

FCC PART 27
FCC PART 22H, PART 24E
MEASUREMENT AND TEST REPORT

For

UNNECTO HOLDING LIMITED

13/F HARBOUR COMMERCIAL BUILDING, 122-124 CONNAUGHT ROAD CENTRAL
SHEUNG WAN

FCC ID:2ADR3U5151

Report Type: Original Report	Product Type: 4G MOBILE PHONE
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Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *UNNECTO HOLDING LIMITED*'s product, model number: U5151 (*FCC ID: 2ADR3U5151*) or the "EUT" in this report was a *4G MOBILE PHONE*, which was measured approximately: 145 mm (L) × 74 mm (W) × 9 mm (H), rated with input voltage: DC 3.8V rechargeable Li-ion battery or DC 5.0V from adapter.

Adapter Information:

Model No.: CU-5151

Input: AC 100-240V, 50/60Hz, 250 mA

Output: DC 5.0V, 1000 mA

**All measurement and test data in this report was gathered from production sample serial number: 1602223 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2016-05-10.*

Objective

This type approval report is prepared on behalf of *UNNECTO HOLDING LIMITED* in accordance with Part 2, Part 22-Subpart H, Part 24-Subpart E and Part 27 of the Federal Communication Commission's rules.

The objective is to determine the compliance of 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 15B JBP, Part 15.247 DSS & DTS submissions with FCC ID: 2ADR3U5151.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-Part 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 radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement uncertainty with radiated emission is 5.81 dB for 30MHz-1GHz and 4.88 dB for above 1GHz, 1.95dB for conducted measurement.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2103. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

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.

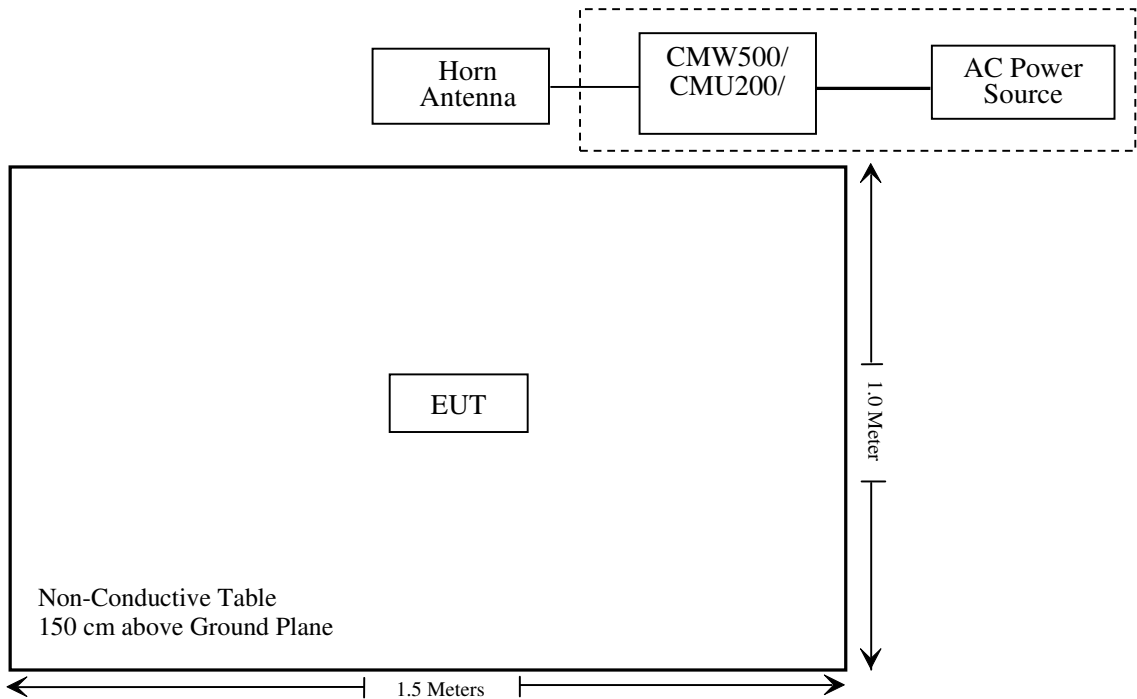
Equipment Modifications

No modifications were made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b)(1), §2.1093	RF Exposure Information	Compliance*
§2.1046; § 22.913 (a); § 24.232 (c); §27.50 (d) (i)	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53 (c)	Occupied Bandwidth	Compliance
§ 2.1051; § 22.917 (a); § 24.238 (a); §27.53(c) (g)	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53 (c) (g)	Spurious Radiated Emissions	Compliance
§ 22.917 (a); § 24.238 (a); §27.53 (c) (g);	Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliance

Compliance*: Please refer to SAR report released by BACL, report number: RSZ160510001-20.

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

Applicable Standard

FCC§1.1307(b), §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ160510001-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d) , Part 22H & 24E, Part 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 - RF OUTPUT POWER**Applicable Standards**

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..

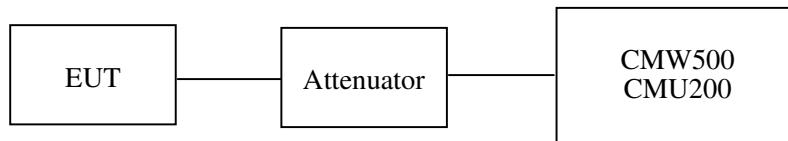
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz. The peak-to-average power ratio (PAR) of the transmitter output power must not exceed 13 dB.

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.

Test Procedure*Conducted method:*

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

*Radiated method:*

TIA603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
HP	Synthesized Sweeper	HP 8341B	2624A00116	2015-07-02	2016-07-01
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Sunol Sciences	Horn Antenna	DRH-118	A052604	2014-12-29	2017-12-28
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369223410-001	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	104PEA	218124002	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	1	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	2	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	3	2015-06-15	2016-06-15
WEINSCHL	10dB Attenuator	5324	AU0709	2015-06-18	2016-06-18

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

Test Data**Environmental Conditions**

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

The testing was performed by Haiguo Li on 2016-05-19.

Conducted Power**Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	33.26	38.45
	190	836.6	33.30	38.45
	251	848.8	33.27	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	33.24	32.50	31.76	31.64	38.45
	190	836.6	33.25	32.23	31.42	31.26	38.45
	251	848.8	33.23	32.16	31.40	31.22	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	27.25	26.59	25.96	24.78	38.45
	190	836.6	27.19	26.53	25.86	24.70	38.45
	251	848.8	27.11	26.43	25.82	24.63	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		22.54	22.61	22.63
		HSDPA	1	21.44	21.51	21.54
			2	21.37	21.48	21.49
			3	21.49	21.60	21.62
			4	21.32	21.38	21.46
		HSUPA	1	20.88	21.01	20.92
			2	20.81	20.93	20.82
			3	20.93	21.08	21.01
			4	20.76	20.93	20.88
			5	20.93	21.13	20.95
		HSPA+	1	20.92	21.25	20.83

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	30.49	33
	661	1880.0	30.58	33
	810	1909.8	30.48	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	30.50	29.57	28.86	26.53	33
	661	1880.0	30.60	29.46	28.81	26.79	33
	810	1909.8	30.49	29.65	29.01	26.93	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.28	26.06	24.80	24.02	33
	661	1880.0	26.24	25.89	24.73	23.96	33
	810	1909.8	26.32	26.06	24.79	23.99	33

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		22.66	22.64	22.64
		HSDPA	1	21.57	21.41	21.67
			2	21.46	21.37	21.60
			3	21.61	21.54	21.75
			4	21.47	21.28	21.55
		HSUPA	1	20.93	20.88	20.98
			2	20.88	20.81	20.92
			3	21.06	21.01	21.08
			4	20.83	20.77	20.88
			5	21.04	20.96	21.02
		HSPA+	1	21.07	20.92	21.15

Peak-to-average ratio (PAR)**Cellular Band**

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.26	13
	Middle	0.23	13
	High	0.25	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.58	13
	Middle	2.41	13
	High	2.57	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.57	13
	Middle	3.46	13
	High	3.52	13
HSDPA (16QAM)	Low	3.54	13
	Middle	3.45	13
	High	3.57	13
HSUPA (BPSK)	Low	3.52	13
	Middle	3.43	13
	High	3.51	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.24	13
	Middle	0.22	13
	High	0.29	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.38	13
	Middle	2.32	13
	High	2.33	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.25	13
	Middle	3.17	13
	High	3.27	13
HSDPA (16QAM)	Low	3.28	13
	Middle	3.12	13
	High	3.25	13
HSUPA (BPSK)	Low	3.29	13
	Middle	3.14	13
	High	3.26	13

Radiated Power**ERP & EIRP****GSM Mode:**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP for Cellular Band (Part 22H), Middle Channel										
836.60	101.54	135	1.5	H	31.0	0.69	0	30.31	38.45	8.14
836.60	98.23	75	1.5	V	27.7	0.69	0	27.01	38.45	11.44
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	90.57	258	1.5	H	21.9	1.40	7.30	27.80	33	5.2
1880.00	89.64	209	1.1	V	20.4	1.40	7.30	26.30	33	6.7

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)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP for Cellular Band (Part 22H), Low Channel										
826.40	98.26	142	1.7	H	27.8	0.69	0	27.11	38.45	11.34
826.40	98.15	113	1.5	V	27.7	0.69	0	27.01	38.45	11.44
EIRP for PCS Band (Part 24E), High Channel										
1909.80	89.47	21	2.4	H	20.8	1.40	7.30	26.70	33	6.3
1909.80	88.39	329	2.4	V	19.2	1.40	7.30	25.10	33	7.9

WCDMA Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP for WCDMA Band V (Part 22H), High Channel										
846.60	91.76	102	1.7	H	21.3	0.69	0	20.57	38.45	17.88
846.60	91.56	127	1.7	V	21.1	0.69	0	20.37	38.45	18.08
EIRP for WCDMA Band II (Part 24E), Low Channel										
1852.40	85.56	103	1.8	H	16.9	1.40	7.30	22.80	33	10.20
1852.40	84.34	134	2.5	V	15.1	1.40	7.30	21.00	33	12.00

Note:

All above data were tested with no amplifier.

Absolute Level = SG 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	22.19	22.49	22.20
		RB Size=1, RB Offset=2	22.27	22.63	22.42
		RB Size=1, RB Offset=5	22.20	22.46	22.19
		RB Size=3, RB Offset=0	22.33	22.65	22.36
		RB Size=3, RB Offset=1	22.23	22.60	22.25
		RB Size=3, RB Offset=2	22.32	22.66	22.53
		RB Size=6, RB Offset=0	22.24	22.57	22.26
	16QAM	RB Size=1, RB Offset=0	22.38	22.75	22.45
		RB Size=1, RB Offset=2	22.16	22.50	22.27
		RB Size=1, RB Offset=5	22.36	22.66	22.43
		RB Size=3, RB Offset=0	22.17	22.50	22.24
		RB Size=3, RB Offset=1	22.27	22.65	22.43
		RB Size=3, RB Offset=2	22.25	22.63	22.33
		RB Size=6, RB Offset=0	22.43	22.77	22.48
3.0	QPSK	RB Size=1, RB Offset=0	22.29	22.53	22.32
		RB Size=1, RB Offset=7	22.36	22.74	22.48
		RB Size=1, RB Offset=14	22.16	22.46	22.20
		RB Size=8, RB Offset=0	22.28	22.60	22.37
		RB Size=8, RB Offset=4	22.15	22.50	22.22
		RB Size=8, RB Offset=7	22.30	22.58	22.36
		RB Size=15, RB Offset=0	22.21	22.57	22.28
	16QAM	RB Size=1, RB Offset=0	22.32	22.66	22.45
		RB Size=1, RB Offset=7	22.24	22.61	22.33
		RB Size=1, RB Offset=14	22.35	22.62	22.48
		RB Size=8, RB Offset=0	22.22	22.49	22.38
		RB Size=8, RB Offset=4	22.38	22.64	22.52
		RB Size=8, RB Offset=7	22.29	22.48	22.31
		RB Size=15, RB Offset=0	22.42	22.59	22.47

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.33	22.56	22.50
		RB Size=1, RB Offset=12	22.43	22.74	22.59
		RB Size=1, RB Offset=24	22.38	22.58	22.39
		RB Size=12, RB Offset=0	22.47	22.70	22.57
		RB Size=12, RB Offset=6	22.24	22.48	22.36
		RB Size=12, RB Offset=11	22.43	22.66	22.51
		RB Size=25, RB Offset=0	22.25	22.47	22.35
	16QAM	RB Size=1, RB Offset=0	22.38	22.63	22.51
		RB Size=1, RB Offset=12	22.36	22.57	22.40
		RB Size=1, RB Offset=24	22.52	22.73	22.60
		RB Size=12, RB Offset=0	22.32	22.51	22.41
		RB Size=12, RB Offset=6	22.49	22.72	22.64
		RB Size=12, RB Offset=11	22.27	22.46	22.37
		RB Size=25, RB Offset=0	22.44	22.60	22.50
10.0	QPSK	RB Size=1, RB Offset=0	22.27	22.48	22.32
		RB Size=1, RB Offset=24	22.38	22.61	22.49
		RB Size=1, RB Offset=49	22.36	22.55	22.47
		RB Size=25, RB Offset=0	22.55	22.68	22.57
		RB Size=25, RB Offset=12	22.37	22.57	22.44
		RB Size=25, RB Offset=24	22.48	22.70	22.60
		RB Size=50, RB Offset=0	22.27	22.48	22.30
	16QAM	RB Size=1, RB Offset=0	22.45	22.60	22.53
		RB Size=1, RB Offset=24	22.27	22.41	22.37
		RB Size=1, RB Offset=49	22.43	22.58	22.55
		RB Size=25, RB Offset=0	22.32	22.56	22.34
		RB Size=25, RB Offset=12	22.48	22.68	22.64
		RB Size=25, RB Offset=24	22.35	22.54	22.42
		RB Size=50, RB Offset=0	22.49	22.64	22.61

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	22.20	22.41	22.38
		RB Size=1, RB Offset=37	22.41	22.64	22.53
		RB Size=1, RB Offset=74	22.26	22.50	22.36
		RB Size=36, RB Offset=0	22.40	22.63	22.49
		RB Size=36, RB Offset=18	22.29	22.47	22.50
		RB Size=36, RB Offset=37	22.53	22.75	22.59
		RB Size=75, RB Offset=0	22.30	22.56	22.42
	16QAM	RB Size=1, RB Offset=0	22.49	22.74	22.59
		RB Size=1, RB Offset=37	22.21	22.48	22.35
		RB Size=1, RB Offset=74	22.45	22.60	22.47
		RB Size=36, RB Offset=0	22.22	22.49	22.30
		RB Size=36, RB Offset=18	22.42	22.63	22.51
		RB Size=36, RB Offset=37	22.25	22.53	22.45
		RB Size=75, RB Offset=0	22.55	22.72	22.56
20.0	QPSK	RB Size=1, RB Offset=0	22.32	22.61	22.37
		RB Size=1, RB Offset=49	22.49	22.69	22.56
		RB Size=1, RB Offset=99	22.24	22.47	22.34
		RB Size=50, RB Offset=0	22.39	22.66	22.54
		RB Size=50, RB Offset=24	22.24	22.44	22.37
		RB Size=50, RB Offset=49	22.39	22.65	22.50
		RB Size=100, RB Offset=0	22.31	22.57	22.47
	16QAM	RB Size=1, RB Offset=0	22.44	22.76	22.62
		RB Size=1, RB Offset=49	22.27	22.55	22.44
		RB Size=1, RB Offset=99	22.46	22.78	22.57
		RB Size=50, RB Offset=0	22.25	22.44	22.33
		RB Size=50, RB Offset=24	22.40	22.57	22.51
		RB Size=50, RB Offset=49	22.20	22.49	22.37
		RB Size=100, RB Offset=0	22.41	22.58	22.47

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.48	13	Pass
QPSK (100%RB Size)	3.87	13	Pass
16QAM (1RB Size)	3.55	13	Pass
16QAM (100%RB Size)	3.91	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)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	85.23	144	1.9	H	16.6	1.40	7.30	22.50	33
1880.00	84.31	262	1.1	V	15.1	1.40	7.30	21.00	33
3 MHz Bandwidth									
1880.00	85.46	5	2.5	H	16.8	1.40	7.30	22.70	33
1880.00	84.27	324	2.4	V	15.0	1.40	7.30	20.90	33
5 MHz Bandwidth									
1880.00	85.41	88	1.7	H	16.7	1.40	7.30	22.60	33
1880.00	84.37	259	2.2	V	15.1	1.40	7.30	21.00	33
10MHz Bandwidth									
1880.00	85.46	159	1.6	H	16.8	1.40	7.30	22.70	33
1880.00	84.27	119	1.4	V	15.0	1.40	7.30	20.90	33
15 MHz Bandwidth									
1880.00	85.41	77	1.6	H	16.7	1.40	7.30	22.60	33
1880.00	84.33	36	1.6	V	15.1	1.40	7.30	21.00	33
20 MHz Bandwidth									
1880.00	85.38	309	1.7	H	16.7	1.40	7.30	22.60	33
1880.00	84.26	158	2.3	V	15.0	1.40	7.30	20.90	33

16-QAM

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1880.00	85.32	296	1.3	H	16.6	1.40	7.30	22.50	33
1880.00	84.24	120	1.9	V	15.0	1.40	7.30	20.90	33
3 MHz Bandwidth									
1880.00	85.37	192	1.6	H	16.7	1.40	7.30	22.60	33
1880.00	84.32	302	1.1	V	15.1	1.40	7.30	21.00	33
5 MHz Bandwidth									
1880.00	85.25	91	1.9	H	16.6	1.40	7.30	22.50	33
1880.00	84.23	15	1.9	V	15.0	1.40	7.30	20.90	33
10MHz Bandwidth									
1880.00	85.37	5	1.2	H	16.7	1.40	7.30	22.60	33
1880.00	84.26	290	2.1	V	15.0	1.40	7.30	20.90	33
15 MHz Bandwidth									
1880.00	85.35	210	1.2	H	16.7	1.40	7.30	22.60	33
1880.00	84.34	193	1.4	V	15.1	1.40	7.30	21.00	33
20 MHz Bandwidth									
1880.00	85.39	84	1.2	H	16.7	1.40	7.30	22.60	33
1880.00	84.23	55	1.6	V	15.0	1.40	7.30	20.90	33

LTE Band 4:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.41	22.54	22.21
		RB Size=1, RB Offset=2	22.56	22.77	22.40
		RB Size=1, RB Offset=5	22.34	22.55	22.27
		RB Size=3, RB Offset=0	22.51	22.71	22.39
		RB Size=3, RB Offset=1	22.46	22.57	22.30
		RB Size=3, RB Offset=2	22.61	22.88	22.52
		RB Size=6, RB Offset=0	22.41	22.61	22.32
	16QAM	RB Size=1, RB Offset=0	22.58	22.74	22.49
		RB Size=1, RB Offset=2	22.36	22.57	22.22
		RB Size=1, RB Offset=5	22.53	22.75	22.37
		RB Size=3, RB Offset=0	22.33	22.62	22.23
		RB Size=3, RB Offset=1	22.53	22.71	22.44
		RB Size=3, RB Offset=2	22.41	22.69	22.32
		RB Size=6, RB Offset=0	22.63	22.83	22.44
3.0	QPSK	RB Size=1, RB Offset=0	22.45	22.71	22.26
		RB Size=1, RB Offset=7	22.59	22.82	22.56
		RB Size=1, RB Offset=14	22.34	22.56	22.20
		RB Size=8, RB Offset=0	22.50	22.71	22.38
		RB Size=8, RB Offset=4	22.39	22.57	22.23
		RB Size=8, RB Offset=7	22.55	22.73	22.40
		RB Size=15, RB Offset=0	22.43	22.64	22.29
	16QAM	RB Size=1, RB Offset=0	22.58	22.79	22.47
		RB Size=1, RB Offset=7	22.51	22.65	22.30
		RB Size=1, RB Offset=14	22.67	22.76	22.43
		RB Size=8, RB Offset=0	22.33	22.59	22.22
		RB Size=8, RB Offset=4	22.50	22.68	22.39
		RB Size=8, RB Offset=7	22.41	22.62	22.21
		RB Size=15, RB Offset=0	22.55	22.75	22.35

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	22.42	22.62	22.30
		RB Size=1, RB Offset=12	22.53	22.78	22.49
		RB Size=1, RB Offset=24	22.52	22.70	22.30
		RB Size=12, RB Offset=0	22.64	22.78	22.41
		RB Size=12, RB Offset=6	22.41	22.54	22.27
		RB Size=12, RB Offset=11	22.50	22.69	22.37
		RB Size=25, RB Offset=0	22.39	22.61	22.21
	16QAM	RB Size=1, RB Offset=0	22.54	22.70	22.39
		RB Size=1, RB Offset=12	22.45	22.63	22.37
		RB Size=1, RB Offset=24	22.59	22.73	22.44
		RB Size=12, RB Offset=0	22.51	22.72	22.33
		RB Size=12, RB Offset=6	22.58	22.80	22.47
		RB Size=12, RB Offset=11	22.49	22.66	22.33
		RB Size=25, RB Offset=0	22.54	22.85	22.50
10.0	QPSK	RB Size=1, RB Offset=0	22.43	22.60	22.37
		RB Size=1, RB Offset=24	22.55	22.73	22.50
		RB Size=1, RB Offset=49	22.40	22.61	22.28
		RB Size=25, RB Offset=0	22.57	22.73	22.40
		RB Size=25, RB Offset=12	22.35	22.57	22.19
		RB Size=25, RB Offset=24	22.50	22.75	22.35
		RB Size=50, RB Offset=0	22.51	22.69	22.31
	16QAM	RB Size=1, RB Offset=0	22.61	22.84	22.46
		RB Size=1, RB Offset=24	22.47	22.68	22.29
		RB Size=1, RB Offset=49	22.54	22.83	22.45
		RB Size=25, RB Offset=0	22.35	22.62	22.20
		RB Size=25, RB Offset=12	22.53	22.69	22.44
		RB Size=25, RB Offset=24	22.33	22.57	22.23
		RB Size=50, RB Offset=0	22.55	22.78	22.40

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	22.47	22.74	22.29
		RB Size=1, RB Offset=37	22.59	22.81	22.53
		RB Size=1, RB Offset=74	22.39	22.63	22.33
		RB Size=36, RB Offset=0	22.63	22.82	22.49
		RB Size=36, RB Offset=18	22.41	22.60	22.21
		RB Size=36, RB Offset=37	22.54	22.77	22.41
		RB Size=75, RB Offset=0	22.35	22.53	22.27
	16QAM	RB Size=1, RB Offset=0	22.57	22.75	22.39
		RB Size=1, RB Offset=37	22.49	22.67	22.31
		RB Size=1, RB Offset=74	22.57	22.83	22.44
		RB Size=36, RB Offset=0	22.44	22.63	22.33
		RB Size=36, RB Offset=18	22.65	22.83	22.45
		RB Size=36, RB Offset=37	22.41	22.61	22.20
		RB Size=75, RB Offset=0	22.50	22.71	22.39
20.0	QPSK	RB Size=1, RB Offset=0	22.34	22.55	22.21
		RB Size=1, RB Offset=49	22.51	22.78	22.36
		RB Size=1, RB Offset=99	22.54	22.71	22.25
		RB Size=50, RB Offset=0	22.54	22.78	22.46
		RB Size=50, RB Offset=24	22.37	22.65	22.30
		RB Size=50, RB Offset=49	22.63	22.83	22.48
		RB Size=100, RB Offset=0	22.36	22.55	22.23
	16QAM	RB Size=1, RB Offset=0	22.56	22.77	22.36
		RB Size=1, RB Offset=49	22.40	22.57	22.26
		RB Size=1, RB Offset=99	22.50	22.77	22.41
		RB Size=50, RB Offset=0	22.44	22.63	22.31
		RB Size=50, RB Offset=24	22.67	22.82	22.41
		RB Size=50, RB Offset=49	22.51	22.66	22.33
		RB Size=100, RB Offset=0	22.62	22.88	22.47

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	3.68	13	Pass
QPSK(100%RB Size)	4.12	13	Pass
16QAM (1RB Size)	3.75	13	Pass
16QAM (100%RB Size)	4.19	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)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	85.76	19	1.8	H	17.0	1.60	6.90	22.30	30
1732.50	84.86	327	1.3	V	15.6	1.60	6.90	20.90	30
3 MHz Bandwidth									
1732.50	85.71	63	2.2	H	16.9	1.60	6.90	22.20	30
1732.50	84.64	262	2.2	V	15.4	1.60	6.90	20.70	30
5 MHz Bandwidth									
1732.50	85.85	112	2.0	H	17.1	1.60	6.90	22.40	30
1732.50	84.69	156	2.4	V	15.5	1.60	6.90	20.80	30
10MHz Bandwidth									
1732.50	85.89	148	1.7	H	17.1	1.60	6.90	22.40	30
1732.50	84.74	282	2.3	V	15.5	1.60	6.90	20.80	30
15 MHz Bandwidth									
1732.50	85.83	327	2.0	H	17.0	1.60	6.90	22.30	30
1732.50	84.79	202	1.4	V	15.6	1.60	6.90	20.90	30
20 MHz Bandwidth									
1732.50	85.87	295	2.3	H	17.1	1.60	6.90	22.40	30
1732.50	84.72	217	2.0	V	15.5	1.60	6.90	20.80	30

16-QAM

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	85.79	66	1.9	H	17.0	1.60	6.90	22.30	30
1732.50	84.78	126	2.5	V	15.6	1.60	6.90	20.90	30
3 MHz Bandwidth									
1732.50	85.72	259	2.4	H	16.9	1.60	6.90	22.20	30
1732.50	84.67	90	1.8	V	15.5	1.60	6.90	20.80	30
5 MHz Bandwidth									
1732.50	85.68	254	1.0	H	16.9	1.60	6.90	22.20	30
1732.50	84.61	143	1.6	V	15.4	1.60	6.90	20.70	30
10MHz Bandwidth									
1732.50	85.62	58	1.3	H	16.8	1.60	6.90	22.10	30
1732.50	84.57	346	2.4	V	15.4	1.60	6.90	20.70	30
15 MHz Bandwidth									
1732.50	85.78	87	2.1	H	17.0	1.60	6.90	22.30	30
1732.50	84.69	110	1.3	V	15.5	1.60	6.90	20.80	30
20 MHz Bandwidth									
1732.50	85.73	212	1.6	H	16.9	1.60	6.90	22.20	30
1732.50	84.65	249	1.8	V	15.4	1.60	6.90	20.70	30

LTE Band 12:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.52	22.93	22.63
		RB Size=1, RB Offset=2	22.67	23.05	22.78
		RB Size=1, RB Offset=5	22.51	22.84	22.60
		RB Size=3, RB Offset=0	22.69	23.08	22.73
		RB Size=3, RB Offset=1	22.58	22.99	22.66
		RB Size=3, RB Offset=2	22.71	23.14	22.84
		RB Size=6, RB Offset=0	22.64	22.97	22.73
	16QAM	RB Size=1, RB Offset=0	22.73	23.17	22.76
		RB Size=1, RB Offset=2	22.52	22.93	22.63
		RB Size=1, RB Offset=5	22.53	22.90	22.61
		RB Size=3, RB Offset=0	22.69	23.08	22.79
		RB Size=3, RB Offset=1	22.49	22.83	22.61
		RB Size=3, RB Offset=2	22.74	23.00	22.79
		RB Size=6, RB Offset=0	22.56	22.96	22.68
3.0	QPSK	RB Size=1, RB Offset=0	22.78	23.16	22.83
		RB Size=1, RB Offset=7	22.61	22.91	22.70
		RB Size=1, RB Offset=14	22.80	23.04	22.88
		RB Size=8, RB Offset=0	22.52	22.89	22.61
		RB Size=8, RB Offset=4	22.75	23.05	22.77
		RB Size=8, RB Offset=7	22.50	22.86	22.56
		RB Size=15, RB Offset=0	22.72	23.00	22.71
	16QAM	RB Size=1, RB Offset=0	22.56	23.01	22.68
		RB Size=1, RB Offset=7	22.80	23.09	22.84
		RB Size=1, RB Offset=14	22.60	22.95	22.61
		RB Size=8, RB Offset=0	22.84	23.07	22.80
		RB Size=8, RB Offset=4	22.49	22.90	22.58
		RB Size=8, RB Offset=7	22.71	23.03	22.77
		RB Size=15, RB Offset=0	22.57	22.86	22.63

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.74	23.07	22.80
		RB Size=1, RB Offset=12	22.60	23.01	22.71
		RB Size=1, RB Offset=24	22.77	23.09	22.82
		RB Size=12, RB Offset=0	22.69	22.97	22.67
		RB Size=12, RB Offset=6	22.86	23.17	22.85
		RB Size=12, RB Offset=11	22.58	22.84	22.59
		RB Size=25, RB Offset=0	22.66	23.04	22.76
	16QAM	RB Size=1, RB Offset=0	22.57	22.85	22.57
		RB Size=1, RB Offset=12	22.70	23.07	22.81
		RB Size=1, RB Offset=24	22.68	22.92	22.67
		RB Size=12, RB Offset=0	22.74	23.10	22.89
		RB Size=12, RB Offset=6	22.69	22.91	22.67
		RB Size=12, RB Offset=11	22.74	23.13	22.92
		RB Size=25, RB Offset=0	22.49	22.84	22.59
10.0	QPSK	RB Size=1, RB Offset=0	22.75	23.00	22.78
		RB Size=1, RB Offset=24	22.50	22.88	22.59
		RB Size=1, RB Offset=49	22.72	23.02	22.73
		RB Size=25, RB Offset=0	22.57	22.89	22.69
		RB Size=25, RB Offset=12	22.82	23.08	22.84
		RB Size=25, RB Offset=24	22.62	22.96	22.68
		RB Size=50, RB Offset=0	22.57	22.84	22.63
	16QAM	RB Size=1, RB Offset=0	22.66	23.04	22.74
		RB Size=1, RB Offset=24	22.57	22.87	22.58
		RB Size=1, RB Offset=49	22.72	22.99	22.76
		RB Size=25, RB Offset=0	22.61	22.93	22.72
		RB Size=25, RB Offset=12	22.74	23.13	22.81
		RB Size=25, RB Offset=24	22.65	22.97	22.69
		RB Size=50, RB Offset=0	22.79	23.11	22.83

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	4.37	13	Pass
QPSK(100%RB Size)	5.36	13	Pass
16QAM (1RB Size)	4.22	13	Pass
16QAM (100%RB Size)	5.42	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)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
707.00	93.34	152	2.2	H	22.8	0.62	0	22.18	34.77
707.00	92.86	123	1.8	V	22.4	0.62	0	21.78	34.77
3 MHz Bandwidth									
707.00	93.57	132	1.6	H	23.1	0.62	0	22.48	34.77
707.00	92.46	211	2.1	V	22.0	0.62	0	21.38	34.77
5 MHz Bandwidth									
707.00	93.52	153	1.7	H	23.0	0.62	0	22.38	34.77
707.00	92.41	105	2.1	V	21.9	0.62	0	21.28	34.77
10 MHz Bandwidth									
707.00	93.78	123	2.0	H	23.3	0.62	0	22.68	34.77
707.00	92.89	78	1.5	V	22.4	0.62	0	21.78	34.77

16-QAM

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
707.00	93.46	152	2.2	H	23.0	0.62	0	22.38	34.77
707.00	92.84	123	1.8	V	22.3	0.62	0	21.68	34.77
3 MHz middle channel									
707.00	93.41	132	1.6	H	22.9	0.62	0	22.28	34.77
707.00	92.89	211	2.1	V	22.4	0.62	0	21.78	34.77
5 MHz middle channel									
707.00	93.53	153	1.7	H	23.0	0.62	0	22.38	34.77
707.00	92.76	105	2.1	V	22.3	0.62	0	21.68	34.77
10 MHz middle channel									
707.00	93.59	123	2.0	H	23.1	0.62	0	22.48	34.77
707.00	92.53	78	1.5	V	22.0	0.62	0	21.38	34.77

LTE Band 17:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.43	22.63	22.45
		RB Size=1, RB Offset=12	22.64	22.83	22.56
		RB Size=1, RB Offset=24	22.47	22.72	22.39
		RB Size=12, RB Offset=0	22.61	22.80	22.58
		RB Size=12, RB Offset=6	22.46	22.74	22.54
		RB Size=12, RB Offset=11	22.71	22.95	22.60
		RB Size=25, RB Offset=0	22.52	22.76	22.43
	16QAM	RB Size=1, RB Offset=0	22.73	22.91	22.71
		RB Size=1, RB Offset=12	22.46	22.64	22.42
		RB Size=1, RB Offset=24	22.67	22.87	22.59
		RB Size=12, RB Offset=0	22.45	22.67	22.46
		RB Size=12, RB Offset=6	22.60	22.87	22.58
		RB Size=12, RB Offset=11	22.59	22.70	22.51
		RB Size=25, RB Offset=0	22.73	22.97	22.71
10.0	QPSK	RB Size=1, RB Offset=0	22.48	22.75	22.50
		RB Size=1, RB Offset=24	22.68	22.97	22.69
		RB Size=1, RB Offset=49	22.50	22.66	22.44
		RB Size=25, RB Offset=0	22.66	22.86	22.59
		RB Size=25, RB Offset=12	22.42	22.67	22.45
		RB Size=25, RB Offset=24	22.57	22.87	22.65
		RB Size=50, RB Offset=0	22.57	22.79	22.55
	16QAM	RB Size=1, RB Offset=0	22.69	22.90	22.66
		RB Size=1, RB Offset=24	22.48	22.72	22.53
		RB Size=1, RB Offset=49	22.67	22.90	22.74
		RB Size=25, RB Offset=0	22.47	22.77	22.53
		RB Size=25, RB Offset=12	22.70	22.96	22.67
		RB Size=25, RB Offset=24	22.58	22.74	22.58
		RB Size=50, RB Offset=0	22.66	22.87	22.70

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	3.68	13	Pass
QPSK(100%RB Size)	5.72	13	Pass
16QAM (1RB Size)	3.78	13	Pass
16QAM (100%RB Size)	5.57	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)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
710.00	93.47	115	1.7	H	23.0	0.62	0	22.38	34.77
710.00	92.53	75	1.7	V	22.0	0.62	0	21.38	34.77
10 MHz Bandwidth									
710.00	93.53	103	1.7	H	23.0	0.62	0	22.38	34.77
710.00	92.67	225	1.7	V	22.2	0.62	0	21.58	34.77

16-QAM

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
5 MHz Bandwidth									
710.00	93.22	256	1.7	H	22.7	0.62	0	22.18	34.77
710.00	92.54	123	1.6	V	22.0	0.62	0	21.38	34.77
10 MHz middle channel									
710.00	93.37	145	1.6	H	22.9	0.62	0	22.38	34.77
710.00	92.79	126	1.5	V	22.3	0.62	0	21.68	34.77

Note:

All above data were tested with no amplifier

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

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

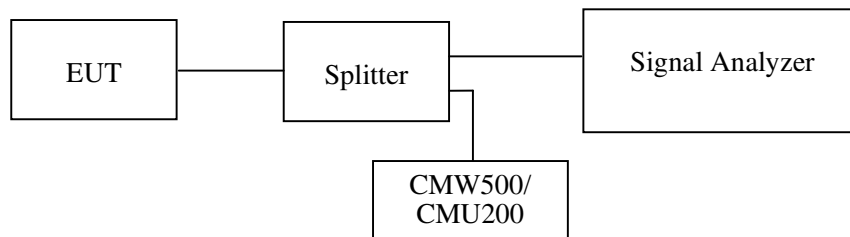
Applicable Standards

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 5 kHz (Cellular /PCS) & 100 kHz (WCDMA) and the 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23
Ducommun technologies	RF Cable	RG-214	4	2015-06-15	2016-06-15
WEINSCHTEL	10dB Attenuator	5321	AU0709	2015-06-18	2016-06-18

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

Test Data**Environmental Conditions**

Temperature:	24-25 °C
Relative Humidity:	50-53 %
ATM Pressure:	101.0kPa

The testing was performed by Haiguo Li from 2016-05-18 to 2016-05-19.

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	248.50	312.63
EGPRS(8PSK)	836.6	240.48	304.61

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.148	4.749
HSDPA (16QAM)	836.6	4.148	4.729
HSUPA (BPSK)	836.6	4.128	4.729

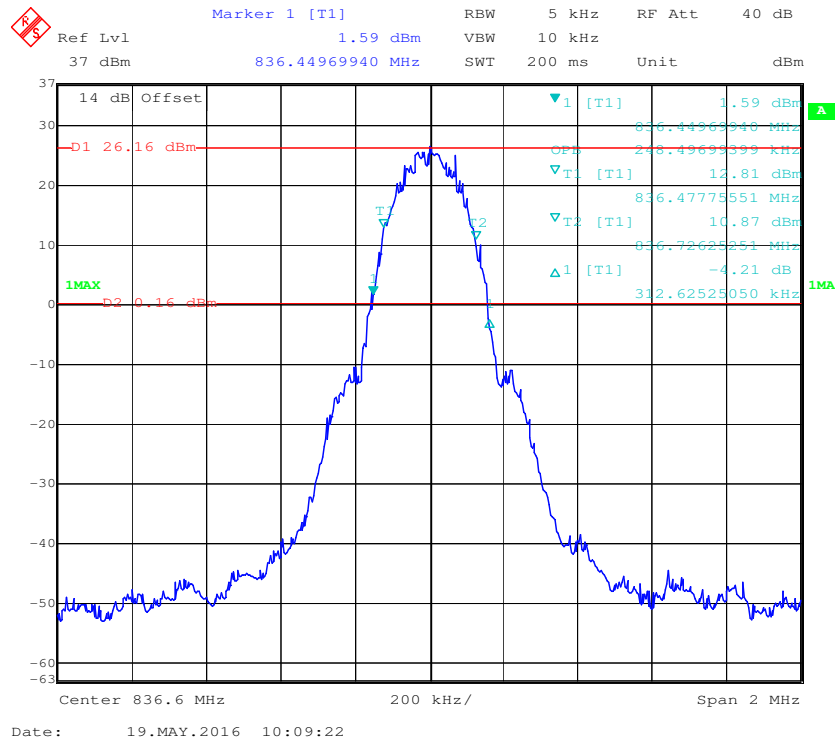
PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	240.48	312.63
EGPRS(8PSK)	1880.0	248.50	312.63

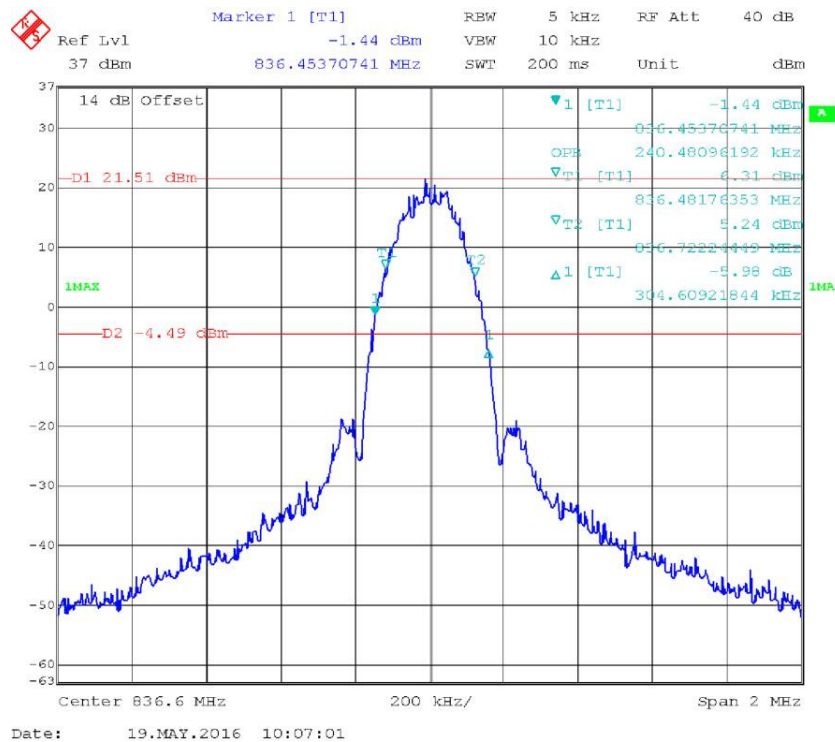
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.188	4.749
HSDPA (16QAM)	1880.0	4.168	4.790
HSUPA (BPSK)	1880.0	4.148	4.749

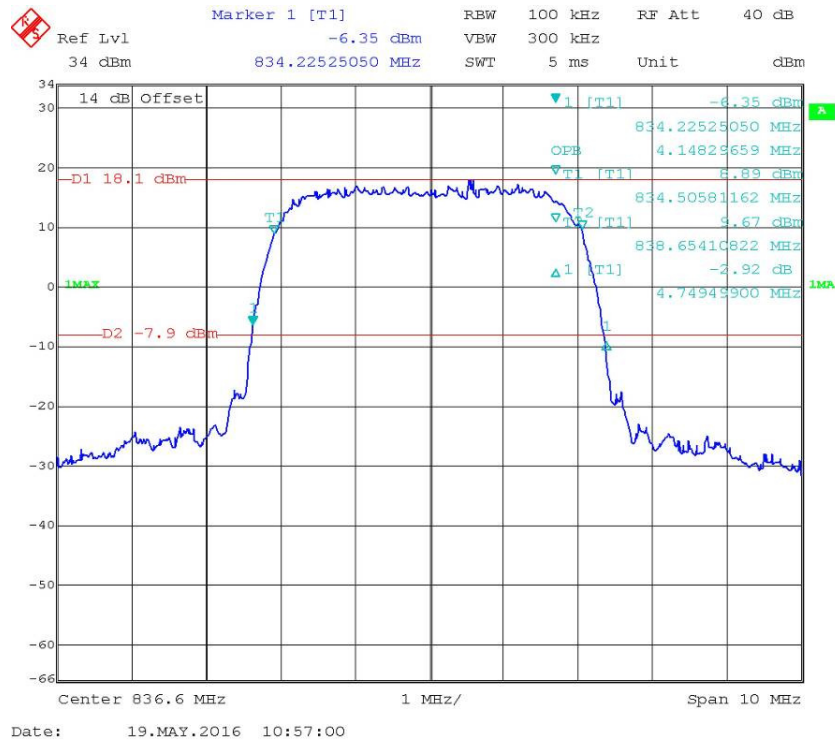
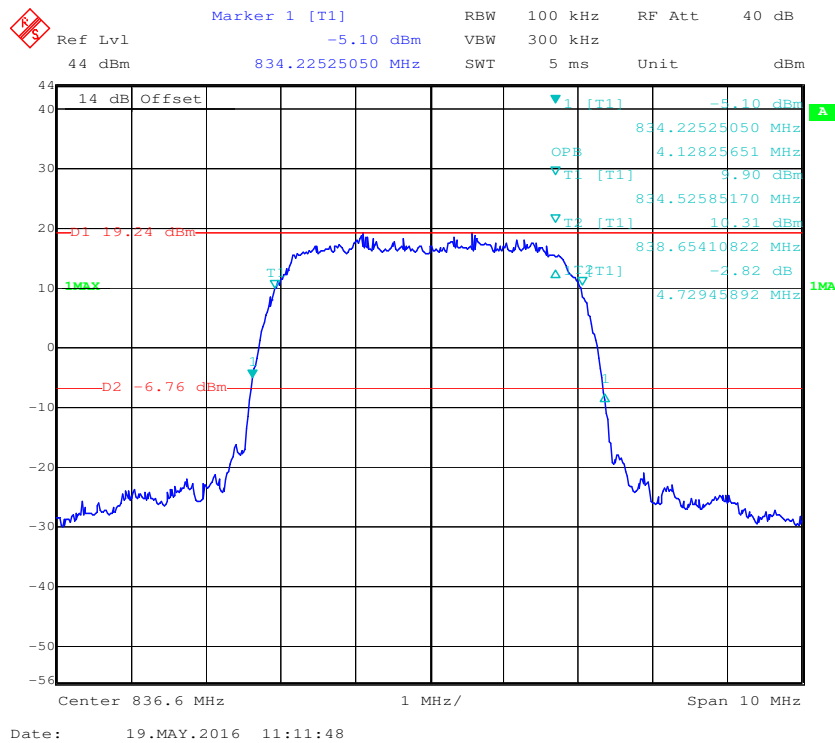
Cellular Band (Part 22H)

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

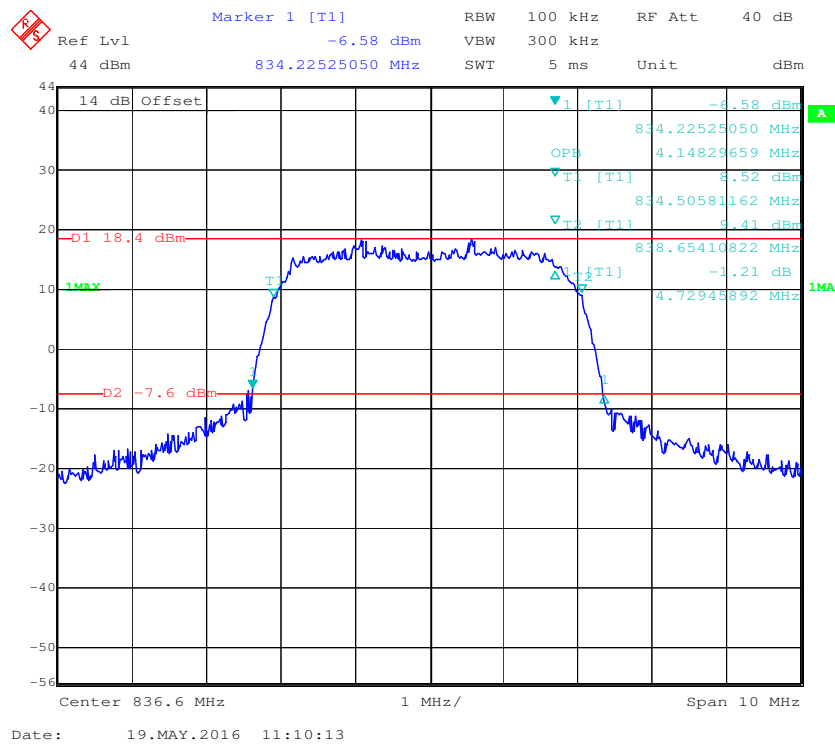


99%&26 dB Occupied Bandwidth for EDGE Mode



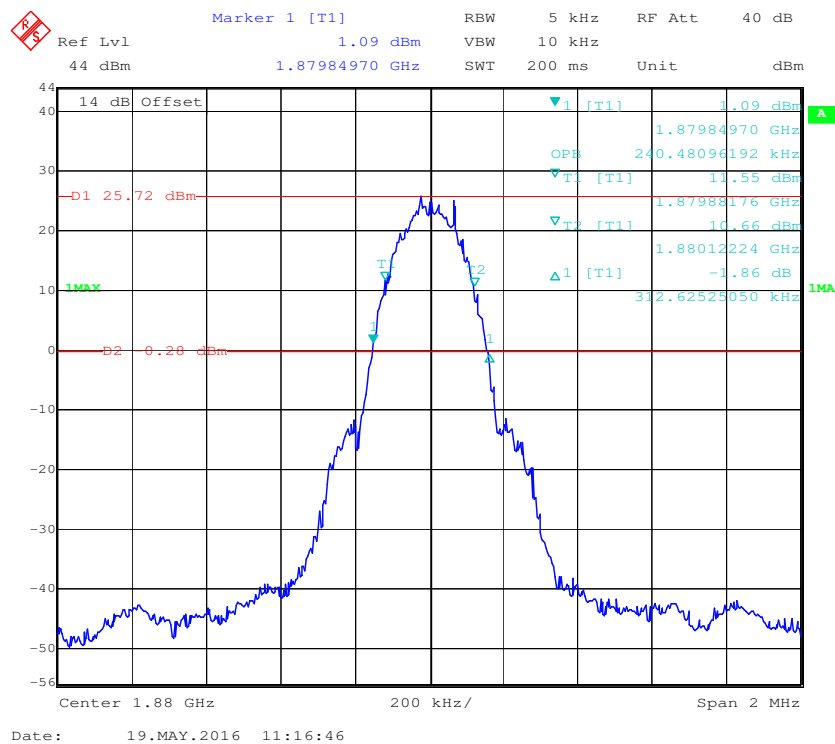
99%&26 dB Occupied Bandwidth for RMC (BPSK) Mode**99%&26 dB Occupied Bandwidth for HSUPA (BPSK) Mode**

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

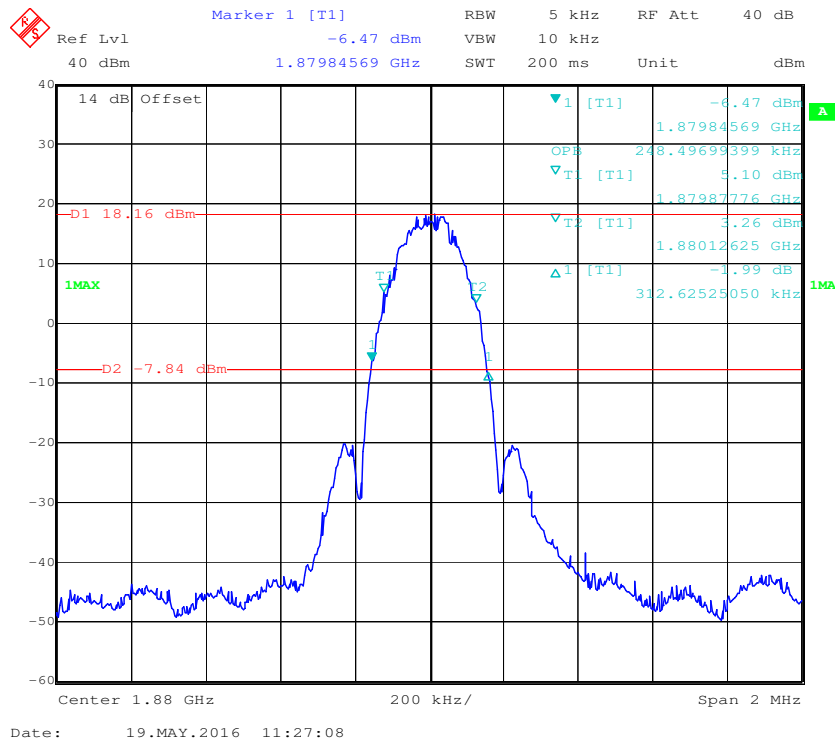


PCS Band (Part 24E)

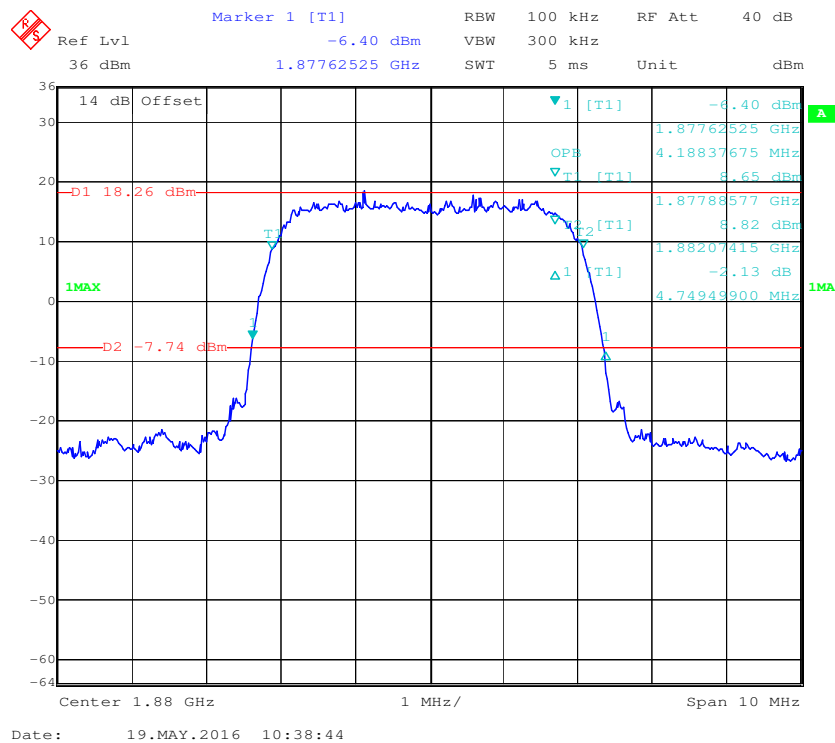
99%&26 dB Occupied Bandwidth for GSM (GMSK) Mode

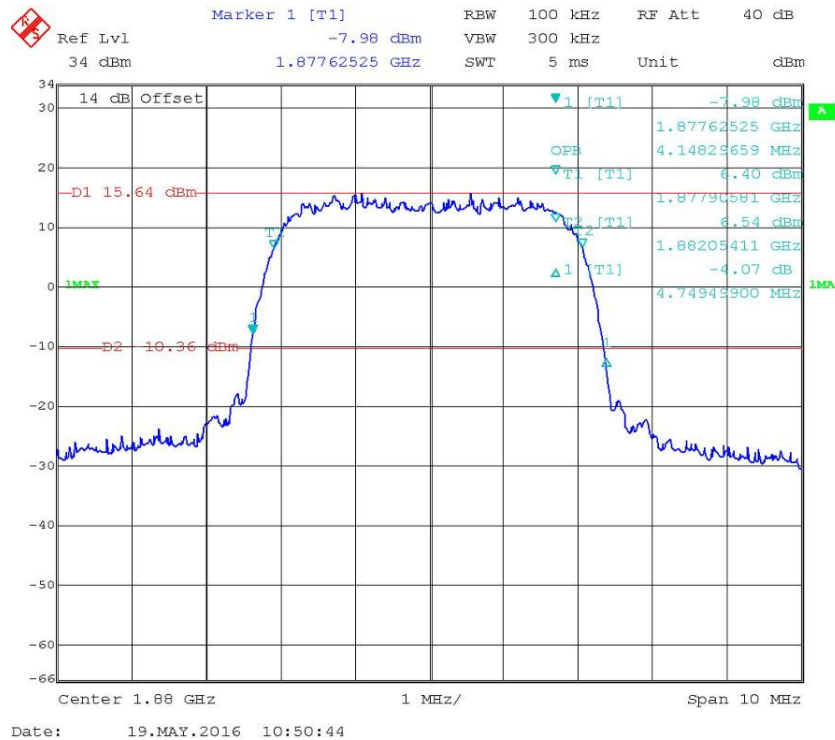
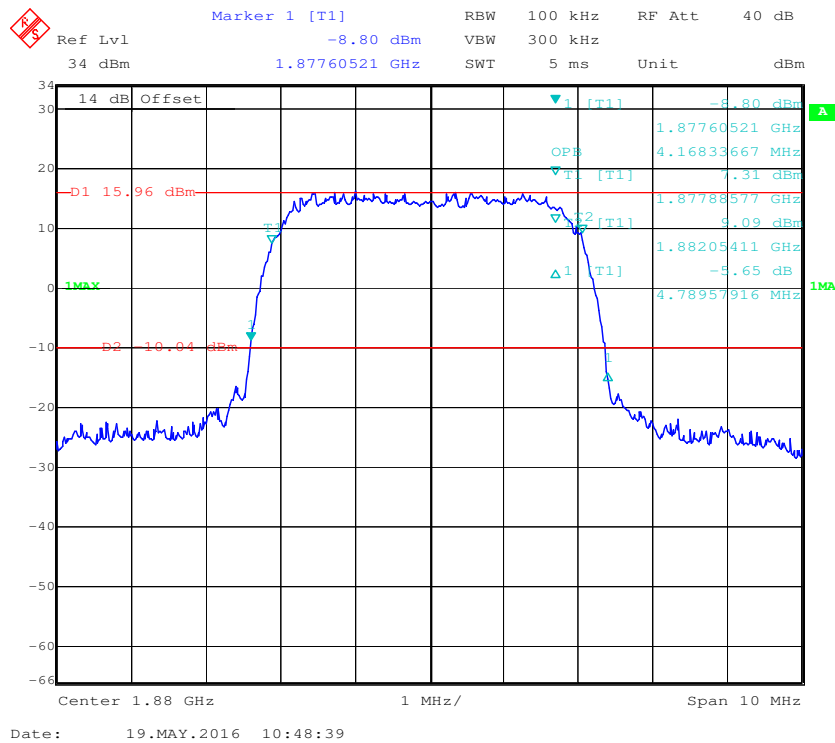


99%&26 dB Occupied Bandwidth for EGPRS Mode



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



99%&26 dB Occupied Bandwidth for HSUPA (BPSK) Mode**99%&26 dB Occupied Bandwidth for HSDPA (16QAM) Mode**

LTE Band 2: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.105	1.296
	16QAM	1.111	1.324
3.0	QPSK	2.693	2.946
	16QAM	2.705	2.982
5.0	QPSK	4.509	5.050
	16QAM	4.529	5.010
10.0	QPSK	8.978	9.699
	16QAM	8.938	9.739
15.0	QPSK	13.587	14.850
	16QAM	13.527	14.790
20.0	QPSK	17.876	19.399
	16QAM	17.876	19.399

Marker 1 [T1] RBW 30 kHz RF Att 30 dB
 Ref Lvl 16.67 dBm VBW 100 kHz
 34 dBm 1.88044609 GHz SWT 8 ms Unit dBm

Marker	Frequency (GHz)	Power (dBm)
1	1.88044609	16.67
2	1.88055832	5.80

Center 1.88 GHz 280 kHz/ Span 2.8 MHz

Date: 18.MAY.2016 14:54:49

Ref Lvl 34 dBm

Marker 1 [T1 ndB] 26.00 dB

RBW 30 kHz

RF Att 30 dB

VBW 100 kHz

SWT 8 ms

Unit dBm

14 dB Offset

15.58 dBm

1.88036754 GHz

26.00 dB

1.29619238 MHz

-10.03 dBm

1.87934629 GHz

-9.95 dBm

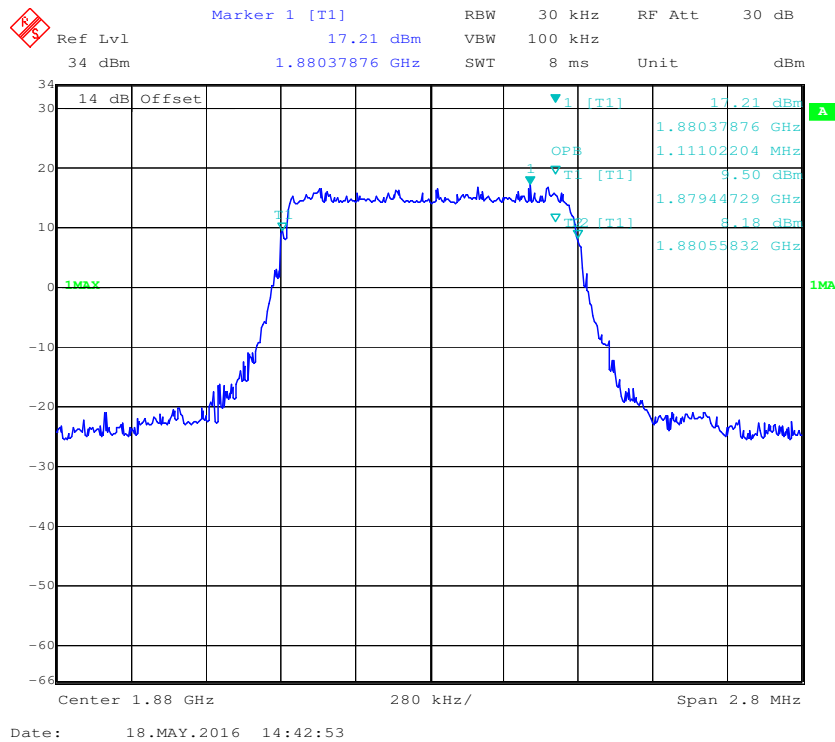
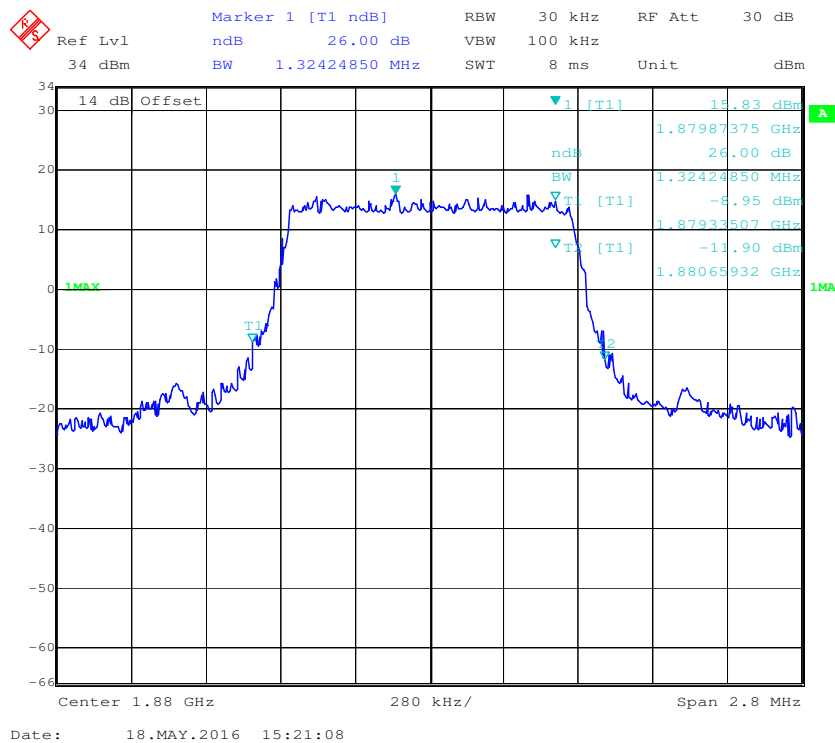
1.88064248 GHz

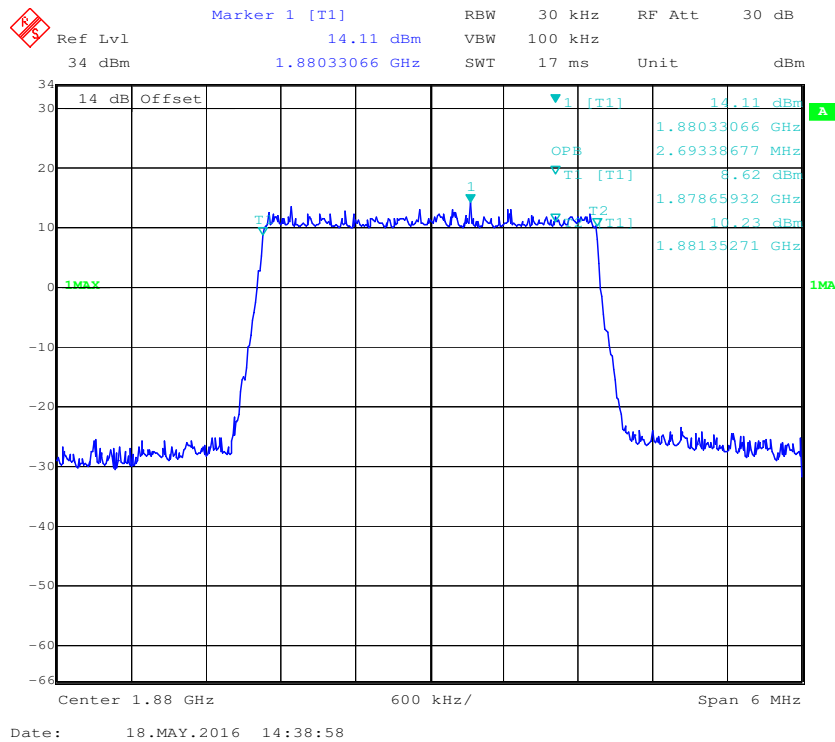
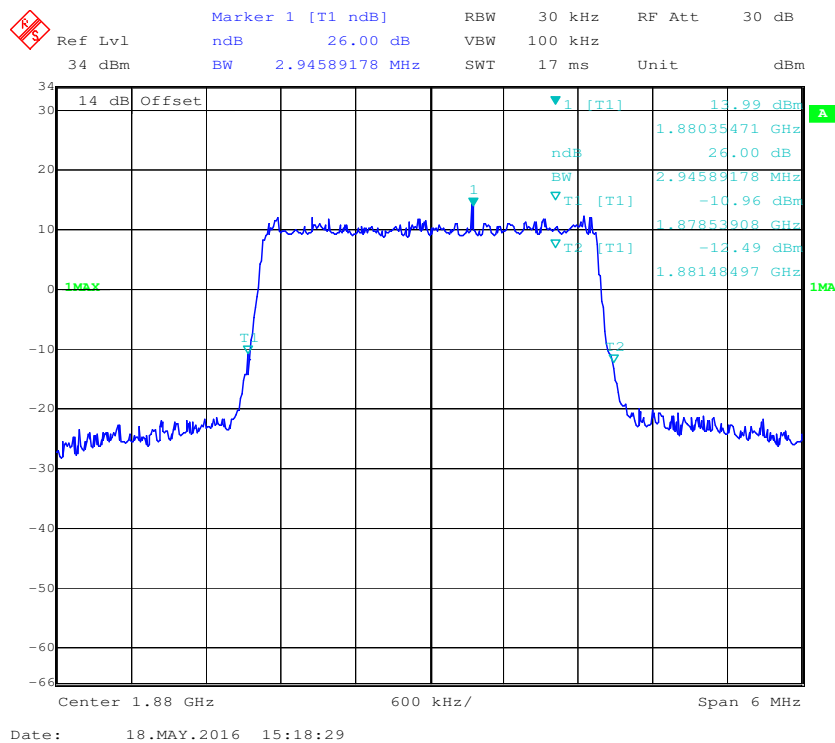
Center 1.88 GHz

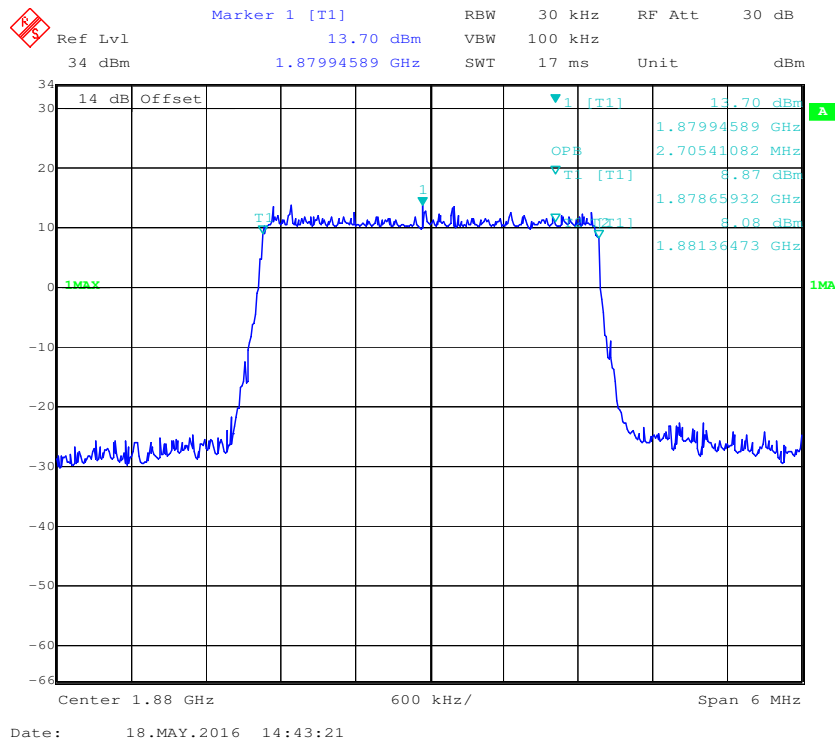
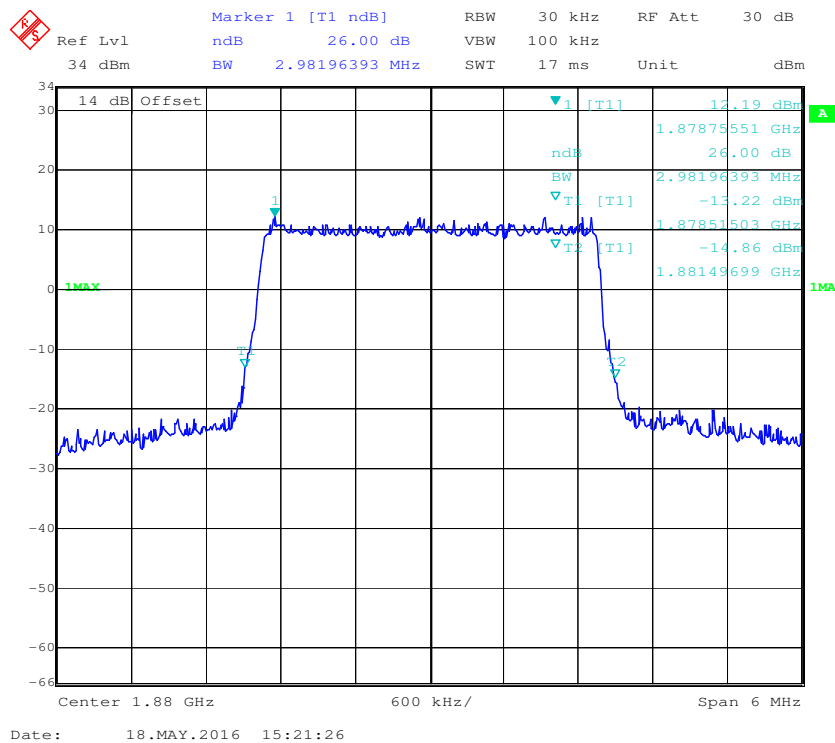
280 kHz/

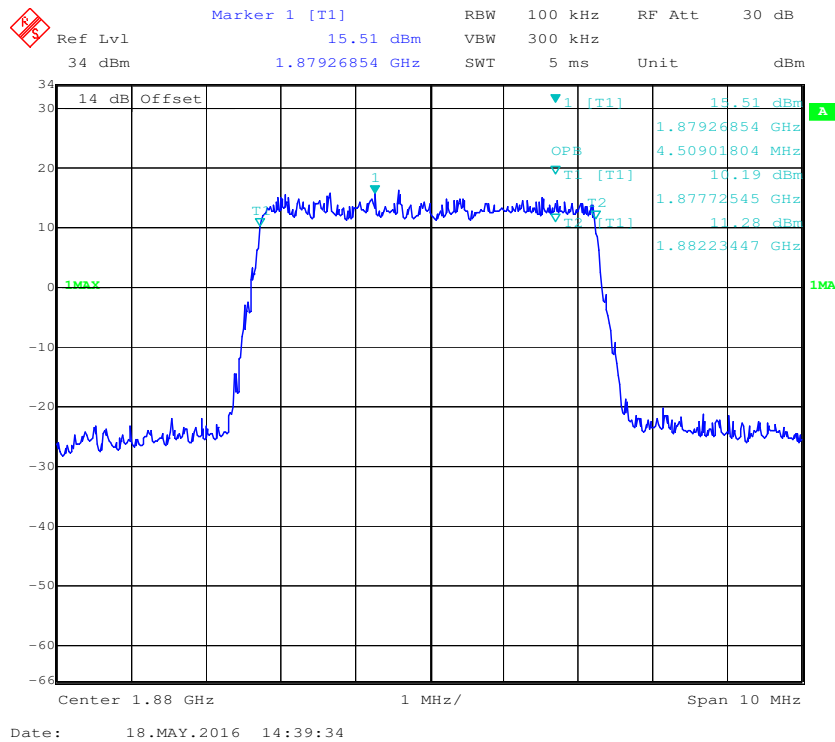
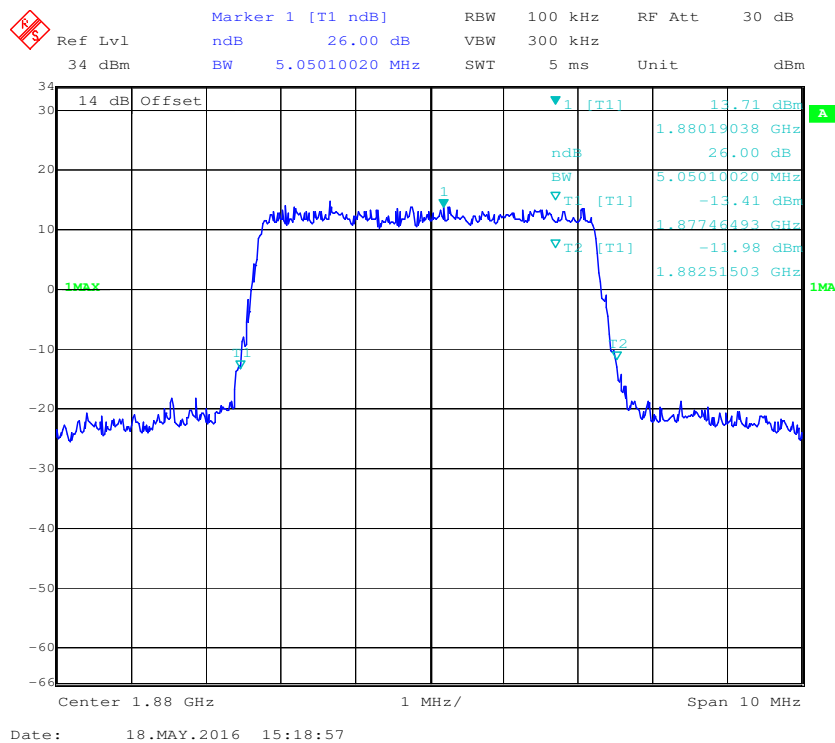
Span 2.8 MHz

Date: 18.MAY.2016 15:17:55

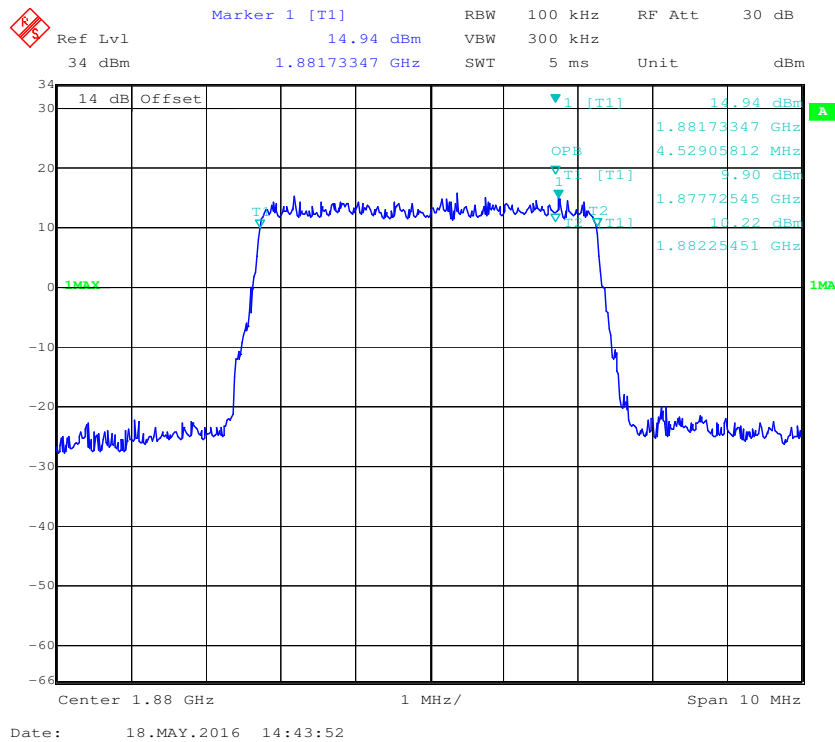
16-QAM (1.4 MHz) -99% Occupied Bandwidth Middle channel**16-QAM (1.4 MHz) -26 dB Bandwidth Middle channel**

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

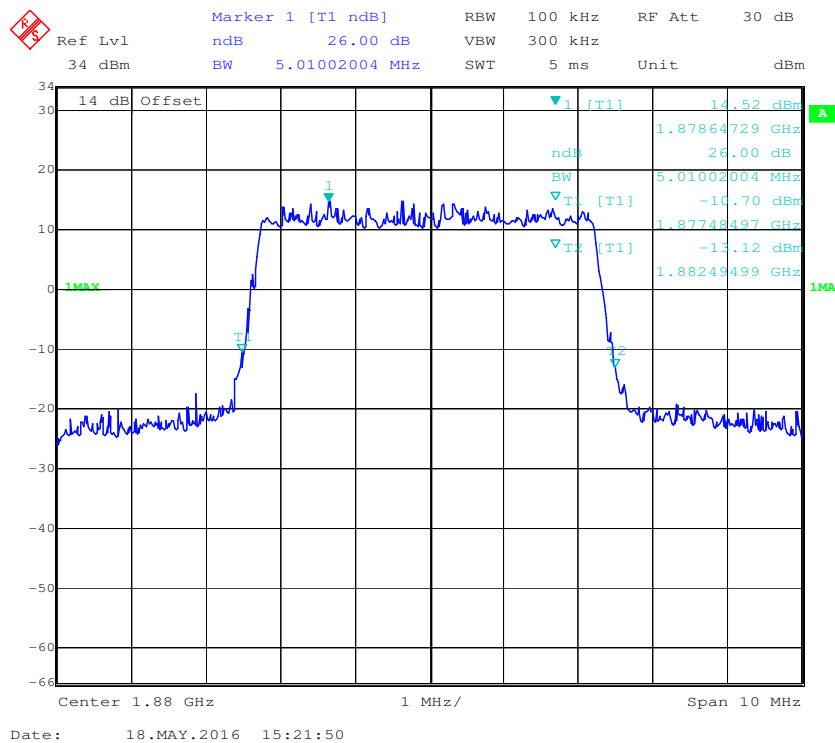
16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel**16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel**

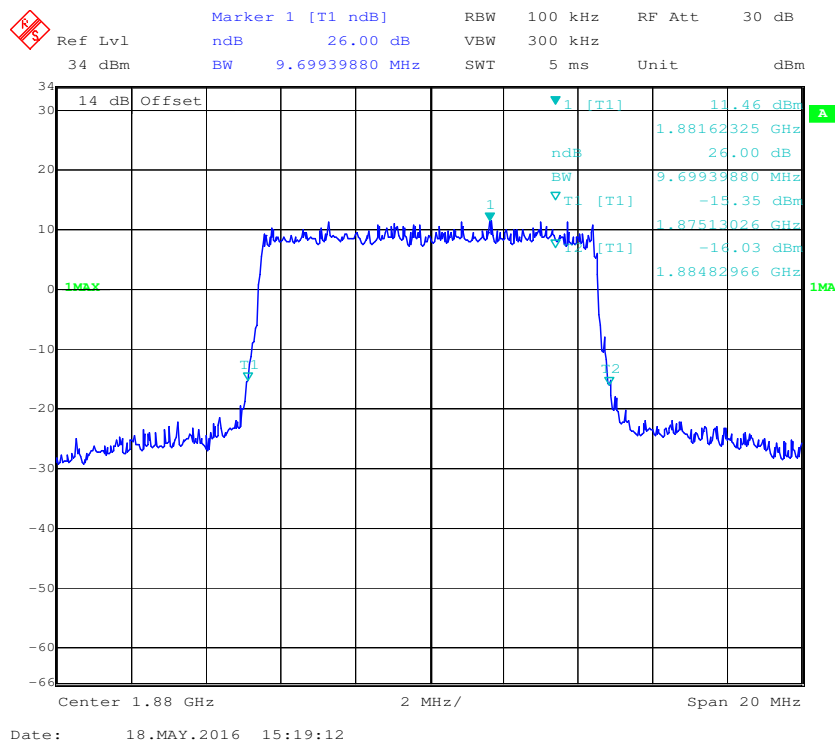
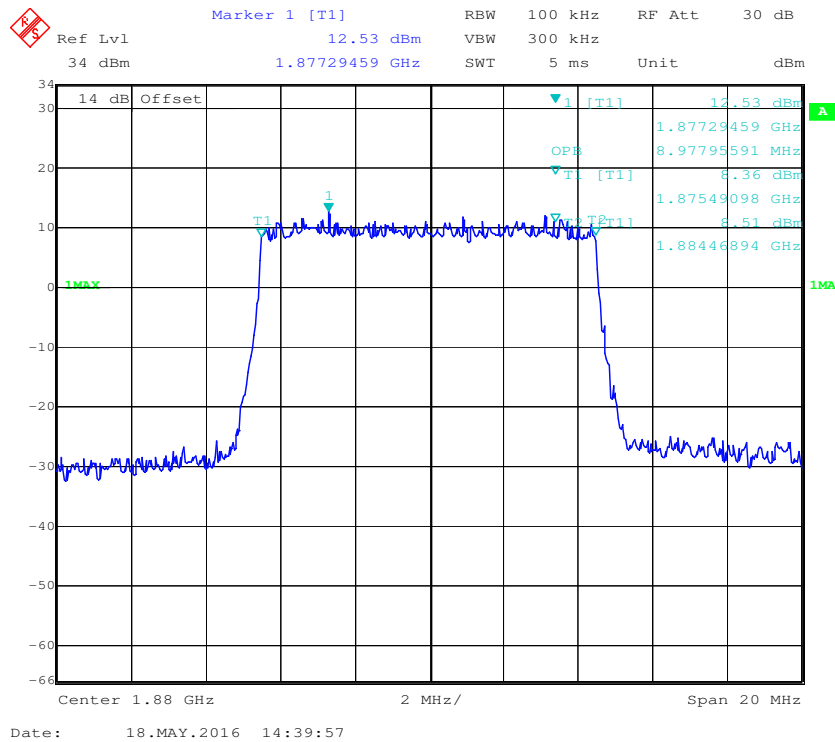
QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel**

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



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





Marker 1 [T1]

Ref Lvl 12.19 dBm

34 dBm 1.87905812 GHz

RBW 100 kHz RF Att 30 dB

VBW 300 kHz

SWT 5 ms Unit dBm

14 dB Offset

12.19 dBm

1.87905812 GHz

8.93787575 MHz

OPB

4.47 dBm

1.87553106 GHz

5.89 dBm

1.88446894 GHz

1MA

Center 1.88 GHz

2 MHz/

Span 20 MHz

Date: 18.MAY.2016 14:44:11

Ref Lvl 34 dBm Marker 1 [T1 ndB] 26.00 dB RBW 100 kHz RF Att 30 dB
 BW 9.73947896 MHz VBW 300 kHz Unit dBm

14 dB Offset

11.17 dBm

1.88158317 GHz

26.00 dB

9.73947896 MHz

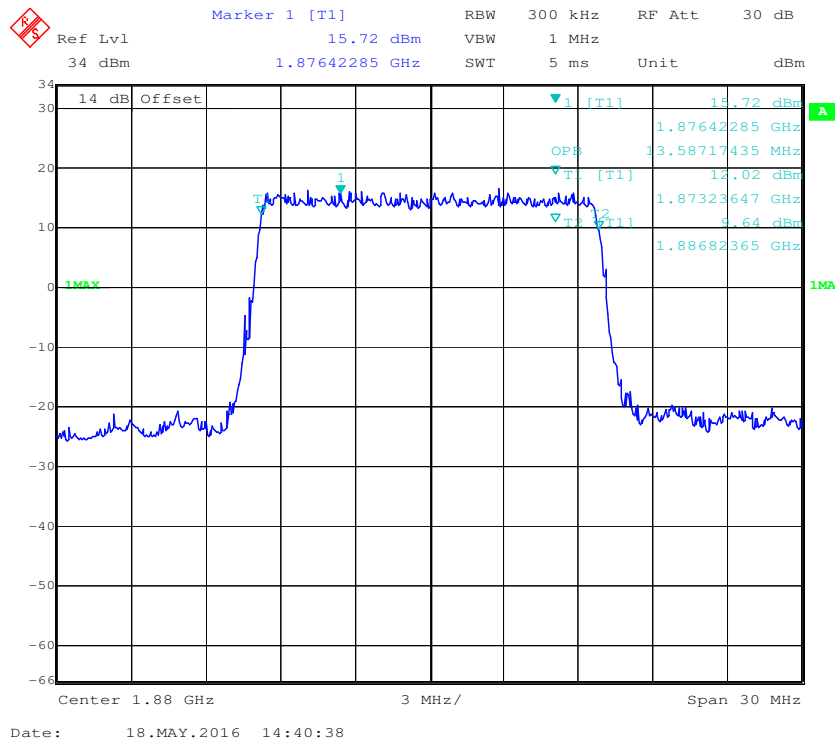
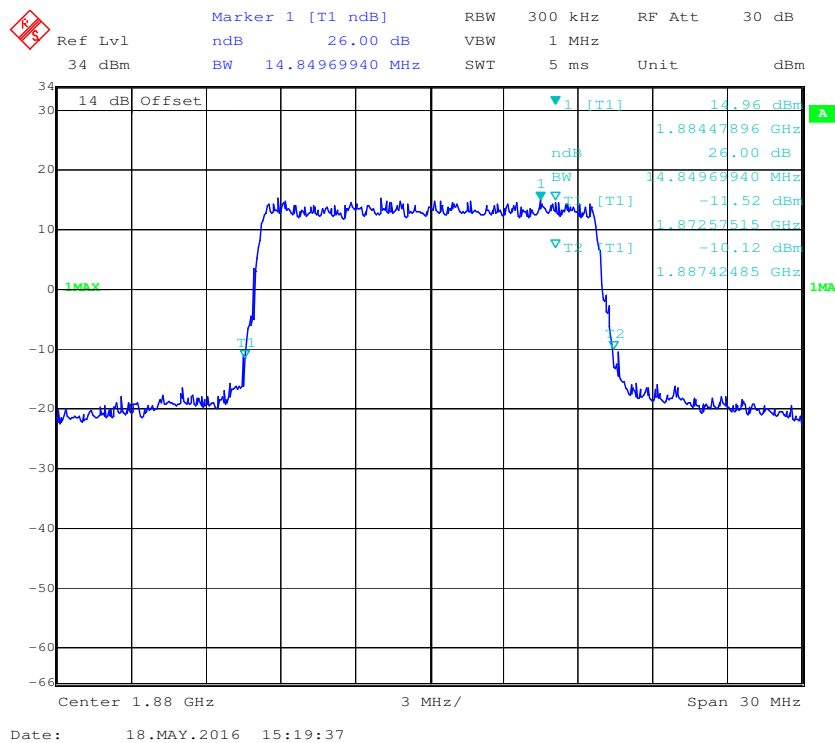
-14.97 dBm

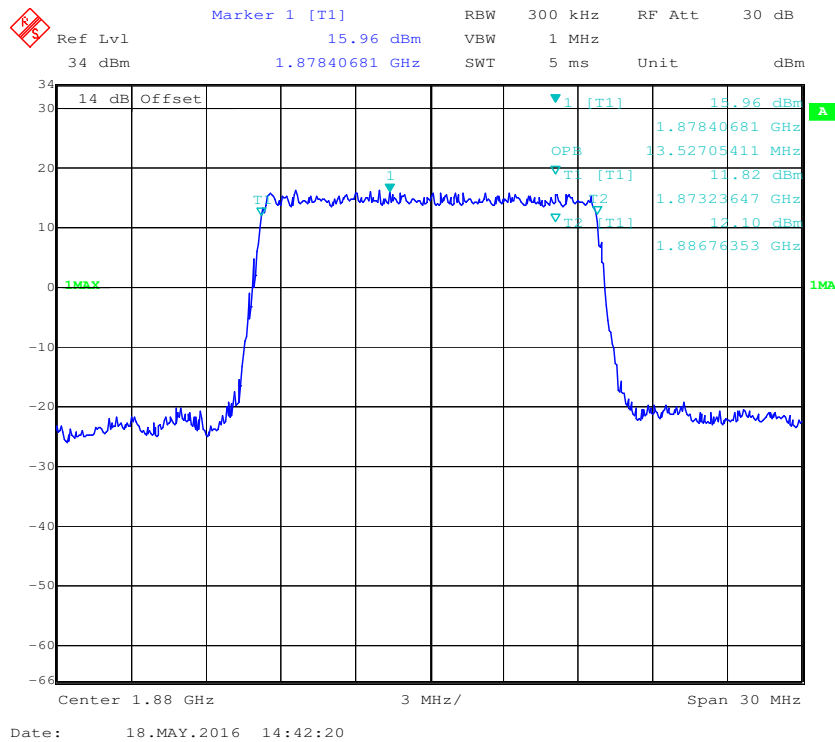
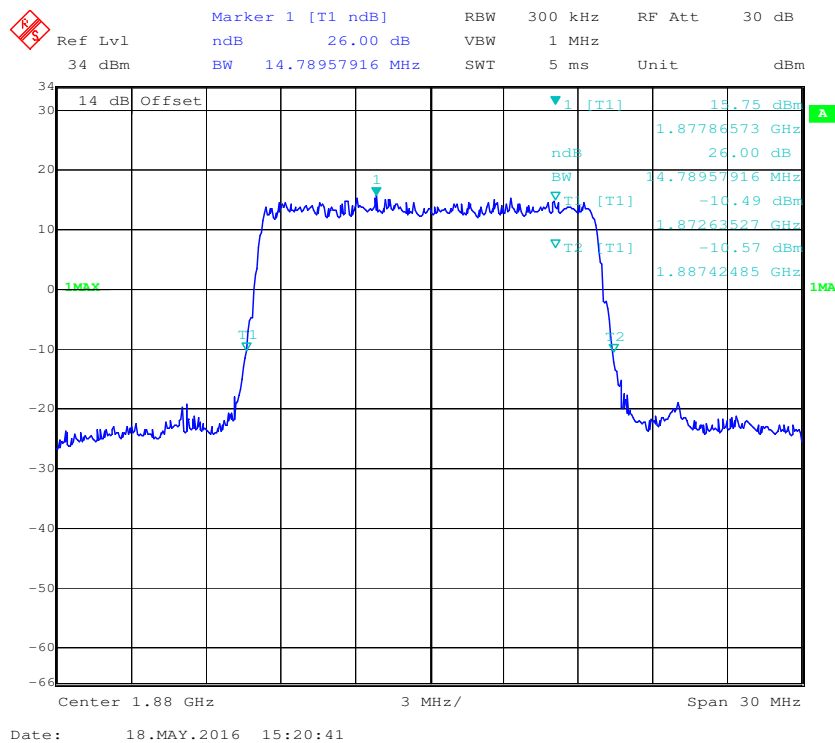
1.87513026 GHz

-15.80 dBm

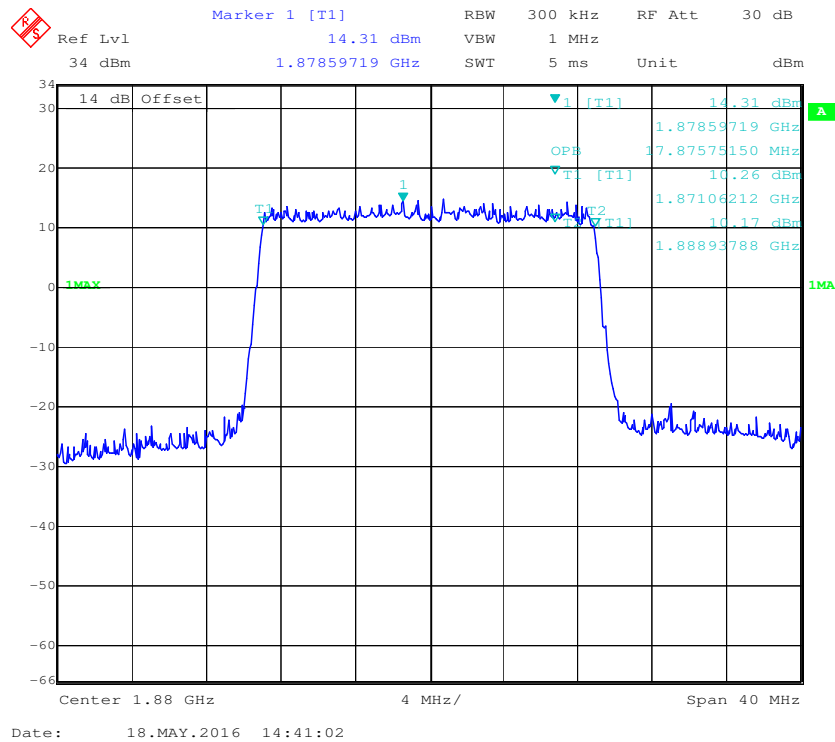
1.88486974 GHz

Center 1.88 GHz 2 MHz/ Span 20 MHz

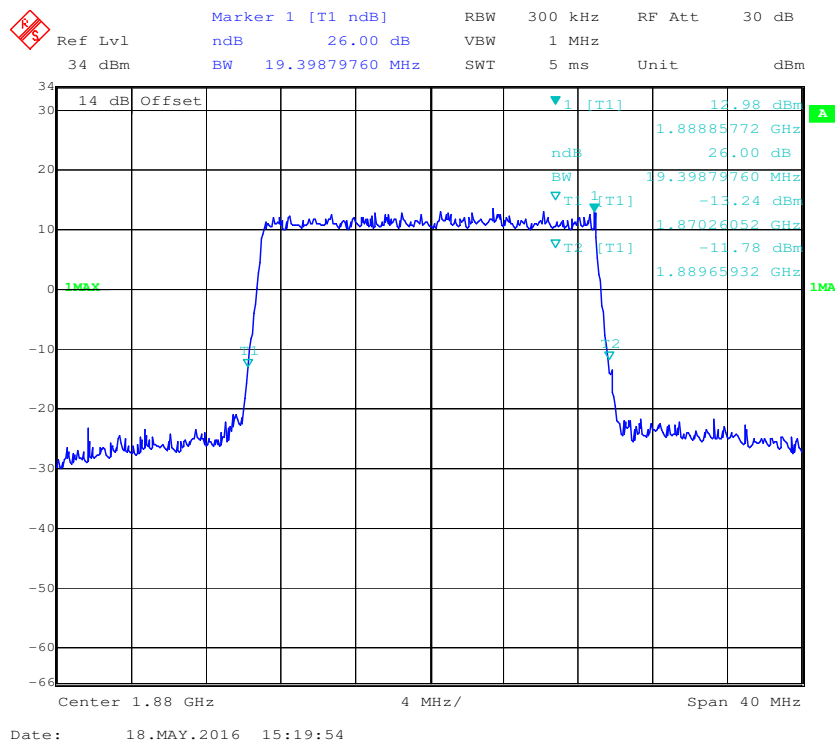
QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel**

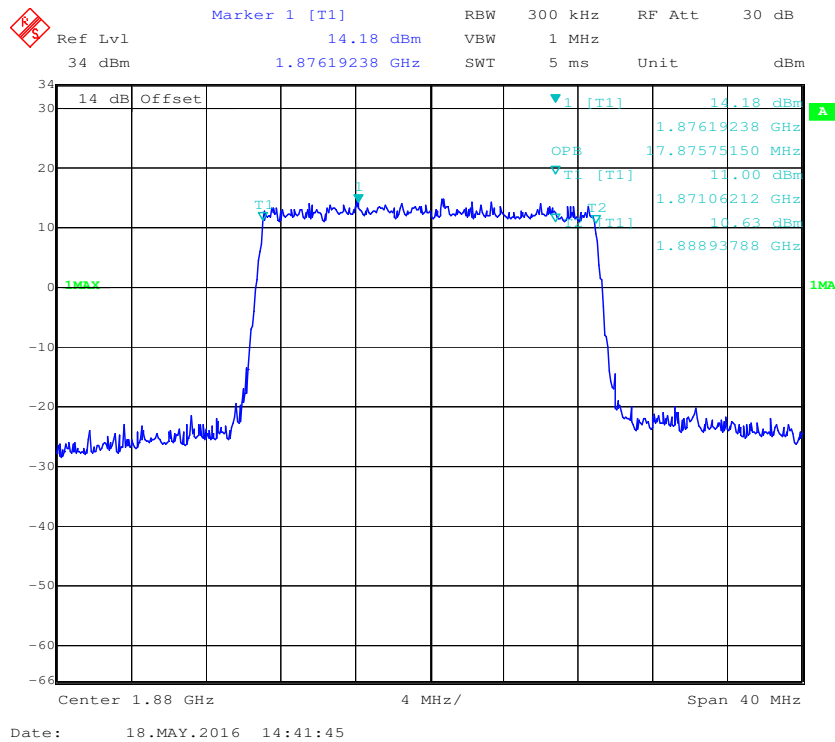
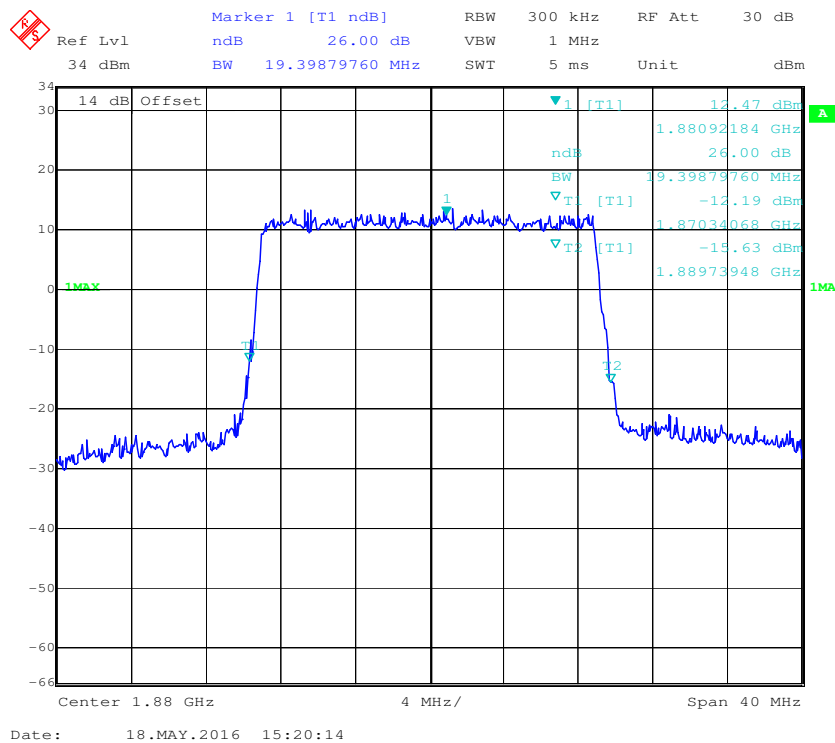
16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel**

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



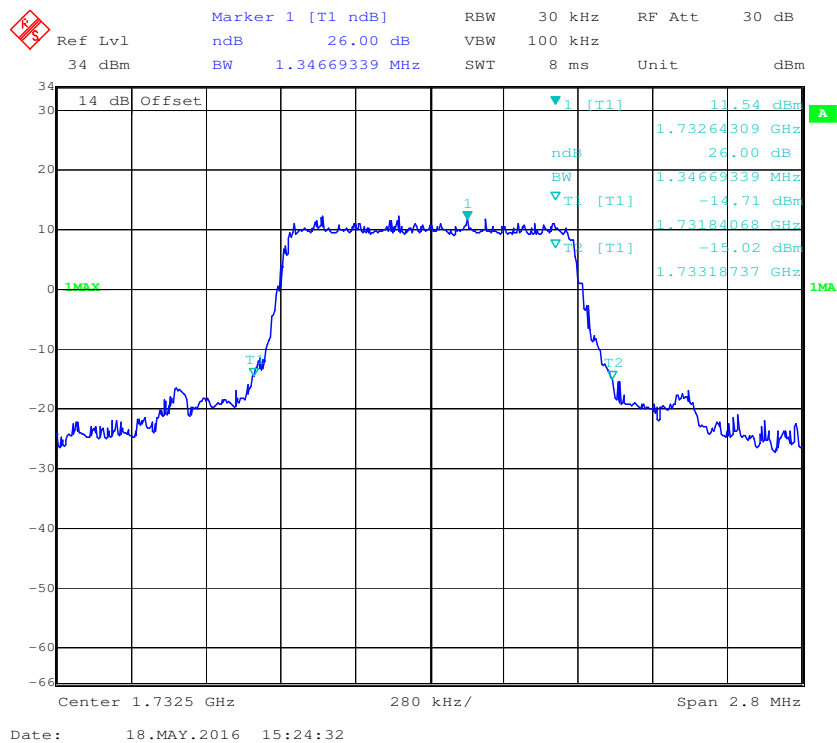
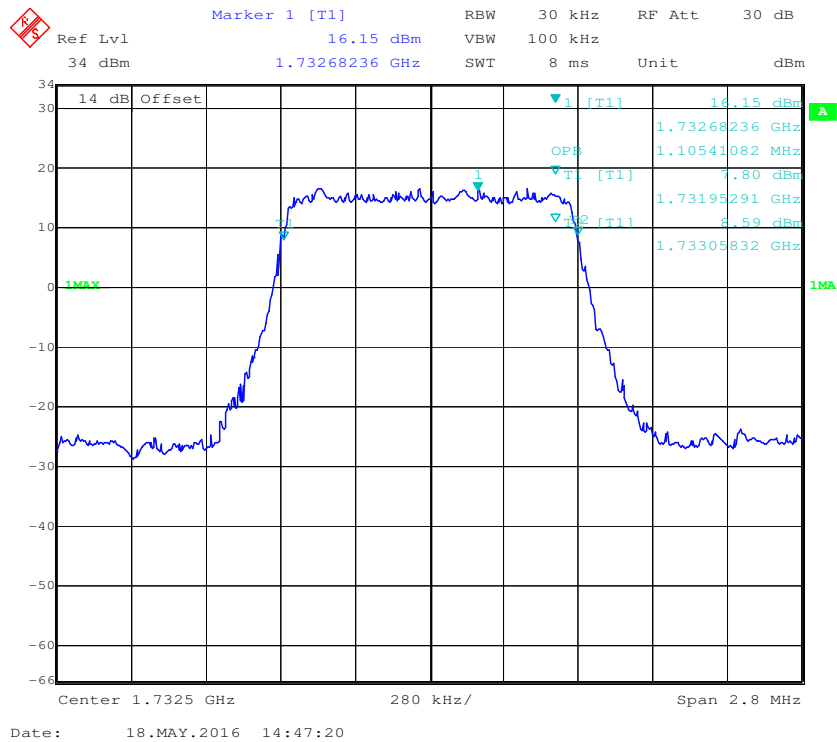
QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel

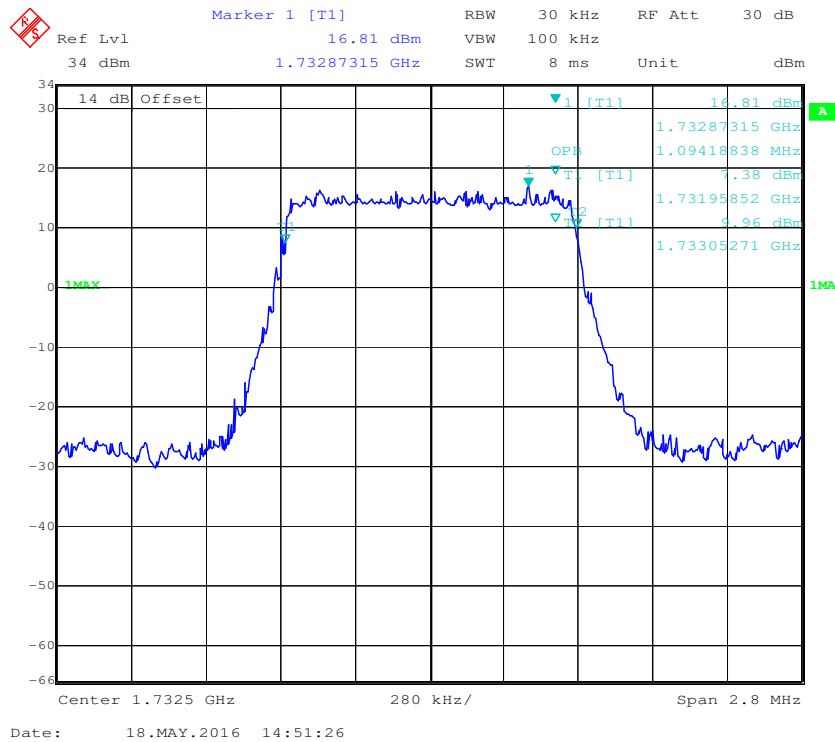
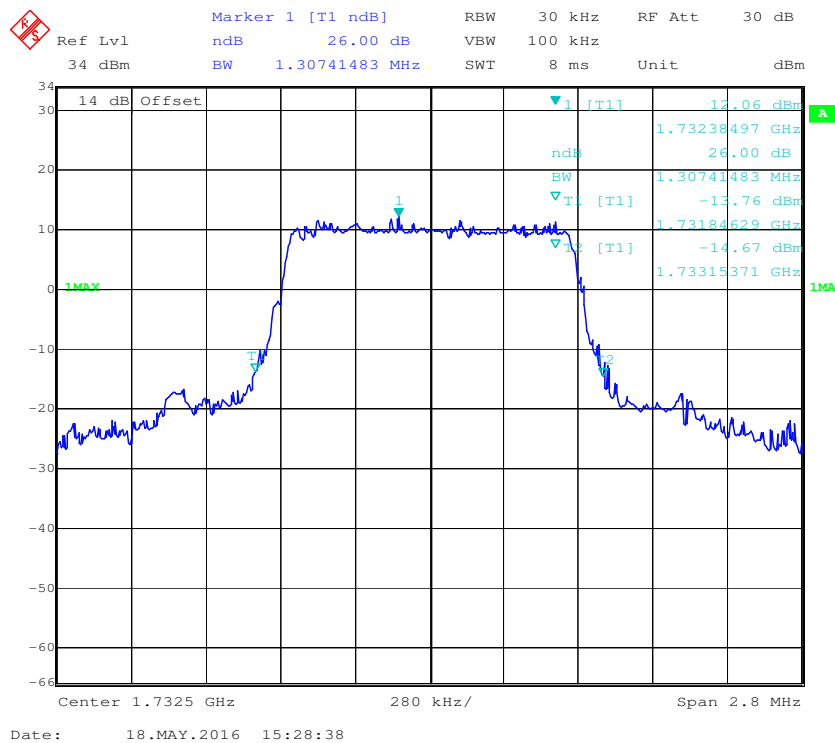


16-QAM (20.0 MHz) - 99% Occupied Bandwidth, Middle channel**16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel**

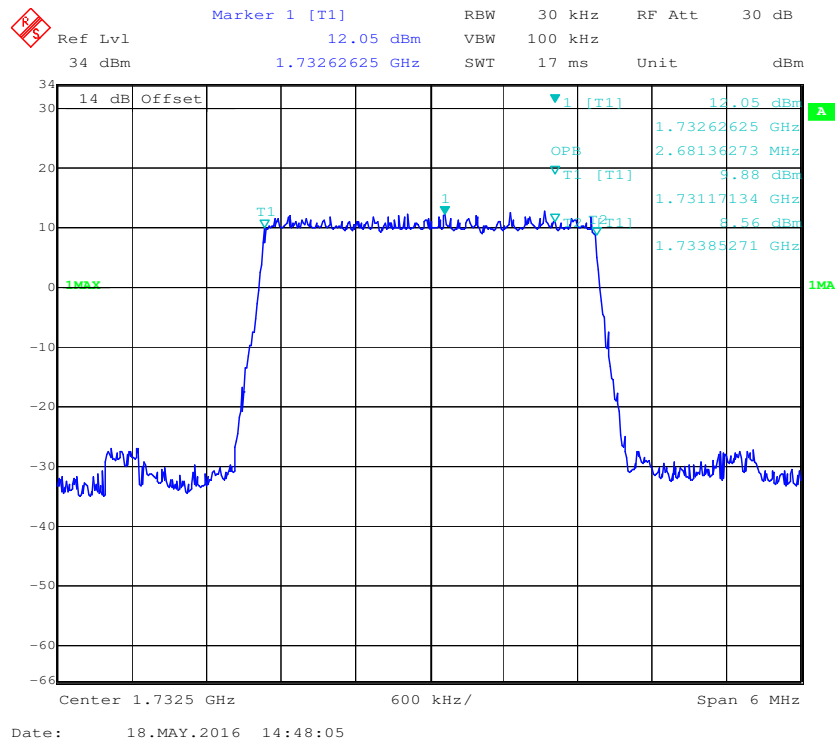
LTE Band 4: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.105	1.347
	16QAM	1.094	1.307
3.0	QPSK	2.681	2.922
	16QAM	2.693	2.958
5.0	QPSK	4.509	5.010
	16QAM	4.509	5.070
10.0	QPSK	8.938	9.699
	16QAM	8.978	9.659
15.0	QPSK	13.527	14.760
	16QAM	13.527	14.910
20.0	QPSK	17.876	19.319
	16QAM	17.036	19.399

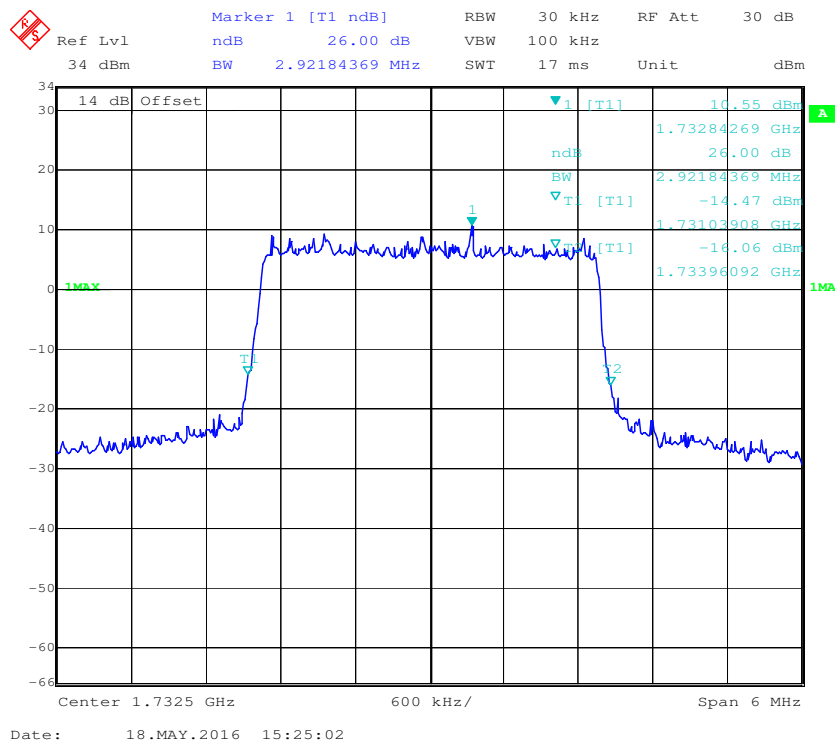


16-QAM (1.4 MHz) -99% Occupied Bandwidth Middle channel**16-QAM (1.4 MHz) -26 dB Bandwidth Middle channel**

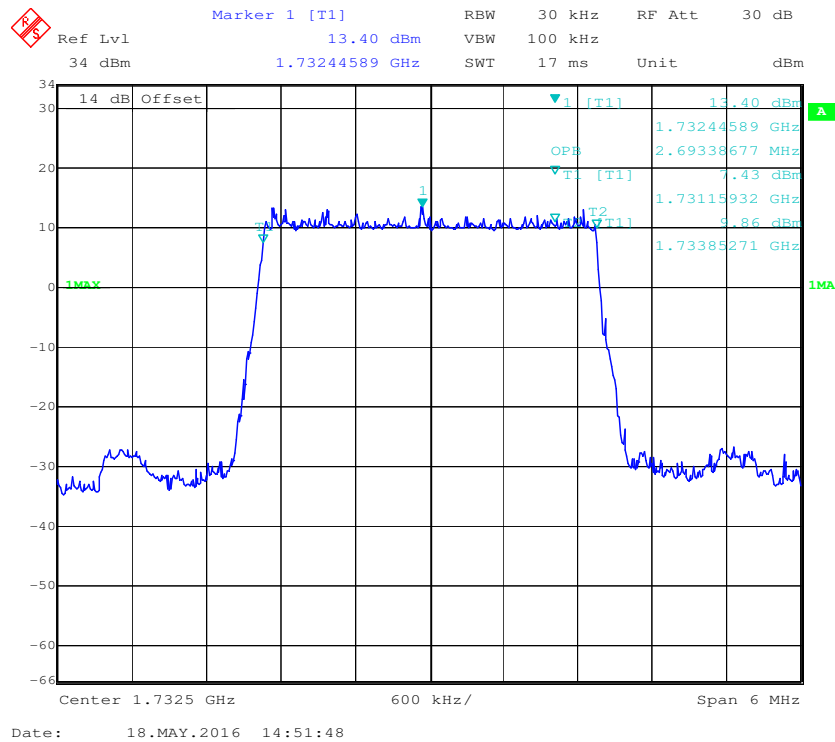
QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



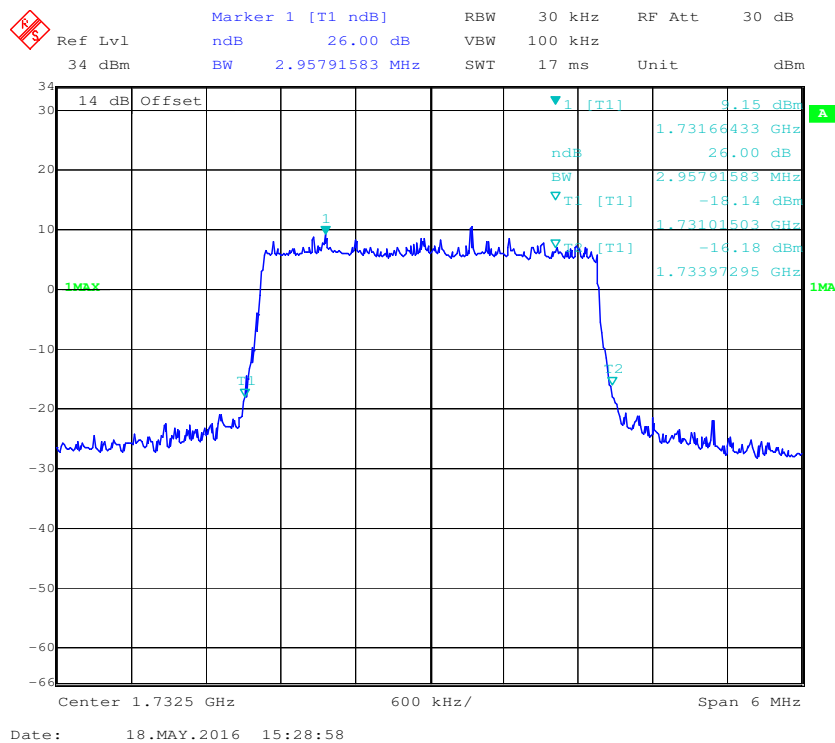
QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel



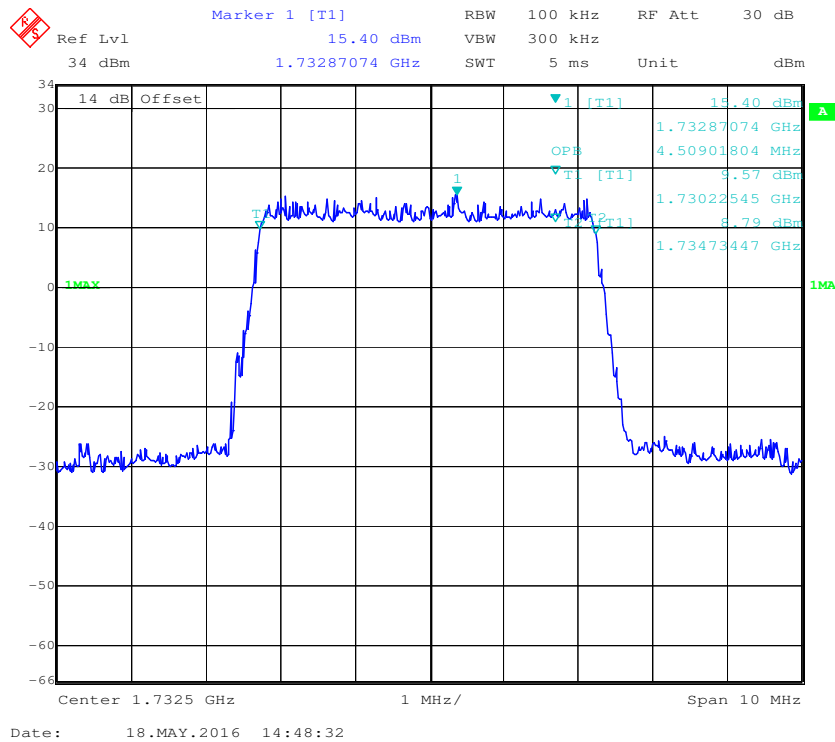
16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



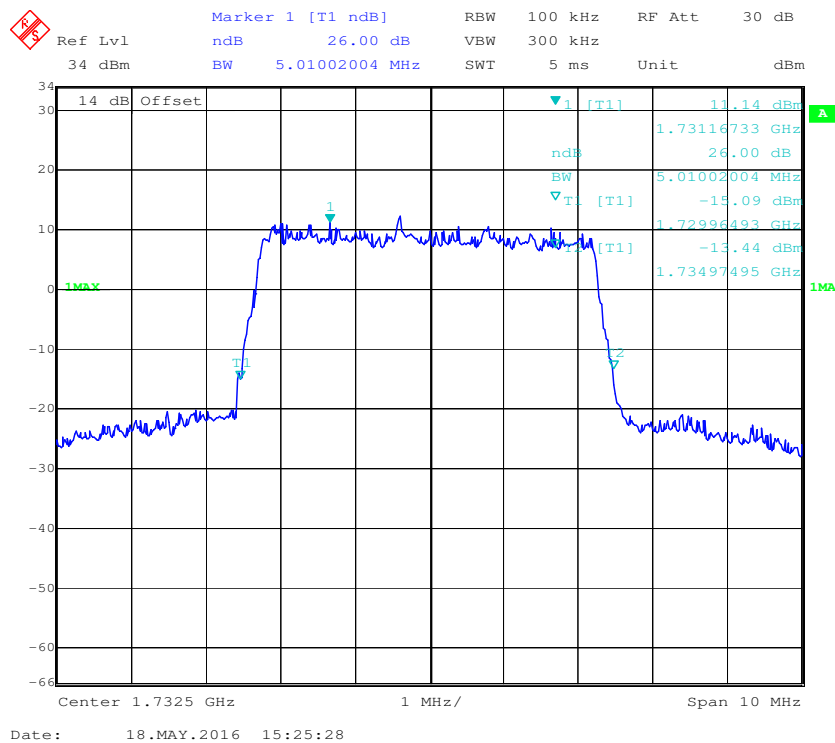
16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel



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



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



Marker 1 [T1] RBW 100 kHz RF Att 30 dB

Ref Lvl 14.72 dBm VBW 300 kHz

34 dBm 1.73271042 GHz SWT 5 ms Unit dBm

14 dB Offset

1.73271042 GHz

4.50901804 MHz

8.95 dBm

1.73022545 GHz

10.48 dBm

1.73473447 GHz

Center 1.7325 GHz 1 MHz/ Span 10 MHz

Date: 18.MAY.2016 14:52:10

[illegible]

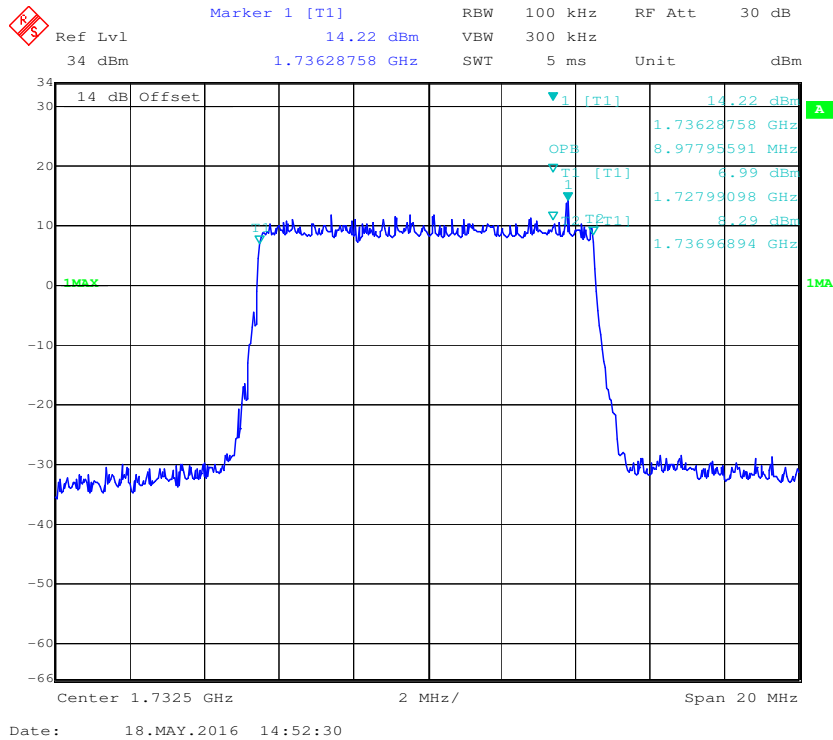
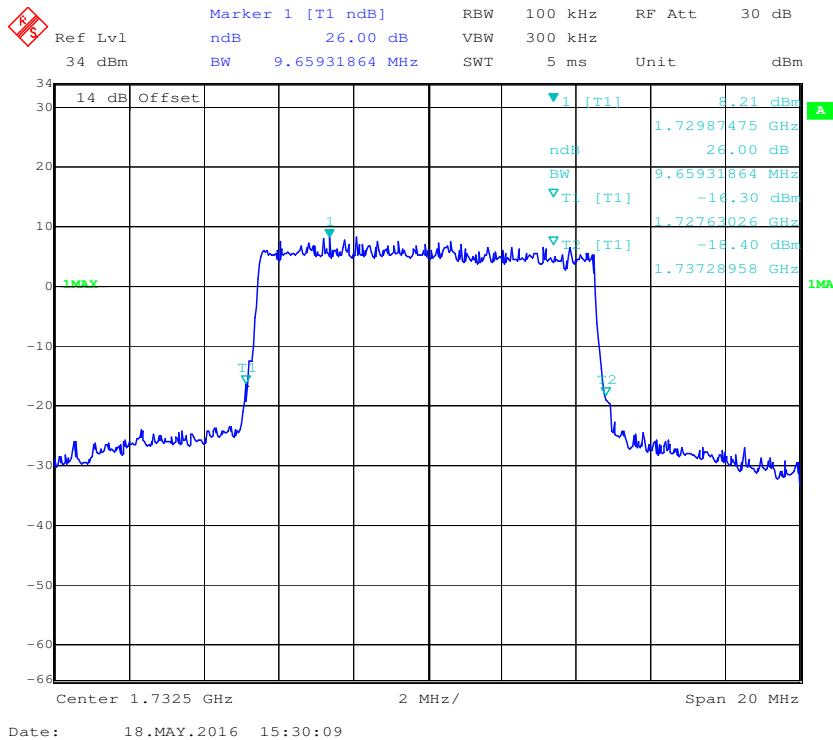
[illegible]

Ref Lvl 34 dBm
 ndB 26.00 dB
 BW 9.69939880 MHz
 RBW 100 kHz
 VBW 300 kHz
 SWT 5 ms
 RF Att 30 dB
 Unit dBm

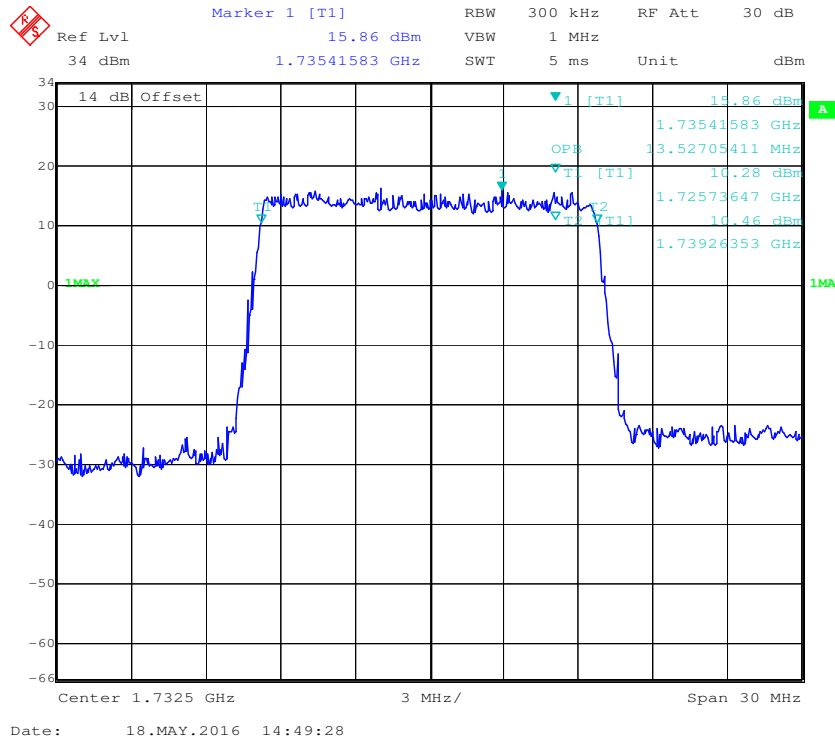
Label	Frequency (GHz)	Power (dBm)
1	1.73628758	5.42
ndB	26.00	-
BW	9.69939880	-
T1 [T1]	-	-17.99
1	1.72763026	-
T2 [T1]	-	-18.14
1	1.73732966	-

Center 1.7325 GHz
 2 MHz/
 Span 20 MHz

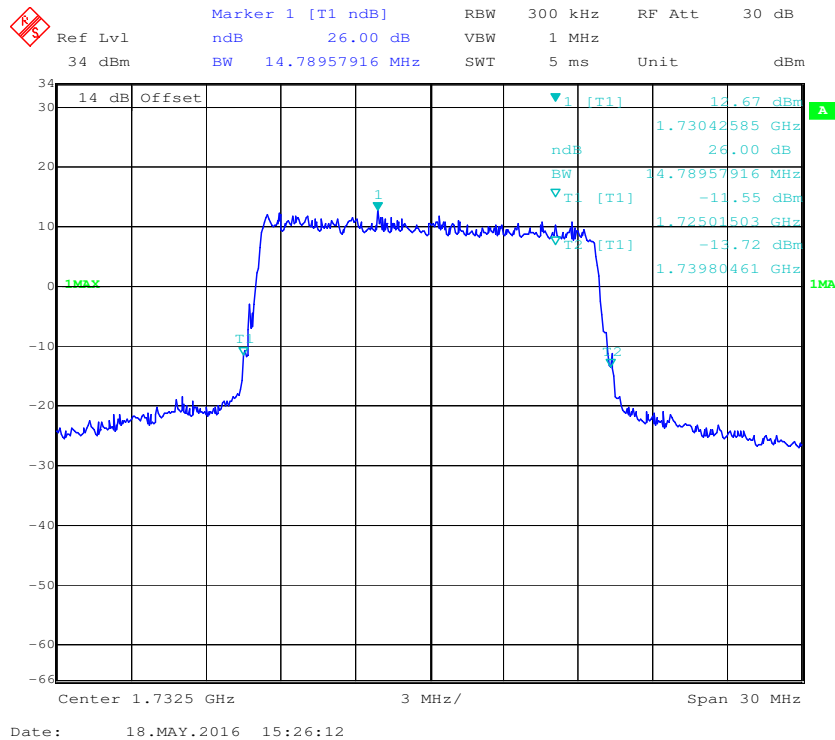
Date: 18.MAY.2016 15:25:49

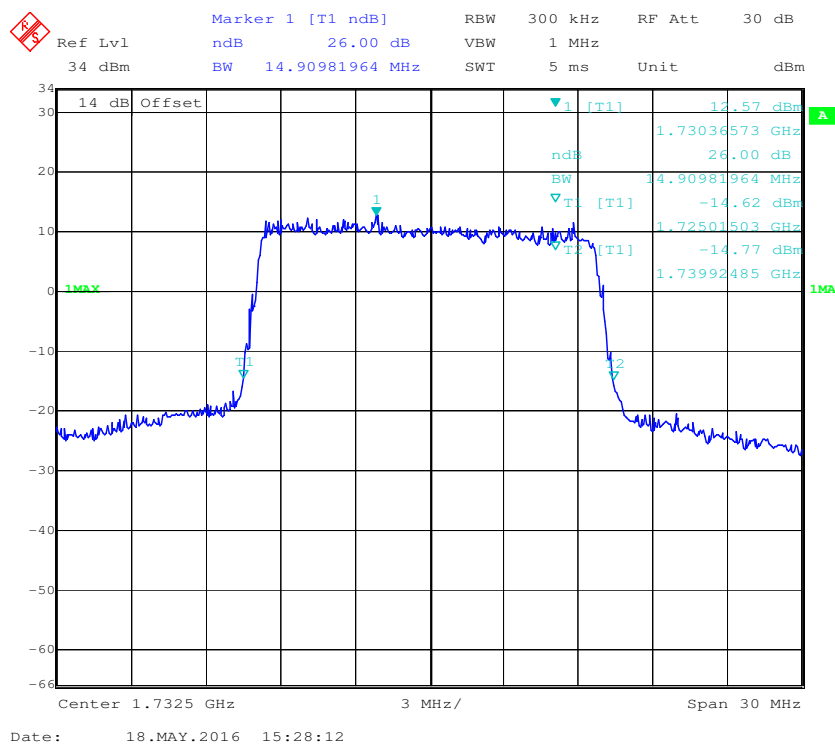
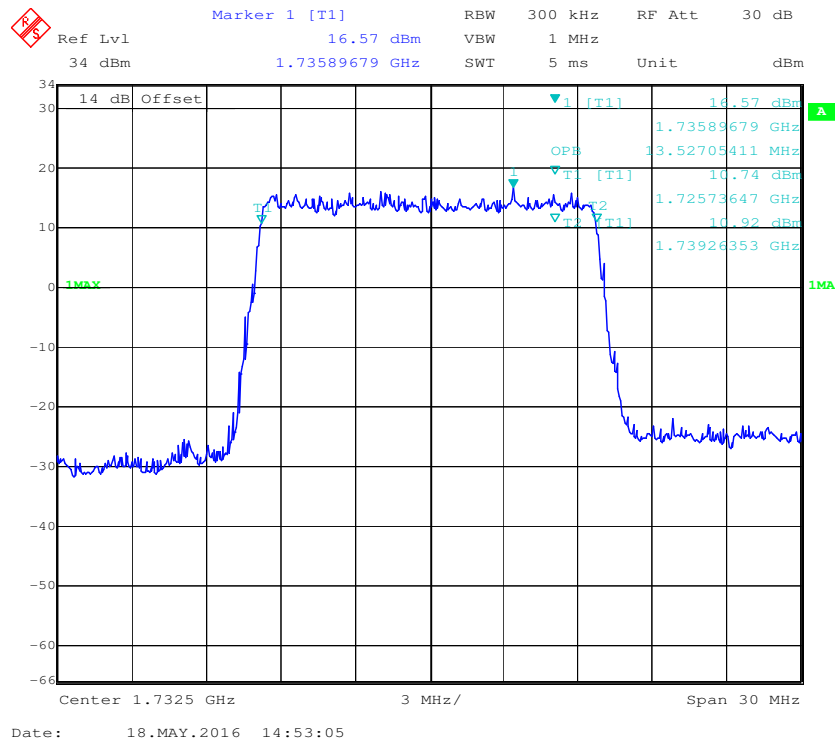
16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel**

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



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





Marker 1 [T1]

Ref Lvl 13.30 dBm

34 dBm 1.72917335 GHz

RBW 300 kHz RF Att 30 dB

VBW 1 MHz

SWT 5 ms Unit dBm

14 dB Offset

13.30 dBm

1.72917335 GHz

17.87575150 MHz

10.66 dBm

1.72356212 GHz

5.24 dBm

1.74143788 GHz

Center 1.7325 GHz

4 MHz/

Span 40 MHz

Date: 18.MAY.2016 14:49:52

Marker 1 [T1 ndB] RBW 300 kHz RF Att 30 dB
 Ref Lvl ndB 26.00 dB VBW 1 MHz
 34 dBm BW 19.31863727 MHz SWT 5 ms Unit dBm

14 dB	Offset							
						▼ 1 [T1]	16.75 dBm	
							1.72612725 GHz	
						ndB	26.00 dB	
						BW	19.31863727 MHz	
						▼ T1 [T1]	-15.63 dBm	
							1.72284068 GHz	
						▼ [T1]	-16.78 dBm	
							1.74215932 GHz	

Center 1.7325 GHz 4 MHz/ Span 40 MHz

Date: 18.MAY.2016 15:26:29

Marker 1 [T1] RBW 300 kHz RF Att 30 dB

Ref Lvl 14.35 dBm VBW 1 MHz

34 dBm 1.73366232 GHz SWT 5 ms Unit dBm

14 dB Offset

14.35 dBm

1.73366232 GHz

18.03607214 MHz

9.18 dBm

1.72348196 GHz

12.56 dBm

1.74151804 GHz

Center 1.7325 GHz 4 MHz/ Span 40 MHz

Date: 18.MAY.2016 14:53:24

Ref Lvl 34 dBm
 ndB 26.00 dB
 BW 19.39879760 MHz
 RBW 300 kHz
 VBW 1 MHz
 SWT 5 ms
 RF Att 30 dB
 Unit dBm

Marker	Frequency (GHz)	Power (dBm)
1	1.72612725	16.86
2	1.72276052	-14.96
3	1.74215932	-16.24

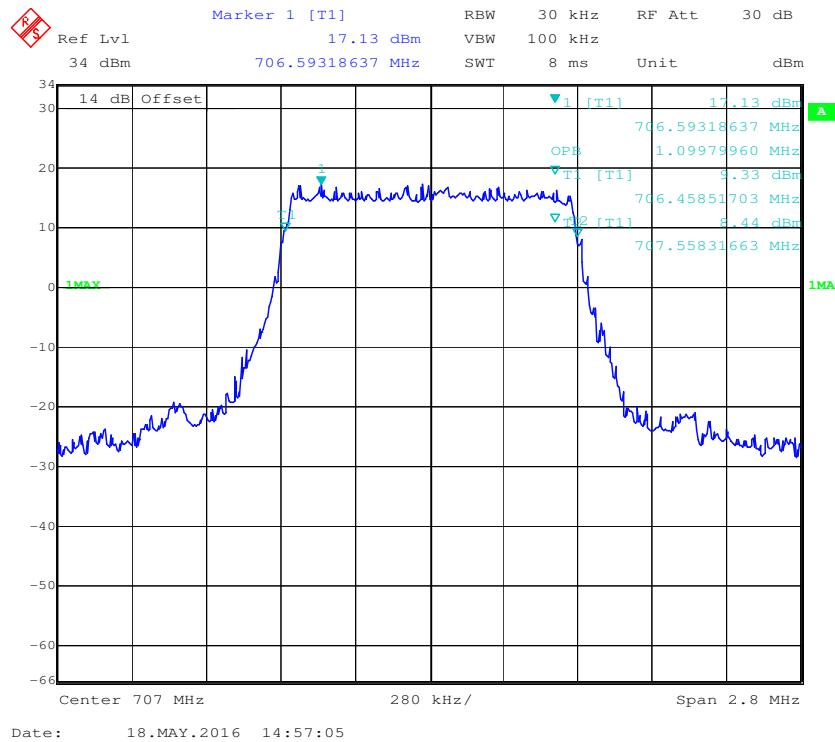
Center 1.7325 GHz
 4 MHz/
 Span 40 MHz

Date: 18.MAY.2016 15:27:50

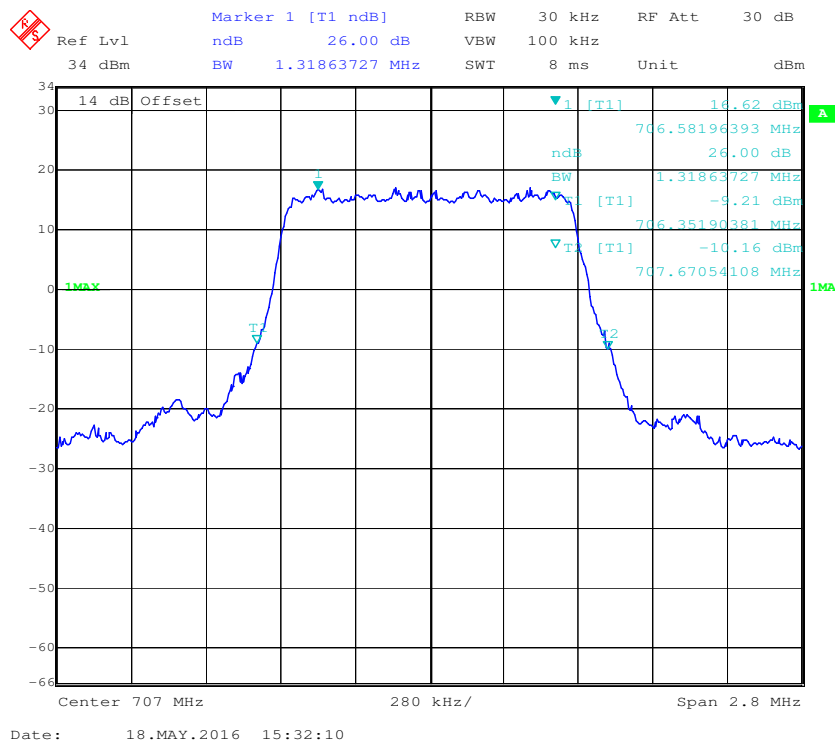
LTE Band 12: (Middle Channel)

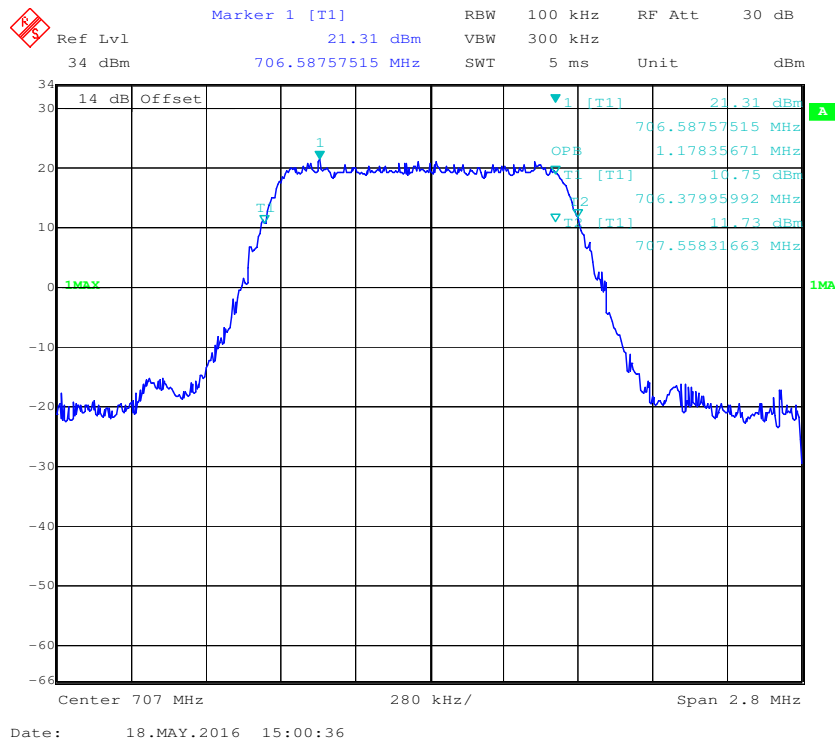
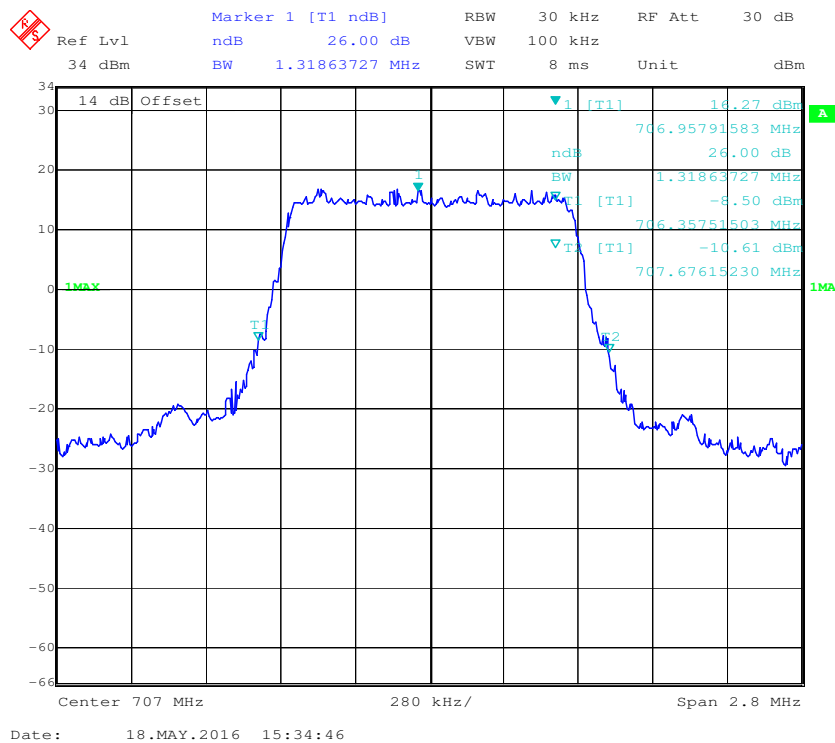
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.0	QPSK	1.100	1.319
	16QAM	1.178	1.319
3.0	QPSK	2.705	2.958
	16QAM	2.754	2.958
5.0	QPSK	4.529	5.030
	16QAM	4.509	5.050
10.0	QPSK	8.978	9.820
	16QAM	8.938	9.739

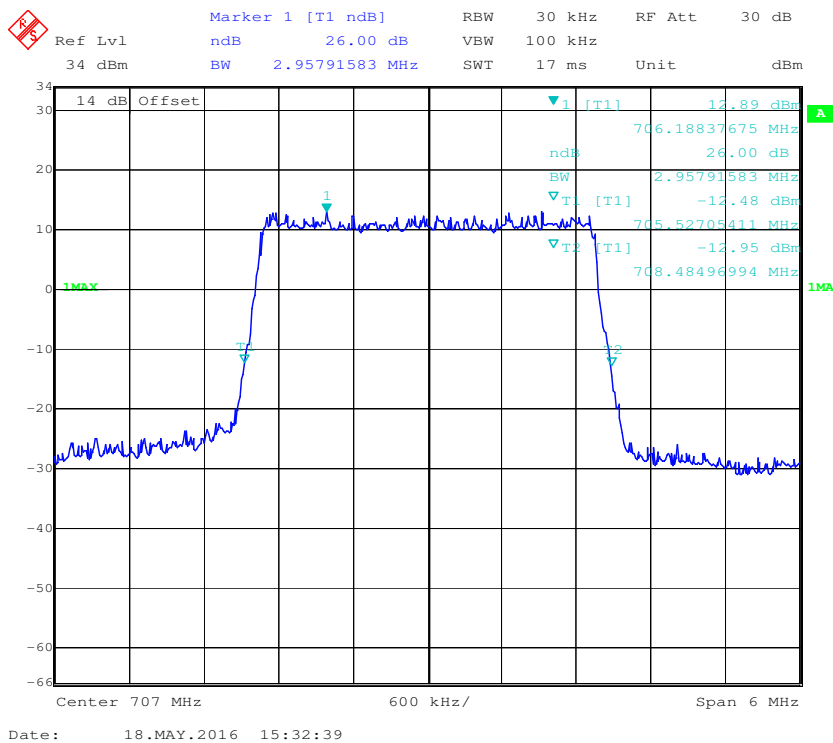
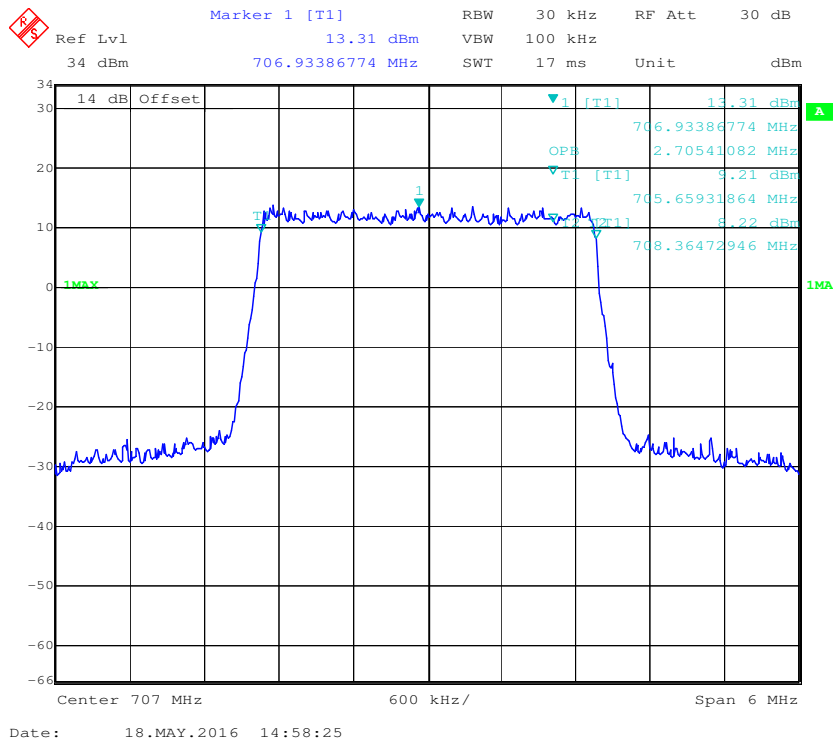
QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



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



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



Marker 1 [T1]

Ref Lvl 34 dBm

18.15 dBm

707.35470942 MHz

RBW 100 kHz

VBW 300 kHz

SWT 5 ms

RF Att 30 dB

Unit dBm

14 dB Offset

18.15 dBm

707.35470942 MHz

2.75350701 MHz

11.37 dBm

705.59919840 MHz

11.23 dBm

708.35270541 MHz

Center 707 MHz

600 kHz/

Span 6 MHz

Date: 18.MAY.2016 15:01:18

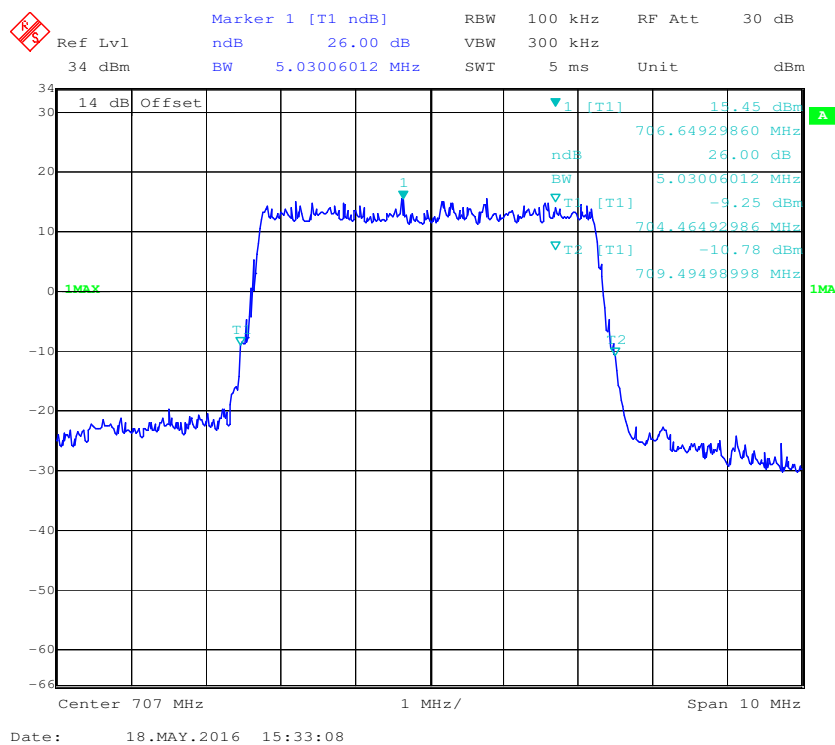
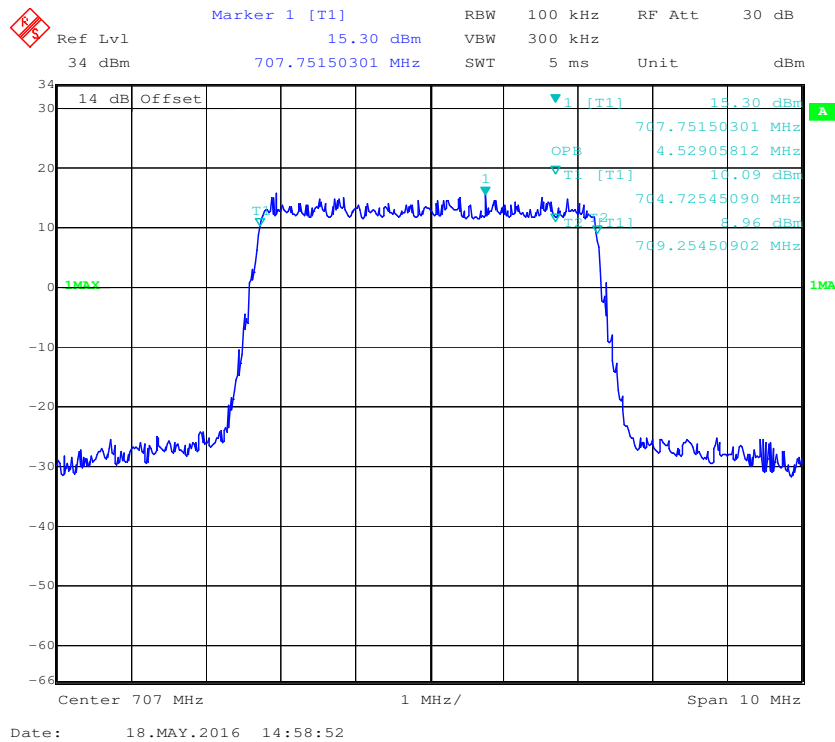
Ref Lvl 34 dBm
 Marker 1 [T1 ndB] 26.00 dB
 BW 2.95791583 MHz
 RBW 30 kHz
 VBW 100 kHz
 RF Att 30 dB
 Unit dBm

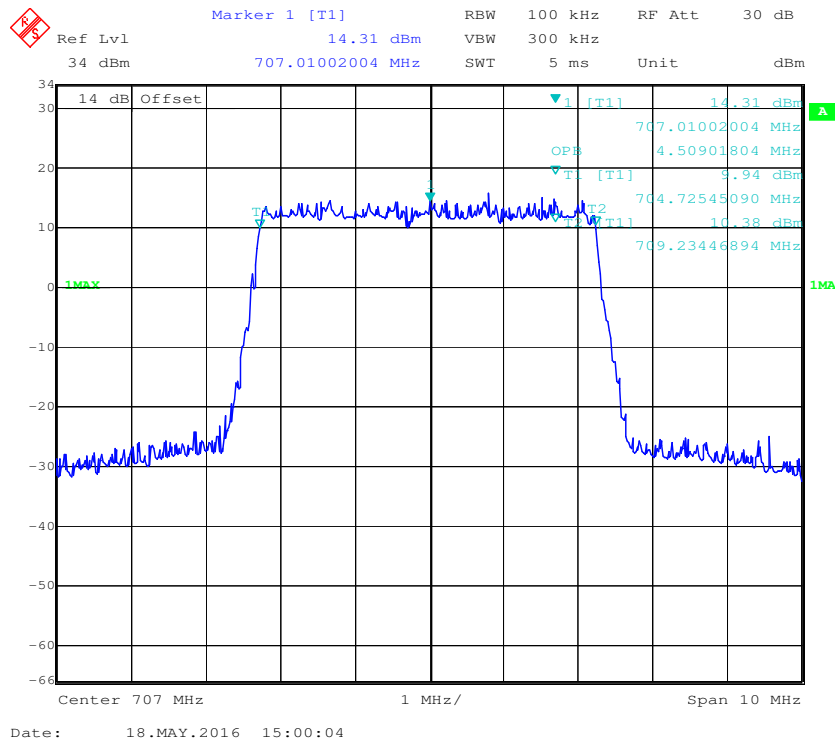
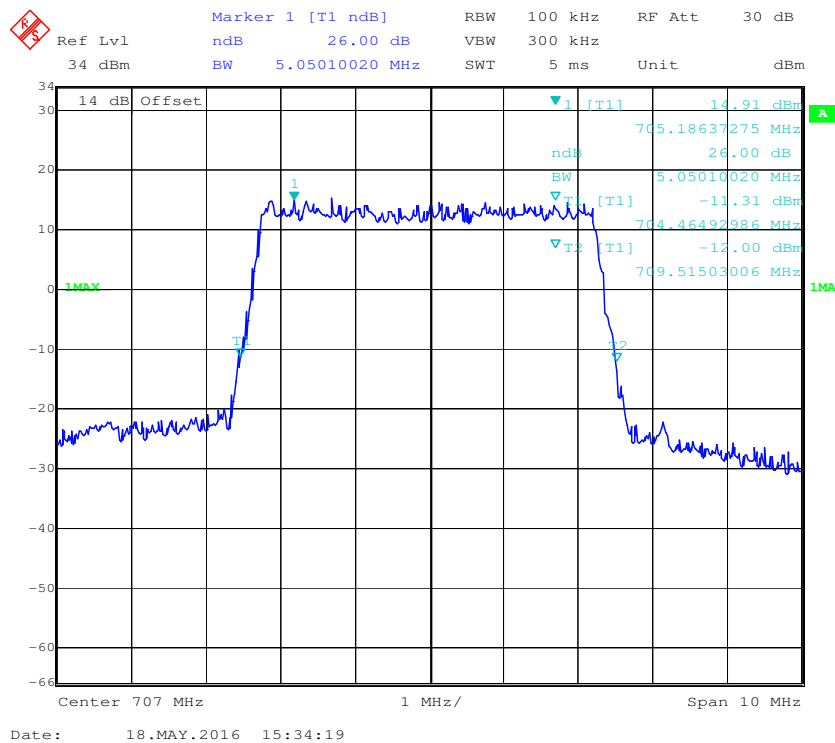
14 dB Offset

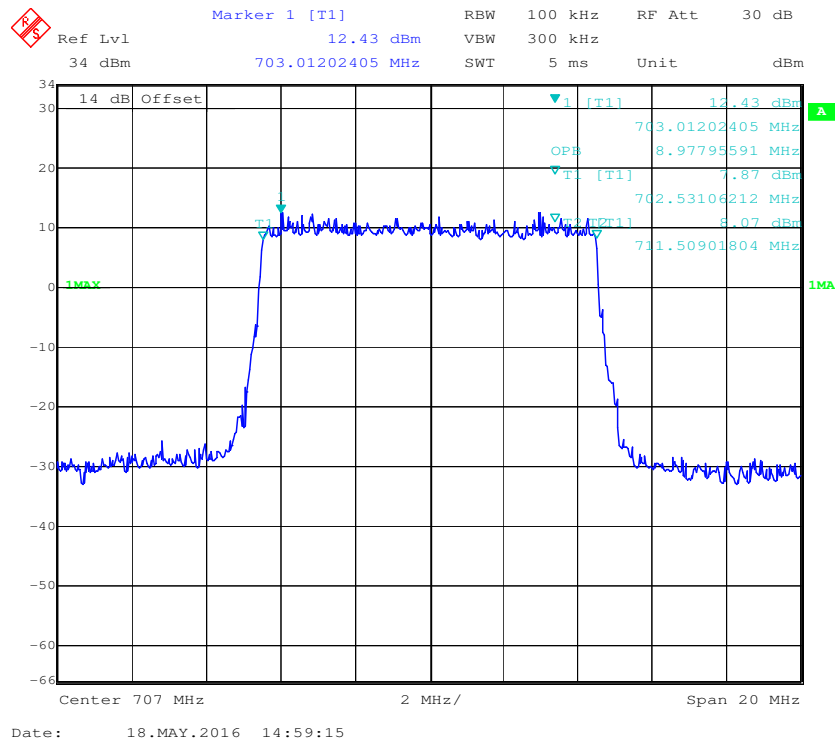
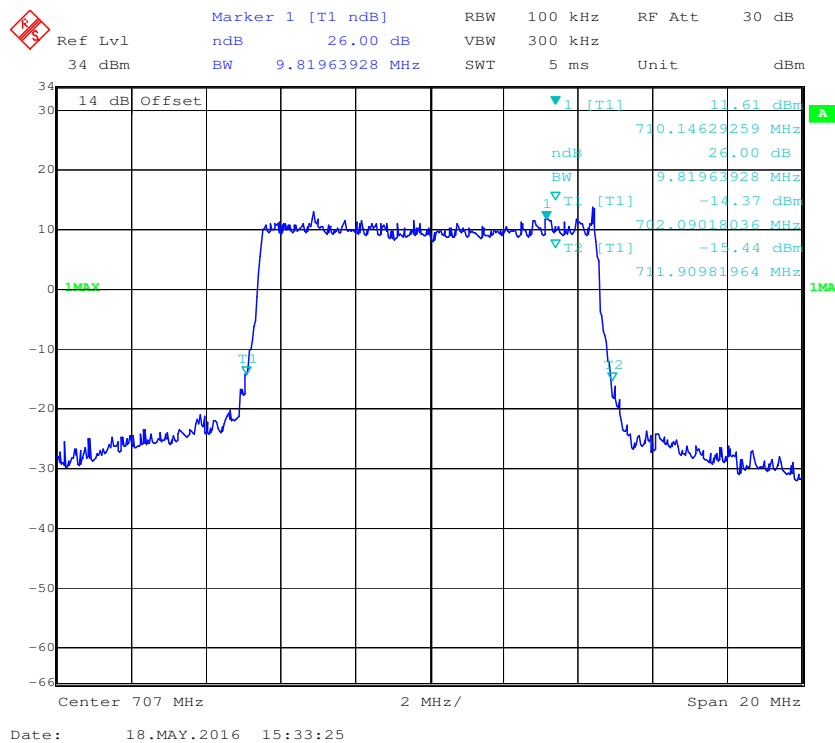
1 15.33 dBm
 707.36673347 MHz
 ndB 26.00 dB
 BW 2.95791583 MHz
 T1 [T1] -11.99 dBm
 T2 [T1] -13.39 dBm
 705.52705411 MHz
 708.48496994 MHz

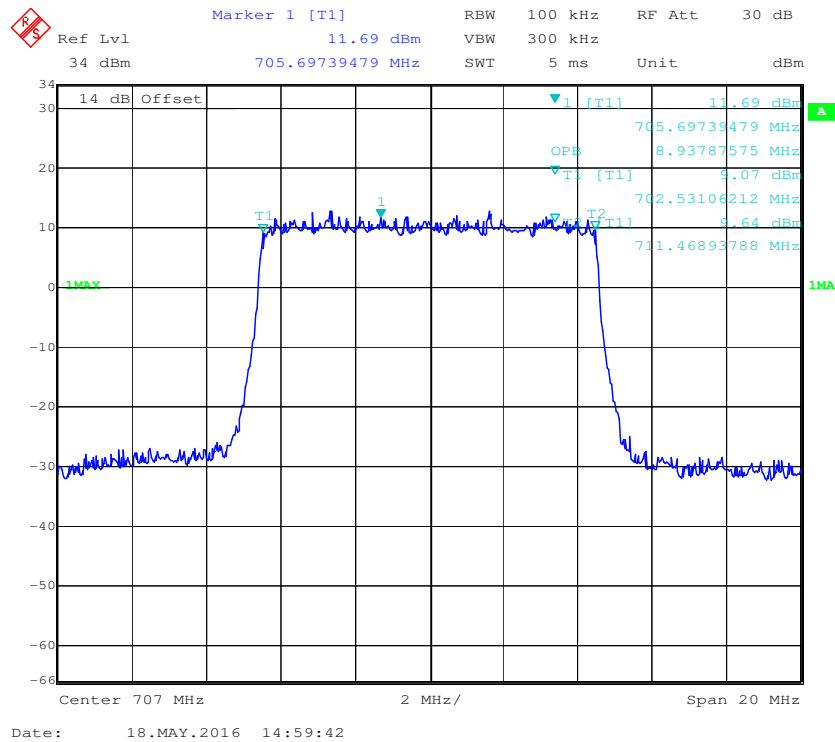
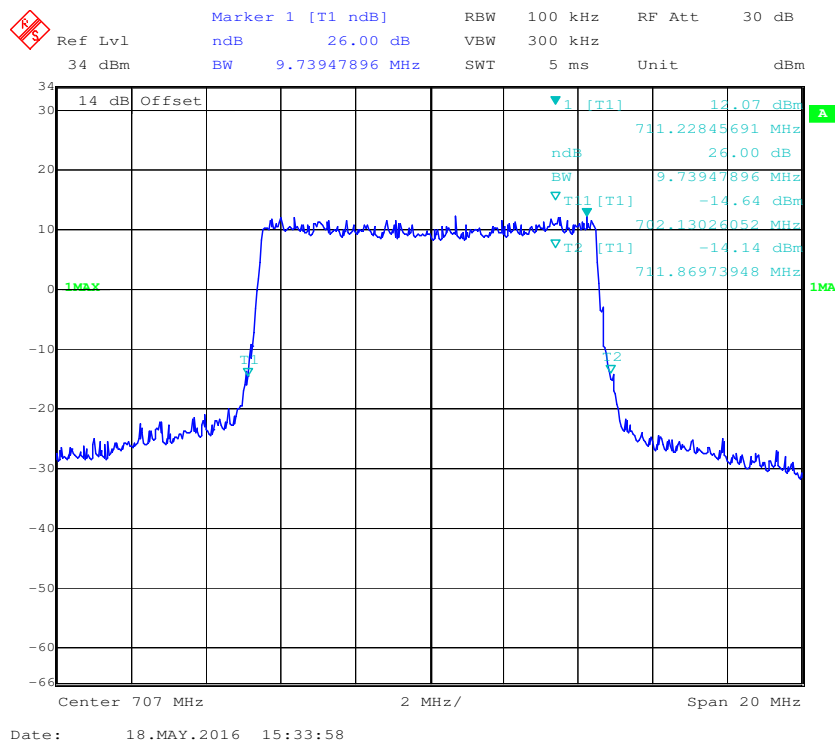
Center 707 MHz 600 kHz/ Span 6 MHz

Date: 18.MAY.2016 15:35:13



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

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

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

LTE Band 17: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.529	5.010
	16QAM	4.529	5.030
10.0	QPSK	8.938	9.699
	16QAM	8.938	9.739

[illegible][illegible]

Marker 1 [T1] RBW 100 kHz RF Att 30 dB
 Ref Lvl 15.55 dBm VBW 300 kHz
 34 dBm 711.63326653 MHz SWT 5 ms Unit dBm

14 dB Offset
 18.55 dBm
 711.63326653 MHz
 4.52905812 MHz
 9.13 dBm
 707.72545090 MHz
 5.80 dBm
 712.25450902 MHz

Center 710 MHz 1 MHz/ Span 10 MHz

Date: 18.MAY.2016 15:10:38

Ref Lvl 34 dBm
 Marker 1 [T1 ndB] 26.00 dB
 BW 5.03006012 MHz
 RBW 100 kHz
 VBW 300 kHz
 RF Att 30 dB
 Unit dBm
 5 ms

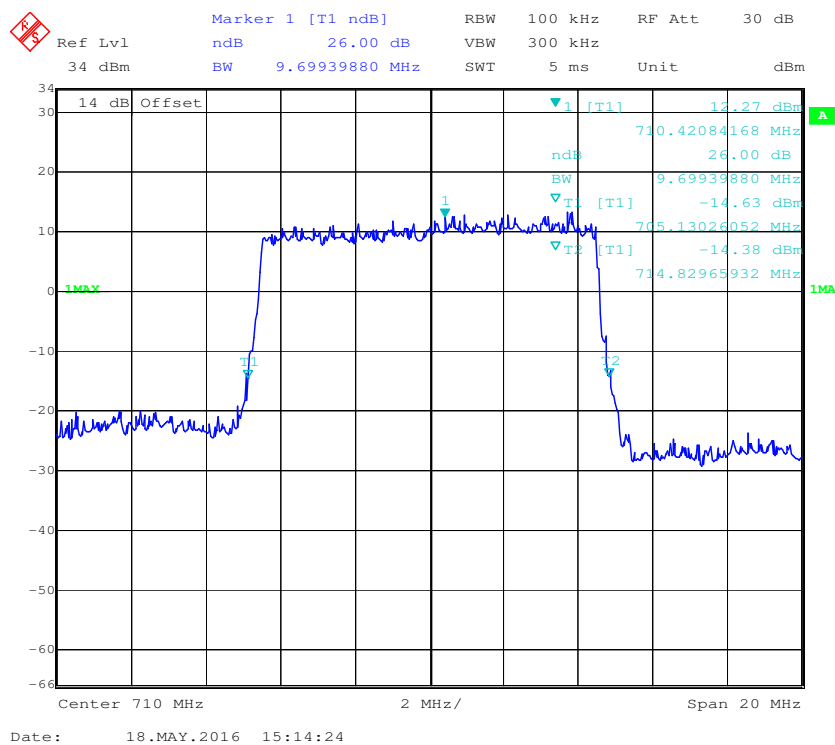
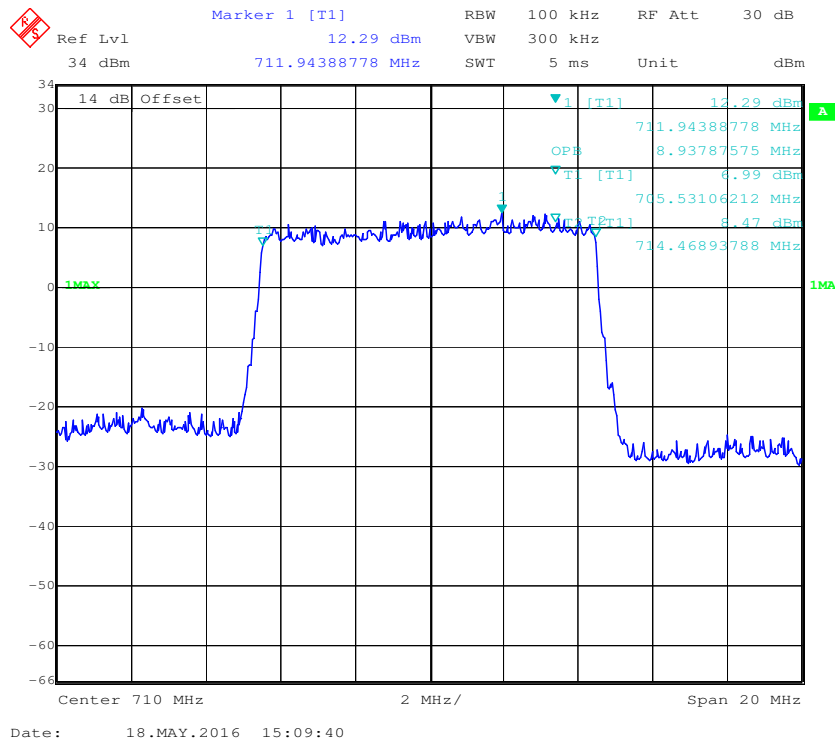
14 dB Offset

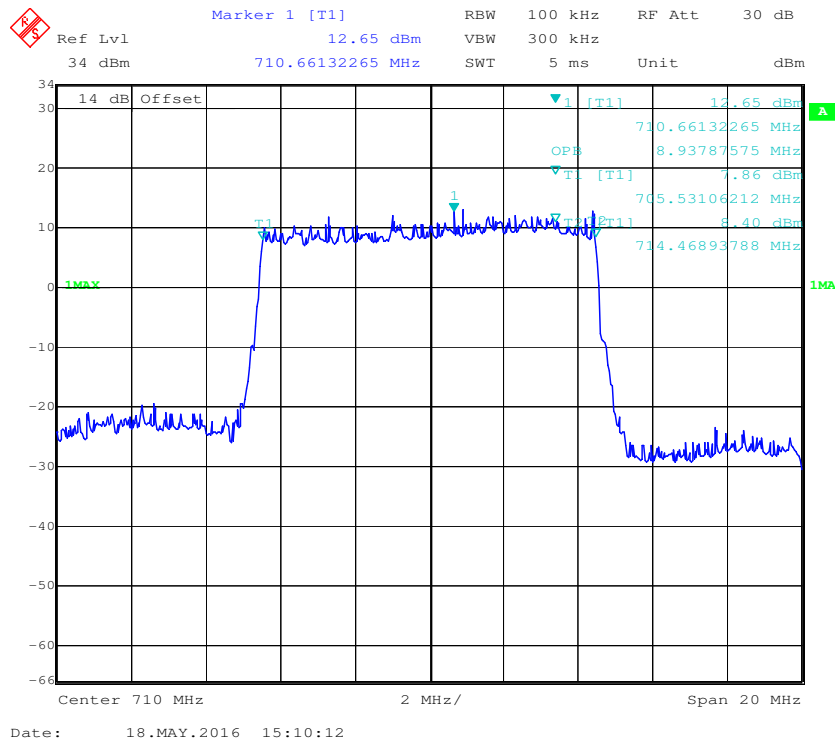
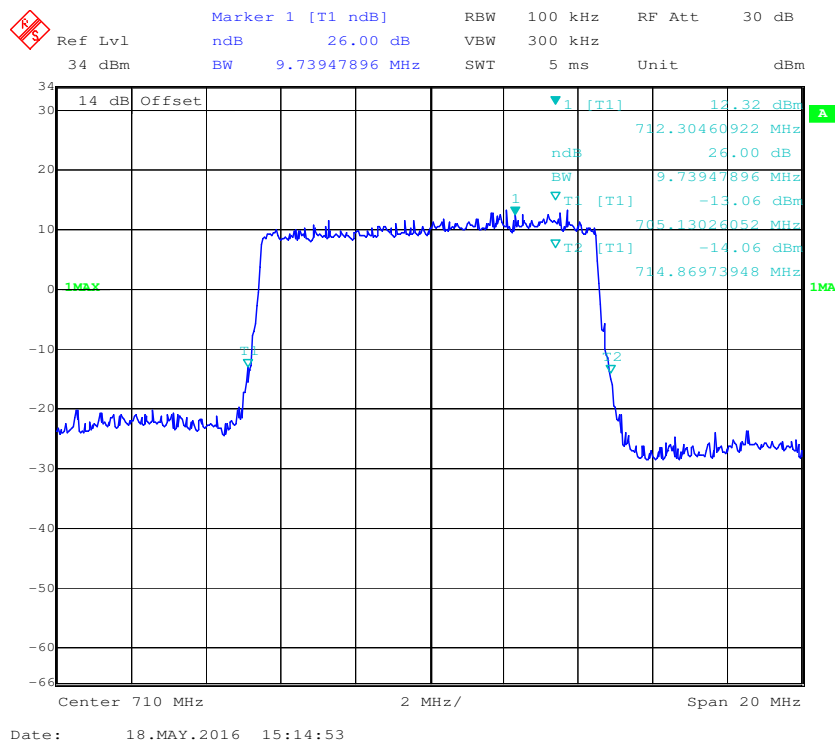
15.00 dBm
 710.39078156 MHz
 ndB
 26.00 dB
 BW 5.03006012 MHz
 [T1] -10.86 dBm
 707.46492986 MHz
 [T1] -10.26 dBm
 712.49498998 MHz

1MA

Center 710 MHz 1 MHz/ Span 10 MHz

Date: 18.MAY.2016 15:15:16



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

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

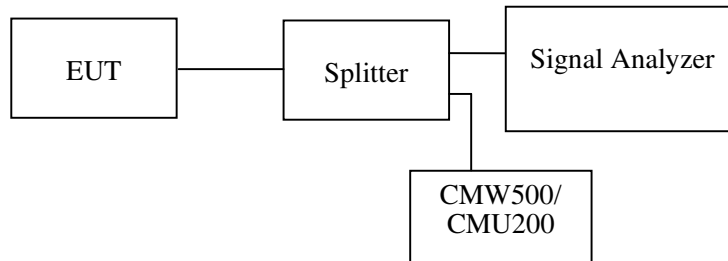
Applicable Standards

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

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

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23
Ducommun technologies	RF Cable	RG-214	4	2015-06-15	2016-06-15
WEINSCHTEL	10dB Attenuator	5321	AU0709	2015-06-18	2016-06-18

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

Test Data**Environmental Conditions**

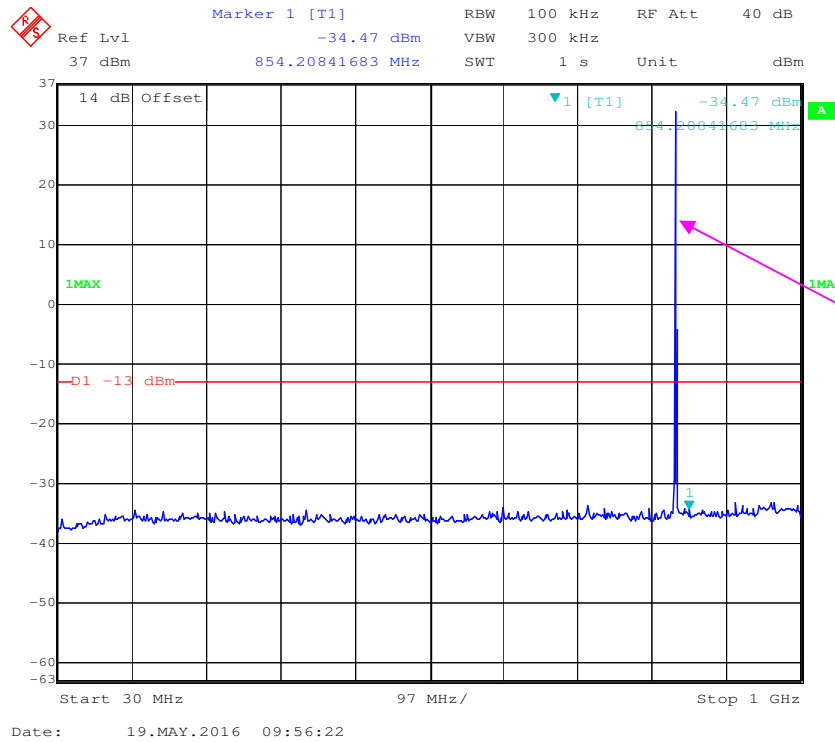
Temperature:	24-25 °C
Relative Humidity:	50-56 %
ATM Pressure:	101.0kPa

The testing was performed by Haiguo Li from 2016-05-18 to 2016-05-31.

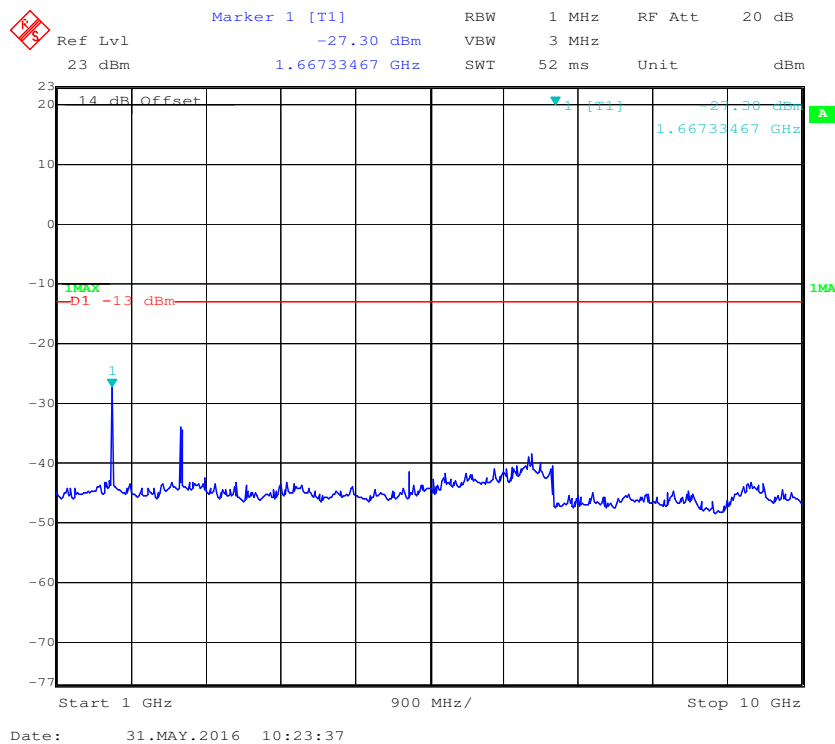
Please refer to the following plots.

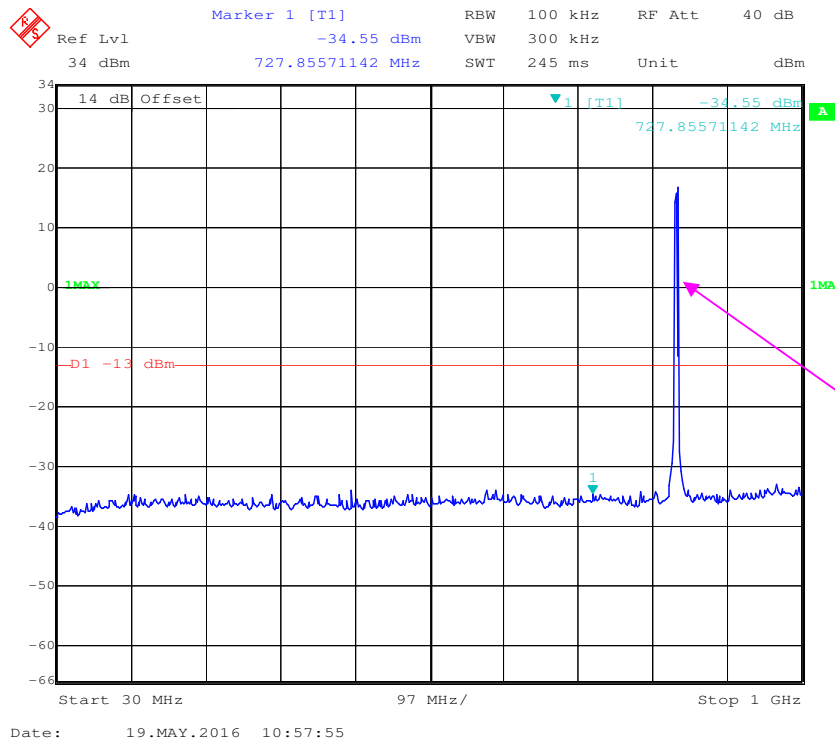
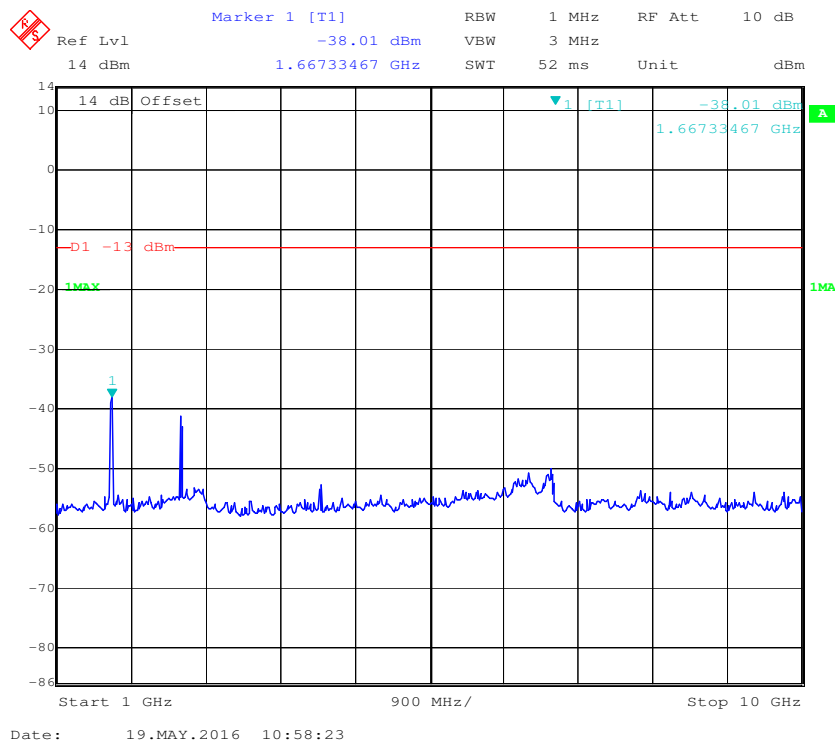
Cellular Band (Part 22H)

30 MHz – 1 GHz (GSM Mode)



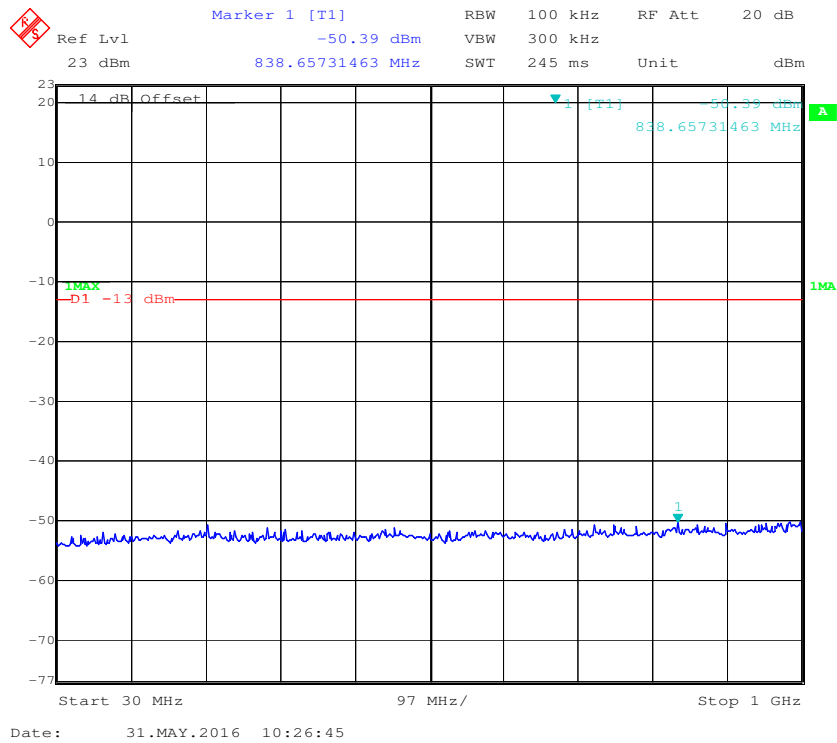
1 GHz – 10 GHz (GSM Mode)



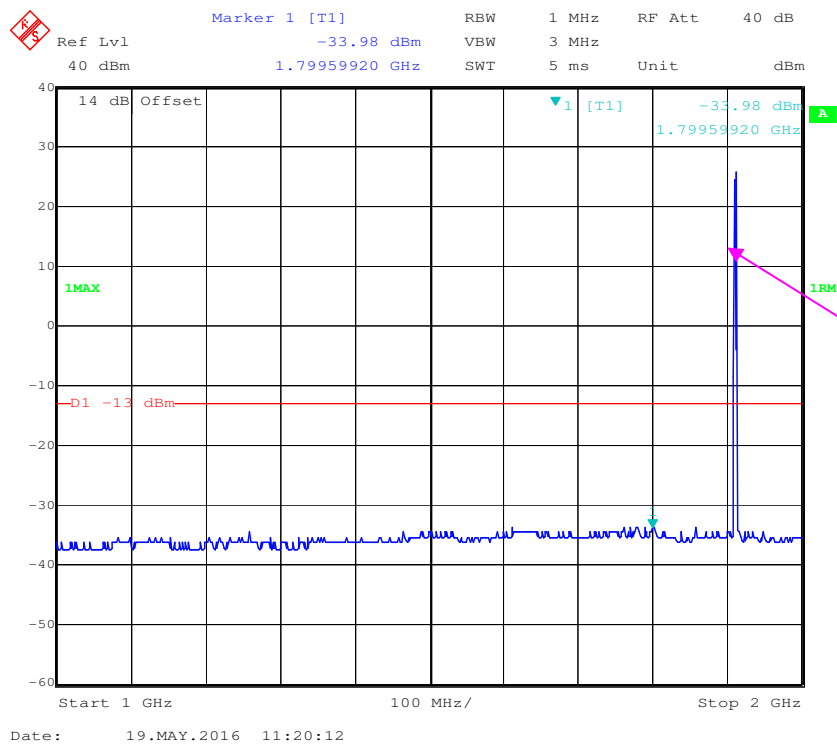
30 MHz – 1 GHz (WCDMA Mode)**1 GHz – 10 GHz (WCDMA Mode)**

PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)

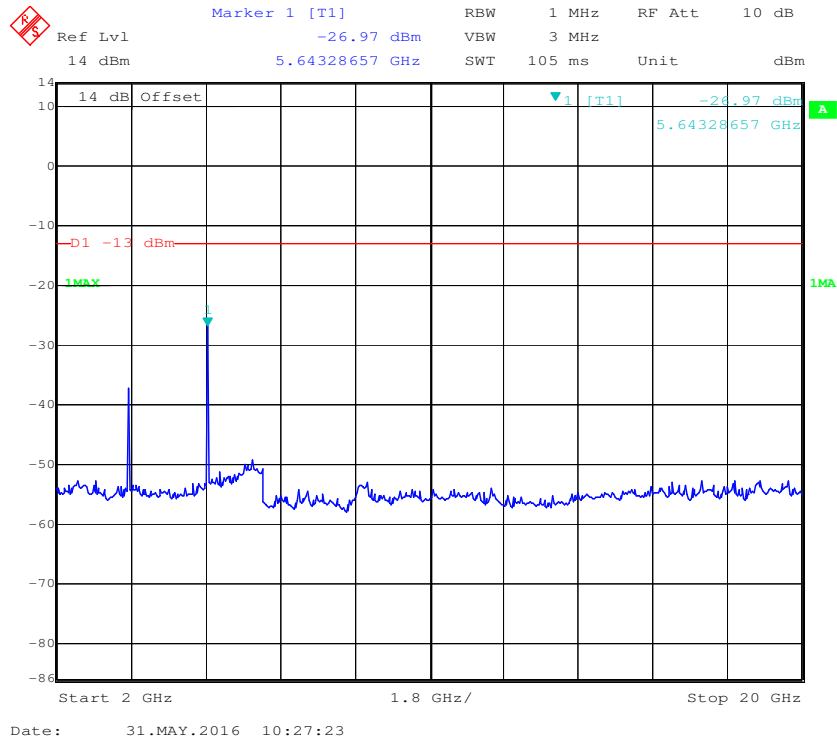


1 GHz – 2 GHz (GSM Mode)

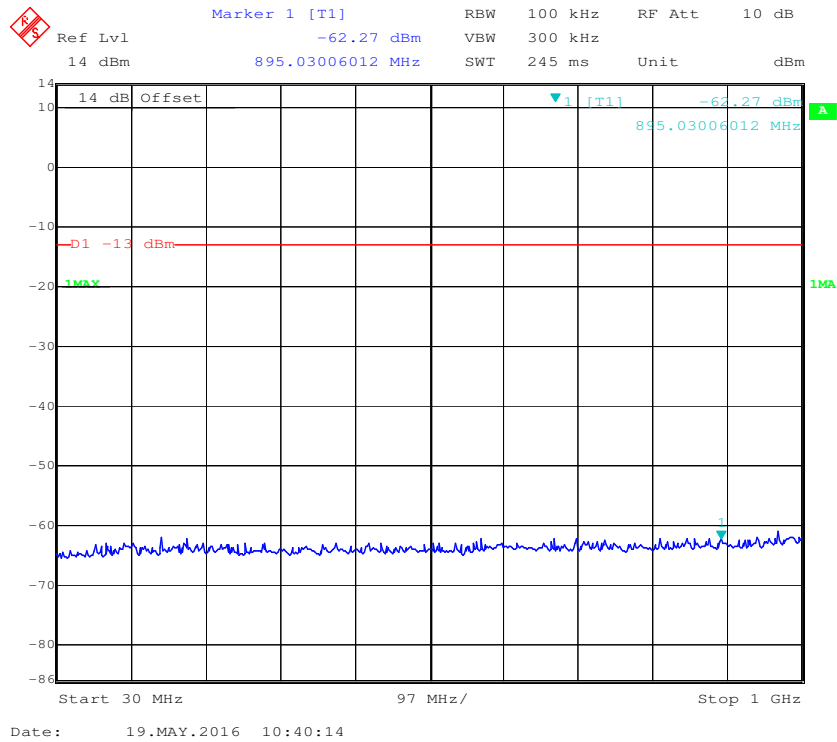


Fundamental test

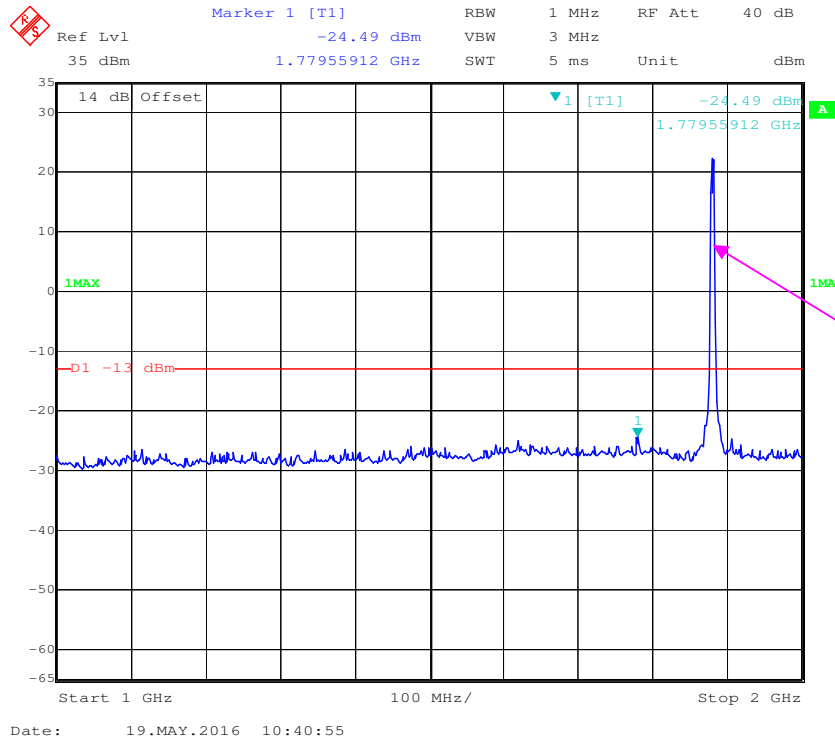
2 GHz – 20 GHz (GSM Mode)



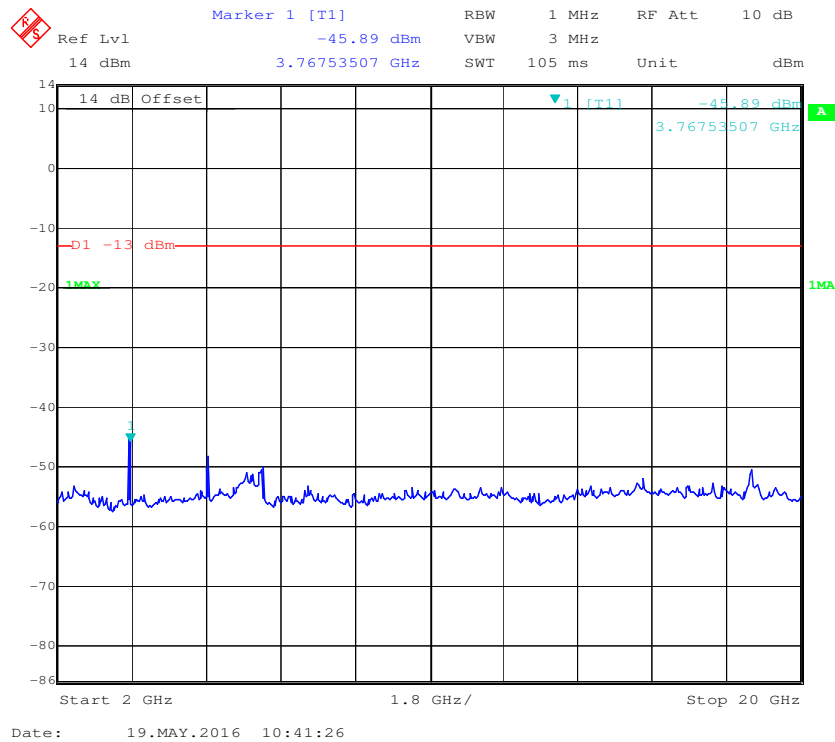
30 MHz – 1 GHz (WCDMA Mode)



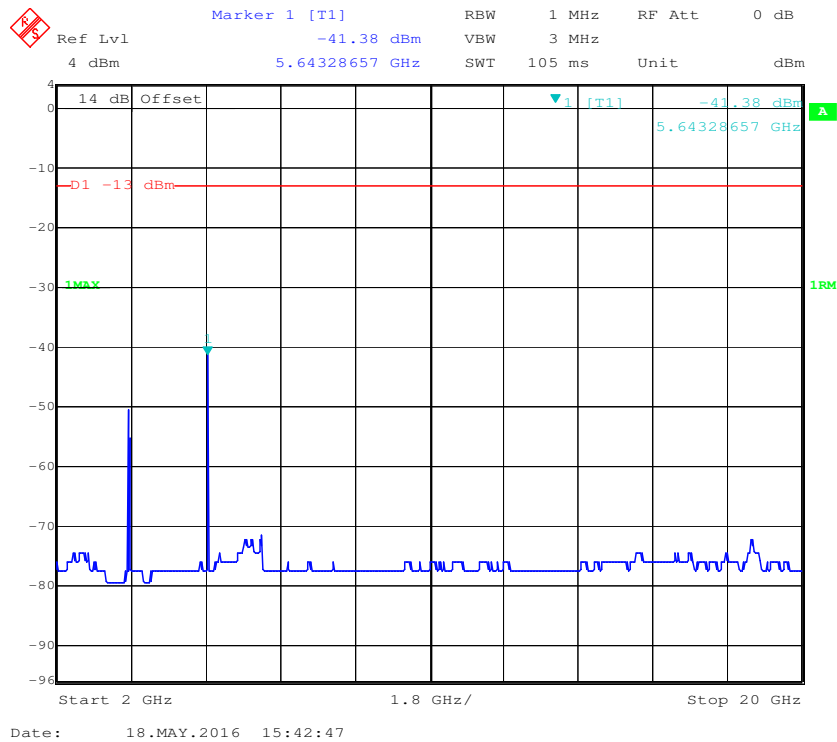
1 GHz – 2 GHz (WCDMA Mode)



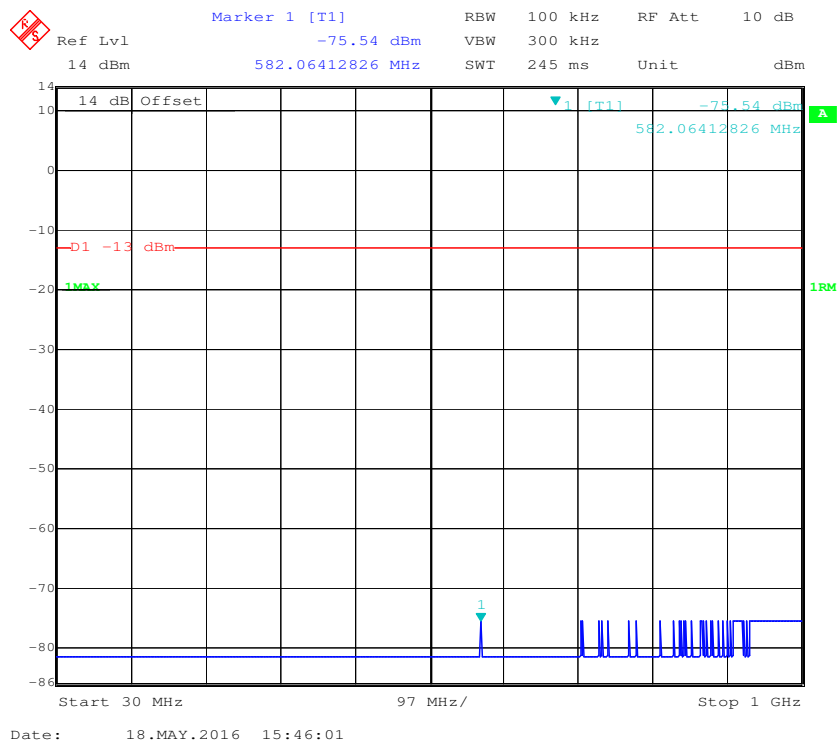
2 GHz – 20 GHz (WCDMA Mode)



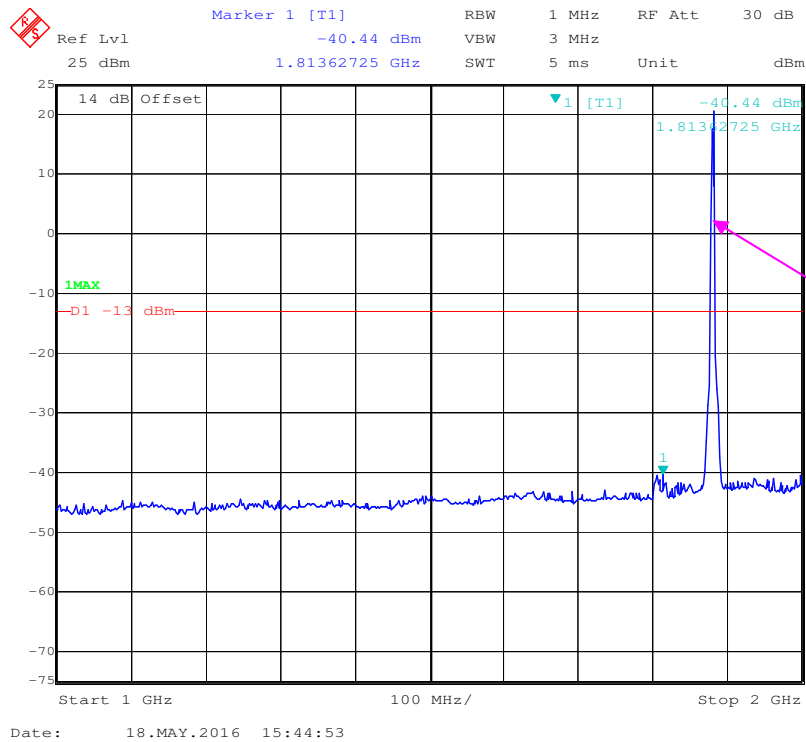
2 GHz – 20 GHz (1.4 MHz, Middle Channel)



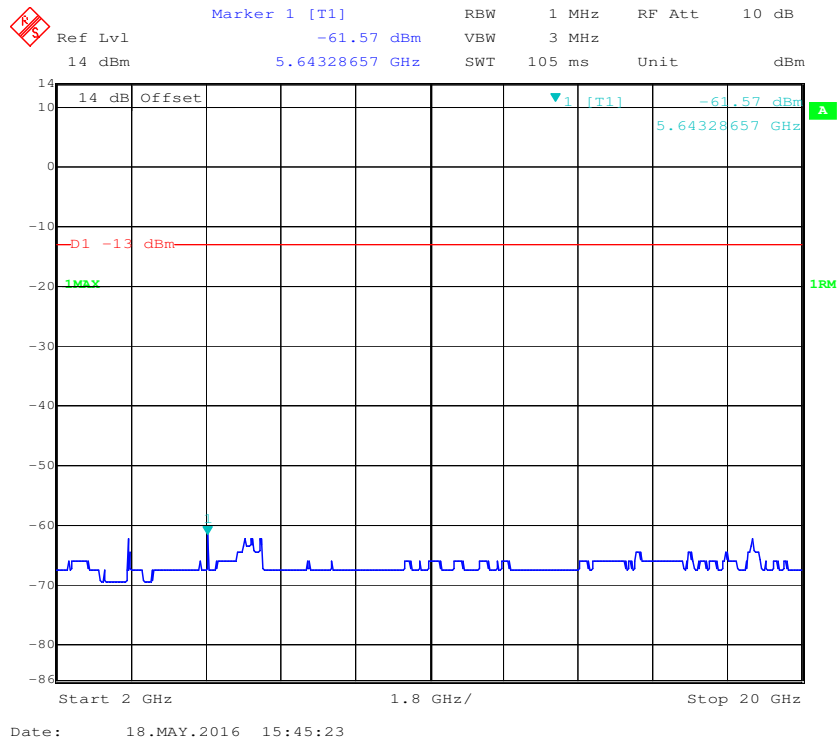
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



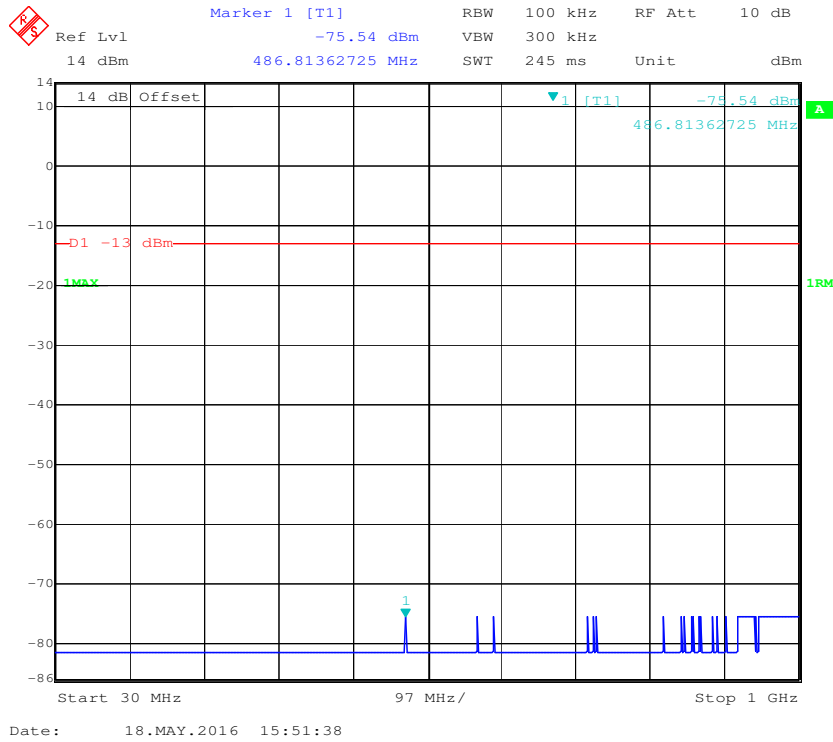
1 GHz – 2 GHz (3.0 MHz, Middle Channel)



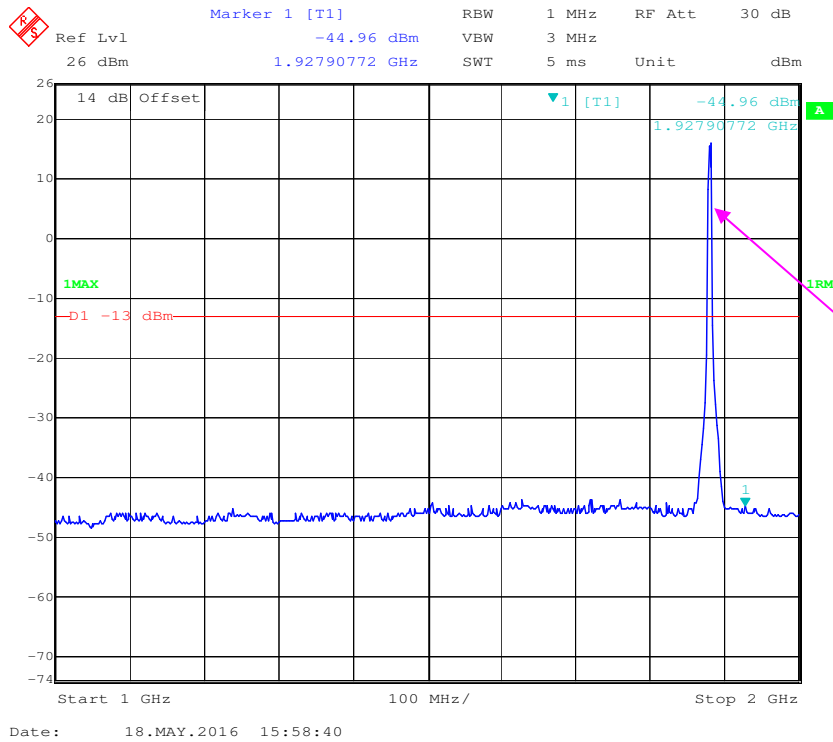
2 GHz – 20 GHz (3.0 MHz, Middle Channel)



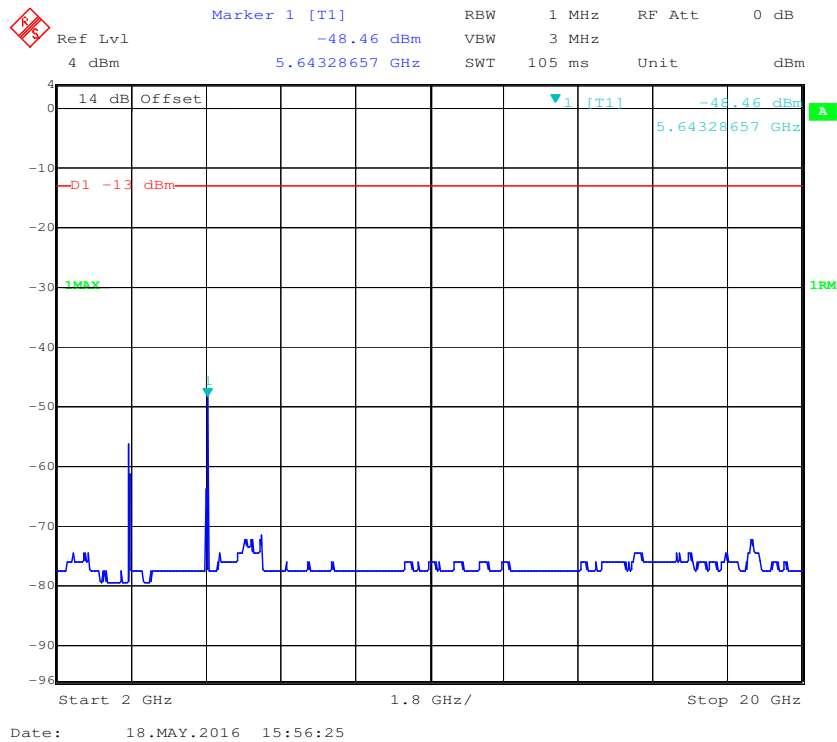
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



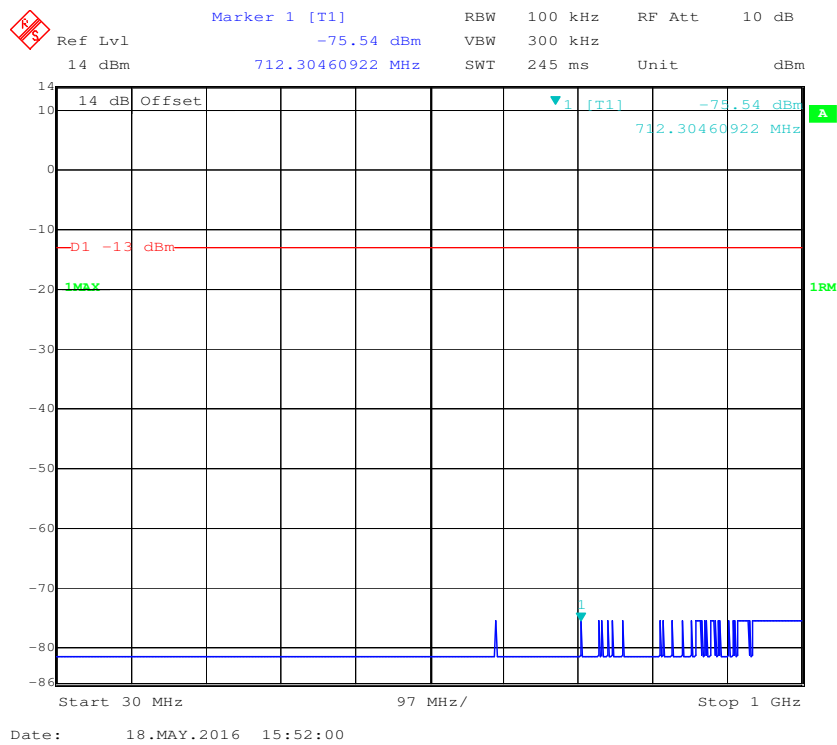
1 GHz - 2 GHz (5.0 MHz, Middle Channel)



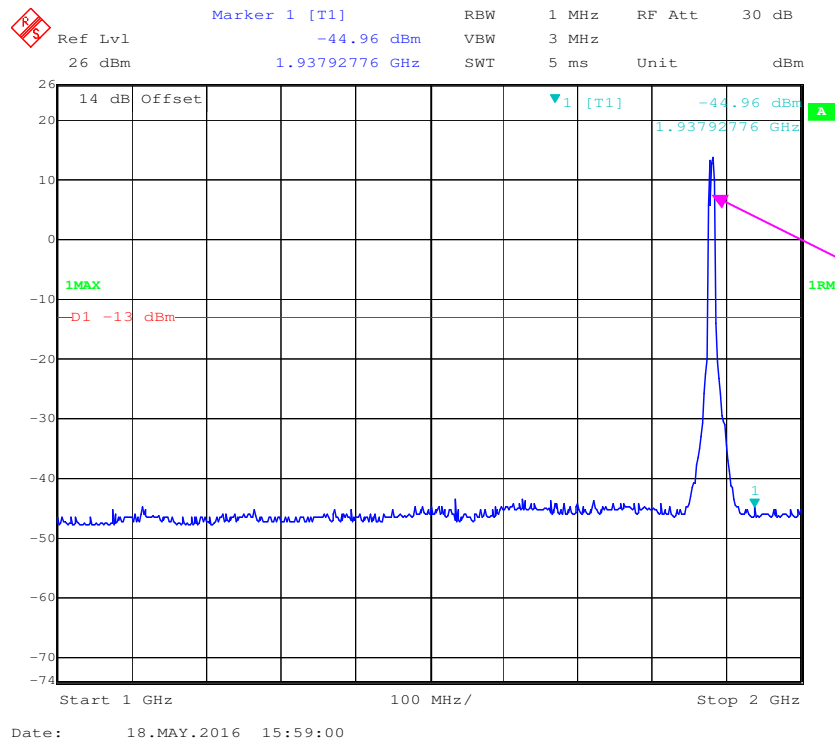
2 GHz – 20 GHz (5.0 MHz, Middle Channel)



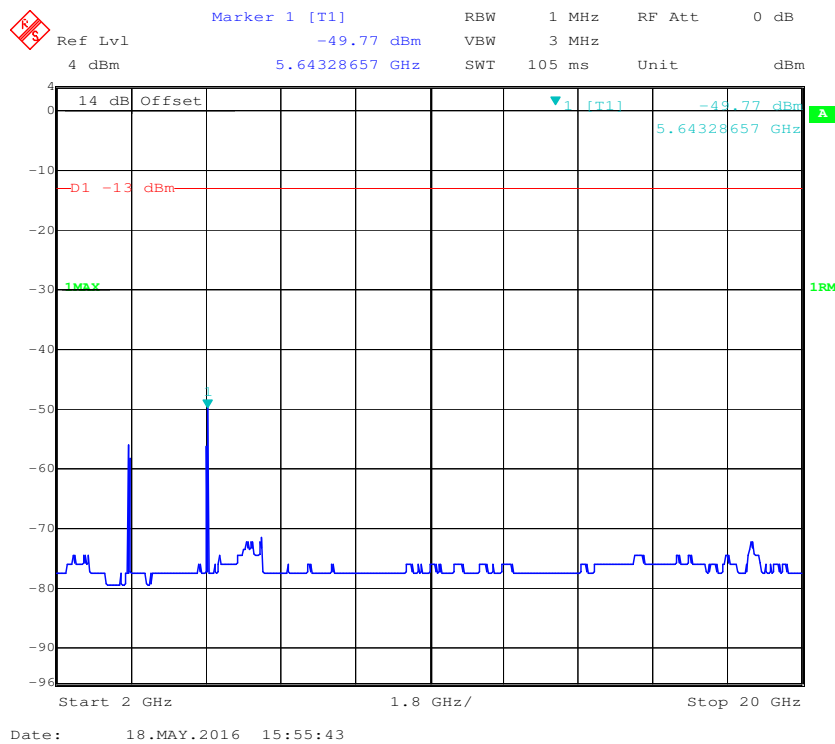
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



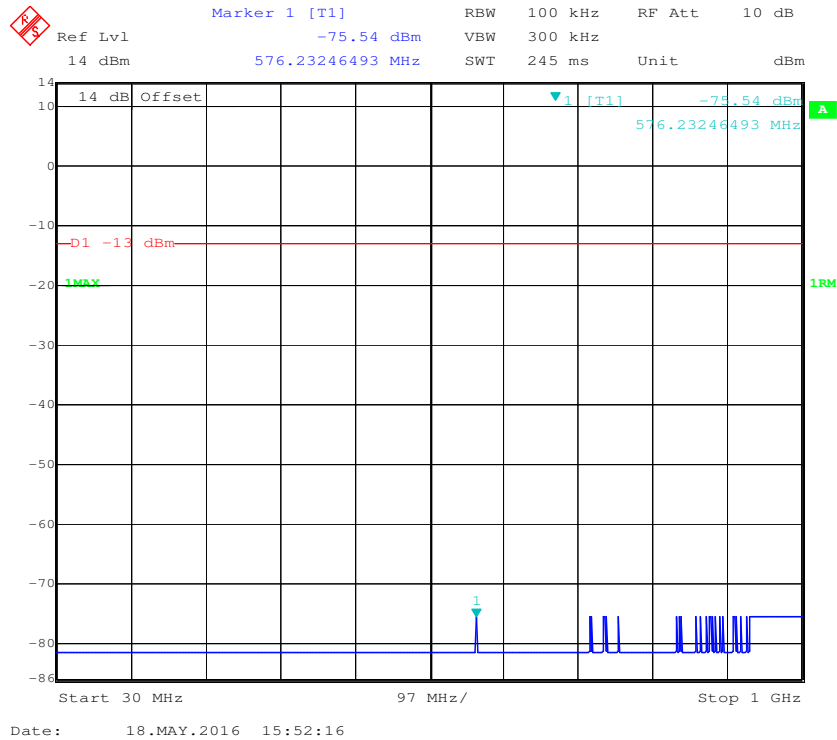
1 GHz – 2 GHz (10.0 MHz, Middle Channel)



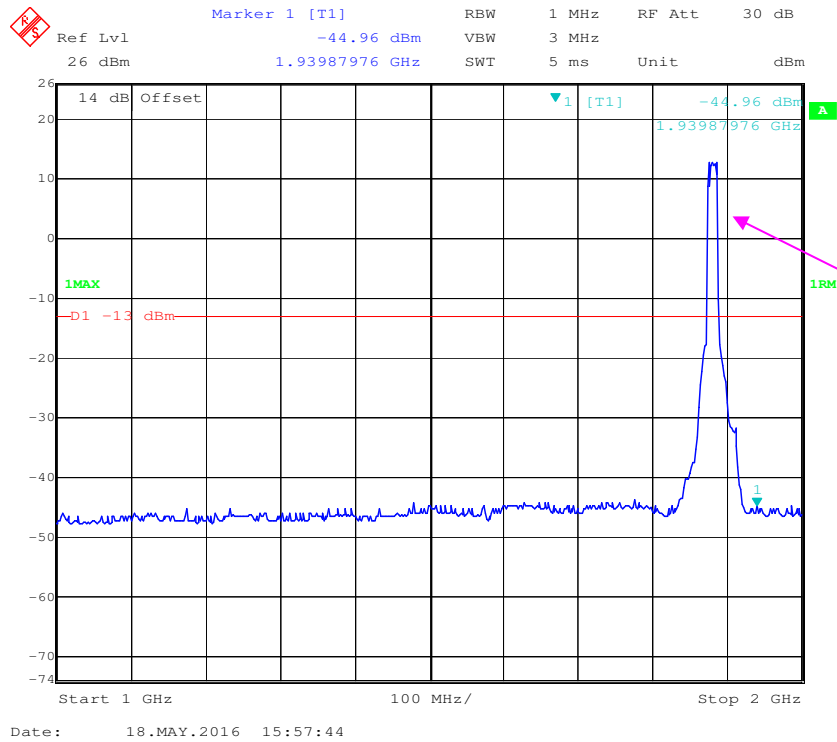
2 GHz – 20 GHz (10.0 MHz, Middle Channel)



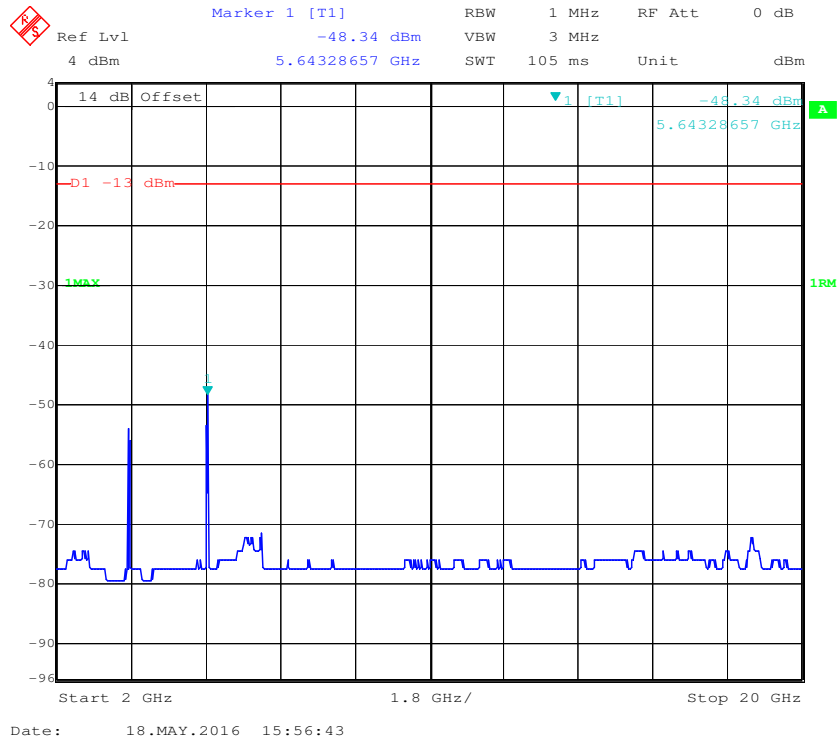
30 MHz - 1 GHz (15.0 MHz, Middle Channel)



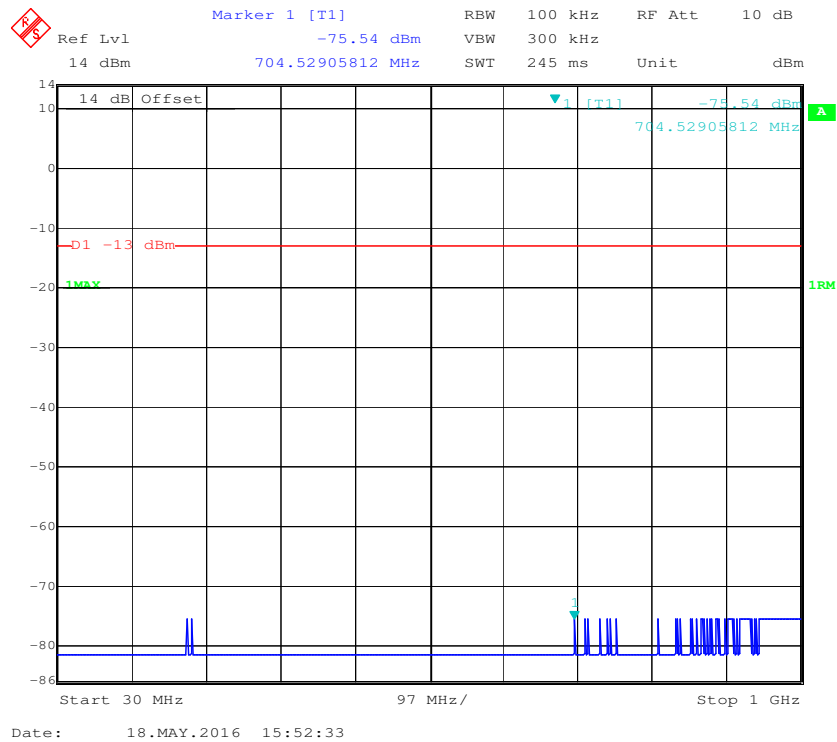
1 GHz – 2 GHz (15.0 MHz, Middle Channel)



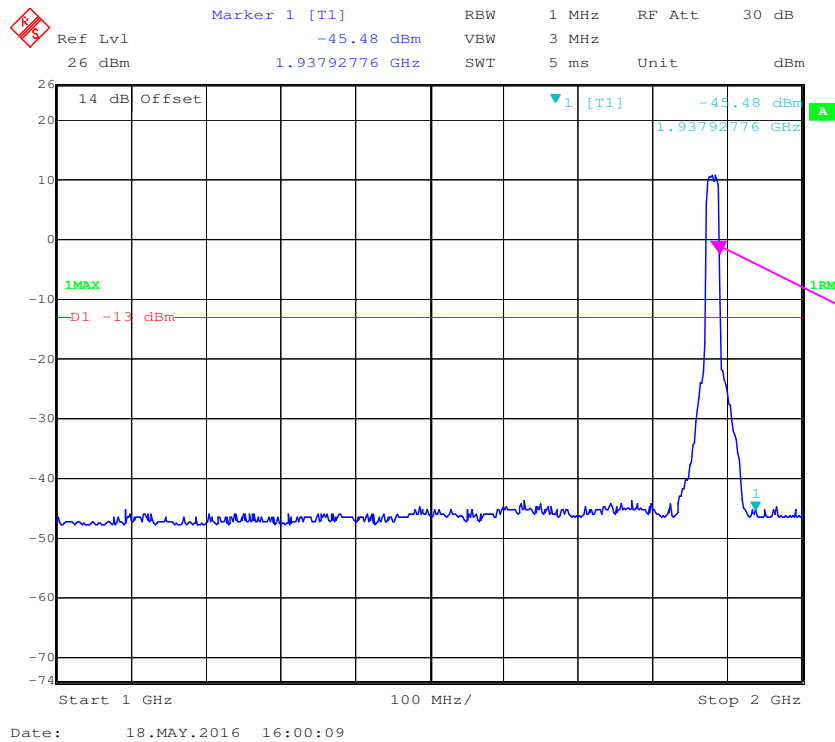
2 GHz – 20GHz (15.0 MHz, Middle Channel)



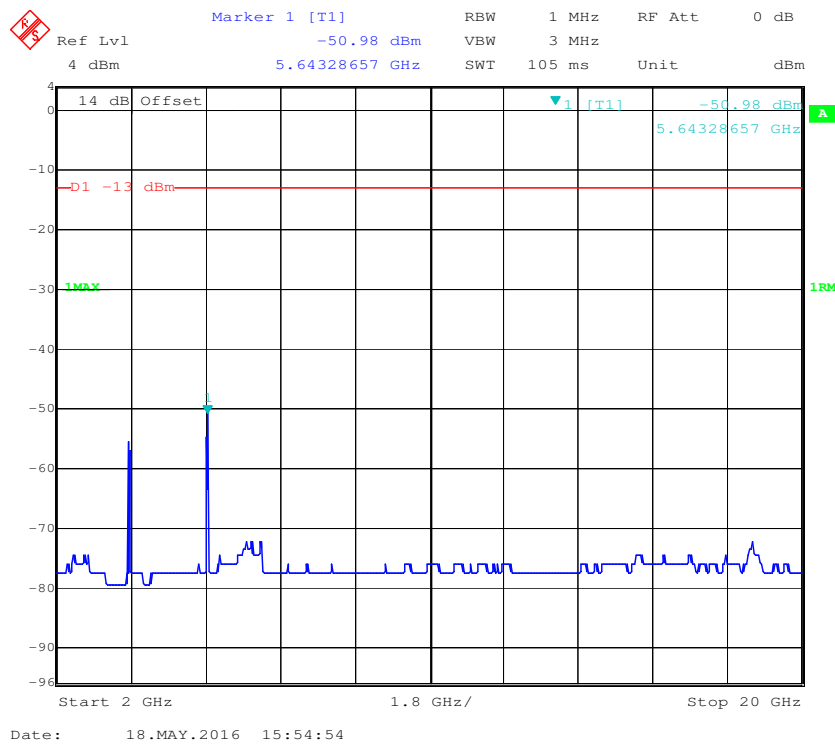
30 MHz - 1 GHz (20.0 MHz, Middle Channel)



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

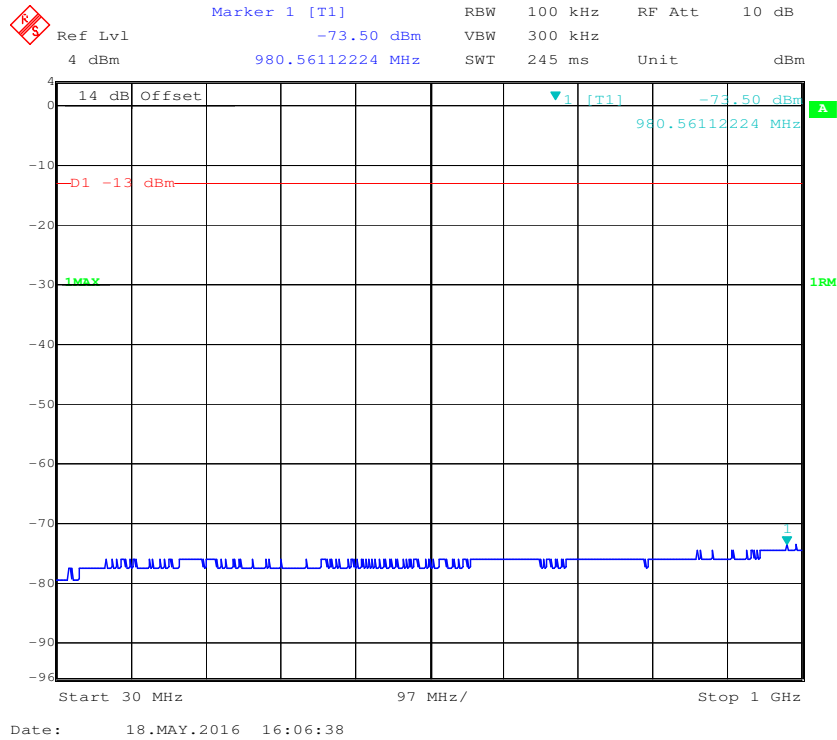


2 GHz – 20 GHz (20.0 MHz, Middle Channel)

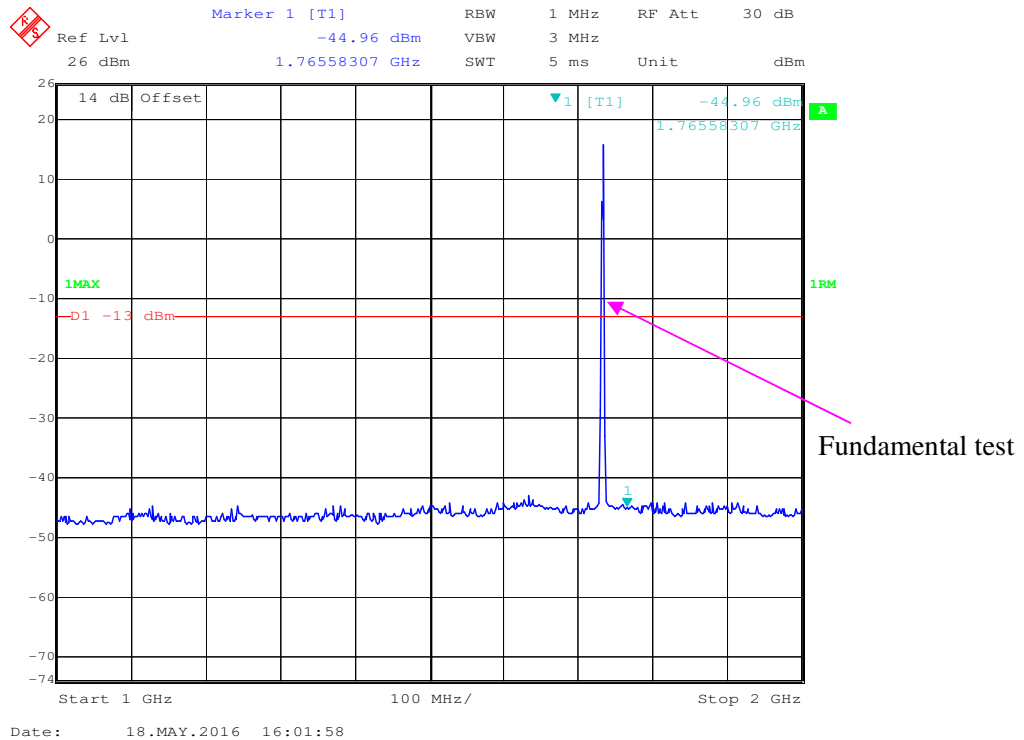


LTE Band 4:

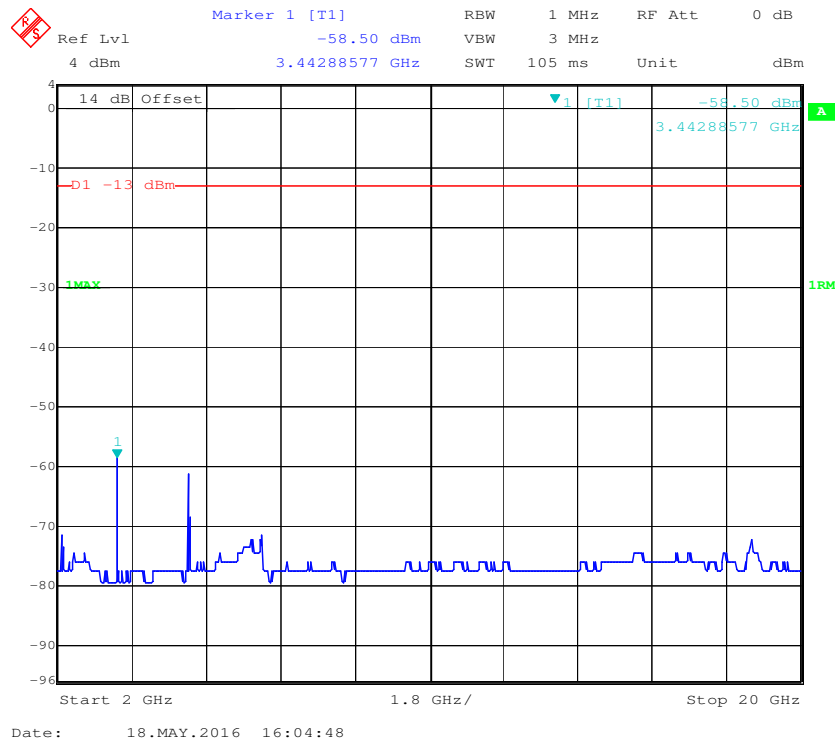
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



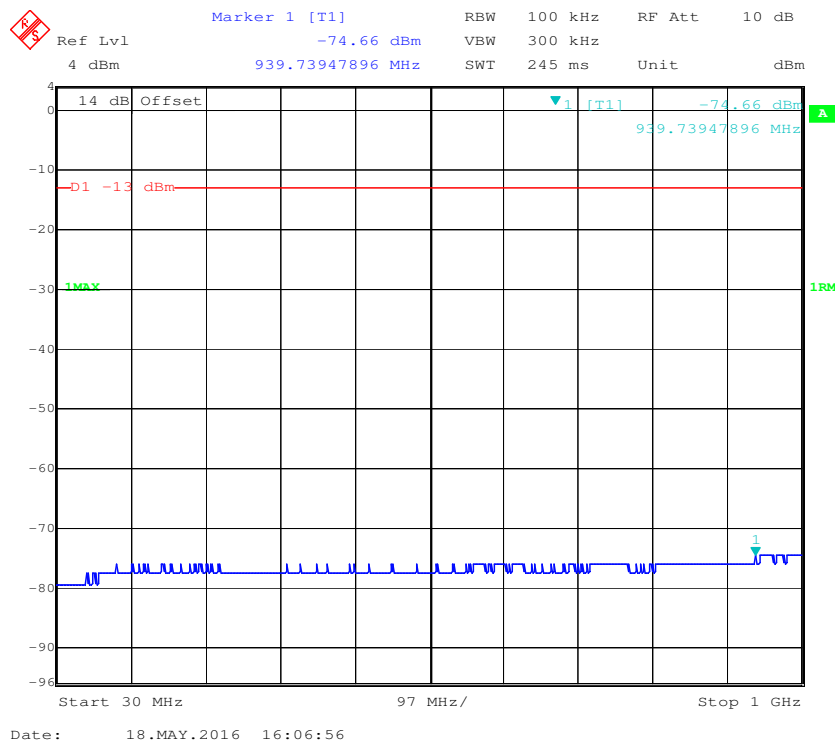
1 GHz – 2 GHz (1.4 MHz, Middle Channel)



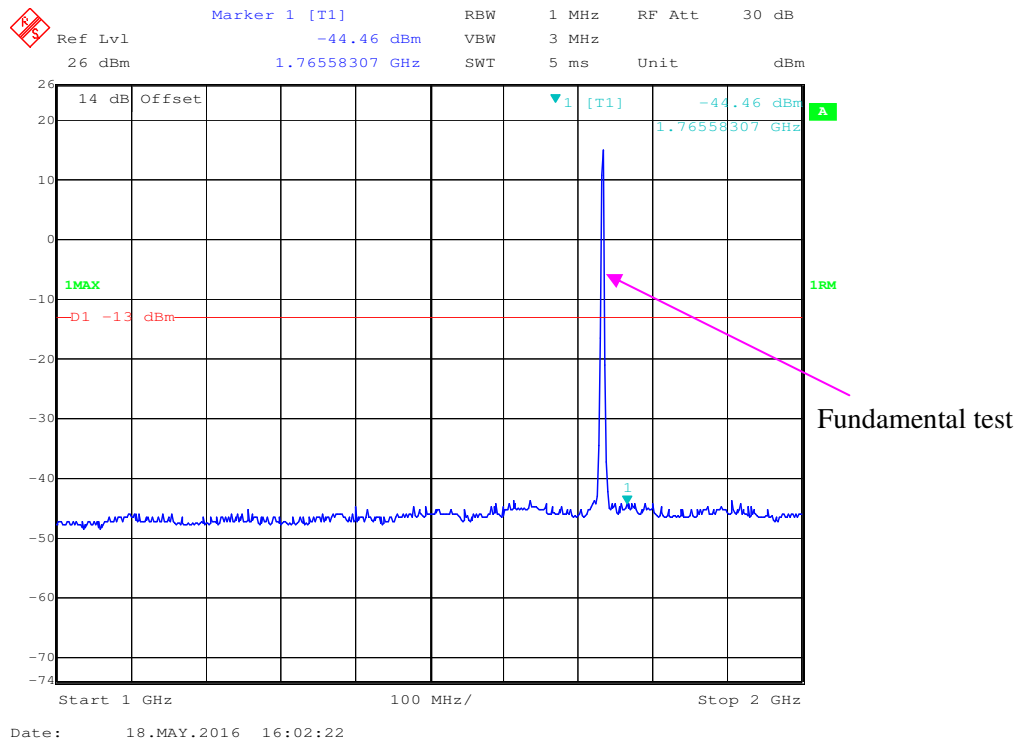
2 GHz – 20 GHz (1.4 MHz, Middle Channel)



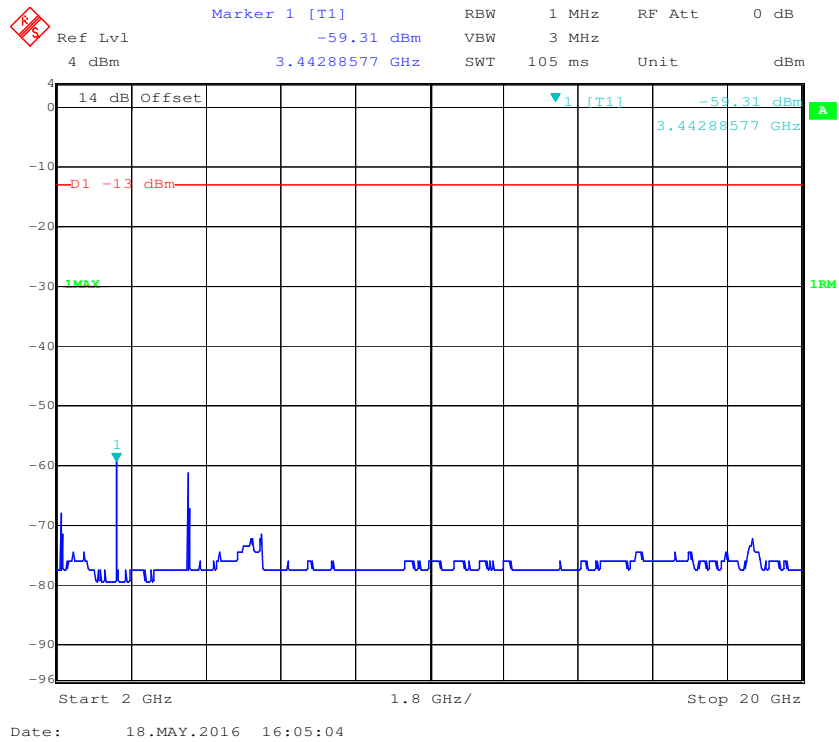
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



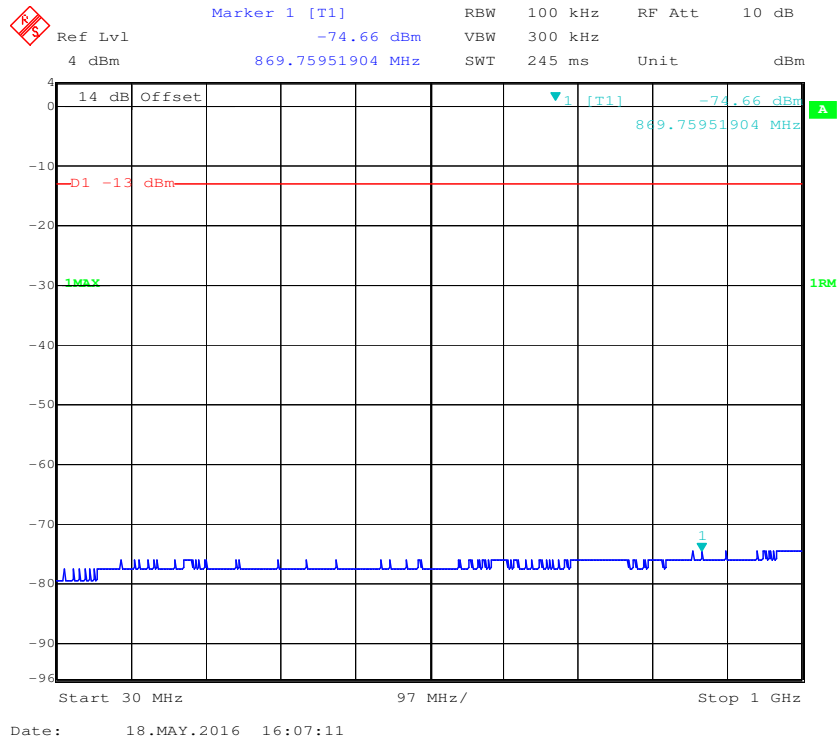
1 GHz – 2 GHz (3.0 MHz, Middle Channel)



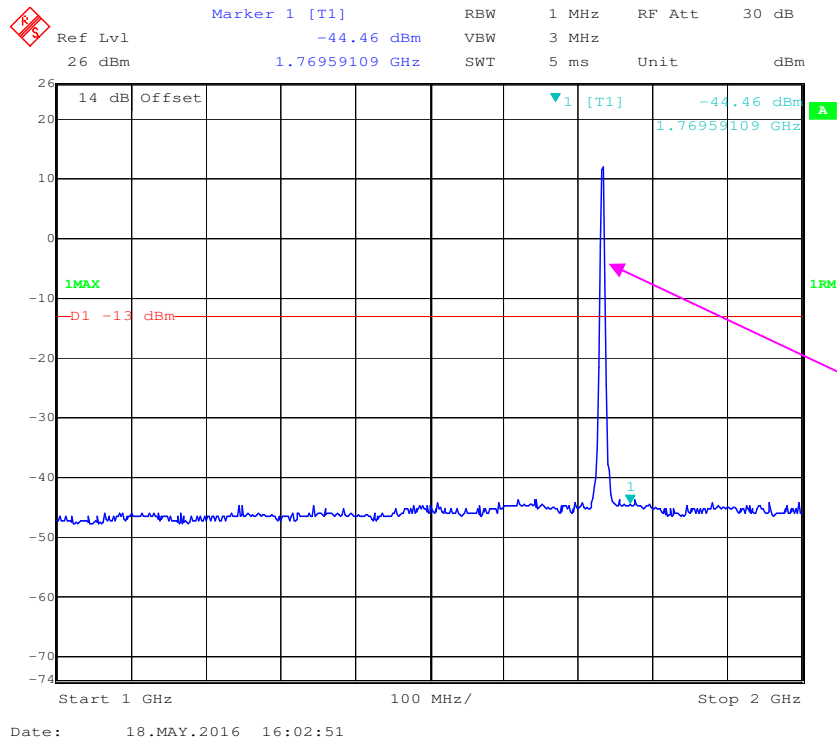
2 GHz – 20 GHz (3.0 MHz, Middle Channel)



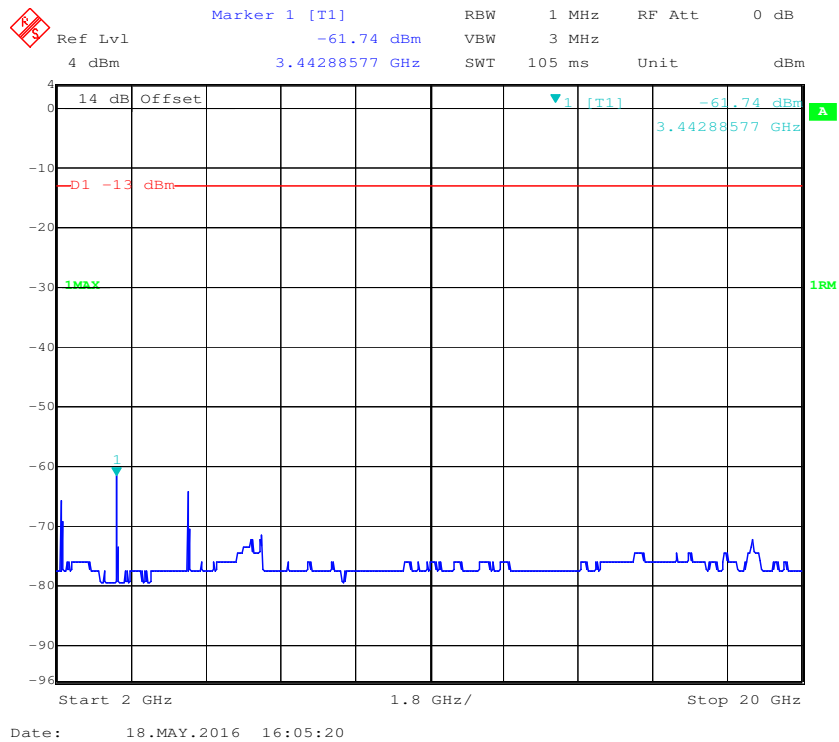
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



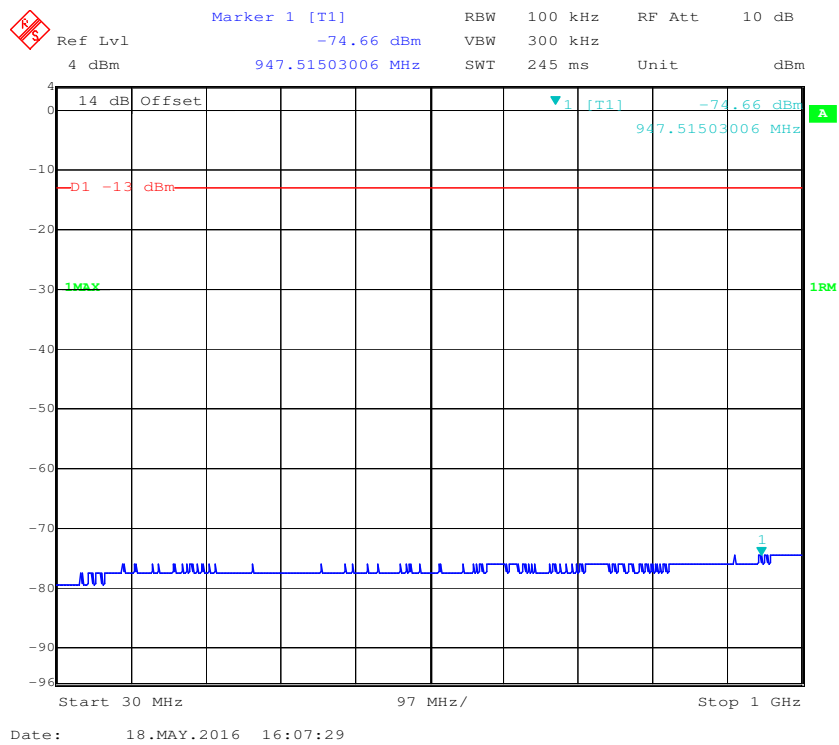
1 GHz - 2 GHz (5.0 MHz, Middle Channel)



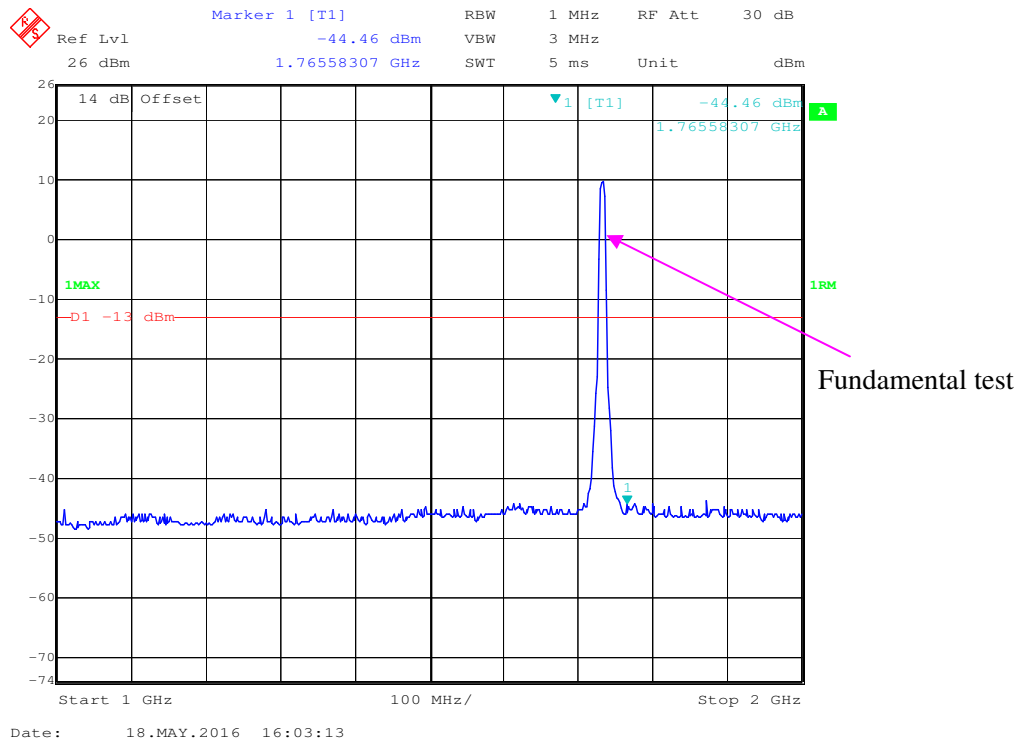
2 GHz – 20 GHz (5.0 MHz, Middle Channel)



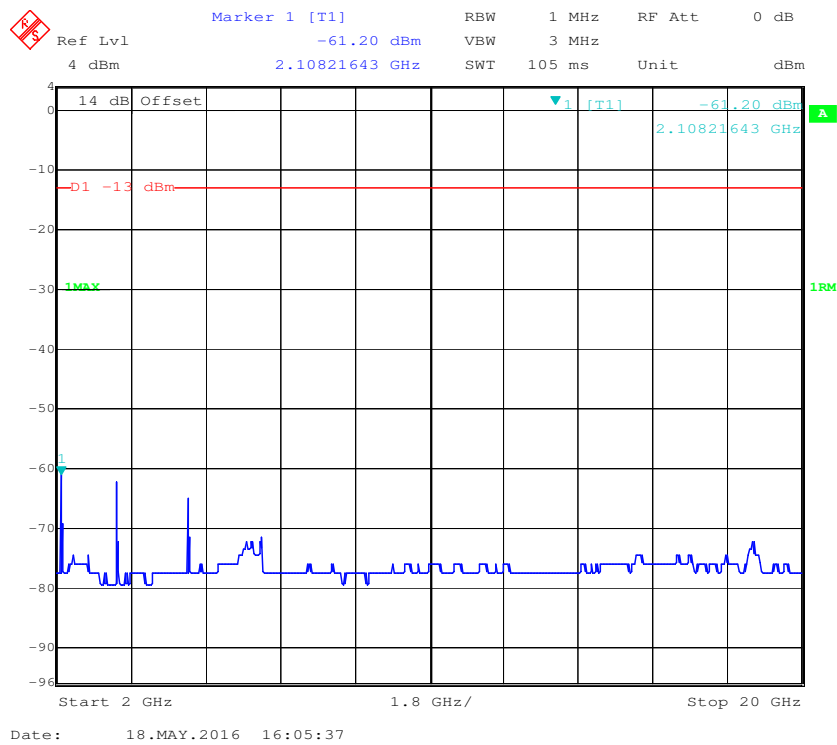
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



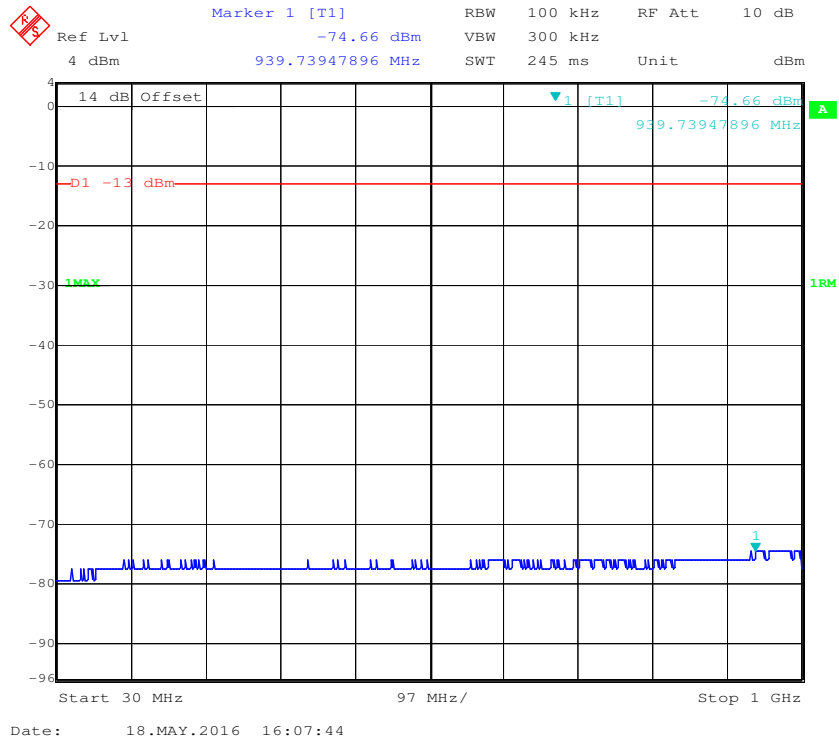
1 GHz – 2 GHz (10.0 MHz, Middle Channel)



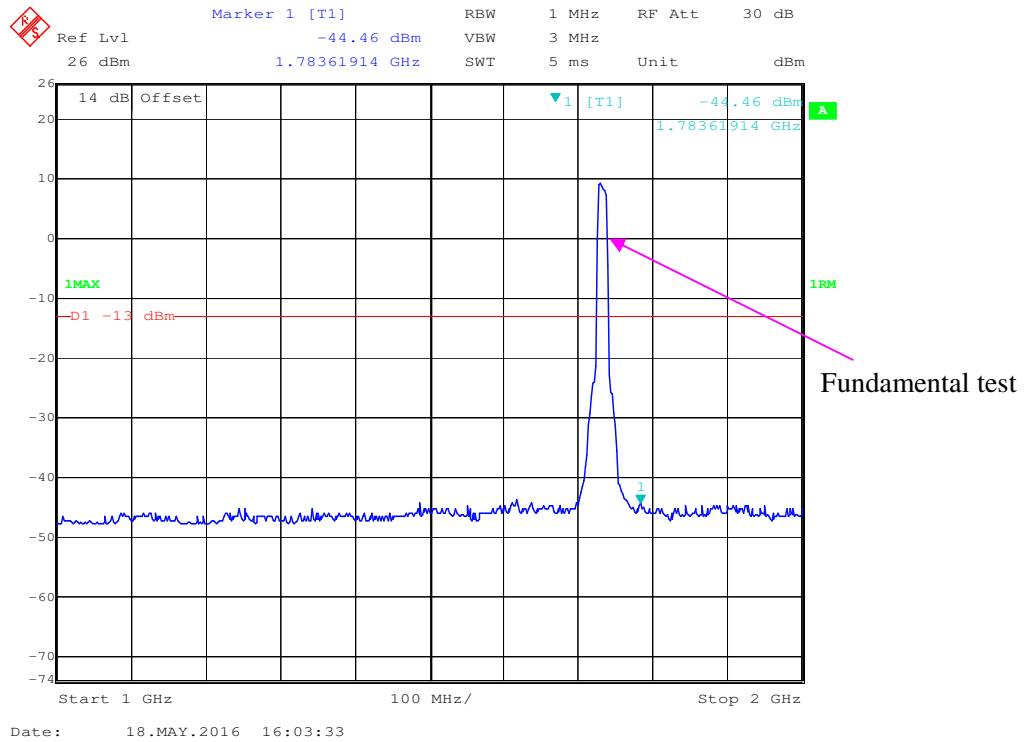
2 GHz – 20 GHz (10.0 MHz, Middle Channel)



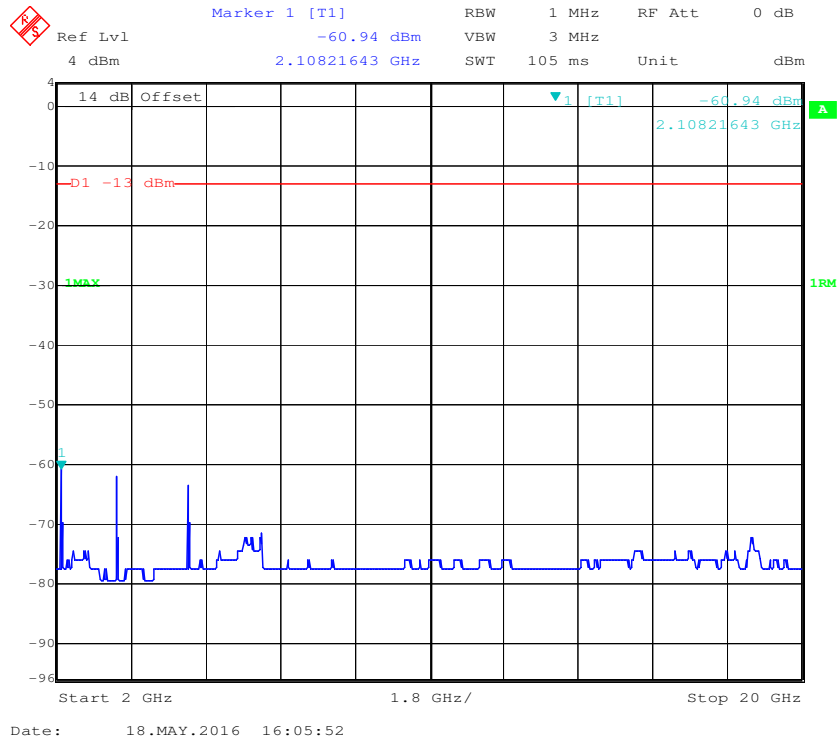
30 MHz - 1 GHz (15.0 MHz, Middle Channel)



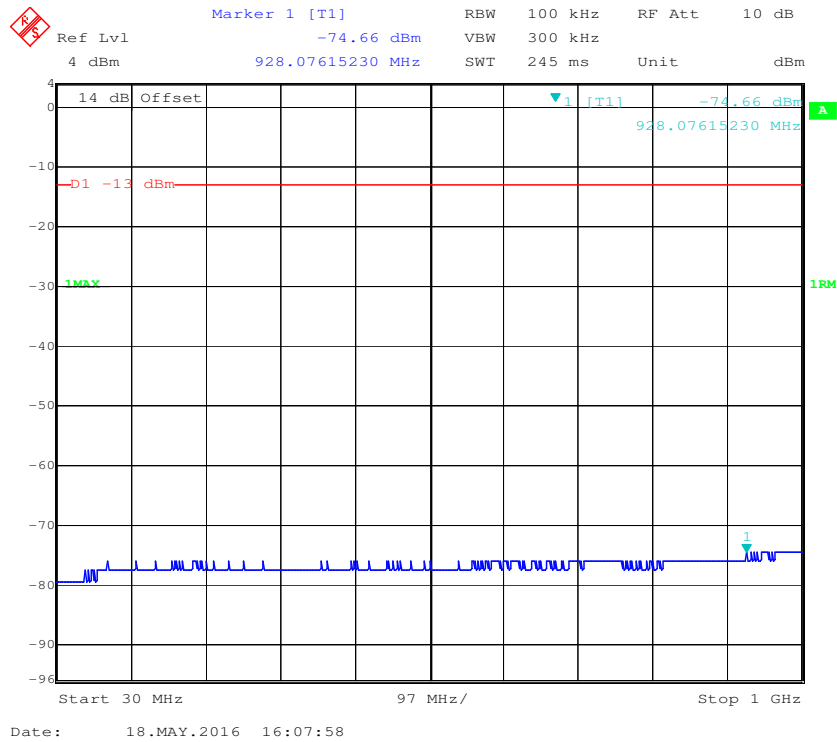
1 GHz – 2 GHz (15.0 MHz, Middle Channel)



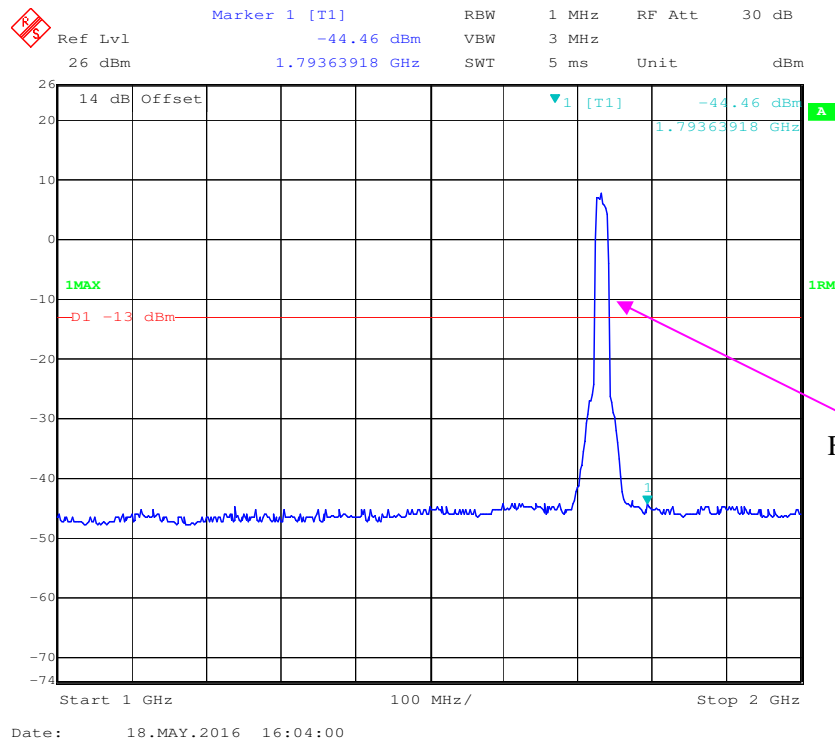
2 GHz – 20GHz (15.0 MHz, Middle Channel)



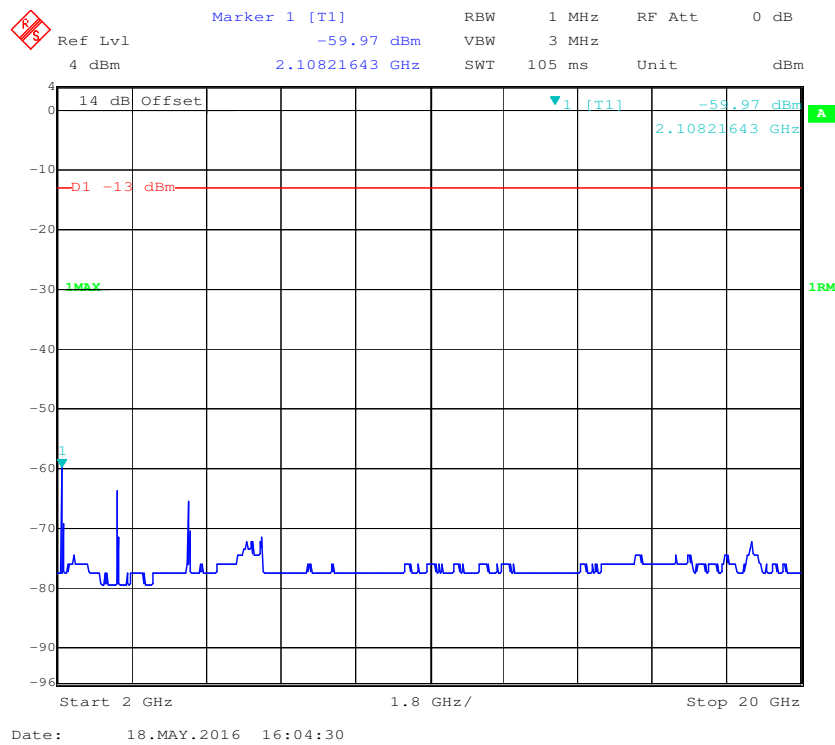
30 MHz - 1 GHz (20.0 MHz, Middle Channel)



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

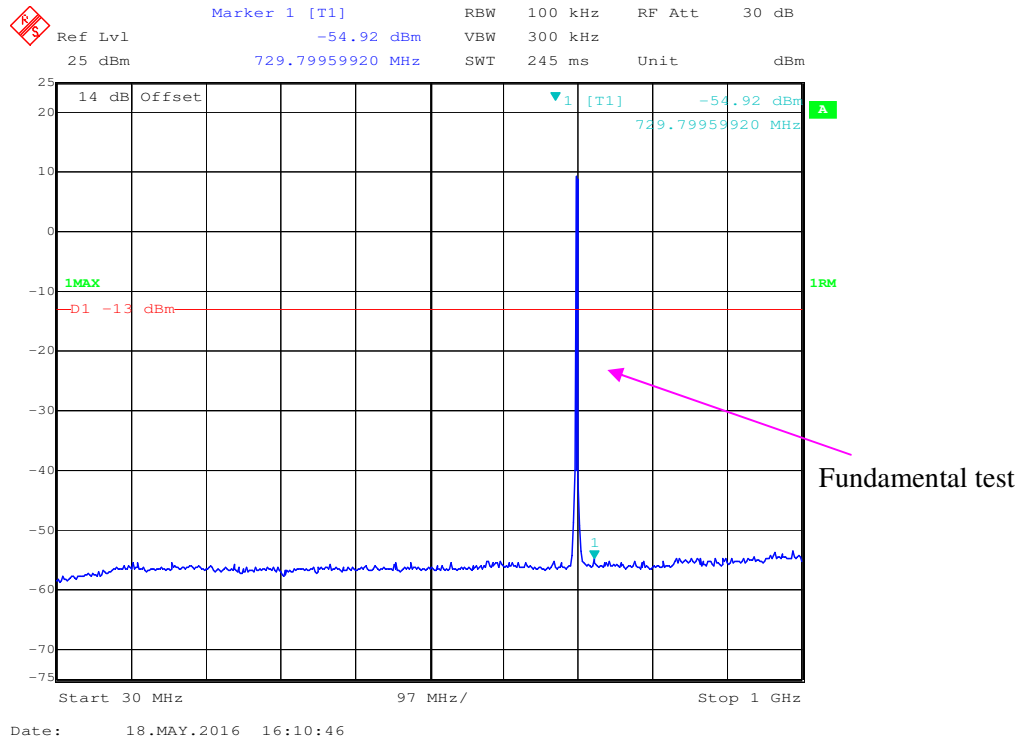


2 GHz – 20 GHz (20.0 MHz, Middle Channel)

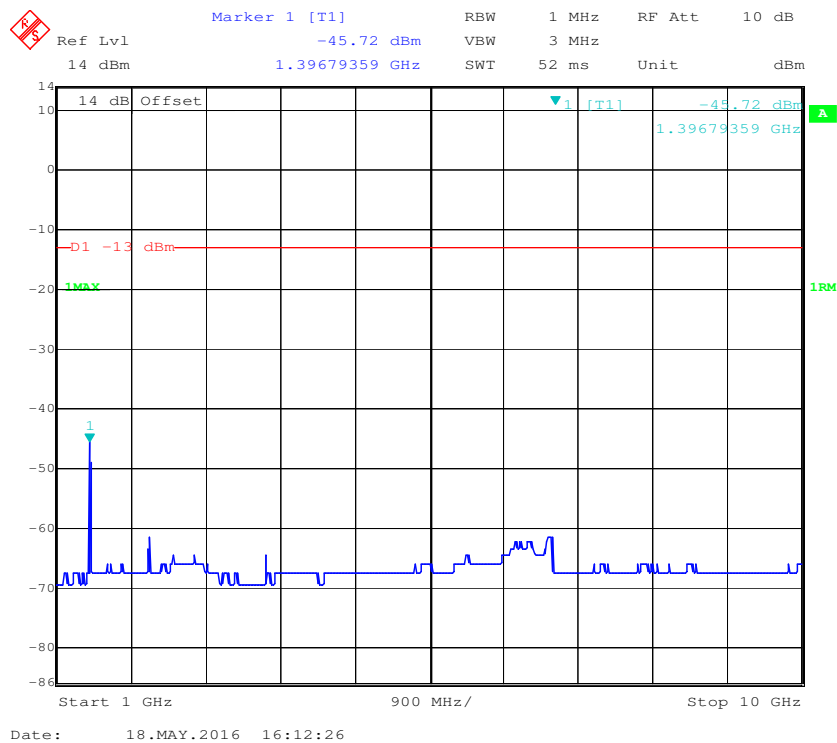


LTE Band 12:

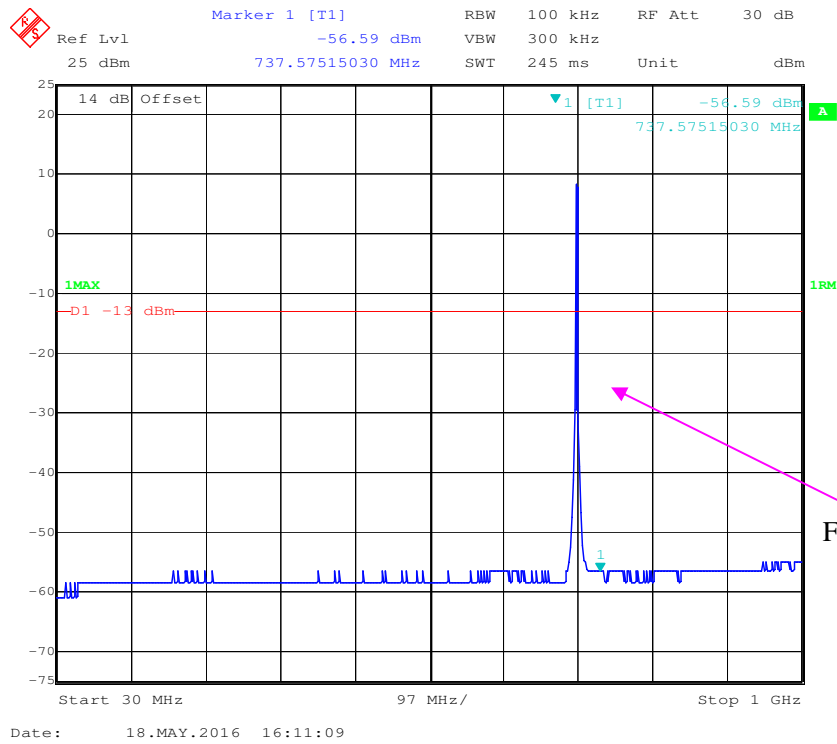
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



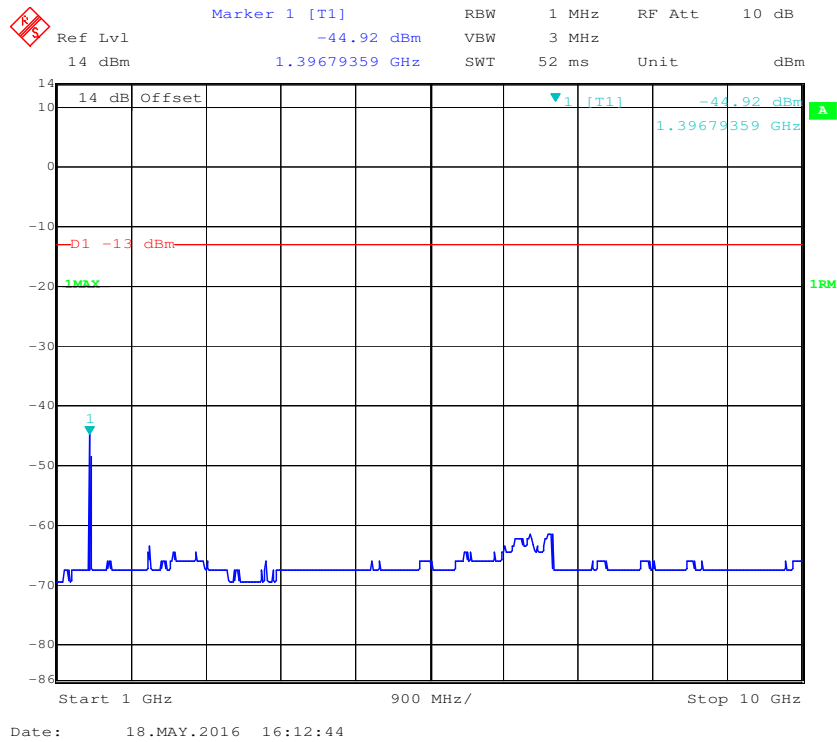
1 GHz -10 GHz (1.4 MHz, Middle Channel)



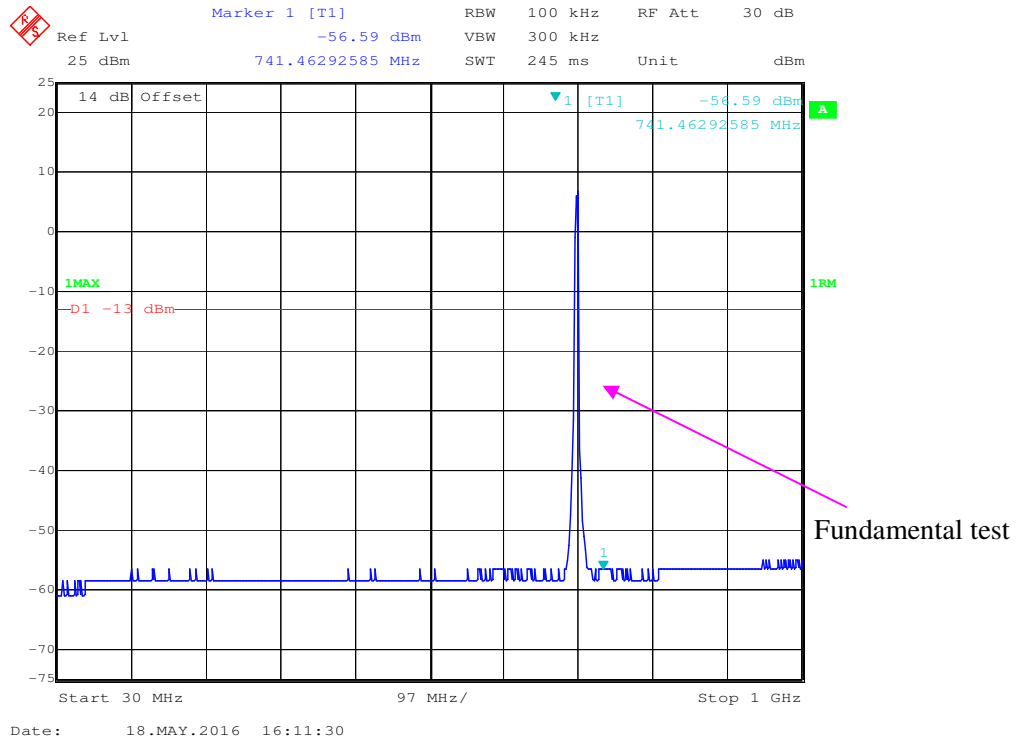
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



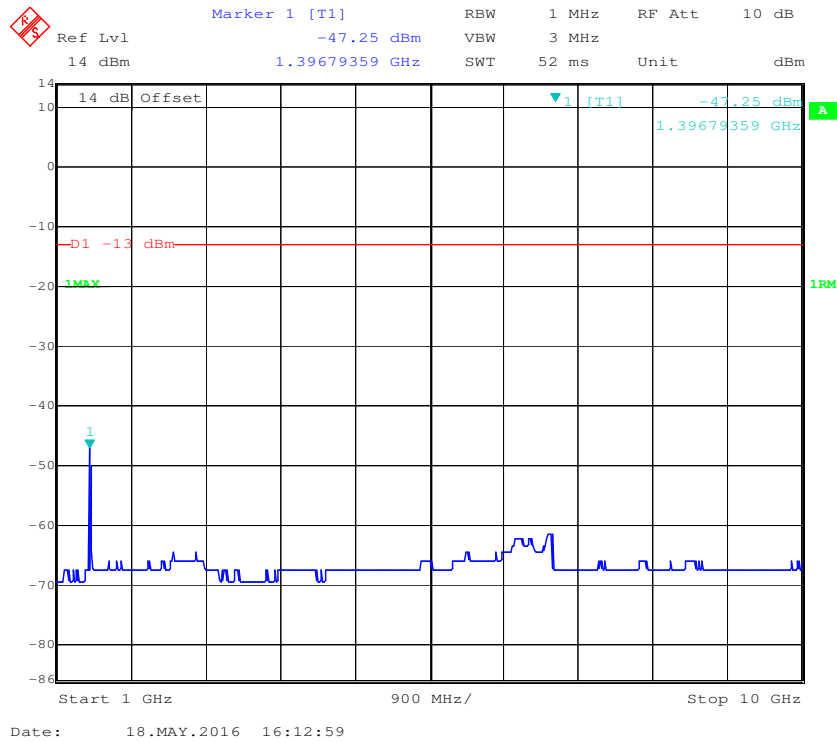
1 GHz – 10 GHz (3.0 MHz, Middle Channel)



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



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



Ref Lvl 25 dBm Marker 1 [T1] -55.00 dBm RBW 100 kHz RF Att 30 dB
VBW 300 kHz SWT 245 ms Unit dBm

14 dB Offset 1 [T1] -55.00 dBm
733.68737475 MHz

1MAX D1 -13 dBm

Start 30 MHz 97 MHz/ Stop 1 GHz

Date: 18.MAY.2016 16:11:49

Ref Lvl 14 dBm Marker 1 [T1] RBW 1 MHz RF Att 10 dB
 -35.14 dBm VBW 3 MHz
 1.39679359 GHz SWT 52 ms Unit dBm

14 dB Offset -35.14 dBm 1.39679359 GHz

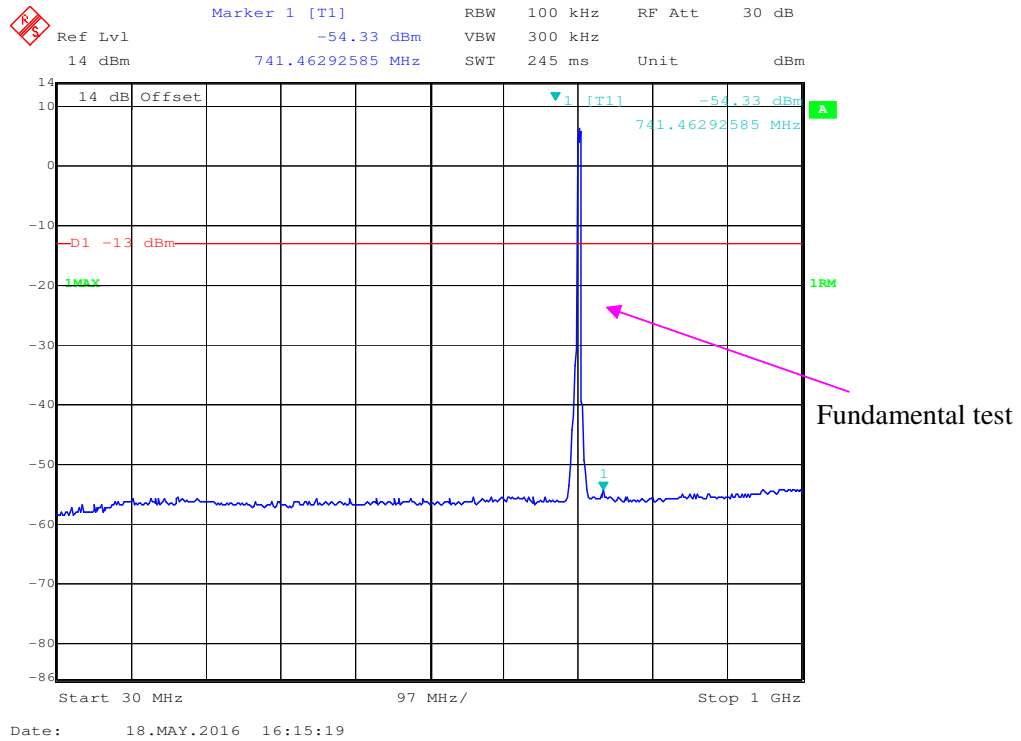
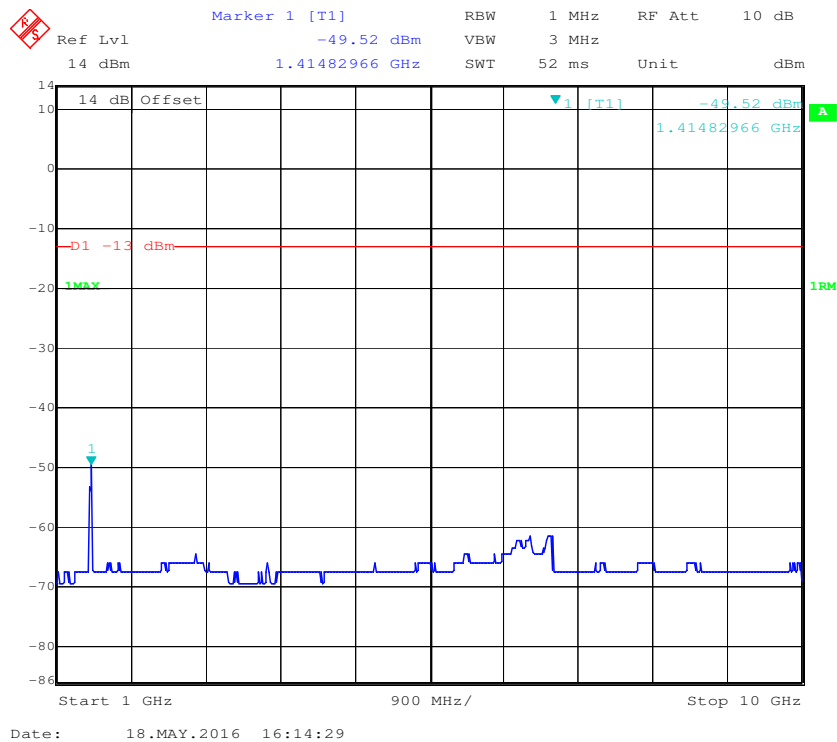
D1 -13 dBm

1 MAY

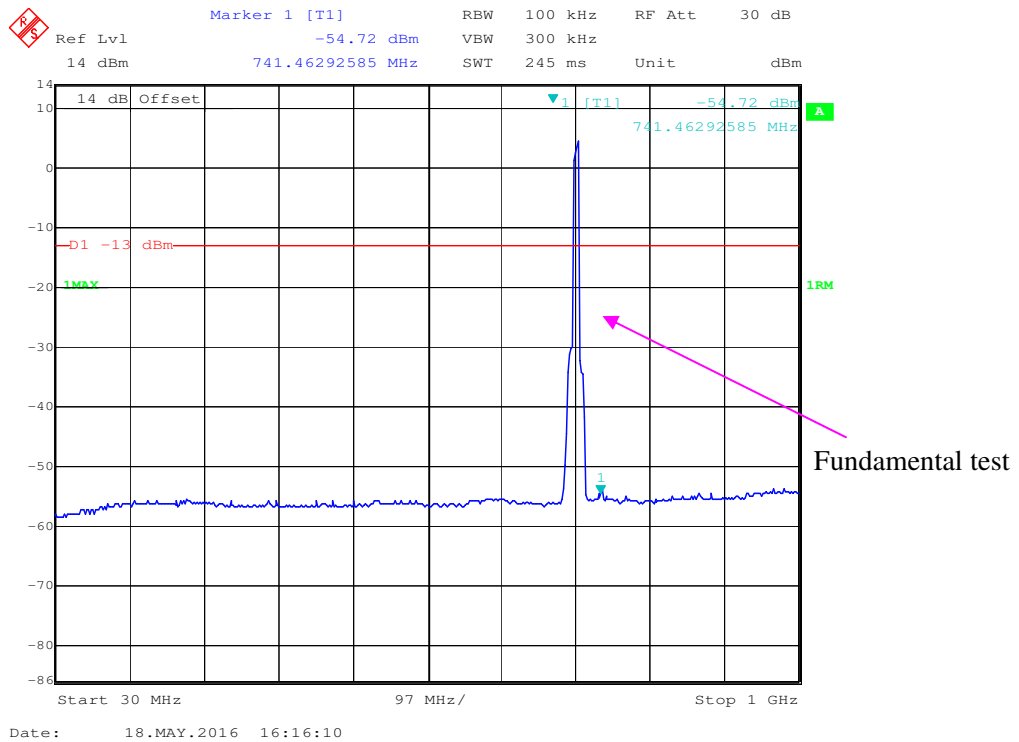
1

Start 1 GHz 900 MHz/ Stop 10 GHz

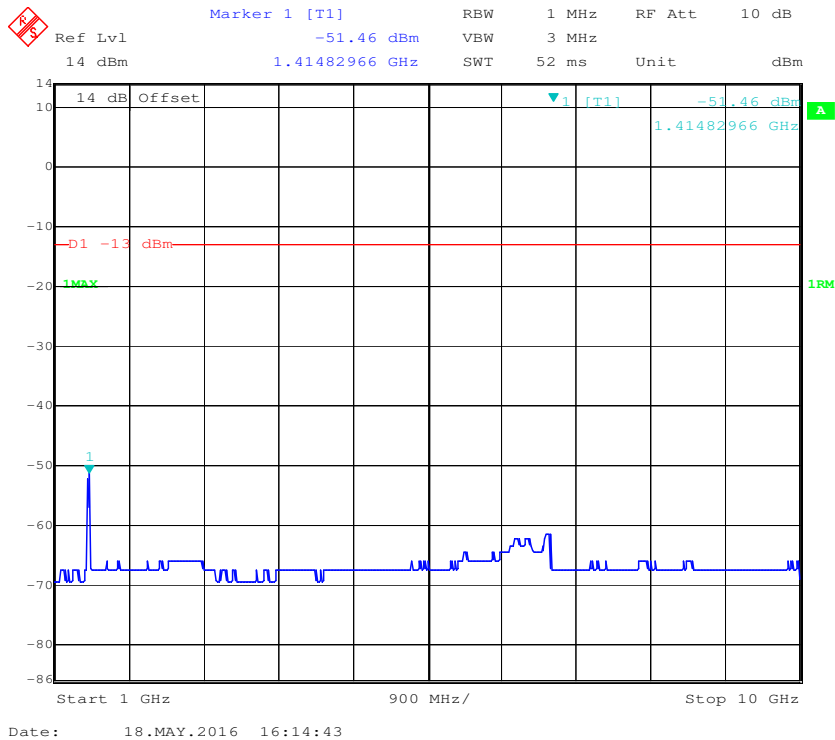
Date: 19.MAY.2016 11:57:04

LTE Band 17:**30 MHz - 1 GHz (5.0 MHz, Middle Channel)****1 GHz - 10 GHz (5.0 MHz, Middle Channel)**

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



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



FCC §2.1053, §22.917 & §24.238 & §27.53 - SPURIOUS RADIATED EMISSIONS

Applicable Standards

FCC § 2.1053, §22.917 and § 24.238 and § 27.53.

Test Procedure

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

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the 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.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \lg (\text{TX pwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \text{Log}_{10} (\text{power out in Watts})$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052604	2014-12-29	2017-12-28
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2016-04-23	2017-04-23
HP	Amplifier	HP8447E	1937A01046	2016-05-06	2017-05-06
HP	Signal Generator	HP 8341B	2624A00116	2015-07-02	2016-07-01
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369223410-001	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	104PEA	218124002	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	1	2015-06-15	2016-06-15
Ducommun technologies	RF Cable	RG-214	2	2015-06-15	2016-06-15

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

Test Data**Environmental Conditions**

Temperature:	24-25 °C
Relative Humidity:	50-56 %
ATM Pressure:	101.0kPa

The testing was performed by Haiguo Li from 2016-05-18 to 2016-05-31.

Test mode: Transmitting (Pre-scan with Low, Middle, High channel, and the worse case data as below)

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
GSM Mode, Low channel										
239.08	38.74	207	1.2	H	-58.3	0.31	0	-58.61	-13	45.61
239.08	37.63	64	1.2	V	-59.4	0.31	0	-59.71	-13	46.71
1648.40	64.89	316	1.4	H	-43.9	1.30	6.70	-38.50	-13	25.50
1648.40	66.71	257	2.4	V	-41.6	1.30	6.70	-36.20	-13	23.20
2472.60	61.34	41	1.6	H	-43.2	1.70	8.60	-36.30	-13	23.30
2472.60	63.77	87	1.6	V	-41.1	1.70	8.60	-34.20	-13	21.20
WCDMA Mode, Middle channel										
237.46	38.75	290	1.6	H	-58.2	0.31	0	-58.51	-13	45.51
237.46	37.67	260	2.4	V	-59.3	0.31	0	-59.61	-13	46.61
1673.20	51.24	22	1.9	H	-56.2	1.60	6.90	-50.90	-13	37.90
1673.20	51.16	52	1.4	V	-56.7	1.60	6.90	-51.40	-13	38.40
2509.80	45.35	91	1.4	H	-59.2	1.70	8.60	-52.30	-13	39.30
2509.80	45.13	285	2.3	V	-59.8	1.70	8.60	-52.90	-13	39.90

30 MHz ~ 20 GHz:**PCS Band (Part 24E)**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
GSM Mode, Middle channel										
239.08	38.89	232	1.8	H	-58.1	0.31	0	-58.41	-13	45.41
239.08	37.71	211	1.3	V	-59.3	0.31	0	-59.61	-13	46.61
3760.00	53.35	100	1.3	H	-46.1	1.90	9.90	-38.10	-13	25.10
3760.00	56.91	189	1.6	V	-42.2	1.90	9.90	-34.20	-13	21.20
5640.00	42.57	314	1.3	H	-53.9	2.10	10.30	-45.70	-13	32.70
5640.00	43.11	208	1.3	V	-52.7	2.10	10.30	-44.50	-13	31.50
WCDMA Mode, Low channel										
237.46	38.77	200	1.4	H	-58.2	0.31	0	-58.51	-13	45.51
237.46	37.54	105	1.1	V	-59.5	0.31	0	-59.81	-13	46.81
3704.80	46.32	233	2.3	H	-48.5	1.80	10.00	-40.30	-13	27.30
3704.80	45.91	269	1.1	V	-49.2	1.80	10.00	-41.00	-13	28.00
5557.20	44.22	192	1.1	H	-52.2	2.10	10.30	-44.00	-13	31.00
5557.20	44.66	112	1.1	V	-51.2	2.10	10.30	-43.00	-13	30.00

Test mode: Transmitting (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)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Band 2										
178.36	38.27	241	2.1	H	-58.7	0.28	0	-58.98	-13	45.98
178.36	37.46	248	2.3	V	-59.5	0.28	0	-59.78	-13	46.78
3760.00	54.32	167	1.4	H	-45.2	1.90	9.90	-37.20	-13	24.20
3760.00	52.67	190	1.0	V	-46.4	1.90	9.90	-38.40	-13	25.40
Band 4										
178.36	38.24	102	1.2	H	-58.8	0.28	0	-59.08	-13	46.08
178.36	37.32	178	1.3	V	-59.7	0.28	0	-59.98	-13	46.98
3465.00	53.55	186	2.0	H	-42.0	1.90	10.00	-33.90	-13	20.90
3465.00	52.27	47	1.8	V	-43.4	1.90	10.00	-35.30	-13	22.30
Band 12										
178.36	38.53	237	1.8	H	-58.5	0.28	0	-58.78	-13	45.78
178.36	37.46	49	2.3	V	-59.5	0.28	0	-59.78	-13	46.78
1414.00	55.36	48	1.4	H	-53.1	1.20	6.40	-47.90	-13	34.90
1414.00	53.27	63	1.1	V	-55.2	1.20	6.40	-50.00	-13	37.00
Band 17										
178.36	38.67	233	1.4	H	-58.3	0.28	0	-58.58	-13	45.58
178.36	37.29	99	2.0	V	-59.7	0.28	0	-59.98	-13	46.98
1420.00	54.27	249	1.9	H	-54.2	1.20	6.40	-49.00	-13	36.00
1420.00	53.13	215	2.1	V	-55.3	1.20	6.40	-50.10	-13	37.10

Note:

- 1) Absolute Level = SG Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level

FCC §22.917(a) & §24.238(a) & §27.53 - BAND EDGES

Applicable Standards

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.

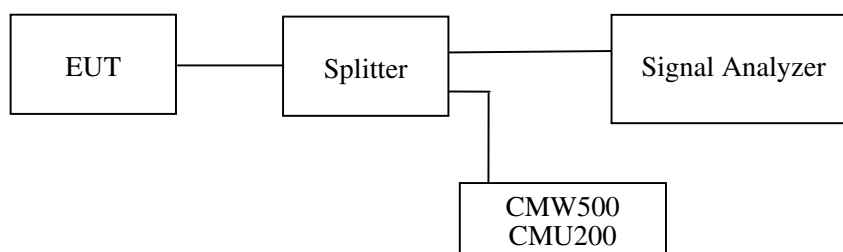
According to FCC §27.53, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23
Ducommun technologies	RF Cable	RG-214	4	2015-06-15	2016-06-15
WEINSCHL	10dB Attenuator	5321	AU0709	2015-06-18	2016-06-18

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

Test Data**Environmental Conditions**

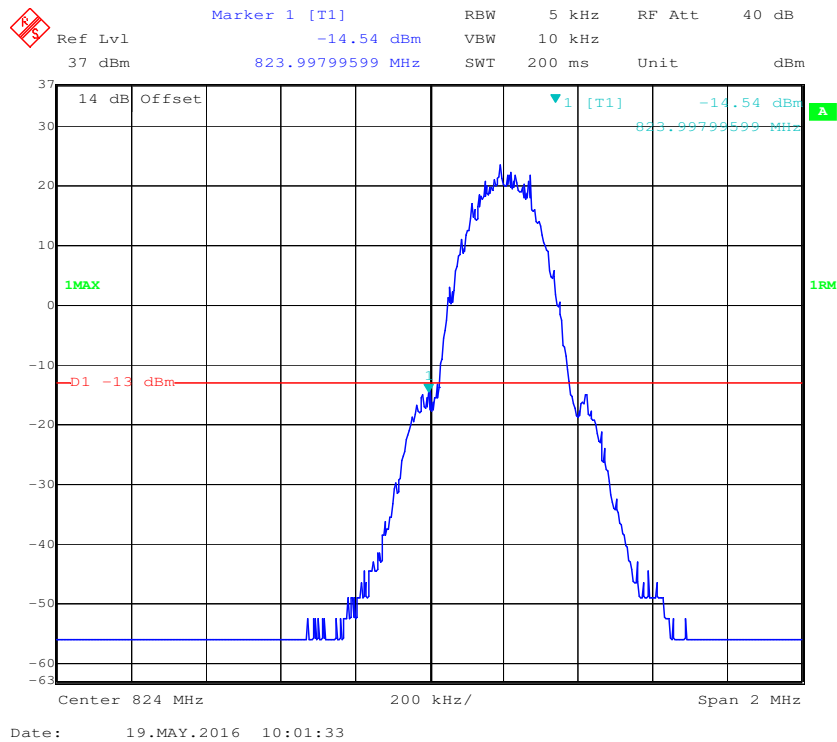
Temperature:	24-25 °C
Relative Humidity:	50-53 %
ATM Pressure:	101.0kPa

The testing was performed by Haiguo Li from 2016-05-18 to 2016-05-19.

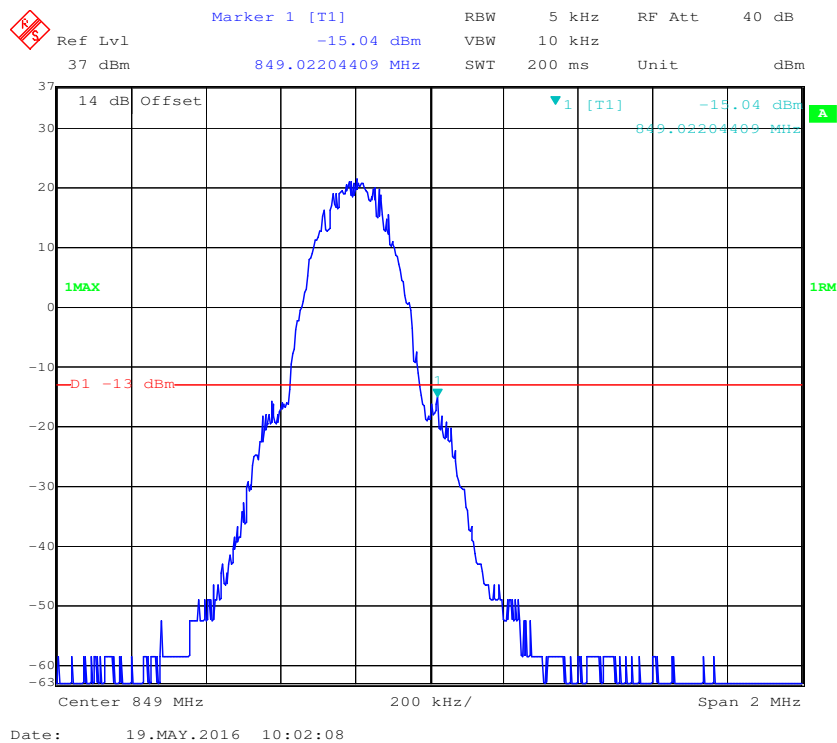
EUT operation mode: Transmitting

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

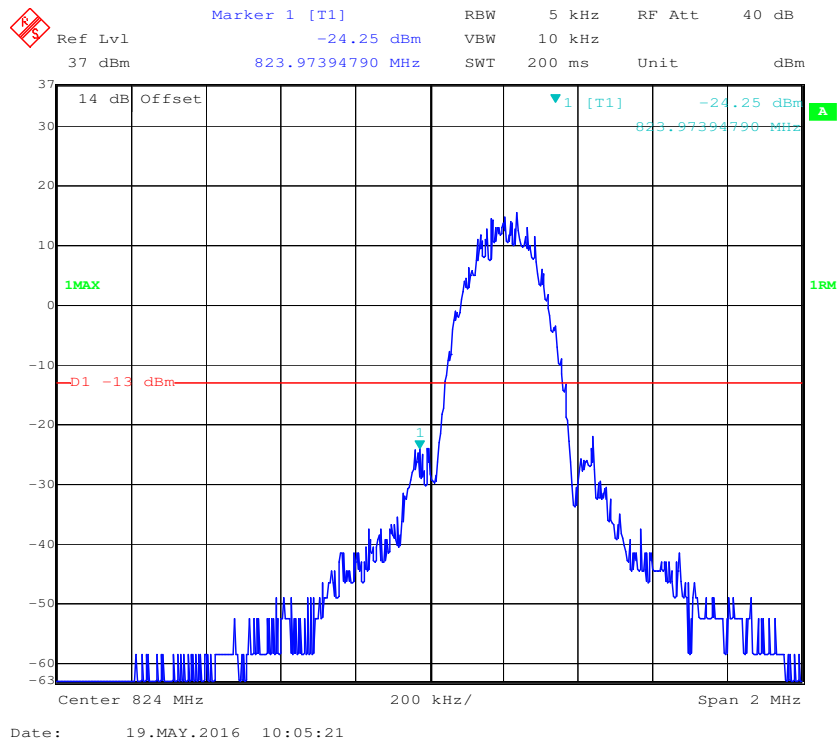
Cellular Band, Left Band Edge for GSM (GMSK) Mode



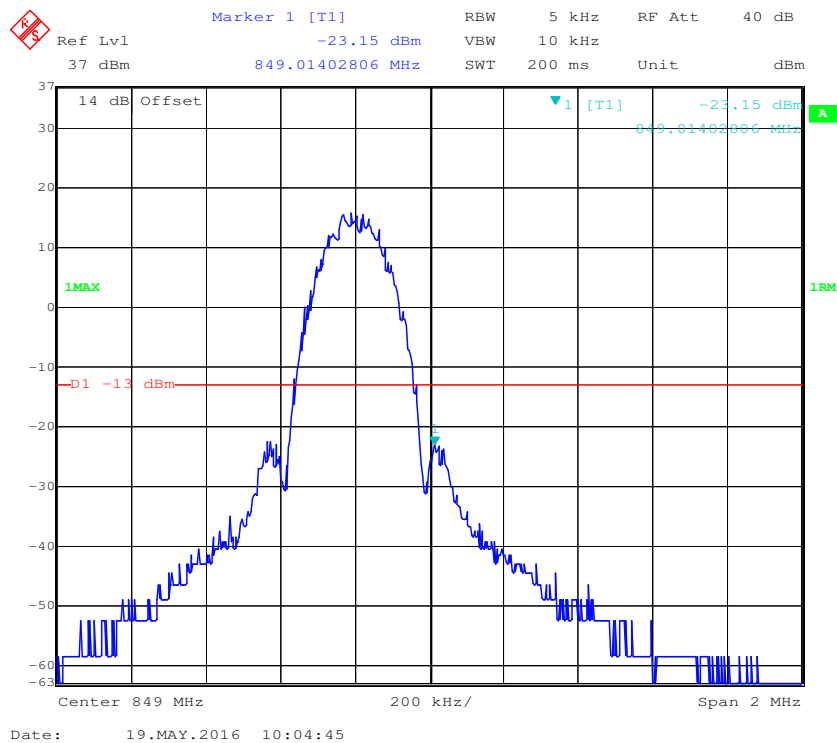
Cellular Band, Right Band Edge for GSM (GMSK) Mode



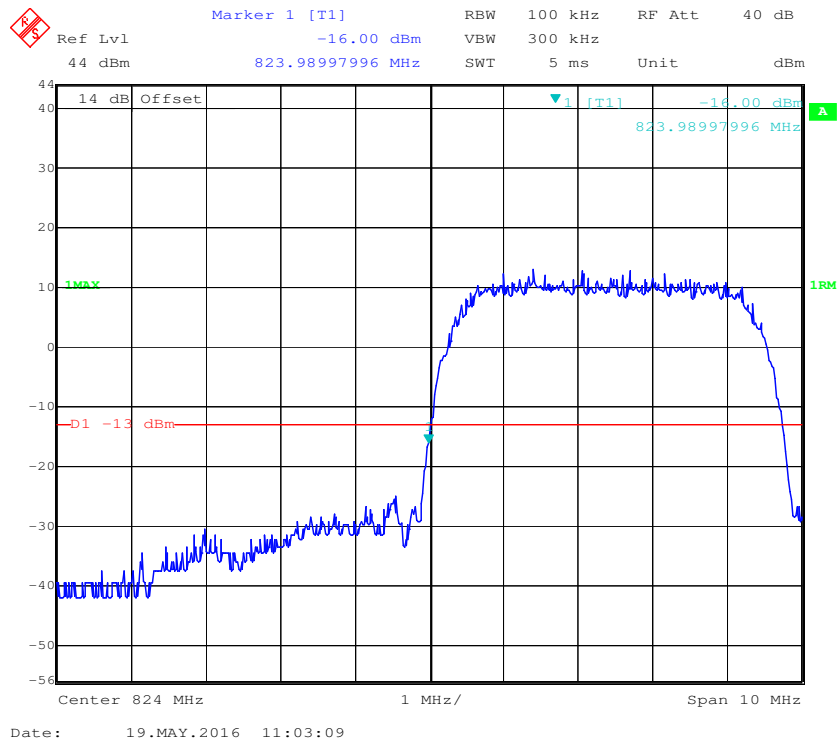
Cellular Band, Left Band Edge for EGPRS Mode



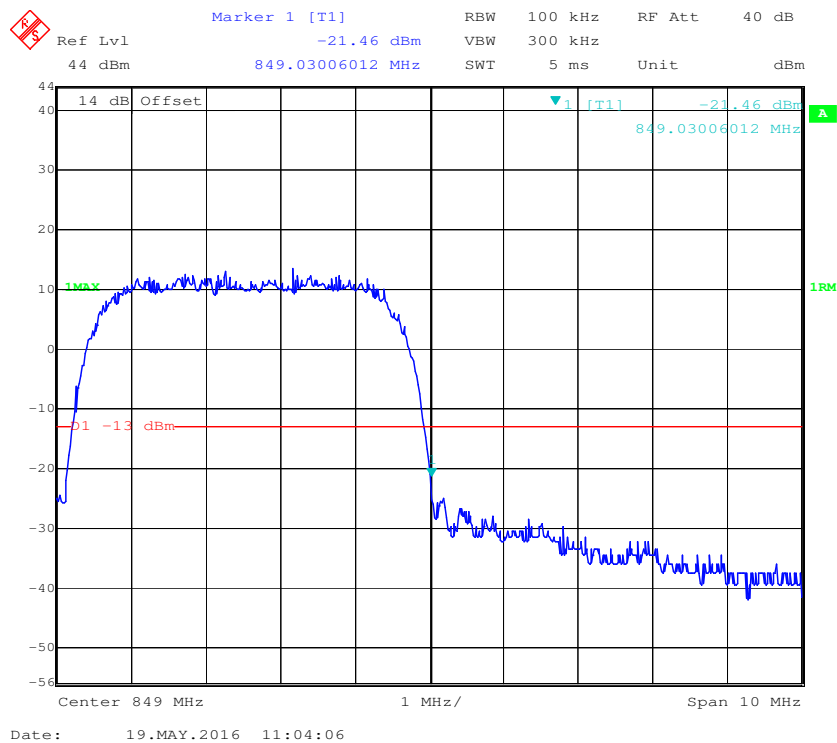
Cellular Band, Right Band Edge for EGPRS Mode

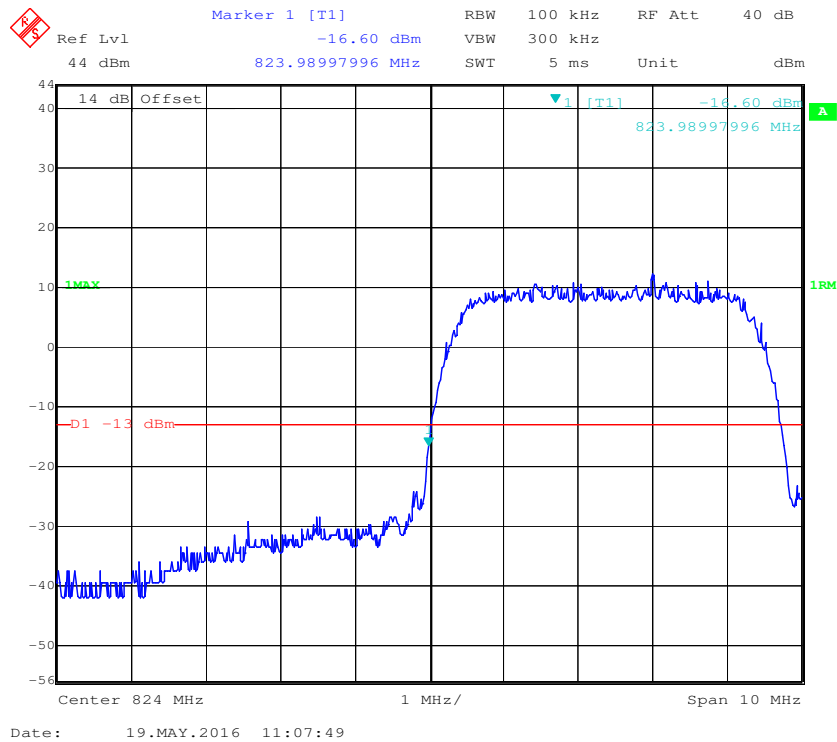
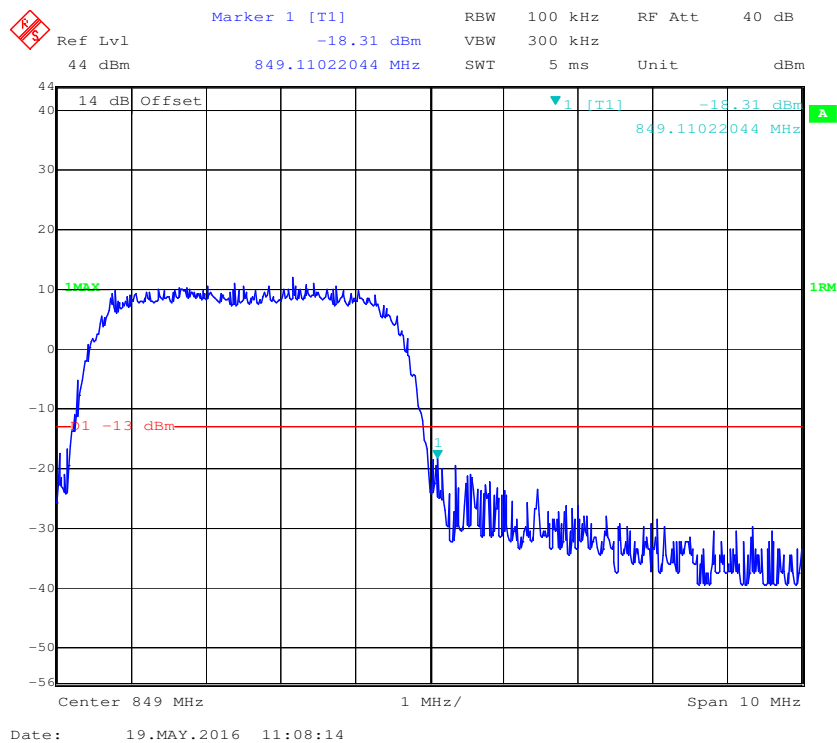


Cellular Band, Left Band Edge for RMC (BPSK) Mode

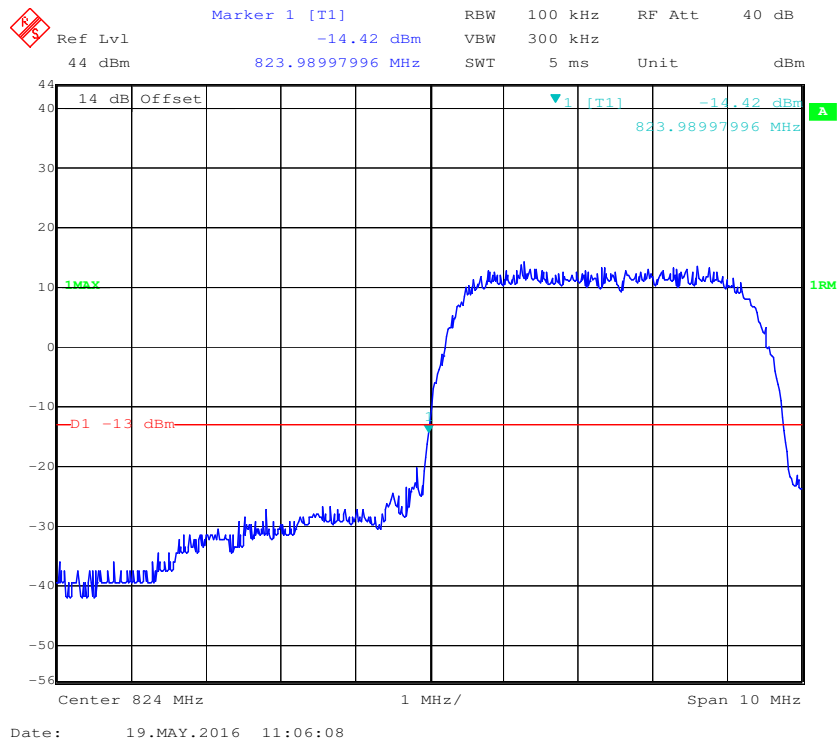


Cellular Band, Right Band Edge for RMC (BPSK) Mode

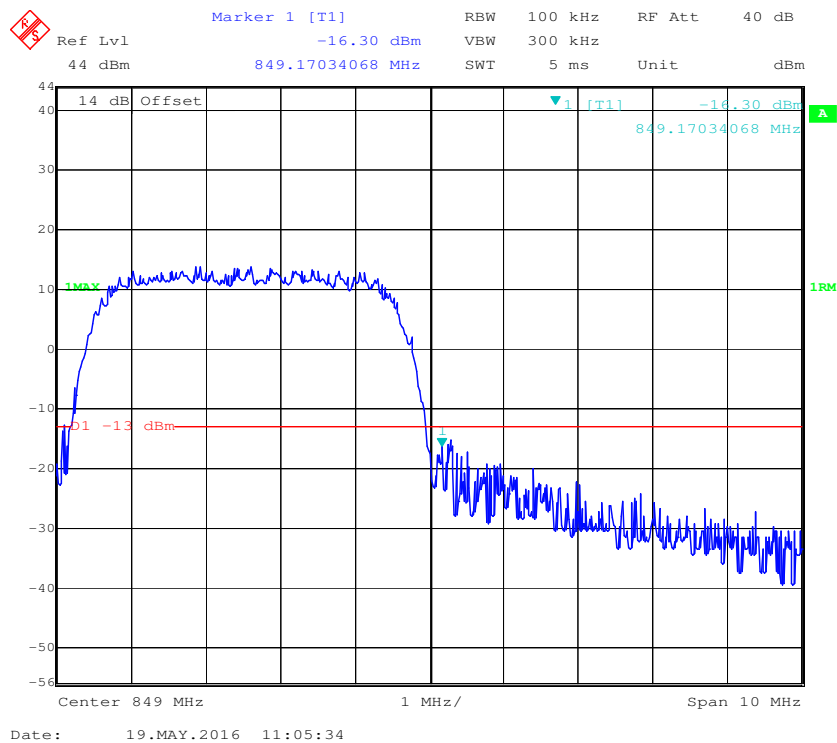


Cellular Band, Left Band Edge for HSDPA (16QAM) Mode**Cellular Band, Right Band Edge for HSDPA (16QAM) Mode**

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



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



Ref Lvl 40 dBm

Marker 1 [T1] -16.88 dBm

1.84999800 GHz

RBW 5 kHz

VBW 10 kHz

SWT 200 ms

Unit dBm

14 dB Offset

1 [T1] -16.88 dBm

1.84999800 GHz

1MAX

1RM

D1 -13 dBm

Center 1.85 GHz

200 kHz/

Span 2 MHz

Date: 19.MAY.2016 11:18:29

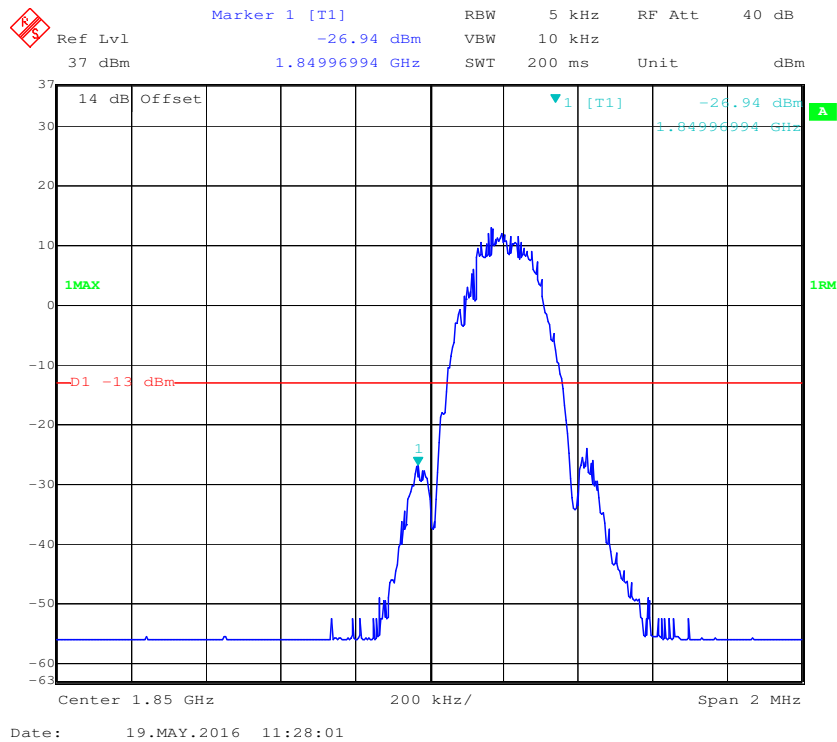
Ref Lvl 40 dBm
 Marker 1 [T1] -16.20 dBm
 RBW 5 kHz
 VBW 10 kHz
 SWT 200 ms
 RF Att 40 dB
 Unit dBm

14 dB Offset
 1MAX
 D1 -13 dBm
 -16.20 dBm
 1.91002204 GHz
 [T1]
 1.91002204 GHz

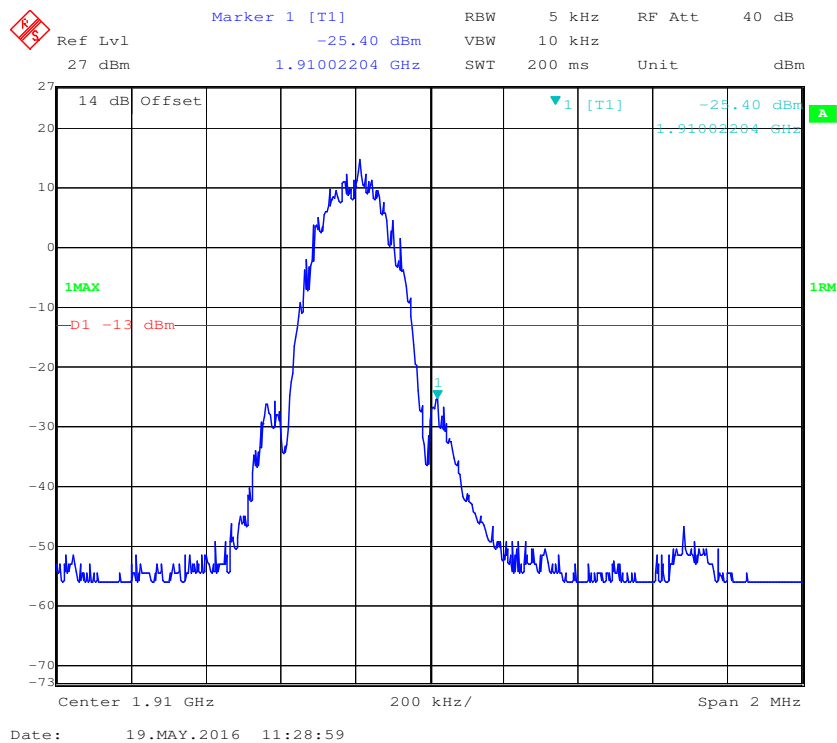
Center 1.91 GHz
 200 kHz/
 Span 2 MHz

Date: 19.MAY.2016 11:19:02

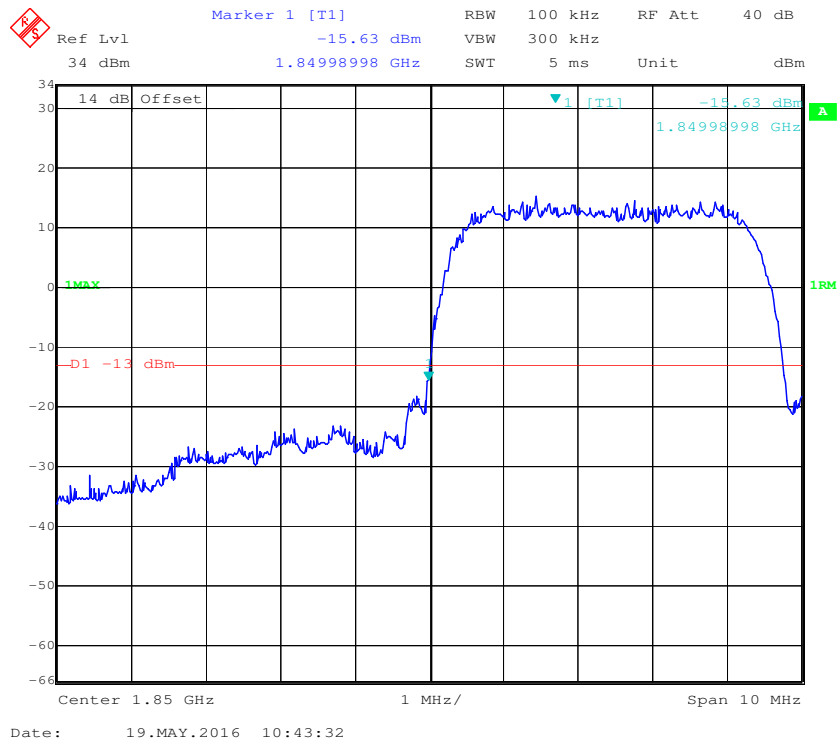
PCS Band, Left Band Edge for EGPRS Mode



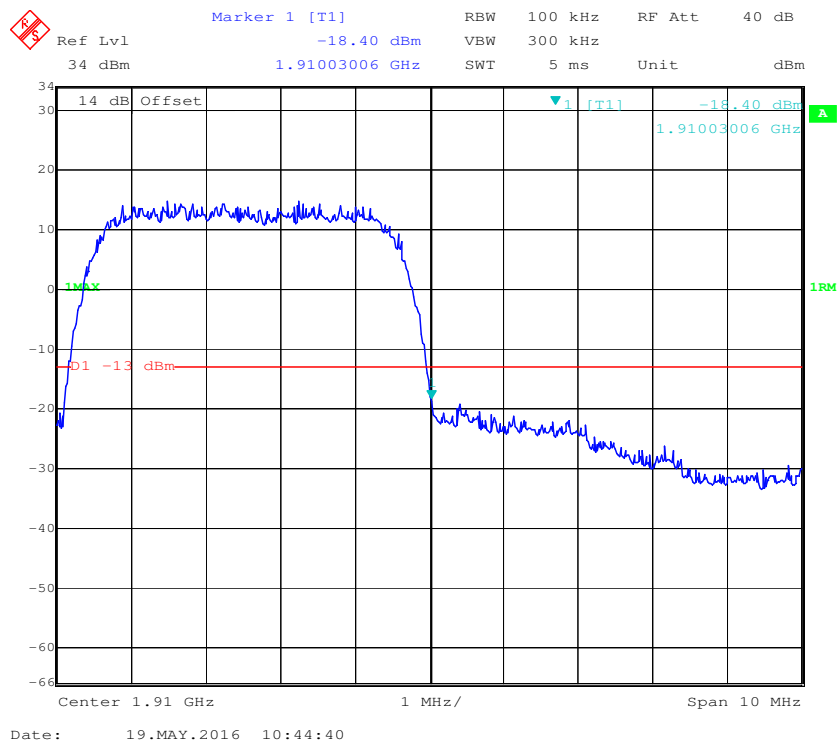
PCS Band, Right Band Edge for EGPRS Mode



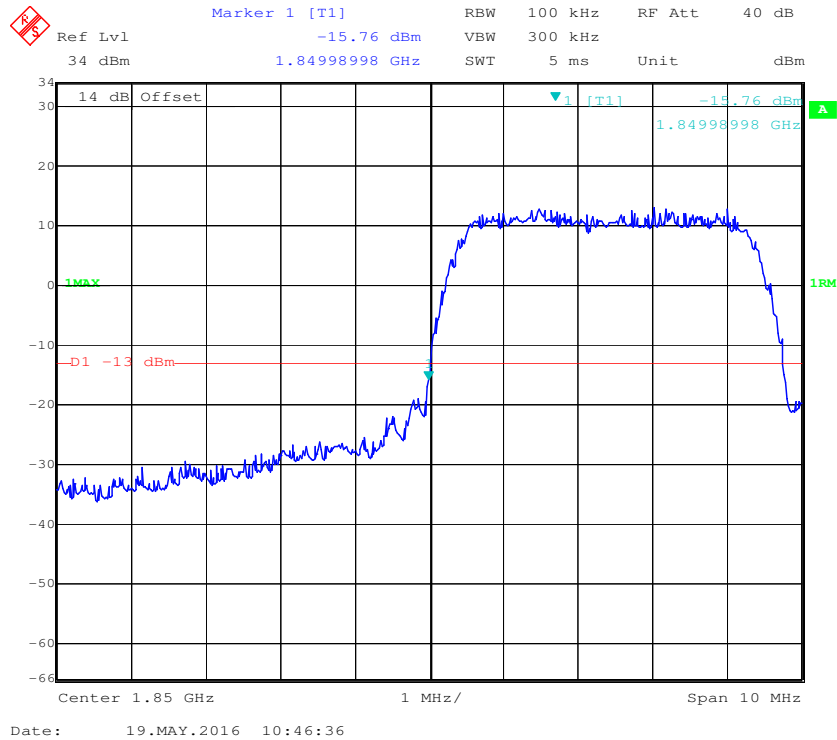
PCS Band, Left Band Edge for RMC (BPSK) Mode



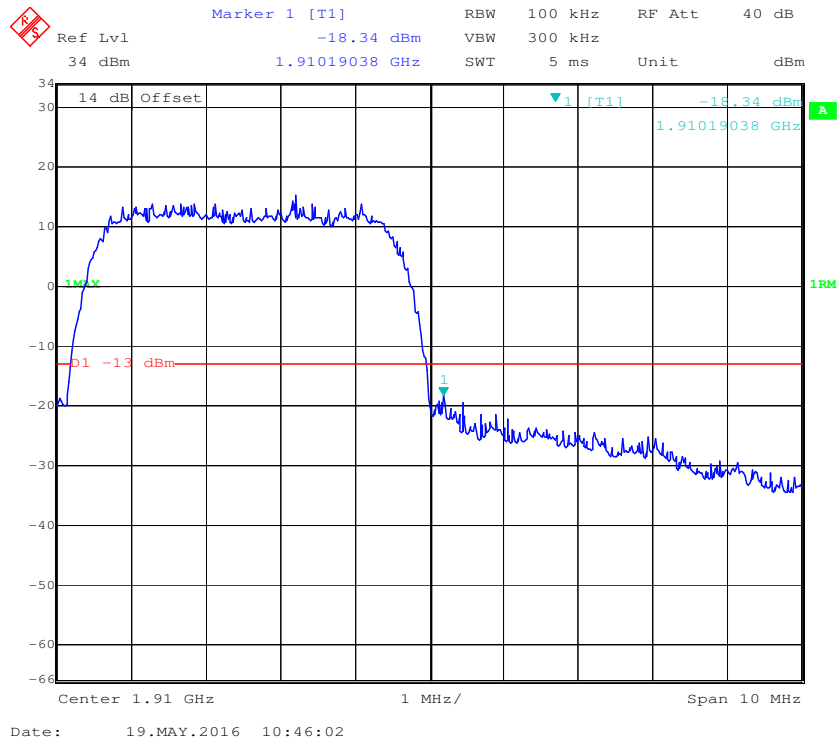
PCS Band, Right Band Edge for RMC (BPSK) Mode



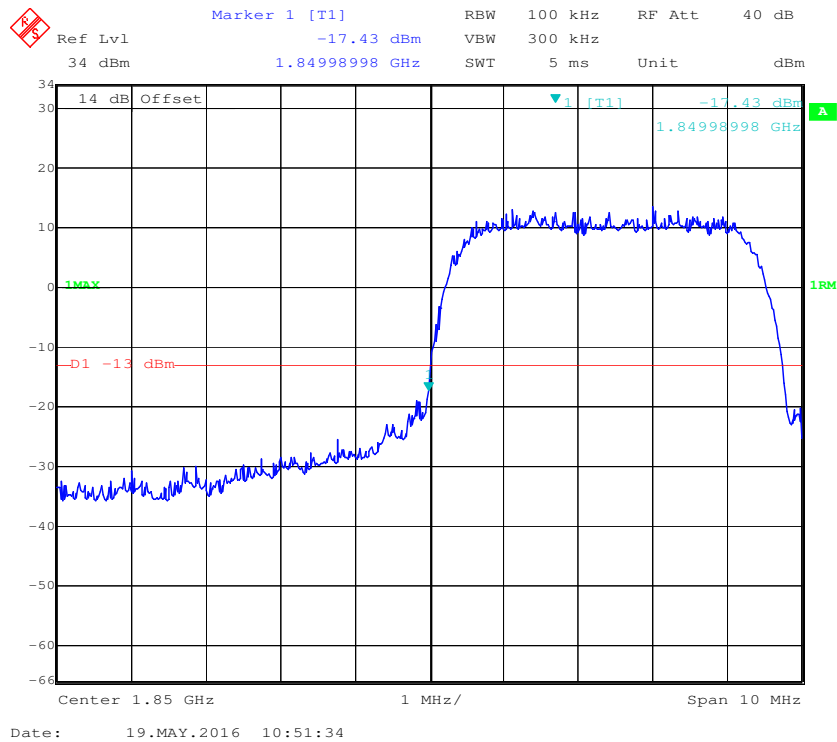
PCS Band, Left Band Edge for HSDPA (16QAM) Mode



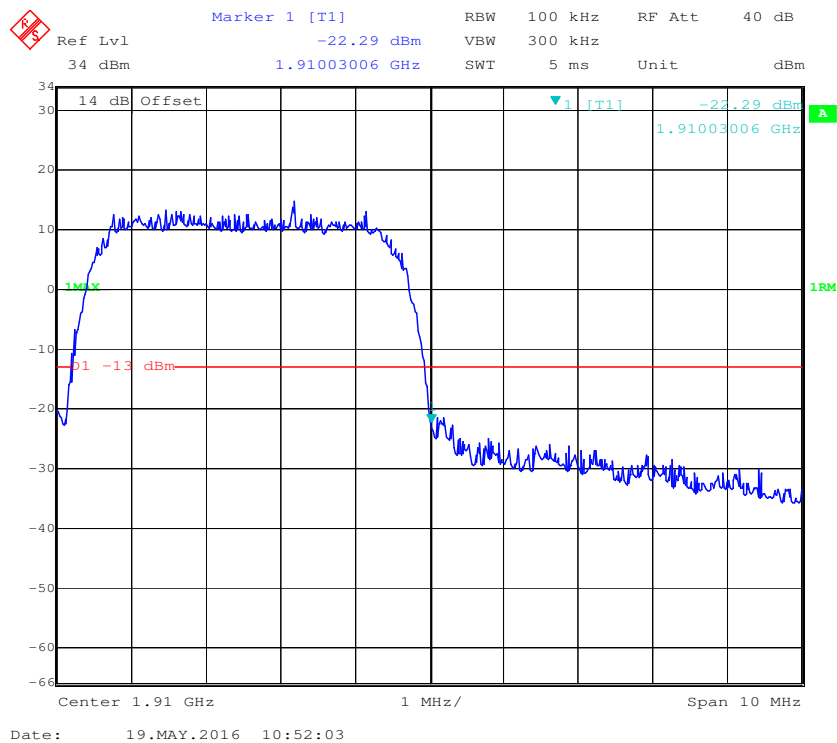
PCS Band, Right Band Edge for HSDPA (16QAM) Mode



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

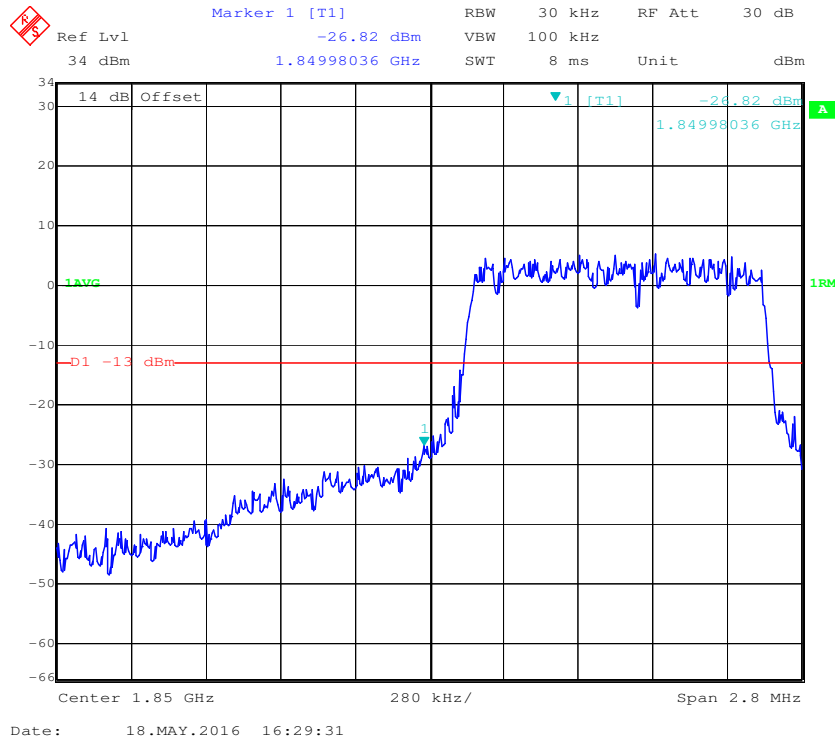


PCS Band, Right Band Edge for HSUPA (BPSK) Mode

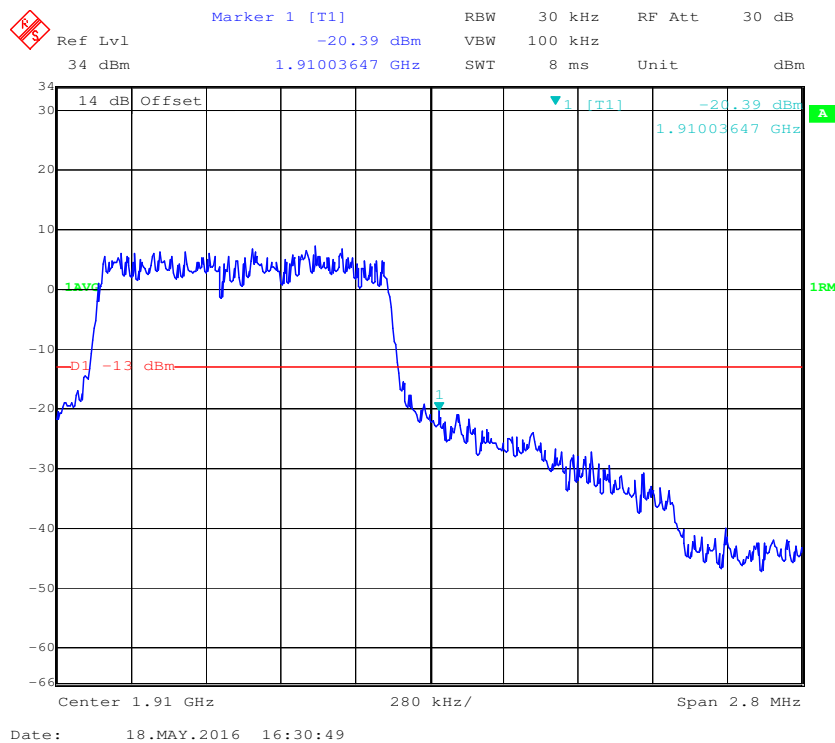


Band 2:

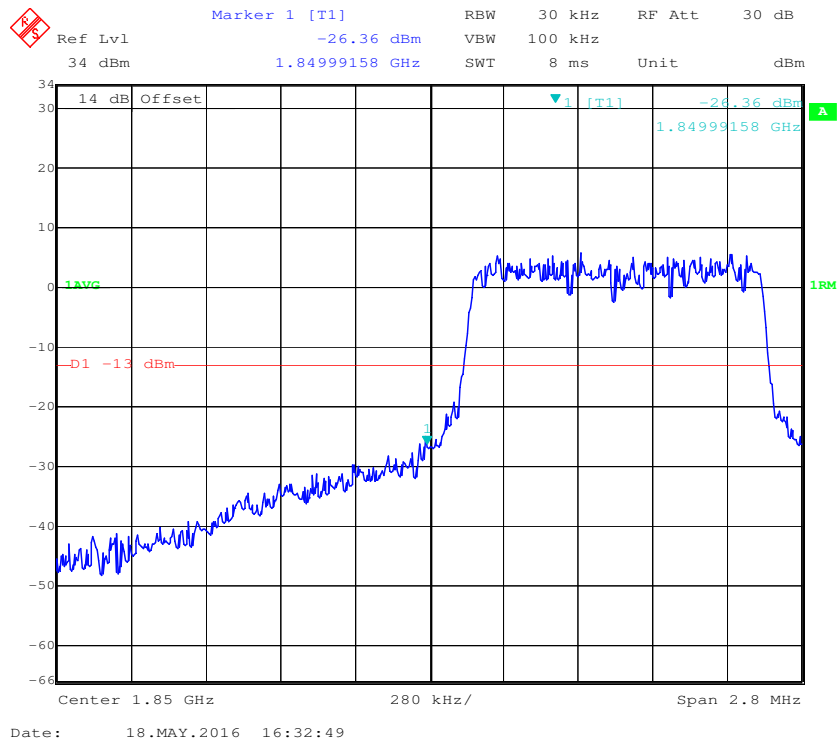
QPSK (1.4 MHz, FULL RB) - Left Band Edge



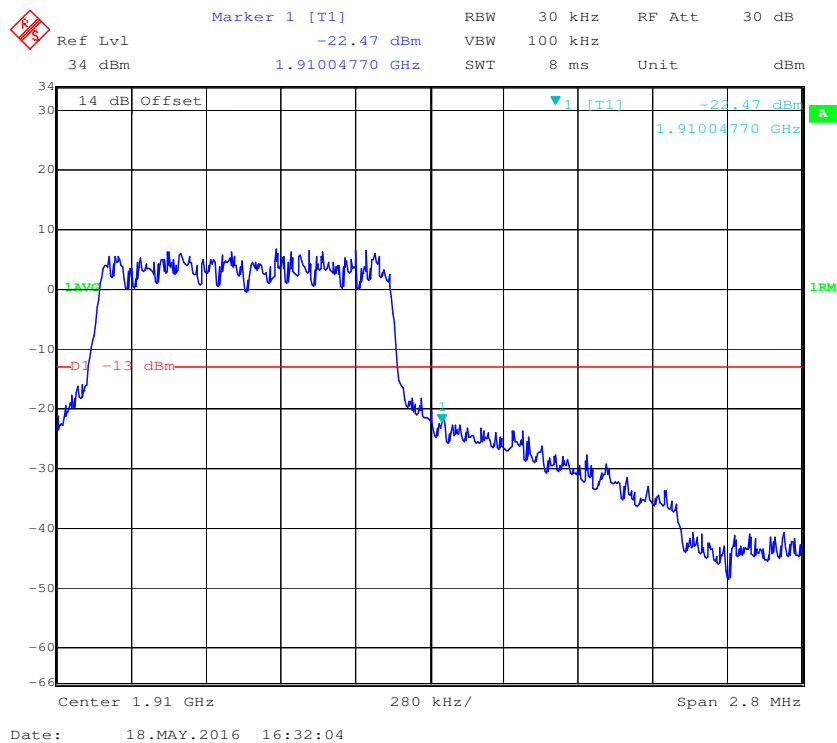
QPSK (1.4 MHz, FULL RB) - Right Band Edge

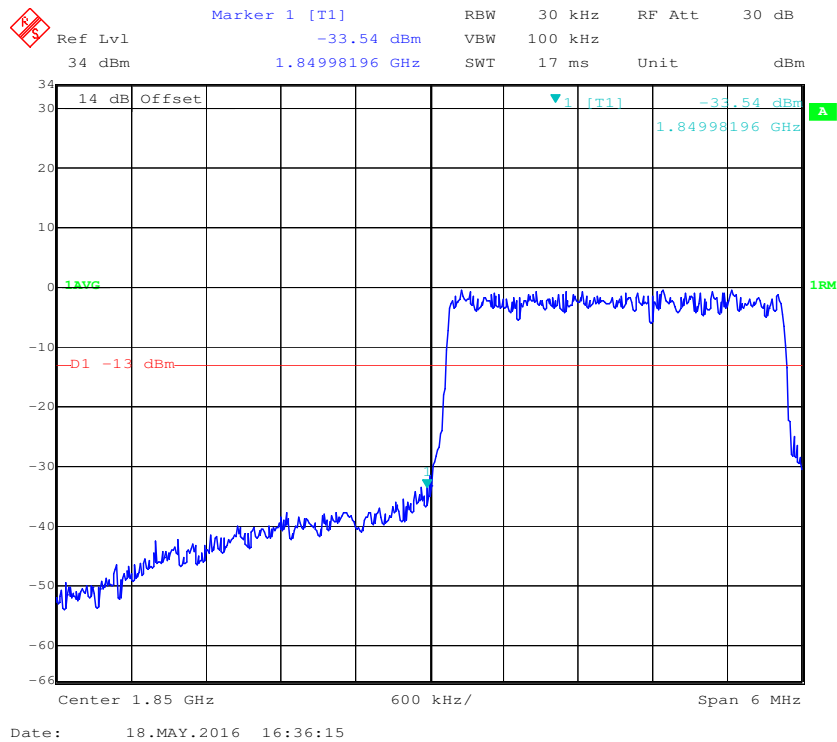
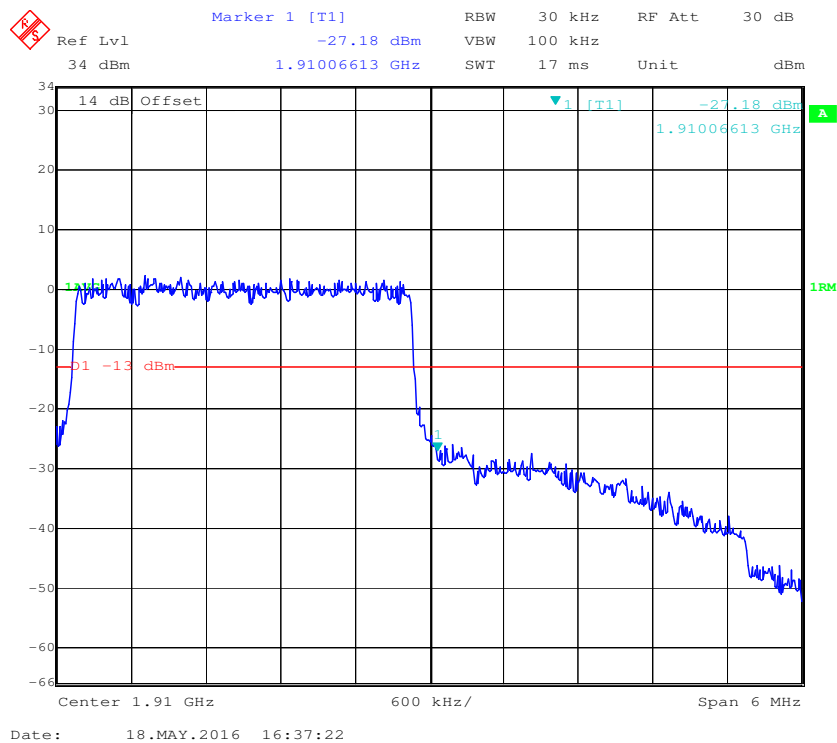


16-QAM (1.4 MHz, FULL RB) - Left Band Edge

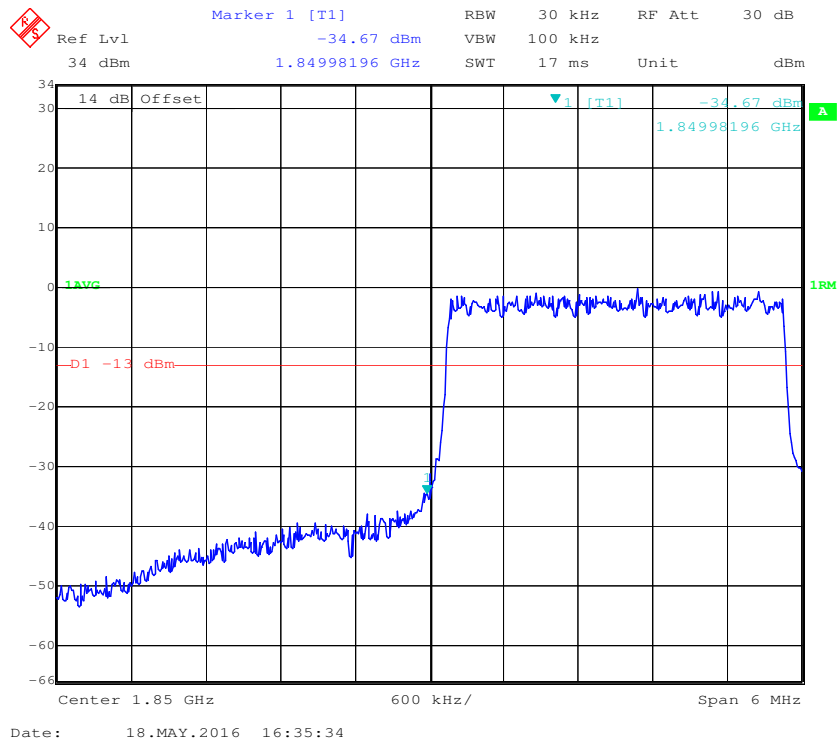


16-QAM (1.4 MHz, FULL RB) - Right Band Edge

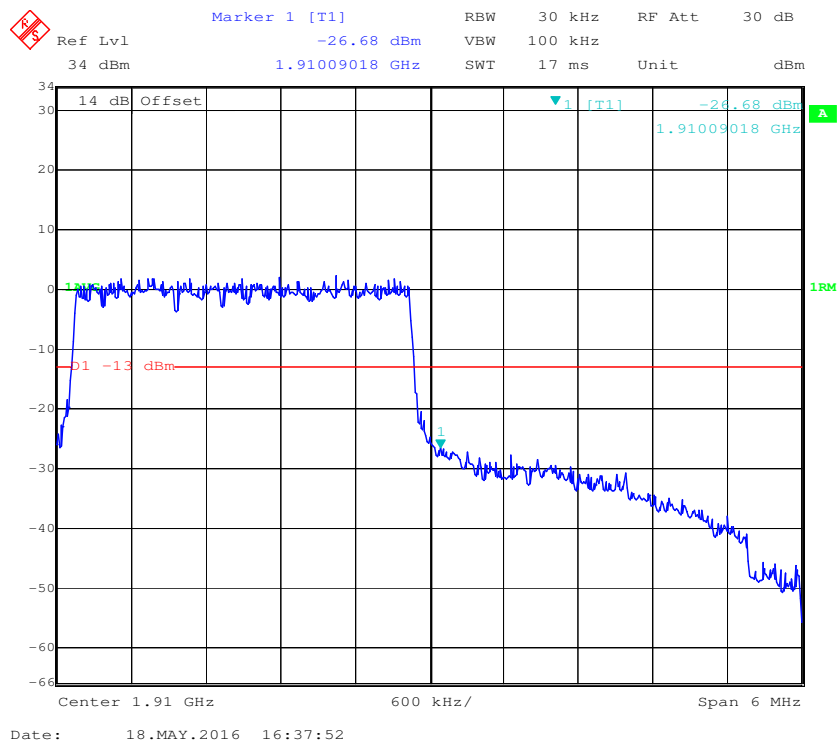


QPSK (3.0 MHz, FULL RB) - Left Band Edge**QPSK (3.0 MHz, FULL RB) - Right Band Edge**

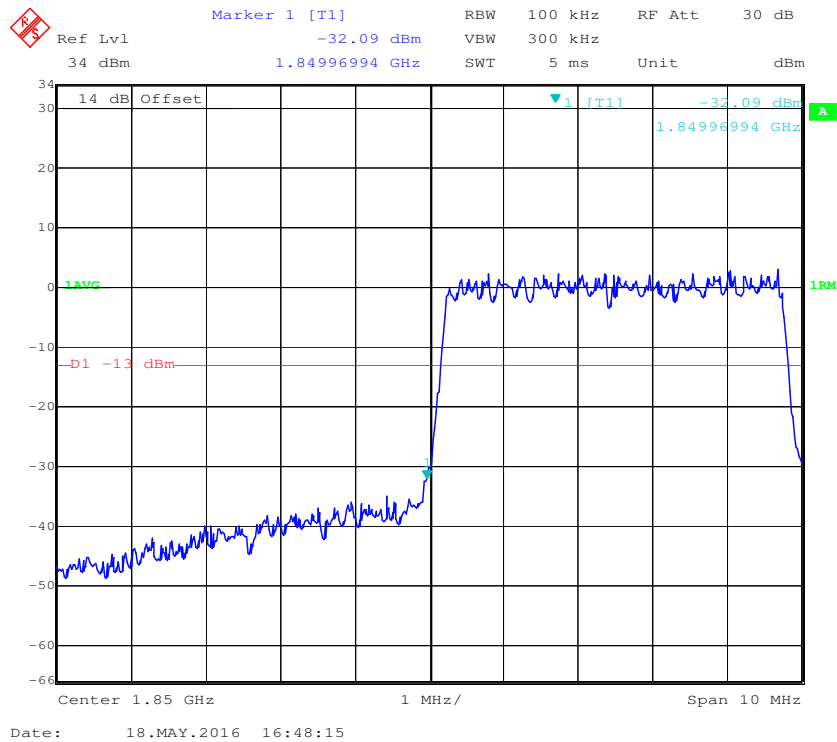
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



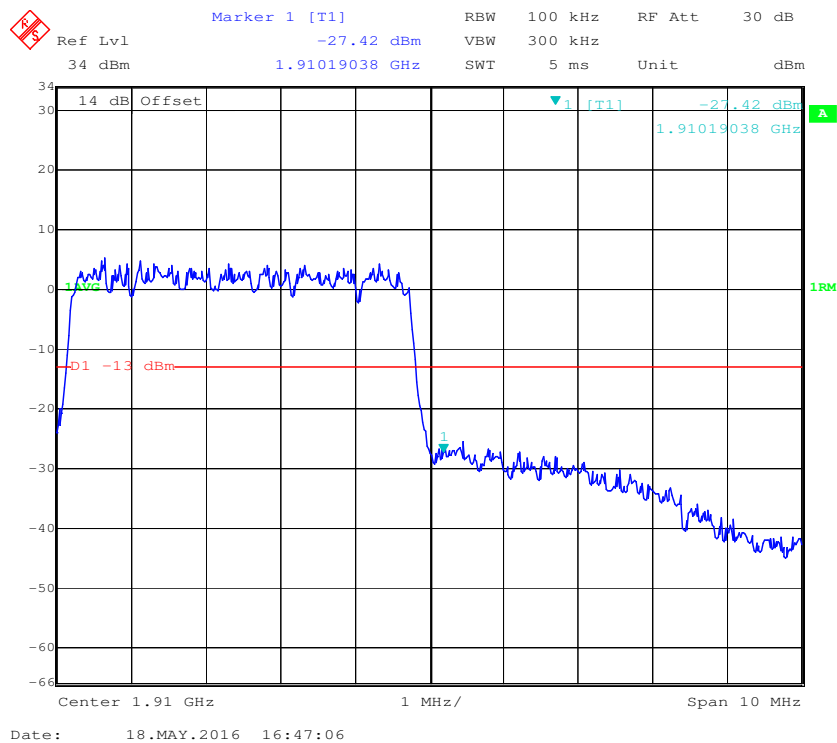
16-QAM (3.0 MHz, FULL RB) - Right Band Edge

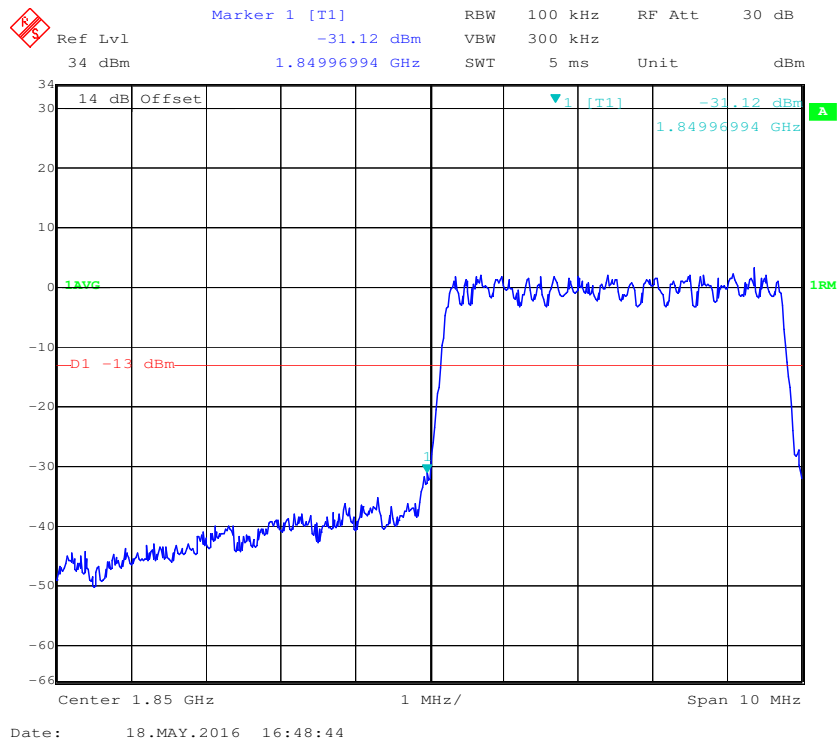
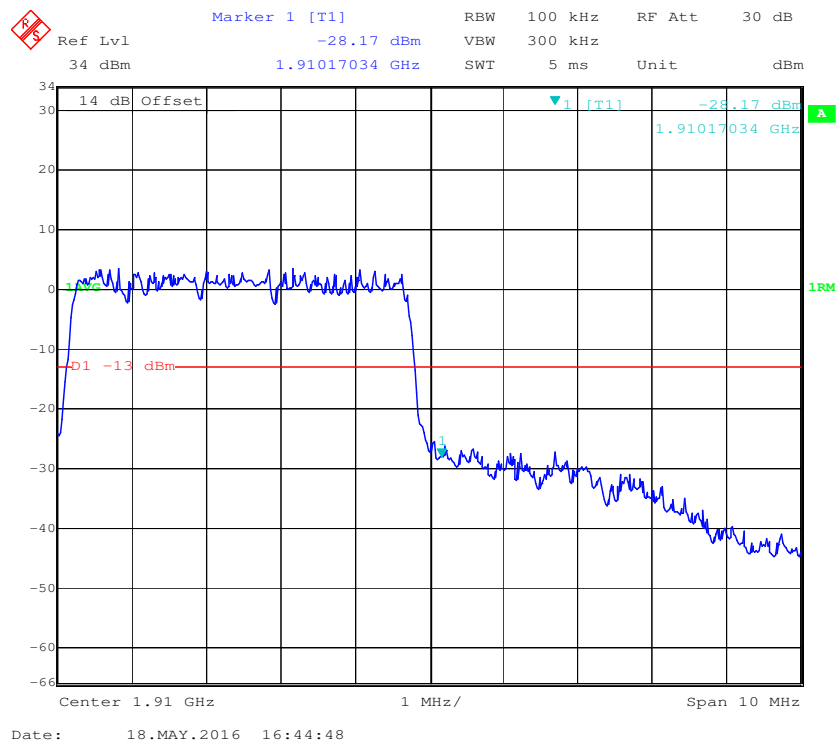


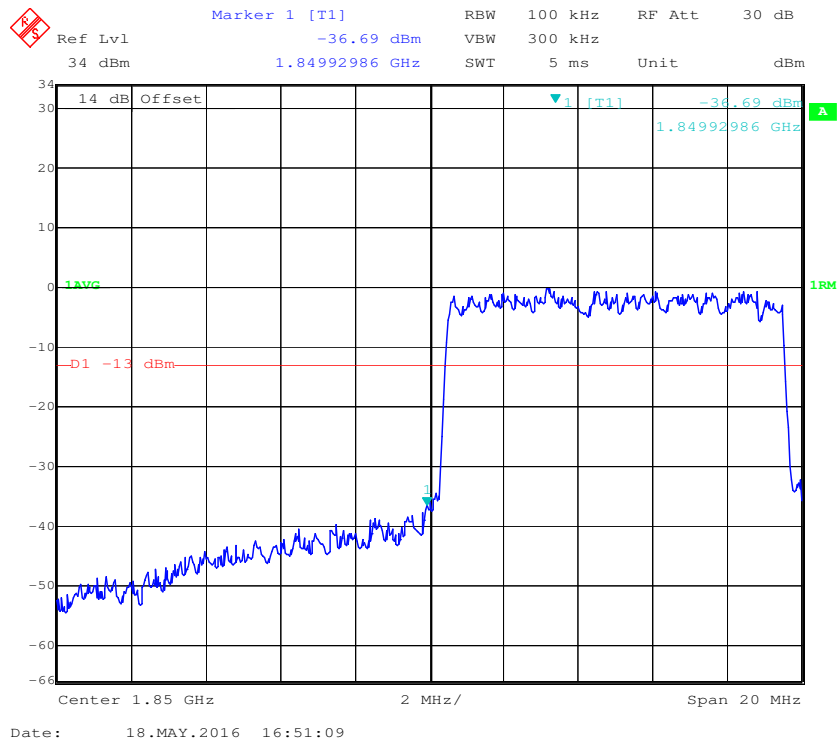
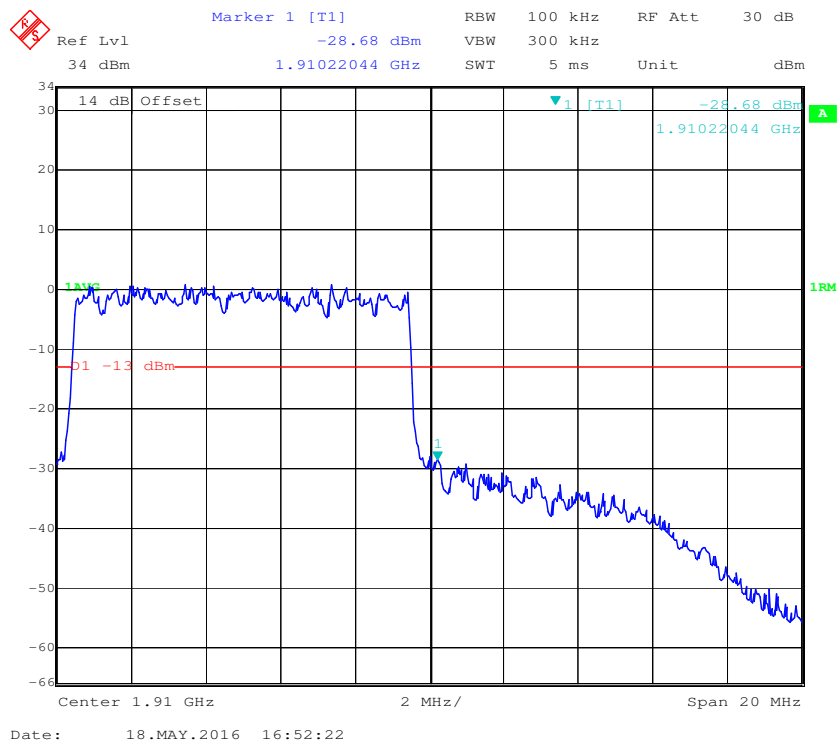
QPSK (5.0 MHz, FULL RB) - Left Band Edge



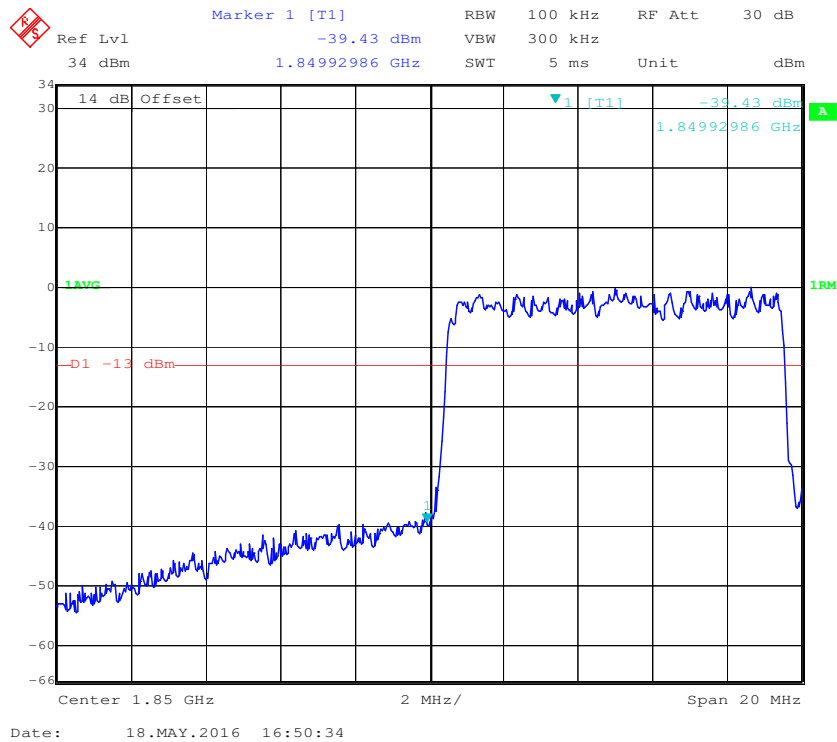
QPSK (5.0 MHz, FULL RB) - Right Band Edge



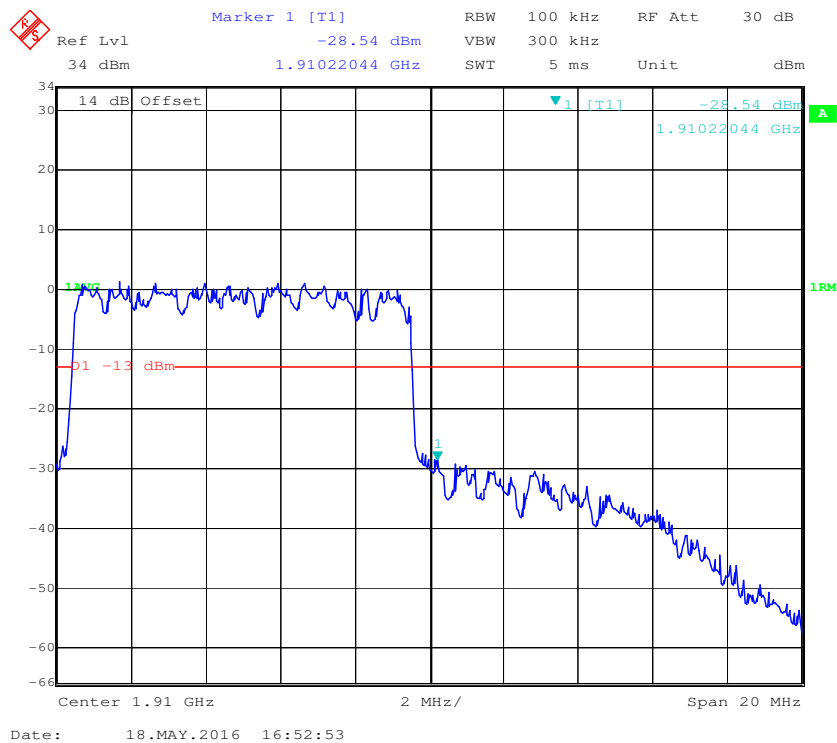
16-QAM (5.0 MHz, FULL RB) - Left Band Edge**16-QAM (5.0 MHz, FULL RB) - Right Band Edge**

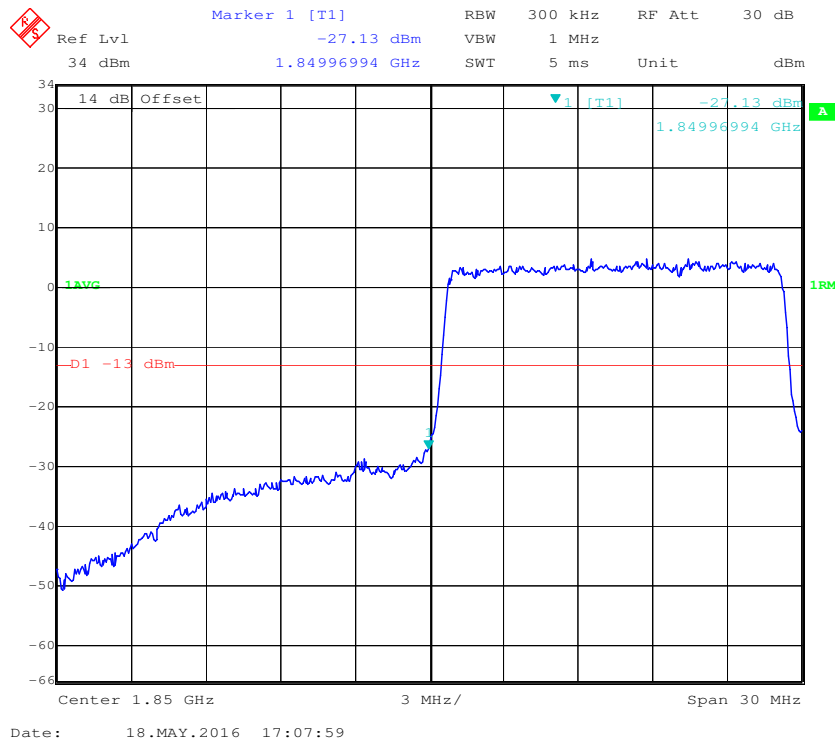
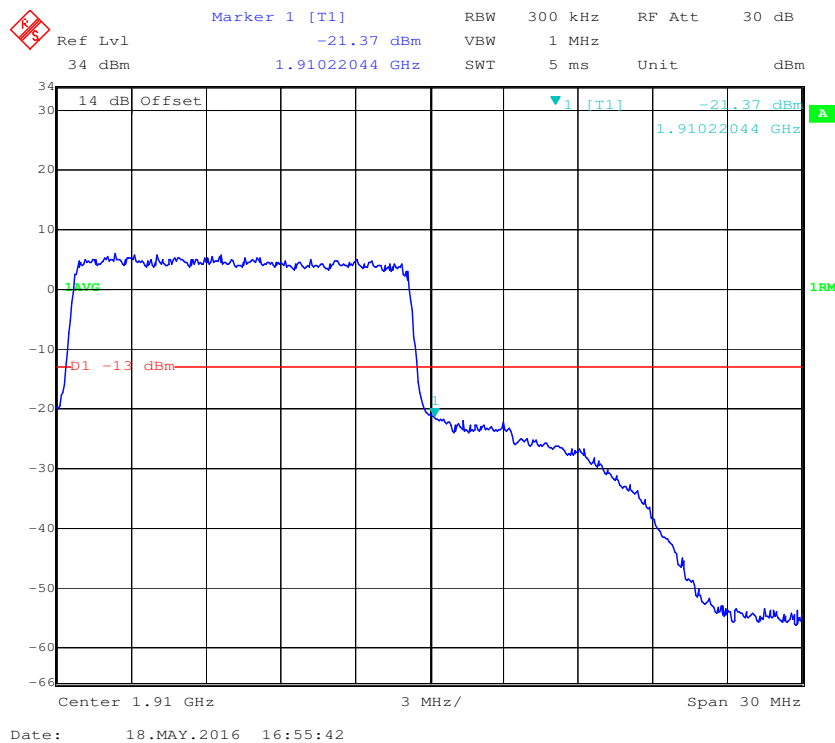
QPSK (10.0 MHz, FULL RB) - Left Band Edge**QPSK (10.0 MHz, FULL RB) - Right Band Edge**

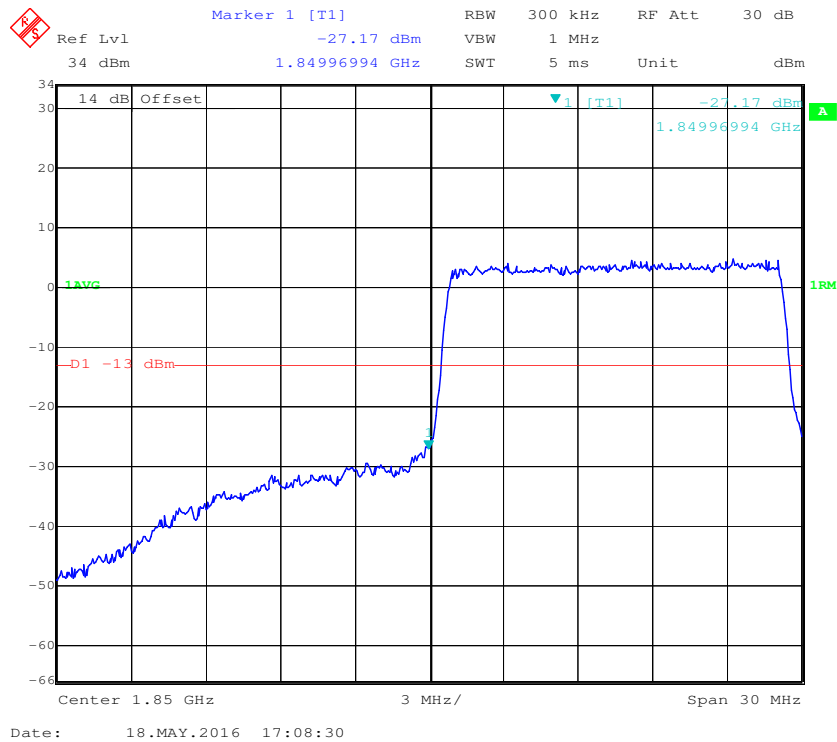
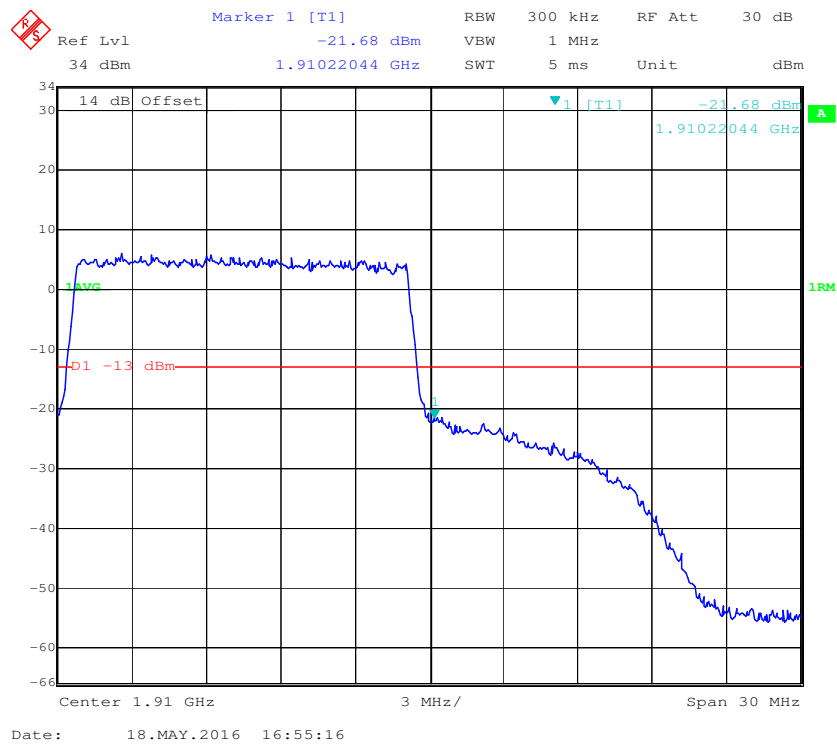
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



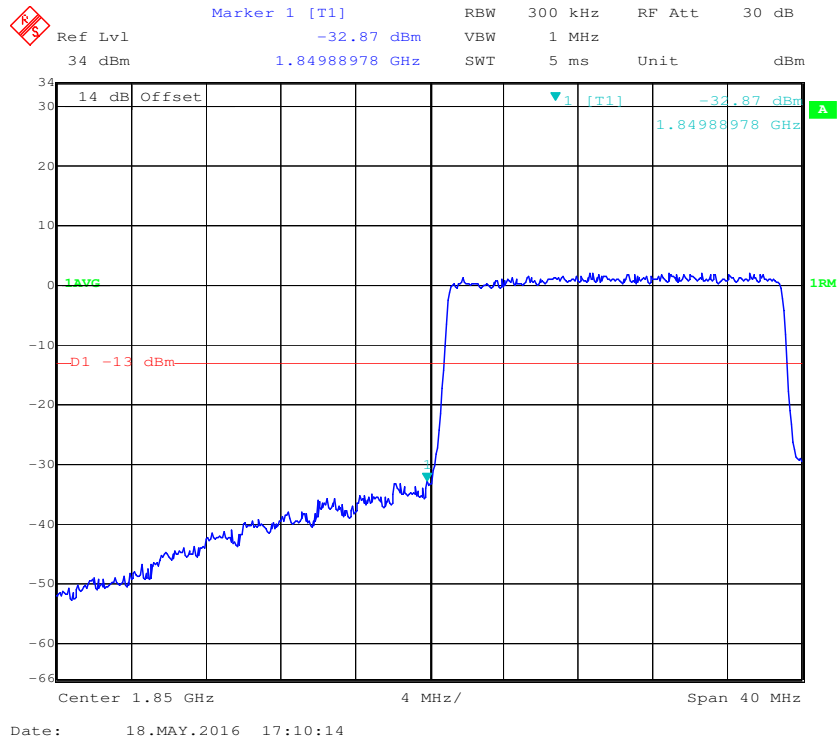
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



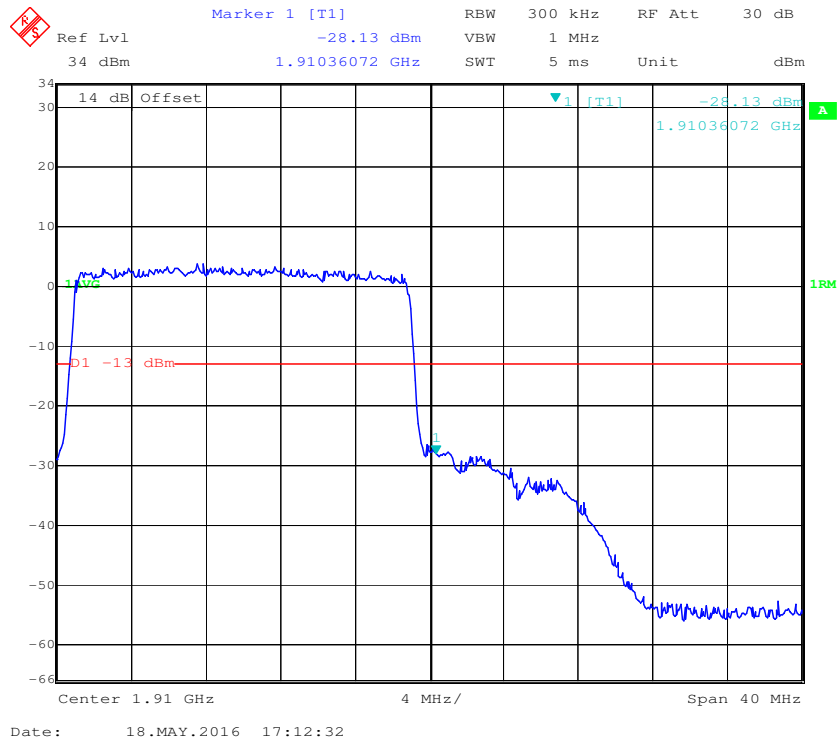
QPSK (15.0 MHz, FULL RB) - Left Band Edge**QPSK (15.0 MHz, FULL RB) - Right Band Edge**

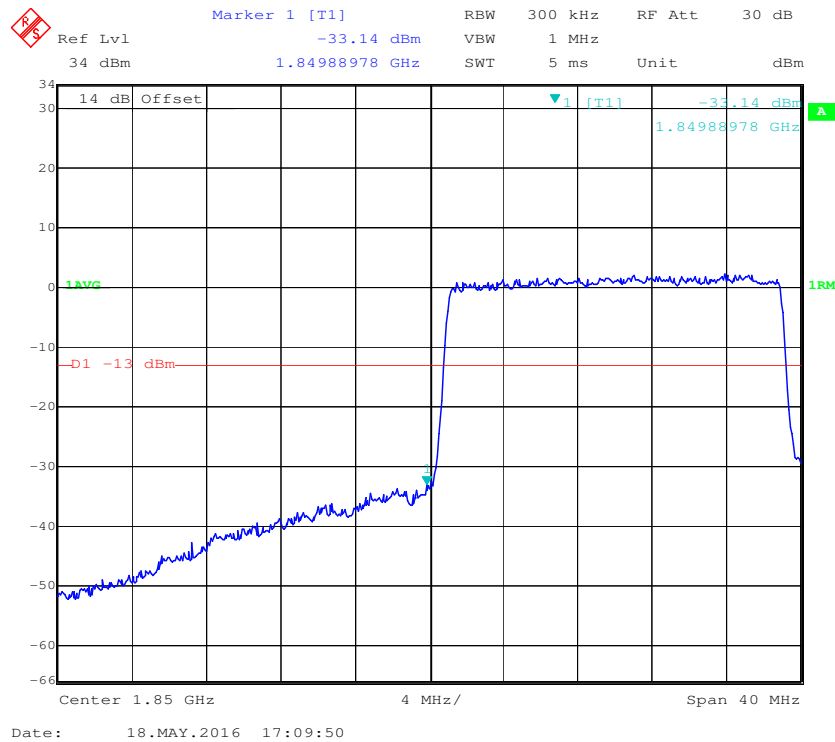
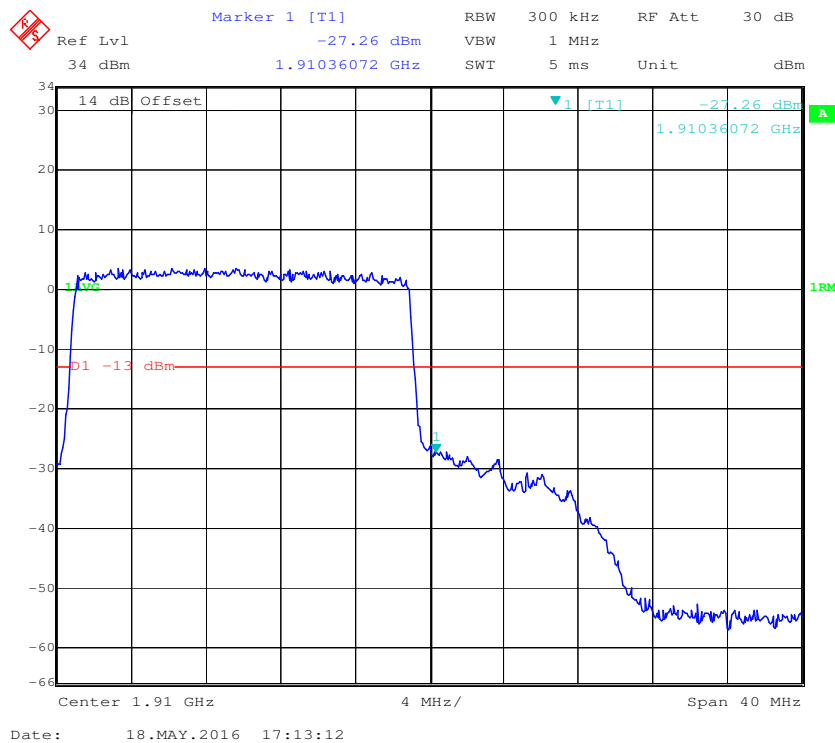
16-QAM (15.0 MHz, FULL RB) - Left Band Edge**16-QAM (15.0 MHz, FULL RB) - Right Band Edge**

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



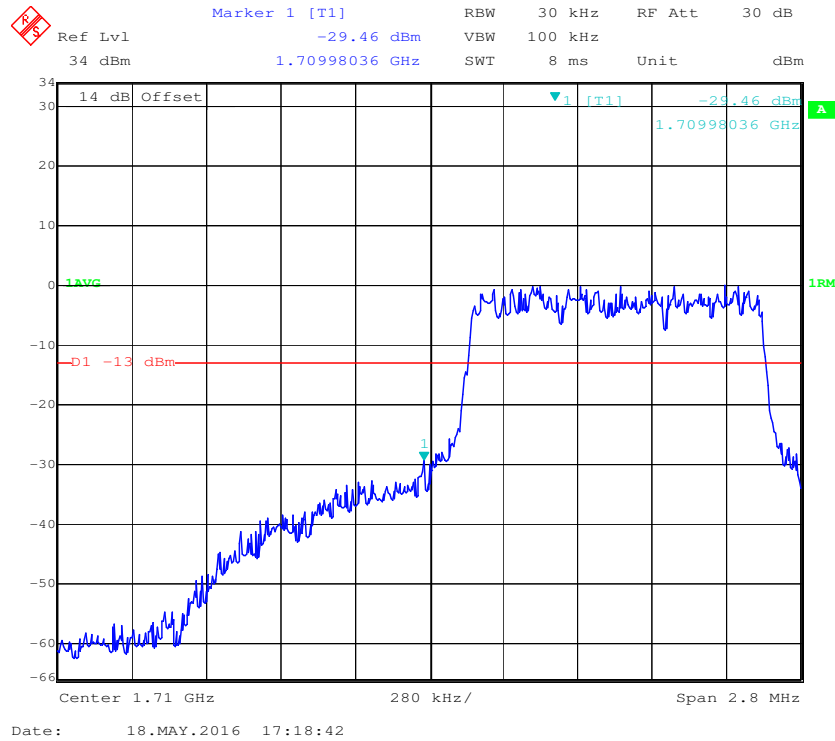
QPSK (20.0 MHz, FULL RB) - Right Band Edge



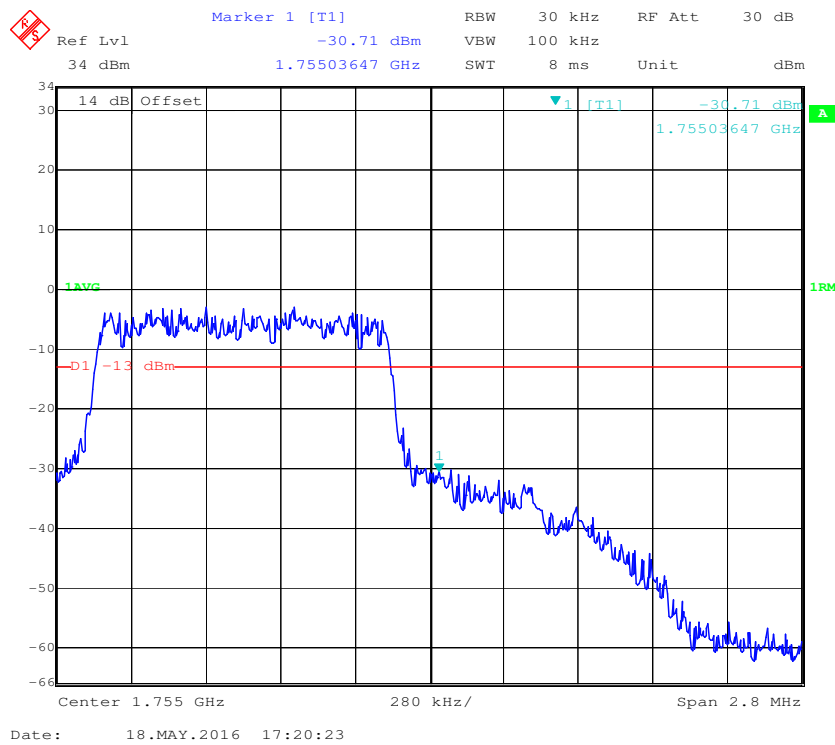
16-QAM (20.0 MHz, FULL RB) - Left Band Edge**16-QAM (20.0 MHz, FULL RB) - Right Band Edge**

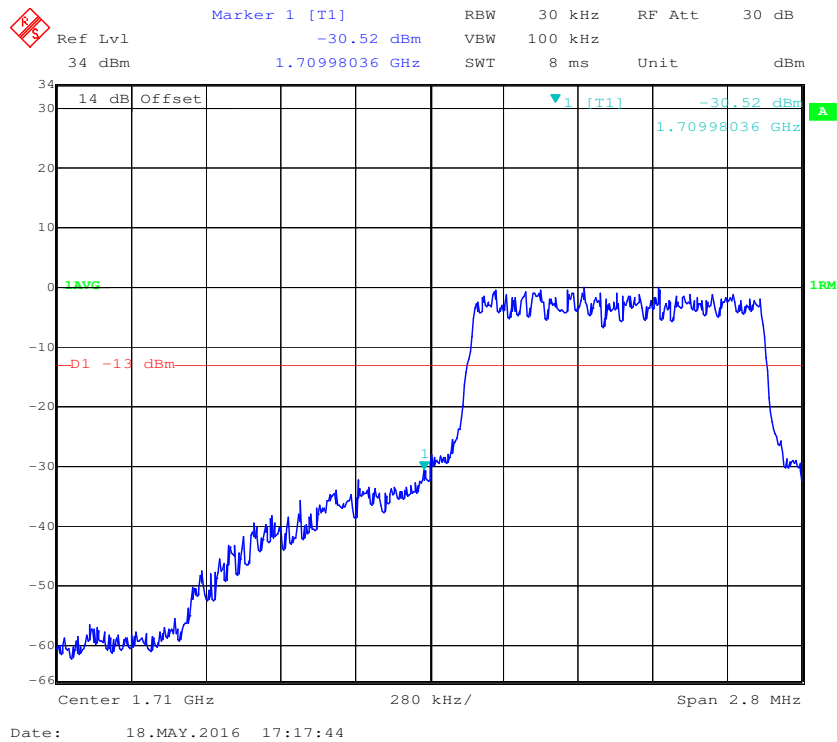
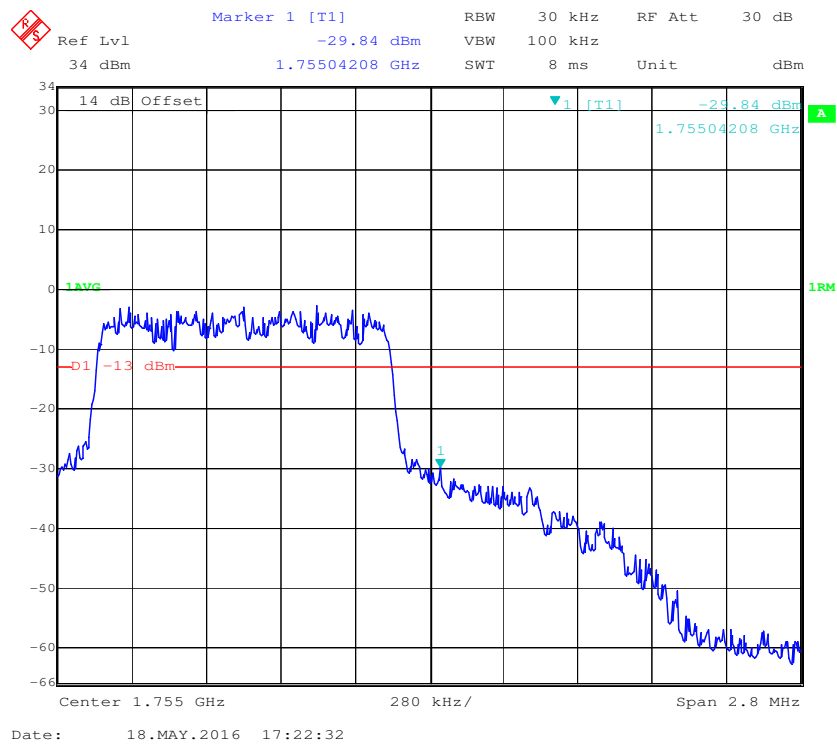
Band 4:

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

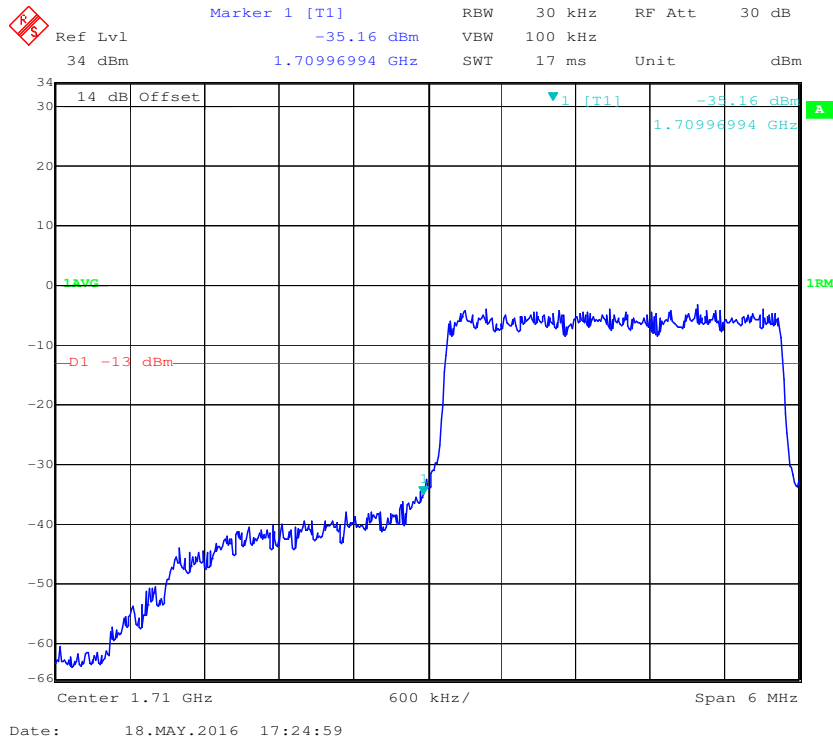


QPSK (1.4 MHz, FULL RB) - Right Band Edge

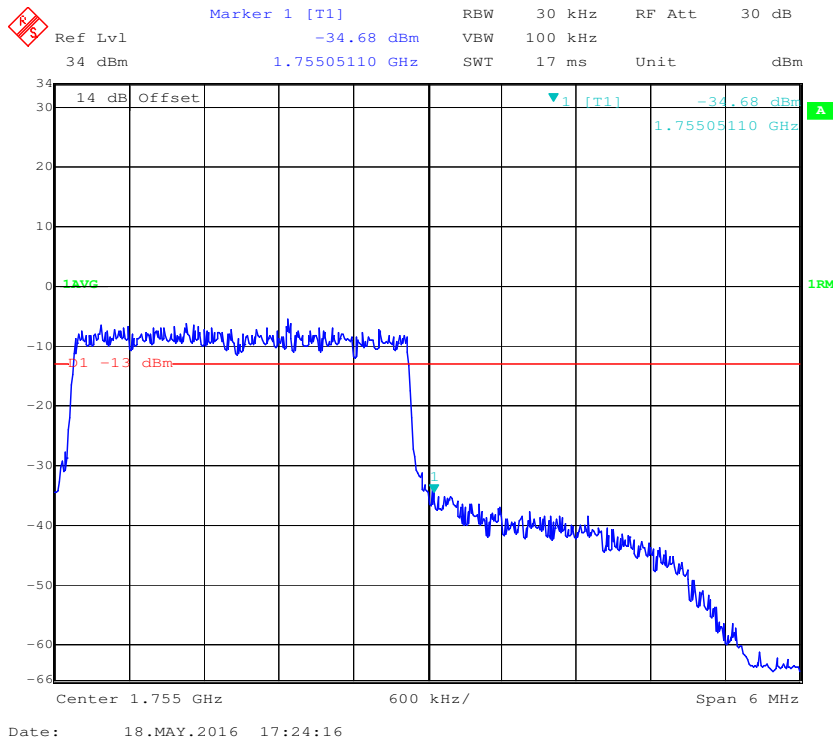


16-QAM (1.4 MHz, FULL RB) - Left Band Edge**16-QAM (1.4 MHz, FULL RB) - Right Band Edge**

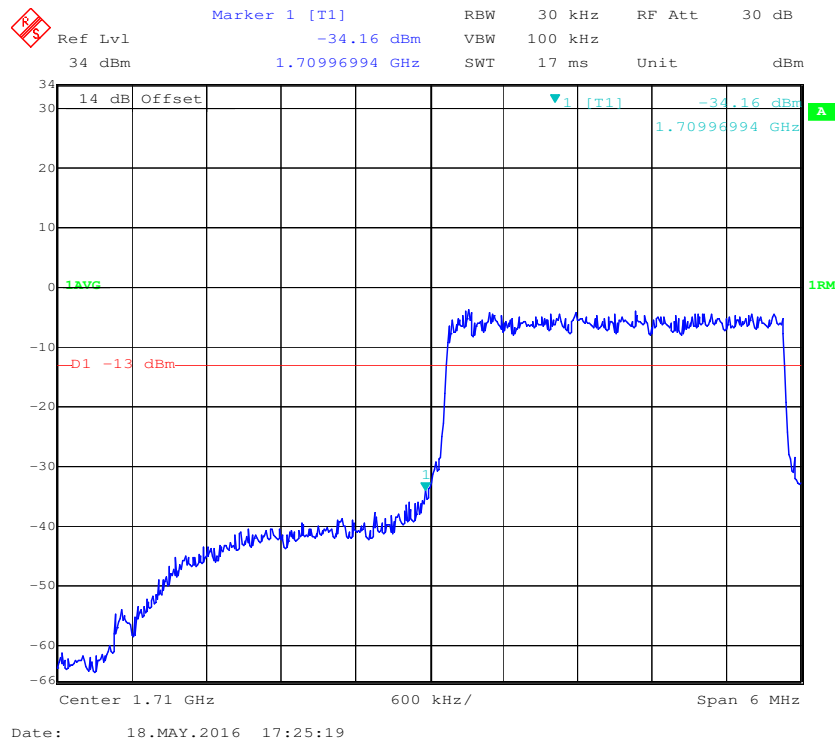
QPSK (3.0 MHz, FULL RB) - Left Band Edge



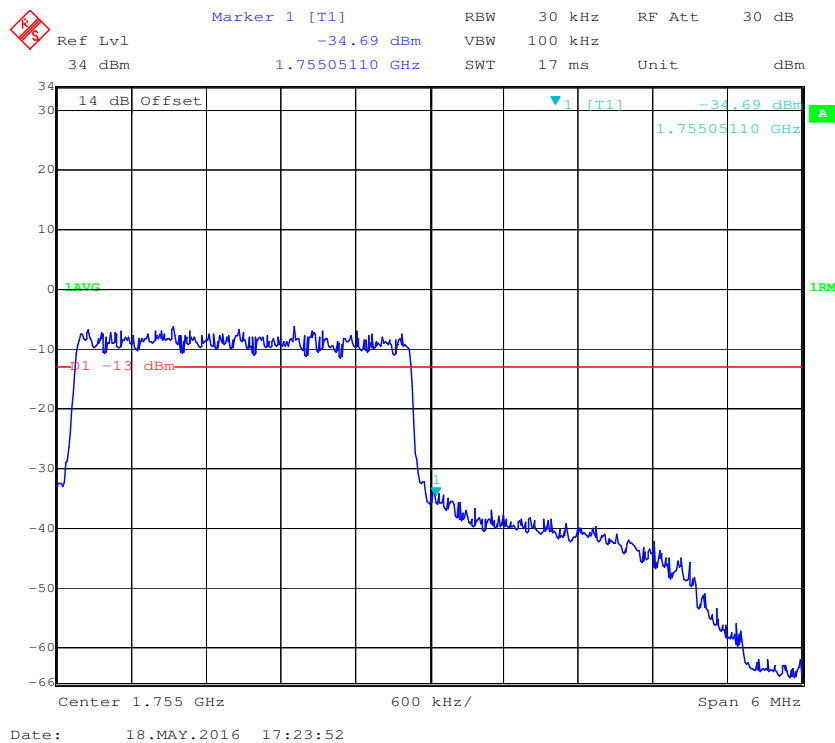
QPSK (3.0 MHz, FULL RB) - Right Band Edge

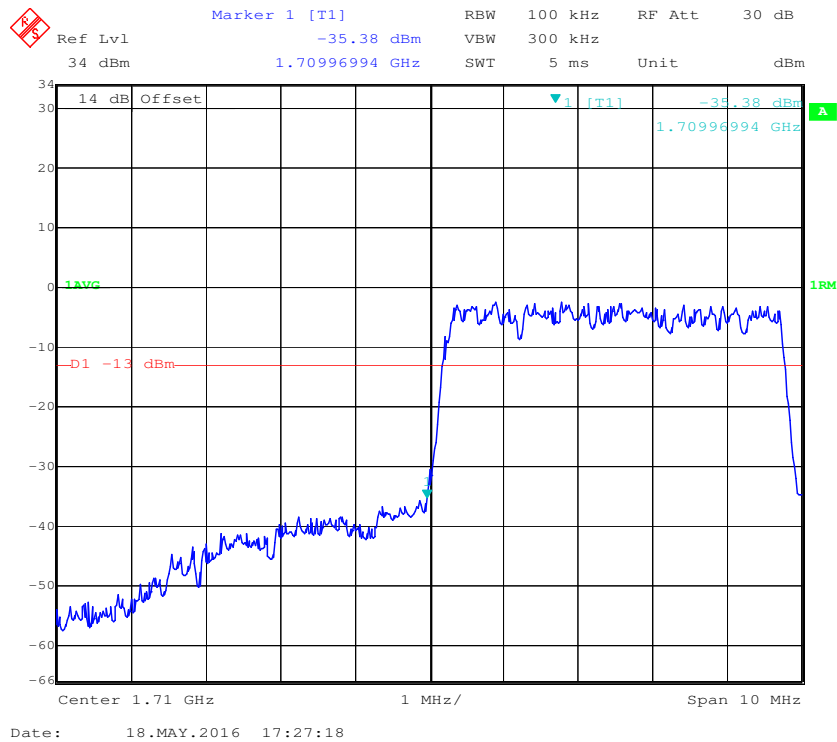
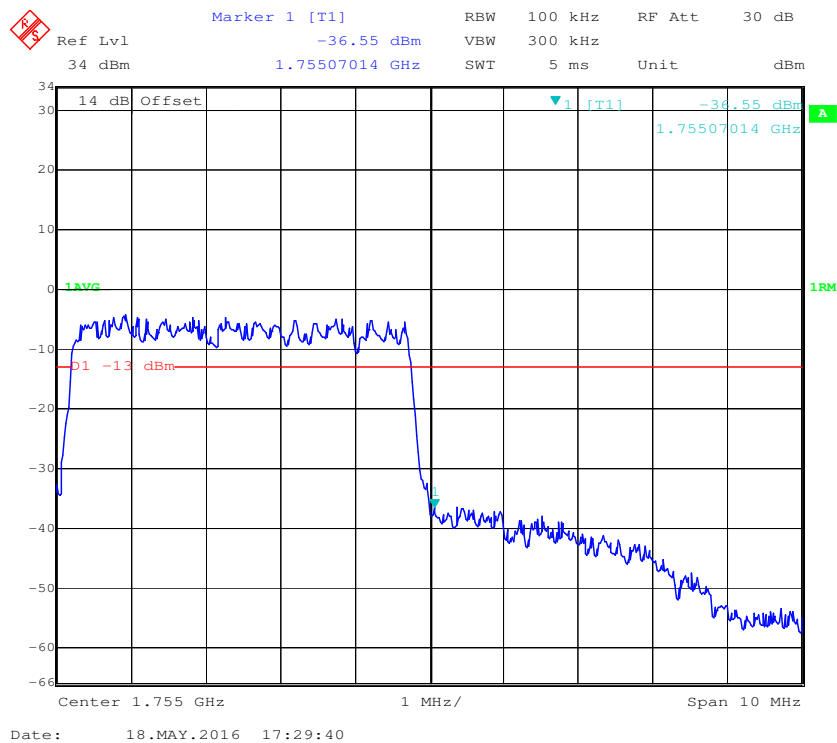


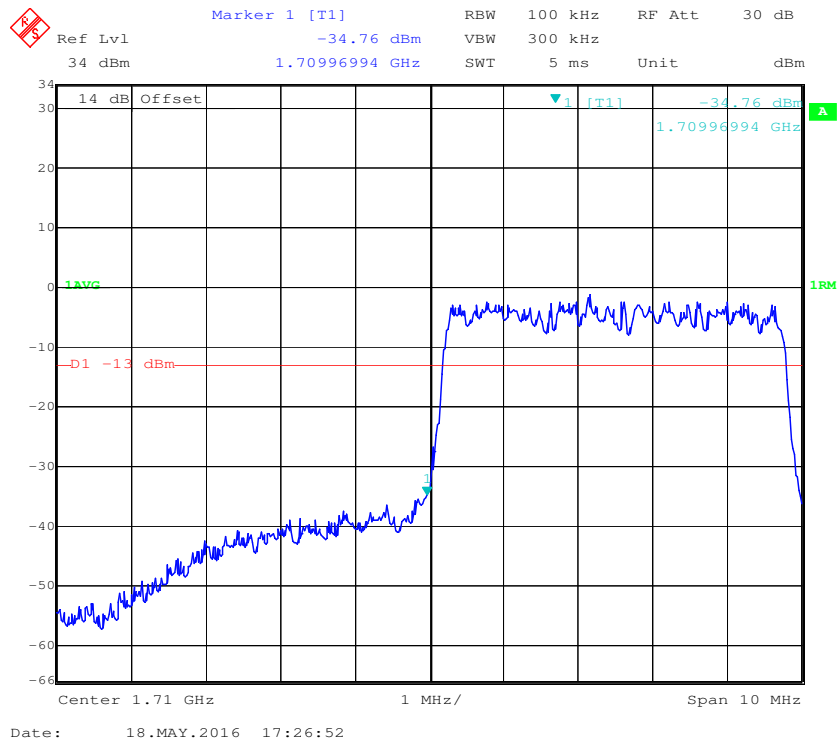
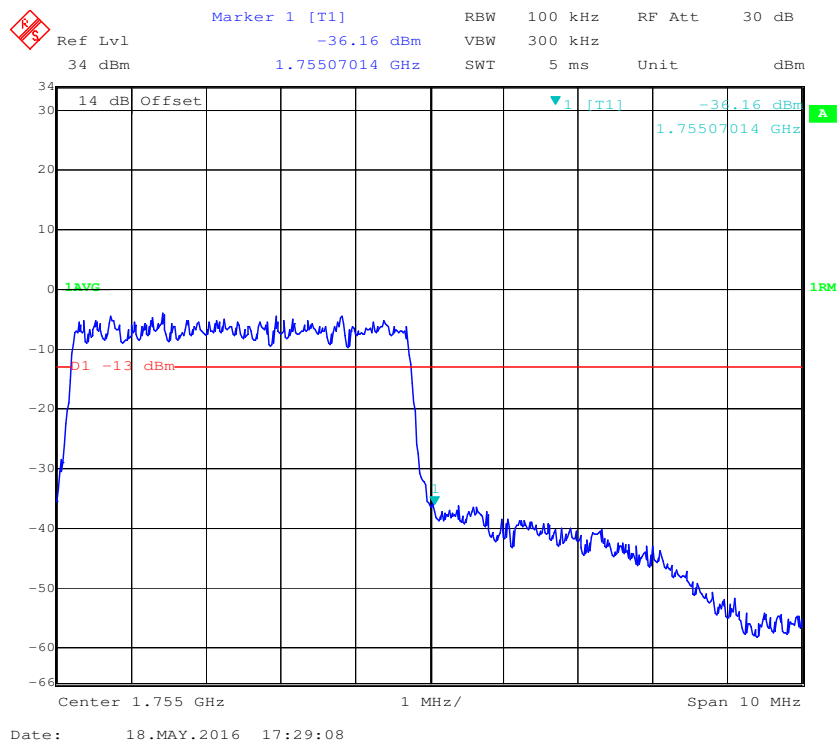
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



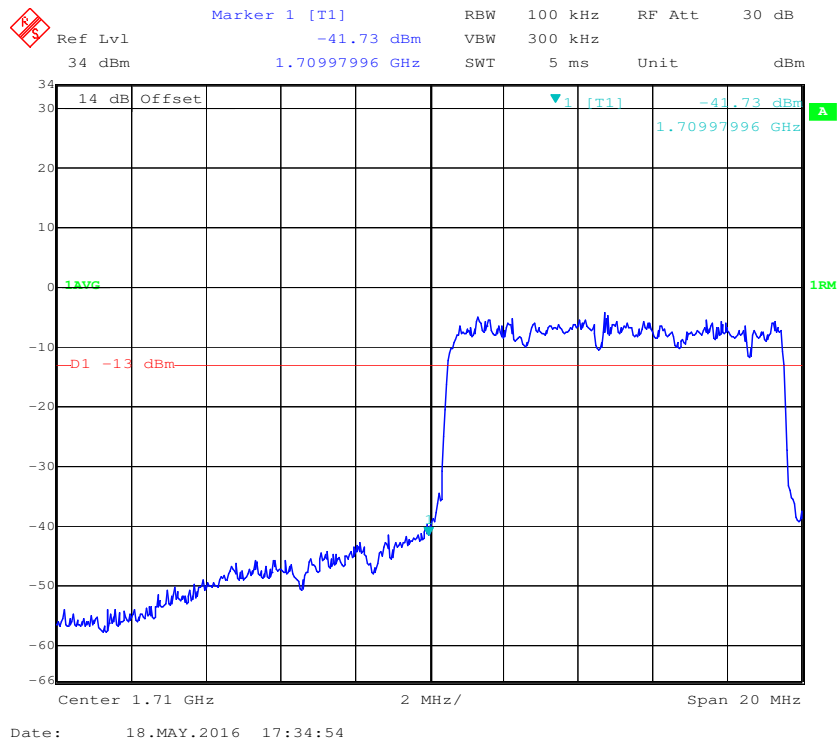
16-QAM (3.0 MHz, FULL RB) - Right Band Edge



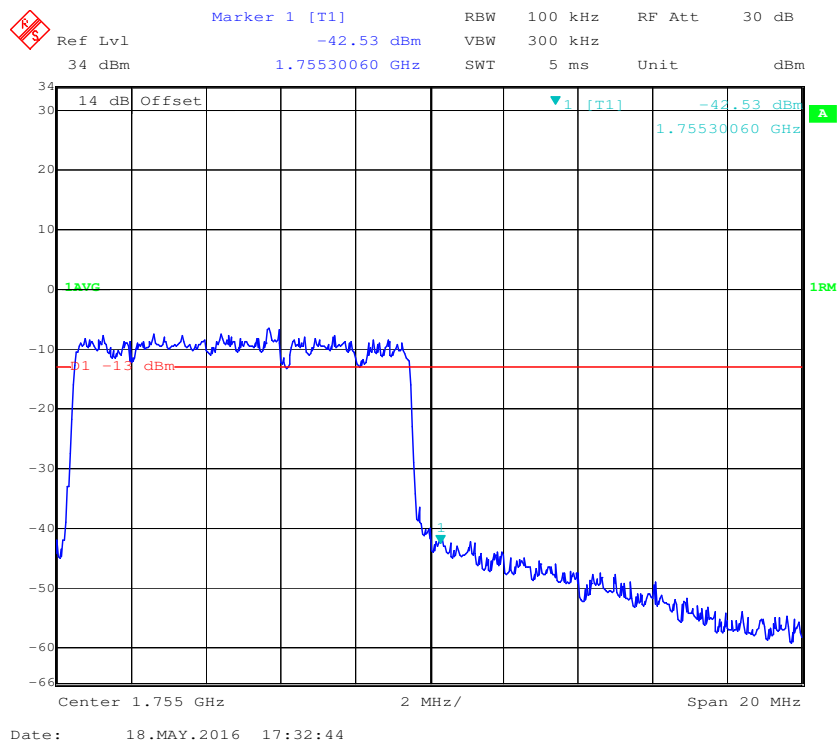
QPSK (5.0 MHz, FULL RB) - Left Band Edge**QPSK (5.0 MHz, FULL RB) - Right Band Edge**

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

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



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



Marker 1 [T1]
 Ref Lvl -40.33 dBm
 34 dBm 1.70997996 GHz
 RBW 100 kHz
 VBW 300 kHz
 SWT 5 ms
 RF Att 30 dB
 Unit dBm

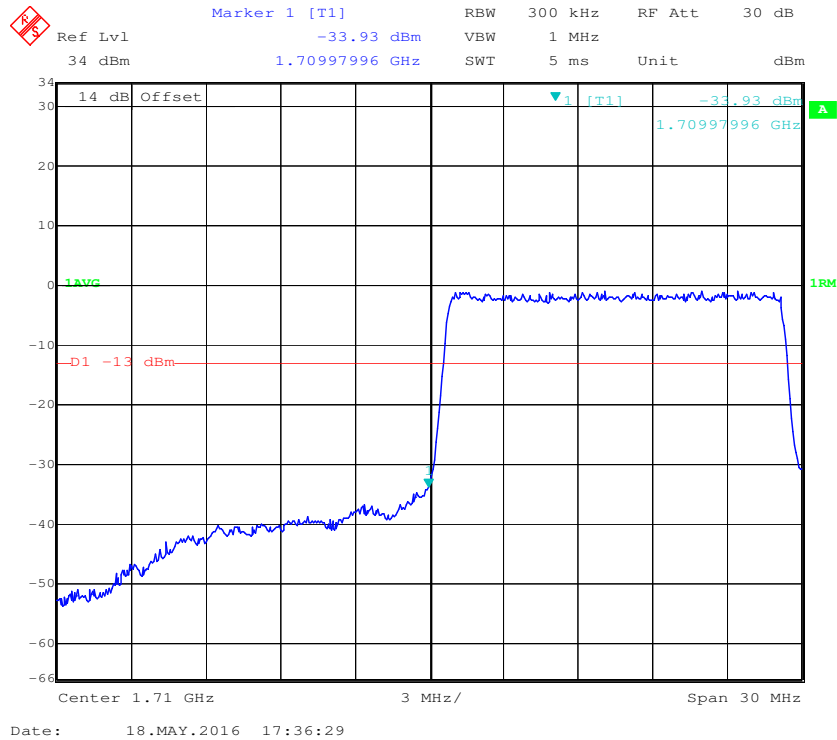
14 dB Offset
 1AVG
 D1 -13 dBm
 1 [T1] -40.33 dBm
 1.70997996 GHz
 1RM

Center 1.71 GHz
 2 MHz/
 Span 20 MHz

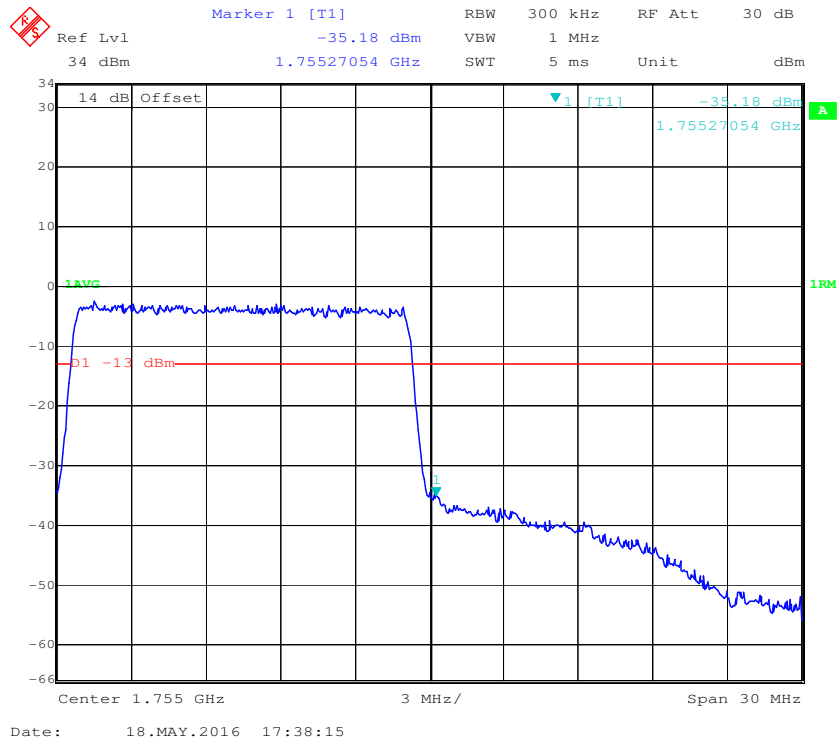
Date: 18.MAY.2016 17:34:08

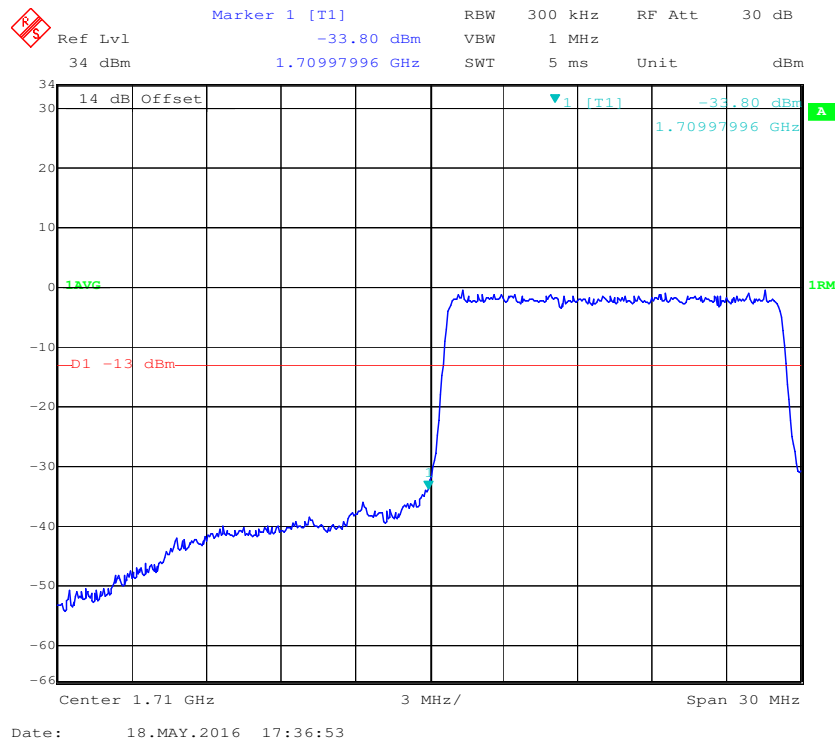
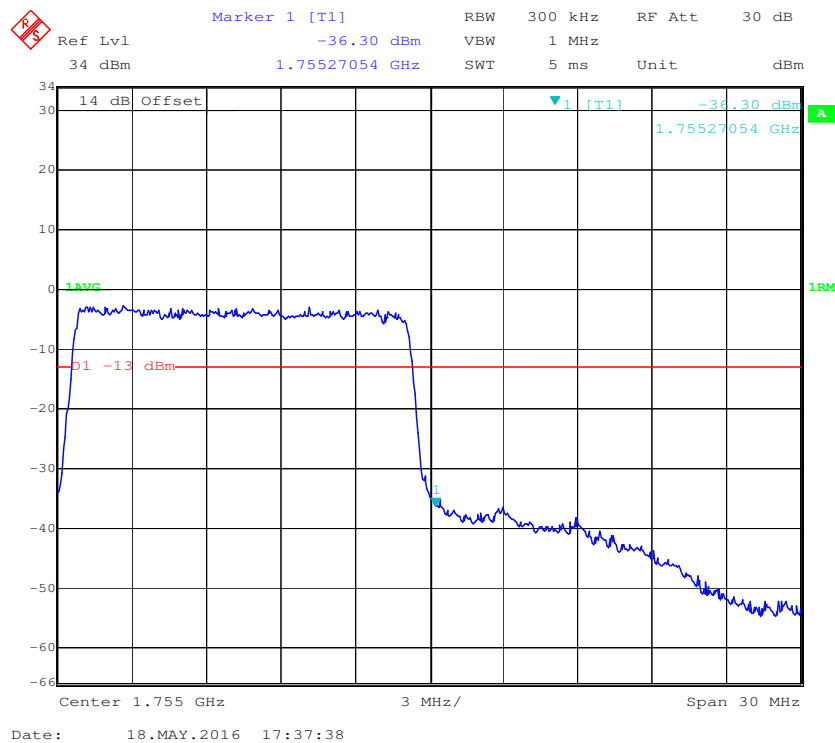
[illegible]

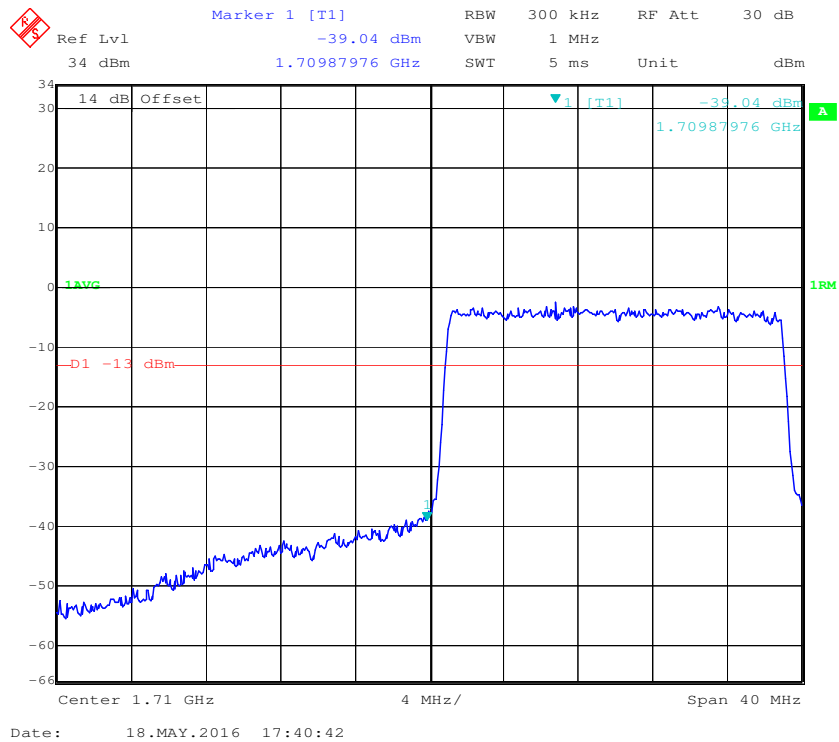
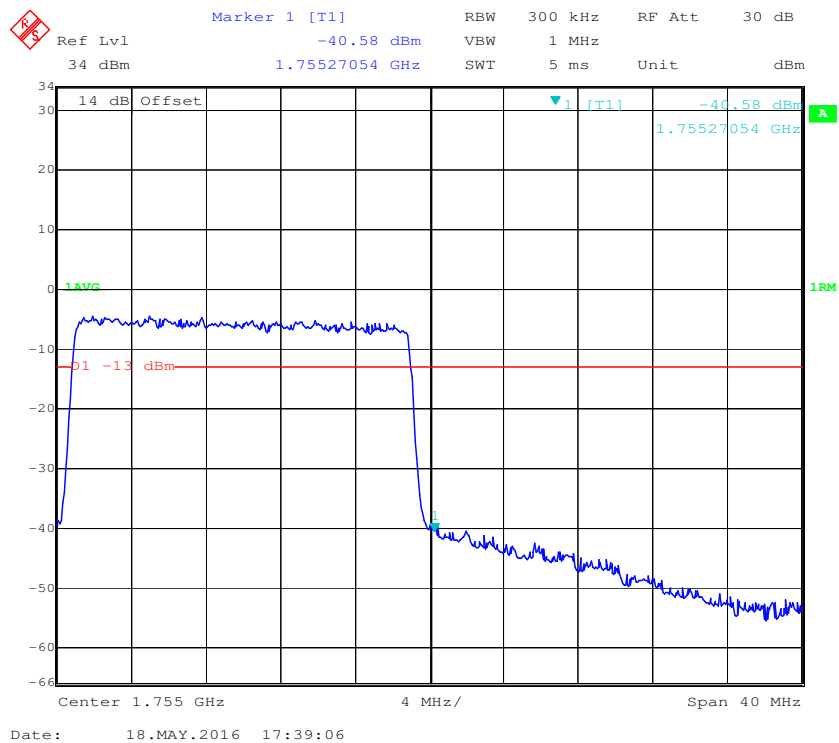
QPSK (15.0 MHz, FULL RB) - Left Band Edge

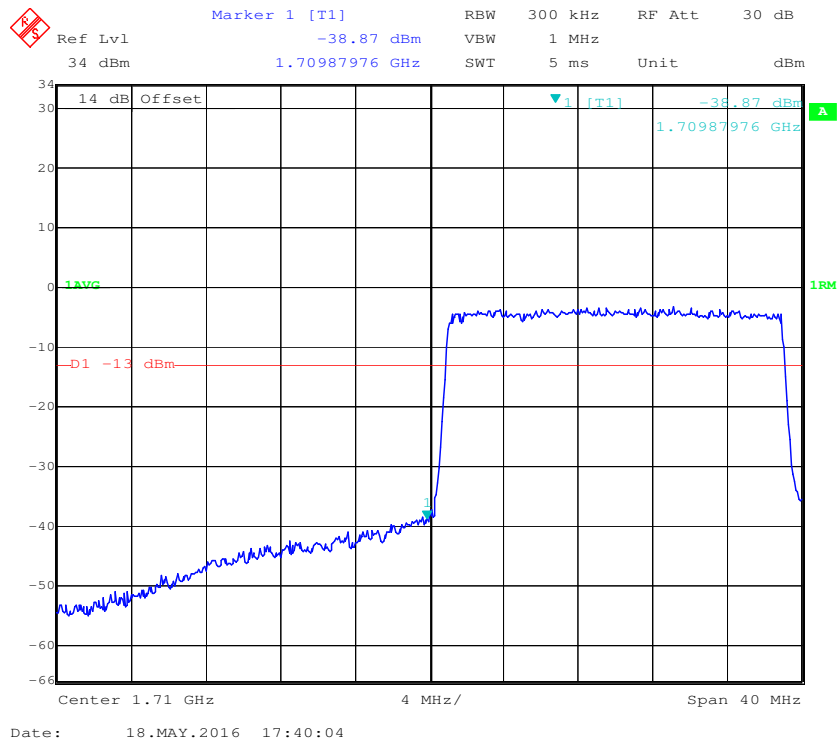
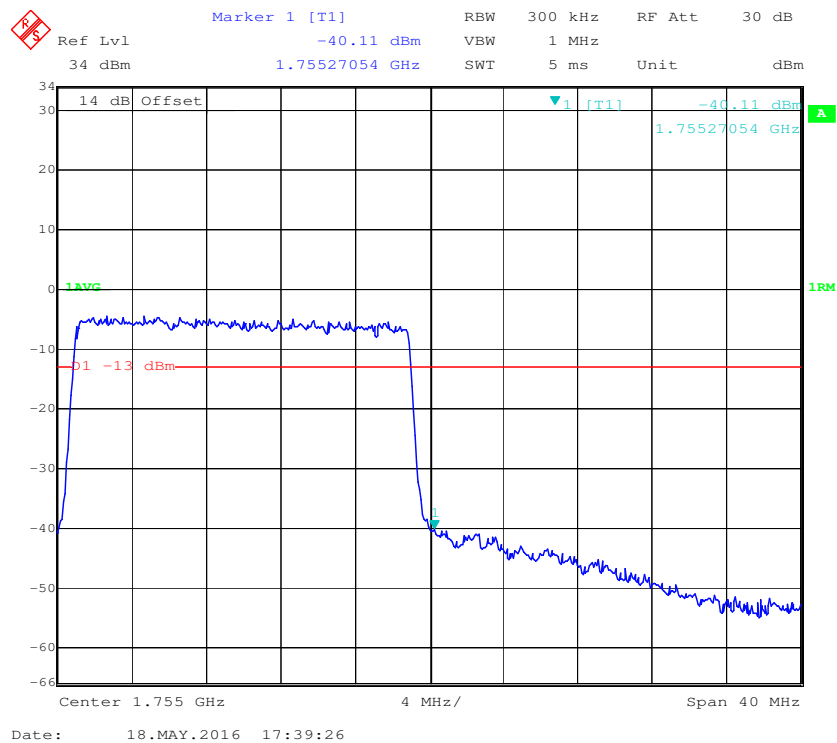


QPSK (15.0 MHz, FULL RB) - Right Band Edge



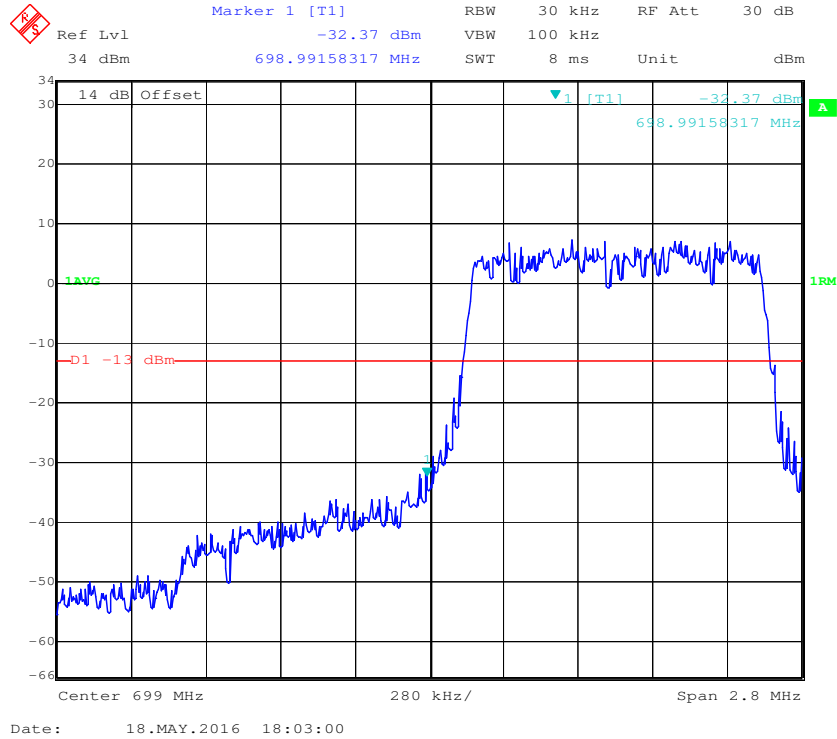
16-QAM (15.0 MHz, FULL RB) - Left Band Edge**16-QAM (15.0 MHz, FULL RB) - Right Band Edge**

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

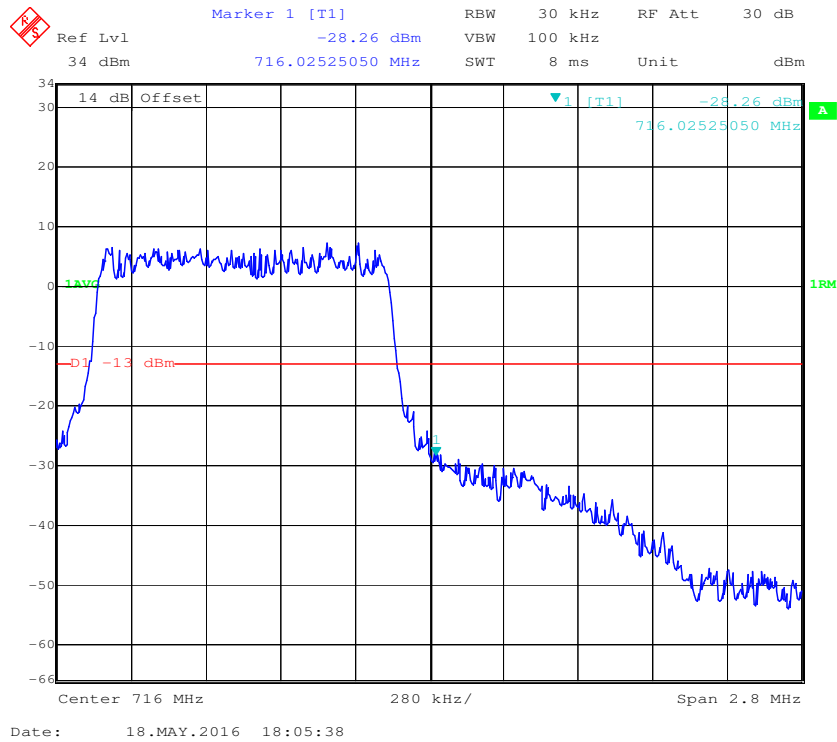
16-QAM (20.0 MHz, FULL RB) - Left Band Edge**16-QAM (20.0 MHz, FULL RB) - Right Band Edge**

Band 12:

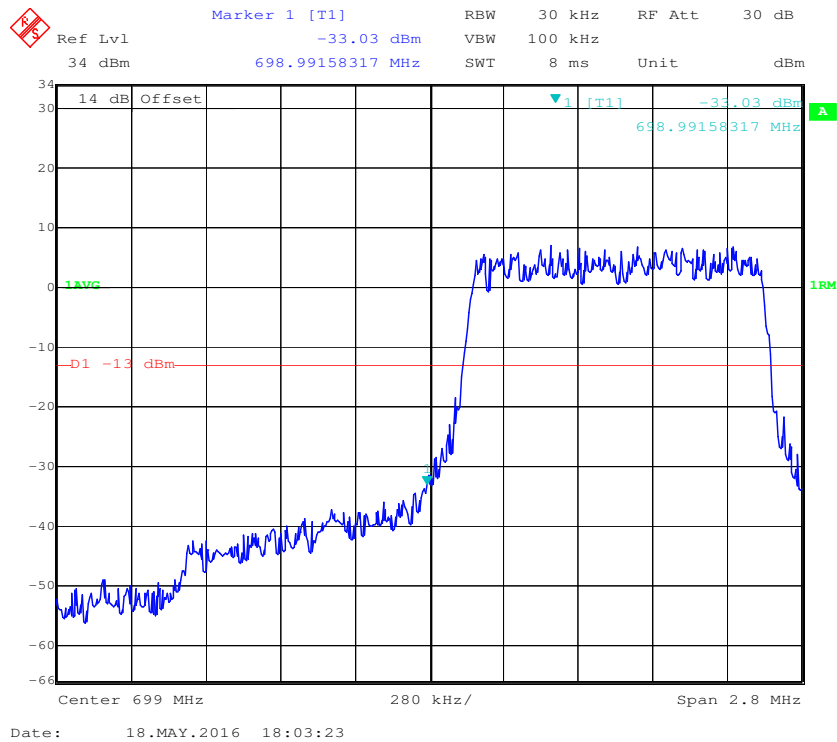
QPSK (1.4 MHz, FULL RB) - Left Band Edge



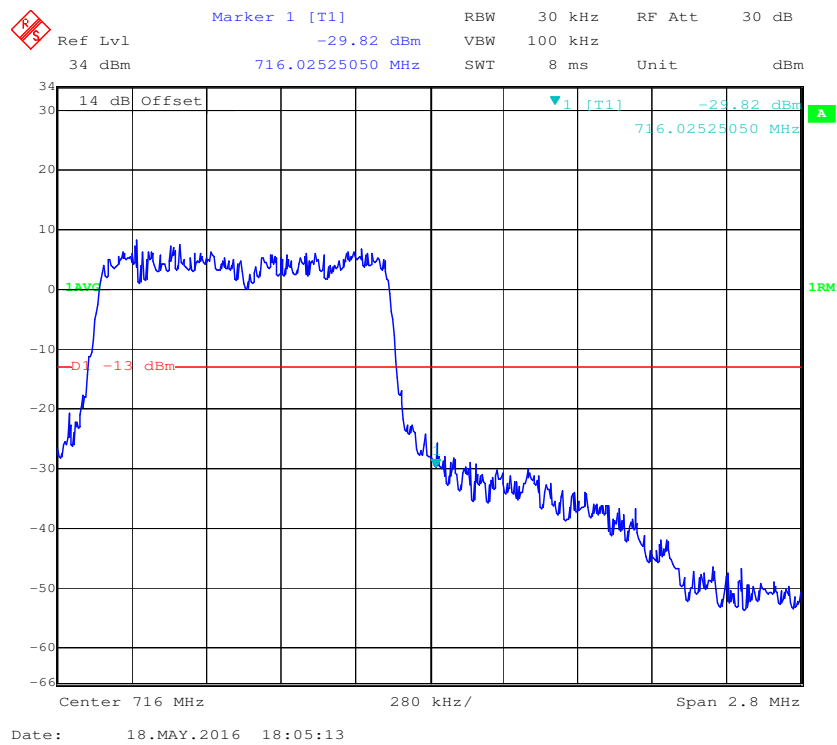
QPSK (1.4 MHz, FULL RB) - Right Band Edge



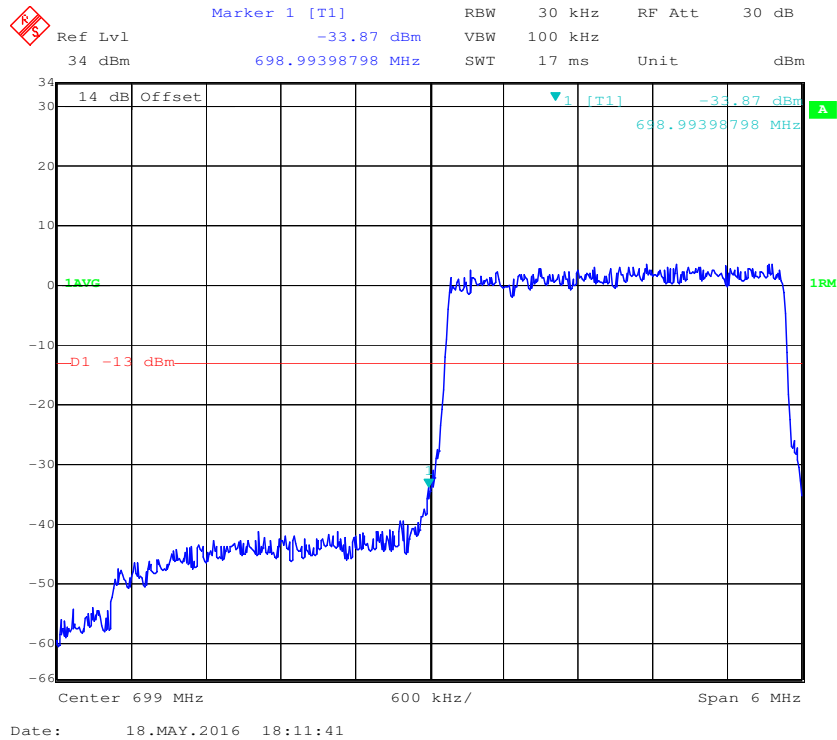
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



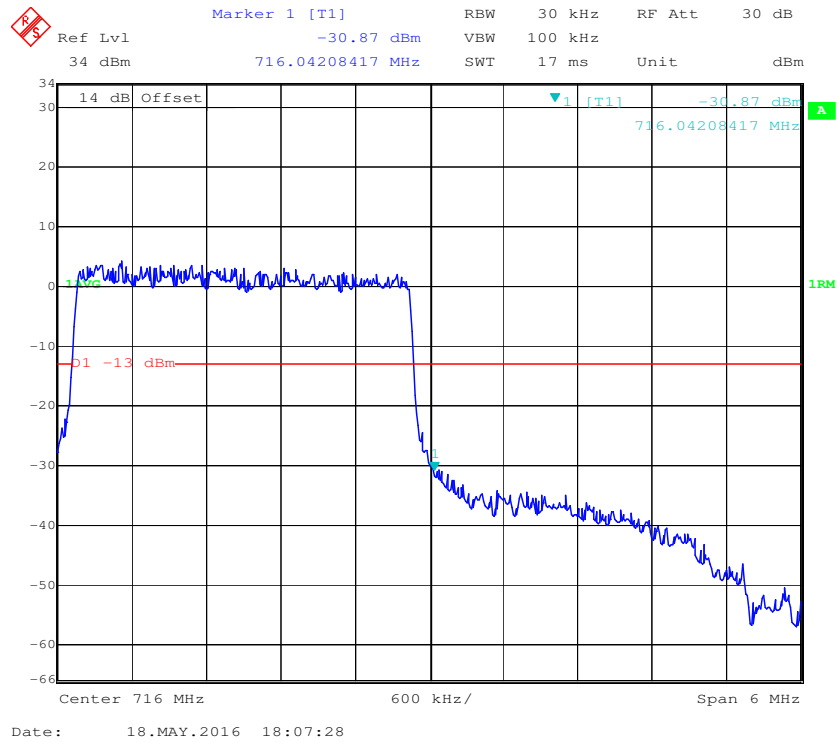
16-QAM (1.4 MHz, FULL RB) - Right Band Edge

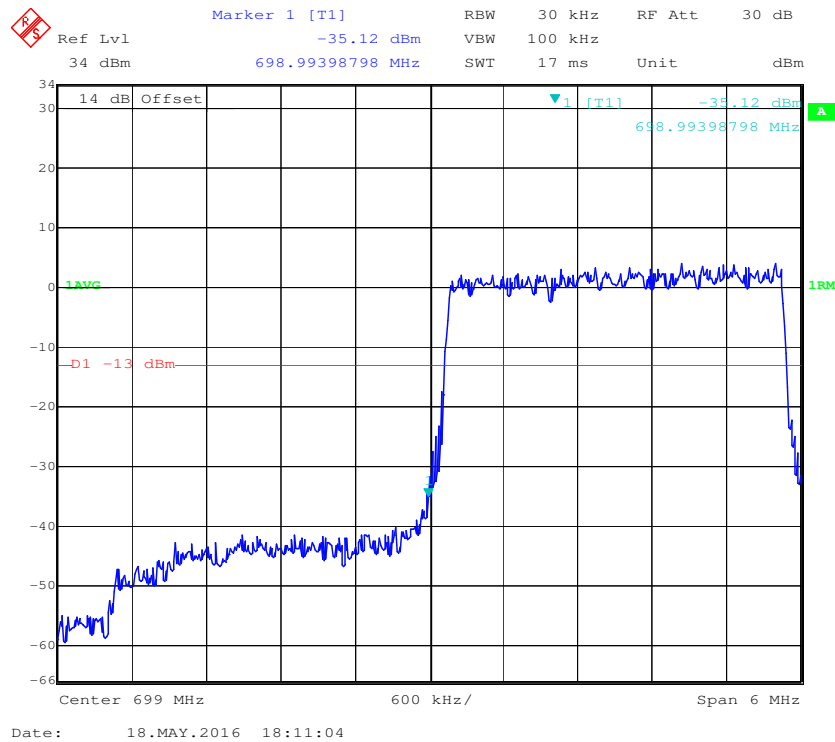
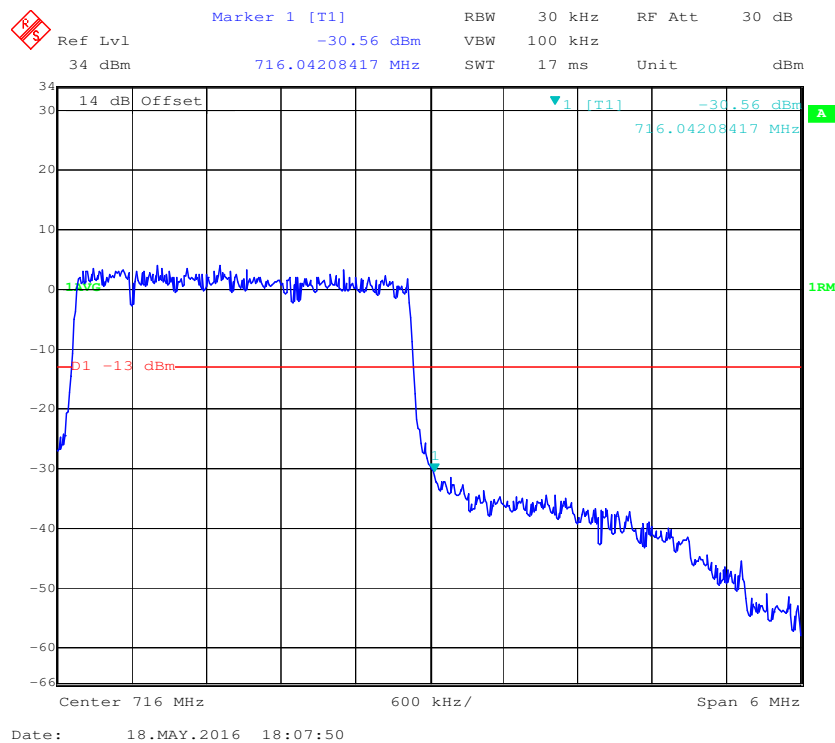


QPSK (3.0 MHz, FULL RB) - Left Band Edge

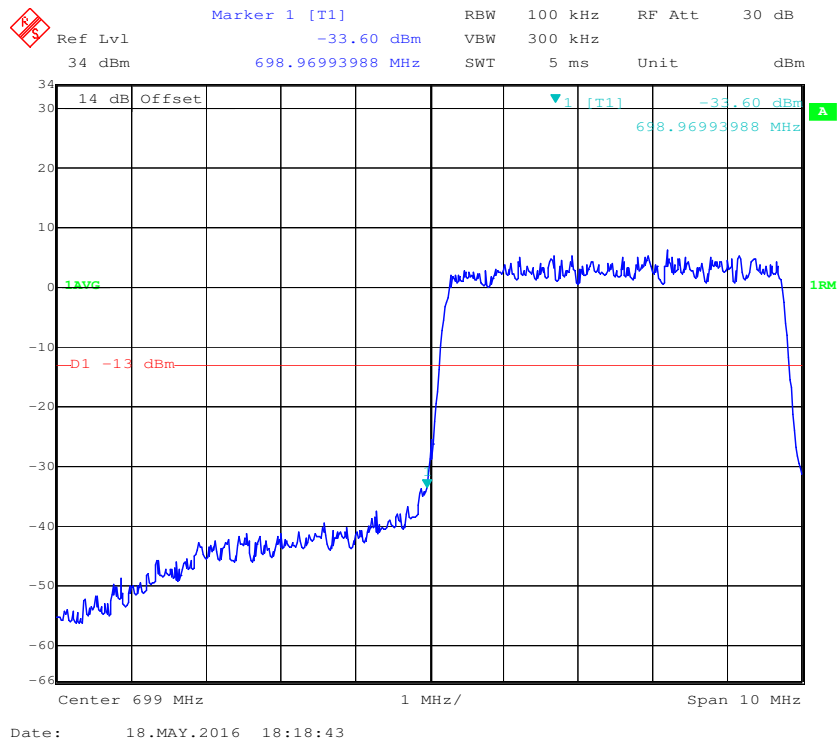


QPSK (3.0 MHz, FULL RB) - Right Band Edge

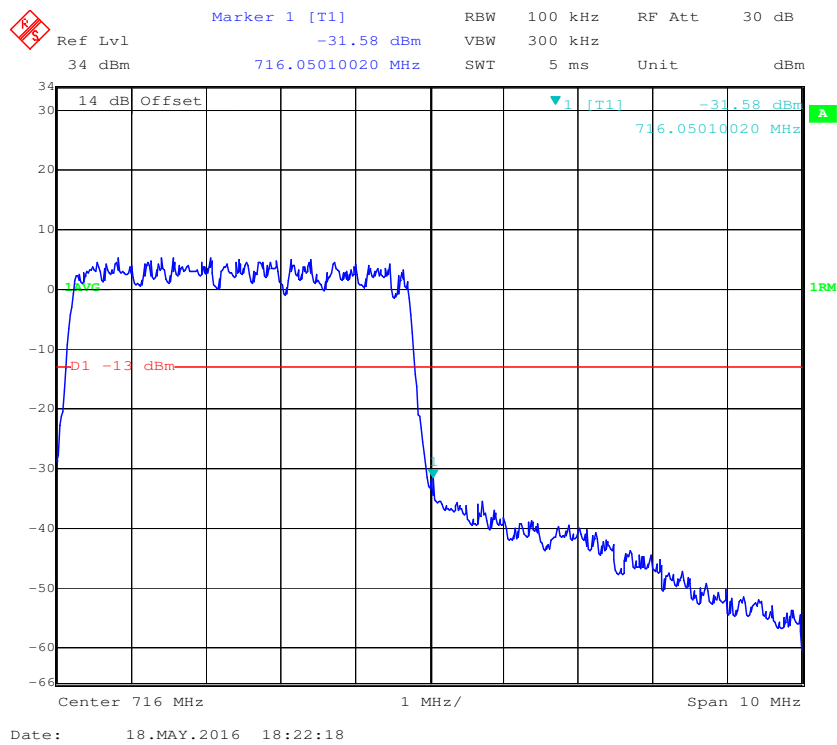


16-QAM (3.0 MHz, FULL RB) - Left Band Edge**16-QAM (3.0 MHz, FULL RB) - Right Band Edge**

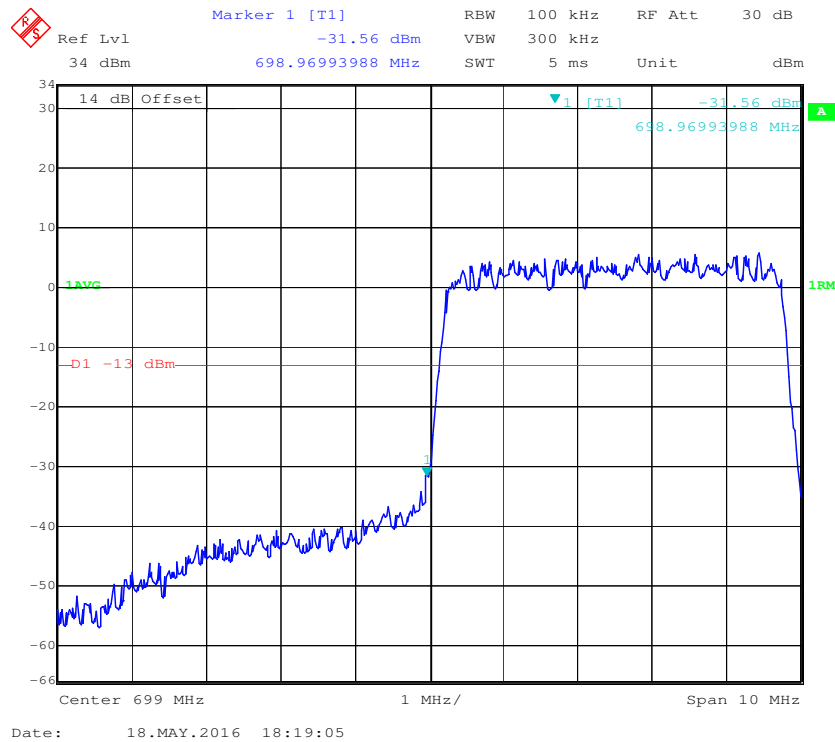
QPSK (5 MHz, FULL RB) - Left Band Edge



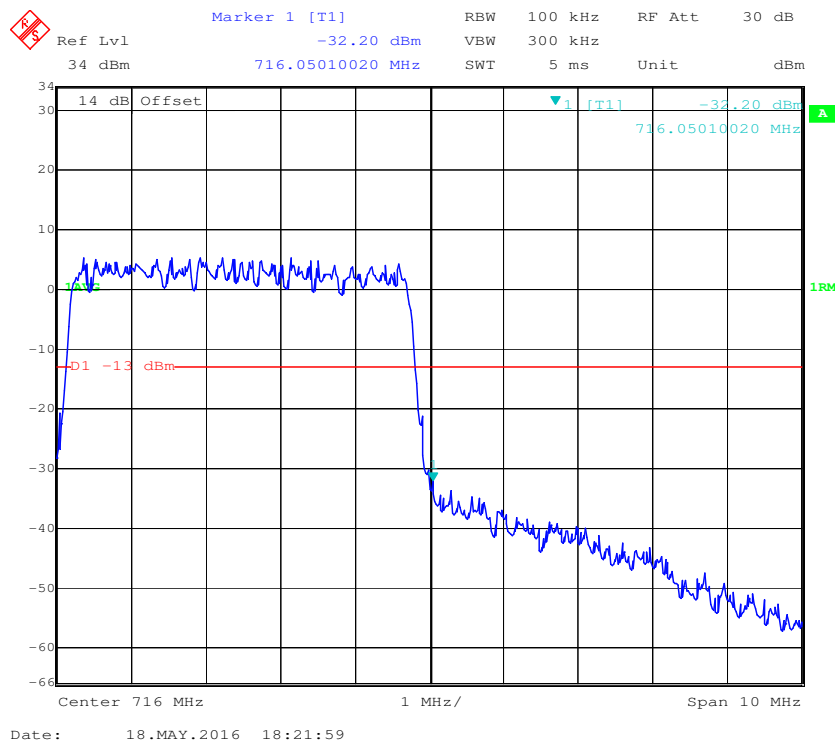
QPSK (5 MHz, FULL RB) - Right Band Edge



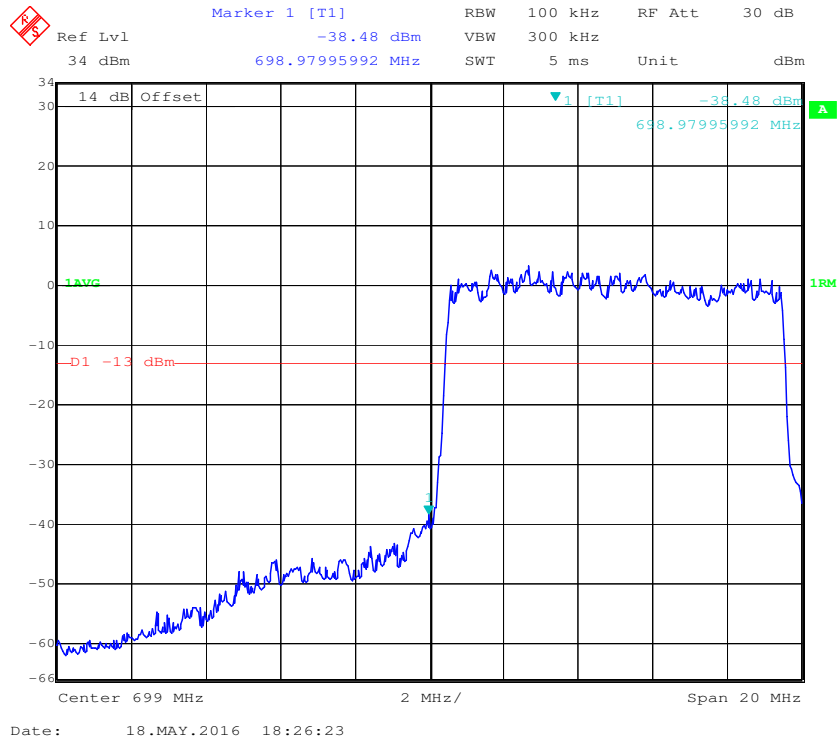
16-QAM (5 MHz, FULL RB) - Left Band Edge



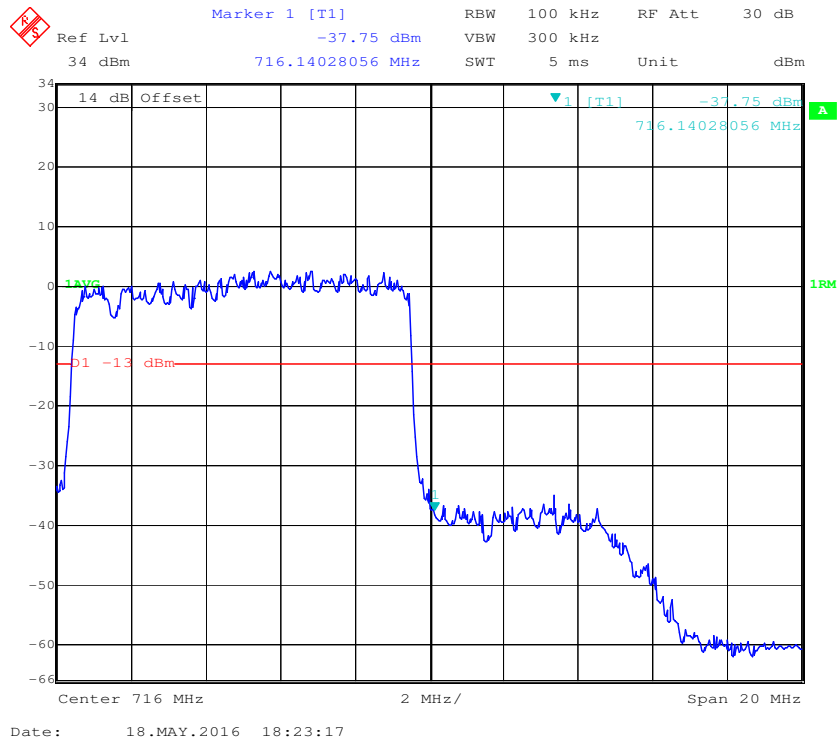
16-QAM (5 MHz, FULL RB) - Right Band Edge



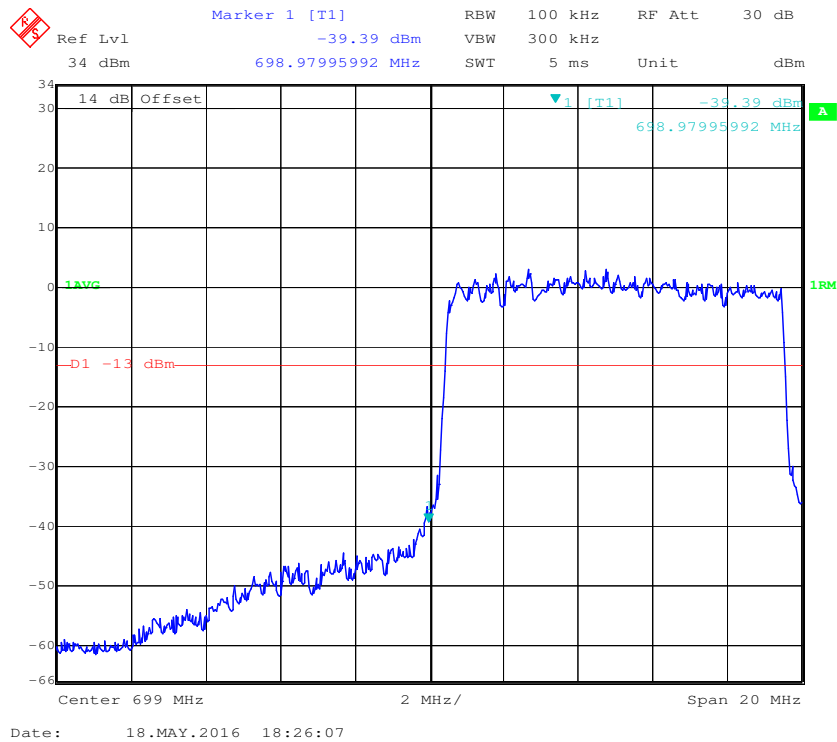
QPSK (10 MHz, FULL RB) - Left Band Edge



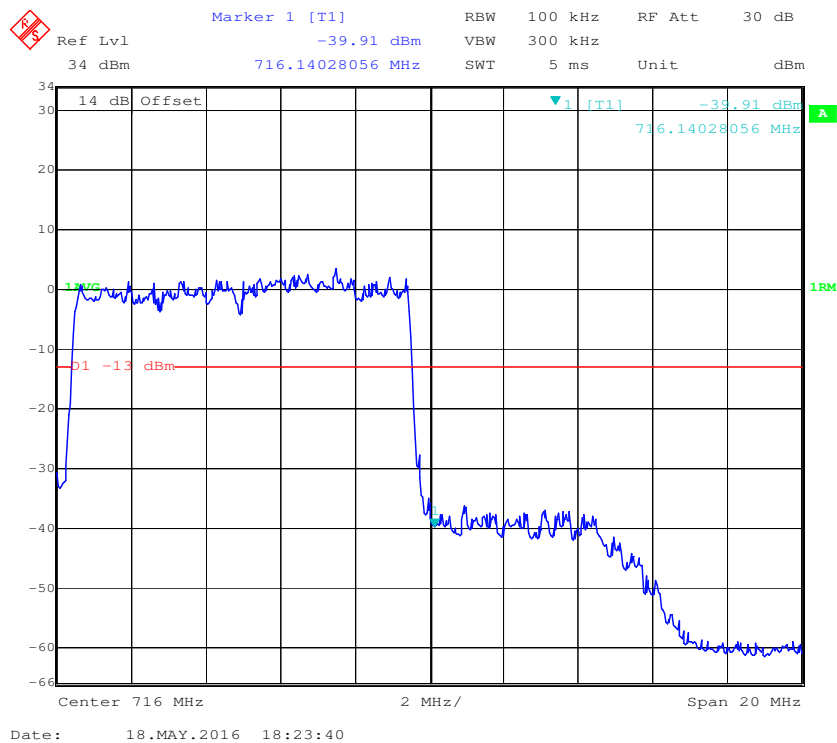
QPSK (10 MHz, FULL RB) - Right Band Edge



16-QAM (10 MHz, FULL RB) - Left Band Edge

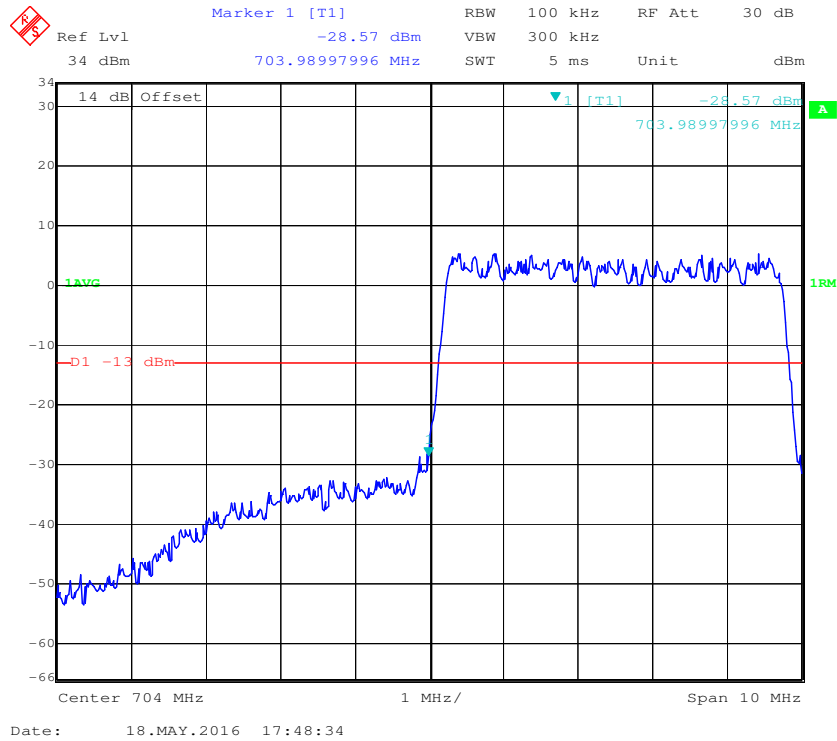


16-QAM (10 MHz, FULL RB) - Right Band Edge

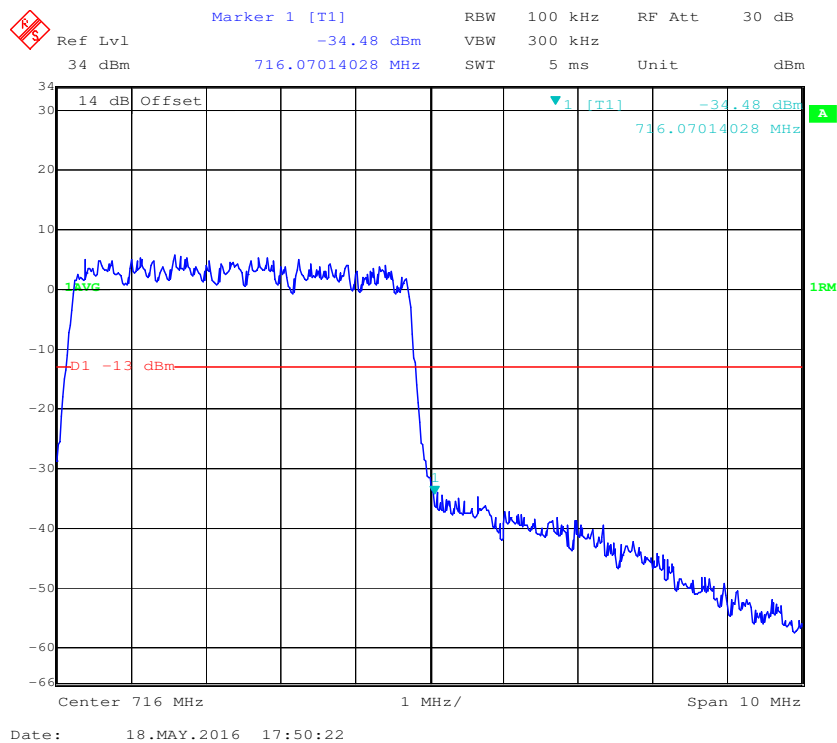


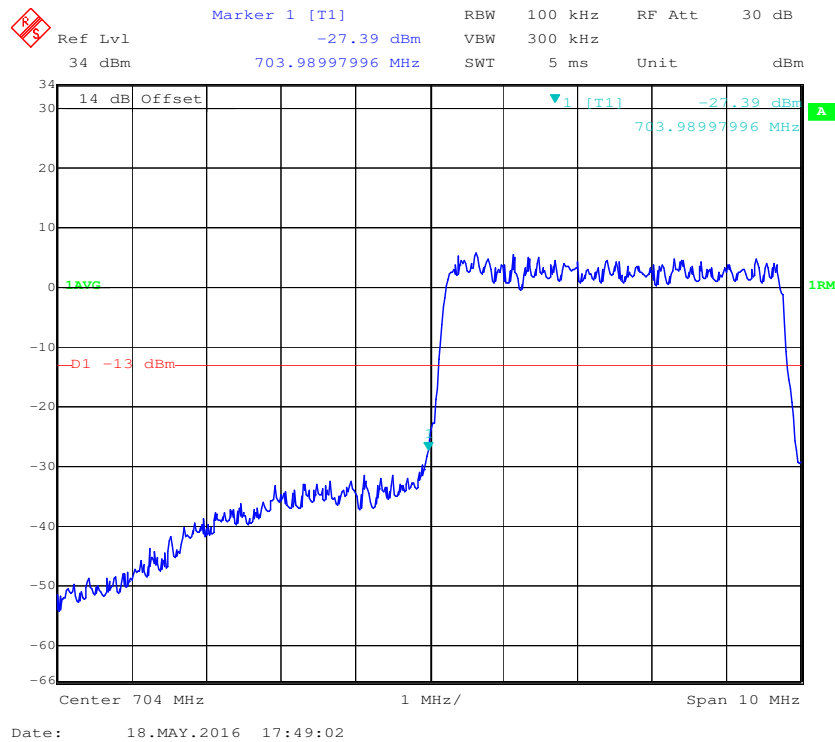
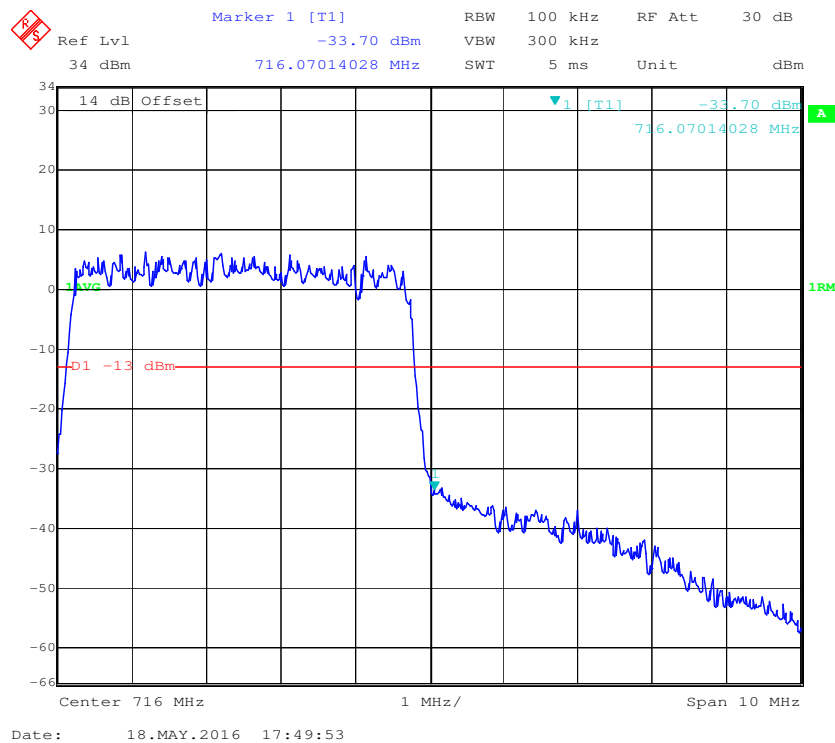
Band 17:

QPSK (5 MHz, FULL RB) - Left Band Edge

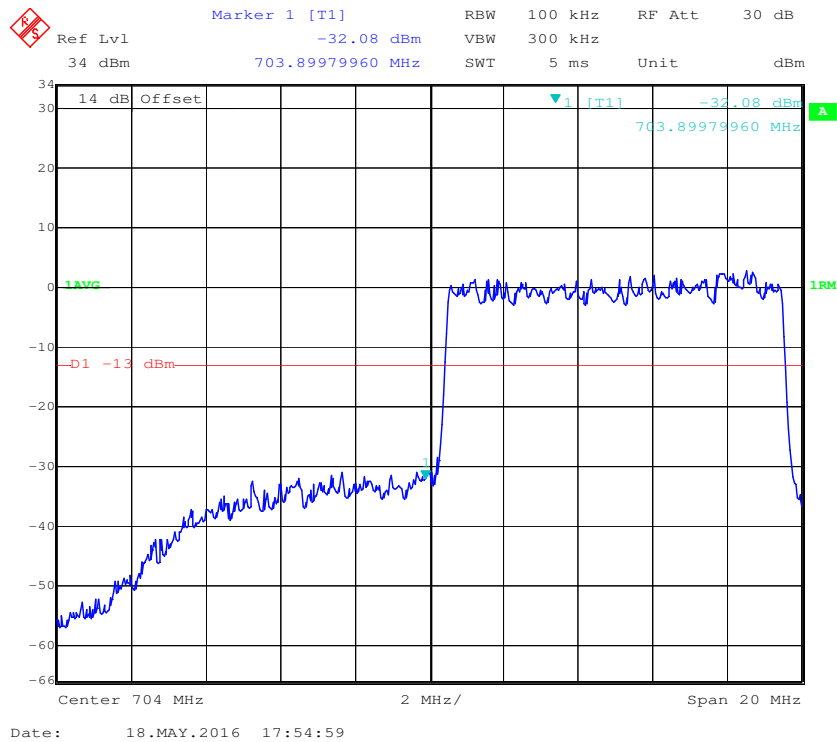


QPSK (5 MHz, FULL RB) - Right Band Edge

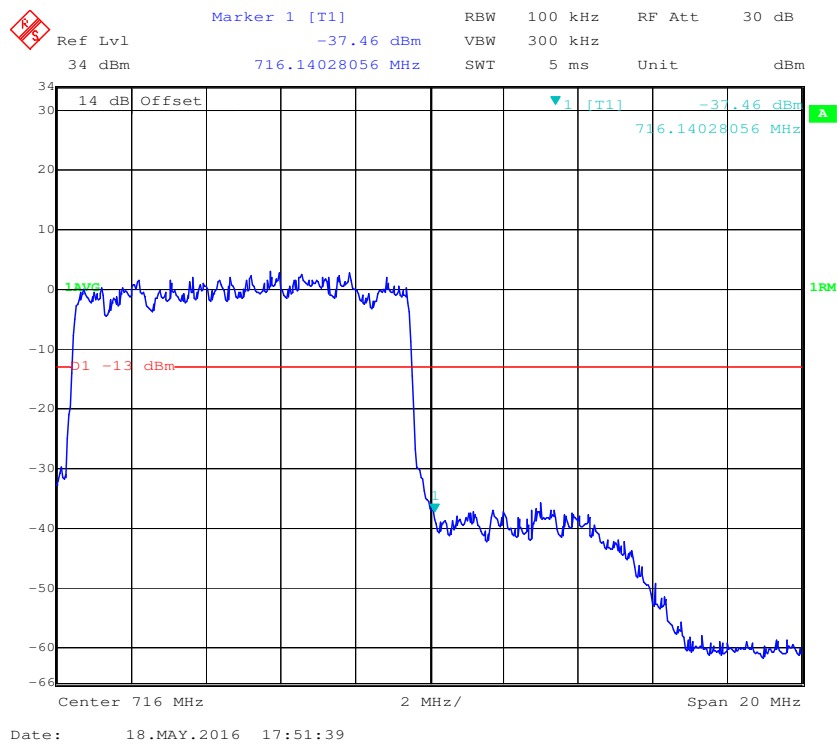


16-QAM (5 MHz, FULL RB) - Left Band Edge**16-QAM (5 MHz, FULL RB) - Right Band Edge**

QPSK (10 MHz, FULL RB) - Left Band Edge



QPSK (10 MHz, FULL RB) - Right Band Edge



[illegible]

The screenshot displays a spectrum analyzer interface. At the top left, there is a red logo with the letters 'K' and 'S'. The main display area shows a blue trace representing the signal spectrum. A horizontal red line indicates the noise floor at -13 dBm. A green cursor labeled '1 [T1]' points to the peak of the signal at 716.14028056 MHz, which has a power level of -36.74 dBm. The x-axis is labeled 'Center 716 MHz' and 'Span 20 MHz'. The y-axis is labeled 'dBm' and ranges from -60 to 34. Various parameters are listed at the top right: RBW 100 kHz, VBW 300 kHz, SWF 5 ms, RF Att 30 dB, Unit dBm. The date and time 'Date: 18.MAY.2016 17:52:30' are shown at the bottom.

Parameter	Value
Ref Lvl	34 dBm
Marker 1 [T1]	-36.74 dBm
RBW	100 kHz
VBW	300 kHz
SWF	5 ms
RF Att	30 dB
Unit	dBm
Center Freq	716.14028056 MHz
Noise Floor	-13 dBm
Span	20 MHz

FCC §2.1055, §22.355 & §24.235 & §27.54 - FREQUENCY STABILITY**Applicable Standards**

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

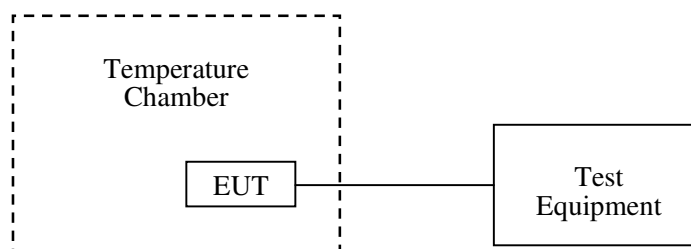
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2015-11-01	2016-10-31
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	106891	2015-11-23	2016-11-23
R&S	Wideband Radio Communication tester	CMW500	1201.002K50-146520-wh	2015-11-23	2016-11-23
Ducommun technologies	RF Cable	RG-214	4	2015-06-15	2016-06-15
WEINSCHTEL	10dB Attenuator	5324	AU0709	2015-06-18	2016-06-18

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

Test Data**Environmental Conditions**

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

The testing was performed by Haiguo Li on 2016-05-18.

EUT operation mode: Transmitting

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

Cellular Band (Part 22H)**GSM Mode**

Middle Channel, $f_0=836.6$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	5	0.02988	2.5
-20		6	0.02988	2.5
-10		2	0.02032	2.5
0		3	0.02032	2.5
10		0	0.02032	2.5
20		1	0.01554	2.5
30		3	0.01554	2.5
40		2	0.02630	2.5
50		5	0.02630	2.5
25	V min.= 3.5	4	0.02988	2.5
25	V max.= 4.35	-1	0.02988	2.5

EDGE Mode

Middle Channel, $f_0=836.6$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	3	0.02630	2.5
-20		4	0.02630	2.5
-10		2	0.02032	2.5
0		0	0.02032	2.5
10		-1	0.02032	2.5
20		2	0.02032	2.5
30		4	0.02391	2.5
40		6	0.02391	2.5
50		2	0.02391	2.5
25	V min.= 3.5	5	0.02630	2.5
25	V max.= 4.35	7	0.02630	2.5

WCDMA Mode

Middle Channel, $f_0 = 836.6$ MHz				
Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	0	0.02988	pass
-20		-1	0.02988	pass
-10		1	0.02749	pass
0		2	0.02749	pass
10		0	0.02749	pass
20		3	0.01434	pass
30		1	0.01434	pass
40		-1	0.01434	pass
50		0	0.01434	pass
25	V min.= 3.5	-2	0.02988	pass
25	V max.= 4.35	3	0.02988	pass

PCS Band (Part 24E)**GSM Mode**

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	-2	0.01702	pass
-20		-4	0.01702	pass
-10		-2	0.01330	pass
0		1	0.01330	pass
10		-6	0.01330	pass
20		-1	0.01223	pass
30		-4	0.01223	pass
40		-3	0.01596	pass
50		-6	0.01596	pass
25	V min.= 3.5	-5	0.01702	pass
25	V max.= 4.35	-4	0.01702	pass

EDGE Mode

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	8	0.01702	pass
-20		7	0.01702	pass
-10		5	0.01596	pass
0		7	0.01596	pass
10		3	0.01223	pass
20		6	0.01223	pass
30		8	0.01596	pass
40		5	0.01596	pass
50		7	0.01596	pass
25	V min.= 3.5	4	0.01702	pass
25	V max.= 4.35	10	0.01702	pass

WCDMA Mode

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.8	0	0.01223	pass
-20		-1	0.01223	pass
-10		3	0.01064	pass
0		5	0.01064	pass
10		1	0.00904	pass
20		4	0.00904	pass
30		2	0.00904	pass
40		-1	0.01064	pass
50		3	0.01064	pass
25	V min.= 3.5	1	0.01223	pass
25	V max.= 4.35	4	0.01223	pass

Band 2:

Bandwidth	Temperature (°C)	Voltage (V _{DC})	QPSK (Hz)	QPSK (ppm)	Result
10.0 MHz, Middle Channel	-30	3.8	32	0.01702	Pass
	-20		30	0.01596	Pass
	-10		30	0.01596	Pass
	0		25	0.01330	Pass
	10		25	0.01330	Pass
	20		25	0.01330	Pass
	30		30	0.01596	Pass
	40		30	0.01596	Pass
	50		30	0.01596	Pass
	25	3.8	30	0.01596	Pass
	25	3.5	32	0.01702	Pass
	25	4.35	32	0.01702	Pass

Band 4:

Bandwidth	Temperature (°C)	Voltage (V _{DC})	QPSK (Hz)	QPSK (ppm)	Result
10.0 MHz, Middle Channel	-30	3.8	32	0.01847	Pass
	-20		32	0.01847	Pass
	-10		25	0.01443	Pass
	0		25	0.01443	Pass
	10		25	0.01443	Pass
	20		25	0.01443	Pass
	30		25	0.01443	Pass
	40		30	0.01732	Pass
	50		30	0.01732	Pass
	25	3.8	30	0.01732	Pass
	25	3.5	30	0.01732	Pass
	25	4.35	32	0.01847	Pass

Band 12:

Bandwidth	Temperature (°C)	Voltage (V _{DC})	QPSK (Hz)	QPSK (ppm)	Result
10.0 MHz, Middle Channel	-30	3.8	25	0.03536	Pass
	-20		25	0.03536	Pass
	-10		25	0.03536	Pass
	0		22	0.03112	Pass
	10		22	0.03112	Pass
	20		22	0.03112	Pass
	30		20	0.02829	Pass
	40		20	0.02829	Pass
	50		25	0.03536	Pass
	25	3.8	25	0.03536	Pass
	25	3.5	25	0.03536	Pass
	25	4.35	25	0.03536	Pass

Band 17:

Bandwidth	Temperature (°C)	Voltage (V _{DC})	QPSK (Hz)	QPSK (ppm)	Result
10.0 MHz, Middle Channel	-30	3.8	25	0.03521	Pass
	-20		25	0.03521	Pass
	-10		22	0.03099	Pass
	0		22	0.03099	Pass
	10		22	0.03099	Pass
	20		20	0.02817	Pass
	30		20	0.02817	Pass
	40		20	0.02817	Pass
	50		22	0.03099	Pass
	25	3.8	22	0.02113	Pass
	25	3.5	25	0.03521	Pass
	25	4.35	25	0.03521	Pass

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