FCC PART 27

FCC PART 22H, PART 24E

TEST REPORT

For

BLU Products, Inc.

10814 NW 33rd St # 100 Doral, FL 33172, United States

FCC ID: YHLBLUGRANDM3

Report Type:	Product Type:
Original Report	Smart Phone

Report Number:	RSZ180206001-00D
Report Date:	2018-03-06
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

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

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *BLU Products, Inc.'s* product, model number: GRAND M3 *(FCC ID: YHLBLUGRANDM3)* or the "EUT" in this report was a *Smart Phone,* which was measured approximately: 15.0 cm (L) × 8.0 cm (W) × 0.8 cm (H), rated with input voltage: DC 3.8 V battery or DC 5V from adapter.

Adapter Information:
Model: US-BB-1000
Input: AC 100-240V, 50/60Hz, 0.2A
Output: DC 5V, 1A

**All measurement and test data in this report was gathered from production sample serial number: 1800136 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-01-09.*

Objective

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

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

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS & DSS and Part 15B JBP submissions with FCC ID: YHLBLUGRANDM3.

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.

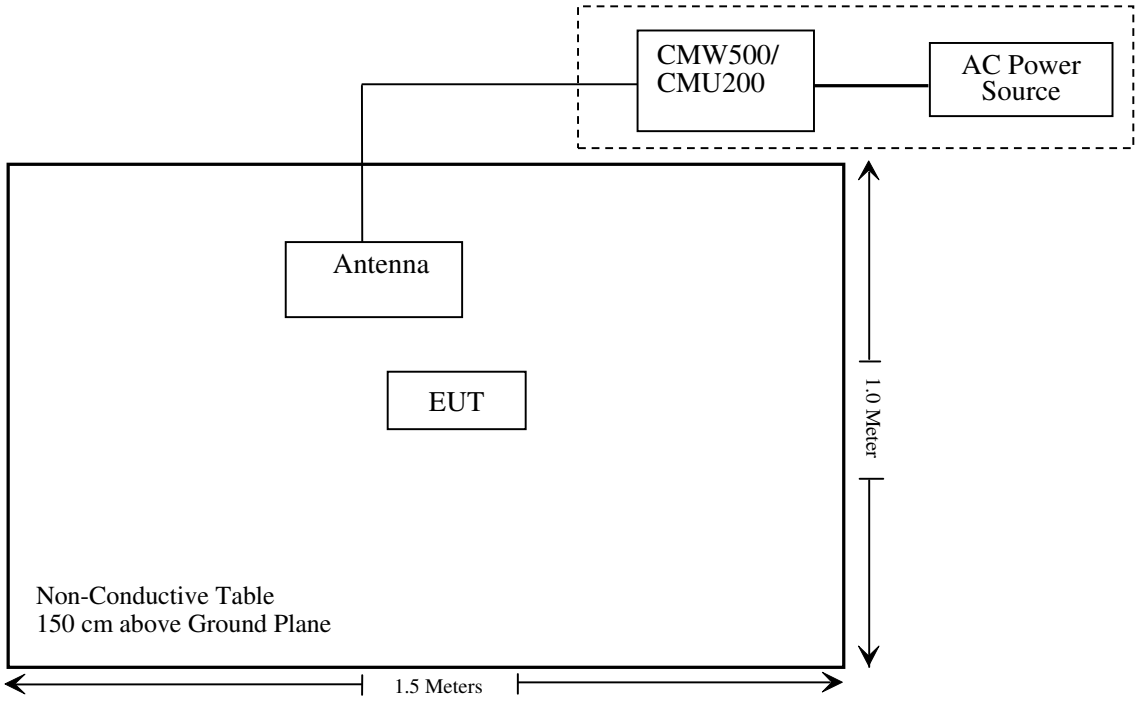
Equipment Modifications

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: RSZ180206001-20

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	2017-12-17	2020-12-16
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	2017-12-24	2018-12-24
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
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2017-08-19	2018-08-19
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: RSZ180206001-20.

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.

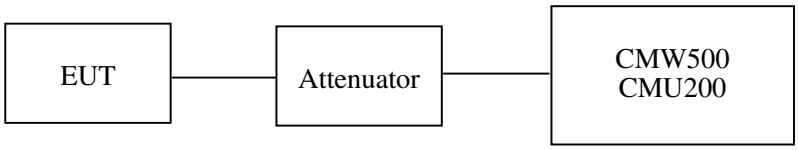
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.

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 Tracy Hu on 2018-02-10.

Conducted Power

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.33	38.45
	190	836.6	32.34	38.45
	251	848.8	32.20	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	32.36	31.54	29.76	28.59	38.45
	190	836.6	32.35	31.58	29.78	28.65	38.45
	251	848.8	32.23	31.46	29.67	28.57	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	27.29	26.25	24.14	22.76	38.45
	190	836.6	27.32	26.26	24.19	22.79	38.45
	251	848.8	27.43	26.37	24.29	23.17	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		22.69	22.67	22.61
		HSDPA	1	21.68	21.67	21.58
			2	21.58	21.62	21.53
			3	21.74	21.72	21.65
			4	21.55	21.59	21.52
		HSUPA	1	21.27	21.11	21.14
			2	21.24	21.06	21.02
			3	21.38	21.16	21.26
			4	21.16	20.98	21.10
			5	21.34	21.22	21.18
		HSPA+	1	21.07	21.15	21.13

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	29.00	33
	661	1880.0	28.74	33
	810	1909.8	28.42	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.03	28.06	26.56	25.27	33
	661	1880.0	28.83	27.84	26.28	25.05	33
	810	1909.8	28.52	27.52	25.98	24.72	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.15	24.95	22.96	21.75	33
	661	1880.0	26.17	24.99	22.96	21.75	33
	810	1909.8	26.17	25.01	22.96	21.72	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		22.00	22.04	22.16
		HSDPA	1	21.01	21.06	21.11
			2	20.95	20.95	21.03
			3	21.08	21.18	21.22
			4	20.91	20.98	21.03
		HSUPA	1	20.57	20.68	20.77
			2	20.52	20.60	20.67
			3	20.68	20.80	20.86
			4	20.44	20.62	20.67
			5	20.67	20.73	20.82
		HSPA+	1	20.55	20.51	20.46

AWS Band (Part 27)

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band IV)	Normal	RMC12.2k		22.58	22.58	22.64
		HSDPA	1	21.54	21.54	21.57
			2	21.43	21.51	21.51
			3	21.60	21.59	21.63
			4	21.48	21.47	21.49
		HSUPA	1	21.07	21.10	21.11
			2	20.98	21.01	21.05
			3	21.17	21.13	21.23
			4	21.01	21.03	20.99
			5	21.15	21.18	21.14
		HSPA+	1	20.47	20.62	20.39

Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.48	13
	Middle	0.35	13
	High	0.46	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.58	13
	Middle	2.42	13
	High	2.57	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	4.36	13
	Middle	4.12	13
	High	4.37	13
HSDPA (16QAM)	Low	4.32	13
	Middle	4.17	13
	High	4.39	13
HSUPA (BPSK)	Low	4.34	13
	Middle	4.15	13
	High	4.33	13
HSPA+	Low	3.54	13
	Middle	3.27	13
	High	3.19	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.45	13
	Middle	0.32	13
	High	0.46	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.58	13
	Middle	2.42	13
	High	2.53	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.64	13
	Middle	3.44	13
	High	3.62	13
HSDPA (16QAM)	Low	3.67	13
	Middle	3.47	13
	High	3.65	13
HSUPA (BPSK)	Low	3.69	13
	Middle	3.46	13
	High	3.67	13
HSPA+	Low	3.82	13
	Middle	3.75	13
	High	3.67	13

AWS Band (Part 27)

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.35	13
	Middle	3.11	13
	High	3.39	13
HSDPA (16QAM)	Low	3.34	13
	Middle	3.16	13
	High	3.35	13
HSUPA (BPSK)	Low	3.39	13
	Middle	3.12	13
	High	3.34	13
HSPA+	Low	3.95	13
	Middle	3.77	13
	High	3.61	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	91.73	121	2.3	H	31.7	0.7	0.0	31.00	38.45	7.45
836.6	83.11	235	1.9	V	23.1	0.7	0.0	22.40	38.45	16.05
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	89.31	179	2.3	H	19.3	1.30	8.50	26.50	33	6.5
1880.00	85.49	275	2.5	V	15.2	1.30	8.50	22.40	33	10.6

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	86.25	276	2.0	H	26.3	0.7	0.0	25.60	38.45	12.85
836.6	81.04	270	2.5	V	21.0	0.7	0.0	20.30	38.45	18.15
EIRP, PCS Band (Part 24E), Middle Channel										
1880.00	84.25	321	2.0	H	14.2	1.30	8.50	21.40	33	11.6
1880.00	80.24	109	2.2	V	10.0	1.30	8.50	17.20	33	15.8

WCDMA Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H/24E/27	
			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	78.25	212	2.0	H	18.3	0.7	0.0	17.6	38.45	20.85
836.6	74.64	77	1.2	V	14.6	0.7	0.0	13.9	38.45	24.55
EIRP for WCDMA Band II (Part 24E), Middle Channel										
1880.00	80.93	219	1.6	H	10.9	1.30	8.50	18.10	33	14.9
1880.00	78.19	56	1.9	V	7.9	1.30	8.50	15.10	33	17.9
EIRP for WCDMA Band IV (Part 27), Middle Channel										
1732.60	85.99	29	1.7	H	12.8	1.30	9.10	20.60	30	9.4
1732.60	82.54	326	1.0	V	10.0	1.30	9.10	17.80	30	12.2

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

LTE Band 2:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.21	22.40	22.22
		RB Size=1, RB Offset=2	22.11	22.32	22.12
		RB Size=1, RB Offset=5	22.26	22.52	22.32
		RB Size=3, RB Offset=0	21.34	21.86	21.38
		RB Size=3, RB Offset=1	21.26	21.79	21.29
		RB Size=3, RB Offset=2	21.44	21.91	21.50
		RB Size=6, RB Offset=0	21.14	21.46	21.67
	16QAM	RB Size=1, RB Offset=0	22.26	22.41	22.27
		RB Size=1, RB Offset=2	22.16	22.29	22.17
		RB Size=1, RB Offset=5	22.32	22.44	22.32
		RB Size=3, RB Offset=0	21.45	21.84	21.48
		RB Size=3, RB Offset=1	21.42	21.80	21.39
		RB Size=3, RB Offset=2	21.55	21.92	21.56
		RB Size=6, RB Offset=0	21.16	21.47	21.15
3.0	QPSK	RB Size=1, RB Offset=0	22.29	22.47	22.25
		RB Size=1, RB Offset=7	22.22	22.41	22.19
		RB Size=1, RB Offset=14	22.40	22.58	22.31
		RB Size=8, RB Offset=0	21.43	21.86	21.41
		RB Size=8, RB Offset=4	21.34	21.77	21.35
		RB Size=8, RB Offset=7	21.56	21.91	21.46
		RB Size=15, RB Offset=0	21.21	21.47	21.15
	16QAM	RB Size=1, RB Offset=0	22.23	22.46	22.21
		RB Size=1, RB Offset=7	22.19	22.37	22.16
		RB Size=1, RB Offset=14	22.35	22.52	22.30
		RB Size=8, RB Offset=0	21.47	21.89	21.43
		RB Size=8, RB Offset=4	21.39	21.82	21.40
		RB Size=8, RB Offset=7	21.59	21.98	21.52
		RB Size=15, RB Offset=0	21.15	21.44	21.18

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.17	22.35	22.13
		RB Size=1, RB Offset=12	22.09	22.25	22.03
		RB Size=1, RB Offset=24	22.28	22.41	22.23
		RB Size=12, RB Offset=0	21.42	21.81	21.46
		RB Size=12, RB Offset=6	21.34	21.69	21.41
		RB Size=12, RB Offset=11	21.48	21.86	21.54
		RB Size=25, RB Offset=0	21.26	21.45	21.15
	16QAM	RB Size=1, RB Offset=0	22.12	22.35	22.14
		RB Size=1, RB Offset=12	22.02	22.31	22.10
		RB Size=1, RB Offset=24	22.21	22.45	22.23
		RB Size=12, RB Offset=0	21.44	21.75	21.49
		RB Size=12, RB Offset=6	21.38	21.72	21.38
		RB Size=12, RB Offset=11	21.50	21.84	21.58
		RB Size=25, RB Offset=0	21.24	21.47	21.15
10.0	QPSK	RB Size=1, RB Offset=0	22.17	22.43	22.15
		RB Size=1, RB Offset=24	22.13	22.31	22.07
		RB Size=1, RB Offset=49	22.22	22.54	22.25
		RB Size=25, RB Offset=0	21.41	21.78	21.42
		RB Size=25, RB Offset=12	21.29	21.70	21.39
		RB Size=25, RB Offset=24	21.49	21.83	21.48
		RB Size=50, RB Offset=0	21.24	21.55	21.17
	16QAM	RB Size=1, RB Offset=0	22.13	22.45	22.18
		RB Size=1, RB Offset=24	22.04	22.38	22.06
		RB Size=1, RB Offset=49	22.25	22.51	22.25
		RB Size=25, RB Offset=0	21.42	21.74	21.44
		RB Size=25, RB Offset=12	21.29	21.68	21.39
		RB Size=25, RB Offset=24	21.45	21.81	21.56
		RB Size=50, RB Offset=0	21.24	21.55	21.27

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	22.19	22.35	22.13
		RB Size=1, RB Offset=37	22.13	22.31	22.05
		RB Size=1, RB Offset=74	22.31	22.43	22.23
		RB Size=36, RB Offset=0	21.47	21.76	21.42
		RB Size=36, RB Offset=18	21.43	21.71	21.38
		RB Size=36, RB Offset=37	21.50	21.87	21.54
		RB Size=75, RB Offset=0	21.34	21.52	21.25
	16QAM	RB Size=1, RB Offset=0	22.11	22.35	22.17
		RB Size=1, RB Offset=37	21.99	22.29	22.11
		RB Size=1, RB Offset=74	22.18	22.38	22.24
		RB Size=36, RB Offset=0	21.51	21.94	21.62
		RB Size=36, RB Offset=18	21.45	21.81	21.58
		RB Size=36, RB Offset=37	21.57	22.07	21.74
		RB Size=75, RB Offset=0	21.24	21.61	21.27
20.0	QPSK	RB Size=1, RB Offset=0	22.04	22.24	22.07
		RB Size=1, RB Offset=49	21.96	22.11	21.96
		RB Size=1, RB Offset=99	22.17	22.29	22.16
		RB Size=50, RB Offset=0	21.57	21.95	21.67
		RB Size=50, RB Offset=24	21.46	21.88	21.56
		RB Size=50, RB Offset=49	21.60	22.07	21.78
		RB Size=100, RB Offset=0	21.34	21.59	21.24
	16QAM	RB Size=1, RB Offset=0	22.01	22.14	22.02
		RB Size=1, RB Offset=49	21.92	22.04	21.94
		RB Size=1, RB Offset=99	22.13	22.24	22.12
		RB Size=50, RB Offset=0	21.51	21.84	21.62
		RB Size=50, RB Offset=24	21.44	21.76	21.59
		RB Size=50, RB Offset=49	21.56	21.90	21.74
		RB Size=100, RB Offset=0	21.23	21.51	21.24

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.77	13	Pass
QPSK (100RB Size)	4.67	13	Pass
16QAM (1RB Size)	4.87	13	Pass
16QAM (100RB Size)	4.86	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	85.62	88	1.1	H	15.6	1.30	8.50	22.80	33
1880.00	84.33	123	1.1	V	14.1	1.30	8.50	21.30	33
3 MHz Bandwidth									
1880.00	86.31	330	1.7	H	16.3	1.30	8.50	23.50	33
1880.00	85.22	96	2.4	V	15.0	1.30	8.50	22.20	33
5 MHz Bandwidth									
1880.00	85.31	357	1.6	H	15.3	1.30	8.50	22.50	33
1880.00	83.11	343	2.2	V	12.8	1.30	8.50	20.00	33
10 MHz Bandwidth									
1880.00	85.42	324	1.1	H	15.4	1.30	8.50	22.60	33
1880.00	85.72	116	1.1	V	15.5	1.30	8.50	22.70	33
15 MHz Bandwidth									
1880.00	85.44	356	2.3	H	15.4	1.30	8.50	22.60	33
1880.00	85.58	346	1.1	V	15.3	1.30	8.50	22.50	33
20 MHz Bandwidth									
1880.00	84.44	33	1.6	H	14.4	1.30	8.50	21.60	33
1880.00	84.58	154	1.5	V	14.3	1.30	8.50	21.50	33

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	86.89	49	1.1	H	16.8	1.30	8.50	24.00	33
1880.00	86.4	12	2.4	V	16.1	1.30	8.50	23.30	33
3 MHz Bandwidth									
1880.00	86.34	141	2.1	H	16.3	1.30	8.50	23.50	33
1880.00	85.72	205	2.3	V	15.5	1.30	8.50	22.70	33
5 MHz Bandwidth									
1880.00	86.37	167	1.7	H	16.3	1.30	8.50	23.50	33
1880.00	86.22	192	1.5	V	16.0	1.30	8.50	23.20	33
10 MHz Bandwidth									
1880.00	88.22	355	2.2	H	18.2	1.30	8.50	25.40	33
1880.00	86.25	60	1.0	V	16.0	1.30	8.50	23.20	33
15 MHz Bandwidth									
1880.00	87.14	30	1.9	H	17.1	1.30	8.50	24.30	33
1880.00	86.67	248	1.6	V	16.4	1.30	8.50	23.60	33
20 MHz Bandwidth									
1880.00	86.88	250	2.4	H	16.8	1.30	8.50	24.00	33
1880.00	86.54	70	2.0	V	16.3	1.30	8.50	23.50	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	22.75	23.1	22.79
		RB Size=1, RB Offset=2	22.69	22.98	22.67
		RB Size=1, RB Offset=5	22.86	23.14	22.83
		RB Size=3, RB Offset=0	22.14	22.53	22.17
		RB Size=3, RB Offset=1	22.04	22.47	22.08
		RB Size=3, RB Offset=2	22.23	22.65	22.23
		RB Size=6, RB Offset=0	21.54	22.10	21.58
	16QAM	RB Size=1, RB Offset=0	23.45	23.76	23.28
		RB Size=1, RB Offset=2	23.32	23.71	23.16
		RB Size=1, RB Offset=5	23.52	23.82	23.34
		RB Size=3, RB Offset=0	22.57	22.95	22.54
		RB Size=3, RB Offset=1	22.48	22.85	22.51
		RB Size=3, RB Offset=2	22.64	22.98	22.66
		RB Size=6, RB Offset=0	21.85	22.10	21.75
3.0	QPSK	RB Size=1, RB Offset=0	22.78	23.19	22.75
		RB Size=1, RB Offset=7	22.75	23.09	22.62
		RB Size=1, RB Offset=14	22.85	23.28	22.87
		RB Size=8, RB Offset=0	22.41	22.67	22.34
		RB Size=8, RB Offset=4	22.33	22.55	22.27
		RB Size=8, RB Offset=7	22.53	22.71	22.44
		RB Size=15, RB Offset=0	22.04	22.21	22.05
	16QAM	RB Size=1, RB Offset=0	22.76	23.2	22.79
		RB Size=1, RB Offset=7	22.68	23.12	22.71
		RB Size=1, RB Offset=14	22.79	23.24	22.86
		RB Size=8, RB Offset=0	22.27	22.57	22.18
		RB Size=8, RB Offset=4	22.20	22.45	22.14
		RB Size=8, RB Offset=7	22.32	22.61	22.24
		RB Size=15, RB Offset=0	22.05	22.17	22.07

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.85	23.13	22.72
		RB Size=1, RB Offset=12	22.80	23.03	22.66
		RB Size=1, RB Offset=24	22.97	23.17	22.77
		RB Size=12, RB Offset=0	22.24	22.54	22.12
		RB Size=12, RB Offset=6	22.13	22.49	22.05
		RB Size=12, RB Offset=11	22.33	22.57	22.20
		RB Size=25, RB Offset=0	22.01	22.23	22.04
	16QAM	RB Size=1, RB Offset=0	22.89	23.16	22.78
		RB Size=1, RB Offset=12	22.86	23.07	22.67
		RB Size=1, RB Offset=24	23.01	23.21	22.83
		RB Size=12, RB Offset=0	22.29	22.68	22.27
		RB Size=12, RB Offset=6	22.17	22.62	22.21
		RB Size=12, RB Offset=11	22.35	22.78	22.39
		RB Size=25, RB Offset=0	22.04	22.23	22.03
10.0	QPSK	RB Size=1, RB Offset=0	22.82	23.25	22.73
		RB Size=1, RB Offset=24	22.79	23.20	22.61
		RB Size=1, RB Offset=49	22.89	23.31	22.78
		RB Size=25, RB Offset=0	22.24	22.61	22.23
		RB Size=25, RB Offset=12	22.12	22.53	22.13
		RB Size=25, RB Offset=24	22.28	22.64	22.32
		RB Size=50, RB Offset=0	22.12	22.33	22.15
	16QAM	RB Size=1, RB Offset=0	22.87	23.23	22.79
		RB Size=1, RB Offset=24	22.82	23.12	22.72
		RB Size=1, RB Offset=49	22.91	23.36	22.88
		RB Size=25, RB Offset=0	22.27	22.65	22.28
		RB Size=25, RB Offset=12	22.14	22.60	22.18
		RB Size=25, RB Offset=24	22.36	22.75	22.40
		RB Size=50, RB Offset=0	22.04	22.29	22.05

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15.0	QPSK	RB Size=1, RB Offset=0	22.89	23.15	22.71
		RB Size=1, RB Offset=37	22.86	23.09	22.59
		RB Size=1, RB Offset=74	22.94	23.24	22.75
		RB Size=36, RB Offset=0	22.34	22.79	22.36
		RB Size=36, RB Offset=18	22.30	22.70	22.27
		RB Size=36, RB Offset=37	22.46	22.87	22.47
		RB Size=75, RB Offset=0	22.04	22.37	22.08
	16QAM	RB Size=1, RB Offset=0	22.81	23.15	22.77
		RB Size=1, RB Offset=37	22.73	23.08	22.70
		RB Size=1, RB Offset=74	22.90	23.23	22.84
		RB Size=36, RB Offset=0	22.37	22.84	22.45
		RB Size=36, RB Offset=18	22.29	22.79	22.37
		RB Size=36, RB Offset=37	22.47	22.91	22.54
		RB Size=75, RB Offset=0	22.12	22.50	22.17
20.0	QPSK	RB Size=1, RB Offset=0	22.85	23.03	22.82
		RB Size=1, RB Offset=49	22.78	22.99	22.78
		RB Size=1, RB Offset=99	22.95	23.12	22.85
		RB Size=50, RB Offset=0	22.31	22.75	22.42
		RB Size=50, RB Offset=24	22.25	22.65	22.36
		RB Size=50, RB Offset=49	22.34	22.82	22.46
		RB Size=100, RB Offset=0	22.12	22.35	22.17
	16QAM	RB Size=1, RB Offset=0	22.81	23.04	22.84
		RB Size=1, RB Offset=49	22.77	22.92	22.72
		RB Size=1, RB Offset=99	22.92	23.08	22.96
		RB Size=50, RB Offset=0	22.24	22.64	22.26
		RB Size=50, RB Offset=24	22.20	22.59	22.15
		RB Size=50, RB Offset=49	22.35	22.73	22.34
		RB Size=100, RB Offset=0	22.04	22.27	22.08

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.64	13	Pass
QPSK (100RB Size)	4.50	13	Pass
16QAM (1RB Size)	4.69	13	Pass
16QAM (100RB Size)	4.43	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	86.41	323	1.5	H	13.2	1.30	8.90	20.80	30
1732.50	83.34	74	2.1	V	10.8	1.30	8.90	18.40	30
3 MHz Bandwidth									
1732.50	85.94	205	2.0	H	12.8	1.30	8.90	20.40	30
1732.50	85.15	258	2.0	V	12.6	1.30	8.90	20.20	30
5 MHz Bandwidth									
1732.50	85.46	309	2.0	H	12.3	1.30	8.90	19.90	30
1732.50	85.31	172	1.9	V	12.7	1.30	8.90	20.30	30
10 MHz Bandwidth									
1732.50	86.23	77	2.2	H	13.1	1.30	8.90	20.70	30
1732.50	84.58	127	1.9	V	12.0	1.30	8.90	19.60	30
15 MHz Bandwidth									
1732.50	86.79	293	2.2	H	13.6	1.30	8.90	21.20	30
1732.50	85.31	185	1.4	V	12.7	1.30	8.90	20.30	30
20 MHz Bandwidth									
1732.50	85.79	313	2.3	H	12.6	1.30	8.90	20.20	30
1732.50	85.11	292	1.1	V	12.5	1.30	8.90	20.10	30

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	86.24	183	1.2	H	13.1	1.30	8.90	20.70	30
1732.50	86.11	245	1.3	V	13.5	1.30	8.90	21.10	30
3 MHz Bandwidth									
1732.50	85.96	304	1.9	H	12.8	1.30	8.90	20.40	30
1732.50	86.43	76	1.7	V	13.9	1.30	8.90	21.50	30
5 MHz Bandwidth									
1732.50	86.24	177	1.8	H	13.1	1.30	8.90	20.70	30
1732.50	87.31	216	2.4	V	14.7	1.30	8.90	22.30	30
10 MHz Bandwidth									
1732.50	86.54	283	2.3	H	13.4	1.30	8.90	21.00	30
1732.50	87.52	30	1.2	V	15.0	1.30	8.90	22.60	30
15 MHz Bandwidth									
1732.50	86.14	186	1.8	H	13.0	1.30	8.90	20.60	30
1732.50	86.85	252	1.9	V	14.3	1.30	8.90	21.90	30
20 MHz Bandwidth									
1732.50	85.74	109	1.9	H	12.6	1.30	8.90	20.20	30
1732.50	86.69	240	1.4	V	14.1	1.30	8.90	21.70	30

LTE Band 5:

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	23.15	23.54	23.24
		RB Size=1, RB Offset=2	23.09	23.43	23.12
		RB Size=1, RB Offset=5	23.26	23.59	23.28
		RB Size=3, RB Offset=0	22.78	23.02	22.81
		RB Size=3, RB Offset=1	22.74	22.98	22.72
		RB Size=3, RB Offset=2	22.89	23.09	22.88
		RB Size=6, RB Offset=0	22.26	22.59	22.34
	16QAM	RB Size=1, RB Offset=0	23.17	23.54	23.29
		RB Size=1, RB Offset=2	23.12	23.43	23.25
		RB Size=1, RB Offset=5	23.22	23.58	23.38
		RB Size=3, RB Offset=0	22.73	23.07	22.89
		RB Size=3, RB Offset=1	22.63	23.03	22.82
		RB Size=3, RB Offset=2	22.85	23.13	23.01
		RB Size=6, RB Offset=0	22.35	22.57	22.15
3.0	QPSK	RB Size=1, RB Offset=0	23.26	23.63	23.12
		RB Size=1, RB Offset=7	23.20	23.59	23.01
		RB Size=1, RB Offset=14	23.39	23.73	23.22
		RB Size=8, RB Offset=0	22.84	23.09	22.82
		RB Size=8, RB Offset=4	22.78	23.05	22.76
		RB Size=8, RB Offset=7	22.94	23.14	22.86
		RB Size=15, RB Offset=0	22.26	22.51	22.31
	16QAM	RB Size=1, RB Offset=0	23.22	23.61	23.17
		RB Size=1, RB Offset=7	23.13	23.53	23.08
		RB Size=1, RB Offset=14	23.31	23.70	23.29
		RB Size=8, RB Offset=0	22.87	23.04	22.86
		RB Size=8, RB Offset=4	22.80	22.94	22.75
		RB Size=8, RB Offset=7	22.99	23.09	22.94
		RB Size=15, RB Offset=0	22.12	22.50	22.24

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	23.27	23.56	23.14
		RB Size=1, RB Offset=12	23.22	23.49	23.09
		RB Size=1, RB Offset=24	23.36	23.68	23.17
		RB Size=12, RB Offset=0	22.82	23.09	22.81
		RB Size=12, RB Offset=6	22.73	22.97	22.78
		RB Size=12, RB Offset=11	22.86	23.17	22.90
		RB Size=25, RB Offset=0	22.13	22.45	22.25
	16QAM	RB Size=1, RB Offset=0	23.24	23.55	23.21
		RB Size=1, RB Offset=12	23.12	23.48	23.11
		RB Size=1, RB Offset=24	23.32	23.68	23.27
		RB Size=12, RB Offset=0	22.87	23.04	22.84
		RB Size=12, RB Offset=6	22.82	23.00	22.73
		RB Size=12, RB Offset=11	22.91	23.12	22.93
		RB Size=25, RB Offset=0	22.26	22.51	22.15
10.0	QPSK	RB Size=1, RB Offset=0	23.28	23.64	23.25
		RB Size=1, RB Offset=24	23.21	23.52	23.18
		RB Size=1, RB Offset=49	23.40	23.74	23.30
		RB Size=25, RB Offset=0	22.84	23.12	22.85
		RB Size=25, RB Offset=12	22.73	23.06	22.75
		RB Size=25, RB Offset=24	22.96	23.16	22.96
		RB Size=50, RB Offset=0	22.32	22.59	22.14
	16QAM	RB Size=1, RB Offset=0	23.25	23.62	23.27
		RB Size=1, RB Offset=24	23.16	23.56	23.15
		RB Size=1, RB Offset=49	23.31	23.69	23.33
		RB Size=25, RB Offset=0	22.87	23.17	22.72
		RB Size=25, RB Offset=12	22.77	23.08	22.60
		RB Size=25, RB Offset=24	22.93	23.22	22.80
		RB Size=50, RB Offset=0	22.21	22.49	22.17

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	4.11	13	Pass
QPSK(50RB Size)	5.36	13	Pass
16QAM (1RB Size)	3.83	13	Pass
16QAM (100RB Size)	5.39	13	Pass

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	79.36	48	1.1	H	17.0	0.7	0.0	16.30	38.45
836.5	72.19	240	1.3	V	11.8	0.7	0.0	11.10	38.45
3 MHz Bandwidth									
836.5	80.21	21	2.3	H	17.8	0.7	0.0	17.10	38.45
836.5	73.69	325	1.9	V	13.3	0.7	0.0	12.60	38.45
5 MHz Bandwidth									
836.5	80.65	159	1.9	H	18.3	0.7	0.0	17.60	38.45
836.5	73.44	170	1.9	V	13.0	0.7	0.0	12.30	38.45
10 MHz Bandwidth									
836.5	81.27	56	2.3	H	18.9	0.7	0.0	18.20	38.45
836.5	74.25	39	1.2	V	13.8	0.7	0.0	13.10	38.45

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	79.66	217	1.3	H	17.6	0.7	0.0	16.90	38.45
836.5	72.18	315	2.0	V	11.7	0.7	0.0	11.00	38.45
3 MHz Bandwidth									
836.5	80.24	284	1.5	H	18.2	0.7	0.0	17.50	38.45
836.5	71.68	228	2.4	V	11.2	0.7	0.0	10.50	38.45
5 MHz Bandwidth									
836.5	81.22	272	2.2	H	19.2	0.7	0.0	18.50	38.45
836.5	72.54	293	1.6	V	12.1	0.7	0.0	11.40	38.45
10 MHz Bandwidth									
836.5	80.61	269	2.3	H	18.6	0.7	0.0	17.90	38.45
836.5	72.05	132	1.4	V	11.6	0.7	0.0	10.90	38.45

LTE Band 7:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB Size=1, RB Offset=0	21.65	22.13	21.72
		RB Size=1, RB Offset=12	21.54	22.01	21.63
		RB Size=1, RB Offset=24	21.78	22.20	21.76
		RB Size=12, RB Offset=0	21.32	21.62	21.24
		RB Size=12, RB Offset=6	21.24	21.56	21.15
		RB Size=12, RB Offset=11	21.43	21.70	21.36
		RB Size=25, RB Offset=0	20.67	21.09	20.72
	16QAM	RB Size=1, RB Offset=0	21.75	22.13	21.79
		RB Size=1, RB Offset=12	21.63	22.09	21.69
		RB Size=1, RB Offset=24	21.88	22.23	21.91
		RB Size=12, RB Offset=0	21.35	21.69	21.27
		RB Size=12, RB Offset=6	21.29	21.63	21.18
		RB Size=12, RB Offset=11	21.41	21.76	21.38
		RB Size=25, RB Offset=0	20.84	21.17	20.87
10	QPSK	RB Size=1, RB Offset=0	21.94	22.25	21.88
		RB Size=1, RB Offset=24	21.90	22.16	21.84
		RB Size=1, RB Offset=49	22.03	22.33	21.97
		RB Size=25, RB Offset=0	21.62	21.84	21.52
		RB Size=25, RB Offset=12	21.57	21.71	21.41
		RB Size=25, RB Offset=24	21.71	21.89	21.60
		RB Size=50, RB Offset=0	21.14	21.31	21.12
	16QAM	RB Size=1, RB Offset=0	22.08	22.3	22.05
		RB Size=1, RB Offset=24	22.05	22.23	21.97
		RB Size=1, RB Offset=49	22.19	22.36	22.15
		RB Size=25, RB Offset=0	21.72	22.01	21.85
		RB Size=25, RB Offset=12	21.67	21.98	21.80
		RB Size=25, RB Offset=24	21.83	22.07	21.95
		RB Size=50, RB Offset=0	21.35	21.74	21.24

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15	QPSK	RB Size=1, RB Offset=0	21.54	21.75	21.34
		RB Size=1, RB Offset=37	21.44	21.68	21.30
		RB Size=1, RB Offset=74	21.64	21.86	21.43
		RB Size=36, RB Offset=0	21.03	21.27	21.08
		RB Size=36, RB Offset=18	20.94	21.19	20.97
		RB Size=36, RB Offset=37	21.06	21.38	21.14
		RB Size=75, RB Offset=0	20.54	20.86	20.25
	16QAM	RB Size=1, RB Offset=0	21.59	21.79	21.48
		RB Size=1, RB Offset=37	21.56	21.69	21.35
		RB Size=1, RB Offset=74	21.63	21.85	21.52
		RB Size=36, RB Offset=0	21.06	21.35	21.02
		RB Size=36, RB Offset=18	21.01	21.25	20.99
		RB Size=36, RB Offset=37	21.10	21.45	21.06
		RB Size=75, RB Offset=0	20.78	21.09	20.84
20	QPSK	RB Size=1, RB Offset=0	21.34	21.59	21.38
		RB Size=1, RB Offset=49	21.26	21.54	21.33
		RB Size=1, RB Offset=99	21.42	21.72	21.47
		RB Size=50, RB Offset=0	21.02	21.33	21.04
		RB Size=50, RB Offset=24	20.94	21.29	20.97
		RB Size=50, RB Offset=49	21.09	21.46	21.11
		RB Size=100, RB Offset=0	20.81	21.08	20.73
	16QAM	RB Size=1, RB Offset=0	21.31	21.53	21.24
		RB Size=1, RB Offset=49	21.25	21.49	21.11
		RB Size=1, RB Offset=99	21.43	21.59	21.28
		RB Size=50, RB Offset=0	21.04	21.26	21.07
		RB Size=50, RB Offset=24	20.95	21.19	20.99
		RB Size=50, RB Offset=49	21.16	21.31	21.15
		RB Size=100, RB Offset=0	20.45	20.73	20.36

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.12	13	Pass
QPSK (100RB Size)	4.21	13	Pass
16QAM (1RB Size)	4.27	13	Pass
16QAM (100RB Size)	4.27	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	80.17	19	1.3	H	10.7	2.60	10.20	18.30	33
2535.00	80.43	329	1.6	V	11.6	2.60	10.20	19.20	33
10 MHz Bandwidth									
2535.00	81.23	60	1.0	H	11.7	2.60	10.20	19.30	33
2535.00	80.44	306	1.7	V	11.6	2.60	10.20	19.20	33
15 MHz Bandwidth									
2535.00	80.65	70	1.6	H	11.2	2.60	10.20	18.80	33
2535.00	80.34	17	1.3	V	11.5	2.60	10.20	19.10	33
20 MHz Bandwidth									
2535.00	80.72	315	1.2	H	11.2	2.60	10.20	18.80	33
2535.00	79.71	84	1.7	V	10.8	2.60	10.20	18.40	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	81.35	210	1.6	H	11.9	2.60	10.20	19.50	33
2535.00	80.47	98	1.6	V	11.6	2.60	10.20	19.20	33
10 MHz Bandwidth									
2535.00	80.43	300	1.1	H	10.9	2.60	10.20	18.50	33
2535.00	80.52	5	2.3	V	11.6	2.60	10.20	19.20	33
15 MHz Bandwidth									
2535.00	80.77	93	2.3	H	11.3	2.60	10.20	18.90	33
2535.00	80.16	118	2.4	V	11.3	2.60	10.20	18.90	33
20 MHz Bandwidth									
2535.00	80.35	161	2.2	H	10.9	2.60	10.20	18.50	33
2535.00	79.68	243	2.4	V	10.8	2.60	10.20	18.40	33

LTE Band 12:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.36	22.73	22.24
		RB Size=1, RB Offset=2	22.31	22.68	22.18
		RB Size=1, RB Offset=5	22.45	22.86	22.37
		RB Size=3, RB Offset=0	22.03	22.26	22.07
		RB Size=3, RB Offset=1	21.91	22.23	22.00
		RB Size=3, RB Offset=2	22.16	22.35	22.11
		RB Size=6, RB Offset=0	21.36	21.88	21.26
	16QAM	RB Size=1, RB Offset=0	22.33	22.74	22.49
		RB Size=1, RB Offset=2	22.27	22.65	22.45
		RB Size=1, RB Offset=5	22.41	22.81	22.59
		RB Size=3, RB Offset=0	22.07	22.38	22.06
		RB Size=3, RB Offset=1	22.01	22.26	21.95
		RB Size=3, RB Offset=2	22.12	22.42	22.11
		RB Size=6, RB Offset=0	21.52	21.90	21.40
3	QPSK	RB Size=1, RB Offset=0	22.65	22.96	22.58
		RB Size=1, RB Offset=7	22.56	22.87	22.53
		RB Size=1, RB Offset=14	22.78	23.02	22.66
		RB Size=8, RB Offset=0	22.32	22.64	22.27
		RB Size=8, RB Offset=4	22.27	22.57	22.15
		RB Size=8, RB Offset=7	22.38	22.74	22.39
		RB Size=15, RB Offset=0	22.05	22.29	22.01
	16QAM	RB Size=1, RB Offset=0	23.05	23.27	23.02
		RB Size=1, RB Offset=7	23.01	23.19	22.97
		RB Size=1, RB Offset=14	23.12	23.37	23.14
		RB Size=8, RB Offset=0	22.39	22.71	22.23
		RB Size=8, RB Offset=4	22.30	22.62	22.18
		RB Size=8, RB Offset=7	22.45	22.84	22.34
		RB Size=15, RB Offset=0	22.08	22.37	22.15

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5	QPSK	RB Size=1, RB Offset=0	23.02	23.26	23.04
		RB Size=1, RB Offset=12	22.95	23.14	22.96
		RB Size=1, RB Offset=24	23.09	23.33	23.17
		RB Size=12, RB Offset=0	22.34	22.78	22.28
		RB Size=12, RB Offset=6	22.29	22.73	22.24
		RB Size=12, RB Offset=11	22.46	22.84	22.40
		RB Size=25, RB Offset=0	22.15	22.36	22.08
	16QAM	RB Size=1, RB Offset=0	22.85	23.09	22.74
		RB Size=1, RB Offset=12	22.78	23.05	22.62
		RB Size=1, RB Offset=24	22.94	23.21	22.79
		RB Size=12, RB Offset=0	22.39	22.62	22.24
		RB Size=12, RB Offset=6	22.31	22.54	22.12
		RB Size=12, RB Offset=11	22.45	22.68	22.35
		RB Size=25, RB Offset=0	22.12	22.36	22.16
10	QPSK	RB Size=1, RB Offset=0	23.06	23.32	23.05
		RB Size=1, RB Offset=24	23.03	23.19	22.97
		RB Size=1, RB Offset=49	23.15	23.38	23.15
		RB Size=25, RB Offset=0	22.72	22.95	22.71
		RB Size=25, RB Offset=12	22.66	22.89	22.62
		RB Size=25, RB Offset=24	22.75	23.05	22.81
		RB Size=50, RB Offset=0	22.31	22.62	22.28
	16QAM	RB Size=1, RB Offset=0	23.12	23.33	23.18
		RB Size=1, RB Offset=24	23.03	23.25	23.07
		RB Size=1, RB Offset=49	23.18	23.43	23.23
		RB Size=25, RB Offset=0	22.75	22.99	22.84
		RB Size=25, RB Offset=12	22.72	22.89	22.72
		RB Size=25, RB Offset=24	22.85	23.06	22.95
		RB Size=50, RB Offset=0	22.37	22.56	22.26

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.06	13	Pass
QPSK (50RB Size)	5.59	13	Pass
16QAM (1RB Size)	4.01	13	Pass
16QAM (100RB Size)	5.40	13	Pass

EIRP:

QPSK:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
707.5	81.36	73	2.2	H	20.4	0.7	0.0	19.70	34.77
707.5	72.15	54	2.0	V	13.7	0.7	0.0	13.00	34.77
3 MHz Bandwidth									
707.5	82.27	49	2.0	H	21.3	0.7	0.0	20.60	34.77
707.5	73.22	330	1.0	V	14.7	0.7	0.0	14.00	34.77
5 MHz Bandwidth									
707.5	81.66	152	2.4	H	20.7	0.7	0.0	20.00	34.77
707.5	73.08	238	1.6	V	14.6	0.7	0.0	13.90	34.77
10 MHz Bandwidth									
707.5	82.19	210	1.2	H	21.2	0.7	0.0	20.50	34.77
707.5	72.09	33	1.4	V	13.6	0.7	0.0	12.90	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									
1.4 MHz Bandwidth									
707.5	81.65	282	2.5	H	20.7	0.7	0.0	20.00	34.77
707.5	73.22	232	1.7	V	14.7	0.7	0.0	14.00	34.77
3 MHz Bandwidth									
707.5	82.21	265	2.1	H	21.2	0.7	0.0	20.50	34.77
707.5	73.36	35	2.0	V	14.9	0.7	0.0	14.20	34.77
5 MHz Bandwidth									
707.5	81.65	124	2.3	H	20.7	0.7	0.0	20.00	34.77
707.5	72.65	191	1.8	V	14.2	0.7	0.0	13.50	34.77
10 MHz Bandwidth									
707.5	81.95	27	2.4	H	21.0	0.7	0.0	20.30	34.77
707.5	72.87	321	1.6	V	14.4	0.7	0.0	13.70	34.77

LTE Band 17:

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.87	23.04	22.97
		RB Size=1, RB Offset=12	22.82	22.95	22.89
		RB Size=1, RB Offset=24	22.98	23.16	23.01
		RB Size=12, RB Offset=0	22.42	22.74	22.43
		RB Size=12, RB Offset=6	22.35	22.67	22.32
		RB Size=12, RB Offset=11	22.47	22.77	22.48
		RB Size=25, RB Offset=0	21.68	22.02	21.72
	16QAM	RB Size=1, RB Offset=0	22.85	23.05	22.91
		RB Size=1, RB Offset=12	22.76	23.01	22.82
		RB Size=1, RB Offset=24	22.95	23.16	23.02
		RB Size=12, RB Offset=0	22.47	22.78	22.38
		RB Size=12, RB Offset=6	22.40	22.75	22.28
		RB Size=12, RB Offset=11	22.51	22.87	22.50
		RB Size=25, RB Offset=0	21.68	22.14	21.75
10.0	QPSK	RB Size=1, RB Offset=0	22.89	23.18	22.95
		RB Size=1, RB Offset=24	22.85	23.12	22.84
		RB Size=1, RB Offset=49	22.95	23.22	22.99
		RB Size=25, RB Offset=0	22.32	22.52	22.24
		RB Size=25, RB Offset=12	22.26	22.43	22.20
		RB Size=25, RB Offset=24	22.42	22.56	22.36
		RB Size=50, RB Offset=0	21.73	22.08	21.78
	16QAM	RB Size=1, RB Offset=0	22.75	23.13	22.63
		RB Size=1, RB Offset=24	22.63	23.07	22.57
		RB Size=1, RB Offset=49	22.88	23.23	22.74
		RB Size=25, RB Offset=0	22.37	22.74	22.29
		RB Size=25, RB Offset=12	22.26	22.71	22.19
		RB Size=25, RB Offset=24	22.50	22.82	22.35
		RB Size=50, RB Offset=0	21.71	22.05	22.65

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	4.36	13	Pass
QPSK(50RB Size)	5.44	13	Pass
16QAM (1RB Size)	4.45	13	Pass
16QAM (100RB Size)	5.47	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	81.34	128	1.2	H	20.3	0.7	0.0	19.60	34.77
710	71.28	49	1.6	V	12.8	0.7	0.0	12.10	34.77
10 MHz Bandwidth									
710	81.58	59	1.4	H	20.6	0.7	0.0	19.90	34.77
710	72.16	121	2.4	V	13.7	0.7	0.0	13.00	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	80.62	214	1.6	H	19.6	0.7	0.0	18.90	34.77
710	73.13	165	1.5	V	14.6	0.7	0.0	13.90	34.77
10 MHz Bandwidth									
710	81.23	51	1.7	H	20.2	0.7	0.0	19.50	34.77
710	73.52	35	2.3	V	15.0	0.7	0.0	14.30	34.77

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

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

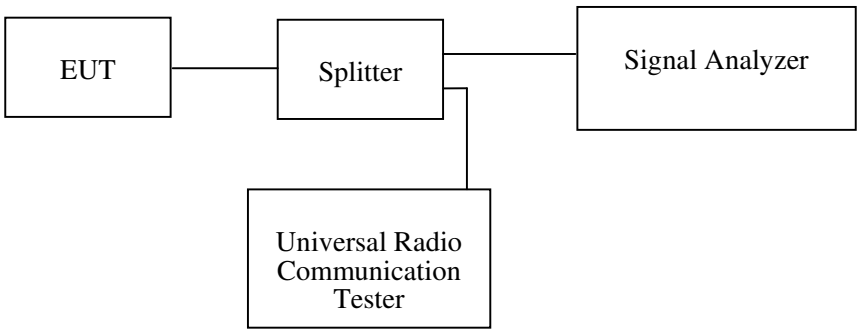
Applicable Standard

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

Test Procedure

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

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



Test Data

Environmental Conditions

Temperature:	24~25 ℃
Relative Humidity:	50~52 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Tracy Hu from 2018-02-08 to 2018-03-06.

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	246.02	318.40
EGPRS(8PSK)	836.6	257.60	327.10

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.168	4.732
HSUPA (BPSK)	836.6	4.211	4.848
HSDPA (16QAM)	836.6	4.182	4.718

PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	243.13	321.30
EGPRS(8PSK)	1880.0	248.91	324.20

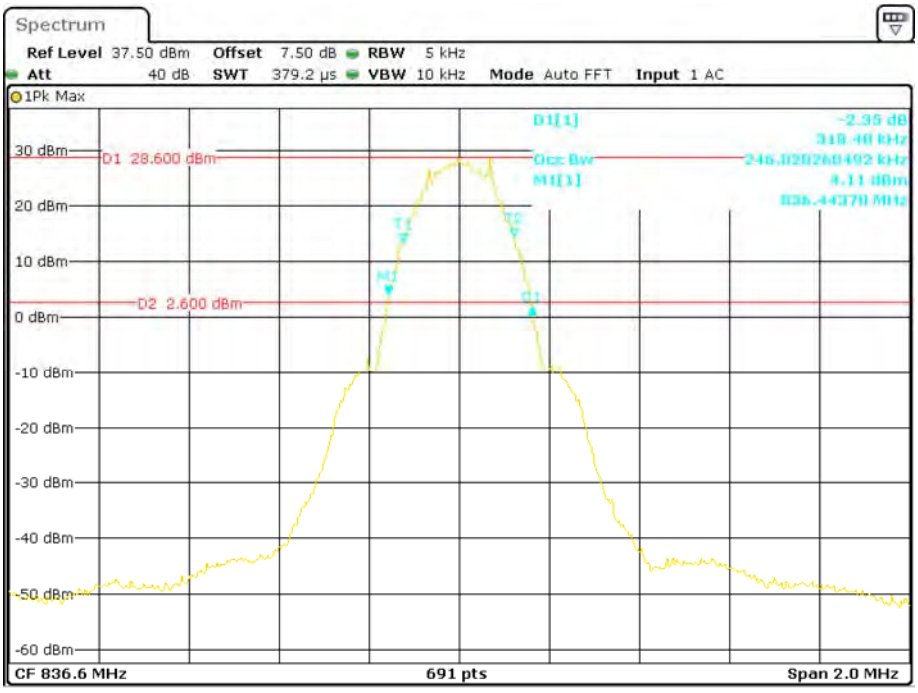
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.153	4.703
HSUPA (BPSK)	1880.0	4.197	5.022
HSDPA (16QAM)	1880.0	4.197	4.935

AWS Band (Part27)

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1732.6	4.182	4.776
HSUPA (BPSK)	1732.6	4.211	4.848
HSDPA (16QAM)	1732.6	4.182	4.891

Cellular Band (Part 22H)

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



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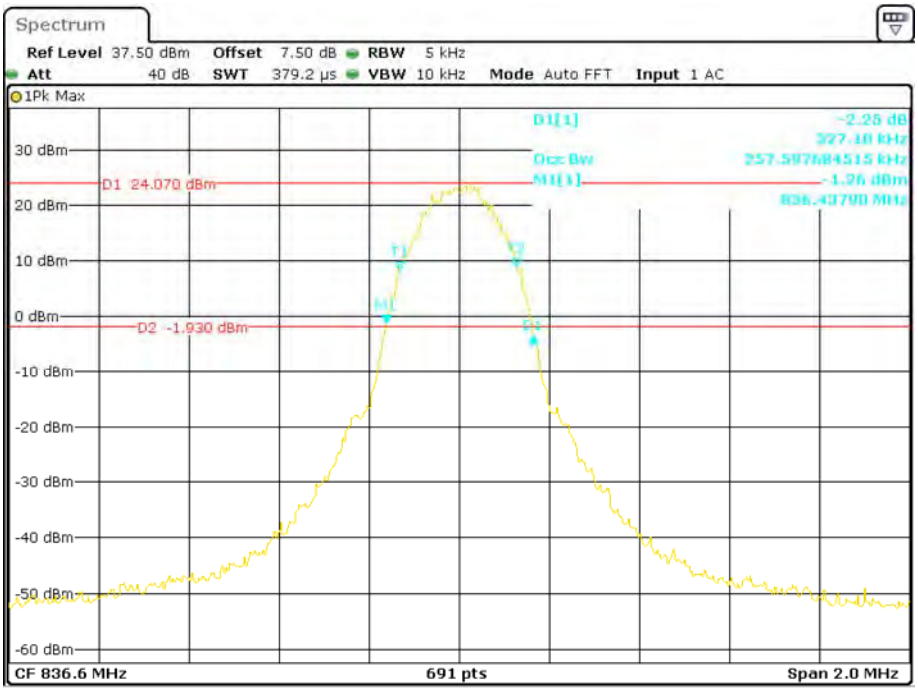
26 dB Emissions &99% Occupied Bandwidth for EDGE Mode



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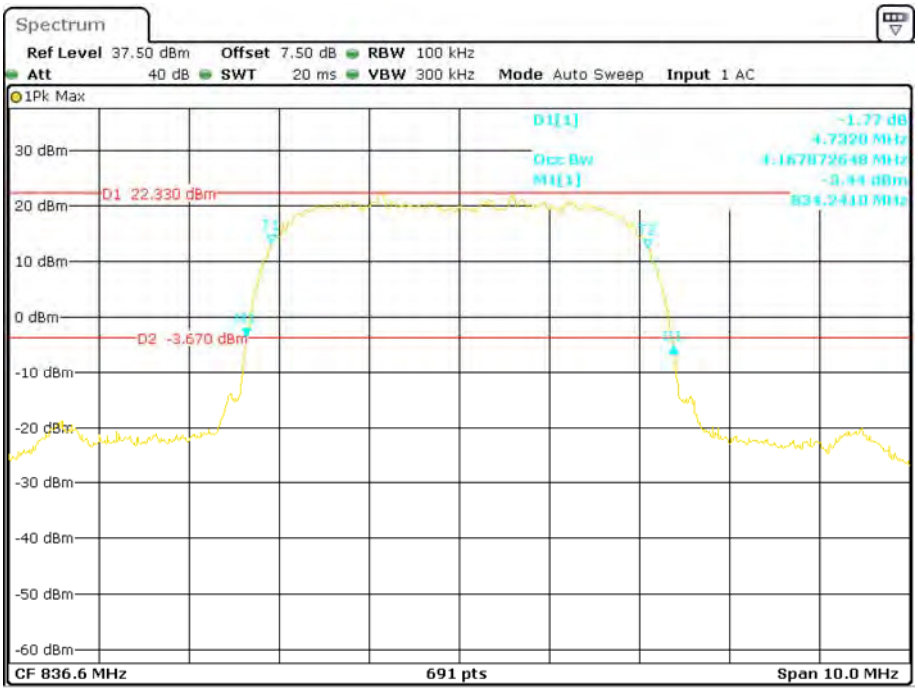
26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode



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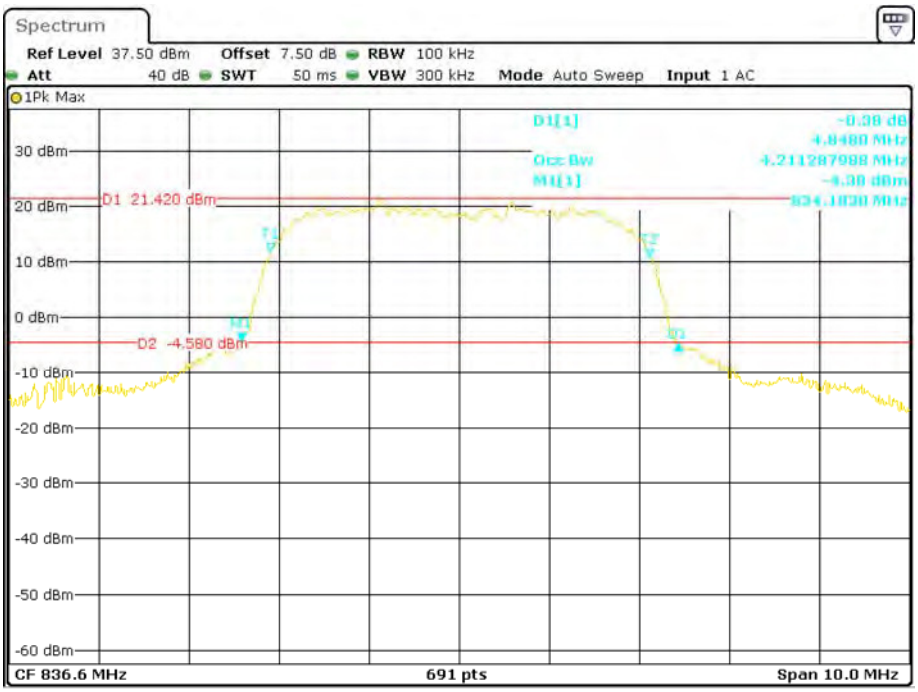
26 dB Emissions &99% Occupied Bandwidth for HSUPA (BPSK) Mode



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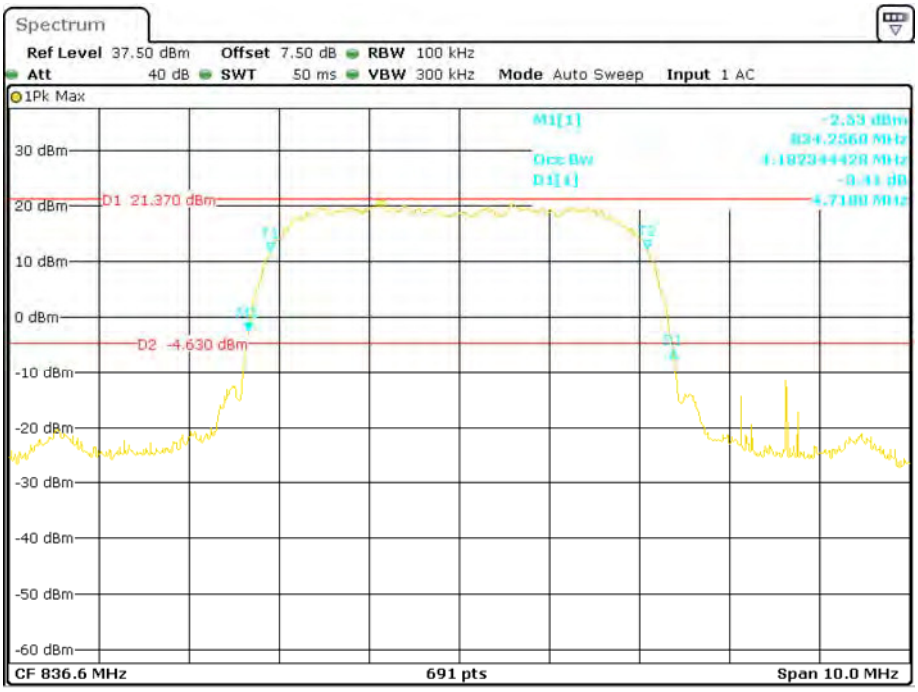
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode



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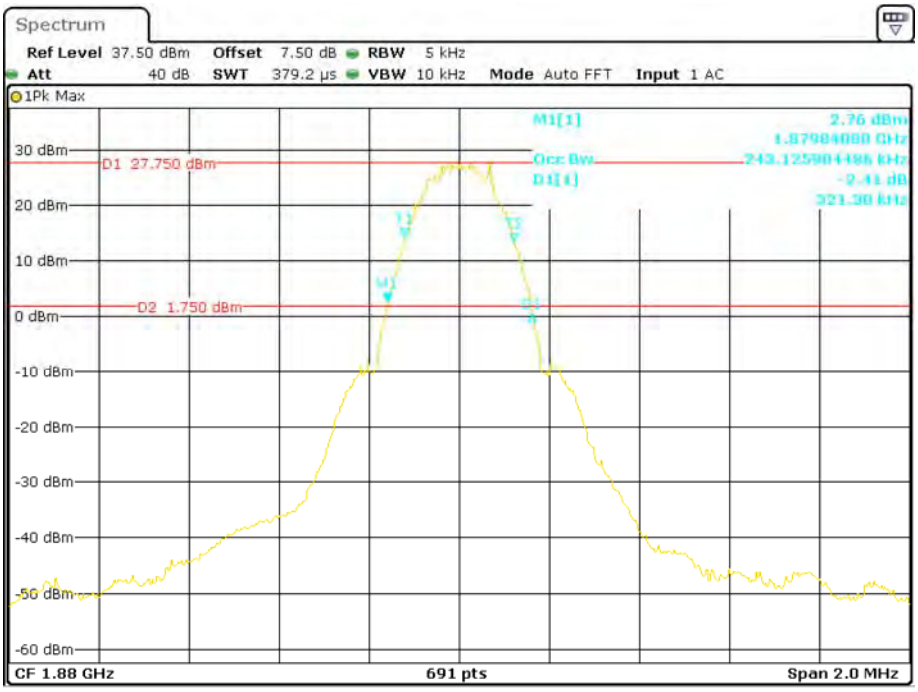
PCS Band (Part 24E)

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



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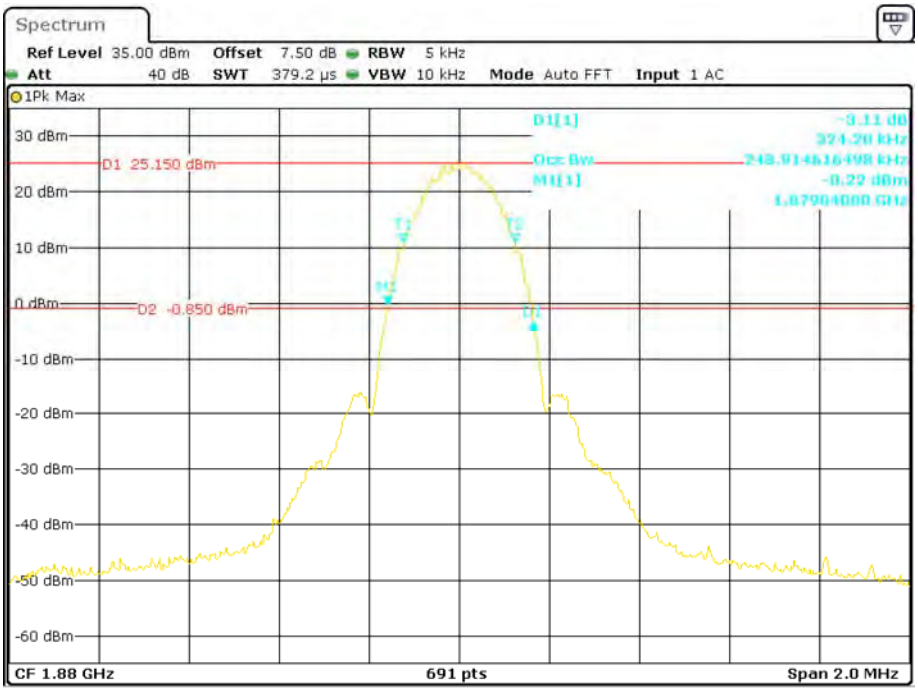
26 dB Emissions &99% Occupied Bandwidth for EDGE Mode



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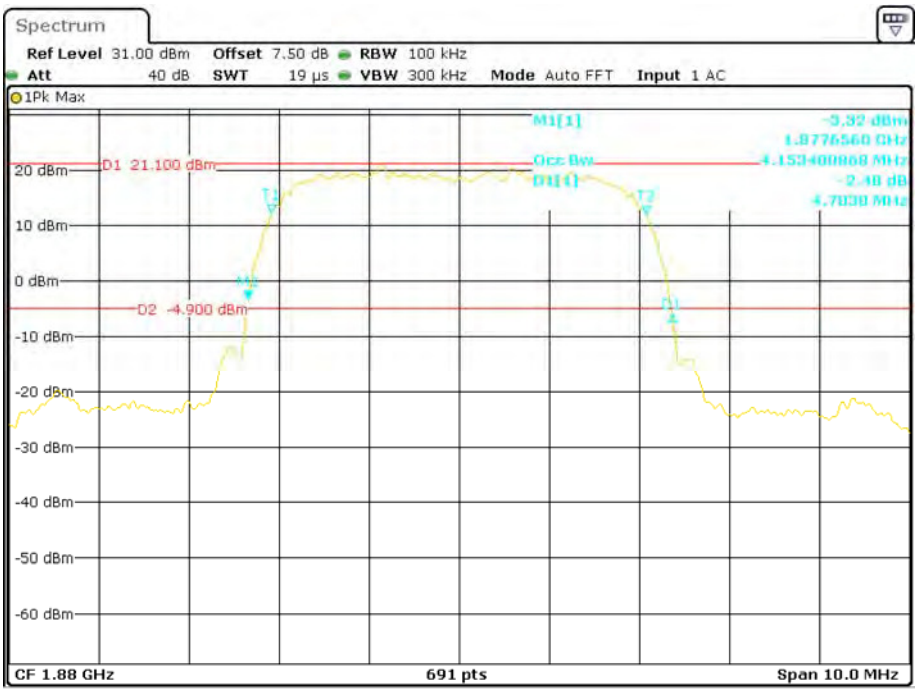
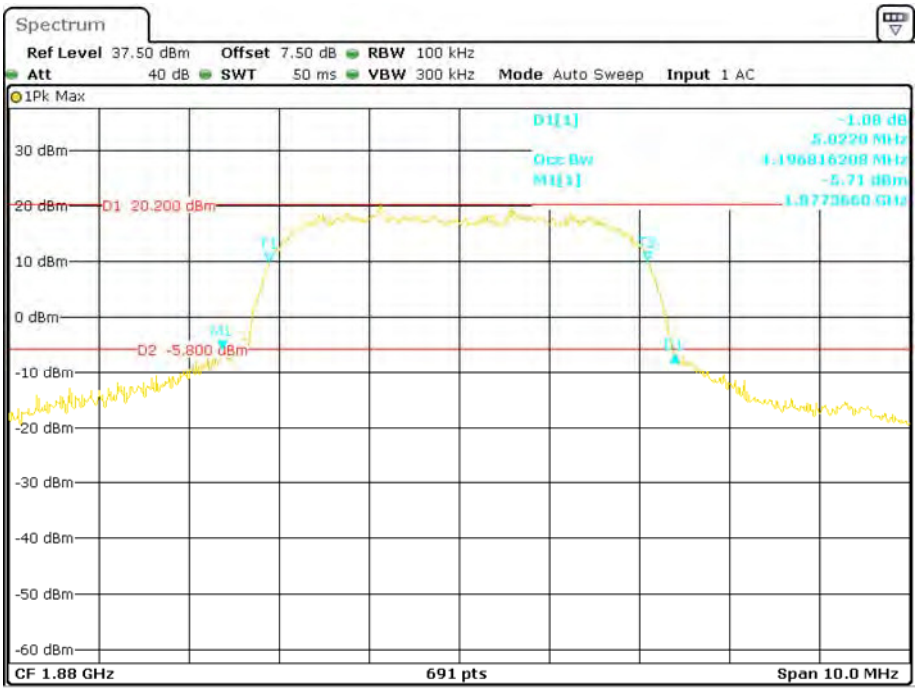
26 dB Emissions &99% Occupied Bandwidth for RMC (BPSK) Mode



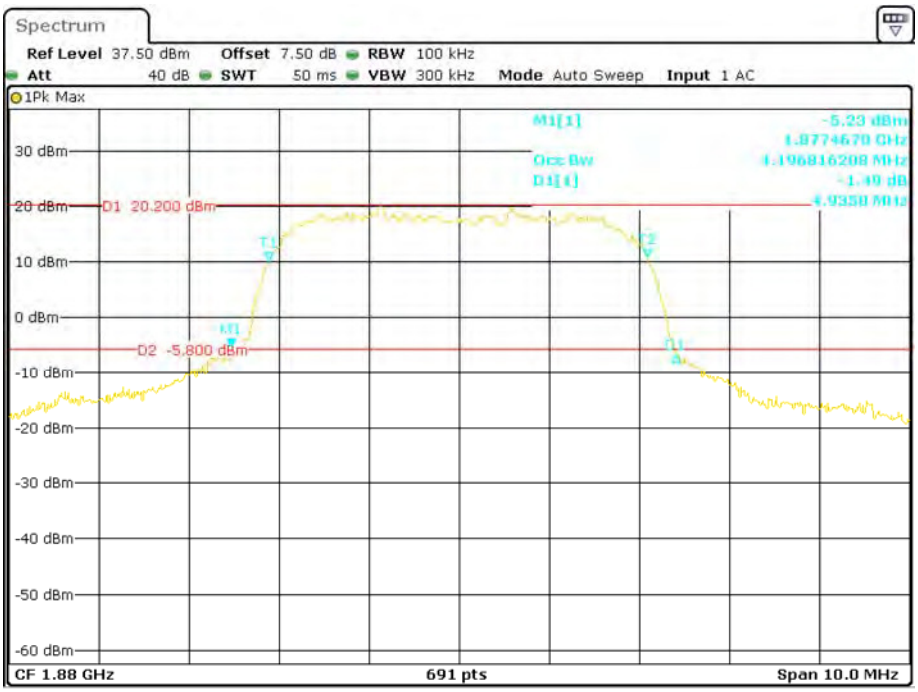
Date: 8.FEB.2018 10:57:13

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



Date: 8.FEB.2018 11:41:11

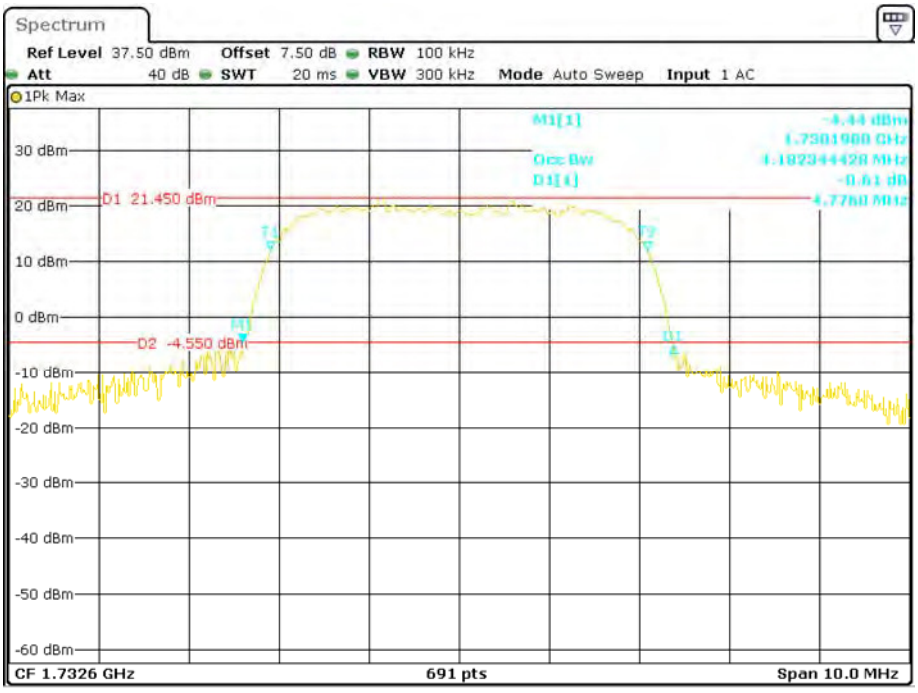
26 dB Emissions &99% Occupied Bandwidth for HSDPA (16QAM) Mode



Date: 8.FEB.2018 11:31:31

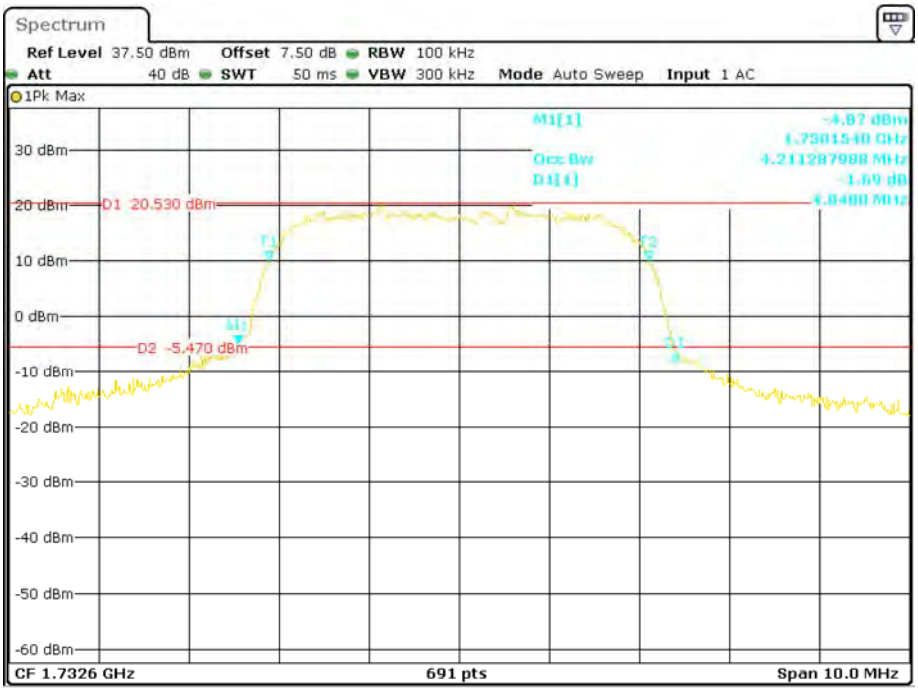
AWS Band (Part 27)

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



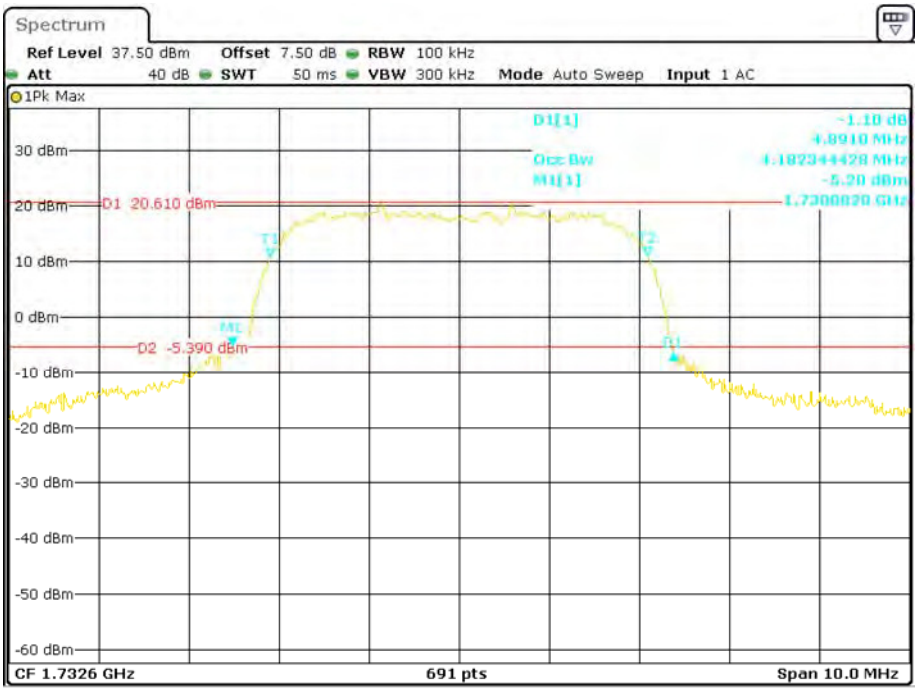
Date: 8.FEB.2018 11:15:10

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



Date: 8.FEB.2018 11:43:28

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

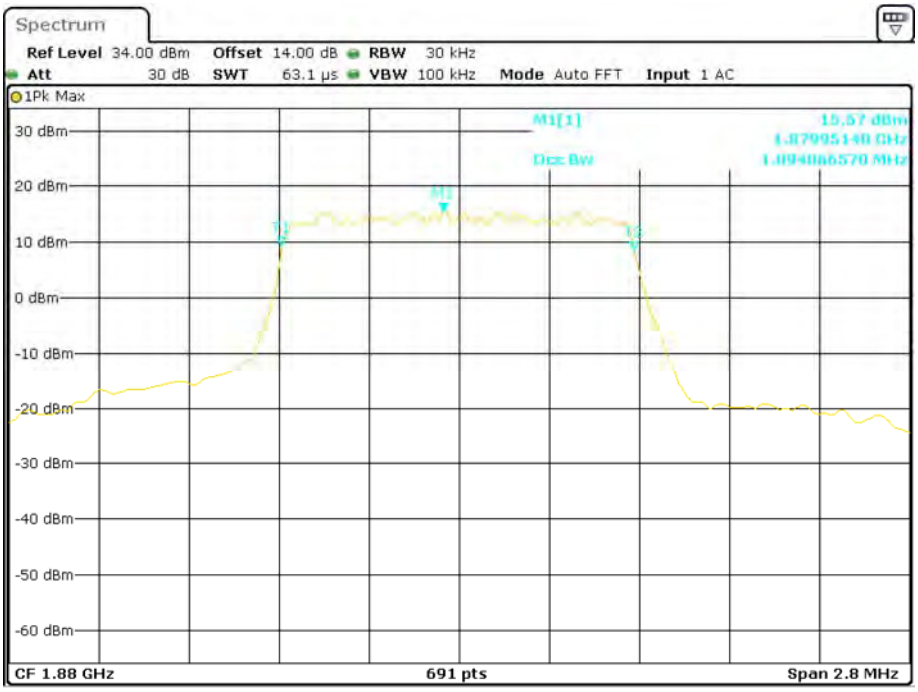


Date: 8.FEB.2018 11:33:18

LTE Band 2: (Middle Channel)

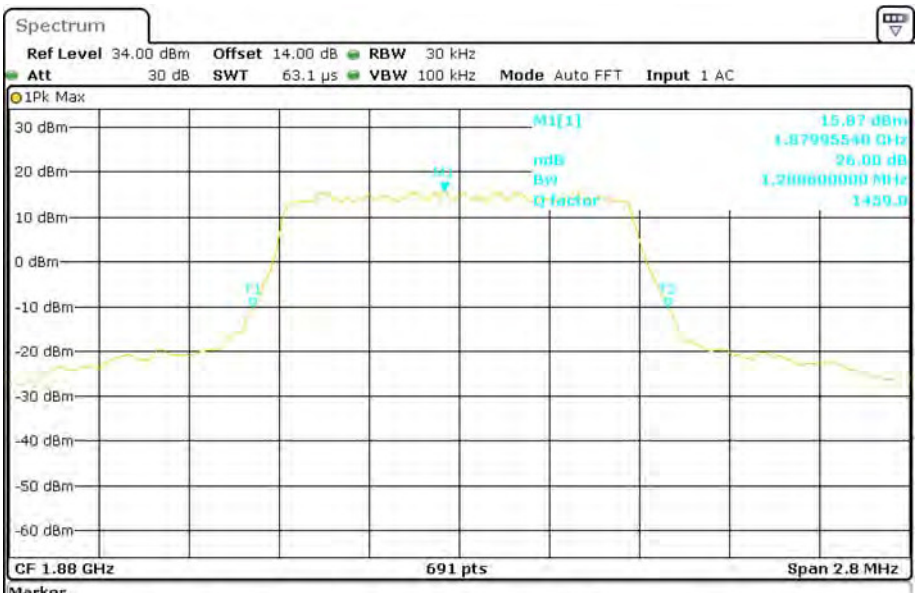
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.094	1.289
	16QAM	1.094	1.293
3.0	QPSK	2.674	2.857
	16QAM	2.683	2.857
5.0	QPSK	4.530	5.181
	16QAM	4.544	5.210
10.0	QPSK	8.973	9.928
	16QAM	9.001	9.957
15.0	QPSK	13.546	15.022
	16QAM	13.502	14.848
20.0	QPSK	17.945	19.219
	16QAM	18.003	19.392

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



Date: 8.FEB.2018 15:02:36

QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel

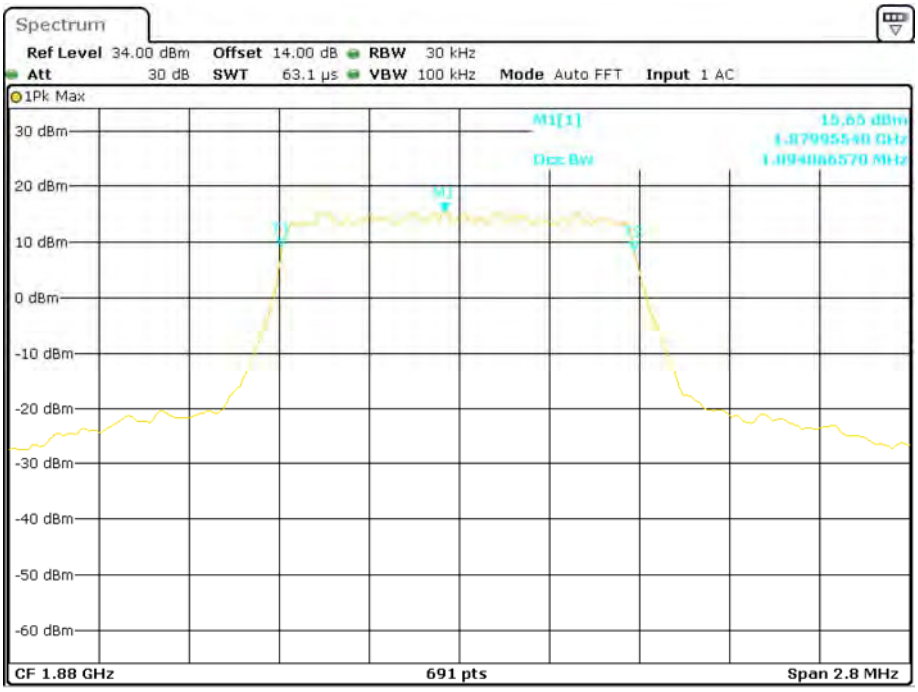


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8799554 GHz	15.87 dBm	ndB down	1.2886 MHz
T1		1	1.8793598 GHz	-10.04 dBm	ndB	26.00 dB
T2		1	1.8806483 GHz	-10.01 dBm	Q factor	1459.0

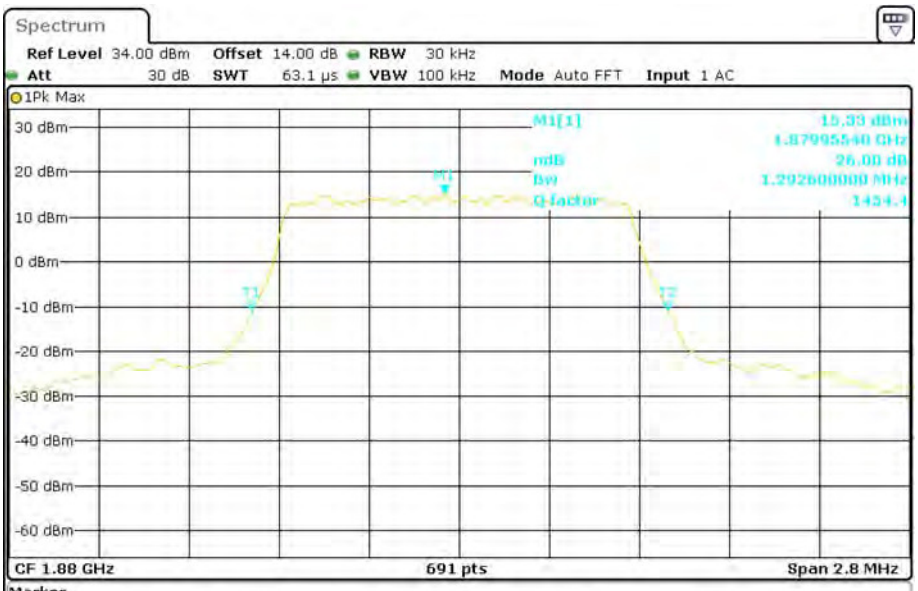
Date: 8.FEB.2018 16:38:20

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



Date: 8.FEB.2018 15:05:06

16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel

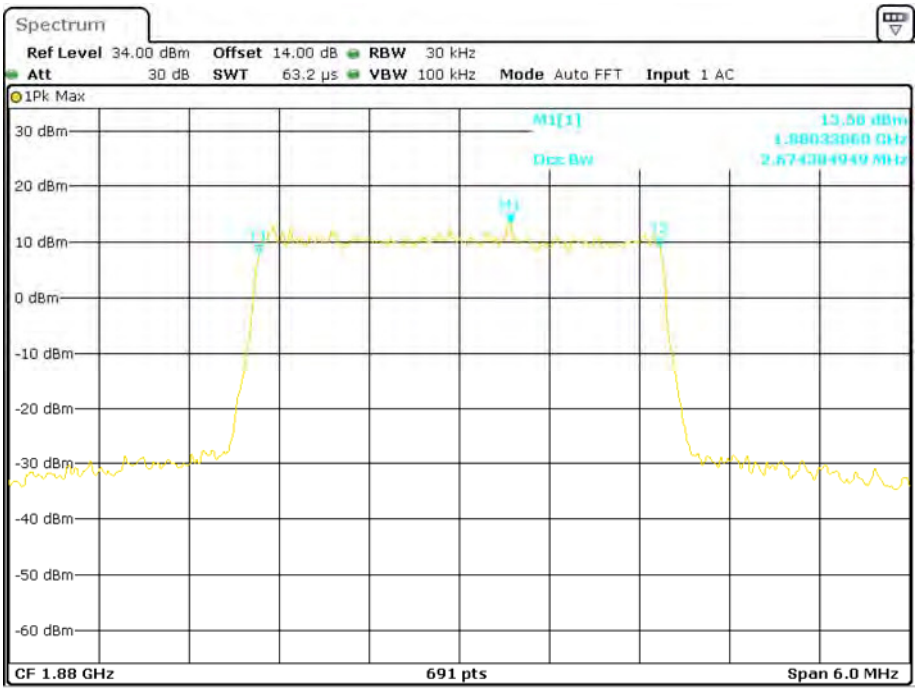


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8799554 GHz	15.33 dBm	ndB down	1.2926 MHz
T1		1	1.8793557 GHz	-10.89 dBm	ndB	26.00 dB
T2		1	1.8806483 GHz	-10.77 dBm	Q factor	1454.4

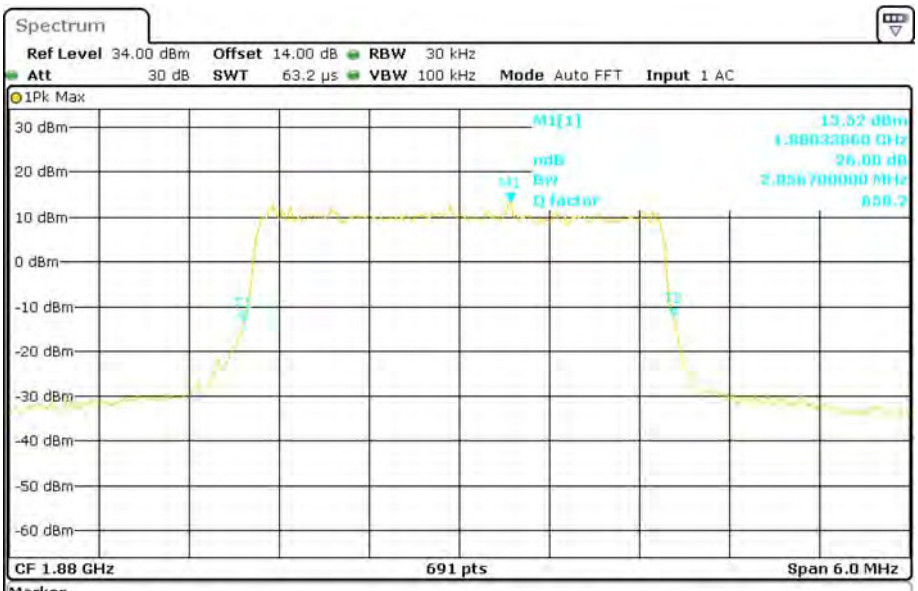
Date: 8.FEB.2018 16:30:20

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



Date: 8.FEB.2018 15:17:03

QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel

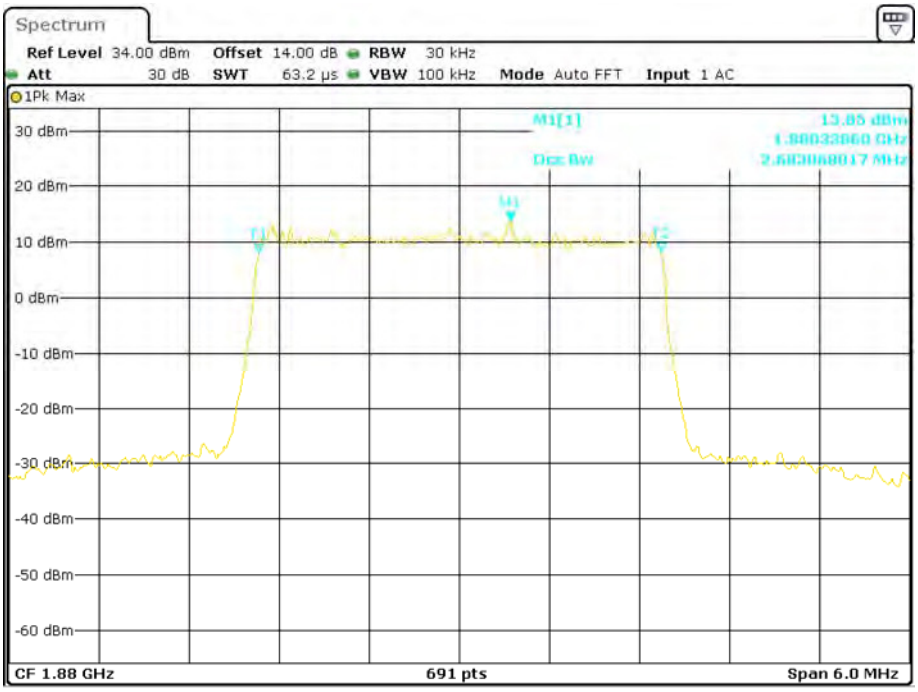


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8803386 GHz	13.52 dBm	ndB down	2.8567 MHz
T1		1	1.8785673 GHz	-13.13 dBm	ndB	26.00 dB
T2		1	1.881424 GHz	-11.99 dBm	Q factor	658.2

Date: 8.FEB.2018 16:53:03

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



Date: 8.FEB.2018 15:16:34

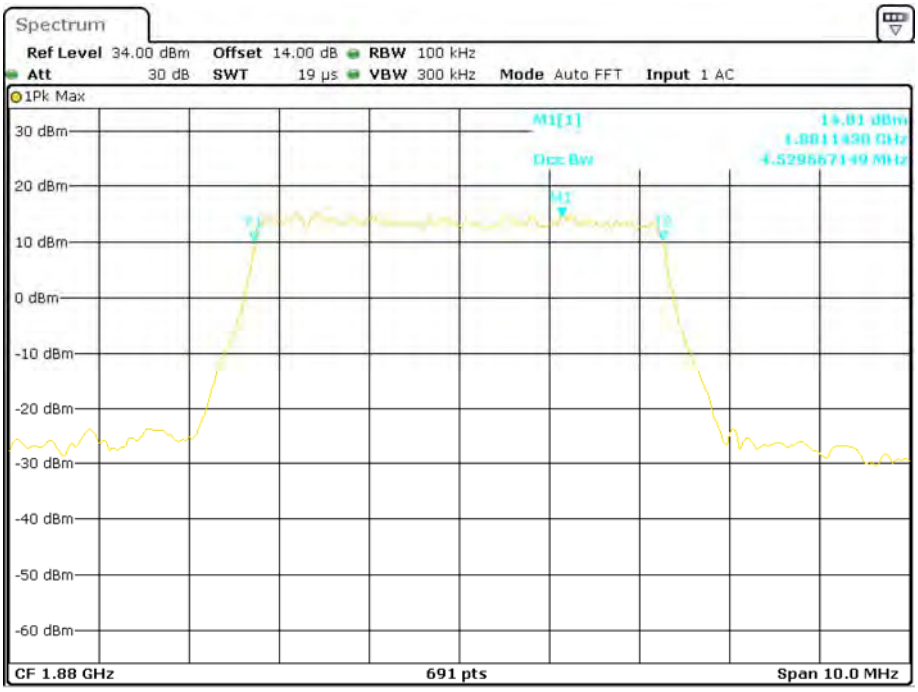
16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.8803386 GHz	13.47 dBm	ndB down	2.8567 MHz
T1		1	1.8785673 GHz	-12.94 dBm	ndB	26.00 dB
T2		1	1.881424 GHz	-11.94 dBm	Q factor	658.2

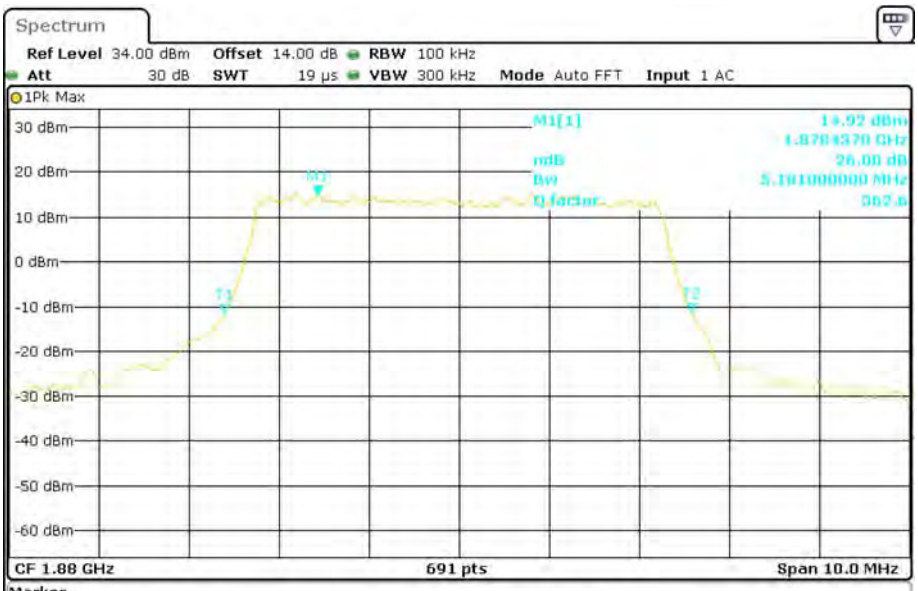
Date: 8.FEB.2018 16:52:35

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



Date: 8.FEB.2018 15:17:55

QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel

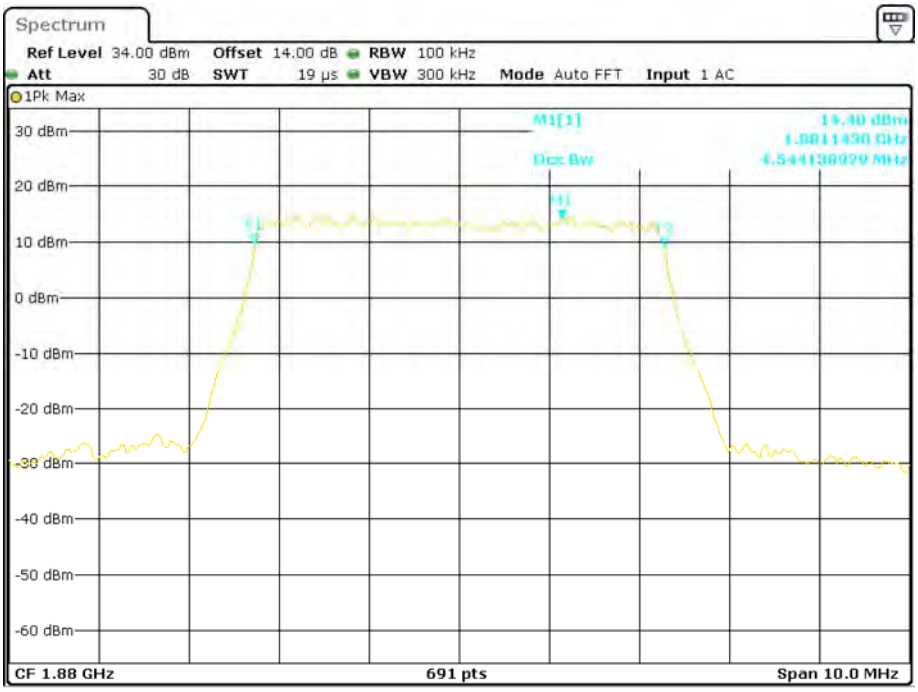


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.878437 GHz	14.92 dBm	ndB down	5.181 MHz
T1		1	1.877395 GHz	-11.27 dBm	ndB	26.00 dB
T2		1	1.882576 GHz	-11.10 dBm	Q factor	362.6

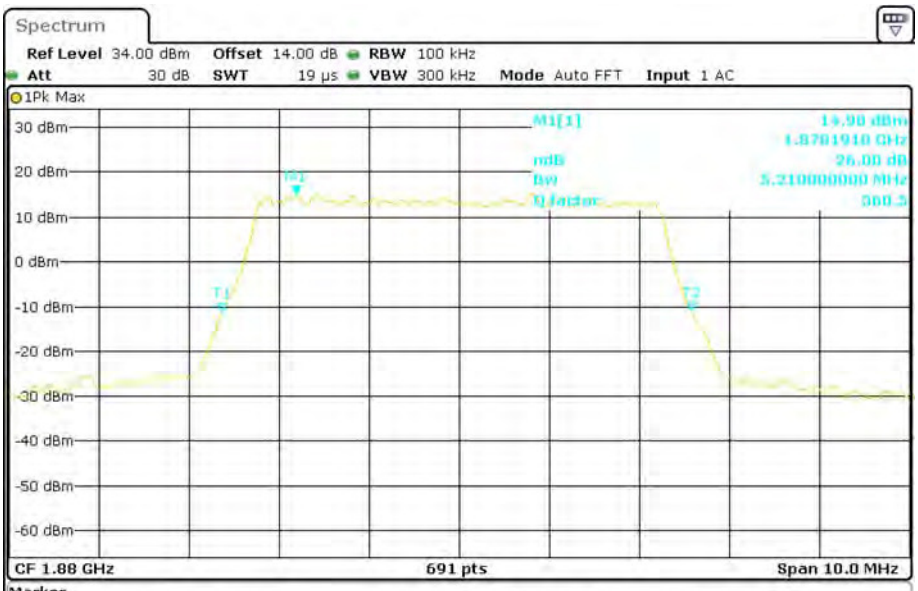
Date: 8.FEB.2018 16:53:33

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



Date: 8.FEB.2018 15:24:38

16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel

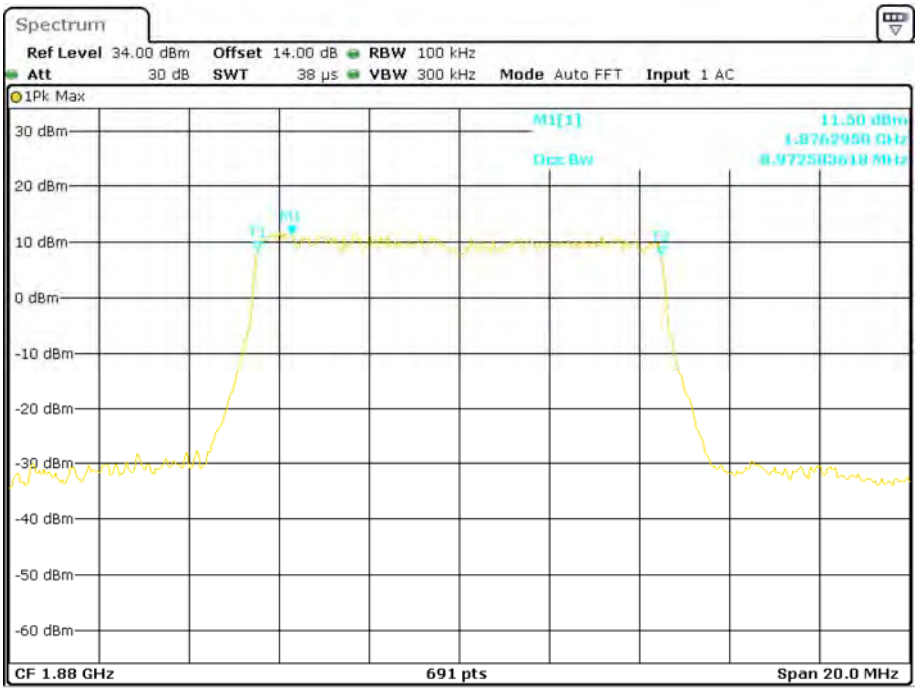


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.878191 GHz	14.98 dBm	ndB down	5.21 MHz
T1		1	1.877366 GHz	-11.11 dBm	ndB	26.00 dB
T2		1	1.882576 GHz	-10.85 dBm	Q factor	360.5

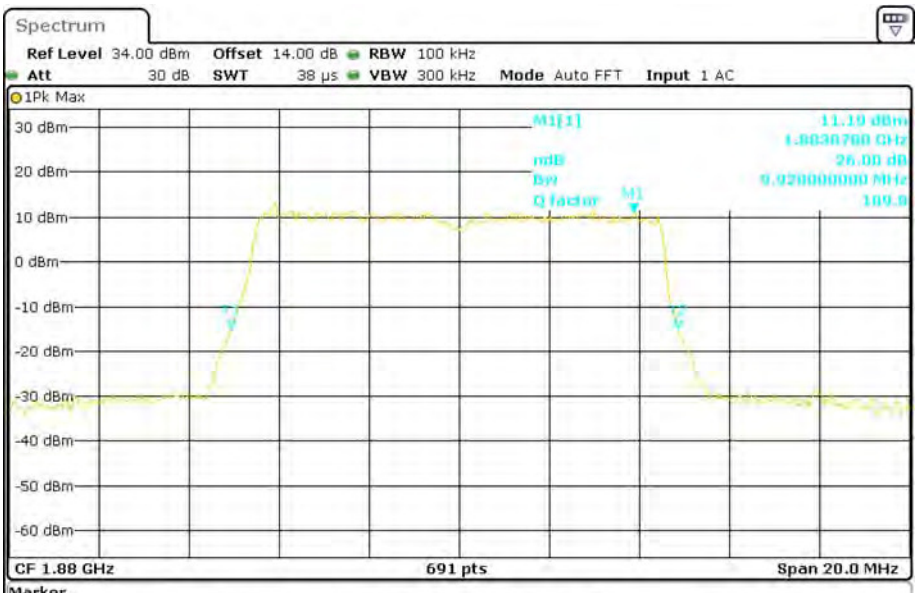
Date: 8.FEB.2018 16:30:10

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



Date: 8.FEB.2018 15:26:13

QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel

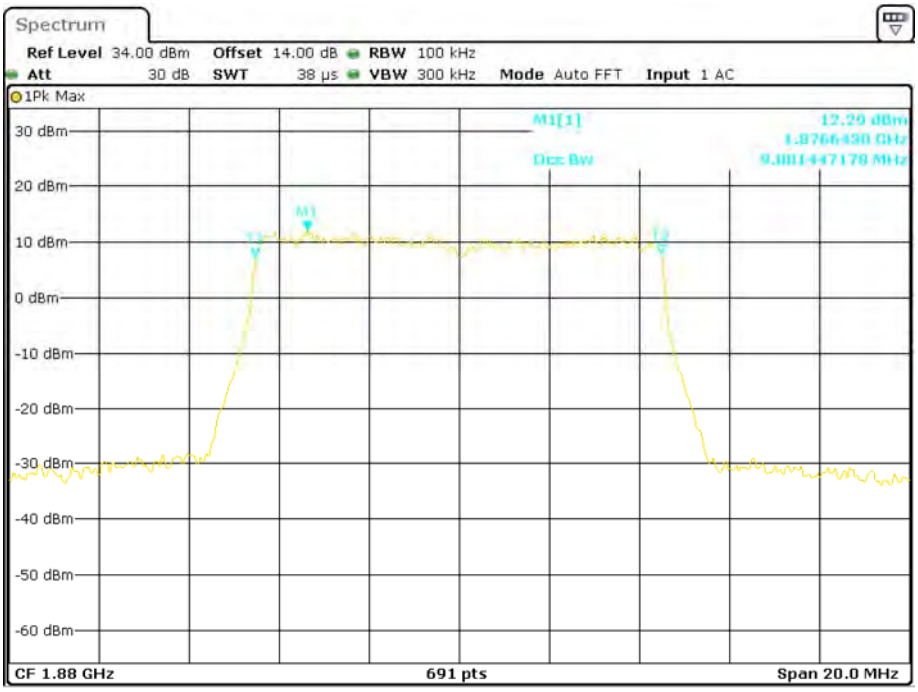


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.883878 GHz	11.19 dBm	ndB down	9.928 MHz
T1		1	1.874935 GHz	-14.83 dBm	ndB	26.00 dB
T2		1	1.884863 GHz	-14.84 dBm	Q factor	189.8

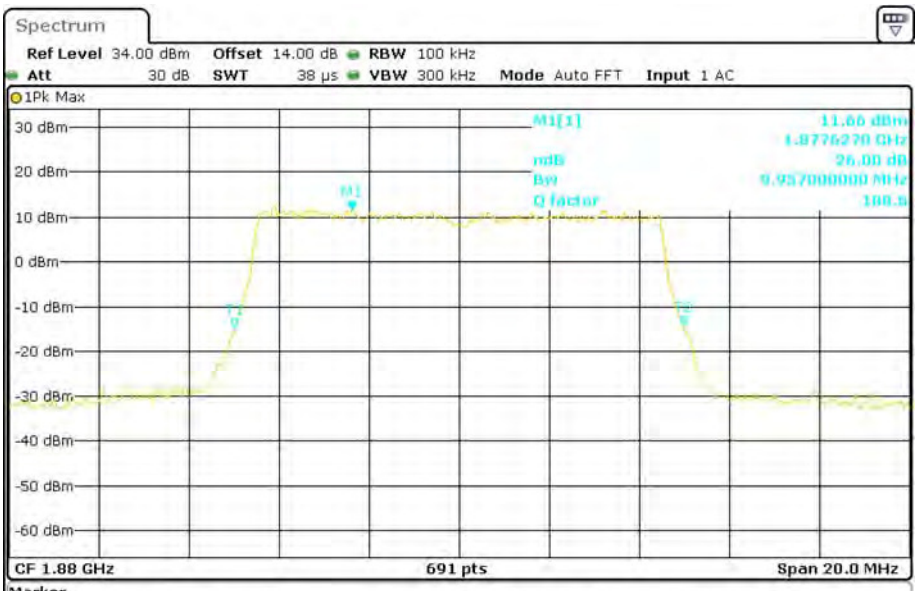
Date: 8.FEB.2018 16:55:02

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



Date: 8.FEB.2018 15:25:41

16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel

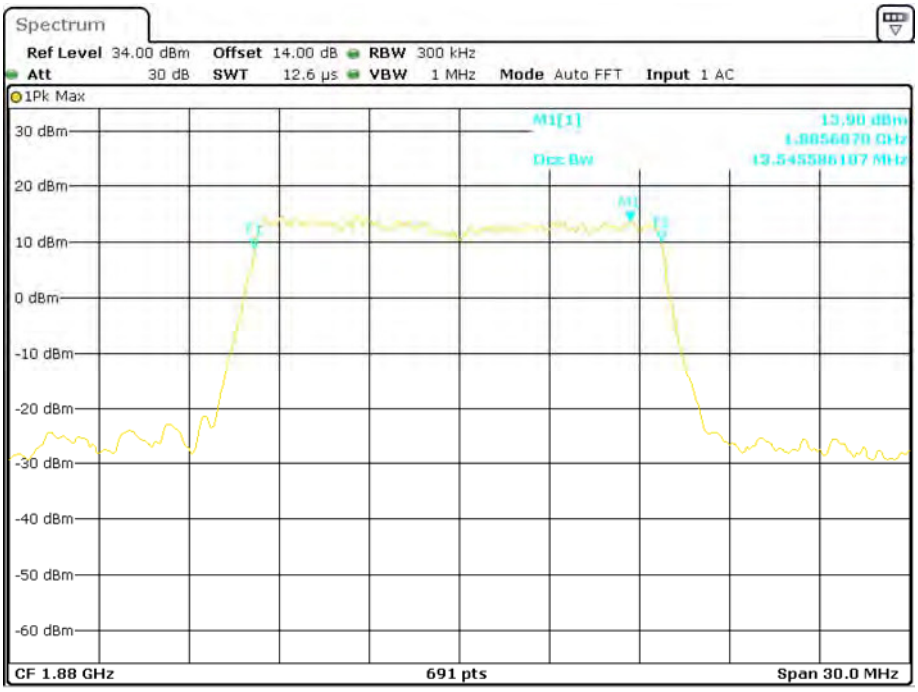


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.877627 GHz	11.66 dBm	ndB down	9.957 MHz
T1		1	1.875022 GHz	-14.49 dBm	ndB	26.00 dB
T2		1	1.884978 GHz	-14.19 dBm	Q factor	188.6

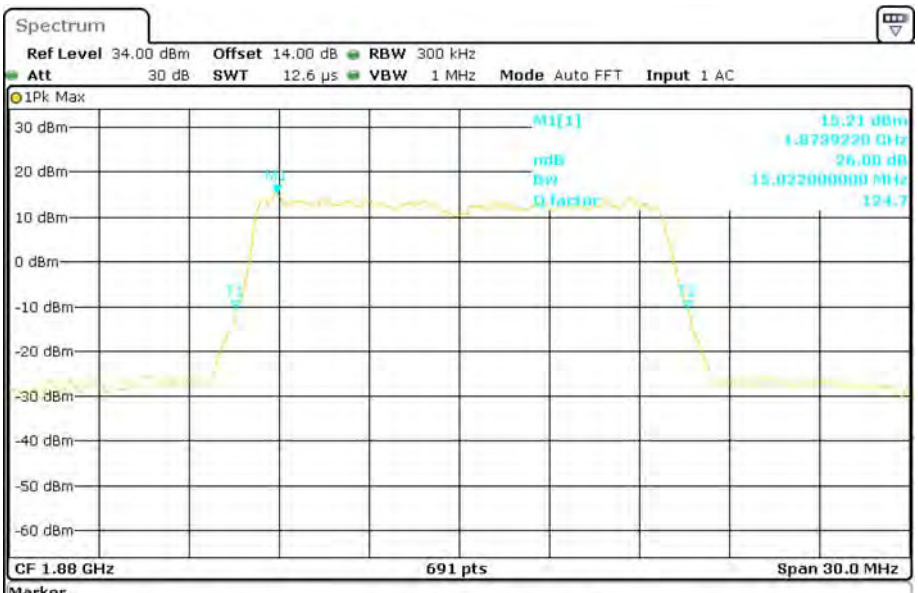
Date: 8.FEB.2018 16:54:39

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



Date: 8.FEB.2018 15:27:50

QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel

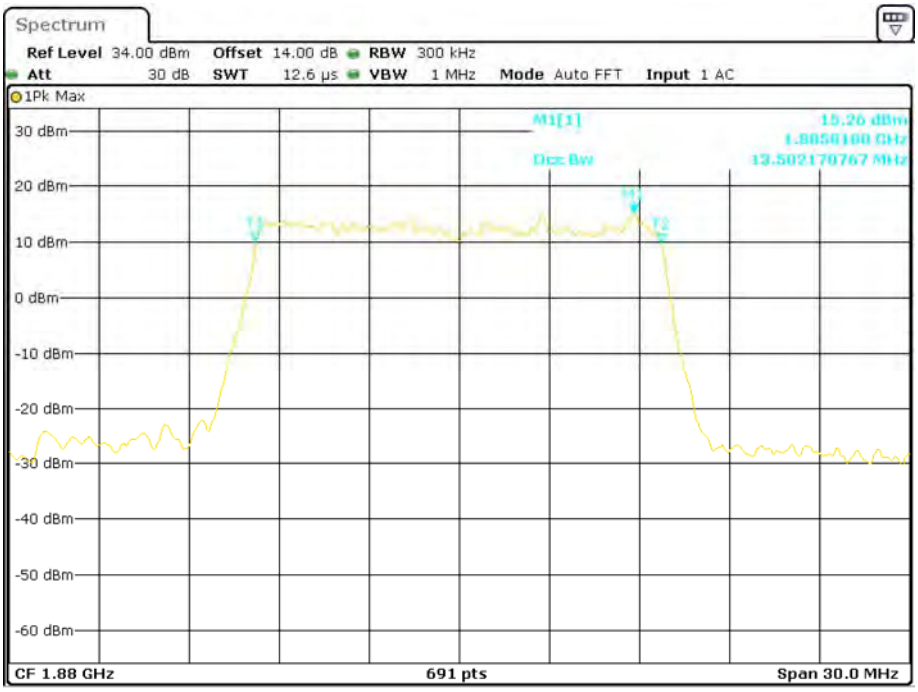


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.873922 GHz	15.21 dBm	ndB down	15.022 MHz
T1		1	1.872576 GHz	-10.63 dBm	ndB	26.00 dB
T2		1	1.887598 GHz	-10.66 dBm	Q factor	124.7

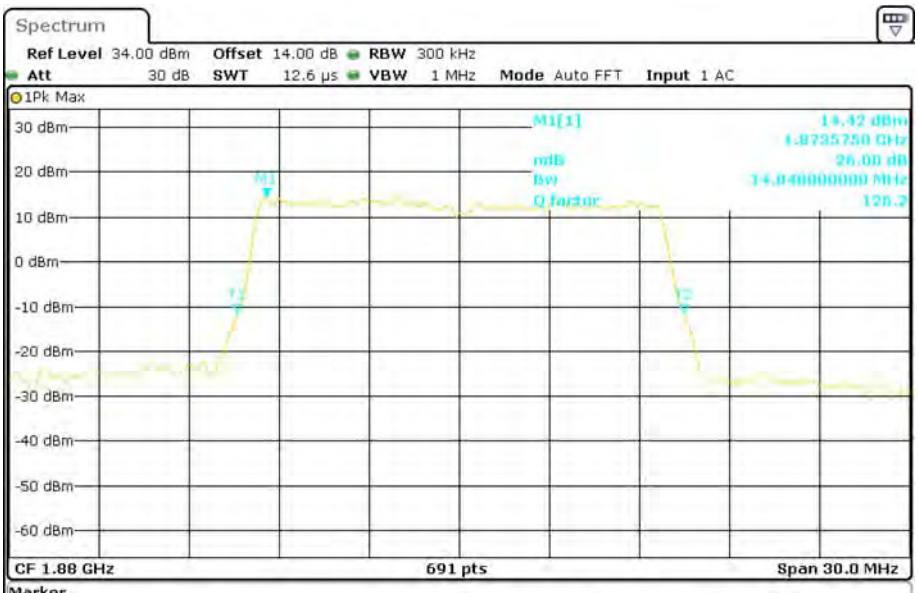
Date: 8.FEB.2018 16:55:21

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



Date: 8.FEB.2018 15:28:13

16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel

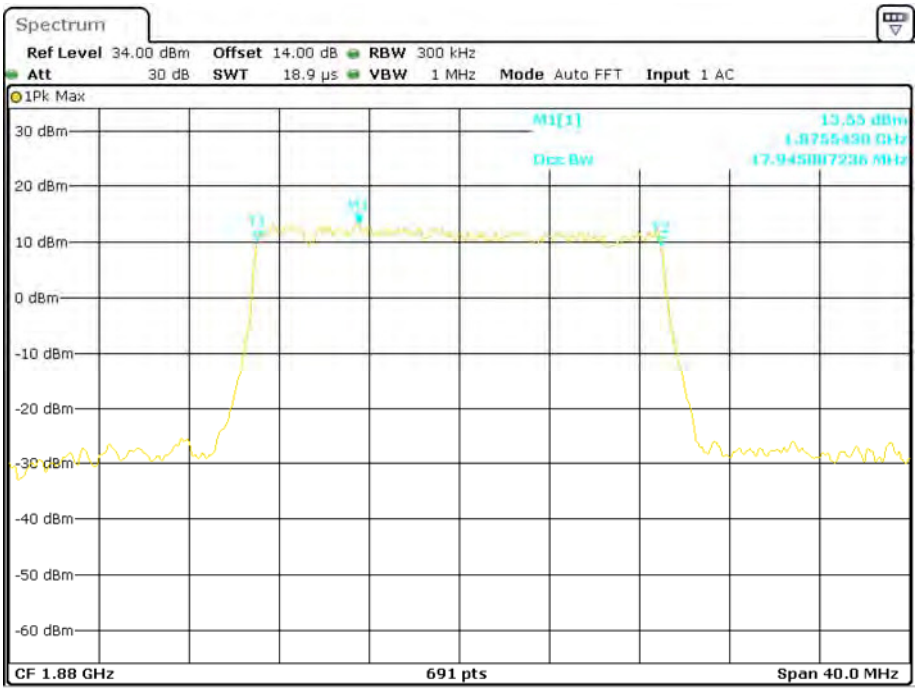


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.873575 GHz	14.42 dBm	ndB down	14.848 MHz
T1		1	1.872619 GHz	-11.22 dBm	ndB	26.00 dB
T2		1	1.887467 GHz	-11.36 dBm	Q factor	126.2

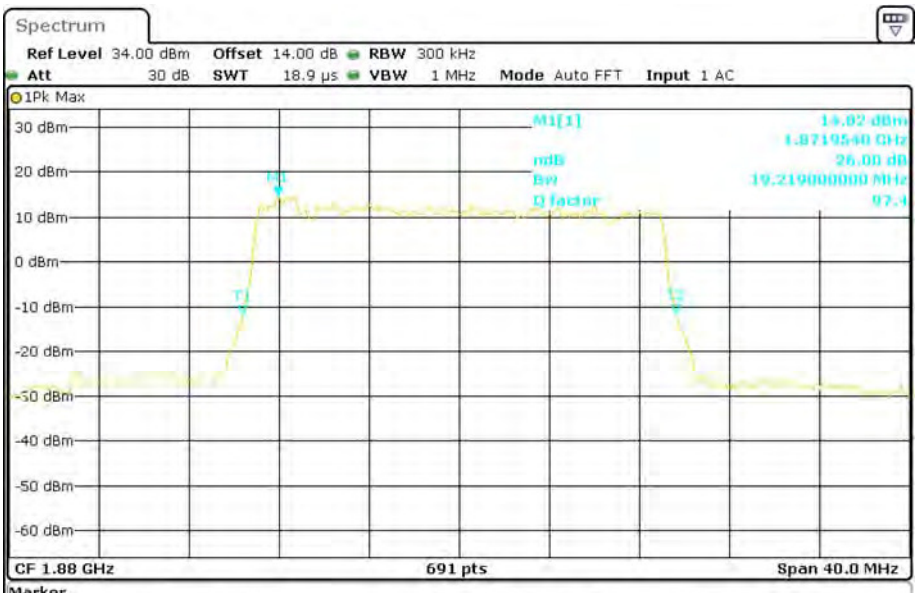
Date: 8.FEB.2018 16:55:53

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



Date: 8.FEB.2018 15:29:14

QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel

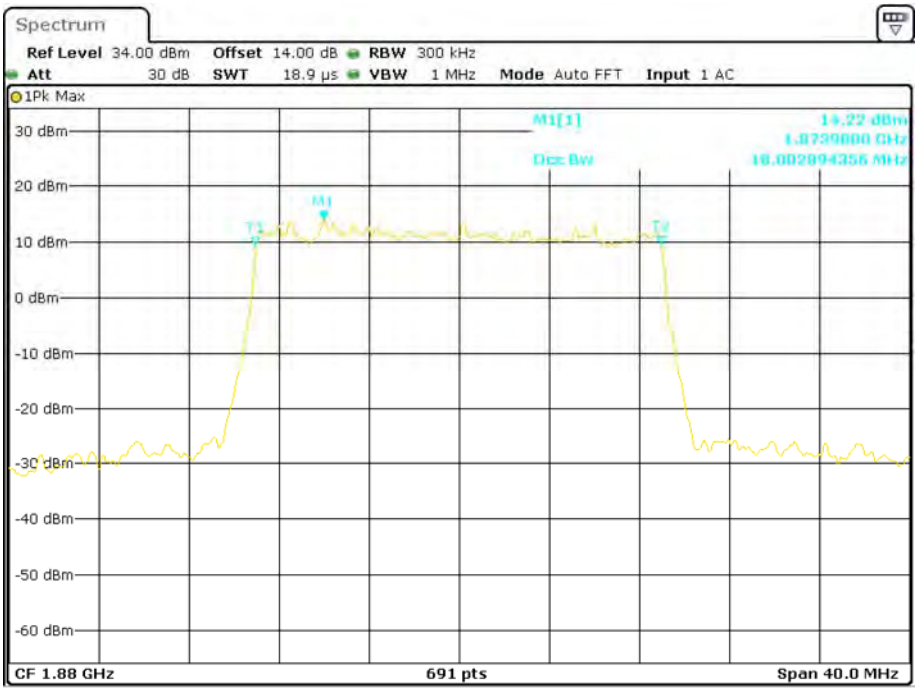


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.871954 GHz	14.82 dBm	ndB down	19.219 MHz
T1		1	1.870391 GHz	-11.63 dBm	ndB	26.00 dB
T2		1	1.889609 GHz	-11.32 dBm	Q factor	97.4

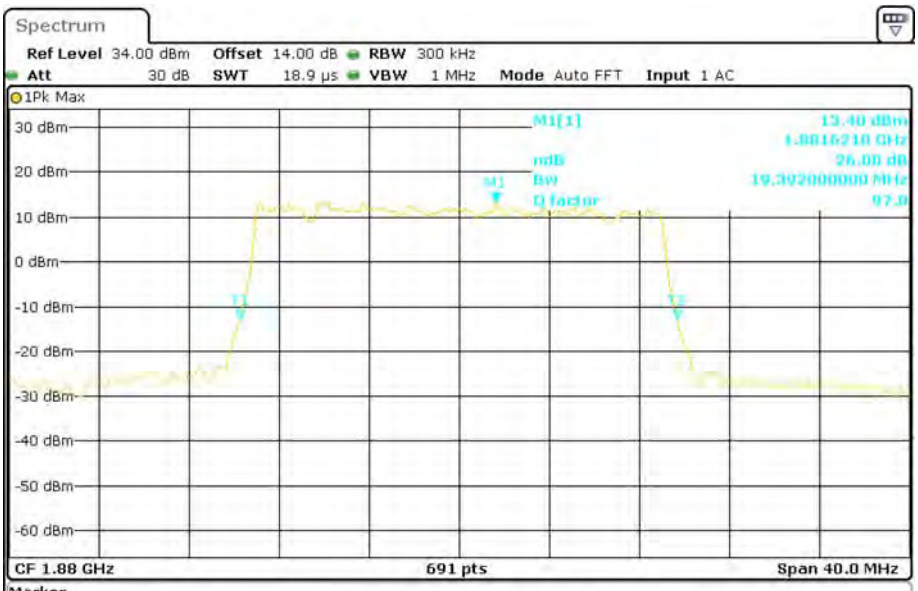
Date: 8.FEB.2018 16:56:46

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



Date: 8.FEB.2018 15:28:43

16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel



Marker

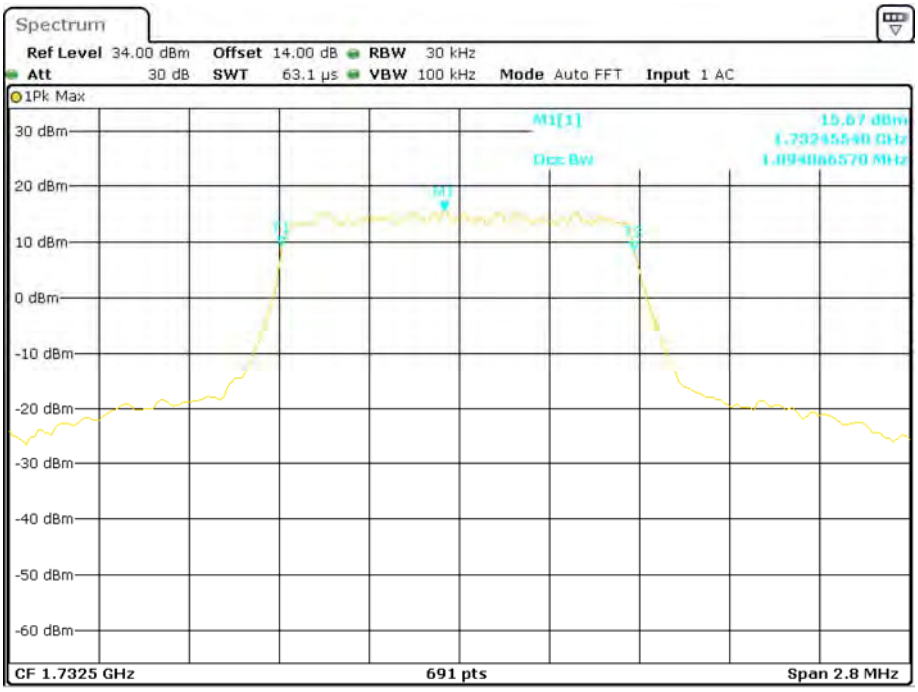
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.881621 GHz	13.40 dBm	ndB down	19.392 MHz
T1		1	1.870275 GHz	-12.53 dBm	ndB	26.00 dB
T2		1	1.889667 GHz	-12.48 dBm	Q factor	97.0

Date: 8.FEB.2018 16:56:20

LTE Band 4: (Middle Channel)

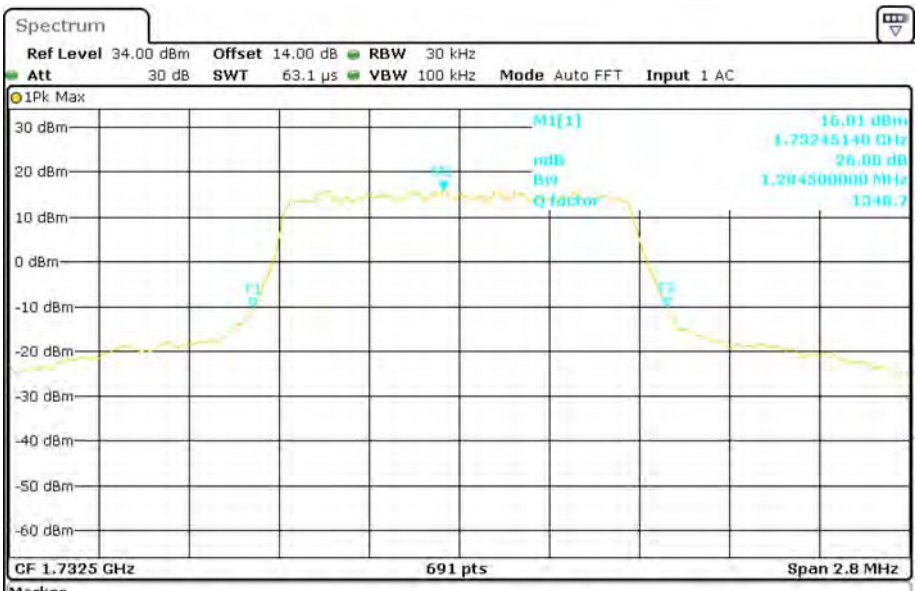
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.094	1.285
	16QAM	1.090	1.285
3.0	QPSK	2.683	2.865
	16QAM	2.683	2.865
5.0	QPSK	4.530	5.181
	16QAM	4.544	5.195
10.0	QPSK	8.973	9.957
	16QAM	8.973	9.899
15.0	QPSK	13.546	14.935
	16QAM	13.502	15.326
20.0	QPSK	17.945	19.508
	16QAM	17.887	19.392

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



Date: 8.FEB.2018 15:40:21

QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel

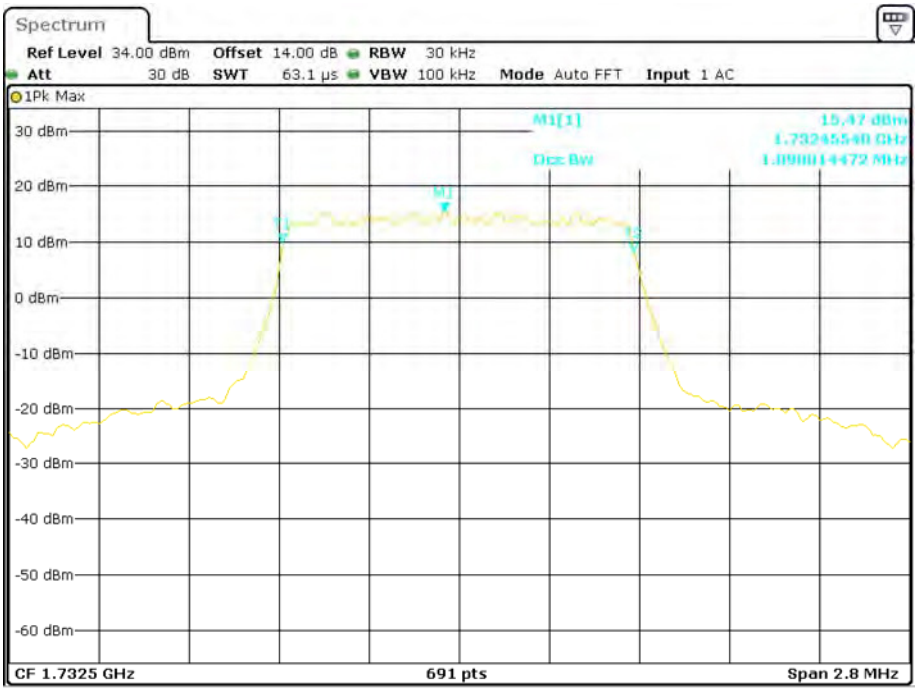


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.7324514 GHz	16.01 dBm	ndB down	1.2845 MHz
T1		1	1.7318598 GHz	-10.12 dBm	ndB	26.00 dB
T2		1	1.7331443 GHz	-9.81 dBm	Q factor	1348.7

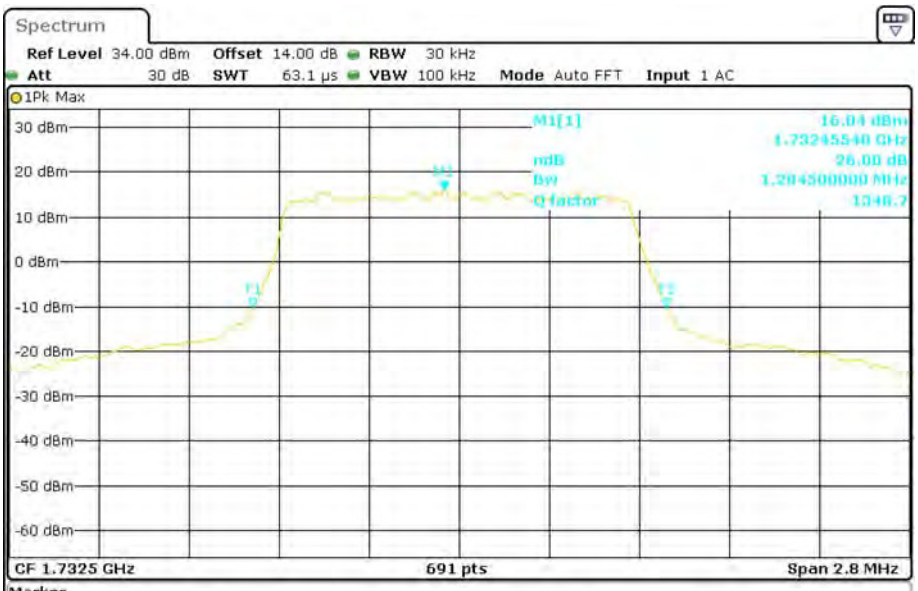
Date: 8.FEB.2018 08:13:55

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



Date: 8.FEB.2018 15:40:52

16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel

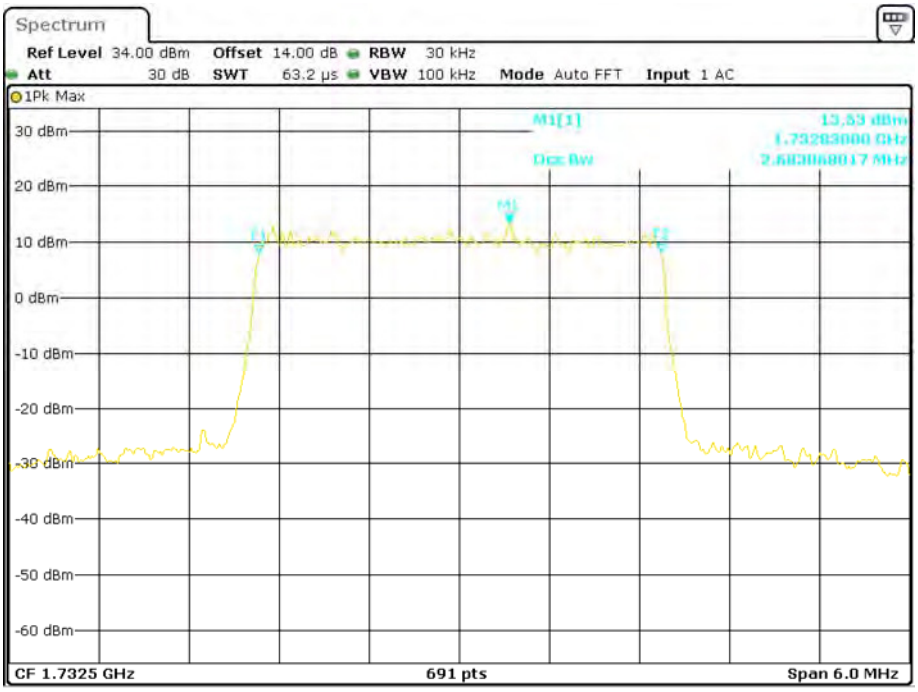


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.7324554 GHz	16.04 dBm	ndB down	1.2845 MHz
T1		1	1.7318598 GHz	-10.07 dBm	ndB	26.00 dB
T2		1	1.7331443 GHz	-9.94 dBm	Q factor	1348.7

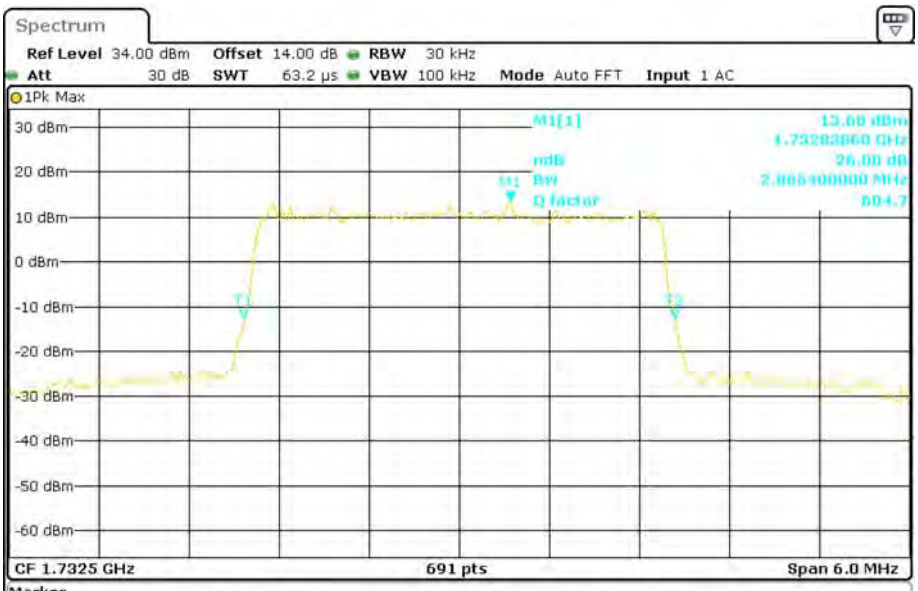
Date: 8.FEB.2018 08:15:57

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



Date: 8.FEB.2018 15:42:05

QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel

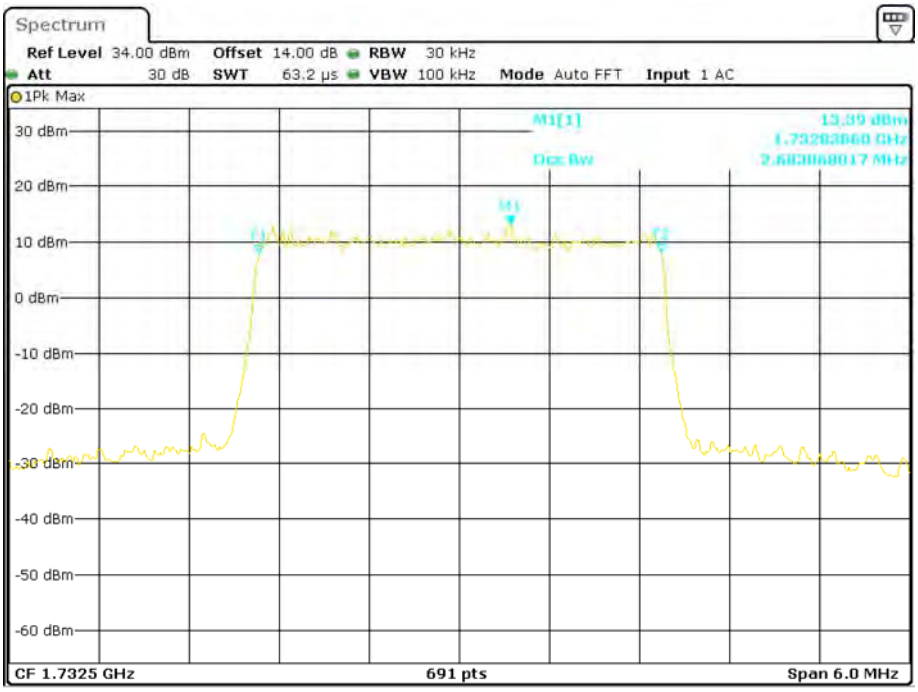


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.7328386 GHz	13.68 dBm	ndB down	2.8654 MHz
T1		1	1.7310673 GHz	-12.65 dBm	ndB	26.00 dB
T2		1	1.7339327 GHz	-12.49 dBm	Q factor	604.7

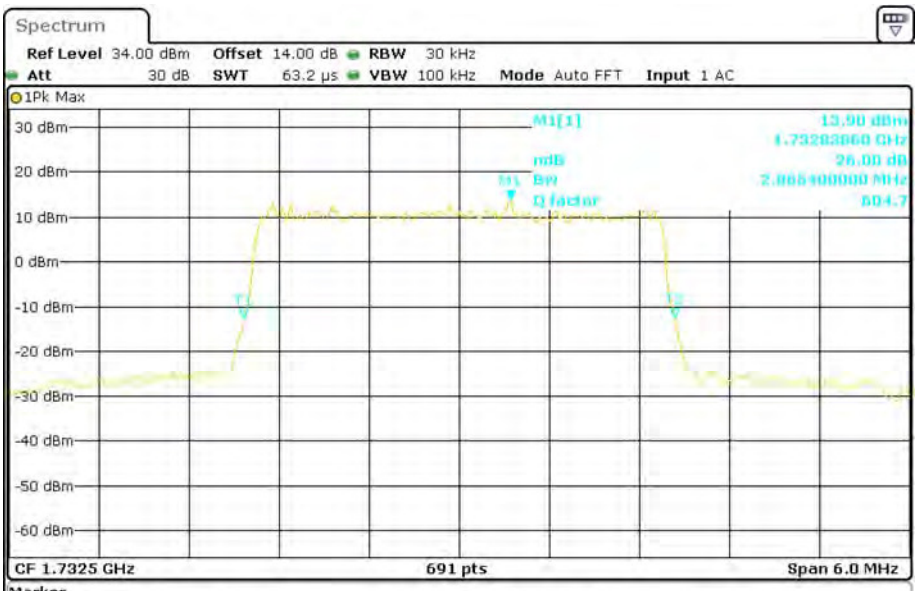
Date: 9.FEB.2018 08:24:02

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



Date: 8.FEB.2018 15:41:29

16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel

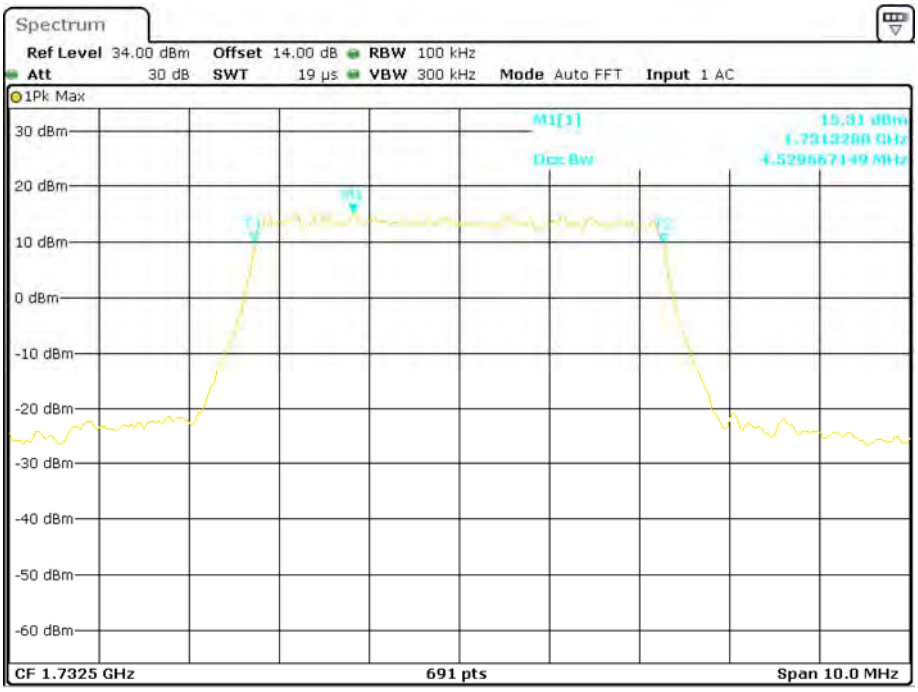


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.7328386 GHz	13.90 dBm	ndB down	2.8654 MHz
T1		1	1.7310673 GHz	-12.53 dBm	ndB	26.00 dB
T2		1	1.7339327 GHz	-12.29 dBm	Q factor	604.7

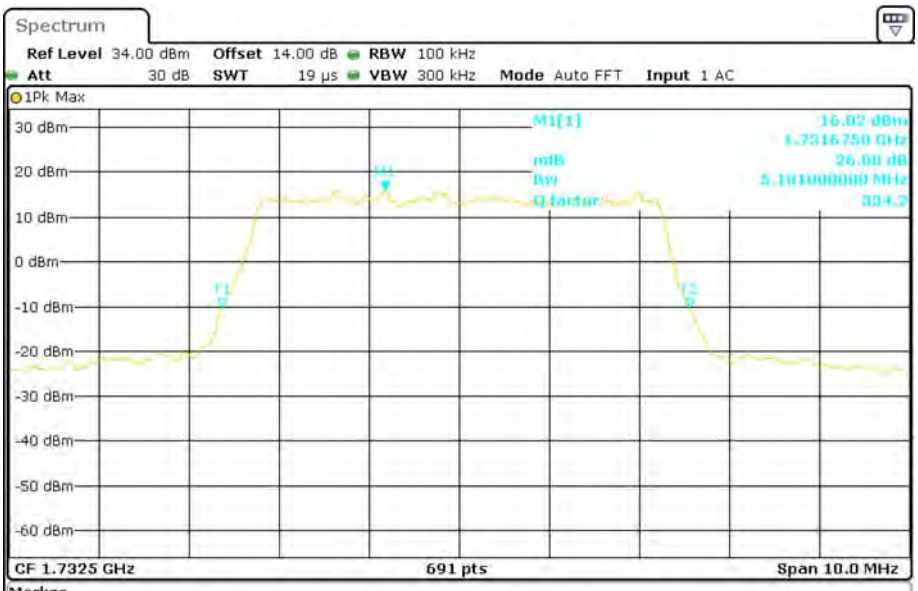
Date: 9.FEB.2018 08:19:09

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

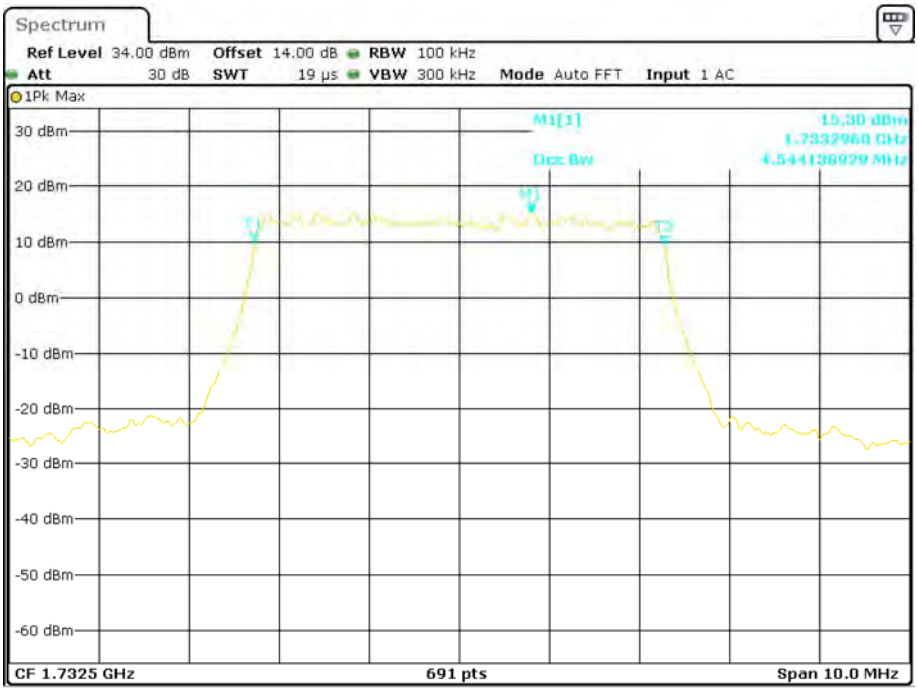


Date: 8.FEB.2018 15:43:53

QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel

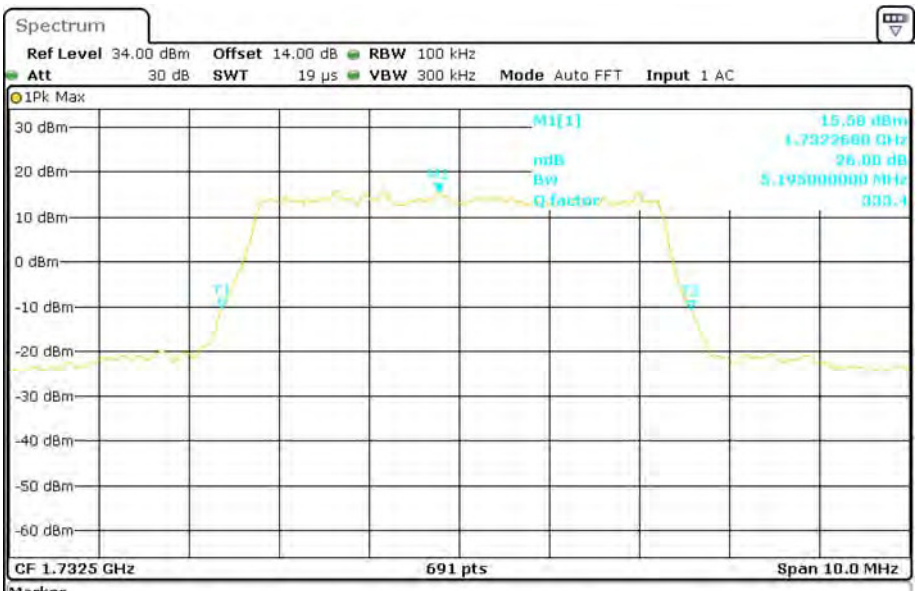


16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.FEB.2018 15:44:19

16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel

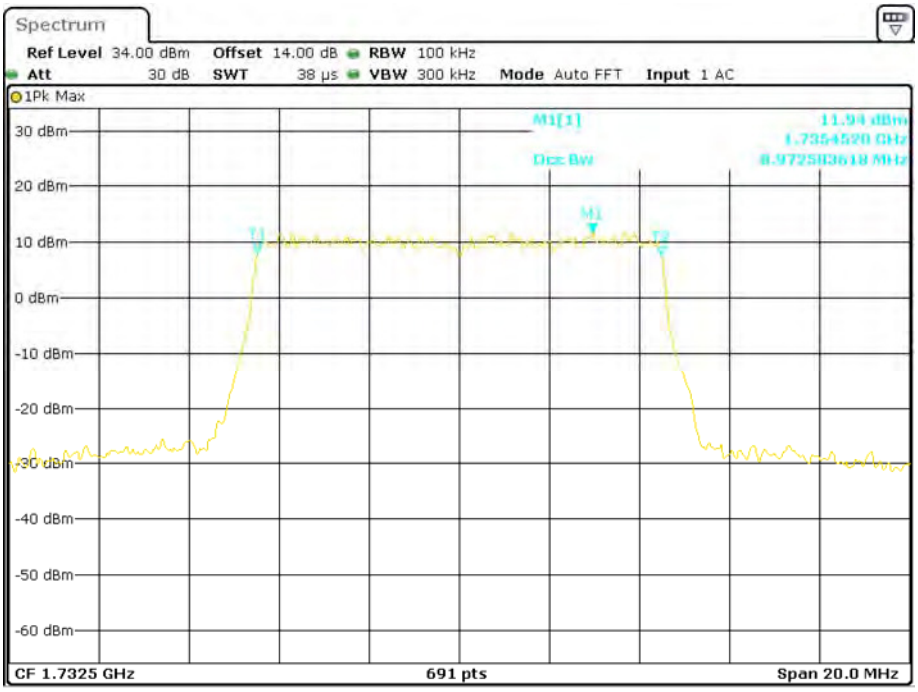


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.732268 GHz	15.58 dBm	ndB down	5.195 MHz
T1		1	1.729866 GHz	-10.29 dBm	ndB	26.00 dB
T2		1	1.735062 GHz	-10.65 dBm	Q factor	333.4

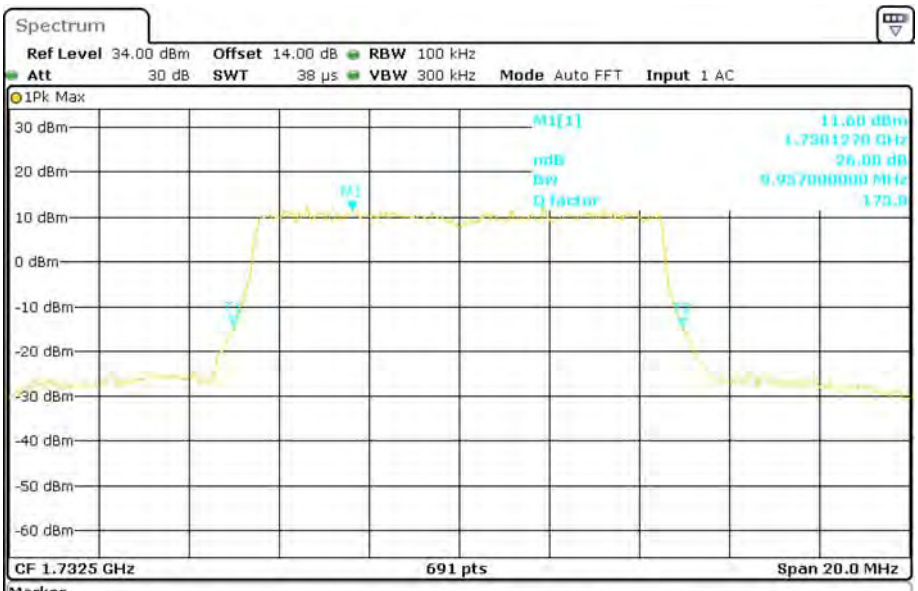
Date: 8.FEB.2018 08:26:00

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



Date: 8.FEB.2018 15:45:32

QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel

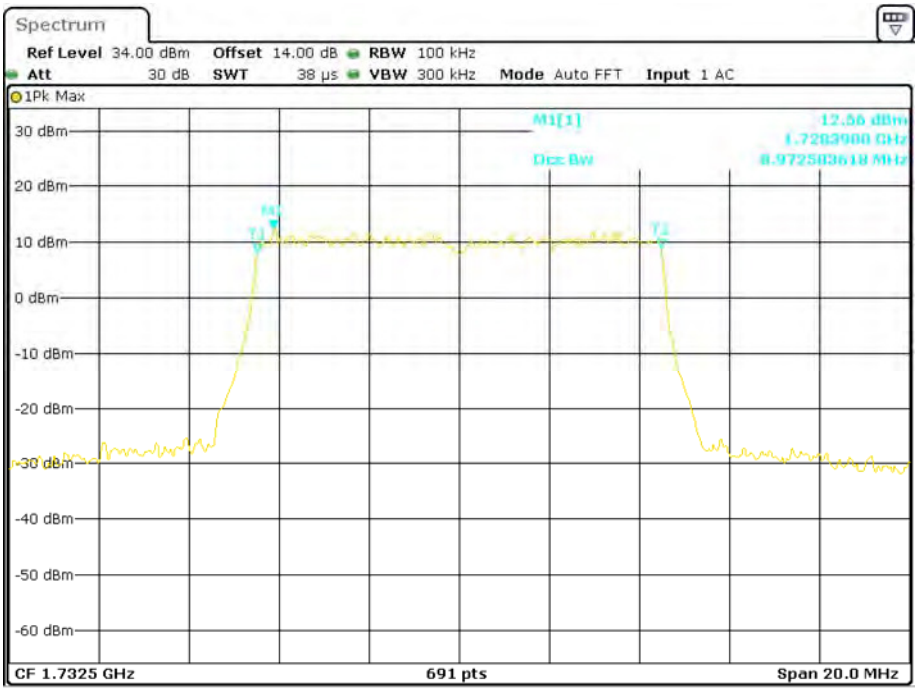


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.730127 GHz	11.60 dBm	ndB down	9.957 MHz
T1		1	1.727493 GHz	-14.16 dBm	ndB	26.00 dB
T2		1	1.737449 GHz	-14.36 dBm	Q factor	173.8

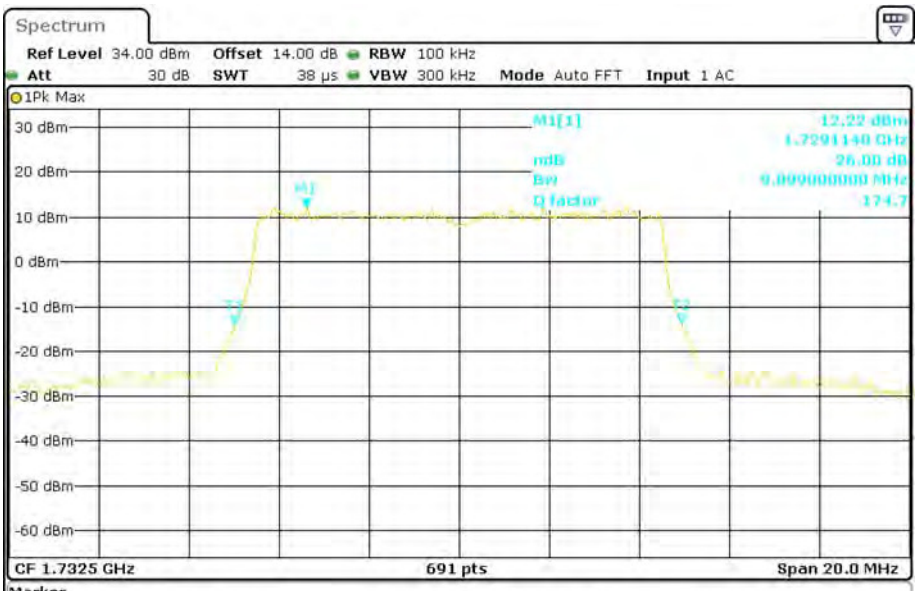
Date: 9.FEB.2018 08:28:13

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



Date: 8.FEB.2018 15:44:59

16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel

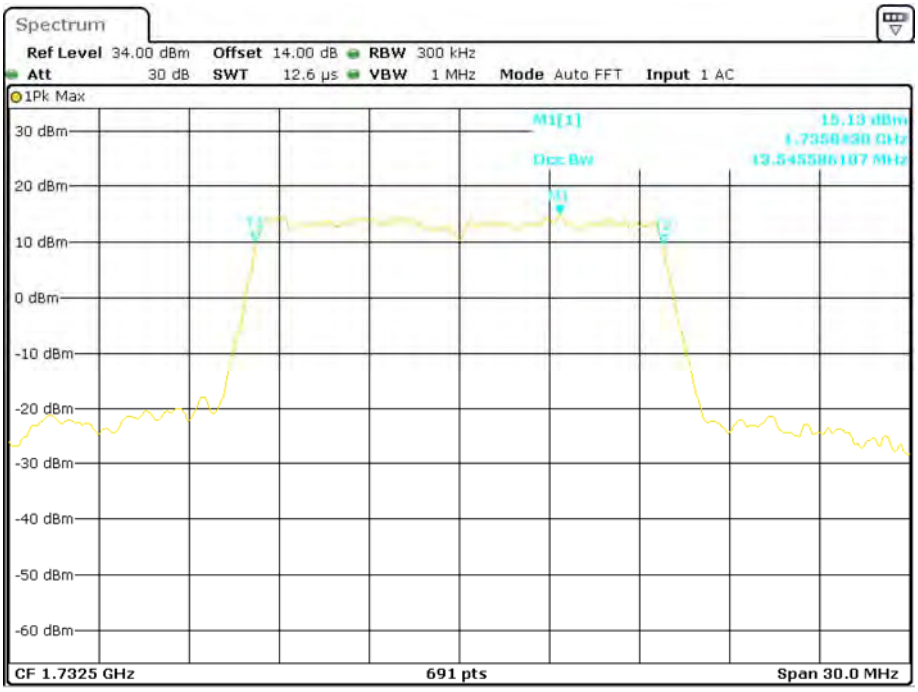


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.729114 GHz	12.22 dBm	ndB down	9.899 MHz
T1		1	1.727522 GHz	-13.86 dBm	ndB	26.00 dB
T2		1	1.73742 GHz	-13.66 dBm	Q factor	174.7

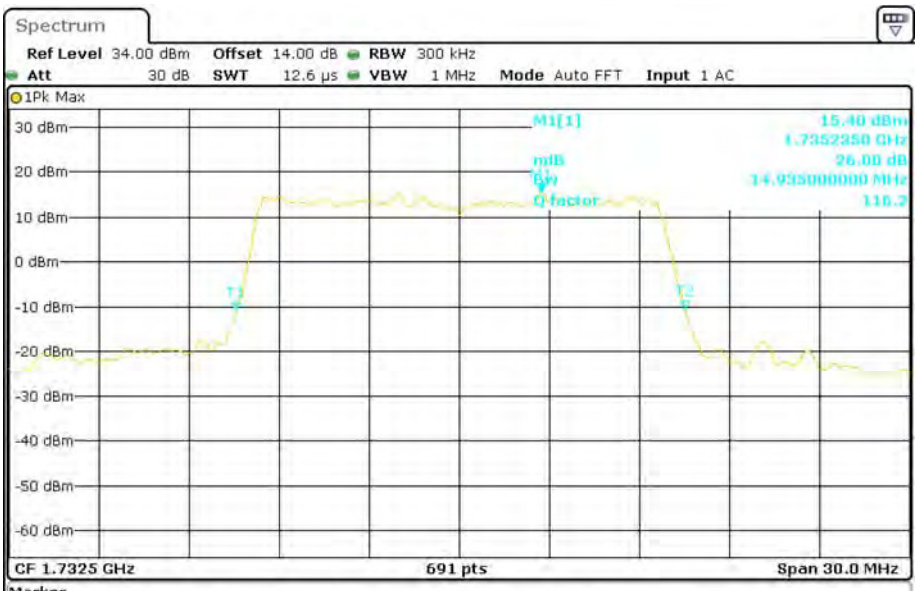
Date: 9.FEB.2018 08:27:39

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



Date: 8.FEB.2018 15:48:05

QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel

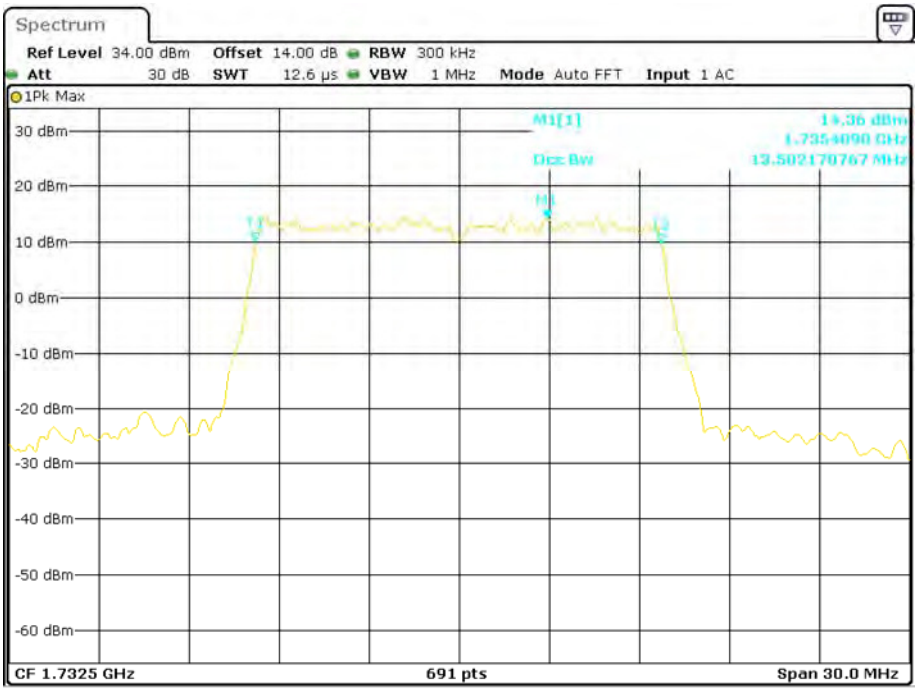


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.735235 GHz	15.40 dBm	ndB down	14.935 MHz
T1		1	1.725076 GHz	-10.80 dBm	ndB	26.00 dB
T2		1	1.740011 GHz	-10.47 dBm	Q factor	116.2

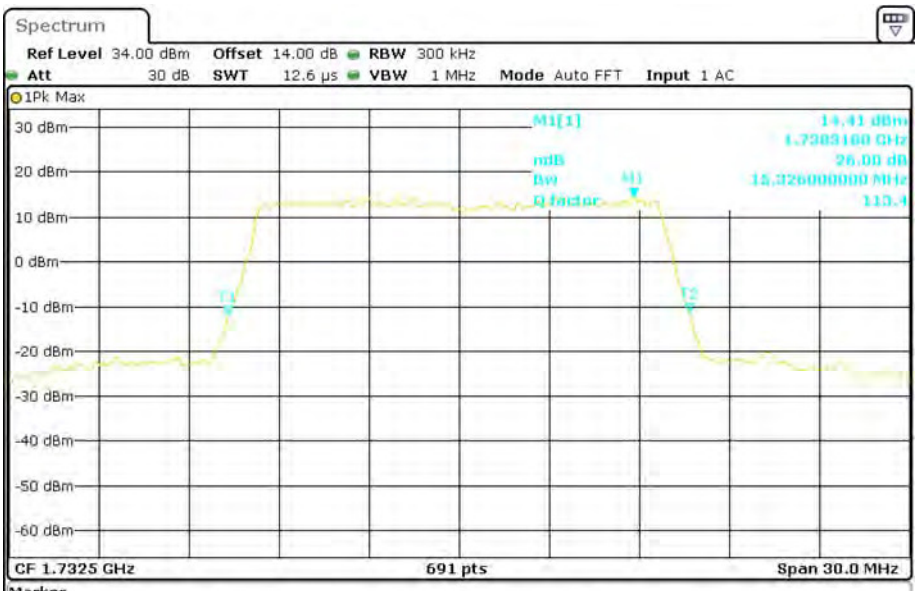
Date: 8.FEB.2018 08:20:07

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



Date: 8.FEB.2018 15:48:28

16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel

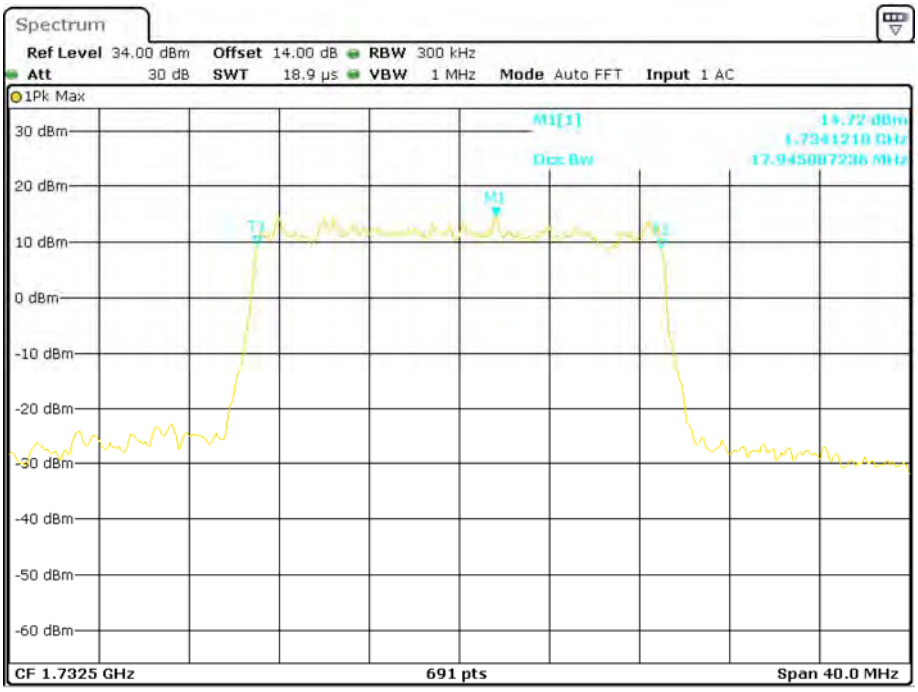


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.738318 GHz	14.41 dBm	ndB down	15.326 MHz
T1		1	1.724815 GHz	-11.93 dBm	ndB	26.00 dB
T2		1	1.740141 GHz	-11.16 dBm	Q factor	113.4

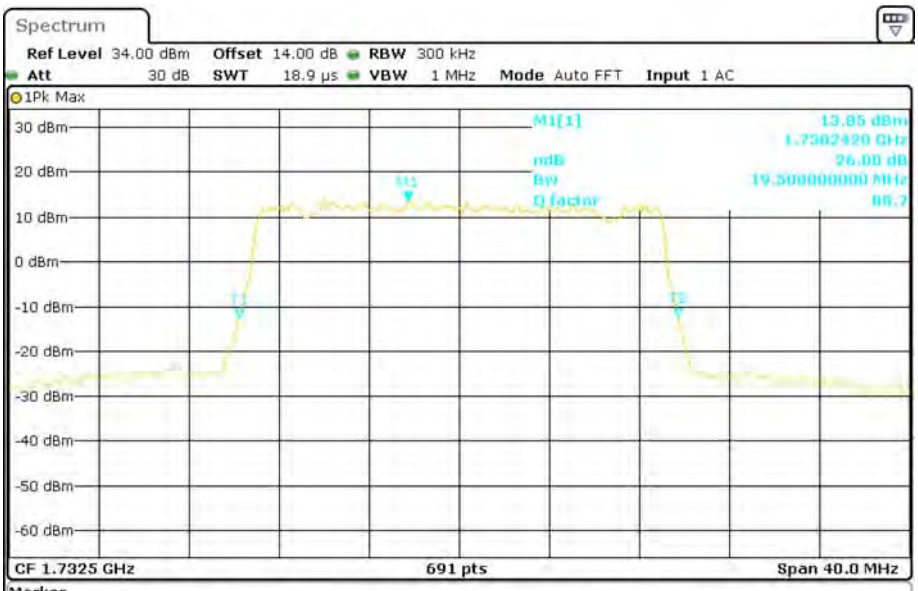
Date: 8.FEB.2018 08:20:56

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



Date: 8.FEB.2018 15:49:27

QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel

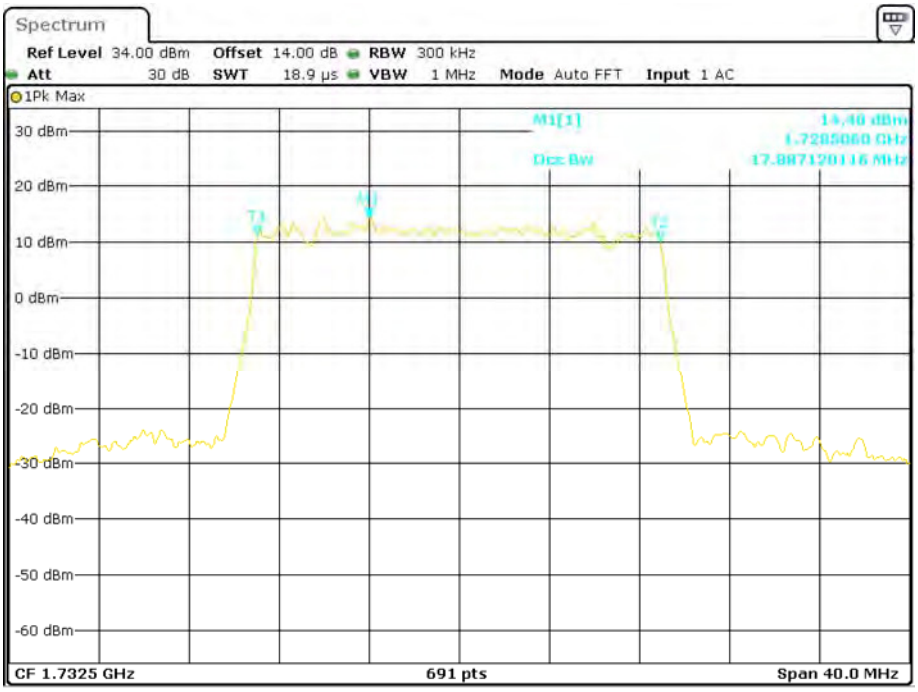


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.730242 GHz	13.85 dBm	ndB down	19.508 MHz
T1		1	1.722717 GHz	-12.40 dBm	ndB	26.00 dB
T2		1	1.742225 GHz	-12.15 dBm	Q factor	88.7

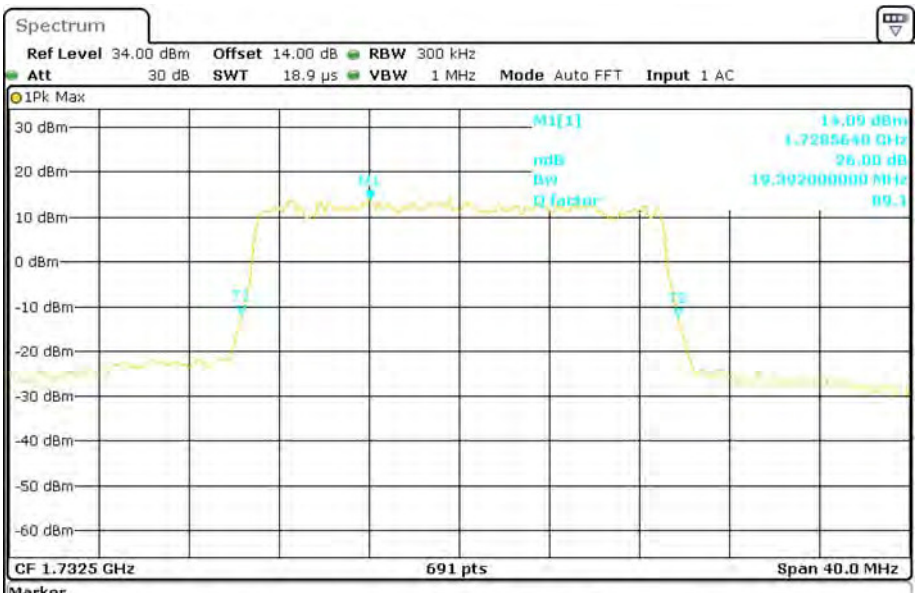
Date: 9.FEB.2018 08:31:05

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



Date: 8.FEB.2018 15:49:00

16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel



Marker

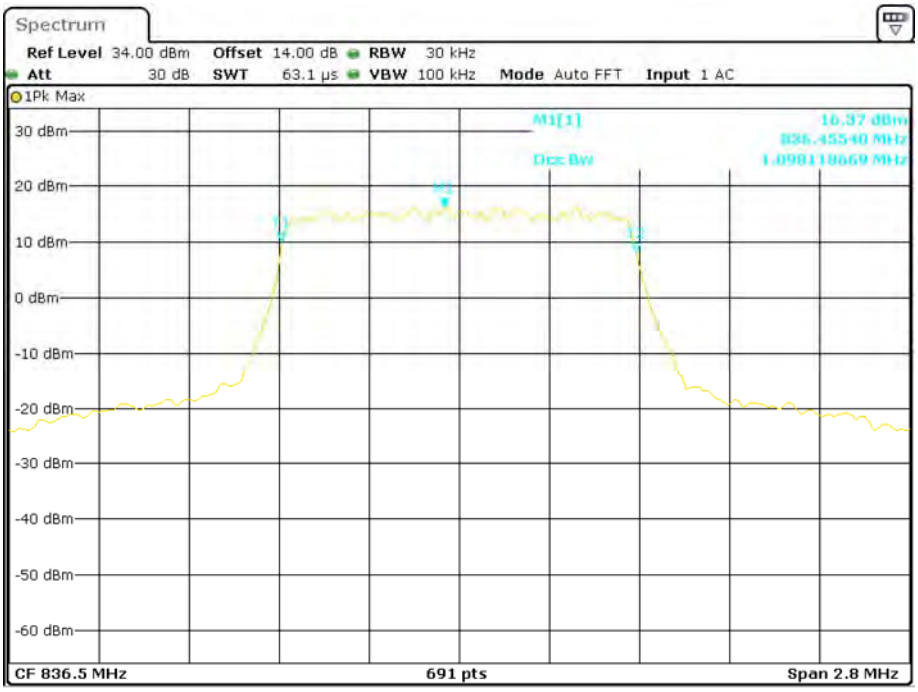
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	1.728564 GHz	14.09 dBm	ndB down	19.392 MHz
T1		1	1.722833 GHz	-11.56 dBm	ndB	26.00 dB
T2		1	1.742225 GHz	-12.18 dBm	Q factor	89.1

Date: 9.FEB.2018 08:38:34

LTE Band 5: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.098	1.341
	16QAM	1.098	1.540
3.0	QPSK	2.683	2.865
	16QAM	2.683	2.865
5.0	QPSK	4.559	5.210
	16QAM	4.559	5.210
10.0	QPSK	9.001	9.986
	16QAM	9.001	9.986

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



Date: 8.FEB.2018 15:59:35

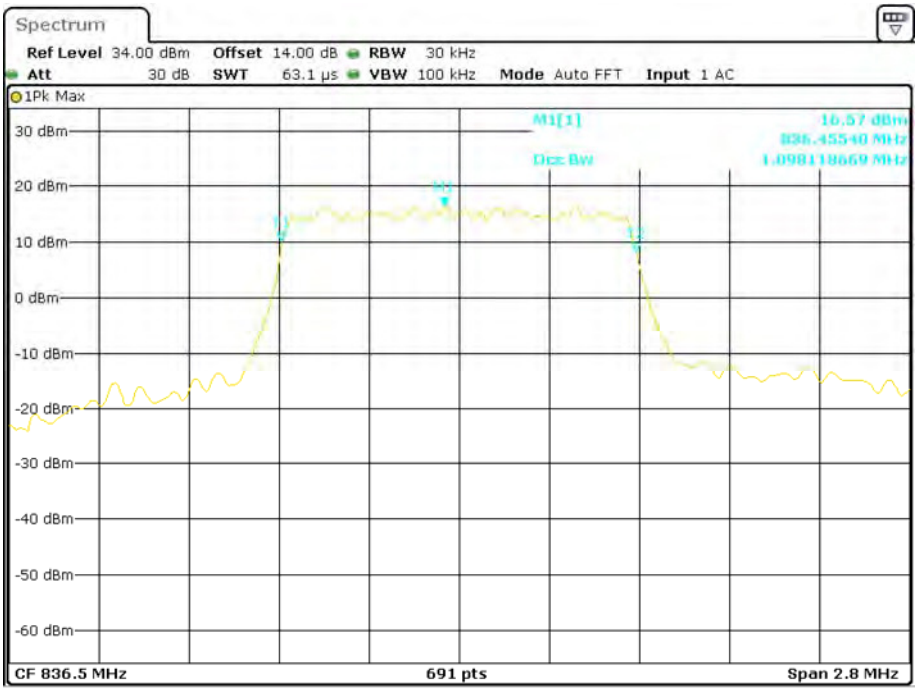
QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.8606 MHz	15.98 dBm	ndB down	1.3412 MHz
T1		1	835.8274 MHz	-9.99 dBm	ndB	26.00 dB
T2		1	837.1686 MHz	-10.13 dBm	Q factor	623.9

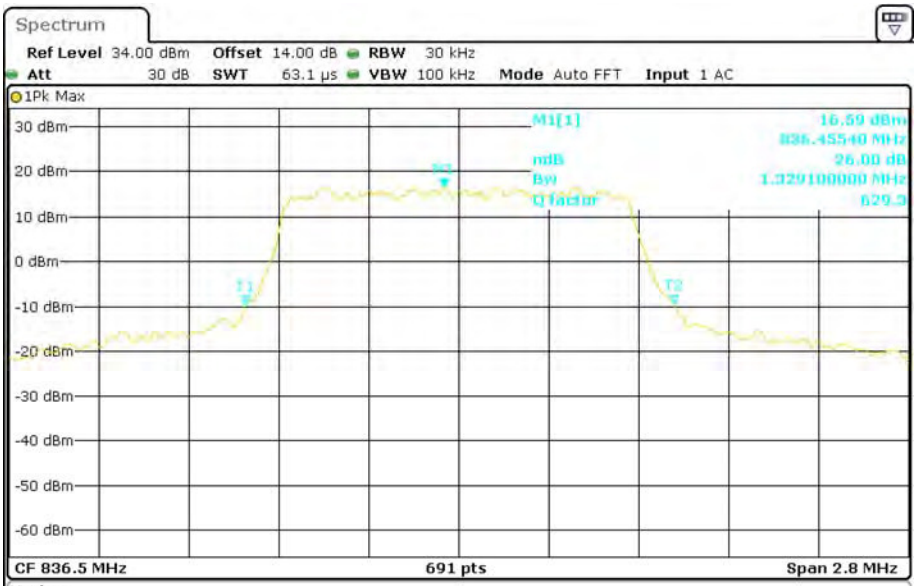
Date: 9.FEB.2018 08:37:18

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



Date: 8.FEB.2018 16:00:10

16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel

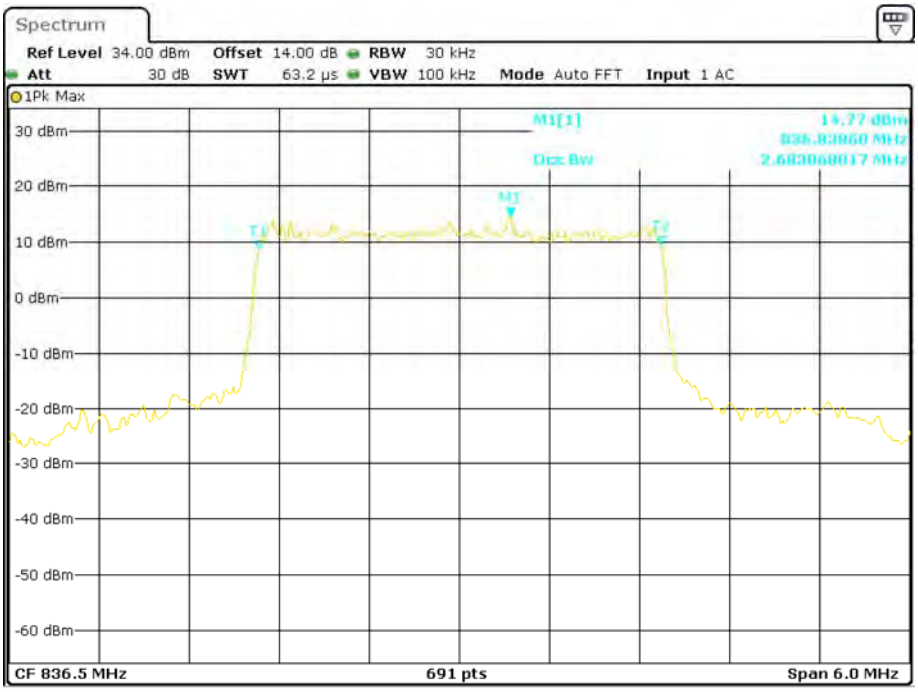


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.4554 MHz	16.59 dBm	ndB down	1.3291 MHz
T1		1	835.8395 MHz	-9.54 dBm	ndB	26.00 dB
T2		1	837.1686 MHz	-9.30 dBm	Q factor	629.3

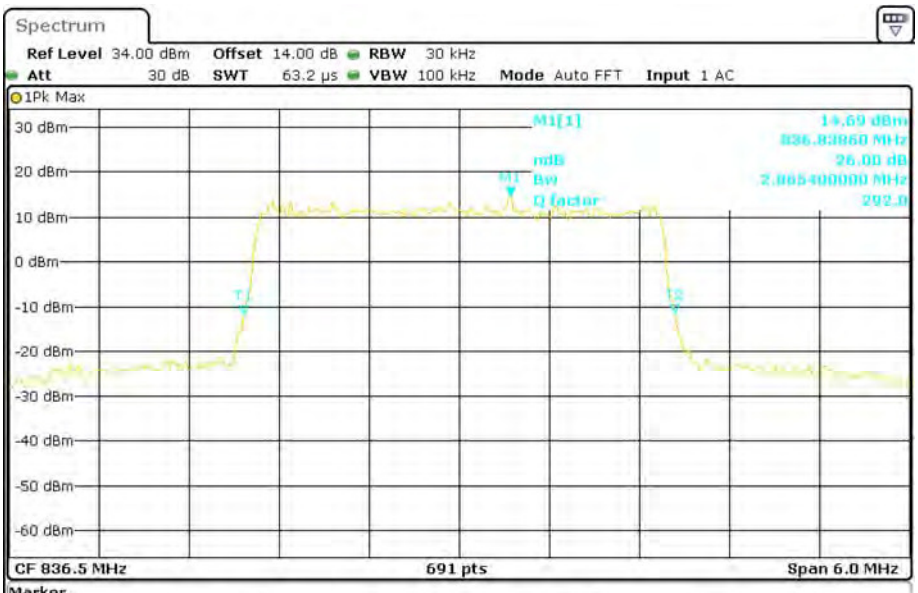
Date: 6.MAR.2018 13:53:08

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



Date: 8.FEB.2018 16:01:08

QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel

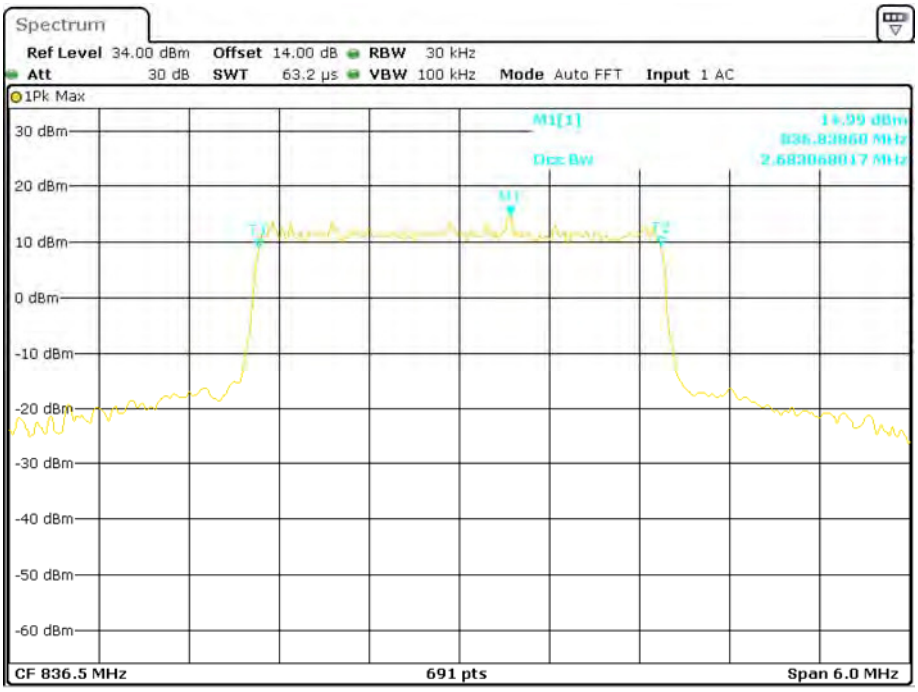


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.8386 MHz	14.69 dBm	ndB down	2.8654 MHz
T1		1	835.0673 MHz	-11.53 dBm	ndB	26.00 dB
T2		1	837.9327 MHz	-11.23 dBm	Q factor	292.0

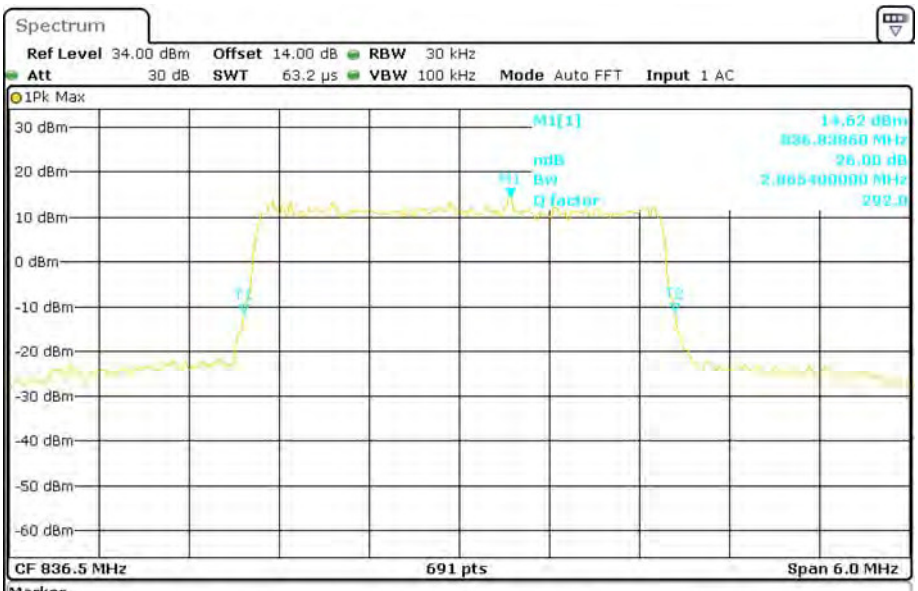
Date: 8.FEB.2018 16:30:34

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



Date: 8.FEB.2018 16:00:43

16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel

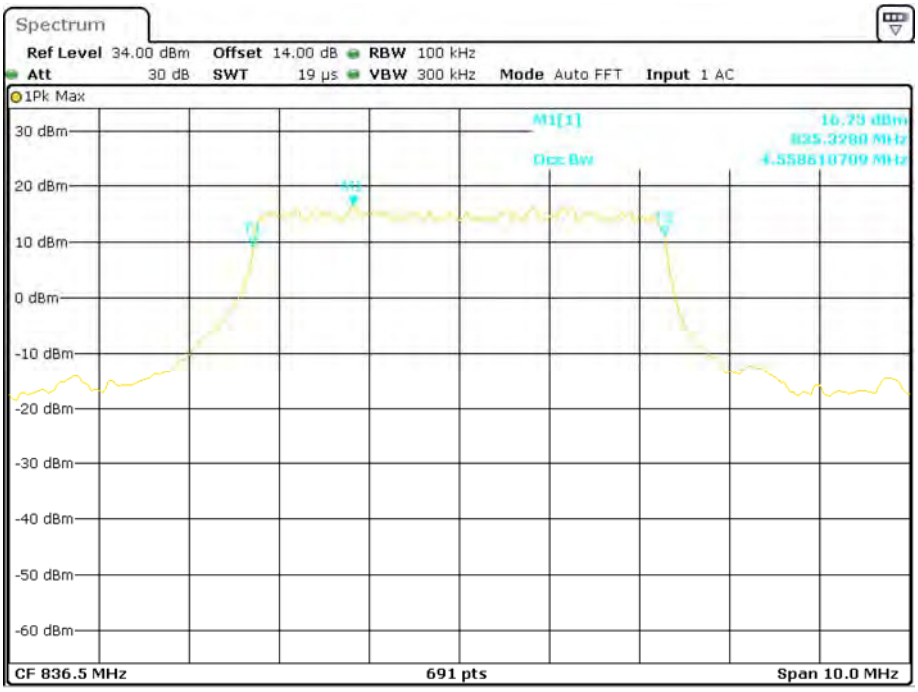


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.8386 MHz	14.62 dBm	ndB down	2.8654 MHz
T1		1	835.0673 MHz	-11.38 dBm	ndB	26.00 dB
T2		1	837.9327 MHz	-11.16 dBm	Q factor	292.0

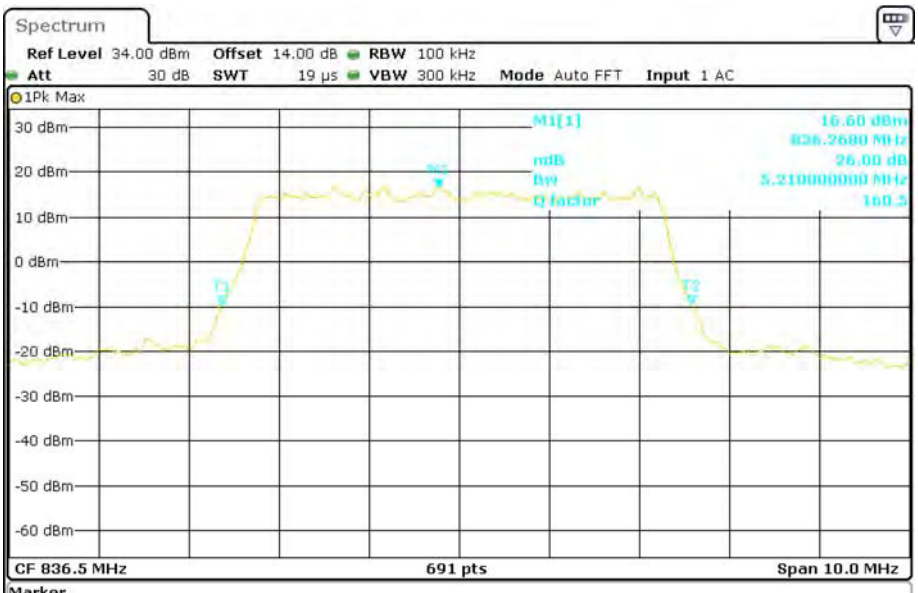
Date: 9.FEB.2018 08:38:58

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



Date: 8.FEB.2018 16:01:45

QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel

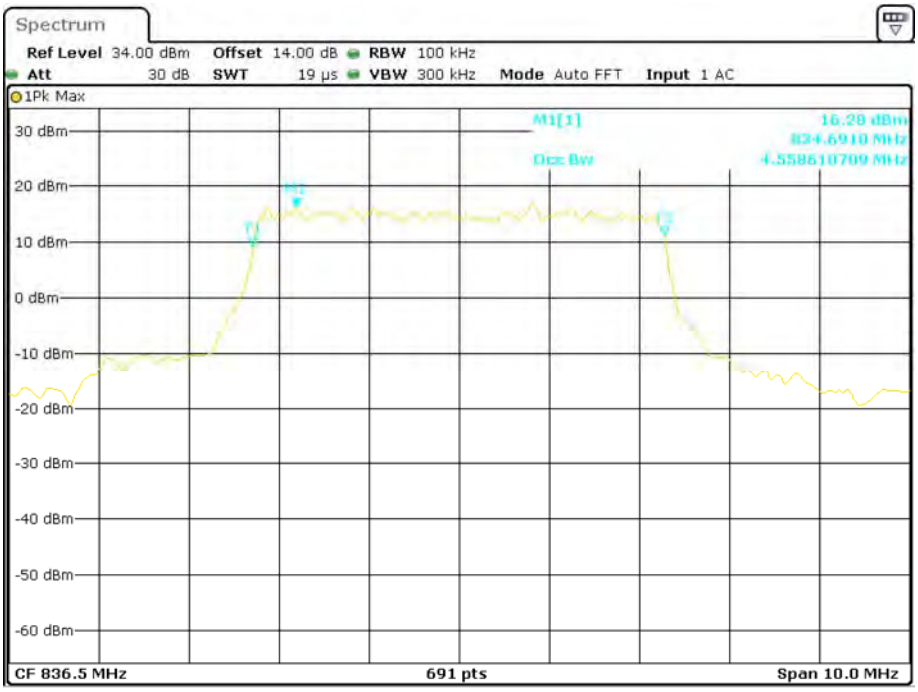


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	836.268 MHz	16.60 dBm	ndB down	5.21 MHz
T1		1	833.866 MHz	-9.52 dBm	ndB	26.00 dB
T2		1	839.076 MHz	-9.34 dBm	Q factor	160.5

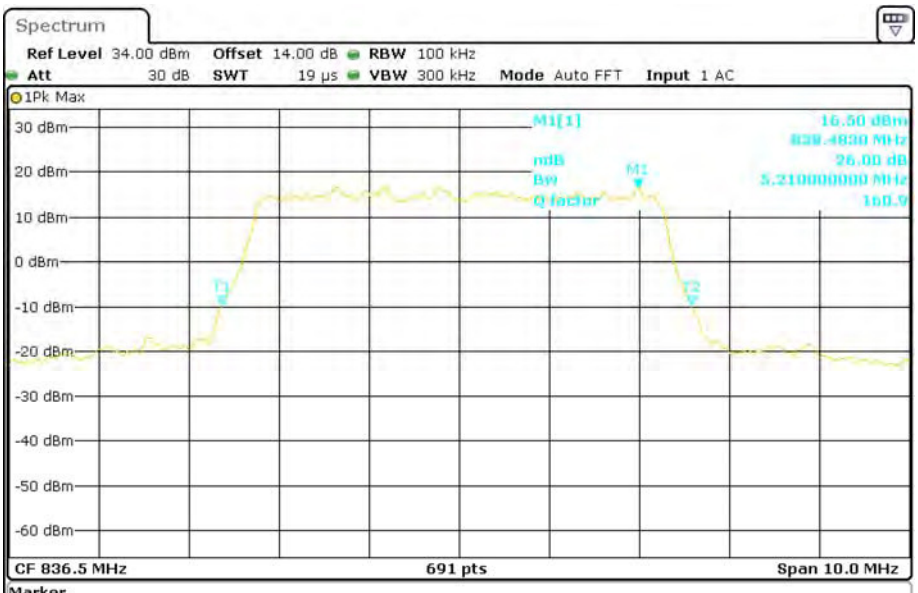
Date: 9.FEB.2018 08:40:23

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



Date: 8.FEB.2018 16:02:12

16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel

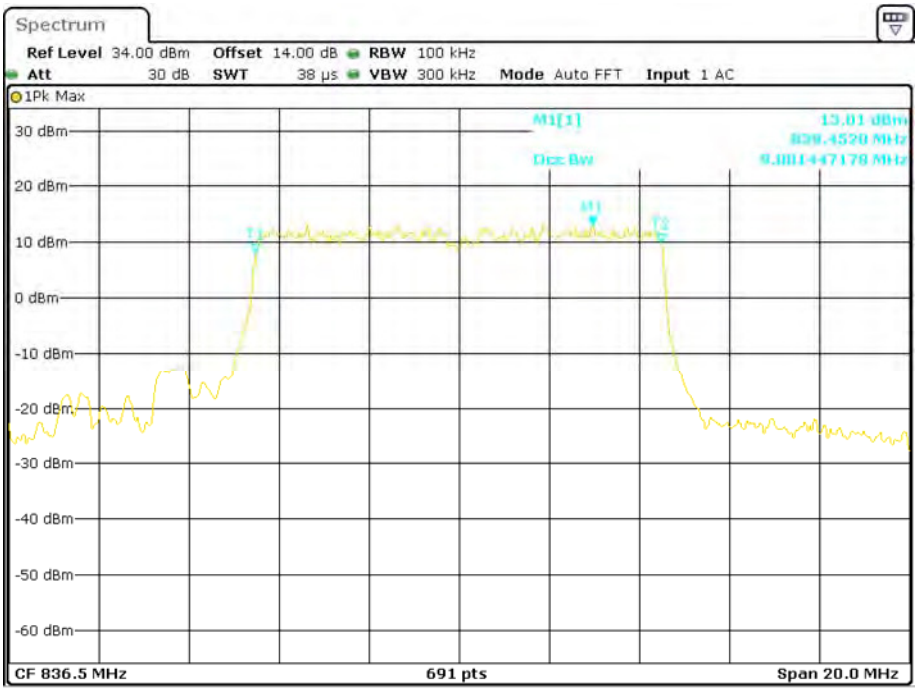


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	838.483 MHz	16.50 dBm	ndB down	5.21 MHz
T1		1	833.866 MHz	-9.57 dBm	ndB	26.00 dB
T2		1	839.076 MHz	-9.57 dBm	Q factor	160.9

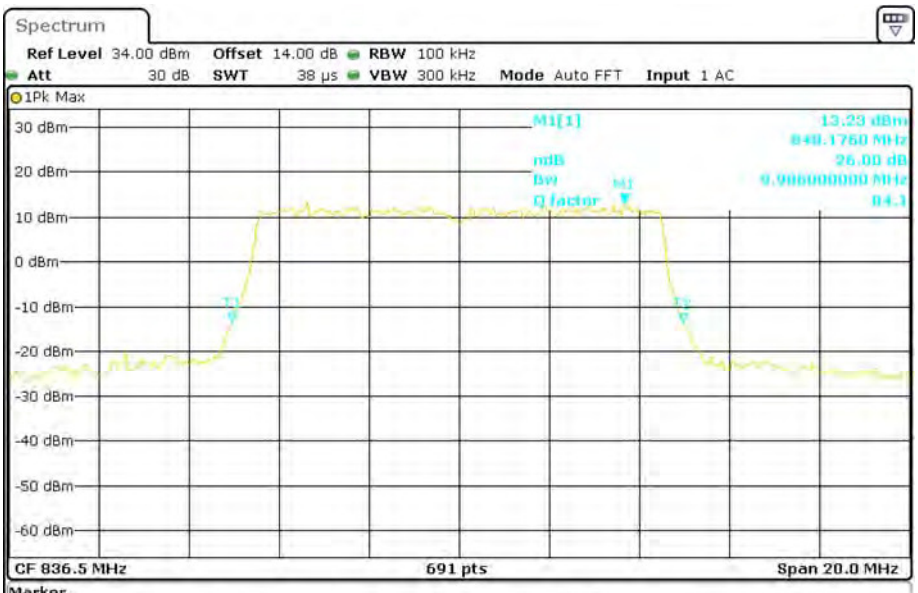
Date: 9.FEB.2018 08:40:51

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



Date: 8.FEB.2018 16:03:22

QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel

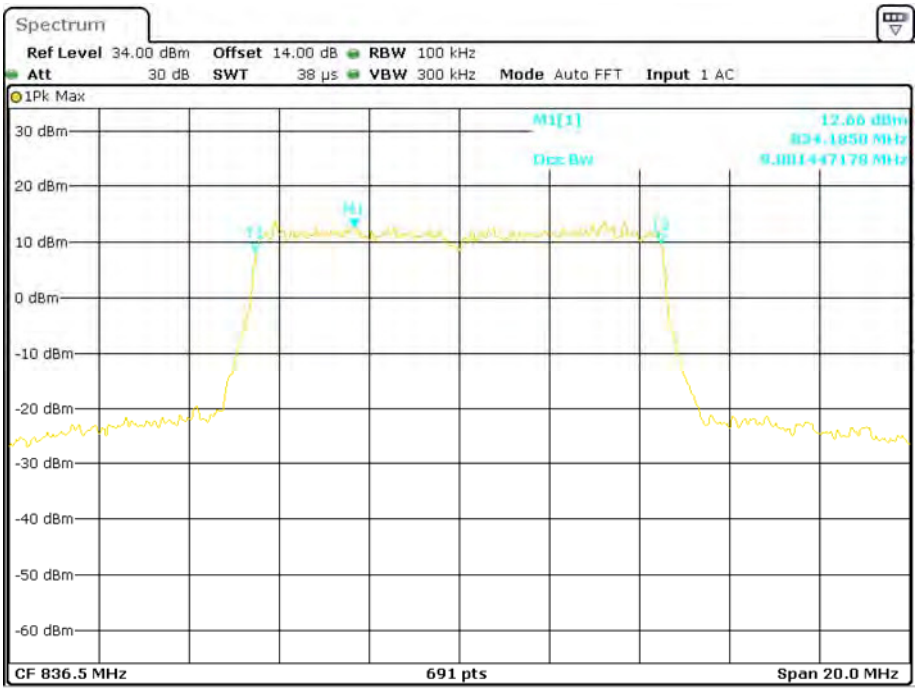


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	840.176 MHz	13.23 dBm	ndB down	9.986 MHz
T1		1	831.464 MHz	-13.15 dBm	ndB	26.00 dB
T2		1	841.449 MHz	-13.24 dBm	Q factor	84.1

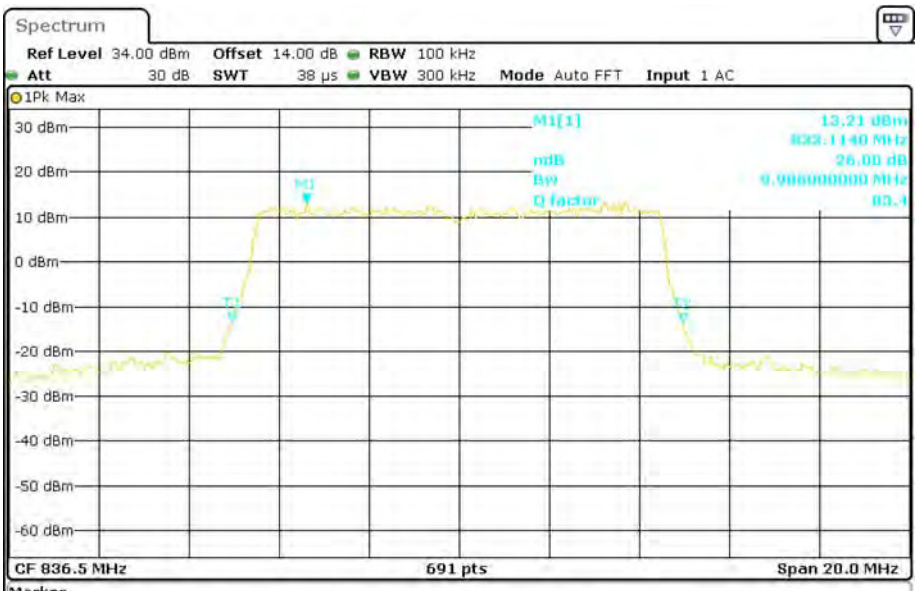
Date: 8.FEB.2018 08:41:53

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



Date: 8.FEB.2018 16:02:43

16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel



Marker

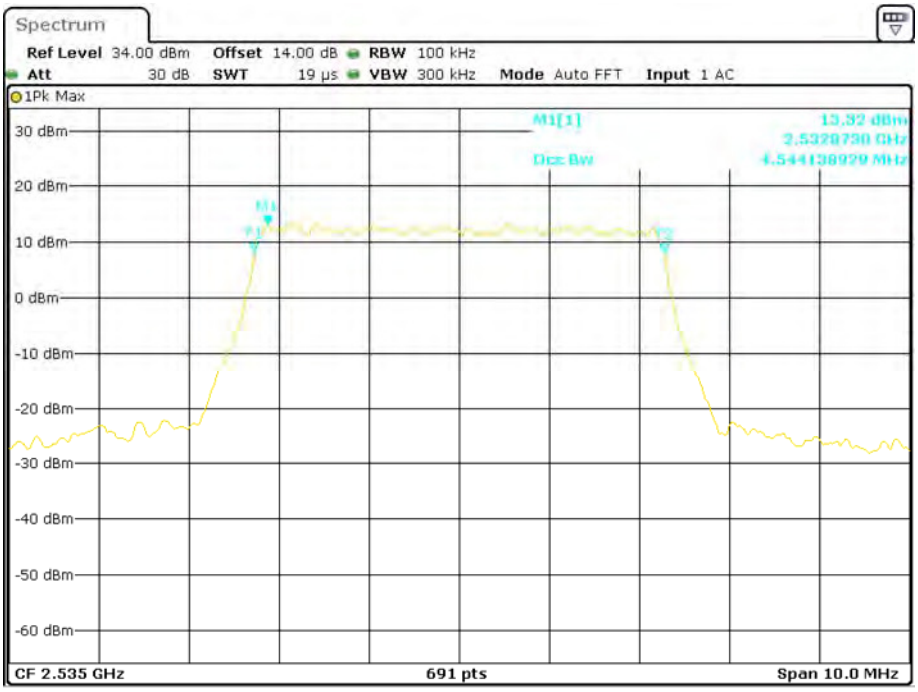
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	833.114 MHz	13.21 dBm	ndB down	9.986 MHz
T1		1	831.464 MHz	-13.03 dBm	ndB	26.00 dB
T2		1	841.449 MHz	-13.28 dBm	Q factor	83.4

Date: 8.FEB.2018 08:41:02

LTE Band 7: (Middle Channel)

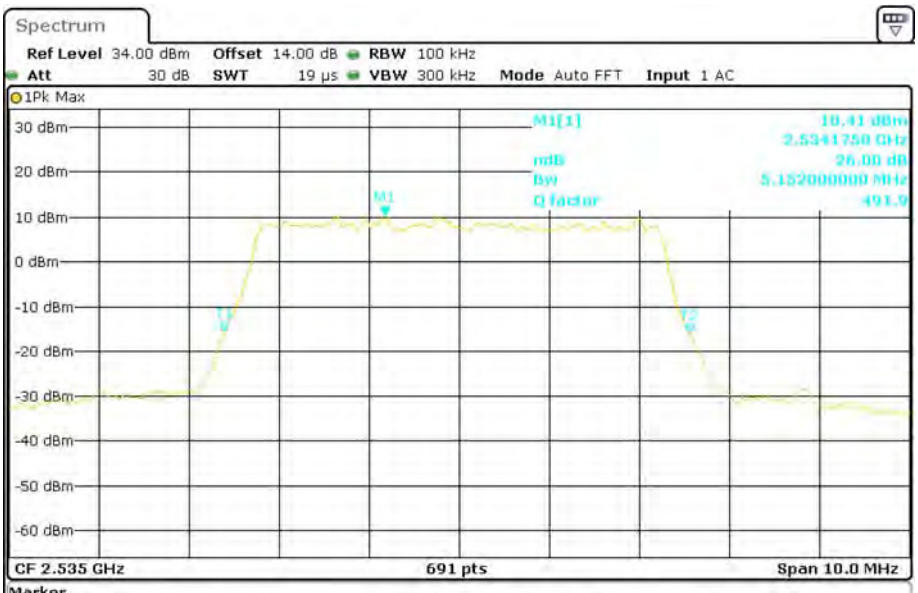
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.544	5.152
	16QAM	4.544	5.152
10.0	QPSK	8.973	9.928
	16QAM	9.001	9.754
15.0	QPSK	13.502	15.239
	16QAM	13.546	15.109
20.0	QPSK	17.945	19.392
	16QAM	17.945	19.392

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



Date: 8.FEB.2018 16:17:23

QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel

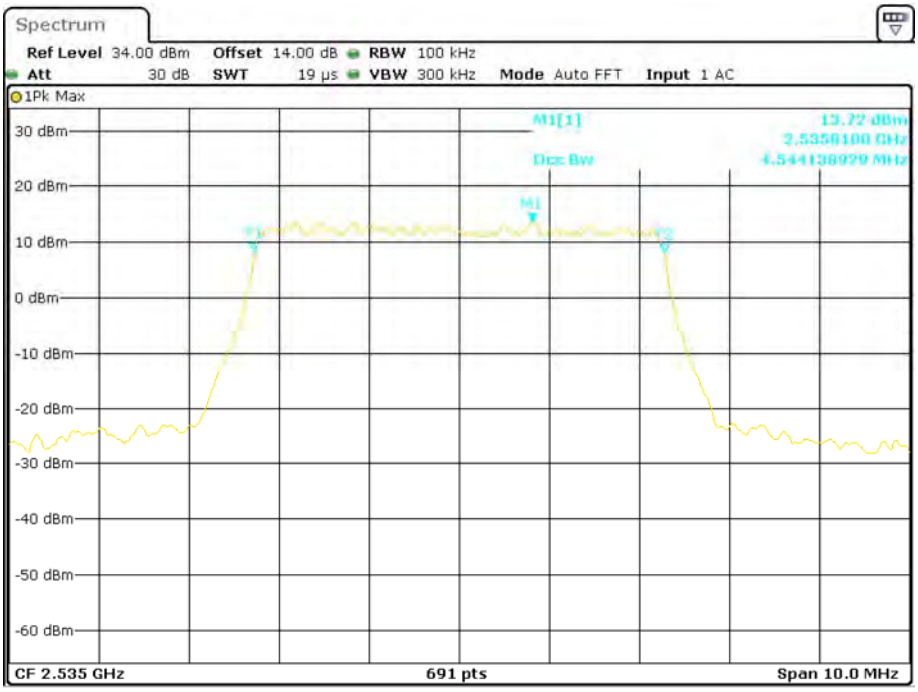


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.534175 GHz	10.41 dBm	ndB down	5.152 MHz
T1		1	2.532395 GHz	-15.40 dBm	ndB	26.00 dB
T2		1	2.537547 GHz	-15.87 dBm	Q factor	491.9

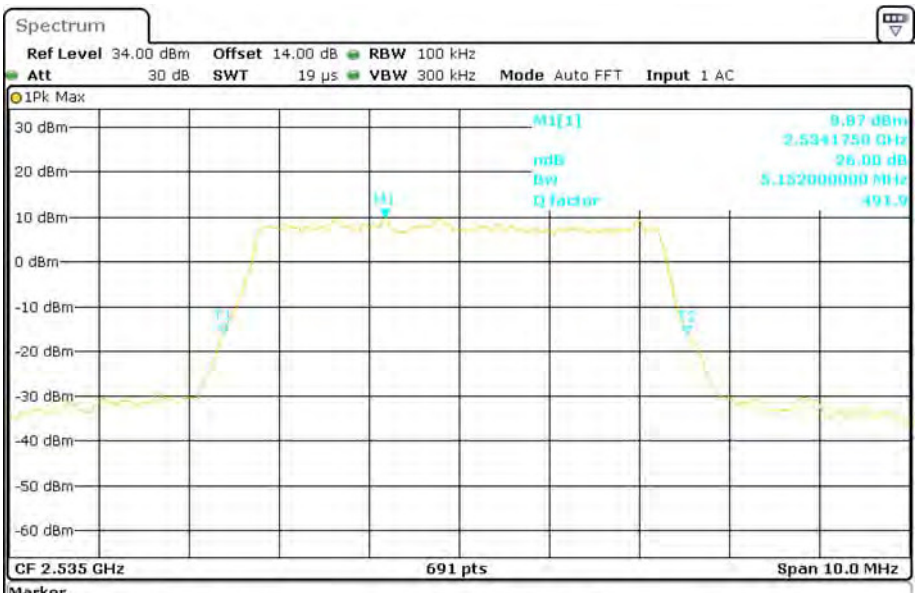
Date: 9.FEB.2018 08:43:46

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



Date: 8.FEB.2018 16:17:01

16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel

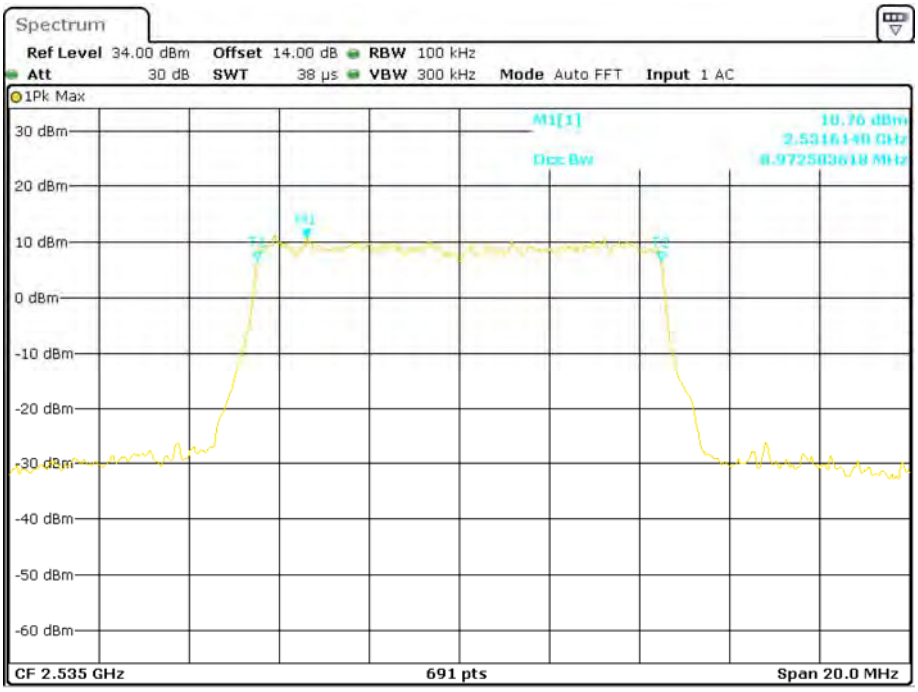


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.534175 GHz	9.87 dBm	ndB down	5.152 MHz
T1		1	2.532381 GHz	-15.97 dBm	ndB	26.00 dB
T2		1	2.537533 GHz	-16.02 dBm	Q factor	491.9

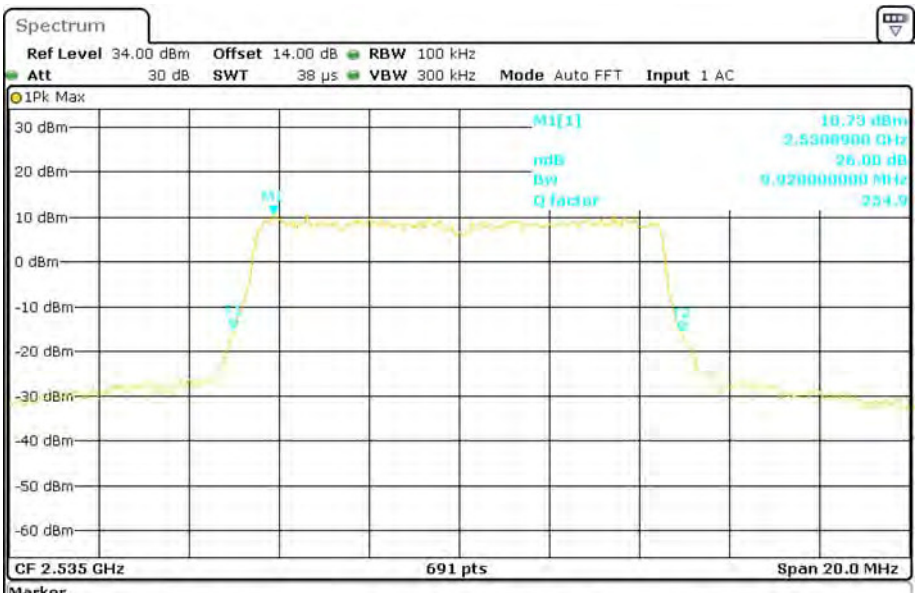
Date: 9.FEB.2018 08:44:40

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



Date: 8.FEB.2018 16:16:18

QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel

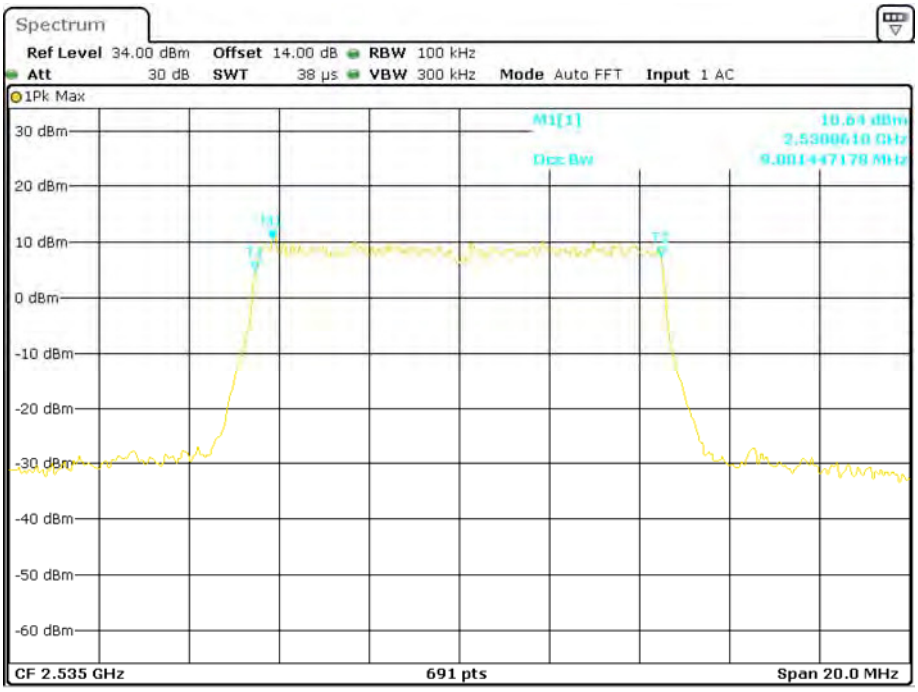


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.53089 GHz	10.73 dBm	ndB down	9.928 MHz
T1		1	2.529993 GHz	-14.91 dBm	ndB	26.00 dB
T2		1	2.53992 GHz	-15.43 dBm	Q factor	254.9

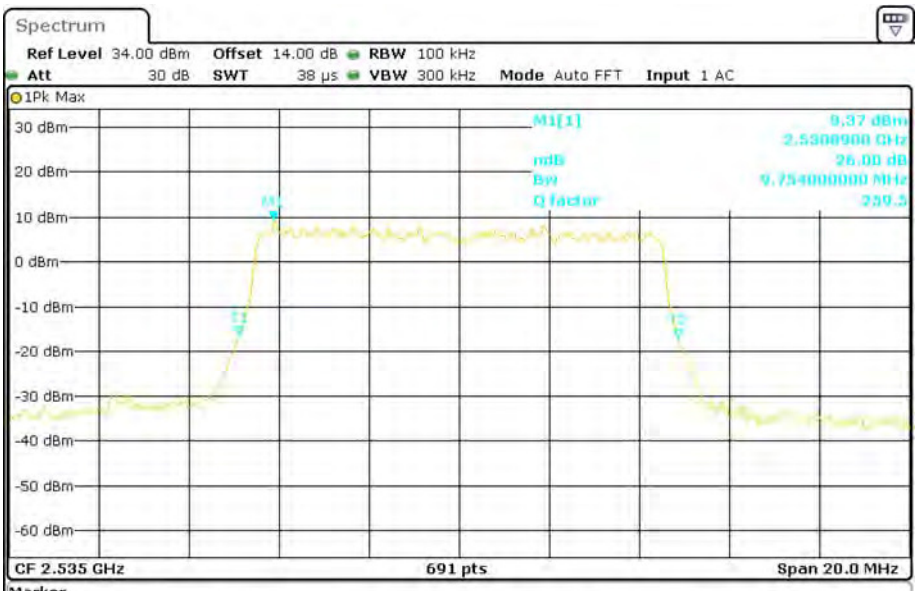
Date: 9.FEB.2018 08:52:50

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



Date: 8.FEB.2018 16:16:37

16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel

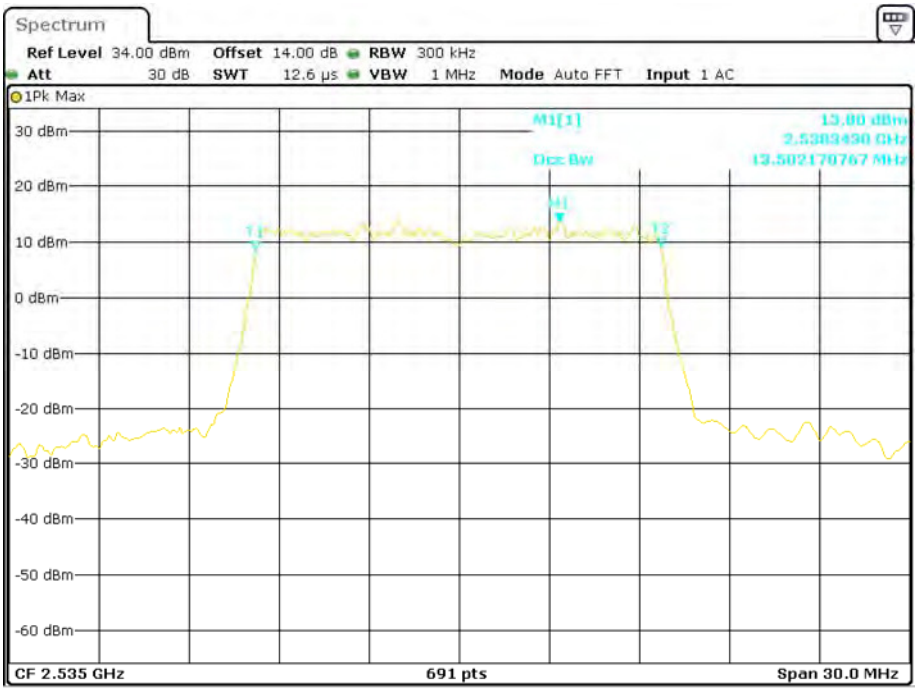


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.53089 GHz	9.37 dBm	ndB down	9.754 MHz
T1		1	2.530109 GHz	-16.33 dBm	ndB	26.00 dB
T2		1	2.539863 GHz	-16.91 dBm	Q factor	259.5

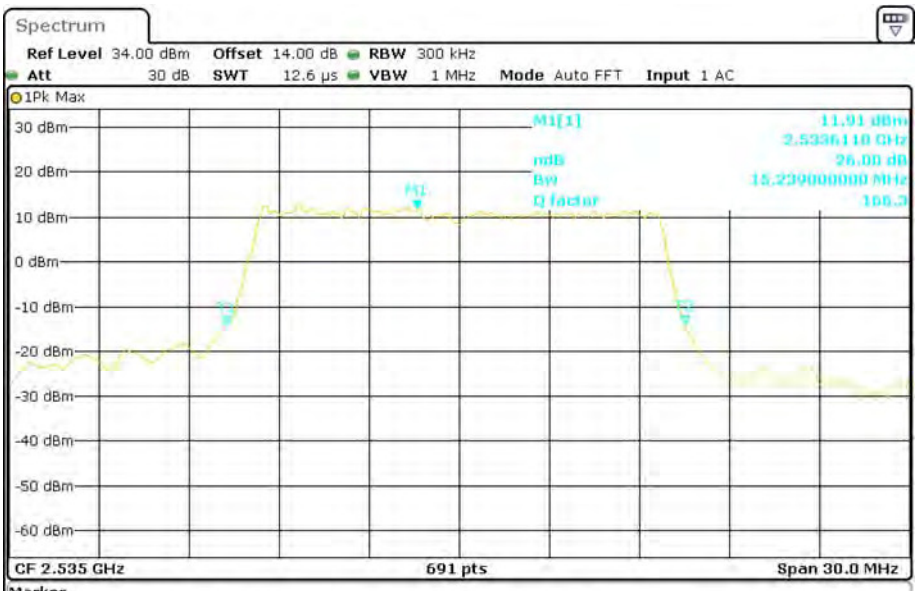
Date: 9.FEB.2018 08:47:08

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



Date: 8.FEB.2018 16:18:00

QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel

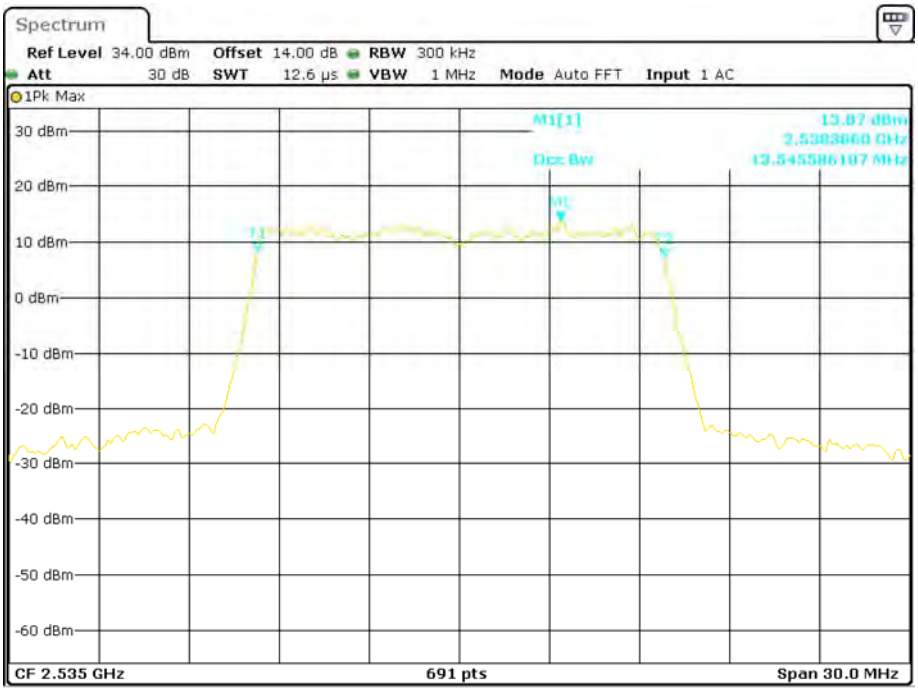


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.533611 GHz	11.91 dBm	ndB down	15.239 MHz
T1		1	2.527272 GHz	-14.03 dBm	ndB	26.00 dB
T2		1	2.542511 GHz	-13.76 dBm	Q factor	166.3

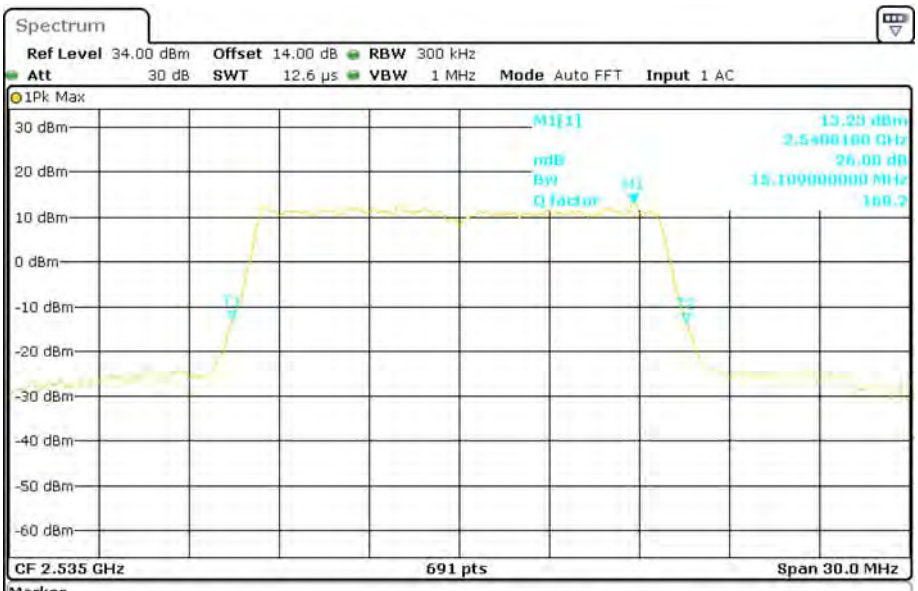
Date: 8.FEB.2018 08:53:02

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



Date: 8.FEB.2018 16:18:31

16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel

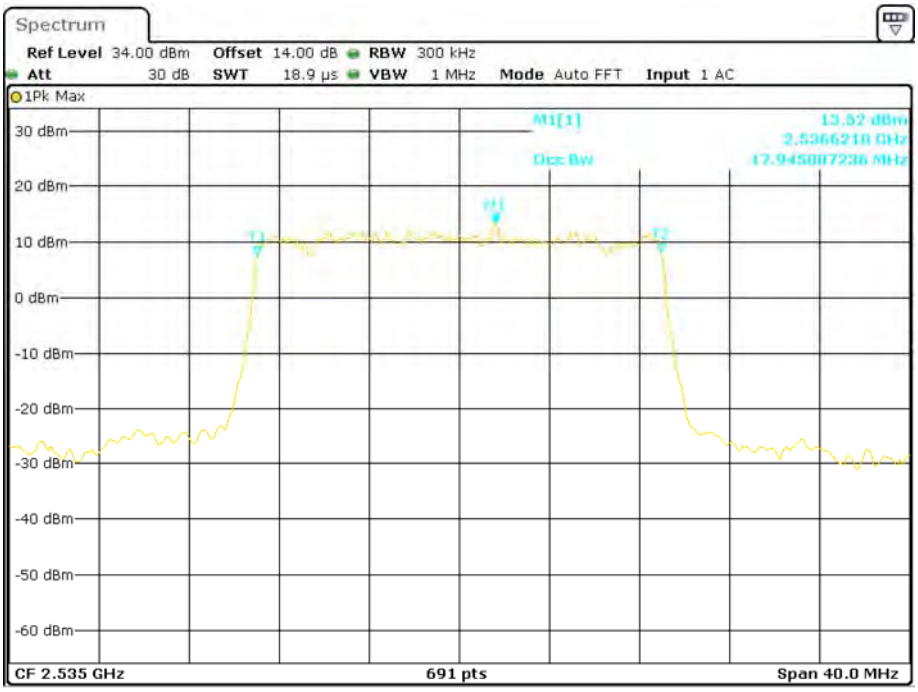


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.540818 GHz	13.23 dBm	ndB down	15.109 MHz
T1		1	2.527446 GHz	-12.81 dBm	ndB	26.00 dB
T2		1	2.542554 GHz	-13.23 dBm	Q factor	168.2

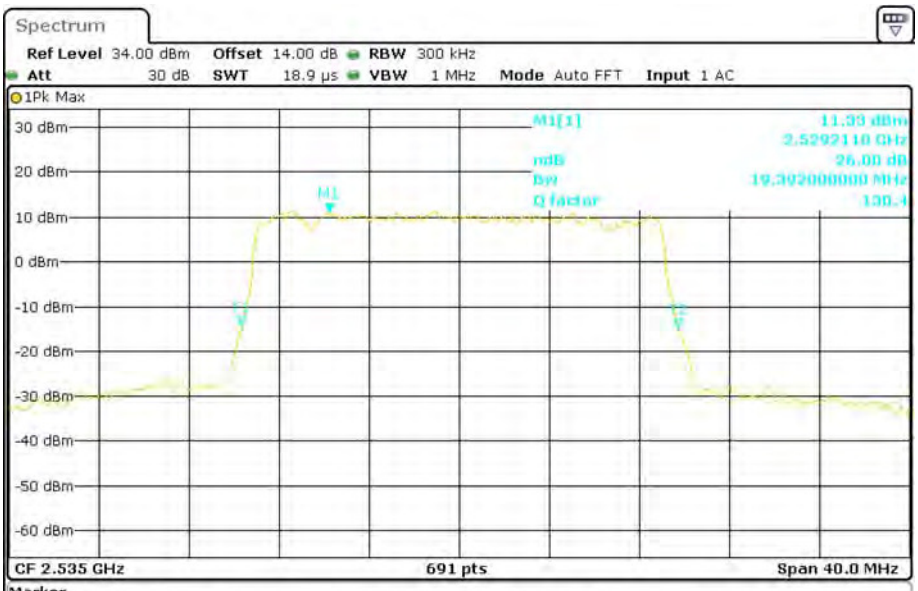
Date: 9.FEB.2018 08:53:51

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



Date: 8.FEB.2018 16:19:43

QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel

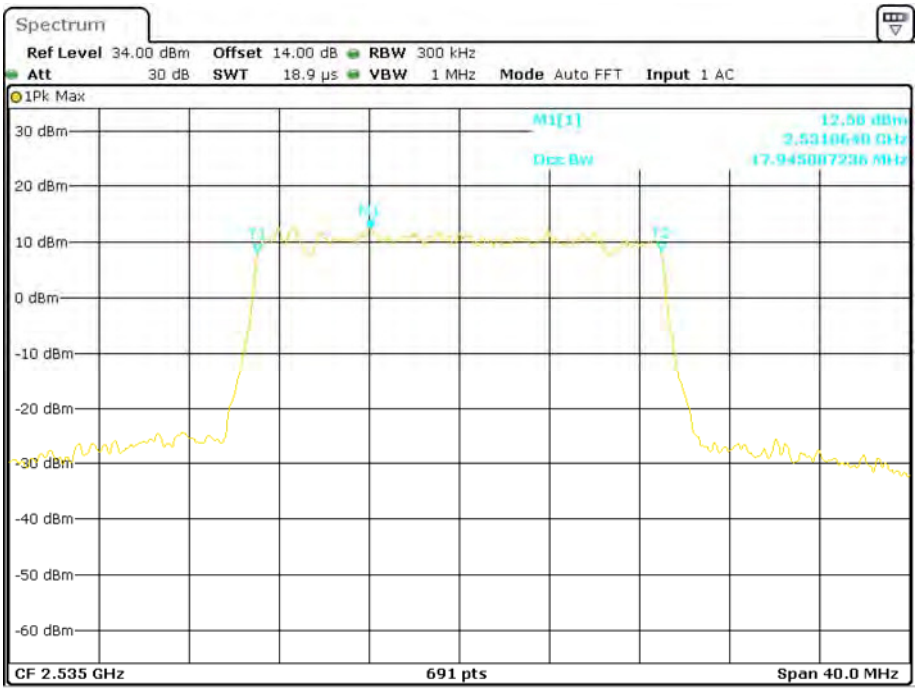


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.529211 GHz	11.33 dBm	ndB down	19.392 MHz
T1		1	2.525333 GHz	-14.15 dBm	ndB	26.00 dB
T2		1	2.544725 GHz	-14.54 dBm	Q factor	130.4

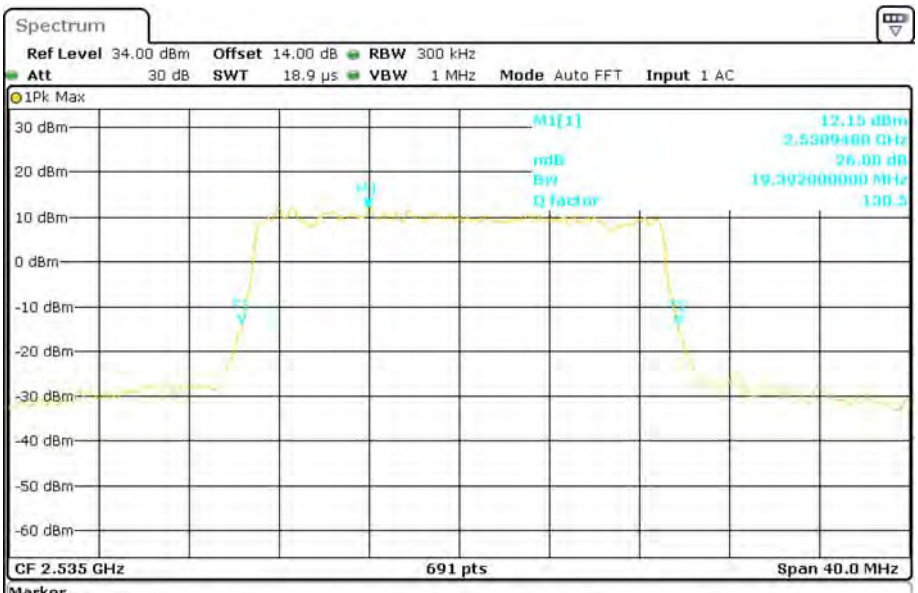
Date: 9.FEB.2018 08:54:54

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



Date: 8.FEB.2018 16:19:06

16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel



Marker

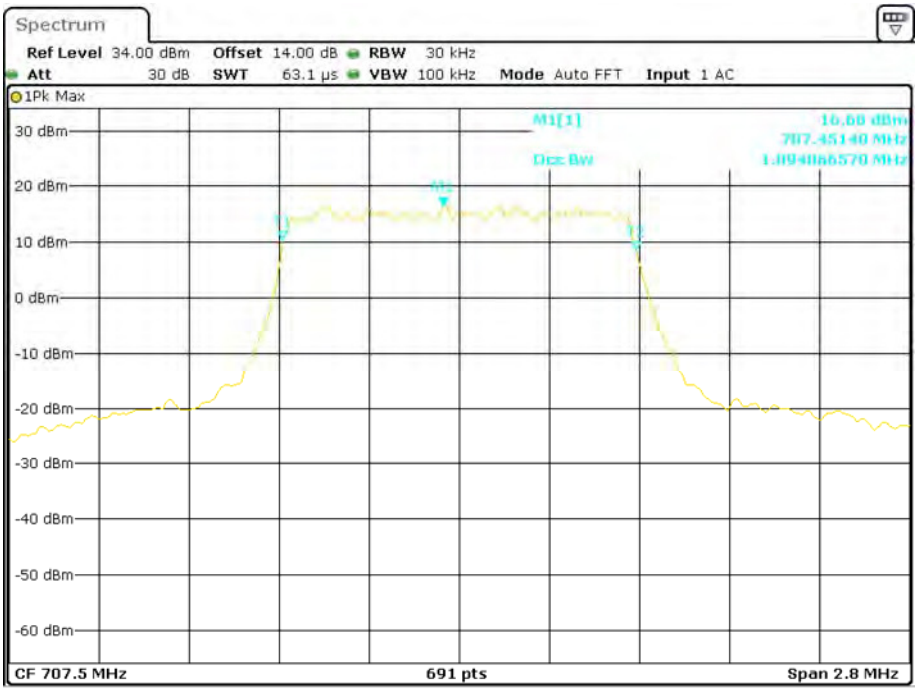
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.530948 GHz	12.15 dBm	ndB down	19.392 MHz
T1		1	2.525333 GHz	-13.68 dBm	ndB	26.00 dB
T2		1	2.544725 GHz	-13.92 dBm	Q factor	130.5

Date: 9.FEB.2018 08:54:23

BAND 12:

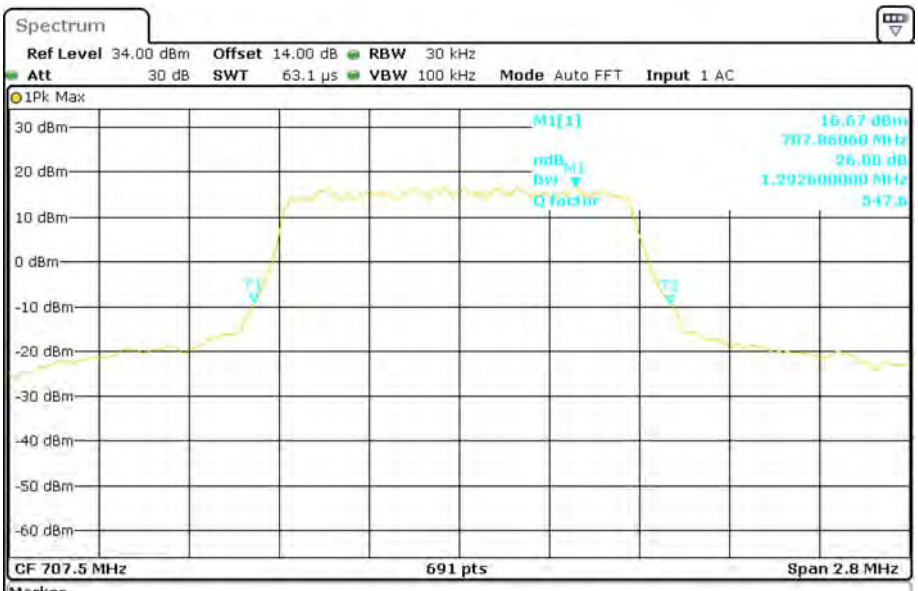
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.094	1.293
	16QAM	1.090	1.293
3.0	QPSK	2.683	2.857
	16QAM	2.683	2.857
5.0	QPSK	4.530	5.195
	16QAM	4.530	5.166
10.0	QPSK	8.944	9.928
	16QAM	8.973	9.870

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



Date: 8.FEB.2018 16:22:42

QPSK (1.4 MHz) -26 dB Bandwidth, Middle channel



Marker

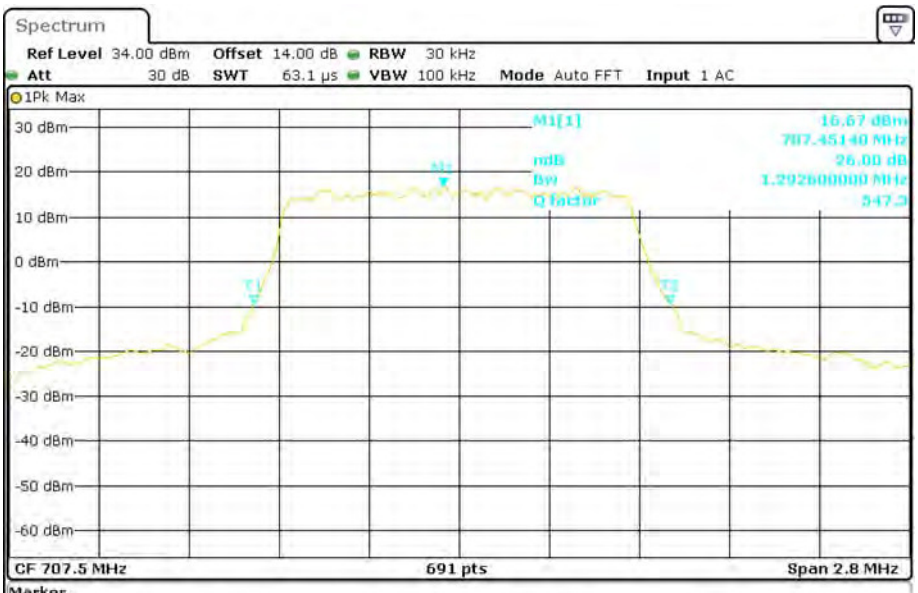
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	707.8606 MHz	16.67 dBm	ndB down	1.2926 MHz
T1		1	706.8638 MHz	-9.10 dBm	ndB	26.00 dB
T2		1	708.1564 MHz	-9.20 dBm	Q factor	547.6

Date: 8.FEB.2018 16:20:16

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

Date: 8.FEB.2018 16:23:15

16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel

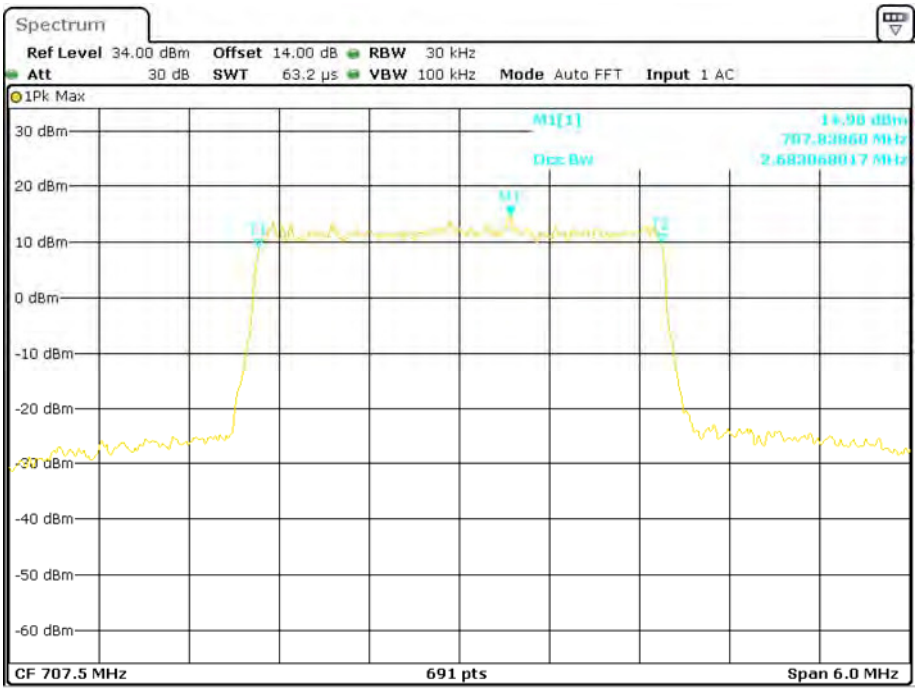


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	707.4514 MHz	16.67 dBm	ndB down	1.2926 MHz
T1		1	706.8638 MHz	-9.22 dBm	ndB	26.00 dB
T2		1	708.1564 MHz	-9.37 dBm	Q factor	547.3

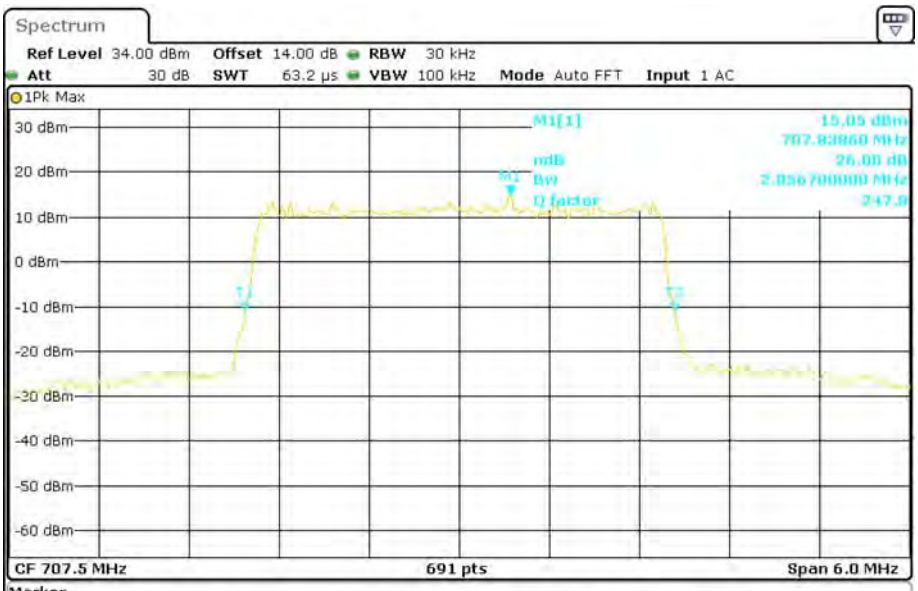
Date: 8.FEB.2018 16:20:41

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



Date: 8.FEB.2018 16:24:12

QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel

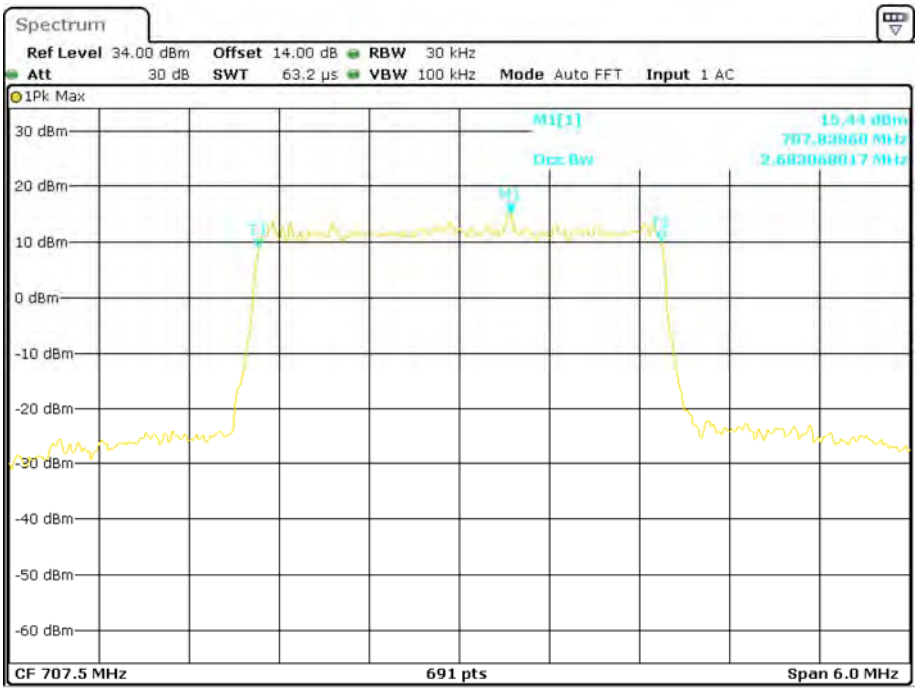


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	707.8386 MHz	15.05 dBm	ndB down	2.8567 MHz
T1		1	706.076 MHz	-10.88 dBm	ndB	26.00 dB
T2		1	708.9327 MHz	-10.88 dBm	Q factor	247.8

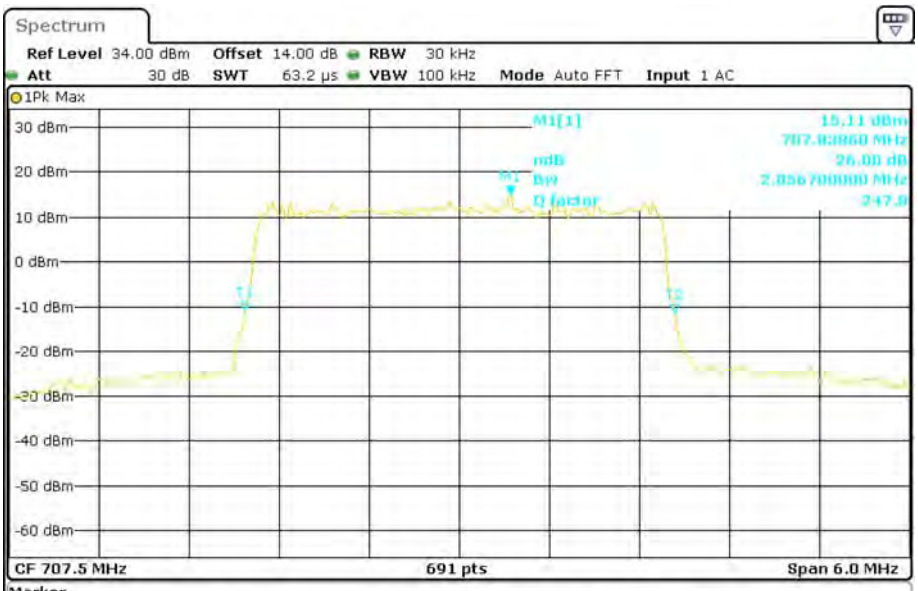
Date: 9.FEB.2018 08:31:39

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



Date: 8.FEB.2018 16:23:46

16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel

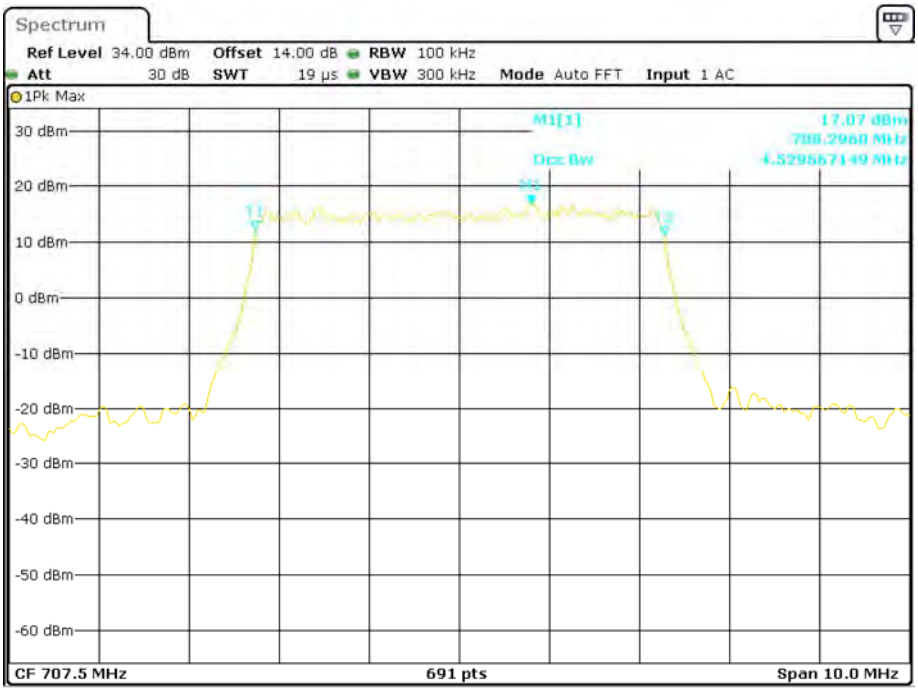


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	707.8386 MHz	15.11 dBm	ndB down	2.8567 MHz
T1		1	706.076 MHz	-10.72 dBm	ndB	26.00 dB
T2		1	708.9327 MHz	-11.32 dBm	Q factor	247.8

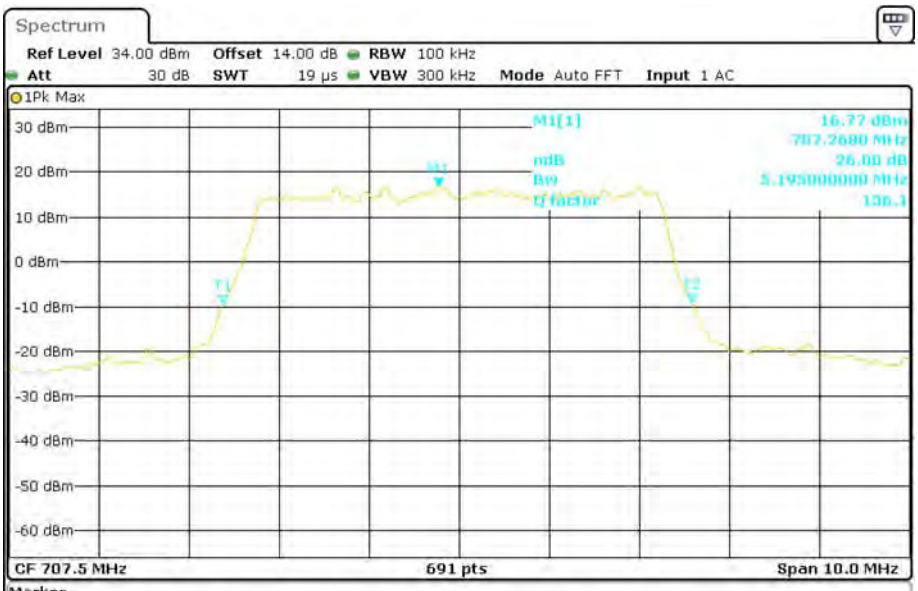
Date: 9.FEB.2018 08:21:07

QPSK (5 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.FEB.2018 16:24:42

QPSK (5 MHz) - 26 dB Bandwidth, Middle channel

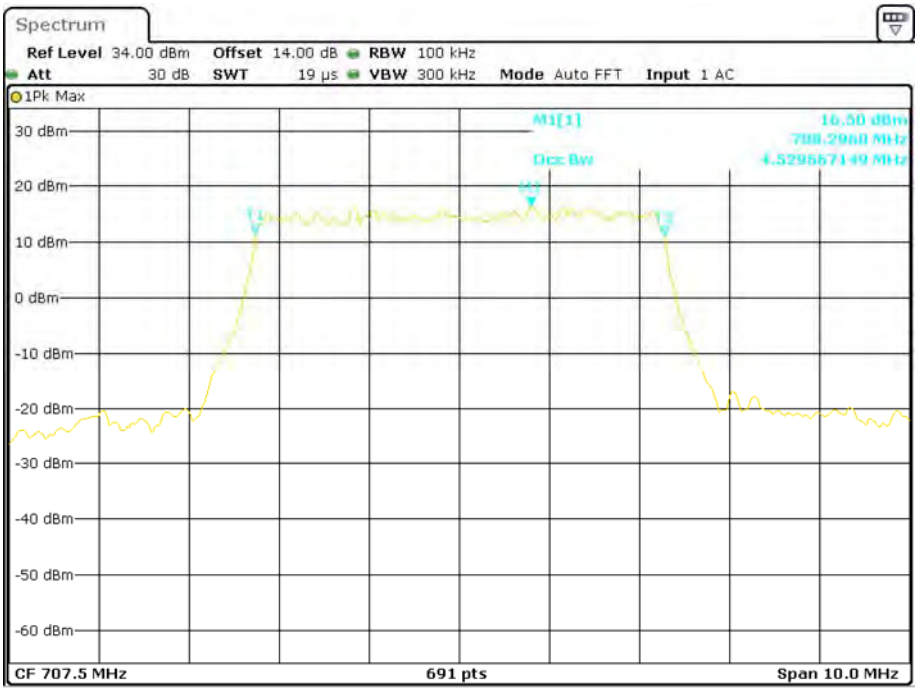


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	707.268 MHz	16.77 dBm	ndB down	5.195 MHz
T1		1	704.881 MHz	-9.36 dBm	ndB	26.00 dB
T2		1	710.076 MHz	-9.00 dBm	Q factor	136.1

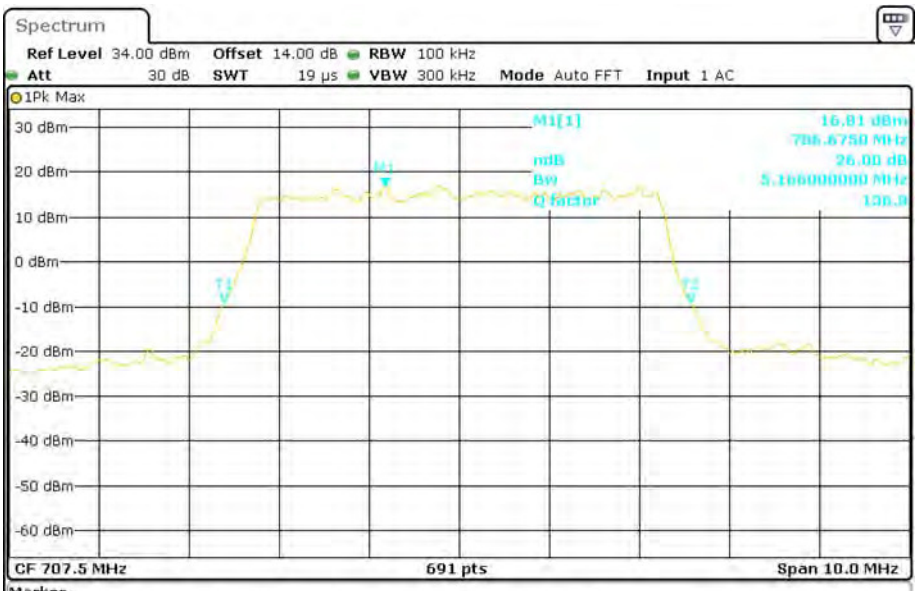
Date: 8.FEB.2018 08:28:16

16-QAM (5 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.FEB.2018 16:25:08

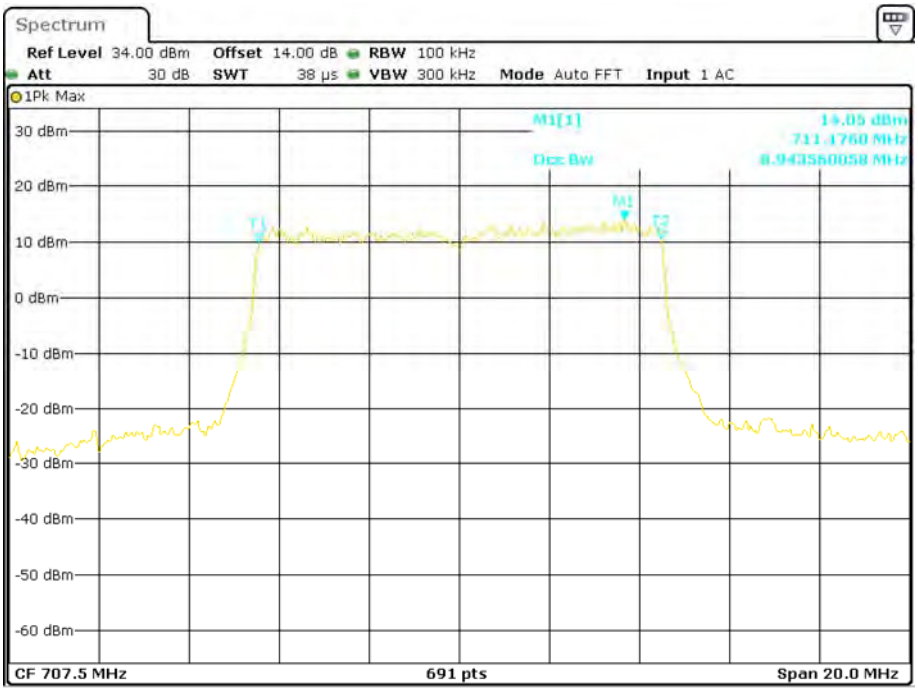
16-QAM (5MHz) - 26 dB Bandwidth, Middle channel



Marker

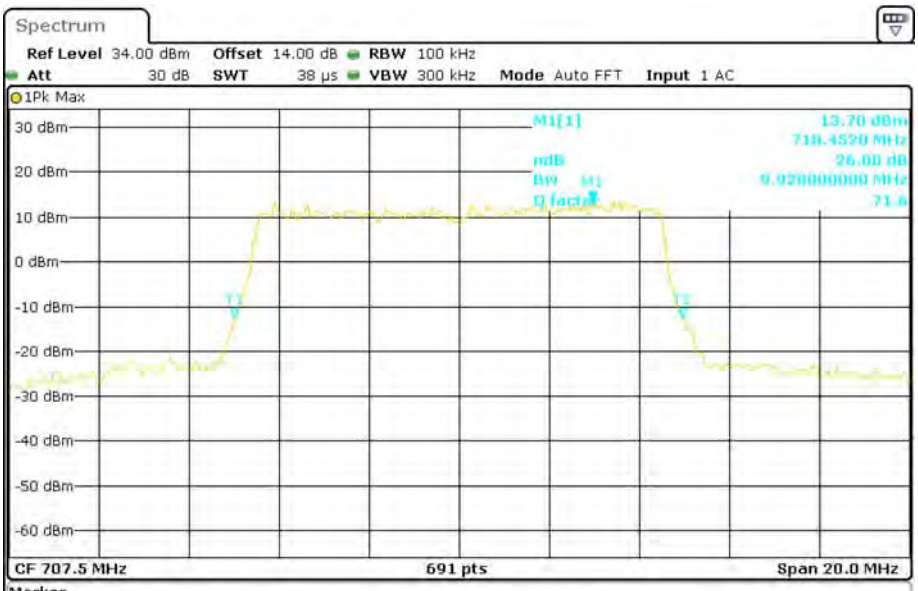
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	706.675 MHz	16.81 dBm	ndB down	5.166 MHz
T1		1	704.895 MHz	-8.95 dBm	ndB	26.00 dB
T2		1	710.062 MHz	-8.92 dBm	Q factor	136.8

QPSK (10 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.FEB.2018 16:26:04

QPSK (10 MHz) - 26 dB Bandwidth, Middle channel

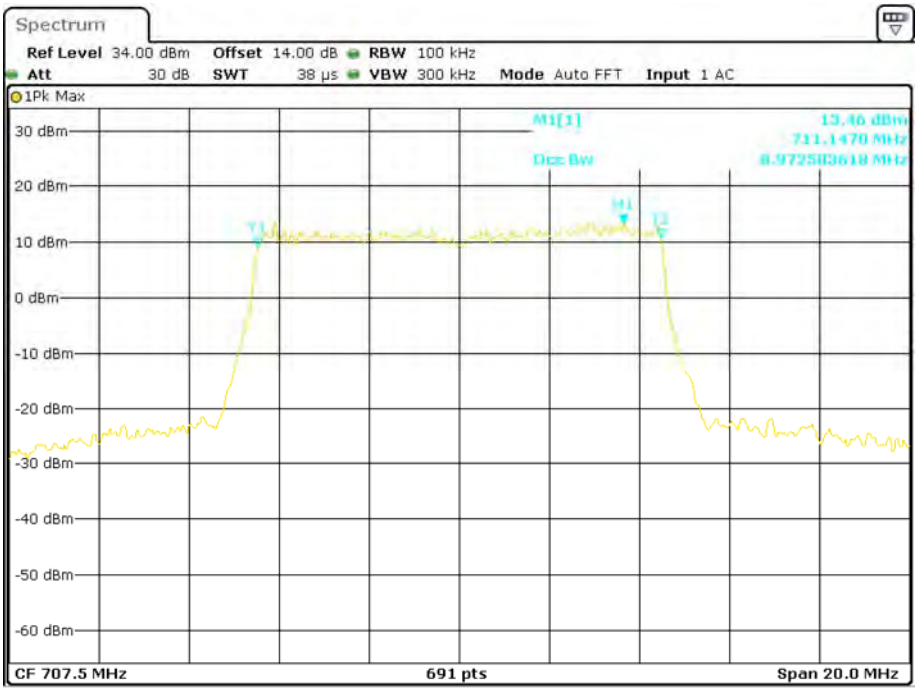


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	710.452 MHz	13.70 dBm	ndB down	9.928 MHz
T1		1	702.522 MHz	-12.43 dBm	ndB	26.00 dB
T2		1	712.449 MHz	-12.24 dBm	Q factor	71.6

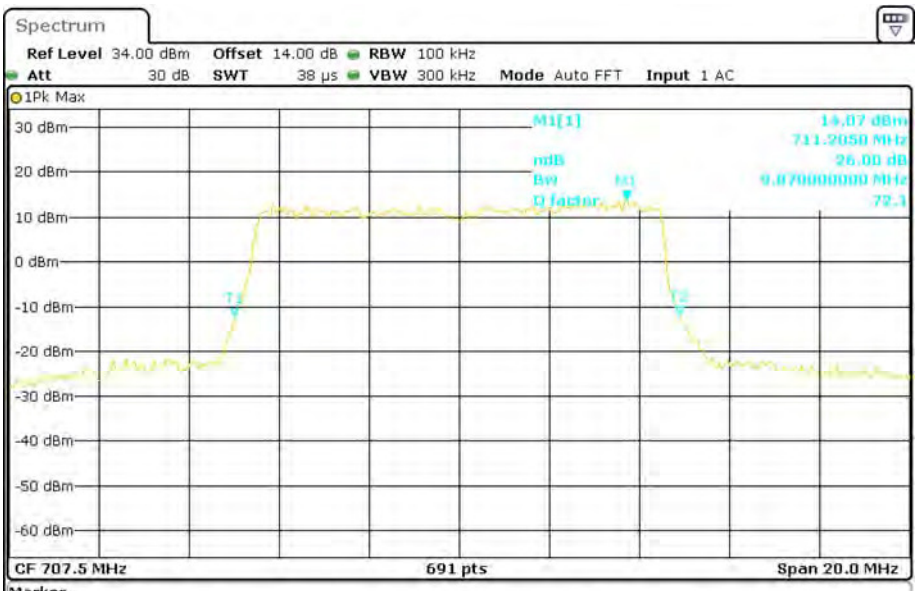
Date: 9.FEB.2018 08:33:56

16-QAM (10MHz) - 99% Occupied Bandwidth, Middle channel



Date: 8.FEB.2018 16:25:34

16-QAM (10MHz) - 26 dB Bandwidth, Middle channel



Marker

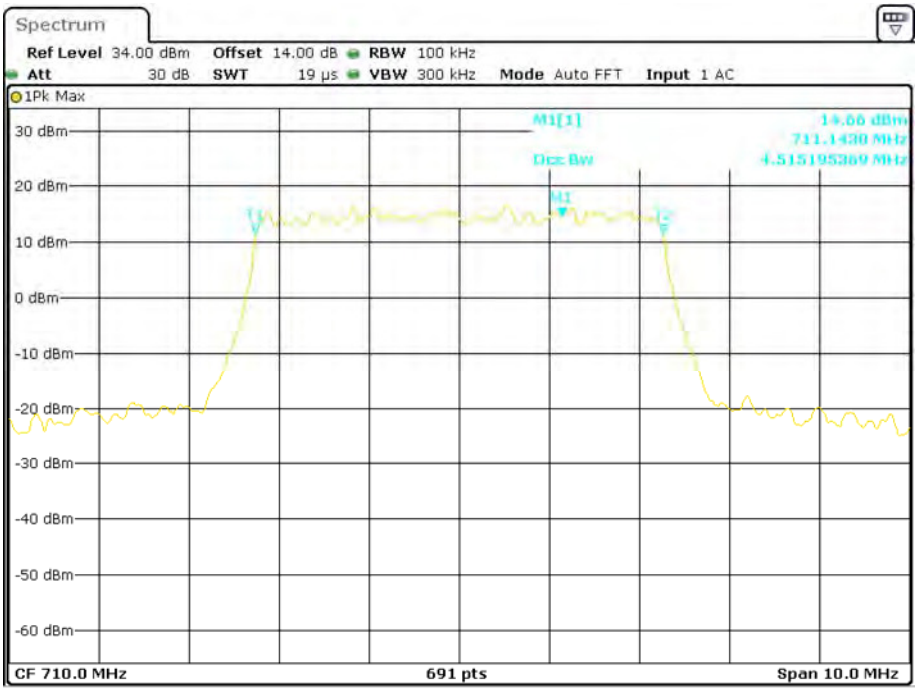
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	711.205 MHz	14.07 dBm	ndB down	9.87 MHz
T1		1	702.522 MHz	-12.07 dBm	ndB	26.00 dB
T2		1	712.391 MHz	-11.83 dBm	Q factor	72.1

Date: 9.FEB.2018 08:23:07

LTE Band 17: (Middle Channel)

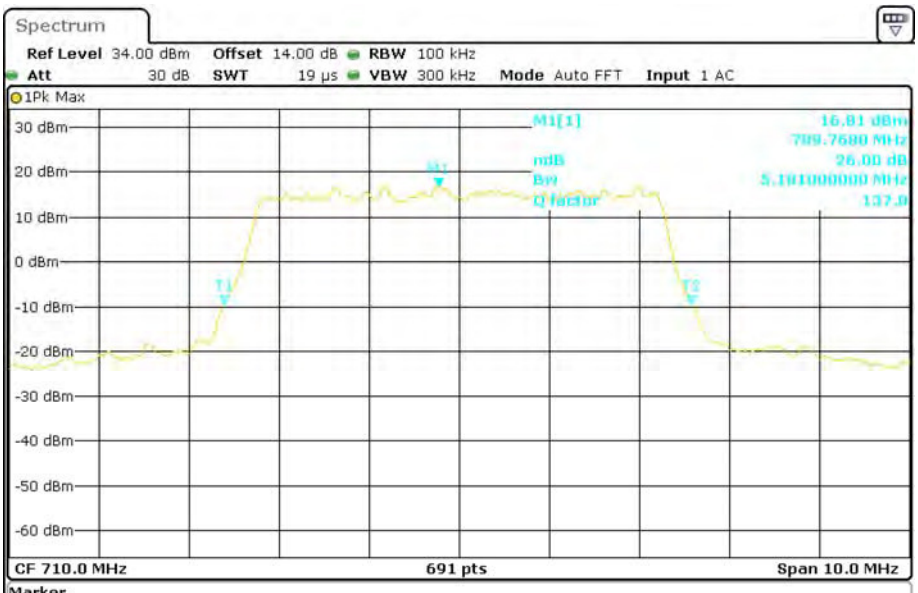
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.515	5.181
	16QAM	4.530	5.195
10.0	QPSK	8.973	9.870
	16QAM	8.944	9.899

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



Date: 8.FEB.2018 16:27:03

QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel

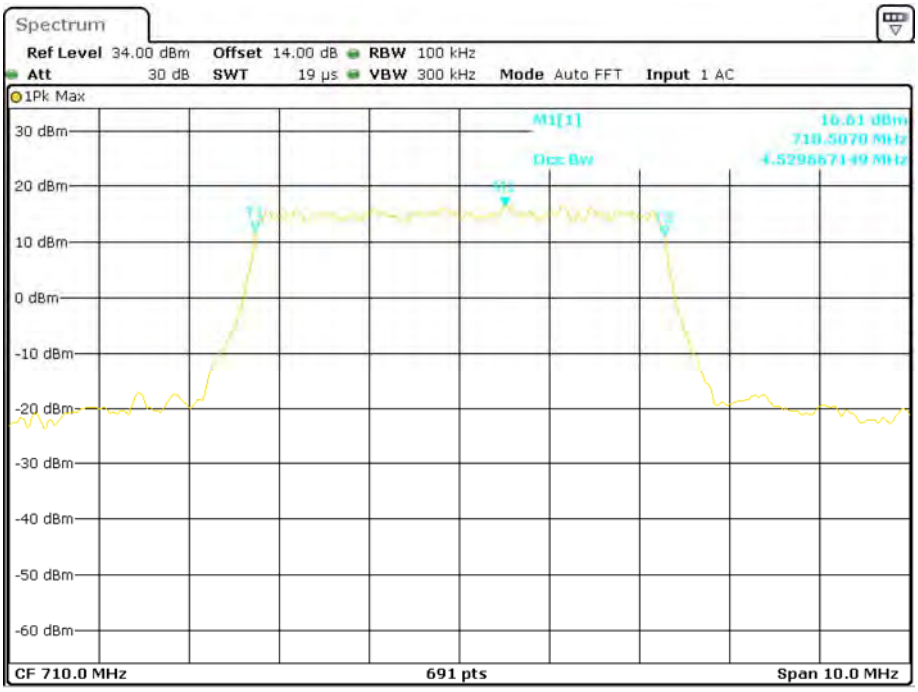


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	709.768 MHz	16.81 dBm	ndB down	5.181 MHz
T1		1	707.395 MHz	-9.22 dBm	ndB	26.00 dB
T2		1	712.576 MHz	-9.37 dBm	Q factor	137.0

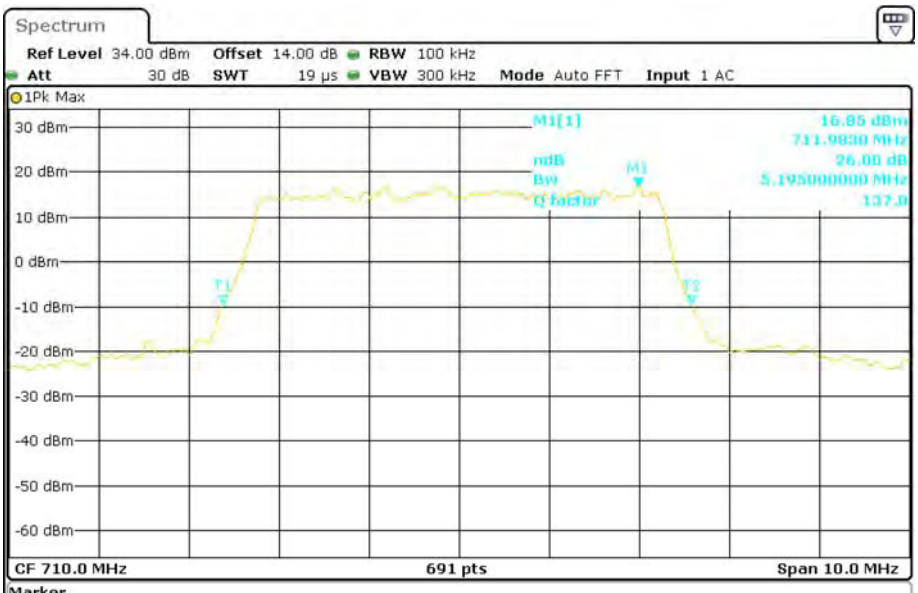
Date: 9.FEB.2018 09:25:08

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



Date: 8.FEB.2018 16:27:33

16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel

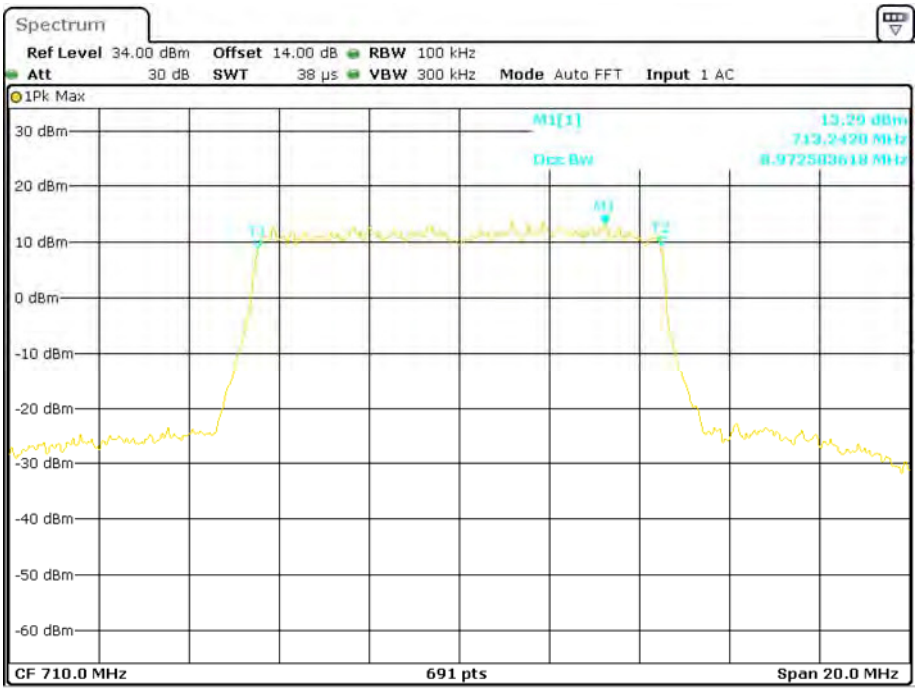


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	711.983 MHz	16.85 dBm	ndB down	5.195 MHz
T1		1	707.381 MHz	-9.38 dBm	ndB	26.00 dB
T2		1	712.576 MHz	-9.36 dBm	Q factor	137.0

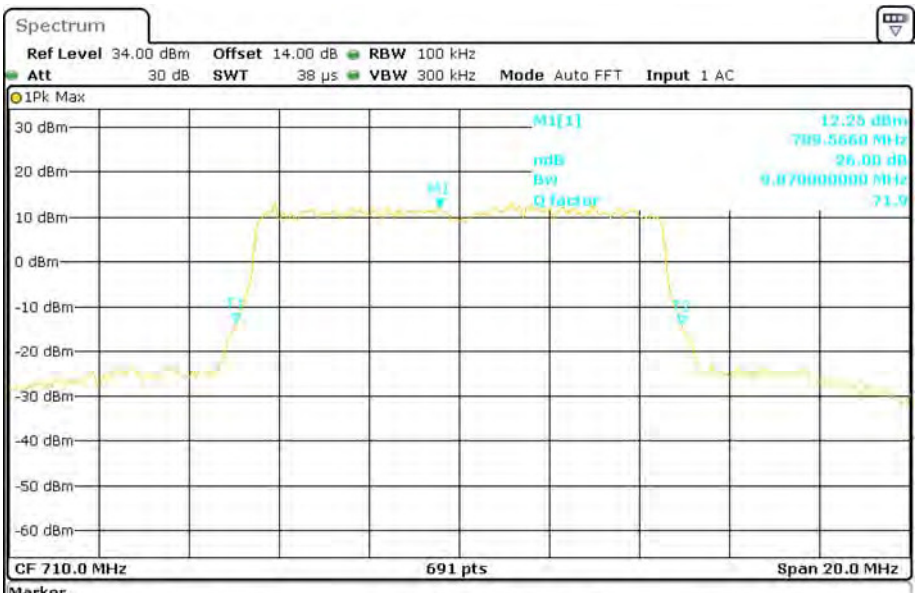
Date: 9.FEB.2018 09:25:41

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



Date: 8.FEB.2018 16:28:28

QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel

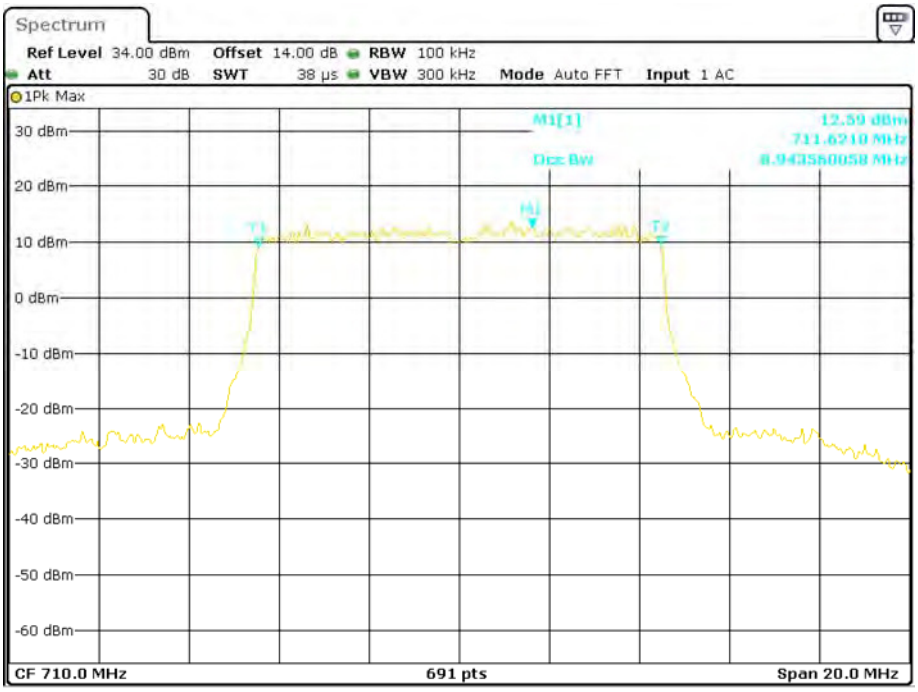


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	709.566 MHz	12.25 dBm	ndB down	9.87 MHz
T1		1	705.051 MHz	-13.29 dBm	ndB	26.00 dB
T2		1	714.92 MHz	-13.82 dBm	Q factor	71.9

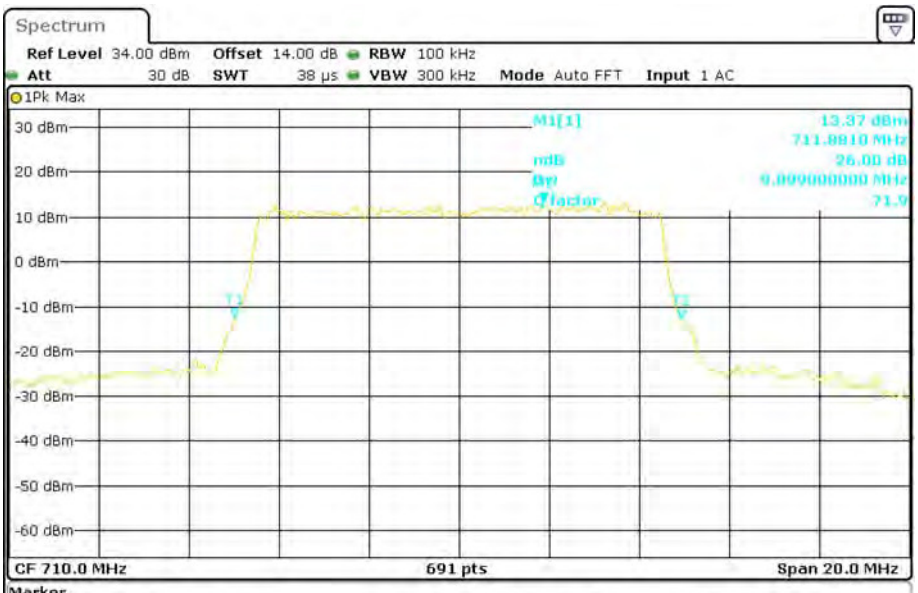
Date: 9.FEB.2018 09:26:34

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



Date: 8.FEB.2018 16:28:03

16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	711.881 MHz	13.37 dBm	ndB down	9.899 MHz
T1		1	705.022 MHz	-12.42 dBm	ndB	26.00 dB
T2		1	714.92 MHz	-12.62 dBm	Q factor	71.9

Date: 8.FEB.2018 08:26:10

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

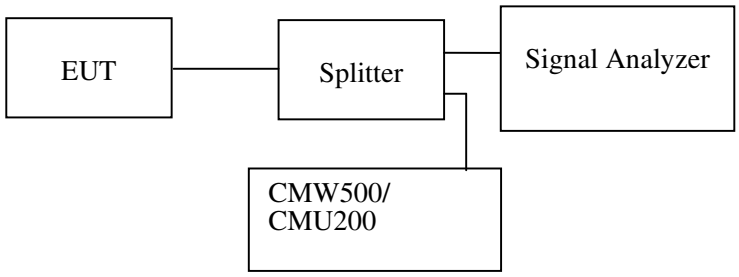
Applicable Standard

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 10^{th} harmonic.



Test Data

Environmental Conditions

Temperature:	24~25 ℃
Relative Humidity:	50~52 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Tracy Hu from 2018-02-08 to 2018-03-06.

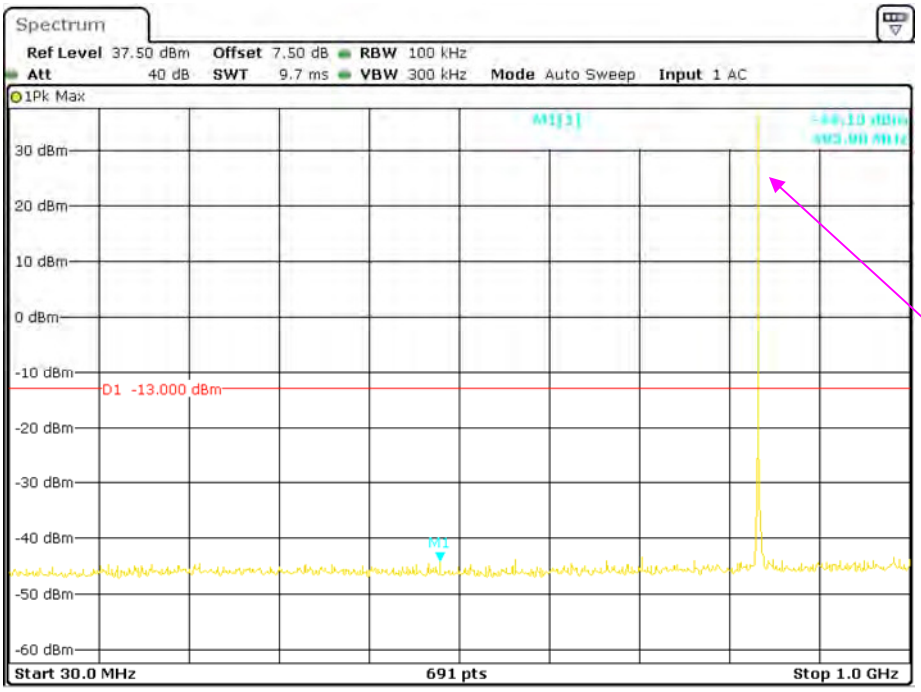
Test result: Compliance,

EUT operation mode: transmitting

Please refer to the following plots.

Cellular Band (Part 22H)

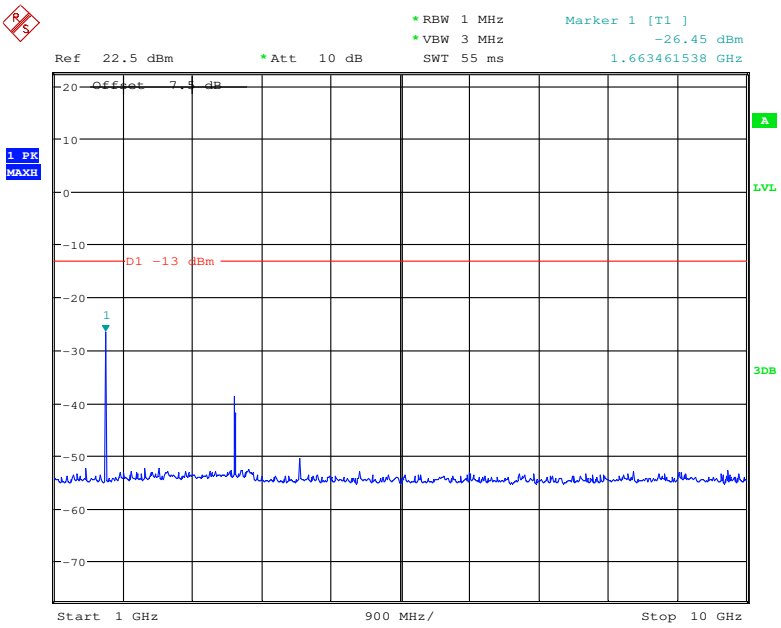
30 MHz – 1 GHz (GSM Mode)



Fundamental test

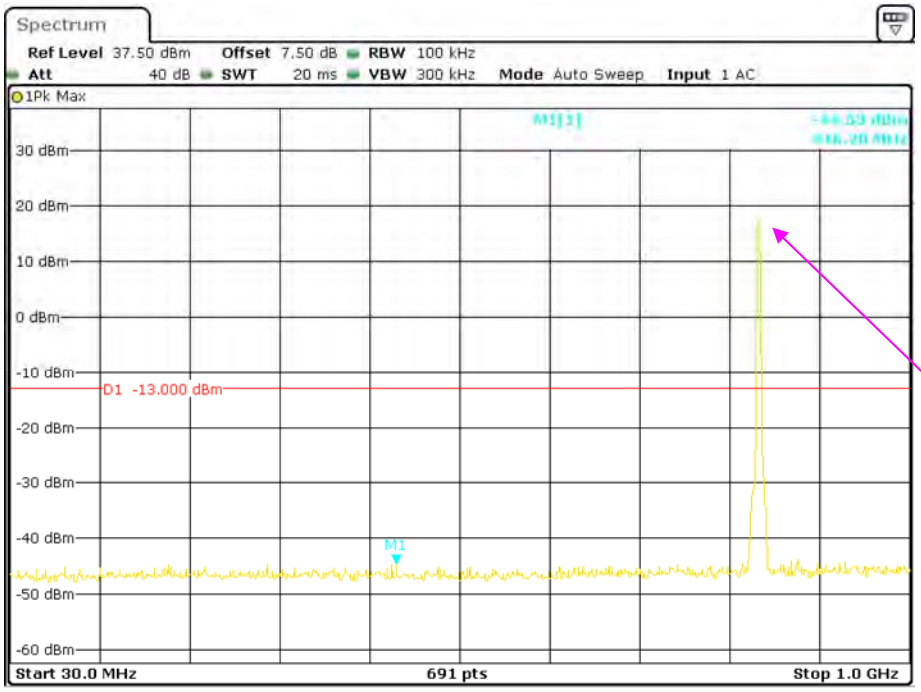
Date: 8.FEB.2018 14:13:03

1 GHz – 10 GHz (GSM Mode)



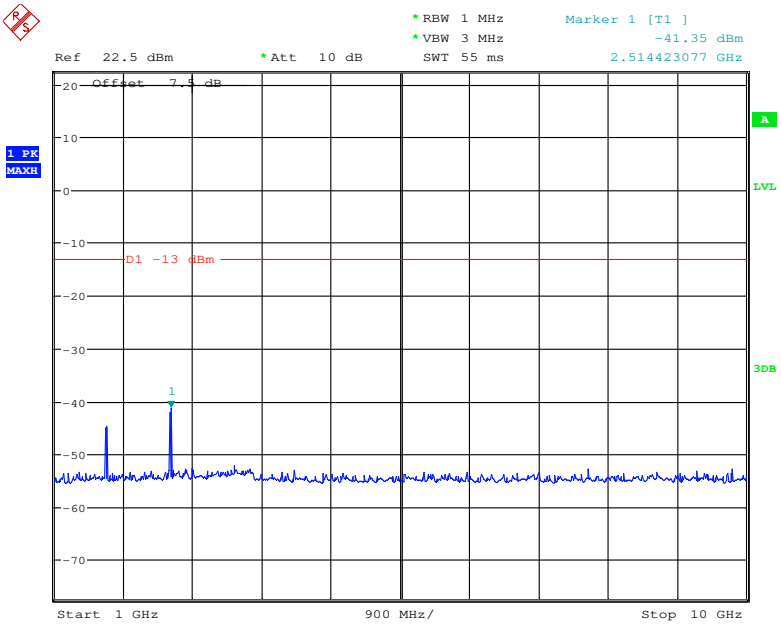
Date: 12.FEB.2018 08:45:54

30 MHz – 1 GHz (WCDMA Mode)



Date: 8.FEB.2018 11:19:34

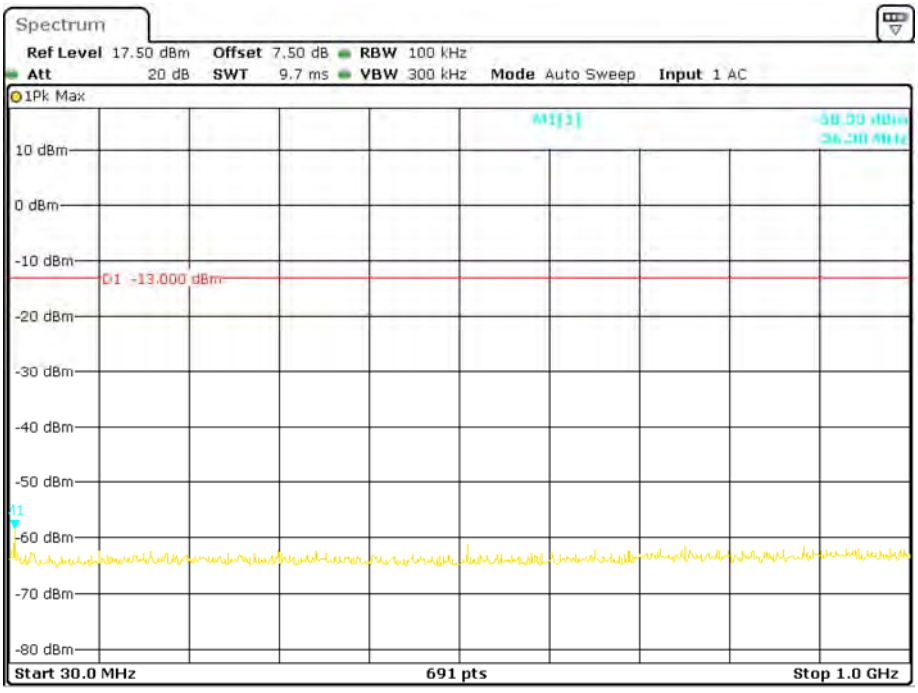
1 GHz – 10 GHz (WCDMA Mode)



Date: 12.FEB.2018 08:59:53

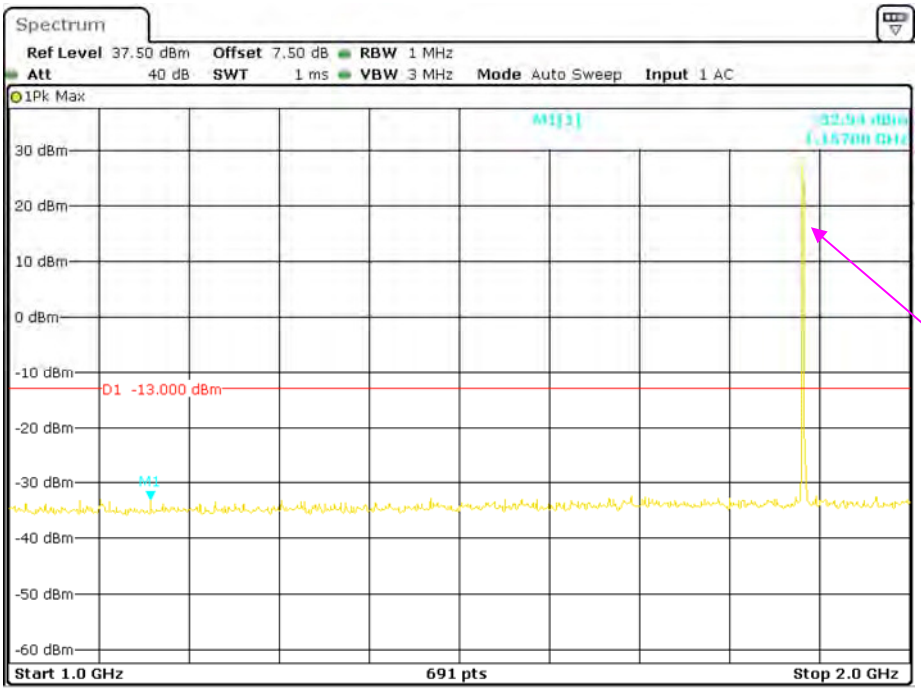
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)



Date: 8.FEB.2018 13:51:35

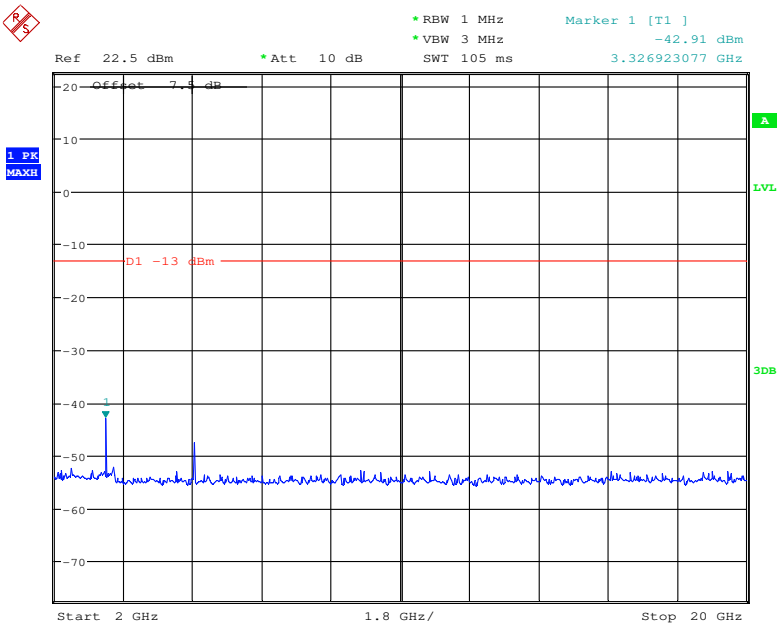
1 GHz – 2 GHz (GSM Mode)



Fundamental test

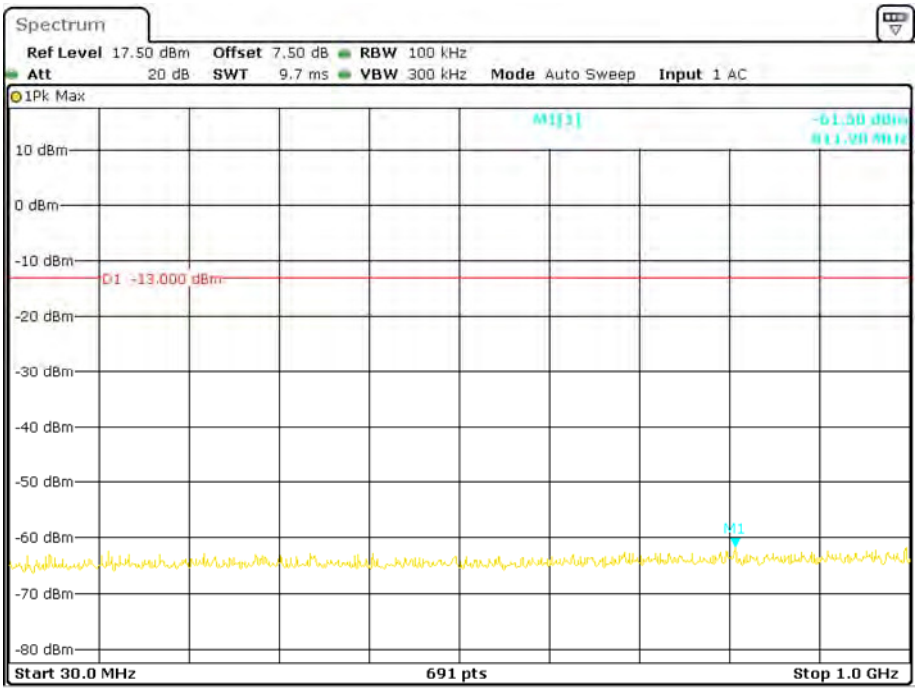
Date: 8.FEB.2018 13:52:29

2 GHz – 20 GHz (GSM Mode)



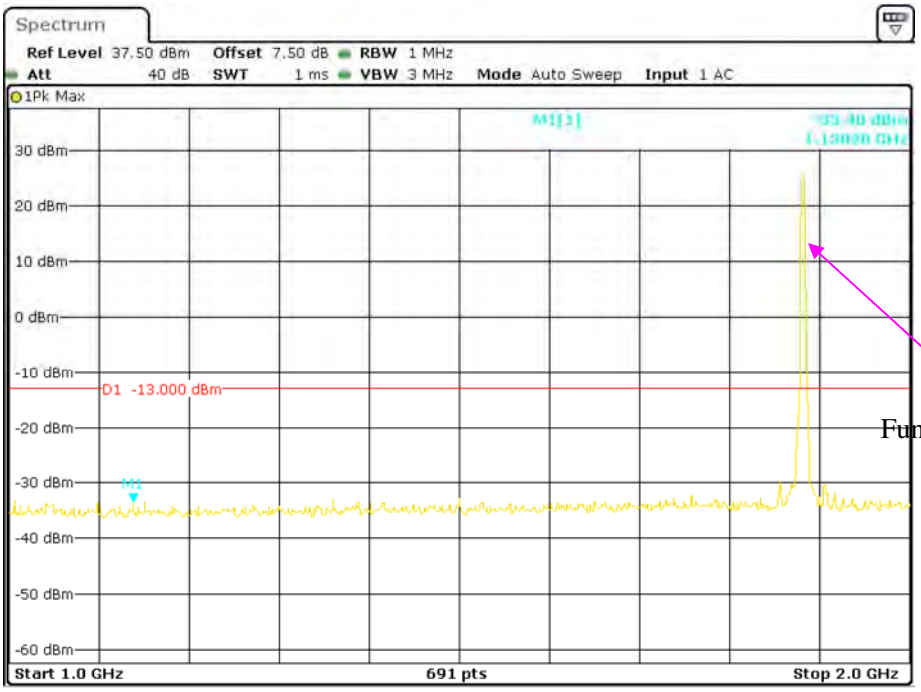
Date: 12.FEB.2018 08:50:16

30 MHz – 1 GHz (WCDMA Mode)



Date: 8.FEB.2018 10:58:27

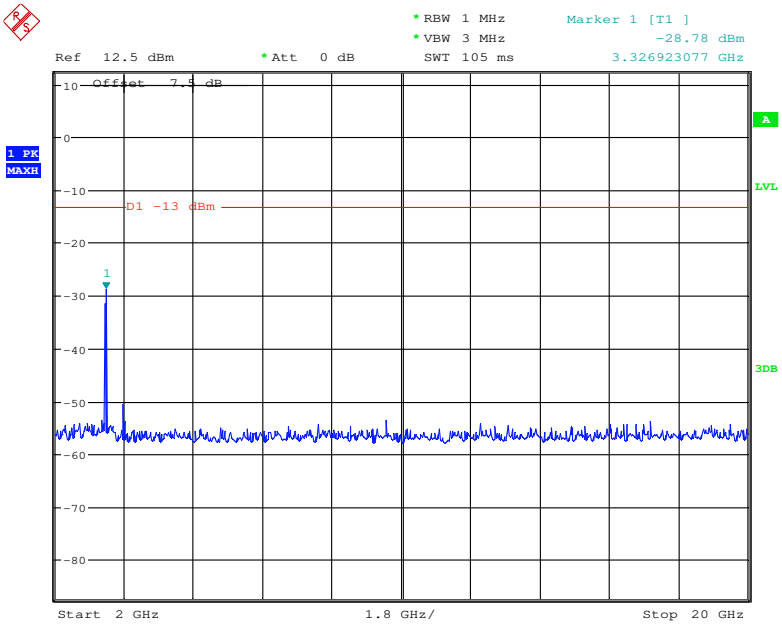
1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

Date: 8.FEB.2018 10:59:38

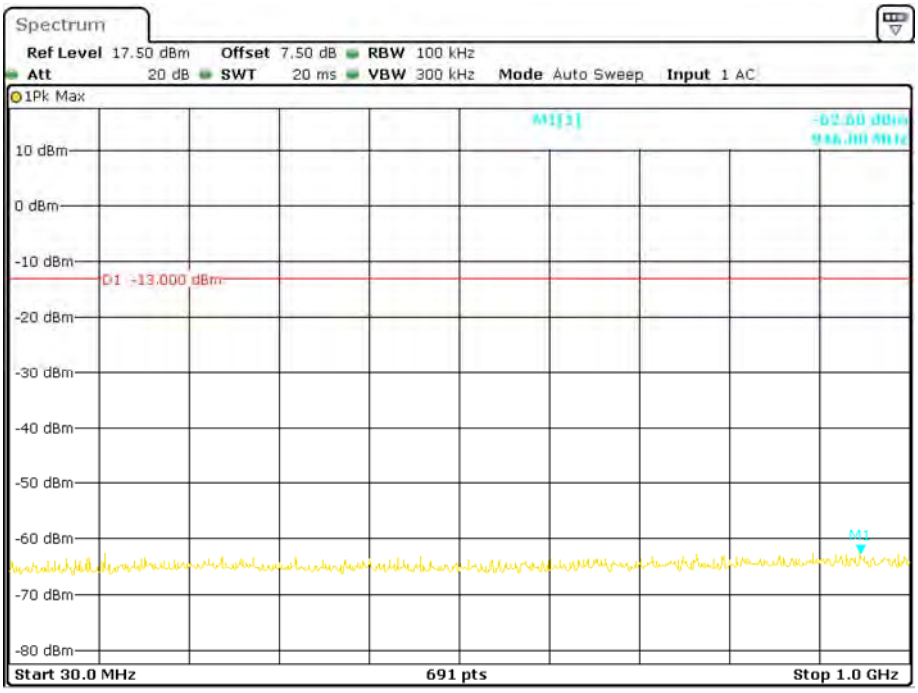
2 GHz – 20 GHz (WCDMA Mode)



Date: 12.FEB.2018 09:01:50

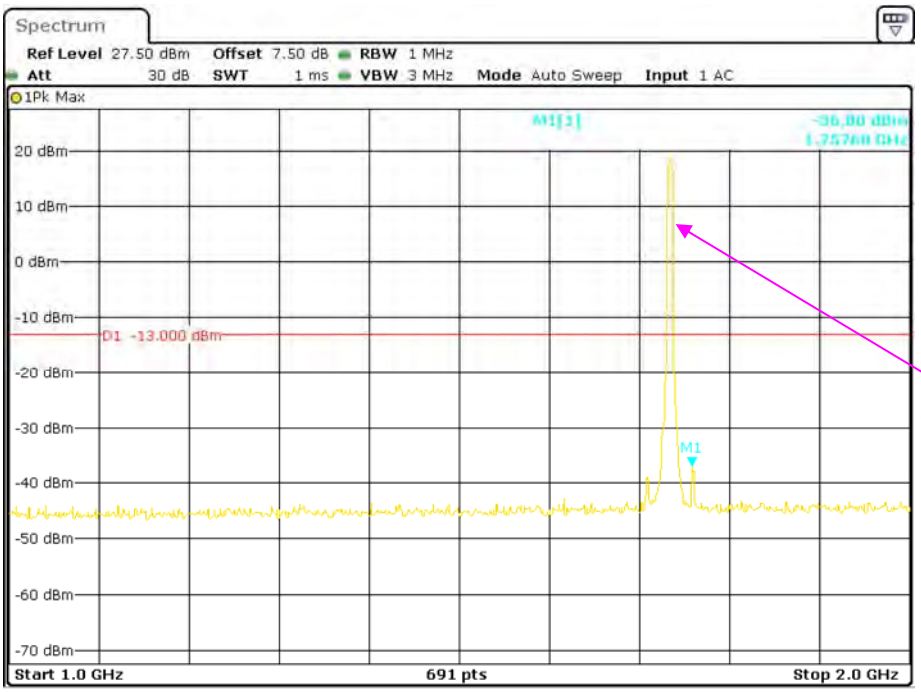
AWS Band (Part 27)

30 MHz – 1 GHz (WCDMA Mode)



Date: 8.FEB.2018 11:11:13

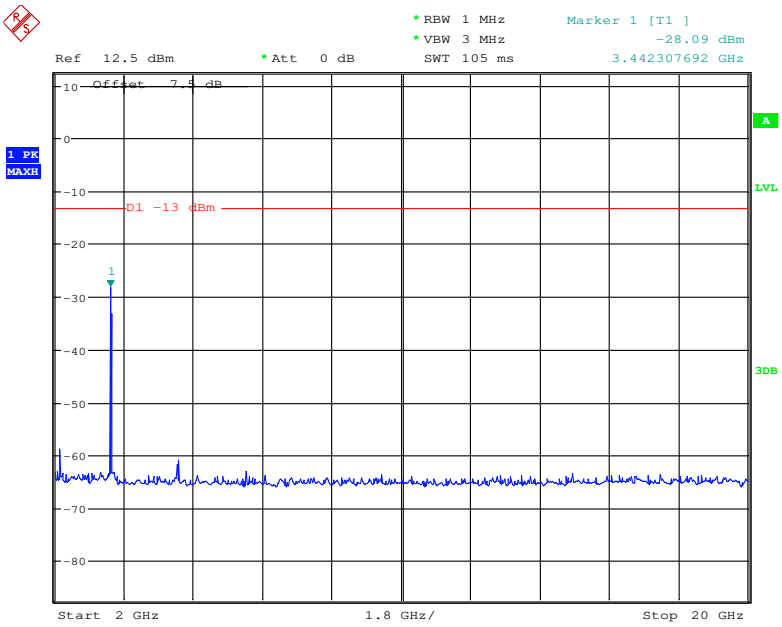
1 GHz – 2 GHz (WCDMA Mode)



Fundamental test

Date: 6.MAR.2018 14:05:24

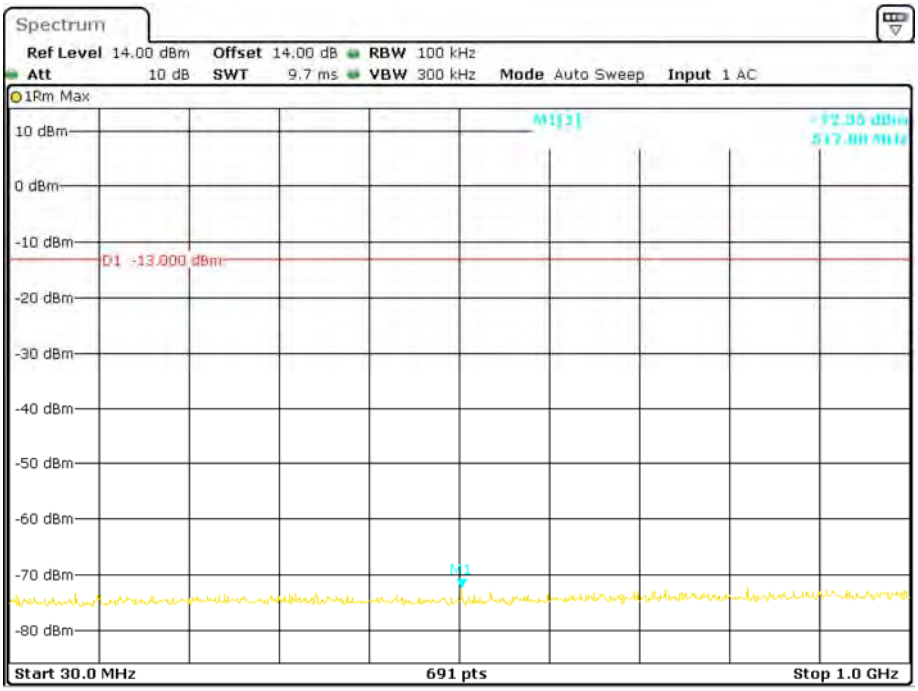
2 GHz – 20 GHz (WCDMA Mode)



Date: 12.FEB.2018 09:02:48

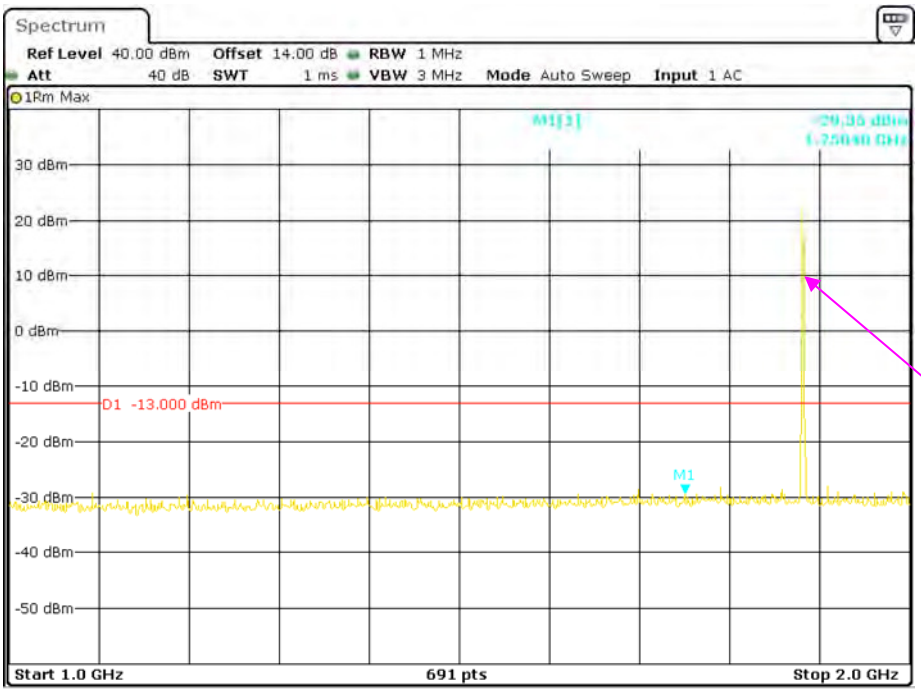
LTE Band 2:

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



Date: 9.FEB.2018 09:30:25

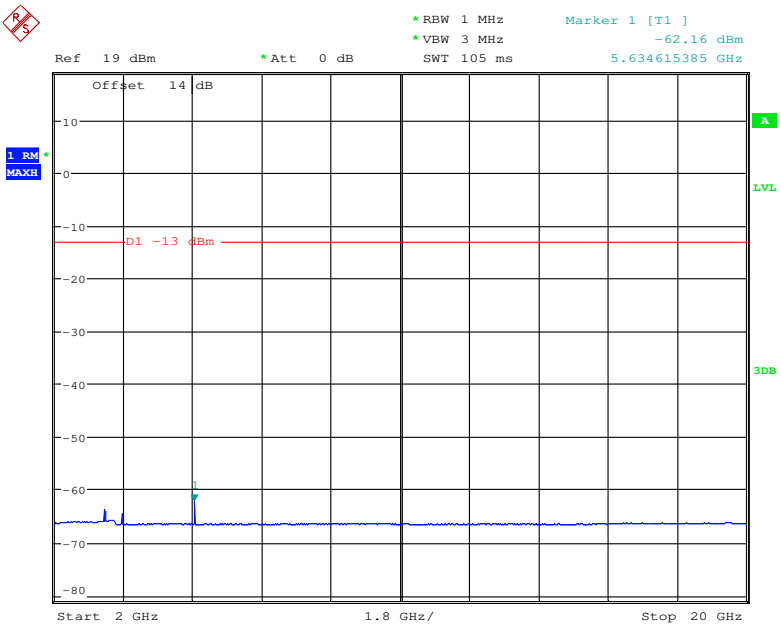
1 GHz – 2 GHz (1.4 MHz, Middle Channel)



Fundamental test

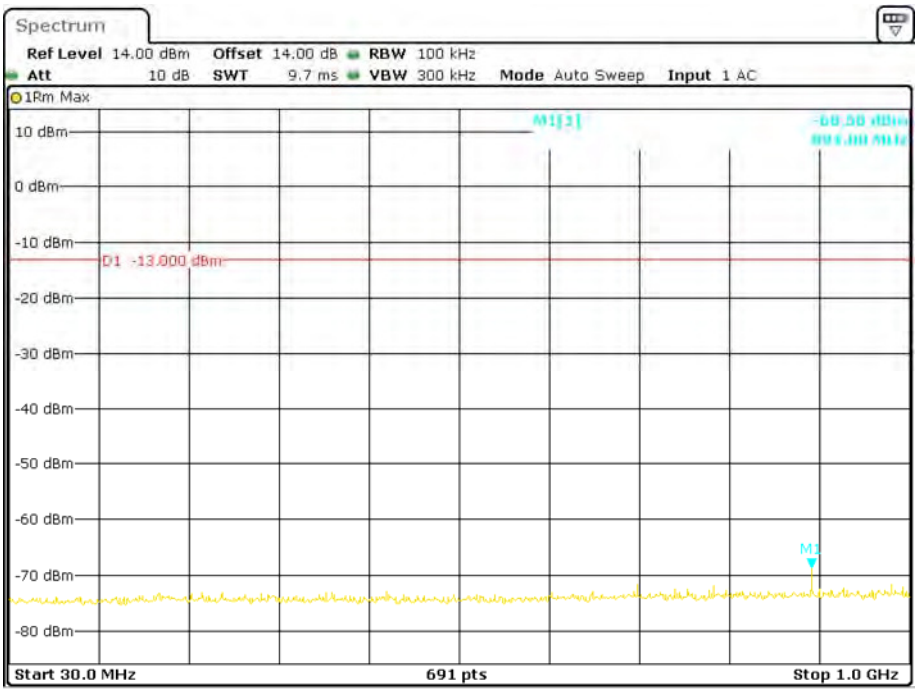
Date: 9.FEB.2018 09:37:16

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



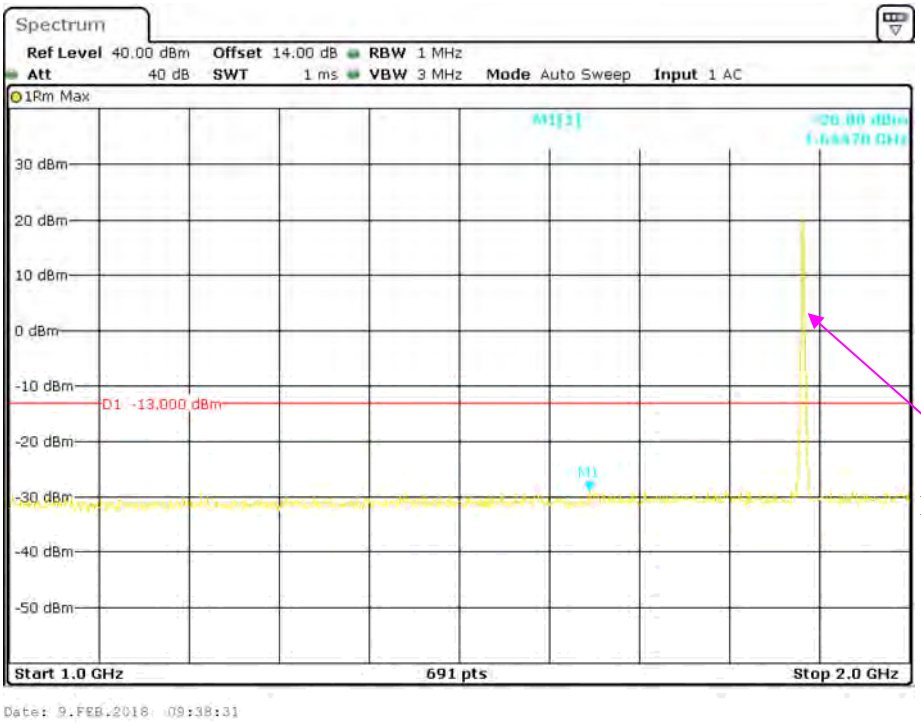
Date: 12.FEB.2018 09:19:55

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



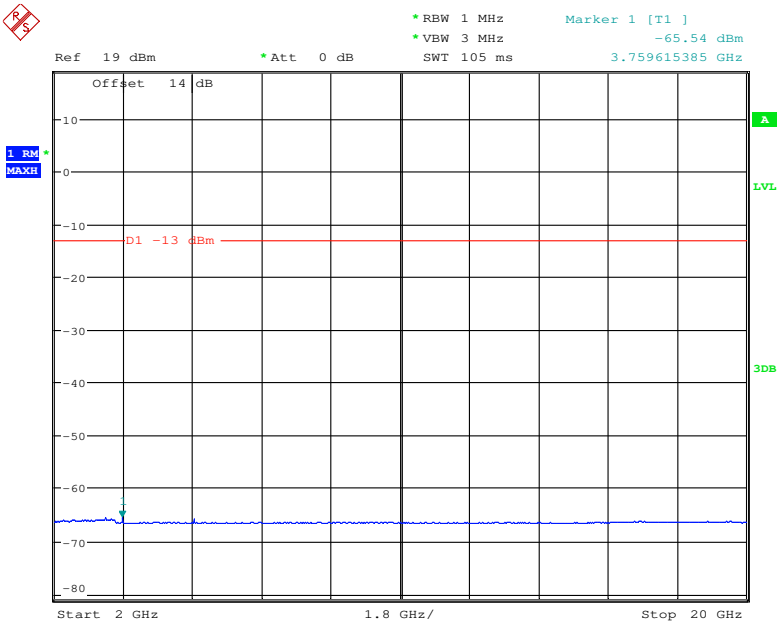
Date: 9.FEB.2018 09:33:46

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



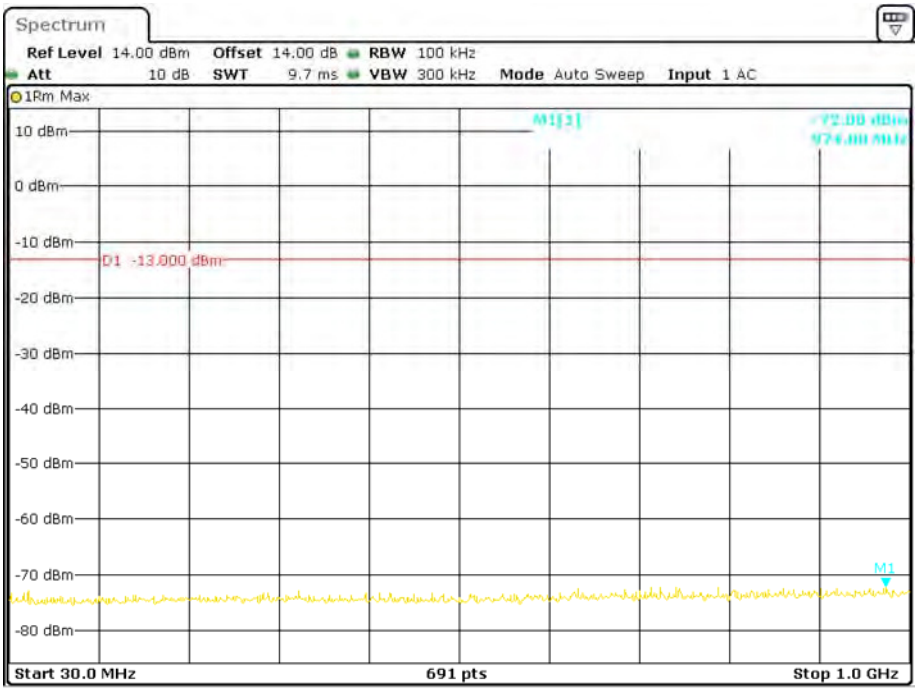
Date: 9.FEB.2018 09:38:31

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



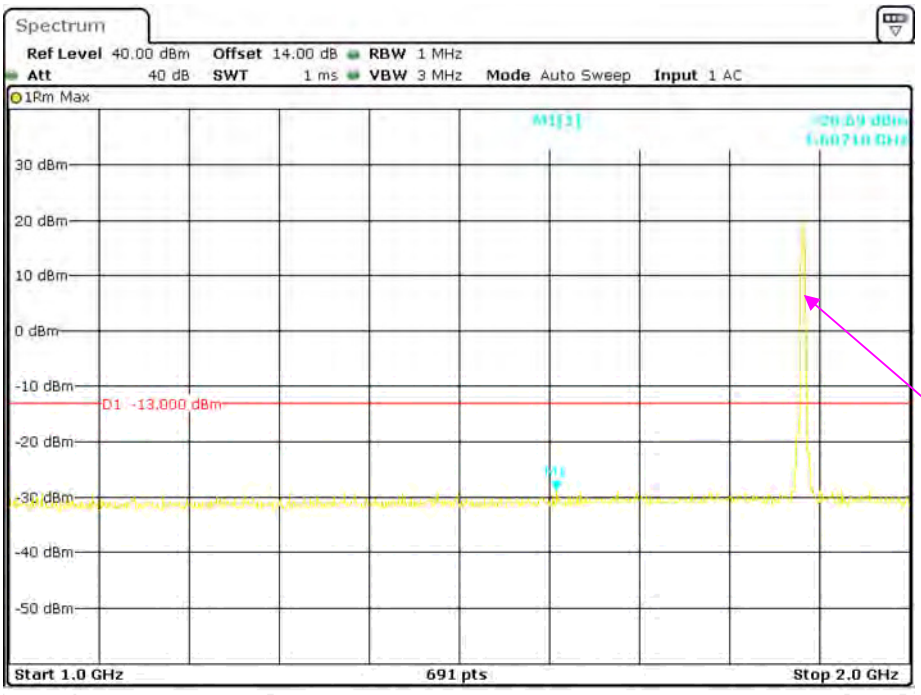
Date: 12.FEB.2018 09:20:26

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



Date: 9.FEB.2018 09:34:14

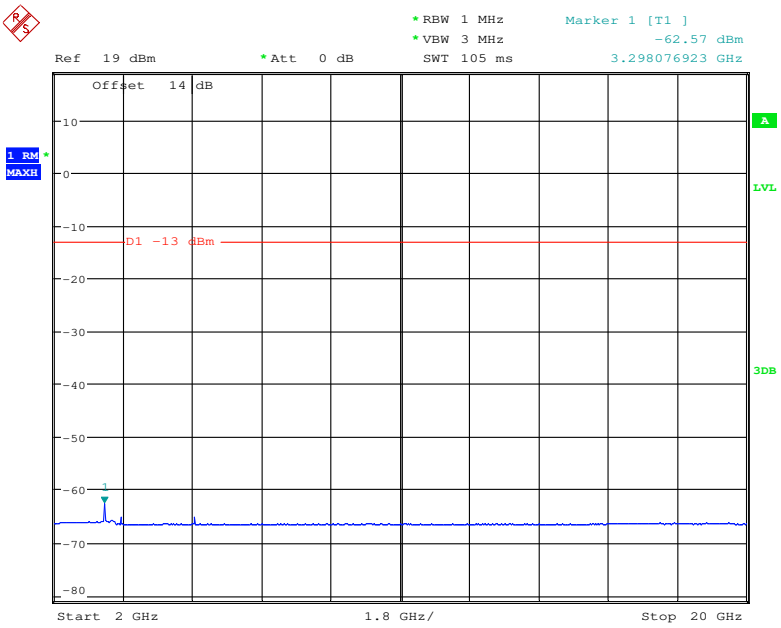
1 GHz – 2 GHz (5.0 MHz, Middle Channel)



Fundamental test

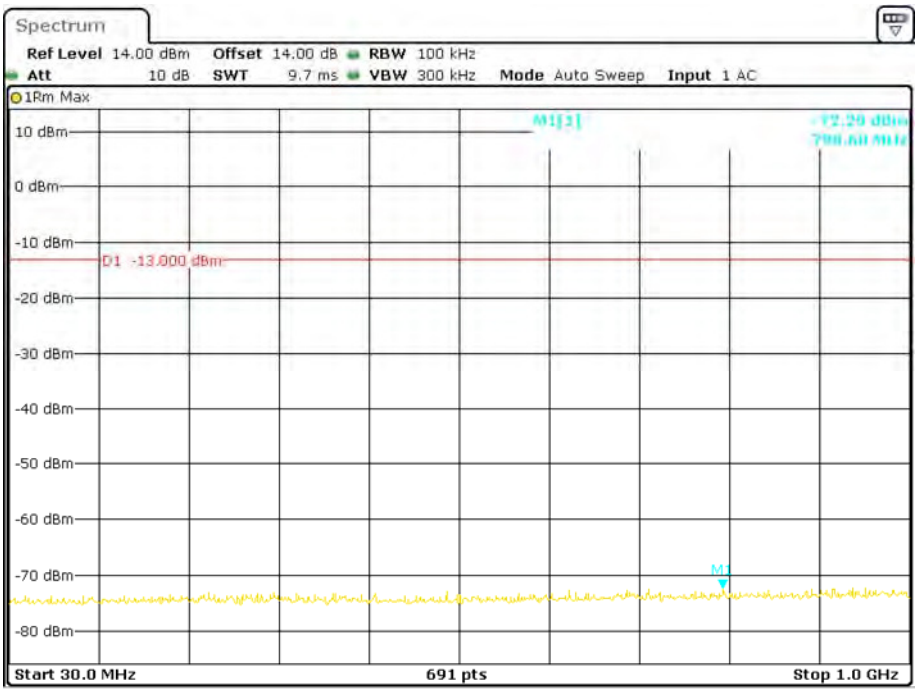
Date: 9.FEB.2018 09:39:05

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



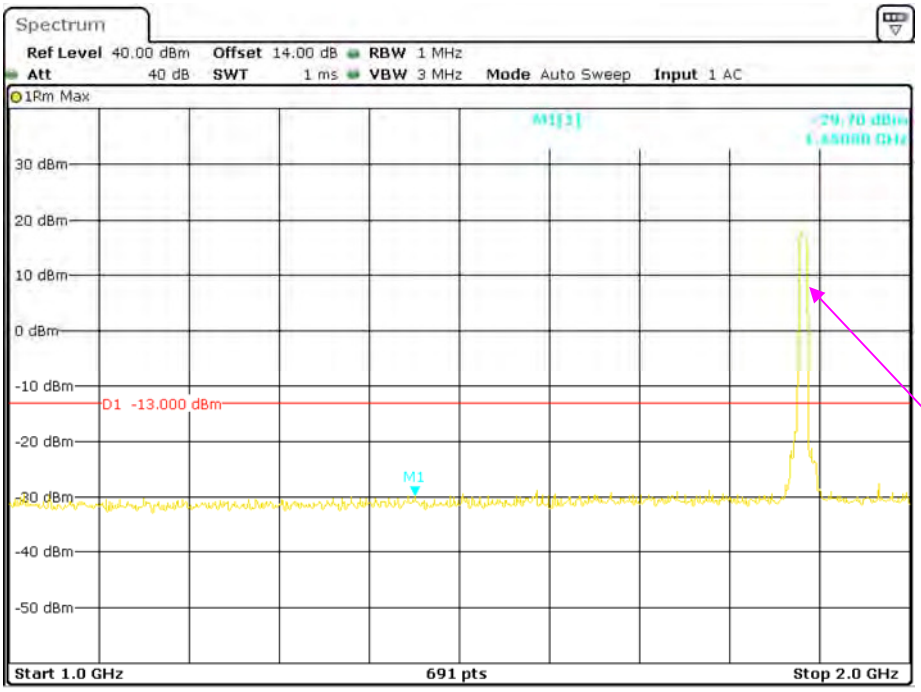
Date: 12.FEB.2018 09:20:44

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



Date: 9.FEB.2018 09:34:48

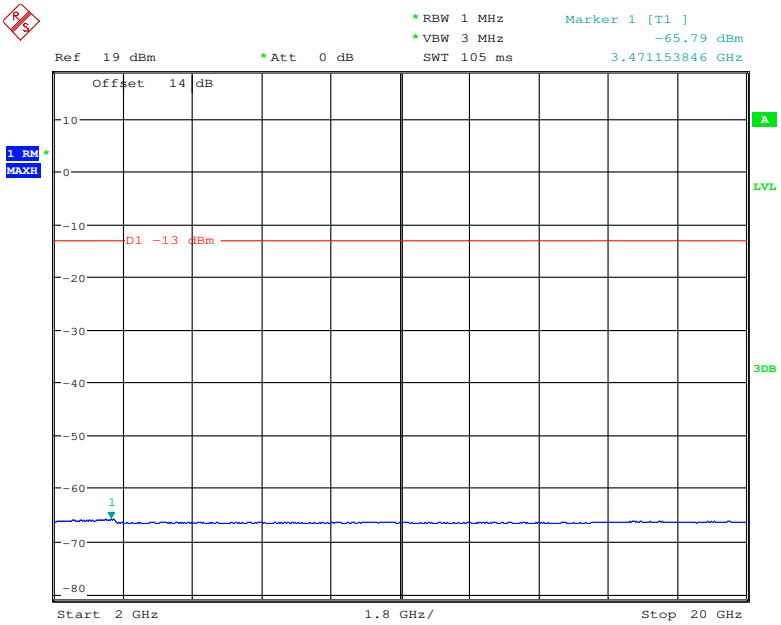
1 GHz – 2 GHz (10.0 MHz, Middle Channel)



Fundamental test

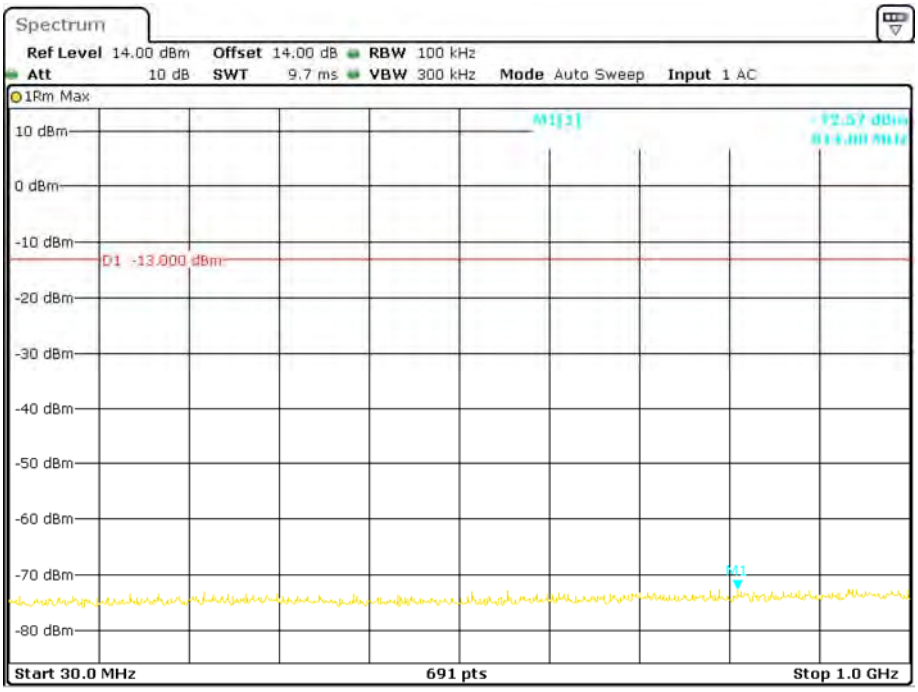
Date: 9.FEB.2018 09:39:40

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



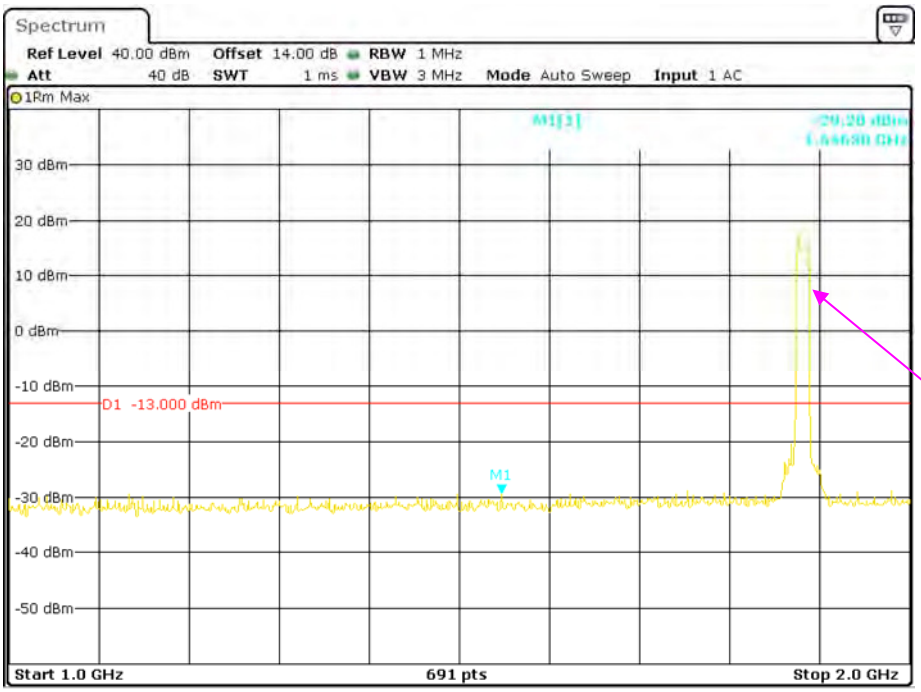
Date: 12.FEB.2018 09:21:07

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



Date: 9.FEB.2018 09:35:09

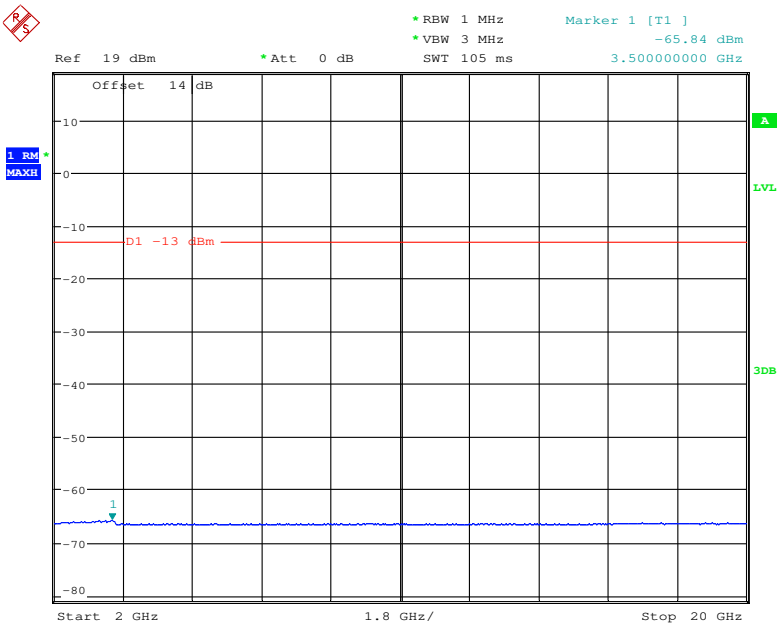
1 GHz – 2 GHz (15.0 MHz, Middle Channel)



Fundamental test

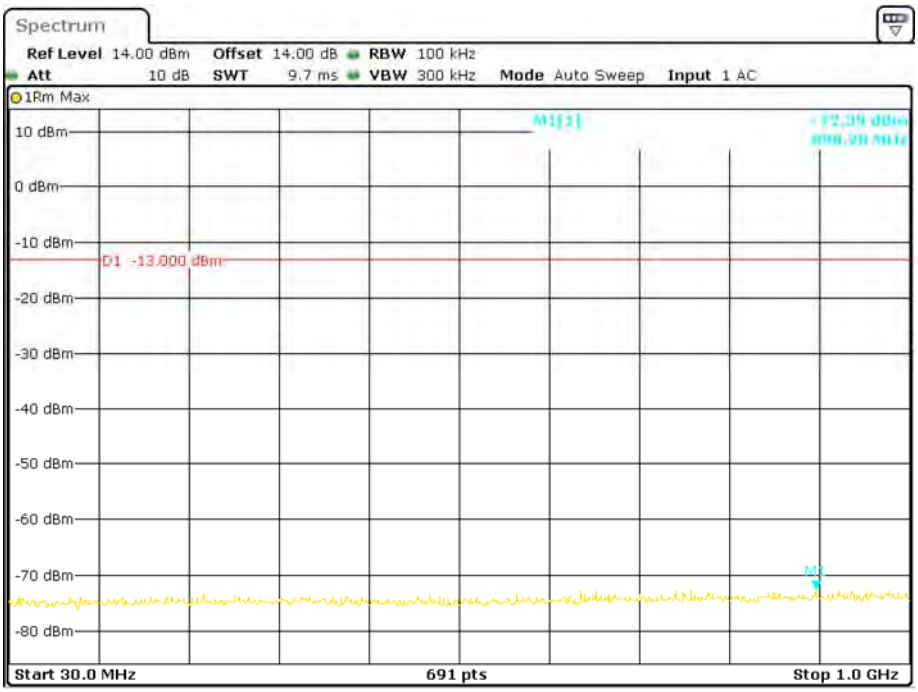
Date: 9.FEB.2018 09:40:11

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



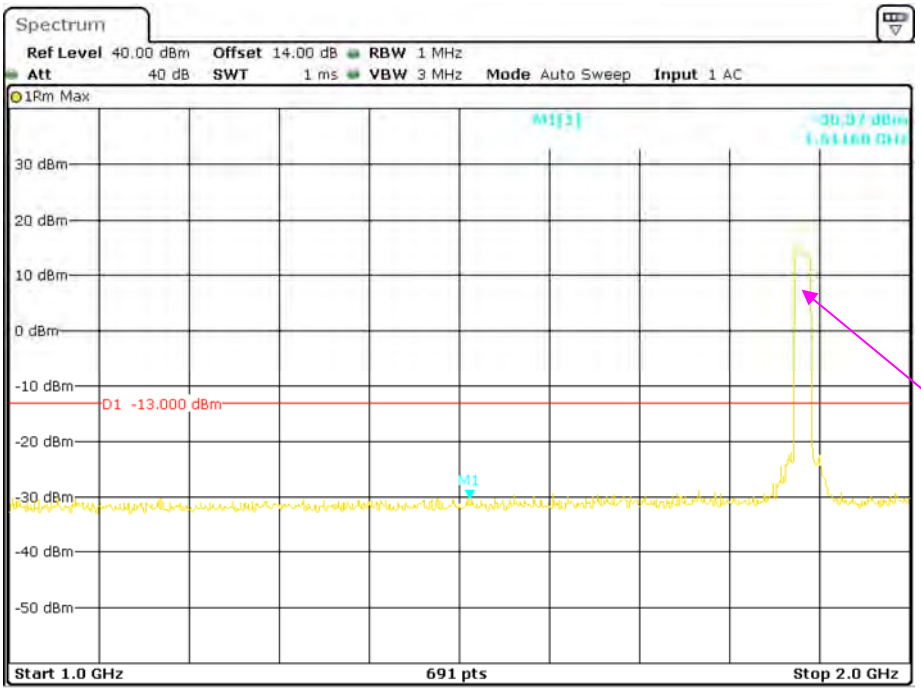
Date: 12.FEB.2018 09:21:27

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



Date: 9.FEB.2018 09:35:30

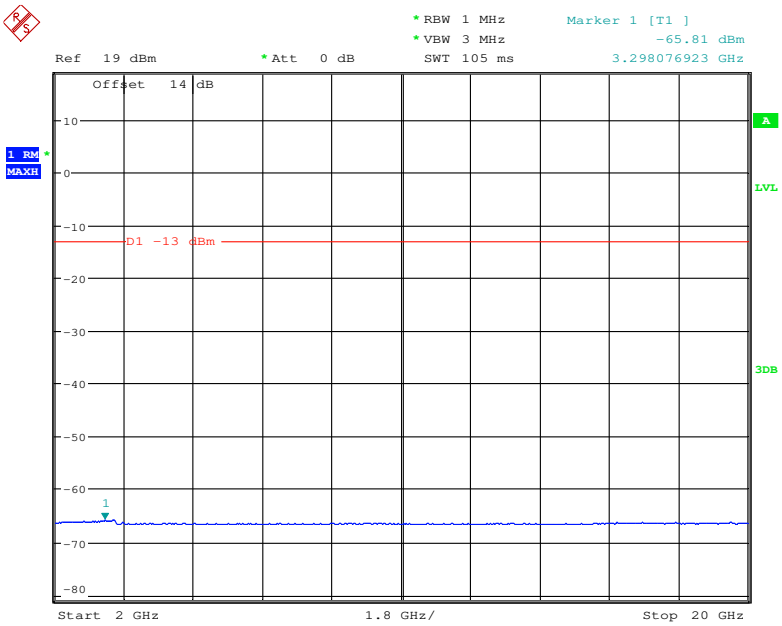
1 GHz – 2 GHz (20.0 MHz, Middle Channel)



Fundamental test

Date: 9.FEB.2018 09:40:38

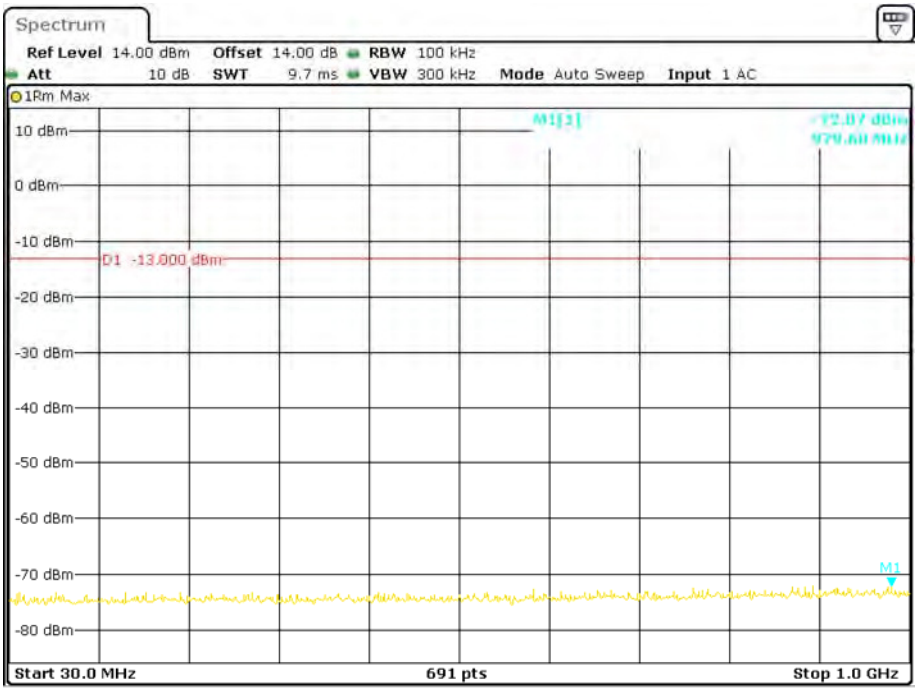
2 GHz –20 GHz (20.0 MHz, Middle Channel)



Date: 12.FEB.2018 09:21:54

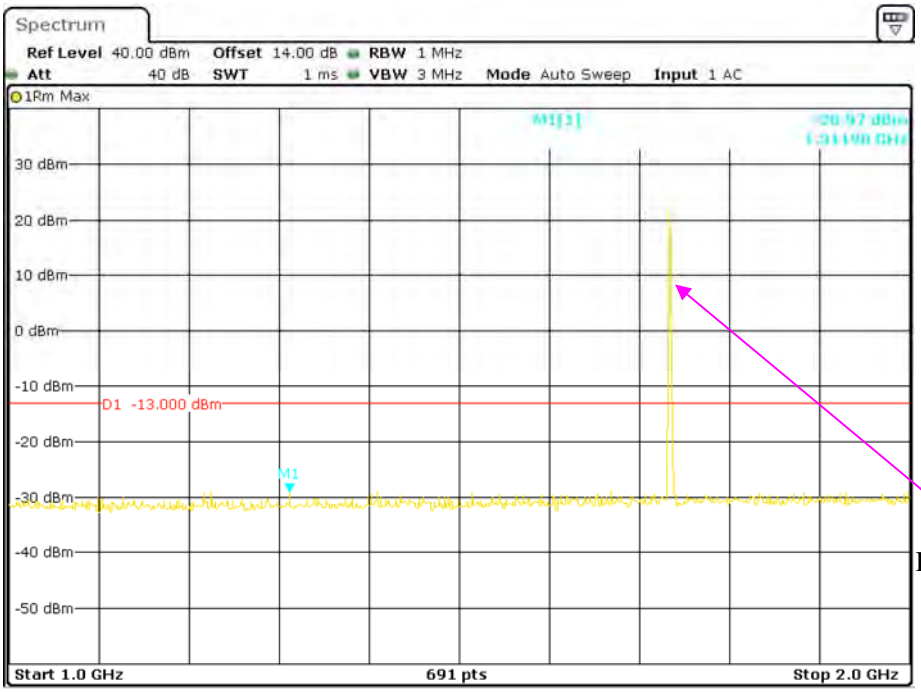
LTE Band 4:

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



Date: 9.FEB.2018 09:51:09

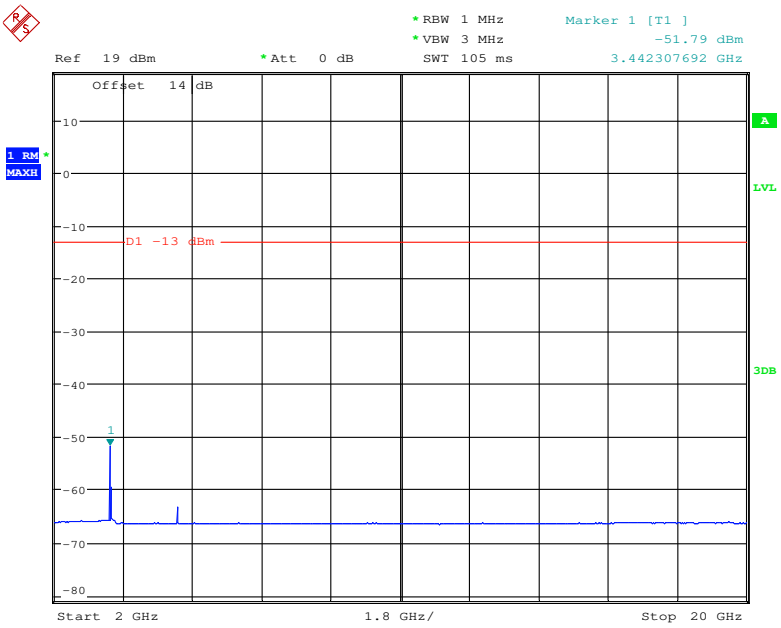
1 GHz – 2 GHz (1.4 MHz, Middle Channel)



Fundamental test

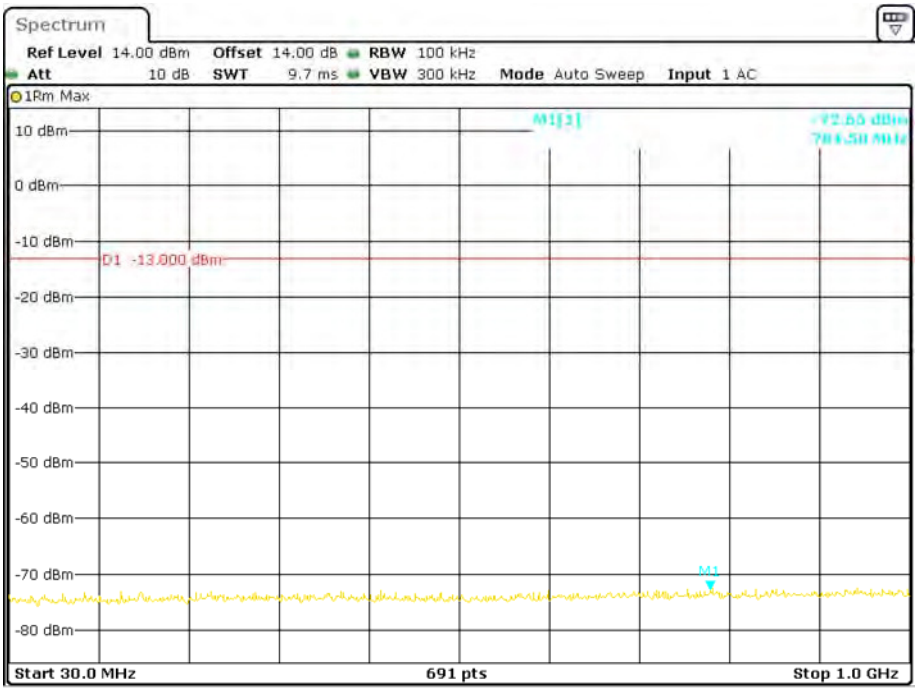
Date: 9.FEB.2018 09:44:51

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



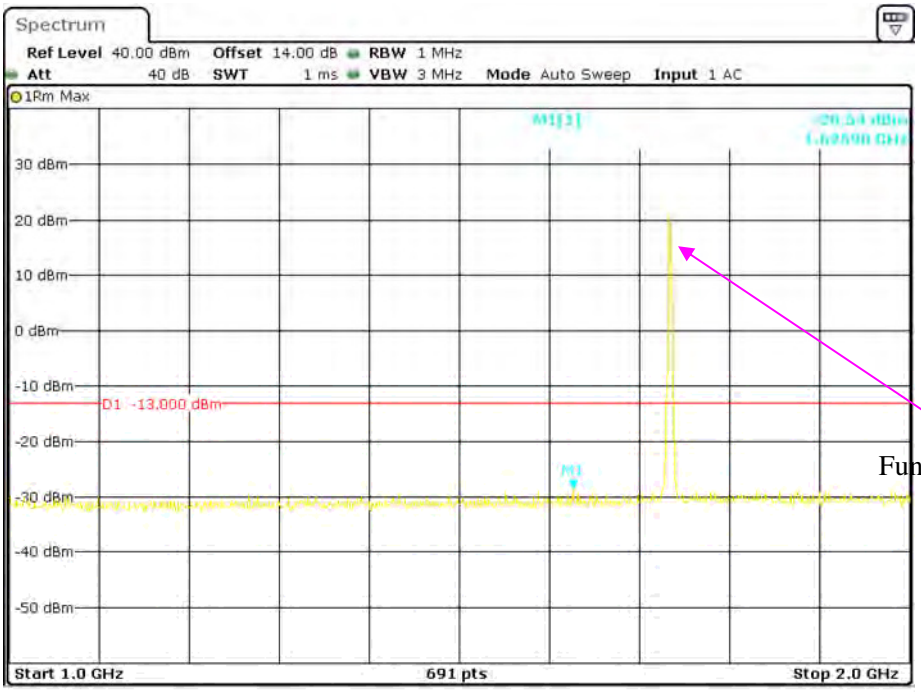
Date: 12.FEB.2018 09:24:23

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



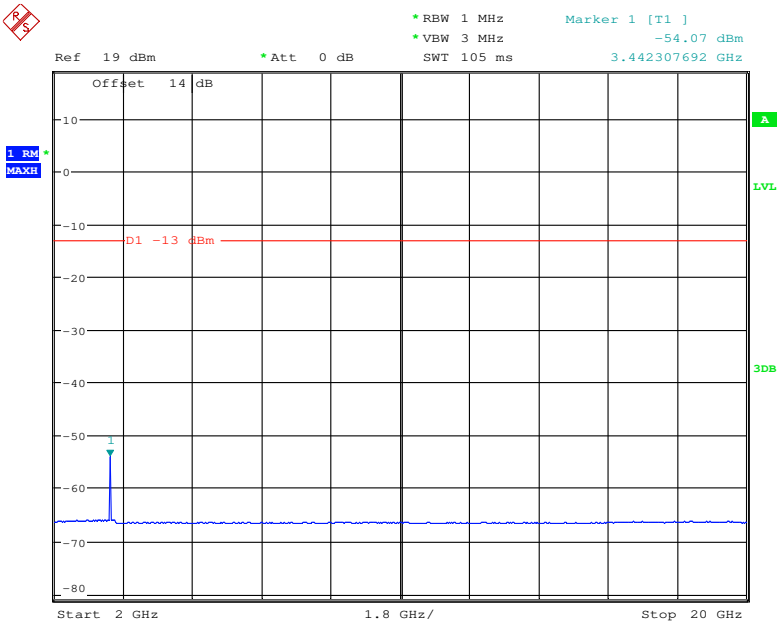
Date: 9.FEB.2018 09:52:13

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



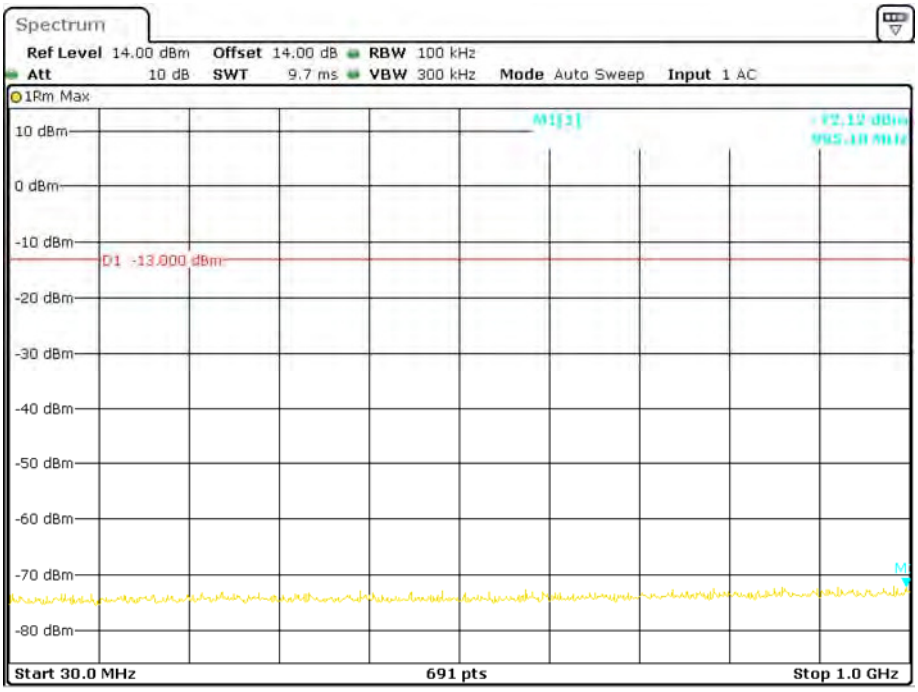
Date: 9.FEB.2018 09:45:58

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



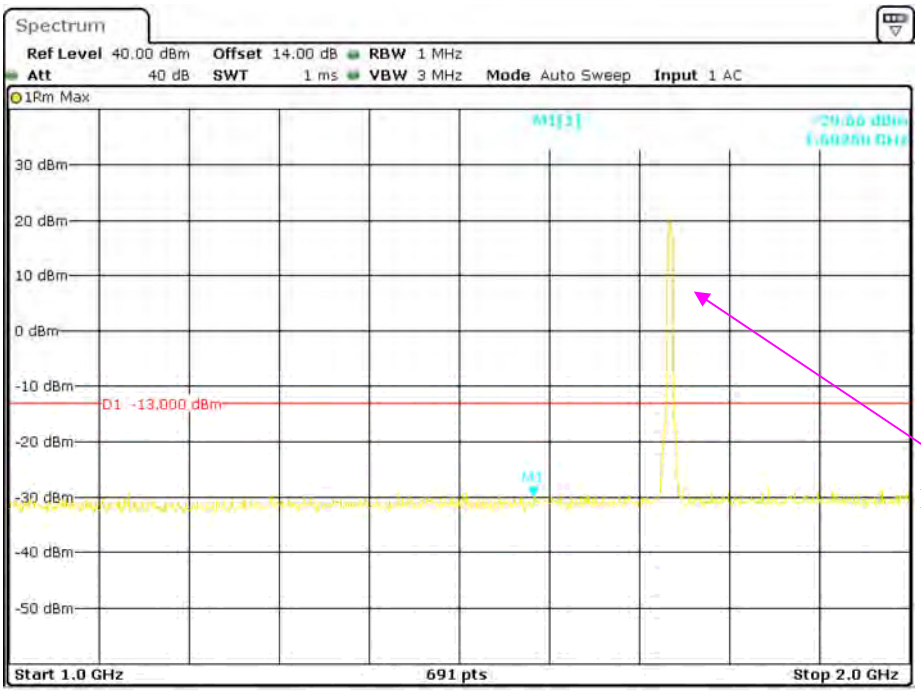
Date: 12.FEB.2018 09:24:45

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



Date: 9.FEB.2018 09:54:31

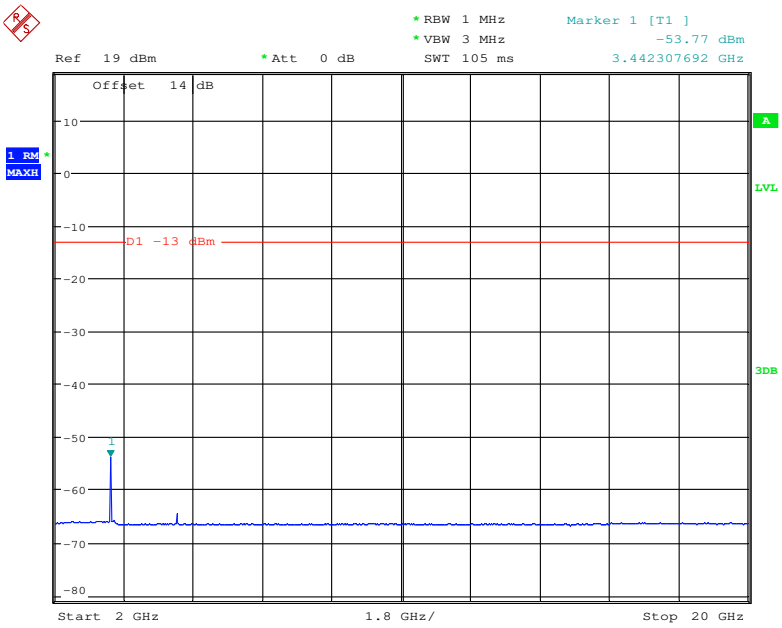
1 GHz – 2 GHz (5.0 MHz, Middle Channel)



Fundamental test

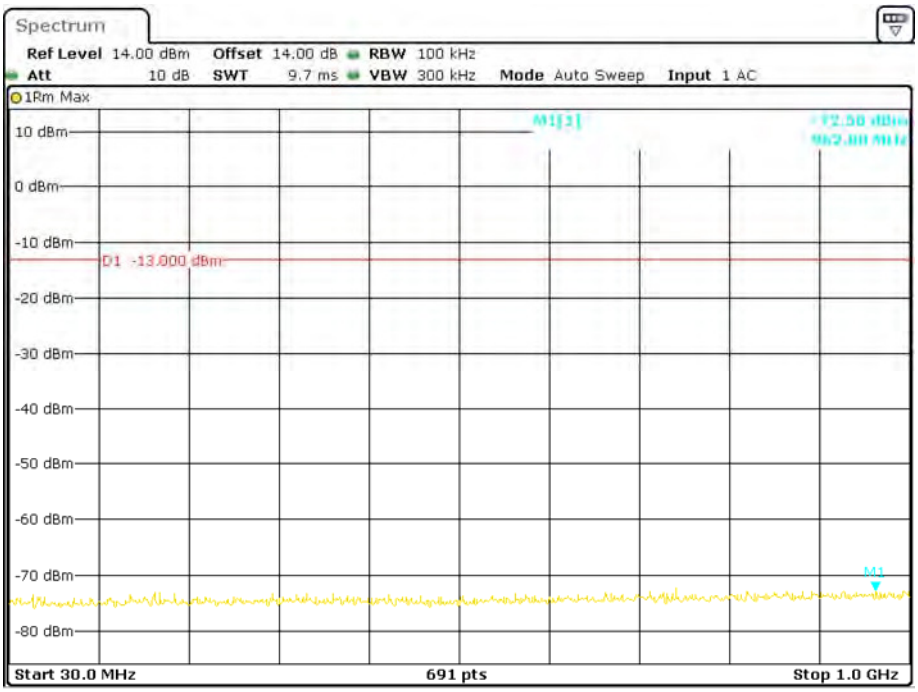
Date: 9.FEB.2018 09:46:46

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



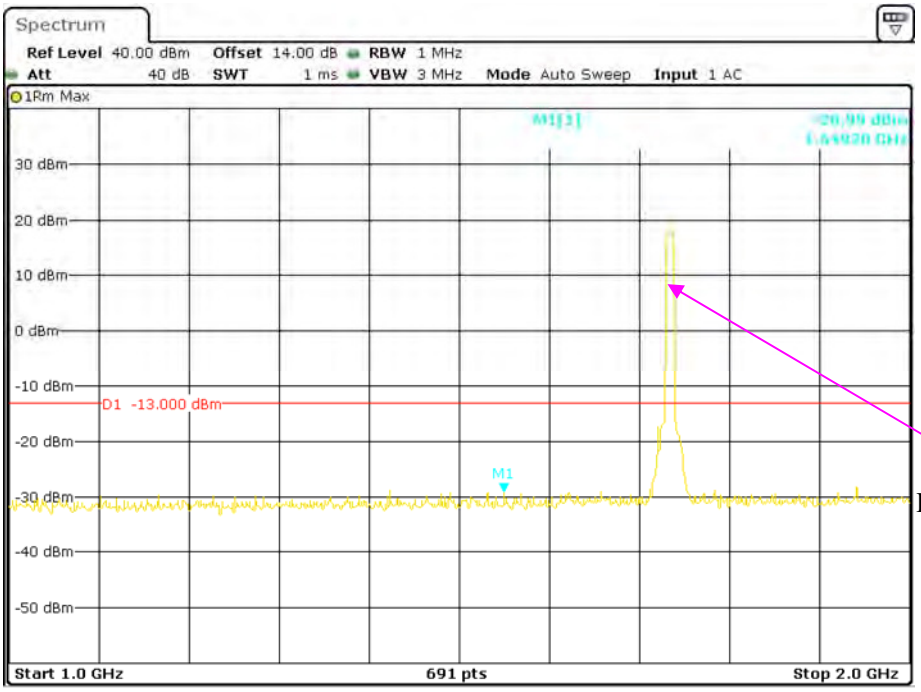
Date: 12.FEB.2018 09:25:02

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



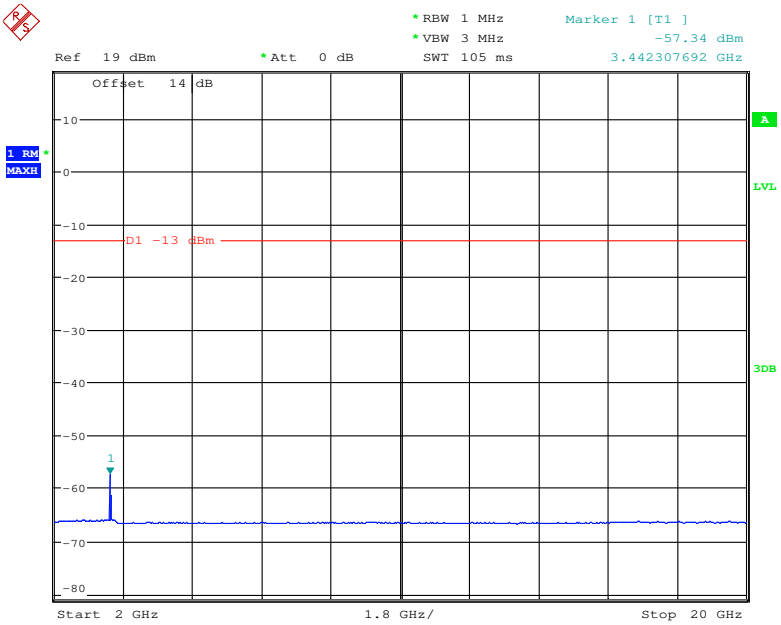
Date: 9.FEB.2018 09:54:57

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



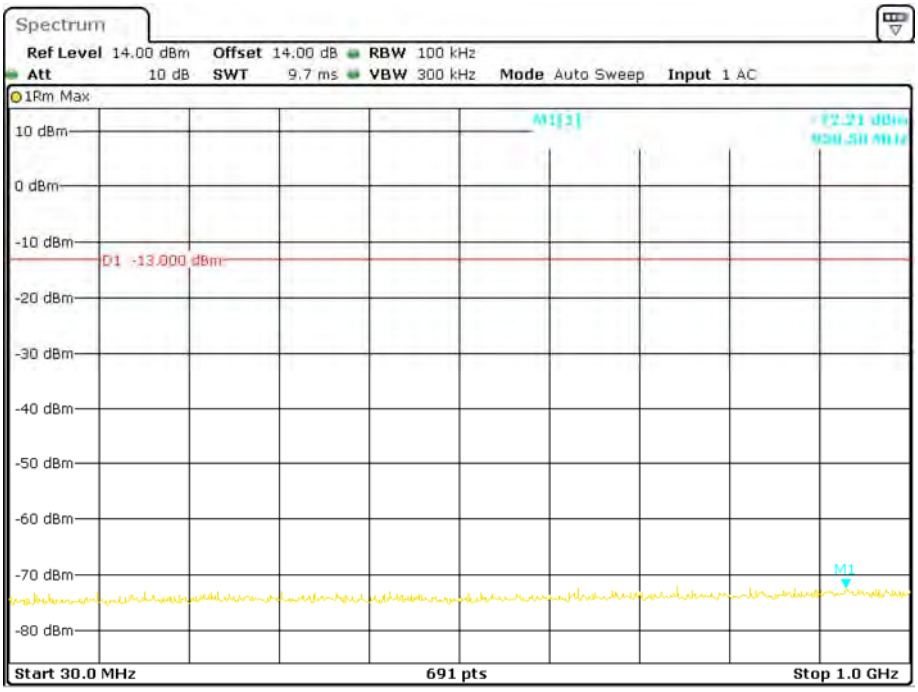
Date: 9.FEB.2018 09:47:15

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



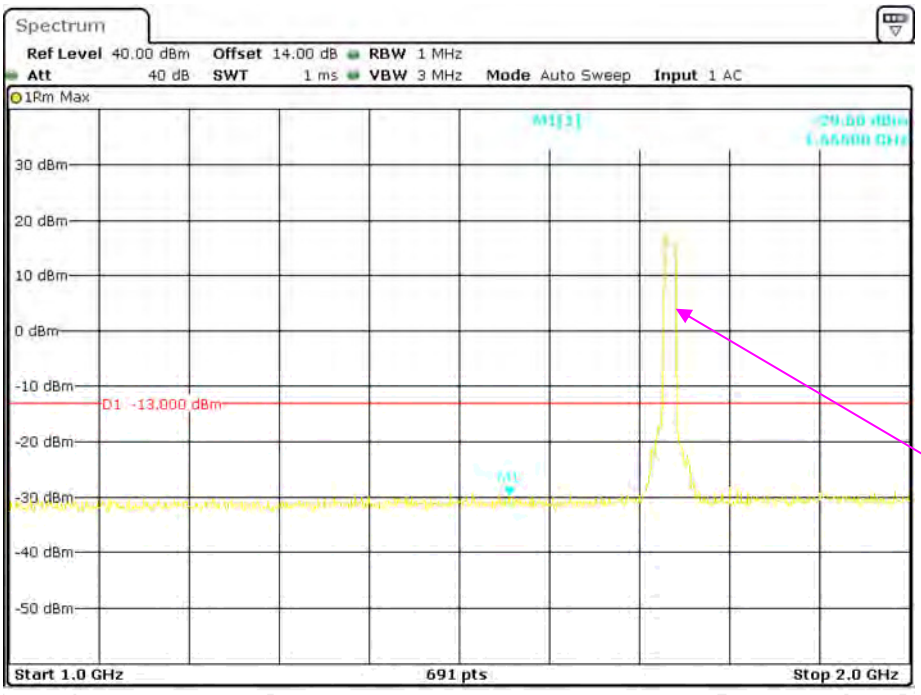
Date: 12.FEB.2018 09:25:16

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



Date: 9.FEB.2018 09:55:35

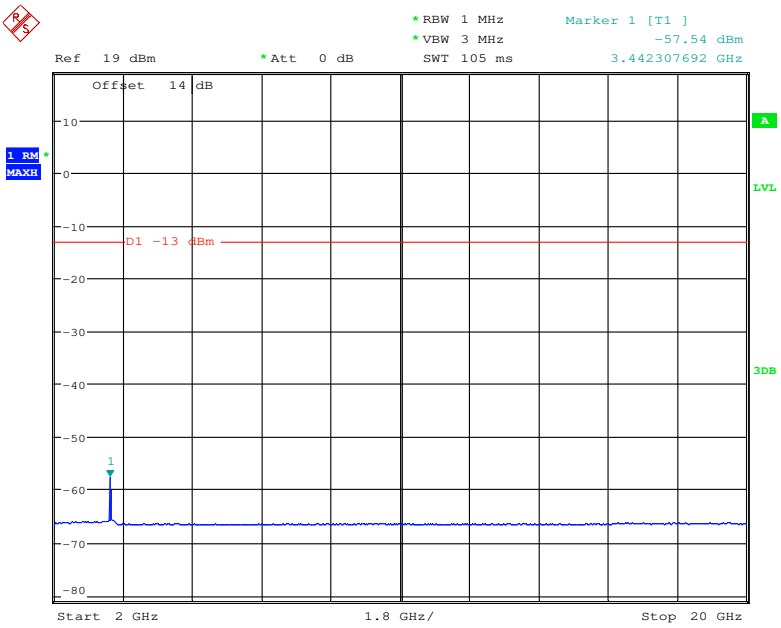
1 GHz – 2 GHz (15.0 MHz, Middle Channel)



Fundamental test

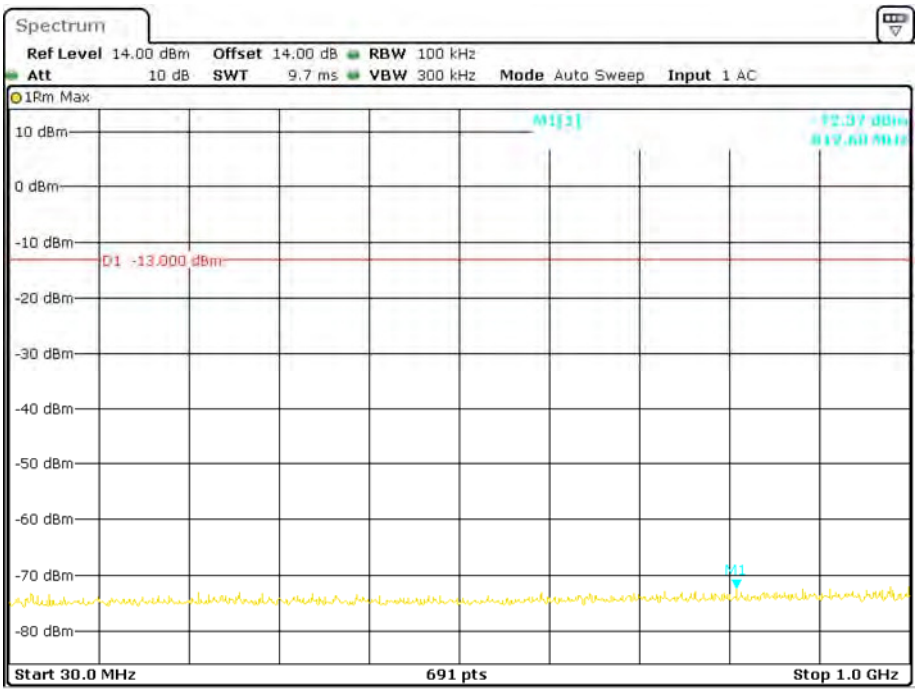
Date: 9.FEB.2018 09:47:46

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



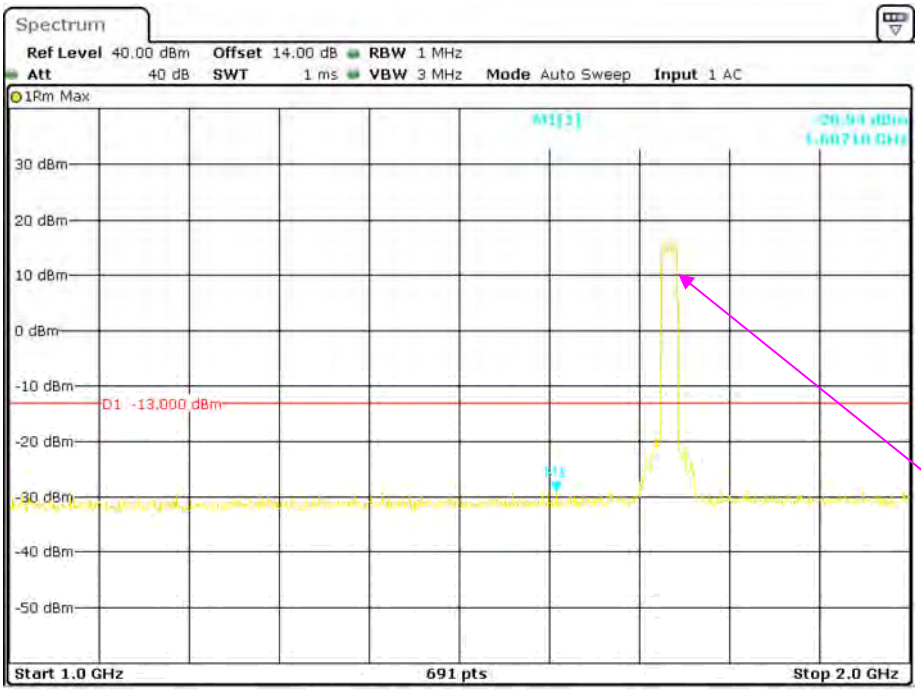
Date: 12.FEB.2018 09:25:30

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



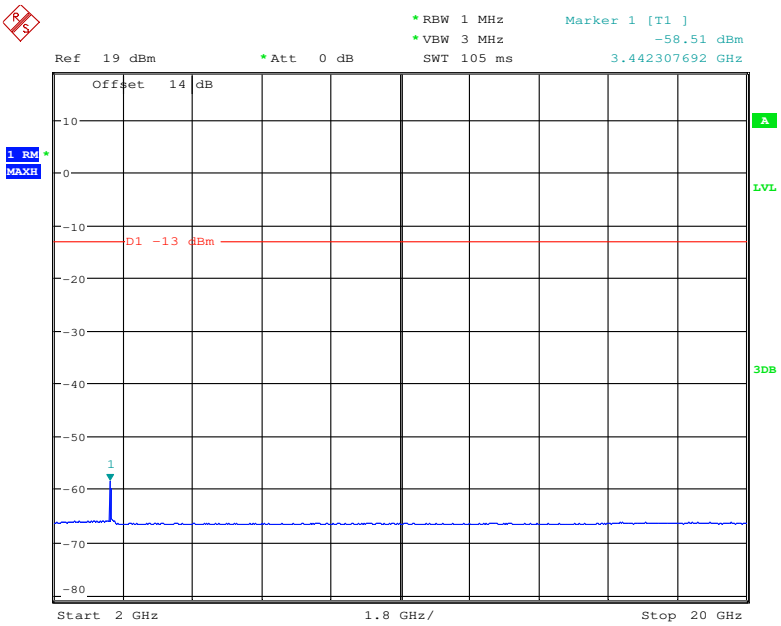
Date: 9.FEB.2018 09:56:00

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



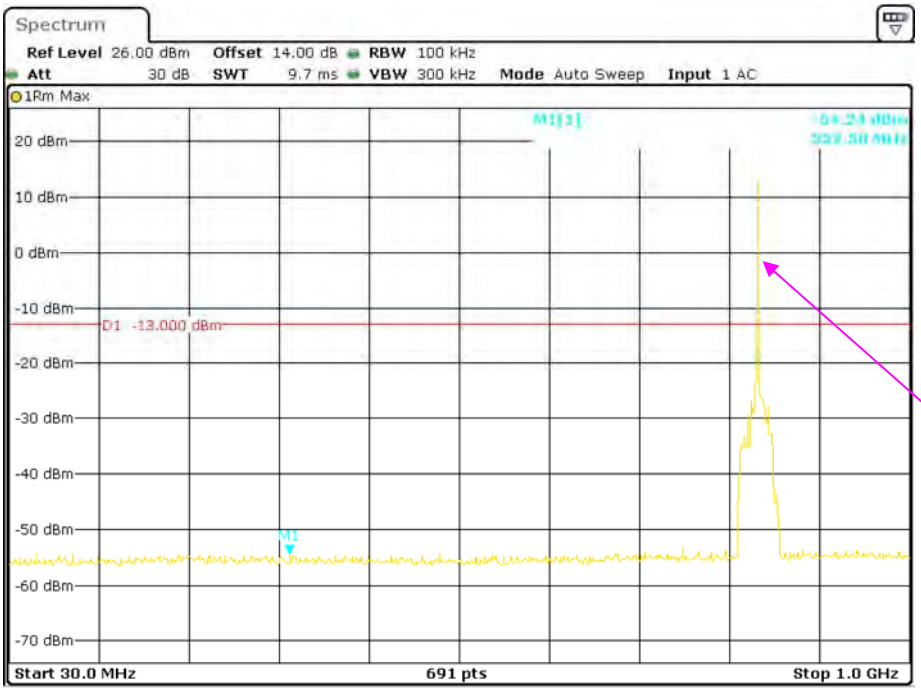
Fundamental test

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



LTE Band 5:

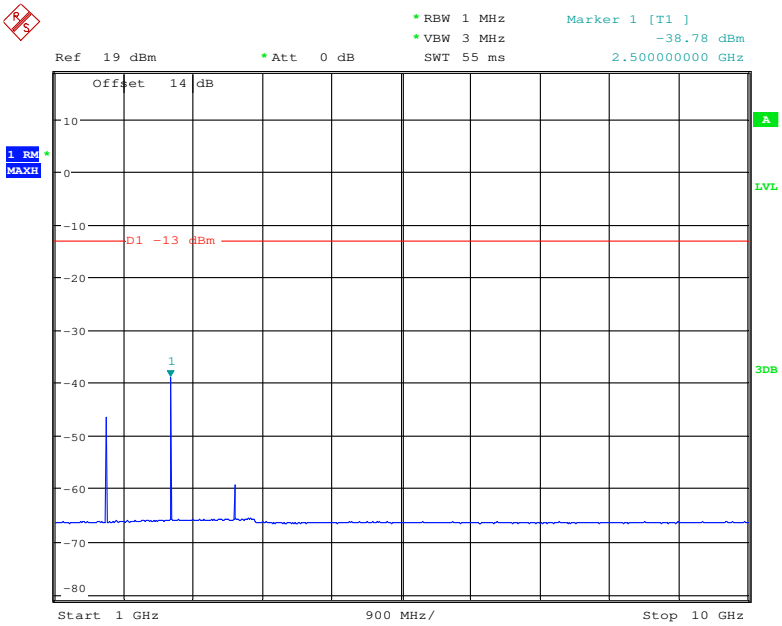
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

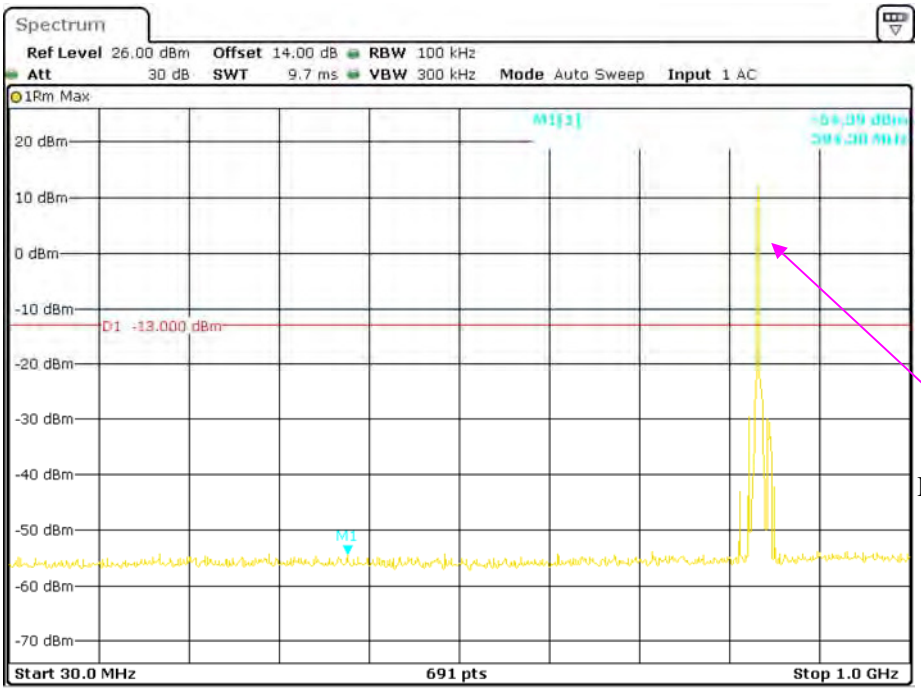
Date: 9.FEB.2018 09:58:20

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



Date: 12.FEB.2018 09:27:39

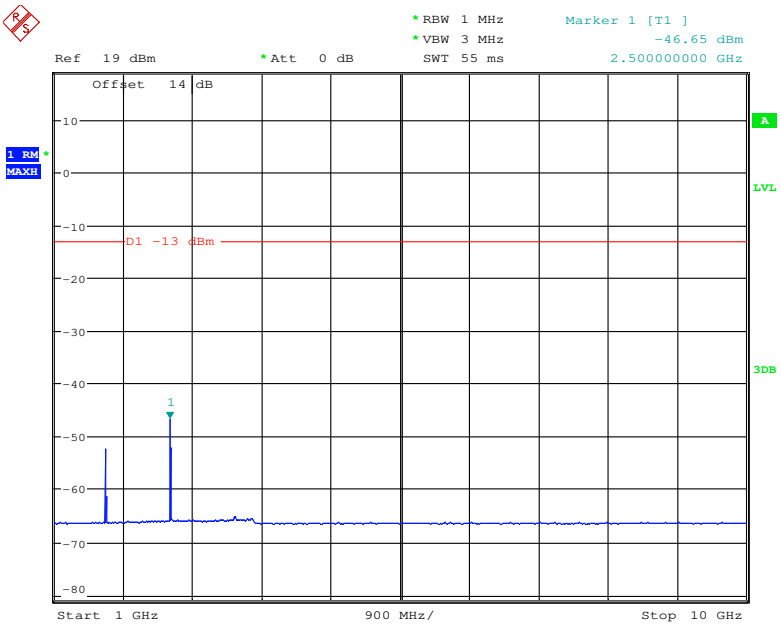
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



Fundamental test

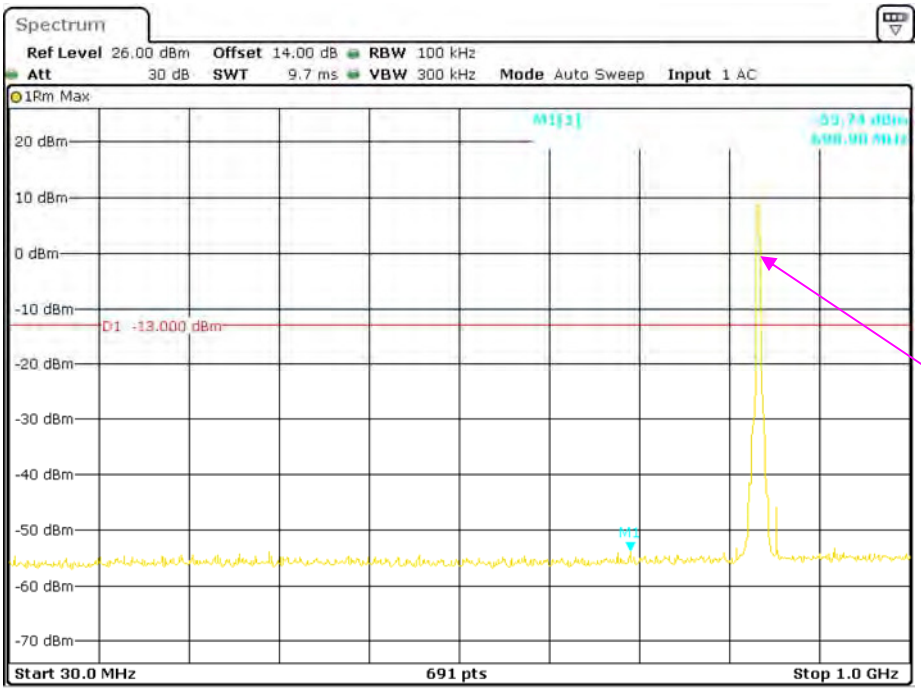
Date: 9.FEB.2018 09:59:27

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



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

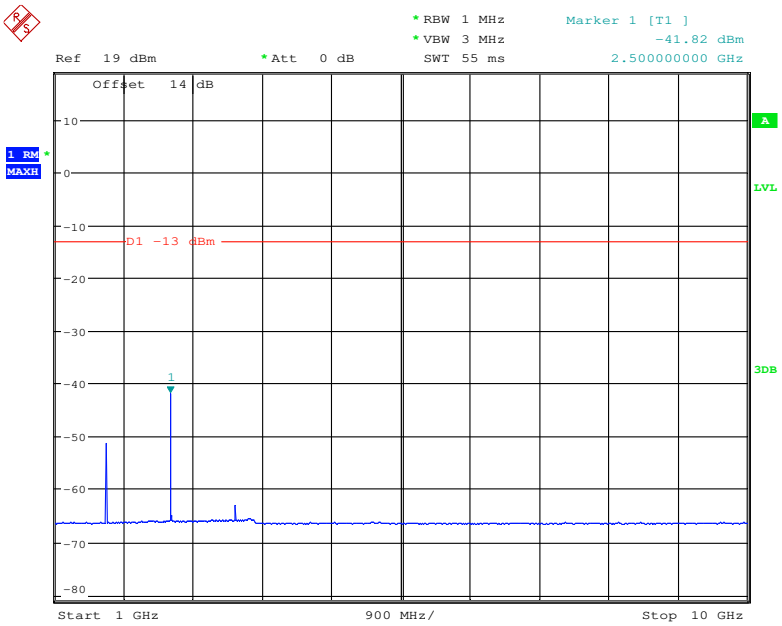
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

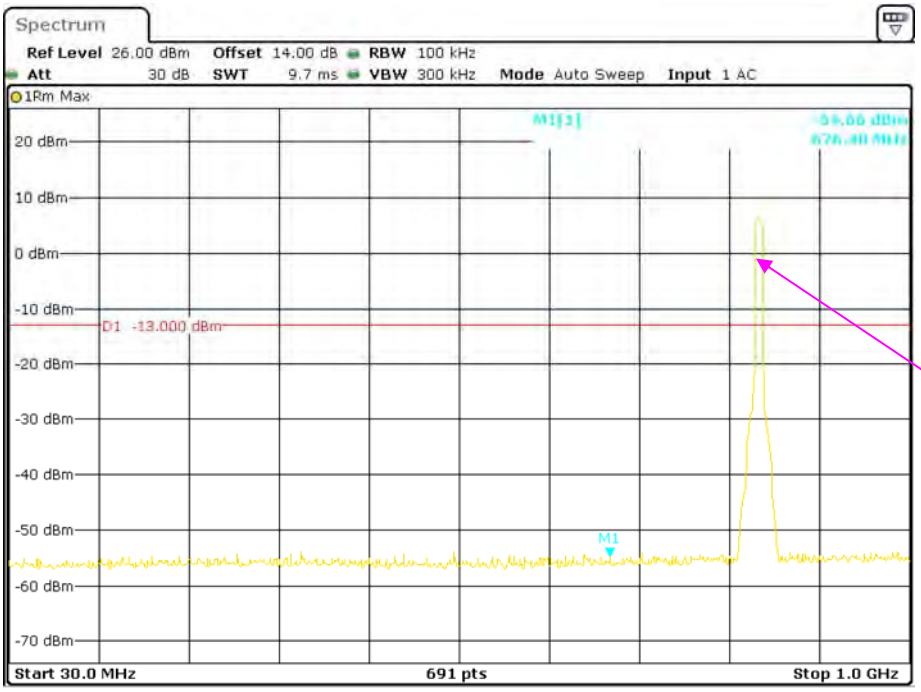
Date: 9.FEB.2018 10:00:00

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



Date: 12.FEB.2018 09:28:30

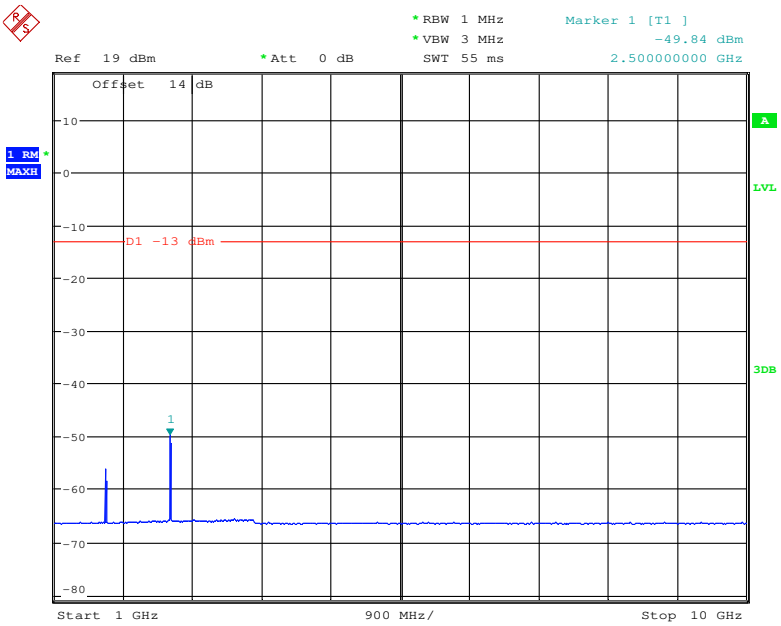
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 9.FEB.2018 10:00:26

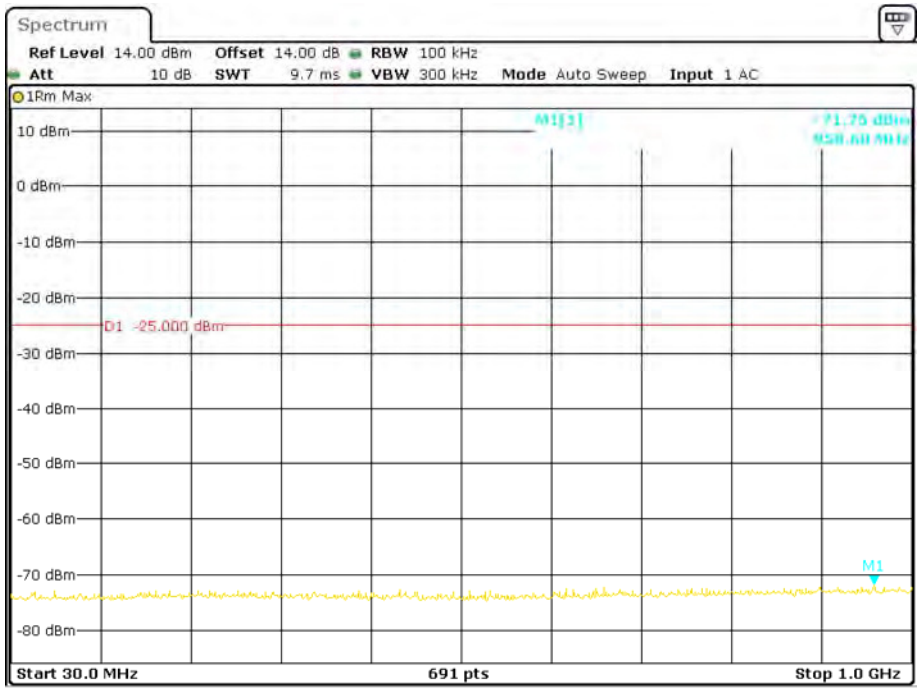
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 12.FEB.2018 09:28:44

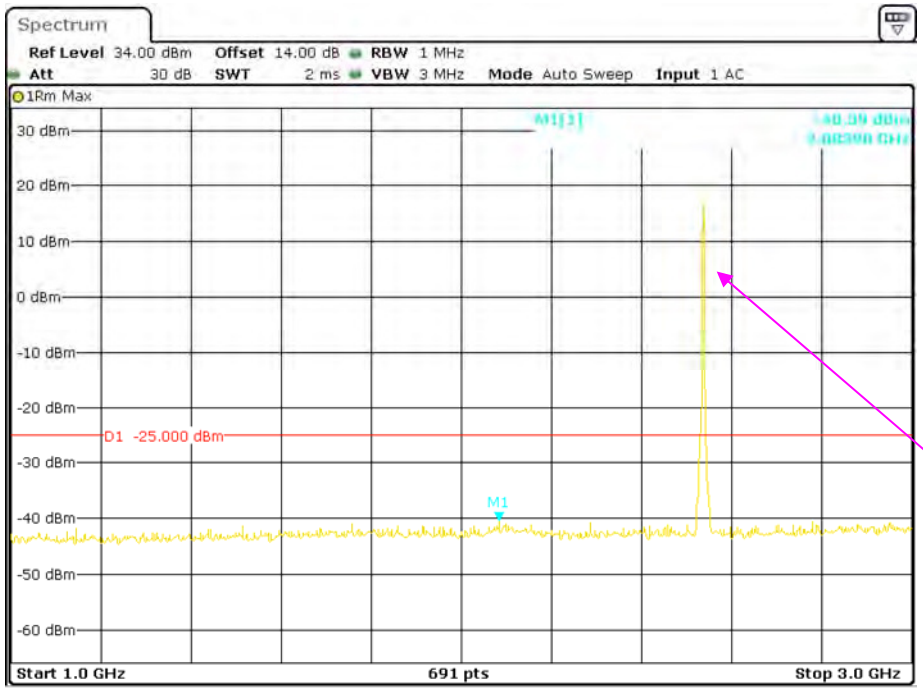
LTE Band 7:

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



Date: 9.FEB.2018 10:06:35

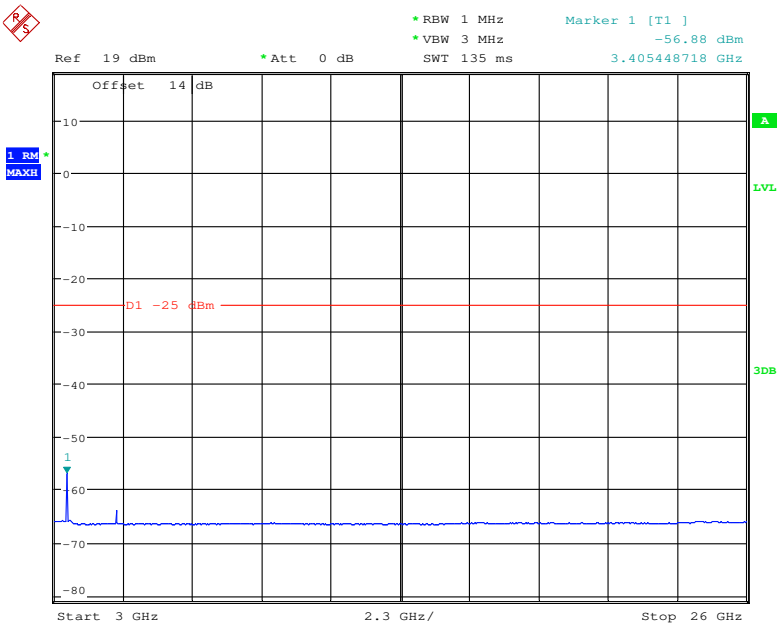
1 GHz – 3.0 GHz (5.0 MHz, Middle Channel)



Fundamental test

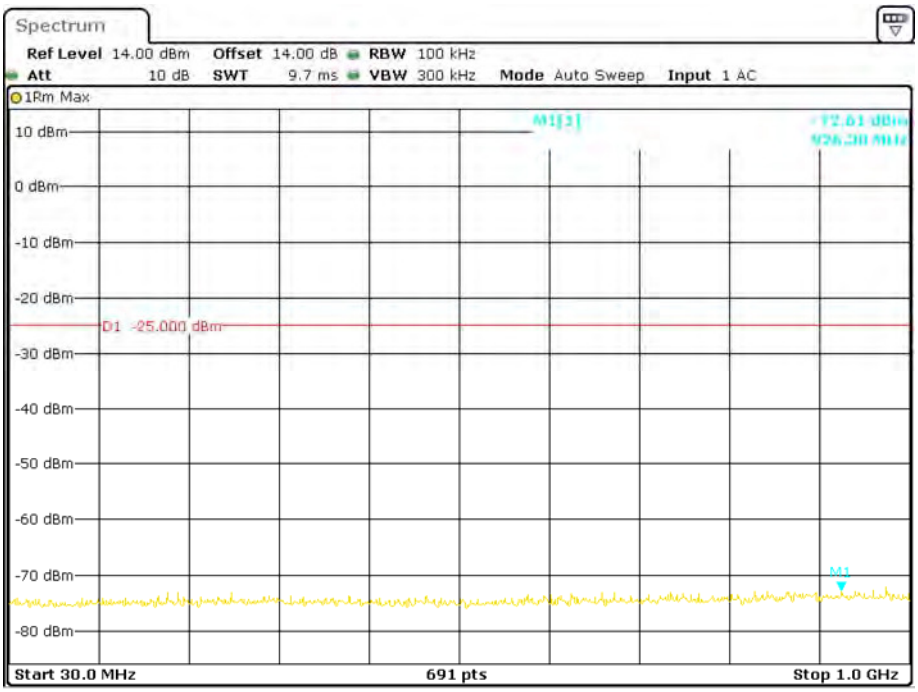
Date: 9.FEB.2018 10:09:50

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



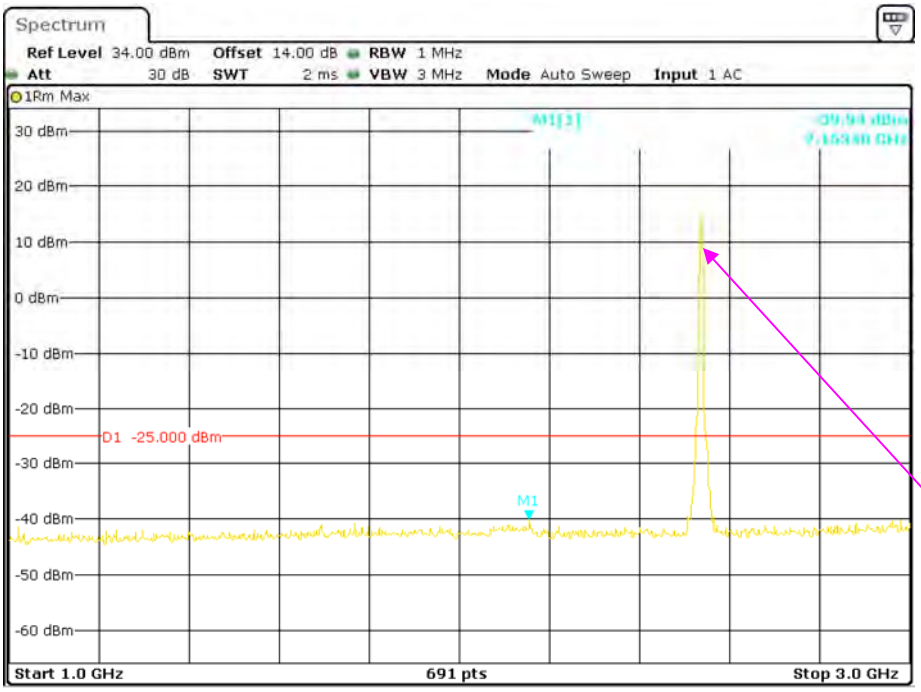
Date: 12.FEB.2018 09:30:13

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



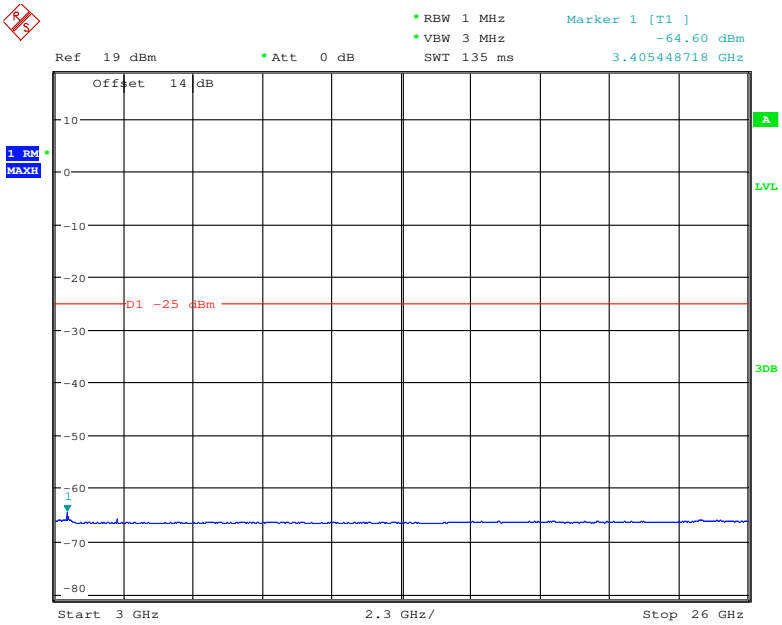
Date: 9.FEB.2018 10:07:02

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



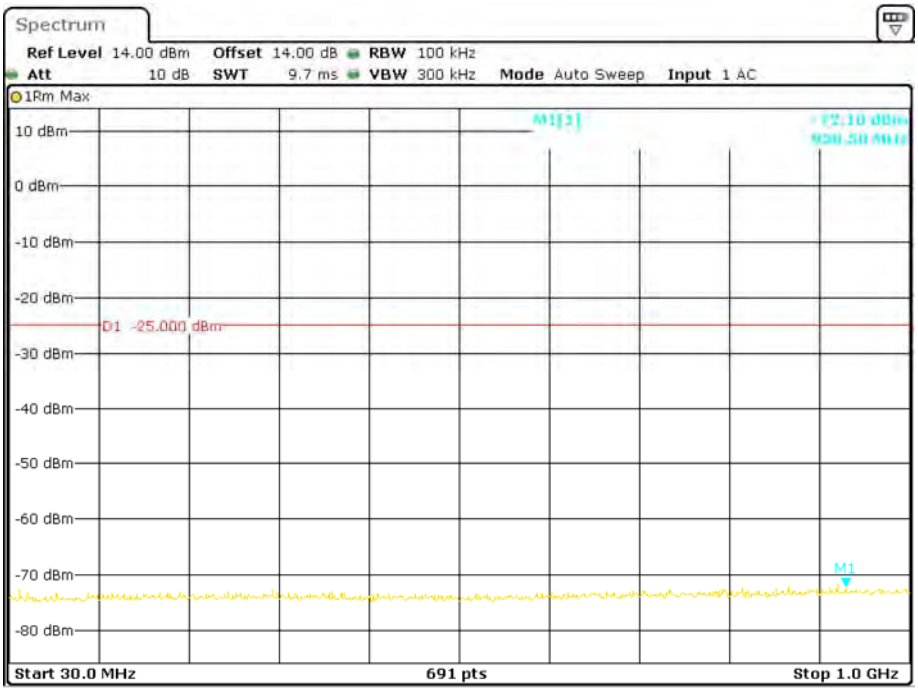
Date: 9.FEB.2018 10:10:37

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



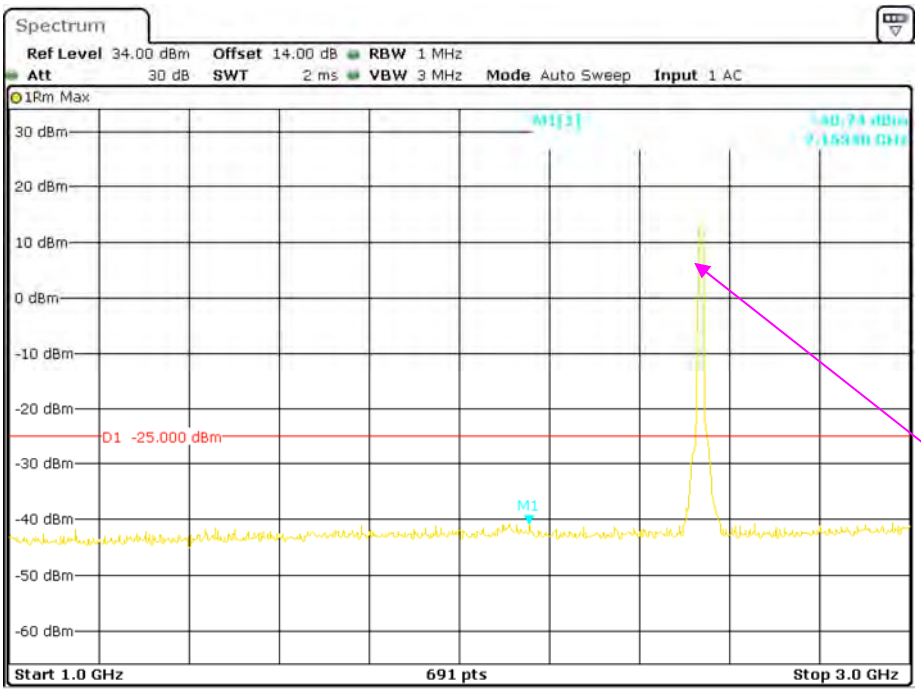
Date: 12.FEB.2018 09:30:49

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



Date: 9.FEB.2018 10:08:01

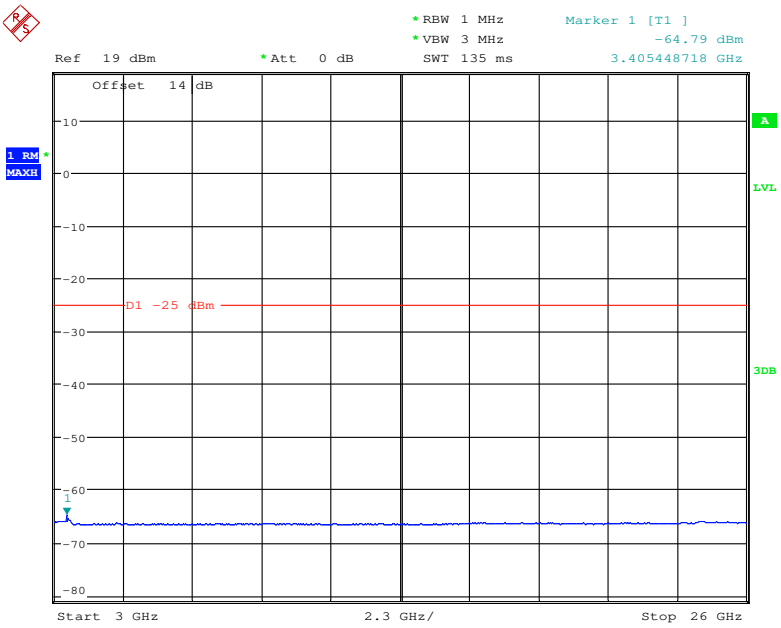
1 GHz – 3 GHz (15.0 MHz, Middle Channel)



Fundamental test

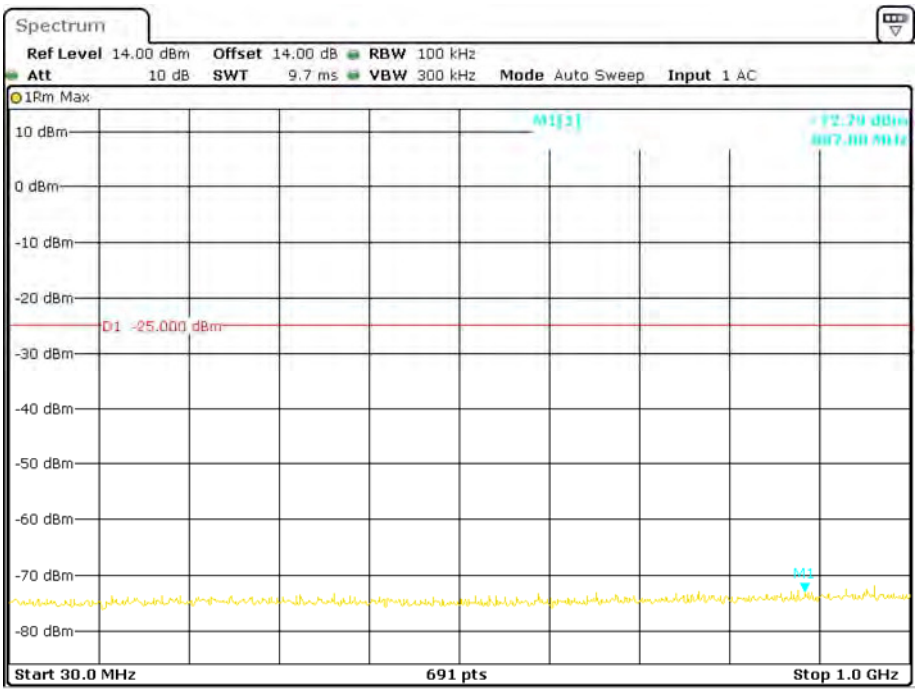
Date: 9.FEB.2018 10:11:11

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



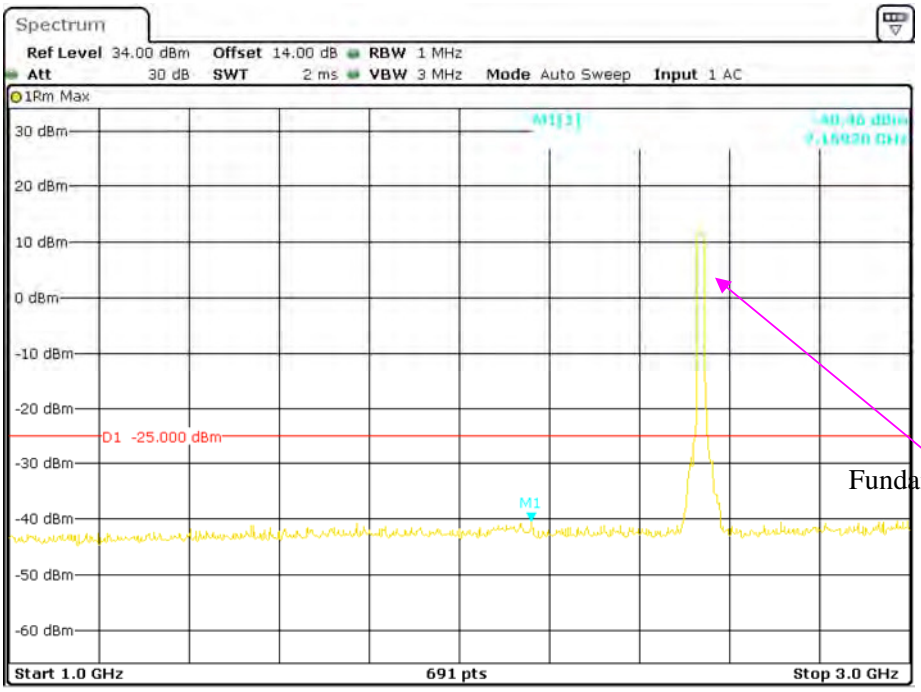
Date: 12.FEB.2018 09:31:05

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



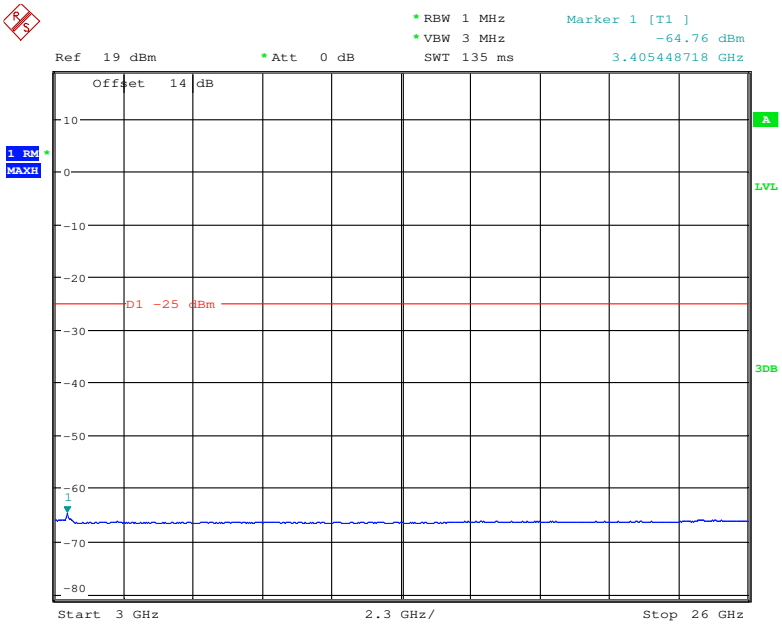
Date: 9.FEB.2018 10:08:20

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



Date: 9.FEB.2018 10:11:50

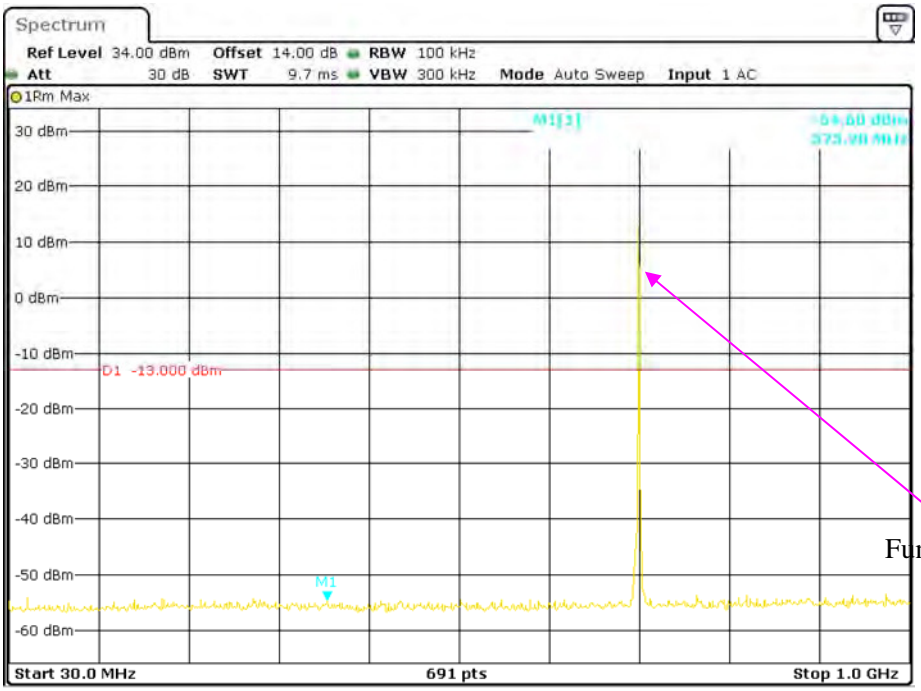
3 GHz – 26 GHz (20.0 MHz, Middle Channel)



Date: 12.FEB.2018 09:31:25

LTE Band 12:

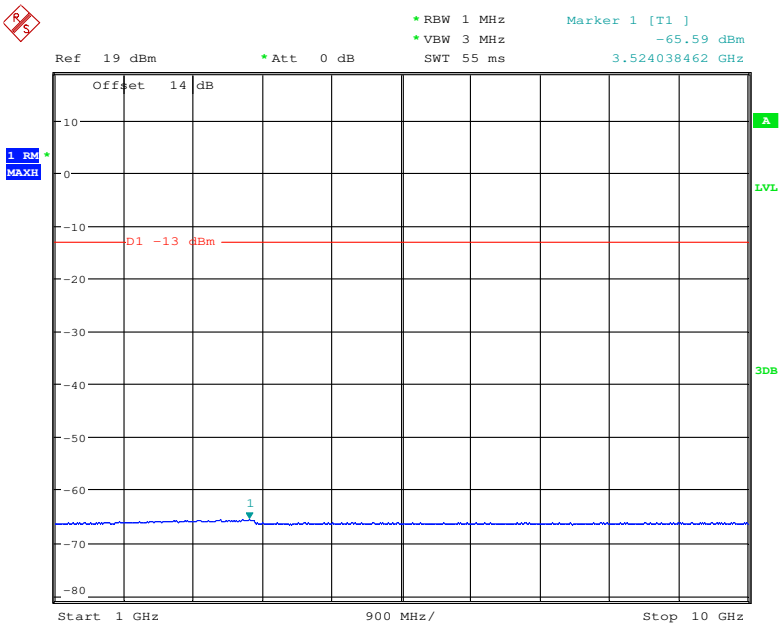
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

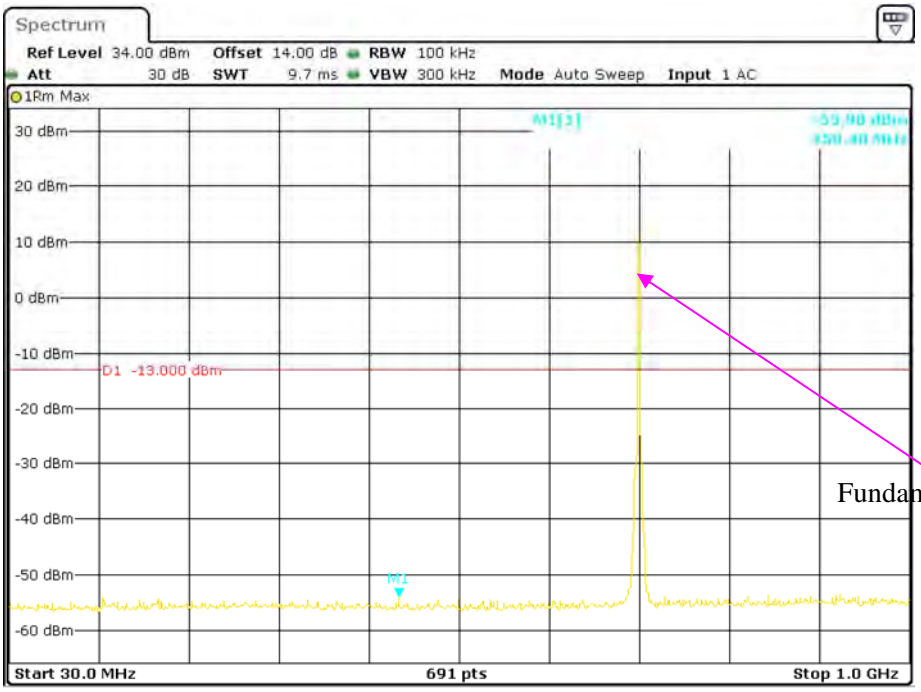
Date: 9.FEB.2018 10:14:14

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



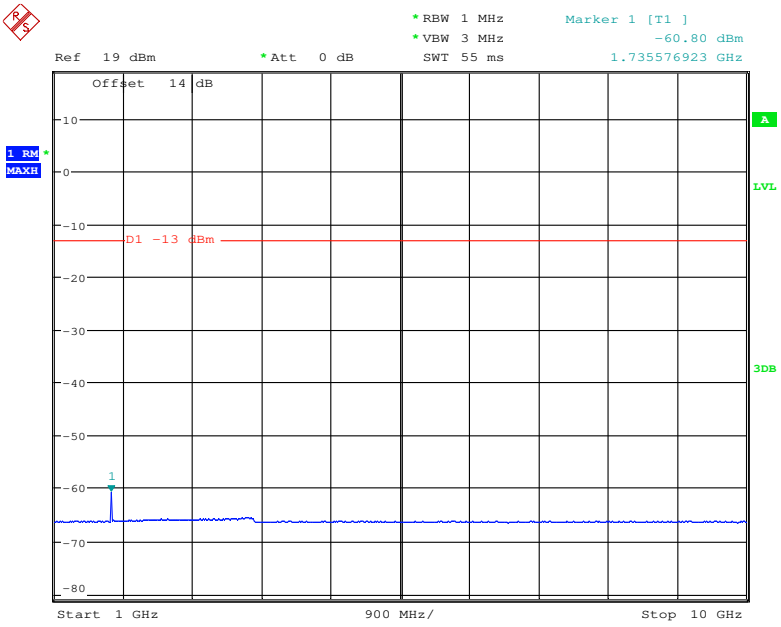
Date: 12.FEB.2018 09:36:55

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



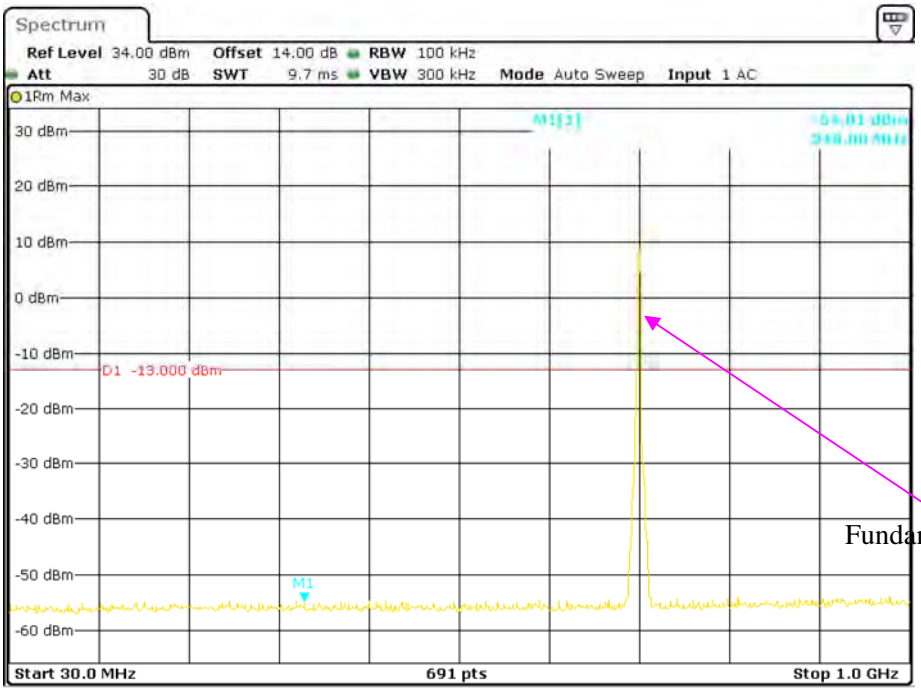
Date: 9.FEB.2018 10:14:54

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



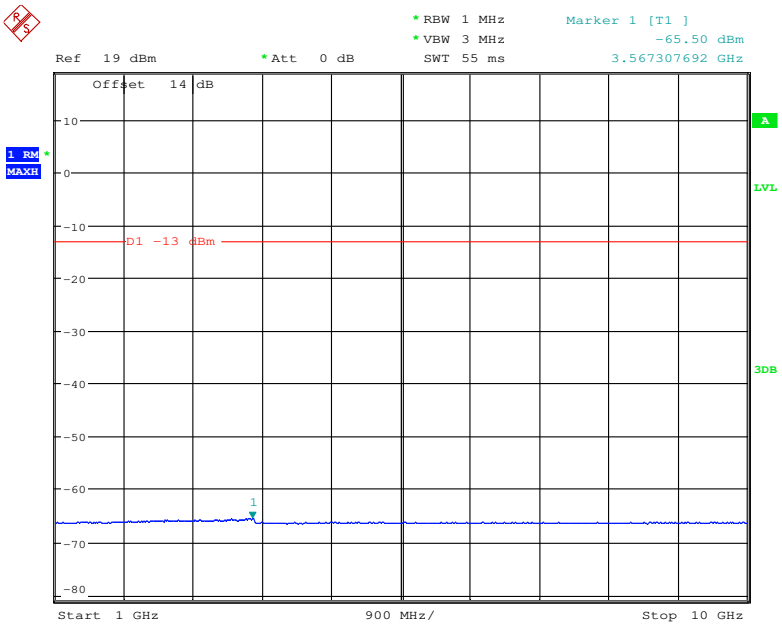
Date: 12.FEB.2018 09:37:32

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



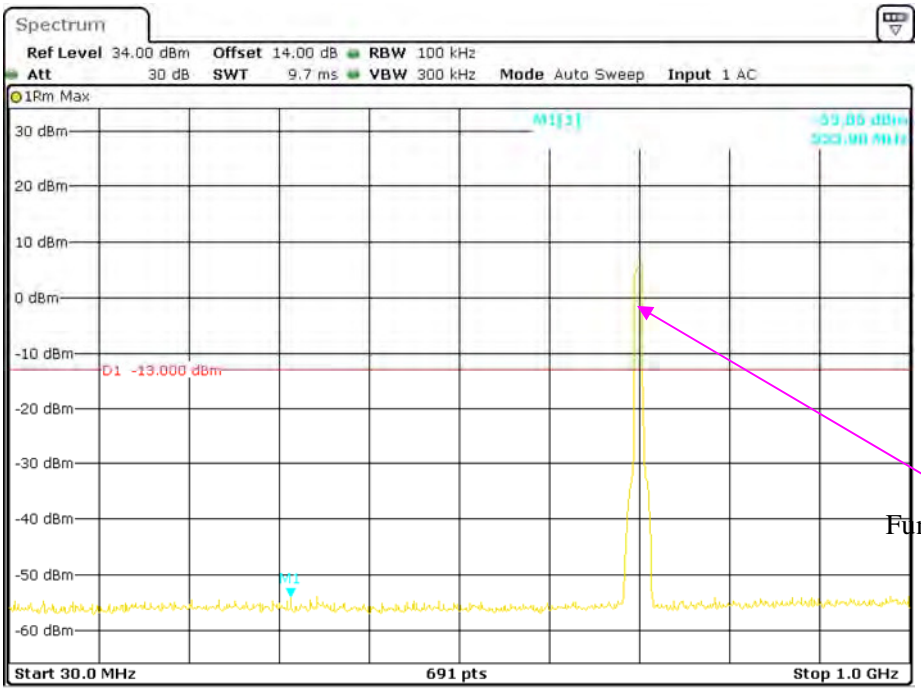
Date: 9.FEB.2018 10:15:18

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



Date: 12.FEB.2018 09:37:53

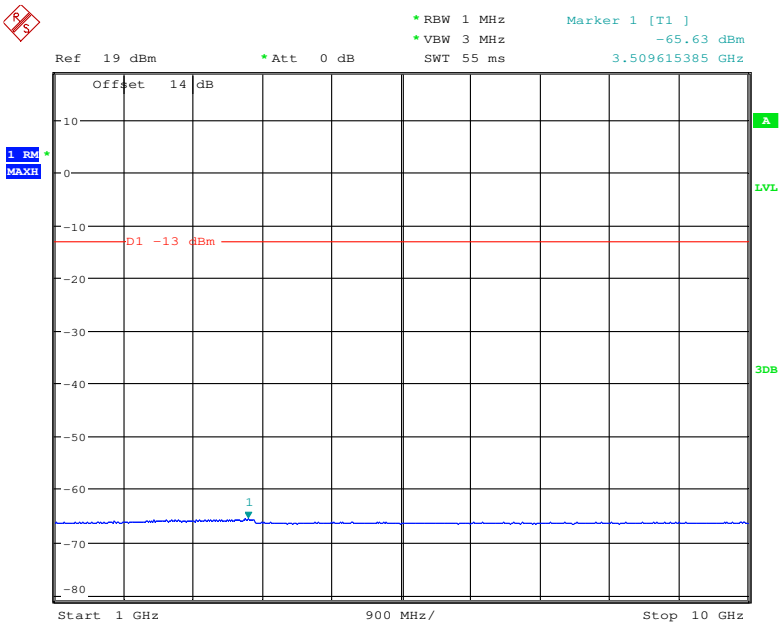
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 9.FEB.2018 10:15:41

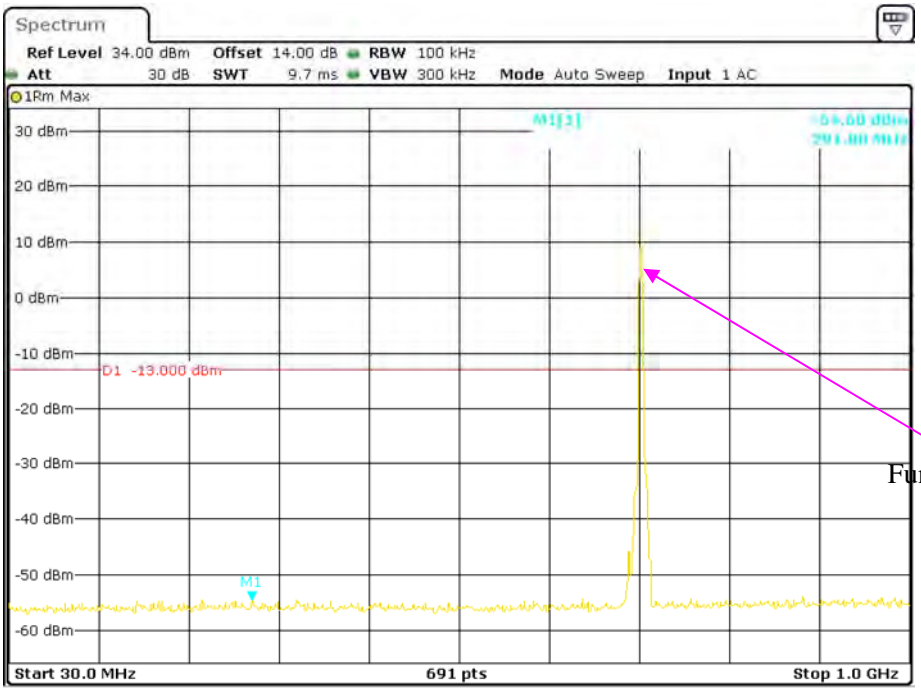
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 12.FEB.2018 09:38:16

LTE Band 17:

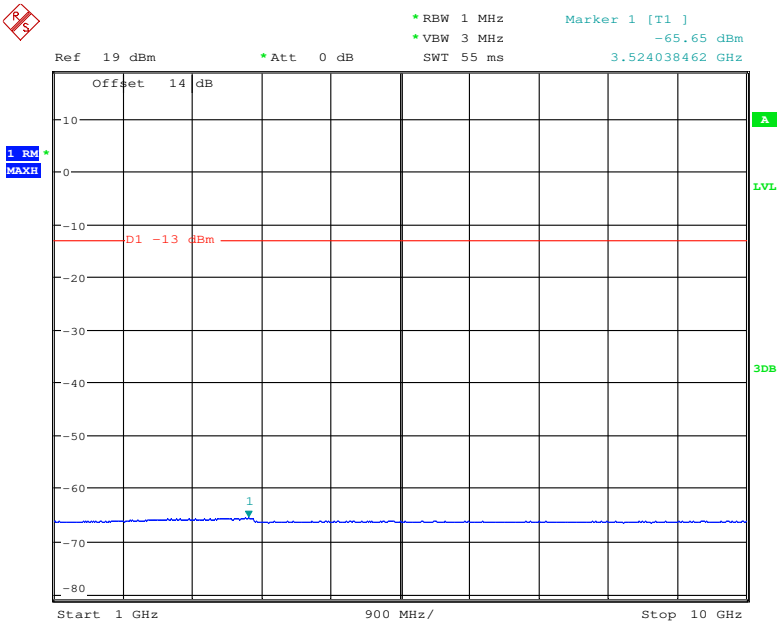
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



Fundamental test

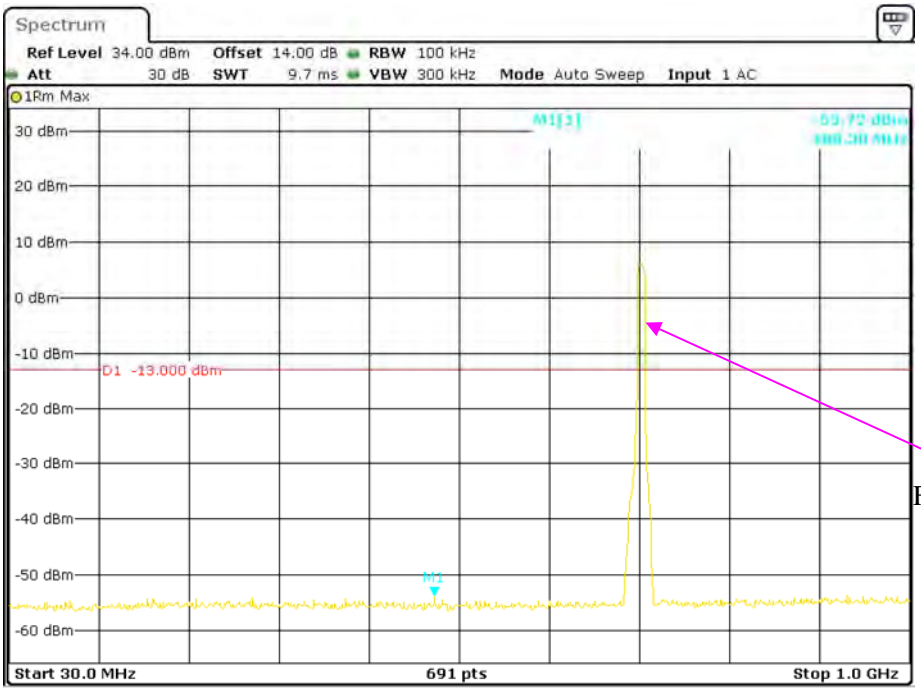
Date: 9.FEB.2018 10:16:49

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



Date: 12.FEB.2018 09:39:12

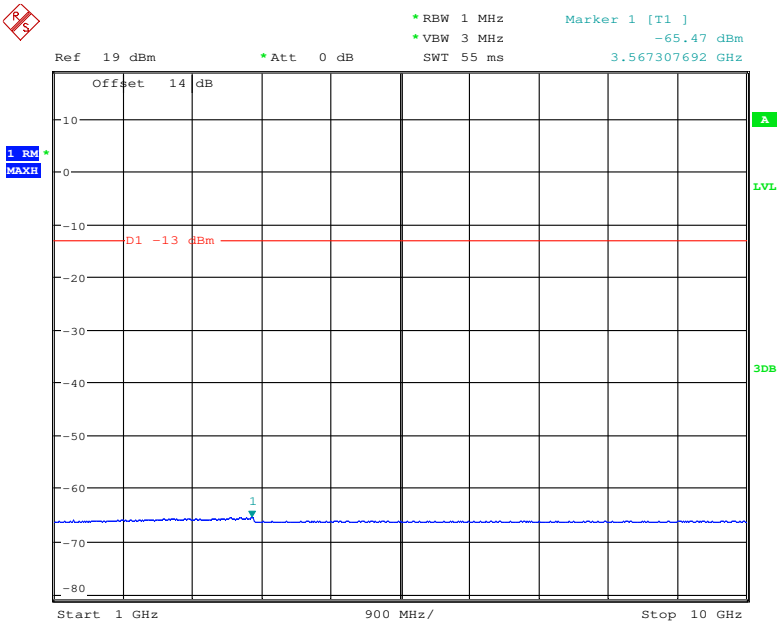
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Fundamental test

Date: 9.FEB.2018 10:17:34

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



Date: 12.FEB.2018 09:39:42

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 Tracy Hu on 2018-02-09.

EUT operation mode: Transmitting

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

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 22H	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
GSM Mode, Middle channel										
140.02	33.02	216	2.2	H	-64.00	0.26	0	-64.26	-13	51.26
140.02	33.90	236	1.0	V	-63.10	0.26	0	-63.36	-13	50.36
1673.20	54.15	128	1.3	H	-52.9	1.30	8.90	-45.30	-13	32.30
1673.20	52.22	59	2.5	V	-54.3	1.30	8.90	-46.70	-13	33.70
2509.80	48.32	290	2.2	H	-55.2	2.60	10.20	-47.60	-13	34.60
2509.80	48.63	121	1.1	V	-54.3	2.60	10.20	-46.70	-13	33.70
3346.40	43.45	244	2.1	H	-56.9	1.50	11.70	-46.70	-13	33.70
3346.40	42.68	255	1.6	V	-57.7	1.50	11.70	-47.50	-13	34.50
WCDMA Mode, Middle channel										
140.02	34.75	351	1.3	H	-62.20	0.26	0	-62.46	-13	49.46
140.02	32.72	170	1.0	V	-64.30	0.26	0	-64.56	-13	51.56
1673.20	43.68	59	1.3	H	-63.4	1.30	8.90	-55.80	-13	42.80
1673.20	43.38	82	2.1	V	-63.1	1.30	8.90	-55.50	-13	42.50
2509.80	44.12	329	1.3	H	-59.4	2.60	10.20	-51.80	-13	38.80
2509.80	43.8	189	1.4	V	-59.1	2.60	10.20	-51.50	-13	38.50

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										
140.02	33.57	351	2.3	H	-63.40	0.26	0	-63.66	-13	50.66
140.02	32.09	136	1.8	V	-64.90	0.26	0	-65.16	-13	52.16
3760.00	44.38	2	1.3	H	-56.8	1.50	11.80	-46.50	-13	33.50
3760.00	44.43	108	1.0	V	-56.3	1.50	11.80	-46.00	-13	33.00
WCDMA Mode Band II, Middle channel										
140.02	33.98	148	1.2	H	-63.00	0.26	0	-63.26	-13	50.26
140.02	32.60	27	2.3	V	-64.40	0.26	0	-64.66	-13	51.66
3760.00	46.35	302	1.1	H	-54.9	1.50	11.80	-44.60	-13	31.60
3760.00	44.28	331	1.5	V	-56.5	1.50	11.80	-46.20	-13	33.20

30 MHz ~ 20 GHz:

AWS Band (Part 27)

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	FCC Part 27	
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
WCDMA Mode Band IV, Middle channel										
140.02	34.17	48	1.7	H	-62.80	0.26	0	-63.06	-13	50.06
140.02	32.17	34	2.0	V	-64.80	0.26	0	-65.06	-13	52.06
3465.20	43.89	325	1.3	H	-56.5	1.50	12.00	-46.00	-13	33.00
3465.20	43.11	83	1.3	V	-58.0	1.50	12.00	-47.50	-13	34.50

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										
140.02	34.39	359	1.8	H	-62.60	0.26	0	-62.86	-13	49.86
140.02	32.62	358	1.5	V	-64.40	0.26	0	-64.66	-13	51.66
3760.00	45.36	192	2.0	H	-55.9	1.50	11.80	-45.60	-13	32.60
3760.00	44.28	252	1.6	V	-56.5	1.50	11.80	-46.20	-13	33.20
Band 4										
Test frequency range:30 MHz ~ 18 GHz										
140.02	33.80	105	1.2	H	-63.20	0.26	0	-63.46	-13	50.46
140.02	33.61	290	1.2	V	-63.40	0.26	0	-63.66	-13	50.66
3465.00	43.44	232	1.2	H	-56.9	1.50	12.00	-46.40	-13	33.40
3465.00	43.72	249	1.5	V	-57.4	1.50	12.00	-46.90	-13	33.90
Band 5										
Test frequency range:30 MHz ~ 10 GHz										
140.02	33.12	4	2.0	H	-63.90	0.26	0	-64.16	-13	51.16
140.02	32.72	197	2.2	V	-64.30	0.26	0	-64.56	-13	51.56
1673.00	46.35	230	1.9	H	-60.7	1.30	8.90	-53.10	-13	40.10
1673.00	45.48	275	1.3	V	-61.0	1.30	8.90	-53.40	-13	40.40
2509.50	43.03	289	1.1	H	-60.5	2.60	10.20	-52.90	-13	39.90
2509.50	42.84	42	2.2	V	-60.1	2.60	10.20	-52.50	-13	39.50
Band 7										
Test frequency range:30 MHz ~ 26 GHz										
140.02	33.2	185	2.1	H	-63.80	0.26	0	-64.06	-25	39.06
140.02	32.85	347	2.4	V	-64.10	0.26	0	-64.36	-25	39.36
5070.00	45.11	43	1.5	H	-53.6	1.60	11.20	-44.00	-25	19.00
5070.00	44.36	300	1.1	V	-54.4	1.60	11.20	-44.80	-25	19.80

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 12										
Test frequency range: 30 MHz ~ 10 GHz										
140.02	34.11	173	2.2	H	-62.90	0.26	0	-63.16	-13	50.16
140.02	33.48	328	1.8	V	-63.50	0.26	0	-63.76	-13	50.76
1415.00	46.38	162	1.9	H	-61.5	1.60	7.90	-55.20	-13	42.20
1415.00	45.27	119	1.1	V	-62.8	1.60	7.90	-56.50	-13	43.50
2122.50	45.56	104	1.6	H	-56.5	1.30	9.70	-48.10	-13	35.10
2122.50	44.14	37	2.0	V	-58.8	1.30	9.70	-50.40	-13	37.40
Band 17										
Test frequency range: 30 MHz ~ 10GHz										
140.02	33.77	286	1.8	H	-63.20	0.26	0	-63.46	-13	50.46
140.02	33.82	307	2.3	V	-63.20	0.26	0	-63.46	-13	50.46
1420.00	45.33	101	1.7	H	-62.5	1.60	7.90	-56.20	-13	43.20
1420.00	44.72	163	1.0	V	-63.4	1.60	7.90	-57.10	-13	44.10
2130.00	43.54	209	2.0	H	-58.5	1.30	9.70	-50.10	-13	37.10
2130.00	43.11	105	1.6	V	-59.8	1.30	9.70	-51.40	-13	38.40

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

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

Applicable Standard

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

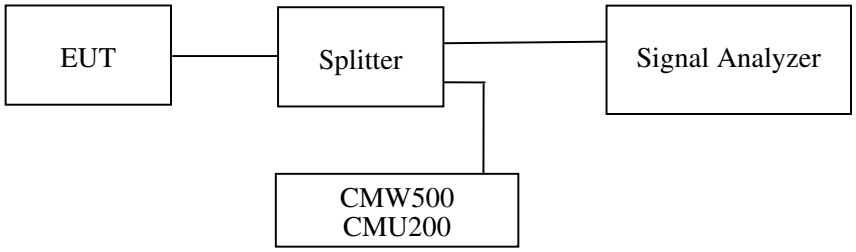
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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

Test Procedure

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

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



Test Data

Environmental Conditions

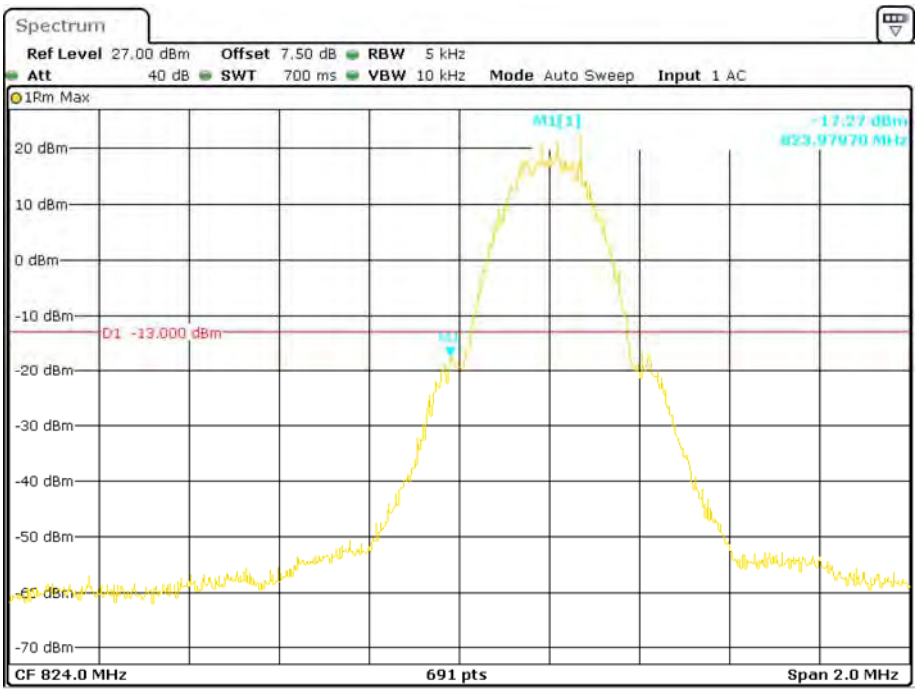
Temperature:	24~25℃
Relative Humidity:	50~52 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Tracy Hu from 2018-02-08 to 2018-02-09.

EUT operation mode: Transmitting

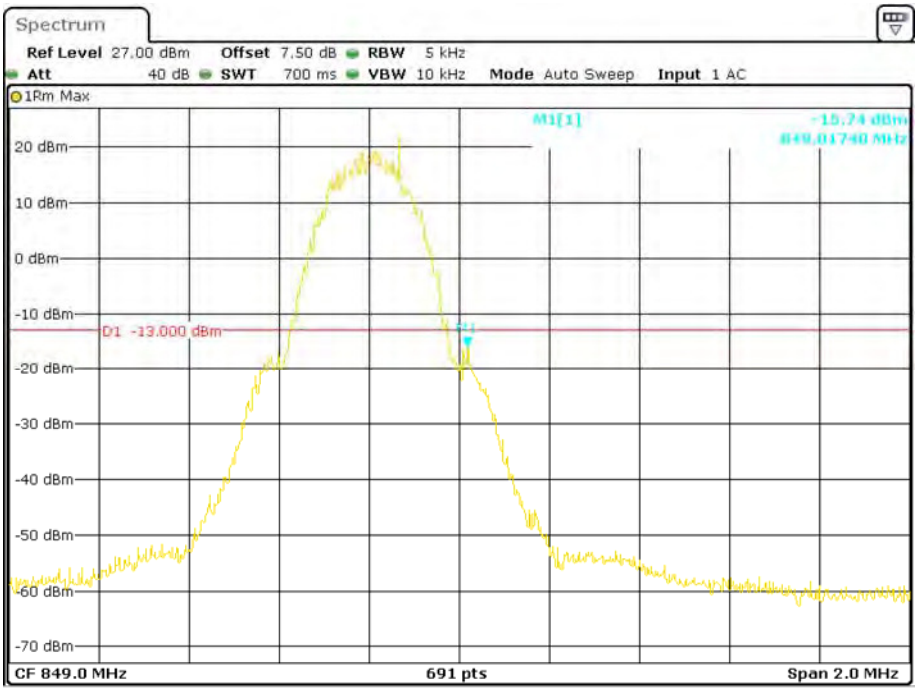
Test Result: Compliance. Please refer to the following plots.

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



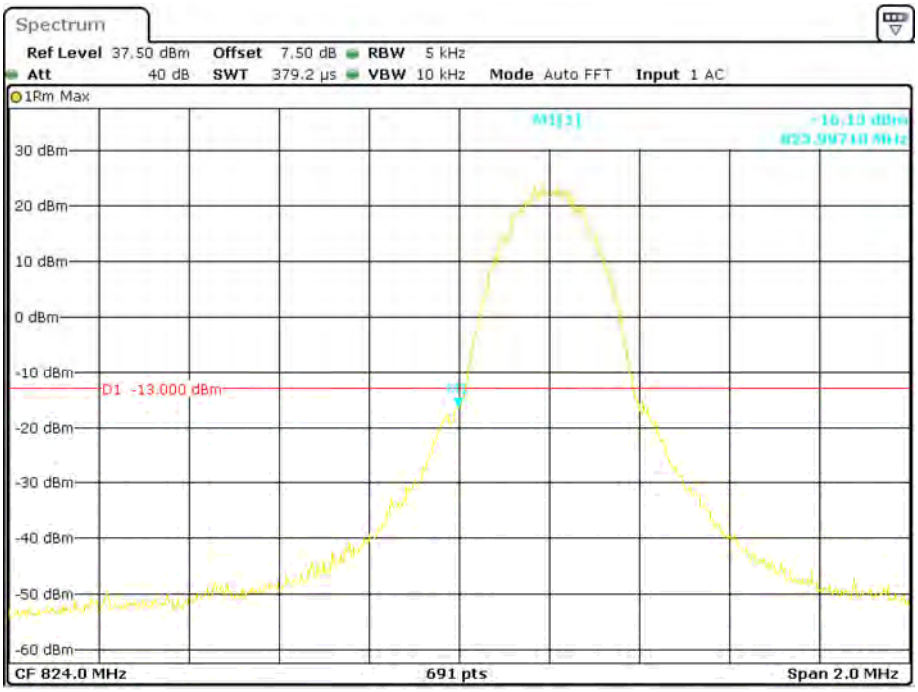
Date: 8.FEB.2018 13:24:36

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



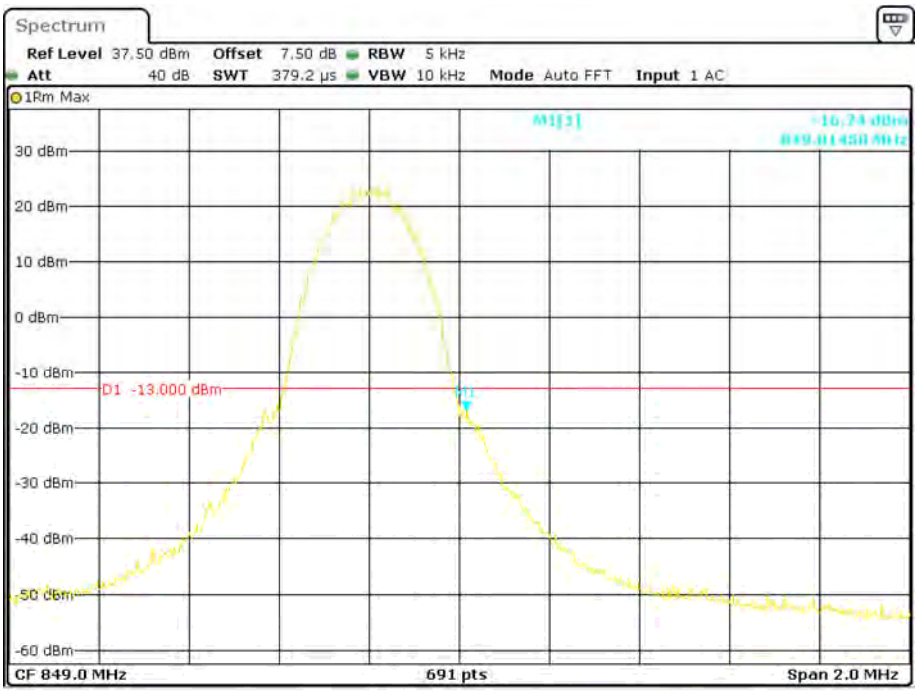
Date: 8.FEB.2018 13:25:45

Cellular Band, Left Band Edge for EDGE Mode



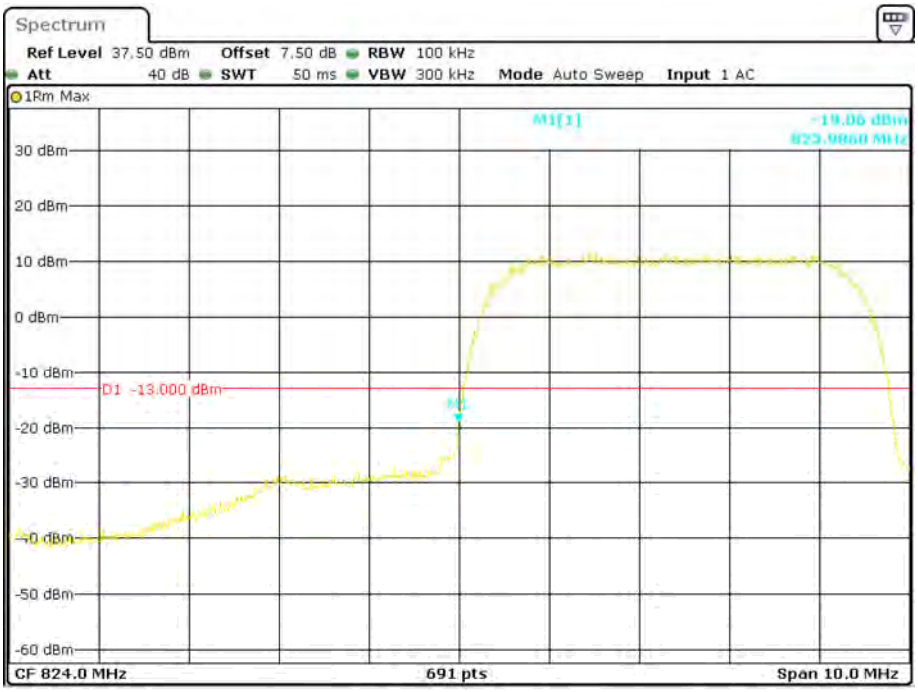
Date: 8.FEB.2018 13:37:51

Cellular Band, Right Band Edge for EDGE Mode



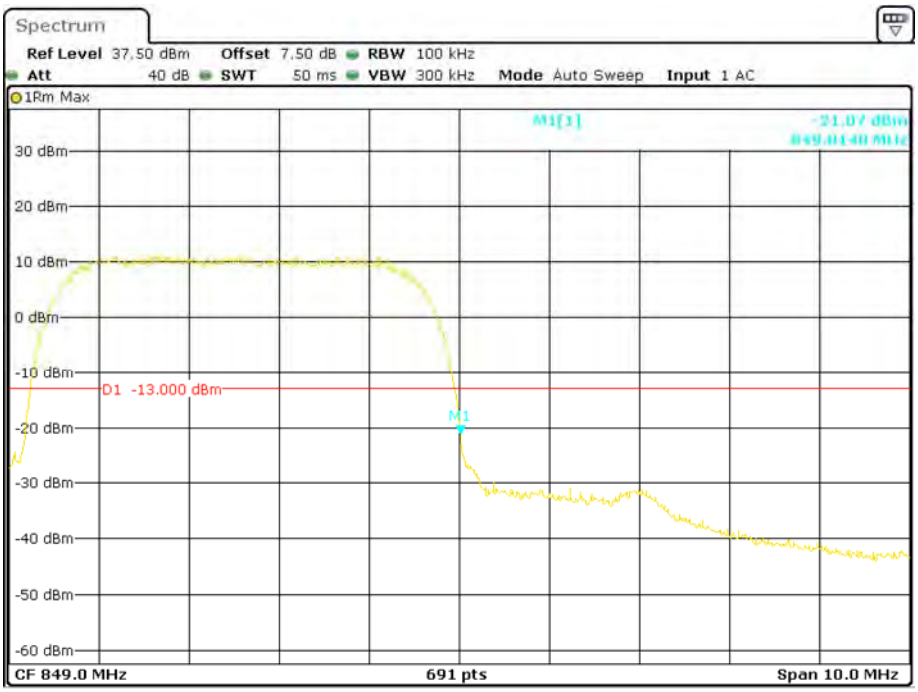
Date: 8.FEB.2018 13:39:13

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



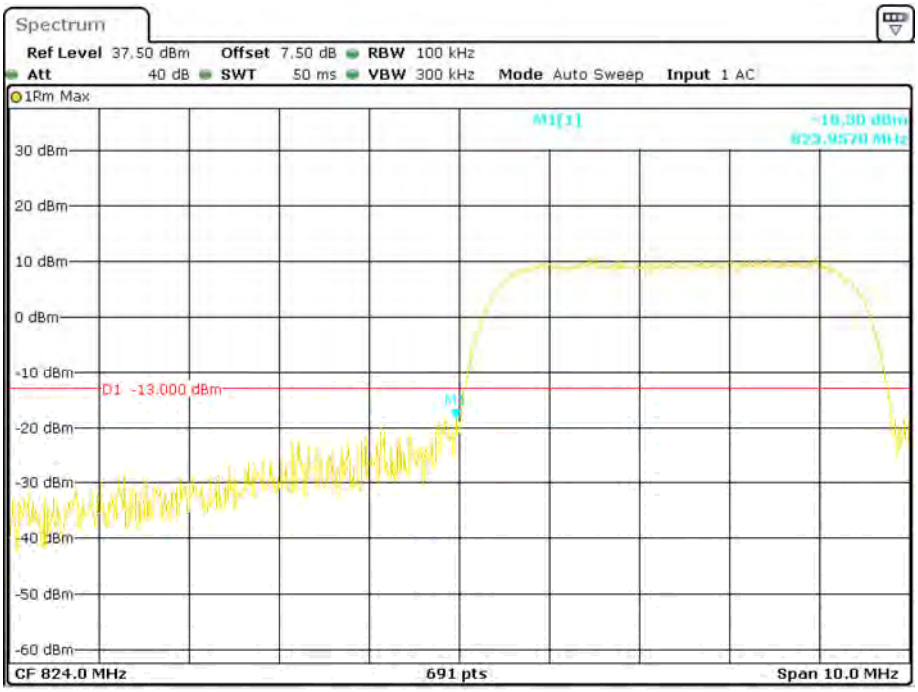
Date: 8.FEB.2018 11:21:11

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



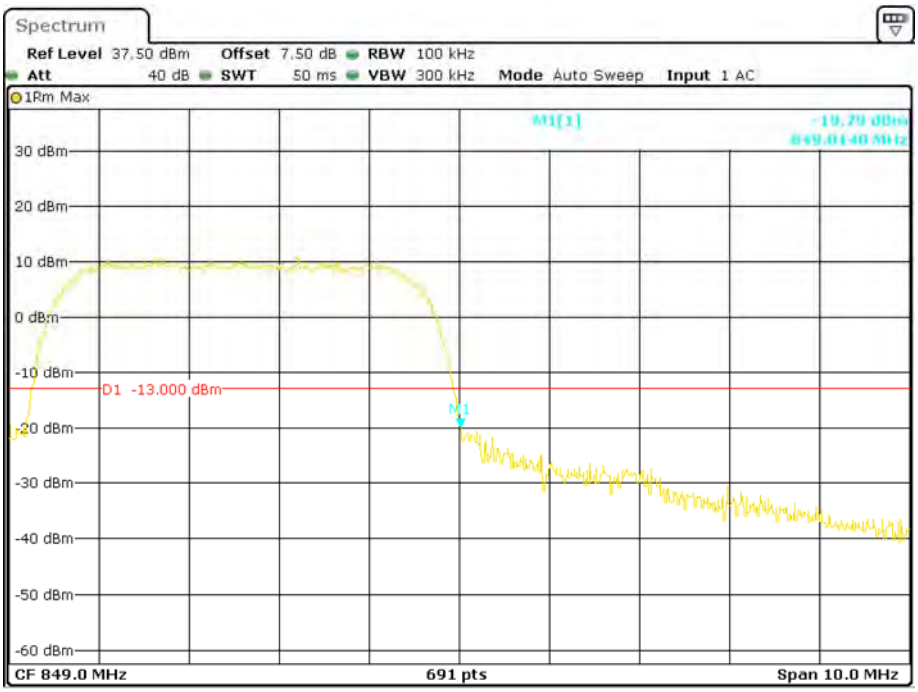
Date: 8.FEB.2018 11:21:50

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



Date: 8.FEB.2018 11:23:46

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



Date: 8.FEB.2018 11:22:59