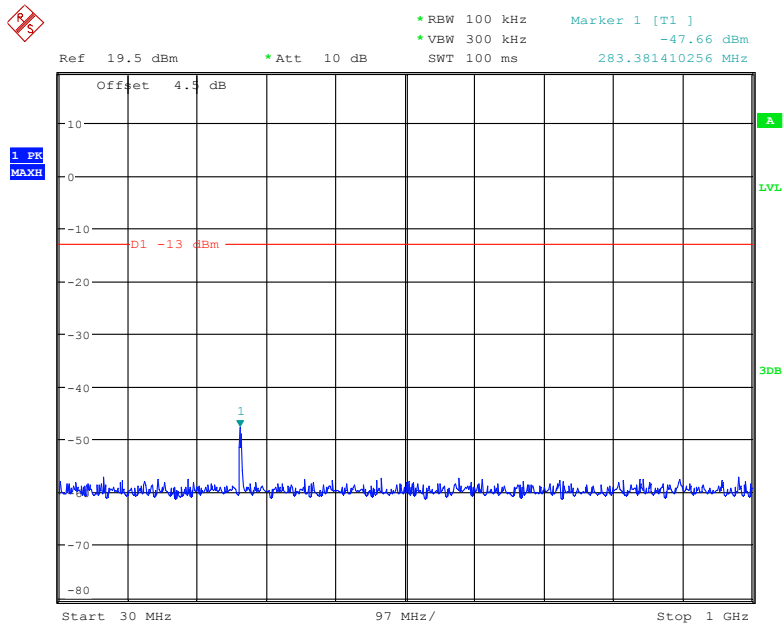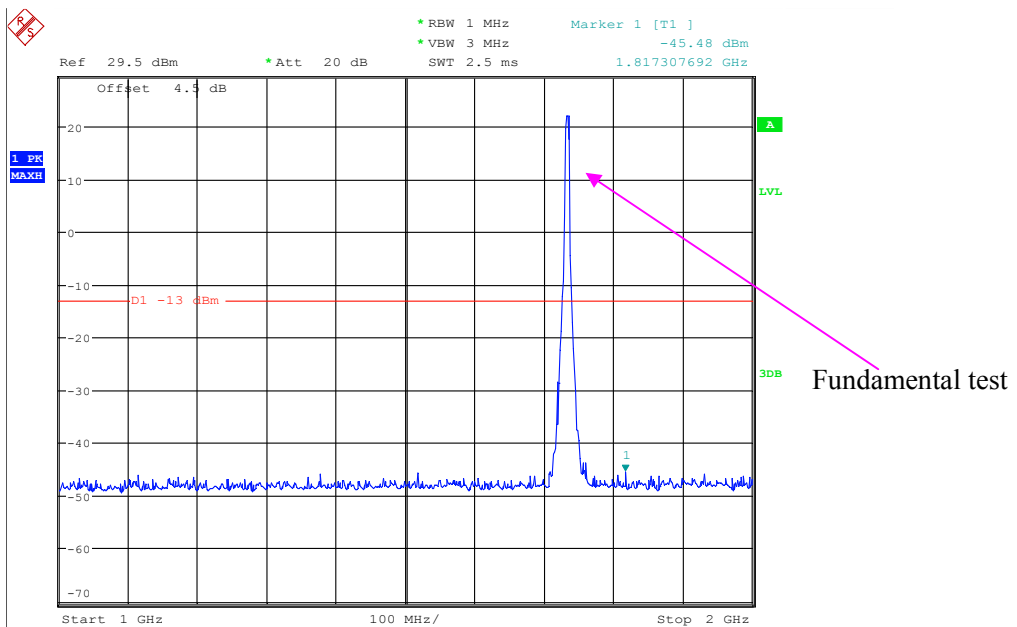Date: 8.MAR.2018 10:02:52

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

Fundamental test

Date: 8.MAR.2018 09:55:37

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

	*RBW 1 MHz	Marker 1 [T1]
	*VBW 3 MHz	-51.90 dBm
Ref 19.5 dBm *Att 10 dB	SWT 105 ms	2.375000000 GHz

Offset 4.5 dB

1 PK
MAXH

D1 -13 dBm

Start 2 GHz   1.8 GHz/   Stop 20 GHz

Date: 8.MAR.2018 09:58:03

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

	*RBW 100 kHz	Marker 1 [T1]
	*VBW 300 kHz	-54.53 dBm
Ref 19.5 dBm *Att 10 dB	SWT 100 ms	505.673076923 MHz

Offset 4.5 dB

1 PK
MAXH

D1 -13 dBm

Start 30 MHz   97 MHz/   Stop 1 GHz

Date: 8.MAR.2018 10:03:08

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

```
                                    *RBW 1 MHz        Marker 1 [T1 ]
                                    *VBW 3 MHz              -46.70 dBm
         Ref  29.5 dBm    *Att  20 dB   SWT 2.5 ms      1.368589744 GHz
            Offset  4.5 dB
```

Fundamental test

```
Start  1 GHz            100 MHz/            Stop  2 GHz
```

Date: 8.MAR.2018 09:56:05

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

```
                                    *RBW 1 MHz        Marker 1 [T1 ]
                                    *VBW 3 MHz              -54.18 dBm
         Ref  19.5 dBm    *Att  10 dB   SWT 105 ms     2.375000000 GHz
            Offset  4.5 dB
```

```
Start  2 GHz            1.8 GHz/            Stop  20 GHz
```

Date: 8.MAR.2018 10:00:48

LTE Band 4:

30 MHz - 1 GHz (1.4 MHz, Middle Channel)
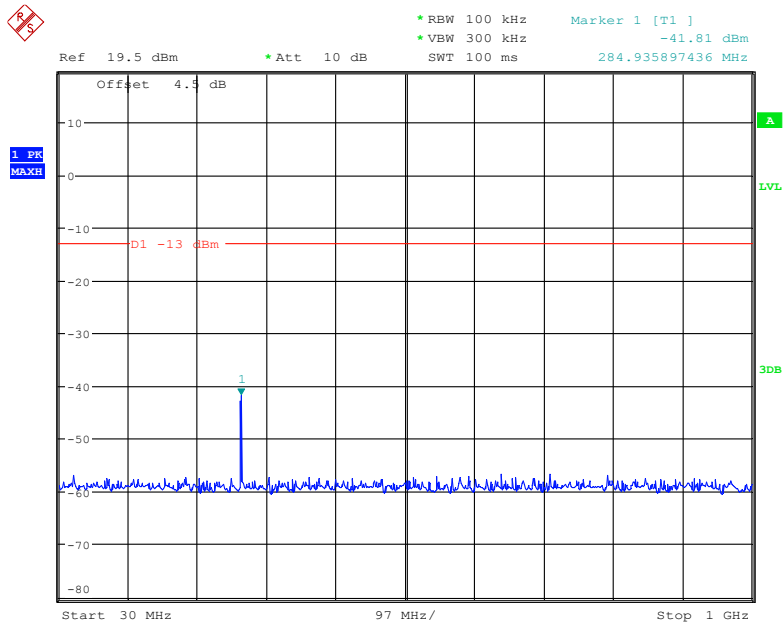
Date: 8.MAR.2018 10:20:49

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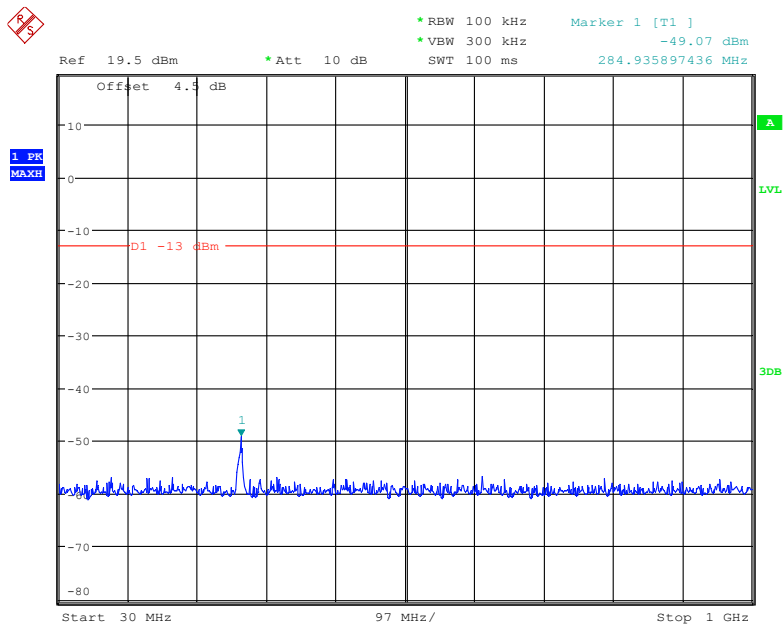

Fundamental test

Date: 8.MAR.2018 10:07:28

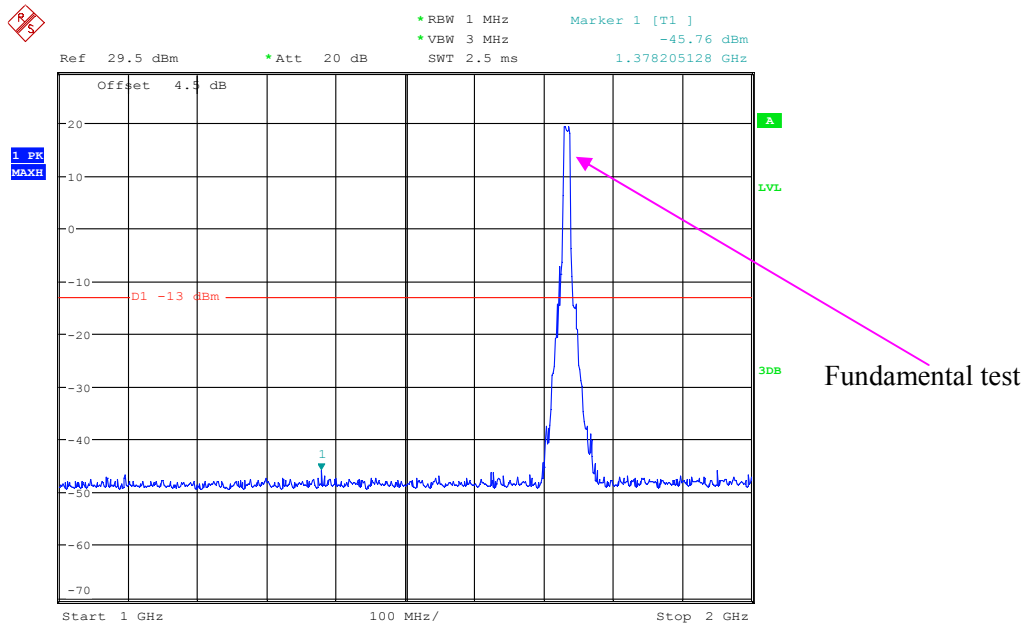## 2 GHz – 20 GHz (1.4 MHz, Middle Channel)
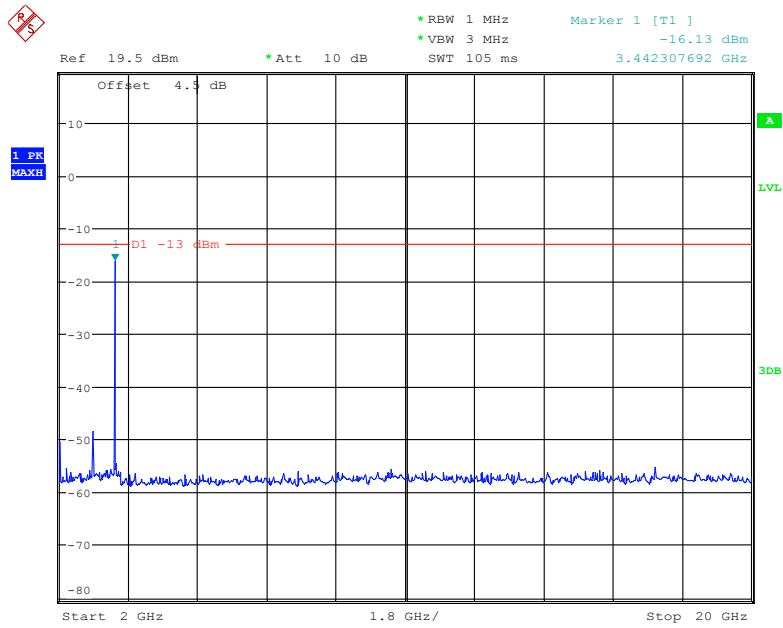
Date: 8.MAR.2018 10:10:41
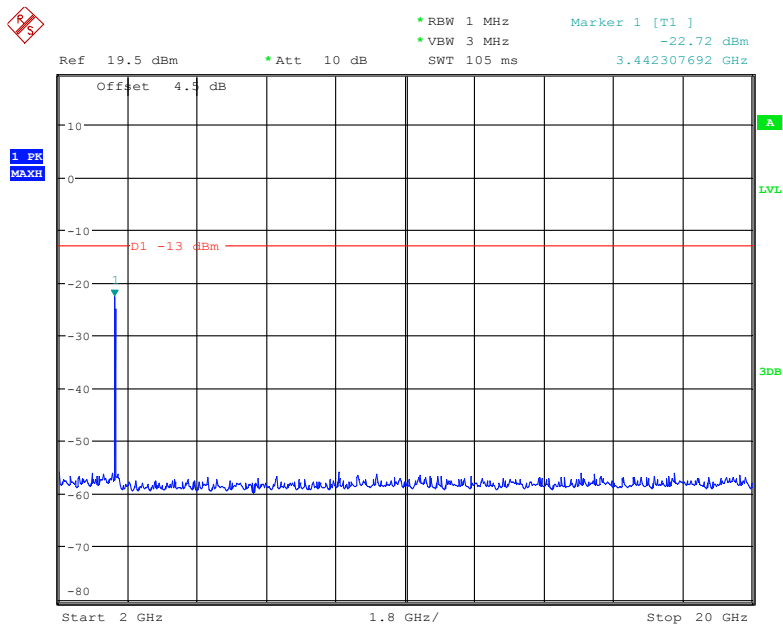
30 MHz - 1 GHz (3.0 MHz, Middle Channel)
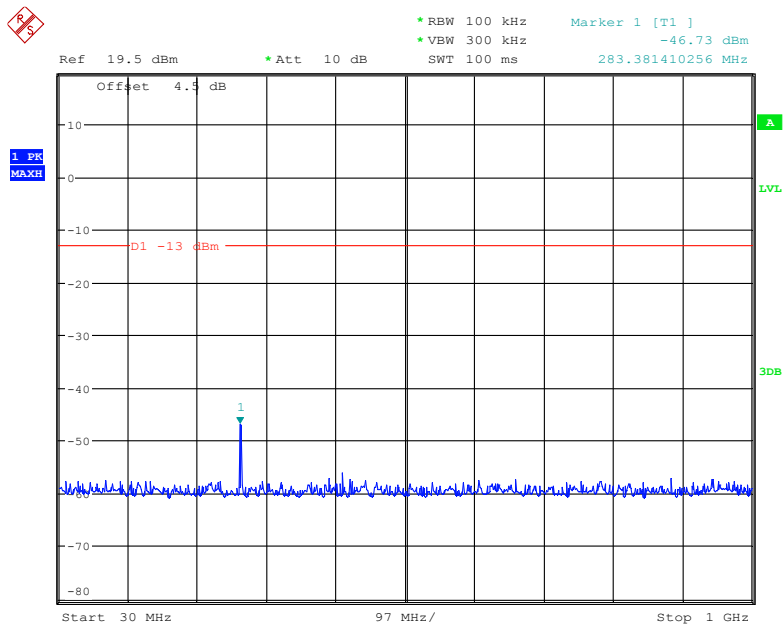
Date: 8.MAR.2018 10:13:54
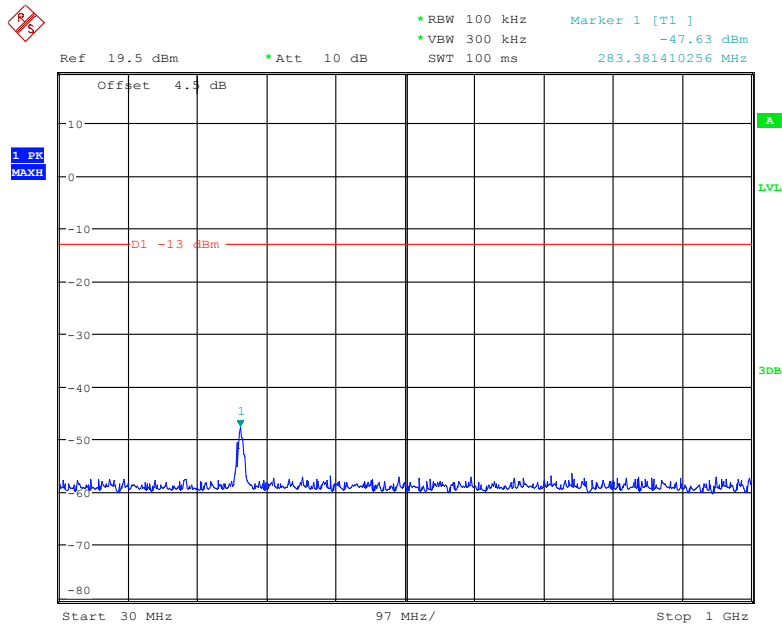
1 GHz – 2 GHz (3.0 MHz, Middle Channel)

Date: 8.MAR.2018 10:07:59

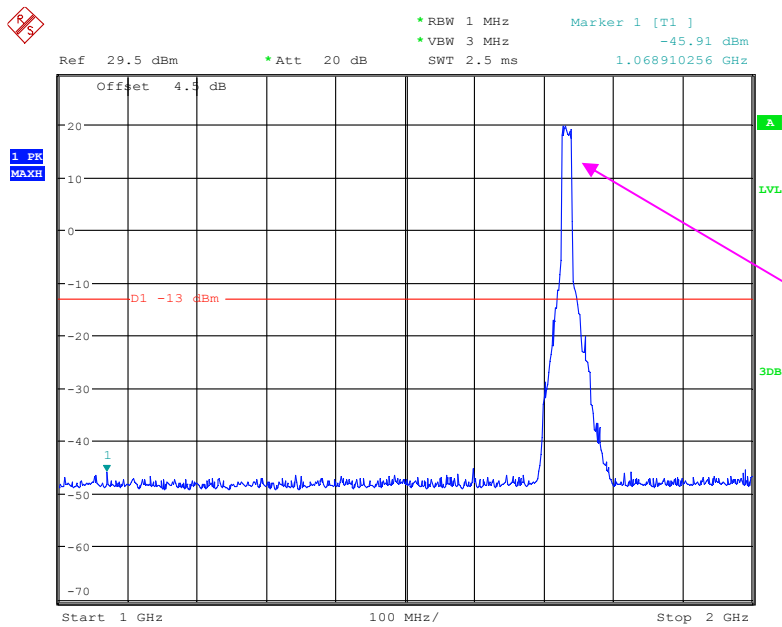## 2 GHz – 20 GHz (3.0 MHz, Middle Channel)
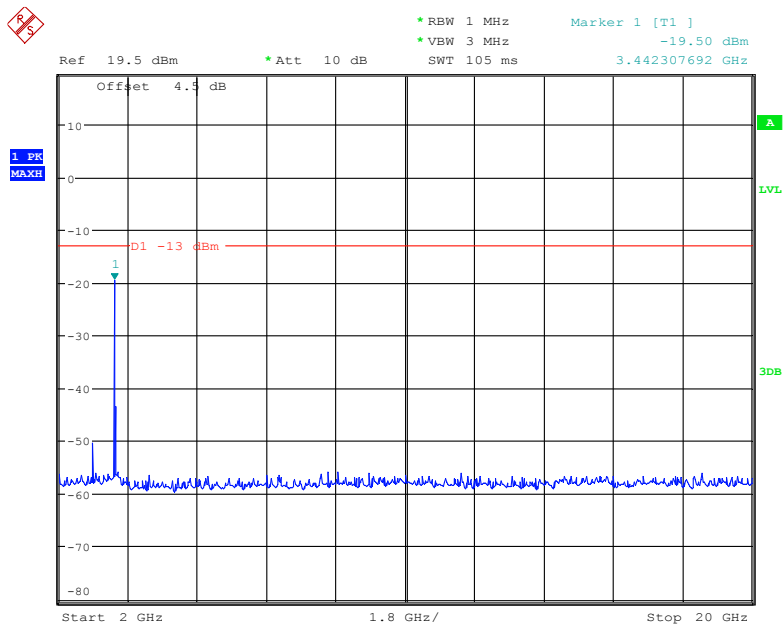
Date: 8.MAR.2018 10:11:10
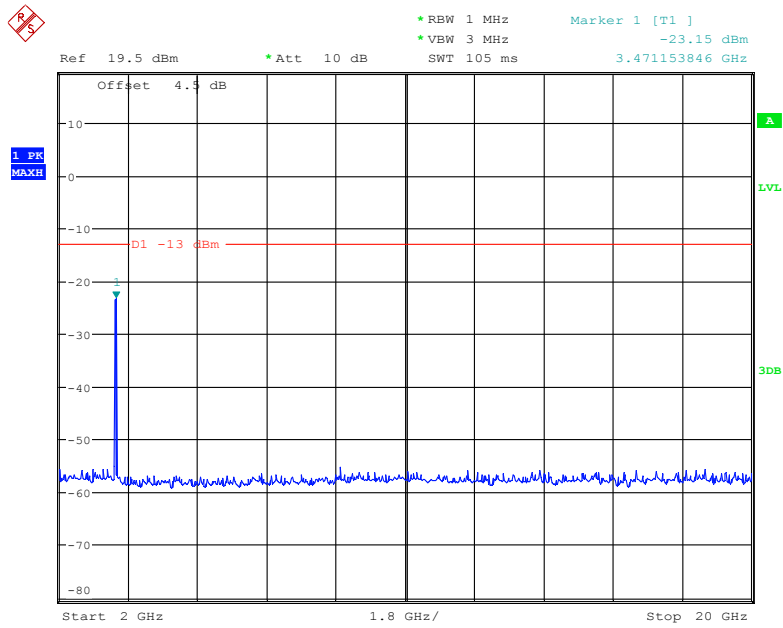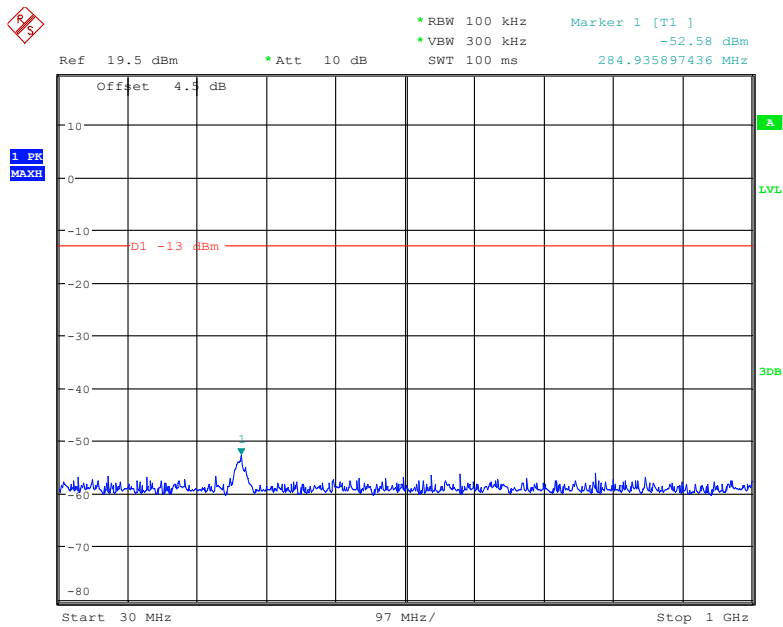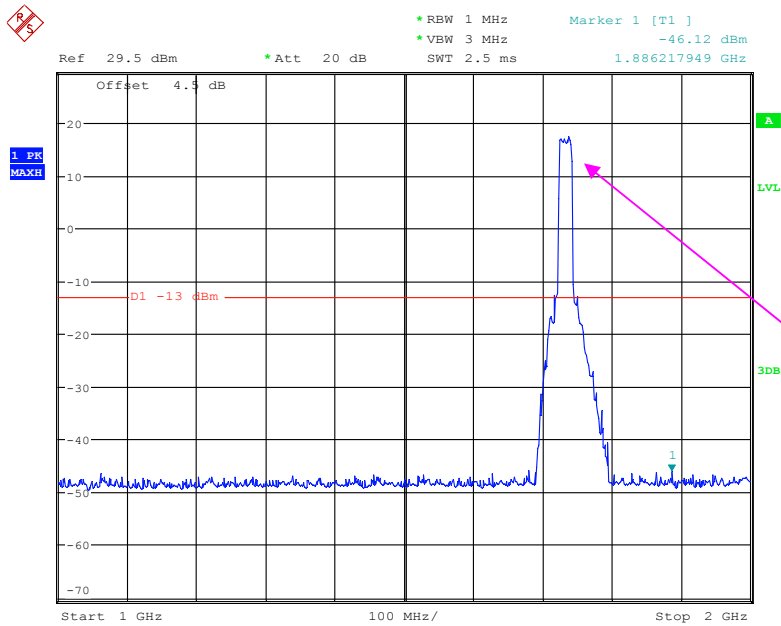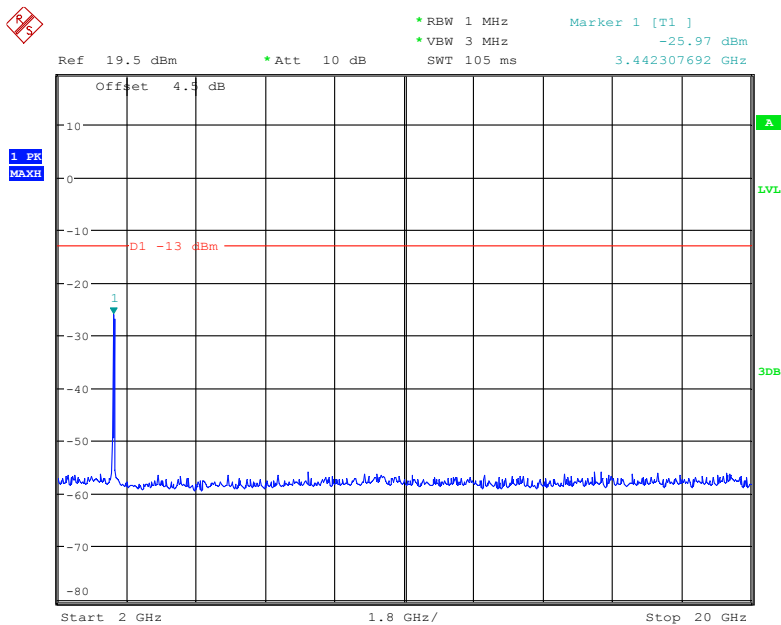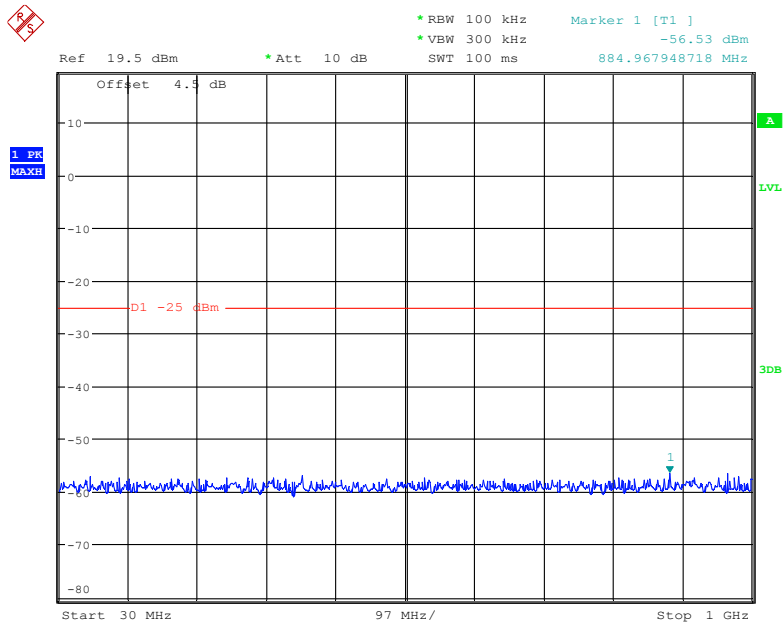
30 MHz - 1 GHz (5.0 MHz, Middle Channel)

```
                                    *RBW 100 kHz    Marker 1 [T1 ]
                                    *VBW 300 kHz              -47.66 dBm
        Ref  19.5 dBm    *Att 10 dB  SWT 100 ms    283.381410256 MHz
           Offset  4.5 dB                                              A

         -10

1 PK
MAXH      -0                                                          LVL

         --10
              -D1 -13 dBm

         --20

         --30
                                                                     3DB

         --40

         --50       1

         --60

         --70

         -80
        Start 30 MHz           97 MHz/              Stop 1 GHz
```

Date: 8.MAR.2018 10:14:06

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

```
                                    *RBW 1 MHz     Marker 1 [T1 ]
                                    *VBW 3 MHz                -45.48 dBm
        Ref  29.5 dBm    *Att 20 dB  SWT 2.5 ms    1.817307692 GHz
           Offset  4.5 dB                                              A

         -20

1 PK
MAXH      -10                                                         LVL

         -0

         --10
              -D1 -13 dBm

         --20

         --30
                                                                     3DB

         --40
                                           1
         --50

         --60

         --70
        Start 1 GHz           100 MHz/             Stop 2 GHz
```

Fundamental test

Date: 8.MAR.2018 10:08:34

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

```
                                    *RBW 1 MHz      Marker 1 [T1 ]
                                    *VBW 3 MHz              -19.85 dBm
         Ref  19.5 dBm    *Att  10 dB   SWT 105 ms     3.442307692 GHz
            Offset   4.5 dB                                            A

 1 PK
 MAXH                                                                  LVL

               D1 -13 dBm

                                                                      3DB



 Start  2 GHz              1.8 GHz/              Stop  20 GHz
```
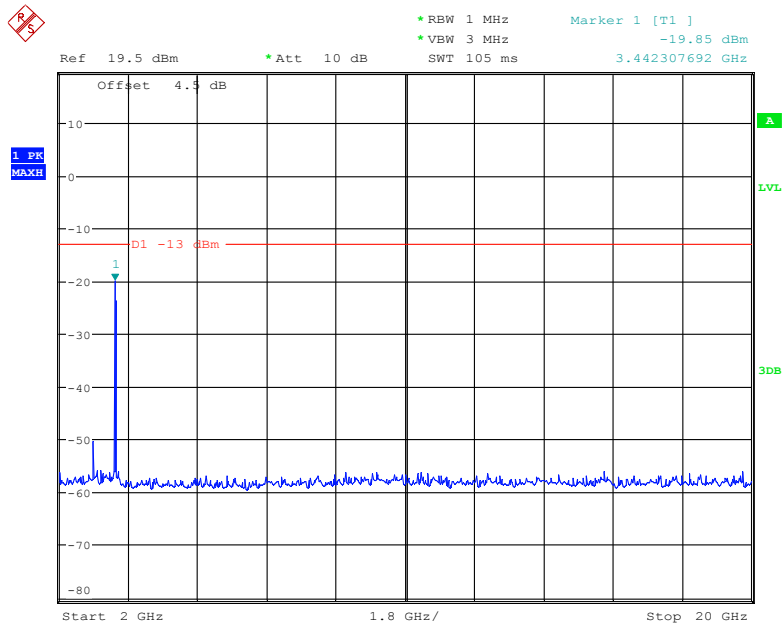
Date: 8.MAR.2018 10:11:24

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

```
                                    *RBW 100 kHz    Marker 1 [T1 ]
                                    *VBW 300 kHz            -49.07 dBm
         Ref  19.5 dBm    *Att  10 dB   SWT 100 ms    284.935897436 MHz
            Offset   4.5 dB                                            A

 1 PK
 MAXH                                                                  LVL

               D1 -13 dBm

                                                                      3DB



 Start  30 MHz             97 MHz/               Stop  1 GHz
```

Date: 8.MAR.2018 10:14:20

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

```
                              * RBW  1 MHz       Marker 1 [T1 ]
                              * VBW  3 MHz              -45.76 dBm
   Ref  29.5 dBm    * Att  20 dB    SWT 2.5 ms        1.378205128 GHz
       Offset  4.5 dB                                              A
   1 PK
   MAXH                                                            LVL

                      D1 -13 dBm
                                                                  3DB
```

Fundamental test

Date: 8.MAR.2018 10:08:56

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

```
                              * RBW  1 MHz       Marker 1 [T1 ]
                              * VBW  3 MHz              -22.72 dBm
   Ref  19.5 dBm    * Att  10 dB    SWT 105 ms        3.442307692 GHz
       Offset  4.5 dB                                              A
   1 PK
   MAXH                                                            LVL

                      D1 -13 dBm
                                                                  3DB
```

Date: 8.MAR.2018 10:12:36

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

```
                                    *RBW 100 kHz    Marker 1 [T1 ]
                                    *VBW 300 kHz              -47.63 dBm
        Ref  19.5 dBm    *Att  10 dB   SWT 100 ms    283.381410256 MHz
           Offset  4.5 dB                                              A

1 PK    -10
MAXH    -0                                                            LVL

        --10
        D1 -13 dBm

        --20

        --30

        --40                                                         3DB

        --50     1

        -60

        --70

        -80
        Start  30 MHz           97 MHz/              Stop  1 GHz
```

Date: 8.MAR.2018 10:14:37

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

```
                                    *RBW 1 MHz     Marker 1 [T1 ]
                                    *VBW 3 MHz               -45.91 dBm
        Ref  29.5 dBm    *Att  20 dB   SWT 2.5 ms    1.068910256 GHz
           Offset  4.5 dB                                              A

        -20
1 PK
MAXH    -10                                                           LVL

        -0

        --10
        D1 -13 dBm

        --20

        --30                                                         3DB

        --40                                          Fundamental test
             1
        --50

        --60

        --70
        Start  1 GHz           100 MHz/              Stop  2 GHz
```

Date: 8.MAR.2018 10:09:29

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

Date: 8.MAR.2018 10:12:50

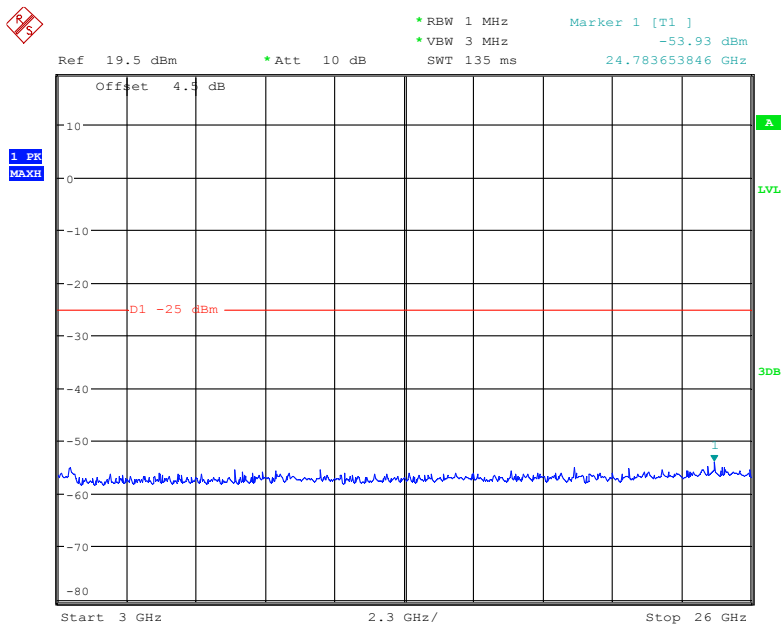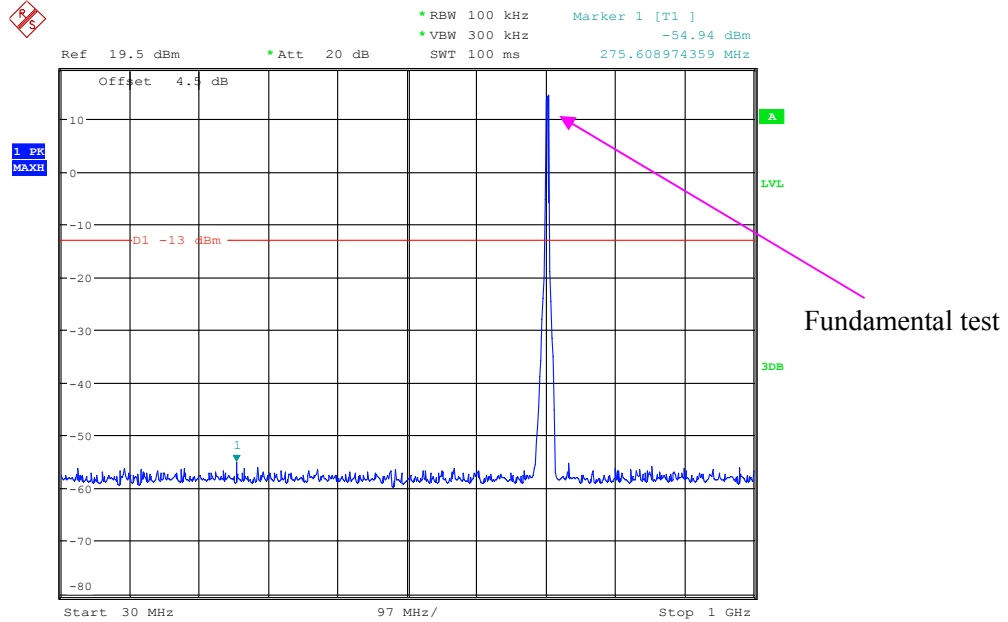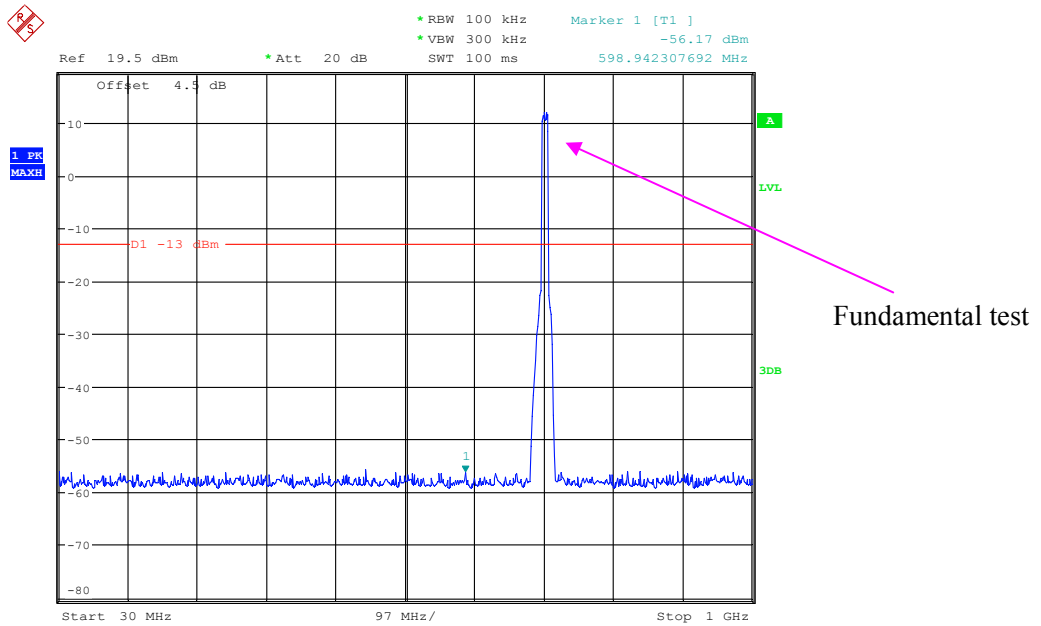## 30 MHz - 1 GHz (20.0 MHz, Middle Channel)

Date: 8.MAR.2018 10:14:52

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

```
                                    *RBW  1 MHz      Marker 1 [T1 ]
                                    *VBW  3 MHz              -46.12 dBm
          Ref   29.5 dBm    *Att  20 dB    SWT 2.5 ms    1.886217949 GHz
             Offset  4.5 dB
                                                                          A
     -20
1 PK
MAXH -10                                                                 LVL
     -0
     --10
            D1 -13 dBm
     --20
                                                                         3DB
     --30
     --40
     --50                                                  1
     --60
     --70
          Start  1 GHz           100 MHz/            Stop  2 GHz
```

Date: 8.MAR.2018 10:09:56

Fundamental test

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

```
                                    *RBW  1 MHz      Marker 1 [T1 ]
                                    *VBW  3 MHz              -25.97 dBm
          Ref   19.5 dBm    *Att  10 dB    SWT 105 ms    3.442307692 GHz
             Offset  4.5 dB
                                                                          A
     -10
1 PK
MAXH -0                                                                  LVL
     --10
            D1 -13 dBm
     --20
         1
     --30
                                                                         3DB
     --40
     --50
     --60
     --70
     --80
          Start  2 GHz           1.8 GHz/            Stop  20 GHz
```

Date: 8.MAR.2018 10:13:03

LTE Band 7:

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


```
                                      *RBW 100 kHz    Marker 1 [T1 ]
                                      *VBW 300 kHz              -56.53 dBm
       Ref  19.5 dBm      *Att  10 dB  SWT 100 ms     884.967948718 MHz
          Offset   4.5 dB

     -10

1 PK
MAXH  -0

     --10

     --20
        D1 -25 dBm
     --30

     --40

     --50
                                                        1

     --70

     -80
       Start  30 MHz              97 MHz/              Stop  1 GHz
```

Date: 27.MAR.2018 11:07:41

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


```
                                      *RBW 1 MHz     Marker 1 [T1 ]
                                      *VBW 3 MHz              -46.95 dBm
       Ref  28 dBm       *Att  20 dB  SWT 5 ms       2.112179487 GHz
          Offset   4.5 dB

     -20

1 PK
MAXH  -10

     -0

     --10

     --20
        D1 -25 dBm
     --30

     --40
                                          1
     --50

     --60

     --70
       Start  1 GHz              200 MHz/             Stop  3 GHz
```

Fundamental test
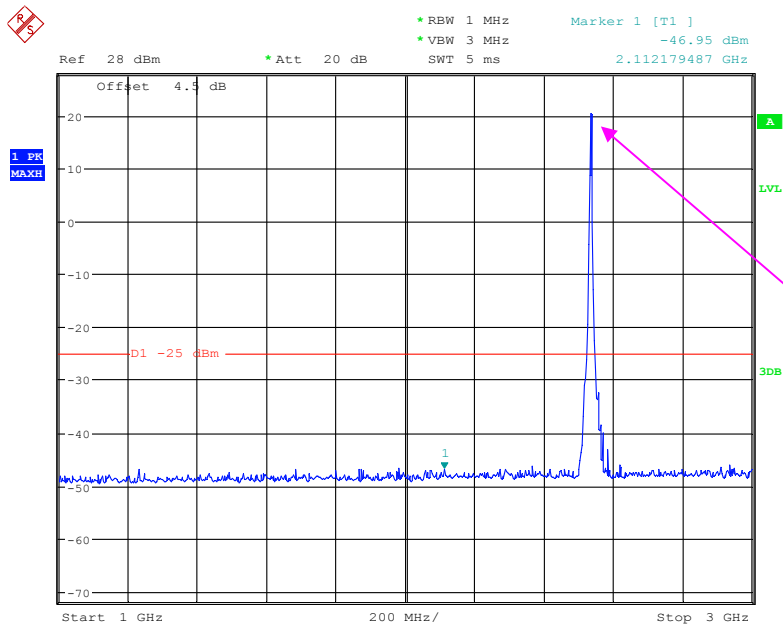
Date: 27.MAR.2018 11:00:31

3.0 GHz – 26 GHz (5.0 MHz, Middle Channel)

```
                              *RBW 1 MHz        Marker 1 [T1 ]
                              *VBW 3 MHz                -52.39 dBm
      Ref  19.5 dBm    *Att  10 dB    SWT 135 ms      3.405448718 GHz
         Offset  4.5 dB                                              A

  1 PK
  MAXH                                                              LVL

                                                                   3DB

      D1 -25 dBm

  Start 3 GHz          2.3 GHz/              Stop  26 GHz
```
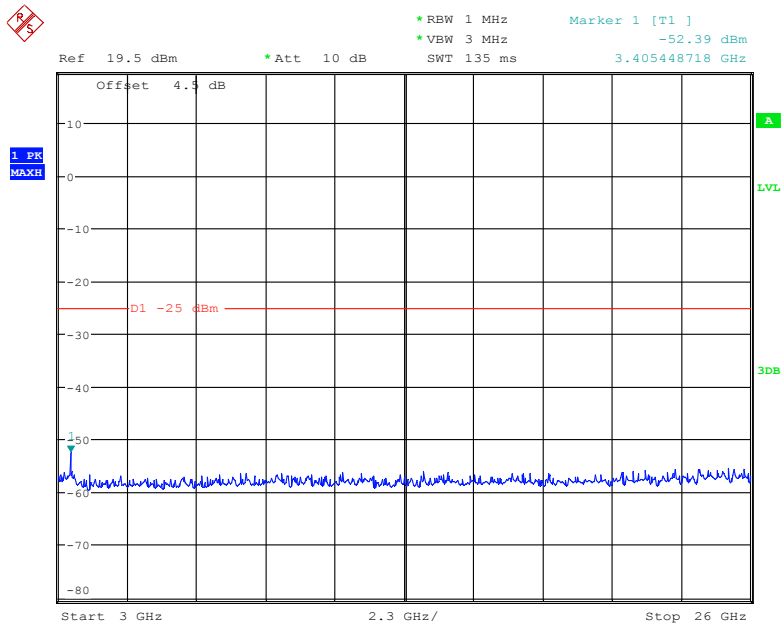
Date: 27.MAR.2018 11:05:36

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

```
                              *RBW 100 kHz       Marker 1 [T1 ]
                              *VBW 300 kHz               -56.14 dBm
      Ref  19.5 dBm    *Att  10 dB    SWT 100 ms    196.330128205 MHz
         Offset  4.5 dB                                              A

  1 PK
  MAXH                                                              LVL

                                                                   3DB

      D1 -25 dBm

  Start 30 MHz         97 MHz/               Stop  1 GHz
```
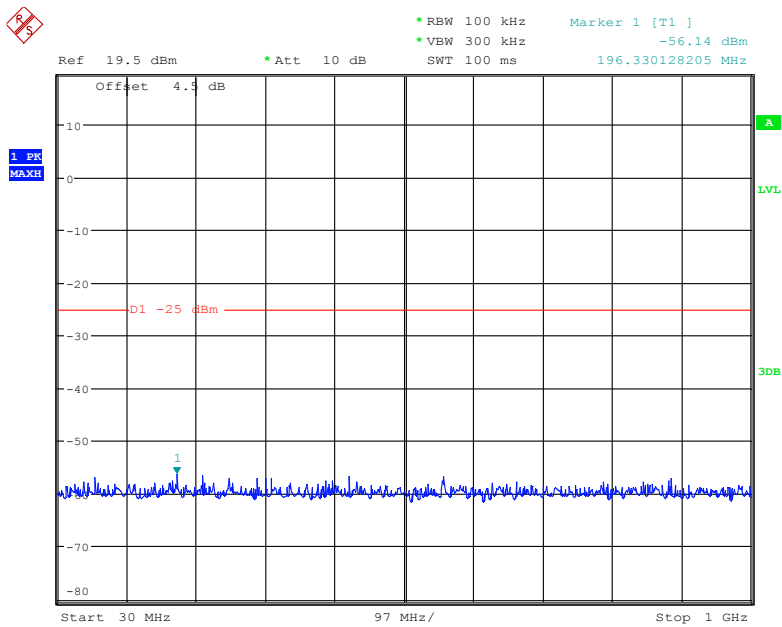
Date: 27.MAR.2018 11:07:54

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

```
                                    *RBW 1 MHz      Marker 1 [T1 ]
                                    *VBW 3 MHz              -47.72 dBm
        Ref  28 dBm      *Att  20 dB   SWT 5 ms      1.349358974 GHz
```
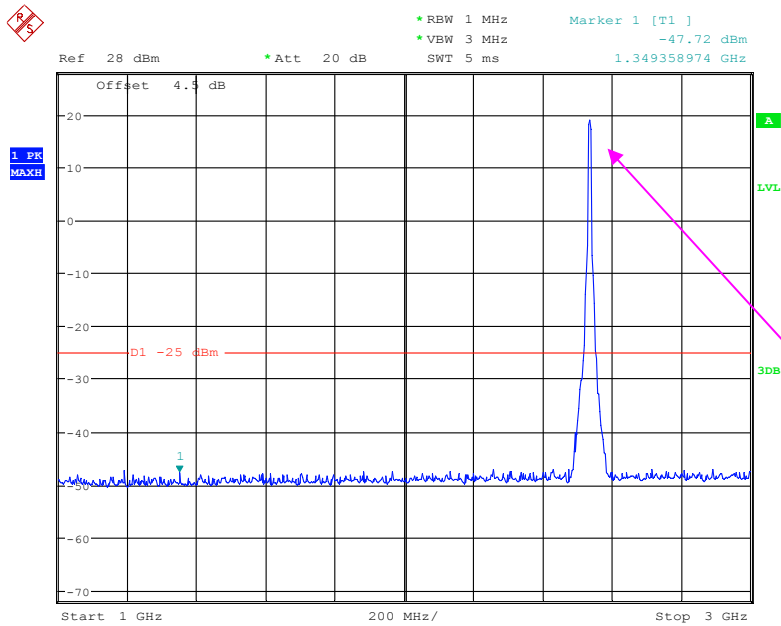
Fundamental test

Date: 27.MAR.2018 11:02:05

3 GHz – 26 GHz (10.0 MHz, Middle Channel)

```
                                    *RBW 1 MHz      Marker 1 [T1 ]
                                    *VBW 3 MHz              -54.78 dBm
        Ref  19.5 dBm    *Att  10 dB   SWT 135 ms   25.631410256 GHz
```
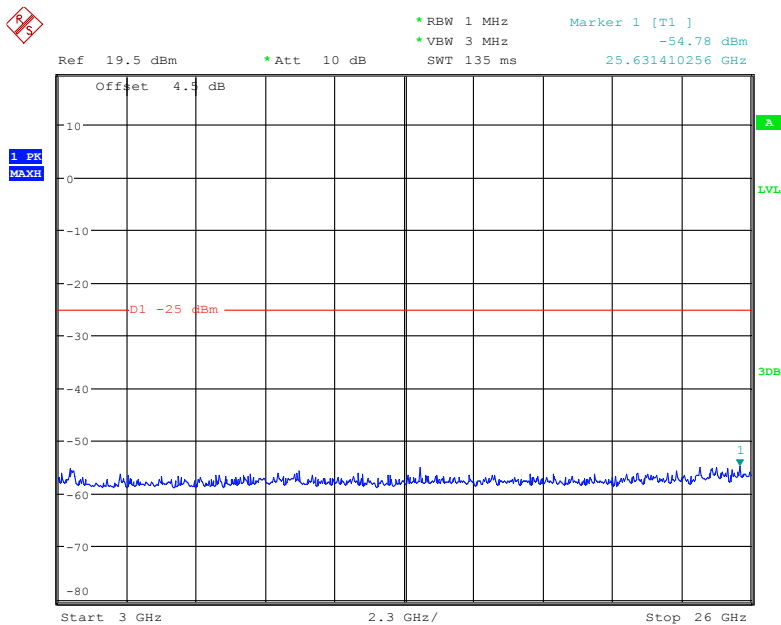
Date: 27.MAR.2018 11:05:16

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

```
                                    *RBW 100 kHz    Marker 1 [T1 ]
                                    *VBW 300 kHz              -55.76 dBm
        Ref  19.5 dBm     *Att  10 dB    SWT 100 ms     765.272435897 MHz
           Offset  4.5 dB                                                    A
      10
1 PK
MAXH   0                                                                     LVL
      -10
      -20
      -D1 -25 dBm                                                            3DB
      -30
      -40
      -50
                                                      1
      -70
      -80
        Start  30 MHz              97 MHz/                   Stop  1 GHz
```
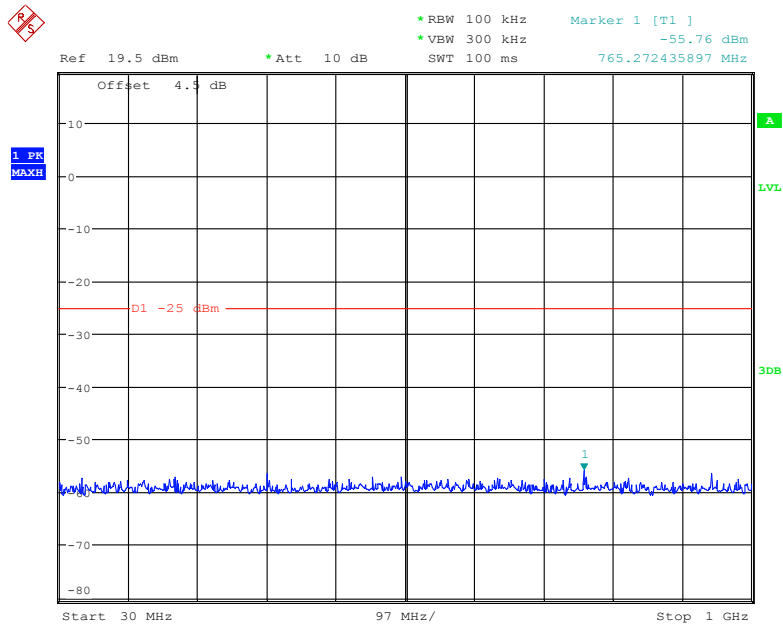
Date: 27.MAR.2018 11:08:13

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

```
                                    *RBW 1 MHz     Marker 1 [T1 ]
                                    *VBW 3 MHz               -47.38 dBm
        Ref  28 dBm       *Att  20 dB    SWT 5 ms      1.971153846 GHz
           Offset  4.5 dB                                                    A
      20
1 PK
MAXH  10                                                                     LVL
       0
      -10
      -20
      -D1 -25 dBm                                                            3DB
      -30
      -40               1
      -60
      -70
        Start  1 GHz               200 MHz/                   Stop  3 GHz
```
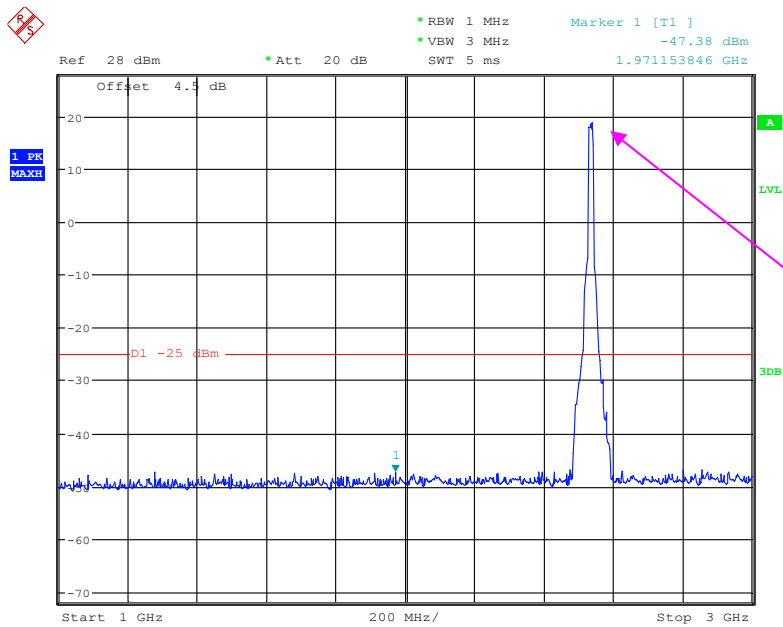
Fundamental test

Date: 27.MAR.2018 11:02:30

3 GHz – 26 GHz (15.0 MHz, Middle Channel)


```
                                        *RBW 1 MHz        Marker 1 [T1 ]
                                        *VBW 3 MHz                -54.47 dBm
        Ref  19.5 dBm      *Att  10 dB  SWT 135 ms        3.405448718 GHz
            Offset  4.5 dB                                                    A

  1 PK
  MAXH                                                                        LVL

                                                                             3DB

  1


        Start 3 GHz               2.3 GHz/              Stop 26 GHz
```
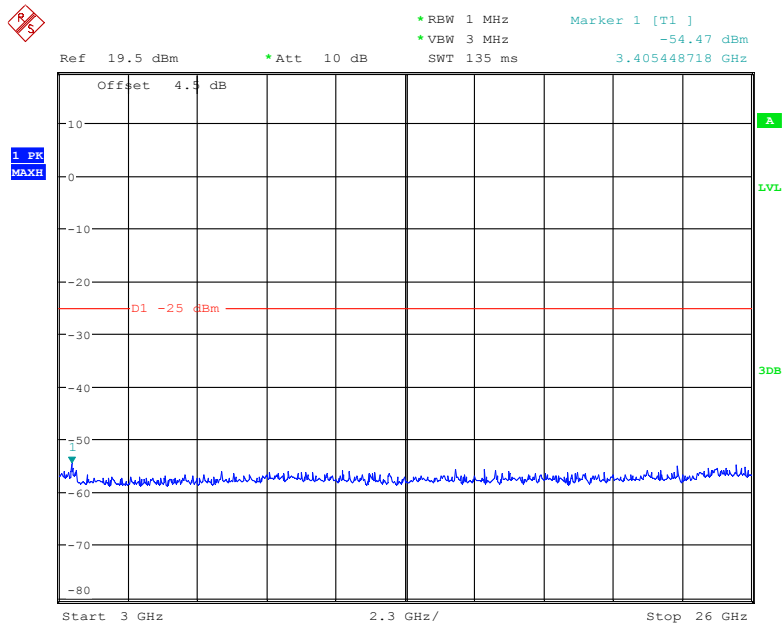
Date: 27.MAR.2018 11:04:57

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


```
                                        *RBW 100 kHz      Marker 1 [T1 ]
                                        *VBW 300 kHz              -56.78 dBm
        Ref  19.5 dBm      *Att  10 dB  SWT 100 ms        842.996794872 MHz
            Offset  4.5 dB                                                    A

  1 PK
  MAXH                                                                        LVL

                                                                             3DB

                                                          1


        Start 30 MHz              97 MHz/               Stop 1 GHz
```
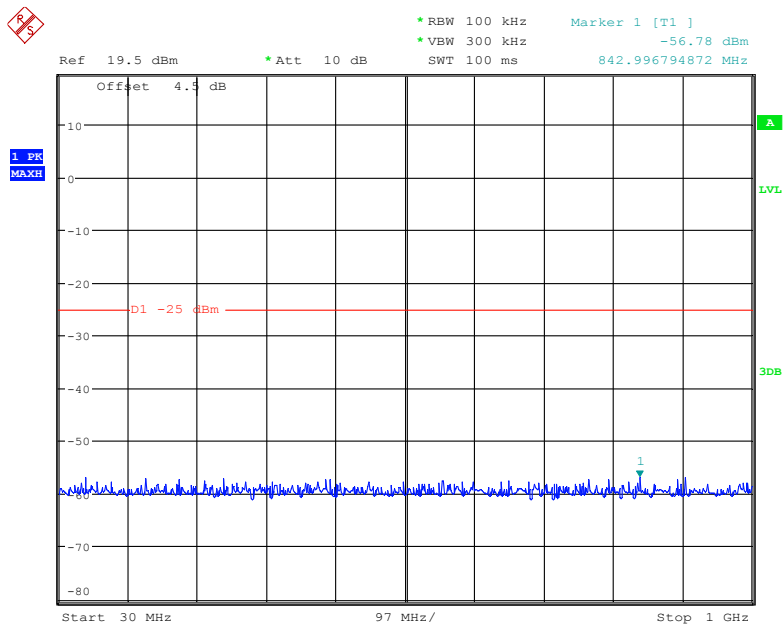
Date: 27.MAR.2018 11:08:34

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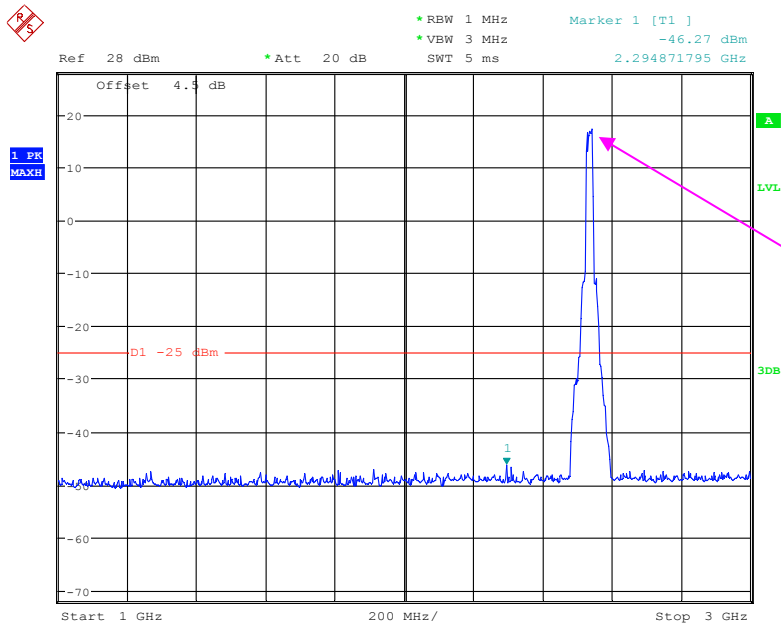
Fundamental test

Date: 27.MAR.2018 11:02:56

3 GHz – 26 GHz (20.0 MHz, Middle Channel)

Date: 27.MAR.2018 11:03:40

LTE Band 17:

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

```
                                    *RBW  100 kHz    Marker 1 [T1 ]
                                    *VBW  300 kHz            -54.94 dBm
        Ref  19.5 dBm    *Att  20 dB    SWT  100 ms    275.608974359 MHz
```

Fundamental test

```
Date: 8.MAR.2018  10:32:40
```

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

```
                                    *RBW  1 MHz      Marker 1 [T1 ]
                                    *VBW  3 MHz              -18.78 dBm
        Ref  19.5 dBm    *Att  10 dB    SWT  55 ms     2.125000000 GHz
```
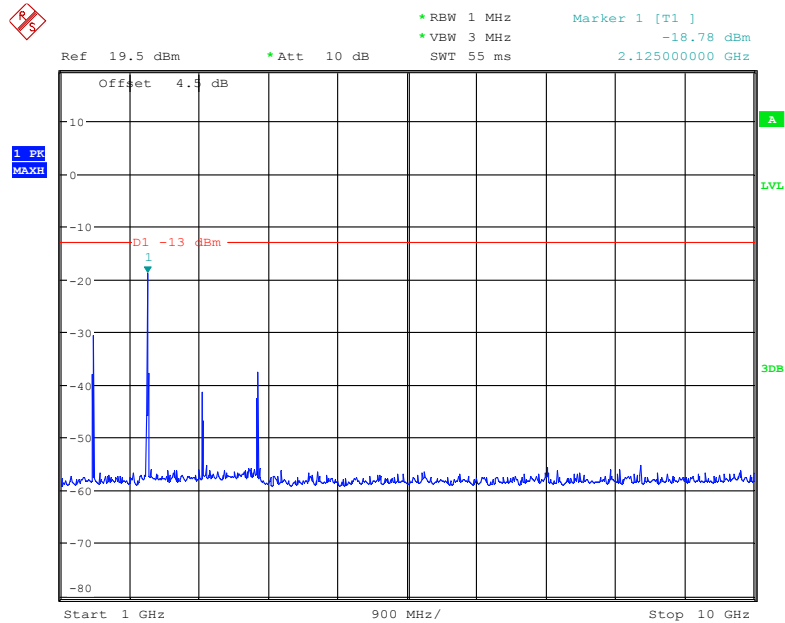
```
Date: 8.MAR.2018  10:33:50
```

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

Fundamental test

Date: 8.MAR.2018 10:33:12

1 GHz – 10 GHz (10.0 MHz, Middle Channel)
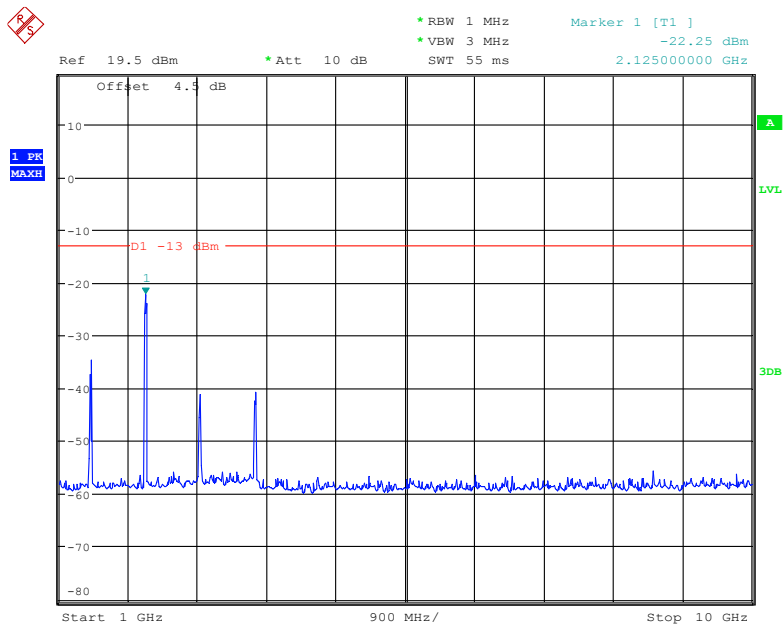
Date: 8.MAR.2018 10:33:35

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

Applicable Standard

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

Test Procedure

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

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

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

Test Data

Environmental Conditions

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

The testing was performed by Nancy Wang on 2018-03-08.

EUT operation mode: Transmitting

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

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
257.37	34.68	325	2.3	H	-62.3	0.32	0	-62.62	-13	49.62
257.37	34.29	55	1.7	V	-62.7	0.32	0	-63.02	-13	50.02
1673.20	53.52	109	2.0	H	-53.6	1.30	8.90	-46.00	-13	33.00
1673.20	53.34	323	1.4	V	-53.1	1.30	8.90	-45.50	-13	32.50
2509.80	54.58	305	2.0	H	-48.9	2.60	10.20	-41.30	-13	28.30
2509.80	52.56	173	1.1	V	-50.4	2.60	10.20	-42.80	-13	29.80
3346.40	45.18	67	1.6	H	-55.2	1.50	11.70	-45.00	-13	32.00
3346.40	43.81	183	1.2	V	-56.6	1.50	11.70	-46.40	-13	33.40
WCDMA Mode, Middle channel										
221.67	33.84	230	2.0	H	-63.2	0.30	0	-63.50	-13	50.50
221.67	34.29	35	1.8	V	-62.7	0.30	0	-63.00	-13	50.00
1673.20	44.18	340	1.4	H	-62.9	1.30	8.90	-55.30	-13	42.30
1673.20	49.02	120	2.5	V	-57.5	1.30	8.90	-49.90	-13	36.90
2509.80	44.5	43	1.5	H	-59.0	2.60	10.20	-51.40	-13	38.40
2509.80	47.44	51	1.7	V	-55.5	2.60	10.20	-47.90	-13	34.90
3346.40	43.01	6	2.2	H	-57.3	1.50	11.70	-47.10	-13	34.10
3346.40	42.51	304	1.3	V	-57.9	1.50	11.70	-47.70	-13	34.70

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 24E	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, middle channel										
257.37	34.18	249	2.0	H	-62.8	0.32	0	-63.12	-13	50.12
257.37	33.54	117	1.8	V	-63.5	0.32	0	-63.82	-13	50.82
3760.00	48.47	32	1.1	H	-52.8	1.50	11.80	-42.50	-13	29.50
3760.00	51.09	89	1.2	V	-49.7	1.50	11.80	-39.40	-13	26.40
5640.00	54.29	220	1.1	H	-43.3	1.70	12.40	-32.60	-13	19.60
5640.00	54.42	246	1.6	V	-42.8	1.70	12.40	-32.10	-13	19.10
7520.00	42.66	148	1.6	H	-51.3	1.90	10.70	-42.50	-13	29.50
7520.00	43.18	173	2.0	V	-50.3	1.90	10.70	-41.50	-13	28.50
WCDMA Mode Band II, Middle channel										
221.67	34.57	291	2.2	H	-62.4	0.30	0	-62.70	-13	49.70
221.67	34.02	47	1.7	V	-63.0	0.30	0	-63.30	-13	50.30
3760.00	44.77	76	1.3	H	-56.5	1.50	11.80	-46.20	-13	33.20
3760.00	43.33	225	2.4	V	-57.4	1.50	11.80	-47.10	-13	34.10
5640.00	45.3	271	1.8	H	-52.3	1.70	12.40	-41.60	-13	28.60
5640.00	43.75	156	1.1	V	-53.5	1.70	12.40	-42.80	-13	29.80

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

Frequency	Receiver	Turntable	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
(MHz)	Reading (dBµV)	Angle Degree	Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Band 2										
Test frequency range:30 MHz ~ 20 GHz										
237.82	33.29	147	1.4	H	-63.7	0.31	0	-64.01	-13	51.01
237.82	33.64	41	1.2	V	-63.4	0.31	0	-63.71	-13	50.71
3760.00	43.46	141	1.9	H	-57.8	1.50	11.80	-47.50	-13	34.50
3760.00	43.11	169	2.0	V	-57.6	1.50	11.80	-47.30	-13	34.30
5640.00	43.23	74	1.4	H	-54.4	1.70	12.40	-43.70	-13	30.70
5640.00	44.62	23	1.7	V	-52.6	1.70	12.40	-41.90	-13	28.90
Band 4										
Test frequency range:30 MHz ~ 18 GHz										
237.82	34.13	17	1.7	H	-62.9	0.31	0	-63.21	-13	50.21
237.82	33.57	93	1.7	V	-63.4	0.31	0	-63.71	-13	50.71
3465.00	44.03	110	2.4	H	-56.4	1.50	12.00	-45.90	-13	32.90
3465.00	43.11	232	2.4	V	-58.0	1.50	12.00	-47.50	-13	34.50
5197.50	44.41	345	1.2	H	-54.2	1.60	12.10	-43.70	-13	30.70
5197.50	43.52	133	2.2	V	-54.6	1.60	12.10	-44.10	-13	31.10
Band 7										
Test frequency range:30 MHz ~ 26 GHz										
237.82	34.39	305	2.3	H	-62.6	0.31	0	-62.91	-25	37.91
237.82	34.81	351	1.1	V	-62.2	0.31	0	-62.51	-25	37.51
5070.00	44.26	221	1.7	H	-53.6	1.60	12.10	-43.10	-25	18.10
5070.00	43.9	328	1.5	V	-54.0	1.60	12.10	-43.50	-25	18.50
7605.00	44.41	283	1.4	H	-50.8	2.10	10.50	-42.40	-25	17.40
7605.00	43.35	340	1.7	V	-51.6	2.10	10.50	-43.20	-25	18.20
Band 17										
Test frequency range: 30 MHz ~ 10GHz										
237.82	33.27	162	1.8	H	-63.7	0.31	0	-64.01	-13	51.01
237.82	33.61	77	1.6	V	-63.4	0.31	0	-63.71	-13	50.71
1420.00	49.14	132	2.3	H	-58.7	1.60	7.90	-52.40	-13	39.40
1420.00	49.68	165	1.2	V	-58.4	1.60	7.90	-52.10	-13	39.10
2130.00	46.78	344	1.9	H	-55.3	1.30	9.70	-46.90	-13	33.90
2130.00	45.58	242	2.0	V	-57.3	1.30	9.70	-48.90	-13	35.90
2840.00	49.17	146	1.1	H	-54.6	1.80	10.50	-45.90	-13	32.90
2840.00	44.05	4	1.4	V	-59.4	1.80	10.50	-50.70	-13	37.70

Note:
1) Absolute Level = Substituted Level - Cable loss + Antenna Gain
2) Margin = Limit- Absolute Level

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

Applicable Standard

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

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

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

Test Procedure

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

The center of the spectrum analyzer was set to block edge frequency
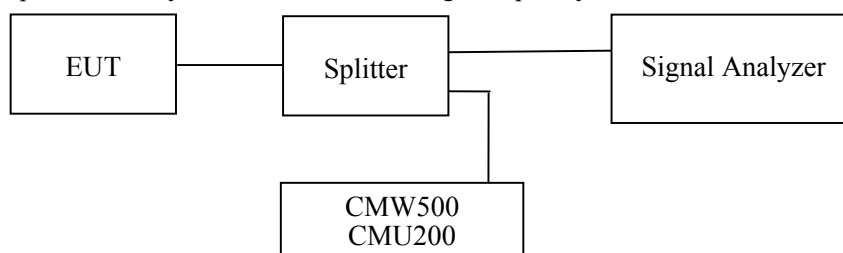
```
┌──────────┐        ┌──────────┐        ┌─────────────────┐
│   EUT    │────────│ Splitter │────────│ Signal Analyzer │
└──────────┘        └──────────┘        └─────────────────┘
                          │
                    ┌──────────┐
                    │ CMW500   │
                    │ CMU200   │
                    └──────────┘
```

Test Data

Environmental Conditions

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

The testing was performed by Nancy Wang on 2018-03-06 and 2018-03-07.

EUT operation mode: Transmitting

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

Cellular Band, Left Band Edge for GSM (GMSK) Mode
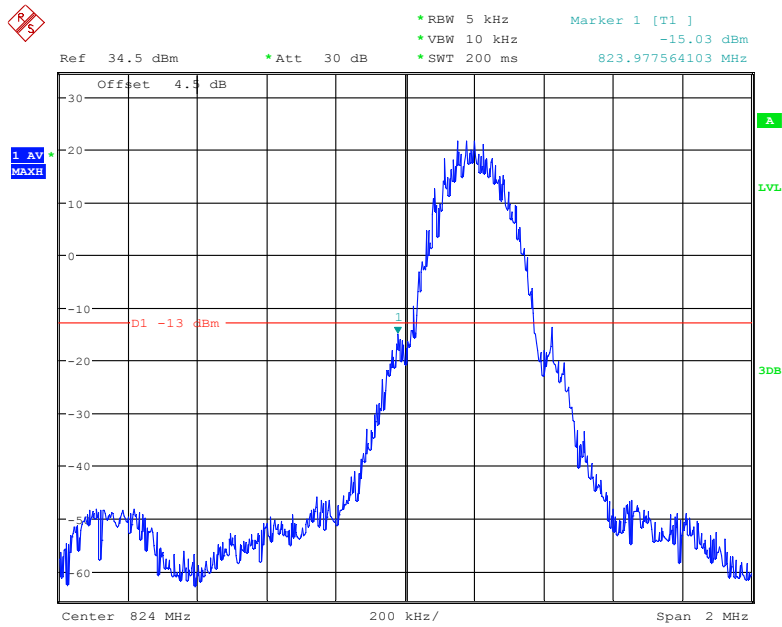
Date: 6.MAR.2018 14:22:55

Cellular Band, Right Band Edge for GSM (GMSK) Mode
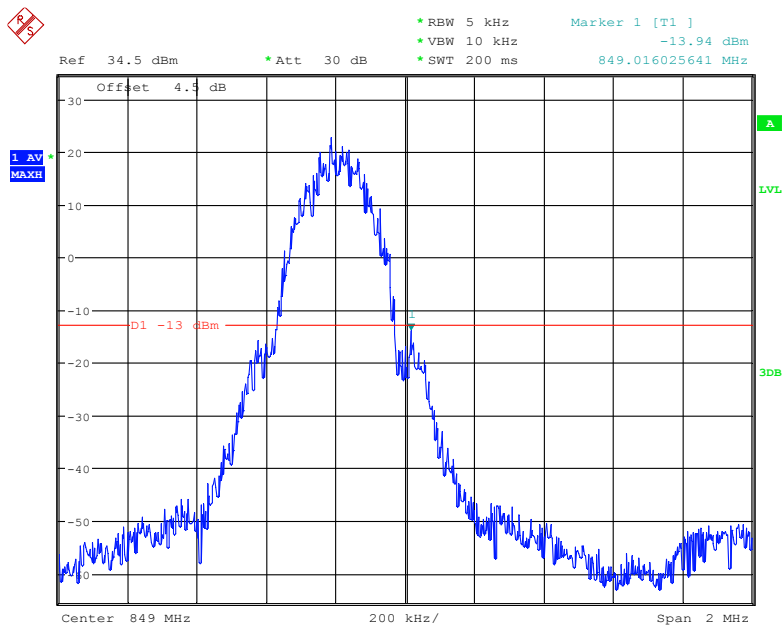
Date: 6.MAR.2018 14:23:49

Cellular Band, Left Band Edge for EDGE Mode
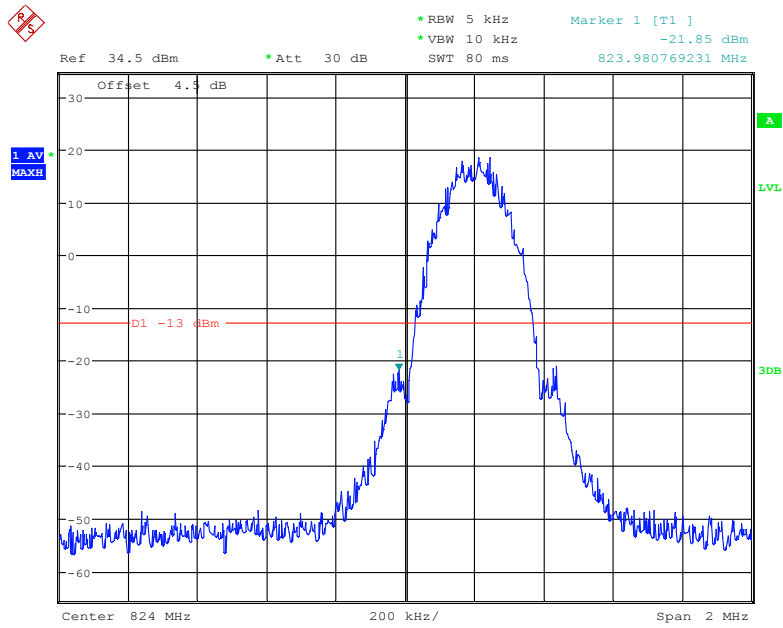
Date: 6.MAR.2018 14:51:39

Cellular Band, Right Band Edge for EDGE Mode
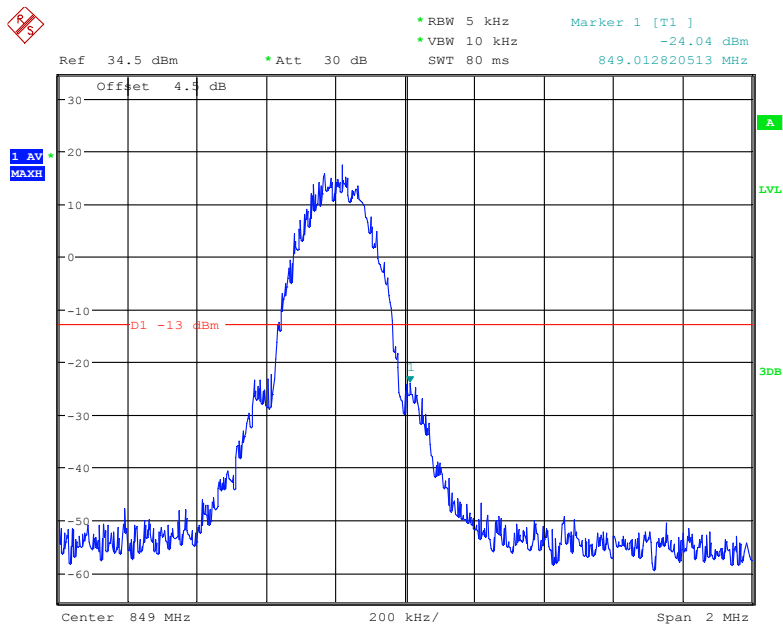
Date: 6.MAR.2018 14:52:22

Cellular Band, Left Band Edge for WCDMA (BPSK) Mode
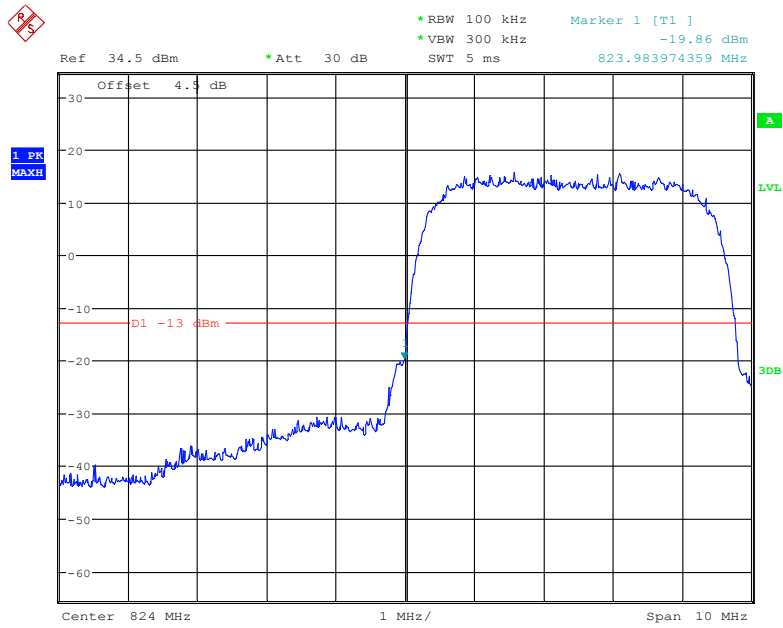
Date: 6.MAR.2018 15:09:27

Cellular Band, Right Band Edge for WCDMA (BPSK) Mode
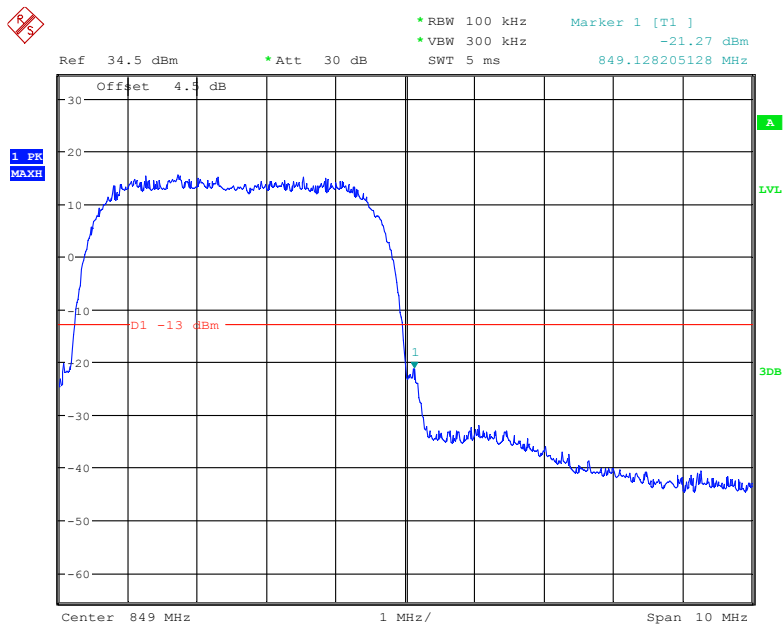
Date: 6.MAR.2018 15:10:27

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

	*RBW 100 kHz	Marker 1 [T1]
	*VBW 300 kHz	-21.14 dBm
Ref 30 dBm	*Att 30 dB SWT 5 ms	823.951923077 MHz

30 Offset 4.5 dB

1 PK
MAXH

A

LVL

D1 -13 dBm

3DB

Center 824 MHz   1 MHz/   Span 10 MHz
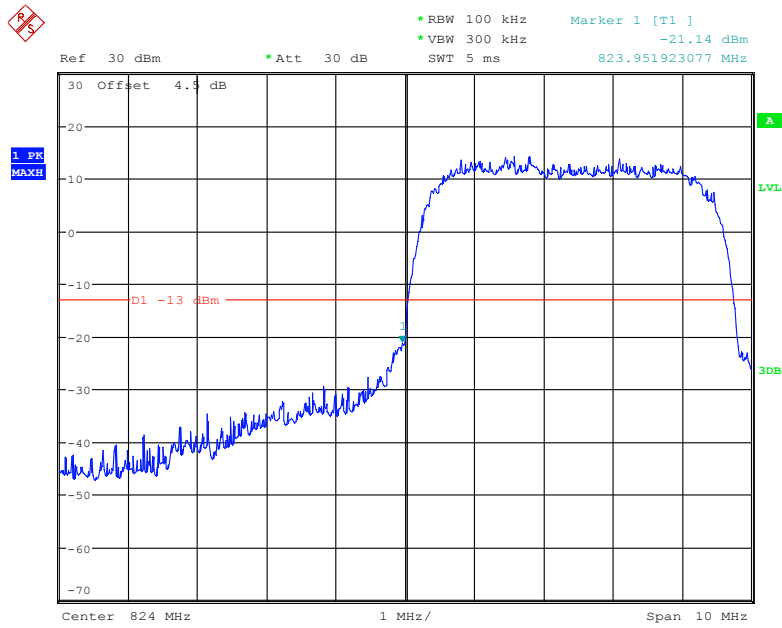
Date: 6.MAR.2018 15:27:29

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

	*RBW 100 kHz	Marker 1 [T1]
	*VBW 300 kHz	-22.09 dBm
Ref 30 dBm	*Att 30 dB SWT 5 ms	849.112179487 MHz

30 Offset 4.5 dB

1 PK
MAXH

A

LVL

D1 -13 dBm

3DB

Center 849 MHz   1 MHz/   Span 10 MHz
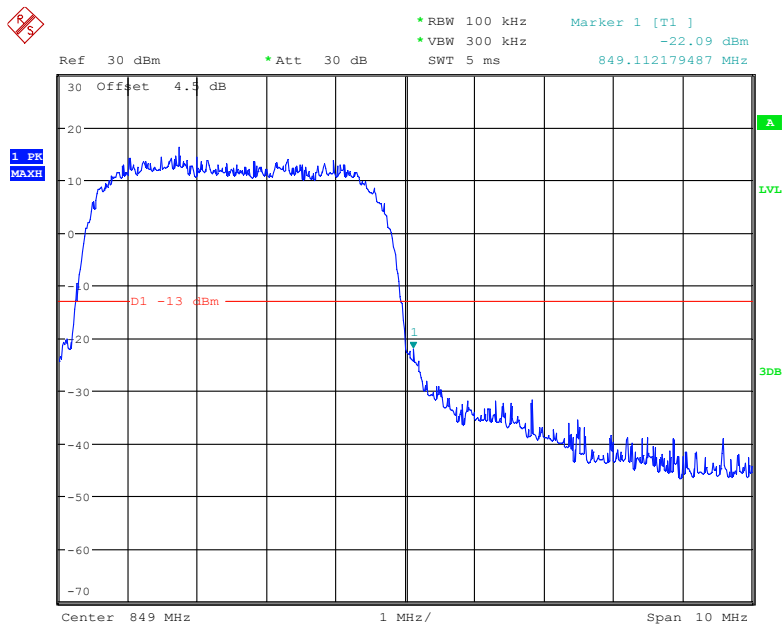
Date: 6.MAR.2018 15:26:59

Cellular Band, Left Band Edge for HSUPA (BPSK) Mode
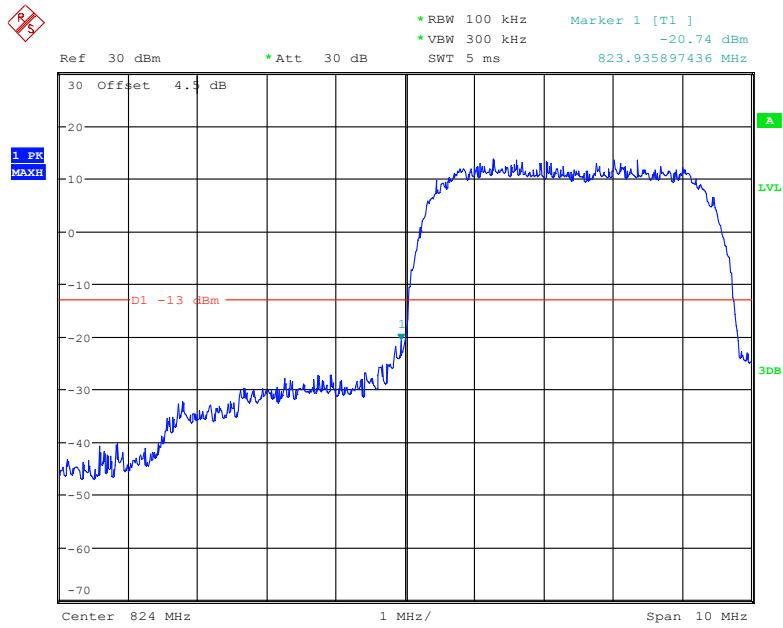
Date: 6.MAR.2018 15:24:26

Cellular Band, Right Band Edge for HSUPA (BPSK) Mode
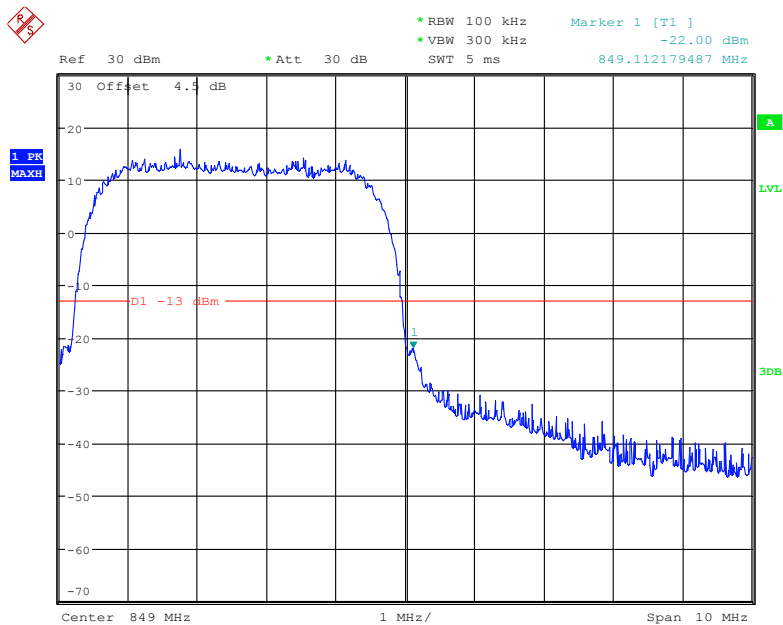
Date: 6.MAR.2018 15:25:41

PCS Band, Left Band Edge for GSM (GMSK) Mode
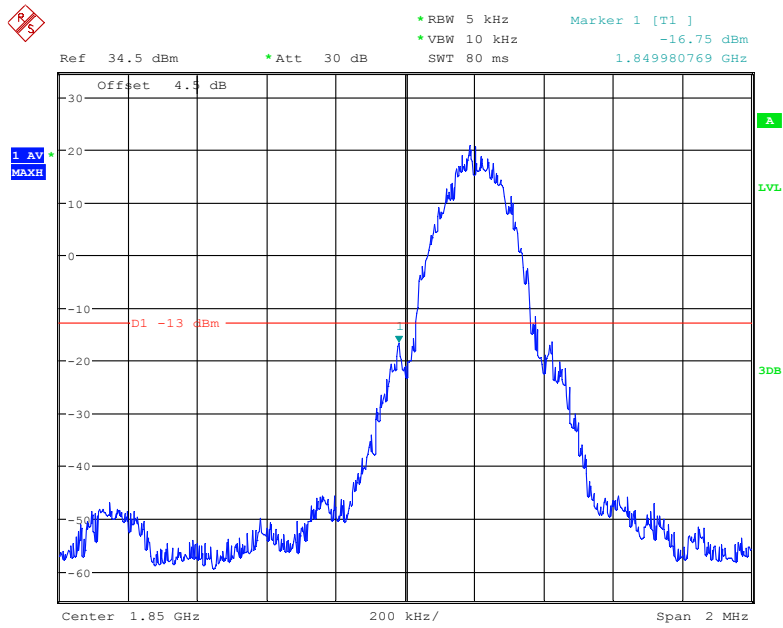
Date: 6.MAR.2018 14:36:03

PCS Band, Right Band Edge for GSM (GMSK) Mode
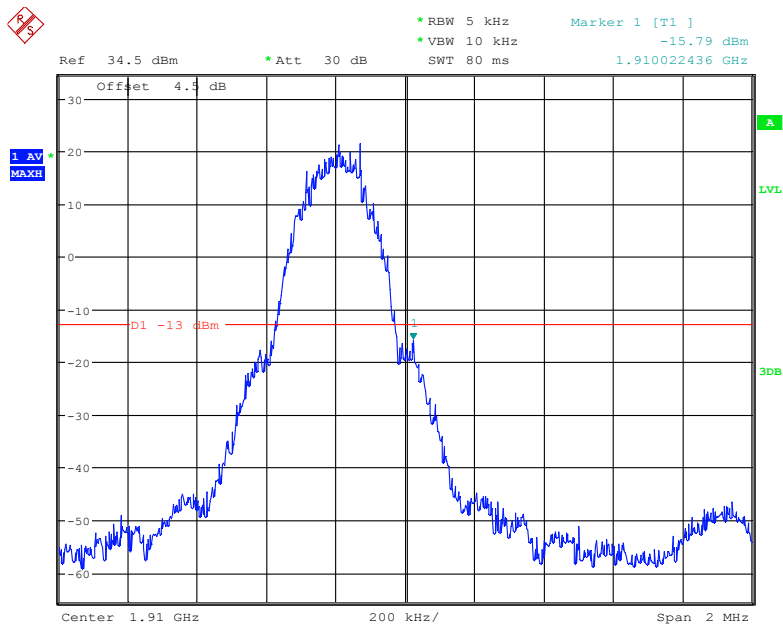
Date: 6.MAR.2018 14:36:58

PCS Band, Left Band Edge for EDGE Mode
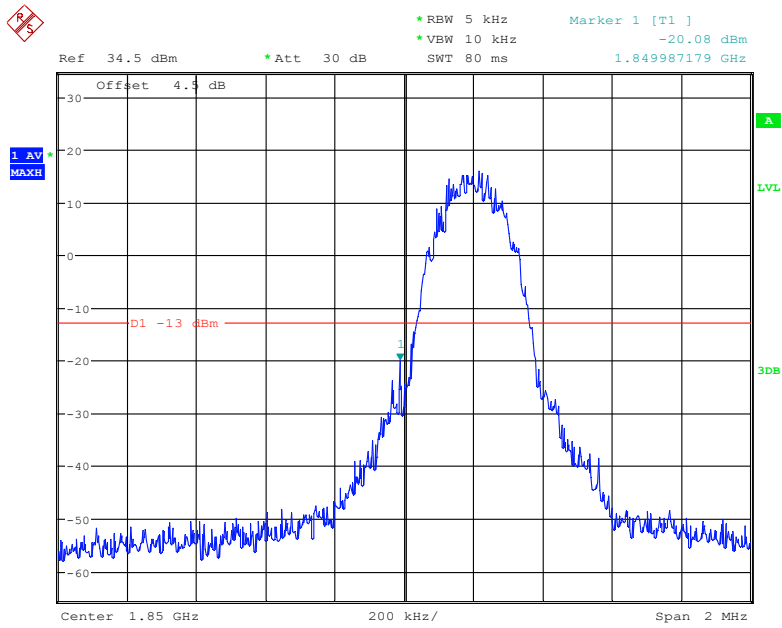
Date: 6.MAR.2018 14:43:01

PCS Band, Right Band Edge for EDGE Mode
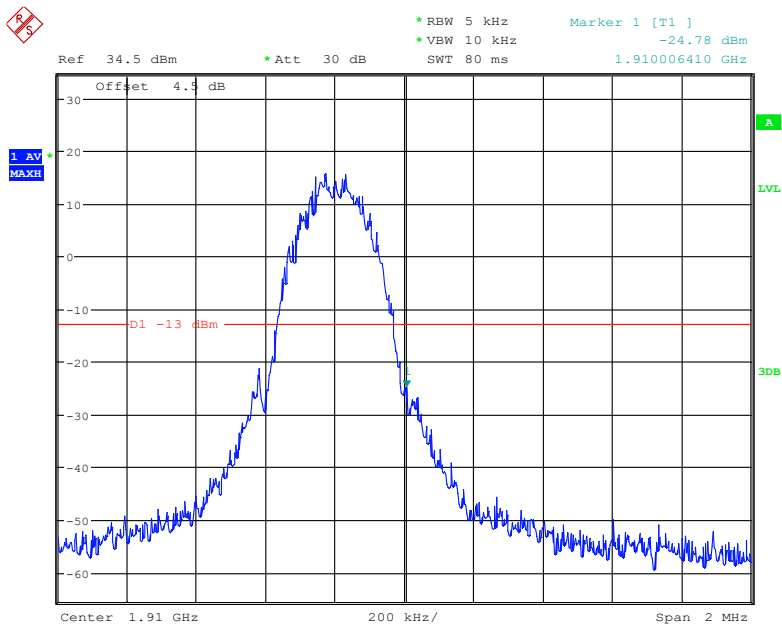
Date: 6.MAR.2018 14:43:48

PCS Band, Left Band Edge for WCDMA (BPSK) Mode
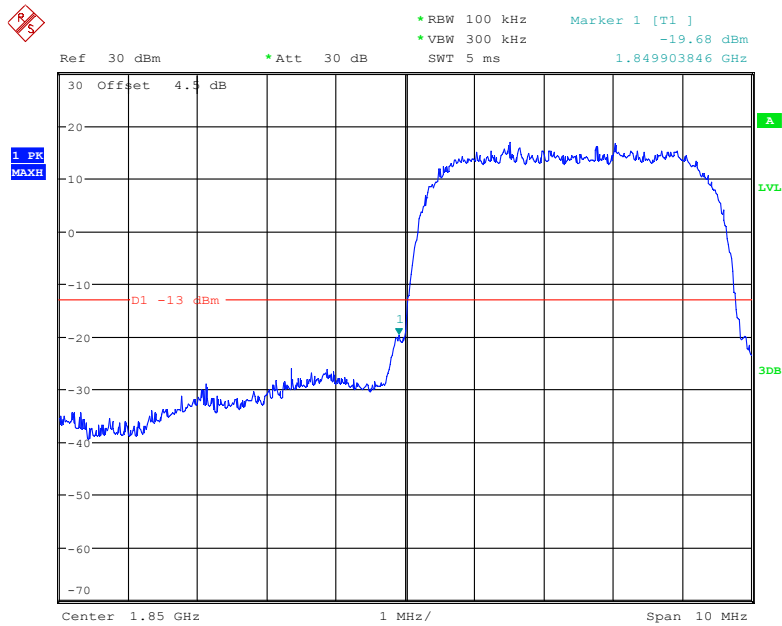
Date: 6.MAR.2018 15:19:22

PCS Band, Right Band Edge for WCDMA (BPSK) Mode
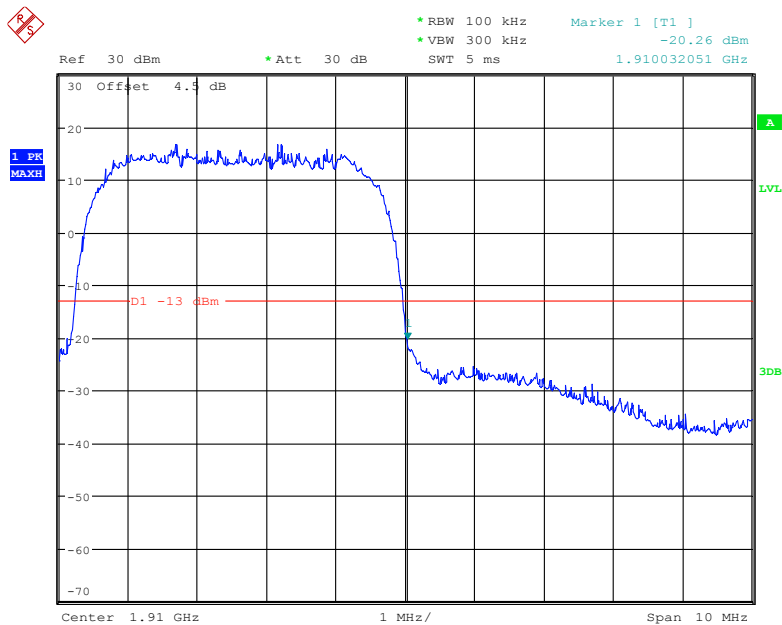
Date: 6.MAR.2018 15:19:52

PCS Band, Left Band Edge for HSDPA (16QAM) Mode
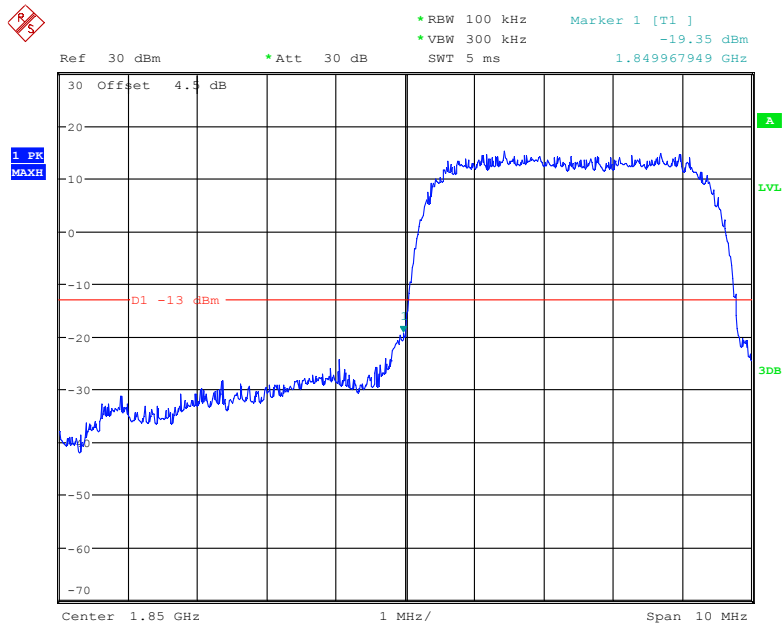
Date: 6.MAR.2018 15:30:32

PCS Band, Right Band Edge for HSDPA (16QAM) Mode
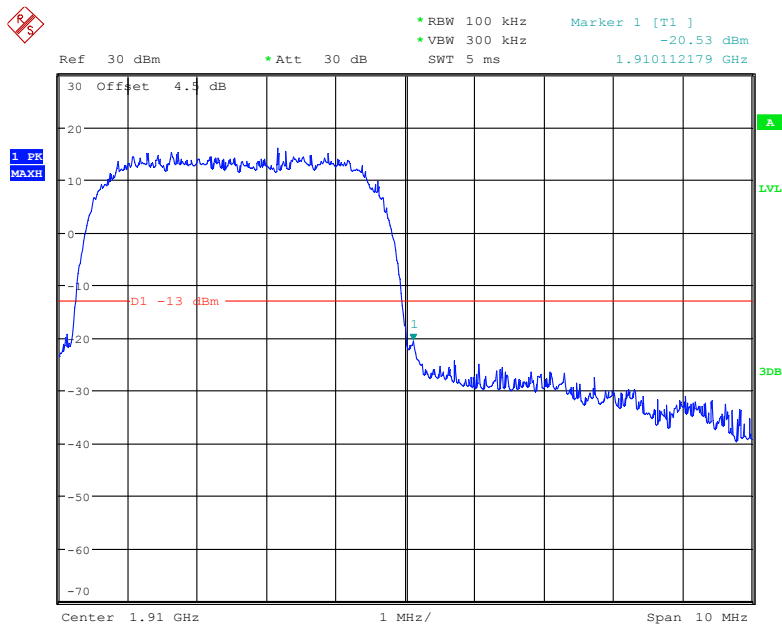
Date: 6.MAR.2018 15:31:06

PCS Band, Left Band Edge for HSUPA (BPSK) Mode
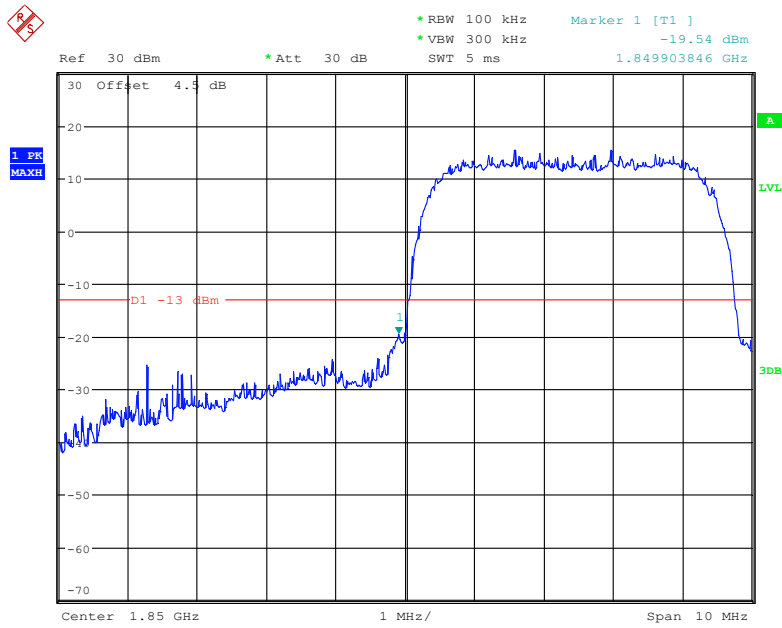
Date: 6.MAR.2018 15:21:20

PCS Band, Right Band Edge for HSUPA (BPSK) Mode
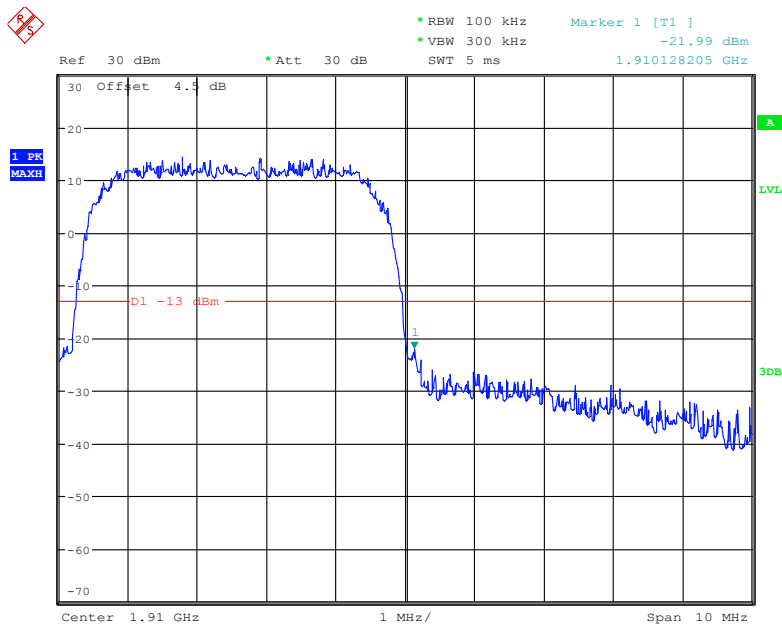
Date: 6.MAR.2018 15:20:48

Band 2:

QPSK (1.4 MHz, FULL RB) - Left Band Edge
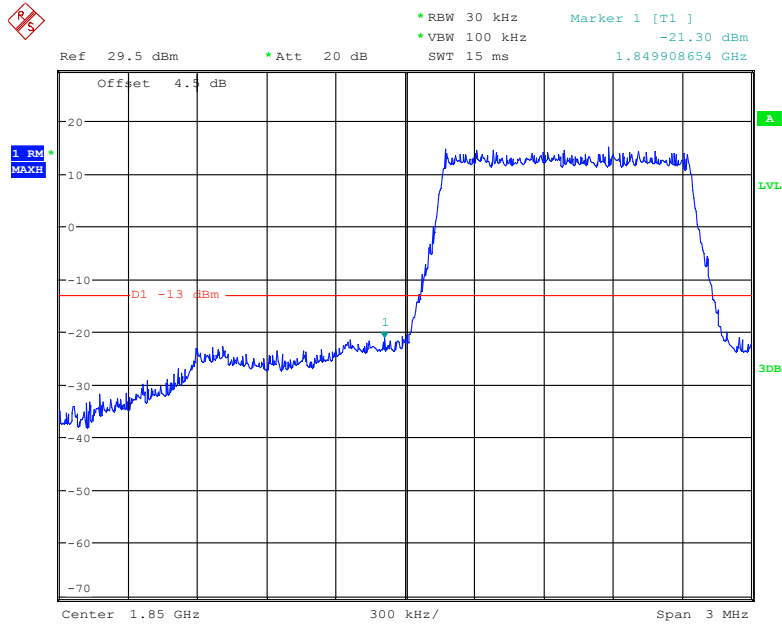
Date: 7.MAR.2018 11:50:06

QPSK (1.4 MHz, FULL RB) - Right Band Edge
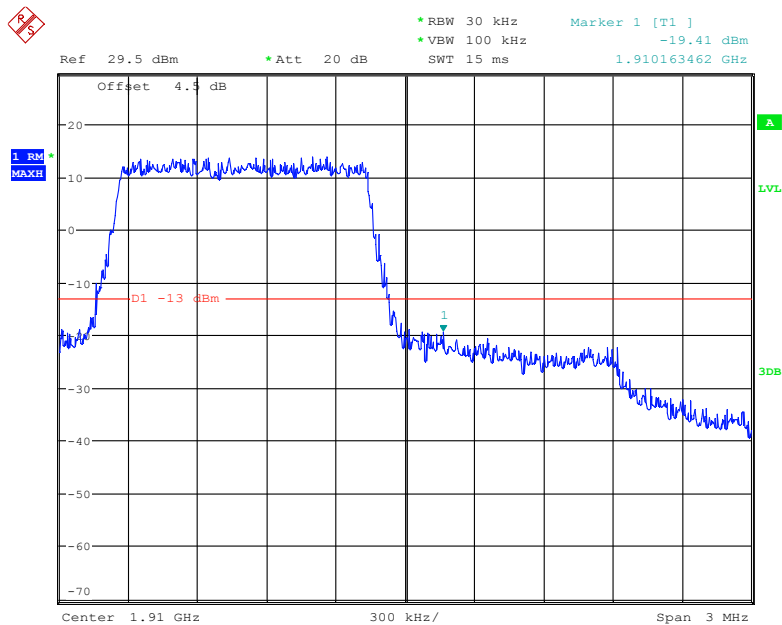
Date: 7.MAR.2018 11:51:31

16-QAM (1.4 MHz, FULL RB) - Left Band Edge
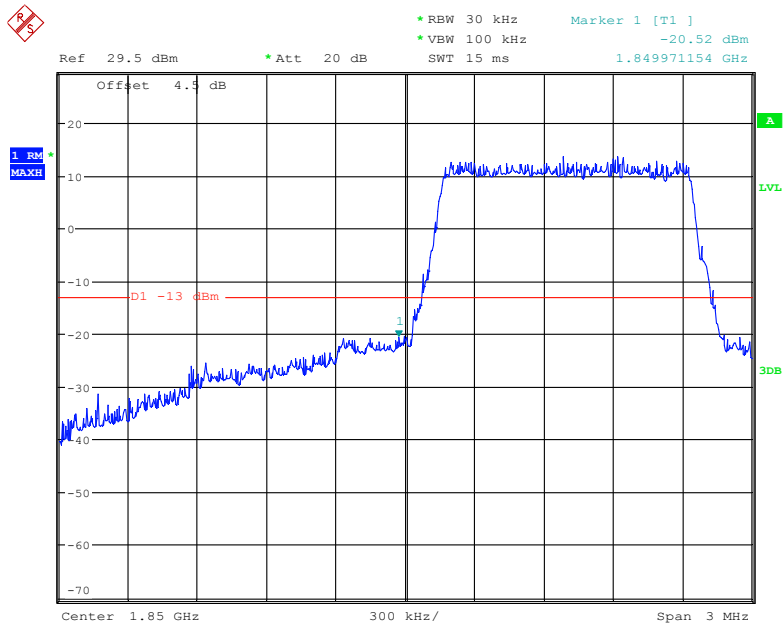
Date: 7.MAR.2018 11:50:31
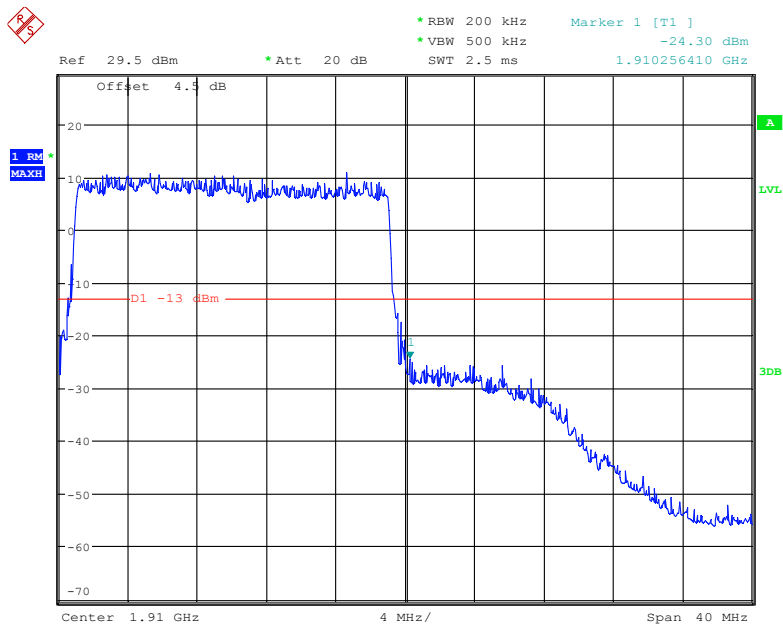
16-QAM (1.4 MHz, FULL RB) - Right Band Edge
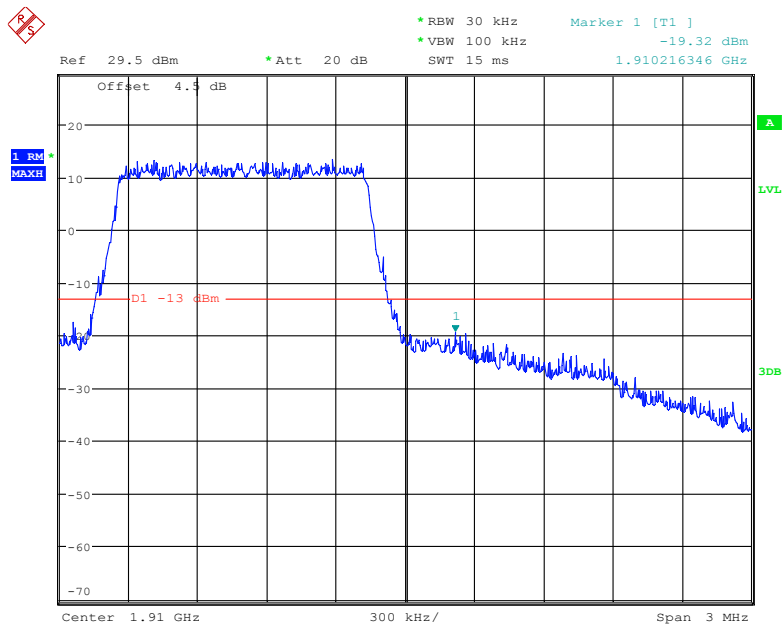
Date: 7.MAR.2018 11:51:11

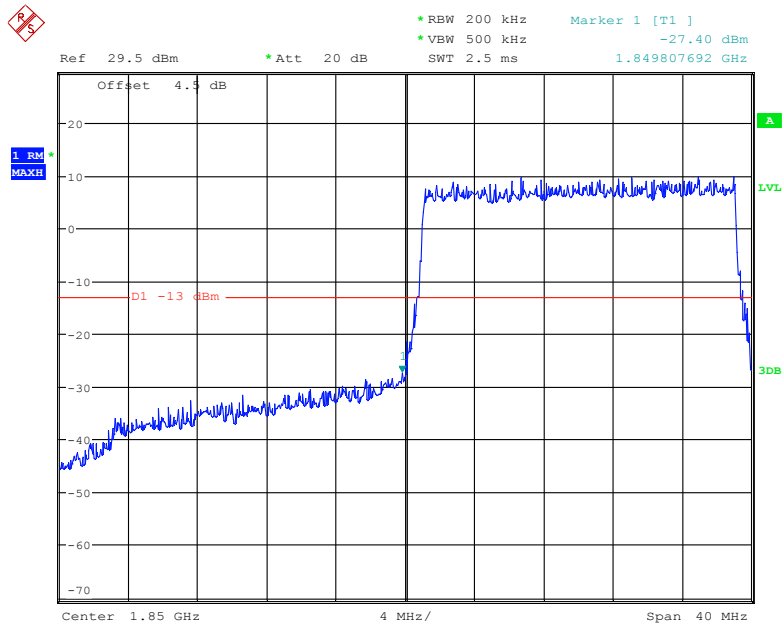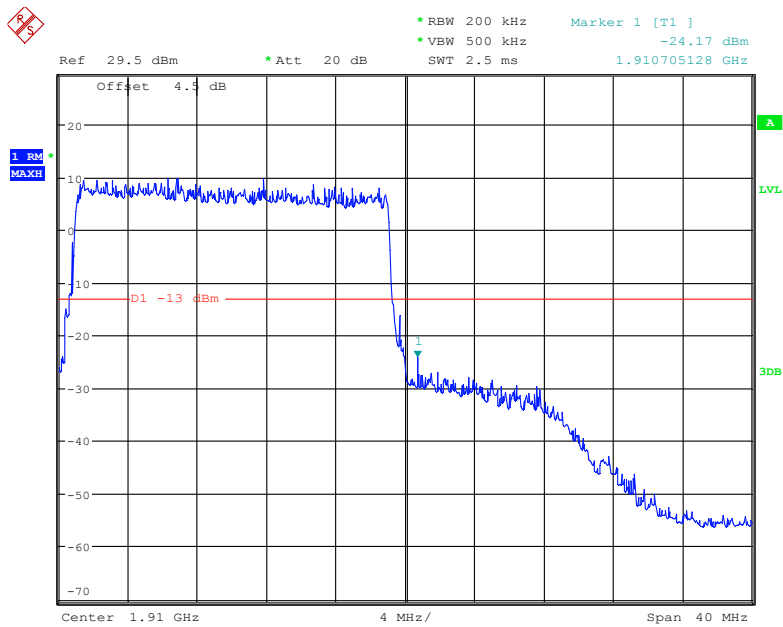## QPSK (3.0 MHz, FULL RB) - Left Band Edge

```
                                    *RBW 30 kHz      Marker 1 [T1 ]
                                    *VBW 100 kHz               -24.28 dBm
     Ref  29.5 dBm      *Att  20 dB  SWT 30 ms          1.849980769 GHz
        Offset   4.5 dB
```
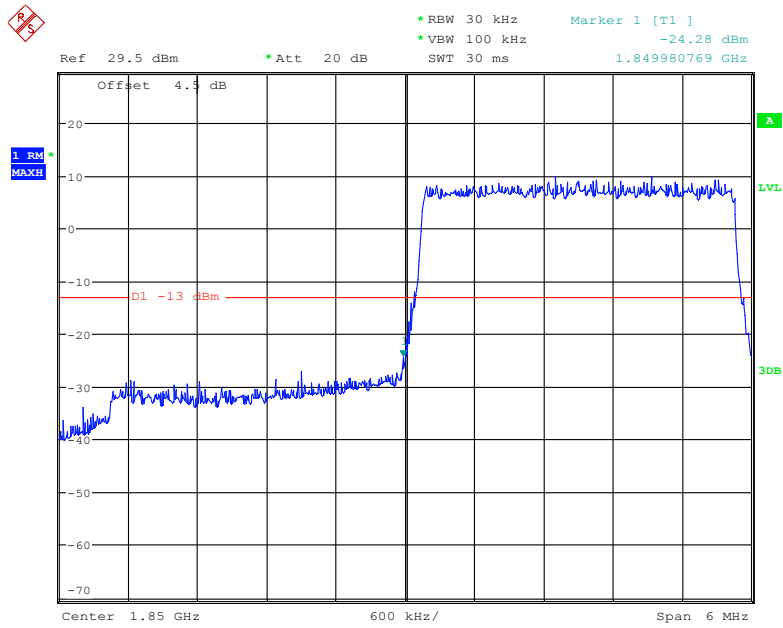
Date: 7.MAR.2018 11:52:32

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

```
                                    *RBW 30 kHz      Marker 1 [T1 ]
                                    *VBW 100 kHz               -24.20 dBm
     Ref  29.5 dBm      *Att  20 dB  SWT 30 ms          1.910653846 GHz
        Offset   4.5 dB
```
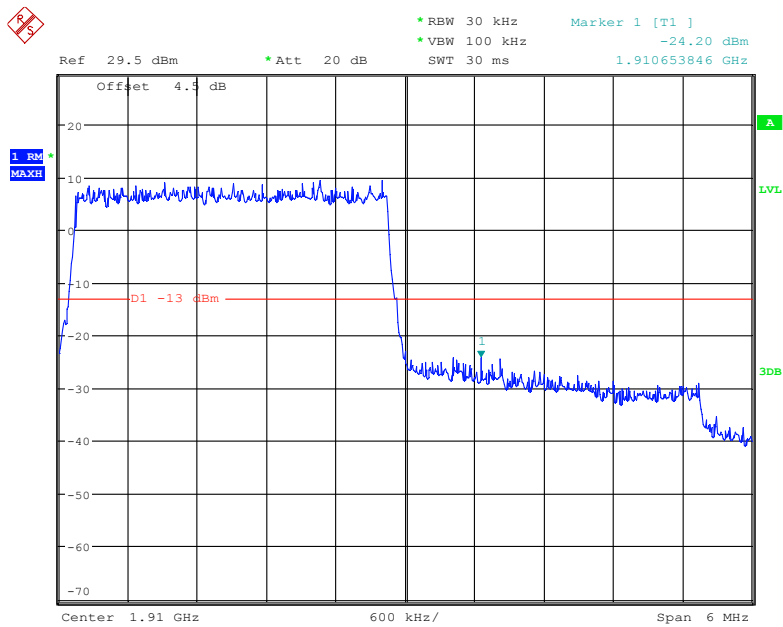
Date: 7.MAR.2018 11:54:16

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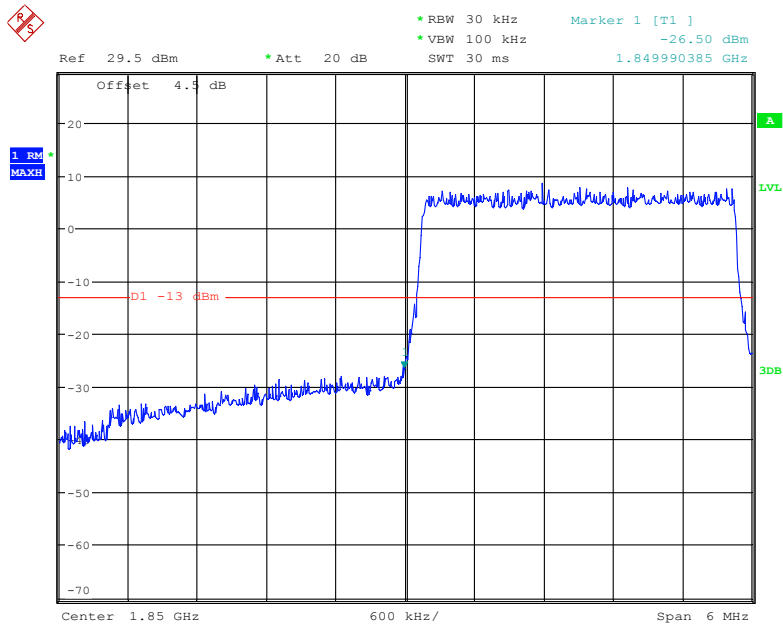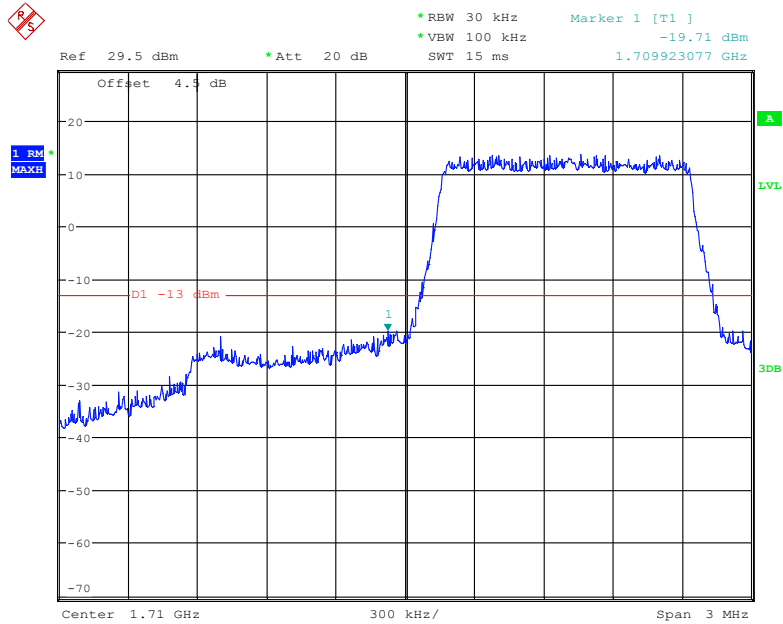

Date: 7.MAR.2018 11:53:12

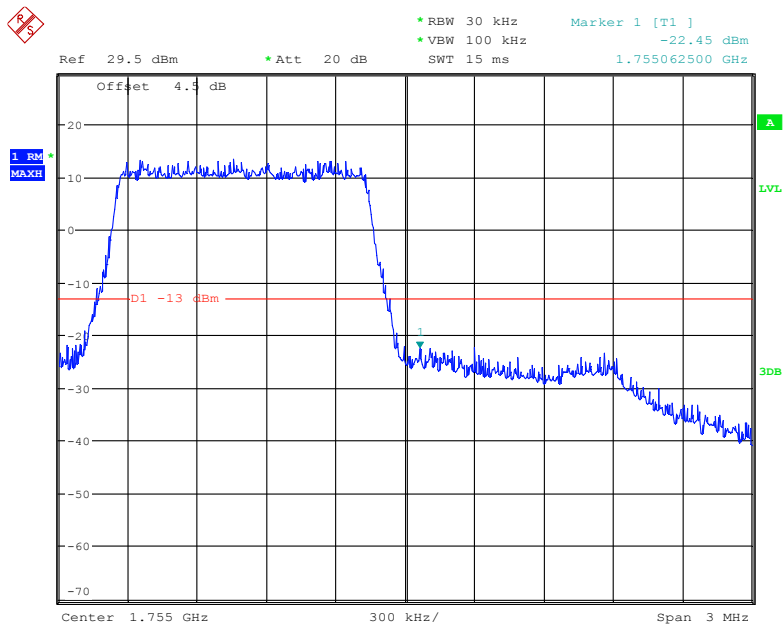## 16-QAM (3.0 MHz, FULL RB) - Right Band Edge
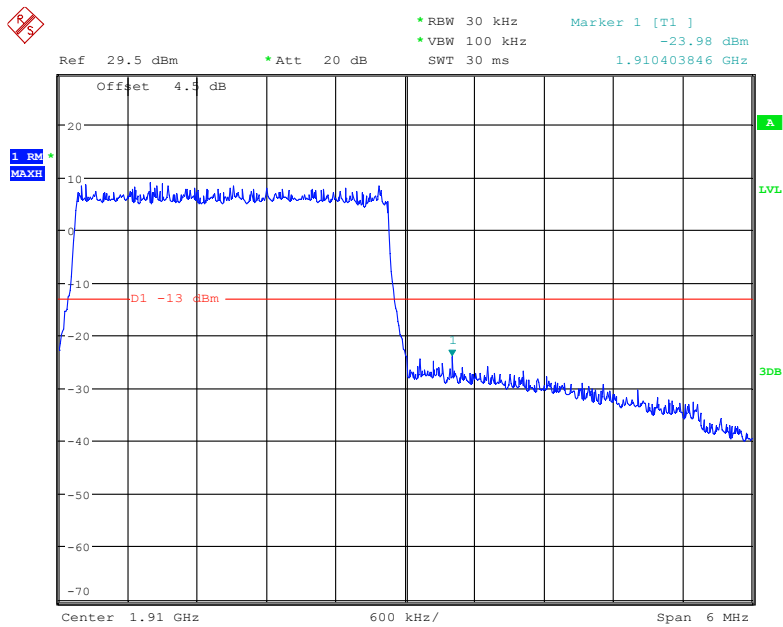
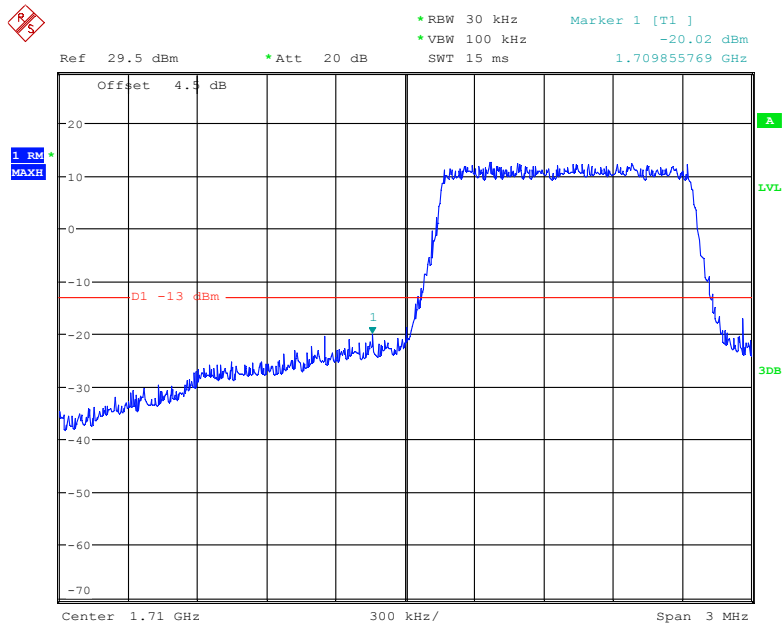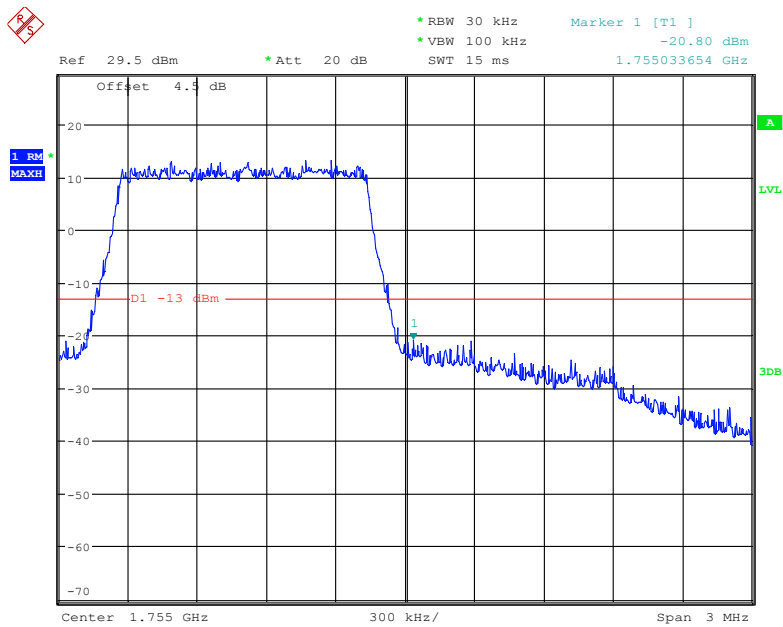Date: 7.MAR.2018 11:53:54

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

Date: 7.MAR.2018 11:56:03

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

Date: 7.MAR.2018 11:57:45

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

```
                                    *RBW  50 kHz      Marker 1 [T1 ]
                                    *VBW  100 kHz              -19.73 dBm
       Ref  29.5 dBm     *Att  20 dB   SWT 5 ms          1.849987179 GHz
          Offset  4.5 dB
```
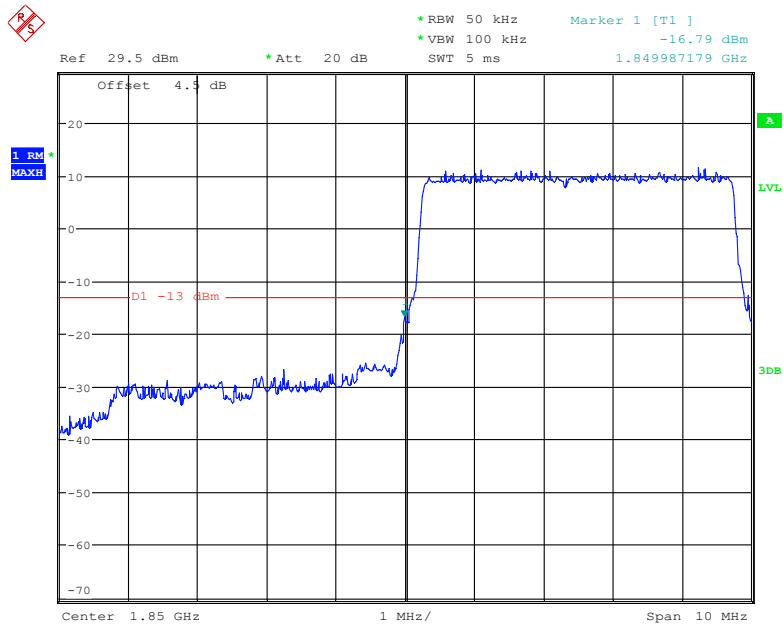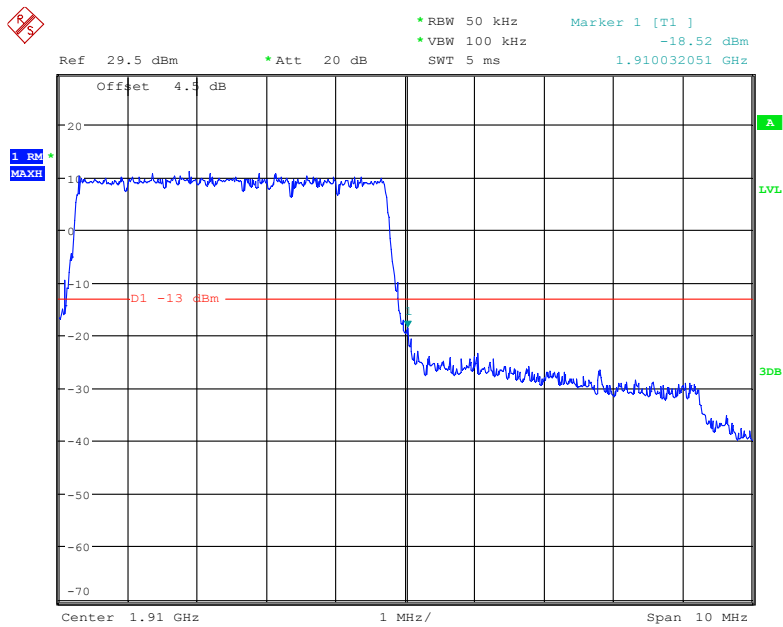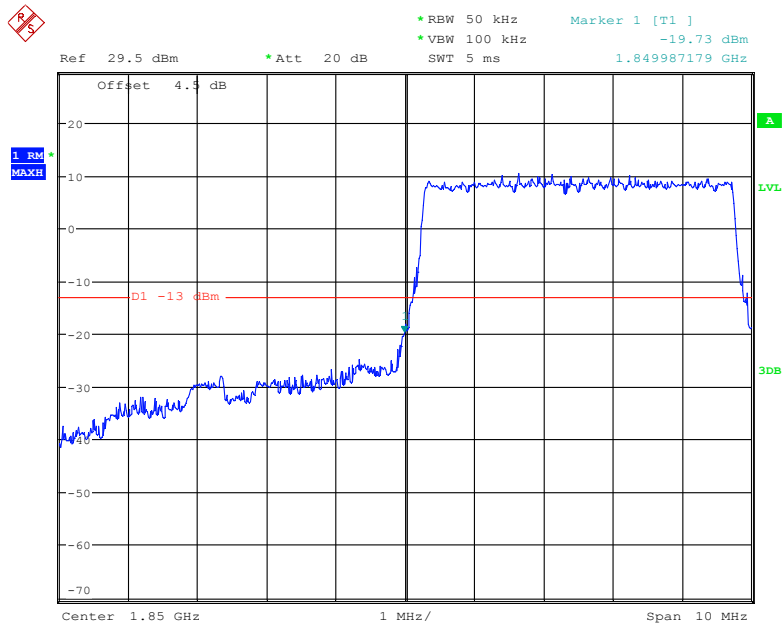
Date: 7.MAR.2018 11:56:45

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

```
                                    *RBW  50 kHz      Marker 1 [T1 ]
                                    *VBW  100 kHz              -21.68 dBm
       Ref  29.5 dBm     *Att  20 dB   SWT 5 ms          1.910048077 GHz
          Offset  4.5 dB
```
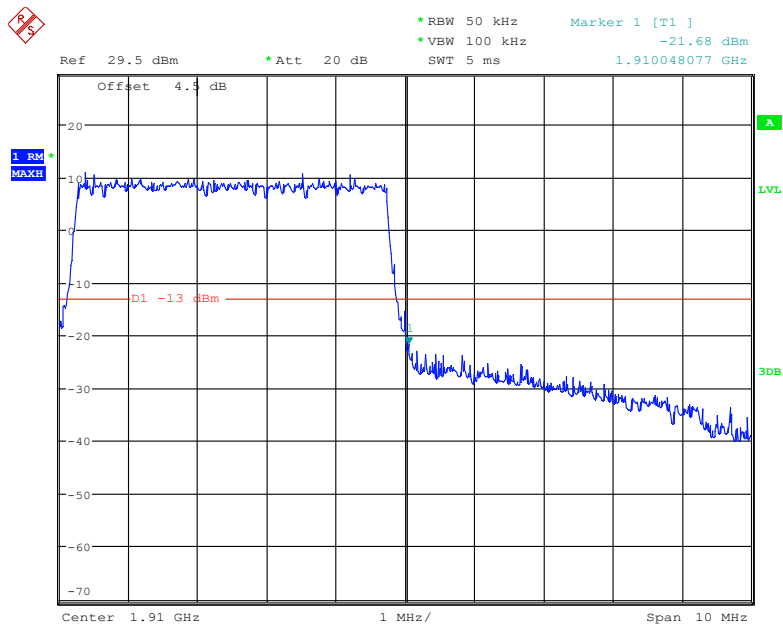
Date: 7.MAR.2018 11:57:20

QPSK (10.0 MHz, FULL RB) - Left Band Edge
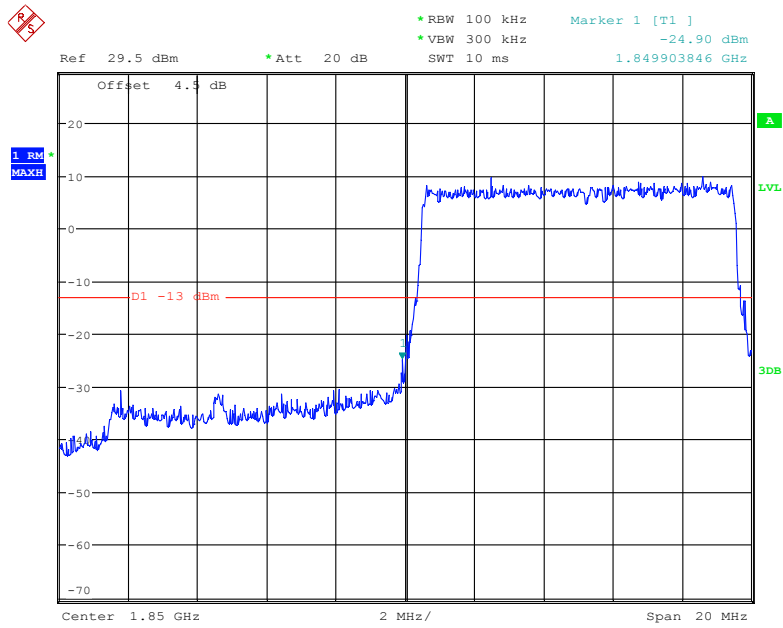
Date: 7.MAR.2018 12:00:06

QPSK (10.0 MHz, FULL RB) - Right Band Edge
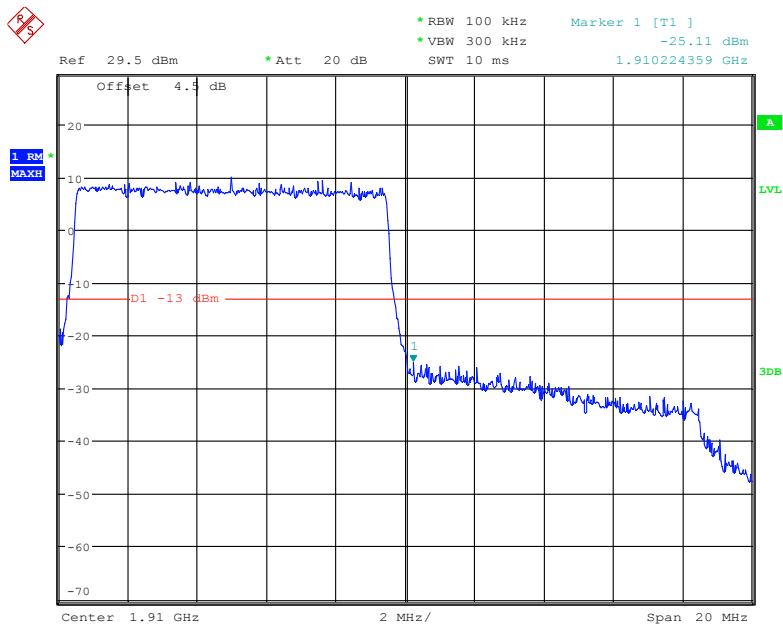
Date: 7.MAR.2018 12:00:39

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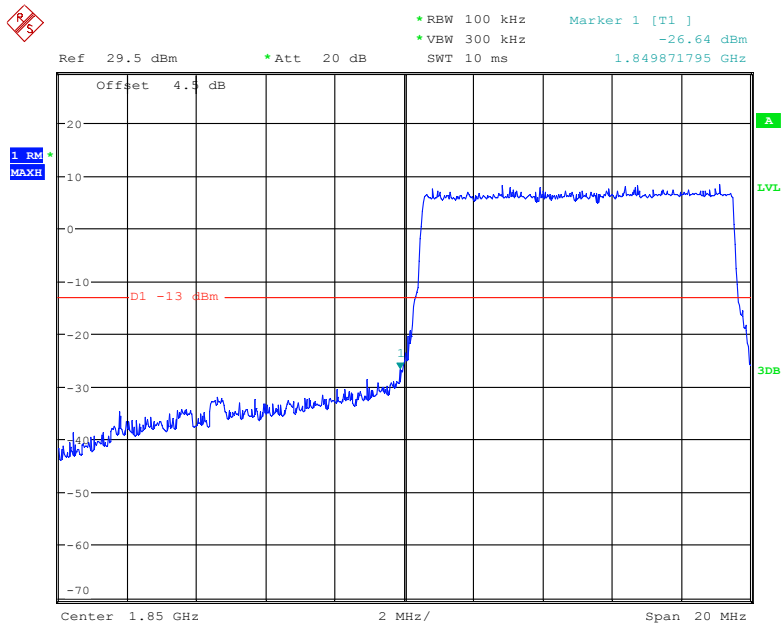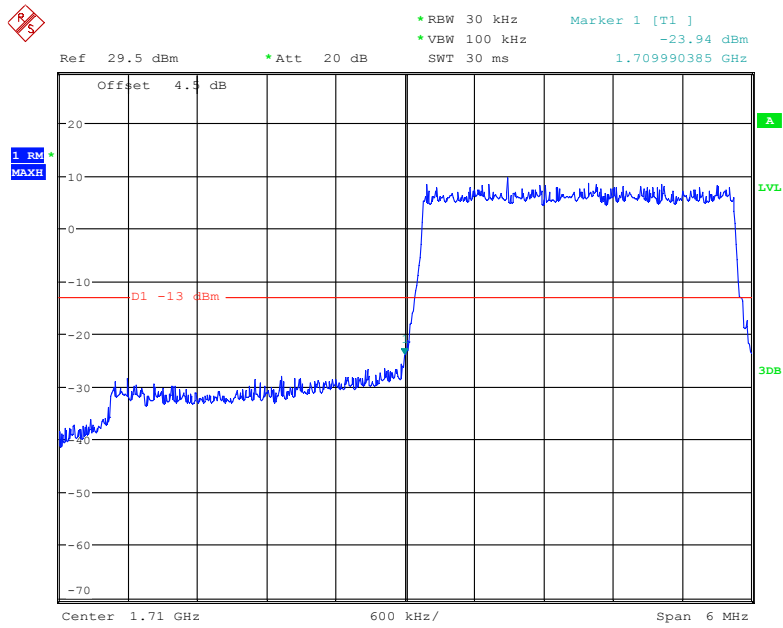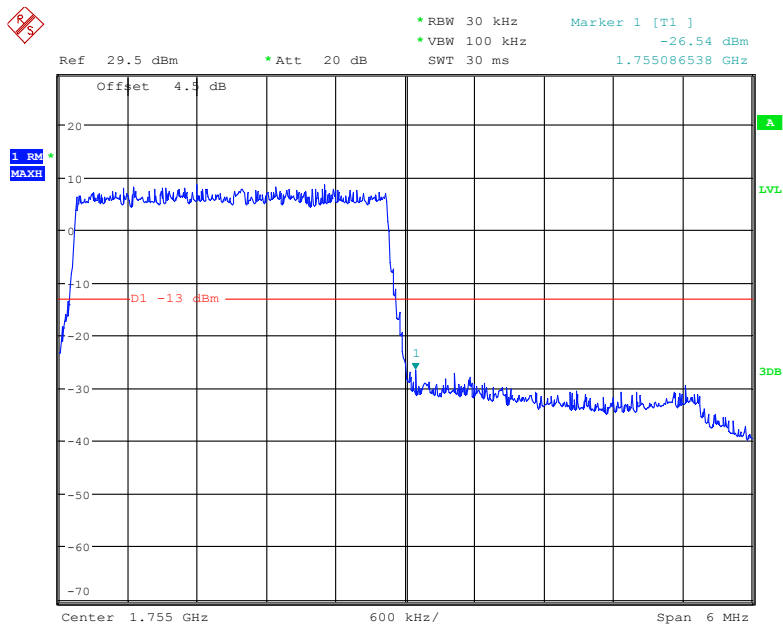

Date: 7.MAR.2018 11:59:37

16-QAM (10.0 MHz, FULL RB) - Right Band Edge
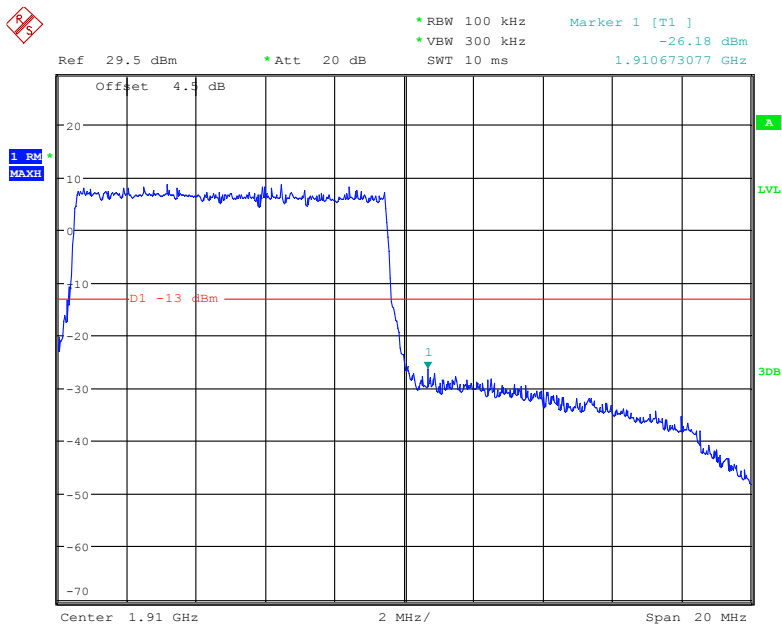
Date: 7.MAR.2018 12:01:12

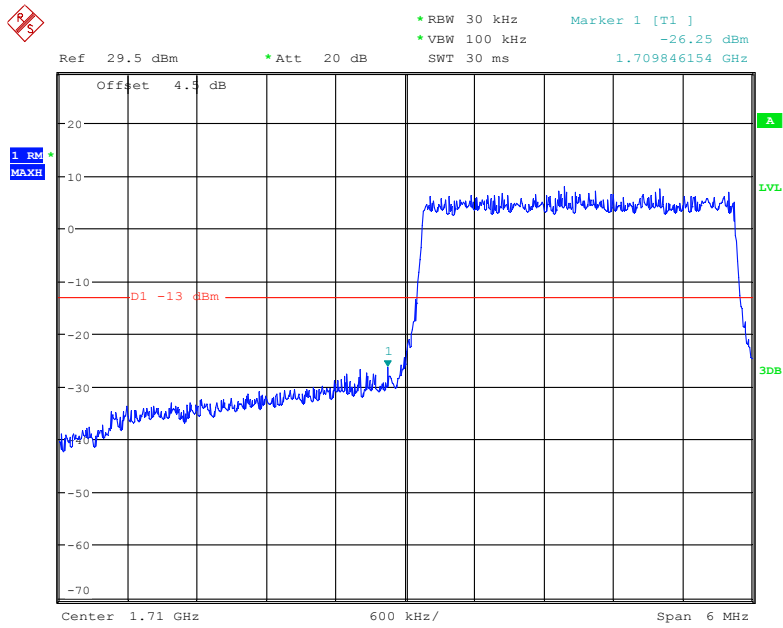## QPSK (15.0 MHz, FULL RB) - Left Band Edge
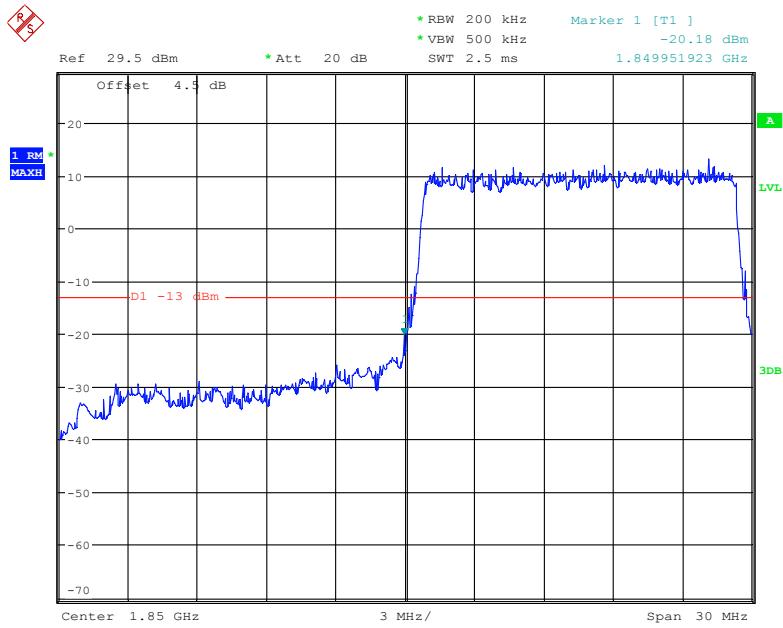
Date: 7.MAR.2018 12:49:41

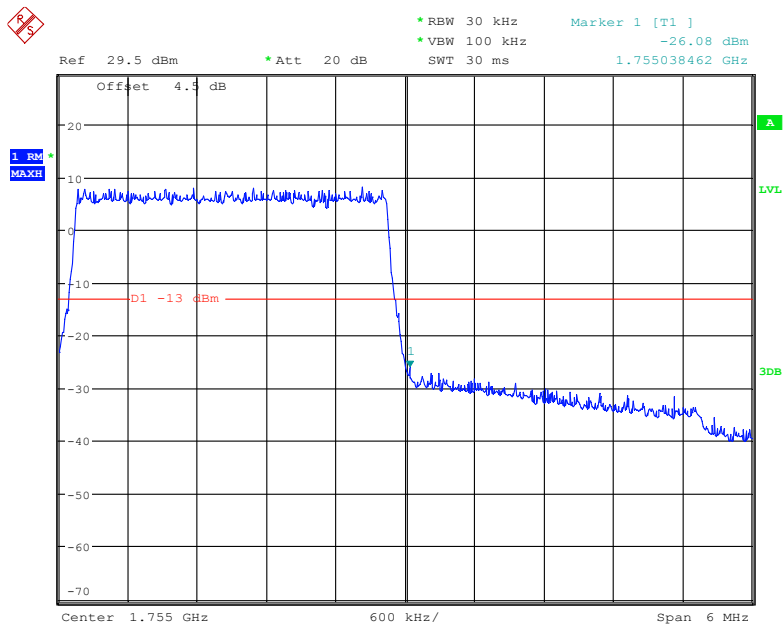## QPSK (15.0 MHz, FULL RB) - Right Band Edge
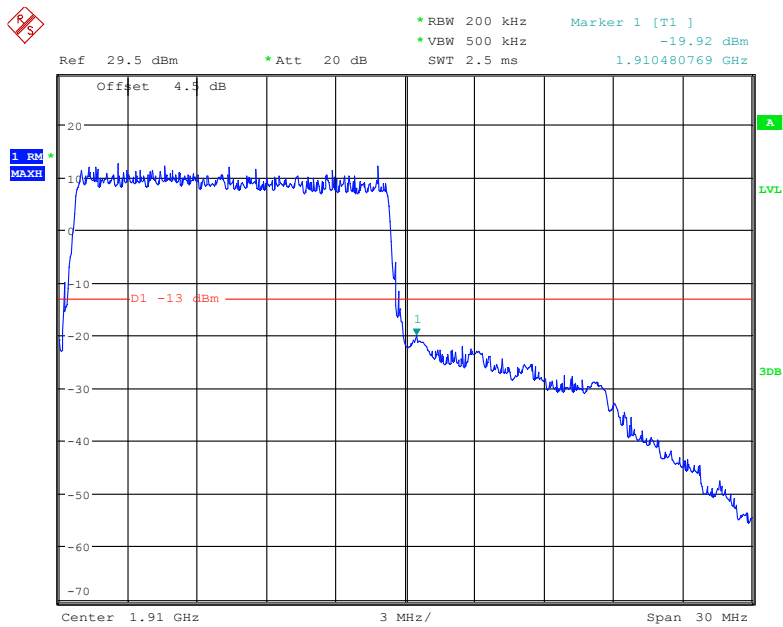
Date: 7.MAR.2018 12:51:24
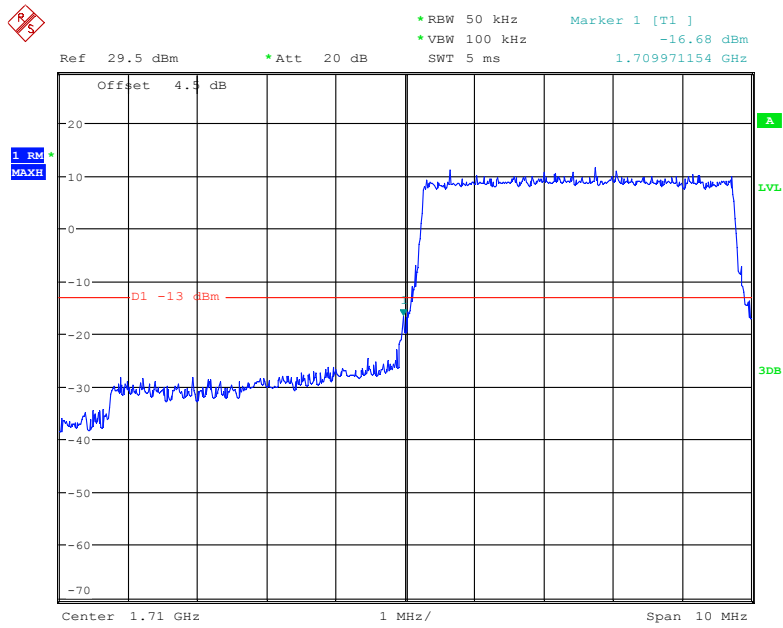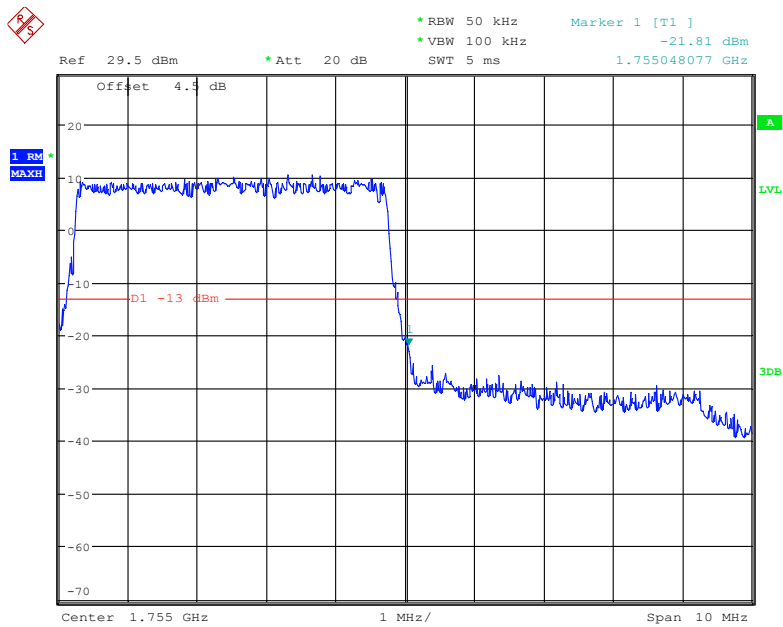
16-QAM (15.0 MHz, FULL RB) - Left Band Edge
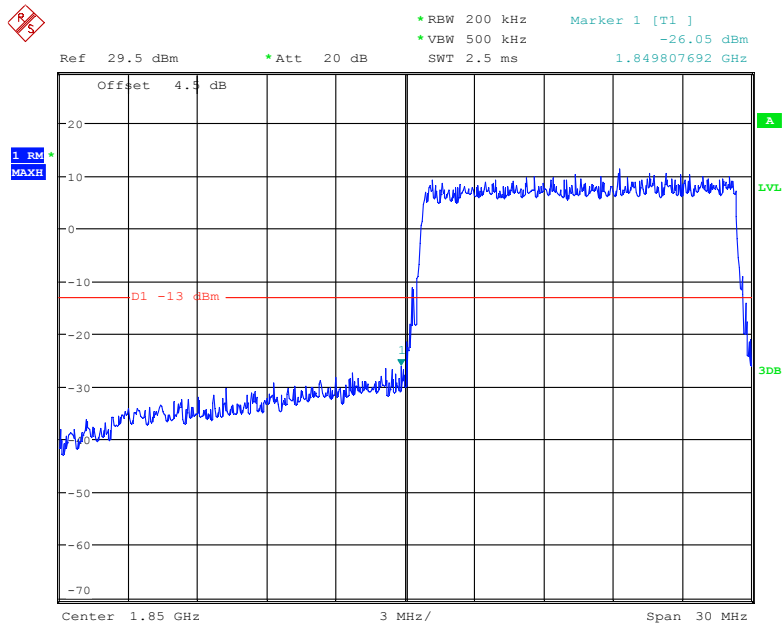
Date: 7.MAR.2018 12:50:15

16-QAM (15.0 MHz, FULL RB) - Right Band Edge
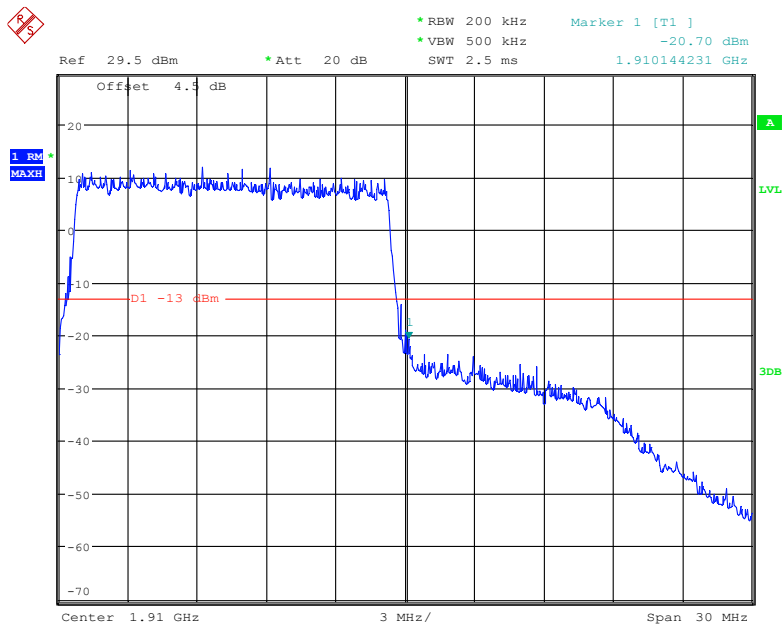
Date: 7.MAR.2018 12:50:51

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


```
                                            *RBW 200 kHz    Marker 1 [T1 ]
                                            *VBW 500 kHz              -28.11 dBm
        Ref   29.5 dBm        *Att  20 dB    SWT 2.5 ms      1.847500000 GHz
            Offset  4.5 dB
```
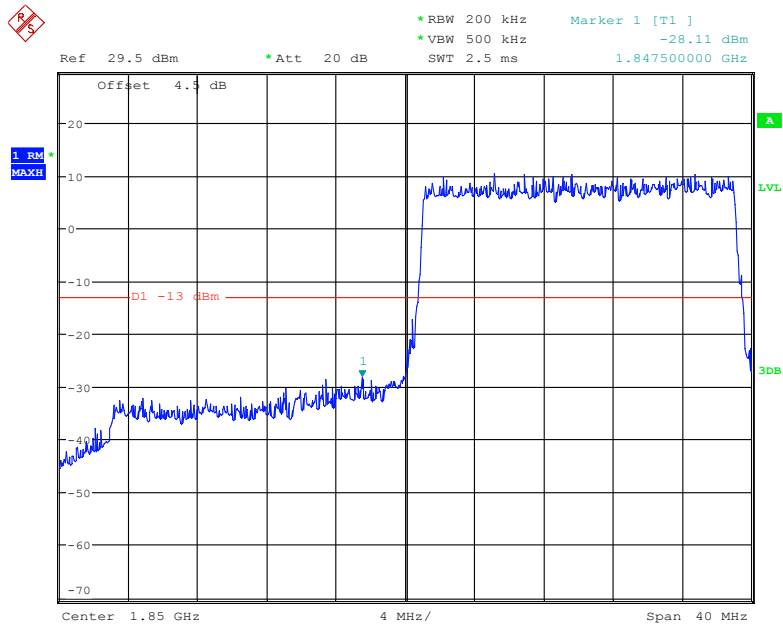
Date: 7.MAR.2018 12:53:17

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


```
                                            *RBW 200 kHz    Marker 1 [T1 ]
                                            *VBW 500 kHz              -24.30 dBm
        Ref   29.5 dBm        *Att  20 dB    SWT 2.5 ms      1.910256410 GHz
            Offset  4.5 dB
```

Date: 7.MAR.2018 12:53:52

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

```
                                        *RBW 200 kHz    Marker 1 [T1 ]
                                        *VBW 500 kHz              -27.40 dBm
         Ref  29.5 dBm      *Att  20 dB  SWT 2.5 ms      1.849807692 GHz
            Offset  4.5 dB
```

Date: 7.MAR.2018 12:52:49

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

```
                                        *RBW 200 kHz    Marker 1 [T1 ]
                                        *VBW 500 kHz              -24.17 dBm
         Ref  29.5 dBm      *Att  20 dB  SWT 2.5 ms      1.910705128 GHz
            Offset  4.5 dB
```

Date: 7.MAR.2018 12:54:19

Band 4:

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

```
                              *RBW  30 kHz      Marker 1 [T1 ]
                              *VBW 100 kHz              -19.71 dBm
      Ref   29.5 dBm    *Att  20 dB    SWT 15 ms      1.709923077 GHz
```

Date: 7.MAR.2018 14:11:01

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

```
                              *RBW  30 kHz      Marker 1 [T1 ]
                              *VBW 100 kHz              -22.45 dBm
      Ref   29.5 dBm    *Att  20 dB    SWT 15 ms      1.755062500 GHz
```

Date: 7.MAR.2018 14:12:54

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

Date: 7.MAR.2018 14:11:42

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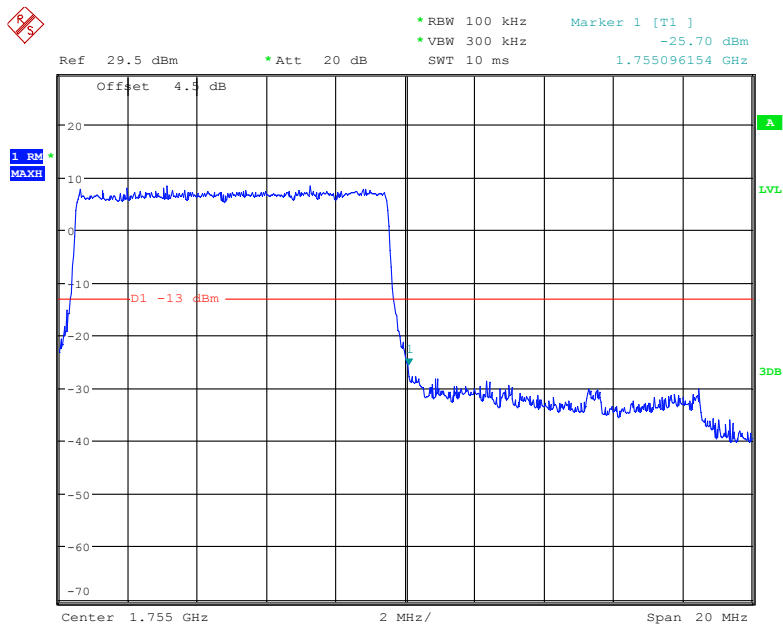

Date: 7.MAR.2018 14:12:36

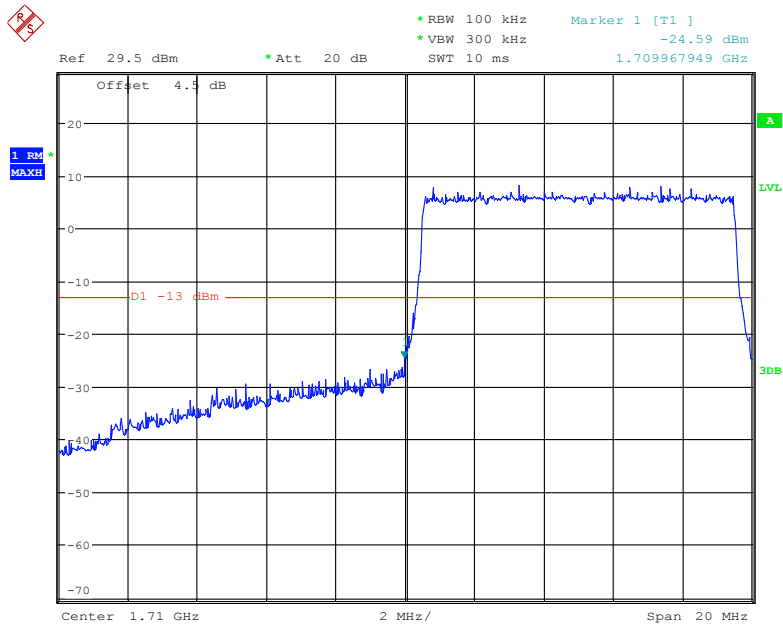## QPSK (3.0 MHz, FULL RB) - Left Band Edge

Date: 7.MAR.2018 14:13:50

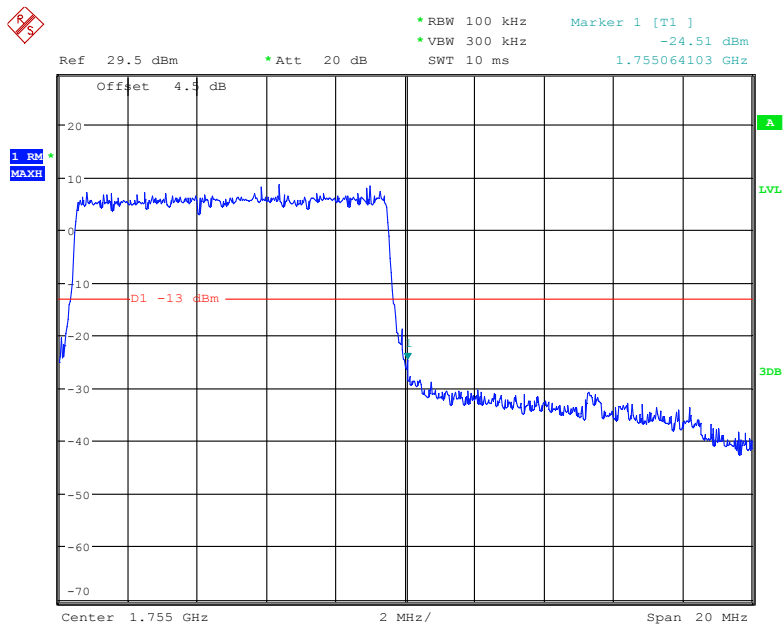## QPSK (3.0 MHz, FULL RB) - Right Band Edge

Date: 7.MAR.2018 14:15:21

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

Date: 7.MAR.2018 14:14:10

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

Date: 7.MAR.2018 14:15:01

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

Date: 7.MAR.2018 14:16:58

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

Date: 7.MAR.2018 14:19:36
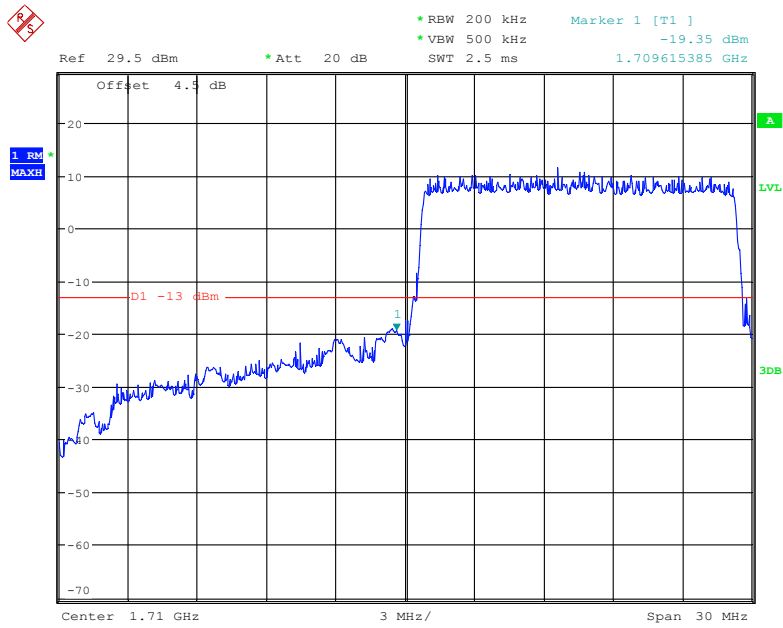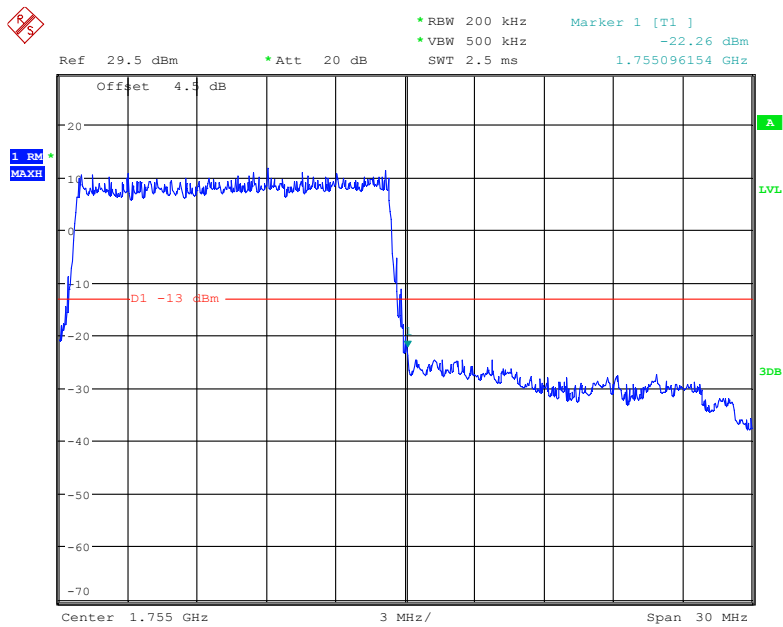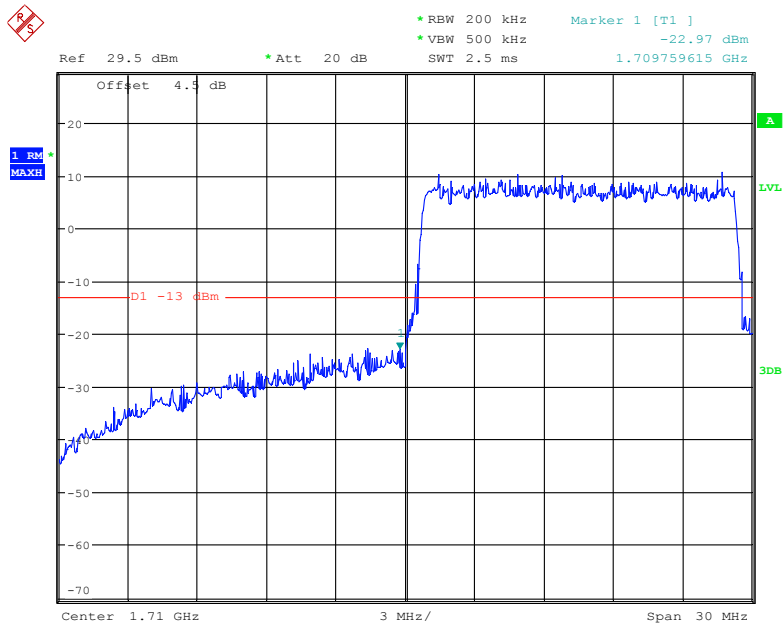
16-QAM (5.0 MHz, FULL RB) - Left Band Edge

```
                                        *RBW  50 kHz      Marker 1 [T1 ]
                                        *VBW 100 kHz              -18.25 dBm
        Ref  29.5 dBm      *Att  20 dB   SWT  5 ms         1.709987179 GHz
           Offset  4.5 dB
```
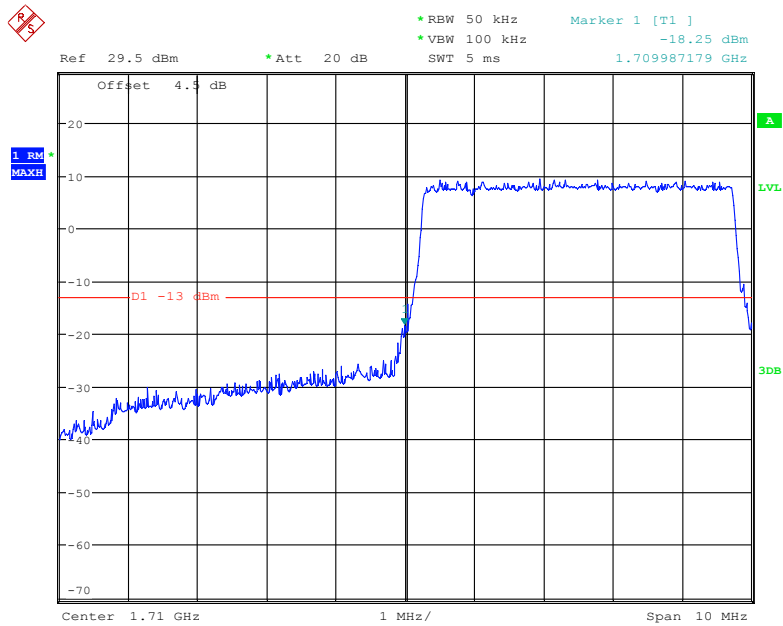
Date: 7.MAR.2018 14:17:40

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

```
                                        *RBW  50 kHz      Marker 1 [T1 ]
                                        *VBW 100 kHz              -22.88 dBm
        Ref  29.5 dBm      *Att  20 dB   SWT  5 ms         1.755032051 GHz
           Offset  4.5 dB
```
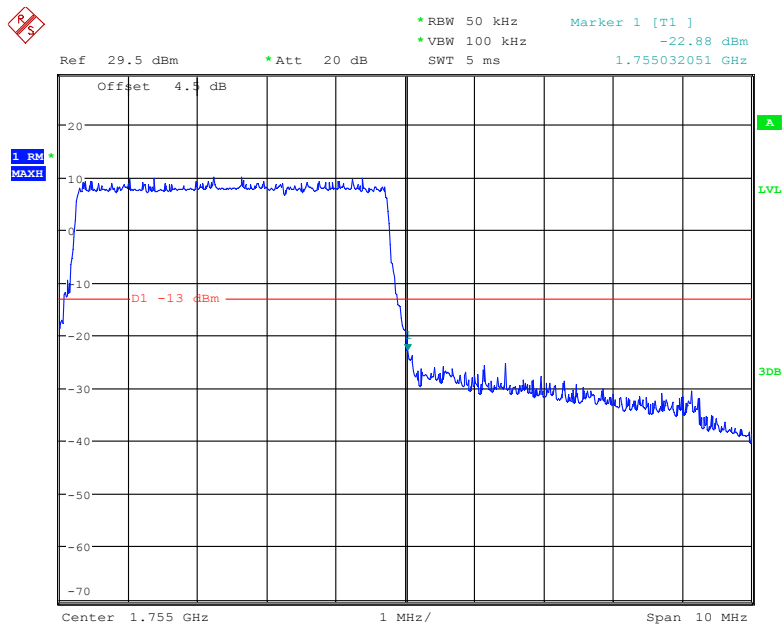
Date: 7.MAR.2018 14:18:34

QPSK (10.0 MHz, FULL RB) - Left Band Edge
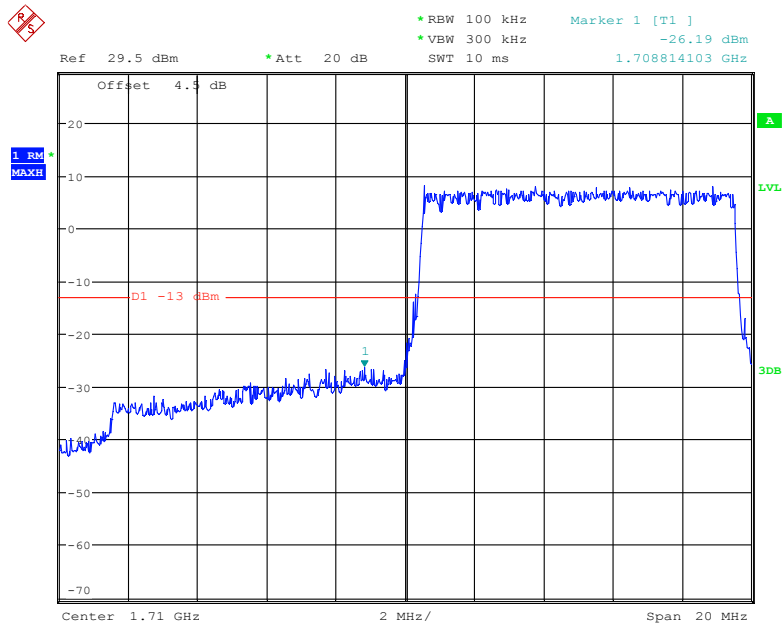
Date: 7.MAR.2018 14:21:26
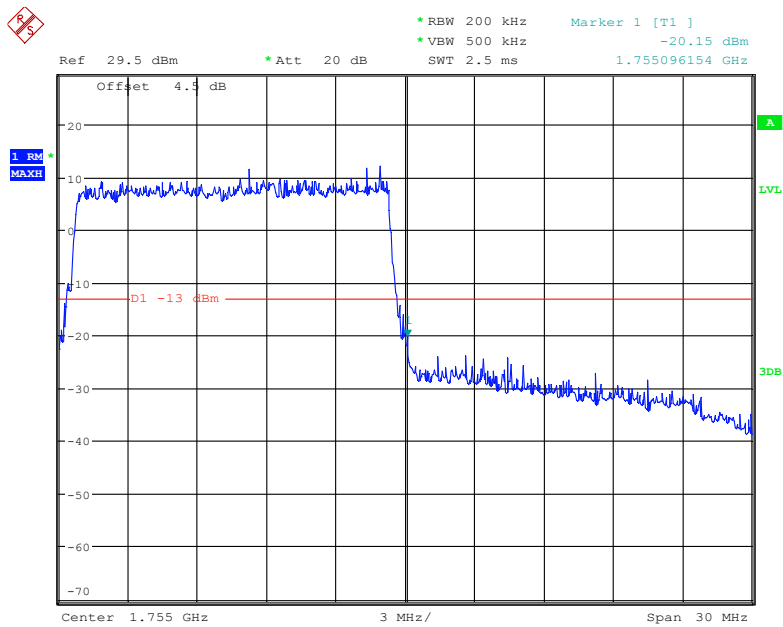
QPSK (10.0 MHz, FULL RB) - Right Band Edge

Date: 7.MAR.2018 14:21:56

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

```
                                        *RBW 100 kHz      Marker 1 [T1 ]
                                        *VBW 300 kHz              -24.59 dBm
        Ref  29.5 dBm        *Att  20 dB    SWT 10 ms         1.709967949 GHz
            Offset   4.5 dB
```

Date: 7.MAR.2018 14:20:59

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

```
                                        *RBW 100 kHz      Marker 1 [T1 ]
                                        *VBW 300 kHz              -24.51 dBm
        Ref  29.5 dBm        *Att  20 dB    SWT 10 ms         1.755064103 GHz
            Offset   4.5 dB
```

Date: 7.MAR.2018 14:22:17

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

Date: 7.MAR.2018 14:23:34

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

Date: 7.MAR.2018 14:25:30
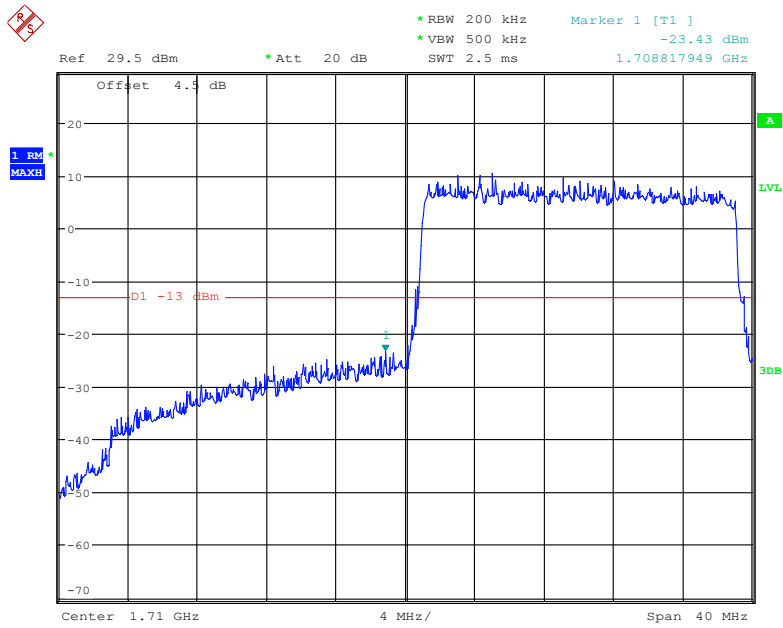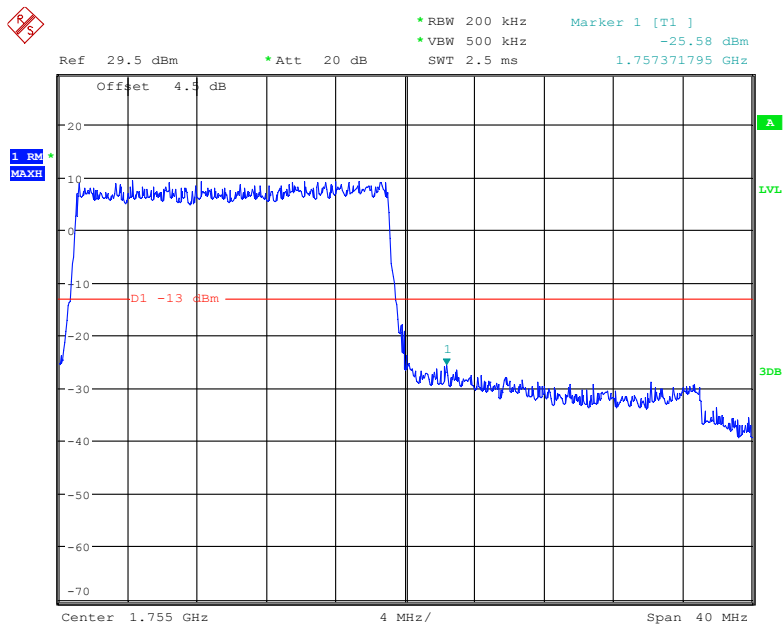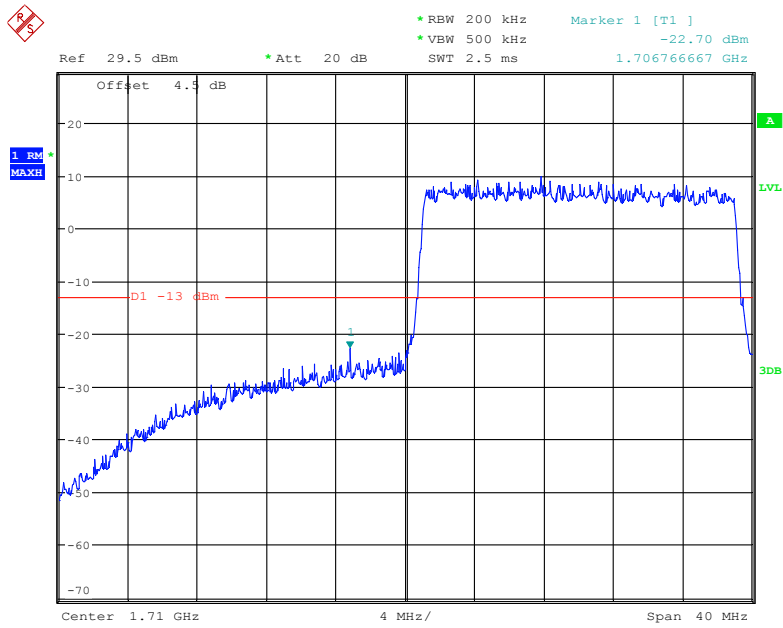
16-QAM (15.0 MHz, FULL RB) - Left Band Edge

```
                                    *RBW  200 kHz    Marker 1 [T1 ]
                                    *VBW  500 kHz          -22.97 dBm
        Ref  29.5 dBm    *Att  20 dB  SWT 2.5 ms       1.709759615 GHz
           Offset  4.5 dB
```

Date: 7.MAR.2018 14:24:02

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

```
                                    *RBW  200 kHz    Marker 1 [T1 ]
                                    *VBW  500 kHz          -20.15 dBm
        Ref  29.5 dBm    *Att  20 dB  SWT 2.5 ms       1.755096154 GHz
           Offset  4.5 dB
```

Date: 7.MAR.2018 14:25:09

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

Date: 7.MAR.2018 15:27:06

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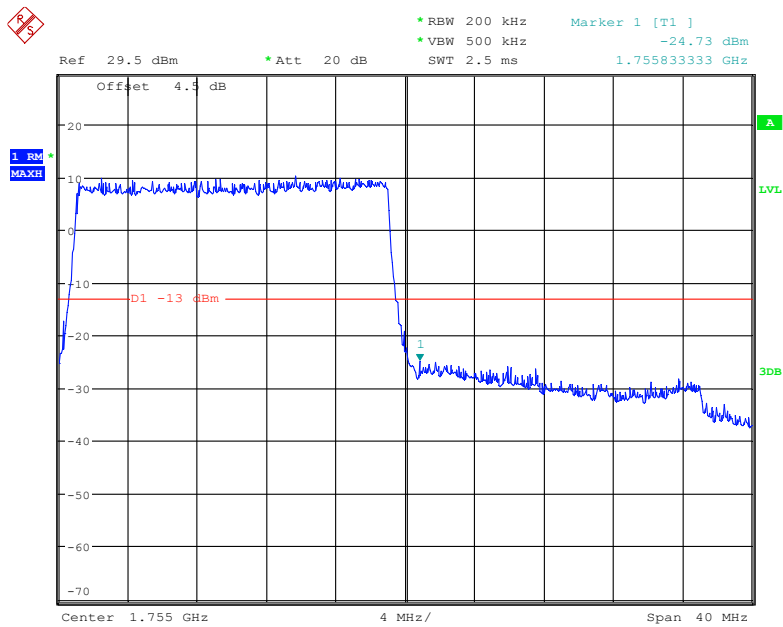

Date: 7.MAR.2018 15:27:47

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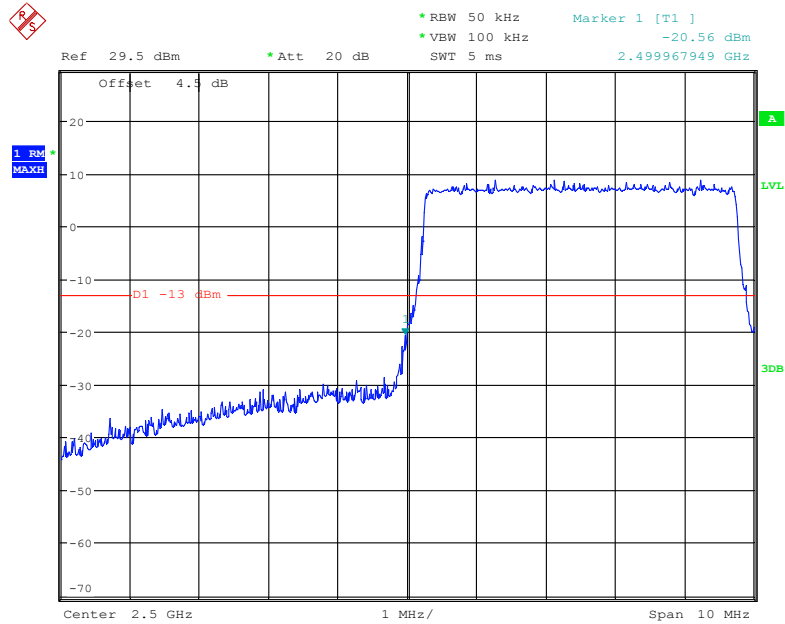

Date: 7.MAR.2018 15:26:18

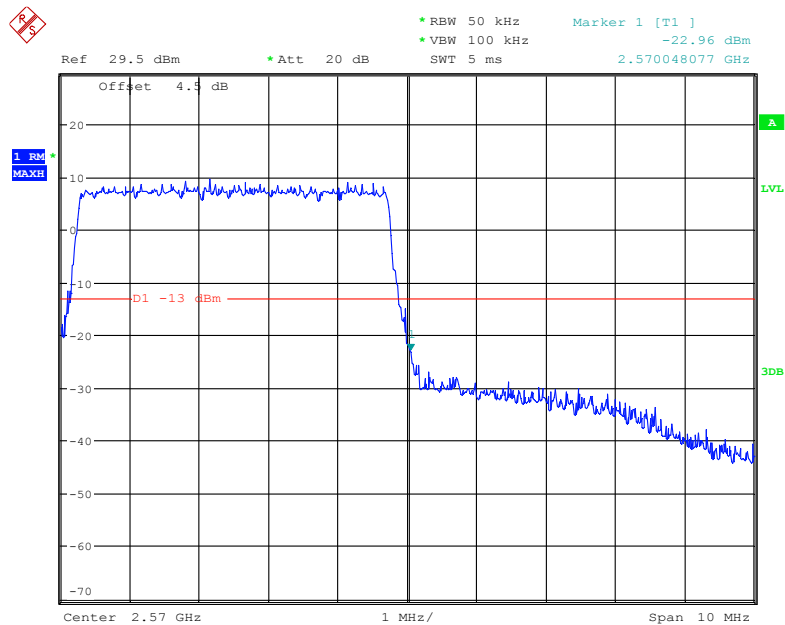## 16-QAM (20.0 MHz, FULL RB) - Right Band Edge

Date: 7.MAR.2018 15:28:30
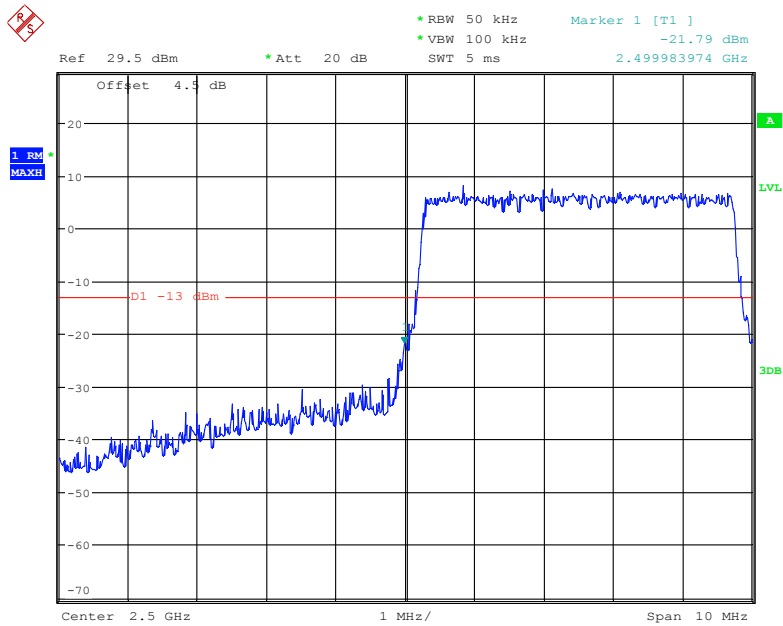
Band 7:

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

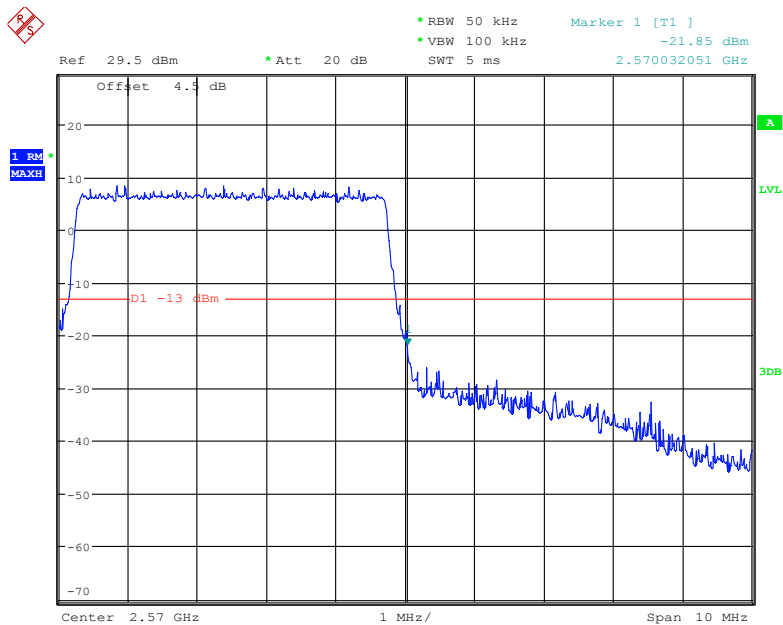Date: 7.MAR.2018 15:30:12

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

Date: 7.MAR.2018 15:32:40
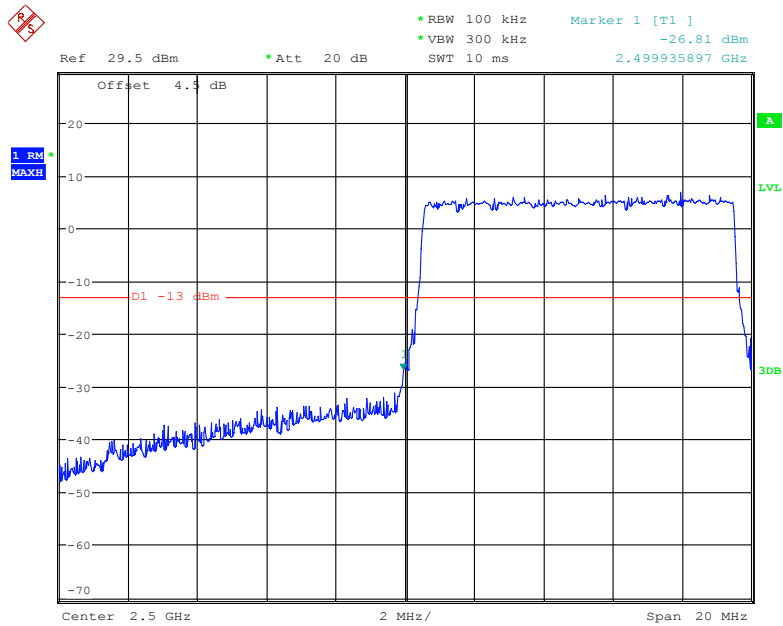
16-QAM (5.0 MHz, FULL RB) - Left Band Edge

```
                                              *RBW 50 kHz     Marker 1 [T1 ]
                                              *VBW 100 kHz            -21.79 dBm
        Ref  29.5 dBm         *Att  20 dB     SWT 5 ms        2.499983974 GHz
           Offset  4.5 dB
```

Date: 7.MAR.2018 15:30:57

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

```
                                              *RBW 50 kHz     Marker 1 [T1 ]
                                              *VBW 100 kHz            -21.85 dBm
        Ref  29.5 dBm         *Att  20 dB     SWT 5 ms        2.570032051 GHz
           Offset  4.5 dB
```

Date: 7.MAR.2018 15:32:06

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

```
                                        *RBW 100 kHz    Marker 1 [T1 ]
                                        *VBW 300 kHz           -26.81 dBm
        Ref  29.5 dBm      *Att  20 dB   SWT 10 ms       2.499935897 GHz
           Offset  4.5 dB
```

Date: 7.MAR.2018 15:34:31

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

```
                                        *RBW 100 kHz    Marker 1 [T1 ]
                                        *VBW 300 kHz           -25.91 dBm
        Ref  29.5 dBm      *Att  20 dB   SWT 10 ms       2.570064103 GHz
           Offset  4.5 dB
```

Date: 7.MAR.2018 15:35:10

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

Date: 7.MAR.2018 15:33:59

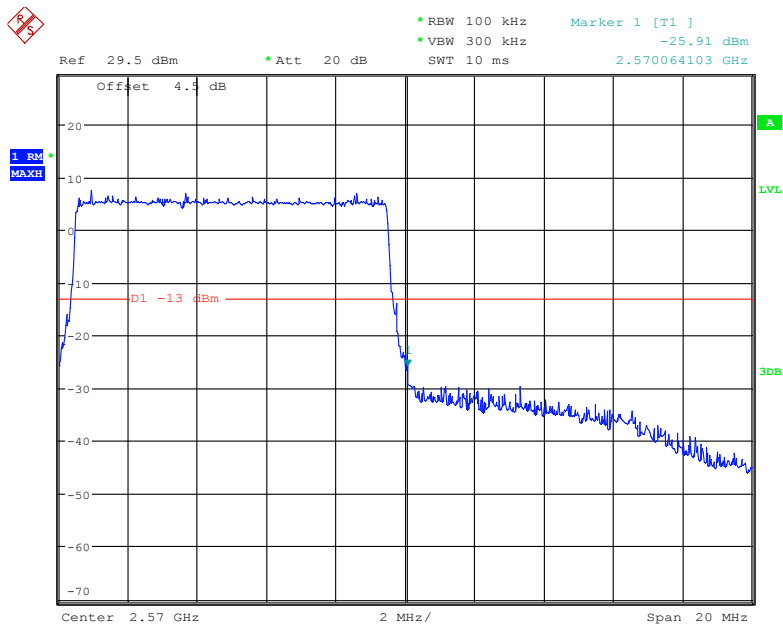## 16-QAM (10.0 MHz, FULL RB) - Right Band Edge

Date: 7.MAR.2018 15:35:43
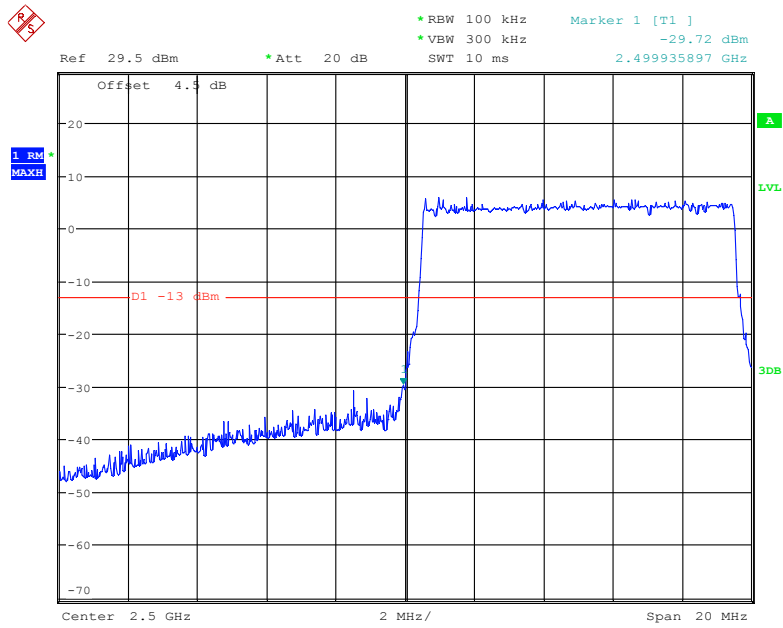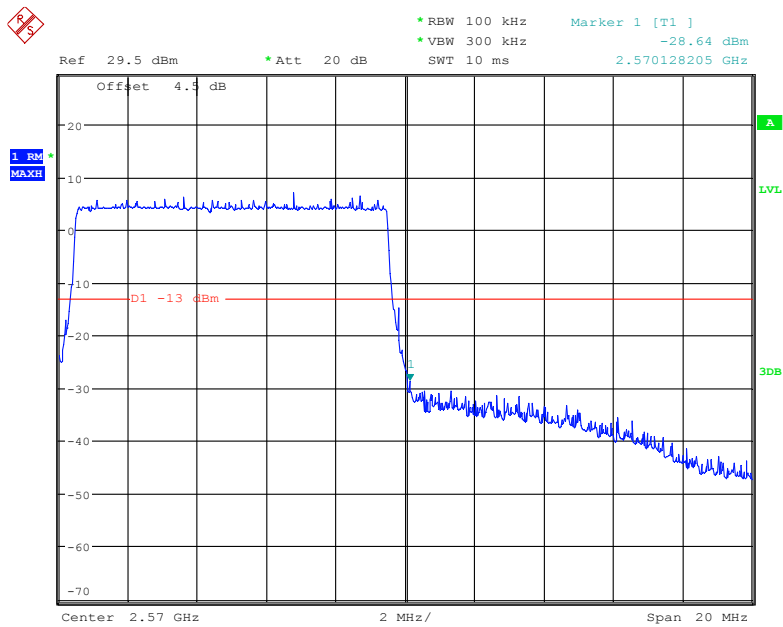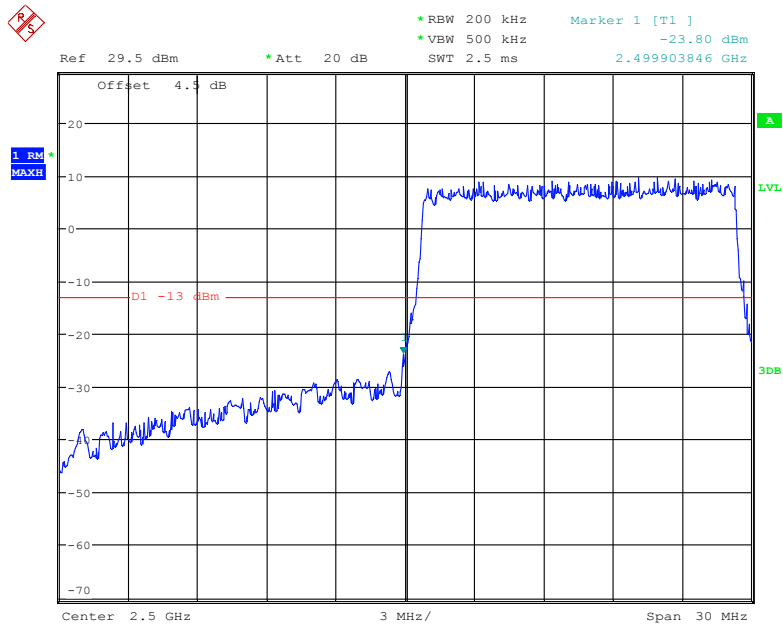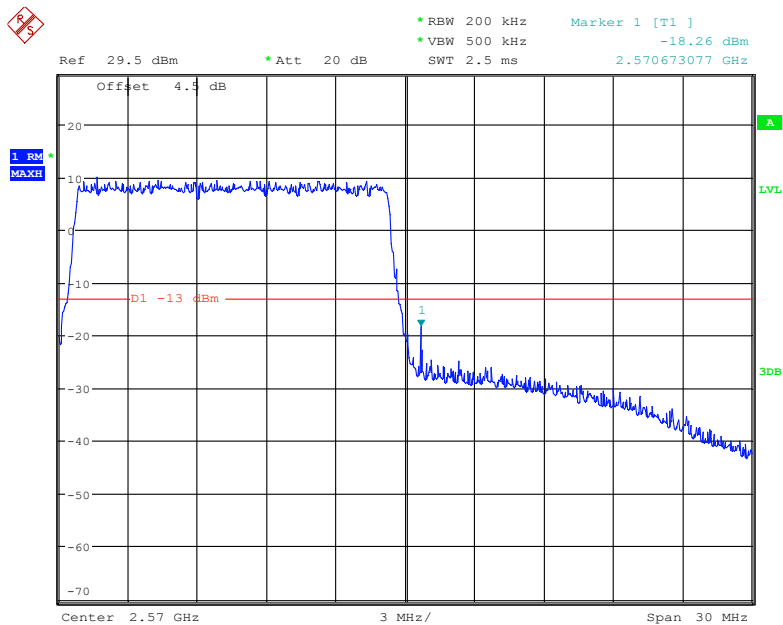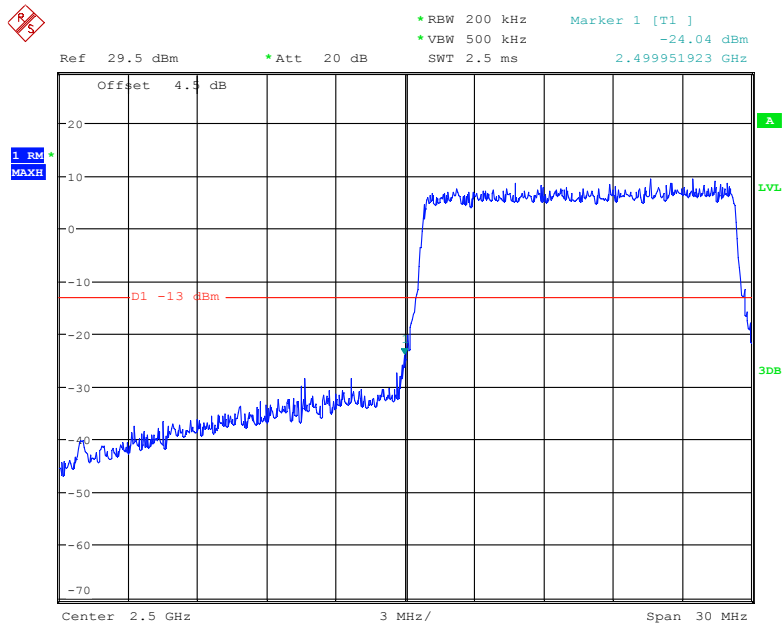
QPSK (15 MHz, FULL RB) - Left Band Edge

Date: 7.MAR.2018 15:37:07

QPSK (15 MHz, FULL RB) - Right Band Edge

Date: 7.MAR.2018 15:41:29

16-QAM (15 MHz, FULL RB) - Left Band Edge

```
                                    *RBW 200 kHz     Marker 1 [T1 ]
                                    *VBW 500 kHz              -24.04 dBm
        Ref  29.5 dBm    *Att  20 dB   SWT 2.5 ms         2.499951923 GHz
          Offset  4.5 dB
```

Date: 7.MAR.2018 15:37:53

16-QAM (15 MHz, FULL RB) - Right Band Edge

```
                                    *RBW 200 kHz     Marker 1 [T1 ]
                                    *VBW 500 kHz              -21.61 dBm
        Ref  29.5 dBm    *Att  20 dB   SWT 2.5 ms         2.570144231 GHz
          Offset  4.5 dB
```

Date: 7.MAR.2018 15:38:53

QPSK (20 MHz, FULL RB) - Left Band Edge

Date: 7.MAR.2018 15:42:54

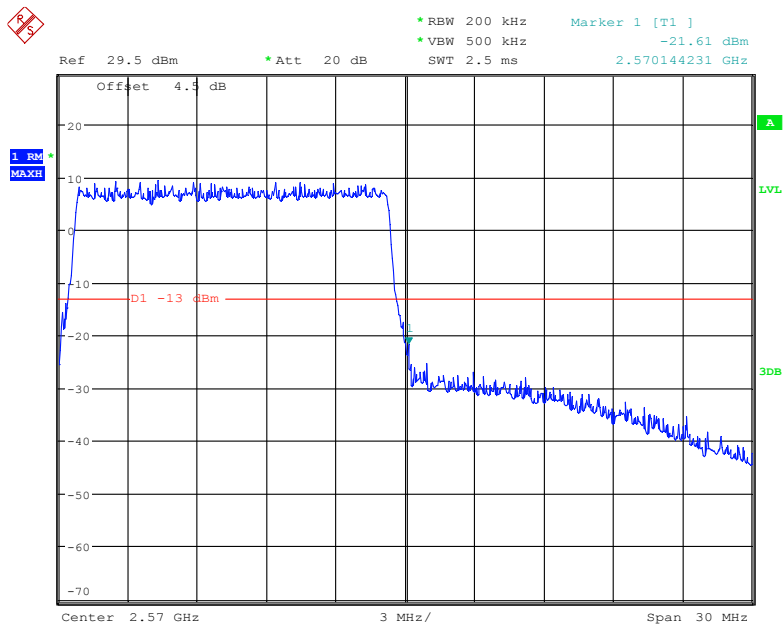## QPSK (20 MHz, FULL RB) - Right Band Edge

Date: 7.MAR.2018 15:44:43

16-QAM (20 MHz, FULL RB) - Left Band Edge

Date: 7.MAR.2018 15:43:39

16-QAM (20 MHz, FULL RB) - Right Band Edge

Date: 7.MAR.2018 15:44:20

Band 17:

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

Date: 7.MAR.2018 15:56:52

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

Date: 7.MAR.2018 15:59:52

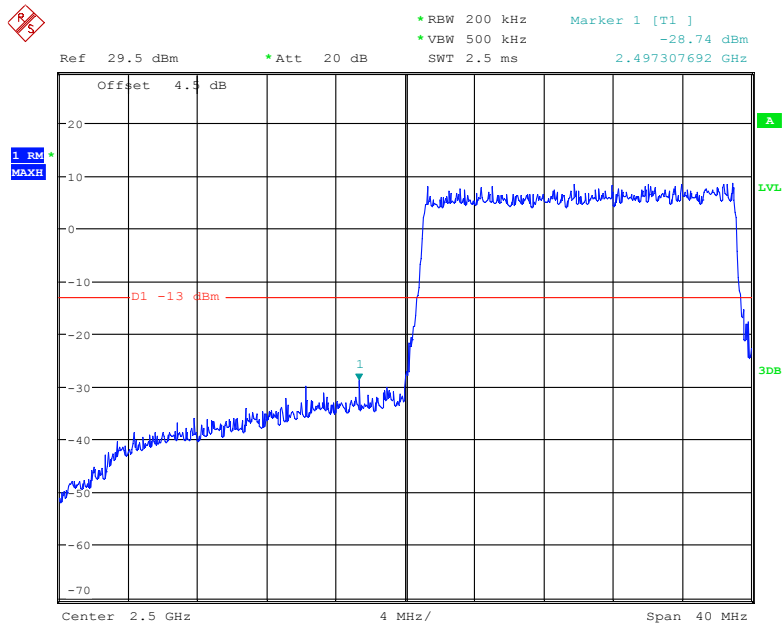## 16-QAM (5.0 MHz, FULL RB) - Left Band Edge

Date: 7.MAR.2018 15:57:36

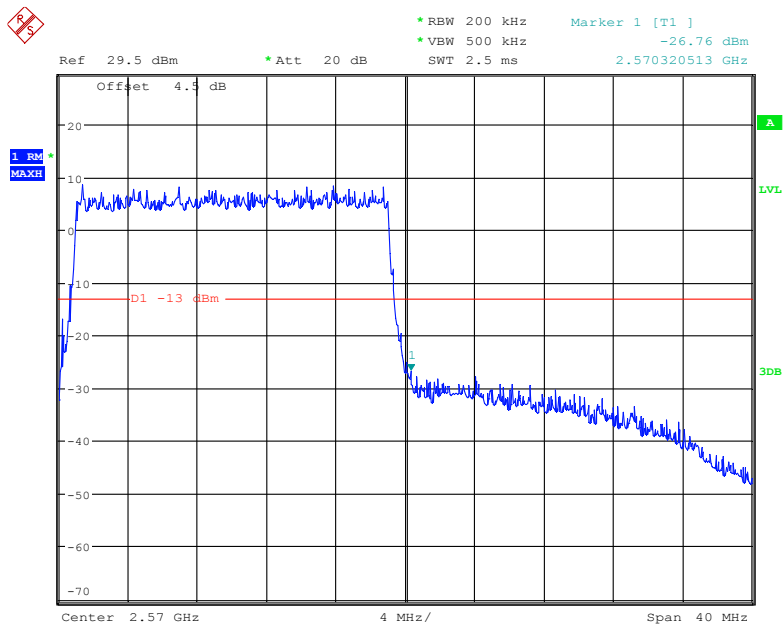## 16-QAM (5.0 MHz, FULL RB) - Right Band Edge
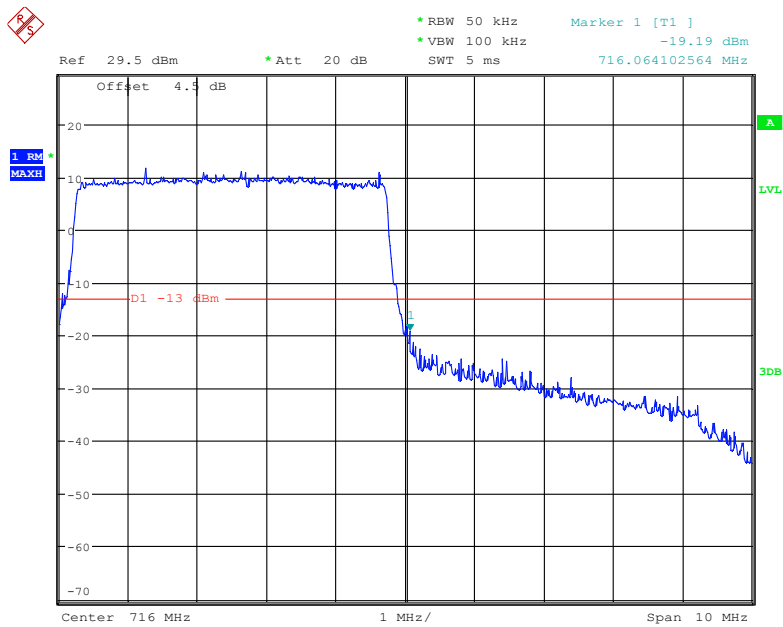
Date: 7.MAR.2018 15:59:32
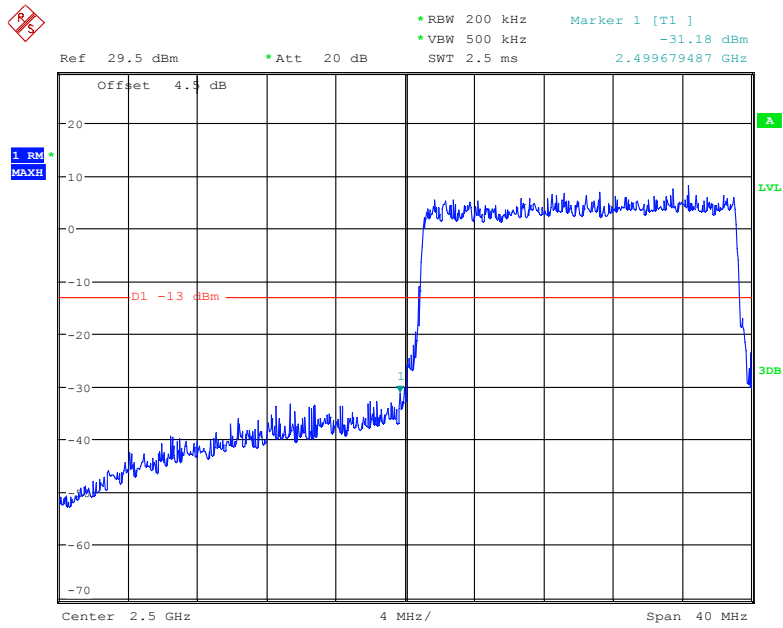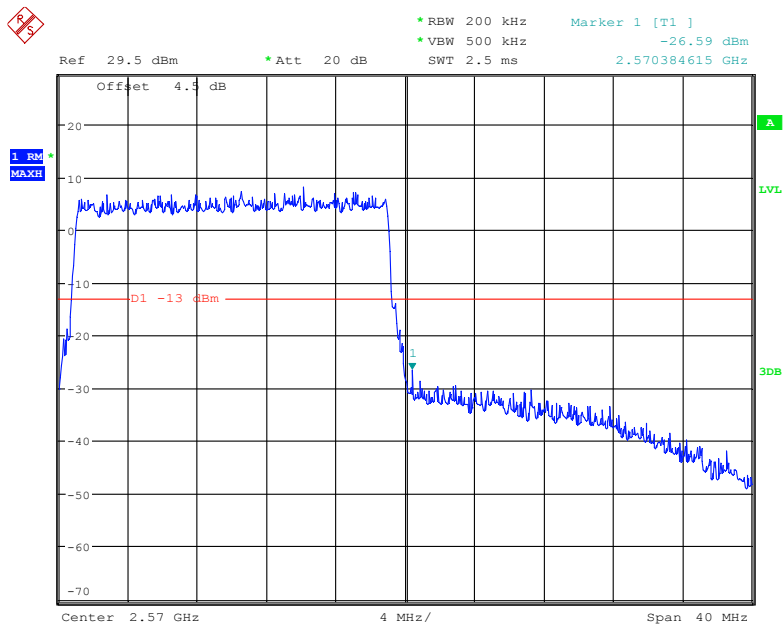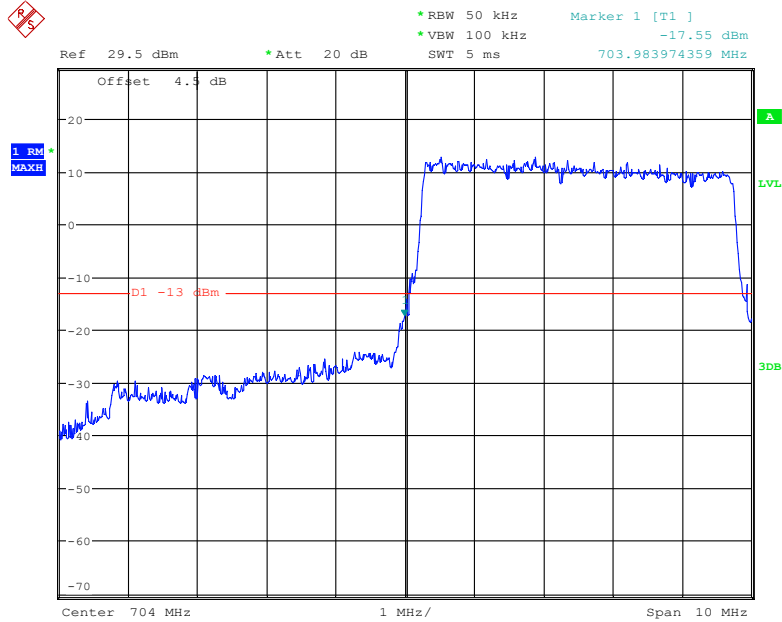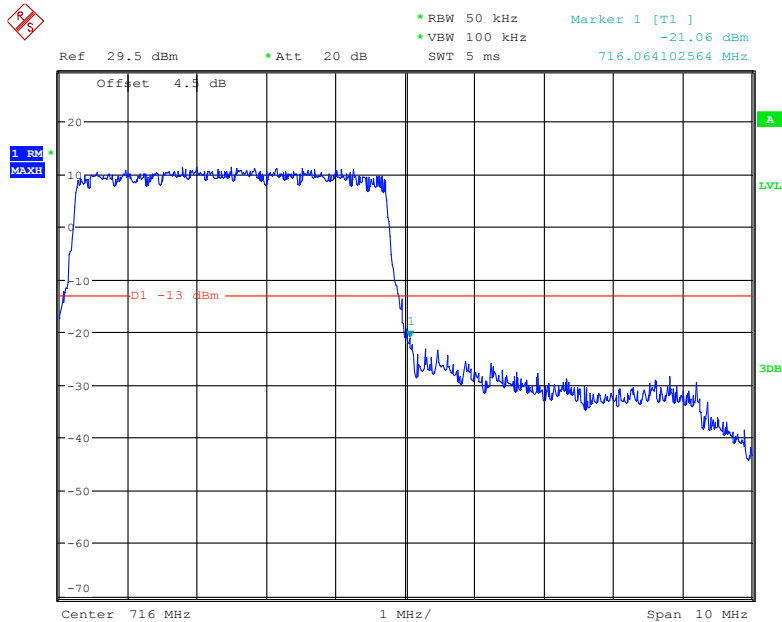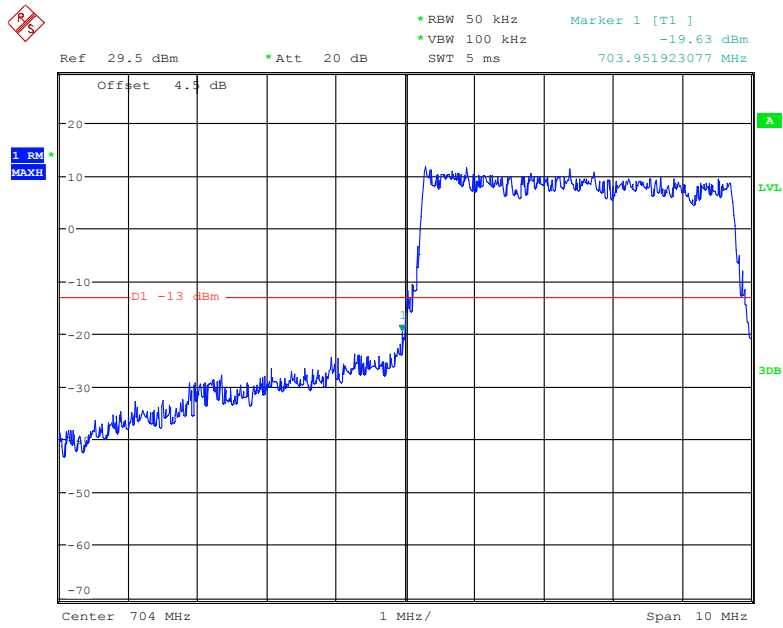
QPSK (10.0 MHz, FULL RB) - Left Band Edge
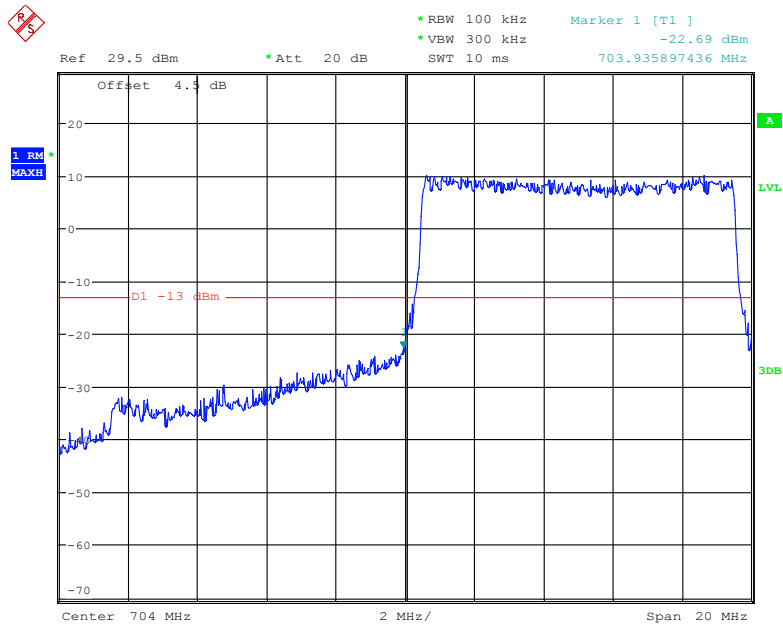
Date: 7.MAR.2018 16:01:28

QPSK (10.0 MHz, FULL RB) - Right Band Edge
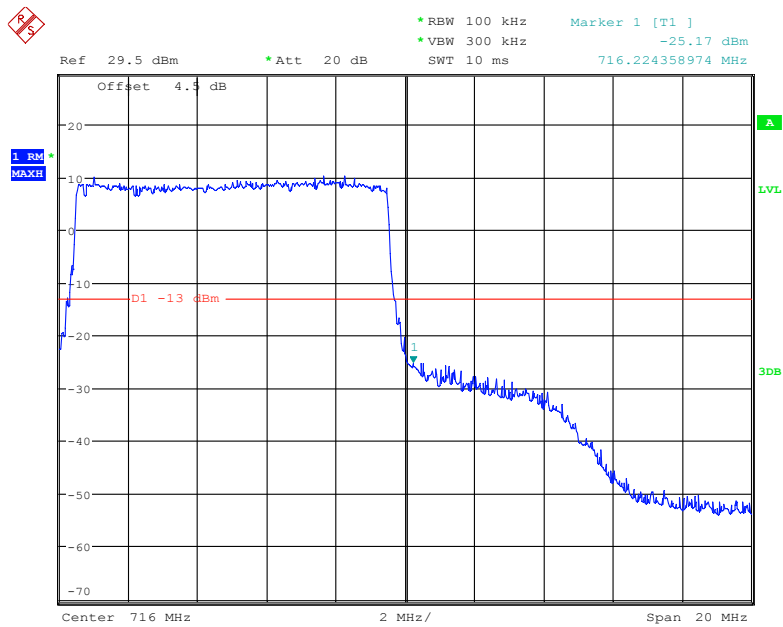
Date: 7.MAR.2018 16:02:01

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

```
                                    *RBW 100 kHz     Marker 1 [T1 ]
                                    *VBW 300 kHz           -22.05 dBm
        Ref  29.5 dBm      *Att  20 dB   SWT 10 ms    703.967948718 MHz
          Offset   4.5 dB                                              A
      -20
1 RM *
MAXH
      -10                                                              LVL
       -0
      -10
          D1 -13 dBm
      -20
      -30                                                             3DB
      -40
      -50
      -60
      -70
      Center  704 MHz          2 MHz/              Span  20 MHz
```
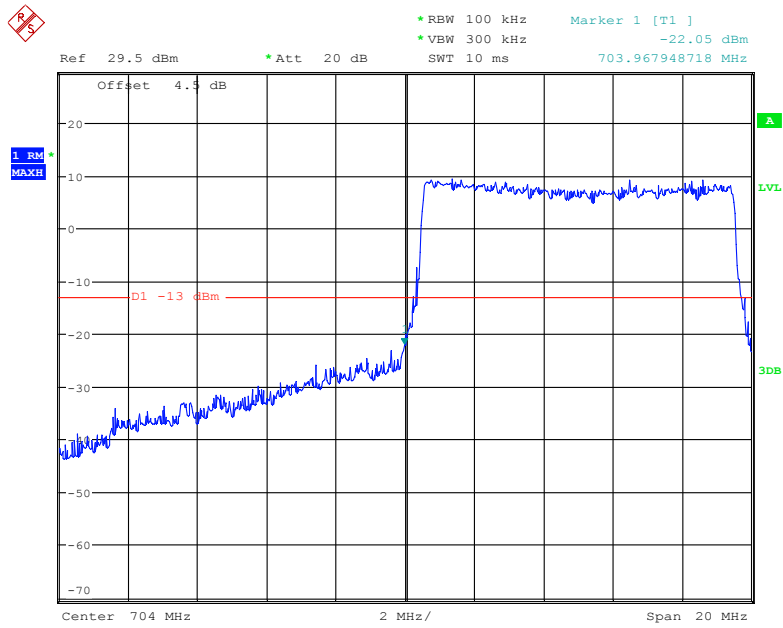
Date: 7.MAR.2018 16:00:56

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

```
                                    *RBW 100 kHz     Marker 1 [T1 ]
                                    *VBW 300 kHz           -25.15 dBm
        Ref  29.5 dBm      *Att  20 dB   SWT 10 ms    716.160256410 MHz
          Offset   4.5 dB                                              A
      -20
1 RM *
MAXH
      -10                                                              LVL
       -0
      -10
          D1 -13 dBm
      -20
      -30                                                             3DB
      -40
      -50
      -60
      -70
      Center  716 MHz          2 MHz/              Span  20 MHz
```
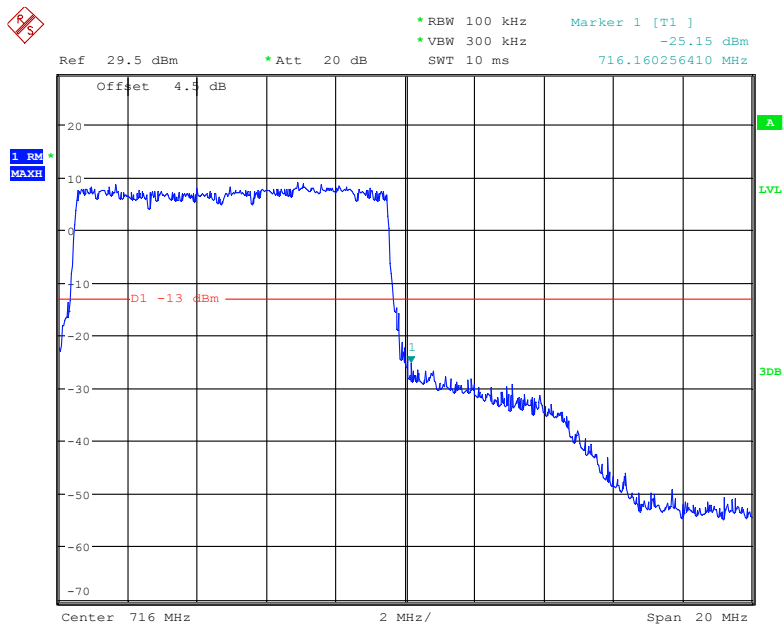
Date: 7.MAR.2018 16:02:20

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

Applicable Standard

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

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

Test Procedure

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

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

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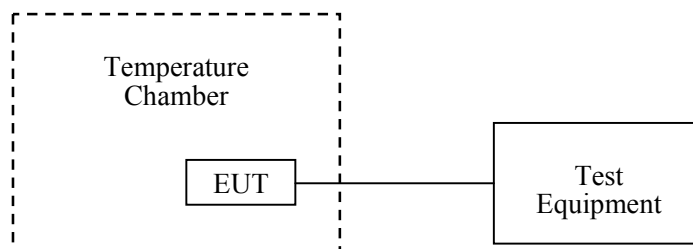
Test Data

Environmental Conditions

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

The testing was performed by Nancy Wang on 2018-03-08.

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		10	0.0120	2.5
-20		7	0.0084	2.5
-10		11	0.0131	2.5
0		9	0.0108	2.5
10	3.8	8	0.0096	2.5
20		10	0.0120	2.5
30		8	0.0096	2.5
40		10	0.0120	2.5
50		12	0.0143	2.5
25	V min.= 3.6	9	0.0108	2.5
	V max.= 4.3	8	0.0096	2.5

EDGE Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30		11	0.0131	2.5
-20		7	0.0084	2.5
-10		4	0.0048	2.5
0		6	0.0072	2.5
10	3.8	8	0.0096	2.5
20		11	0.0131	2.5
30		5	0.0060	2.5
40		8	0.0096	2.5
50		9	0.0108	2.5
25	V min.= 3.6	10	0.0120	2.5
	V max.= 4.3	8	0.0096	2.5

WCDMA Mode

Middle Channel, f_o =836.6MHz				
Temperature (℃)	Voltage Supplied (V$_{DC}$)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30		6	0.0072	2.5
-20		8	0.0096	2.5
-10		-1	-0.0012	2.5
0		6	0.0072	2.5
10	3.8	8	0.0096	2.5
20		-2	-0.0024	2.5
30		7	0.0084	2.5
40		4	0.0048	2.5
50		5	0.0060	2.5
25	V min.= 3.6	3	0.0036	2.5
	V max.= 4.3	5	0.0060	2.5

PCS Band (Part 24E)

GSM Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	Voltage Supplied (V$_{DC}$)	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30		28	0.0149	pass
-20		18	0.0096	pass
-10		21	0.0112	pass
0		10	0.0053	pass
10	3.8	20	0.0106	pass
20		37	0.0197	pass
30		28	0.0149	pass
40		21	0.0112	pass
50		18	0.0096	pass
25	V min.= 3.6	30	0.0160	pass
	V max.= 4.3	27	0.0144	pass

EDGE Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	12	0.0064	pass
-20		17	0.0090	pass
-10		25	0.0133	pass
0		18	0.0096	pass
10		20	0.0106	pass
20		33	0.0176	pass
30		12	0.0064	pass
40		17	0.0090	pass
50		26	0.0138	pass
25	V min.= 3.6	20	0.0106	pass
	V max.= 4.3	24	0.0128	pass

WCDMA Mode

Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	8	0.0043	pass
-20		6	0.0032	pass
-10		4	0.0021	pass
0		7	0.0037	pass
10		-2	-0.0011	pass
20		-3	-0.0016	pass
30		1	0.0005	pass
40		3	0.0016	pass
50		4	0.0021	pass
25	V min.= 3.6	6	0.0032	pass
	V max.= 4.3	1	0.0005	pass

LTE:
QPSK:

Band 2:

10.0 MHz Middle Channel, f_o =1880MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-3.36	-0.00179	pass
-20		-7.00	-0.00372	pass
-10		-4.80	-0.00255	pass
0		-7.00	-0.00372	pass
10		-5.00	-0.00266	pass
20		-6.74	-0.00359	pass
30		-5.00	-0.00266	pass
40		-2.90	-0.00154	pass
50		-3.60	-0.00191	pass
20	V min.= 3.6	-5.00	-0.00266	pass
	V max.= 4.3	8.00	0.004255	pass

Band 4:

10.0 MHz Middle Channel, f_o =1732.5 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-5.42	-0.00313	pass
-20		-4.42	-0.00255	pass
-10		-4.00	-0.00231	pass
0		-3.52	-0.00203	pass
10		-3.00	-0.00173	pass
20		-3.26	-0.00188	pass
30		-1.78	-0.00103	pass
40		-1.57	-0.00091	pass
50		-2.68	-0.00155	pass
20	V min.= 3.6	3.00	0.001732	pass
	V max.= 4.3	-4.00	-0.00231	pass

Band 7:

10.0 MHz Middle Channel, f_o =2535 MHz				
Temperature (℃)	Voltage Supplied (V_DC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-4.44	-0.00175	pass
-20		-6.00	-0.00237	pass
-10		-3.80	-0.00150	pass
0		-3.90	-0.00154	pass
10		-4.48	-0.00177	pass
20		-1.53	-0.00060	pass
30		-7.80	-0.00308	pass
40		-3.90	-0.00154	pass
50		-2.46	-0.00097	pass
20	V min.= 3.6	-8.00	-0.00316	pass
	V max.= 4.3	1.00	0.000394	pass

Band 17:

10.0 MHz Middle Channel, f_o =710 MHz				
Temperature (℃)	Voltage Supplied (V_DC)	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-4.28	-0.00603	pass
-20		4.00	0.005634	pass
-10		-4.9	-0.0069	pass
0		-7.00	-0.00986	pass
10		3.00	0.004225	pass
20		-4.36	-0.00614	pass
30		-5.00	-0.00704	pass
40		-2.70	-0.0038	pass
50		-3.90	-0.00549	pass
25	V min.= 3.6	-3.00	-0.00423	pass
	V max.= 4.3	4.00	0.005634	pass

16QAM:

Band 2:

10.0 MHz Middle Channel, f_o =1880MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-8.62	-0.00459	pass
-20		-5.74	-0.00305	pass
-10		-7.00	-0.00372	pass
0		-4.57	-0.00243	pass
10		-5.41	-0.00288	pass
20		-6.52	-0.00347	pass
30		-3.32	-0.00177	pass
40		-5.00	-0.00266	pass
50		-2.92	-0.00155	pass
20	V min.= 3.6	-3.00	-0.00160	pass
	V max.= 4.3	7.00	0.00372	pass

Band 4:

10.0 MHz Middle Channel, f_o =1732.5 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-4.54	-0.00262	pass
-20		-8.36	-0.00483	pass
-10		-7.32	-0.00423	pass
0		-5.24	-0.00302	pass
10		-3.32	-0.00192	pass
20		-1.45	-0.00084	pass
30		2.44	0.001408	pass
40		1.38	0.000797	pass
50		1.85	0.001068	pass
20	V min.= 3.6	-6	-0.00346	pass
	V max.= 4.3	-4	-0.00231	pass

Band 7:

10.0 MHz Middle Channel, f_o =2535 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	5.45	0.00215	pass
-20		4.32	0.001704	pass
-10		6.46	0.002548	pass
0		8.51	0.003357	pass
10		1.62	0.000639	pass
20		2.44	0.000963	pass
30		5.00	0.001972	pass
40		8.00	0.003156	pass
50		8.00	0.003156	pass
20	V min.= 3.6	6.00	0.002367	pass
	V max.= 4.3	-4.00	-0.00158	pass

Band 17:

10.0 MHz Middle Channel, f_o =710 MHz				
Temperature (℃)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	5.36	0.007549	pass
-20		4.76	0.006704	pass
-10		5.43	0.007648	pass
0		5.59	0.007873	pass
10		1.86	0.00262	pass
20		3.49	0.004915	pass
30		4.00	0.005634	pass
40		7.00	0.009859	pass
50		6.00	0.008451	pass
25	V min.= 3.6	7.00	0.009859	pass
25	V max.= 4.3	-8.00	-0.01127	pass

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