

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

For

Roadefend Intelligence Technology (Shanghai) Co.,Ltd.

Room 01, level3, block B3, lane221, Huangxing Road Yangpu District, Shanghai, China

FCC ID: 2AXWG-AI-5-E

Report Type: Original Report	Product Type: Intelligent Driving Assist System
Test Engineer:	CK Huang
Report Number:	RSHD200915002-00B
Report Date:	2020-10-15
Reviewed By:	Oscar Ye EMC Manager
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

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S)	3
TEST METHODOLOGY	4
MEASUREMENT UNCERTAINTY	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
JUSTIFICATION	5
CHANNEL LIST	5
EQUIPMENT MODIFICATIONS	8
SUPPORT EQUIPMENT LIST AND DETAILS	8
EXTERNAL I/O CABLE.....	8
BLOCK DIAGRAM OF TEST SETUP	9
SUMMARY OF TEST RESULTS	11
TEST EQUIPMENT LIST	12
FCC §1.1310 & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)	14
FCC §2.1047 - MODULATION CHARACTERISTIC	16
FCC §2.1046; § 22.913 (A); § 24.232 (C); §27.50 (B) (C) (D) - RF OUTPUT POWER.....	17
APPLICABLE STANDARDS.....	17
TEST PROCEDURE	17
TEST DATA	18
FCC §2.1049, §22.917, §22.905 & §24.238; §27.53 - OCCUPIED BANDWIDTH	60
APPLICABLE STANDARDS.....	60
TEST PROCEDURE	60
TEST DATA	60
FCC § 2.1051; § 22.917 (A); § 24.238 (A); §27.53(M) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS.....	165
APPLICABLE STANDARDS.....	165
TEST PROCEDURE	165
TEST DATA	165
FCC § 2.1053; § 22.917 (A); § 24.238 (A); §27.53 (M) - SPURIOUS RADIATED EMISSIONS	354
APPLICABLE STANDARDS.....	354
TEST PROCEDURE	354
TEST DATA	355
FCC § 22.917 (A); § 24.238 (A); §27.53 (M) - BAND EDGES	367
APPLICABLE STANDARDS.....	367
TEST PROCEDURE	367
TEST DATA	367
FCC § 2.1055; § 22.355; § 24.235; §27.54 - FREQUENCY STABILITY	428
APPLICABLE STANDARDS.....	428
TEST PROCEDURE	428
TEST DATA	429

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Roadefend Intelligence Technology (Shanghai) Co.,Ltd.
Tested Model:	AI-5-E
Product Type:	Intelligent Driving Assist System
Power Supply:	DC 6.4V from battery, DC 8-32V from external power supply(typical DC 24V)
RF Function:	GPRS/EGPRS, WCDMA, LTE
Operating Band/Frequency:	GPRS/EGPRS 850: 824-849 MHz(TX), 869-894 MHz(RX) GPRS/EGPRS 1900: 1850-1910 MHz(TX), 1930-1990 MHz(RX) WCDMA Band II: 1850-1910 MHz(TX), 1930-1990 MHz(RX) WCDMA Band IV: 1710-1755 MHz(TX), 2110-2155MHz(RX) WCDMA Band V: 824-849 MHz(TX), 869-894 MHz(RX) LTE Band 2: 1850-1910 MHz(TX), 1930MHz-1990 MHz(RX) LTE Band 4: 1710-1755 MHz(TX), 2110-2155 MHz(RX) LTE Band 5: 824-849 MHz(TX), 869-894 MHz(RX) LTE Band 12: 699-716 MHz(TX), 729-746 MHz(RX) LTE Band 13: 777-787 MHz(TX), 746-756 MHz(RX)
Modulation Type:	GPRS/EGPRS: GMSK/8PSK WCDMA: BPSK,QPSK,16QAM LTE: QPSK,16QAM
Antenna Type:	Monopole antenna
*Maximum Antenna Gain:	2.0 dBi

Note: The antenna gain was provided by the applicant.

**All measurement and test data in this report was gathered from production sample serial number: 20200915002. (Assigned by the BACL. The EUT supplied by the applicant was received on 2020-09-15)*

Objective

This type approval report is prepared on behalf of *Roadefend Intelligence Technology (Shanghai) Co.,Ltd.* in accordance with Part 2, Part 22-Subpart H and Part 24-Subpart E , 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)

No related submittal(s)/grant(s).

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: ANSI C63.26-2015.

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°C
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 Compliant 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 and CAB identifier CN0004 under the ISED requirement. 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 ANSI C63.26-2015.

The final qualification test was performed with the EUT operating at normal mode.

Channel List

Mode		Channel		Frequency (MHz)
GPRS/EGPRS 850		Low	128	824.2
		Middle	190	836.6
		High	251	848.8
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 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 5	1.4M	Low	20407	824.7
		Middle	20525	836.5
		High	20643	848.3
	3M	Low	20415	825.5
		Middle	20525	836.5
		High	20635	847.5
	5M	Low	20425	826.5
		Middle	20525	836.5
		High	20625	846.5
	10M	Low	20450	829.0
		Middle	20525	836.5
		High	20600	844.0
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

Mode		Channel		Frequency (MHz)
LTE Band 13	5M	Low	23205	779.5
		Middle	23230	782.0
		High	23255	784.5
	10M	Low	/	/
		Middle	23230	782.0
		High	/	/

Equipment Modifications

No modifications were made to the EUT.

Support Equipment List and Details

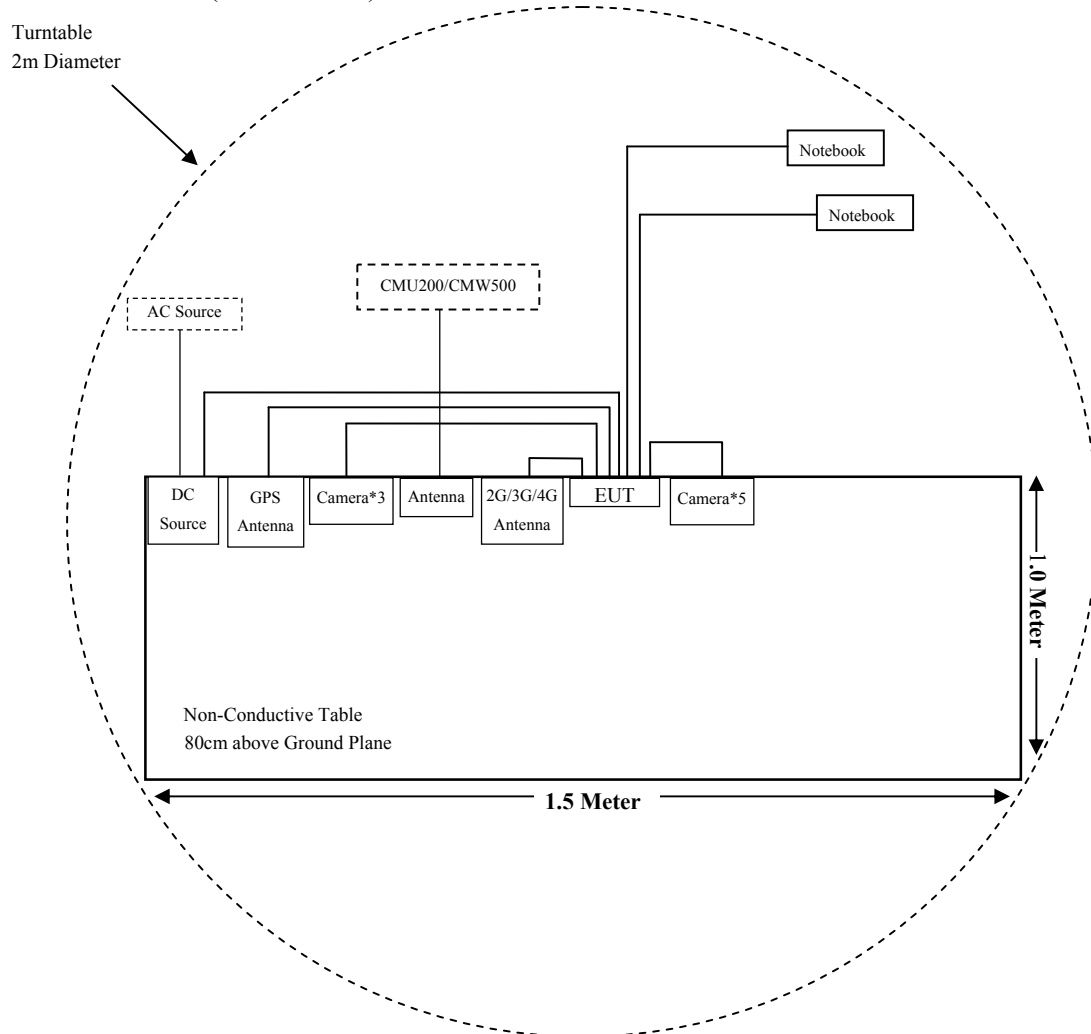
Manufacturer	Description	Model	Serial Number
Aihuaxin technology	Antenna	Unknown	Unknown
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478
Unknown	Camera*3	Unknown	Unknown
Unknown	Camera*5	Unknown	Unknown
Unknown	GPS Antenna	Unknown	Unknown
Unknown	2G/3G/4G Antenna	Unknown	Unknown
MCH	DC Source	MCH-303D-II	14070562
HP	Notebook1	4441s	2CE3130VWY
Dell	Notebook2	E6410	3094742521

External I/O Cable

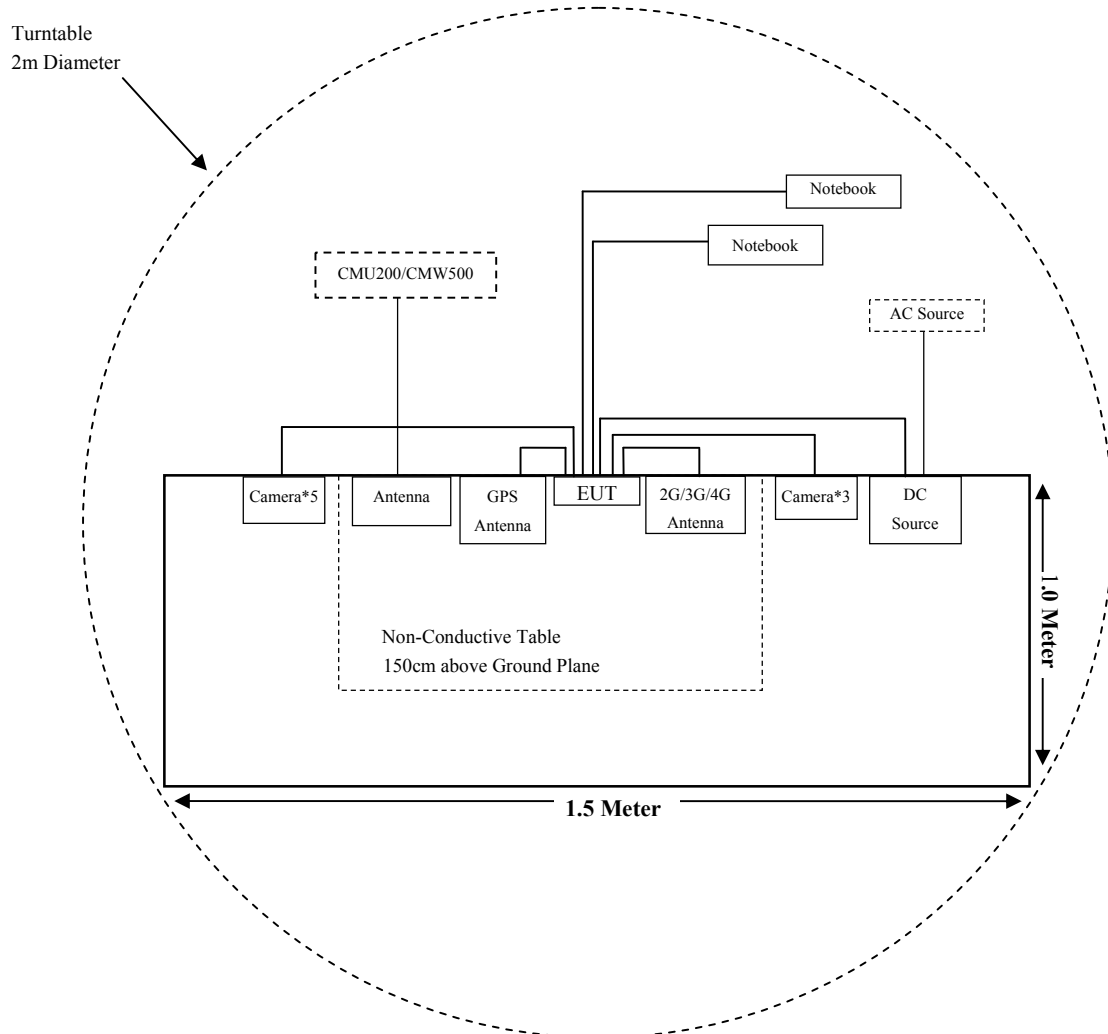
Cable Description	Length (m)	From Port	To
Video Cable	1.3	EUT	Camera*3
Power Cable	1.5	EUT	DC Source
Power Cable	1.0	DC Source	AC Source
Video Cable	1.3	EUT	Camera*5
signal Cable	5	EUT	Notebook1
signal Cable	5	EUT	Notebook2

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
§1.1310 & §2.1091	Maximum Permissible Exposure(MPE)	Compliant
§2.1046; § 22.913 (a);§ 24.232 (c); § 27.50 (b)(c)(d);§27.50(h) (2)	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53	Occupied Bandwidth	Compliant
§ 2.1051; § 22.917 (a); § 24.238 (a); §27.53 (m)	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53 (m)	Spurious Radiated Emissions	Compliant
§ 22.917 (a); § 24.238 (a); §27.53 (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	2019-12-14	2020-12-13
HP	Signal Generator	N5183A	MY51040755	2019-12-14	2020-12-13
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2017-12-26	2020-12-25
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2019-01-09	2022-01-08
Sonoma Instrunent	Pre-amplifier	310N	171205	2020-08-14	2021-08-13
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-8	008	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2020-08-15	2021-08-14
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605	2020-04-01	2021-03-31
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04
Radiated Emission Test (Chamber 2#)					
HP	Signal Generator	N5183A	MY51040755	2019-12-14	2020-12-13
Rohde & Schwarz	EMI Test Receiver	ESU40	100207	2020-04-01	2021-03-31
ETS-LINDGREN	Horn Antenna	3115	9207-3900	2020-07-15	2023-07-14
ETS-LINDGREN	Horn Antenna	3115	6229	2020-01-10	2023-01-09
ETS-LINDGREN	Horn Antenna	3116	00084159	2019-10-18	2022-10-17
ETS-LINDGREN	Horn Antenna	3116	2516	2020-01-17	2023-01-16
A.H.Systems,inc	Amplifier	PAM-0118P	512	2020-02-20	2021-02-19
EM Electronics Corporation	Amplifier	EM18G40G	060726	2020-03-22	2021-03-21
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-13	013	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-16	016	2020-08-15	2021-08-14
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605	2020-04-01	2021-03-31
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Signal Analyzer	FSIQ26	836131/009	2019-12-14	2020-12-13
Rohde & Schwarz	EMI Test Receiver	ESIB26	100146	2019-12-14	2020-12-13
Narda	Attenuator	10dB	010	2020-08-15	2021-08-14
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605	2020-04-01	2021-03-31
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04
Mini-Circuits	Power splitter	ZFRSC-14-S+	SF019411452	2019-11-10	2020-11-09
BACL	Temperature & Humidity Chamber	BTH-150	30023	2019-12-20	2020-12-19
EAST	Regulated DC Power Supply	MCH-303D-II	14070562	2019-10-10	2020-10-09
EAST	Regulated DC Power Supply	MCH-303D-II	14070562	2020-10-10	2021-10-09
Roadefend Intelligence	RF Cable	Roadefend Intelligence 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 §1.1310 & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §2.1091 and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data (worst case):

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
GSM850 (GPRS/EGPRS)	824-849	2.00	1.58	27.50	562.34	20	0.1767	0.55
PCS1900 (GPRS/EGPRS)	1850-1910	2.00	1.58	24.00	251.19	20	0.0789	1.00
WCDMA Band II	1850-1910	2.00	1.58	23.00	199.53	20	0.0627	1.00
WCDMA Band IV	1710-1755	2.00	1.58	23.00	199.53	20	0.0627	1.00
WCDMA Band V	824-849	2.00	1.58	23.00	199.53	20	0.0627	0.55
LTE Band 2	1850-1910	2.00	1.58	23.50	223.87	20	0.0704	1.00
LTE Band 4	1710-1755	2.00	1.58	23.00	199.53	20	0.0627	1.00
LTE Band 5	824-849	2.00	1.58	25.00	316.23	20	0.0994	0.55
LTE Band 12	699-716	2.00	1.58	22.50	177.83	20	0.0559	0.47
LTE Band 13	777-787	2.00	1.58	22.50	177.83	20	0.0559	0.52

Note 1:

GSM850: Tune-up maximum output power with 4 slots is 30.50 dBm, so the tune-up time based Ave. power compared to slotted Ave. power is 27.50 dBm.

PCS1900: Tune-up maximum output power with 4 slots is 27.00 dBm, so the tune-up time based Ave. power compared to slotted Ave. power is 24.00 dBm.

Number of Time slot	1	2	3	4
Duty Cycle	1:8	1:4	1:2.66	1:2
Time based Ave. power compared to slotted Ave. power	-9 dB	-6 dB	-4.26 dB	-3 dB

Result: The device meet FCC MPE at 20 cm distance.

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 (b) (c) (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 (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(b), mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands is limited to 30 watts ERP.

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

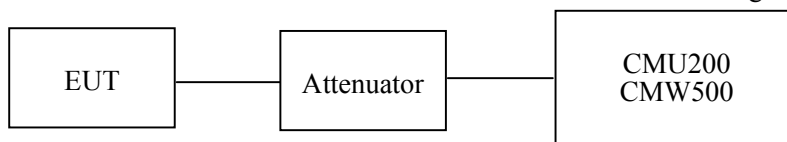
According to §27.50(c), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

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 C63.26-2015 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 ,If a standard radiation test site is used,raise and lower the test antenna to obtain a maximum reading and adjustment signal generator level, make the value of the spectrum analyzer equal to the test value of step b (LVL), record this value as submitted Level (dBm).

$$\text{ERP/ EIRP (dBm)} = \text{Submitted Level (dBm)} - \text{Cable loss(dB)} + \text{Antenna Gain(dBd/dBi)}$$

Test Data

Environmental Conditions

Temperature:	24.9 °C
Relative Humidity:	53 %
ATM Pressure:	101.9 kPa

The testing was performed by CK Huang on 2020-10-12.

Conducted Power:

GPRS/EGPRS 850 Band

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.20	33.26	32.43	31.29	29.97	38.45
	190	836.60	33.28	32.92	31.12	30.34	38.45
	251	848.80	33.19	32.37	31.09	30.19	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.20	26.82	25.42	23.68	22.16	38.45
	190	836.60	26.74	25.39	23.59	22.36	38.45
	251	848.80	26.39	25.49	23.66	22.46	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	22.46	22.35	22.16
		HSDPA	1	22.01	22.17	22.29
			2	21.97	22.09	22.10
			3	22.08	22.13	22.22
			4	22.02	22.01	22.27
		HSUPA	1	21.94	22.06	22.20
			2	22.09	22.05	22.21
			3	22.06	21.91	22.13
			4	22.18	22.16	22.10
			5	21.99	22.08	22.09
		HSPA+	1	22.06	22.05	22.20

PCS 1900 Band

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	29.39	28.49	27.39	26.46	33
	661	1880.0	29.41	28.39	27.41	26.39	33
	810	1909.8	29.33	28.45	27.37	26.41	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	26.49	25.21	24.08	22.24	33
	661	1880.0	26.41	25.19	24.11	22.16	33
	810	1909.8	26.09	24.93	23.49	22.09	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	22.46	22.15	22.32
		HSDPA	1	22.17	21.91	22.17
			2	22.32	22.02	22.18
			3	22.30	21.94	22.18
			4	22.27	21.96	22.10
		HSUPA	1	22.23	22.01	22.20
			2	22.26	21.99	22.04
			3	22.30	22.16	22.02
			4	22.17	22.05	22.10
			5	22.28	22.09	22.16
		HSPA+	1	22.17	22.03	22.09

WCDMA Band IV

Mode	Test Condition	Test Mode	3GPP Sub Test	Average Output Power (dBm)		
				Low Frequency	Middle Frequency	High Frequency
WCDMA (Band IV)	Normal	Rel 99	1	22.26	22.16	22.41
		HSDPA	1	22.27	22.07	22.16
			2	22.31	22.10	22.17
			3	22.13	22.01	22.19
			4	22.26	21.96	22.05
		HSUPA	1	22.24	21.98	22.21
			2	22.37	22.04	22.06
			3	22.19	22.01	22.18
			4	22.26	22.01	22.22
			5	22.16	22.10	22.16
		HSPA+	1	22.24	22.11	22.21

Maximum Output Power:**LTE Band 2**

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1#0	21.75	22.13	21.92
		1#3	22.53	21.80	21.57
		1#5	22.61	22.31	21.77
		3#0	22.50	21.80	22.11
		3#1	22.01	21.63	22.24
		3#3	22.06	21.74	21.92
		6#0	22.01	21.42	22.36
	16-QAM	1#0	22.47	21.96	21.85
		1#3	22.62	22.00	22.48
		1#5	22.38	21.73	22.39
		3#0	22.40	22.34	22.04
		3#1	22.69	22.32	21.95
		3#3	21.95	22.27	22.28
		6#0	22.70	21.73	21.53
3M	QPSK	1#0	22.32	21.46	22.60
		1#7	22.70	21.55	21.68
		1#14	22.15	22.22	22.24
		8#0	21.98	22.42	21.72
		8#4	21.84	21.79	21.48
		8#7	22.64	21.79	21.63
		15#0	21.79	22.35	21.42
	16-QAM	1#0	22.46	22.21	22.16
		1#7	22.00	21.87	21.43
		1#14	22.24	21.75	22.37
		8#0	22.52	21.63	21.61
		8#4	22.34	21.74	22.39
		8#7	22.28	21.86	22.21
		15#0	22.61	22.46	22.05

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.59	21.96	22.20
		1#12	22.23	21.82	21.80
		1#24	22.36	22.23	21.50
		12#0	22.26	22.27	21.53
		12#6	22.81	22.26	21.92
		12#11	22.68	21.43	21.53
		25#0	22.06	21.67	21.66
	16-QAM	1#0	21.83	21.60	21.63
		1#12	22.71	22.03	21.99
		1#24	22.73	21.87	22.04
		12#0	22.55	22.38	21.67
		12#6	22.31	22.08	21.61
		12#11	22.15	21.67	22.16
		25#0	22.31	21.99	22.13
10M	QPSK	1#0	22.54	21.73	22.11
		1#24	22.63	21.88	22.59
		1#49	22.10	22.06	22.16
		25#0	22.75	21.61	22.22
		25#12	21.96	22.22	22.30
		25#24	22.51	21.55	22.51
		50#0	22.39	21.72	21.84
	16-QAM	1#0	22.35	22.02	21.77
		1#24	22.00	22.14	21.96
		1#49	22.62	21.49	22.57
		25#0	22.60	22.15	21.66
		25#12	22.56	21.30	22.43
		25#24	22.11	21.70	22.17
		50#0	22.43	21.63	22.11

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.24	22.52	22.00
		1#37	22.22	22.74	21.78
		1#74	23.04	23.01	21.91
		36#0	22.60	22.23	22.41
		36#17	22.61	23.08	22.71
		36#35	22.94	22.50	22.25
		75#0	22.94	22.28	22.34
	16-QAM	1#0	22.60	22.27	22.59
		1#37	23.06	22.68	21.83
		1#74	22.45	22.31	21.84
		36#0	22.27	22.37	22.32
		36#17	22.29	22.34	22.18
		36#35	23.06	22.55	22.47
		75#0	22.98	22.38	22.13
20M	QPSK	1#0	22.84	22.72	21.99
		1#49	22.65	23.02	22.56
		1#99	22.17	22.59	22.60
		50#0	22.40	22.28	22.13
		50#24	22.27	22.95	22.03
		50#49	22.46	22.77	21.92
		100#0	22.15	22.55	22.40
	16-QAM	1#0	22.72	22.63	22.60
		1#49	22.19	22.32	22.10
		1#99	22.69	22.24	21.96
		50#0	22.23	22.92	22.44
		50#24	22.49	22.78	21.93
		50#49	22.96	22.95	22.57
		100#0	22.71	22.80	22.34

LTE Band 4

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1#0	21.82	21.69	22.05
		1#3	22.07	22.12	22.12
		1#5	22.03	21.99	22.71
		3#0	22.33	22.33	22.97
		3#1	22.13	22.60	22.40
		3#3	22.14	22.10	22.71
		6#0	21.99	22.42	22.99
	16-QAM	1#0	21.87	22.58	22.89
		1#3	21.95	21.94	22.69
		1#5	22.38	22.09	22.55
		3#0	21.84	21.96	22.17
		3#1	22.02	21.72	22.10
		3#3	22.74	22.51	22.42
		6#0	22.40	22.63	22.34
3M	QPSK	1#0	22.26	21.95	22.93
		1#7	22.62	22.10	22.93
		1#14	22.76	22.40	22.48
		8#0	22.72	22.53	22.31
		8#4	22.34	22.26	22.80
		8#7	22.31	22.47	22.90
		15#0	22.34	22.00	22.17
	16-QAM	1#0	21.87	21.86	22.62
		1#7	22.73	22.26	22.79
		1#14	22.66	22.34	22.98
		8#0	22.30	22.60	22.56
		8#4	22.56	22.04	22.32
		8#7	21.92	22.02	22.31
		15#0	22.72	22.05	22.22

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	21.68	21.79	21.79
		1#12	22.04	22.41	22.25
		1#24	22.25	22.02	22.75
		12#0	21.77	21.91	22.21
		12#6	21.95	22.65	22.45
		12#11	22.27	22.29	22.38
		25#0	22.12	21.88	22.75
	16-QAM	1#0	22.12	22.15	22.83
		1#12	22.08	22.02	22.87
		1#24	22.69	22.48	22.30
		12#0	22.52	21.88	22.85
		12#6	22.32	21.81	22.96
		12#11	22.53	22.68	22.05
		25#0	22.69	22.23	22.37
10M	QPSK	1#0	22.13	22.50	22.05
		1#24	22.63	22.76	22.25
		1#49	21.84	22.19	22.40
		25#0	22.64	22.19	22.29
		25#12	22.31	22.14	22.58
		25#24	22.64	22.28	22.21
		50#0	22.58	22.37	22.18
	16-QAM	1#0	22.06	21.84	22.23
		1#24	22.69	22.05	22.25
		1#49	21.95	22.05	22.20
		25#0	22.49	22.00	22.40
		25#12	22.71	22.53	22.45
		25#24	22.07	21.80	22.53
		50#0	22.34	22.15	21.97

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.16	21.79	21.69
		1#37	22.36	22.27	22.87
		1#74	22.72	21.96	22.57
		36#0	22.13	22.01	22.10
		36#17	22.62	22.22	22.13
		36#35	22.05	21.97	22.14
		75#0	21.92	22.31	22.25
	16-QAM	1#0	22.29	21.68	22.52
		1#37	22.33	22.11	22.15
		1#74	22.76	21.98	21.96
		36#0	21.83	22.36	22.36
		36#17	22.31	22.60	22.28
		36#35	22.37	22.16	22.01
		75#0	22.51	22.54	22.30
20M	QPSK	1#0	22.50	21.85	22.32
		1#49	22.52	22.59	22.14
		1#99	21.98	21.68	22.72
		50#0	22.30	22.08	22.51
		50#24	22.67	21.68	22.75
		50#49	22.63	22.21	22.61
		100#0	22.49	22.60	22.27
	16-QAM	1#0	22.28	21.81	22.25
		1#49	22.64	21.90	22.19
		1#99	22.32	22.03	22.30
		50#0	22.21	22.10	22.80
		50#24	22.20	22.21	21.89
		50#49	22.19	22.46	22.78
		100#0	22.20	22.00	22.42

LTE Band 5

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1#0	23.46	23.09	23.49
		1#3	23.78	23.36	24.04
		1#5	23.78	23.93	24.03
		3#0	23.93	23.39	23.95
		3#1	23.93	23.44	23.76
		3#3	23.37	23.27	24.11
		6#0	23.49	23.61	23.88
	16-QAM	1#0	24.28	23.60	23.82
		1#3	23.83	23.65	23.72
		1#5	24.28	23.82	24.09
		3#0	24.31	23.48	23.44
		3#1	23.58	23.97	23.24
		3#3	23.59	23.58	23.23
		6#0	24.14	23.66	23.38
3M	QPSK	1#0	23.58	23.85	23.80
		1#7	23.34	23.26	23.83
		1#14	24.13	23.52	23.63
		8#0	23.79	23.52	23.92
		8#4	24.12	23.82	23.36
		8#7	23.68	24.14	24.12
		15#0	24.19	23.68	23.19
	16-QAM	1#0	23.65	23.38	23.35
		1#7	23.95	23.93	23.46
		1#14	23.55	24.18	23.96
		8#0	23.70	23.47	23.67
		8#4	23.71	23.36	23.55
		8#7	23.88	23.66	23.71
		15#0	23.99	24.18	24.03

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	23.19	23.43	23.29
		1#12	23.97	23.98	23.74
		1#24	24.47	23.65	24.21
		12#0	23.55	23.70	23.48
		12#6	23.80	23.60	24.19
		12#11	24.20	23.52	24.01
		25#0	23.85	24.05	23.66
	16-QAM	1#0	24.12	23.54	24.11
		1#12	23.57	24.25	23.92
		1#24	23.93	23.64	23.67
		12#0	23.65	23.80	24.30
		12#6	23.66	24.22	24.21
		12#11	23.98	24.23	24.29
		25#0	24.34	23.65	24.06
10M	QPSK	1#0	24.23	24.20	24.01
		1#24	23.68	23.62	24.02
		1#49	23.66	24.12	23.91
		25#0	24.50	23.50	23.54
		25#12	24.16	23.52	24.21
		25#24	23.88	23.72	24.16
		50#0	23.96	23.92	23.52
	16-QAM	1#0	24.29	23.59	23.89
		1#24	24.47	23.31	23.57
		1#49	23.73	23.82	23.48
		25#0	23.66	24.23	23.49
		25#12	24.02	23.98	23.75
		25#24	24.43	23.92	23.37
		50#0	23.73	23.63	23.96

LTE Band 12

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1#0	21.68	21.98	21.85
		1#3	21.61	21.97	21.93
		1#5	21.60	22.00	21.99
		3#0	21.62	22.04	22.03
		3#1	21.57	22.01	21.95
		3#3	21.63	21.92	21.93
		6#0	21.61	21.81	21.93
	16-QAM	1#0	21.68	21.90	21.93
		1#3	21.62	21.82	21.92
		1#5	21.71	21.83	21.92
		3#0	21.79	21.74	21.89
		3#1	21.83	21.67	21.85
		3#3	21.81	21.74	21.93
		6#0	21.90	21.69	21.82
3M	QPSK	1#0	21.82	21.70	21.78
		1#7	21.85	21.74	21.74
		1#14	21.83	21.68	21.79
		8#0	21.79	21.61	21.73
		8#4	21.82	21.72	21.70
		8#7	21.81	21.74	21.67
		15#0	21.80	21.64	21.66
	16-QAM	1#0	21.84	21.67	21.65
		1#7	21.86	21.68	21.59
		1#14	21.88	21.56	21.69
		8#0	21.90	21.52	21.75
		8#4	21.97	21.48	21.83
		8#7	21.99	21.53	21.94
		15#0	21.97	21.55	21.94

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	21.95	21.50	21.94
		1#12	21.96	21.62	21.89
		1#24	21.99	21.64	21.82
		12#0	21.91	21.70	21.93
		12#6	21.93	21.73	21.95
		12#11	22.06	21.77	21.91
		25#0	22.03	21.83	22.05
	16-QAM	1#0	22.00	21.80	22.08
		1#12	22.13	21.89	22.00
		1#24	22.14	21.91	22.02
		12#0	22.17	21.93	22.03
		12#6	22.16	21.99	21.90
		12#11	22.20	22.06	21.90
		25#0	22.18	22.17	21.90
10M	QPSK	1#0	22.28	22.09	21.94
		1#24	22.19	22.03	21.89
		1#49	22.21	22.02	21.94
		25#0	22.17	22.07	22.05
		25#12	22.19	22.15	22.07
		25#24	22.28	22.11	22.12
		50#0	22.28	22.14	22.16
	16-QAM	1#0	22.36	22.17	22.06
		1#24	22.30	22.10	22.13
		1#49	22.28	22.17	22.12
		25#0	22.26	22.16	22.08
		25#12	22.28	22.07	22.08
		25#24	22.33	22.07	22.09
		50#0	22.34	22.05	22.08

LTE Band 13

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	21.28	21.61	22.00
		1#12	21.73	21.71	21.22
		1#24	21.66	21.82	21.36
		12#0	21.90	21.47	21.06
		12#6	21.71	21.76	21.37
		12#11	21.50	21.33	21.54
		25#0	21.28	21.51	21.80
	16-QAM	1#0	22.12	21.94	21.98
		1#12	22.08	22.03	21.34
		1#24	21.37	21.98	21.92
		12#0	21.80	21.89	21.40
		12#6	21.80	21.69	21.65
		12#11	21.80	21.74	21.67
		25#0	21.64	22.02	21.63
10M	QPSK	1#0	/	21.53	/
		1#24	/	21.32	/
		1#49	/	21.48	/
		25#0	/	21.54	/
		25#12	/	21.95	/
		25#24	/	21.33	/
		50#0	/	21.44	/
	16-QAM	1#0	/	21.94	/
		1#24	/	21.29	/
		1#49	/	21.18	/
		25#0	/	21.15	/
		25#12	/	21.45	/
		25#24	/	21.65	/
		50#0	/	21.75	/

Peak-to-average ratio (PAR):**GPRS/ EGPRS 850 Band**

Mode	Channel	PAR (dB)	Limit (dB)
GPRS	Low	2.15	≤ 13
	Middle	2.17	≤ 13
	High	2.14	≤ 13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.16	≤ 13
	Middle	2.05	≤ 13
	High	2.09	≤ 13

WCDMA Band V

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (Rel99)	Low	3.31	≤ 13
	Middle	3.22	≤ 13
	High	3.30	≤ 13
WCDMA (HSDPA)	Low	2.73	≤ 13
	Middle	2.75	≤ 13
	High	2.72	≤ 13
WCDMA (HSUPA)	Low	2.83	≤ 13
	Middle	2.90	≤ 13
	High	2.80	≤ 13
WCDMA (HSPA+)	Low	2.59	≤ 13
	Middle	2.49	≤ 13
	High	2.41	≤ 13

PCS 1900

Mode	Channel	PAR (dB)	Limit (dB)
GPRS	Low	2.09	13
	Middle	2.06	13
	High	2.15	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	2.01	13
	Middle	2.24	13
	High	2.11	13

WCDMA Band II

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (Rel99)	Low	2.72	≤ 13
	Middle	2.68	≤ 13
	High	2.69	≤ 13
WCDMA (HSDPA)	Low	2.57	≤ 13
	Middle	2.47	≤ 13
	High	2.41	≤ 13
WCDMA (HSUPA)	Low	2.61	≤ 13
	Middle	2.55	≤ 13
	High	2.55	≤ 13
WCDMA (HSPA+)	Low	2.52	≤ 13
	Middle	2.51	≤ 13
	High	2.41	≤ 13

WCDMA Band IV

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (Rel99)	Low	2.72	≤ 13
	Middle	2.66	≤ 13
	High	2.74	≤ 13
WCDMA (HSDPA)	Low	2.57	≤ 13
	Middle	2.53	≤ 13
	High	2.46	≤ 13
WCDMA (HSUPA)	Low	2.61	≤ 13
	Middle	2.67	≤ 13
	High	2.70	≤ 13
WCDMA (HSPA+)	Low	2.52	≤ 13
	Middle	2.44	≤ 13
	High	2.48	≤ 13

LTE Band 2

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20M	3.57	3.73	3.62	13
	100 RB		5.51	5.68	5.55	13
16-QAM	1 RB	20M	4.43	4.61	4.53	13
	100 RB		6.33	6.6	6.59	13

LTE Band 4

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	20M	3.52	3.63	3.41	13
	100 RB		5.51	5.56	5.37	13
16-QAM	1 RB	20M	4.27	4.51	4.37	13
	100 RB		6.24	6.47	6.28	13

LTE Band 5

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	10M	3.37	3.64	3.62	13
	50 RB		5.43	5.73	5.62	13
16-QAM	1 RB	10M	4.61	4.73	4.66	13
	50 RB		6.62	6.77	6.57	13

LTE Band 12

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	10M	3.13	3.13	3.17	13
	50 RB		5.10	5.03	5.15	13
16-QAM	1 RB	10M	4.07	4.14	4.07	13
	50 RB		6.13	6.00	6.02	13

LTE Band 13

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	10M	/	3.18	/	13
	50 RB		/	5.09	/	13
16-QAM	1 RB	10M	/	4.05	/	13
	50 RB		/	6.16	/	13

Radiated Power:**GPRS/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)			
GPRS 850, Low Channel (ERP)										
824.20	98.49	77	200	H	33.69	0.62	-1.18	31.89	38.45	6.56
824.20	97.69	310	157	V	32.89	0.62	-1.18	31.09	38.45	7.36
EGPRS 850, Low Channel (ERP)										
824.20	93.61	56	152	H	29.95	0.62	-1.18	28.15	38.45	10.30
824.20	94.13	254	175	V	30.47	0.62	-1.18	28.67	38.45	9.78
GPRS 1900, Low Channel (EIRP)										
1850.2	93.49	225	198	H	20.36	0.84	8.76	28.28	33.00	4.72
1850.2	94.82	350	174	V	21.69	0.84	8.76	29.61	33.00	3.39
EGPRS 1900, Low Channel (EIRP)										
1850.2	89.46	275	163	H	16.33	0.84	8.76	24.25	33.00	8.75
1850.2	90.12	300	112	V	16.99	0.84	8.76	24.91	33.00	8.09

GPRS/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)			
GPRS 850, Middle Channel (ERP)										
836.60	99.16	77	200	H	35.5	0.63	-1.10	33.77	38.45	4.68
836.60	98.23	310	157	V	34.57	0.63	-1.10	32.84	38.45	5.61
EGPRS 850, Middle Channel (ERP)										
836.60	94.12	56	152	H	30.46	0.63	-1.10	28.73	38.45	9.72
836.60	92.89	254	175	V	29.23	0.63	-1.10	27.50	38.45	10.95
GPRS 1900, Middle Channel (EIRP)										
1880.00	93.49	225	198	H	20.36	0.85	8.81	28.32	33.00	4.68
1880.00	94.22	350	174	V	21.09	0.85	8.81	29.05	33.00	3.95
EGPRS 1900, Middle Channel (EIRP)										
1880.00	90.39	275	163	H	17.26	0.85	8.81	25.22	33.00	7.78
1880.00	89.46	300	112	V	16.33	0.85	8.81	24.29	33.00	8.71

GPRS/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)			
GPRS 850, High Channel (ERP)										
848.80	98.16	77	200	H	35.62	0.63	-1.10	33.89	38.45	4.56
848.80	97.68	310	157	V	35.14	0.63	-1.10	33.41	38.45	5.04
EGPRS 850, High Channel (ERP)										
848.80	93.44	56	152	H	30.90	0.63	-1.10	29.17	38.45	9.28
848.80	93.52	254	175	V	30.98	0.63	-1.10	29.25	38.45	9.20
GPRS 1900, High Channel (EIRP)										
1909.80	94.13	225	198	H	21.00	0.85	8.85	29.00	33.00	4.00
1909.80	94.23	350	174	V	21.10	0.85	8.85	29.10	33.00	3.90
EGPRS 1900, High Channel (EIRP)										
1909.80	89.76	275	163	H	16.63	0.85	8.85	24.63	33.00	8.37
1909.80	90.01	300	112	V	16.88	0.85	8.85	24.88	33.00	8.12

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, Low Channel(ERP)										
826.40	87.06	297	187	H	23.55	0.63	-1.17	21.75	38.45	16.70
826.40	86.49	311	130	V	22.98	0.63	-1.17	21.18	38.45	17.27
WCDMA Band II, Low Channel(EIRP)										
1852.40	86.49	168	214	H	14.20	0.84	8.76	22.12	33.00	10.88
1852.40	87.19	246	206	V	14.90	0.84	8.76	22.82	33.00	10.18
WCDMA Band IV, Low Channel(EIRP)										
1715.00	87.49	49	214	H	14.25	0.84	8.57	21.98	30	8.02
1715.00	86.49	176	206	V	13.25	0.84	8.57	20.98	30	9.02

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)										
836.60	87.46	40	187	H	23.95	0.63	-1.14	22.18	38.45	16.27
836.60	86.96	201	130	V	23.45	0.63	-1.14	21.68	38.45	16.77
WCDMA Band II, Middle Channel(EIRP)										
1880.00	86.49	211	214	H	14.20	0.85	9.00	22.35	33.00	10.65
1880.00	87.09	210	206	V	14.80	0.85	9.00	22.95	33.00	10.05
WCDMA Band IV, Middle Channel(EIRP)										
1732.60	88.69	124	214	H	15.45	0.84	8.37	22.98	30.00	7.02
1732.60	87.09	315	206	V	13.85	0.84	8.37	21.38	30.00	8.62

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, High Channel(ERP)										
846.60	86.78	156	187	H	23.27	0.63	-1.11	21.53	38.45	16.92
846.60	87.09	216	130	V	23.58	0.63	-1.11	21.84	38.45	16.61
WCDMA Band II, High Channel(EIRP)										
1907.60	86.96	168	214	H	14.67	0.85	8.85	22.67	33.00	10.33
1907.60	87.19	176	206	V	14.90	0.85	8.85	22.90	33.00	10.10
WCDMA Band IV, High Channel(EIRP)										
1750.00	85.69	236	214	H	12.45	0.84	8.57	20.18	30.00	9.82
1750.00	87.15	307	206	V	13.91	0.84	8.57	21.64	30.00	8.36

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 (dBd/dBi)			
QPSK 1.4M BW Low Channel								
1850.7	H	88.31	15.06	0.84	8.76	22.98	33	10.02
1850.7	V	87.46	14.21	0.84	8.76	22.13	33	10.87
16-QAM 1.4M BW Low Channel								
1850.7	H	88.85	15.60	0.84	8.76	23.52	33	9.48
1850.7	V	87.26	14.01	0.84	8.76	21.93	33	11.07
QPSK 3M BW Low Channel								
1851.5	H	88.16	14.92	0.84	8.76	22.84	33	10.16
1851.5	V	87.82	14.58	0.84	8.76	22.50	33	10.50
16-QAM 3M BW Low Channel								
1851.5	H	88.81	15.57	0.84	8.76	23.49	33	9.51
1851.5	V	87.75	14.51	0.84	8.76	22.43	33	10.57
QPSK 5M BW Low Channel								
1852.5	H	88.3	15.07	0.84	8.76	22.99	33	10.01
1852.5	V	87.36	14.13	0.84	8.76	22.05	33	10.95
16-QAM 5M BW Low Channel								
1852.5	H	88.4	15.17	0.84	8.76	23.09	33	9.91
1852.5	V	87.65	14.42	0.84	8.76	22.34	33	10.66
QPSK 10M BW Low Channel								
1855	H	88.07	14.86	0.84	8.77	22.79	33	10.21
1855	V	87.99	14.78	0.84	8.77	22.71	33	10.29
16-QAM 10M BW Low Channel								
1855	H	88.07	14.86	0.84	8.77	22.79	33	10.21
1855	V	87.1	13.89	0.84	8.77	21.82	33	11.18
QPSK 15M BW Low Channel								
1857.5	H	88.19	14.99	0.84	8.77	22.92	33	10.08
1857.5	V	87.12	13.92	0.84	8.77	21.85	33	11.15
16-QAM 15M BW Low Channel								
1857.5	H	88.97	15.77	0.84	8.77	23.70	33	9.30
1857.5	V	87.85	14.65	0.84	8.77	22.58	33	10.42

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 20M BW Low Channel								
1860	H	88.26	15.08	0.84	8.78	23.02	33	9.98
1860	V	87.23	14.05	0.84	8.78	21.99	33	11.01
16-QAM 20M BW Low Channel								
1860	H	88.16	14.98	0.84	8.78	22.92	33	10.08
1860	V	87.82	14.64	0.84	8.78	22.58	33	10.42

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 1.4M BW Middle Channel								
1880	H	88.65	15.61	0.85	8.81	23.57	33	9.43
1880	V	87.15	14.11	0.85	8.81	22.07	33	10.93
16-QAM 1.4M BW Middle Channel								
1880	H	88.95	15.91	0.85	8.81	23.87	33	9.13
1880	V	87.18	14.14	0.85	8.81	22.10	33	10.90
QPSK 3M BW Middle Channel								
1880	H	88.29	15.25	0.85	8.81	23.21	33	9.79
1880	V	87.79	14.75	0.85	8.81	22.71	33	10.29
16-QAM 3M BW Middle Channel								
1880	H	88.59	15.55	0.85	8.81	23.51	33	9.49
1880	V	87.89	15.07	0.85	8.81	23.03	33	9.97
QPSK 5M BW Middle Channel								
1880	H	88.31	15.27	0.85	8.81	23.23	33	9.77
1880	V	87.87	15.05	0.85	8.81	23.01	33	9.99
16-QAM 5M BW Middle Channel								
1880	H	88.05	15.01	0.85	8.81	22.97	33	10.03
1880	V	87.78	14.96	0.85	8.81	22.92	33	10.08
QPSK 10M BW Middle Channel								
1880	H	88.61	15.57	0.85	8.81	23.53	33	9.47
1880	V	87.16	14.34	0.85	8.81	22.30	33	10.70
16-QAM 10M BW Middle Channel								
1880	H	88.57	15.53	0.85	8.81	23.49	33	9.51
1880	V	87.39	14.57	0.85	8.81	22.53	33	10.47
QPSK 15M BW Middle Channel								
1880	H	88.36	15.32	0.85	8.81	23.28	33	9.72
1880	V	87.33	14.51	0.85	8.81	22.47	33	10.53
16-QAM 15M BW Middle Channel								
1880	H	88.86	15.82	0.85	8.81	23.78	33	9.22
1880	V	87.65	14.83	0.85	8.81	22.79	33	10.21

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 20M BW Middle Channel								
1880	H	88.02	14.98	0.85	8.81	22.94	33	10.06
1880	V	87.66	14.84	0.85	8.81	22.80	33	10.20
16-QAM 20M BW Middle Channel								
1880	H	88.43	15.39	0.85	8.81	23.35	33	9.65
1880	V	87.08	14.26	0.85	8.81	22.22	33	10.78

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 1.4M BW High Channel								
1909.30	H	88.37	15.53	0.85	8.85	23.53	33	9.47
1909.30	V	87.87	15.03	0.85	8.85	23.03	33	9.97
16-QAM 1.4M BW High Channel								
1909.30	H	88.99	16.15	0.85	8.85	24.15	33	8.85
1909.30	V	87.17	14.33	0.85	8.85	22.33	33	10.67
QPSK 3M BW High Channel								
1908.50	H	88.19	15.34	0.85	8.85	23.34	33	9.66
1908.50	V	87	14.15	0.85	8.85	22.15	33	10.85
16-QAM 3M BW Low Channel								
1908.50	H	88.62	15.77	0.85	8.85	23.77	33	9.23
1908.50	V	87.13	14.28	0.85	8.85	22.28	33	10.72
QPSK 5M BW High Channel								
1907.50	H	88.76	15.91	0.85	8.85	23.91	33	9.09
1907.50	V	87.86	15.01	0.85	8.85	23.01	33	9.99
16-QAM 5M BW High Channel								
1907.50	H	88.22	15.37	0.85	8.85	23.37	33	9.63
1907.50	V	87.07	14.22	0.85	8.85	22.22	33	10.78
QPSK 10M BW High Channel								
1905.00	H	88.56	15.69	0.85	8.85	23.69	33	9.31
1905.00	V	87.23	14.36	0.85	8.85	22.36	33	10.64
16-QAM 10M BW High Channel								
1905.00	H	88.73	15.86	0.85	8.85	23.86	33	9.14
1905.00	V	87.3	14.43	0.85	8.85	22.43	33	10.57
QPSK 15M BW High Channel								
1902.50	H	88.62	15.73	0.85	8.84	23.72	33	9.28
1902.50	V	87.04	14.15	0.85	8.84	22.14	33	10.86
16-QAM 15M BW High Channel								
1902.50	H	88.08	15.19	0.85	8.84	23.18	33	9.82
1902.50	V	87.07	14.18	0.85	8.84	22.17	33	10.83

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 20M BW High Channel								
1900.00	H	88.26	15.36	0.85	8.84	23.35	33	9.65
1900.00	V	87.16	14.26	0.85	8.84	22.25	33	10.75
16-QAM 20M BW High Channel								
1900.00	H	88.53	15.63	0.85	8.84	23.62	33	9.38
1900.00	V	87.38	14.48	0.85	8.84	22.47	33	10.53

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 (dBd/dBi)			
QPSK 1.4M BW Low Channel								
1710.7	H	88.25	14.03	0.84	8.54	21.73	30	8.27
1710.7	V	87.77	13.55	0.84	8.54	21.25	30	8.75
16-QAM 1.4M BW Low Channel								
1710.7	H	88.09	13.87	0.84	8.54	21.57	30	8.43
1710.7	V	87.62	13.40	0.84	8.54	21.10	30	8.90
QPSK 3M BW Low Channel								
1711.5	H	88.13	13.92	0.84	8.54	21.62	30	8.38
1711.5	V	87.02	12.81	0.84	8.54	20.51	30	9.49
16-QAM 3M BW Low Channel								
1711.5	H	88.82	14.61	0.84	8.54	22.31	30	7.69
1711.5	V	87.11	12.90	0.84	8.54	20.60	30	9.40
QPSK 5M BW Low Channel								
1712.5	H	88.76	14.56	0.84	8.54	22.26	30	7.74
1712.5	V	87.81	13.61	0.84	8.54	21.31	30	8.69
16-QAM 5M BW Low Channel								
1712.5	H	88.7	14.50	0.84	8.54	22.20	30	7.80
1712.5	V	87.38	13.18	0.84	8.54	20.88	30	9.12
QPSK 10M BW Low Channel								
1715	H	88.54	14.36	0.84	8.54	22.06	30	7.94
1715	V	87.32	13.14	0.84	8.54	20.84	30	9.16
16-QAM 10M BW Low Channel								
1715	H	88.45	14.27	0.84	8.54	21.97	30	8.03
1715	V	87.8	13.62	0.84	8.54	21.32	30	8.68
QPSK 15M BW Low Channel								
1717.5	H	88.52	14.35	0.84	8.55	22.06	30	7.94
1717.5	V	87.06	12.89	0.84	8.55	20.60	30	9.40
16-QAM 15M BW Low Channel								
1717.5	H	88.33	14.16	0.84	8.55	21.87	30	8.13
1717.5	V	87.66	13.49	0.84	8.55	21.20	30	8.80

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 20M BW Low Channel								
1720	H	88.96	14.81	0.84	8.55	22.52	30	7.48
1720	V	87.94	13.79	0.84	8.55	21.50	30	8.50
16-QAM 20M BW Low Channel								
1720	H	88.87	14.72	0.84	8.55	22.43	30	7.57
1720	V	87.4	13.25	0.84	8.55	20.96	30	9.04

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 1.4M BW Middle Channel								
1732.5	H	88.12	14.06	0.84	8.57	21.79	30	8.21
1732.5	V	87.59	13.53	0.84	8.57	21.26	30	8.74
16-QAM 1.4M BW Middle Channel								
1732.5	H	88.51	14.45	0.84	8.57	22.18	30	7.82
1732.5	V	87.43	13.37	0.84	8.57	21.10	30	8.90
QPSK 3M BW Middle Channel								
1732.5	H	88.91	14.85	0.84	8.57	22.58	30	7.42
1732.5	V	87.46	13.40	0.84	8.57	21.13	30	8.87
16-QAM 3M BW Middle Channel								
1732.5	H	88.77	14.71	0.84	8.57	22.44	30	7.56
1732.5	V	87.42	13.36	0.84	8.57	21.09	30	8.91
QPSK 5M BW Middle Channel								
1732.5	H	88.21	14.15	0.84	8.57	21.88	30	8.12
1732.5	V	87.02	12.96	0.84	8.57	20.69	30	9.31
16-QAM 5M BW Middle Channel								
1732.5	H	88.65	14.59	0.84	8.57	22.32	30	7.68
1732.5	V	87.41	13.35	0.84	8.57	21.08	30	8.92
QPSK 10M BW Middle Channel								
1732.5	H	88.15	14.09	0.84	8.57	21.82	30	8.18
1732.5	V	87.55	13.49	0.84	8.57	21.22	30	8.78
16-QAM 10M BW Middle Channel								
1732.5	H	88.17	14.11	0.84	8.57	21.84	30	8.16
1732.5	V	87.69	13.63	0.84	8.57	21.36	30	8.64
QPSK 15M BW Middle Channel								
1732.5	H	88.04	13.98	0.84	8.57	21.71	30	8.29
1732.5	V	87.3	13.24	0.84	8.57	20.97	30	9.03
16-QAM 15M BW Middle Channel								
1732.5	H	88.16	14.10	0.84	8.57	21.83	30	8.17
1732.5	V	87.1	13.04	0.84	8.57	20.77	30	9.23

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 20M BW Middle Channel								
1732.5	H	88.65	14.59	0.84	8.57	22.32	30	7.68
1732.5	V	87.86	13.80	0.84	8.57	21.53	30	8.47
16-QAM 20M BW Middle Channel								
1732.5	H	88.39	14.33	0.84	8.57	22.06	30	7.94
1732.5	V	87.88	13.82	0.84	8.57	21.55	30	8.45

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 1.4M BW High Channel								
1754.30	H	88.84	14.93	0.84	8.61	22.70	30.00	7.30
1754.30	V	87.59	13.68	0.84	8.61	21.45	30.00	8.55
16-QAM 1.4M BW High Channel								
1754.30	H	88.43	14.52	0.84	8.61	22.29	30.00	7.71
1754.30	V	87.52	13.61	0.84	8.61	21.38	30.00	8.62
QPSK 3M BW High Channel								
1753.50	H	88.58	14.66	0.84	8.60	22.42	30.00	7.58
1753.50	V	87.85	13.93	0.84	8.60	21.69	30.00	8.31
16-QAM 3M BW High Channel								
1753.50	H	88.23	14.31	0.84	8.60	22.07	30.00	7.93
1753.50	V	87.82	13.90	0.84	8.60	21.66	30.00	8.34
QPSK 5M BW High Channel								
1752.50	H	88.02	14.09	0.84	8.60	21.85	30.00	8.15
1752.50	V	87.71	13.78	0.84	8.60	21.54	30.00	8.46
16-QAM 5M BW High Channel								
1752.50	H	88.26	14.33	0.84	8.60	22.09	30.00	7.91
1752.50	V	87.96	14.03	0.84	8.60	21.79	30.00	8.21
QPSK 10M BW High Channel								
1750.00	H	88.19	14.25	0.84	8.60	22.01	30.00	7.99
1750.00	V	87.08	13.14	0.84	8.60	20.90	30.00	9.10
16-QAM 10M BW High Channel								
1750.00	H	88.63	14.69	0.84	8.60	22.45	30.00	7.55
1750.00	V	87.22	13.28	0.84	8.60	21.04	30.00	8.96
QPSK 15M BW High Channel								
1747.50	H	88.03	14.07	0.84	8.60	21.83	30.00	8.17
1747.50	V	87.01	13.05	0.84	8.60	20.81	30.00	9.19
16-QAM 15M BW High Channel								
1747.50	H	88.23	14.27	0.84	8.60	22.03	30.00	7.97
1747.50	V	87.56	13.60	0.84	8.60	21.36	30.00	8.64

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 20M BW High Channel								
1745.00	H	88.77	14.80	0.84	8.59	22.55	30	7.45
1745.00	V	87.8	13.83	0.84	8.59	21.58	30	8.42
16-QAM 20M High Channel								
1745.00	H	88.10	14.13	0.84	8.59	21.88	30	8.12
1745.00	V	87.38	13.41	0.84	8.59	21.16	30	8.84

LTE Band 5

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 1.4M BW Low Channel								
824.7	H	88.16	23.38	0.62	-1.18	21.58	38.45	16.87
824.7	V	87.69	22.91	0.62	-1.18	21.11	38.45	17.34
16-QAM 1.4M BW Low Channel								
824.7	H	88.3	23.52	0.62	-1.18	21.72	38.45	16.73
824.7	V	87.27	22.49	0.62	-1.18	20.69	38.45	17.76
QPSK 3M BW Low Channel								
825.5	H	88.57	23.86	0.63	-1.17	22.06	38.45	16.39
825.5	V	87.74	23.03	0.63	-1.17	21.23	38.45	17.22
16-QAM 3M BW Low Channel								
825.5	H	88.94	24.23	0.63	-1.17	22.43	38.45	16.02
825.5	V	87.4	22.69	0.63	-1.17	20.89	38.45	17.56
QPSK 5M BW Low Channel								
826.5	H	88.68	24.06	0.63	-1.17	22.26	38.45	16.19
826.5	V	87.18	22.56	0.63	-1.17	20.76	38.45	17.69
16-QAM 5M BW Low Channel								
826.5	H	88.4	23.78	0.63	-1.17	21.98	38.45	16.47
826.5	V	87.5	22.88	0.63	-1.17	21.08	38.45	17.37
QPSK 10M BW Low Channel								
829.0	H	88.55	24.16	0.63	-1.16	22.37	38.45	16.08
829.0	V	87.01	22.62	0.63	-1.16	20.83	38.45	17.62
16-QAM 10M BW Low Channel								
829.0	H	88.89	24.50	0.63	-1.16	22.71	38.45	15.74
829.0	V	87.72	23.33	0.63	-1.16	21.54	38.45	16.91

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 1.4M BW Middle Channel								
836.5	H	88.22	22.75	0.63	-1.14	20.98	38.45	17.47
836.5	V	87.3	21.83	0.63	-1.14	20.06	38.45	18.39
16-QAM 1.4M BW Middle Channel								
836.5	H	88.85	23.38	0.63	-1.14	21.61	38.45	16.84
836.5	V	87.62	22.15	0.63	-1.14	20.38	38.45	18.07
QPSK 3M BW Middle Channel								
836.5	H	88.42	22.95	0.63	-1.14	21.18	38.45	17.27
836.5	V	87.43	21.96	0.63	-1.14	20.19	38.45	18.26
16-QAM 3M BW Middle Channel								
836.5	H	88.31	22.84	0.63	-1.14	21.07	38.45	17.38
836.5	V	87.53	22.06	0.63	-1.14	20.29	38.45	18.16
QPSK 5M BW Middle Channel								
836.5	H	88.19	22.72	0.63	-1.14	20.95	38.45	17.50
836.5	V	87.8	22.33	0.63	-1.14	20.56	38.45	17.89
16-QAM 5M BW Middle Channel								
836.5	H	88.98	23.51	0.63	-1.14	21.74	38.45	16.71
836.5	V	87.64	22.17	0.63	-1.14	20.40	38.45	18.05
QPSK 10M BW Middle Channel								
836.5	H	88.04	22.57	0.63	-1.14	20.80	38.45	17.65
836.5	V	87.53	22.06	0.63	-1.14	20.29	38.45	18.16
16-QAM 10M BW Middle Channel								
836.5	H	88.19	22.72	0.63	-1.14	20.95	38.45	17.50
836.5	V	87.64	22.17	0.63	-1.14	20.40	38.45	18.05

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 1.4M BW High Channel								
848.30	H	88.99	26.37	0.62	-1.11	24.64	38.45	13.81
848.30	V	87.55	24.93	0.62	-1.11	23.20	38.45	15.25
16-QAM 1.4M BW High Channel								
848.30	H	88.39	25.77	0.62	-1.11	24.04	38.45	14.41
848.30	V	87.42	24.80	0.62	-1.11	23.07	38.45	15.38
QPSK 3M BW High Channel								
847.50	H	88.67	25.98	0.63	-1.11	24.24	38.45	14.21
847.50	V	87.01	24.32	0.63	-1.11	22.58	38.45	15.87
16-QAM 3M BW High Channel								
847.50	H	88.22	25.53	0.63	-1.11	23.79	38.45	14.66
847.50	V	87.17	24.48	0.63	-1.11	22.74	38.45	15.71
QPSK 5M BW High Channel								
846.50	H	88.35	25.57	0.63	-1.11	23.83	38.45	14.62
846.50	V	87.3	24.52	0.63	-1.11	22.78	38.45	15.67
16-QAM 5M BW High Channel								
846.50	H	88.09	25.31	0.63	-1.11	23.57	38.45	14.88
846.50	V	87.7	24.92	0.63	-1.11	23.18	38.45	15.27
QPSK 10M BW High Channel								
844.00	H	88.51	25.50	0.63	-1.12	23.75	38.45	14.70
844.00	V	87.28	24.27	0.63	-1.12	22.52	38.45	15.93
16-QAM 10M BW High Channel								
844.00	H	88.68	25.67	0.63	-1.12	23.92	38.45	14.53
844.00	V	87.76	24.75	0.63	-1.12	23.00	38.45	15.45

ERP:**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/dBi)			
QPSK 1.4M BW Low Channel								
699.7	H	88.53	18.89	0.62	-1.75	16.52	34.77	18.25
699.7	V	87.41	17.77	0.62	-1.75	15.4	34.77	19.37
16-QAM 1.4M BW Low Channel								
699.7	H	88.42	18.78	0.62	-1.75	16.41	34.77	18.36
699.7	V	87.26	17.62	0.62	-1.75	15.25	34.77	19.52
QPSK 3M BW Low Channel								
700.5	H	88.58	18.90	0.62	-1.75	16.53	34.77	18.24
700.5	V	87.46	17.78	0.62	-1.75	15.41	34.77	19.36
16-QAM 3M BW Low Channel								
700.5	H	88.83	19.15	0.62	-1.75	16.78	34.77	17.99
700.5	V	87.23	17.55	0.62	-1.75	15.18	34.77	19.59
QPSK 5M BW Low Channel								
701.5	H	88.42	18.73	0.62	-1.74	16.37	34.77	18.4
701.5	V	87.69	18.00	0.62	-1.74	15.64	34.77	19.13
16-QAM 5M BW Low Channel								
701.5	H	88.47	18.78	0.62	-1.74	16.42	34.77	18.35
701.5	V	87.54	17.85	0.62	-1.74	15.49	34.77	19.28
QPSK 10M BW Low Channel								
704.0	H	88.85	19.11	0.62	-1.73	16.76	34.77	18.01
704.0	V	87.5	17.76	0.62	-1.73	15.41	34.77	19.36
16-QAM 10M BW Low Channel								
704.0	H	88.39	18.65	0.62	-1.73	16.3	34.77	18.47
704.0	V	87.37	17.63	0.62	-1.73	15.28	34.77	19.49

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 1.4M BW Middle Channel								
707.5	H	88.39	24.90	0.62	-1.71	22.57	34.77	12.20
707.5	V	87.64	24.15	0.62	-1.71	21.82	34.77	12.95
16-QAM 1.4M BW Middle Channel								
707.5	H	88.10	24.61	0.62	-1.71	22.28	34.77	12.49
707.5	V	87.75	24.26	0.62	-1.71	21.93	34.77	12.84
QPSK 3M BW Middle Channel								
707.5	H	88.50	25.01	0.62	-1.71	22.68	34.77	12.09
707.5	V	87.00	23.51	0.62	-1.71	21.18	34.77	13.59
16-QAM 3M BW Middle Channel								
707.5	H	88.43	24.94	0.62	-1.71	22.61	34.77	12.16
707.5	V	87.69	24.20	0.62	-1.71	21.87	34.77	12.90
QPSK 5M BW Middle Channel								
707.5	H	88.75	25.26	0.62	-1.71	22.93	34.77	11.84
707.5	V	87.39	23.90	0.62	-1.71	21.57	34.77	13.20
16-QAM 5M BW Middle Channel								
707.5	H	88.21	24.72	0.62	-1.71	22.39	34.77	12.38
707.5	V	87.22	23.73	0.62	-1.71	21.4	34.77	13.37
QPSK 10M BW Middle Channel								
707.5	H	88.37	24.88	0.62	-1.71	22.55	34.77	12.22
707.5	V	87.80	24.31	0.62	-1.71	21.98	34.77	12.79
16-QAM 10M BW Middle Channel								
707.5	H	88.67	25.18	0.62	-1.71	22.85	34.77	11.92
707.5	V	87.51	24.02	0.62	-1.71	21.69	34.77	13.08

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 1.4M BW High Channel								
715.30	H	88.75	18.83	0.62	-1.67	16.54	34.77	18.23
715.30	V	87.38	17.46	0.62	-1.67	15.17	34.77	19.60
16-QAM 1.4M BW High Channel								
715.30	H	88.36	18.44	0.62	-1.67	16.15	34.77	18.62
715.30	V	87.22	17.30	0.62	-1.67	15.01	34.77	19.76
QPSK 3M BW High Channel								
714.50	H	88.65	18.74	0.62	-1.68	16.44	34.77	18.33
714.50	V	87.26	17.35	0.62	-1.68	15.05	34.77	19.72
16-QAM 3M BW High Channel								
714.50	H	88.68	18.77	0.62	-1.68	16.47	34.77	18.30
714.50	V	87.58	17.67	0.62	-1.68	15.37	34.77	19.40
QPSK 5M BW High Channel								
713.50	H	88.31	18.42	0.62	-1.68	16.12	34.77	18.65
713.50	V	87.02	17.13	0.62	-1.68	14.83	34.77	19.94
16-QAM 5M BW High Channel								
713.50	H	88.61	18.72	0.62	-1.68	16.42	34.77	18.35
713.50	V	87.73	17.84	0.62	-1.68	15.54	34.77	19.23
QPSK 10M BW High Channel								
711.00	H	88.24	18.39	0.62	-1.70	16.07	34.77	18.70
711.00	V	87.64	17.79	0.62	-1.70	15.47	34.77	19.30
16-QAM 10M BW High Channel								
711.00	H	88.71	18.86	0.62	-1.70	16.54	34.77	18.23
711.00	V	87.50	17.65	0.62	-1.70	15.33	34.77	19.44

ERP:**LTE Band 13**

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 Low Channel								
779.5	H	88.45	26.36	0.65	-1.35	24.36	44.77	20.41
779.5	V	87.94	25.85	0.65	-1.35	23.85	44.77	20.92
16-QAM 5M BW Low Channel								
779.5	H	88.79	26.70	0.65	-1.35	24.70	44.77	20.07
779.5	V	87.63	25.54	0.65	-1.35	23.54	44.77	21.23

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								
782	H	88.43	26.14	0.65	-1.34	24.15	44.77	20.62
782	V	87.32	25.03	0.65	-1.34	23.04	44.77	21.73
16-QAM 5M BW Middle Channel								
782	H	88.86	26.57	0.65	-1.34	24.58	44.77	20.19
782	V	87.88	25.59	0.65	-1.34	23.60	44.77	21.17
QPSK 10M BW Middle Channel								
782	H	88.30	26.01	0.65	-1.34	24.02	44.77	20.75
782	V	87.57	25.28	0.65	-1.34	23.29	44.77	21.48
16-QAM 10M BW Middle Channel								
782	H	88.12	25.83	0.65	-1.34	23.84	44.77	20.93
782	V	87.60	25.31	0.65	-1.34	23.32	44.77	21.45

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 High Channel								
784.5	H	88.78	26.43	0.62	-1.63	24.18	44.77	20.59
784.5	V	87.04	24.69	0.62	-1.63	22.44	44.77	22.33
16-QAM 5M BW High Channel								
784.5	H	88.30	25.95	0.62	-1.63	23.70	44.77	21.07
784.5	V	87.81	25.46	0.62	-1.63	23.21	44.77	21.56

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

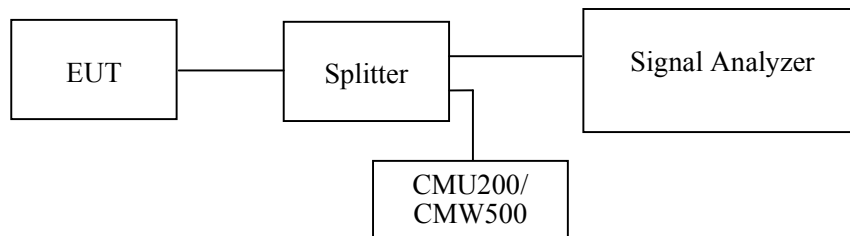
Applicable Standards

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 3 kHz (Cellular /PCS) & 50 kHz (WCDMA) & 30 kHz/50 kHz/100 kHz/200 kHz (LTE), and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

Temperature:	24.9~25.3 °C
Relative Humidity:	50~52 %
ATM Pressure:	100.7~102.9 kPa

The testing was performed by CK Huang from 2020-09-22 to 2020-09-29.

EUT operation mode: Transmitting

Test Result: Compliance.

GSM 850 Band

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
GPRS (GMSK)	824.2	0.319	0.244
	836.6	0.315	0.244
	848.8	0.321	0.244
EGPRS (8PSK)	824.2	0.311	0.246
	836.6	0.305	0.244
	848.8	0.311	0.244

WCDMA Band V

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (Rel 99)	826.4	4.669	4.128
	836.6	4.649	4.128
	846.6	4.669	4.128
WCDMA (HSDPA)	826.4	4.649	4.128
	836.6	4.629	4.128
	846.6	4.649	4.128
WCDMA (HSUPA)	826.4	4.649	4.128
	836.6	4.649	4.108
	846.6	4.669	4.128
WCDMA (HSPA+)	826.4	4.649	4.128
	836.6	4.649	4.128
	846.6	4.629	4.128

PCS 1900

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
GPRS (GMSK)	1850.2	0.318	0.246
	1880.0	0.318	0.244
	1909.8	0.321	0.251
EGPRS (8PSK)	1850.2	0.305	0.240
	1880.0	0.311	0.244
	1909.8	0.311	0.246

WCDMA Band II

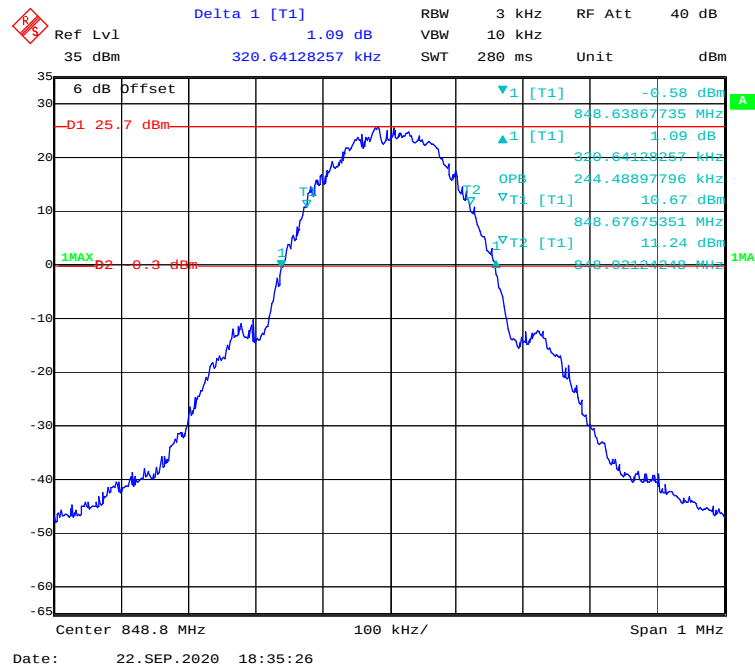
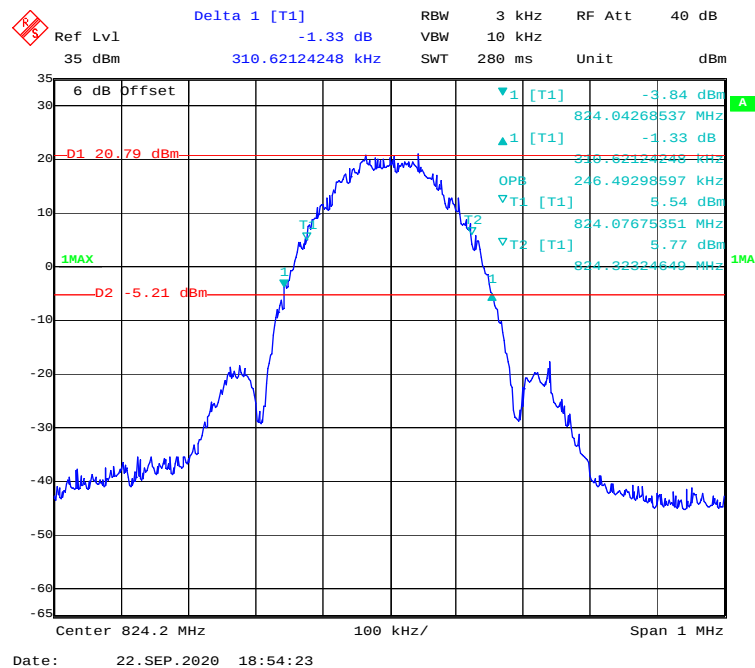
Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (Rel 99)	1852.4	4.629	4.128
	1880.0	4.649	4.148
	1907.6	4.689	4.128
WCDMA (HSDPA)	1852.4	4.669	4.128
	1880.0	4.669	4.128
	1907.6	4.689	4.128
WCDMA (HSUPA)	1852.4	4.669	4.128
	1880.0	4.669	4.128
	1907.6	4.689	4.148
WCDMA (HSPA+)	1852.4	4.669	4.128
	1880.0	4.669	4.148
	1907.6	4.669	4.128

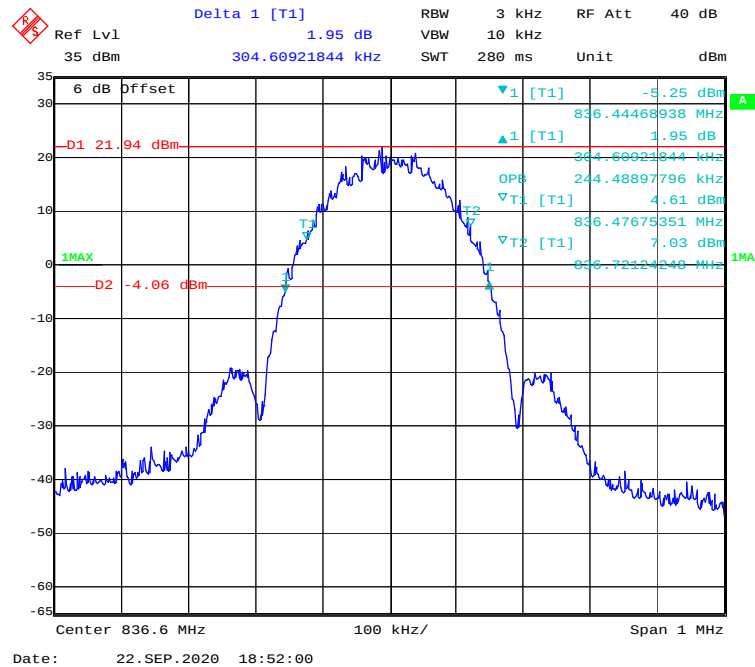
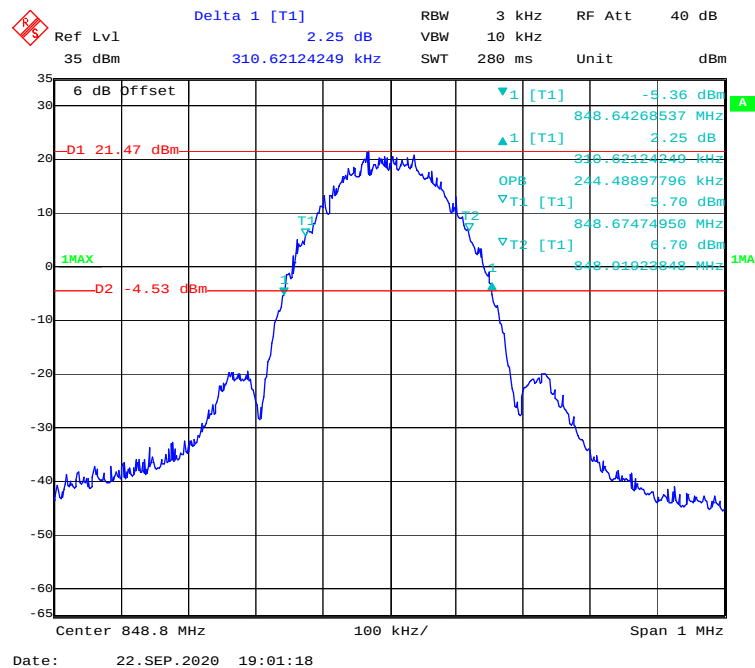
WCDMA Band IV

Mode	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
WCDMA (Rel 99)	1712.4	4.669	4.128
	1732.6	4.669	4.128
	1752.6	4.669	4.128
WCDMA (HSDPA)	1712.4	4.689	4.148
	1732.6	4.629	4.148
	1752.6	4.649	4.128
WCDMA (HSUPA)	1712.4	4.649	4.128
	1732.6	4.669	4.148
	1752.6	4.689	4.168
WCDMA (HSPA+)	1712.4	4.669	4.128
	1732.6	4.649	4.148
	1752.6	4.669	4.148

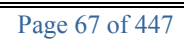
99% Occupied & 26 dB Emissions Bandwidth for GPRS (GMSK) Low channel



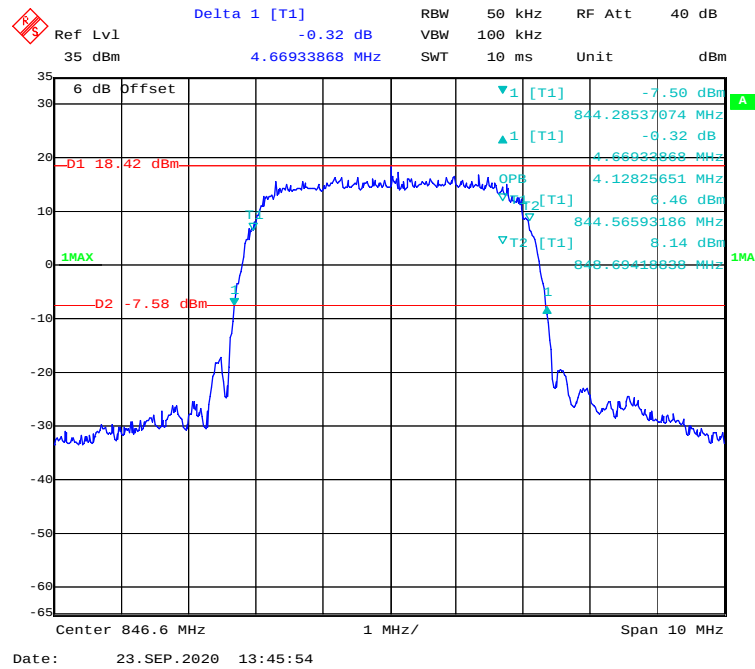
99% Occupied & 26 dB Emissions Bandwidth for GPRS (GMSK) High channel**99% Occupied & 26 dB Emissions Bandwidth for EGPRS (GMSK) Low channel**

99% Occupied & 26 dB Emissions Bandwidth for EGPRS (GMSK) Middle channel**99% Occupied & 26 dB Emissions Bandwidth for EGPRS (GMSK) High channel**

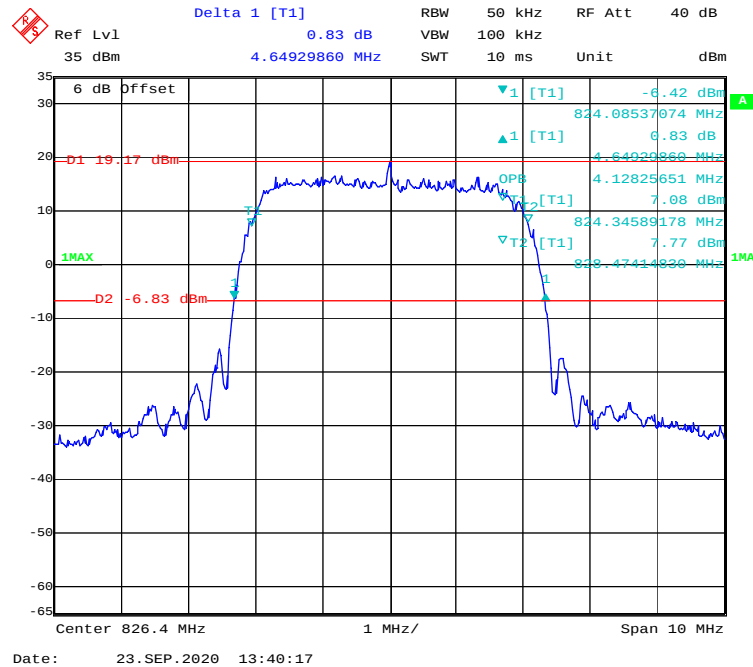
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Low channel



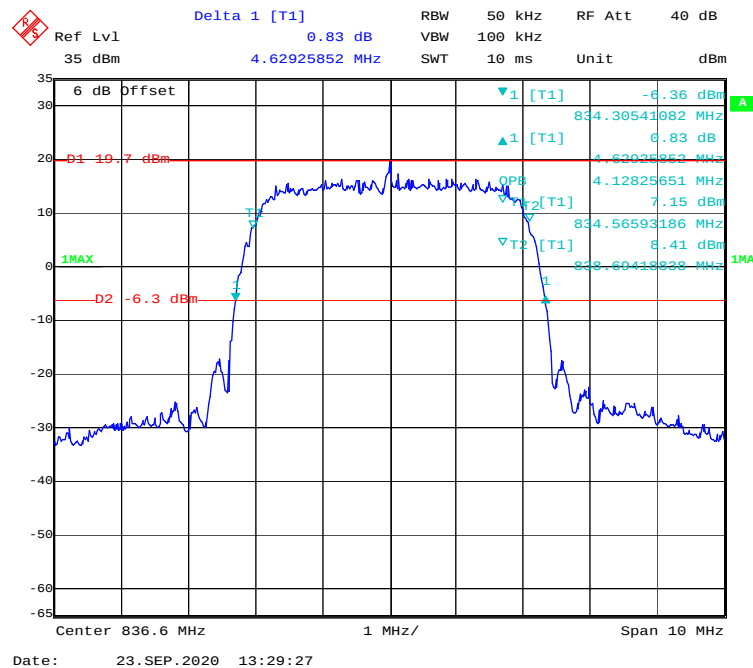
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) High channel



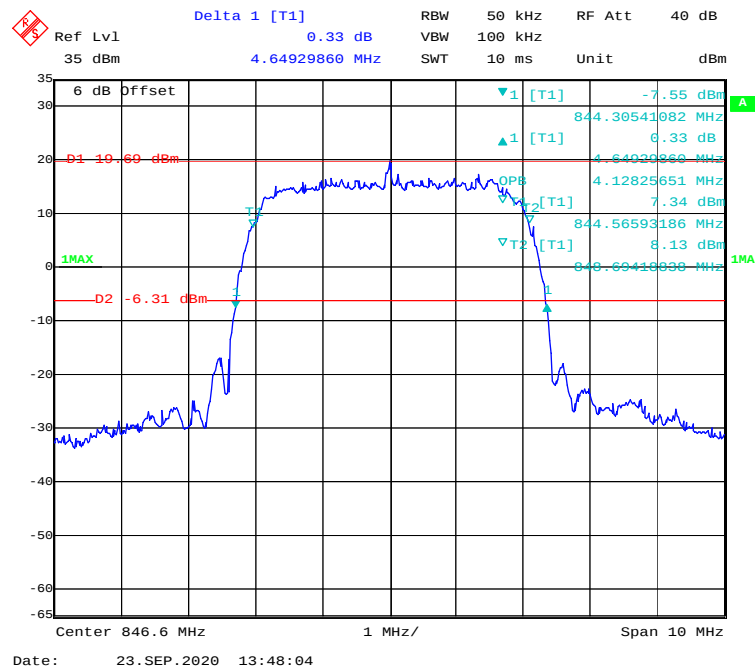
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Low channel



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

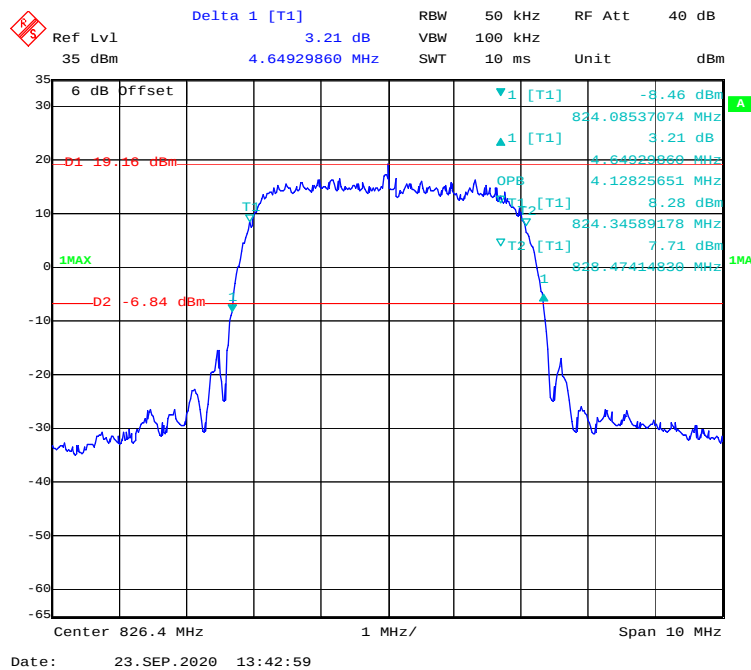


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) High channel

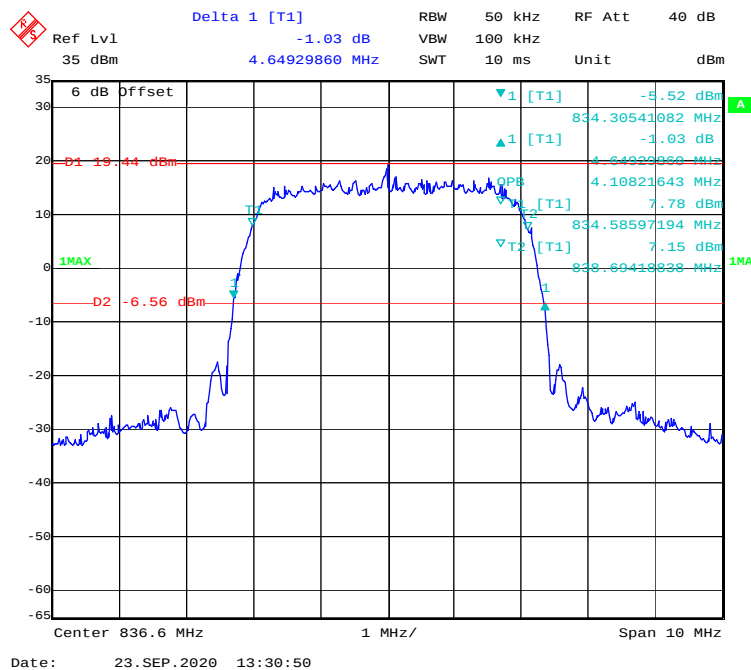


WCDMA Band V

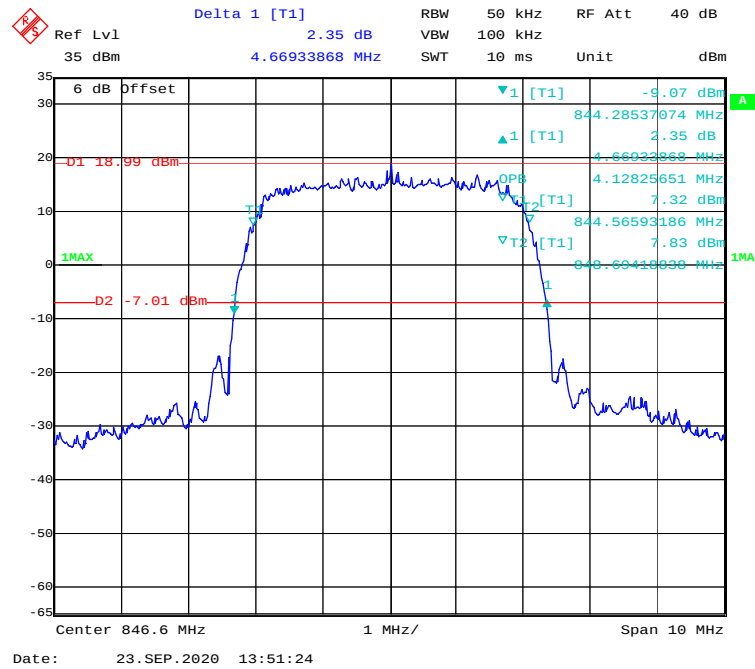
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Low channel

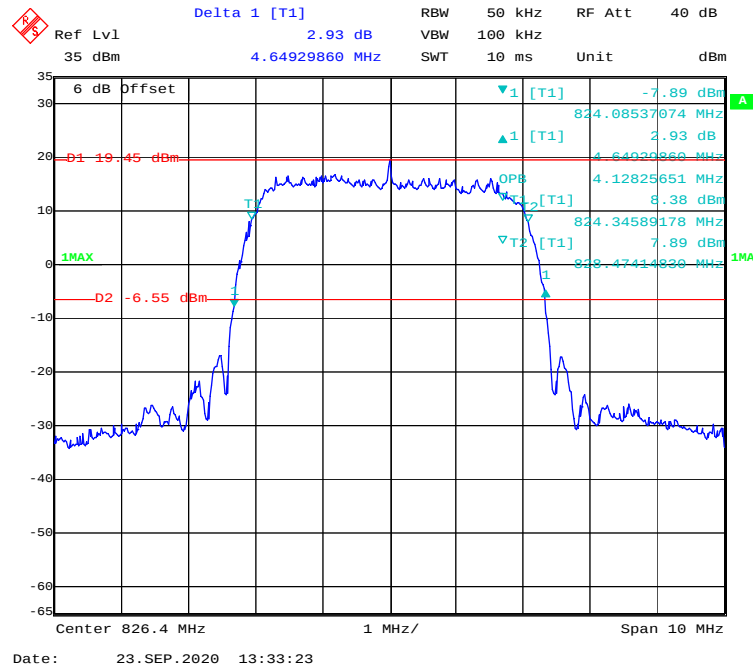
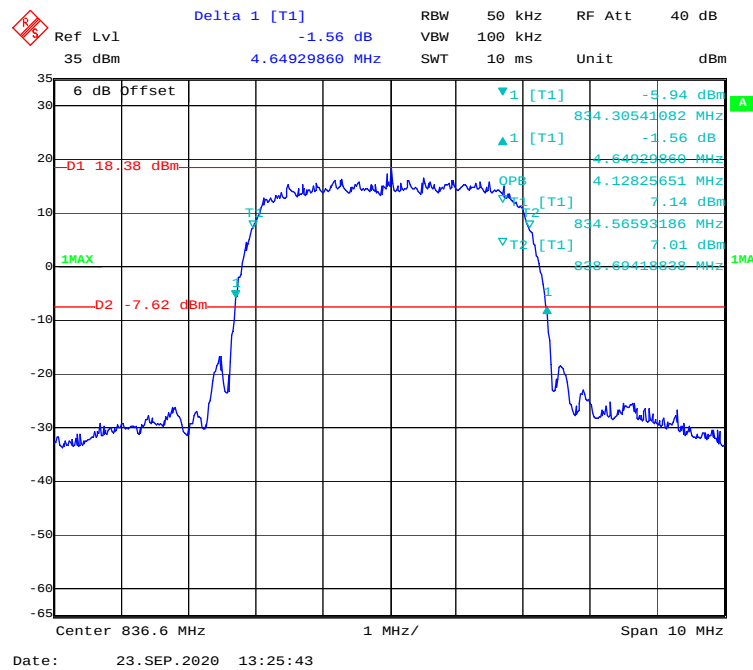


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Middle channel

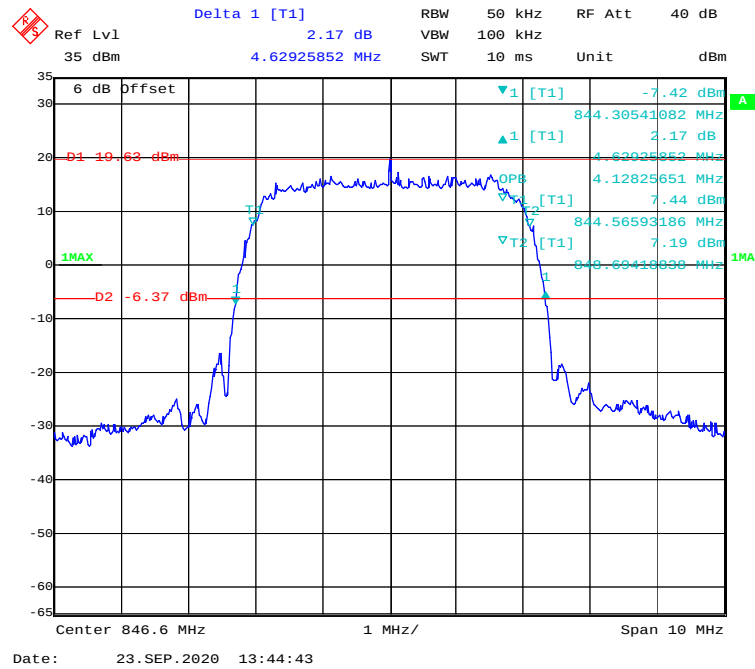


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) High channel



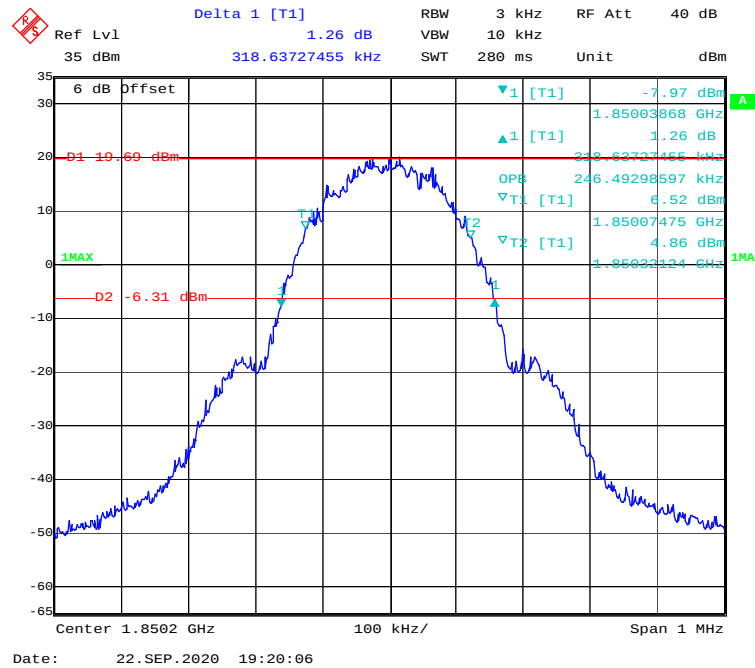
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Low channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Middle channel**

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

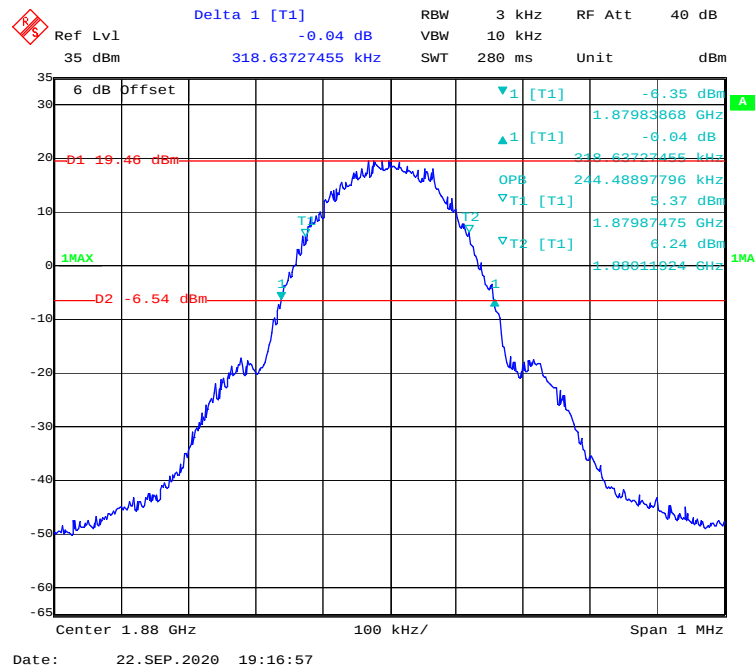


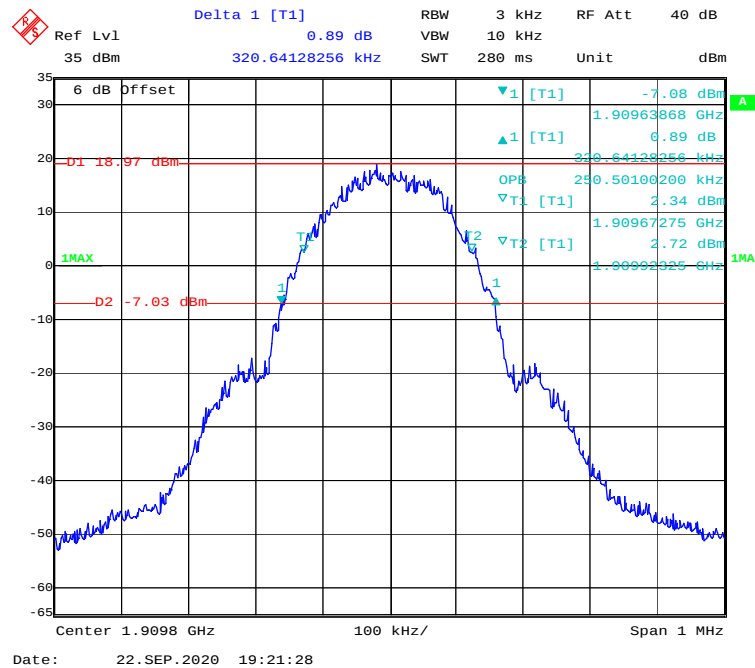
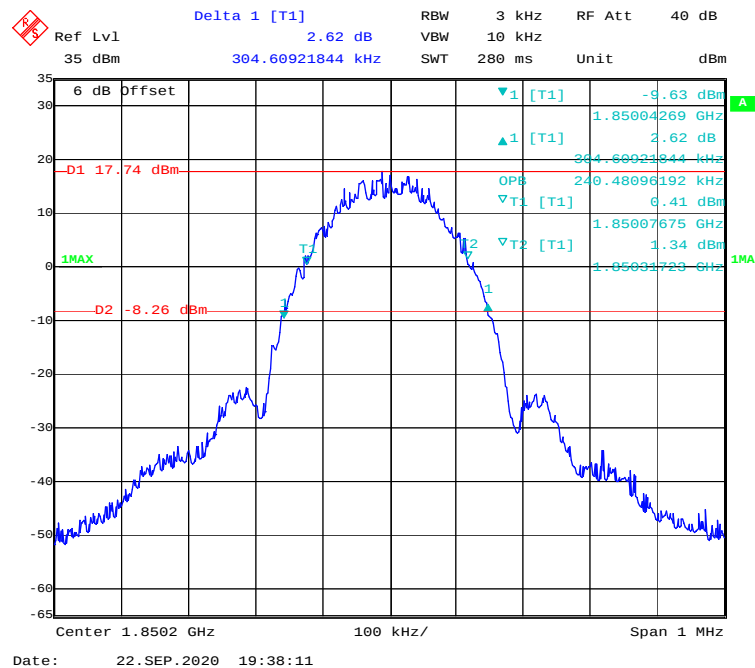
PCS 1900 Band

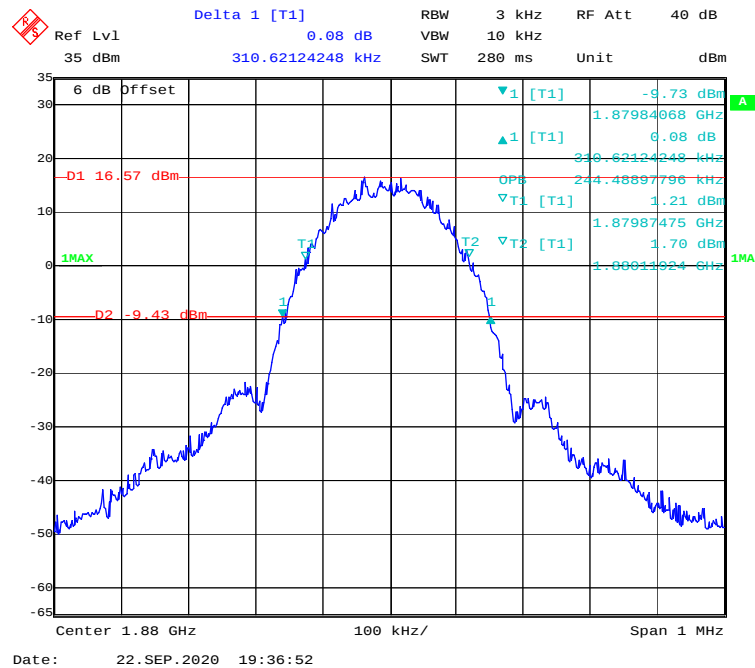
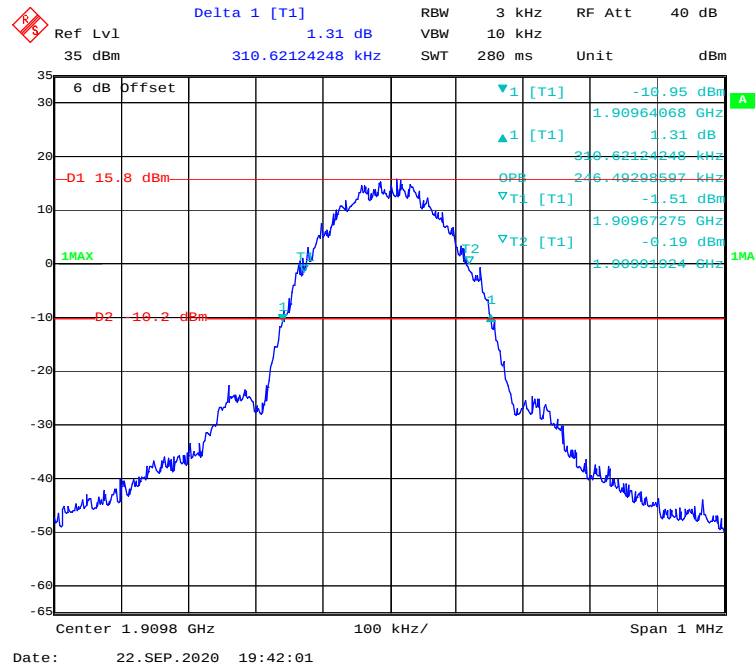
99% Occupied & 26 dB Emissions Bandwidth for GPRS (GMSK) Low channel



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

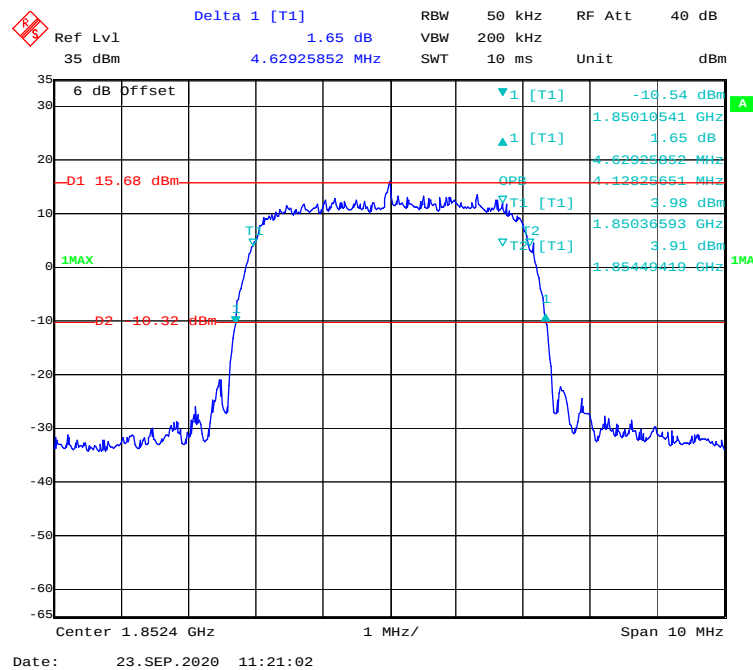


99% Occupied & 26 dB Emissions Bandwidth for GPRS (GMSK) High channel**99% Occupied & 26 dB Emissions Bandwidth for EGPRS (8PSK) Low channel**

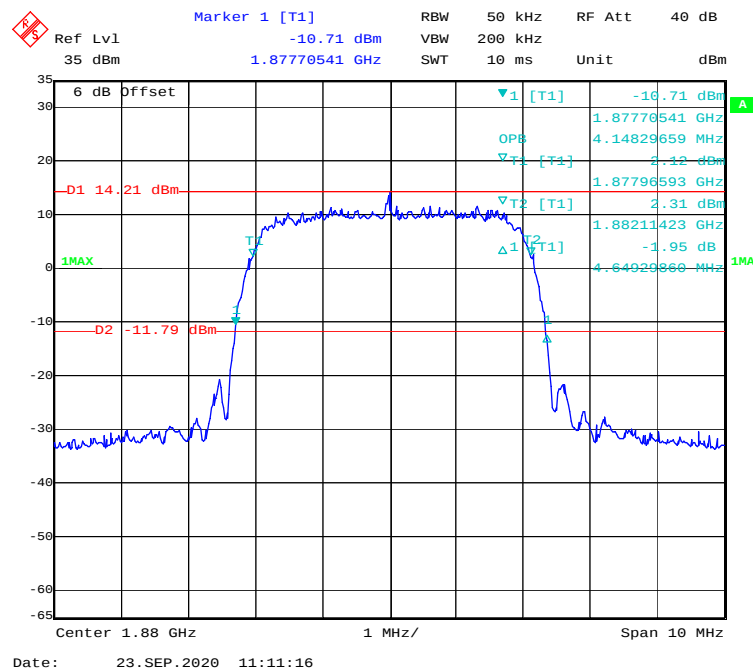
99% Occupied & 26 dB Emissions Bandwidth for EGPRS (8PSK) Middle channel**99% Occupied & 26 dB Emissions Bandwidth for EGPRS (8PSK) High channel**

WCDMA Band II

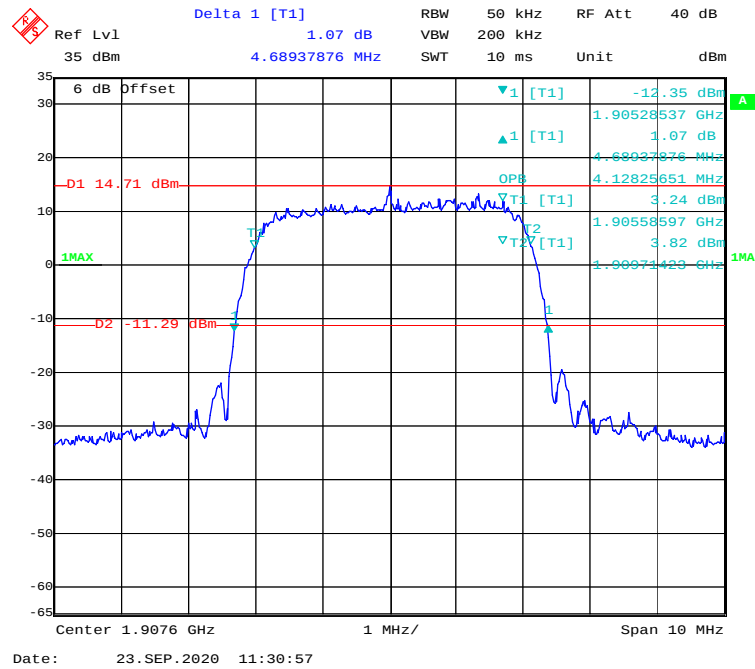
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Low channel



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



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



Delta 1 [T1] -0.33 dB

RBW 50 kHz RF Att 40 dB

SWT 10 ms Unit dBm

Ref Lvl 35 dBm

6 dB Offset

D1 15.96 dBm

1MAX

T1

T2

T3

T4

T5

T6

T7

T8

T9

T10

T11

T12

T13

T14

T15

T16

T17

T18

T19

T20

T21

T22

T23

T24

T25

T26

T27

T28

T29

T30

T31

T32

T33

T34

T35

T36

T37

T38

T39

T40

T41

T42

T43

T44

T45

T46

T47

T48

T49

T50

T51

T52

T53

T54

T55

T56

T57

T58

T59

T60

T61

T62

T63

T64

T65

T66

T67

T68

T69

T70

T71

T72

T73

T74

T75

T76

T77

T78

T79

T80

T81

T82

T83

T84

T85

T86

T87

T88

T89

T90

T91

T92

T93

T94

T95

T96

T97

T98

T99

T100

T101

T102

T103

T104

T105

T106

T107

T108

T109

T110

T111

T112

T113

T114

T115

T116

T117

T118

T119

T120

T121

T122

T123

T124

T125

T126

T127

T128

T129

T130

T131

T132

T133

T134

T135

T136

T137

T138

T139

T140

T141

T142

T143

T144

T145

T146

T147

T148

T149

T150

T151

T152

T153

T154

T155

T156

T157

T158

T159

T160

T161

T162

T163

T164

T165

T166

T167

T168

T169

T170

T171

T172

T173

T174

T175

T176

T177

T178

T179

T180

T181

T182

T183

T184

T185

T186

T187

T188

T189

T190

T191

T192

T193

T194

T195

T196

T197

T198

T199

T200

T201

T202

T203

T204

T205

T206

T207

T208

T209

T210

T211

T212

T213

T214

T215

T216

T217

T218

T219

T220

T221

T222

T223

T224

T225

T226

T227

T228

T229

T230

T231

T232

T233

T234

T235

T236

T237

T238

T239

T240

T241

T242

T243

T244

T245

T246

T247

T248

T249

T250

T251

T252

T253

T254

T255

T256

T257

T258

T259

T260

T261

T262

T263

T264

T265

T266

T267

T268

T269

T270

T271

T272

T273

T274

T275

T276

T277

T278

T279

T280

T281

T282

T283

T284

T285

T286

T287

T288

T289

T290

T291

T292

T293

T294

T295

T296

T297

T298

T299

T300

T301

T302

T303

T304

T305

T306

T307

T308

T309

T310

T311

T312

T313

T314

T315

T316

T317

T318

T319

T320

T321

T322

T323

T324

T325

T326

T327

T328

T329

T330

T331

T332

T333

T334

T335

T336

T337

T338

T339

T340

T341

T342

T343

T344

T345

T346

T347

T348

T349

T350

T351

T352

T353

T354

T355

T356

T357

T358

T359

T360

T361

T362

T363

T364

T365

T366

T367

T368

T369

T370

T371

T372

T373

T374

T375

T376

T377

T378

T379

T380

T381

T382

T383

T384

T385

T386

T387

T388

T389

T390

T391

T392

T393

T394

T395

T396

T397

T398

T399

T400

T401

T402

T403

T404

T405

T406

T407

T408

T409

T410

T411

T412

T413

T414

T415

T416

T417

T418

T419

T420

T421

T422

T423

T424

T425

T426

T427

T428

T429

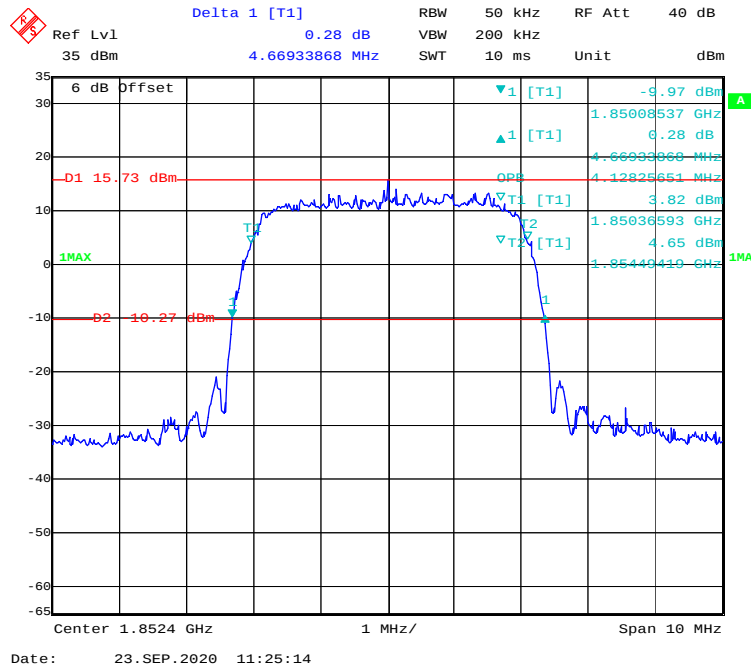
T430

T431

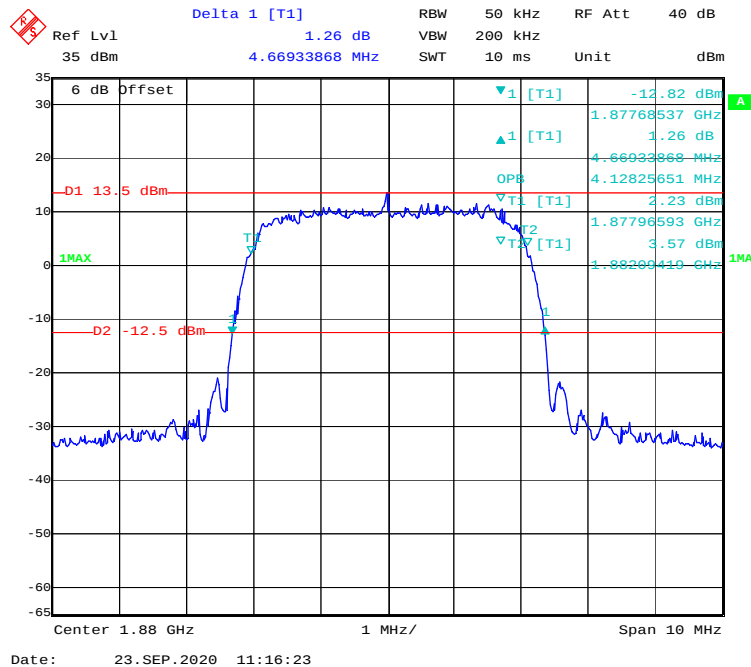
[illegible]

[illegible]

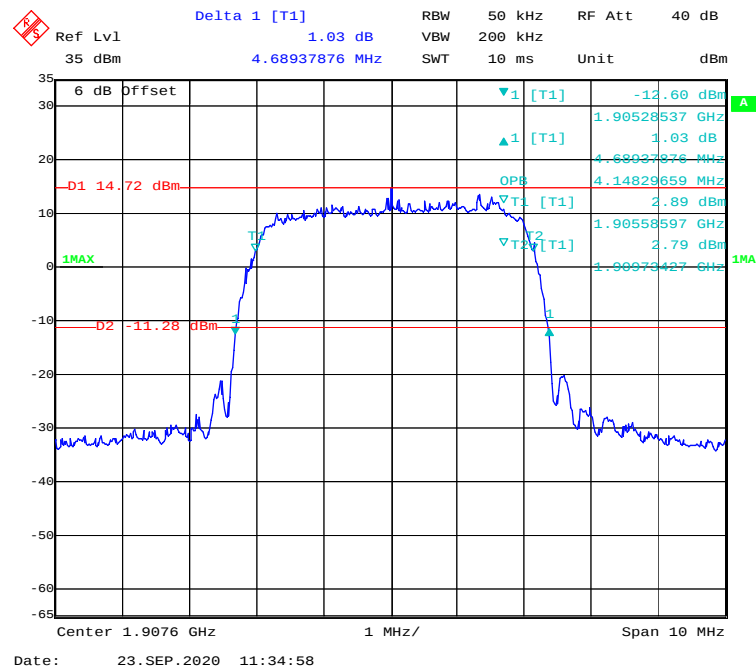
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Low channel



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



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



[illegible]

Ref Lvl 35 dBm
Delta 1 [T1] 1.12 dB
4.66933868 MHz

RBW 50 kHz
VBW 200 kHz
SWT 10 ms

RF Att 40 dB
Unit dBm

6 dB Offset

D1 13.99 dBm

1MAX

T1

T2

T3

1

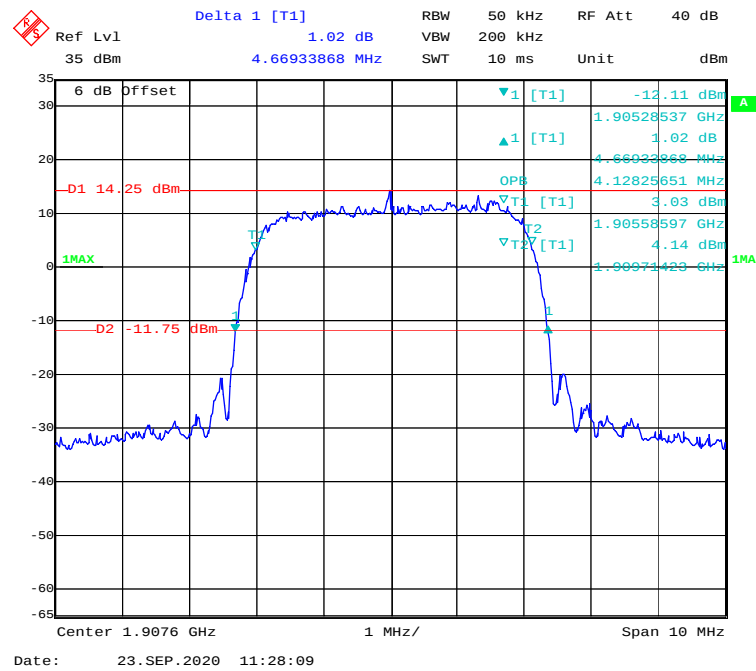
D2 -12.01 dBm

1.87768537 GHz
1.12 dB
4.66933868 MHz
4.14829659 MHz
2.20 dBm
1.87794589 GHz
2.37 dBm
1.88200410 GHz

Center 1.88 GHz
1 MHz/
Span 10 MHz

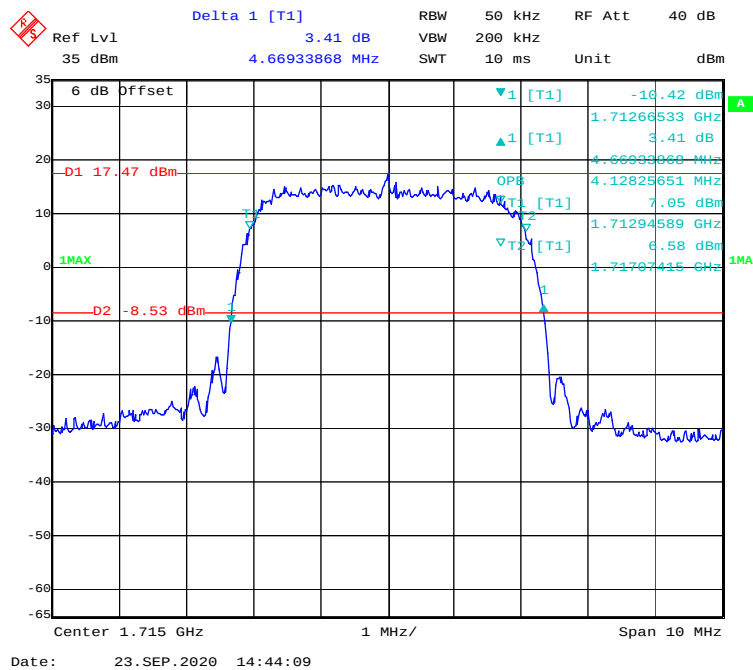
Date: 23.SEP.2020 11:07:30

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

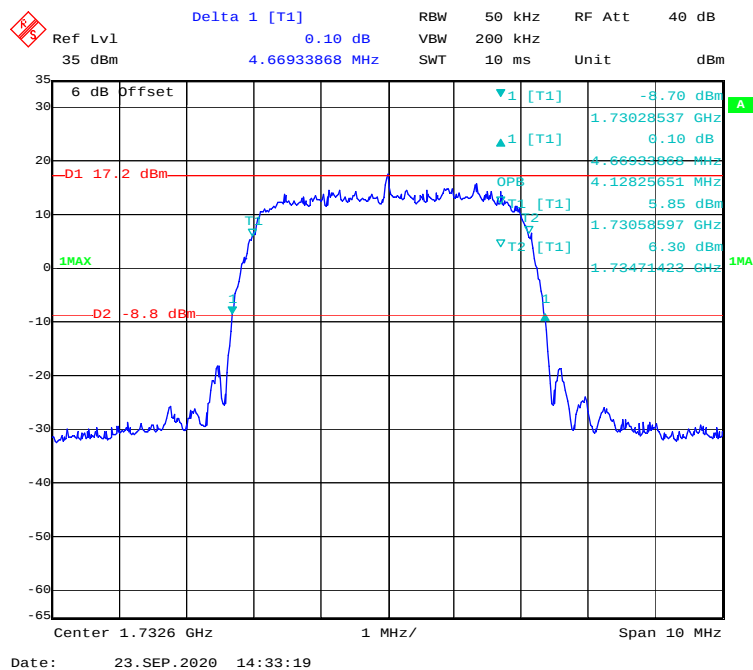


WCDMA Band IV

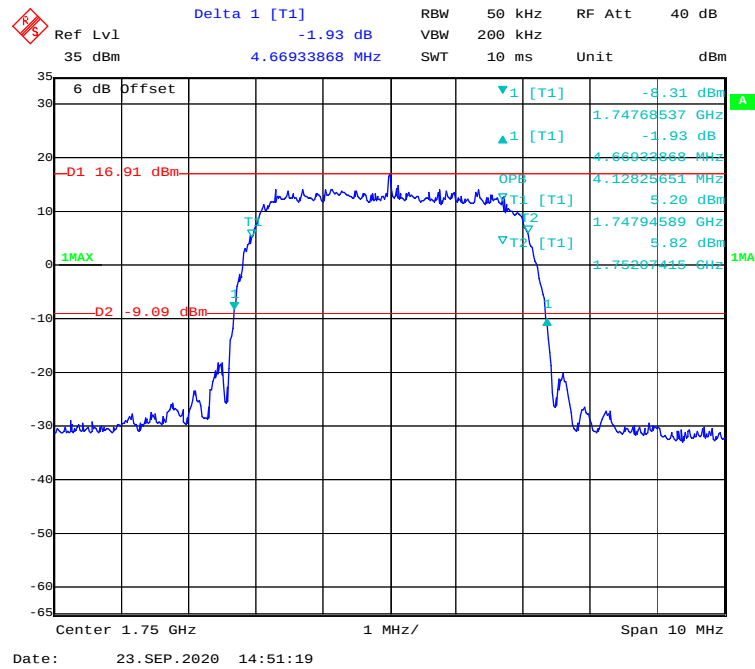
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Low channel

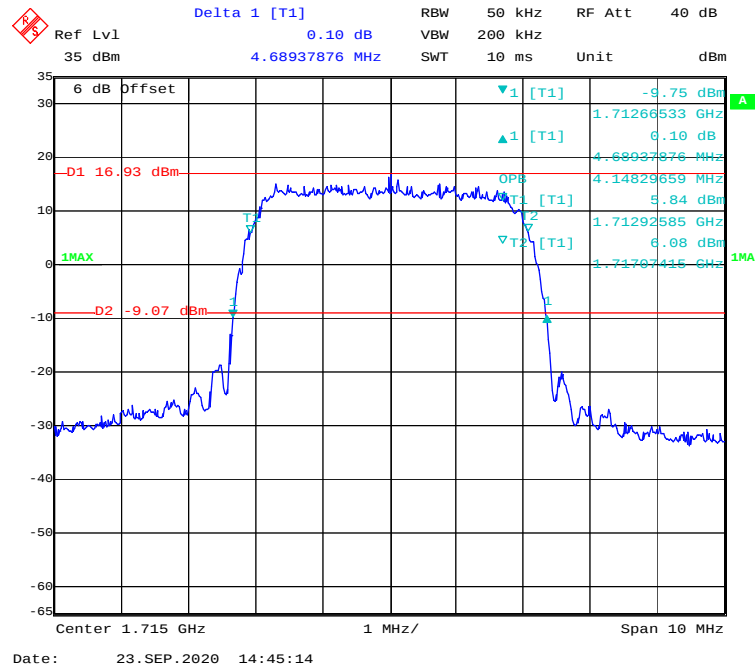
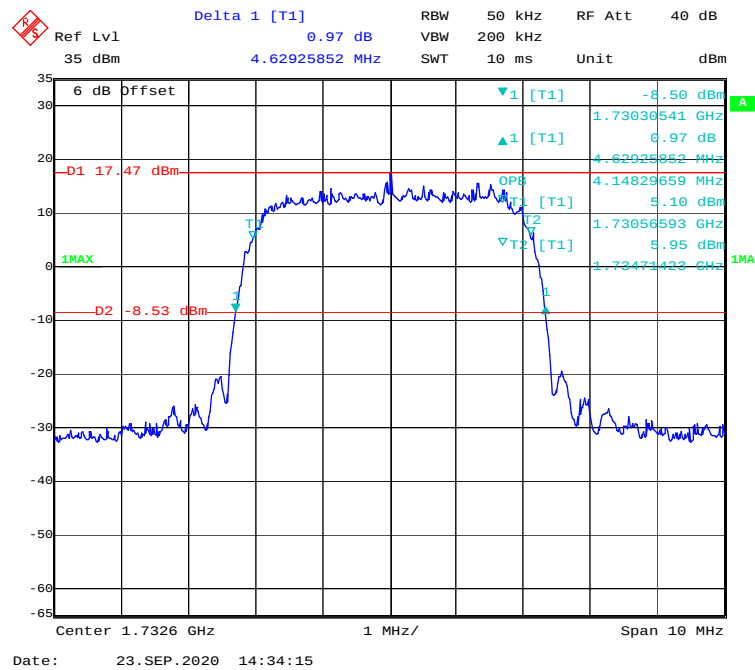


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Middle channel

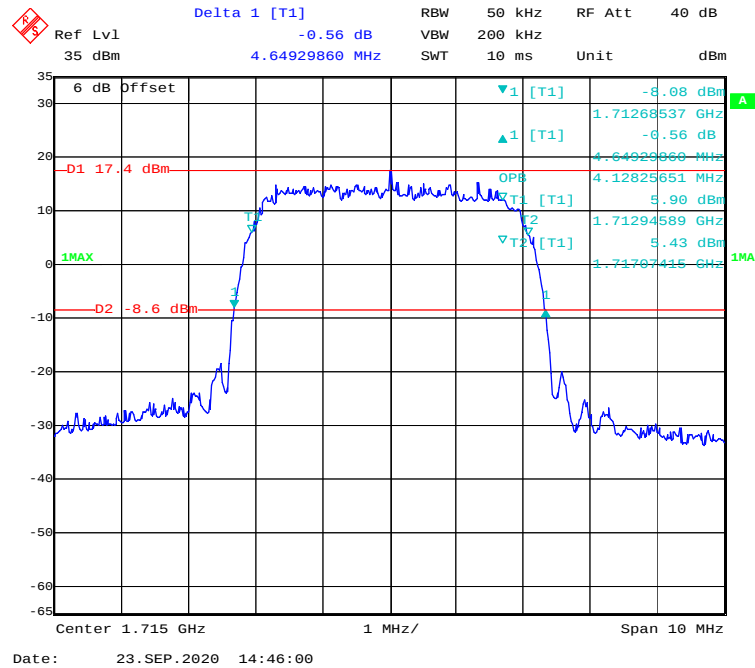
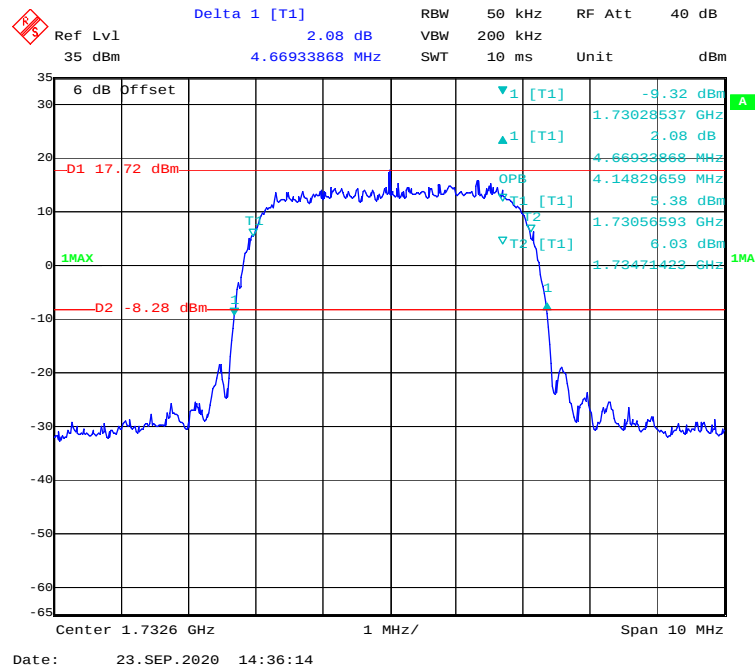


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) High channel

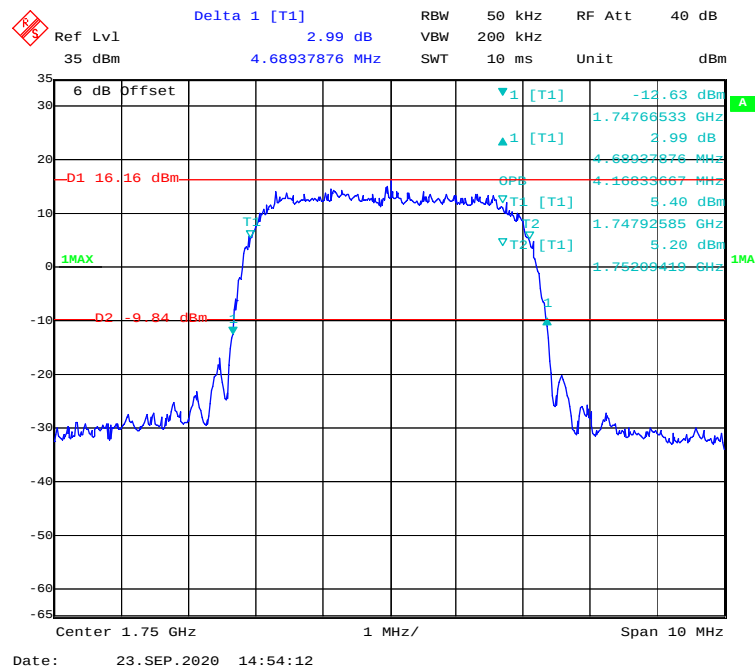


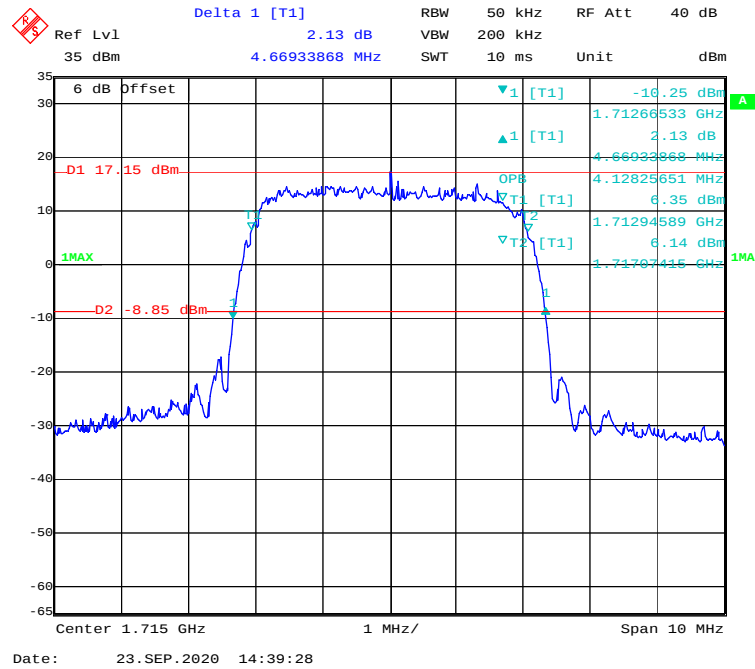
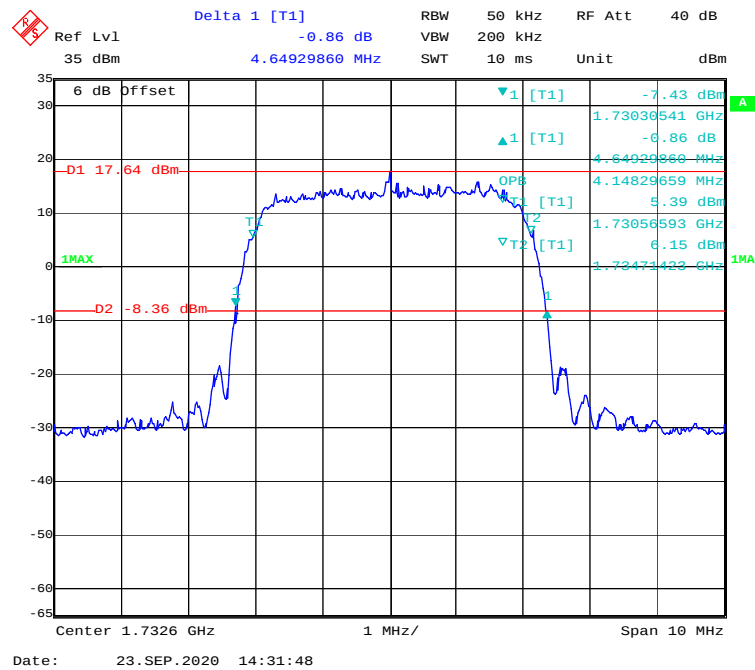
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Low channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Middle channel**

[illegible]

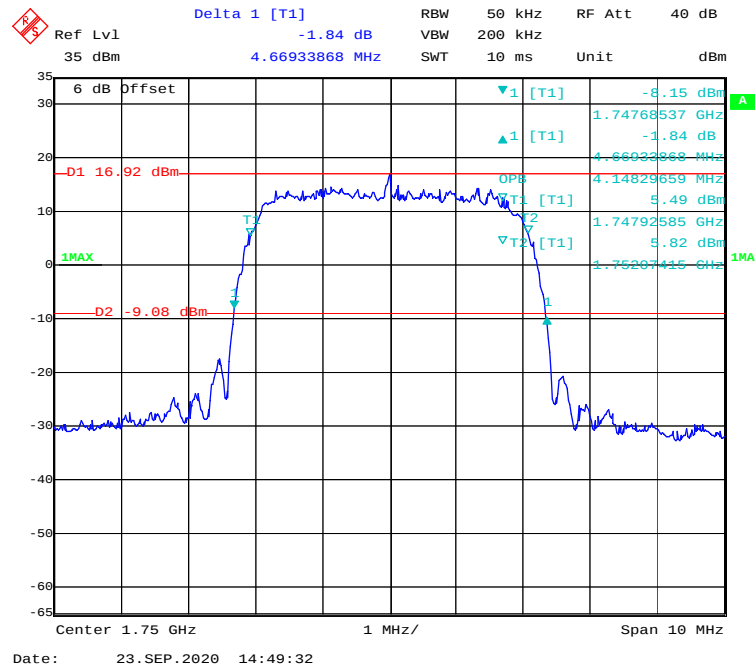
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Low channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Middle channel**

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



99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Low channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Middle channel**

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

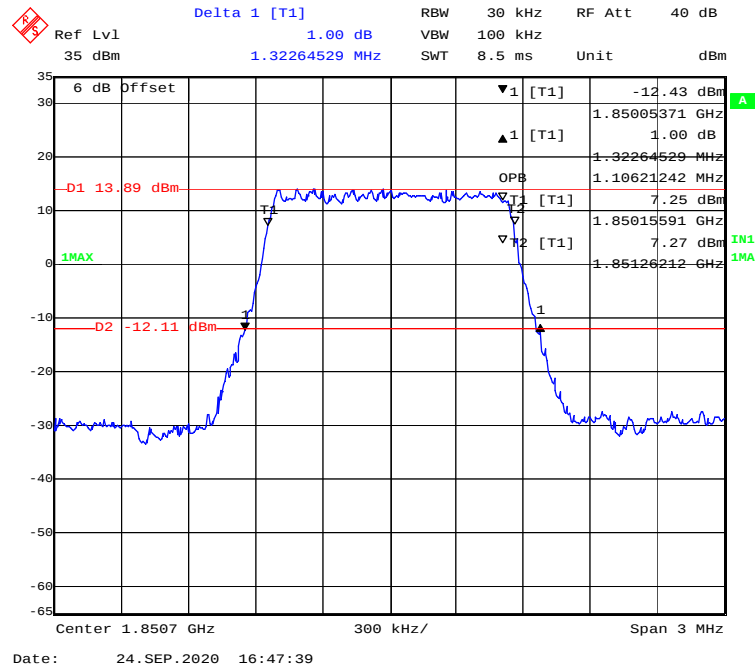


LTE Band 2:

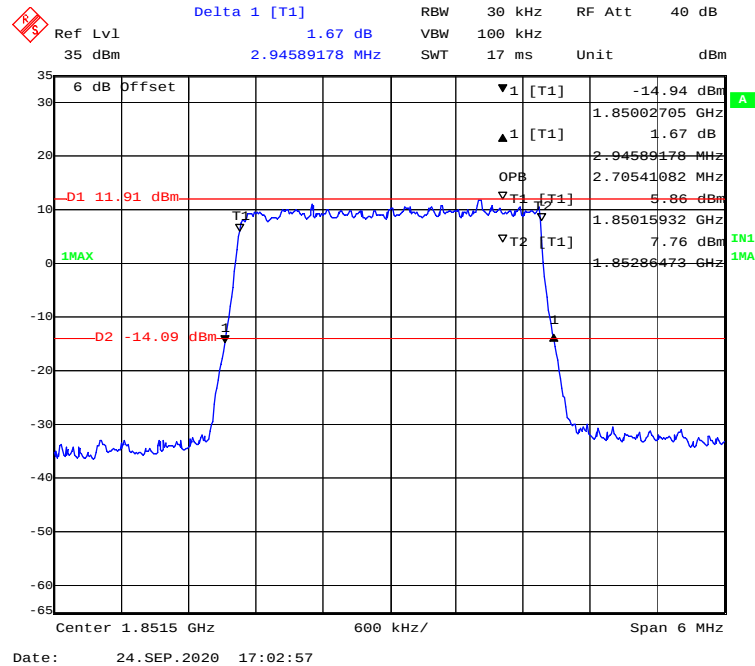
Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	1.4M	Low	1.323	1.106
	3M		2.946	2.705
	5M		4.950	4.509
	10M		9.619	8.938
	15M		14.549	13.347
	20M		18.998	17.876
	1.4M	Middle	1.311	1.112
	3M		2.946	2.705
	5M		4.950	4.509
	10M		9.780	8.938
	15M		14.729	13.466
	20M		19.238	17.956
	1.4M	High	1.335	1.106
	3M		2.958	2.705
	5M		4.930	4.489
	10M		9.780	9.018
	15M		14.669	13.527
	20M		19.158	17.956

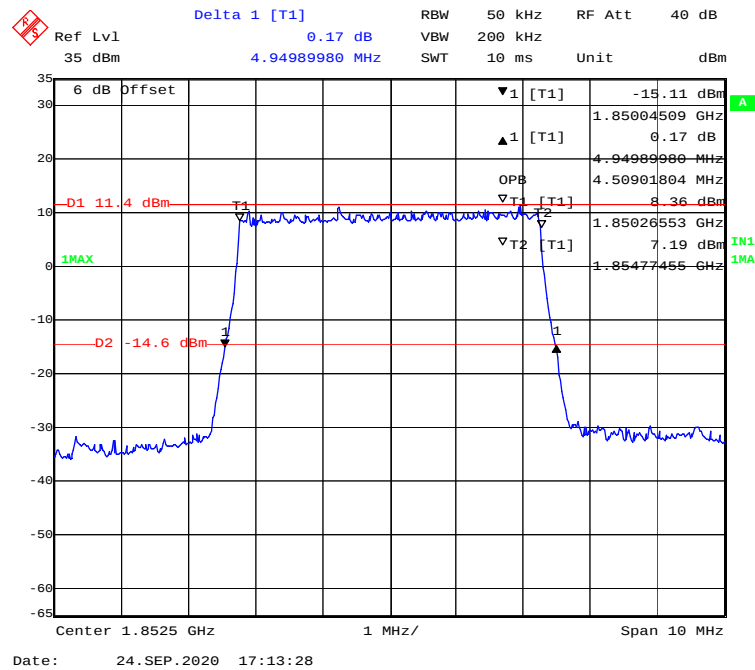
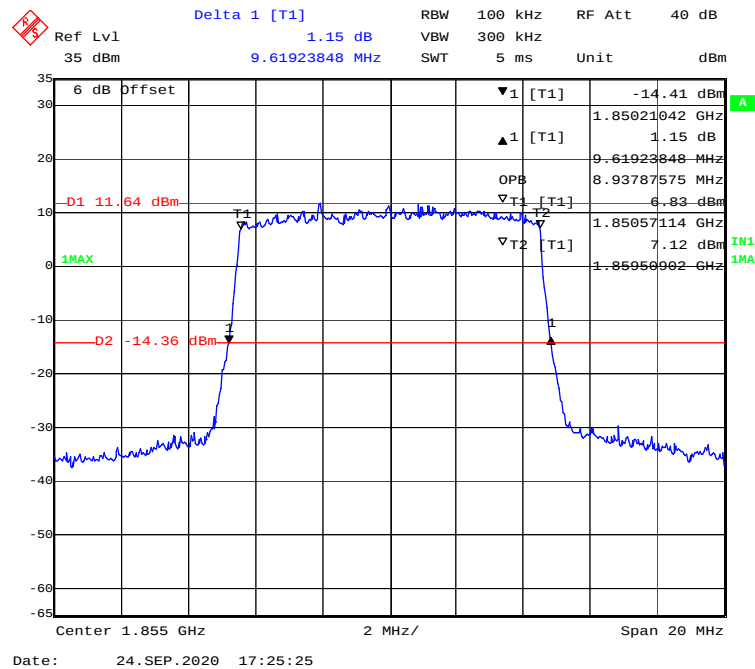
Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
16-QAM	1.4M	Low	1.317	1.106
	3M		2.958	2.705
	5M		4.950	4.489
	10M		9.699	8.938
	15M		14.489	13.407
	20M		18.998	17.796
	1.4M	Middle	1.305	1.112
	3M		2.934	2.705
	5M		4.990	4.509
	10M		9.739	8.978
	15M		14.729	13.467
	20M		19.158	17.956
	1.4M	High	1.323	1.112
	3M		2.946	2.705
	5M		4.930	4.489
	10M		9.900	8.978
	15M		14.790	13.527
	20M		19.158	17.956

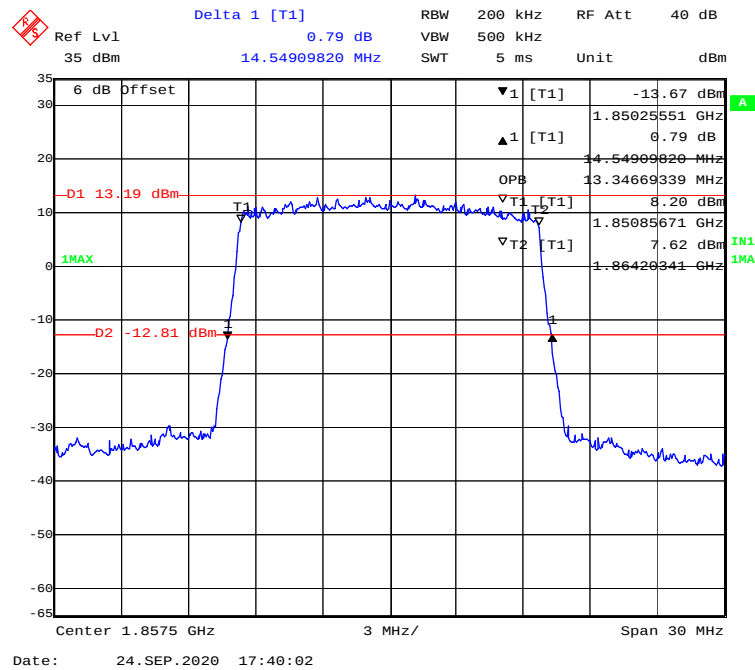
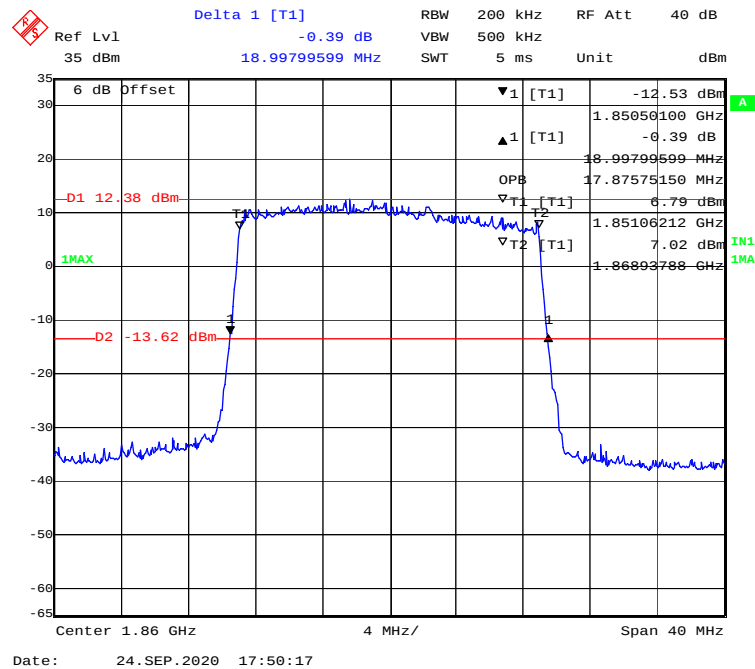
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

Delta 1 [T1]

Ref Lvl 35 dBm

1.31 dB

1.31062124 MHz

RBW 30 kHz

100 kHz

SWT 8.5 ms

RF Att 40 dB

Unit dBm

6 dB Offset

D1 14.94 dBm

1MAX

D2 -11.06 dBm

1

▼1 [T1]

▲1 [T1]

OPB

▼T1 [T1]

▼T2 [T1]

1

1.87934770 GHz

1.31 dB

1.31062124 MHz

1.11222445 MHz

8.16 dBm

1.87944990 GHz

6.19 dBm

1.88056212 GHz

IN1

1MAX

Center 1.88 GHz

300 kHz/

Span 3 MHz

Date: 24.SEP.2020 16:45:01

Delta 1 [T1]

Ref Lvl 35 dBm

-1.20 dB

2.94589178 MHz

RBW 30 kHz

VBW 100 kHz

SWT 17 ms

RF Att 40 dB

Unit dBm

6 dB Offset

▼1 [T1] -12.93 dBm

▲1 [T1] -1.20 dB

OPB

▽T1 [T1] 6.13 dBm

▽T2 [T1] 6.80 dBm

1.87853908 GHz

2.70541082 MHz

1.87865932 GHz

1.88136473 GHz

D1 12.7 dBm

D2 -13.3 dBm

1MAX

1MIN

IN1

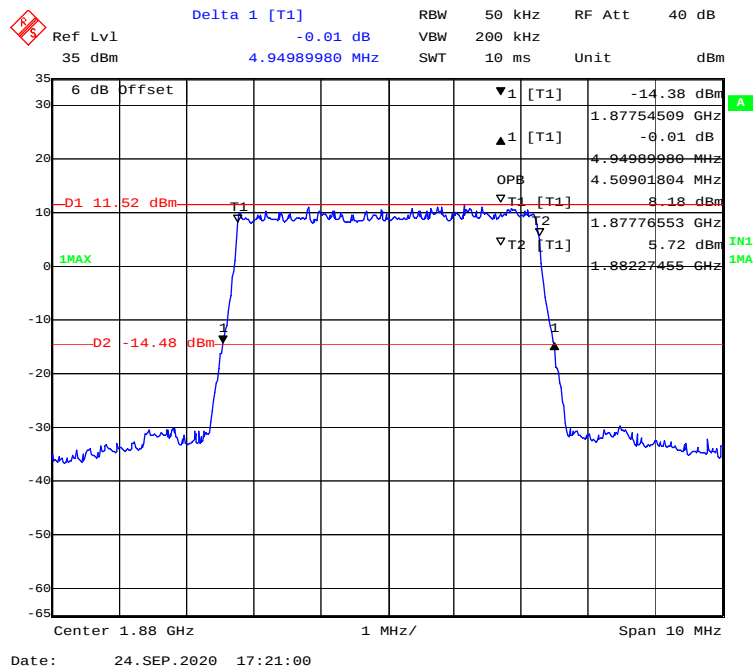
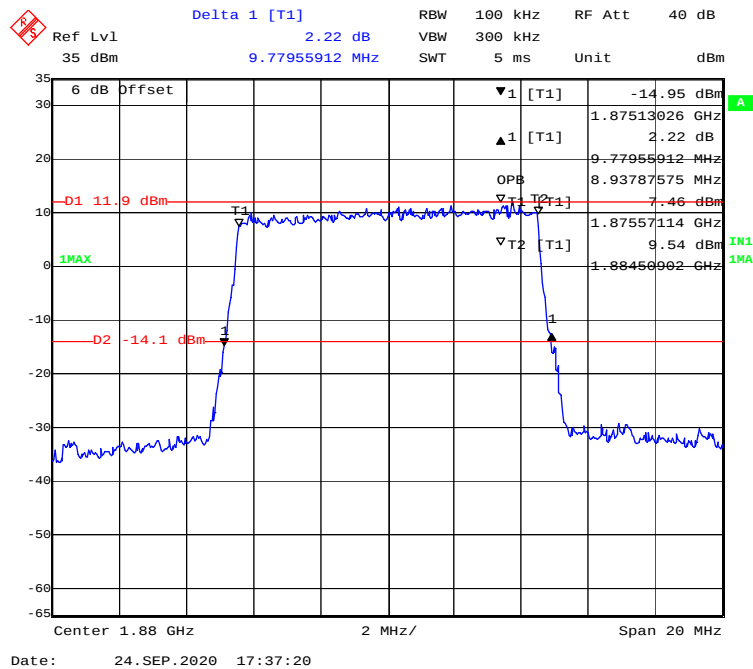
IN2

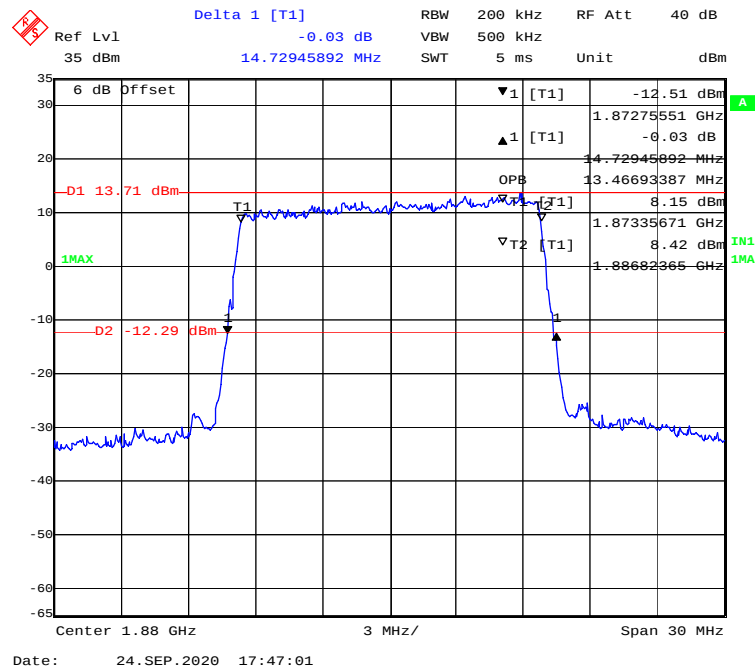
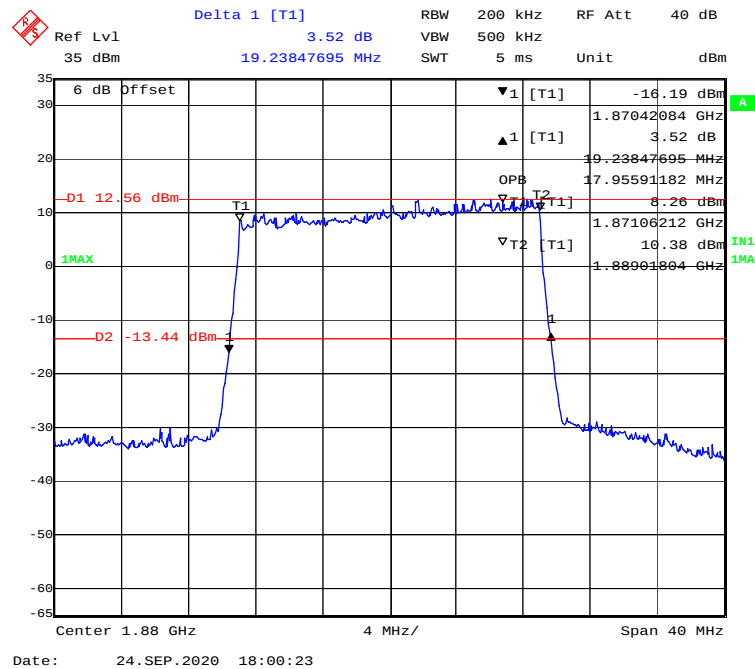
Center 1.88 GHz

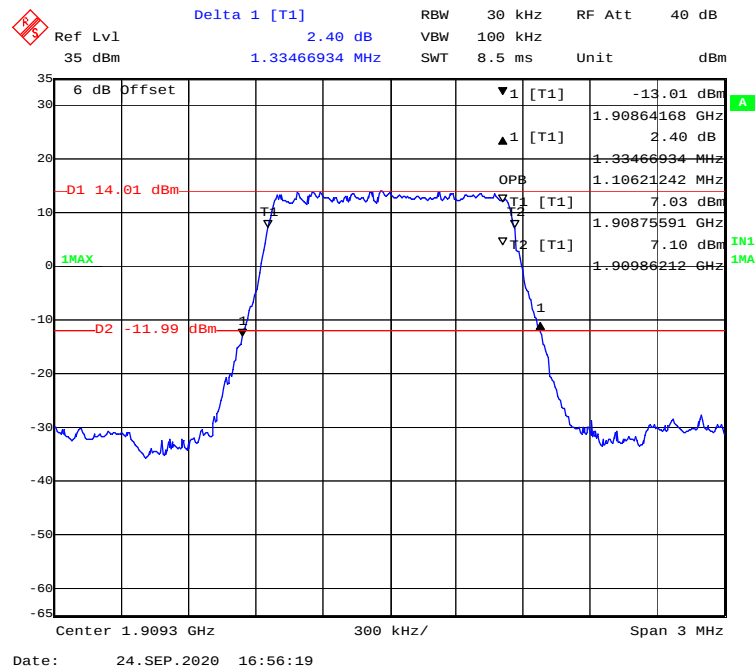
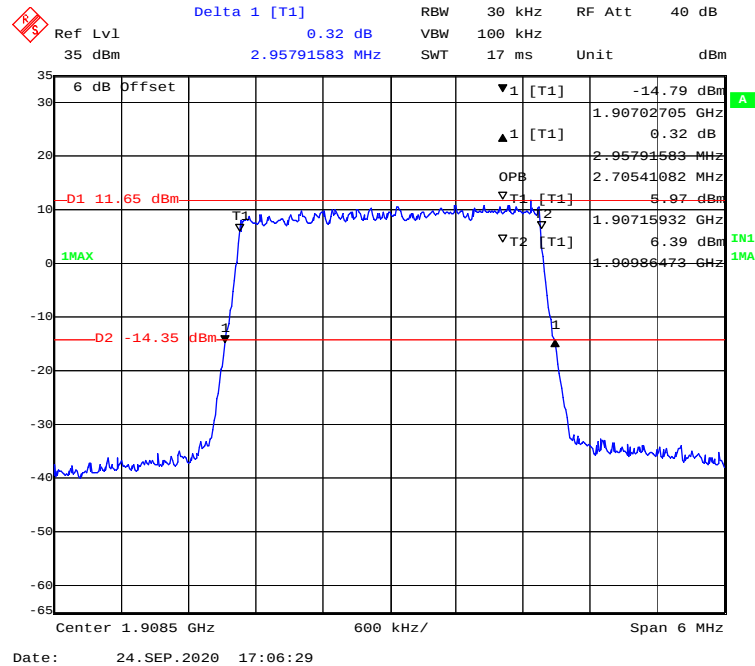
600 kHz/

Span 6 MHz

Date: 24.SEP.2020 17:10:30

QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

Delta 1 [T1]

Ref Lvl 1.05 dB

35 dBm 4.92985972 MHz

RBW 50 kHz RF Att 40 dB

VBW 200 kHz

SWT 10 ms Unit dBm

6 dB Offset

▼1 [T1] -15.05 dBm

▲1 [T1] 1.05 dB

OPB 1.9056513 GHz

▽T1 [T1] 4.92985972 MHz

▽T2 [T1] 4.48897796 MHz

D1 11.72 dBm

1MAX

D2 -14.28 dBm

1

1.90528557 GHz 7.14 dBm

1.90977455 GHz 7.55 dBm

Center 1.9075 GHz 1 MHz/ Span 10 MHz

Date: 24.SEP.2020 17:17:05

Delta 1 [T1]

Ref Lvl 35 dBm

1.55 dB

RBW 100 kHz

RF Att 40 dB

9.77955912 MHz

5 ms

Unit dBm

6 dB Offset

D1 11.73 dBm

IMAX

D2 -14.27 dBm

Center 1.905 GHz

2 MHz/

Span 20 MHz

▼1 [T1] -14.29 dBm

▲1 [T1] 1.55 dB

OPB

▽T1 [T1] 9.77955912 MHz

▽T2 [T1] 9.01803607 MHz

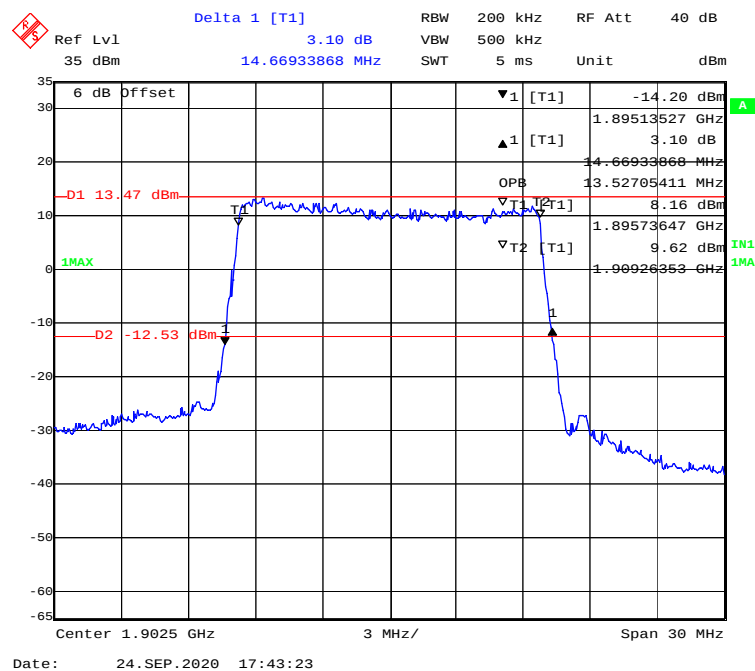
1.90053106 GHz

7.61 dBm

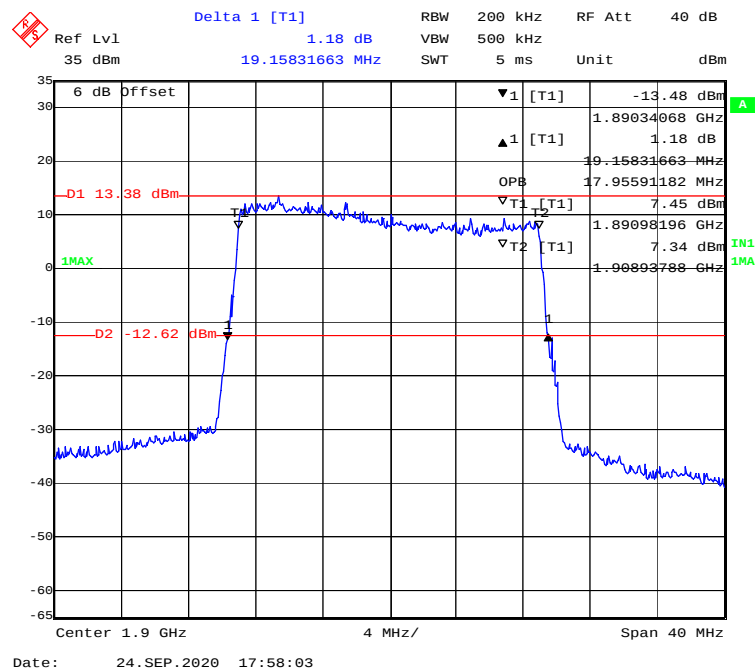
1.90954910 GHz

Date: 24.SEP.2020 17:31:10

QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



Delta 1 [T1]

Ref Lvl 1.42 dB

35 dBm 1.31663327 MHz

RBW 30 kHz RF Att 40 dB

VBW 100 kHz

SWT 8.5 ms Unit dBm

6 dB Offset

D1 14.23 dBm

1MAX

D2 -11.77 dBm

1MA

▼1 [T1] -12.19 dBm

▲1 [T1] 1.42 dB

OPB 1.10621242 MHz

▽T1 [T1] 7.35 dBm

▽T2 [T1] 1.85015591 GHz

1.85005371 GHz

1.31663327 MHz

1.85126212 GHz

7.06 dBm

Center 1.8507 GHz

300 kHz/

Span 3 MHz

Date: 24.SEP.2020 16:49:25

Delta 1 [T1] 0.64 dB

Ref Lvl 35 dBm

RBW 30 kHz

VBW 100 kHz

SWT 17 ms

RF Att 40 dB

Unit dBm

Center 1.8515 GHz

600 kHz/

Span 6 MHz

Date: 24.SEP.2020 17:04:57

6 dB Offset

D1 11.8 dBm

D2 -14.2 dBm

IMAX

IN1

IN2

▼1 [T1] -14.58 dBm

▲1 [T1] 0.64 dB

OPB

▽T1 [T1] 5.84 dBm

▽T2 [T1] 7.69 dBm

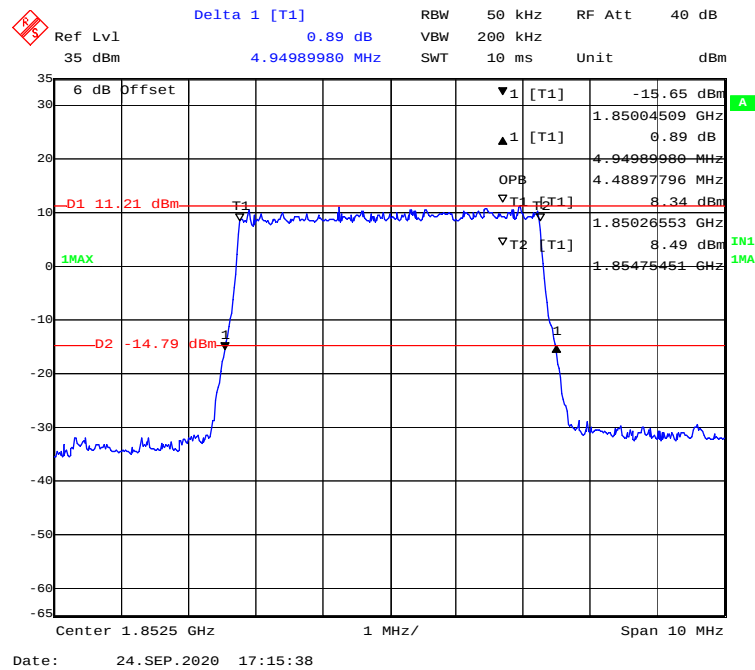
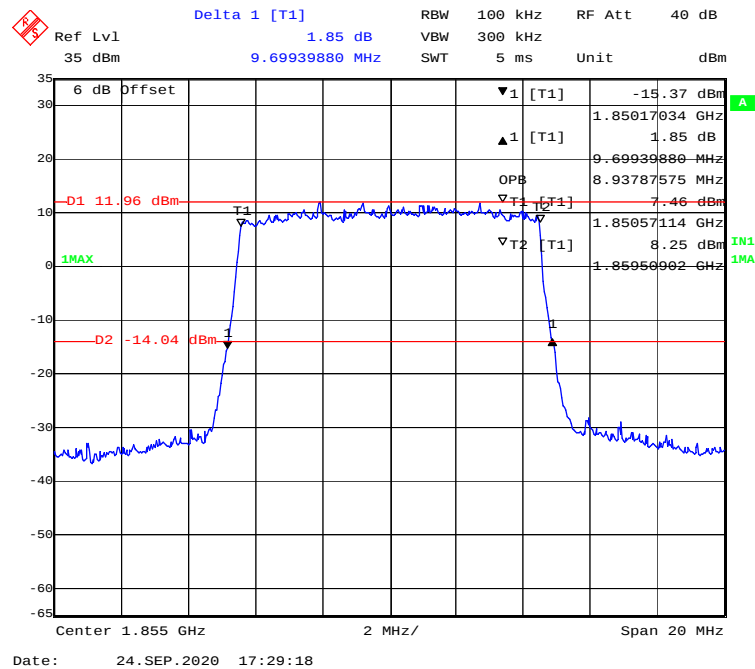
1.85002795 GHz

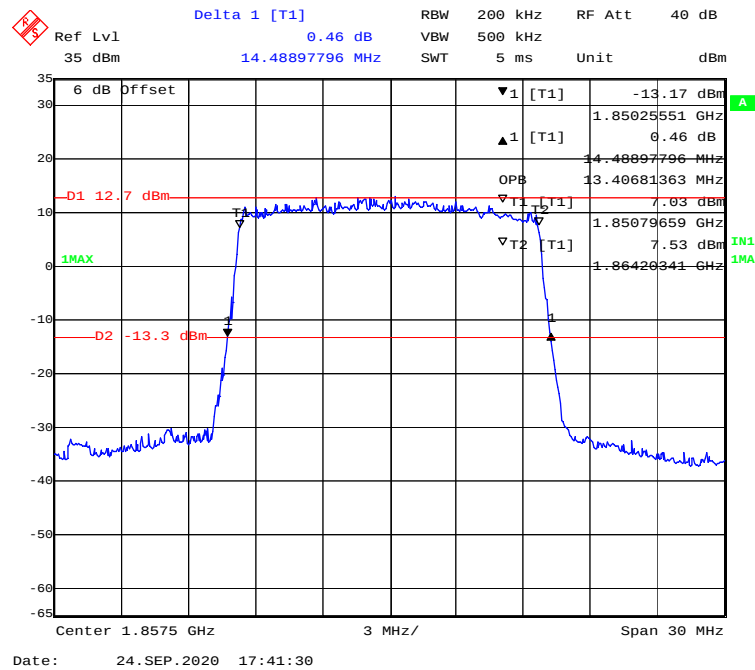
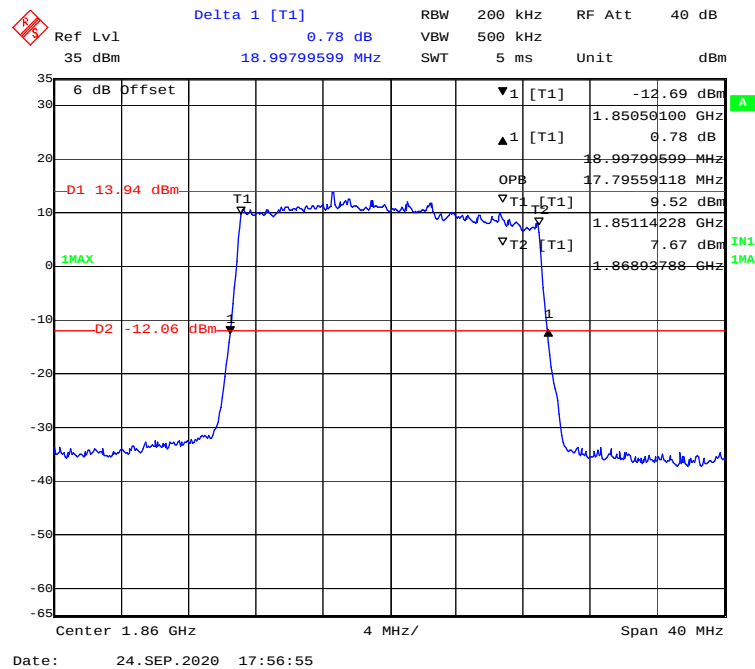
2.95791583 MHz

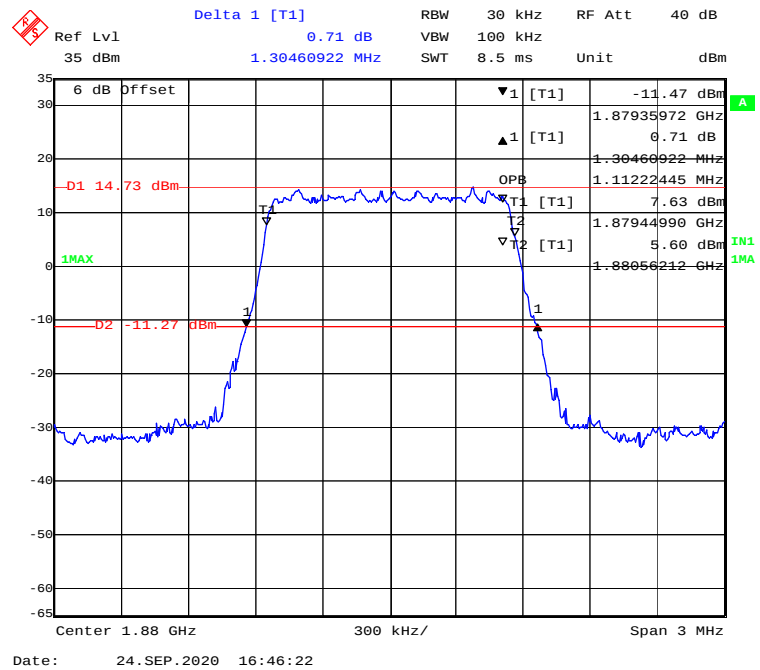
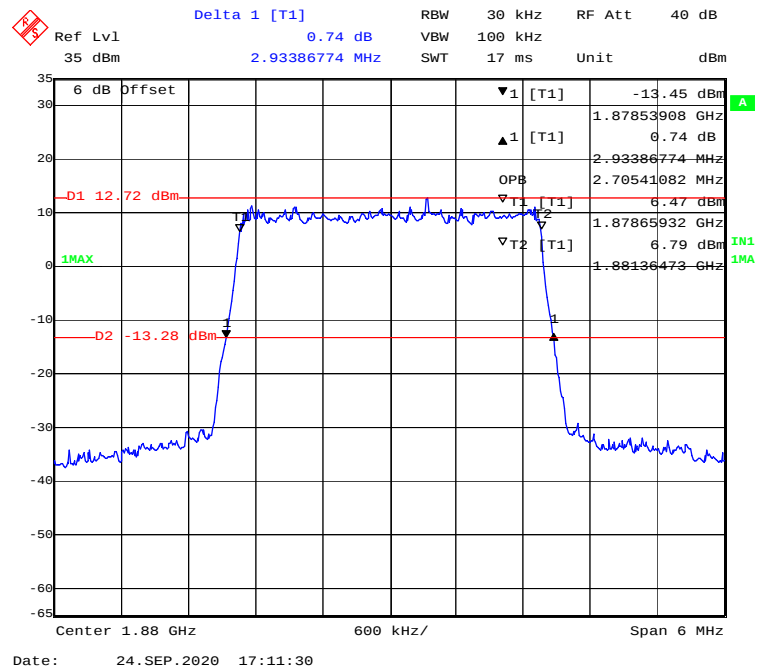
2.70541082 MHz

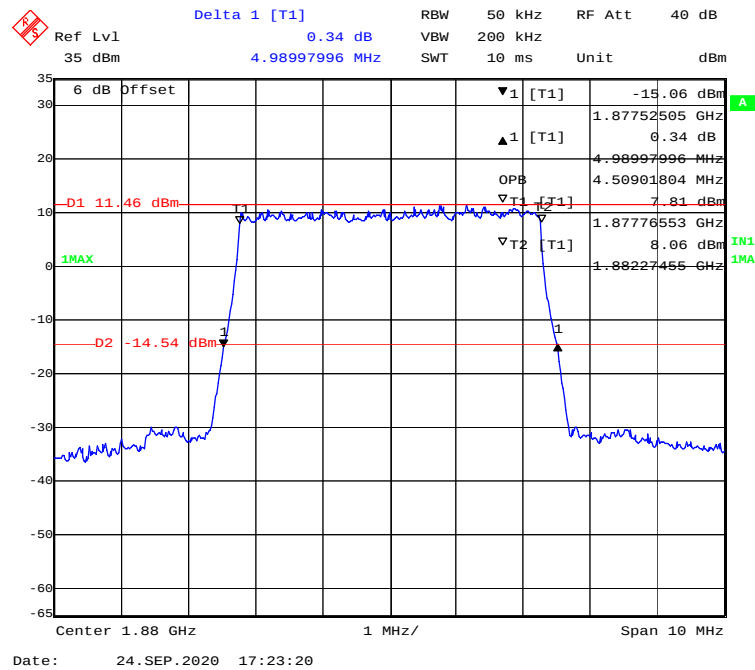
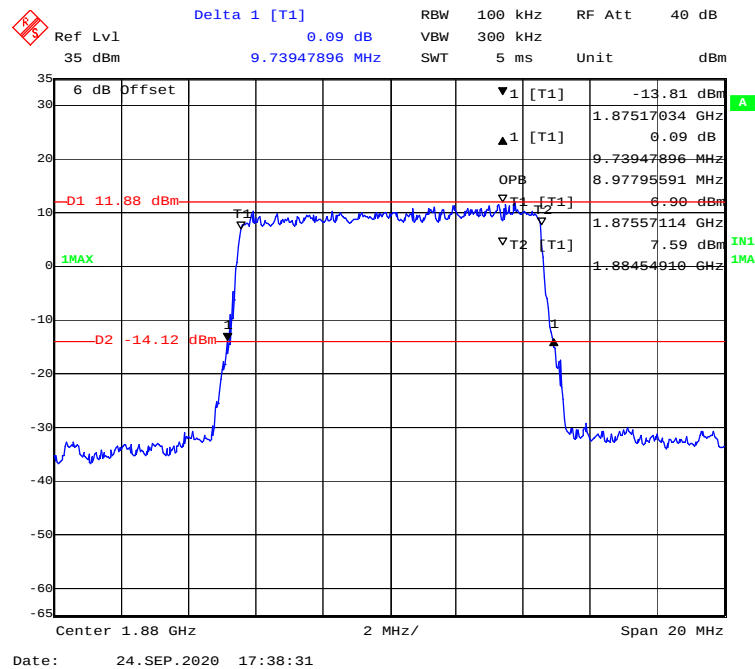
1.85015932 GHz

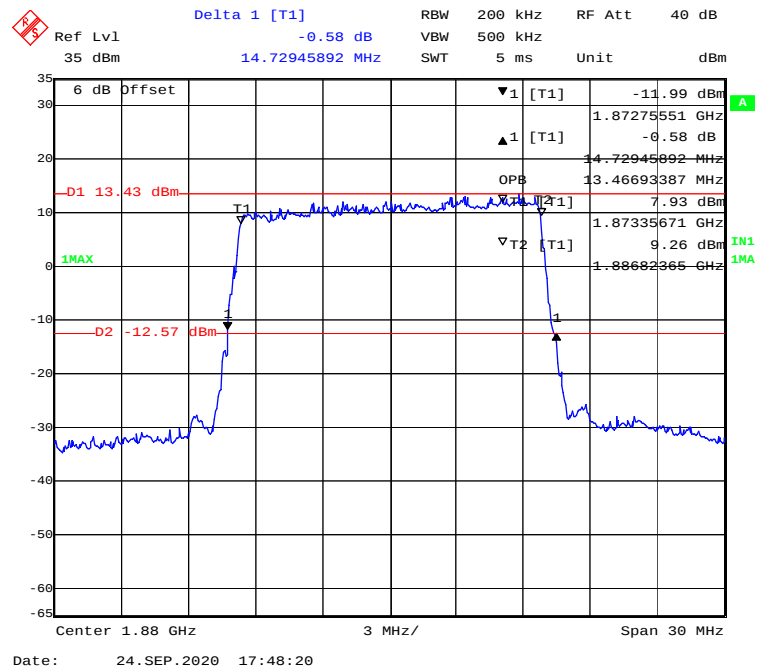
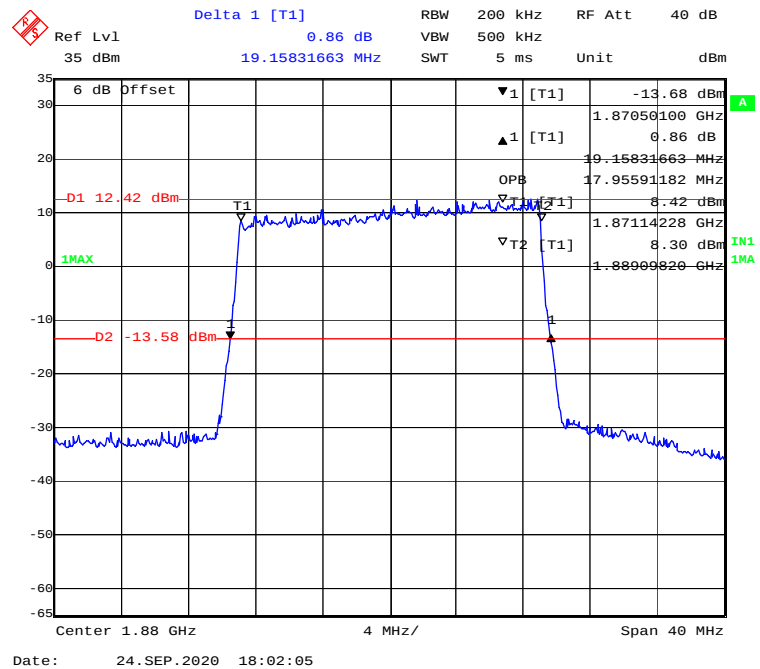
1.85264473 GHz

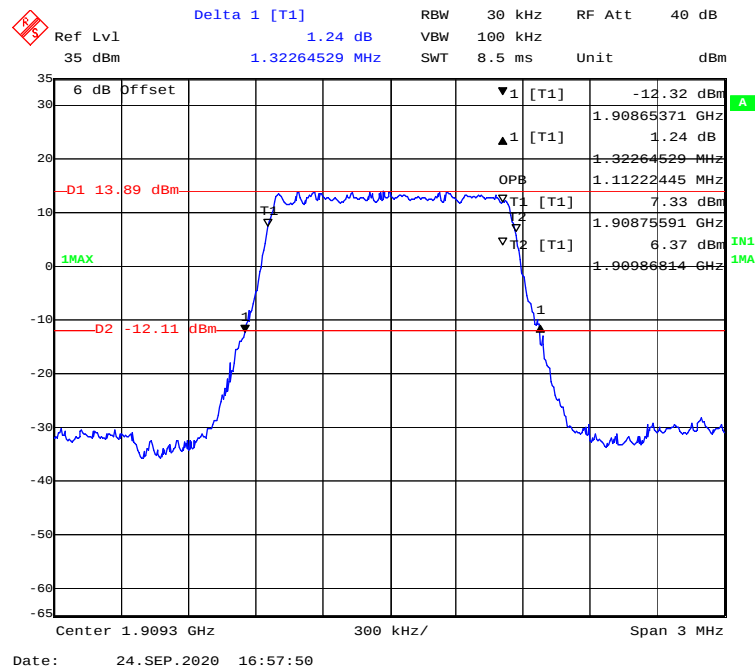
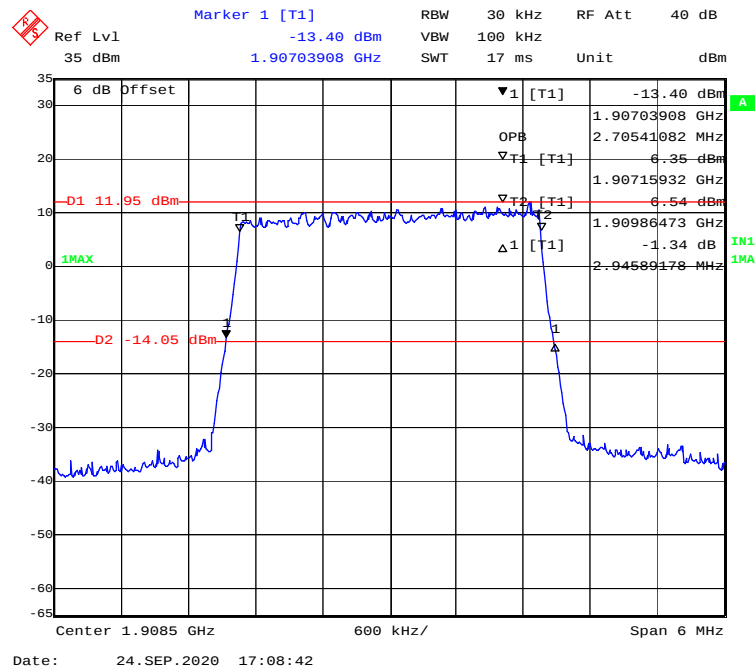
16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

Delta 1 [T1] 0.21 dB

Ref Lvl 35 dBm

RBW 50 kHz

VBW 200 kHz

SWT 10 ms

RF Att 40 dB

Unit dBm

6 dB Offset

D1 11.82 dBm

IMAX

D2 -14.18 dBm

▼1 [T1] -14.91 dBm

▲1 [T1] 0.21 dB

OPB

▽T1 [T1] 4.92985972 MHz

▽T2 [T1] 4.48897796 MHz

1.90506513 GHz

1.90528557 GHz

1.90977455 GHz

Center 1.9075 GHz

1 MHz/

Span 10 MHz

Date: 24.SEP.2020 17:19:19

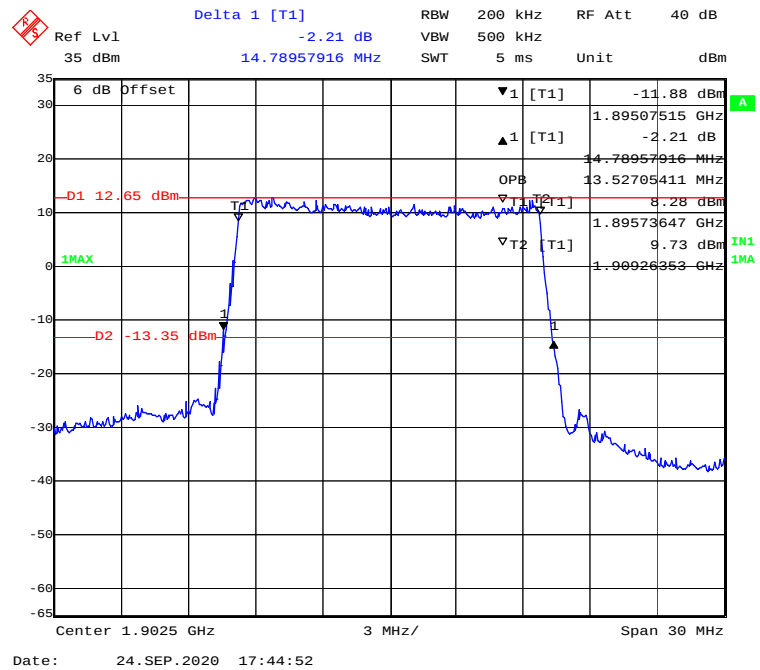
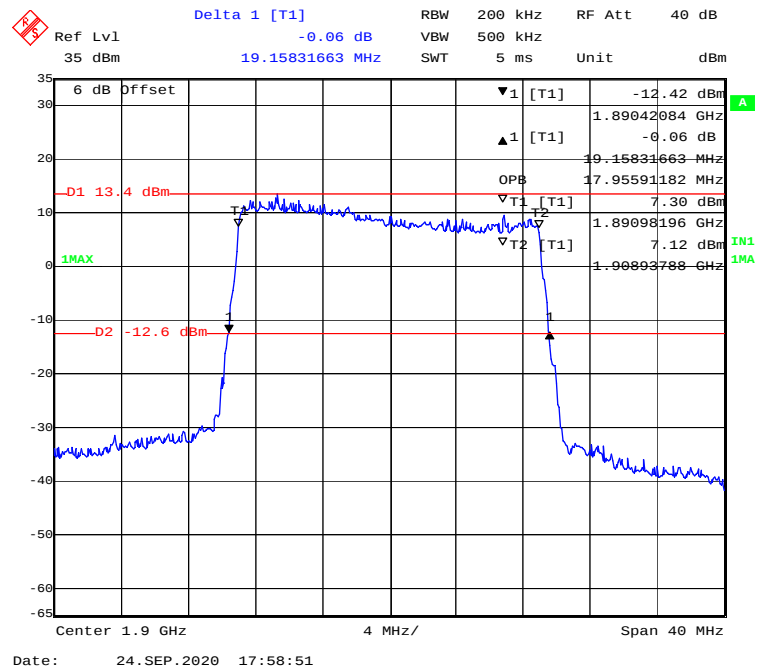
Delta 1 [T1]
 Ref Lvl 35 dBm
 1.44 dB
 9.89979960 MHz
 RBW 100 kHz
 VBW 300 kHz
 SWT 5 ms
 RF Att 40 dB
 Unit dBm

6 dB Offset
 -15.69 dBm
 1.90009018 GHz
 1.44 dB
 9.89979960 MHz
 8.97795591 MHz
 7.35 dBm
 1.90053106 GHz
 9.01 dBm
 1.90950002 GHz

D1 11.2 dBm
 1MAX
 D2 -14.8 dBm
 1
 1
 1

Center 1.905 GHz
 2 MHz/
 Span 20 MHz

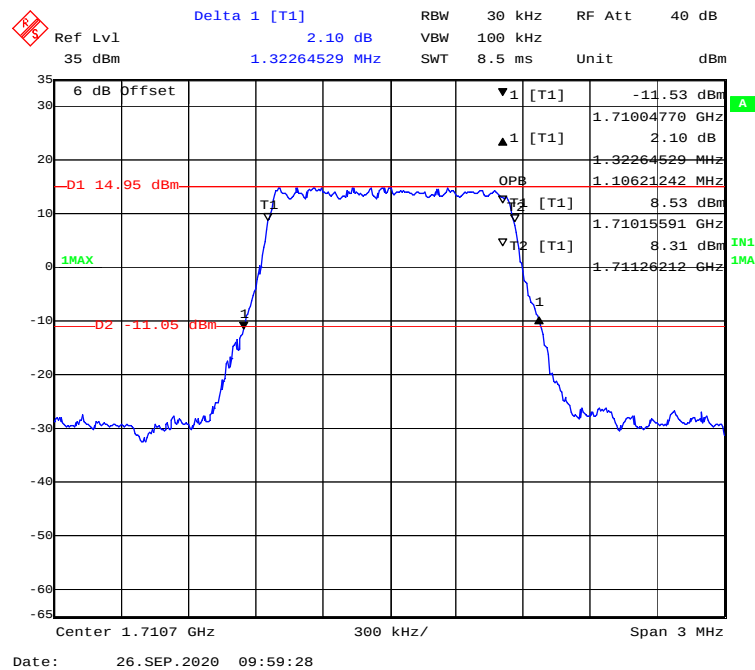
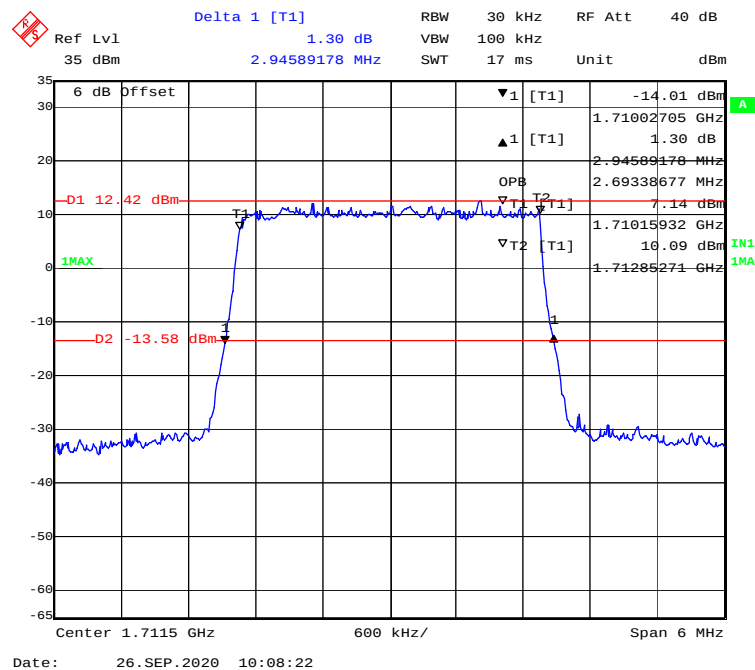
Date: 24.SEP.2020 17:33:13

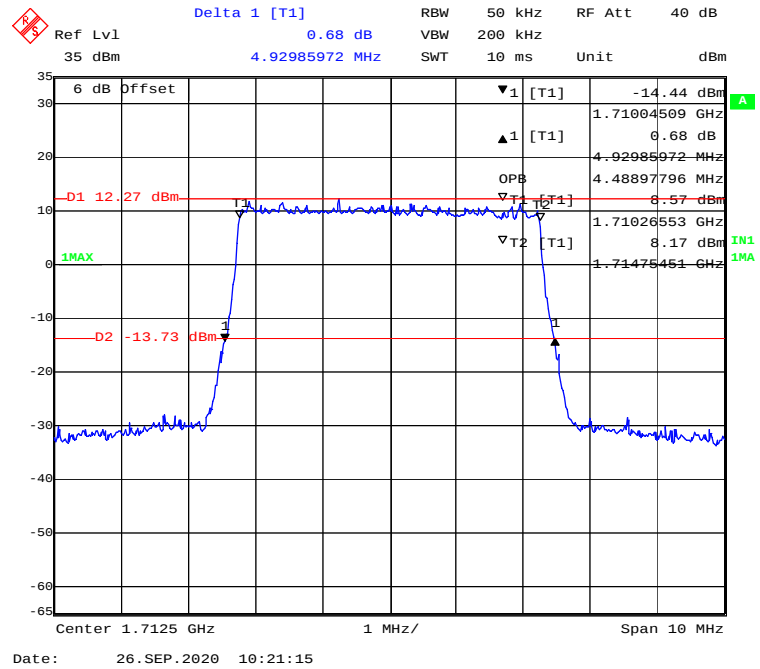
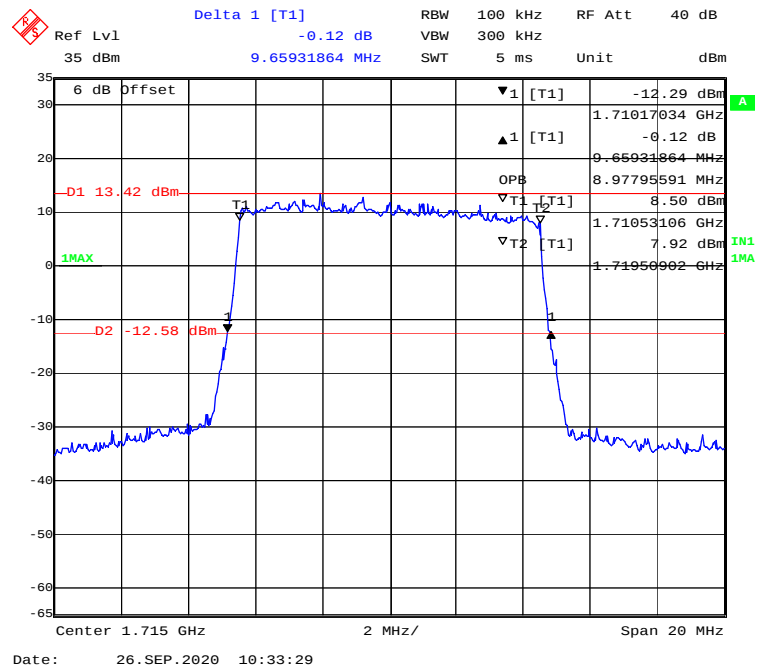
16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

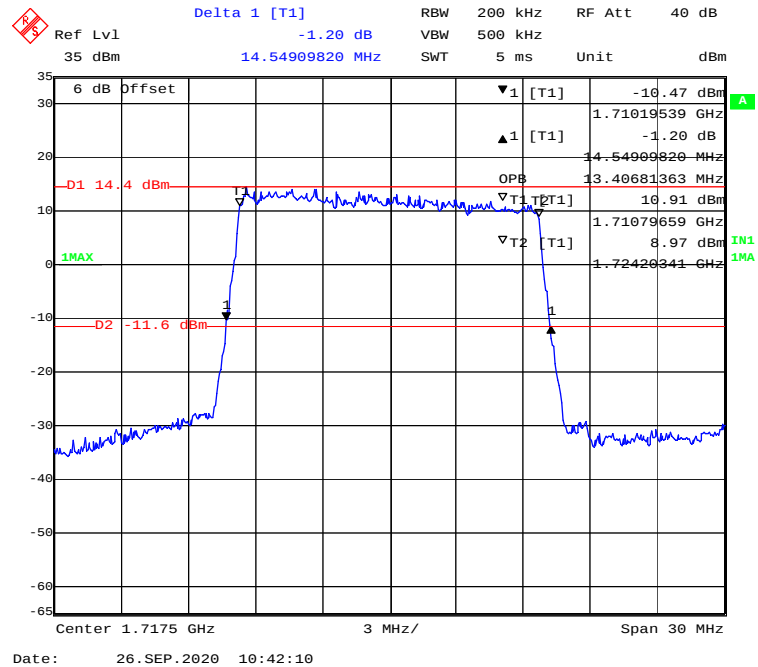
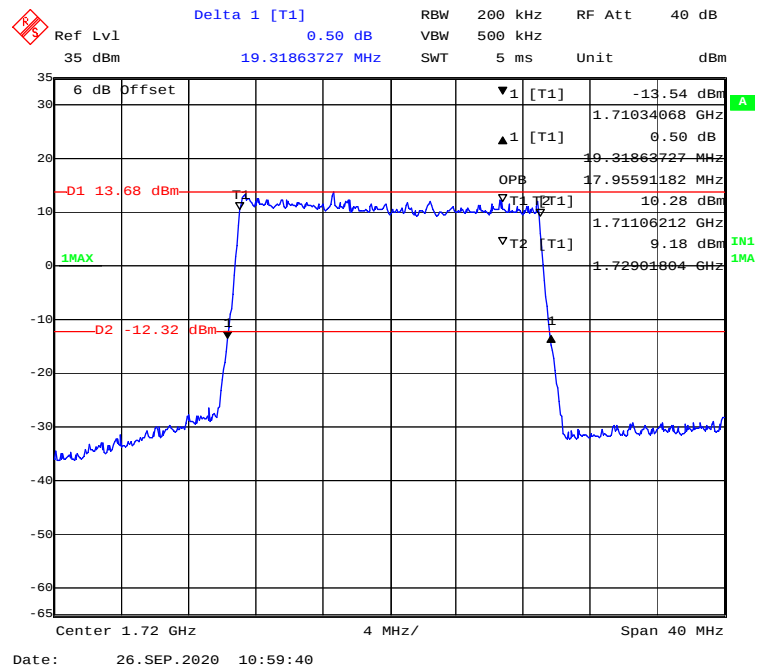
LTE Band 4:

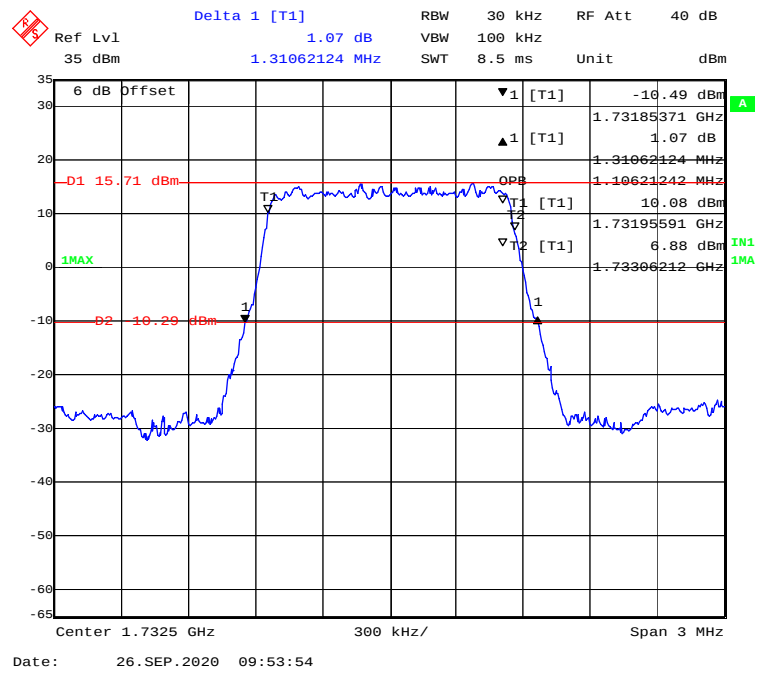
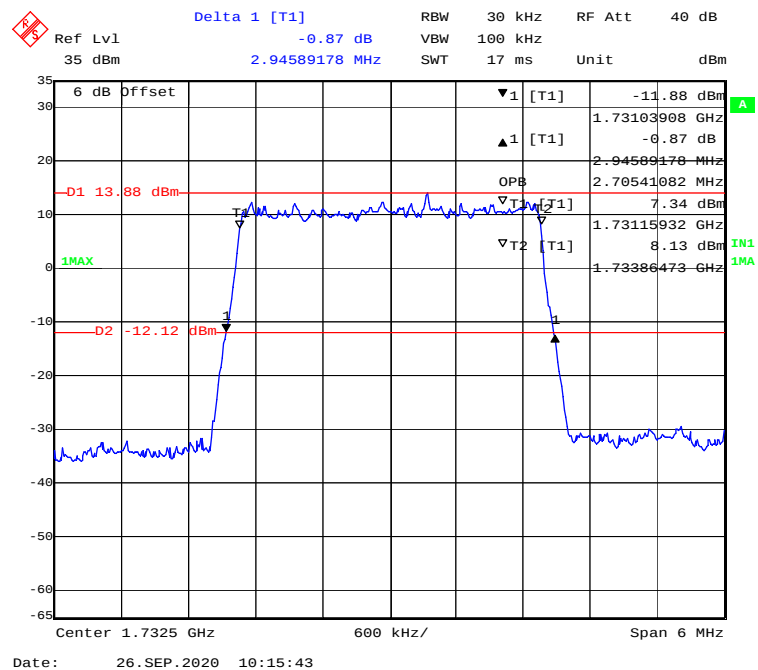
Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	1.4M	Low	1.323	1.106
	3M		2.946	2.693
	5M		4.930	4.489
	10M		9.659	8.978
	15M		14.549	13.407
	20M		19.319	17.956
	1.4M	Middle	1.311	1.106
	3M		2.946	2.705
	5M		4.970	4.509
	10M		9.739	8.978
	15M		14.669	13.467
	20M		19.078	17.876
	1.4M	High	1.287	1.118
	3M		2.970	2.693
	5M		4.930	4.489
	10M		9.780	8.978
	15M		14.609	13.467
	20M		19.158	17.796

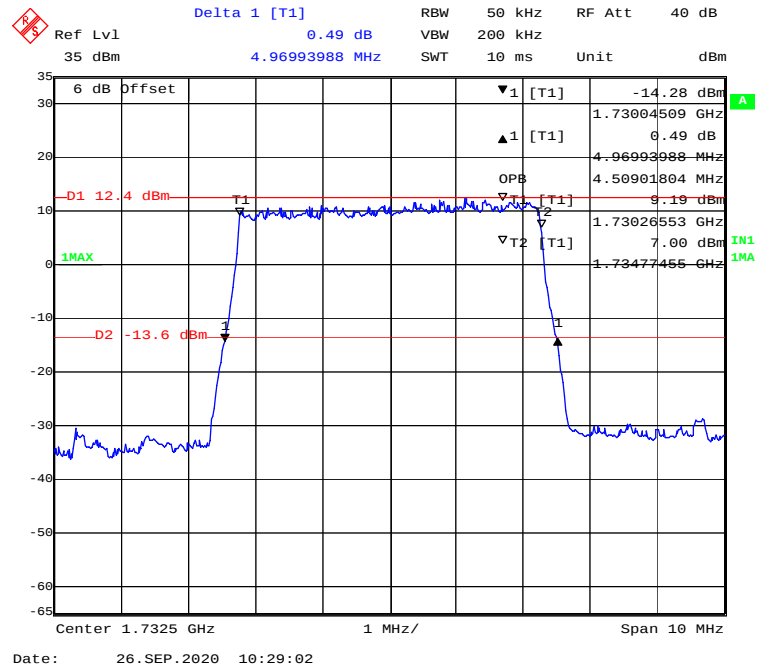
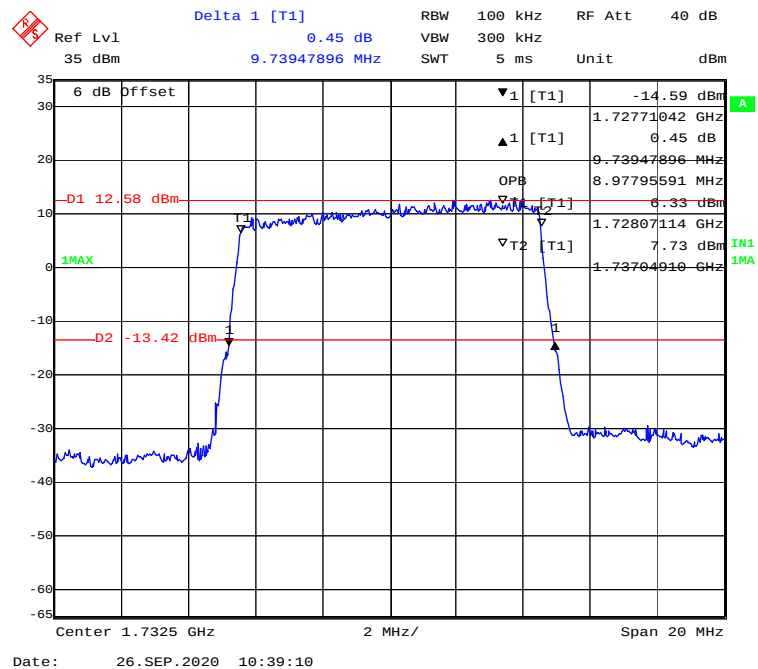
Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
16-QAM	1.4M	Low	1.335	1.106
	3M		2.946	2.705
	5M		4.930	4.509
	10M		9.659	8.938
	15M		14.609	13.407
	20M		19.158	17.956
	1.4M	Middle	1.317	1.112
	3M		2.958	2.705
	5M		4.950	4.509
	10M		9.739	8.978
	15M		14.609	13.467
	20M		18.998	17.876
	1.4M	High	1.293	1.106
	3M		2.970	2.693
	5M		4.950	4.489
	10M		9.739	8.978
	15M		14.729	13.467
	20M		19.238	17.876

QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

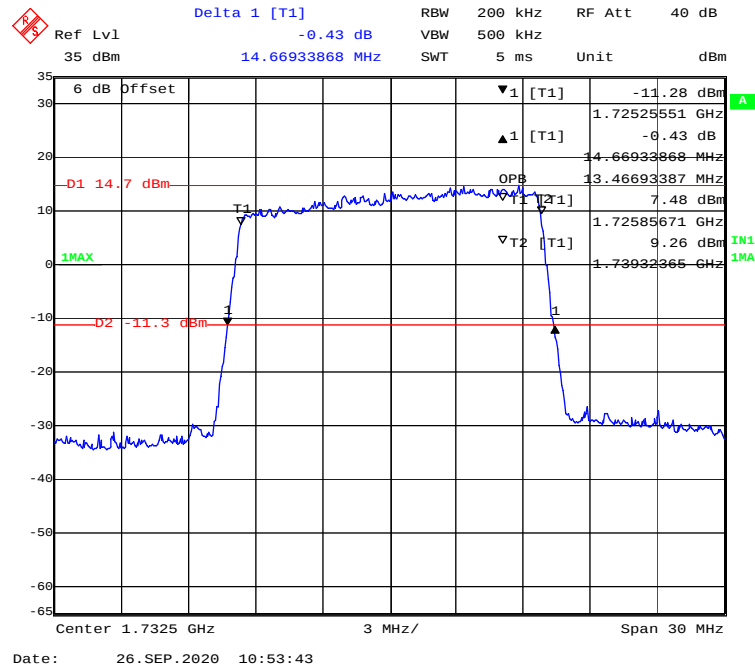
QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

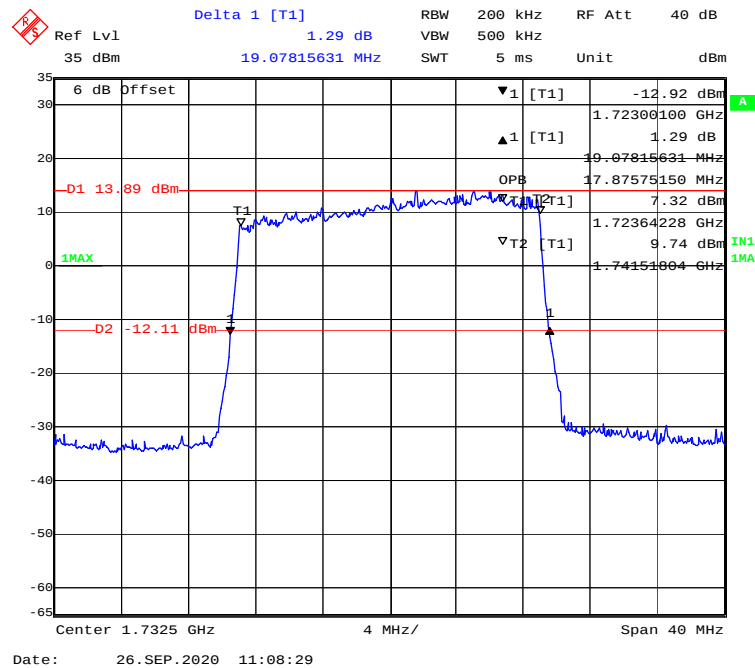
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

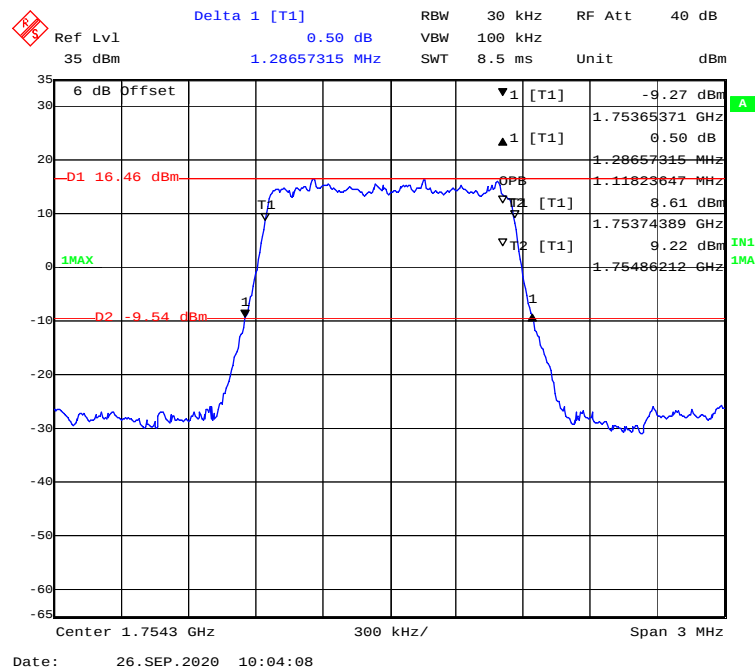
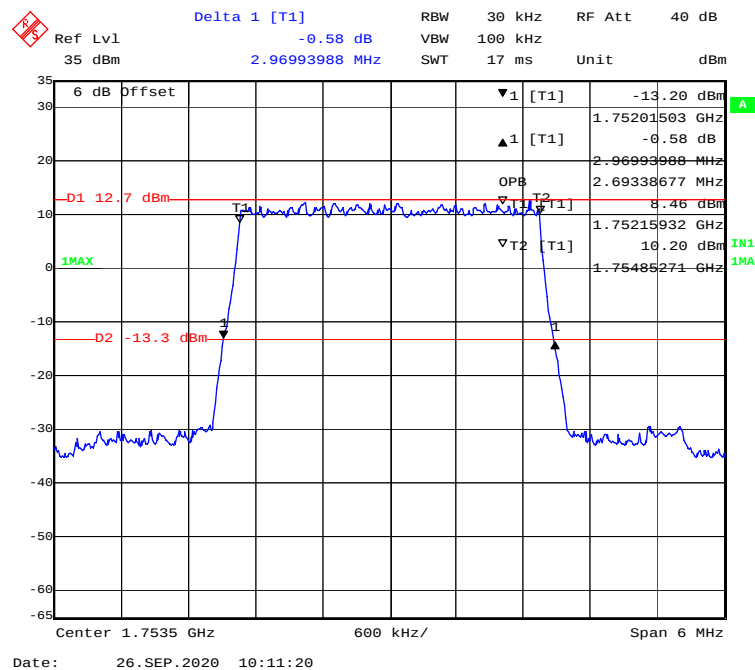
QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

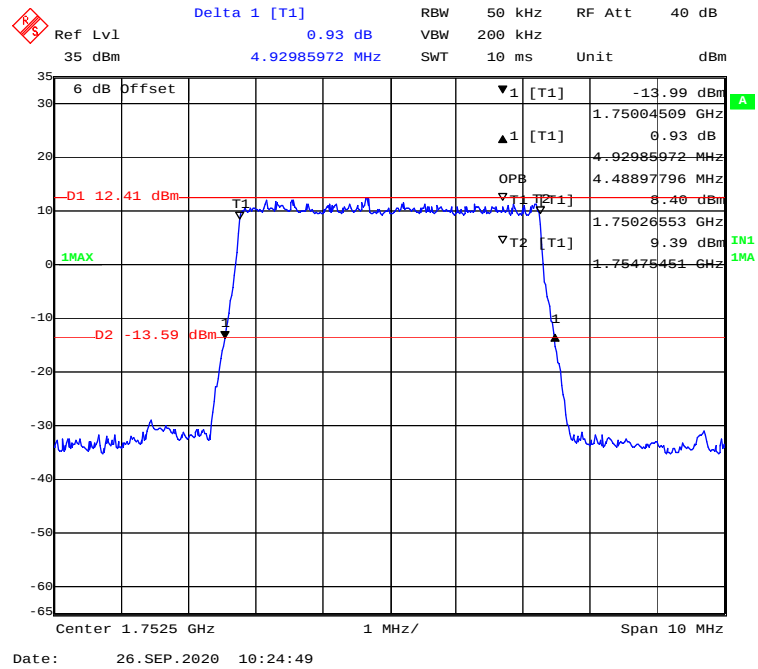
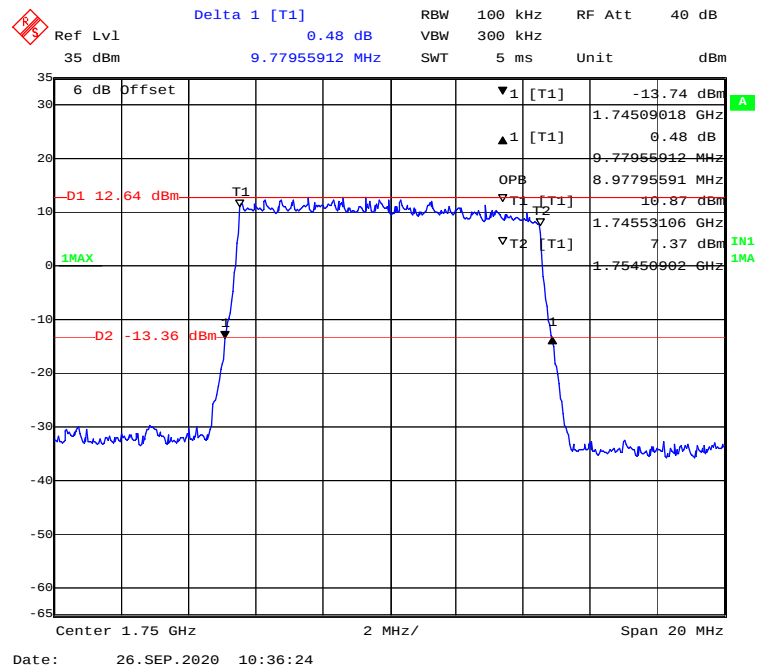
QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

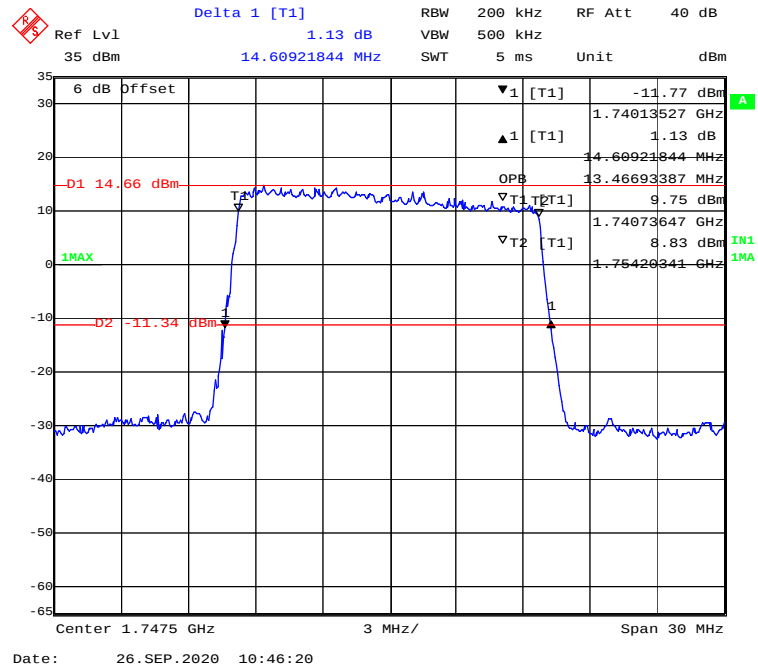
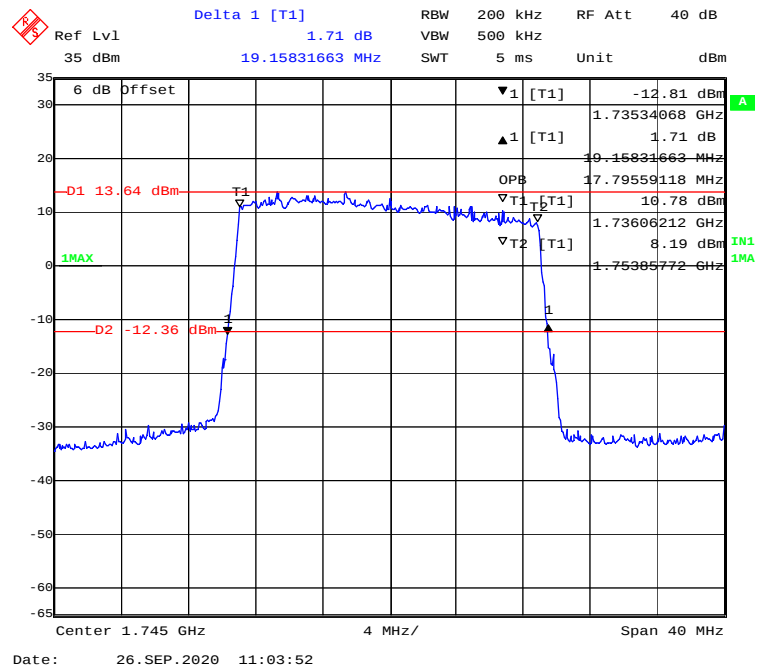


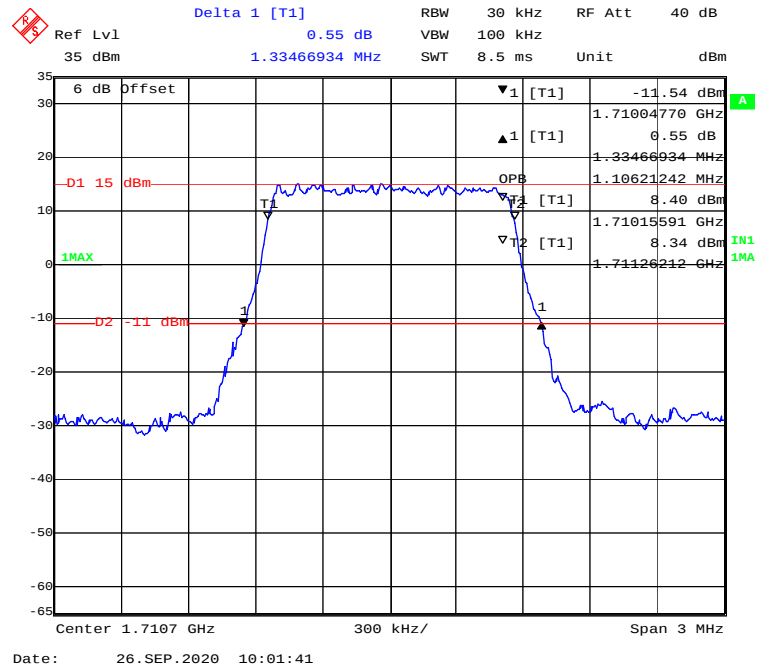
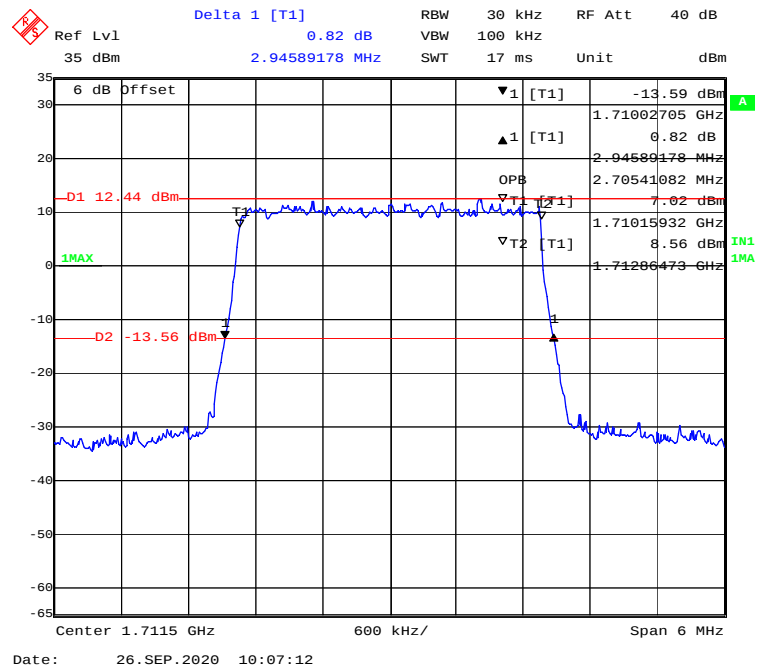
QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

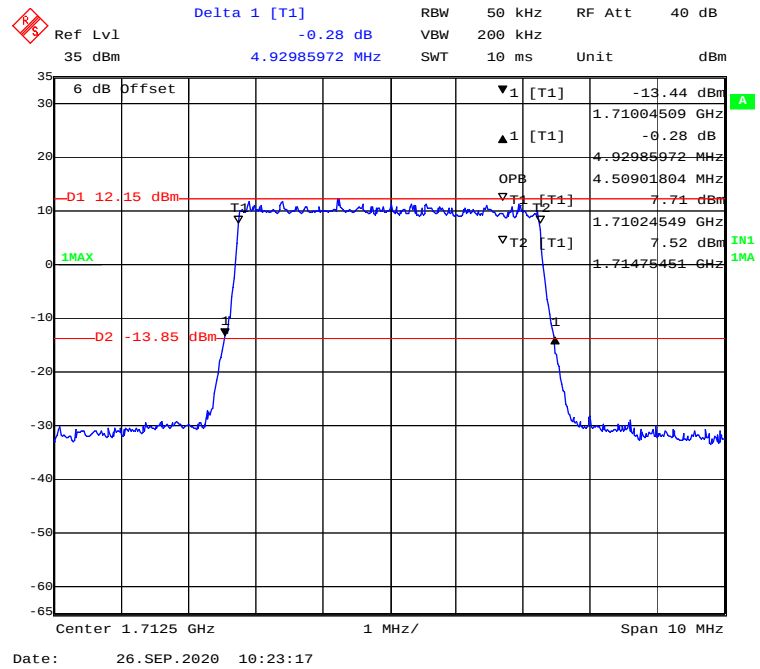
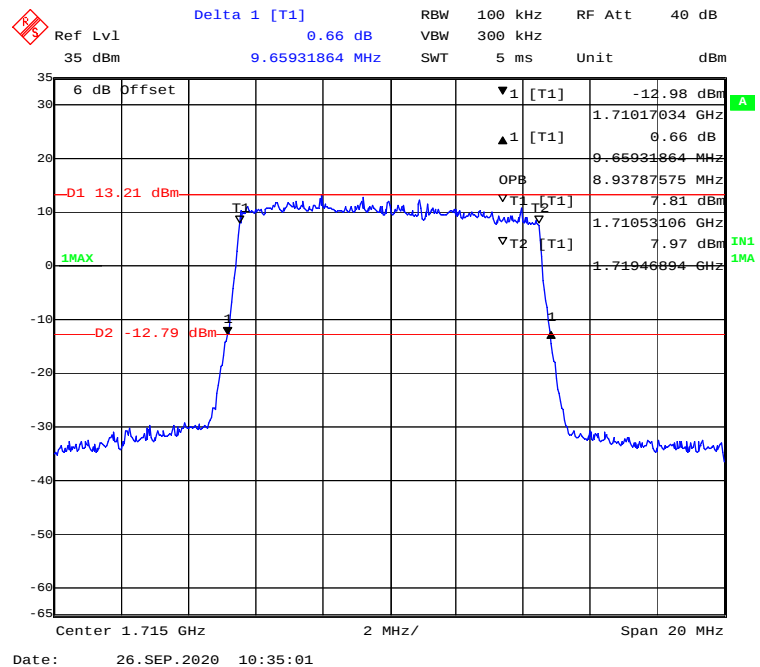


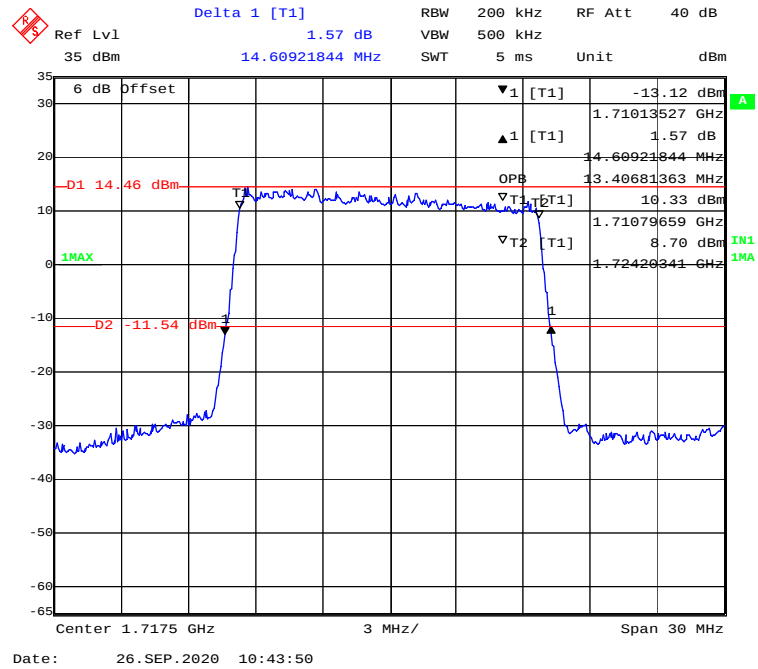
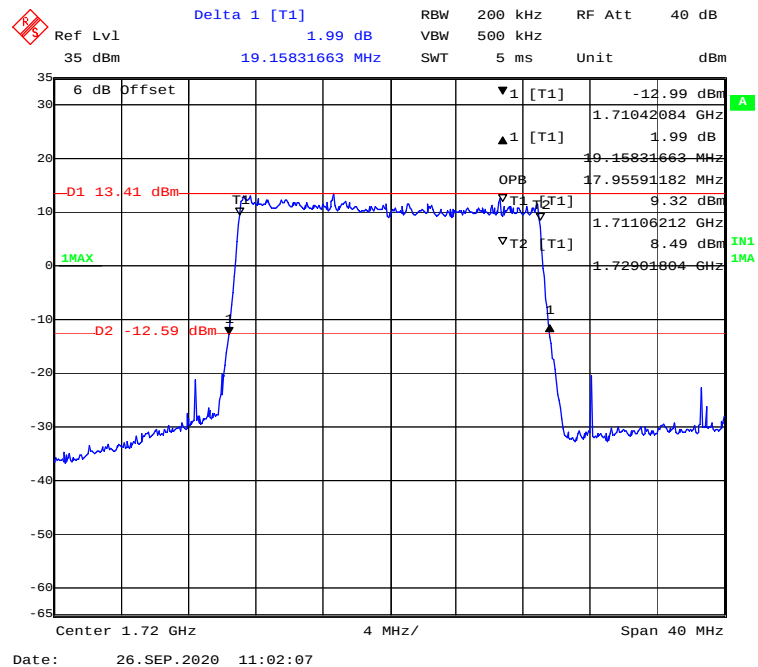
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

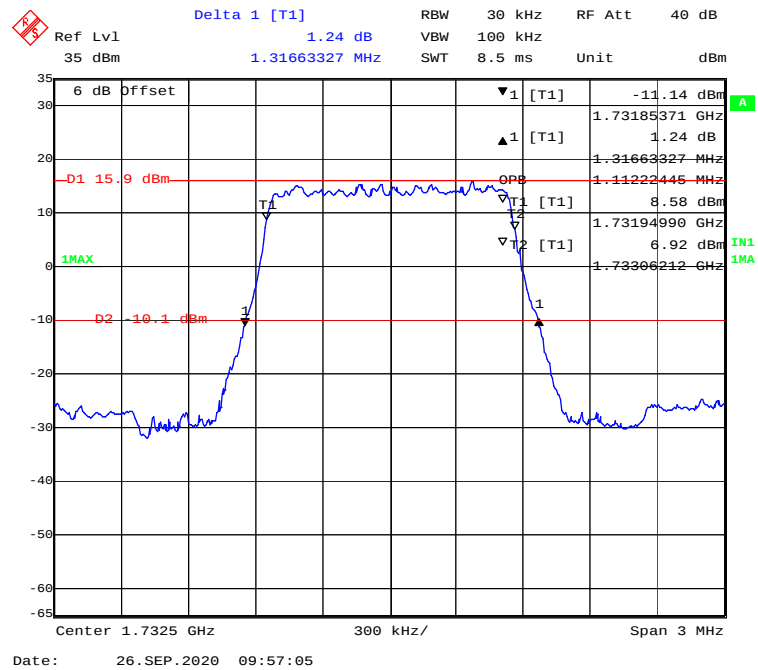
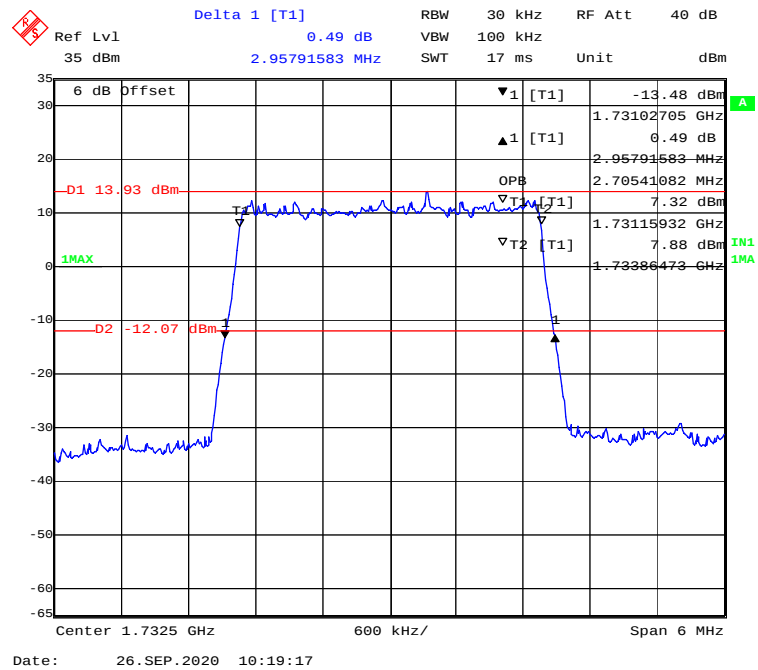
QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

Delta 1 [T1] 1.66 dB

RBW 50 kHz VBW 200 kHz SWT 10 ms

Ref Lvl 35 dBm RF Att 40 dB Unit dBm

6 dB Offset

D1 12.16 dBm

1MAX

D2 -13.84 dBm

▼1 [T1] -14.66 dBm

▲1 [T1] 1.66 dB

OPB 4.50901804 MHz

▽T1 [T1] 1.73026553 GHz 8.06 dBm

▽T2 [T1] 1.73477455 GHz 8.02 dBm

IN1 1MA

Center 1.7325 GHz 1 MHz/ Span 10 MHz

Date: 26. SEP. 2020 10:31:02

Ref Lvl 35 dBm Delta 1 [T1] 2.05 dB RBW 100 kHz RF Att 40 dB
 9.73947896 MHz VSW 300 kHz Unit dBm

6 dB Offset

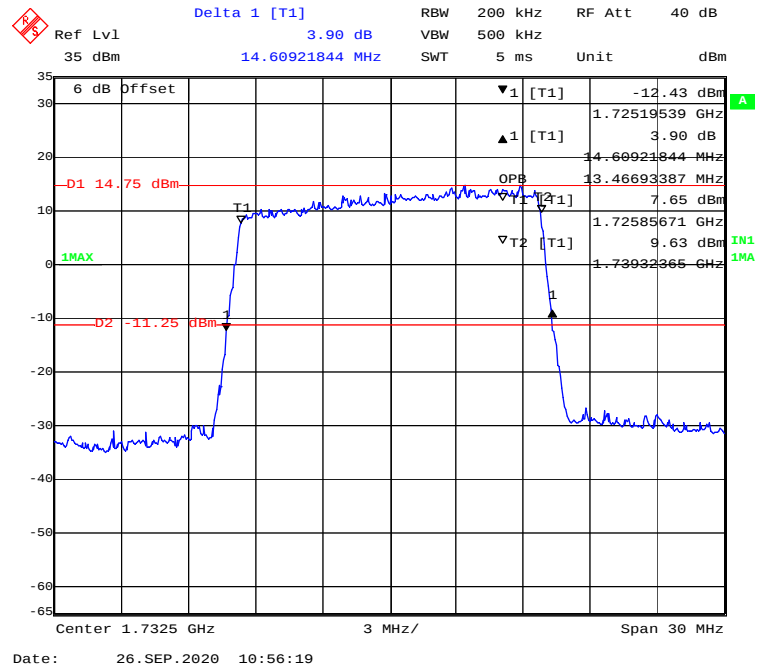
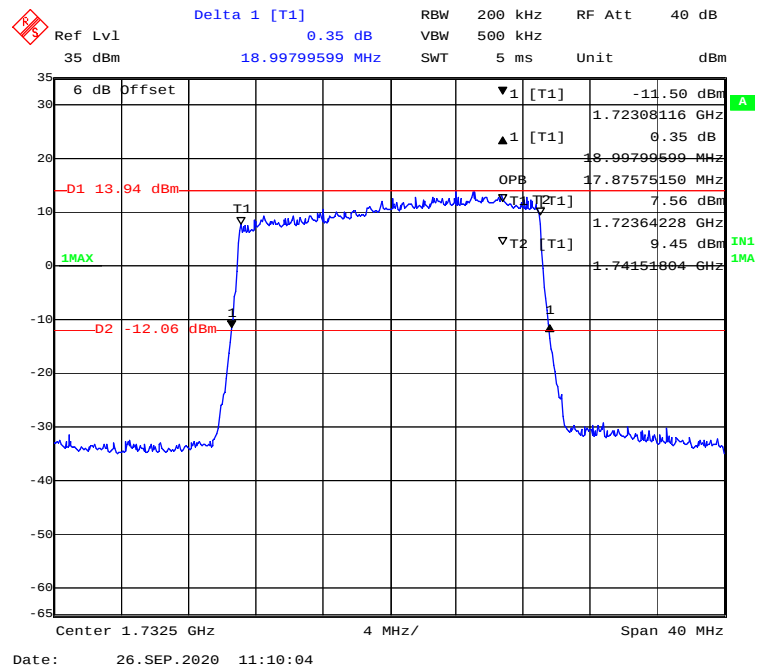
D1 12.51 dBm

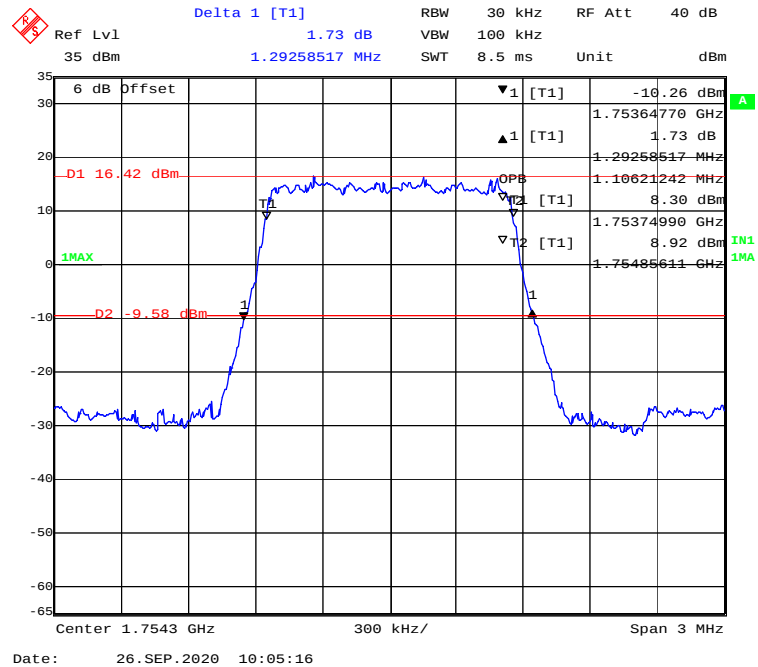
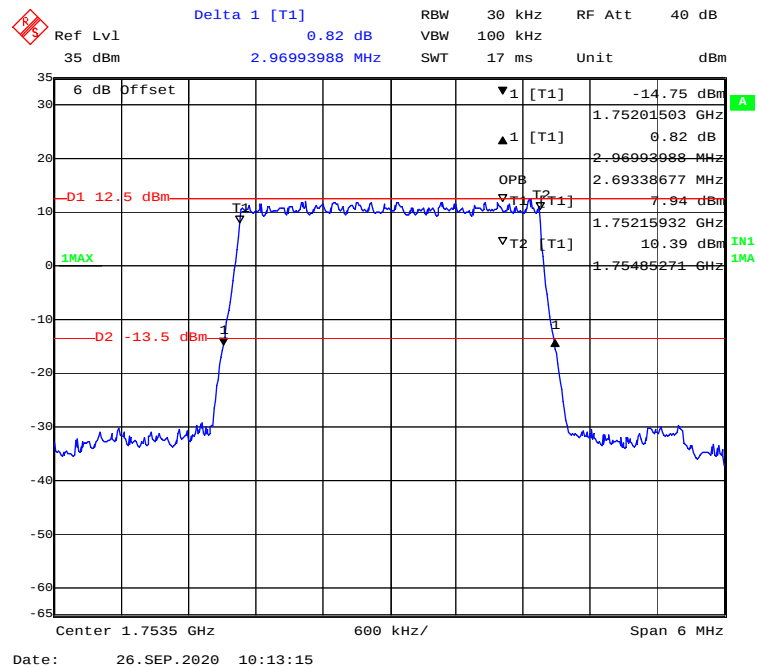
IMAX

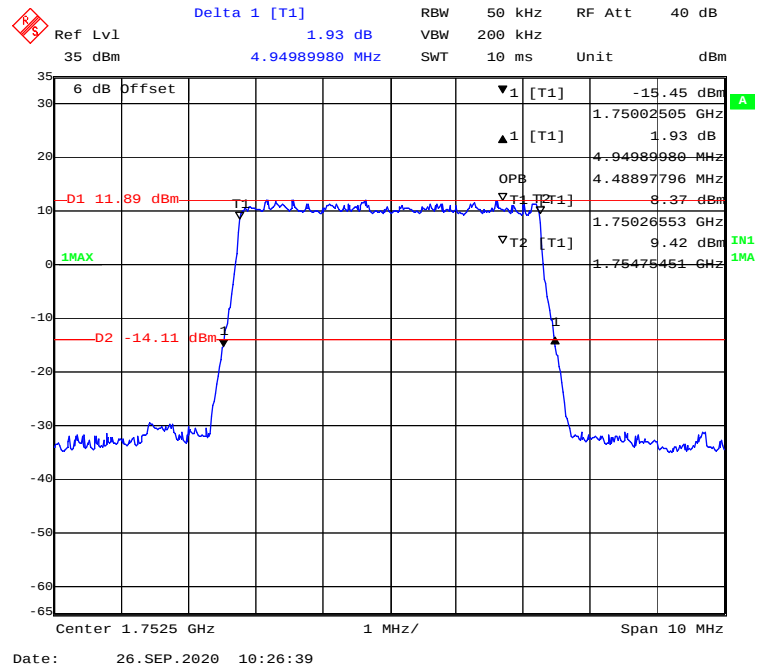
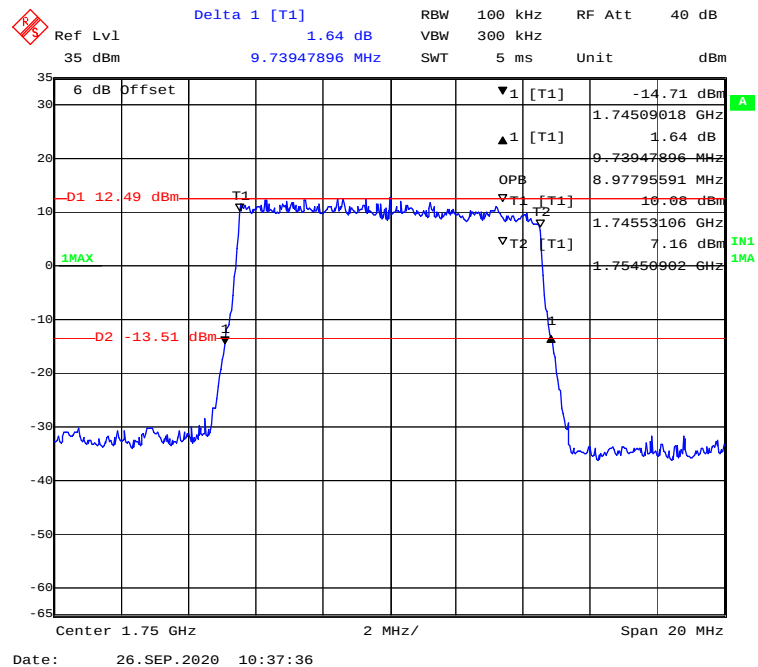
D2 -13.49 dBm

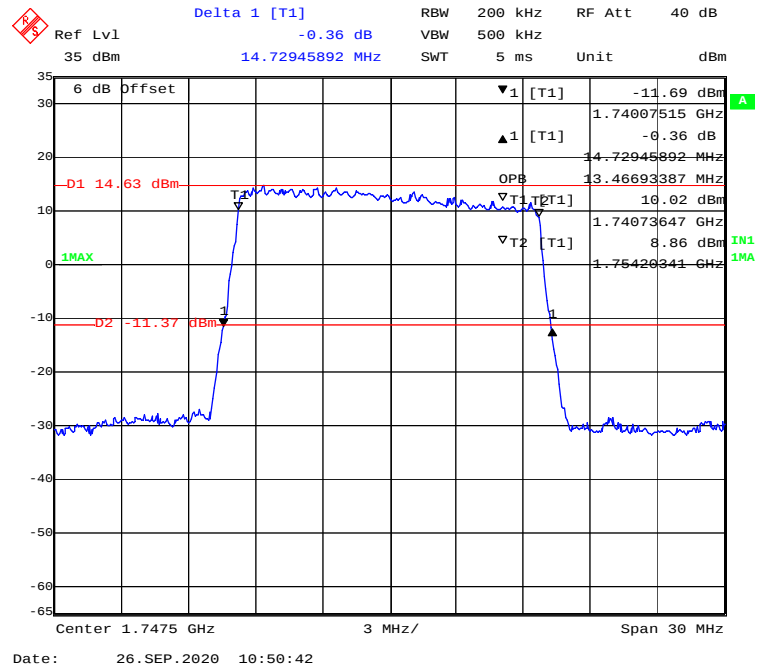
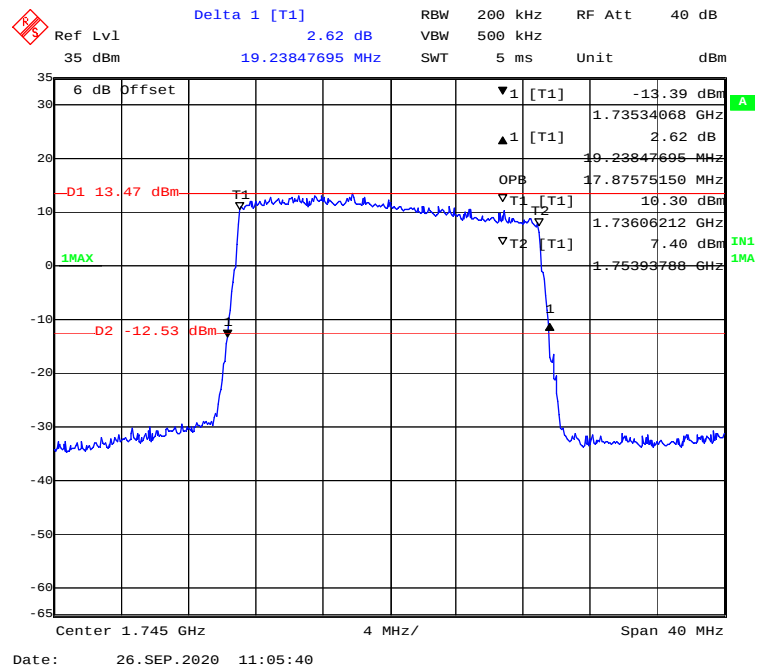
Center 1.7325 GHz 2 MHz/ Span 20 MHz

Date: 26.SEP.2020 10:40:31

16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

LTE Band 5:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	1.4M	Low	1.323	1.106
	3M		2.946	2.693
	5M		4.930	4.489
	10M		9.780	8.978
	1.4M	Middle	1.299	1.112
	3M		2.934	2.705
	5M		4.970	4.489
	10M		9.820	8.978
	1.4M	High	1.293	1.119
	3M		2.958	2.693
	5M		4.910	4.489
	10M		9.739	8.978
16-QAM	1.4M	Low	1.317	1.106
	3M		2.958	2.693
	5M		4.930	4.489
	10M		9.780	8.978
	1.4M	Middle	1.299	1.112
	3M		2.934	2.705
	5M		4.970	4.509
	10M		9.780	8.978
	1.4M	High	1.293	1.118
	3M		2.958	2.693
	5M		4.930	4.489
	10M		9.739	8.978

Delta 1 [T1] 0.90 dB

RBW 30 kHz RF Att 40 dB

Ref Lvl 35 dBm VBW 100 kHz

SWT 8.5 ms Unit dBm

6 dB Offset

D1 18.66 dBm

D2 -7.34 dBm

1MAX

▼1 [T1] -7.91 dBm

▲1 [T1] 0.90 dB

824.04769539 MHz

1.32264529 MHz

1.10621242 MHz

824.15591182 MHz

12.21 dBm

▼T1 [T1]

▼T2 [T1]

12.12 dBm

825.26212425 MHz

IN1 1MAX

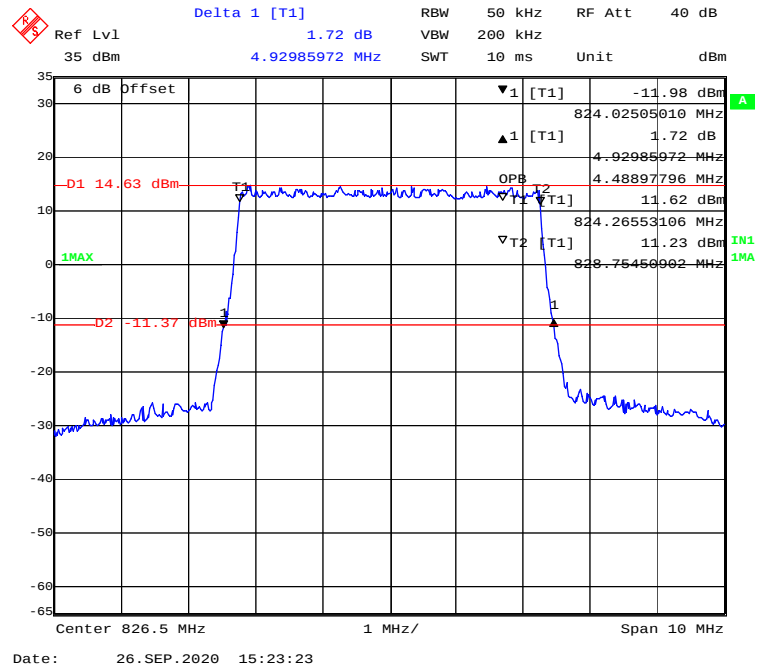
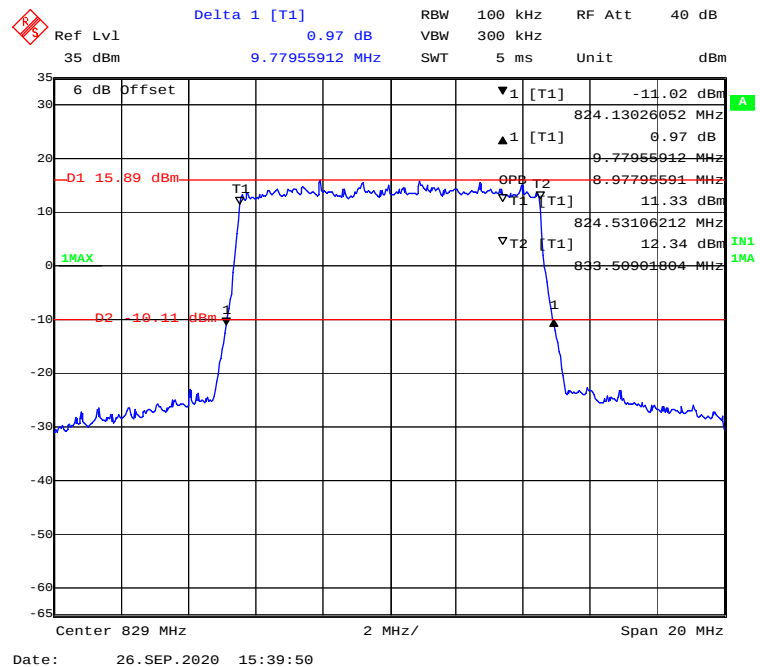
Center 824.7 MHz

300 kHz/

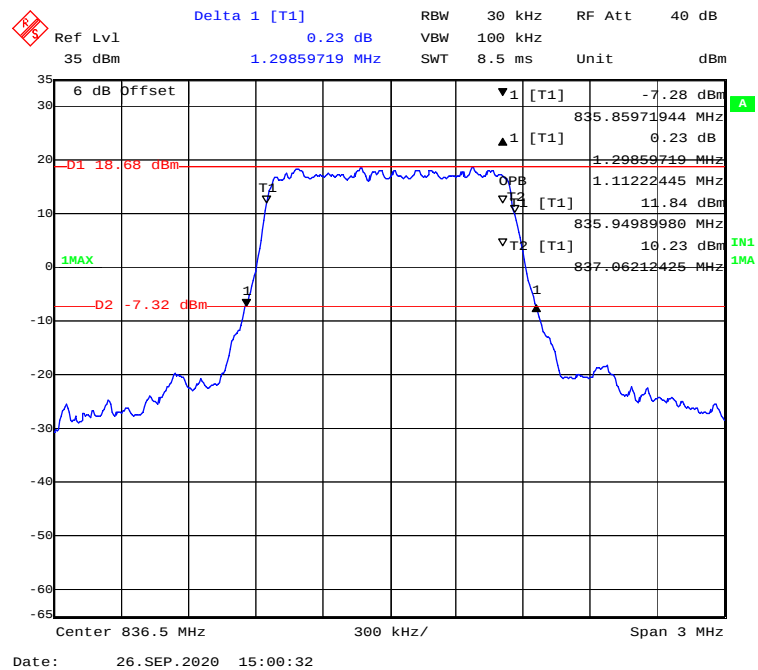
Span 3 MHz

Date: 26. SEP. 2020 14:45:01

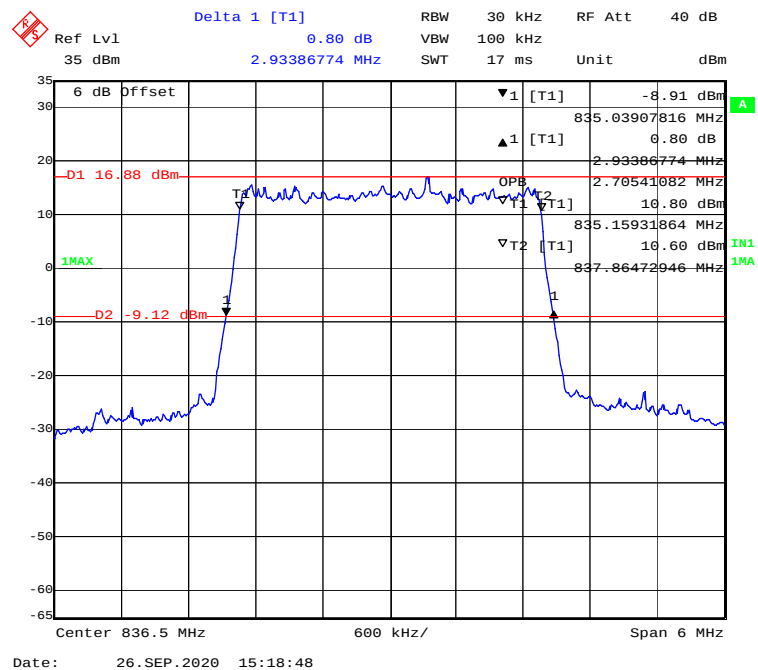
[illegible]

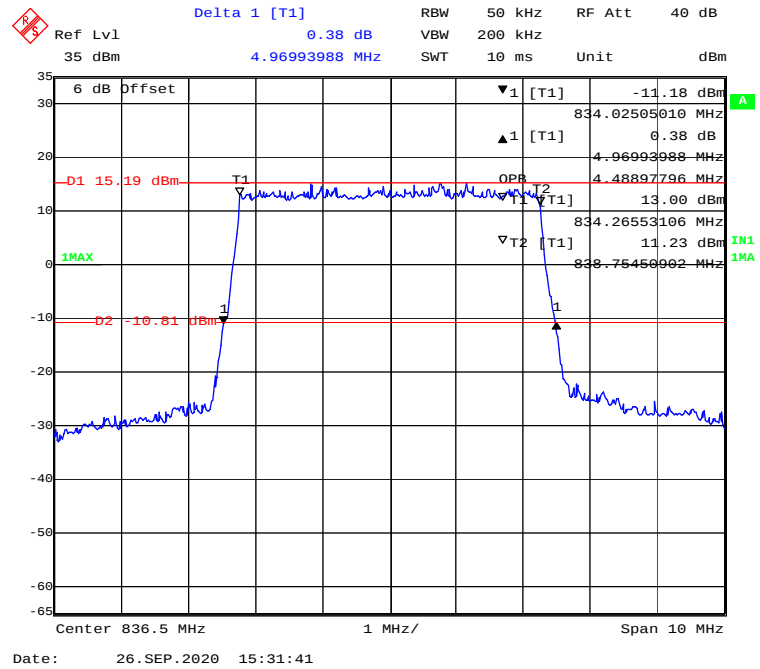
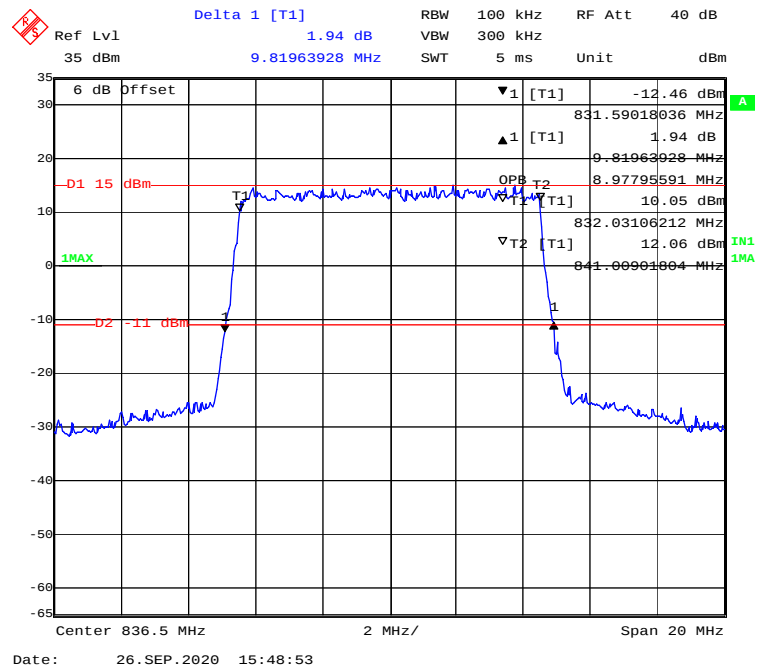
QPSK (5.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

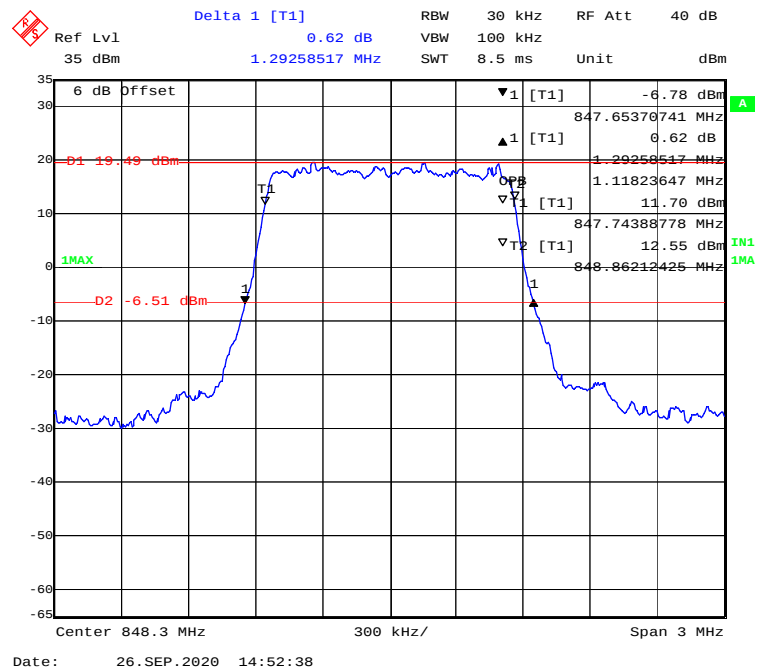
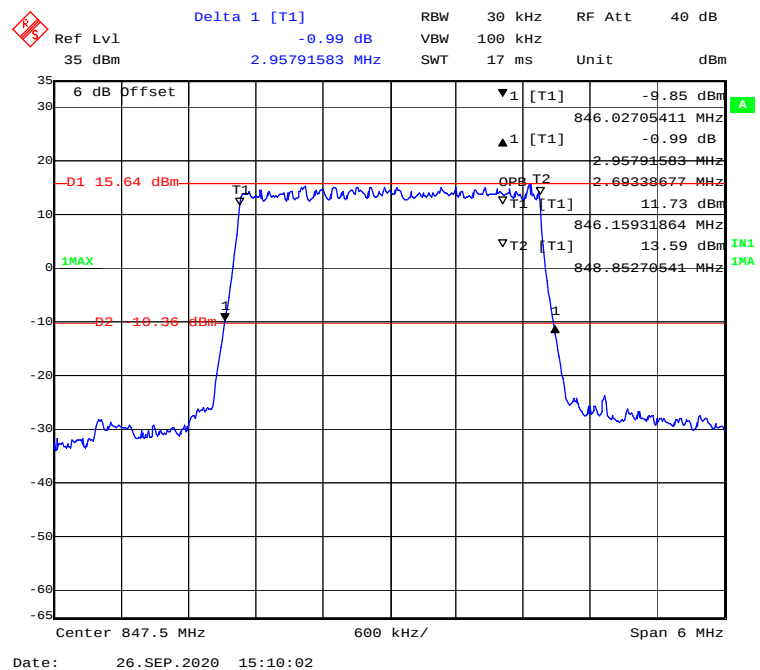
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

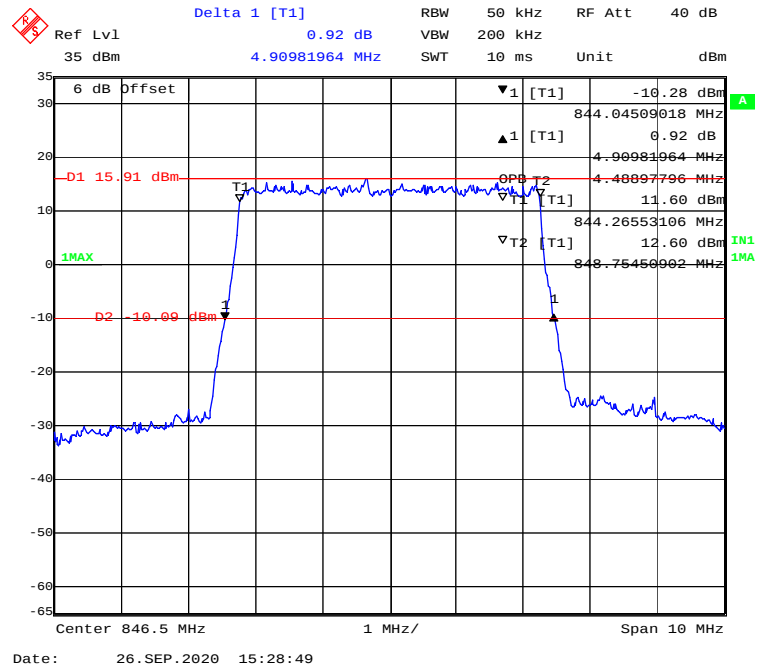
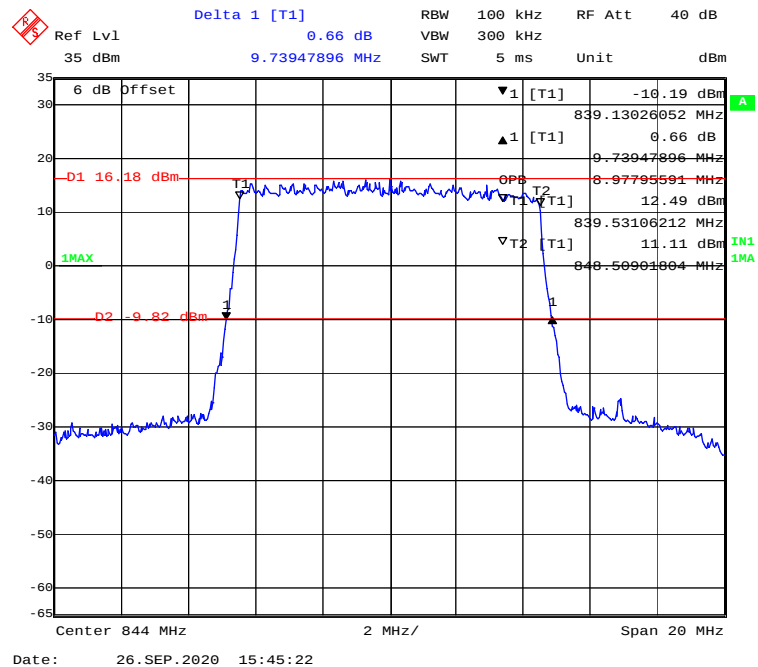


QPSK (3.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



QPSK (5.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (3.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

QPSK (5.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

Delta 1 [T1] 0.18 dB

Ref Lvl 35 dBm

RBW 30 kHz

SWT 8.5 ms

RF Att 40 dB

Unit dBm

Center 824.7 MHz

300 kHz/

Span 3 MHz

Date: 26.SEP.2020 14:49:28

Delta 1 [T1] 0.55 dB 2.95791583 MHz

RBW 30 kHz RF Att 40 dB

Ref Lvl 35 dBm VBW 100 kHz

SWT 17 ms Unit dBm

6 dB Offset

D1 15.93 dBm

1MAX

T1

OPB T2

T1 T1

1

D2 -10.07 dBm

1

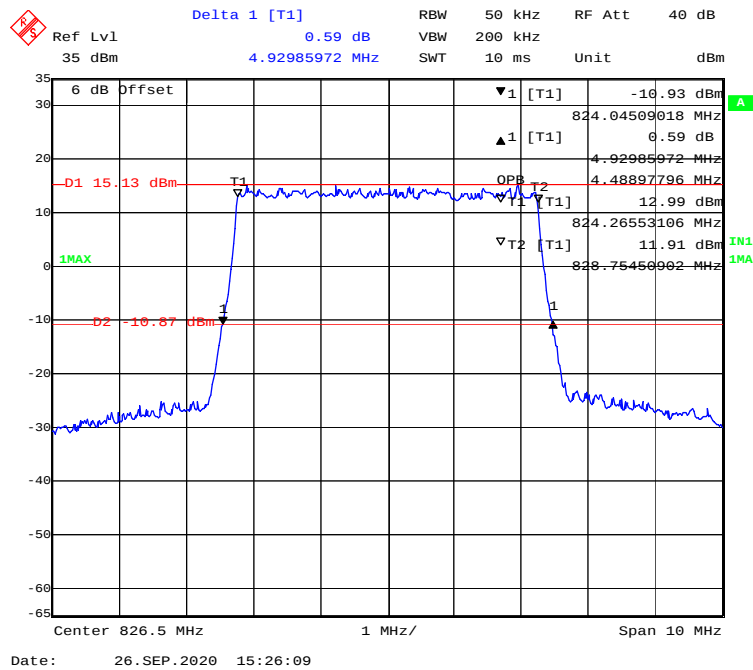
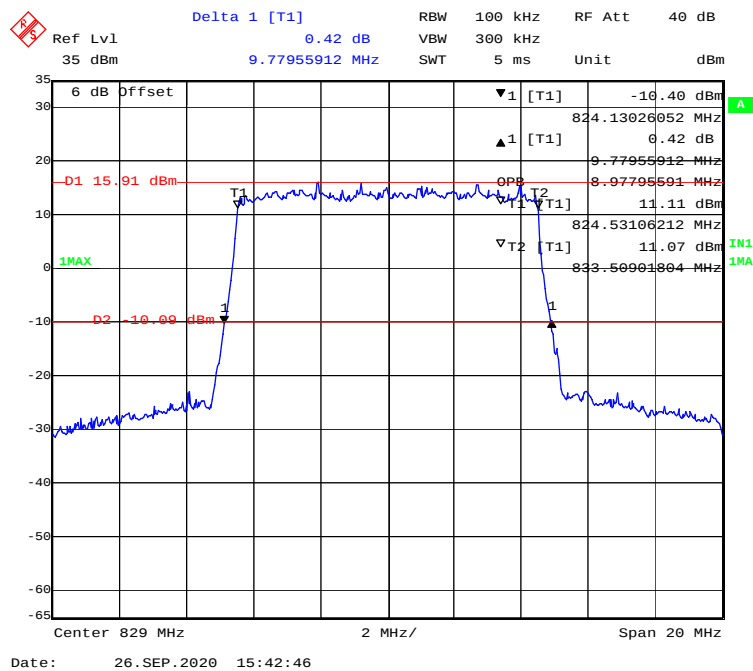
824.02705411 MHz

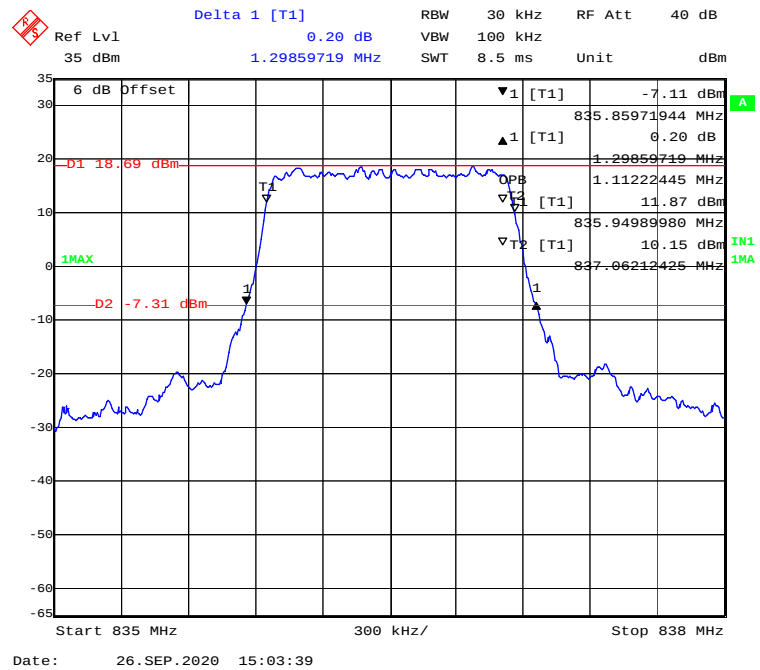
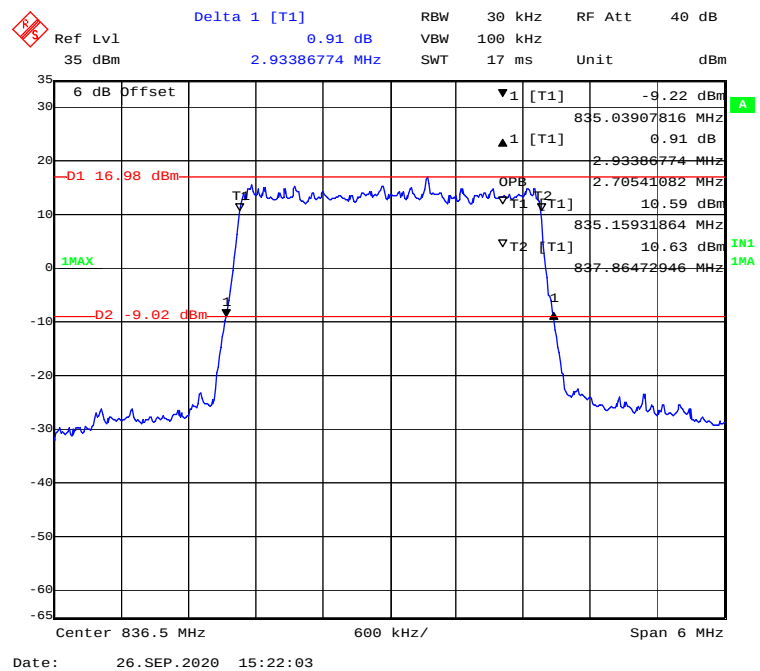
824.15931864 MHz

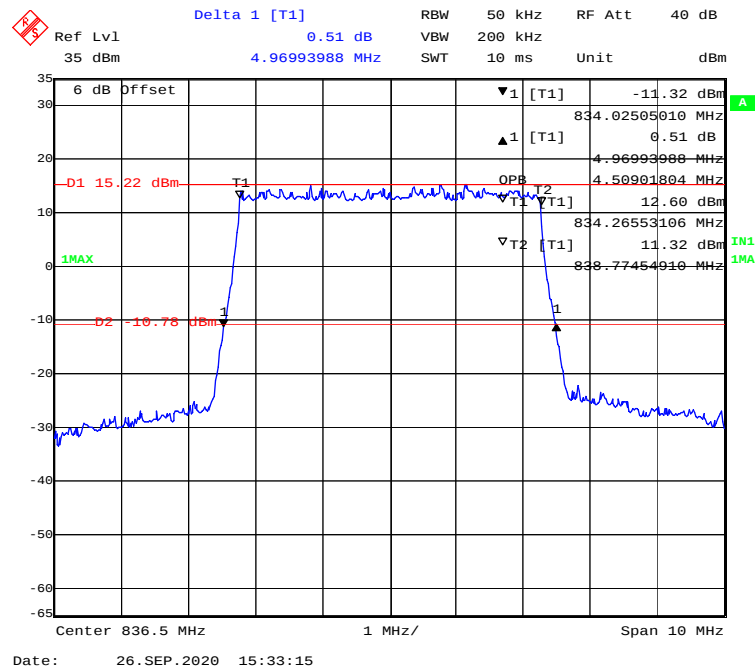
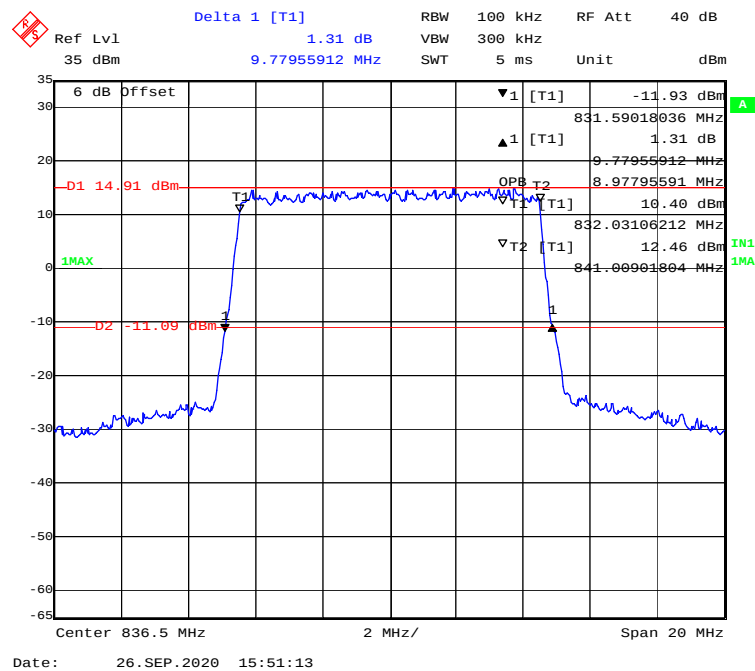
826.85270541 MHz

Center 825.5 MHz 600 kHz/ Span 6 MHz

Date: 26.SEP.2020 15:07:53

16-QAM (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (3.0 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**

[illegible][illegible]

Ref Lvl 35 dBm Delta 1 0.60 dB RBW 50 kHz RF Att 40 dB
 35 dBm 4.92985972 MHz VSWR 10 ms Unit dBm

6 dB Offset

D1 15.89 dBm

T1

▼1 [T1] -9.84 dBm

▲1 [T1] 0.60 dB

OPB T2 4.92985972 MHz

T1 4.48897796 MHz

T1 11.15 dBm

844.26553106 MHz

▽T2 [T1] 12.65 dBm

846.75456962 MHz

D2 -10.11 dBm

1MAX

IN1 1MAX

Center 846.5 MHz 1 MHz/ Span 10 MHz

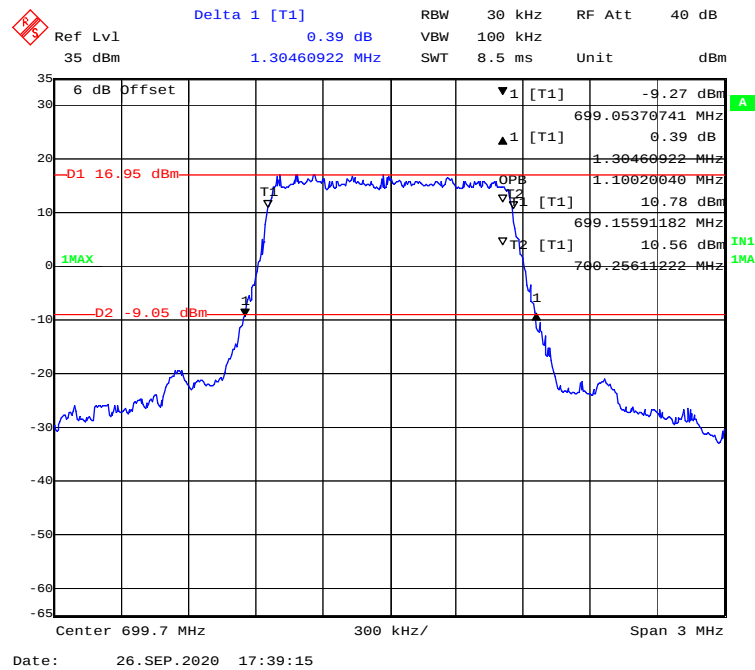
Date: 26.SEP.2020 15:30:20

[illegible]

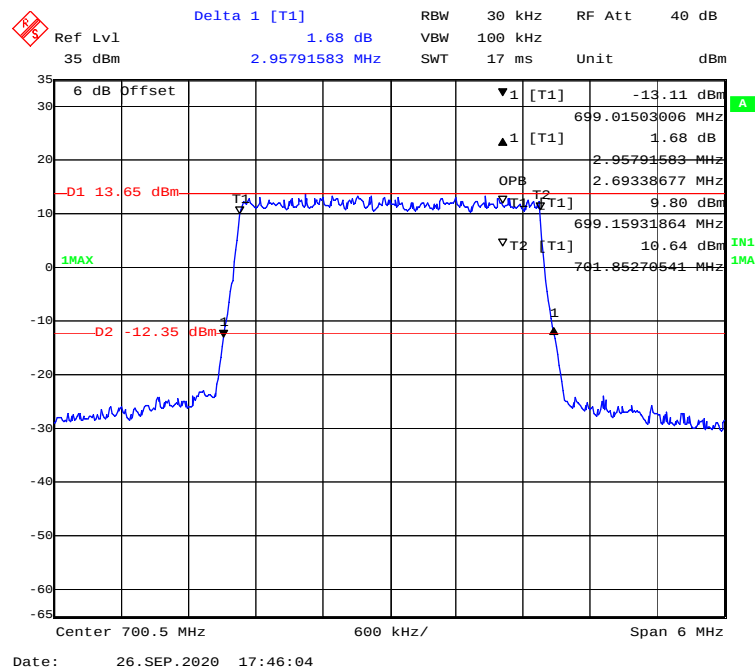
LTE Band 12:

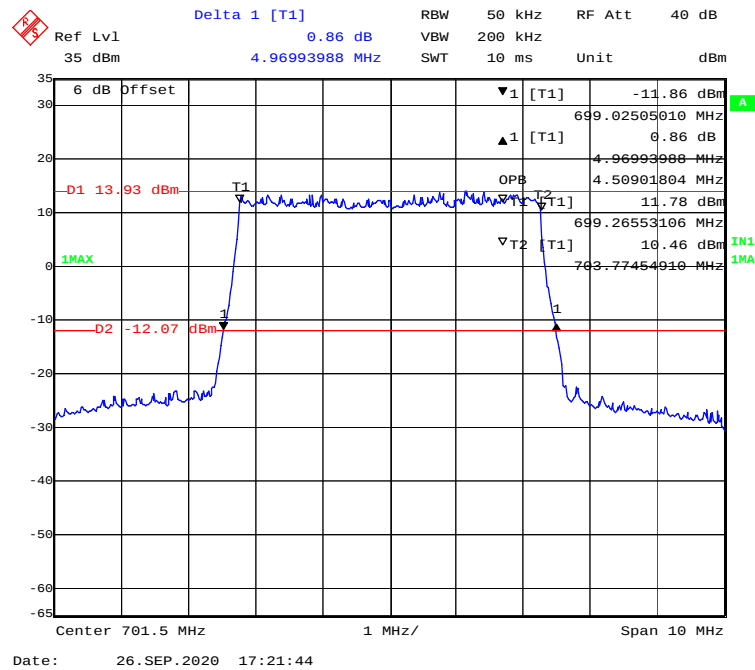
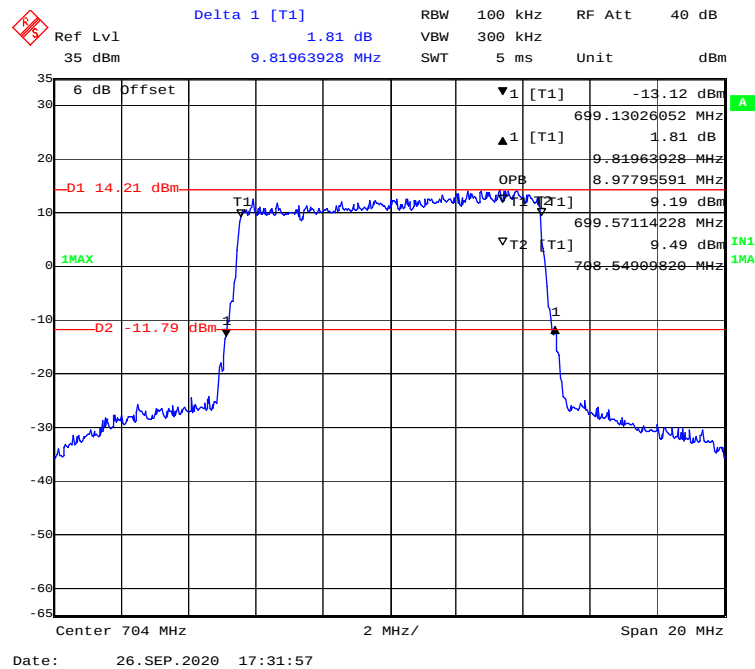
Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	1.4M	Low	1.305	1.100
	3M		2.958	2.693
	5M		4.970	4.509
	10M		9.820	8.978
	1.4M	Middle	1.305	1.100
	3M		2.934	2.705
	5M		4.910	4.469
	10M		9.739	8.938
	1.4M	High	1.287	1.112
	3M		2.934	2.705
	5M		4.930	4.509
	10M		9.619	8.978
16-QAM	1.4M	Low	1.317	1.106
	3M		2.958	2.693
	5M		4.970	4.489
	10M		9.739	8.978
	1.4M	Middle	1.305	1.106
	3M		2.934	2.705
	5M		4.910	4.489
	10M		9.619	8.938
	1.4M	High	1.293	1.106
	3M		2.946	2.705
	5M		4.930	4.489
	10M		9.619	8.978

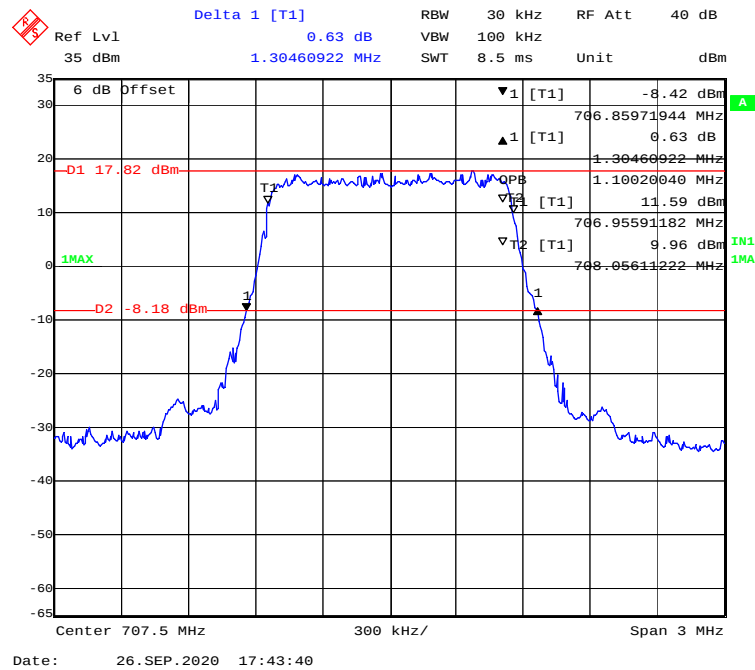
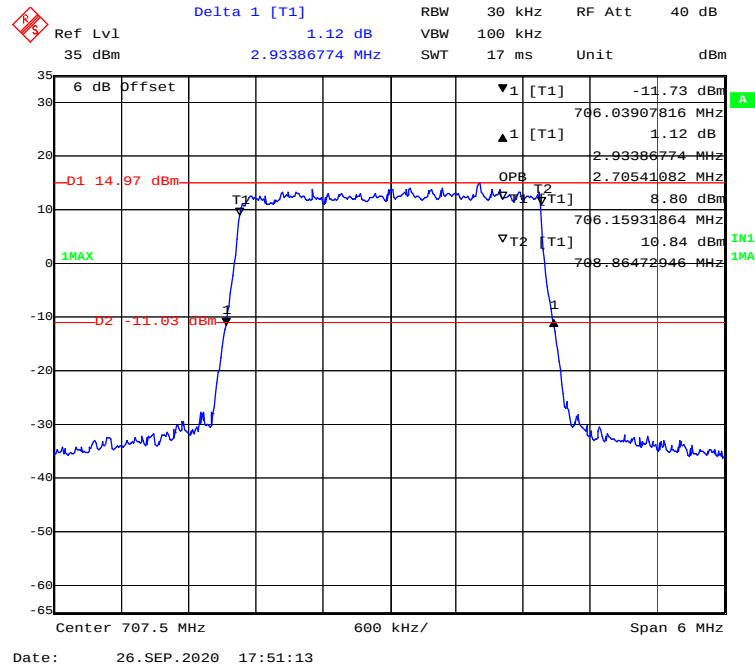
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

A

Parameter	Value
Ref Lvl	35 dBm
Delta 1 [T1]	-0.88 dB
RBW	50 kHz
RF Att	40 dB
VBW	200 kHz
SWT	10 ms
Unit	dBm

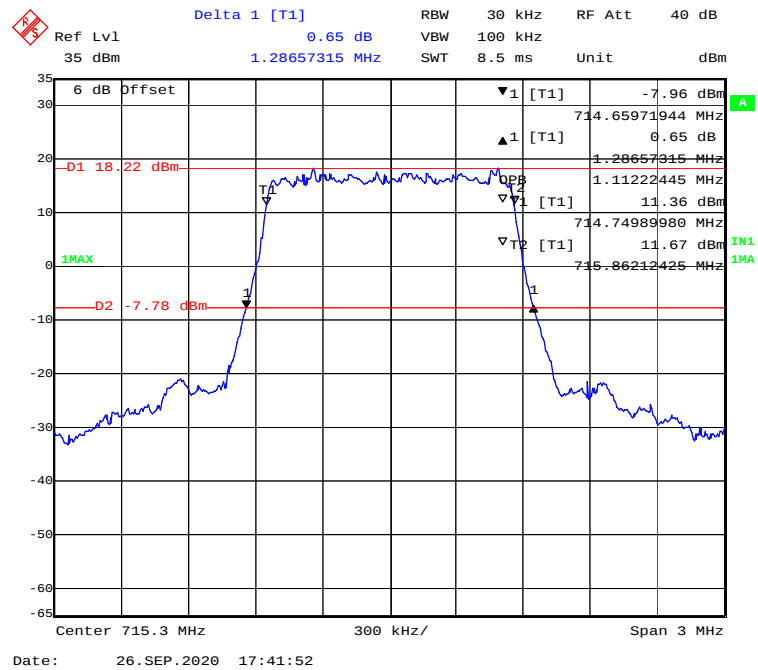
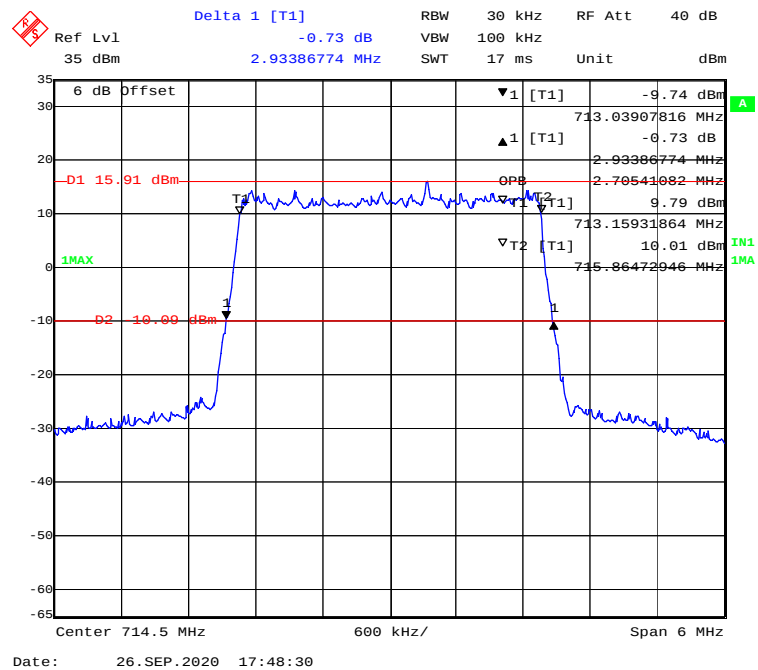
Center 707.5 MHz 1 MHz/ Span 10 MHz

Date: 26.SEP.2020 17:26:34

Delta 1 [T1] 2.67 dB
 Ref Lvl 35 dBm
 9.73947896 MHz
 RBW 100 kHz RF Att 40 dB
 VBW 300 kHz
 SWT 5 ms Unit dBm

6 dB Offset
 D1 14.19 dBm
 1MAX
 D2 -11.81 dBm
 IN1
 IN2

Center 707.5 MHz 2 MHz/ Span 20 MHz
 Date: 26. SEP. 2020 17:29:08

QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

Delta 1 [T1] -2.12 dB
 RBW 50 kHz RF Att 40 dB
 Ref Lvl 35 dBm
 4.92985972 MHz SWT 10 ms Unit dBm

6 dB Offset
 -10.81 dBm
 -2.12 dB
 4.92985972 MHz
 4.50901804 MHz
 10.58 dBm
 11.45 dBm
 715.75450902 MHz

D1 14.38 dBm
 D2 -11.62 dBm
 1
 1
 1
 1

1MAX
 1MA

Center 713.5 MHz 1 MHz/ Span 10 MHz

Date: 26.SEP.2020 17:23:57

Delta 1 [T1] -0.74 dB
 Ref Lvl 35 dBm
 9.61923848 MHz
 RBW 100 kHz
 VBW 300 kHz
 SWT 5 ms
 RF Att 40 dB
 Unit dBm

6 dB Offset
 -D1 15.46 dBm
 1MAX
 -D2 -10.54 dBm
 1
 T1
 T2
 1
 T1
 T2
 1
 T1
 T2

-9.62 dBm
 706.21042084 MHz
 -0.74 dB
 9.61923848 MHz
 8.97795591 MHz
 9.39 dBm
 706.53106212 MHz
 10.99 dBm
 715.50901804 MHz

Center 711 MHz
 2 MHz/
 Span 20 MHz

Date: 26.SEP.2020 17:36:28

[illegible]

Delta 1 [T1] 1.09 dB

Ref Lvl 35 dBm

2.95791583 MHz

RBW 30 kHz

VBW 100 kHz

SWT 17 ms

Unit dBm

6 dB Offset

D1 14.19 dBm

1MAX

D2 -11.81 dBm

▼1 [T1] -12.41 dBm

▲1 [T1] 1.09 dB

OPB T2 2.95791583 MHz

2.69338677 MHz

9.49 dBm

699.15931864 MHz

11.96 dBm

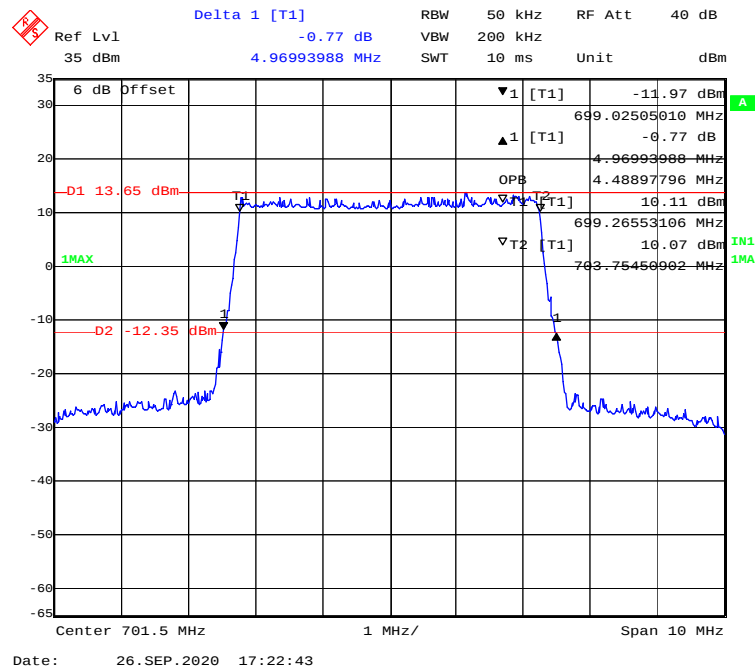
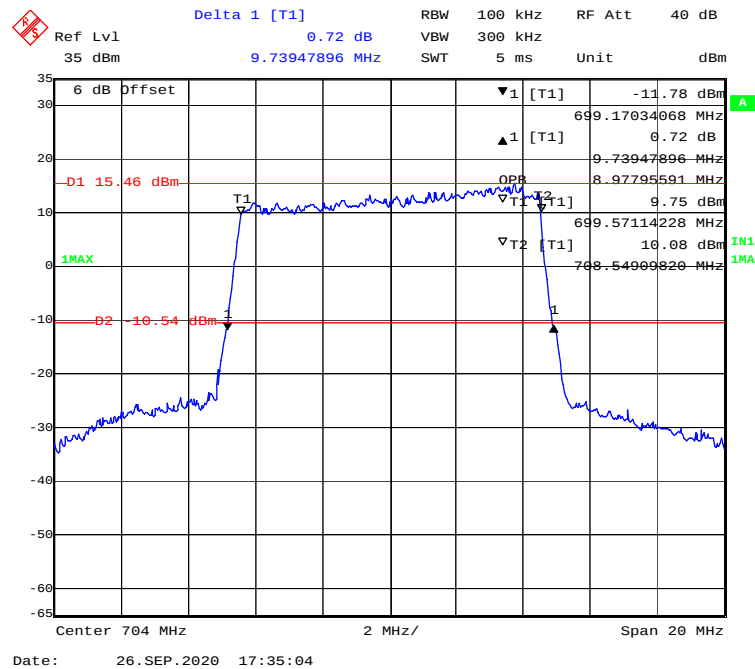
701.85270541 MHz

Center 700.5 MHz

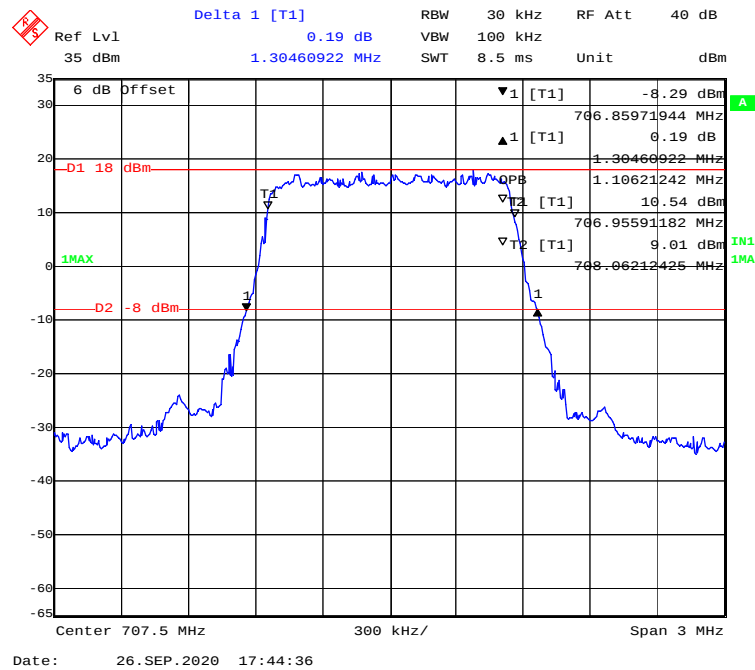
600 kHz/

Span 6 MHz

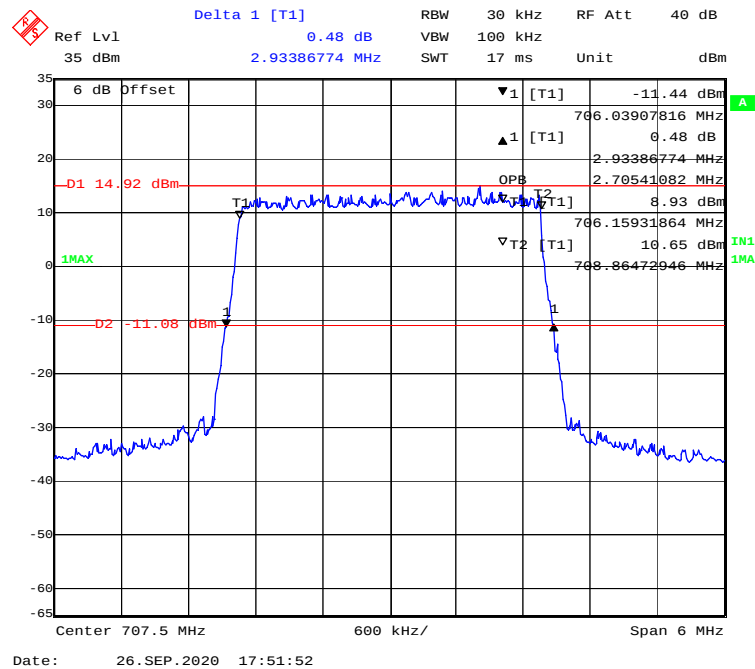
Date: 26.SEP.2020 17:47:21

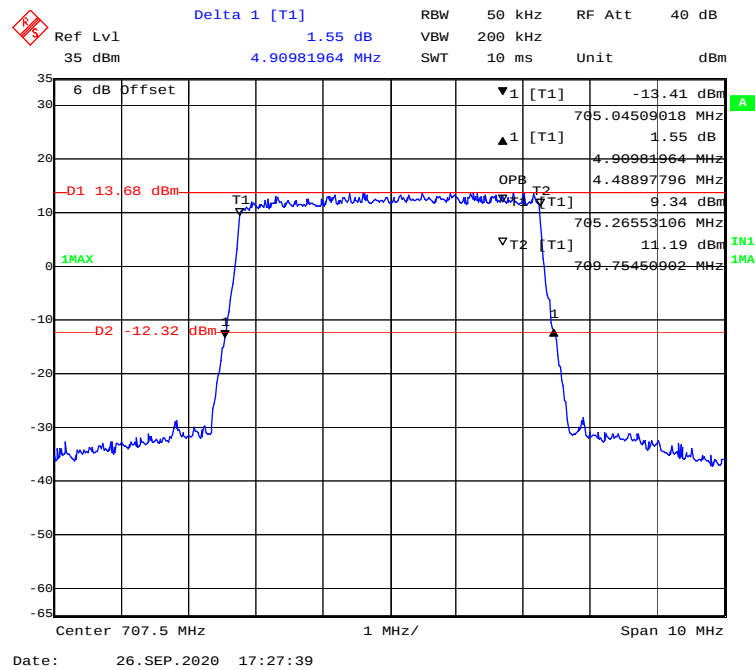
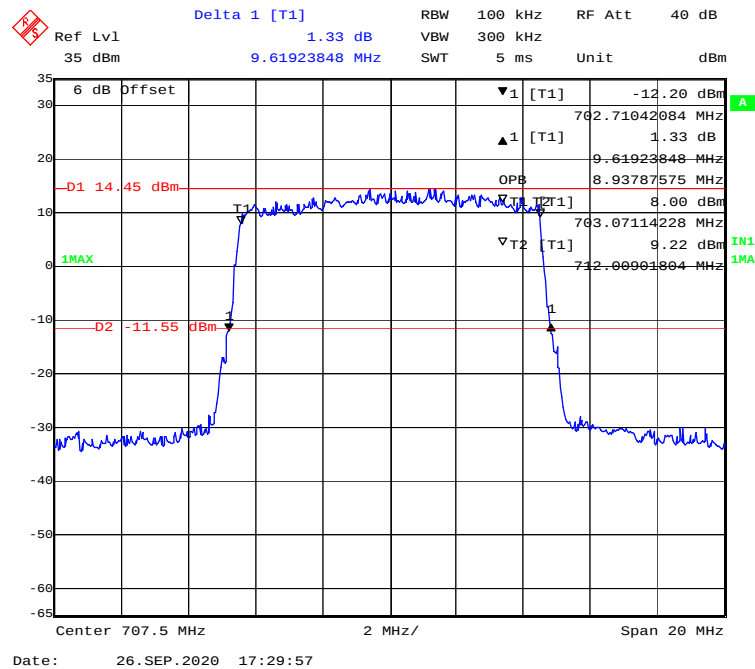
16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

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



16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

[illegible]

Delta 1 [T1] -0.73 dB
 RBW 30 kHz RF Att 40 dB
 Ref Lvl 35 dBm VBW 100 kHz
 2.94589178 MHz SWT 17 ms Unit dBm

6 dB Offset
 D1 15.88 dBm
 D2 -10.12 dBm
 IN1 1MA
 Center 714.5 MHz 600 kHz/ Span 6 MHz

1 [T1] -9.84 dBm
 1 [T1] -0.73 dB
 2.94589178 MHz
 2.70541082 MHz
 8.43 dBm
 713.03907816 MHz
 713.15931864 MHz
 9.80 dBm
 715.86472046 MHz

Date: 26. SEP. 2020 17:49:48

Ref Lvl 35 dBm Delta 1 [T1] 1.06 dB RBW 50 kHz RF Att 40 dB
 35 dBm 4.92985972 MHz VBW 200 kHz SWT 10 ms Unit dBm

Center 713.5 MHz 1 MHz/ Span 10 MHz

Date: 26.SEP.2020 17:25:03

Spectrum Analyzer Readings:

- Ref Lvl:** 35 dBm
- Delta 1 [T1]:** 0.34 dB
- RBW:** 100 kHz
- RF Att:** 40 dB
- VBW:** 300 kHz
- SWT:** 5 ms
- Unit:** dBm
- Span:** 20 MHz
- Center:** 711 MHz
- Resolution:** 2 MHz

Marker	Type	Freq [MHz]	Power [dBm]
D1	Level	15.24	-8.24
T1	Trace	~711	~10
D2	Level	10.76	-10.76
T2	Trace	~711	~-10

LTE Band 13:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	5M	Low	4.970	4.509
	5M	Middle	4.970	4.509
	5M	High	4.930	4.489
	10M	/	9.860	8.978
16-QAM	5M	Low	4.970	4.489
	5M	Middle	4.970	4.509
	5M	High	4.930	4.489
	10M	/	9.820	8.978

Delta 1 [T1] 1.16 dB

Ref Lvl 35 dBm

RBW 50 kHz

VBW 200 kHz

SWT 10 ms

RF Att 40 dB

Unit dBm

6 dB Offset

D1 15.94 dBm

1MAX

D2 10.06 dBm

1

▼1 [T1] -10.83 dBm

▲1 [T1] 1.16 dB

OPB

▼T2 [T1] 4.96993988 MHz

▼T1 [T1] 4.50991804 MHz

▼T2 [T1] 11.61 dBm

▼T2 [T1] 777.24549098 MHz

▼T2 [T1] 11.79 dBm

▼T2 [T1] 781.75450902 MHz

Center 779.5 MHz

1 MHz/

Span 10 MHz

Date: 29. SEP. 2020 16:10:25

Ref Lvl 35 dBm Delta 1 [T1] 0.20 dB 4.96993988 MHz RBW 50 kHz VBW 200 kHz RF Att 40 dB Unit dBm

6 dB Offset

▼1 [T1] -16.40 dBm

▲1 [T1] 0.20 dB

D1 15.65 dBm T1 4.96993988 MHz

OPB T2 4.509901804 MHz

▽T1 [T1] 13.67 dBm

▽T2 [T1] 779.76553106 MHz

11.76 dBm

784.27454910 MHz

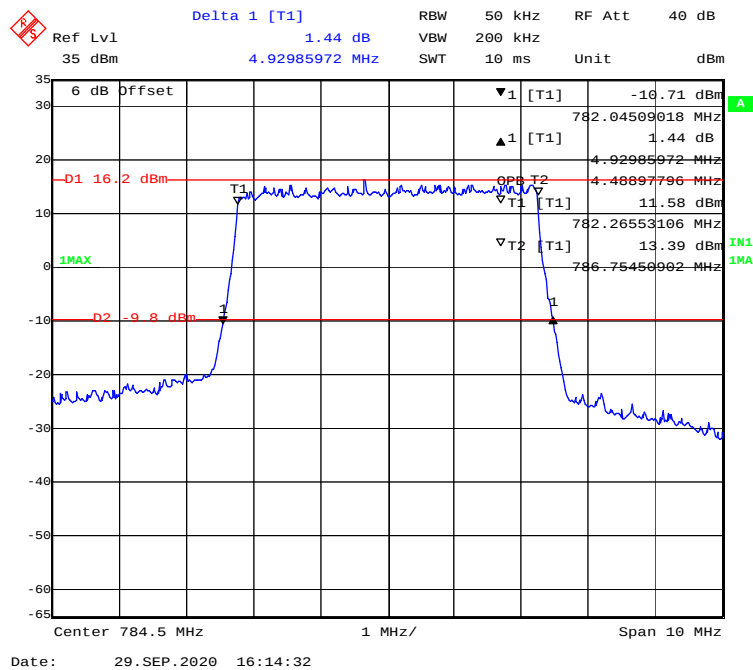
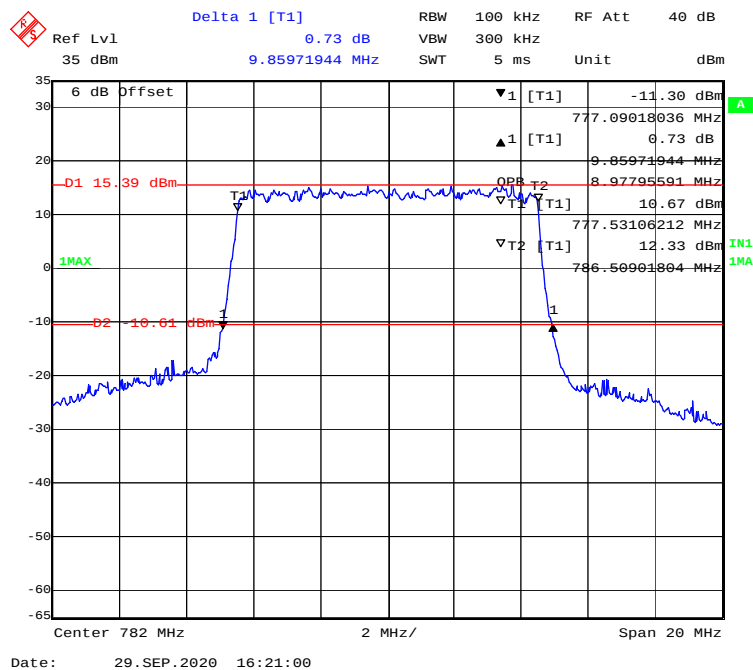
1MAX

IN1

1MA

Center 782 MHz 1 MHz/ Span 10 MHz

Date: 29. SEP. 2020 16:17:37

QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth**

Delta 1 [T1] -0.15 dB

Ref Lvl 35 dBm

RBW 50 kHz

RF Att 40 dB

SWT 10 ms

Unit dBm

6 dB Offset

D1 15.9 dBm

D2 -10.1 dBm

IMAX

IMIN

Center 779.5 MHz

1 MHz/

Span 10 MHz

Date: 29.SEP.2020 16:12:41

[illegible]

Delta 1 [T1] 1.37 dB
 RBW 50 kHz RF Att 40 dB
 Ref Lvl 35 dBm SWT 10 ms Unit dBm
 Center 784.5 MHz 1 MHz/ Span 10 MHz
 Date: 29.SEP.2020 16:15:37

Ref Lvl 35 dBm
Delta 1 [T1] -0.17 dB
RBW 100 kHz
VBW 300 kHz
SWT 5 ms
Unit dBm

6 dB Offset
D1 15.54 dBm
D2 -10.46 dBm
IMAX

▼1 [T1] -10.74 dBm
▲1 [T1] -0.17 dB
OPB T2 8.97795591 MHz
▼T1 [T1] 10.58 dBm
▼T2 [T1] 13.11 dBm
777.09018036 MHz
9.81963928 MHz
777.53106212 MHz
786.50901804 MHz

Center 782 MHz
2 MHz/
Span 20 MHz

Date: 29. SEP. 2020 16:22:22

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

Applicable Standards

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

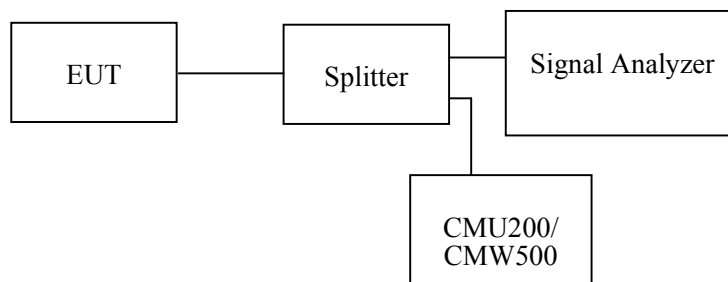
The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

According to §22.917(a),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.

According to §27.53(m),for mobile digital stations, any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log(P)$ dB.

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

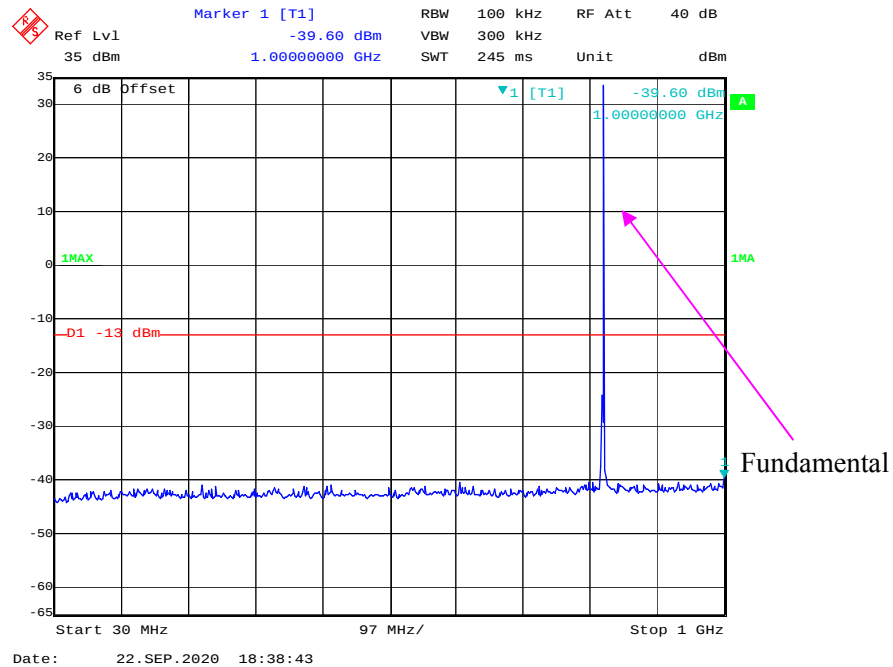
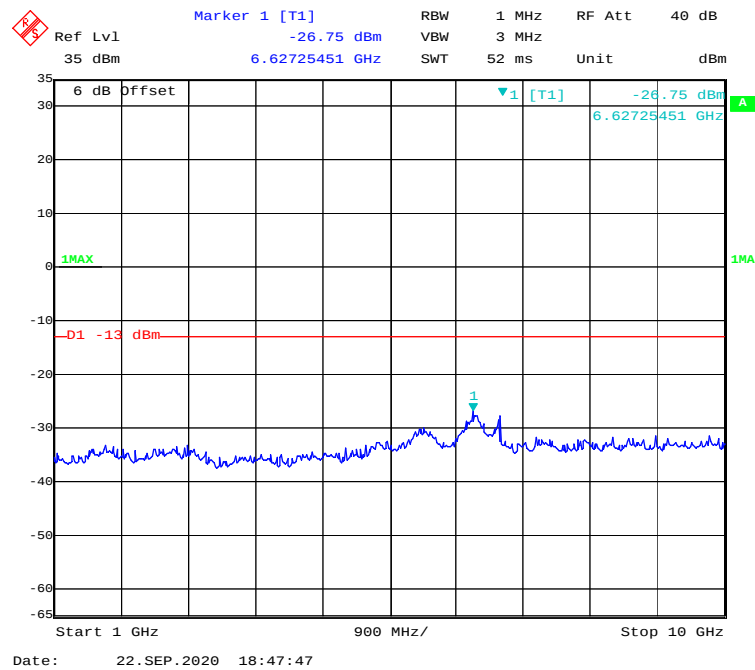
Environmental Conditions

Temperature:	23.5~24.9 °C
Relative Humidity:	50~52 %
ATM Pressure:	100.7~101.9 kPa

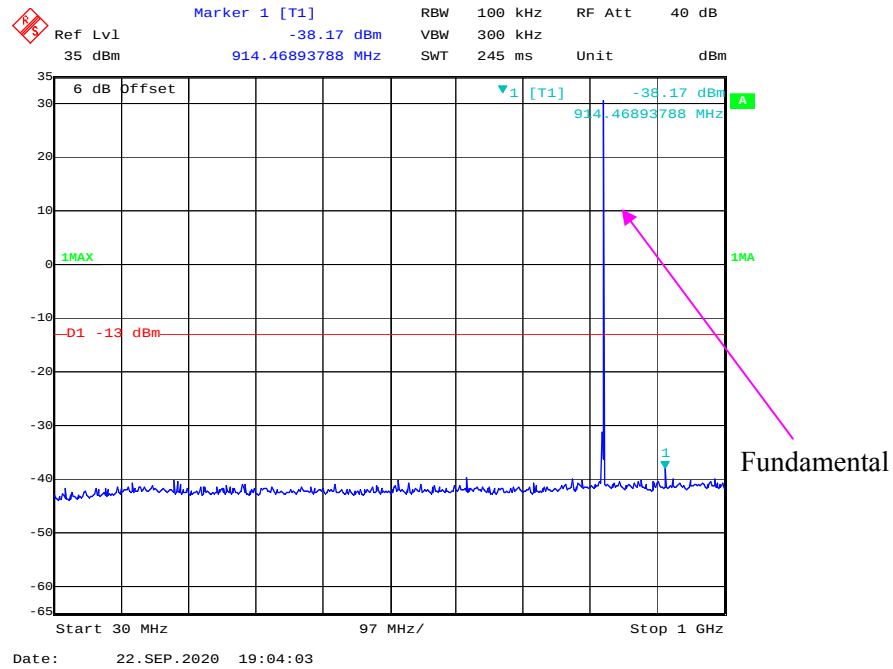
The testing was performed by CK Huang from 2020-09-22 to 2020-09-29.

EUT operation mode: Transmitting

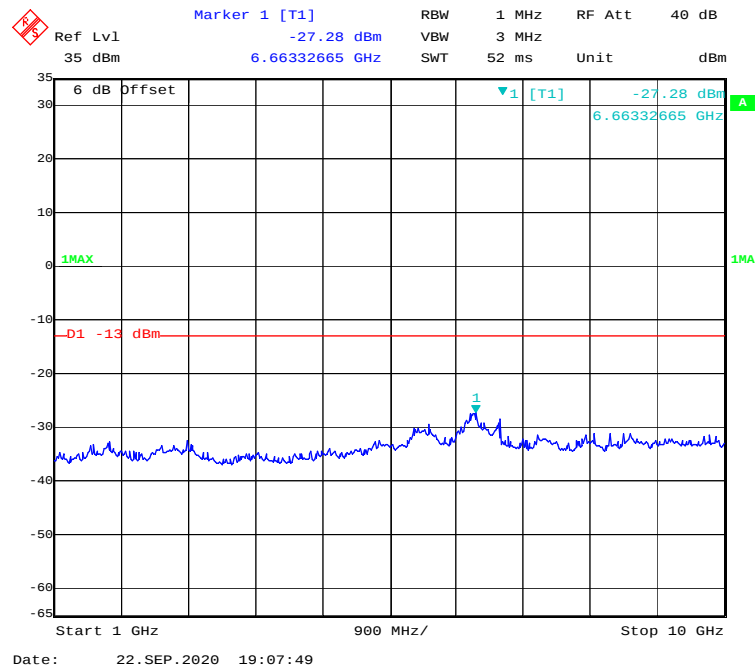
Test Result: Compliance.

GSM 850 Band:**30 MHz – 1GHz(GPRS Mode), Low channel****1 GHz – 10 GHz (GPRS Mode), Low channel**

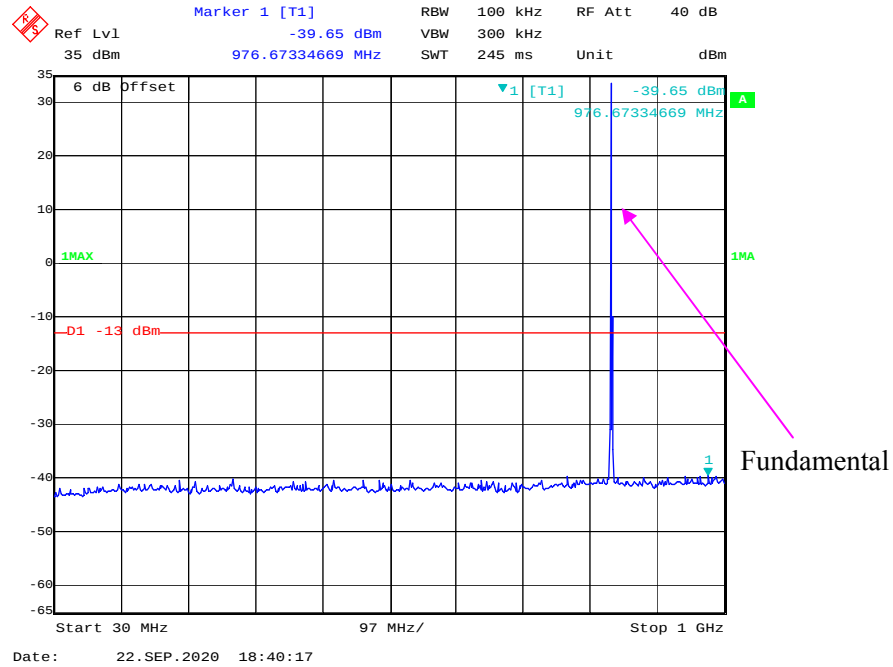
30 MHz – 1GHz(EGPRS Mode)), Low channel



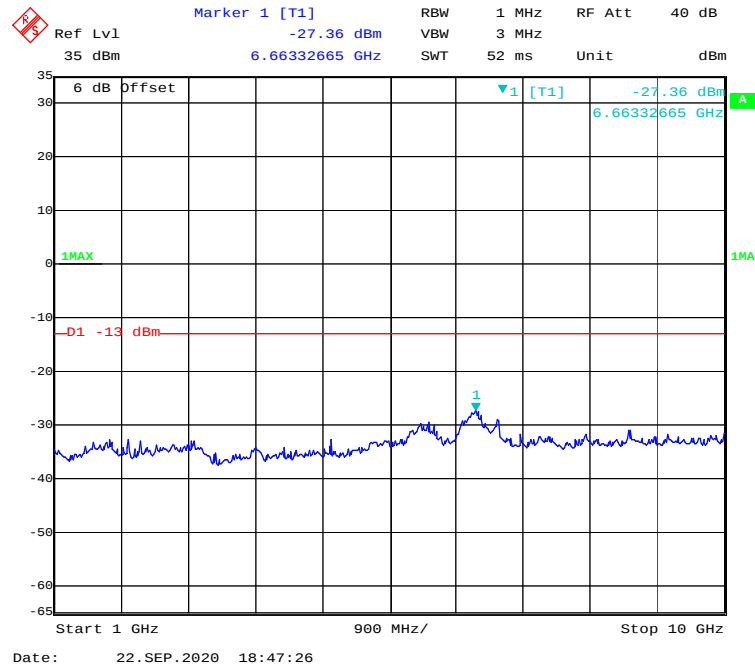
1 GHz – 10 GHz (EGPRS Mode)), Low channel



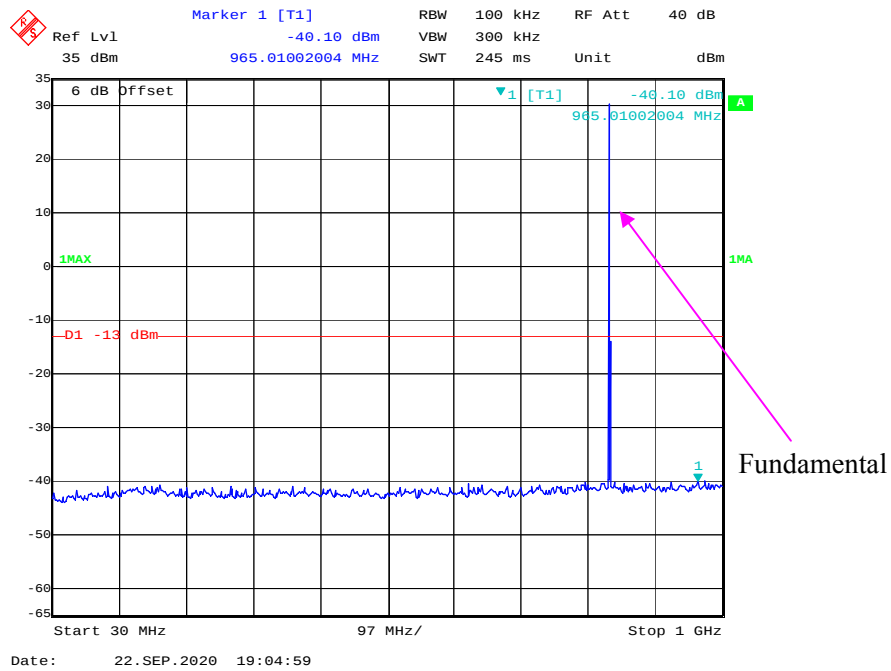
30 MHz – 1GHz(GPRS Mode)), Middle channel



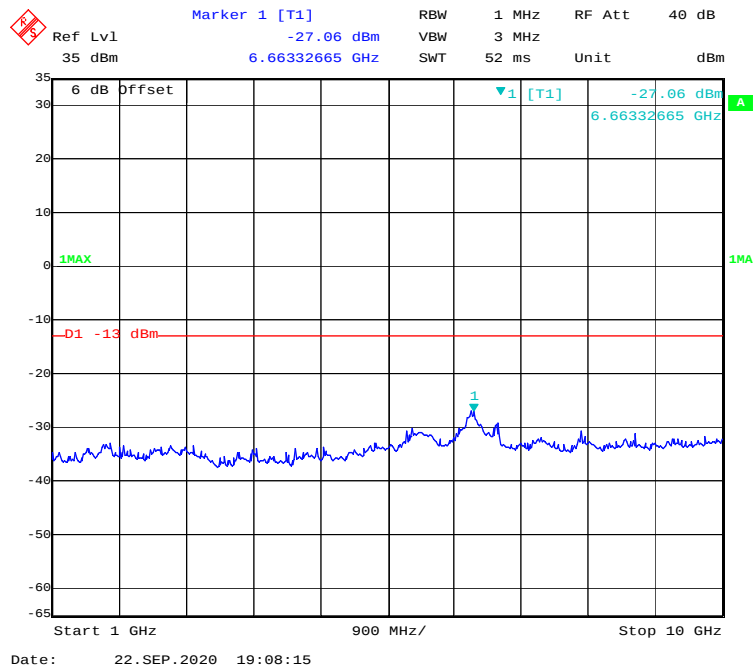
1 GHz – 10 GHz (GPRS Mode)), Middle channel



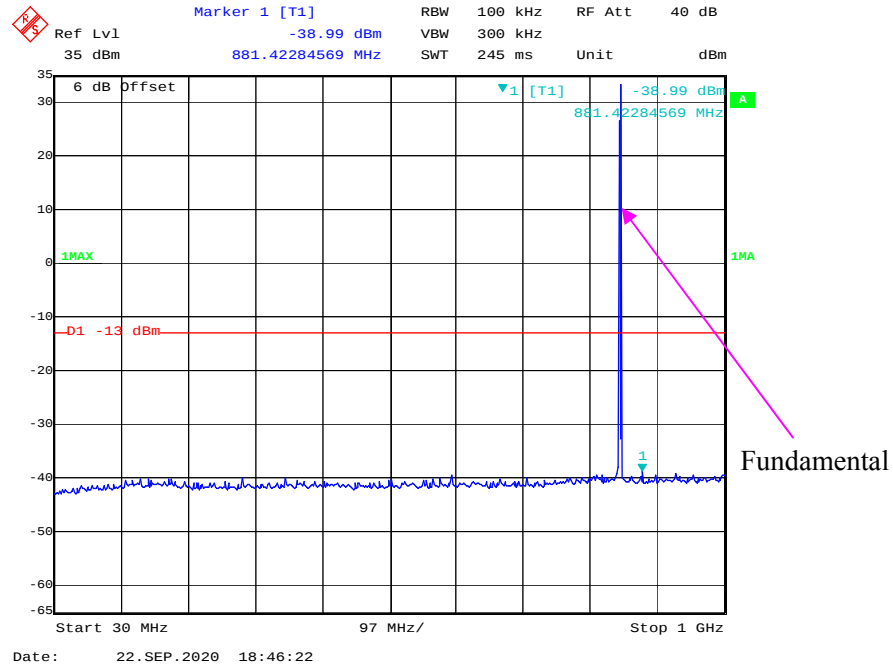
30 MHz – 1GHz(EGPRS Mode) , Middle channel



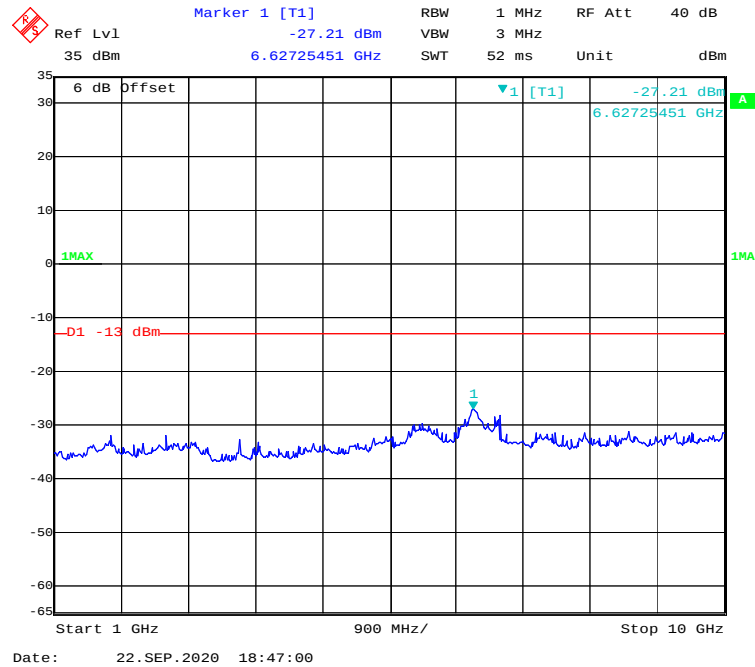
1 GHz – 10 GHz (EGPRS Mode), Middle channel



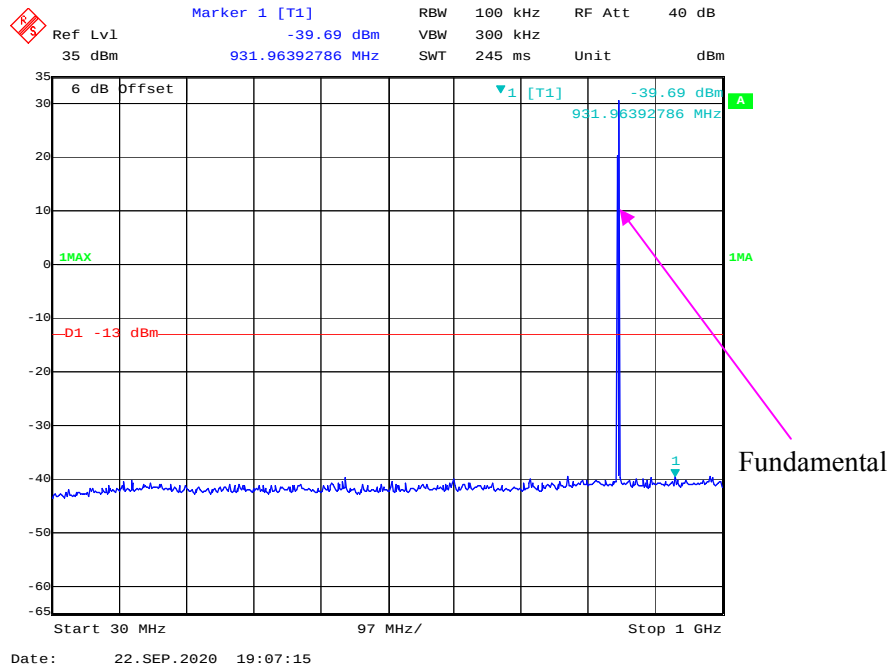
30 MHz – 1GHz(GPRS Mode), High channel



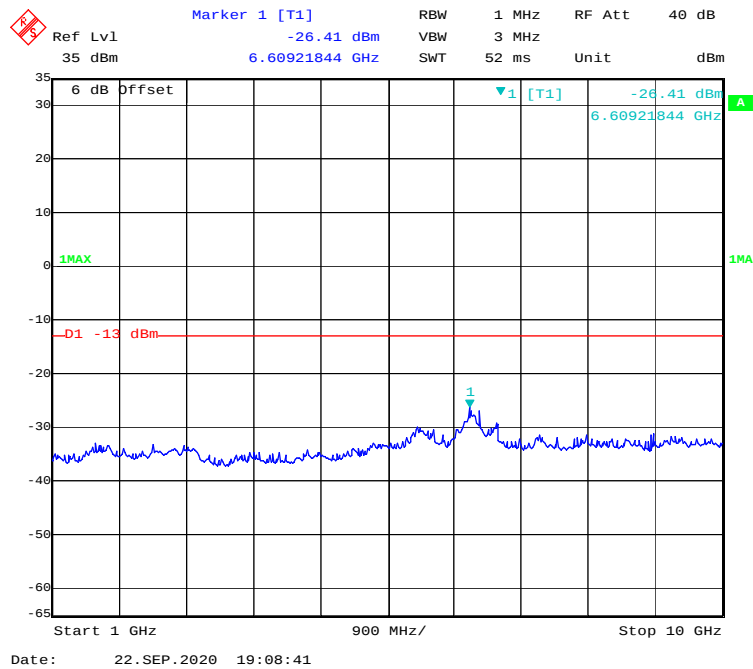
1 GHz – 10 GHz (GPRS Mode), High channel



30 MHz – 1GHz(EGPRS Mode), High channel

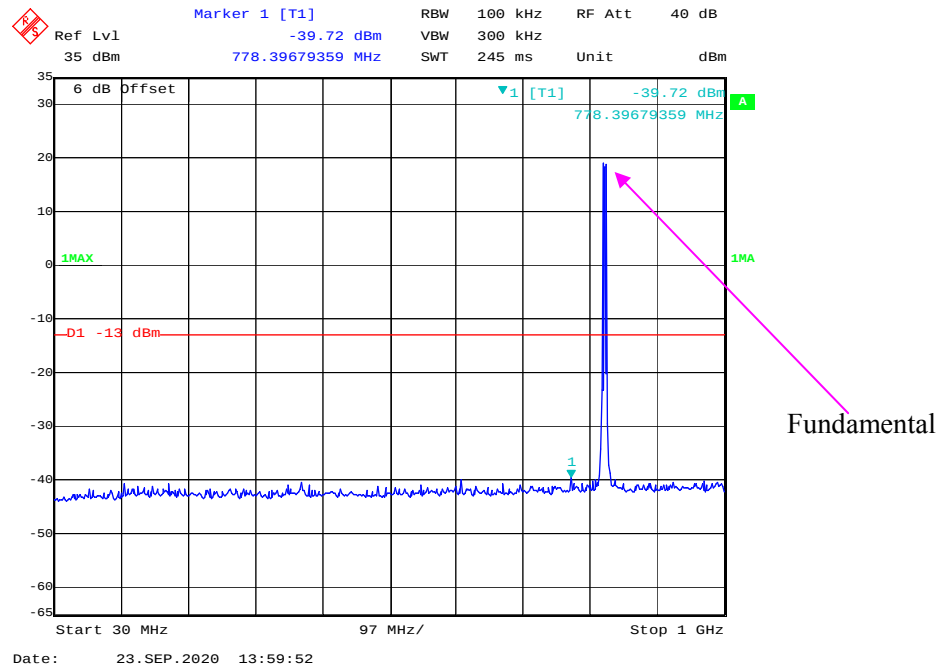


1 GHz – 10 GHz (EGPRS Mode), High channel

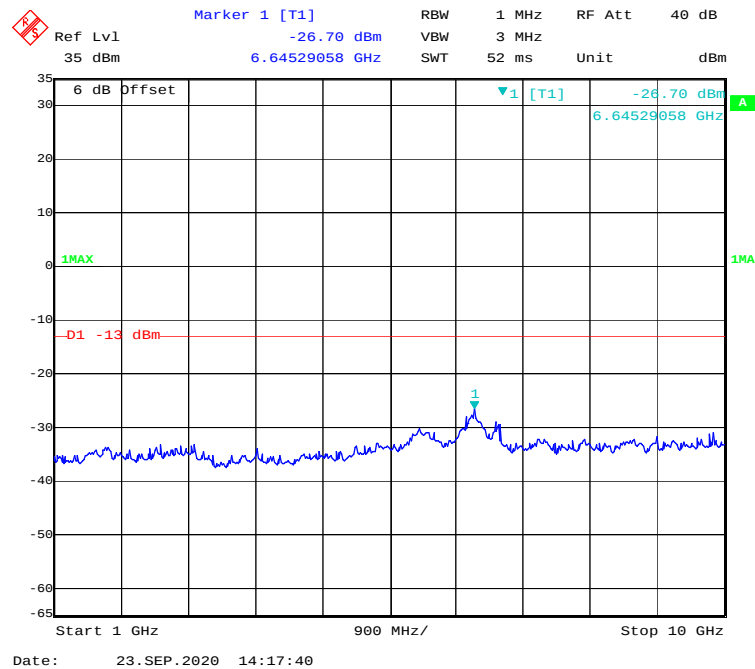


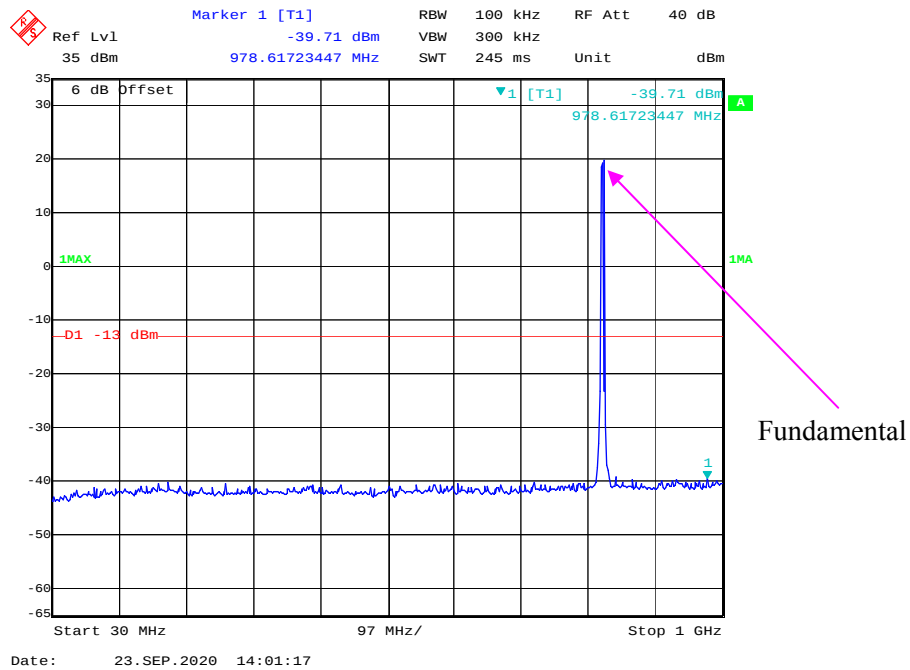
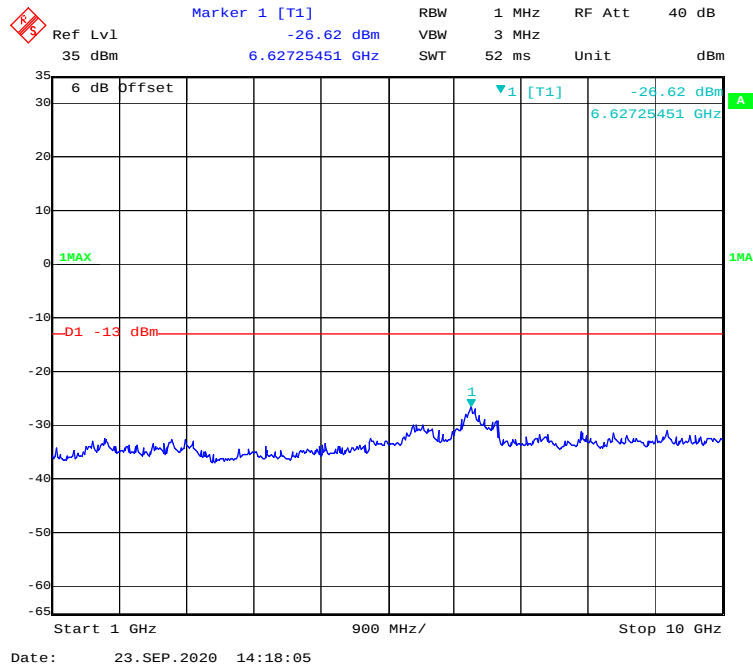
WCDMA Band V:

30 MHz – 1GHz WCDMA (Rel 99) Mode, Low channel

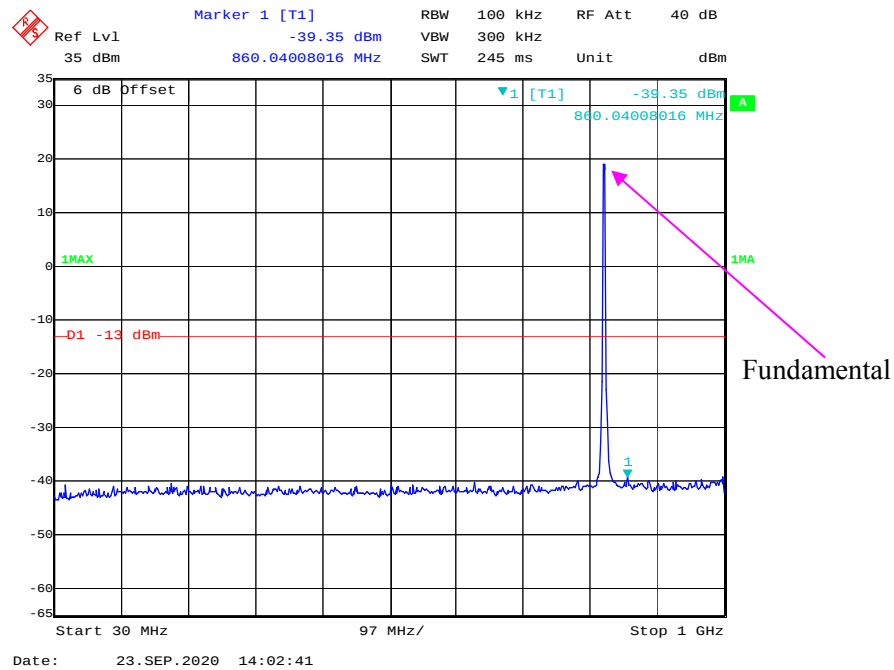


1 GHz – 10 GHz WCDMA (Rel 99) Mode, Low channel

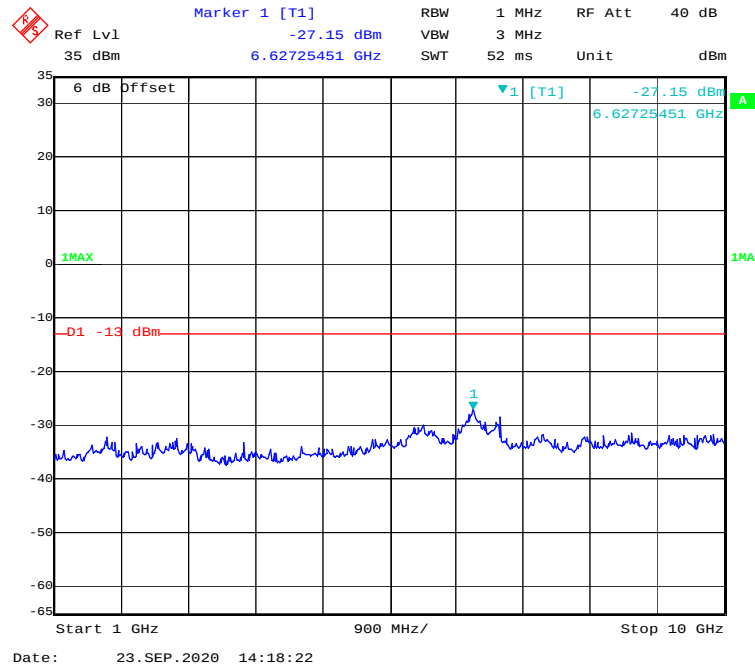


30 MHz – 1GHz WCDMA (HSDPA) Mode, Low channel**1 GHz – 10 GHz WCDMA (HSDPA) Mode, Low channel**

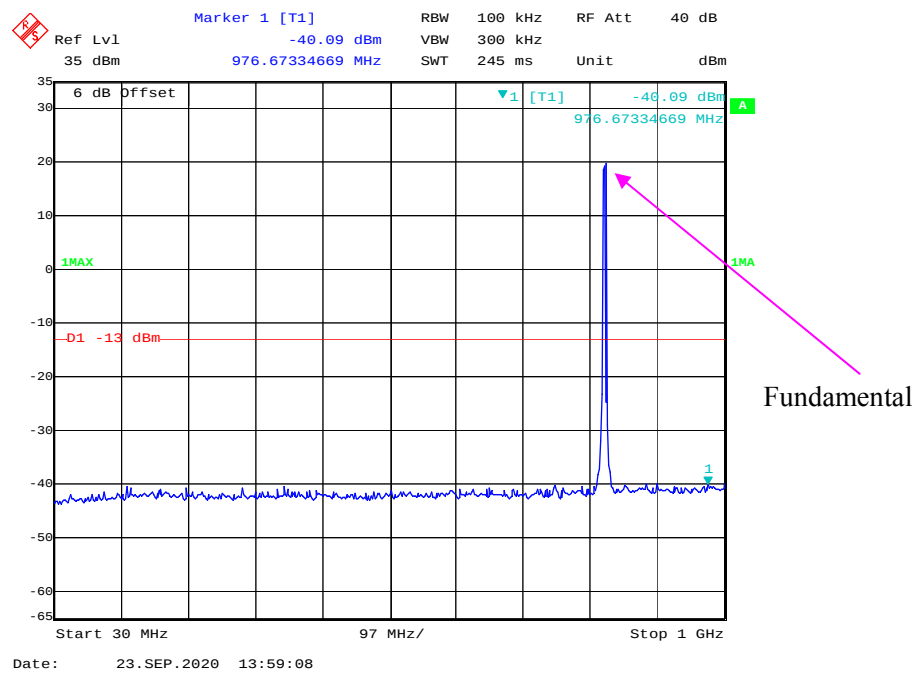
30 MHz – 1GHz WCDMA (HSUPA) Mode, Low channel



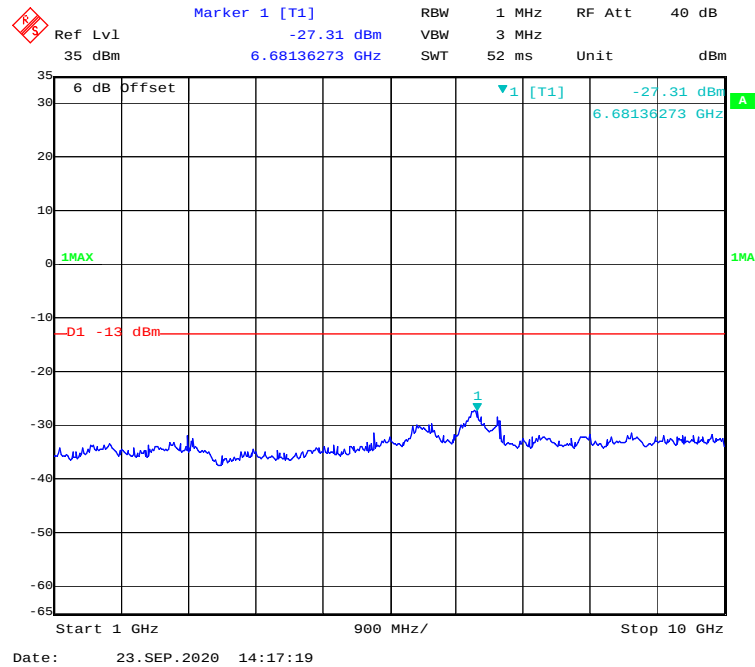
1 GHz – 10 GHz WCDMA (HSUPA) Mode, Low channel

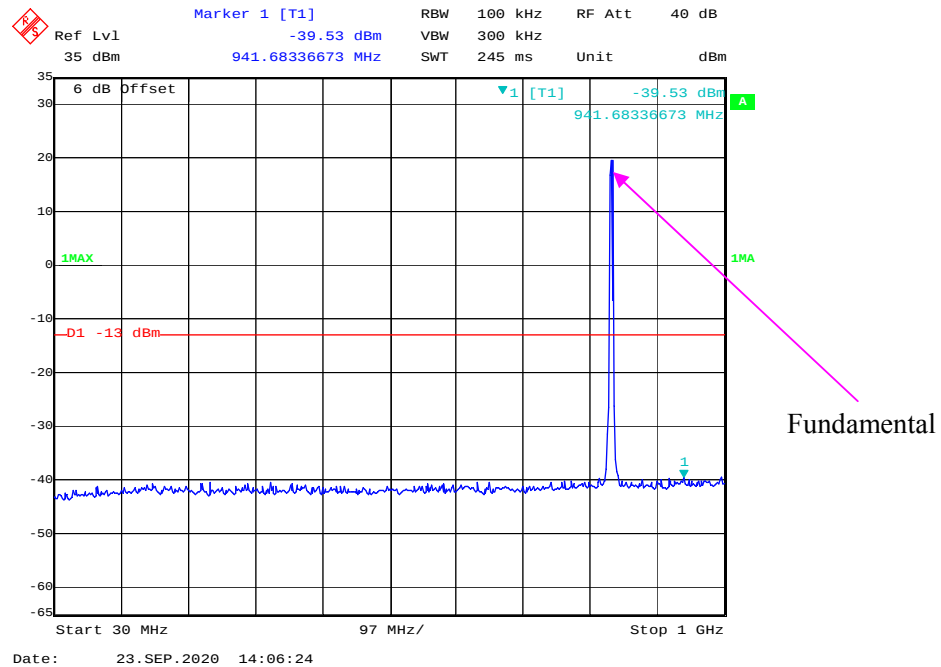
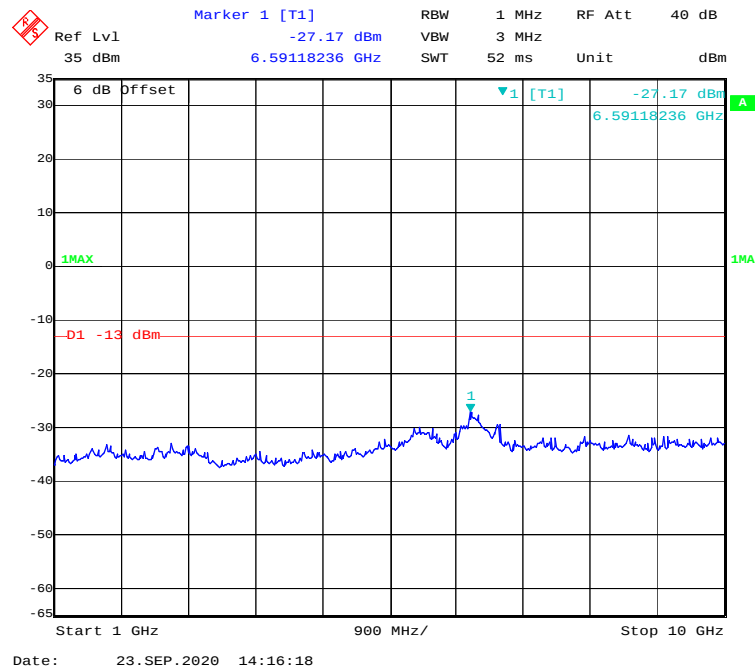


30 MHz – 1GHz WCDMA (HSPA+) Mode, Low channel

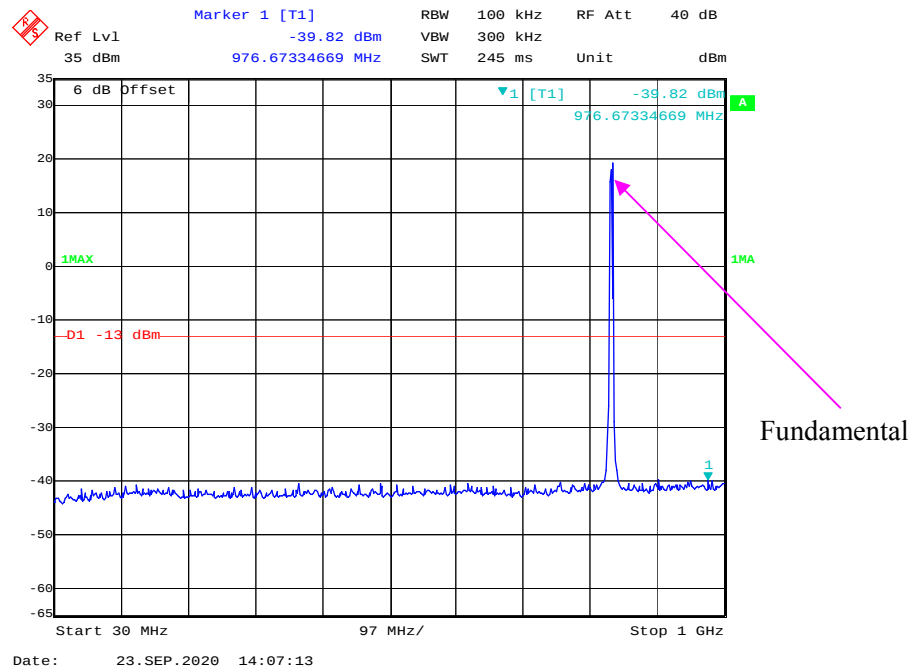


1 GHz – 10 GHz WCDMA (HSPA+) Mode, Low channel

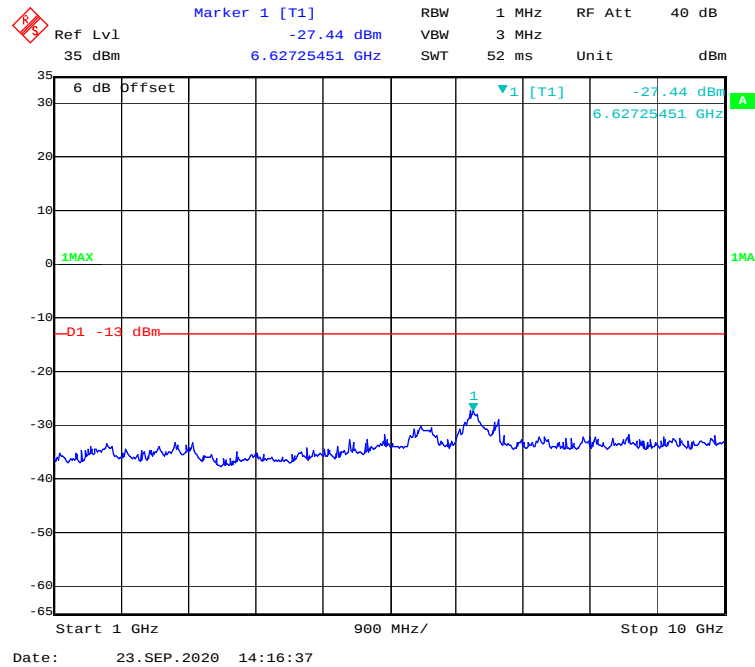


30 MHz – 1GHz WCDMA (Rel 99) Mode, Middle channel**1 GHz – 10 GHz WCDMA (Rel 99) Mode, Middle channel**

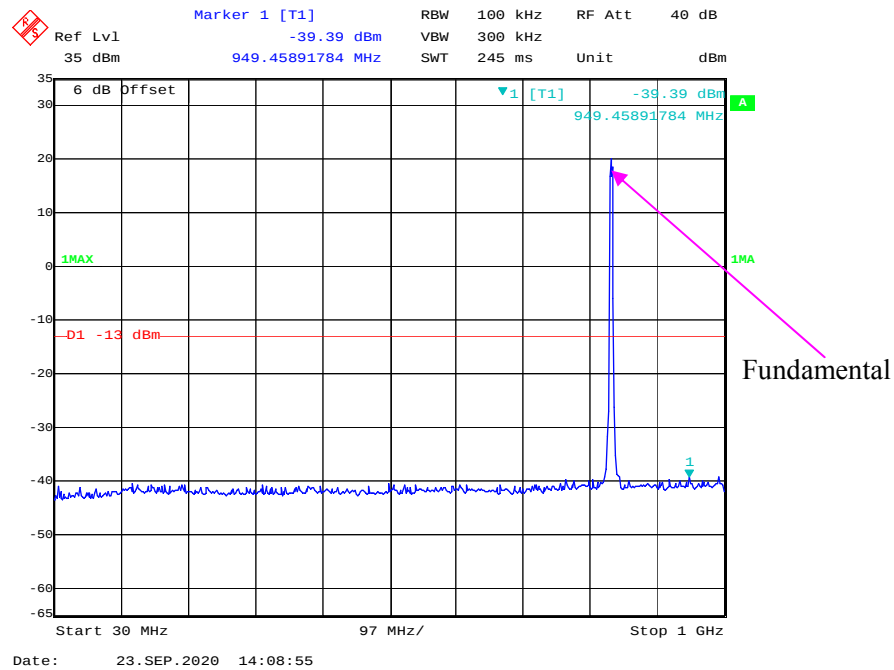
30 MHz – 1GHz WCDMA (HSDPA) Mode, Middle channel



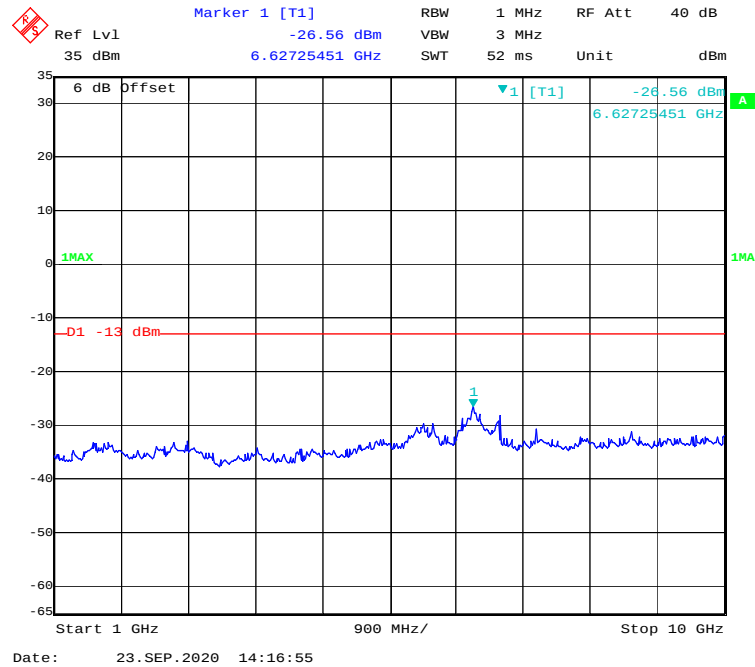
1 GHz – 10 GHz WCDMA (HSDPA) Mode, Middle channel

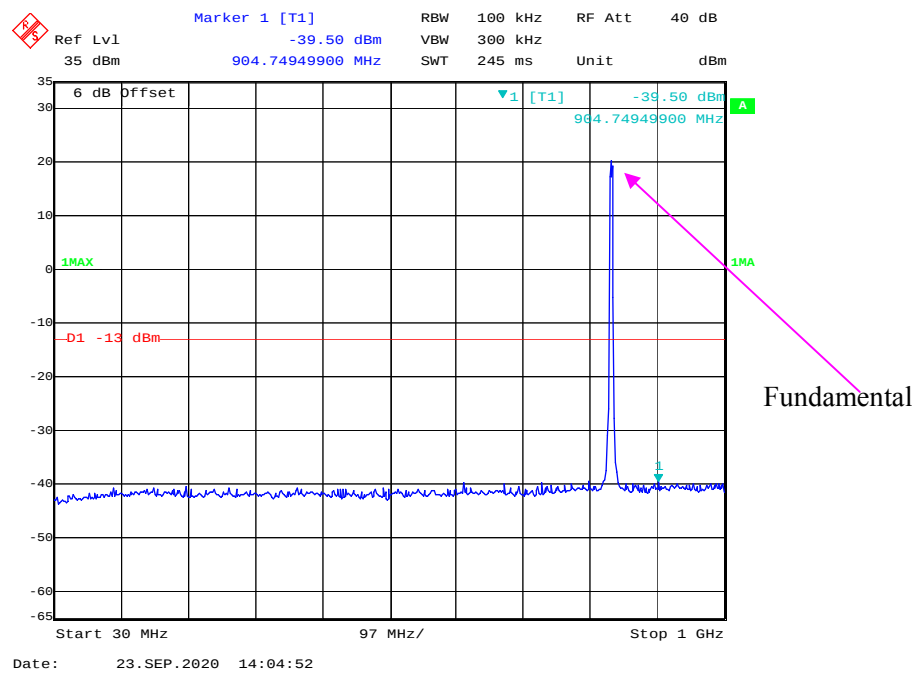
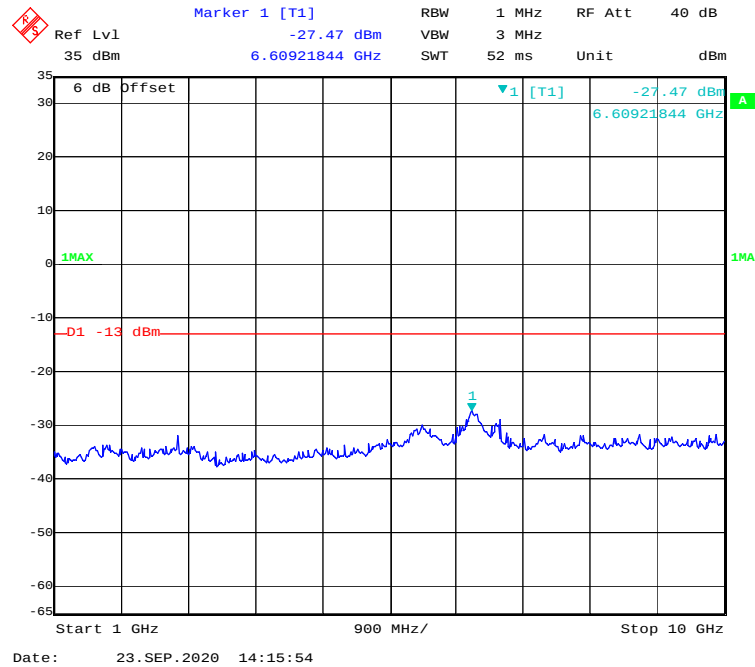


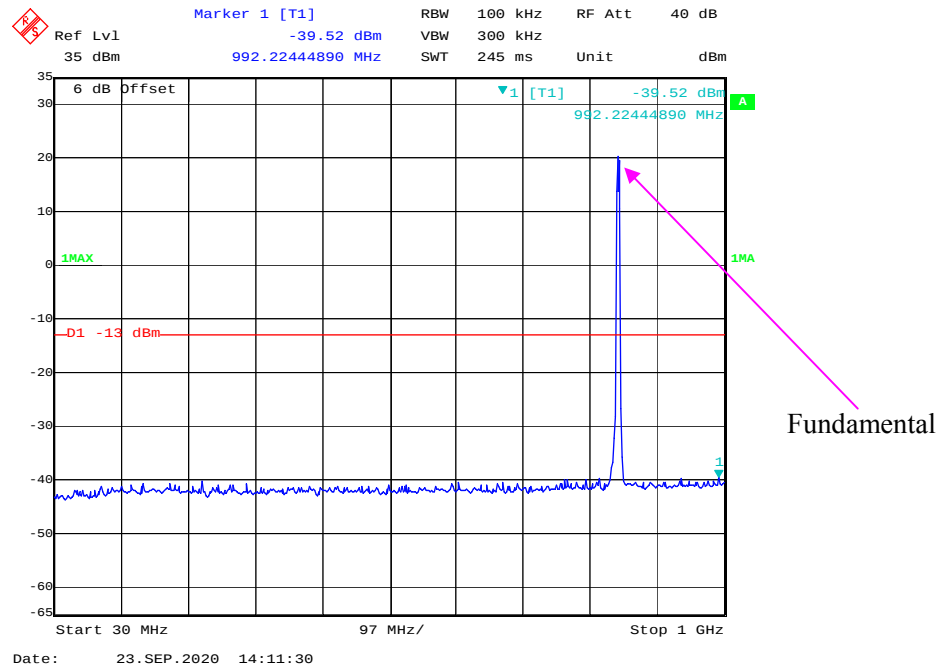
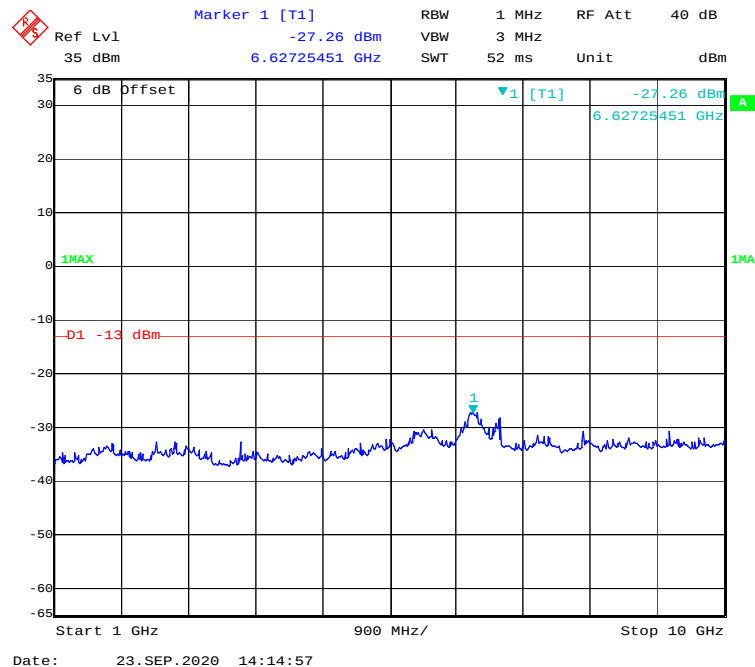
30 MHz – 1GHz WCDMA (HSUPA) Mode, Middle channel

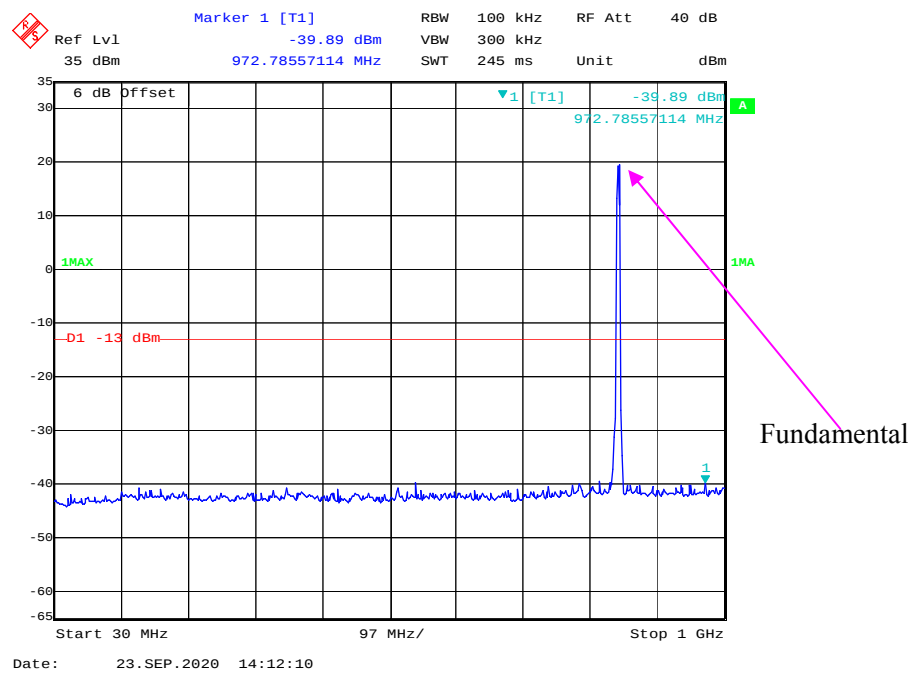
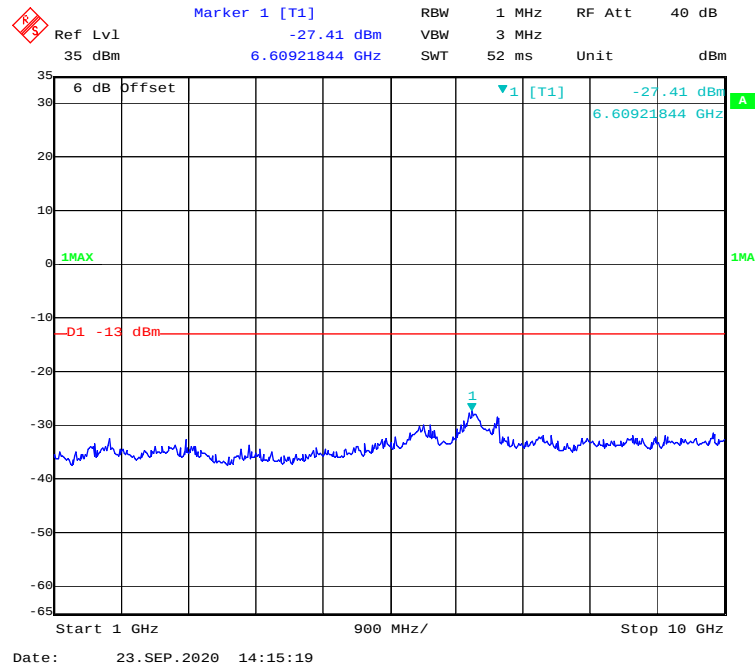


1 GHz – 10 GHz WCDMA (HSUPA) Mode, Middle channel

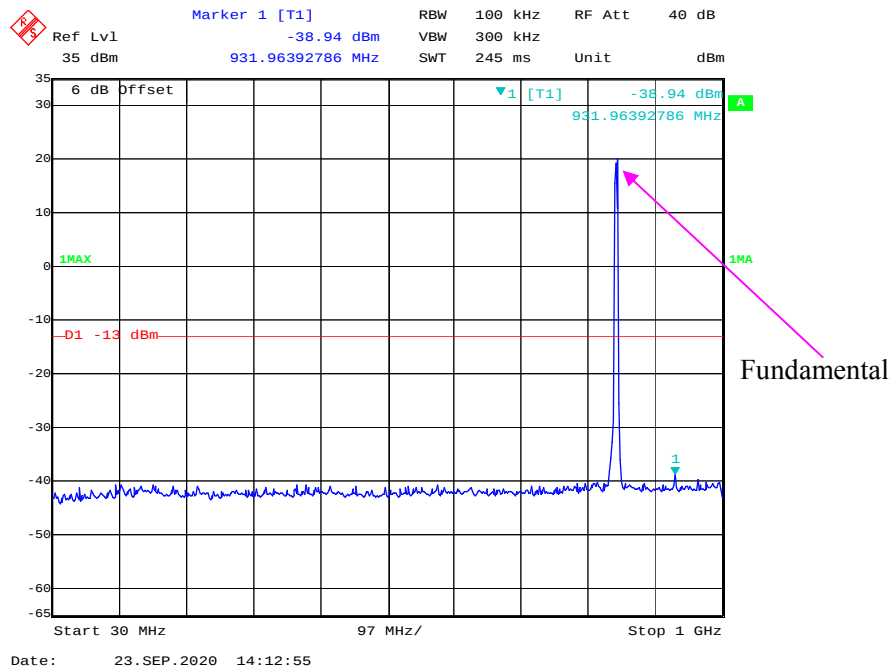


30 MHz – 1GHz WCDMA (HSPA+) Mode, Middle channel**1 GHz – 10 GHz WCDMA (HSPA+) Mode, Middle channel**

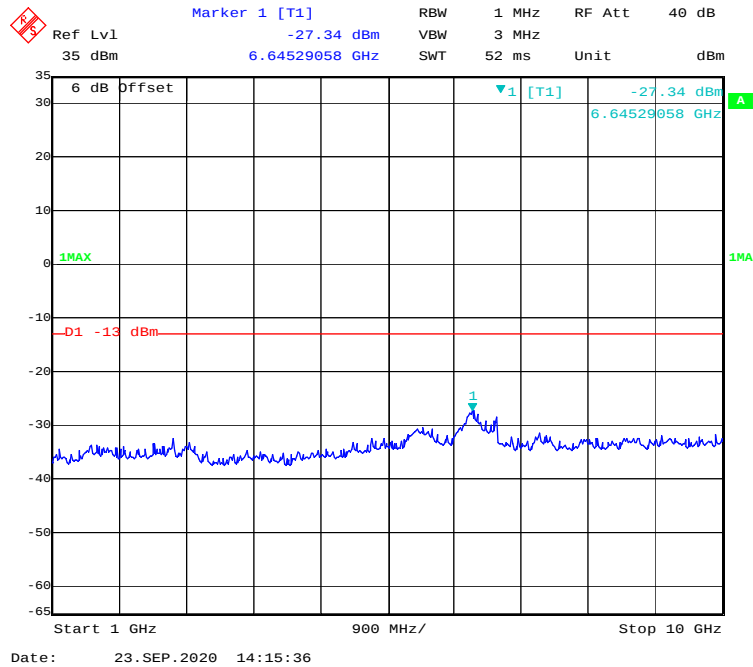
30 MHz – 1GHz WCDMA (Rel 99) Mode, High channel**1 GHz – 10 GHz WCDMA (Rel 99) Mode, High channel**

30 MHz – 1GHz WCDMA (HSDPA) Mode, High channel**1 GHz – 10 GHz WCDMA (HSDPA) Mode, High channel**

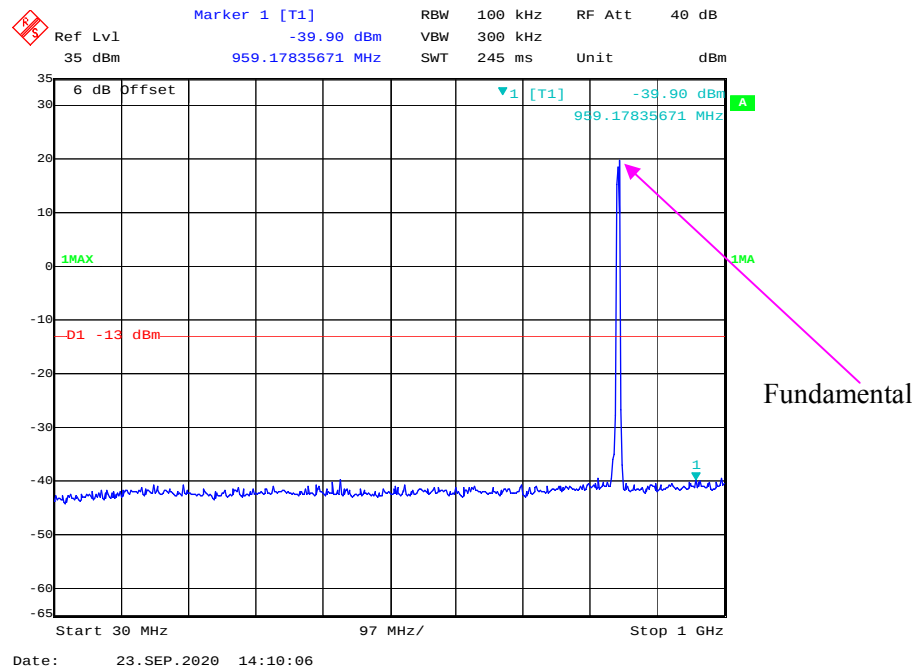
30 MHz – 1GHz WCDMA (HSUPA) Mode, High channel



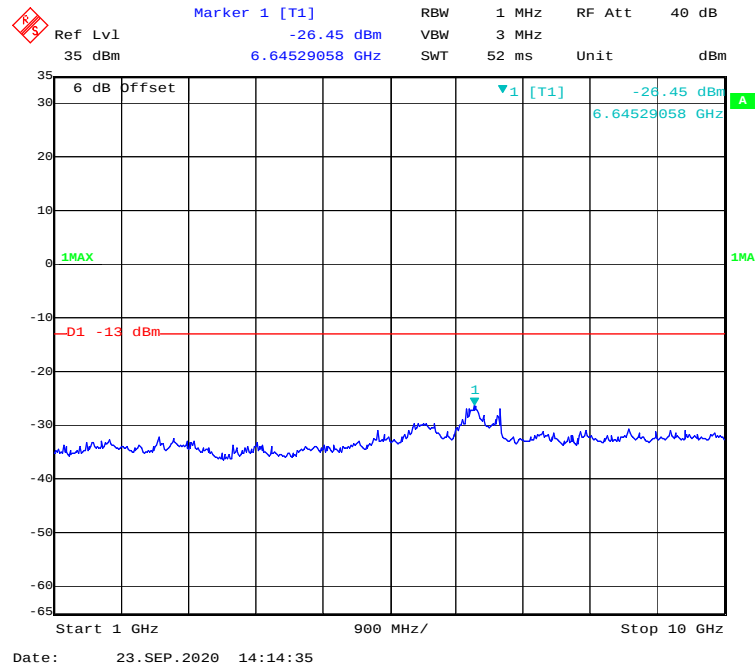
1 GHz – 10 GHz WCDMA (HSUPA) Mode, High channel



30 MHz – 1GHz WCDMA (HSPA+) Mode, High channel

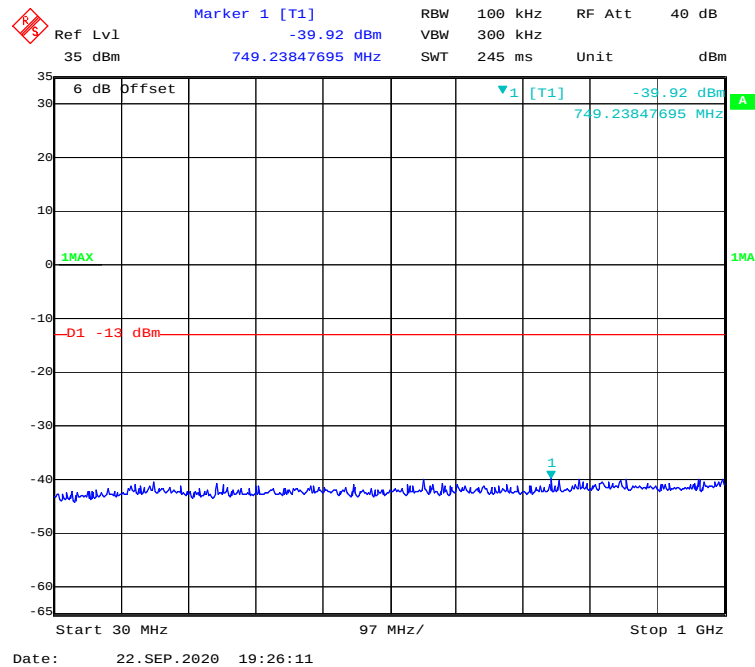


1 GHz – 10 GHz WCDMA (HSPA+) Mode, High channel

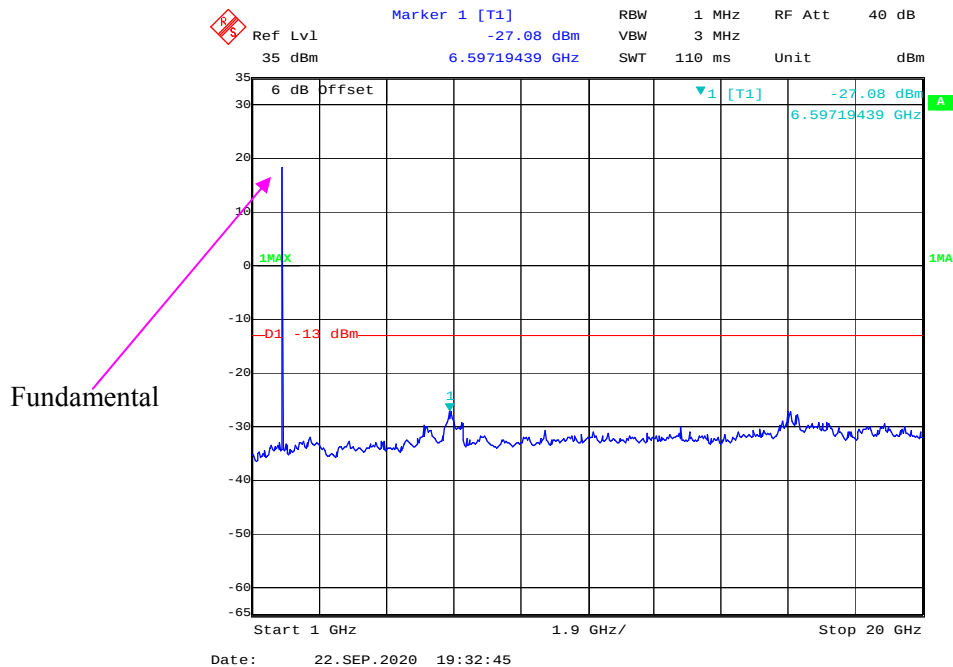


PCS 1900 Band:

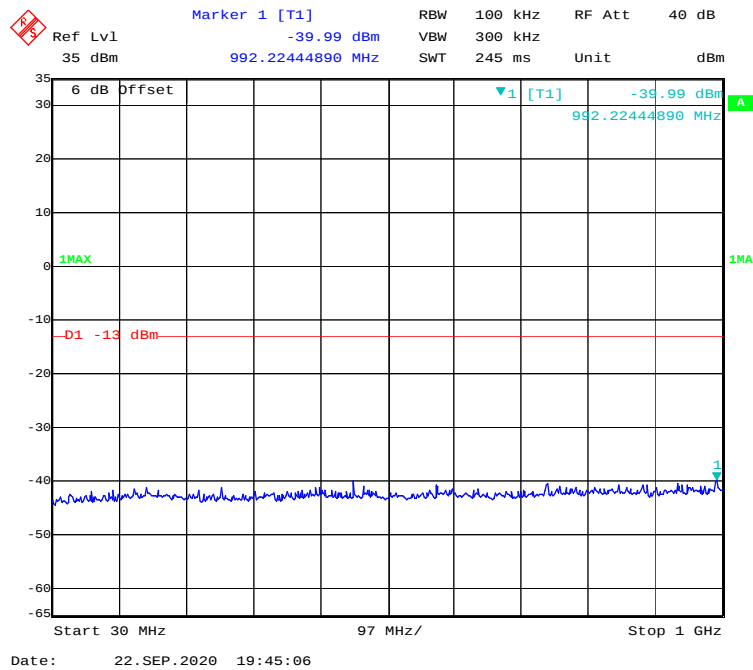
30 MHz – 1GHz(GPRS Mode) , Low channel



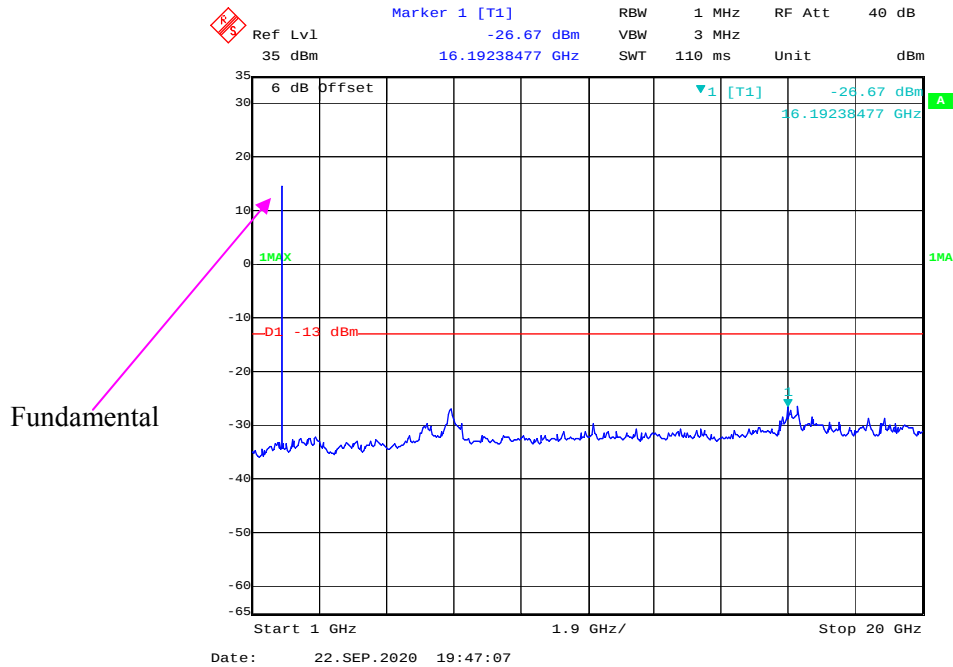
1 GHz – 20 GHz (GPRS Mode) , Low channel



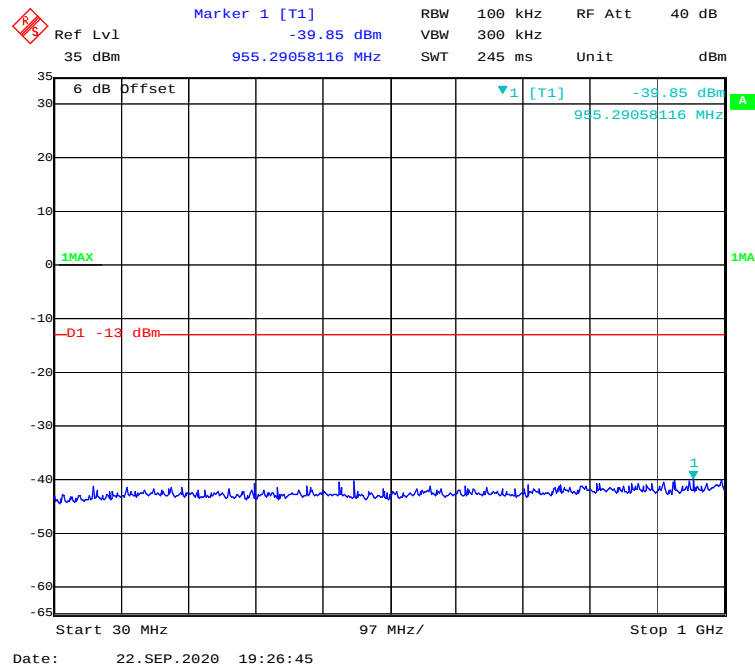
30 MHz – 1GHz(EGPRS Mode) , Low channel



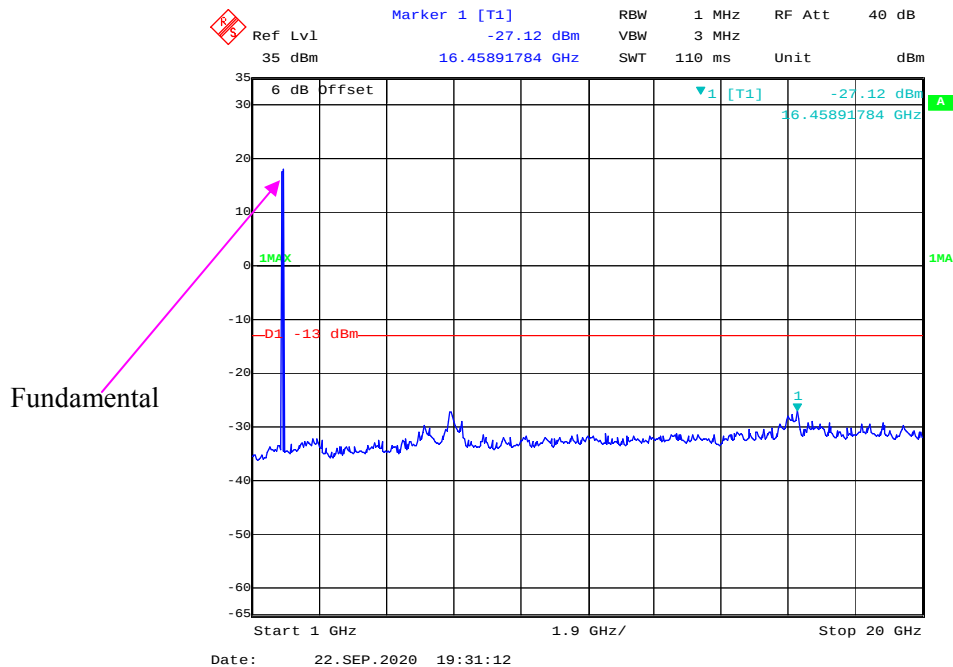
1 GHz – 20 GHz (EGPRS Mode) , Low channel



30 MHz – 1GHz(GPRS Mode) , Middle channel



1 GHz – 20 GHz (GPRS Mode) , Middle channel



Marker 1 [T1]
 -46.38 dBm
 846.43286573 MHz

RBW 100 kHz
 VBW 300 kHz
 SWT 245 ms

Ref Lvl 35 dBm
 RF Att 40 dB
 Unit dBm

6 dB Offset

1MAX

D1 -13 dBm

1

Start 30 MHz 97 MHz/ Stop 1 GHz

Date: 22.SEP.2020 19:45:33

Ref Lvl 35 dBm
 RBW 1 MHz
 VBW 3 MHz
 SWT 110 ms
 RF Att 40 dB
 Unit dBm

Marker 1 [T1]
 -27.27 dBm
 6.67334669 GHz

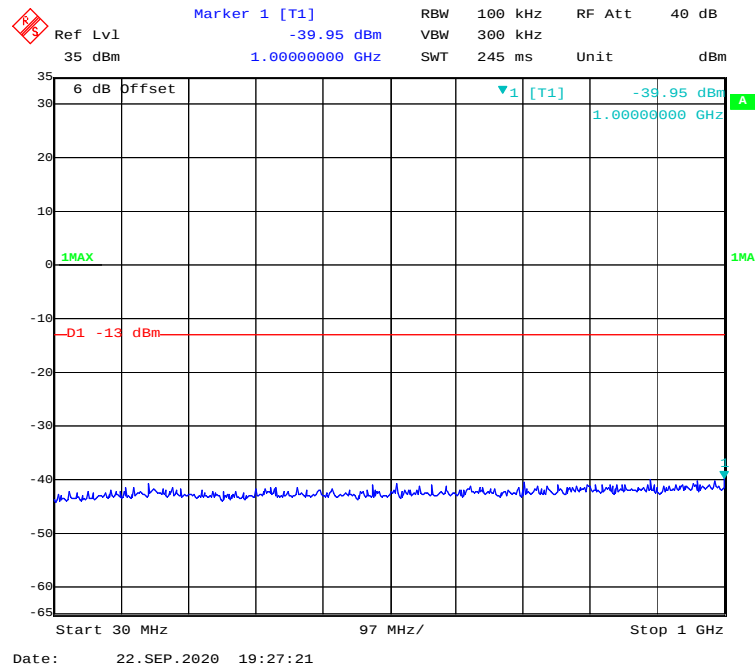
6 dB Offset
 1MAX
 -13 dBm
 -27.27 dBm
 6.67334669 GHz

Start 1 GHz
 1.9 GHz/
 Stop 20 GHz

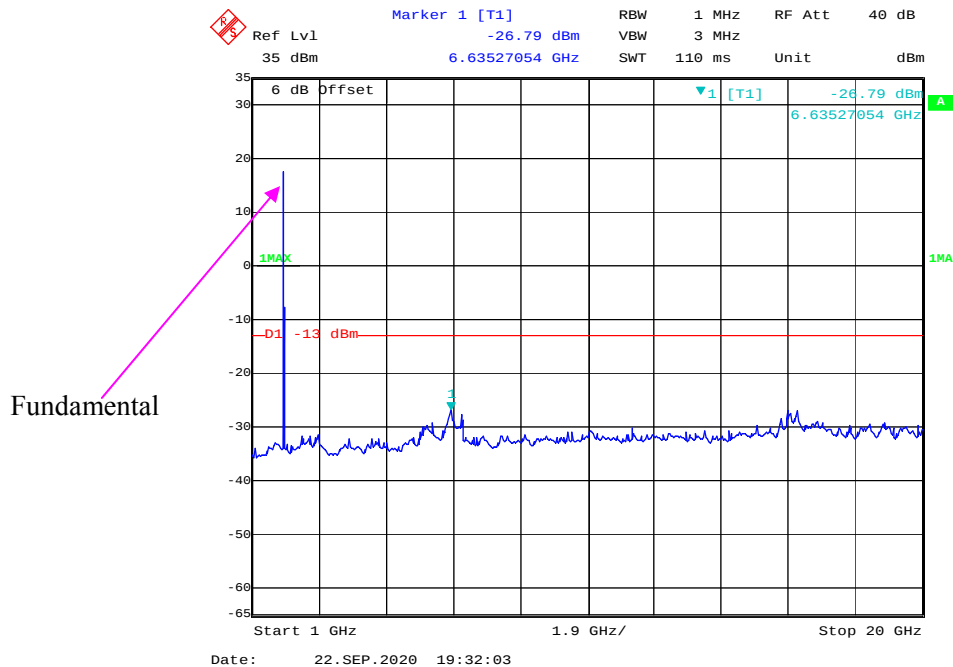
Date: 22.SEP.2020 19:47:38

Fundamental

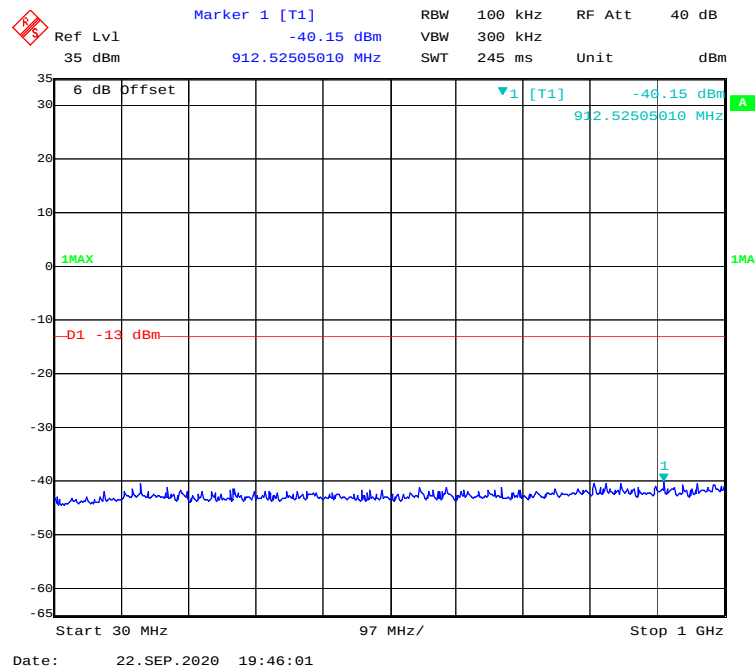
30 MHz – 1GHz(GPRS Mode) , High channel



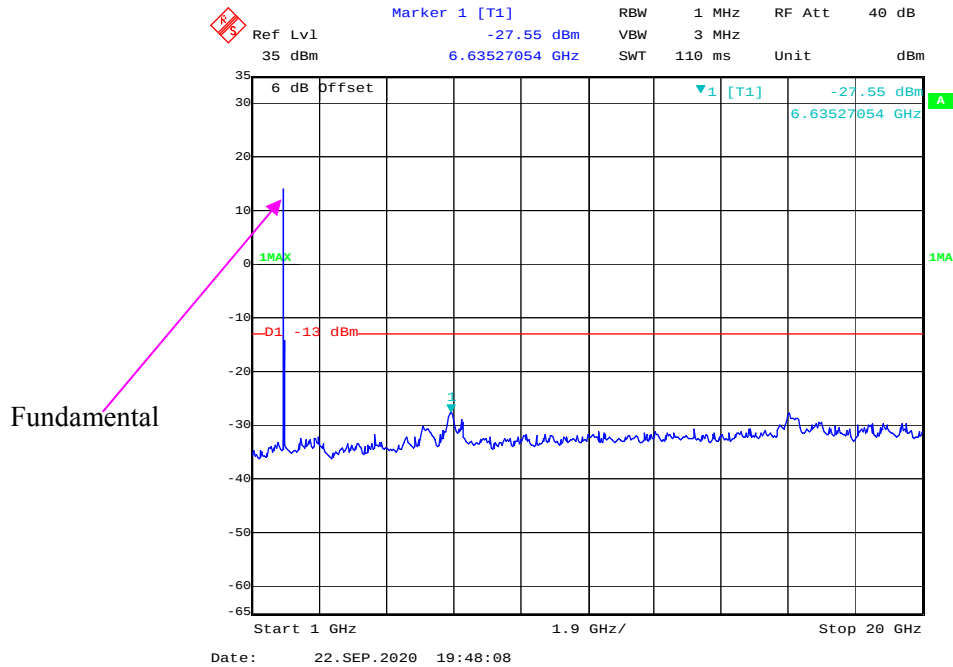
1 GHz – 20 GHz (GPRS Mode) , High channel



30 MHz – 1GHz(EGPRS Mode) , High channel

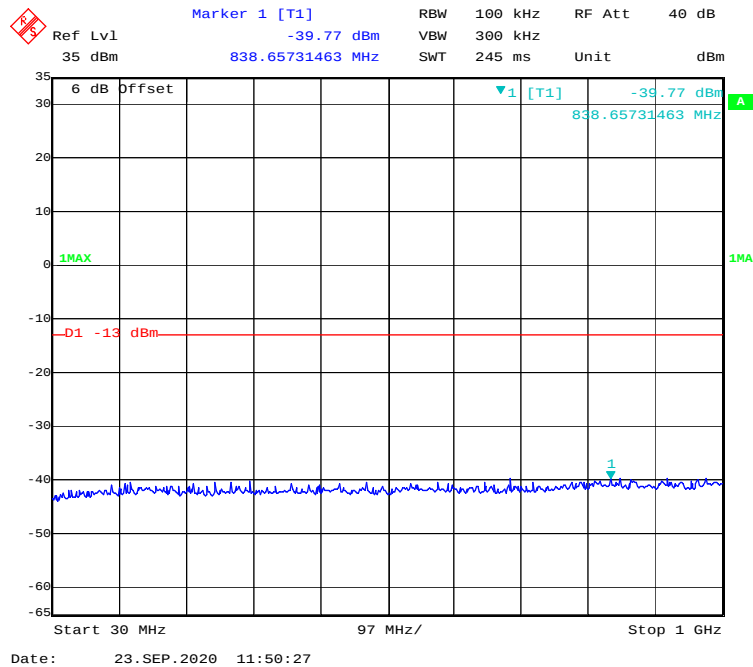


1 GHz – 20 GHz (EGPRS Mode) , High channel

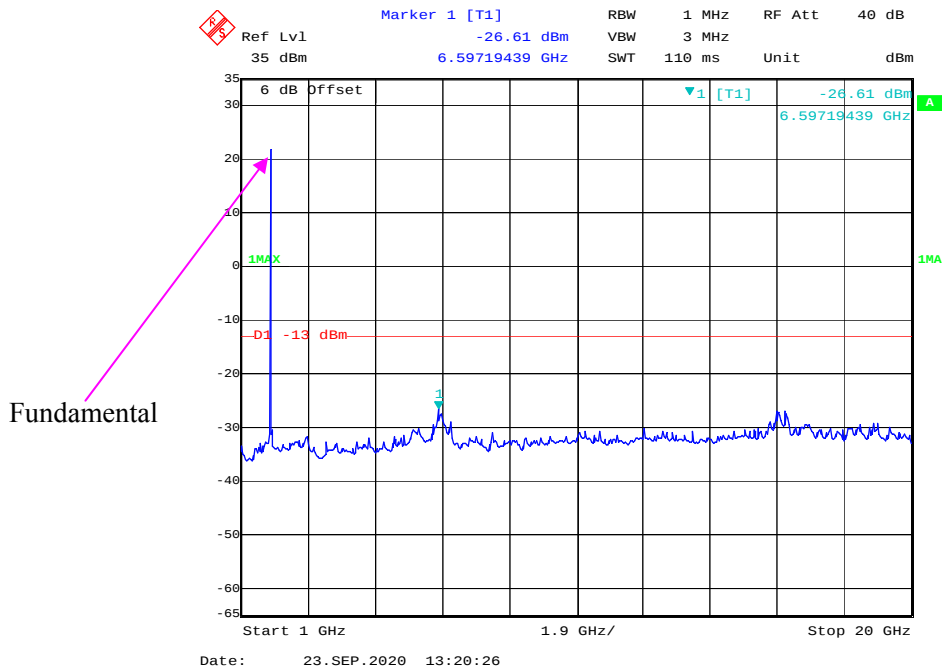


WCDMA Band II:

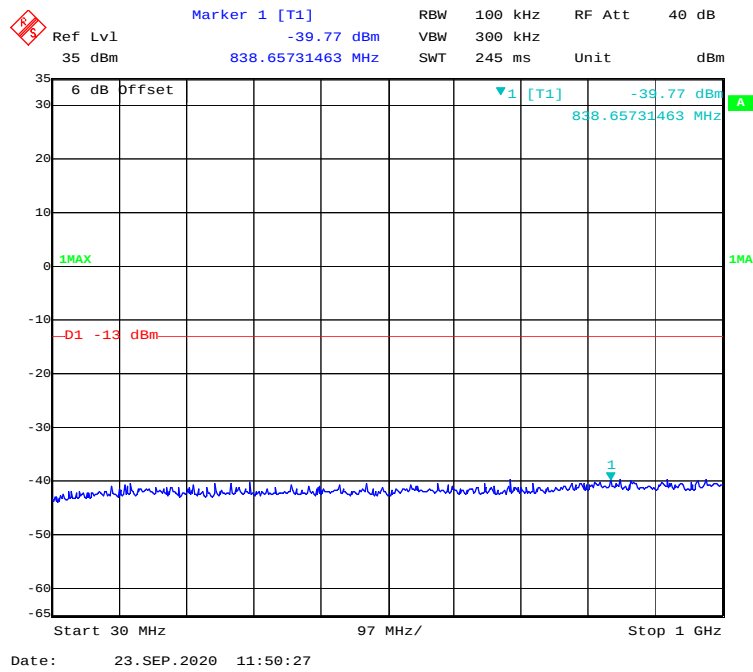
30 MHz – 1GHz WCDMA (Rel 99) Mode , Low channel



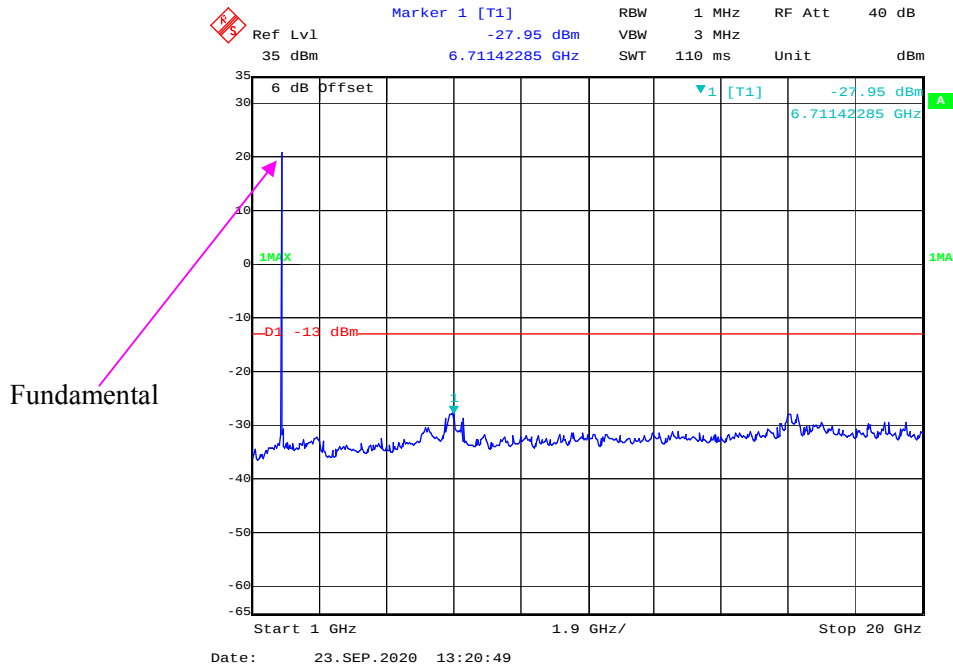
1 GHz – 20 GHz WCDMA (Rel 99) Mode , Low channel



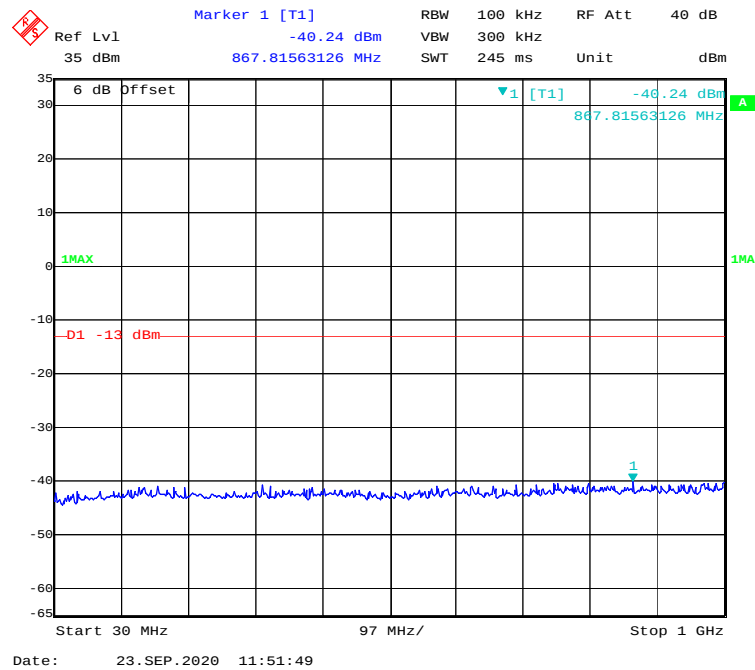
30 MHz – 1GHz WCDMA (HSDPA) Mode , Low channel



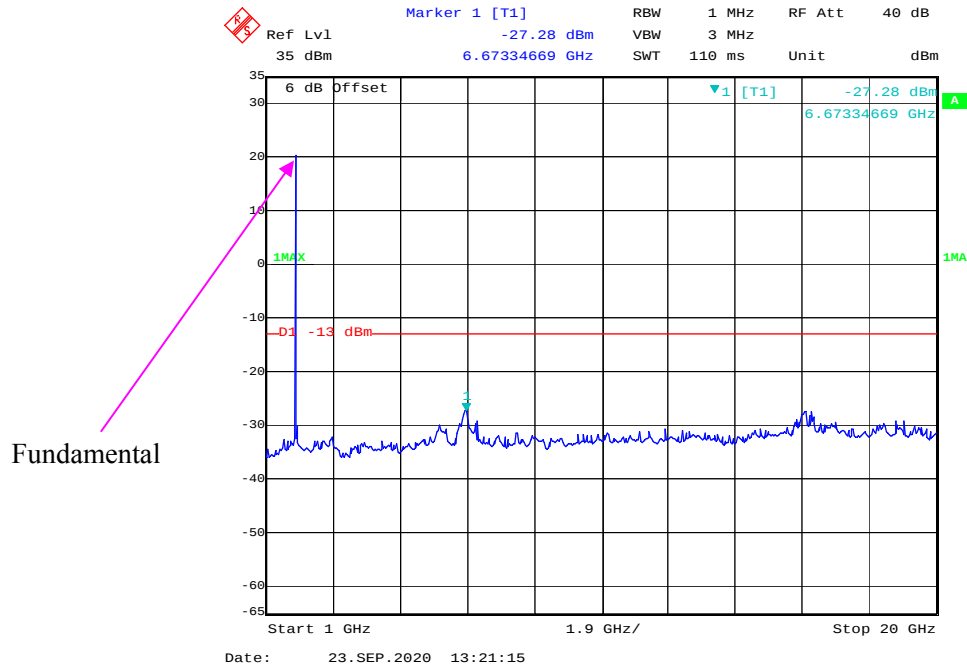
1 GHz – 20 GHz WCDMA (HSDPA) Mode , Low channel



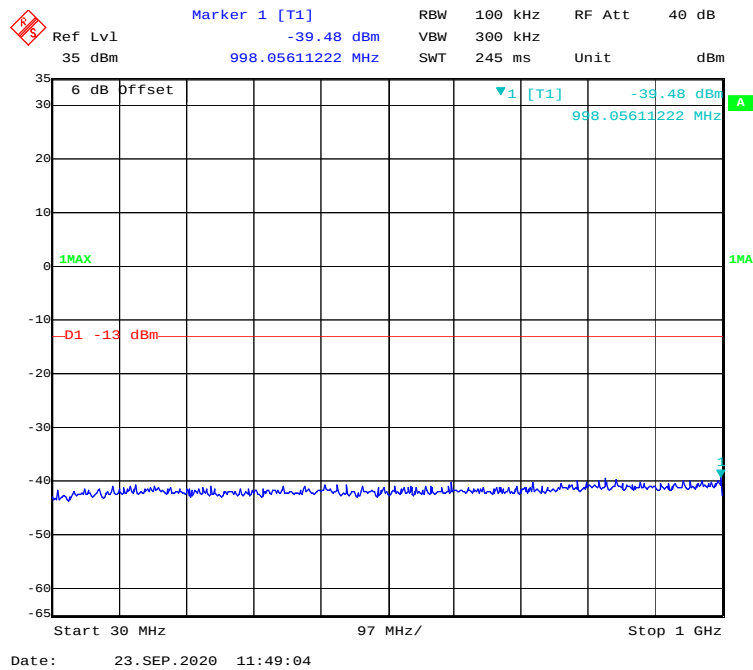
30 MHz – 1GHz WCDMA (HSUPA) Mode , Low channel



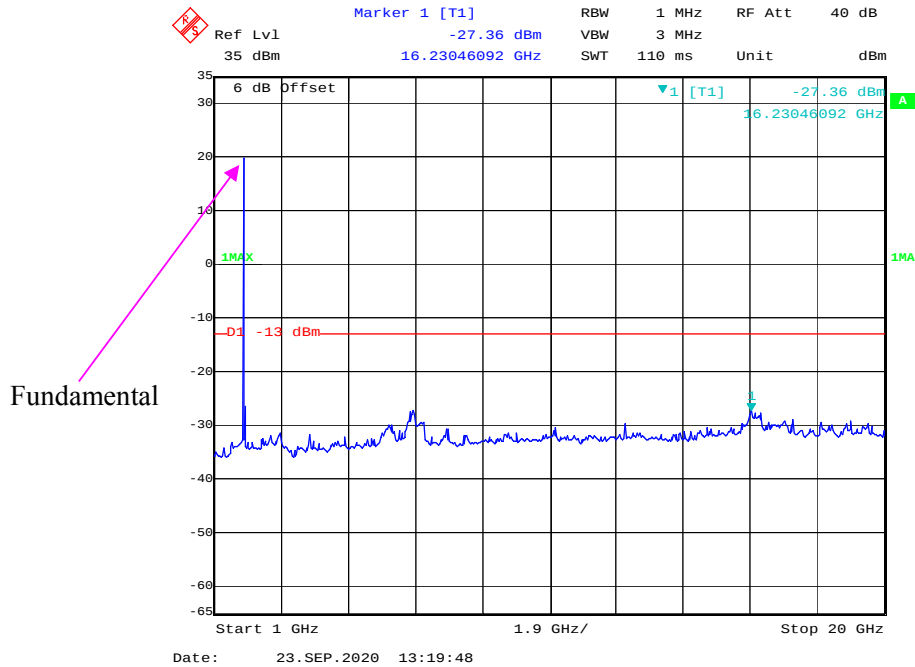
1 GHz – 20 GHz WCDMA (HSUPA) Mode , Low channel

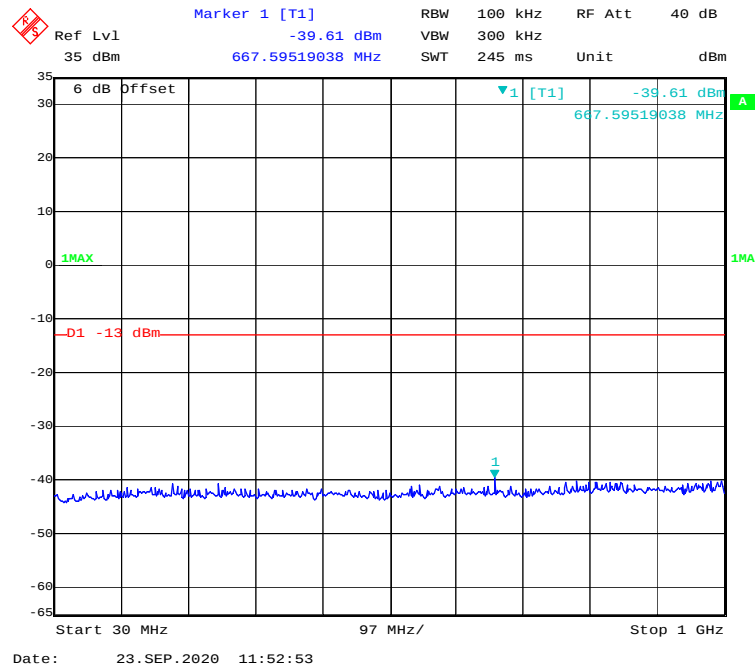
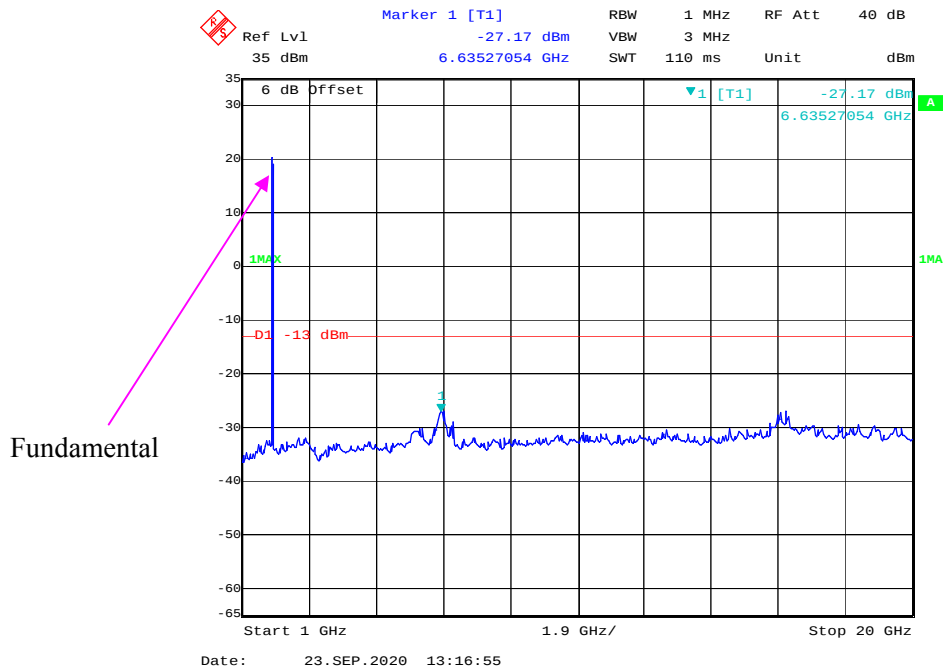


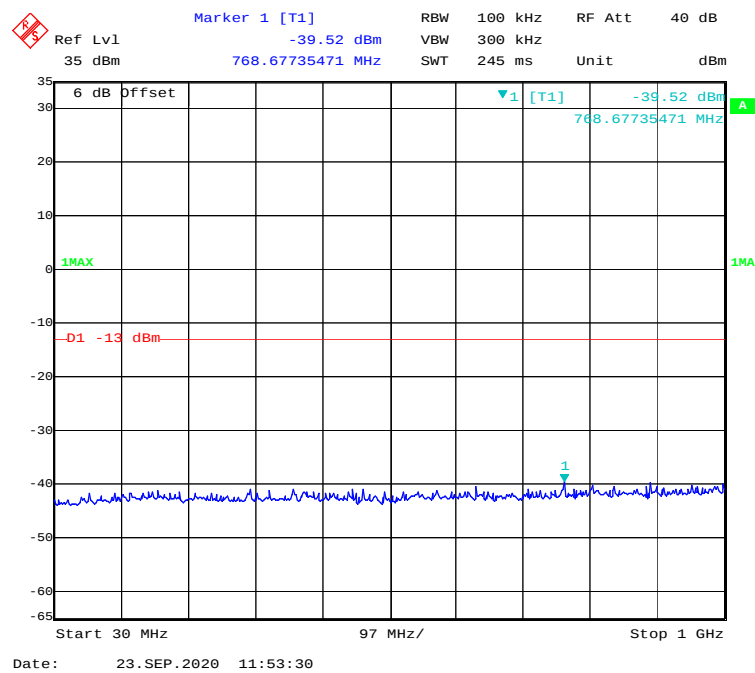
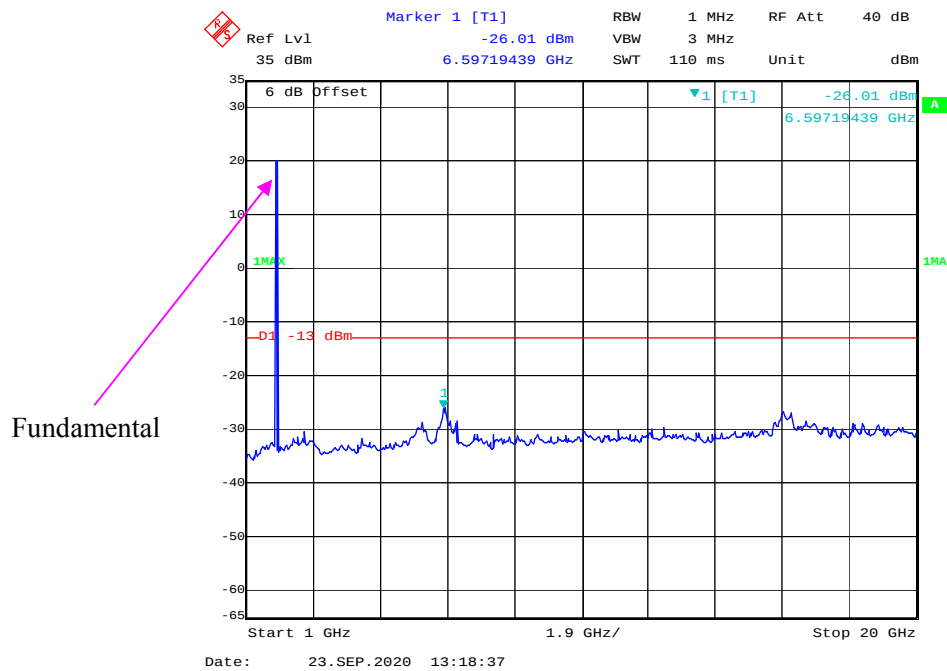
30 MHz – 1GHz WCDMA (HSPA+) Mode , Low channel



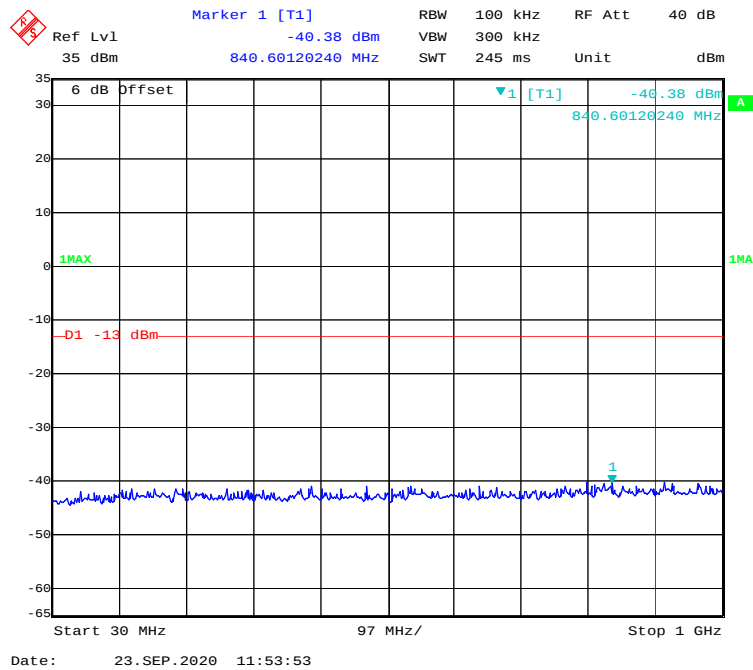
1 GHz – 20 GHz WCDMA (HSPA+) Mode , Low channel



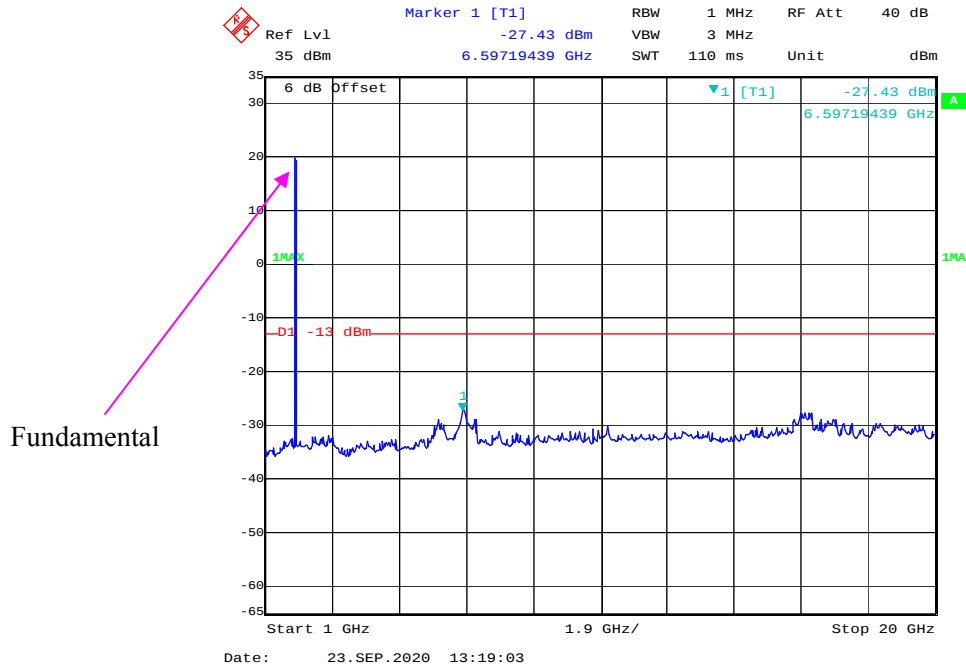
30 MHz – 1GHz WCDMA (Rel 99) Mode , Middle channel**1 GHz – 20 GHz WCDMA (Rel 99) Mode , Middle channel**

30 MHz – 1GHz WCDMA (HSDPA) Mode , Middle channel**1 GHz – 20 GHz WCDMA (HSDPA) Mode , Middle channel**

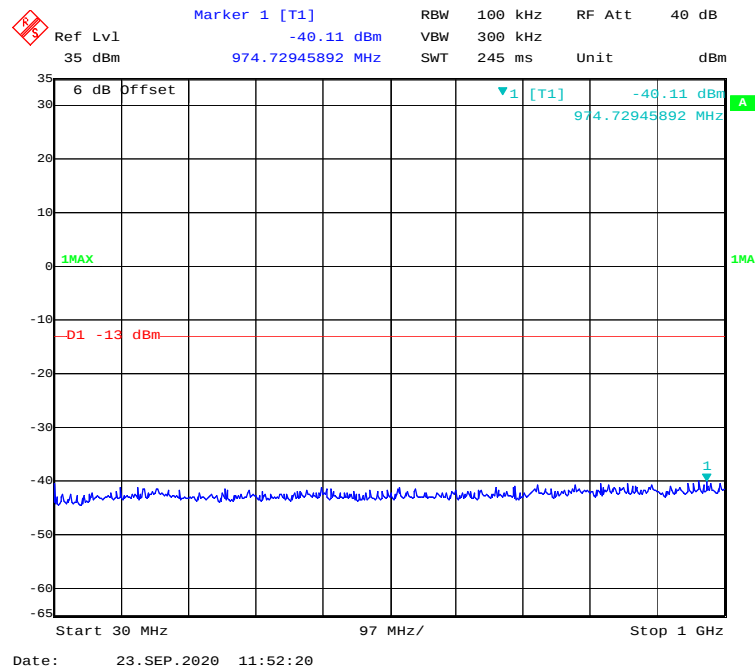
30 MHz – 1GHz WCDMA (HSUPA) Mode , Middle channel



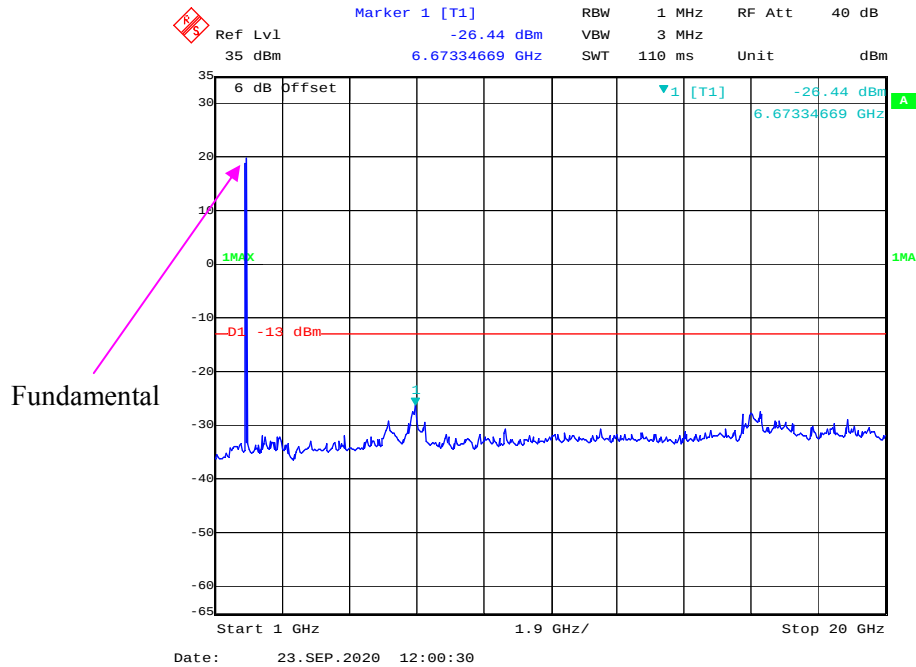
1 GHz – 20 GHz WCDMA (HSUPA) Mode , Middle channel



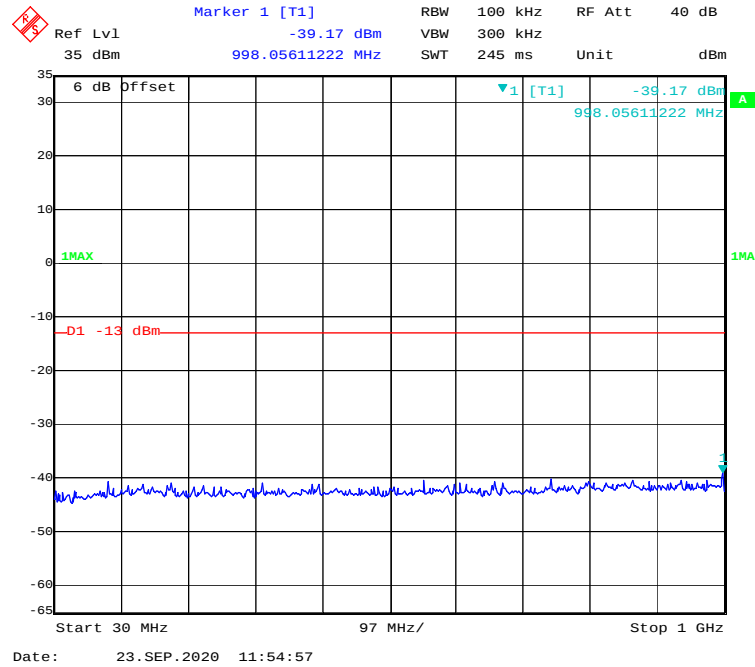
30 MHz – 1GHz WCDMA (HSPA+) Mode , Middle channel



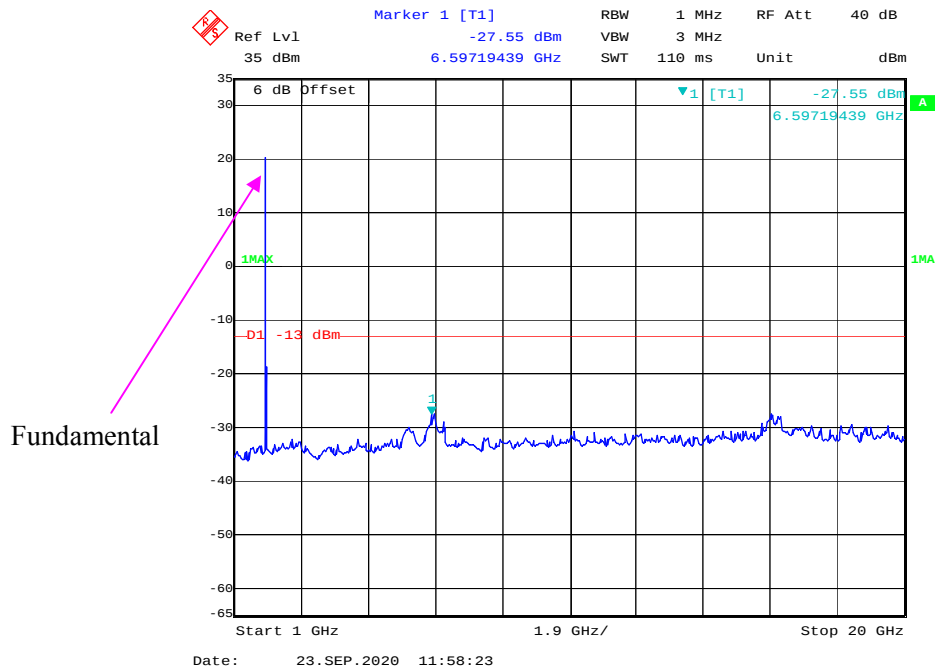
1 GHz – 20 GHz WCDMA (HSPA+) Mode , Middle channel



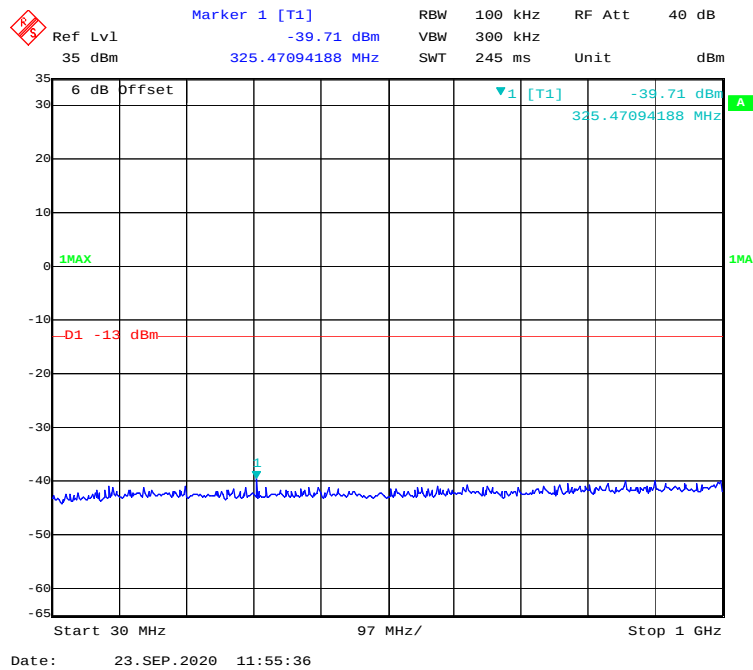
30 MHz – 1GHz WCDMA (Rel 99) Mode , High channel



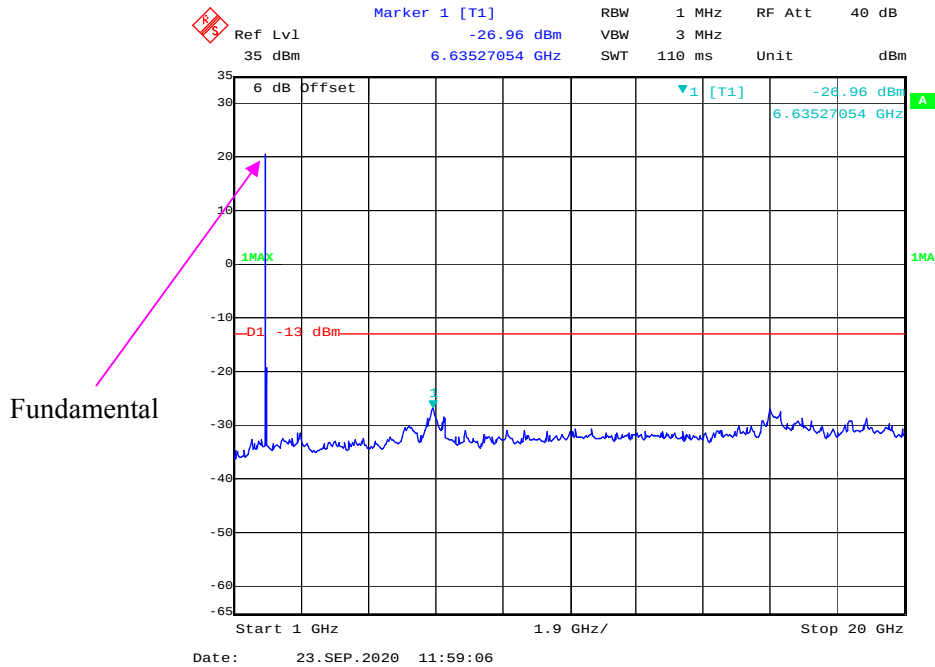
1 GHz – 20 GHz WCDMA (Rel 99) Mode , High channel

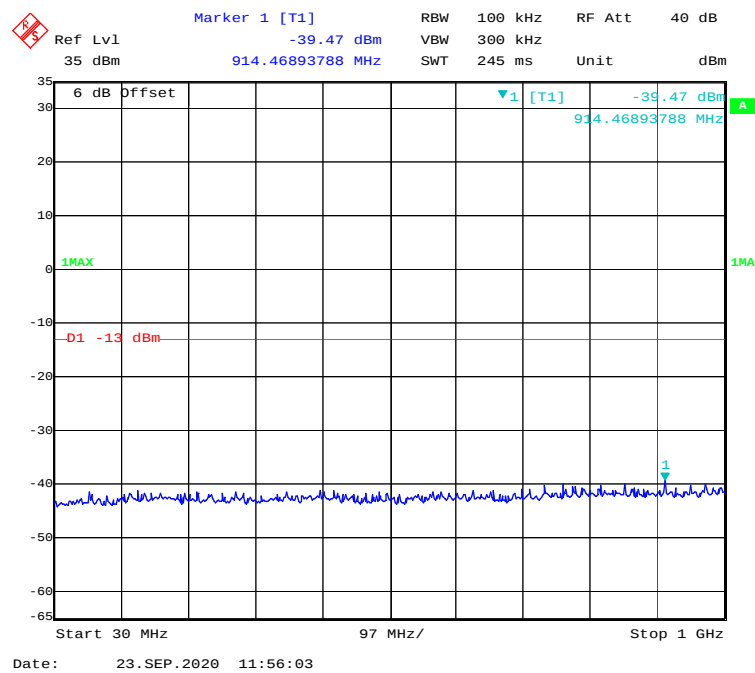
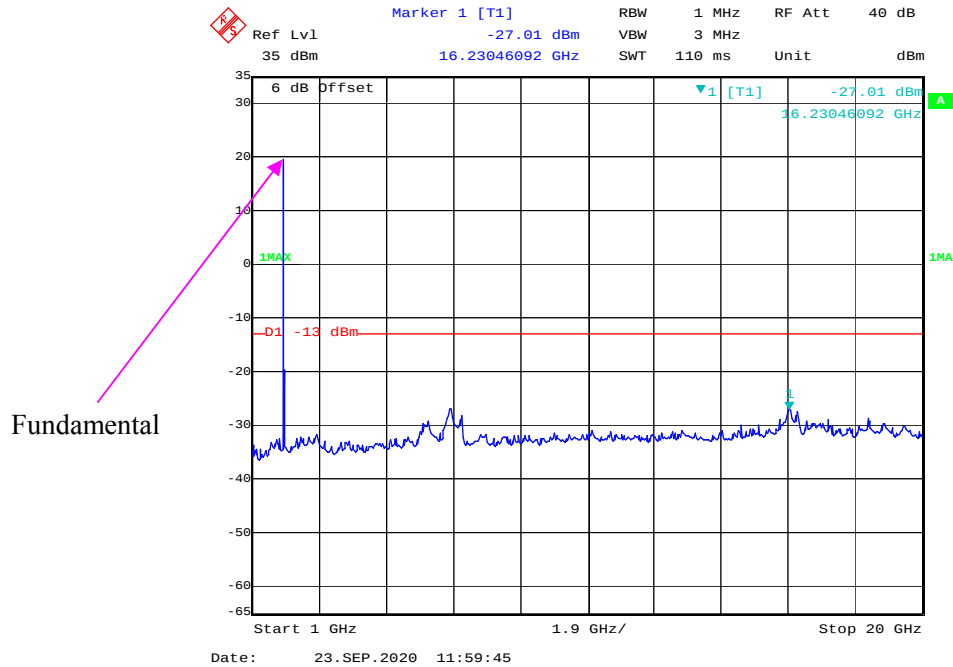


30 MHz – 1GHz WCDMA (HSDPA) Mode , High channel

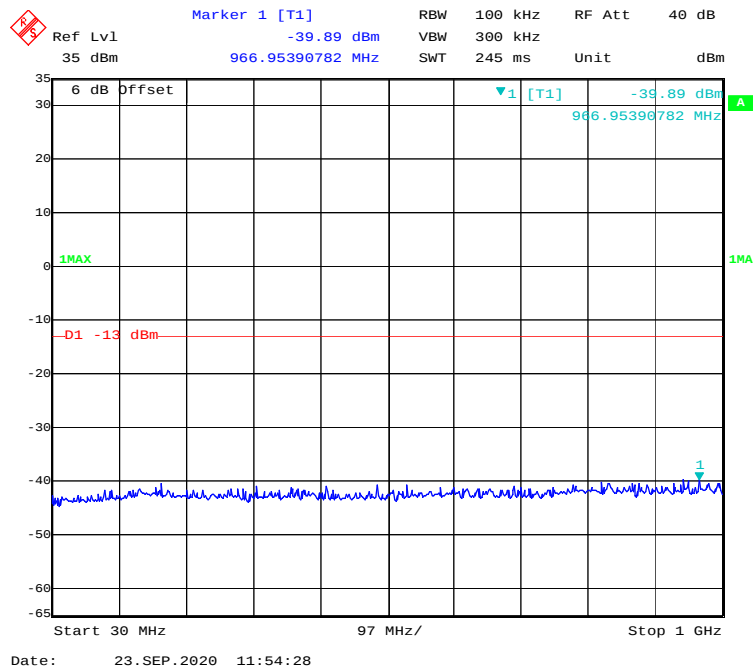


1 GHz – 20 GHz WCDMA (HSDPA) Mode , High channel

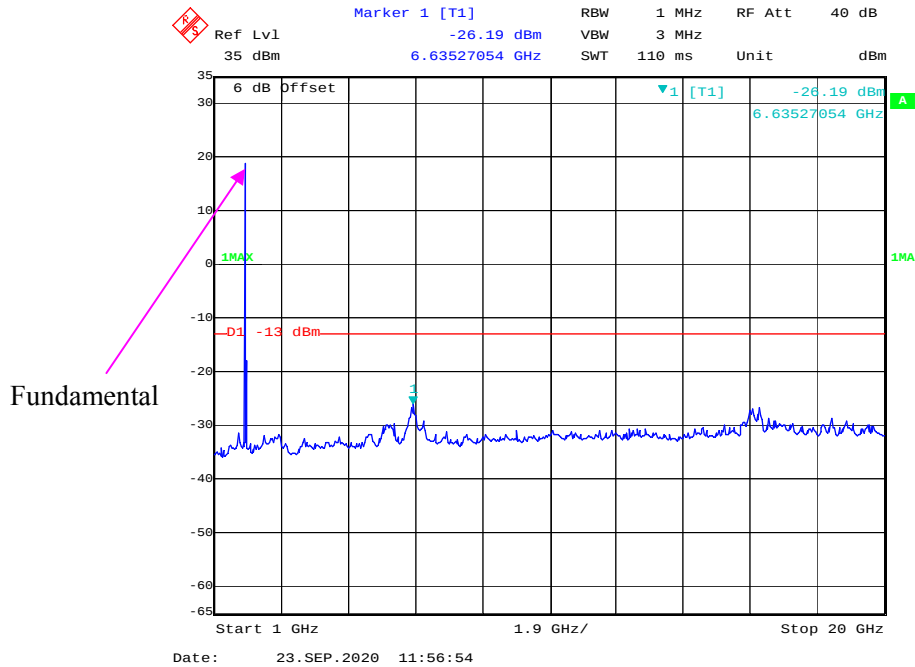


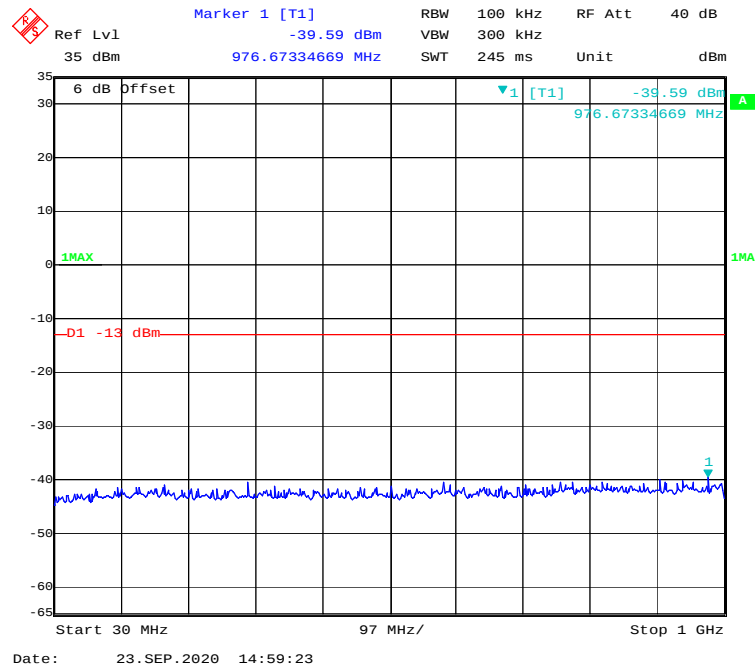
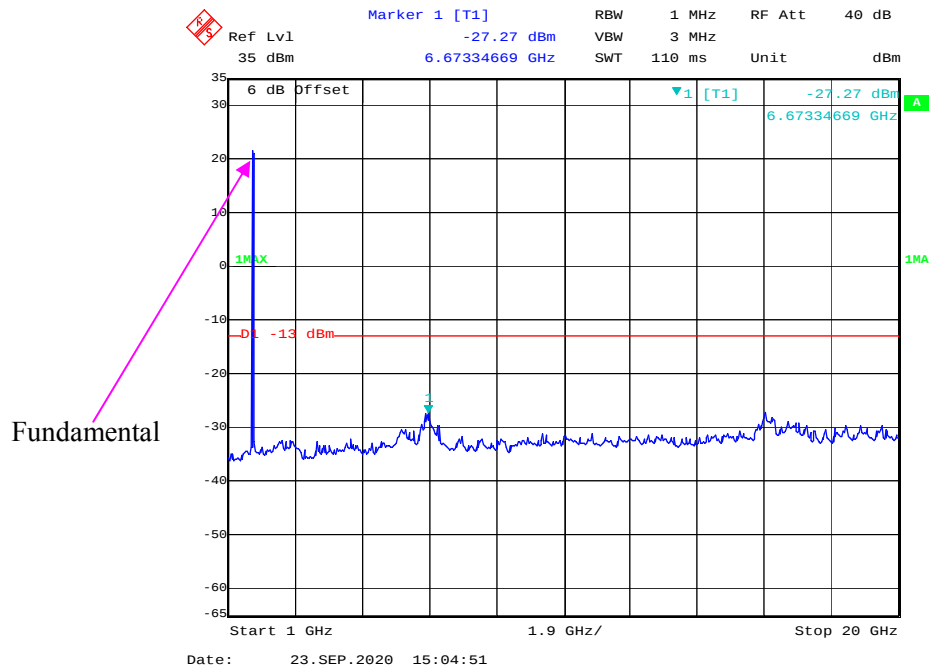
30 MHz – 1GHz WCDMA (HSUPA) Mode , High channel**1 GHz – 20 GHz WCDMA (HSUPA) Mode , High channel**

30 MHz – 1GHz WCDMA (HSPA+) Mode , High channel

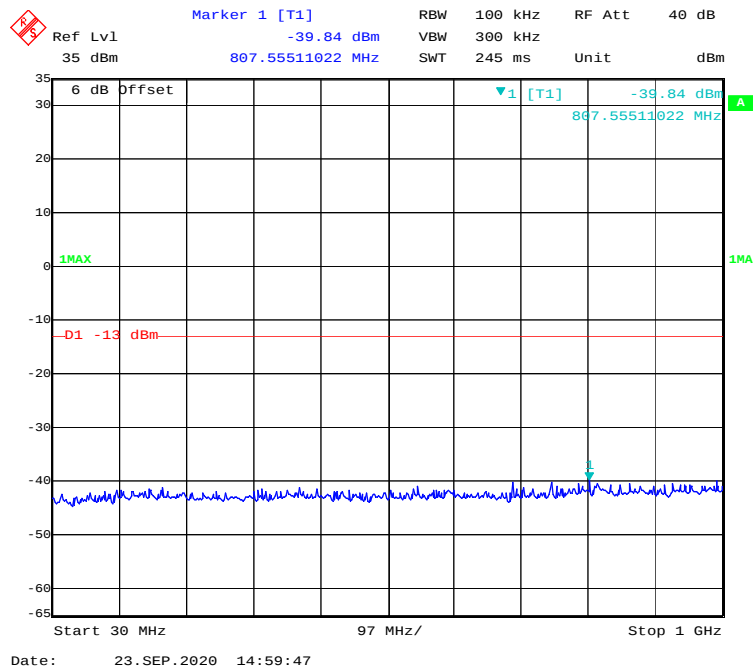


1 GHz – 20 GHz WCDMA (HSPA+) Mode , High channel

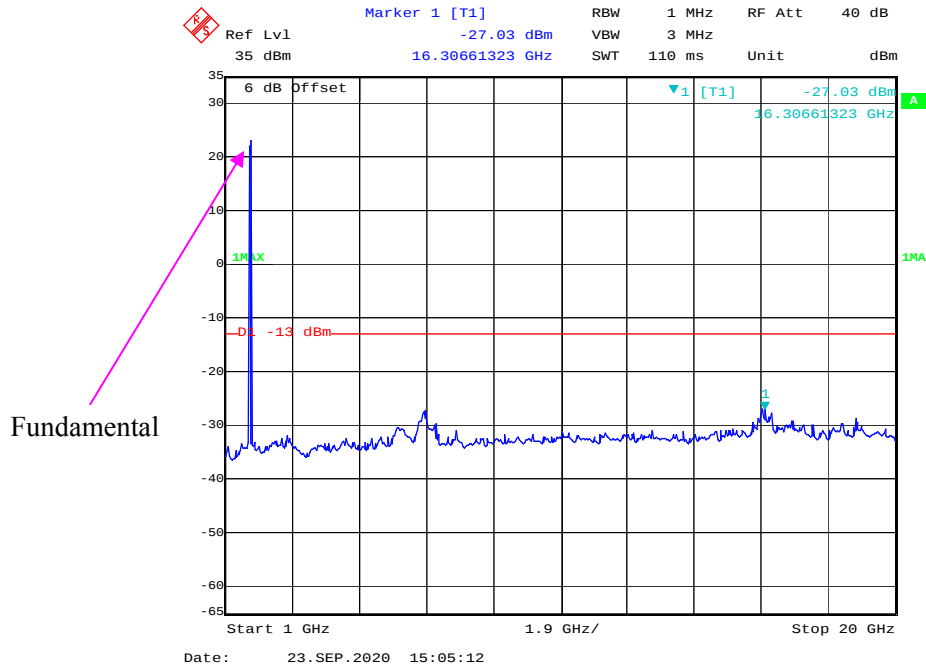


WCDMA Band IV:**30 MHz – 1GHz WCDMA (Rel 99) Mode, Low channel****1 GHz – 20 GHz WCDMA (Rel 99) Mode, Low channel**

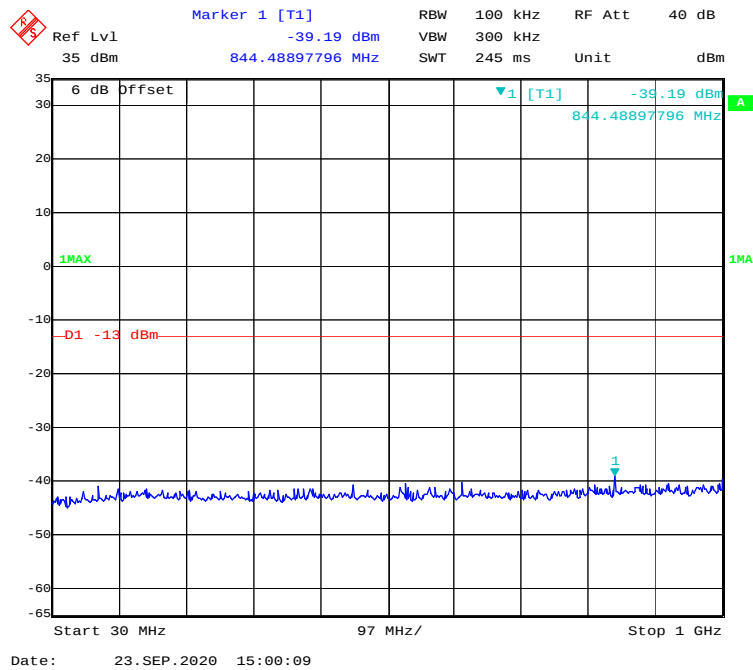
30 MHz – 1GHz WCDMA (HSDPA) Mode, Low channel



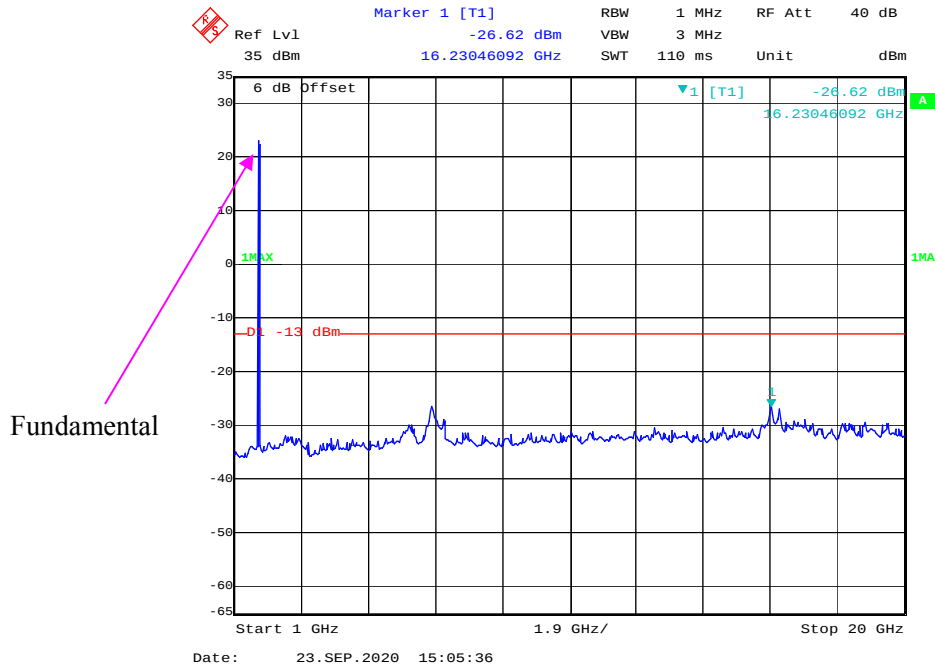
1 GHz – 20 GHz WCDMA (HSDPA) Mode, Low channel



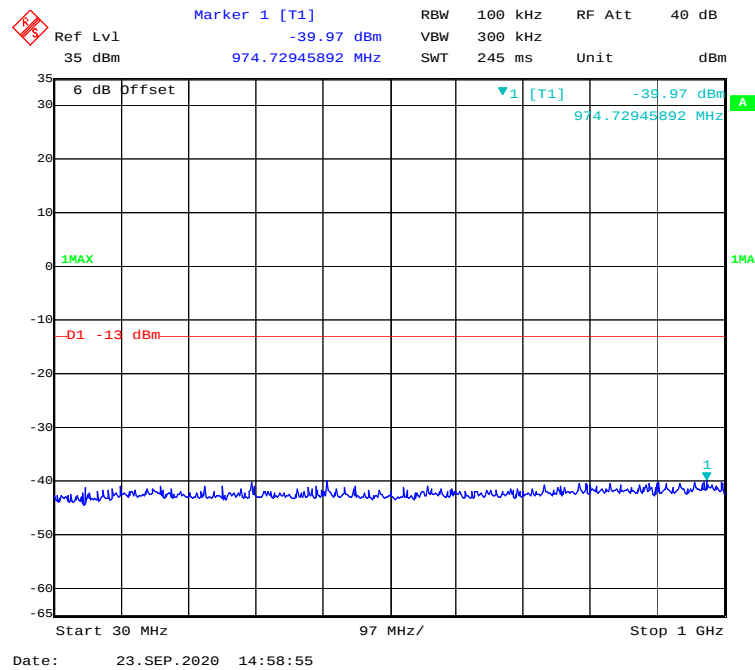
30 MHz – 1GHz WCDMA (HSUPA) Mode, Low channel



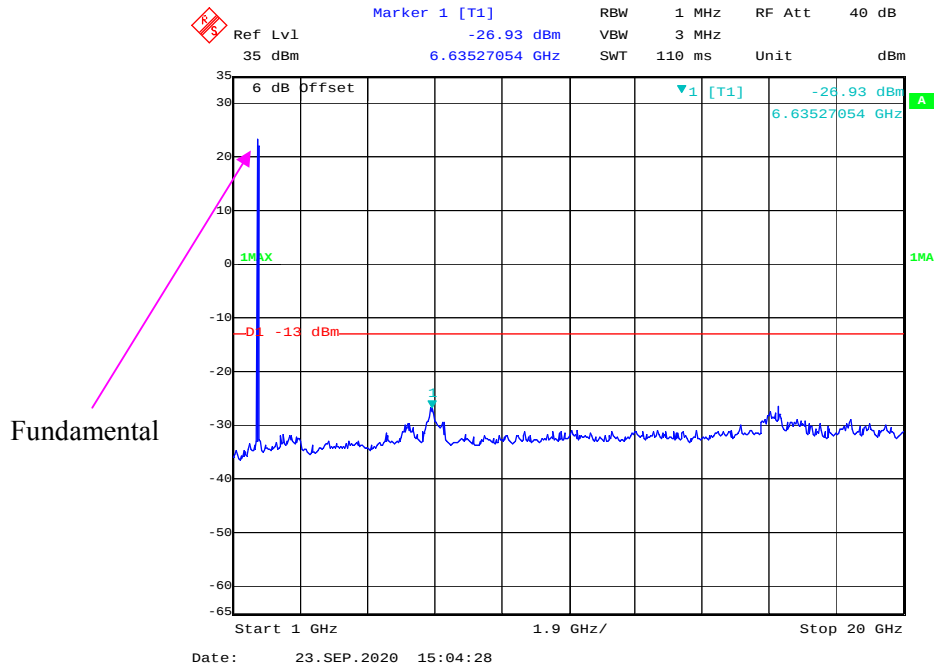
1 GHz – 20 GHz WCDMA (HSUPA) Mode, Low channel



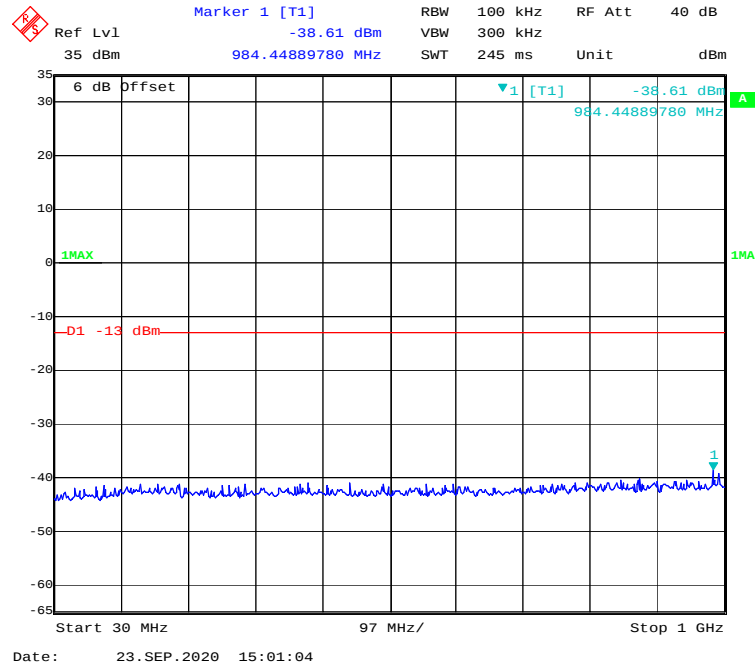
30 MHz – 1GHz WCDMA (HSPA+) Mode, Low channel



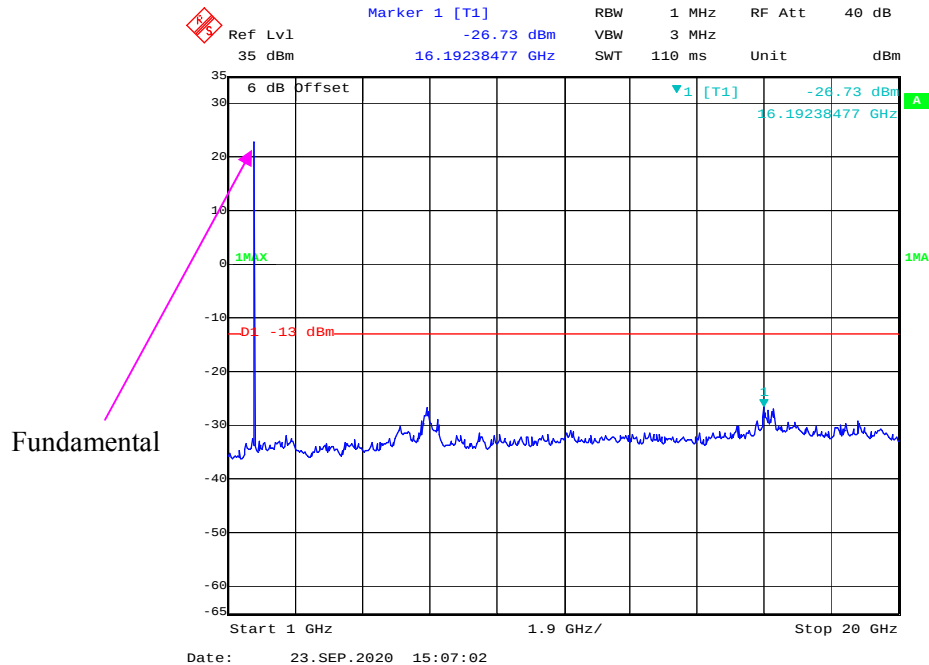
1 GHz – 20 GHz WCDMA (HSPA+) Mode, Low channel



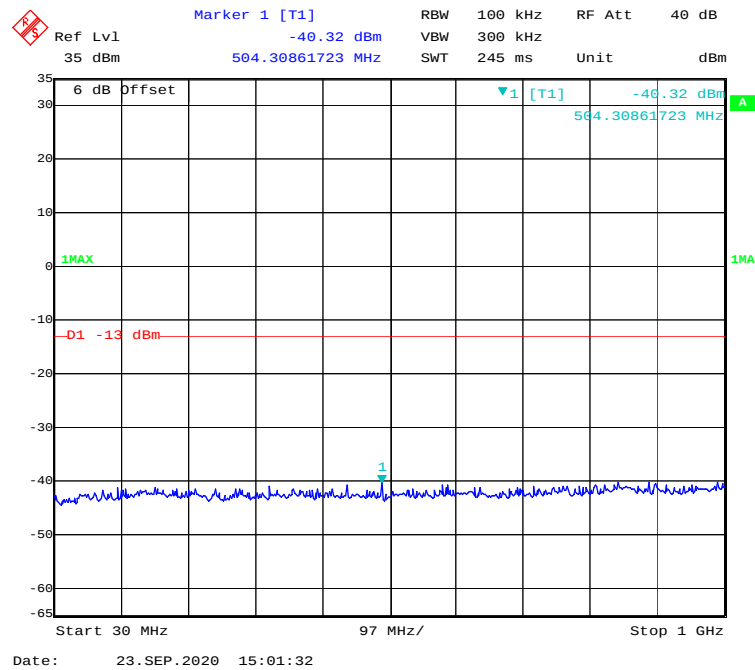
30 MHz – 1GHz WCDMA (Rel 99) Mode, Middle channel



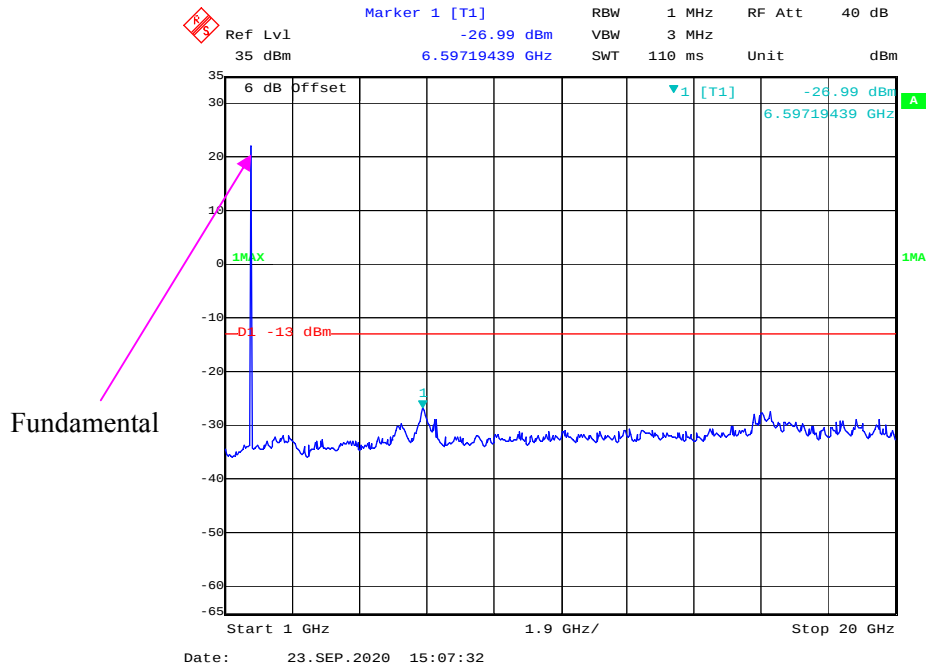
1 GHz – 20 GHz WCDMA (Rel 99) Mode, Middle channel



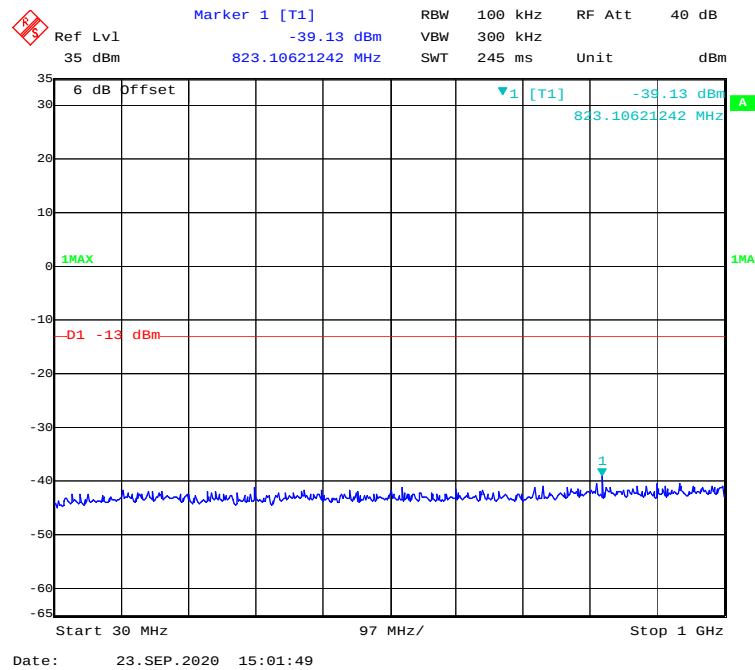
30 MHz – 1GHz WCDMA (HSDPA) Mode, Middle channel



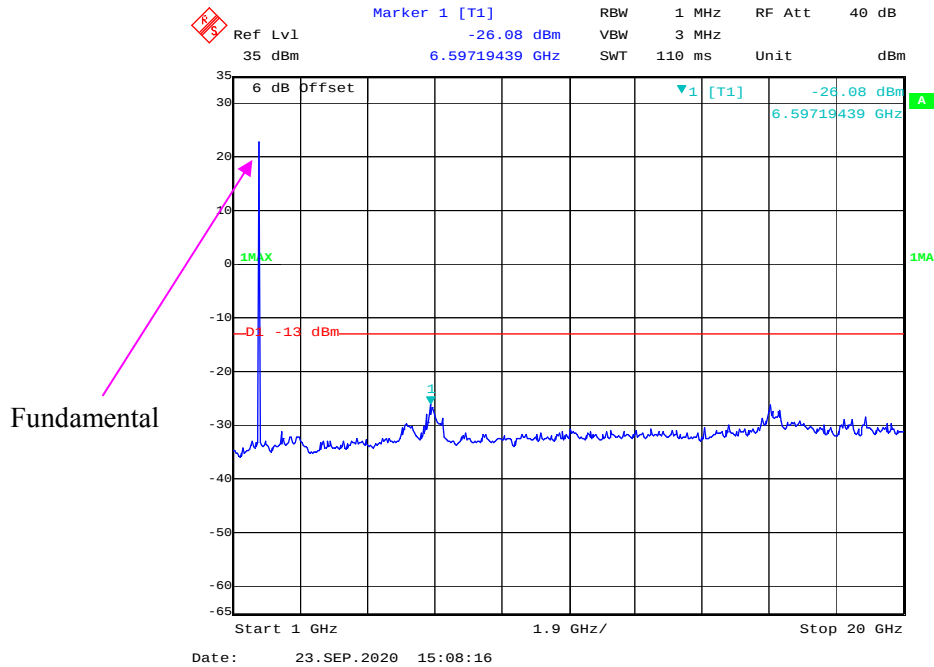
1 GHz – 20 GHz WCDMA (HSDPA) Mode, Middle channel



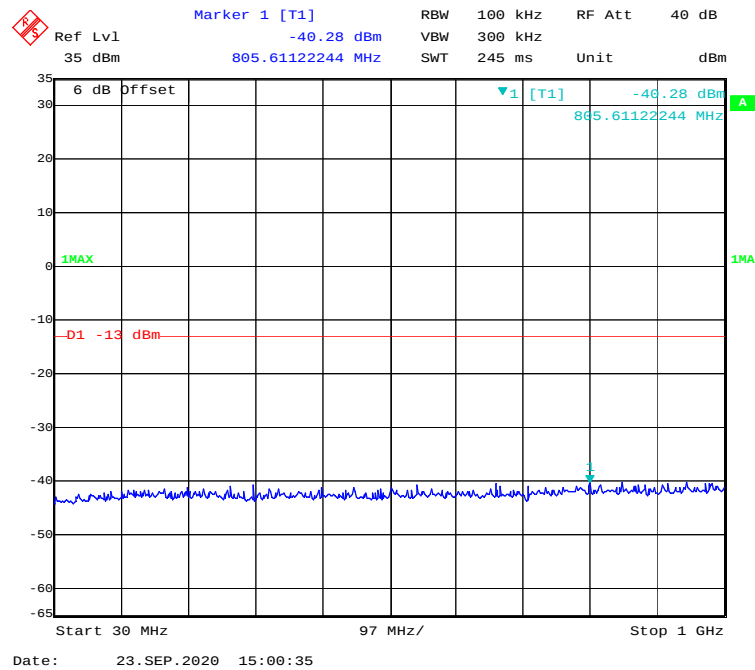
30 MHz – 1GHz WCDMA (HSUPA) Mode, Middle channel



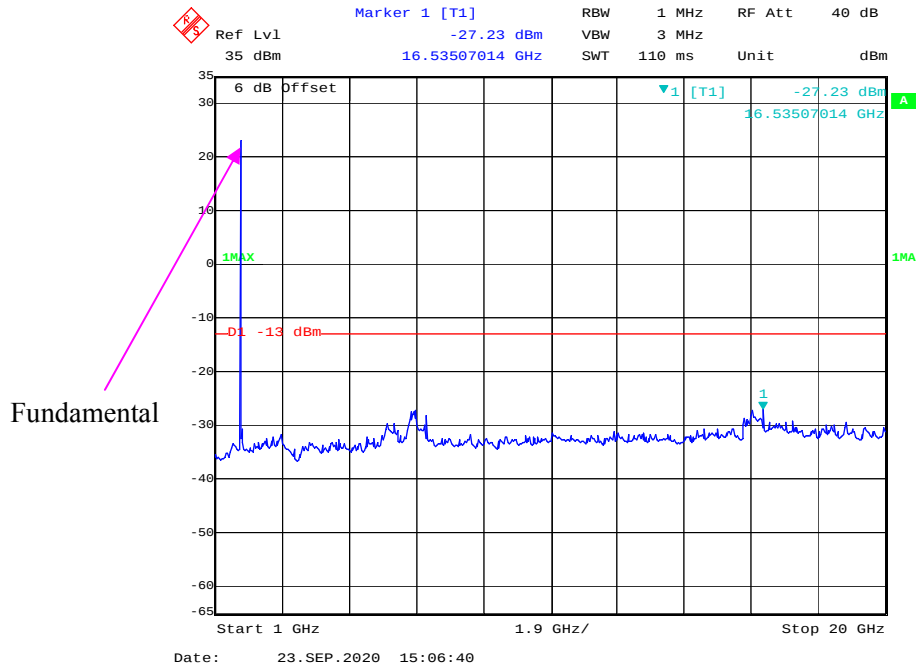
1 GHz – 20 GHz WCDMA (HSUPA) Mode, Middle channel



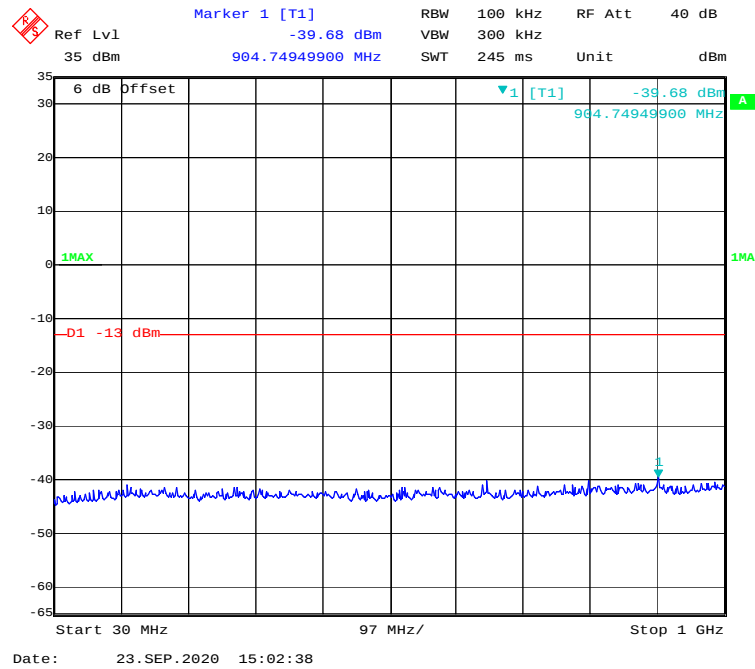
30 MHz – 1GHz WCDMA (HSPA+) Mode, Middle channel



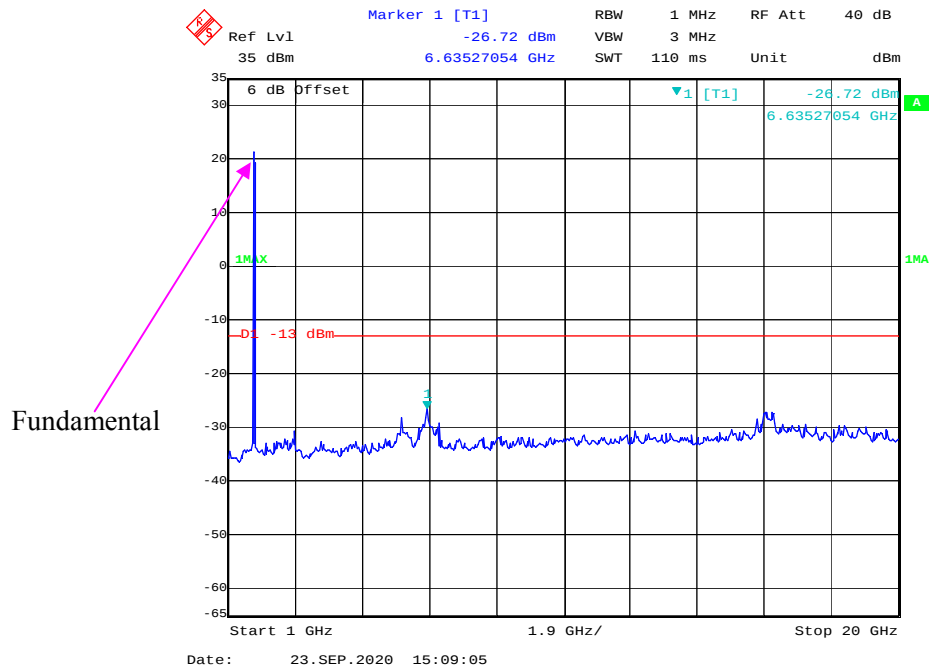
1 GHz – 20 GHz WCDMA (HSPA+) Mode, Middle channel



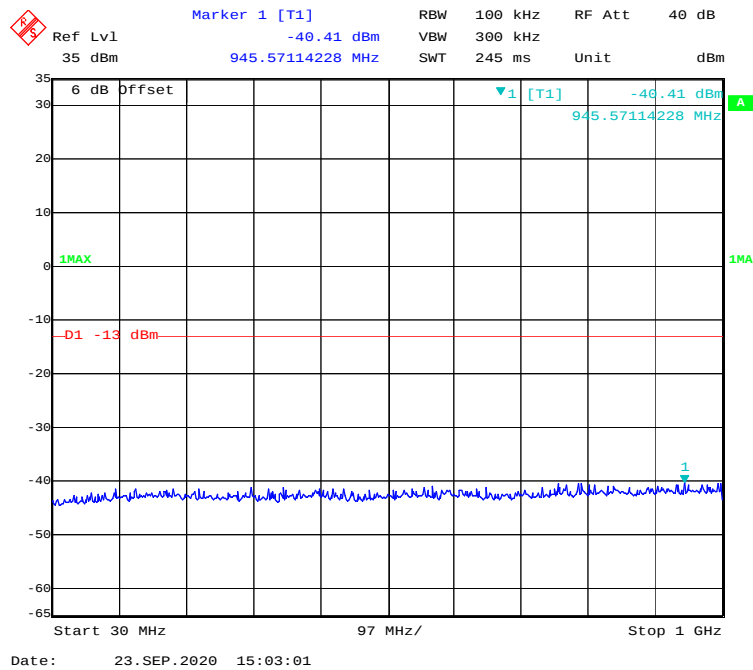
30 MHz – 1GHz WCDMA (Rel 99) Mode, High channel



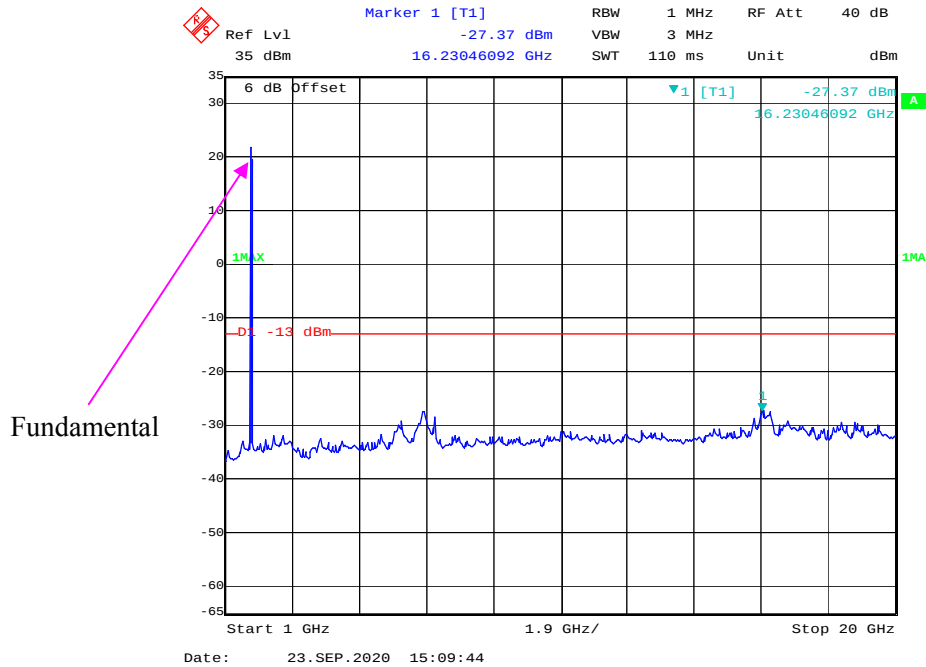
1 GHz – 20 GHz WCDMA (Rel 99) Mode, High channel



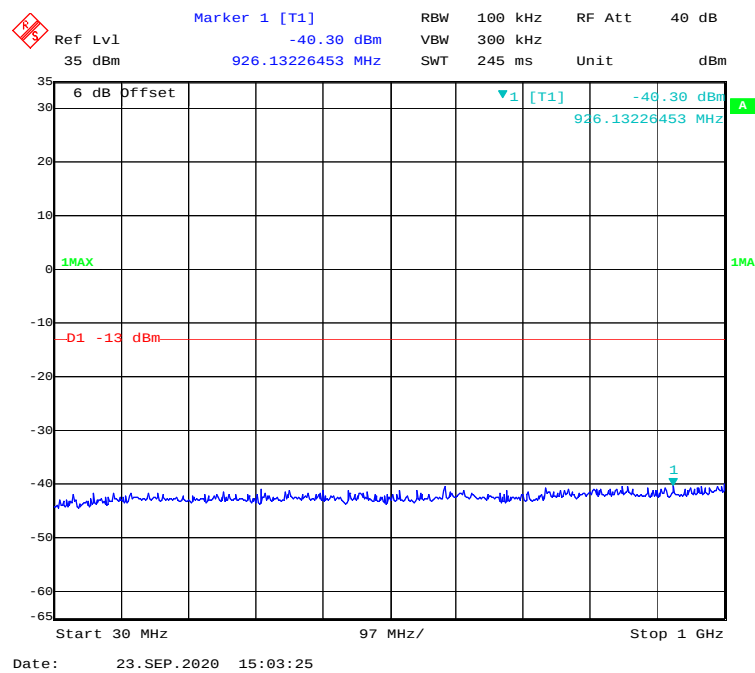
30 MHz – 1GHz WCDMA (HSDPA) Mode, High channel



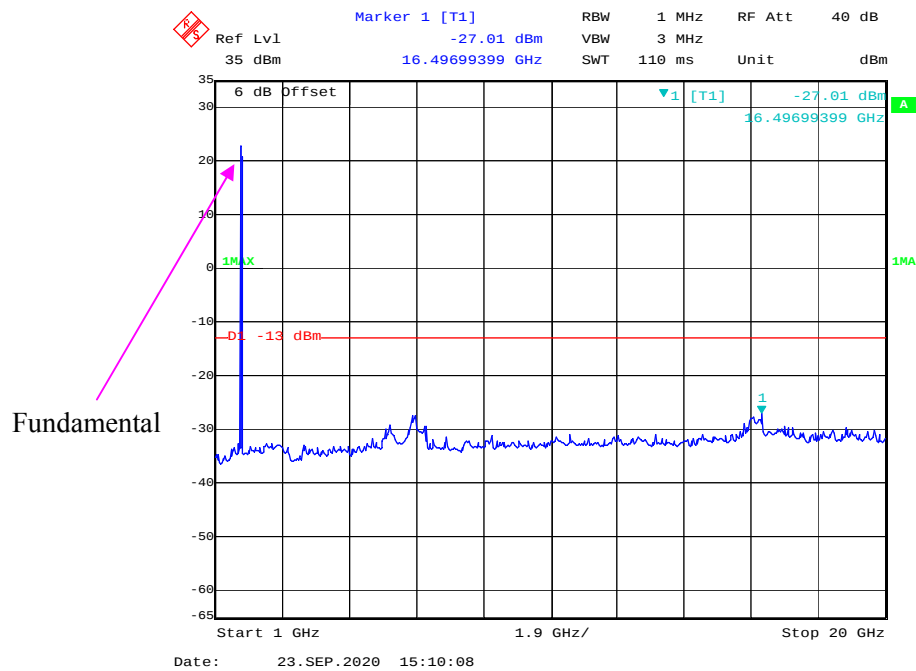
1 GHz – 20 GHz WCDMA (HSDPA) Mode, High channel



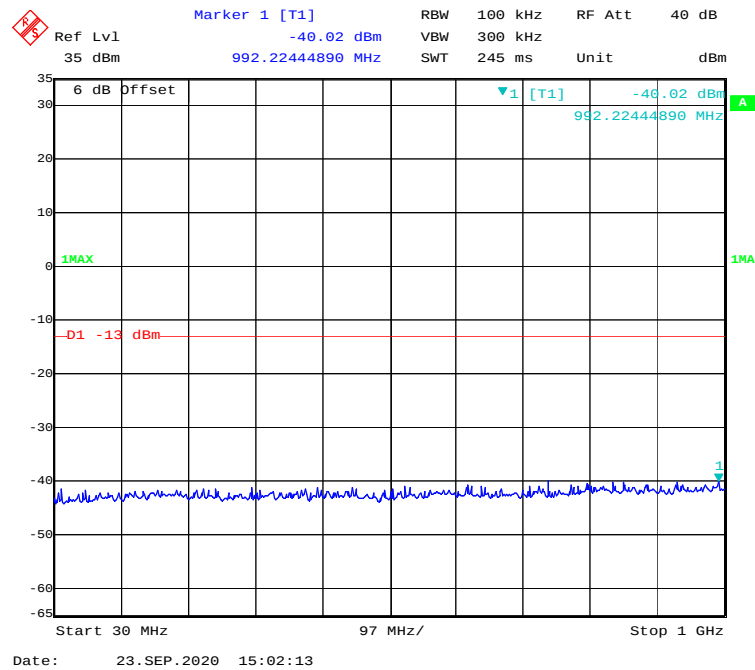
30 MHz – 1GHz WCDMA (HSUPA) Mode, High channel



1 GHz – 20 GHz WCDMA (HSUPA) Mode, High channel



30 MHz – 1GHz WCDMA (HSPA+) Mode, High channel



1 GHz – 20 GHz WCDMA (HSPA+) Mode, High channel

