

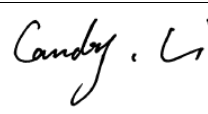
FCC PART 27
FCC PART 22H, PART 24E
MEASUREMENT AND TEST REPORT

For

South Mobile Ltda

Avenida Apoquindo 6410, Of. 803. Las Condes. Santiago, Chile

FCC ID:2AEMYESF651

Report Type: Original Report	Product Type: MOBILE PHONE
Test Engineer: <u>Xiangguang Kong</u> 	
Report Number: <u>RSZ160513006-00D</u>	
Report Date: <u>2016-05-27</u>	
Reviewed By: <u>Candy Li</u>  RF Engineer	
Prepared By: Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn	

Note: This 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.

TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY	4
TEST FACILITY	5
SYSTEM TEST CONFIGURATION.....	6
JUSTIFICATION	6
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	6
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
FCC §1.1307(B) & §2.1093 - RF EXPOSURE INFORMATION.....	8
APPLICABLE STANDARD	8
TEST RESULT	8
FCC §2.1047 - MODULATION CHARACTERISTIC	9
FCC § 2.1046, § 22.913 (A) & § 24.232 (C) & § 27.50 - RF OUTPUT POWER.....	10
APPLICABLE STANDARDS.....	10
TEST PROCEDURE	10
TEST EQUIPMENT LIST AND DETAILS.....	11
TEST DATA	11
FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53 - OCCUPIED BANDWIDTH.....	27
APPLICABLE STANDARDS.....	27
TEST PROCEDURE	27
TEST EQUIPMENT LIST AND DETAILS.....	27
TEST DATA	28
FCC §2.1051, §22.917(A) & §24.238(A) & §27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS ..	61
APPLICABLE STANDARDS.....	61
TEST PROCEDURE	61
TEST EQUIPMENT LIST AND DETAILS.....	61
TEST DATA	62
FCC §2.1053, §22.917 & §24.238 & §27.53 - SPURIOUS RADIATED EMISSIONS	83
APPLICABLE STANDARDS.....	83
TEST PROCEDURE	83
TEST EQUIPMENT LIST AND DETAILS.....	84
TEST DATA	84
FCC §22.917(A) & §24.238(A) & §27.53 - BAND EDGES.....	88
APPLICABLE STANDARDS.....	88
TEST PROCEDURE	88
TEST EQUIPMENT LIST AND DETAILS.....	89
TEST DATA	89

FCC §2.1055, §22.355 & §24.235 & §27.54 - FREQUENCY STABILITY.....120
 APPLICABLE STANDARDS.....120
 TEST PROCEDURE120
 TEST EQUIPMENT LIST AND DETAILS.....121
 TEST DATA121

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *South Mobile Ltda*'s product, model number: *F651 (FCC ID: 2AEMYESF651)* or the "EUT" in this report was a *MOBILE PHONE*, which was measured approximately: 142 mm (L) × 71.5 mm (W) × 8 mm (H), rated with input voltage: DC 3.7V rechargeable Li-ion battery .

Note: The serial models Flash ES-F651 and F651, they are identical schematics, and the difference between them is only the model number. Model F651 was selected for testing. The detail was explained in the attached product similarity declaration letter provided and guaranteed by applicant.

**All measurement and test data in this report was gathered from production sample serial number: 1602272 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2016-05-13.*

Objective

This type approval report is prepared on behalf of *South Mobile Ltda* 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: 2AEMYESF651.

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.

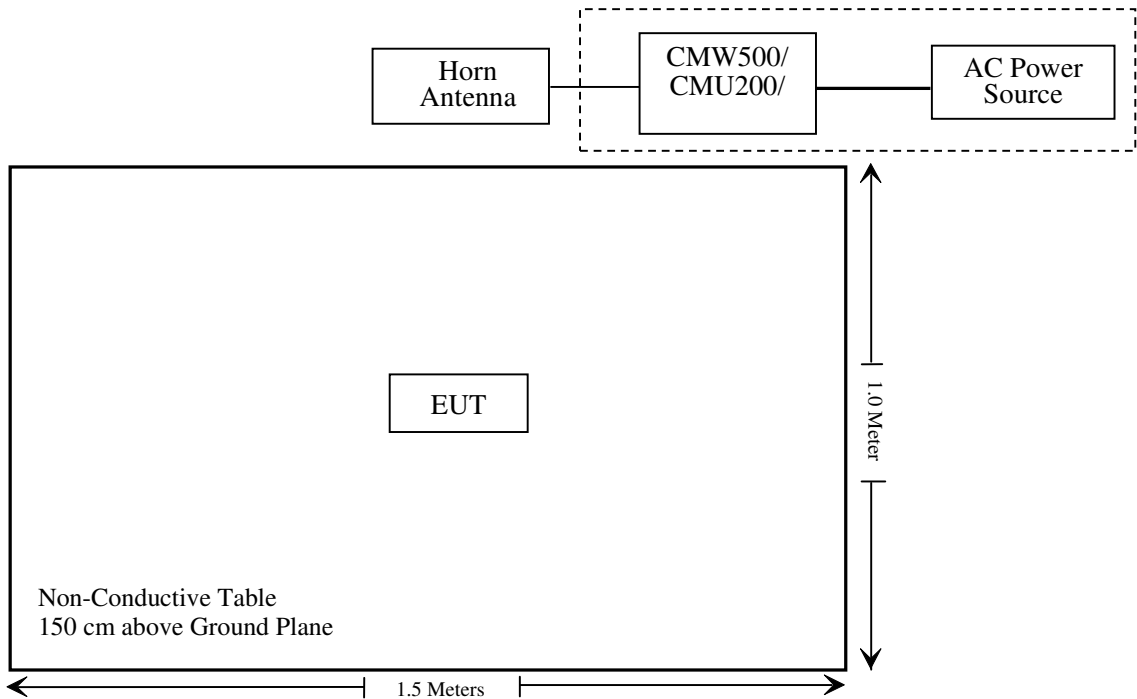
Equipment Modifications

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

Note: * Please refer to SAR report released by BACL, report number: RSZ160513006-20.

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

Applicable Standard

FCC§1.1307, §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ160513006-20.

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..

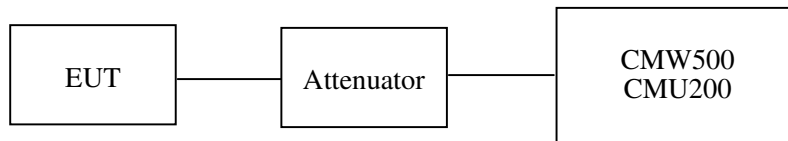
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz. The peak-to-average power ratio (PAR) of the transmitter output power must not exceed 13 dB.

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	MFR64369 223410-001	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 Xiangguang Kong on 2016-05-18.

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

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	31.79	38.45
	190	836.6	31.90	38.45
	251	848.8	31.83	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	31.82	31.66	30.58	27.57	38.45
	190	836.6	31.93	31.73	30.69	27.69	38.45
	251	848.8	31.86	31.70	30.64	27.66	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	26.88	25.77	23.60	22.39	38.45
	190	836.6	26.86	25.66	23.56	22.36	38.45
	251	848.8	26.96	25.77	23.63	22.45	38.45

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	RMC12.2k		21.97	22.00	22.02
		HSDPA	1	21.56	21.58	21.58
			2	21.54	21.55	21.56
			3	21.51	21.52	21.53
			4	21.55	21.59	21.58
		HSUPA	1	21.60	21.63	21.62
			2	21.55	21.58	21.58
			3	21.54	21.56	21.57
			4	21.62	21.61	21.60
			5	21.58	21.59	21.57
		DC-HSDPA	1	21.40	21.42	21.46
			2	21.36	21.51	21.43
			3	21.39	21.37	21.52
			4	21.30	21.56	21.60
		HSPA+	1	21.35	21.44	21.43

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	29.30	33
	661	1880.0	29.40	33
	810	1909.8	29.42	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.32	28.68	27.22	24.16	33
	661	1880.0	29.34	28.75	27.19	24.31	33
	810	1909.8	29.39	28.80	27.23	24.39	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	25.82	24.75	22.76	21.59	33
	661	1880.0	25.92	24.74	22.70	21.72	33
	810	1909.8	25.84	24.84	22.85	21.40	33

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	RMC12.2k		21.70	21.62	21.70
		HSDPA	1	21.16	21.07	21.18
			2	21.13	21.06	21.14
			3	21.10	21.03	21.11
			4	21.17	21.10	21.18
		HSUPA	1	21.15	21.08	21.17
			2	21.13	21.05	21.15
			3	21.10	21.04	21.11
			4	21.14	21.10	21.16
			5	21.11	21.07	21.12
		DC-HSDPA	1	21.21	21.19	21.08
			2	21.15	21.20	21.14
			3	21.18	21.31	21.11
			4	21.22	21.17	21.13
		HSPA+	1	21.16	21.25	21.17

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

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.32	13
	Middle	0.34	13
	High	0.30	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.40	13
	Middle	3.38	13
	High	3.42	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.31	13
	Middle	3.32	13
	High	3.30	13
HSDPA (16QAM)	Low	3.42	13
	Middle	3.45	13
	High	3.41	13
HSUPA (BPSK)	Low	3.45	13
	Middle	3.46	13
	High	3.42	13
HSPA+ (16QAM)	Low	3.31	13
	Middle	3.29	13
	High	3.32	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	0.33	13
	Middle	0.37	13
	High	0.31	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.42	13
	Middle	3.41	13
	High	3.39	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.40	13
	Middle	3.33	13
	High	3.15	13
HSDPA (16QAM)	Low	3.51	13
	Middle	3.42	13
	High	3.26	13
HSUPA (BPSK)	Low	3.55	13
	Middle	3.51	13
	High	3.25	13
HSPA+ (16QAM)	Low	3.35	13
	Middle	3.34	13
	High	3.39	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										
836.6	99.57	36	2.4	H	31.7	0.67	0	31.03	38.45	7.42
836.6	94.83	100	1.4	V	26.9	0.67	0	26.23	38.45	12.22
EIRP for PCS Band (Part 24E), High Channel										
1909.80	90.44	355	2.2	H	21.8	1.40	7.30	27.70	33	5.3
1909.80	84.78	58	1.5	V	15.5	1.40	7.30	21.40	33	11.6

EDGE Mode:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	S.G. Level (dBm)	Cable loss (dB)	Antenna Gain (dB)			
ERP for Cellular Band (Part 22H), High Channel										
848.8	93.97	182	1.5	H	26.1	0.67	0	25.43	38.45	13.02
848.8	89.53	68	1.2	V	21.6	0.67	0	20.93	38.45	17.52
EIRP for PCS Band (Part 24E), Middle Channel										
1880.00	86.59	5	1.6	H	17.9	1.40	7.30	23.80	33	9.2
1880.00	81.12	188	1.9	V	11.9	1.40	7.30	17.80	33	15.2

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										
846.6	90.27	180	1.6	H	22.4	0.67	0	21.73	38.45	16.72
846.6	86.03	128	1.7	V	18.1	0.67	0	17.43	38.45	21.02
EIRP for WCDMA Band II (Part 24E), High Channel										
1907.60	84.54	272	1.3	H	15.9	1.40	7.30	21.80	33	11.2
1907.60	79.02	290	1.5	V	9.8	1.40	7.30	15.70	33	17.3

Note:

All above data were tested with no amplifier.

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

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	23.31	23.24	23.16
		RB Size=1, RB Offset=2	23.35	23.33	23.25
		RB Size=1, RB Offset=5	23.32	23.25	23.17
		RB Size=3, RB Offset=0	23.35	23.29	23.10
		RB Size=3, RB Offset=1	23.37	23.35	23.11
		RB Size=3, RB Offset=2	23.34	23.32	23.10
		RB Size=6, RB Offset=0	22.30	22.24	22.11
	16QAM	RB Size=1, RB Offset=0	22.20	22.18	22.07
		RB Size=1, RB Offset=2	22.19	22.15	22.10
		RB Size=1, RB Offset=5	22.21	22.12	22.05
		RB Size=3, RB Offset=0	22.18	22.16	22.09
		RB Size=3, RB Offset=1	22.17	22.16	22.09
		RB Size=3, RB Offset=2	22.15	22.12	22.03
		RB Size=6, RB Offset=0	21.23	21.14	21.00
3.0	QPSK	RB Size=1, RB Offset=0	23.30	23.25	23.18
		RB Size=1, RB Offset=7	23.39	23.38	23.08
		RB Size=1, RB Offset=14	23.30	23.35	23.24
		RB Size=8, RB Offset=0	23.23	23.14	23.16
		RB Size=8, RB Offset=4	23.36	23.26	23.11
		RB Size=8, RB Offset=7	23.33	23.28	23.07
		RB Size=15, RB Offset=0	22.26	22.24	22.14
	16QAM	RB Size=1, RB Offset=0	22.24	22.65	22.25
		RB Size=1, RB Offset=7	22.15	22.52	22.24
		RB Size=1, RB Offset=14	22.15	22.67	22.19
		RB Size=8, RB Offset=0	22.21	22.55	22.16
		RB Size=8, RB Offset=4	22.33	22.55	22.22
		RB Size=8, RB Offset=7	22.19	22.74	22.25
		RB Size=15, RB Offset=0	21.37	21.27	21.08

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	23.33	23.20	23.25
		RB Size=1, RB Offset=12	23.20	23.17	23.24
		RB Size=1, RB Offset=24	23.31	23.27	23.16
		RB Size=12, RB Offset=0	23.30	23.11	23.09
		RB Size=12, RB Offset=6	23.51	23.14	23.22
		RB Size=12, RB Offset=11	23.39	23.22	23.11
		RB Size=25, RB Offset=0	22.15	21.91	22.10
	16QAM	RB Size=1, RB Offset=0	22.55	22.17	22.25
		RB Size=1, RB Offset=12	22.52	22.17	22.14
		RB Size=1, RB Offset=24	22.44	22.17	22.24
		RB Size=12, RB Offset=0	22.57	22.23	22.23
		RB Size=12, RB Offset=6	22.58	22.05	22.28
		RB Size=12, RB Offset=11	22.73	22.18	22.30
		RB Size=25, RB Offset=0	21.22	21.09	21.11
10.0	QPSK	RB Size=1, RB Offset=0	22.83	22.79	22.69
		RB Size=1, RB Offset=24	22.78	22.81	22.75
		RB Size=1, RB Offset=49	22.83	22.67	22.72
		RB Size=25, RB Offset=0	22.89	22.93	22.84
		RB Size=25, RB Offset=12	22.87	22.76	22.85
		RB Size=25, RB Offset=24	22.81	22.78	22.81
		RB Size=50, RB Offset=0	22.09	21.87	22.02
	16QAM	RB Size=1, RB Offset=0	22.07	22.42	21.83
		RB Size=1, RB Offset=24	22.00	22.38	21.81
		RB Size=1, RB Offset=49	22.15	22.54	21.73
		RB Size=25, RB Offset=0	22.01	22.48	21.93
		RB Size=25, RB Offset=12	22.10	22.37	22.01
		RB Size=25, RB Offset=24	22.01	22.26	21.74
		RB Size=50, RB Offset=0	21.18	20.95	21.09

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	23.03	23.04	22.93
		RB Size=1, RB Offset=37	22.95	22.96	23.01
		RB Size=1, RB Offset=74	23.05	23.21	23.02
		RB Size=36, RB Offset=0	22.98	23.00	22.87
		RB Size=36, RB Offset=18	23.17	22.97	22.86
		RB Size=36, RB Offset=37	23.02	22.99	23.05
		RB Size=75, RB Offset=0	22.03	21.84	21.95
	16QAM	RB Size=1, RB Offset=0	22.28	22.69	22.31
		RB Size=1, RB Offset=37	22.35	22.72	22.27
		RB Size=1, RB Offset=74	22.17	22.58	22.33
		RB Size=36, RB Offset=0	22.37	22.73	22.46
		RB Size=36, RB Offset=18	22.41	22.74	22.14
		RB Size=36, RB Offset=37	22.26	22.72	22.47
		RB Size=75, RB Offset=0	21.11	20.94	21.02
20.0	QPSK	RB Size=1, RB Offset=0	23.31	23.35	23.36
		RB Size=1, RB Offset=49	23.14	23.19	22.92
		RB Size=1, RB Offset=99	23.13	23.26	23.00
		RB Size=50, RB Offset=0	22.98	23.16	23.05
		RB Size=50, RB Offset=24	23.19	23.23	23.03
		RB Size=50, RB Offset=49	23.14	23.08	23.08
		RB Size=100, RB Offset=0	21.96	21.85	21.87
	16QAM	RB Size=1, RB Offset=0	22.38	22.53	22.37
		RB Size=1, RB Offset=49	22.47	22.61	22.42
		RB Size=1, RB Offset=99	22.40	22.54	22.27
		RB Size=50, RB Offset=0	22.47	22.52	22.42
		RB Size=50, RB Offset=24	22.48	22.57	22.21
		RB Size=50, RB Offset=49	22.38	22.62	22.49
		RB Size=100, RB Offset=0	21.03	20.96	20.98

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.77	13	Pass
QPSK (100%RB Size)	5.81	13	Pass
16QAM (1RB Size)	5.83	13	Pass
16QAM (100%RB Size)	5.79	13	Pass

EIRP:**QPSK**

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
1732.50	85.62	64	1.5	H	16.8	1.60	6.90	22.10	30
1732.50	83.97	26	1.6	V	14.8	1.60	6.90	20.10	30
3 MHz Bandwidth									
1732.50	85.41	151	1.5	H	16.6	1.60	6.90	21.90	30
1732.50	84.03	331	1.3	V	14.8	1.60	6.90	20.10	30
5 MHz Bandwidth									
1732.50	85.02	271	1.5	H	16.2	1.60	6.90	21.50	30
1732.50	83.25	69	2.5	V	14.0	1.60	6.90	19.30	30
10MHz Bandwidth									
1732.50	84.89	40	1.1	H	16.1	1.60	6.90	21.40	30
1732.50	83.41	5	2.5	V	14.2	1.60	6.90	19.50	30
15 MHz Bandwidth									
1732.50	84.55	105	1.3	H	15.8	1.60	6.90	21.10	30
1732.50	83.07	42	1.7	V	13.8	1.60	6.90	19.10	30
20 MHz Bandwidth									
1732.50	84.73	179	2.0	H	15.9	1.60	6.90	21.20	30
1732.50	82.81	293	1.6	V	13.6	1.60	6.90	18.90	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	84.71	214	2.1	H	15.9	1.60	6.90	21.20	30
1732.50	83.37	168	1.8	V	14.2	1.60	6.90	19.50	30
3 MHz Bandwidth									
1732.50	84.47	51	2.2	H	15.7	1.60	6.90	21.00	30
1732.50	83.24	189	1.4	V	14.0	1.60	6.90	19.30	30
5 MHz Bandwidth									
1732.50	84.24	295	2.5	H	15.5	1.60	6.90	20.80	30
1732.50	83.09	71	2.2	V	14.9	1.60	6.90	19.20	30
10MHz Bandwidth									
1732.50	84.40	240	2.0	H	15.6	1.60	6.90	20.90	30
1732.50	83.41	124	1.9	V	14.2	1.60	6.90	19.50	30
15 MHz Bandwidth									
1732.50	84.09	161	2.3	H	15.3	1.60	6.90	20.60	30
1732.50	83.06	170	1.3	V	13.8	1.60	6.90	19.10	30
20 MHz Bandwidth									
1732.50	84.11	9	2.2	H	15.3	1.60	6.90	20.60	30
1732.50	83.28	132	1.2	V	14.1	1.60	6.90	19.40	30

LTE Band 7:**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	23.16	22.92	22.51
		RB Size=1, RB Offset=12	22.72	22.42	22.25
		RB Size=1, RB Offset=24	23.31	22.91	22.79
		RB Size=12, RB Offset=0	21.95	21.51	21.24
		RB Size=12, RB Offset=6	21.99	21.53	21.33
		RB Size=12, RB Offset=11	22.04	21.52	21.46
		RB Size=25, RB Offset=0	21.97	21.54	22.28
	16QAM	RB Size=1, RB Offset=0	22.51	21.87	22.08
		RB Size=1, RB Offset=12	22.48	21.76	22.06
		RB Size=1, RB Offset=24	22.59	21.92	22.22
		RB Size=12, RB Offset=0	21.75	20.93	21.29
		RB Size=12, RB Offset=6	21.62	21.03	21.27
		RB Size=12, RB Offset=11	21.57	20.93	21.36
		RB Size=25, RB Offset=0	21.01	20.71	20.52
10.0	QPSK	RB Size=1, RB Offset=0	22.60	22.37	22.78
		RB Size=1, RB Offset=24	22.70	22.31	22.60
		RB Size=1, RB Offset=49	22.55	22.23	22.73
		RB Size=25, RB Offset=0	21.82	21.58	22.04
		RB Size=25, RB Offset=12	21.84	21.74	21.95
		RB Size=25, RB Offset=24	21.77	21.71	22.02
		RB Size=50, RB Offset=0	21.98	21.42	21.49
	16QAM	RB Size=1, RB Offset=0	21.81	22.00	21.91
		RB Size=1, RB Offset=24	21.67	22.14	21.93
		RB Size=1, RB Offset=49	21.74	22.20	21.95
		RB Size=25, RB Offset=0	20.99	21.18	21.20
		RB Size=25, RB Offset=12	21.12	21.09	21.01
		RB Size=25, RB Offset=24	21.01	21.26	21.20
		RB Size=50, RB Offset=0	21.08	20.51	20.61

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	22.69	22.57	23.80
		RB Size=1, RB Offset=37	22.59	22.65	23.55
		RB Size=1, RB Offset=74	22.75	22.61	23.79
		RB Size=36, RB Offset=0	21.93	21.91	22.86
		RB Size=36, RB Offset=18	21.92	21.64	23.06
		RB Size=36, RB Offset=37	22.05	21.85	23.00
		RB Size=75, RB Offset=0	22.08	21.29	22.13
	16QAM	RB Size=1, RB Offset=0	21.96	21.73	22.60
		RB Size=1, RB Offset=37	21.88	21.45	22.63
		RB Size=1, RB Offset=74	21.99	21.64	22.74
		RB Size=36, RB Offset=0	21.09	20.90	21.88
		RB Size=36, RB Offset=18	21.24	20.94	21.71
		RB Size=36, RB Offset=37	21.06	20.99	21.75
		RB Size=75, RB Offset=0	20.64	20.45	21.27
20.0	QPSK	RB Size=1, RB Offset=0	22.74	22.92	23.53
		RB Size=1, RB Offset=49	22.65	22.85	23.33
		RB Size=1, RB Offset=99	22.92	23.06	23.65
		RB Size=50, RB Offset=0	21.97	22.16	22.74
		RB Size=50, RB Offset=24	22.01	22.13	22.74
		RB Size=50, RB Offset=49	21.98	22.07	22.77
		RB Size=100, RB Offset=0	22.19	21.62	22.41
	16QAM	RB Size=1, RB Offset=0	22.04	22.23	22.80
		RB Size=1, RB Offset=49	21.90	22.27	22.59
		RB Size=1, RB Offset=99	22.06	22.23	22.90
		RB Size=50, RB Offset=0	21.27	21.30	22.01
		RB Size=50, RB Offset=24	21.31	21.52	22.07
		RB Size=50, RB Offset=49	21.16	21.37	21.97
		RB Size=100, RB Offset=0	21.22	20.71	21.45

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	6.29	13	Pass
QPSK (100%RB Size)	6.37	13	Pass
16QAM (1RB Size)	6.42	13	Pass
16QAM (100%RB Size)	6.53	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									
2535.00	77.34	129	2.2	H	11.0	1.70	8.60	17.90	33
2535.00	81.23	93	1.6	V	14.5	1.70	8.60	21.40	33
10MHz Bandwidth									
2535.00	77.22	169	2.3	H	10.8	1.70	8.60	17.70	33
2535.00	81.09	296	2.2	V	14.4	1.70	8.60	21.30	33
15 MHz Bandwidth									
2535.00	77.17	153	1.7	H	10.8	1.70	8.60	17.70	33
2535.00	80.89	215	2.3	V	14.2	1.70	8.60	21.10	33
20 MHz Bandwidth									
2535.00	77.01	147	1.4	H	10.6	1.70	8.60	17.50	33
2535.00	80.56	196	1.8	V	13.9	1.70	8.60	20.80	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									
5 MHz Bandwidth									
2535.00	76.15	346	1.6	H	9.8	1.70	8.60	16.70	33
2535.00	80.42	117	1.7	V	13.7	1.70	8.60	20.60	33
10 MHz middle channel									
2535.00	75.94	116	1.6	H	9.6	1.70	8.60	16.50	33
2535.00	80.27	233	1.2	V	13.6	1.70	8.60	20.50	33
15 MHz middle channel									
2535.00	76.08	251	2.4	H	9.7	1.70	8.60	16.60	33
2535.00	80.13	304	2.2	V	13.4	1.70	8.60	20.30	33
20 MHz middle channel									
2535.00	75.85	259	1.4	H	9.5	1.70	8.60	16.40	33
2535.00	79.92	282	1.7	V	13.2	1.70	8.60	20.10	33

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

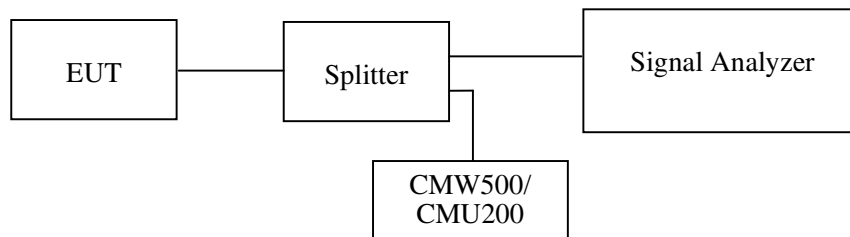
Applicable Standards

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 Xiangguang Kong from 2016-05-18 to 2016-05-20.

EUT operation mode: Transmitting

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

Cellular Band (Part 22H)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	836.6	246.493	312.625
EGPRS(8PSK)	836.6	244.489	306.613

Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	836.6	4.228	4.890
HSUPA (BPSK)	836.6	4.208	4.910
HSDPA (16QAM)	836.6	4.228	4.890

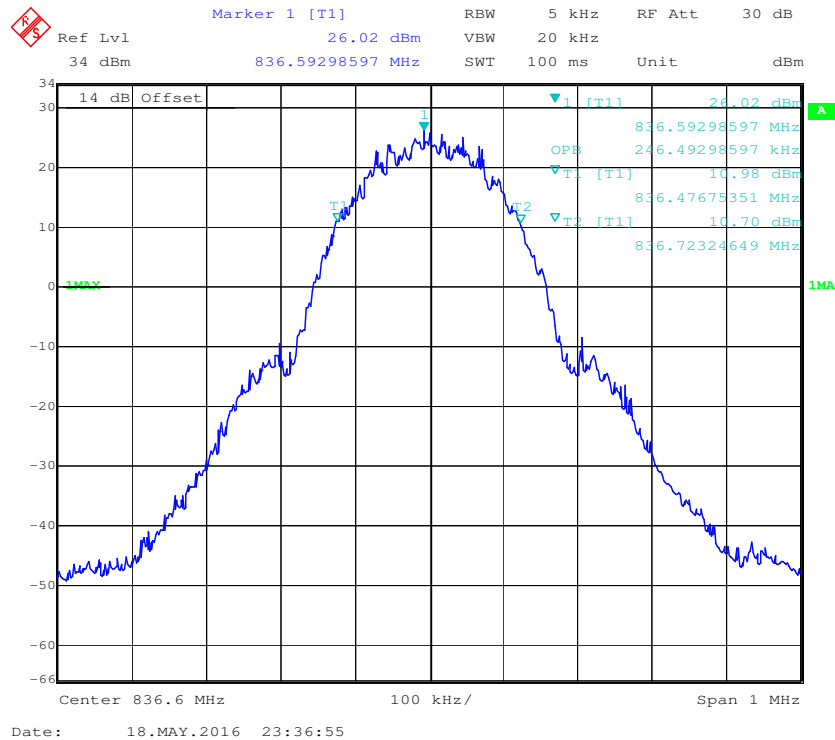
PCS Band (Part 24E)

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	244.489	316.633
EGPRS(8PSK)	1880.0	244.489	304.609

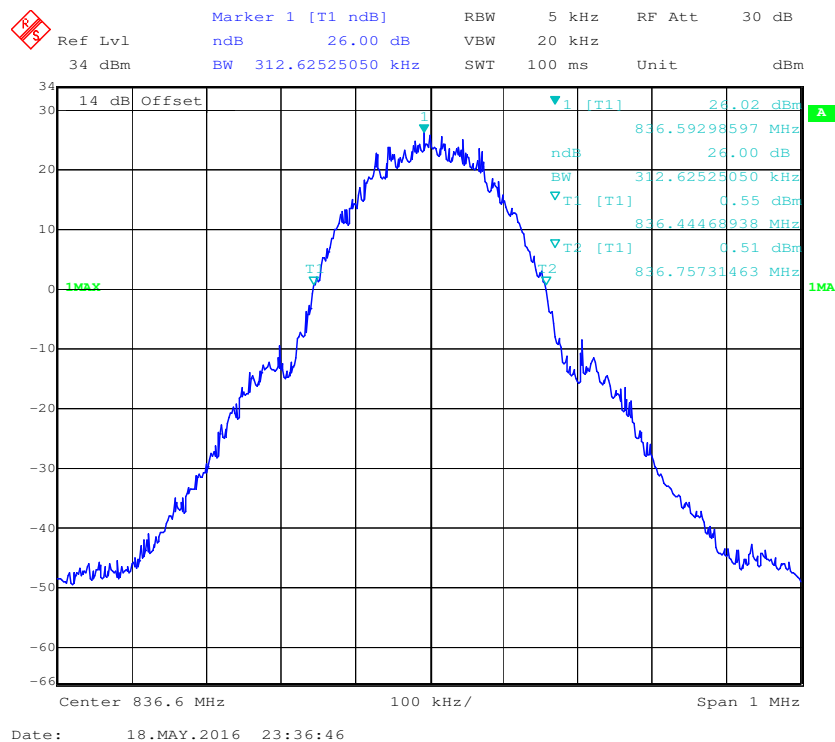
Mode	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
RMC (BPSK)	1880.0	4.208	4.890
HSUPA (BPSK)	1880.0	4.228	4.890
HSDPA (16QAM)	1880.0	4.228	4.870

Cellular Band (Part 22H)

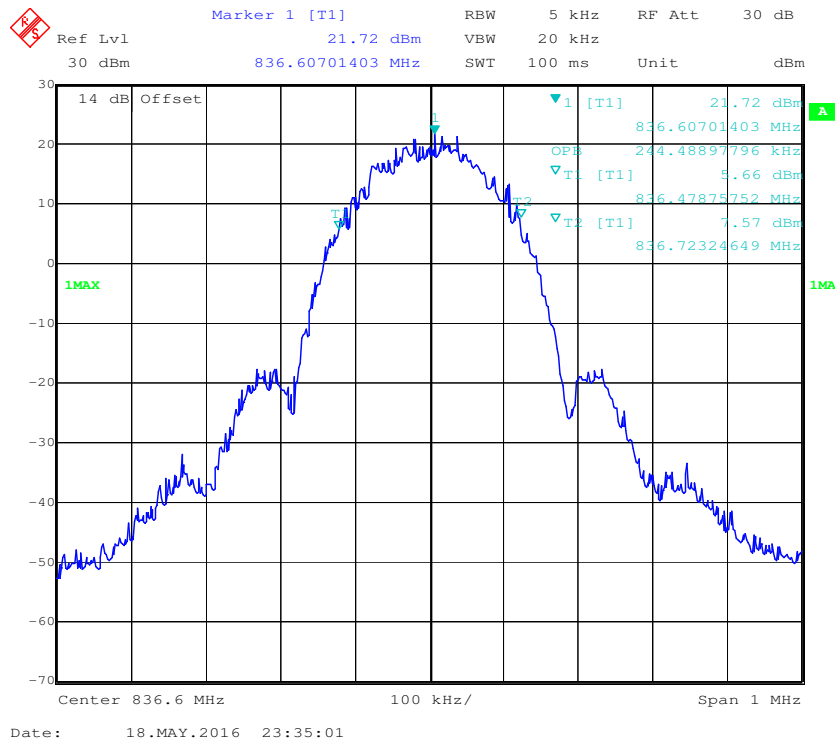
99% Occupied Bandwidth for GSM (GMSK) Mode



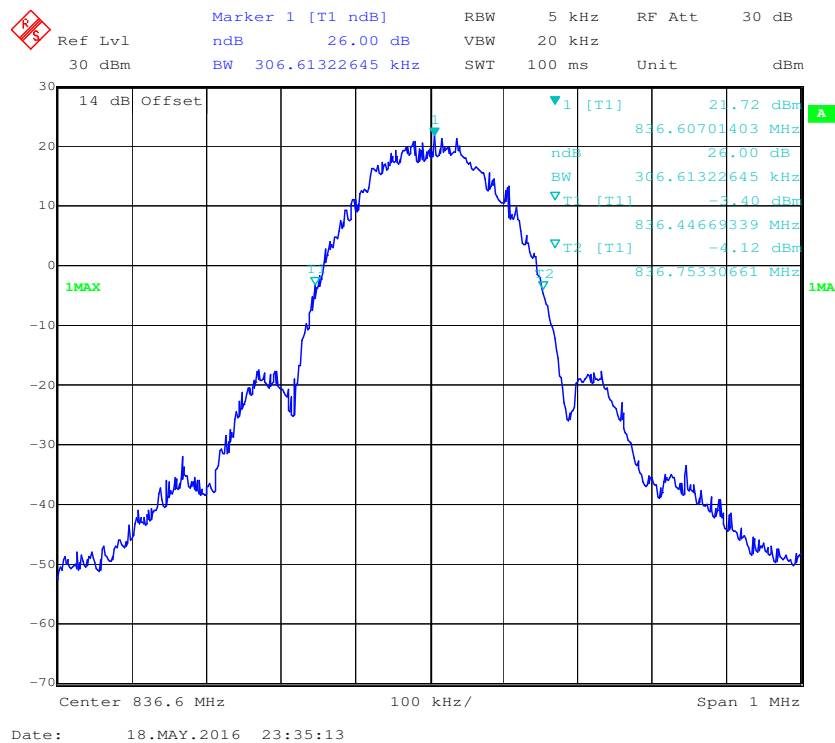
26 dB Emissions Bandwidth for GSM (GMSK) Mode



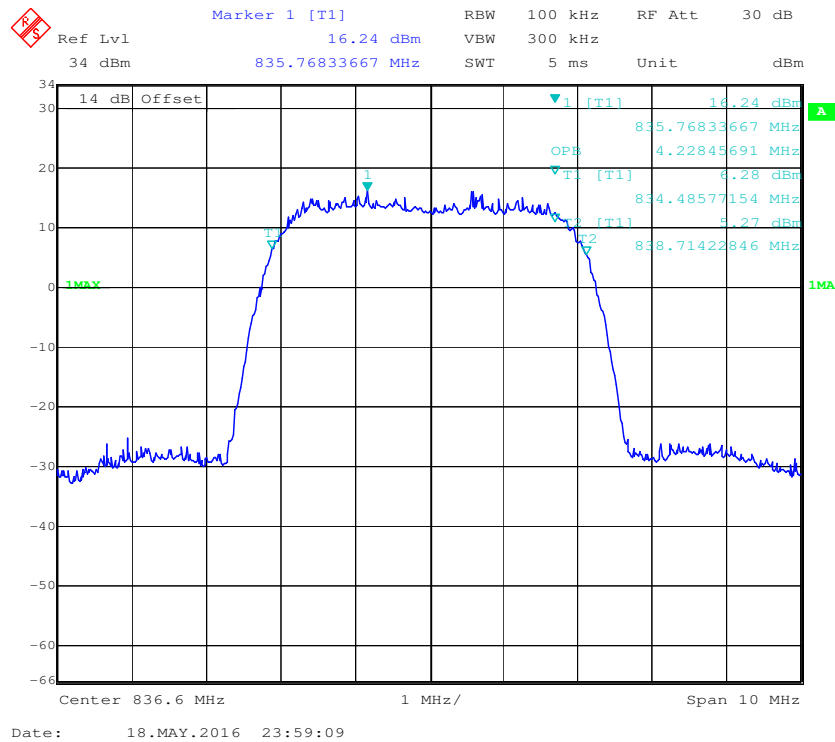
99% Occupied Bandwidth for EDGE Mode



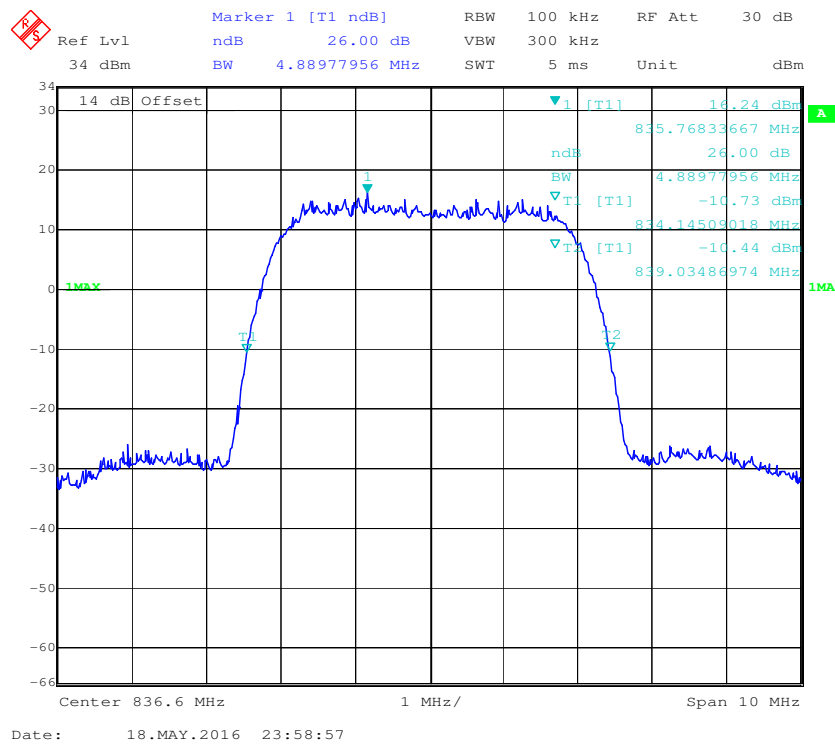
26 dB Emissions Bandwidth for EDGE Mode



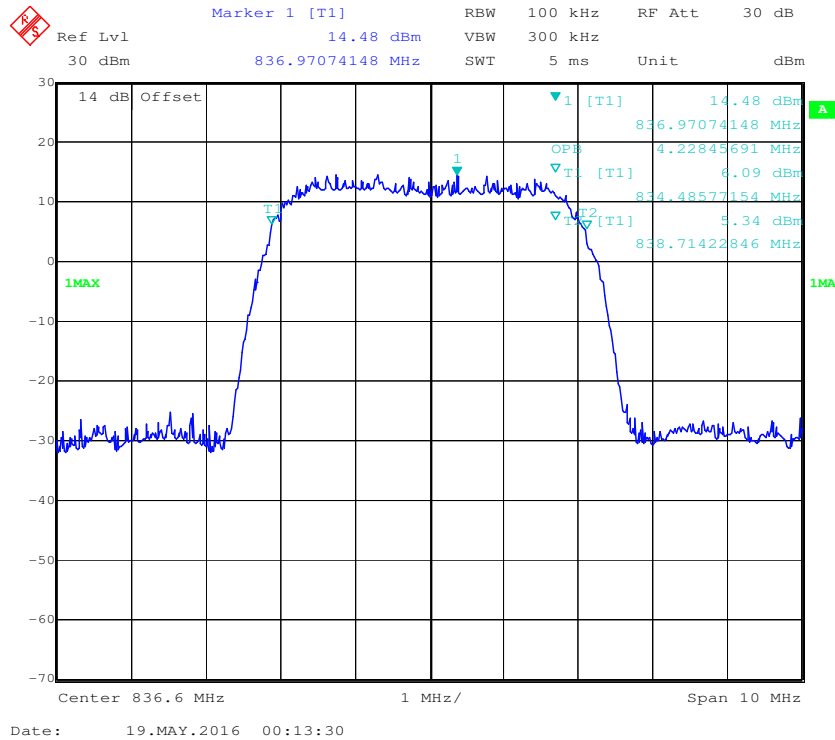
99% Occupied Bandwidth for RMC (BPSK) Mode



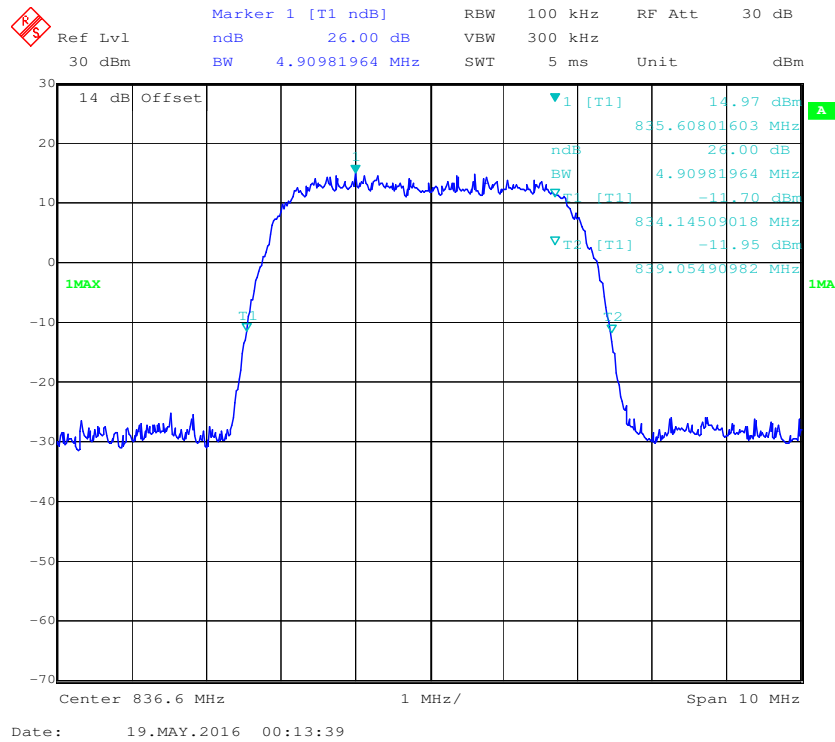
26 dB Emissions Bandwidth for RMC (BPSK) Mode

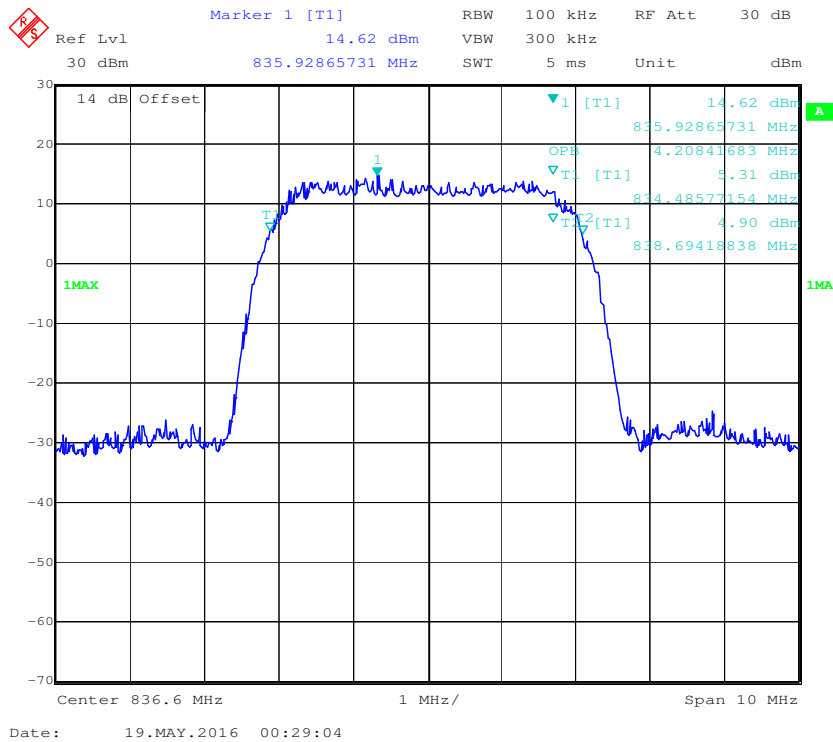
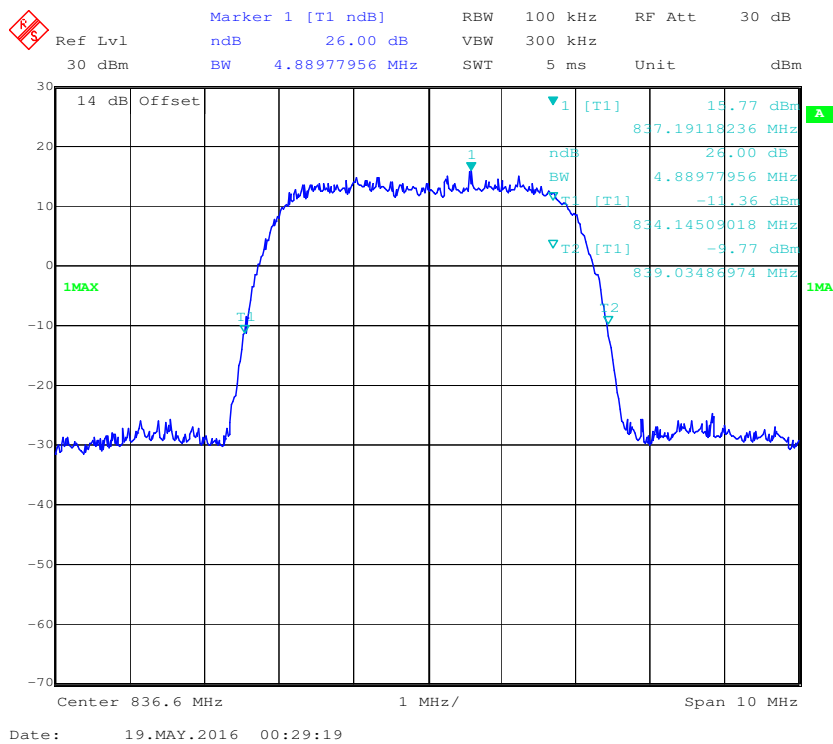


99% Occupied Bandwidth for HSUPA (BPSK) Mode



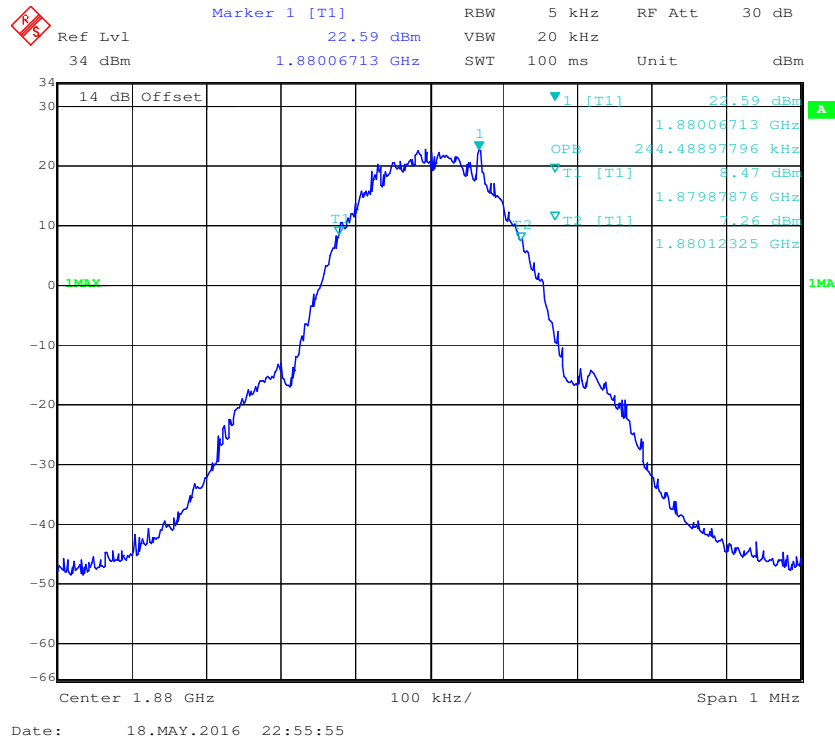
26 dB Emissions Bandwidth for HSUPA (BPSK) Mode



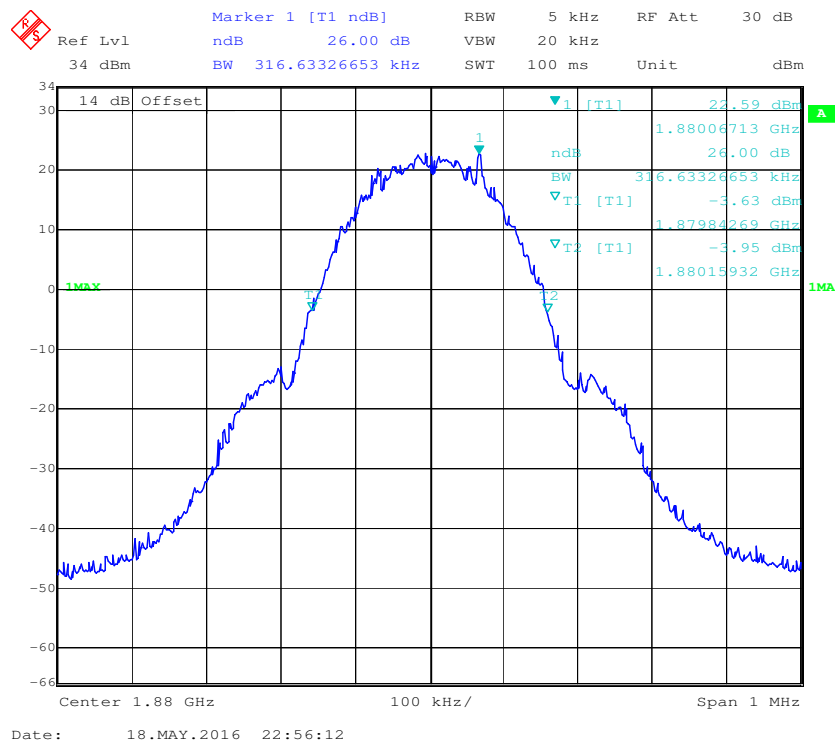
99% Occupied Bandwidth for HSDPA (16QAM) Mode**26 dB Emissions Bandwidth for HSDPA (16QAM) Mode**

PCS Band (Part 24E)

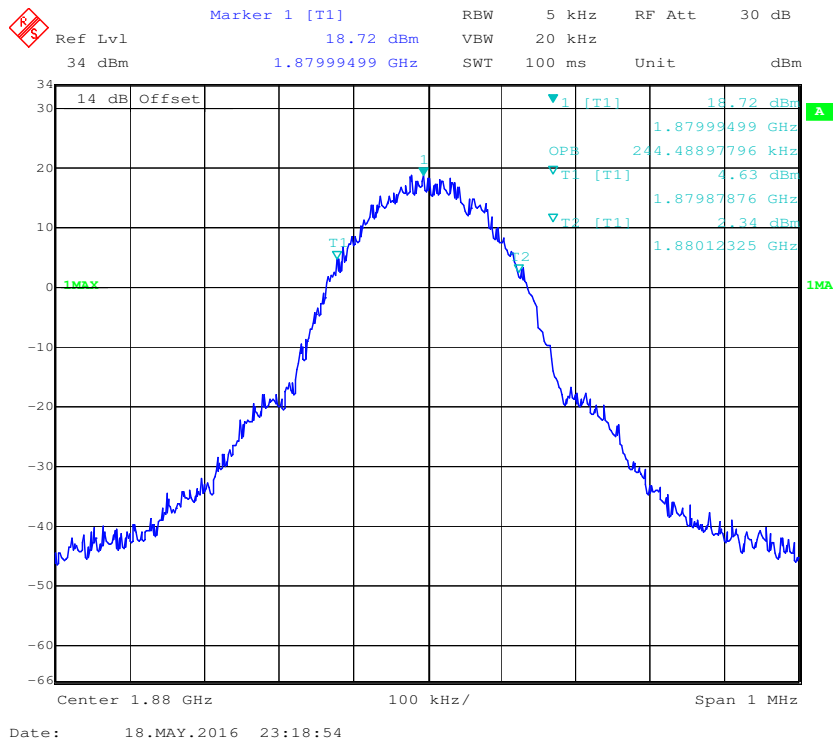
99% Occupied Bandwidth for GSM (GMSK) Mode



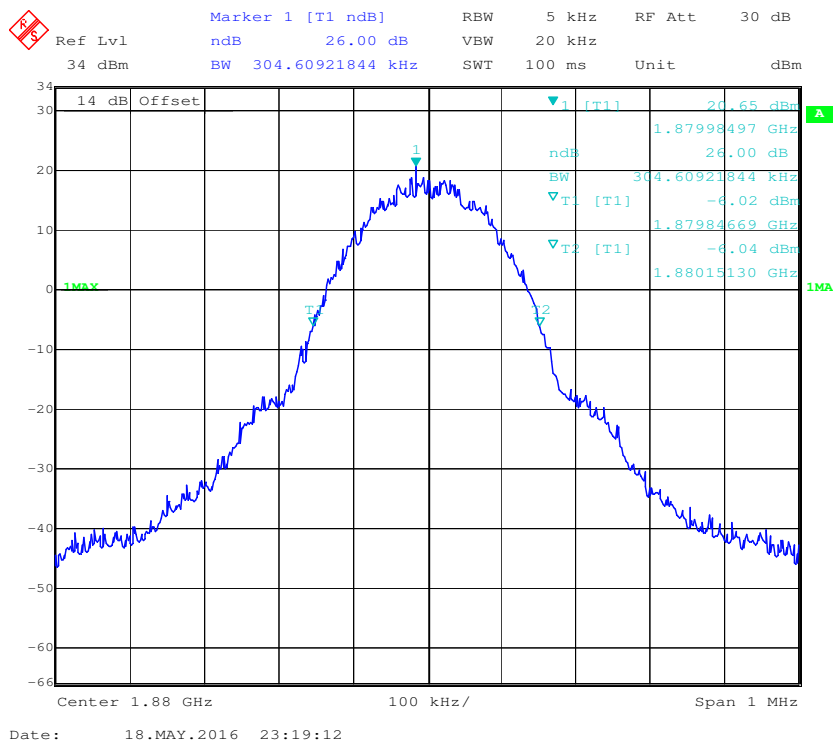
26 dB Emissions Bandwidth for GSM (GMSK) Mode

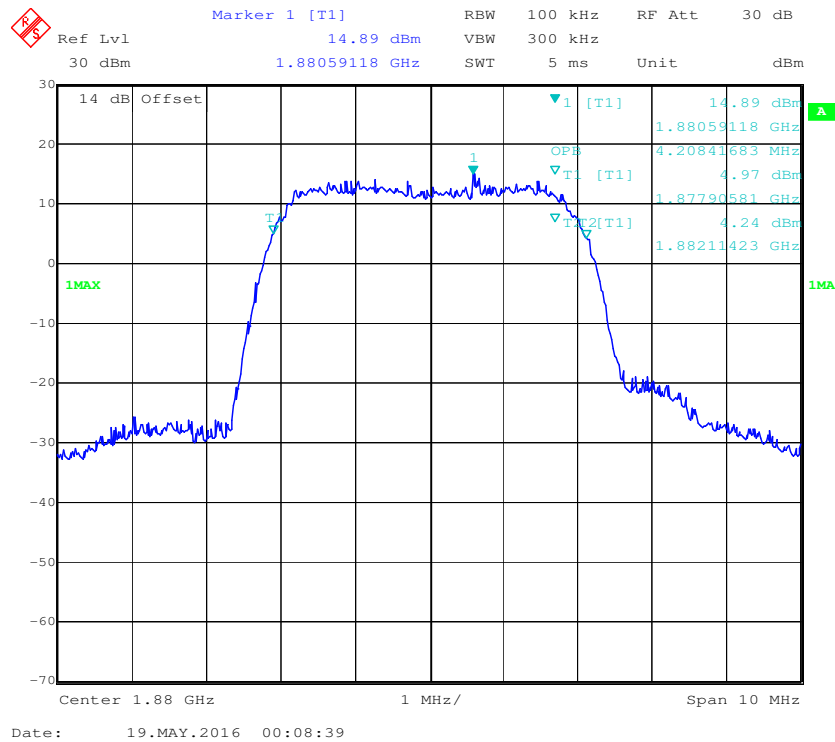
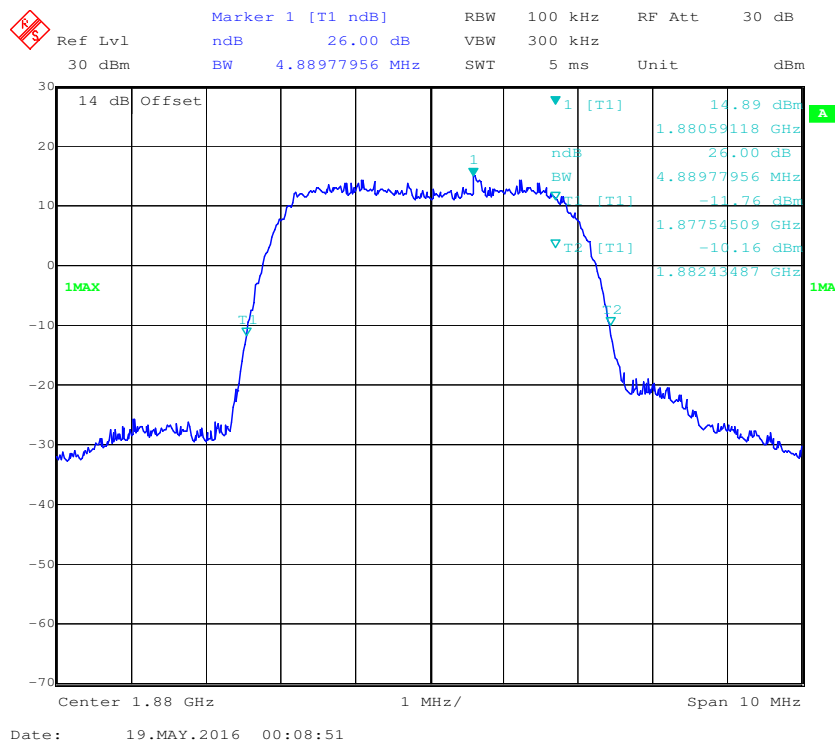


99% Occupied Bandwidth for EGPRS Mode

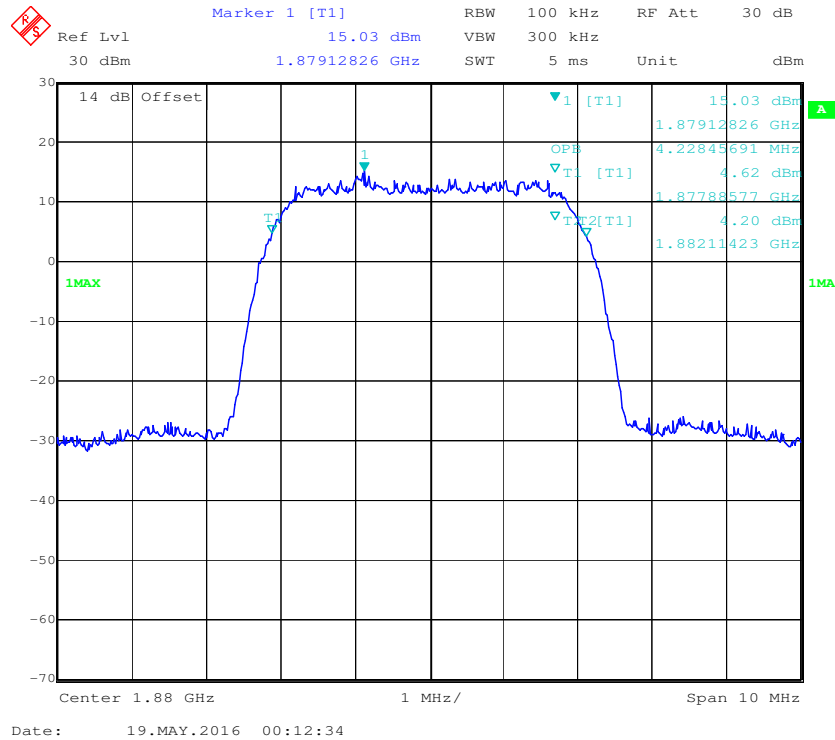


26 dB Emissions Bandwidth for EGPRS Mode

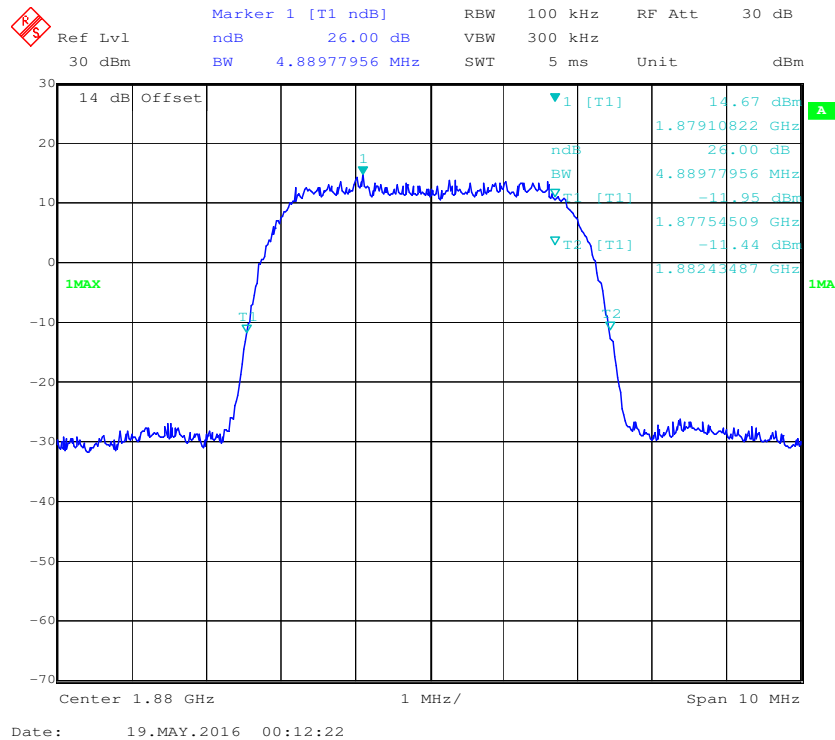


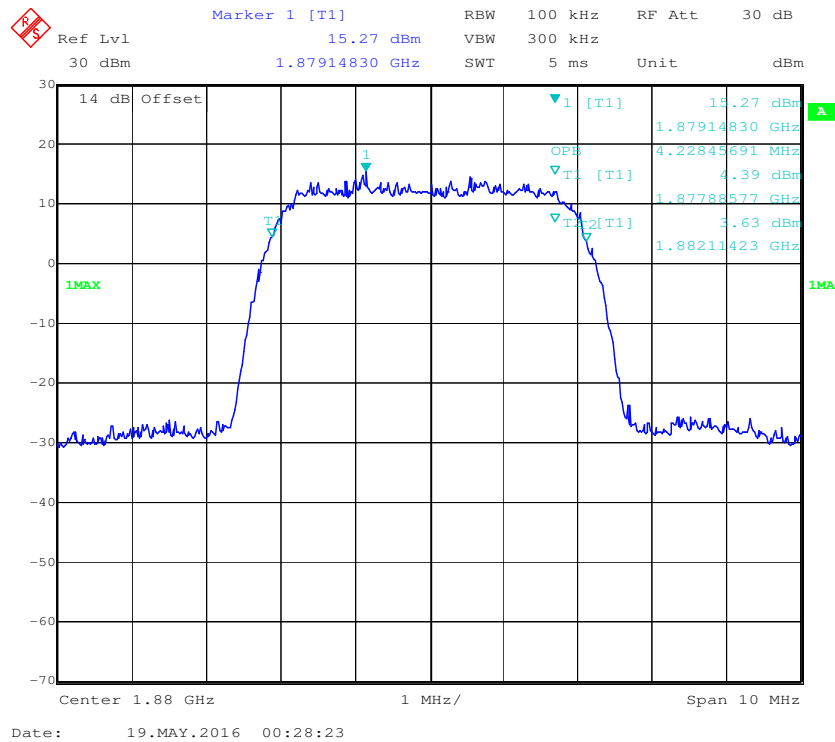
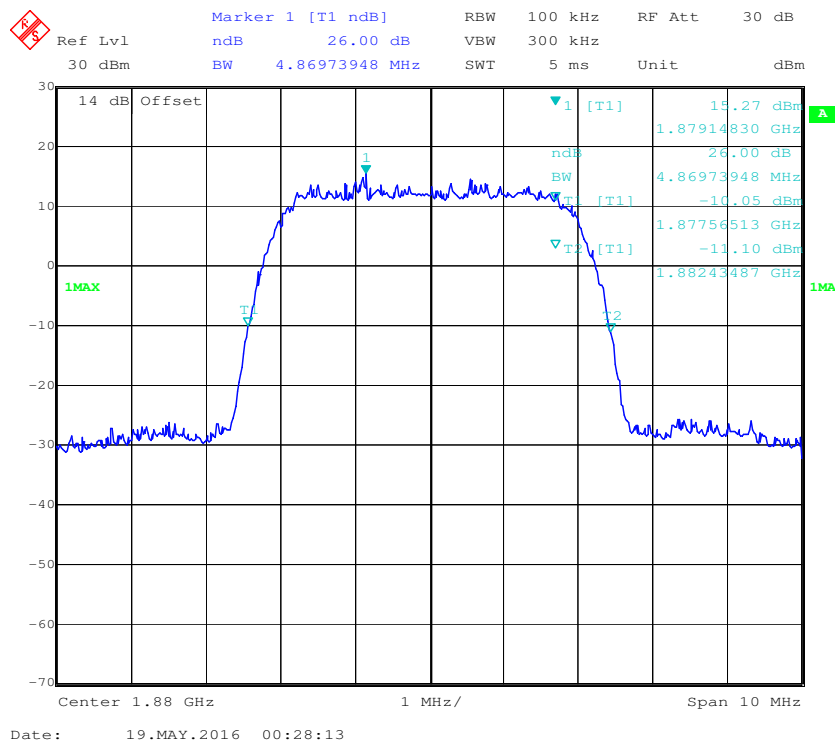
99% Occupied Bandwidth for RMC (BPSK) Mode**26 dB Emissions Bandwidth for RMC (BPSK) Mode**

99% Occupied Bandwidth for HSUPA (BPSK) Mode



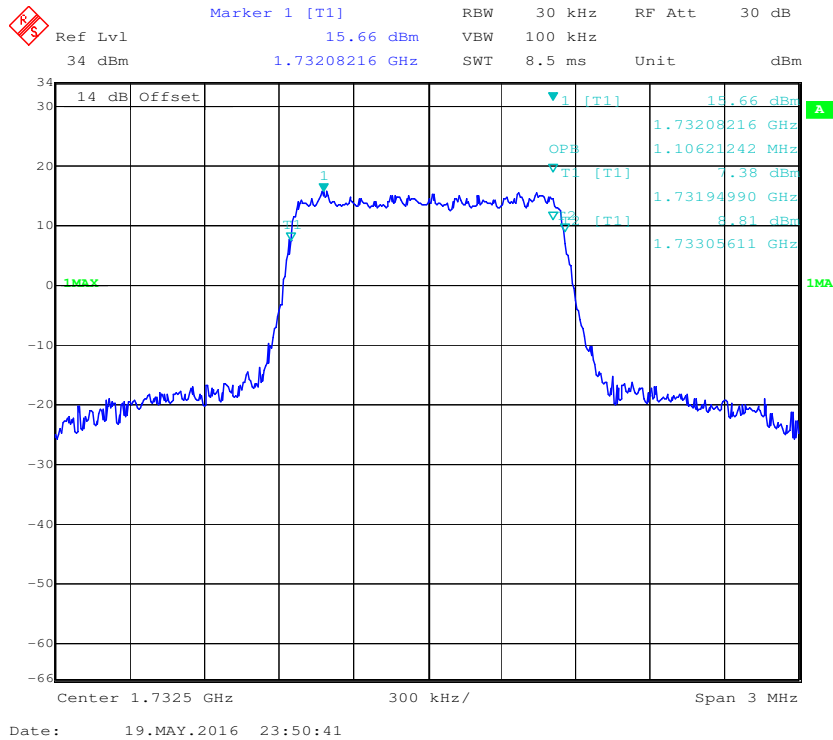
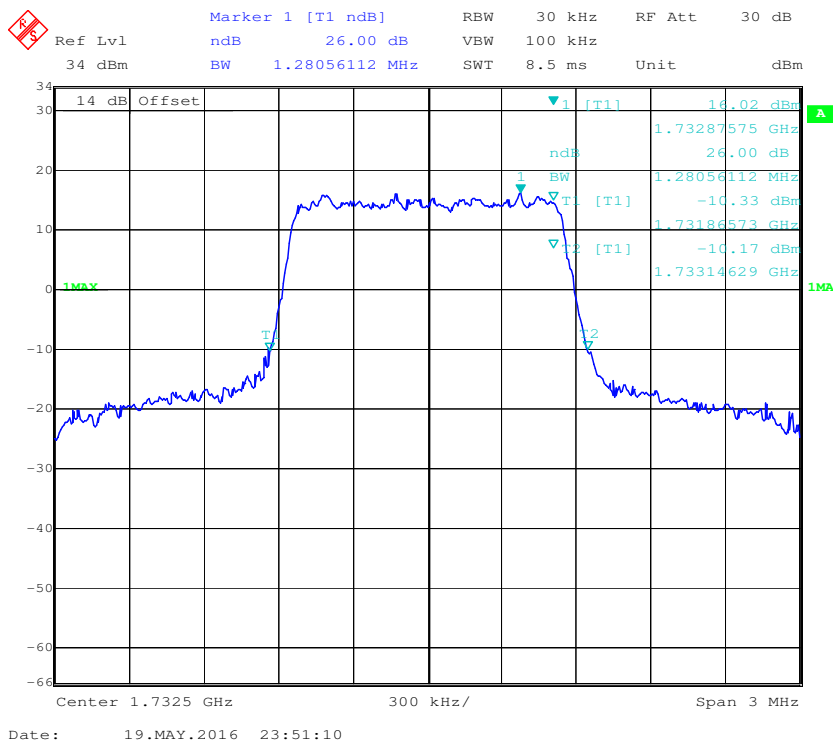
26 dB Emissions Bandwidth for HSUPA (BPSK) Mode



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

LTE Band 4: (Middle Channel)

Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.106	1.281
	16QAM	1.106	1.287
3.0	QPSK	2.693	2.922
	16QAM	2.705	2.946
5.0	QPSK	4.509	5.070
	16QAM	4.549	5.030
10.0	QPSK	8.978	9.820
	16QAM	8.978	9.699
15.0	QPSK	13.527	14.970
	16QAM	13.467	14.910
20.0	QPSK	17.876	19.319
	16QAM	18.036	19.559

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

Marker 1 [T1]
 Ref Lvl 16.05 dBm
 34 dBm 1.73210020 GHz
 RBW 30 kHz RF Att 30 dB
 VBW 100 kHz
 SWT 8.5 ms Unit dBm

14 dB Offset

16.05 dBm
 1.73210020 GHz
 1.10621242 MHz
 1.73194990 GHz
 6.79 dBm
 1.73305611 GHz

OPB

1 [T1] 16.92 dBm
 T1 [T1] 16.79 dBm
 T2 [T1] 16.79 dBm

1MAX

Center 1.7325 GHz 300 kHz/ Span 3 MHz

Date: 19.MAY.2016 23:52:19

Marker 1 [T1 ndB]

Ref Lvl 34 dBm

ndB 26.00 dB

VBW 100 kHz

RBW 30 kHz

RF Att 30 dB

Unit dBm

SWT 8.5 ms

16.05 dBm

1.73210020 GHz

26.00 dB

1.28657315 MHz

-10.22 dBm

1.73185972 GHz

-10.07 dBm

1.73314629 GHz

Center 1.7325 GHz

300 kHz/

Span 3 MHz

Date: 19.MAY.2016 23:52:39

Marker 1 [T1]

Ref Lvl 13.70 dBm

34 dBm 1.73283066 GHz

RBW 30 kHz RF Att 30 dB

VBW 100 kHz

SWT 17 ms Unit dBm

14 dB Offset

1 13.70 dBm

1.73283066 GHz

2.69338677 MHz

OPB

T1 [T1] 8.59 dBm

1.73115932 GHz

T2 [T2] 8.45 dBm

1.73385271 GHz

1MAX

1MAX

Center 1.7325 GHz

600 kHz/

Span 6 MHz

Date: 19.MAY.2016 23:54:54

Marker 1 [T1 ndB]

Ref Lvl	ndB	26.00 dB	VBW	100 kHz	RF Att	30 dB
34 dBm	BW	2.92184369 MHz	SWT	17 ms	Unit	dBm

14 dB Offset

14.13 dBm

1.73284269 GHz

ndB

26.00 dB

BW

2.92184369 MHz

T1 [T1]

-12.46 dBm

1.73103908 GHz

T2 [T1]

-10.94 dBm

1.73396092 GHz

1MAX

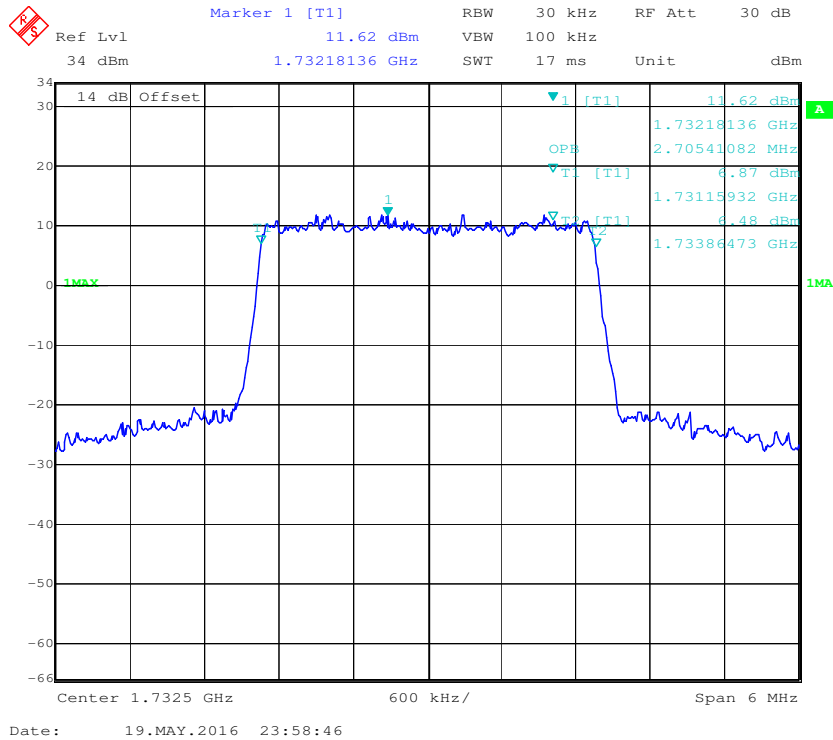
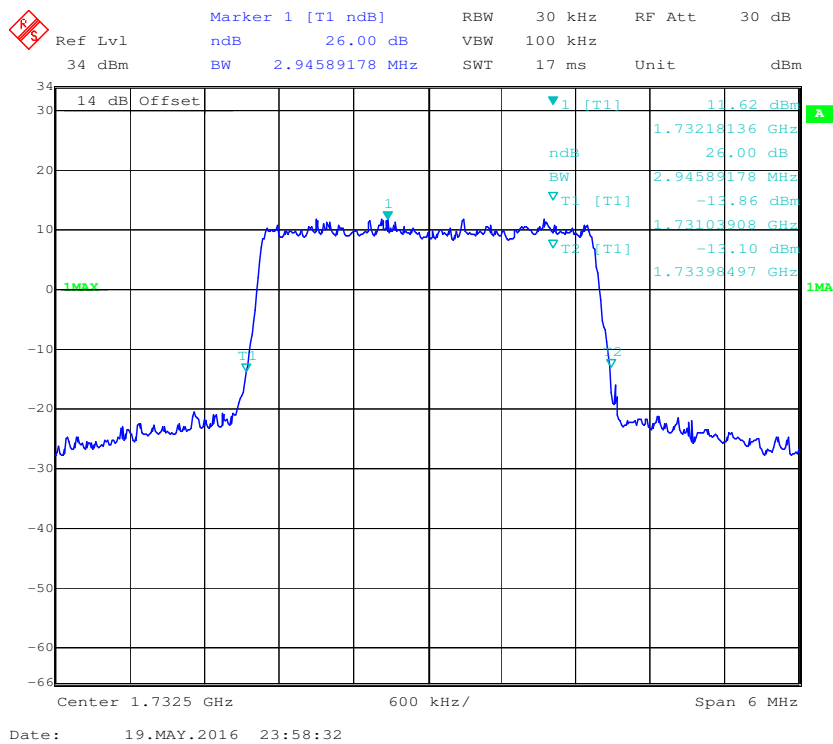
1MA

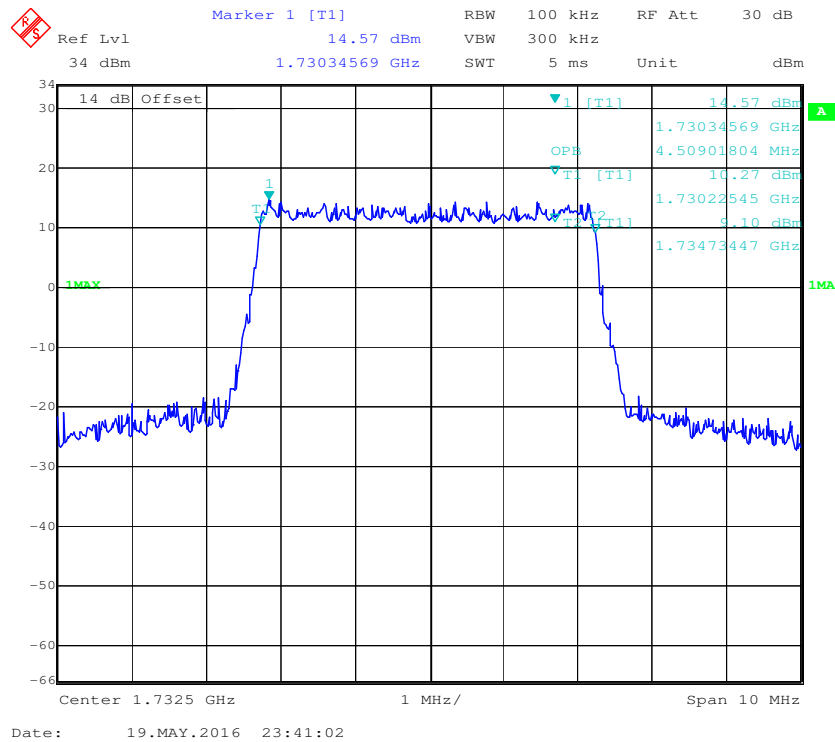
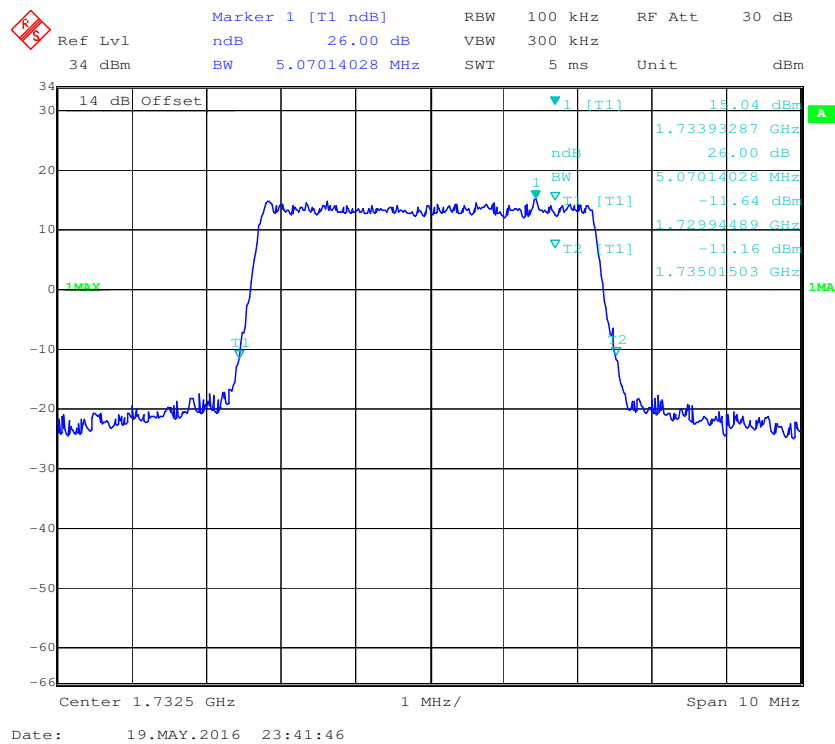
Center 1.7325 GHz

600 kHz/

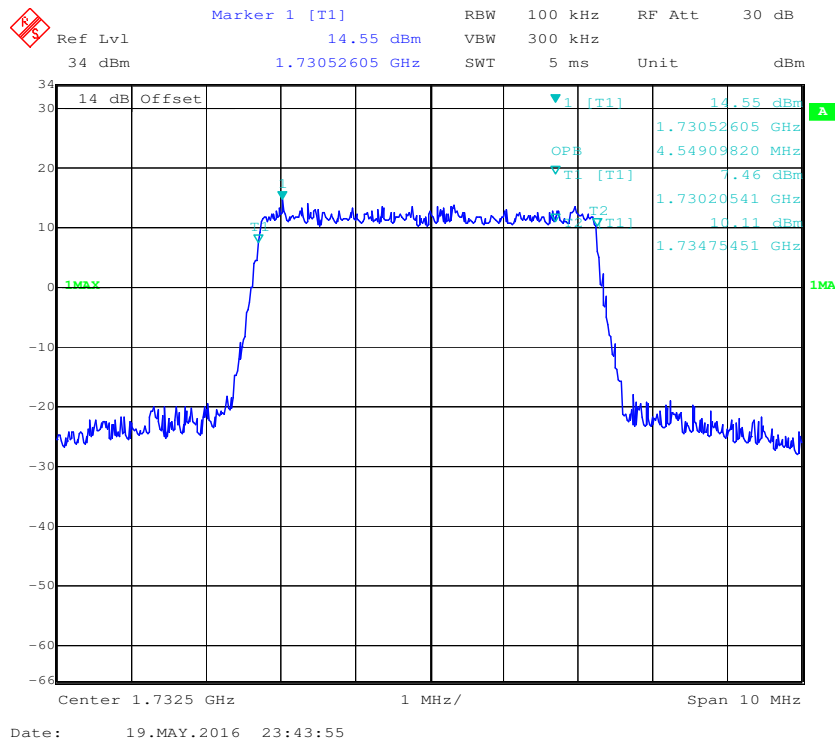
Span 6 MHz

Date: 19.MAY.2016 23:55:16

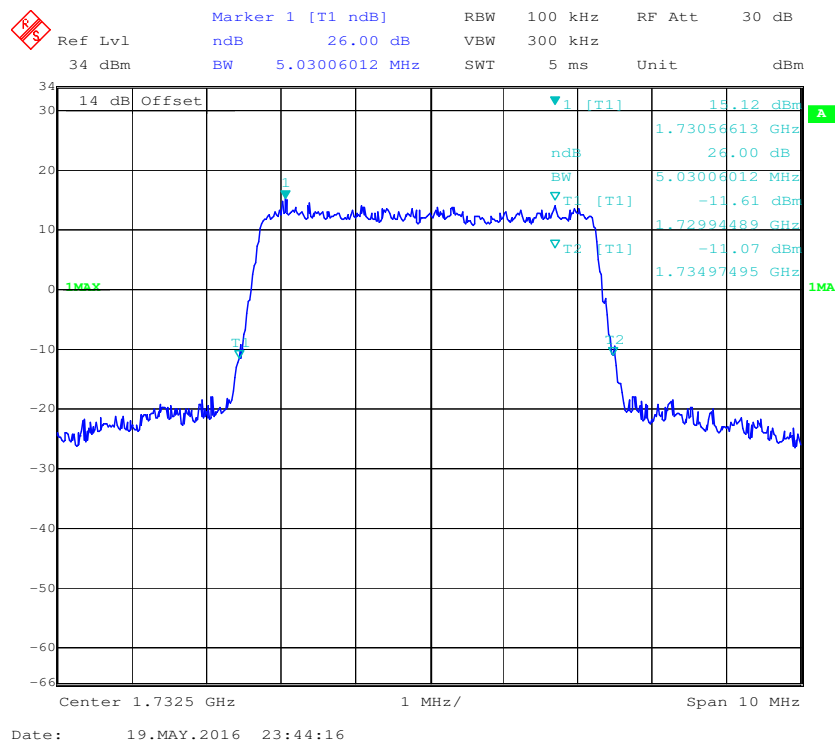
16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel**16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel**

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

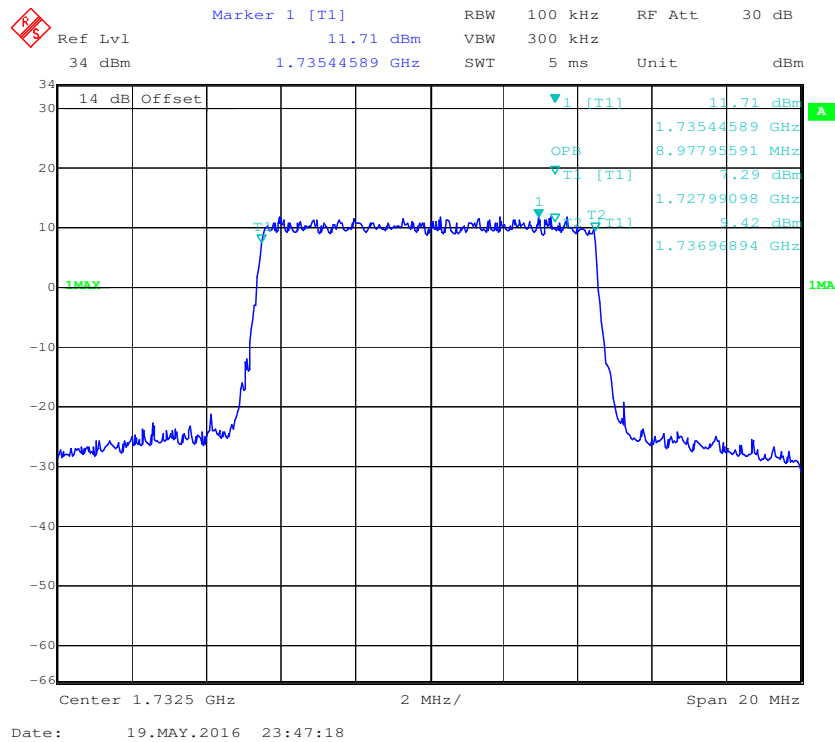
16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



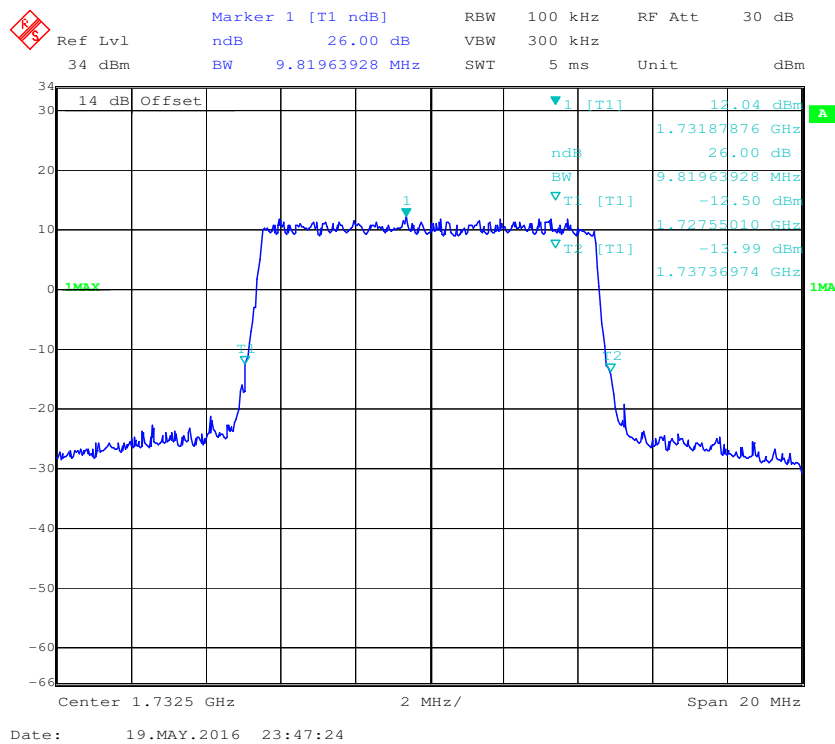
16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel

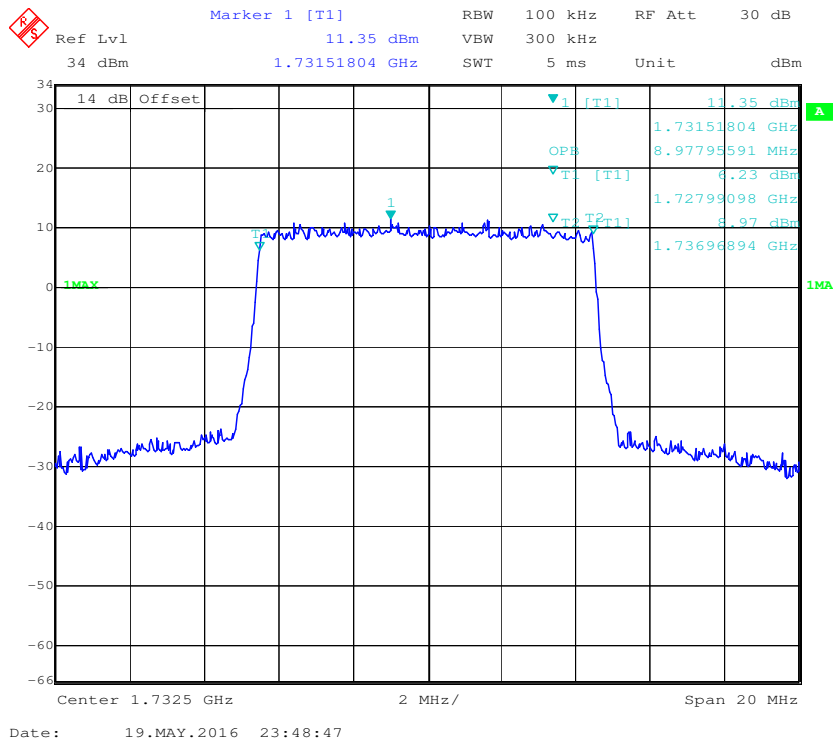
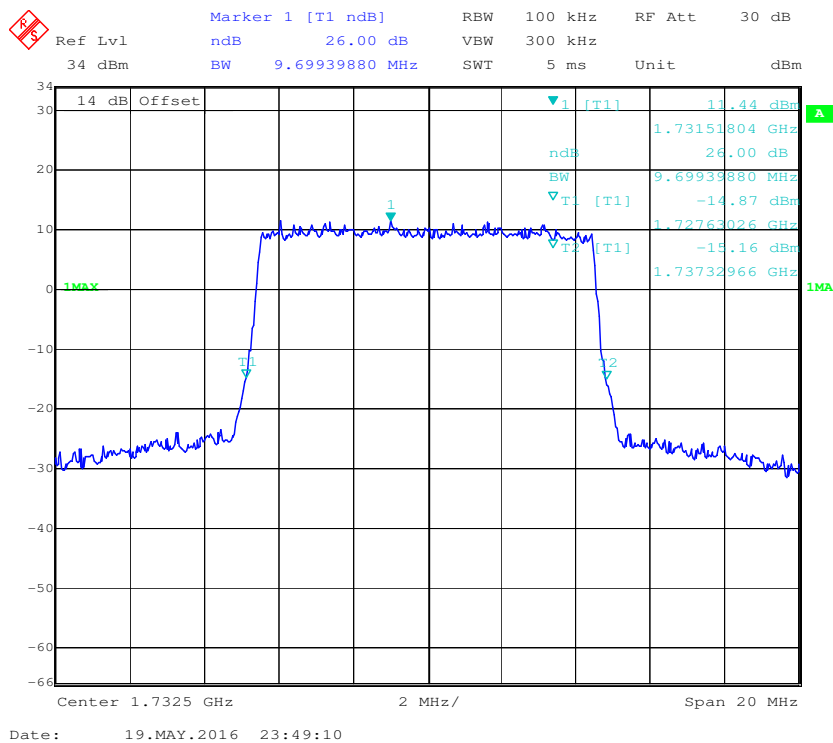


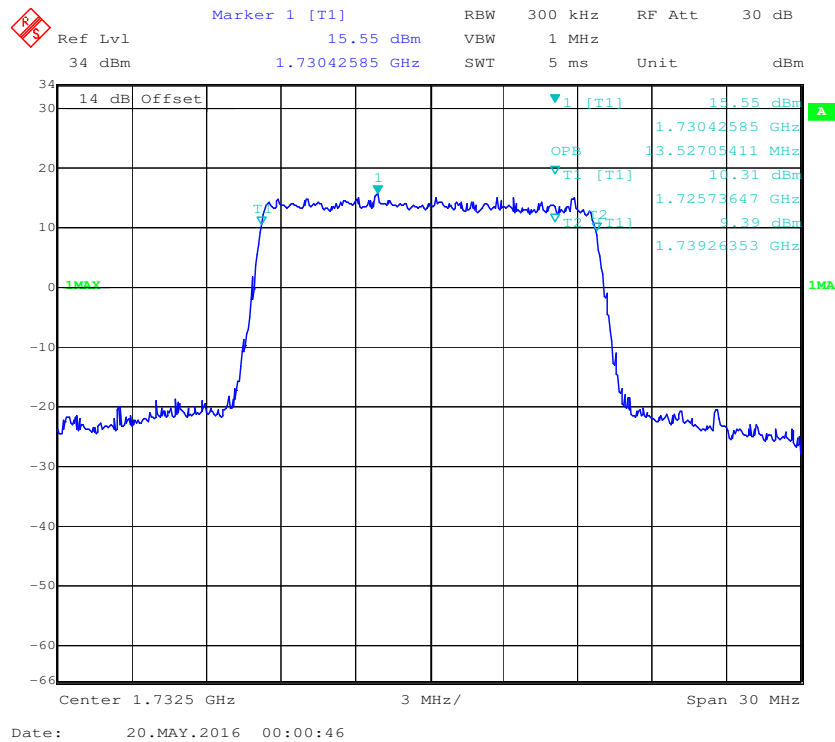
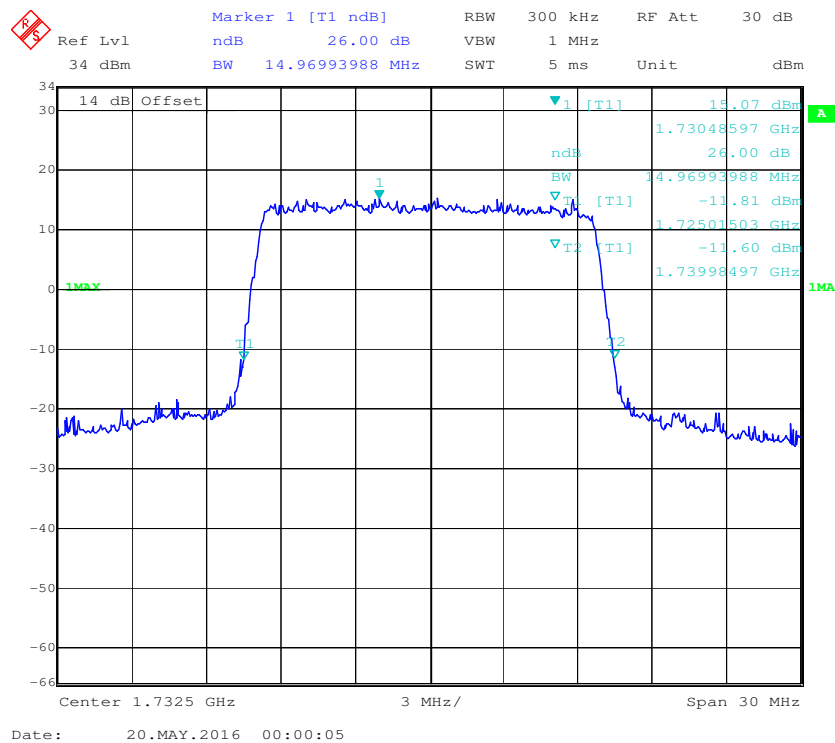
QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel

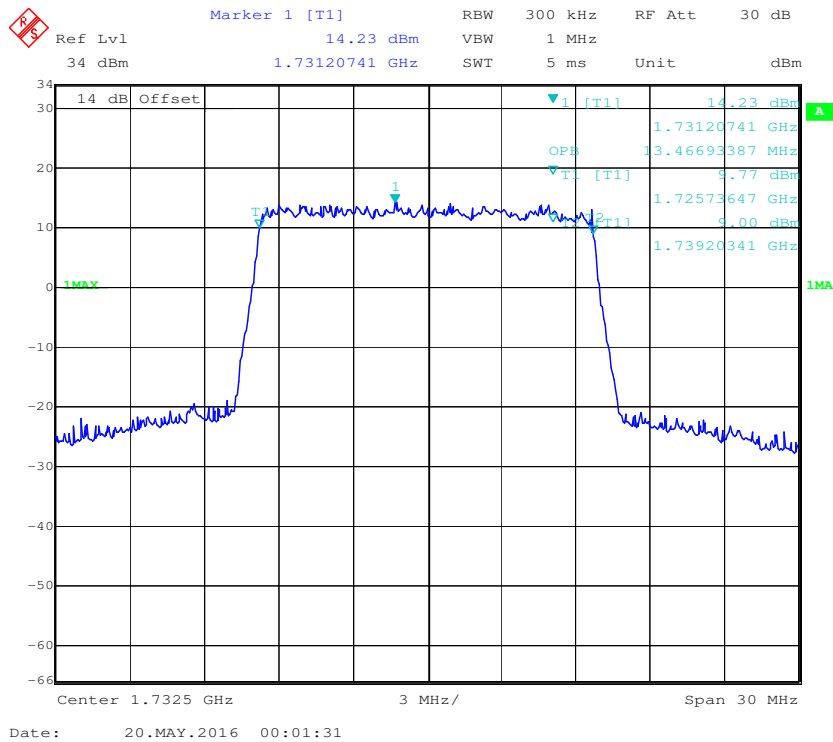
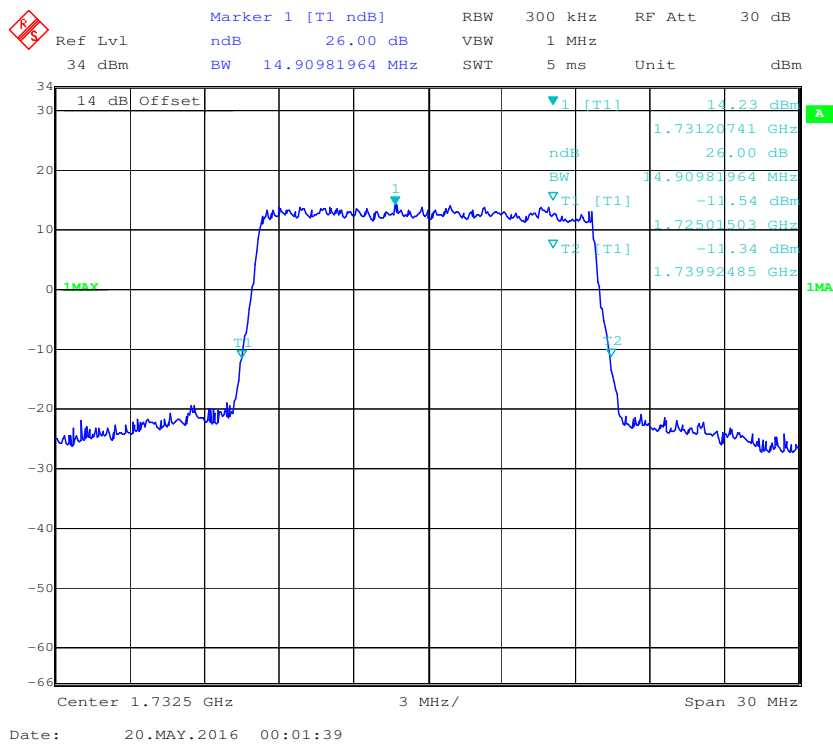


QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel

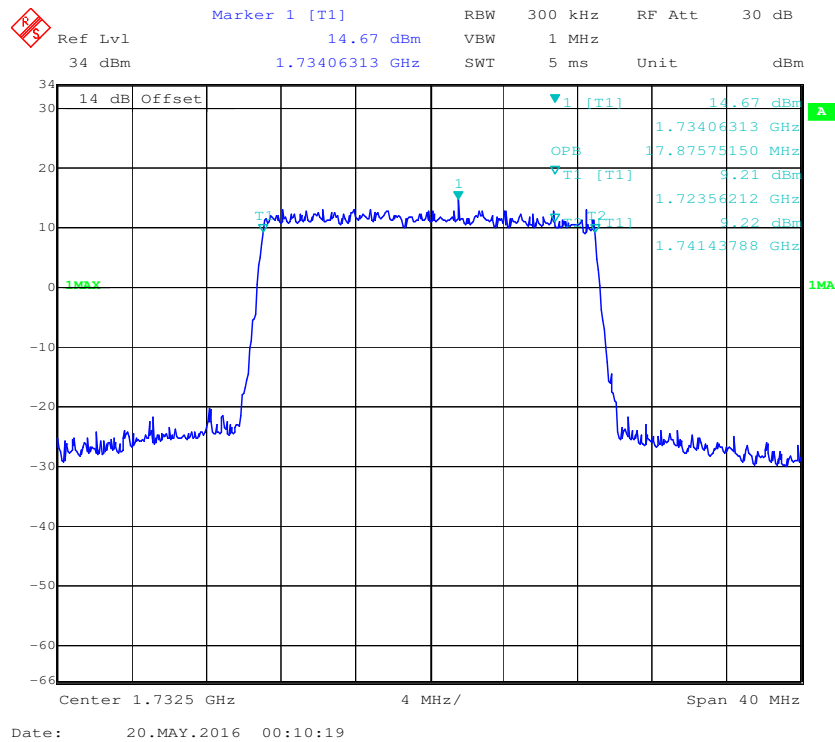


16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel**

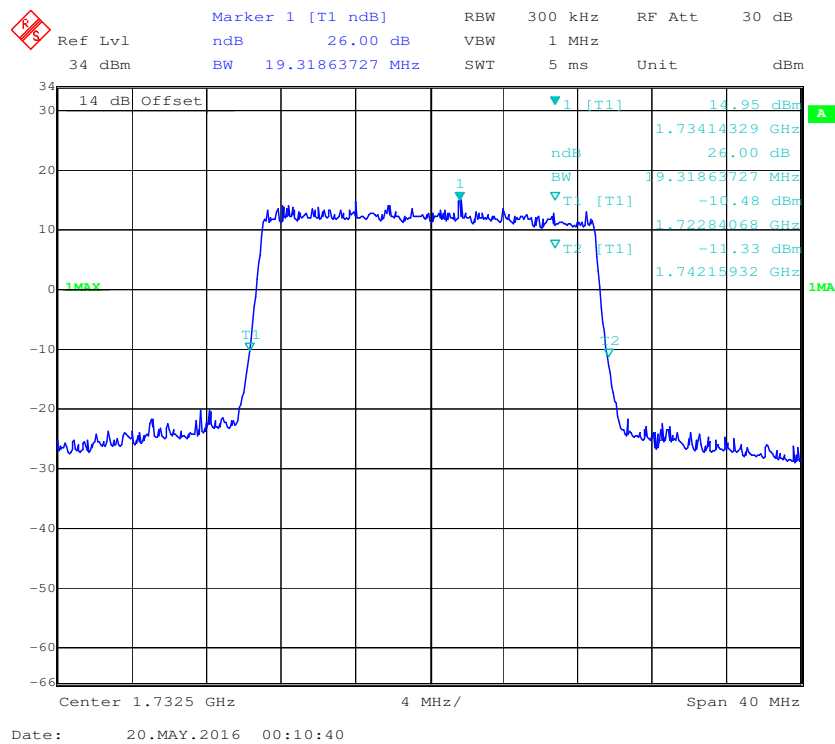
QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel**

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

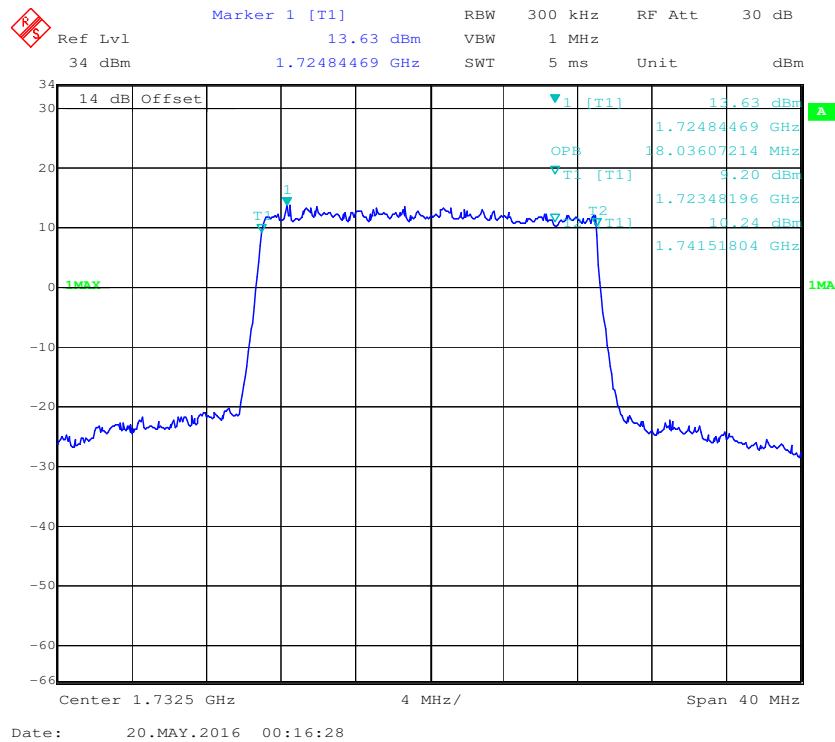
QPSK (20.0 MHz) - 99% Occupied Bandwidth, Middle channel



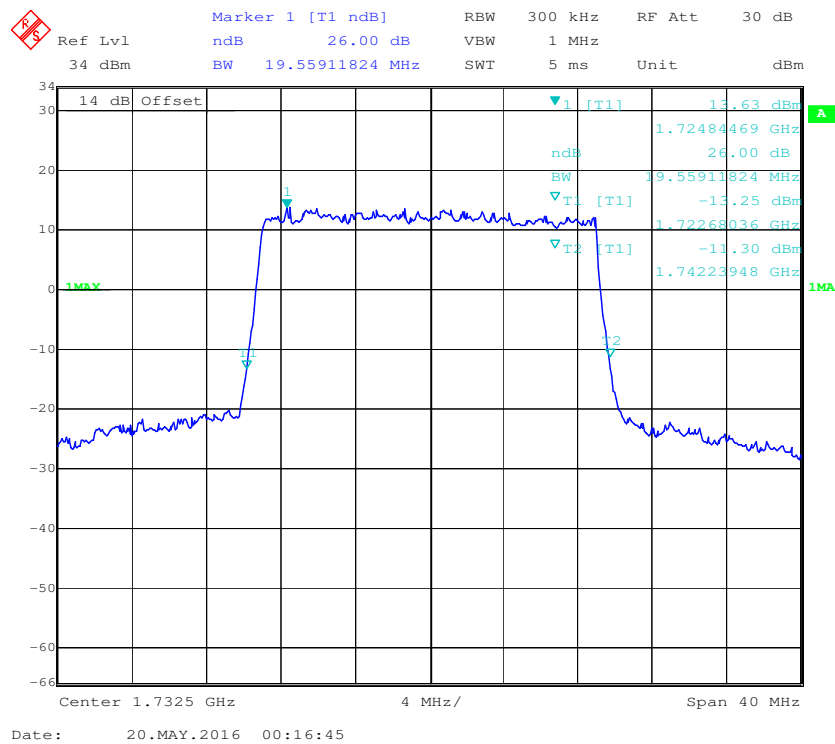
QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel



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

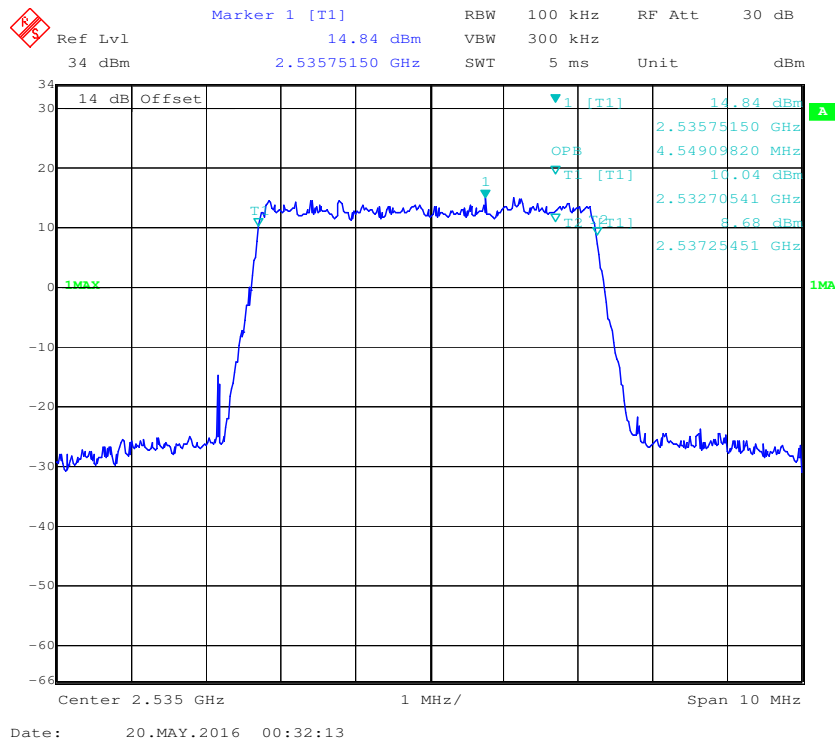
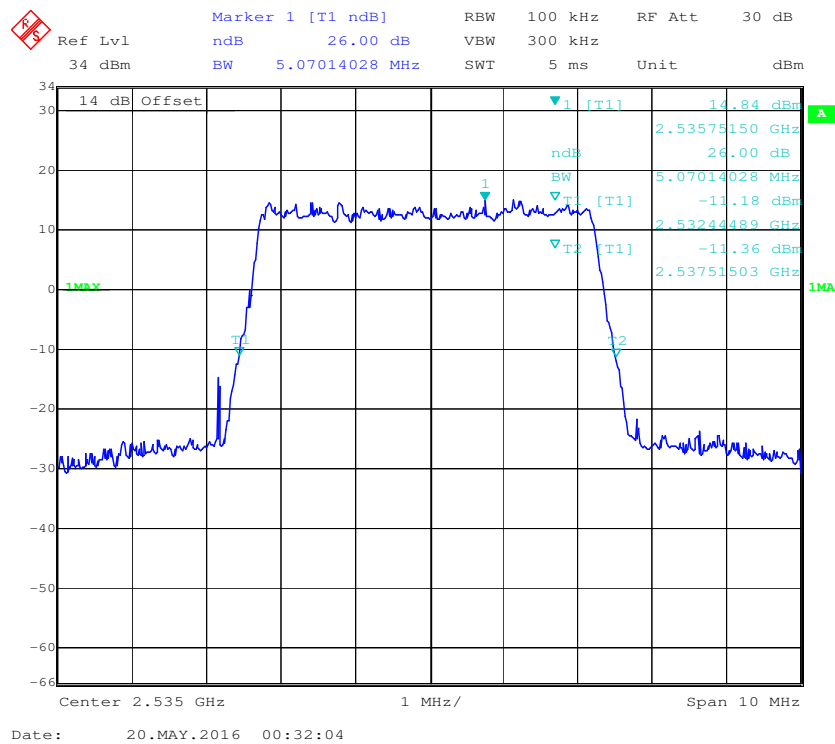


16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel

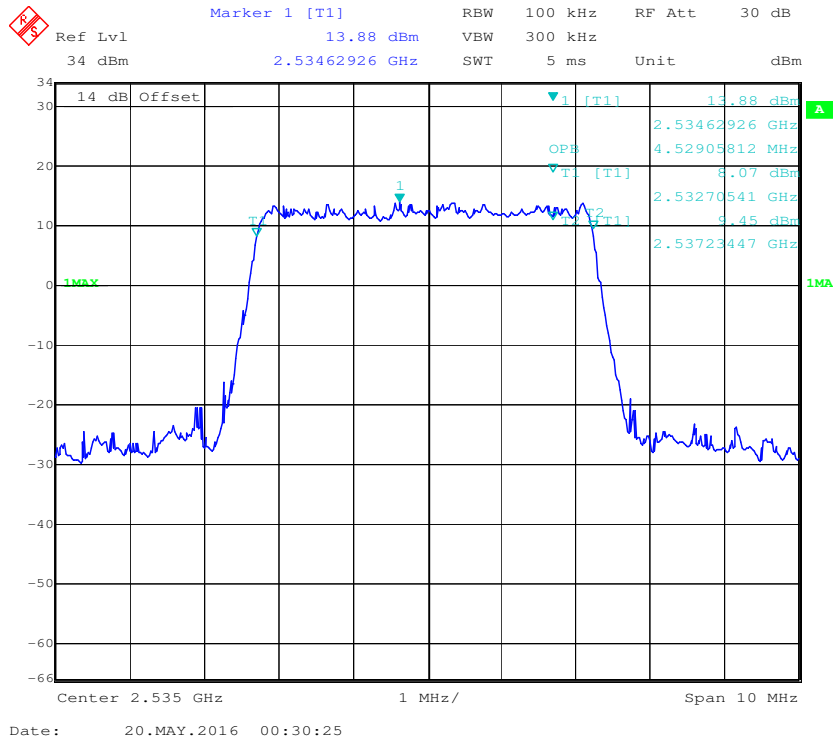


LTE Band 7: (Middle Channel)

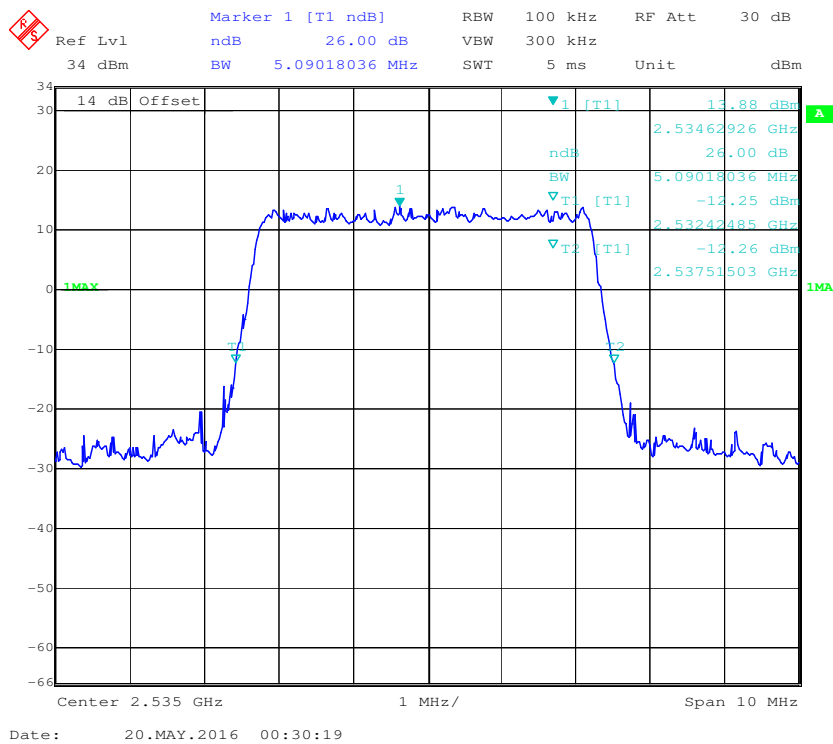
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5.0	QPSK	4.549	5.070
	16QAM	4.529	5.090
10.0	QPSK	9.018	9.780
	16QAM	9.018	9.699
15.0	QPSK	13.587	15.090
	16QAM	13.527	14.970
20.0	QPSK	17.956	19.479
	16QAM	18.036	19.559

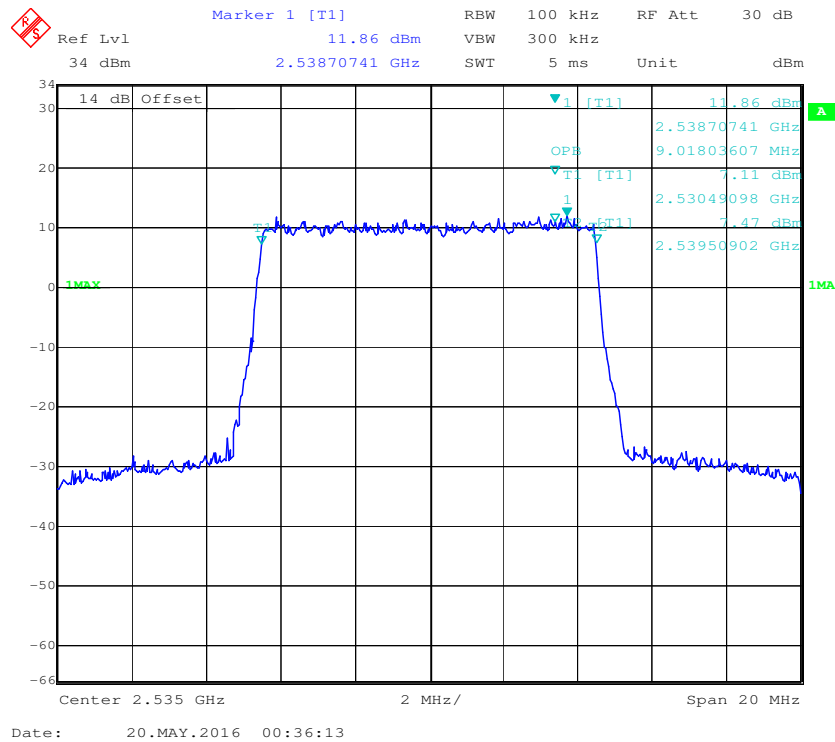
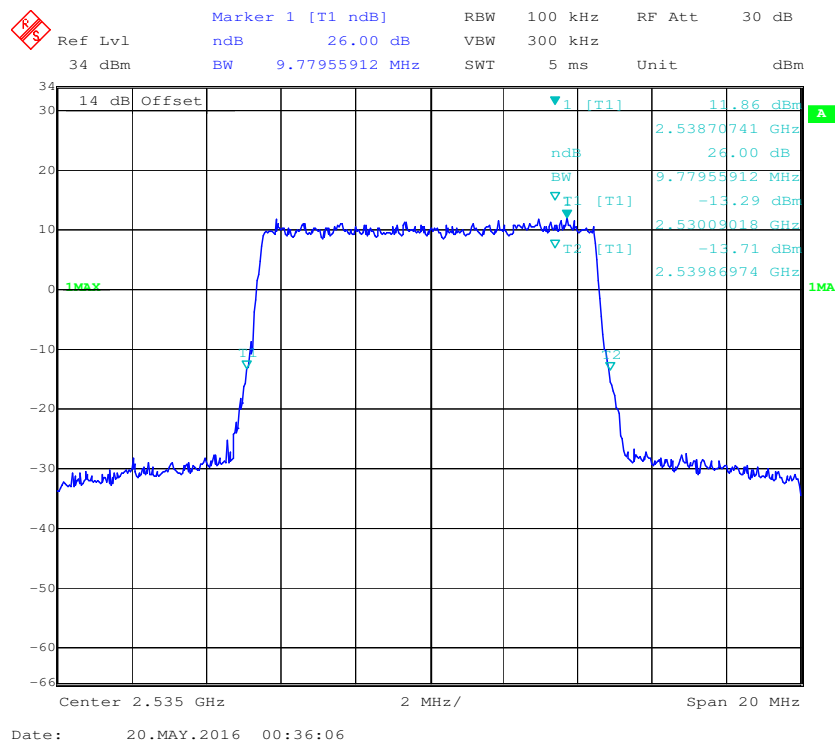
QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel**QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel**

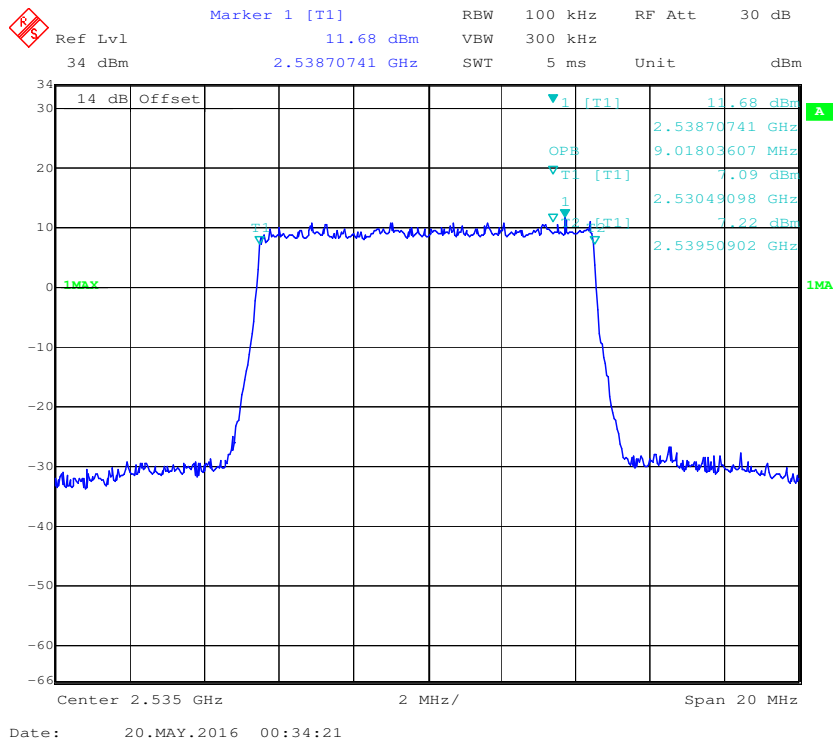
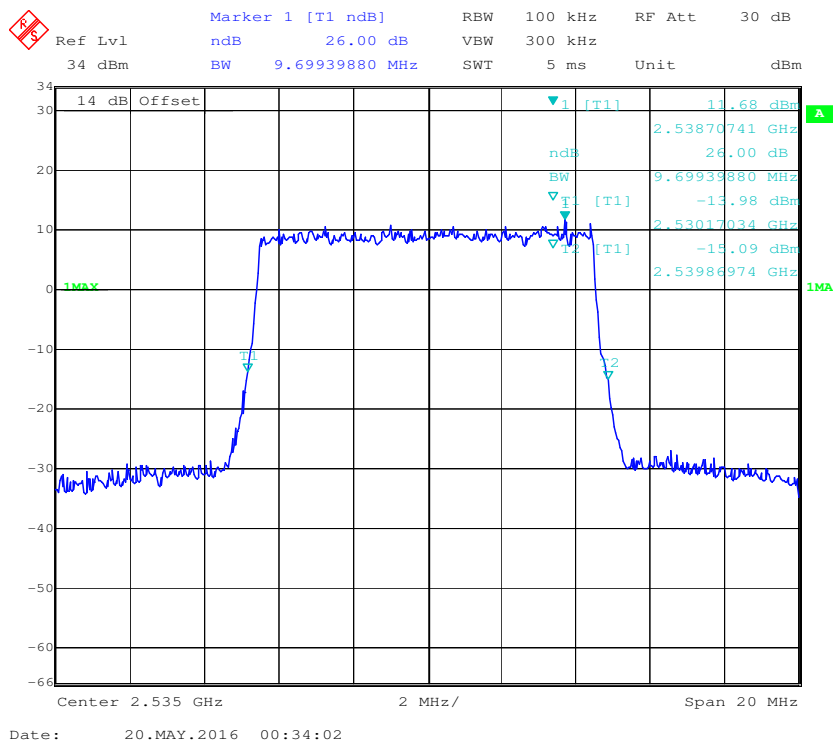
16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel

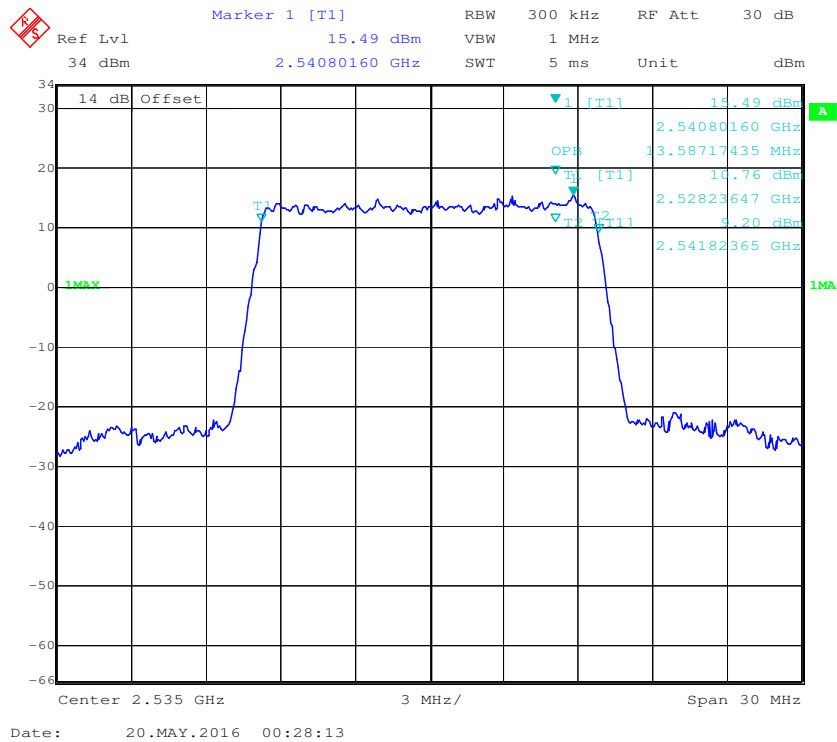
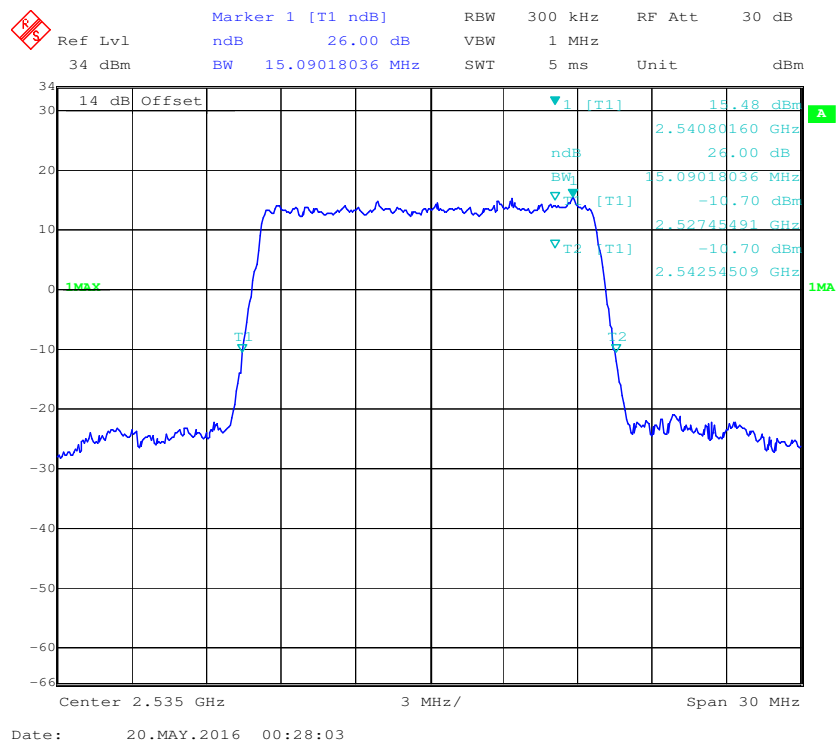


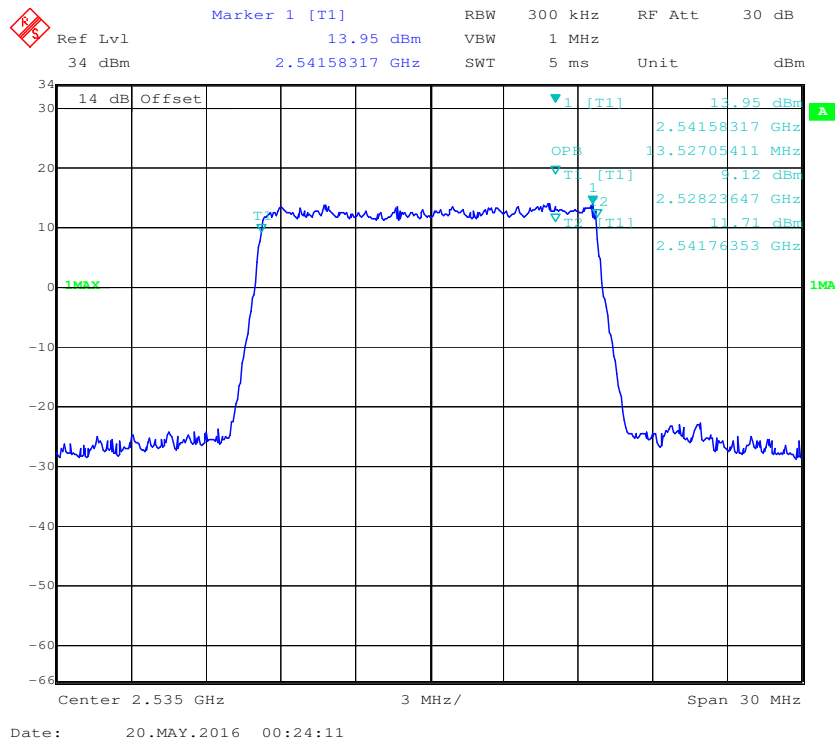
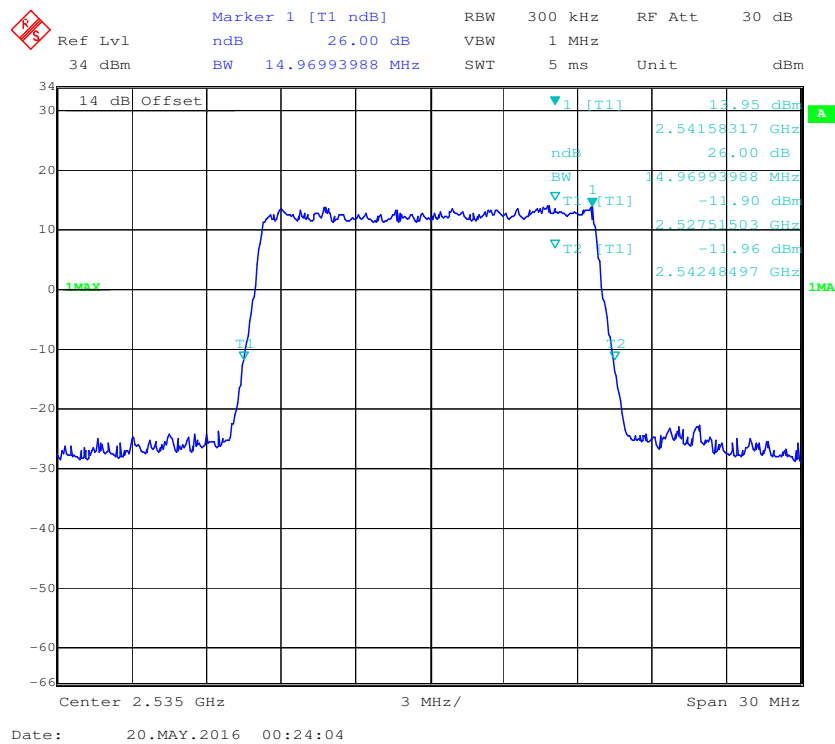
16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel



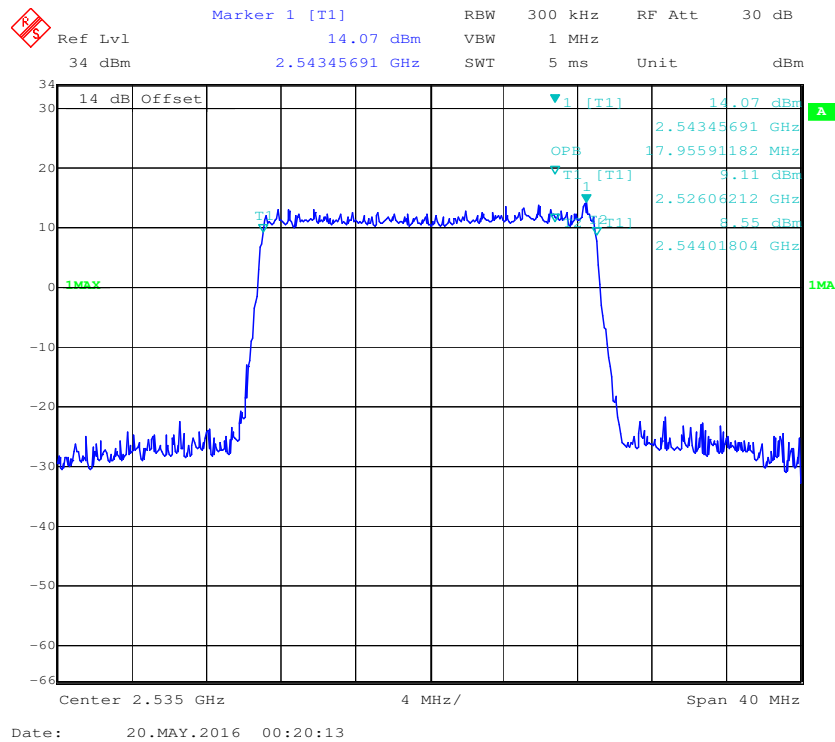
QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel**QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel**

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

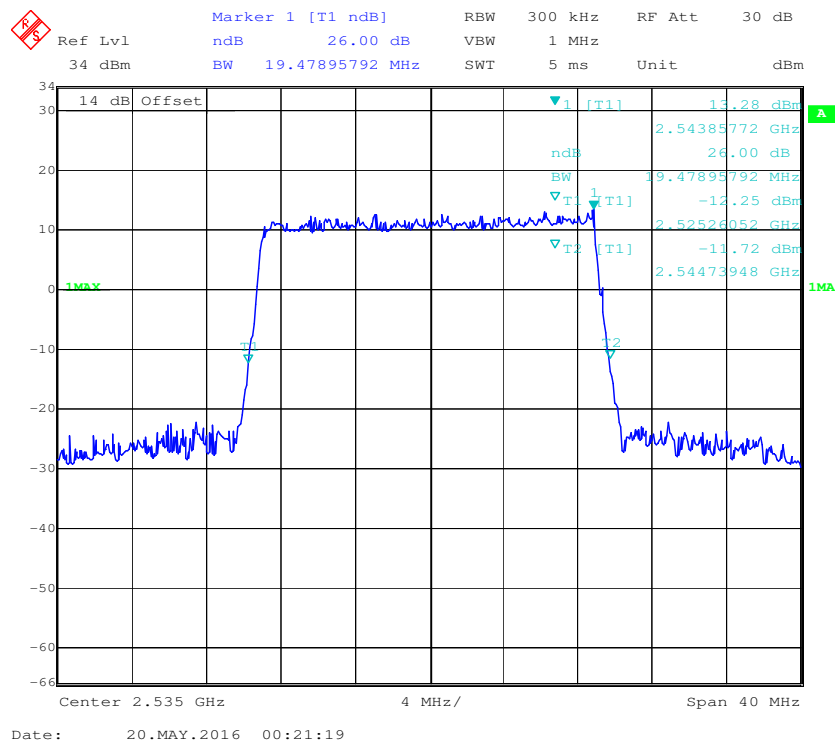
QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel**

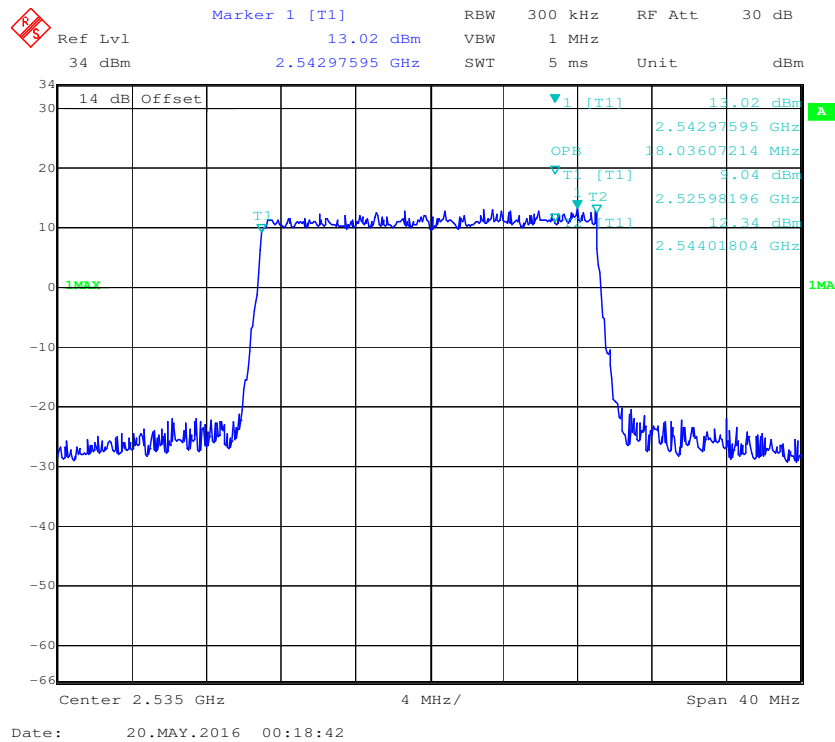
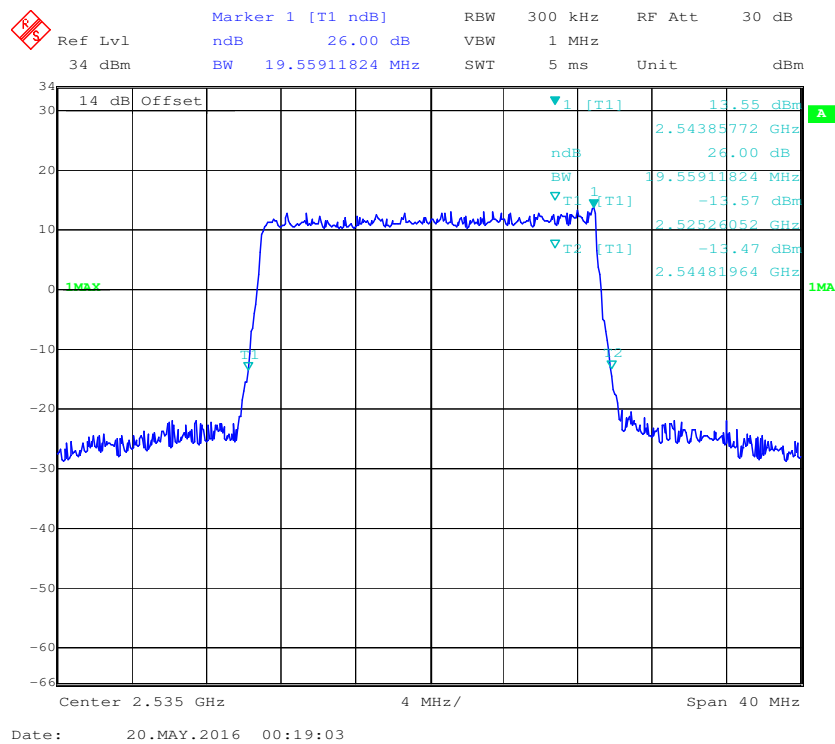
16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel**16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel**

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**

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

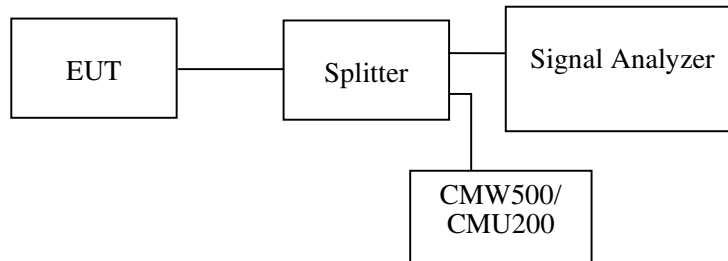
Applicable Standards

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**

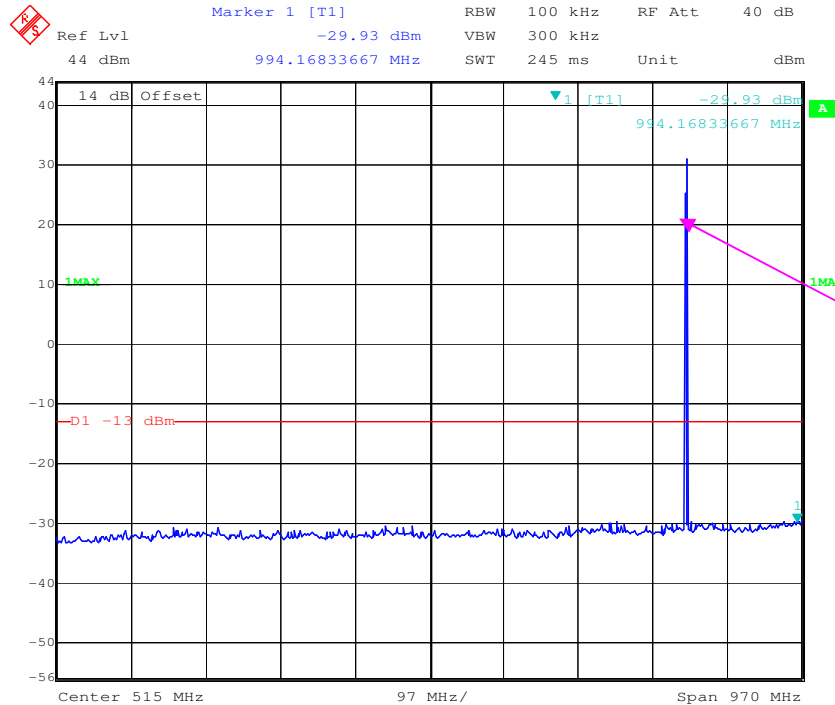
Temperature:	24-25 °C
Relative Humidity:	50-56 %
ATM Pressure:	101.0kPa

The testing was performed by Xiangguang Kong from 2016-05-18 to 2016-05-23.

Please refer to the following plots.

Cellular Band (Part 22H)

30 MHz – 1 GHz (GSM Mode)



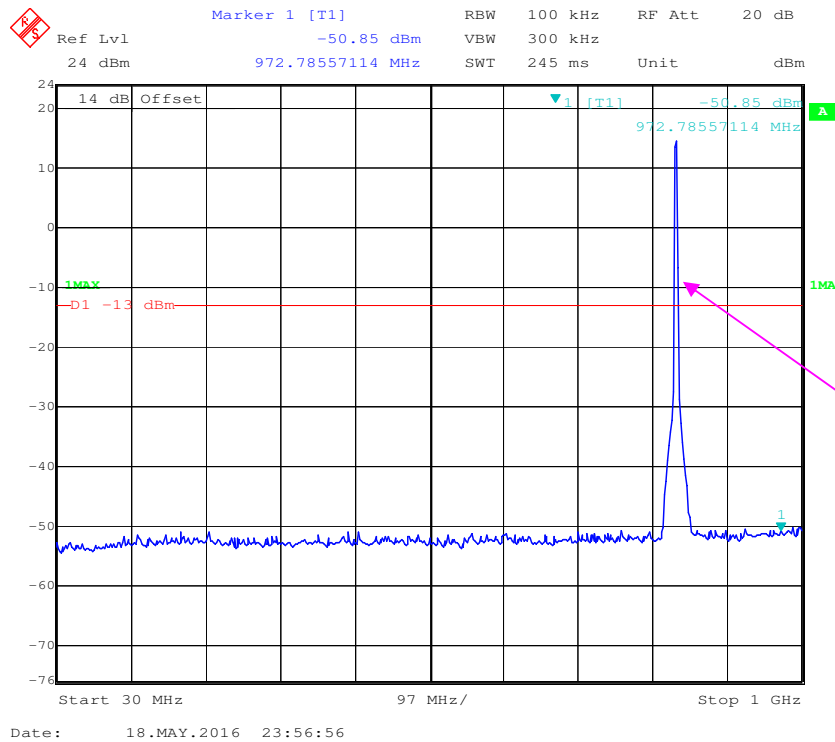
Date: 18.MAY.2016 23:49:35

1 GHz – 10 GHz (GSM Mode)

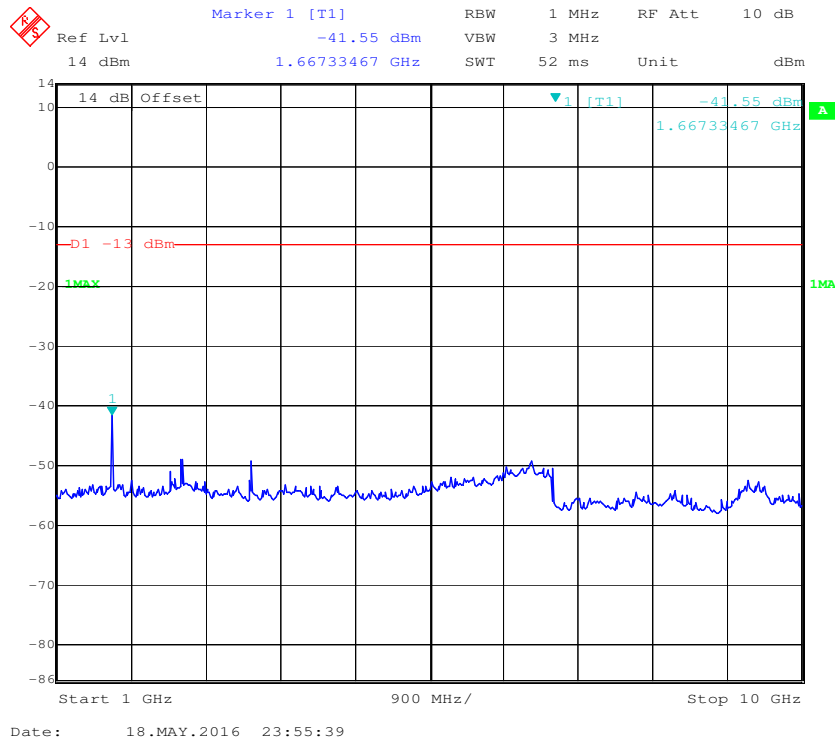


Date: 18.MAY.2016 23:50:21

30 MHz – 1 GHz (WCDMA Mode)

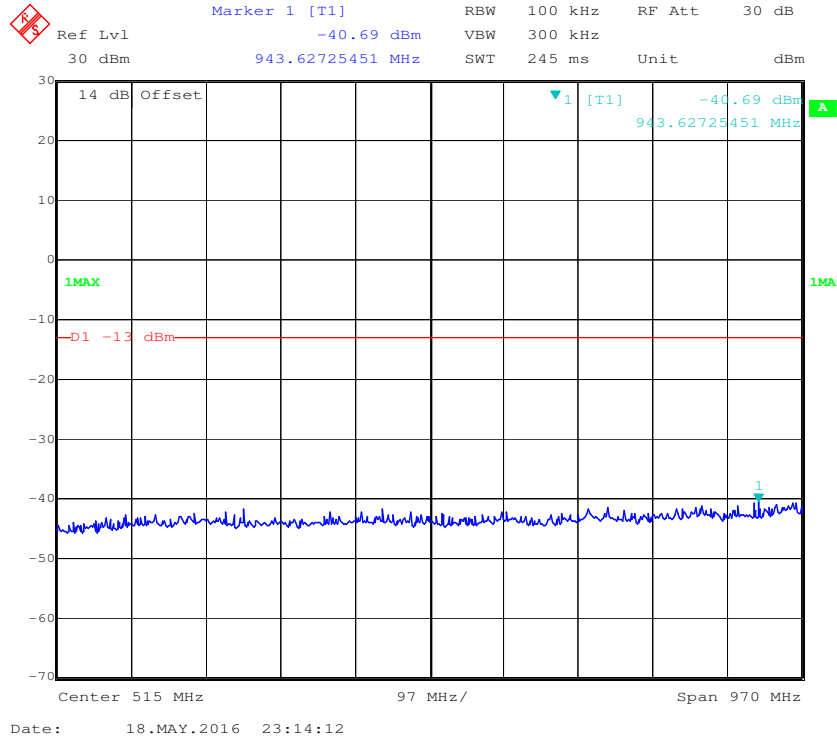


1 GHz – 10 GHz (WCDMA Mode)

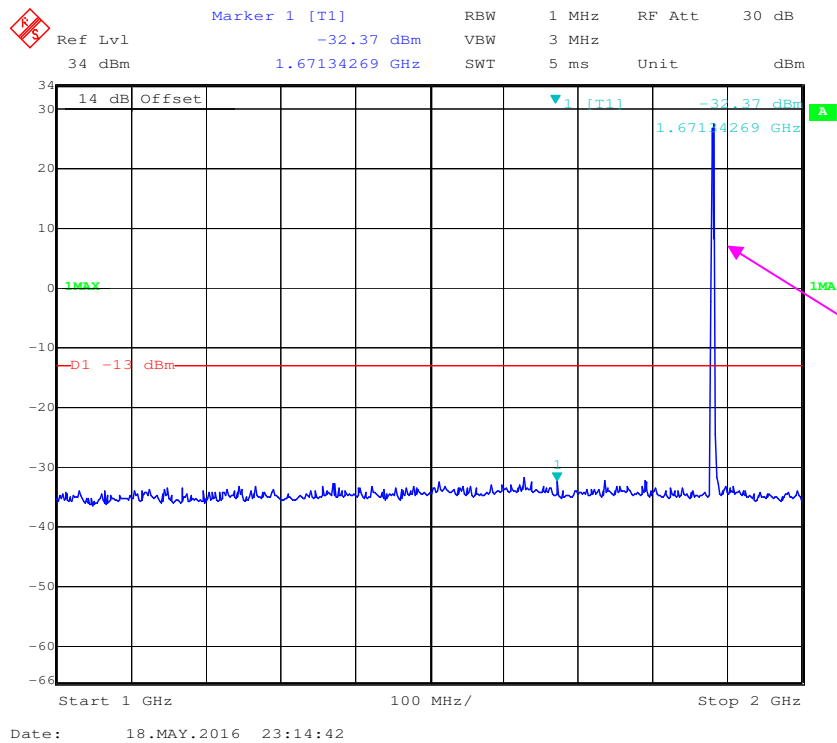


PCS Band (Part 24E)

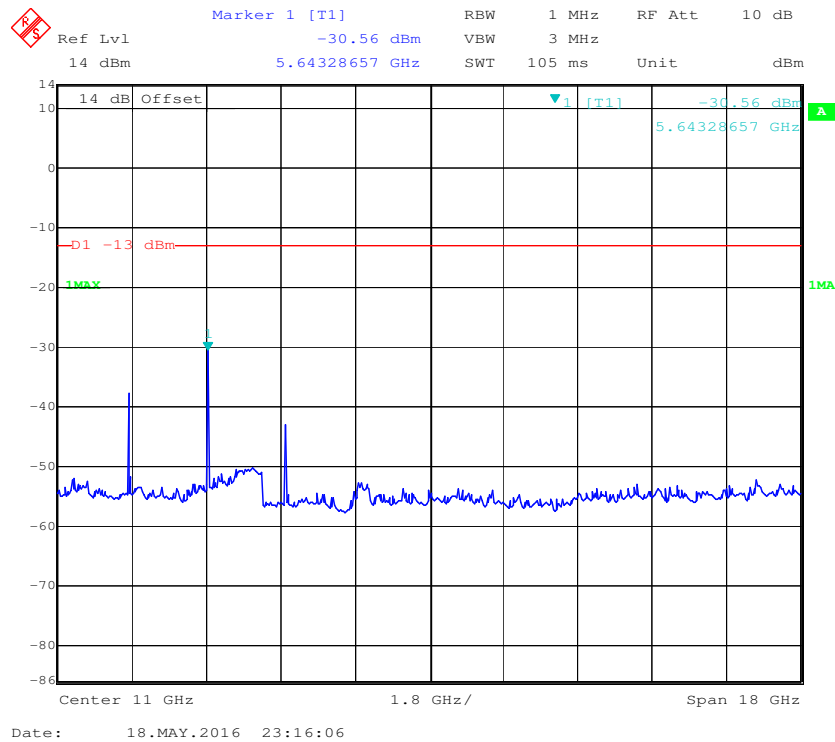
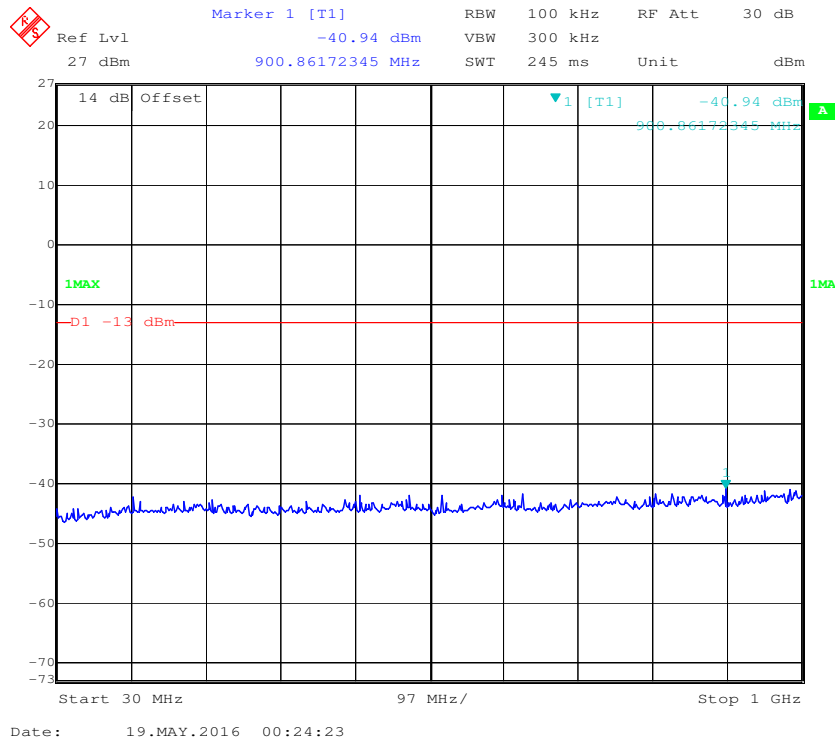
30 MHz – 1 GHz (GSM Mode)



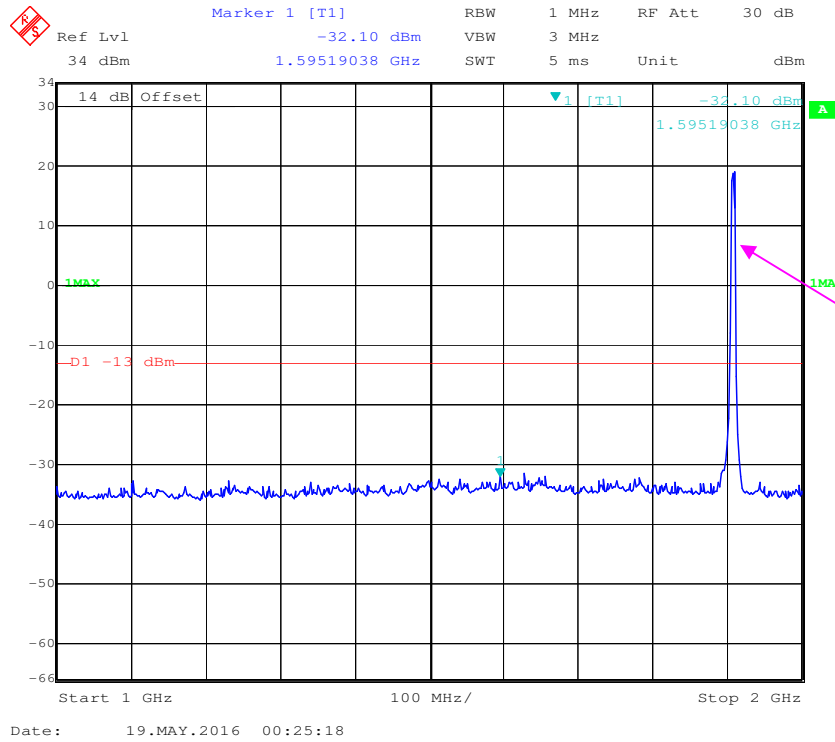
1 GHz – 2 GHz (GSM Mode)



Fundamental test

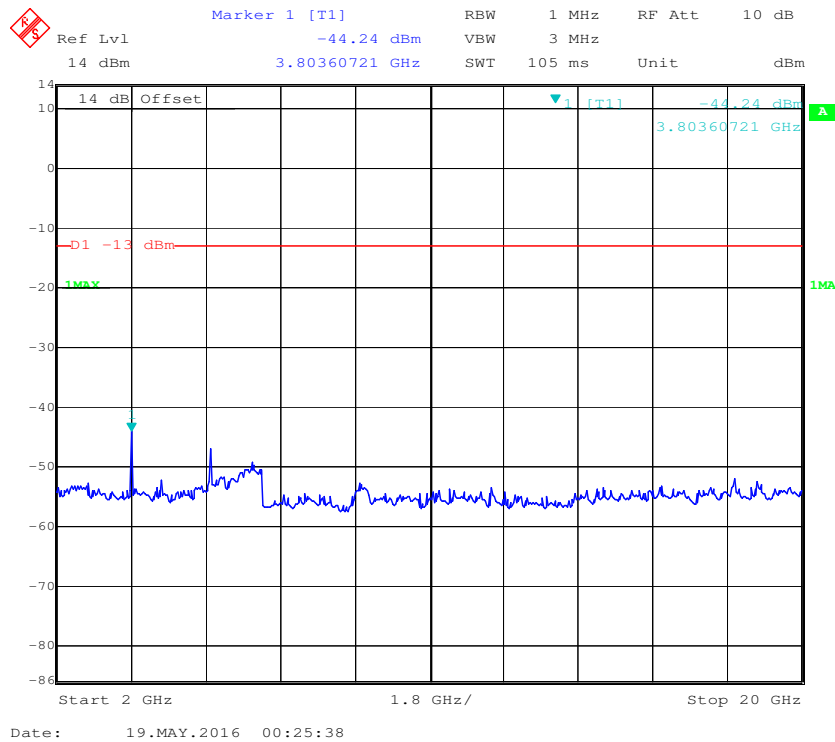
2 GHz – 20 GHz (GSM Mode)**30 MHz – 1 GHz (WCDMA Mode)**

1 GHz – 2 GHz (WCDMA Mode)



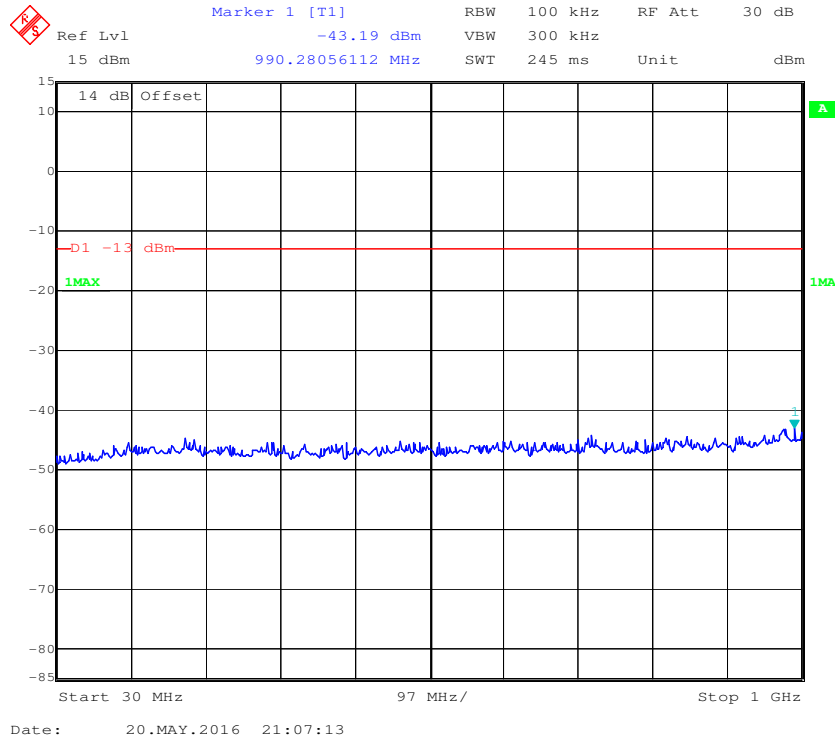
Fundamental test

2 GHz – 20 GHz (WCDMA Mode)

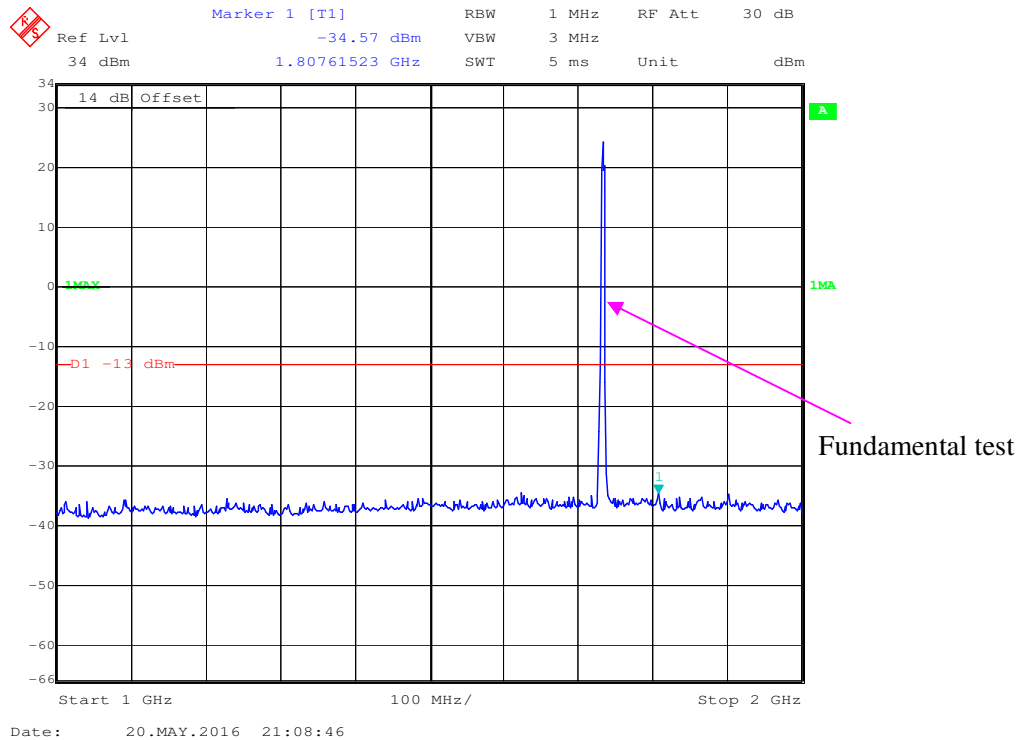


LTE Band 4:

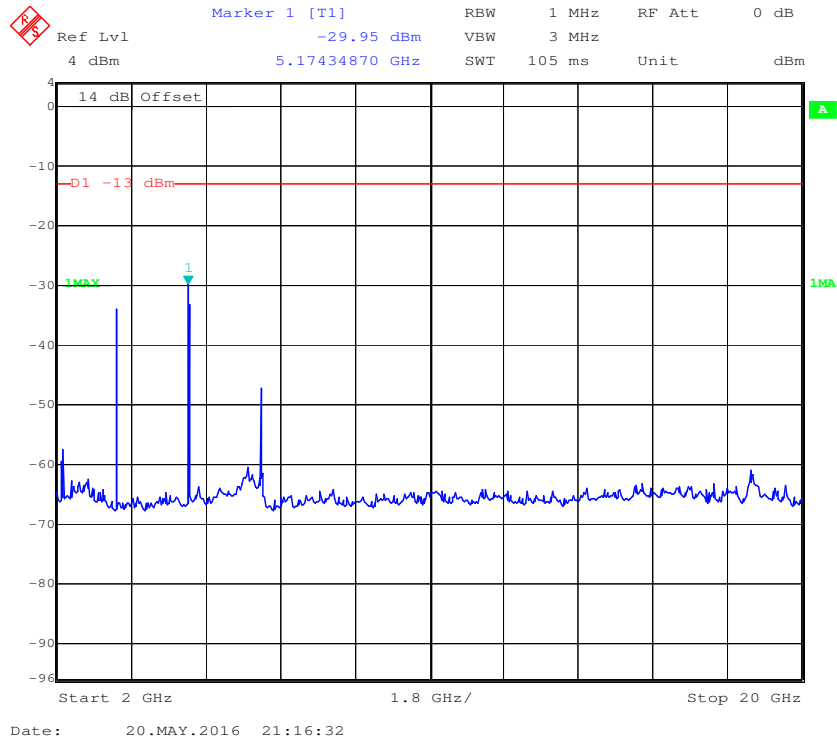
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



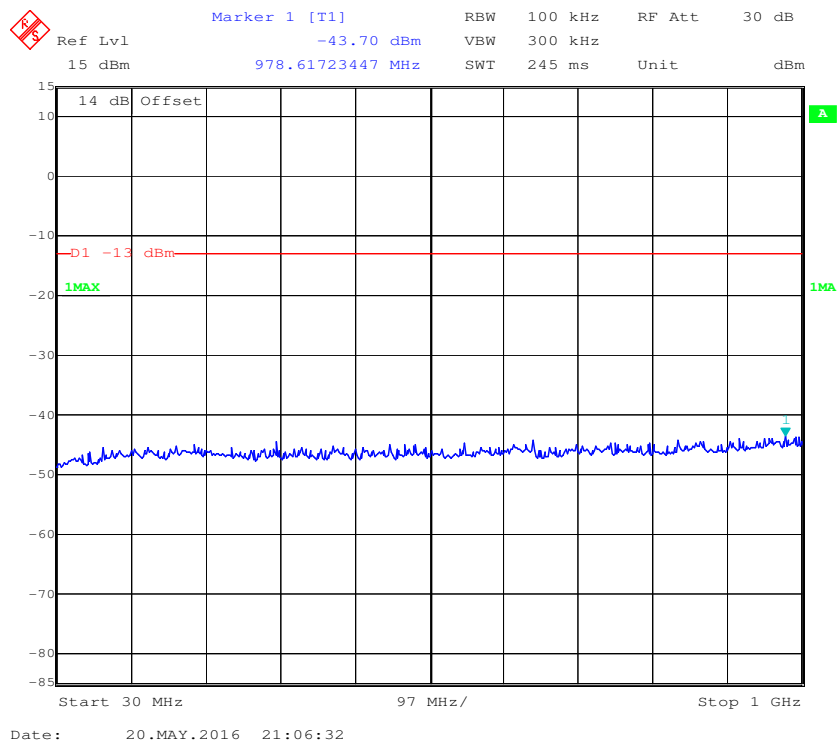
1 GHz - 2 GHz (1.4 MHz, Middle Channel)



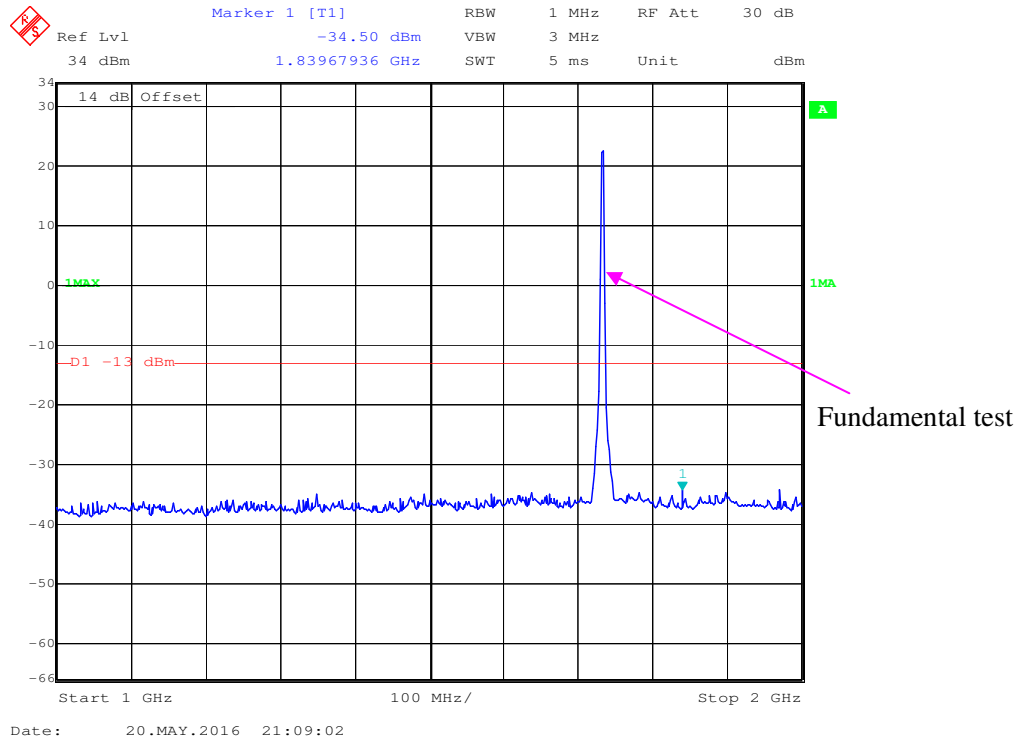
2 GHz – 20 GHz (1.4 MHz, Middle Channel)



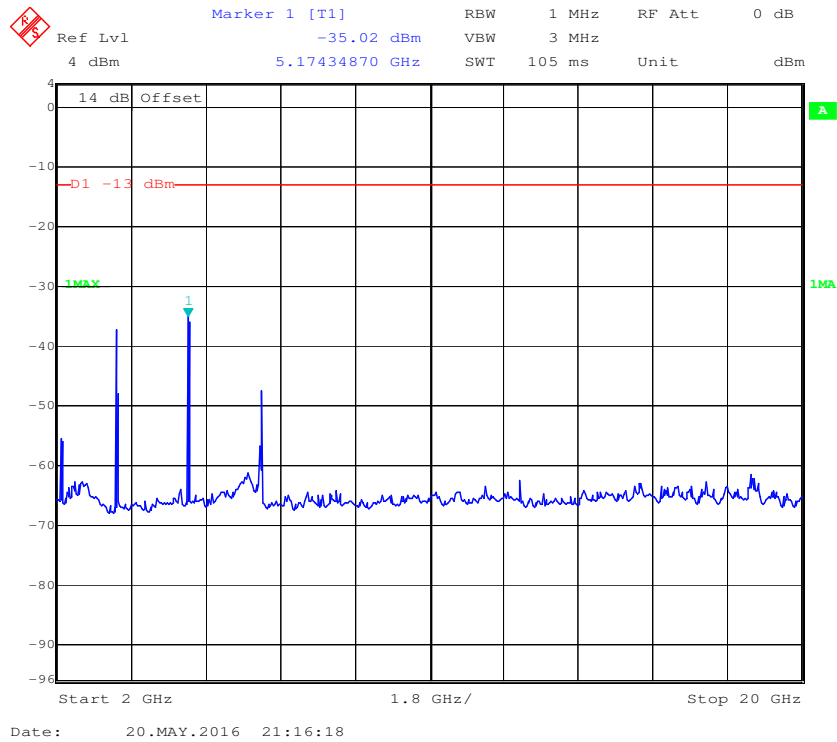
30 MHz - 1 GHz (3.0 MHz, Middle Channel)



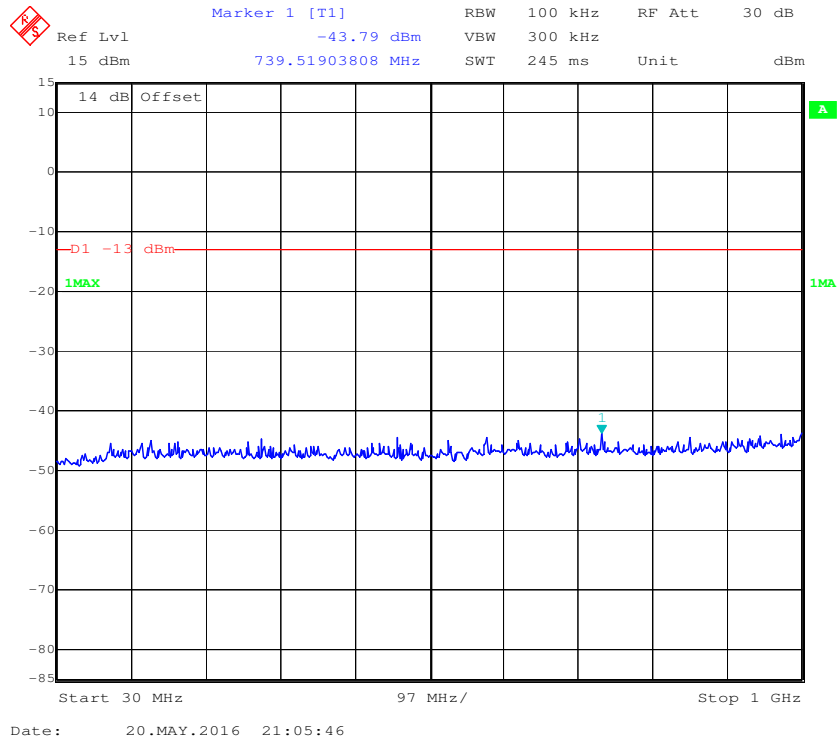
1 GHz – 2 GHz (3.0 MHz, Middle Channel)



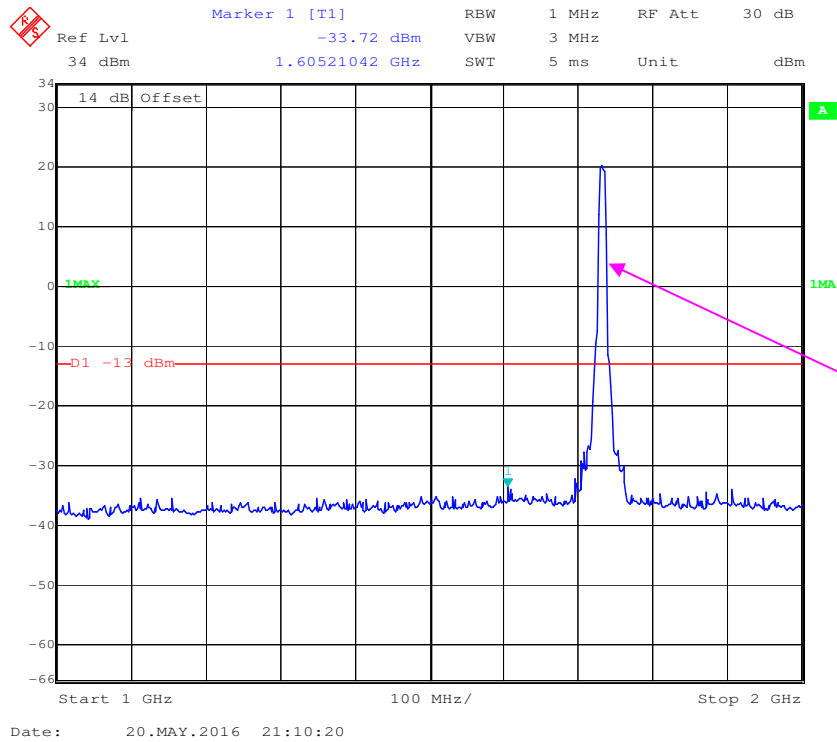
2 GHz – 20 GHz (3.0 MHz, Middle Channel)



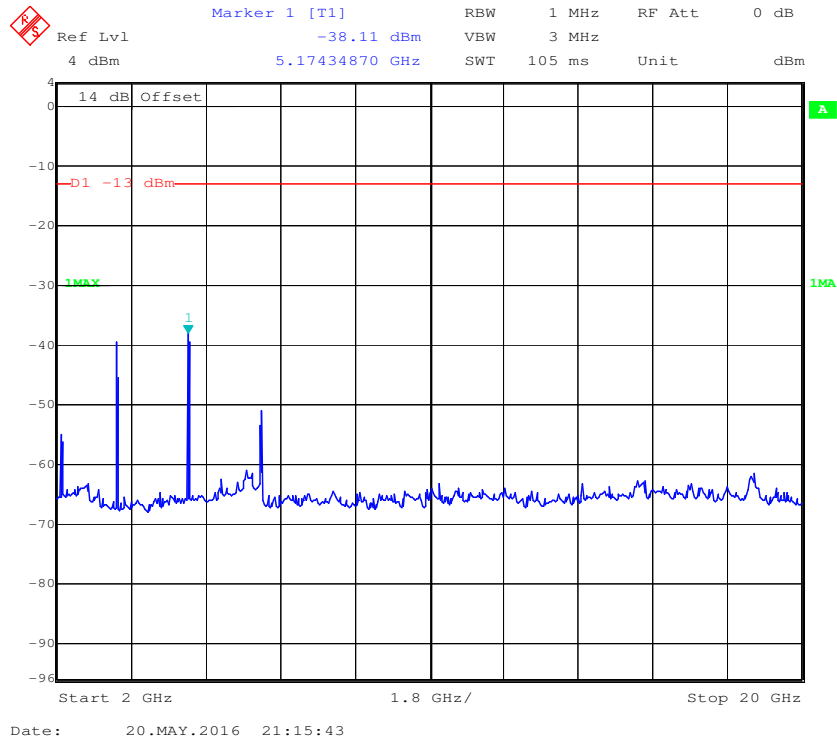
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



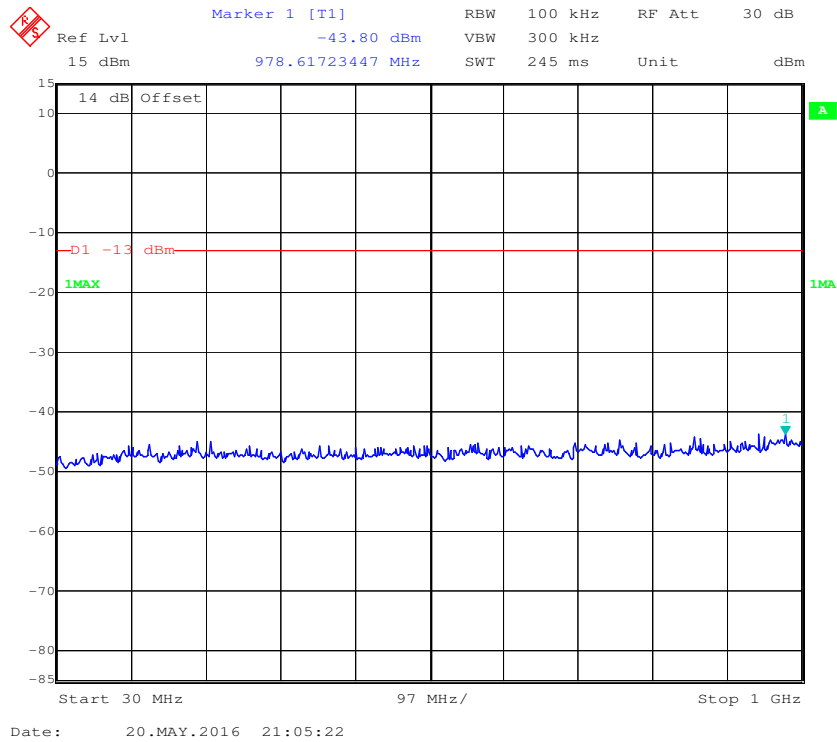
1 GHz - 2 GHz (5.0 MHz, Middle Channel)



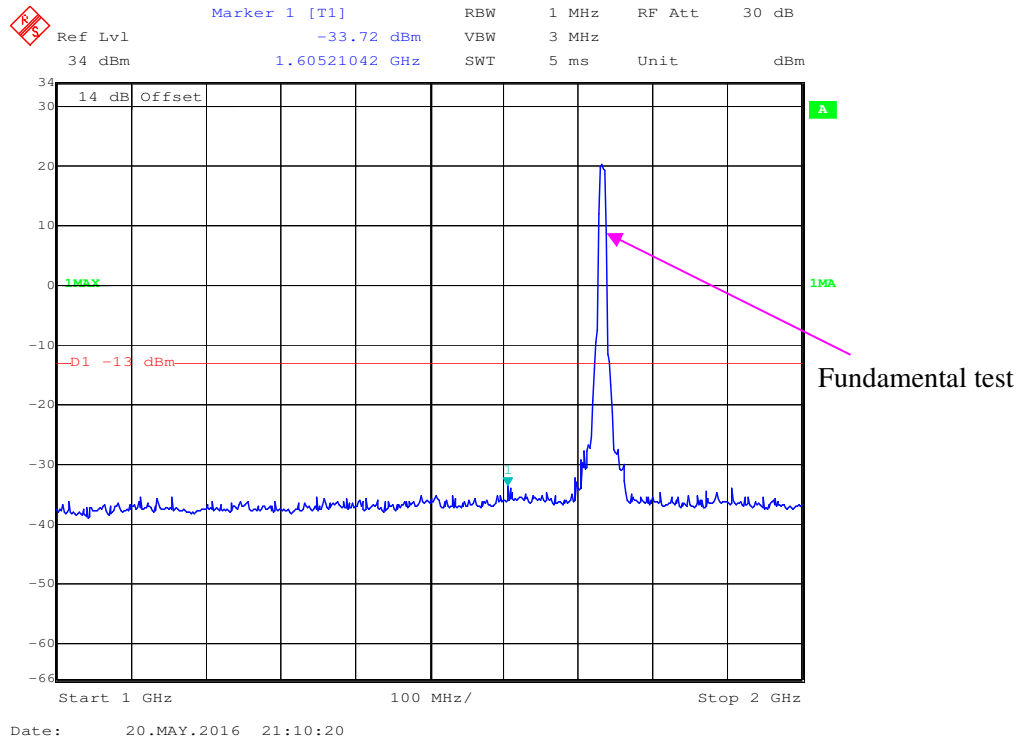
2 GHz – 20 GHz (5.0 MHz, Middle Channel)



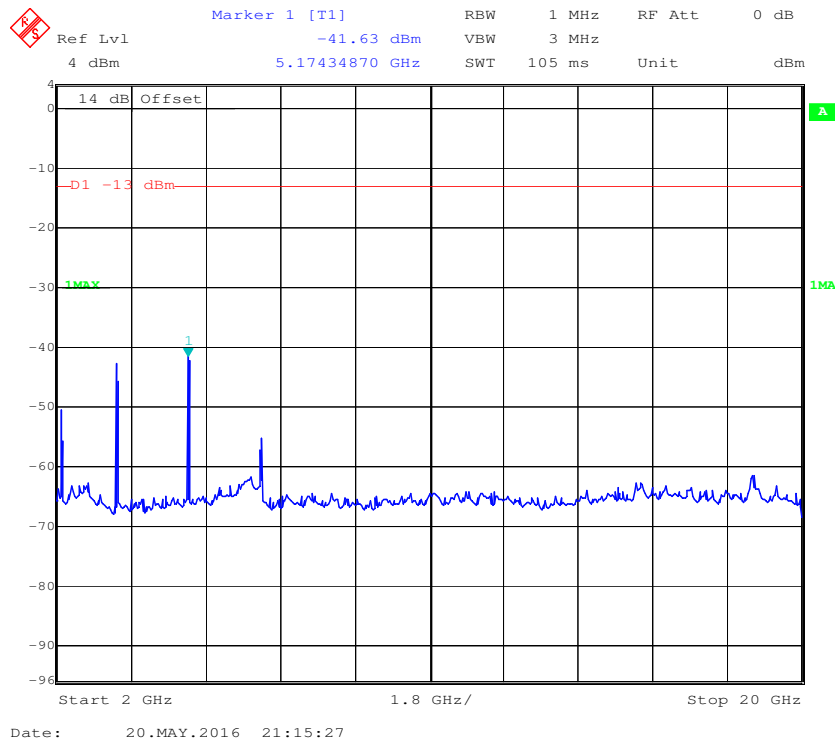
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



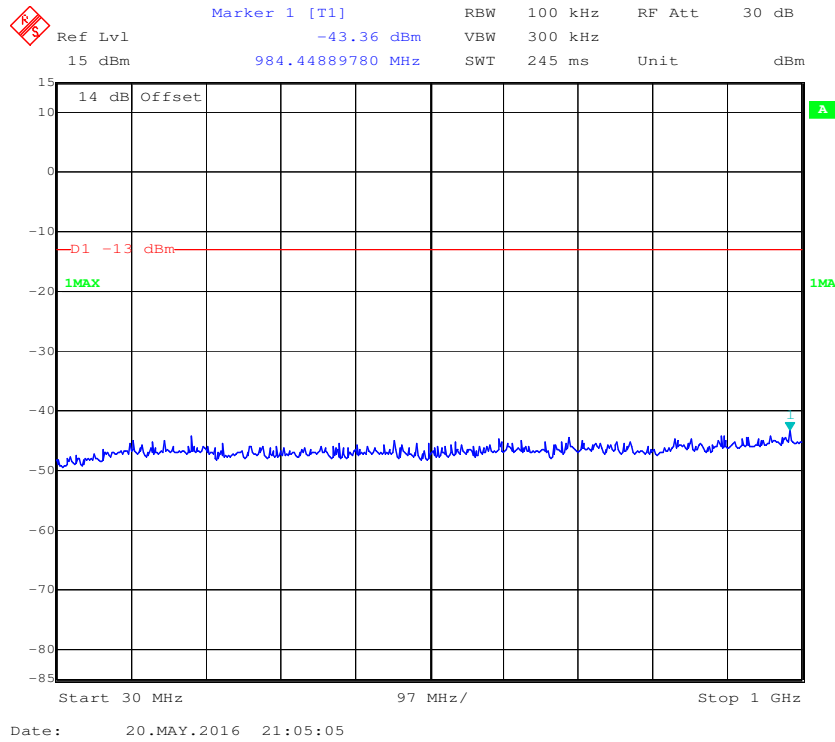
1 GHz – 2 GHz (10.0 MHz, Middle Channel)



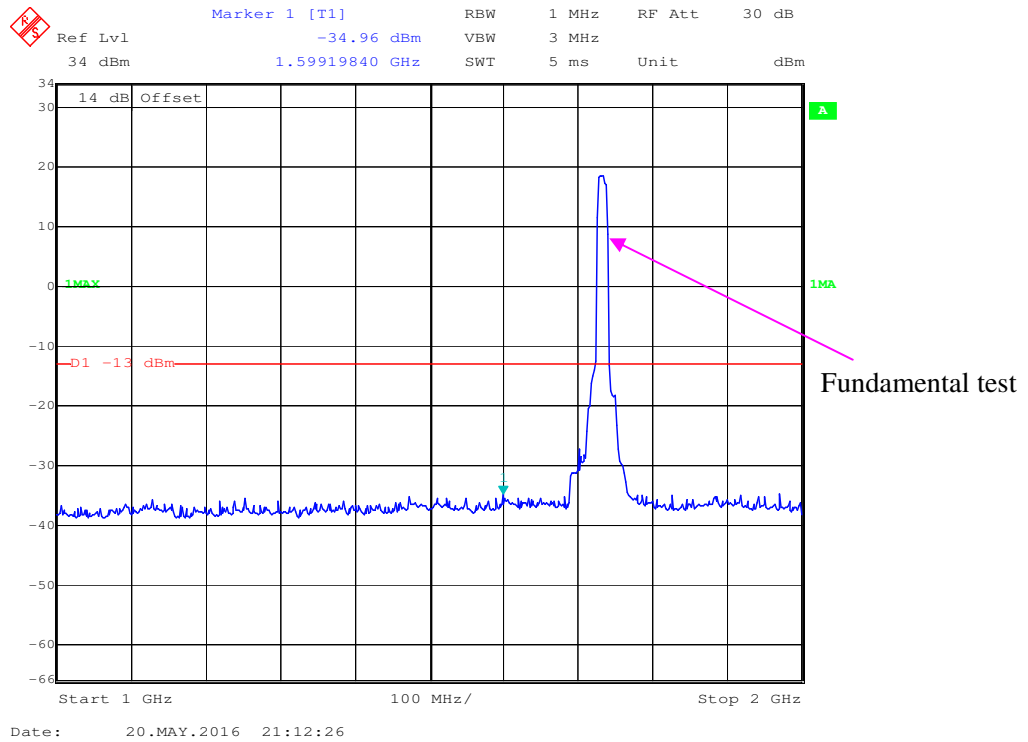
2 GHz – 20 GHz (10.0 MHz, Middle Channel)



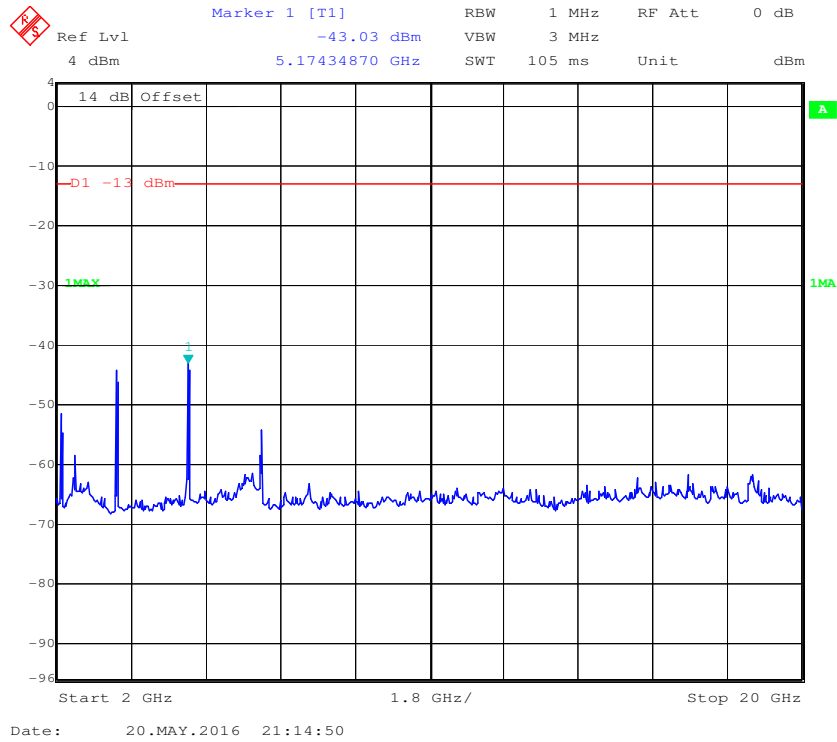
30 MHz - 1 GHz (15.0 MHz, Middle Channel)



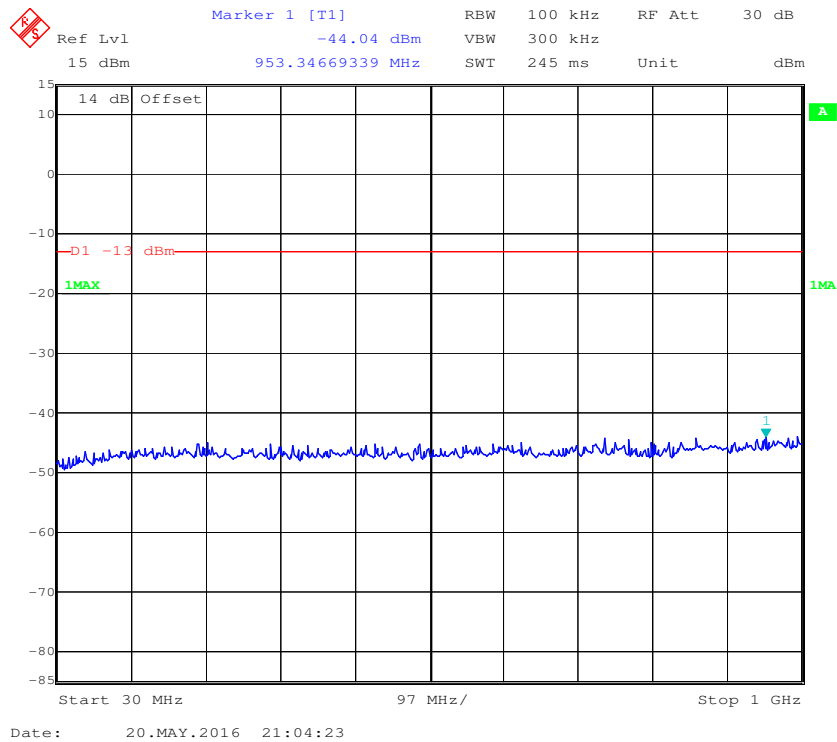
1 GHz - 2 GHz (15.0 MHz, Middle Channel)



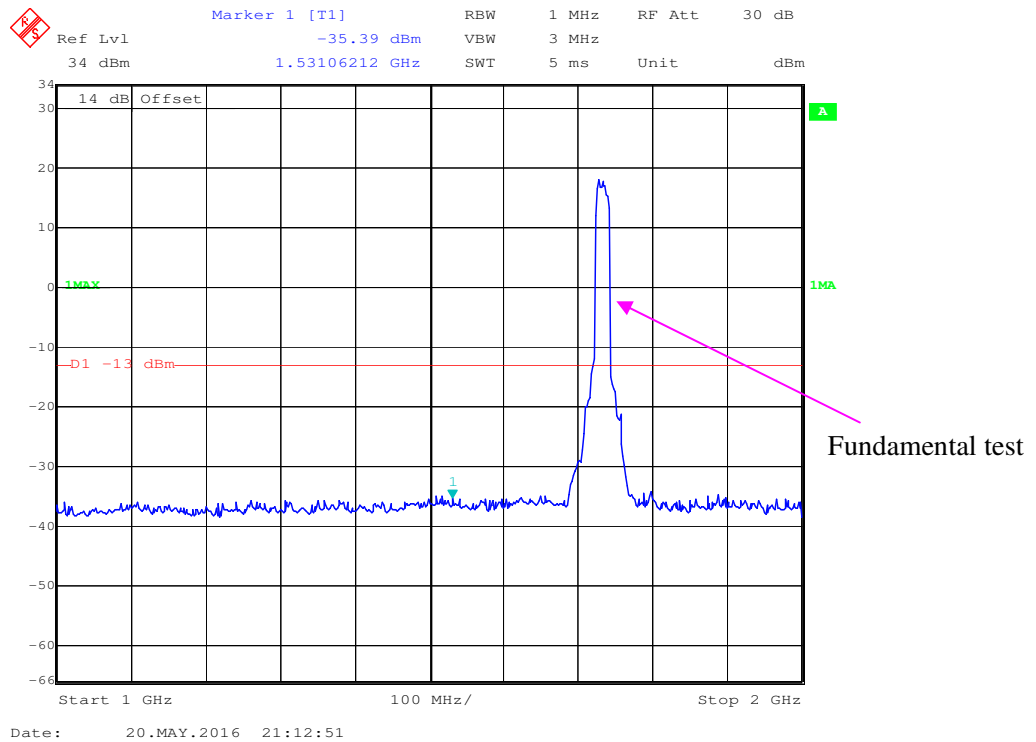
2 GHz – 20GHz (15.0 MHz, Middle Channel)



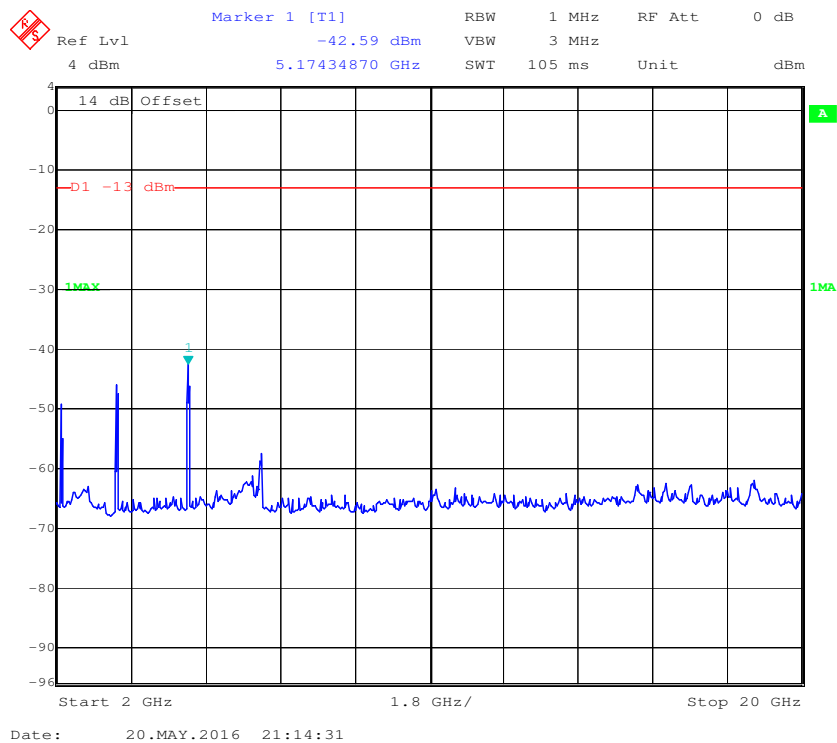
30 MHz - 1 GHz (20.0 MHz, Middle Channel)



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

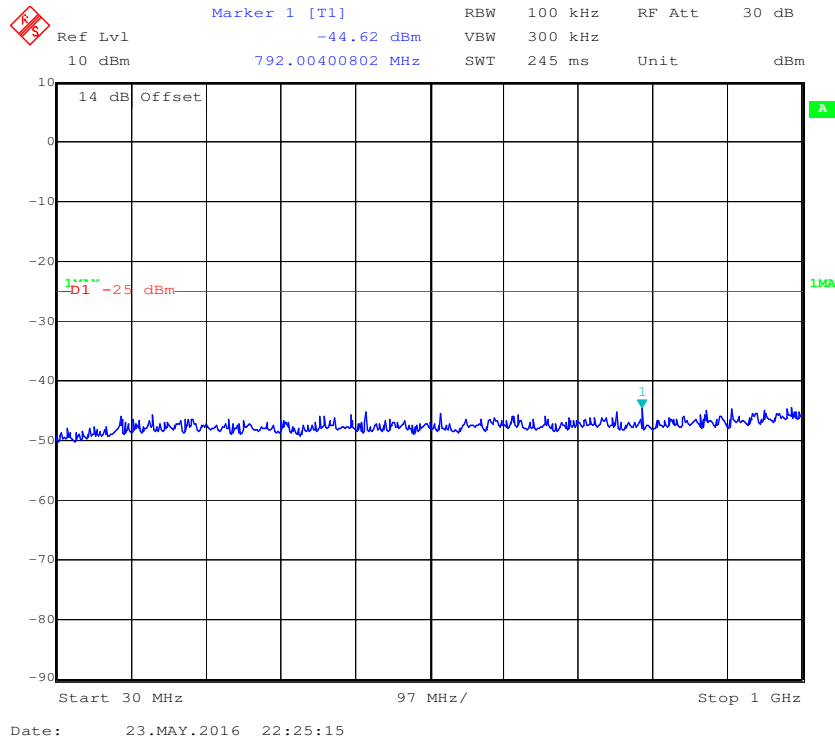


2 GHz – 20 GHz (20.0 MHz, Middle Channel)

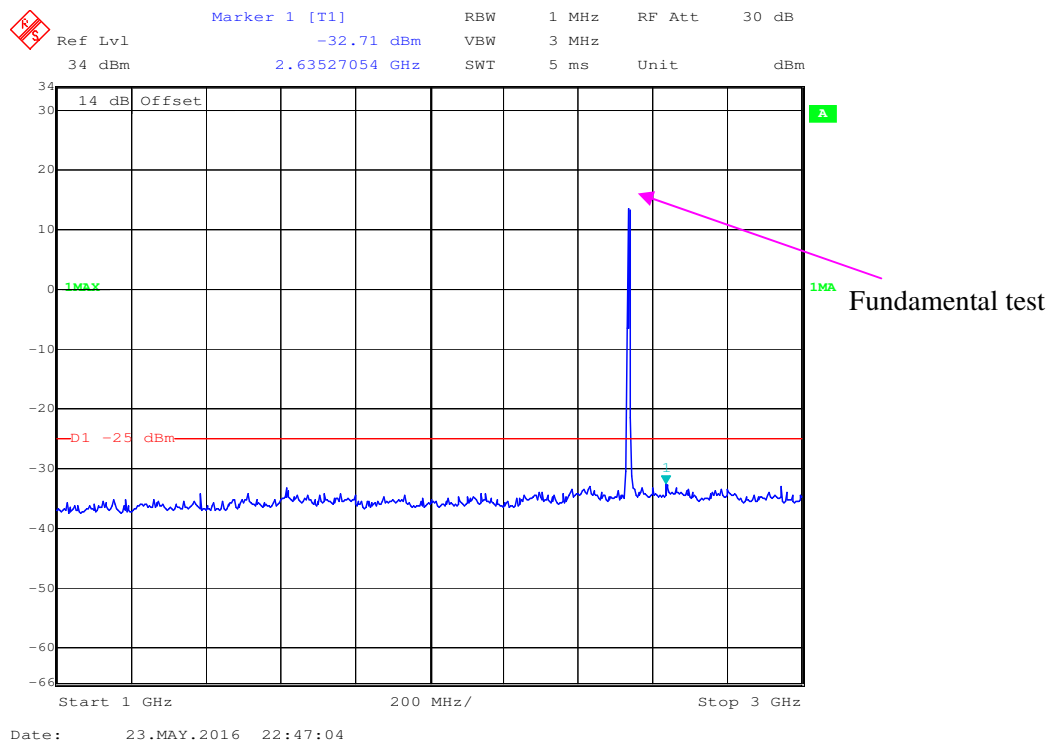


LTE Band 7:

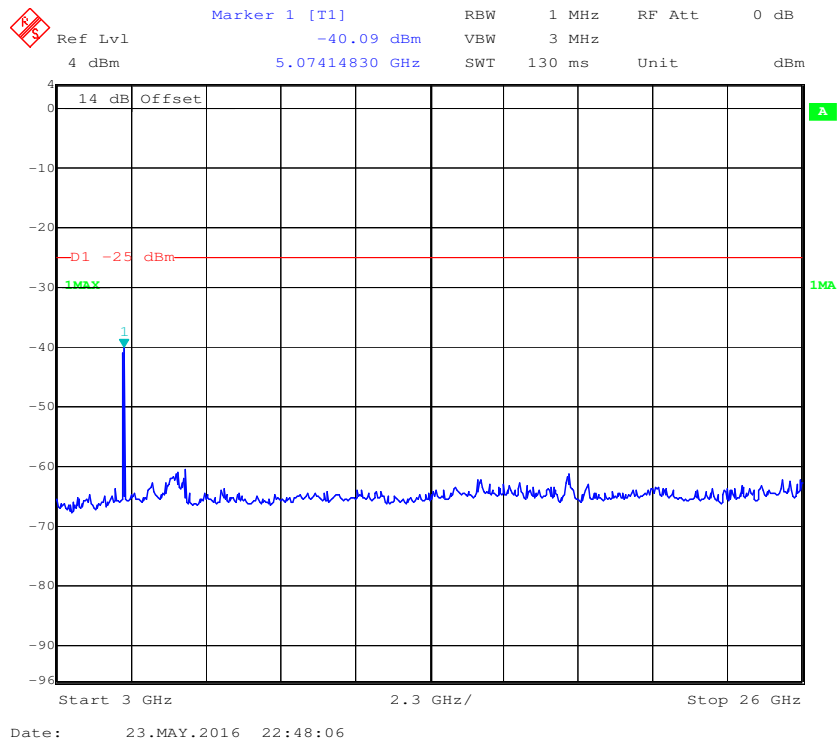
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



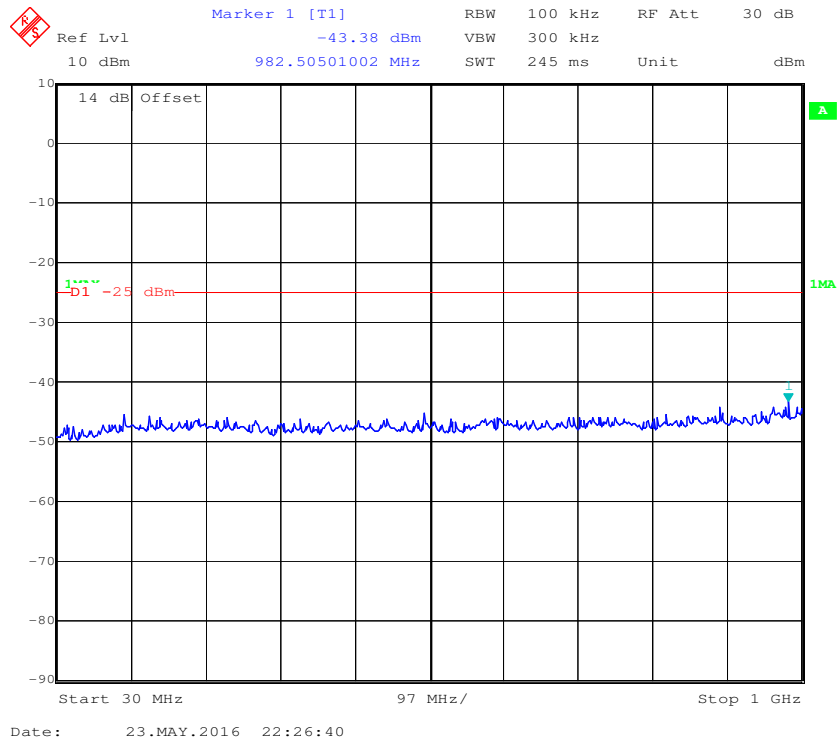
1 GHz - 3 GHz (5.0 MHz, Middle Channel)



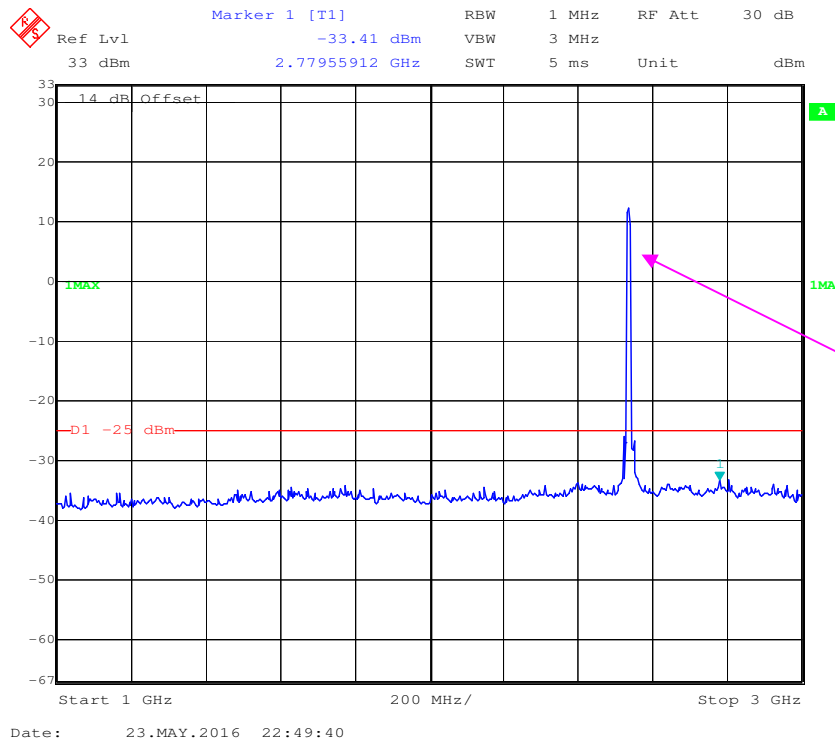
3 GHz – 26 GHz (5.0 MHz, Middle Channel)



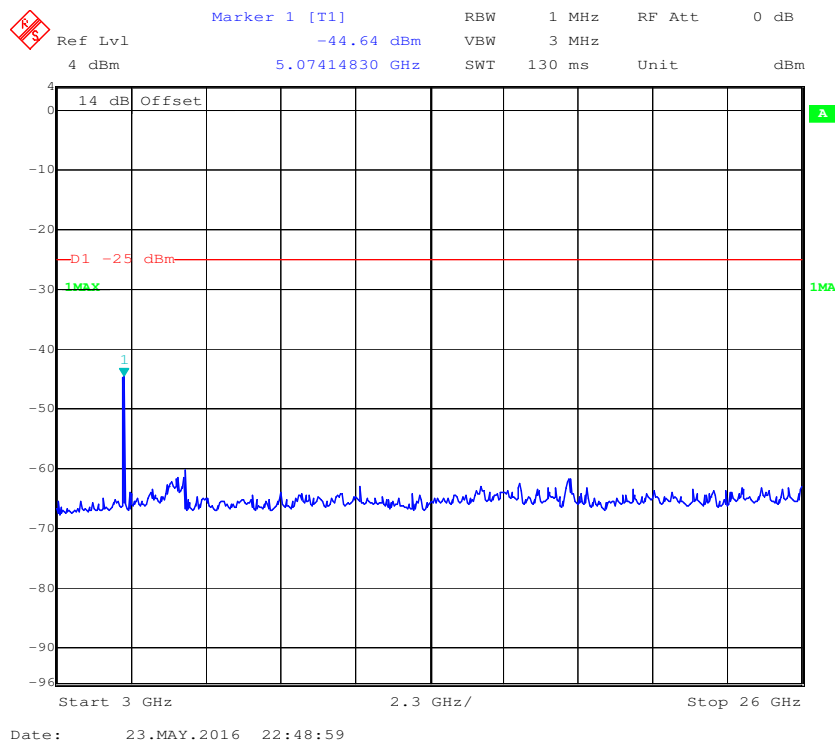
30 MHz - 1 GHz (10.0 MHz, Middle Channel)



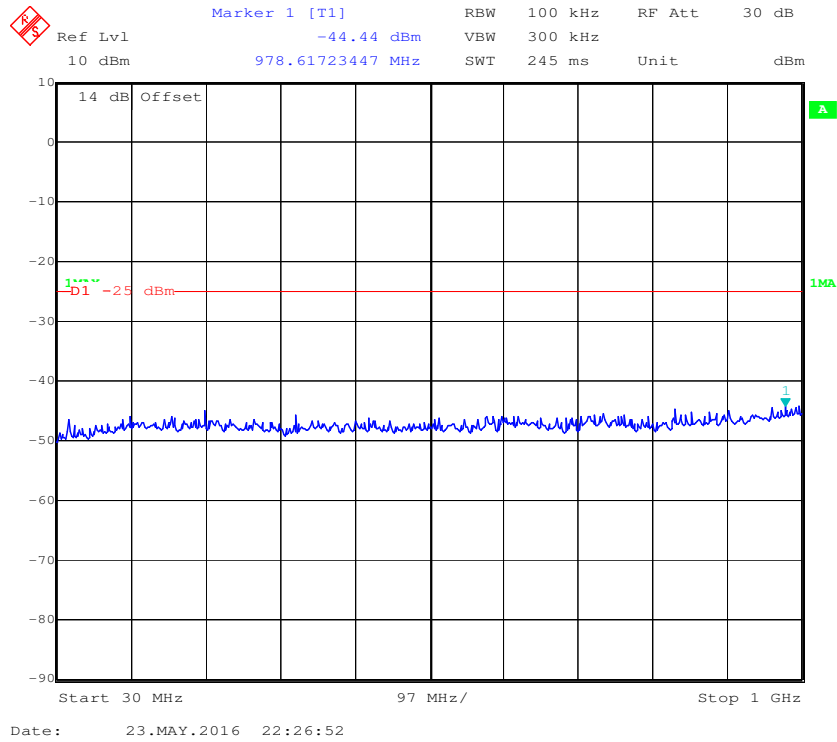
1 GHz – 3 GHz (10.0 MHz, Middle Channel)



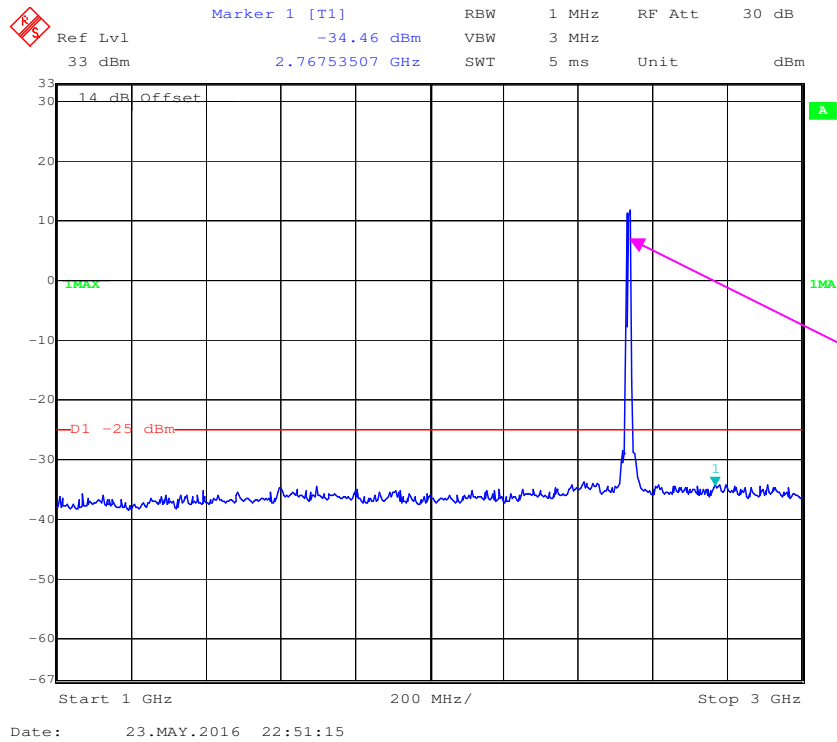
3 GHz – 26 GHz (10.0 MHz, Middle Channel)



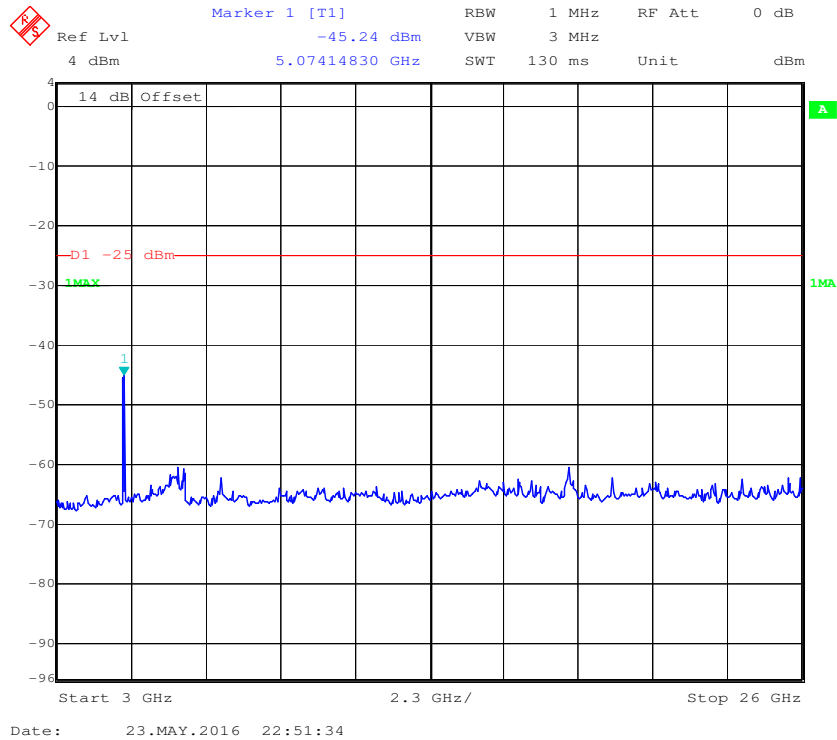
30 MHz - 1 GHz (15.0 MHz, Middle Channel)



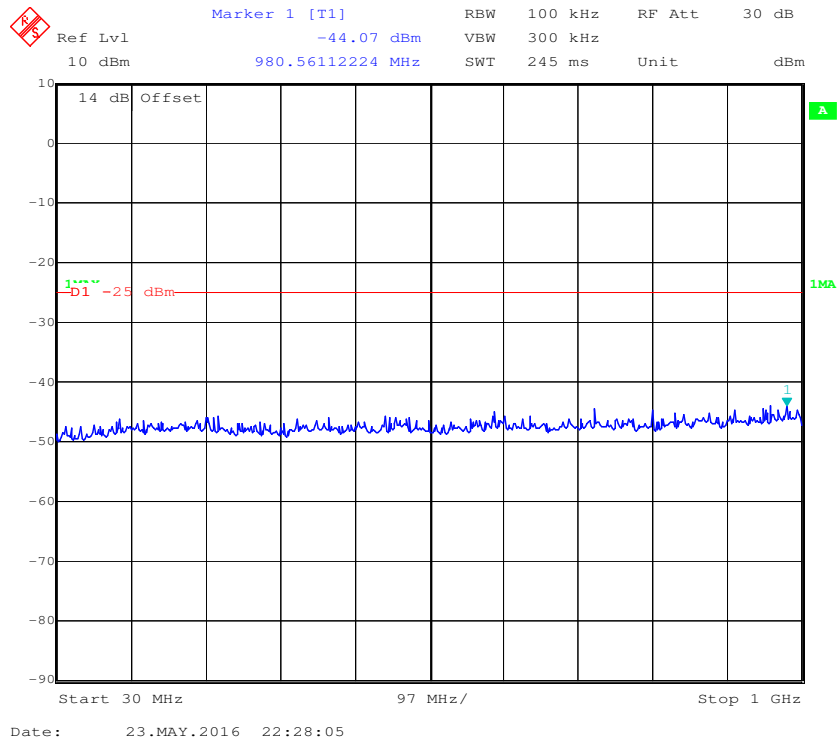
1 GHz – 3 GHz (15.0 MHz, Middle Channel)



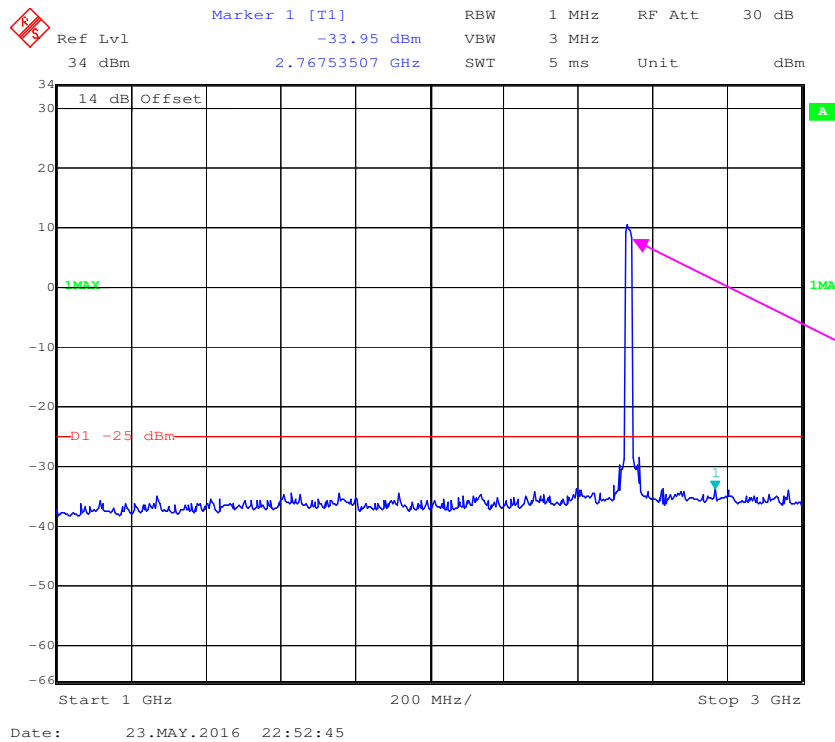
3 GHz – 26GHz (15.0 MHz, Middle Channel)



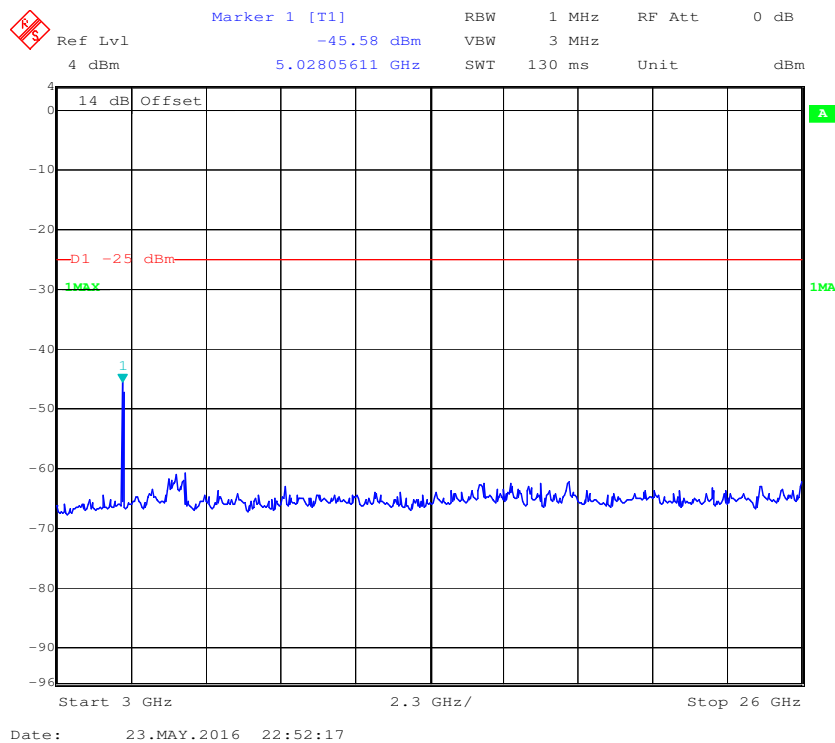
30 MHz - 1 GHz (20.0 MHz, Middle Channel)



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



3 GHz – 26 GHz (20.0 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 °C
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

The testing was performed by Xiangguang Kong on 2016-05-18.

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, Middle channel										
935.62	35.96	70	1.7	H	-61.0	0.70	0	-61.70	-13	48.70
935.62	34.71	233	1.6	V	-62.3	0.70	0	-63.00	-13	50.00
1673.20	67.79	13	1.2	H	-39.6	1.60	6.90	-34.30	-13	21.30
1673.20	62.28	66	1.2	V	-45.6	1.60	6.90	-40.30	-13	27.30
2509.80	55.97	160	1.8	H	-48.6	1.70	8.60	-41.70	-13	28.70
2509.80	57.06	309	1.0	V	-47.8	1.70	8.60	-40.90	-13	27.90
3346.40	49.67	168	1.3	H	-51.7	1.90	9.80	-43.80	-13	30.80
3346.40	49.61	152	2.4	V	-52.4	1.90	9.80	-44.50	-13	31.50
WCDMA Mode, High channel										
935.62	35.67	154	1.5	H	-61.3	0.70	0	-62.00	-13	49.00
935.62	34.51	276	1.5	V	-62.5	0.70	0	-63.20	-13	50.20
1692.80	53.28	110	2.0	H	-54.1	1.60	6.90	-48.80	-13	35.80
1692.80	53.45	349	2.3	V	-54.4	1.60	6.90	-49.10	-13	36.10
2539.20	55.95	142	1.6	H	-48.6	1.70	8.60	-41.70	-13	28.70
2539.20	55.64	20	2.5	V	-49.3	1.70	8.60	-42.40	-13	29.40

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, High channel										
935.62	34.65	237	1.5	H	-62.3	0.70	0	-63.00	-13	50.00
935.62	34.49	233	2.4	V	-62.5	0.70	0	-63.20	-13	50.20
3819.60	52.93	105	1.4	H	-46.5	1.90	9.90	-38.50	-13	25.50
3819.60	51.11	345	1.2	V	-48.0	1.90	9.90	-40.00	-13	27.00
WCDMA Mode, High channel										
935.62	34.25	136	1.3	H	-62.7	0.70	0	-63.40	-13	50.40
935.62	35.25	235	2.1	V	-61.7	0.70	0	-62.40	-13	49.40
3814.80	50.27	186	1.8	H	-49.2	1.90	9.90	-41.20	-13	28.20
3814.80	51.42	66	1.3	V	-47.7	1.90	9.90	-39.70	-13	26.70

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 4										
935.62	34.96	58	1.5	H	-62.0	0.70	0	-62.70	-13	49.70
935.62	35.59	306	1.9	V	-61.4	0.70	0	-62.10	-13	49.10
3465.00	44.31	303	1.2	H	-53.2	1.90	10.00	-45.10	-13	32.10
3465.00	43.51	226	2.2	V	-54.7	1.90	10.00	-46.60	-13	33.60
Band 7										
935.62	34.24	149	2.5	H	-62.8	0.70	0	-63.50	-25	38.50
935.62	35.61	74	1.7	V	-61.4	0.70	0	-62.10	-25	37.10
5070.00	38.81	272	1.2	H	-57.5	2.30	10.10	-49.70	-25	24.70
5070.00	38.87	336	1.2	V	-56.6	2.30	10.10	-48.80	-25	23.80

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.

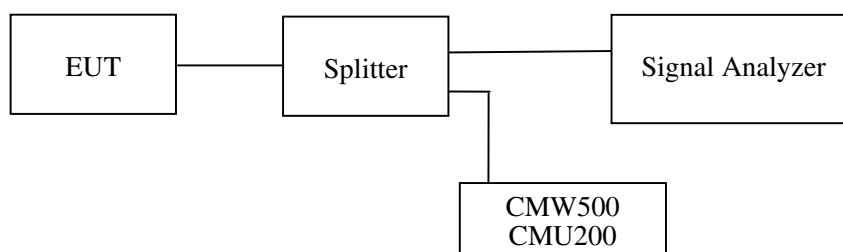
According to FCC §27.53, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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**

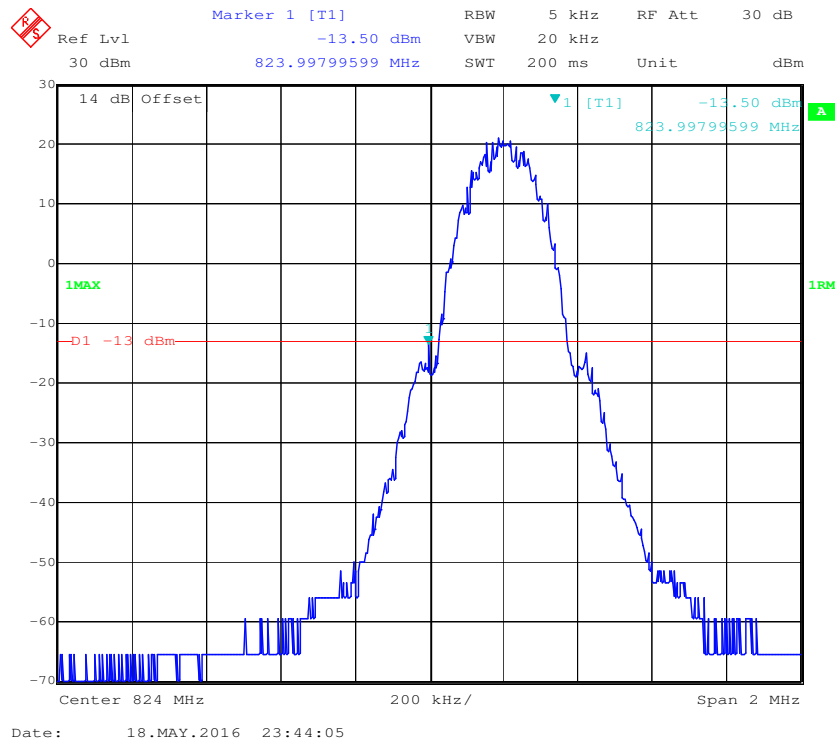
Temperature:	24-25 °C
Relative Humidity:	50-53 %
ATM Pressure:	101.0kPa

The testing was performed by Xiangguang Kong from 2016-05-18 to 2016-05-20.

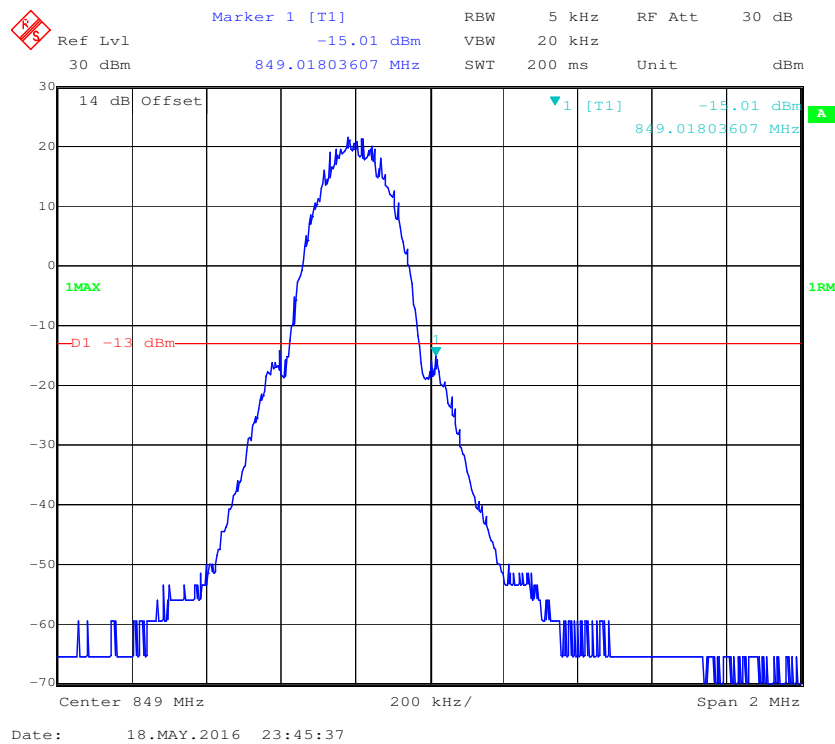
EUT operation mode: Transmitting

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

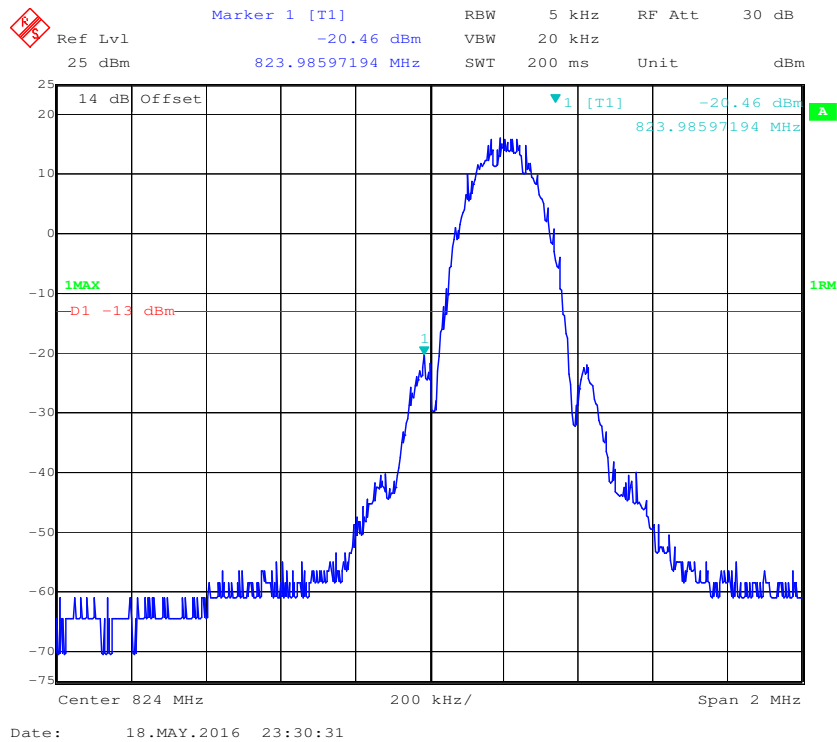
Cellular Band, Left Band Edge for GSM (GMSK) Mode



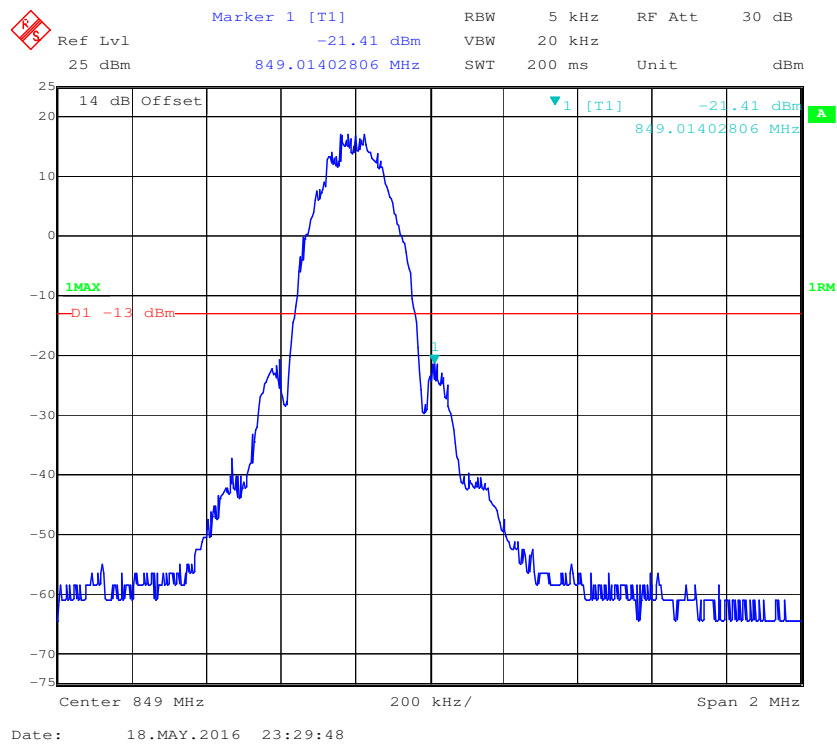
Cellular Band, Right Band Edge for GSM (GMSK) Mode



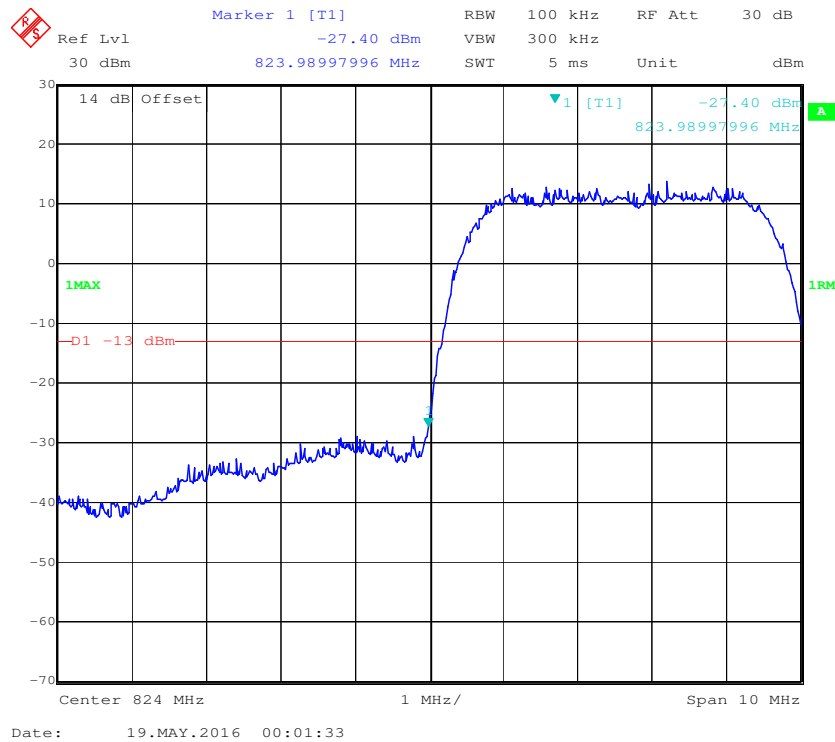
Cellular Band, Left Band Edge for EGPRS Mode



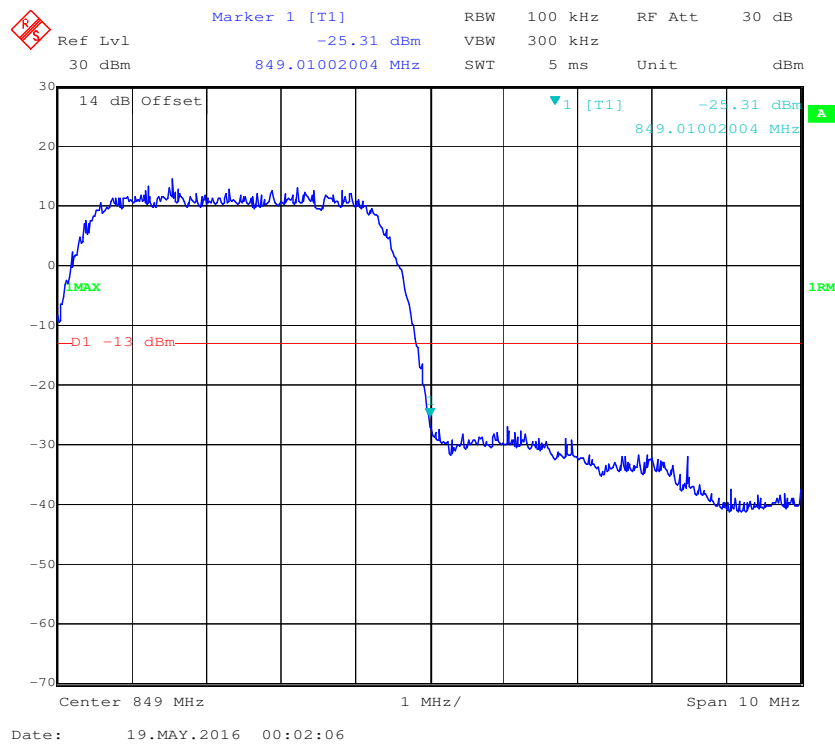
Cellular Band, Right Band Edge for EGPRS Mode

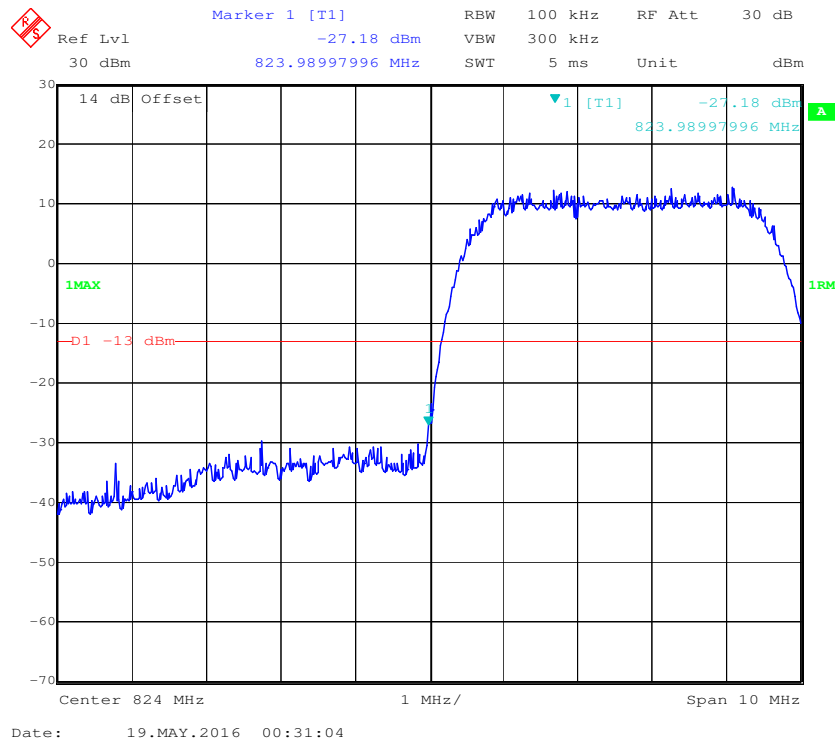
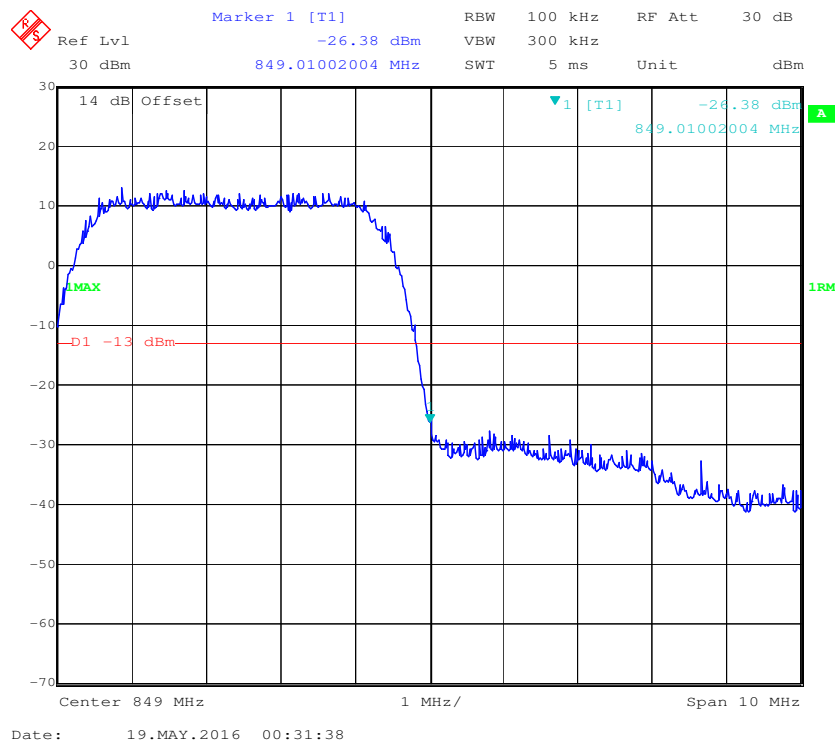


Cellular Band, Left Band Edge for RMC (BPSK) Mode

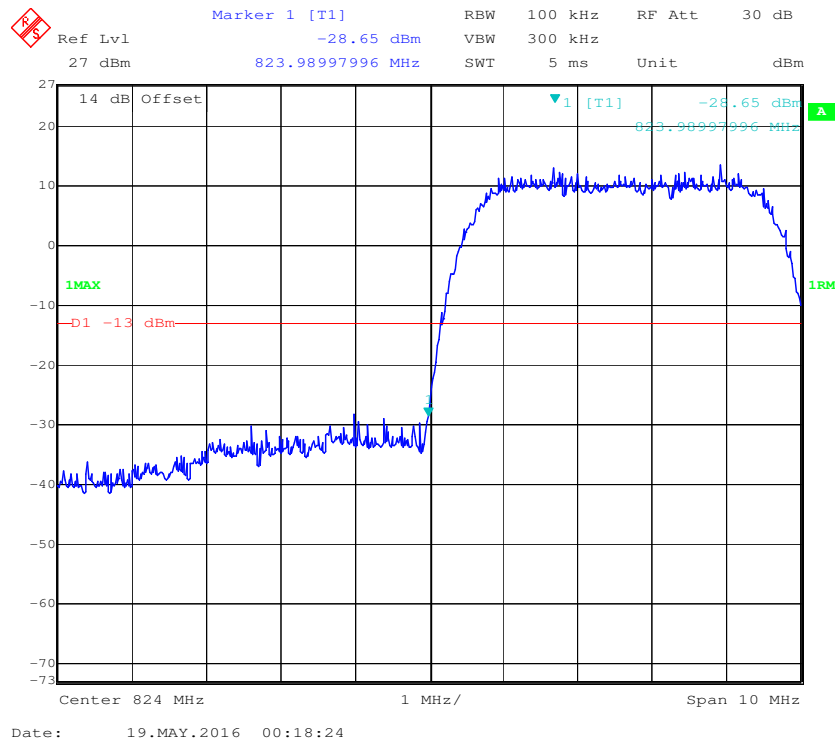


Cellular Band, Right Band Edge for RMC (BPSK) Mode

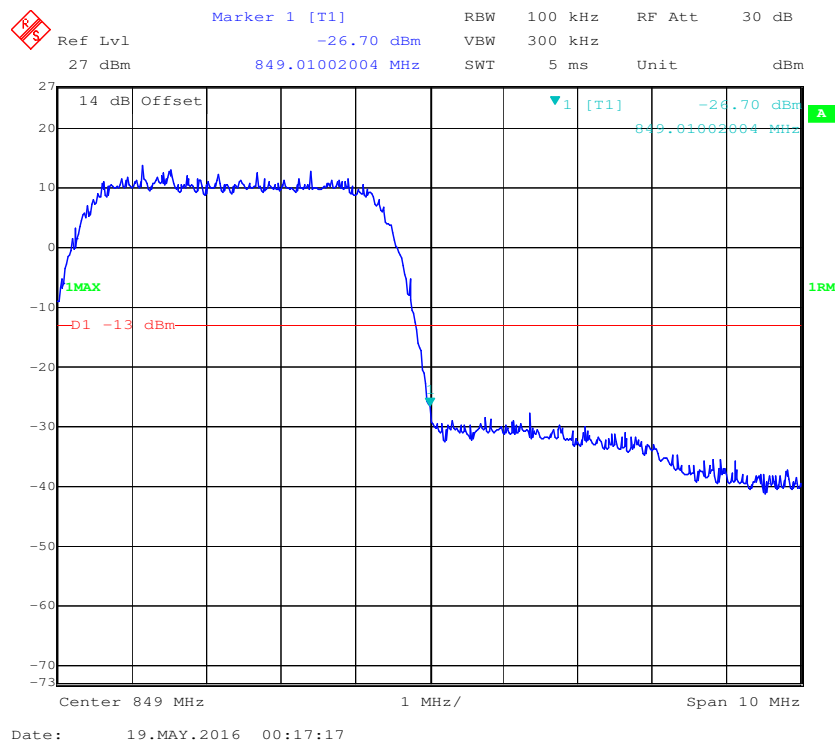


Cellular Band, Left Band Edge for HSDPA (16QAM) Mode**Cellular Band, Right Band Edge for HSDPA (16QAM) Mode**

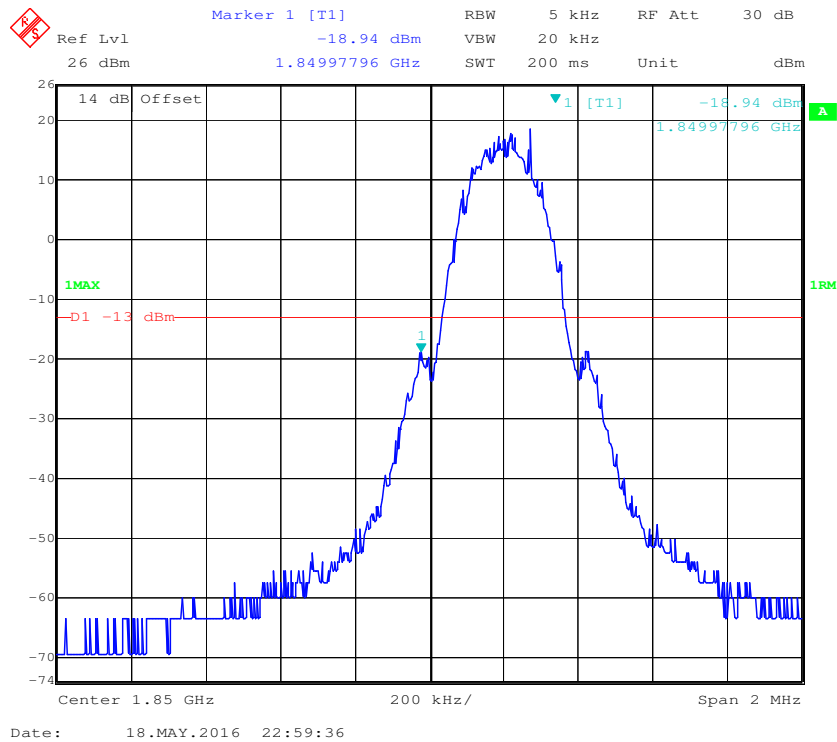
Cellular Band, Left Band Edge for HSUPA (BPSK) Mode



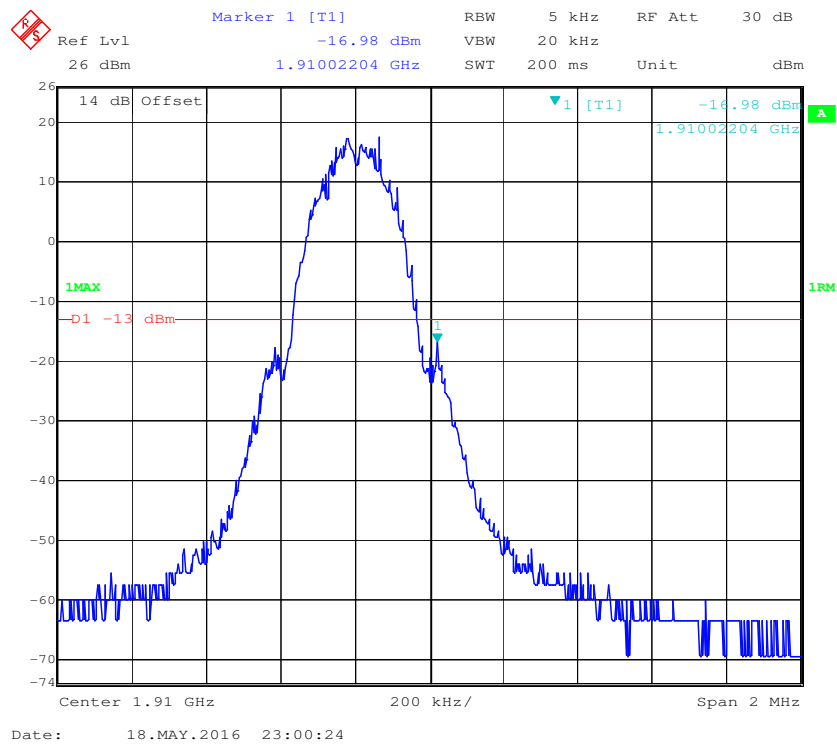
Cellular Band, Right Band Edge for HSUPA (BPSK) Mode



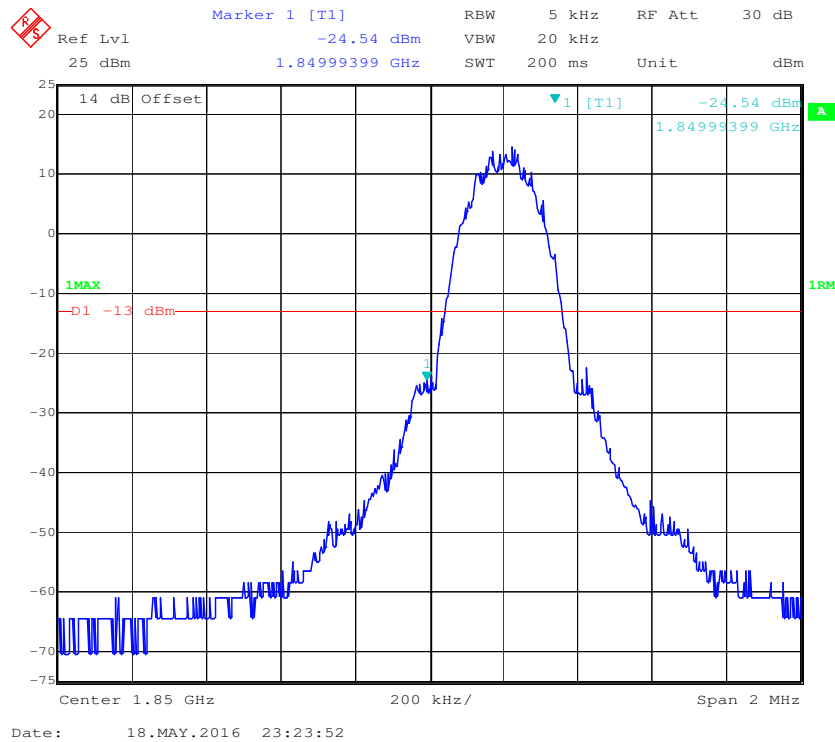
PCS Band, Left Band Edge for GSM (GMSK) Mode



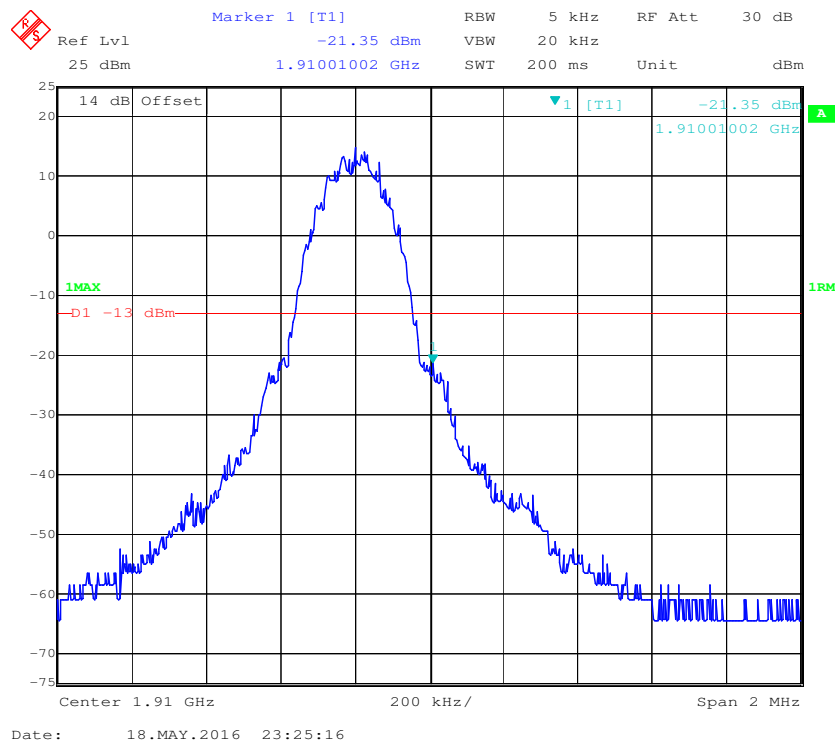
PCS Band, Right Band Edge for GSM (GMSK) Mode



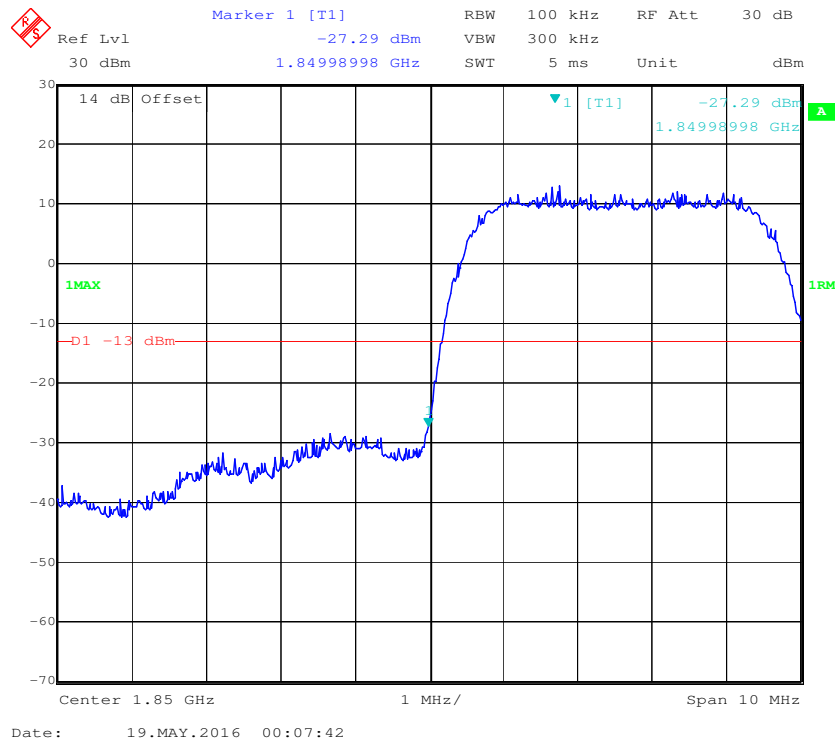
PCS Band, Left Band Edge for EGPRS Mode



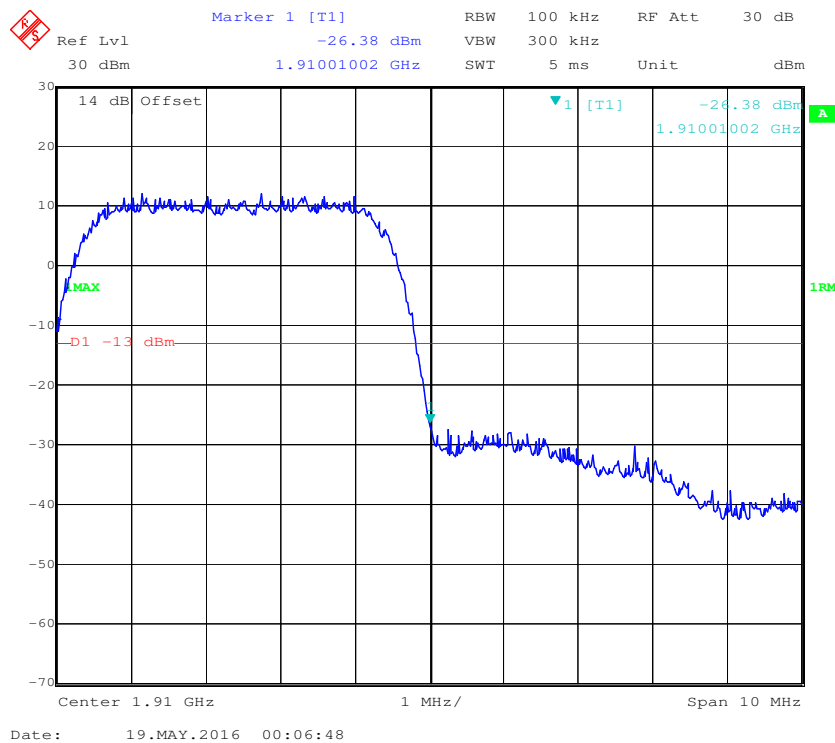
PCS Band, Right Band Edge for EGPRS Mode



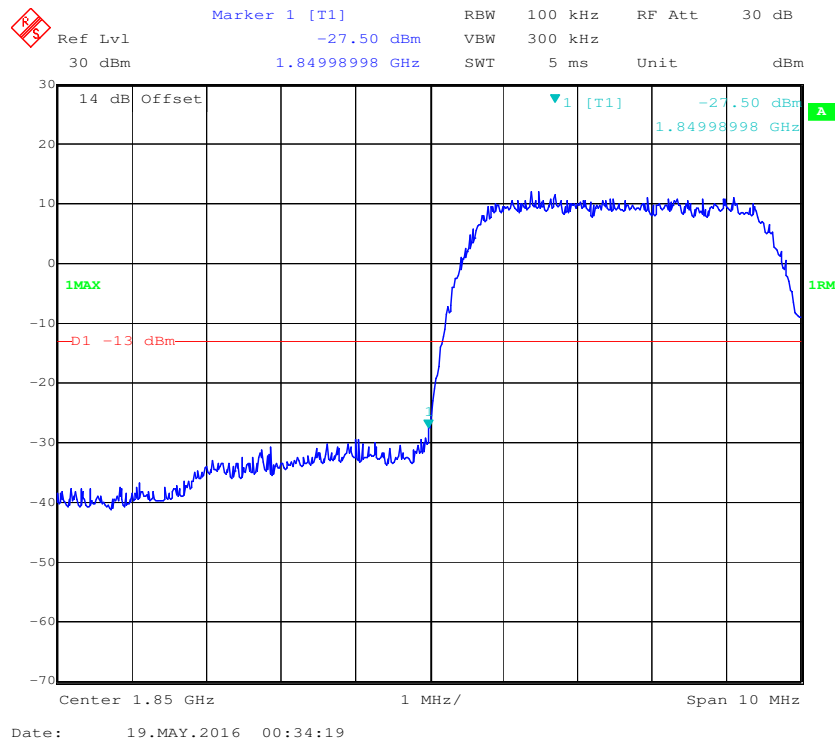
PCS Band, Left Band Edge for RMC (BPSK) Mode



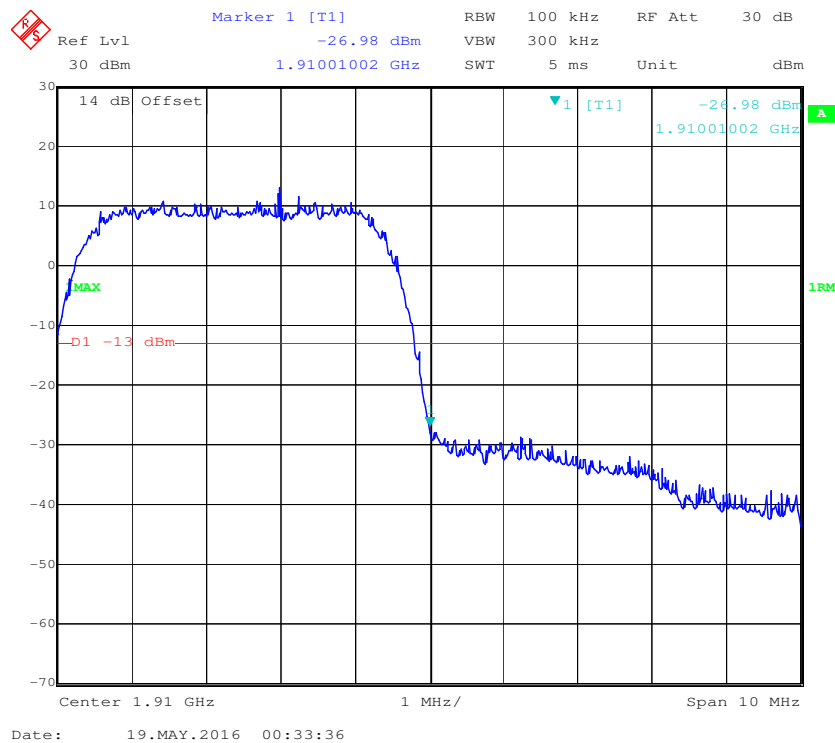
PCS Band, Right Band Edge for RMC (BPSK) Mode



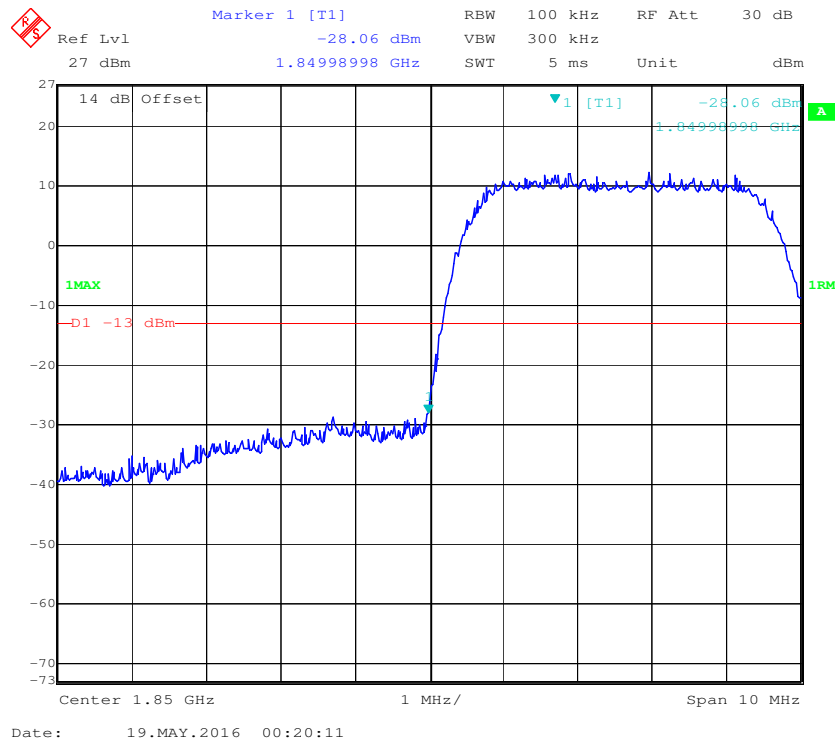
PCS Band, Left Band Edge for HSDPA (16QAM) Mode



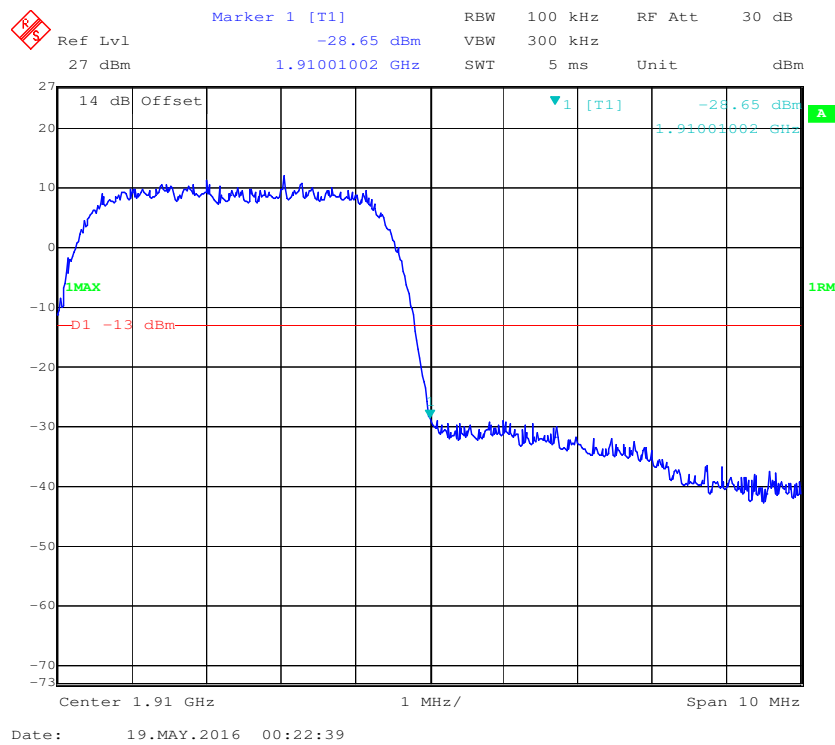
PCS Band, Right Band Edge for HSDPA (16QAM) Mode



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

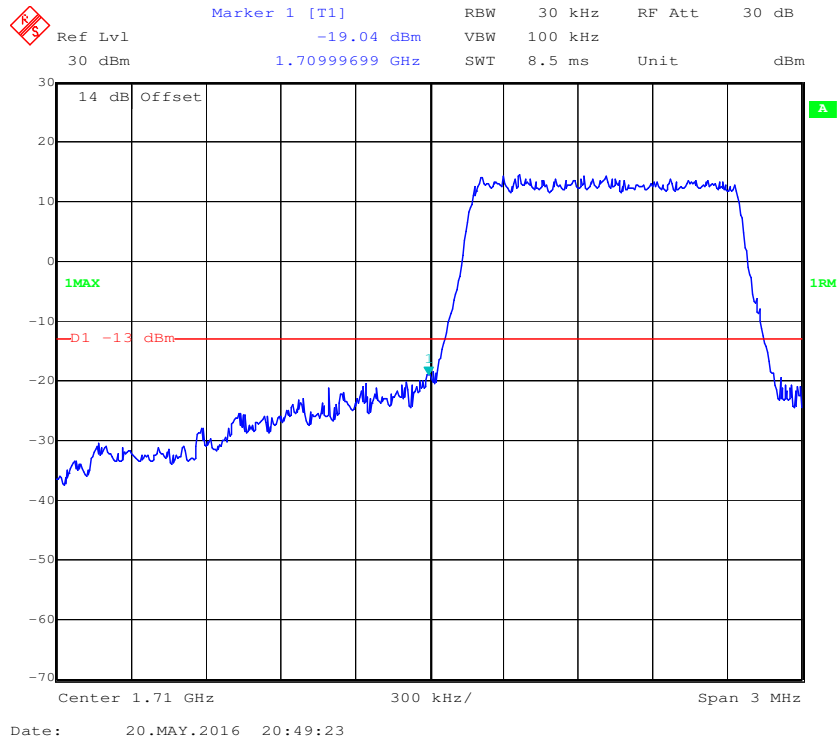


PCS Band, Right Band Edge for HSUPA (BPSK) Mode

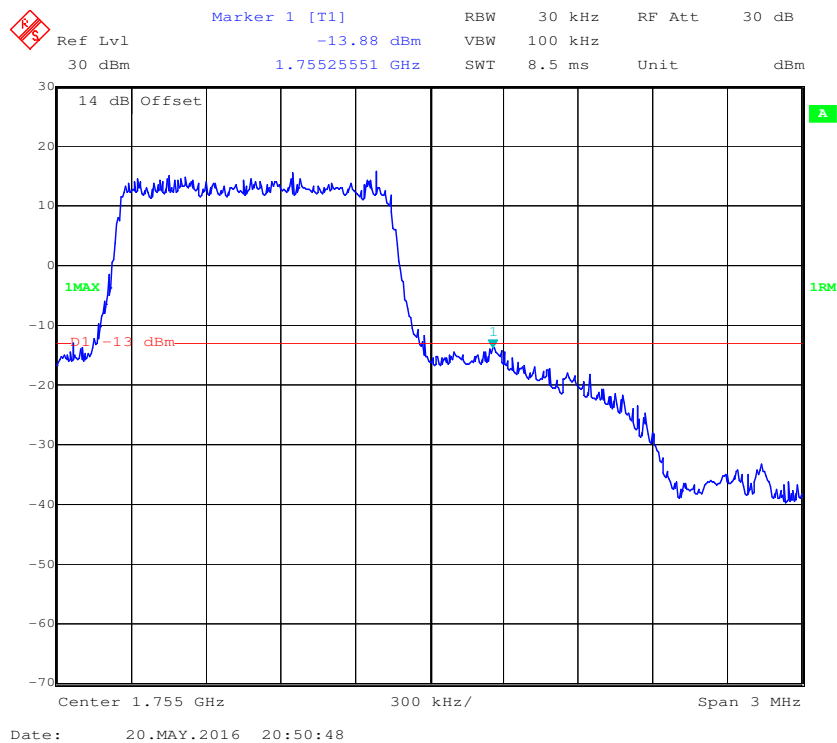


Band 4:

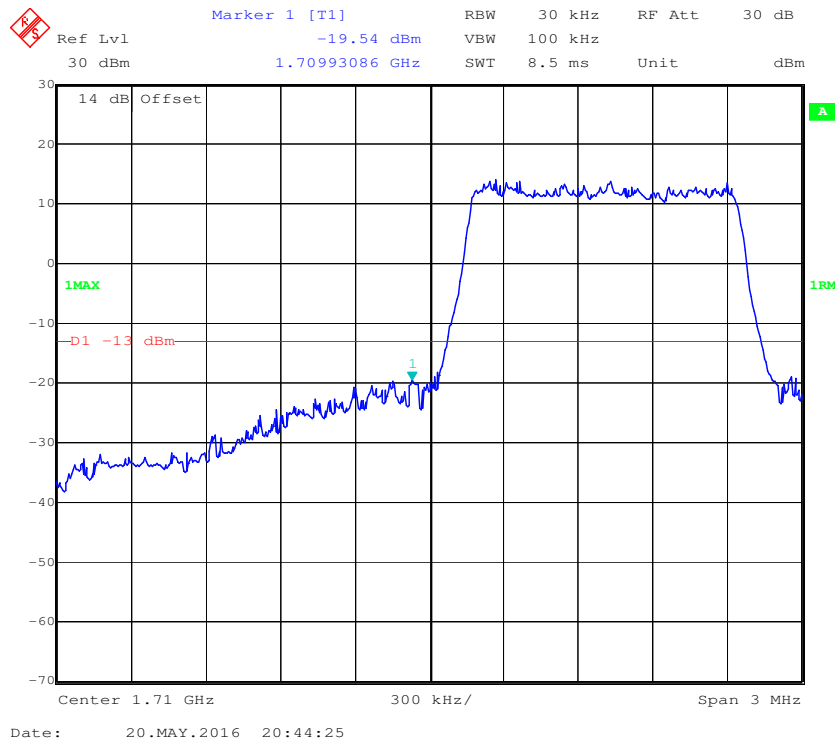
QPSK (1.4 MHz, FULL RB) - Left Band Edge



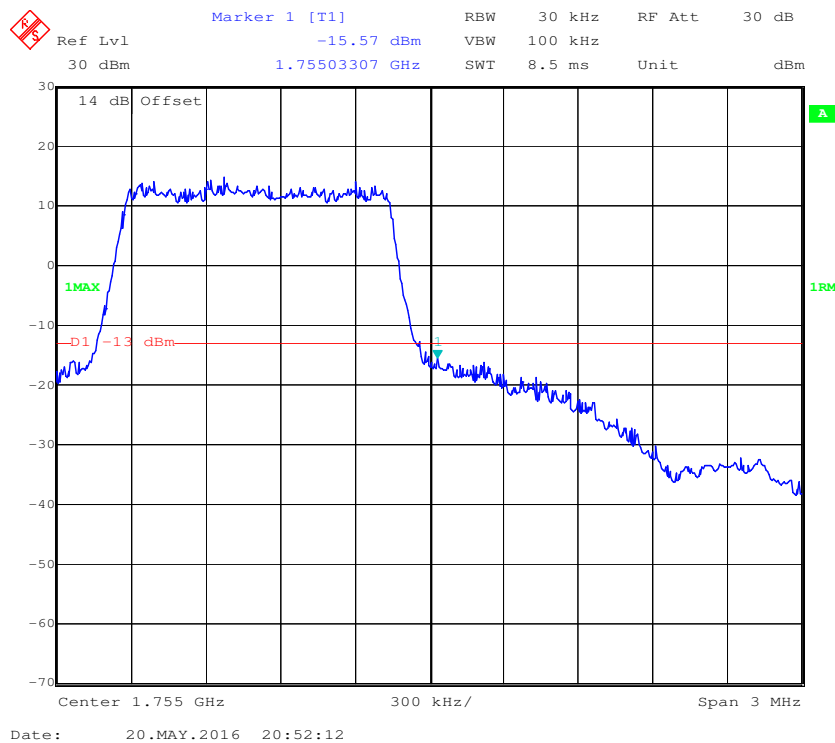
QPSK (1.4 MHz, FULL RB) - Right Band Edge



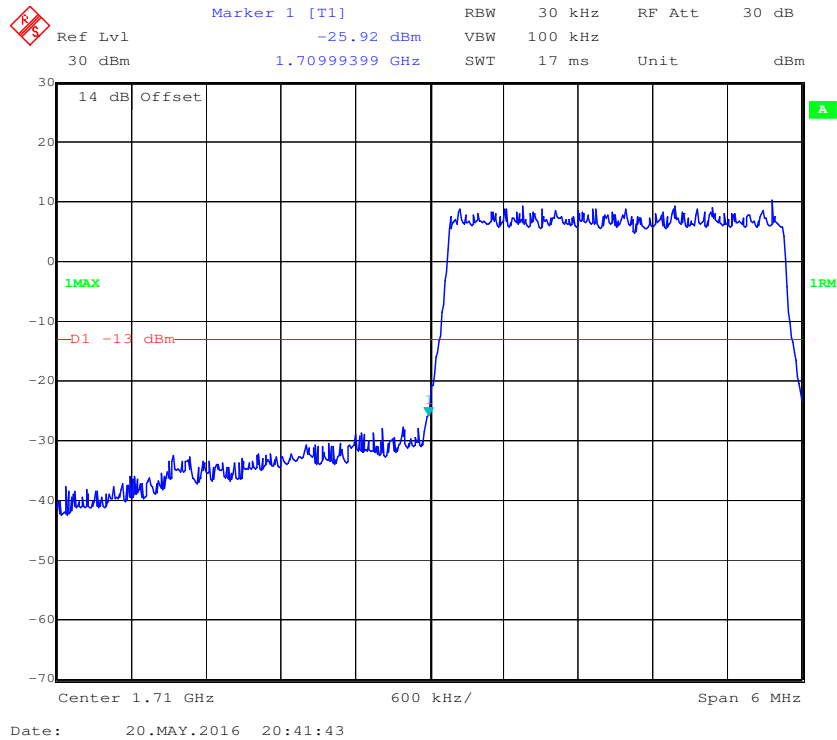
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



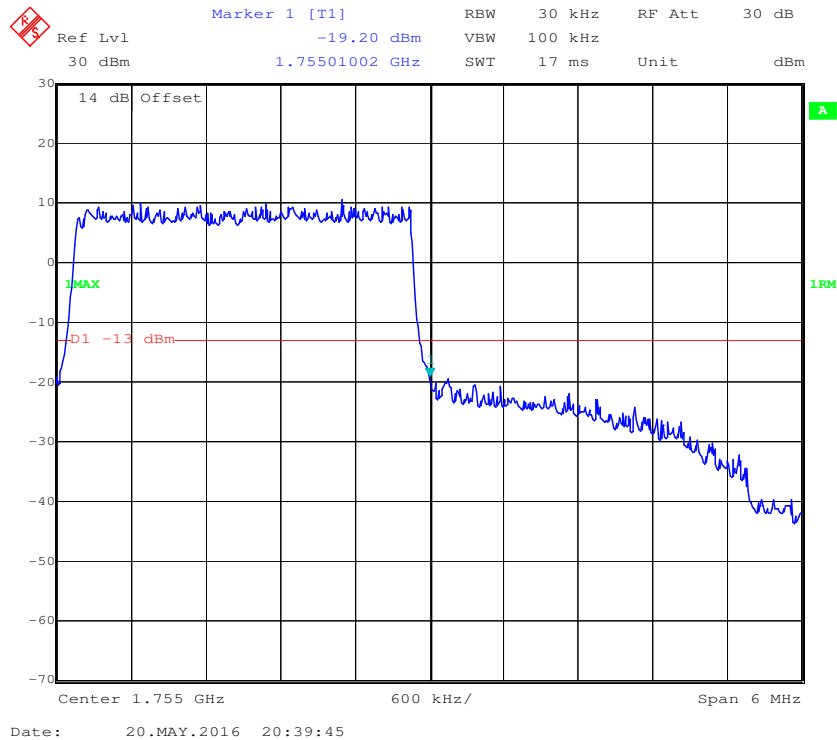
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



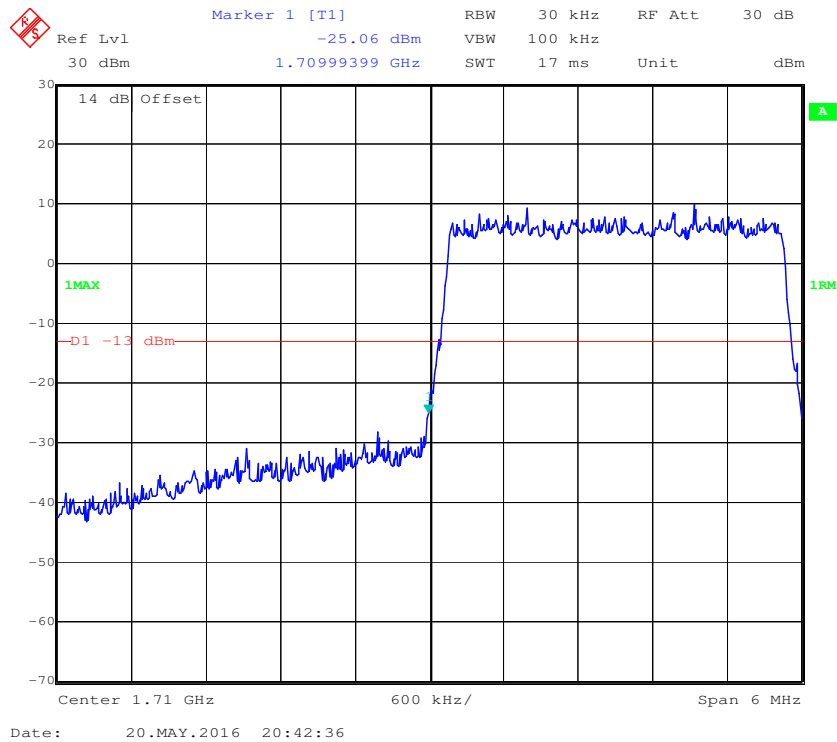
QPSK (3.0 MHz, FULL RB) - Left Band Edge



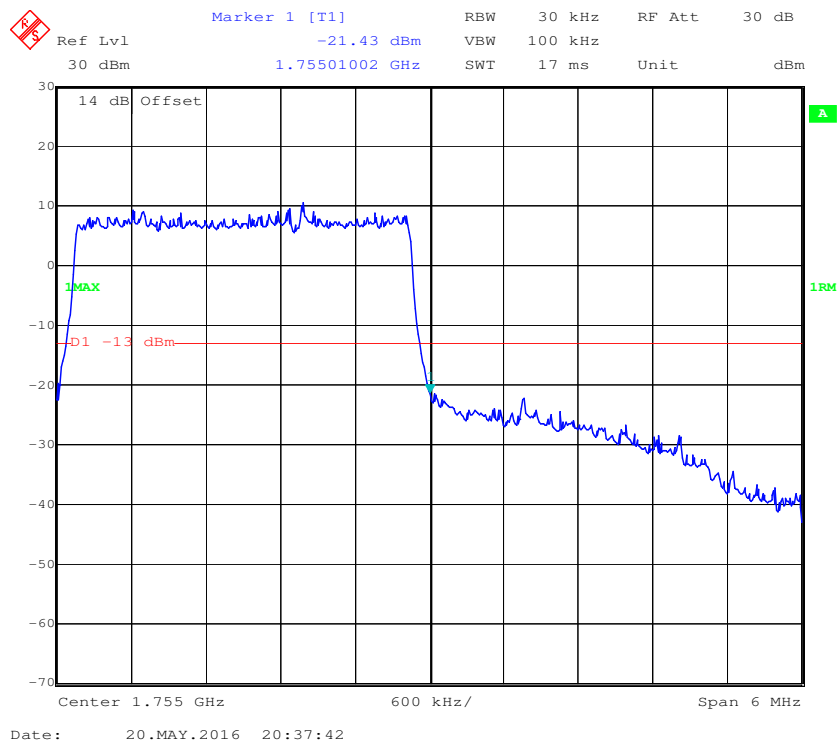
QPSK (3.0 MHz, FULL RB) - Right Band Edge



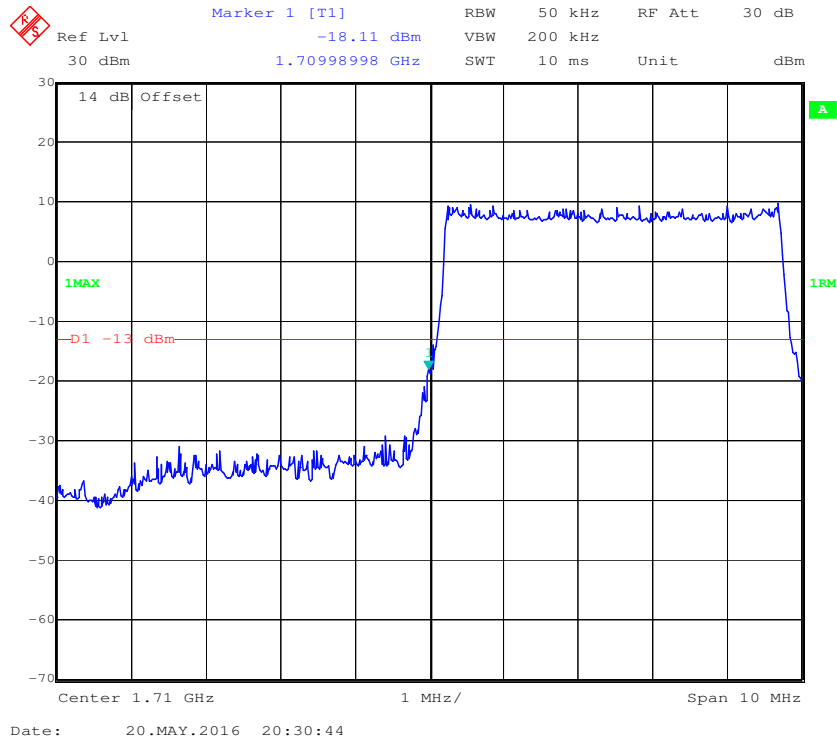
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



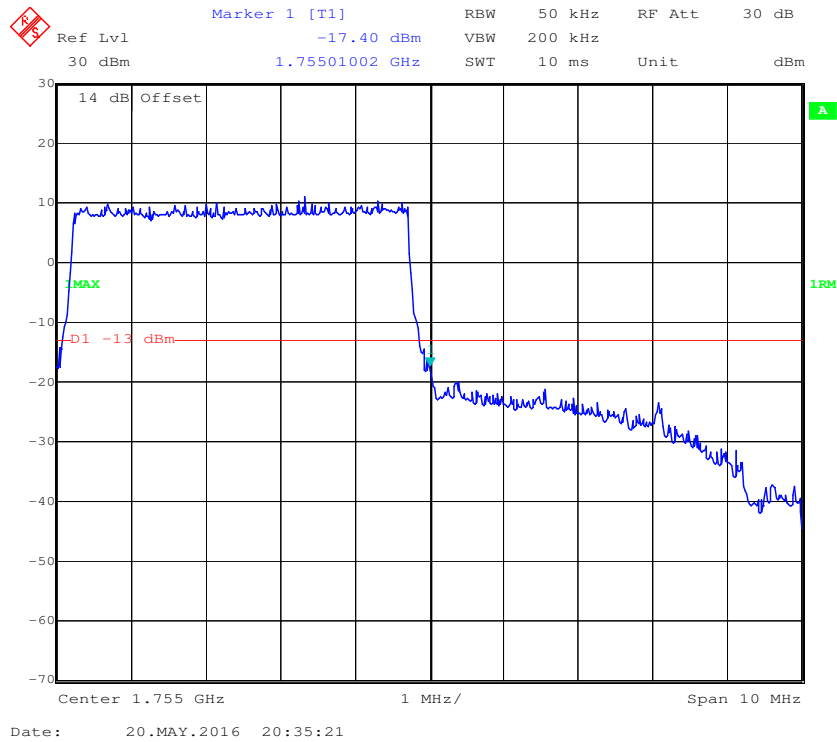
16-QAM (3.0 MHz, FULL RB) - Right Band Edge



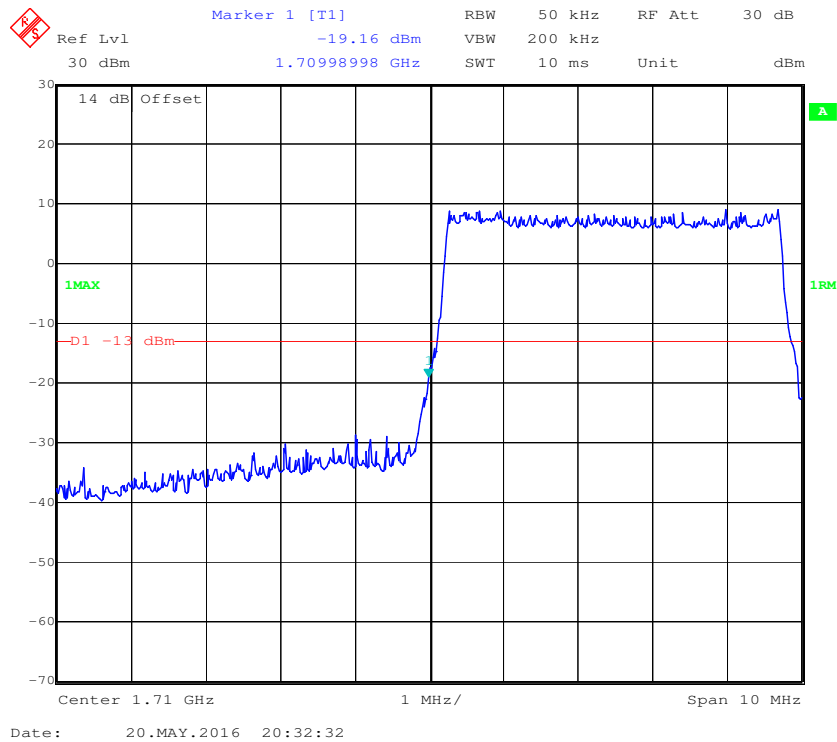
QPSK (5.0 MHz, FULL RB) - Left Band Edge



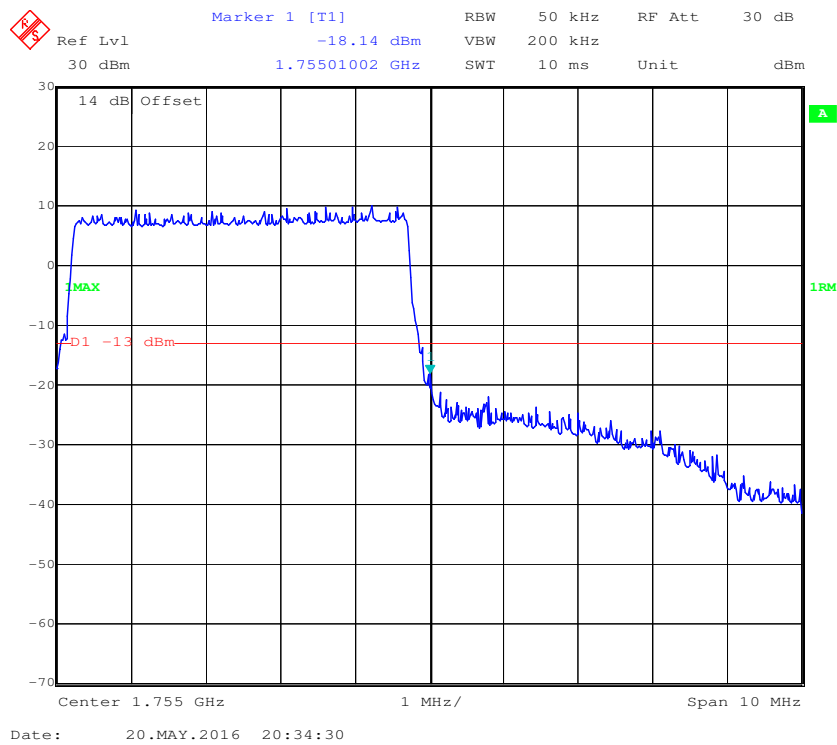
QPSK (5.0 MHz, FULL RB) - Right Band Edge



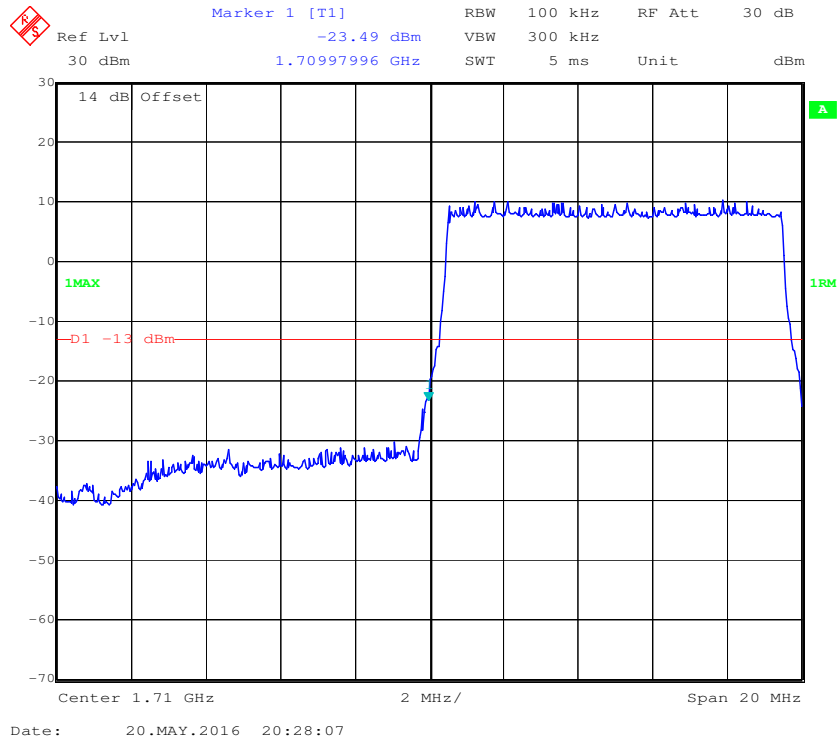
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



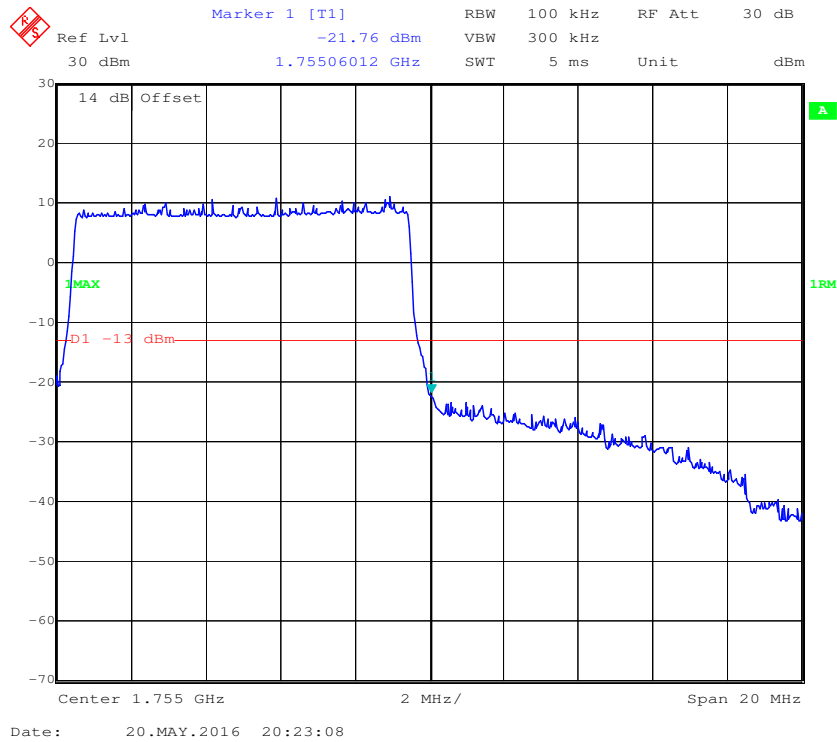
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



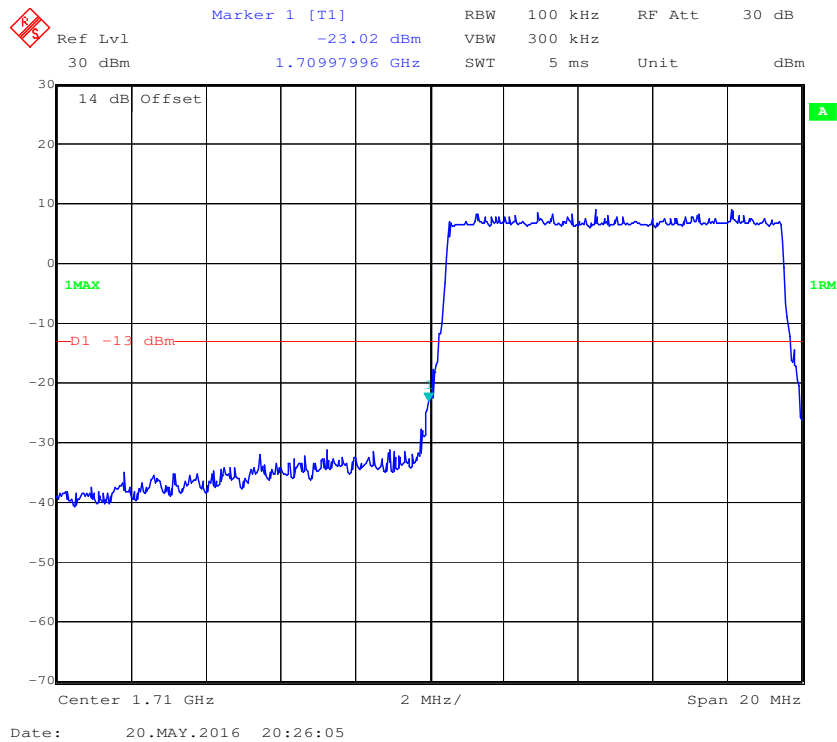
QPSK (10.0 MHz, FULL RB) - Left Band Edge



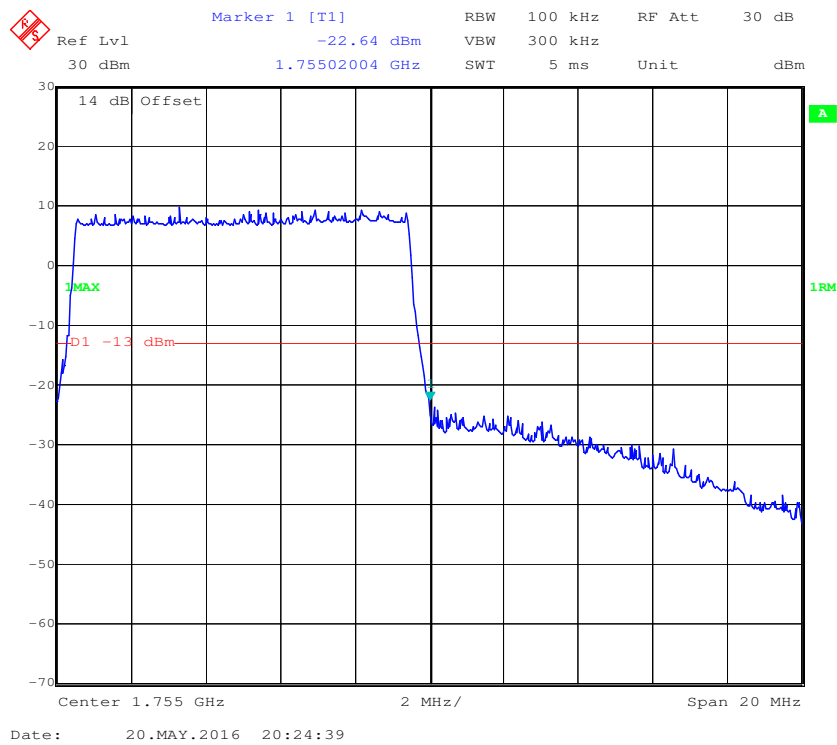
QPSK (10.0 MHz, FULL RB) - Right Band Edge



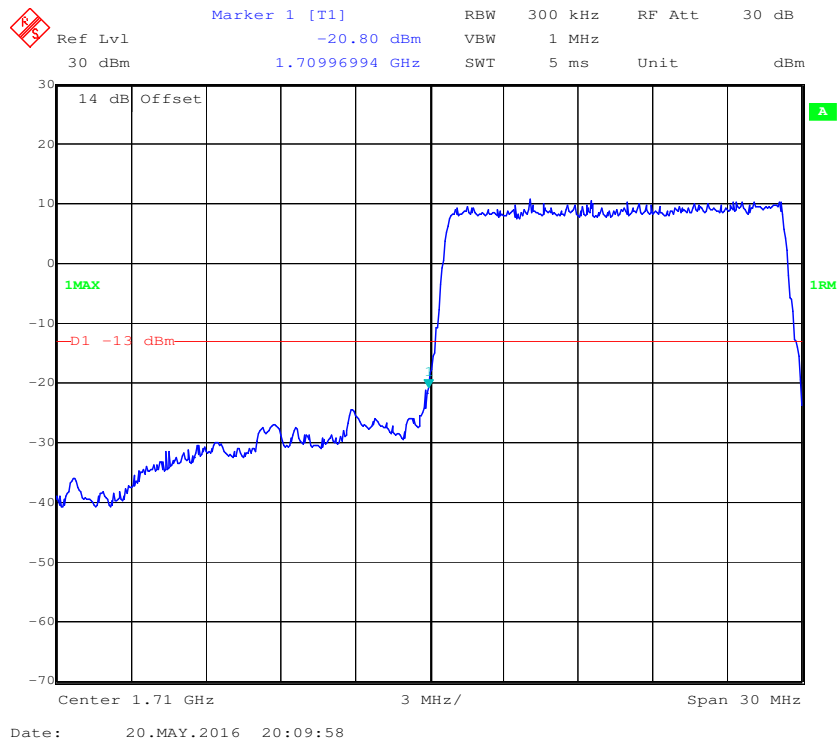
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



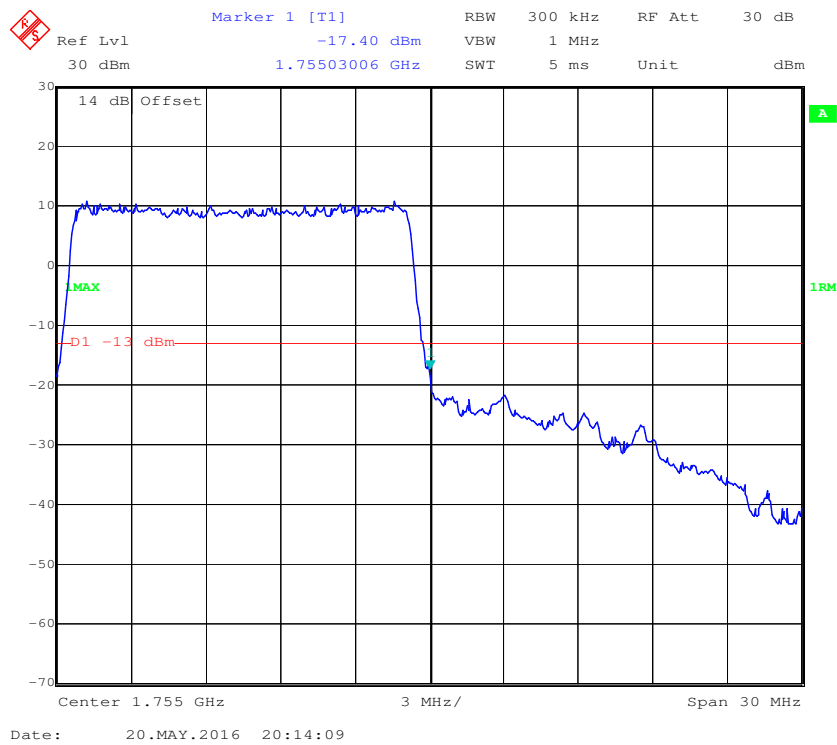
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



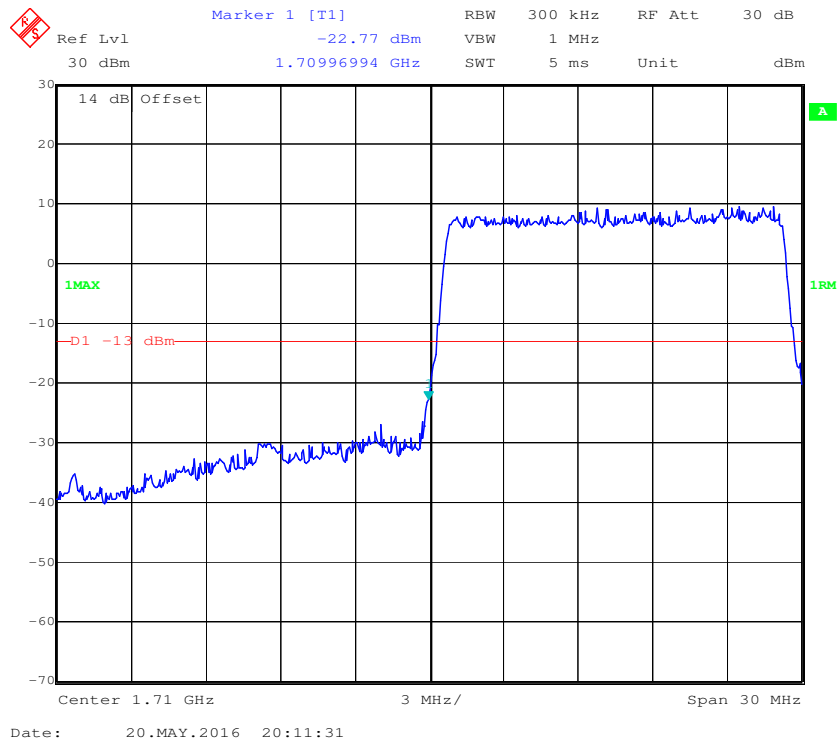
QPSK (15.0 MHz, FULL RB) - Left Band Edge



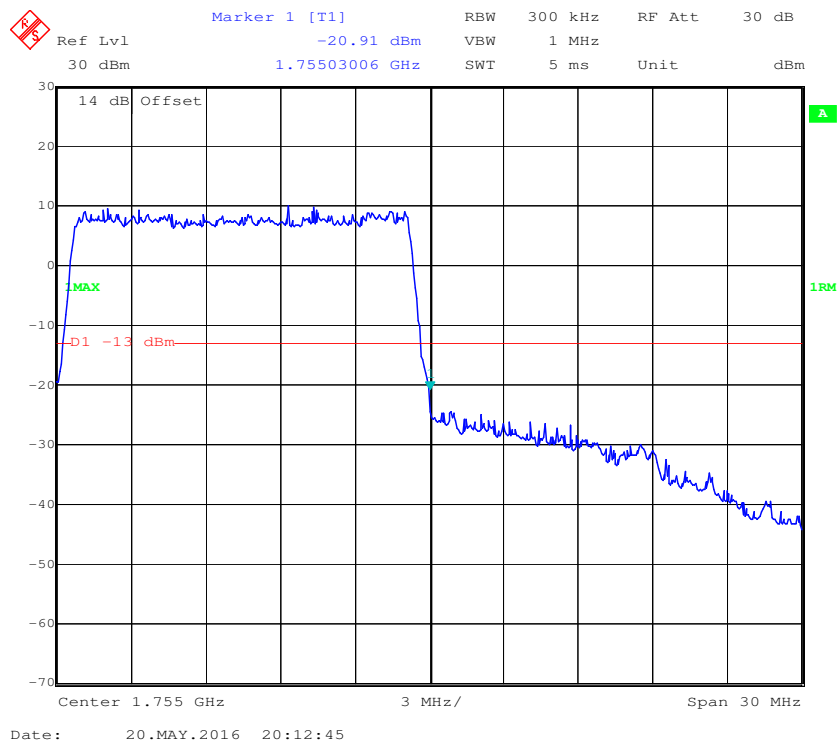
QPSK (15.0 MHz, FULL RB) - Right Band Edge



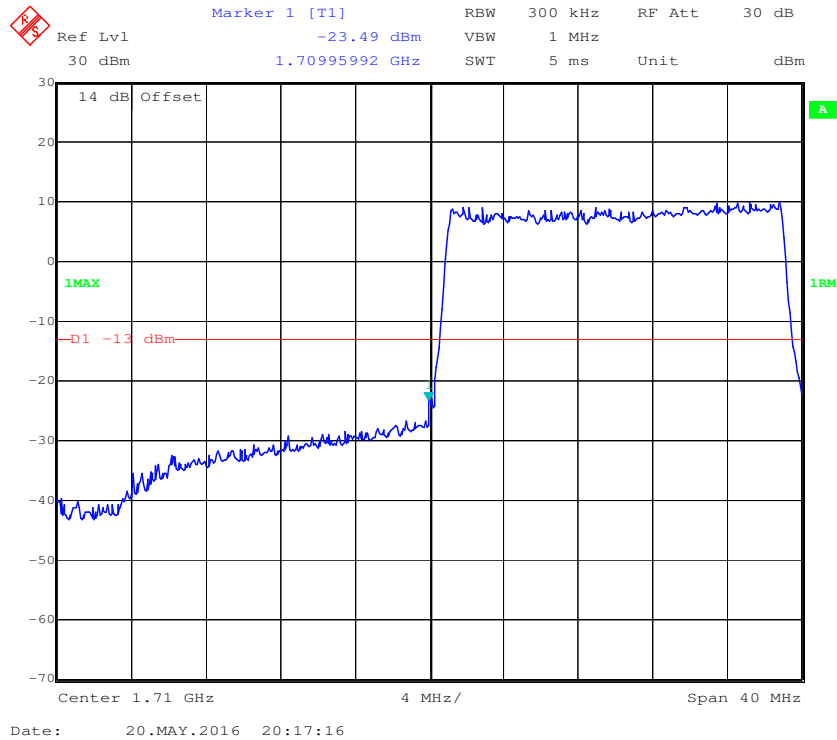
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



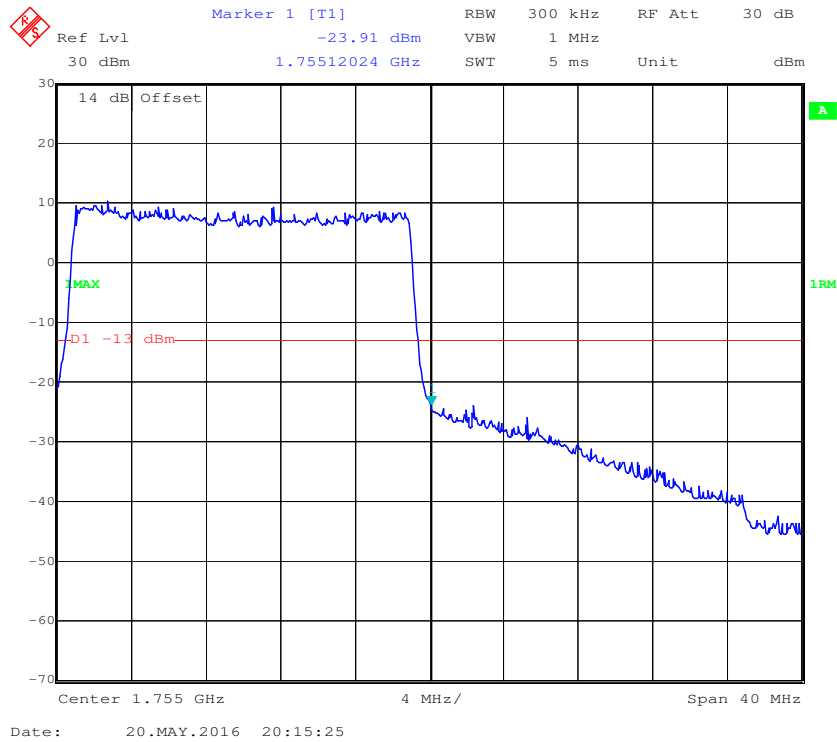
16-QAM (15.0 MHz, FULL RB) - Right Band Edge



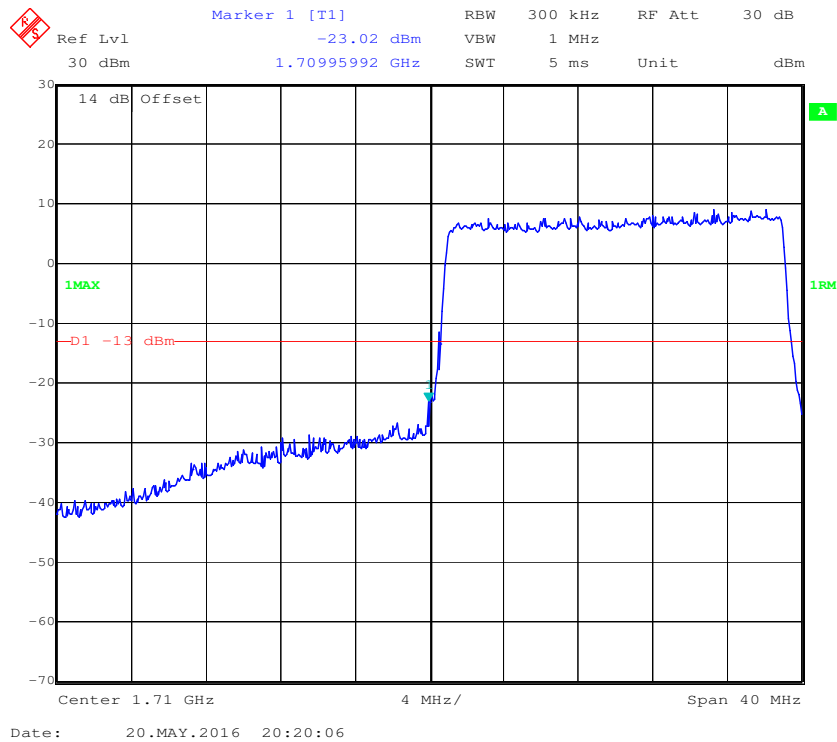
QPSK (20.0 MHz, FULL RB) - Left Band Edge



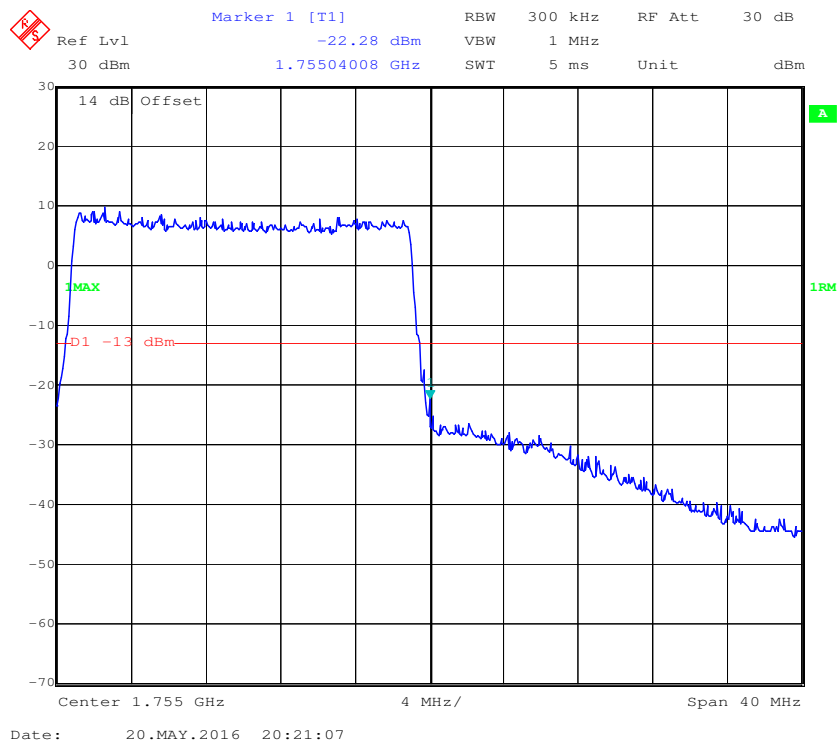
QPSK (20.0 MHz, FULL RB) - Right Band Edge



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

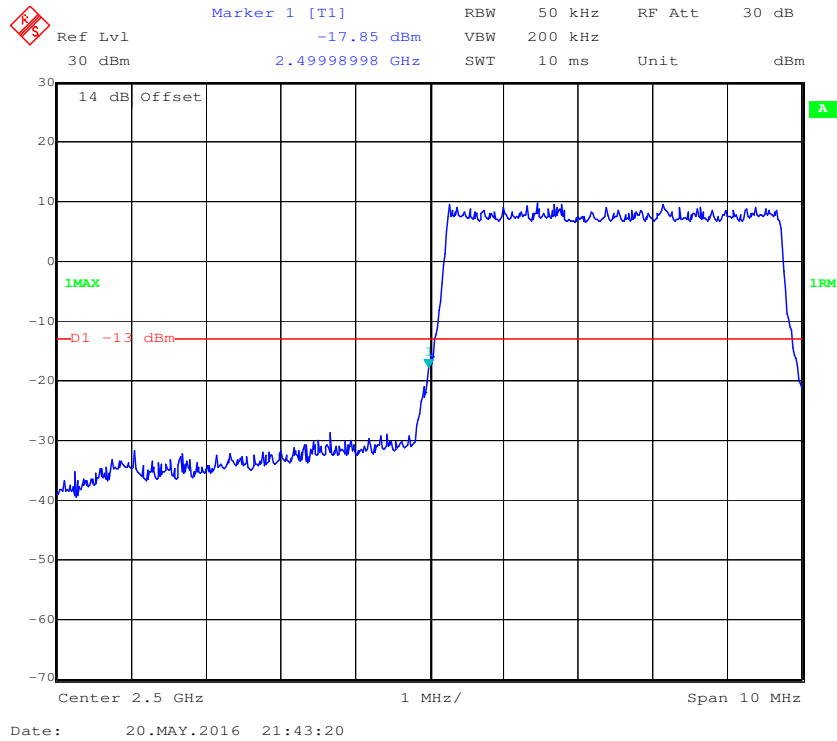


16-QAM (20.0 MHz, FULL RB) - Right Band Edge

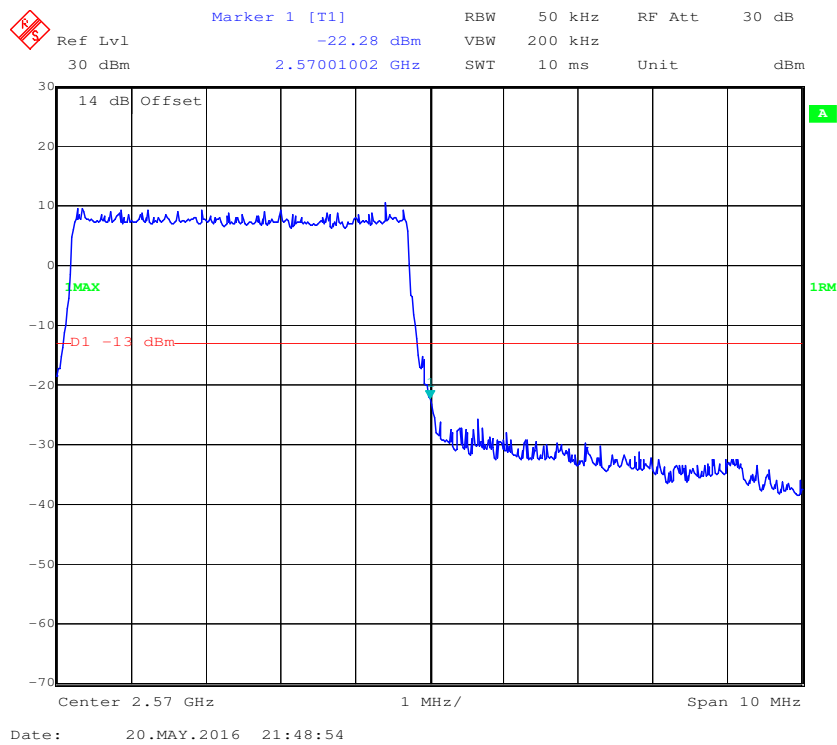


Band 7:

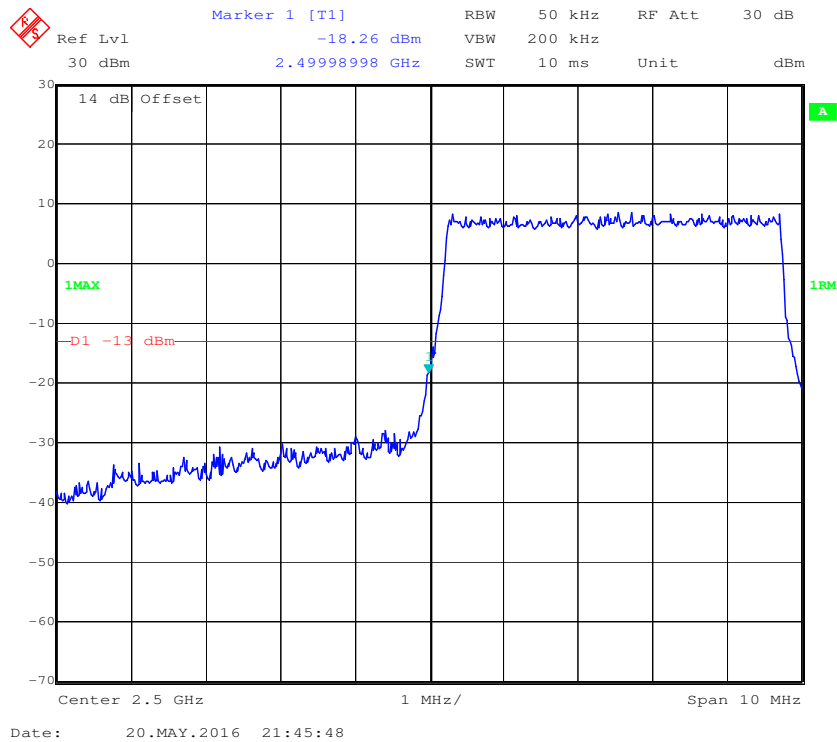
QPSK (5.0 MHz, FULL RB) - Left Band Edge



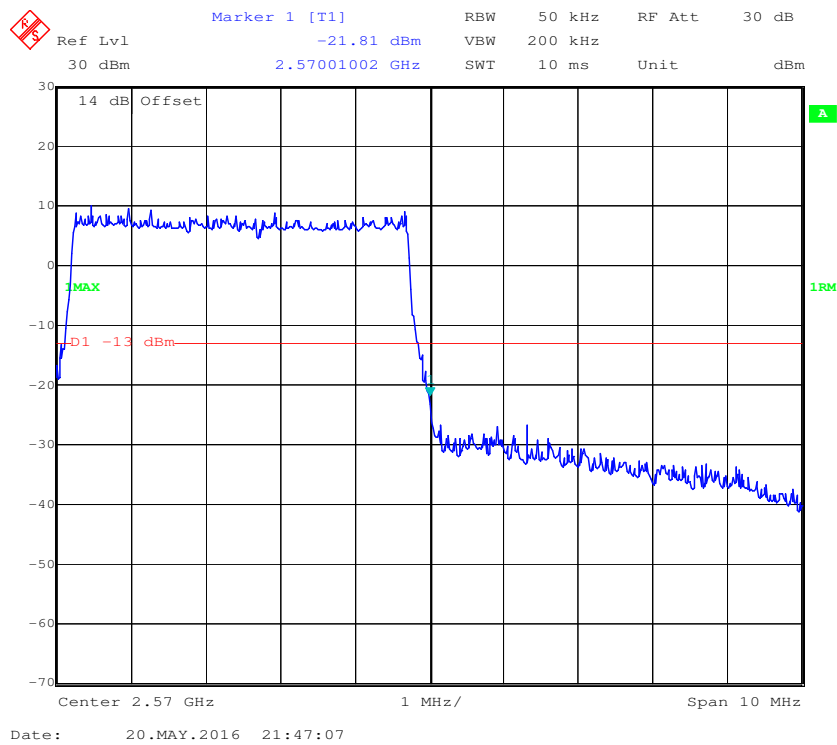
QPSK (5.0 MHz, FULL RB) - Right Band Edge



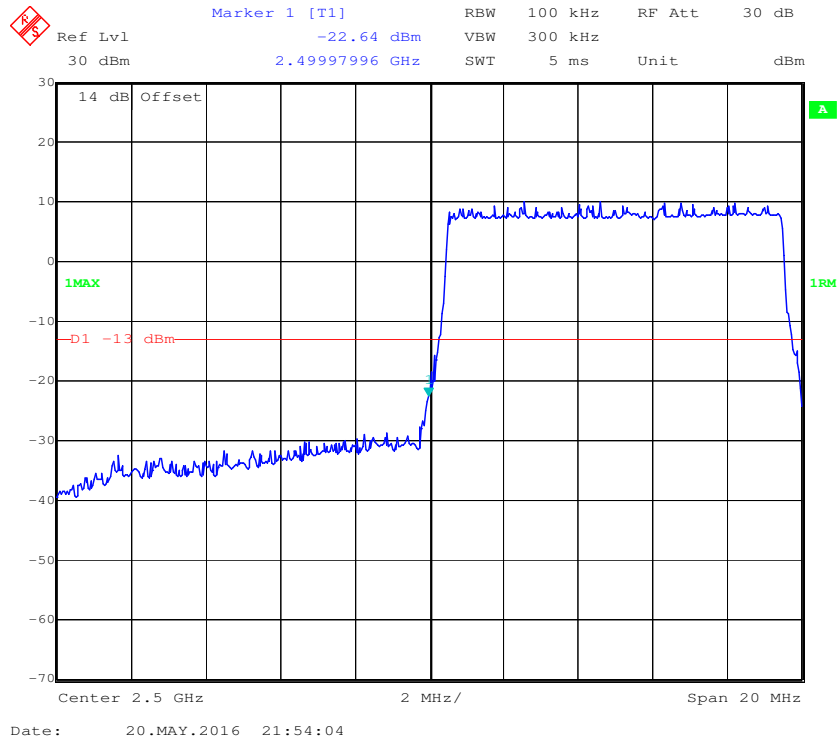
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



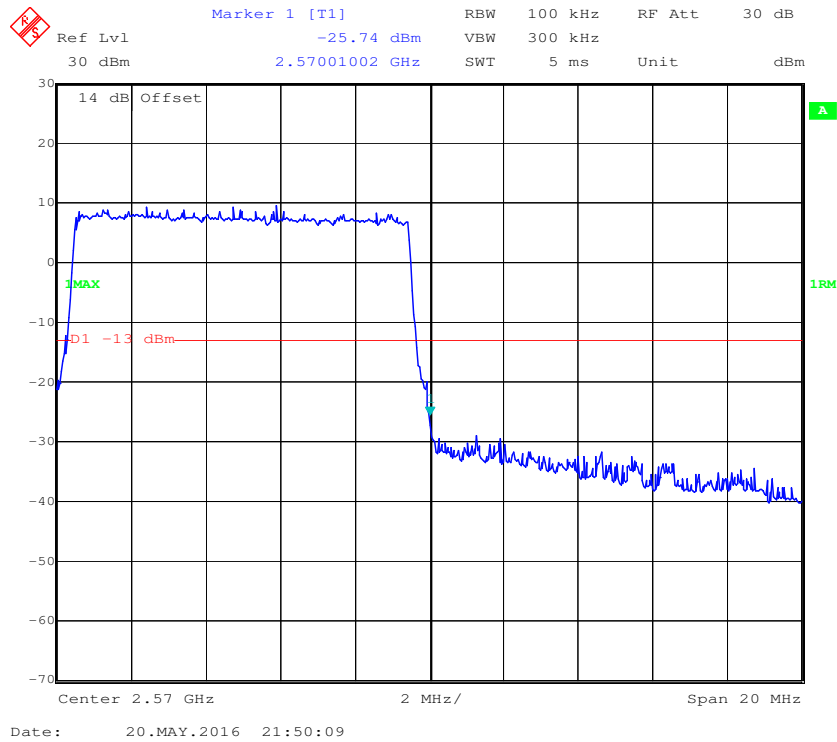
16-QAM (5.0 MHz, FULL RB) - Right Band Edge

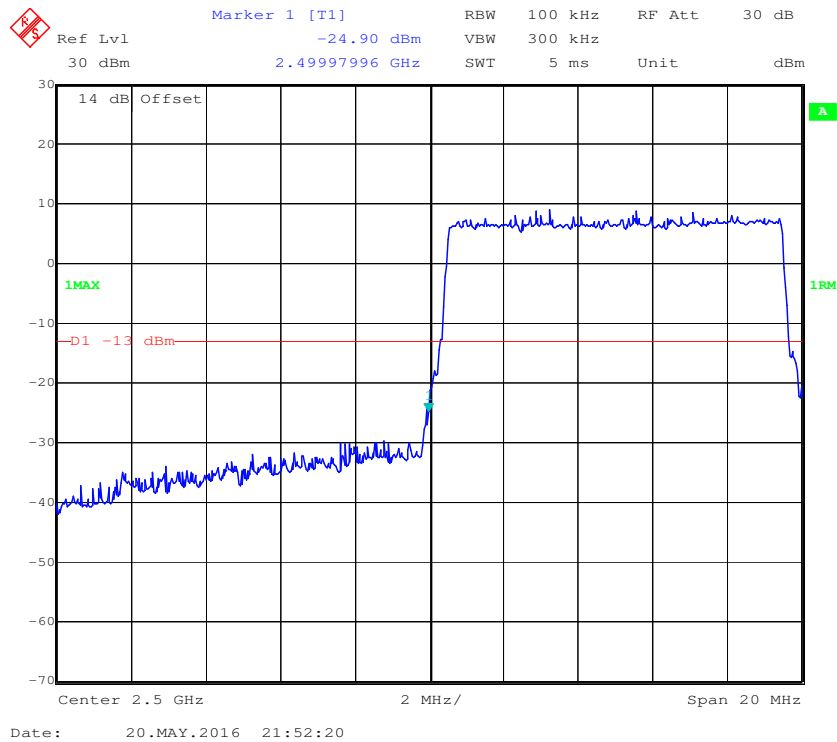
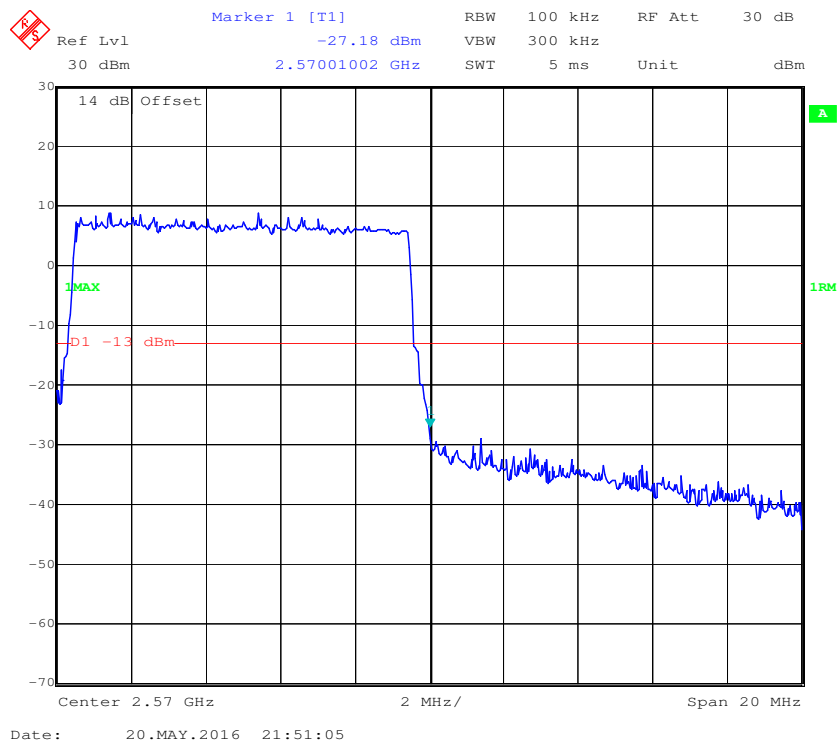


QPSK (10.0 MHz, FULL RB) - Left Band Edge

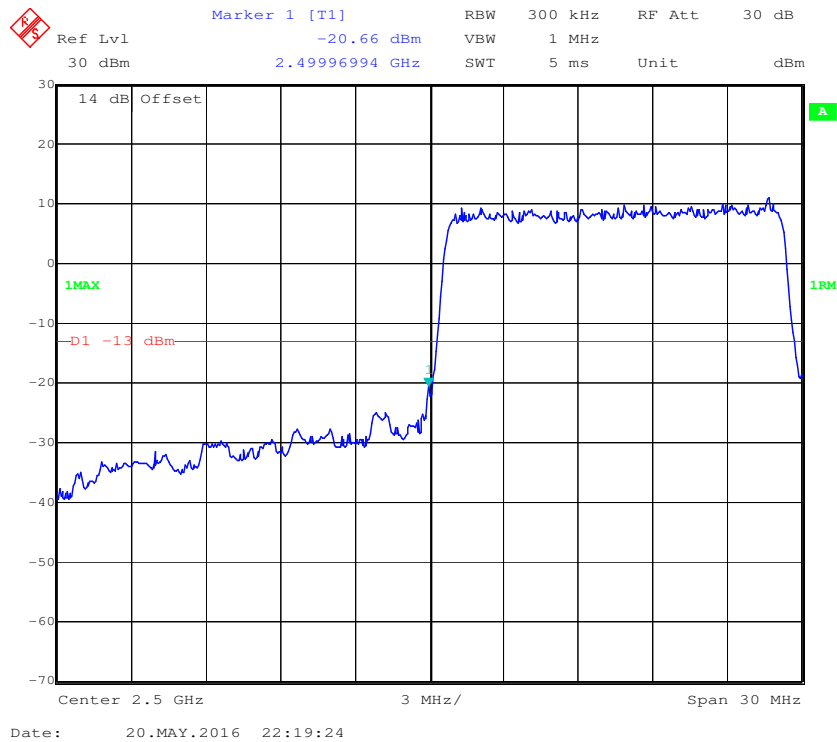


QPSK (10.0 MHz, FULL RB) - Right Band Edge

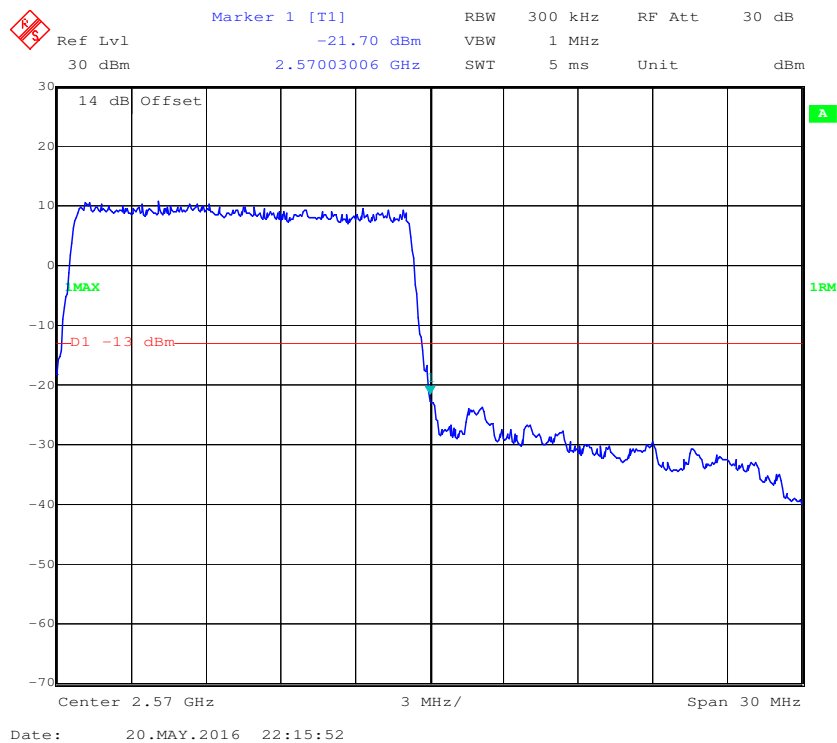


16-QAM (10.0 MHz, FULL RB) - Left Band Edge**16-QAM (10.0 MHz, FULL RB) - Right Band Edge**

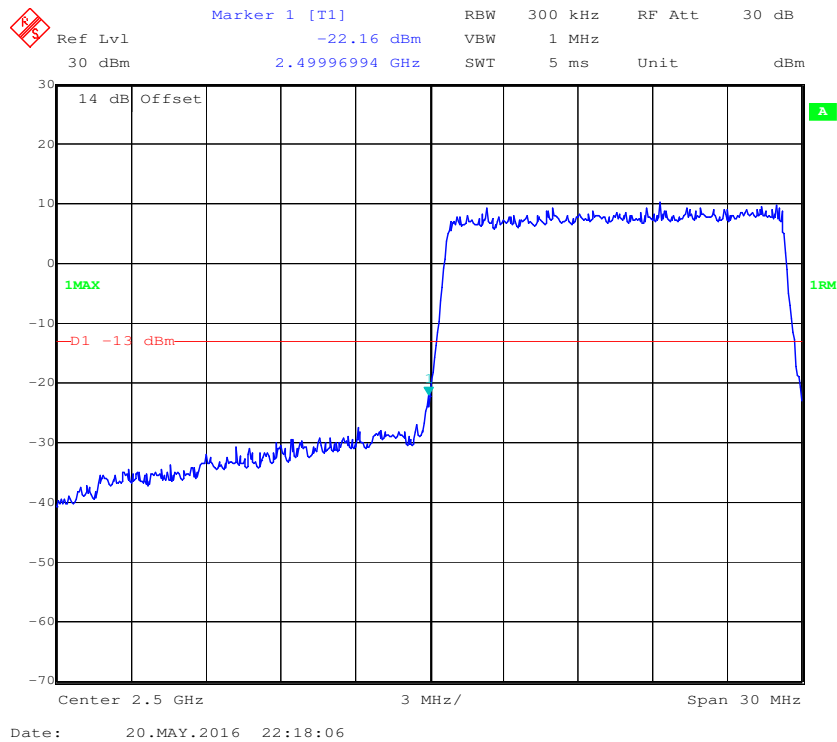
QPSK (15 MHz, FULL RB) - Left Band Edge



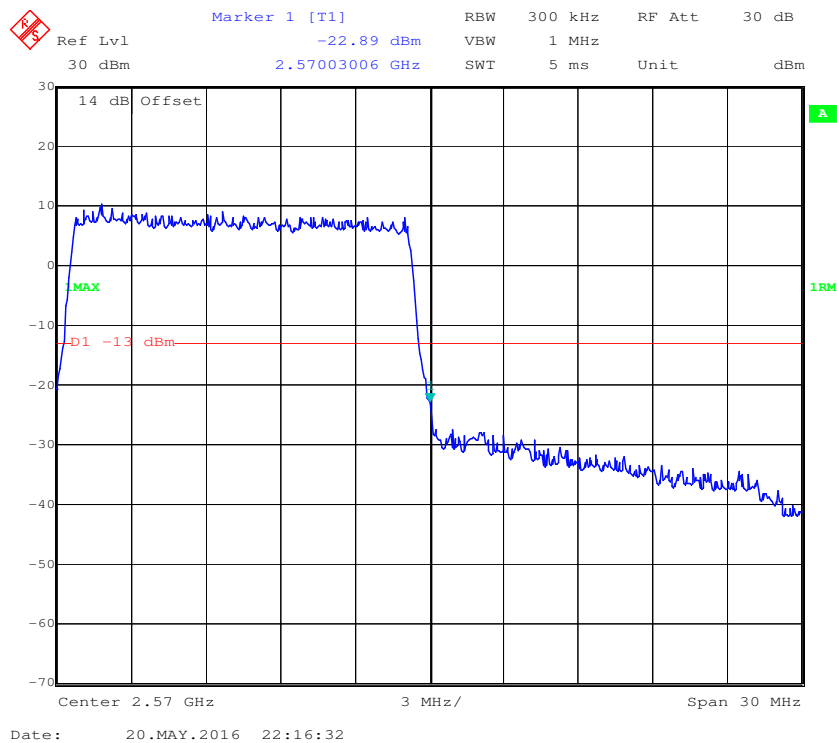
QPSK (15 MHz, FULL RB) - Right Band Edge



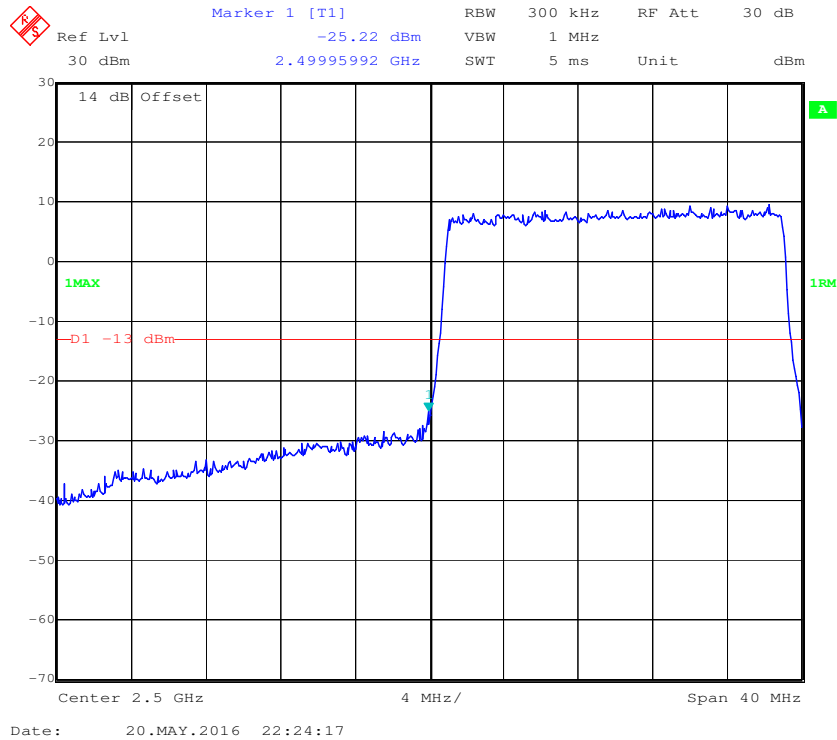
16-QAM (15 MHz, FULL RB) - Left Band Edge



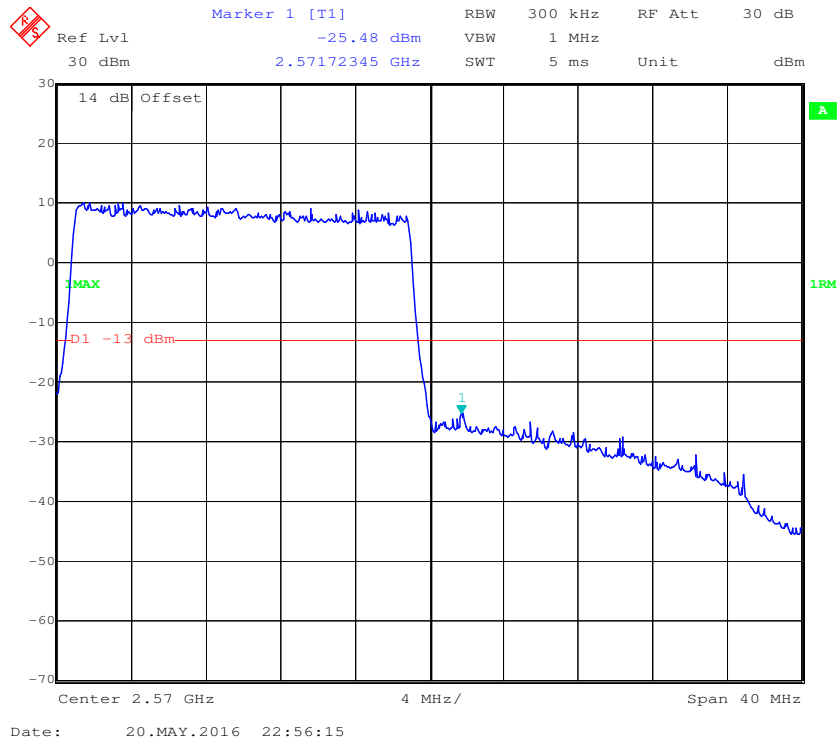
16-QAM (15 MHz, FULL RB) - Right Band Edge



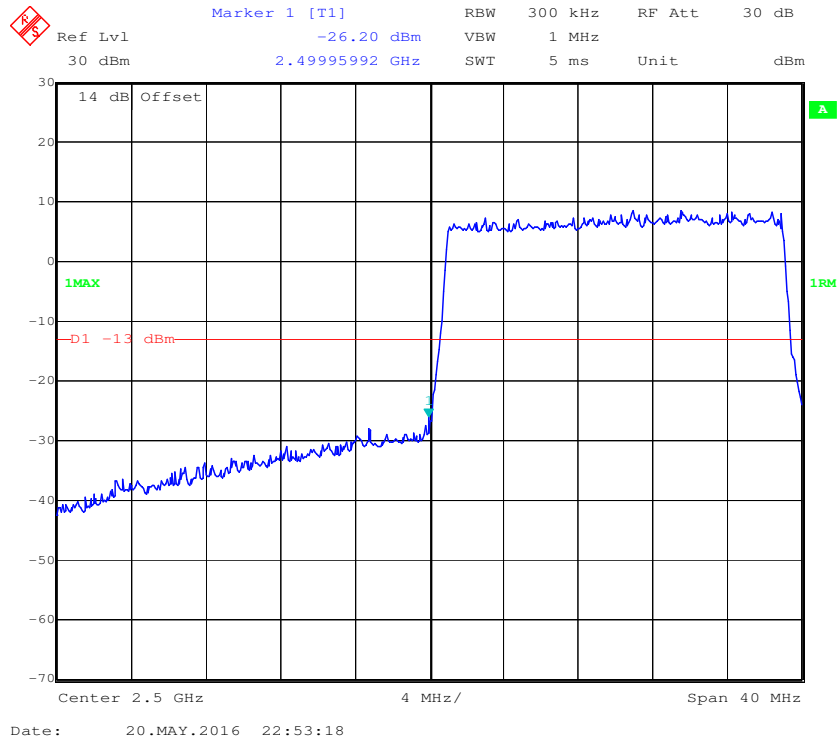
QPSK (20 MHz, FULL RB) - Left Band Edge



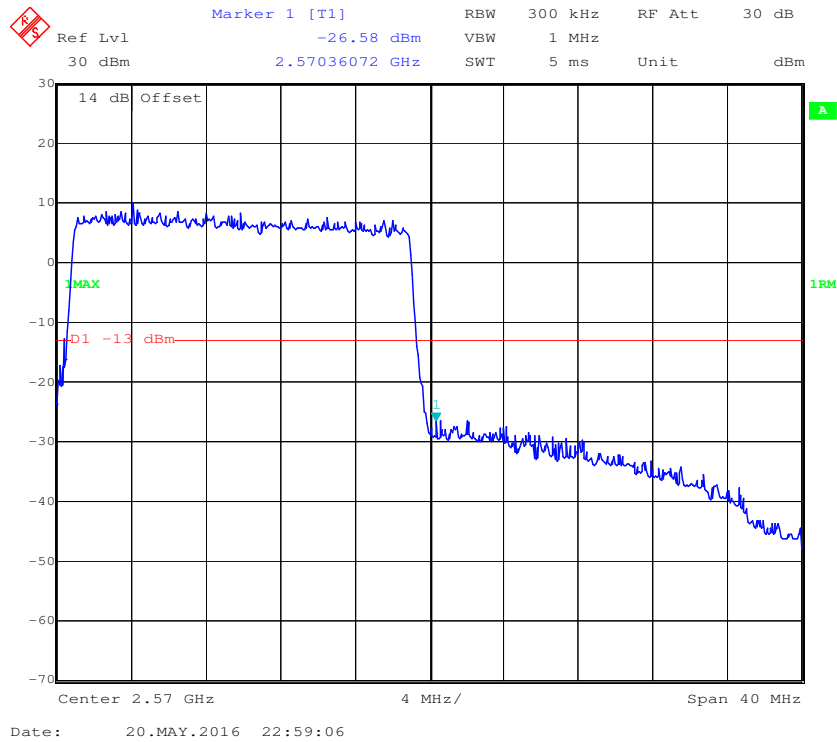
QPSK (20 MHz, FULL RB) - Right Band Edge



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



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



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

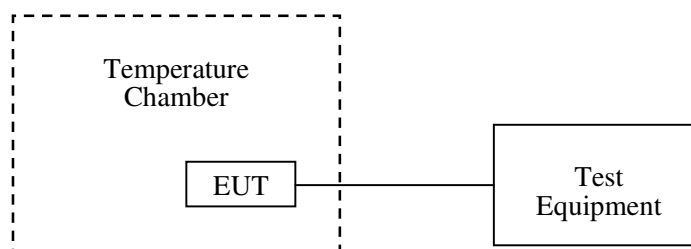
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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 Xiangguang Kong 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	3.7	5	0.005977	2.5
-20		6	0.007172	2.5
-10		2	0.002391	2.5
0		3	0.003586	2.5
10		0	0	2.5
20		1	0.001195	2.5
30		3	0.003586	2.5
40		2	0.002391	2.5
50		5	0.005977	2.5
25	V min.= 3.5	4	0.004781	2.5
25	V max.= 4.2	-1	-0.001195	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	3.7	3	0.003586	2.5
-20		4	0.004781	2.5
-10		2	0.002391	2.5
0		0	0	2.5
10		-1	-0.001195	2.5
20		2	0.002391	2.5
30		4	0.004781	2.5
40		6	0.007172	2.5
50		2	0.002391	2.5
25	V min.= 3.5	5	0.005977	2.5
25	V max.= 4.2	7	0.008367	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	3.7	0	0	pass
-20		-1	-0.001195	pass
-10		1	0.001195	pass
0		2	0.002391	pass
10		0	0	pass
20		3	0.003586	pass
30		1	0.001195	pass
40		-1	-0.001195	pass
50		0	0	pass
25	V min.= 3.5	-2	-0.002391	pass
25	V max.= 4.2	3	0.003586	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	3.7	-2	-0.001064	pass
-20		-4	-0.002128	pass
-10		-2	-0.001064	pass
0		1	0.000532	pass
10		-6	-0.003191	pass
20		-1	-0.000532	pass
30		-4	-0.002128	pass
40		-3	-0.001596	pass
50		-6	-0.003191	pass
25	V min.= 3.5	-5	-0.002660	pass
25	V max.= 4.2	-4	-0.002128	pass

EDGE Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	8	0.004255	pass
-20		7	0.003723	pass
-10		5	0.002660	pass
0		7	0.003723	pass
10		3	0.001596	pass
20		6	0.003191	pass
30		8	0.004255	pass
40		5	0.002660	pass
50		7	0.003723	pass
25	V min.= 3.5	4	0.002128	pass
25	V max.= 4.2	10	0.005319	pass

WCDMA Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	3.7	0	0	pass
-20		-1	-0.000530	pass
-10		3	0.001596	pass
0		5	0.002660	pass
10		1	0.000532	pass
20		4	0.002128	pass
30		2	0.001064	pass
40		-1	-0.000530	pass
50		3	0.001596	pass
25	V min.= 3.5	1	0.000532	pass
25	V max.= 4.2	4	0.002128	pass

Band 4:

Bandwidth	Temperature (°C)	Voltage (V _{DC})	QPSK (Hz)	QPSK (ppm)	Result
10.0 MHz, Middle Channel	-30	3.7	4	0.00231	Pass
	-20		1	0.00058	Pass
	-10		3	0.00173	Pass
	0		2	0.00115	Pass
	10		-1	-0.00058	Pass
	20		2	0.00115	Pass
	30		1	0.00058	Pass
	40		1	0.00058	Pass
	50		3	0.00173	Pass
	25	3.7	0	0	Pass
	25	3.5	-2	-0.00115	Pass
	25	4.2	2	0.00115	Pass

Band 7:

Bandwidth	Temperature (°C)	Voltage (V _{DC})	QPSK (Hz)	QPSK (ppm)	Result
10.0 MHz, Middle Channel	-30	3.7	4	0.00158	Pass
	-20		2	0.00079	Pass
	-10		1	0.00039	Pass
	0		3	0.00118	Pass
	10		0	0	Pass
	20		-1	-0.00039	Pass
	30		2	0.00079	Pass
	40		4	0.00158	Pass
	50		2	0.00079	Pass
	25	3.7	3	0.00118	Pass
	25	3.5	5	0.00197	Pass
	25	4.2	0	0	Pass

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