TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 27

FCC PART 22H, PART 24E

MEASUREMENT AND TEST REPORT

For

Tersus GNSS Inc.

Rm 210, Building A, No. 666 Zhangheng Road, Zhangjiang Hi-tech Park,Pudong,Shanghai, P.R.C Shanghai, China

FCC ID: 2AMDJ-TC20

Report Type:	**Product Type:**
Original Report	TC20 Controller

Test Engineer:	Hope Zhang
Report Number:	RSHA181129001-00D
Report Date:	2019-02-25
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	Tersus GNSS Inc.
Tested Model	TC20
Product Type	TC20 Controller
Dimension	209mm(L)*87mm(W)*31mm(H)
Power Supply	DC 5.0V from adapter,lithium battery voltage 3.7V

**All measurement and test data in this report was gathered from production sample serial number: 20181129001. (Assigned by the BACL. The EUT supplied by the applicant was received on 2018-11-29)*

Objective

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

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

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS, Part 15.247 DTS, Part 15.225 DXX submittals with FCC ID: 2AMDJ- TC20.

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	5.91dB
	1GHz~6GHz	4.68dB
	6GHz~18GHz	4.92dB
	18GHz~40GHz	5.21dB
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/EGPRS 850		Low	128	824.2
		Middle	190	836.6
		High	251	848.8
PCS/GPRS/EGPRS 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 V		Low	4132	826.4
		Middle	4183	836.6
		High	4233	846.6
CDMA850 Band		Low	1013	824.70
		Middle	384	836.52
		High	777	848.31
LTE Band 7	5M	Low	20775	2502.5
		Middle	21100	2535
		High	21425	2567.5
	10M	Low	20800	2505
		Middle	21100	2535
		High	21400	2565
	15M	Low	20825	2507.5
		Middle	21100	2535
		High	21375	2562.5
	20M	Low	20850	2510
		Middle	21100	2535
		High	21350	2560

Mode		Channel		Frequency (MHz)
LTE Band 41	5M	Low	40265	2557.5
		Middle	40740	2605.0
		High	41215	2652.5
	10M	Low	40290	2560.0
		Middle	40740	2605.0
		High	41190	2650.0
	15M	Low	40315	2562.5
		Middle	40740	2605.0
		High	41165	2647.5
	20M	Low	40340	2565.0
		Middle	40740	2605.0
		High	41140	2645.0

Equipment Modifications

No modifications were made to the EUT.

Support Equipment List and Details

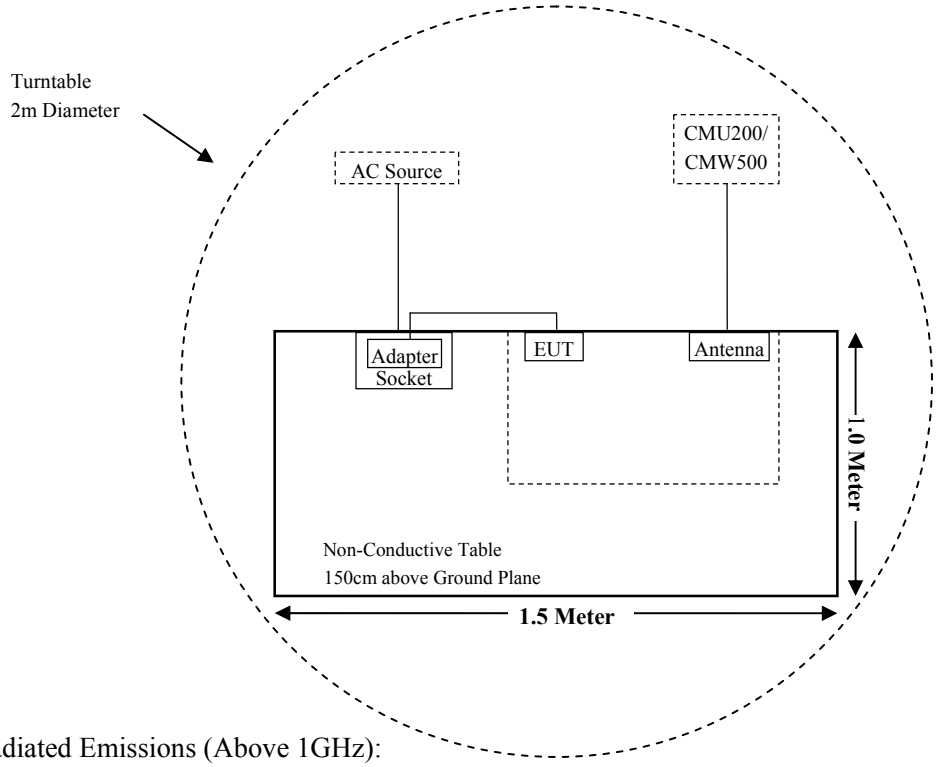
Manufacturer	Description	Model	Serial Number
Tersus Inc.	Antenna	/	/
Huntkey	Adapter(5V/2A)	HKC0115021-2D	711GS186L000007
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605
R & S	Wideband Radio Communication Tester	CMW500	104478

External I/O Cable

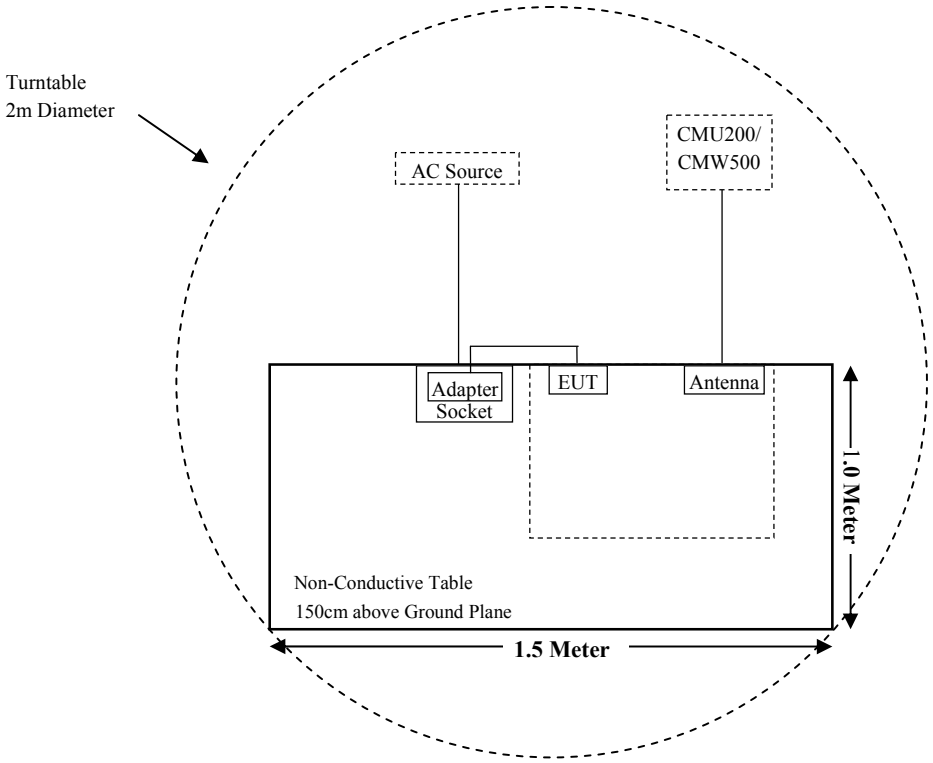
Cable Description	Length (m)	From Port	To
Power Cable	0.8	EUT	Adapter

Block Diagram of Test Setup

For Radiated Emissions (Below 1GHz):



For Radiated Emissions (Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307(b)(1)& §2.1093	RF Exposure Information	Compliant
§2.1046; § 22.913 (a);§ 24.232 (c); 27.50(h) (2)	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238	Occupied Bandwidth	Compliant
§ 2.1051; § 22.917 (a); § 24.238 (a); §27.53	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53 (h) (m)	Spurious Radiated Emissions	Compliant
§ 22.917 (a); § 24.238 (a); §27.53 (h) (m)	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54	Frequency stability	Compliant

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	2018-11-12	2019-11-11
HP	Signal Generator	HP 8341B	2624A00116	2018-08-29	2019-08-28
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
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2019-01-09	2022-01-08
Sonoma Instrunent	Pre-amplifier	310N	171205	2018-08-15	2019-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-8	008	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2018-08-15	2019-08-14
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2018-11-12	2019-11-11
R & S	Wideband Radio Communication Tester	CMW500	104478	2018-07-21	2019-07-20
Radiated Emission Test（Chamber 2#）					
HP	Signal Generator	HP 8341B	2624A00116	2018-08-29	2019-08-28
Rohde & Schwarz	EMI Test Receiver	ESU40	100207	2018-08-27	2019-08-26
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2019-01-11	2022-01-10
ETS-LINDGREN	Horn Antenna	3115	6229	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3115	6229	2019-01-11	2022-01-10
ETS-LINDGREN	Horn Antenna	3116	00084159	2016-10-18	2019-10-17
ETS-LINDGREN	Horn Antenna	3116	2516	2016-12-12	2019-12-12
Mini-Circuits	Amplifier	ZVA-183W-S+	220701818	2018-05-20	2019-05-19
EM Electronics Corporation	Amplifier	EM18G40G	060726	2018-03-22	2019-03-21
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-13	013	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-16	016	2018-08-15	2019-08-14
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2018-11-12	2019-11-11
R & S	Wideband Radio Communication Tester	CMW500	104478	2018-07-21	2019-07-20

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Signal Analyzer	FSIQ26	836131/009	2018-09-21	2019-09-20
Narda	Attenuator/6dB	10690812-2	26850-6	2018-01-10	2019-01-09
Narda	Attenuator/6dB	10690812-2	26850-6	2019-01-10	2020-01-09
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2018-11-12	2019-11-11
R & S	Wideband Radio Communication Tester	CMW500	104478	2018-07-21	2019-07-20
Mini-Ciruits	Power splitter	ZFRSC-14-S+	SF019411452	2018-11-10	2019-11-09
BACL	Temperature & Humidity Chamber	BTH-150	30023	2018-10-10	2019-10-09
EAST	Regulated DC Power Supply	MCH-303D-II	14070562	2018-10-10	2019-10-09
Tersus	RF Cable	Tersus C01	C01	Each Time	/

*** 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) & §2.1093 - RF EXPOSURE INFORMATION

Applicable Standard

FCC§1.1307,§2.1093.

Test Result

Compliance, please refer to the SAR report: RSH181203050-20.

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(h) (2) - 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 (38.45dBm).

According to FCC §2.1046 and §24.232 (c), mobile and portable stations are limited to 2 watts (33dBm) EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

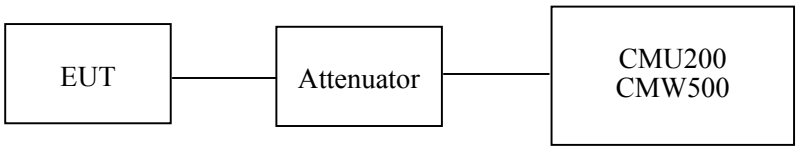
According to §27.50(h) (2), Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

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

Test Procedure

Conducted method:

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



Radiated Output Power:

The measurements procedures specified in ANSI/TIA-603-D were applied.

a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.

b) Key the transmitter, then rotate the EUT 360o azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).

c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.

d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used,raise and lower the test antenna to obtain a maximum reading. LOSS = Generator Output Power (dBm) – Analyzer reading (dBm)

e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation:
ERP (dBm) = LVL (dBm) + LOSS (dB)

f) The maximum ERP is the maximum value determined in the preceding step.
(Note: Effective Isotropic Radiated Power (EIRP) can be computed using the following:
EIRP (dBm) = ERP (dBm) + 2.15 (dB)

Test Data

Environmental Conditions

Temperature:	23.2℃
Relative Humidity:	50 %
ATM Pressure:	101.3kPa

The testing was performed by Hope Zhang on 2019-01-10.

Conducted Power:

GSM 850 Band

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	128	824.2	32.15	38.45
	190	836.6	32.17	38.45
	251	848.8	32.21	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.20	32.21	31.10	30.15	29.94	38.45
	190	836.60	32.12	31.20	30.22	29.95	38.45
	251	848.80	32.11	32.16	30.24	29.34	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.20	26.83	25.94	25.43	24.87	38.45
	190	836.60	26.24	25.54	25.74	25.53	38.45
	251	848.80	26.75	25.78	25.56	24.69	38.45

WCDMA Band V

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band V)	Normal	Rel 99	1	22.16	22.09	22.10
		HSDPA	1	22.05	22.16	22.23
			2	22.23	22.03	22.10
			3	22.10	22.11	22.32
			4	21.98	22.08	21.84
		HSUPA	1	21.62	22.07	22.43
			2	22.08	22.14	22.15
			3	22.14	22.12	21.90
			4	22.32	22.17	22.15
			5	21.84	22.06	21.59
		HSPA+	1	21.97	22.16	22.17

PCS 1900 Band

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)
GSM	512	1850.2	29.23	33
	661	1880.0	28.97	33
	810	1909.8	29.08	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.21	28.24	27.36	26.12	33
	661	1880.0	29.12	28.14	27.28	26.24	33
	810	1909.8	29.03	28.24	27.40	26.22	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	25.68	24.16	23.54	22.95	33
	661	1880.0	25.78	24.32	23.15	22.64	33
	810	1909.8	25.84	24.25	23.17	22.24	33

WCDMA Band II

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band II)	Normal	Rel 99	1	22.16	22.76	22.52
		HSDPA	1	22.29	22.53	22.55
			2	22.46	22.64	22.37
			3	22.65	22.59	22.46
			4	22.67	22.47	22.35
		HSUPA	1	22.23	22.51	22.49
			2	22.50	22.43	22.24
			3	23.14	22.69	22.76
			4	22.65	22.76	22.93
			5	22.51	22.77	22.65
		HSPA+	1	22.75	22.68	22.84

CDMA BC0 1xRTT Mode

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			RC1+SO55	RC3+SO55	RC3+SO32 (FCH)	RC3+SO32 (SCH)
BC0	1013	824.70	24.64	24.67	24.68	24.61
	384	836.52	24.62	24.81	24.71	24.64
	777	848.31	24.68	24.69	24.66	24.62

CDMA BC0 EVDO Mode

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)	
			RTAP 153.6kbps Subtype 0	RETAP 4096bps Subtype 2
BC0	1013	824.70	24.60	24.69
	384	836.52	24.71	24.65
	777	848.31	24.65	24.61

Maximum Output Power:

LTE Band 7

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.40	22.15	21.97
		1#12	22.35	22.32	22.50
		1#24	21.77	21.87	22.04
		12#0	20.16	20.22	19.86
		12#6	22.67	22.49	22.40
		12#11	22.03	22.16	22.19
		25#0	21.38	21.67	21.54
	16-QAM	1#0	22.81	22.41	22.21
		1#12	21.75	22.07	21.91
		1#24	21.48	21.61	21.34
		12#0	21.48	21.16	21.48
		12#6	21.12	21.39	21.16
		12#11	21.24	21.45	21.18
		25#0	21.48	21.19	21.12
10M	QPSK	1#0	22.63	22.33	22.48
		1#24	22.07	21.88	22.03
		1#49	21.66	21.53	21.66
		25#0	21.64	21.54	21.29
		25#12	21.74	21.63	21.46
		25#24	22.08	21.71	21.64
		50#0	21.33	21.49	21.72
	16-QAM	1#0	21.88	21.73	21.75
		1#24	21.31	21.37	21.31
		1#49	21.56	21.56	21.54
		25#0	20.22	20.54	20.50
		25#12	22.11	22.07	21.79
		25#24	21.94	21.84	21.82
		50#0	21.92	21.97	22.06

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.30	22.68	22.55
		1#37	22.25	22.22	22.25
		1#74	21.87	21.83	21.64
		36#0	21.23	21.57	21.27
		36#17	21.25	21.32	21.46
		36#35	21.24	20.92	21.12
		75#0	20.32	20.61	20.89
	16-QAM	1#0	23.01	22.67	22.64
		1#37	22.46	22.18	22.27
		1#74	21.72	21.68	21.46
		36#0	21.38	21.27	21.07
		36#17	21.64	21.83	21.75
		36#35	21.57	21.69	21.83
		75#0	21.81	21.86	21.92
20M	QPSK	1#0	22.54	22.48	22.30
		1#49	22.11	22.06	22.20
		1#99	21.65	21.66	21.45
		50#0	21.60	21.28	21.06
		50#24	21.00	20.79	20.48
		50#49	20.12	20.29	20.36
		100#0	19.93	19.83	19.51
	16-QAM	1#0	22.26	22.17	21.99
		1#49	22.18	21.90	21.96
		1#99	21.46	21.49	21.61
		50#0	21.09	21.18	21.12
		50#24	20.70	20.66	20.73
		50#49	20.43	20.34	20.10
		100#0	20.58	20.69	20.53

LTE Band 41

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.93	22.67	22.36
		1#12	22.56	22.37	22.74
		1#24	21.74	22.01	22.10
		12#0	21.92	21.69	21.95
		12#6	21.47	21.29	21.22
		12#11	21.23	20.76	20.81
		25#0	20.69	20.45	20.18
	16-QAM	1#0	21.94	21.92	21.48
		1#12	21.58	21.56	21.62
		1#24	21.12	21.13	21.35
		12#0	20.60	20.67	20.77
		12#6	21.46	21.39	21.21
		12#11	21.28	21.37	21.41
		25#0	21.72	21.65	21.68
10M	QPSK	1#0	22.19	22.19	22.48
		1#24	21.82	21.75	21.91
		1#49	21.55	21.28	21.40
		25#0	20.89	20.74	20.74
		25#12	19.81	20.27	20.65
		25#24	21.02	20.61	20.46
		50#0	20.63	20.37	20.44
	16-QAM	1#0	21.02	21.41	21.20
		1#24	21.13	21.03	21.16
		1#49	21.04	21.36	21.01
		25#0	21.17	21.09	21.15
		25#12	20.74	20.76	20.49
		25#24	21.65	21.62	21.43
		50#0	20.52	20.69	20.54

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.27	22.35	22.01
		1#37	22.01	21.99	21.76
		1#74	21.79	21.57	21.42
		36#0	21.65	21.29	21.31
		36#17	20.89	20.87	20.74
		36#35	20.92	20.79	20.75
		75#0	21.14	21.27	21.45
	16-QAM	1#0	21.59	21.94	21.65
		1#37	21.62	21.44	21.81
		1#74	21.19	20.98	20.94
		36#0	20.32	20.39	20.58
		36#17	21.79	21.34	21.36
		36#35	20.69	20.69	20.27
		75#0	20.48	20.56	20.88
20M	QPSK	1#0	22.57	22.53	22.34
		1#49	22.20	22.25	22.35
		1#99	22.03	21.78	21.52
		50#0	21.71	21.38	21.34
		50#24	20.93	20.91	20.93
		50#49	21.39	21.42	21.33
		100#0	21.40	21.35	21.20
	16-QAM	1#0	22.28	22.46	22.30
		1#49	21.67	21.94	22.01
		1#99	22.00	21.56	21.88
		50#0	21.12	21.15	20.95
		50#24	21.41	21.47	21.41
		50#49	21.42	21.32	21.08
		100#0	21.55	21.58	21.38

Peak-to-average ratio (PAR):

PCS 1900 Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	4.95	13
	Middle	4.87	13
	High	4.89	13

Mode	Channel	PAR (dB)	Limit (dB)
GPRS	Low	5.13	13
	Middle	5.25	13
	High	5.17	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	5.36	13
	Middle	5.75	13
	High	5.84	13

WCDMA Band II

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (Rel99)	Low	4.95	≤ 13
	Middle	4.98	≤ 13
	High	4.89	≤ 13
WCDMA (HSDPA)	Low	4.72	≤ 13
	Middle	5.10	≤ 13
	High	5.03	≤ 13
WCDMA (HSUPA)	Low	5.24	≤ 13
	Middle	5.15	≤ 13
	High	5.27	≤ 13
WCDMA (HSPA+)	Low	5.14	≤ 13
	Middle	5.31	≤ 13
	High	5.17	≤ 13

LTE Band 7

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	20M	5.31	4.81	3.16	13
	100 RB		5.01	5.04	6.58	13
16-QAM	1 RB	20M	5.31	5.10	5.60	13
	100 RB		4.97	4.92	7.19	13

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, Middle Channel (ERP)										
836.6	95.32	24	220	H	31.66	0.63	-1.14	29.89	38.45	8.56
836.6	97.11	10	200	V	30.02	0.63	-1.14	28.25	38.45	10.2
GPRS 850, Middle Channel (ERP)										
836.6	95.21	77	200	H	31.55	0.63	-1.14	29.78	38.45	8.67
836.6	97.02	310	157	V	29.93	0.63	-1.14	28.16	38.45	10.29
EGPRS 850, Middle Channel (ERP)										
836.6	89.65	56	152	H	25.99	0.63	-1.14	24.22	38.45	14.23
836.6	91.02	254	175	V	23.93	0.63	-1.14	22.16	38.45	16.29
PCS 1900, Middle Channel (EIRP)										
1880.0	91.87	106	136	H	18.74	0.85	9.00	26.89	33	6.11
1880.0	91.15	203	200	V	17.59	0.85	9.00	25.74	33	7.26
GPRS 1900, Middle Channel (EIRP)										
1880.0	91.12	225	198	H	17.99	0.85	9.00	26.14	33	6.86
1880.0	91.03	350	174	V	17.47	0.85	9.00	25.62	33	7.38
EGPRS 1900, Middle Channel (EIRP)										
1880.0	88.32	275	163	H	15.19	0.85	9.00	23.34	33	9.66
1880.0	88.03	300	112	V	14.47	0.85	9.00	22.62	33	10.38

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(ERP)										
836.6	86.01	40	187	H	22.50	0.63	-1.14	20.73	38.45	17.72
836.6	88.65	201	130	V	21.68	0.63	-1.14	19.91	38.45	18.54
WCDMA Band II, Middle Channel(EIRP)										
1880.0	85.01	211	214	H	12.72	0.85	9.00	20.87	33.00	12.13
1880.0	85.36	210	206	V	11.92	0.85	9.00	20.07	33.00	12.93

CDMA850 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)			
CDMA850 1xRTT, Middle Channel(ERP)										
836.52	86.01	76	195	H	22.35	0.63	-1.1	20.62	38.50	17.88
836.52	89.34	116	193	V	22.25	0.63	-1.1	20.52	38.50	17.98
CDMA850 EV-DO, Middle Channel(ERP)										
836.52	85.24	76	195	H	21.58	0.63	-1.1	19.85	38.50	18.65
836.52	89.11	116	193	V	22.02	0.63	-1.1	20.29	38.50	18.21

EIRP:

LTE Band 7

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/dBi)			
QPSK 5M BW Middle Channel								
2535	H	78.64	11.13	0.89	10.1	20.34	33	12.66
2535	V	79.65	11.08	0.89	10.1	20.29	33	12.71
16-QAM 5M BW Middle Channel								
2535	H	80.93	8.86	0.89	10.1	20.13	33	12.87
2535	V	80.56	11.84	0.89	10.1	19.98	33	13.02
QPSK 10M BW Middle Channel								
2535	H	81.44	9.37	0.89	10.1	19.33	33	13.67
2535	V	82.07	12.25	0.89	10.1	19.51	33	13.49
16-QAM 10M BW Middle Channel								
2535	H	80.04	7.97	0.89	10.1	19.47	33	13.53
2535	V	81.16	11.49	0.89	10.1	19.23	33	13.77
QPSK 15M BW Middle Channel								
2535	H	80.59	8.52	0.89	10.1	19.83	33	13.17
2535	V	82.8	10.74	0.89	10.1	19.29	33	13.71
16-QAM 15M BW Middle Channel								
2535	H	79.13	7.06	0.89	10.1	19.57	33	13.43
2535	V	81.82	9.76	0.89	10.1	19.31	33	13.69
QPSK 20M BW Middle Channel								
2535	H	79.66	7.59	0.89	10.1	19.47	33	13.53
2535	V	81.37	10.4	0.89	10.1	19.65	33	13.35
16-QAM 20M BW Middle Channel								
2535	H	78.26	6.19	0.89	10.1	19.13	33	13.87
2535	V	81.32	9.26	0.89	10.1	19.34	33	13.66

LTE Band 41

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/dBi)			
QPSK 5M BW Middle Channel								
2605	H	78.97	10.00	0.89	10.1	19.21	33	13.79
2605	V	79.80	10.84	0.89	10.1	20.05	33	12.95
16-QAM 5M BW Middle Channel								
2605	H	79.63	10.66	0.89	10.1	19.87	33	13.13
2605	V	79.88	9.92	0.89	10.1	19.13	33	13.87
QPSK 10M BW Middle Channel								
2605	H	79.74	9.77	0.89	10.1	18.98	33	14.02
2605	V	79.91	9.95	0.89	10.1	19.16	33	13.84
16-QAM 10M BW Middle Channel								
2605	H	79.80	9.83	0.89	10.1	19.04	33	13.96
2605	V	80.62	10.66	0.89	10.1	19.87	33	13.13
QPSK 15M BW Middle Channel								
2605	H	80.33	10.36	0.89	10.1	19.57	33	13.43
2605	V	80.54	10.58	0.89	10.1	19.79	33	13.21
16-QAM 15M BW Middle Channel								
2605	H	79.87	9.90	0.89	10.1	19.11	33	13.89
2605	V	80.56	10.6	0.89	10.1	19.81	33	13.19
QPSK 20M BW Middle Channel								
2605	H	79.60	9.63	0.89	10.1	18.84	33	14.16
2605	V	80.20	10.24	0.89	10.1	19.45	33	13.55
16-QAM 20M BW Middle Channel								
2605	H	79.60	9.63	0.89	10.1	18.84	33	14.16
2605	V	80.20	10.24	0.89	10.1	19.45	33	13.55

Note:
All above data were tested without amplifier.
Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)
Margin (dB) = Limit (dBm) - Absolute Level (dBm)

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

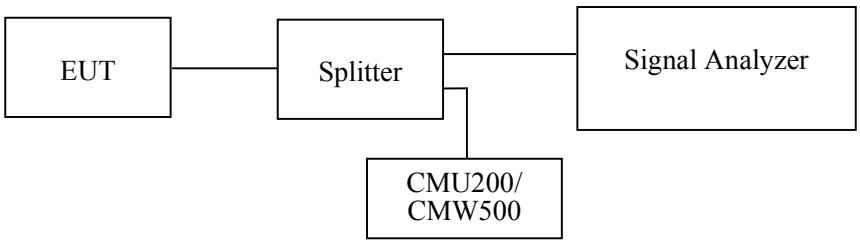
Applicable Standards

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:	23.2℃-23.5℃
Relative Humidity:	51 %-23%
ATM Pressure:	101.1kPa-103.3kPa

The testing was performed by Hope Zhang from 2018-12-11 to 2019-01-21.

EUT operation mode: Transmitting

Test Result: Compliance.

GSM 850 Band

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
GSM (GMSK)	836.6	0.313	0.244
EGPRS (8PSK)	836.6	0.311	0.246

WCDMA Band V

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (Rel 99)	836.6	4.93	4.248
WCDMA (HSDPA)	836.6	4.99	4.269
WCDMA (HSUPA)	836.6	4.97	4.248
WCDMA (HSPA+)	836.6	4.95	4.248

PCS 1900 Band

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
GSM (GMSK)	1880	0.317	0.246
EGPRS (8PSK)	1880	0.323	0.251

WCDMA Band II

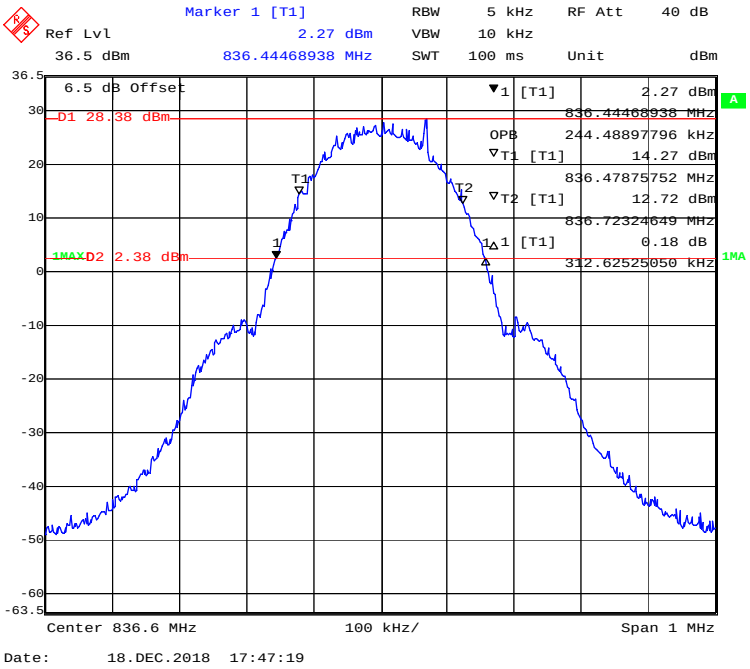
Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (Rel 99)	1880	4.89	4.228
WCDMA (HSDPA)	1880	4.89	4.228
WCDMA (HSUPA)	1880	4.89	4.248
WCDMA (HSPA+)	1880	4.89	4.248

CDMA850 Band

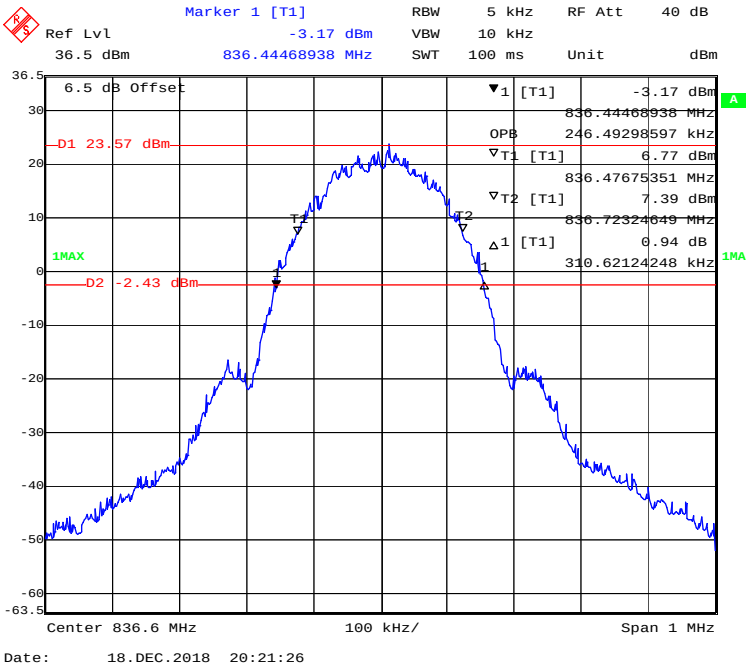
Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
CDMA (1xRTT)	836.52	1.894	1.305
CDMA (EV-DO)	836.52	1.876	1.305

GSM 850 Band

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

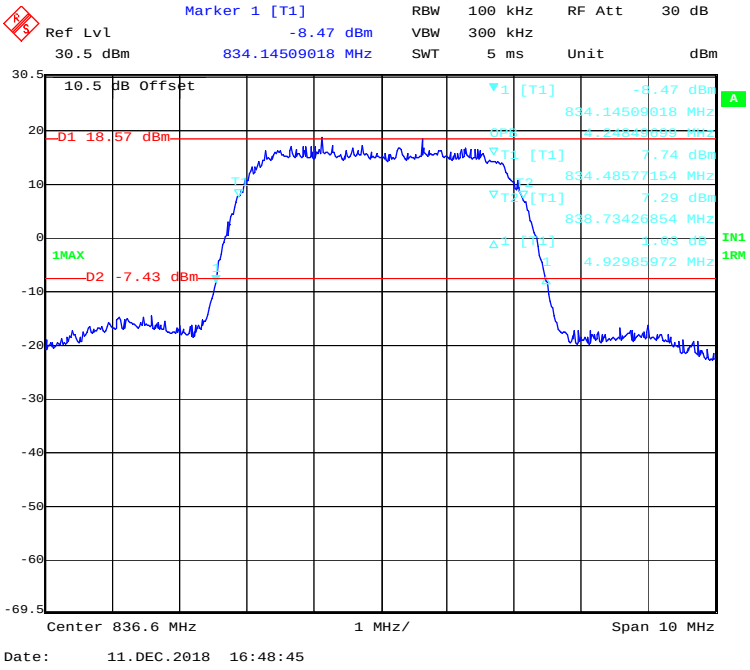


99% Occupied & 26 dB Emissions Bandwidth for EGPRS (GMSK) Mode

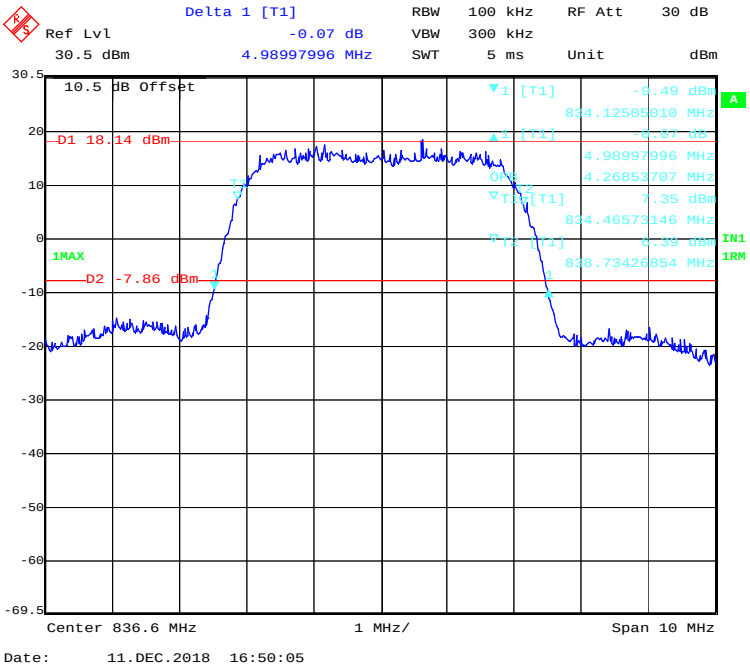


WCDMA Band V

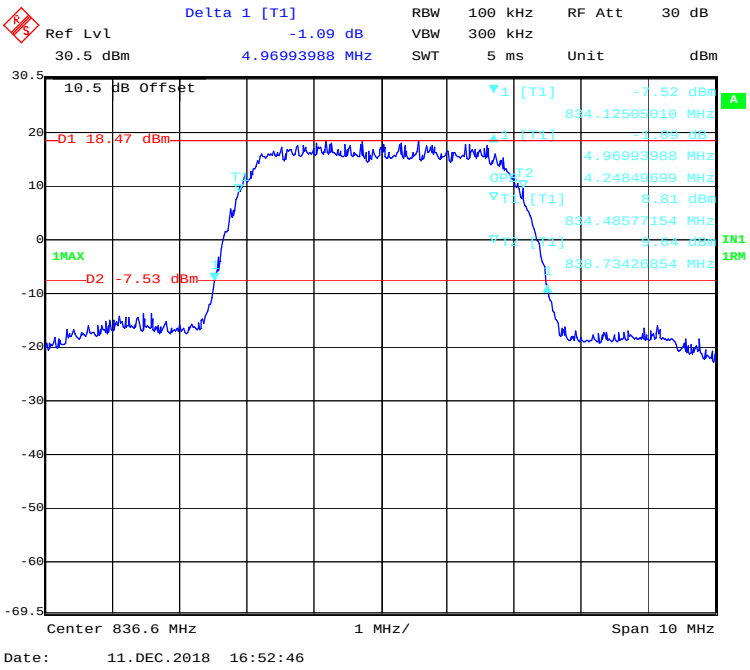
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode



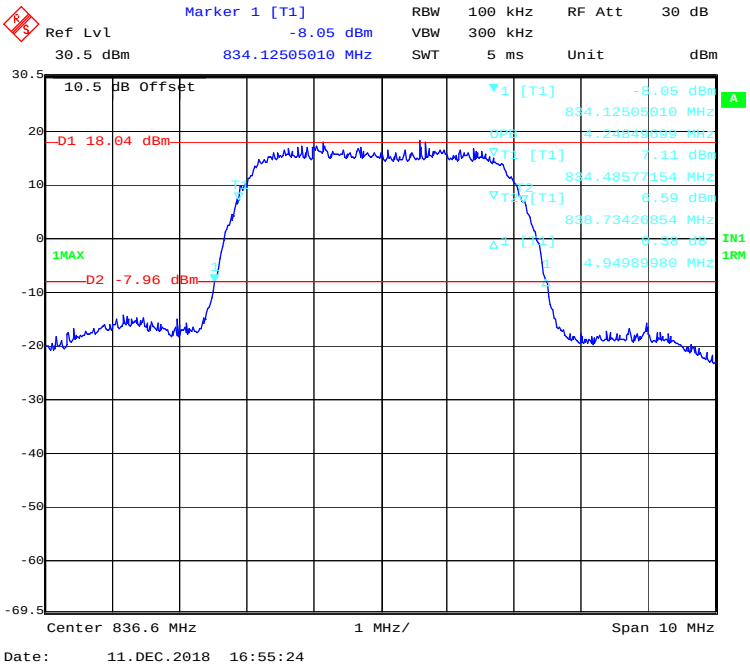
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode



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

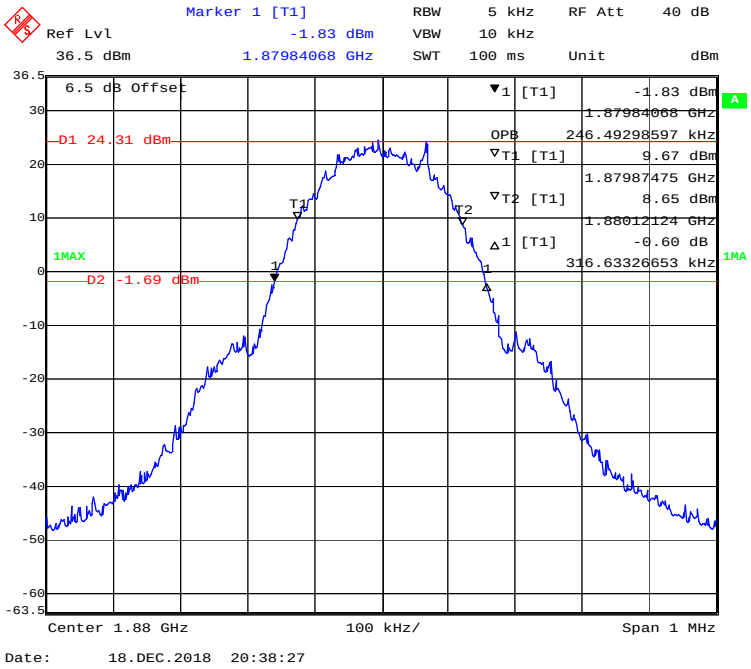


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode

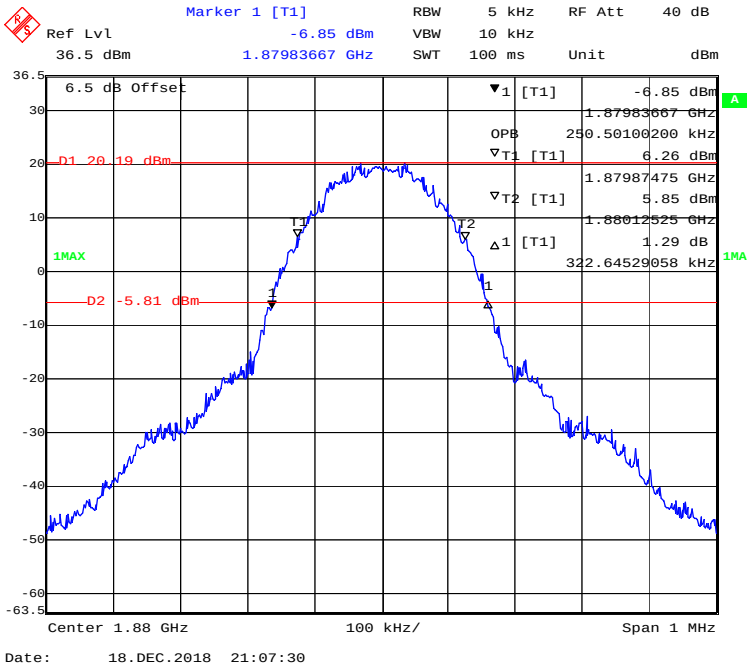


PCS 1900Band

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

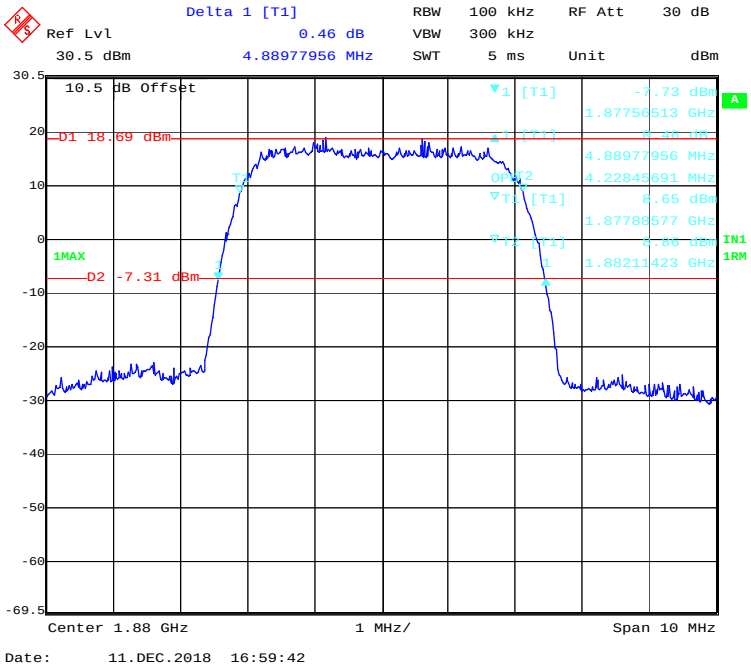


99% Occupied & 26 dB Emissions Bandwidth for EGPRS (GMSK) Mode

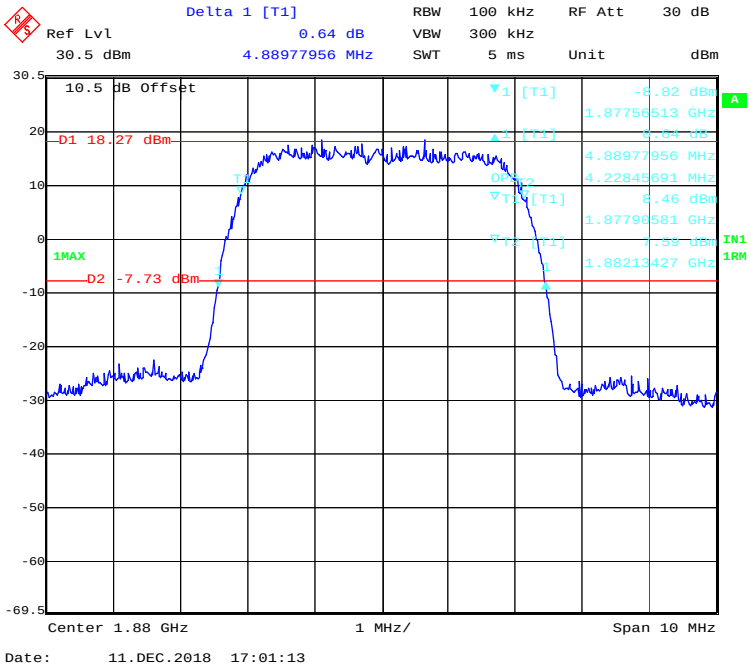


WCDMA Band II

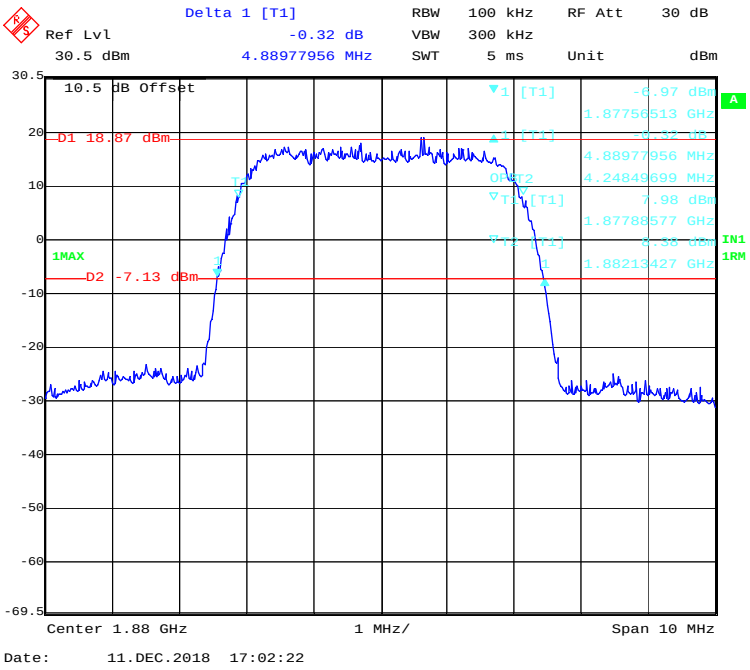
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode



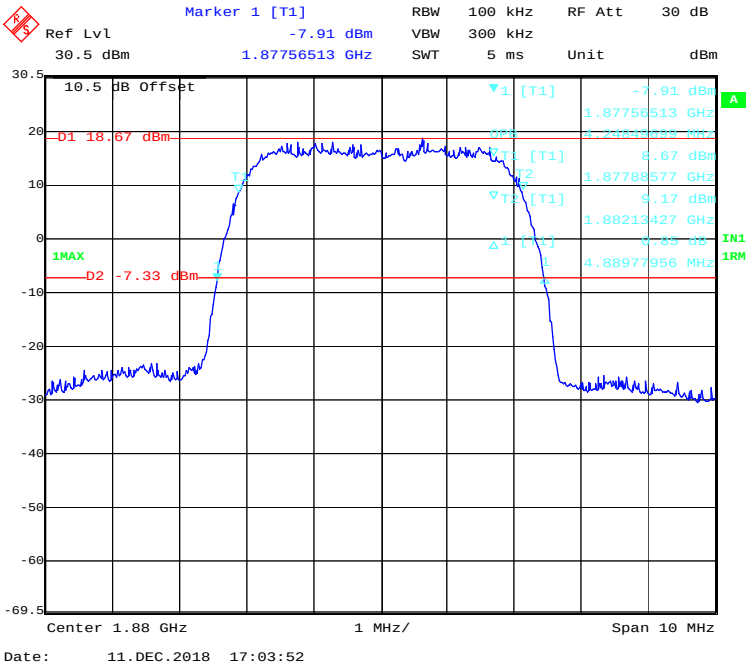
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode



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

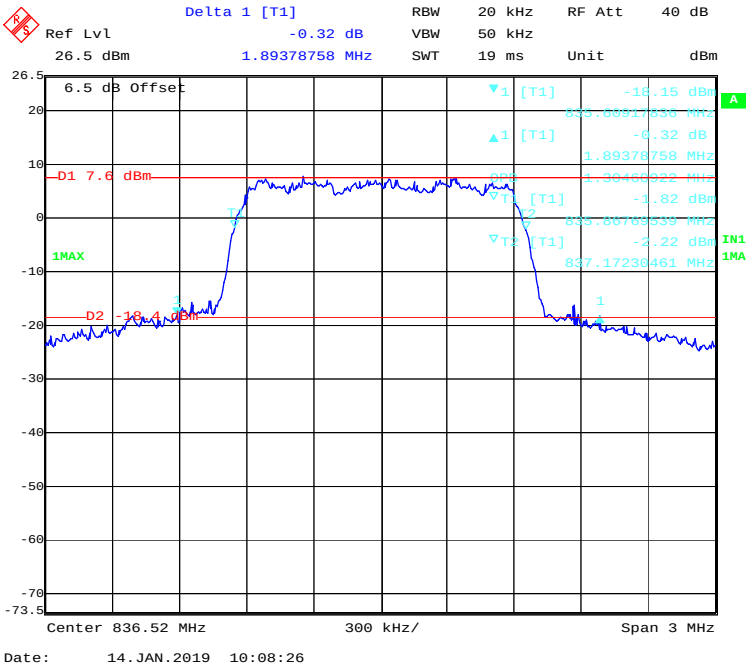


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode

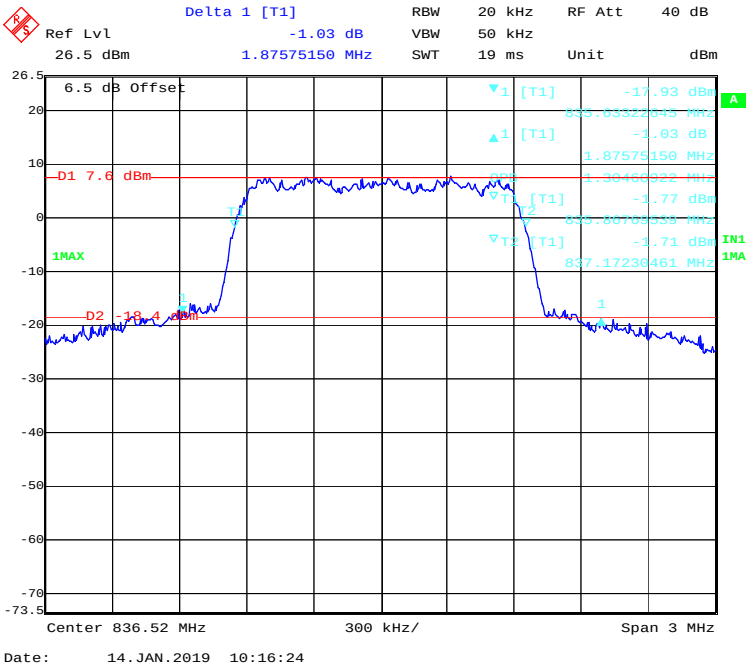


CDMA850 Band

99% Occupied & 26 dB Emissions Bandwidth for CDMA (1xRTT) Mode



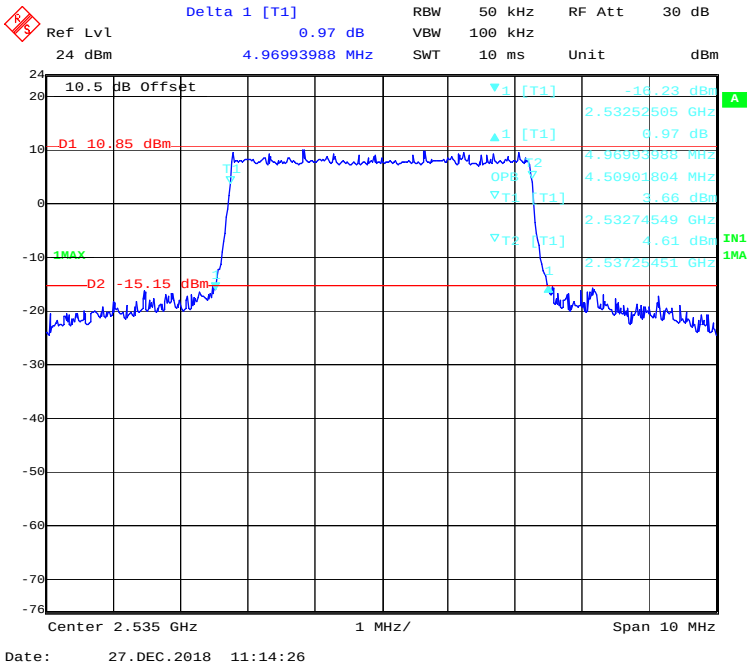
99% Occupied & 26 dB Emissions Bandwidth for CDMA (EV-DO) Mode



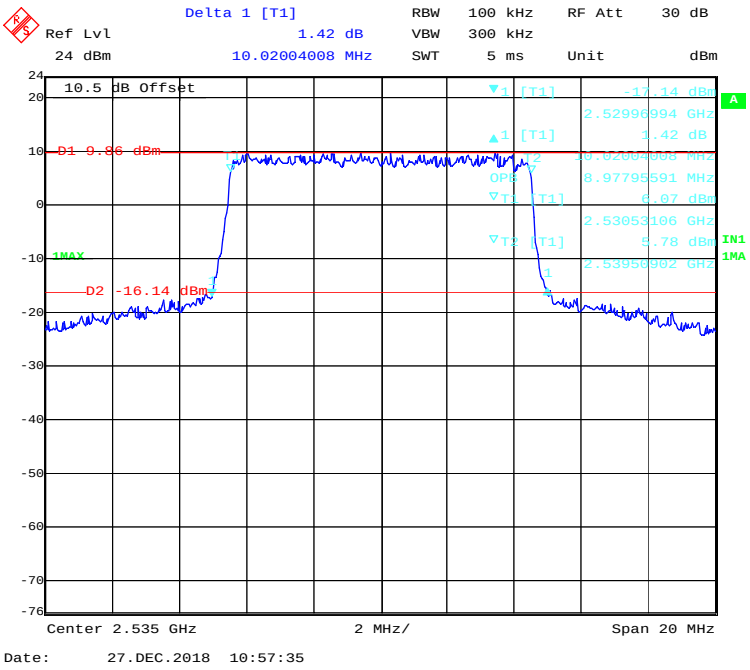
LTE Band 7:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	5M	Middle	4.970	4.509
	10M		10.020	8.978
	15M		15.210	13.587
	20M		19.399	17.956
16-QAM	5M	Middle	5.090	4.529
	10M		10.020	8.978
	15M		14.910	13.587
	20M		19.238	17.956

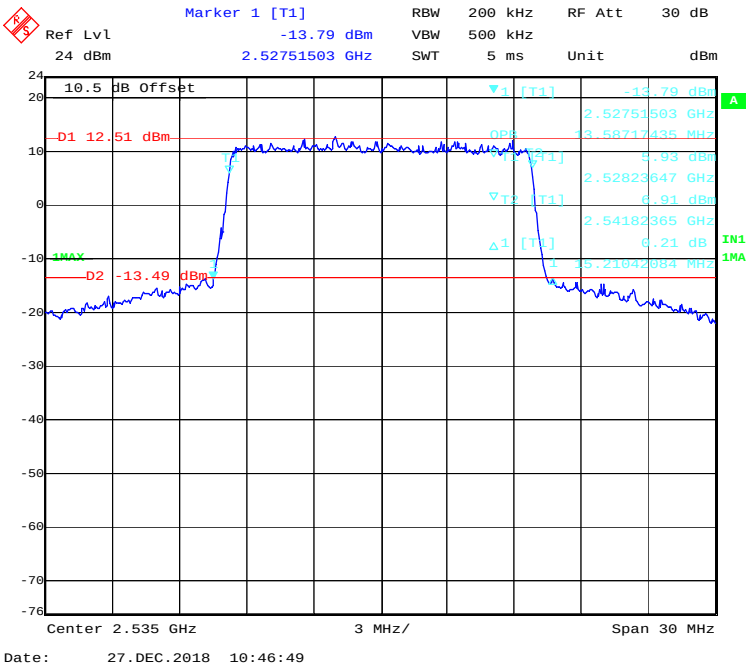
QPSK (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



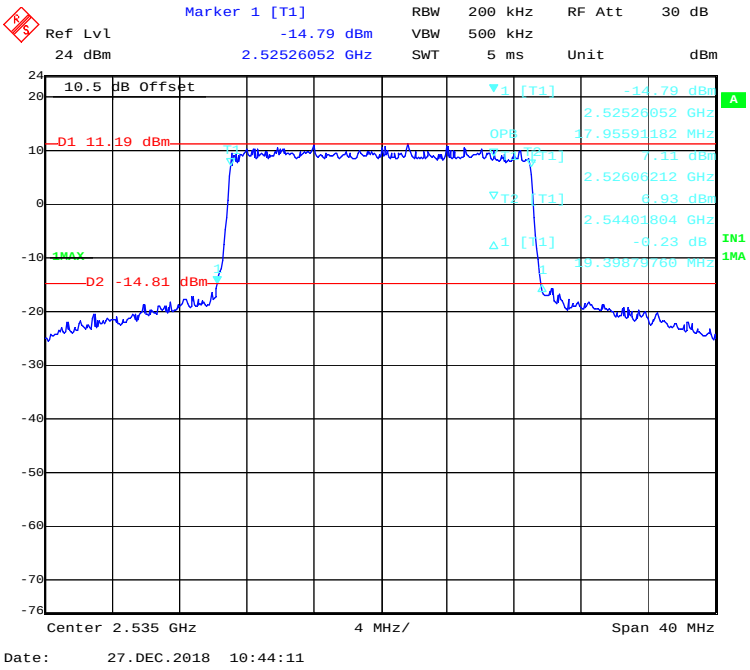
QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



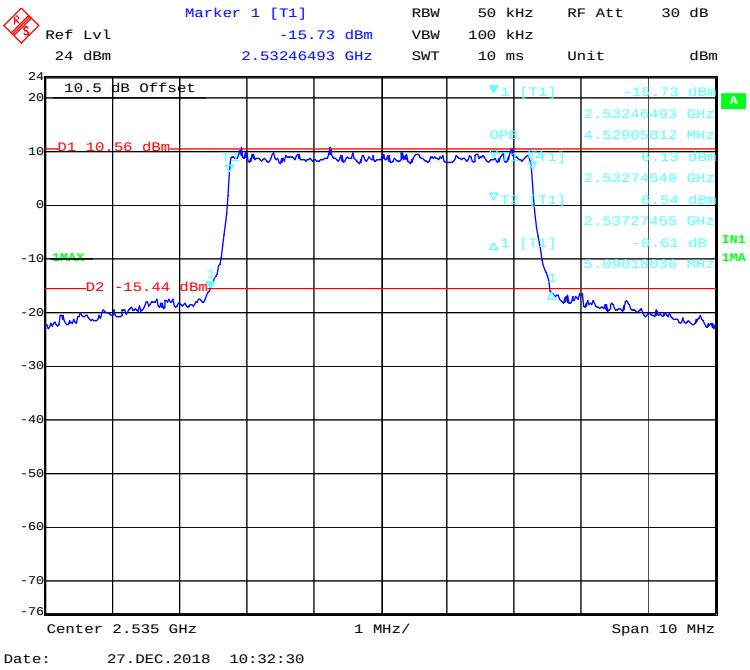
QPSK (15.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



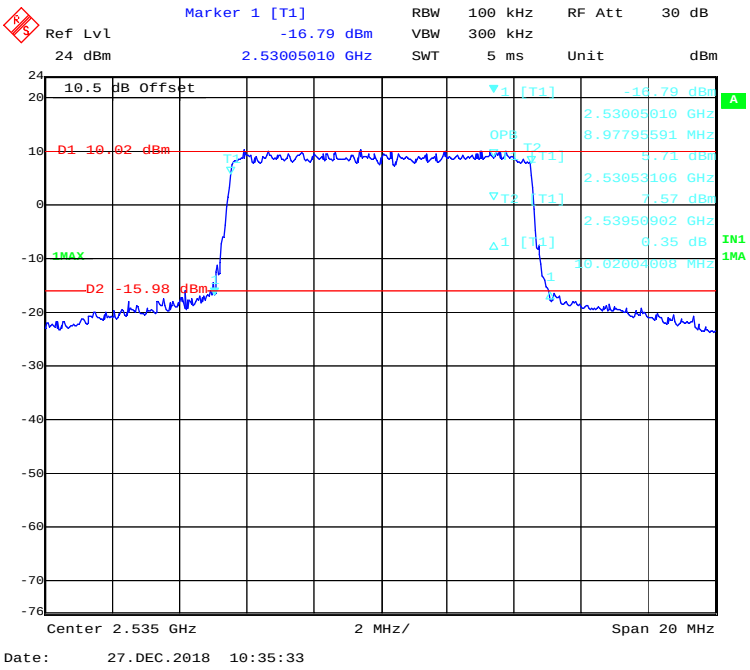
QPSK (20.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



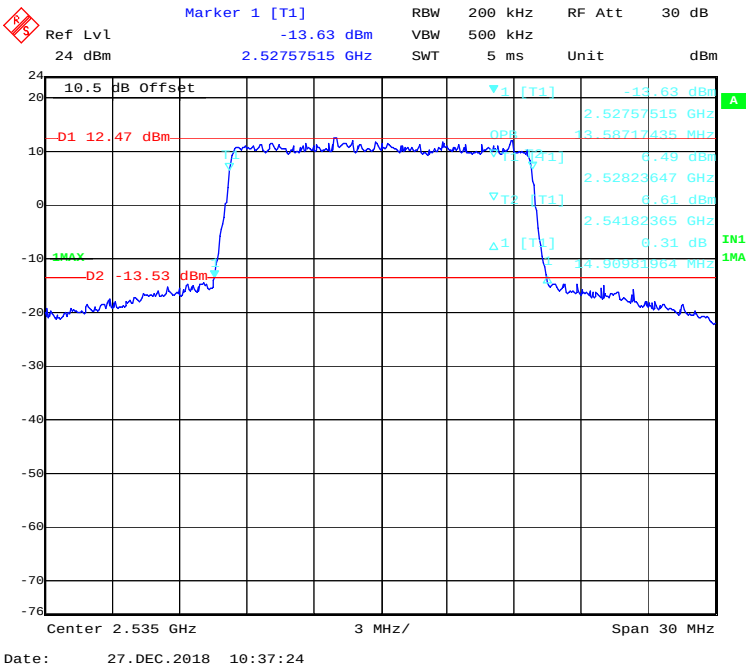
16-QAM (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



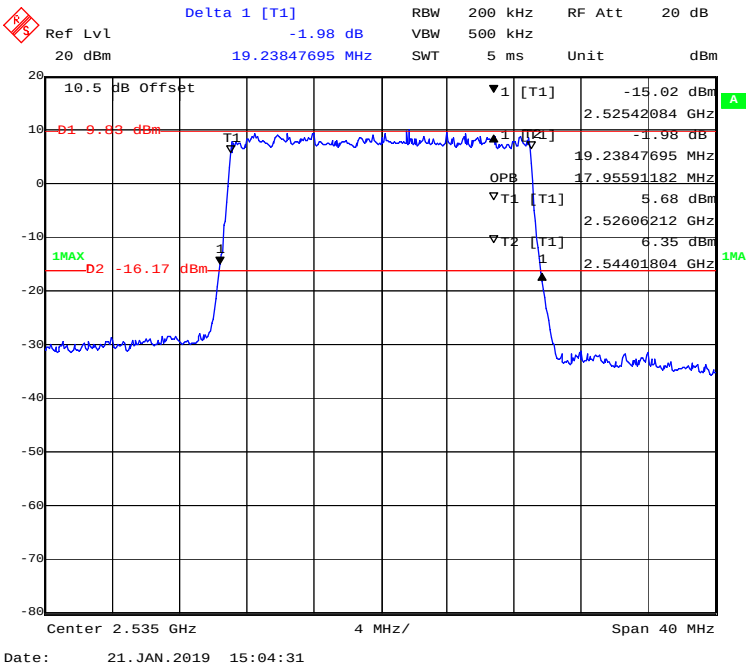
16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



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



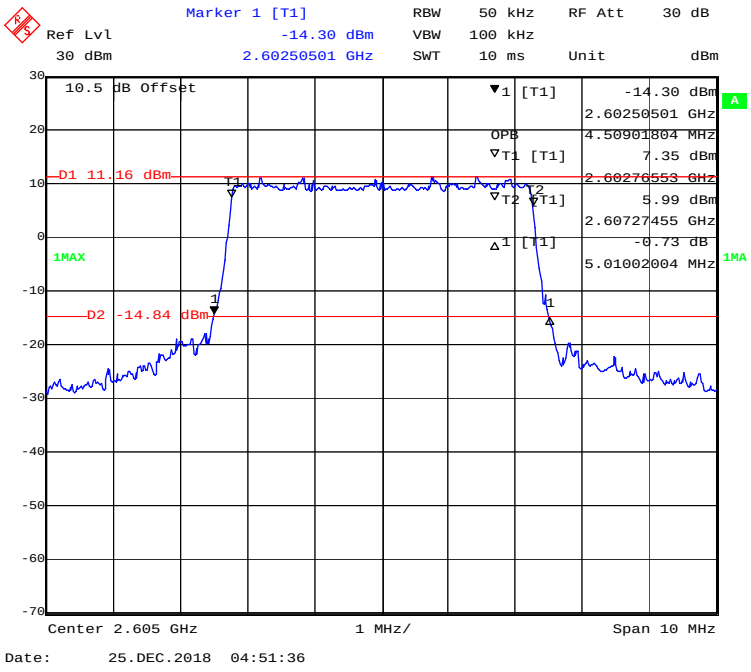
16-QAM (20.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



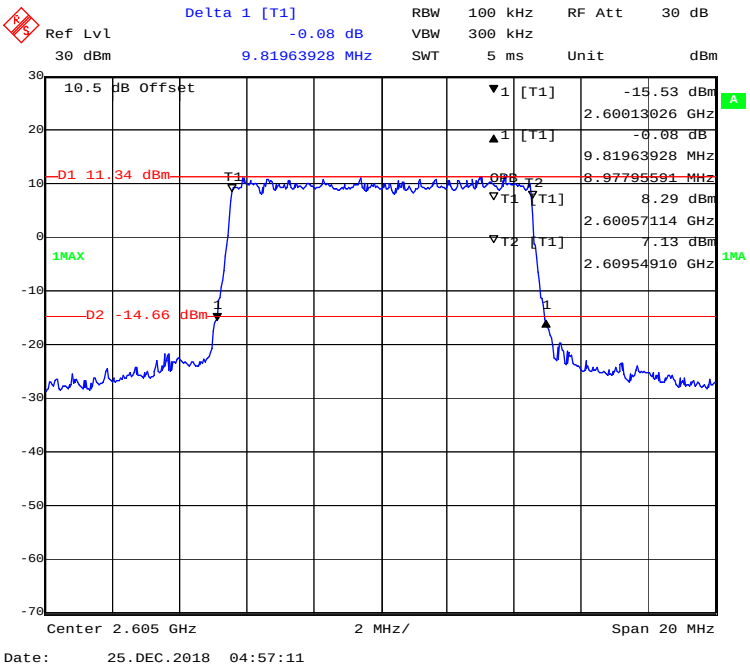
LTE Band 41:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	5M	Middle	5.010	4.509
	10M		9.820	8.978
	15M		15.090	13.527
	20M		19.639	17.956
16-QAM	5M	Middle	5.030	4.489
	10M		9.780	9.018
	15M		14.790	13.527
	20M		19.560	17.956

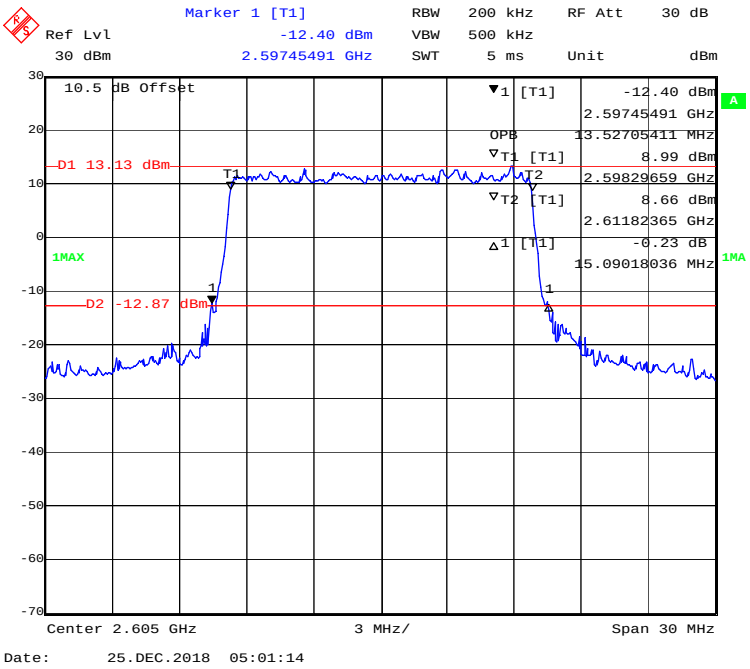
QPSK (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



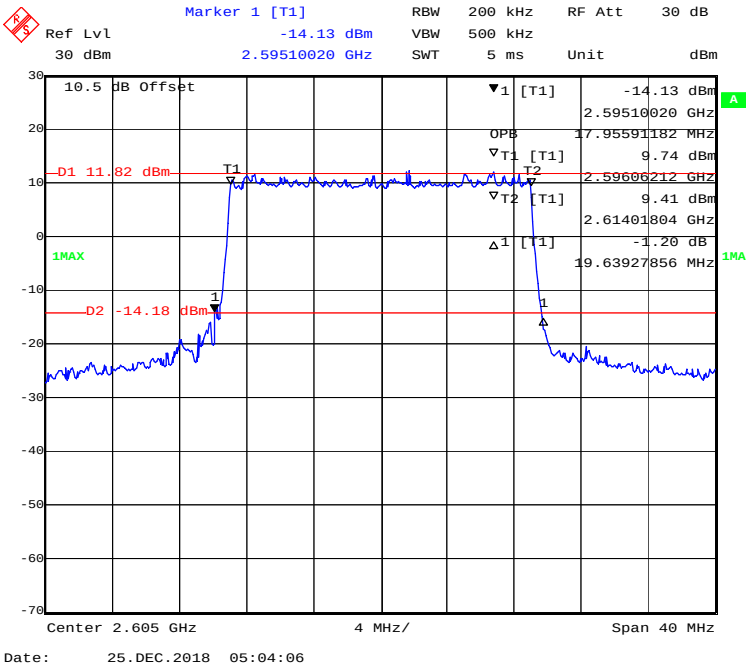
QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



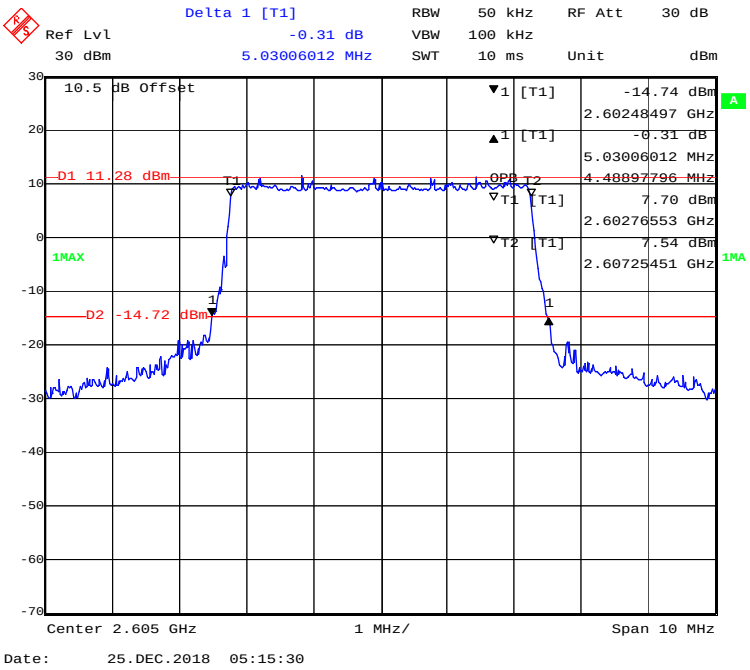
QPSK (15.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



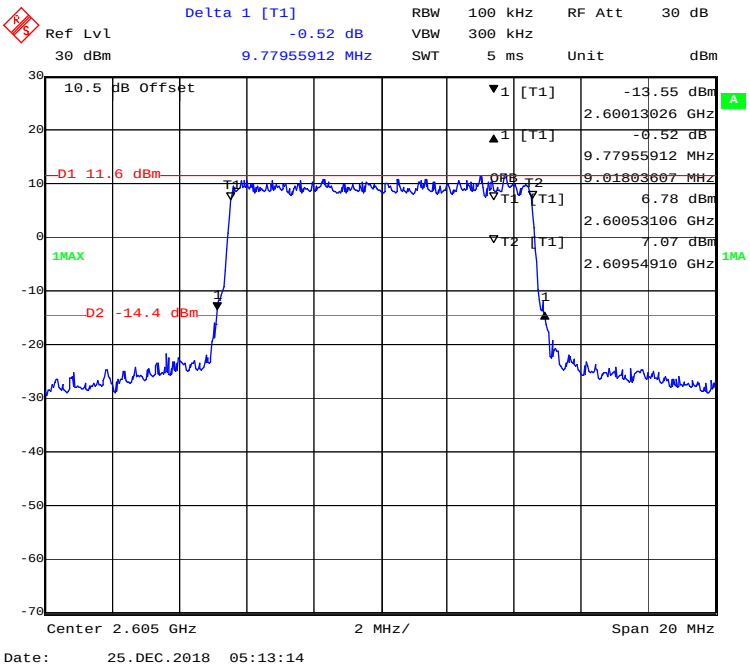
QPSK (20.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



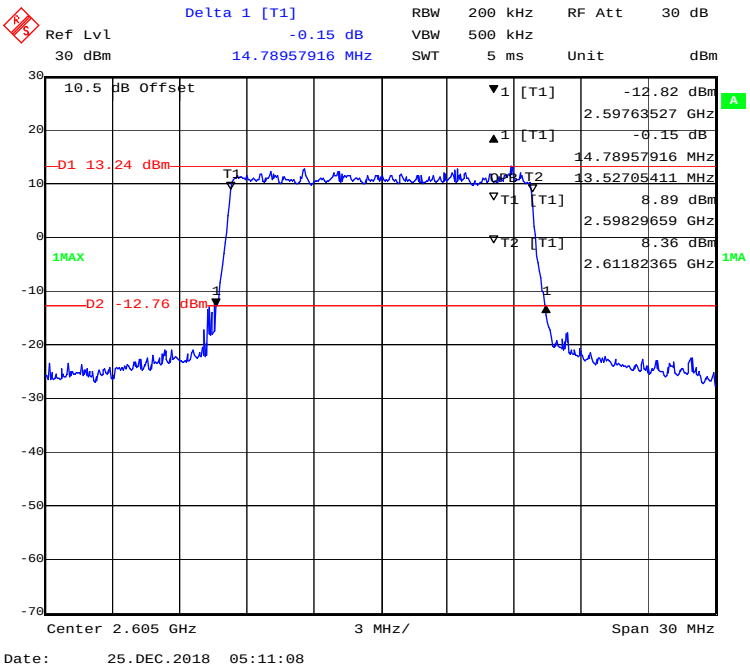
16-QAM (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



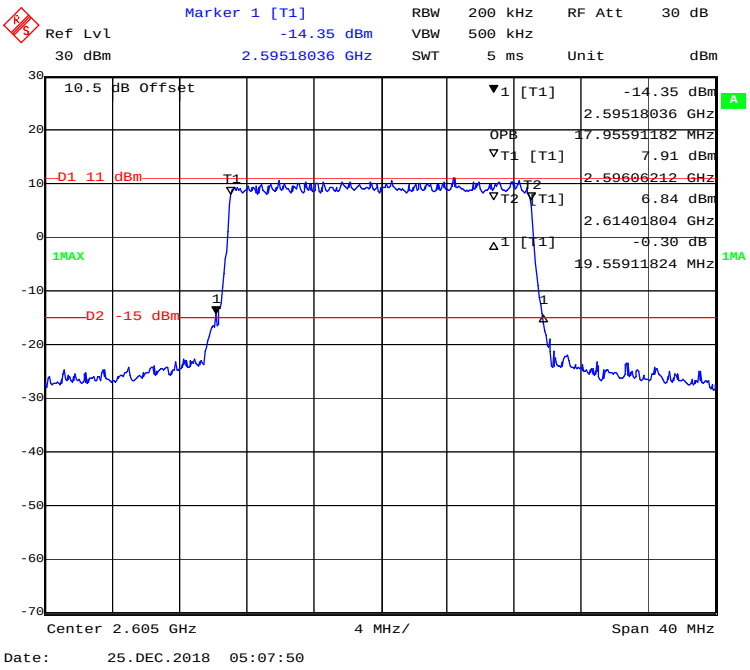
16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



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



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



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

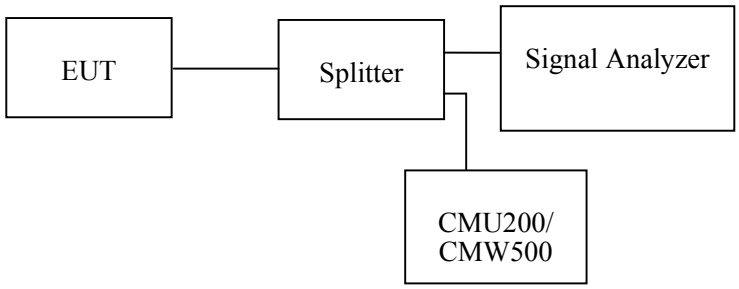
Applicable Standards

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 100 kHz 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:	23.2℃-23.5℃
Relative Humidity:	51 %-23%
ATM Pressure:	101.1kPa-103.3kPa

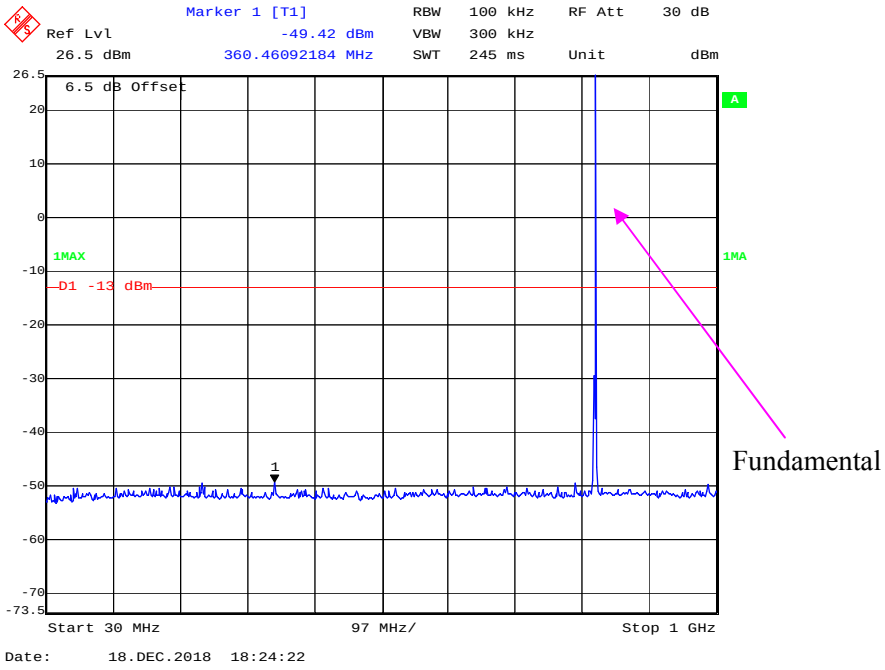
The testing was performed by Hope Zhang from 2018-12-18 to 2019-02-23.

EUT operation mode: Transmitting

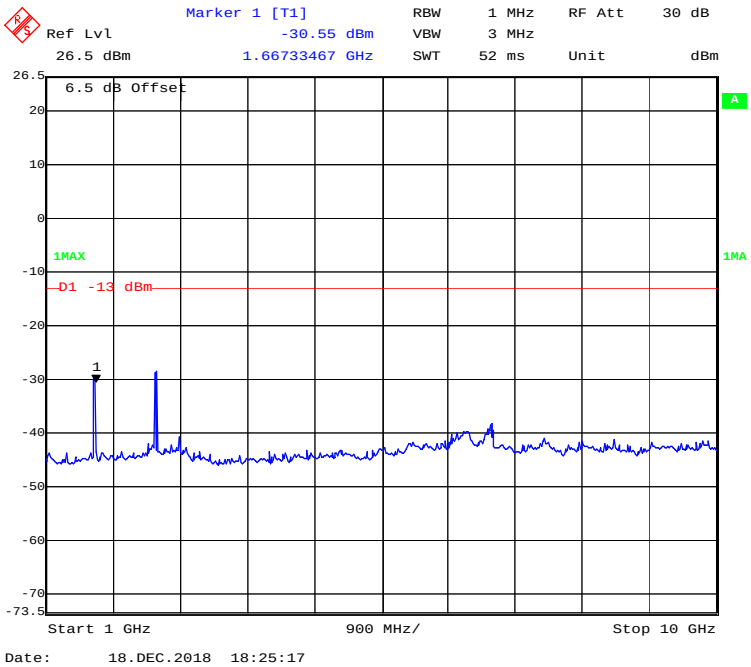
Test Result: Compliance.

GSM 850 Band:

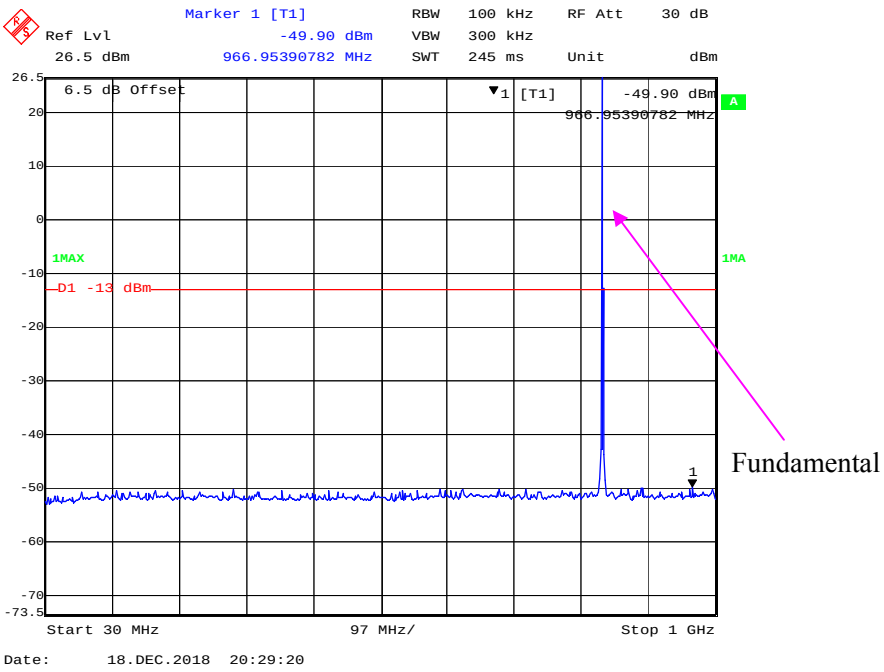
30 MHz – 1GHz(GSM Mode)



1 GHz – 10 GHz (GSM Mode)



30 MHz – 1GHz(EGPRS Mode)



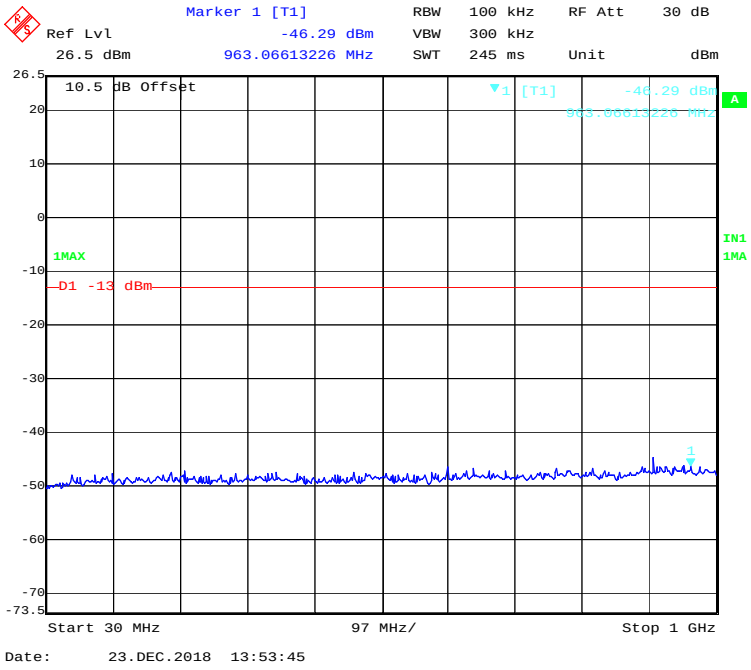
Date: 18.DEC.2018 20:29:20

1 GHz – 10 GHz (EGPRS Mode)

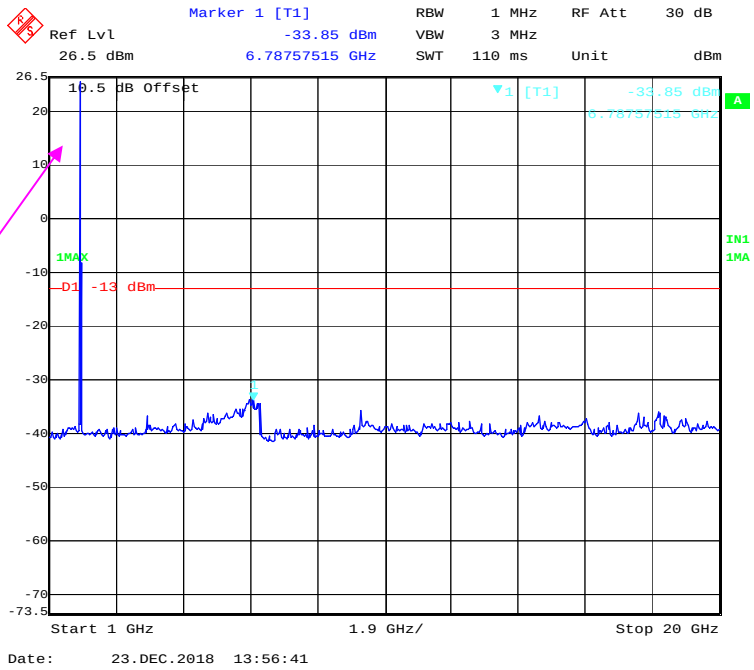
Date: 18.DEC.2018 20:31:02

WCDMA II Band:

30 MHz – 1GHz WCDMA (Rel 99) Mode

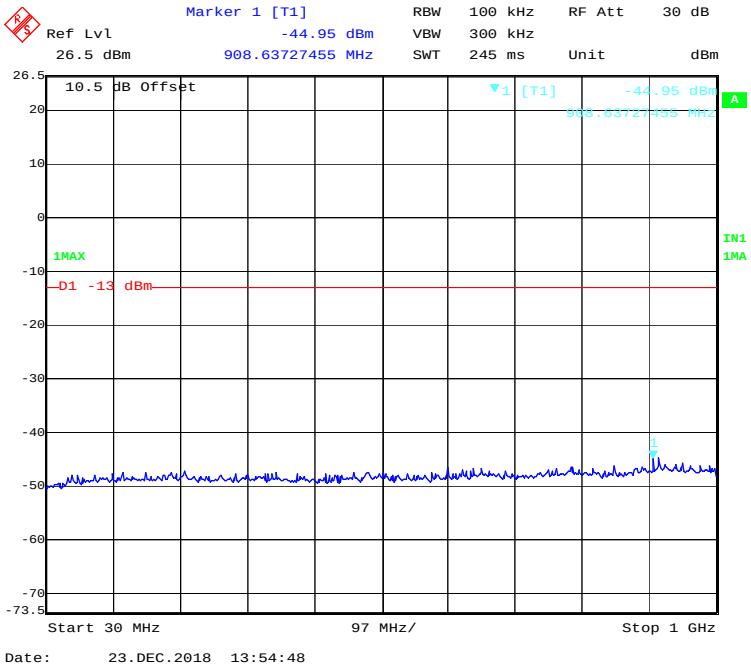


1 GHz – 20 GHz WCDMA (Rel 99) Mode

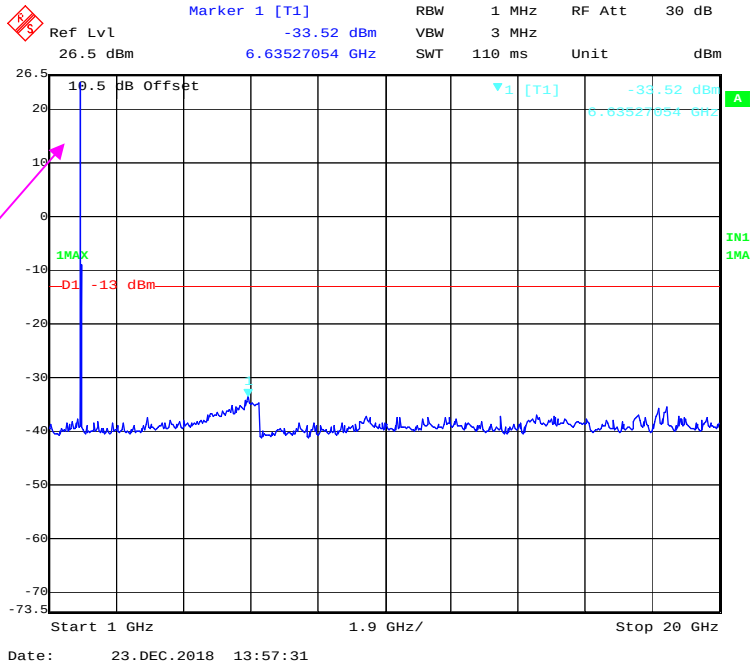


Fundamental

30 MHz – 1GHz WCDMA (HSDPA) Mode

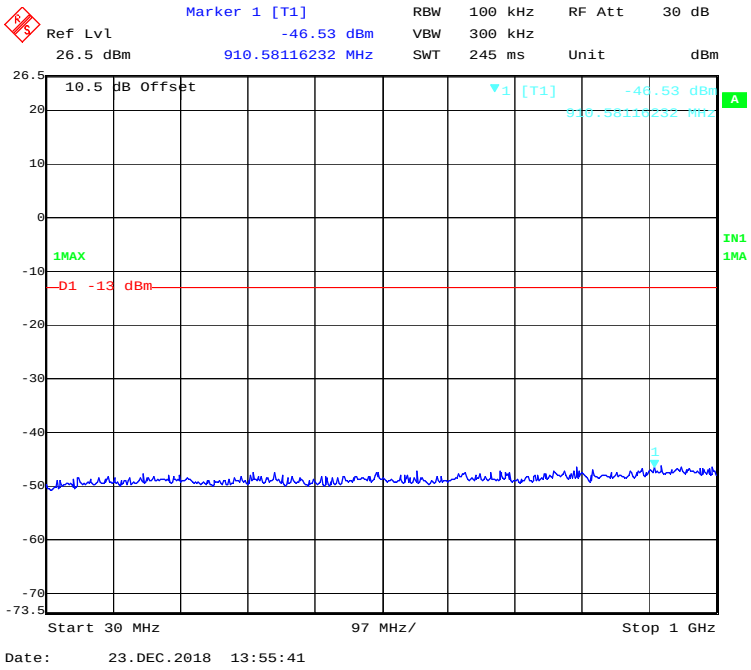


1 GHz – 20 GHz WCDMA (HSDPA) Mode

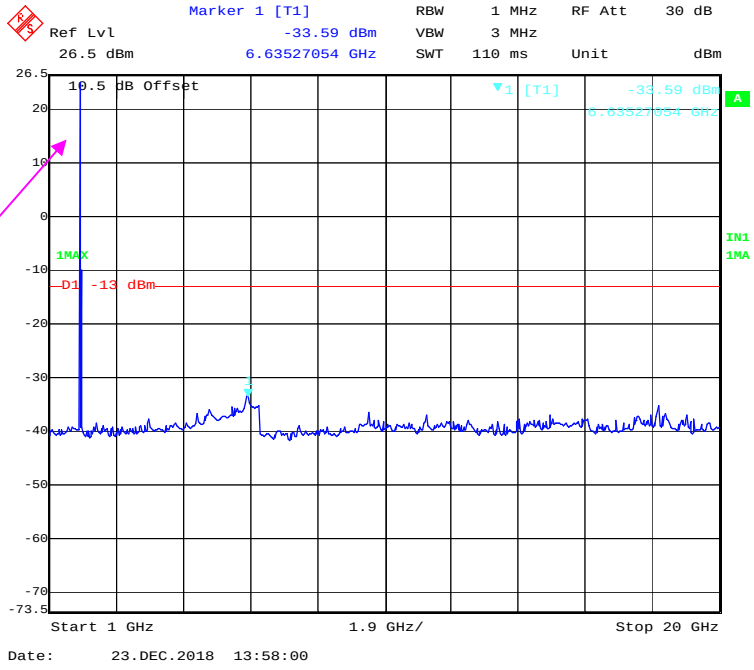


Fundamental

30 MHz – 1GHz WCDMA (HSUPA) Mode

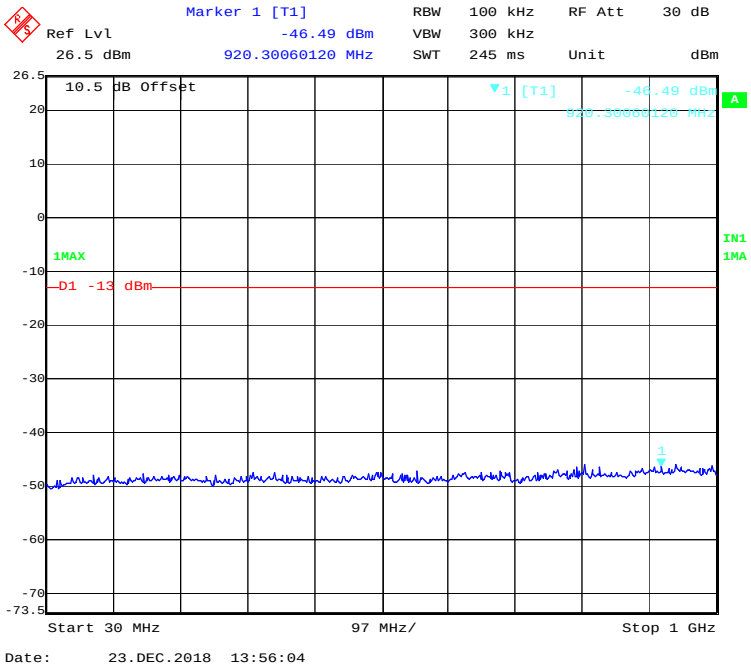


1 GHz – 20 GHz WCDMA (HSUPA) Mode

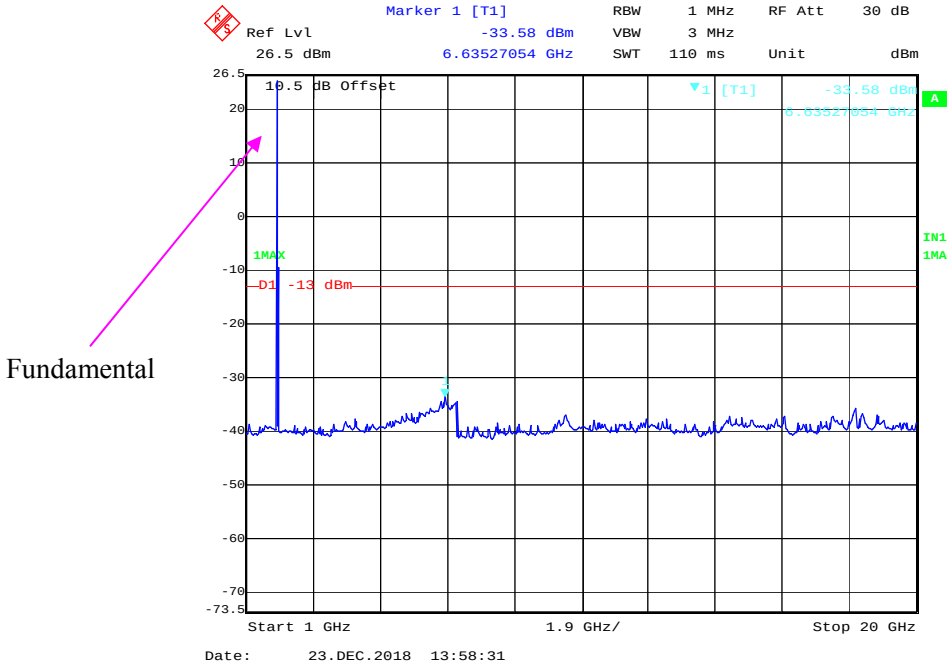


Fundamental

30 MHz – 1GHz WCDMA (HSPA+) Mode

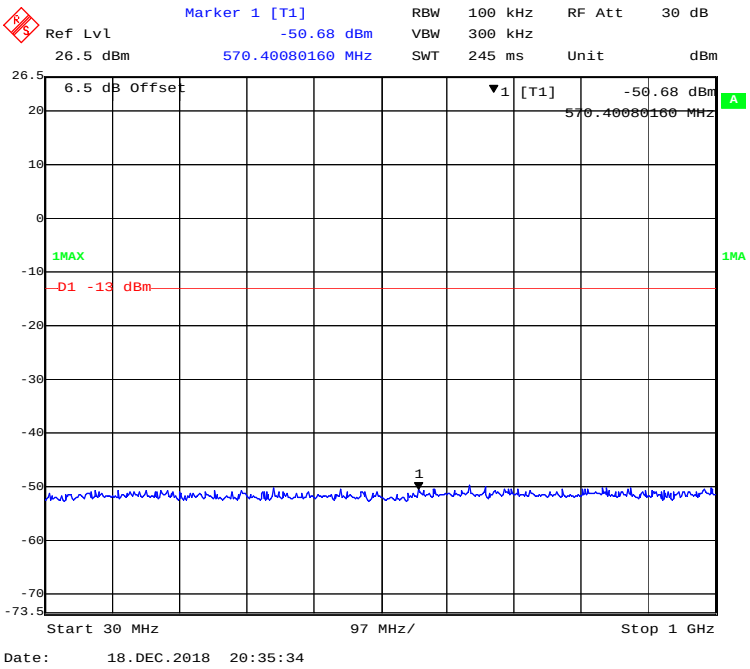


1 GHz – 20 GHz WCDMA (HSPA+) Mode

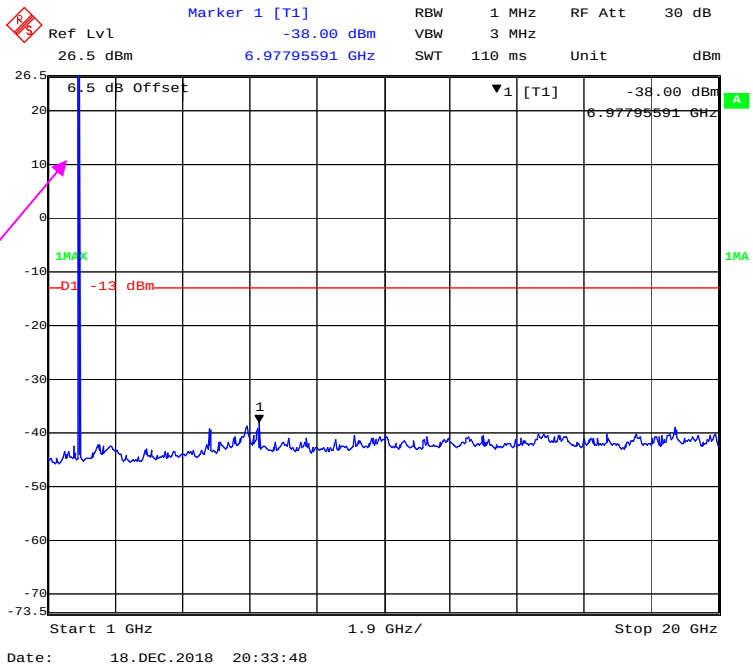


PCS 1900 Band:

30 MHz – 1GHz(GSM Mode)

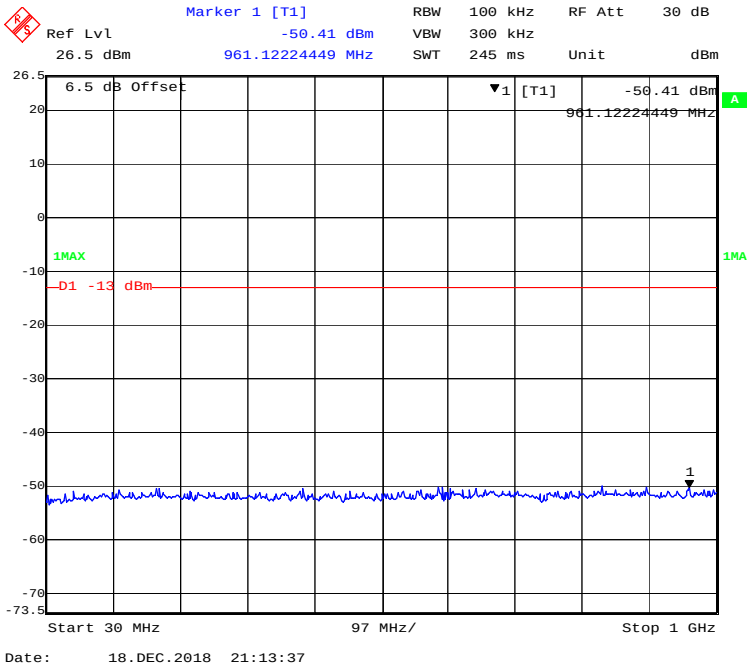


1 GHz – 20 GHz (GSM Mode)

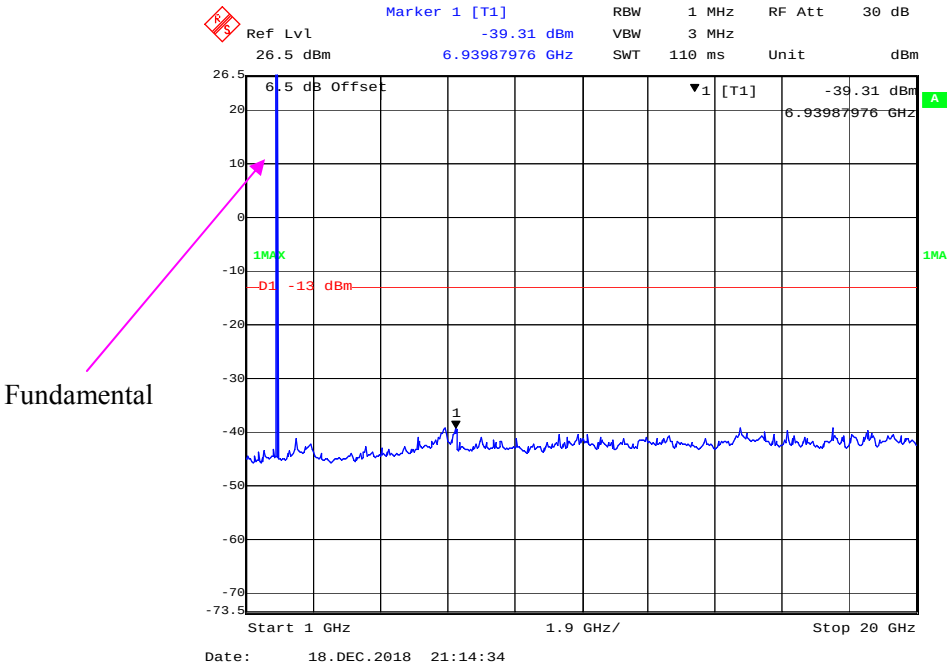


Fundamental

30 MHz – 1GHz(EGPRS Mode)

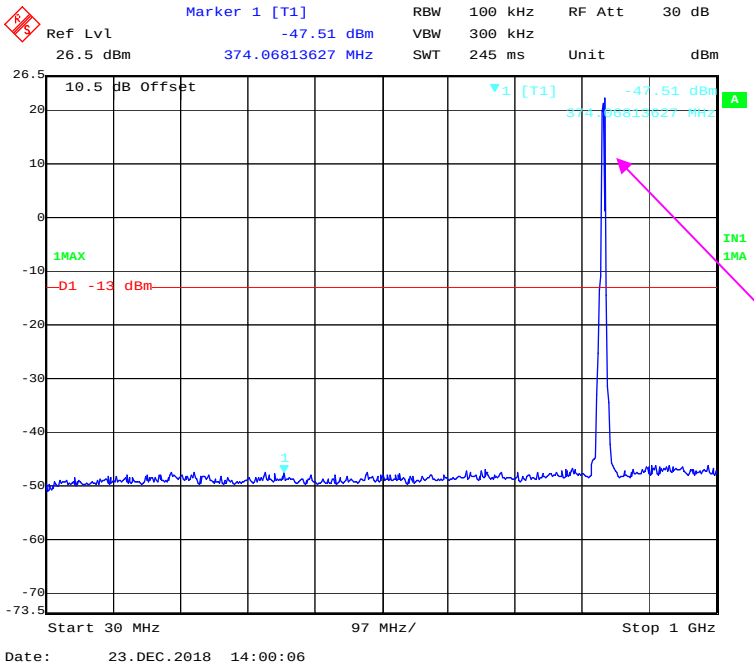


1 GHz – 20 GHz (EGPRS Mode)

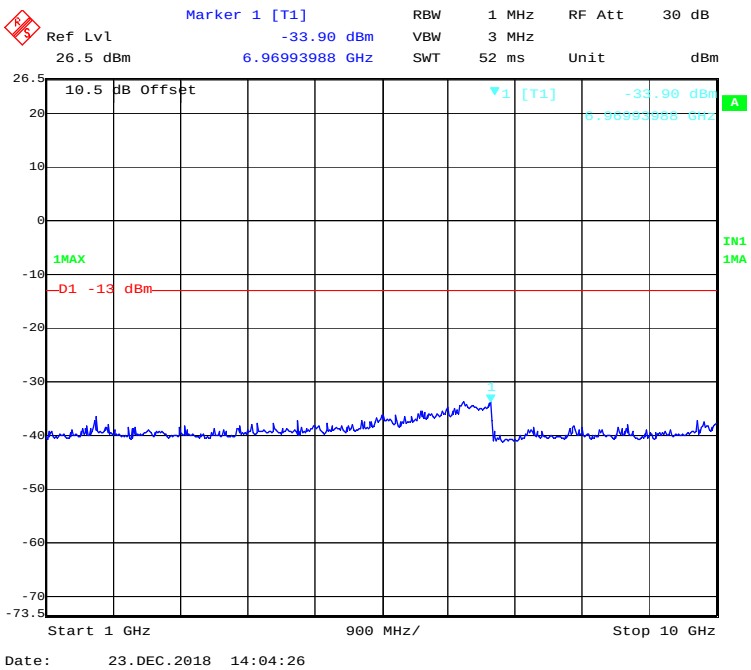


WCDMA Band V:

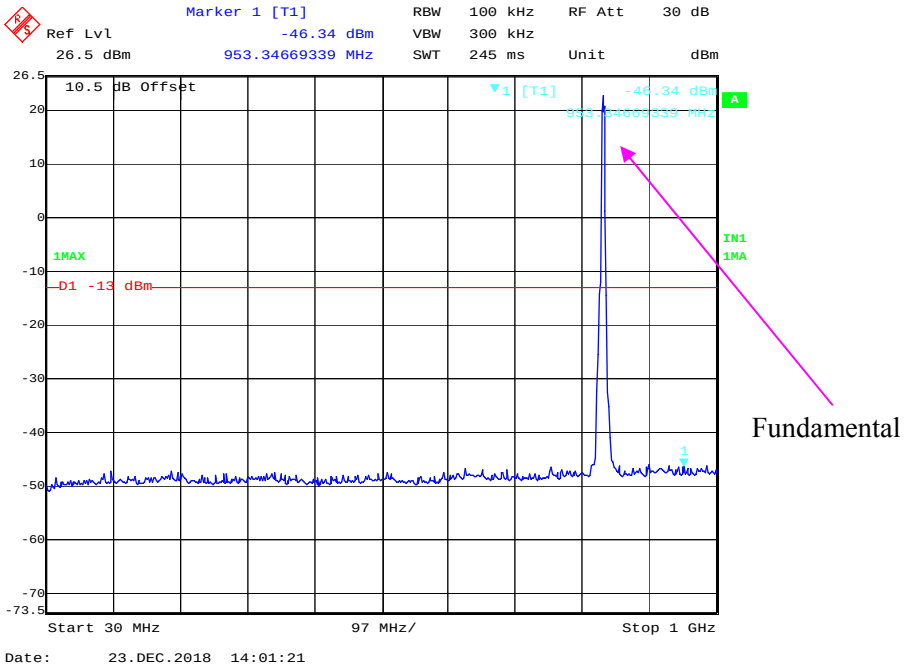
30 MHz – 1GHz WCDMA (Rel 99) Mode



1 GHz – 10 GHz WCDMA (Rel 99) Mode

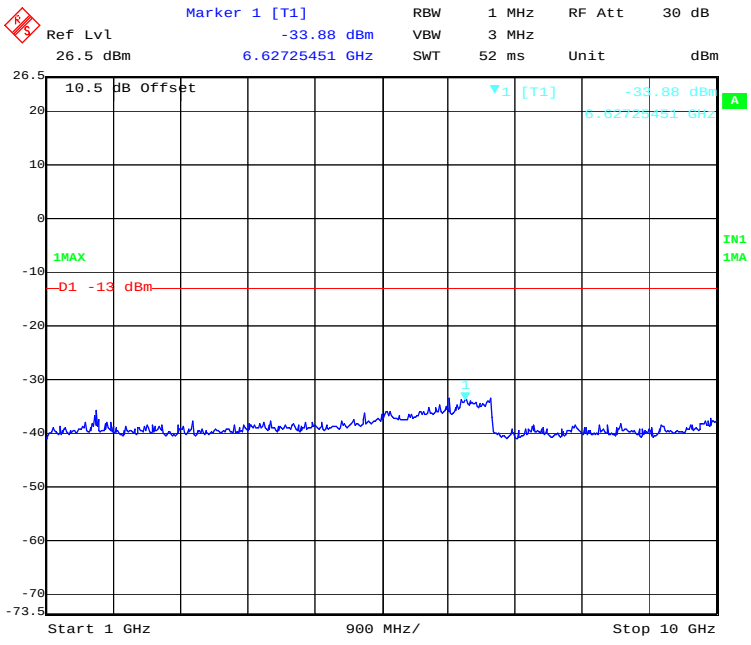


30 MHz – 1GHz WCDMA (HSDPA) Mode



Date: 23.DEC.2018 14:01:21

1 GHz – 10 GHz WCDMA (HSDPA) Mode



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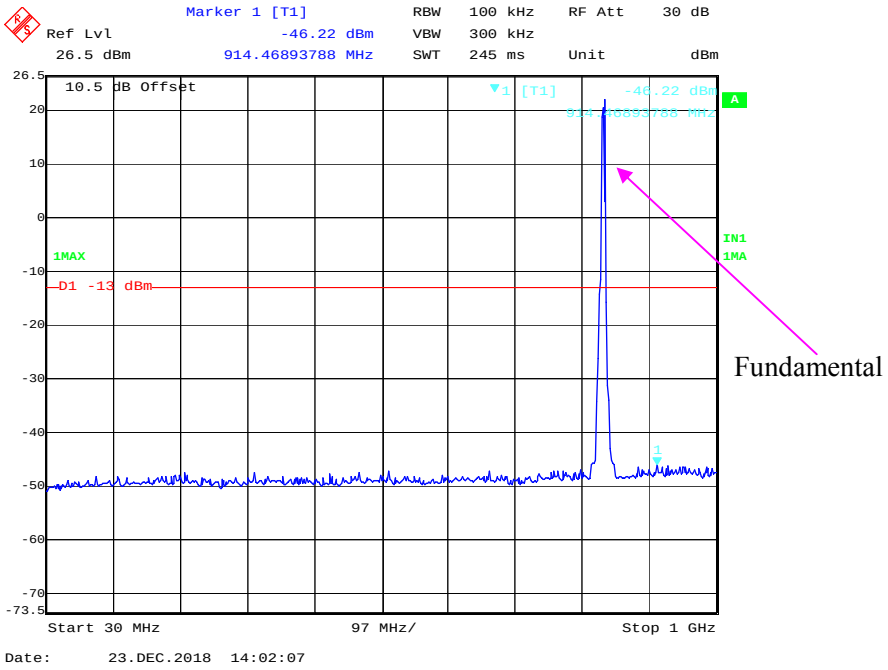
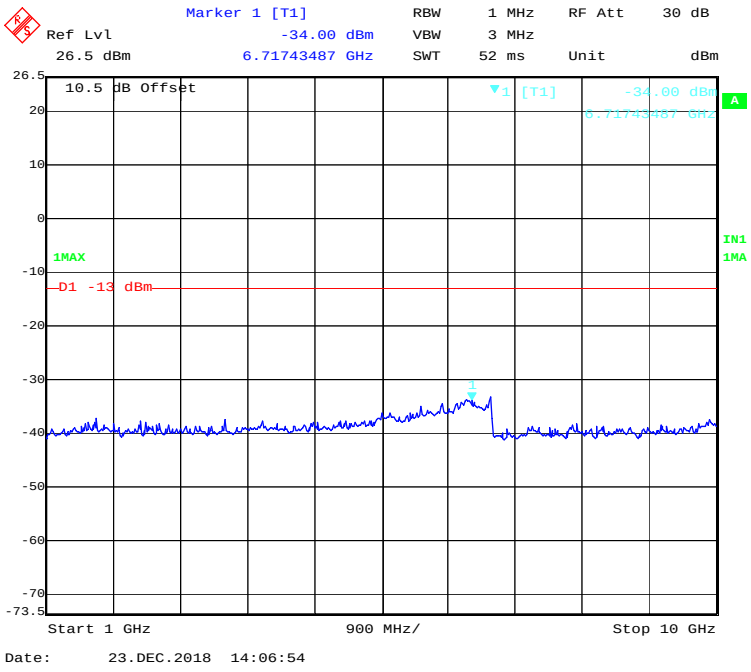
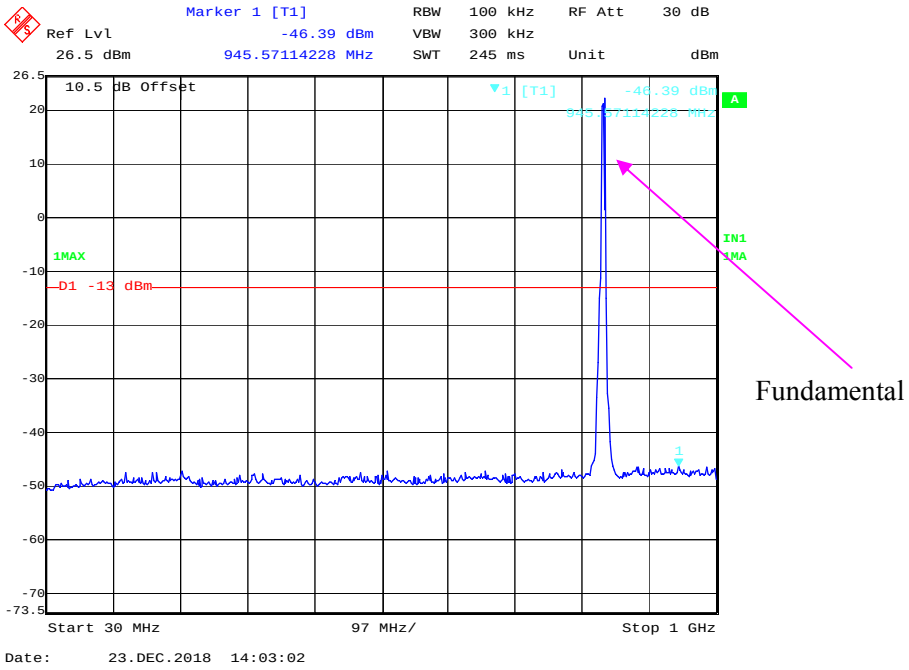
30 MHz – 1GHz WCDMA (HSUPA) Mode



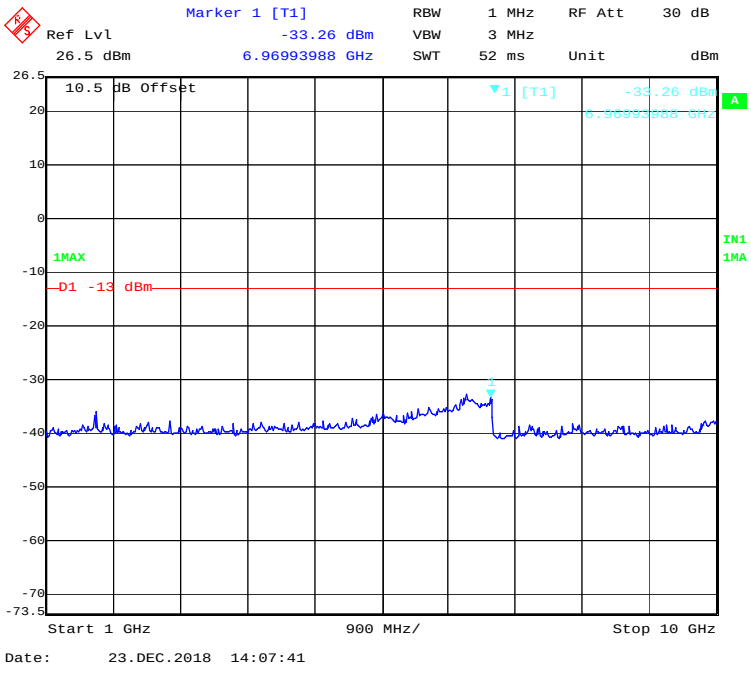
1 GHz – 10 GHz WCDMA (HSUPA) Mode



30 MHz – 1GHz WCDMA (HSPA+) Mode

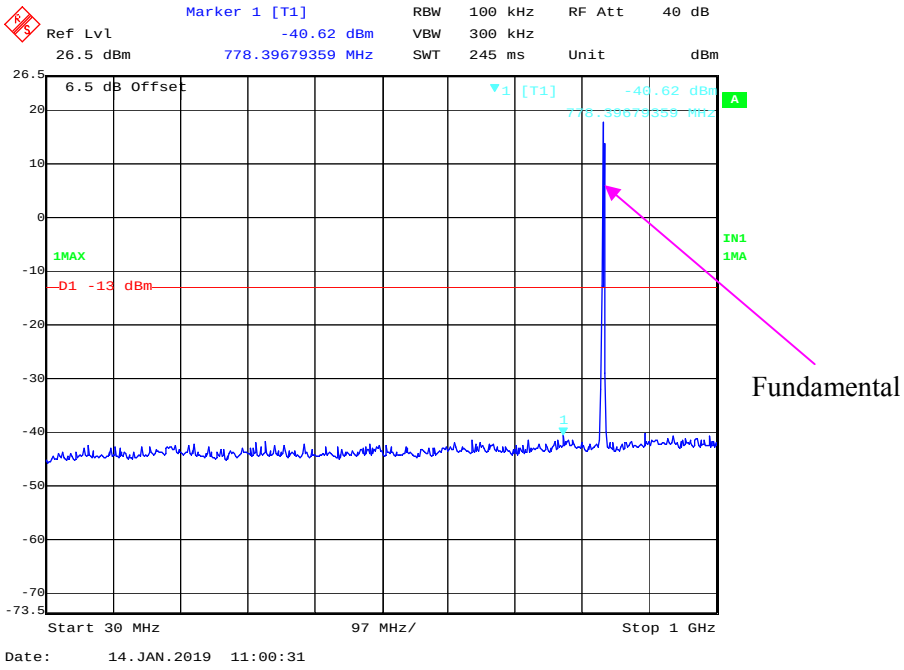


1 GHz – 10 GHz WCDMA (HSPA+) Mode

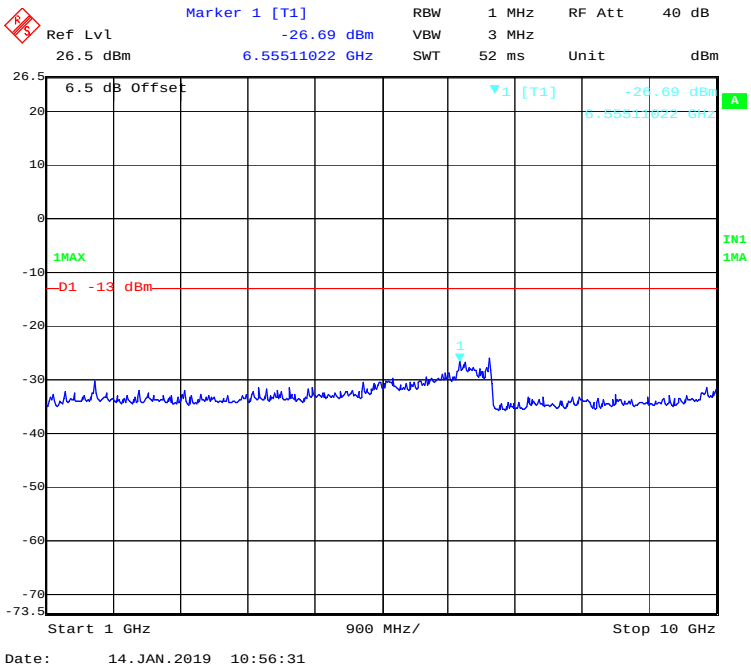


CDMA:

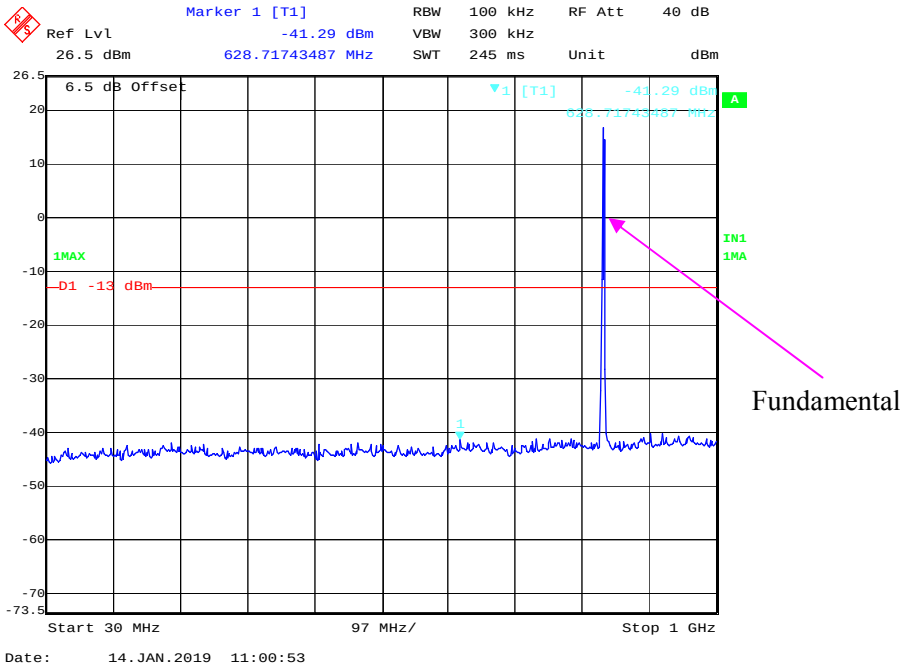
30 MHz – 1GHz CDMA (1xRTT) Mode 1



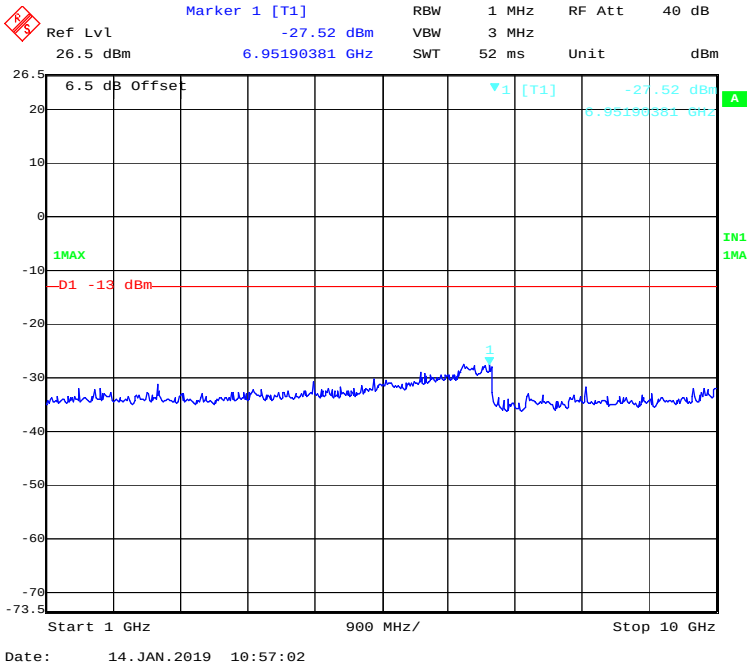
1 GHz – 10 GHz CDMA (1xRTT) Mode 1



30 MHz – 1GHz CDMA (EV-DO) Mode 2

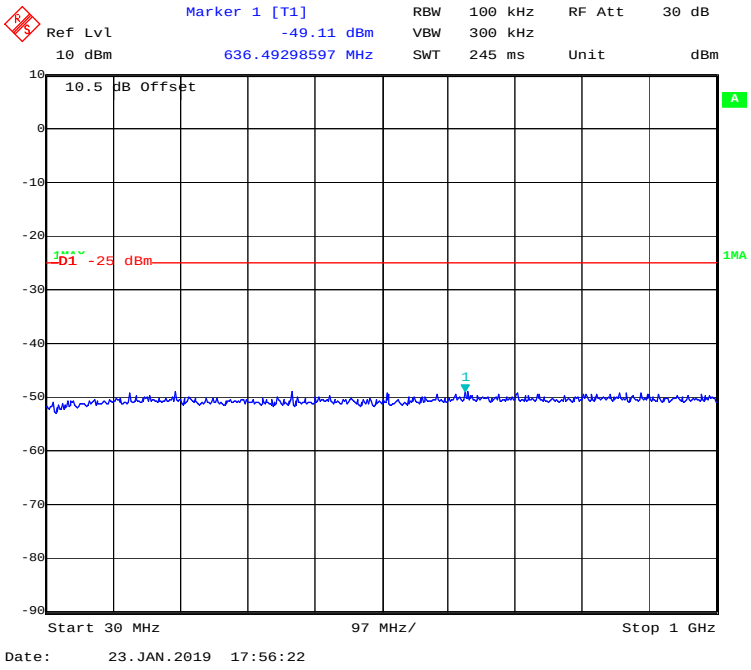


1 GHz – 10 GHz CDMA (EV-DO) Mode 2

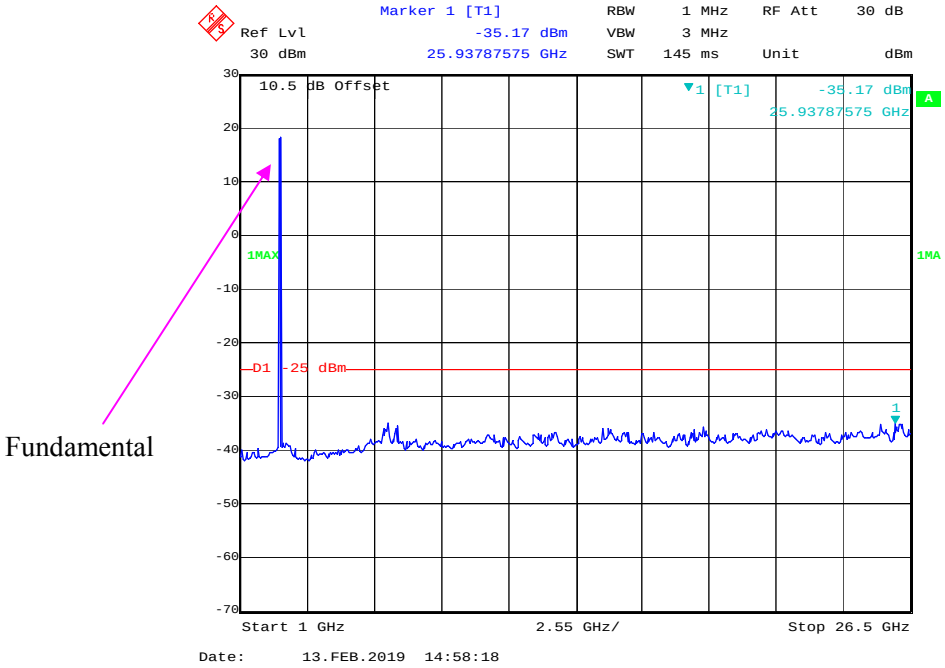


LTE Band 7:

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

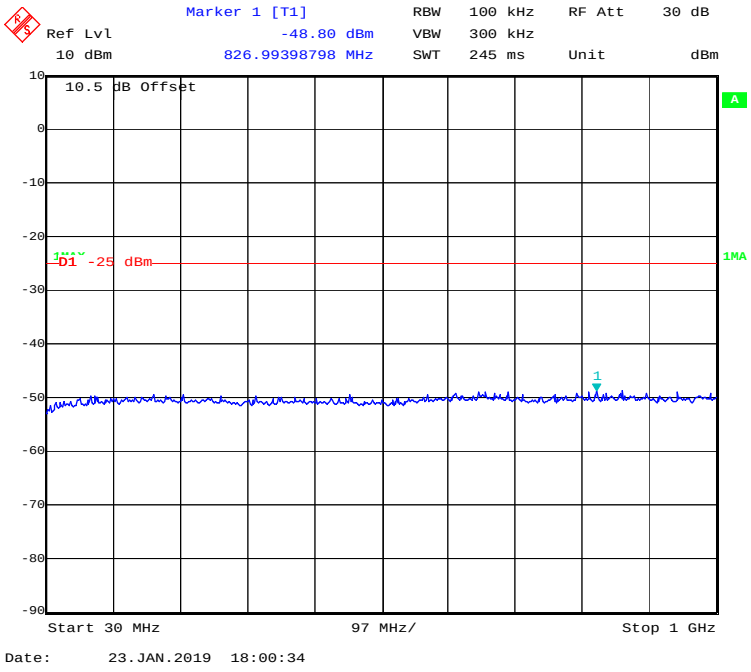


1 GHz – 26.5 GHz (5.0 MHz, Middle Channel)

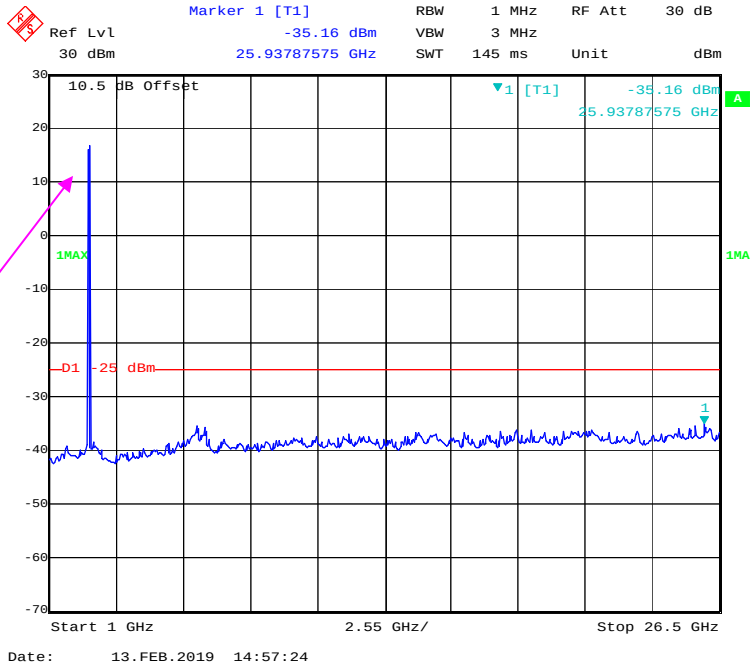


Fundamental

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

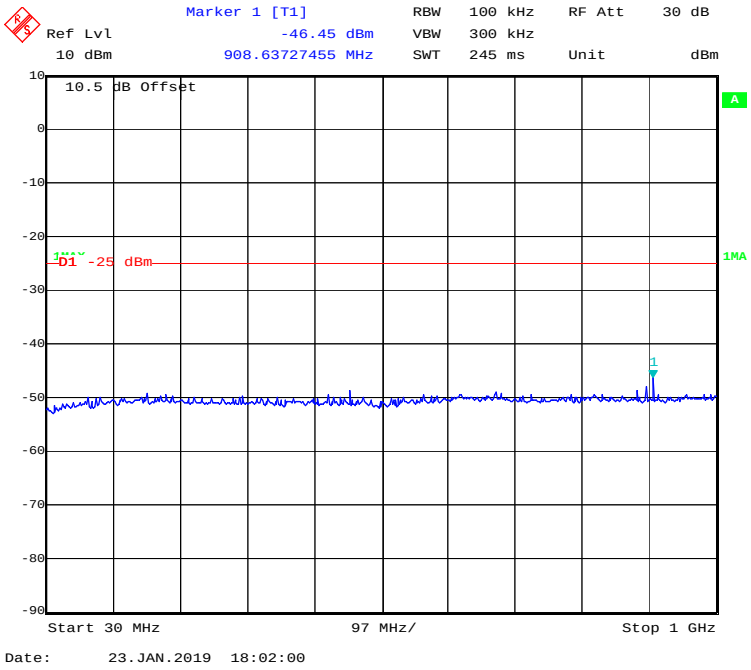


1 GHz – 26.5 GHz (10.0 MHz, Middle Channel)

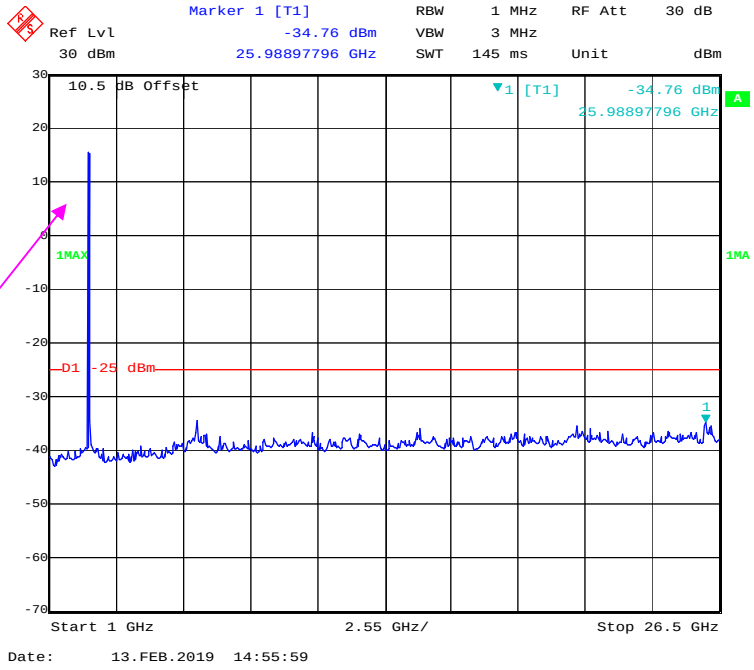


Fundamental

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

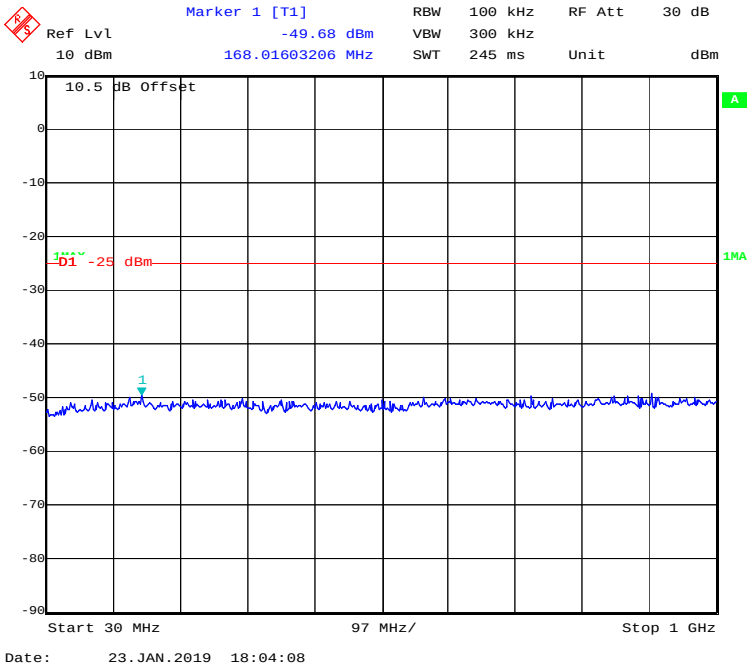


1 GHz – 26.5 GHz (15.0MHz, Middle Channel)

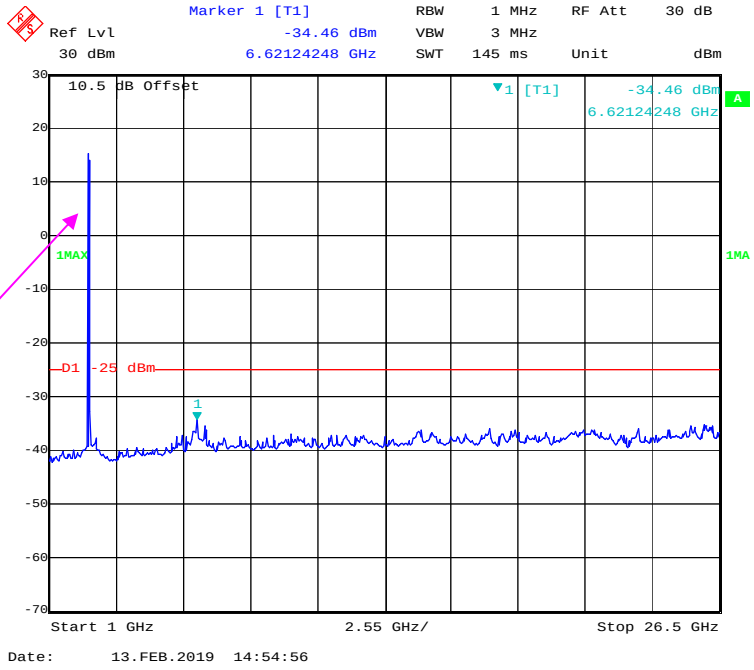


Fundamental

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



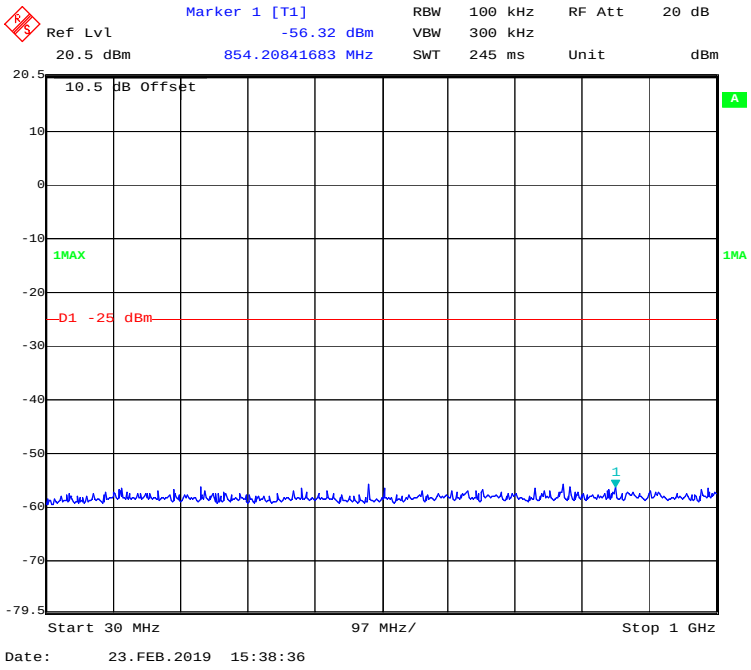
1 GHz – 26.5 GHz (20.0 MHz, Middle Channel)



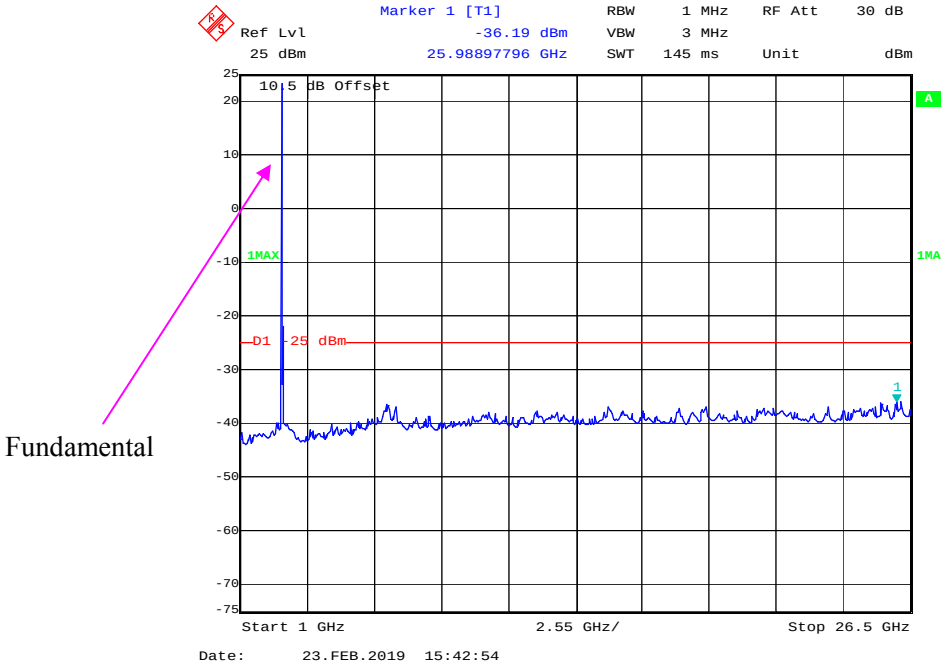
Fundamental

LTE Band 41

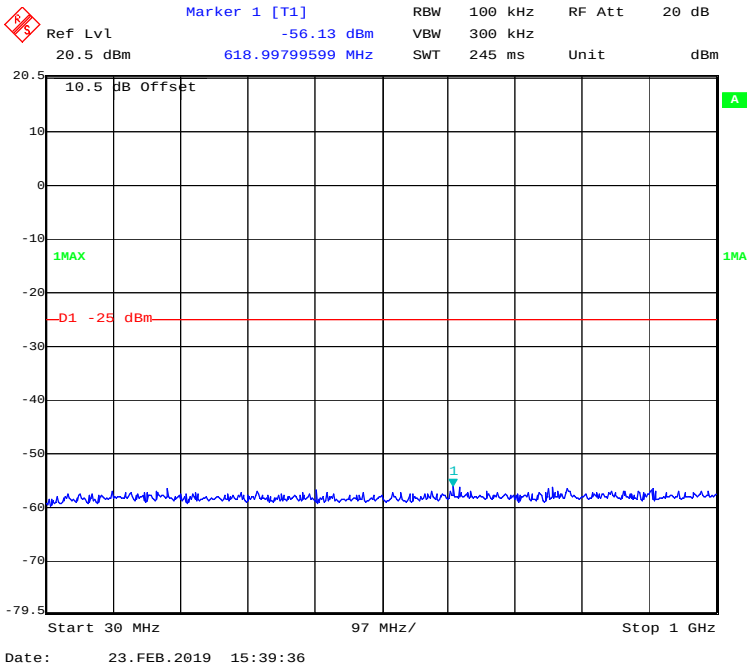
30 MHz - 1 GHz (5.0 MHz, Middle Channel)



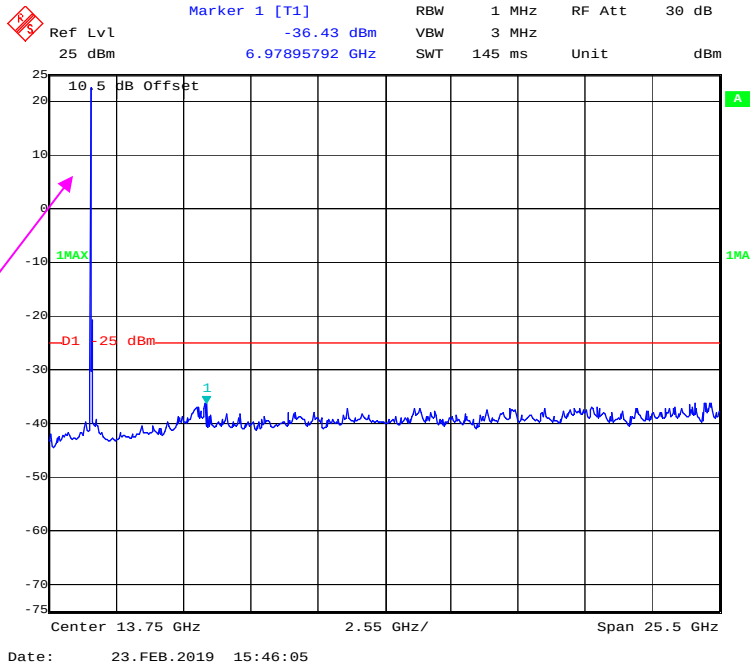
1 GHz – 26.5 GHz (5.0 MHz, Middle Channel)



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

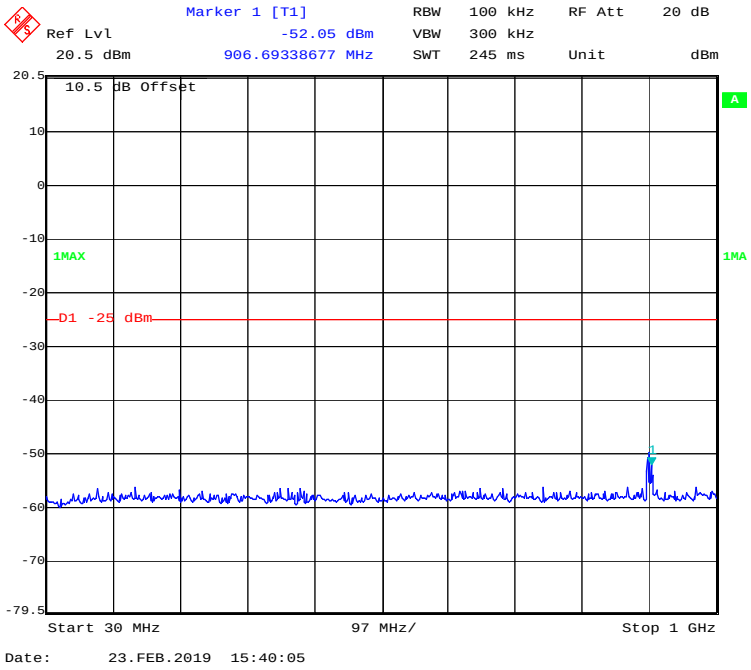


1 GHz – 26.5 GHz (10.0 MHz, Middle Channel)

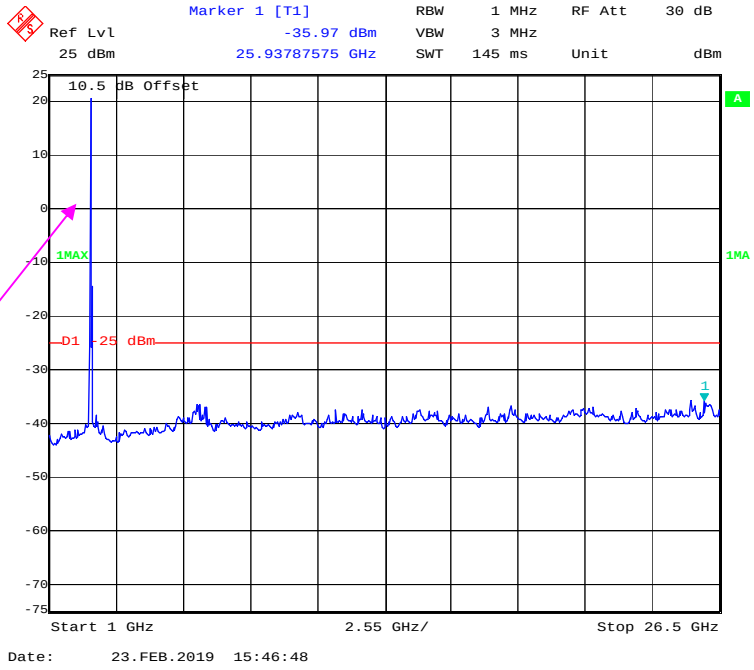


Fundamental

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

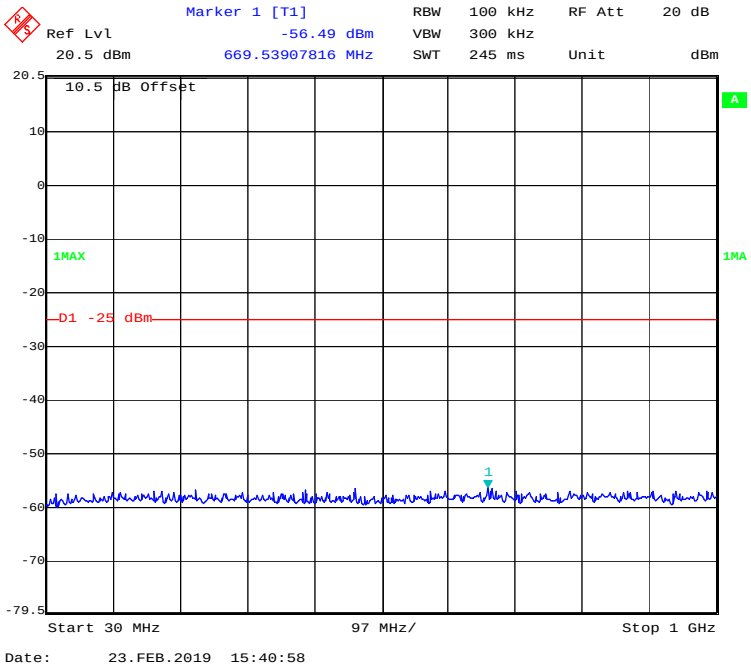


1 GHz – 26.5 GHz (15.0MHz, Middle Channel)

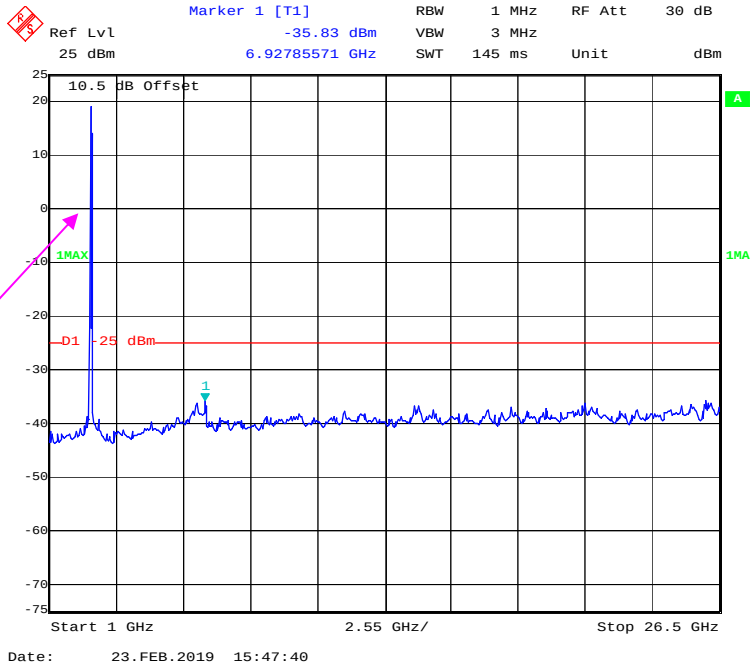


Fundamental

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



1 GHz – 26.5 GHz (20.0 MHz, Middle Channel)



Fundamental

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:	21.2℃~23.2℃
Relative Humidity:	51 %~53 %
ATM Pressure:	101.3kPa~101.7kPa

The testing was performed by Hope Zhang from 2018-12-18 to 2019-01-14.

Test mode: Transmitting (Pre-scan with low, middle and high channels, 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										
90.36	63.73	195	210	H	-43.49	0.32	-6.92	-50.73	-13	37.73
90.36	61.96	56	158	V	-40.72	0.32	-6.92	-47.96	-13	34.96
1673.2	49.97	78	125	H	-53.42	0.84	8.48	-45.78	-13	32.78
1673.2	56.73	96	139	V	-47.16	0.84	8.48	-39.52	-13	26.52
2509.8	42.41	86	114	H	-58.53	0.89	10.09	-49.33	-13	36.33
2509.8	49.07	124	175	V	-51.88	0.89	10.09	-42.68	-13	29.68

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										
136.87	59.81	219	143	H	-45.69	0.36	-6.12	-52.17	-13	39.17
136.87	58.62	91	127	V	-41.44	0.36	-6.12	-47.92	-13	34.92
1673.2	56.54	145	104	H	-41.07	0.83	8.20	-33.70	-13	20.70
1673.2	57.16	264	201	V	-40.99	0.83	8.20	-33.62	-13	20.62
2509.8	48.68	339	127	H	-46.91	0.89	10.10	-37.70	-13	24.70
2509.8	49.16	39	156	V	-46.75	0.89	10.10	-37.54	-13	24.54

CDMA850 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)			
CDMA Mode, Middle channel										
90.22	60.12	87	160	H	-47.10	0.32	-6.92	-54.34	-13	41.34
90.22	61.21	216	173	V	-41.47	0.32	-6.92	-48.71	-13	35.71
1673.04	50.24	84	111	H	-53.15	0.84	8.48	-45.51	-13	32.51
1673.04	53.26	144	168	V	-50.63	0.84	8.48	-42.99	-13	29.99
2509.56	46.59	315	126	H	-54.35	0.89	10.09	-45.15	-13	32.15
2509.56	45.99	282	114	V	-54.96	0.89	10.09	-45.76	-13	32.76

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										
90.42	62.62	55	145	H	-44.60	0.32	-6.92	-51.84	-13	38.84
90.42	61.29	302	156	V	-41.39	0.32	-6.92	-48.63	-13	35.63
3760	43.84	225	189	H	-52.87	0.95	9.74	-44.08	-13	31.08
3760	47.11	110	200	V	-51.03	0.95	9.74	-42.24	-13	29.24
5640	41.77	137	155	H	-52.16	1.15	10.74	-42.57	-13	29.57
5640	44.17	159	187	V	-49.79	1.15	10.74	-40.20	-13	27.20

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										
136.87	56.32	118	156	H	-49.18	0.36	-6.12	-55.66	-13	42.66
136.87	57.82	356	141	V	-42.24	0.36	-6.12	-48.72	-13	35.72
3760	47.61	245	207	H	-50.06	0.93	9.90	-41.09	-13	28.09
3760	48.35	216	162	V	-49.79	0.93	9.90	-40.82	-13	27.82
5640	52.37	67	213	H	-41.62	1.14	10.30	-32.46	-13	19.46
5640	53.52	304	137	V	-40.51	1.14	10.30	-31.35	-13	18.35

Note:
1) Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)
2) Margin (dB) = Limit (dBm) - Absolute Level (dBm)

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

30 MHz ~ 20 GHz:

LTE Band 7:

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 5.0MHz Bandwidth Middle Channel										
716.52	59.29	246	232	H	-41.36	0.62	-1.67	-43.65	-25	18.65
716.52	56.57	137	120	V	-42.10	0.62	-1.67	-44.39	-25	19.39
5093.60	43.66	344	180	H	-51.93	1.08	10.30	-42.71	-25	17.71
5093.60	44.15	151	228	V	-51.76	1.08	10.30	-42.54	-25	17.54
7785.00	42.78	281	153	H	-46.72	1.85	10.00	-38.57	-25	13.57
7785.00	43.06	151	186	V	-46.54	1.85	10.00	-38.39	-25	13.39
16-QAM 5.0MHz Bandwidth Middle Channel										
716.52	57.63	63	233	H	-43.02	0.62	-1.67	-45.31	-25	20.31
716.52	56.17	327	239	V	-42.50	0.62	-1.67	-44.79	-25	19.79
5093.60	49.99	156	207	H	-45.60	1.08	10.30	-36.38	-25	11.38
5093.60	48.67	80	236	V	-47.24	1.08	10.30	-38.02	-25	13.02
7785.00	44.74	116	213	H	-44.76	1.85	10.00	-36.61	-25	11.61
7785.00	44.11	85	213	V	-45.49	1.85	10.00	-37.34	-25	12.34

LTE Band 41:

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										
716.52	60.37	246	232	H	-40.28	0.62	-1.67	-45.31	-25	20.31
716.52	61.29	137	120	V	-37.38	0.62	-1.67	-44.79	-25	19.79
5190.00	45.73	344	180	H	-49.16	1.10	10.30	-39.96	-25	14.96
5190.00	46.52	151	228	V	-48.67	1.10	10.30	-39.47	-25	14.47
7785.00	43.87	281	153	H	-45.63	1.81	10.04	-37.40	-25	12.40
7785.00	42.15	151	186	V	-47.45	1.85	10.00	-39.30	-25	14.30
16-QAM 5MHz Bandwidth Middle Channel										
716.52	62.03	63	233	H	-38.62	0.62	-1.67	-45.31	-25	20.31
716.52	61.72	327	239	V	-36.95	0.62	-1.67	-44.79	-25	19.79
5190.00	49.99	156	207	H	-44.90	1.10	10.30	-35.70	-25	10.70
5190.00	48.67	80	236	V	-46.52	1.10	10.30	-37.32	-25	12.32
7785.00	44.74	116	213	H	-44.76	1.85	10.00	-36.61	-25	11.61
7785.00	43.12	85	213	V	-46.48	1.85	10.00	-38.33	-25	13.33

Note:
1) Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)
2) Margin (dB) = Limit (dBm) - Absolute Level (dBm)

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.

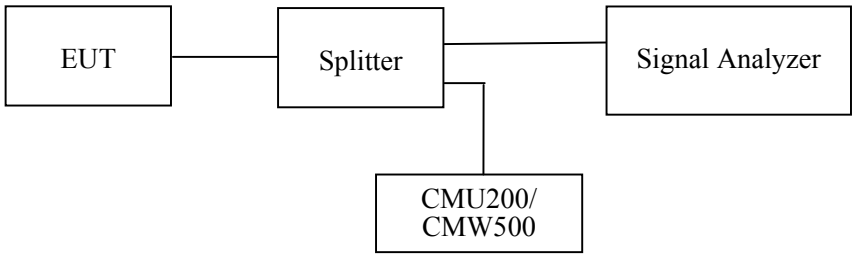
According to FCC §27.53 (h) (m), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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

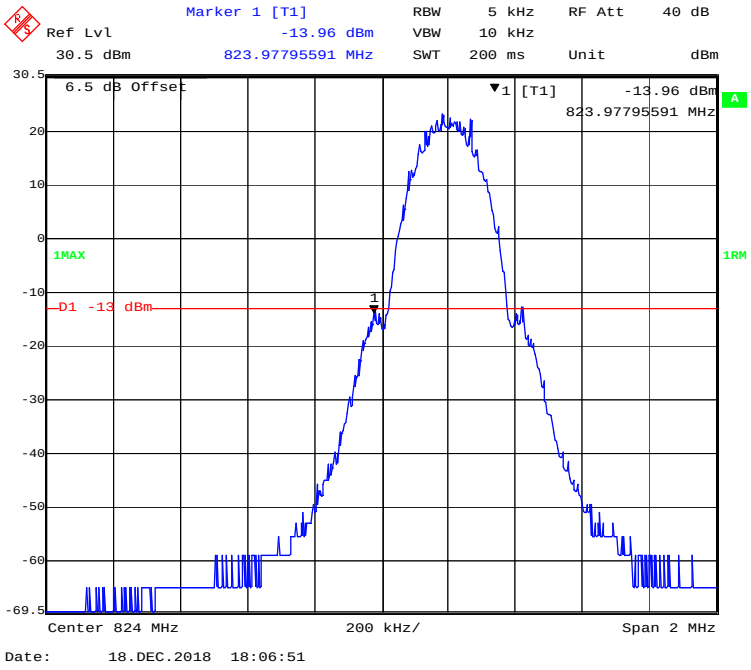
Temperature:	23.2℃-23.5℃
Relative Humidity:	51 %-53%
ATM Pressure:	101.1kPa-101.3kPa

The testing was performed by Hope Zhang from 2018-12-18 to 2019-01-22.

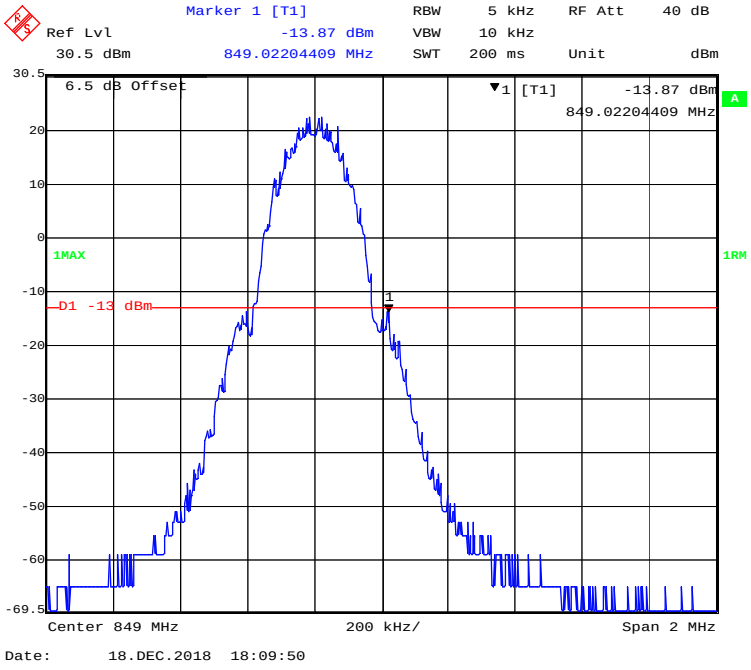
EUT operation mode: Transmitting
Test Result: Compliance.

GSM 850 Band:

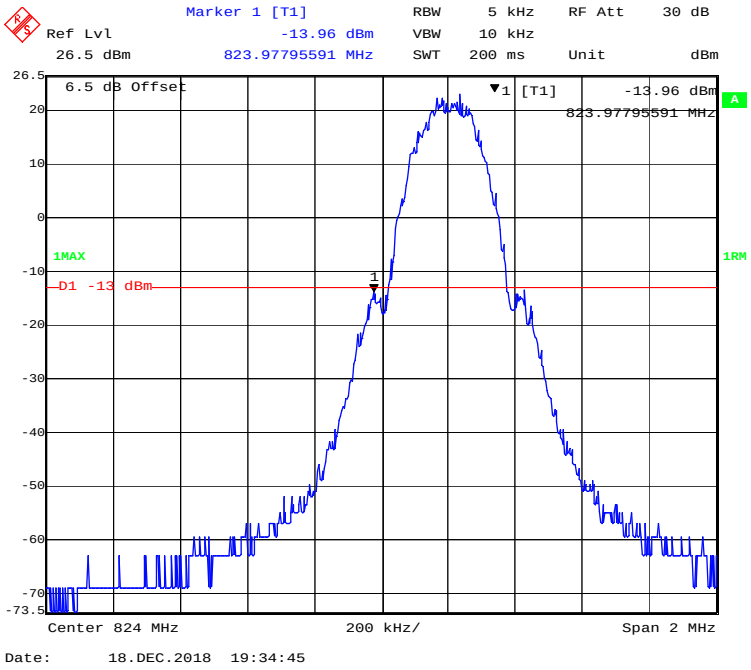
GSM Mode, Left Band Edge



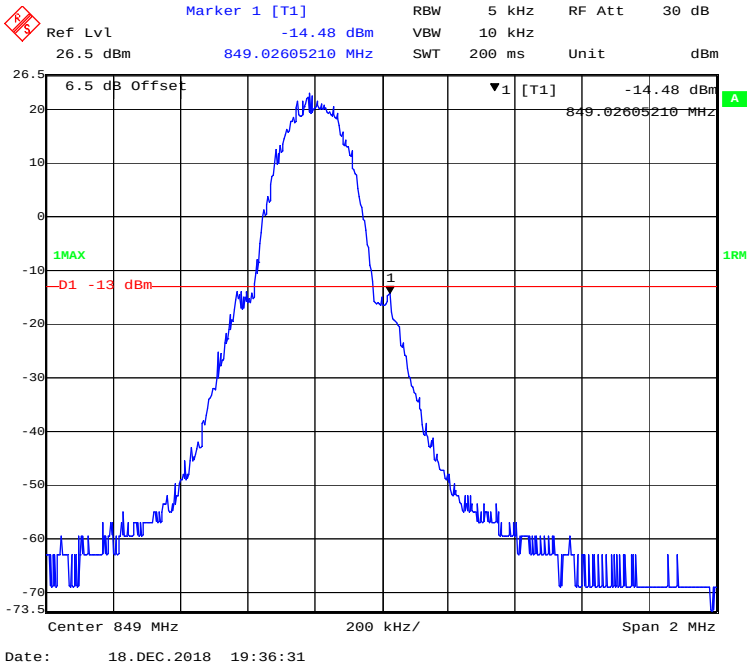
GSM Mode, Right Band Edge



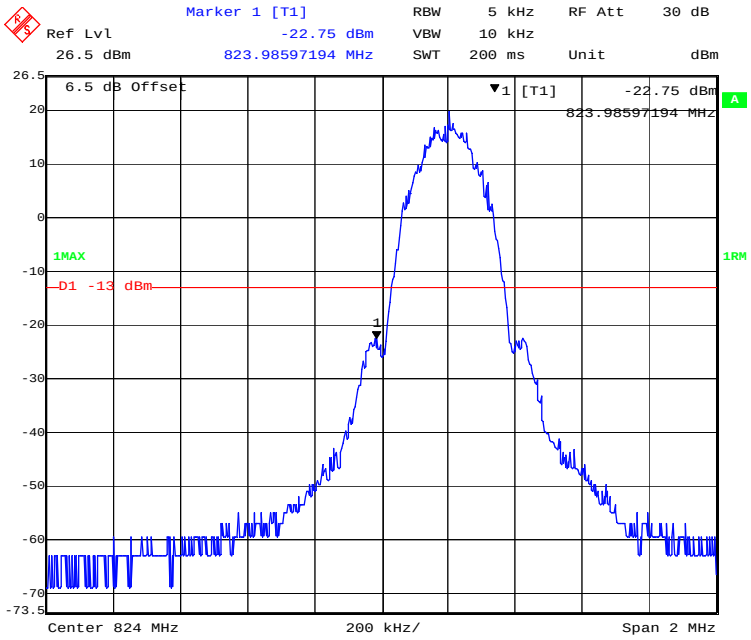
GPRS Mode, Left Band Edge



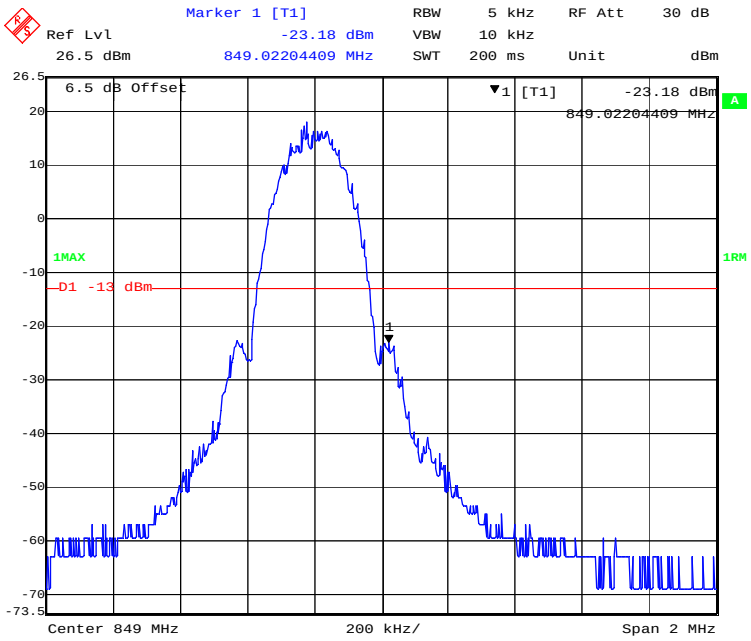
GPRS Mode, Right Band Edge



EGPRS Mode, Left Band Edge

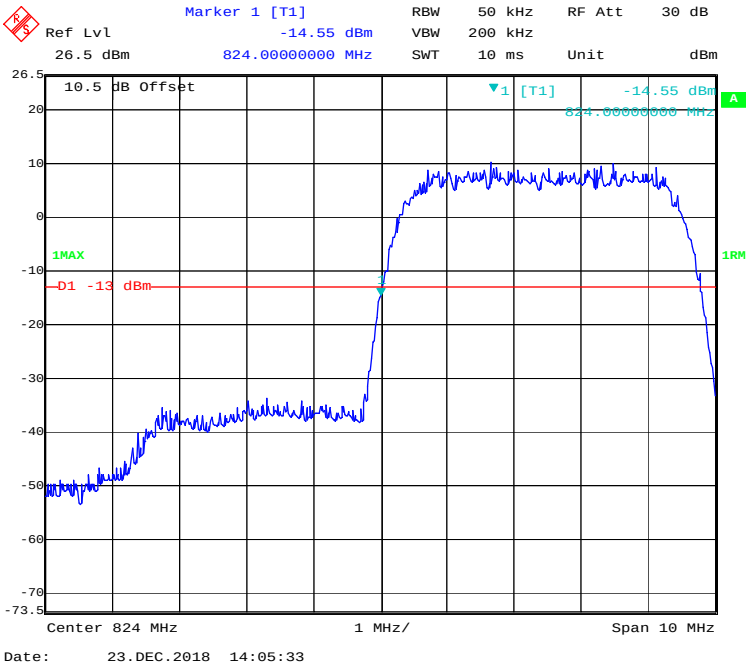


EGPRS Mode, Right Band Edge

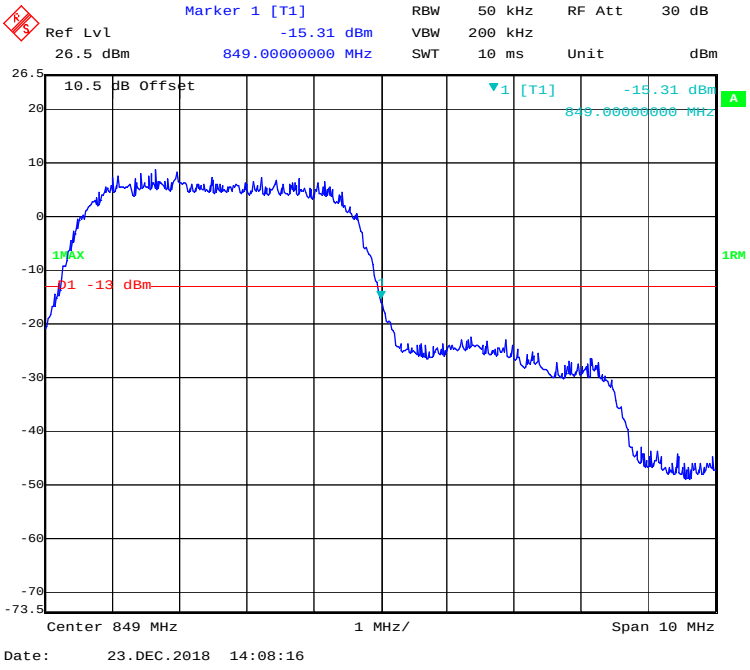


WCDMA Band V

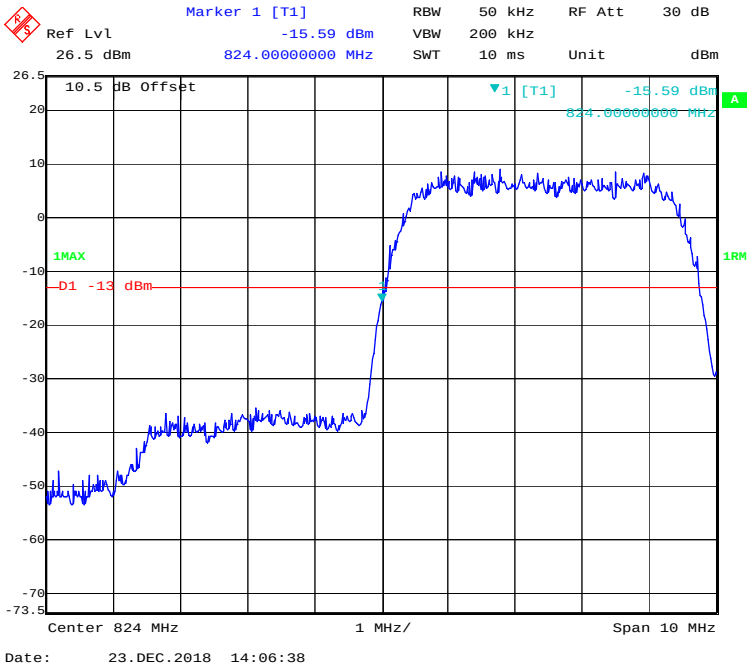
WCDMA (Rel 99) Mode, Left Band Edge



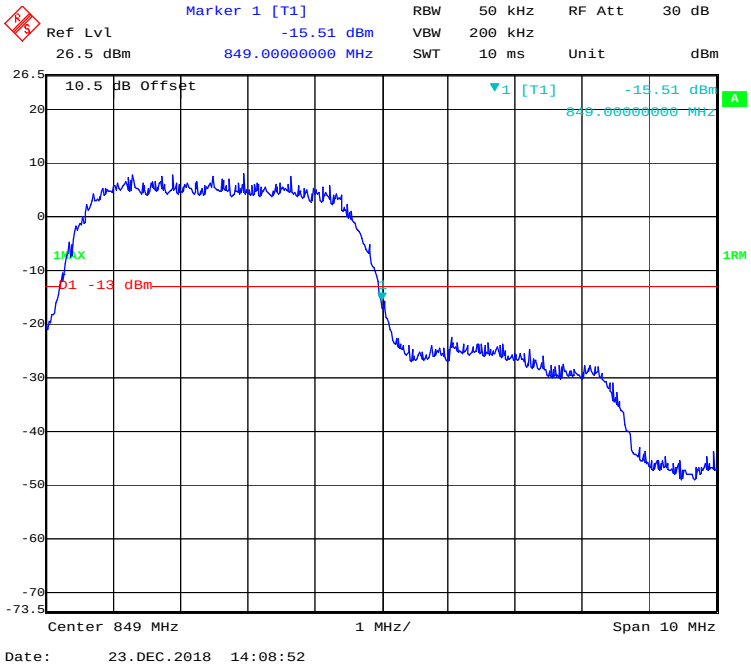
WCDMA (Rel 99) Mode, Right Band Edge



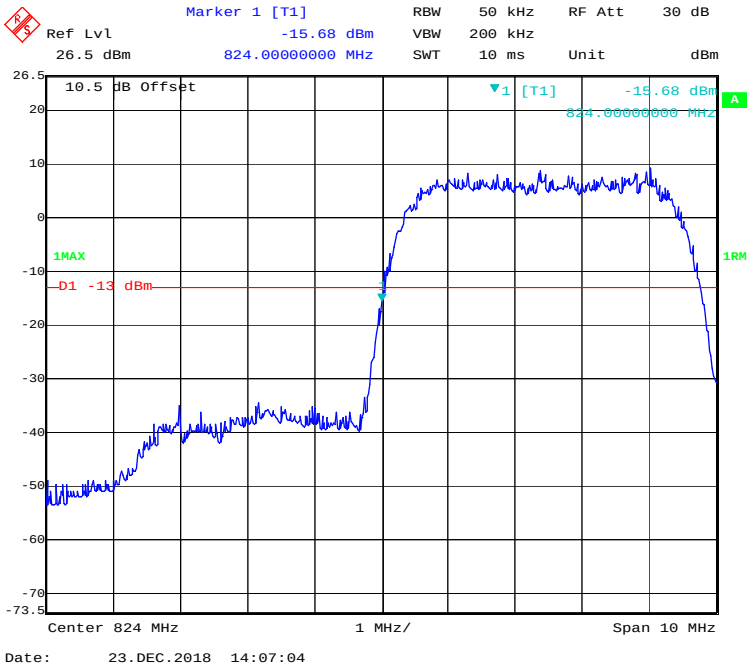
WCDMA (HSDPA) Mode, Left Band Edge



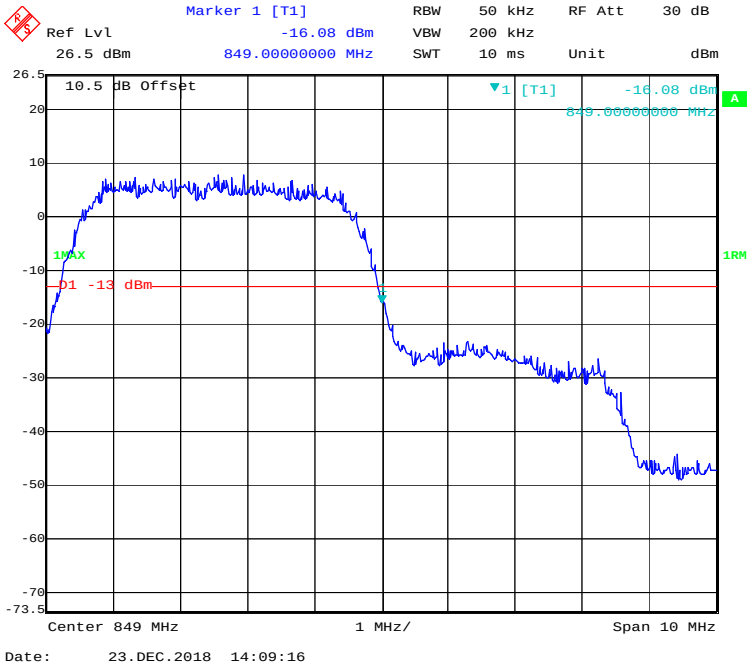
WCDMA (HSDPA) Mode, Right Band Edge



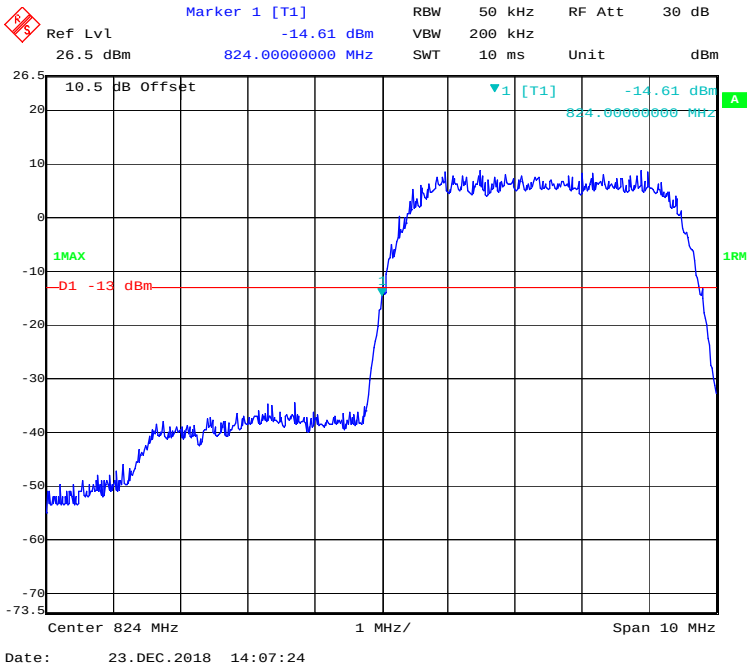
WCDMA (HSUPA) Mode, Left Band Edge



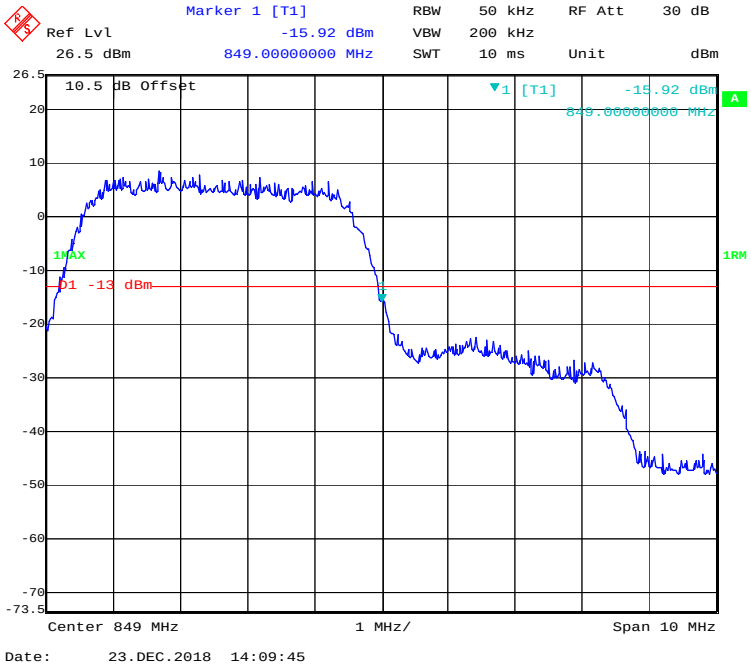
WCDMA (HSUPA) Mode, Right Band Edge



WCDMA (HSPA+) Mode, Left Band Edge

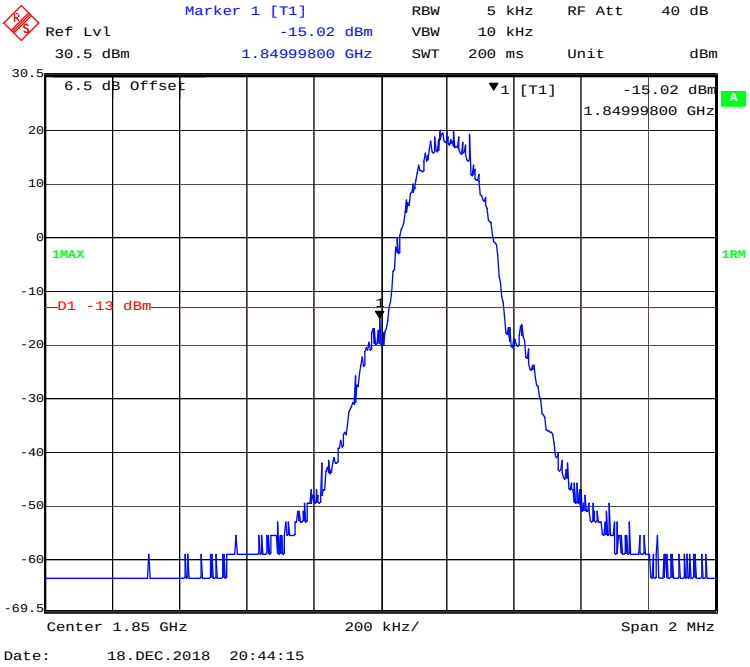


WCDMA (HSPA+) Mode, Right Band Edge

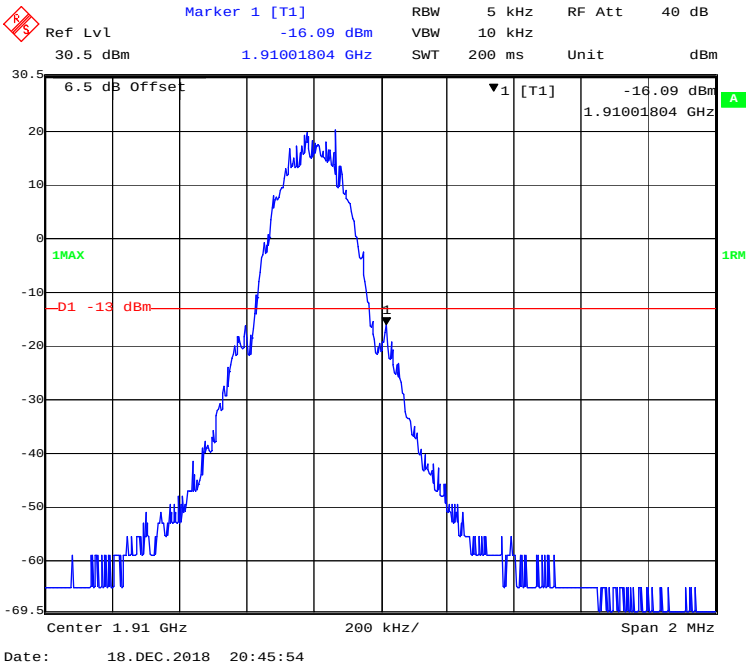


PCS 1900 Band:

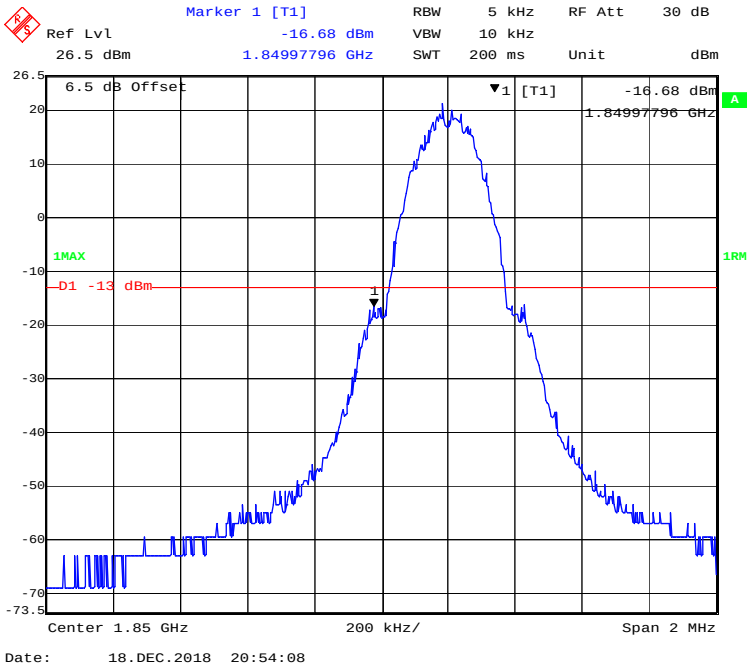
GSM Mode, Left Band Edge



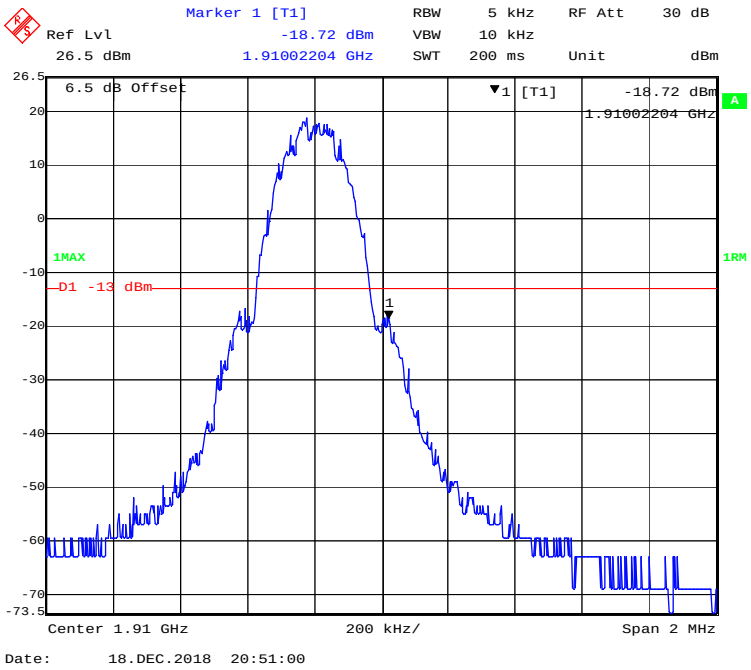
GSM Mode, Right Band Edge



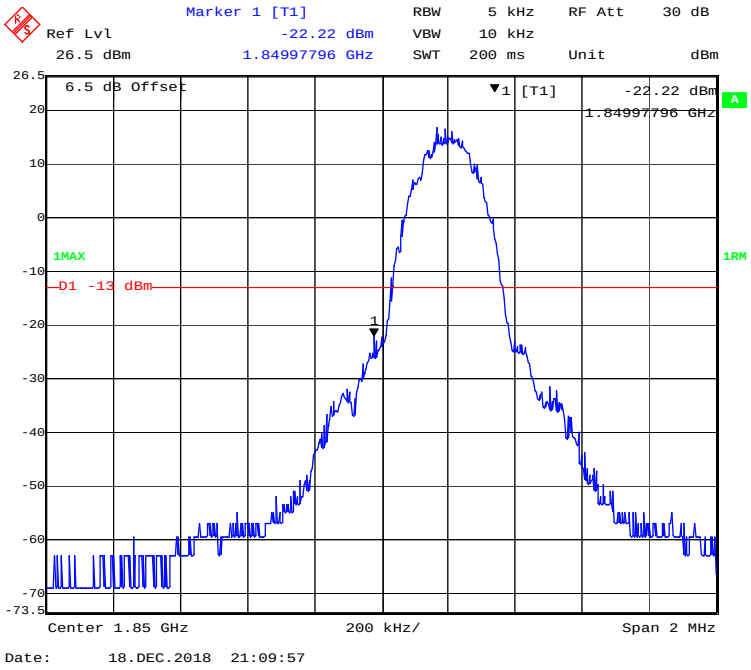
GPRS Mode, Left Band Edge



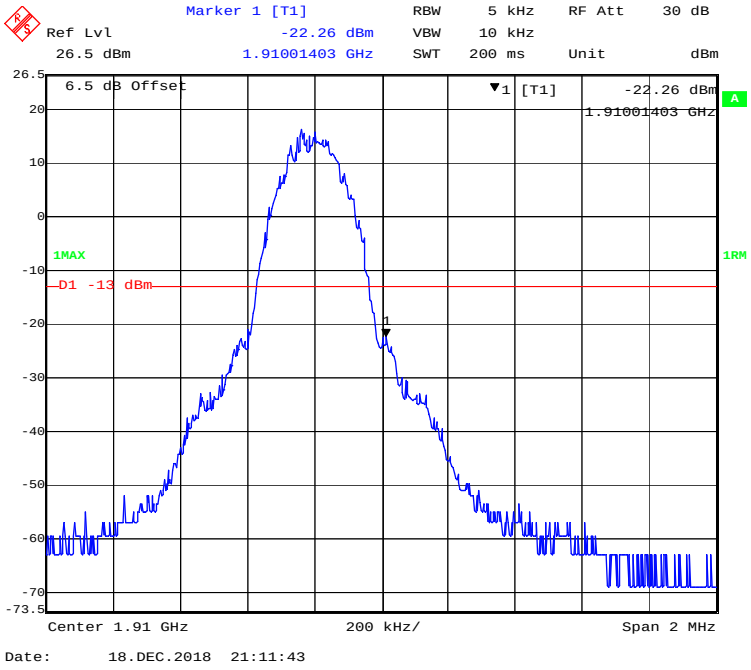
GPRS Mode, Right Band Edge



EGPRS Mode, Left Band Edge

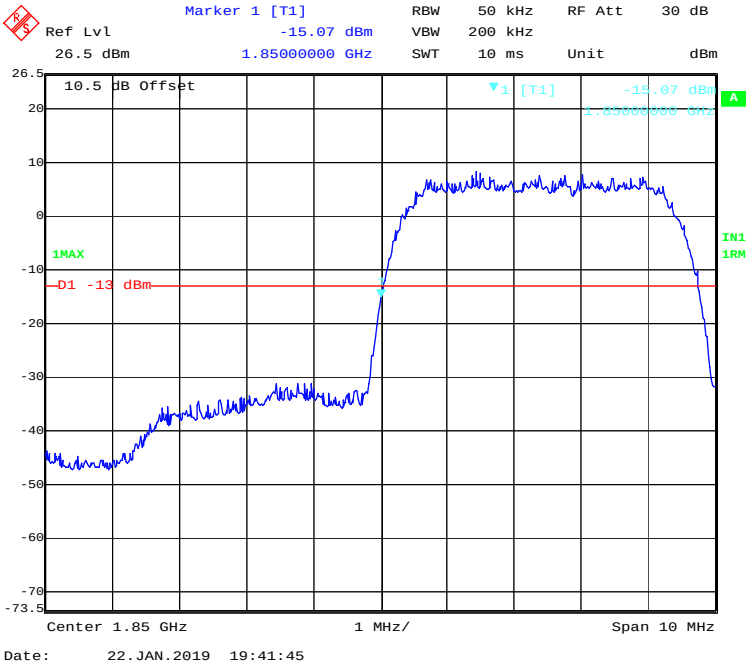


EGPRS Mode, Right Band Edge

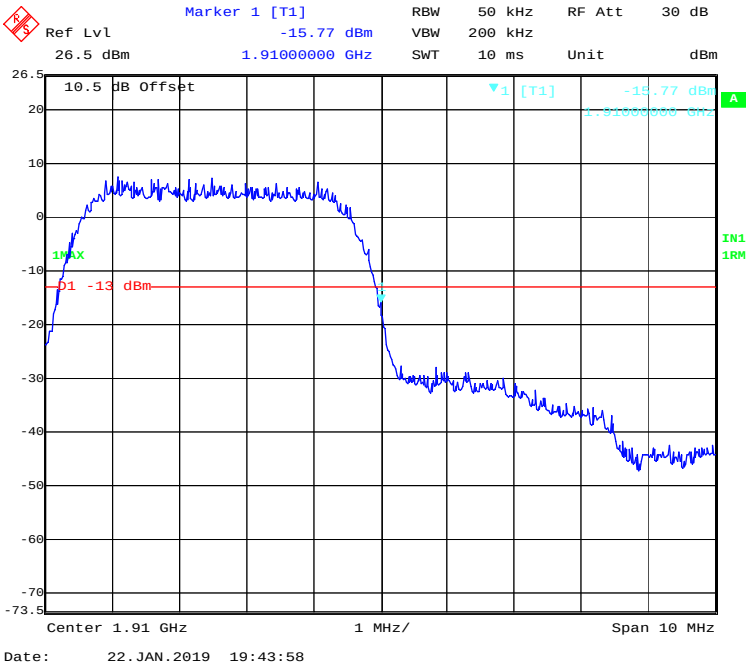


WCDMA Band II

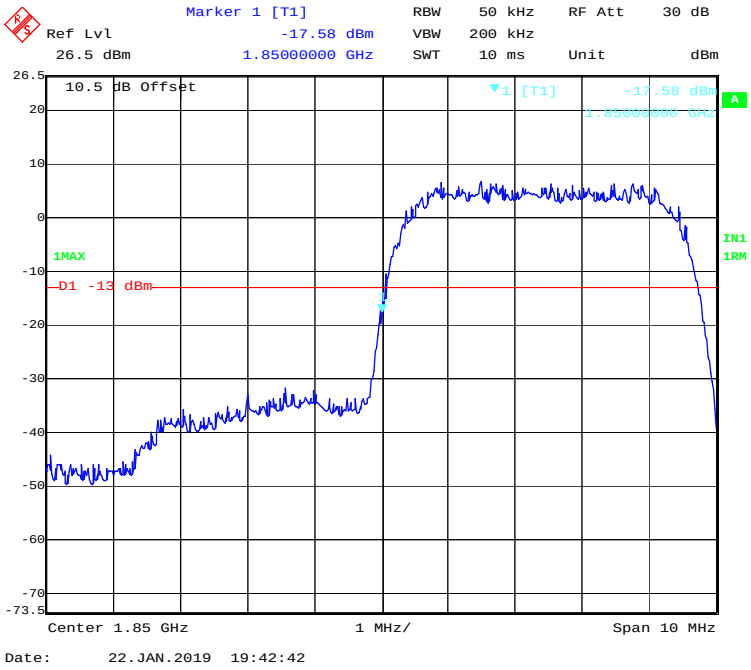
WCDMA (Rel99) Mode, Left Band Edge



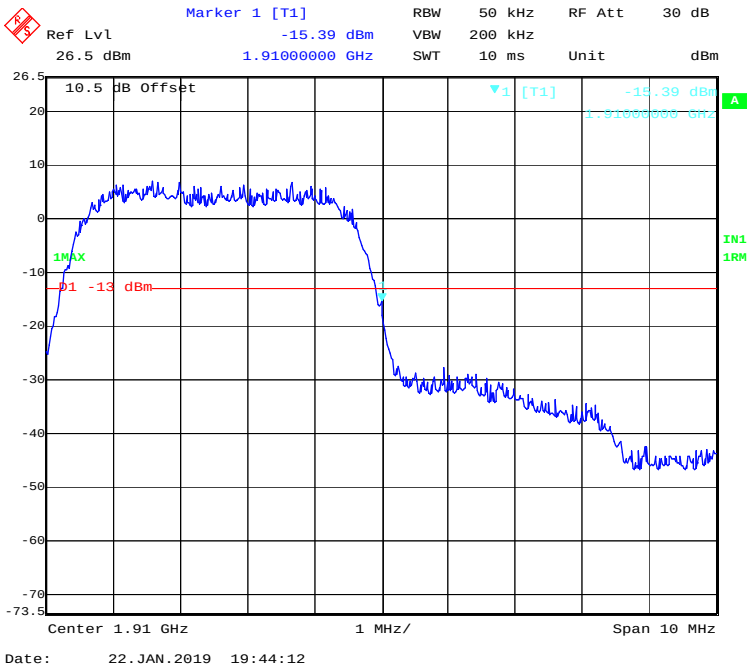
WCDMA (Rel99) Mode, Right Band Edge



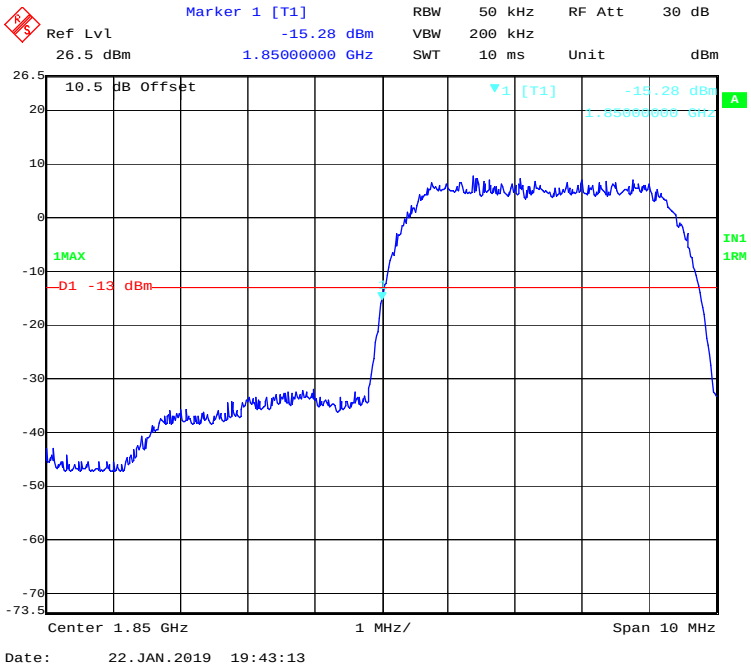
WCDMA (HSDPA) Mode, Left Band Edge



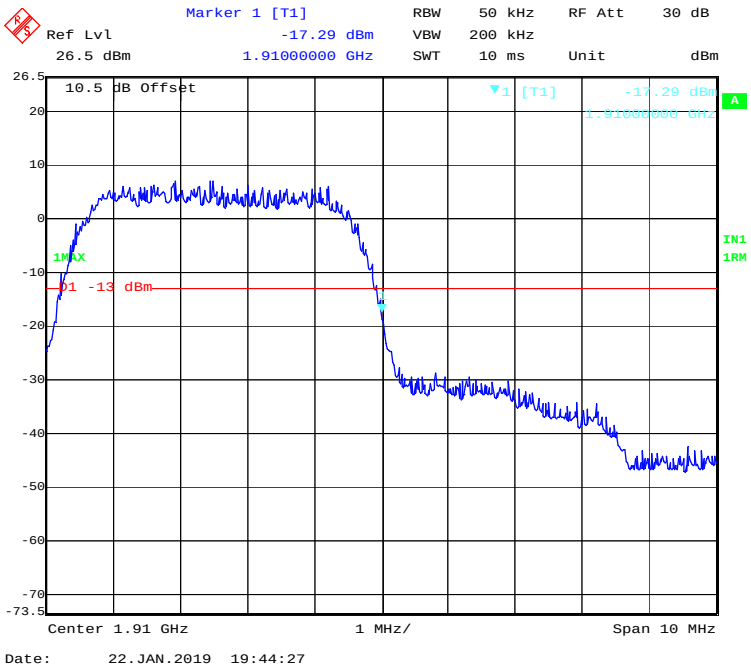
WCDMA (HSDPA) Mode, Right Band Edge



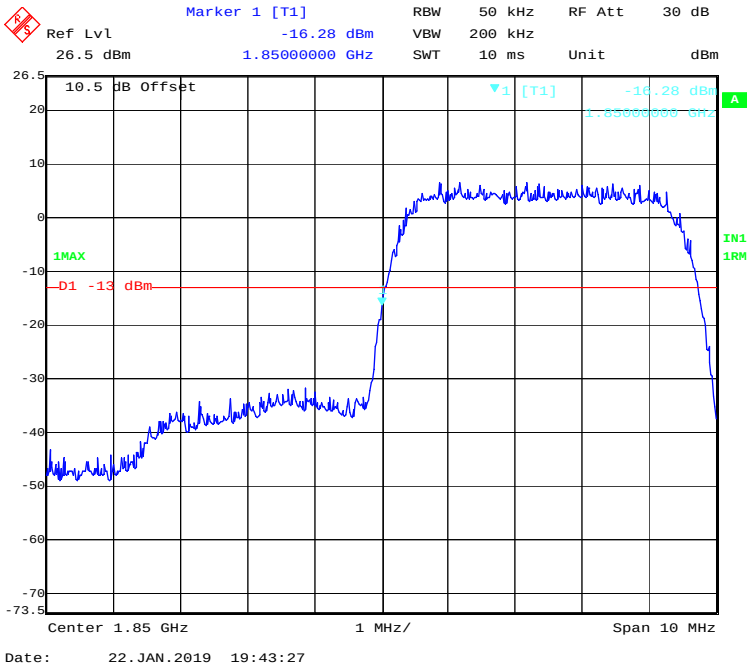
WCDMA (HSUPA) Mode, Left Band Edge



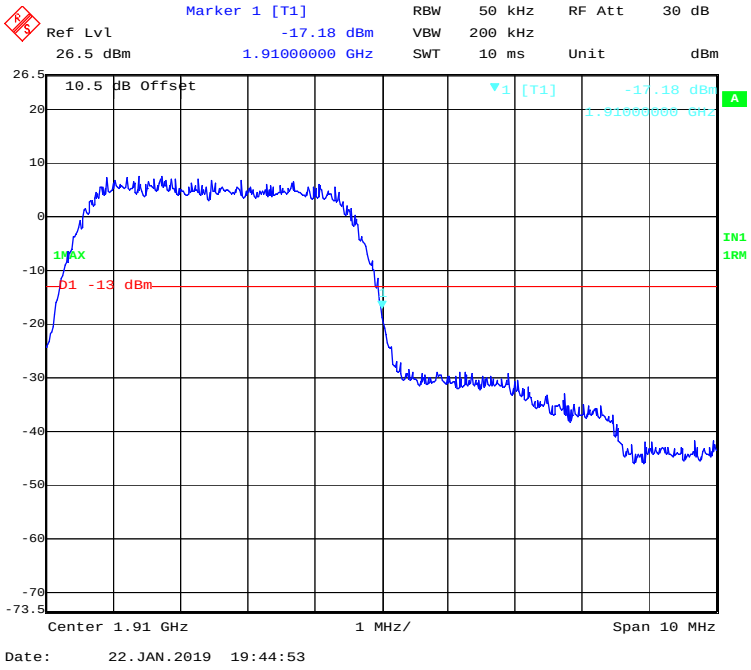
WCDMA (HSUPA) Mode, Right Band Edge



WCDMA (HSPA+) Mode, Left Band Edge

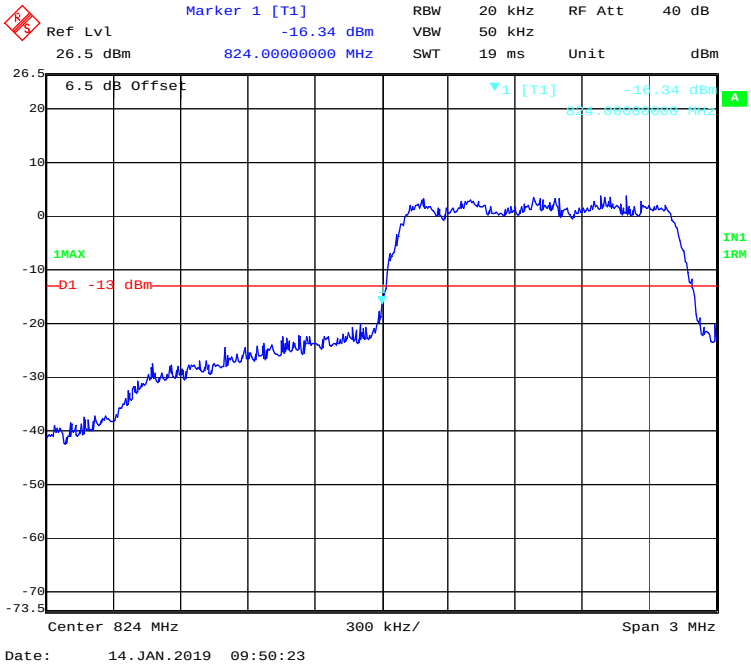


WCDMA (HSPA+) Mode, Right Band Edge



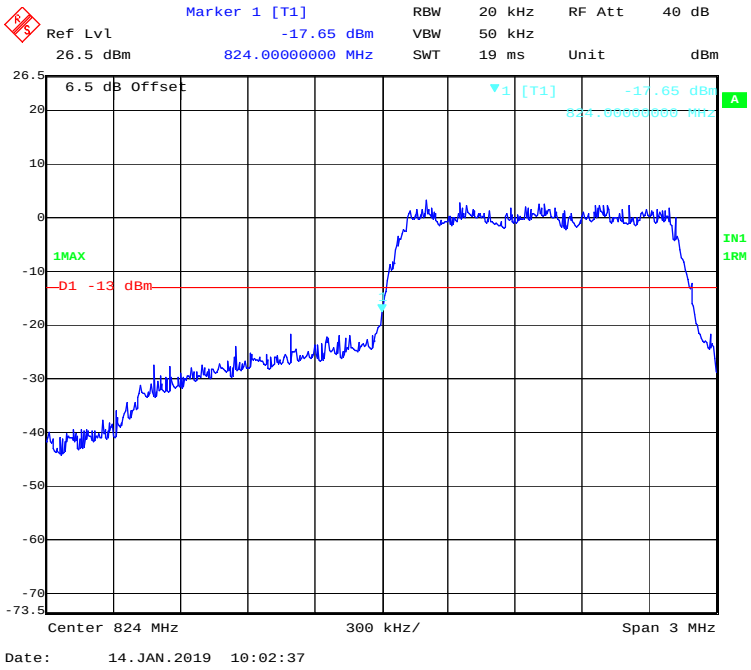
CDMA Band

CDMA Mode(1xRTT), Left Band Edge

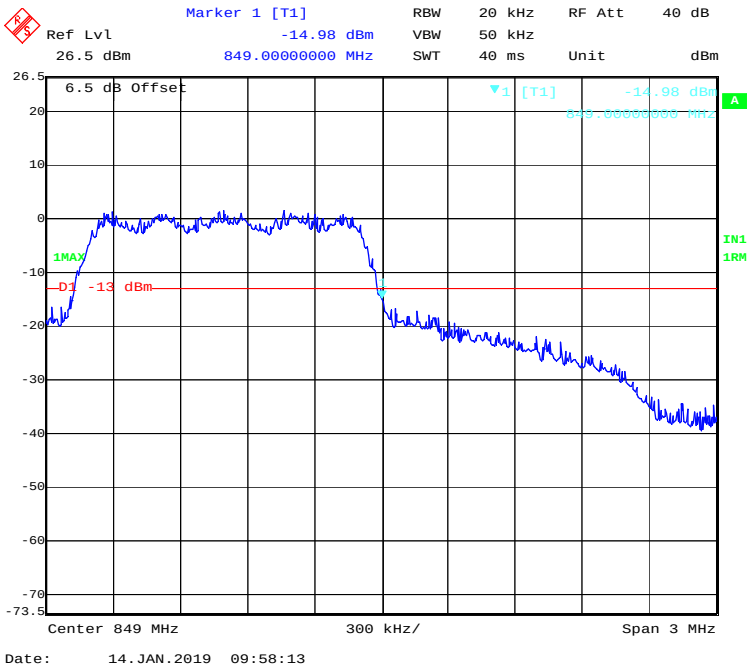


CDMA Mode(1xRTT), Right Band Edge

CDMA Mode(EV-DO), Left Band Edge

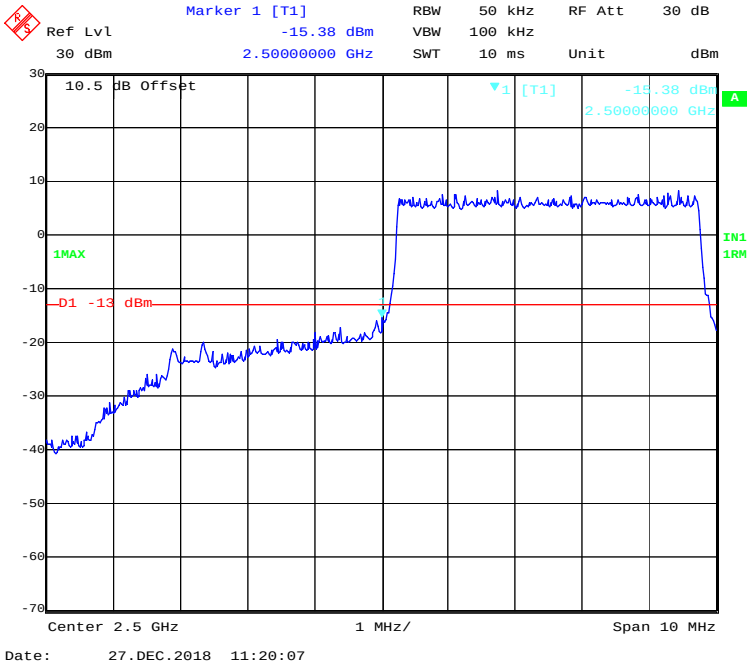


CDMA Mode(EV-DO), Right Band Edge

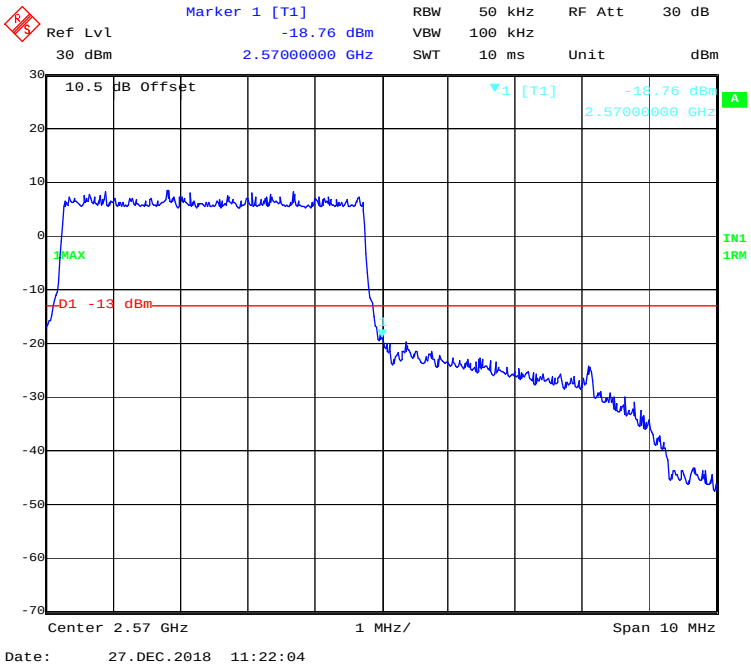


LTE Band 7:

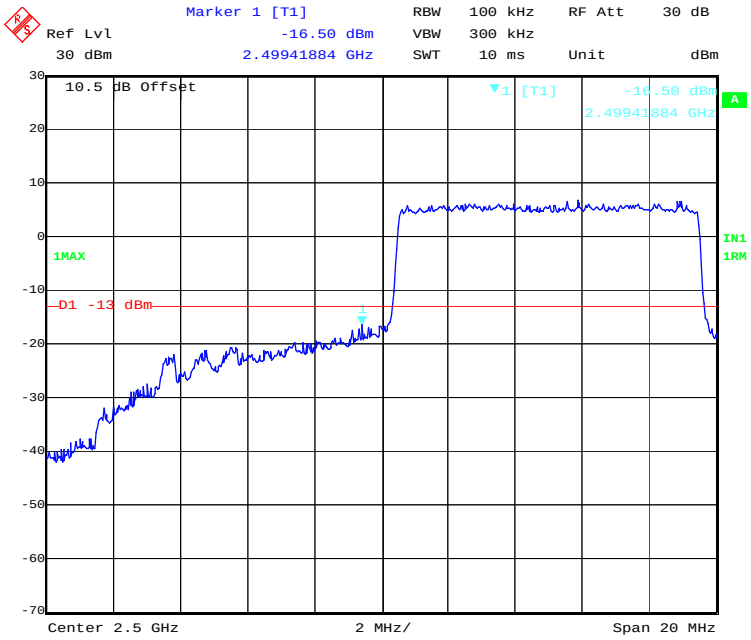
QPSK (5.0 MHz, FULL RB) - Left Band Edge



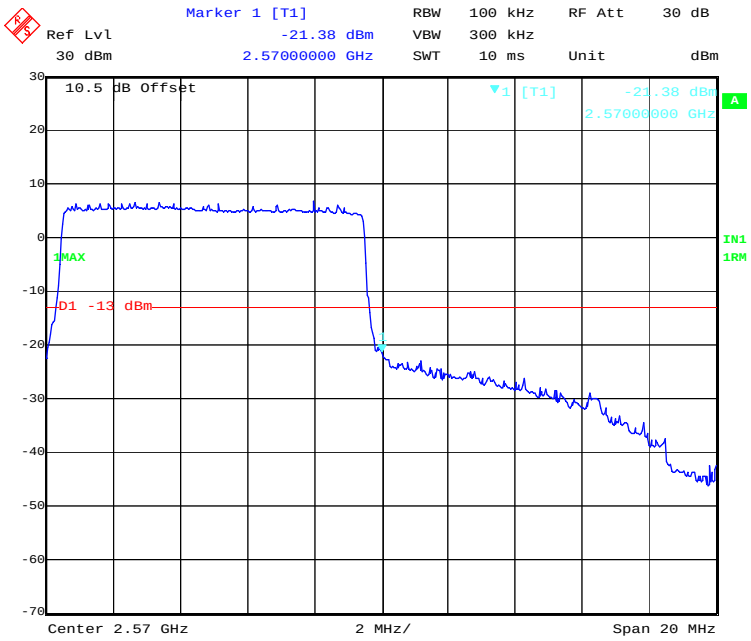
QPSK (5.0 MHz, FULL RB) - Right Band Edge



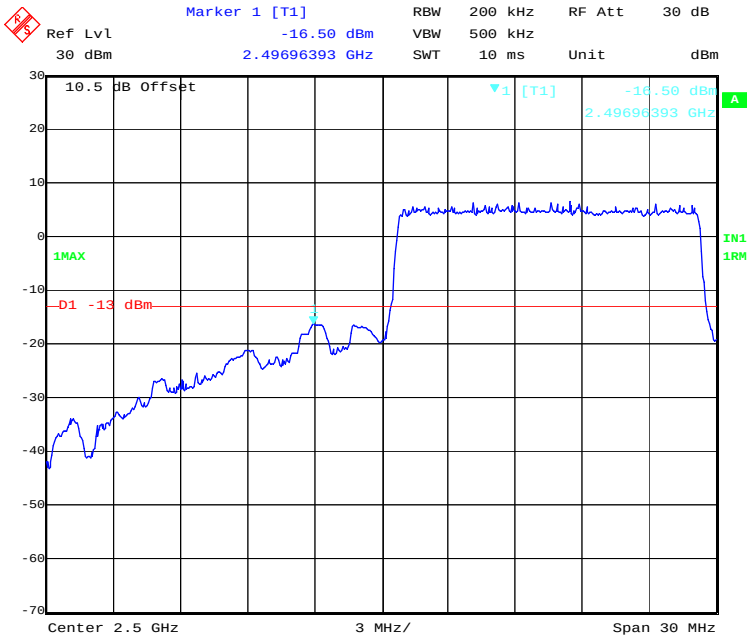
QPSK (10.0 MHz, FULL RB) - Left Band Edge



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

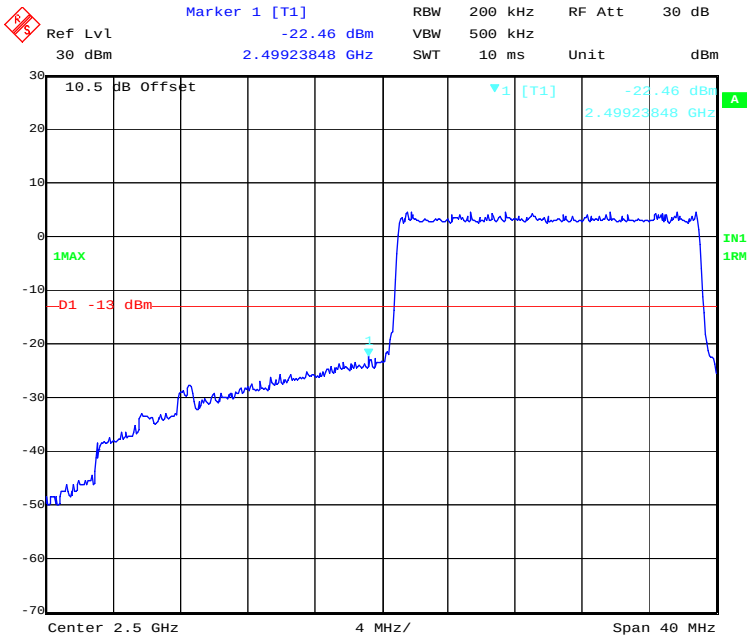


QPSK (15.0 MHz, FULL RB) - Left Band Edge

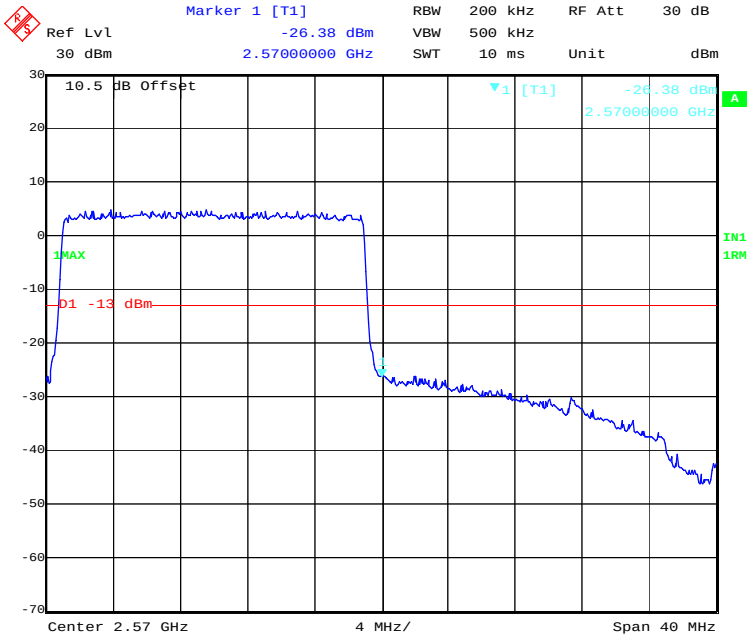


QPSK (15.0 MHz, FULL RB) - Right Band Edge

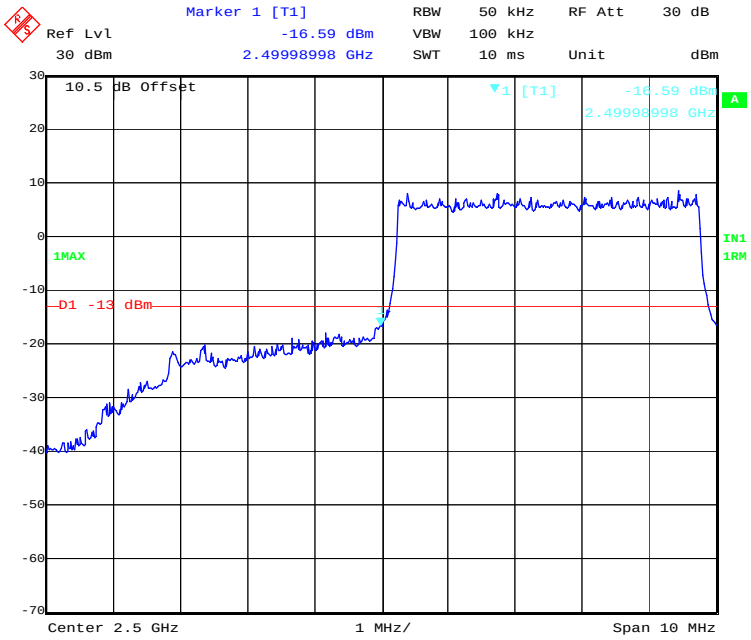
QPSK (20.0 MHz, FULL RB) - Left Band Edge



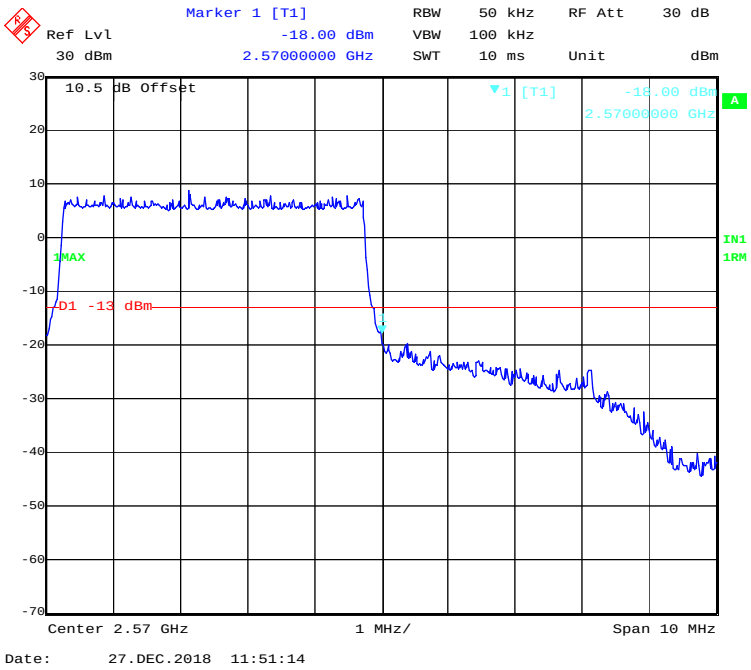
QPSK (20.0 MHz, FULL RB) - Right Band Edge



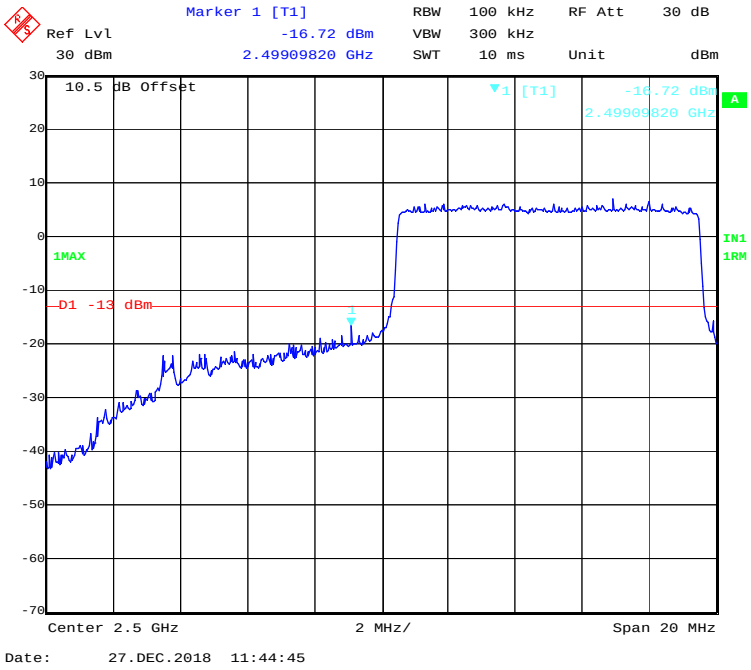
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



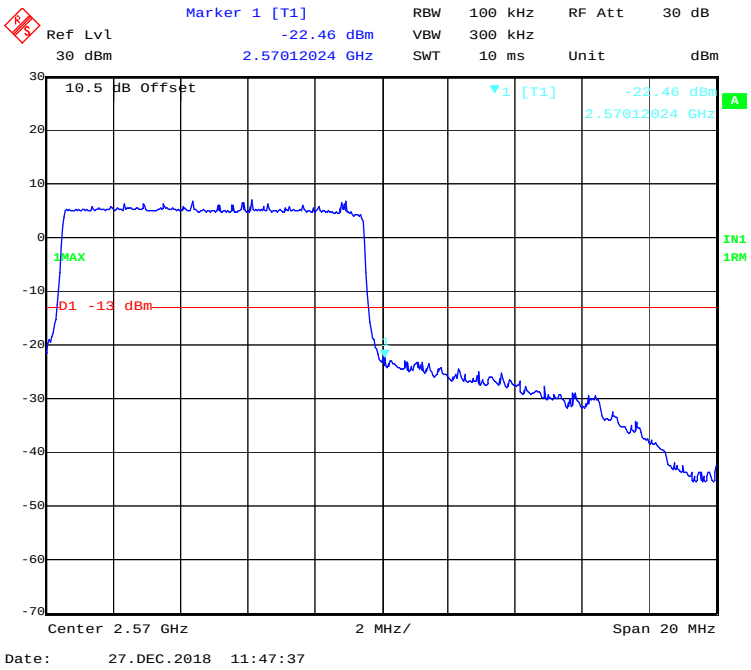
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



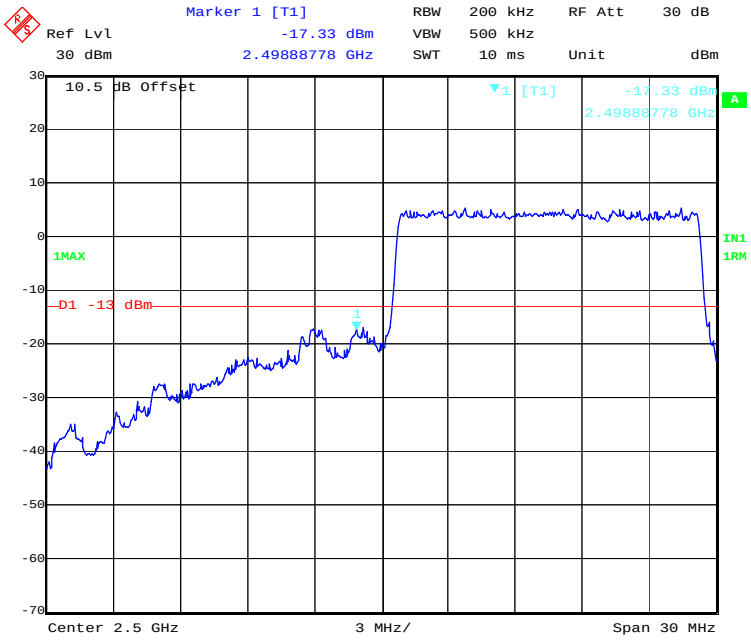
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



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

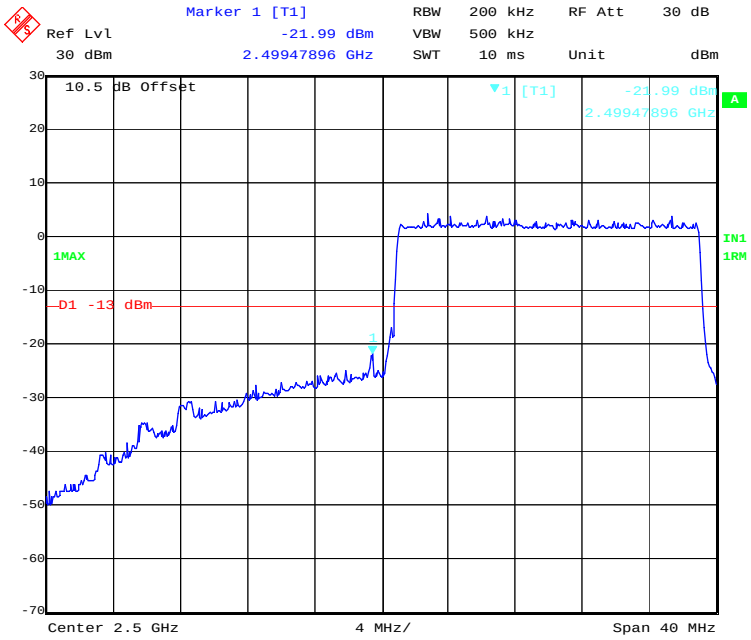


16-QAM (15.0 MHz, FULL RB) - Left Band Edge

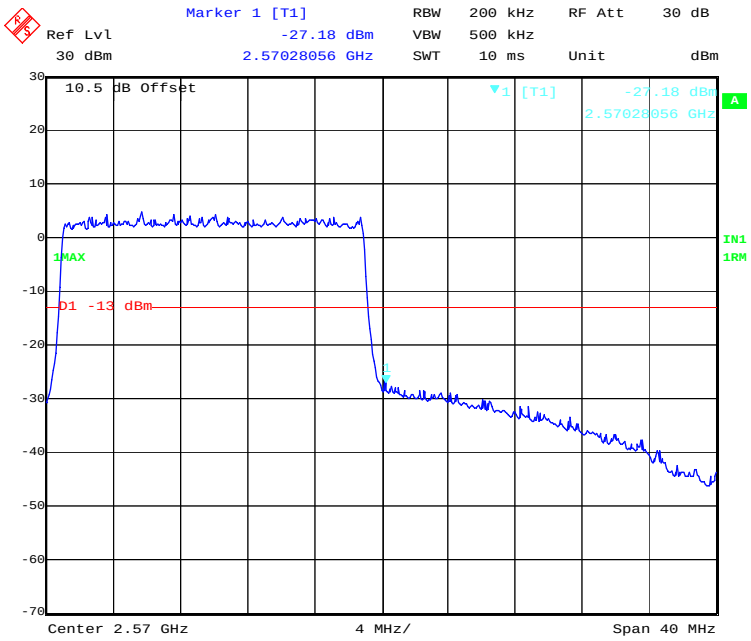


16-QAM (15.0 MHz, FULL RB) - Right Band Edge

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

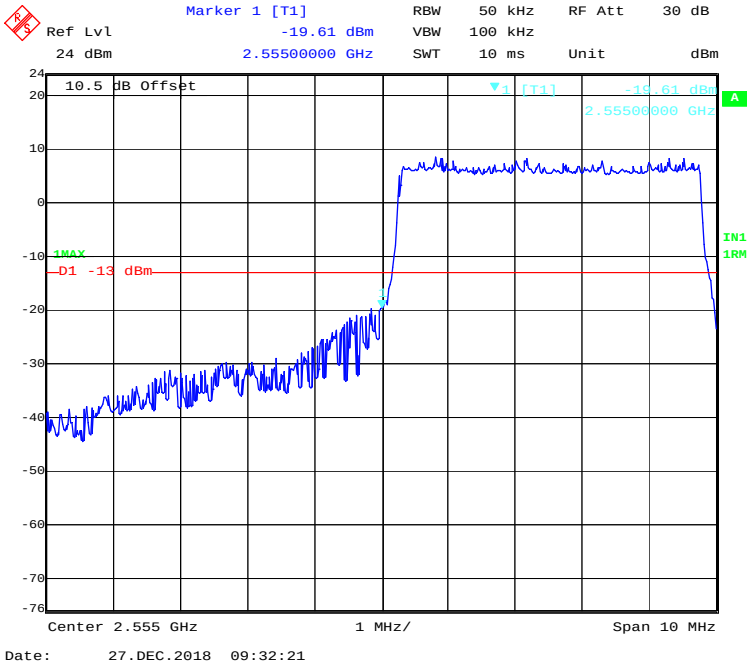


16-QAM (20.0 MHz, FULL RB) - Right Band Edge

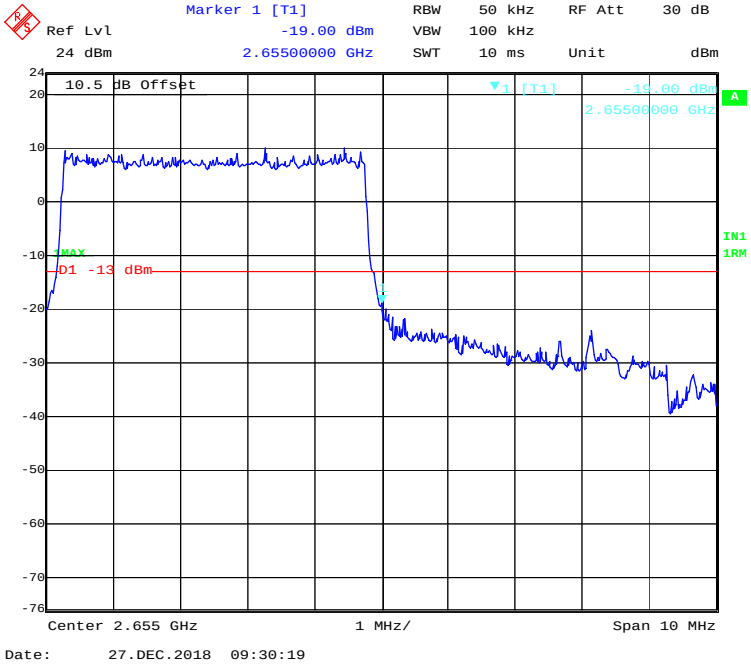


LTE Band 41:

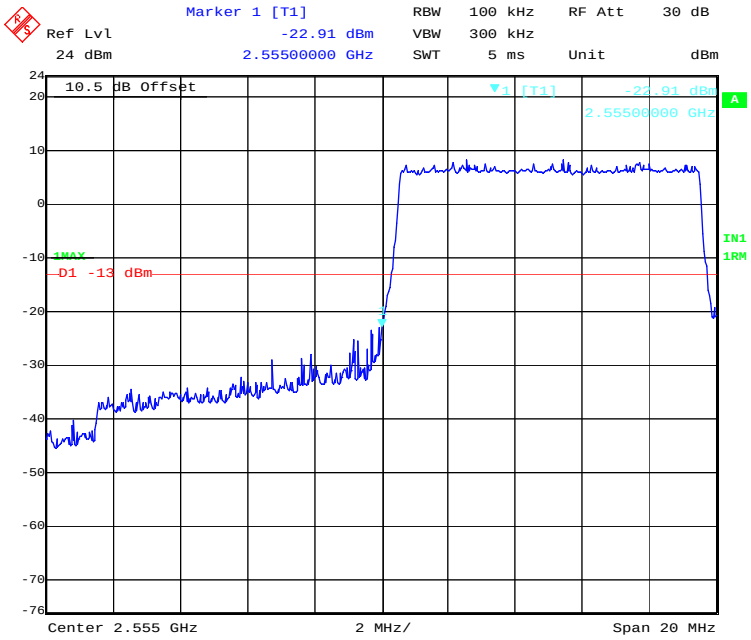
QPSK (5.0 MHz, FULL RB) - Left Band Edge



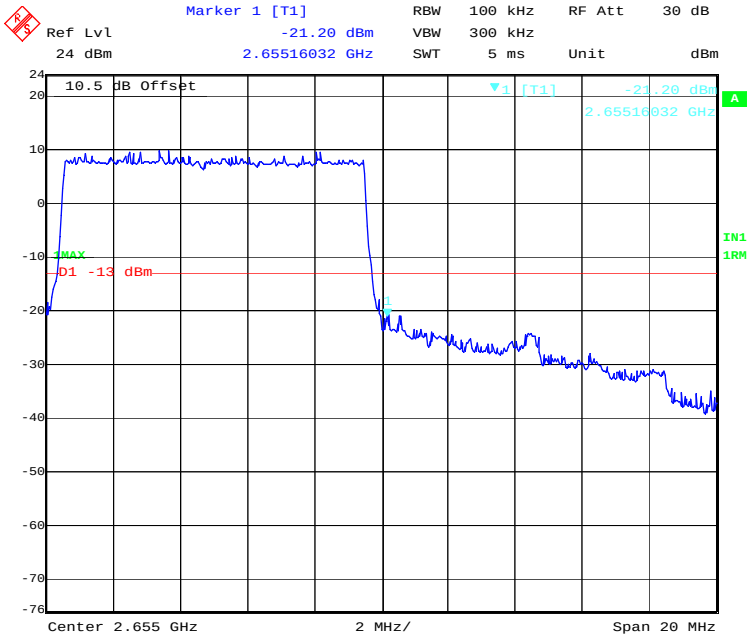
QPSK (5.0 MHz, FULL RB) - Right Band Edge



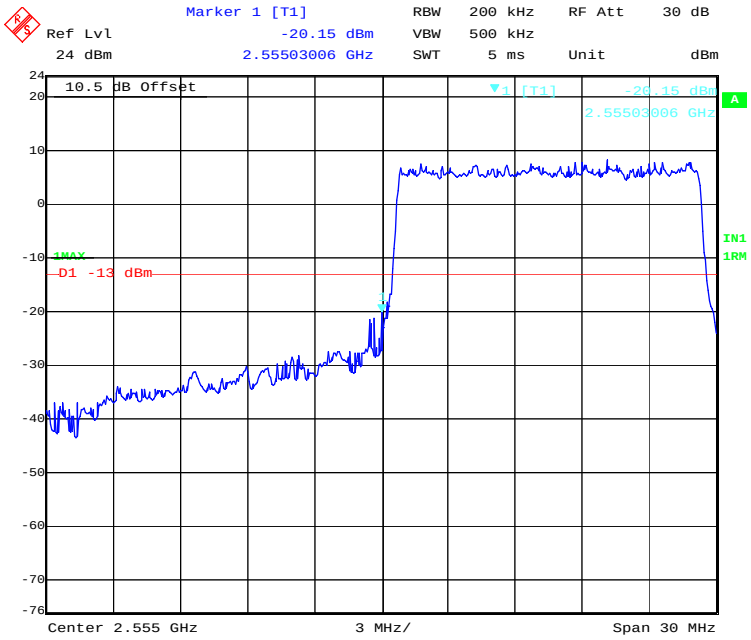
QPSK (10.0 MHz, FULL RB) - Left Band Edge



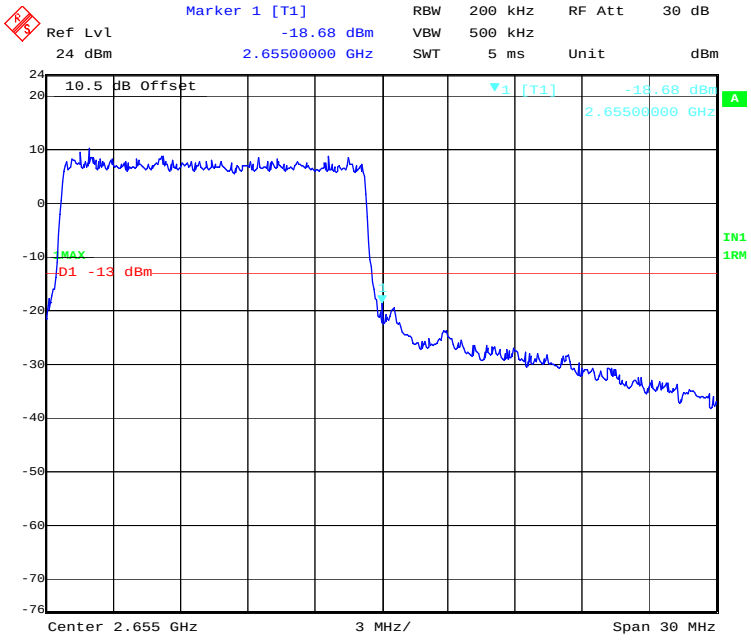
QPSK (10.0 MHz, FULL RB) - Right Band Edge



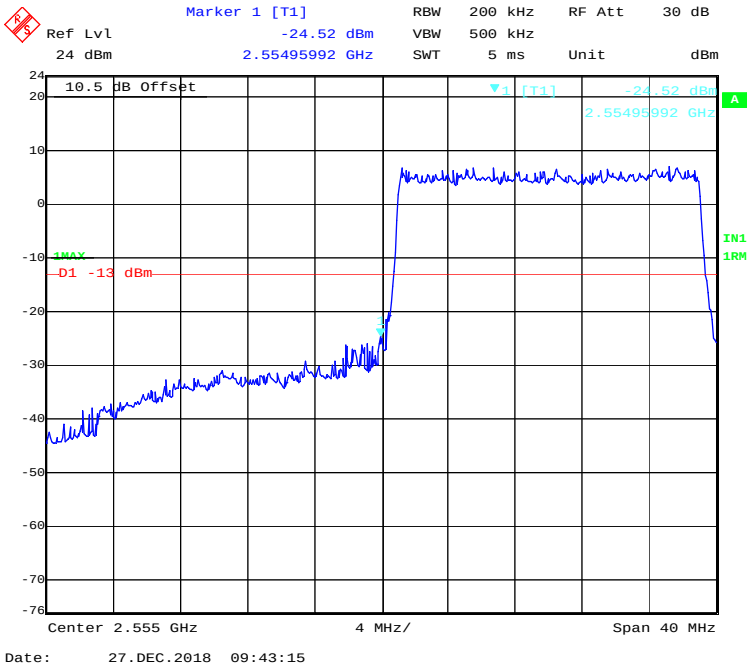
QPSK (15.0 MHz, FULL RB) - Left Band Edge



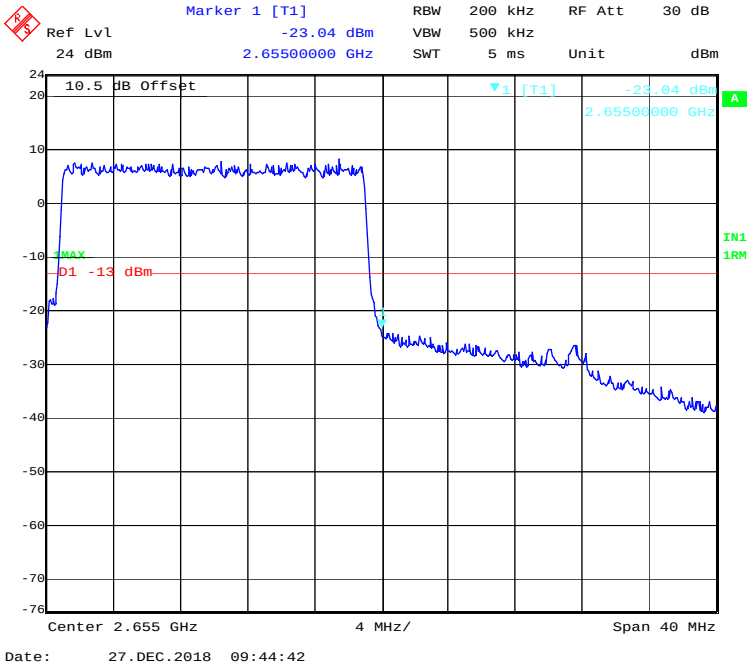
QPSK (15.0 MHz, FULL RB) - Right Band Edge



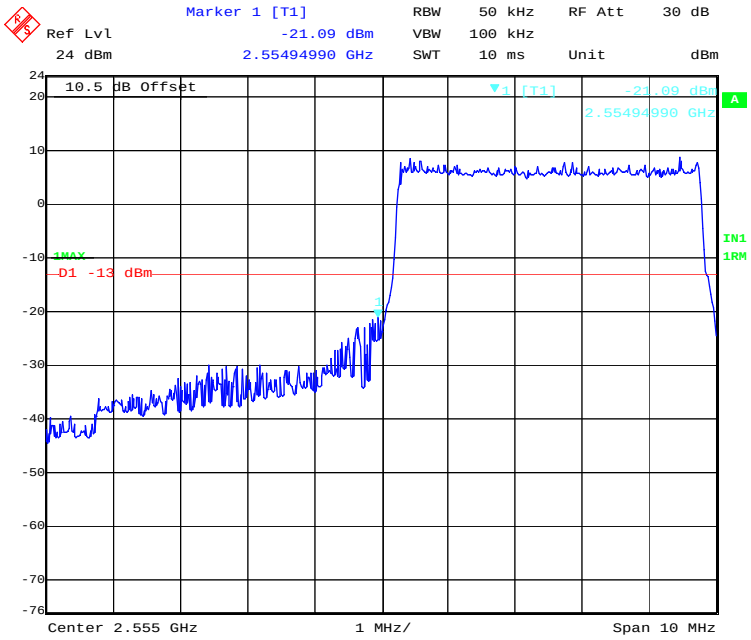
QPSK (20.0 MHz, FULL RB) - Left Band Edge



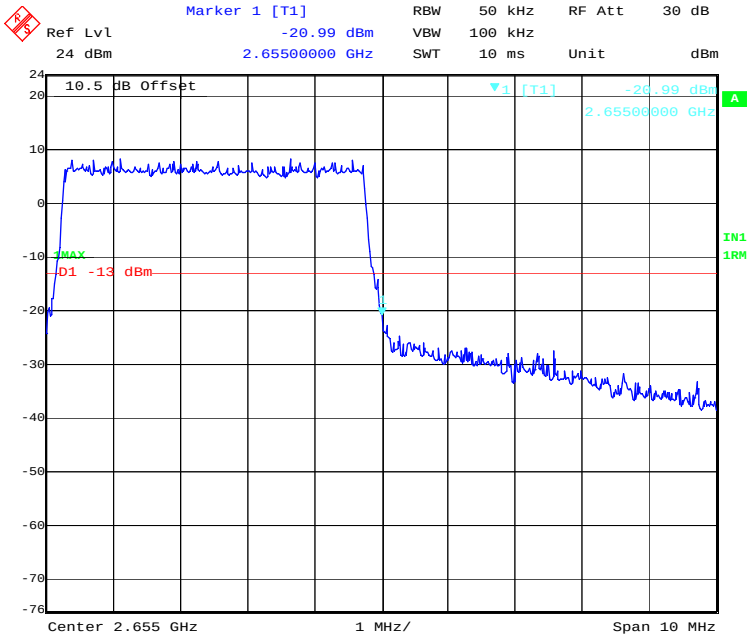
QPSK (20.0 MHz, FULL RB) - Right Band Edge



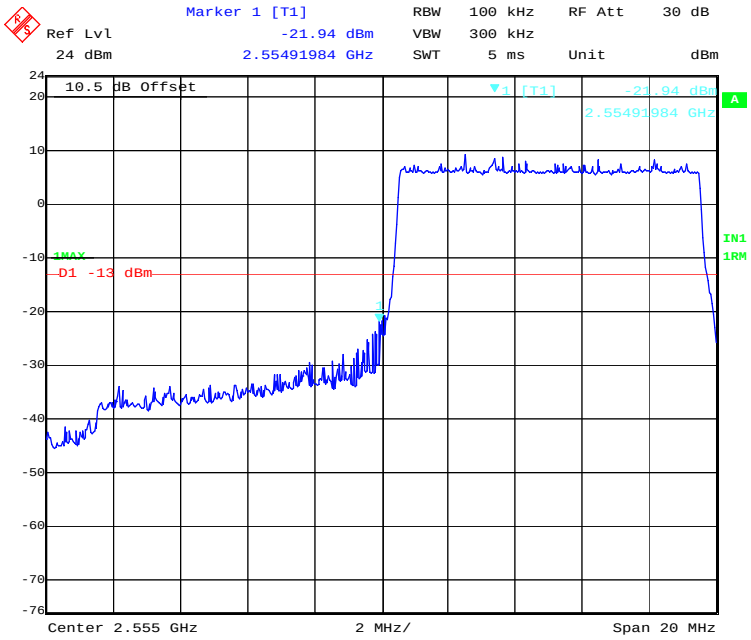
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



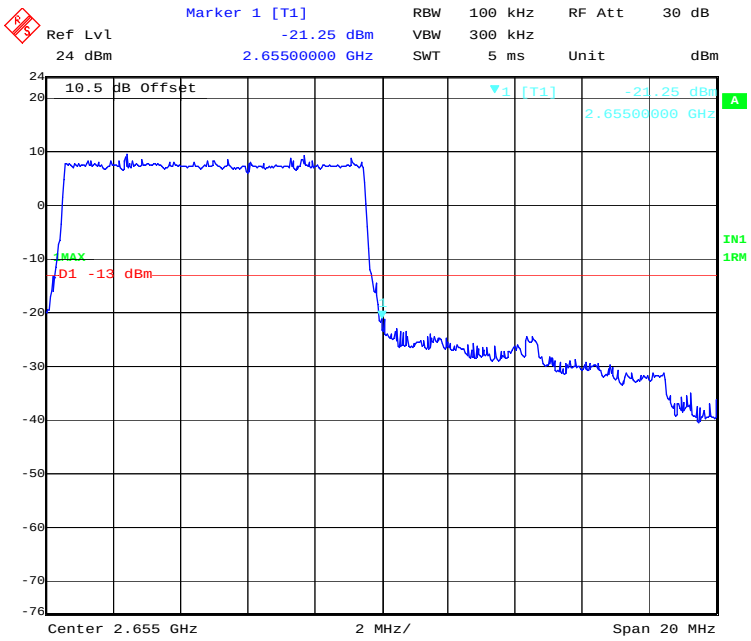
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



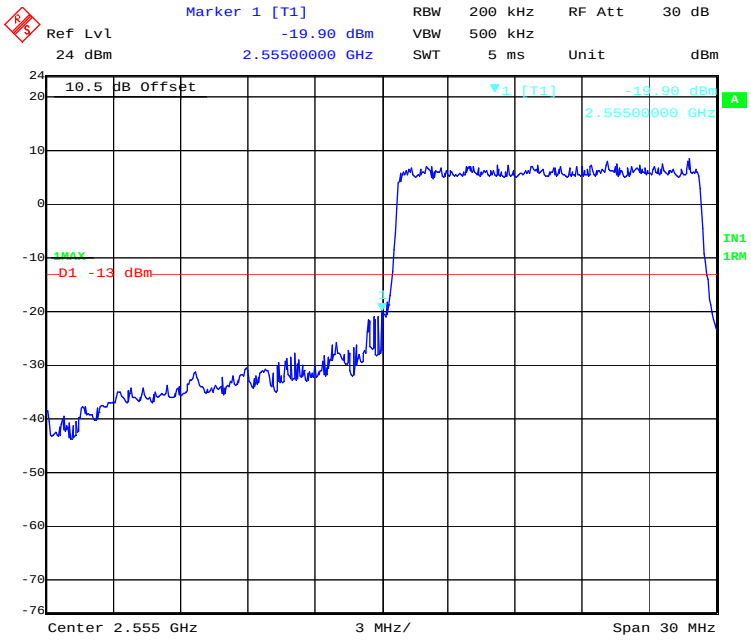
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



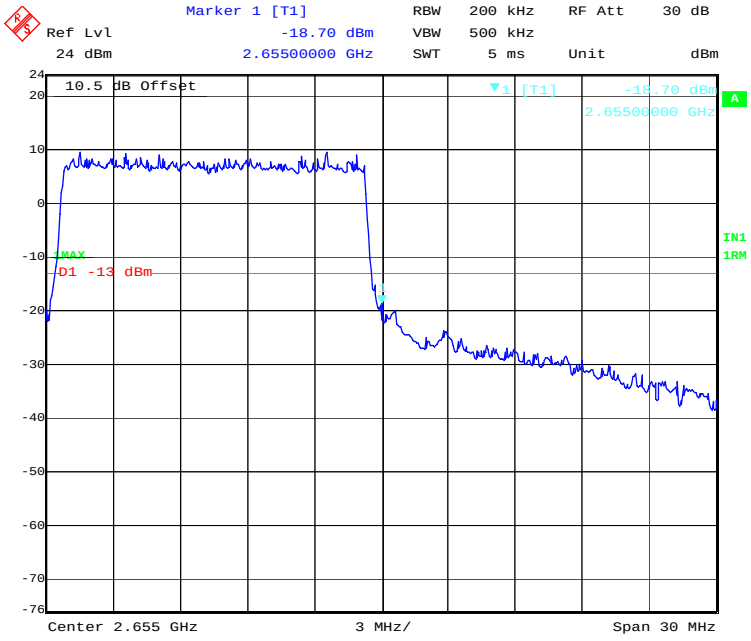
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



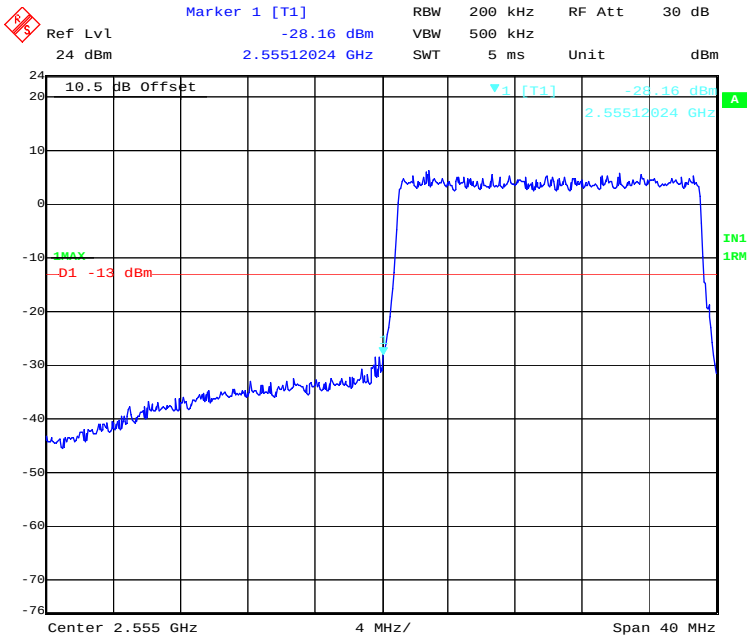
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



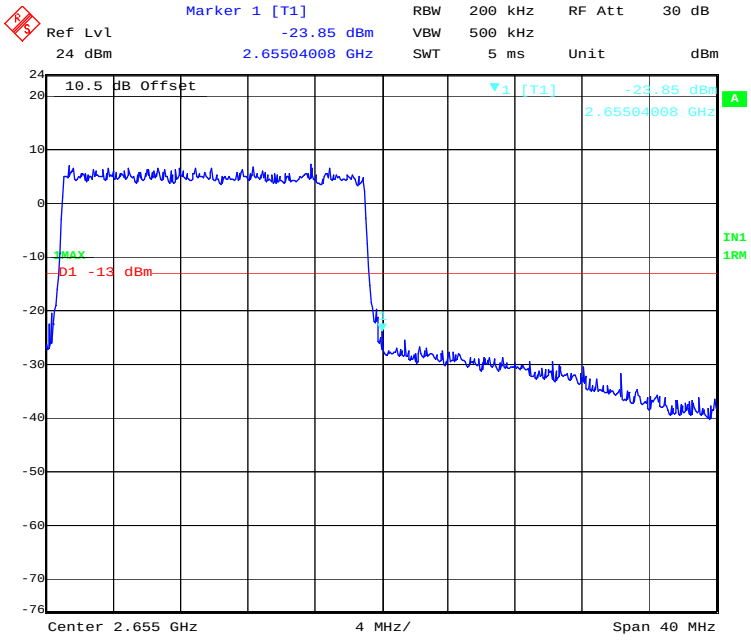
16-QAM (15.0 MHz, FULL RB) - Right Band Edge



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



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



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

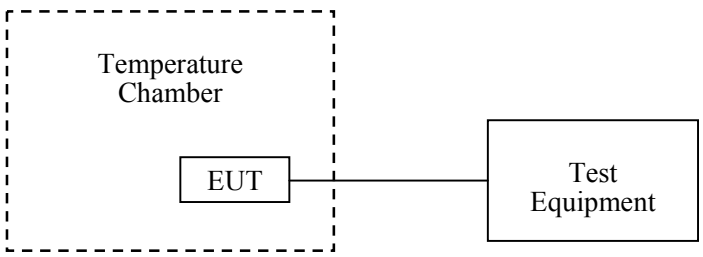
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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:	23.2℃
Relative Humidity:	51 %
ATM Pressure:	101.3kPa

The testing was performed by Hope Zhang on 2019-01-11.

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	13	0.0155	2.5
-20		11	0.0131	2.5
-10		4	0.0048	2.5
0		10	0.0120	2.5
10		8	0.0096	2.5
20		5	0.0060	2.5
30		3	0.0036	2.5
40		9	0.0108	2.5
50		7	0.0084	2.5
20	V min.= 3.3	10	0.0120	2.5
20	V max.= 4.2	7	0.0084	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	13	0.0155	2.5
-20		7	0.0084	2.5
-10		2	0.0024	2.5
0		10	0.0120	2.5
10		11	0.0131	2.5
20		12	0.0143	2.5
30		11	0.0131	2.5
40		5	0.0060	2.5
50		6	0.0072	2.5
20	V min.= 3.3	4	0.0048	2.5
20	V max.= 4.2	5	0.0060	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	11	0.0131	2.5
-20		13	0.0155	2.5
-10		12	0.0143	2.5
0		7	0.0084	2.5
10		9	0.0108	2.5
20		11	0.0131	2.5
30		9	0.0108	2.5
40		8	0.0096	2.5
50		10	0.0120	2.5
20	V min.= 3.3	7	0.0084	2.5
20	V max.= 4.2	3	0.0036	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	-8	-0.0043	pass
-20		-5	-0.0027	pass
-10		-7	-0.0037	pass
0		-8	-0.0043	pass
10		-3	-0.0016	pass
20		1	0.0005	pass
30		-2	-0.0011	pass
40		-7	-0.0037	pass
50		-8	-0.0043	pass
20	V min.= 3.3	-8	-0.0043	pass
20	V max.= 4.2	-3	-0.0016	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	-9	-0.0048	pass
-20		-7	-0.0037	pass
-10		-5	-0.0027	pass
0		-4	-0.0021	pass
10		-1	-0.0005	pass
20		1	0.0005	pass
30		-6	-0.0032	pass
40		-2	-0.0011	pass
50		-10	-0.0053	pass
20	V min.= 3.3	-8	-0.0043	pass
20	V max.= 4.2	-7	-0.0037	pass

GPRS Mode, Middle Channel, f_o =1880.0 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit**
-30	3.7	-10	-0.0053	pass
-20		-9	-0.0048	pass
-10		-5	-0.0027	pass
0		-4	-0.0021	pass
10		-10	-0.0053	pass
20		-4	-0.0021	pass
30		-4	-0.0021	pass
40		-11	-0.0059	pass
50		-10	-0.0053	pass
20	V min.= 3.3	-11	-0.0059	pass
20	V max.= 4.2	-6	-0.0032	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 (ppm)**
-30	3.7	-2	-0.0011	pass
-20		-8	-0.0043	pass
-10		-4	-0.0021	pass
0		-3	-0.0016	pass
10		2	0.0011	pass
20		-7	-0.0037	pass
30		3	0.0016	pass
40		-11	-0.0059	pass
50		-8	-0.0043	pass
20	V min.= 3.3	-7	-0.0037	pass
20	V max.= 4.2	-10	-0.0053	pass

WCDMA Band V:

WCDMA Mode, Middle Channel, f_o = 836.6 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	14	0.0167	2.5
-20		5	0.0060	2.5
-10		13	0.0155	2.5
0		11	0.0131	2.5
10		9	0.0108	2.5
20		8	0.0096	2.5
30		10	0.0120	2.5
40		6	0.0072	2.5
50		9	0.0108	2.5
20	V min.= 3.3	13	0.0155	2.5
20	V max.= 4.2	9	0.0108	2.5

CDMA Mode, Middle Channel, f_o = 836.52 MHz				
Temperature (℃)	**Power Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Limit (ppm)**
-30	3.7	20	0.0239	2.5
-20		18	0.0215	2.5
-10		15	0.0179	2.5
0		13	0.0155	2.5
10		14	0.0167	2.5
20		11	0.0131	2.5
30		9	0.0108	2.5
40		10	0.012	2.5
50		6	0.0072	2.5
20	V min.= 3.3	7	0.0084	2.5
20	V max.= 4.2	11	0.0131	2.5

LTE Band 7:

Low Channel & High Channel (QPSK)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.7	2500.0010	2569.9906	2500	2570
-20		2500.0009	2569.9960	2500	2570
-10		2500.0001	2569.9987	2500	2570
0		2500.0007	2569.9914	2500	2570
10		2500.0010	2569.9958	2500	2570
20		2500.0007	2569.9976	2500	2570
30		2500.0010	2569.9925	2500	2570
40		2500.0006	2569.9898	2500	2570
50		2500.0011	2569.9981	2500	2570
20	V min.= 3.3	2500.0008	2569.9886	2500	2570
20	V max.= 4.2	2500.0003	2569.9913	2500	2570

Low Channel & High Channel (16-QAM)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.7	2500.0004	2569.9896	2500	2570
-20		2500.0000	2569.9919	2500	2570
-10		2500.0010	2569.9901	2500	2570
0		2500.0005	2569.9912	2500	2570
10		2500.0009	2569.9919	2500	2570
20		2500.0010	2569.9942	2500	2570
30		2500.0010	2569.9973	2500	2570
40		2500.0000	2569.9994	2500	2570
50		2500.0006	2569.9956	2500	2570
20	V min.= 3.3	2500.0012	2569.9965	2500	2570
20	V max.= 4.2	2500.0003	2569.9886	2500	2570

LTE Band 41:

Low Channel & High Channel (QPSK)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.7	2555.0006	2654.9890	2555	2655
-20		2555.0011	2654.9921	2555	2655
-10		2555.0004	2654.9951	2555	2655
0		2555.0010	2654.9900	2555	2655
10		2555.0011	2654.9959	2555	2655
20		2555.0006	2654.9981	2555	2655
30		2555.0000	2654.9988	2555	2655
40		2555.0006	2654.9990	2555	2655
50		2555.0010	2654.9913	2555	2655
20	V min.= 3.3	2555.0011	2654.9913	2555	2655
20	V max.= 4.2	2555.0005	2654.9945	2555	2655

Low Channel & High Channel (16-QAM)					
Temperature	**Power Supplied**	**F_L**	**F_H**	**F_L Limit**	**F_H Limit**
(℃)	**(V_{DC})**	**(MHz)**	**(MHz)**	**(MHz)**	**(MHz)**
-30	3.7	2555.0001	2654.9938	2555	2655
-20		2555.0004	2654.9982	2555	2655
-10		2555.0009	2654.9962	2555	2655
0		2555.0003	2654.9994	2555	2655
10		2555.0003	2654.9887	2555	2655
20		2555.0009	2654.9897	2555	2655
30		2555.0002	2654.9920	2555	2655
40		2555.0006	2654.9986	2555	2655
50		2555.0006	2654.9928	2555	2655
20	V min.= 3.3	2555.0012	2654.9883	2555	2655
20	V max.= 4.2	2555.0003	2654.9934	2555	2655

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