TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 27

FCC PART 22H, PART 24E

MEASUREMENT AND TEST REPORT

For

Mason America, Inc.

300 Park Street, Suite 380, Birmingham, Michigan, United States 48009

FCC ID: 2AJZP-C210

Report Type:	**Product Type:**
Original Report	Smartphone

Test Engineer:	Kyle Xu
Report Number:	RKSA170915002-00D
Report Date:	2018-02-07
Reviewed By:	Oscar Ye RF Leader
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu province, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	Mason America, Inc.
Tested Model	C210
Series Model	C210A1
Model Difference	Model name
Product Type	Smartphone
Dimension	143 mm(L)×72 mm(W)×8.8 mm(H)
Power Supply	DC3.7V from battery and DC 5.0V charging by adapter

Adapter Information:
Model: CC10-050200U
Input: AC 100-240V, 50/60 Hz, 0.25A
Output: DC 5V, 1A

**All measurement and test data in this report was gathered from production sample serial number: 20170915002. (Assigned by the BACL. The EUT supplied by the applicant was received on 2017-09-15)*

Objective

This type approval report is prepared on behalf of Mason America, Inc. 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 Part15.247 DSS&DTS , Part 15B JBP submissions with FCC ID: 2AJZP-C210.

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. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		3.19dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emission	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0℃
Humidity		6%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road,Kunshan,Jiangsu province,China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

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.

Channel List

Mode		Channel		Frequency (MHz)
GSM/GPRS/EDGE 850		Low	128	824.2
		Middle	190	836.6
		High	251	848.8
PCS/GPRS/EDGE 1900		Low	512	1850.2
		Middle	661	1880.0
		High	810	1909.8
WCDMA Band II		Low	9262	1852.4
		Middle	9400	1880.0
		High	9538	1907.6
WCDMA Band IV		Low	1312	1712.4
		Middle	1413	1732.6
		High	1513	1752.6
WCDMA Band V		Low	4132	826.4
		Middle	4183	836.6
		High	4233	846.6
LTE Band 2	1.4M	Low	18607	1850.7
		Middle	18900	1880.0
		High	19193	1909.3
	3M	Low	18615	1851.5
		Middle	18900	1880.0
		High	19185	1908.5
	5M	Low	18625	1852.5
		Middle	18900	1880.0
		High	19175	1907.5
	10M	Low	18650	1855.0
		Middle	18900	1880.0
		High	19150	1905.0
	15M	Low	18675	1857.5
		Middle	18900	1880.0
		High	19125	1902.5
	20M	Low	18700	1860.0
		Middle	18900	1880.0
		High	19100	1900.0

Mode		Channel		Frequency (MHz)
LTE Band 4	1.4M	Low	19957	1710.7
		Middle	20175	1732.5
		High	20393	1754.3
	3M	Low	19965	1711.5
		Middle	20175	1732.5
		High	20385	1753.5
	5M	Low	19975	1712.5
		Middle	20175	1732.5
		High	20375	1752.5
	10M	Low	20000	1715.0
		Middle	20175	1732.5
		High	20350	1750.0
	15M	Low	20025	1717.5
		Middle	20175	1732.5
		High	20325	1747.5
	20M	Low	20050	1720.0
		Middle	20175	1732.5
		High	20300	1745.0
LTE Band 12	1.4M	Low	23017	699.7
		Middle	23095	707.5
		High	23173	715.3
	3M	Low	23025	700.5
		Middle	23095	707.5
		High	23165	714.5
	5M	Low	23035	701.5
		Middle	23095	707.5
		High	23155	713.5
	10M	Low	23060	704.0
		Middle	23095	707.5
		High	23130	711.0
LTE Band 17	5M	Low	23755	706.5
		Middle	23790	710.0
		High	23825	713.5
	10M	Low	23780	709.0
		Middle	23790	710.0
		High	23800	711.0

Equipment Modifications

No modifications were made to the EUT.

Support Equipment List and Details

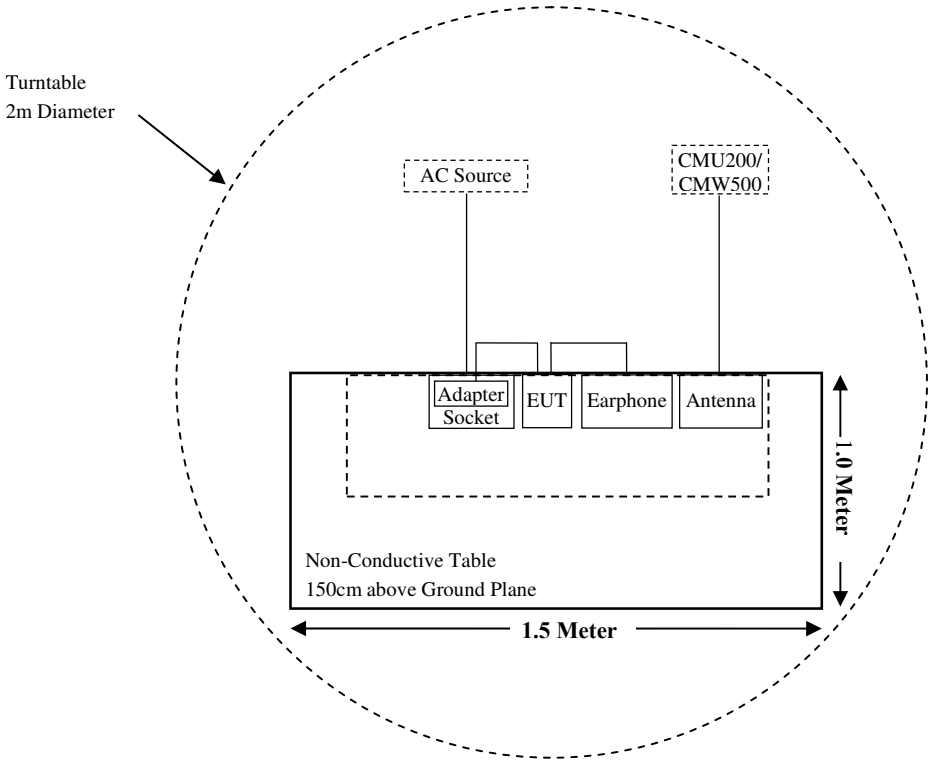
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478
Mason America, Inc.	Antenna	/	/

External Cable List and Details

Cable Description	Length (m)	From Port	To
/	/	/	/

Block Diagram of Test Setup

For Radiated Emissions(Below & Above 1GHz):



SUMMARY OF TEST RESULTS

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

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test（Chamber 1#）					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2017-11-12	2018-11-11
HP	Signal Generator	HP 8341B	2624A00116	2017-08-29	2018-08-28
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2016-12-26	2019-12-25
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2016-01-09	2019-01-08
Sonoma Instrunent	Pre-amplifier	310N	171205	2017-08-15	2018-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-8	008	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2017-08-15	2018-08-14
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2017-08-21	2018-08-20
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478	2017-07-22	2018-07-21
Radiated Emission Test（Chamber 2#）					
HP	Signal Generator	HP 8341B	2624A00116	2017-08-29	2018-08-28
Rohde & Schwarz	EMI Test Receiver	ESU40	100207	2017-08-27	2018-08-26
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3115	6229	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3116	00084159	2016-10-18	2019-10-17
ETS-LINDGREN	Horn Antenna	3116	2516	2016-12-12	2019-12-12
Narda	Pre-amplifier	AFS42-00101800	2001270	2017-12-12	2018-12-11
QuinStar	Amplifier	QLW-18405536-J0	15964001009	2017-12-12	2018-12-11
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-13	013	2017-08-15	2018-08-14
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2017-08-21	2018-08-20
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478	2017-07-22	2018-07-21

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Signal Analyzer	FSIQ26	836131/009	2017-08-21	2018-08-20
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2017-08-21	2018-08-20
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478	2017-07-22	2018-07-21
BACL	Temperature & Humidity Chamber	BTH-150	30023	2016-10-10	2017-10-09
EAST	Regulated DC Power Supply	MCH-303D-II	14070562	/	/
Mason	RF Cable	N/A	N/A	/	/
Narda	Attenuator/6dB	10690812-2	26850-6	2017-01-10	2018-01-09

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

FCC §1.1307(b) (1)& §2.1093 - RF EXPOSURE INFORMATION

Applicable Standard

FCC§1.1307(b) (1),§2.1093.

Test Result

Compliance, please refer to the SAR report: RKS170919050-20.

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 (d) - 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 FCC §24.232 (d), The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

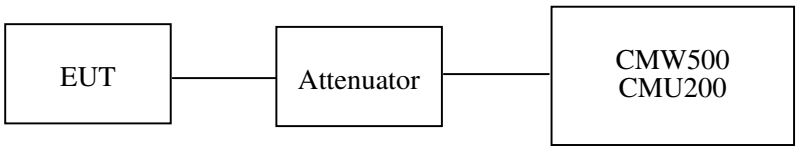
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1755MHz.
The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

According to §27.50(c), the maximum EIRP must not exceed 3Watts (34.77dBm) for 699-716MHz.

Test Procedure

Conducted method:

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



Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

The testing was performed by Kyle Xu on 2017-09-30.

Conducted Power:

GSM 850 Band

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	31.84	38.45
	190	836.6	31.85	38.45
	251	848.8	31.82	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	31.87	31.57	29.35	28.25	38.45
	190	836.6	31.86	31.49	29.16	28.16	38.45
	251	848.8	31.88	31.52	29.27	28.86	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	25.59	25.26	23.52	22.03	38.45
	190	836.6	25.43	25.13	23.38	21.93	38.45
	251	848.8	25.28	24.95	23.26	21.89	38.45

WCDMA Band V

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA	Normal	RMC12.2k		22.60	22.68	22.78
		Rel 5 HSDPA	1	21.86	21.92	21.96
			2	21.73	21.79	21.83
			3	21.46	21.52	21.64
			4	21.33	21.42	21.55
		Rel 6 HSUPA	1	20.91	20.94	20.98
			2	20.75	20.78	20.83
			3	20.49	20.53	20.63
			4	19.33	19.46	19.66
			5	19.53	19.62	19.71

PCS 1900 Band

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	28.87	33
	661	1880.0	28.52	33
	810	1909.8	28.17	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	28.89	28.71	26.63	25.41	33
	661	1880.0	28.50	28.34	26.21	25.00	33
	810	1909.8	28.11	28.02	26.03	24.66	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	24.48	24.18	22.67	21.42	33
	661	1880.0	24.82	24.48	22.97	21.82	33
	810	1909.8	24.53	24.17	22.53	22.63	33

WCDMA Band II

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA	Normal	Rel 99	1	21.40	21.90	21.98
		Rel 5 HSDPA	1	20.34	20.89	20.82
			2	20.23	20.62	20.68
			3	20.18	20.35	20.35
			4	20.13	20.08	20.12
		Rel 6 HSUPA	1	19.92	19.94	19.98
			2	19.77	19.81	19.84
			3	19.51	19.54	19.58
			4	19.29	19.32	19.43
			5	18.85	18.66	19.12

WCDMA Band IV

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA	Normal	RMC12.2k		21.97	21.51	21.24
		Rel 5 HSDPA	1	20.87	21.72	21.66
			2	20.74	21.71	21.63
			3	20.56	21.53	21.48
			4	20.33	21.32	21.25
		Rel 6 HSUPA	1	19.96	19.93	19.91
			2	19.87	19.88	19.87
			3	19.72	19.66	19.65
			4	19.71	19.62	19.61
			5	18.70	18.61	18.52

Maximum Output Power:

LTE Band 2

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
1.4M	QPSK	1#0	22.25	22.60	22.54	33
		1#3	22.44	22.59	22.61	
		1#5	22.25	22.85	22.53	
		3#0	22.16	21.82	22.59	
		3#1	22.10	21.80	22.48	
		3#3	22.26	22.36	22.54	
		6#0	21.20	21.82	21.66	
	16-QAM	1#0	21.48	21.69	22.10	
		1#3	21.56	22.01	22.15	
		1#5	21.45	21.94	21.33	
		3#0	22.31	22.65	22.21	
		3#1	22.33	22.64	22.21	
		3#3	22.28	22.62	22.12	
		6#0	21.20	21.64	20.88	
3M	QPSK	1#0	22.05	22.80	22.46	33
		1#7	22.44	22.78	22.73	
		1#14	22.12	22.72	22.50	
		8#0	22.32	21.98	22.70	
		8#4	21.97	21.76	22.62	
		8#7	22.42	22.18	22.66	
		15#0	21.09	21.64	21.75	
	16-QAM	1#0	21.49	21.59	21.91	
		1#7	21.59	21.95	22.08	
		1#14	21.57	22.09	21.27	
		8#0	22.47	22.66	22.27	
		8#4	22.30	22.68	22.12	
		8#7	22.44	22.44	22.16	
		15#0	21.15	21.83	20.91	

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
5M	QPSK	1#0	22.02	22.94	22.51	33
		1#12	22.34	22.93	22.56	
		1#24	22.28	22.89	22.67	
		12#0	22.43	22.05	22.55	
		12#6	22.12	21.97	22.59	
		12#11	22.47	22.13	22.72	
		25#0	21.18	21.45	21.84	
	16-QAM	1#0	21.62	21.54	22.07	
		1#12	21.40	21.82	22.07	
		1#24	21.67	22.26	21.73	
		12#0	22.31	22.74	22.24	
		12#6	22.49	22.67	22.06	
		12#11	22.51	22.40	22.21	
		25#0	21.13	21.80	20.86	
10M	QPSK	1#0	22.16	22.96	22.49	33
		1#24	22.51	22.90	22.73	
		1#49	22.46	22.72	22.84	
		25#0	22.42	21.94	22.56	
		25#12	22.18	21.90	22.61	
		25#24	22.59	22.09	22.69	
		50#0	21.33	21.59	21.73	
	16-QAM	1#0	21.65	21.68	22.21	
		1#24	21.73	21.98	22.24	
		1#49	21.85	22.09	21.23	
		25#0	22.41	22.57	22.13	
		25#12	22.53	22.69	21.87	
		25#24	22.66	22.32	22.22	
		50#0	21.03	21.71	20.99	

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
15M	QPSK	1#0	22.03	22.94	22.69	33
		1#37	22.69	22.91	22.63	
		1#74	22.31	22.68	22.78	
		36#0	22.26	22.11	22.38	
		36#17	22.37	21.88	22.76	
		36#35	22.57	22.21	22.72	
		75#0	21.14	21.78	21.68	
	16-QAM	1#0	21.84	21.59	22.18	
		1#37	21.36	21.59	22.07	
		1#74	21.67	22.13	21.41	
		36#0	22.32	22.54	22.02	
		36#17	22.67	22.83	22.04	
		36#35	22.53	22.28	22.08	
		75#0	21.21	21.79	20.94	
20M	QPSK	1#0	22.16	22.98	22.81	33
		1#49	22.66	22.78	22.45	
		1#99	22.27	22.55	22.62	
		50#0	22.29	22.04	22.57	
		50#24	22.24	21.73	22.67	
		50#49	22.7	22.12	22.83	
		100#0	21.27	21.73	21.88	
	16-QAM	1#0	21.87	21.63	22.38	
		1#49	21.43	21.60	21.98	
		1#99	21.73	22.24	21.24	
		50#0	22.19	22.73	21.92	
		50#24	22.73	22.39	22.08	
		50#49	22.41	22.40	22.19	
		100#0	21.08	21.98	21.00	

LTE Band 4

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
1.4M	QPSK	1#0	24.22	24.27	24.18	30
		1#3	24.13	24.17	24.08	
		1#5	24.04	24.11	24.03	
		3#0	23.99	24.11	24.03	
		3#1	23.95	24.09	24.02	
		3#3	23.87	24.07	23.92	
		6#0	22.87	23.11	22.91	
	16-QAM	1#0	22.81	23.04	22.87	
		1#3	22.78	22.96	22.82	
		1#5	22.70	22.92	22.78	
		3#0	22.69	22.82	22.74	
		3#1	22.62	22.76	22.70	
		3#3	22.58	22.68	22.64	
		6#0	21.66	21.72	21.61	
3M	QPSK	1#0	24.11	24.15	24.08	30
		1#7	23.93	24.00	23.91	
		1#14	24.03	24.00	23.96	
		8#0	23.87	24.02	23.92	
		8#4	23.76	24.05	23.83	
		8#7	23.69	23.98	23.75	
		15#0	22.84	22.92	22.89	
	16-QAM	1#0	22.67	22.99	22.81	
		1#7	22.74	22.87	22.72	
		1#14	22.70	22.73	22.65	
		8#0	22.58	22.65	22.68	
		8#4	22.54	22.69	22.61	
		8#7	22.43	22.49	22.55	
		15#0	21.47	21.68	21.41	

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
5M	QPSK	1#0	23.92	24.10	24.00	30
		1#12	23.87	23.81	23.74	
		1#24	23.85	23.94	23.94	
		12#0	23.68	23.97	23.92	
		12#6	23.75	23.99	23.64	
		12#11	23.69	23.83	23.65	
		25#0	22.82	22.85	22.85	
	16-QAM	1#0	22.60	22.87	22.69	
		1#12	22.72	22.80	22.69	
		1#24	22.60	22.67	22.58	
		12#0	22.49	22.51	22.50	
		12#6	22.43	22.53	22.41	
		12#11	22.32	22.42	22.44	
		25#0	21.45	21.68	21.37	
10M	QPSK	1#0	23.90	24.04	23.88	30
		1#24	23.77	23.96	23.63	
		1#49	23.69	23.88	23.81	
		25#0	23.53	23.89	23.90	
		25#12	23.68	23.98	23.45	
		25#24	23.66	23.63	23.65	
		50#0	22.79	22.73	22.78	
	16-QAM	1#0	22.43	22.80	22.55	
		1#24	22.61	22.66	22.63	
		1#49	22.46	22.47	22.58	
		25#0	22.45	22.44	22.48	
		25#12	22.42	22.34	22.35	
		25#24	22.24	22.40	22.30	
		50#0	21.26	21.64	21.20	

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
15M	QPSK	1#0	23.83	23.94	23.82	30
		1#37	23.72	23.73	23.51	
		1#74	23.63	23.69	23.67	
		36#0	23.43	23.72	23.87	
		36#17	23.55	23.82	23.33	
		36#35	23.54	23.56	23.57	
		75#0	22.69	22.56	22.63	
	16-QAM	1#0	22.30	22.78	22.52	
		1#37	22.58	22.55	22.63	
		1#74	22.39	22.32	22.48	
		36#0	22.25	22.26	22.36	
		36#17	22.36	22.27	22.27	
		36#35	22.09	22.35	22.24	
		75#0	21.19	21.64	21.13	
20M	QPSK	1#0	23.94	24.44	23.88	30
		1#49	23.77	24.09	23.85	
		1#99	23.94	23.90	23.93	
		50#0	23.85	24.01	23.81	
		50#24	23.69	23.85	23.73	
		50#49	23.57	23.80	23.61	
		100#0	22.81	22.79	22.84	
	16-QAM	1#0	22.64	22.80	22.73	
		1#49	22.70	22.67	22.59	
		1#99	22.64	22.56	22.48	
		50#0	22.42	22.61	22.59	
		50#24	22.38	22.58	22.51	
		50#49	22.38	22.44	22.47	
		100#0	21.40	21.55	21.34	

LTE Band 12

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
1.4M	QPSK	1#0	24.21	24.40	24.01	34.77
		1#3	23.95	24.17	23.93	
		1#5	24.04	23.97	23.85	
		3#0	23.88	23.92	23.85	
		3#1	23.89	24.02	23.99	
		3#3	23.78	24.05	23.77	
		6#0	22.85	22.96	22.79	
	16-QAM	1#0	23.57	24.10	23.48	
		1#3	22.68	22.79	22.70	
		1#5	22.65	22.75	22.67	
		3#0	22.59	22.64	22.58	
		3#1	22.61	22.58	22.55	
		3#3	22.45	22.68	22.48	
		6#0	21.46	21.58	21.42	
3M	QPSK	1#0	24.21	24.50	24.11	34.77
		1#7	23.96	24.08	23.92	
		1#14	23.90	24.07	23.83	
		8#0	23.95	23.94	23.88	
		8#4	23.92	24.03	23.84	
		8#7	23.80	23.99	23.85	
		15#0	22.80	22.95	22.83	
	16-QAM	1#0	23.55	24.16	23.49	
		1#7	22.77	22.92	22.76	
		1#14	22.54	22.92	22.71	
		8#0	22.59	22.82	22.59	
		8#4	22.47	22.59	22.56	
		8#7	22.44	22.64	22.49	
		15#0	21.64	21.52	21.57	

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
5M	QPSK	1#0	24.12	24.33	23.96	34.77
		1#12	23.90	24.05	23.79	
		1#24	23.77	23.94	23.63	
		12#0	23.91	23.81	23.72	
		12#6	23.89	23.87	23.65	
		12#11	23.62	23.96	23.82	
		25#0	22.72	22.81	22.66	
	16-QAM	1#0	23.39	23.98	23.41	
		1#12	22.72	22.74	22.72	
		1#24	22.46	22.92	22.64	
		12#0	22.58	22.76	22.39	
		12#6	22.46	22.48	22.47	
		12#11	22.31	22.57	22.45	
		25#0	21.57	21.46	21.39	
10M	QPSK	1#0	23.93	24.41	23.93	34.77
		1#24	23.74	23.93	23.61	
		1#49	23.64	23.90	23.57	
		25#0	23.73	23.76	23.53	
		25#12	23.79	23.82	23.57	
		25#24	23.57	23.90	23.72	
		50#0	22.53	22.80	22.61	
	16-QAM	1#0	23.25	23.90	23.27	
		1#24	22.65	22.64	22.59	
		1#49	22.37	22.87	22.49	
		25#0	22.56	22.67	22.22	
		25#12	22.38	22.40	22.44	
		25#24	22.18	22.41	22.32	
		50#0	21.37	21.32	21.24	

LTE Band 17

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)	Limit (dBm)
5M	QPSK	1#0	24.37	24.39	23.80	34.77
		1#12	23.71	24.01	23.66	
		1#24	23.62	23.93	23.49	
		12#0	23.71	23.76	23.52	
		12#6	23.82	23.87	23.58	
		12#11	23.59	23.83	23.77	
		25#0	22.72	22.79	22.52	
	16-QAM	1#0	23.76	23.89	23.24	
		1#12	22.67	22.60	22.64	
		1#24	22.28	22.86	22.49	
		12#0	22.54	22.57	22.31	
		12#6	22.30	22.44	22.33	
		12#11	22.15	22.40	22.40	
		25#0	21.43	21.42	21.25	
10M	QPSK	1#0	24.30	24.42	23.74	34.77
		1#24	23.63	23.89	23.63	
		1#49	23.57	23.87	23.41	
		25#0	23.65	23.59	23.47	
		25#12	23.76	23.73	23.53	
		25#24	23.46	23.72	23.62	
		50#0	22.58	22.64	22.41	
	16-QAM	1#0	23.76	23.89	23.16	
		1#24	22.63	22.52	22.49	
		1#49	22.13	22.71	22.41	
		25#0	22.47	22.43	22.11	
		25#12	22.25	22.25	22.27	
		25#24	21.97	22.34	22.31	
		50#0	21.35	21.35	21.06	

Peak-to-average ratio (PAR):

PCS 1900 Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	2.02	13
	Middle	2.13	13
	High	2.11	13

Mode	Channel	PAR (dB)	Limit (dB)
GPRS	Low	2.06	13
	Middle	2.41	13
	High	2.32	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.35	13
	Middle	2.51	13
	High	2.37	13

WCDMA Band II

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA	Low	2.12	13
	Middle	2.32	13
	High	2.25	13
HSDPA	Low	2.24	13
	Middle	2.37	13
	High	2.24	13
HSUPA	Low	2.05	13
	Middle	2.52	13
	High	2.14	13

WCDMA Band IV

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA	Low	3.41	13
	Middle	3.05	13
	High	3.44	13
HSDPA	Low	3.25	13
	Middle	3.27	13
	High	3.22	13
HSUPA	Low	3.34	13
	Middle	3.37	13
	High	3.42	13

LTE Band 2

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	9.35	13	Pass
QPSK (100%RB Size)	8.25	13	Pass
16QAM (1RB Size)	9.45	13	Pass
16QAM (100%RB Size)	8.12	13	Pass

LTE Band 4

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	8.36	13	Pass
QPSK (100%RB Size)	7.92	13	Pass
16QAM (1RB Size)	8.44	13	Pass
16QAM (100%RB Size)	7.68	13	Pass

LTE Band 12

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	8.35	13	Pass
QPSK (100%RB Size)	7.65	13	Pass
16QAM (1RB Size)	8.06	13	Pass
16QAM (100%RB Size)	7.77	13	Pass

LTE Band 17

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	9.13	13	Pass
QPSK (100%RB Size)	8.09	13	Pass
16QAM (1RB Size)	9.01	13	Pass
16QAM (100%RB Size)	8.13	13	Pass

Radiated Power:

GSM Mode

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
GSM850 Band, Middle Channel										
836.60	63.54	169	194	H	33.09	0.63	-1.14	31.32	38.45	7.13
836.60	67.39	321	238	V	32.70	0.63	-1.14	30.93	38.45	7.52
PCS1900 Band, Middle Channel										
1880.00	82.14	96	160	H	19.39	0.85	8.81	27.35	33	5.65
1880.00	82.47	62	210	V	19.37	0.85	8.81	27.33	33	5.67

GPRS Mode

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
GSM850 Band, Middle Channel										
836.60	65.64	143	138	H	30.99	0.63	-1.14	29.22	38.45	9.23
836.60	69.48	150	239	V	30.61	0.63	-1.14	28.84	38.45	9.61
PCS1900 Band, Middle Channel										
1880.00	82.48	200	132	H	19.05	0.85	8.81	27.01	33	5.99
1880.00	82.86	38	146	V	18.98	0.85	8.81	26.94	33	6.06

EGPRS Mode

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
GSM850 Band, Middle Channel										
836.60	69.93	26	236	H	26.70	0.63	-1.14	24.93	38.45	13.52
836.60	74.21	334	168	V	25.88	0.63	-1.14	24.11	38.45	14.34
PCS1900 Band, Middle Channel										
1880.00	85.57	207	105	H	15.96	0.85	8.81	23.92	33	9.08
1880.00	86.52	225	176	V	15.32	0.85	8.81	23.28	33	9.72

WCDMA Mode

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Band V, Middle Channel										
836.60	73.66	183	125	H	23.12	0.63	-1.14	21.35	38.45	17.10
836.60	78.25	98	185	V	21.85	0.63	-1.14	20.08	38.45	18.37
WCDMA Band II, Middle Channel										
1880.00	88.05	303	220	H	13.48	0.85	8.81	21.44	33	11.56
1880.00	88.87	6	114	V	12.97	0.85	8.81	20.93	33	12.07
WCDMA Band IV, Middle Channel										
1732.60	89.04	61	139	H	11.70	0.84	8.58	19.44	30	10.56
1732.60	89.92	302	228	V	12.29	0.84	8.58	20.03	30	9.97

EIRP:

LTE Band 2

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)			
QPSK, 1.4M BW, Middle Channel								
1880.00	H	87.01	14.52	0.85	8.81	22.48	33.00	10.52
1880.00	V	88.43	13.41	0.85	8.81	21.37	33.00	11.63
16-QAM, 1.4M BW, Middle Channel								
1880.00	H	87.18	14.35	0.85	8.81	22.31	33.00	10.69
1880.00	V	88.02	13.82	0.85	8.81	21.78	33.00	11.22
QPSK, 3M BW, Middle Channel								
1880.00	H	87.46	14.07	0.85	8.81	22.03	33.00	10.97
1880.00	V	87.87	13.97	0.85	8.81	21.93	33.00	11.07
16-QAM, 3M BW, Middle Channel								
1880.00	H	87.08	14.45	0.85	8.81	22.41	33.00	10.59
1880.00	V	88.46	13.38	0.85	8.81	21.34	33.00	11.66
QPSK, 5M BW, Middle Channel								
1880.00	H	86.95	14.58	0.85	8.81	22.54	33.00	10.46
1880.00	V	88.06	13.78	0.85	8.81	21.74	33.00	11.26
16-QAM, 5M BW, Middle Channel								
1880.00	H	87.13	14.40	0.85	8.81	22.36	33.00	10.64
1880.00	V	88.33	13.51	0.85	8.81	21.47	33.00	11.53
QPSK, 10M BW, Middle Channel								
1880.00	H	87.46	14.07	0.85	8.81	22.03	33.00	10.97
1880.00	V	88.64	13.20	0.85	8.81	21.16	33.00	11.84
16-QAM, 10M BW, Middle Channel								
1880.00	H	86.95	14.58	0.85	8.81	22.54	33.00	10.46
1880.00	V	88.64	13.2	0.85	8.81	21.16	33.00	11.84
QPSK, 15M BW, Middle Channel								
1880.00	H	87.12	14.41	0.85	8.81	22.37	33.00	10.63
1880.00	V	88.62	13.22	0.85	8.81	21.18	33.00	11.82
16-QAM, 15M BW, Middle Channel								
1880.00	H	87.13	14.40	0.85	8.81	22.36	33.00	10.64
1880.00	V	88.33	13.51	0.85	8.81	21.47	33.00	11.53
QPSK, 20M BW, Middle Channel								
1880.00	H	86.81	14.72	0.85	8.81	22.68	33.00	10.32
1880.00	V	88.09	13.75	0.85	8.81	21.71	33.00	11.29
16-QAM, 20M BW, Middle Channel								
1880.00	H	86.82	14.71	0.85	8.81	22.67	33.00	10.33
1880.00	V	88.57	13.27	0.85	8.81	21.23	33.00	11.77

LTE Band 4

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi)			
QPSK, 1.4M BW, Middle Channel								
1732.50	H	86.91	15.89	0.84	8.57	23.62	30.00	6.38
1732.50	V	87.93	15.14	0.84	8.57	22.87	30.00	7.13
16-QAM, 1.4M BW, Middle Channel								
1732.50	H	87.06	15.74	0.84	8.57	23.47	30.00	6.53
1732.50	V	88.35	14.72	0.84	8.57	22.45	30.00	7.55
QPSK, 3M BW, Middle Channel								
1732.50	H	87.1	15.70	0.84	8.57	23.43	30.00	6.57
1732.50	V	88.06	15.01	0.84	8.57	22.74	30.00	7.26
16-QAM, 3M BW, Middle Channel								
1732.50	H	87.49	15.31	0.84	8.57	23.04	30.00	6.96
1732.50	V	88.17	14.90	0.84	8.57	22.63	30.00	7.37
QPSK, 5M BW, Middle Channel								
1732.50	H	86.79	16.01	0.84	8.57	23.74	30.00	6.26
1732.50	V	88.39	14.68	0.84	8.57	22.41	30.00	7.59
16-QAM, 5M BW, Middle Channel								
1732.50	H	86.99	15.81	0.84	8.57	23.54	30.00	6.46
1732.50	V	88.48	14.59	0.84	8.57	22.32	30.00	7.68
QPSK, 10M BW, Middle Channel								
1732.50	H	86.99	15.81	0.84	8.57	23.54	30.00	6.46
1732.50	V	88.17	14.90	0.84	8.57	22.63	30.00	7.37
16-QAM, 10M BW, Middle Channel								
1732.50	H	87.51	15.29	0.84	8.57	23.02	30.00	6.98
1732.50	V	88.63	14.44	0.84	8.57	22.17	30.00	7.83
QPSK, 15M BW, Middle Channel								
1732.50	H	87.41	15.39	0.84	8.57	23.12	30.00	6.88
1732.50	V	88.44	14.63	0.84	8.57	22.36	30.00	7.64
16-QAM, 15M BW, Middle Channel								
1732.50	H	87.5	15.30	0.84	8.57	23.03	30.00	6.97
1732.50	V	88.69	14.38	0.84	8.57	22.11	30.00	7.89
QPSK, 20M BW, Middle Channel								
1732.50	H	86.66	16.14	0.84	8.57	23.87	30.00	6.13
1732.50	V	87.88	15.19	0.84	8.57	22.92	30.00	7.08
16-QAM, 20M BW, Middle Channel								
1732.50	H	86.9	15.90	0.84	8.57	23.63	30.00	6.37
1732.50	V	88.42	14.65	0.84	8.57	22.38	30.00	7.62

LTE Band 12

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd)			
QPSK, 1.4M BW, Middle Channel								
707.50	H	77.16	25.67	0.62	-1.71	23.34	34.77	11.43
707.50	V	76.99	24.45	0.62	-1.71	22.12	34.77	12.65
16-QAM, 1.4M BW, Middle Channel								
707.50	H	77.36	25.47	0.62	-1.71	23.14	34.77	11.63
707.50	V	77.07	24.37	0.62	-1.71	22.04	34.77	12.73
QPSK, 3M BW, Middle Channel								
707.50	H	76.96	25.87	0.62	-1.71	23.54	34.77	11.23
707.50	V	76.90	24.54	0.62	-1.71	22.21	34.77	12.56
16-QAM, 3M BW, Middle Channel								
707.50	H	77.18	25.65	0.62	-1.71	23.32	34.77	11.45
707.50	V	77.04	24.40	0.62	-1.71	22.07	34.77	12.70
QPSK, 5M BW, Middle Channel								
707.50	H	76.93	25.90	0.62	-1.71	23.57	34.77	11.20
707.50	V	76.95	24.49	0.62	-1.71	22.16	34.77	12.61
16-QAM, 5M BW, Middle Channel								
707.50	H	76.96	25.87	0.62	-1.71	23.54	34.77	11.23
707.50	V	76.75	24.69	0.62	-1.71	22.36	34.77	12.41
QPSK, 10M BW, Middle Channel								
707.50	H	76.76	26.07	0.62	-1.71	23.74	34.77	11.03
707.50	V	76.70	24.74	0.62	-1.71	22.41	34.77	12.36
16-QAM, 10M BW, Middle Channel								
707.50	H	77.29	25.54	0.62	-1.71	23.21	34.77	11.56
707.50	V	76.98	24.46	0.62	-1.71	22.13	34.77	12.64

LTE Band 17

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd)			
QPSK, 5M BW, Middle Channel								
710.00	H	77.20	25.67	0.62	-1.70	23.35	34.77	11.42
710.00	V	76.87	24.44	0.62	-1.70	22.12	34.77	12.65
16-QAM, 5M BW, Middle Channel								
710.00	H	77.51	25.36	0.62	-1.70	23.04	34.77	11.73
710.00	V	76.96	24.35	0.62	-1.70	22.03	34.77	12.74
QPSK, 10M BW, Middle Channel								
710.00	H	77.14	25.73	0.62	-1.70	23.41	34.77	11.36
710.00	V	76.81	24.50	0.62	-1.70	22.18	34.77	12.59
16-QAM, 10M BW, Middle Channel								
710.00	H	77.32	25.55	0.62	-1.70	23.23	34.77	11.54
710.00	V	76.95	24.36	0.62	-1.70	22.04	34.77	12.73

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

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

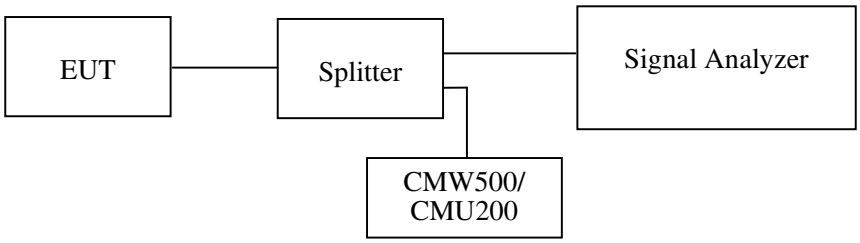
Applicable Standards

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 Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

The testing was performed by Kyle Xu from 2017-09-20 to 2017-09-27.

EUT operation mode: Transmitting

Test Result: Compliance.

GSM 850 Band

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
GSM (GMSK)	836.60	0.319	0.244
GPRS (GMSK)	836.60	0.315	0.246
EGPRS (8PSK)	836.60	0.313	0.246

WCDMA Band V

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (BPSK)	836.60	4.790	4.188

PCS1900 Band

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
GSM (GMSK)	1880.00	0.313	0.244
GPRS (GMSK)	1880.00	0.319	0.244
EGPRS (8PSK)	1880.00	0.319	0.246

WCDMA Band II

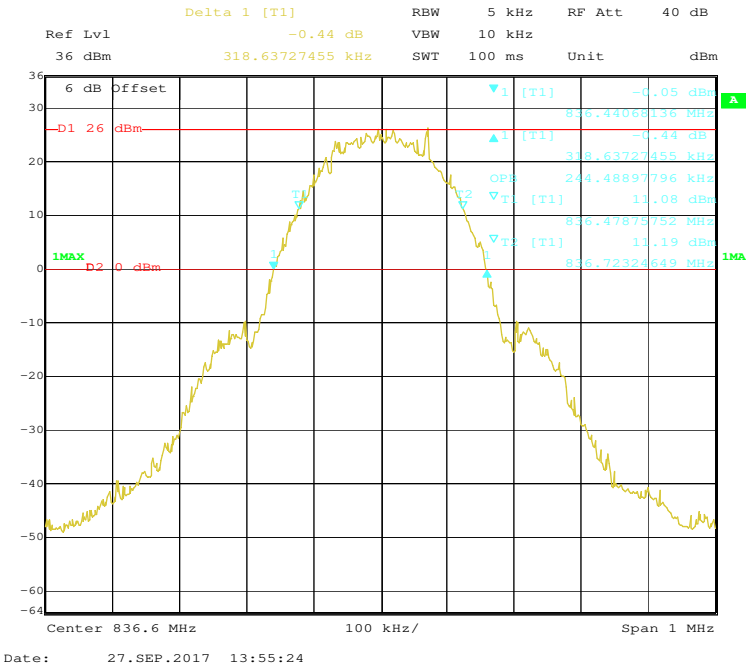
Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (BPSK)	1880.00	4.770	4.168

WCDMA Band IV

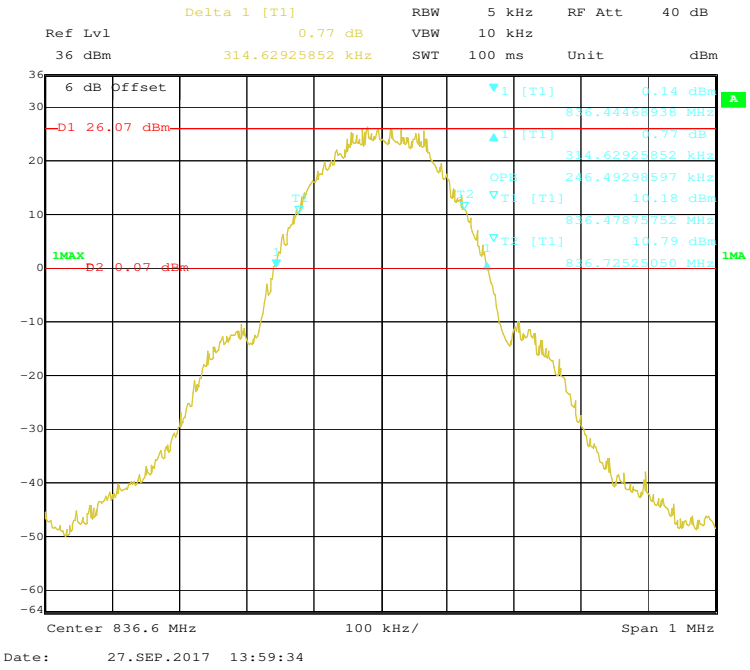
Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (BPSK)	1732.6	4.749	4.168

GSM 850Band

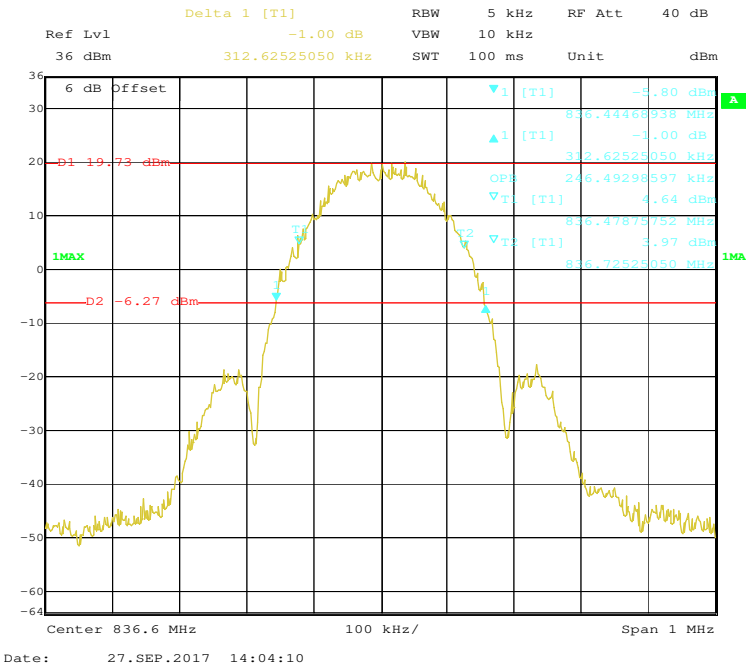
99% Occupied & 26 dB Emissions Bandwidth for GSM (GMSK) Mode



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

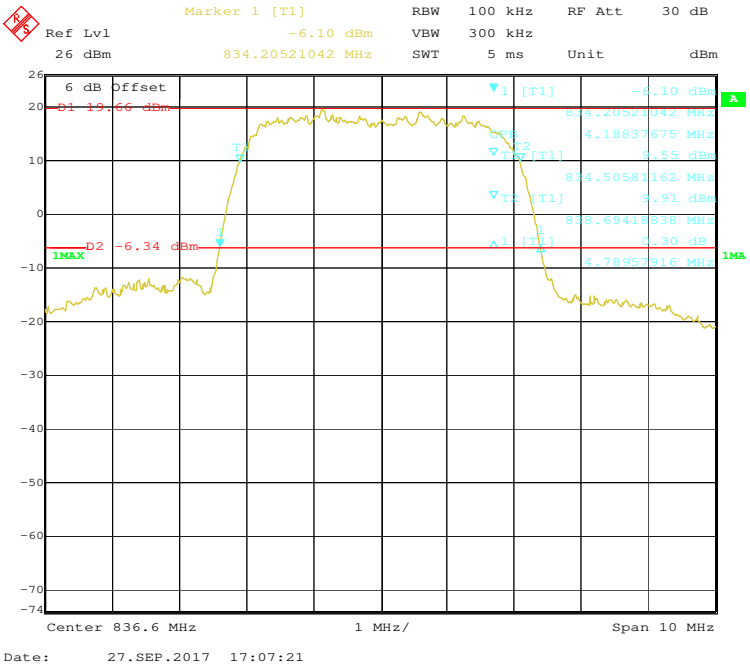


99% Occupied & 26 dB Emissions Bandwidth for EGRPS (8PSK) Mode



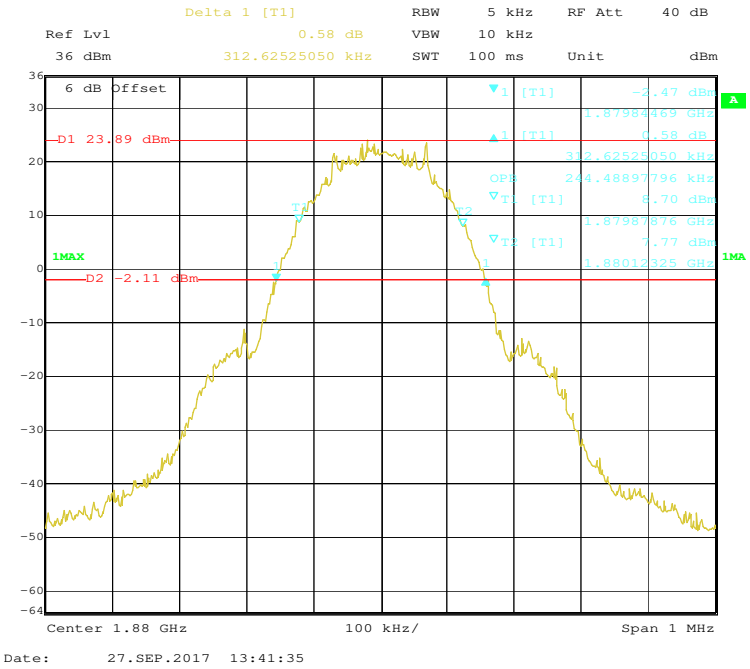
WCDMA Band V

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

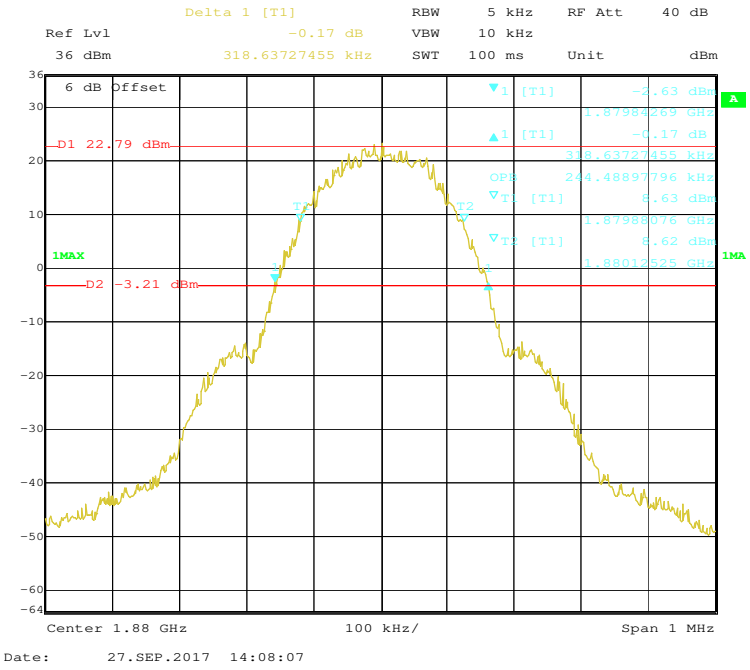


PCS 1900Band

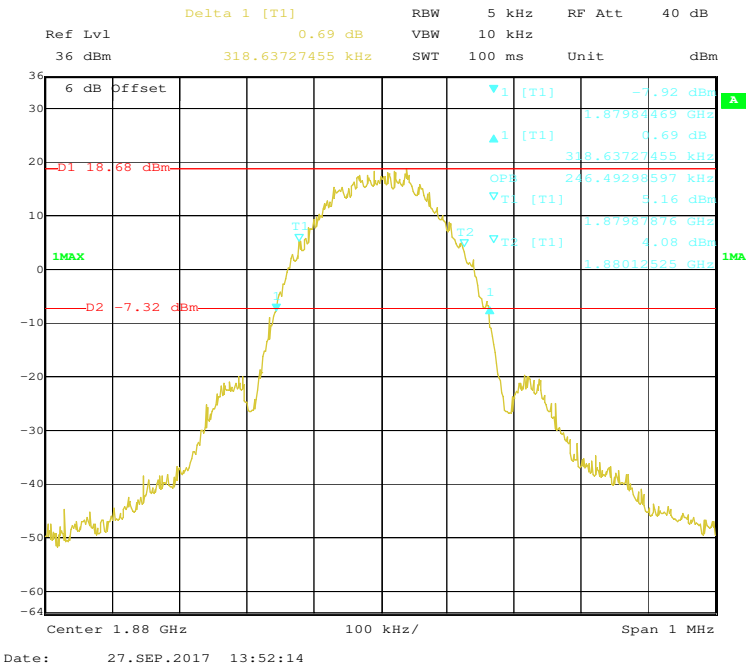
99% Occupied & 26 dB Emissions Bandwidth for GSM (GMSK) Mode



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

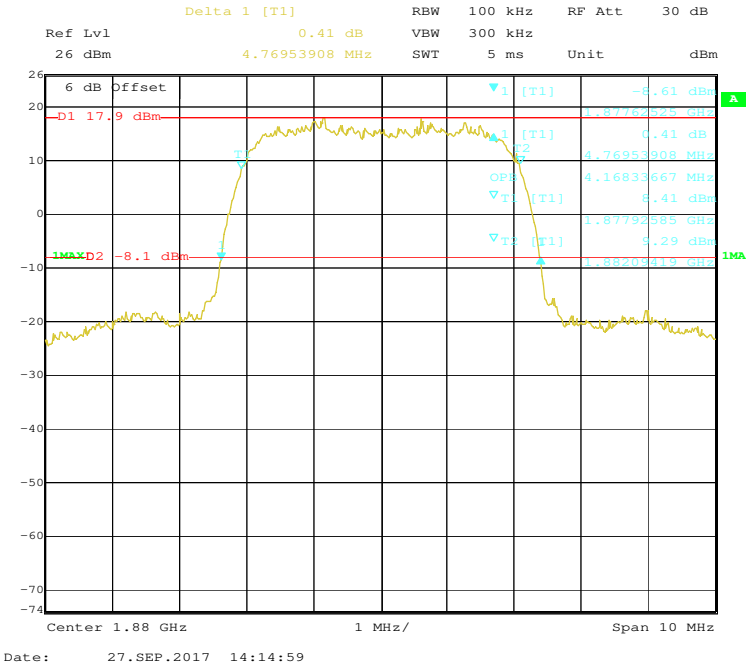


99% Occupied & 26 dB Emissions Bandwidth for EGRPS (8PSK) Mode



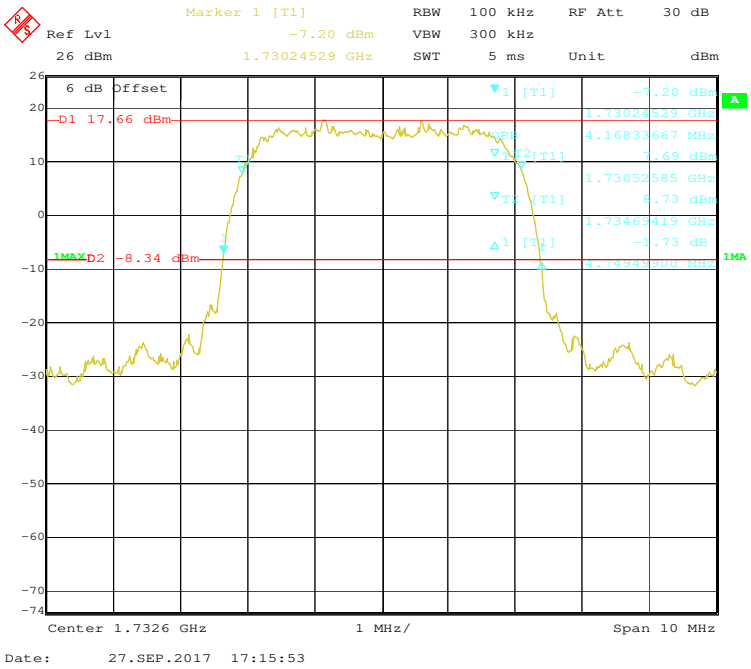
WCDMA Band II

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



WCDMA Band IV

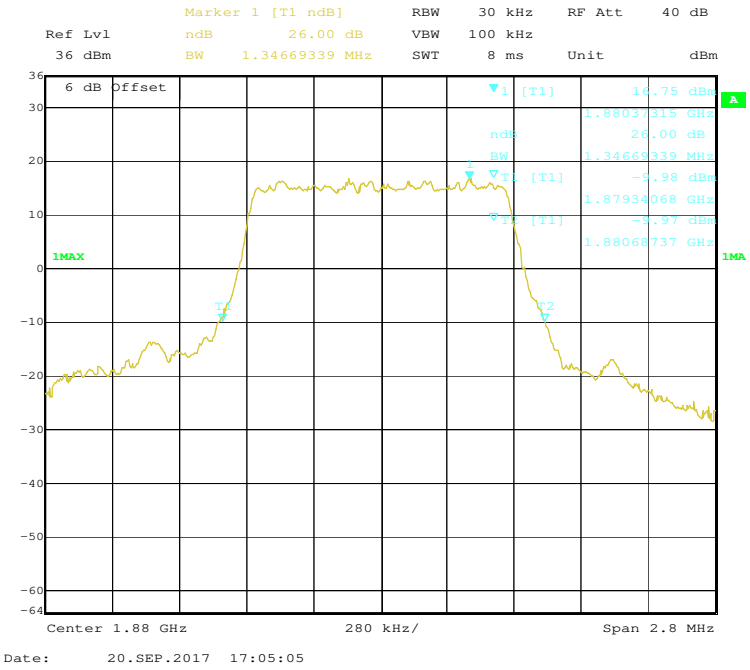
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (BPSK) Mode



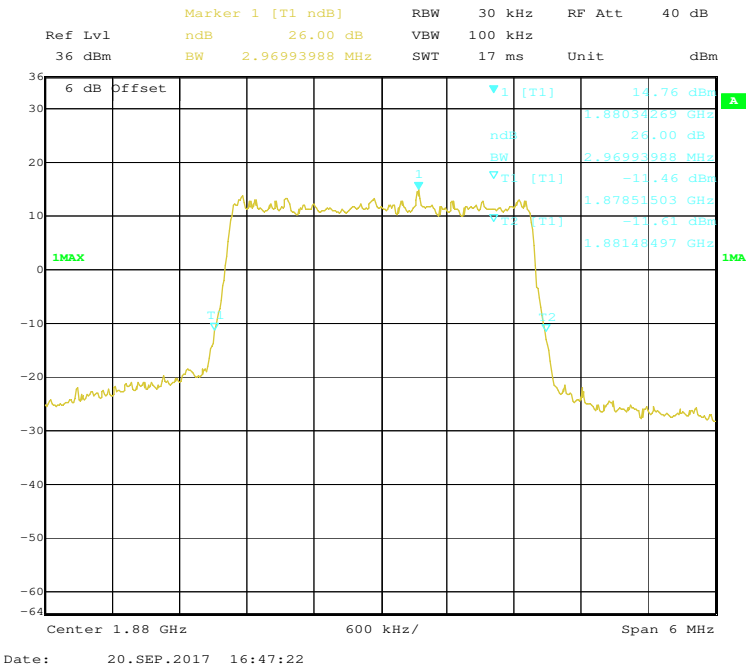
LTE Band 2:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	1.4M	Middle	1.347	1.111
	3M		2.970	2.693
	5M		5.070	4.549
	10M		9.820	9.018
	15M		15.090	13.587
	20M		19.559	17.956
16-QAM	1.4M	Middle	1.313	1.111
	3M		2.982	2.705
	5M		5.050	4.529
	10M		9.699	9.018
	15M		14.970	13.587
	20M		19.719	17.956

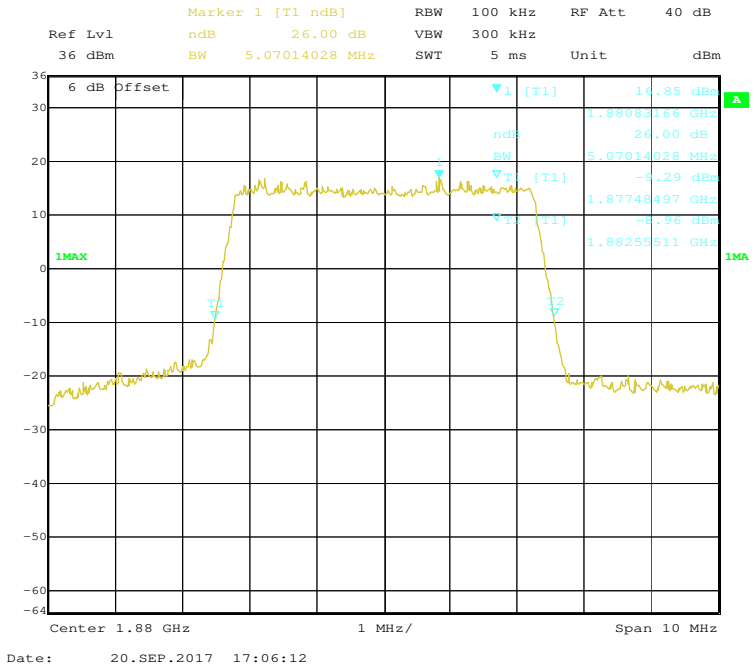
QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel



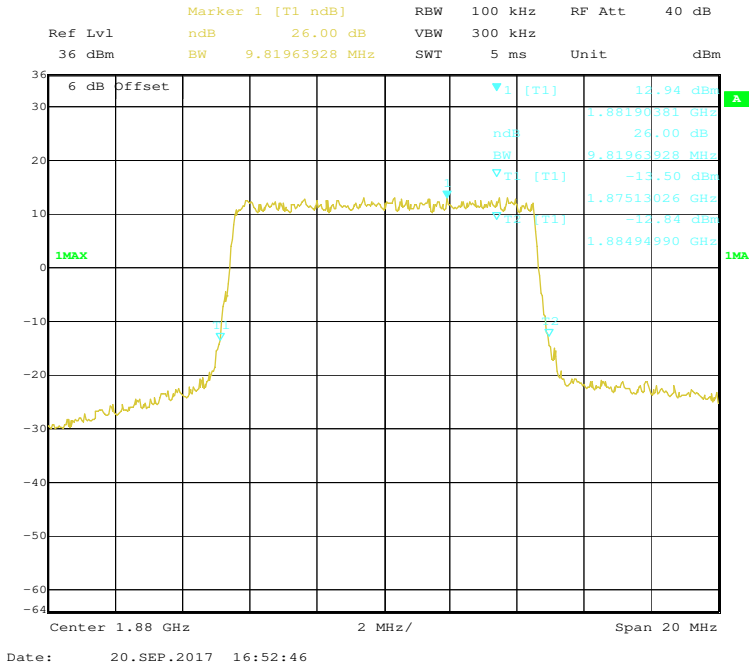
QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel



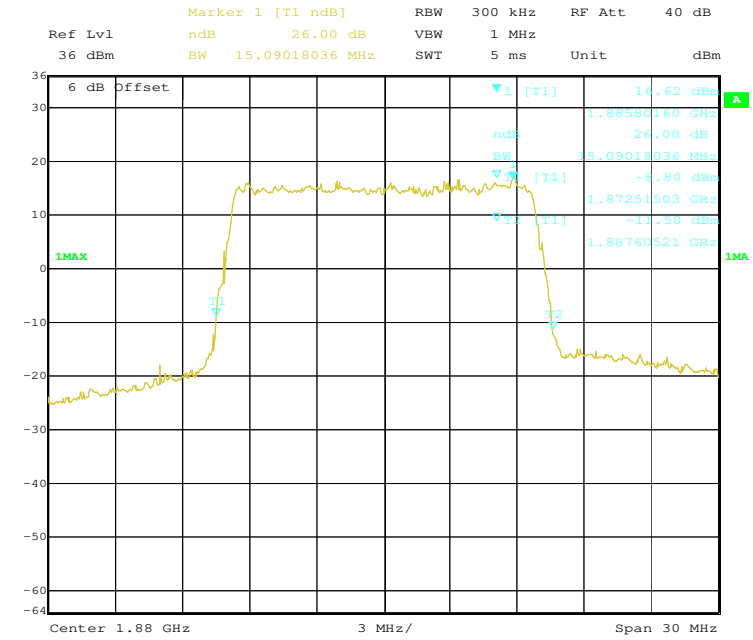
QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel



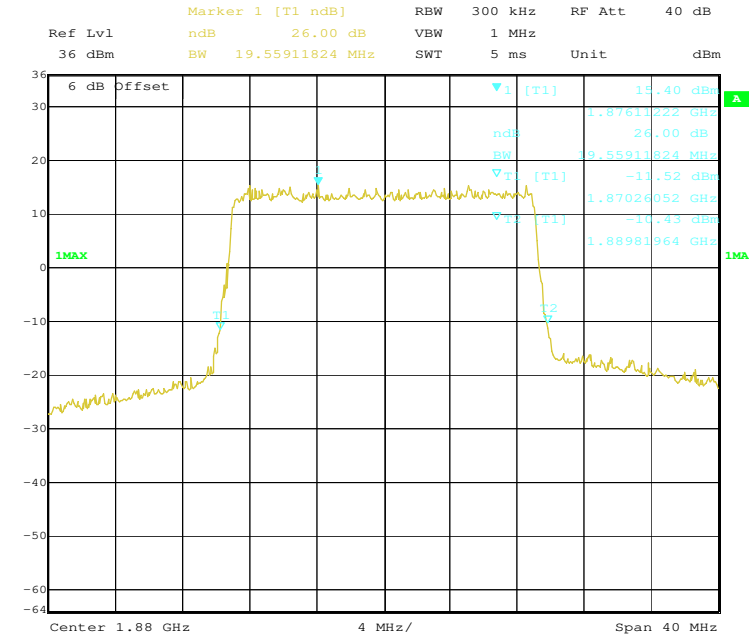
QPSK (10.0MHz) - 26 dB Bandwidth, Middle channel



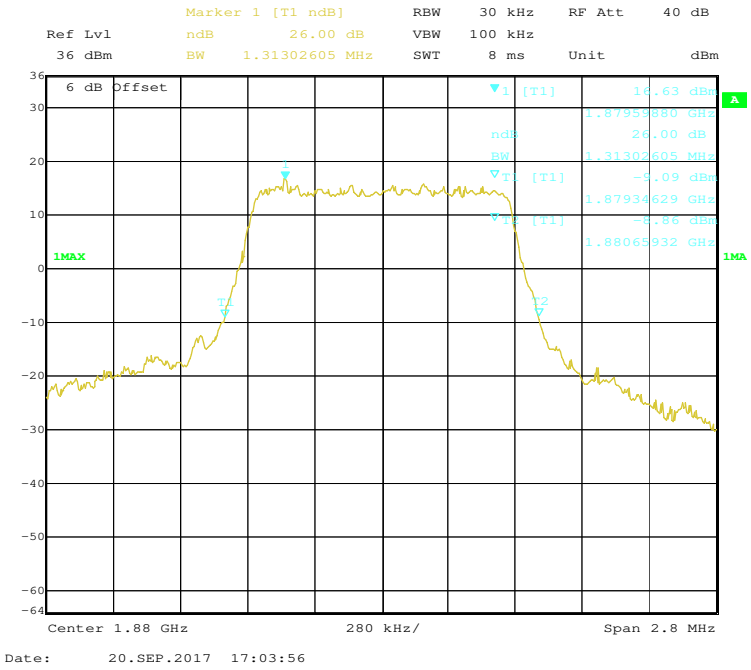
QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel



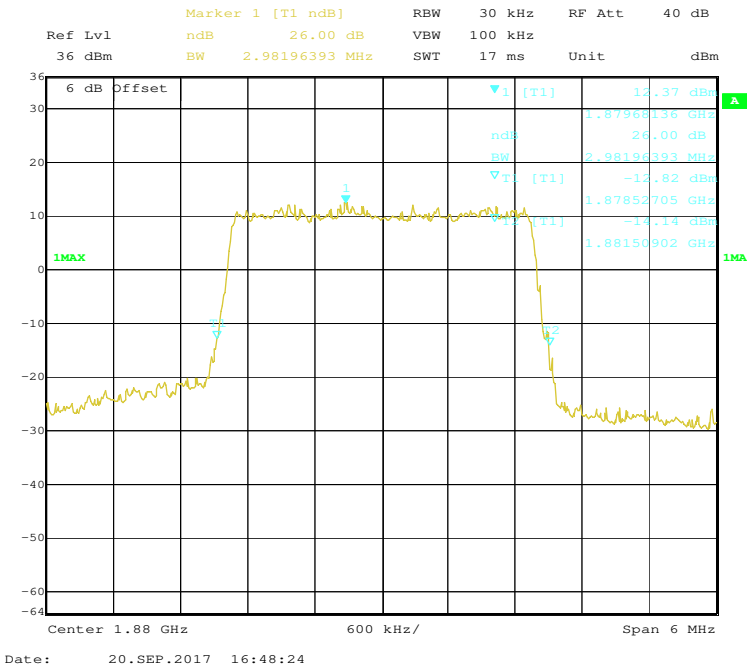
QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel



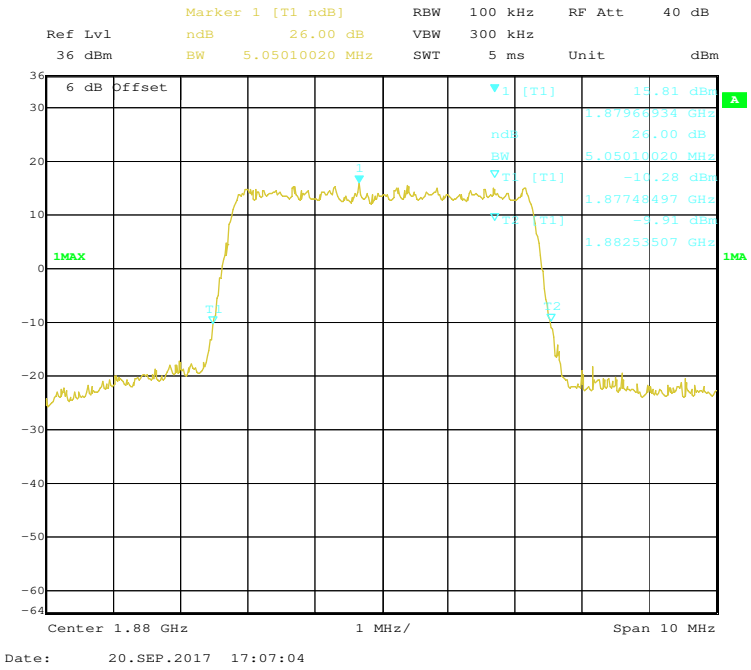
16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel



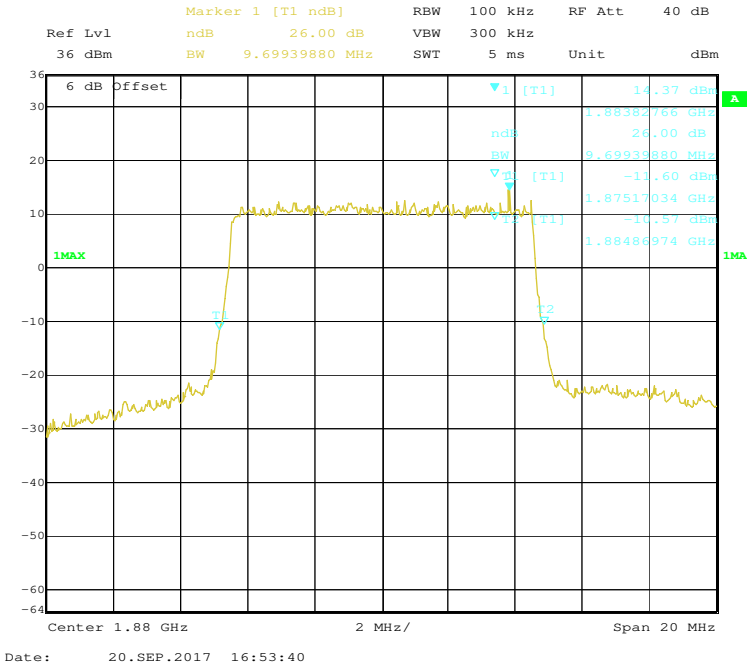
16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel



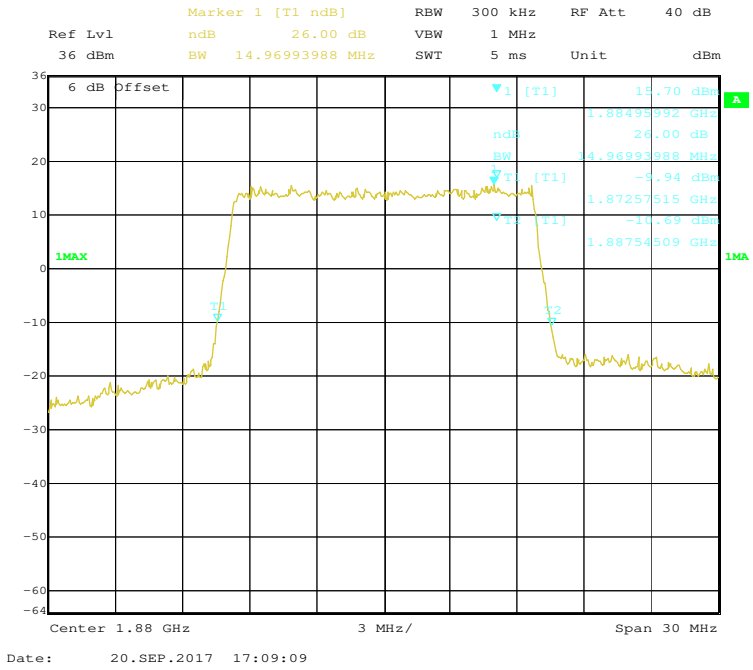
16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel



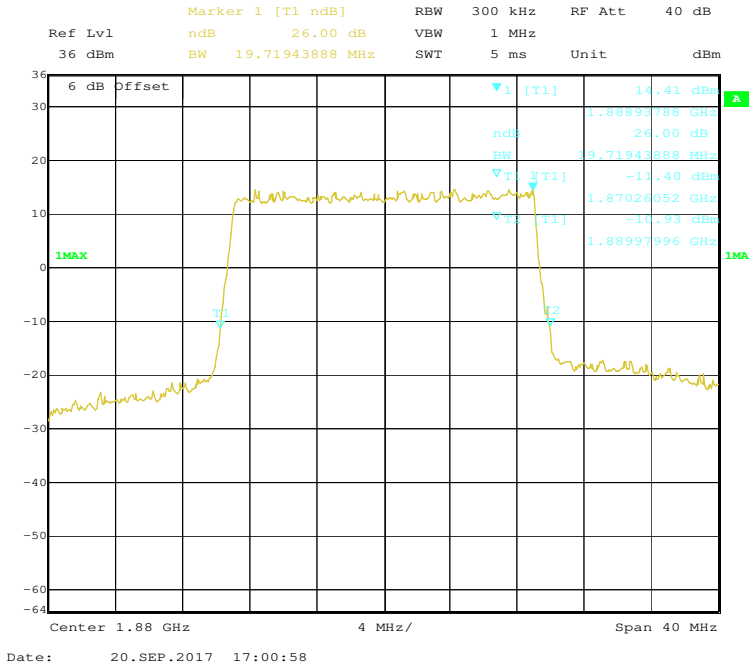
16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel



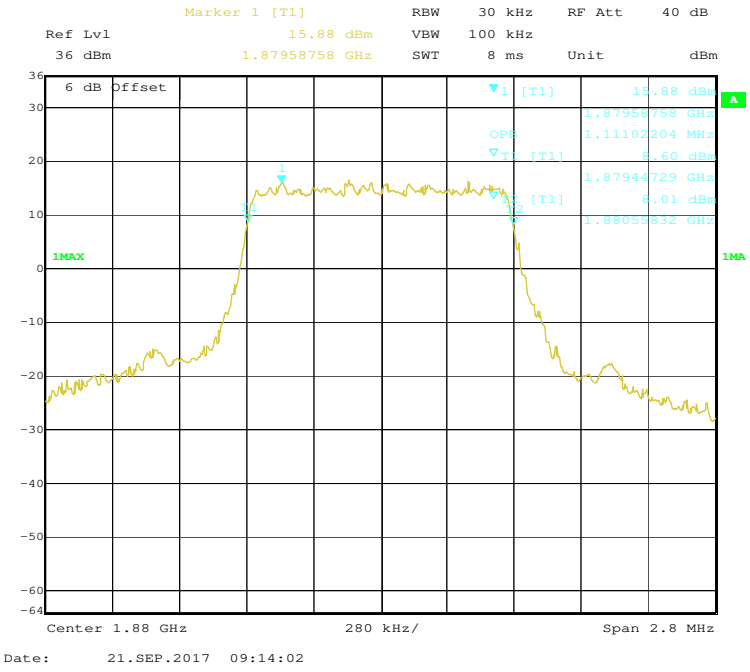
16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel



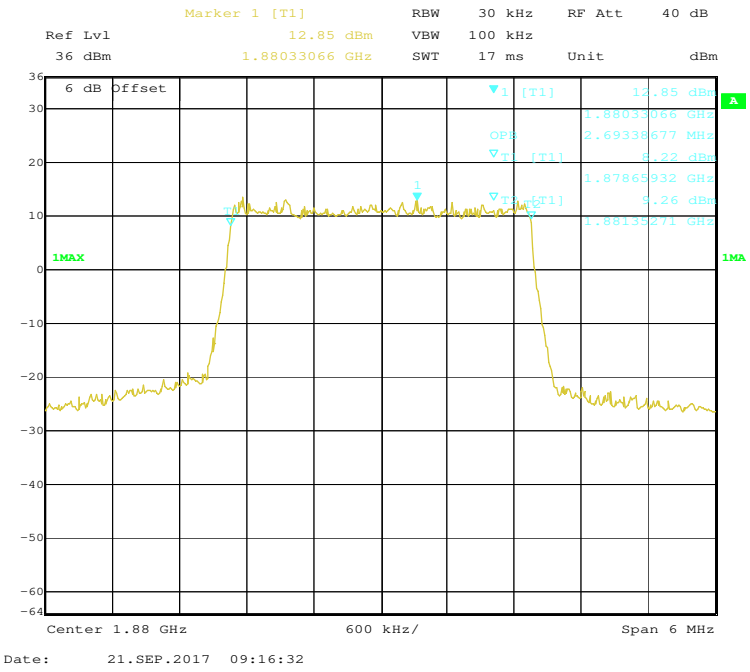
16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel



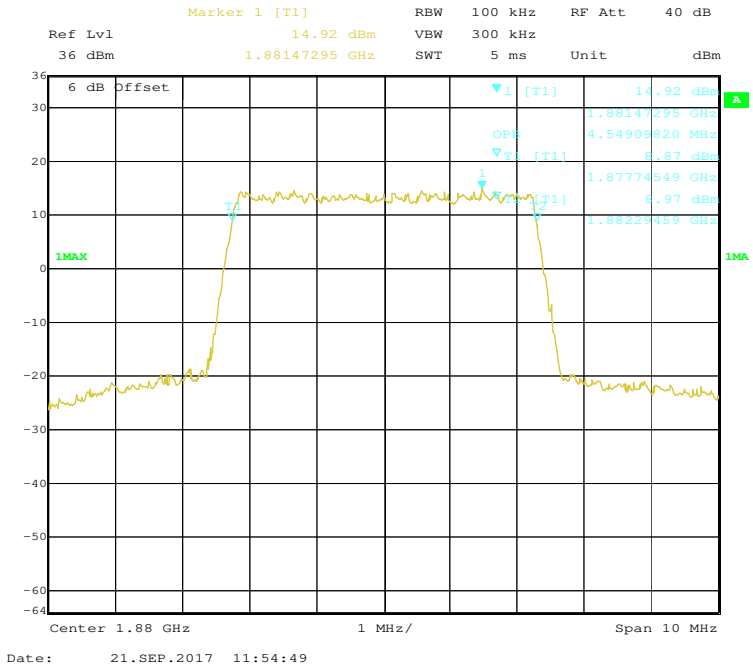
QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



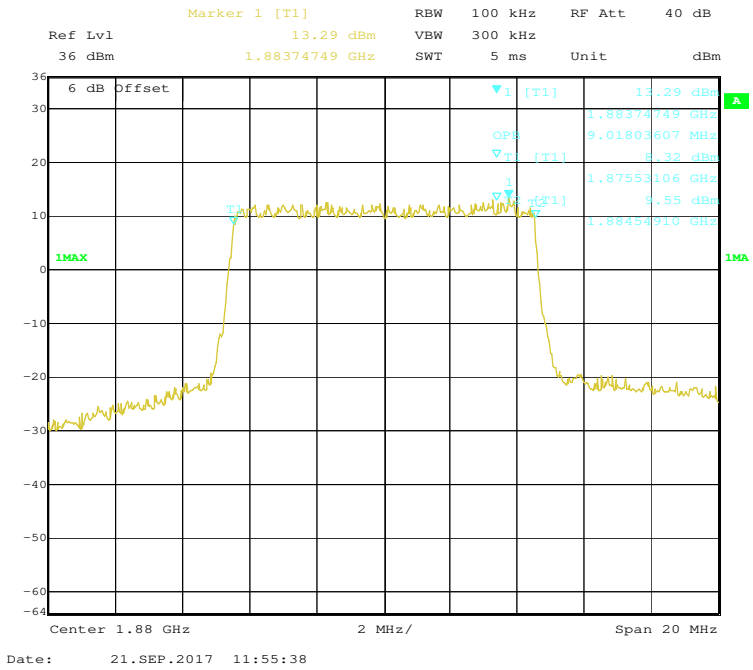
QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



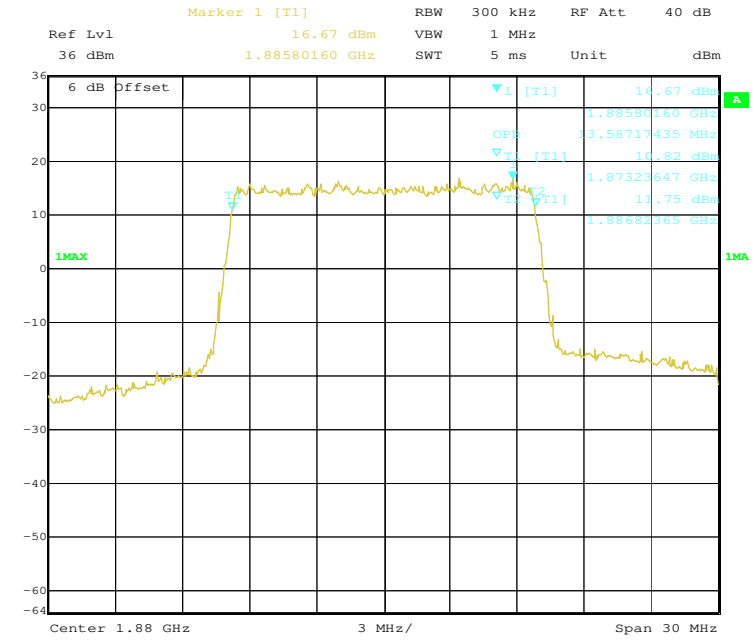
QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



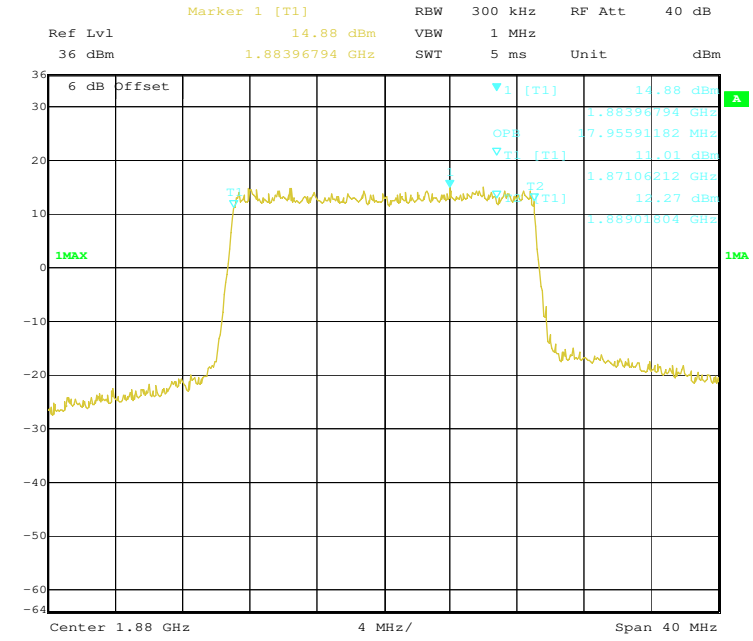
QPSK (10.0MHz) - 99% Occupied Bandwidth, Middle channel



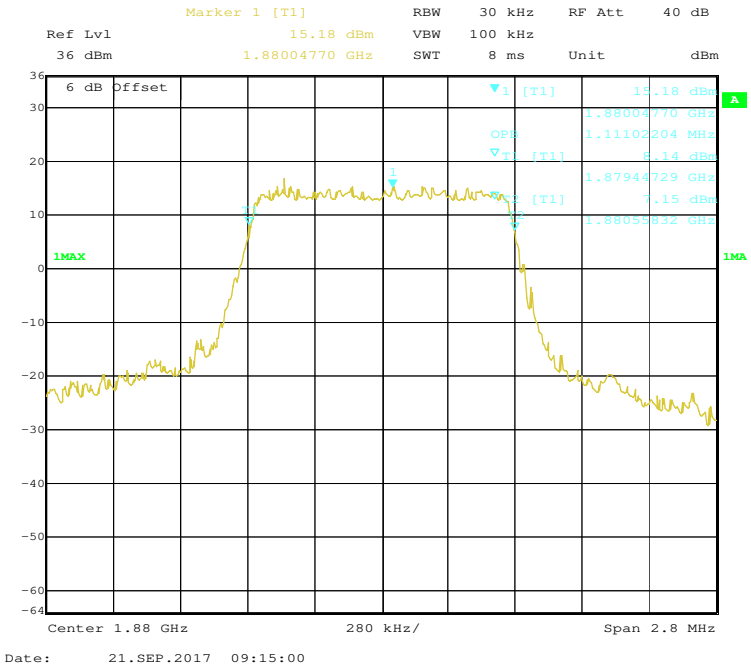
QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel



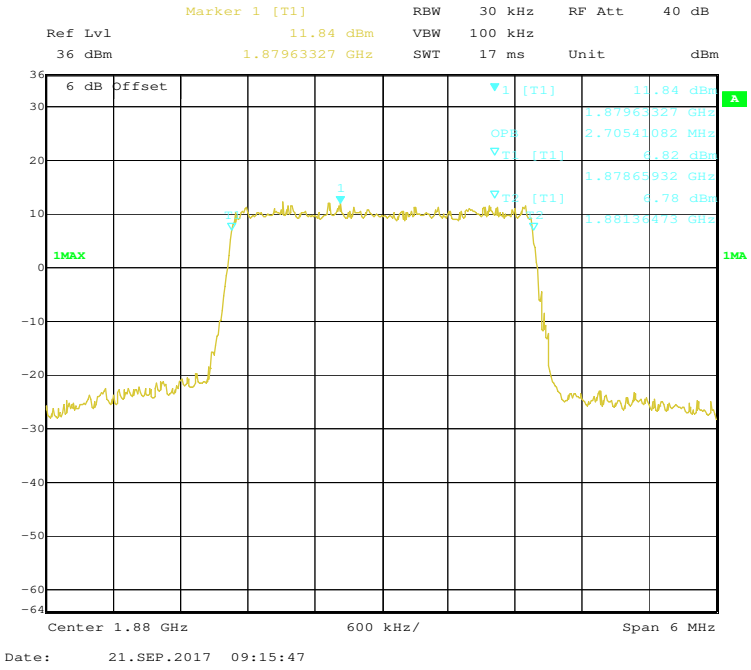
QPSK (20.0 MHz) - 99% Occupied Bandwidth, Middle channel



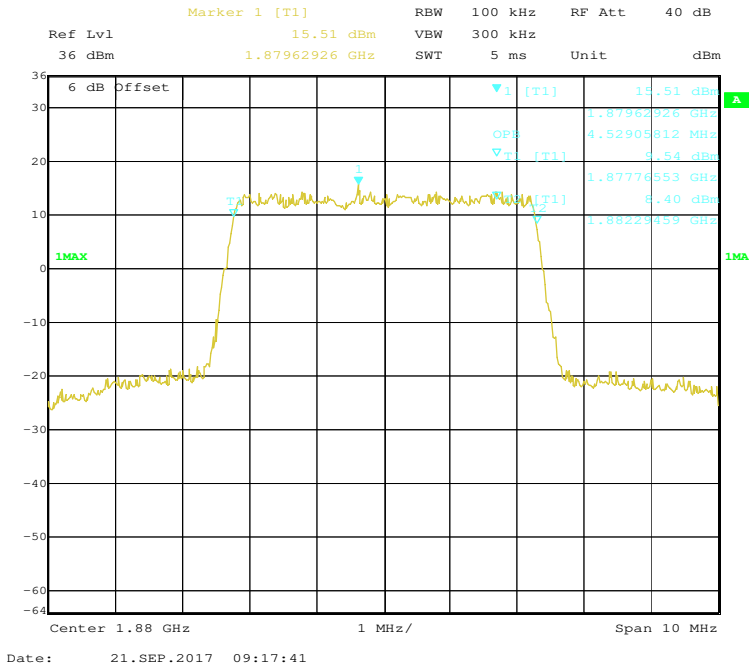
16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



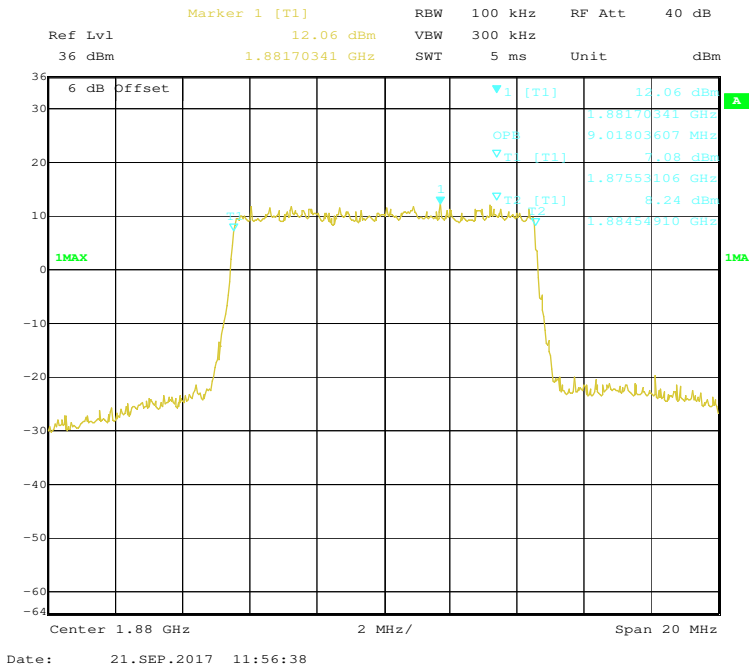
16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



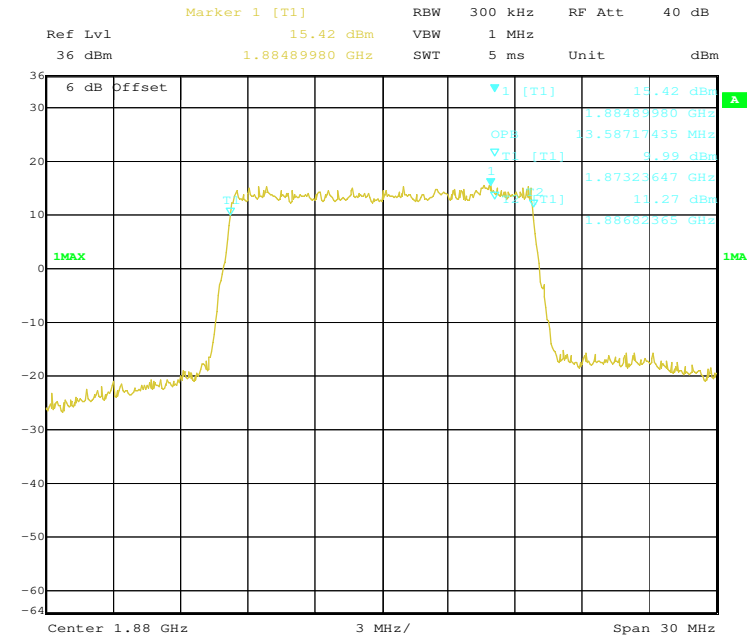
16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



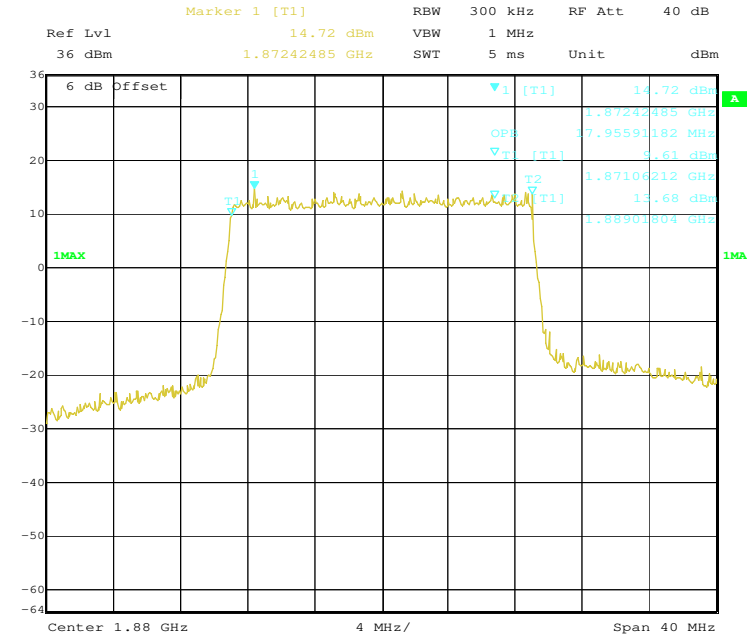
16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



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



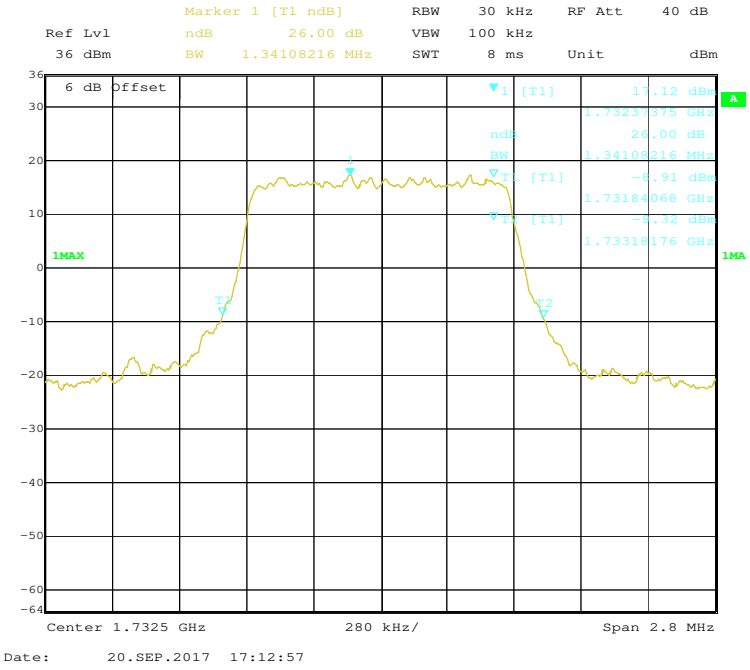
16-QAM (20.0 MHz) - 99% Occupied Bandwidth, Middle channel



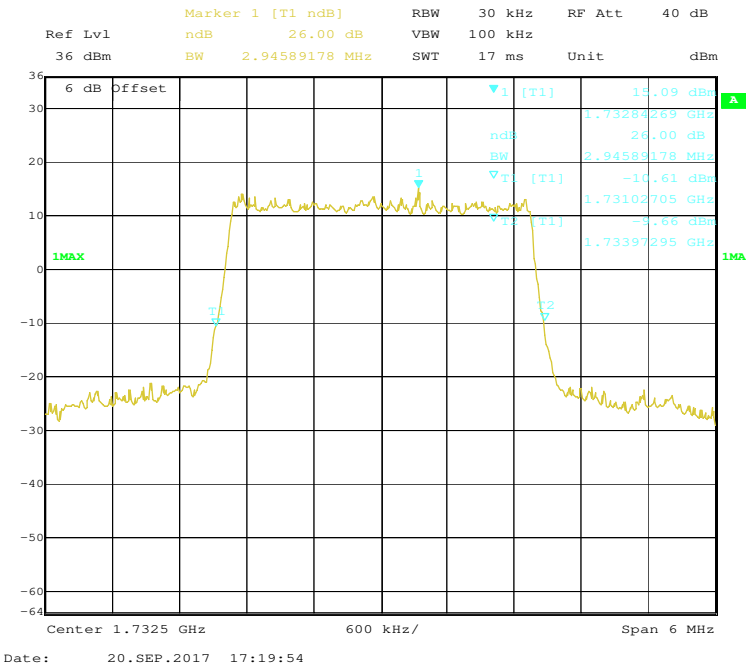
LTE Band 4:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	1.4M	Middle	1.341	1.111
	3M		2.946	2.705
	5M		5.070	4.549
	10M		9.820	8.978
	15M		15.030	13.527
	20M		19.399	17.956
16-QAM	1.4M	Middle	1.319	1.105
	3M		2.982	2.693
	5M		5.050	4.529
	10M		9.659	8.938
	15M		14.970	13.527
	20M		19.559	17.956

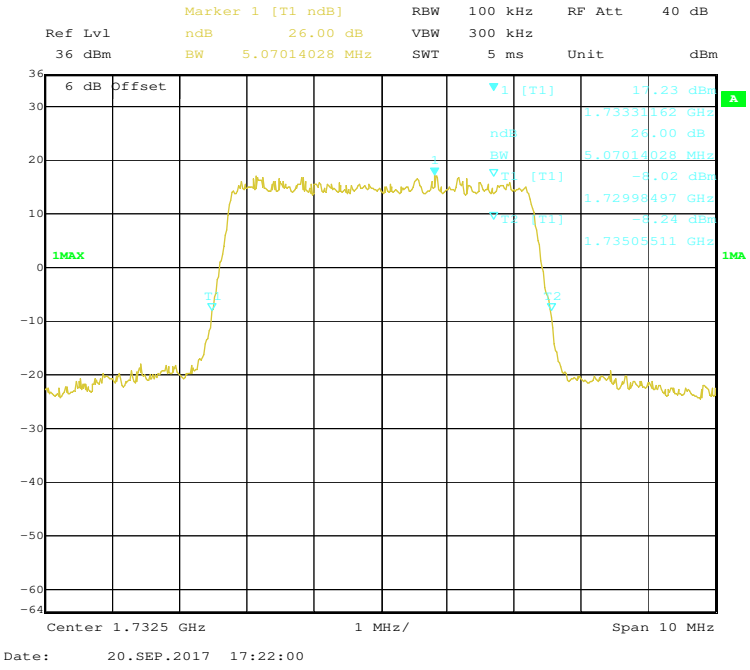
QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel



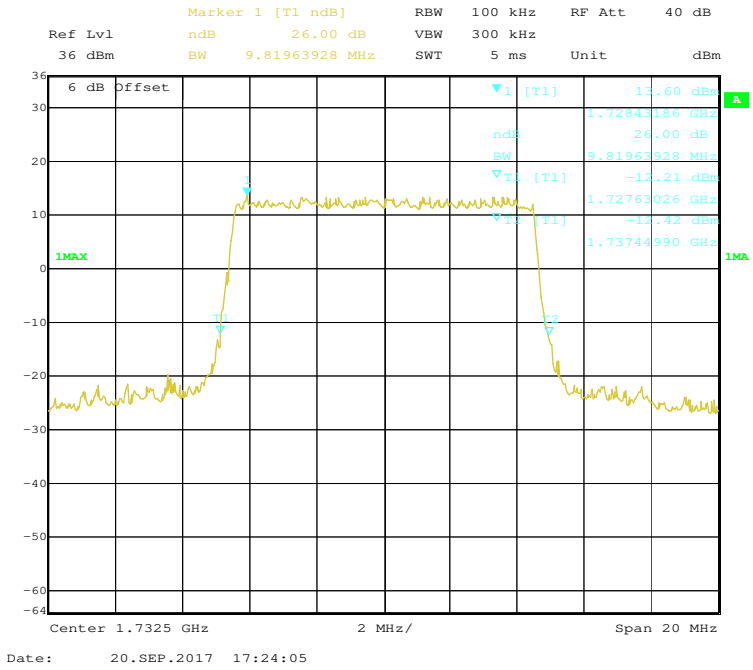
QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel



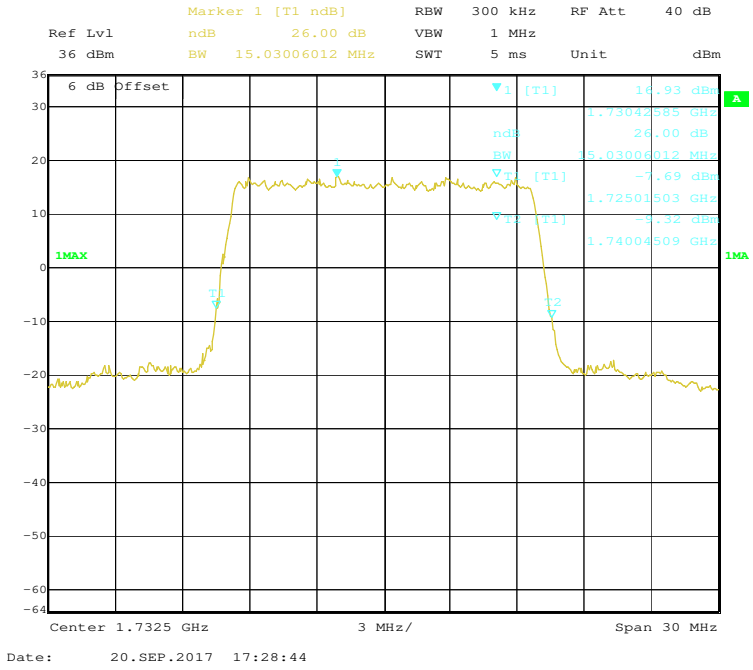
QPSK (5.0MHz) - 26 dB Bandwidth, Middle channel



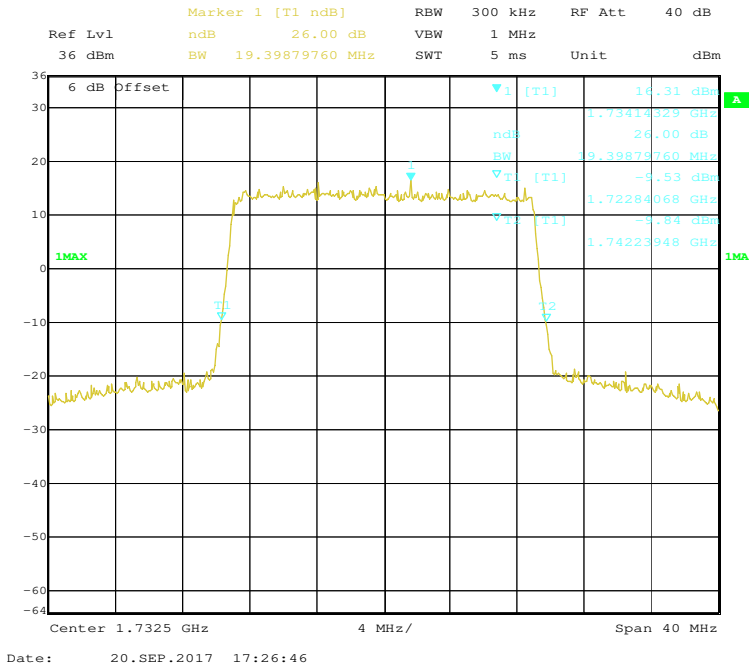
QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel



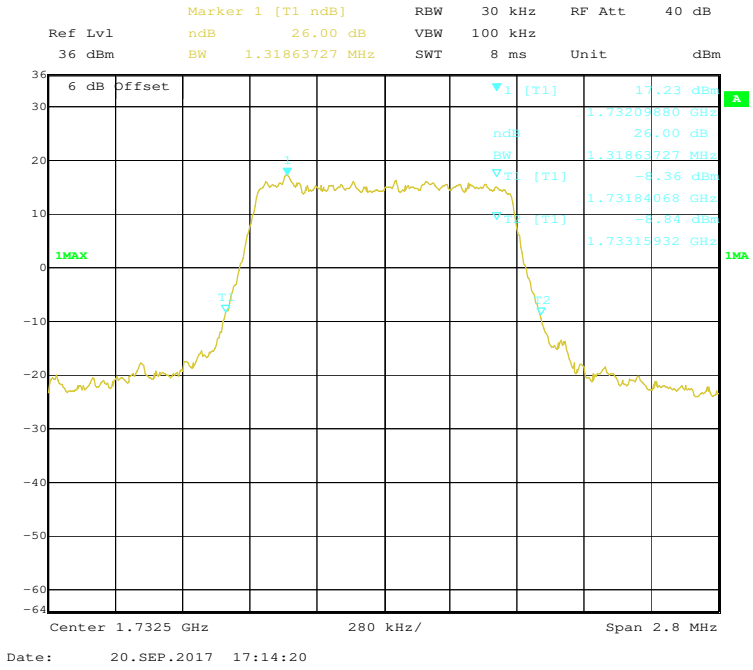
QPSK (15.0 MHz) - 26 dB Bandwidth, Middle channel



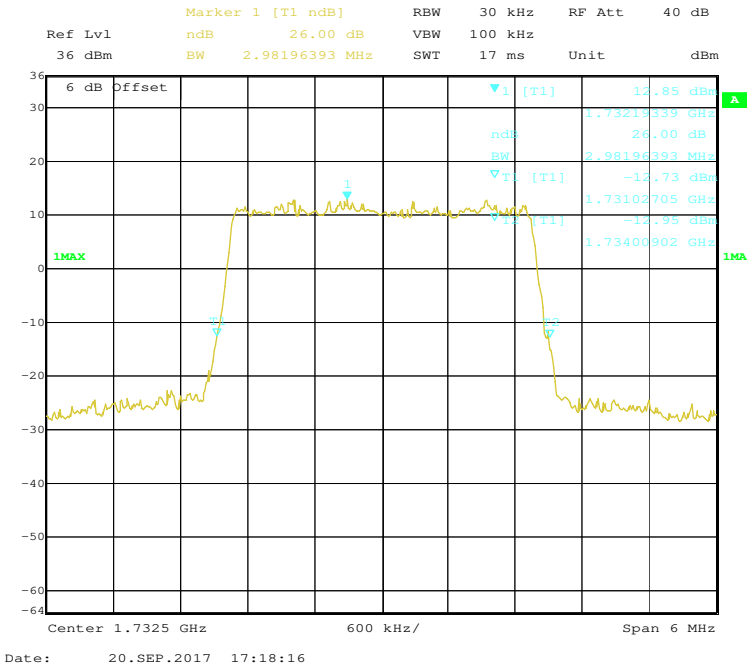
QPSK (20.0 MHz) - 26 dB Bandwidth, Middle channel



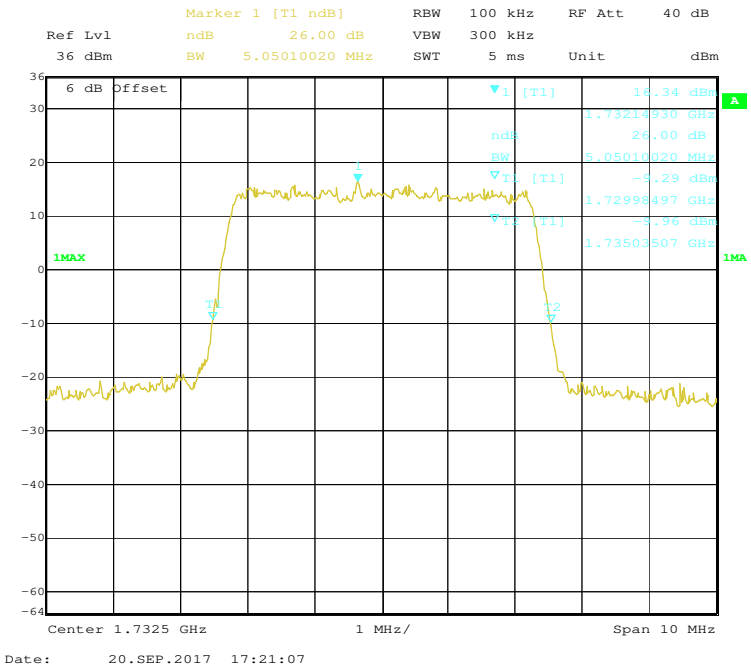
16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel



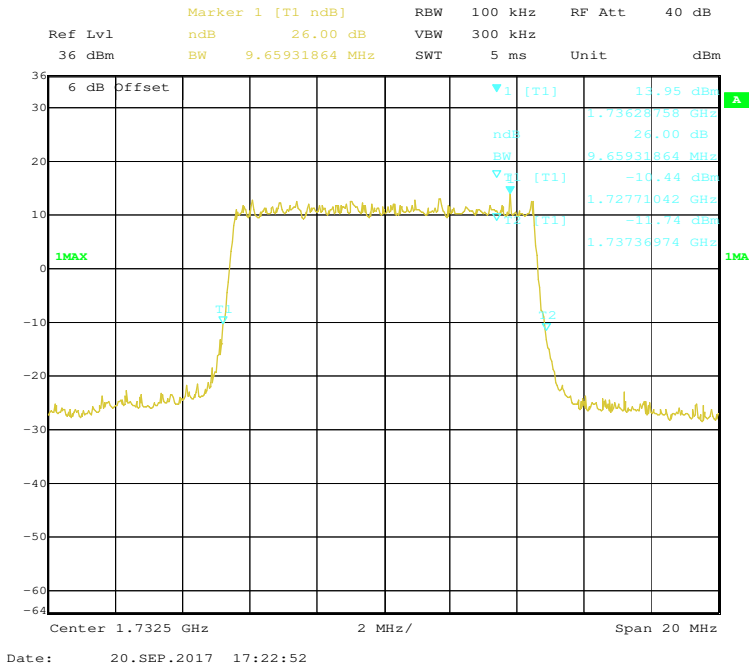
16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel



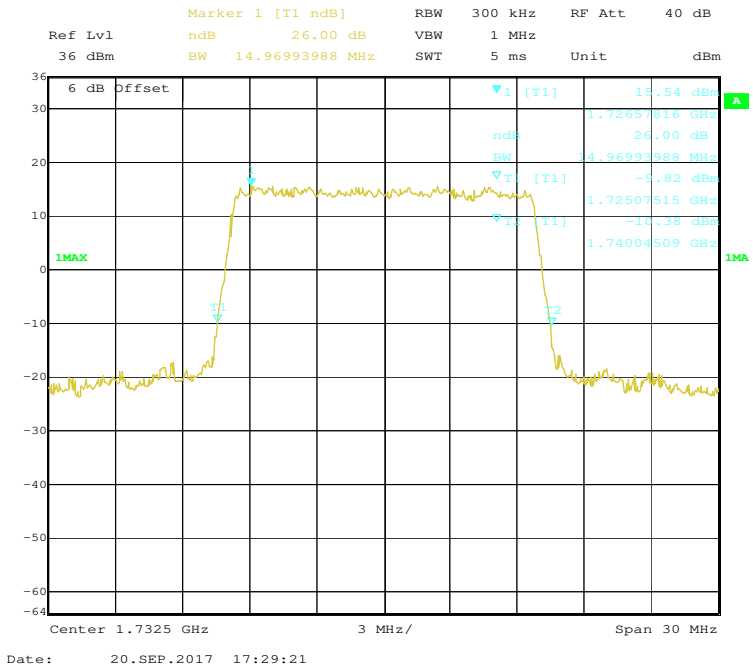
16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel



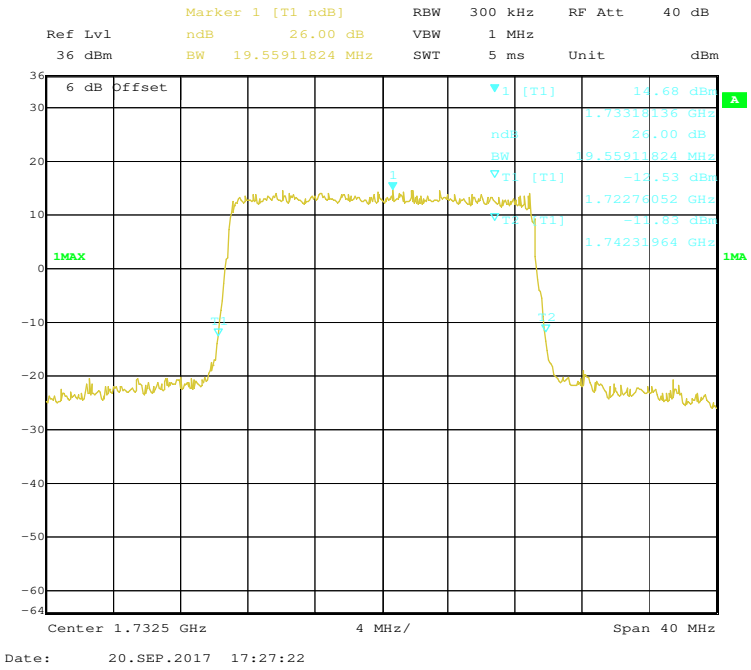
16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel



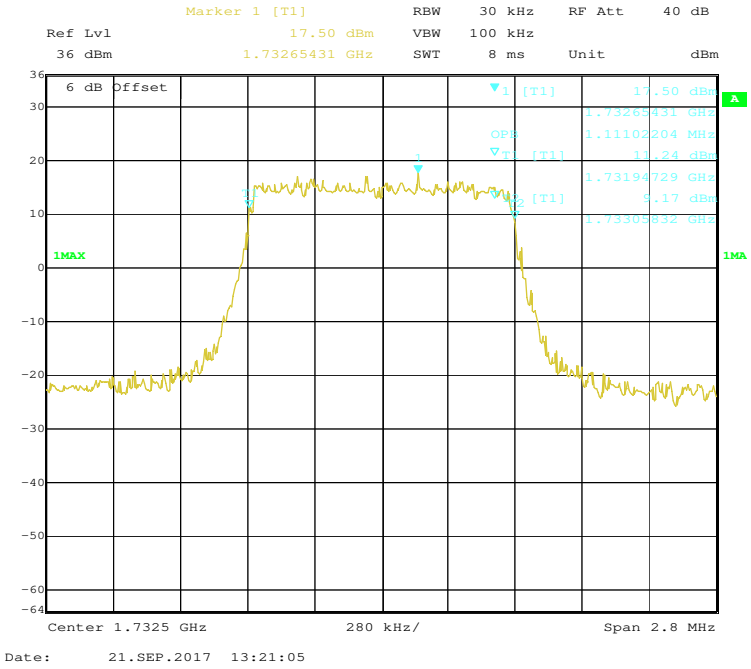
16-QAM (15.0 MHz) - 26 dB Bandwidth, Middle channel



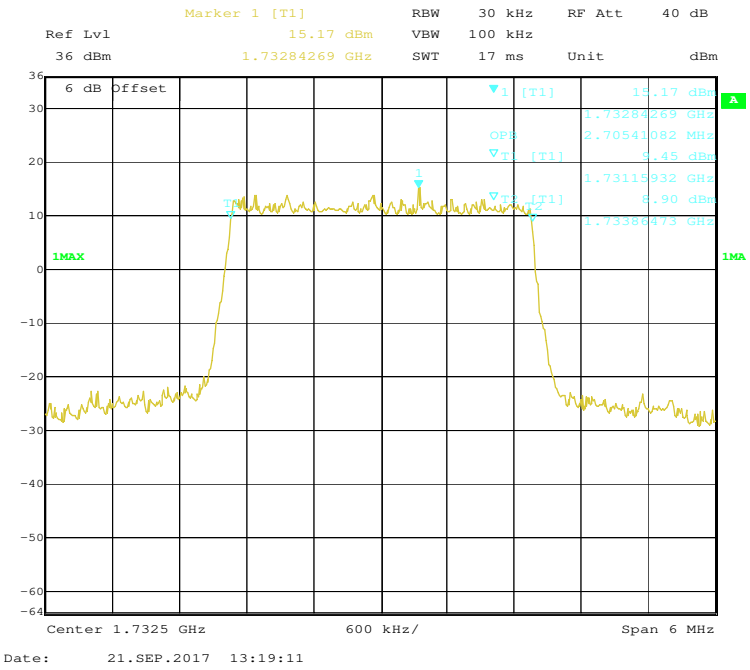
16-QAM (20.0 MHz) - 26 dB Bandwidth, Middle channel



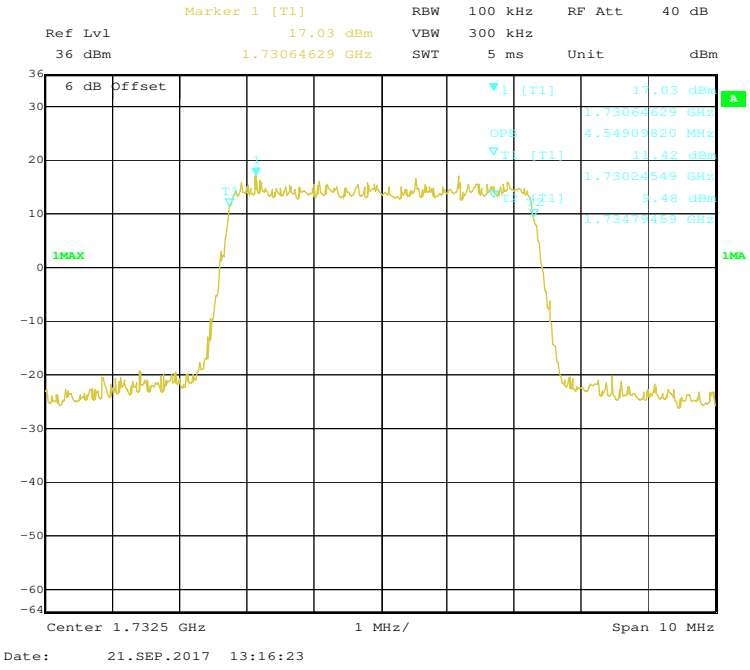
QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



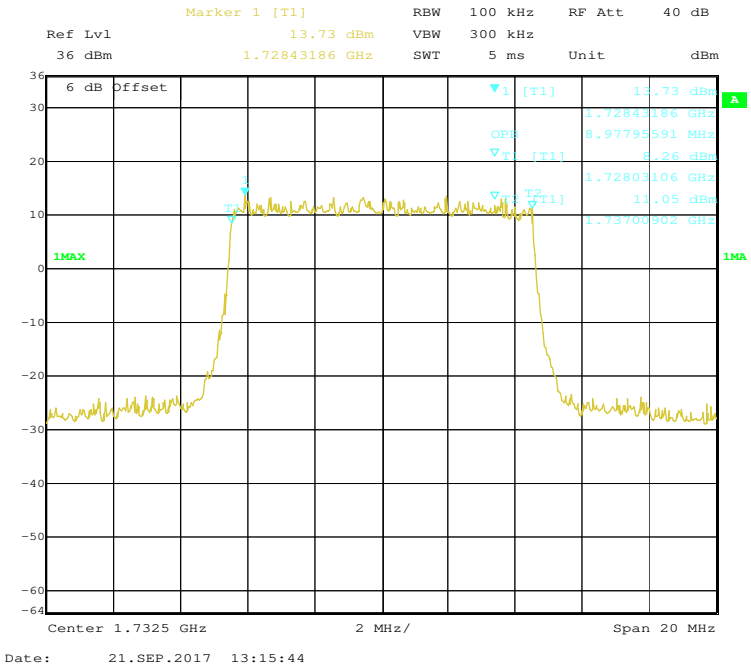
QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



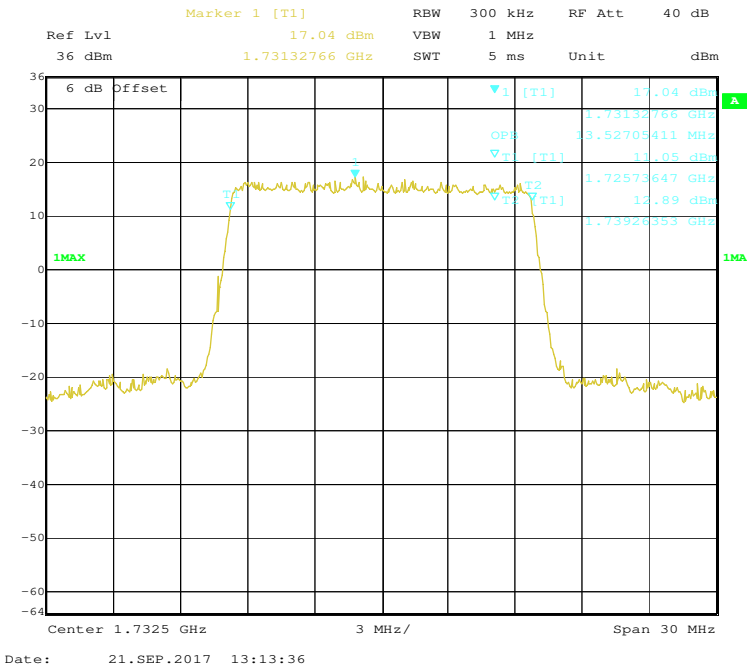
QPSK (5.0MHz) - 99% Occupied Bandwidth, Middle channel



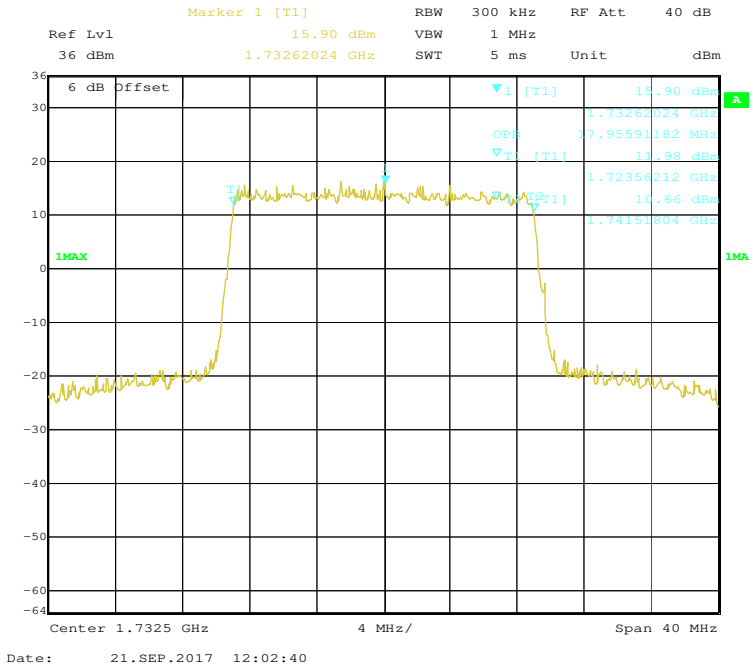
QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



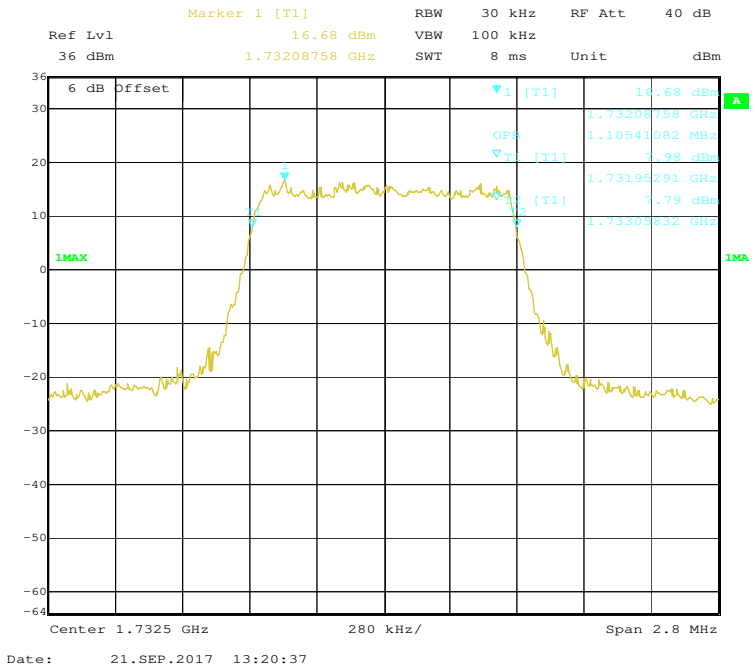
QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel



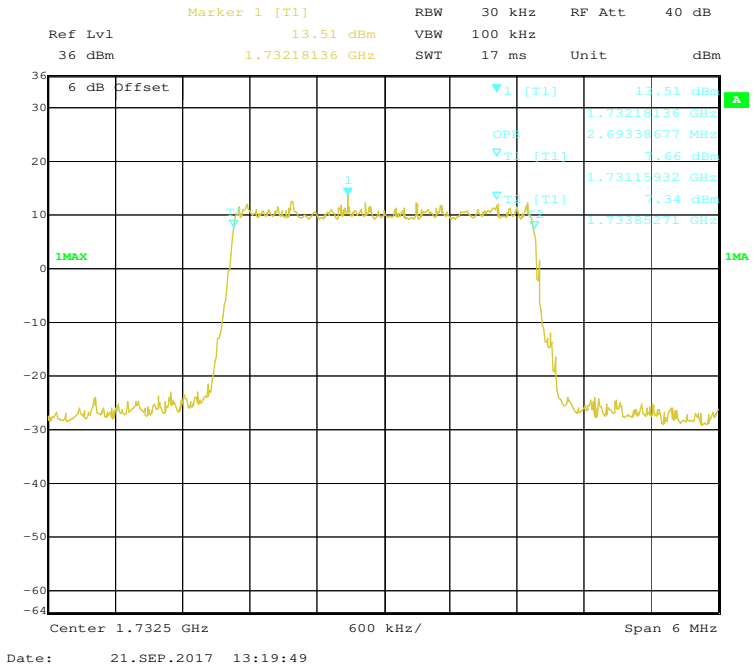
QPSK (20.0 MHz) - 99% Occupied Bandwidth, Middle channel



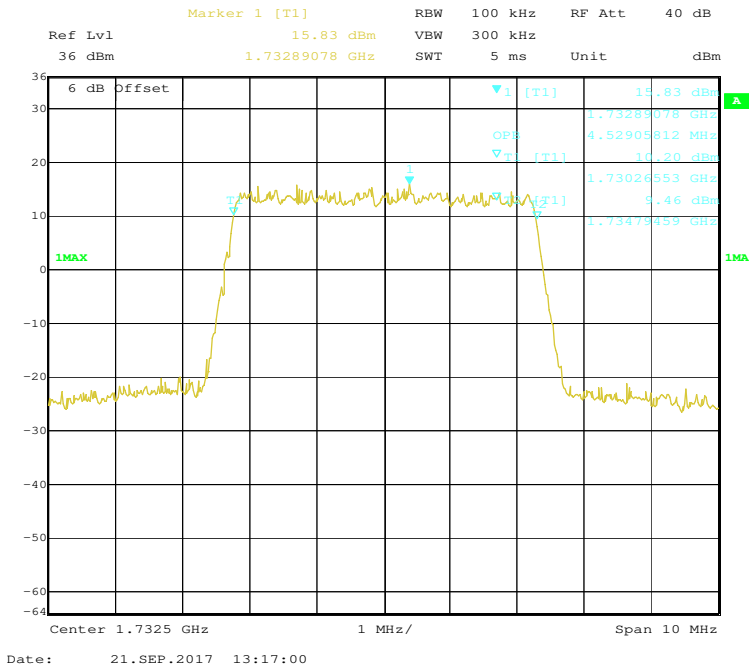
16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



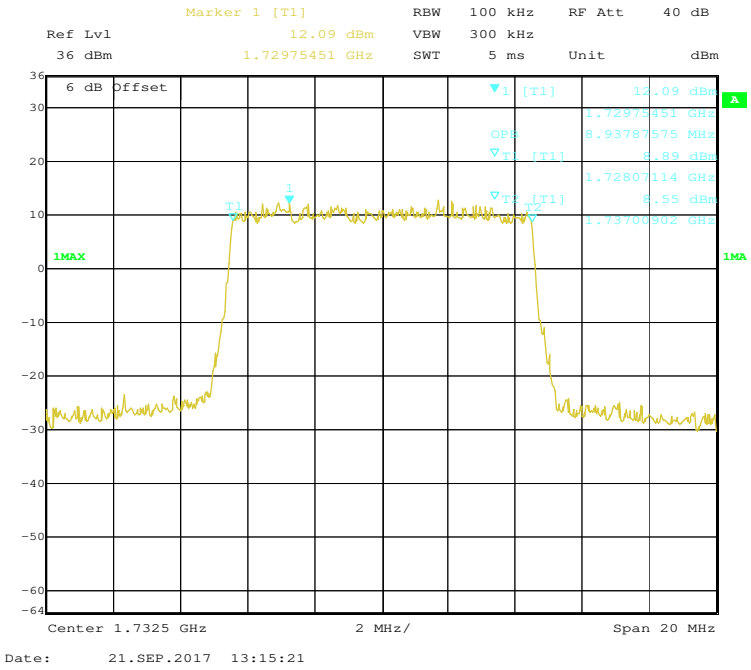
16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



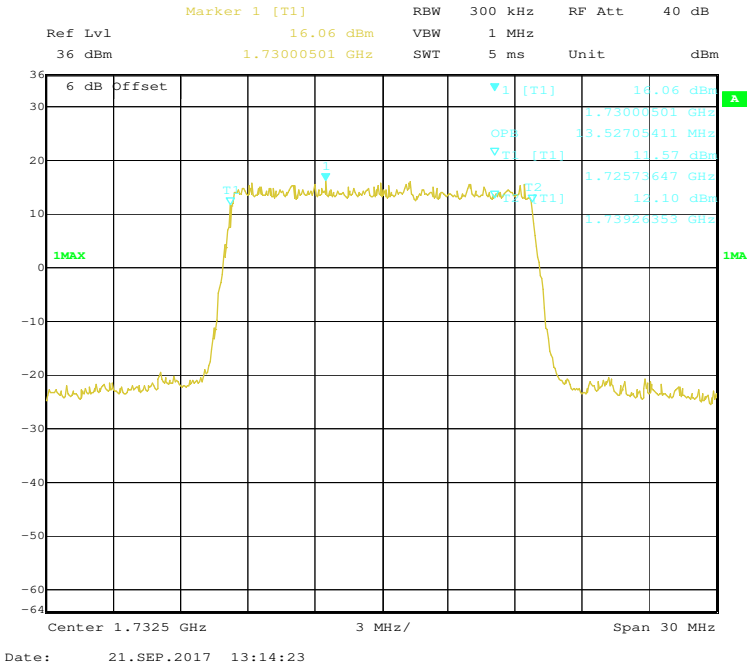
16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



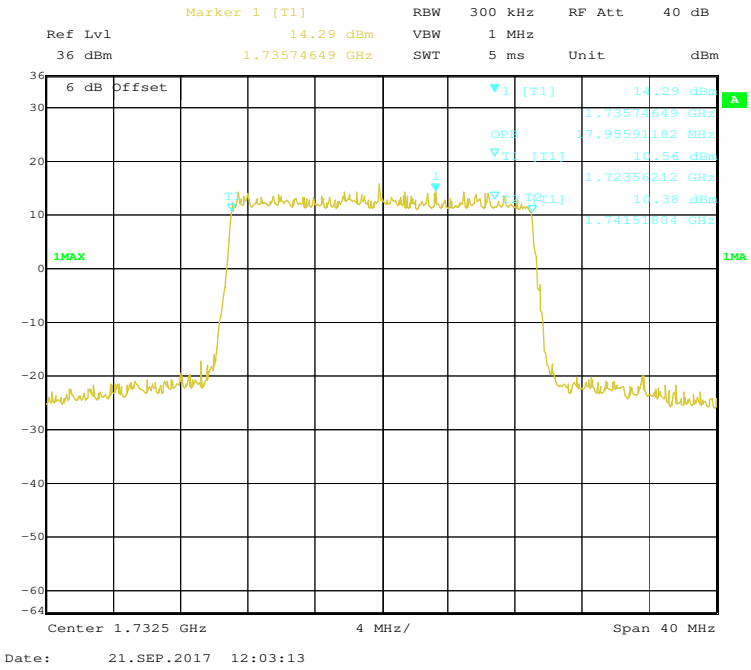
16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



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



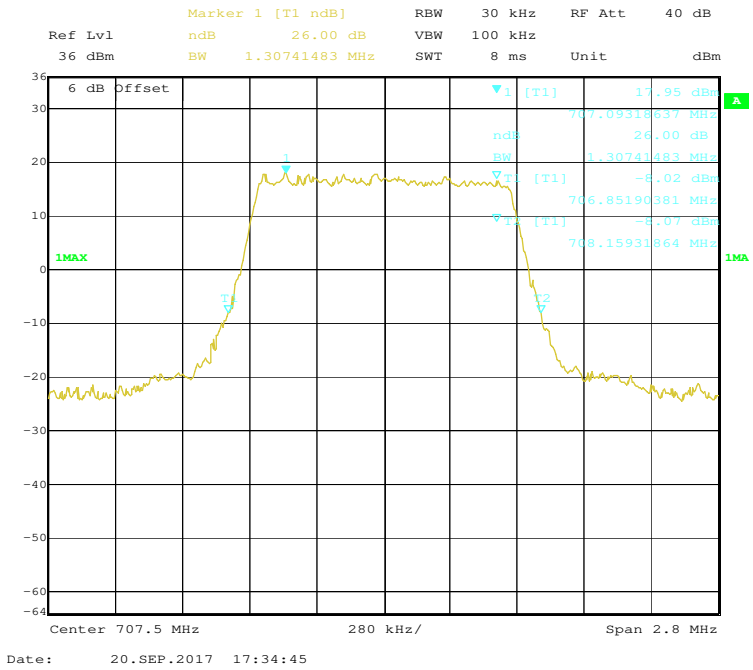
16-QAM (20.0 MHz) - 99% Occupied Bandwidth, Middle channel



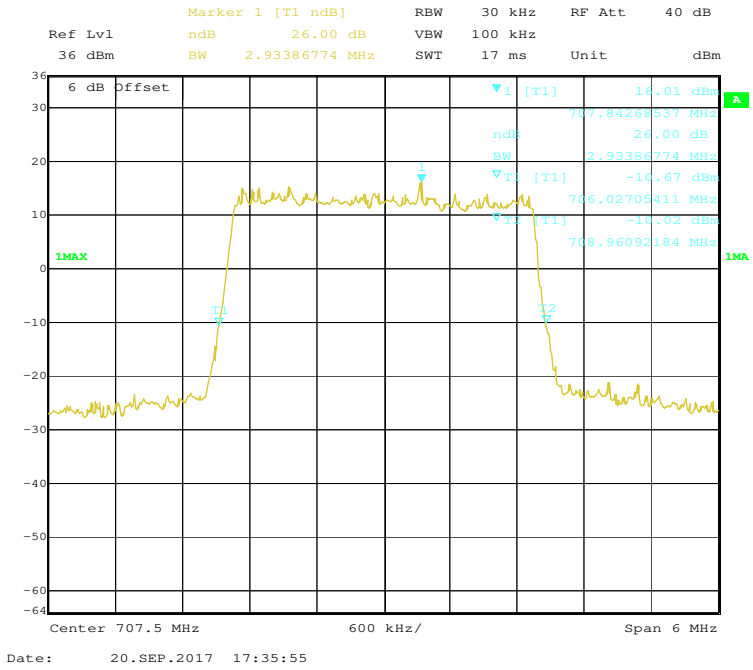
LTE Band 12:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	1.4M	Middle	1.307	1.105
	3M		2.934	2.693
	5M		5.010	4.529
	10M		9.659	8.938
16-QAM	1.4M	Middle	1.302	1.111
	3M		2.970	2.693
	5M		5.010	4.529
	10M		9.659	8.938

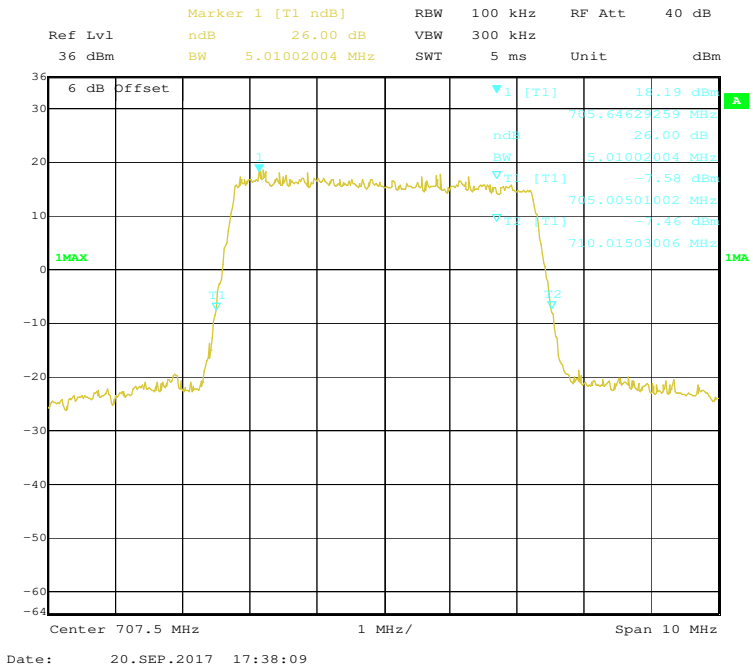
QPSK (1.4 MHz) - 26 dB Bandwidth, Middle channel



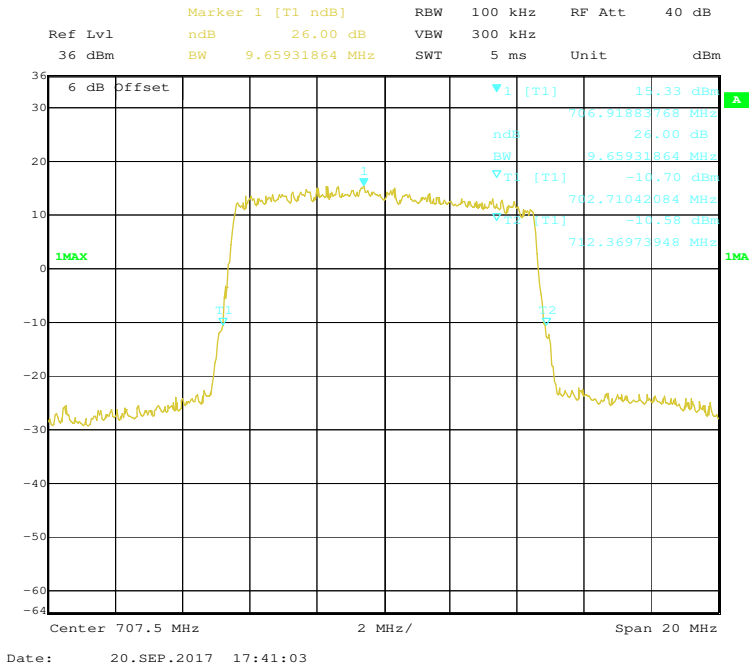
QPSK (3.0 MHz) - 26 dB Bandwidth, Middle channel



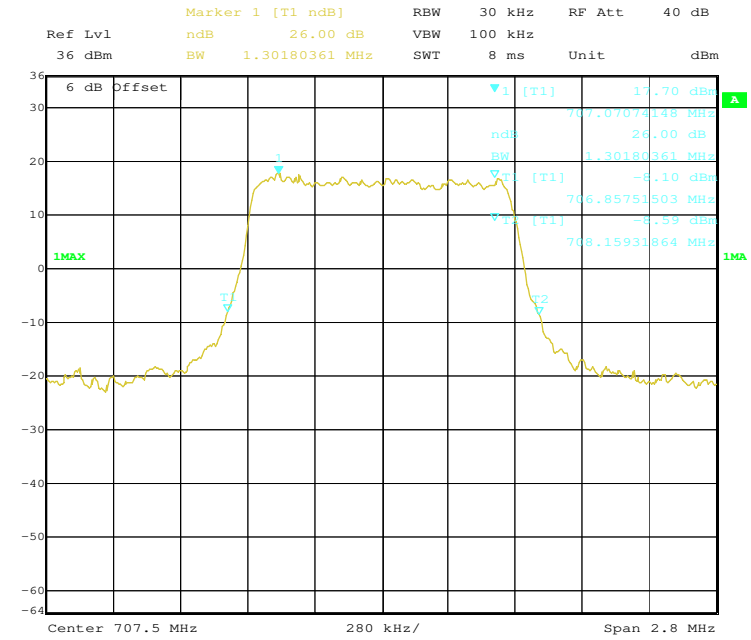
QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel



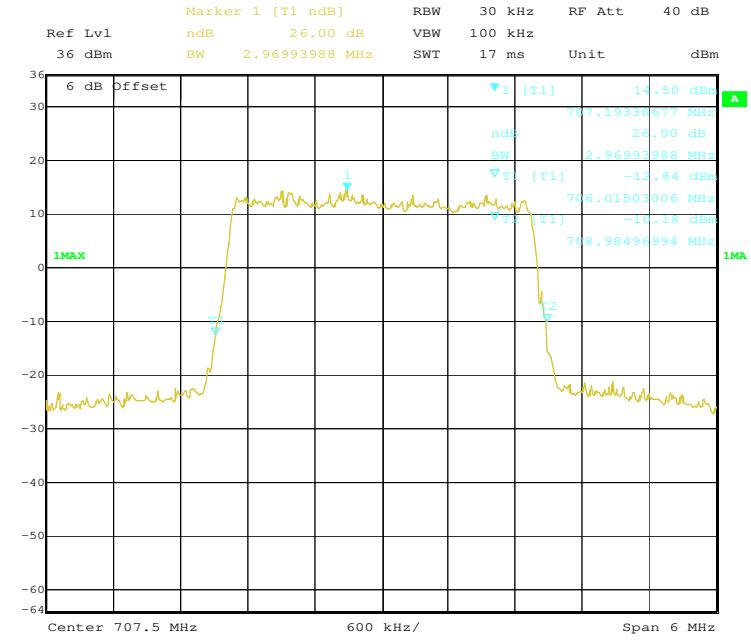
QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel



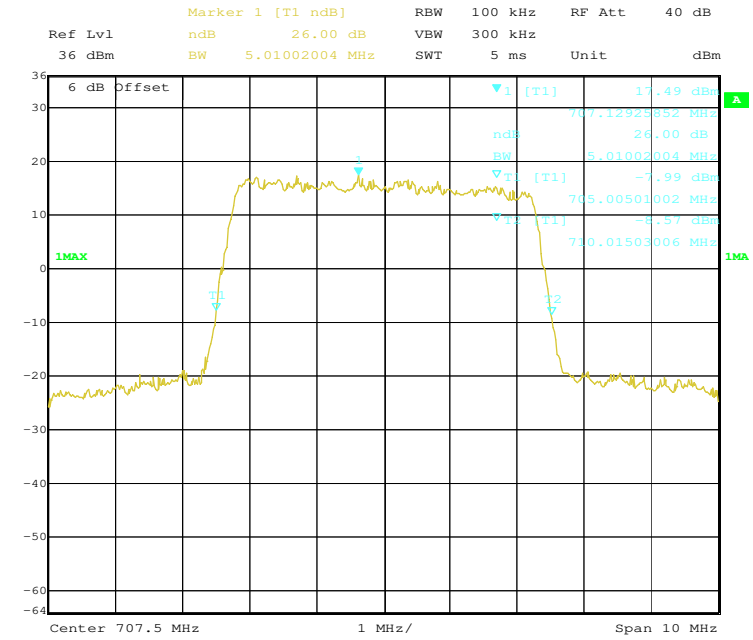
16-QAM (1.4 MHz) - 26 dB Bandwidth, Middle channel



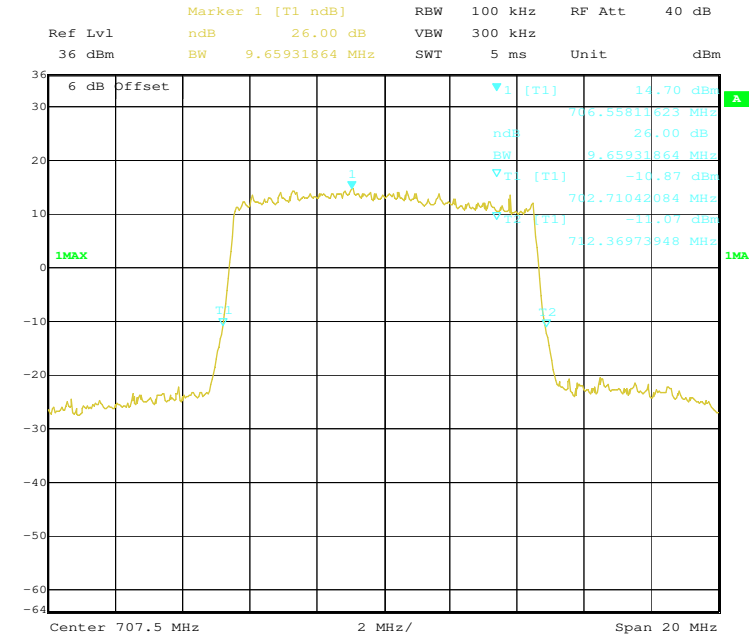
16-QAM (3.0 MHz) - 26 dB Bandwidth, Middle channel



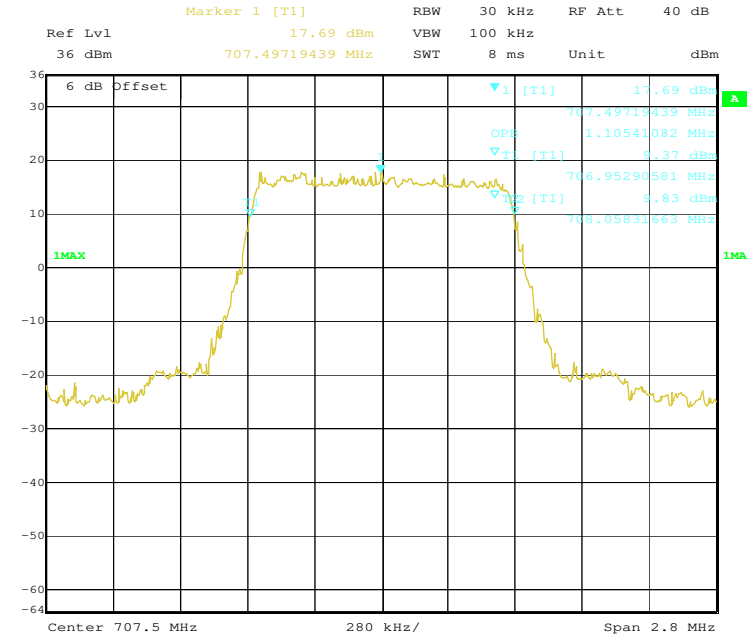
16-QAM (5.0 MHz) -26 dB Bandwidth, Middle channel



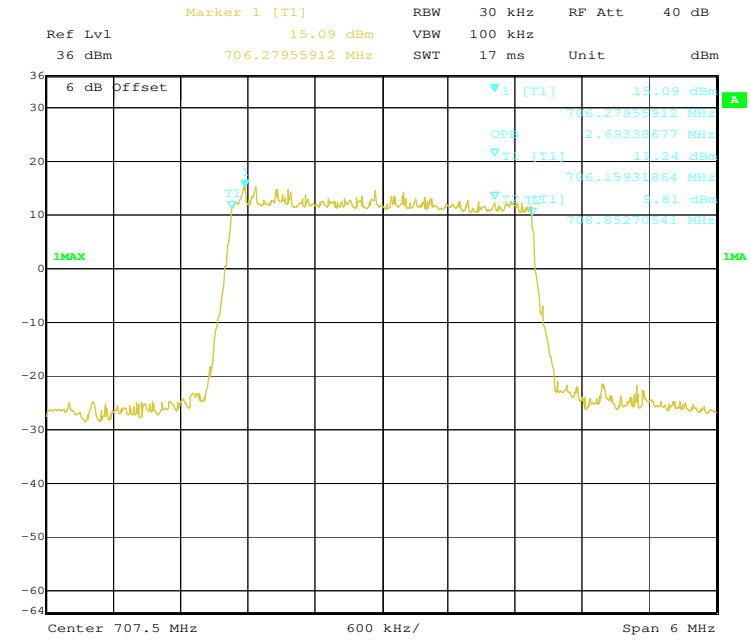
16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel



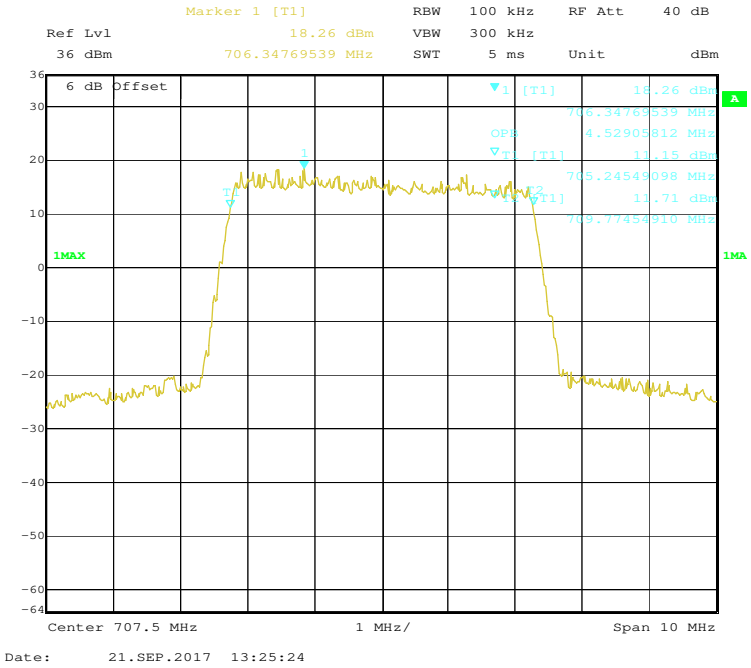
QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



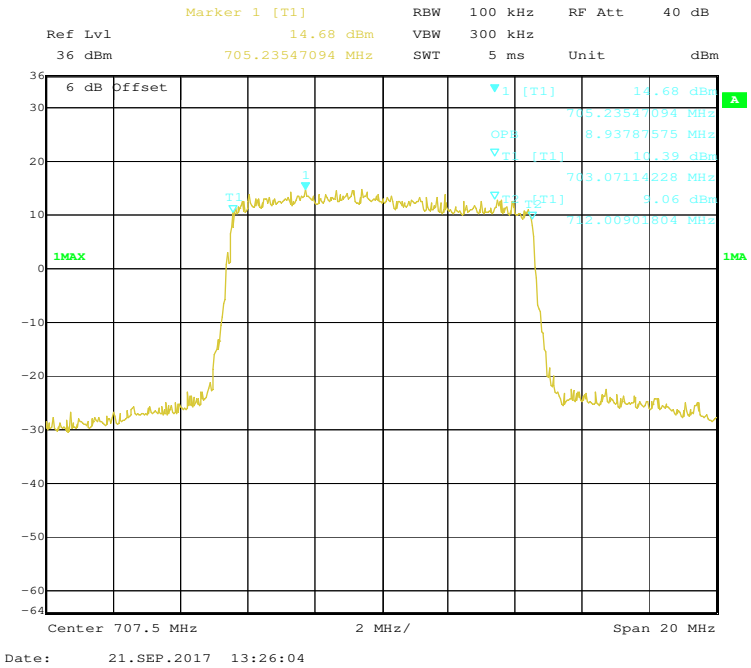
QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



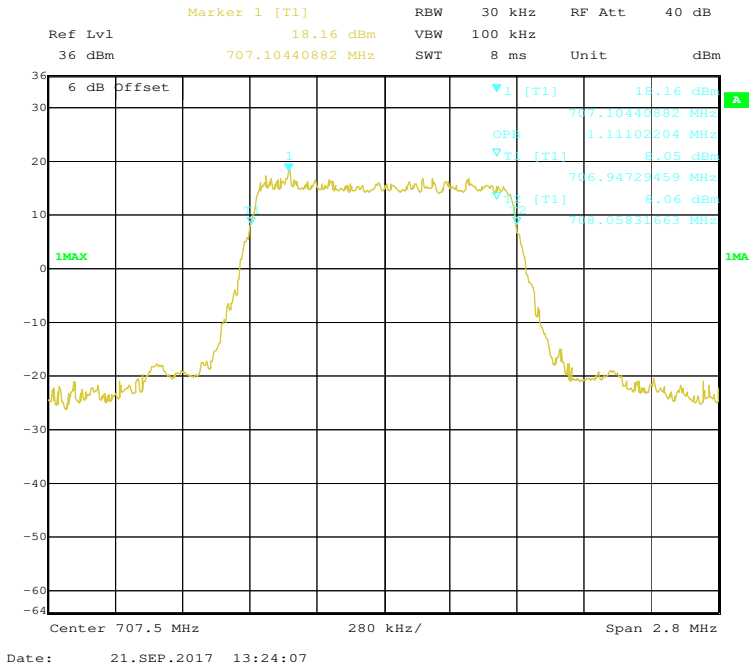
QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



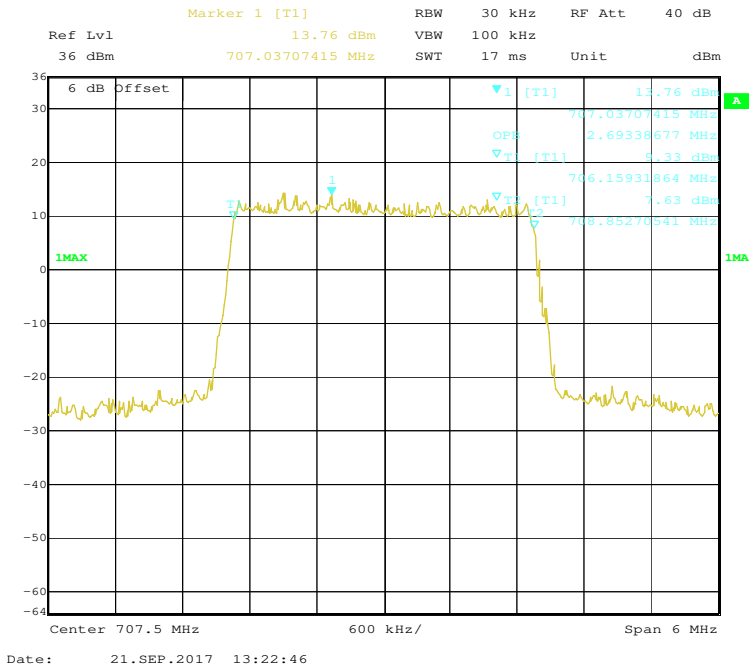
QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



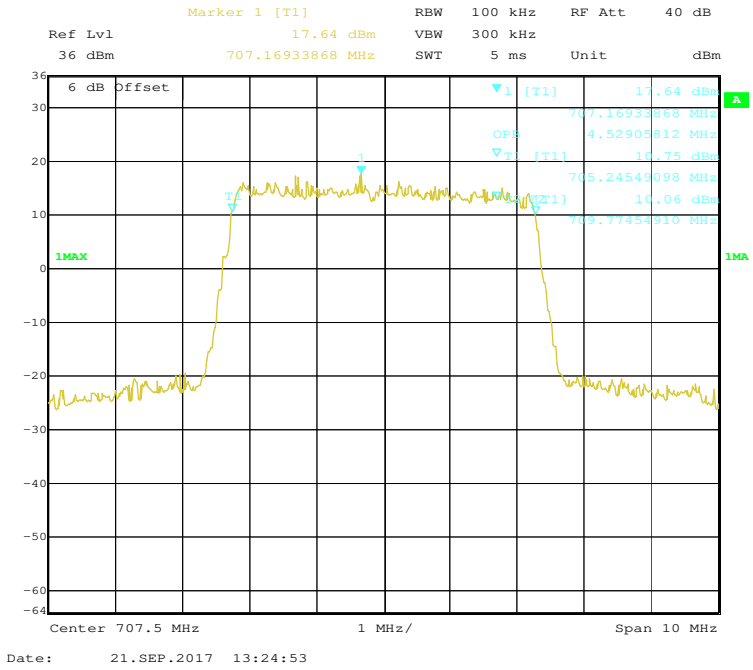
16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



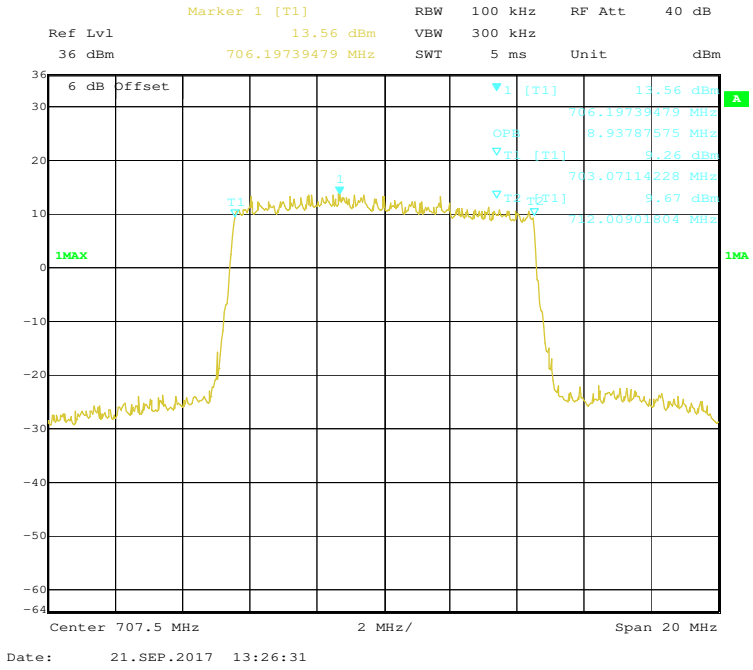
16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



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



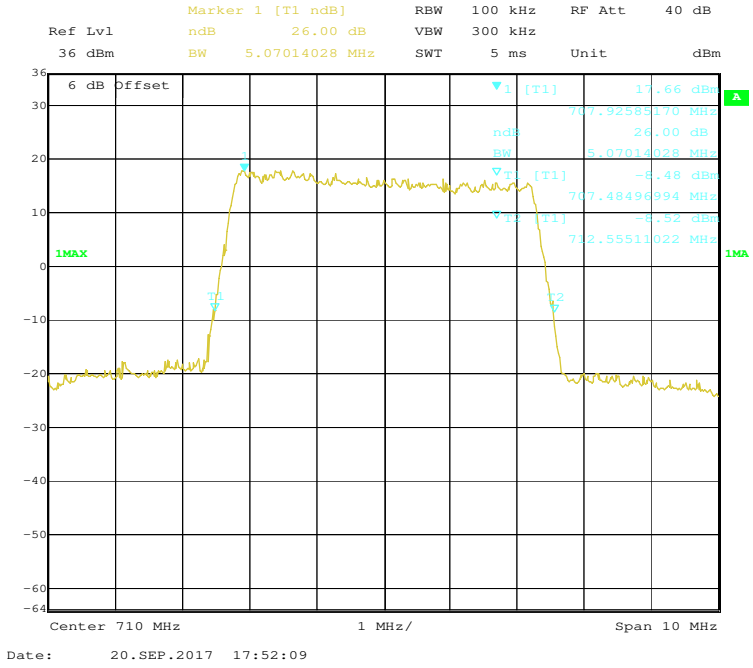
16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



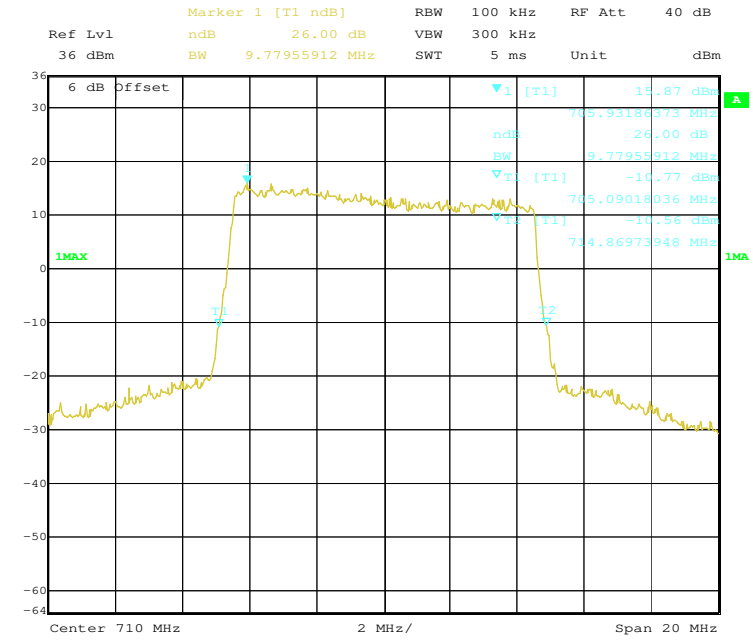
LTE Band 17:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	5M	Middle	5.070	4.569
	10M		9.780	8.978
16-QAM	5M	Middle	5.050	4.529
	10M		9.699	8.978

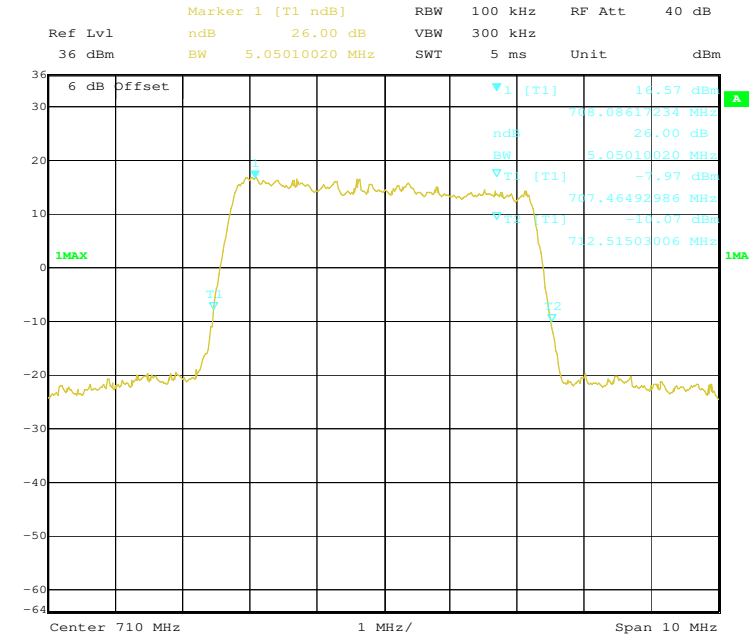
QPSK (5.0 MHz) - 26 dB Bandwidth, Middle channel



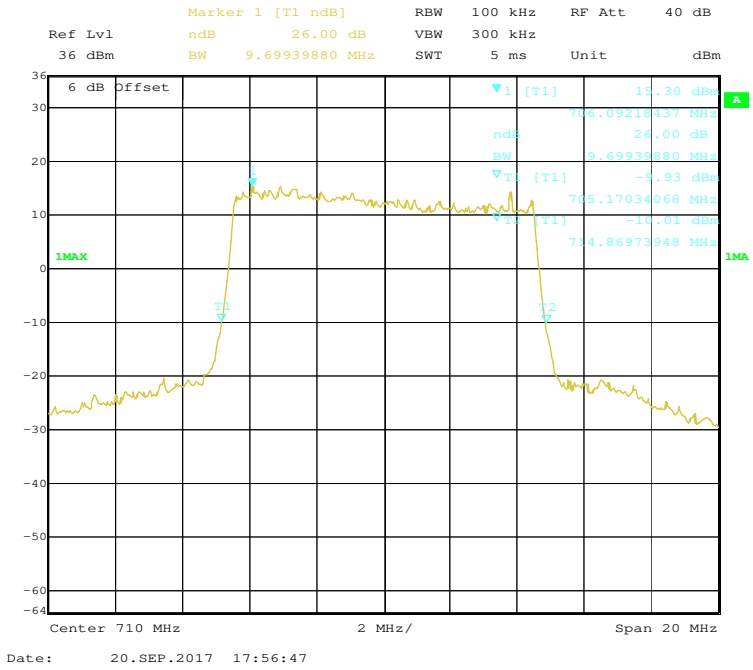
QPSK (10.0 MHz) - 26 dB Bandwidth, Middle channel



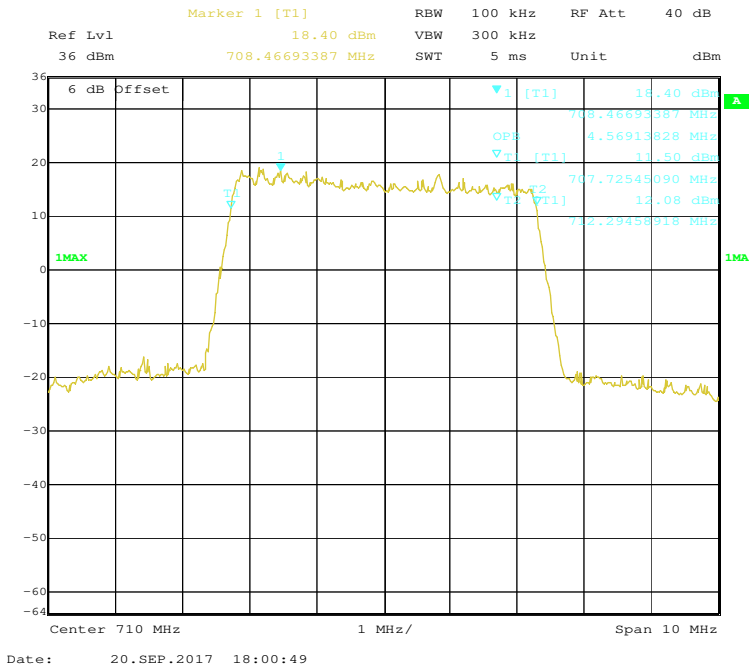
16-QAM (5.0 MHz) - 26 dB Bandwidth, Middle channel



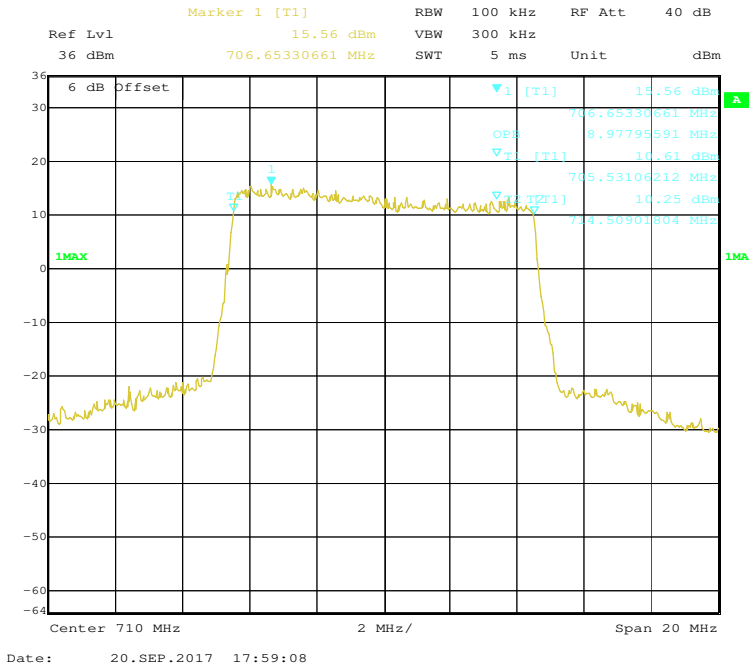
16-QAM (10.0 MHz) - 26 dB Bandwidth, Middle channel



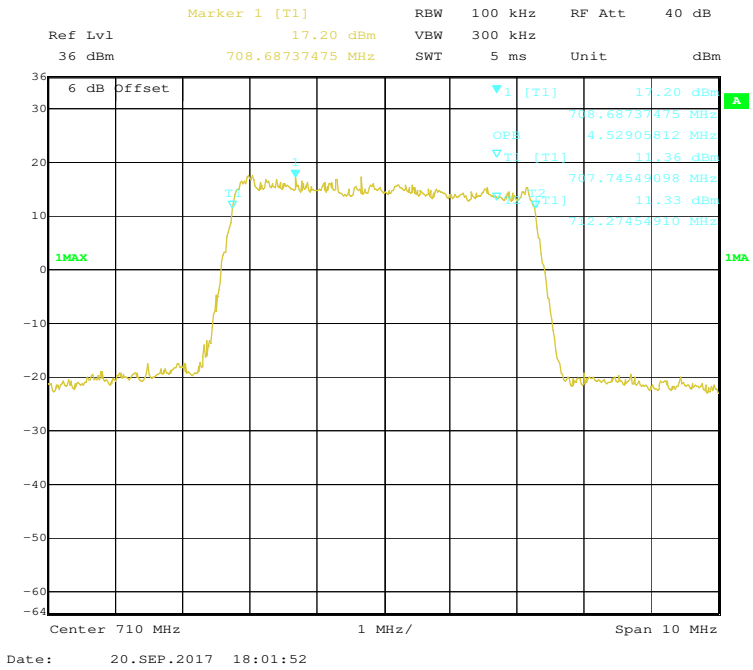
QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



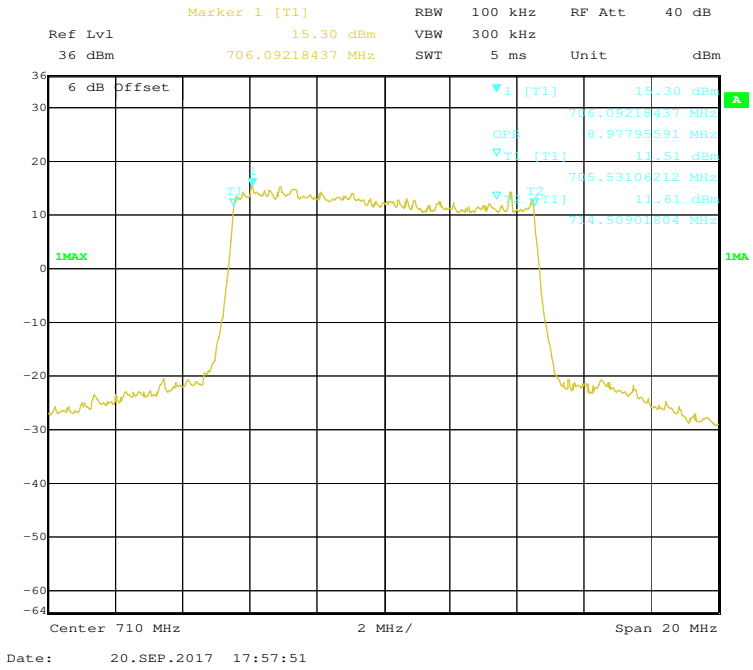
QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



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



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



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

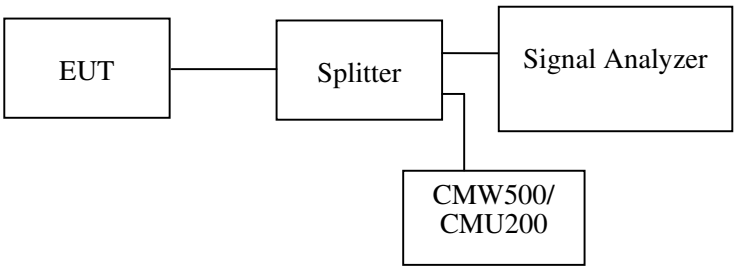
Applicable Standards

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

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

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100kHz for below 1GHz & 1MHz for above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Data

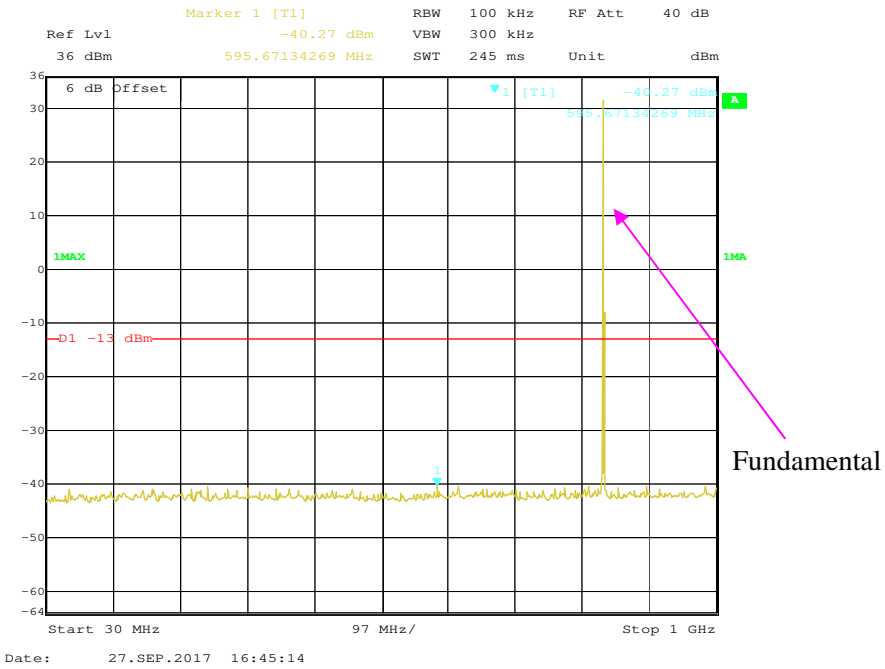
Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

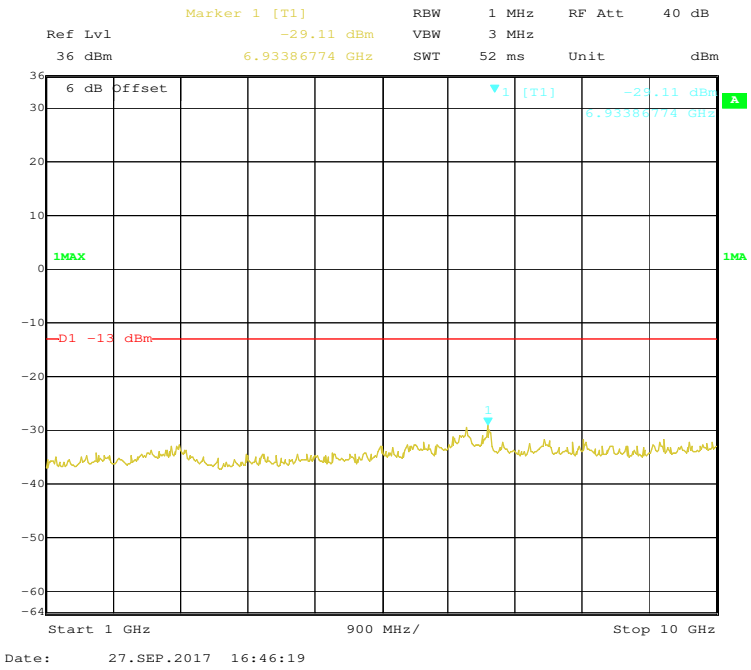
The testing was performed by Kyle Xu on 2017-09-27.

GSM 850 Band:

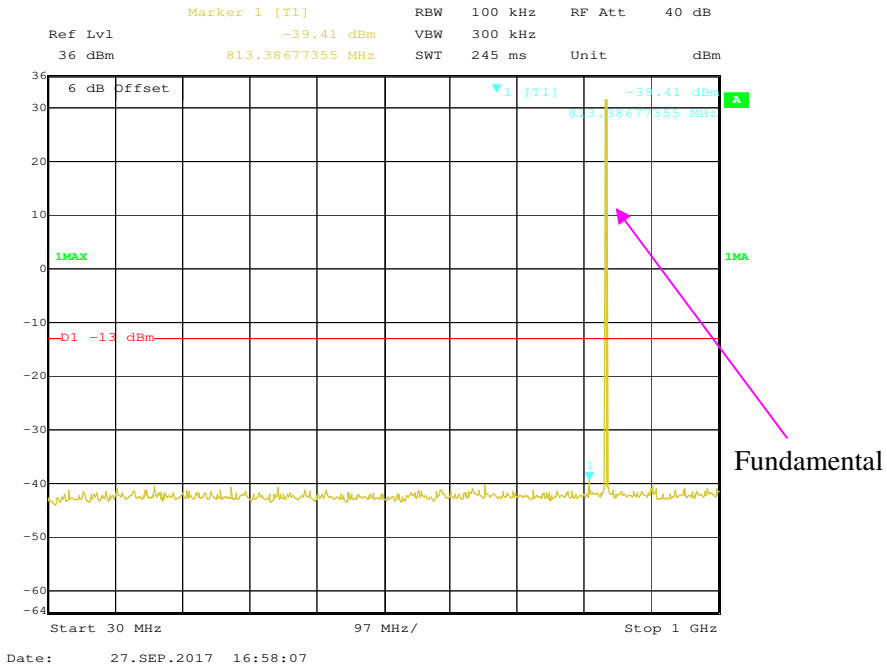
30 MHz – 1GHz(GSM Mode)



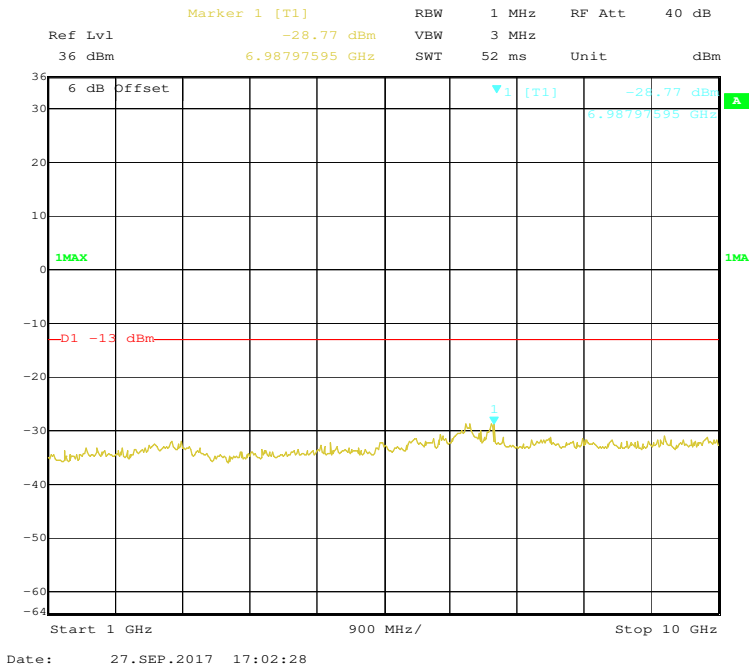
1 GHz – 10 GHz (GSM Mode)



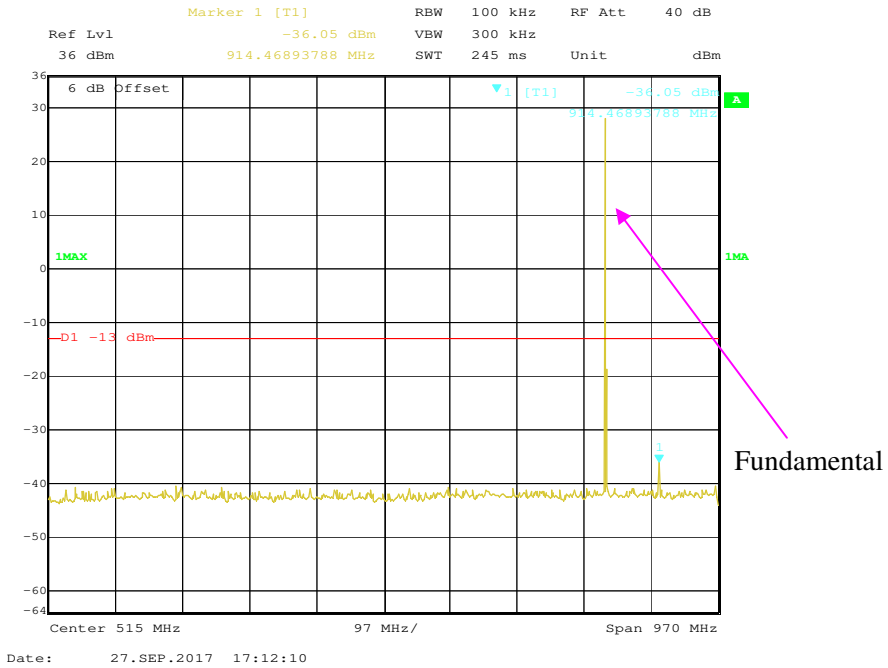
30 MHz – 1GHz(GPRS Mode)



1 GHz – 10 GHz (GPRS Mode)

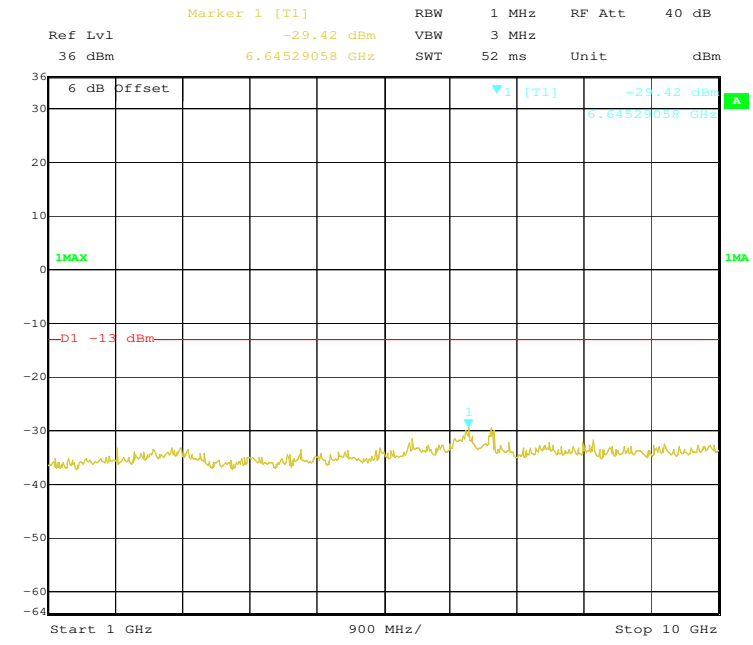


30 MHz – 1GHz(EGPRS Mode)



Date: 27.SEP.2017 17:12:10

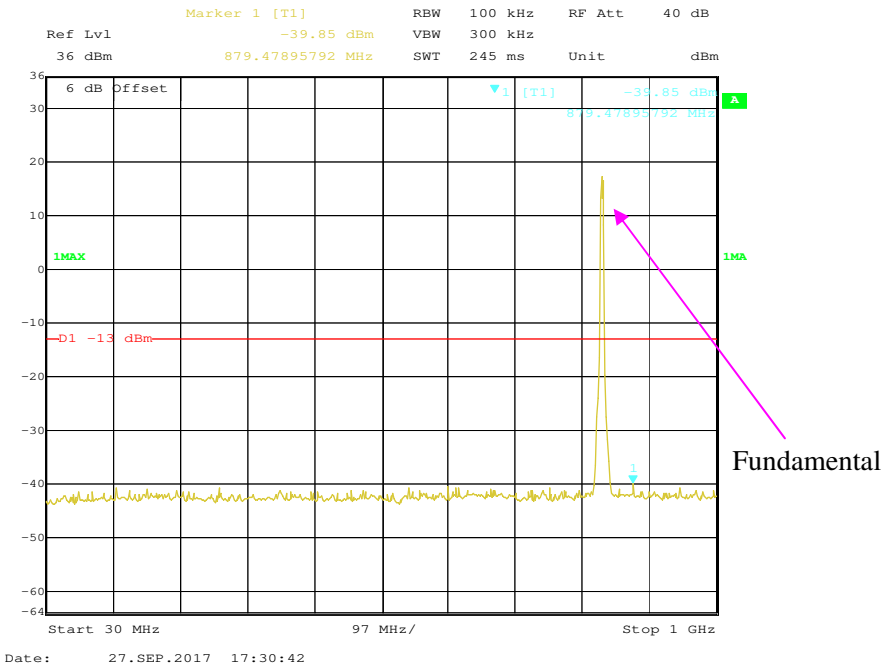
1 GHz – 10 GHz (EGPRS Mode)



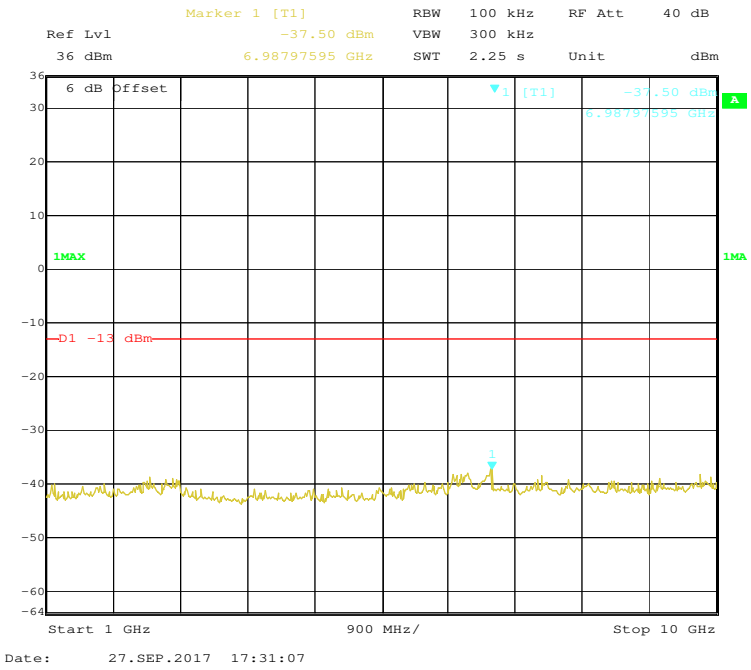
Date: 27.SEP.2017 17:19:49

WCDMA Band V:

30 MHz – 1GHz(WCDMA Mode)

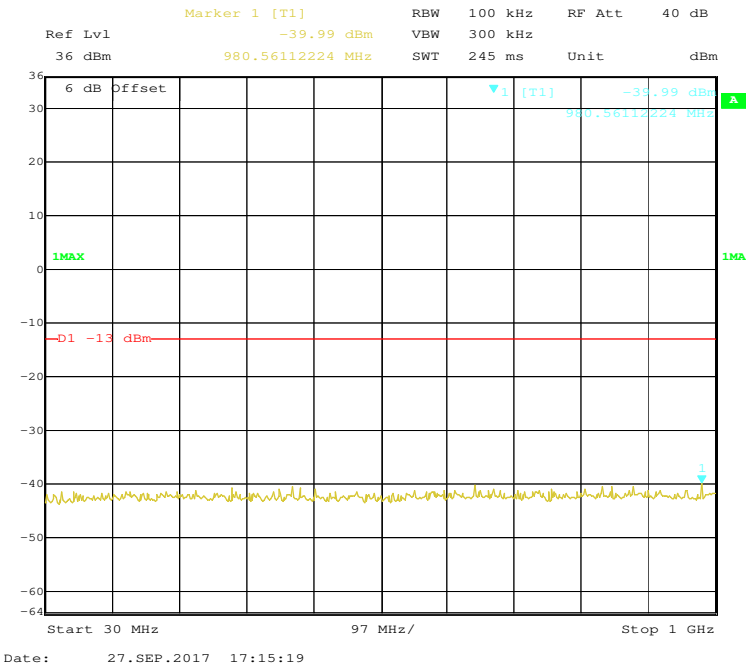


1 GHz – 10 GHz (WCDMA Mode)

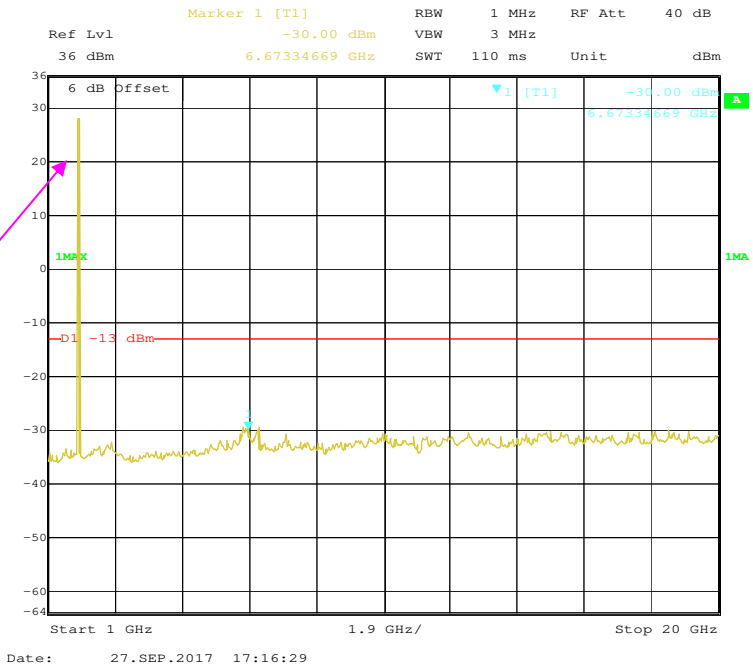


PCS 1900 Band:

30 MHz – 1GHz(GSM Mode)

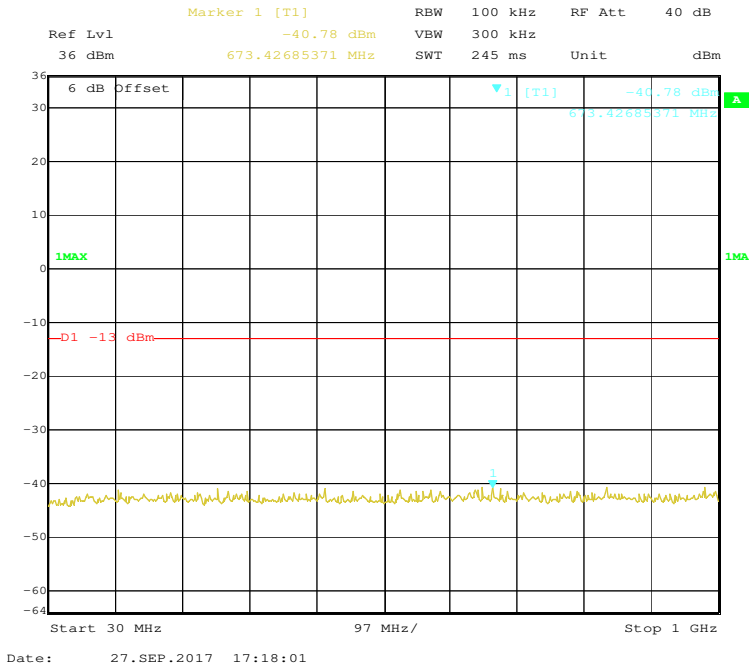


1 GHz – 20 GHz (GSM Mode)

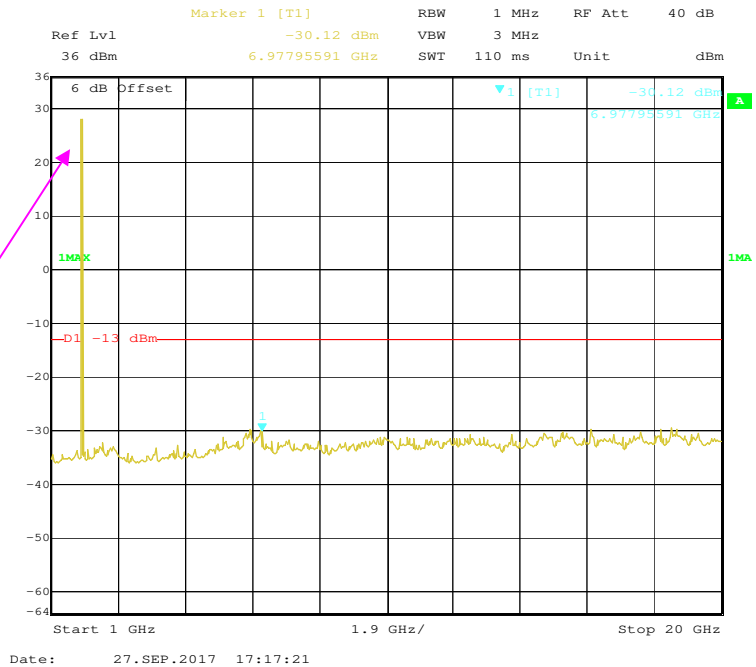


Fundamental

30 MHz – 1GHz(GPRS Mode)

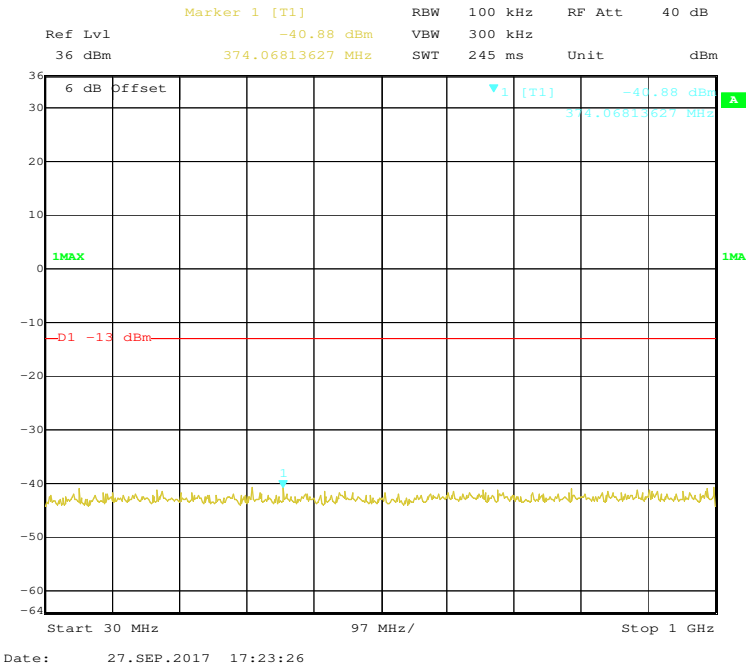


1 GHz – 20 GHz (GPRS Mode)

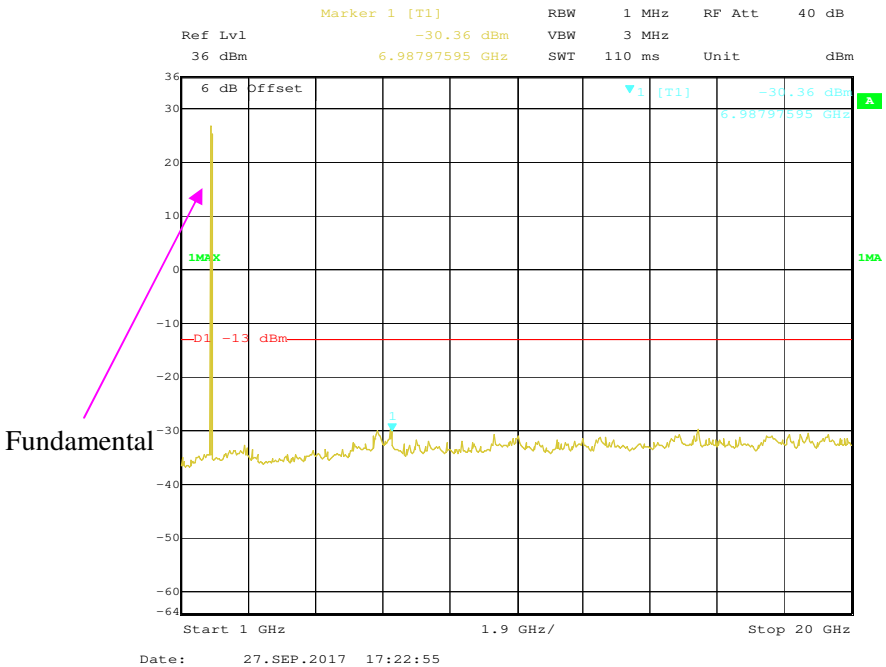


Fundamental

30 MHz – 1GHz(EGPRS Mode)

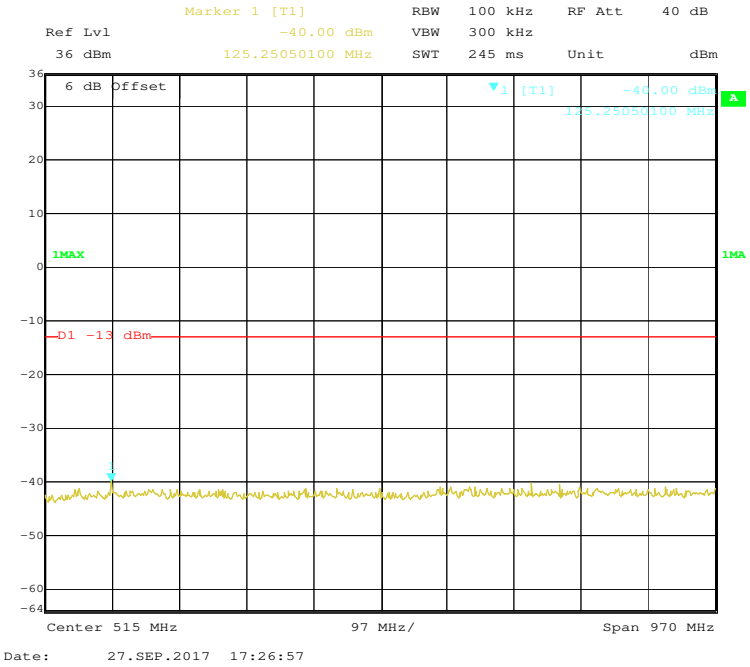


1 GHz – 20 GHz (EGPRS Mode)

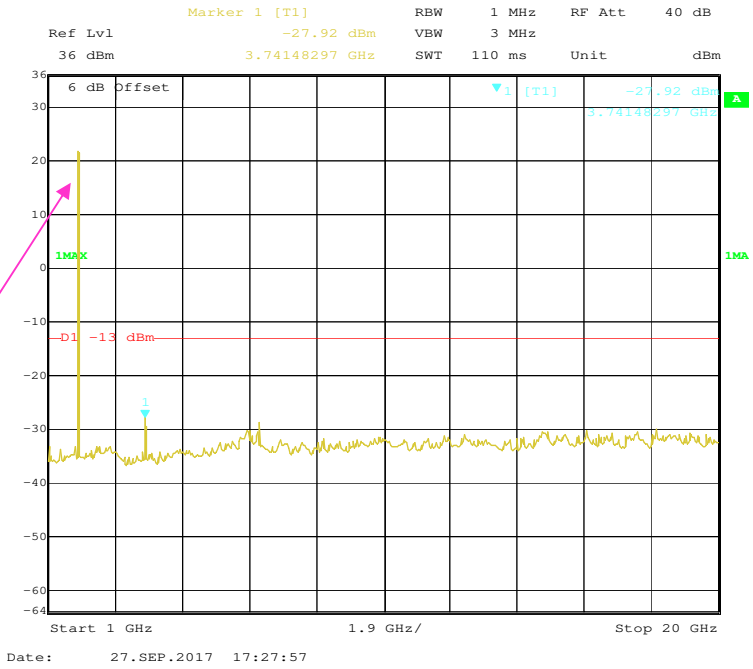


WCDMA Band II:

30 MHz – 1 GHz (WCDMA Mode)



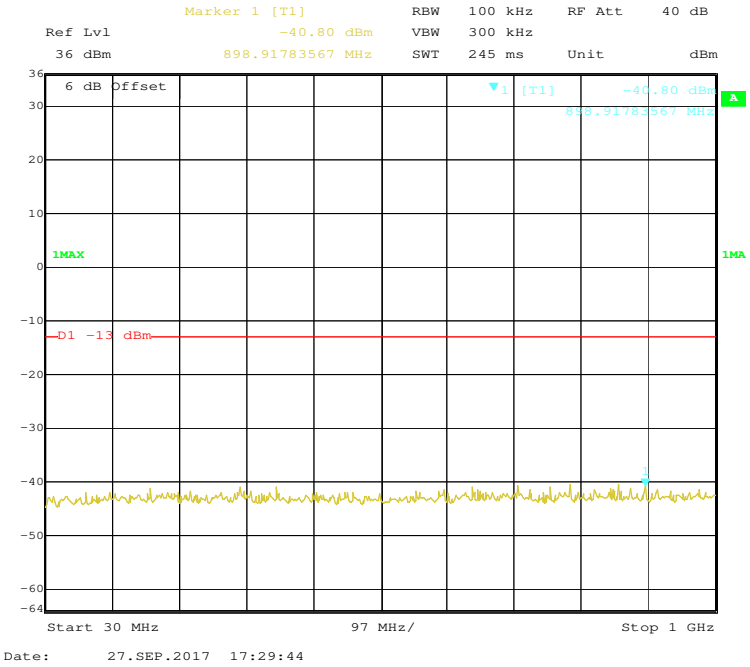
1 GHz – 20 GHz (WCDMA Mode)



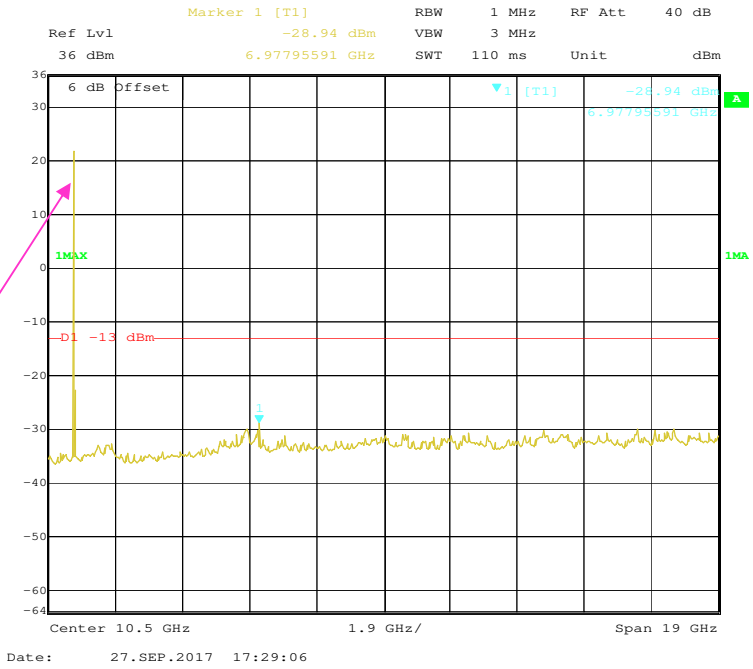
Fundamental

WCDMA Band IV:

30 MHz – 1 GHz (WCDMA Mode)



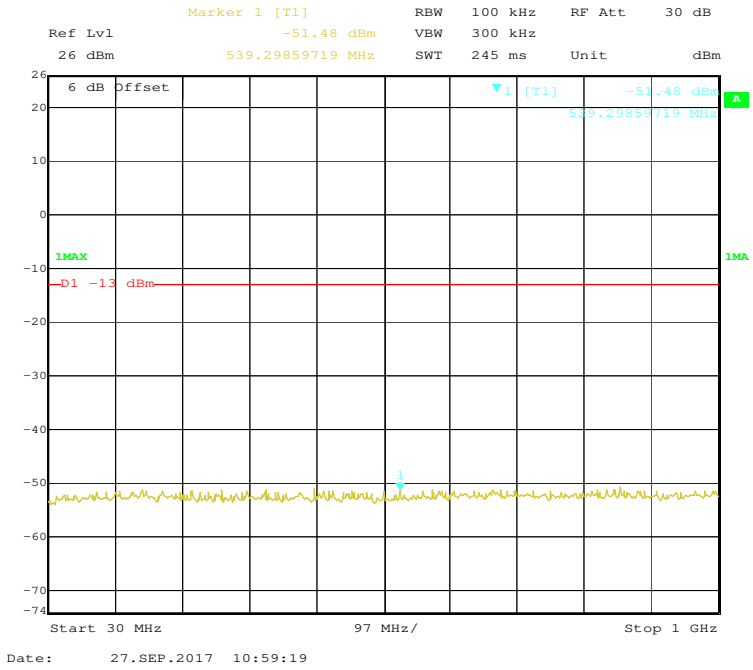
1 GHz – 20 GHz (WCDMA Mode)



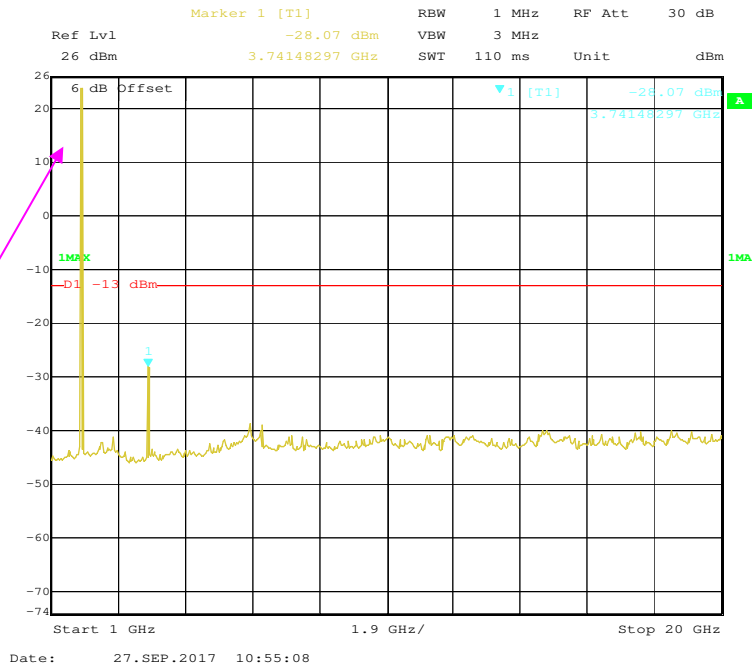
Fundamental

LTE Band 2:

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

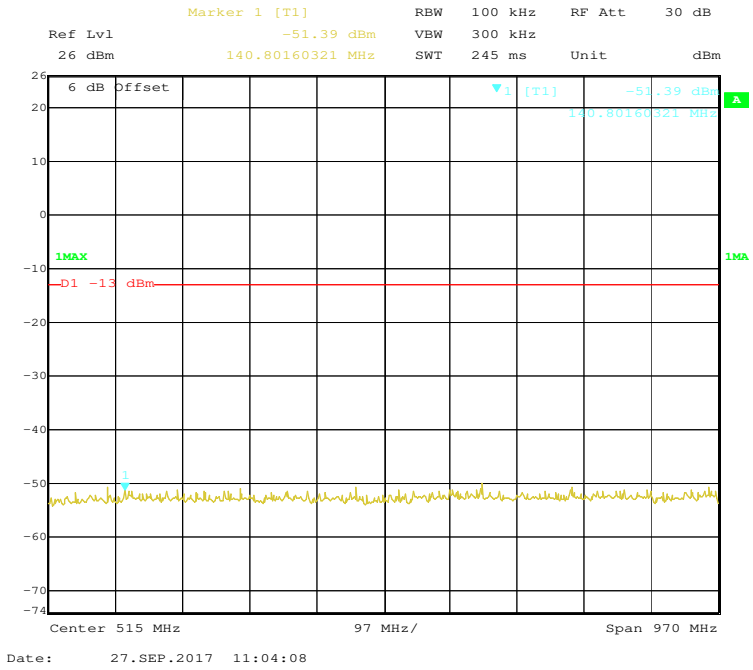


1 GHz – 20 GHz (1.4 MHz, Middle Channel)

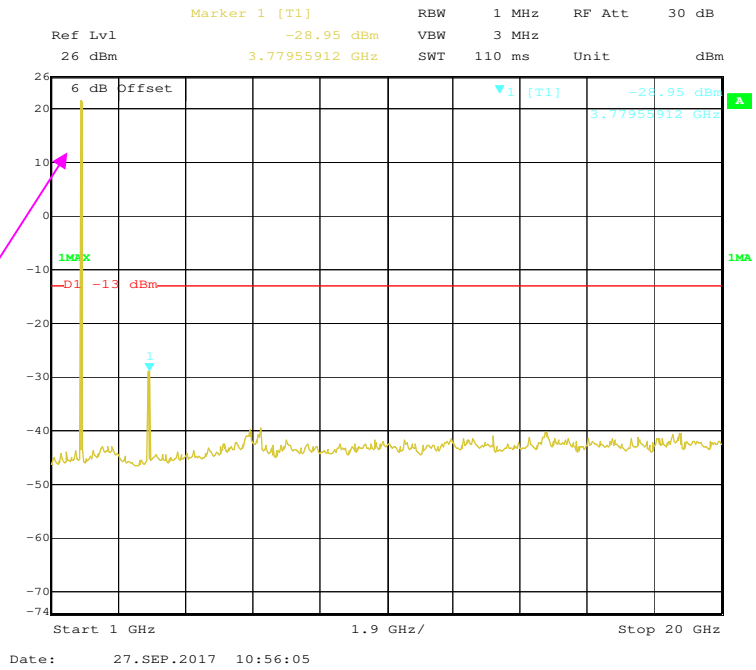


Fundamental

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

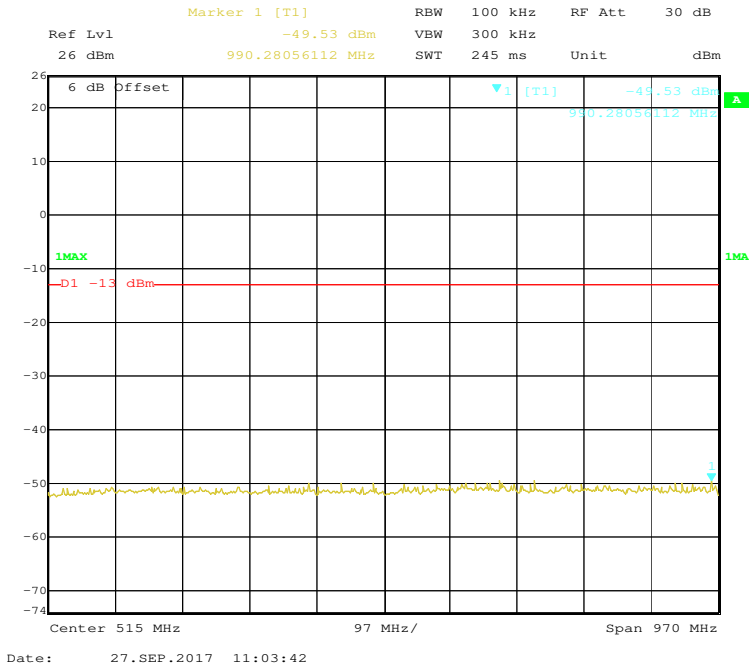


1 GHz – 20 GHz (3.0 MHz, Middle Channel)

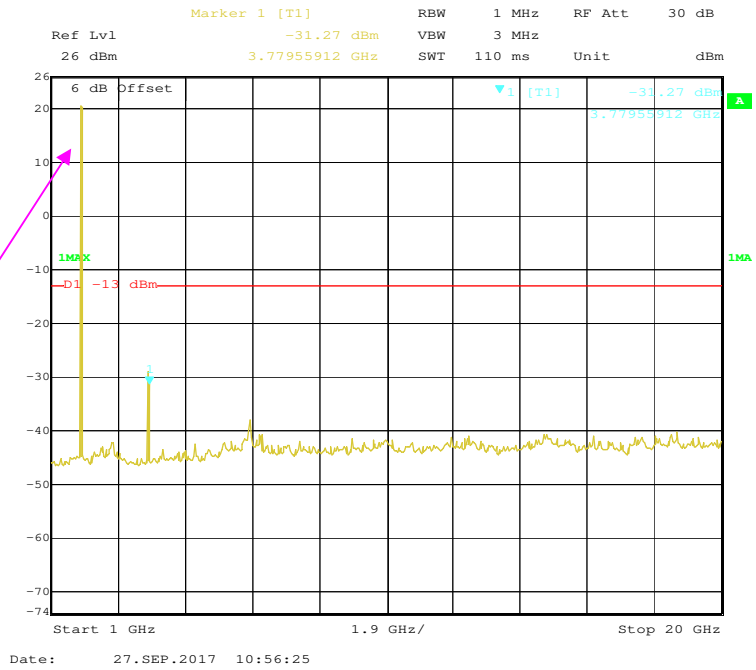


Fundamental

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

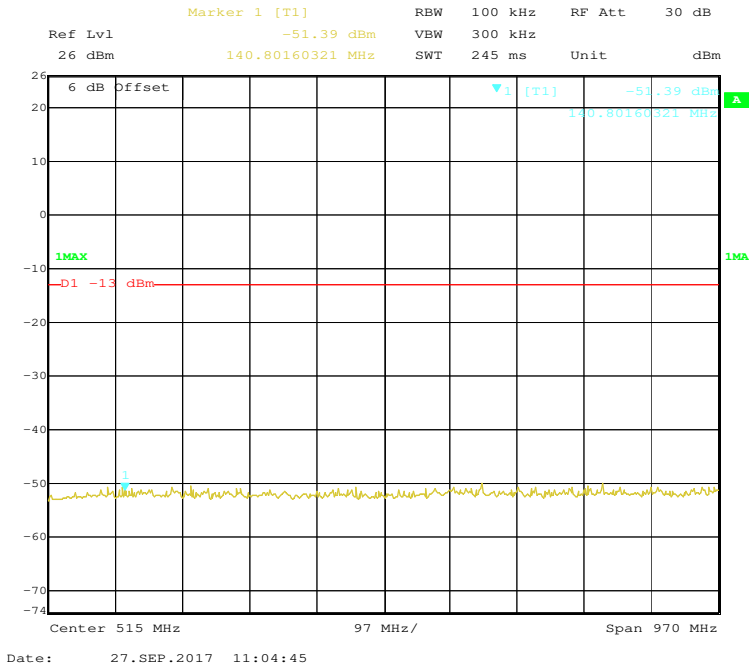


1 GHz – 20 GHz (5.0MHz, Middle Channel)

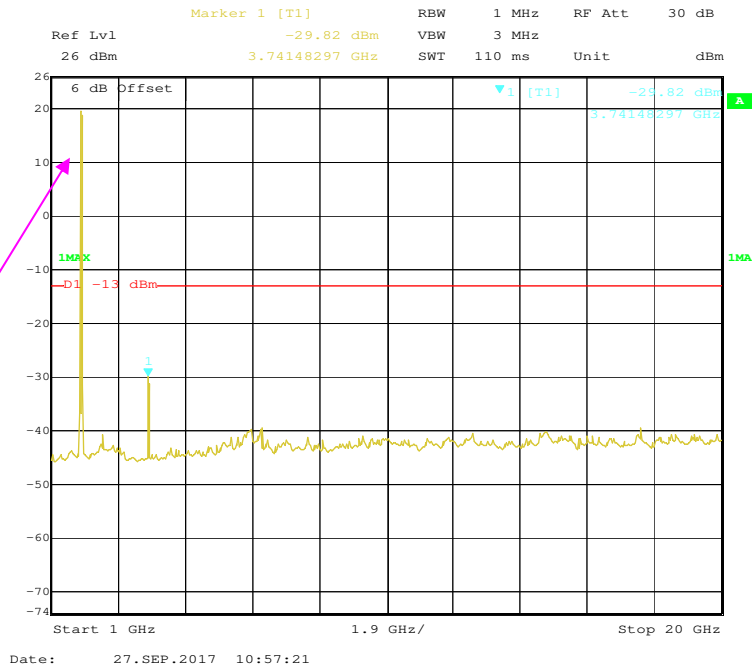


Fundamental

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

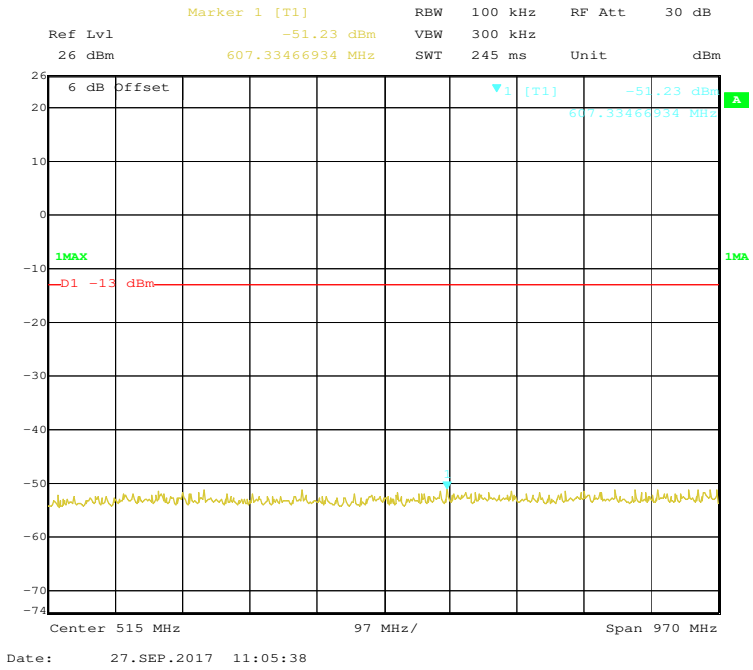


1 GHz – 20 GHz (10.0 MHz, Middle Channel)

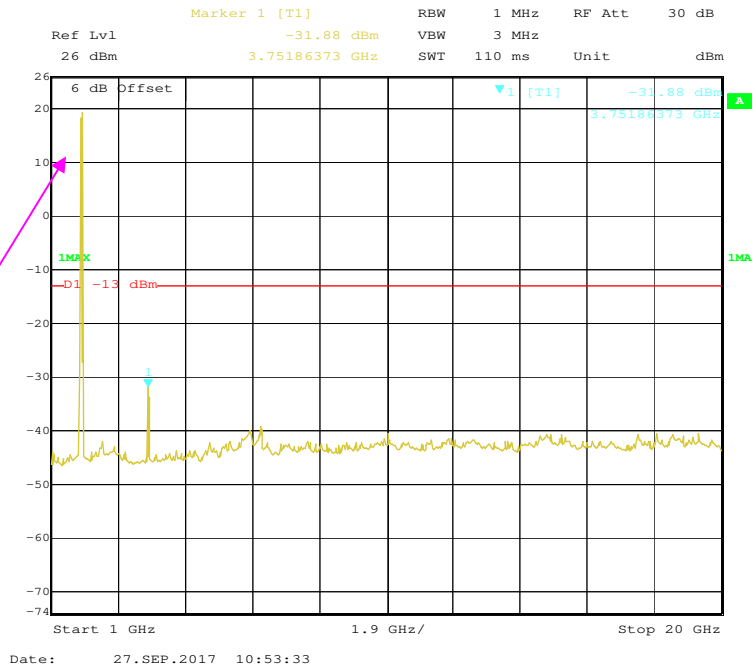


Fundamental

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

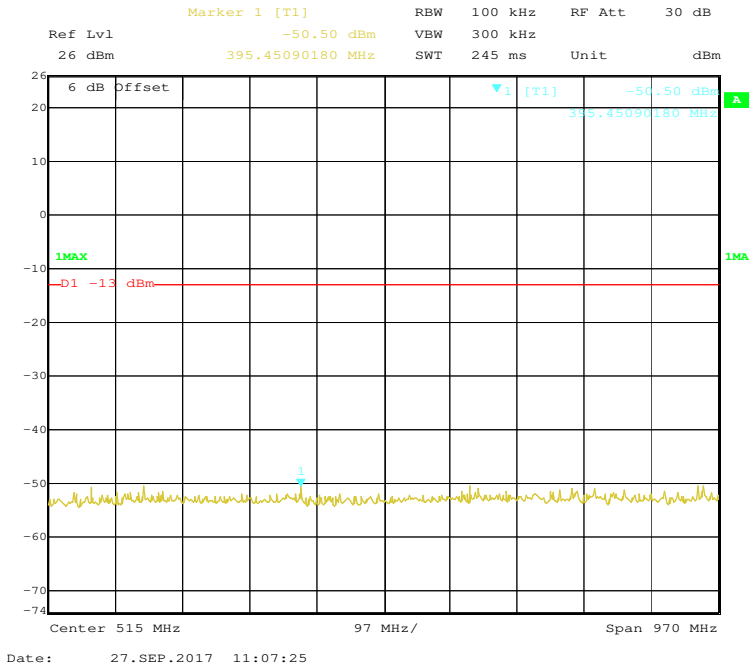


1 GHz – 20 GHz (15.0 MHz, Middle Channel)

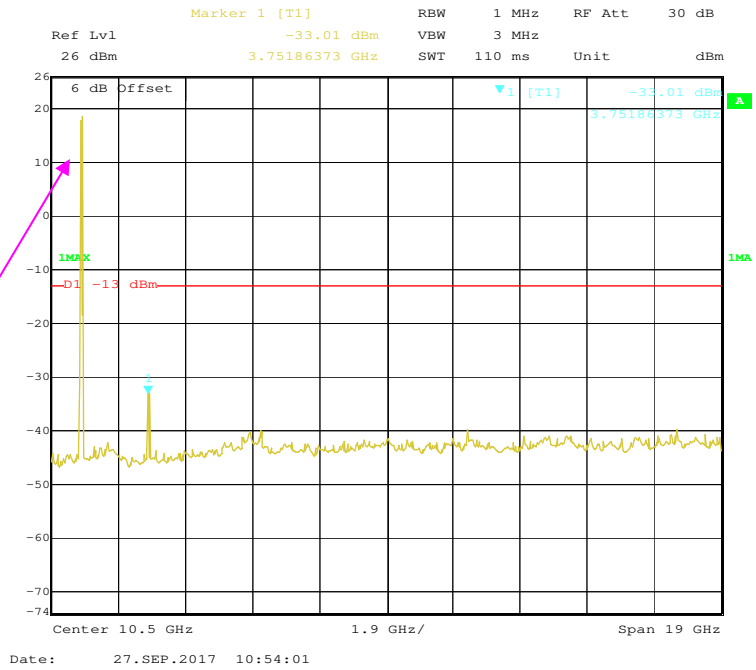


Fundamental

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



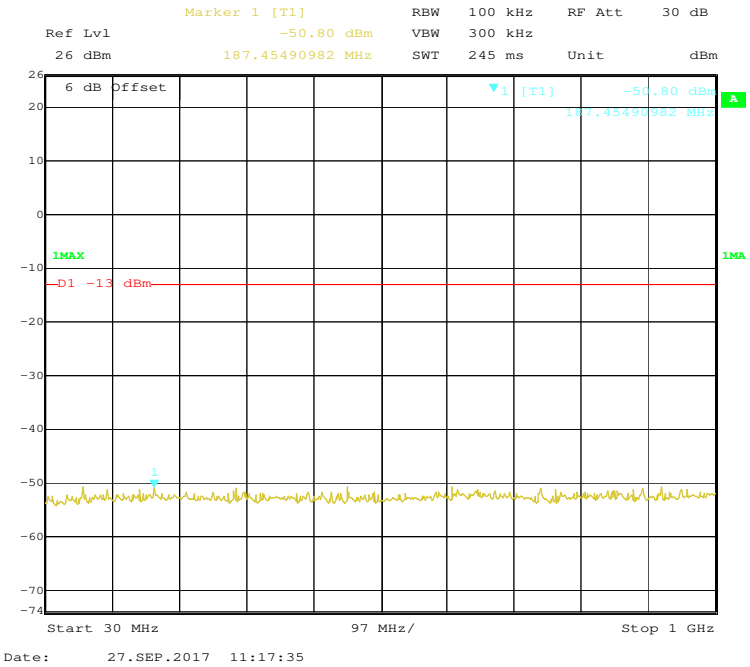
1 GHz – 20 GHz (20.0 MHz, Middle Channel)



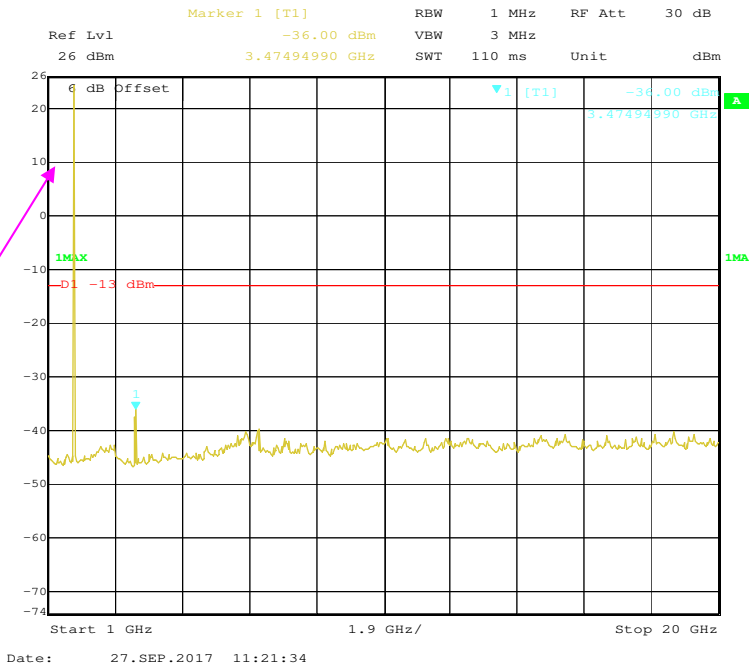
Fundamental

LTE Band 4:

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

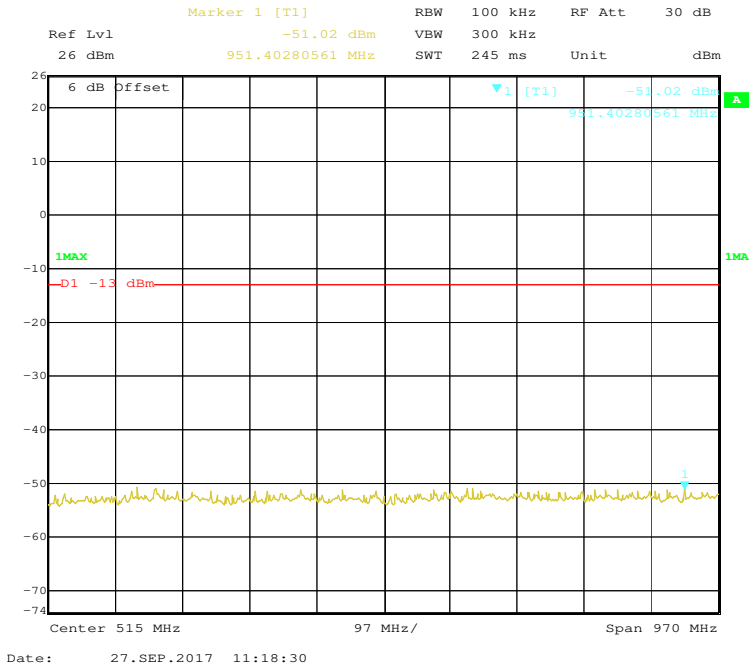


1 GHz – 20 GHz (1.4 MHz, Middle Channel)

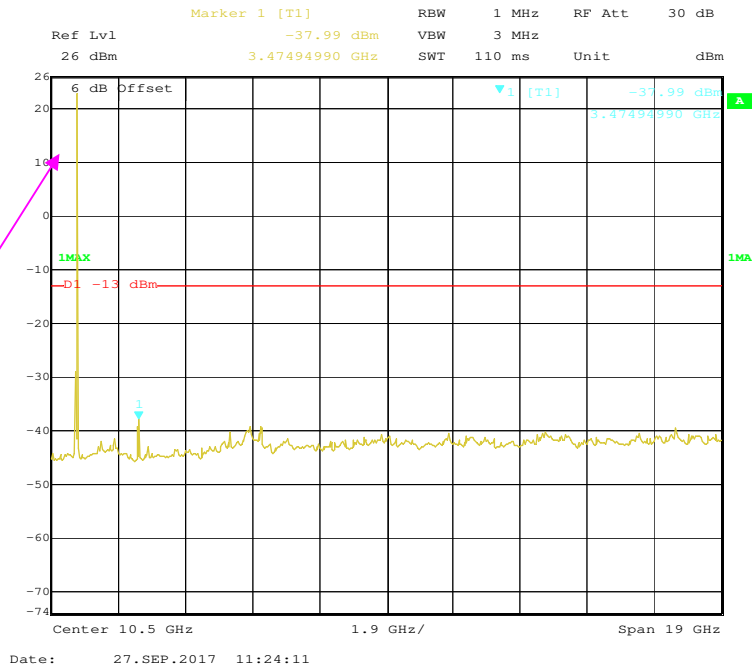


Fundamental

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

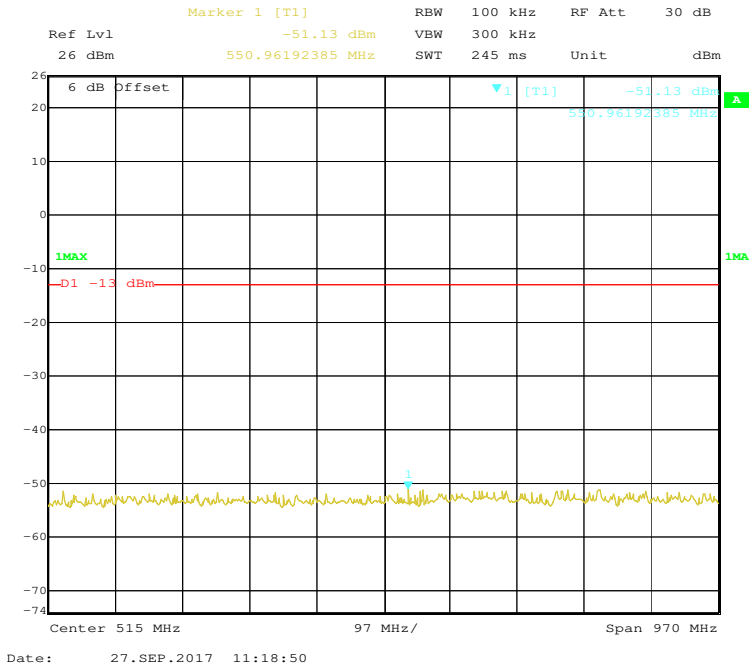


1 GHz – 20 GHz (3.0 MHz, Middle Channel)

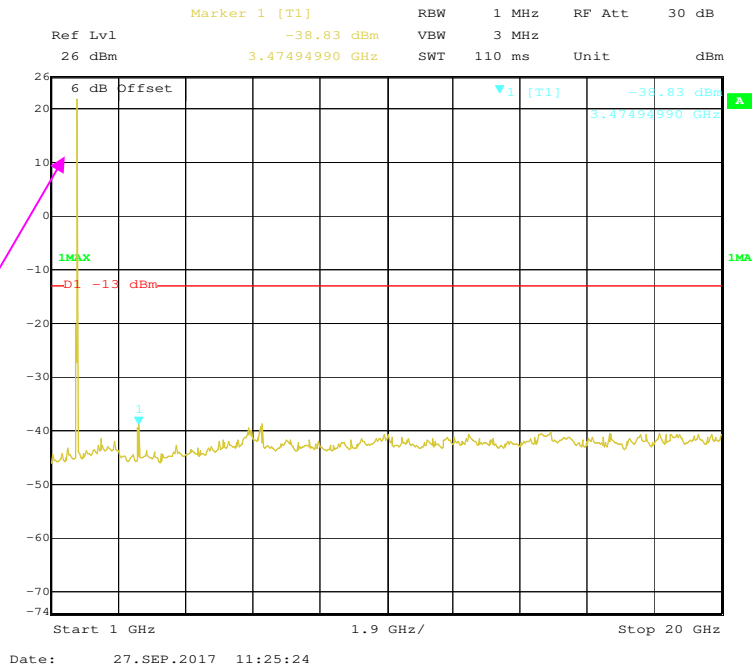


Fundamental

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

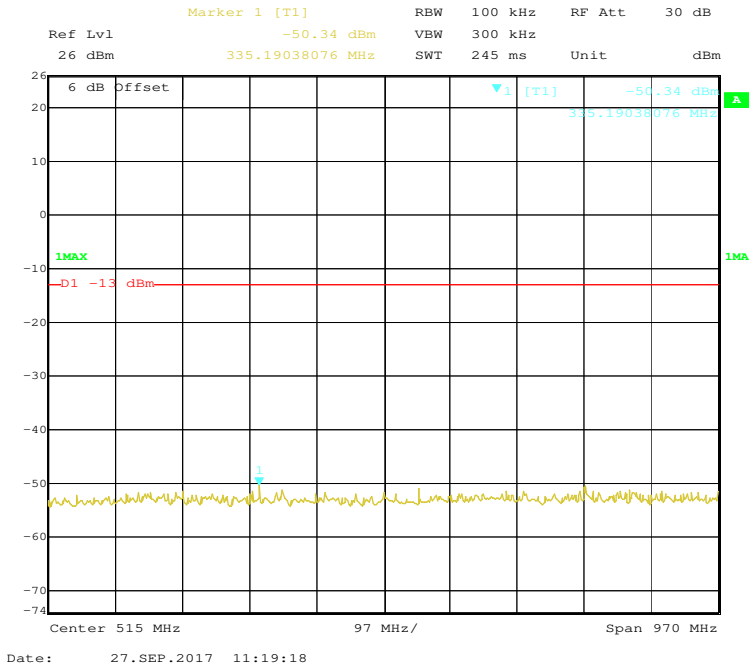


1 GHz – 20 GHz (5.0MHz, Middle Channel)

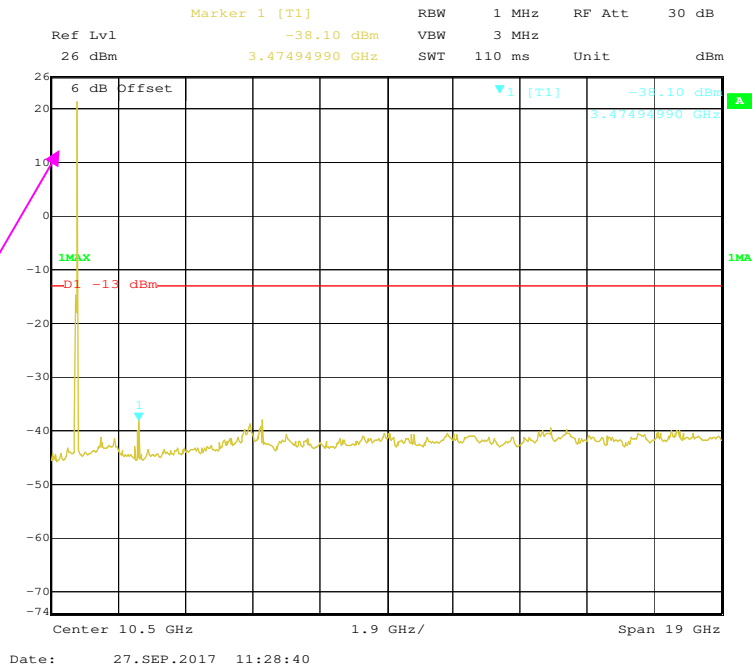


Fundamental

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

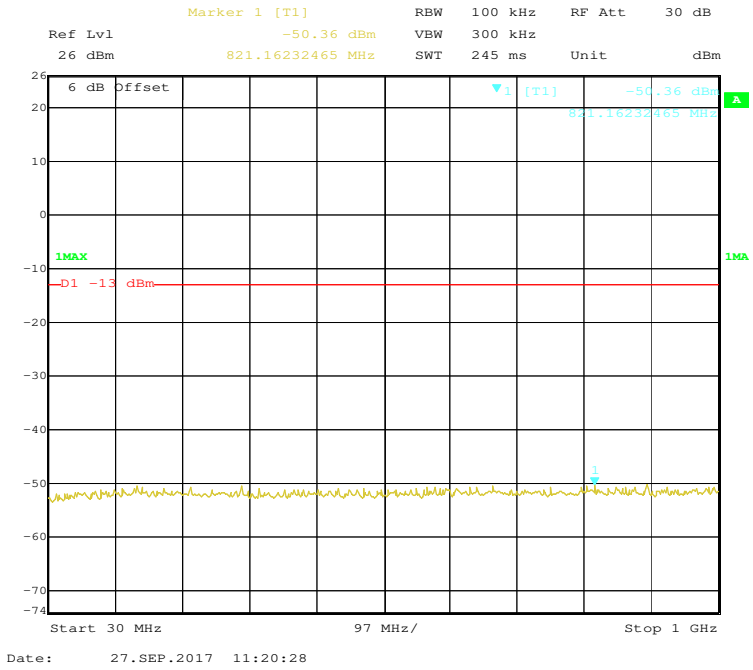


1 GHz – 20 GHz (10.0 MHz, Middle Channel)

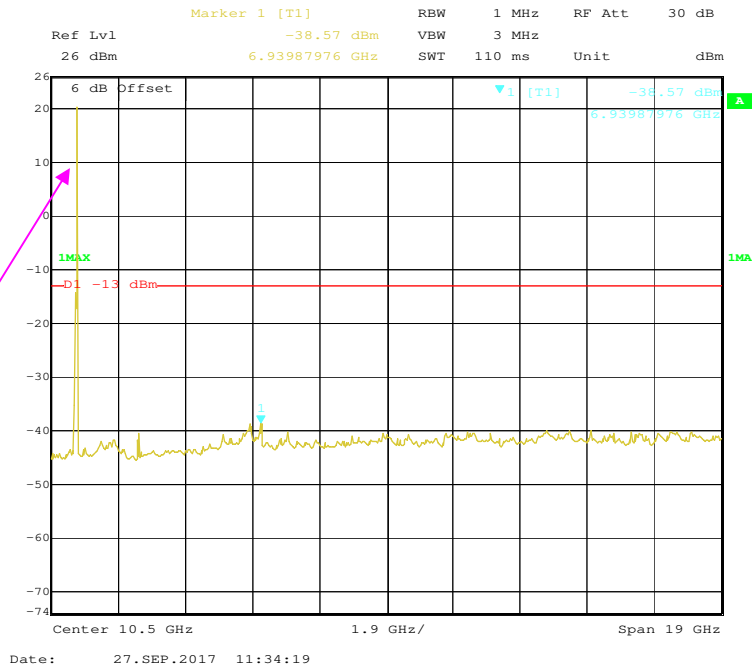


Fundamental

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

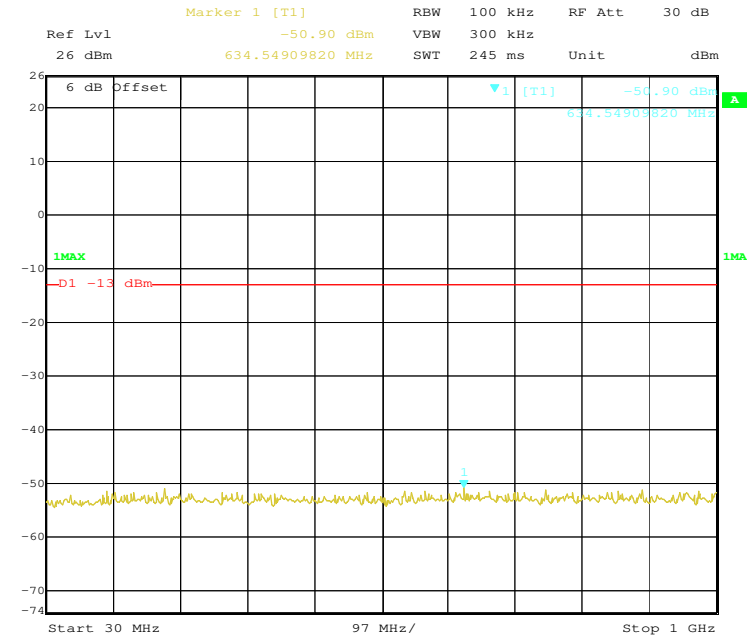


1 GHz – 20 GHz (15.0 MHz, Middle Channel)

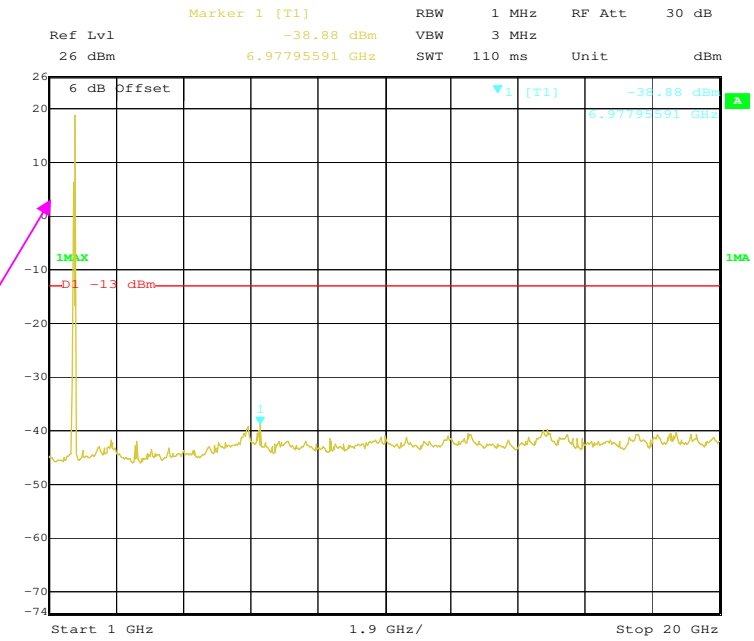


Fundamental

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



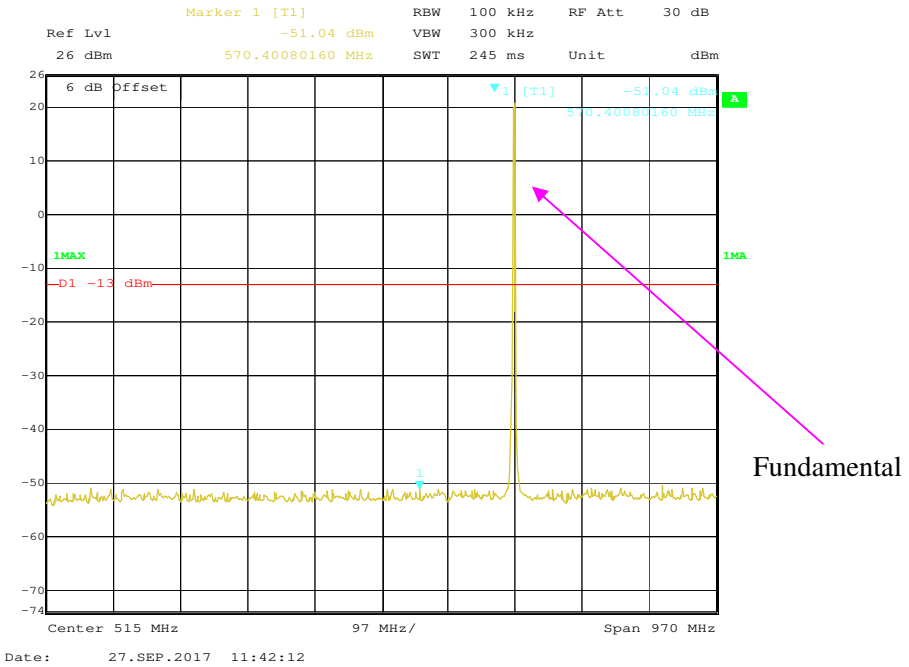
1 GHz – 20 GHz (20.0 MHz, Middle Channel)



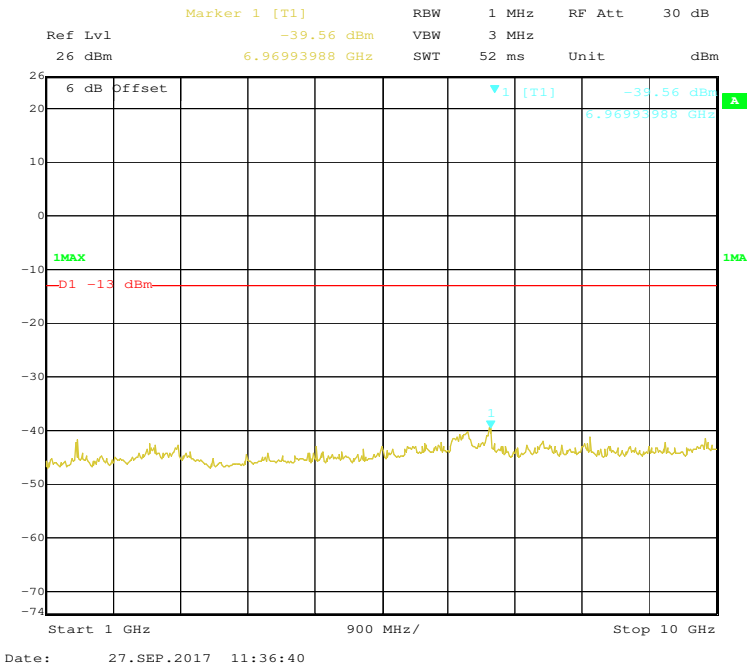
Fundamental

LTE Band 12:

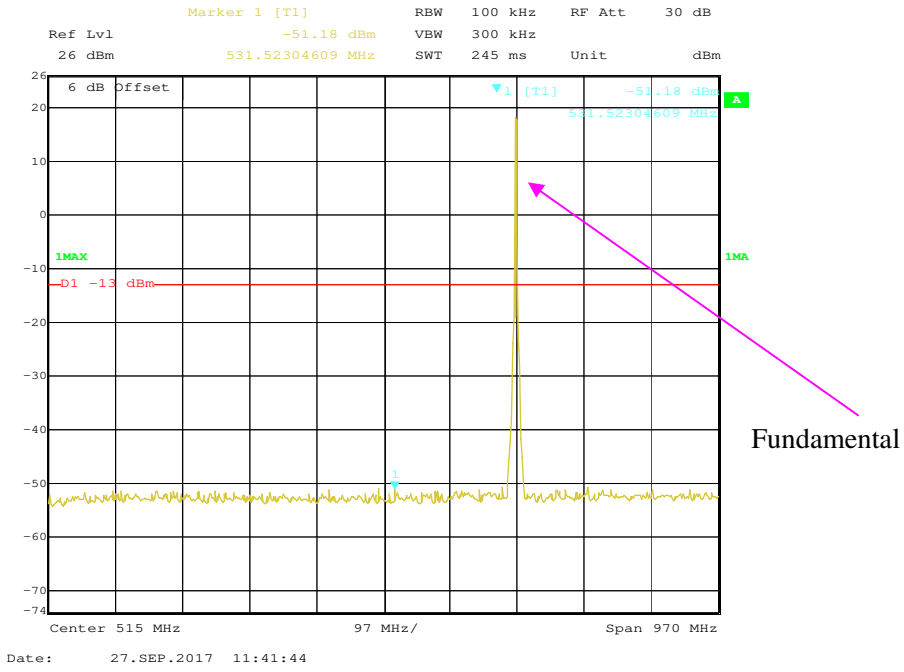
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



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

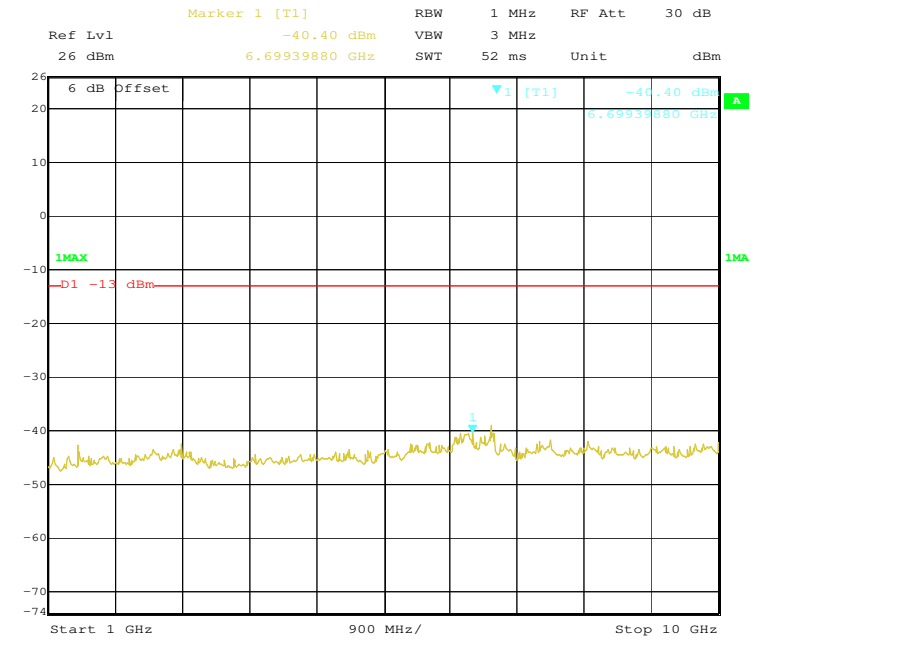


30 MHz - 1 GHz (3.0 MHz, Middle Channel)



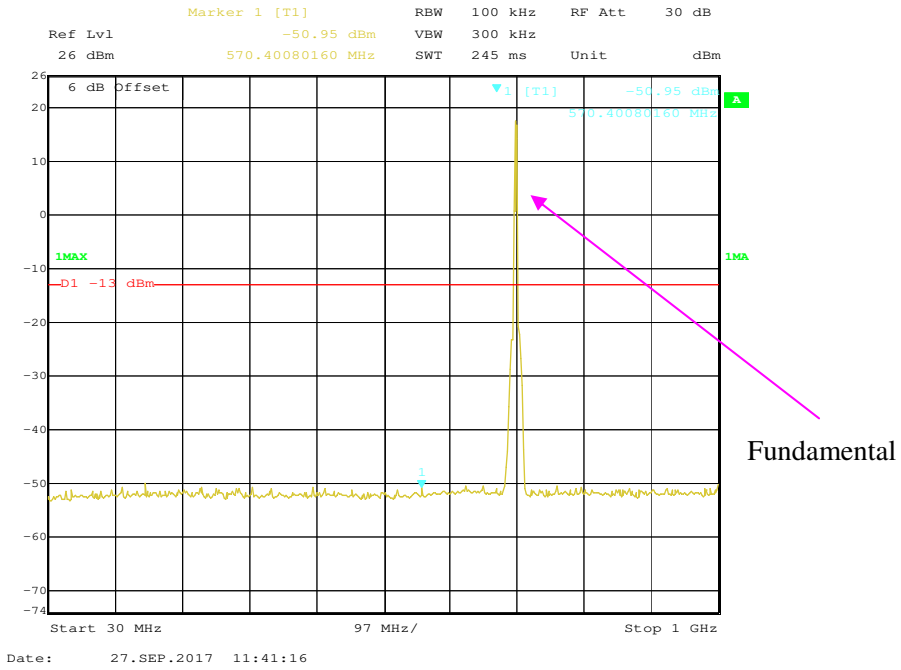
Date: 27.SEP.2017 11:41:44

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



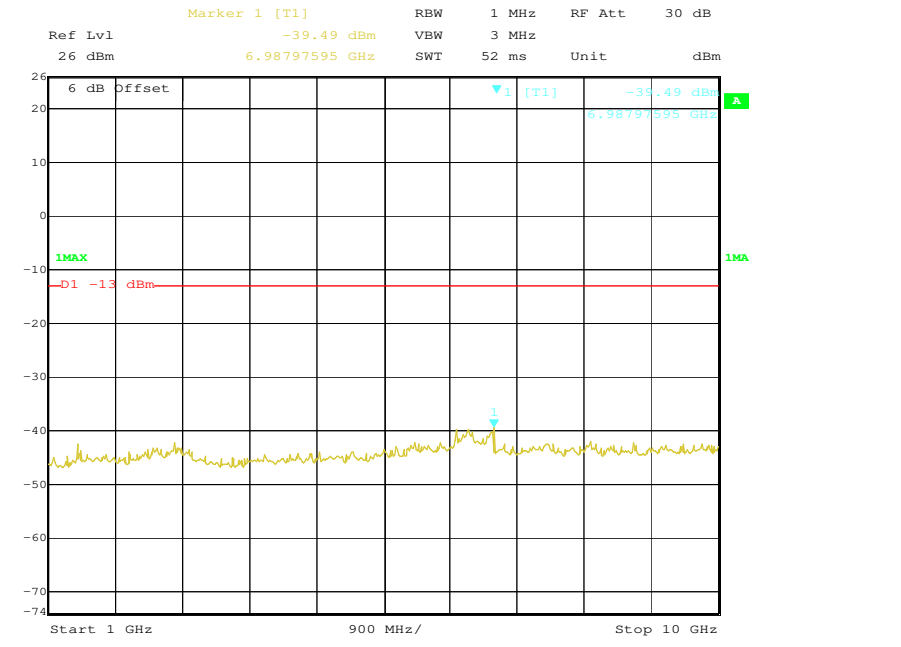
Date: 27.SEP.2017 11:38:36

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



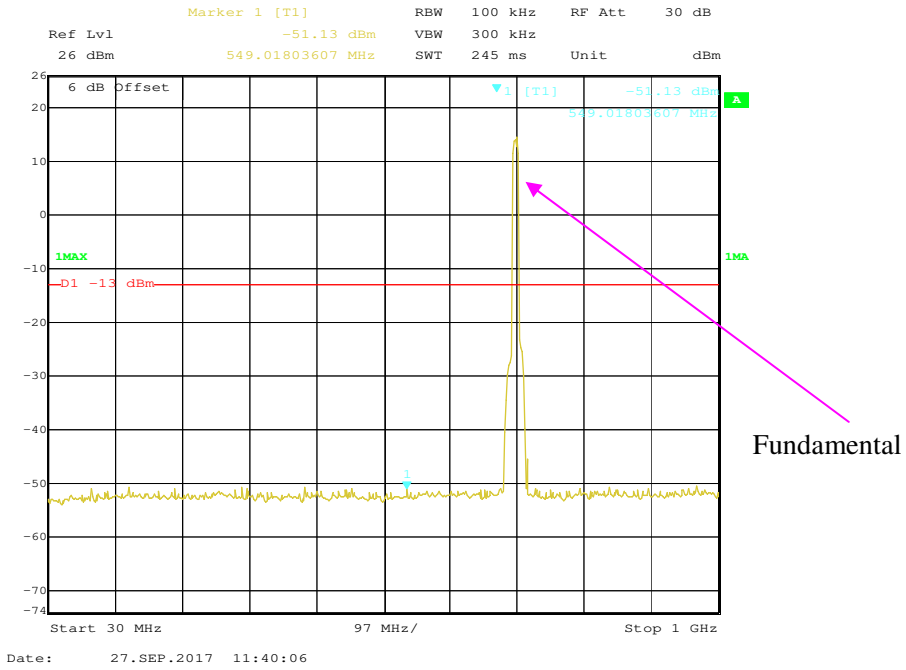
Date: 27.SEP.2017 11:41:16

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



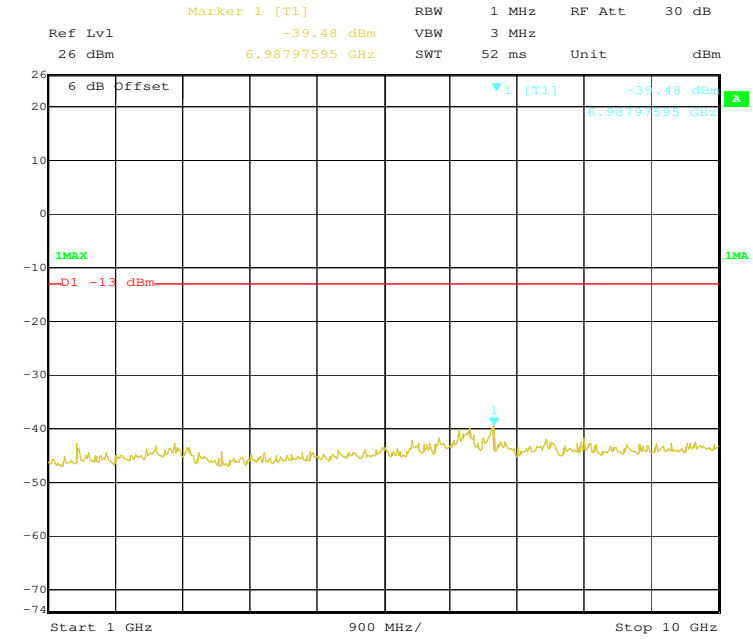
Date: 27.SEP.2017 11:39:01

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



Date: 27.SEP.2017 11:40:06

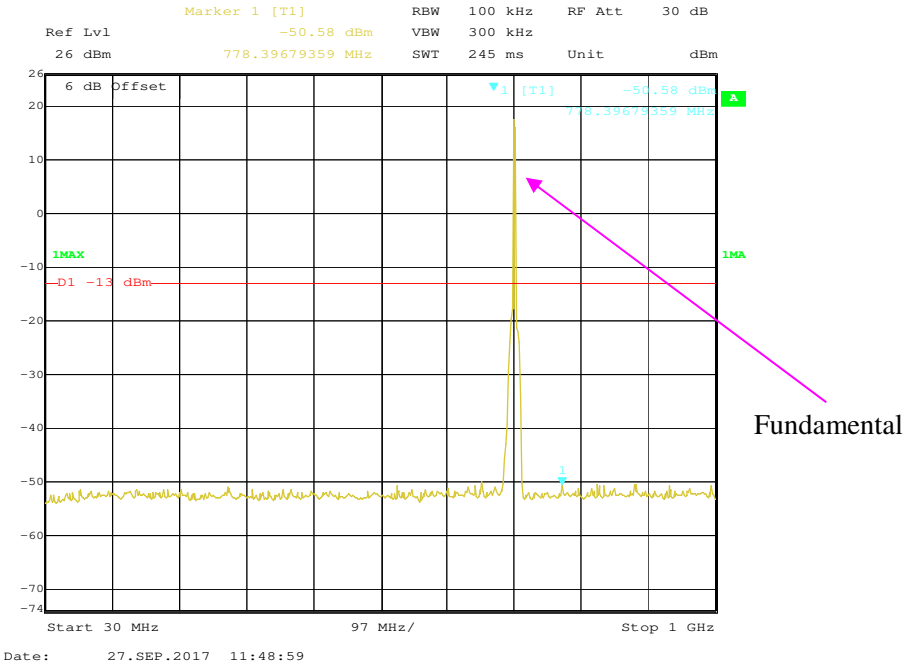
1 GHz – 10 GHz (10.0 MHz, Middle Channel)



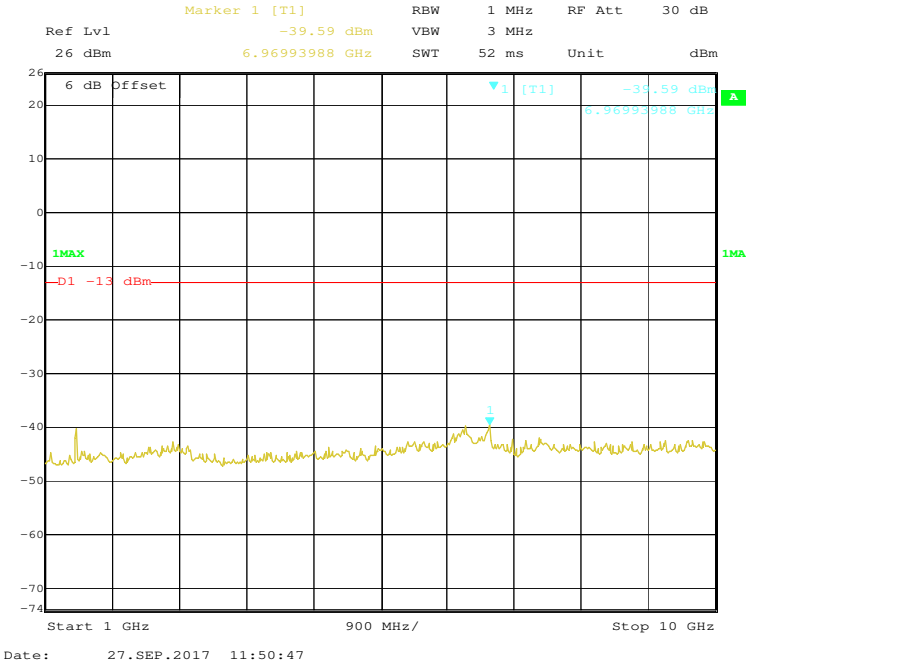
Date: 27.SEP.2017 11:39:22

LTE Band 17:

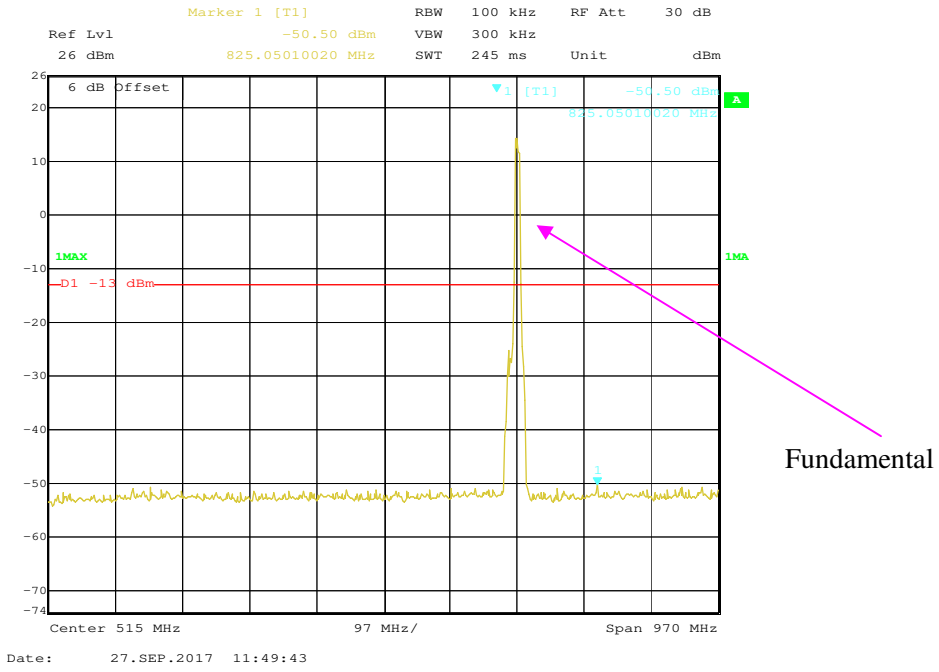
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



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

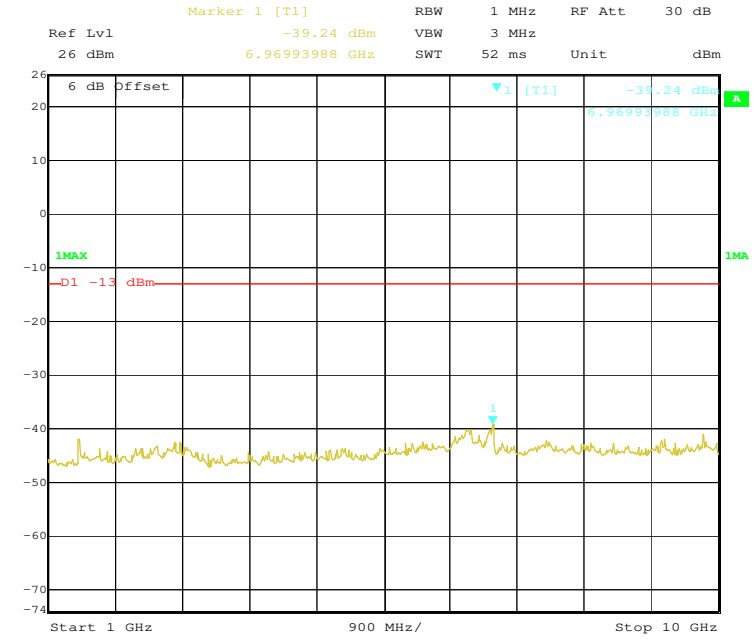


30 MHz - 1 GHz (10.0 MHz, Middle Channel)



Date: 27.SEP.2017 11:49:43

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



Date: 27.SEP.2017 11:50:08

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

Applicable Standards

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

22.917 (a) Out of band emissions. 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.

24.238 (a) Out of band emissions. 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.

27.53 (h)(m), 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 that 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 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 (TX pwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

The testing was performed by Kyle Xu on 2018-02-07.

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

30 MHz ~ 10 GHz:

GSM 850 Band

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
GSM Mode, Middle channel										
99.89	49.65	93	101	H	-57.94	0.33	-6.06	-64.33	-13	51.33
99.89	42.62	300	177	V	-55.79	0.33	-6.06	-62.18	-13	49.18
1673.20	60.09	227	58	H	-50.86	0.84	8.48	-43.22	-13	30.22
1673.20	57.24	316	229	V	-53.96	0.84	8.48	-46.32	-13	33.32
2509.80	48.10	338	232	H	-60.52	0.89	10.09	-51.32	-13	38.32
2509.80	46.25	85	111	V	-62.44	0.89	10.09	-53.24	-13	40.24

WCDMA Band V

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Middle channel										
99.89	50.21	330	41	H	-57.38	0.33	-6.06	-63.77	-13	50.77
99.89	42.59	24	115	V	-55.82	0.33	-6.06	-62.21	-13	49.21
1670.00	62.00	256	186	H	-48.95	0.84	8.47	-41.32	-13	28.32
1670.00	61.21	259	110	V	-49.99	0.84	8.47	-42.36	-13	29.36
2505.00	47.06	243	40	H	-61.56	0.89	10.09	-52.36	-13	39.36
2505.00	45.28	316	22	V	-63.41	0.89	10.09	-54.21	-13	41.21

30 MHz ~ 20 GHz:

PCS 1900 Band

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
GSM Mode, Middle channel										
99.89	51.66	78	229	H	-55.93	0.33	-6.06	-62.32	-13	49.32
99.89	43.45	281	142	V	-54.96	0.33	-6.06	-61.35	-13	48.35
3760.00	50.58	201	207	H	-53.11	0.95	9.74	-44.32	-13	31.32
3760.00	47.34	18	166	V	-56.67	0.95	9.74	-47.88	-13	34.88
5640.00	40.88	221	196	H	-59.63	1.15	10.74	-50.04	-13	37.04
5640.00	39.59	41	172	V	-61.22	1.15	10.74	-51.63	-13	38.63

WCDMA Band II

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Middle channel										
99.89	49.66	345	185	H	-57.93	0.33	-6.06	-64.32	-13	51.32
99.89	41.93	71	103	V	-56.48	0.33	-6.06	-62.87	-13	49.87
3760.00	50.55	137	208	H	-53.14	0.95	9.74	-44.35	-13	31.35
3760.00	49.90	146	139	V	-54.11	0.95	9.74	-45.32	-13	32.32
5640.00	38.56	191	232	H	-61.95	1.15	10.74	-52.36	-13	39.36
5640.00	35.51	216	150	V	-65.30	1.15	10.74	-55.71	-13	42.71

WCDMA Band IV

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Middle channel										
99.89	49.63	152	236	H	-57.96	0.33	-6.06	-64.35	-13	51.35
99.89	41.68	331	152	V	-56.73	0.33	-6.06	-63.12	-13	50.12
3480.00	51.40	255	173	H	-53.32	0.93	9.88	-44.37	-13	31.37
3480.00	50.18	239	163	V	-54.98	0.93	9.88	-46.03	-13	33.03
5220.00	39.55	319	175	H	-62.44	1.11	10.30	-53.25	-13	40.25
5220.00	35.83	99	201	V	-66.37	1.11	10.30	-57.18	-13	44.18

Test mode: Transmitting (Pre-scan with all the bandwidth, and worse case as below)

30 MHz ~ 20 GHz:

LTE Band 2:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 20MHz Bandwidth Middle Channel										
99.89	52.86	136	123	H	-54.73	0.33	-6.06	-61.12	-13	48.12
99.89	42.44	341	157	V	-55.97	0.33	-6.06	-62.36	-13	49.36
3760.00	50.78	271	117	H	-52.91	0.95	9.74	-44.12	-13	31.12
3760.00	50.10	19	227	V	-53.91	0.95	9.74	-45.12	-13	32.12
5640.00	42.76	3	226	H	-57.75	1.15	10.74	-48.16	-13	35.16
5640.00	42.00	196	245	V	-58.81	1.15	10.74	-49.22	-13	36.22
16-QAM 20MHz Bandwidth Middle Channel										
99.89	50.56	26	184	H	-57.03	0.33	-6.06	-63.42	-13	50.42
99.89	40.22	130	182	V	-58.19	0.33	-6.06	-64.58	-13	51.58
3760.00	49.75	351	141	H	-53.94	0.95	9.74	-45.15	-13	32.15
3760.00	46.69	138	212	V	-57.32	0.95	9.74	-48.53	-13	35.53
5640.00	39.44	122	120	H	-61.07	1.15	10.74	-51.48	-13	38.48
5640.00	38.45	86	114	V	-62.36	1.15	10.74	-52.77	-13	39.77

LTE Band 4:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 20MHz Bandwidth Middle Channel										
99.89	51.57	158	157	H	-56.02	0.33	-6.06	-62.41	-13	49.41
99.89	39.99	190	139	V	-58.42	0.33	-6.06	-64.81	-13	51.81
3465.00	51.52	322	215	H	-53.27	0.93	9.87	-44.33	-13	31.33
3465.00	49.03	276	102	V	-56.19	0.93	9.87	-47.25	-13	34.25
5197.50	41.53	310	106	H	-60.55	1.10	10.30	-51.35	-13	38.35
5197.50	40.71	288	242	V	-61.58	1.10	10.30	-52.38	-13	39.38
16-QAM 20MHz Bandwidth Middle Channel										
99.89	49.20	347	248	H	-58.39	0.33	-6.06	-64.78	-13	51.78
99.89	42.38	175	113	V	-56.03	0.33	-6.06	-62.42	-13	49.42
3465.00	51.53	234	156	H	-53.26	0.93	9.87	-44.32	-13	31.32
3465.00	50.41	228	112	V	-54.81	0.93	9.87	-45.87	-13	32.87
5197.50	43.56	28	158	H	-58.52	1.10	10.30	-49.32	-13	36.32
5197.50	40.96	113	152	V	-61.33	1.10	10.30	-52.13	-13	39.13

30 MHz ~ 10 GHz:

LTE Band 12:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 10MHz Bandwidth Middle Channel										
99.89	48.66	181	111	H	-58.93	0.33	-6.06	-65.32	-13	52.32
99.89	38.06	137	215	V	-60.35	0.33	-6.06	-66.74	-13	53.74
1415.00	63.56	312	214	H	-48.49	0.82	7.96	-41.35	-13	28.35
1415.00	62.46	60	227	V	-49.89	0.82	7.96	-42.75	-13	29.75
2122.50	44.88	82	227	H	-64.04	0.86	9.27	-55.63	-13	42.63
2122.50	41.29	238	153	V	-67.35	0.86	9.27	-58.94	-13	45.94
16-QAM 10MHz Bandwidth Middle Channel										
99.89	51.75	335	100	H	-55.84	0.33	-6.06	-62.23	-13	49.23
99.89	40.96	168	238	V	-57.45	0.33	-6.06	-63.84	-13	50.84
1415.00	60.02	270	223	H	-52.03	0.82	7.96	-44.89	-13	31.89
1415.00	59.08	150	221	V	-53.27	0.82	7.96	-46.13	-13	33.13
2122.50	45.66	58	157	H	-63.26	0.86	9.27	-54.85	-13	41.85
2122.50	44.37	287	140	V	-64.27	0.86	9.27	-55.86	-13	42.86

LTE Band 17:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Middle Channel										
99.89	51.50	80	158	H	-56.09	0.33	-6.06	-62.48	-13	49.48
99.89	43.81	328	217	V	-54.60	0.33	-6.06	-60.99	-13	47.99
1420.00	59.03	254	190	H	-53.03	0.82	7.98	-45.87	-13	32.87
1420.00	58.07	270	203	V	-54.29	0.82	7.98	-47.13	-13	34.13
2130.00	44.43	120	207	H	-64.21	0.86	9.29	-55.78	-13	42.78
2130.00	43.77	91	190	V	-65.14	0.86	9.29	-56.71	-13	43.71
16-QAM 5MHz Bandwidth Middle Channel										
99.89	53.63	350	190	H	-53.96	0.33	-6.06	-60.35	-13	47.35
99.89	42.03	83	217	V	-56.38	0.33	-6.06	-62.77	-13	49.77
1420.00	60.05	216	194	H	-52.01	0.82	7.98	-44.85	-13	31.85
1420.00	58.33	110	216	V	-54.03	0.82	7.98	-46.87	-13	33.87
2130.00	46.63	55	124	H	-62.01	0.86	9.29	-53.58	-13	40.58
2130.00	46.35	220	179	V	-62.56	0.86	9.29	-54.13	-13	41.13

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

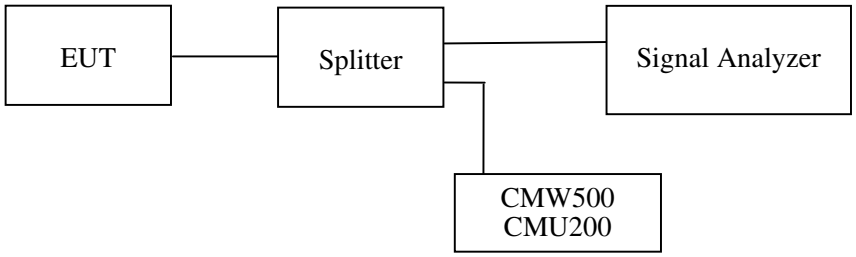
According to FCC §27.53 (h)(m), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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 that 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 Data

Environmental Conditions

Temperature:	23.1 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

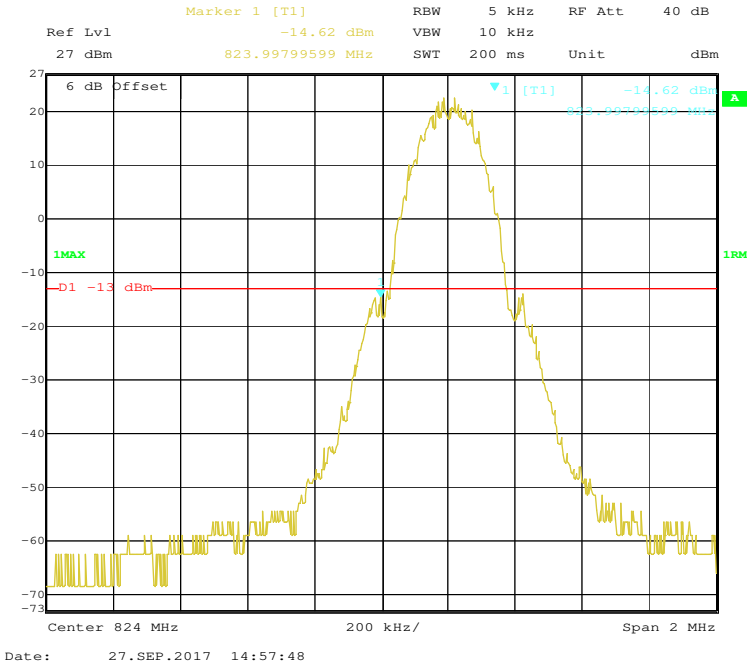
The testing was performed by Kyle Xu on 2017-09-26 to 2017-09-27.

EUT operation mode: Transmitting

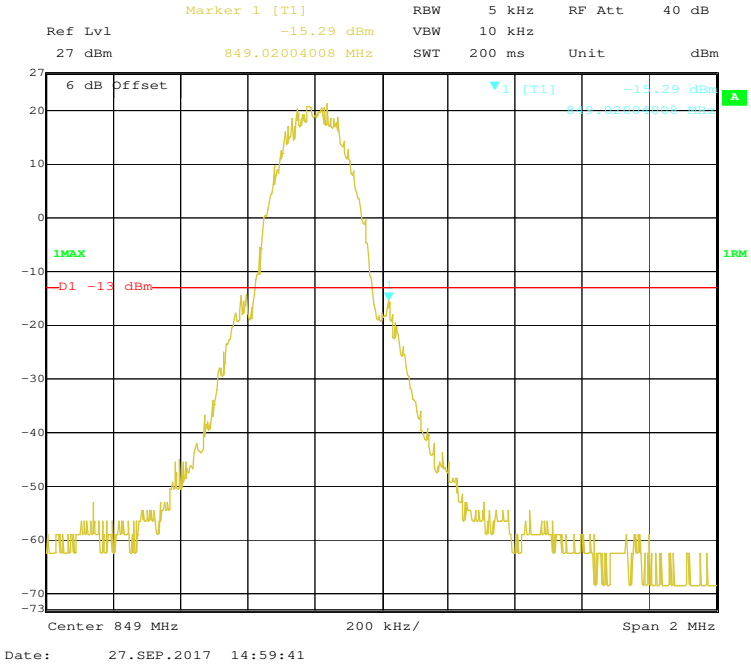
Test Result: Compliance.

GSM 850 Band:

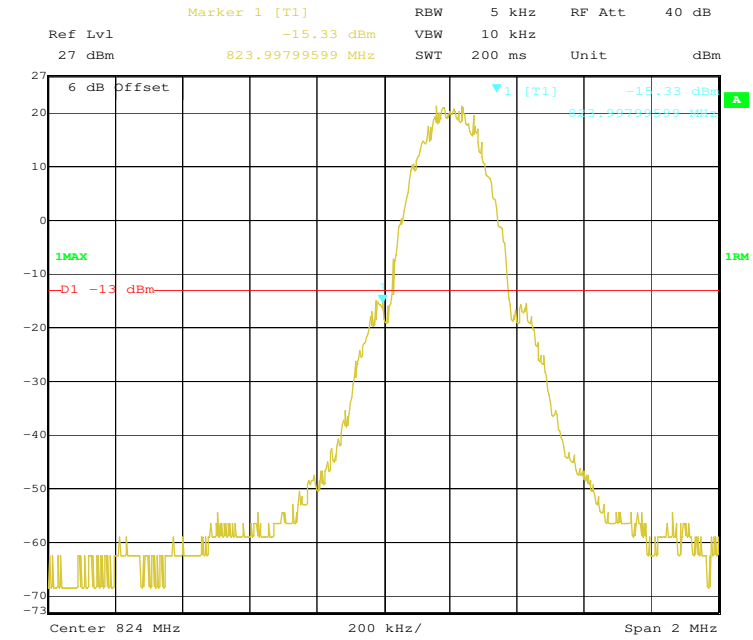
GSM Mode, Left Band Edge



GSM Mode, Right Band Edge

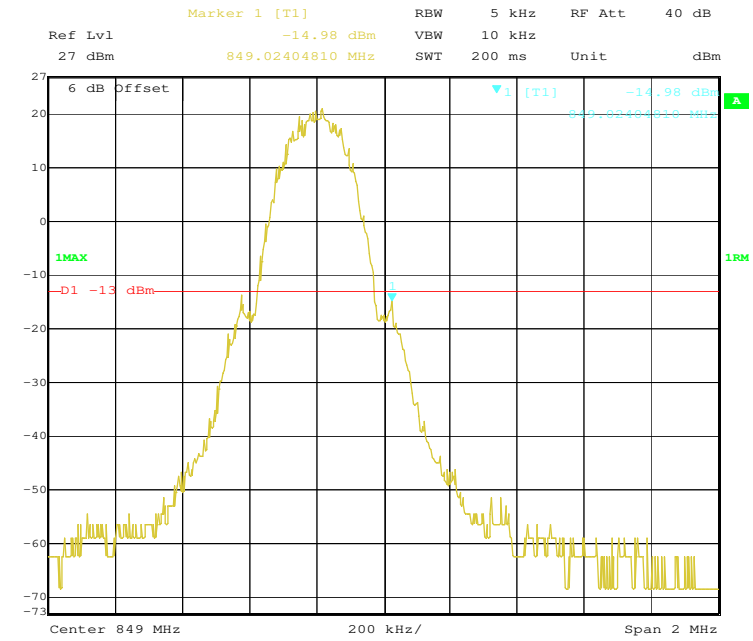


GPRS Mode, Left Band Edge



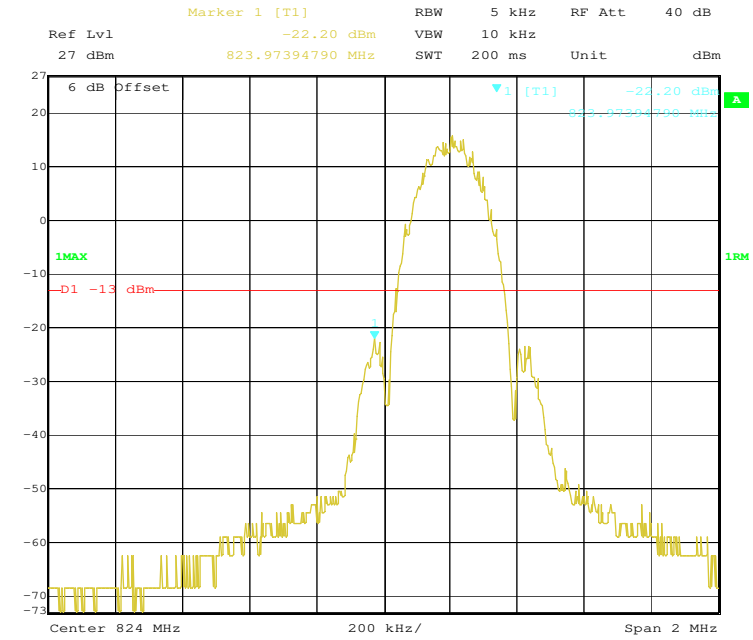
Date: 27.SEP.2017 15:05:28

GPRS Mode, Right Band Edge

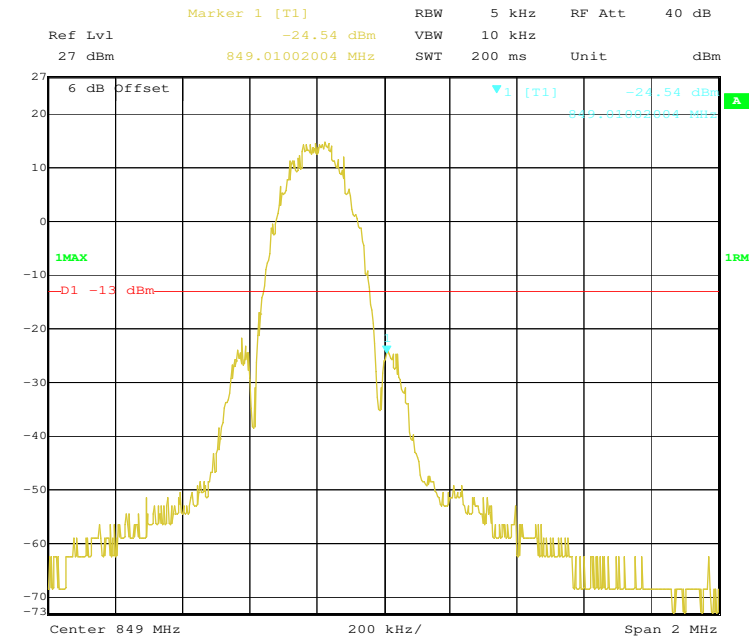


Date: 27.SEP.2017 15:02:39

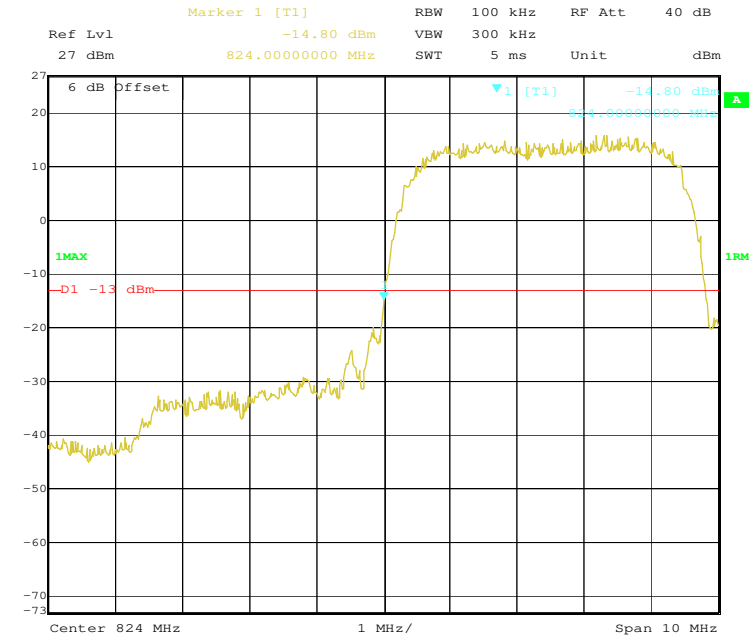
EGPRS Mode, Left Band Edge



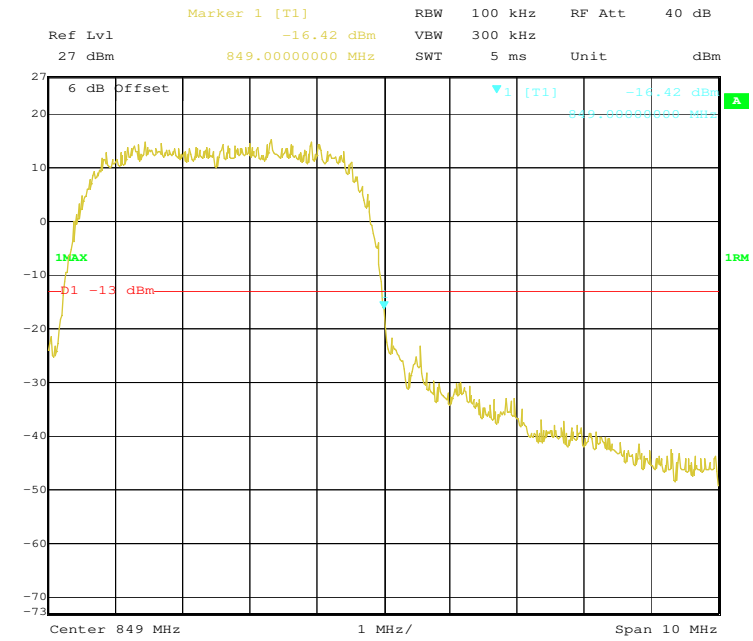
EGPRS Mode, Right Band Edge



WCDMA Mode Band V, Left Band Edge

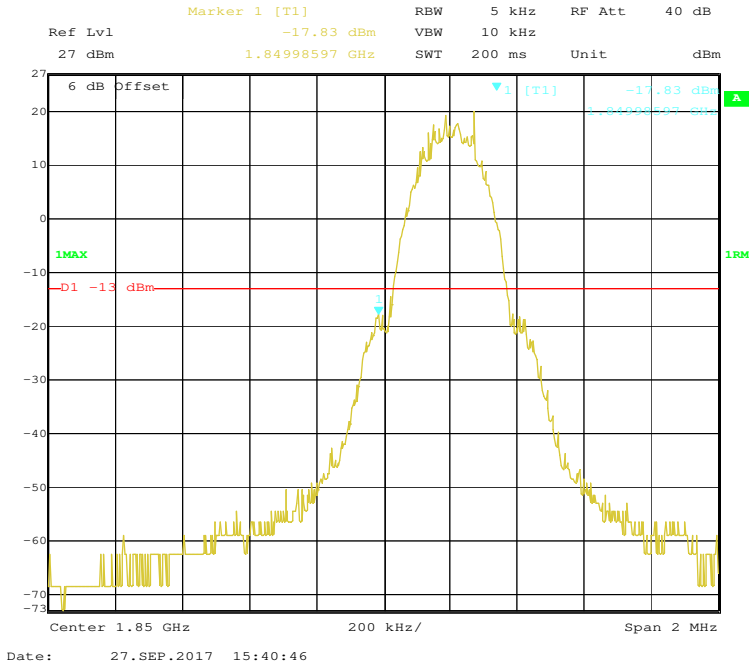


WCDMA Mode Band V, Right Band Edge

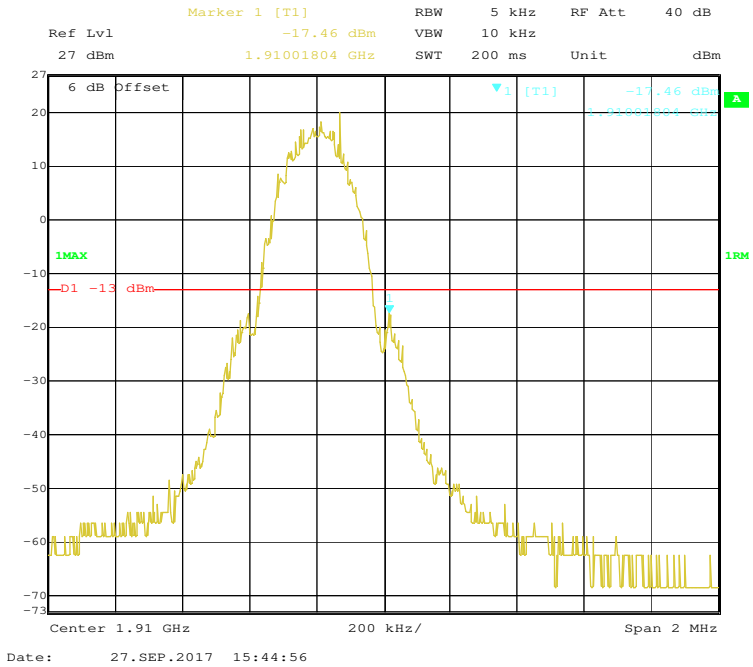


PCS 1900 Band:

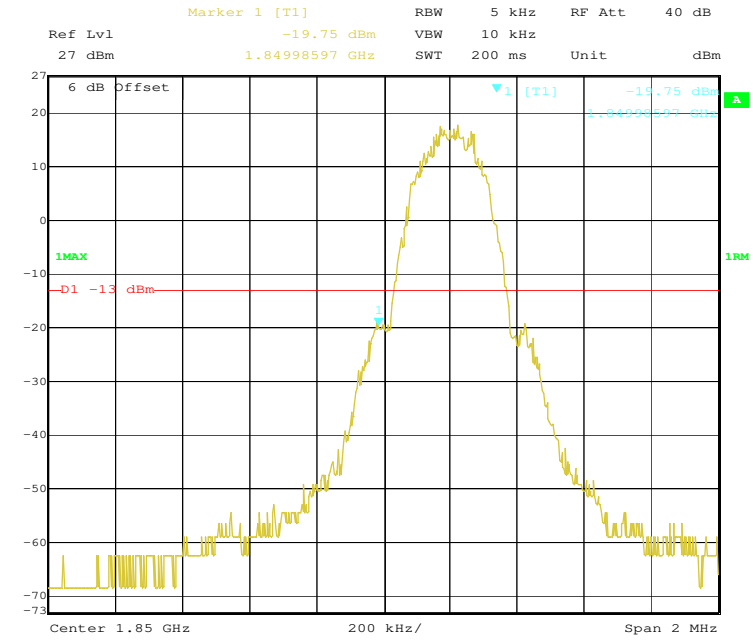
GSM Mode, Left Band Edge



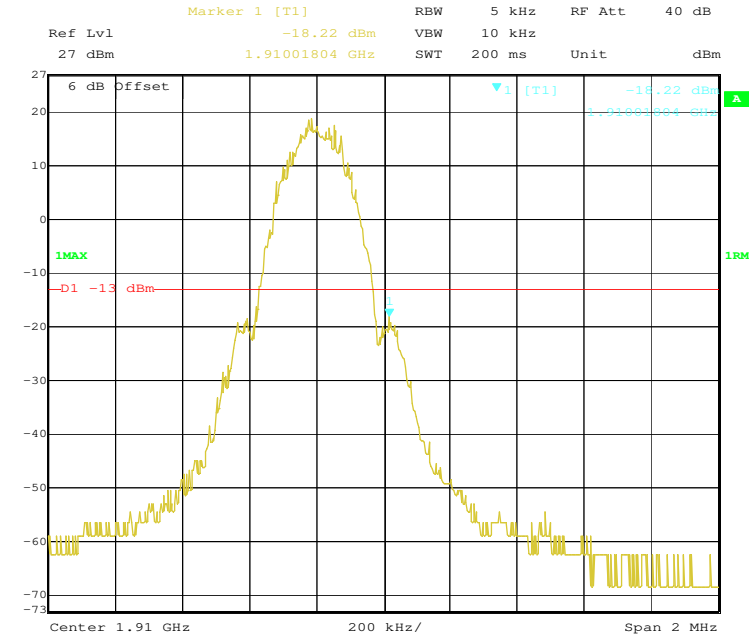
GSM Mode, Right Band Edge



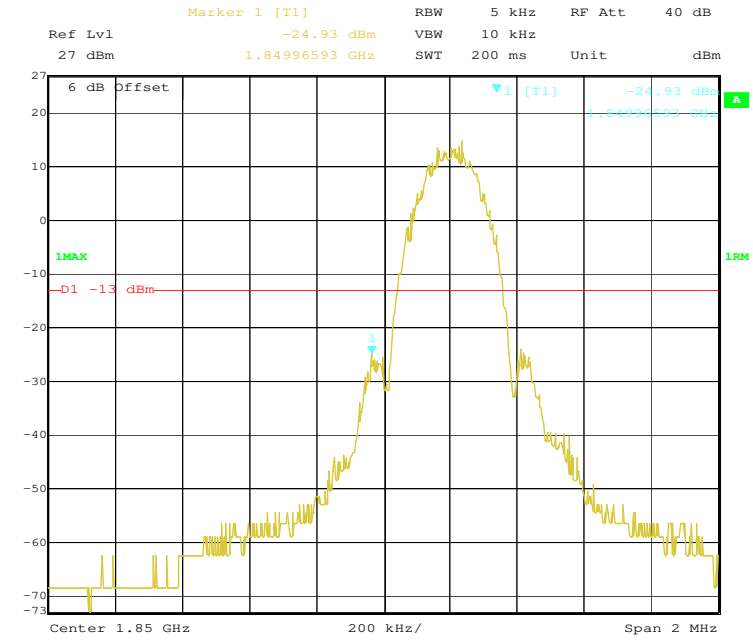
GPRS Mode, Left Band Edge



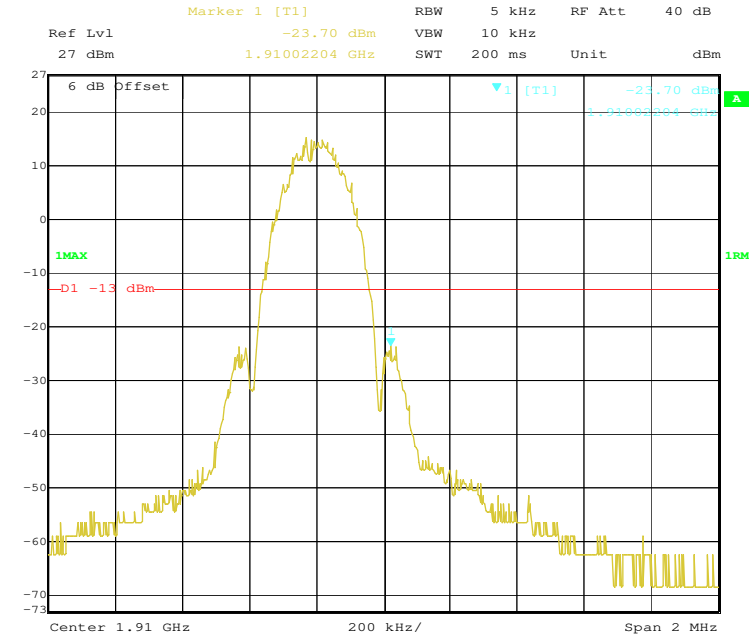
GPRS Mode, Right Band Edge



EGPRS Mode, Left Band Edge

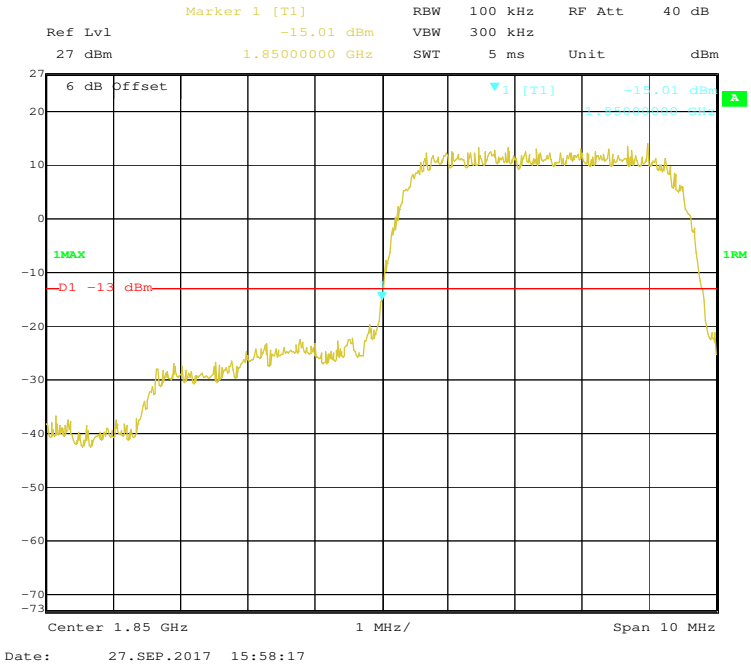


EGPRS Mode, Right Band Edge

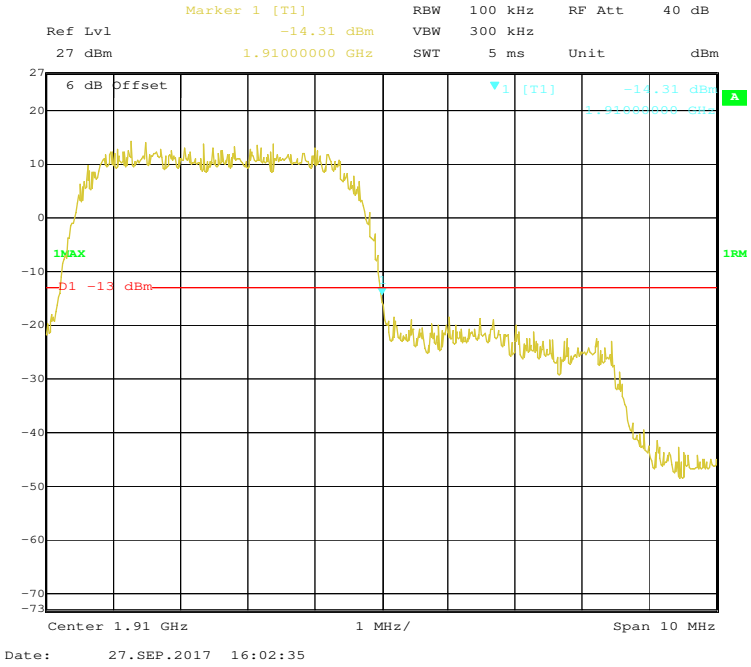


WCDMA Band II

WCDMA Mode, Left Band Edge

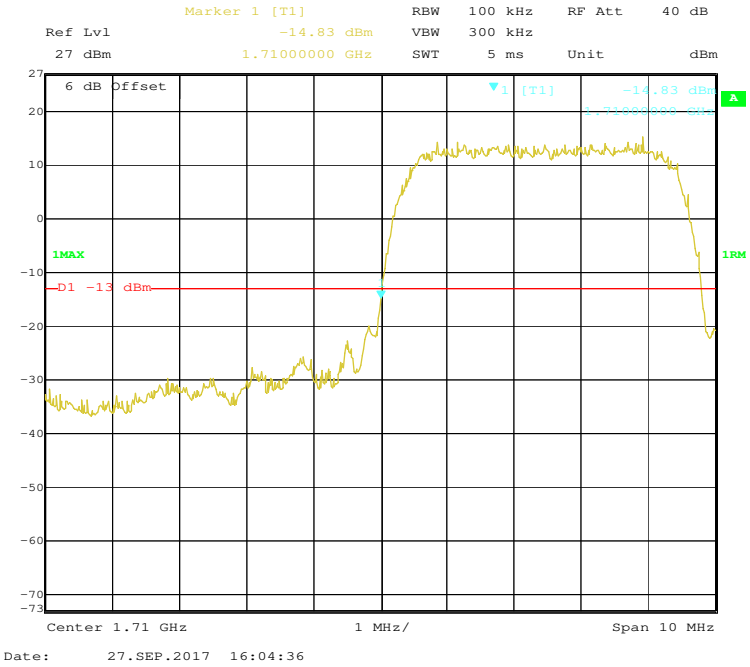


WCDMA Mode, Right Band Edge

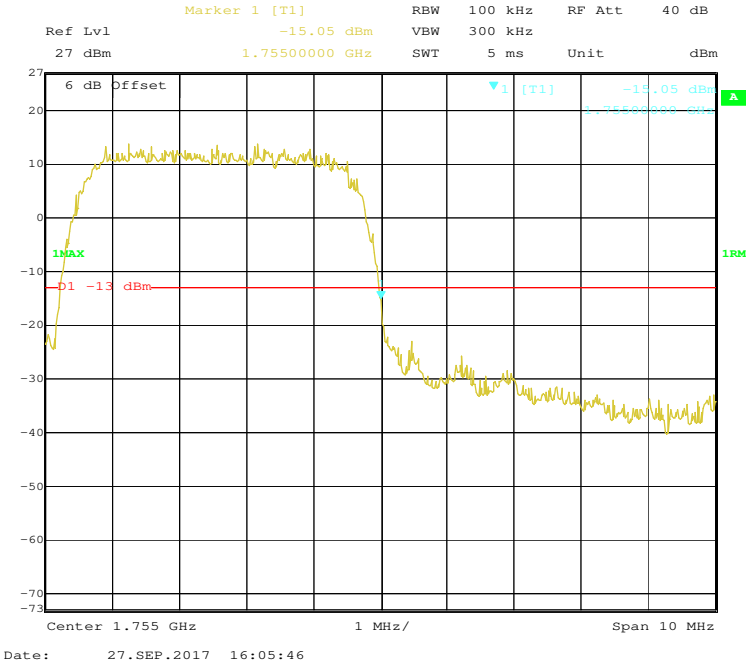


WCDMA Band IV

WCDMA Mode, Left Band Edge

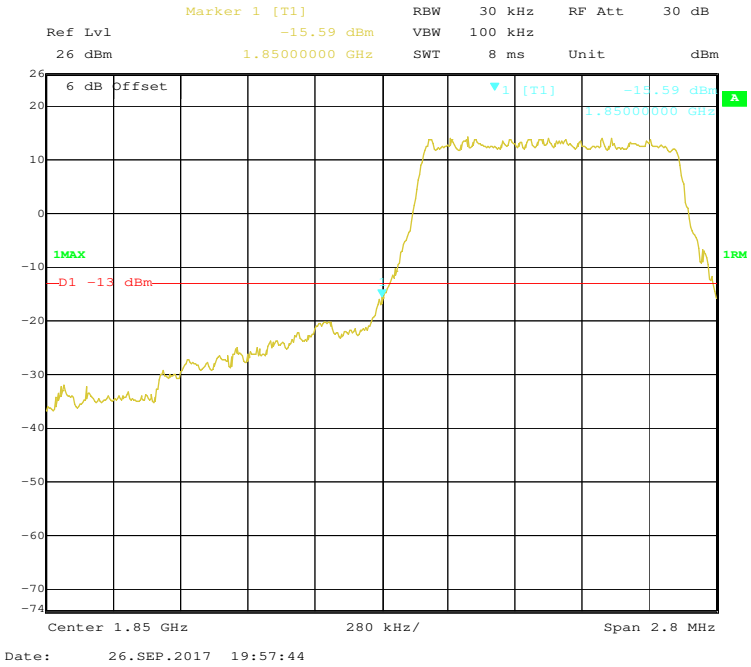


WCDMA Mode, Right Band Edge

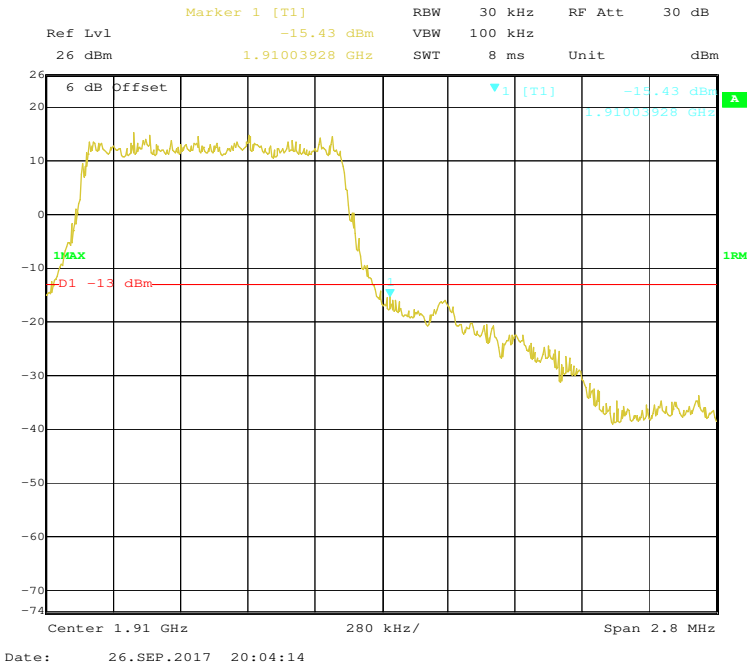


LTE Band 2:

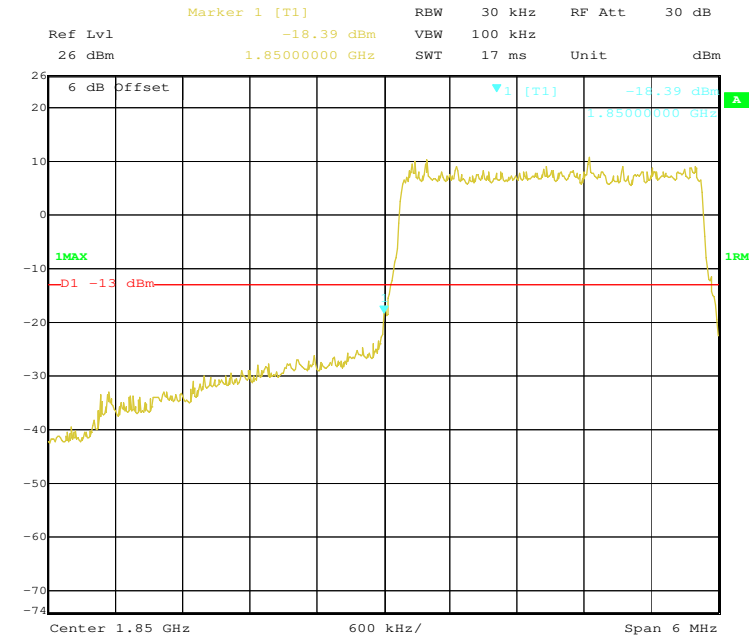
QPSK (1.4 MHz, FULL RB) - Left Band Edge



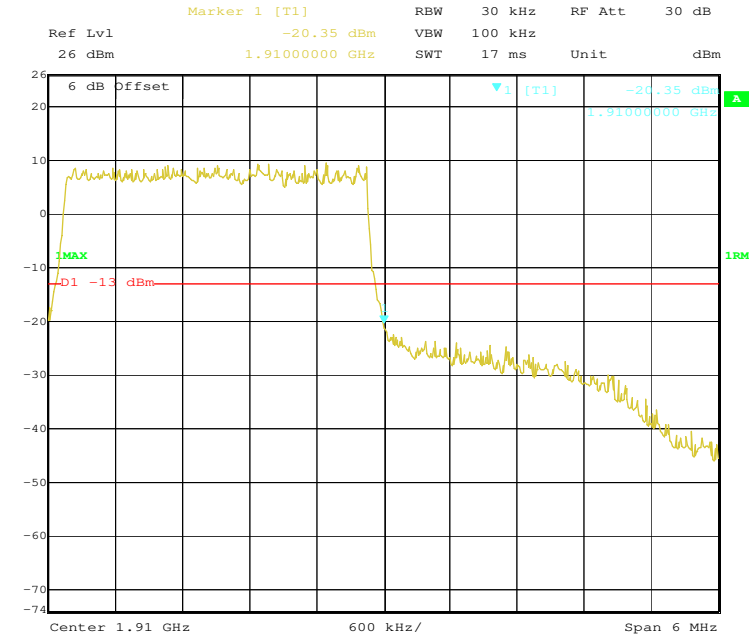
QPSK (1.4 MHz, FULL RB) - Right Band Edge



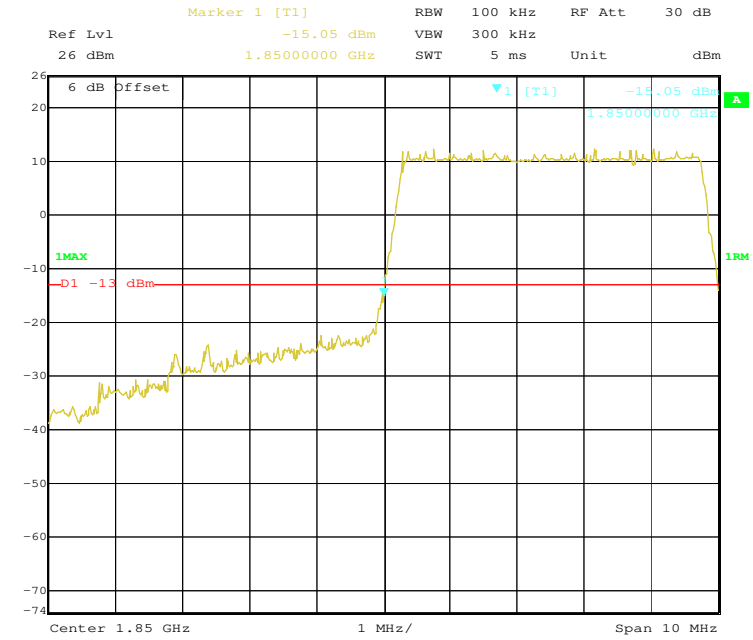
QPSK (3.0 MHz, FULL RB) - Left Band Edge



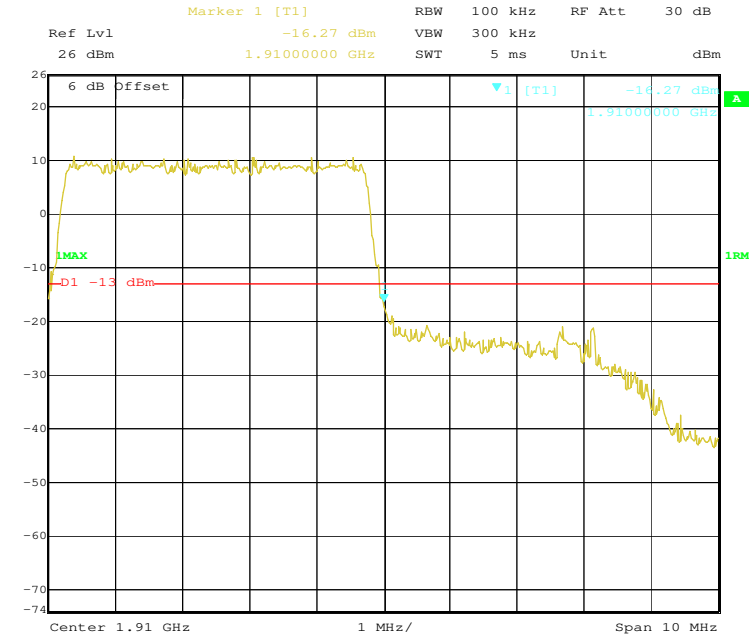
QPSK (3.0 MHz, FULL RB) - Right Band Edge



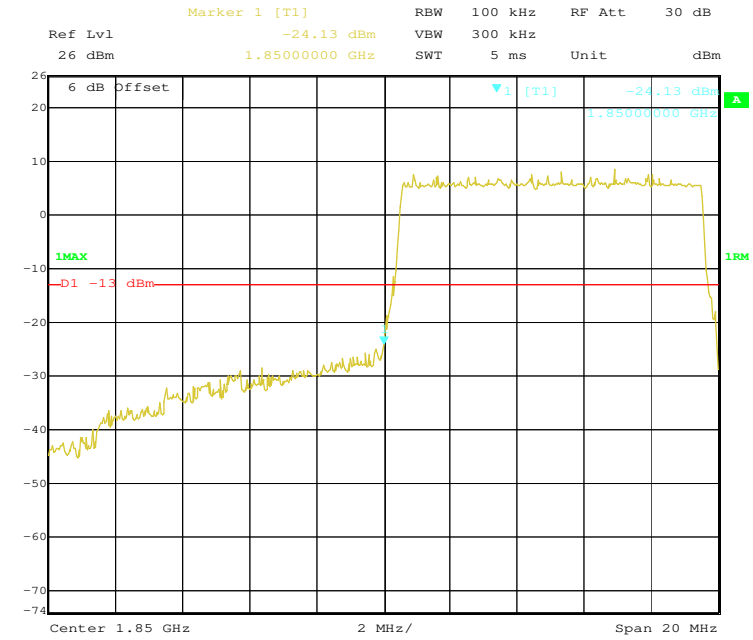
QPSK (5.0 MHz, FULL RB) - Left Band Edge



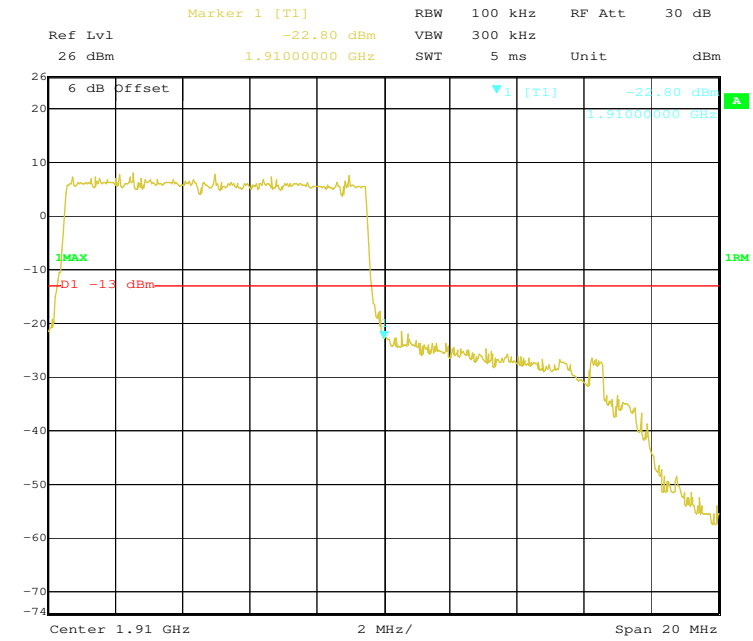
QPSK (5.0 MHz, FULL RB) - Right Band Edge



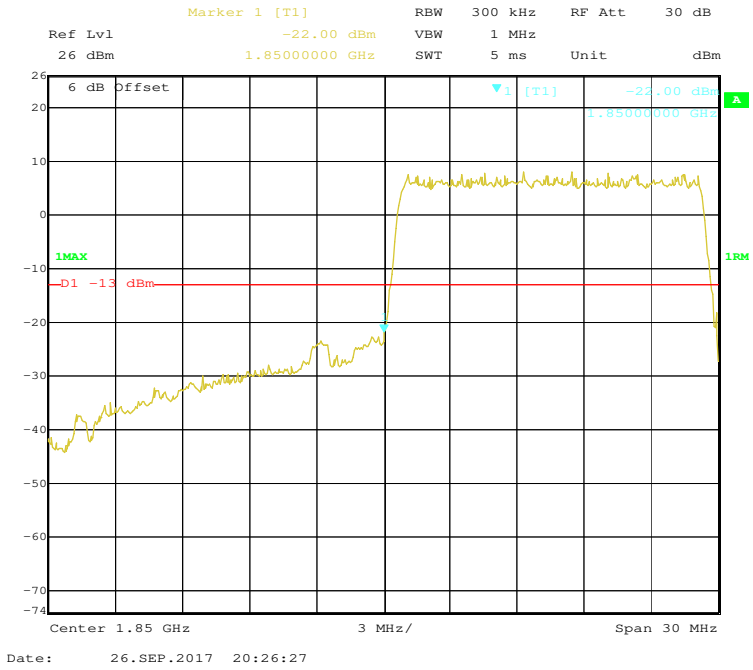
QPSK (10.0 MHz, FULL RB) - Left Band Edge



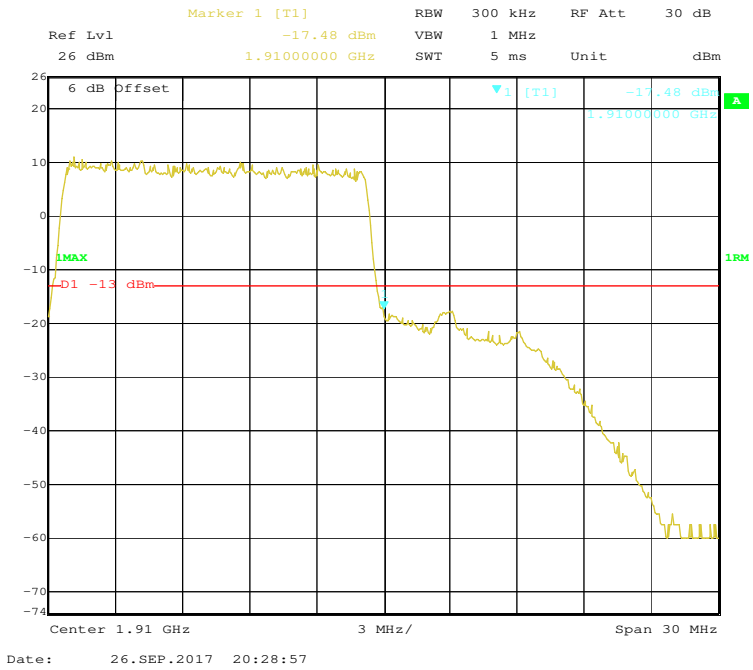
QPSK (10.0 MHz, FULL RB) - Right Band Edge



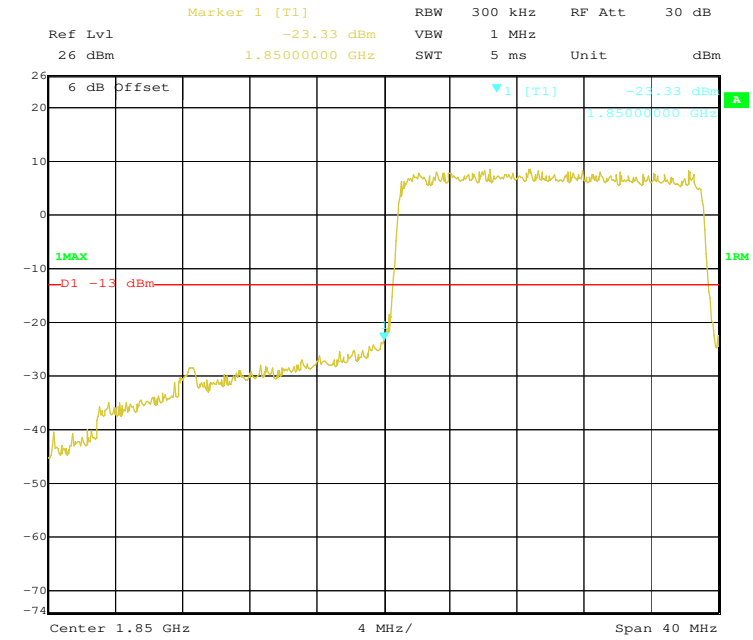
QPSK (15.0 MHz, FULL RB) - Left Band Edge



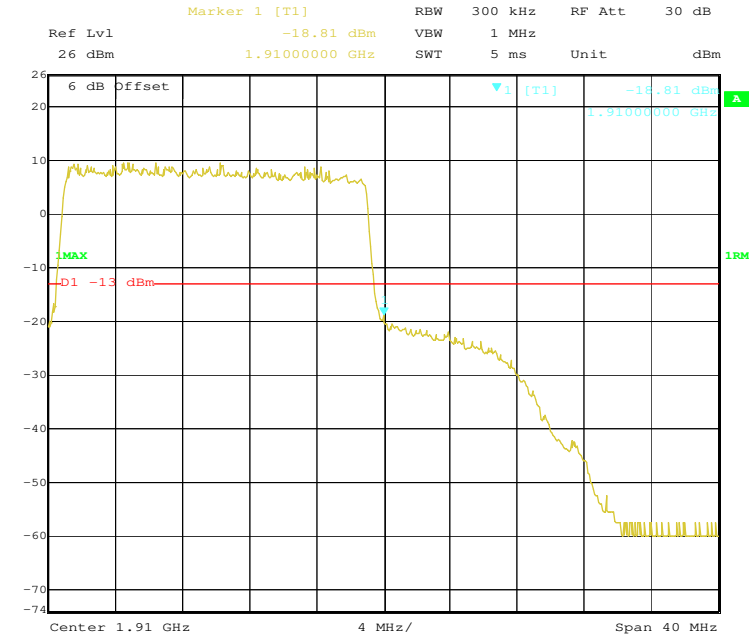
QPSK (15.0 MHz, FULL RB) - Right Band Edge



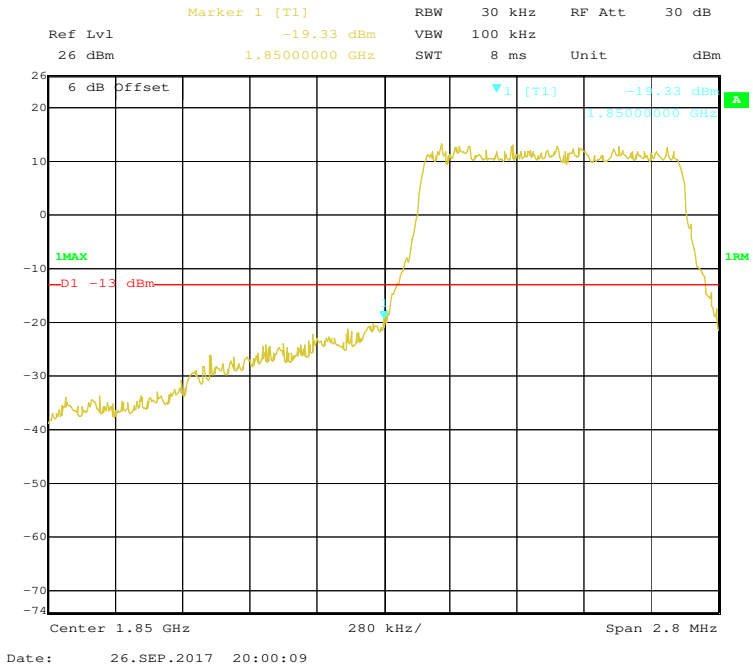
QPSK (20.0 MHz, FULL RB) - Left Band Edge



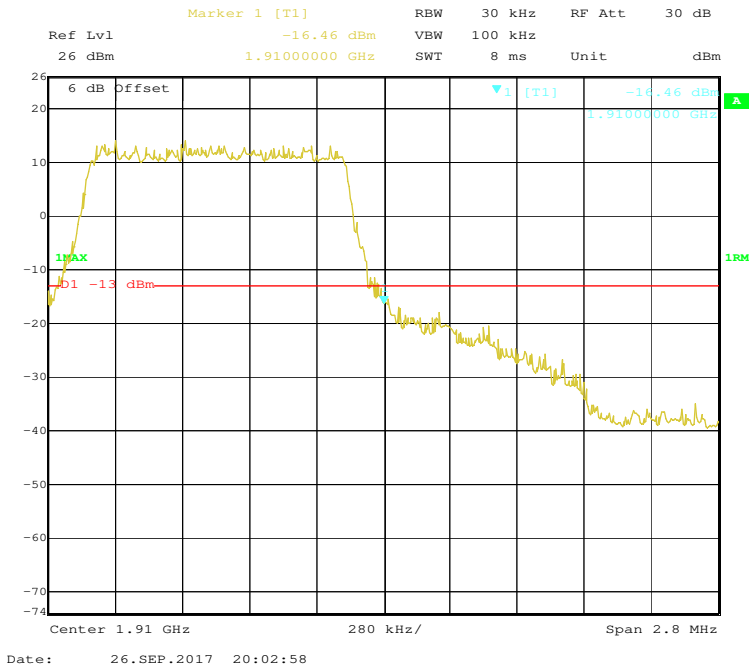
QPSK (20.0 MHz, FULL RB) - Right Band Edge



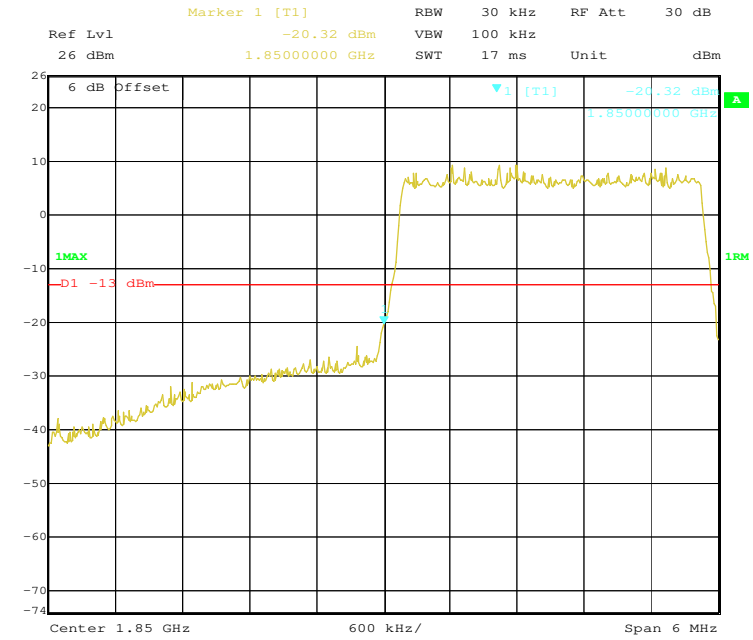
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



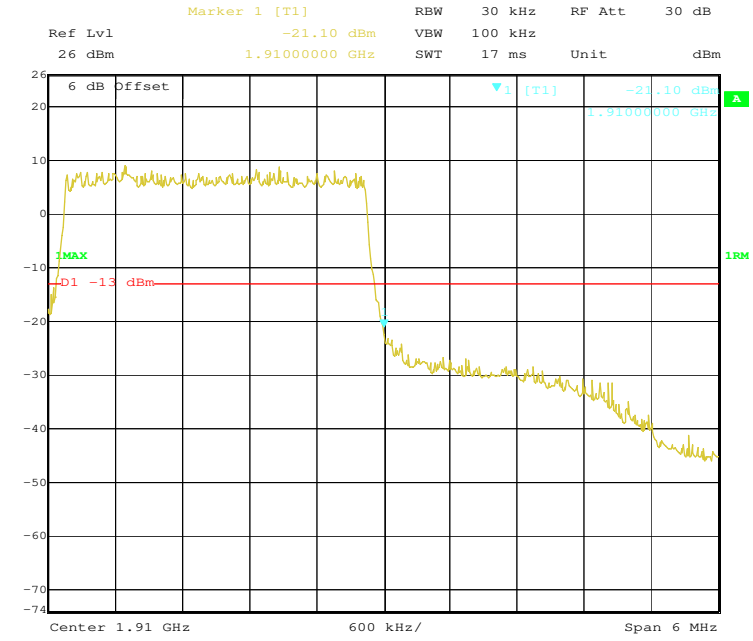
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



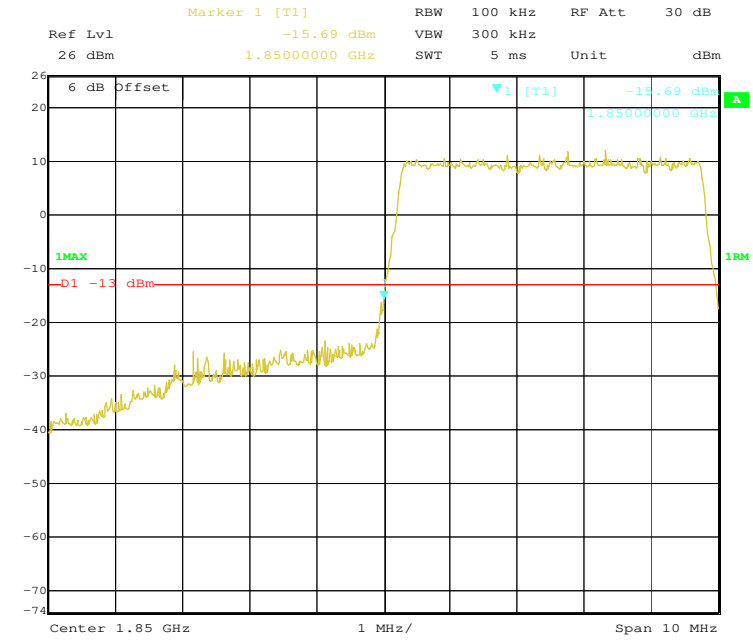
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



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



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



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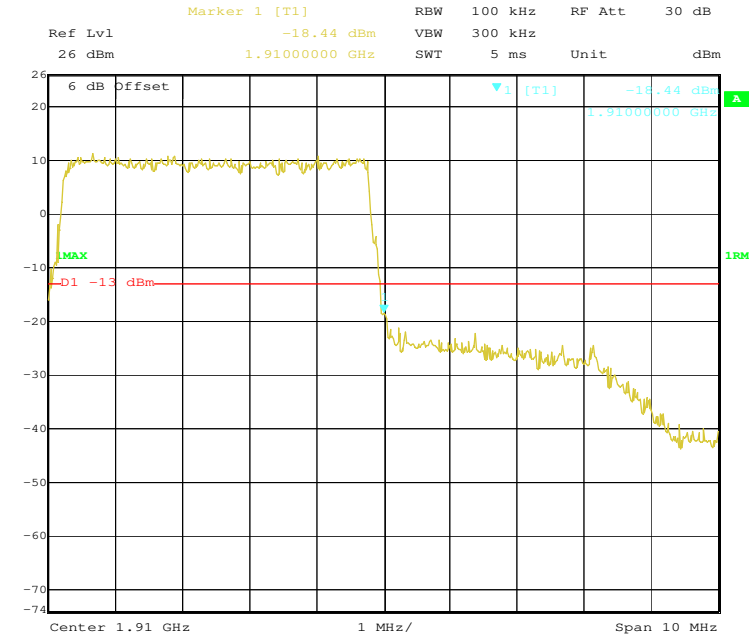
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



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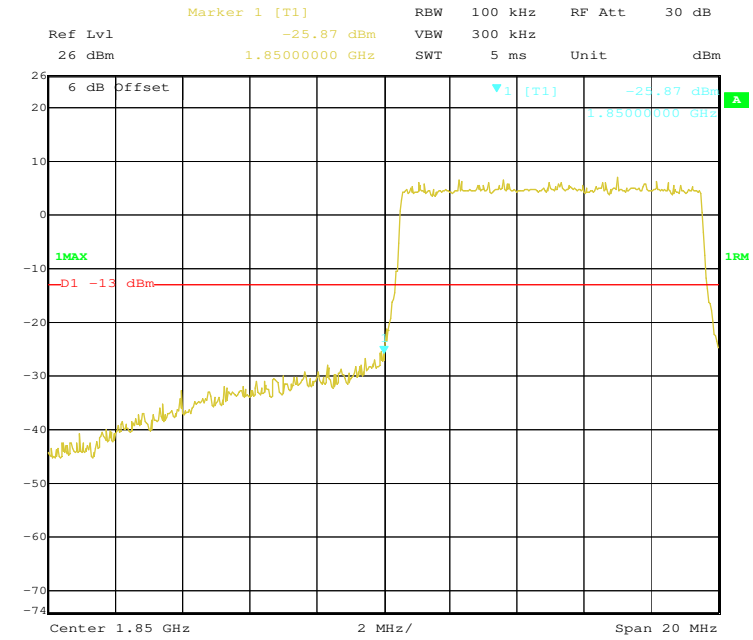
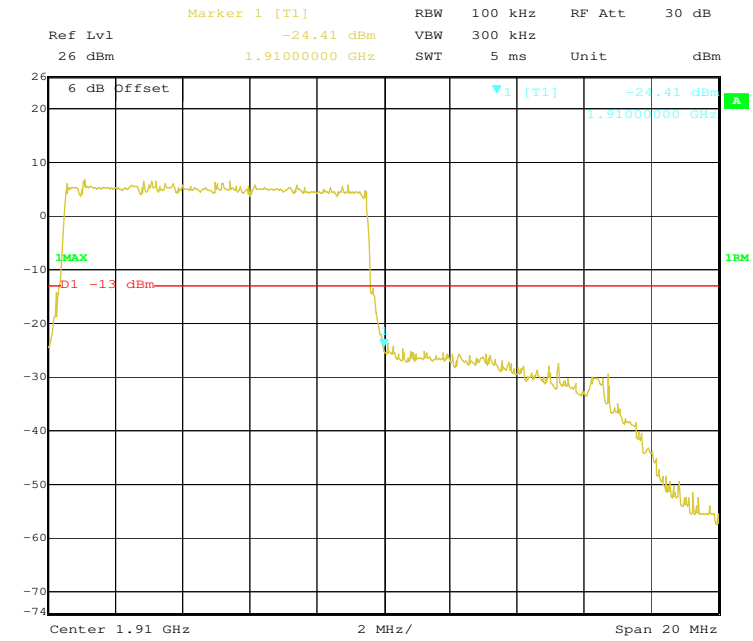
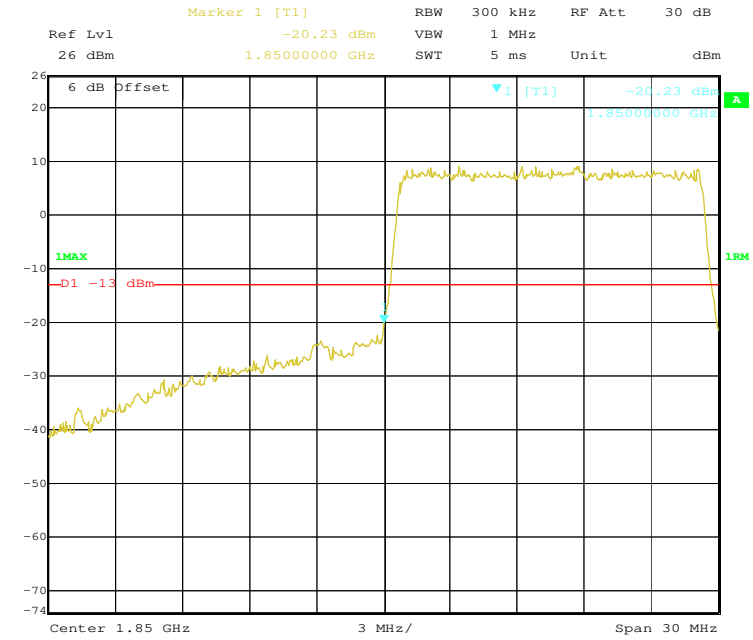
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



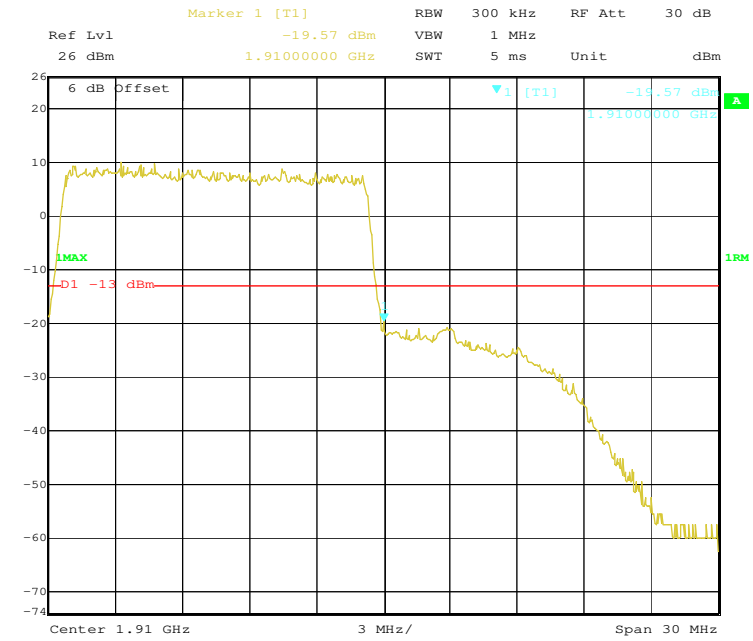
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



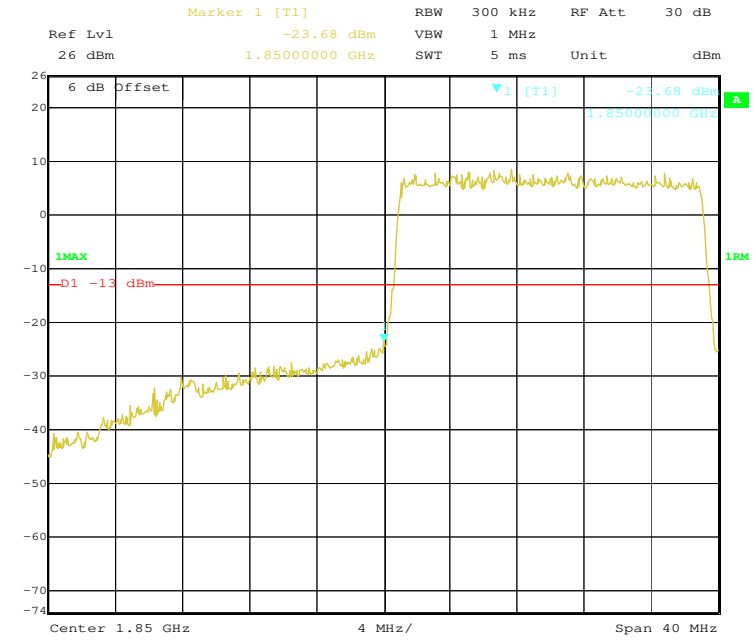
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



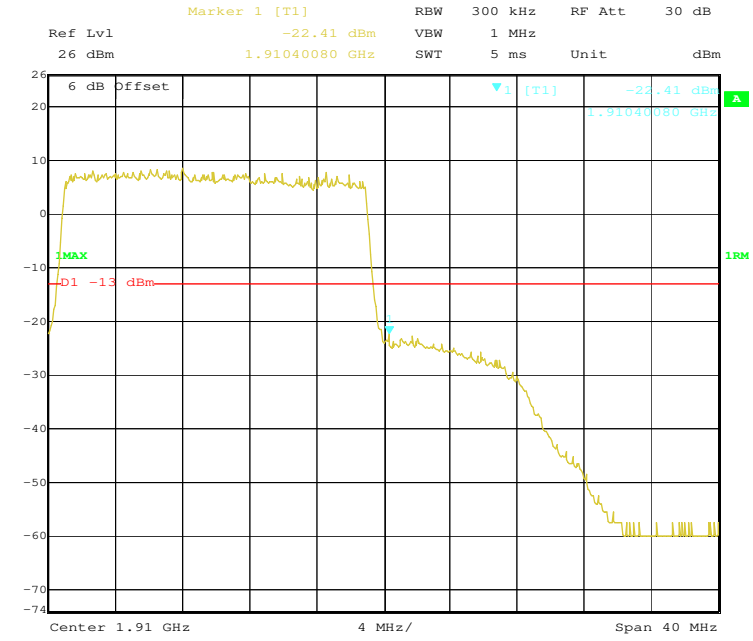
16-QAM (15.0 MHz, FULL RB) - Right Band Edge



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

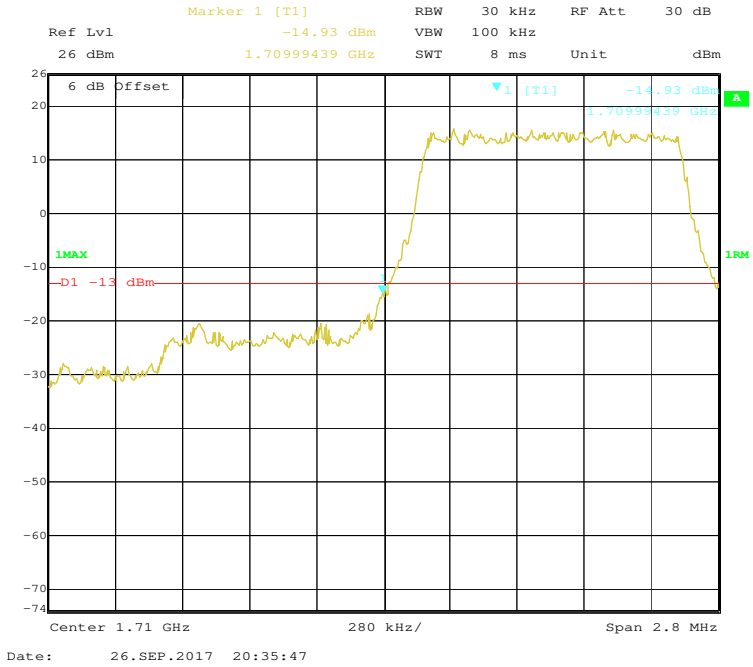


16-QAM (20.0 MHz, FULL RB) - Right Band Edge

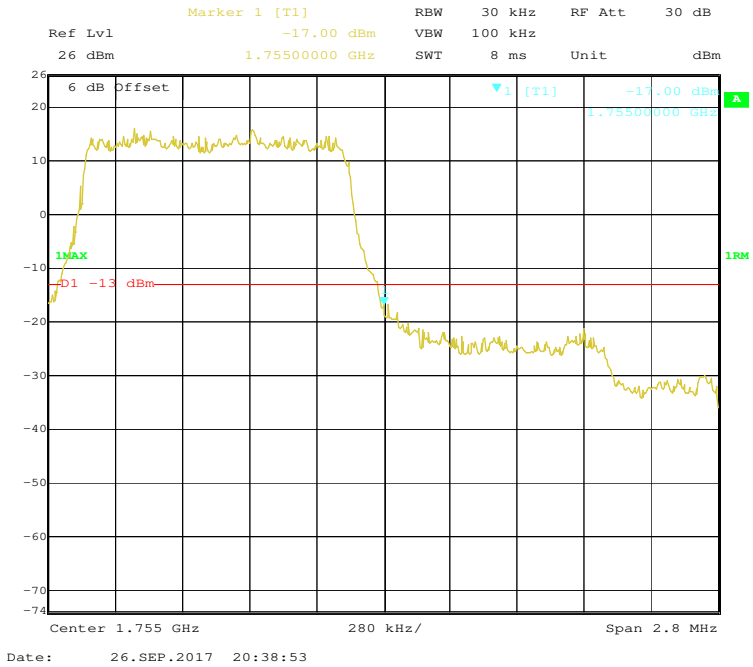


LTE Band 4:

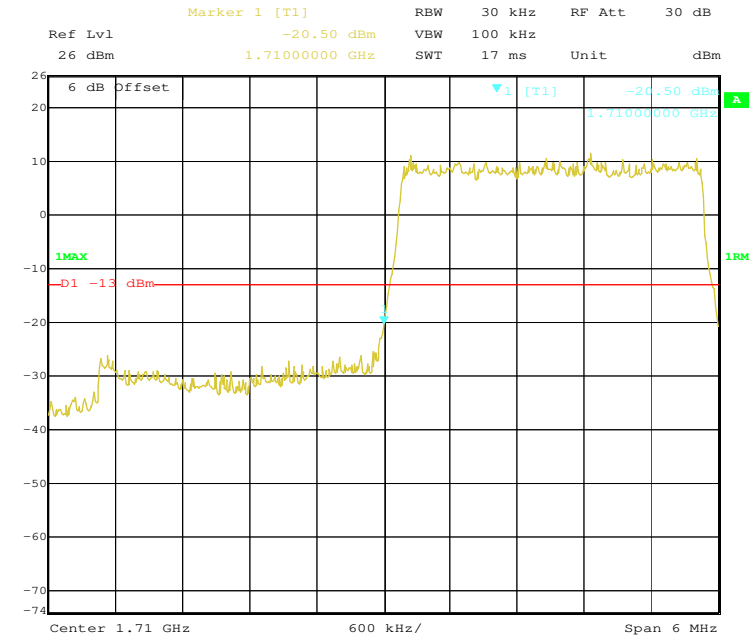
QPSK (1.4 MHz, FULL RB) - Left Band Edge



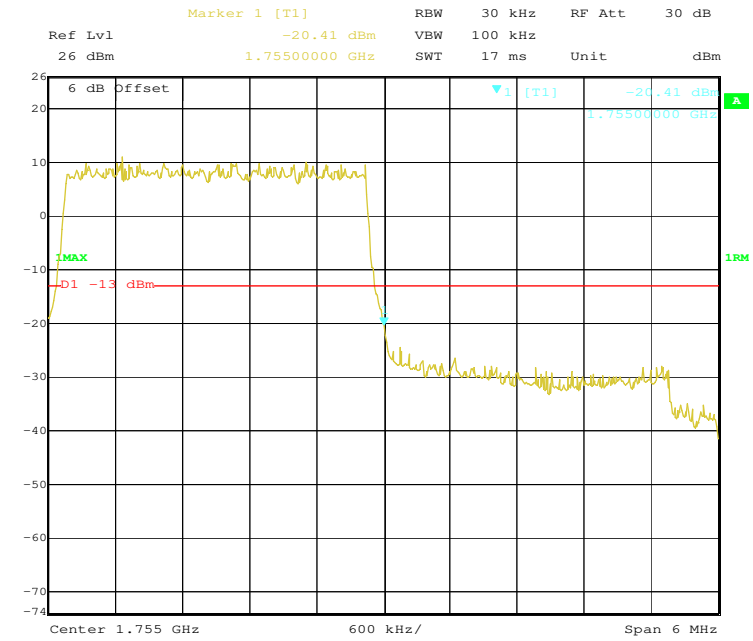
QPSK (1.4 MHz, FULL RB) - Right Band Edge



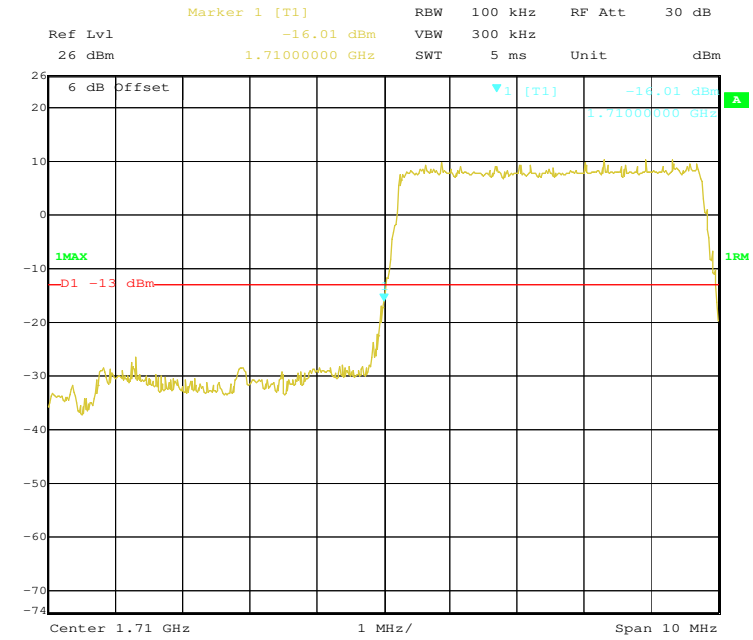
QPSK (3.0 MHz, FULL RB) - Left Band Edge



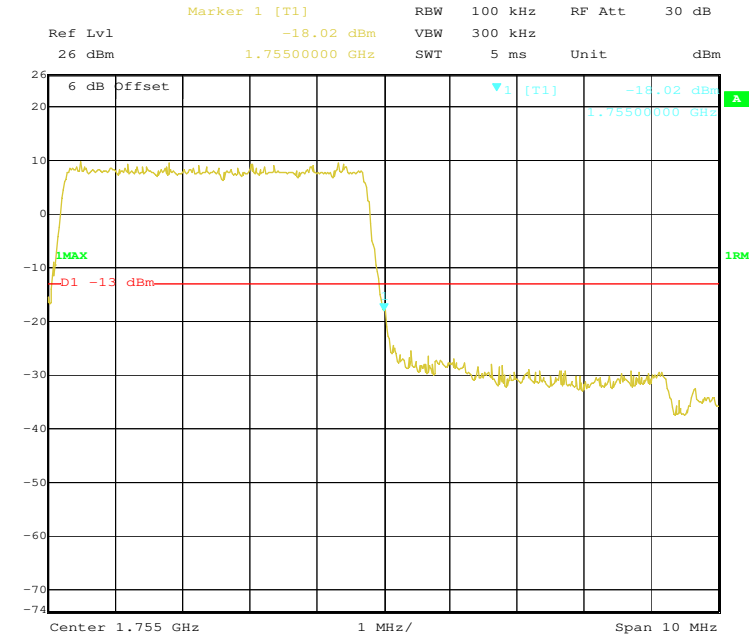
QPSK (3.0 MHz, FULL RB) - Right Band Edge



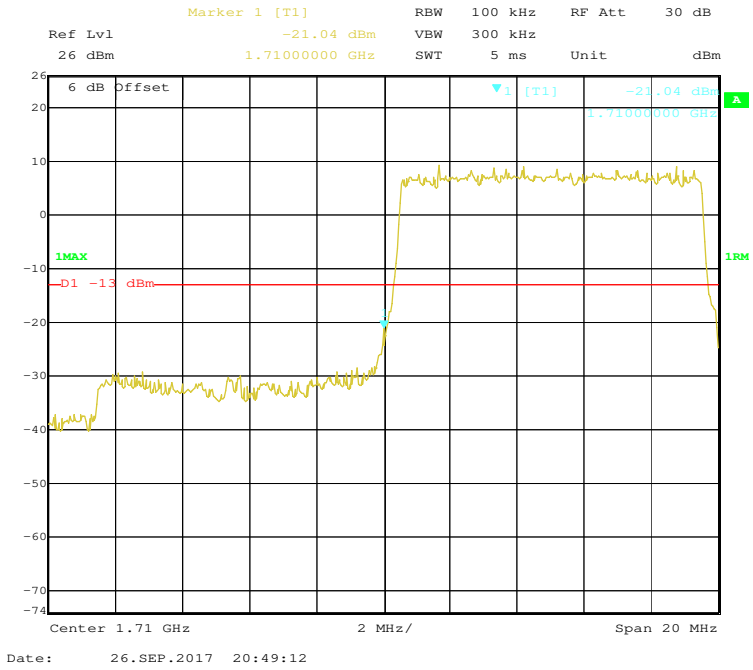
QPSK (5.0 MHz, FULL RB) - Left Band Edge



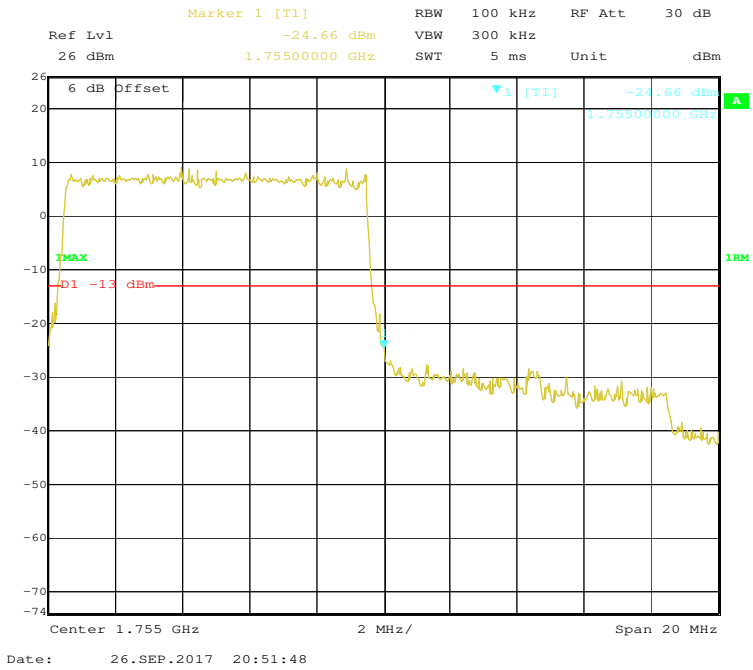
QPSK (5.0 MHz, FULL RB) - Right Band Edge



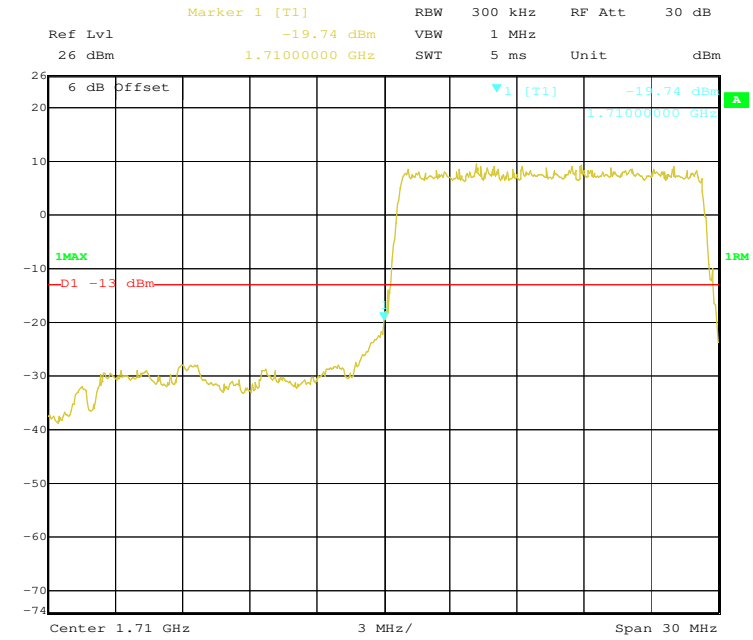
QPSK (10.0 MHz, FULL RB) - Left Band Edge



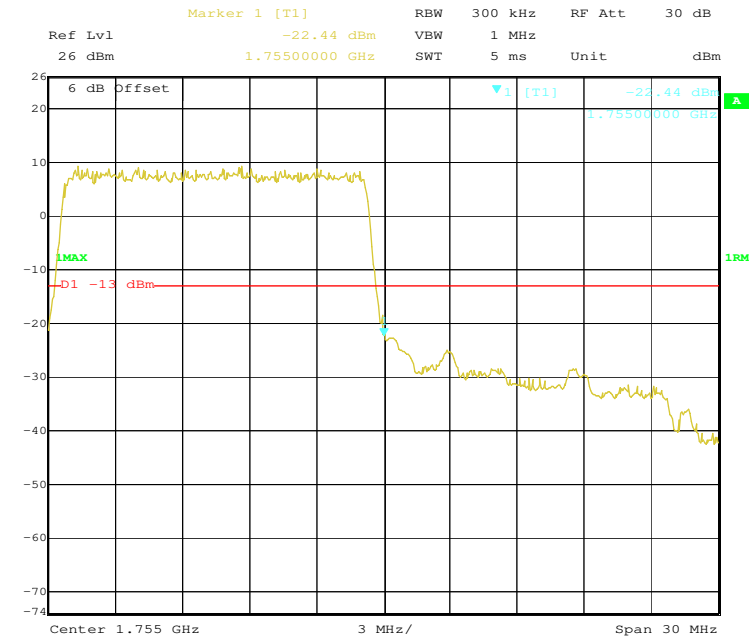
QPSK (10.0 MHz, FULL RB) - Right Band Edge



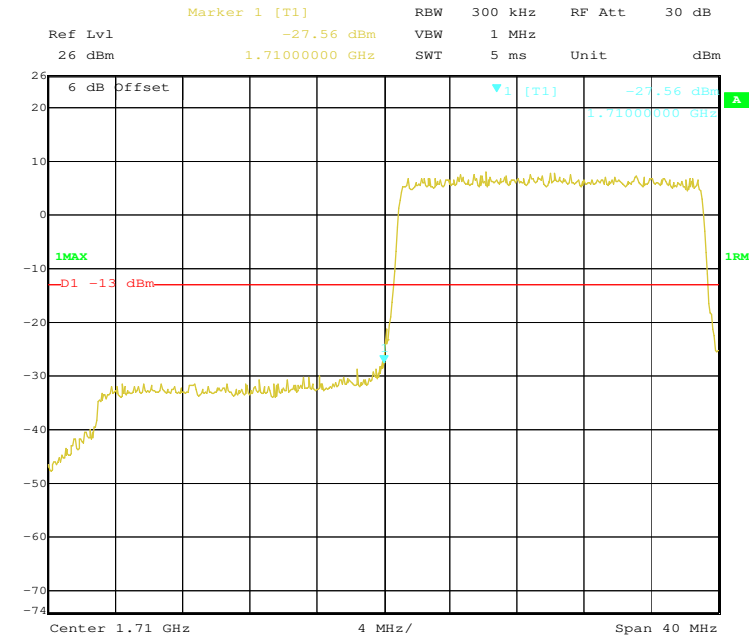
QPSK (15.0 MHz, FULL RB) - Left Band Edge



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



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



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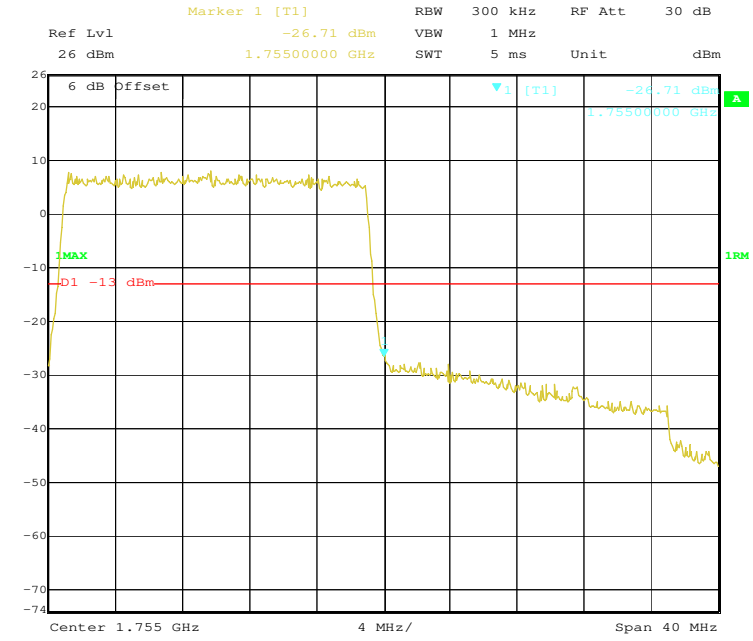
QPSK (20.0 MHz, FULL RB) - Right Band Edge



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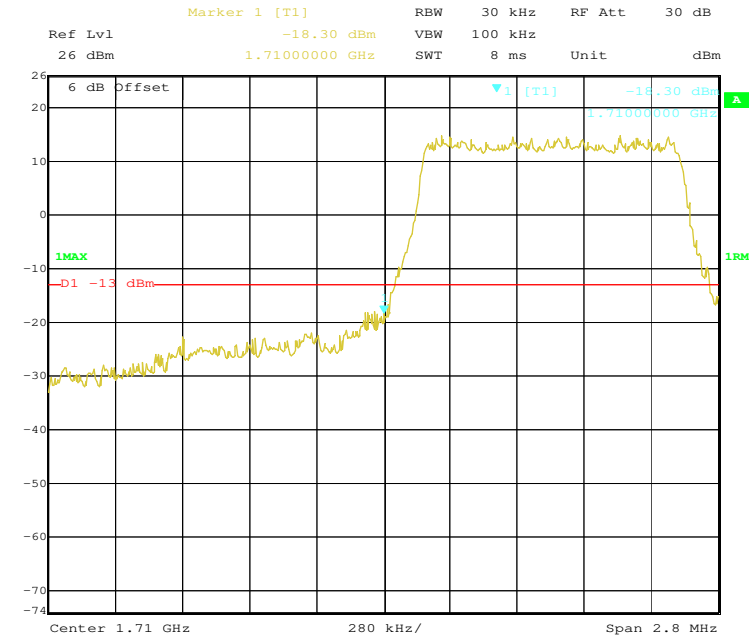
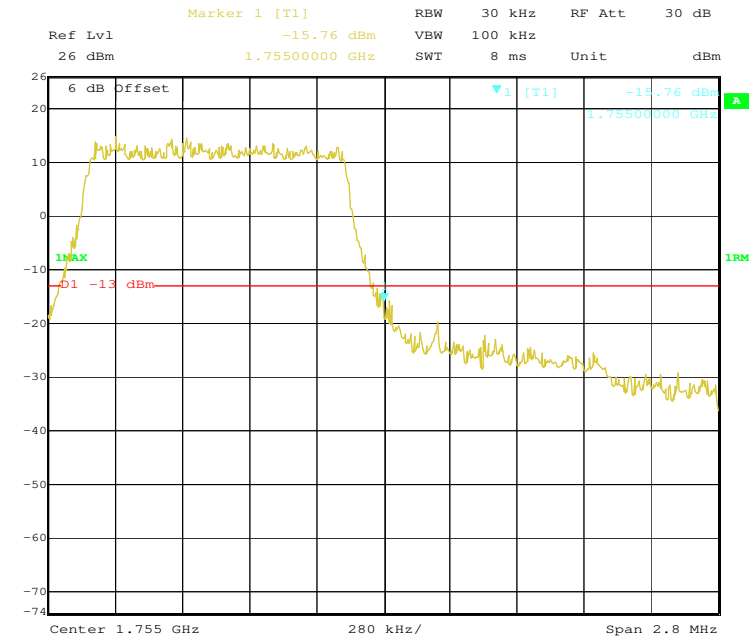
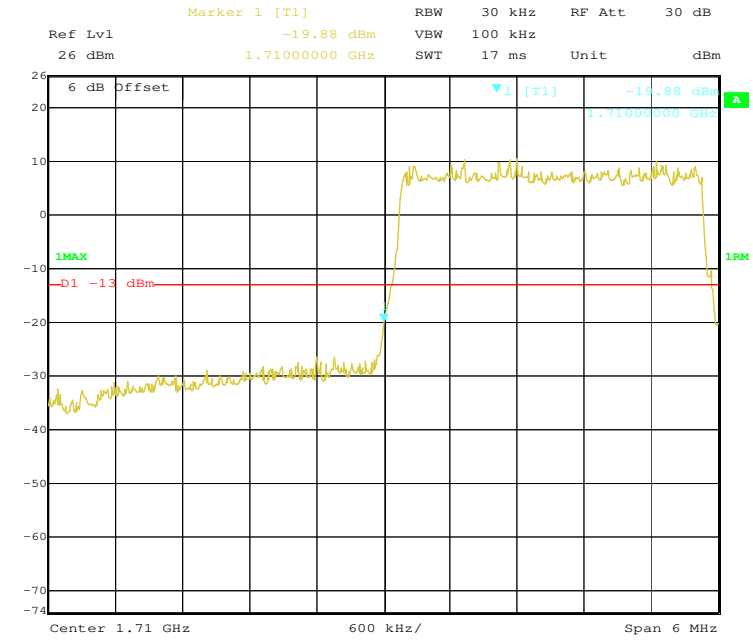
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



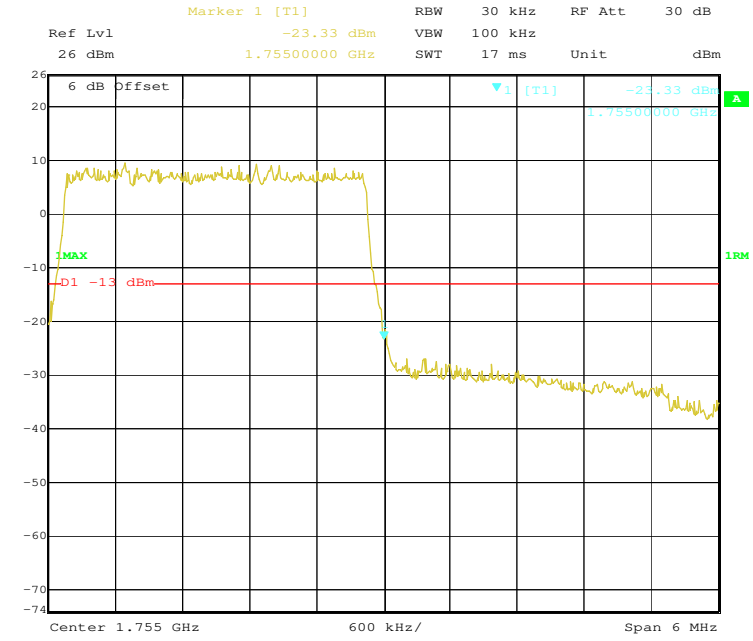
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



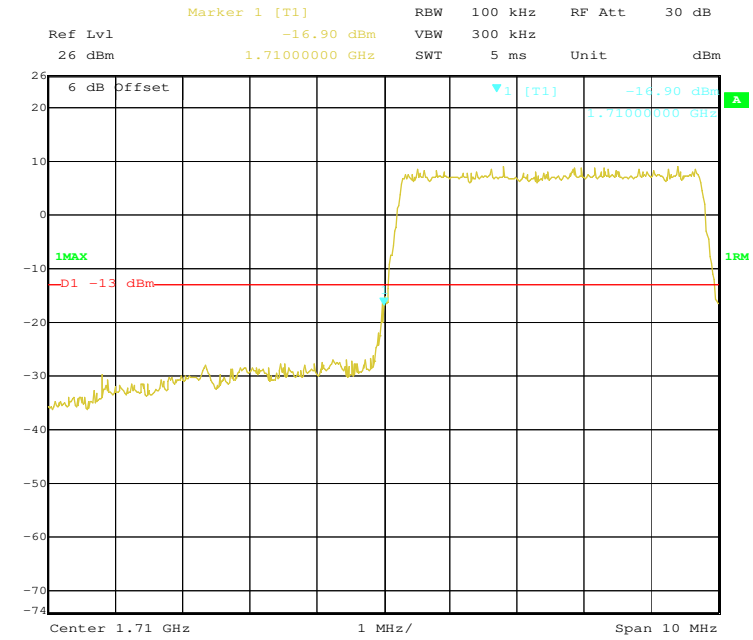
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



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



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



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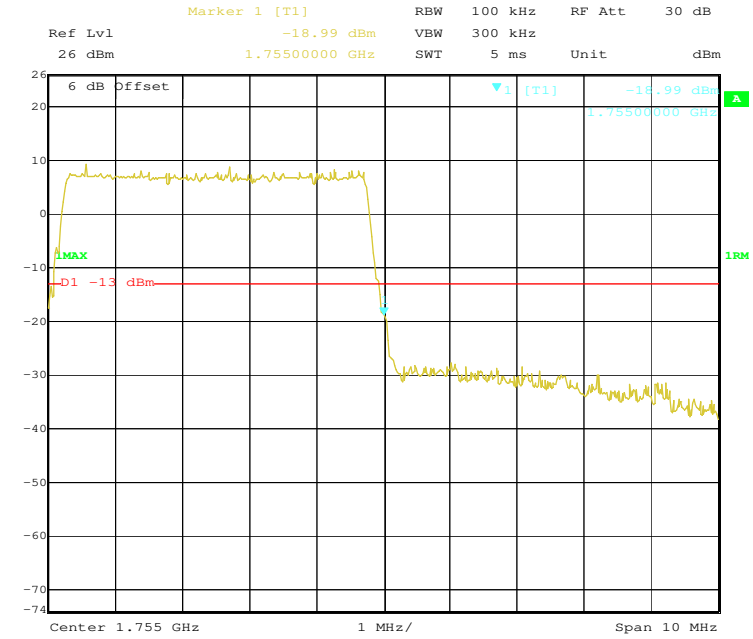
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



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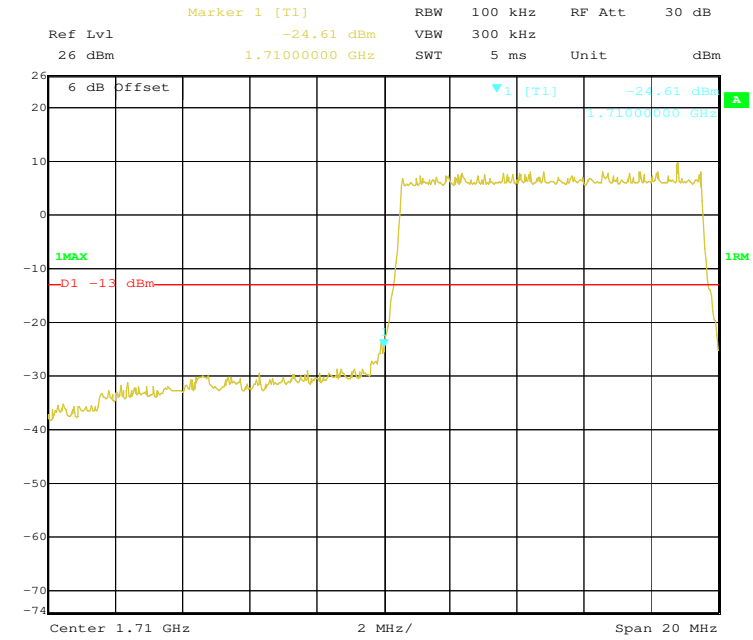
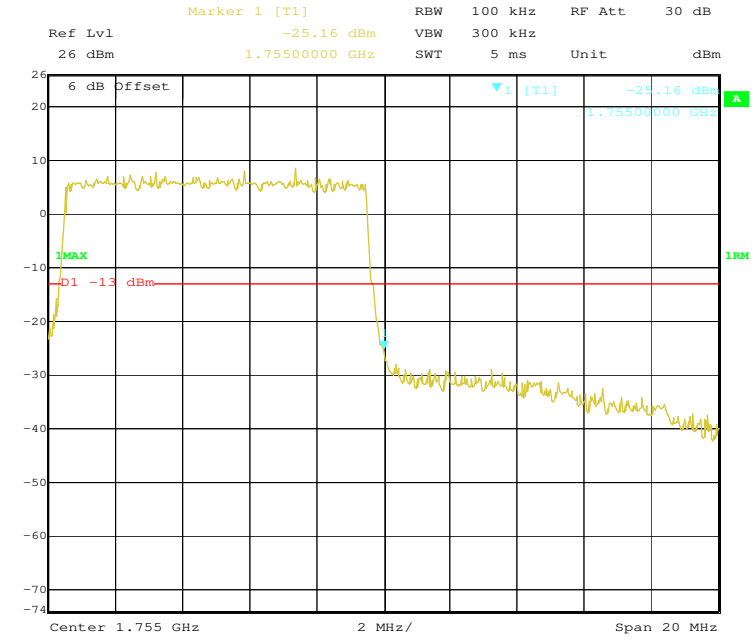
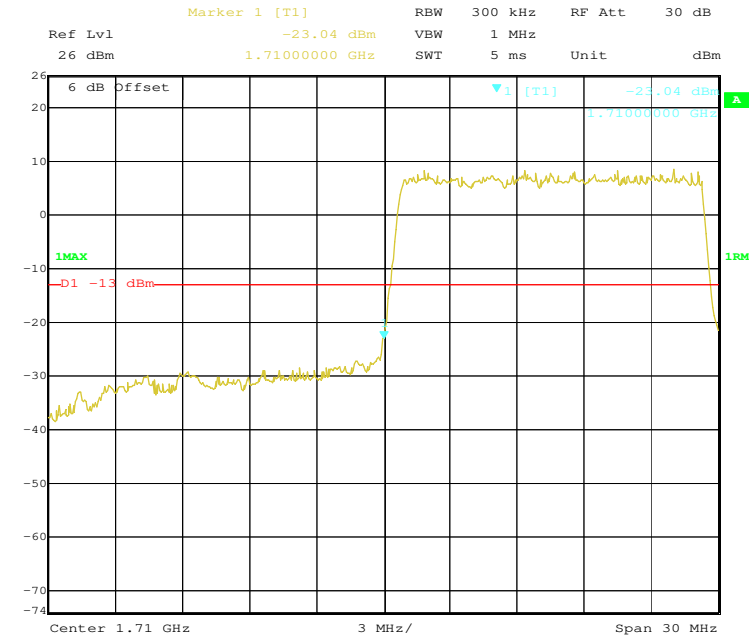
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



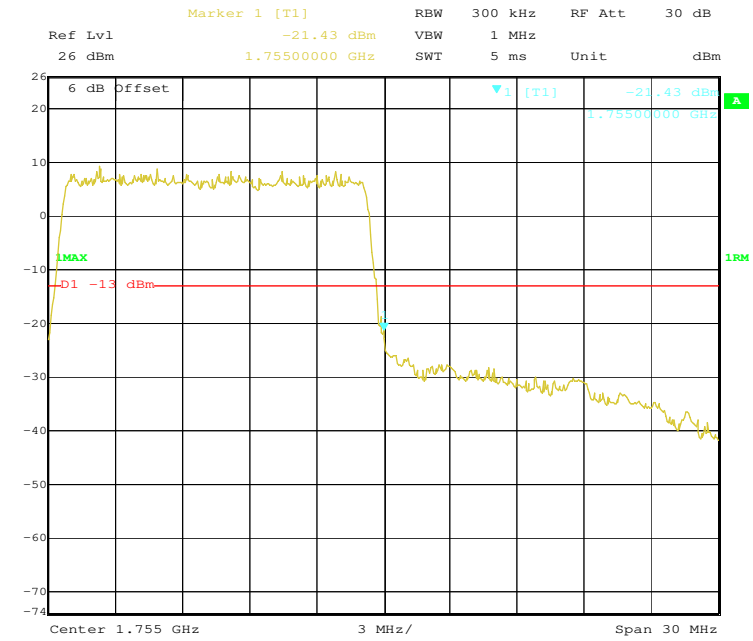
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



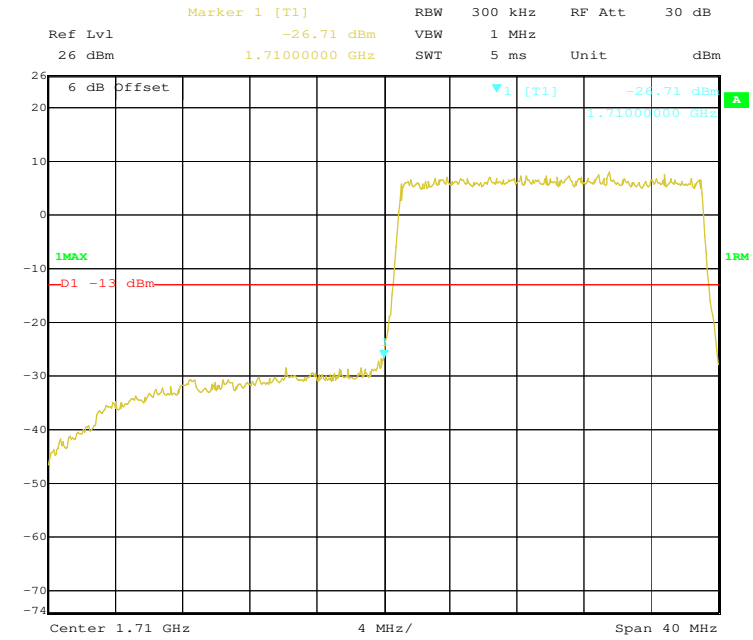
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



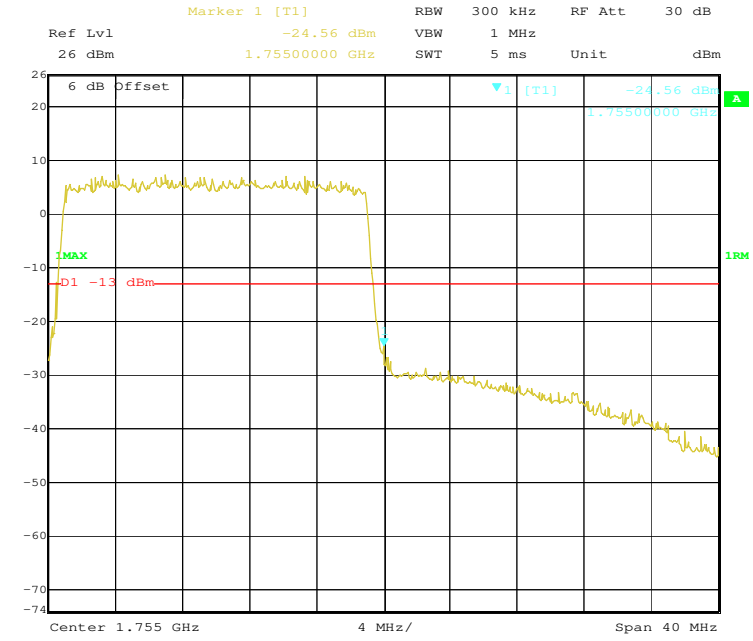
16-QAM (15.0 MHz, FULL RB) - Right Band Edge



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

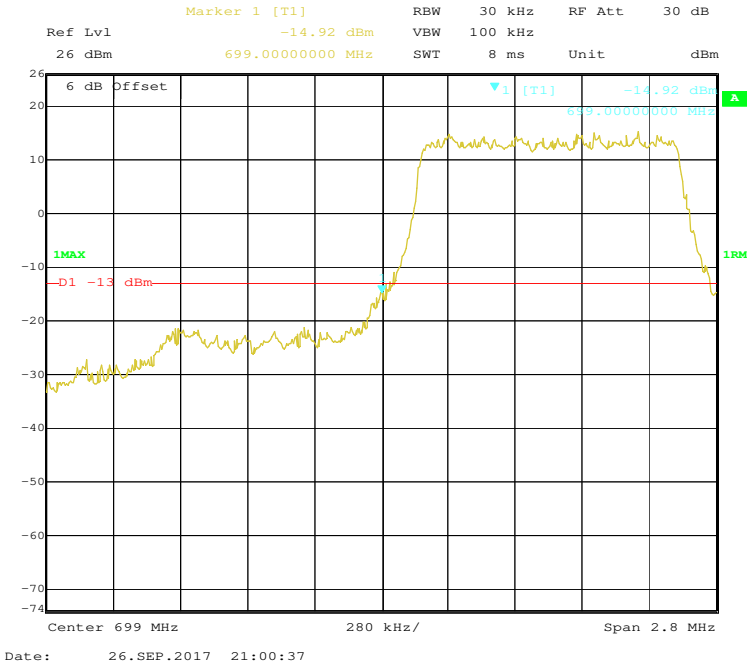


16-QAM (20.0 MHz, FULL RB) - Right Band Edge

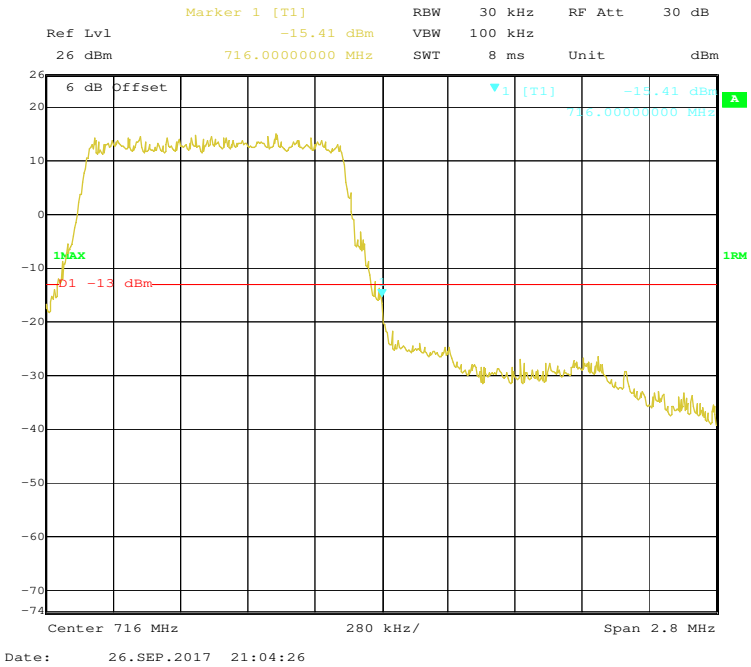


LTE Band 12:

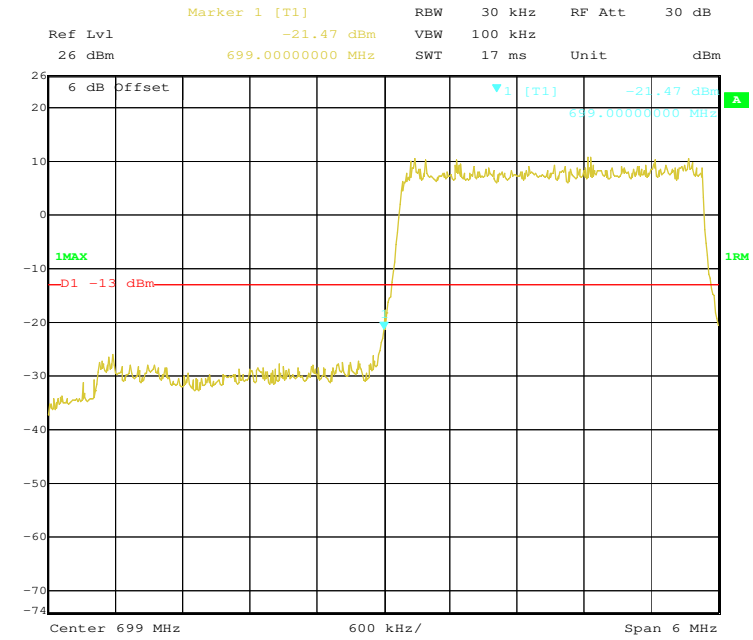
QPSK (1.4 MHz, FULL RB) - Left Band Edge



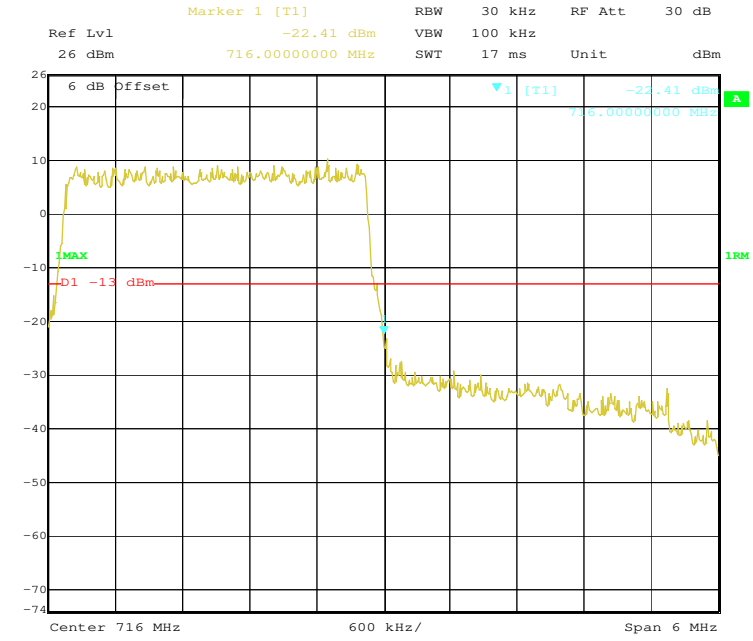
QPSK (1.4 MHz, FULL RB) - Right Band Edge



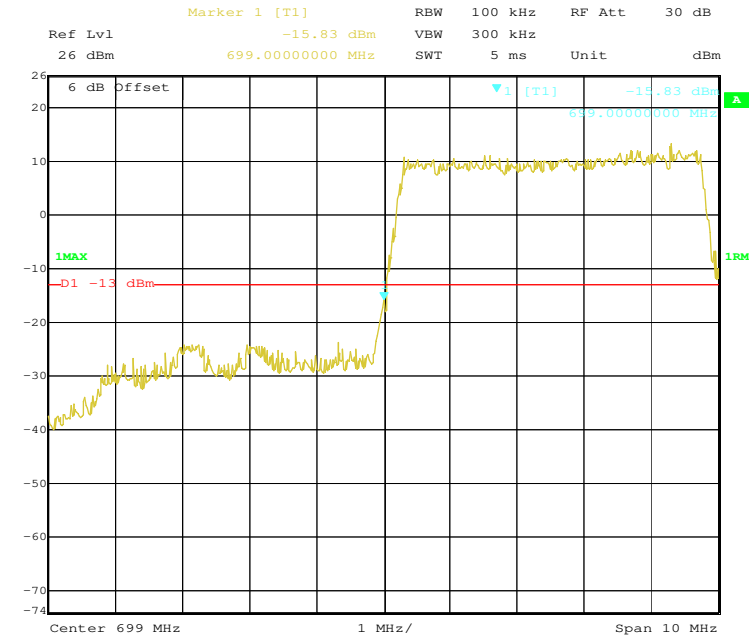
QPSK (3.0 MHz, FULL RB) - Left Band Edge



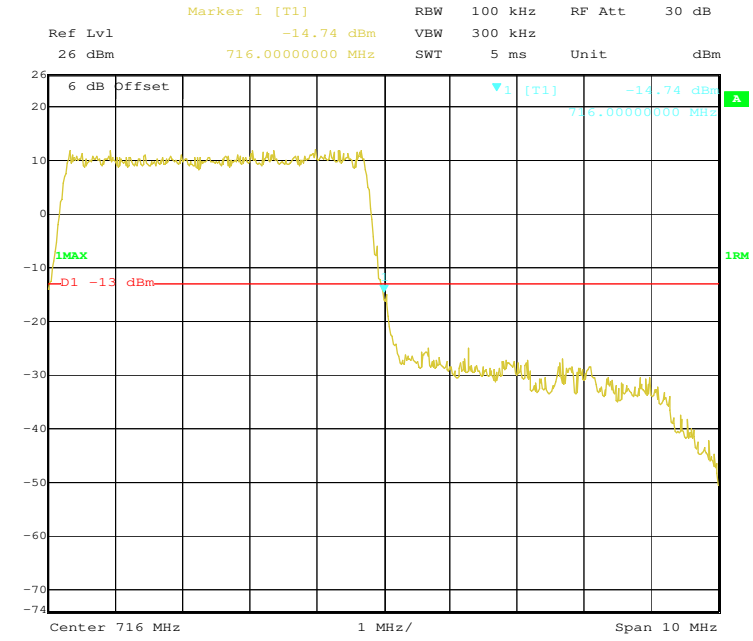
QPSK (3.0 MHz, FULL RB) - Right Band Edge



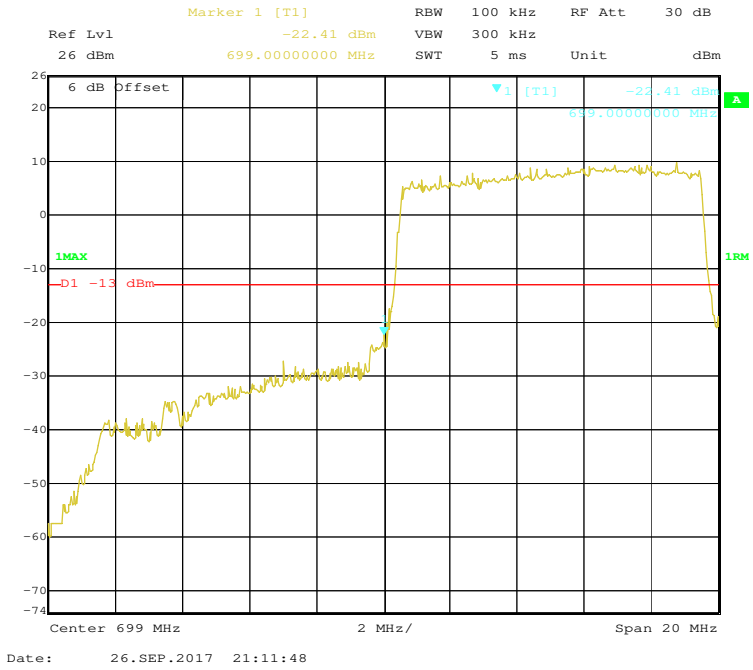
QPSK (5.0 MHz, FULL RB) - Left Band Edge



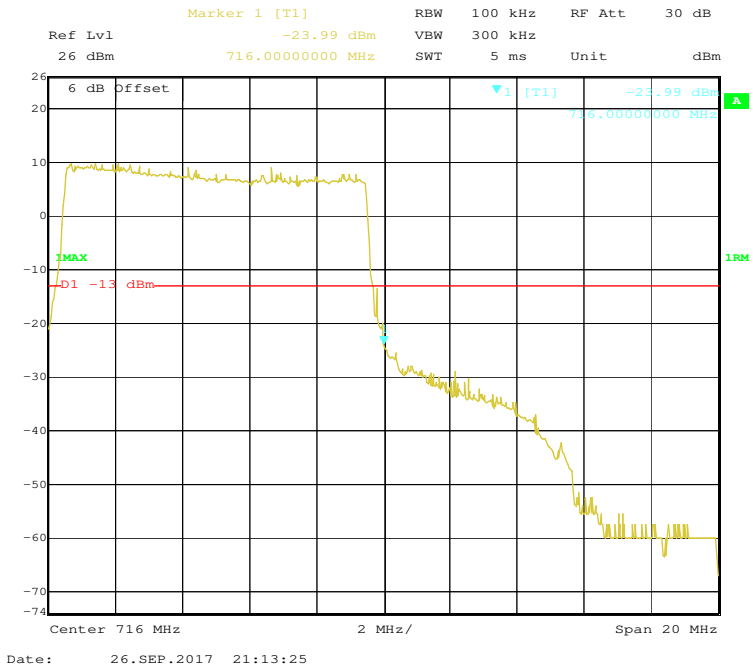
QPSK (5.0 MHz, FULL RB) - Right Band Edge



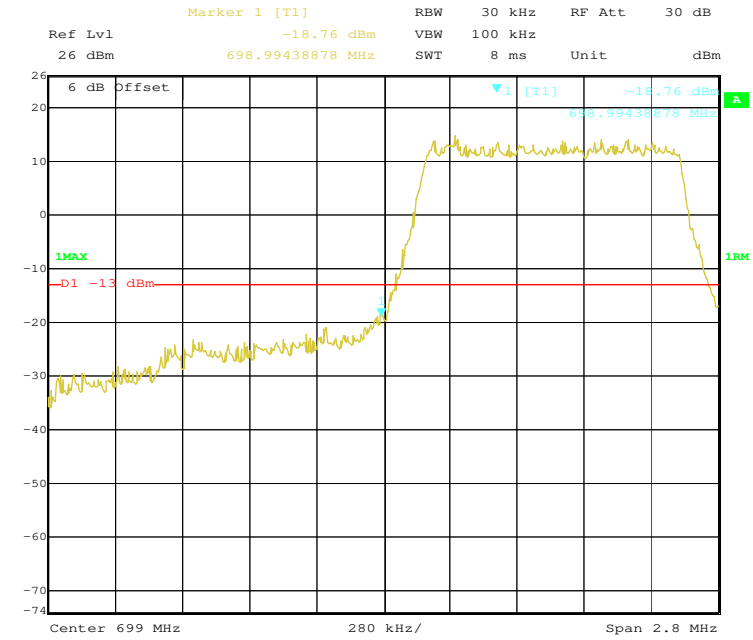
QPSK (10.0 MHz, FULL RB) - Left Band Edge



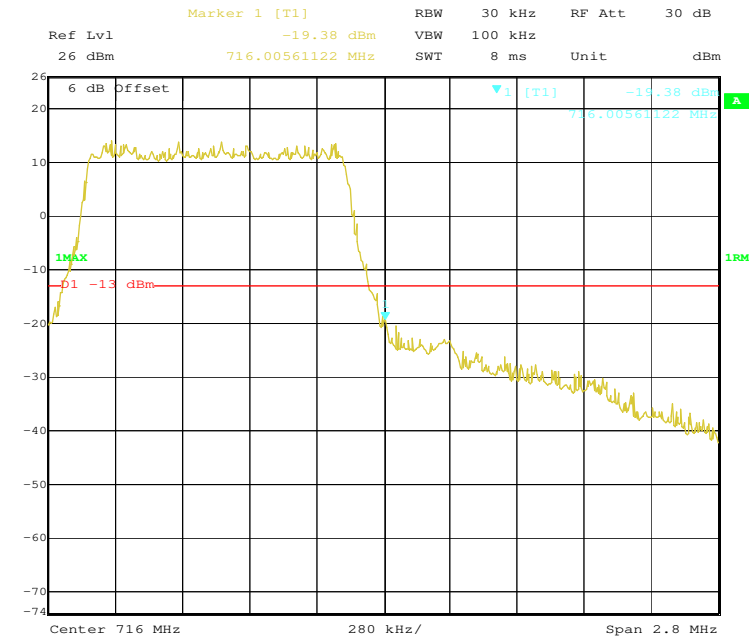
QPSK (10.0 MHz, FULL RB) - Right Band Edge



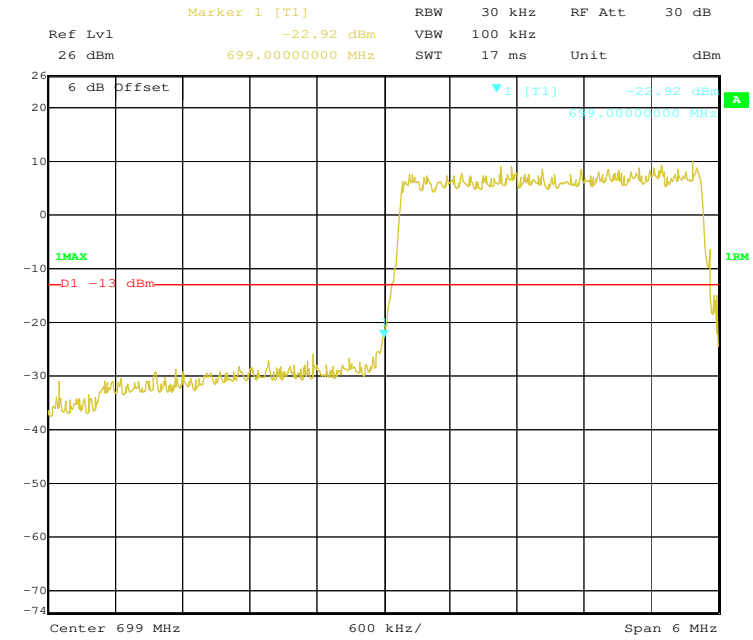
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



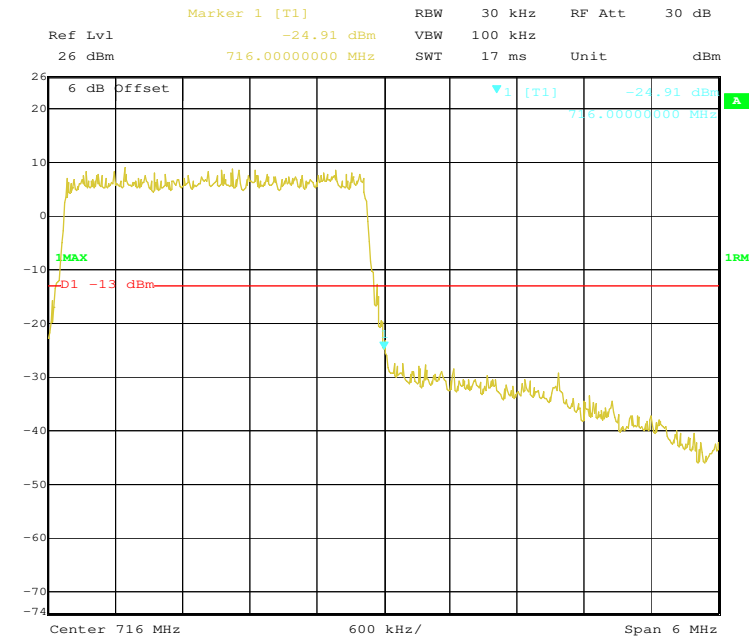
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



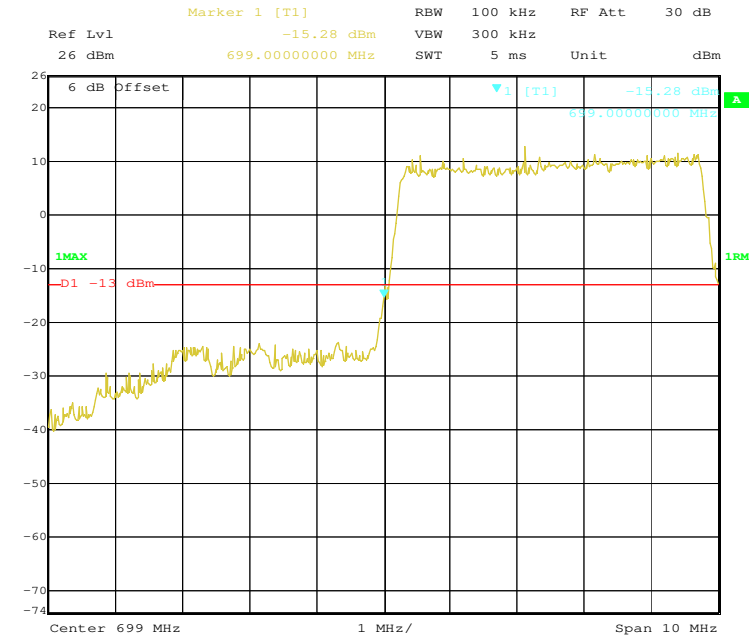
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



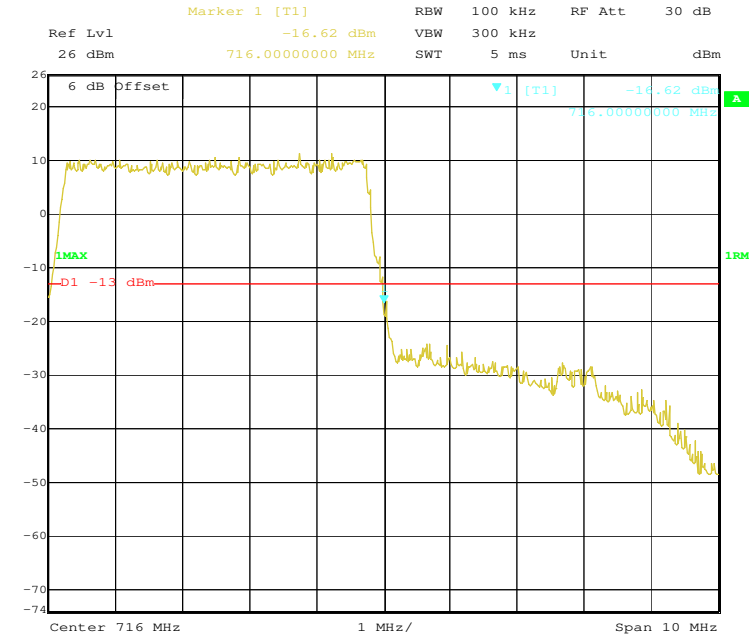
16-QAM (3.0 MHz, FULL RB) - Right Band Edge



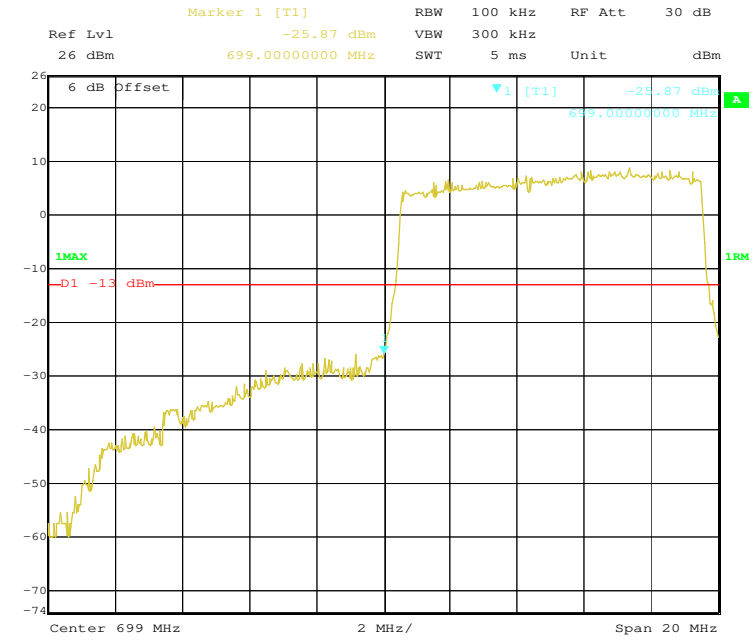
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



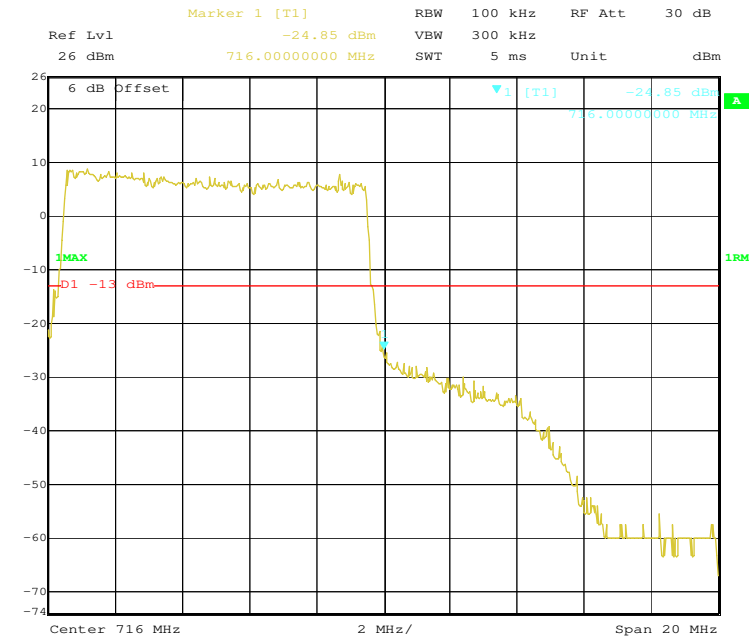
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



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

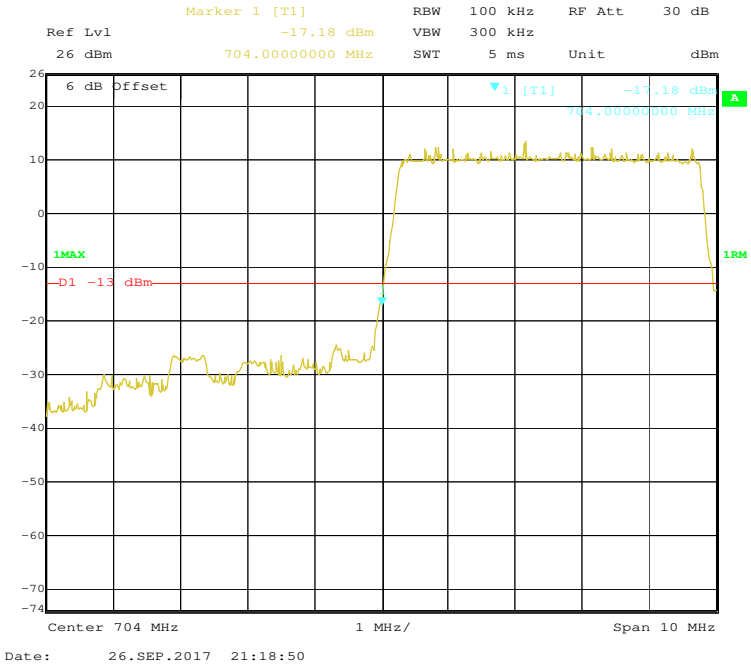


16-QAM (10.0 MHz, FULL RB) - Right Band Edge

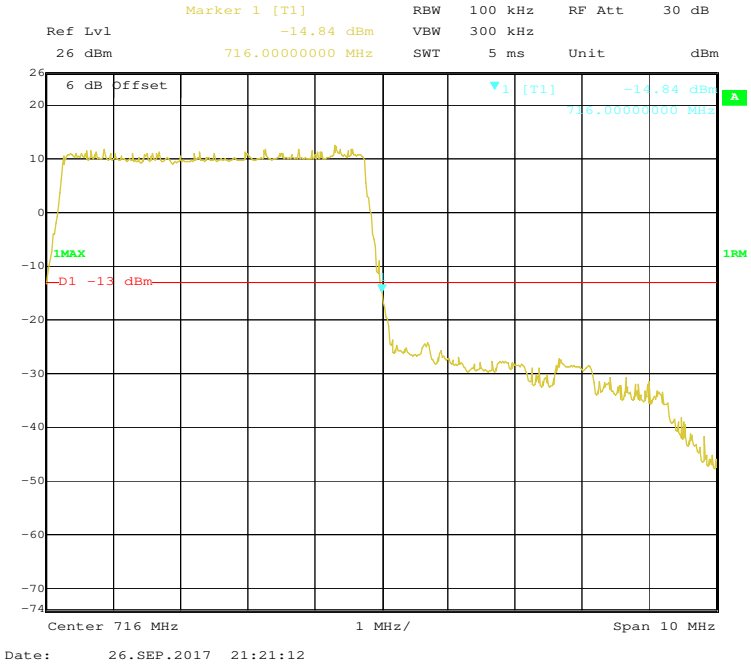


LTE Band 17:

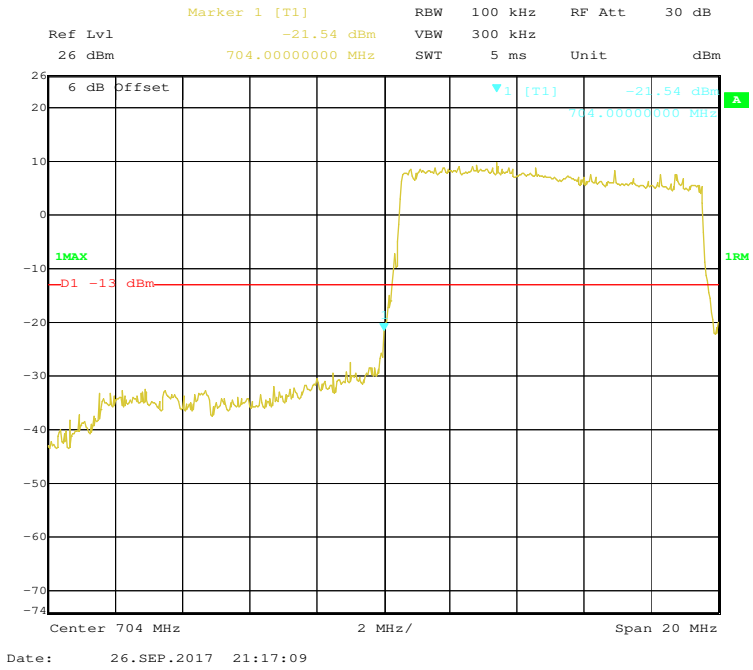
QPSK (5.0 MHz, FULL RB) - Left Band Edge



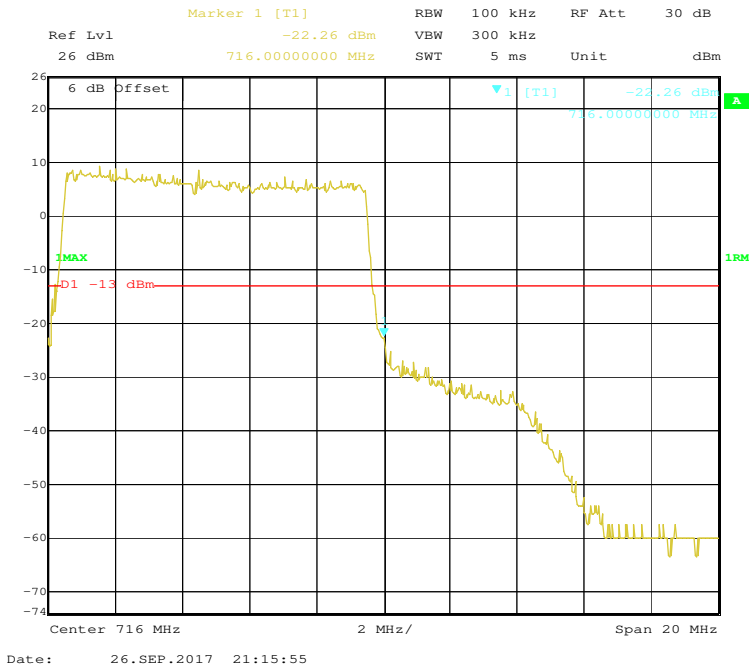
QPSK (5.0 MHz, FULL RB) - Right Band Edge



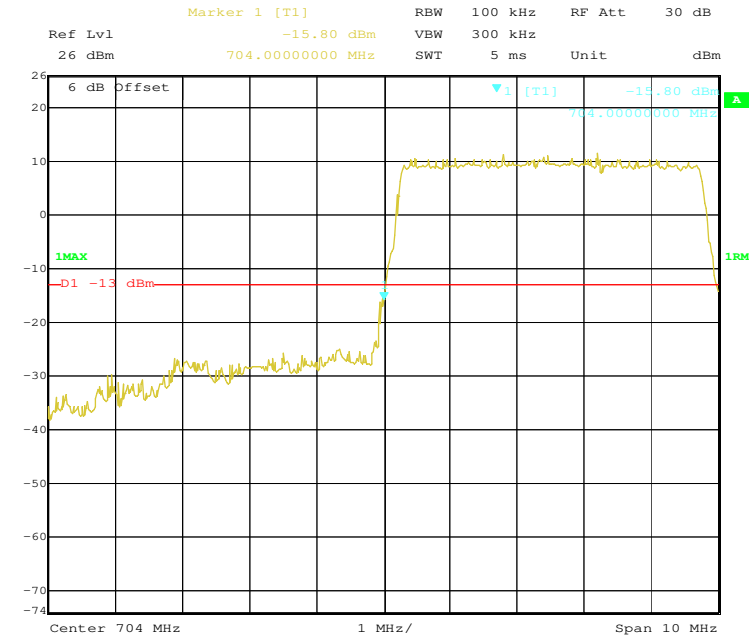
QPSK (10.0 MHz, FULL RB) - Left Band Edge



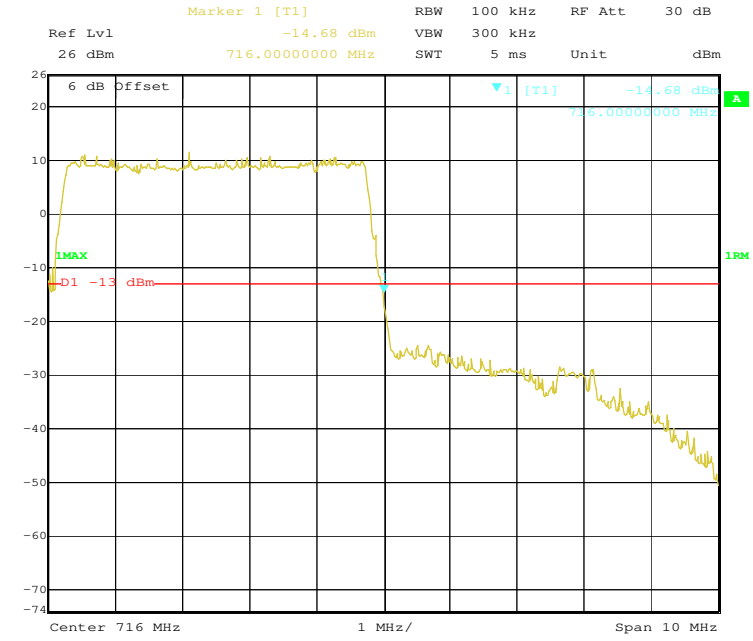
QPSK (10.0 MHz, FULL RB) - Right Band Edge



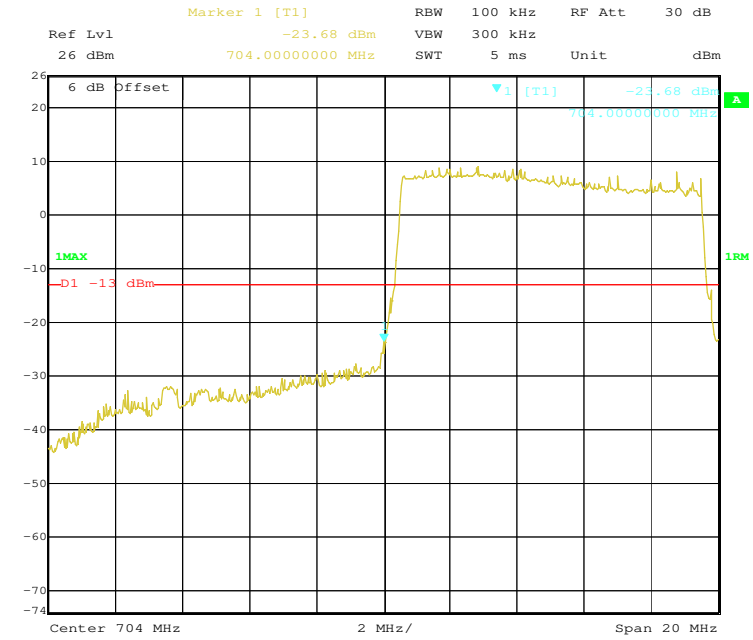
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



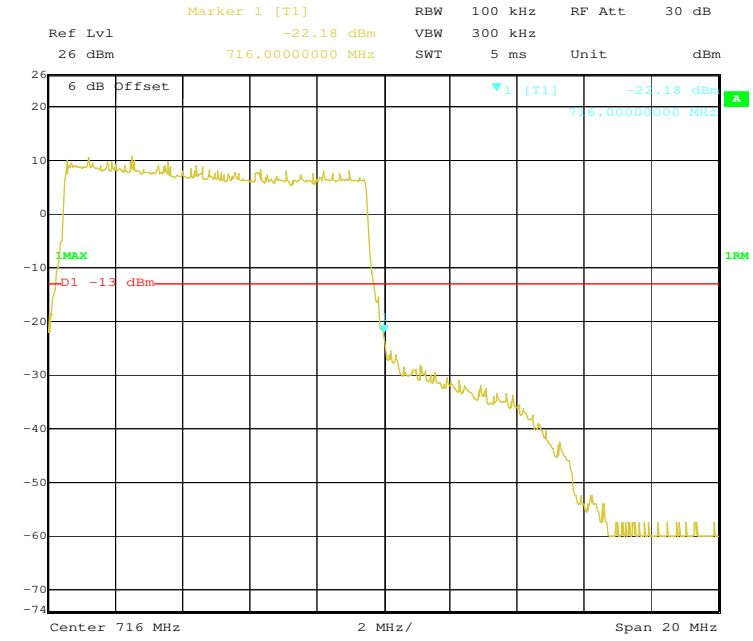
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



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



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



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

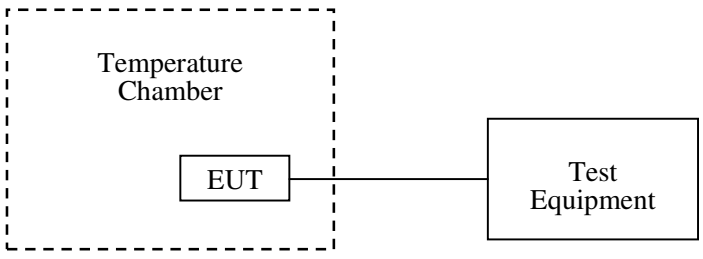
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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 Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0kPa

The testing was performed by Kyle Xu on 2017-09-27.

EUT operation mode: Transmitting

Test Result: Compliance.

GSM 850 Band

GSM Mode, Middle Channel, f_o=836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	5	0.0060	2.5
-20		2	0.0024	2.5
-10		-1	-0.0012	2.5
0		0	0.0000	2.5
10		2	0.0028	2.5
20		6	0.0072	2.5
30		2	0.0024	2.5
40		3	0.0036	2.5
50		7	0.0084	2.5
25	V min.= 3.33	8	0.0096	2.5
25	V max.= 4.2	4	0.0048	2.5

GPRS Mode, Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	4	0.0048	2.5
-20		2	0.0024	2.5
-10		0	0.0000	2.5
0		-2	-0.0024	2.5
10		1	0.0012	2.5
20		3	0.0036	2.5
30		5	0.0060	2.5
40		6	0.0072	2.5
50		9	0.0108	2.5
25	V min.= 3.3	7	0.0084	2.5
25	V max.= 4.2	6	0.0072	2.5

EGPRS Mode, Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	6	0.0072	2.5
-20		4	0.0048	2.5
-10		2	0.0024	2.5
0		-1	-0.0012	2.5
10		3	0.0036	2.5
20		2	0.0024	2.5
30		7	0.0084	2.5
40		9	0.0108	2.5
50		8	0.0096	2.5
25	V min.= 3.3	10	0.0120	2.5
25	V max.= 4.2	8	0.0096	2.5

WCDMA Band V

Middle Channel, f_o =836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	16	0.0191	2.5
-20		14	0.0167	2.5
-10		11	0.0131	2.5
0		15	0.0179	2.5
10		12	0.0143	2.5
20		14	0.0167	2.5
30		16	0.0191	2.5
40		13	0.0155	2.5
50		14	0.0167	2.5
25	V min.= 3.3	12	0.0143	2.5
25	V max.= 4.2	14	0.0167	2.5

PCS 1900 Band

GSM Mode, Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	10	0.0053	Pass
-20		11	0.0059	Pass
-10		6	0.0032	Pass
0		4	0.0021	Pass
10		5	0.0027	Pass
20		8	0.0043	Pass
30		4	0.0021	Pass
40		7	0.0037	Pass
50		5	0.0027	Pass
25	V min.= 3.3	12	0.0064	Pass
25	V max.= 4.2	11	0.0059	Pass

GPRS Mode, Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	12	0.0064	Pass
-20		10	0.0053	Pass
-10		4	0.0021	Pass
0		5	0.0027	Pass
10		9	0.0048	Pass
20		4	0.0021	Pass
30		8	0.0043	Pass
40		6	0.0032	Pass
50		9	0.0048	Pass
25	V min.= 3.3	13	0.0069	Pass
25	V max.= 4.2	10	0.0053	Pass

EGPRS Mode, Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	12	0.0064	Pass
-20		11	0.0059	Pass
-10		9	0.0048	Pass
0		5	0.0027	Pass
10		6	0.0032	Pass
20		4	0.0021	Pass
30		3	0.0016	Pass
40		6	0.0032	Pass
50		9	0.0048	Pass
25	V min.= 3.3	8	0.0043	Pass
25	V max.= 4.2	7	0.0037	Pass

WCDMA Band II

WCDMA Mode, Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	15	0.0080	pass
-20		13	0.0069	pass
-10		11	0.0059	pass
0		6	0.0032	pass
10		7	0.0037	pass
20		8	0.0043	pass
30		5	0.0027	pass
40		13	0.0069	pass
50		11	0.0059	pass
25	V min.= 3.3	12	0.0064	pass
25	V max.= 4.2	10	0.0053	pass

WCDMA Band IV

WCDMA Mode, Middle Channel, f_o =1732.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	13	0.0075	pass
-20		15	0.0086	pass
-10		9	0.0052	pass
0		12	0.0069	pass
10		14	0.0080	pass
20		12	0.0069	pass
30		8	0.0046	pass
40		9	0.0052	pass
50		11	0.0063	pass
25	V min.= 3.3	13	0.0075	pass
25	V max.= 4.2	13	0.0075	pass

LTE Band 2:

20.0 MHz Middle Channel, f_o =1880.0 MHz (QPSK)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	13	0.0069	pass
-20		11	0.0059	pass
-10		12	0.0064	pass
0		8	0.0043	pass
10		11	0.0059	pass
20		7	0.0037	pass
30		6	0.0032	pass
40		4	0.0021	pass
50		3	0.0016	pass
25	V min.= 3.3	10	0.0053	pass
25	V max.= 4.2	7	0.0037	pass

20.0 MHz Middle Channel, f_o =1880.0 MHz (16QAM)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	10	0.0053	pass
-20		9	0.0048	pass
-10		8	0.0043	pass
0		8	0.0043	pass
10		11	0.0059	pass
20		12	0.0064	pass
30		14	0.0074	pass
40		10	0.0053	pass
50		9	0.0048	pass
25	V min.= 3.3	13	0.0069	pass
25	V max.= 4.2	11	0.0059	pass

LTE Band 4:

20.0 MHz Middle Channel, f_o =1732.5MHz (QPSK)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	3	0.0017	pass
-20		2	0.0012	pass
-10		1	0.0006	pass
0		-1	-0.0006	pass
10		-5	-0.0029	pass
20		-4	-0.0023	pass
30		-6	-0.0035	pass
40		5	0.0029	pass
50		-2	-0.0012	pass
25	V min.= 3.3	4	0.0023	pass
25	V max.= 4.2	3	0.0017	pass

20.0 MHz Middle Channel, f_o =1732.5 MHz (16QAM)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	-3	-0.0017	pass
-20		3	0.0017	pass
-10		2	0.0012	pass
0		1	0.0006	pass
10		-1	-0.0006	pass
20		4	0.0023	pass
30		-5	-0.0029	pass
40		-2	-0.0012	pass
50		-1	-0.0006	pass
25	V min.= 3.3	-4	-0.0023	pass
25	V max.= 4.2	-5	-0.0029	pass

LTE Band 12:

10.0 MHz Middle Channel, f_o=707.5MHz (QPSK)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	6	0.0085	pass
-20		8	0.0113	pass
-10		-2	-0.0028	pass
0		2	0.0028	pass
10		-1	-0.0014	pass
20		-3	-0.0042	pass
30		-4	-0.0057	pass
40		-3	-0.0042	pass
50		6	0.0085	pass
25	V min.= 3.3	4	0.0057	pass
25	V max.= 4.2	7	0.0099	pass

10.0 MHz Middle Channel, f_o=707.5 MHz (16QAM)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	-2	-0.0028	pass
-20		3	0.0042	pass
-10		5	0.0071	pass
0		2	0.0028	pass
10		3	0.0042	pass
20		6	0.0085	pass
30		-1	-0.0014	pass
40		-3	-0.0042	pass
50		-4	-0.0057	pass
25	V min.= 3.3	-6	-0.0085	pass
25	V max.= 4.2	-5	-0.0071	pass

LTE Band 17:

10.0 MHz Middle Channel, f_o=710.0MHz (QPSK)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	5	0.0070	pass
-20		10	0.0141	pass
-10		4	0.0056	pass
0		2	0.0028	pass
10		4	0.0056	pass
20		11	0.0155	pass
30		3	0.0042	pass
40		4	0.0056	pass
50		13	0.0183	pass
25	V min.= 3.3	12	0.0169	pass
25	V max.= 4.2	9	0.0127	pass

10.0 MHz Middle Channel, f_o=710.0 MHz (16QAM)				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.7	4	0.0056	pass
-20		9	0.0127	pass
-10		4	0.0056	pass
0		-2	-0.0028	pass
10		-4	-0.0056	pass
20		-3	-0.0042	pass
30		6	0.0085	pass
40		-7	-0.0099	pass
50		-5	-0.0070	pass
25	V min.= 3.3	-8	-0.0113	pass
25	V max.= 4.2	-6	-0.0085	pass

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