

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

For

SHANGHAI WANWAY DIGITAL TECHNOLOGY
CO., LTD

FLOOR 23 NO. 1999 WENCHUAN ROAD BAOSHAN DISTRICT, SHANGHAI, China

FCC ID: 2AWBA-GS22

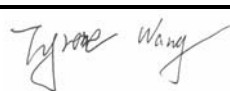
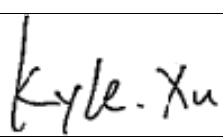
Report Type: Original Report	Product Type: GPS Tracker
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Report Number:	<u>RSHE210118001-00B</u>
Report Date:	<u>2021-02-20</u>
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	SHANGHAI WANWAY DIGITAL TECHNOLOGY CO., LTD
Tested Model:	GS22
Series Model:	GS22A, GS22E, GS22U, GS22N, GS22F, GS21, GS21A
Model Difference:	See Declaration Letter
Product Type:	GPS Tracker
Power Supply:	DC 9-35V/DC 3.7V from battery
RF Function:	WCDMA; LTE
Operating Band/Frequency:	WCDMA Band II: 1850-1910 MHz(TX), 1930-1990 MHz(RX) WCDMA Band IV: 1710-1755MHz(TX), 2110-2155MHz(RX) WCDMA Band V: 824-849MHz(TX), 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX), 1930-1990 MHz(RX) LTE Band 4: 1710-1755MHz(TX), 2110-2155MHz(RX) LTE Band 12: 699-716MHz(TX), 729-746MHz(RX)
Power Class:	WCDMA & LTE: Class 3
Modulation Type:	WCDMA: BPSK,QPSK,16QAM LTE: QPSK,16QAM
Antenna Type:	WCDMA & LTE: FPC Antenna
*Maximum Antenna Gain:	WCDMA: Band II: 2.71dBi; Band IV: 1.85dBi; Band V: -1.61dBi LTE: Band 2: 2.71dBi; Band 4: 1.85dBi; Band 12: 0.50dBi

Note: The maximum antenna gain was declared by the manufacturer.

**All measurement and test data in this report was gathered from production sample serial number: RSHE210118001-1. (Assigned by the BACL. The EUT supplied by the applicant was received on 2021-01-18)*

Objective

This type approval report is prepared on behalf of SHANGHAI WANWAY DIGITAL TECHNOLOGY CO., LTD in accordance with Part 2, Part 22-Subpart H, 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)

FCC Part 15.247 DTS submissions with FCC ID: 2AWBA-GS22.

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℃
Humidity		6%

Test Facility

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

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01 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)
WCDMA Band II		Low	9262	1852.4
		Middle	9400	1880.0
		High	9538	1907.6
WCDMA Band IV		Low	1312	1712.4
		Middle	1413	1732.6
		High	1513	1752.6
WCDMA Band V		Low	4132	826.4
		Middle	4183	836.6
		High	4233	846.6
LTE Band 2	1.4M	Low	18607	1850.7
		Middle	18900	1880.0
		High	19193	1909.3
	3M	Low	18615	1851.5
		Middle	18900	1880.0
		High	19185	1908.5
	5M	Low	18625	1852.5
		Middle	18900	1880.0
		High	19175	1907.5
	10M	Low	18650	1855.0
		Middle	18900	1880.0
		High	19150	1905.0
	15M	Low	18675	1857.5
		Middle	18900	1880.0
		High	19125	1902.5
	20M	Low	18700	1860.0
		Middle	18900	1880.0
		High	19100	1900.0

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

Equipment Modifications

No modifications were made to the EUT.

Support Equipment List and Details

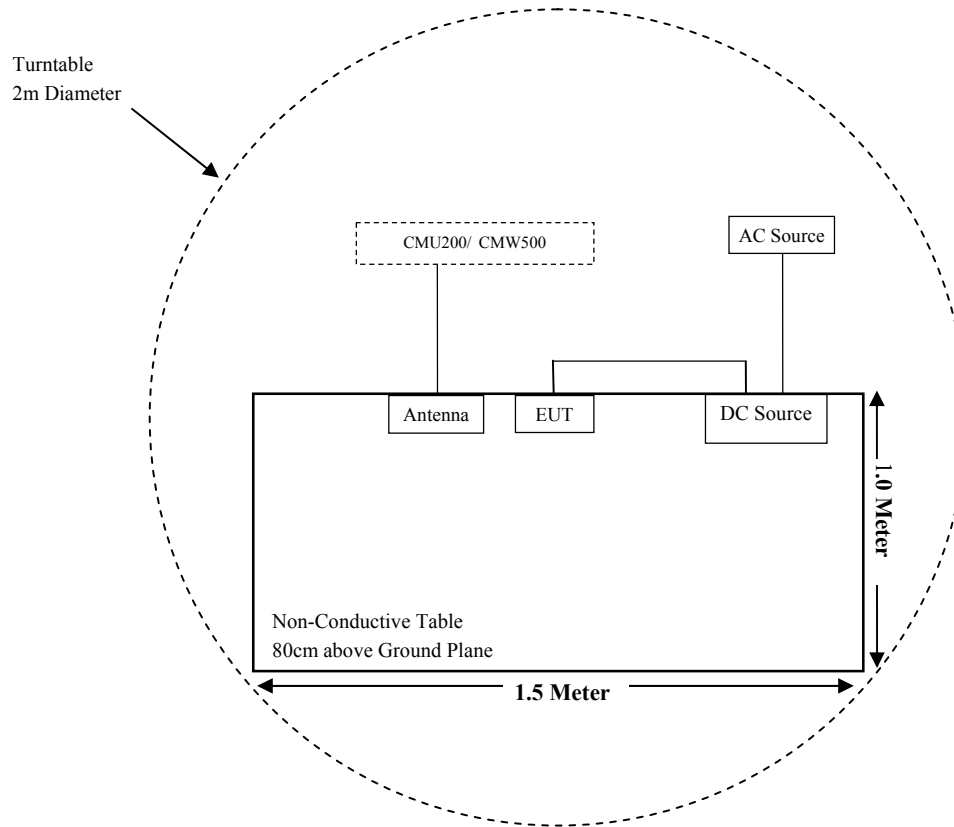
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605
Aihuaxin technology	Antenna	/	/
ZHAOXIN	DC Power Supply	RXN-605D	DC002
R & S	Wideband Radio Communication Tester	CMW500	104478

External I/O Cable

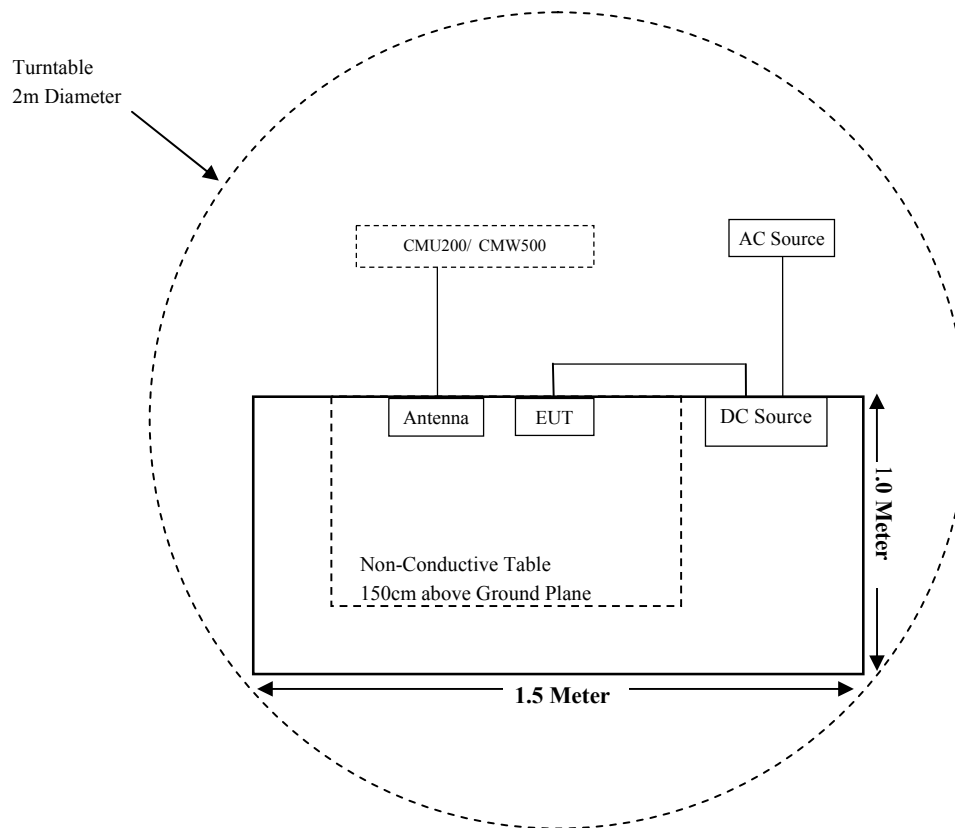
Cable Description	Length (m)	From Port	To
Power Cable	1.0	EUT	DC Source
Power Cable	1.0	DC Source	AC Source

Block Diagram of Test Setup

For Radiated Emissions (Below 1GHz):



For Radiated Emissions (Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§2.1046; § 22.913 (a);§ 24.232 (c); § 27.50 (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 (g)(h);	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53 (g)(h);	Spurious Radiated Emissions	Compliant
§ 22.917 (a); § 24.238 (a); §27.53 (g)(h);	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	2020-11-27	2021-11-26
HP	Signal Generator	N5183A	MY51040755	2020-11-27	2021-11-26
Sunol Sciences	Broadband Antenna	JB3	A090314-1	2020-08-05	2023-08-04
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2020-01-07	2023-01-06
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
R & S	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2020-04-01	2021-03-31
Radiated Emission Test (Chamber 2#)					
HP	Signal Generator	N5183A	MY51040755	2020-11-27	2021-11-26
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	2020-01-07	2023-01-06
A.H.Systems,inc	Amplifier	PAM-0118P	512	2020-08-14	2021-08-13
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
R & S	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2020-04-01	2021-03-31

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Signal Analyzer	FSIQ26	836131/009	2020-11-27	2021-12-26
Rohde & Schwarz	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	110605	2020-04-01	2021-03-31
R & S	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04
Mini-Circuits	Power splitter	ZFRSC-14-S+	SF019411452	2020-11-10	2021-11-09
BACL	Temperature & Humidity Chamber	BTH-150	30023	2020-12-20	2021-12-19
SHANGHAI WANWAY DIGITAL TECHNOLOGY CO., LTD	RF Cable	SHANGHAI WANWAY DIGITAL TECHNOLOGY CO., LTD 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;

According to §1.1310 and §2.1091 RF exposure is calculated.

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:**2.4G WI-FI**

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Output Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412~2462	2.47	1.77	23.00	199.53	20	0.0701	1.0
802.11g		2.47	1.77	22.50	177.83	20	0.0625	1.0
802.11n-HT20		2.47	1.77	23.00	199.53	20	0.0701	1.0
802.11n-HT40	2422~2452	2.47	1.77	22.00	158.49	20	0.0557	1.0

WCDMA/LTE

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)			
WCDMA Band II	1850-1910	2.71	1.87	22.5	177.83	20	0.0661	1.0
WCDMA Band IV	1710-1755	1.85	1.53	22.5	177.83	20	0.0541	1.0
WCDMA Band V	824-849	-1.61	0.69	22.5	177.83	20	0.0244	0.55
LTE Band 2	1850-1910	2.71	1.87	22.5	177.83	20	0.0661	1.0
LTE Band 4	1710-1755	1.85	1.53	22.5	177.83	20	0.0541	1.0
LTE Band 12	699-716	0.50	1.12	22.5	177.83	20	0.0396	0.47

Note:

- 1.For the above tune up power were declared by the manufacturer.
2. 2.4G Wi-Fi, WCDMA / LTE can transmit simultaneously, The worst condition is as below:

$$\sum_i \frac{S_i}{S_{Limit,i}} = 0.0701/1.00 + 0.0396/0.47 = 0.1544 < 1.0$$

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 (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.

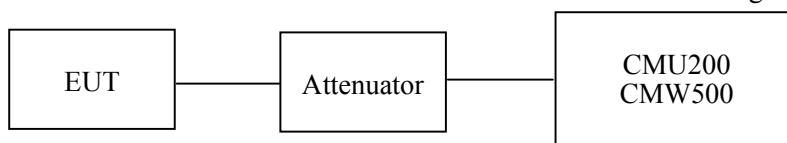
According to §27.50(d), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1780MHz.

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 CMU200/CMW500 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 and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading.
 $LOSS = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$

e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation:

$$ERP \text{ (dBm)} = LVL \text{ (dBm)} + LOSS \text{ (dB)}$$

f) The maximum ERP is the maximum value determined in the preceding step.

(Note: Effective Isotropic Radiated Power (EIRP) can be computed using the following:

$$EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB)}$$

Test Data

Environmental Conditions

Temperature:	23.2°C
Relative Humidity:	51 %
ATM Pressure:	101.1kPa

The testing was performed by Tyrone Wang on 2021-02-18

Conducted Power:

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	21.95	21.94	22.19
		HSDPA	1	21.97	22.10	22.08
			2	22.10	21.99	22.11
			3	22.02	22.09	22.26
			4	22.03	22.05	22.11
		HSUPA	1	22.05	22.14	22.15
			2	22.07	22.12	22.20
			3	22.17	22.13	22.09
			4	22.00	21.93	22.10
			5	21.96	21.91	22.26
		HSPA+	1	21.97	21.96	22.07

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	22.12	22.04	22.07
		HSDPA	1	22.21	22.13	22.13
			2	22.28	21.92	22.07
			3	22.25	21.99	22.07
			4	22.16	22.03	22.04
		HSUPA	1	22.21	22.10	22.03
			2	22.20	22.07	22.17
			3	22.28	22.17	22.19
			4	22.34	22.00	22.06
			5	22.18	22.04	22.18
		HSPA+	1	22.21	21.98	22.27

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	22.12	21.98	22.22
		HSDPA	1	22.28	22.05	22.12
			2	22.24	22.10	22.22
			3	22.16	22.11	22.02
			4	22.18	22.11	22.19
		HSUPA	1	22.24	22.05	22.12
			2	22.38	21.95	22.10
			3	22.24	22.11	22.20
			4	22.14	22.06	22.21
			5	22.27	22.07	22.25
		HSPA+	1	22.26	22.07	22.07

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	21.65	22.05	21.69
		1#3	22.18	21.46	21.85
		1#5	21.52	22.10	21.13
		3#0	22.02	21.51	21.22
		3#1	21.79	21.19	21.41
		3#3	21.65	21.51	21.23
		6#0	21.29	21.19	21.18
	16-QAM	1#0	21.83	21.73	21.28
		1#3	21.26	21.93	21.94
		1#5	21.48	21.51	21.62
		3#0	21.29	21.26	21.64
		3#1	21.69	21.51	21.08
		3#3	21.39	21.84	21.75
		6#0	21.75	21.60	21.82
3M	QPSK	1#0	21.59	21.89	22.00
		1#7	21.30	21.64	21.16
		1#14	22.22	21.14	21.51
		8#0	21.89	21.47	21.67
		8#4	21.98	21.55	21.11
		8#7	21.33	21.14	21.71
		15#0	21.95	21.16	21.23
	16-QAM	1#0	21.56	22.10	21.74
		1#7	21.31	21.58	21.03
		1#14	22.00	21.38	21.57
		8#0	21.29	21.13	21.24
		8#4	21.74	22.06	21.95
		8#7	21.99	21.51	21.61
		15#0	21.63	21.14	21.78

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.11	22.10	21.82
		1#12	21.36	21.50	21.28
		1#24	21.66	21.75	21.32
		12#0	21.45	21.12	21.10
		12#6	21.29	21.77	21.40
		12#11	22.26	21.83	21.21
		25#0	21.90	21.70	21.48
	16-QAM	1#0	21.56	21.24	21.80
		1#12	21.69	21.73	21.48
		1#24	21.67	21.54	21.48
		12#0	21.71	22.10	21.32
		12#6	21.30	21.77	21.99
		12#11	21.71	21.41	21.97
		25#0	21.63	21.13	21.27
10M	QPSK	1#0	21.73	21.55	21.69
		1#24	21.43	21.36	21.03
		1#49	21.86	21.38	21.31
		25#0	22.02	21.25	21.38
		25#12	21.69	21.68	21.35
		25#24	21.42	21.17	21.34
		50#0	22.10	21.18	21.90
	16-QAM	1#0	21.77	21.57	22.00
		1#24	21.68	21.56	21.72
		1#49	21.41	21.62	21.73
		25#0	21.63	21.41	21.91
		25#12	21.51	21.99	21.50
		25#24	21.91	21.20	21.60
		50#0	21.87	21.98	21.47

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.15	22.03	21.69
		1#37	21.86	21.93	21.68
		1#74	21.43	22.11	21.34
		36#0	21.34	21.41	21.53
		36#17	21.63	21.32	21.99
		36#35	21.34	21.25	21.83
		75#0	22.22	22.00	21.85
	16-QAM	1#0	21.84	21.82	21.44
		1#37	21.96	21.26	21.05
		1#74	21.81	21.74	21.62
		36#0	21.57	21.55	21.76
		36#17	21.44	22.03	21.25
		36#35	21.41	21.28	21.46
		75#0	21.34	21.13	21.71
20M	QPSK	1#0	21.71	21.88	21.51
		1#49	21.61	21.73	21.76
		1#99	21.80	21.41	21.50
		50#0	21.78	21.18	21.93
		50#24	21.45	21.89	21.09
		50#49	21.50	21.82	21.90
		100#0	22.11	21.44	21.42
	16-QAM	1#0	21.40	21.98	21.32
		1#49	21.90	21.28	21.33
		1#99	21.70	21.68	21.72
		50#0	22.12	21.98	21.31
		50#24	21.34	21.62	21.03
		50#49	21.51	21.23	21.58
		100#0	21.75	21.98	21.38

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	22.10	21.42	21.35
		1#3	22.16	21.26	21.36
		1#5	21.33	21.25	21.66
		3#0	22.09	21.38	21.68
		3#1	21.30	21.58	21.18
		3#3	21.73	21.72	21.42
		6#0	21.69	21.35	21.63
	16-QAM	1#0	22.20	21.17	21.03
		1#3	21.66	21.78	21.05
		1#5	22.12	21.91	21.89
		3#0	21.90	21.20	21.16
		3#1	21.88	21.58	21.65
		3#3	21.46	21.15	21.27
		6#0	22.08	21.52	21.98
3M	QPSK	1#0	21.41	21.93	21.41
		1#7	22.07	22.07	22.01
		1#14	21.76	21.14	21.36
		8#0	22.10	21.44	21.61
		8#4	21.33	21.33	21.57
		8#7	21.72	22.05	21.12
		15#0	21.74	21.22	21.78
	16-QAM	1#0	21.94	21.96	21.19
		1#7	22.01	21.41	22.00
		1#14	21.43	21.36	21.22
		8#0	21.29	21.88	21.02
		8#4	21.26	22.11	21.63
		8#7	21.69	21.73	21.34
		15#0	21.44	21.58	21.36

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	21.87	21.64	21.28
		1#12	21.46	21.83	21.92
		1#24	21.46	21.38	21.77
		12#0	21.35	21.21	21.46
		12#6	21.83	21.40	21.23
		12#11	21.47	21.94	21.74
		25#0	22.06	21.77	21.90
	16-QAM	1#0	21.44	21.52	21.70
		1#12	21.55	21.56	21.32
		1#24	21.66	21.32	21.77
		12#0	21.75	21.78	21.78
		12#6	21.40	21.75	21.94
		12#11	21.72	21.76	21.65
		25#0	22.19	21.84	21.10
10M	QPSK	1#0	22.16	21.19	21.55
		1#24	22.25	22.06	21.76
		1#49	21.86	21.65	21.95
		25#0	22.11	21.23	21.50
		25#12	21.88	21.74	21.56
		25#24	21.74	22.04	21.85
		50#0	21.30	21.64	21.57
	16-QAM	1#0	21.53	21.32	21.95
		1#24	21.84	21.86	21.83
		1#49	22.25	21.72	21.28
		25#0	21.63	21.94	21.23
		25#12	21.98	21.24	21.66
		25#24	21.85	22.07	21.19
		50#0	21.82	21.72	21.97

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	22.21	22.10	21.58
		1#37	21.33	21.59	21.46
		1#74	21.39	21.69	21.55
		36#0	21.45	21.12	21.98
		36#17	21.52	21.77	21.27
		36#35	21.28	21.97	21.17
		75#0	22.24	21.85	21.26
	16-QAM	1#0	21.48	21.30	21.44
		1#37	21.51	21.92	21.48
		1#74	22.19	21.97	21.26
		36#0	21.81	21.23	21.93
		36#17	22.16	21.64	21.56
		36#35	22.19	21.68	21.21
		75#0	22.23	21.62	21.43
20M	QPSK	1#0	22.15	21.70	21.68
		1#49	22.03	21.39	21.85
		1#99	21.98	21.56	21.06
		50#0	21.30	21.90	21.70
		50#24	22.26	21.34	21.72
		50#49	21.81	21.37	21.39
		100#0	21.95	21.35	21.94
	16-QAM	1#0	21.69	21.60	21.38
		1#49	21.69	21.22	21.96
		1#99	22.15	21.86	21.39
		50#0	21.72	22.09	21.42
		50#24	21.64	21.62	21.33
		50#49	21.79	21.31	21.60
		100#0	21.56	21.31	21.91

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	21.85	21.68	21.93
		1#3	21.85	21.80	21.04
		1#5	21.59	21.36	21.73
		3#0	22.10	21.77	21.88
		3#1	22.21	21.22	21.53
		3#3	21.98	21.68	21.58
		6#0	21.85	21.25	21.81
	16-QAM	1#0	22.03	22.00	21.35
		1#3	21.80	21.18	21.94
		1#5	22.03	21.98	21.69
		3#0	22.12	21.97	21.91
		3#1	21.39	21.43	21.40
		3#3	21.58	21.35	21.12
		6#0	22.08	22.09	21.70
3M	QPSK	1#0	22.24	21.39	21.36
		1#7	22.25	21.95	21.38
		1#14	21.43	21.83	21.85
		8#0	21.73	21.66	21.35
		8#4	22.09	21.61	21.34
		8#7	21.53	21.99	21.74
		15#0	21.31	21.36	21.68
	16-QAM	1#0	21.63	21.37	21.89
		1#7	22.09	21.81	21.95
		1#14	21.60	21.26	21.97
		8#0	21.65	21.37	21.10
		8#4	21.27	21.61	21.73
		8#7	21.91	21.12	21.38
		15#0	21.31	21.14	21.45

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.11	21.79	21.63
		1#12	21.88	21.82	21.60
		1#24	21.80	21.85	21.12
		12#0	21.77	21.47	21.73
		12#6	21.75	21.28	21.94
		12#11	21.63	21.15	21.09
		25#0	22.22	21.53	21.92
	16-QAM	1#0	22.23	21.71	21.61
		1#12	21.94	21.14	21.34
		1#24	21.69	22.02	21.16
		12#0	22.12	22.02	21.67
		12#6	21.76	21.57	21.69
		12#11	21.54	21.99	21.59
		25#0	21.95	21.35	21.22
10M	QPSK	1#0	21.79	21.12	21.09
		1#24	21.44	21.66	21.75
		1#49	22.00	21.98	21.85
		25#0	21.41	21.24	21.93
		25#12	21.54	21.41	21.95
		25#24	22.17	21.59	21.94
		50#0	21.29	21.88	21.19
	16-QAM	1#0	22.19	21.18	21.27
		1#24	22.08	22.09	21.08
		1#49	21.87	22.03	21.20
		25#0	21.45	21.12	21.81
		25#12	21.38	21.55	21.50
		25#24	22.15	21.32	21.99
		50#0	21.72	21.18	21.37

Peak-to-average ratio (PAR):**WCDMA Band V:**

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (Rel99)	Low	2.09	≤ 13
	Middle	2.16	≤ 13
	High	2.14	≤ 13
WCDMA (HSDPA)	Low	2.13	≤ 13
	Middle	1.97	≤ 13
	High	2.06	≤ 13
WCDMA (HSUPA)	Low	2	≤ 13
	Middle	2.01	≤ 13
	High	2.16	≤ 13
WCDMA (HSPA+)	Low	2.17	≤ 13
	Middle	2.1	≤ 13
	High	1.99	≤ 13

WCDMA Band II

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (Rel99)	Low	2.06	≤ 13
	Middle	1.97	≤ 13
	High	2.24	≤ 13
WCDMA (HSDPA)	Low	1.96	≤ 13
	Middle	2.27	≤ 13
	High	2.14	≤ 13
WCDMA (HSUPA)	Low	2.09	≤ 13
	Middle	2.17	≤ 13
	High	2.01	≤ 13
WCDMA (HSPA+)	Low	2.08	≤ 13
	Middle	2.06	≤ 13
	High	2.25	≤ 13

WCDMA Band IV

Mode	Channel	PAR (dB)	Limit (dB)
WCDMA (Rel99)	Low	2.19	≤ 13
	Middle	1.99	≤ 13
	High	2.09	≤ 13
WCDMA (HSDPA)	Low	2.17	≤ 13
	Middle	2.13	≤ 13
	High	2.11	≤ 13
WCDMA (HSUPA)	Low	2.03	≤ 13
	Middle	2.16	≤ 13
	High	2.24	≤ 13
WCDMA (HSPA+)	Low	2.24	≤ 13
	Middle	2	≤ 13
	High	2.24	≤ 13

LTE Band 2

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20M	3.09	3.08	3.03	13
	100 RB		5.14	5.07	5.16	13
16-QAM	1 RB	20M	4.06	4.11	4.00	13
	100 RB		6.15	6.19	6.09	13

LTE Band 4

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	20M	3.13	3.17	3.03	13
	100 RB		5.20	5.04	5.03	13
16-QAM	1 RB	20M	4.11	4.12	4.07	13
	100 RB		6.05	6.09	6.07	13

LTE Band 12

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	10M	3.11	3.03	3.20	13
	50 RB		5.15	5.03	5.02	13
16-QAM	1 RB	10M	4.20	4.12	4.11	13
	50 RB		6.14	6.03	6.00	13

Radiated Power:**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)										
826.4	87.63	248	200	H	22.77	0.63	-1.17	20.97	38.45	17.48
826.4	88.46	289	150	V	23.6	0.63	-1.17	21.8	38.45	16.65
WCDMA Band II, Low Channel(EIRP)										
1852.4	84.33	41	200	H	14.2	0.84	8.76	22.12	33	10.88
1852.4	85.15	24	150	V	15.02	0.84	8.76	22.94	33	10.06
WCDMA Band IV, Low Channel(EIRP)										
1712.4	84.28	201	200	H	11.69	0.84	8.57	19.42	30	10.58
1712.4	85.32	16	150	V	12.73	0.84	8.57	20.46	30	9.54

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Band V, Middle Channel(ERP)										
836.6	87.83	266	200	H	22.97	0.63	-1.14	21.2	38.45	17.25
836.6	88.15	106	150	V	23.29	0.63	-1.14	21.52	38.45	16.93
WCDMA Band II, Middle Channel(EIRP)										
1880	84.47	40	200	H	14.34	0.85	8.81	22.3	33	10.7
1880	85.44	41	150	V	15.31	0.85	8.81	23.27	33	9.73
WCDMA Band IV, Middle Channel(EIRP)										
1732.6	84.59	281	200	H	12	0.84	8.57	19.73	30	10.27
1732.6	85.49	118	150	V	12.9	0.84	8.57	20.63	30	9.37

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)										
846.6	87.06	52	200	H	22.2	0.63	-1.11	20.46	38.45	17.99
846.6	88.98	289	150	V	24.12	0.63	-1.11	22.38	38.45	16.07
WCDMA Band II, High Channel(EIRP)										
1907.6	84.29	304	200	H	14.16	0.85	8.85	22.16	33	10.84
1907.6	85.66	86	150	V	15.53	0.85	8.85	23.53	33	9.47
WCDMA Band IV, High Channel(EIRP)										
1752.6	84.46	32	200	H	11.87	0.84	8.57	19.6	30	10.4
1752.6	85.77	107	150	V	13.18	0.84	8.57	20.91	30	9.09

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	V	89.64	14.91	0.84	8.76	22.83	33	10.17
1850.7	H	88.81	14.08	0.84	8.76	22	33	11
16-QAM 1.4M BW Low Channel								
1850.7	V	89.48	14.75	0.84	8.76	22.67	33	10.33
1850.7	H	88.17	13.44	0.84	8.76	21.36	33	11.64
QPSK 3M BW Low Channel								
1851.5	V	89.14	14.41	0.84	8.76	22.33	33	10.67
1851.5	H	88.26	13.53	0.84	8.76	21.45	33	11.55
16-QAM 3M BW Low Channel								
1851.5	V	89.72	14.99	0.84	8.76	22.91	33	10.09
1851.5	H	88.8	14.07	0.84	8.76	21.99	33	11.01
QPSK 5M BW Low Channel								
1852.5	V	89.88	15.15	0.84	8.76	23.07	33	9.93
1852.5	H	88.94	14.21	0.84	8.76	22.13	33	10.87
16-QAM 5M BW Low Channel								
1852.5	V	89.55	14.82	0.84	8.76	22.74	33	10.26
1852.5	H	88.82	14.09	0.84	8.76	22.01	33	10.99
QPSK 10M BW Low Channel								
1855	V	89.14	14.41	0.84	8.77	22.34	33	10.66
1855	H	88.63	13.9	0.84	8.77	21.83	33	11.17
16-QAM 10M BW Low Channel								
1855	V	89.2	14.47	0.84	8.77	22.4	33	10.6
1855	H	88.95	14.22	0.84	8.77	22.15	33	10.85
QPSK 15M BW Low Channel								
1857.5	V	89.97	15.24	0.84	8.77	23.17	33	9.83
1857.5	H	88.67	13.94	0.84	8.77	21.87	33	11.13
16-QAM 15M BW Low Channel								
1857.5	V	89.85	15.12	0.84	8.77	23.05	33	9.95
1857.5	H	88.61	13.88	0.84	8.77	21.81	33	11.19

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	V	89.65	14.92	0.84	8.78	22.86	33	10.14
1860	H	88.06	13.33	0.84	8.78	21.27	33	11.73
16-QAM 20M BW Low Channel								
1860	V	89.83	15.1	0.84	8.78	23.04	33	9.96
1860	H	88.23	13.5	0.84	8.78	21.44	33	11.56

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	V	89.29	14.56	0.85	8.81	22.52	33	10.48
1880	H	88.65	13.92	0.85	8.81	21.88	33	11.12
16-QAM 1.4M BW Middle Channel								
1880	V	89.42	14.69	0.85	8.81	22.65	33	10.35
1880	H	88.76	14.03	0.85	8.81	21.99	33	11.01
QPSK 3M BW Middle Channel								
1880	V	89.83	15.1	0.85	8.81	23.06	33	9.94
1880	H	88.8	14.07	0.85	8.81	22.03	33	10.97
16-QAM 3M BW Middle Channel								
1880	V	89.45	14.72	0.85	8.81	22.68	33	10.32
1880	H	88.66	13.93	0.85	8.81	21.89	33	11.11
QPSK 5M BW Middle Channel								
1880	V	89.02	14.29	0.85	8.81	22.25	33	10.75
1880	H	88.28	13.55	0.85	8.81	21.51	33	11.49
16-QAM 5M BW Middle Channel								
1880	V	89.54	14.81	0.85	8.81	22.77	33	10.23
1880	H	88.47	13.74	0.85	8.81	21.7	33	11.3
QPSK 10M BW Middle Channel								
1880	V	89.59	14.86	0.85	8.81	22.82	33	10.18
1880	H	88.1	13.37	0.85	8.81	21.33	33	11.67
16-QAM 10M BW Middle Channel								
1880	V	89.29	14.56	0.85	8.81	22.52	33	10.48
1880	H	88.6	13.87	0.85	8.81	21.83	33	11.17
QPSK 15M BW Middle Channel								
1880	V	89.53	14.8	0.85	8.81	22.76	33	10.24
1880	H	88.8	14.07	0.85	8.81	22.03	33	10.97
16-QAM 15M BW Middle Channel								
1880	V	89.76	15.03	0.85	8.81	22.99	33	10.01
1880	H	88.87	14.14	0.85	8.81	22.1	33	10.9

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	V	89.31	14.58	0.85	8.81	22.54	33	10.46
1880	H	88.52	13.79	0.85	8.81	21.75	33	11.25
16-QAM 20M BW Middle Channel								
1880	V	89.22	14.49	0.85	8.81	22.45	33	10.55
1880	H	88.47	13.74	0.85	8.81	21.7	33	11.3

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								
1909.3	V	89.92	15.19	0.85	8.85	23.19	33	9.81
1909.3	H	88.06	13.33	0.85	8.85	21.33	33	11.67
16-QAM 1.4M BW High Channel								
1909.3	V	89.61	14.88	0.85	8.85	22.88	33	10.12
1909.3	H	88.12	13.39	0.85	8.85	21.39	33	11.61
QPSK 3M BW High Channel								
1908.5	V	89.27	14.54	0.85	8.85	22.54	33	10.46
1908.5	H	88.74	14.01	0.85	8.85	22.01	33	10.99
16-QAM 3M BW High Channel								
1908.5	V	89.2	14.47	0.85	8.85	22.47	33	10.53
1908.5	H	88.56	13.83	0.85	8.85	21.83	33	11.17
QPSK 5M BW High Channel								
1907.5	V	89.44	14.71	0.85	8.85	22.71	33	10.29
1907.5	H	88.8	14.07	0.85	8.85	22.07	33	10.93
16-QAM 5M BW High Channel								
1907.5	V	89.9	15.17	0.85	8.85	23.17	33	9.83
1907.5	H	88.07	13.34	0.85	8.85	21.34	33	11.66
QPSK 10M BW High Channel								
1905	V	89.41	14.68	0.85	8.85	22.68	33	10.32
1905	H	88.45	13.72	0.85	8.85	21.72	33	11.28
16-QAM 10M BW High Channel								
1905	V	89.93	15.2	0.85	8.85	23.2	33	9.8
1905	H	88.8	14.07	0.85	8.85	22.07	33	10.93
QPSK 15M BW High Channel								
1902.5	V	89.41	14.68	0.85	8.84	22.67	33	10.33
1902.5	H	88.51	13.78	0.85	8.84	21.77	33	11.23
16-QAM 15M BW High Channel								
1902.5	V	89.13	14.4	0.85	8.84	22.39	33	10.61
1902.5	H	88.14	13.41	0.85	8.84	21.4	33	11.6

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	V	89.64	14.91	0.85	8.84	22.9	33	10.1
1900	H	88.34	13.61	0.85	8.84	21.6	33	11.4
16-QAM 20M BW High Channel								
1900	V	89.64	14.91	0.85	8.84	22.9	33	10.1
1900	H	88.05	13.32	0.85	8.84	21.31	33	11.69

EIRP:**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	V	89.1	13.35	0.84	8.54	21.05	30	8.95
1710.7	H	88.3	12.55	0.84	8.54	20.25	30	9.75
16-QAM 1.4M BW Low Channel								
1710.7	V	89.34	13.59	0.84	8.54	21.29	30	8.71
1710.7	H	88.57	12.82	0.84	8.54	20.52	30	9.48
QPSK 3M BW Low Channel								
1711.5	V	89.66	13.91	0.84	8.54	21.61	30	8.39
1711.5	H	88.36	12.61	0.84	8.54	20.31	30	9.69
16-QAM 3M BW Low Channel								
1711.5	V	89.76	14.01	0.84	8.54	21.71	30	8.29
1711.5	H	88.05	12.3	0.84	8.54	20	30	10
QPSK 5M BW Low Channel								
1712.5	V	89.71	13.96	0.84	8.54	21.66	30	8.34
1712.5	H	88.08	12.33	0.84	8.54	20.03	30	9.97
16-QAM 5M BW Low Channel								
1712.5	V	89.46	13.71	0.84	8.54	21.41	30	8.59
1712.5	H	88.99	13.24	0.84	8.54	20.94	30	9.06
QPSK 10M BW Low Channel								
1715	V	89.68	13.93	0.84	8.54	21.63	30	8.37
1715	H	88.04	12.29	0.84	8.54	19.99	30	10.01
16-QAM 10M BW Low Channel								
1715	V	89.96	14.21	0.84	8.54	21.91	30	8.09
1715	H	88.57	12.82	0.84	8.54	20.52	30	9.48
QPSK 15M BW Low Channel								
1717.5	V	89.89	14.14	0.84	8.55	21.85	30	8.15
1717.5	H	88.16	12.41	0.84	8.55	20.12	30	9.88
16-QAM 15M BW Low Channel								
1717.5	V	89.74	13.99	0.84	8.55	21.7	30	8.3
1717.5	H	88.58	12.83	0.84	8.55	20.54	30	9.46

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	V	89.61	13.86	0.84	8.55	21.57	30	8.43
1720	H	88.89	13.14	0.84	8.55	20.85	30	9.15
16-QAM 20M BW Low Channel								
1720	V	89.03	13.28	0.84	8.55	20.99	30	9.01
1720	H	88.22	12.47	0.84	8.55	20.18	30	9.82

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	V	89.48	13.73	0.84	8.57	21.46	30	8.54
1732.5	H	88.31	12.56	0.84	8.57	20.29	30	9.71
16-QAM 1.4M BW Middle Channel								
1732.5	V	89.7	13.95	0.84	8.57	21.68	30	8.32
1732.5	H	88.12	12.37	0.84	8.57	20.1	30	9.9
QPSK 3M BW Middle Channel								
1732.5	V	89.36	13.61	0.84	8.57	21.34	30	8.66
1732.5	H	88.04	12.29	0.84	8.57	20.02	30	9.98
16-QAM 3M BW Middle Channel								
1732.5	V	89.07	13.32	0.84	8.57	21.05	30	8.95
1732.5	H	88.34	12.59	0.84	8.57	20.32	30	9.68
QPSK 5M BW Middle Channel								
1732.5	V	89.47	13.72	0.84	8.57	21.45	30	8.55
1732.5	H	88.08	12.33	0.84	8.57	20.06	30	9.94
16-QAM 5M BW Middle Channel								
1732.5	V	89.41	13.66	0.84	8.57	21.39	30	8.61
1732.5	H	88.12	12.37	0.84	8.57	20.1	30	9.9
QPSK 10M BW Middle Channel								
1732.5	V	89.2	13.45	0.84	8.57	21.18	30	8.82
1732.5	H	88.35	12.6	0.84	8.57	20.33	30	9.67
16-QAM 10M BW Middle Channel								
1732.5	V	89.21	13.46	0.84	8.57	21.19	30	8.81
1732.5	H	88.93	13.18	0.84	8.57	20.91	30	9.09
QPSK 15M BW Middle Channel								
1732.5	V	89.4	13.65	0.84	8.57	21.38	30	8.62
1732.5	H	88.07	12.32	0.84	8.57	20.05	30	9.95
16-QAM 15M BW Middle Channel								
1732.5	V	89.46	13.71	0.84	8.57	21.44	30	8.56
1732.5	H	88.36	12.61	0.84	8.57	20.34	30	9.66

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	V	89.64	13.89	0.84	8.57	21.62	30	8.38
1732.5	H	88.09	12.34	0.84	8.57	20.07	30	9.93
16-QAM 20M BW Middle Channel								
1732.5	V	89.44	13.69	0.84	8.57	21.42	30	8.58
1732.5	H	88.25	12.5	0.84	8.57	20.23	30	9.77

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								
1754.3	V	89.52	13.77	0.84	8.61	21.54	30	8.46
1754.3	H	88.85	13.1	0.84	8.61	20.87	30	9.13
16-QAM 1.4M BW High Channel								
1754.3	V	89.45	13.7	0.84	8.61	21.47	30	8.53
1754.3	H	88.15	12.4	0.84	8.61	20.17	30	9.83
QPSK 3M BW High Channel								
1753.5	V	89.95	14.2	0.84	8.6	21.96	30	8.04
1753.5	H	88.87	13.12	0.84	8.6	20.88	30	9.12
16-QAM 3M BW High Channel								
1753.5	V	89.75	14	0.84	8.6	21.76	30	8.24
1753.5	H	88.12	12.37	0.84	8.6	20.13	30	9.87
QPSK 5M BW High Channel								
1752.5	V	89.05	13.3	0.84	8.6	21.06	30	8.94
1752.5	H	88.63	12.88	0.84	8.6	20.64	30	9.36
16-QAM 5M BW High Channel								
1752.5	V	89.36	13.61	0.84	8.6	21.37	30	8.63
1752.5	H	88.26	12.51	0.84	8.6	20.27	30	9.73
QPSK 10M BW High Channel								
1750	V	89.78	14.03	0.84	8.6	21.79	30	8.21
1750	H	88.88	13.13	0.84	8.6	20.89	30	9.11
16-QAM 10M BW High Channel								
1750	V	89.14	13.39	0.84	8.6	21.15	30	8.85
1750	H	88.59	12.84	0.84	8.6	20.6	30	9.4
QPSK 15M BW High Channel								
1747.5	V	89.19	13.44	0.84	8.6	21.2	30	8.8
1747.5	H	88.05	12.3	0.84	8.6	20.06	30	9.94
16-QAM 15M BW High Channel								
1747.5	V	89.6	13.85	0.84	8.6	21.61	30	8.39
1747.5	H	88.5	12.75	0.84	8.6	20.51	30	9.49

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 20M BW High Channel								
1745	V	89.1	13.35	0.84	8.59	21.1	30	8.9
1745	H	88.78	13.03	0.84	8.59	20.78	30	9.22
16-QAM 20M BW High Channel								
1745	V	89.09	13.34	0.84	8.59	21.09	30	8.91
1745	H	88.6	12.85	0.84	8.59	20.6	30	9.4

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	V	88.88	25.24	0.62	-1.75	22.87	34.77	11.9
699.7	H	86.09	22.45	0.62	-1.75	20.08	34.77	14.69
16-QAM 1.4M BW Low Channel								
699.7	V	88.43	24.79	0.62	-1.75	22.42	34.77	12.35
699.7	H	86.35	22.71	0.62	-1.75	20.34	34.77	14.43
QPSK 3M BW Low Channel								
700.5	V	88.28	24.64	0.62	-1.75	22.27	34.77	12.5
700.5	H	86.47	22.83	0.62	-1.75	20.46	34.77	14.31
16-QAM 3M BW Low Channel								
700.5	V	88.68	25.04	0.62	-1.75	22.67	34.77	12.1
700.5	H	86.99	23.35	0.62	-1.75	20.98	34.77	13.79
QPSK 5M BW Low Channel								
701.5	V	88.69	25.05	0.62	-1.74	22.69	34.77	12.08
701.5	H	86.69	23.05	0.62	-1.74	20.69	34.77	14.08
16-QAM 5M BW Low Channel								
701.5	V	88.25	24.61	0.62	-1.74	22.25	34.77	12.52
701.5	H	86.4	22.76	0.62	-1.74	20.4	34.77	14.37
QPSK 10M BW Low Channel								
704	V	88.03	24.39	0.62	-1.73	22.04	34.77	12.73
704	H	86.59	22.95	0.62	-1.73	20.6	34.77	14.17
16-QAM 10M BW Low Channel								
704	V	88.36	24.72	0.62	-1.73	22.37	34.77	12.4
704	H	86.93	23.29	0.62	-1.73	20.94	34.77	13.83

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 1.4M BW Middle Channel								
707.5	V	88.64	25.15	0.62	-1.71	22.82	34.77	11.95
707.5	H	86.87	23.38	0.62	-1.71	21.05	34.77	13.72
16-QAM 1.4M BW Middle Channel								
707.5	V	88.78	25.29	0.62	-1.71	22.96	34.77	11.81
707.5	H	86.78	23.29	0.62	-1.71	20.96	34.77	13.81
QPSK 3M BW Middle Channel								
707.5	V	88.91	25.42	0.62	-1.71	23.09	34.77	11.68
707.5	H	86.41	22.92	0.62	-1.71	20.59	34.77	14.18
16-QAM 3M BW Middle Channel								
707.5	V	88.68	25.19	0.62	-1.71	22.86	34.77	11.91
707.5	H	86.94	23.45	0.62	-1.71	21.12	34.77	13.65
QPSK 5M BW Middle Channel								
707.5	V	88.2	24.71	0.62	-1.71	22.38	34.77	12.39
707.5	H	86.17	22.68	0.62	-1.71	20.35	34.77	14.42
16-QAM 5M BW Middle Channel								
707.5	V	88.49	25	0.62	-1.71	22.67	34.77	12.1
707.5	H	86.21	22.72	0.62	-1.71	20.39	34.77	14.38
QPSK 10M BW Middle Channel								
707.5	V	88.7	25.21	0.62	-1.71	22.88	34.77	11.89
707.5	H	86.96	23.47	0.62	-1.71	21.14	34.77	13.63
16-QAM 10M BW Middle Channel								
707.5	V	88.91	25.42	0.62	-1.71	23.09	34.77	11.68
707.5	H	86.58	23.09	0.62	-1.71	20.76	34.77	14.01

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								
715.3	V	88.89	24.97	0.62	-1.67	22.68	34.77	12.09
715.3	H	86.21	22.29	0.62	-1.67	20	34.77	14.77
16-QAM 1.4M BW High Channel								
715.3	V	88.11	24.19	0.62	-1.67	21.9	34.77	12.87
715.3	H	86.86	22.94	0.62	-1.67	20.65	34.77	14.12
QPSK 3M BW High Channel								
714.5	V	88.03	24.11	0.62	-1.68	21.81	34.77	12.96
714.5	H	86.69	22.77	0.62	-1.68	20.47	34.77	14.3
16-QAM 3M BW High Channel								
714.5	V	88.38	24.46	0.62	-1.68	22.16	34.77	12.61
714.5	H	86.93	23.01	0.62	-1.68	20.71	34.77	14.06
QPSK 5M BW High Channel								
713.5	V	88.67	24.75	0.62	-1.68	22.45	34.77	12.32
713.5	H	86.43	22.51	0.62	-1.68	20.21	34.77	14.56
16-QAM 5M BW High Channel								
713.5	V	88.59	24.67	0.62	-1.68	22.37	34.77	12.4
713.5	H	86.53	22.61	0.62	-1.68	20.31	34.77	14.46
QPSK 10M BW High Channel								
711	V	88.15	24.23	0.62	-1.7	21.91	34.77	12.86
711	H	86	22.08	0.62	-1.7	19.76	34.77	15.01
16-QAM 10M BW High Channel								
711	V	88.08	24.16	0.62	-1.7	21.84	34.77	12.93
711	H	86.33	22.41	0.62	-1.7	20.09	34.77	14.68

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

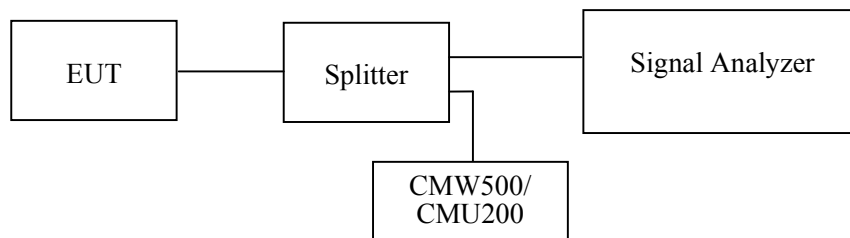
Applicable Standards

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 50 kHz (WCDMA)&30/100/300kHz(LTE), and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

Temperature:	23.2°C-23.5°C
Relative Humidity:	51 %-53%
ATM Pressure:	101.1kPa-103.3kPa

The testing was performed by Tyrone Wang from 2021-01-28 to 2021-02-18.

EUT operation mode: Transmitting

Test Result: Compliance.

WCDMA Band V

Mode	26 dB Emission Bandwidth (MHz)			99% Occupied Bandwidth (MHz)		
	Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
WCDMA (Rel 99)	4.71	4.71	4.73	4.15	4.15	4.15
WCDMA (HSDPA)	4.71	4.71	4.73	4.13	4.13	4.13
WCDMA (HSUPA)	4.71	4.70	4.73	4.15	4.15	4.13
WCDMA (HSPA+)	4.71	4.70	4.71	4.15	4.15	4.13

WCDMA Band II

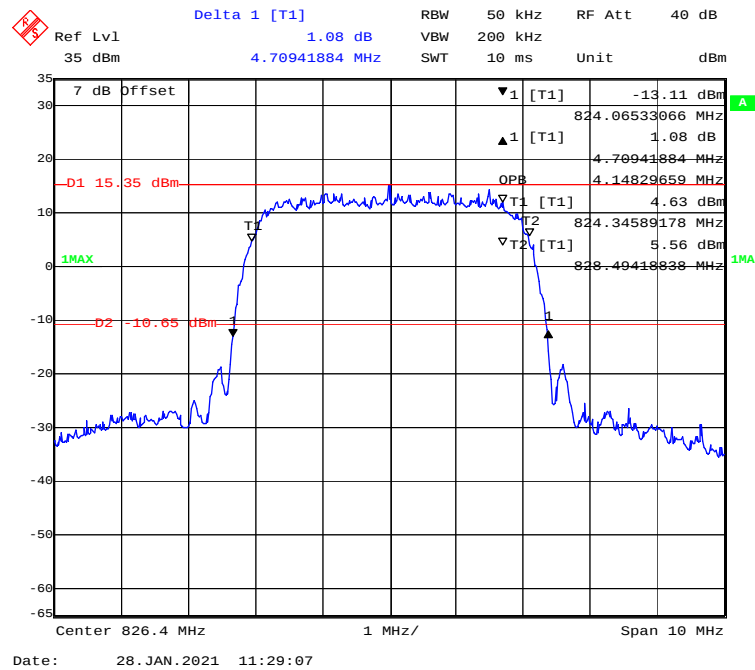
Mode	26 dB Emission Bandwidth (MHz)			99% Occupied Bandwidth (MHz)		
	Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
WCDMA (Rel 99)	4.71	4.73	4.69	4.15	4.15	4.13
WCDMA (HSDPA)	4.73	4.75	4.69	4.13	4.15	4.13
WCDMA (HSUPA)	4.73	4.73	4.71	4.13	4.15	4.15
WCDMA (HSPA+)	4.71	4.73	4.73	4.11	4.13	4.15

WCDMA Band IV

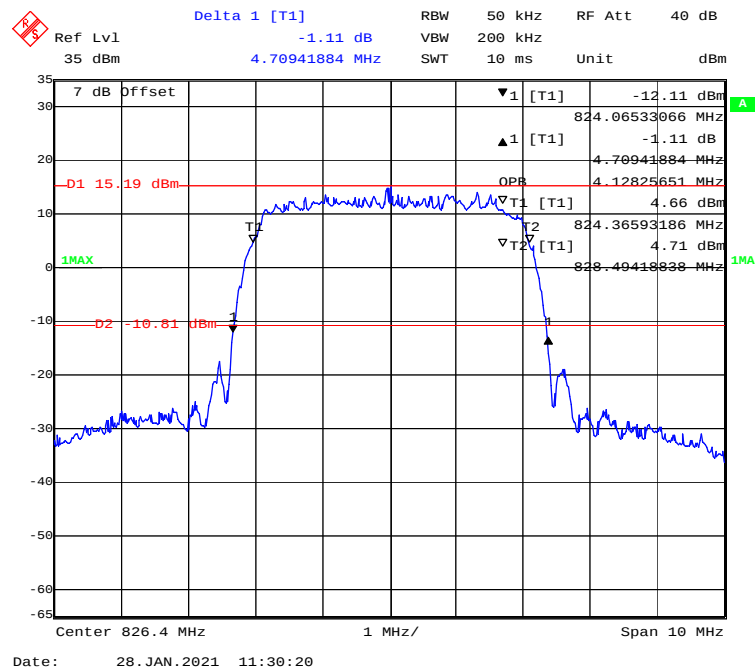
Mode	26 dB Emission Bandwidth (MHz)			99% Occupied Bandwidth (MHz)		
	Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
WCDMA (Rel 99)	4.81	4.75	4.73	4.17	4.17	4.13
WCDMA (HSDPA)	4.77	4.77	4.73	4.15	4.15	4.15
WCDMA (HSUPA)	4.73	4.77	4.77	4.17	4.15	4.15
WCDMA (HSPA+)	4.75	4.77	4.77	4.17	4.17	4.17

WCDMA Band V

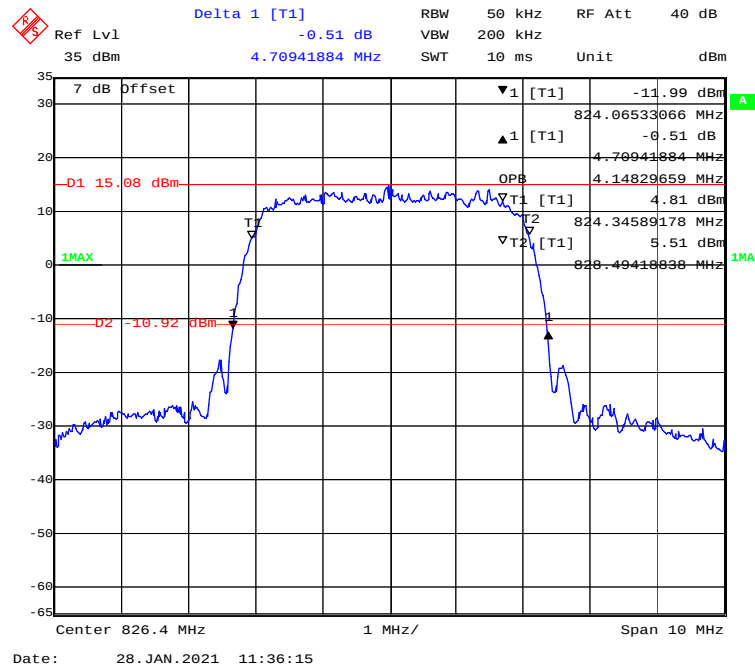
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, Low Channel



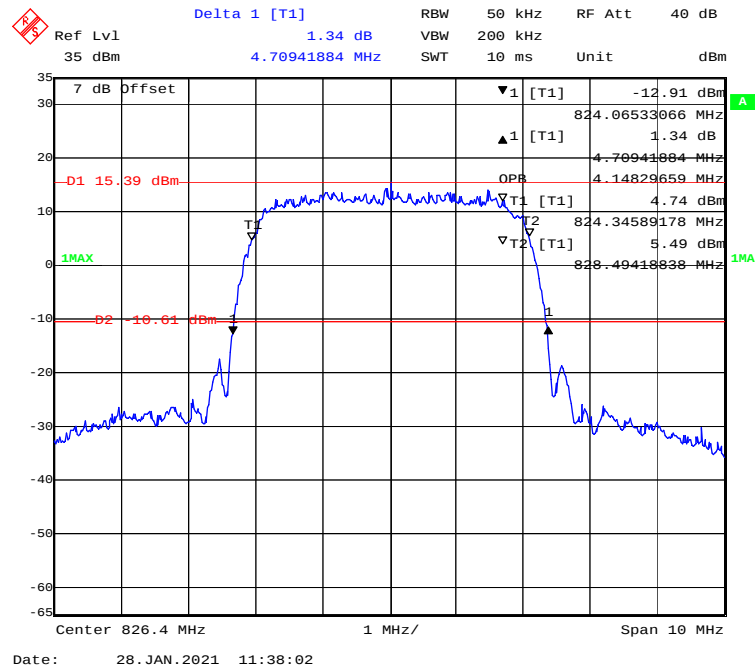
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, Low Channel



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

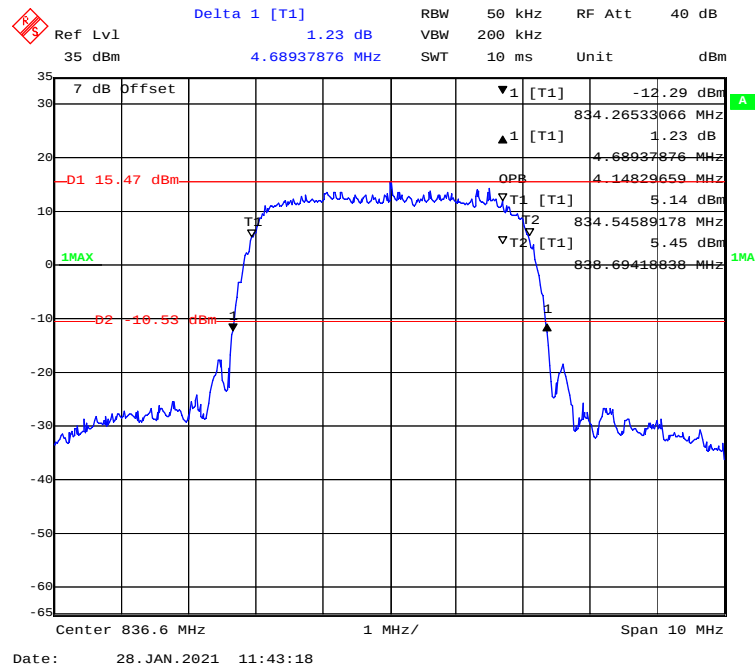


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Low Channel

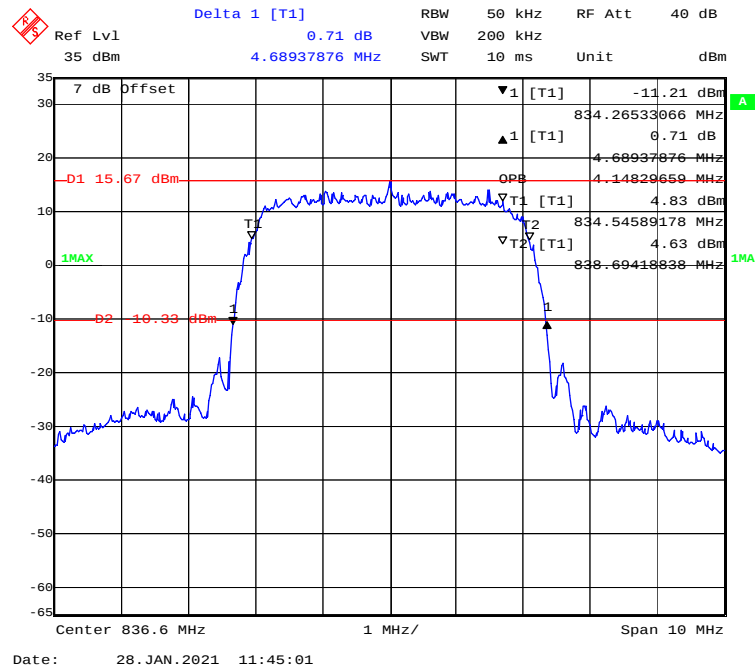


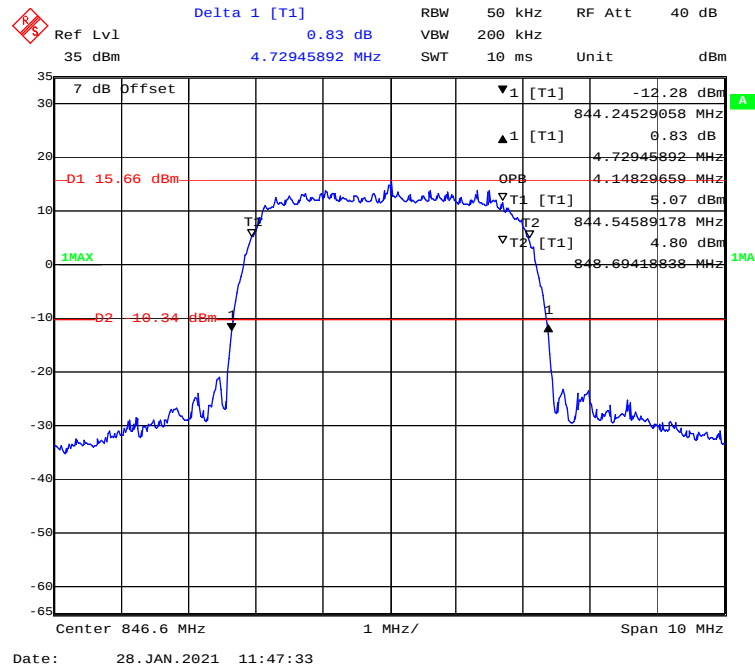
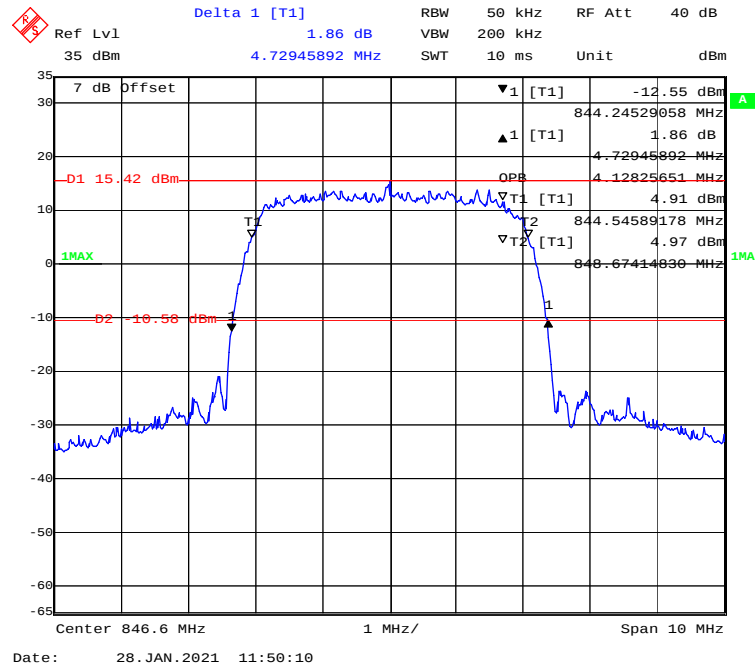
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99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode, Middle Channel

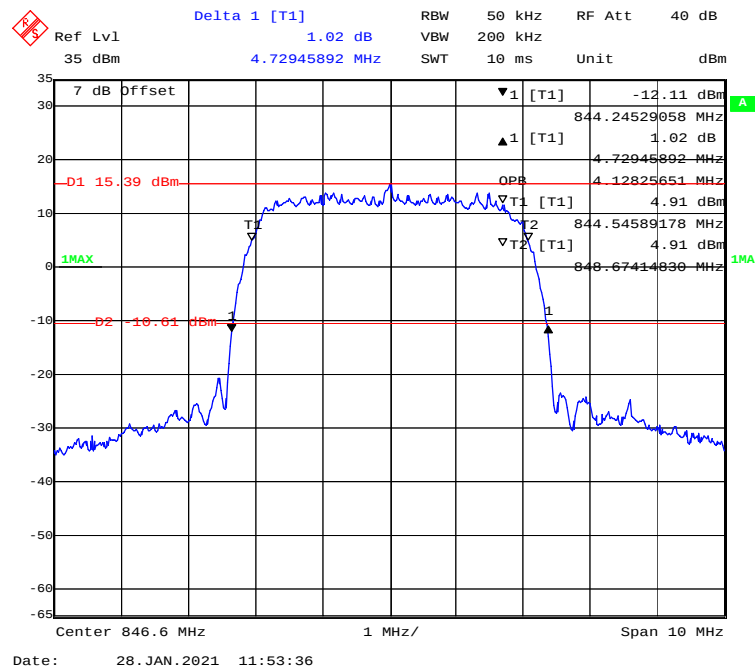


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Middle Channel

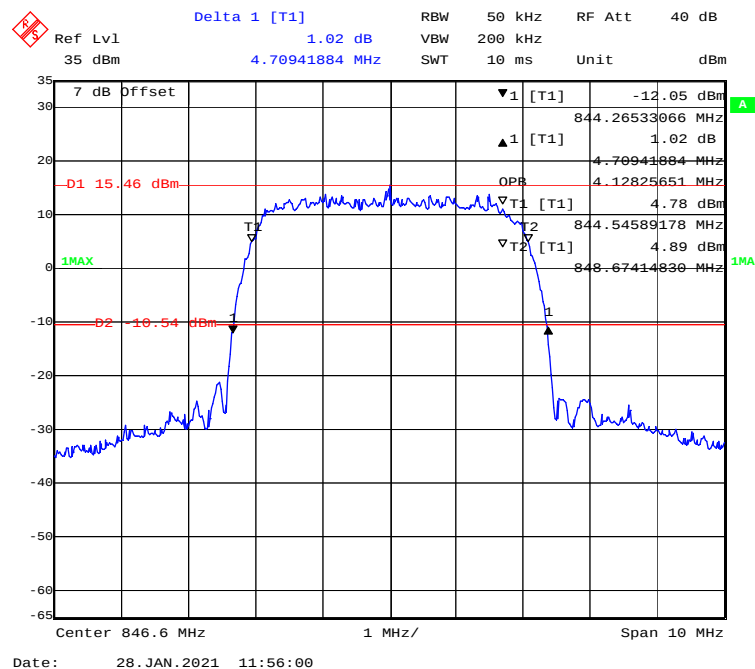


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, High Channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, High Channel**

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

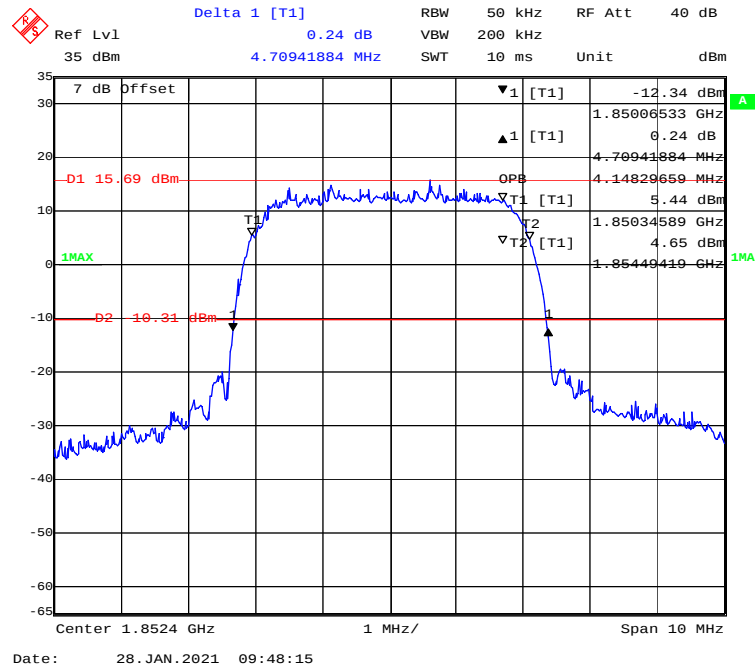


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, High Channel

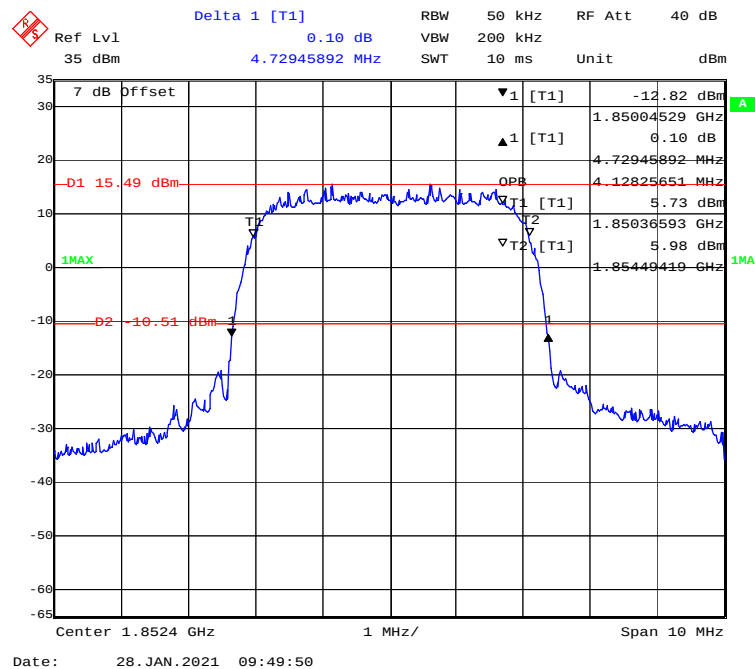


WCDMA Band II

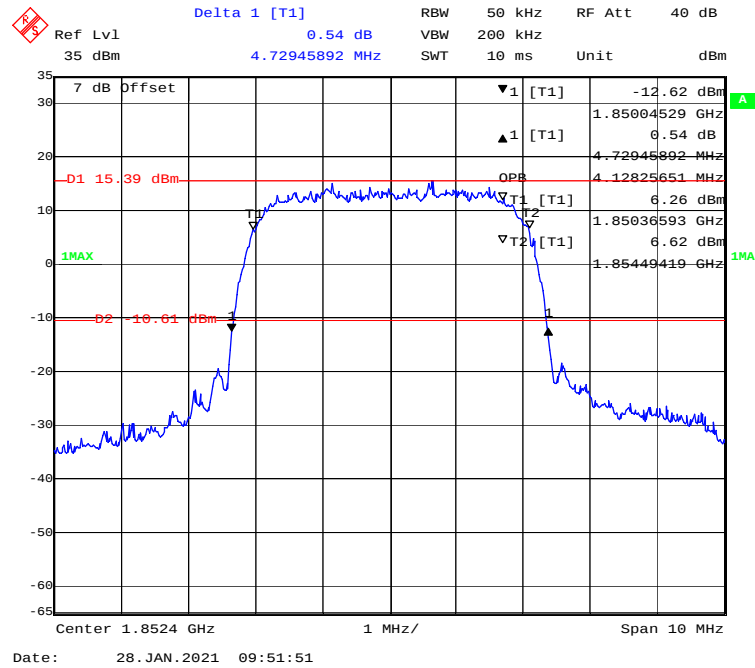
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, Low Channel



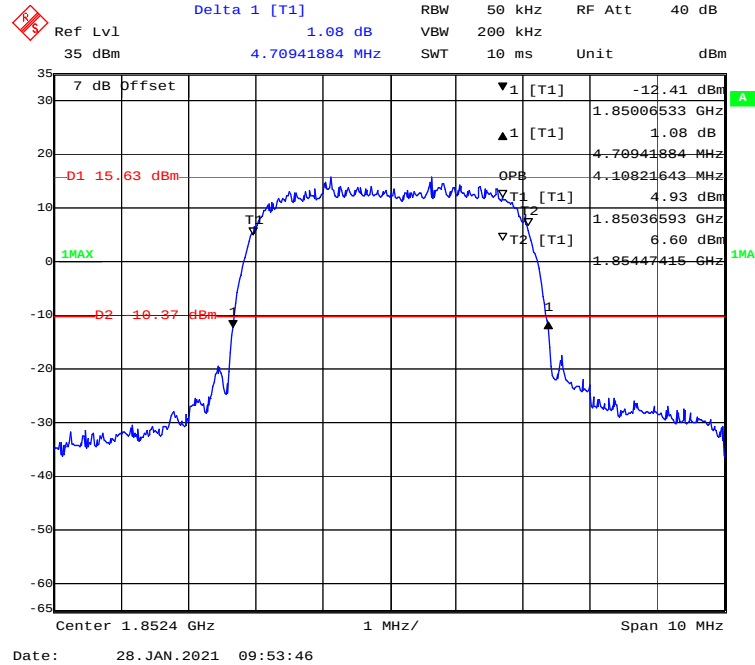
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, Low Channel

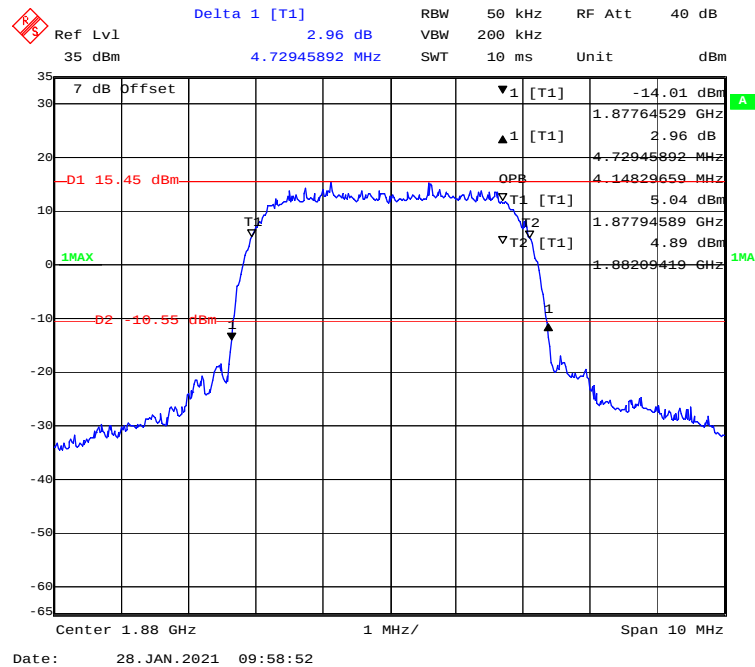
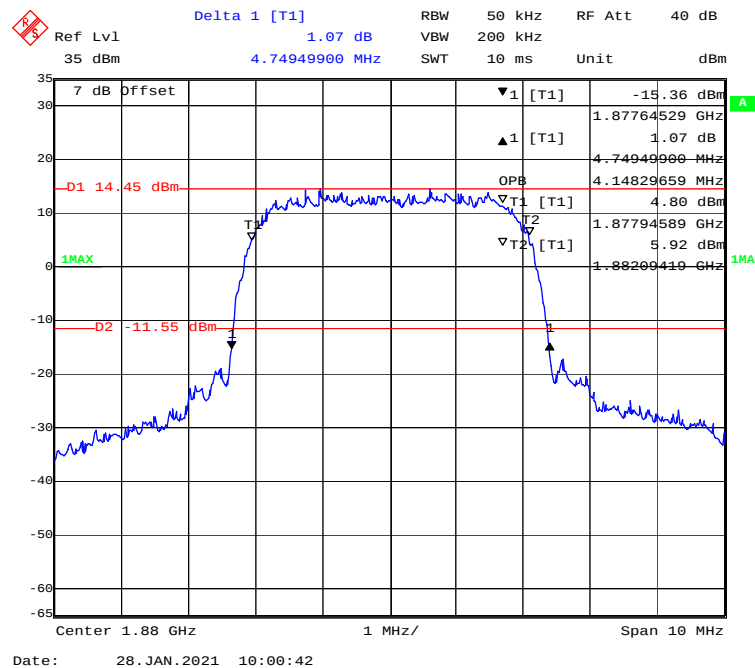


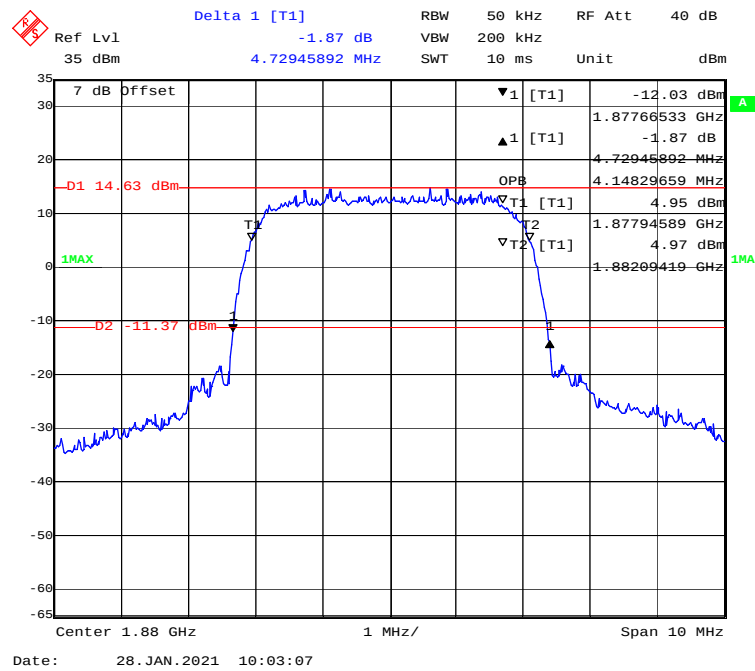
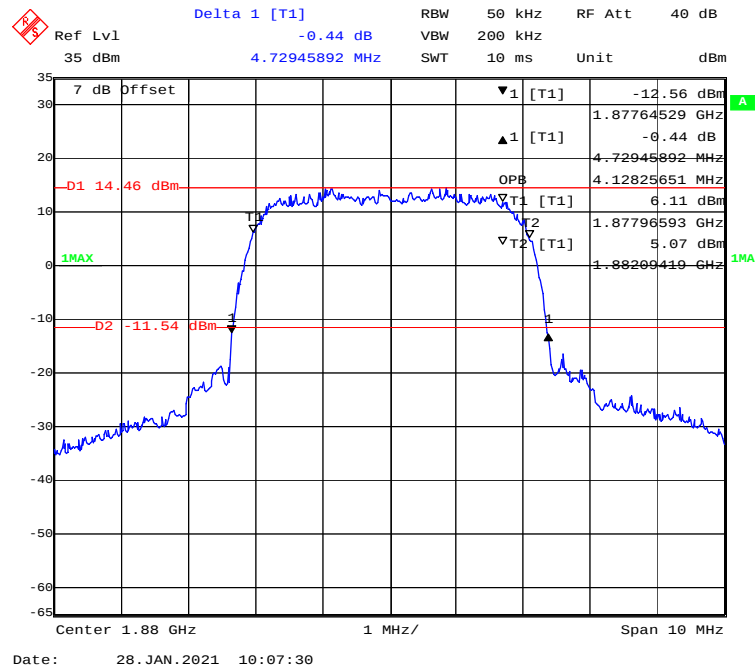
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode, Low Channel

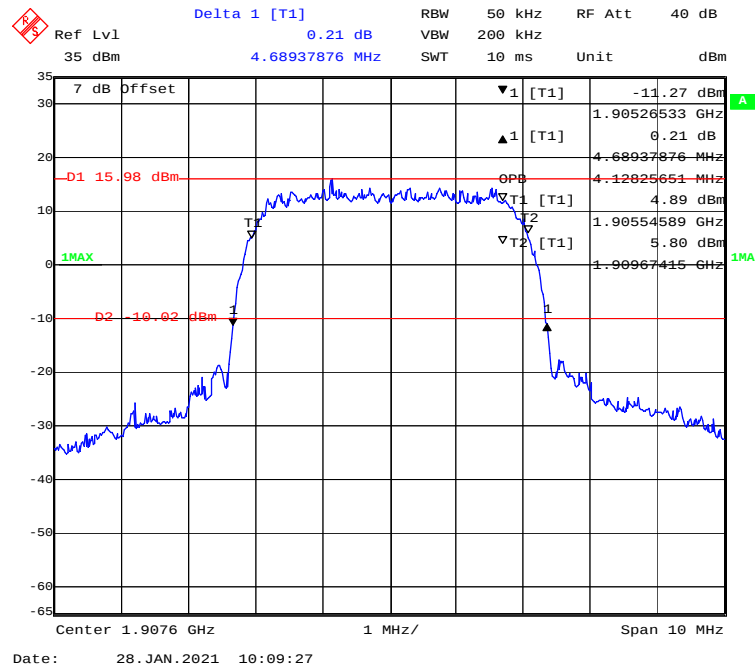
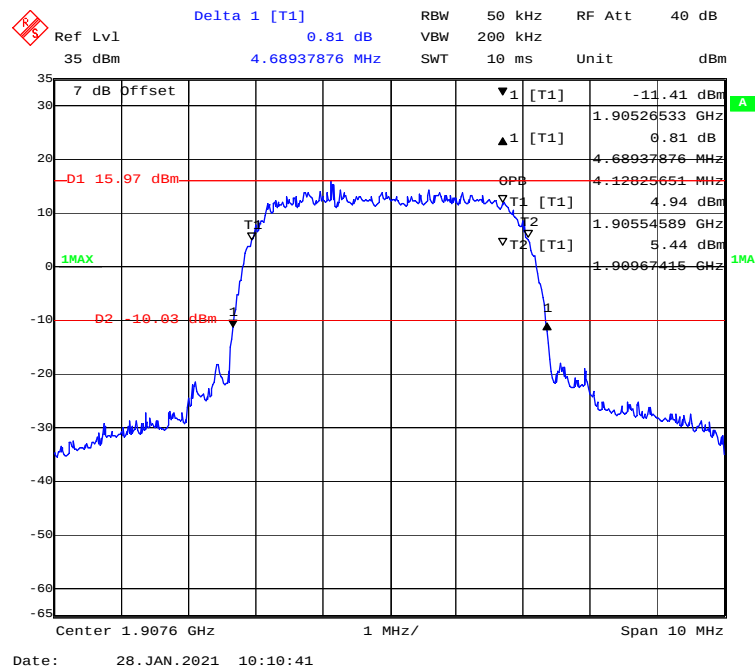


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Low Channel

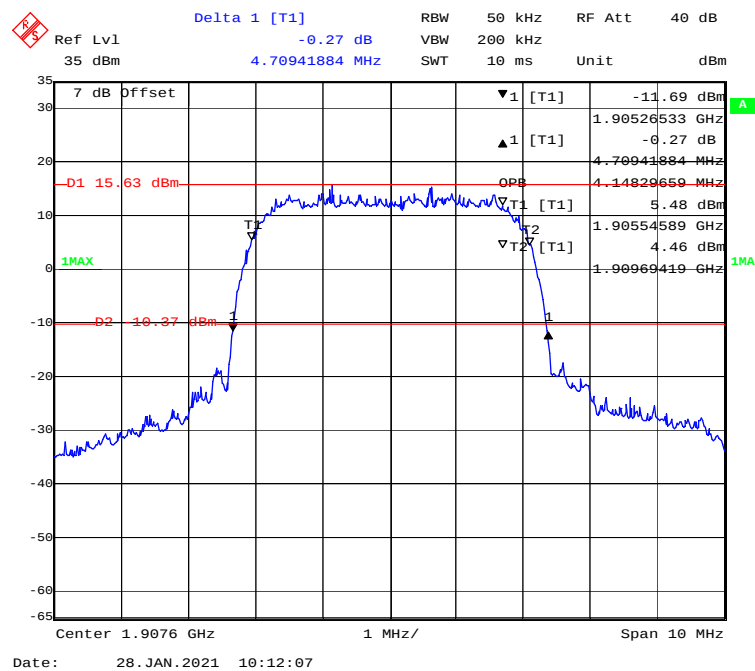


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, Middle Channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, Middle Channel**

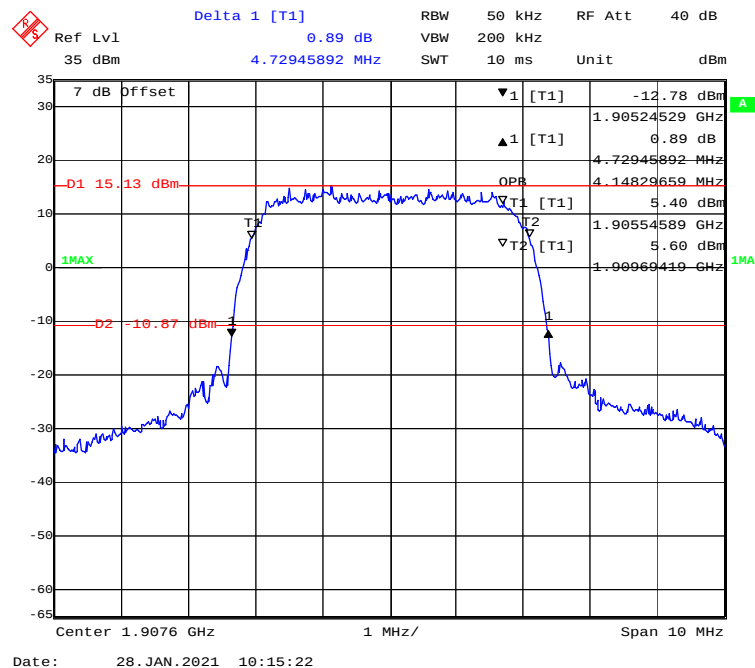
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode, Middle Channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, Middle Channel**

99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, High Channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, High Channel**

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

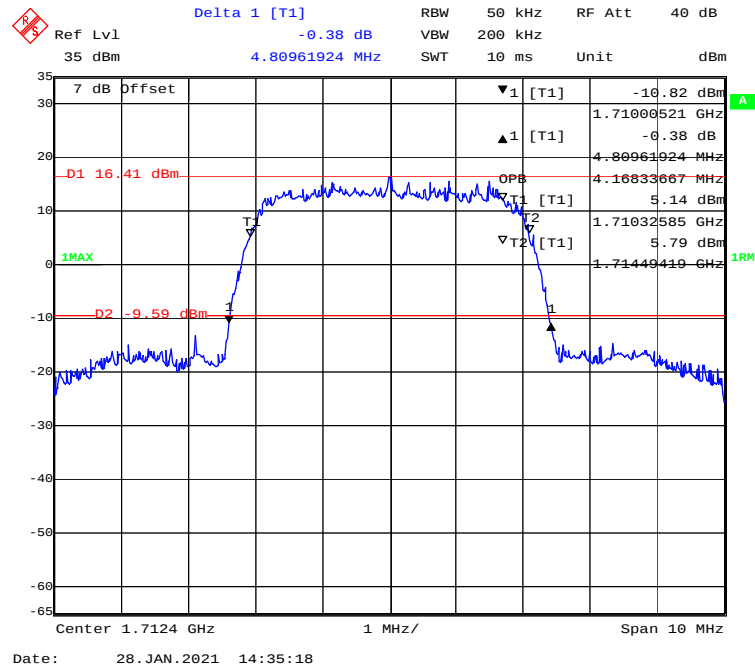


99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, High Channel

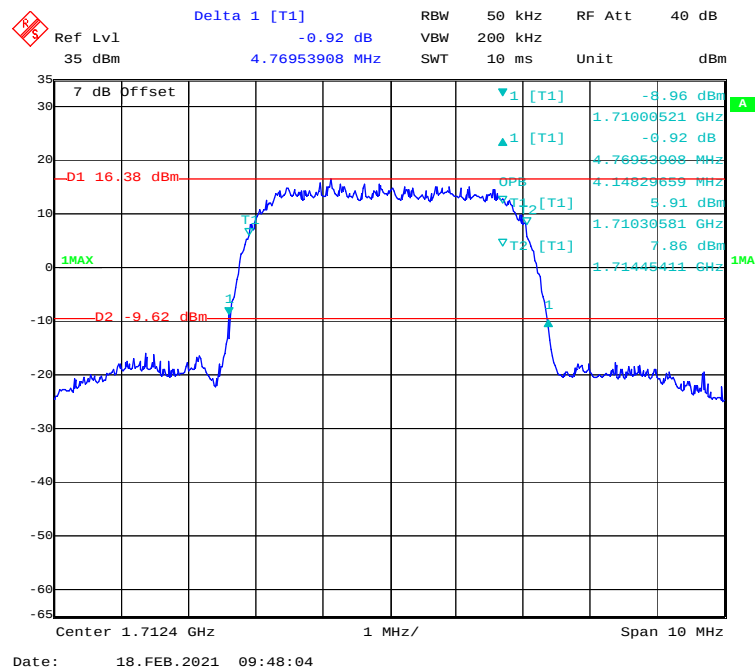


WCDMA Band IV

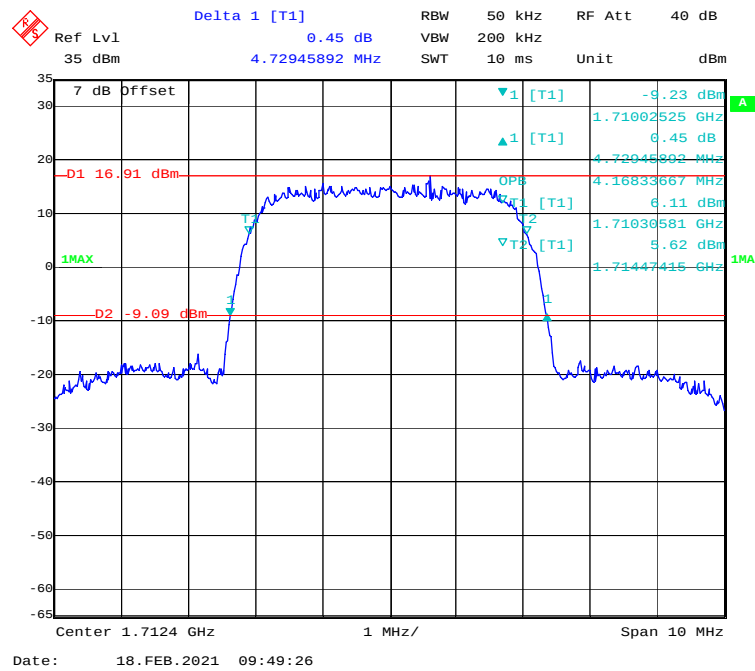
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, Low Channel



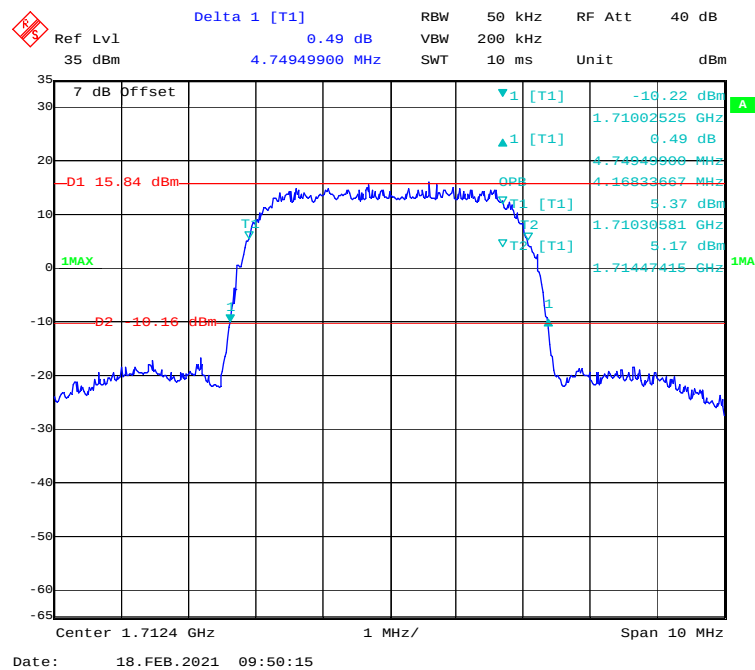
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, Low Channel



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



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



[illegible]

Delta 1 [T1] -0.28 dB

Ref Lvl 35 dBm

RBW 50 kHz

VBW 200 kHz

SWT 10 ms

RF Att 40 dB

Unit dBm

7 dB Offset

D1 16.14 dBm

D2 -9.86 dBm

1MAX

1RM

▼1 [T1] -11.50 dBm

▲1 [T1] -0.28 dB

4.76953908 MHz

4.14829659 MHz

1.73022545 GHz

1.73054609 GHz

1.73469439 GHz

Center 1.7325 GHz

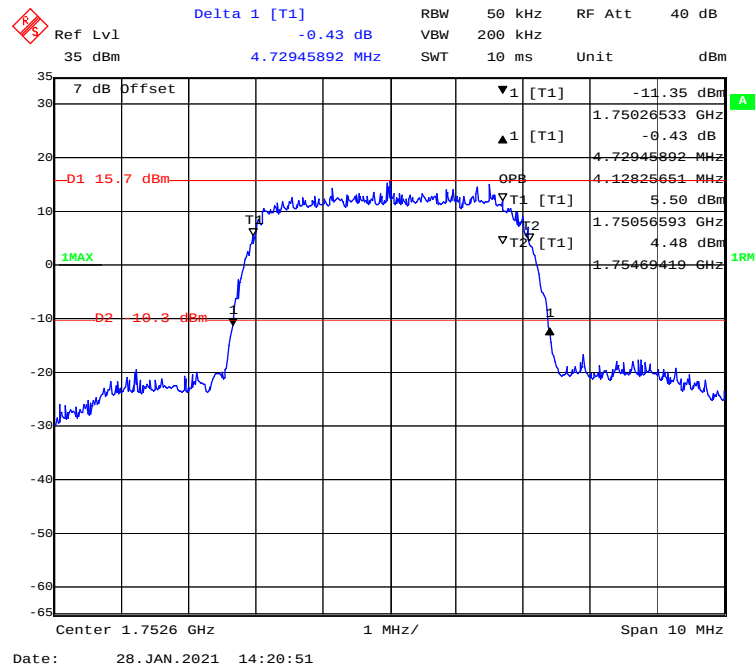
1 MHz/

Span 10 MHz

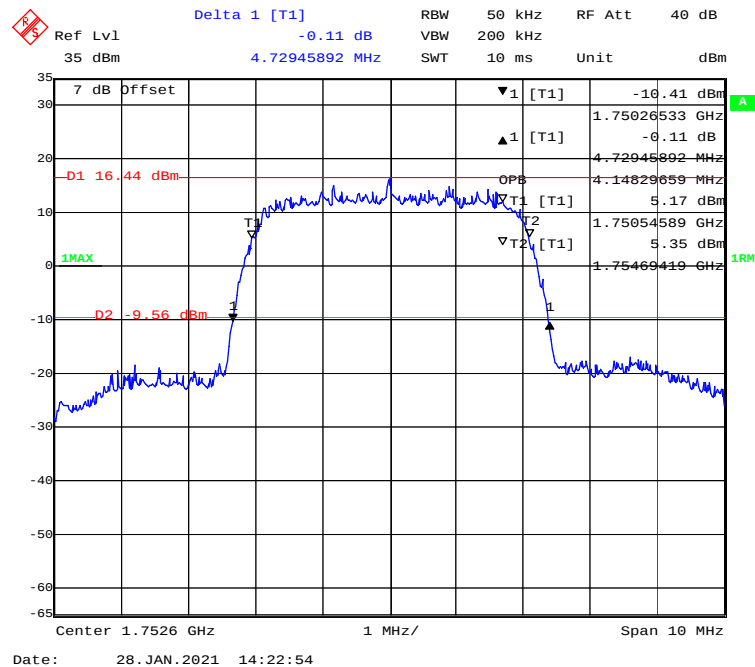
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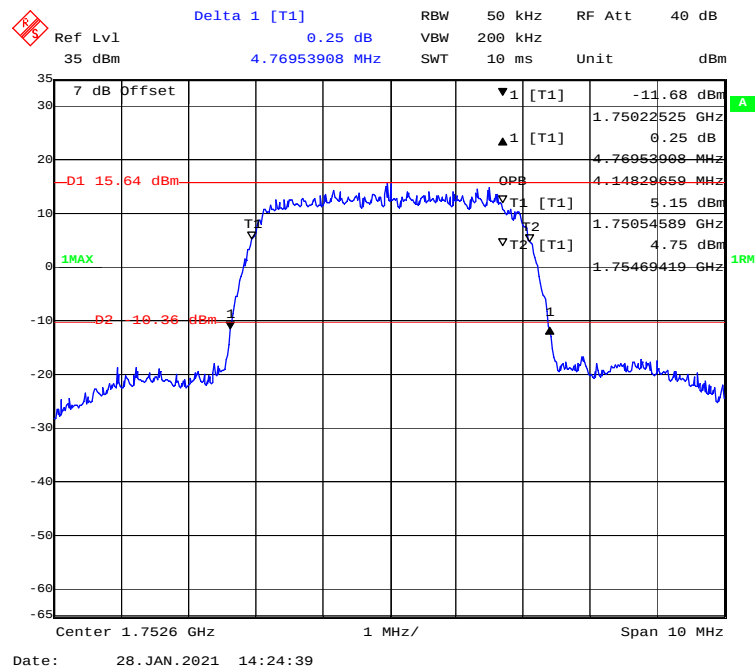
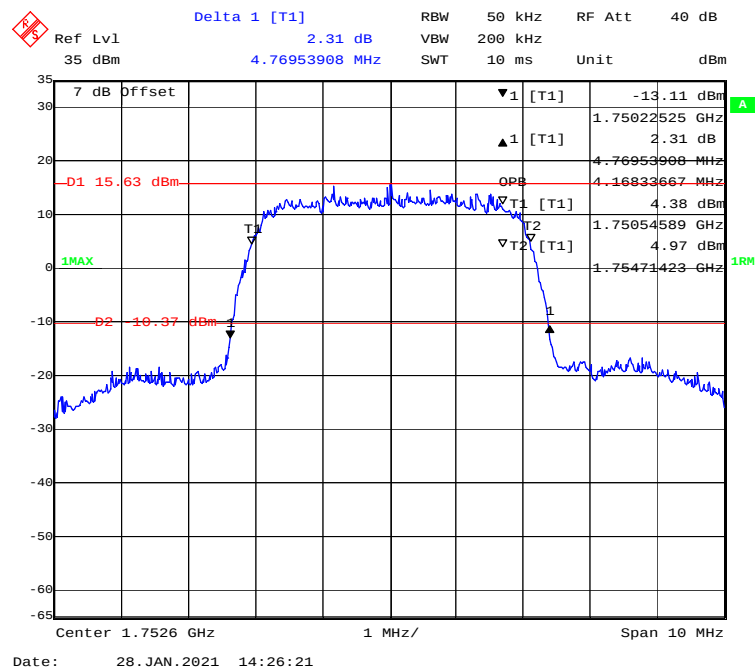
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99% Occupied & 26 dB Emissions Bandwidth for WCDMA (Rel 99) Mode, High Channel



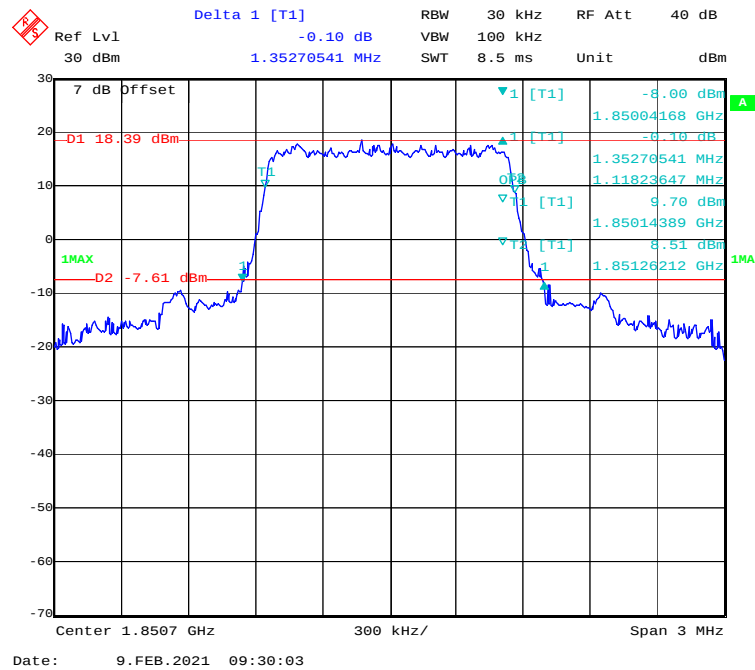
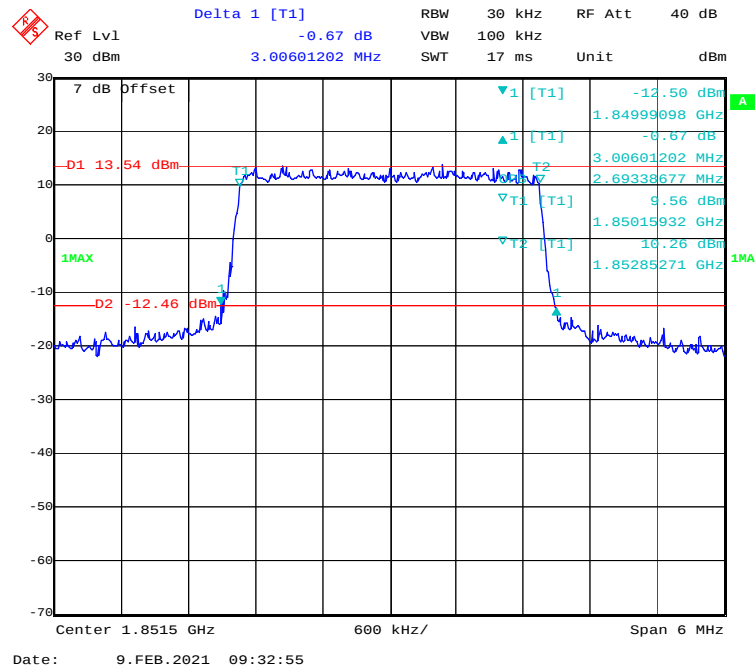
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSDPA) Mode, High Channel

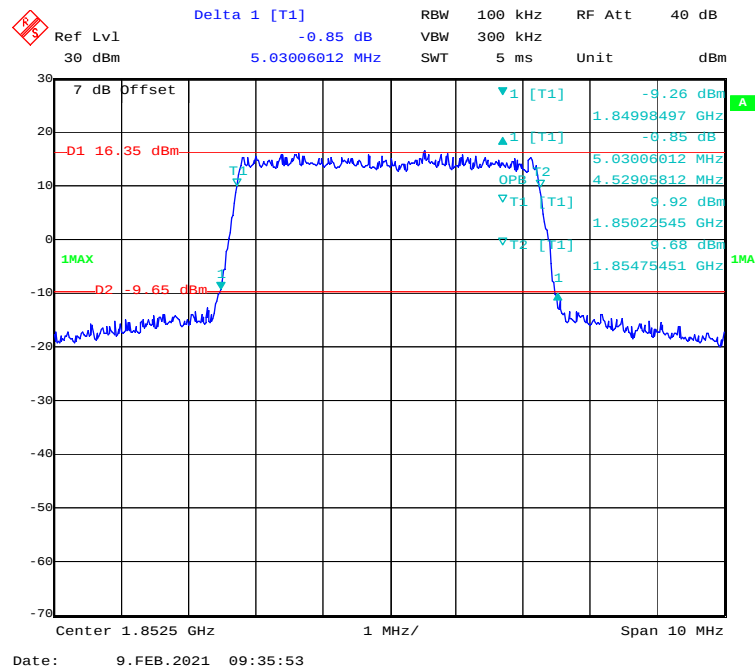
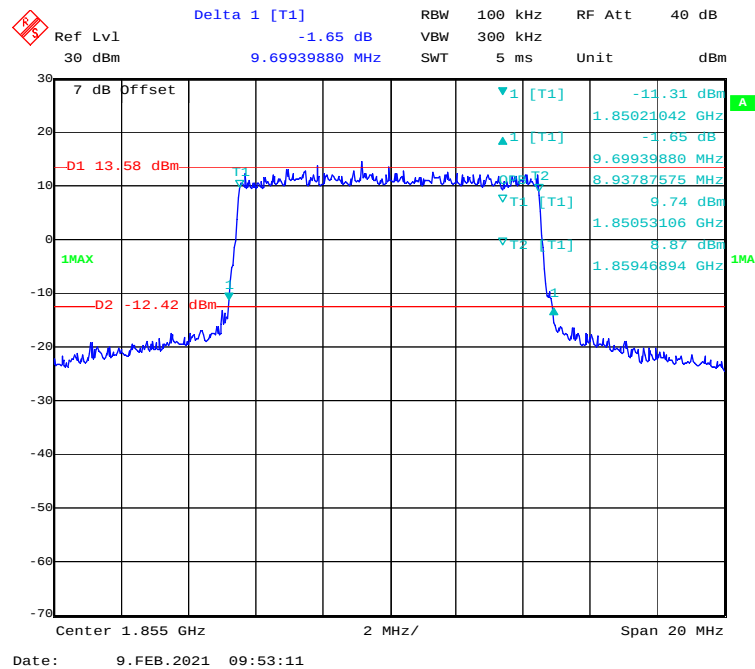


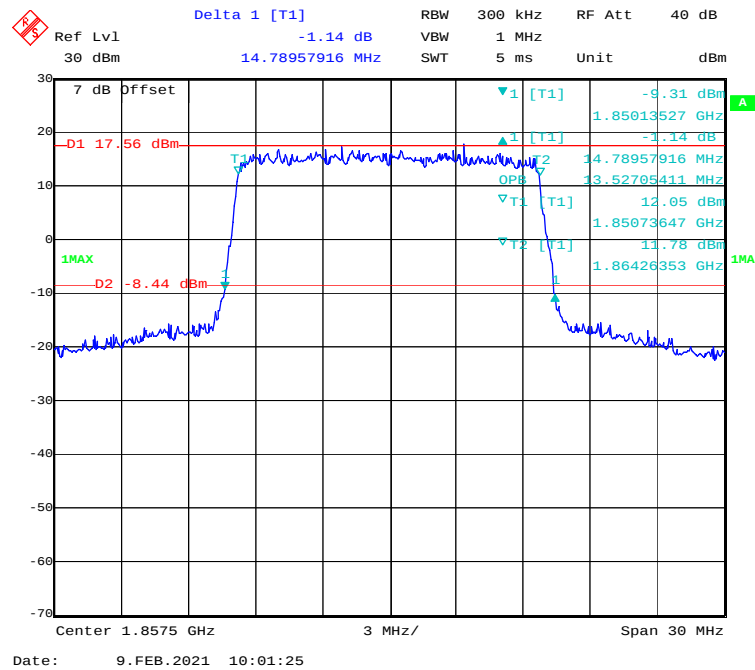
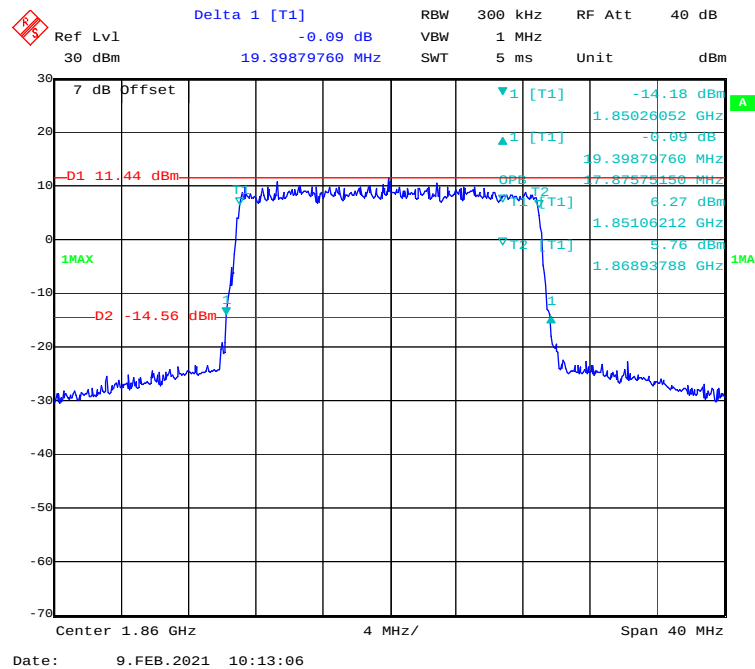
99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSUPA) Mode, High Channel**99% Occupied & 26 dB Emissions Bandwidth for WCDMA (HSPA+) Mode, High Channel**

LTE Band 2:

Test Modulation	Test Bandwidth	26 dB Bandwidth MHz			99% Occupied Bandwidth MHz		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
QPSK	1.4M	1.35	1.29	1.32	1.12	1.10	1.12
	3M	3.01	2.92	2.95	2.69	2.69	2.69
	5M	5.03	5.07	4.99	4.53	4.53	4.53
	10M	9.70	9.74	9.50	8.94	8.98	8.90
	15M	14.79	14.85	14.67	13.53	13.47	13.47
	20M	19.40	19.24	19.16	17.88	17.88	17.88
16-QAM	1.4M	1.34	1.30	1.32	1.12	1.11	1.11
	3M	2.97	2.96	2.96	2.69	2.69	2.69
	5M	5.05	5.01	4.97	4.55	4.53	4.53
	10M	9.66	9.74	9.62	8.98	8.94	8.94
	15M	14.79	14.79	14.67	13.53	13.47	13.53
	20M	19.56	19.32	19.40	17.96	17.96	17.96

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] -0.21 dB
 Ref Lvl 30 dBm
 RBW 30 kHz
 RF Att 40 dB
 SWT 8.5 ms
 Unit dBm

7 dB Offset
 D1 18.2 dBm
 D2 -7.8 dBm
 1MAX
 1MA

Center 1.8507 GHz
 300 kHz/
 Span 3 MHz

Date: 9.FEB.2021 09:30:33

Ref Lvl 30 dBm
30 dBm

Delta 1 [T1]
0.84 dB
2.96993988 MHz

RBW 30 kHz
SWT 17 ms

RF Att 40 dB
Unit dBm

7 dB Offset

D1 13.66 dBm

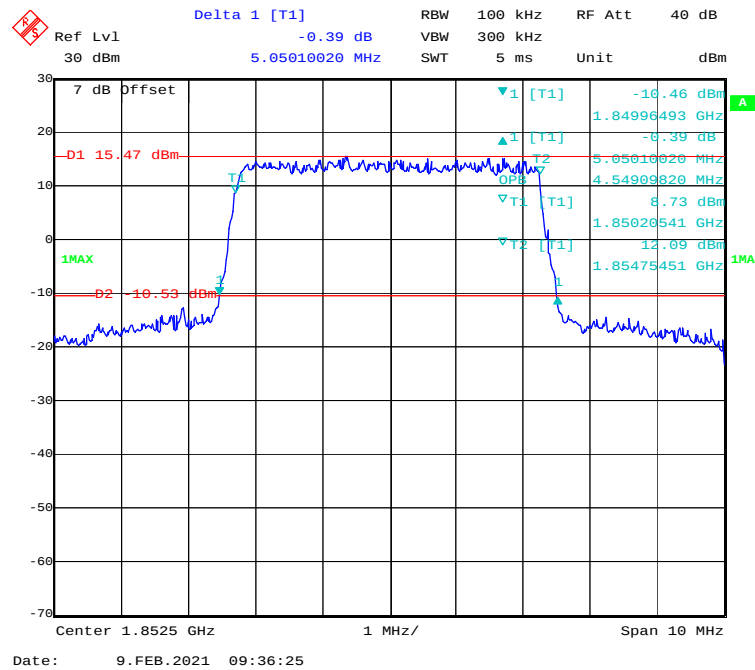
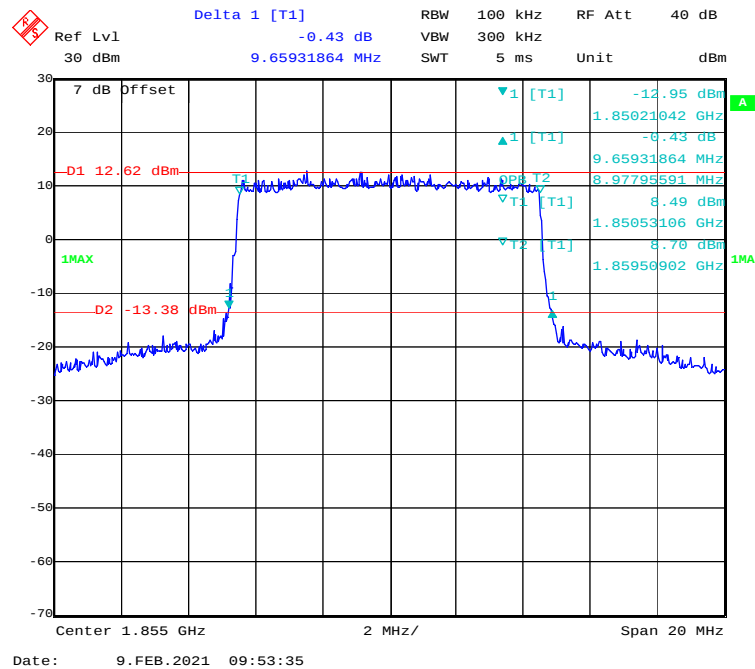
1MAX

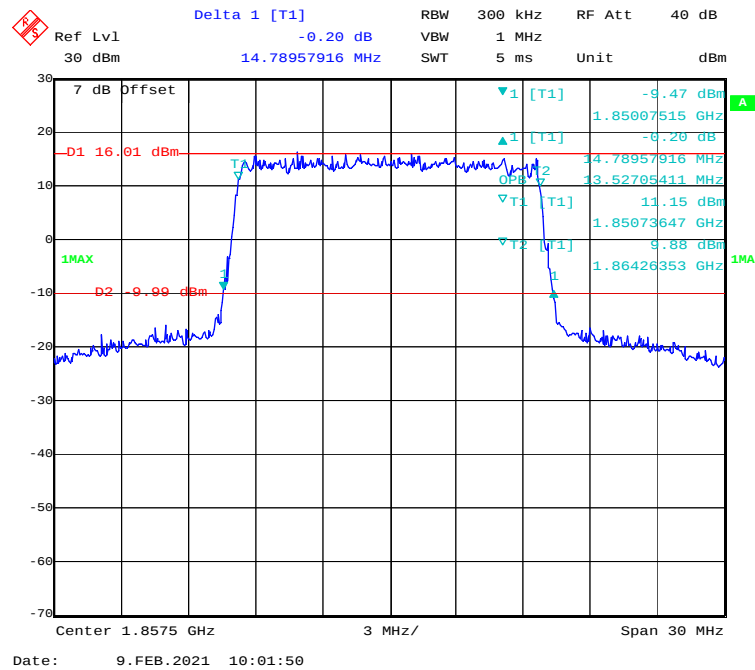
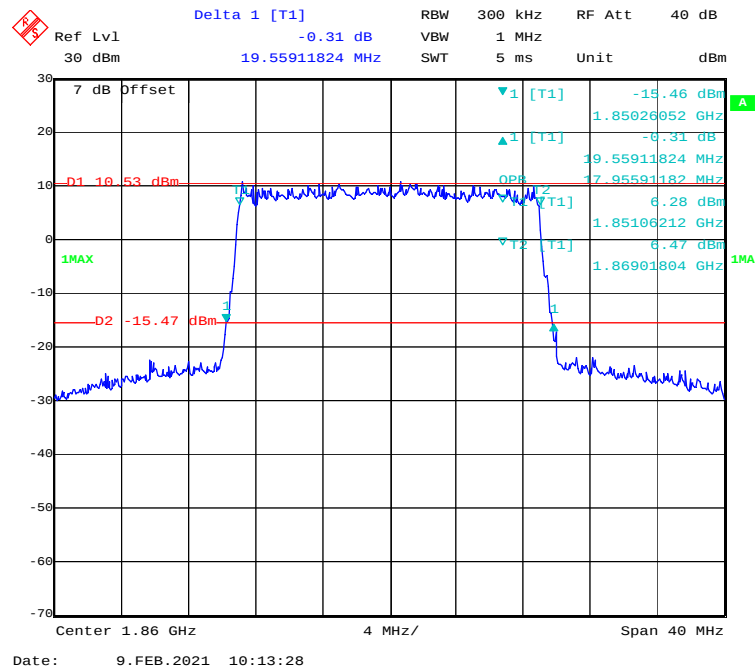
D2 -12.34 dBm

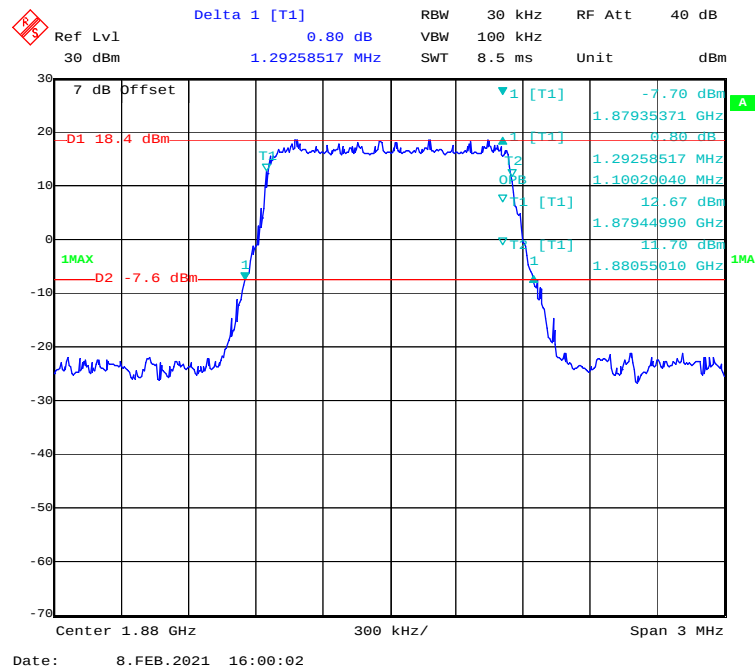
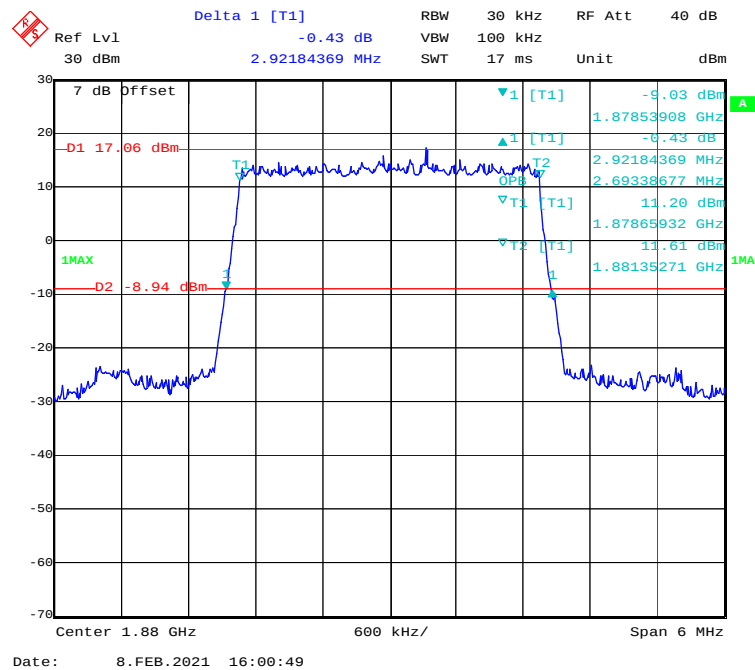
▼1 [T1] -12.17 dBm
1.85006301 GHz
▲1 [T1] 0.84 dB
2.96993988 MHz
▽T1 [T1] 16.25 dBm
2.69338677 MHz
▼T2 [T1] 1.85015932 GHz
7.05 dBm
1.85285271 GHz

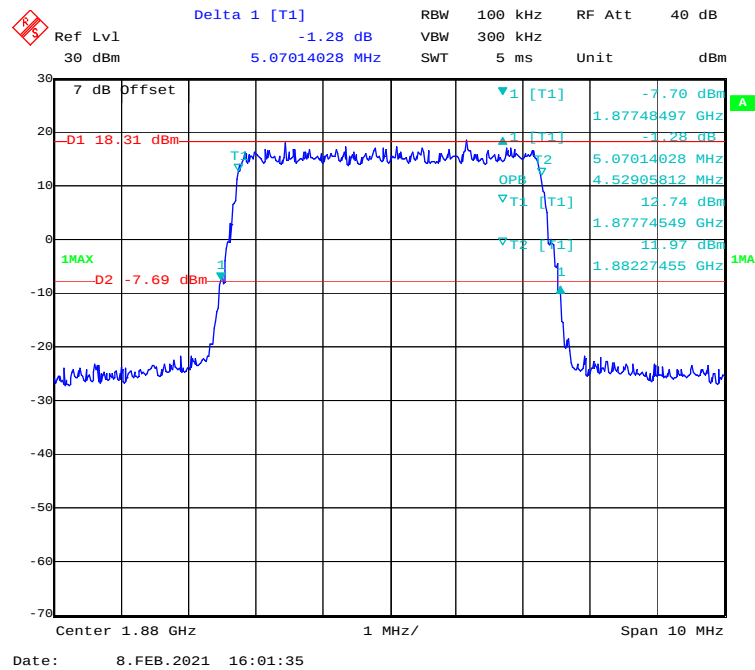
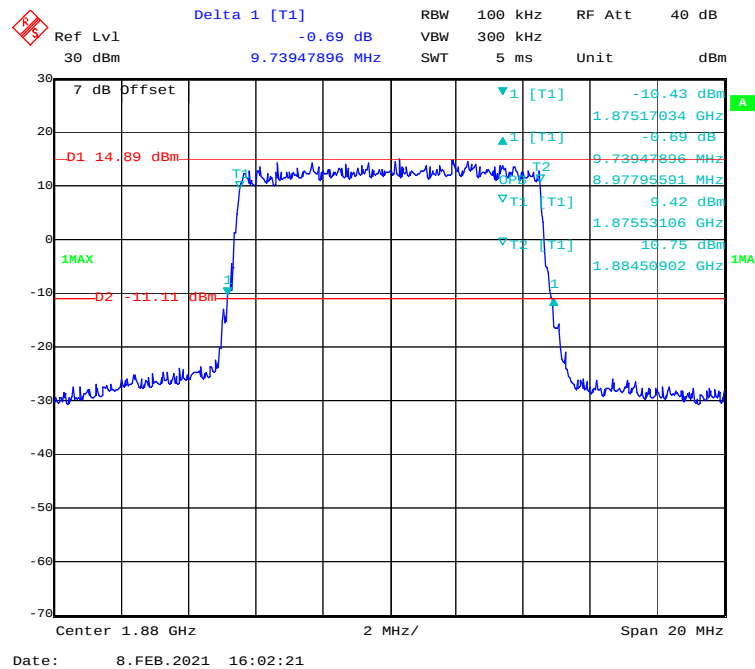
Center 1.8515 GHz
600 kHz/
Span 6 MHz

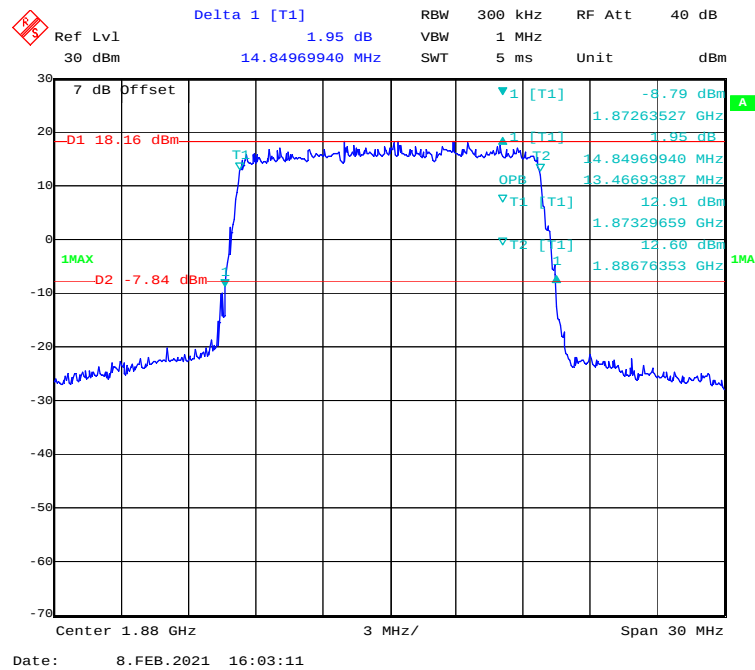
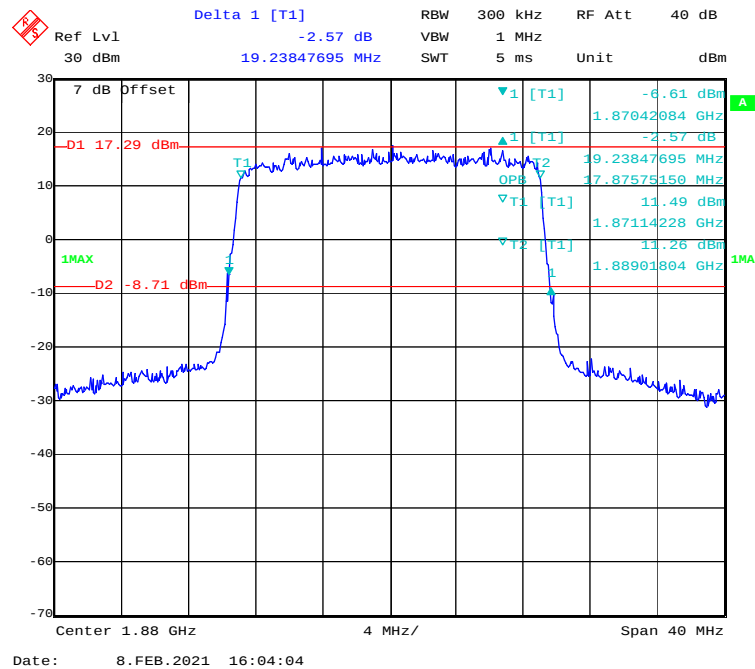
Date: 9.FEB.2021 09:33:14

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**

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

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**

Delta 1 [T1]

Ref Lvl 0.04 dB

30 dBm 1.30460922 MHz

RBW 30 kHz

SWT 8.5 ms

RF Att 40 dB

Unit dBm

7 dB Offset

D1 18.94 dBm

1MAX

D2 -7.06 dBm

T1

T2

T3

T4

T5

T6

T7

T8

T9

T10

T11

T12

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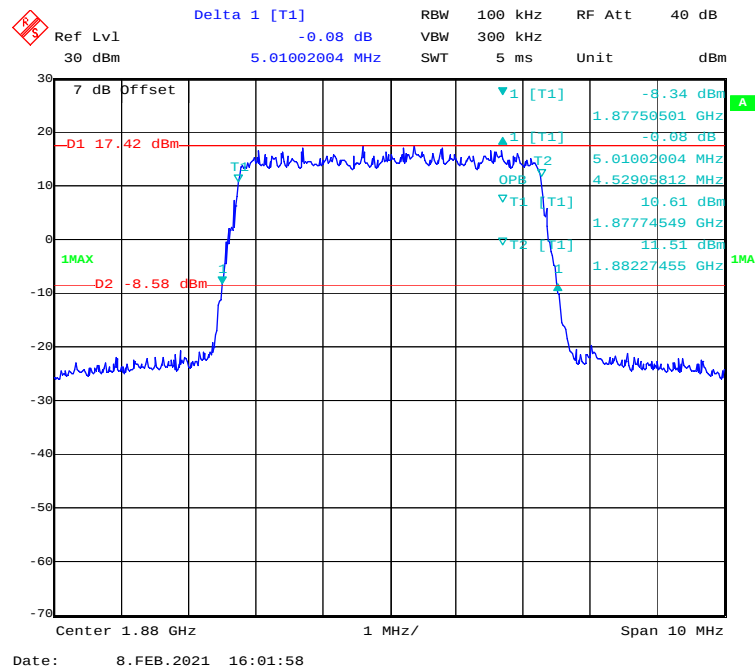
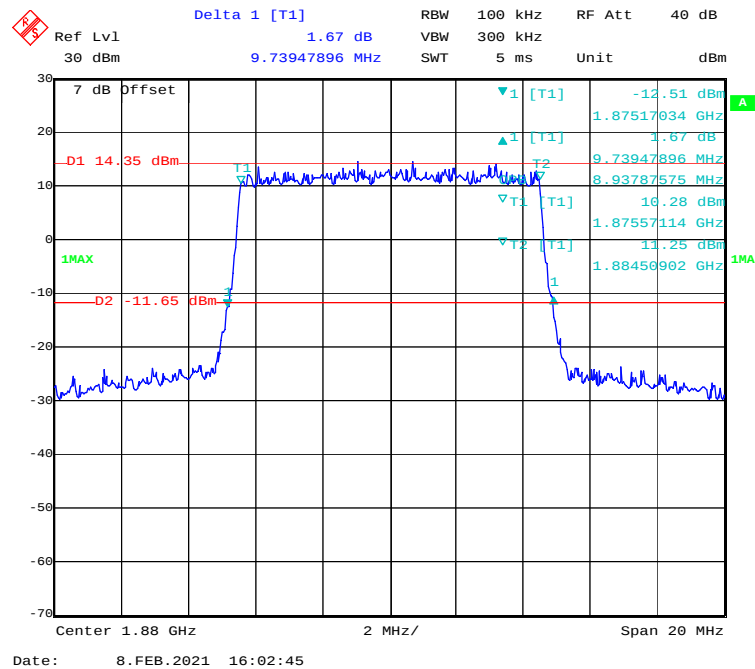
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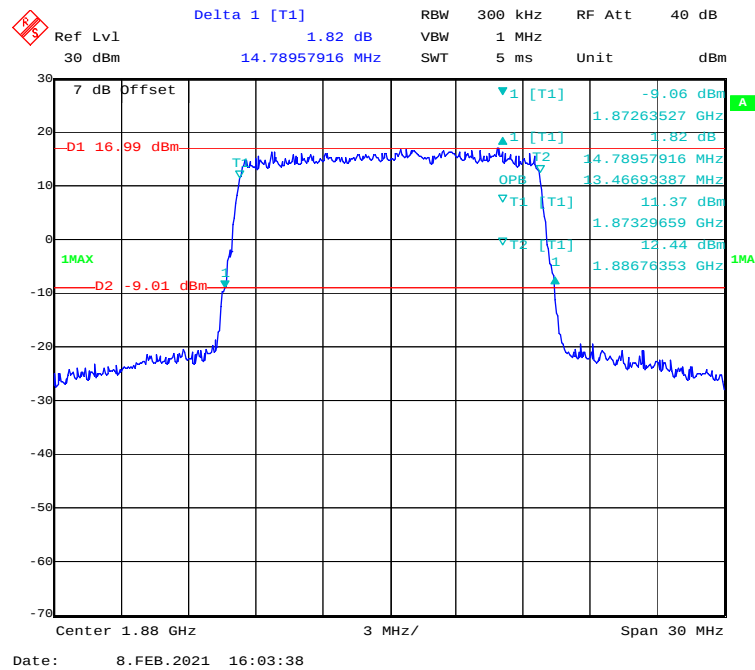
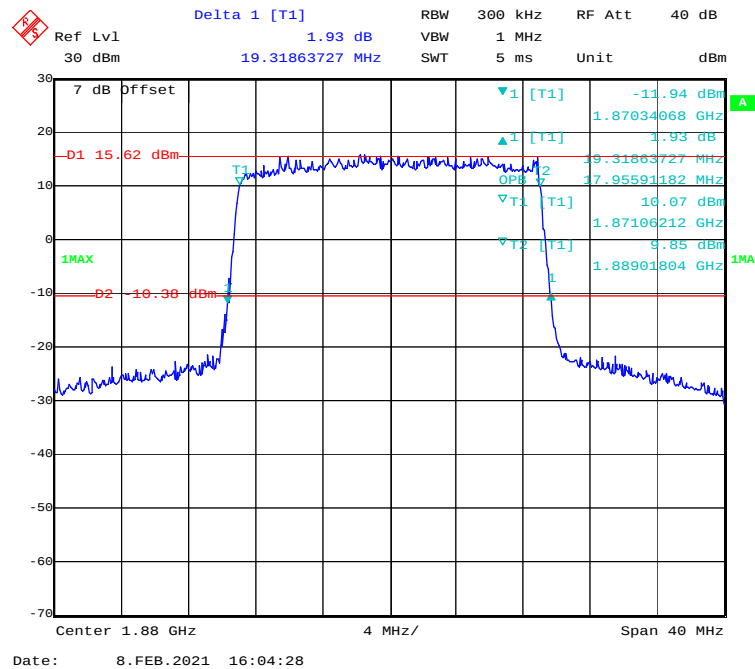
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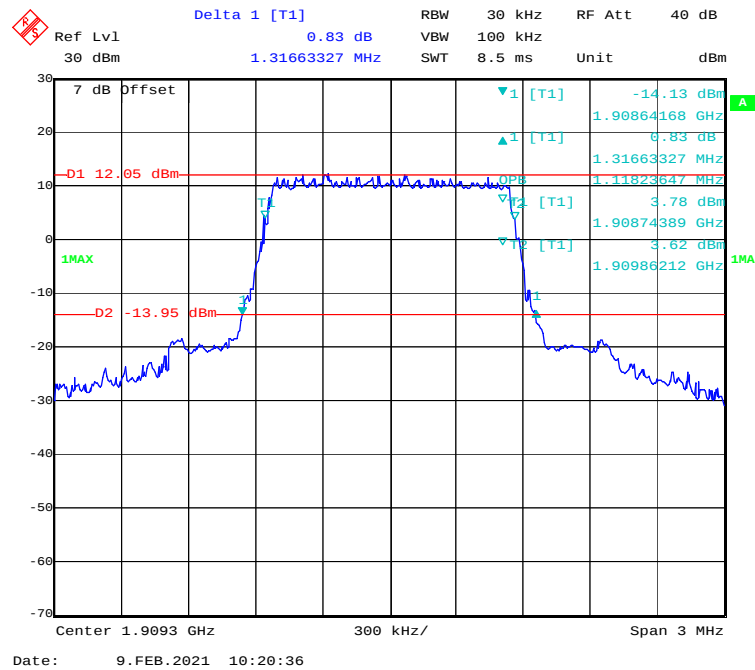
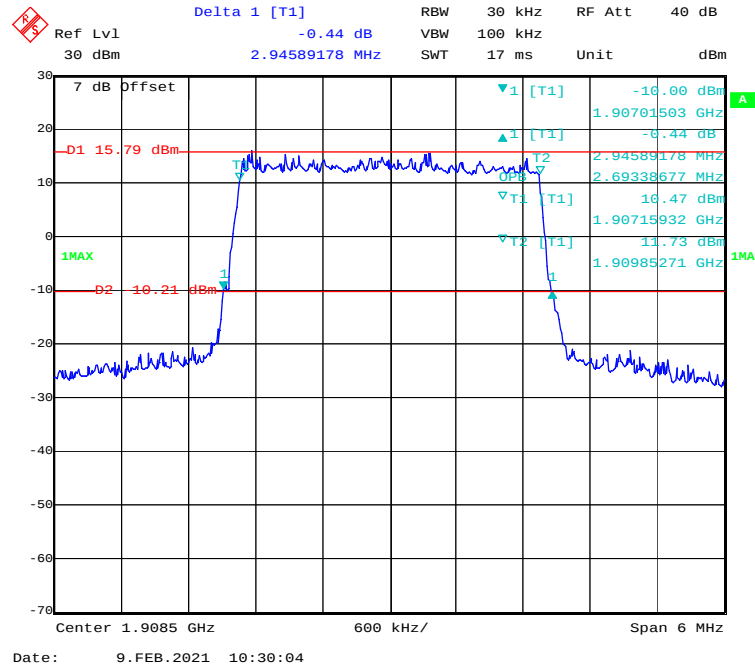
T427

T428

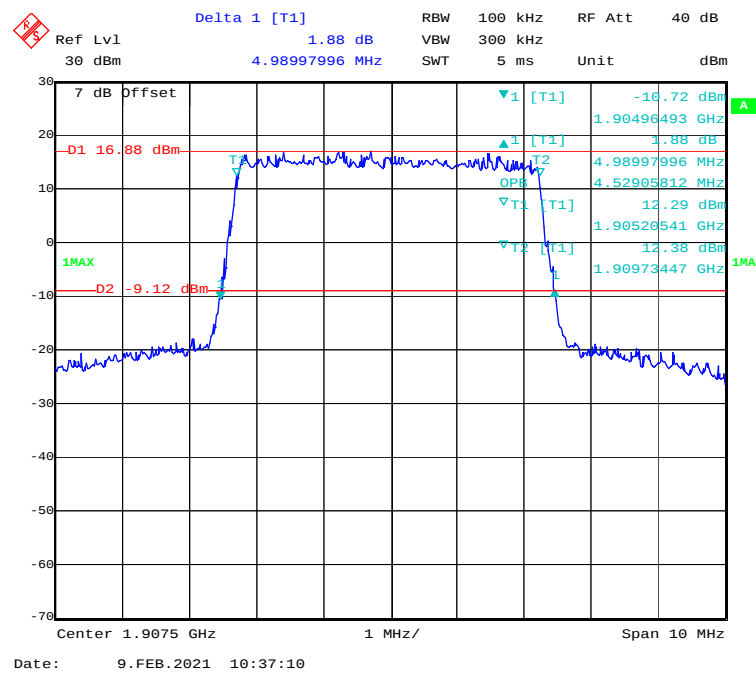
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16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

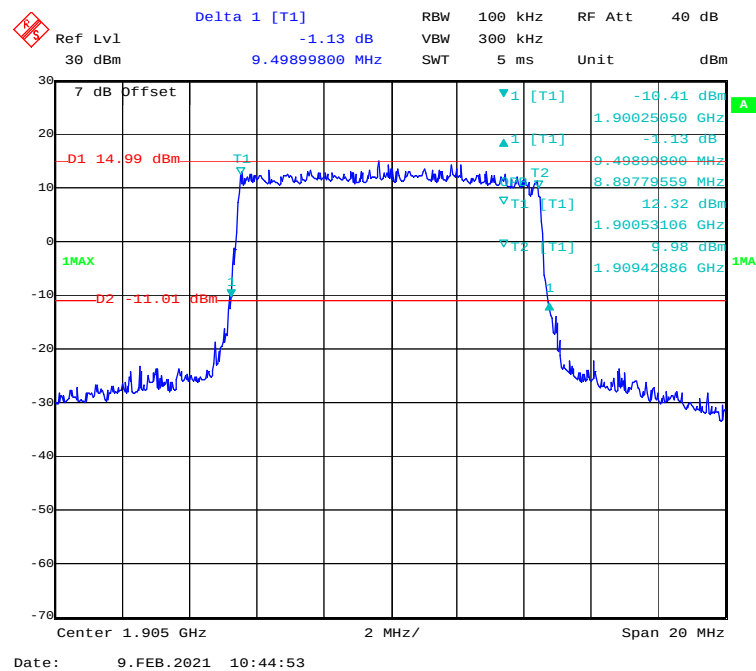
16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

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

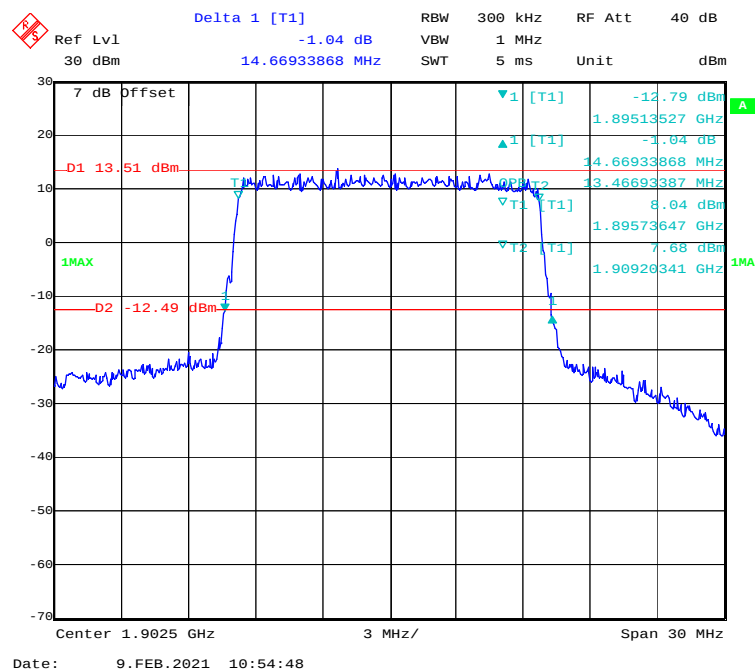
QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



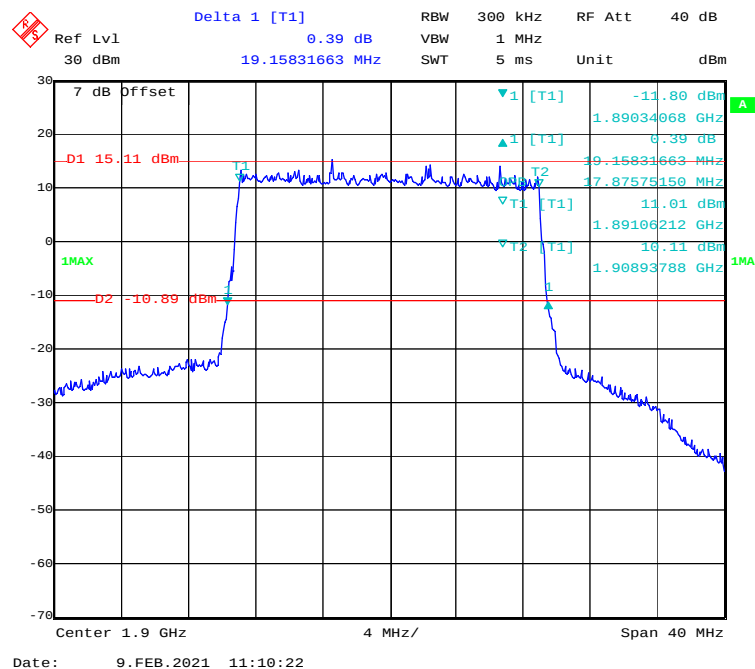
QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel

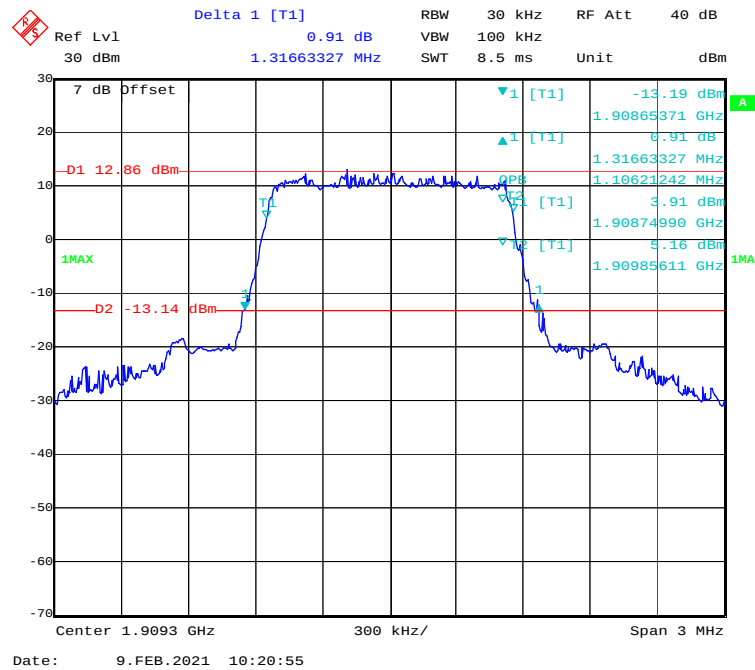
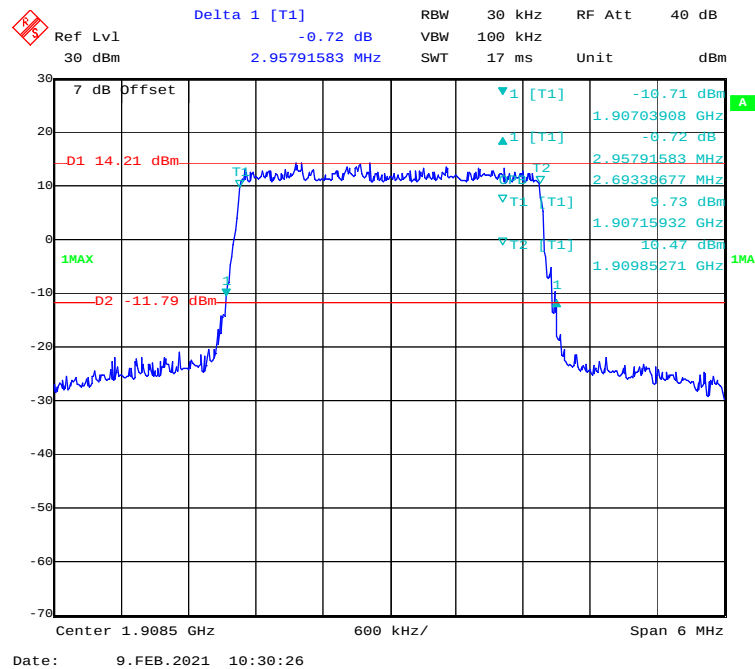


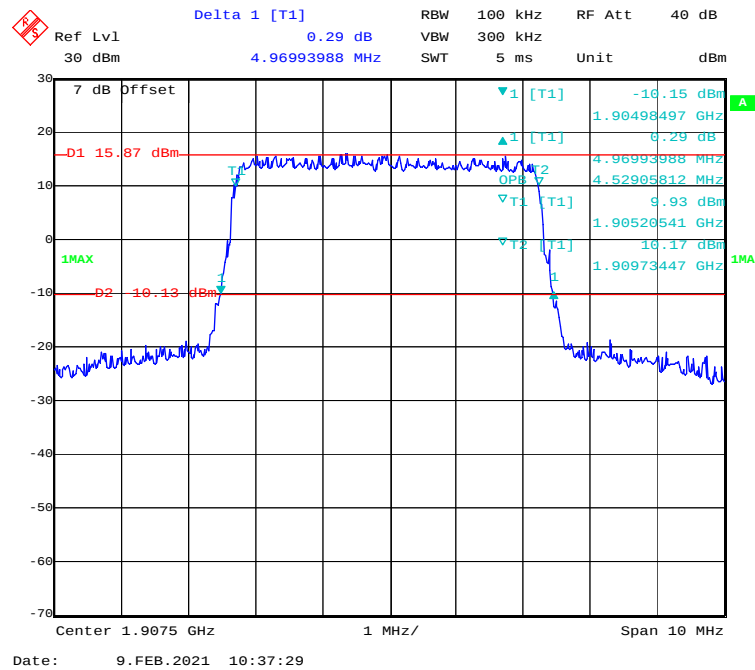
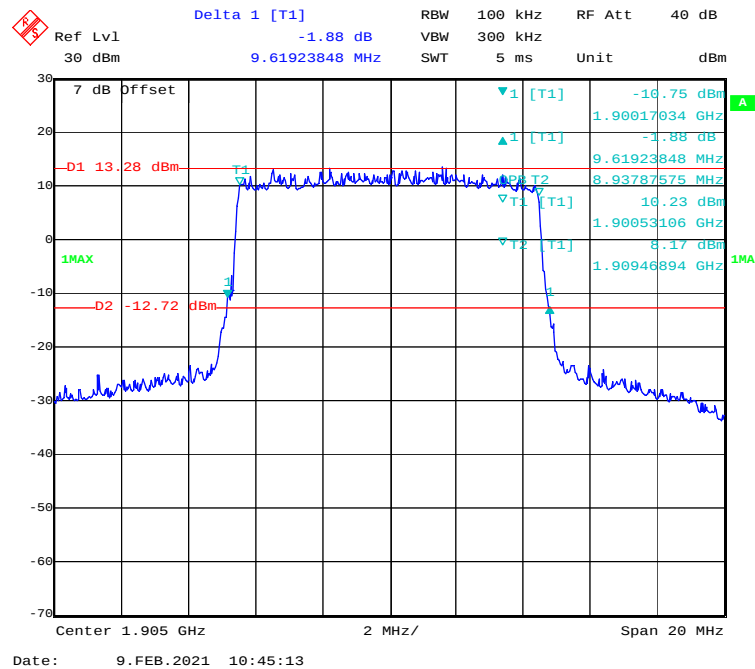
QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



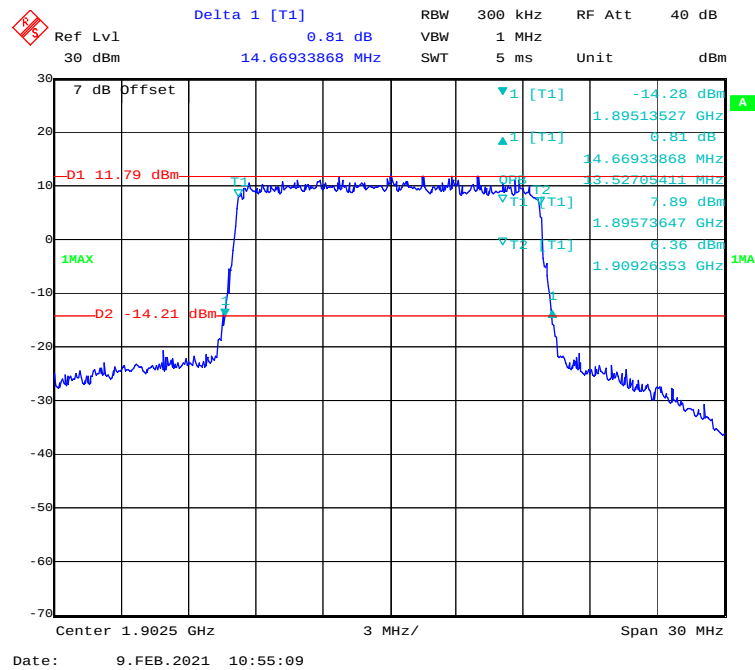
QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



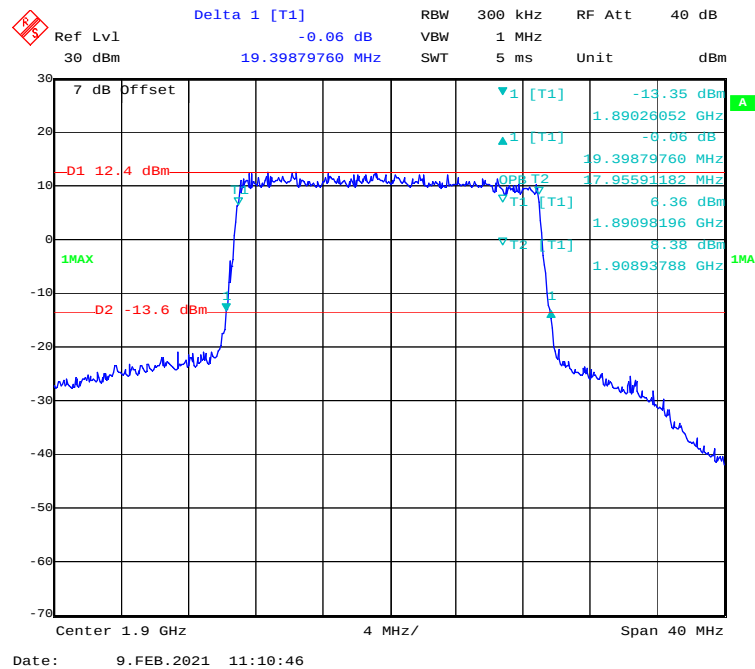
16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

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

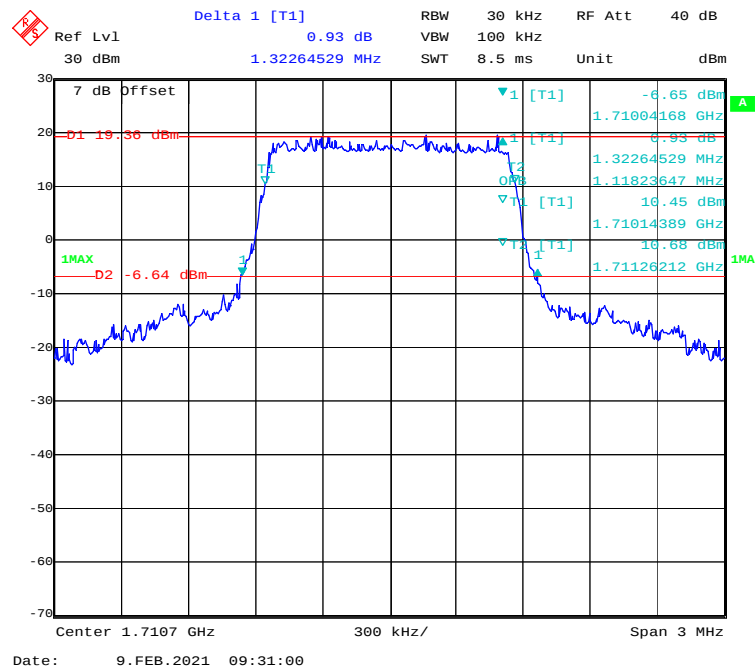


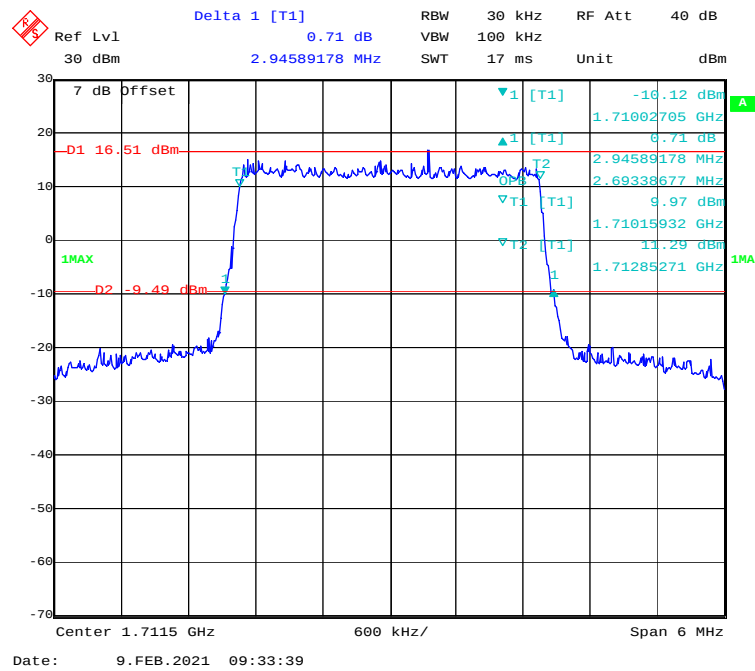
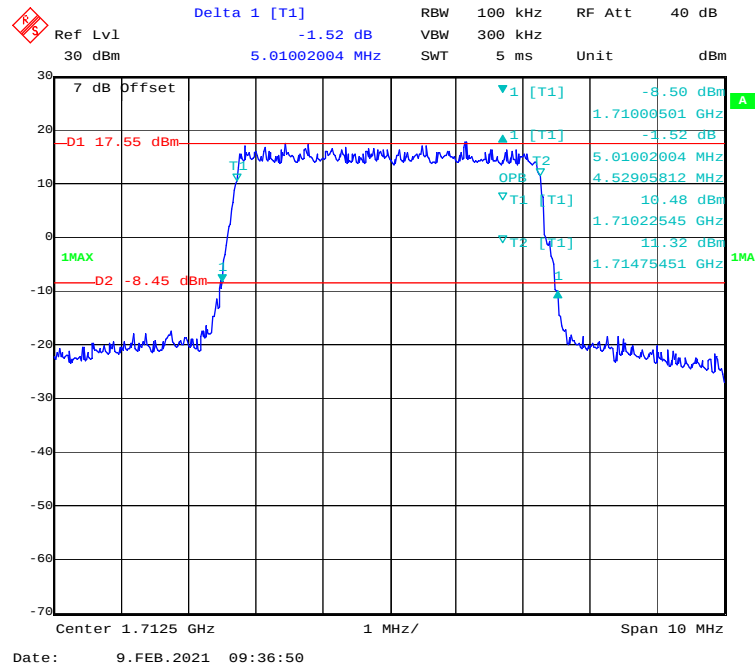
16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel

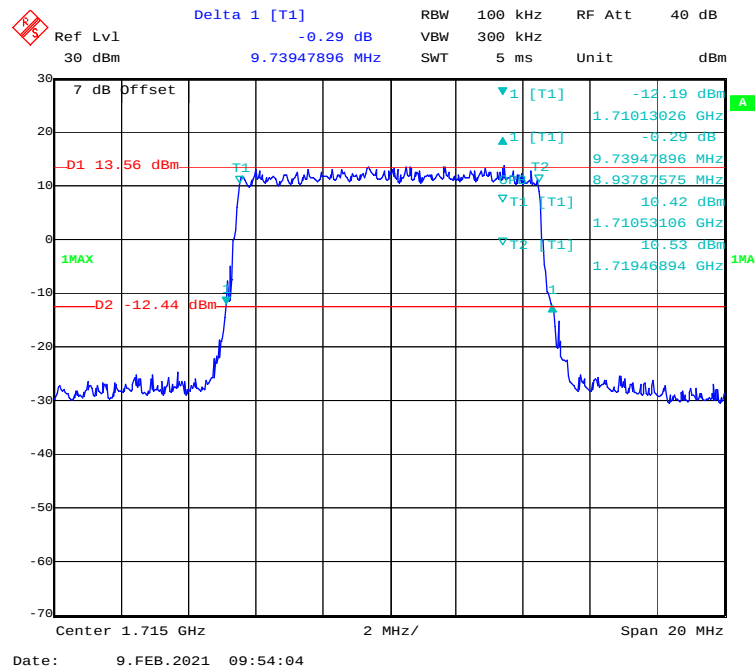
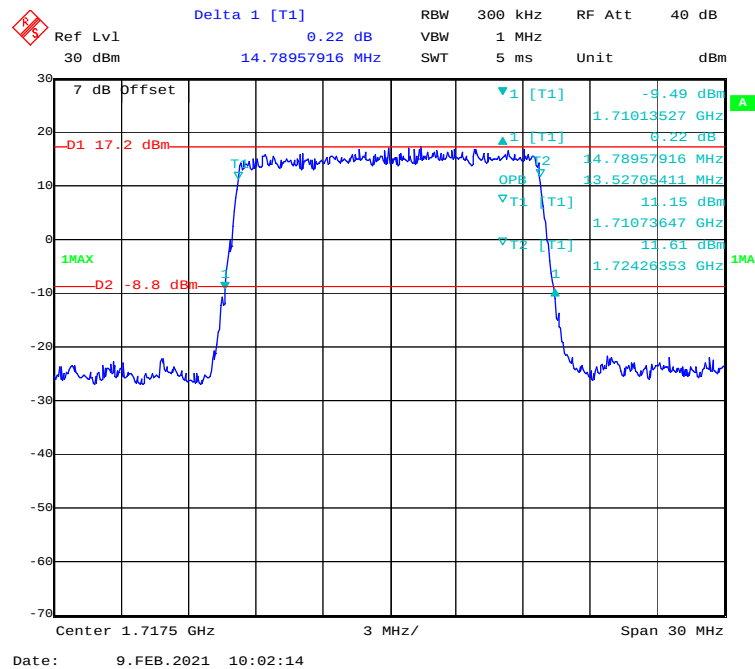


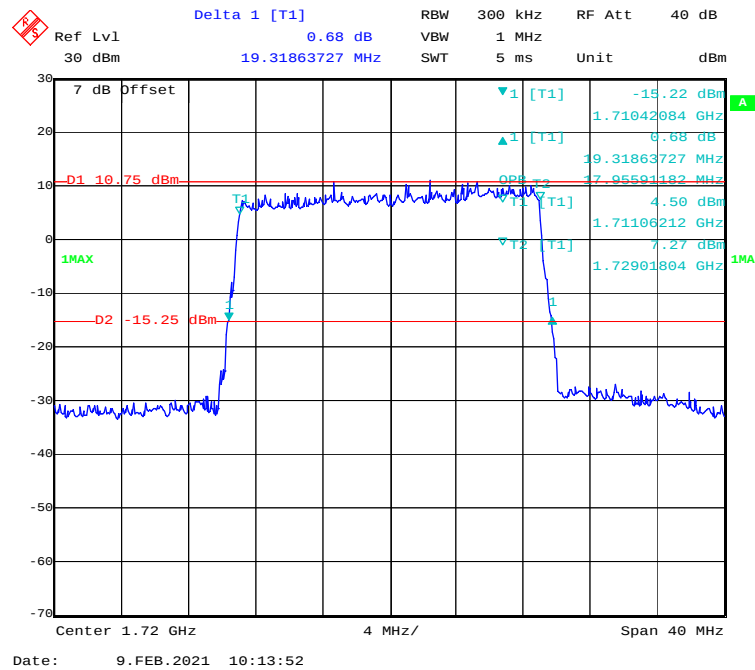
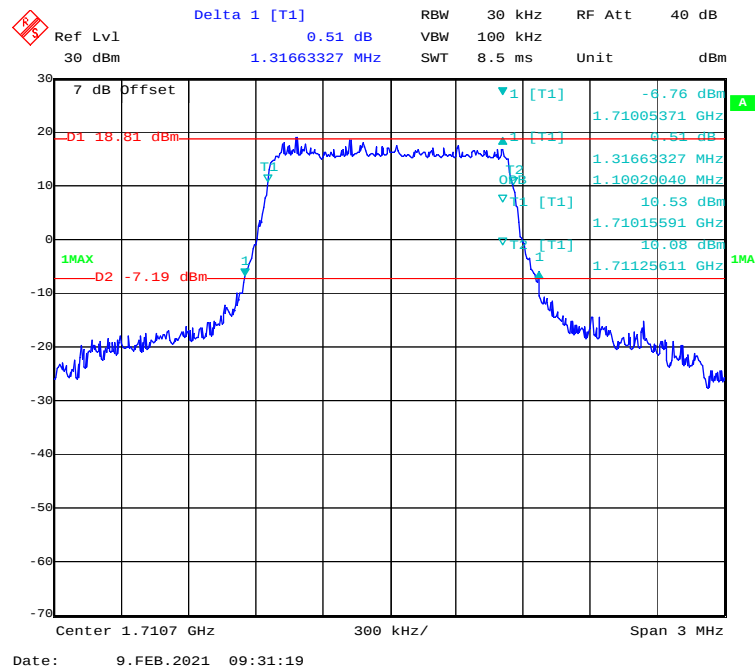
LTE Band 4:

Test Modulation	Test Bandwidth	26 dB Bandwidth MHz			99% Occupied Bandwidth MHz		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
QPSK	1.4M	1.32	1.30	1.32	1.12	1.10	1.11
	3M	2.95	2.93	2.93	2.69	2.69	2.69
	5M	5.01	5.03	4.99	4.53	4.53	4.53
	10M	9.74	9.66	9.74	8.94	8.94	8.94
	15M	14.79	14.67	14.91	13.53	13.41	13.53
	20M	19.32	19.24	19.24	17.96	17.80	17.96
16-QAM	1.4M	1.32	1.30	1.29	1.10	1.11	1.10
	3M	2.96	2.95	2.95	2.69	2.69	2.69
	5M	4.95	5.05	5.01	4.53	4.51	4.53
	10M	9.58	9.66	9.62	8.94	8.94	8.94
	15M	14.67	14.67	14.85	13.47	13.47	13.53
	20M	19.56	19.08	19.16	17.96	17.80	17.96

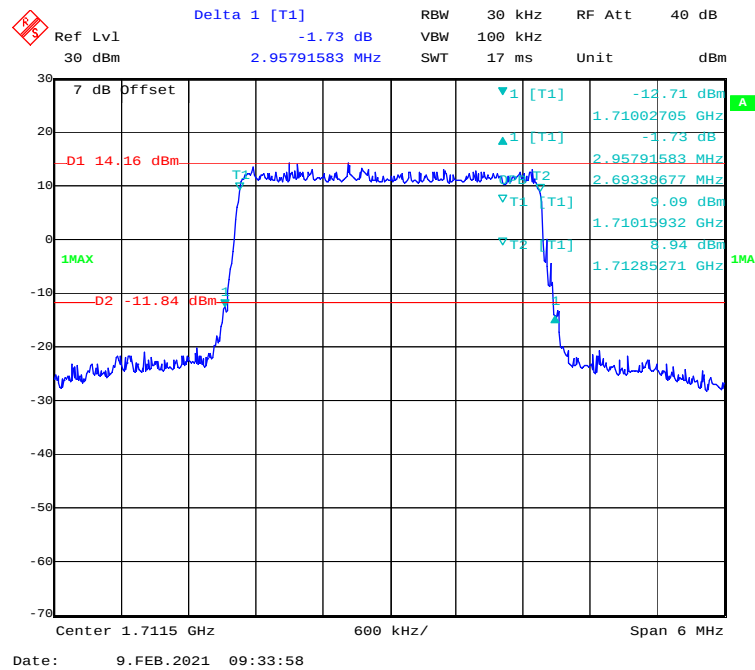
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel

QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

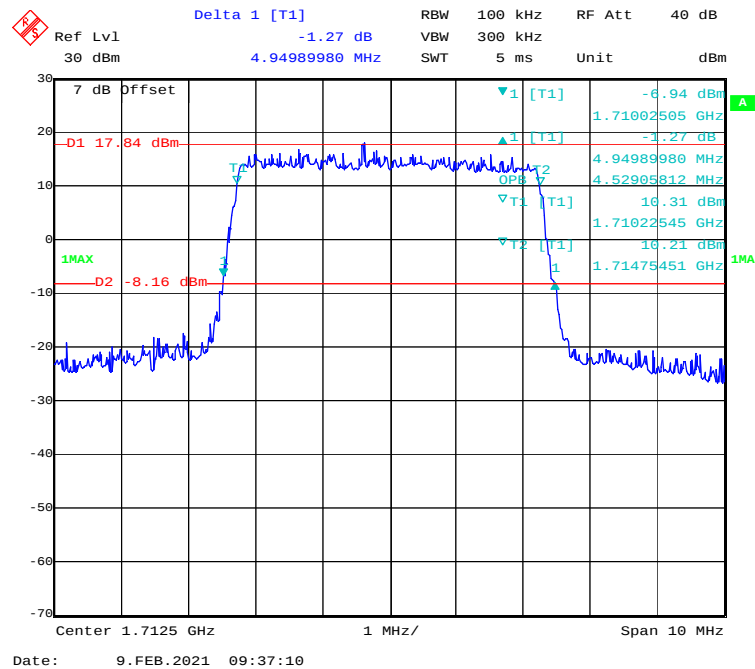
QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

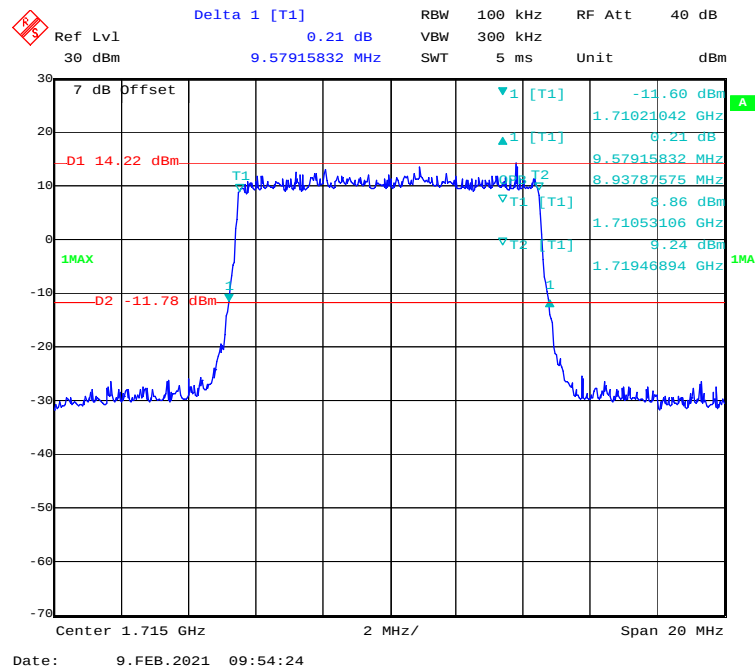
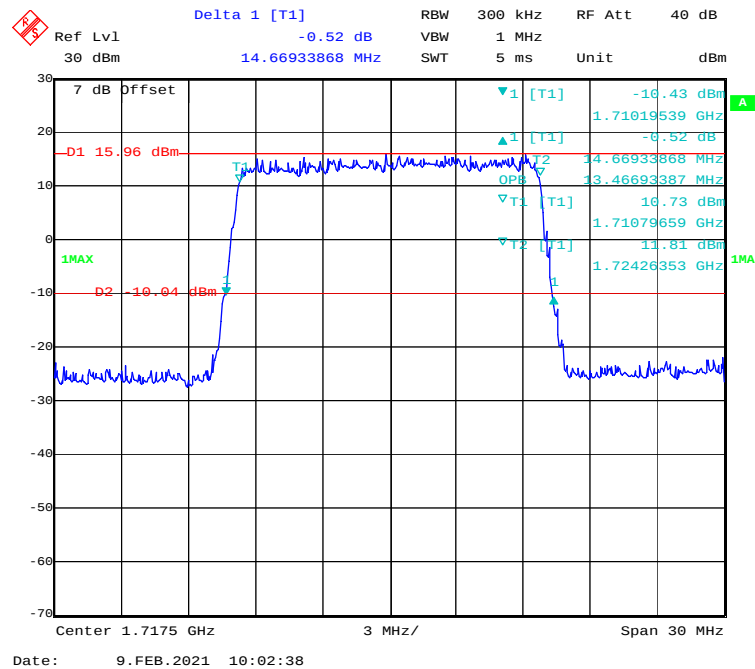
QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

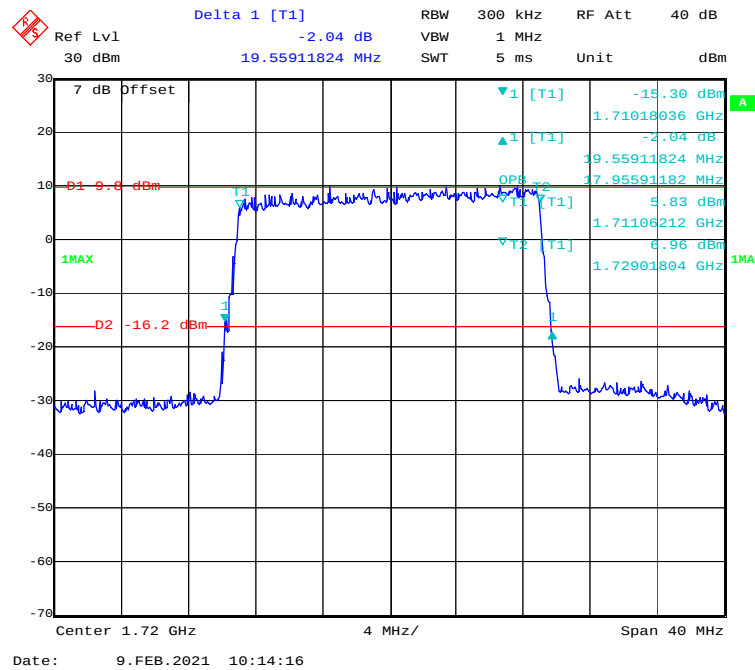
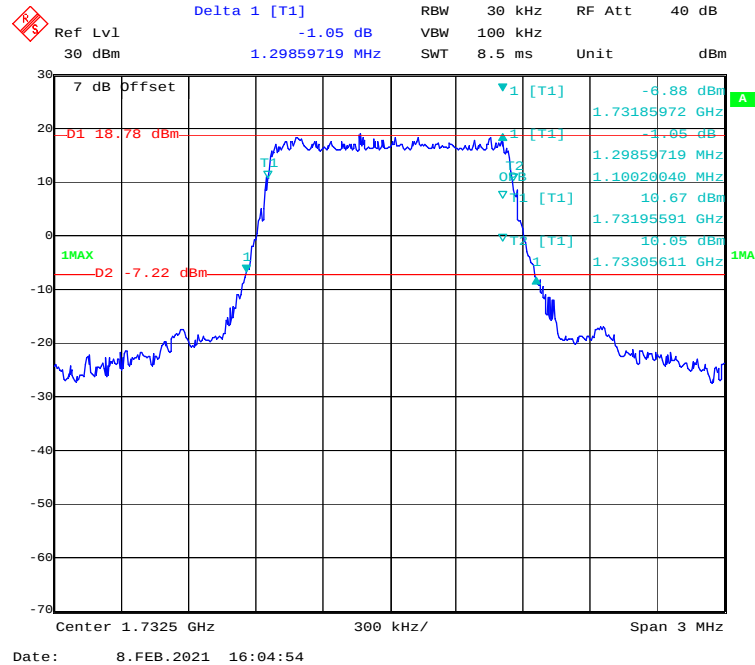
16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel

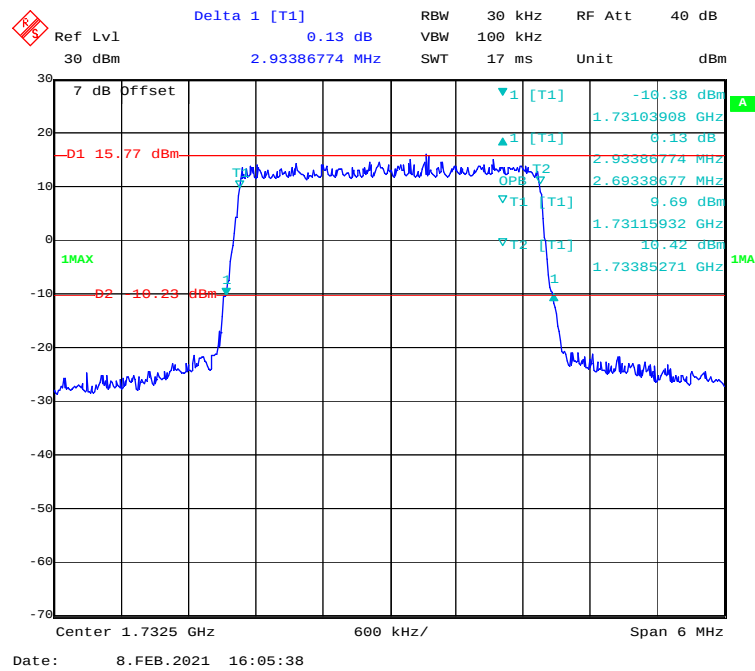
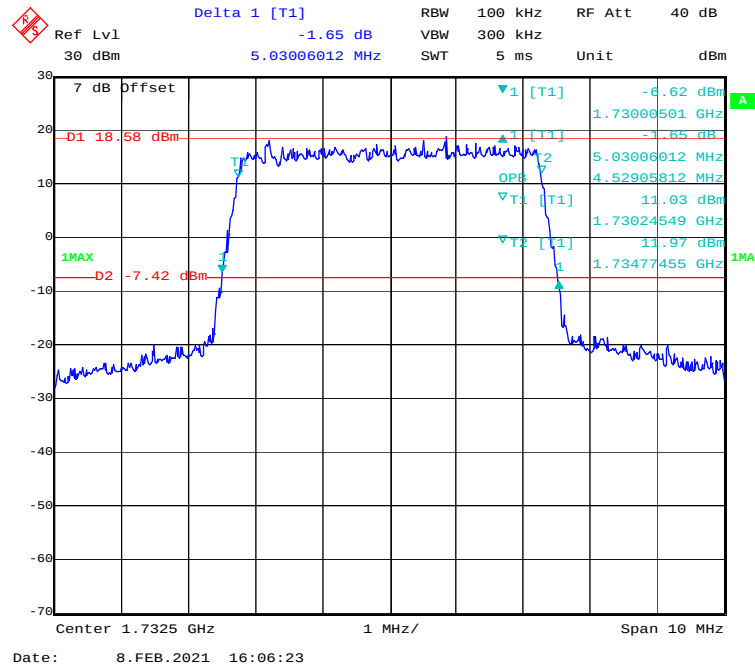


16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel

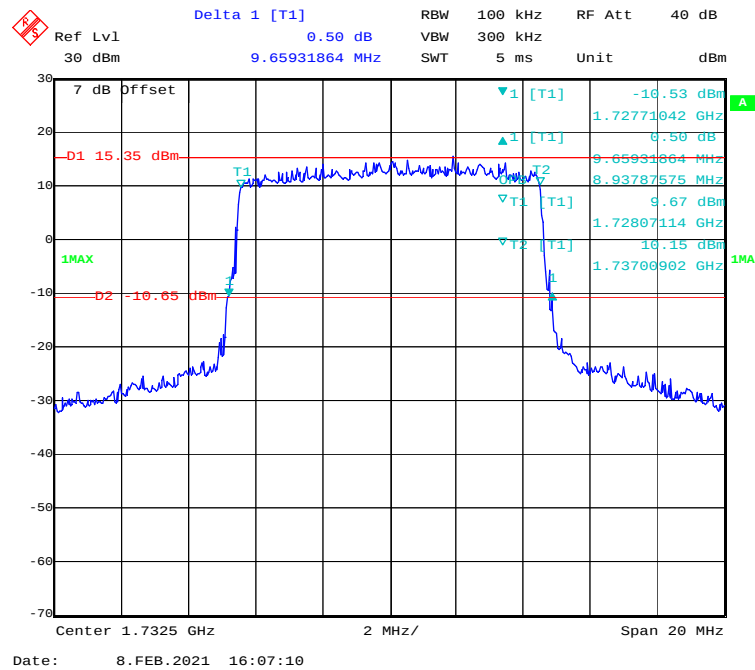


16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

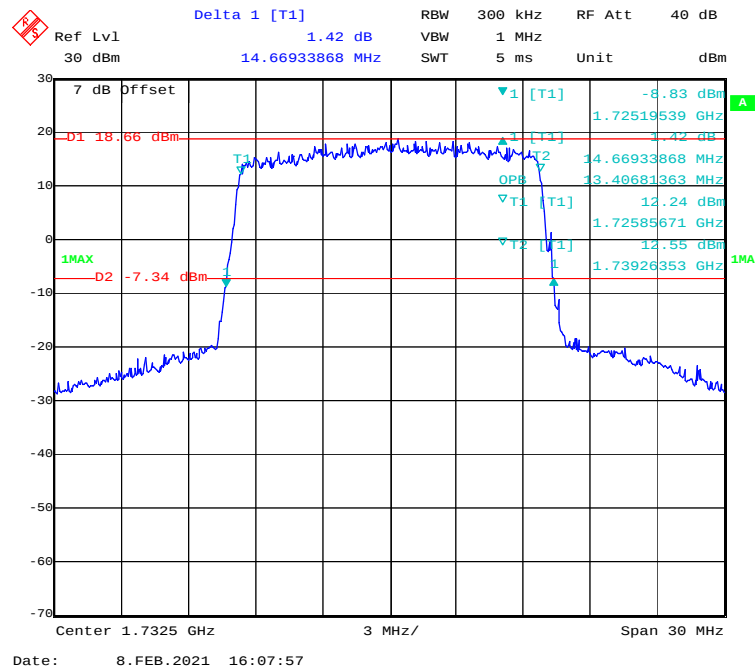
16-QAM (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

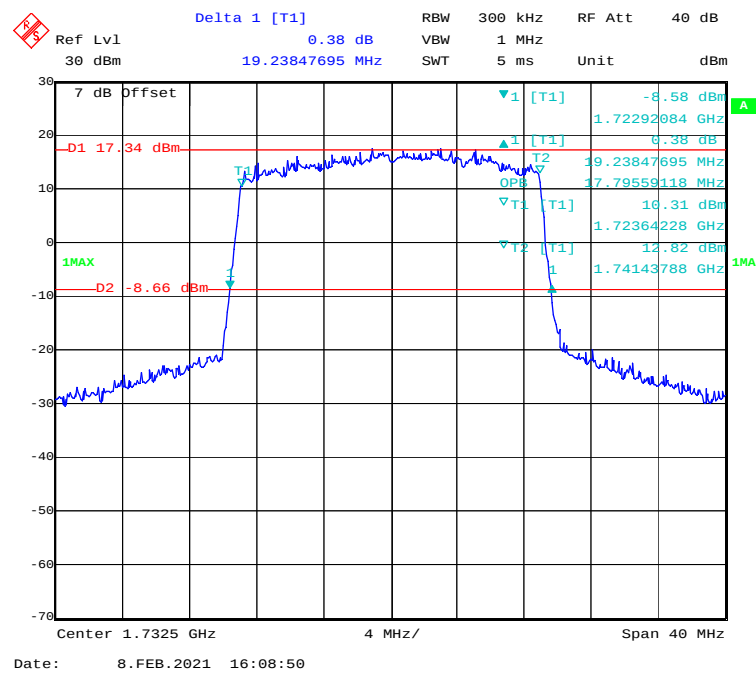
QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



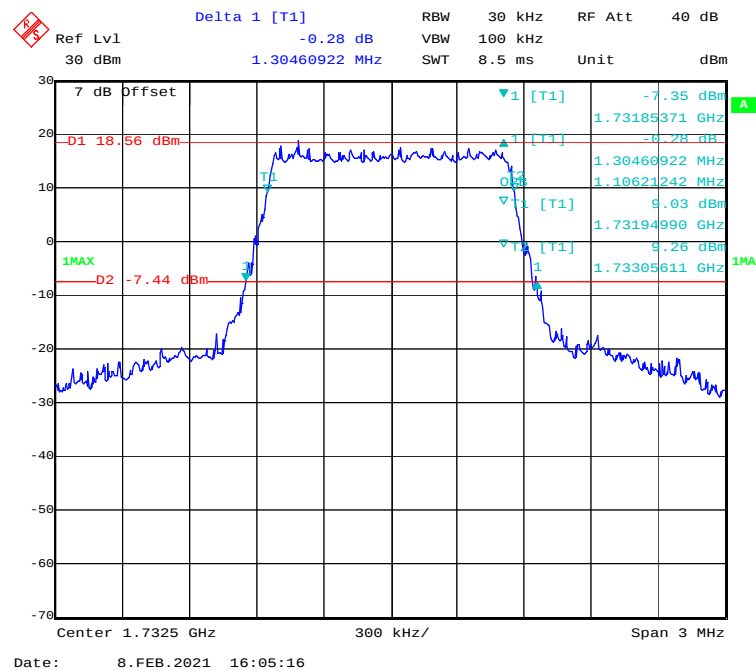
QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

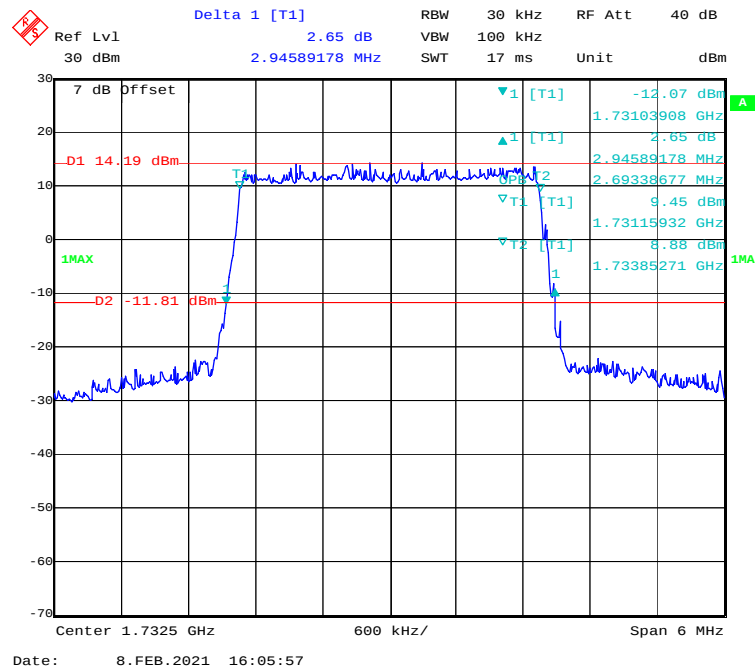
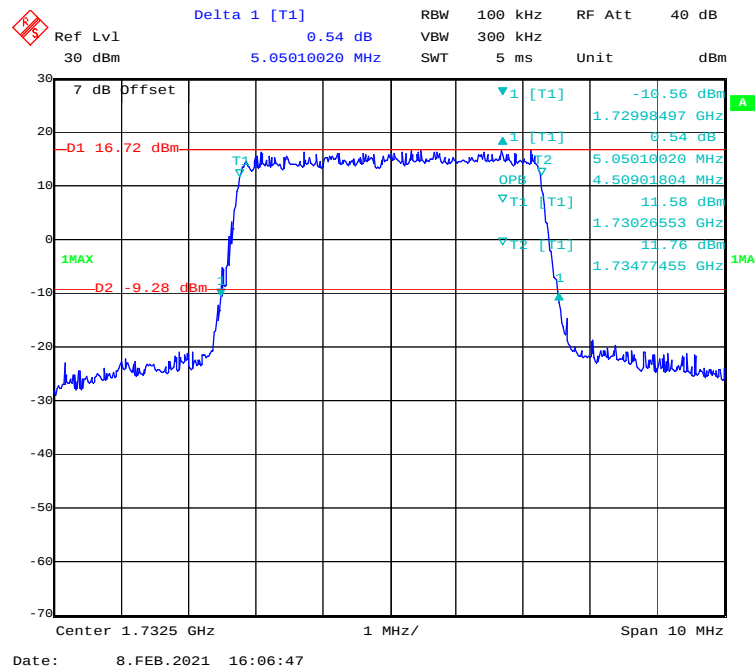


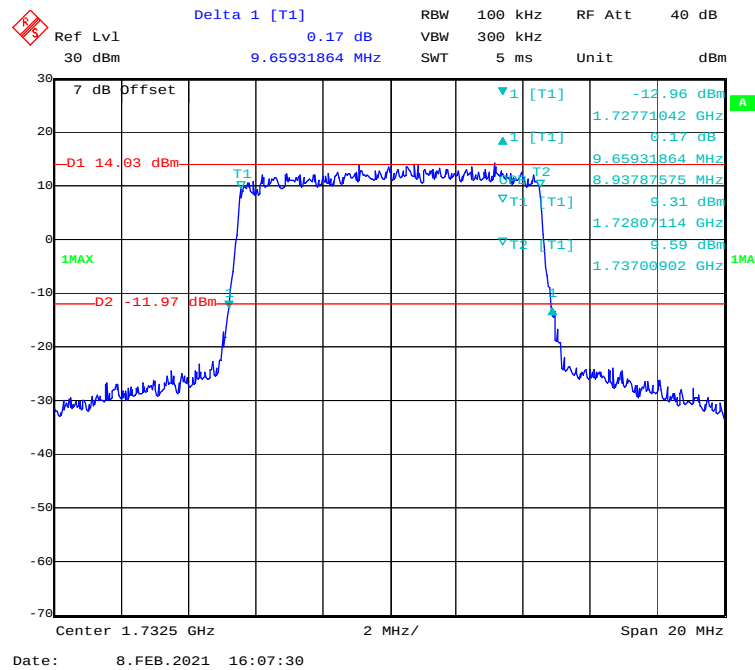
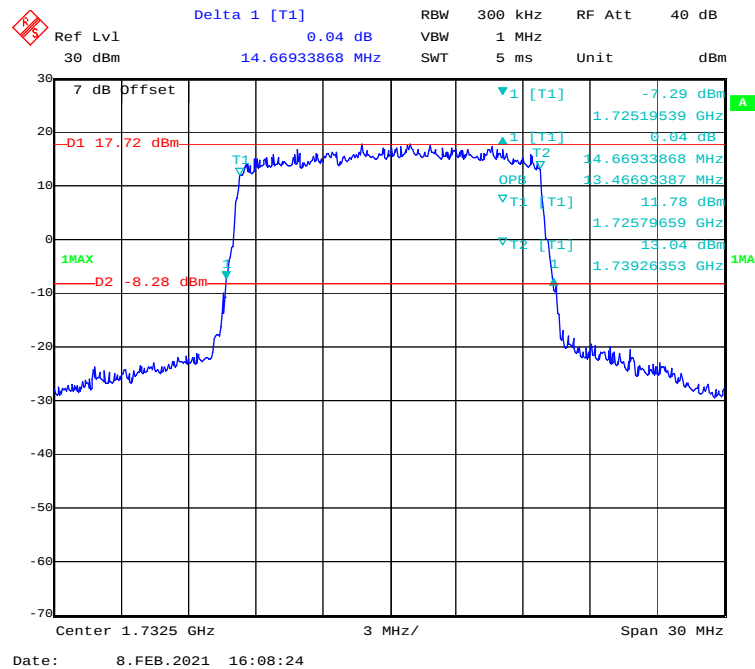
QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



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**

[illegible]

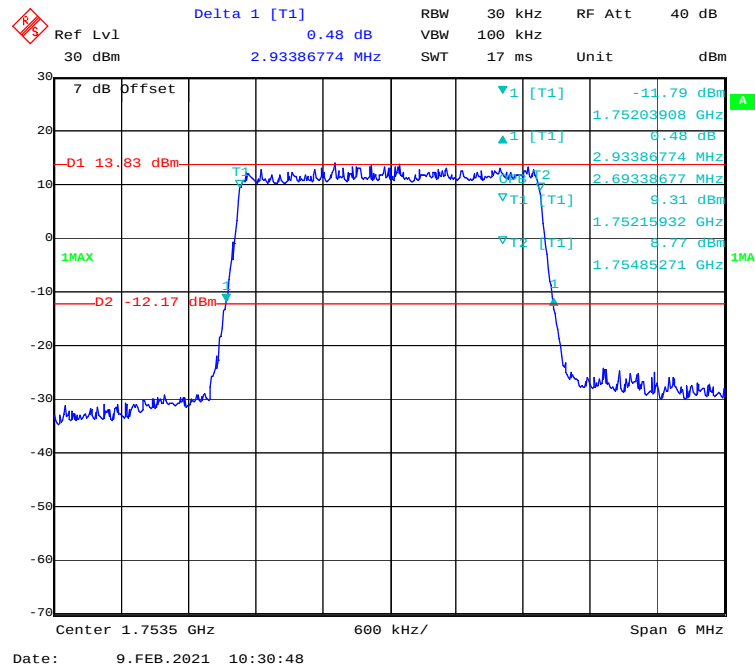
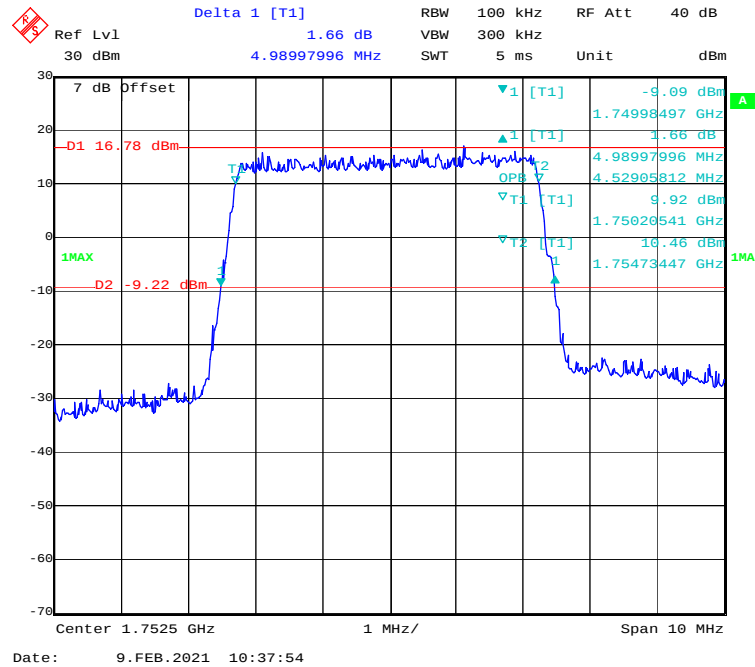
Delta 1 [T1] -0.83 dB
 Ref Lvl 30 dBm
 RBW 30 kHz
 VBW 100 kHz
 RF Att 40 dB
 1.31663327 MHz
 SWT 8.5 ms
 Unit dBm

7 dB Offset
 -D1 11.88 dBm
 1MAX
 -D2 -14.12 dBm
 1MA

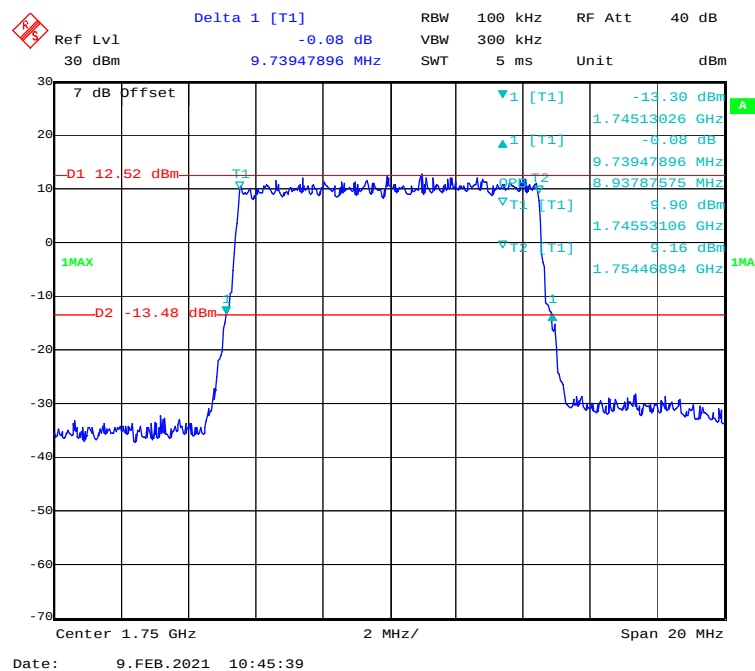
1 [T1] -14.05 dBm
 1.75365371 GHz
 1 [T1] -0.83 dB
 1.31663327 MHz
 1 [T1] 4.18 dBm
 1.75375591 GHz
 1 [T1] 4.92 dBm
 1.75486212 GHz

Center 1.7543 GHz
 300 kHz/
 Span 3 MHz

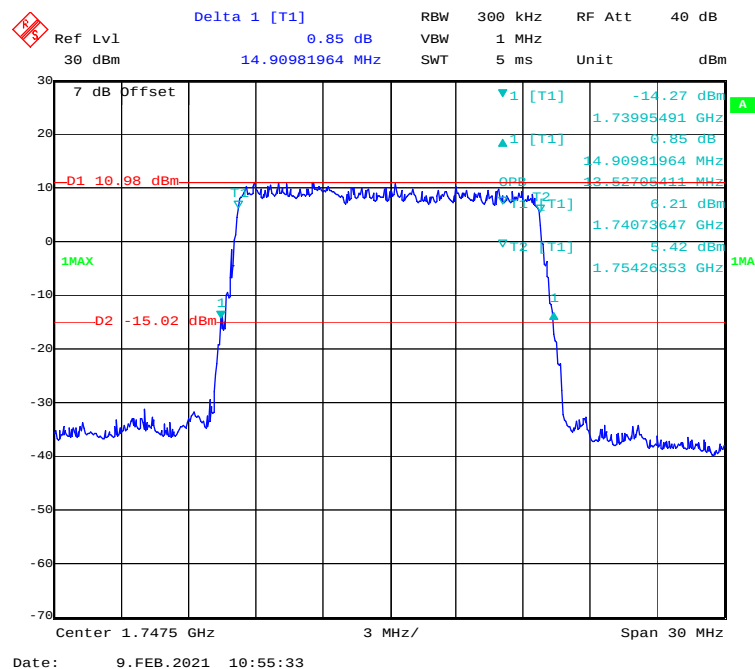
Date: 9.FEB.2021 10:21:20

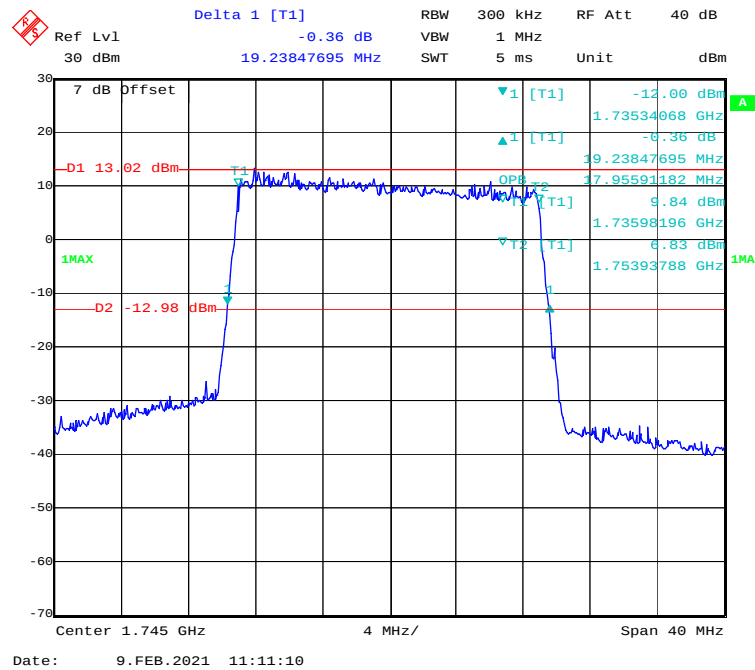
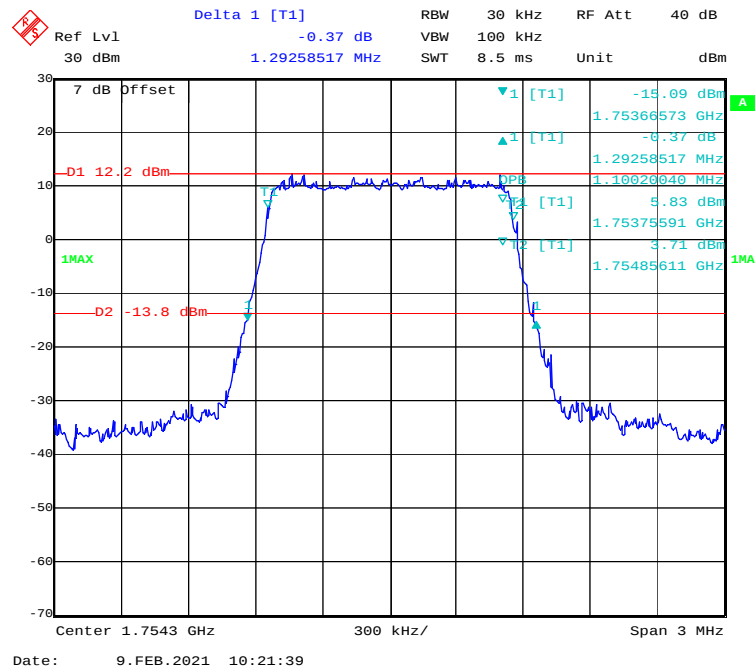
QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (5MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

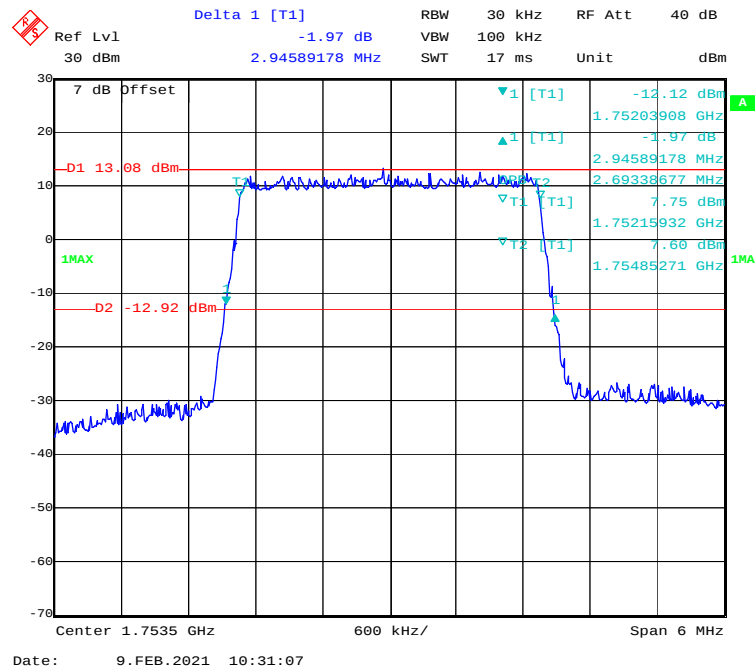
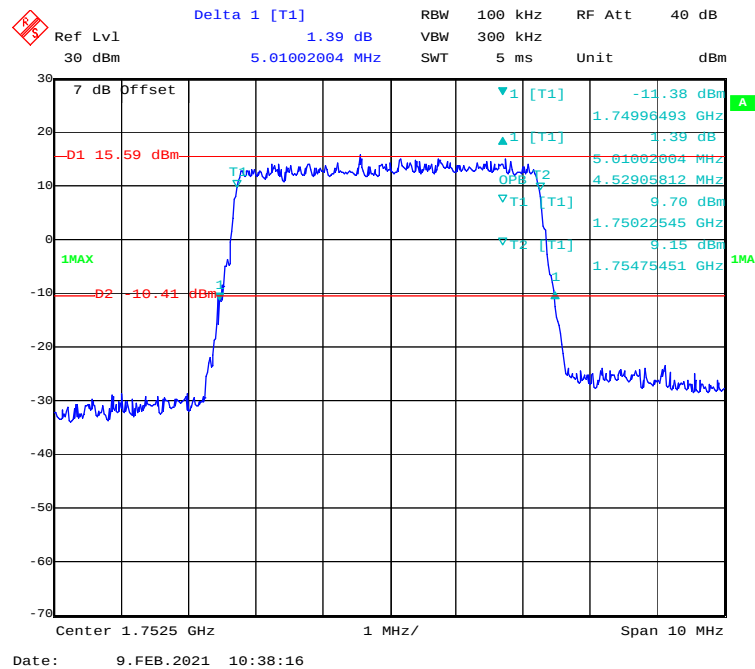
QPSK (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel

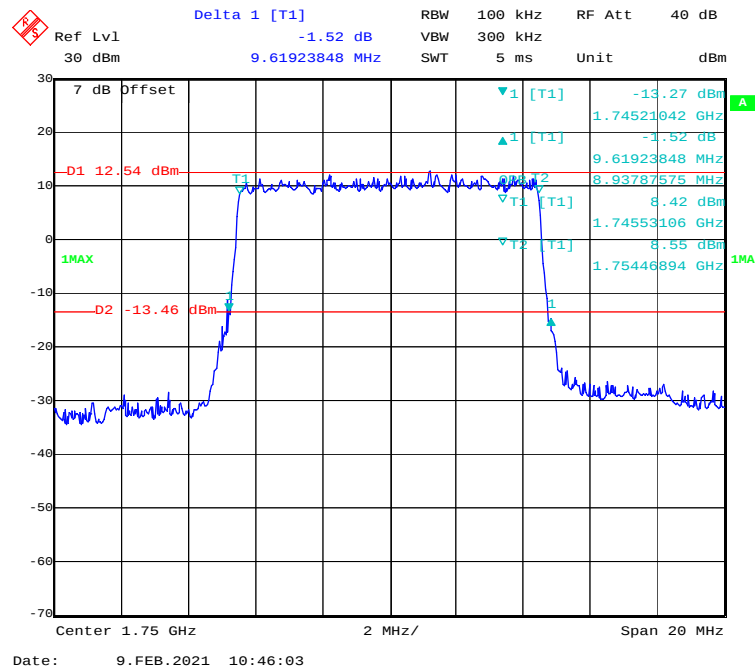
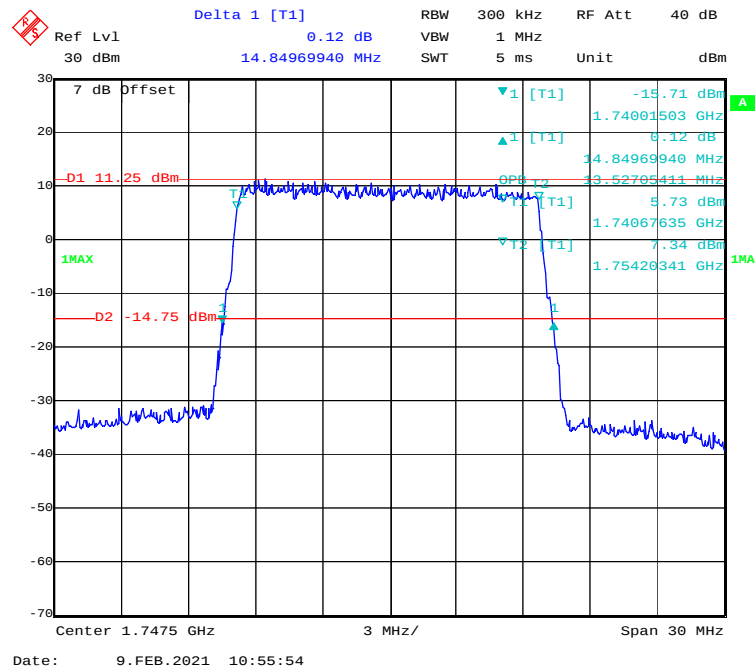


QPSK (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel

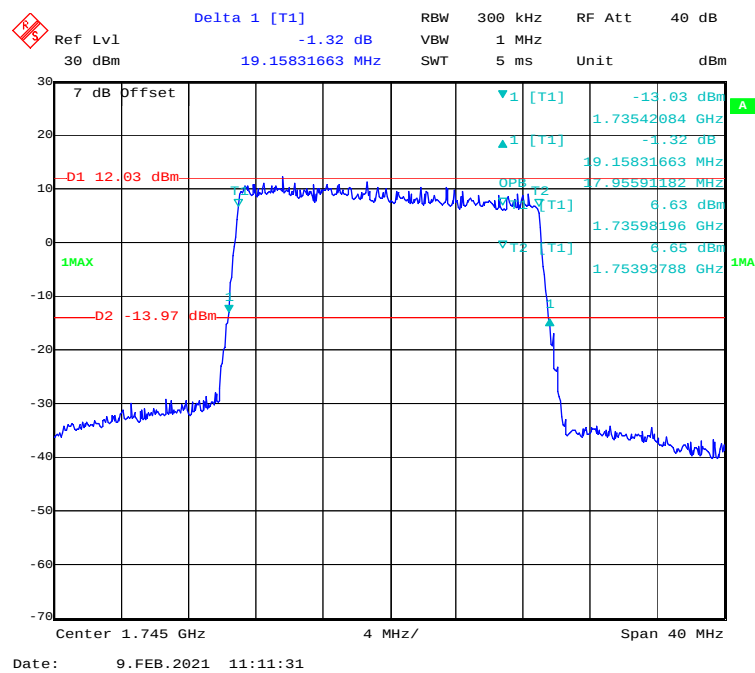


QPSK (20 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

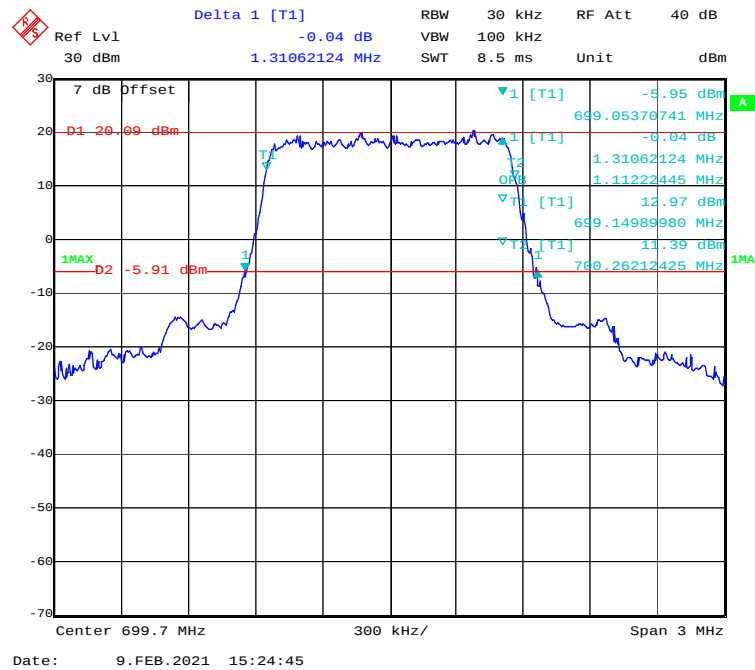
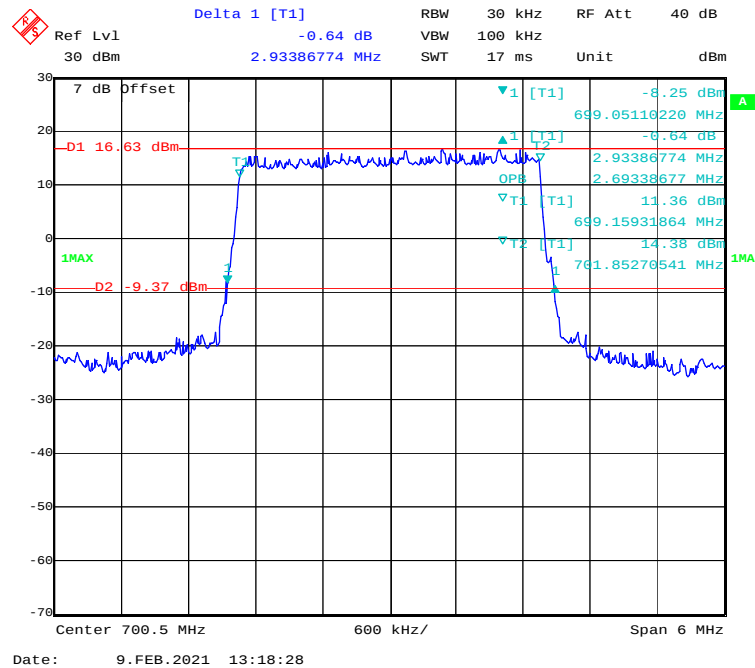
16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**16-QAM (15 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

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

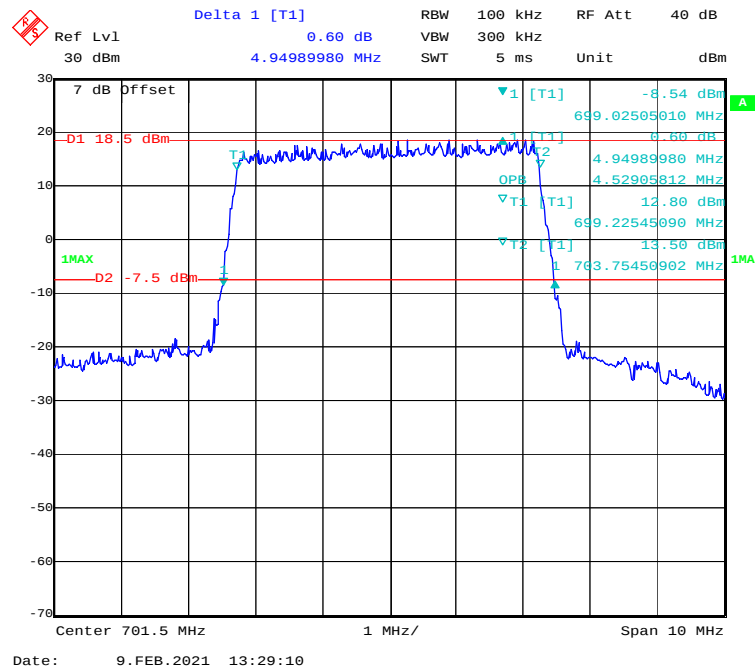


LTE Band 12:

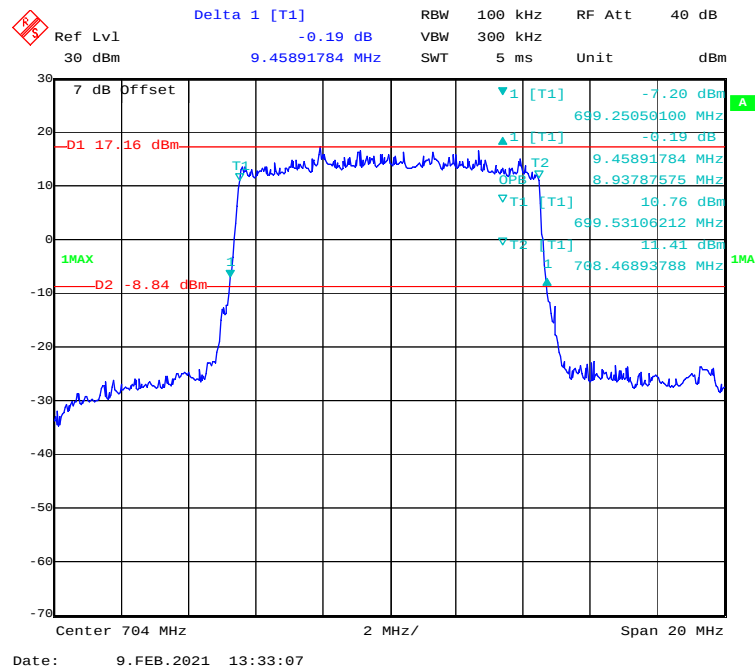
Test Modulation	Test Bandwidth	26 dB Bandwidth MHz			99% Occupied Bandwidth MHz		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
QPSK	1.4M	1.31	1.30	1.29	1.11	1.10	1.11
	3M	2.93	2.96	2.95	2.69	2.69	2.69
	5M	4.95	5.05	4.97	4.53	4.55	4.51
	10M	9.46	9.78	9.70	8.94	8.98	8.94
16-QAM	1.4M	1.31	1.30	1.29	1.11	1.10	1.11
	3M	2.96	2.90	2.93	2.69	2.68	2.69
	5M	4.99	5.03	4.97	4.53	4.53	4.53
	10M	9.54	9.74	9.70	8.94	8.98	8.98

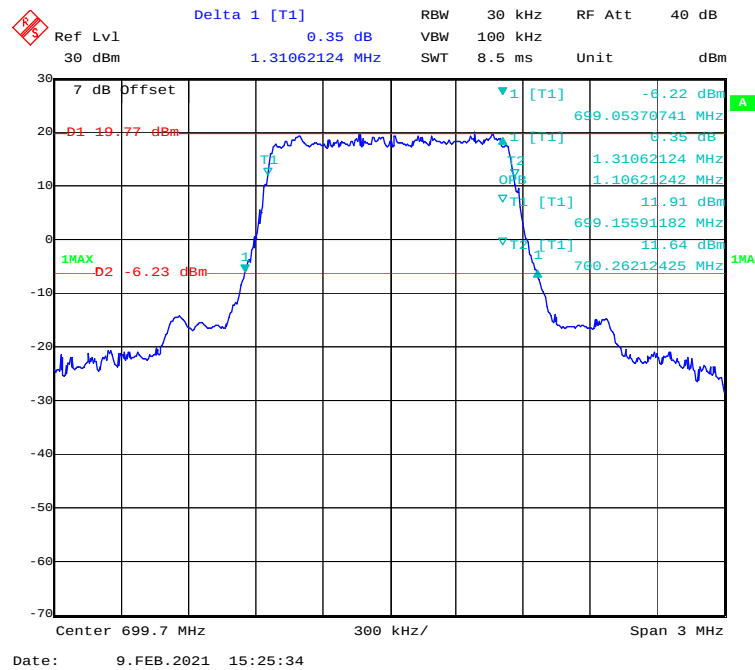
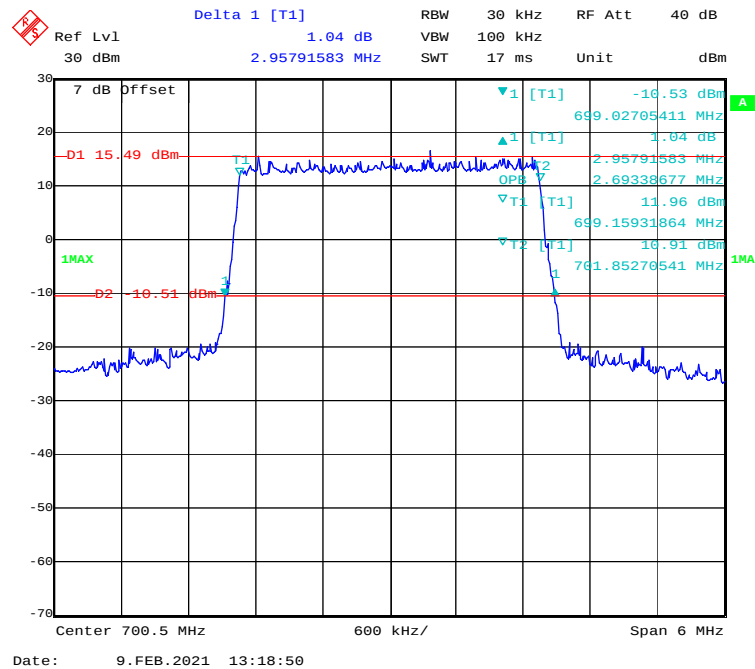
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

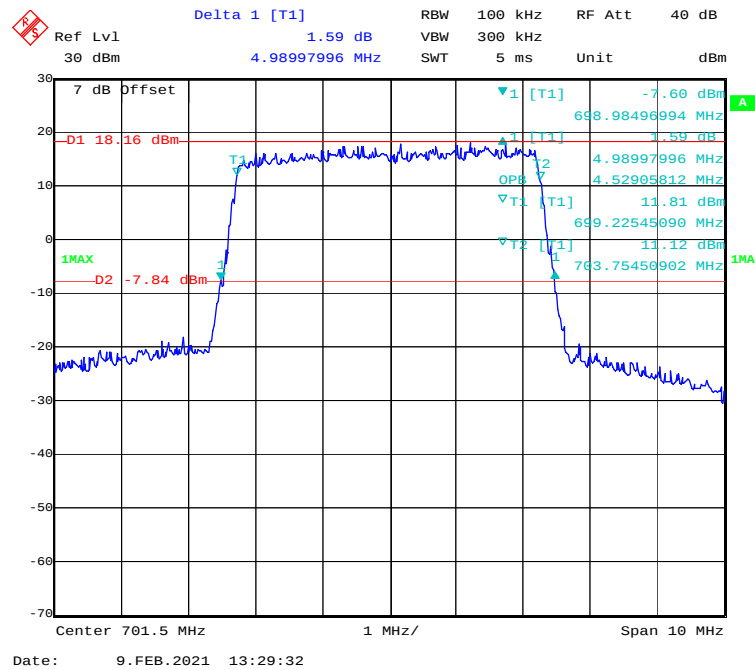
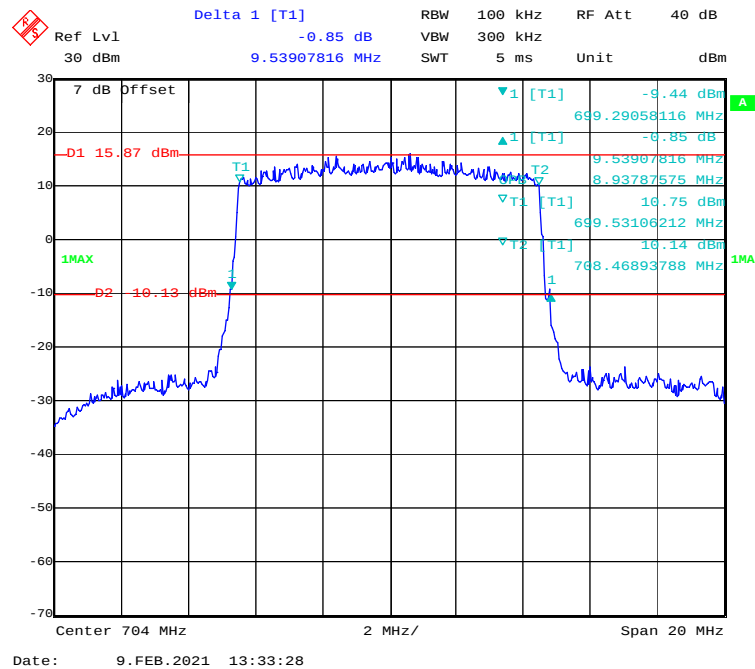
QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel

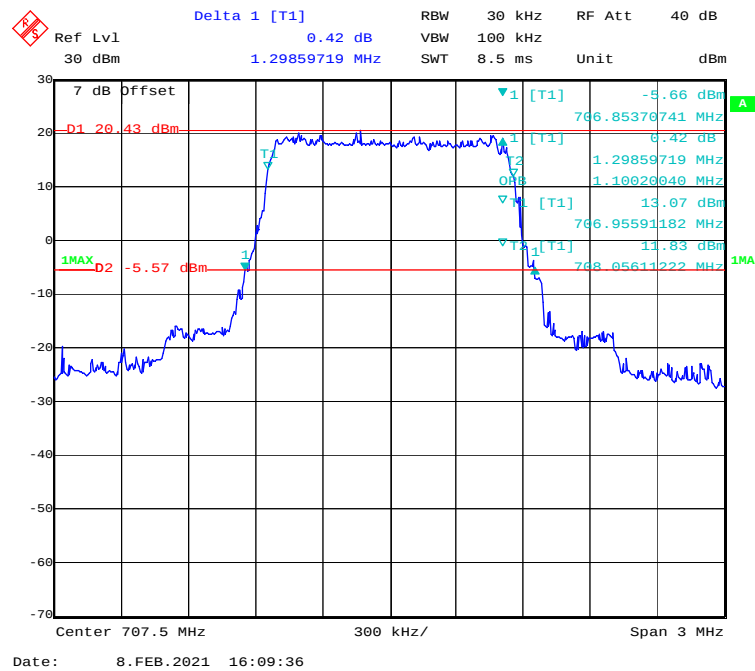
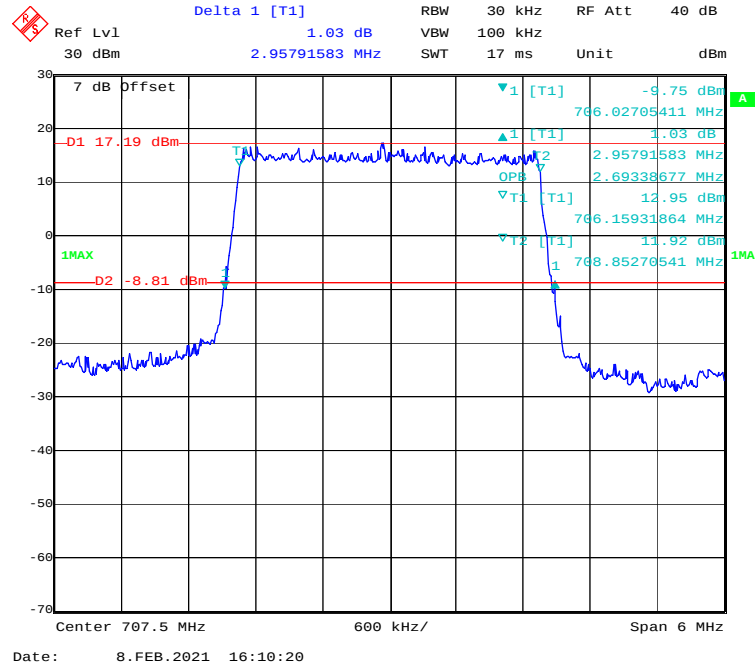


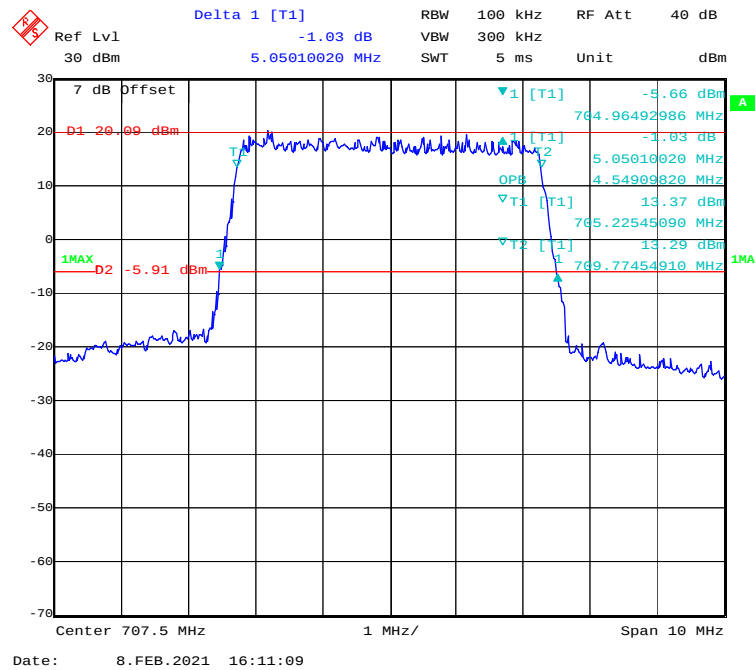
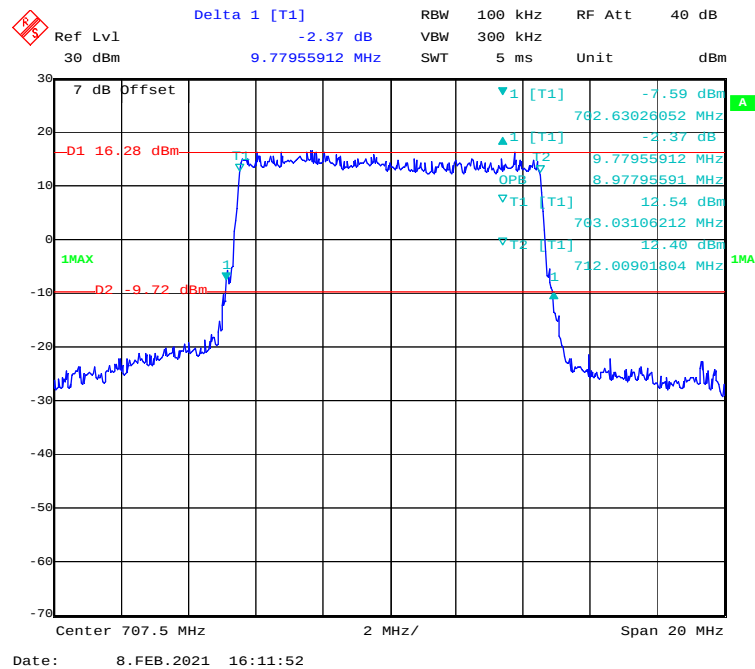
QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel

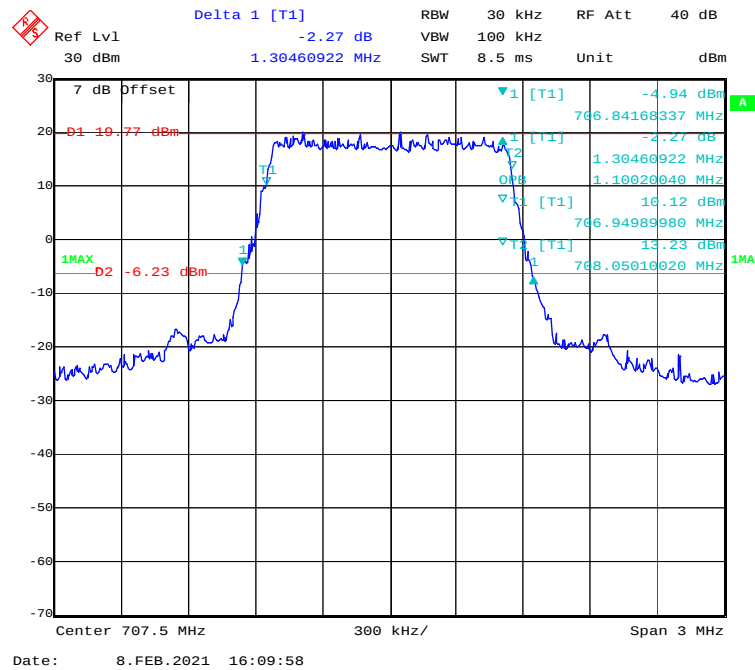
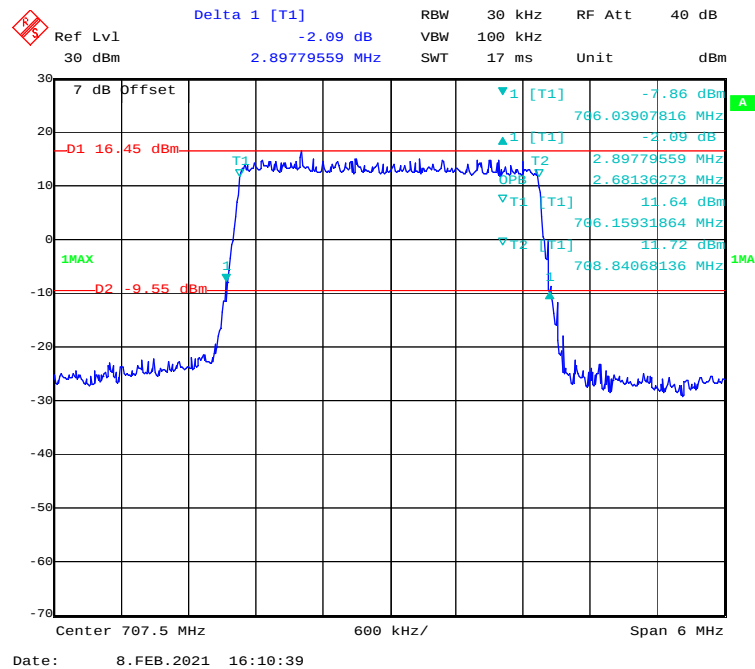


16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

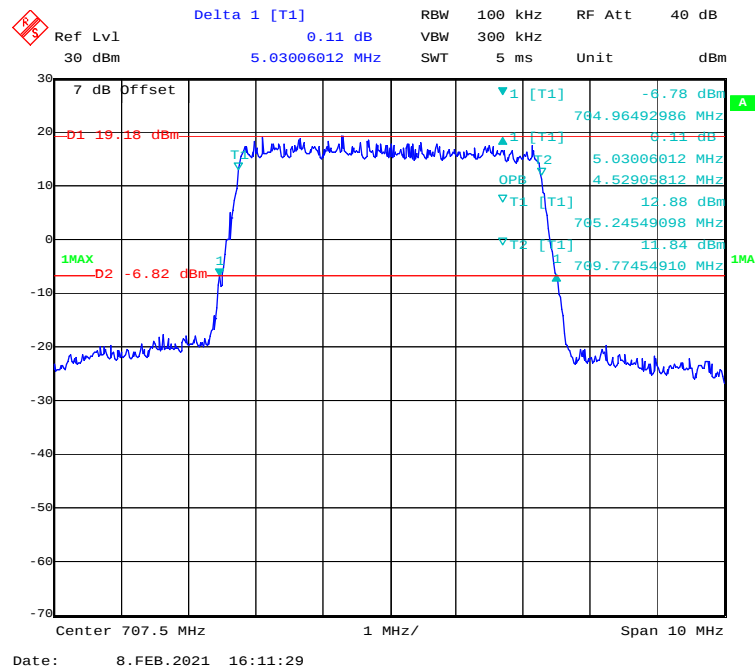
16-QAM (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel**

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

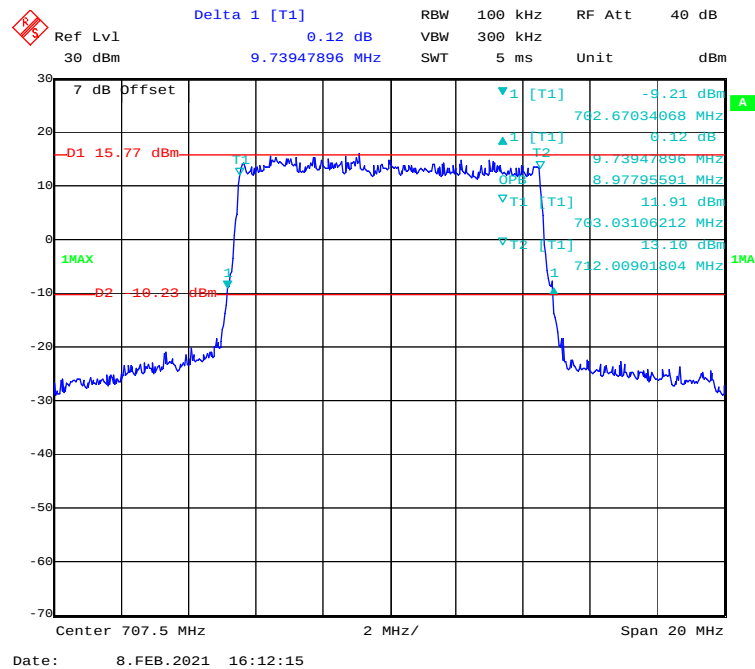
QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

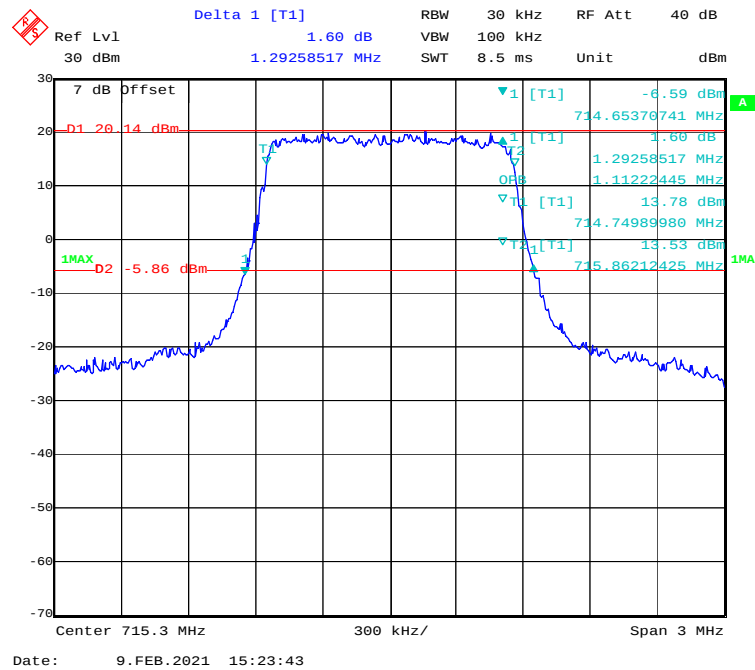
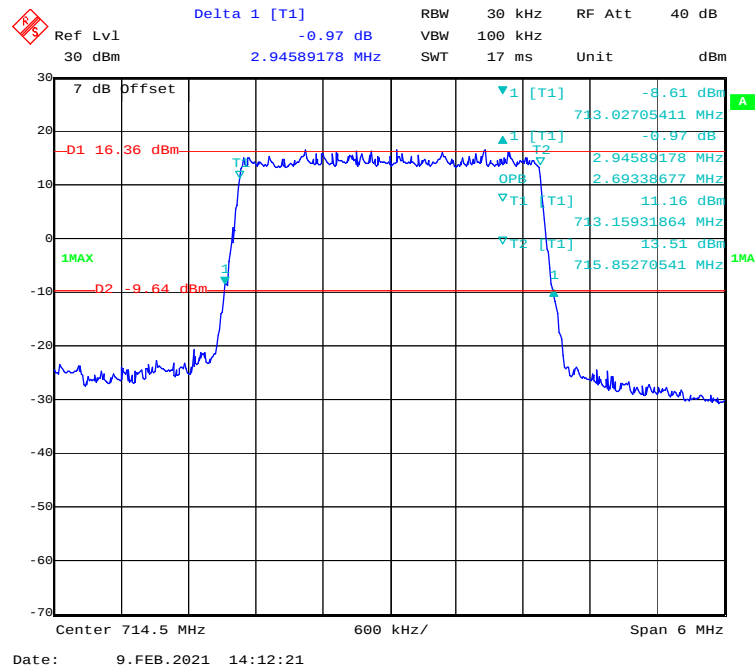
16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**16-QAM (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel**

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

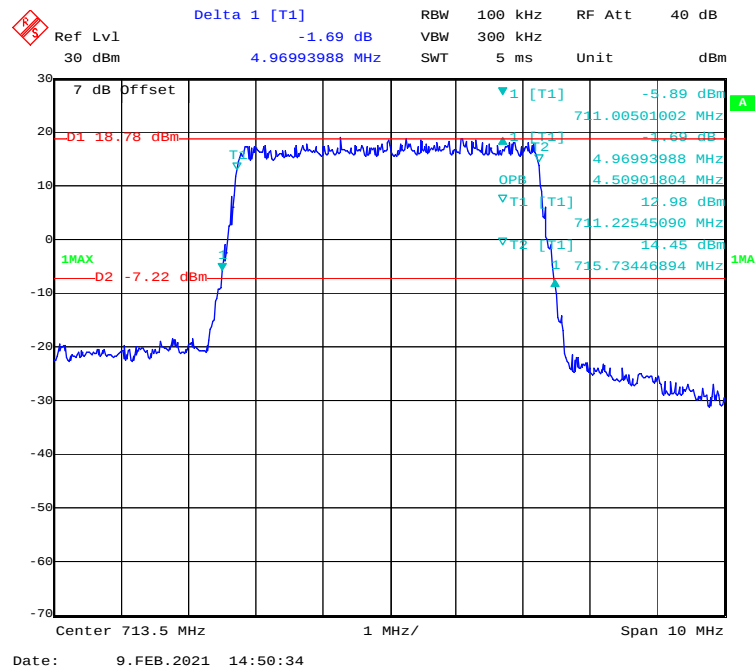


16-QAM (10 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel

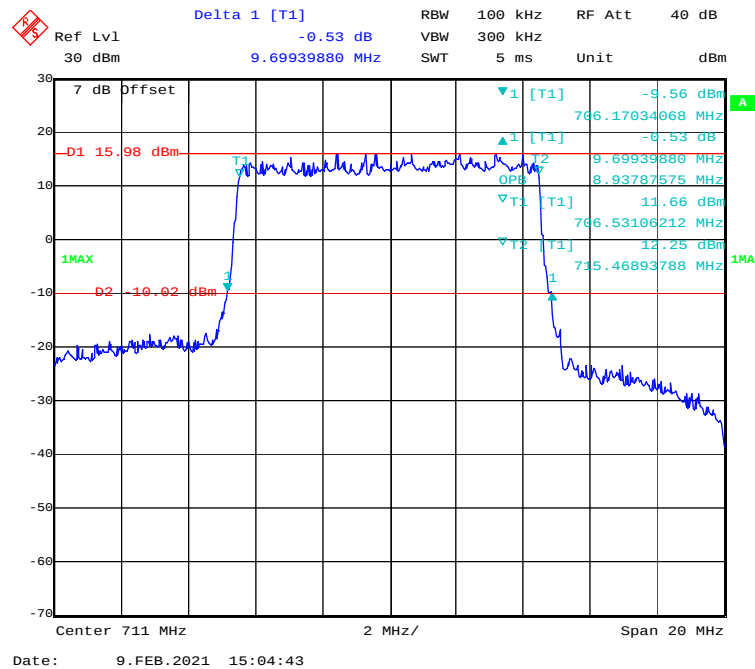


QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**QPSK (3 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel**

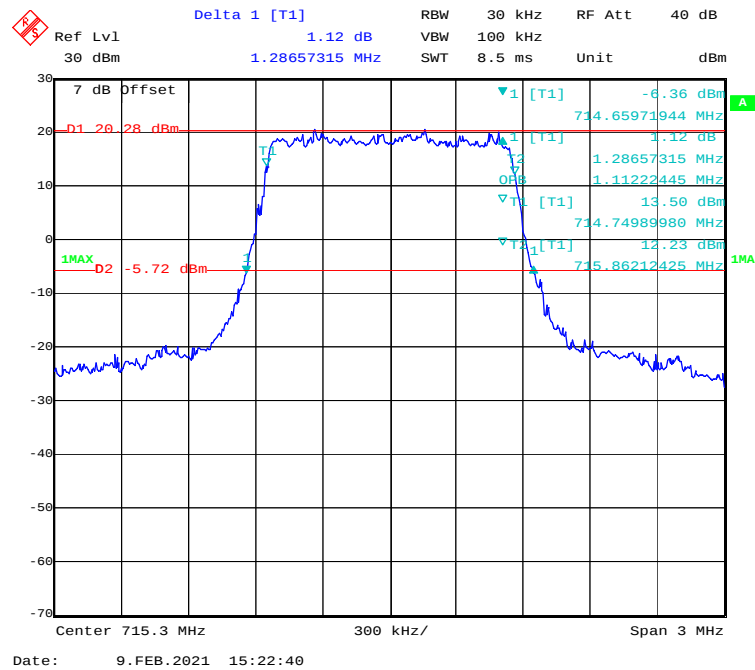
QPSK (5 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



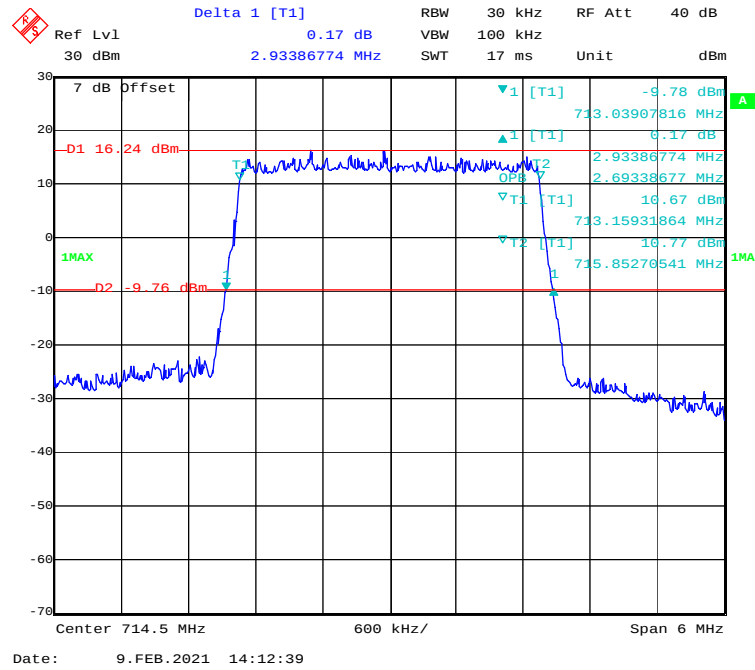
QPSK (10MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



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



[illegible]

Delta 1 [T1]

Ref Lvl 30 dBm

30 dBm

9.69939880 MHz

RBW 100 kHz

RF Att 40 dB

SWT 5 ms

Unit dBm

7 dB Offset

D1 15.6 dBm

D2 -10.4 dBm

1MAX

1MAX

Center 711 MHz

2 MHz/

Span 20 MHz

Date: 9.FEB.2021 15:05:03

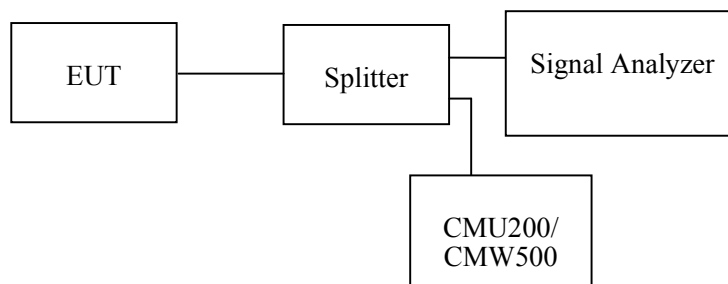
FCC § 2.1051; § 22.917 (a); § 24.238 (a); §27.53 (h) (g), - SPURIOUS EMISSIONS AT ANTENNA TERMINALS**Applicable Standards**

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

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

Test Procedure

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

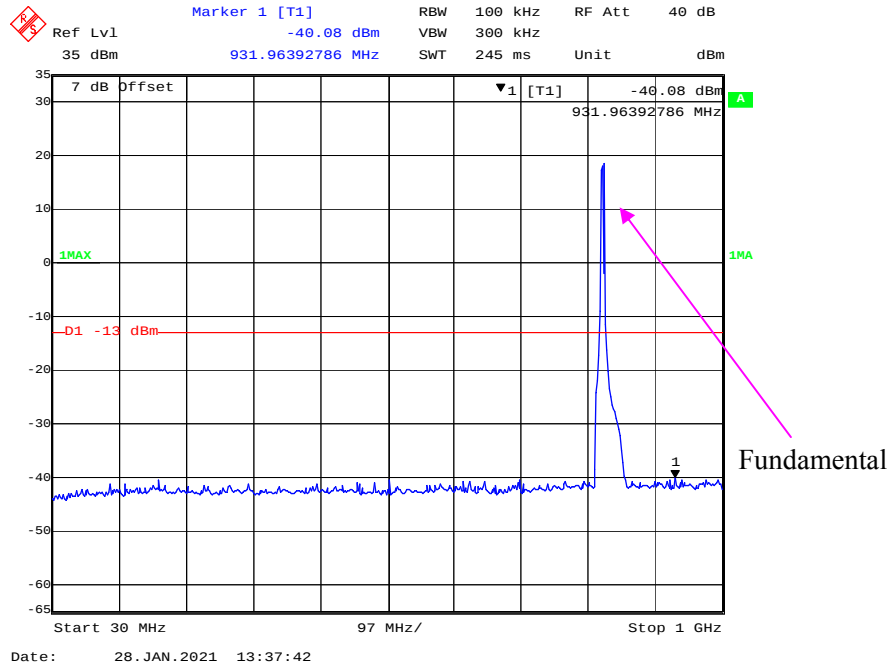
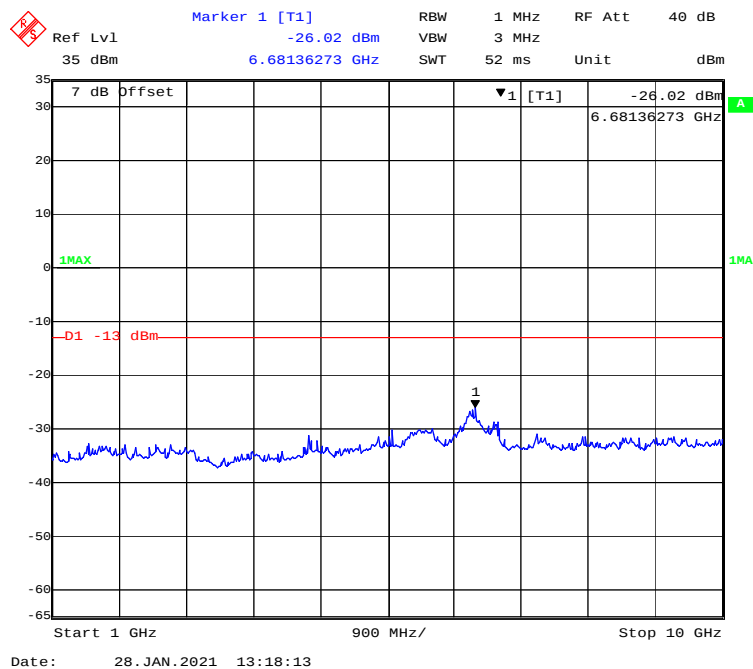
**Test Data****Environmental Conditions**

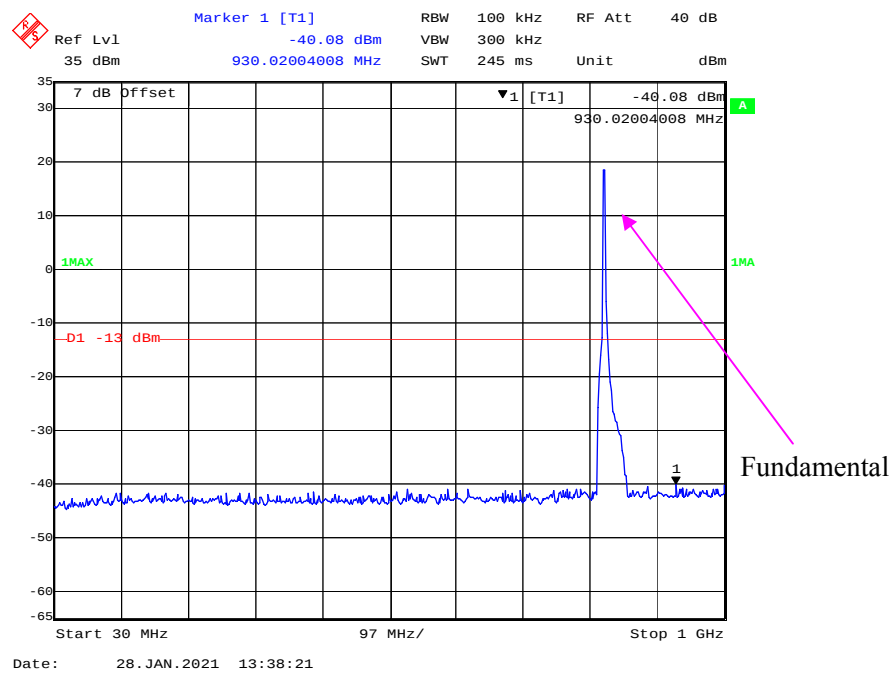
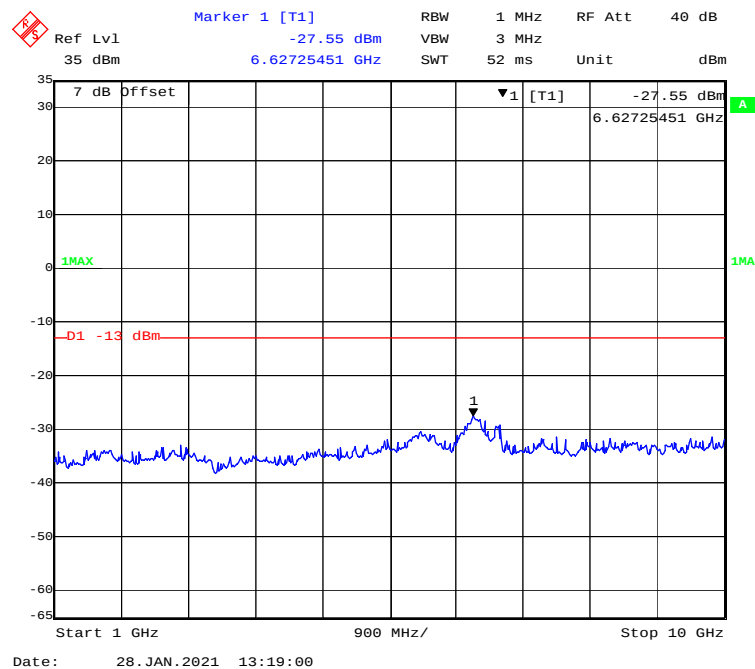
Temperature:	23.2°C-23.5°C
Relative Humidity:	51 %-23%
ATM Pressure:	101.1kPa-103.3kPa

The testing was performed by Tyrone Wang from 2021-01-28 to 2021-02-18.

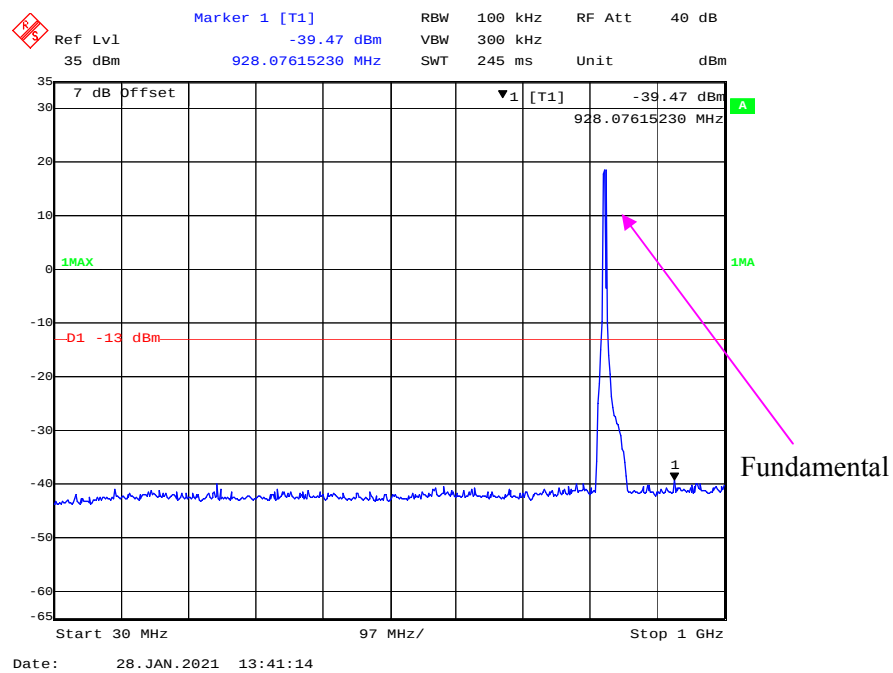
EUT operation mode: Transmitting

Test Result: Compliance.

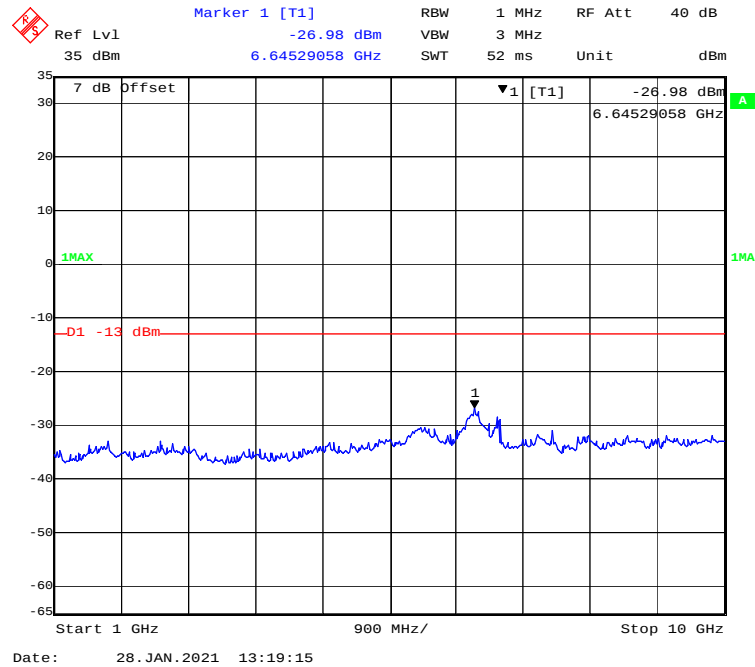
WCDMA Band V:**30 MHz – 1GHz WCDMA (Rel 99) Mode, Low channel****1 GHz – 10 GHz WCDMA (Rel 99) Mode, Low channel**

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

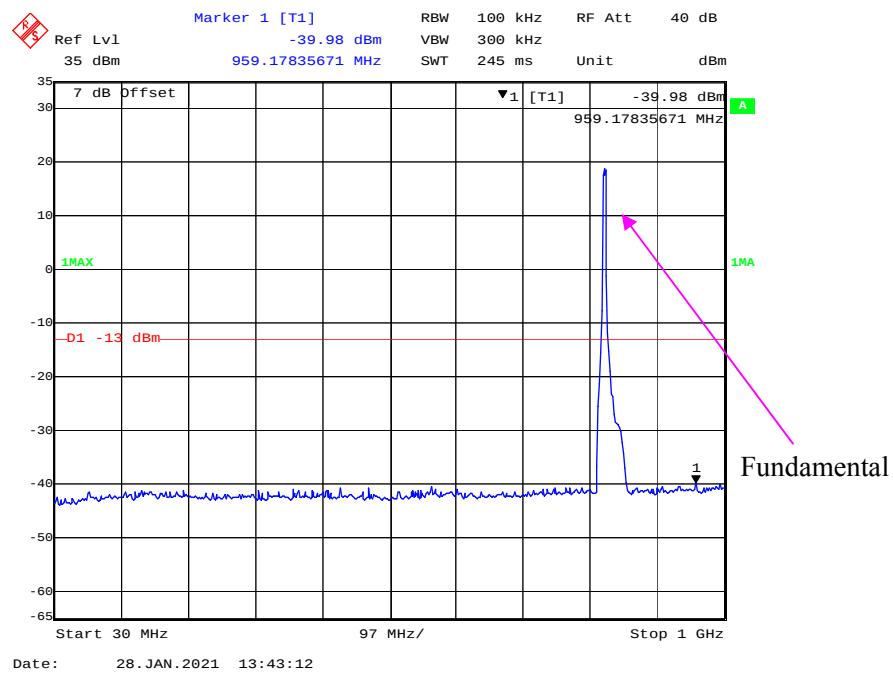
30 MHz – 1GHz WCDMA (HSUPA) Mode, Low channel



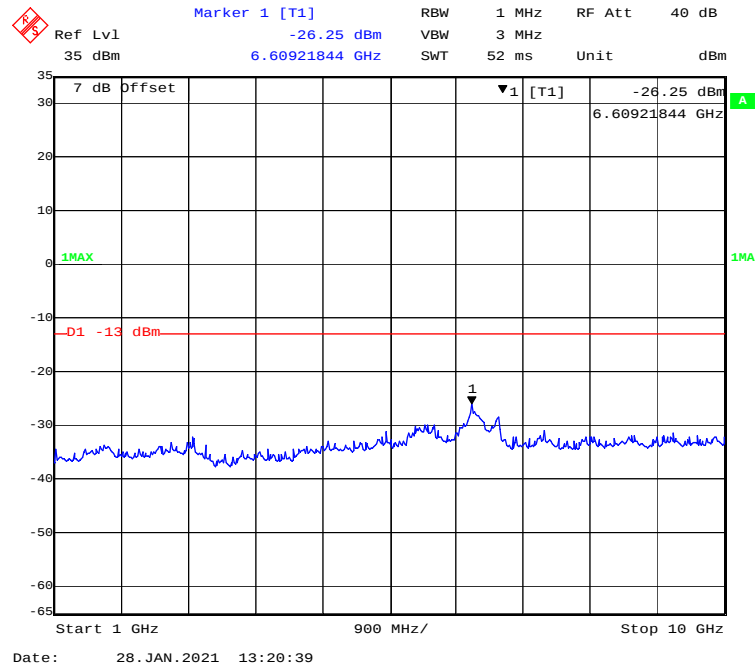
1 GHz – 10 GHz WCDMA (HSUPA) Mode, Low channel



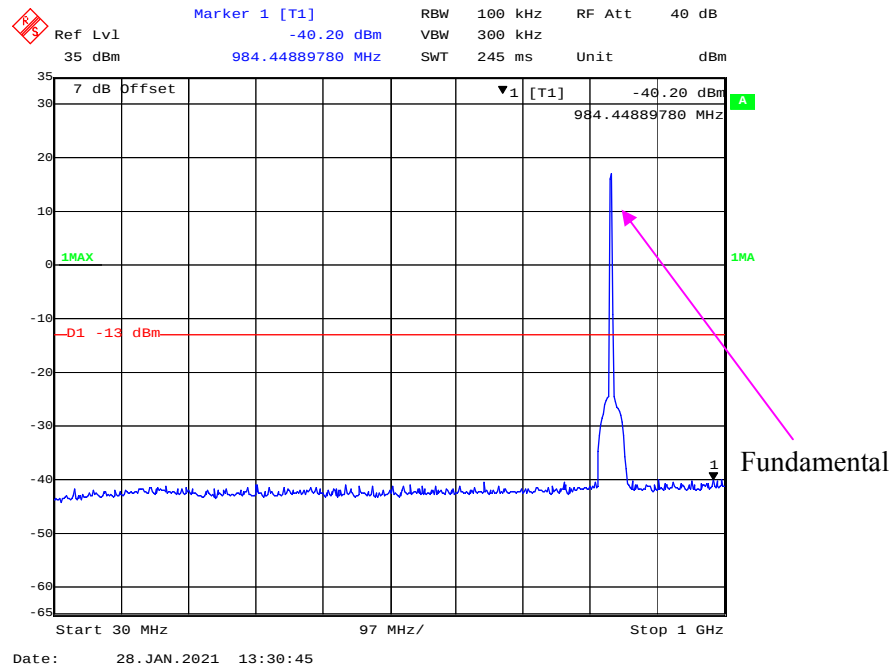
30 MHz – 1GHz WCDMA (HSPA+) Mode, Low channel



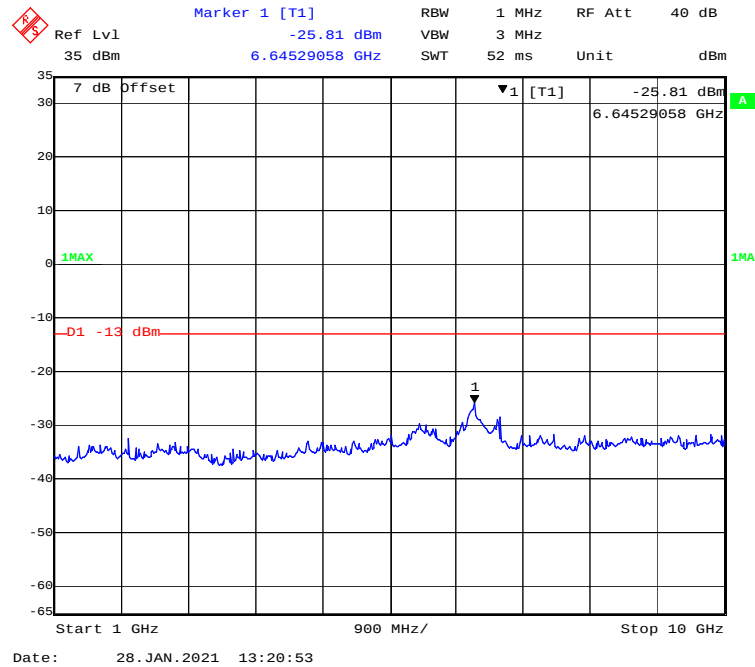
1 GHz – 10 GHz WCDMA (HSPA+) Mode, Low channel



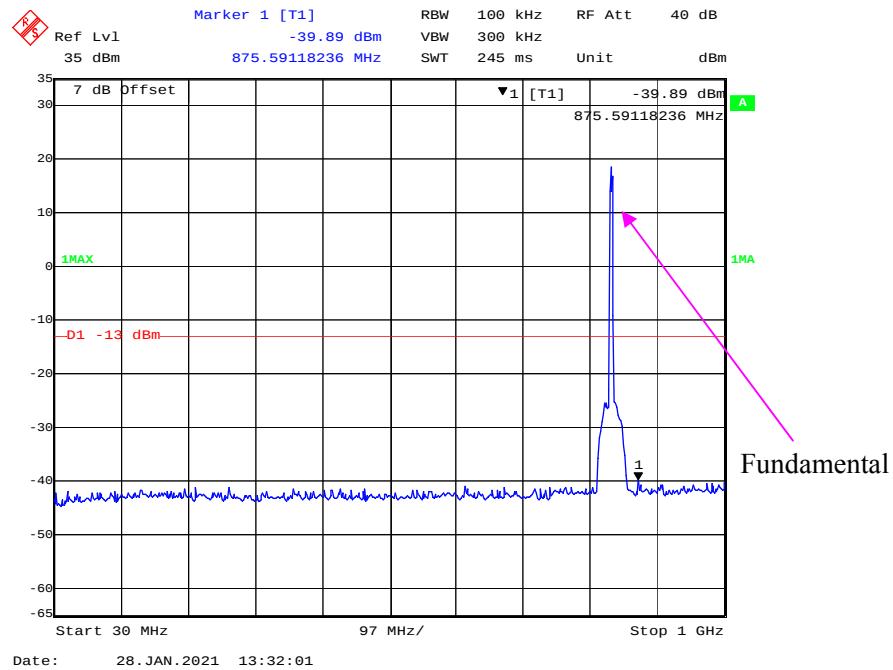
30 MHz – 1GHz WCDMA (Rel 99) Mode, Middle channel



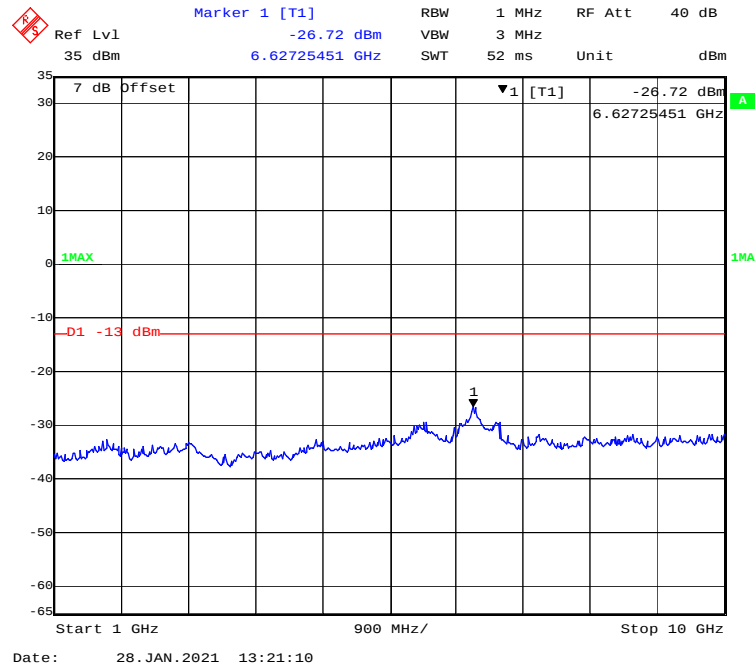
1 GHz – 10 GHz WCDMA (Rel 99) Mode, Middle channel



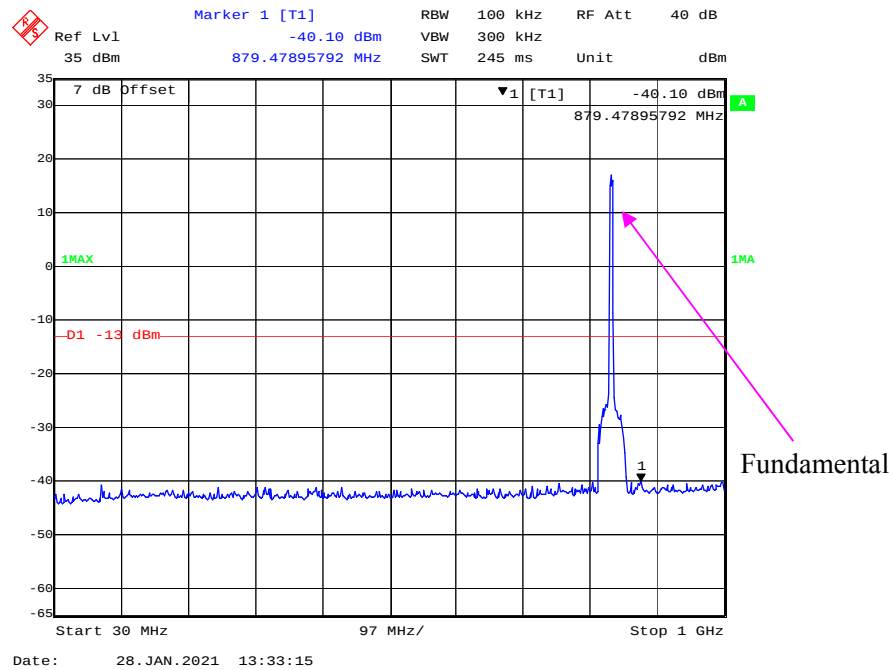
30 MHz – 1GHz WCDMA (HSDPA) Mode, Middle channel



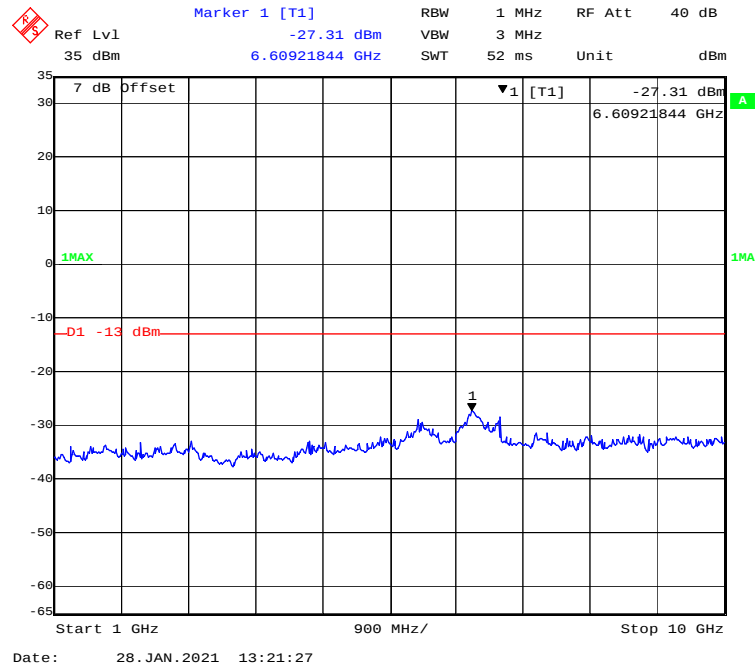
1 GHz – 10 GHz WCDMA (HSDPA) Mode, Middle channel

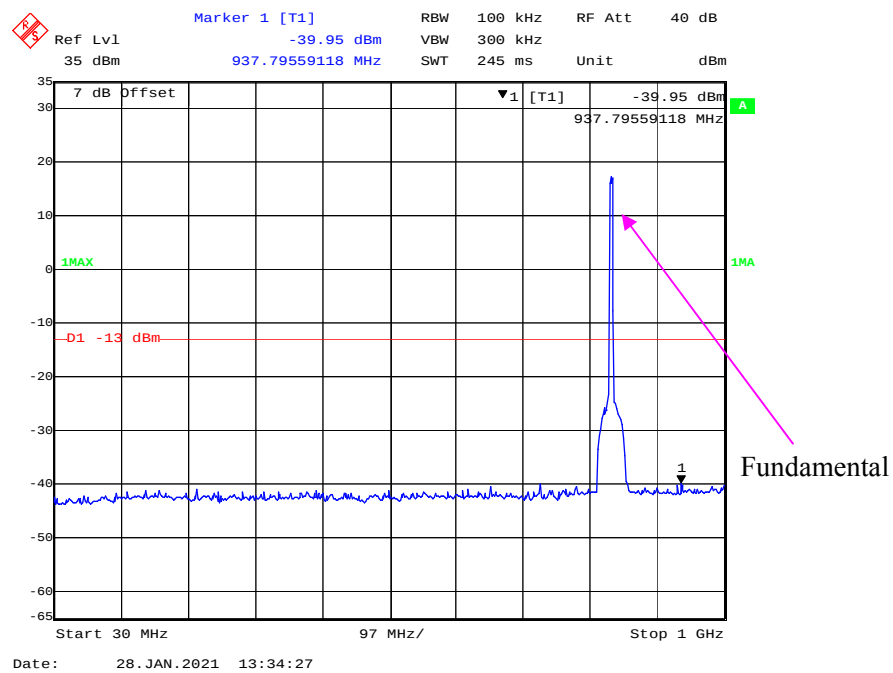
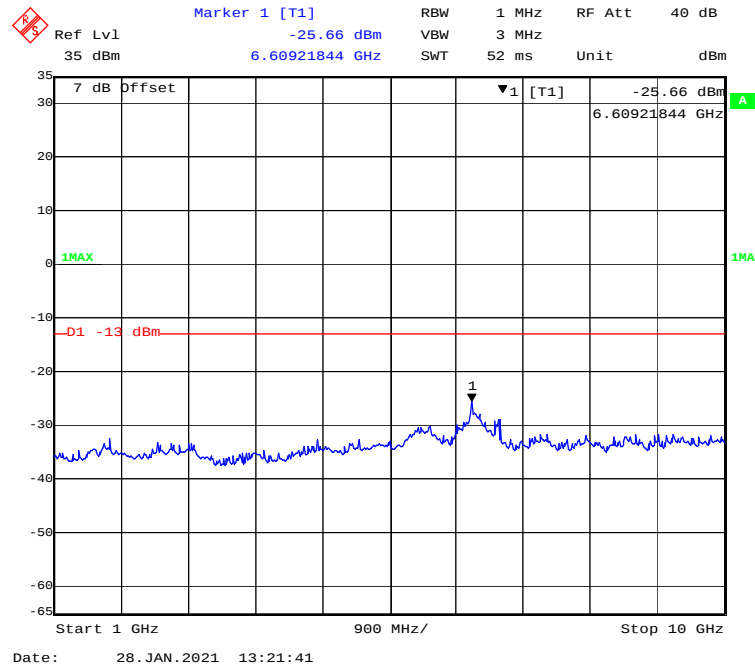


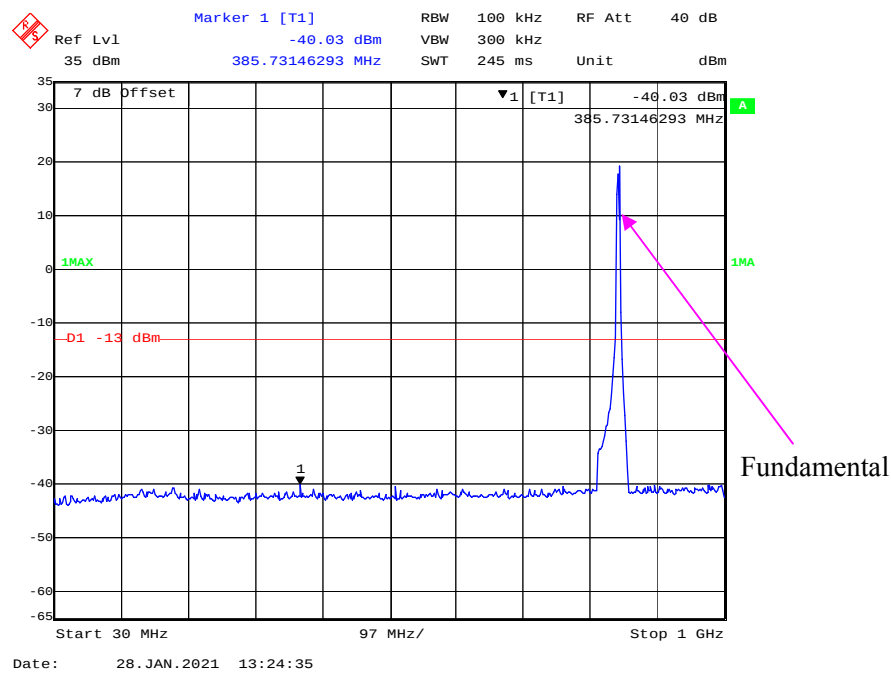
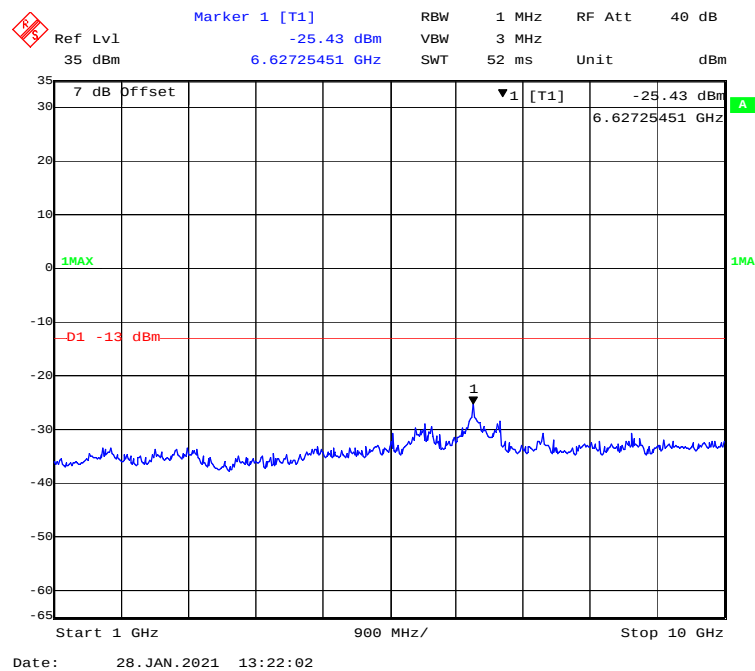
30 MHz – 1GHz WCDMA (HSUPA) Mode, Middle channel



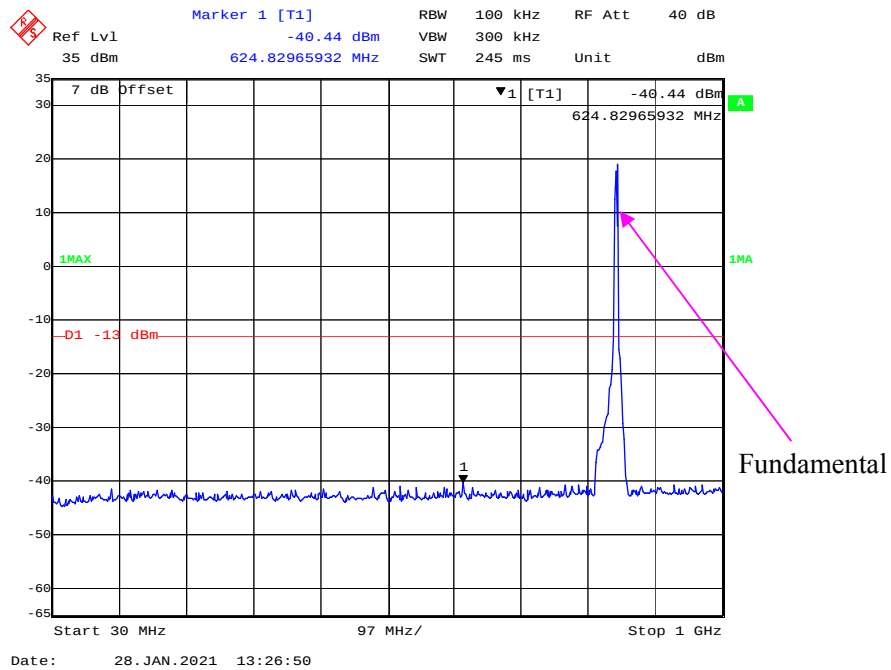
1 GHz – 10 GHz WCDMA (HSUPA) Mode, Middle channel



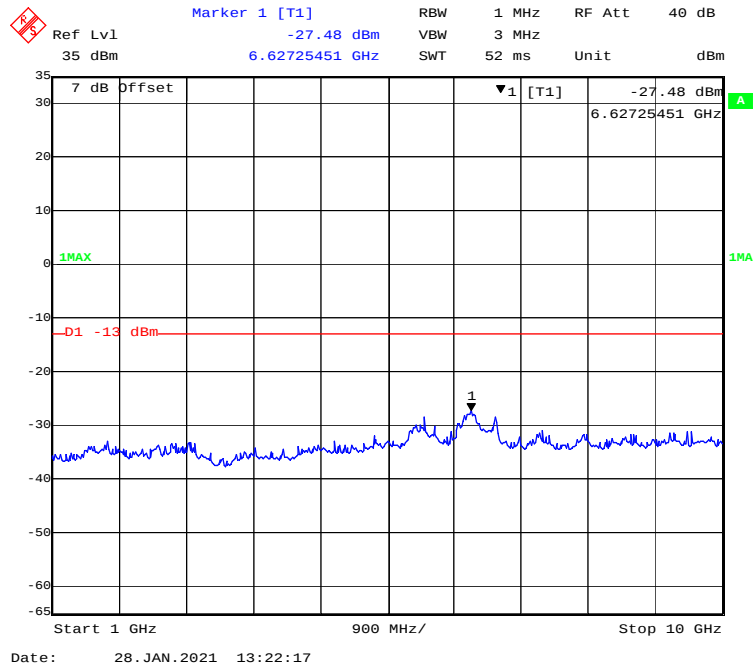
30 MHz – 1GHz WCDMA (HSPA+) Mode, Middle channel**1 GHz – 10 GHz WCDMA (HSPA+) Mode, Middle channel**

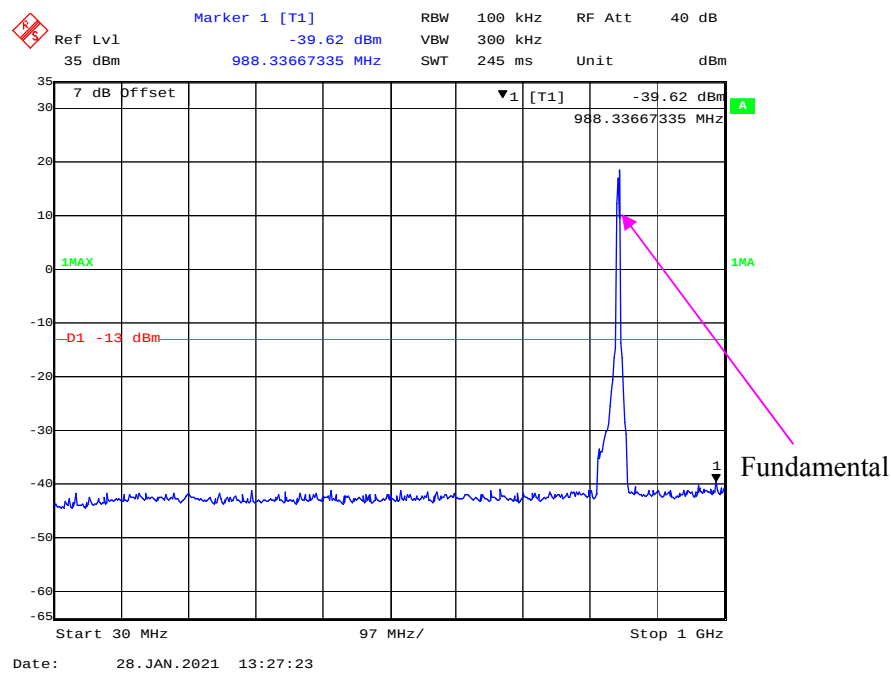
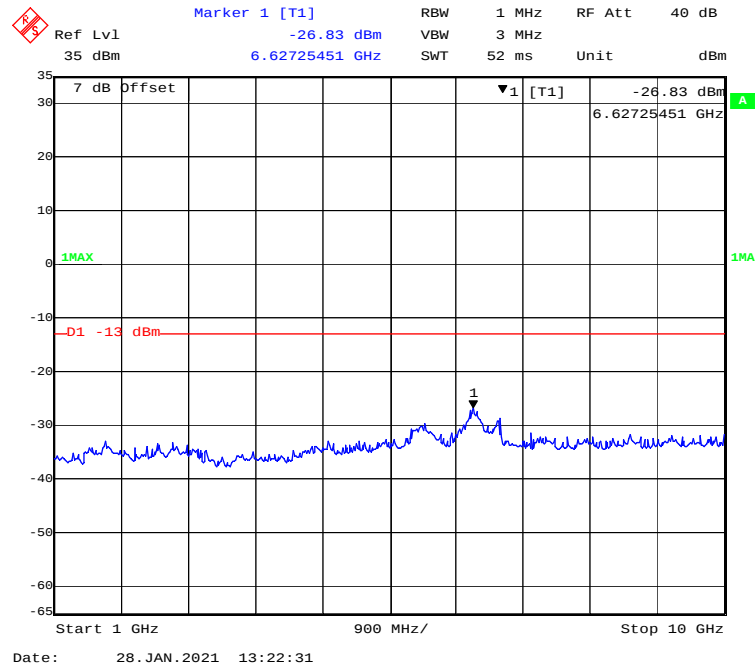
30 MHz – 1GHz WCDMA (Rel 99) Mode, High channel**1 GHz – 10 GHz WCDMA (Rel 99) Mode, High channel**

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

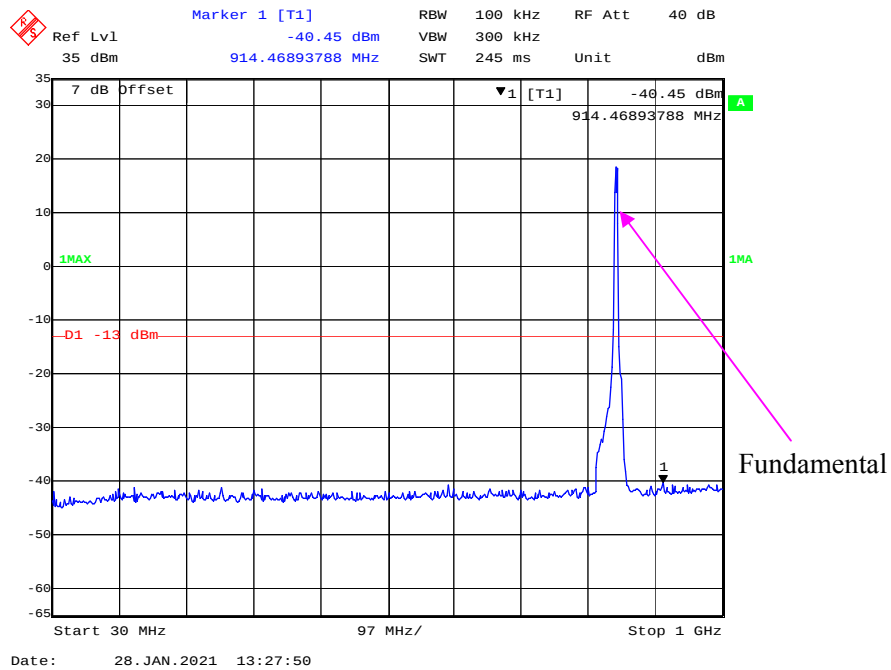


1 GHz – 10 GHz WCDMA (HSDPA) Mode, High channel

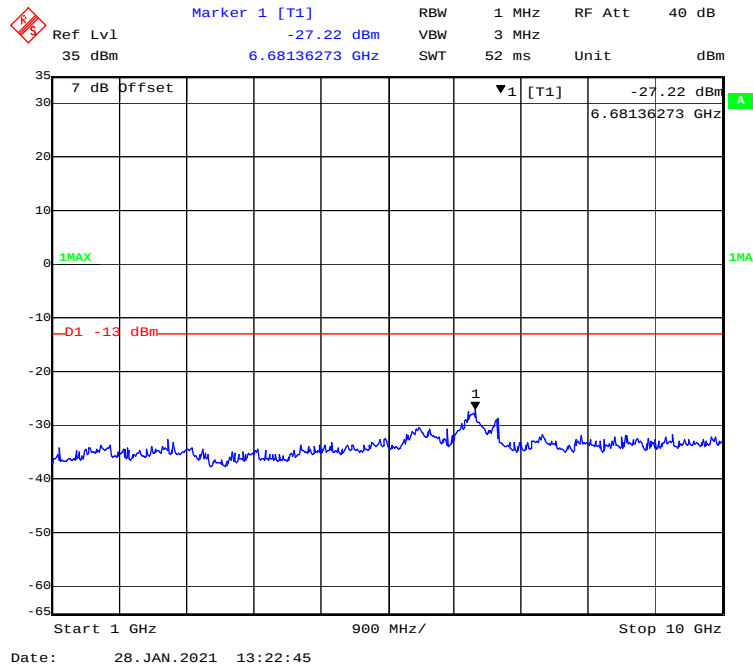


30 MHz – 1GHz WCDMA (HSUPA) Mode, High channel**1 GHz – 10 GHz WCDMA (HSUPA) Mode, High channel**

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

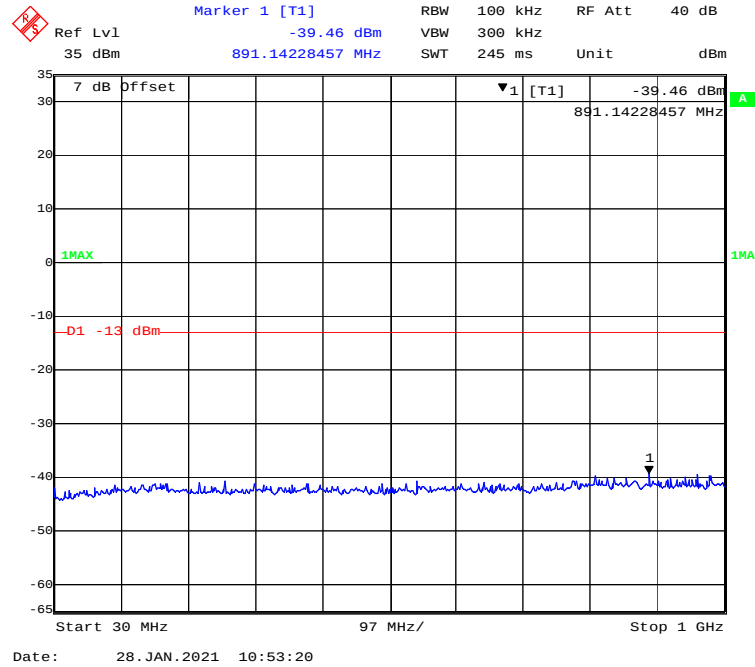


1 GHz – 10 GHz WCDMA (HSPA+) Mode, High channel

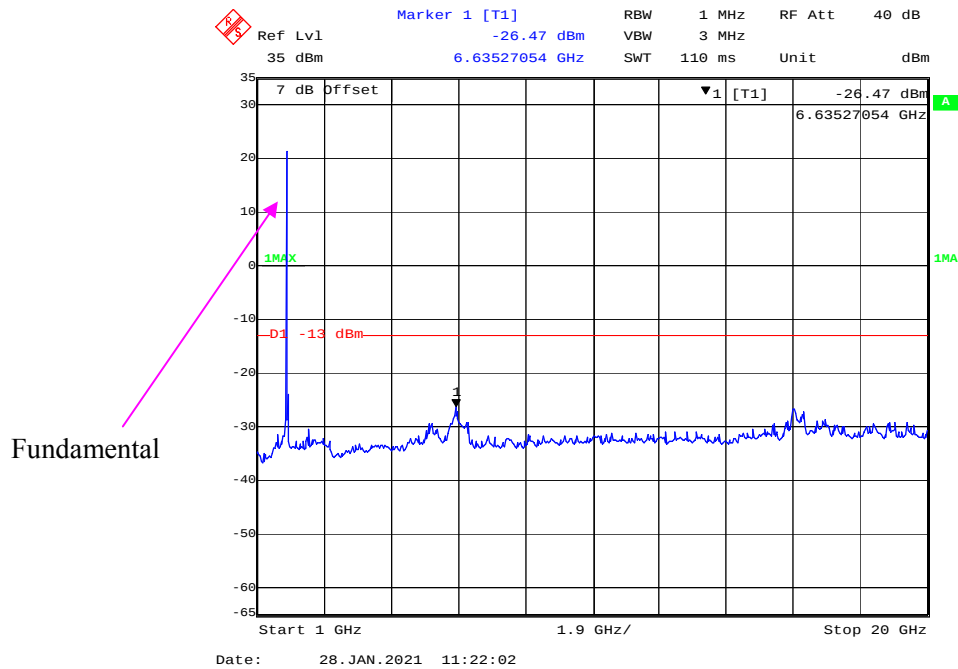


WCDMA Band II:

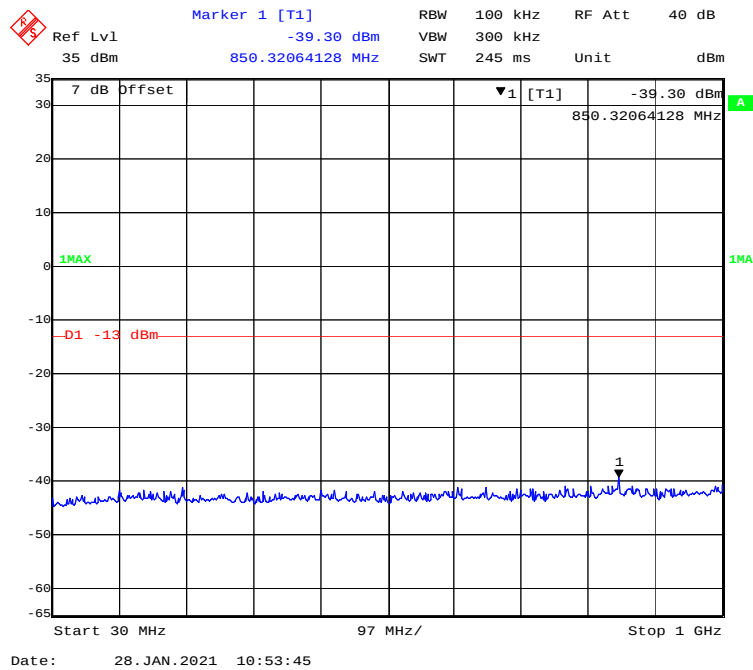
30 MHz – 1GHz WCDMA (Rel 99) Mode, Low channel



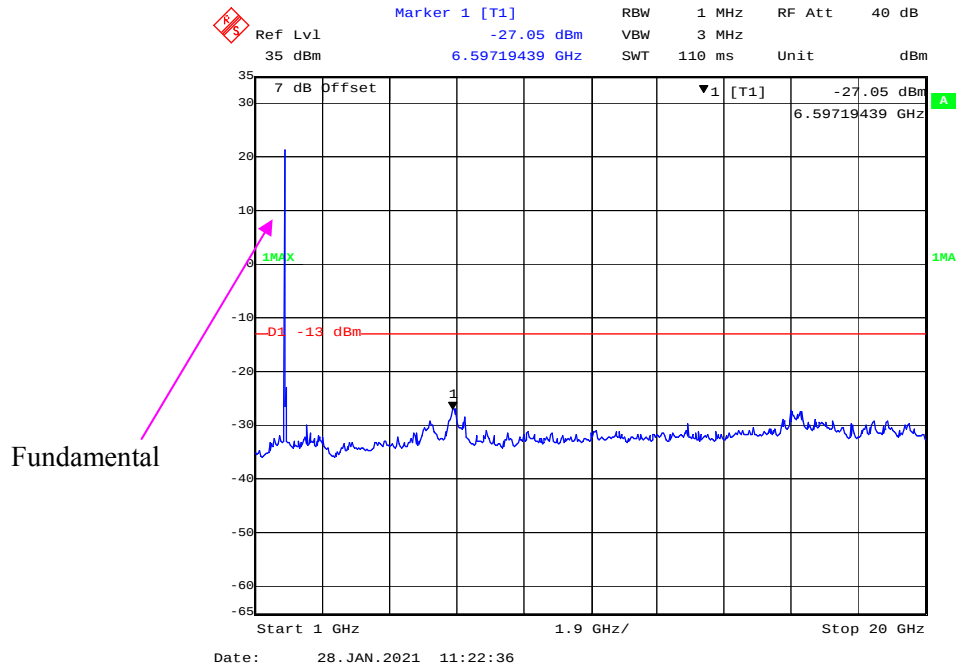
1 GHz – 20 GHz WCDMA (Rel 99) Mode, Low channel



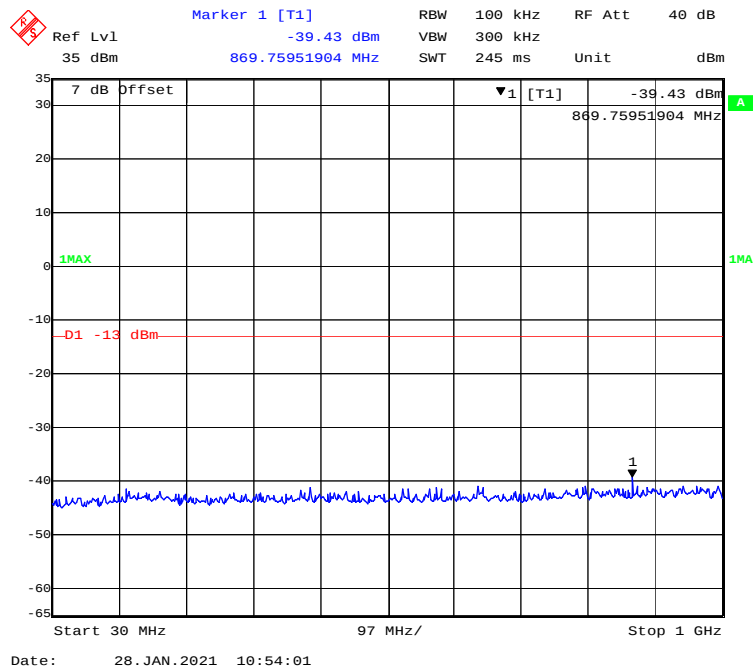
30 MHz – 1GHz WCDMA (HSDPA) Mode, Low channel



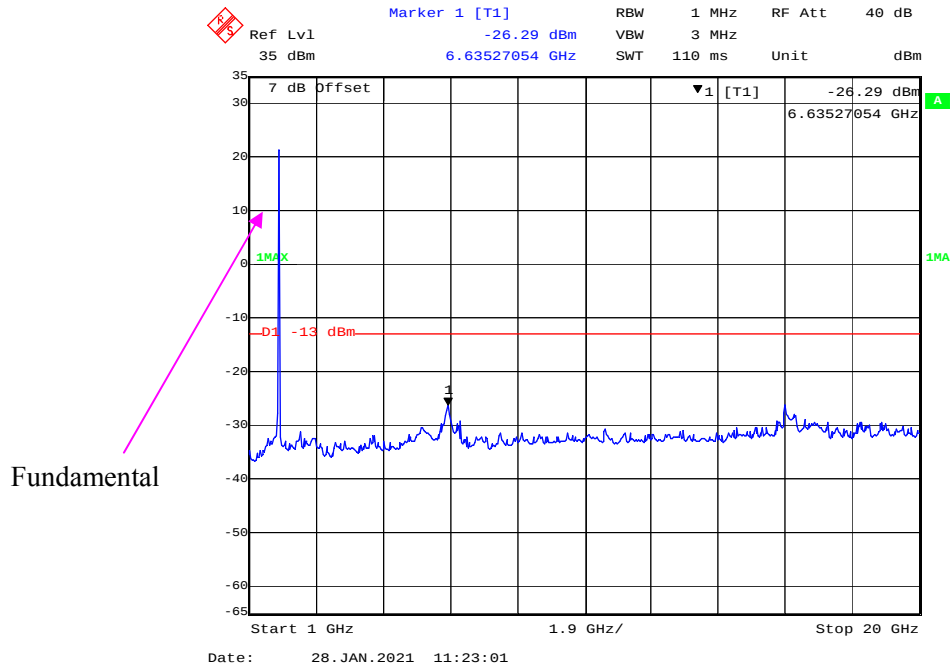
1 GHz – 20 GHz WCDMA (HSDPA) Mode, Low channel



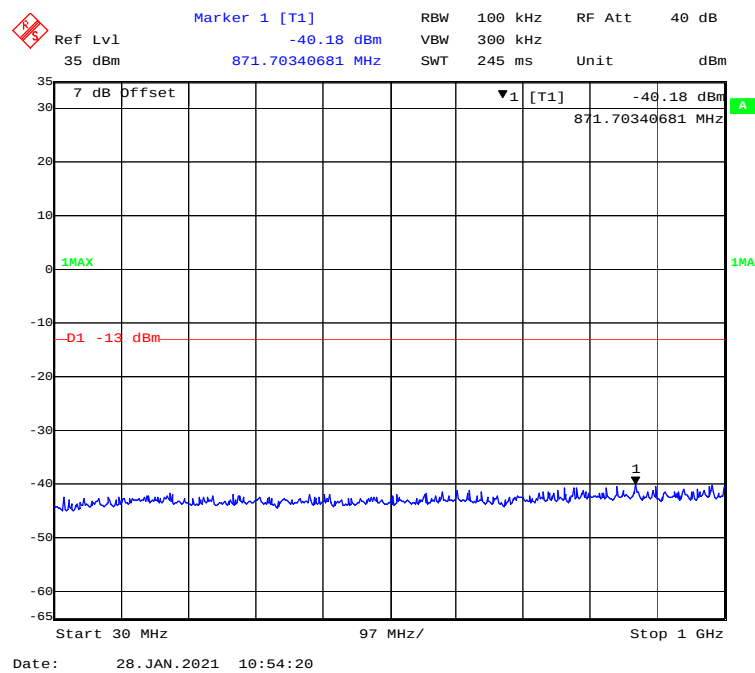
30 MHz – 1GHz WCDMA (HSUPA) Mode, Low channel



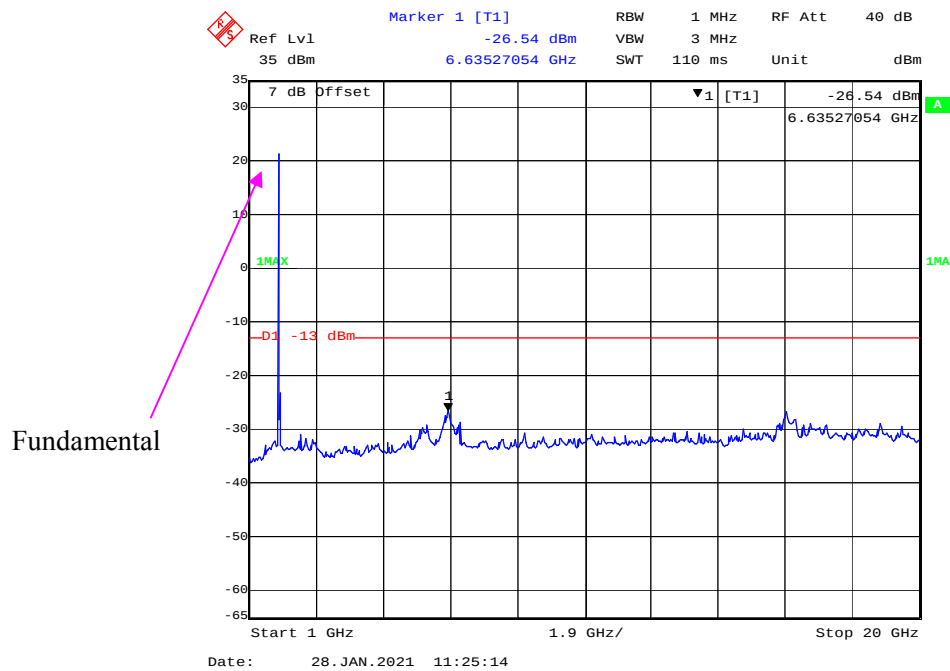
1 GHz – 20 GHz WCDMA (HSUPA) Mode, Low channel



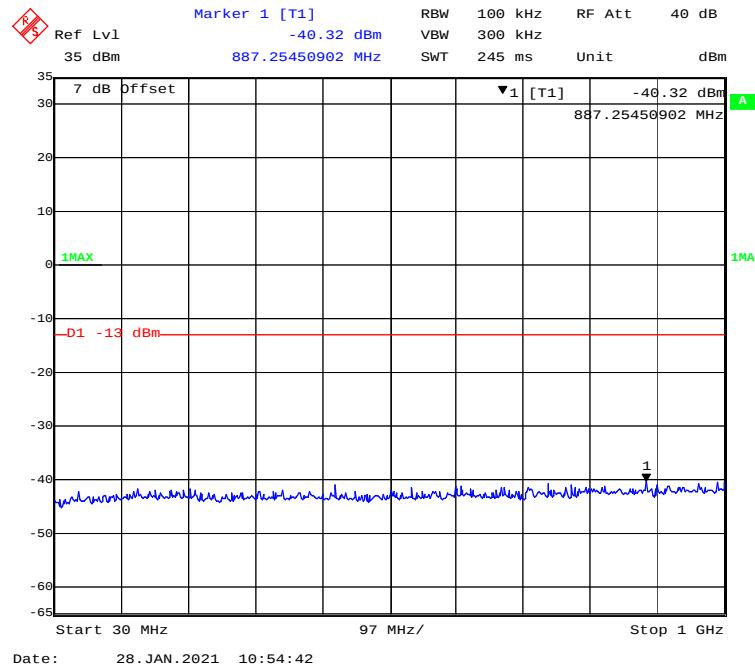
30 MHz – 1GHz WCDMA (HSPA+) Mode, Low channel



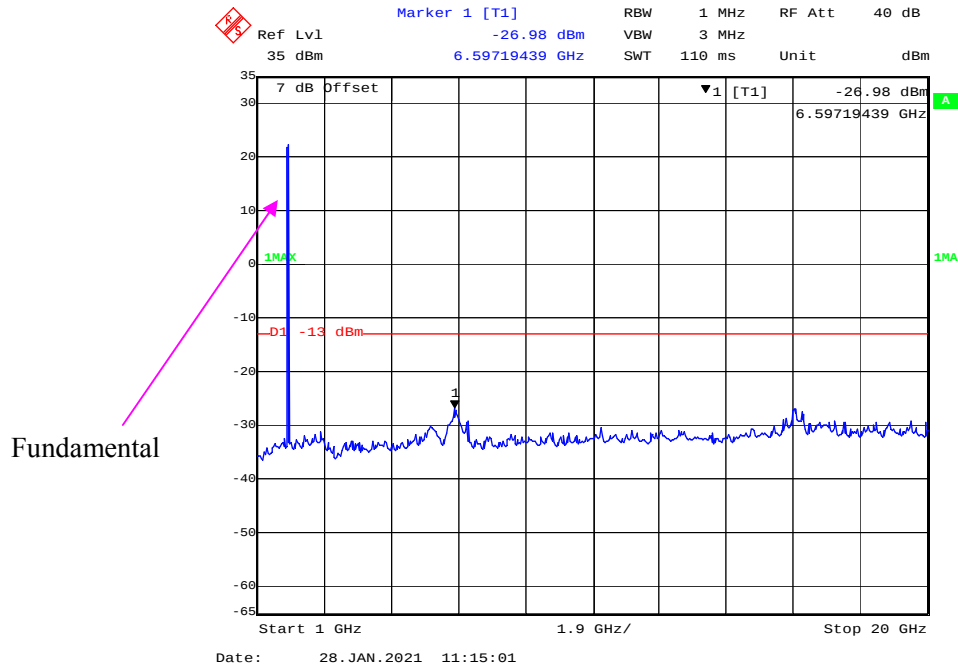
1 GHz – 20 GHz WCDMA (HSPA+) Mode, Low channel



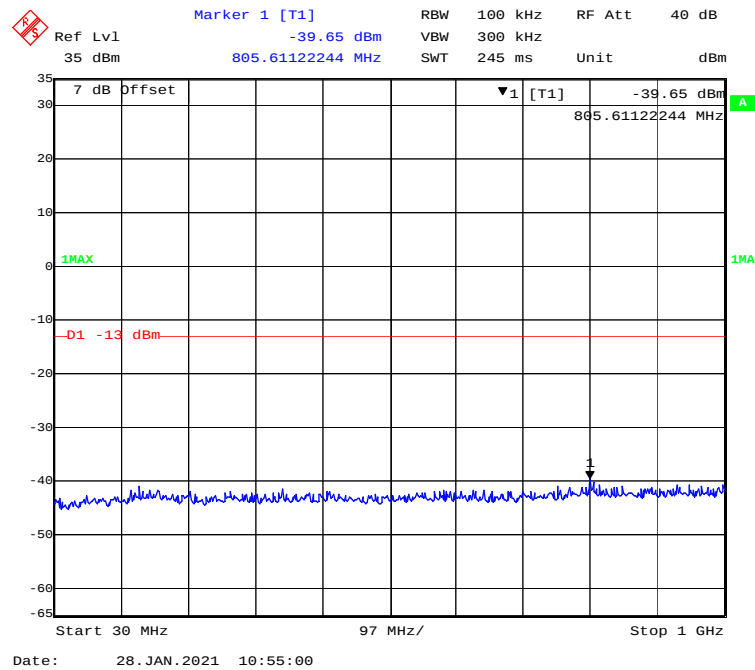
30 MHz – 1GHz WCDMA (Rel 99) Mode, Middle channel



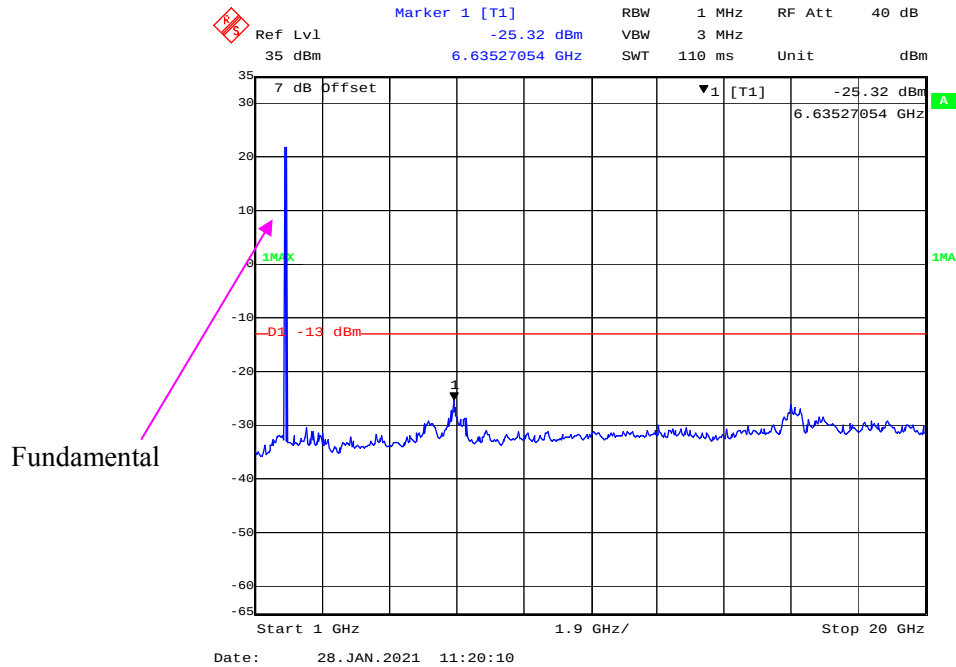
1 GHz – 20 GHz WCDMA (Rel 99) Mode, Middle channel



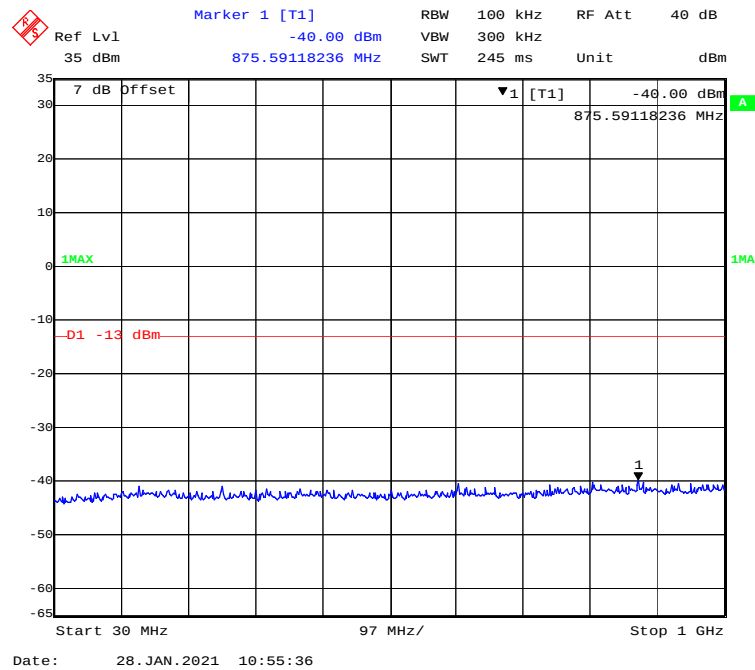
30 MHz – 1GHz WCDMA (HSDPA) Mode, Middle channel



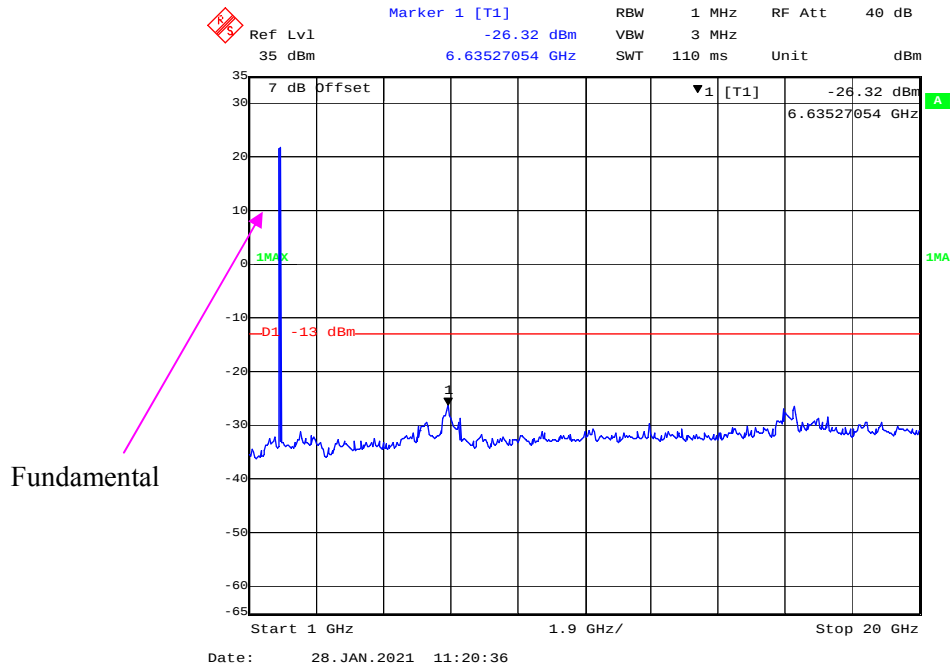
1 GHz – 20 GHz WCDMA (HSDPA) Mode, Middle channel



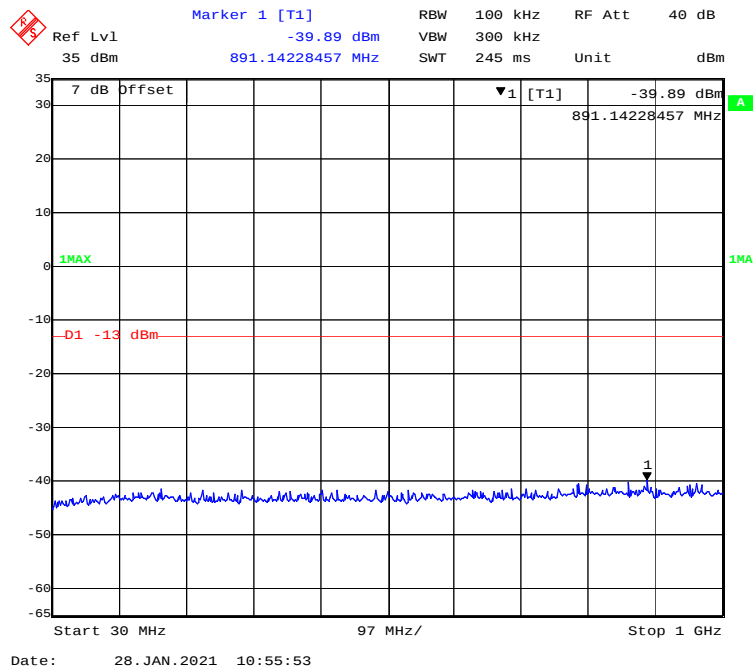
30 MHz – 1GHz WCDMA (HSUPA) Mode, Middle channel



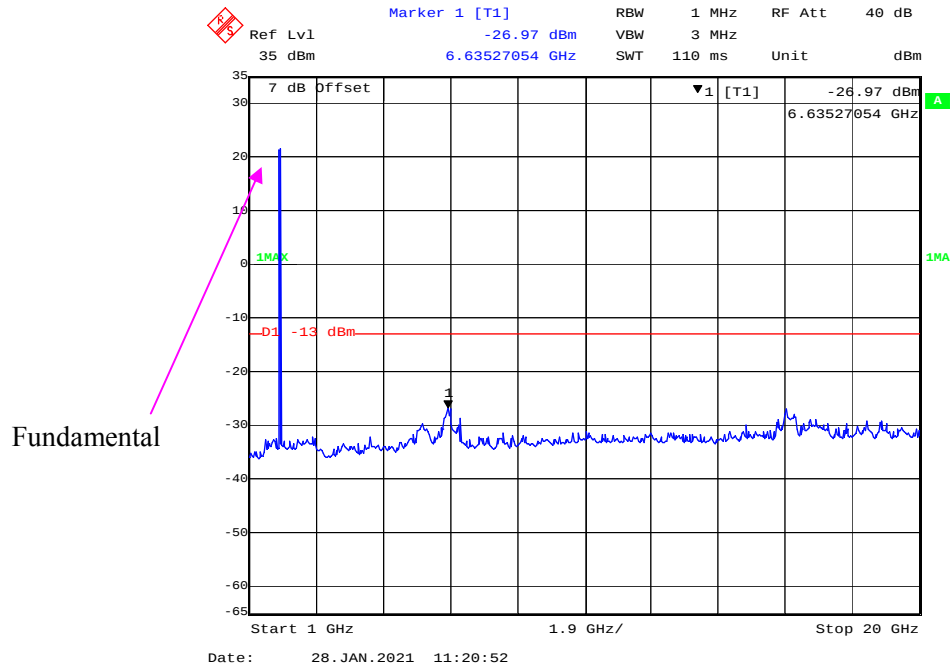
1 GHz – 20 GHz WCDMA (HSUPA) Mode, Middle channel



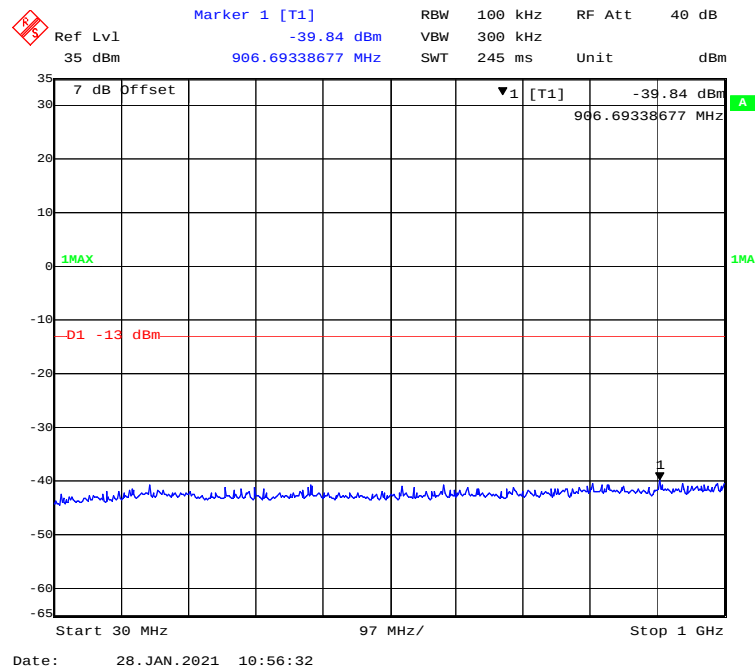
30 MHz – 1GHz WCDMA (HSPA+) Mode, Middle channel



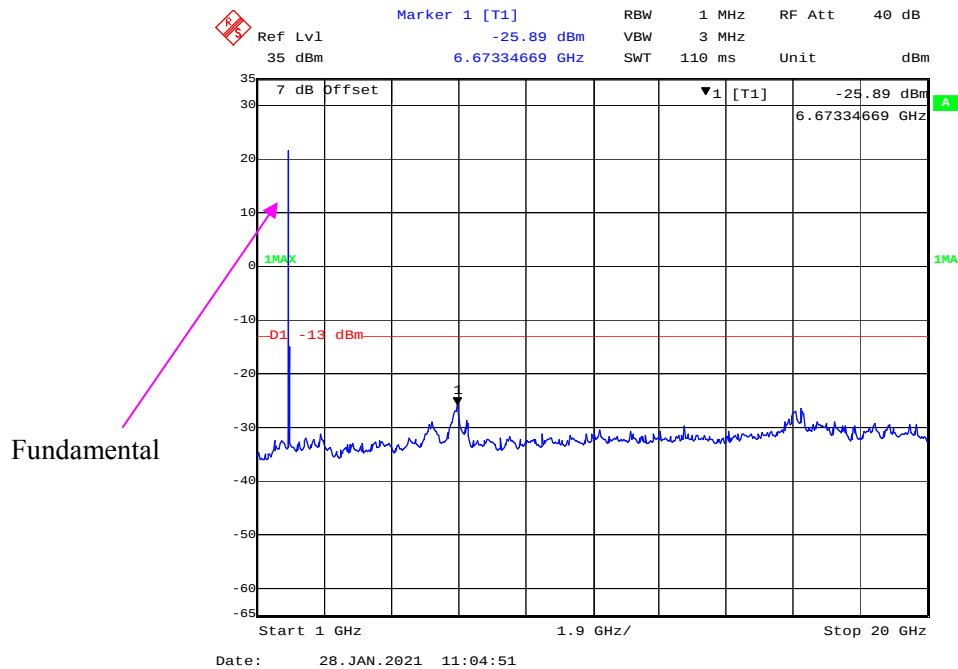
1 GHz – 20 GHz WCDMA (HSPA+) Mode, Middle channel



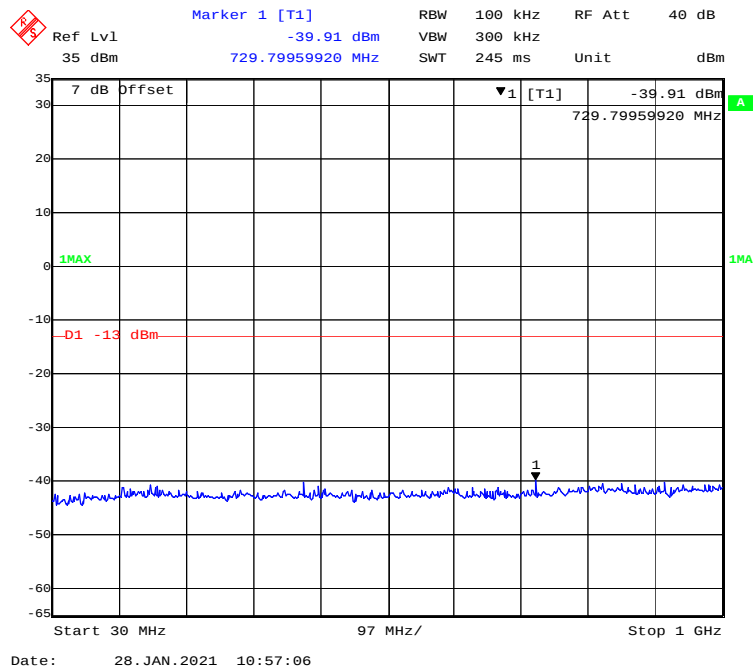
30 MHz – 1GHz WCDMA (Rel 99) Mode, High channel



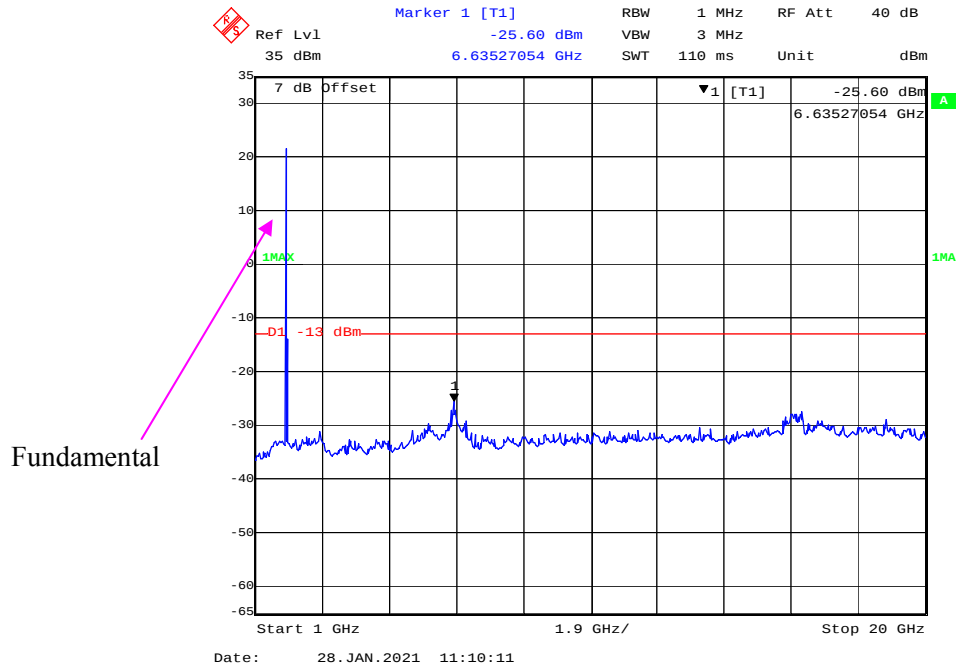
1 GHz – 20 GHz WCDMA (Rel 99) Mode, High channel



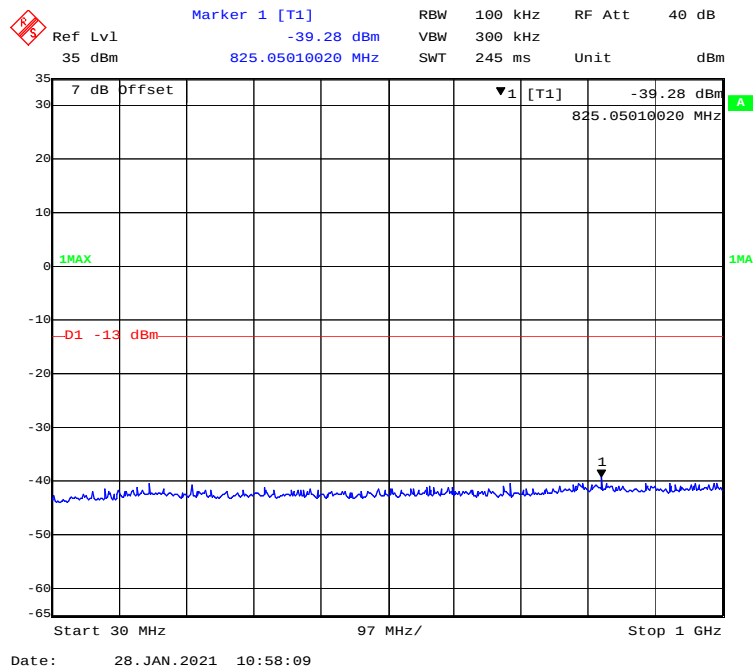
30 MHz – 1GHz WCDMA (HSDPA) Mode, High channel



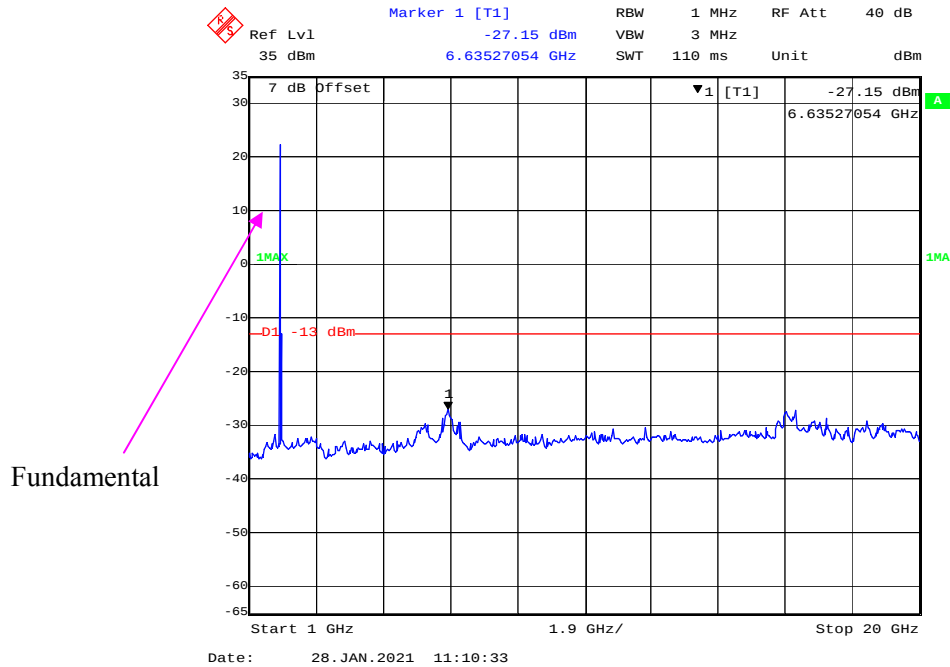
1 GHz – 20 GHz WCDMA (HSDPA) Mode, High channel



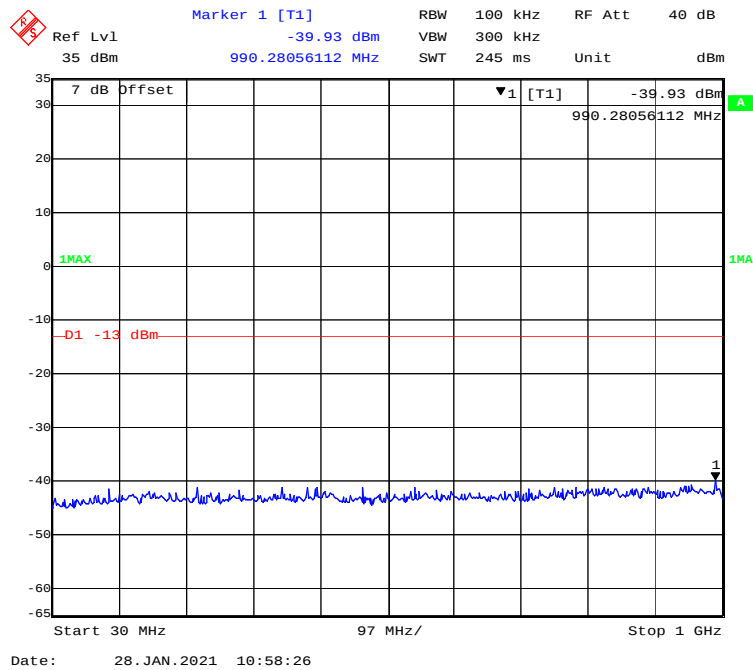
30 MHz – 1GHz WCDMA (HSUPA) Mode, High channel



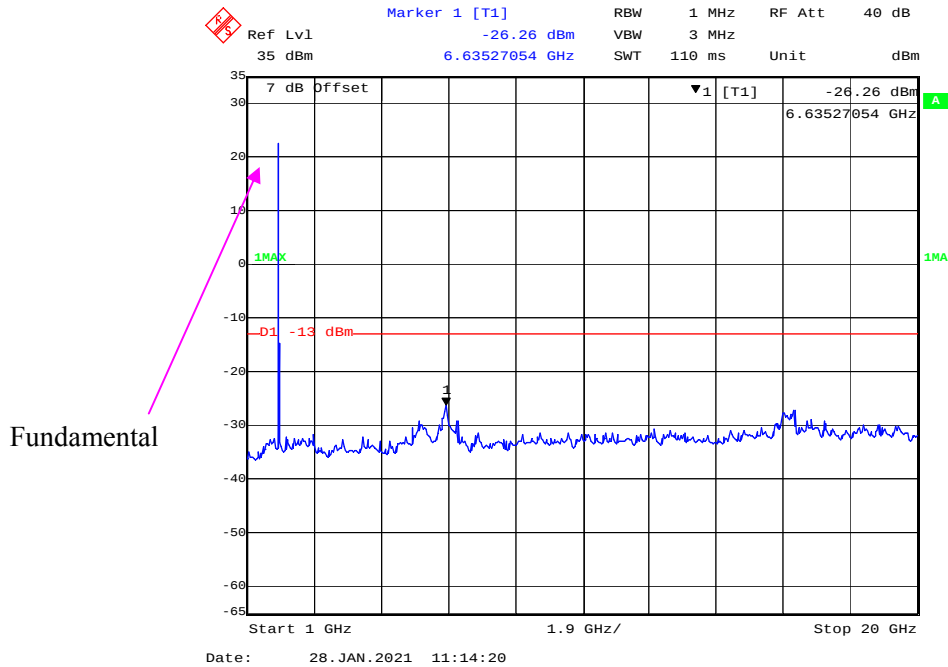
1 GHz – 20 GHz WCDMA (HSUPA) Mode, High channel



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

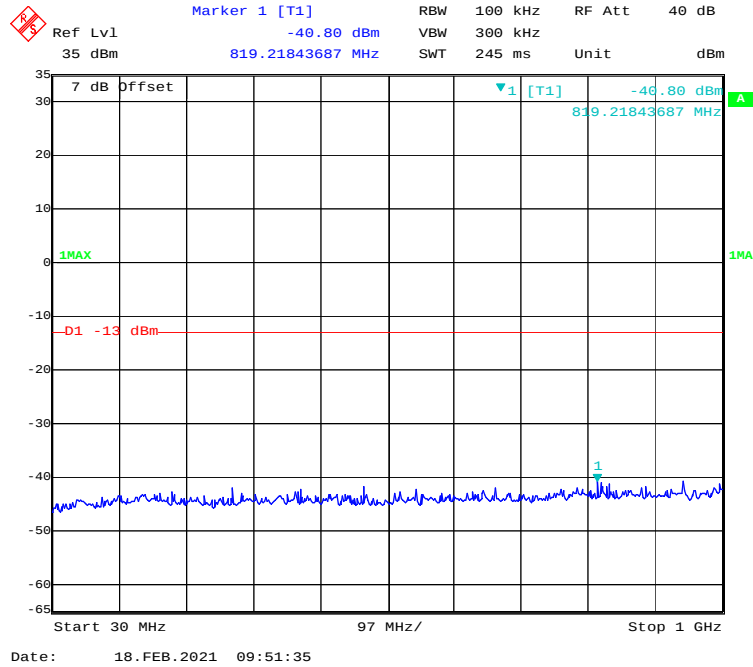


1 GHz – 20 GHz WCDMA (HSPA+) Mode, High channel

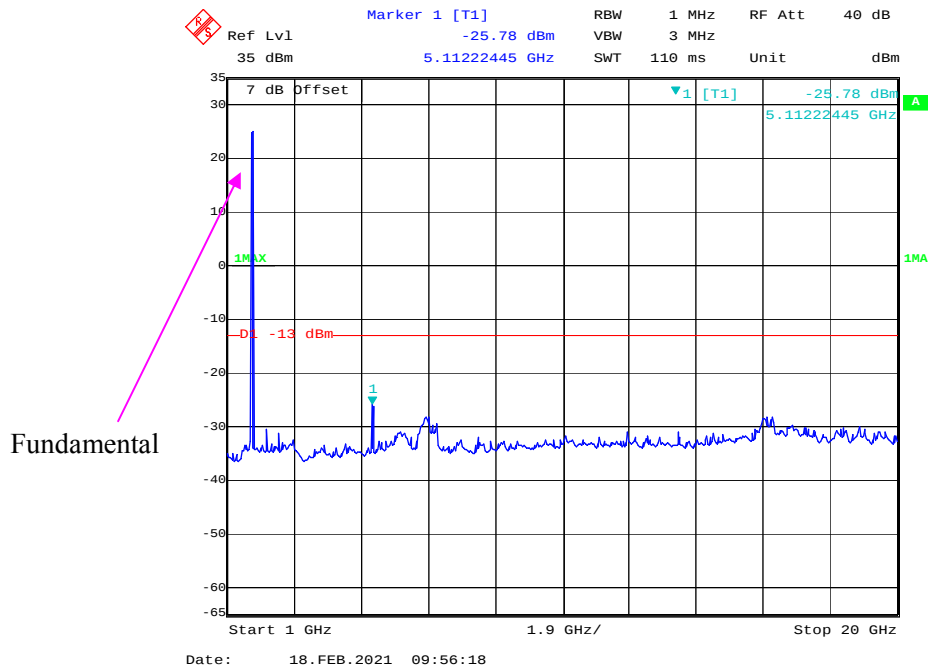


WCDMA Band IV:

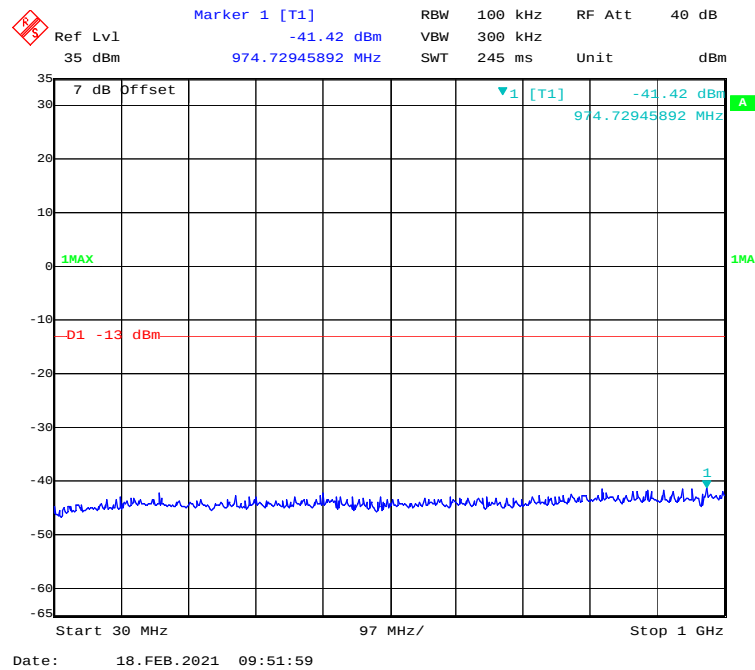
30 MHz – 1GHz WCDMA (Rel 99) Mode, Low channel



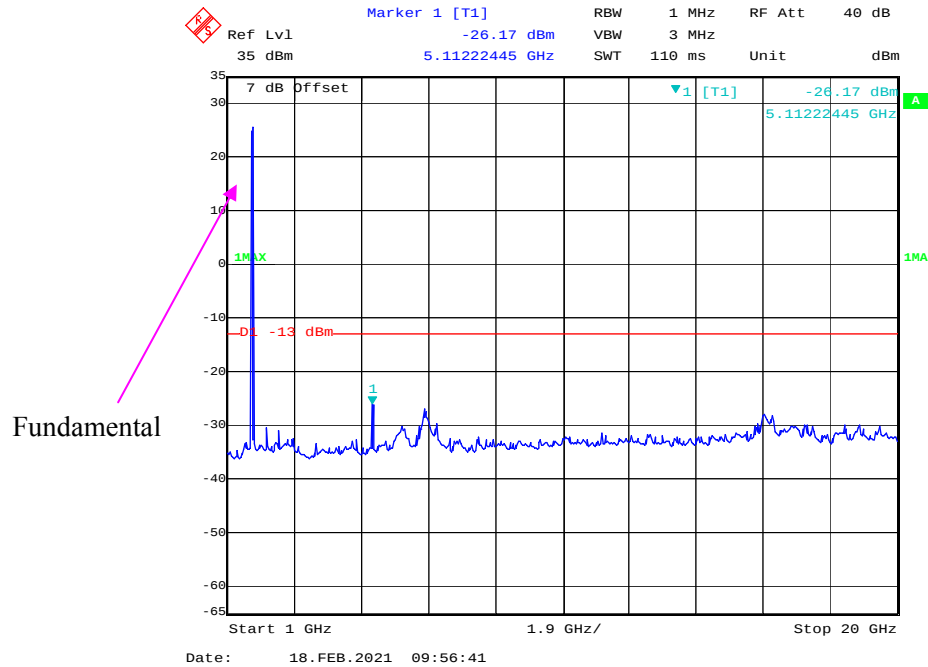
1 GHz – 20 GHz WCDMA (Rel 99) Mode, Low channel



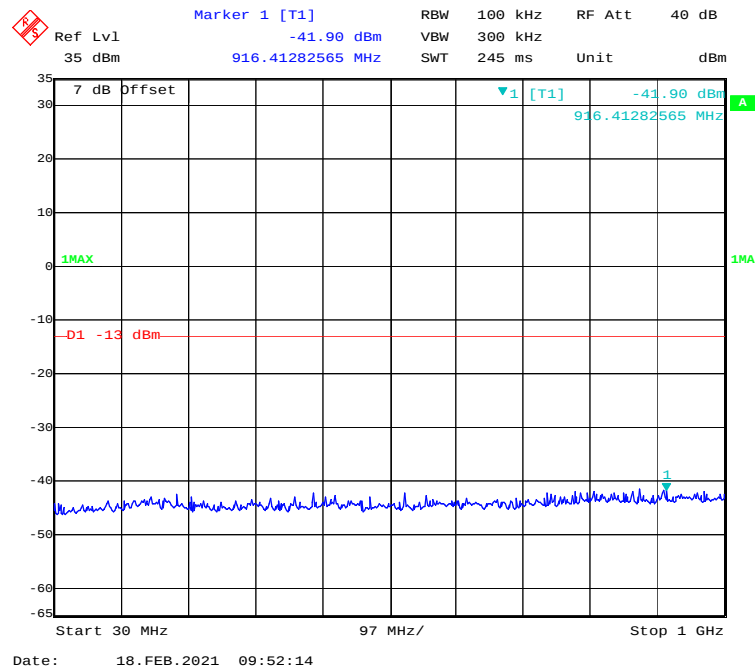
30 MHz – 1GHz WCDMA (HSDPA) Mode, Low channel



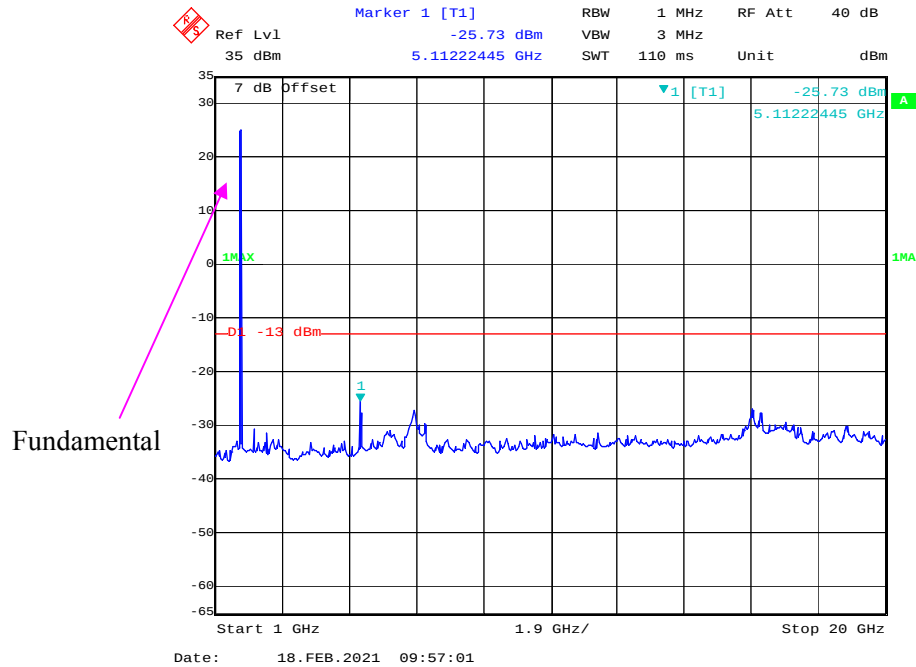
1 GHz – 20 GHz WCDMA (HSDPA) Mode, Low channel

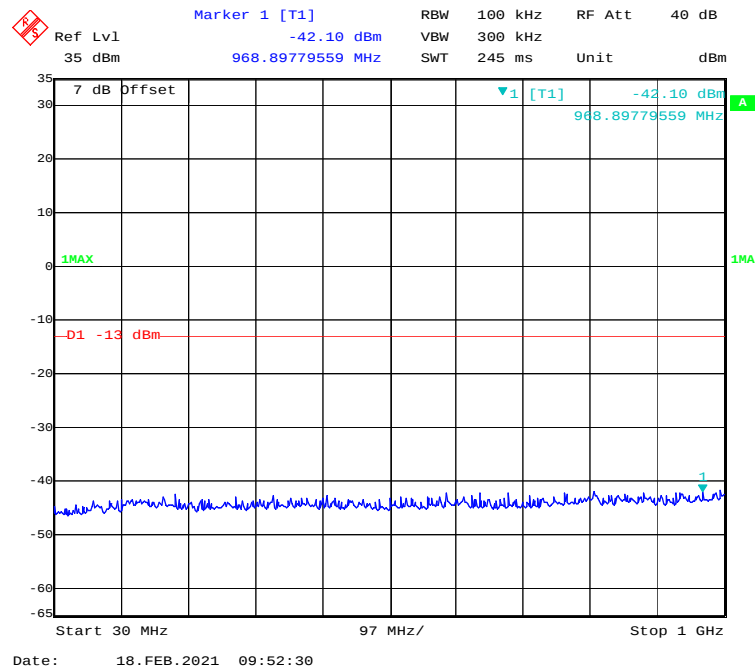
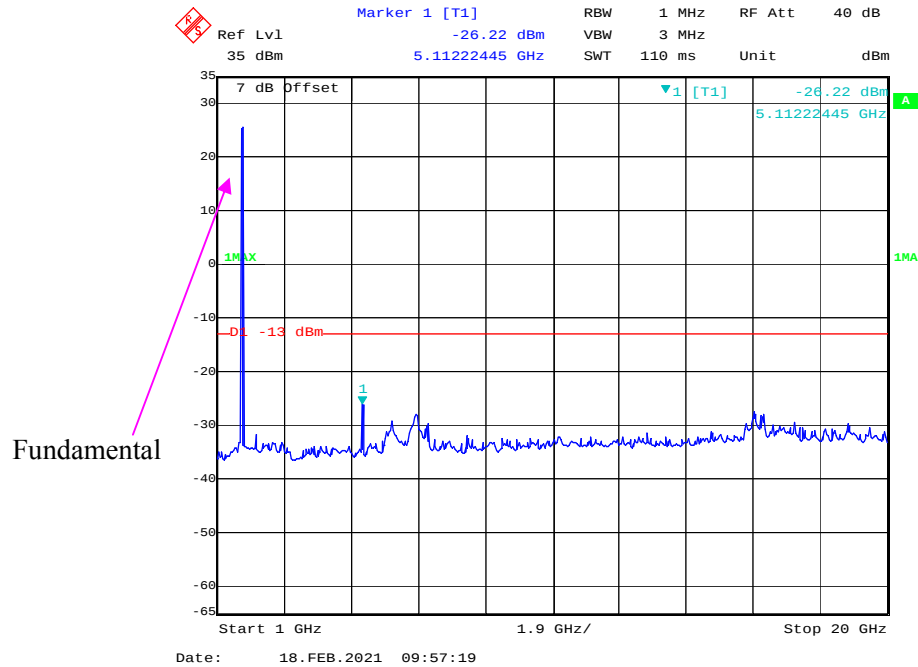


30 MHz – 1GHz WCDMA (HSUPA) Mode, Low channel

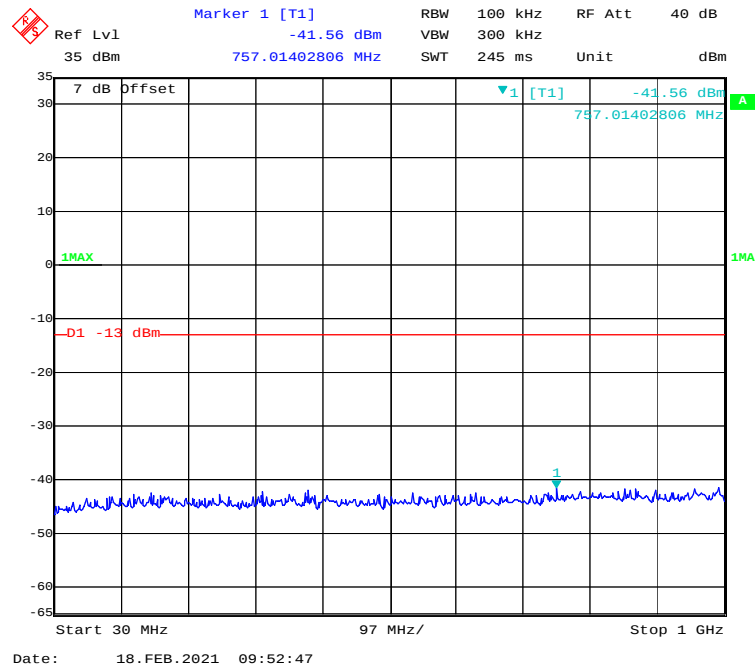


1 GHz – 20 GHz WCDMA (HSUPA) Mode, Low channel

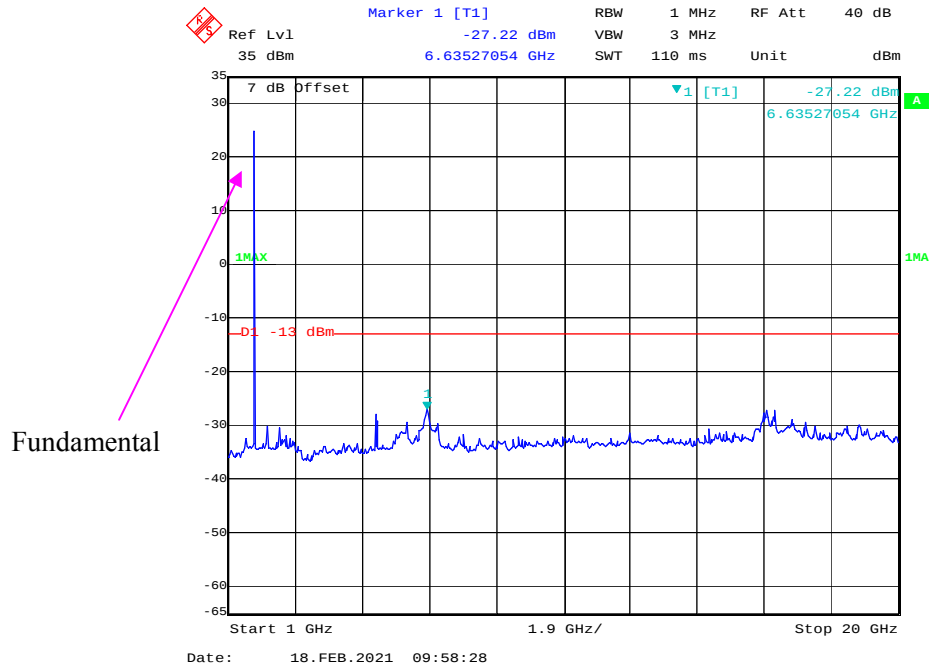


30 MHz – 1GHz WCDMA (HSPA+) Mode, Low channel**1 GHz – 20 GHz WCDMA (HSPA+) Mode, Low channel**

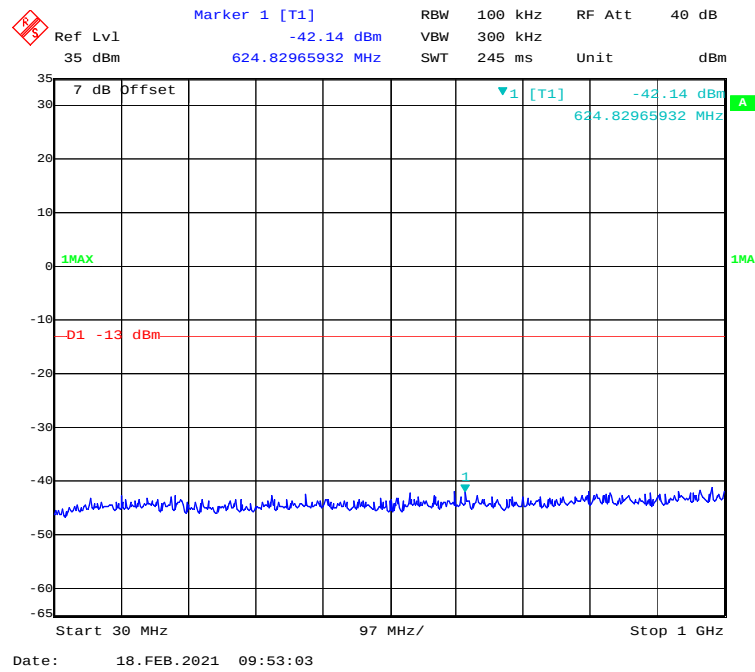
30 MHz – 1GHz WCDMA (Rel 99) Mode, Middle channel



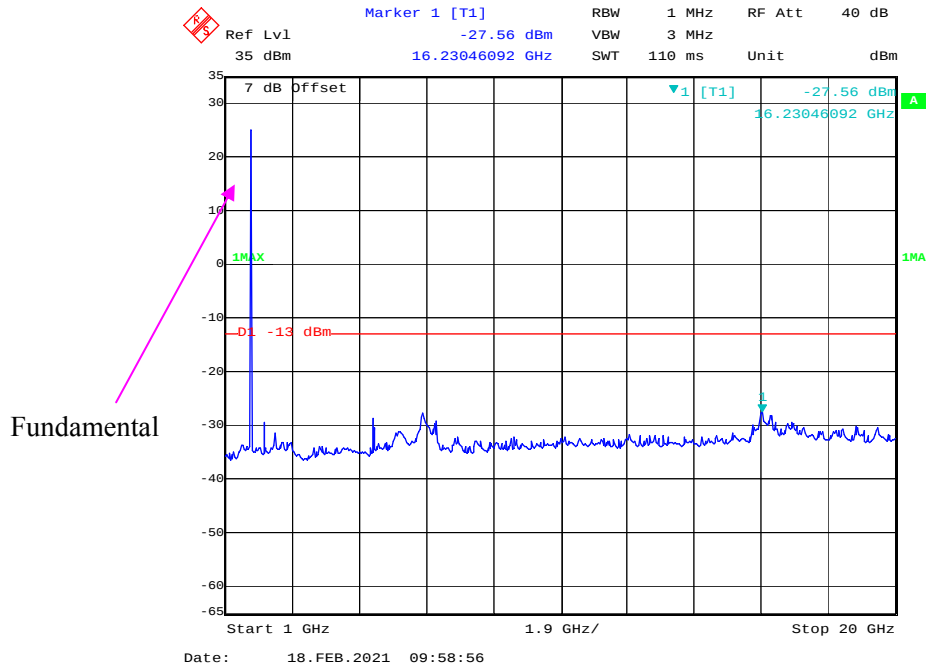
1 GHz – 20 GHz WCDMA (Rel 99) Mode, Middle channel



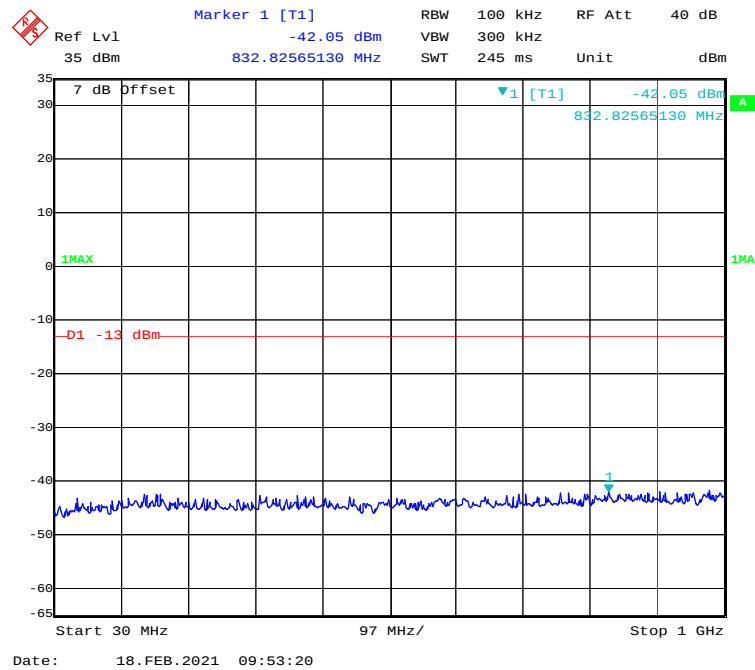
30 MHz – 1GHz WCDMA (HSDPA) Mode, Middle channel



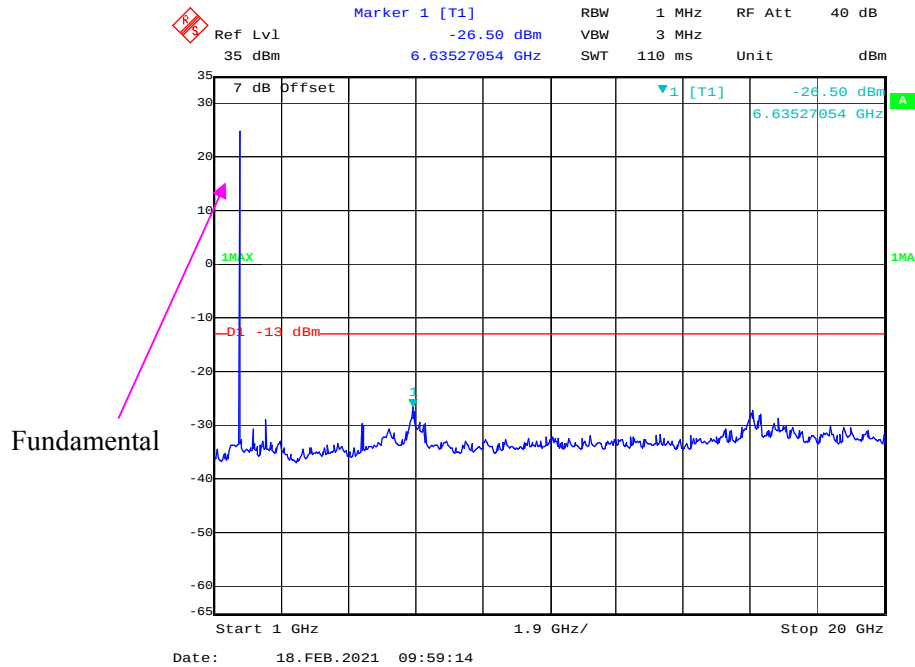
1 GHz – 20 GHz WCDMA (HSDPA) Mode, Middle channel



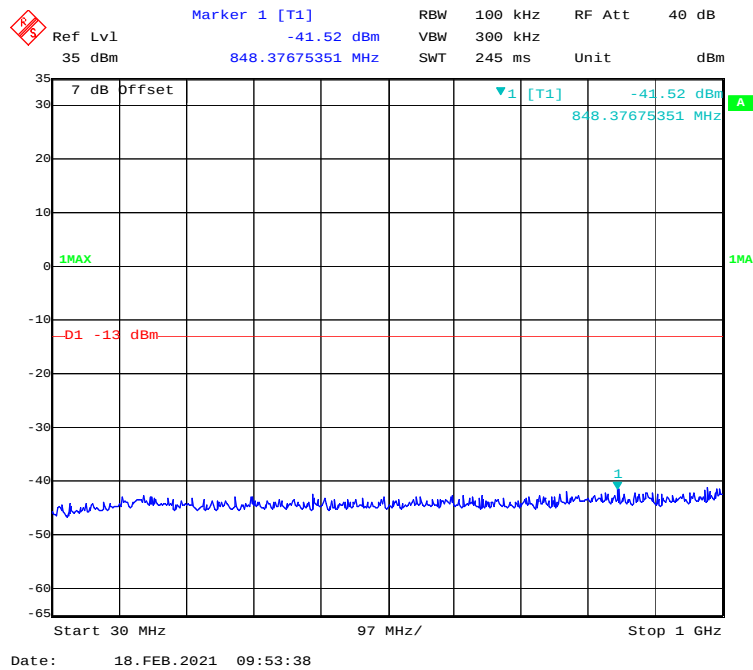
30 MHz – 1GHz WCDMA (HSUPA) Mode, Middle channel



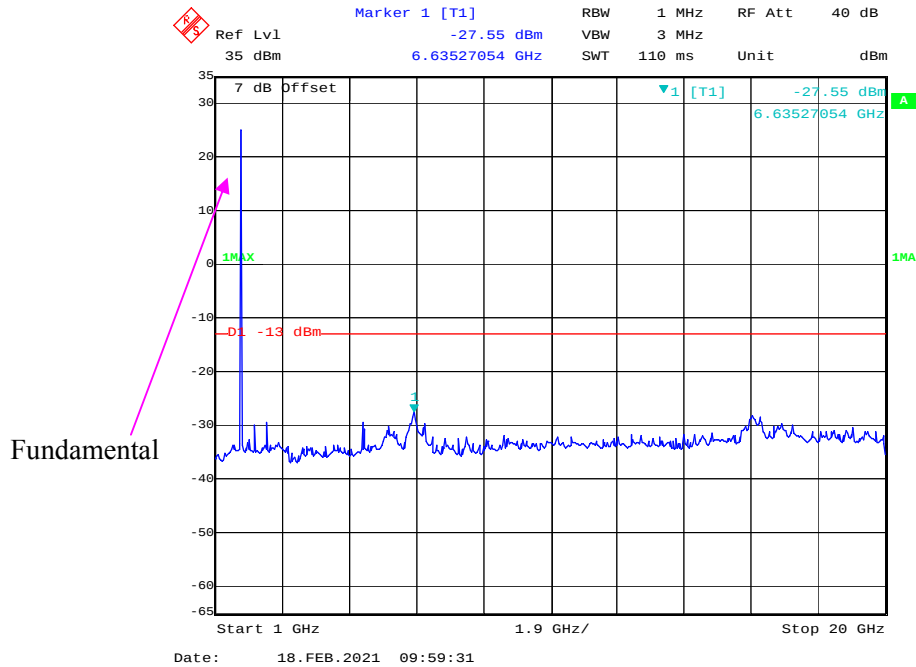
1 GHz – 20 GHz WCDMA (HSUPA) Mode, Middle channel



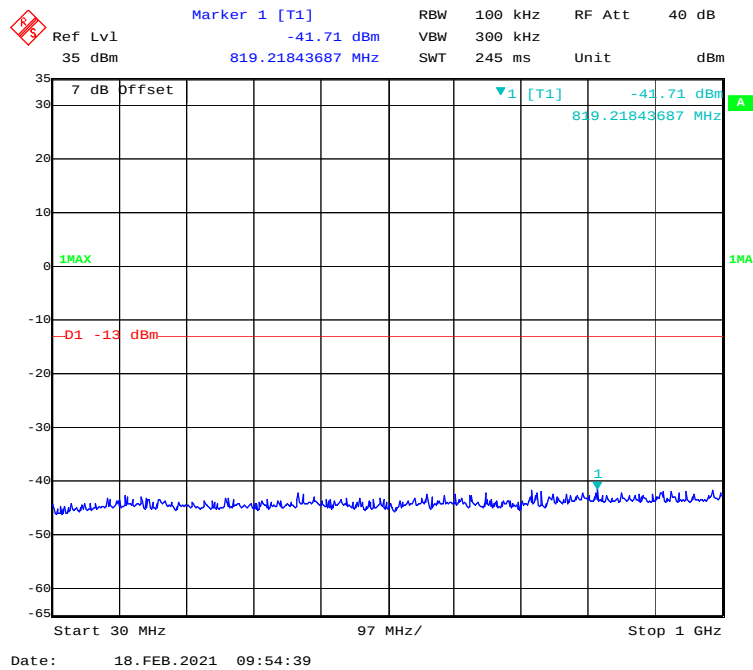
30 MHz – 1GHz WCDMA (HSPA+) Mode, Middle channel



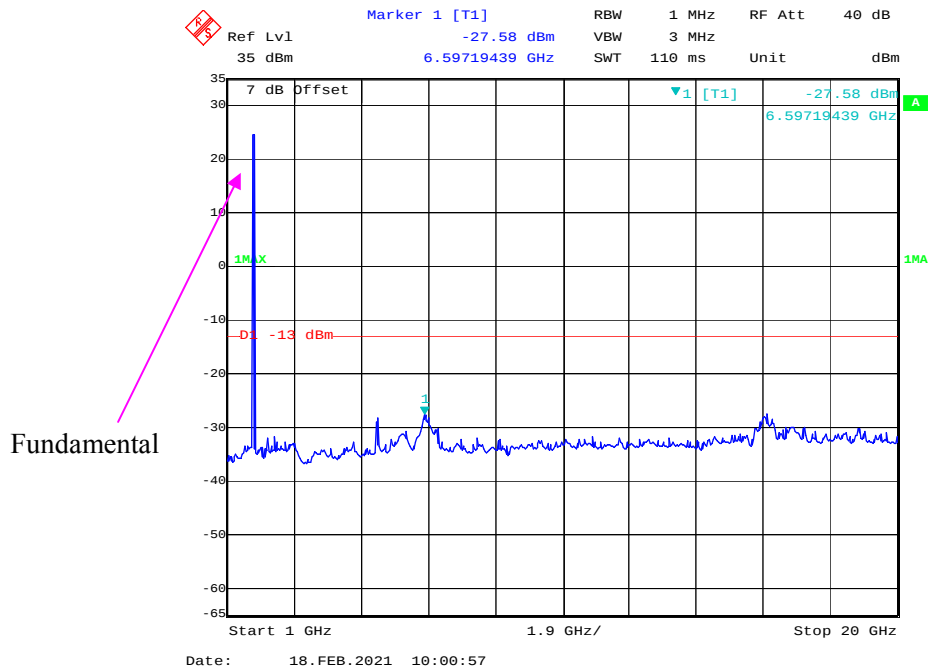
1 GHz – 20 GHz WCDMA (HSPA+) Mode, Middle channel



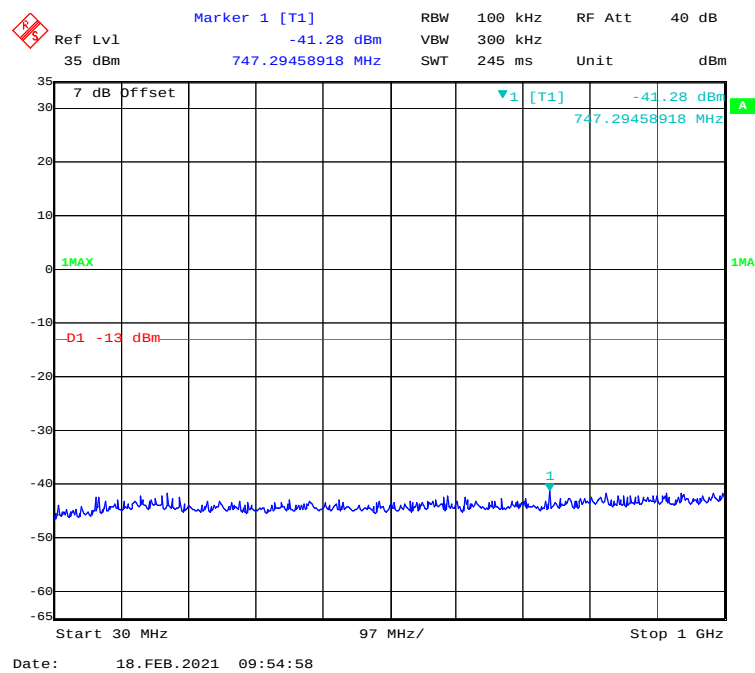
30 MHz – 1GHz WCDMA (Rel 99) Mode, High channel



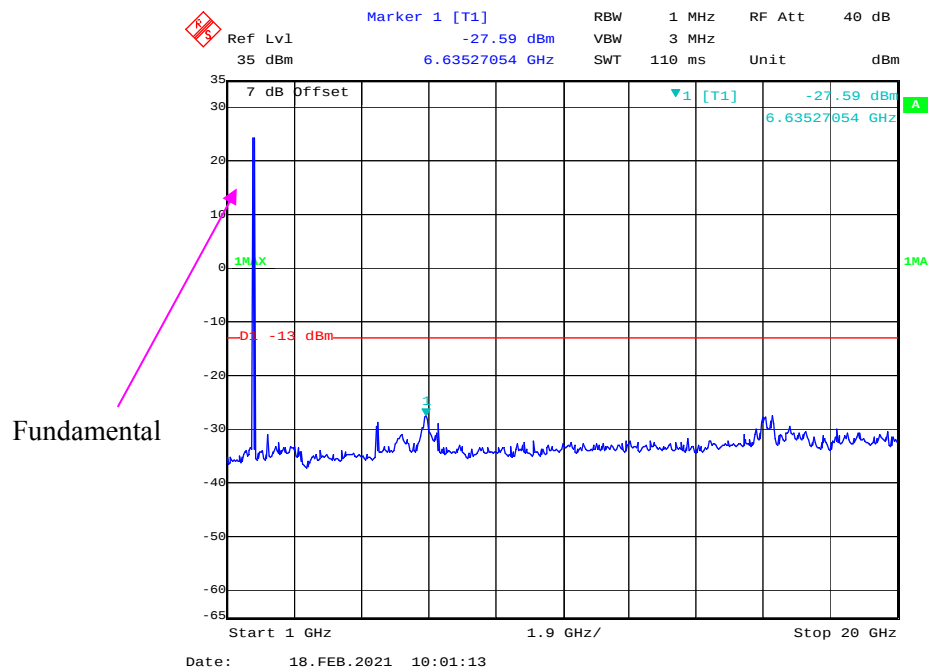
1 GHz – 20 GHz WCDMA (Rel 99) Mode, High channel

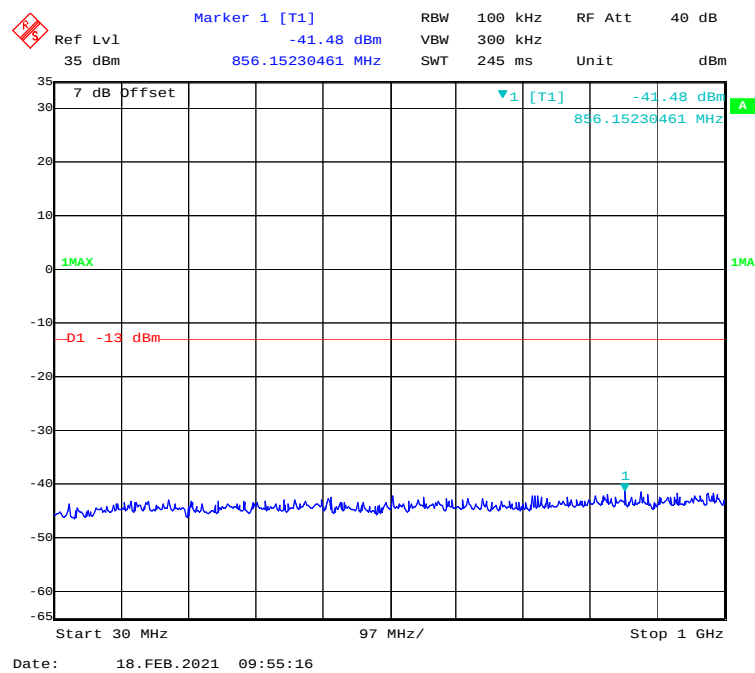
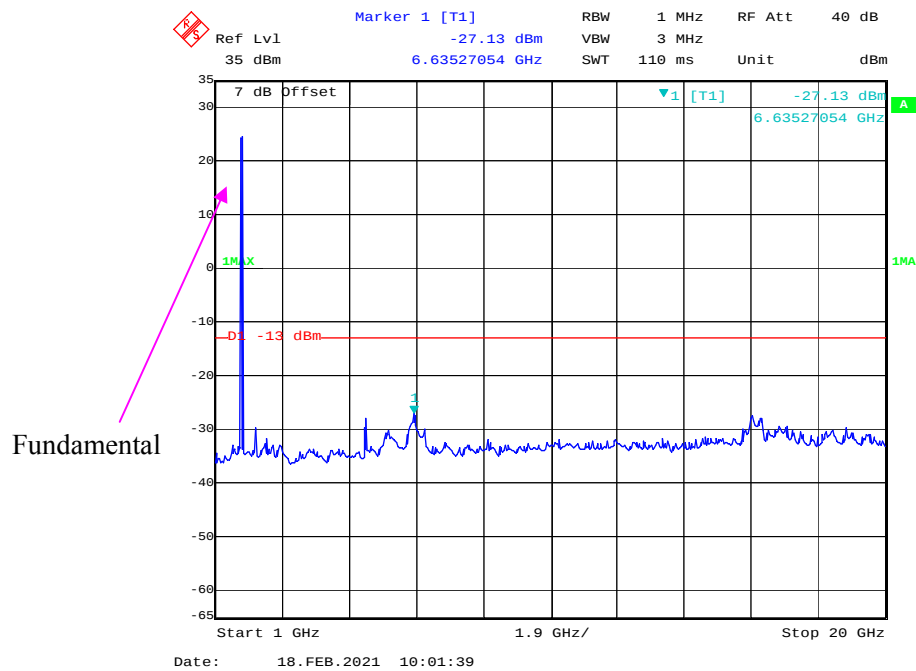


30 MHz – 1GHz WCDMA (HSDPA) Mode, High channel

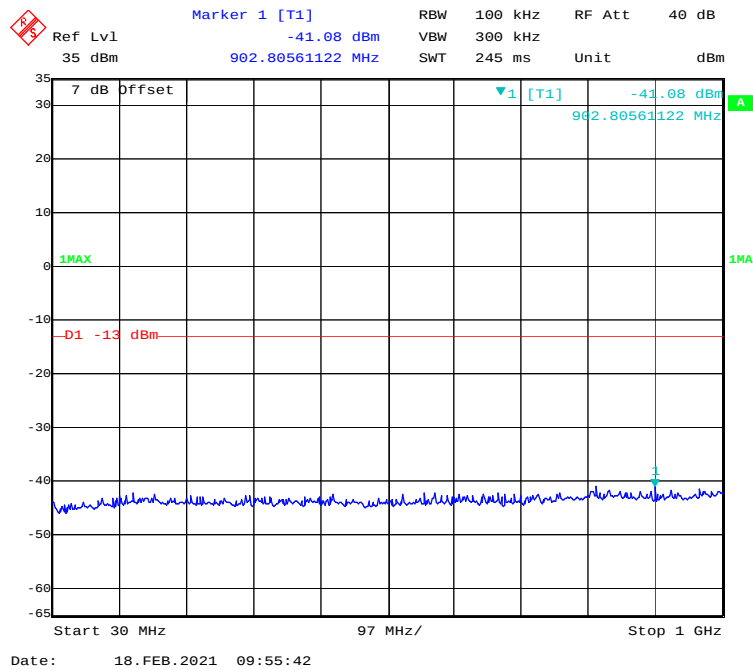


1 GHz – 20 GHz WCDMA (HSDPA) Mode, High channel

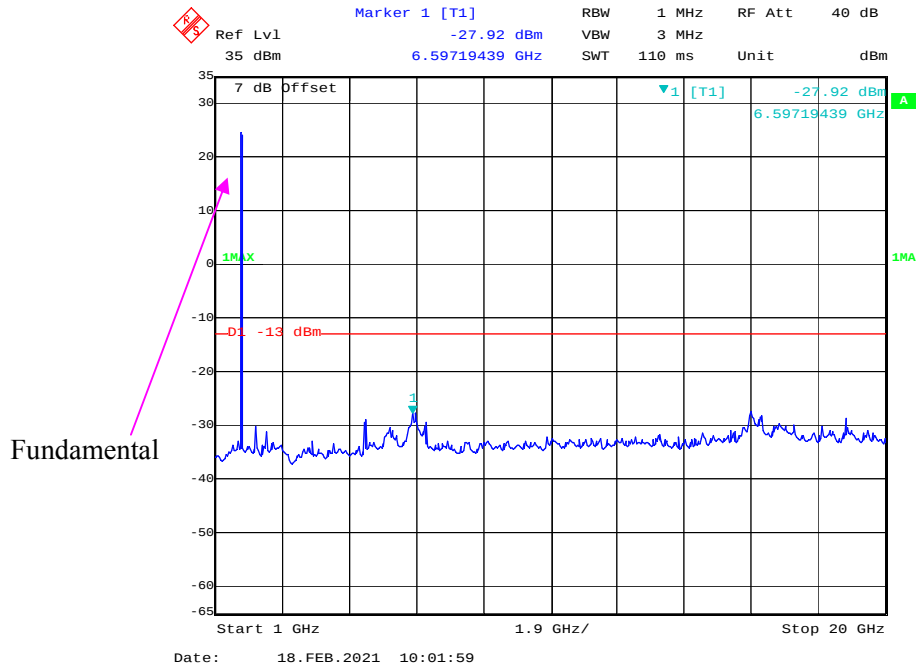


30 MHz – 1GHz WCDMA (HSUPA) Mode, High channel**1 GHz – 20 GHz WCDMA (HSUPA) Mode, High channel**

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

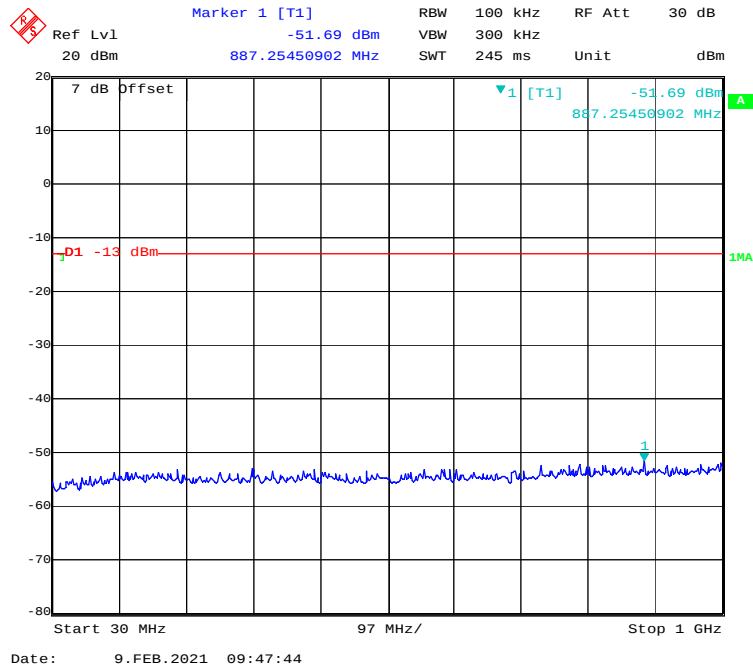


1 GHz – 20 GHz WCDMA (HSPA+) Mode, High channel

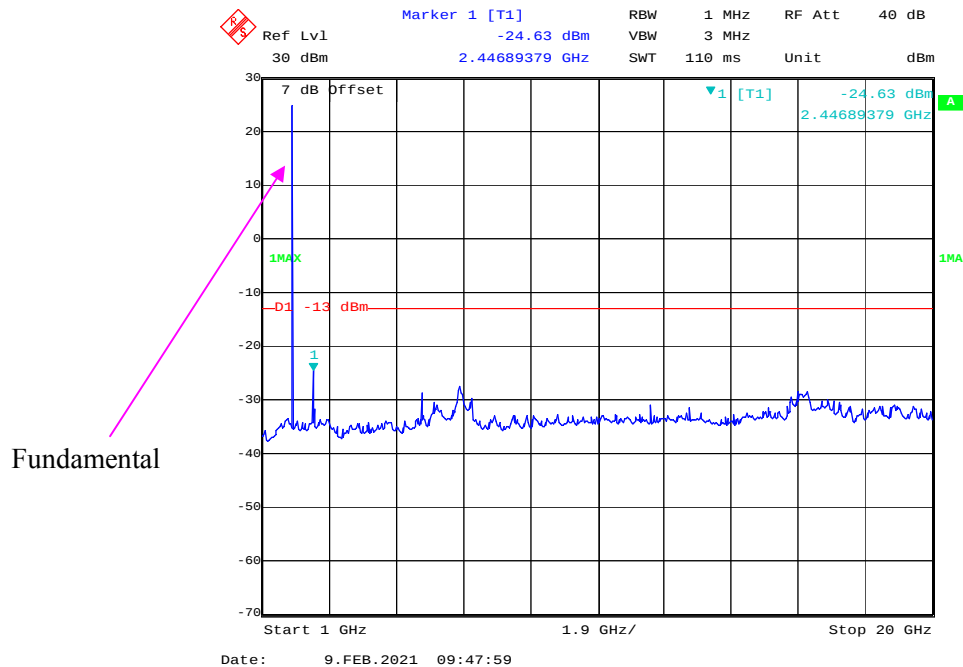


LTE Band 2:

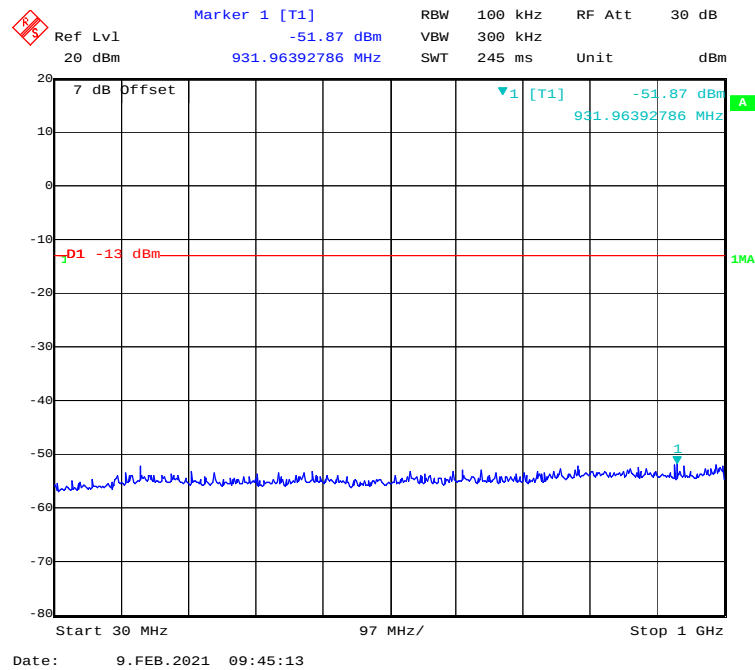
30 MHz - 1 GHz (1.4 MHz, QPSK, Low Channel)



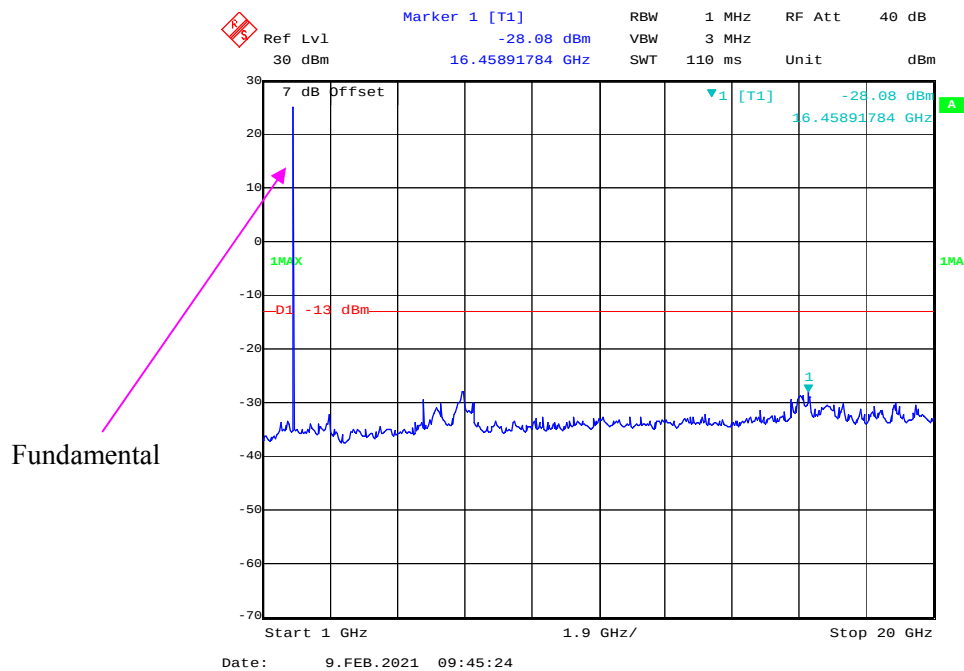
1 GHz – 20 GHz (1.4 MHz, QPSK, Low Channel)



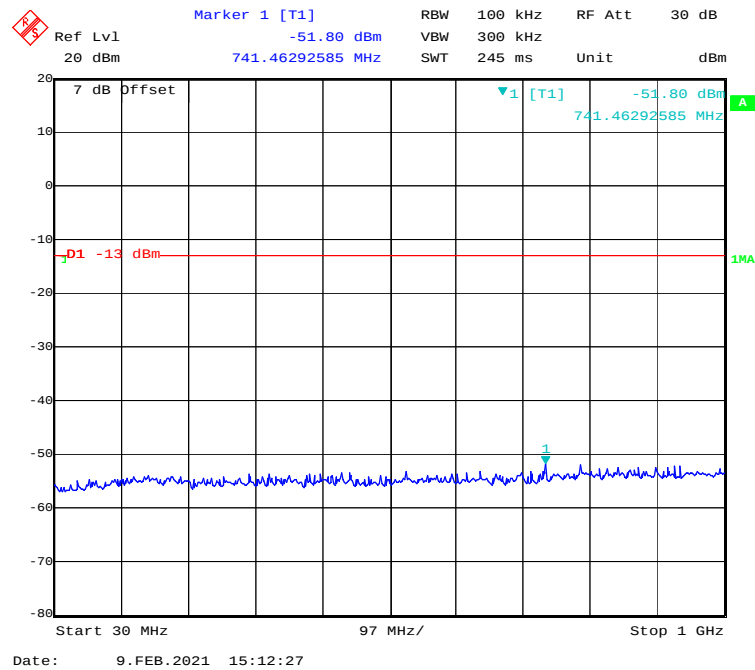
30 MHz - 1 GHz (1.4 MHz, 16-QAM, Low Channel)



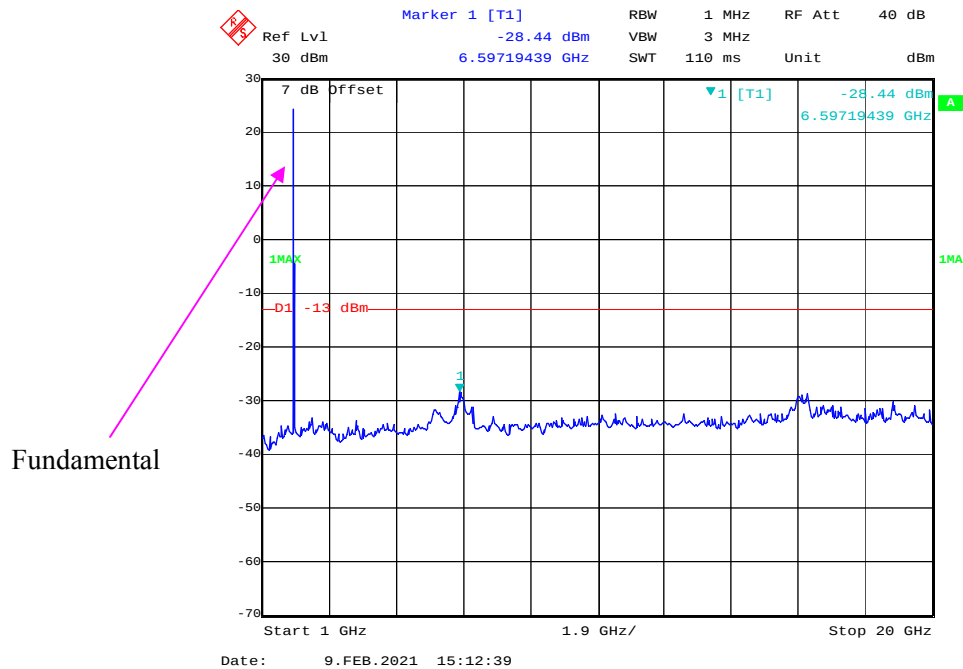
1 GHz – 20 GHz (1.4 MHz, 16-QAM, Low Channel)



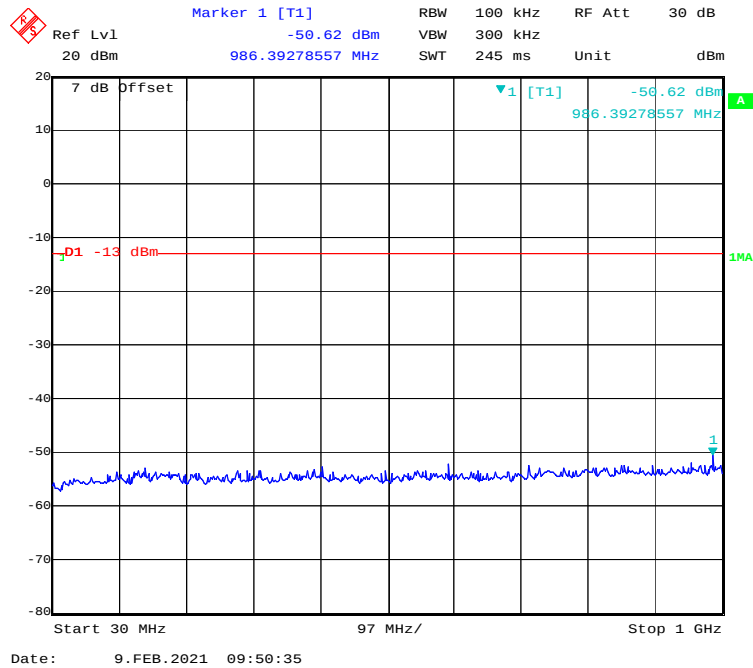
30 MHz - 1 GHz (3 MHz, QPSK, Low Channel)



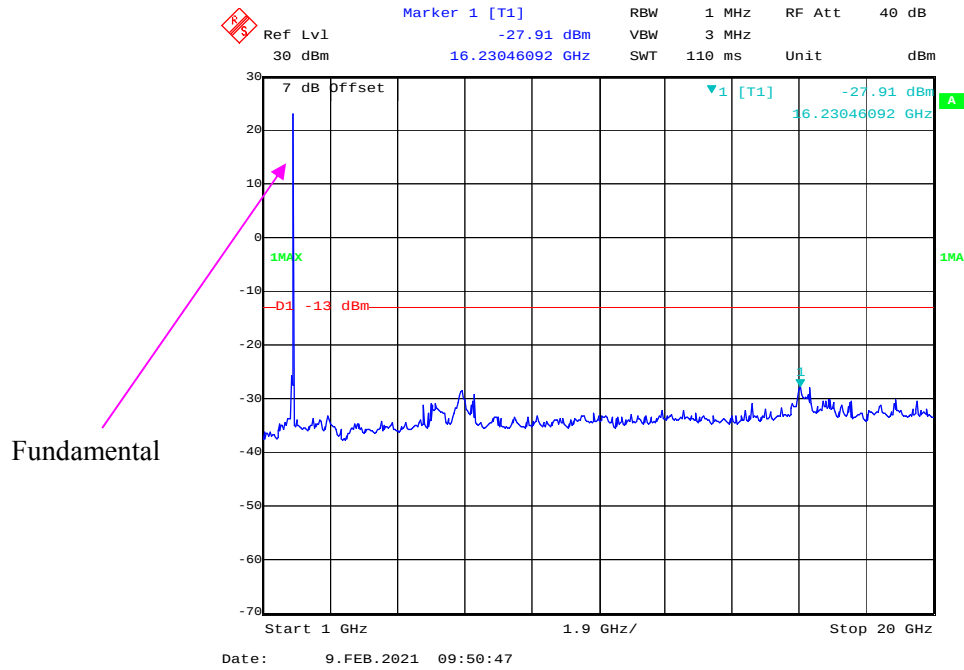
1 GHz – 20 GHz (3 MHz, QPSK, Low Channel)



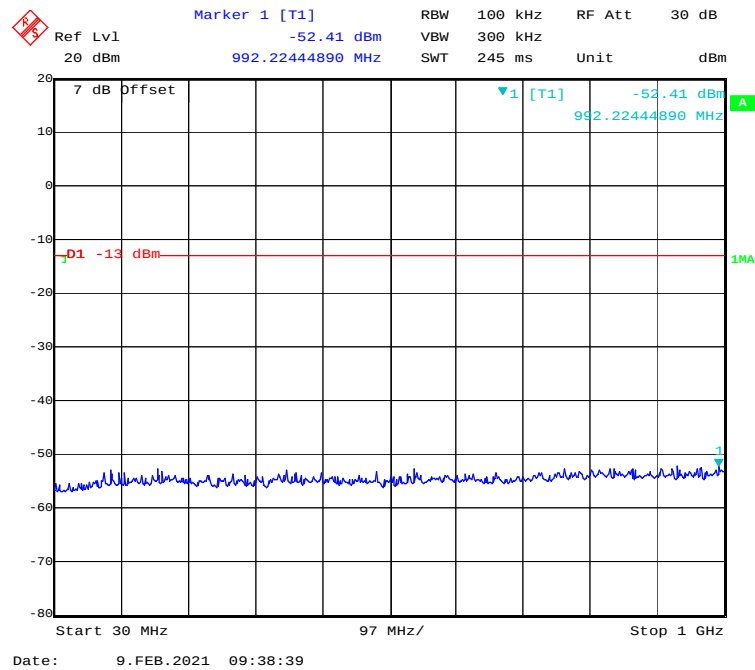
30 MHz - 1 GHz (3 MHz, 16-QAM, Low Channel)



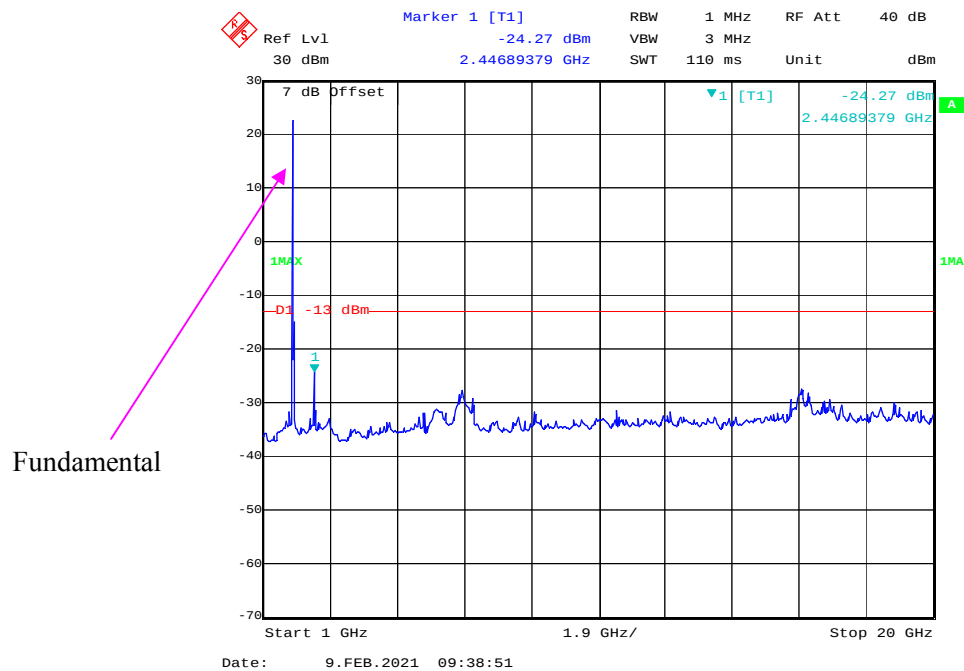
1 GHz – 20 GHz (3 MHz, 16-QAM, Low Channel)



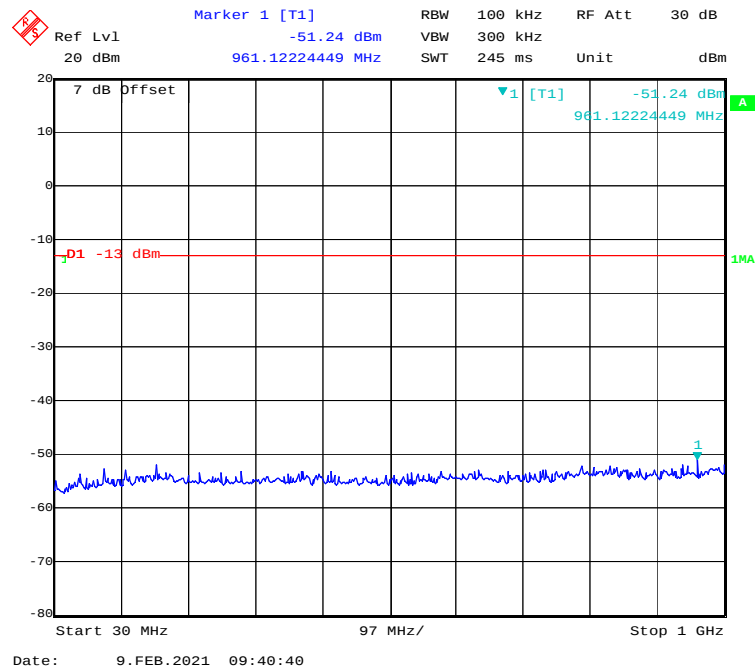
30 MHz - 1 GHz (5 MHz, QPSK, Low Channel)



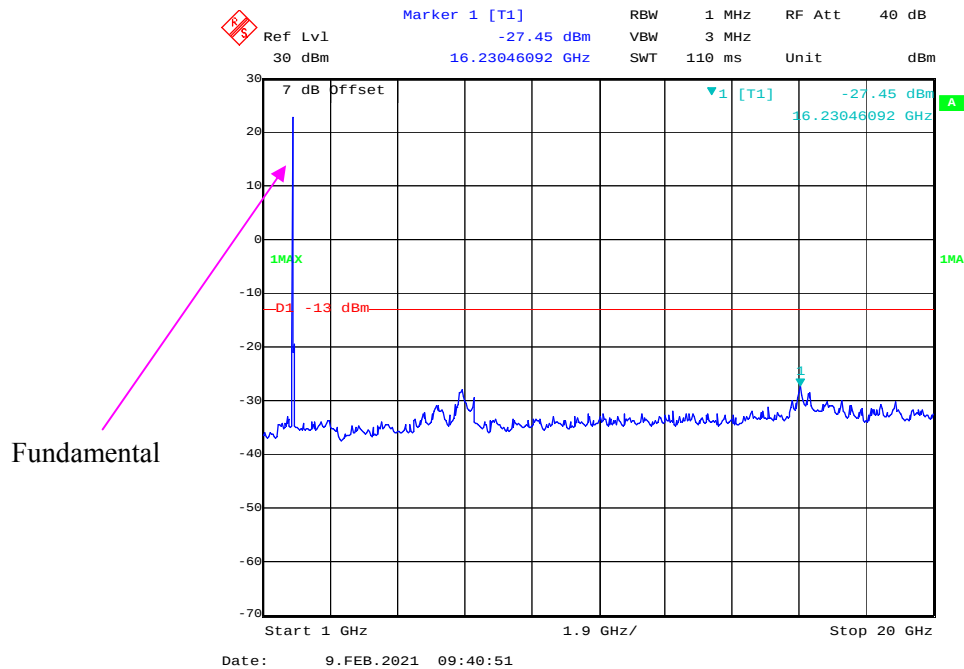
1 GHz – 20 GHz (5 MHz, QPSK, Low Channel)



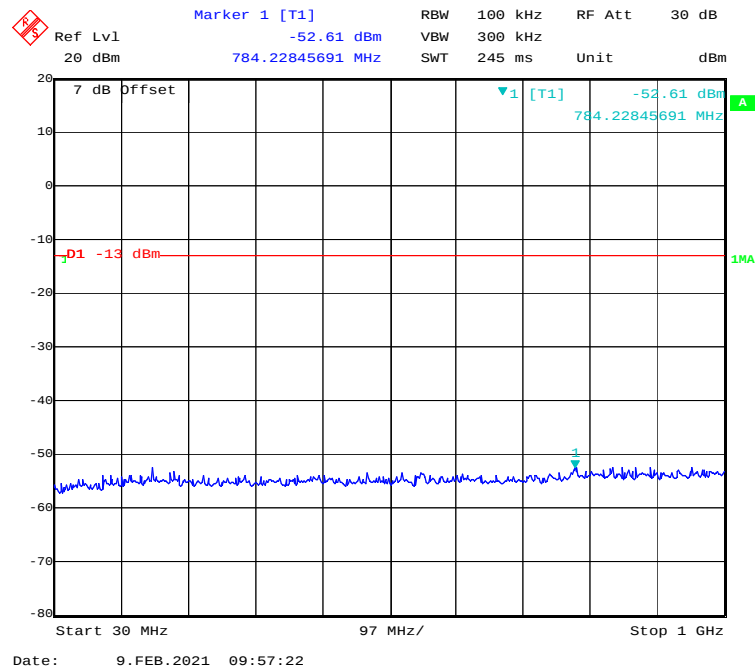
30 MHz - 1 GHz (5 MHz, 16-QAM, Low Channel)



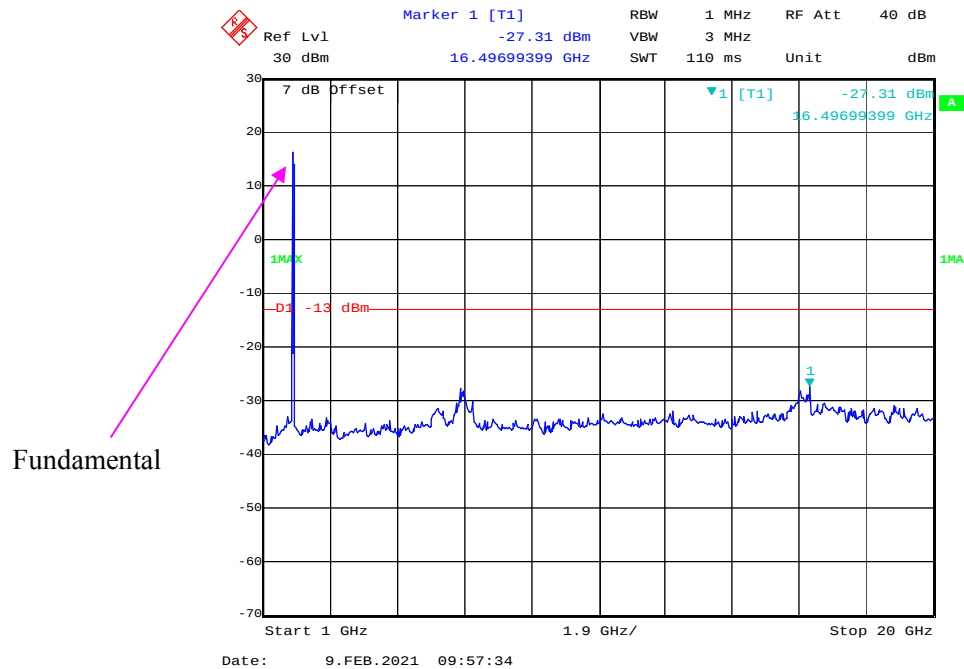
1 GHz – 20 GHz (5 MHz, 16-QAM, Low Channel)



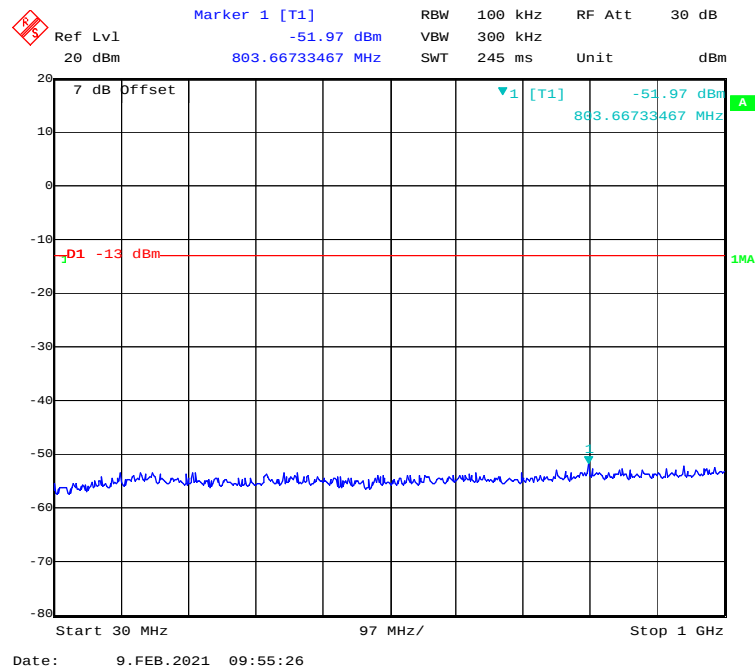
30 MHz - 1 GHz (10 MHz, QPSK, Low Channel)



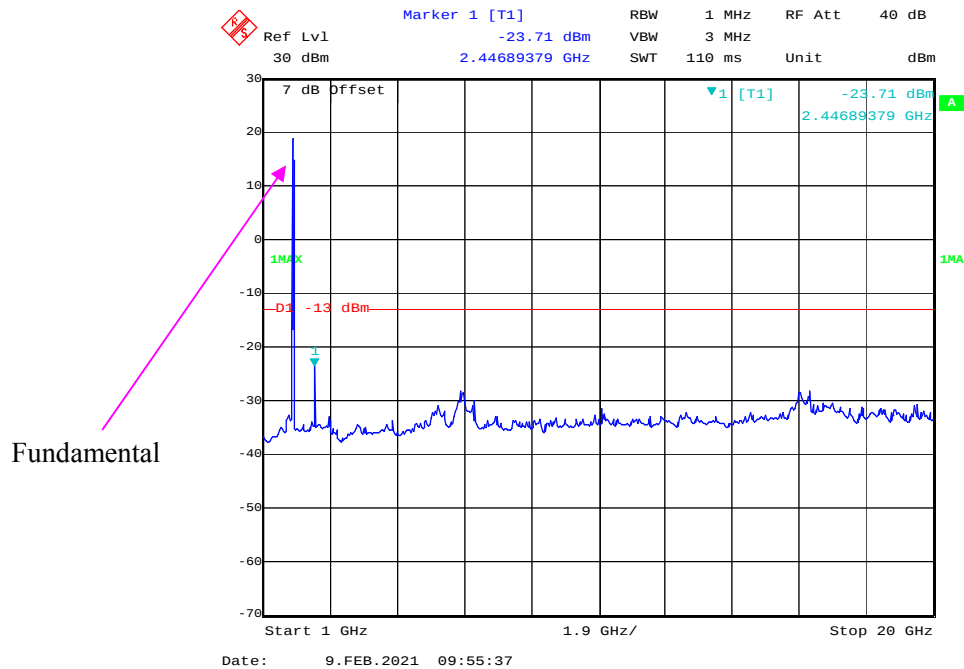
1 GHz – 20 GHz (10 MHz, QPSK, Low Channel)



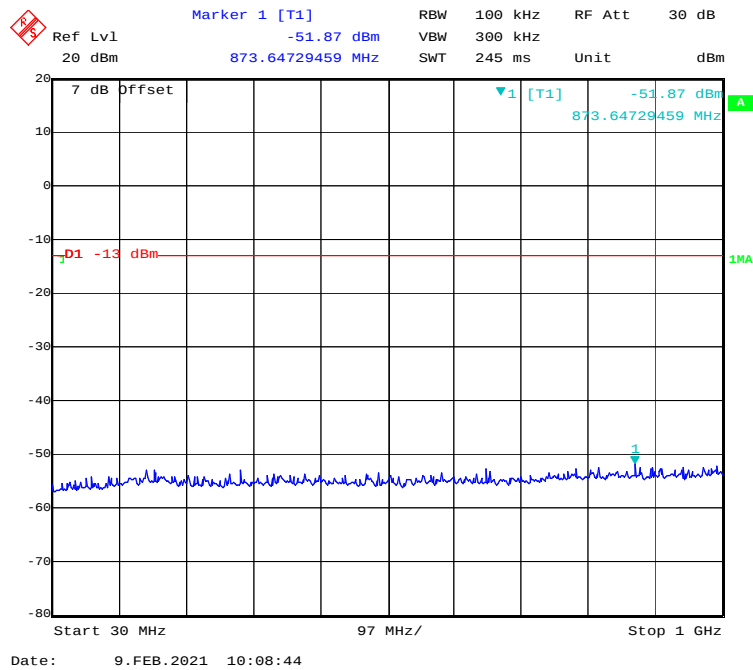
30 MHz - 1 GHz (10 MHz, 16-QAM, Low Channel)



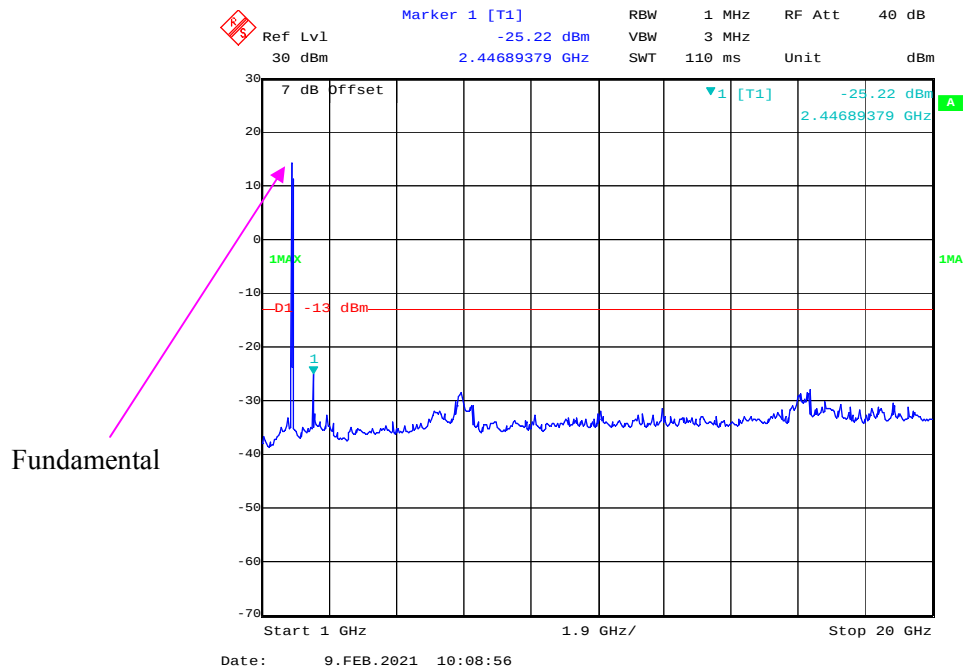
1 GHz – 20 GHz (10 MHz, 16-QAM, Low Channel)



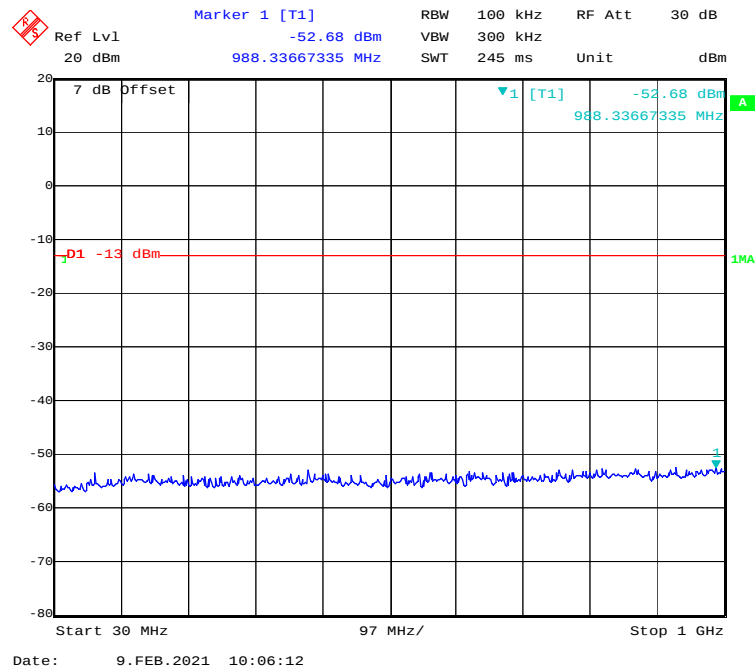
30 MHz - 1 GHz (15 MHz, QPSK, Low Channel)



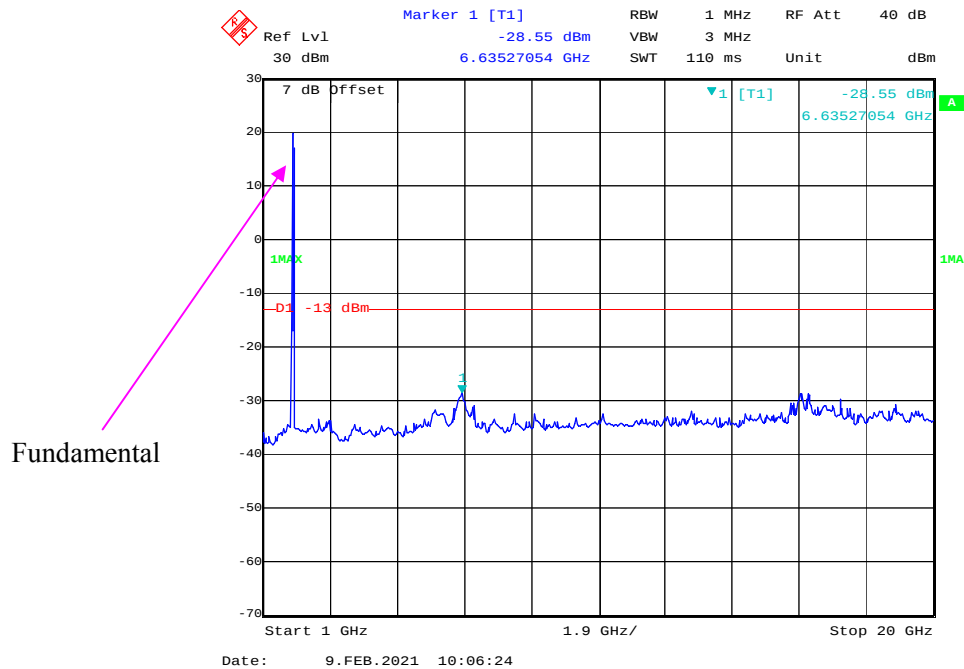
1 GHz – 20 GHz (15 MHz, QPSK, Low Channel)



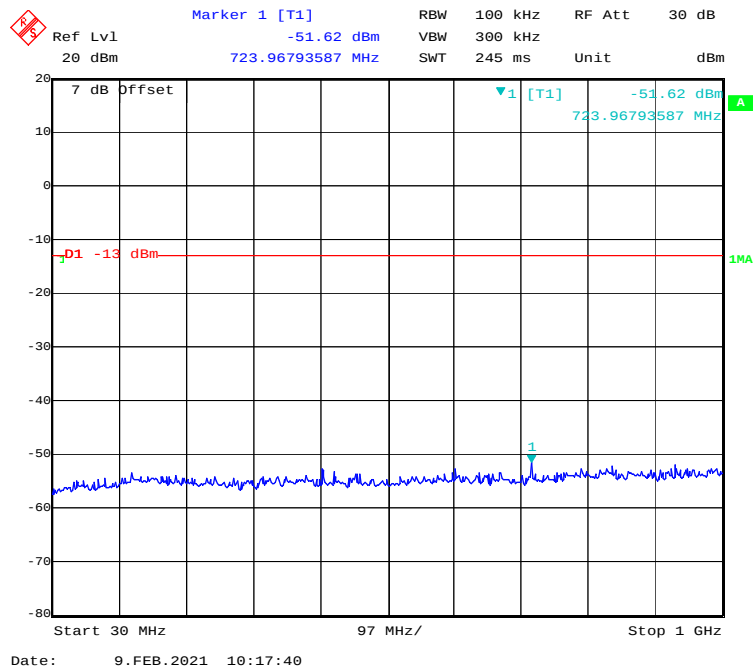
30 MHz - 1 GHz (15 MHz, 16-QAM, Low Channel)



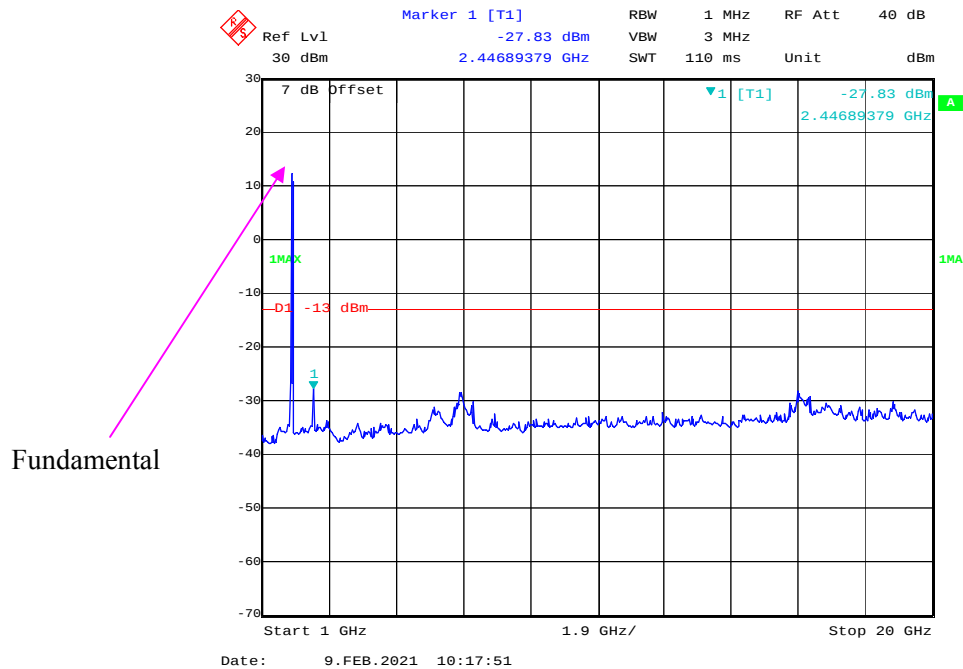
1 GHz – 20 GHz (15 MHz, 16-QAM, Low Channel)



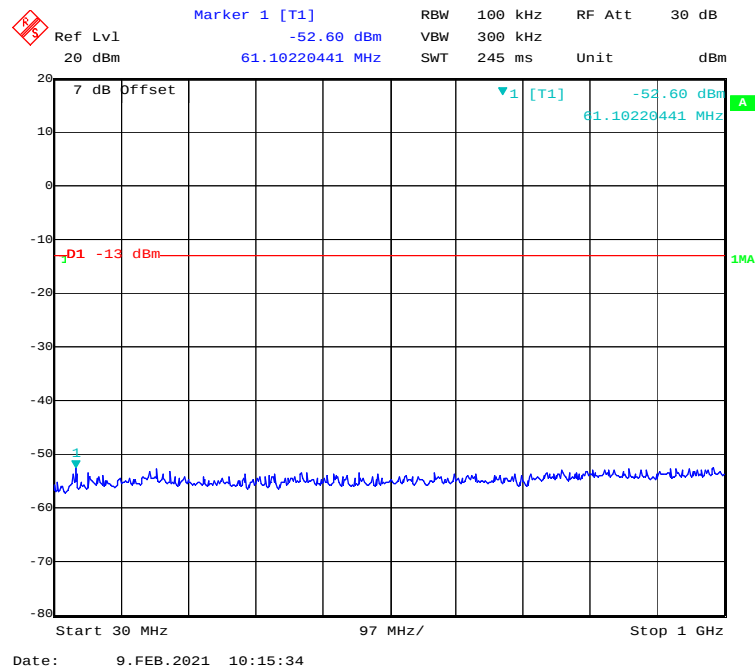
30 MHz - 1 GHz (20 MHz, QPSK, Low Channel)



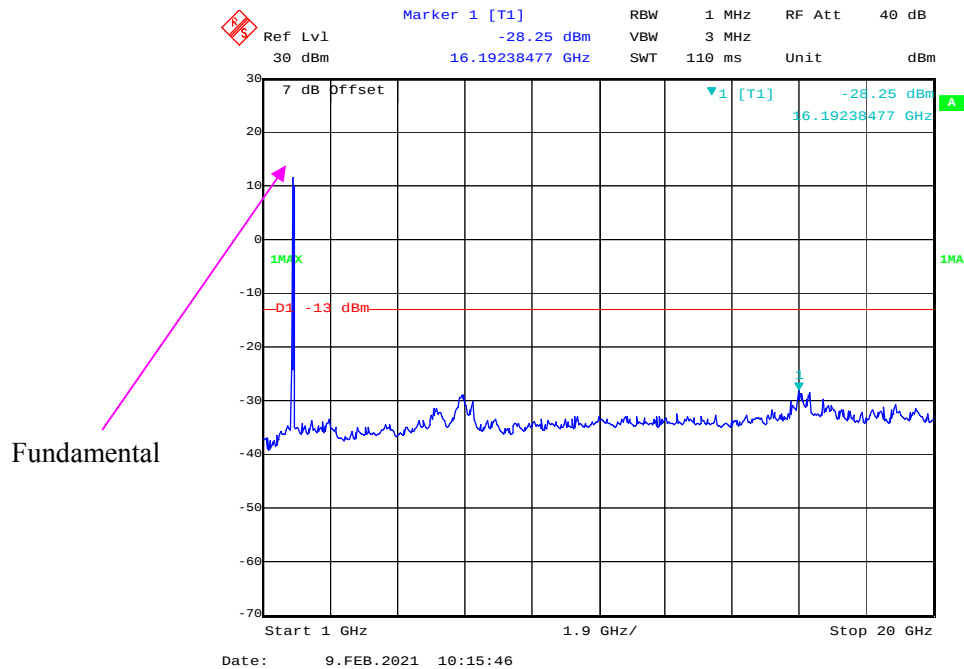
1 GHz – 20 GHz (20 MHz, QPSK, Low Channel)



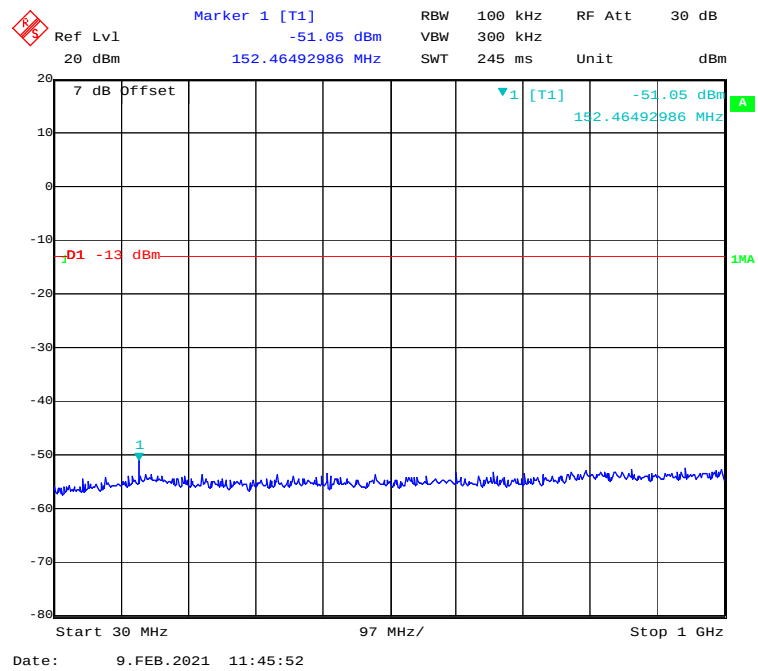
30 MHz - 1 GHz (20 MHz, 16-QAM, Low Channel)



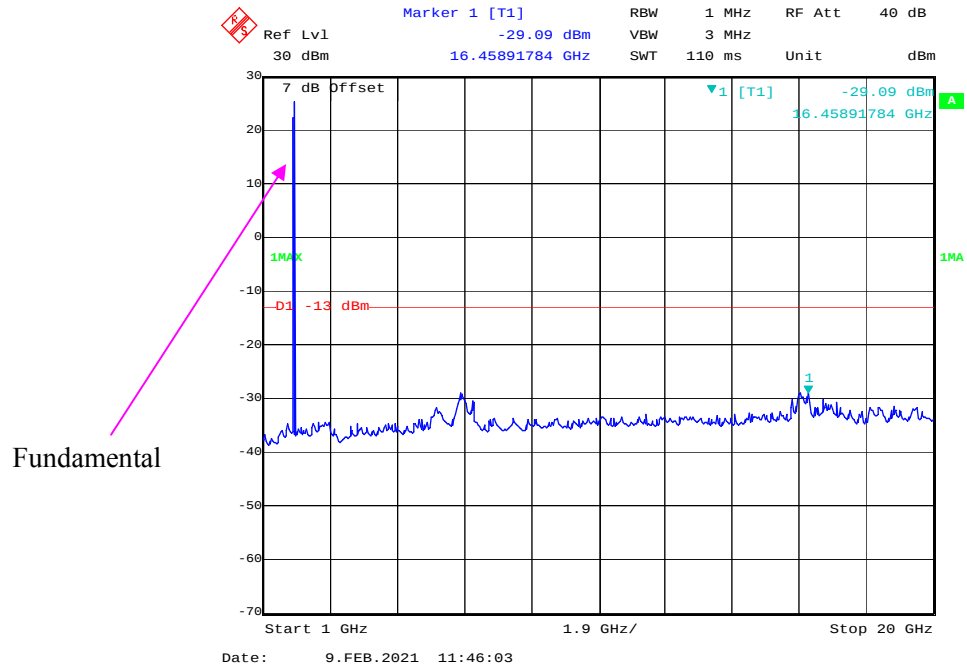
1 GHz – 20 GHz (20 MHz, 16-QAM, Low Channel)



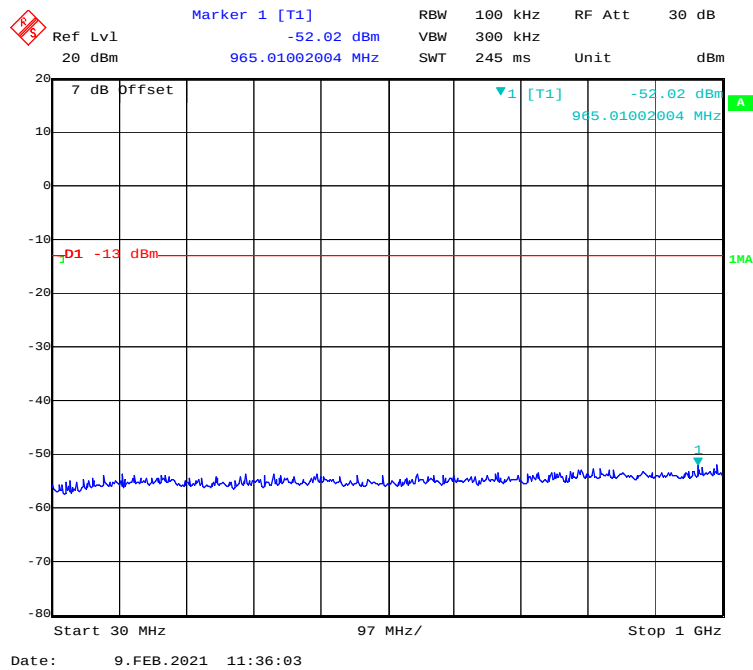
30 MHz - 1 GHz (1.4 MHz, QPSK, Middle Channel)



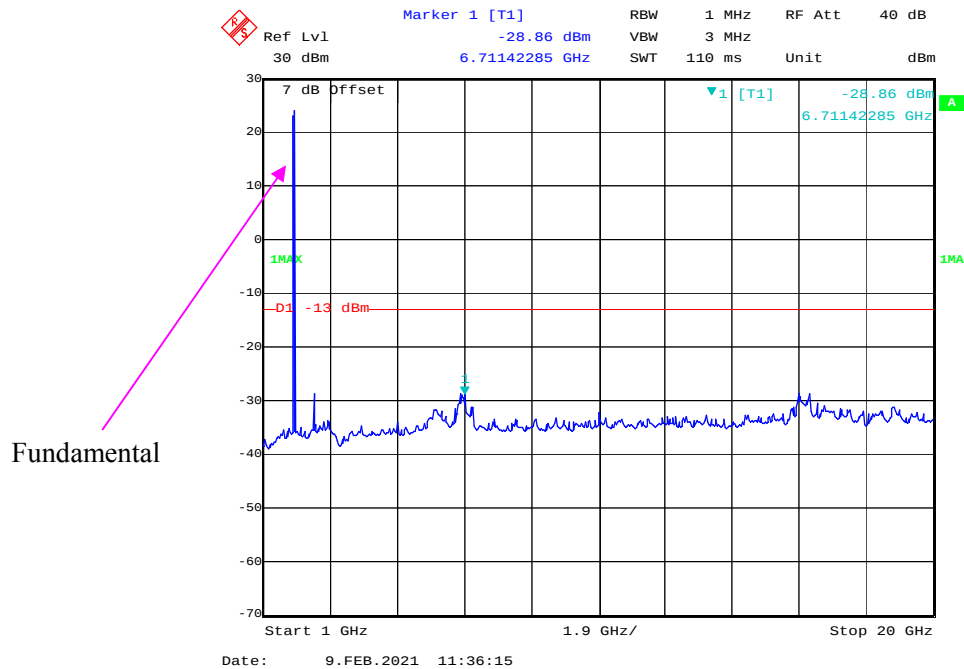
1 GHz – 20 GHz (1.4 MHz, QPSK, Middle Channel)



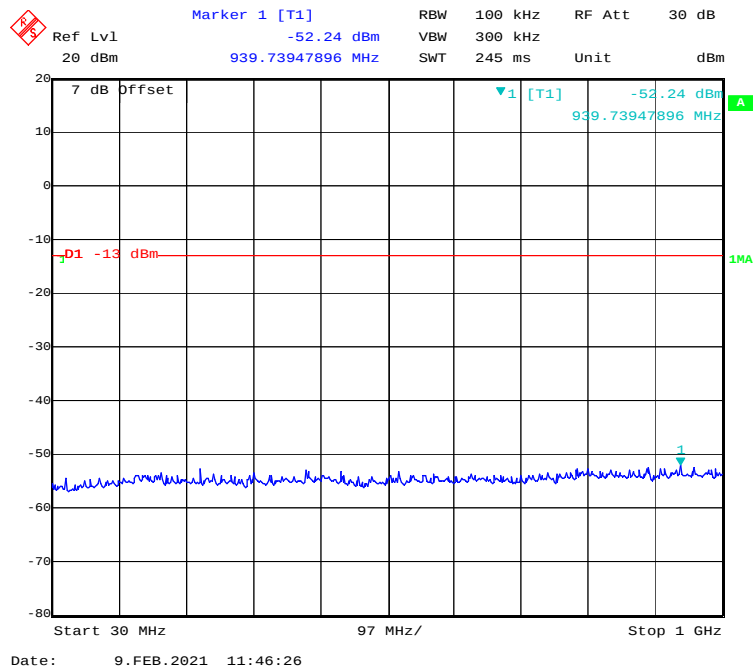
30 MHz - 1 GHz (1.4 MHz, 16-QAM, Middle Channel)



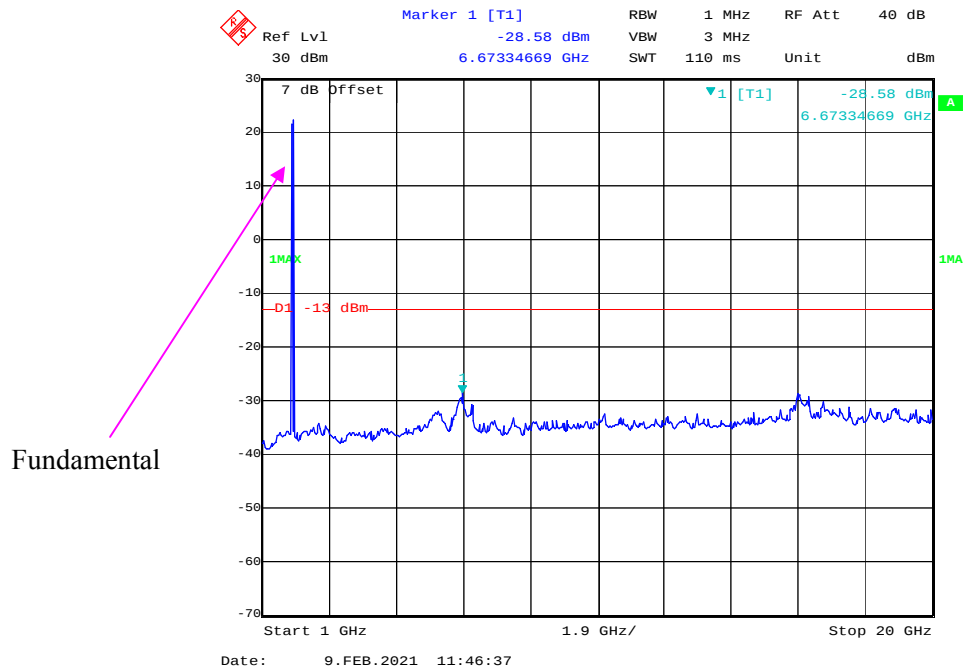
1 GHz – 20 GHz (1.4 MHz, 16-QAM, Middle Channel)



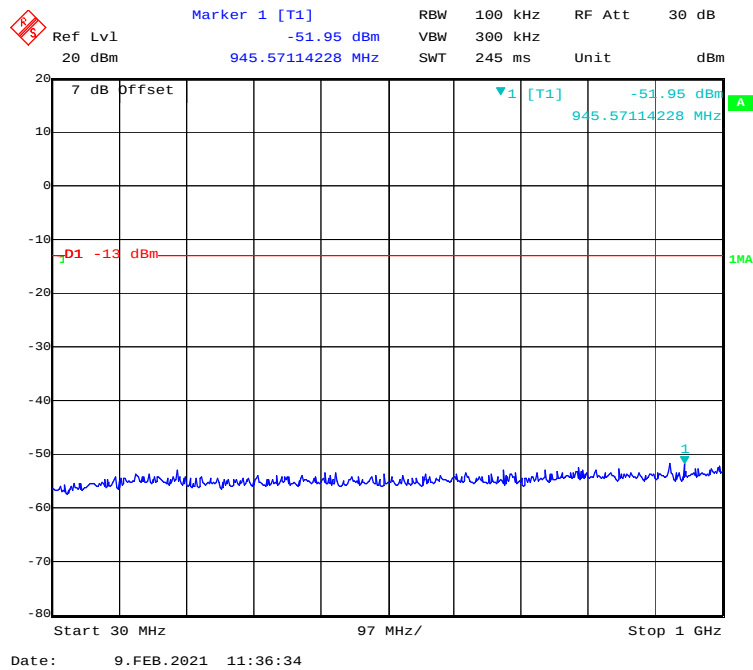
30 MHz - 1 GHz (3 MHz, QPSK, Middle Channel)



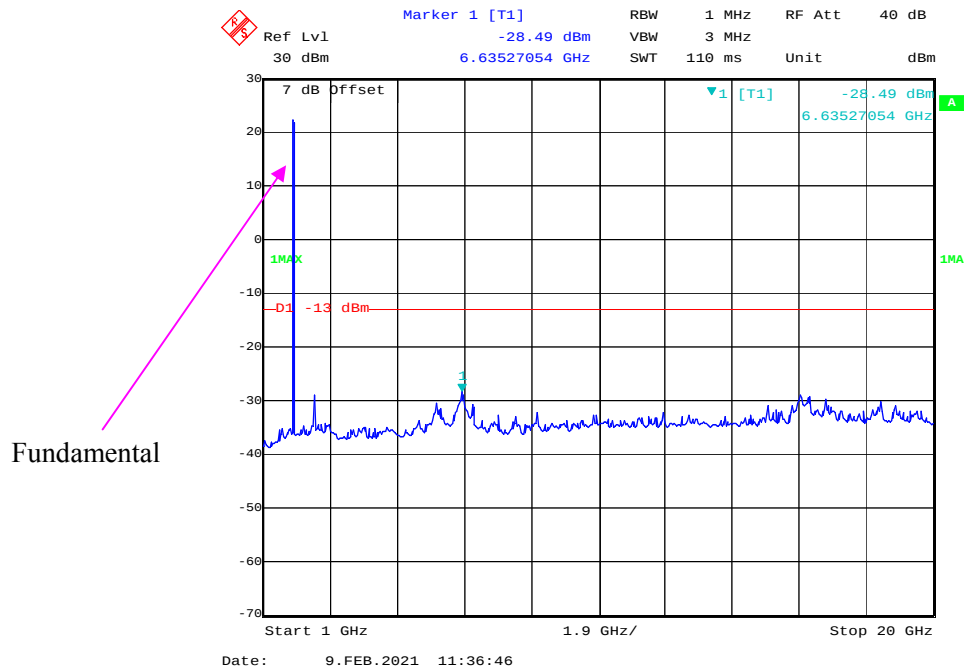
1 GHz – 20 GHz (3 MHz, QPSK, Middle Channel)



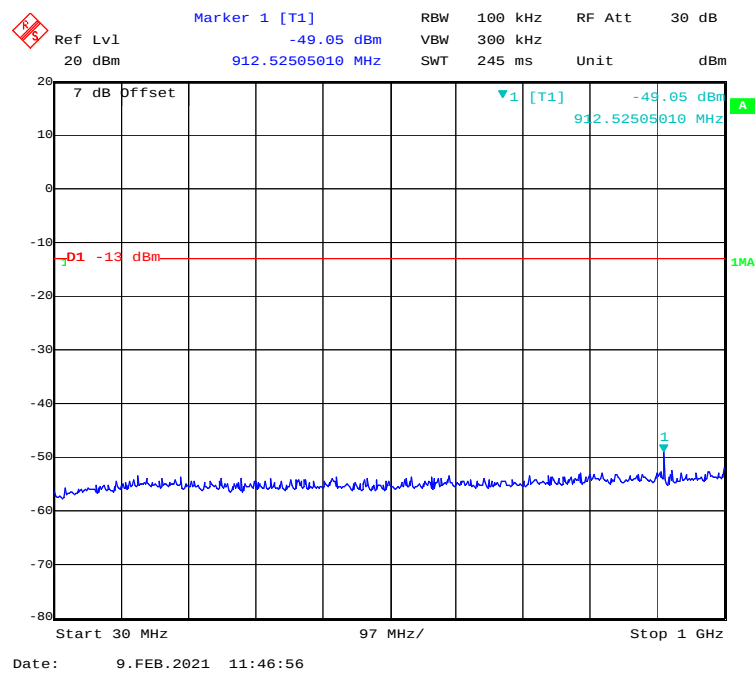
30 MHz - 1 GHz (3 MHz, 16-QAM, Middle Channel)



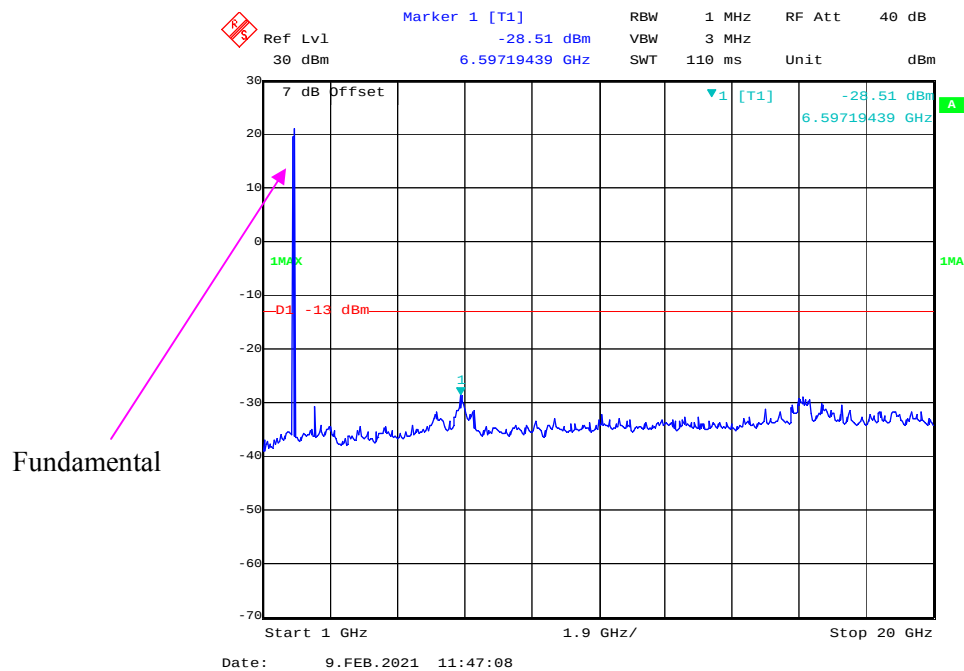
1 GHz – 20 GHz (3 MHz, 16-QAM, Middle Channel)



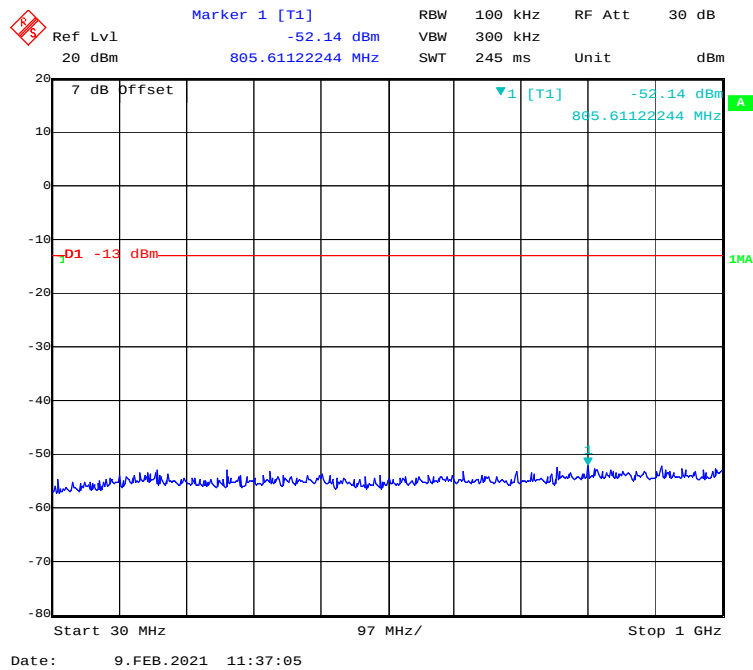
30 MHz - 1 GHz (5 MHz, QPSK, Middle Channel)



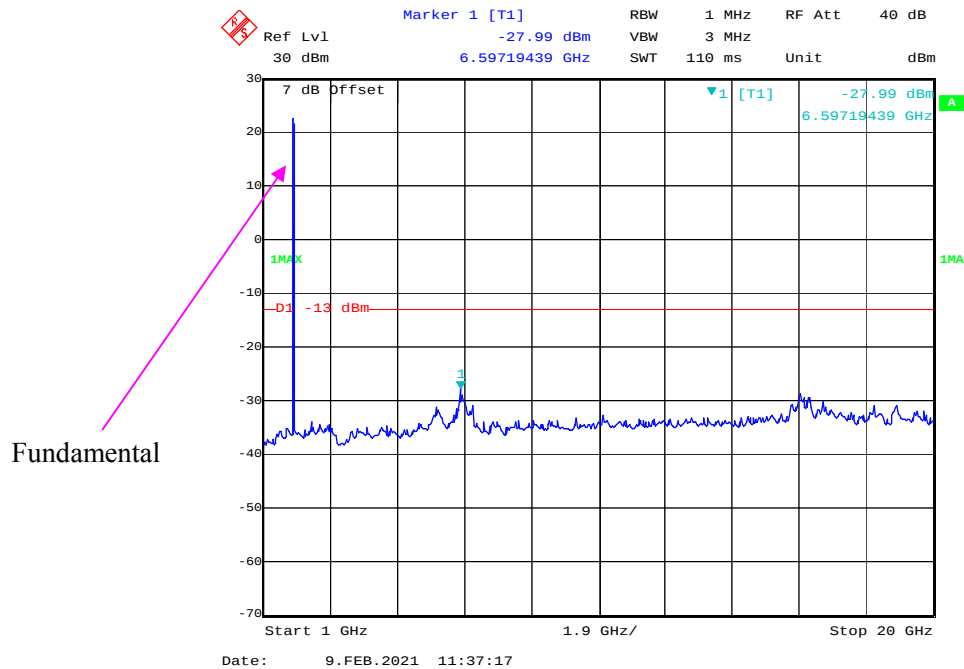
1 GHz – 20 GHz (5 MHz, QPSK, Middle Channel)



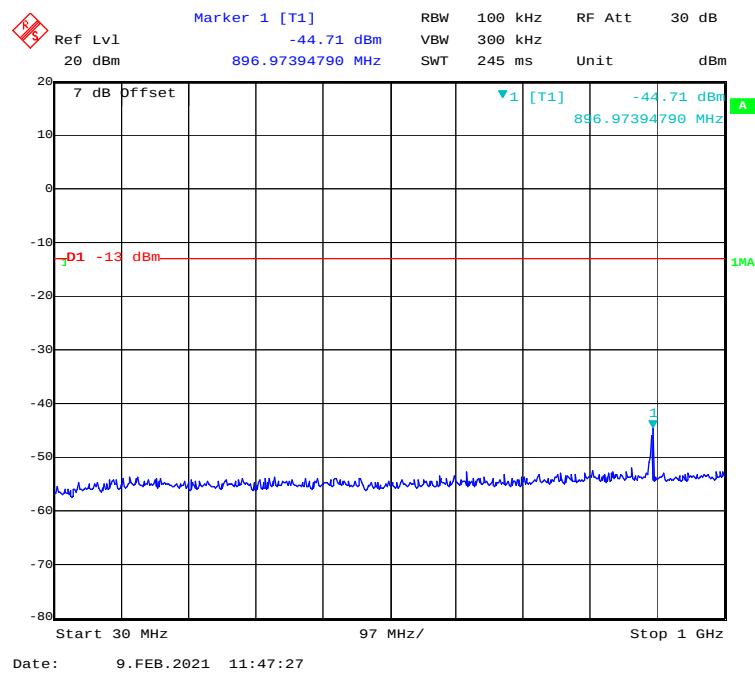
30 MHz - 1 GHz (5 MHz, 16-QAM, Middle Channel)



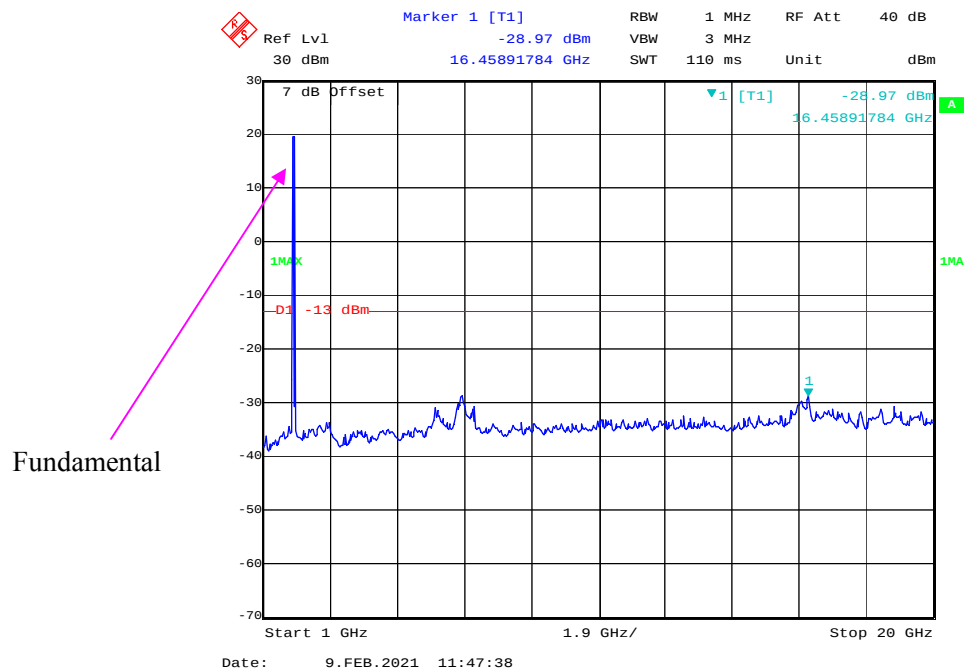
1 GHz – 20 GHz (5 MHz, 16-QAM, Middle Channel)



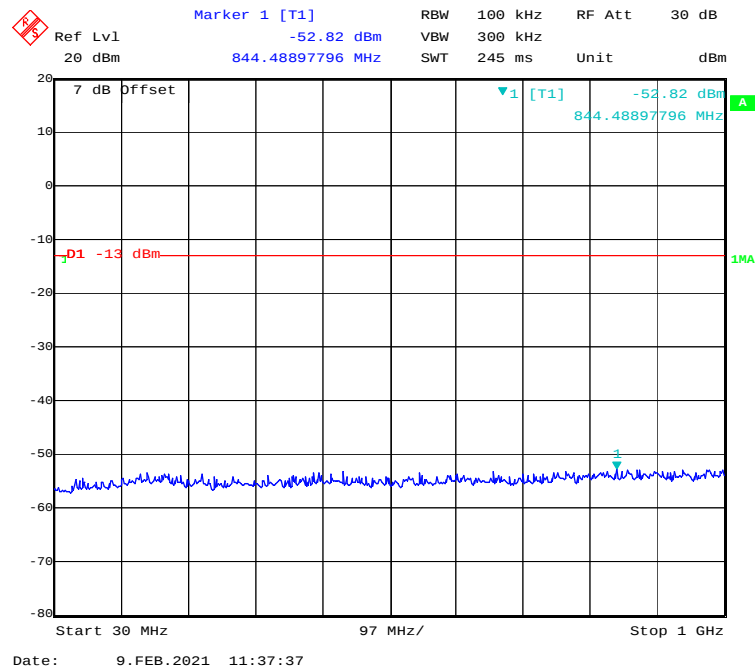
30 MHz - 1 GHz (10 MHz, QPSK, Middle Channel)



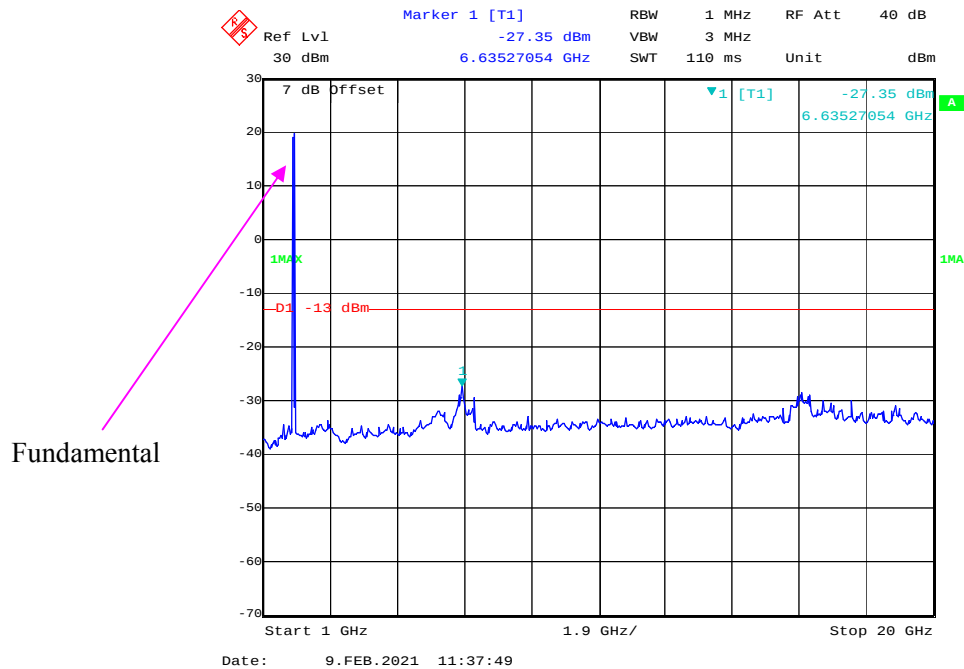
1 GHz – 20 GHz (10 MHz, QPSK, Middle Channel)



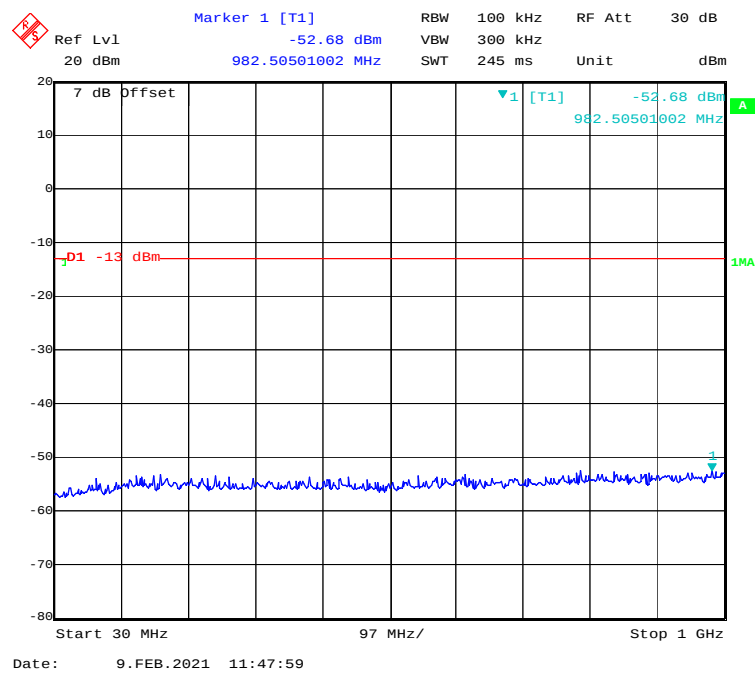
30 MHz - 1 GHz (10 MHz, 16-QAM, Middle Channel)



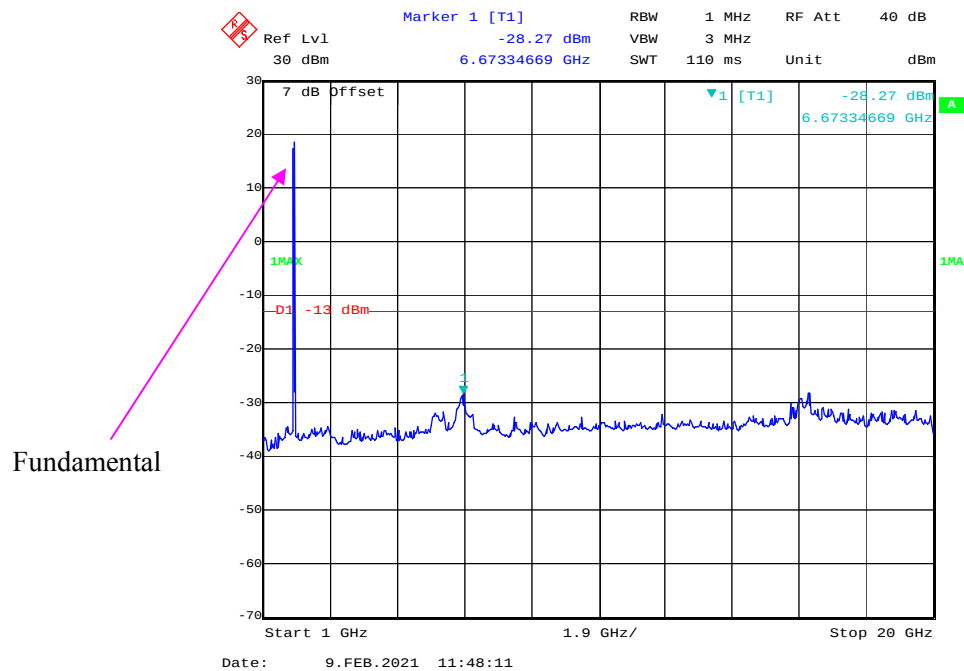
1 GHz – 20 GHz (10 MHz, 16-QAM, Middle Channel)



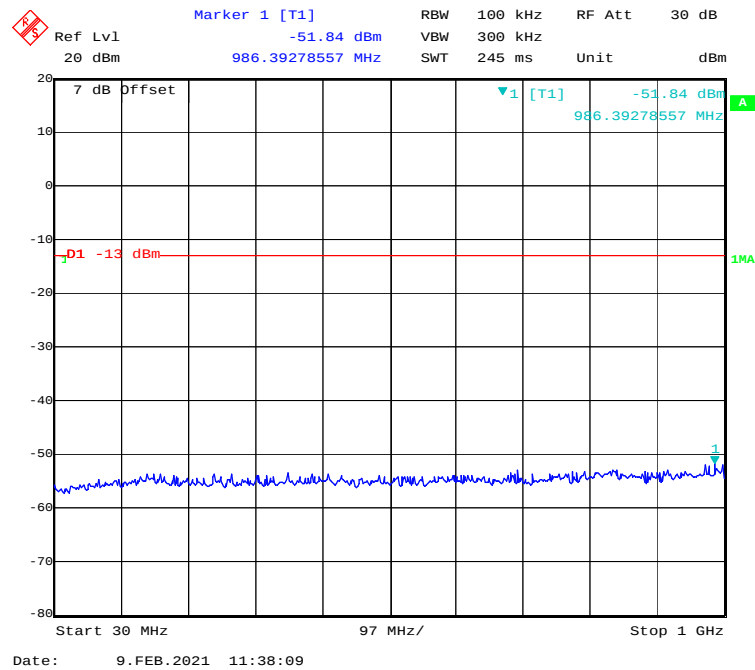
30 MHz - 1 GHz (15 MHz, QPSK, Middle Channel)



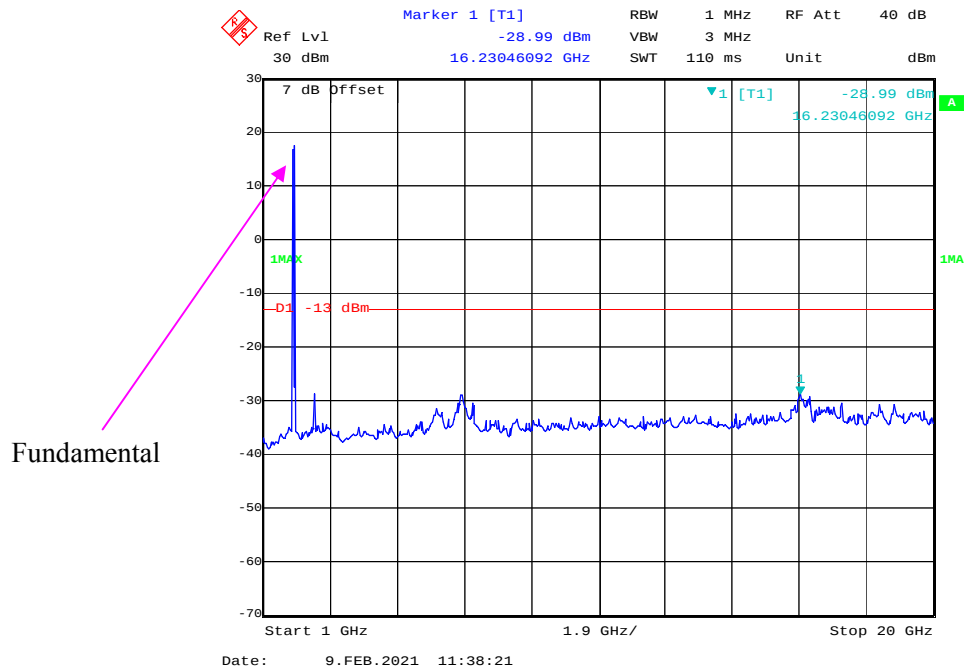
1 GHz – 20 GHz (15 MHz, QPSK, Middle Channel)



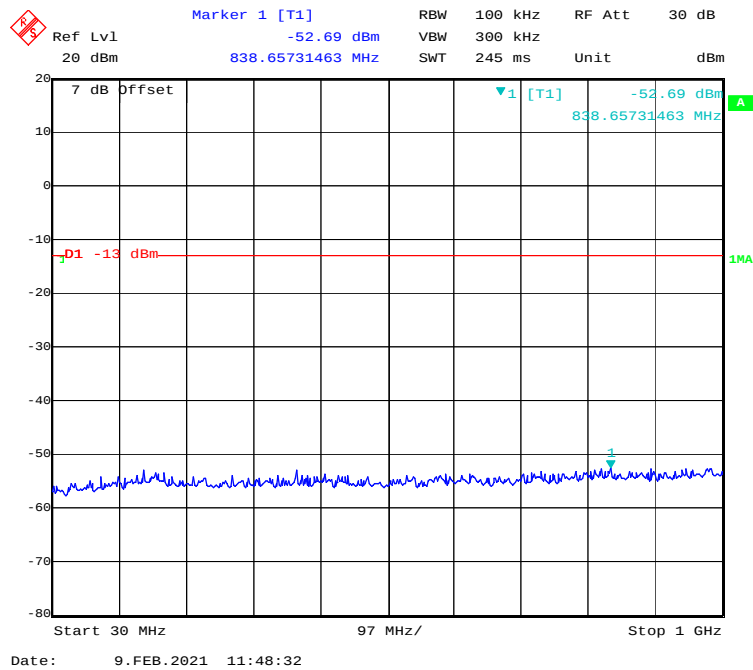
30 MHz - 1 GHz (15 MHz, 16-QAM, Middle Channel)



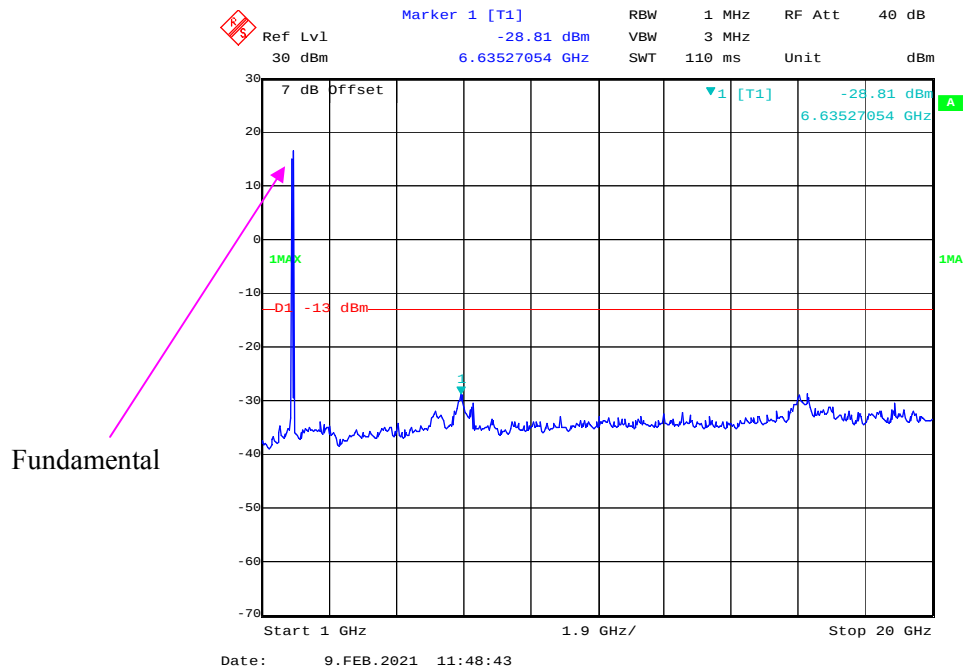
1 GHz – 20 GHz (15 MHz, 16-QAM, Middle Channel)



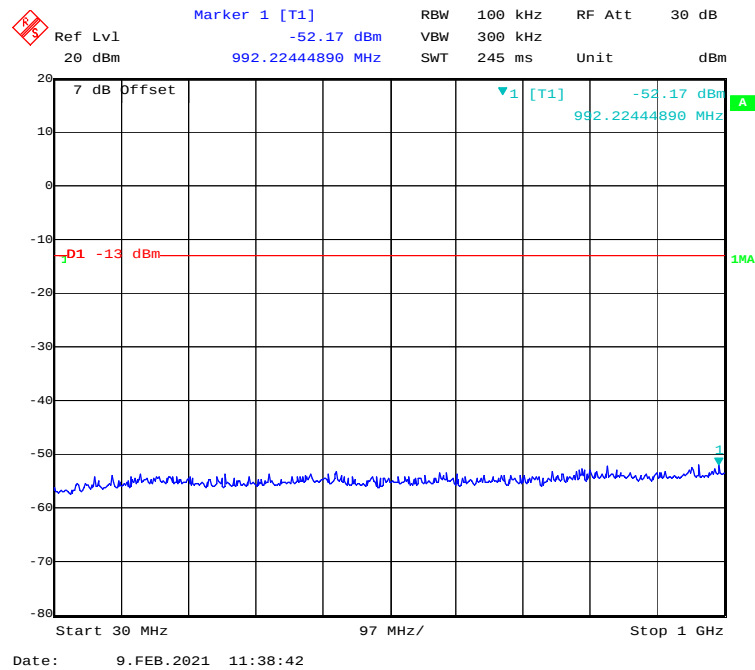
30 MHz - 1 GHz (20 MHz, QPSK, Middle Channel)



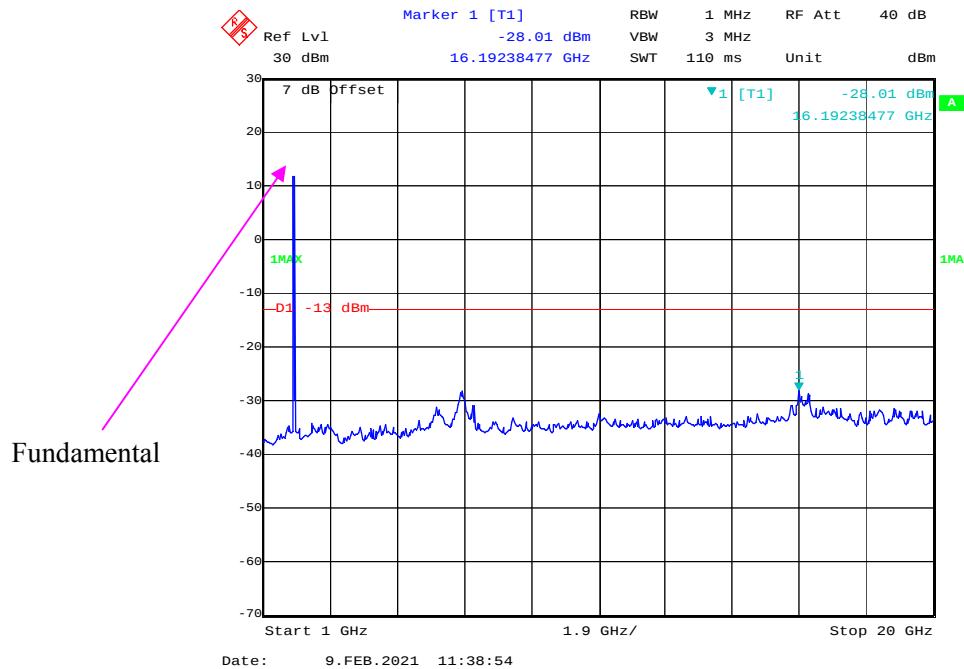
1 GHz – 20 GHz (20 MHz, QPSK, Middle Channel)



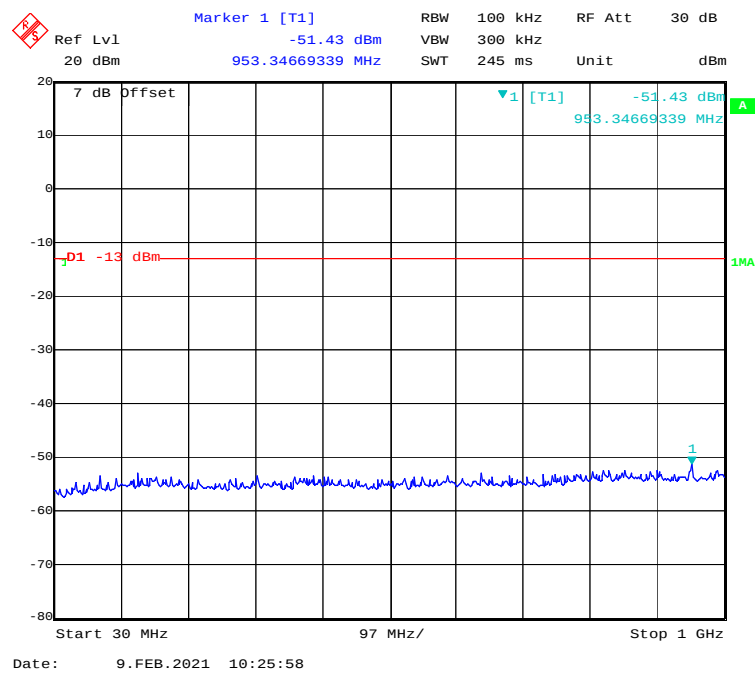
30 MHz - 1 GHz (20 MHz, 16-QAM, Middle Channel)



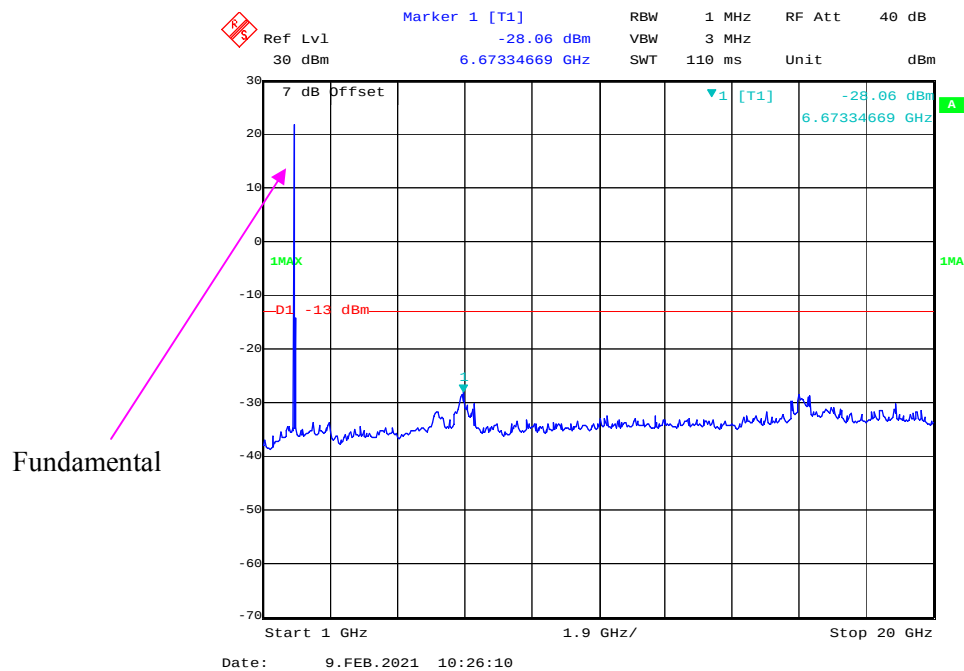
1 GHz – 20 GHz (20 MHz, 16-QAM, Middle Channel)



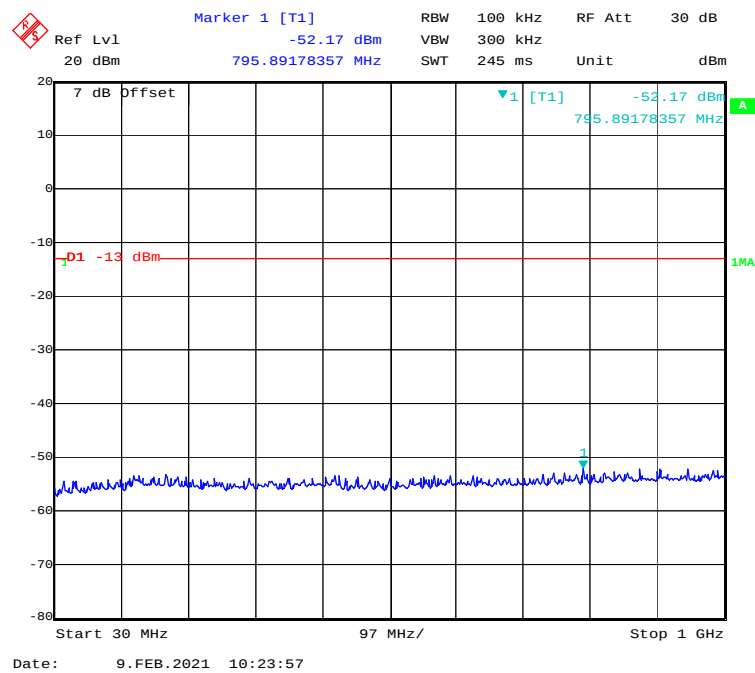
30 MHz - 1 GHz (1.4 MHz, QPSK, High Channel)



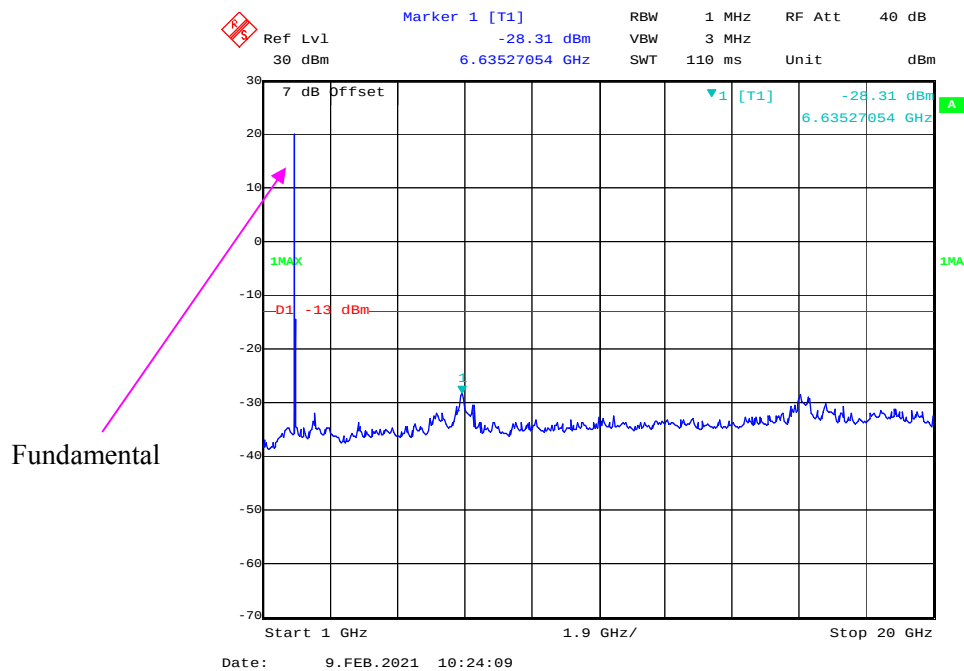
1 GHz – 20 GHz (1.4 MHz, QPSK, High Channel)



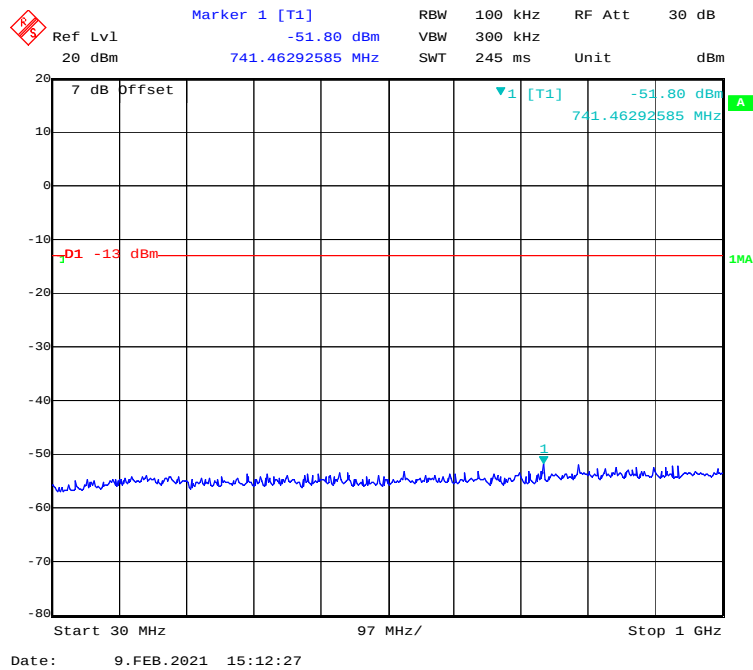
30 MHz - 1 GHz (1.4 MHz, 16-QAM, High Channel)



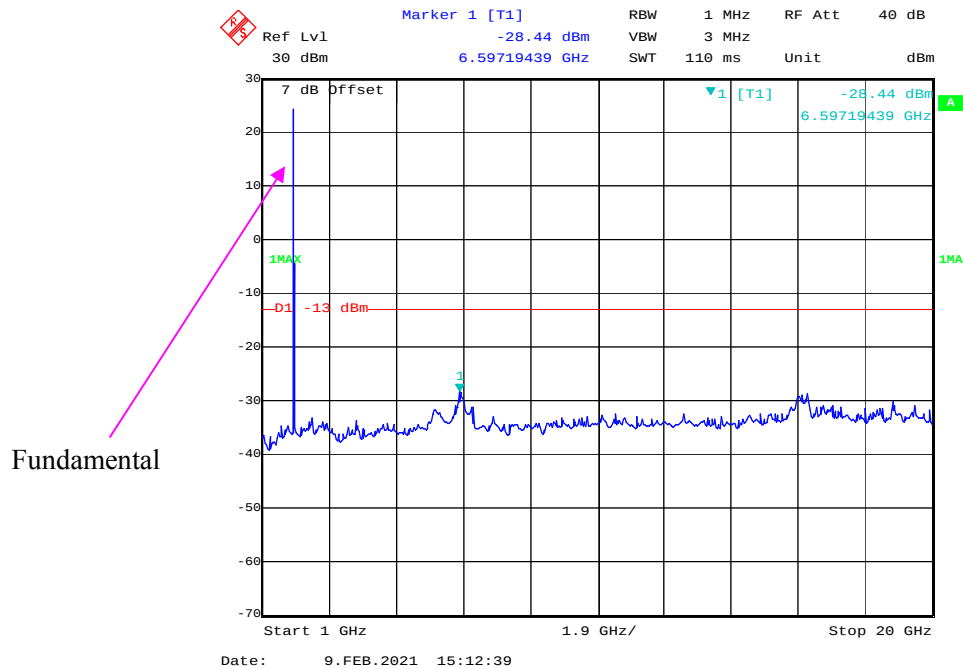
1 GHz – 20 GHz (1.4 MHz, 16-QAM, High Channel)



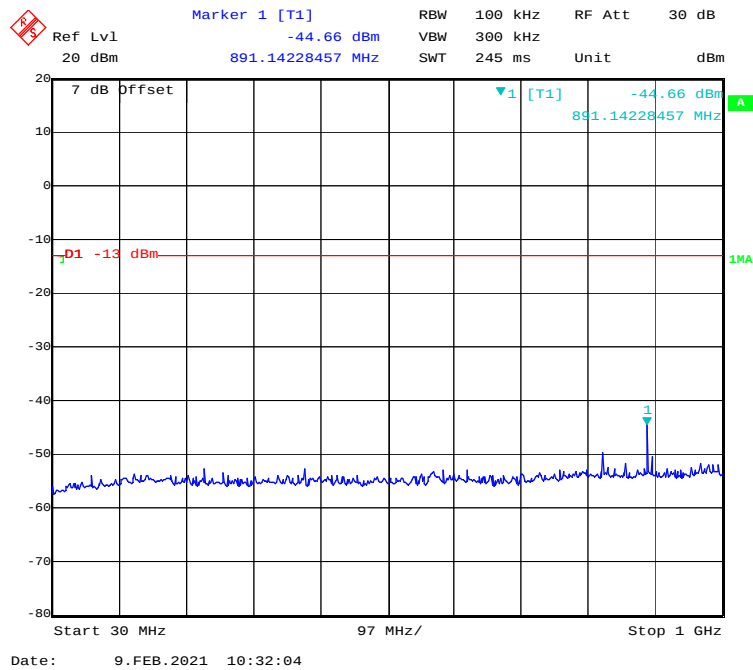
30 MHz - 1 GHz (3 MHz, QPSK, High Channel)



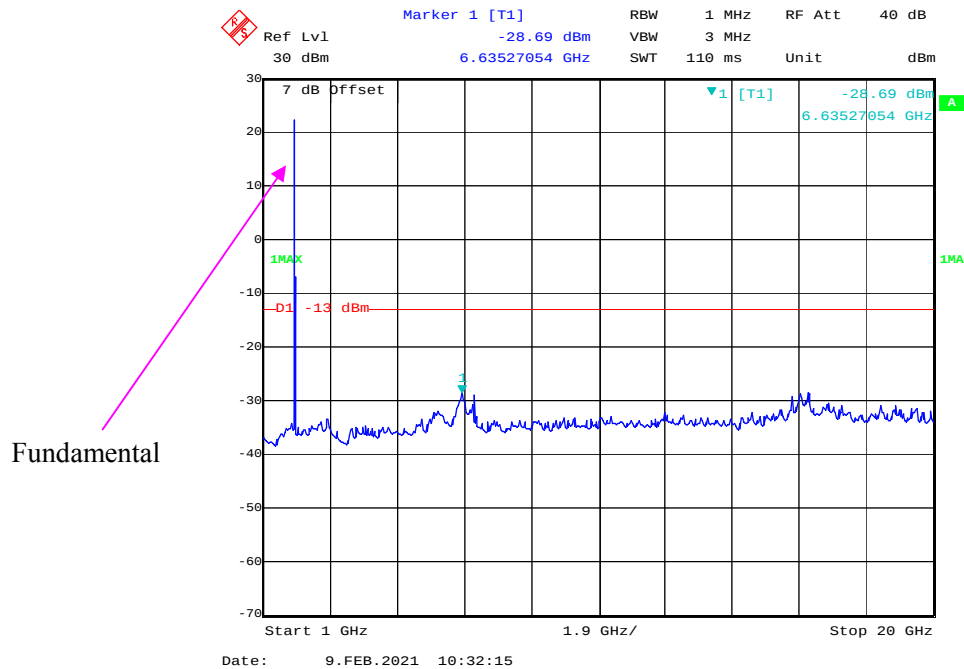
1 GHz – 20 GHz (3 MHz, QPSK, High Channel)



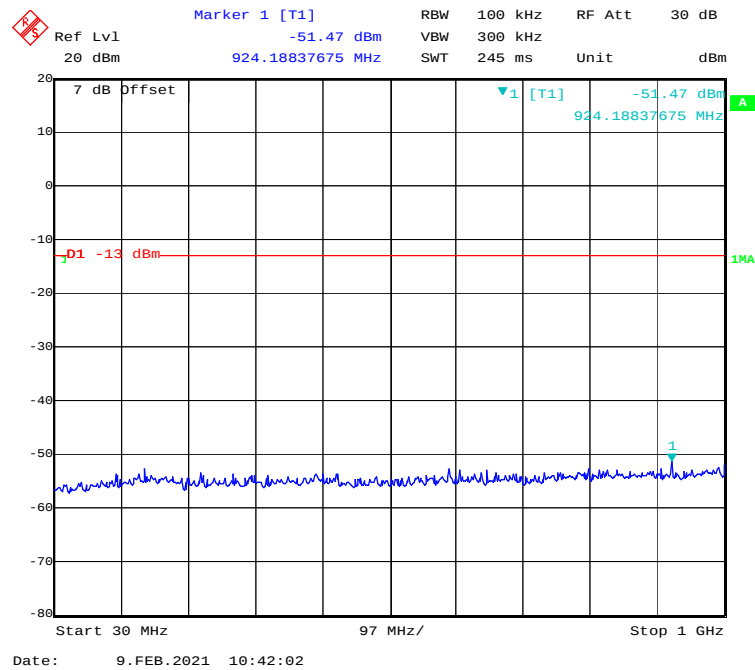
30 MHz - 1 GHz (3 MHz, 16-QAM, High Channel)



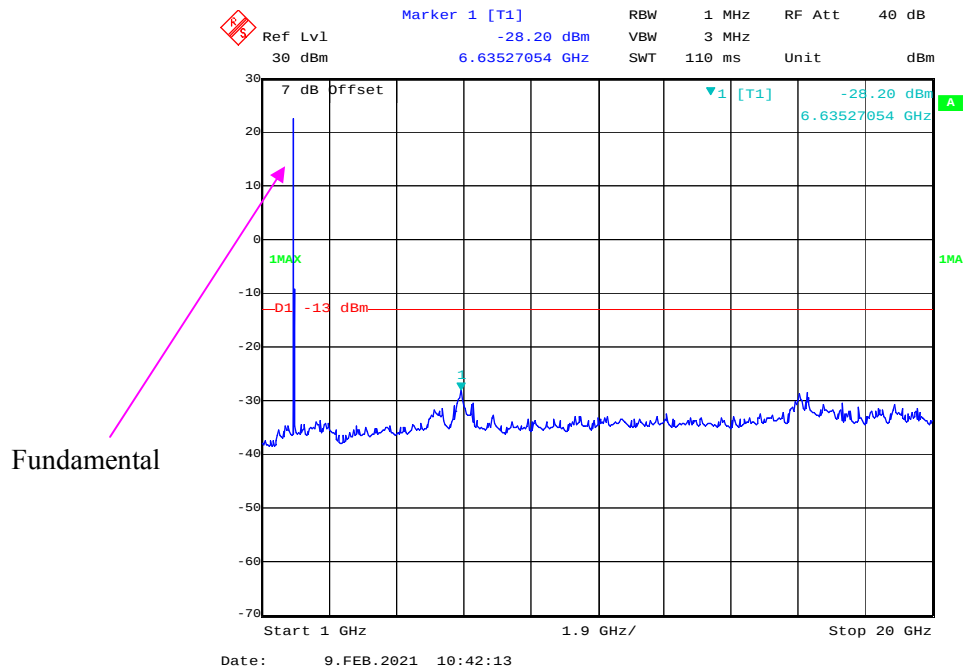
1 GHz – 20 GHz (3 MHz, 16-QAM, High Channel)

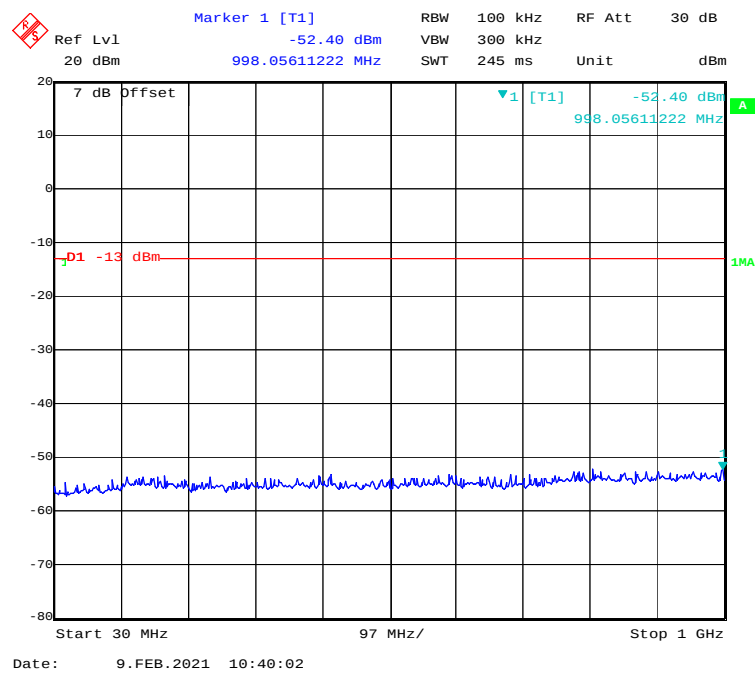
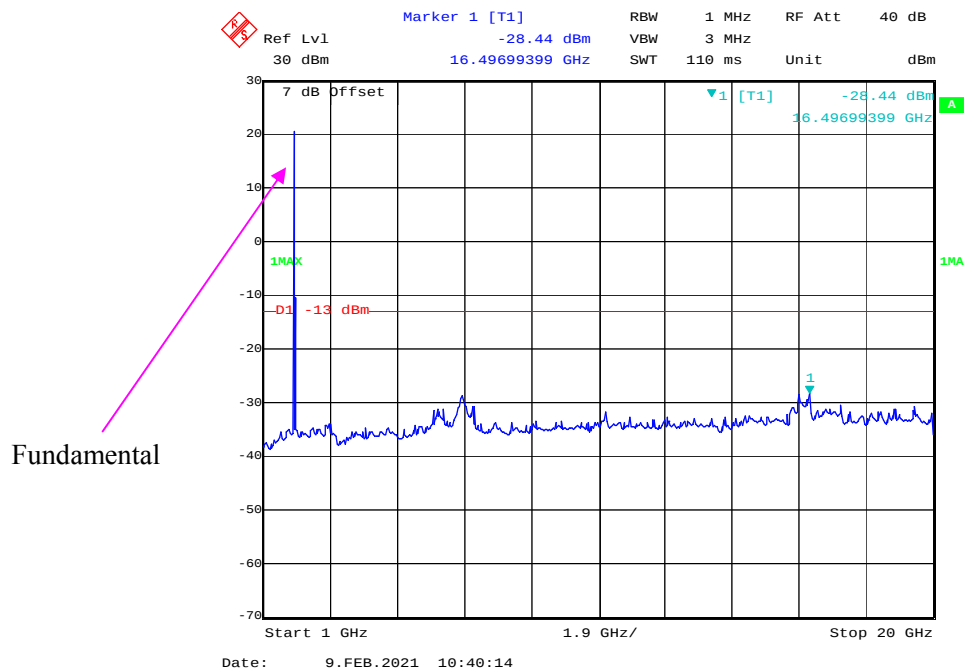


30 MHz - 1 GHz (5 MHz, QPSK, High Channel)

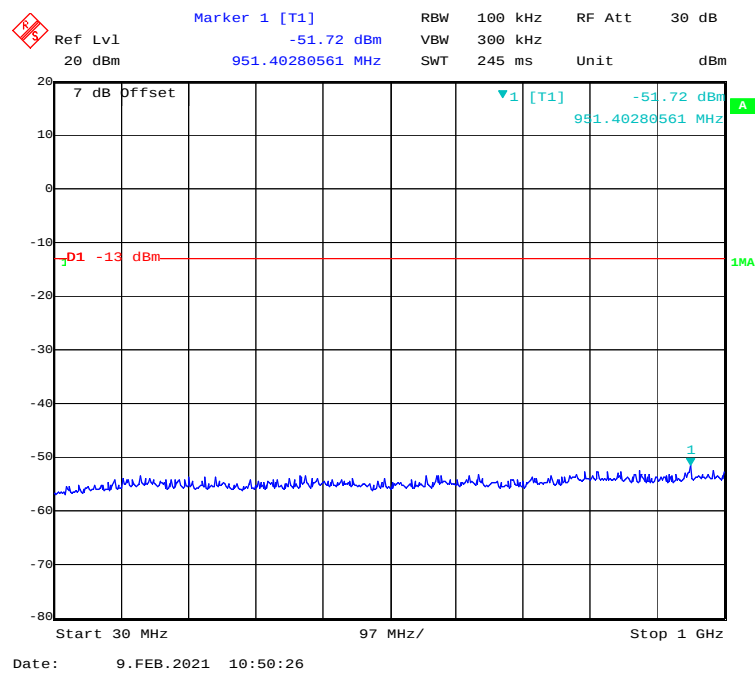


1 GHz – 20 GHz (5 MHz, QPSK, High Channel)

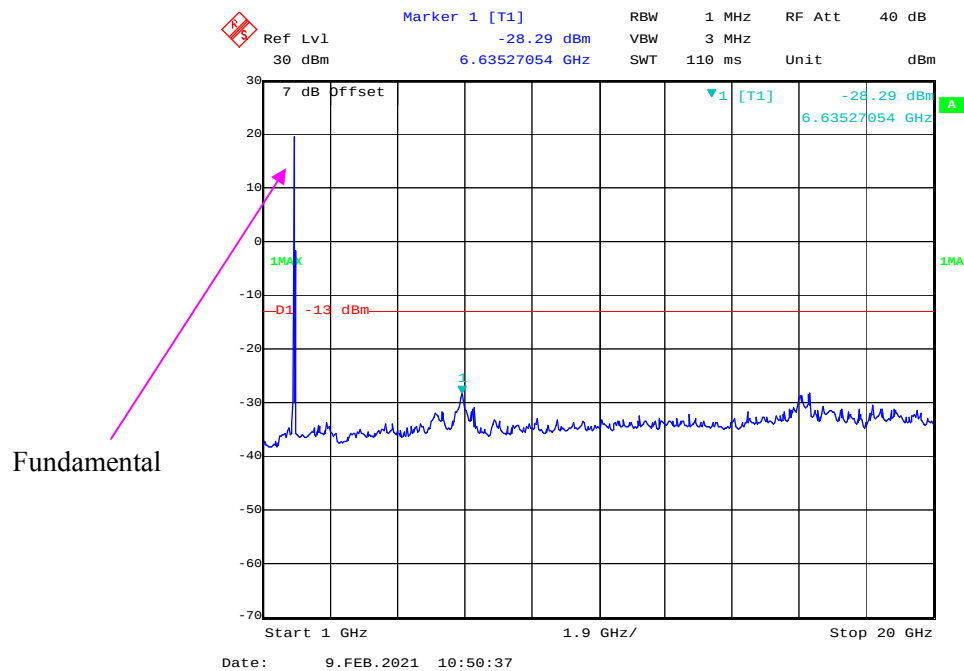


30 MHz - 1 GHz (5 MHz, 16-QAM, High Channel)**1 GHz - 20 GHz (5 MHz, 16-QAM, High Channel)**

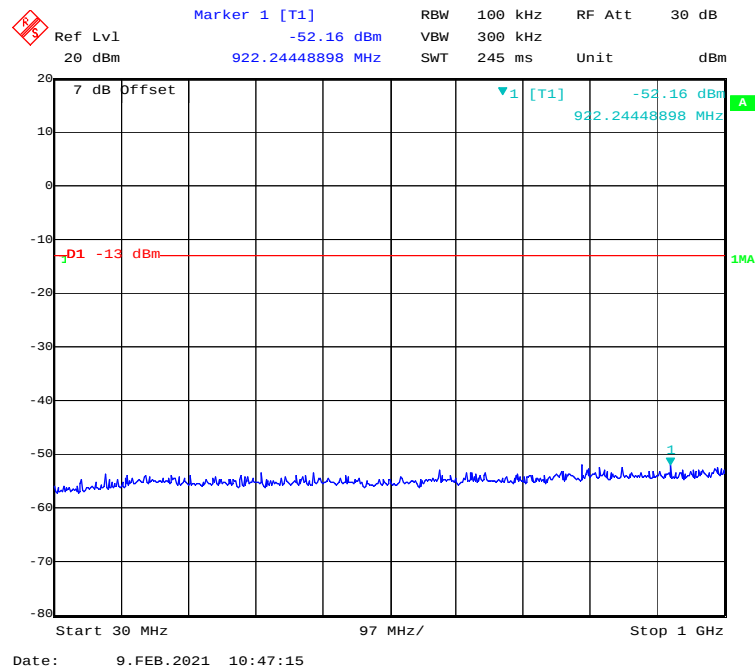
30 MHz - 1 GHz (10 MHz, QPSK, High Channel)



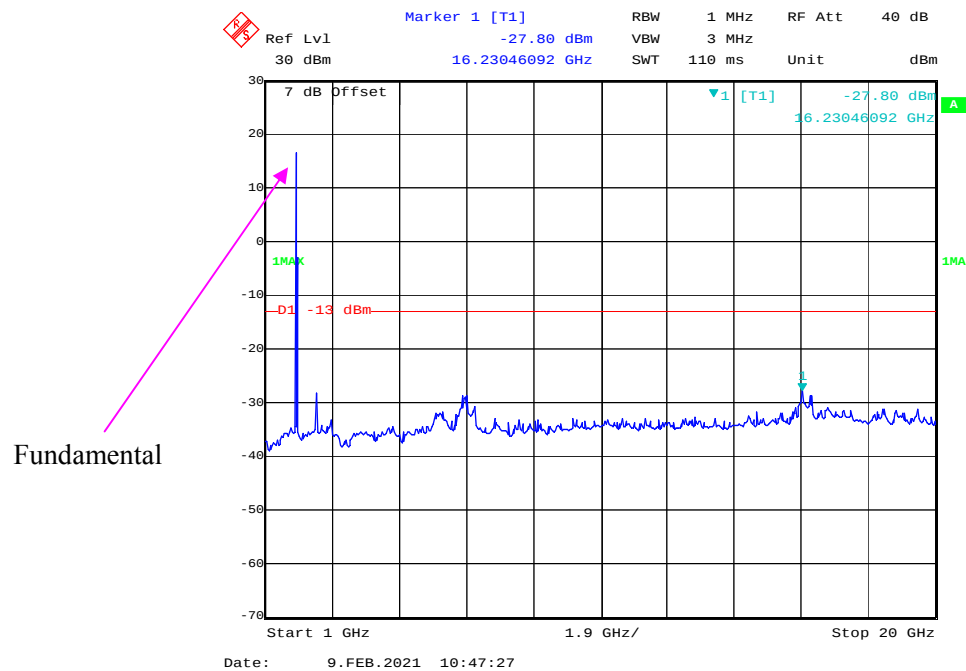
1 GHz – 20 GHz (10 MHz, QPSK, High Channel)



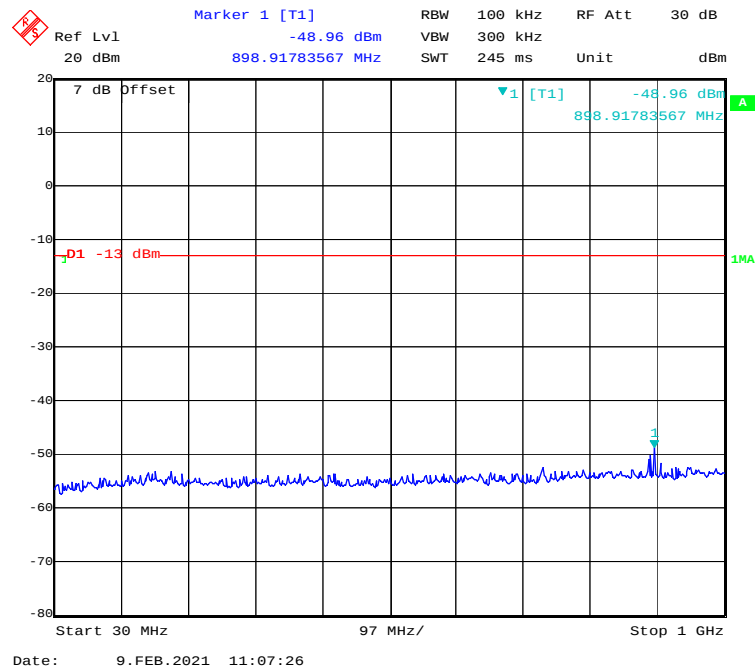
30 MHz - 1 GHz (10 MHz, 16-QAM, High Channel)



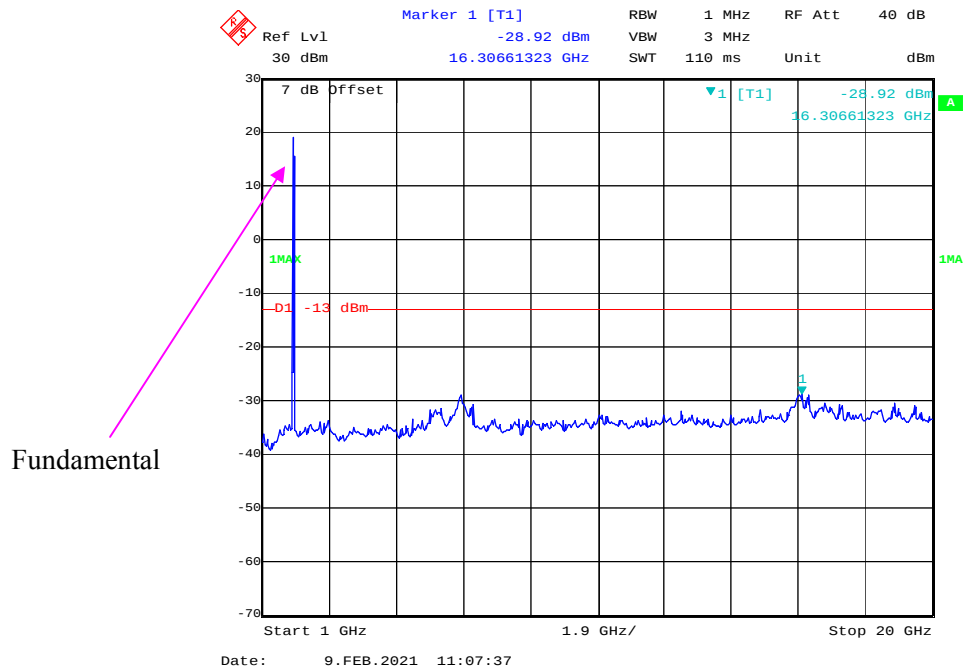
1 GHz – 20 GHz (10 MHz, 16-QAM, High Channel)



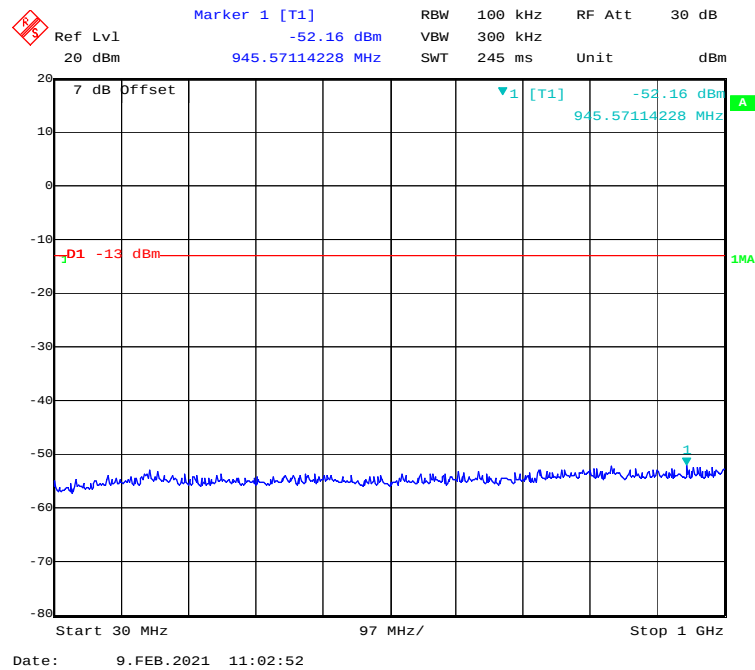
30 MHz - 1 GHz (15 MHz, QPSK, High Channel)



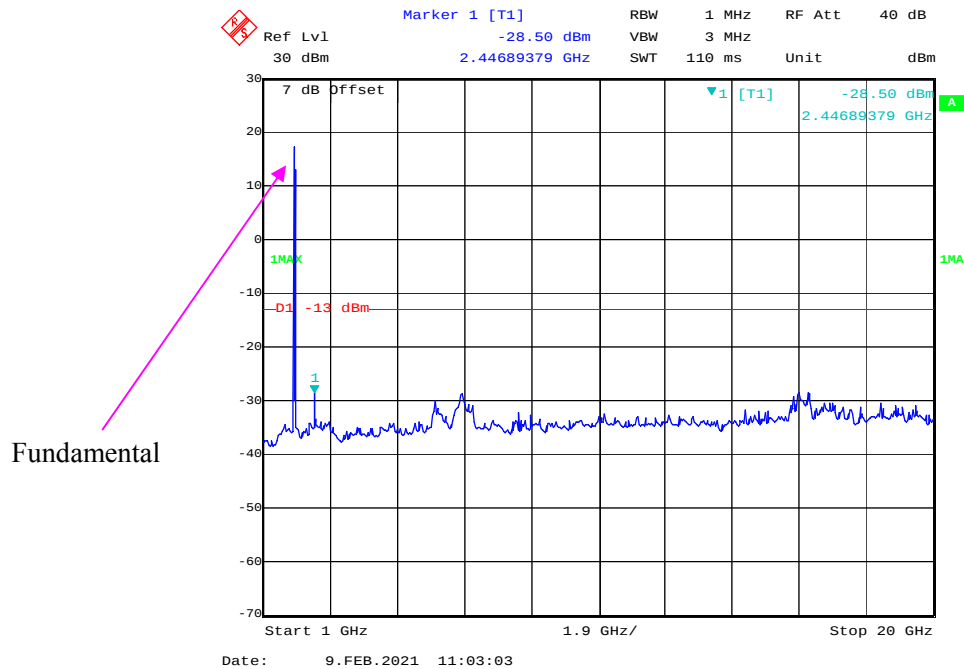
1 GHz – 20 GHz (15 MHz, QPSK, High Channel)



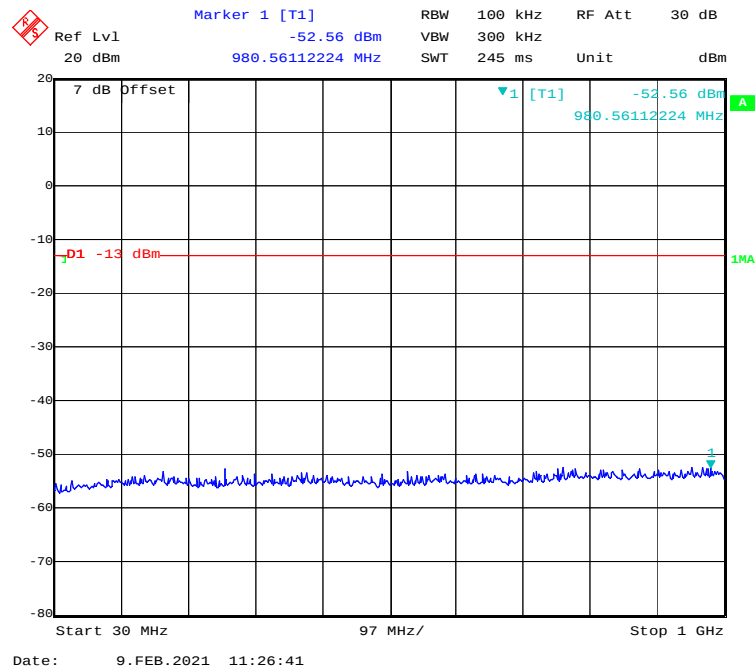
30 MHz - 1 GHz (15 MHz, 16-QAM, High Channel)



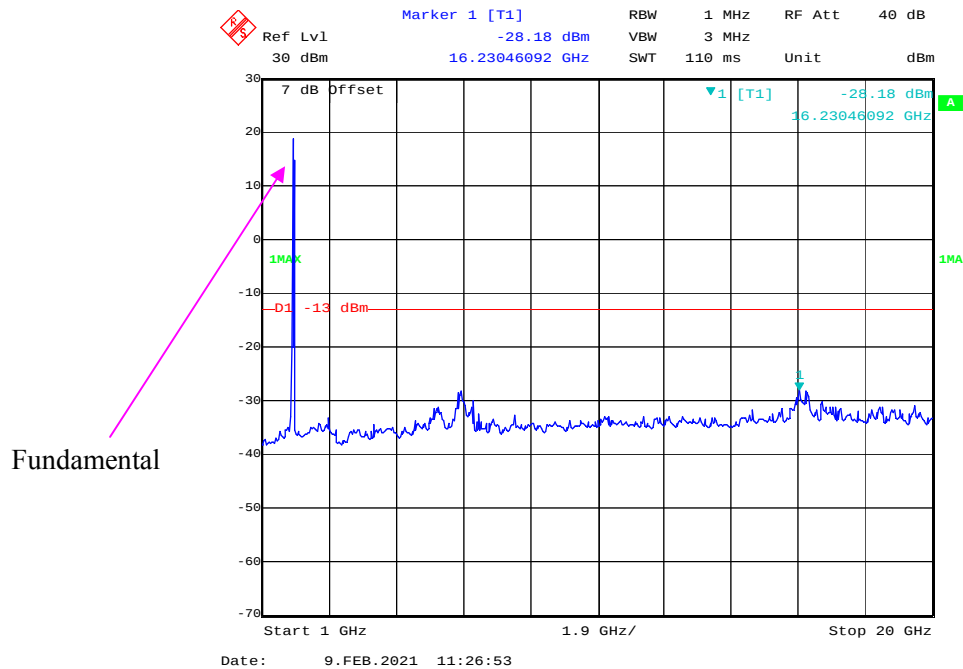
1 GHz – 20 GHz (15 MHz, 16-QAM, High Channel)



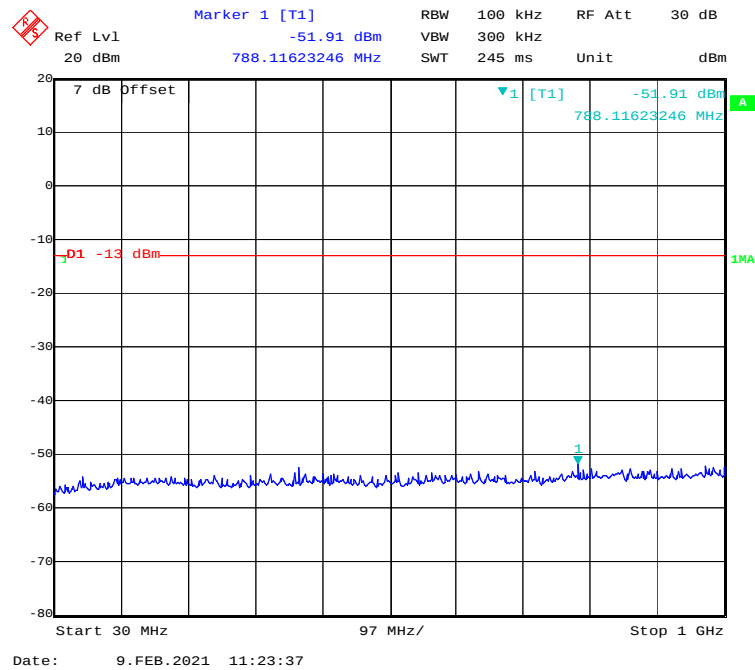
30 MHz - 1 GHz (20 MHz, QPSK, High Channel)



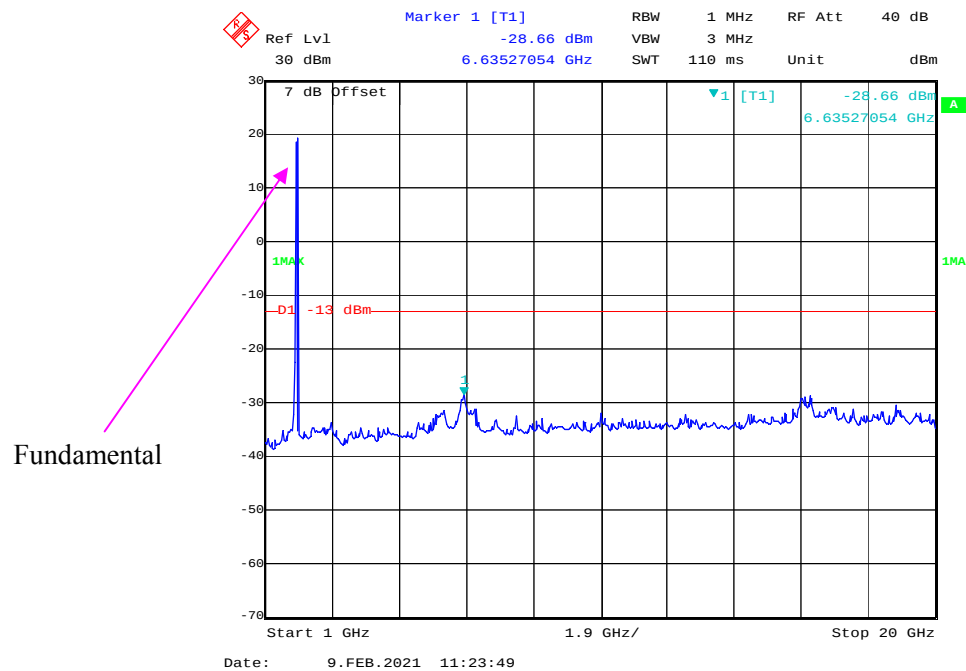
1 GHz – 20 GHz (20 MHz, QPSK, High Channel)



30 MHz - 1 GHz (20 MHz, 16-QAM, High Channel)

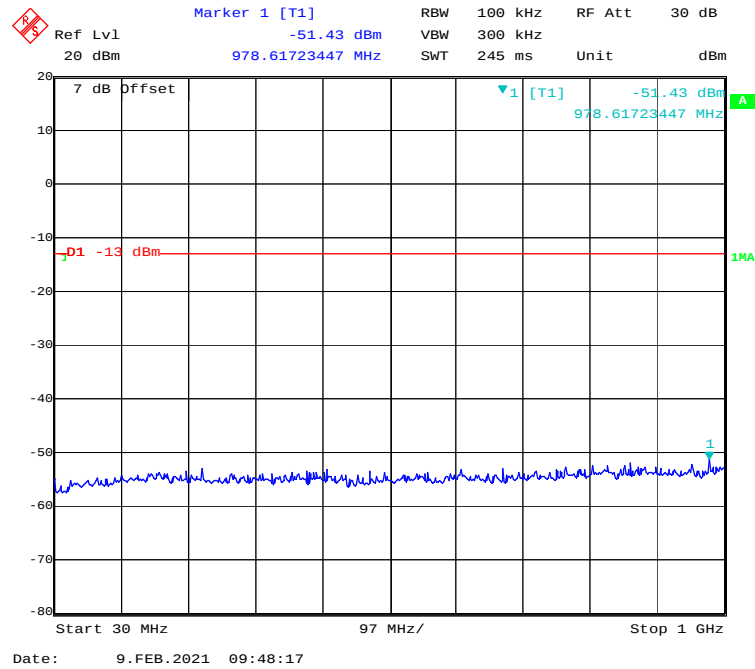


1 GHz – 20 GHz (20 MHz, 16-QAM, High Channel)

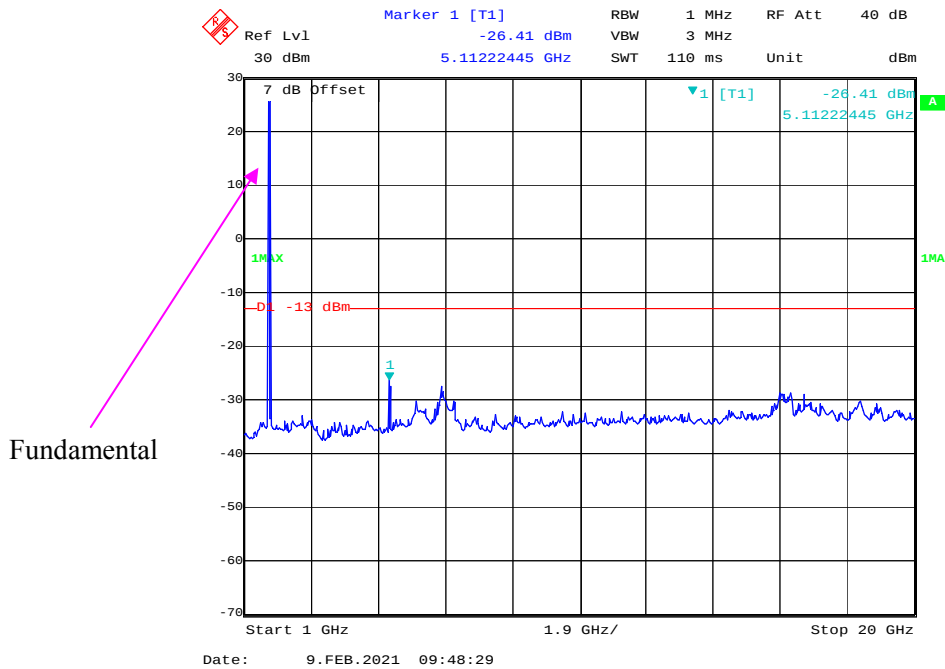


LTE Band 4:

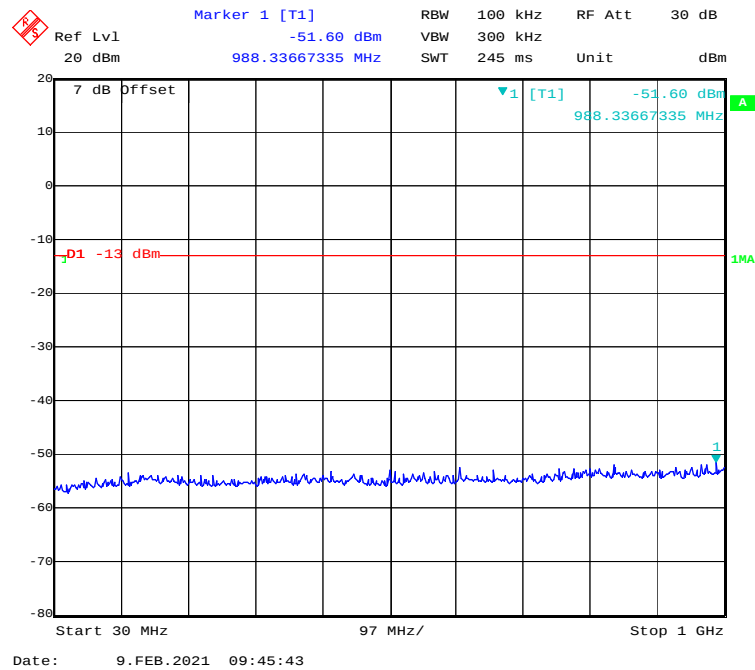
30 MHz - 1 GHz (1.4 MHz, QPSK, Low Channel)



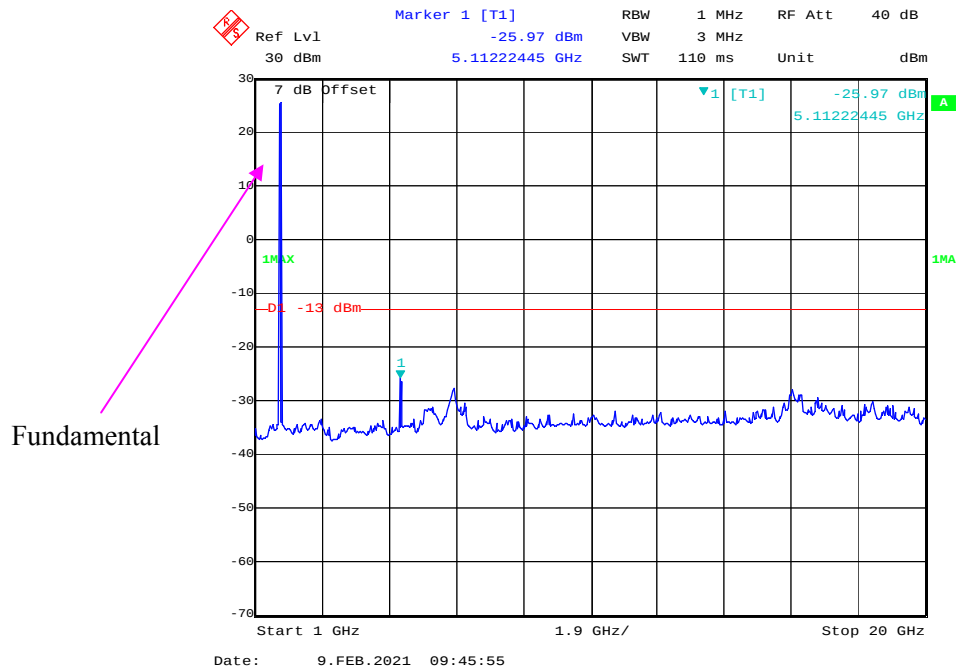
1 GHz – 20 GHz (1.4 MHz, QPSK, Low Channel)



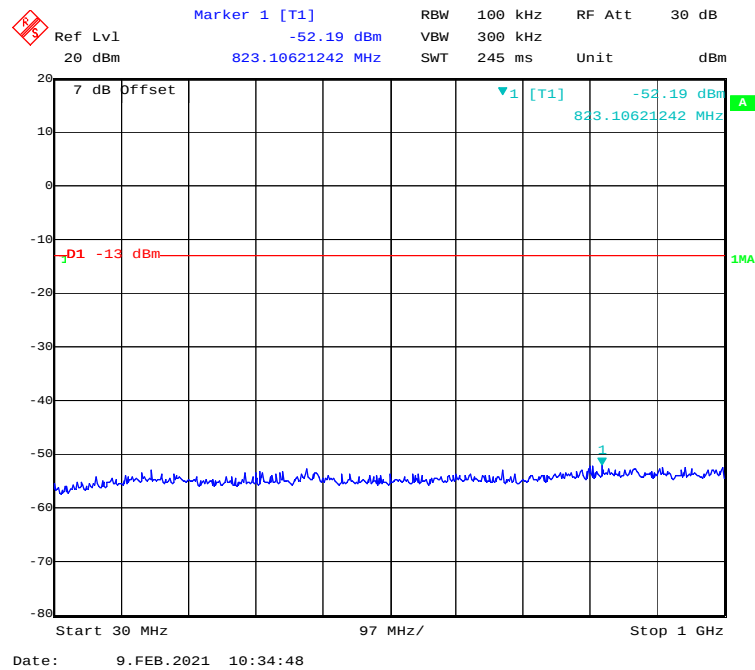
30 MHz - 1 GHz (1.4 MHz, 16-QAM, Low Channel)



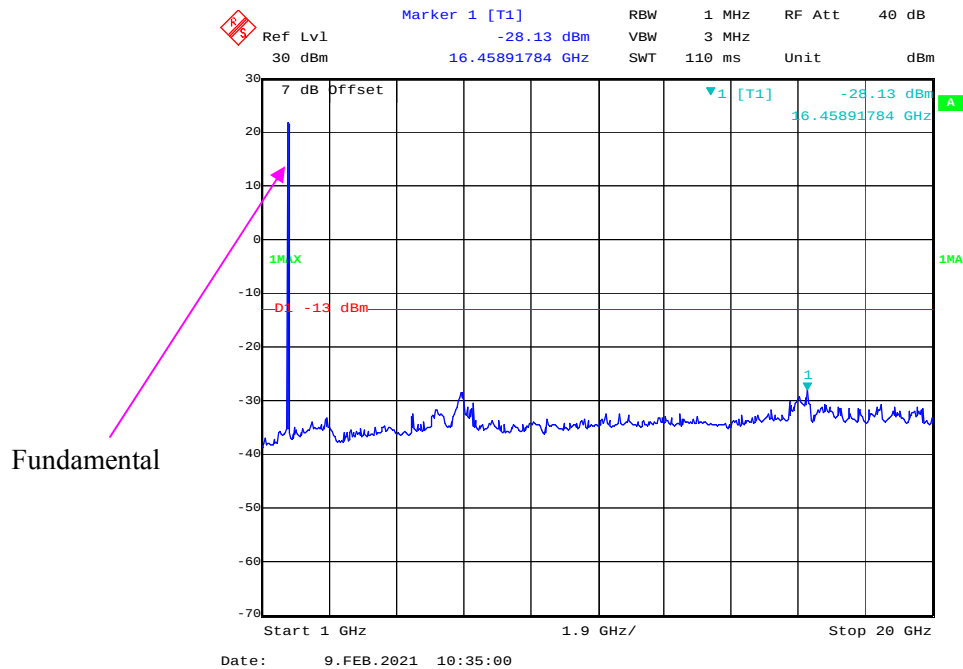
1 GHz – 20 GHz (1.4 MHz, 16-QAM, Low Channel)



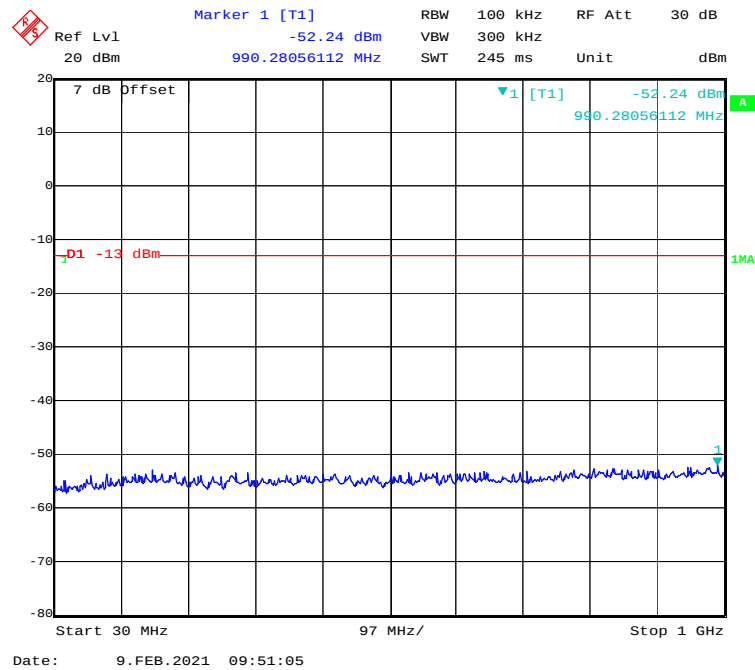
30 MHz - 1 GHz (3 MHz, QPSK, Low Channel)



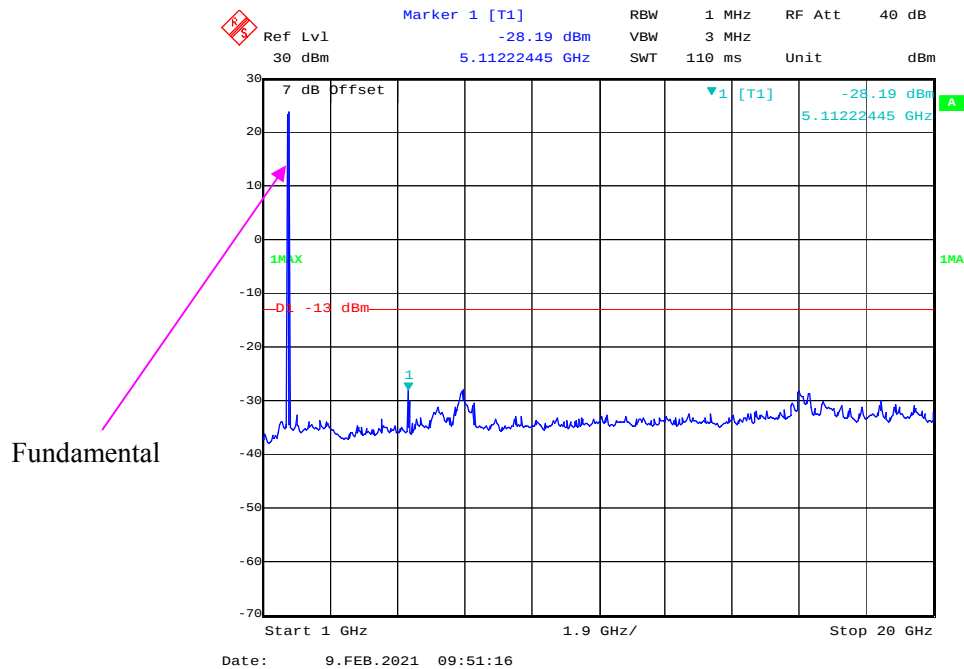
1 GHz – 20 GHz (3 MHz, QPSK, Low Channel)



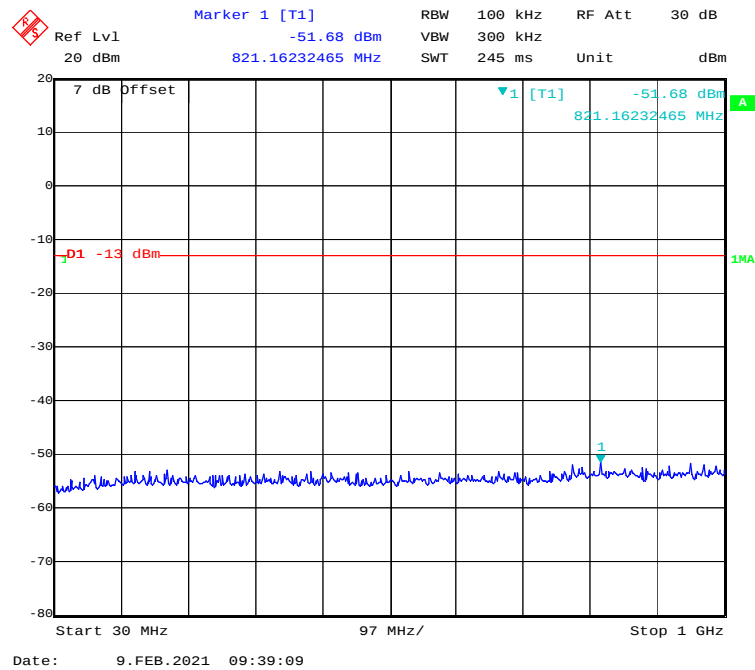
30 MHz - 1 GHz (3 MHz, 16-QAM, Low Channel)



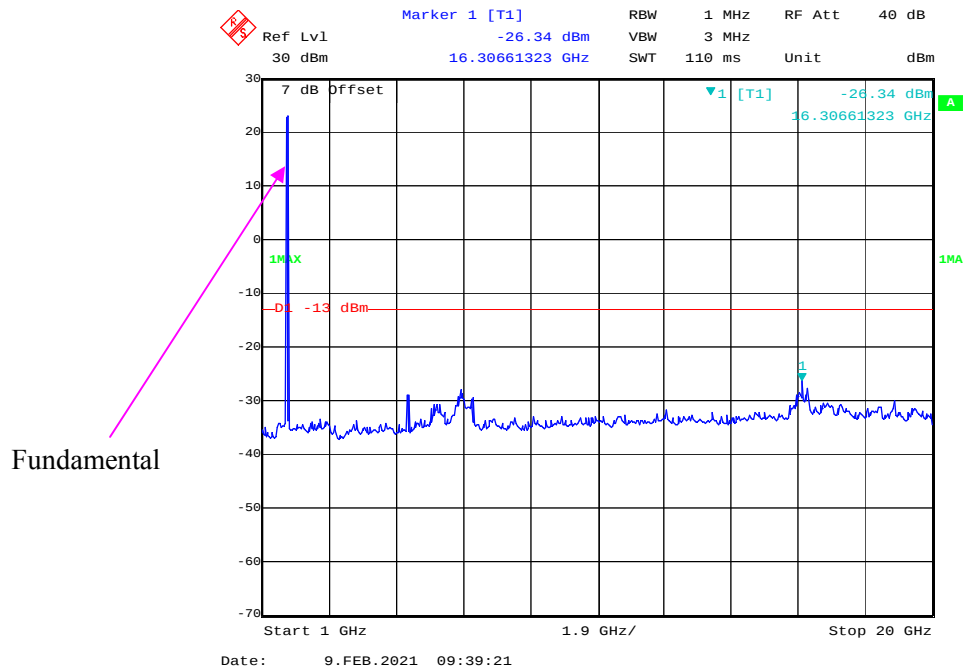
1 GHz – 20 GHz (3 MHz, 16-QAM, Low Channel)



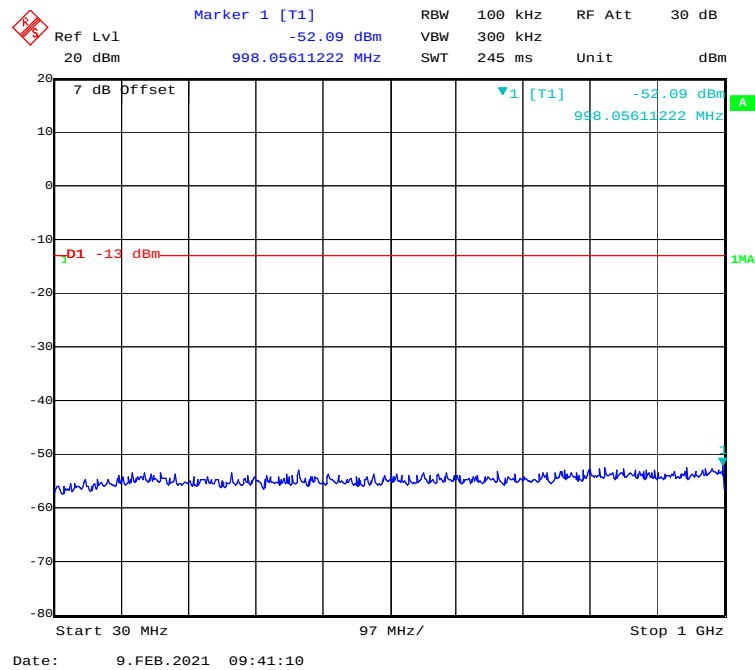
30 MHz - 1 GHz (5 MHz, QPSK, Low Channel)



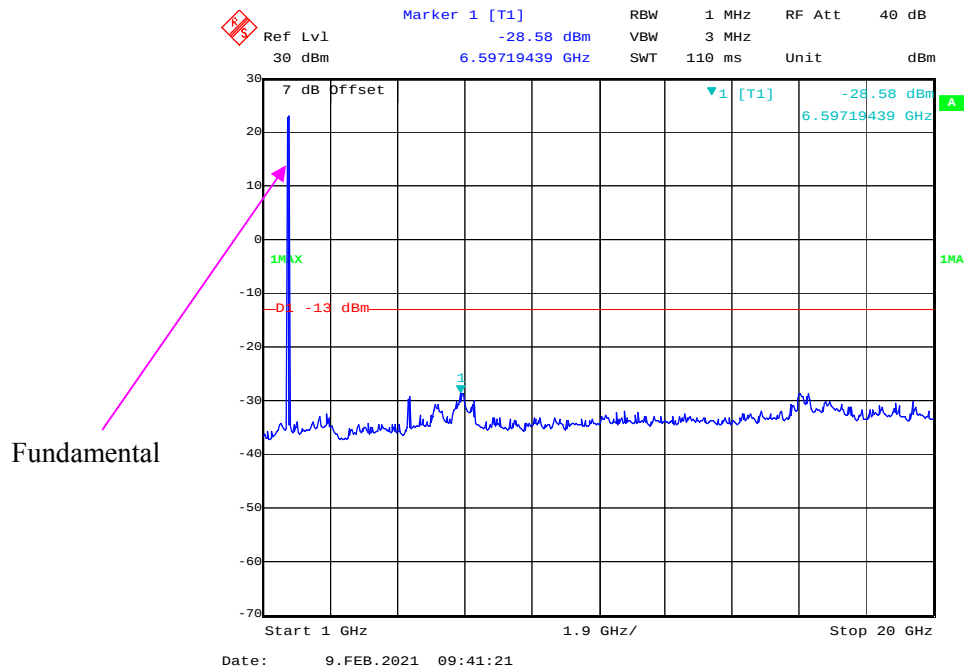
1 GHz – 20 GHz (5 MHz, QPSK, Low Channel)



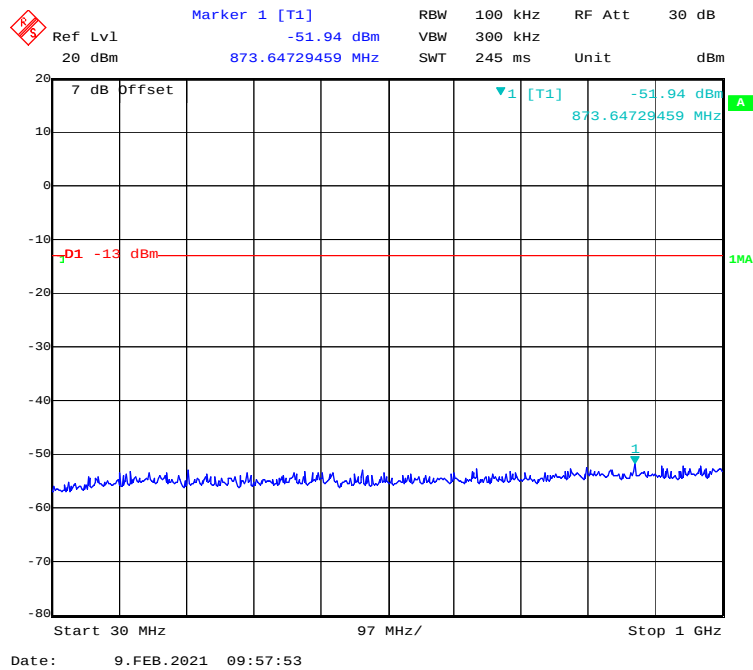
30 MHz - 1 GHz (5 MHz, 16-QAM, Low Channel)



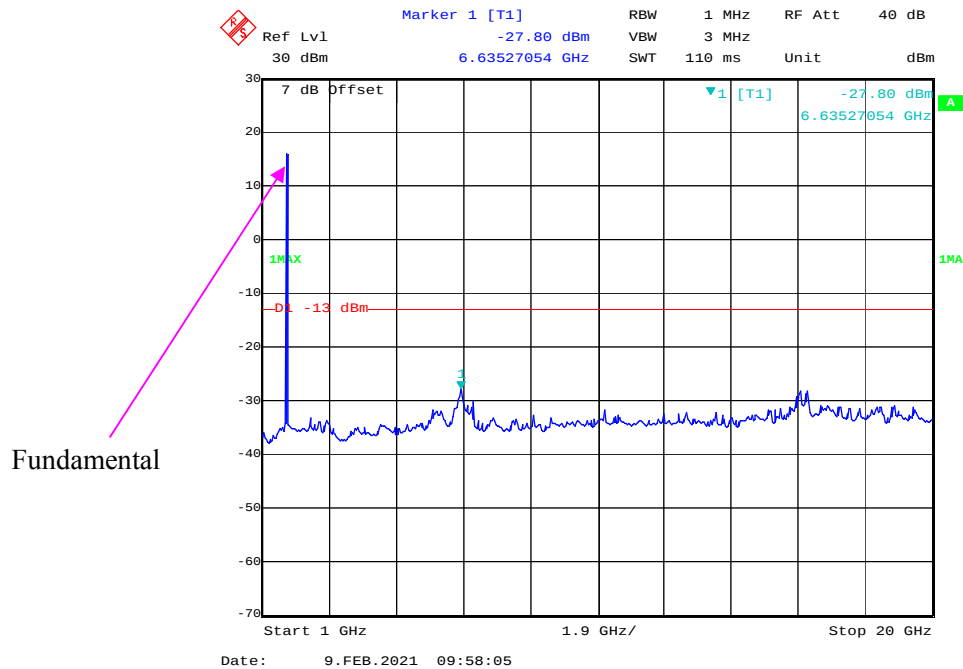
1 GHz – 20 GHz (5 MHz, 16-QAM, Low Channel)



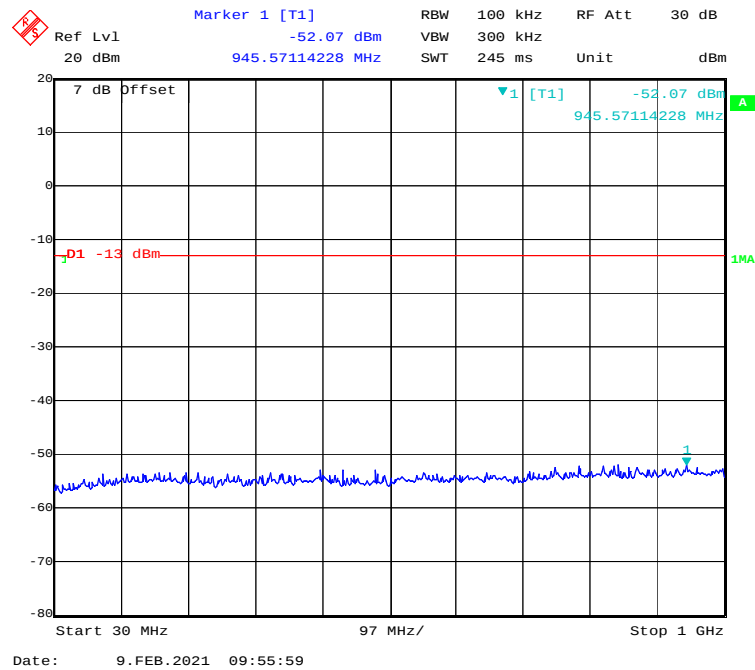
30 MHz - 1 GHz (10 MHz, QPSK, Low Channel)



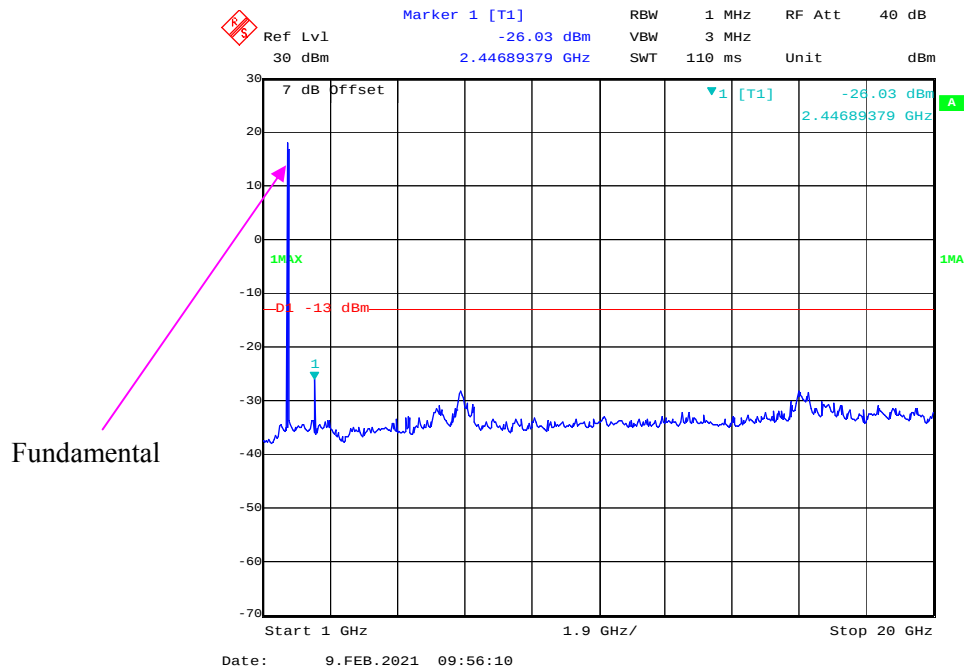
1 GHz – 20 GHz (10 MHz, QPSK, Low Channel)



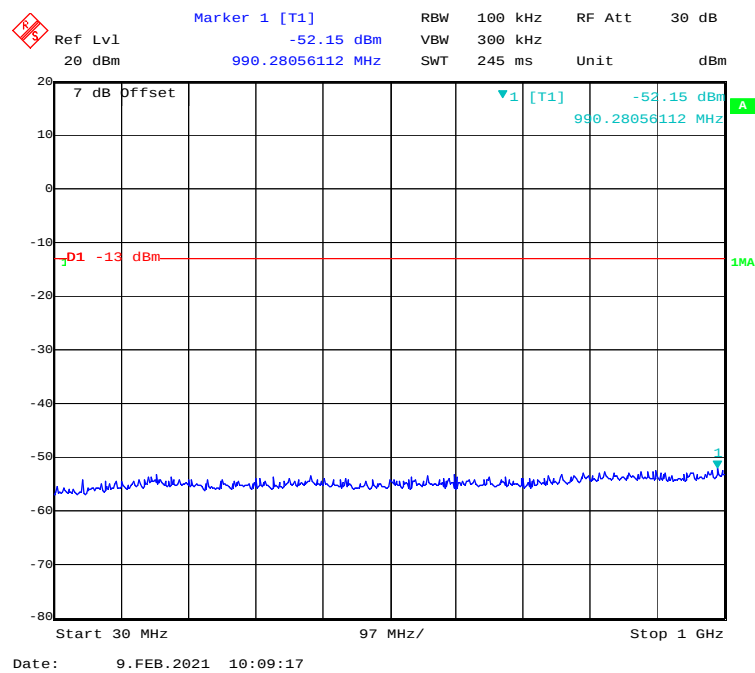
30 MHz - 1 GHz (10 MHz, 16-QAM, Low Channel)



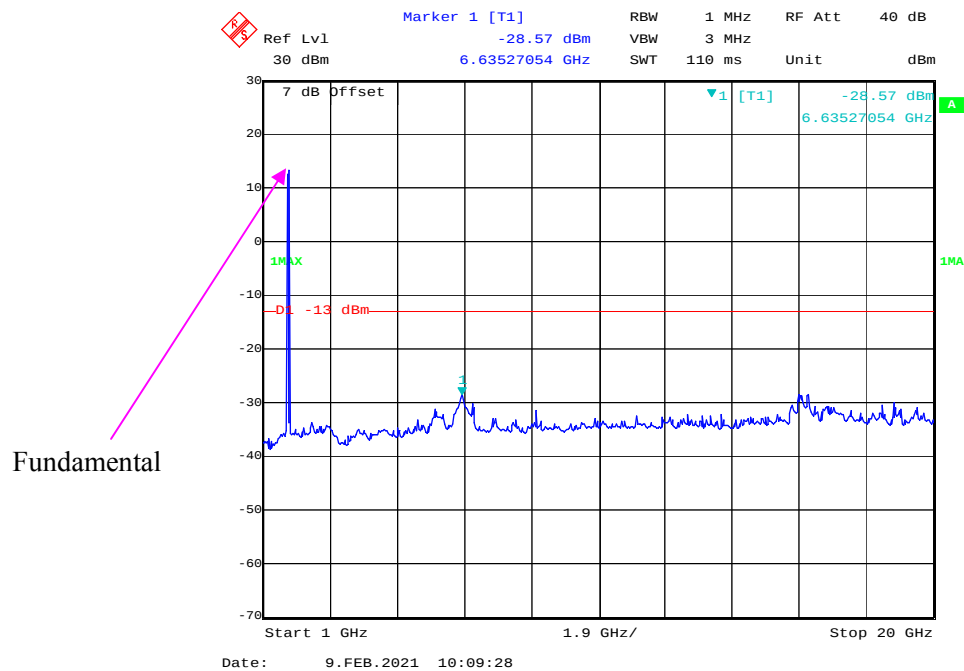
1 GHz – 20 GHz (10 MHz, 16-QAM, Low Channel)



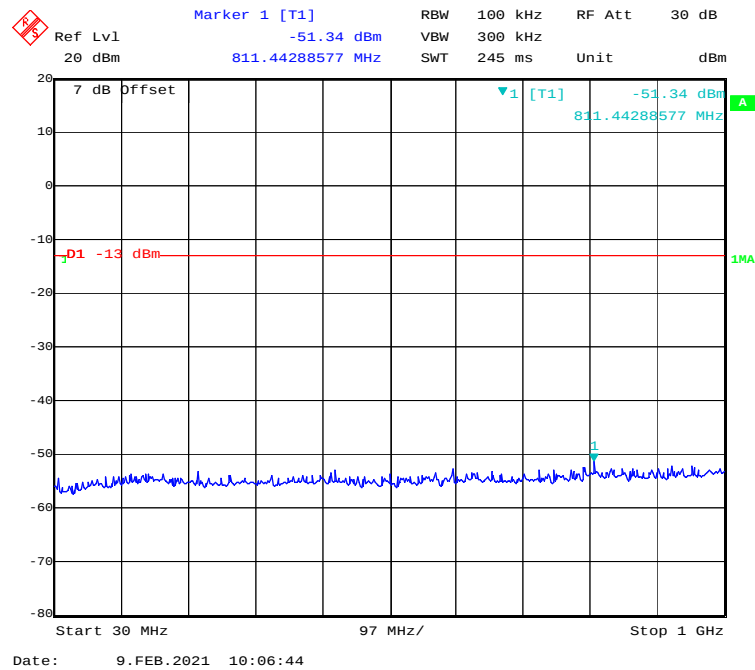
30 MHz - 1 GHz (15 MHz, QPSK, Low Channel)



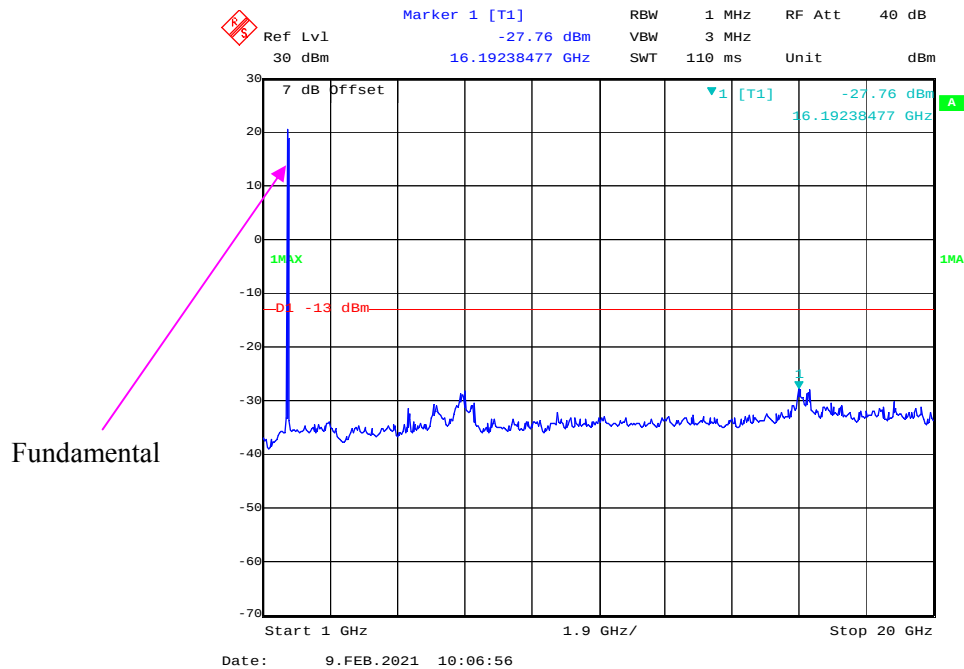
1 GHz – 20 GHz (15 MHz, QPSK, Low Channel)



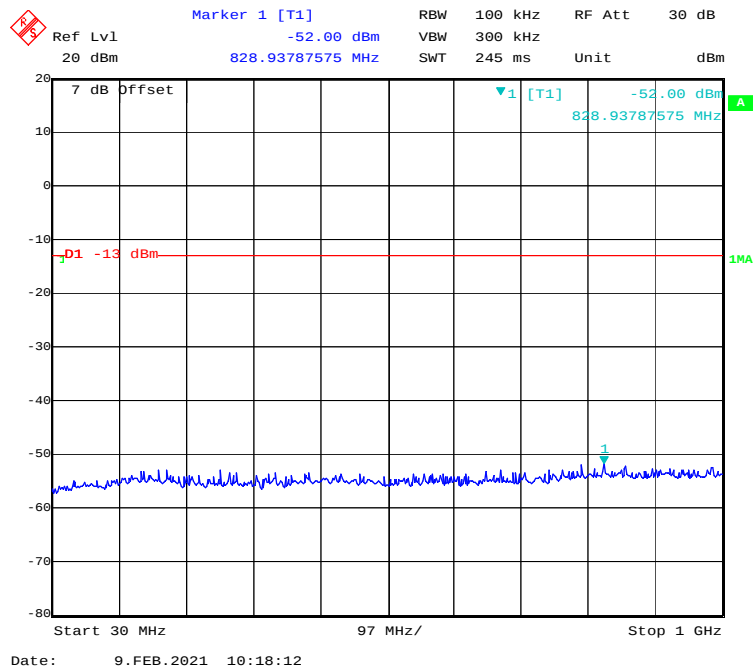
30 MHz - 1 GHz (15 MHz, 16-QAM, Low Channel)



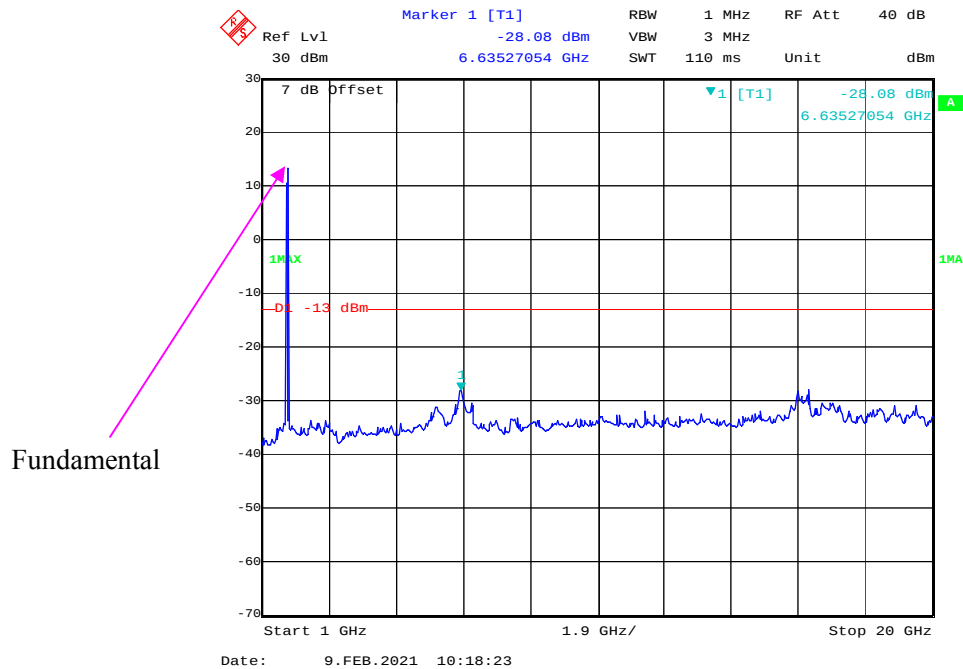
1 GHz – 20 GHz (15 MHz, 16-QAM, Low Channel)



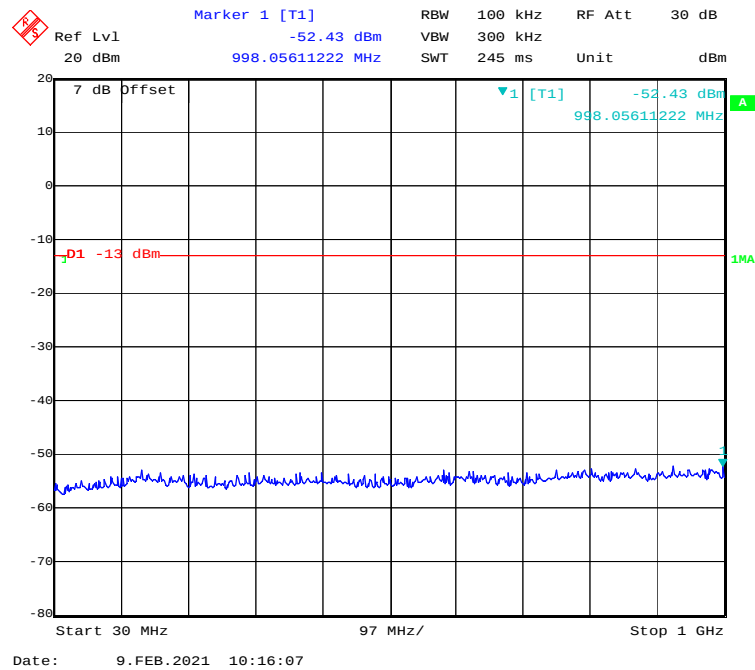
30 MHz - 1 GHz (20 MHz, QPSK, Low Channel)



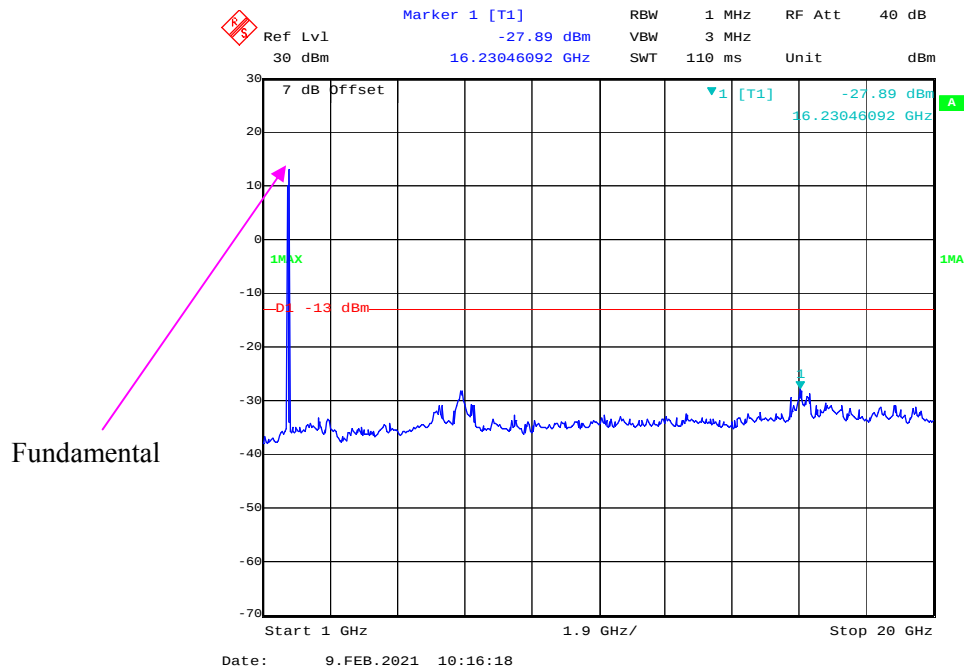
1 GHz – 20 GHz (20 MHz, QPSK, Low Channel)

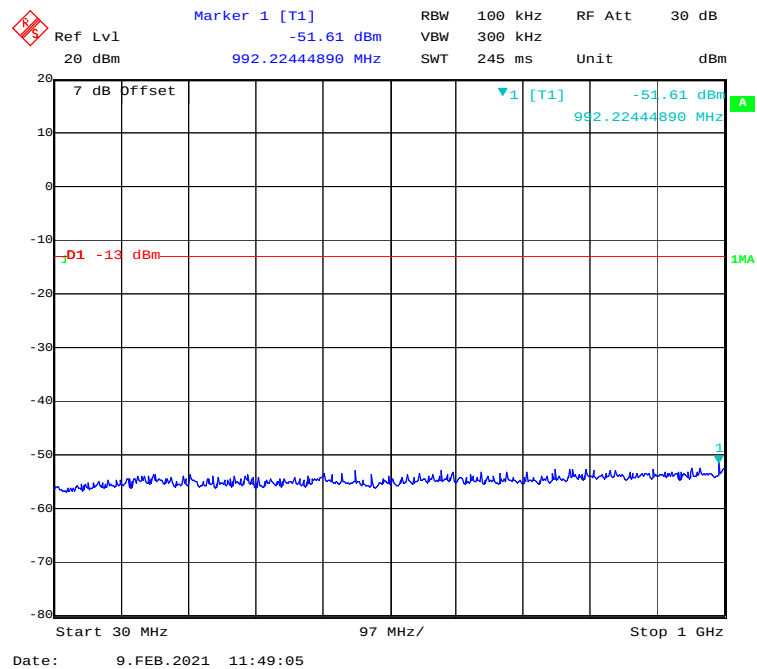
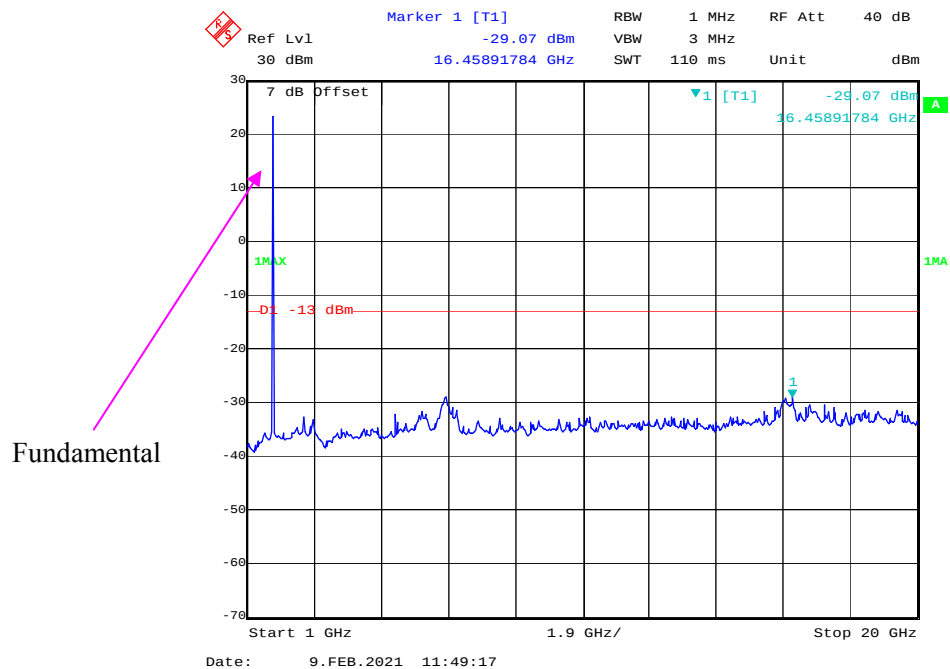


30 MHz - 1 GHz (20 MHz, 16-QAM, Low Channel)

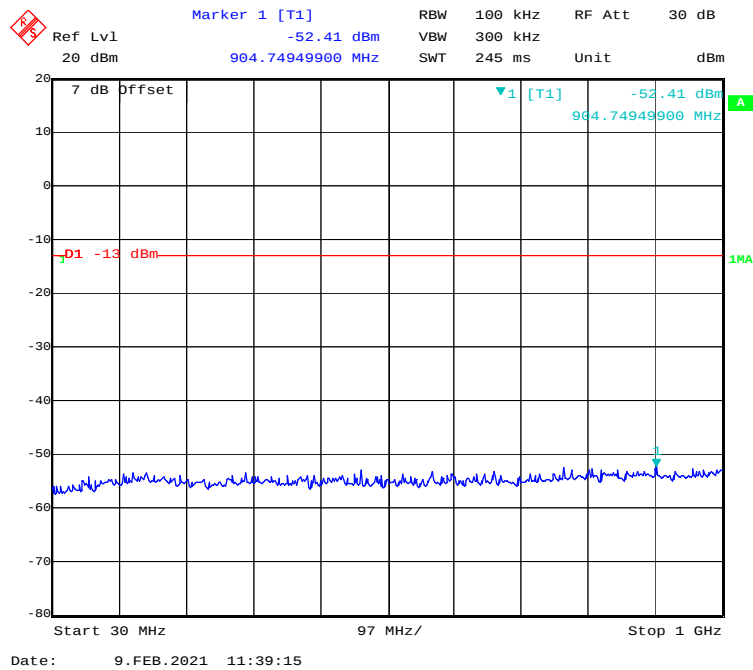


1 GHz – 20 GHz (20 MHz, 16-QAM, Low Channel)

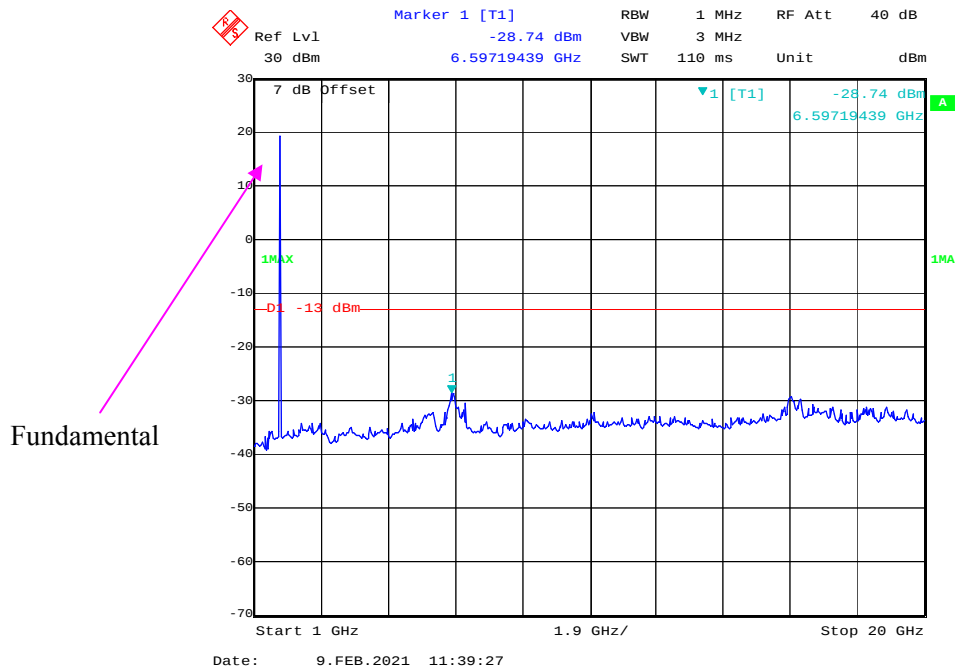


30 MHz - 1 GHz (1.4 MHz, QPSK, Middle Channel)**1 GHz – 20 GHz (1.4 MHz, QPSK, Middle Channel)**

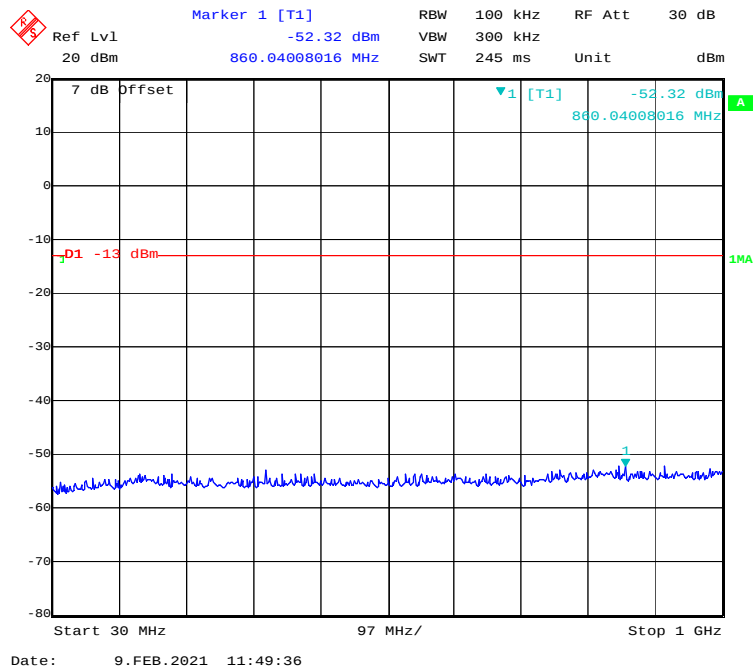
30 MHz - 1 GHz (1.4 MHz, 16-QAM, Middle Channel)



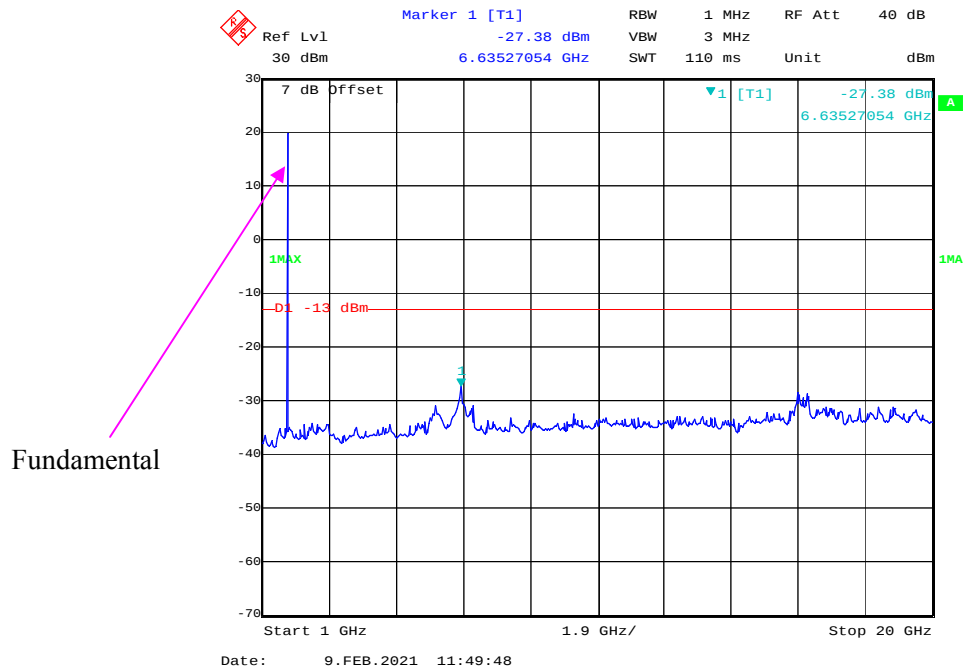
1 GHz – 20 GHz (1.4 MHz, 16-QAM, Middle Channel)



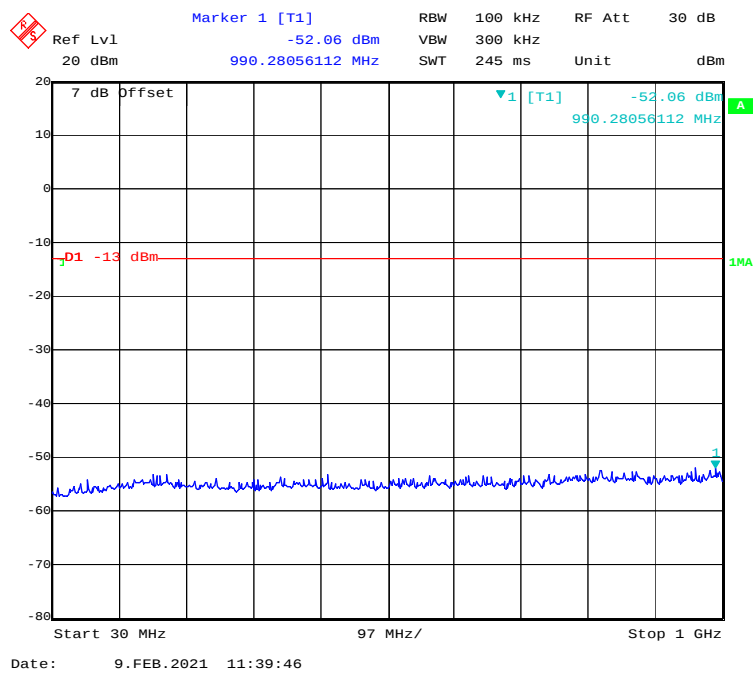
30 MHz - 1 GHz (3 MHz, QPSK, Middle Channel)



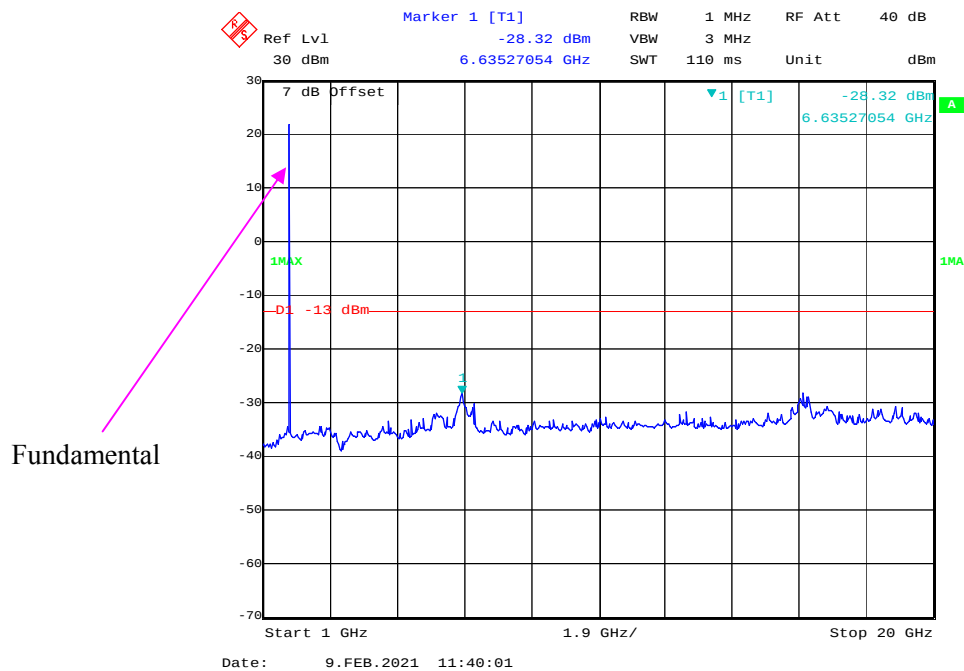
1 GHz – 20 GHz (3 MHz, QPSK, Middle Channel)



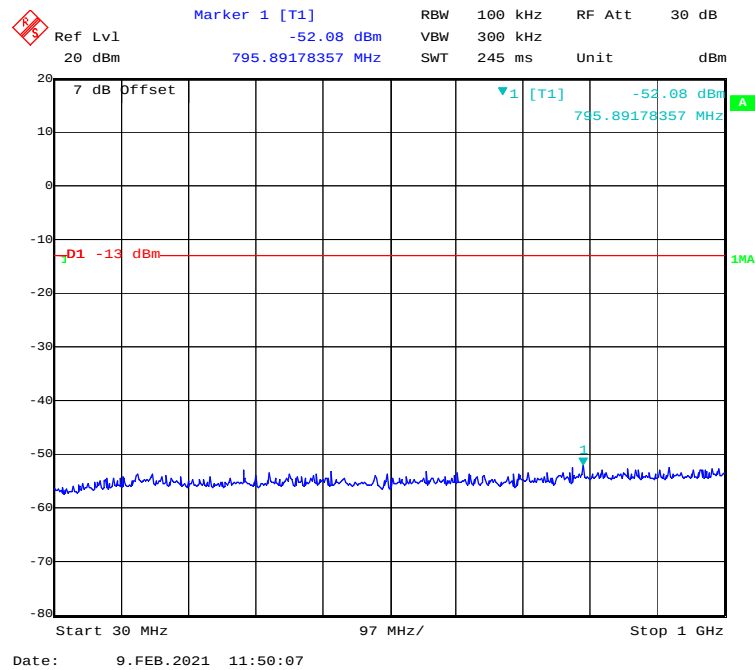
30 MHz - 1 GHz (3 MHz, 16-QAM, Middle Channel)



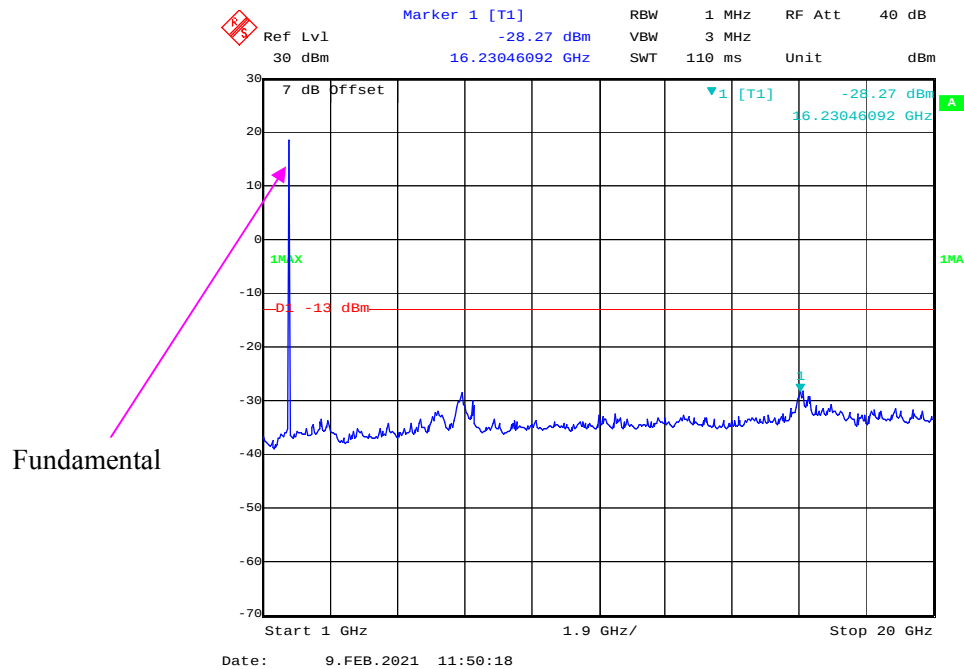
1 GHz – 20 GHz (3 MHz, 16-QAM, Middle Channel)



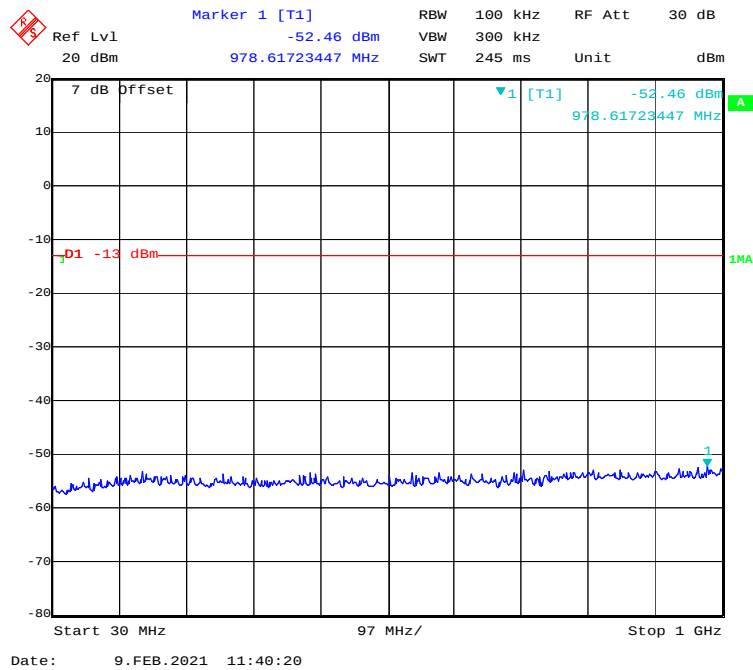
30 MHz - 1 GHz (5 MHz, QPSK, Middle Channel)



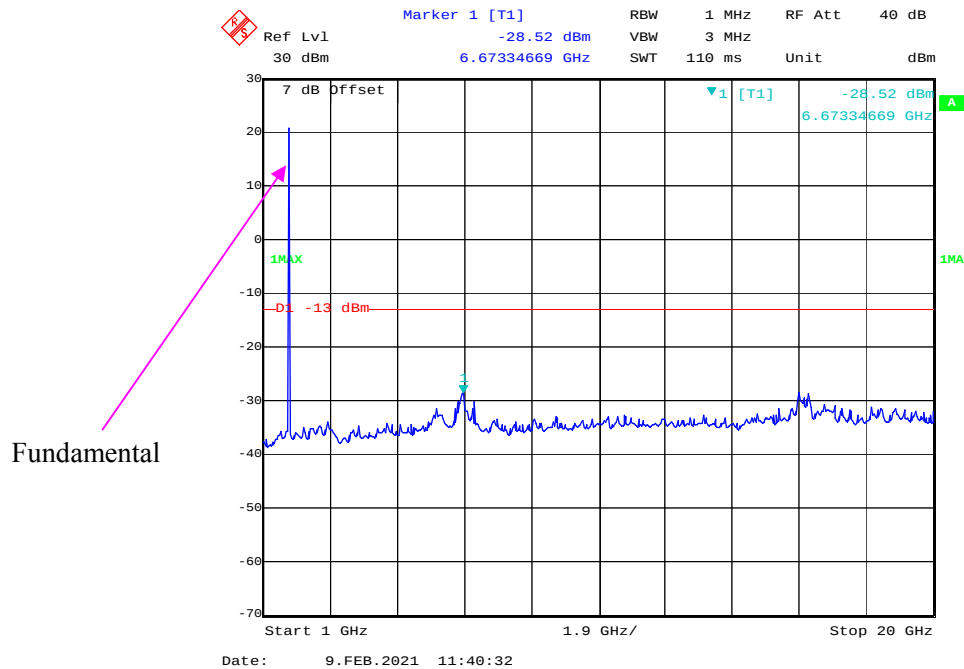
1 GHz – 20 GHz (5 MHz, QPSK, Middle Channel)



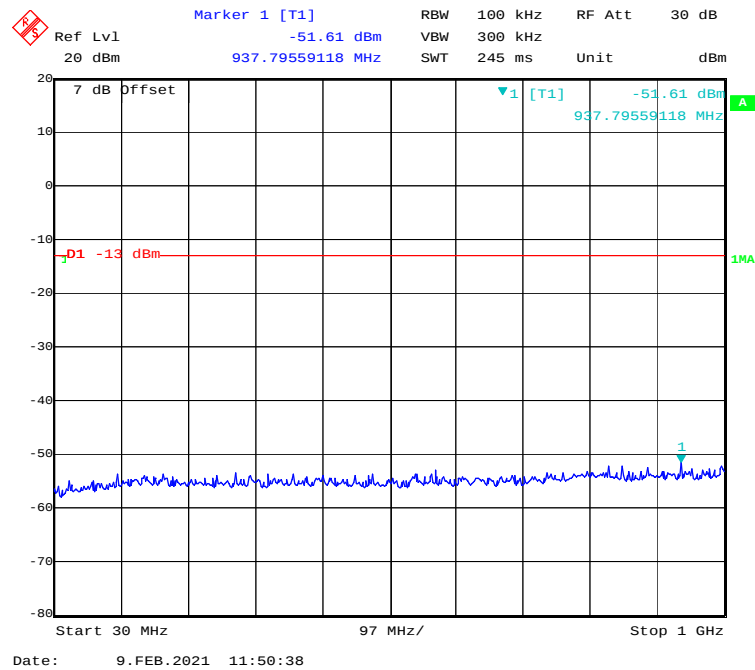
30 MHz - 1 GHz (5 MHz, 16-QAM, Middle Channel)



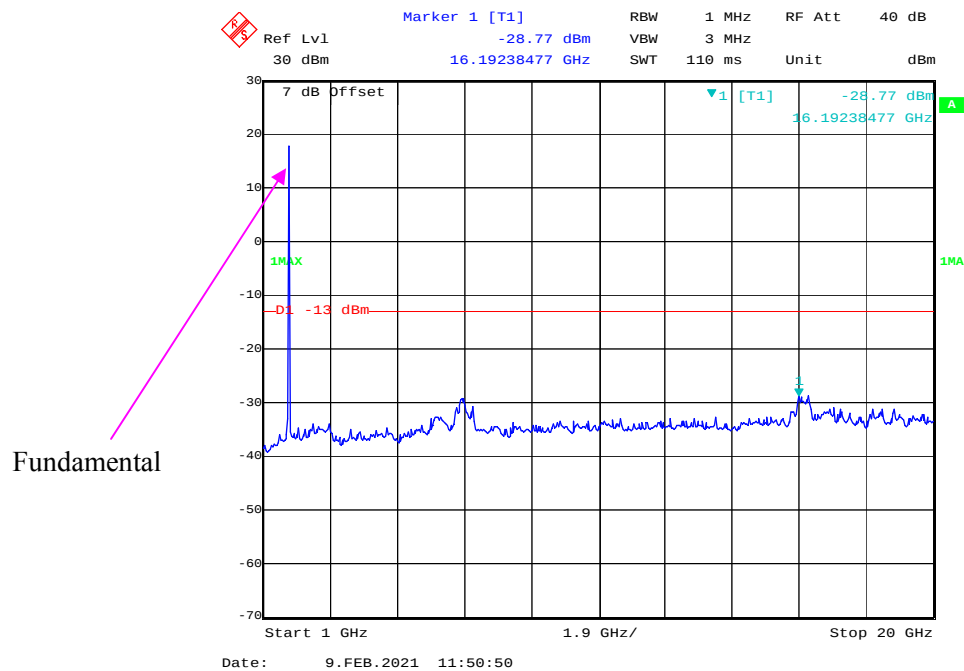
1 GHz – 20 GHz (5 MHz, 16-QAM, Middle Channel)



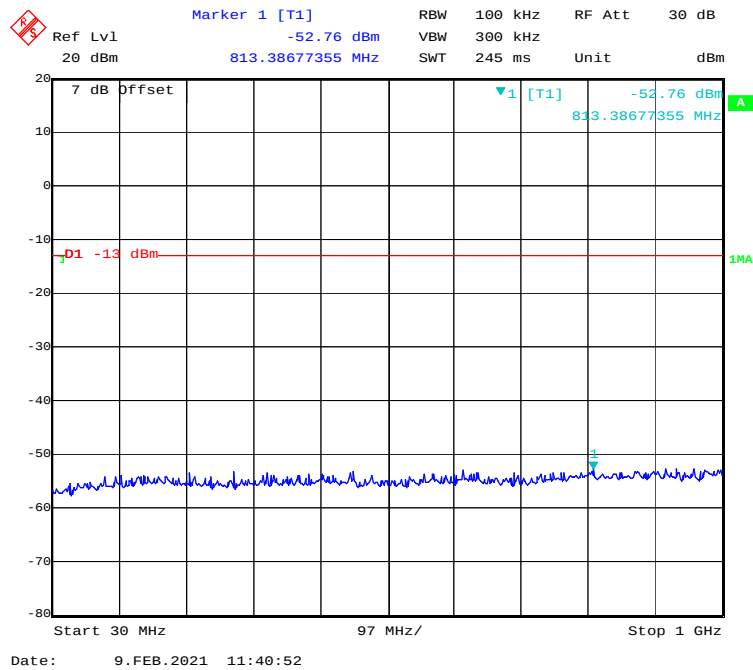
30 MHz - 1 GHz (10 MHz, QPSK, Middle Channel)



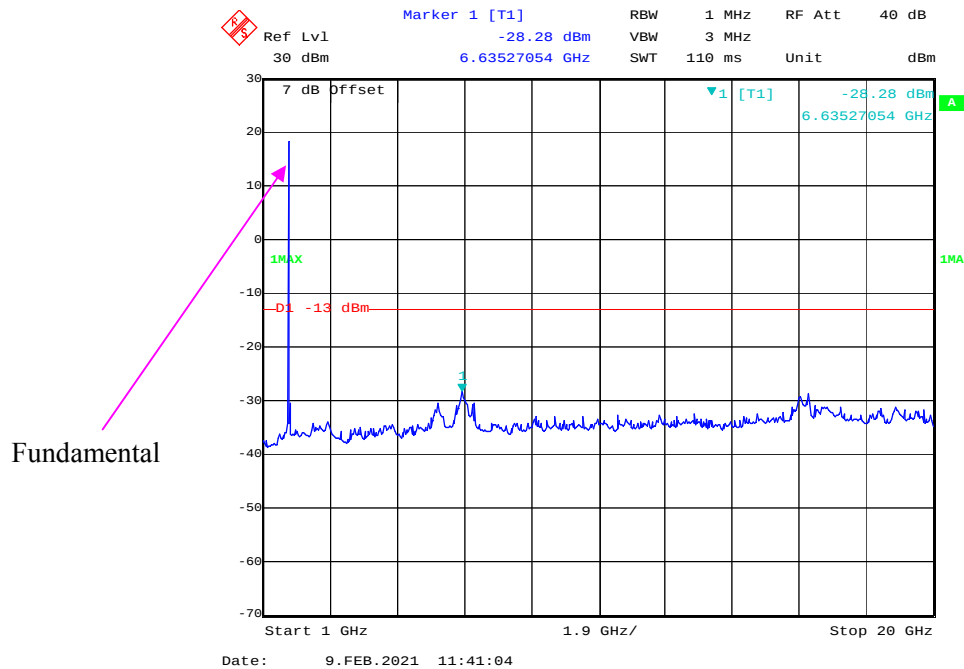
1 GHz – 20 GHz (10 MHz, QPSK, Middle Channel)



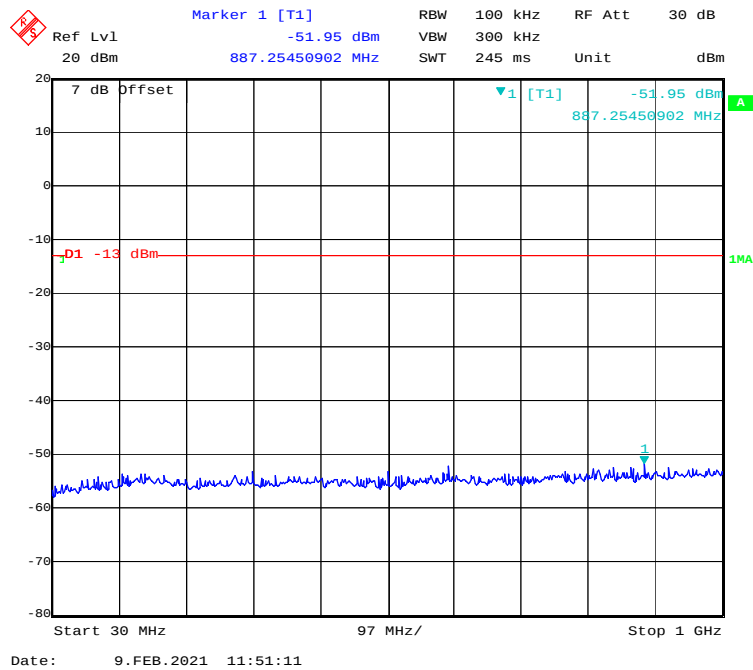
30 MHz - 1 GHz (10 MHz, 16-QAM, Middle Channel)



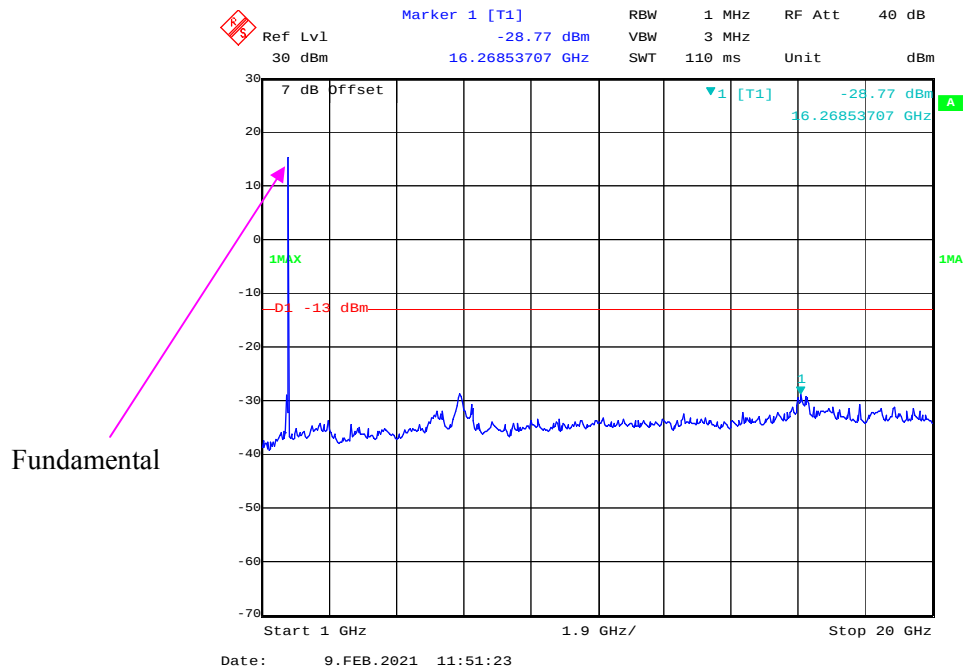
1 GHz – 20 GHz (10 MHz, 16-QAM, Middle Channel)



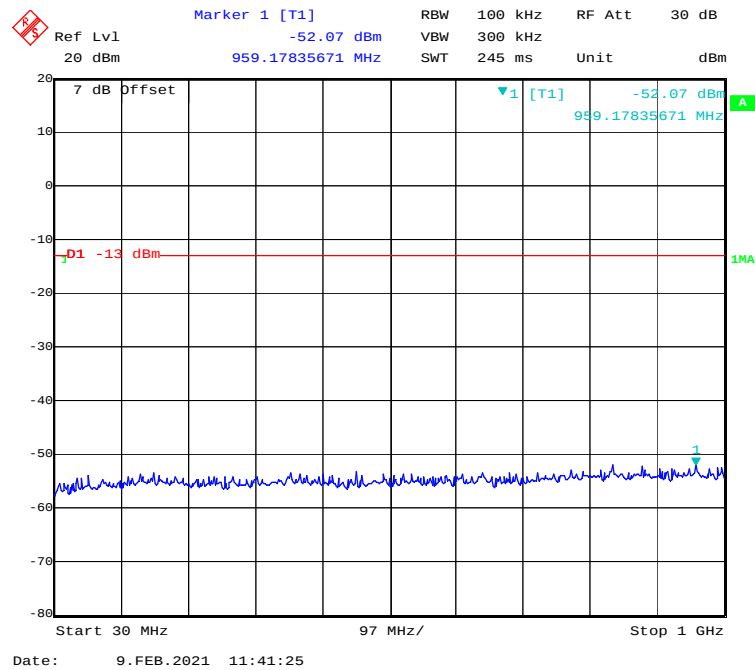
30 MHz - 1 GHz (15 MHz, QPSK, Middle Channel)



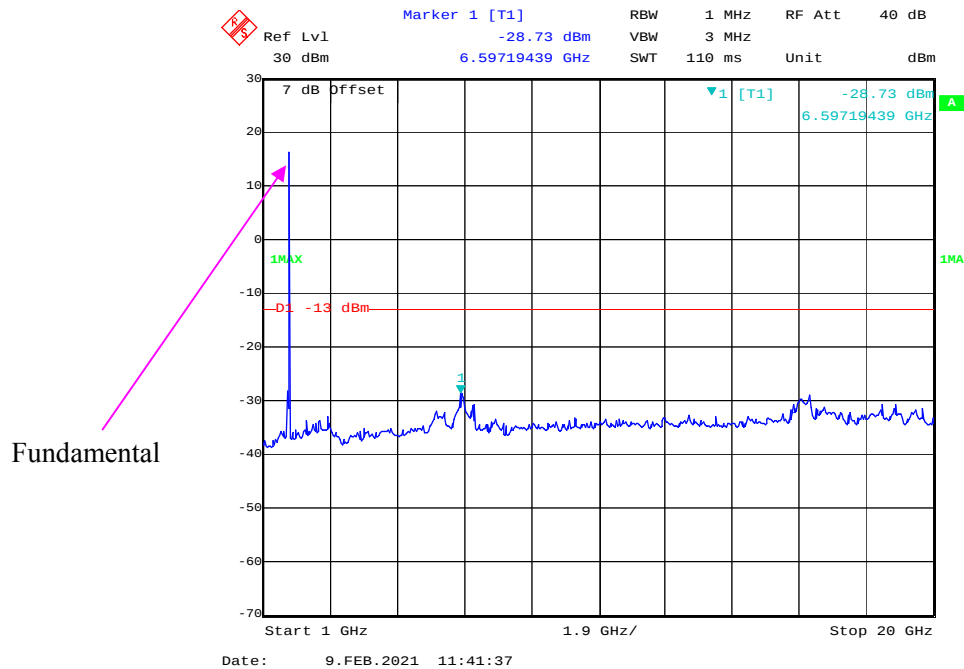
1 GHz – 20 GHz (15 MHz, QPSK, Middle Channel)



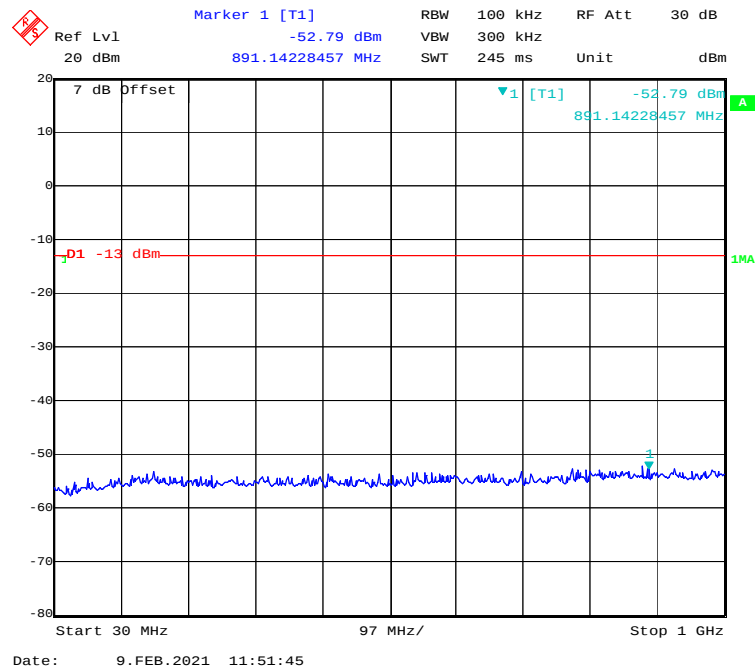
30 MHz - 1 GHz (15 MHz, 16-QAM, Middle Channel)



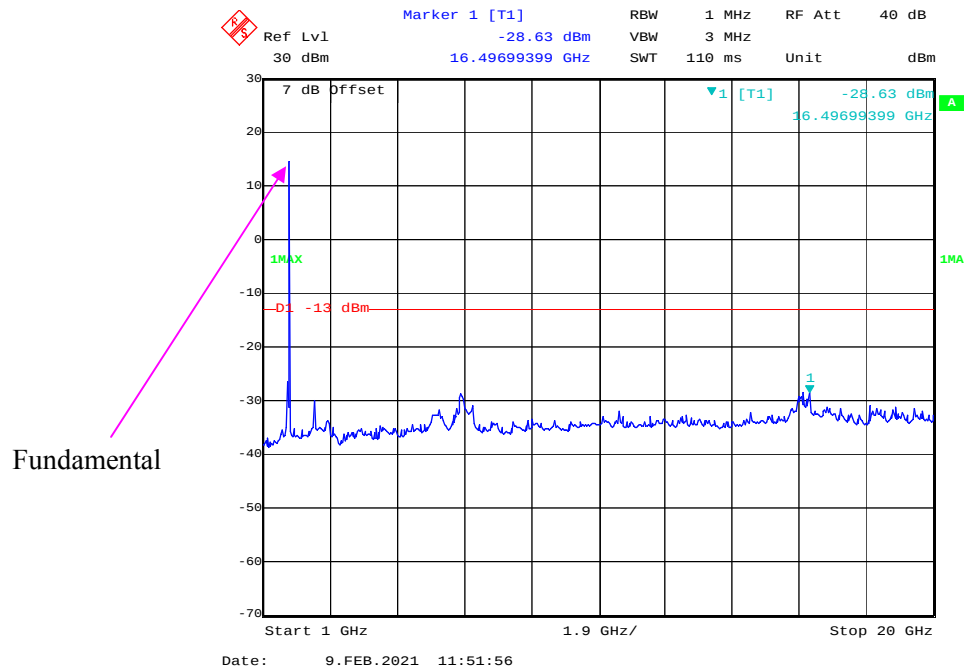
1 GHz – 20 GHz (15 MHz, 16-QAM, Middle Channel)



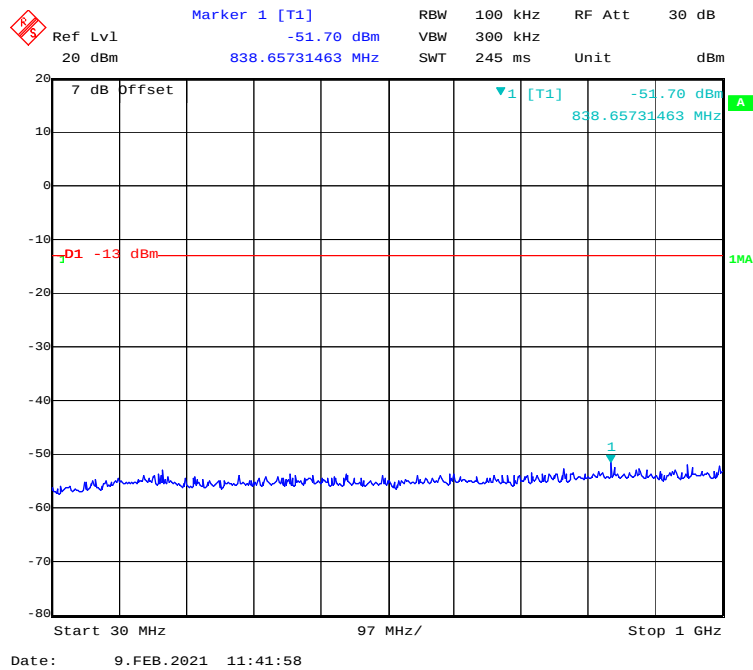
30 MHz - 1 GHz (20 MHz, QPSK, Middle Channel)



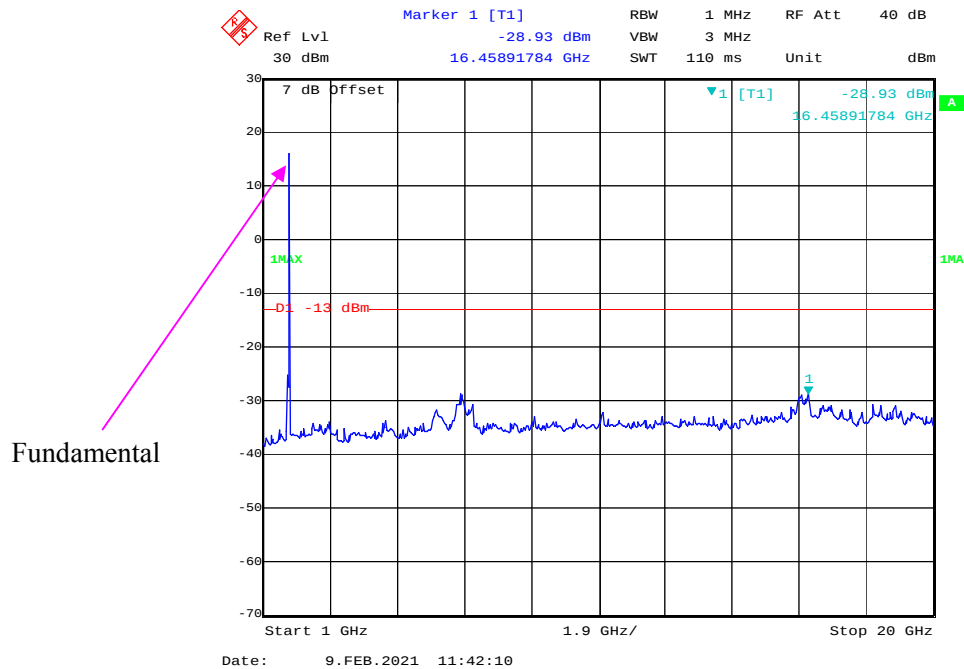
1 GHz – 20 GHz (20 MHz, QPSK, Middle Channel)



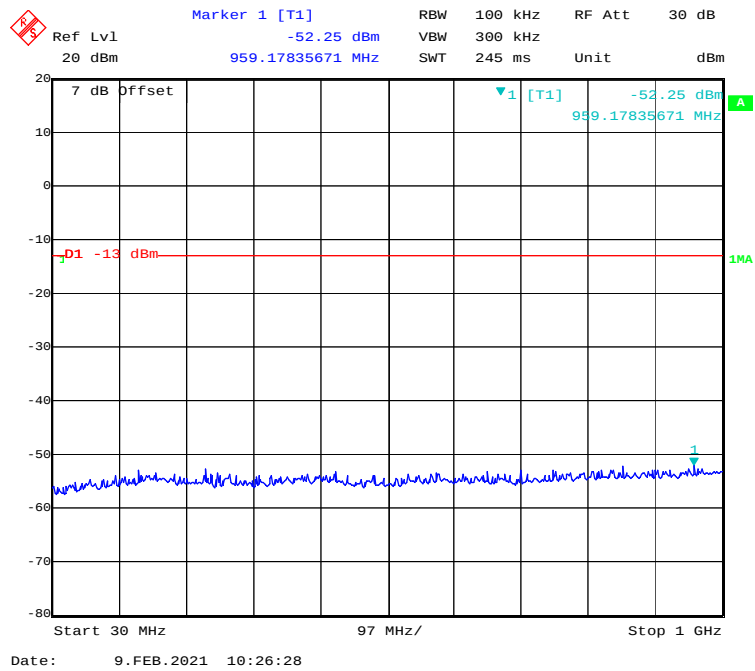
30 MHz - 1 GHz (20 MHz, 16-QAM, Middle Channel)



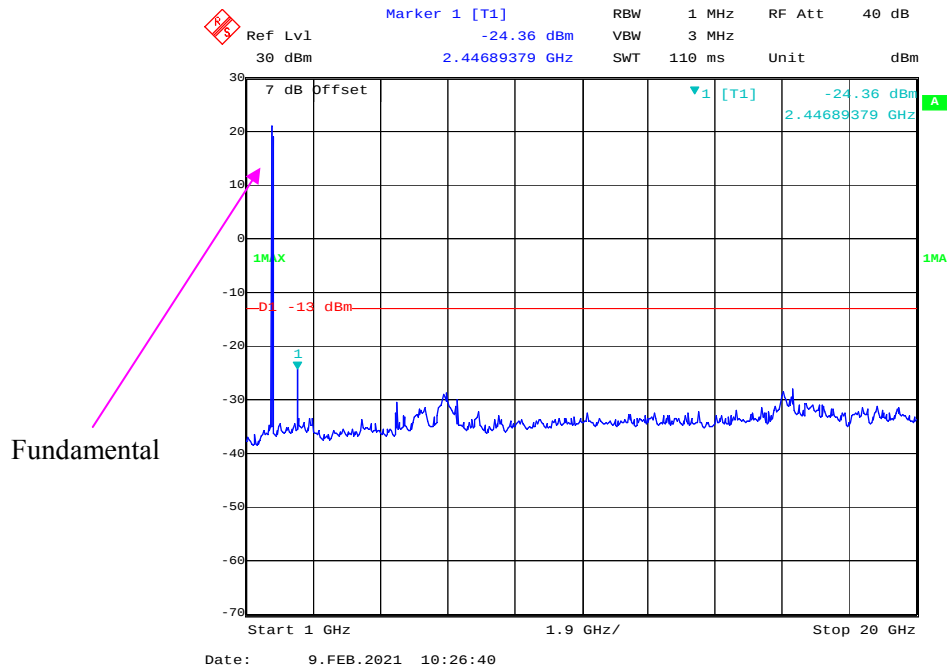
1 GHz – 20 GHz (20 MHz, 16-QAM, Middle Channel)



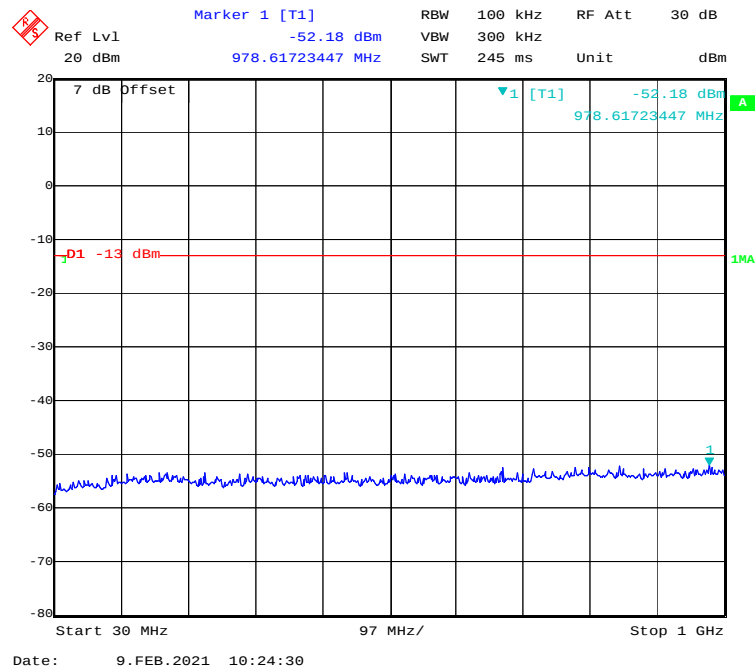
30 MHz - 1 GHz (1.4 MHz, QPSK, High Channel)



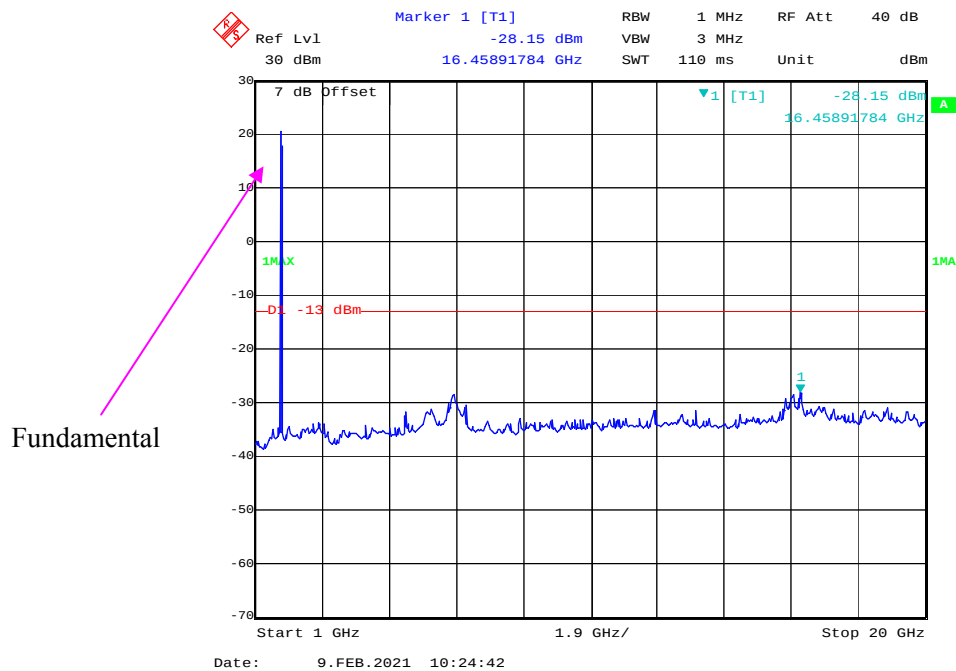
1 GHz – 20 GHz (1.4 MHz, QPSK, High Channel)



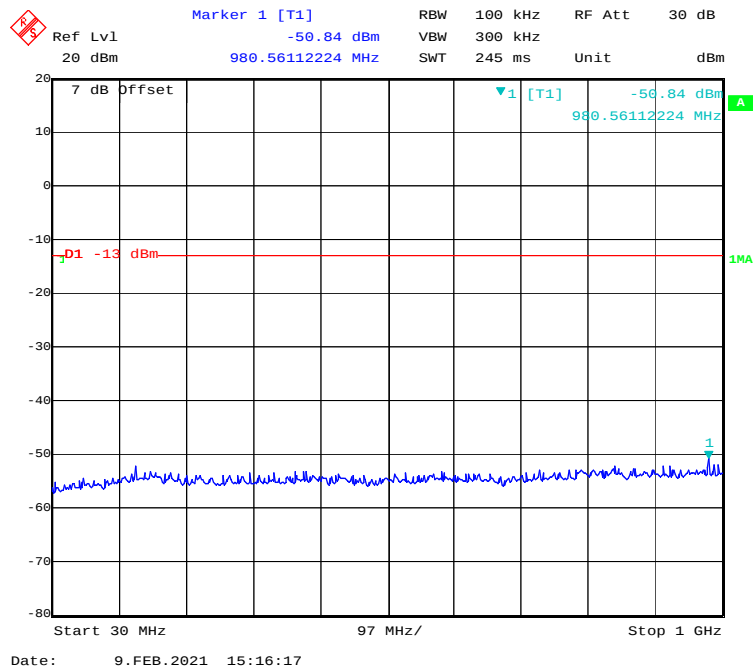
30 MHz - 1 GHz (1.4 MHz, 16-QAM, High Channel)



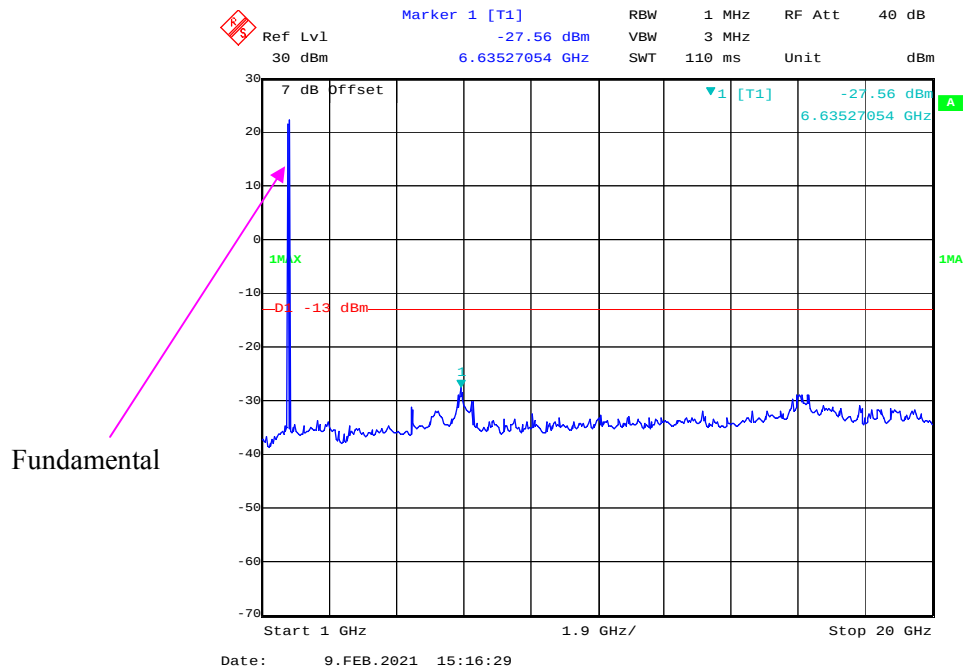
1 GHz – 20 GHz (1.4 MHz, 16-QAM, High Channel)



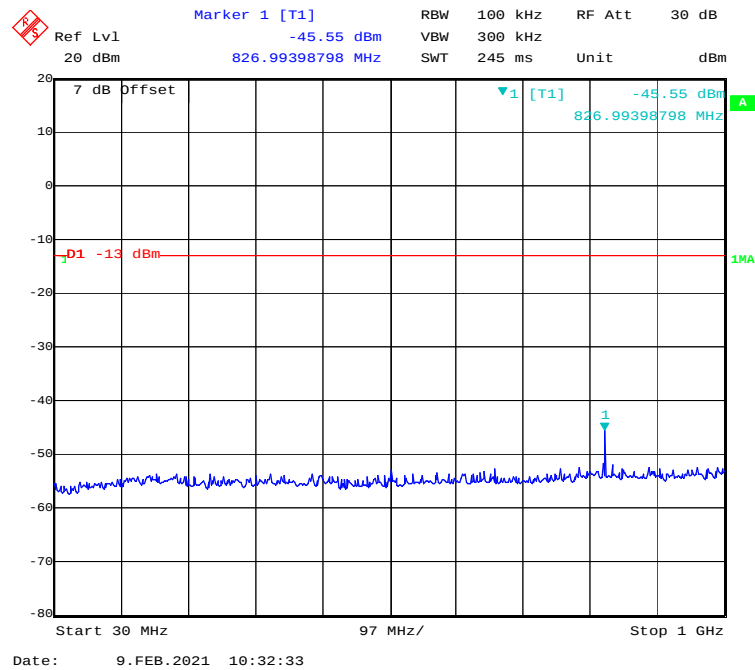
30 MHz - 1 GHz (3 MHz, QPSK, High Channel)



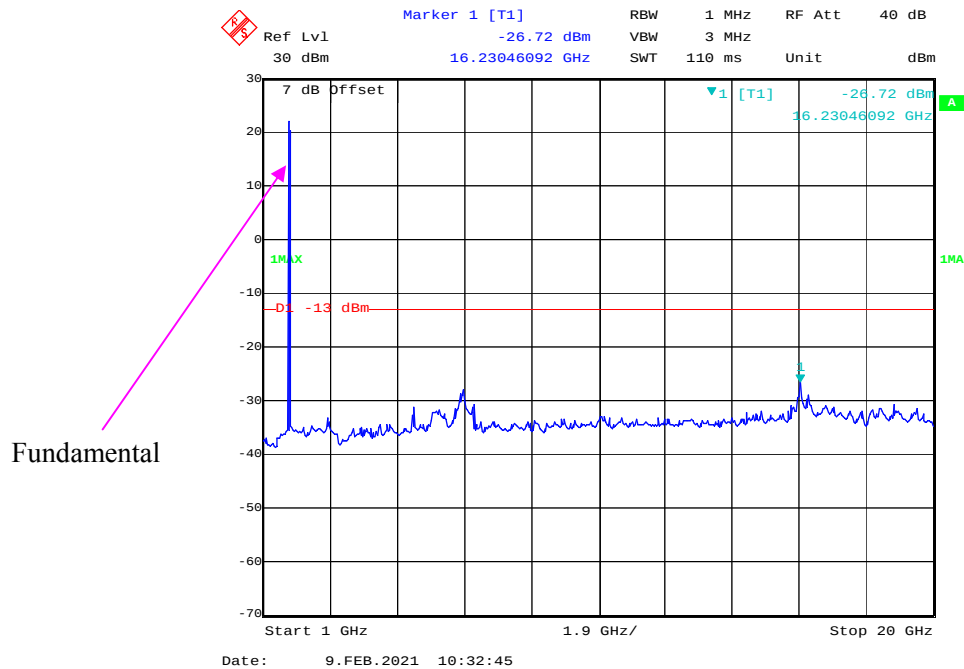
1 GHz – 20 GHz (3 MHz, QPSK, High Channel)



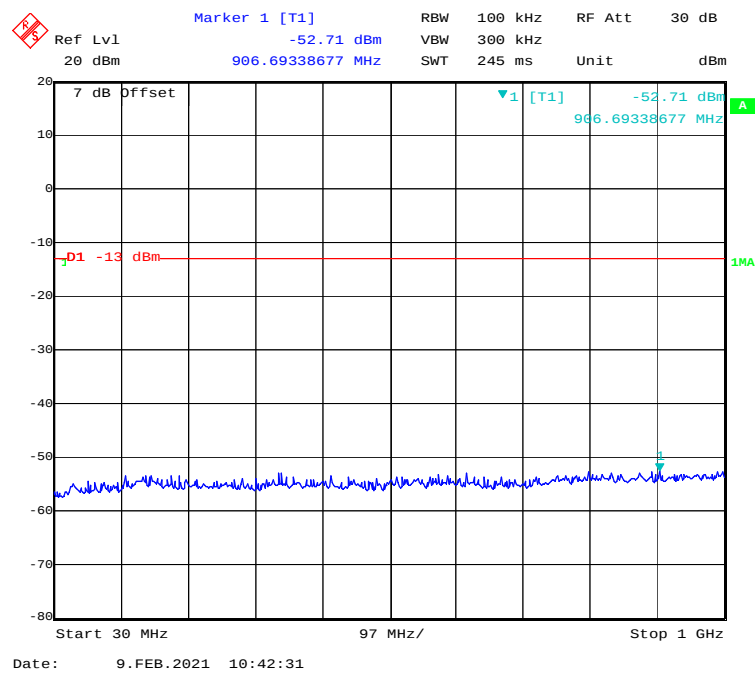
30 MHz - 1 GHz (3 MHz, 16-QAM, High Channel)



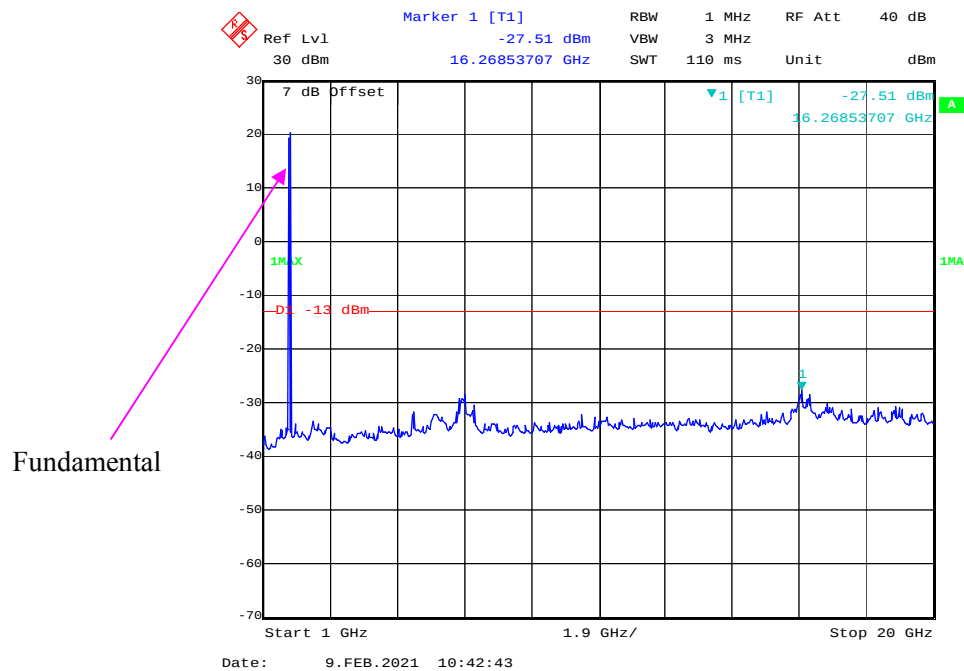
1 GHz – 20 GHz (3 MHz, 16-QAM, High Channel)



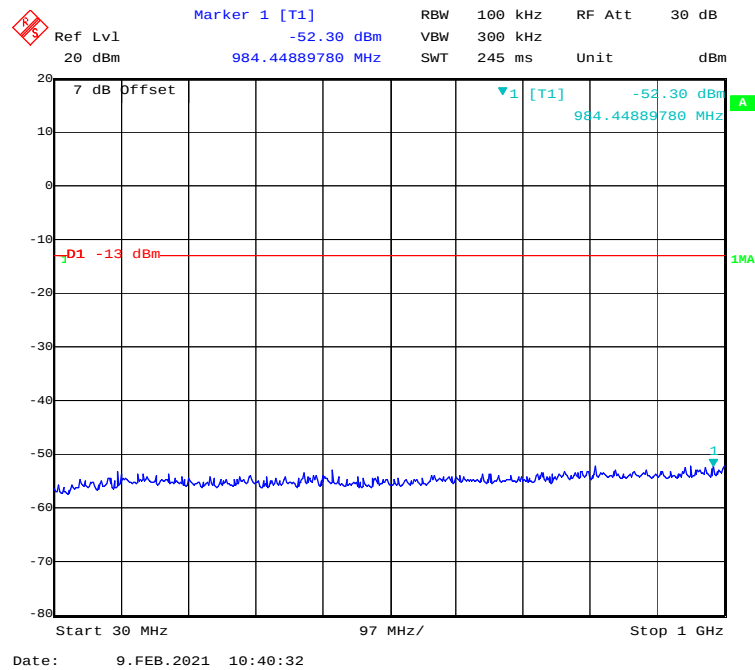
30 MHz - 1 GHz (5 MHz, QPSK, High Channel)



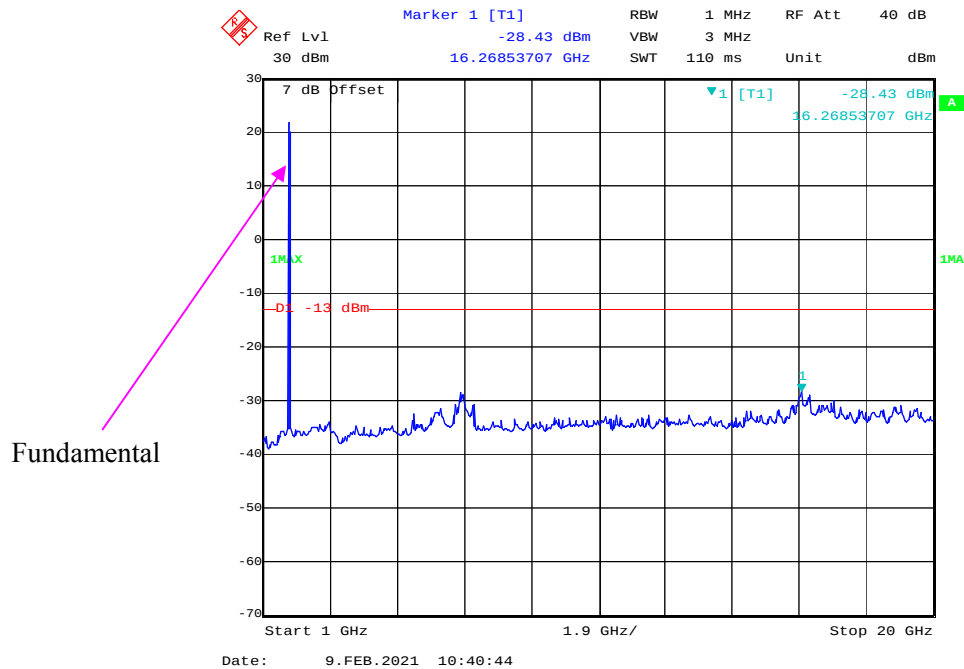
1 GHz – 20 GHz (5 MHz, QPSK, High Channel)



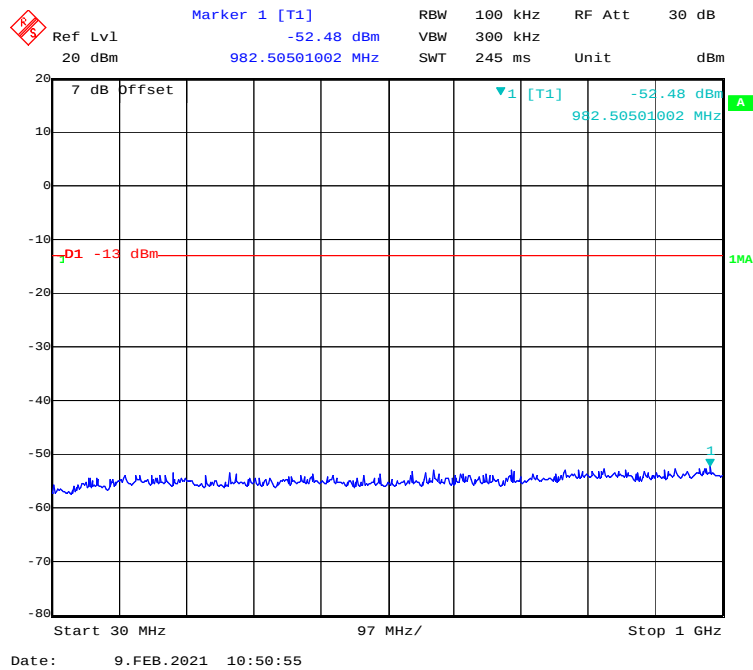
30 MHz - 1 GHz (5 MHz, 16-QAM, High Channel)



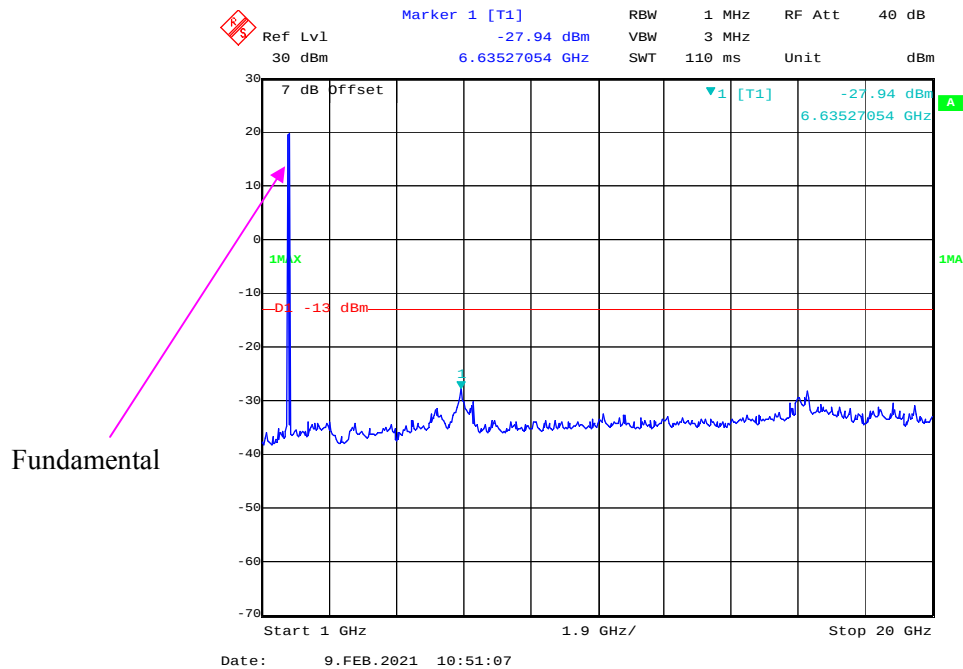
1 GHz – 20 GHz (5 MHz, 16-QAM, High Channel)



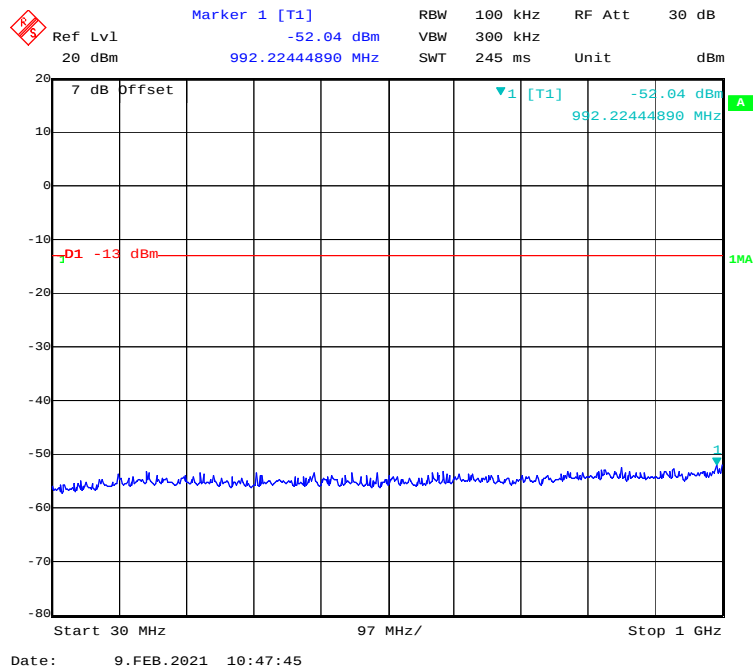
30 MHz - 1 GHz (10 MHz, QPSK, High Channel)



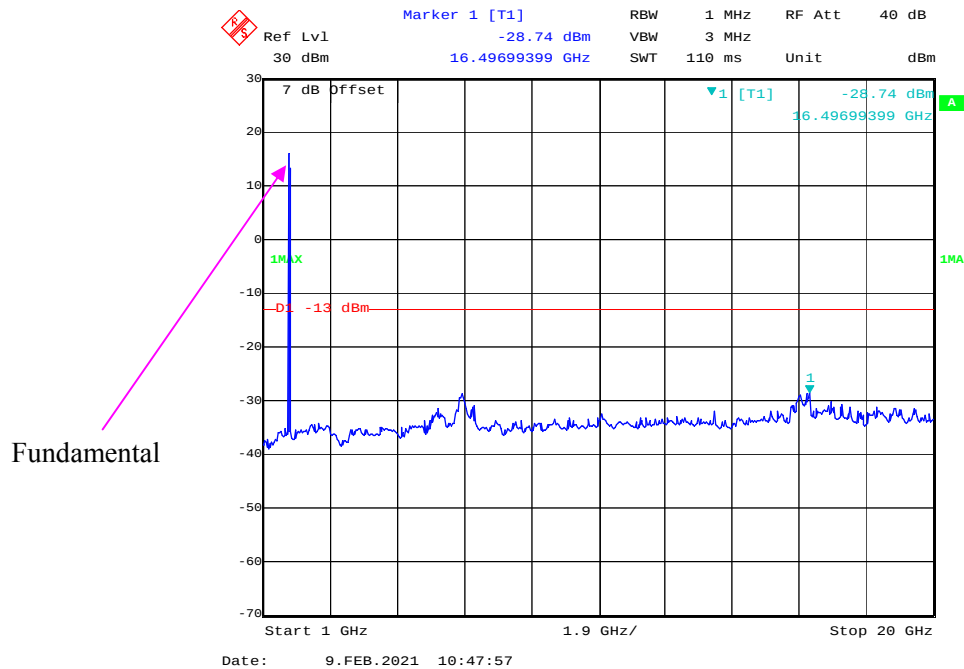
1 GHz – 20 GHz (10 MHz, QPSK, High Channel)



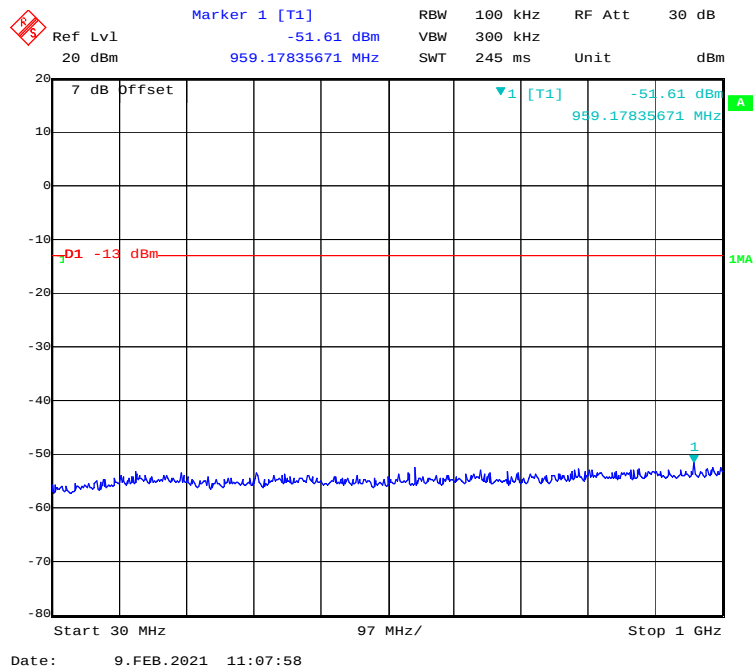
30 MHz - 1 GHz (10 MHz, 16-QAM, High Channel)



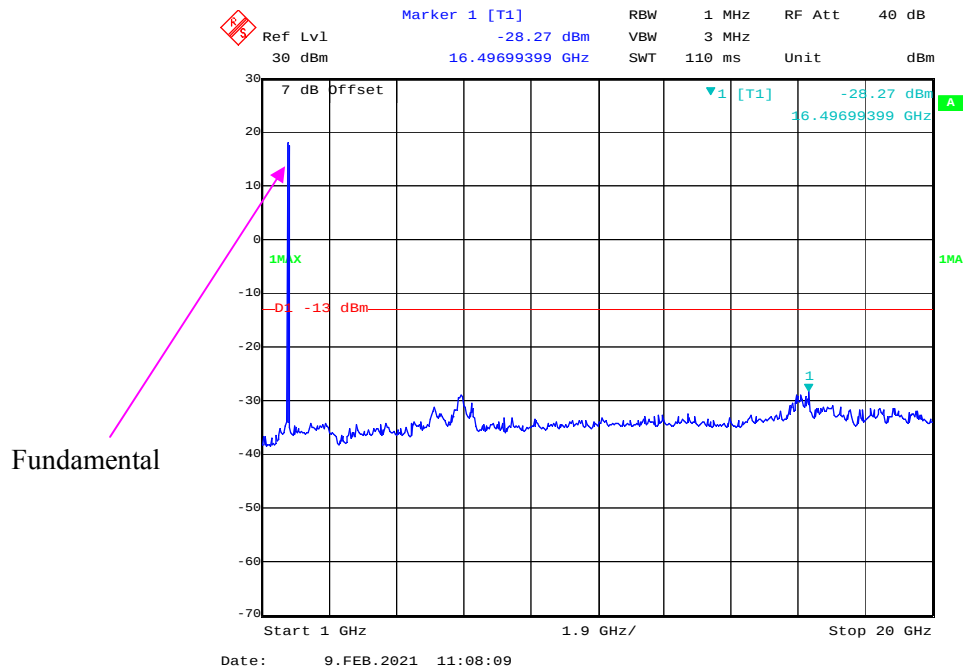
1 GHz – 20 GHz (10 MHz, 16-QAM, High Channel)



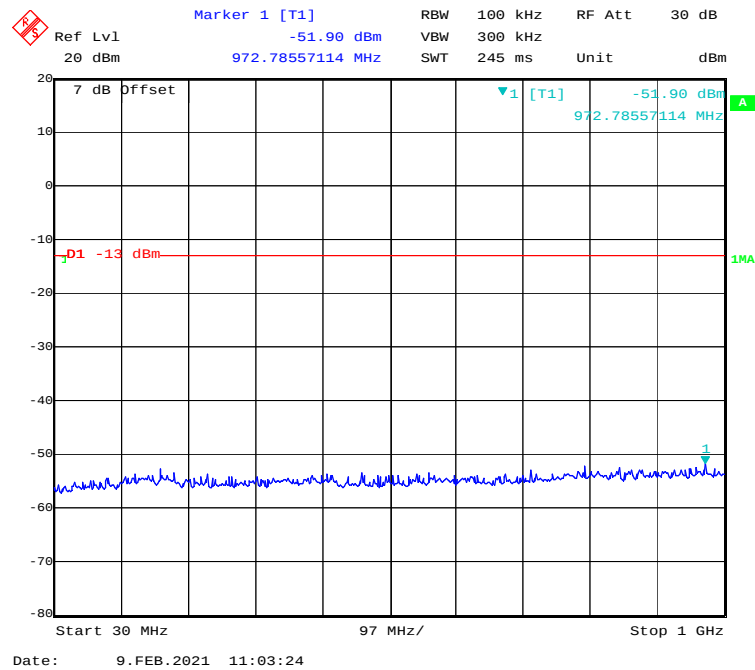
30 MHz - 1 GHz (15 MHz, QPSK, High Channel)



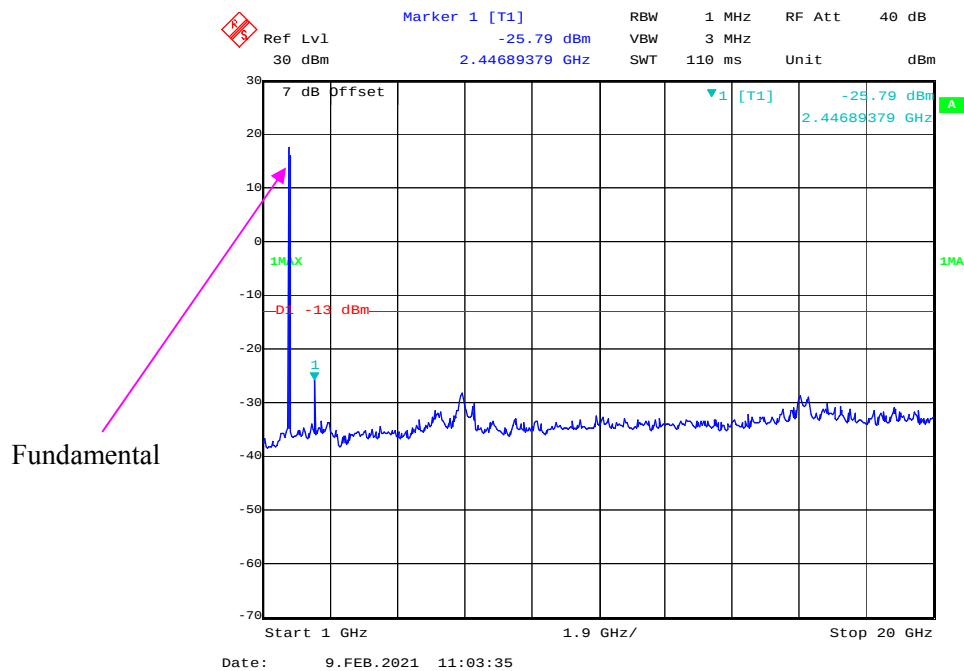
1 GHz – 20 GHz (15 MHz, QPSK, High Channel)



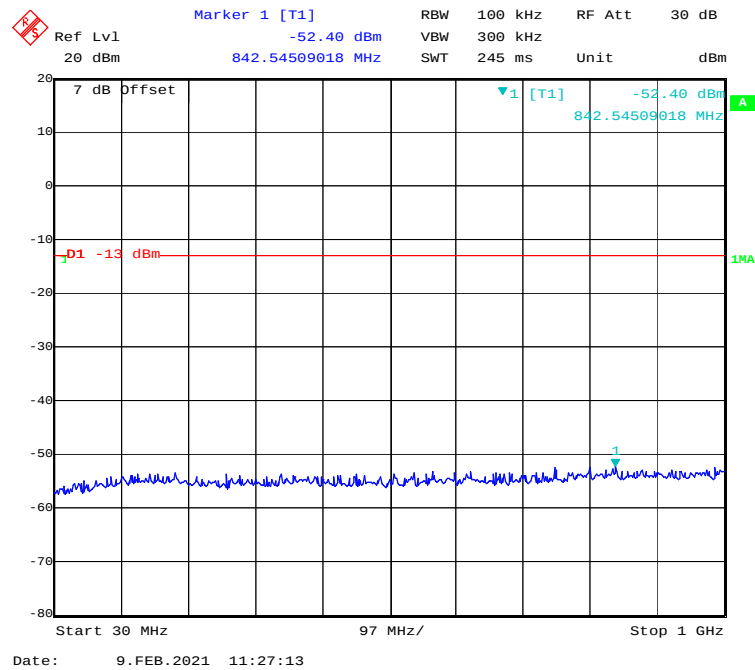
30 MHz - 1 GHz (15 MHz, 16-QAM, High Channel)



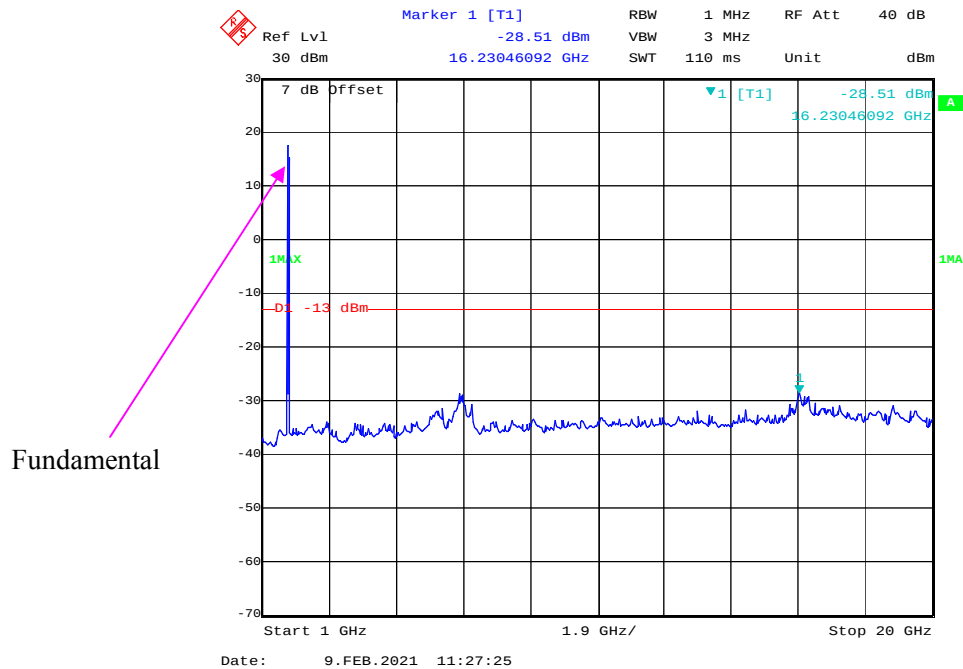
1 GHz – 20 GHz (15 MHz, 16-QAM, High Channel)



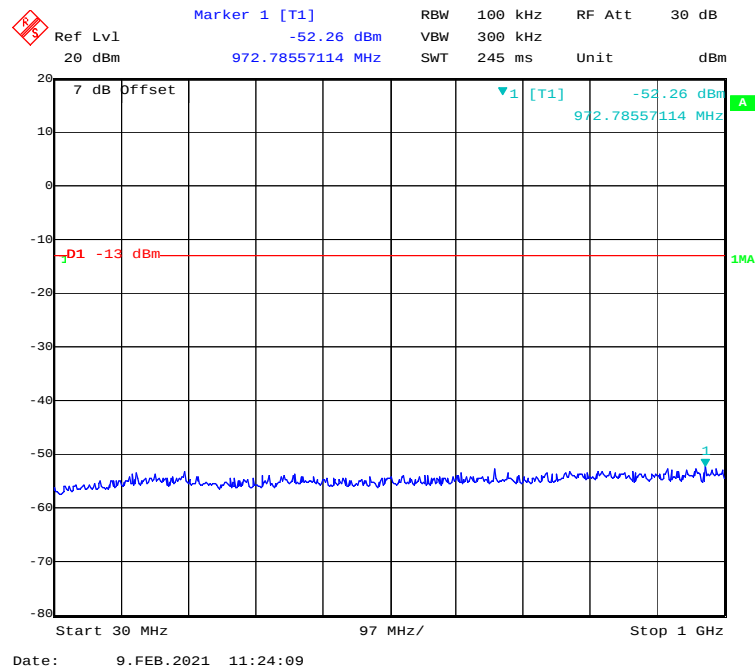
30 MHz - 1 GHz (20 MHz, QPSK, High Channel)



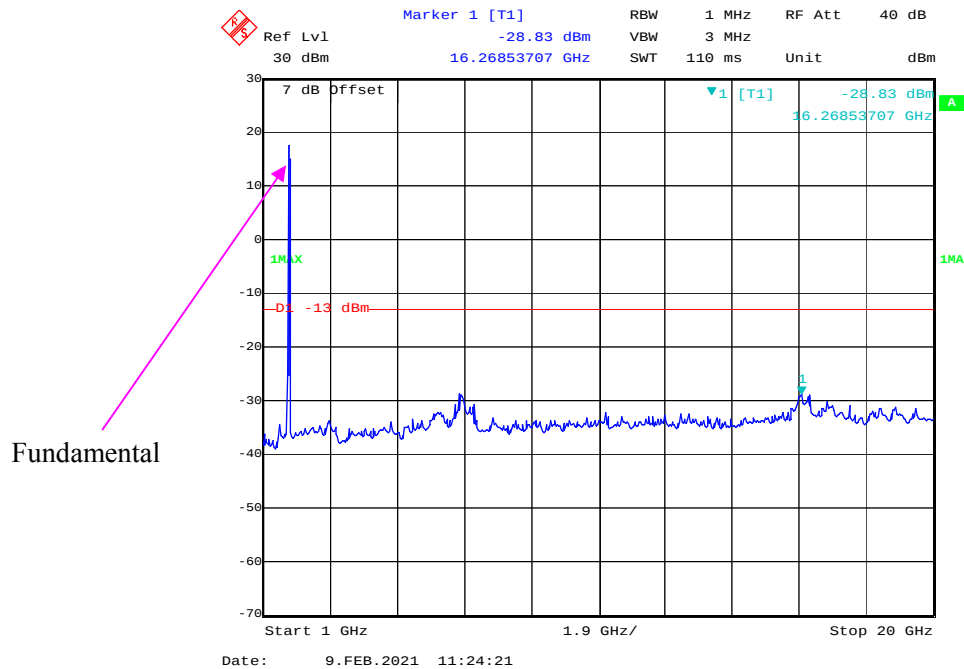
1 GHz – 20 GHz (20 MHz, QPSK, High Channel)



30 MHz - 1 GHz (20 MHz, 16-QAM, High Channel)

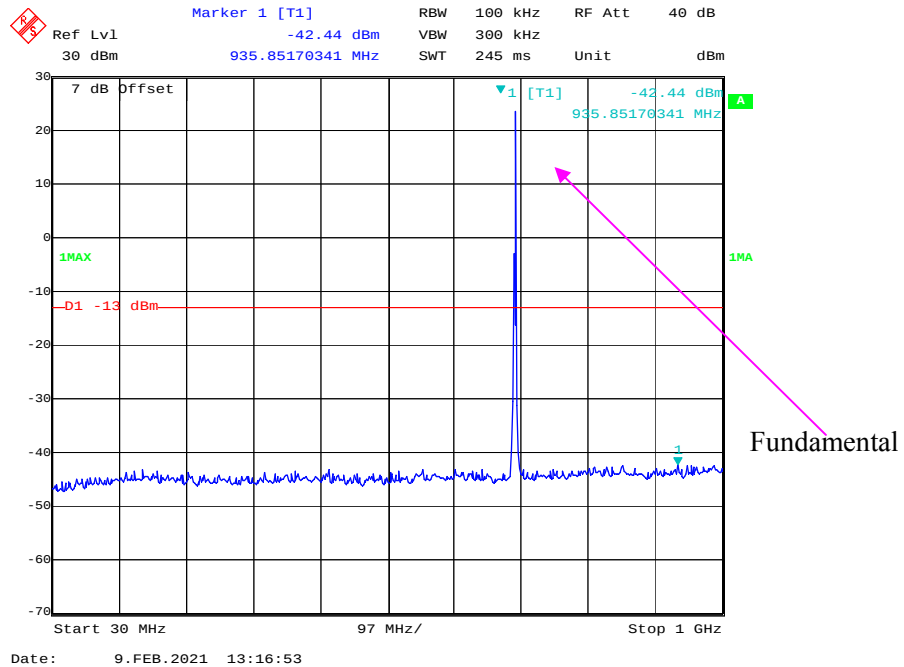


1 GHz – 20 GHz (20 MHz, 16-QAM, High Channel)

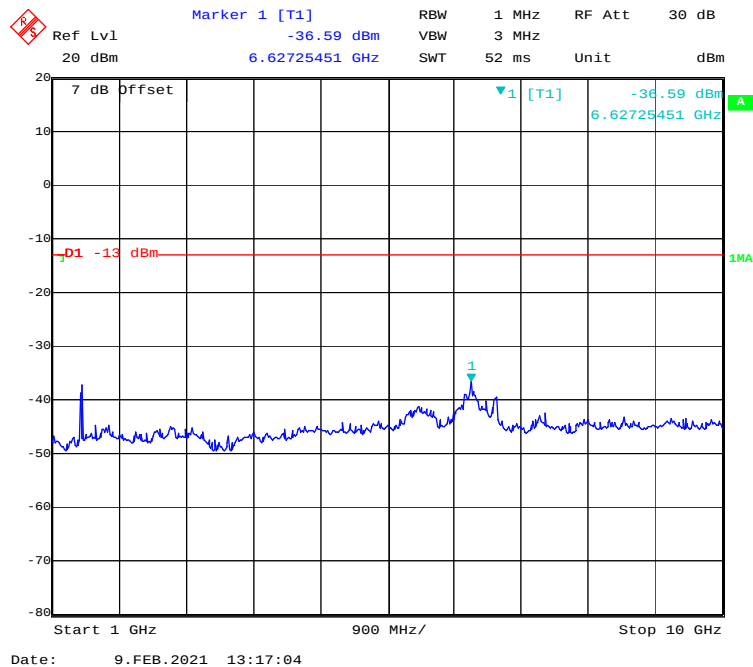


LTE Band 12:

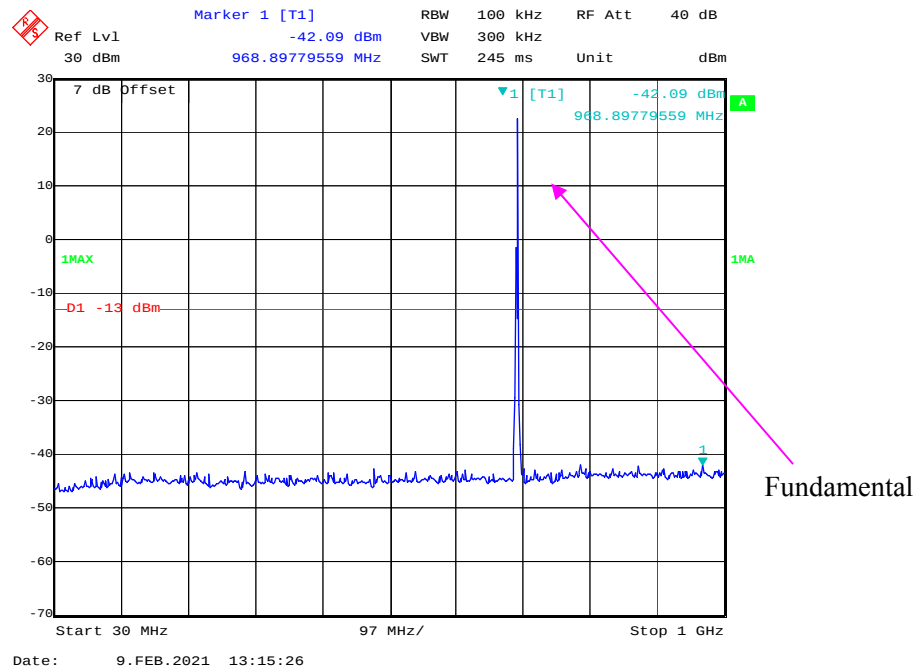
30 MHz - 1 GHz (1.4 MHz, QPSK, Low Channel)



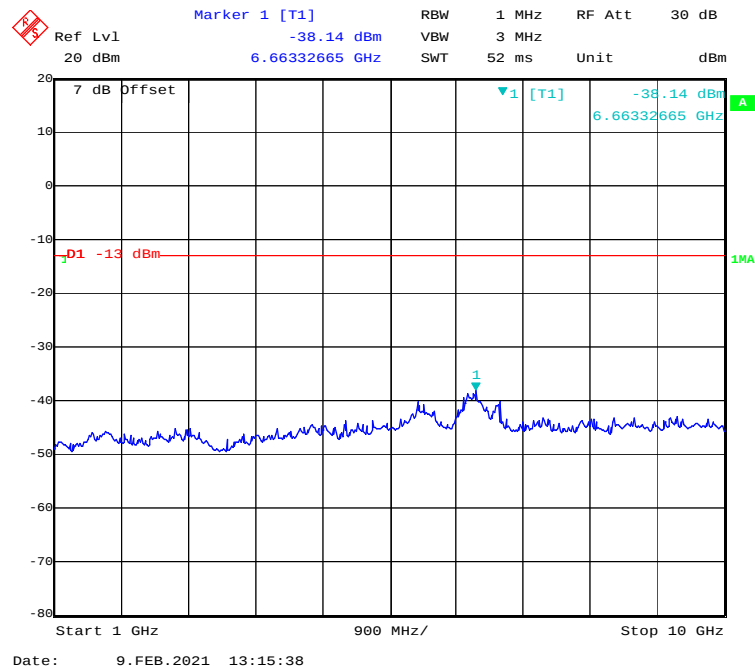
1 GHz – 10 GHz (1.4 MHz, QPSK, Low Channel)



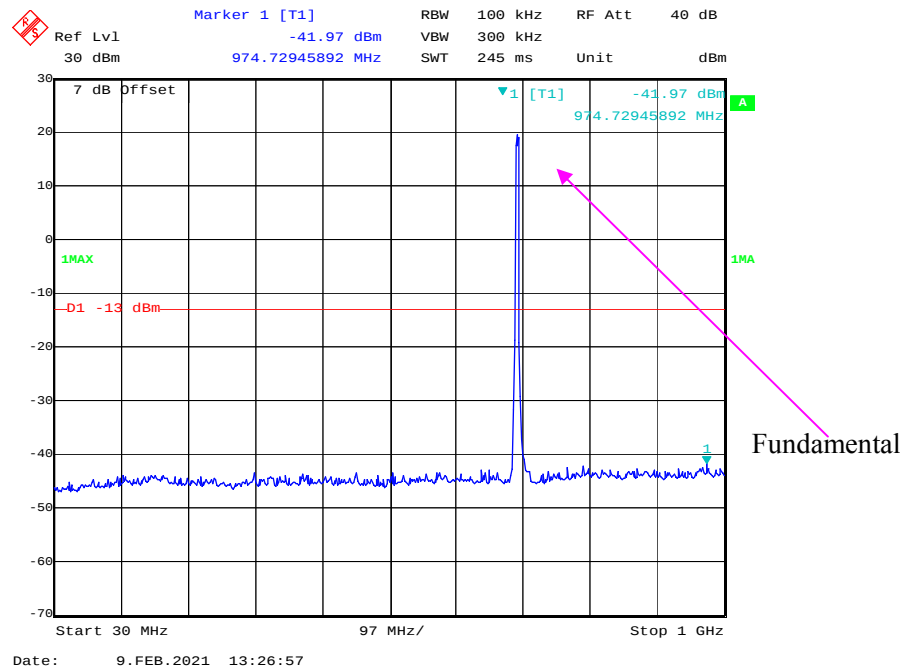
30 MHz - 1 GHz (1.4 MHz, 16-QAM, Low Channel)



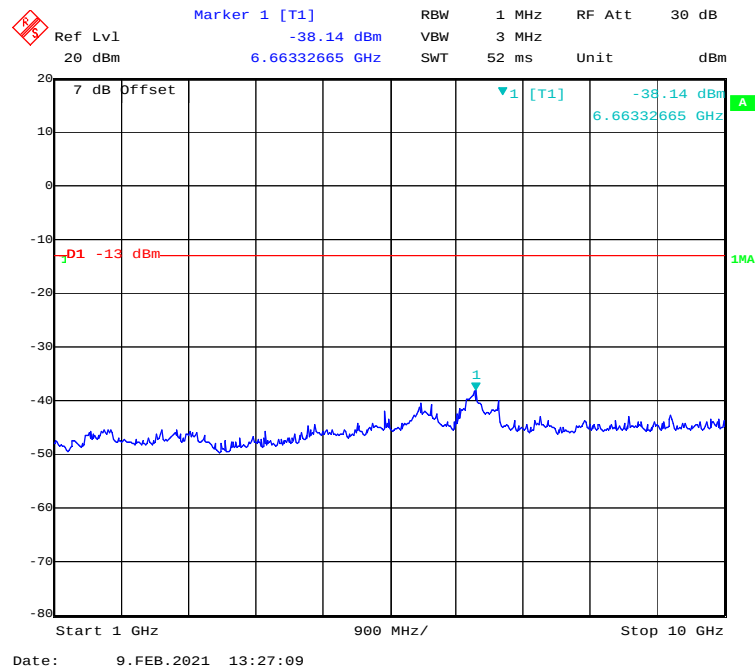
1 GHz – 10 GHz (1.4 MHz, 16-QAM, Low Channel)



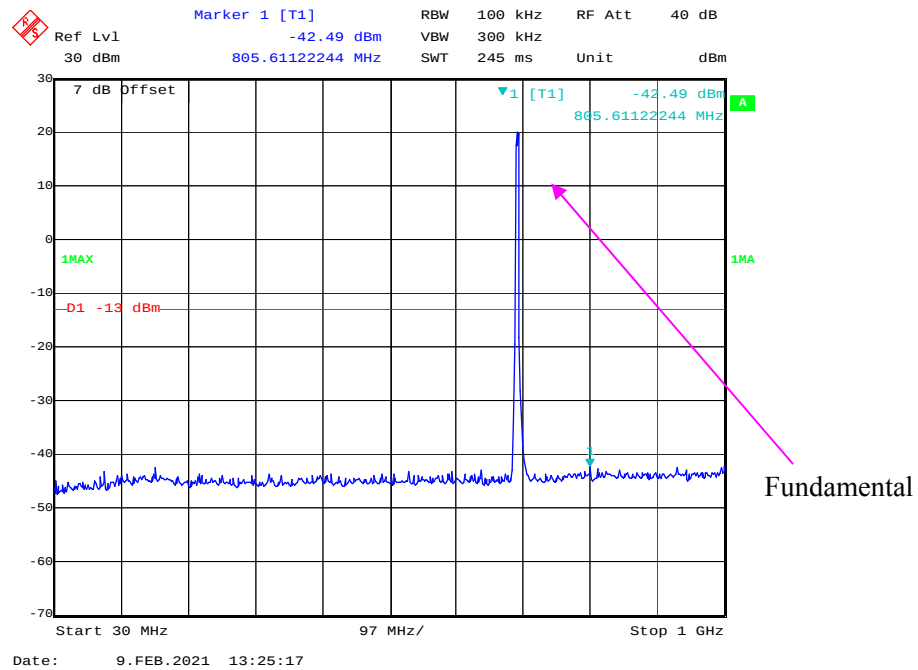
30 MHz - 1 GHz (3 MHz, QPSK, Low Channel)



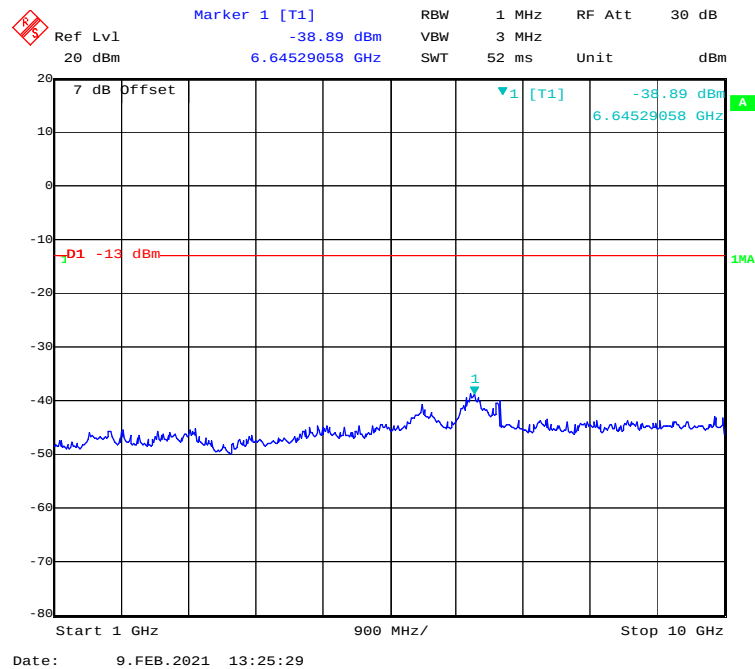
1 GHz – 10 GHz (3 MHz, QPSK, Low Channel)



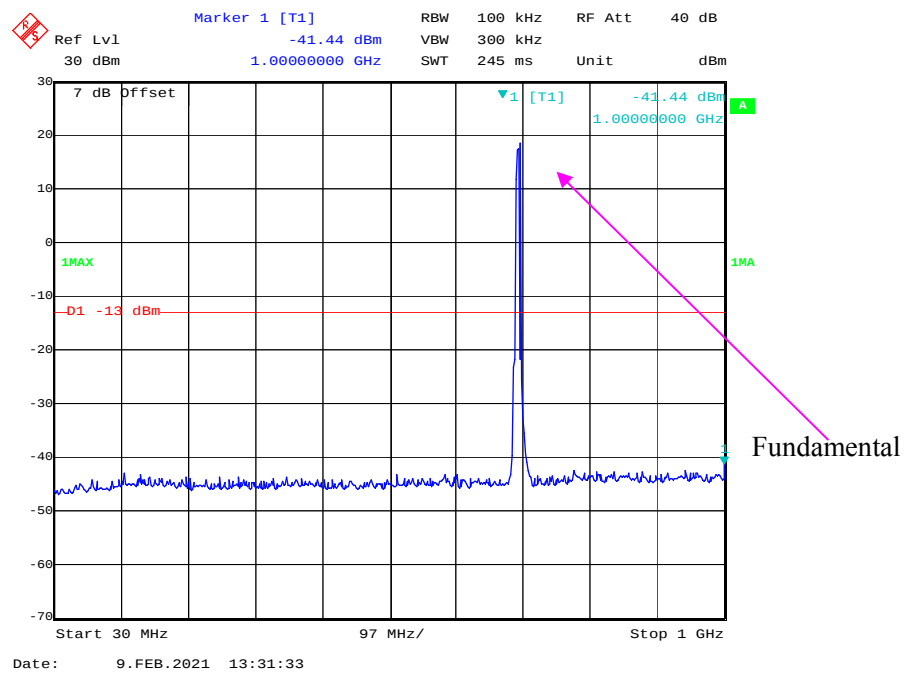
30 MHz - 1 GHz (3 MHz, 16-QAM, Low Channel)



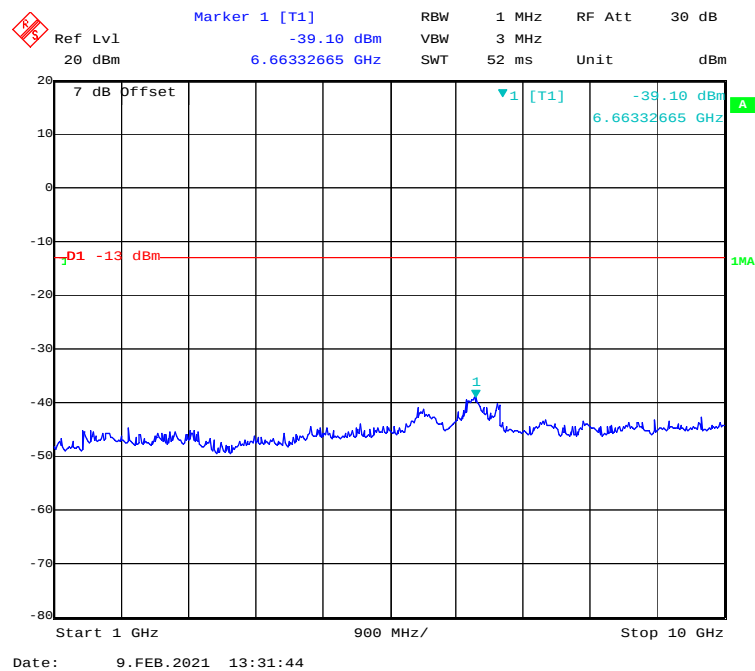
1 GHz – 10 GHz (3 MHz, 16-QAM, Low Channel)



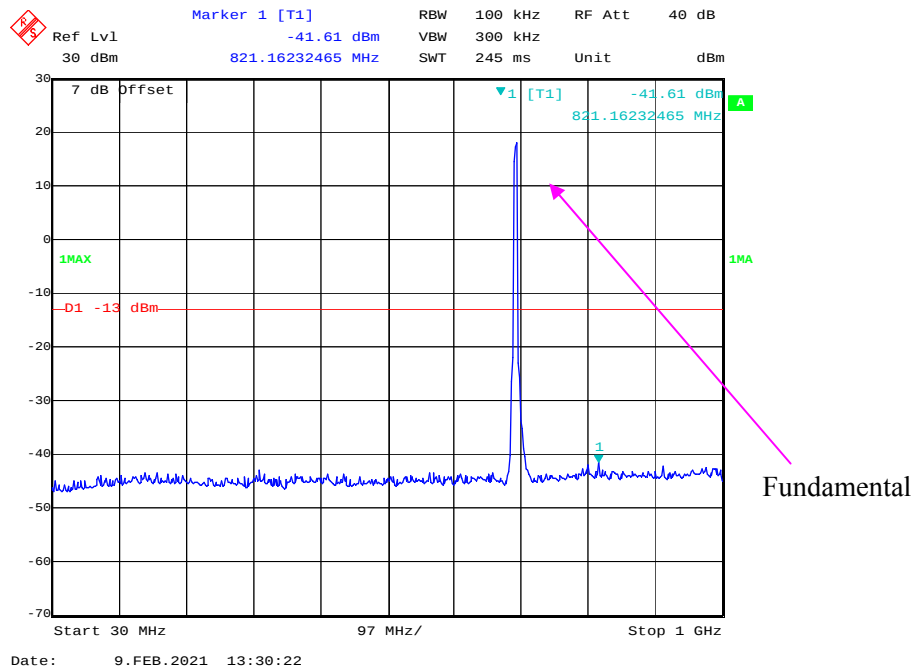
30 MHz - 1 GHz (5 MHz, QPSK, Low Channel)



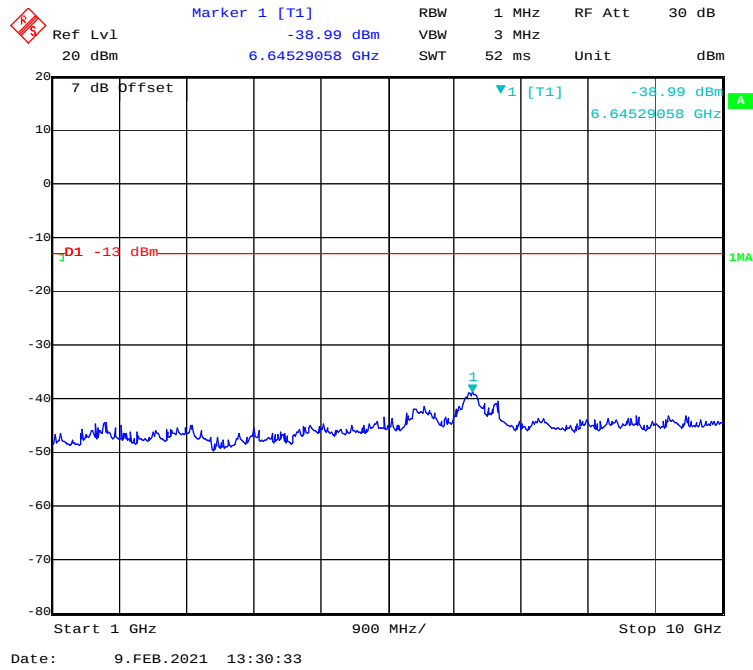
1 GHz – 10 GHz (5 MHz, QPSK, Low Channel)



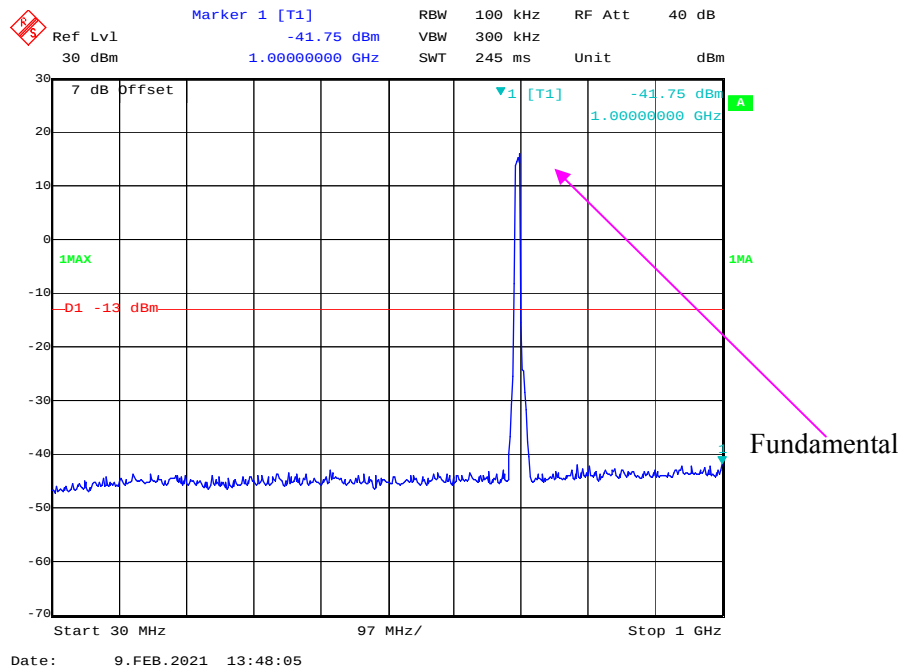
30 MHz - 1 GHz (5 MHz, 16-QAM, Low Channel)



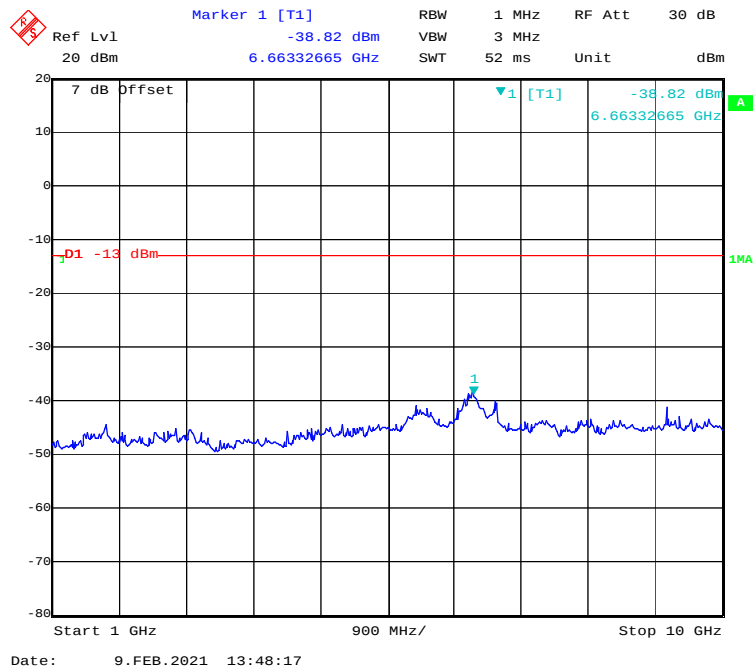
1 GHz – 10 GHz (5 MHz, 16-QAM, Low Channel)



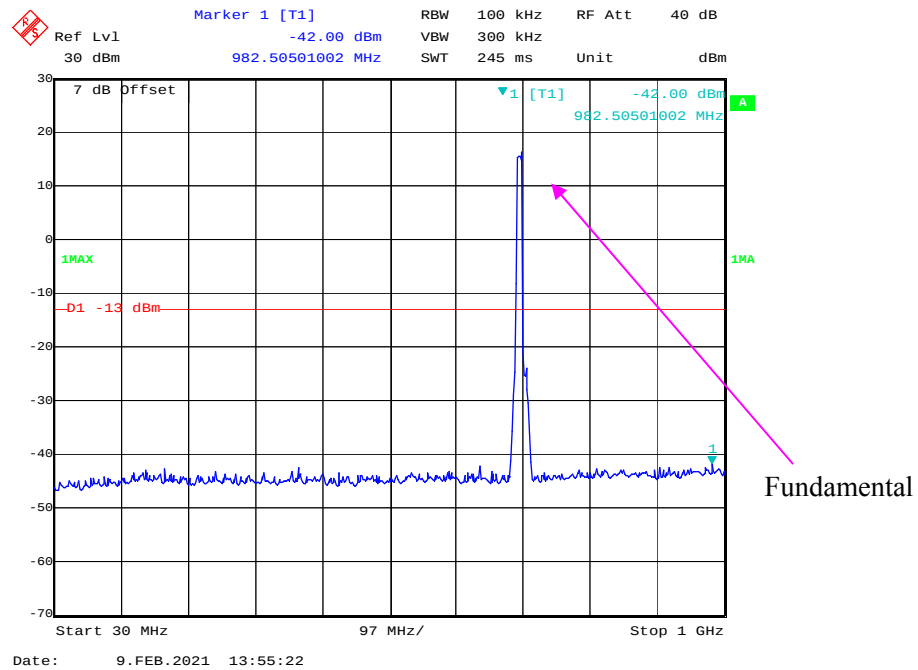
30 MHz - 1 GHz (10 MHz, QPSK, Low Channel)



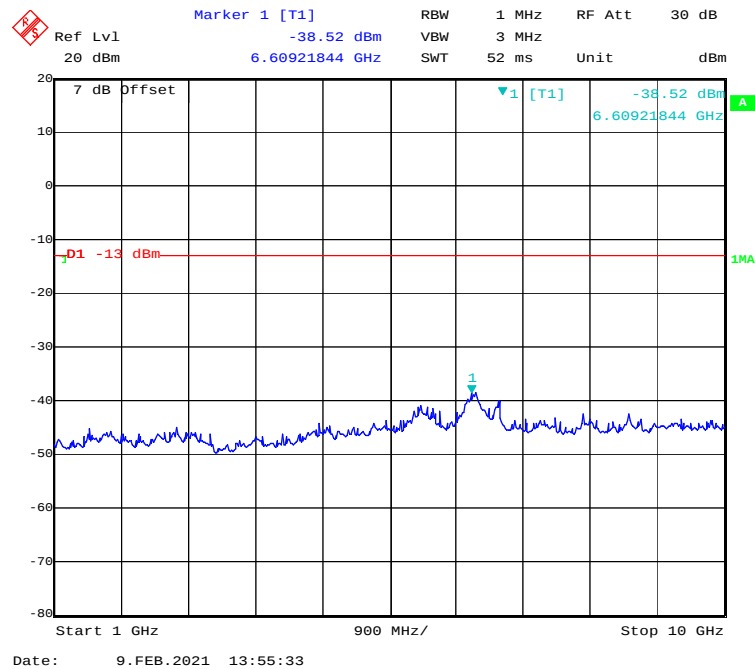
1 GHz – 10 GHz (10 MHz, QPSK, Low Channel)



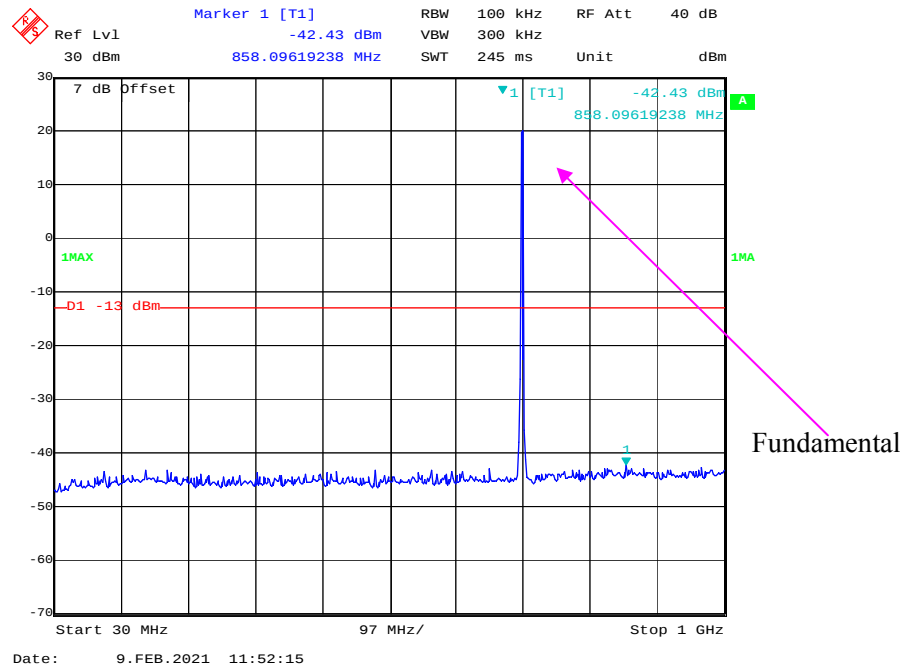
30 MHz - 1 GHz (10 MHz, 16-QAM, Low Channel)



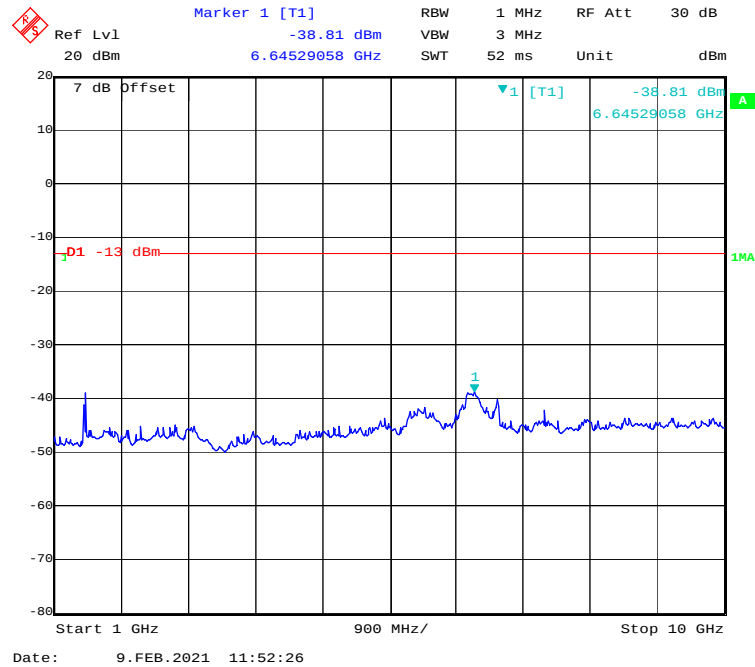
1 GHz – 10 GHz (10 MHz, 16-QAM, Low Channel)



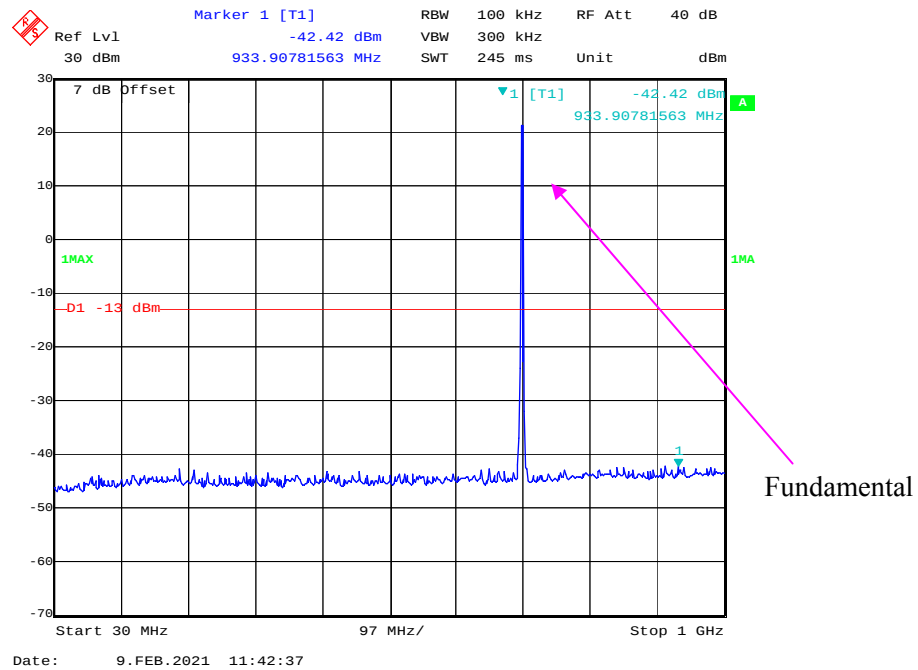
30 MHz - 1 GHz (1.4 MHz, QPSK, Middle Channel)



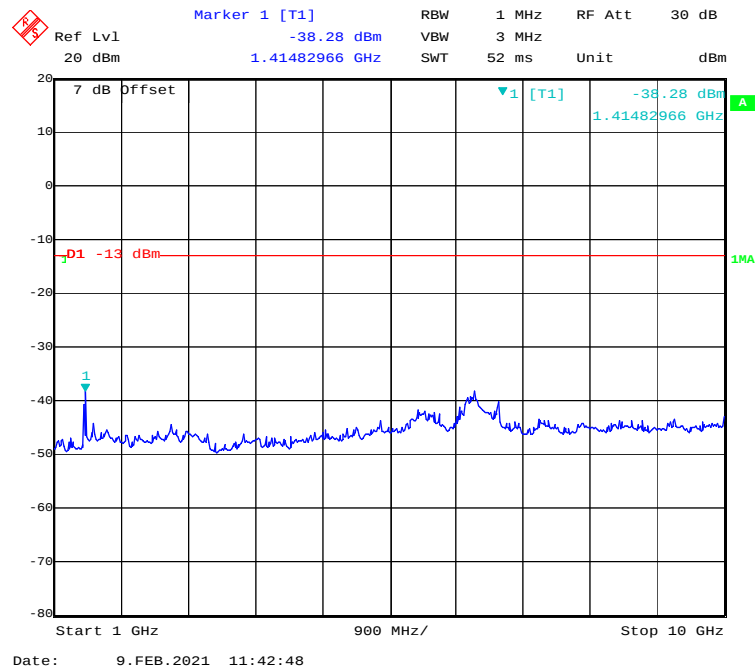
1 GHz – 10 GHz (1.4 MHz, QPSK, Middle Channel)



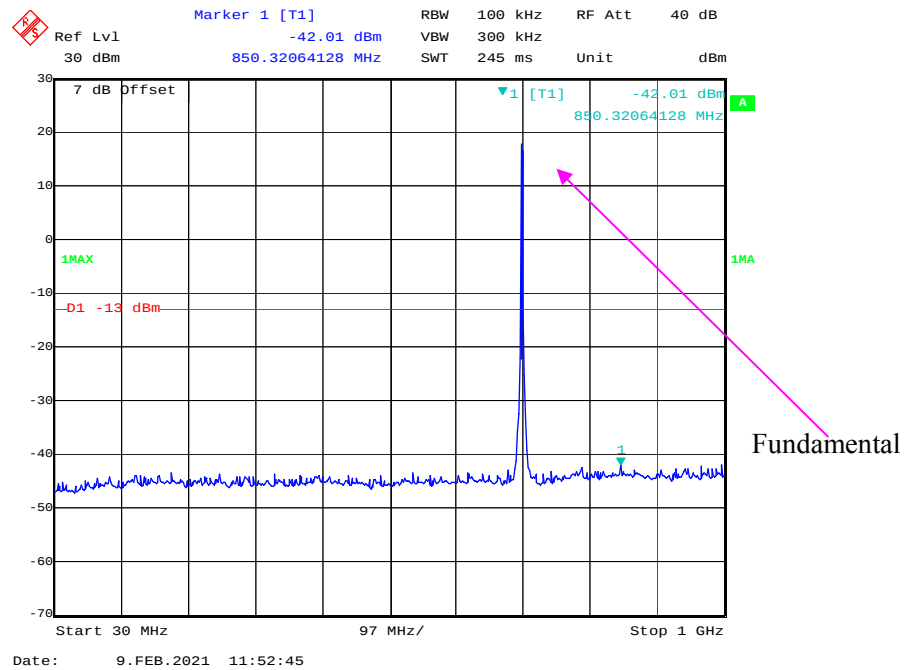
30 MHz - 1 GHz (1.4 MHz, 16-QAM, Middle Channel)



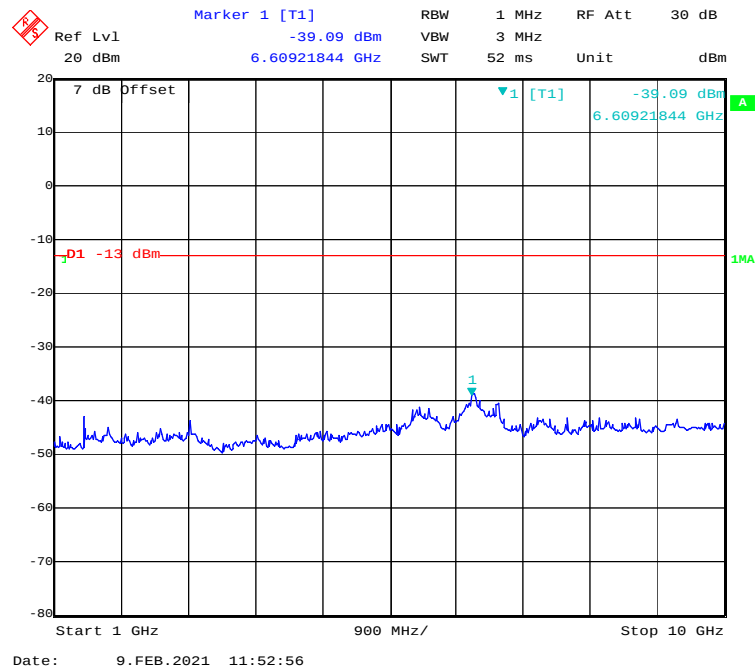
1 GHz – 10 GHz (1.4 MHz, 16-QAM, Middle Channel)



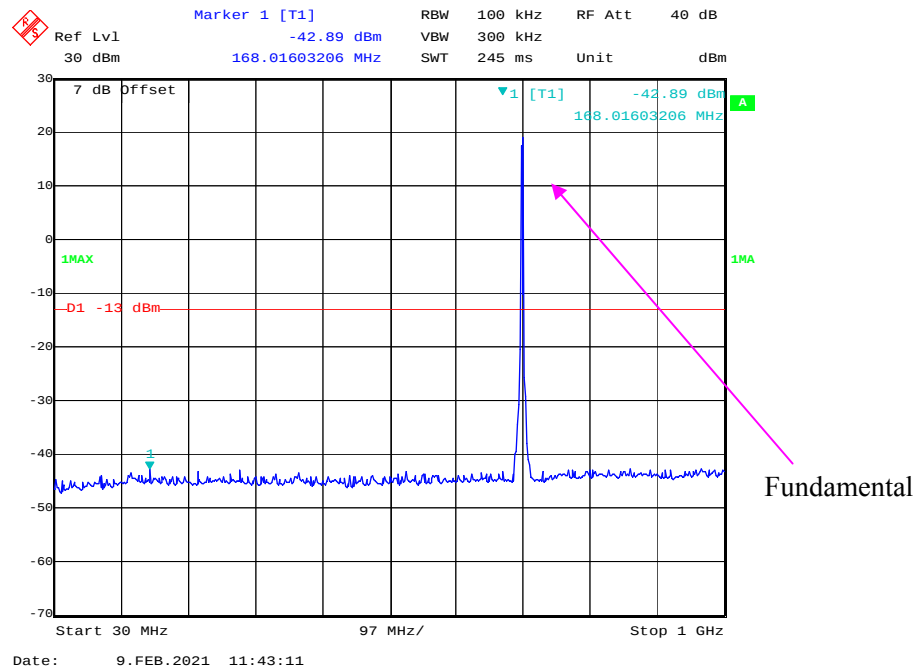
30 MHz - 1 GHz (3 MHz, QPSK, Middle Channel)



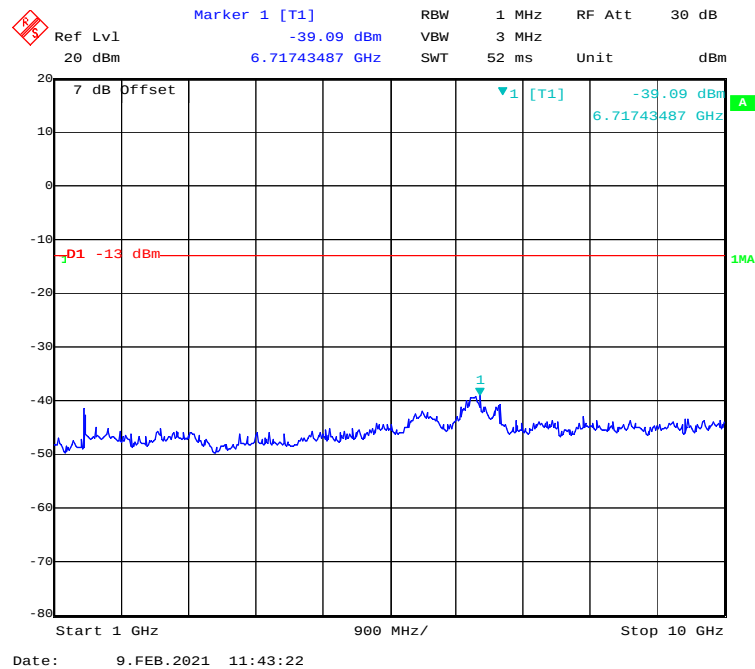
1 GHz – 10 GHz (3 MHz, QPSK, Middle Channel)



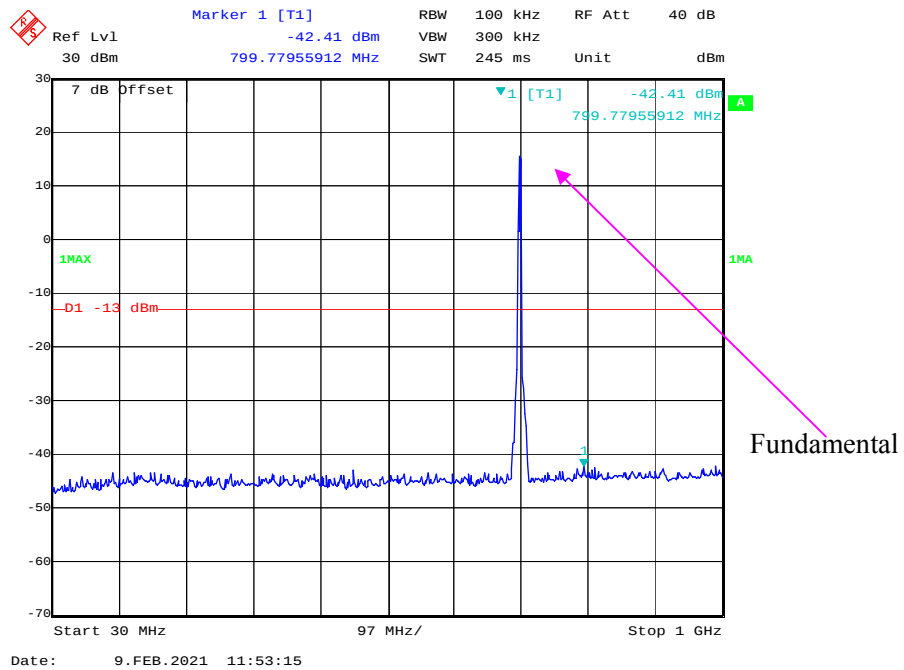
30 MHz - 1 GHz (3 MHz, 16-QAM, Middle Channel)



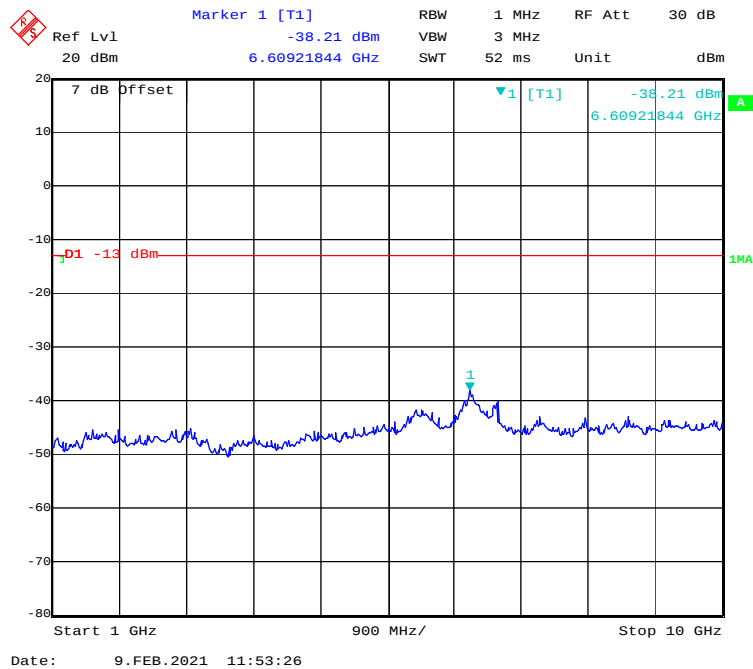
1 GHz – 10 GHz (3 MHz, 16-QAM, Middle Channel)



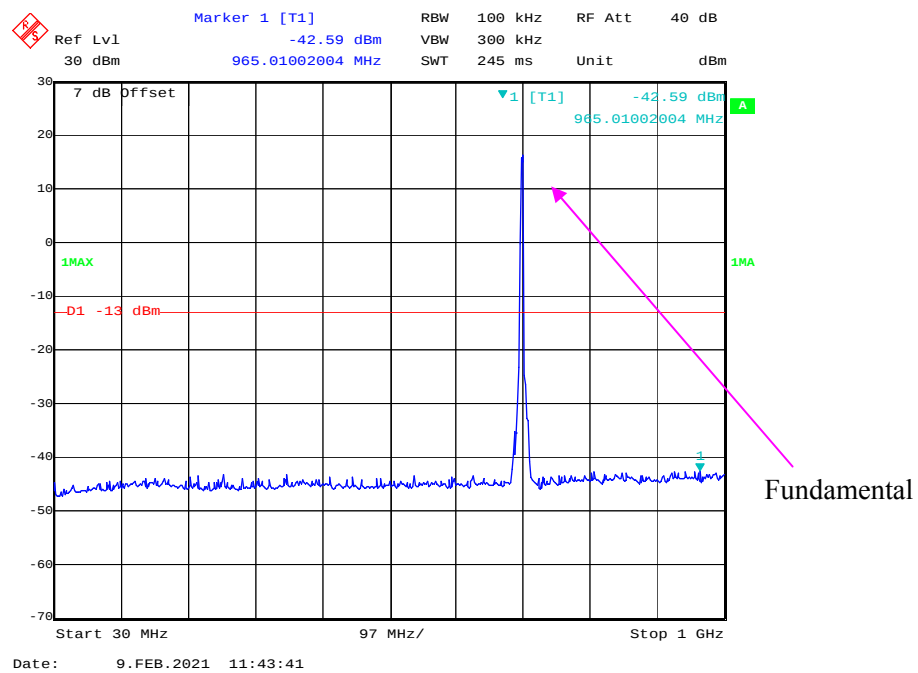
30 MHz - 1 GHz (5 MHz, QPSK, Middle Channel)



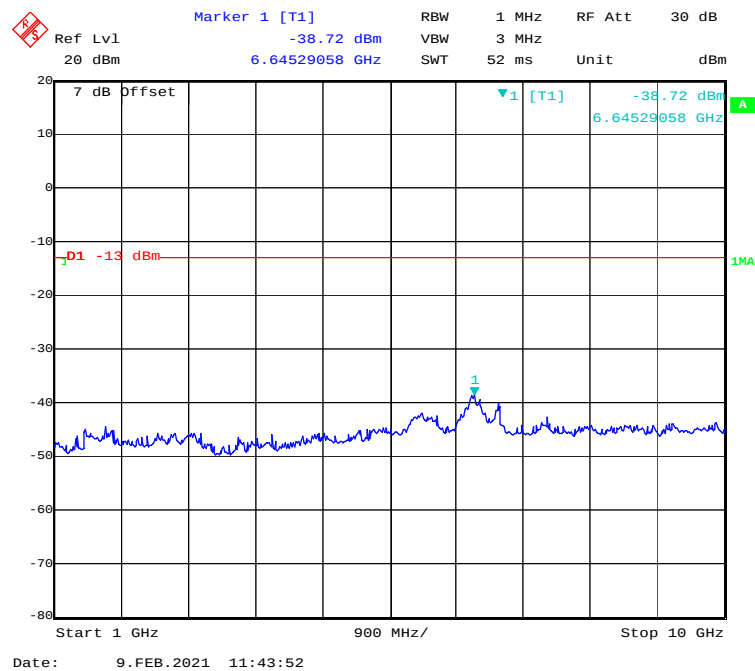
1 GHz – 10 GHz (5 MHz, QPSK, Middle Channel)



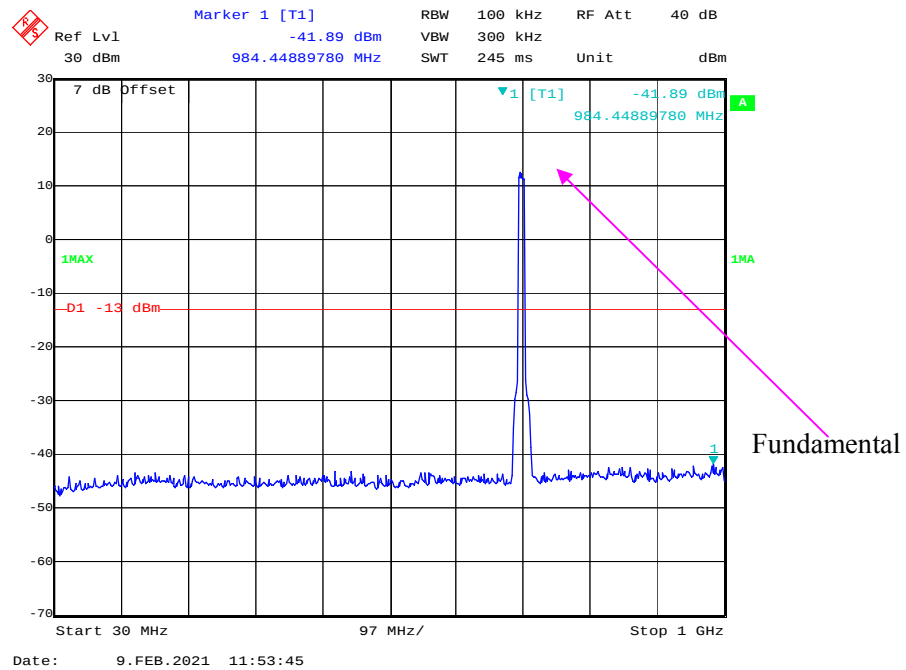
30 MHz - 1 GHz (5 MHz, 16-QAM, Middle Channel)



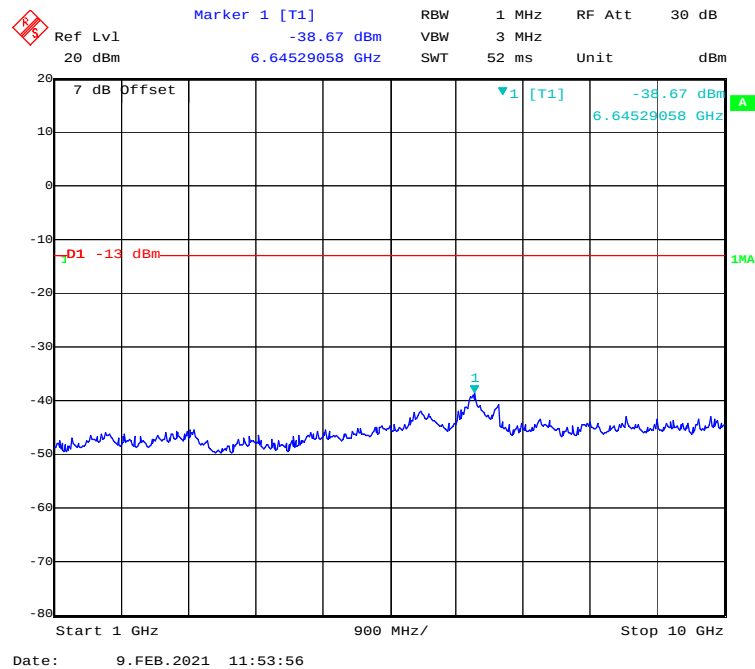
1 GHz – 10 GHz (5 MHz, 16-QAM, Middle Channel)



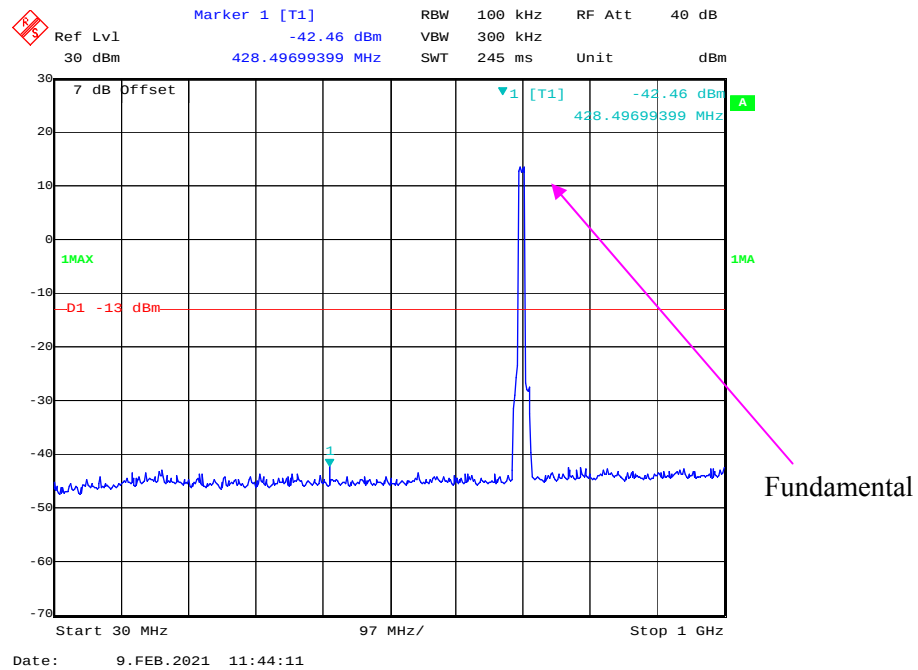
30 MHz - 1 GHz (10 MHz, QPSK, Middle Channel)



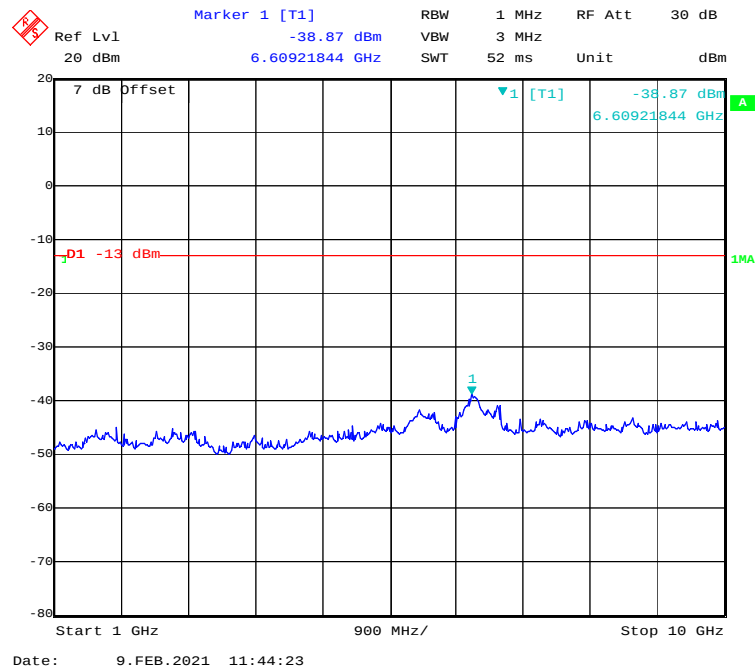
1 GHz – 10 GHz (10 MHz, QPSK, Middle Channel)



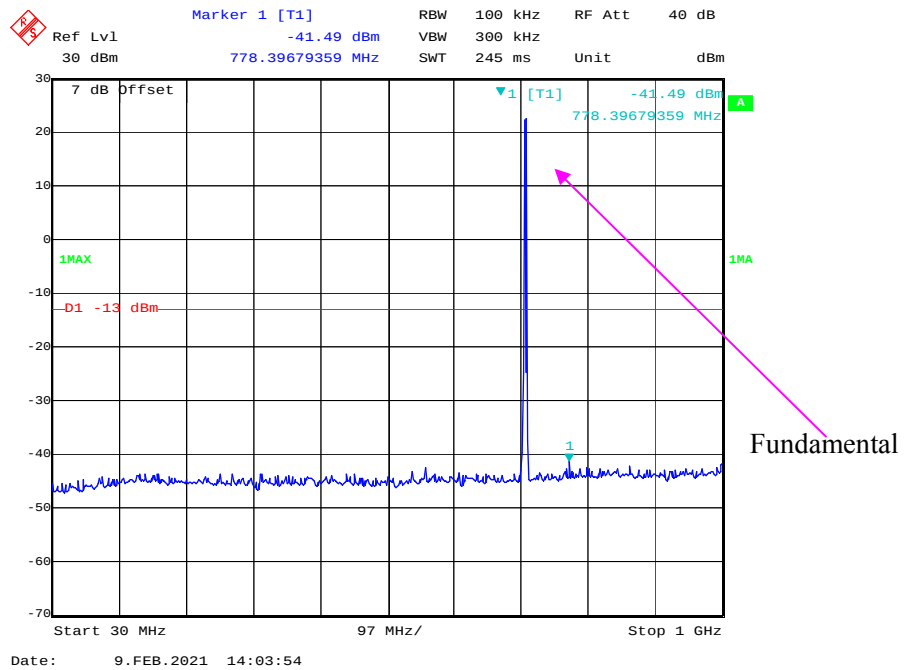
30 MHz - 1 GHz (10 MHz, 16-QAM, Middle Channel)



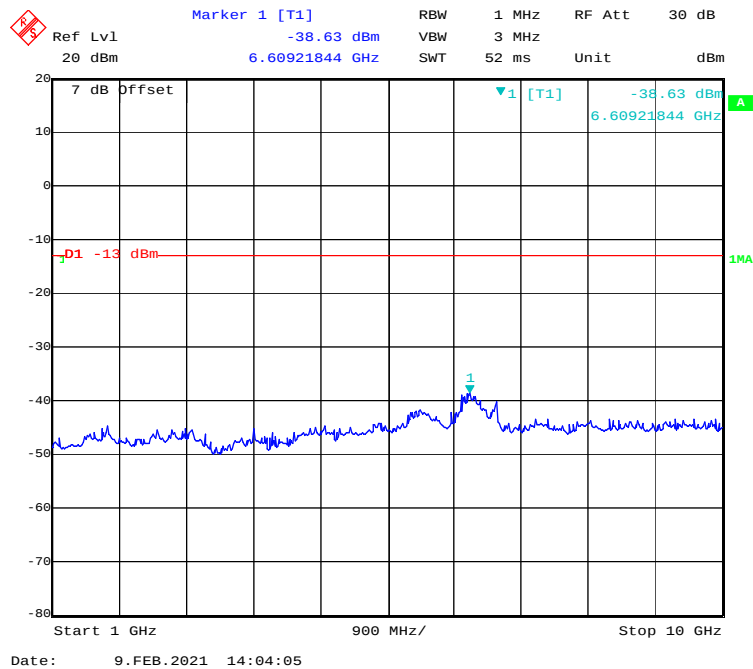
1 GHz – 10 GHz (10 MHz, 16-QAM, Middle Channel)

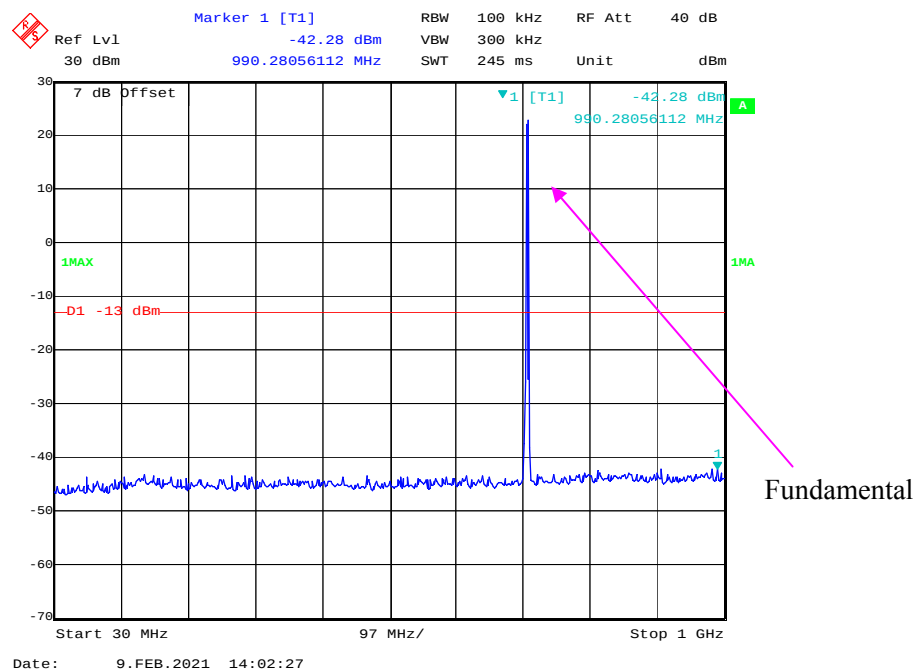
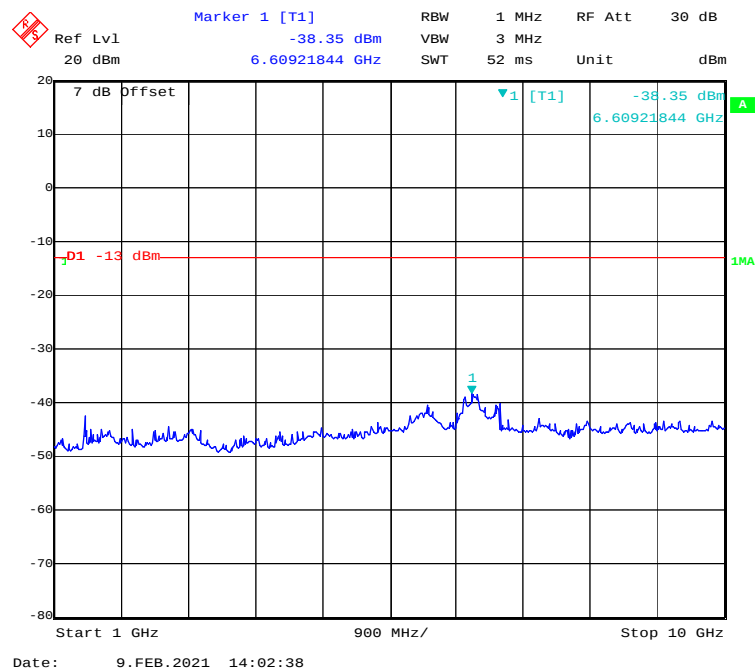


30 MHz - 1 GHz (1.4 MHz, QPSK, High Channel)

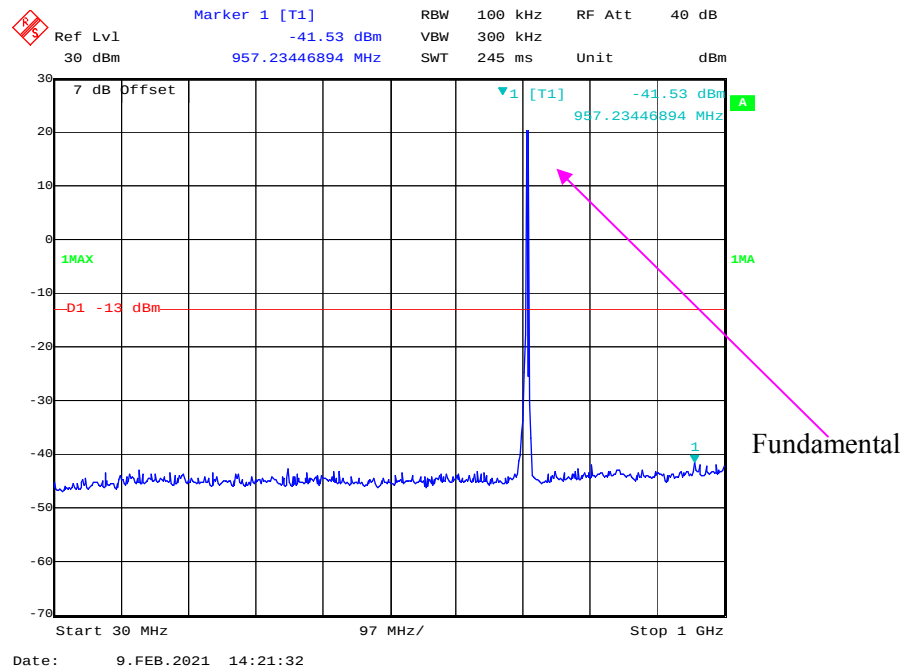


1 GHz – 10 GHz (1.4 MHz, QPSK, High Channel)

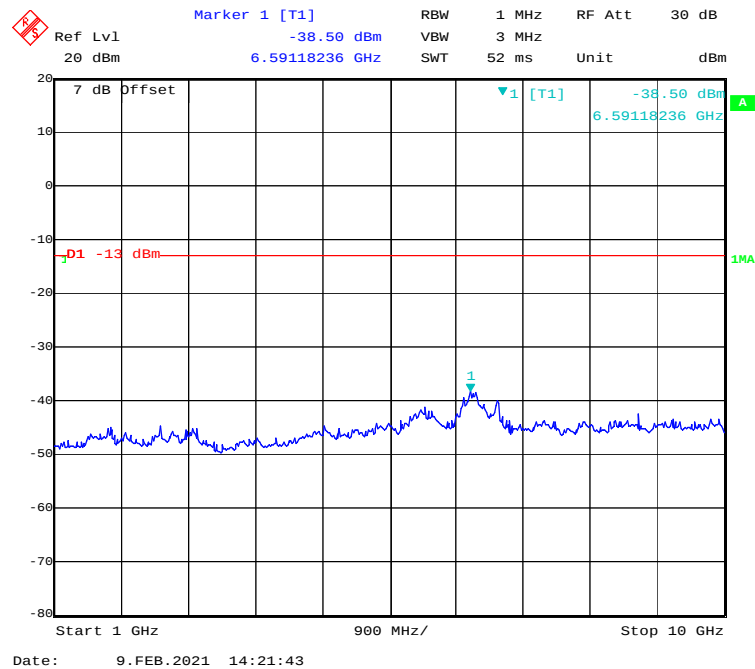


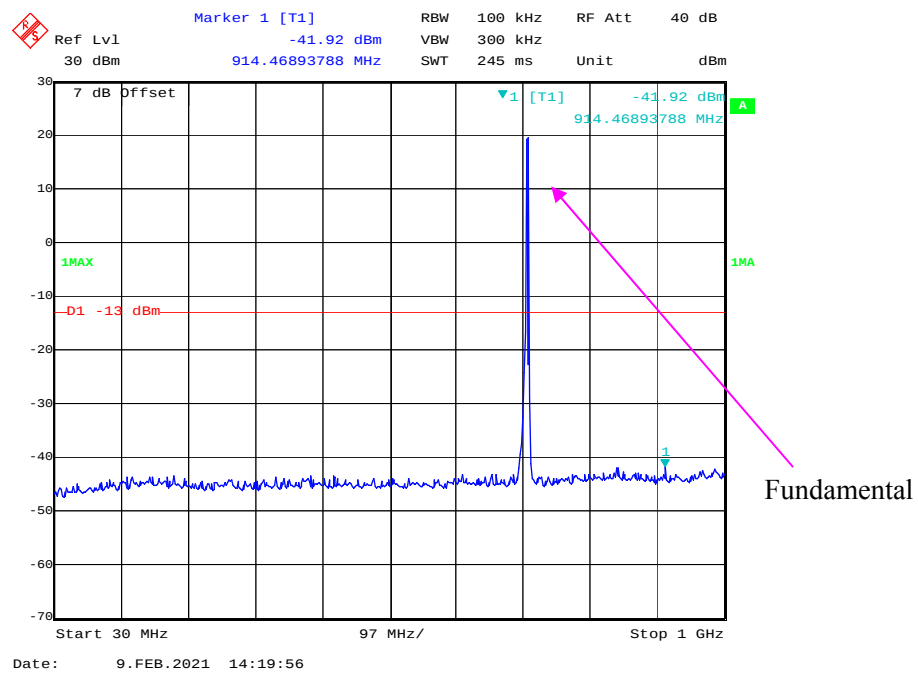
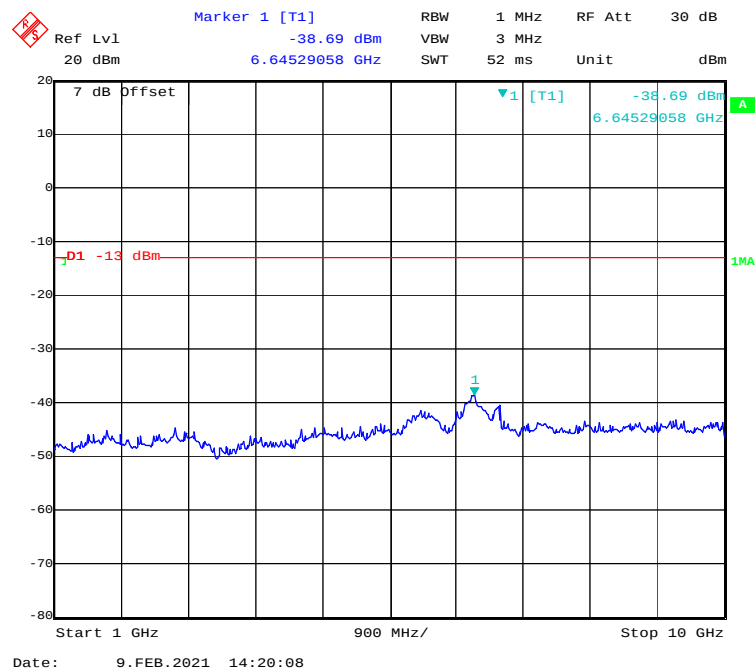
30 MHz - 1 GHz (1.4 MHz, 16-QAM, High Channel)**1 GHz – 10 GHz (1.4 MHz, 16-QAM, High Channel)**

30 MHz - 1 GHz (3 MHz, QPSK, High Channel)

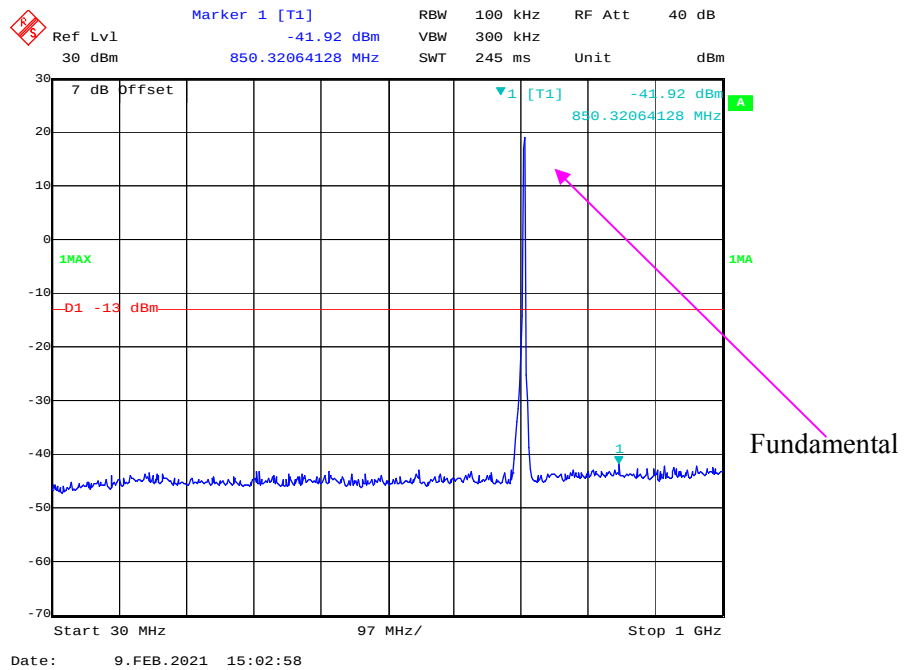


1 GHz – 10 GHz (3 MHz, QPSK, High Channel)

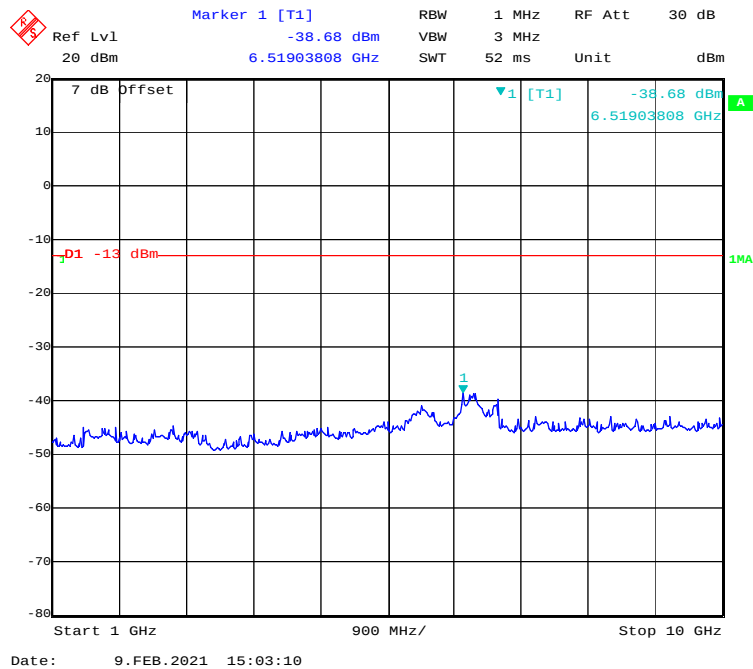


30 MHz - 1 GHz (3 MHz, 16-QAM, High Channel)**1 GHz – 10 GHz (3 MHz, 16-QAM, High Channel)**

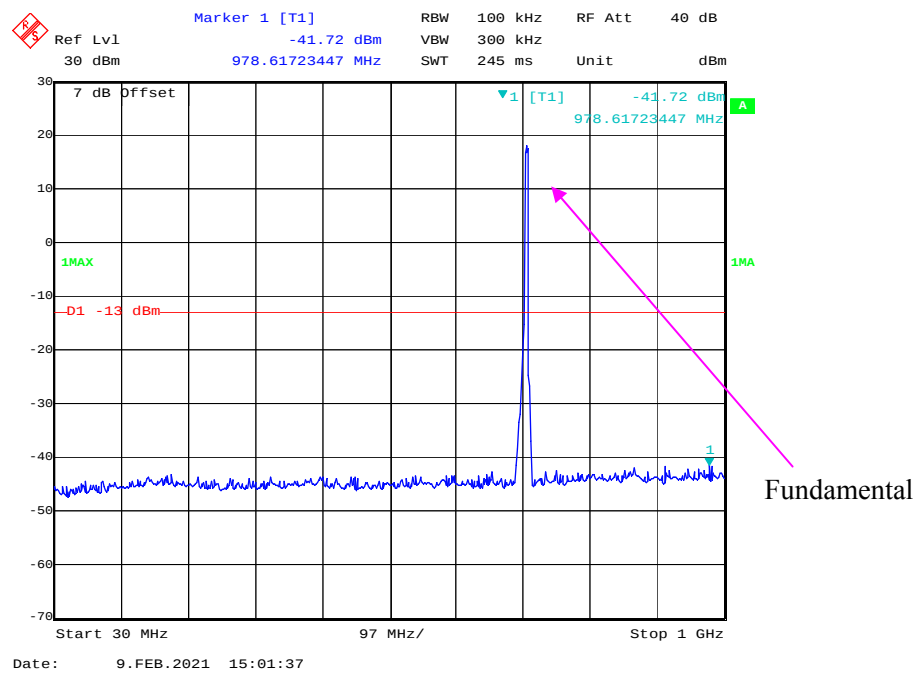
30 MHz - 1 GHz (5 MHz, QPSK, High Channel)



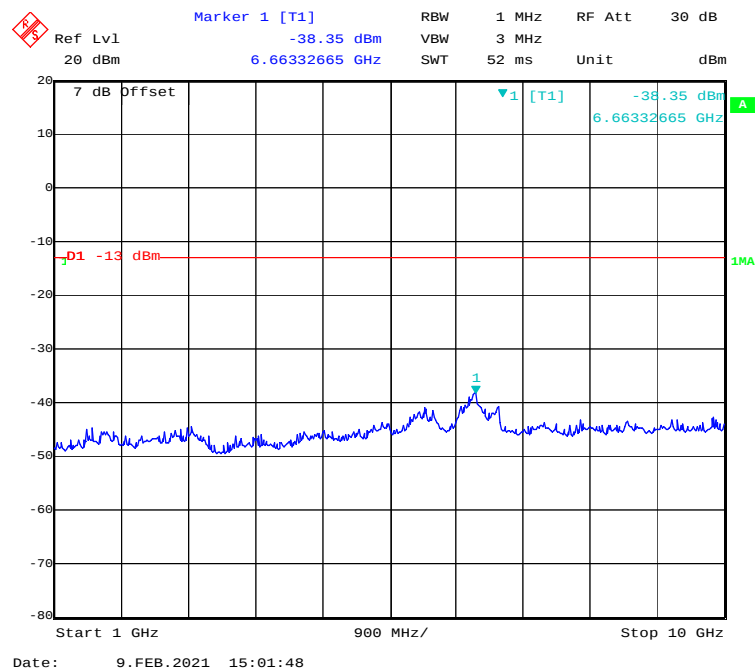
1 GHz – 10 GHz (5 MHz, QPSK, High Channel)

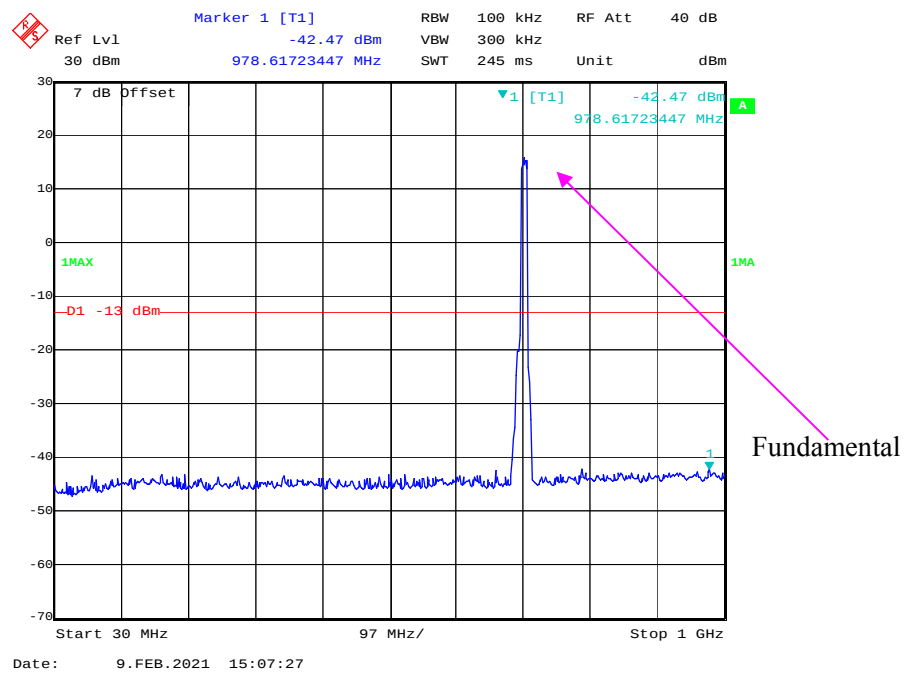
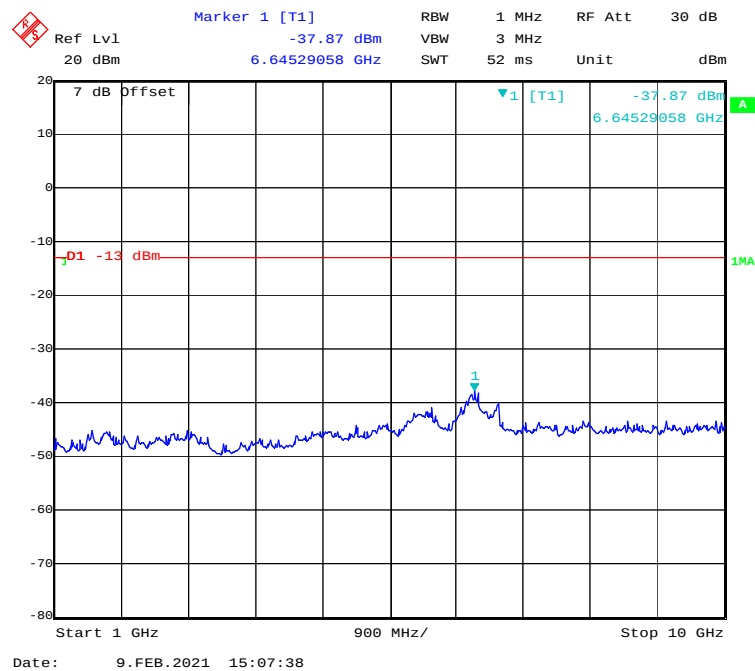


30 MHz - 1 GHz (5 MHz, 16-QAM, High Channel)

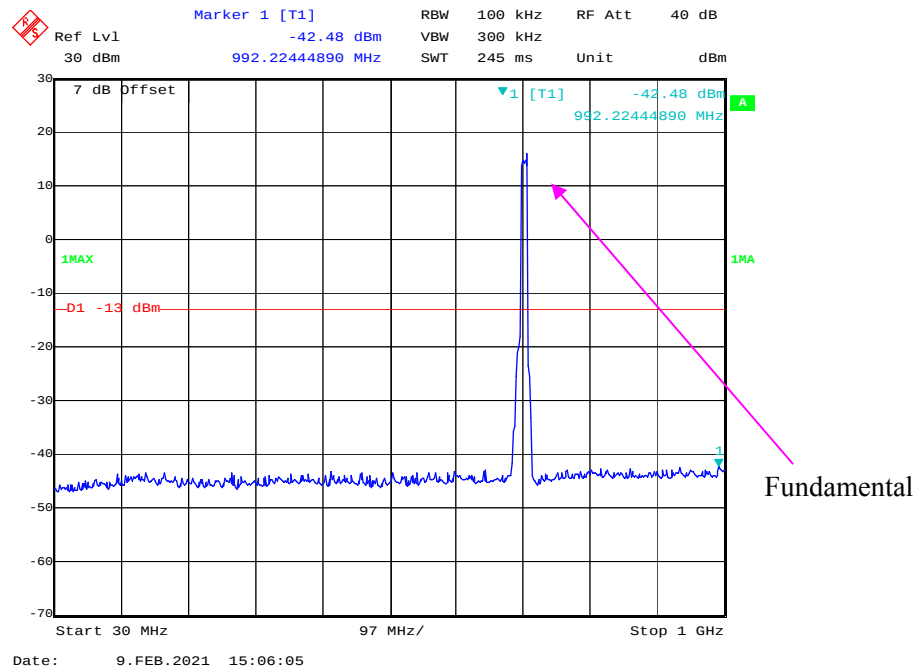


1 GHz – 10 GHz (5 MHz, 16-QAM, High Channel)

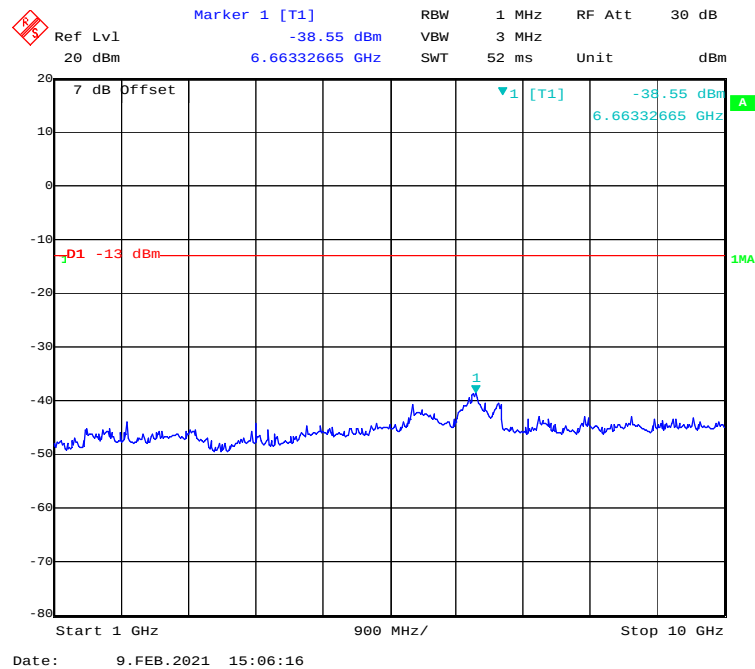


30 MHz - 1 GHz (10 MHz, QPSK, High Channel)**1 GHz – 10 GHz (10 MHz, QPSK, High Channel)**

30 MHz - 1 GHz (10 MHz, 16-QAM, High Channel)



1 GHz – 10 GHz (10 MHz, 16-QAM, High Channel)



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

Applicable Standards

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

22.917 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

24.238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC §27.53 (g) (h).

Test Procedure

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

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

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

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

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

Test Data**Environmental Conditions**

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

The testing was performed by Tyrone Wang on 2021-02-18.

Test mode: Transmitting (Pre-scan with low, middle and high channels, and the worse case data as below)

30 MHz ~ 10 GHz:

WCDMA Band V

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Low channel										
335.3	54.98	275	150	H	-53.1	0.48	-1.87	-55.45	-13	42.45
335.3	55.22	200	150	V	-52.86	0.48	-1.87	-55.21	-13	42.21
1652.80	45.72	119	100	H	-67.60	0.84	8.44	-60	-13	47
1652.80	46.31	304	100	V	-67.01	0.84	8.44	-59.41	-13	46.41

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Middle channel										
335.3	54.02	19	150	H	-54.06	0.48	-1.87	-56.41	-13	43.41
335.3	54.79	83	150	V	-53.29	0.48	-1.87	-55.64	-13	42.64
1673.20	45.37	324	100	H	-67.95	0.84	8.48	-60.31	-13	47.31
1673.20	45.77	35	100	V	-67.55	0.84	8.48	-59.91	-13	46.91

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, High channel										
335.3	54.99	122	150	H	-53.09	0.48	-1.87	-55.44	-13	42.44
335.3	55.47	170	150	V	-52.61	0.48	-1.87	-54.96	-13	41.96
1693.20	45.72	117	100	H	-67.31	0.84	8.51	-59.64	-13	46.64
1693.20	46.2	4	100	V	-66.83	0.84	8.51	-59.16	-13	46.16

30 MHz ~ 20 GHz:

WCDMA Band II

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Low channel										
557.43	54.29	18	150	H	-50.34	0.58	-1.2	-52.12	-13	39.12
557.43	55.66	174	150	V	-48.97	0.58	-1.2	-50.75	-13	37.75
3704.8	38.55	43	200	H	-68.41	0.95	9.78	-59.58	-13	46.58
3704.8	38.84	225	100	V	-68.12	0.95	9.78	-59.29	-13	46.29

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Middle channel										
557.43	54.13	67	150	H	-50.50	0.58	-1.2	-52.28	-13	39.28
557.43	54.84	123	150	V	-49.79	0.58	-1.2	-51.57	-13	38.57
3760	37.68	150	200	H	-69.1	0.95	9.74	-60.31	-13	47.31
3760	38.33	13	100	V	-68.45	0.95	9.74	-59.66	-13	46.66

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, High channel										
557.43	54.46	19	150	H	-50.17	0.58	-1.2	-51.95	-13	38.95
557.43	55.94	30	150	V	-48.69	0.58	-1.2	-50.47	-13	37.47
3815.2	38.83	350	200	H	-67.77	0.96	9.71	-59.02	-13	46.02
3815.2	39.49	224	100	V	-67.11	0.96	9.71	-58.36	-13	45.36

WCDMA Band IV

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Low channel										
711.18	54.95	23	150	H	-45.62	0.62	-1.69	-47.93	-13	34.93
711.18	55.77	341	150	V	-44.8	0.62	-1.69	-47.11	-13	34.11
3424.8	39.64	233	200	H	-68.26	0.93	9.83	-59.36	-13	46.36
3424.8	39.61	265	100	V	-68.29	0.93	9.83	-59.39	-13	46.39

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, Middle channel										
711.18	54.63	208	150	H	-45.94	0.62	-1.69	-48.25	-13	35.25
711.18	54.9	128	150	V	-45.67	0.62	-1.69	-47.98	-13	34.98
3465.2	38.50	313	200	H	-69.25	0.93	9.87	-60.31	-13	47.31
3465.2	38.77	75	100	V	-68.98	0.93	9.87	-60.04	-13	47.04

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
WCDMA Mode, High channel										
711.18	55.34	221	150	H	-45.23	0.62	-1.69	-47.54	-13	34.54
711.18	56.65	338	150	V	-43.92	0.62	-1.69	-46.23	-13	33.23
3505.2	40.19	308	200	H	-67.41	0.93	9.9	-58.44	-13	45.44
3505.2	40.20	287	100	V	-67.4	0.93	9.9	-58.43	-13	45.43

Note:

1) Absolute Level (dBm) = Submitted Level (dBm) - Cable loss (dB) + Antenna Gain (dBd/dBi)

2) Margin (dB) = Limit (dBm) - Absolute Level (dBm)

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

30 MHz ~ 20 GHz:

LTE Band 2:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
214.75	41.84	262	100	H	-62.55	0.43	-3.45	-66.43	-13	53.43
214.75	41.99	253	200	V	-62.4	0.43	-3.45	-66.28	-13	53.28
3701.40	41.23	198	150	H	-65.73	0.95	9.78	-56.9	-13	43.90
3701.40	41.53	176	100	V	-65.43	0.95	9.78	-56.6	-13	43.60
16-QAM 1.4MHz Bandwidth Low Channel										
214.75	41.35	207	150	H	-63.04	0.43	-3.45	-66.92	-13	53.92
214.75	41.83	321	150	V	-62.56	0.43	-3.45	-66.44	-13	53.44
3701.40	42.4	59	200	H	-64.56	0.95	9.78	-55.73	-13	42.73
3701.40	42.03	238	200	V	-64.93	0.95	9.78	-56.1	-13	43.10

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
214.75	41.04	64	100	H	-63.35	0.43	-3.45	-67.23	-13	54.23
214.75	41.96	51	100	V	-62.43	0.43	-3.45	-66.31	-13	53.31
3760	40.51	25	150	H	-66.27	0.95	9.74	-57.48	-13	44.48
3760	40.53	190	100	V	-66.25	0.95	9.74	-57.46	-13	44.46
16-QAM 1.4MHz Bandwidth Middle Channel										
214.75	41.41	294	150	H	-62.98	0.43	-3.45	-66.86	-13	53.86
214.75	41.88	184	150	V	-62.51	0.43	-3.45	-66.39	-13	53.39
3760	41.12	332	200	H	-65.66	0.95	9.74	-56.87	-13	43.87
3760	41.34	68	200	V	-65.44	0.95	9.74	-56.65	-13	43.65

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
214.75	42.02	202	100	H	-62.37	0.43	-3.45	-66.25	-13	53.25
214.75	42.49	244	200	V	-61.9	0.43	-3.45	-65.78	-13	52.78
3818.60	41.22	310	150	H	-65.38	0.96	9.71	-56.63	-13	43.63
3818.60	42.13	62	100	V	-64.47	0.96	9.71	-55.72	-13	42.72
16-QAM 1.4MHz Bandwidth High Channel										
214.75	41.5	54	150	H	-62.89	0.43	-3.45	-66.77	-13	53.77
214.75	41.5	95	150	V	-62.89	0.43	-3.45	-66.77	-13	53.77
3818.60	42.69	28	200	H	-63.91	0.96	9.71	-55.16	-13	42.16
3818.60	42.73	280	200	V	-63.87	0.96	9.71	-55.12	-13	42.12

30 MHz ~ 20 GHz:
LTE Band 4:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
213.81	41.95	250	100	H	-62.52	0.43	-3.48	-66.43	-13	53.43
213.81	41.75	342	200	V	-62.72	0.43	-3.48	-66.63	-13	53.63
3421.40	43.63	161	150	H	-64.31	0.93	9.82	-55.42	-13	42.42
3421.40	44.53	115	100	V	-63.41	0.93	9.82	-54.52	-13	41.52
16-QAM 1.4MHz Bandwidth Low Channel										
213.81	41.29	248	150	H	-63.18	0.43	-3.48	-59.27	-13	46.27
213.81	41.84	21	150	V	-62.63	0.43	-3.48	-58.72	-13	45.72
3421.40	44.99	98	200	H	-62.95	0.93	9.82	-54.06	-13	41.06
3421.40	44.21	185	200	V	-63.73	0.93	9.82	-54.84	-13	41.84

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
213.81	41.04	98	100	H	-63.43	0.43	-3.48	-67.34	-13	54.34
213.81	41.37	326	200	V	-63.1	0.43	-3.48	-67.01	-13	54.01
3465	42.65	150	150	H	-65.1	0.93	9.87	-56.16	-13	43.16
3465	43.35	291	100	V	-64.4	0.93	9.87	-55.46	-13	42.46
16-QAM 1.4MHz Bandwidth Middle Channel										
213.81	41.47	310	150	H	-63	0.43	-3.48	-66.91	-13	53.91
213.81	41.15	176	150	V	-63.32	0.43	-3.48	-67.23	-13	54.23
3465	43.63	359	200	H	-64.12	0.93	9.87	-55.18	-13	42.18
3465	44.14	210	200	V	-63.61	0.93	9.87	-54.67	-13	41.67

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
213.81	42	141	100	H	-62.47	0.43	-3.48	-66.38	-13	53.38
213.81	42.67	288	200	V	-61.8	0.43	-3.48	-65.71	-13	52.71
3508.60	43.63	278	150	H	-63.94	0.93	9.90	-54.97	-13	41.97
3508.60	44.15	116	100	V	-63.42	0.93	9.90	-54.45	-13	41.45
16-QAM 1.4MHz Bandwidth High Channel										
213.81	41.62	129	150	H	-62.85	0.43	-3.48	-66.76	-13	53.76
213.81	41.68	279	150	V	-62.79	0.43	-3.48	-66.7	-13	53.70
3508.60	45.02	291	200	H	-62.55	0.93	9.90	-53.58	-13	40.58
3508.60	44.21	89	200	V	-63.36	0.93	9.90	-54.39	-13	41.39

30 MHz ~ 10 GHz:**LTE Band 12:**

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Low Channel										
223.63	44.48	205	100	H	-59.16	0.43	-3.15	-62.74	-13	49.74
223.63	43.89	148	200	V	-59.75	0.43	-3.15	-63.33	-13	50.33
1399.4	51.8	59	150	H	-62.37	0.82	7.92	-55.27	-13	42.27
1399.4	53.37	294	100	V	-60.8	0.82	7.92	-53.7	-13	40.70
16-QAM 1.4MHz Bandwidth Low Channel										
223.63	44.03	19	150	H	-59.61	0.43	-3.15	-63.19	-13	50.19
223.63	45.09	176	150	V	-58.55	0.43	-3.15	-62.13	-13	49.13
1399.4	53.81	178	200	H	-60.36	0.82	7.92	-53.26	-13	40.26
1399.4	52.15	204	200	V	-62.02	0.82	7.92	-54.92	-13	41.92

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth Middle Channel										
223.63	43.58	23	100	H	-60.06	0.43	-3.15	-63.64	-13	50.64
223.63	43.71	192	200	V	-59.93	0.43	-3.15	-63.51	-13	50.51
1415	51.67	8	150	H	-62.53	0.82	7.96	-55.39	-13	42.39
1415	52.18	85	100	V	-62.02	0.82	7.96	-54.88	-13	41.88
16-QAM 1.4MHz Bandwidth Middle Channel										
223.63	43.71	55	150	H	-59.93	0.43	-3.15	-63.51	-13	50.51
223.63	44	311	150	V	-59.64	0.43	-3.15	-63.22	-13	50.22
1415	52.19	58	200	H	-62.01	0.82	7.96	-54.87	-13	41.87
1415	52.19	137	200	V	-62.01	0.82	7.96	-54.87	-13	41.87

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4MHz Bandwidth High Channel										
223.63	43.68	145	100	H	-59.96	0.43	-3.15	-63.54	-13	50.54
223.63	43.68	300	200	V	-59.96	0.43	-3.15	-63.54	-13	50.54
1430.6	51.68	86	150	H	-62.55	0.82	8	-55.37	-13	42.37
1430.6	52.85	170	100	V	-61.38	0.82	8	-54.2	-13	41.20
16-QAM 1.4MHz Bandwidth High Channel										
223.63	44.41	359	150	H	-59.23	0.43	-3.15	-62.81	-13	49.81
223.63	44.1	254	150	V	-59.54	0.43	-3.15	-63.12	-13	50.12
1430.6	53.4	354	200	H	-60.83	0.82	8	-53.65	-13	40.65
1430.6	52.08	342	200	V	-62.15	0.82	8	-54.97	-13	41.97

Note:

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

FCC § 22.917 (a); § 24.238 (a); §27.53 (g) (h); - BAND EDGES**Applicable Standards**

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

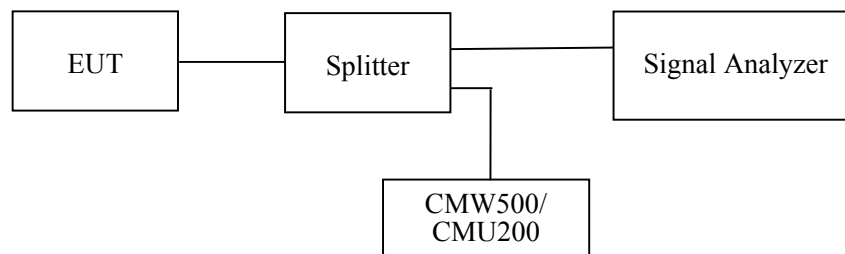
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

according to FCC §27.53 (g) (h).

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency.

**Test Data****Environmental Conditions**

Temperature:	23.2°C-23.5°C
Relative Humidity:	51 %-53%
ATM Pressure:	101.1kPa-103.3kPa

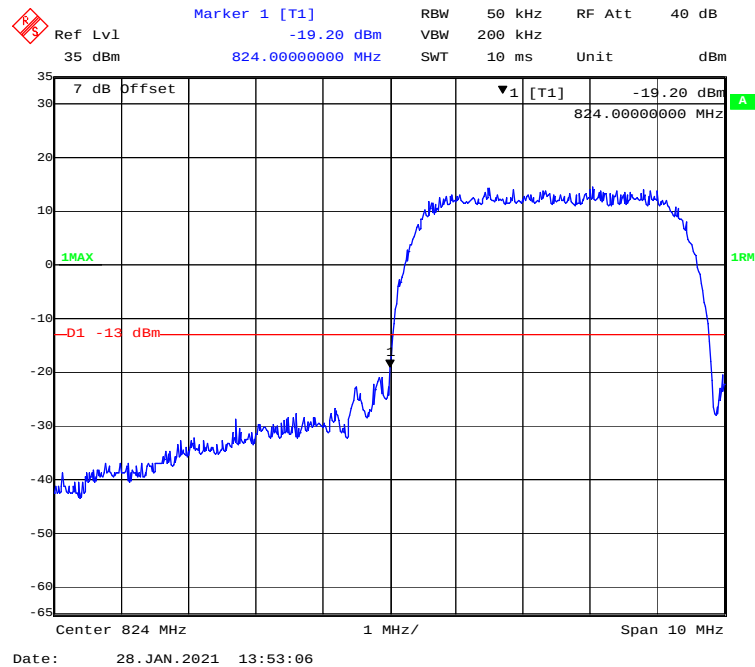
The testing was performed by Tyrone Wang from 2021-01-28 to 2021-02-18.

EUT operation mode: Transmitting

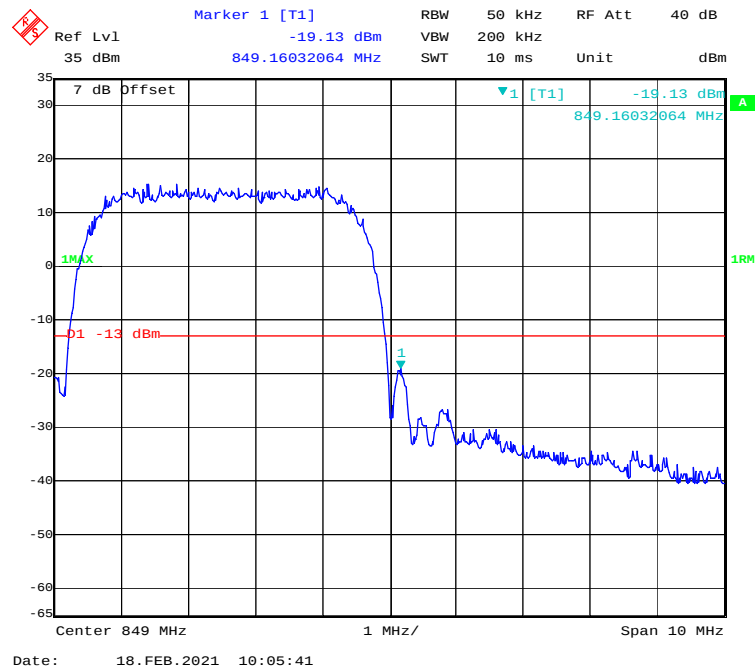
Test Result: Compliance.

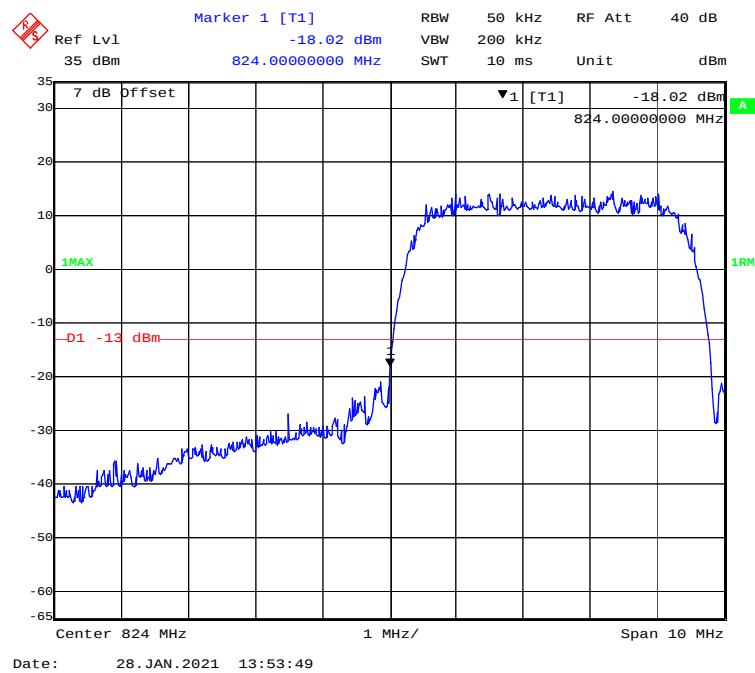
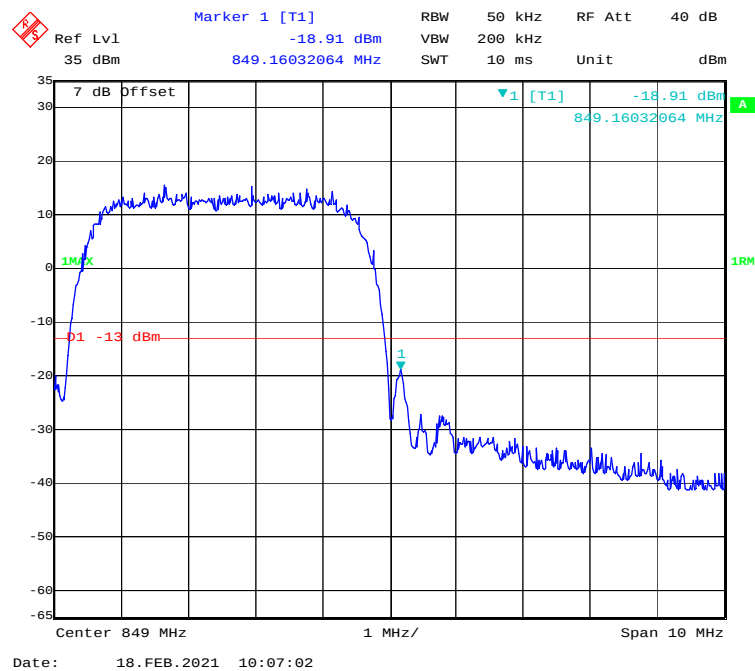
WCDMA Band V

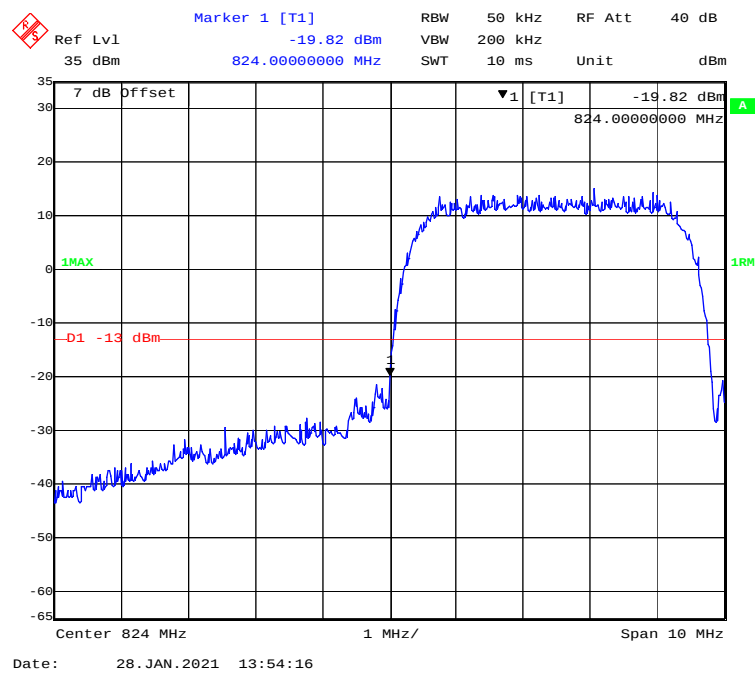
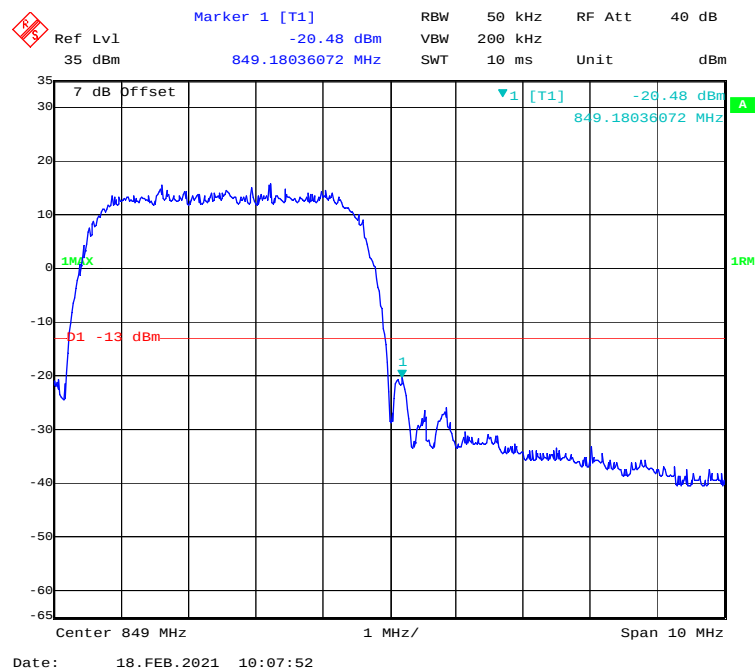
WCDMA (Rel 99) Mode, Left Band Edge



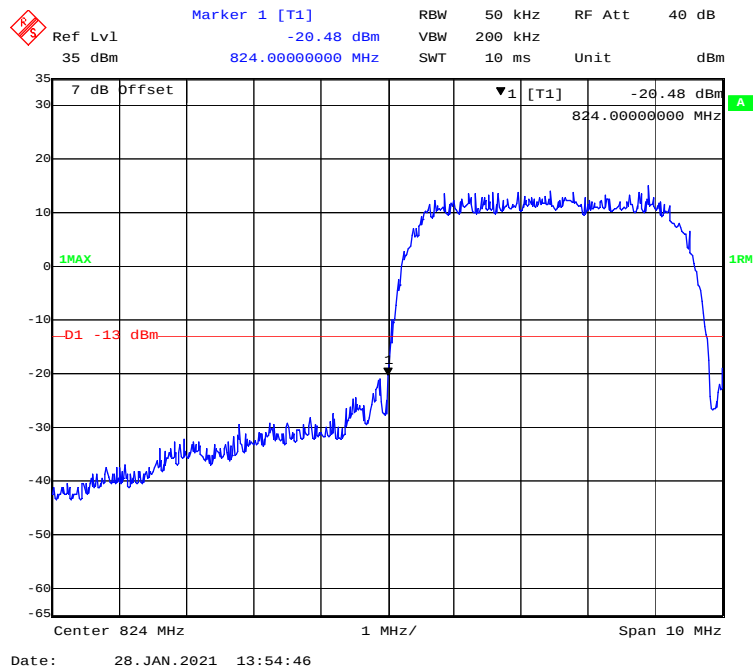
WCDMA (Rel 99) Mode, Right Band Edge



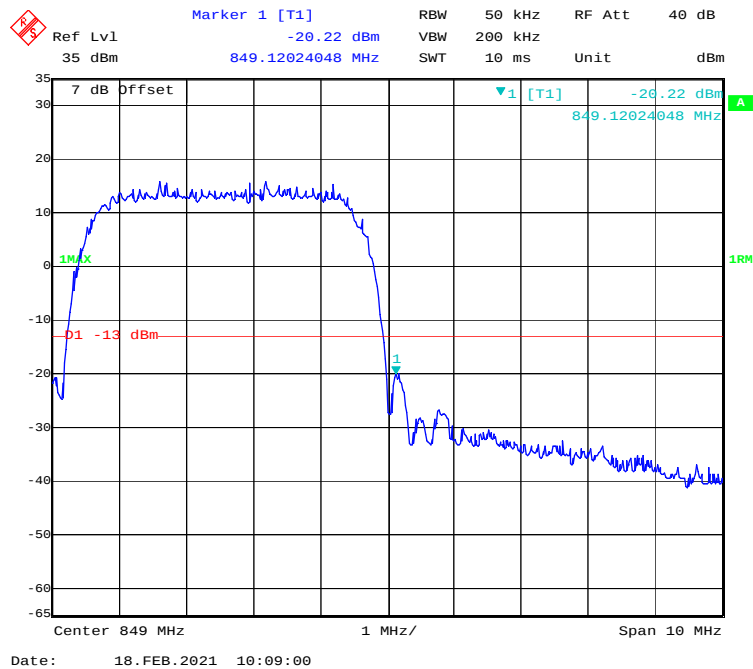
WCDMA (HSDPA) Mode, Left Band Edge**WCDMA (HSDPA) Mode, Right Band Edge**

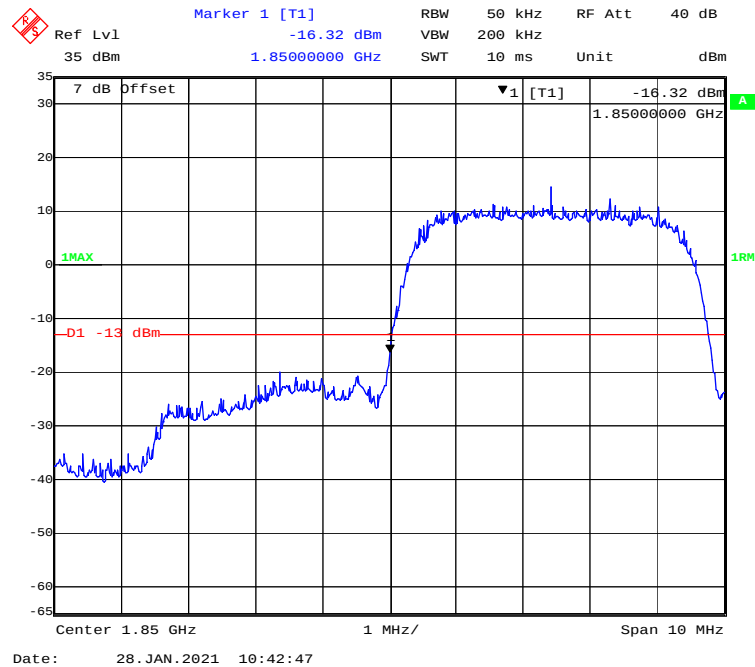
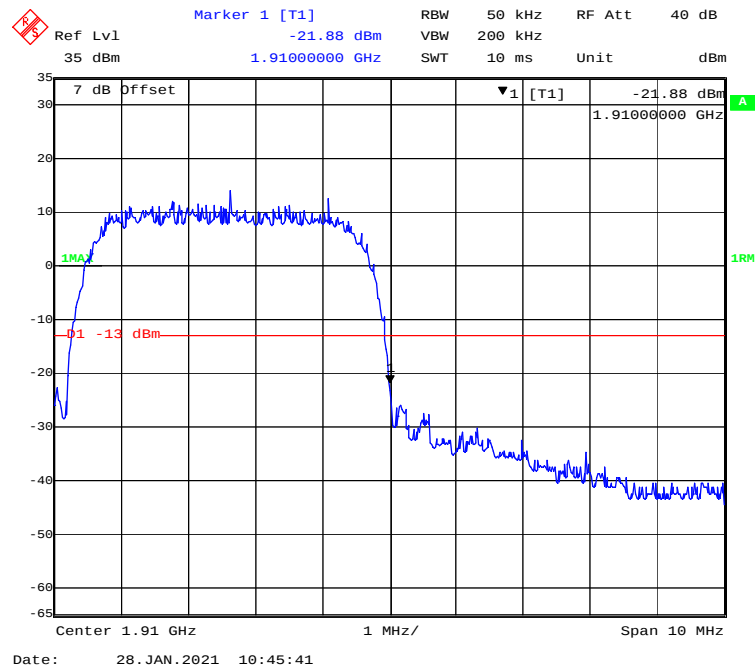
WCDMA (HSUPA) Mode, Left Band Edge**WCDMA (HSUPA) Mode, Right Band Edge**

WCDMA (HSPA+) Mode, Left Band Edge

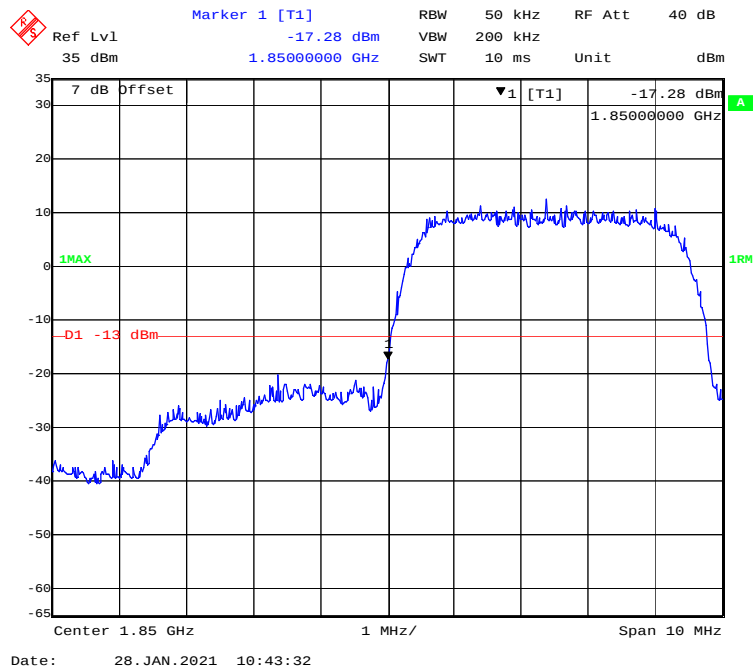


WCDMA (HSPA+) Mode, Right Band Edge

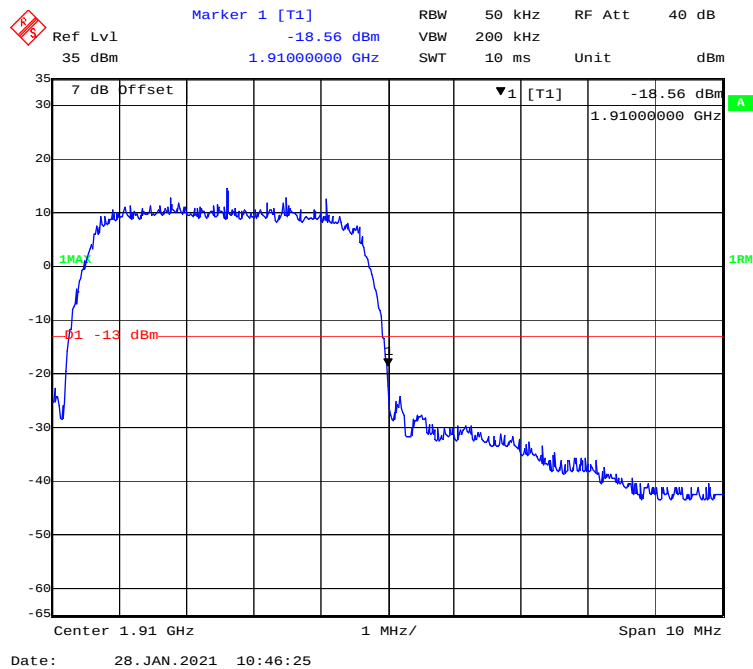


WCDMA Band II**WCDMA (Rel99) Mode, Left Band Edge****WCDMA (Rel99) Mode, Right Band Edge**

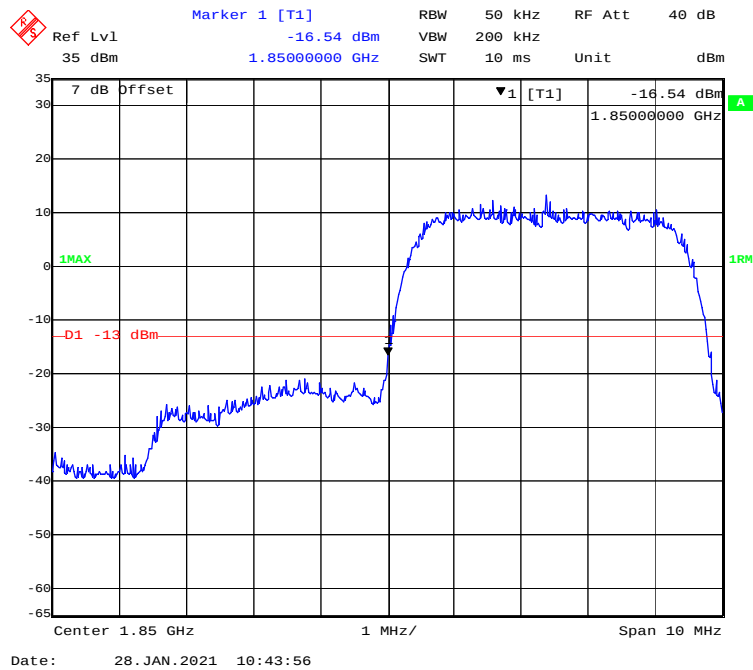
WCDMA (HSDPA) Mode, Left Band Edge



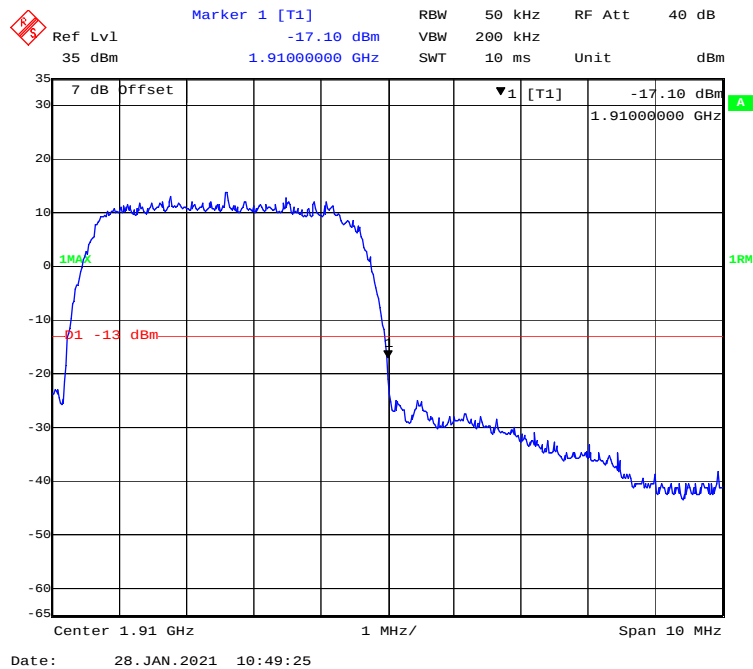
WCDMA (HSDPA) Mode, Right Band Edge



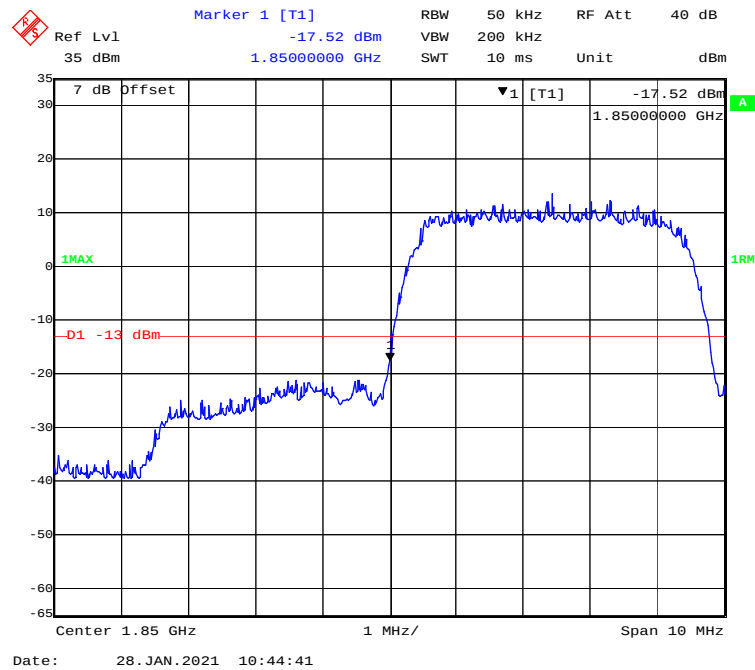
WCDMA (HSUPA) Mode, Left Band Edge



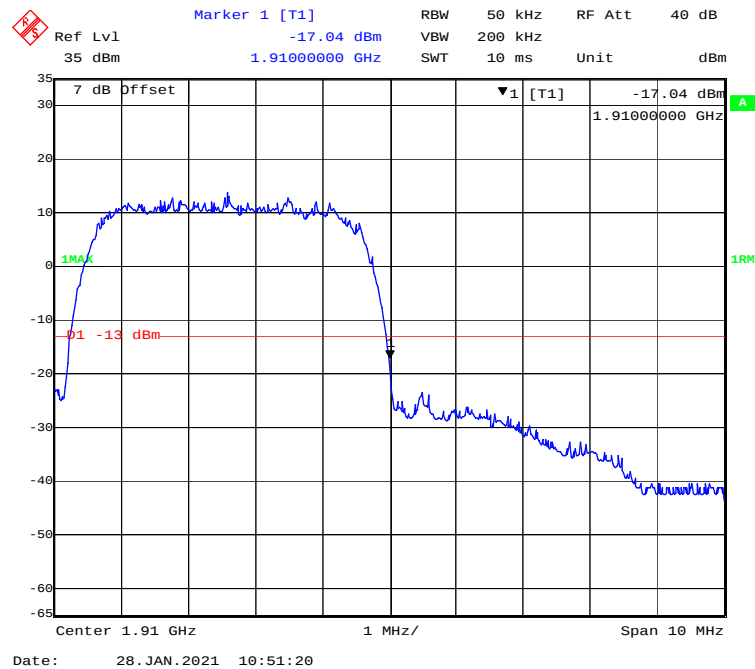
WCDMA (HSUPA) Mode, Right Band Edge

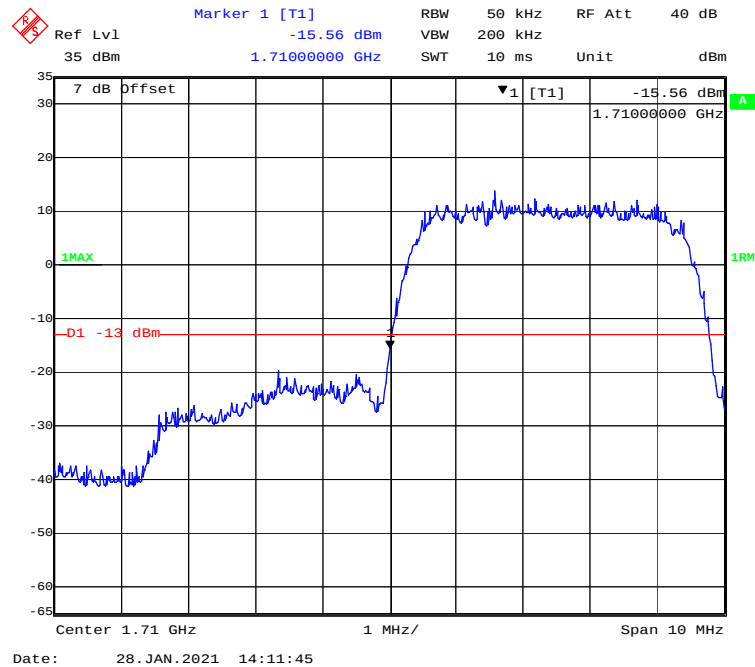
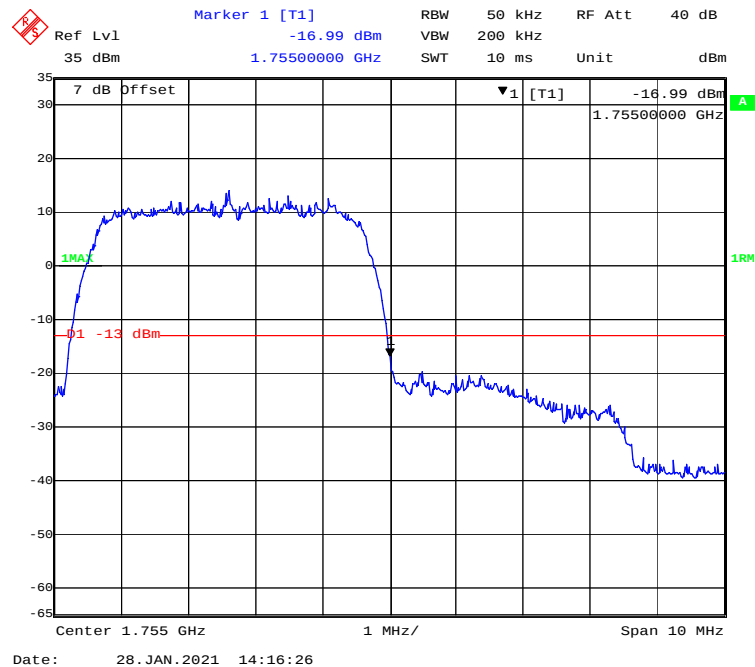


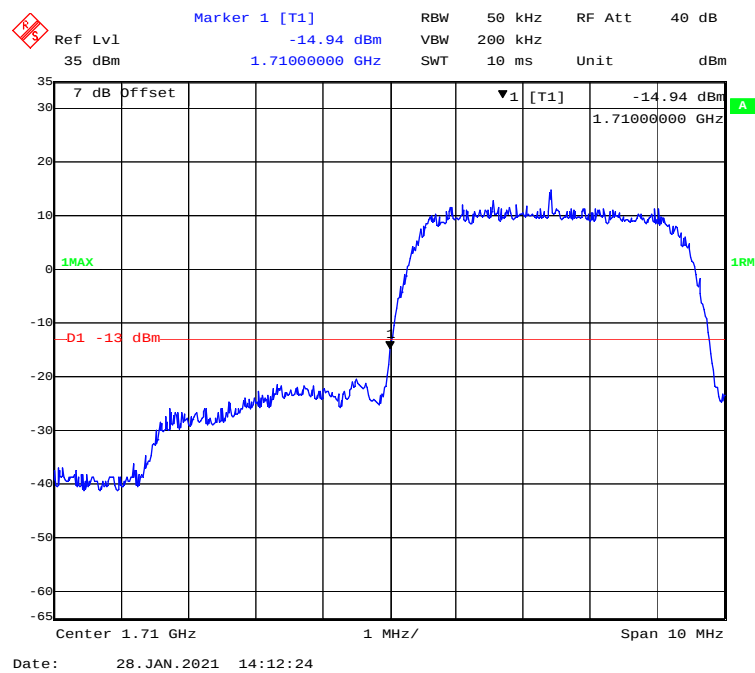
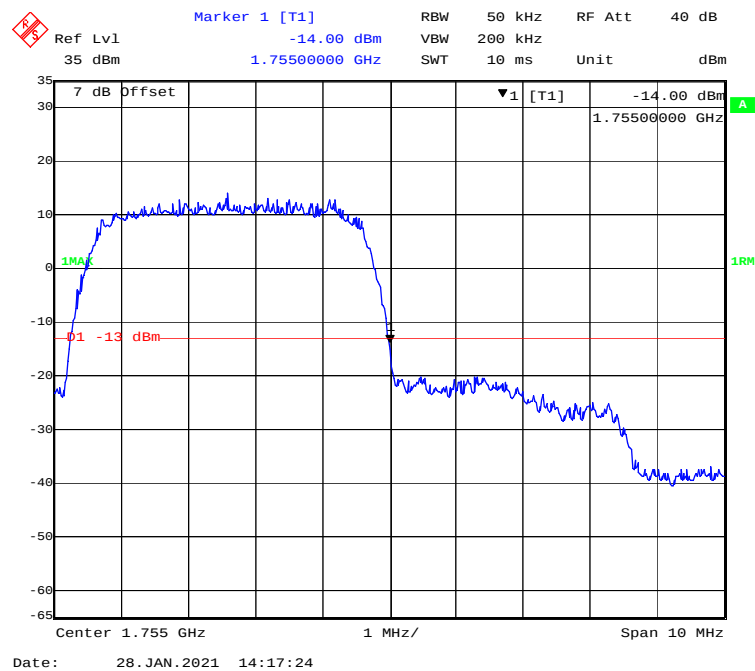
WCDMA (HSPA+) Mode, Left Band Edge



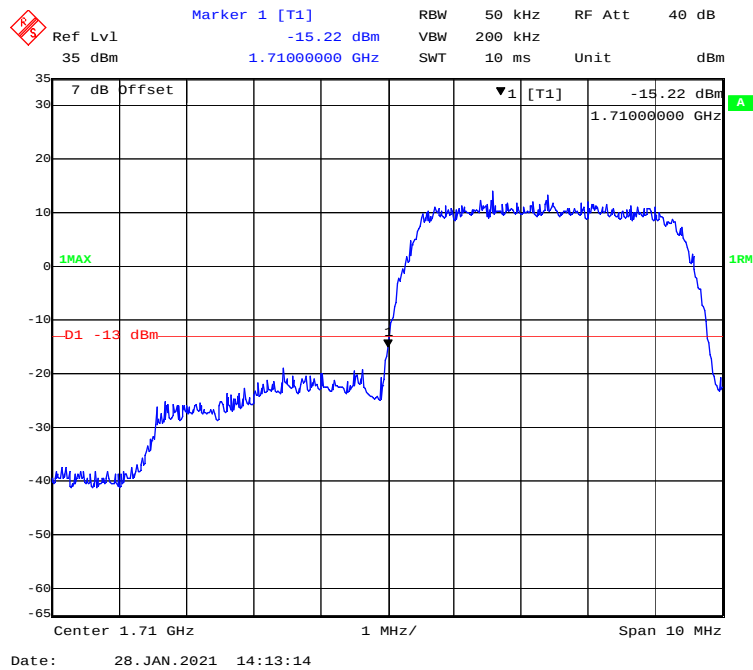
WCDMA (HSPA+) Mode, Right Band Edge



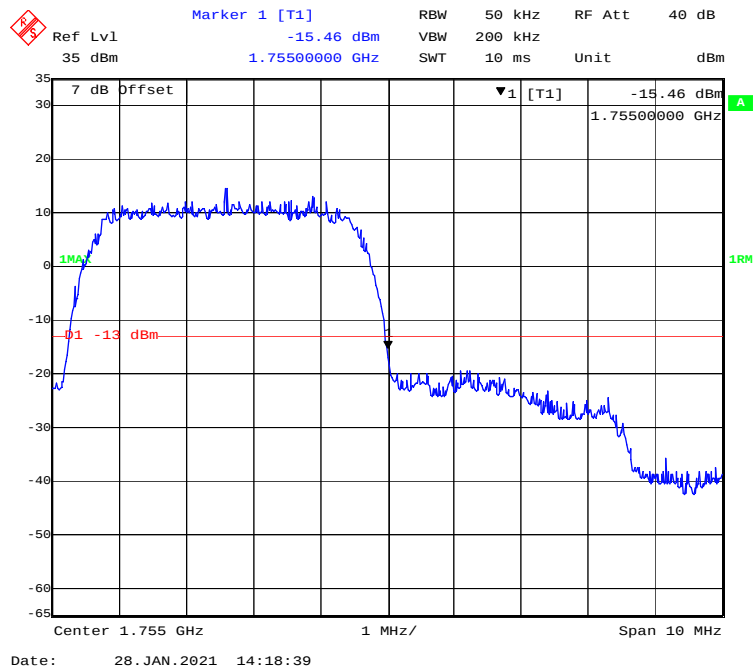
WCDMA Band IV**WCDMA (Rel99) Mode, Left Band Edge****WCDMA (Rel99) Mode, Right Band Edge**

WCDMA (HSDPA) Mode, Left Band Edge**WCDMA (HSDPA) Mode, Right Band Edge**

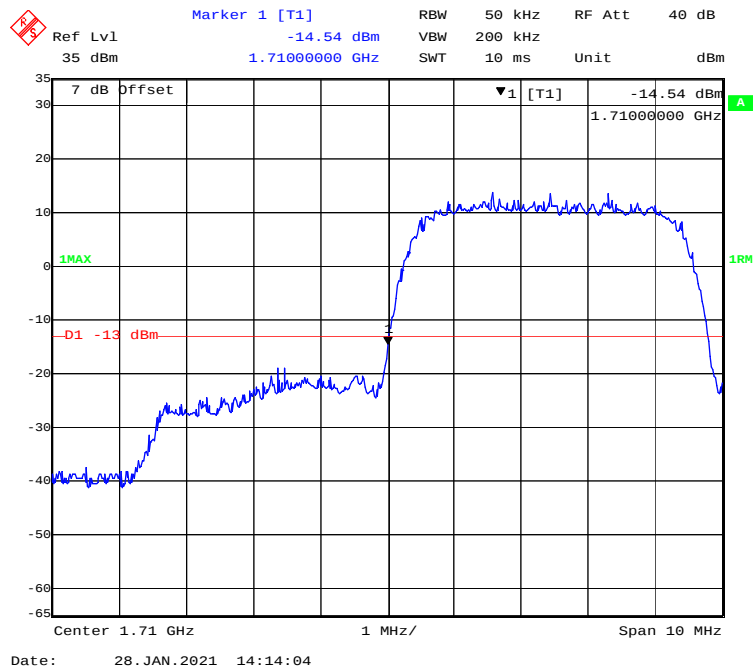
WCDMA (HSUPA) Mode, Left Band Edge



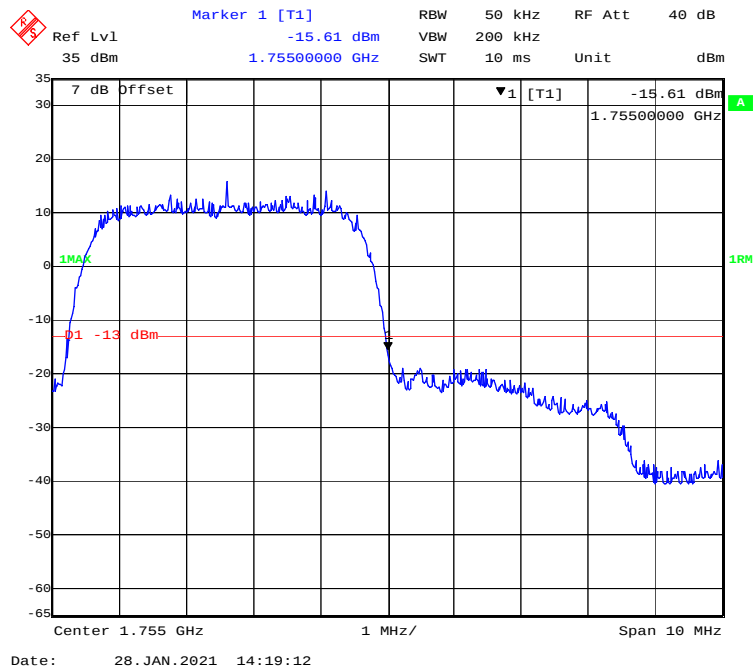
WCDMA (HSUPA) Mode, Right Band Edge



WCDMA (HSPA+) Mode, Left Band Edge



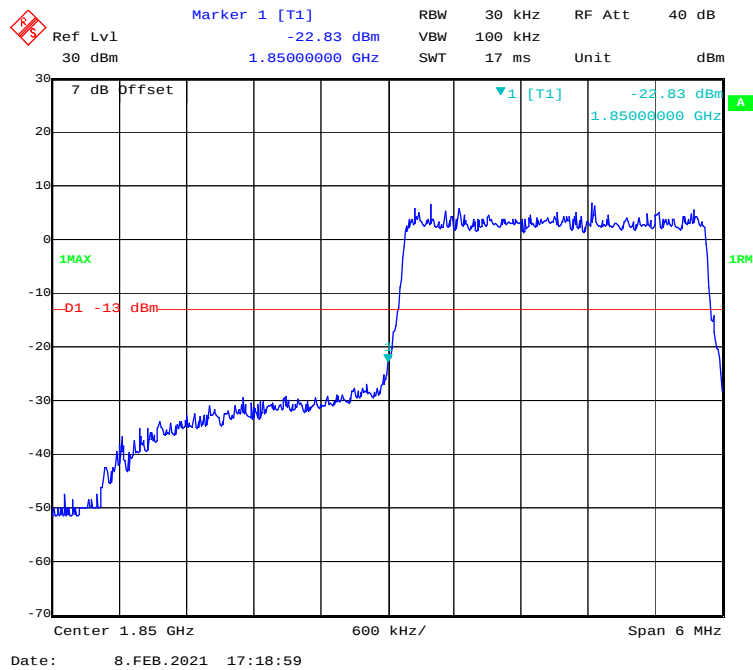
WCDMA (HSPA+) Mode, Right Band Edge



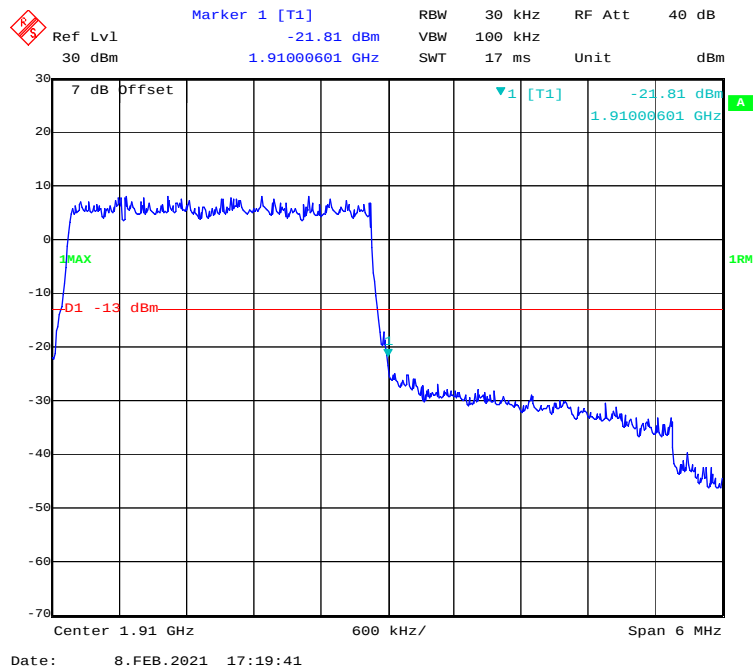
QPSK (1.4 MHz, FULL RB) - Left Band Edge

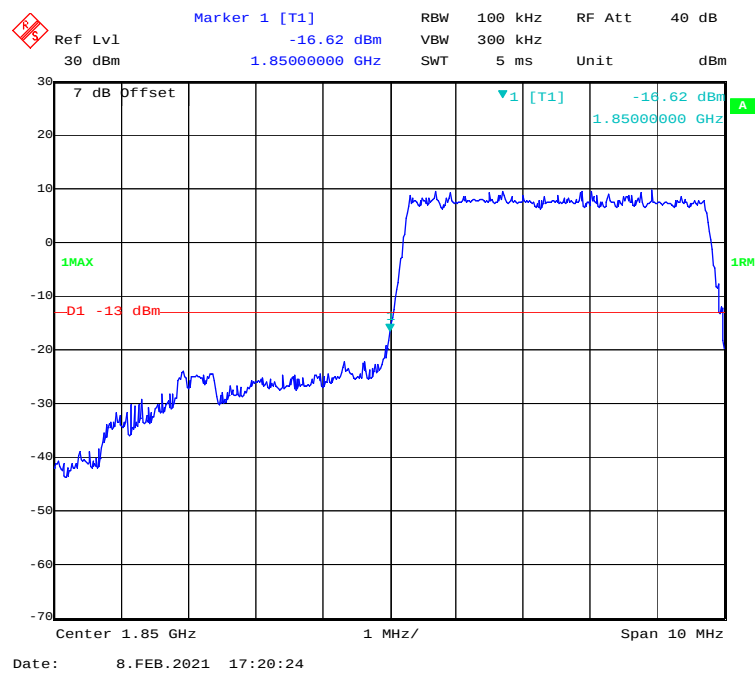


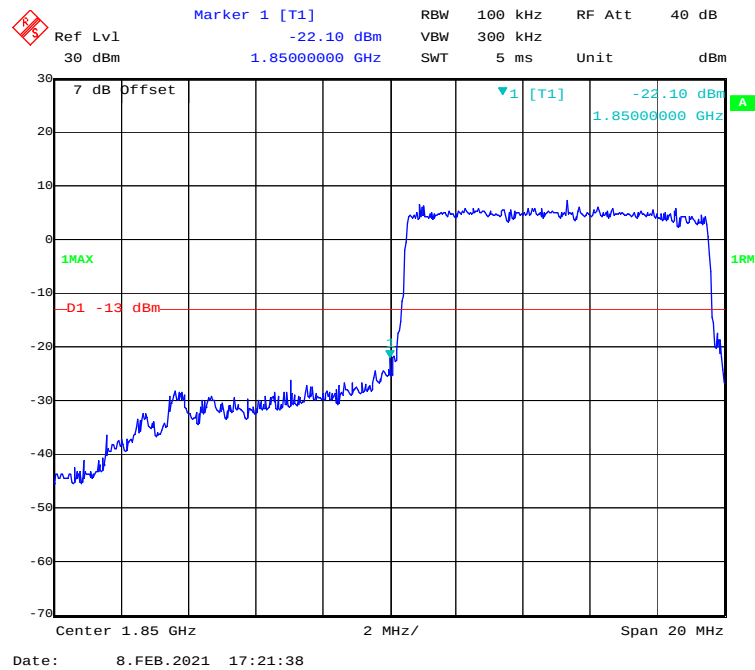
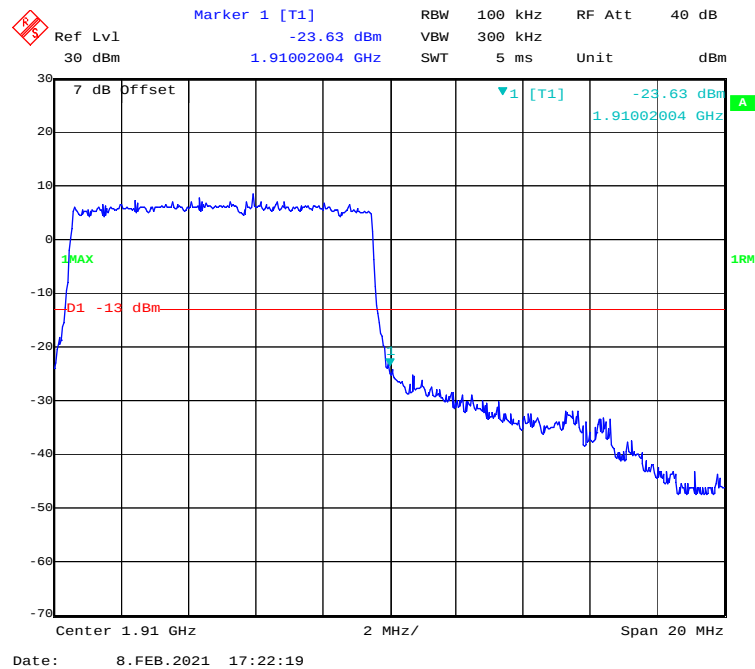
QPSK (3 MHz, FULL RB) - Left Band Edge



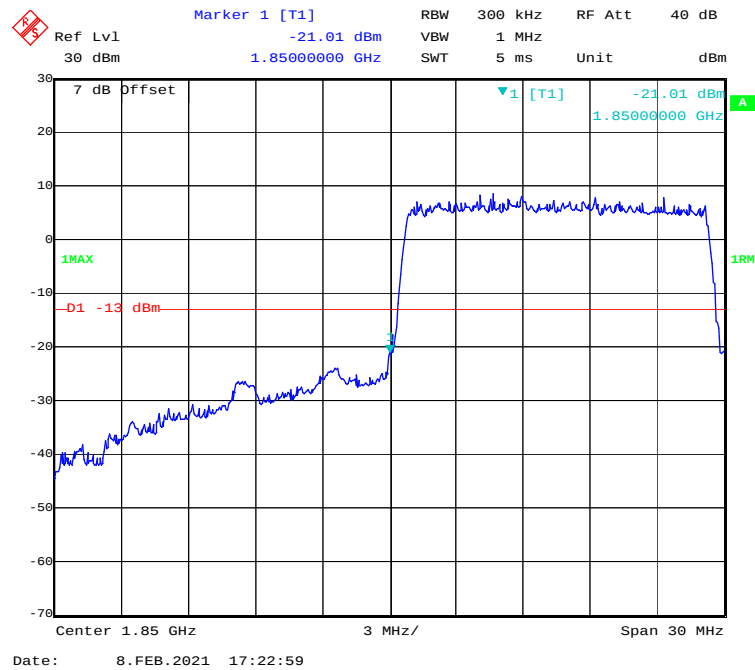
QPSK (3 MHz, FULL RB) - Right Band Edge



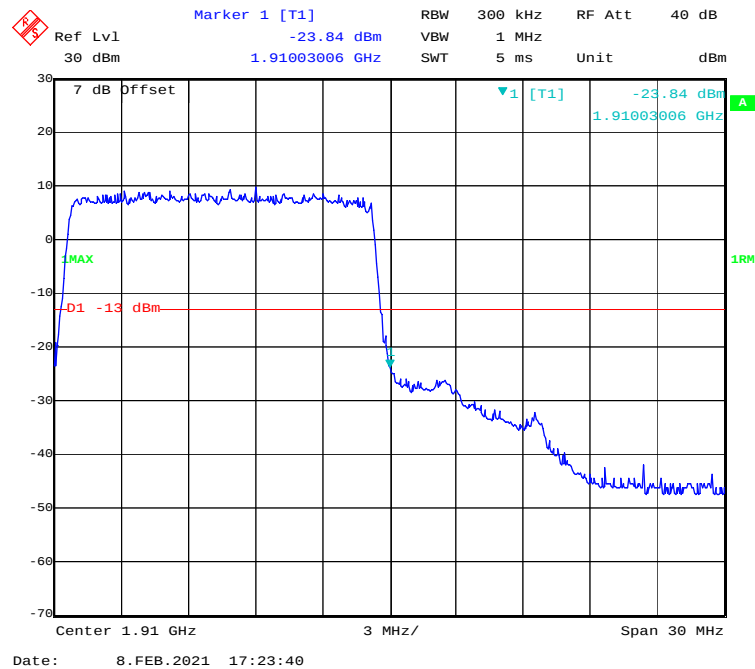
QPSK (5 MHz, FULL RB) - Left Band Edge**QPSK (5 MHz, FULL RB) - Right Band Edge**

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

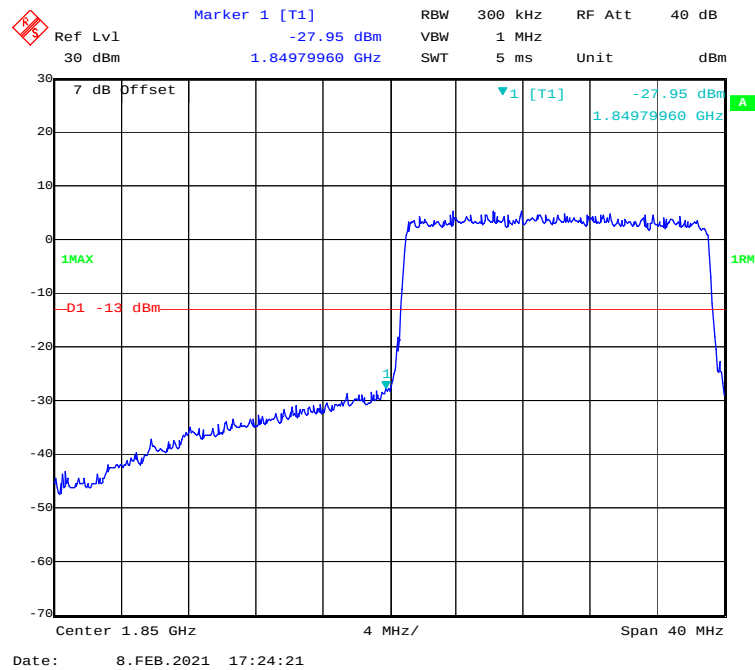
QPSK (15 MHz, FULL RB) - Left Band Edge



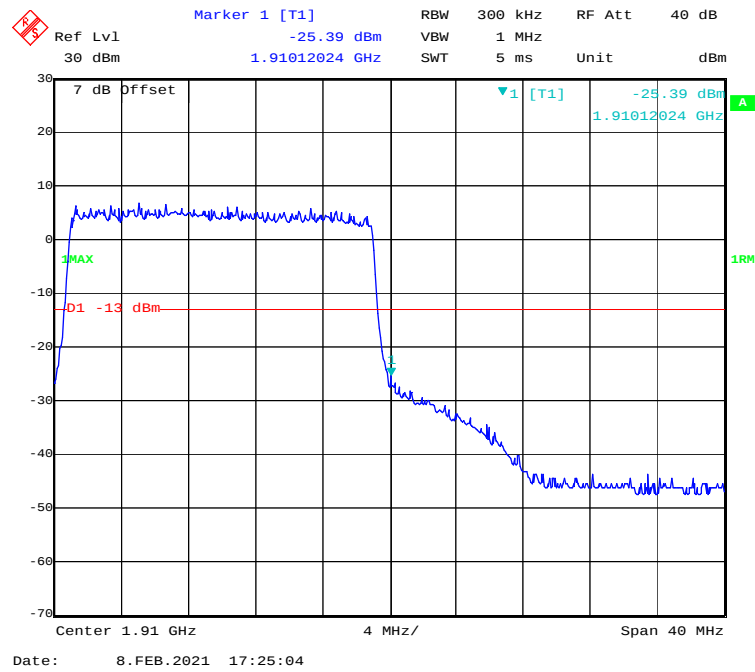
QPSK (15 MHz, FULL RB) - Right Band Edge



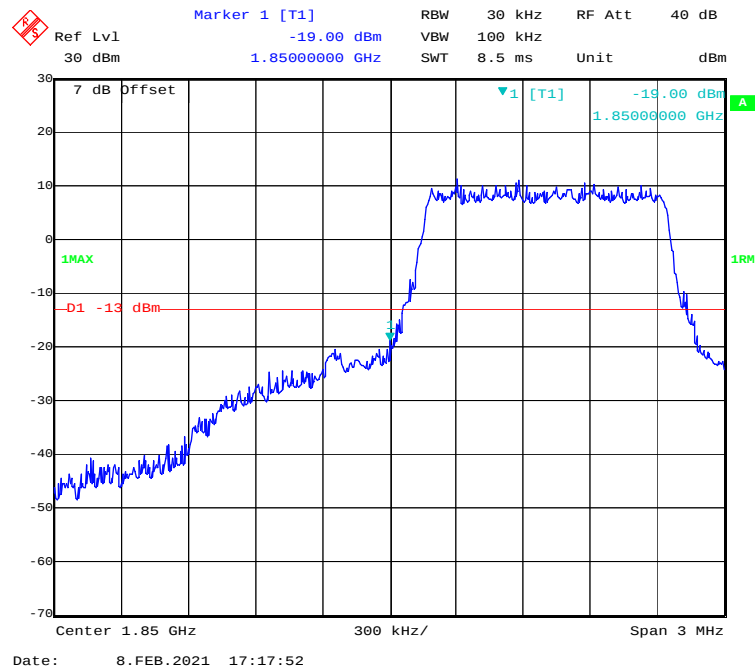
QPSK (20 MHz, FULL RB) - Left Band Edge



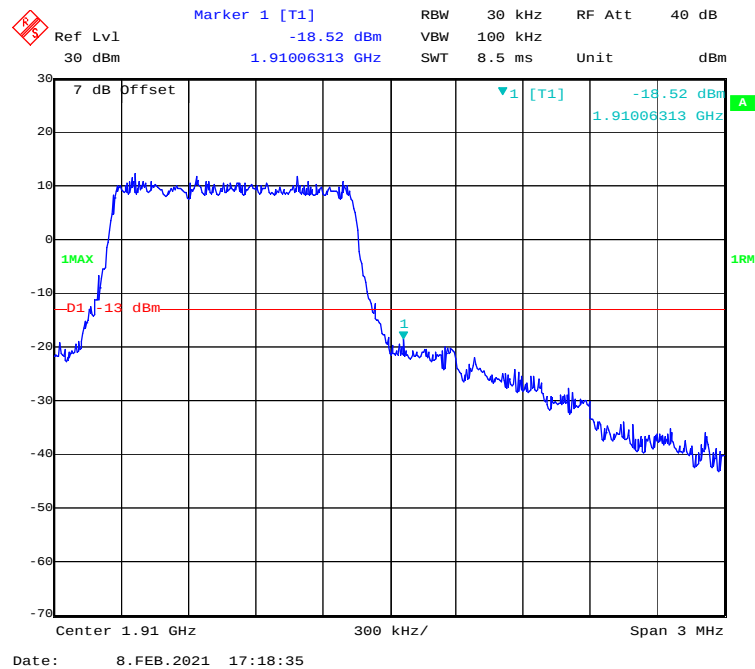
QPSK (20 MHz, FULL RB) - Right Band Edge



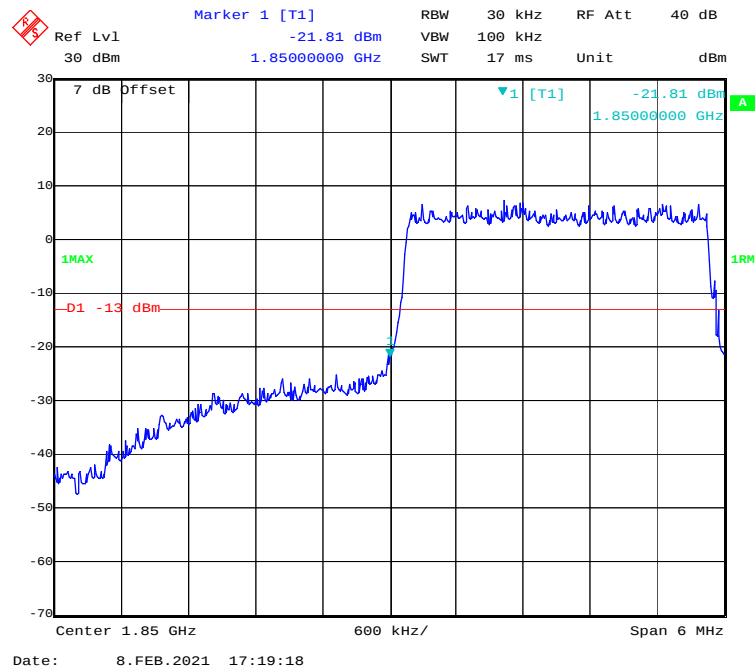
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



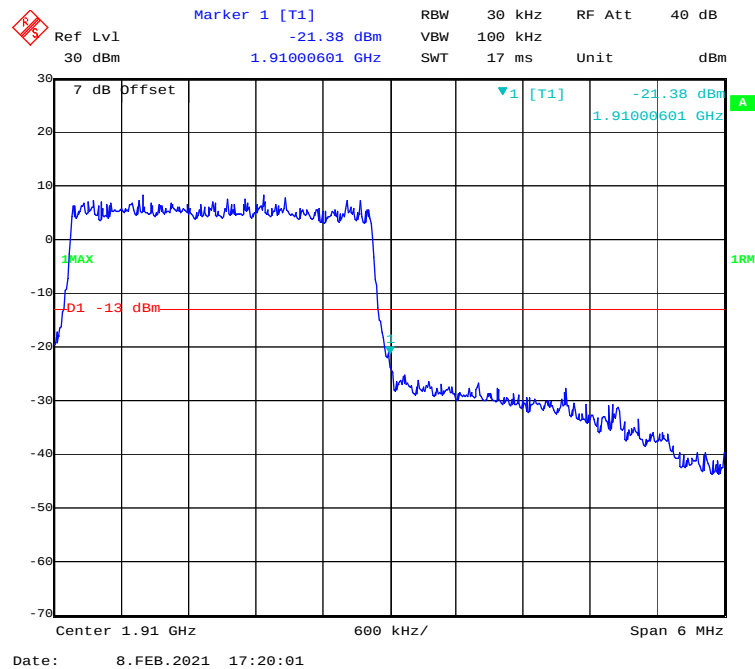
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



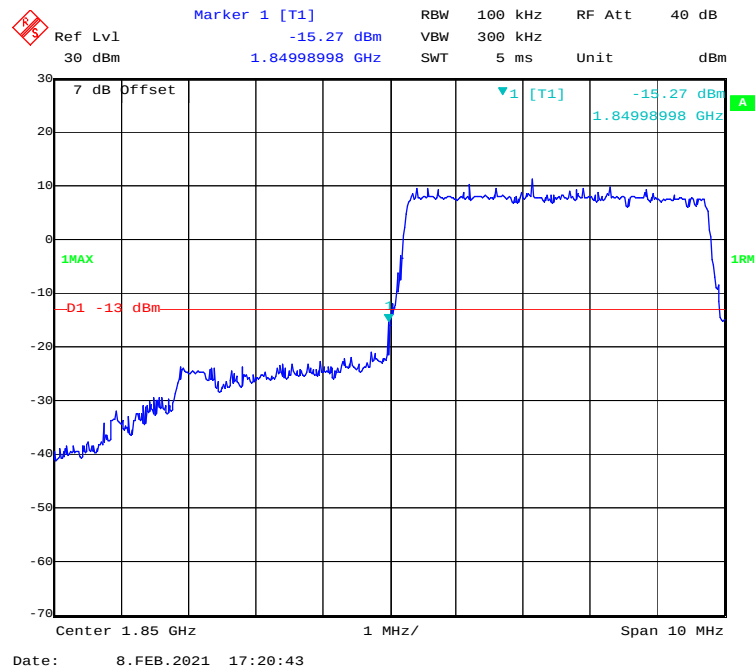
16-QAM (3 MHz, FULL RB) - Left Band Edge



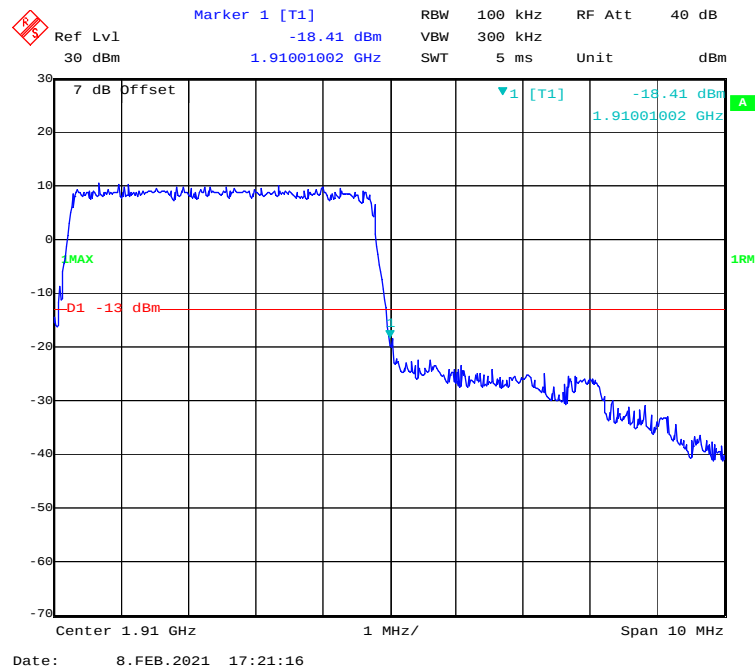
16-QAM (3 MHz, FULL RB) - Right Band Edge

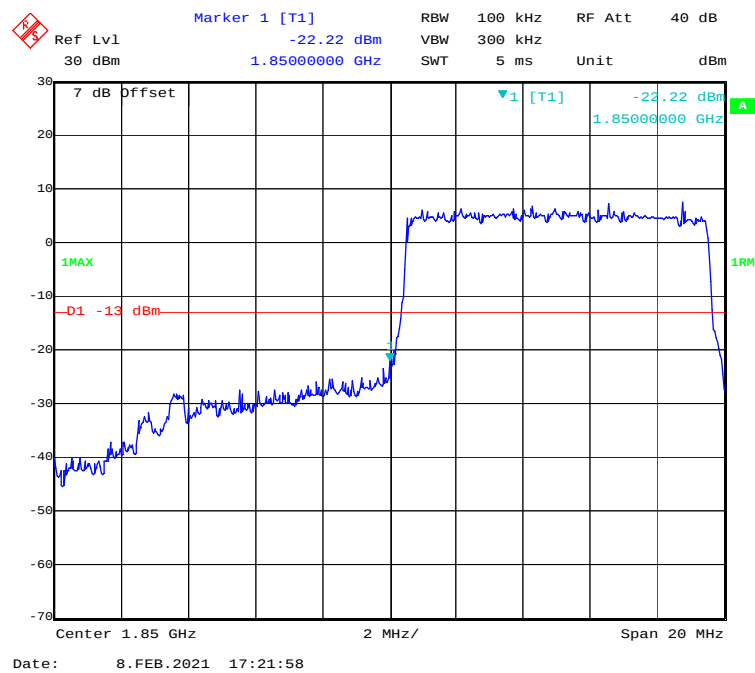
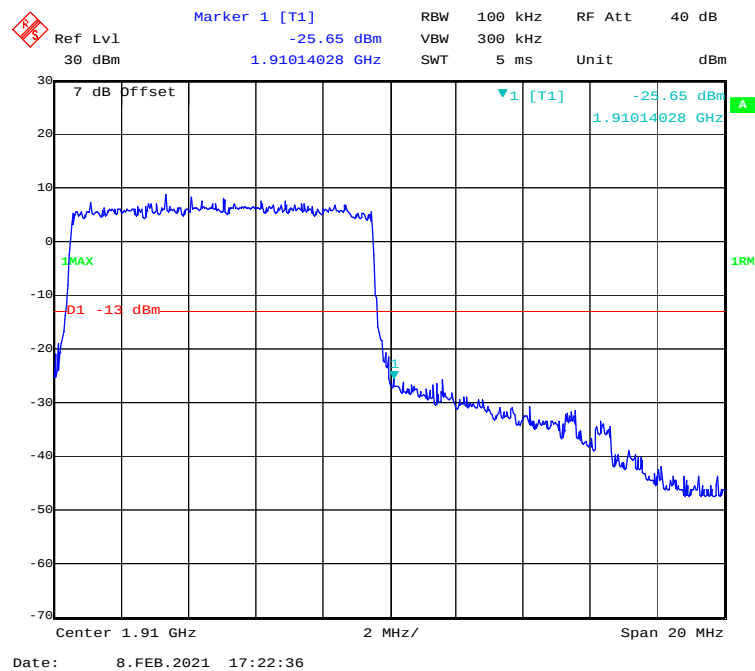


16-QAM (5 MHz, FULL RB) - Left Band Edge

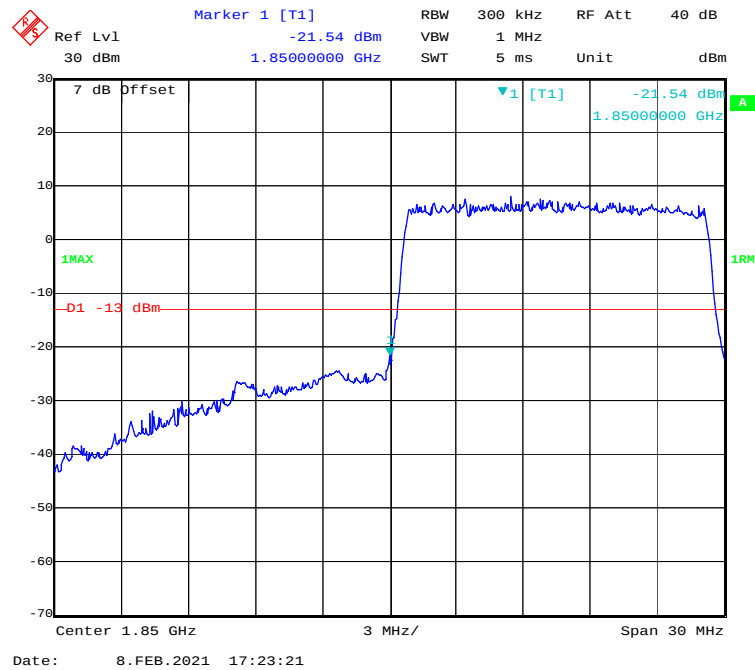


16-QAM (5 MHz, FULL RB) - Right Band Edge

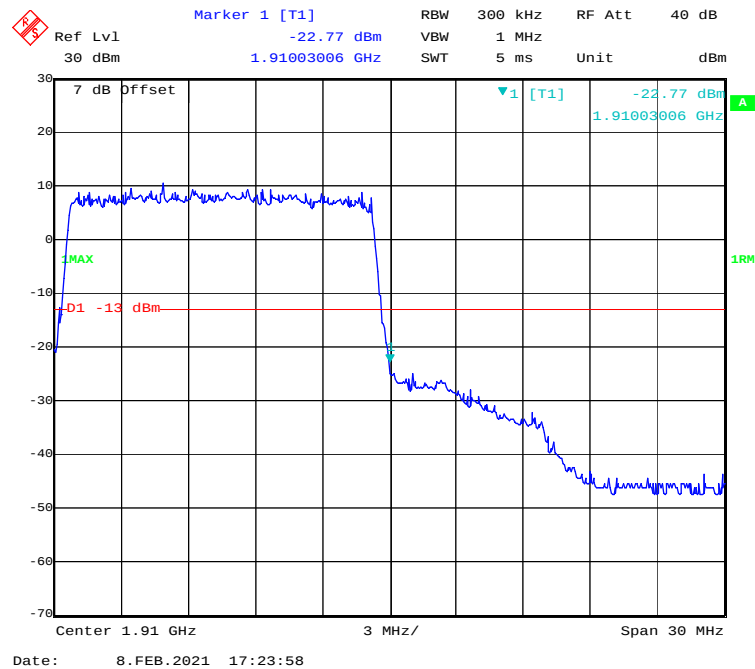


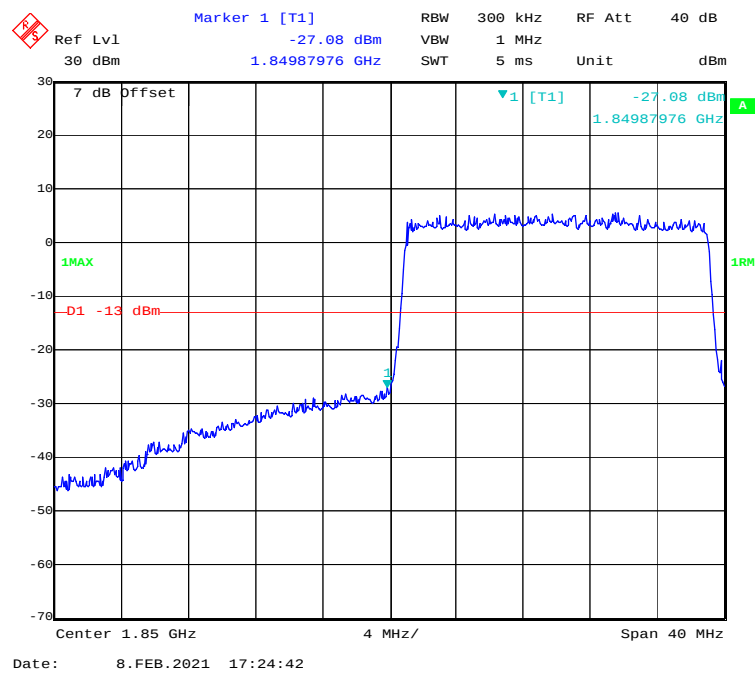
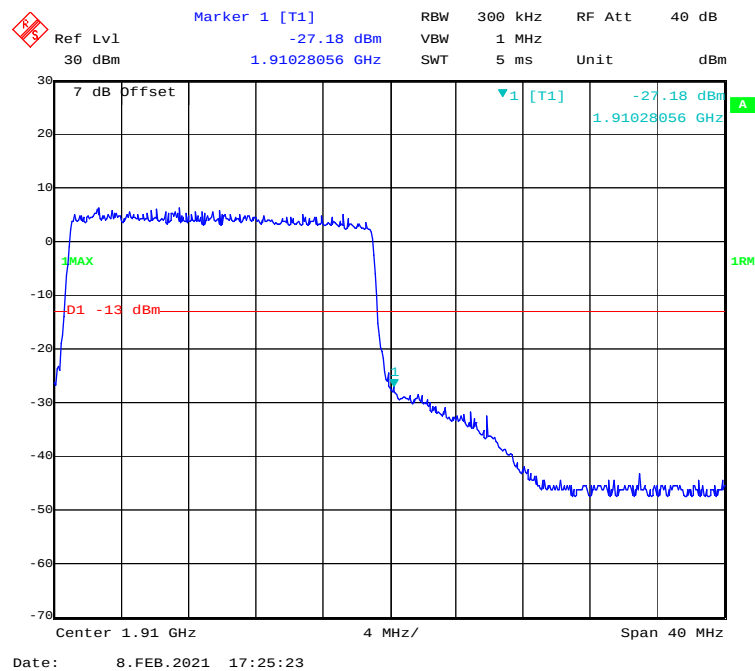
16-QAM (10 MHz, FULL RB) - Left Band Edge**16-QAM (10 MHz, FULL RB) - Right Band Edge**

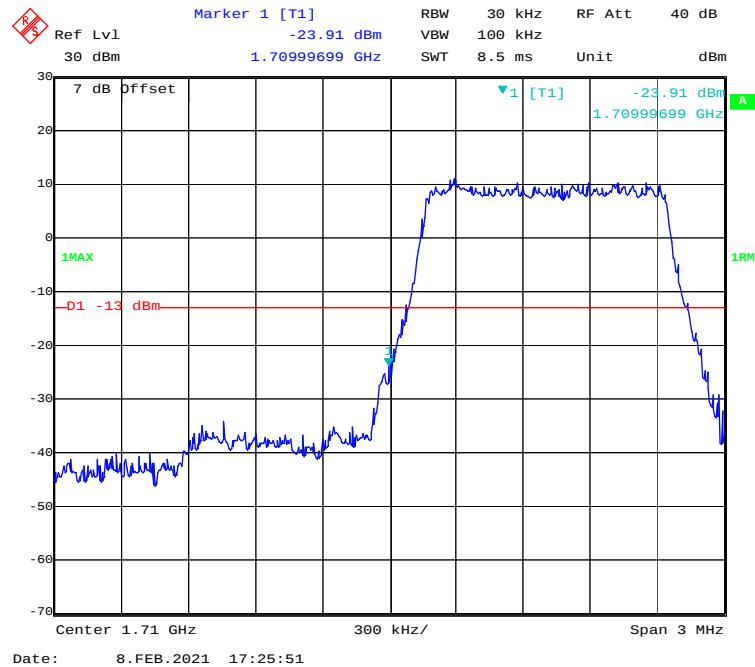
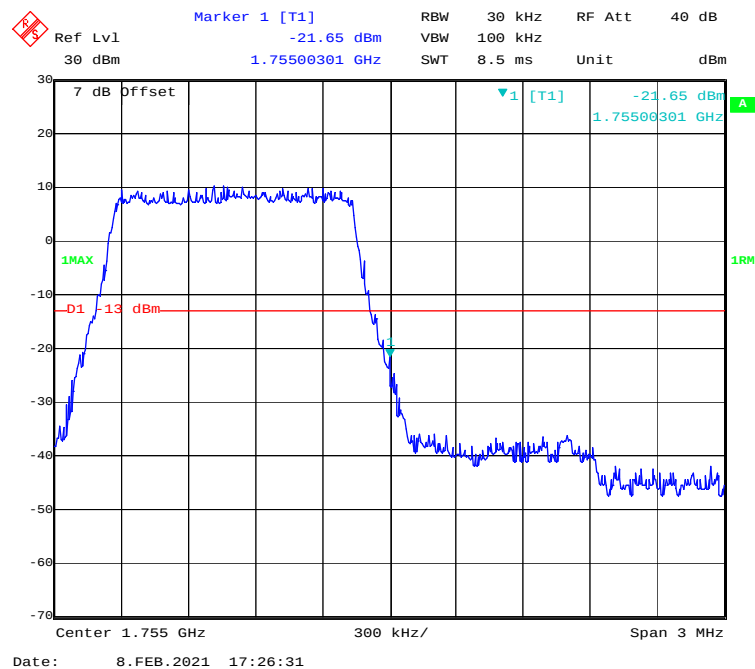
16-QAM (15 MHz, FULL RB) - Left Band Edge



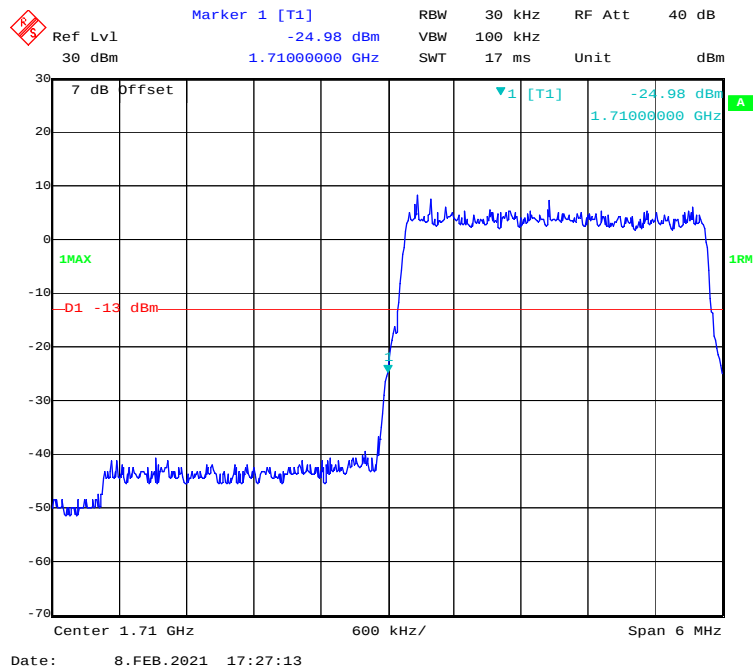
16-QAM (15 MHz, FULL RB) - Right Band Edge



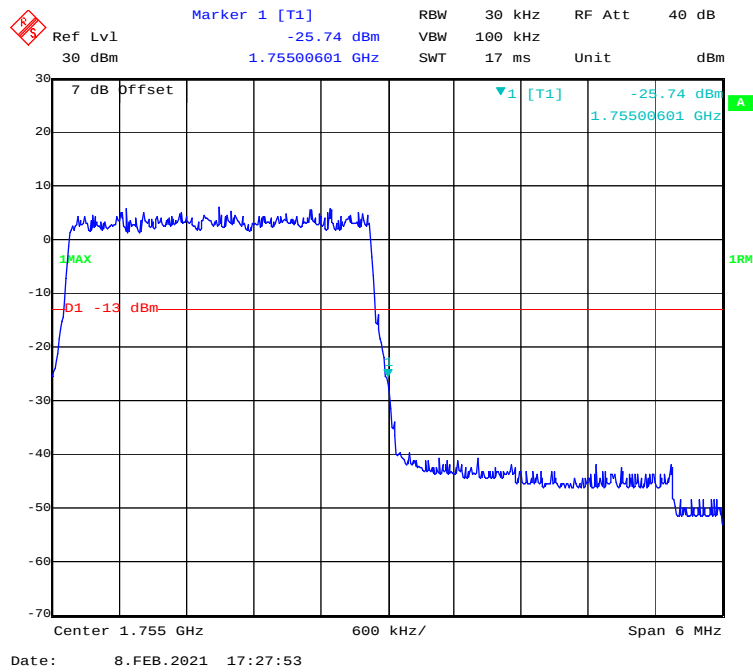
16-QAM (20 MHz, FULL RB) - Left Band Edge**16-QAM (20 MHz, FULL RB) - Right Band Edge**

LTE Band 4:**QPSK (1.4 MHz, FULL RB) - Left Band Edge****QPSK (1.4 MHz, FULL RB) - Right Band Edge**

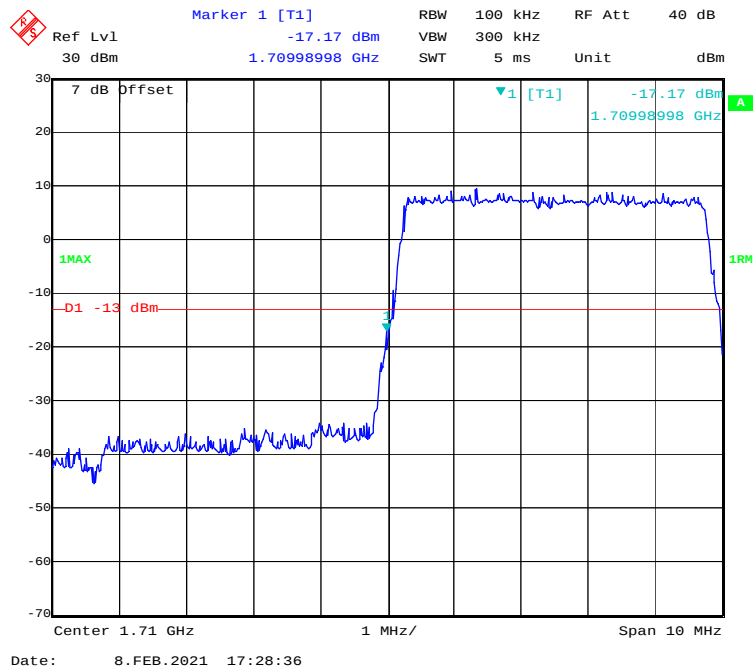
QPSK (3 MHz, FULL RB) - Left Band Edge



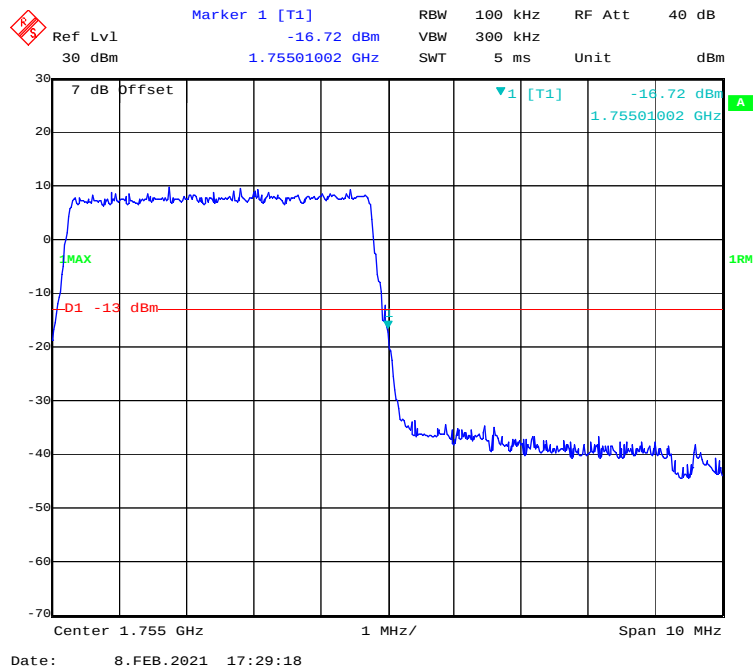
QPSK (3 MHz, FULL RB) - Right Band Edge

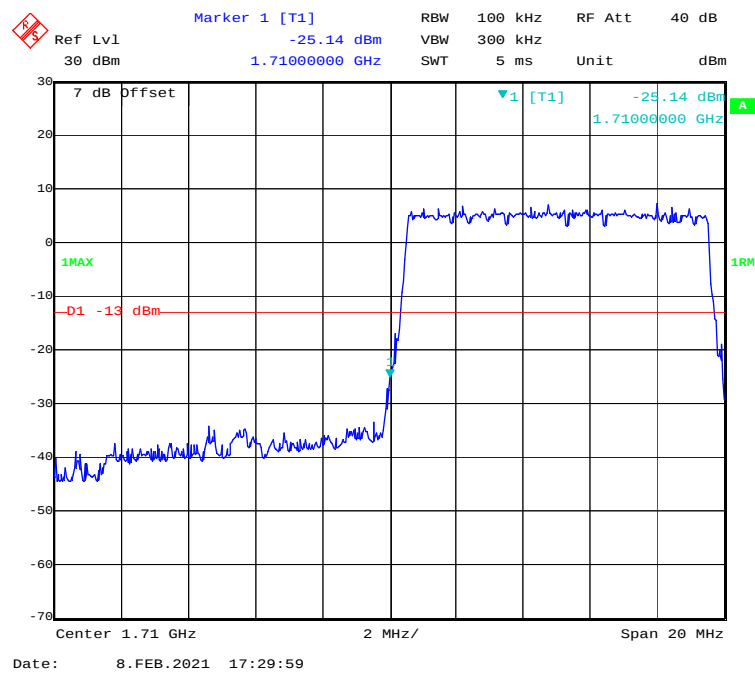
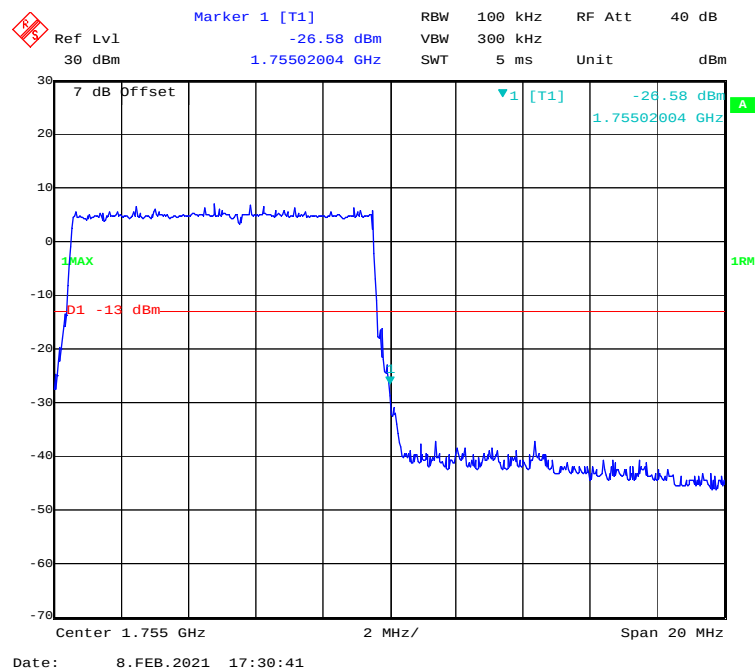


QPSK (5 MHz, FULL RB) - Left Band Edge

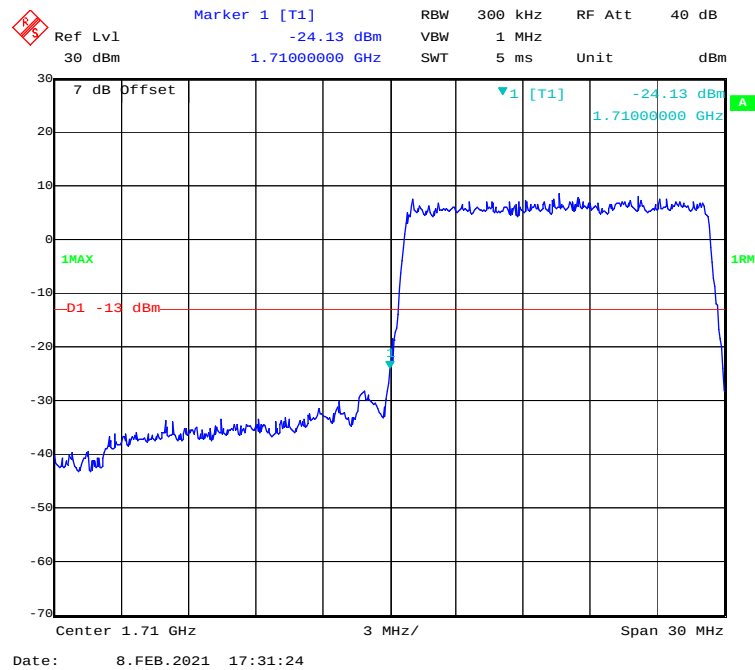


QPSK (5 MHz, FULL RB) - Right Band Edge

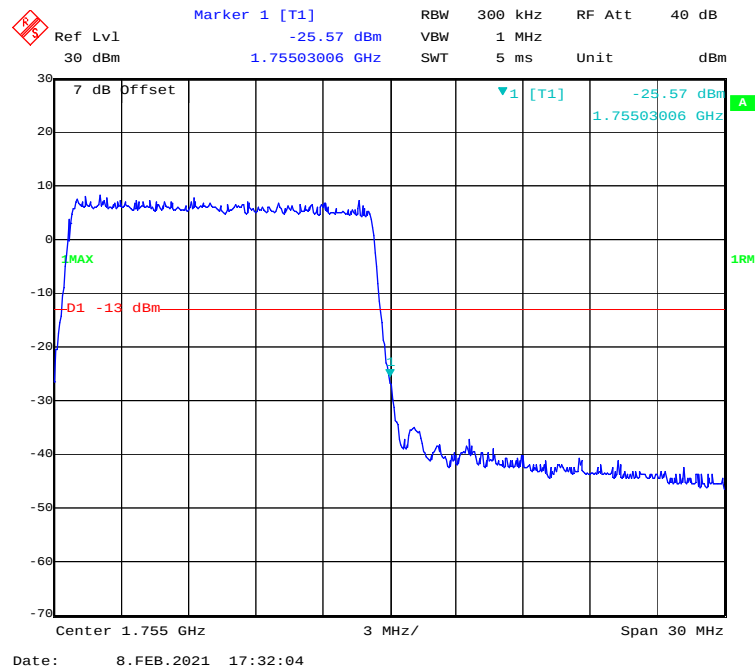


QPSK (10 MHz, FULL RB) - Left Band Edge**QPSK (10 MHz, FULL RB) - Right Band Edge**

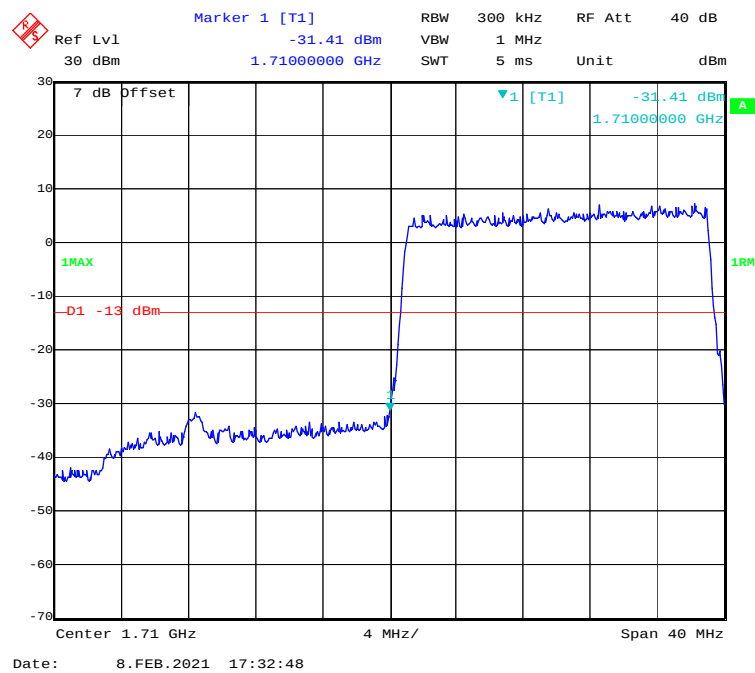
QPSK (15 MHz, FULL RB) - Left Band Edge



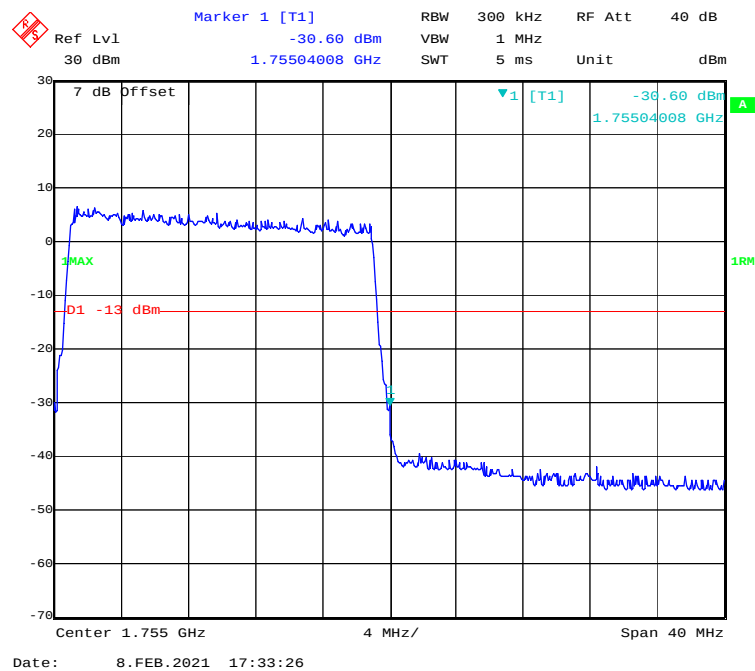
QPSK (15 MHz, FULL RB) - Right Band Edge



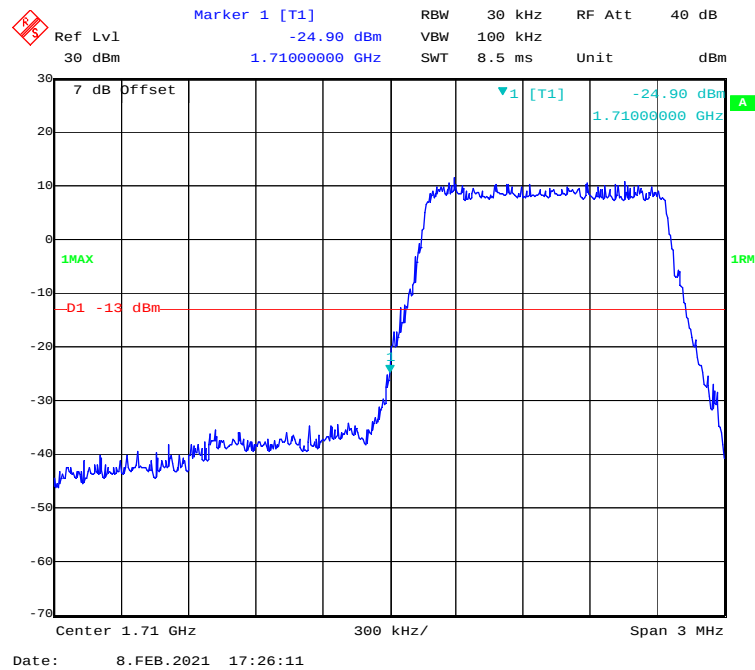
QPSK (20 MHz, FULL RB) - Left Band Edge



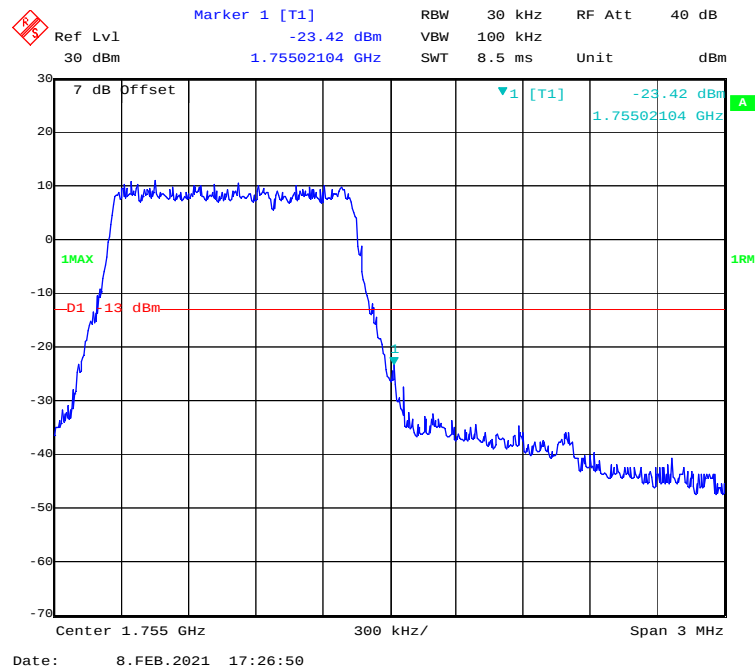
QPSK (20 MHz, FULL RB) - Right Band Edge

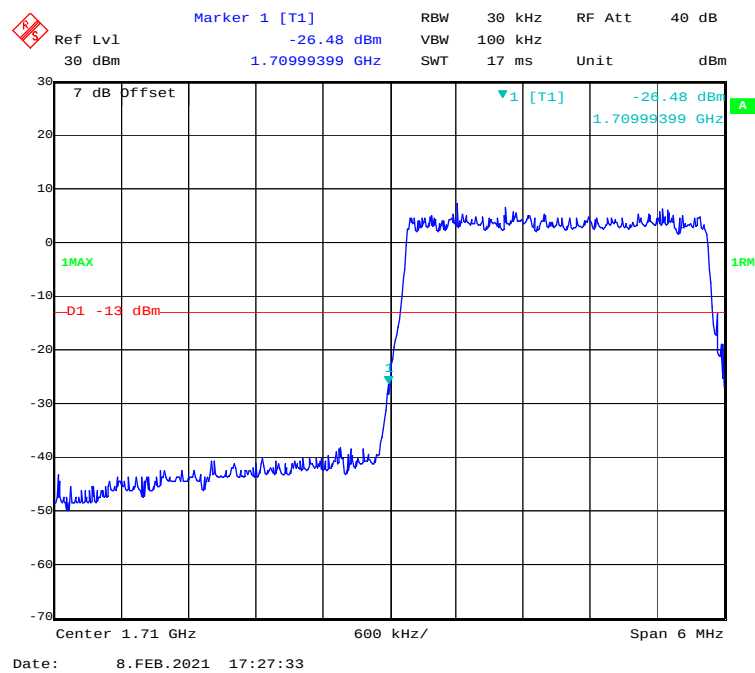
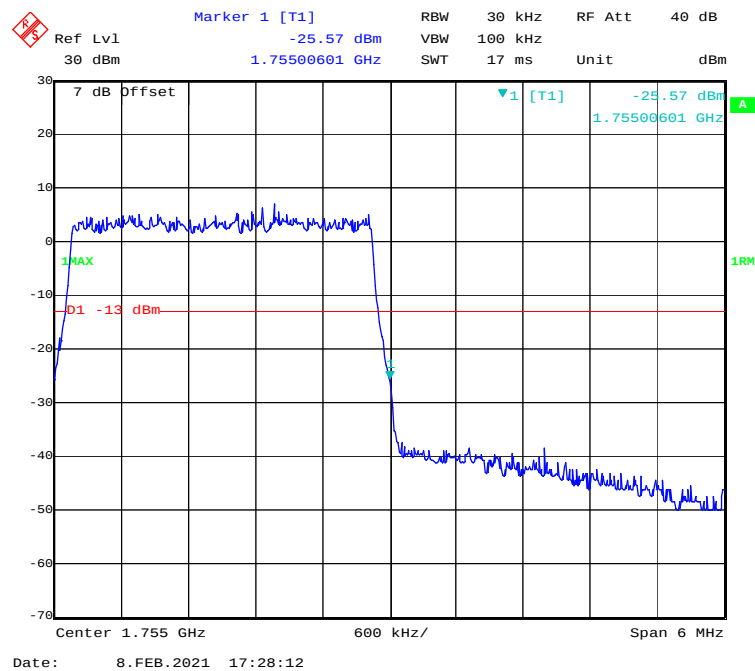


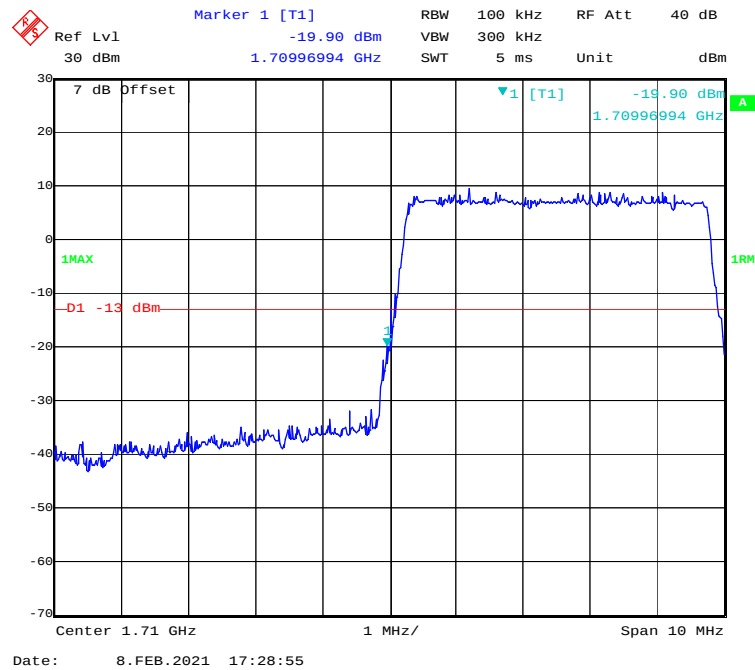
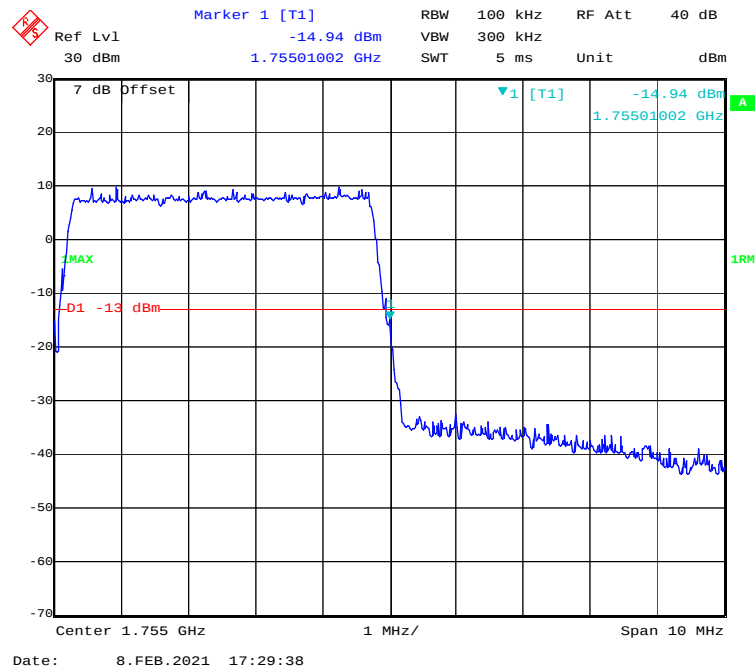
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



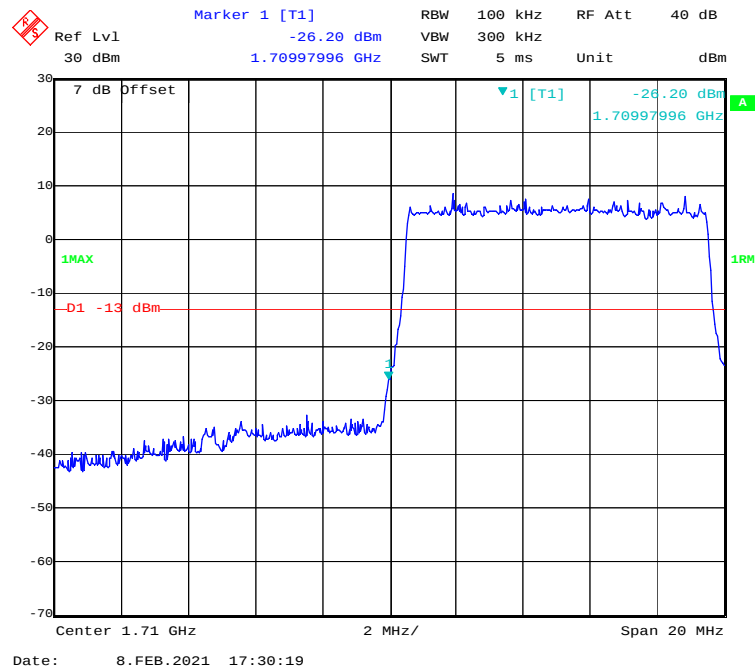
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



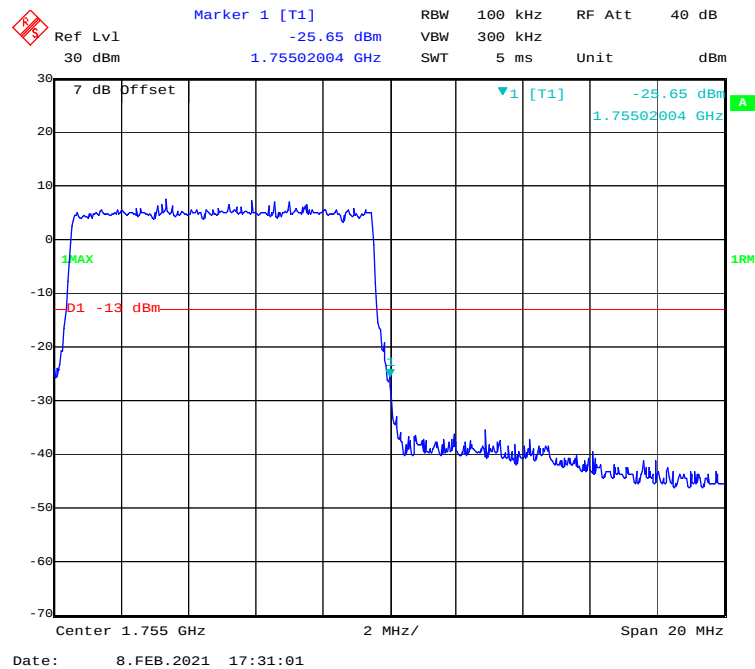
16-QAM (3 MHz, FULL RB) - Left Band Edge**16-QAM (3 MHz, FULL RB) - Right Band Edge**

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

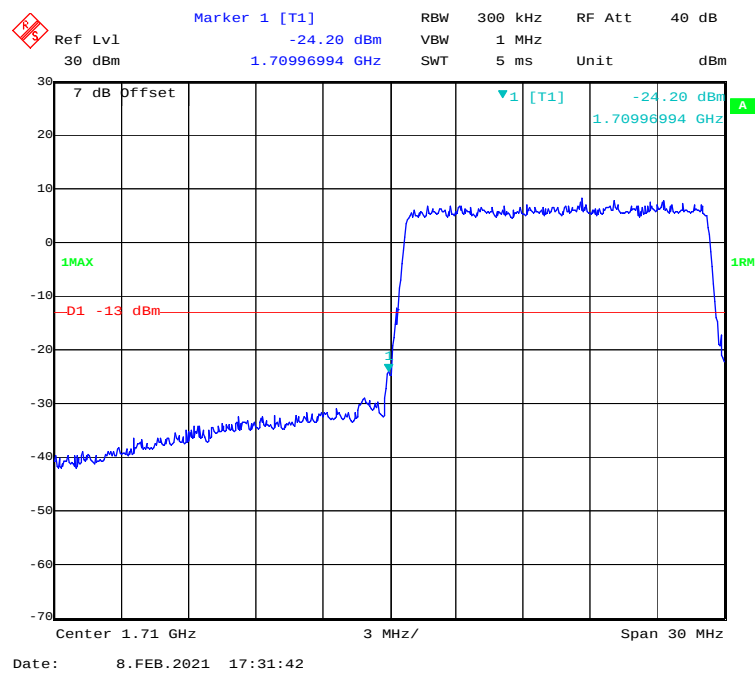
16-QAM (10 MHz, FULL RB) - Left Band Edge



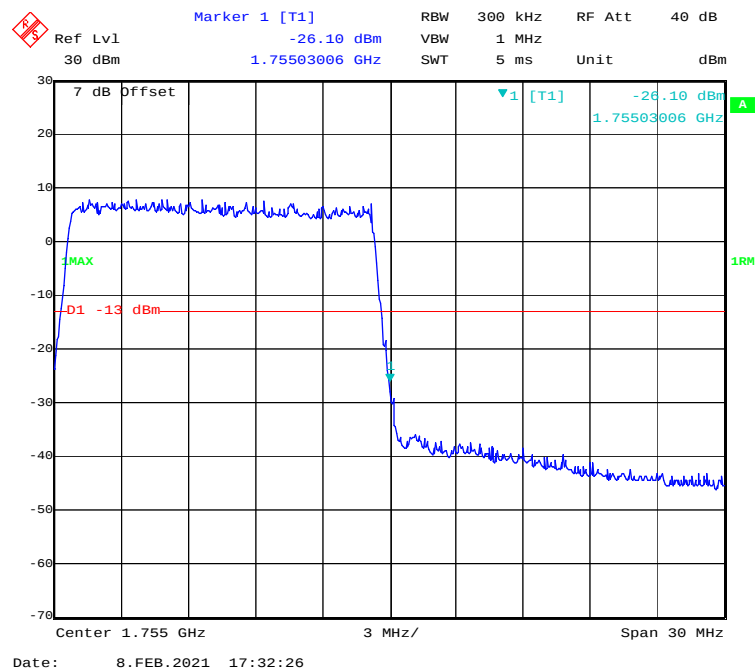
16-QAM (10 MHz, FULL RB) - Right Band Edge



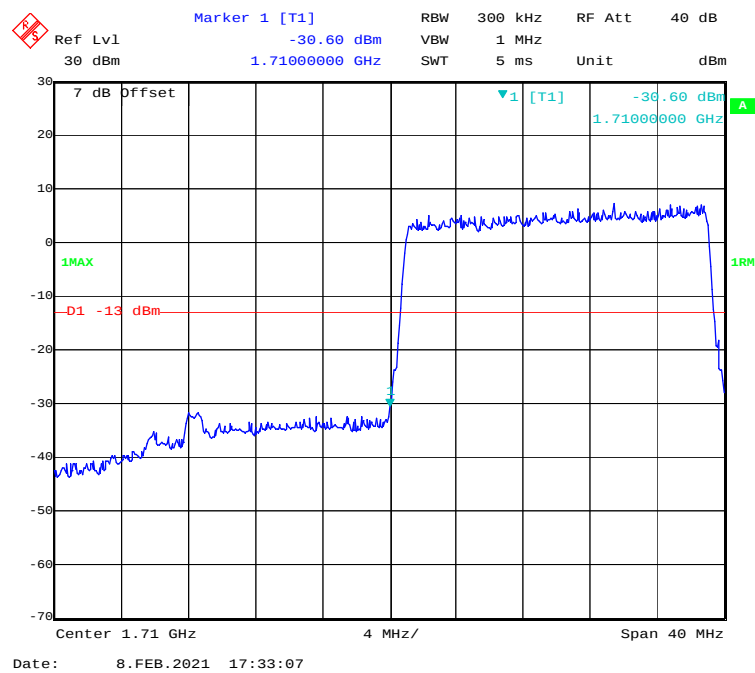
16-QAM (15 MHz, FULL RB) - Left Band Edge



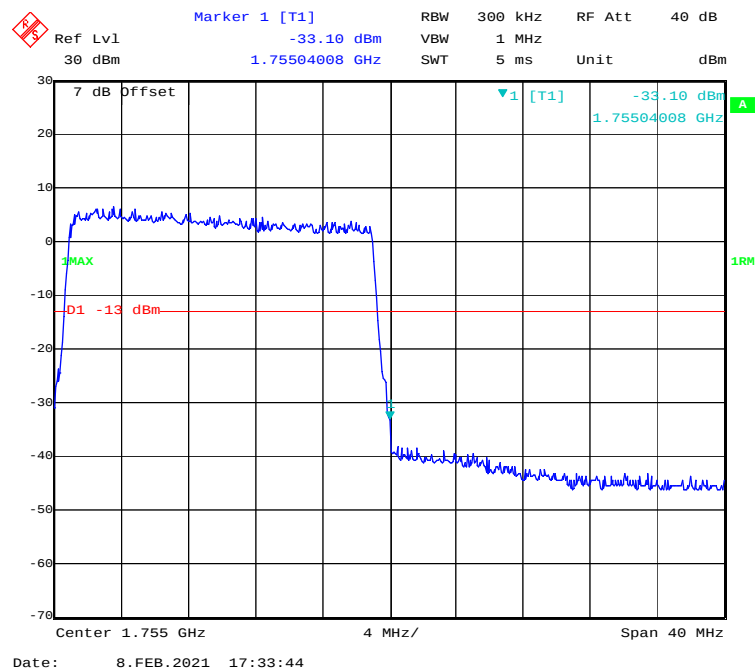
16-QAM (15 MHz, FULL RB) - Right Band Edge

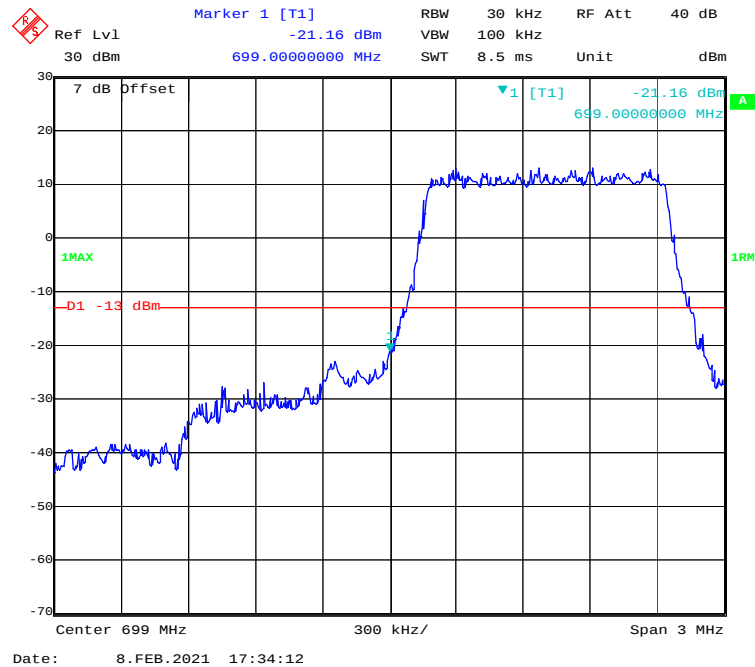
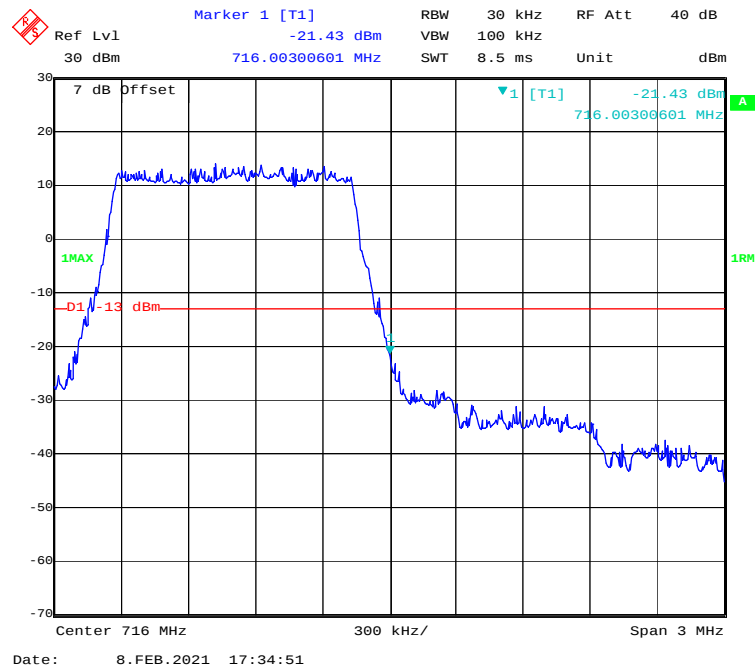


16-QAM (20 MHz, FULL RB) - Left Band Edge

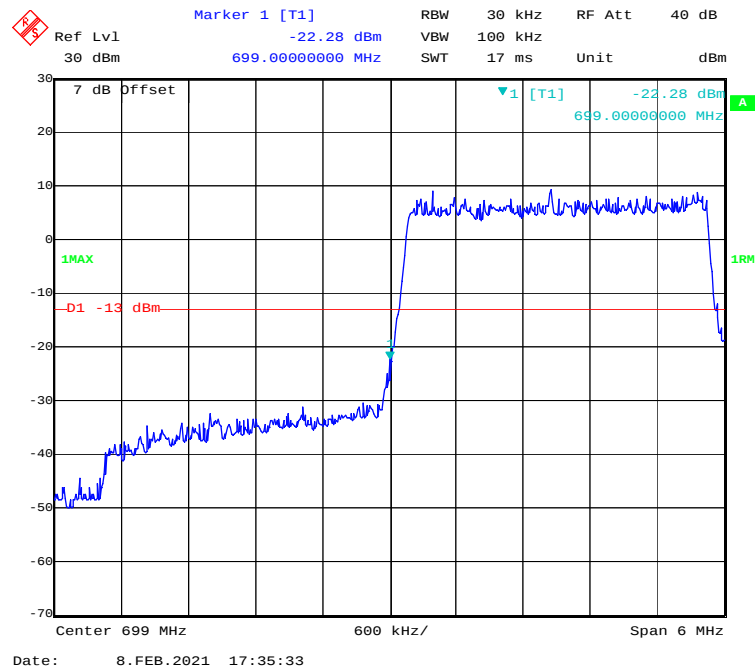


16-QAM (20 MHz, FULL RB) - Right Band Edge

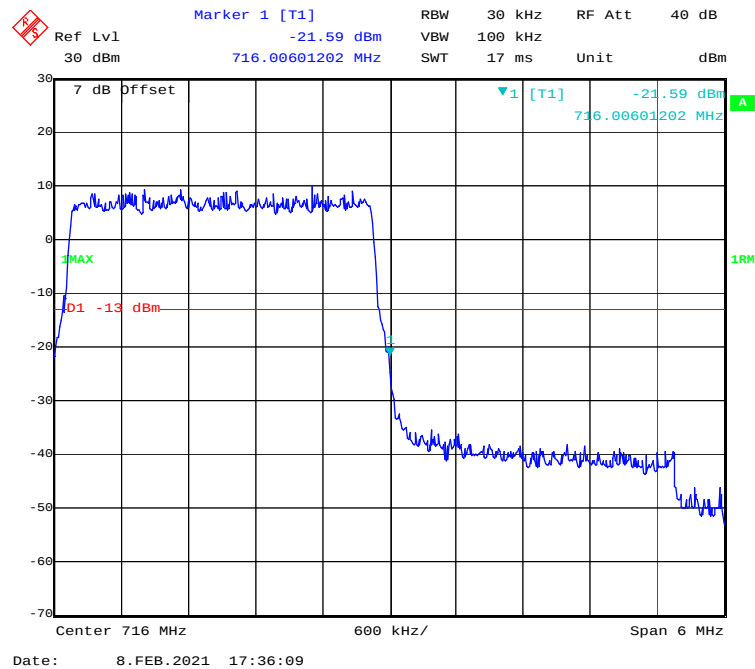


LTE Band 12:**QPSK (1.4 MHz, FULL RB) - Left Band Edge****QPSK (1.4 MHz, FULL RB) - Right Band Edge**

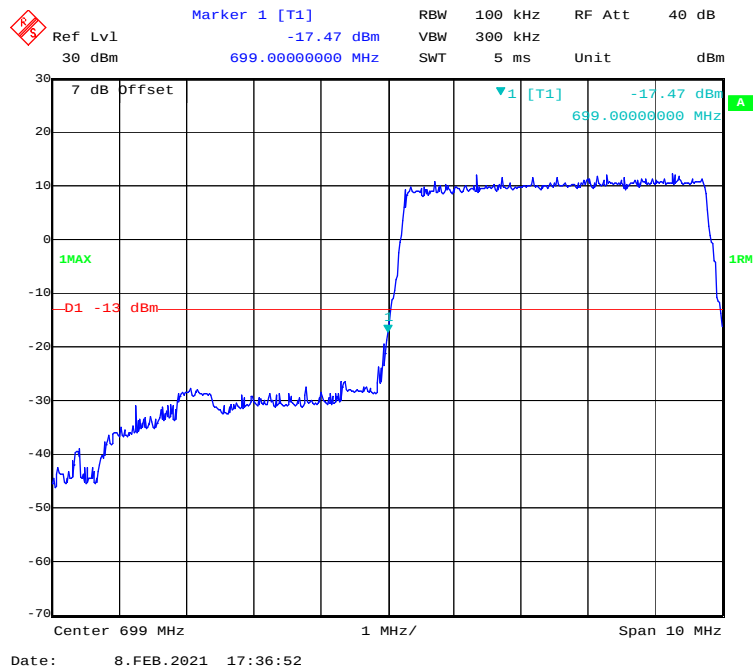
QPSK (3 MHz, FULL RB) - Left Band Edge



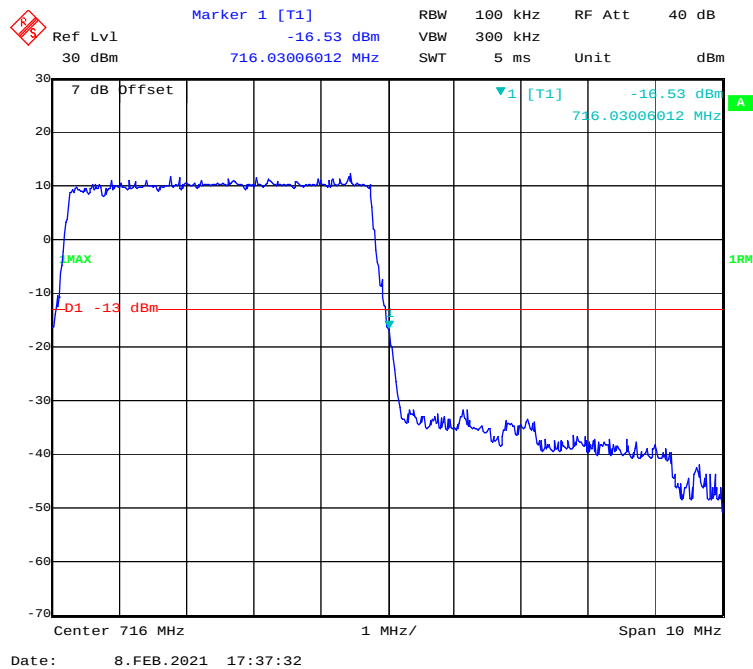
QPSK (3 MHz, FULL RB) - Right Band Edge

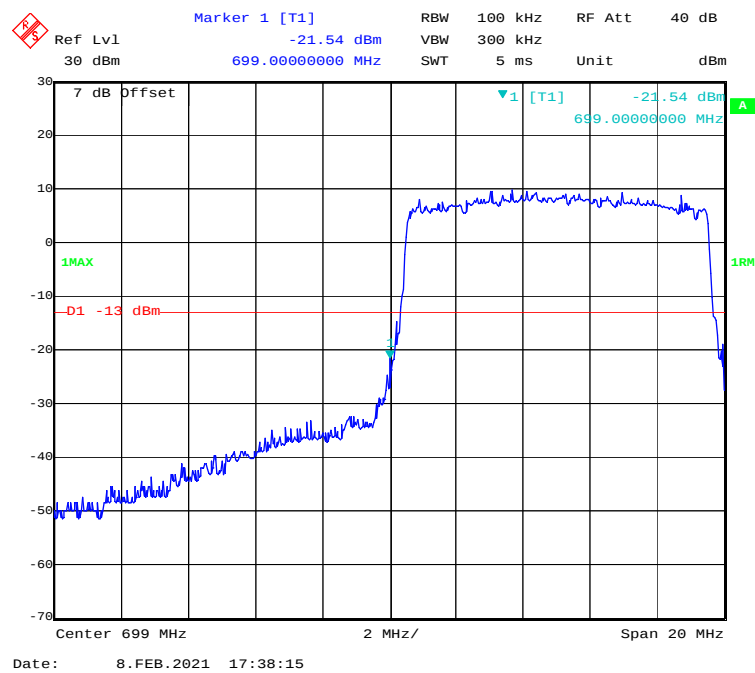
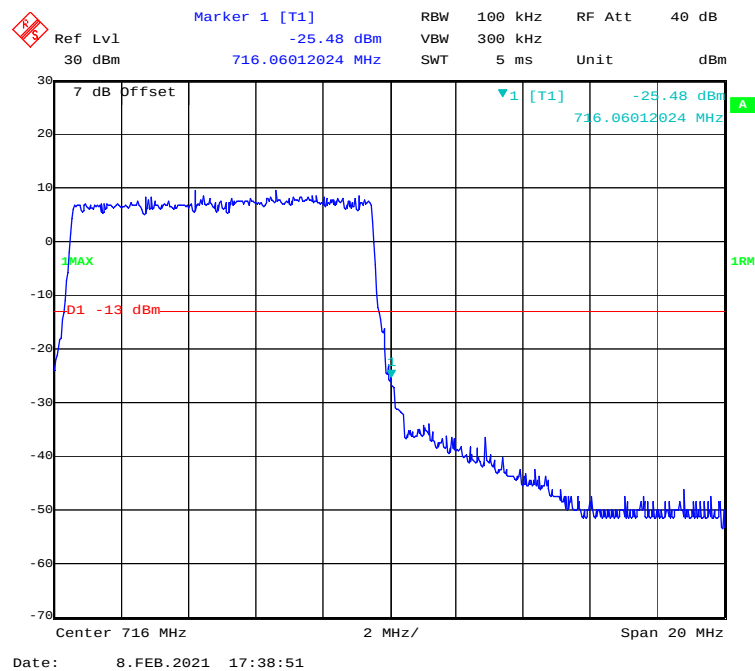


QPSK (5 MHz, FULL RB) - Left Band Edge

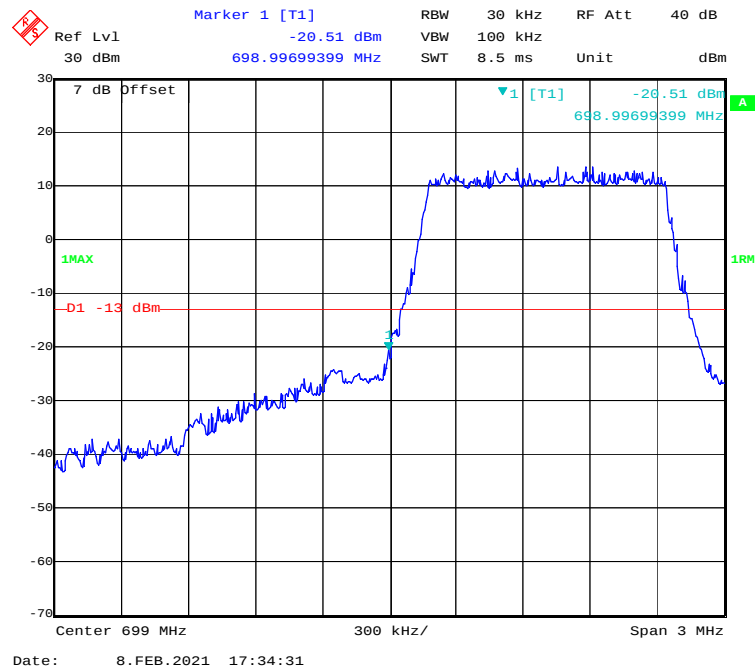


QPSK (5 MHz, FULL RB) - Right Band Edge

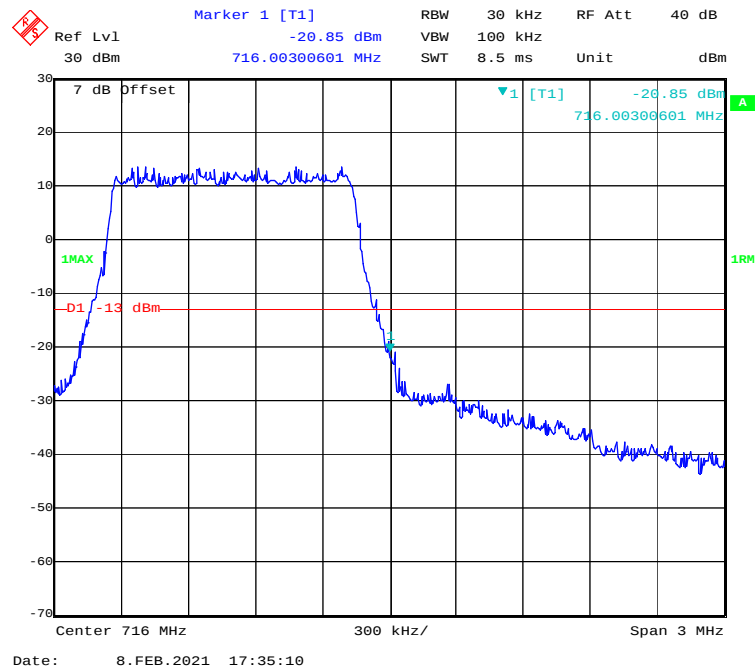


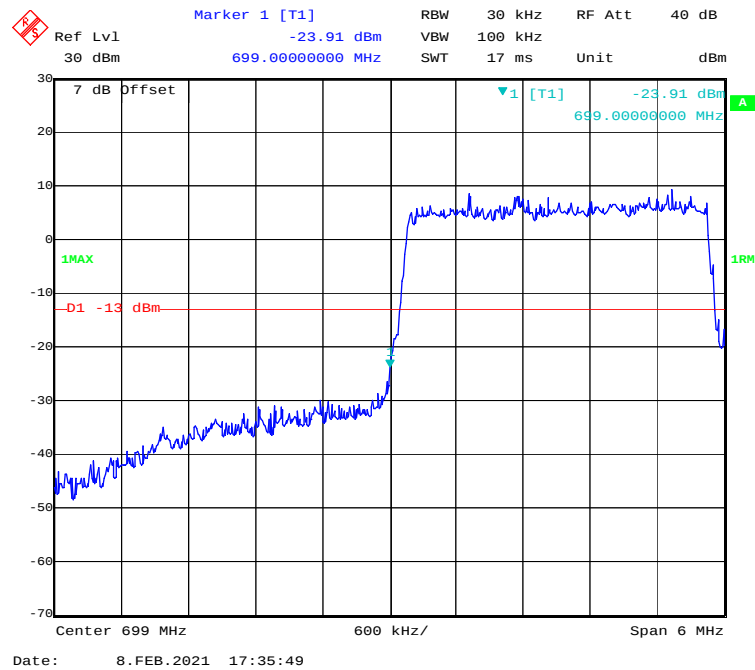
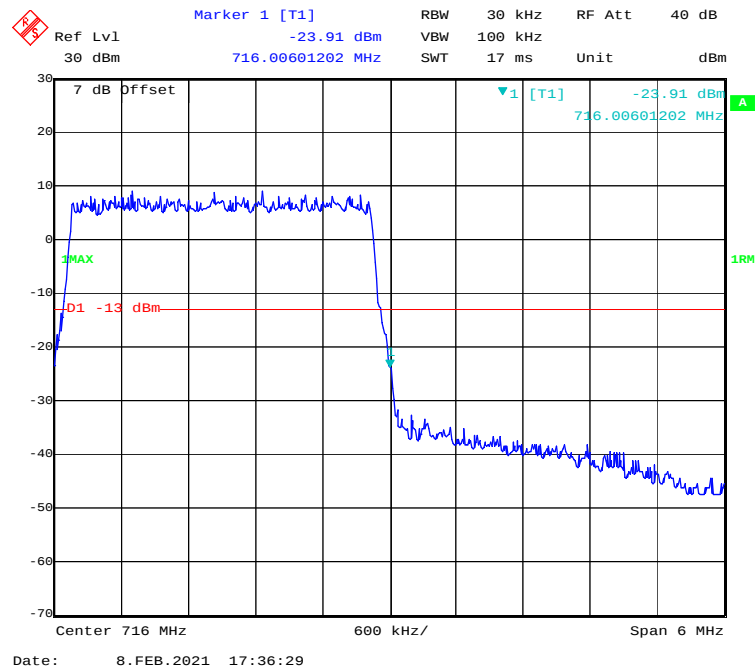
QPSK (10 MHz, FULL RB) - Left Band Edge**QPSK (10 MHz, FULL RB) - Right Band Edge**

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

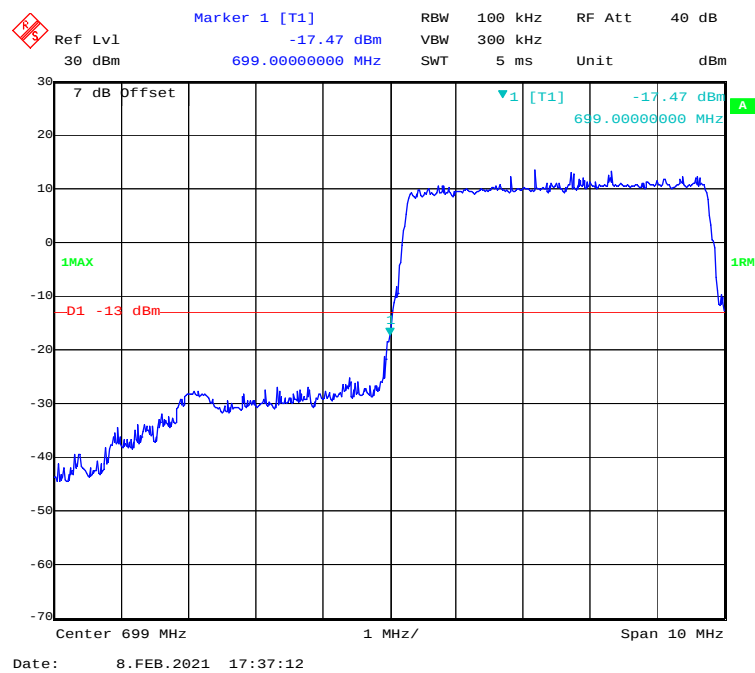


16-QAM (1.4 MHz, FULL RB) - Right Band Edge

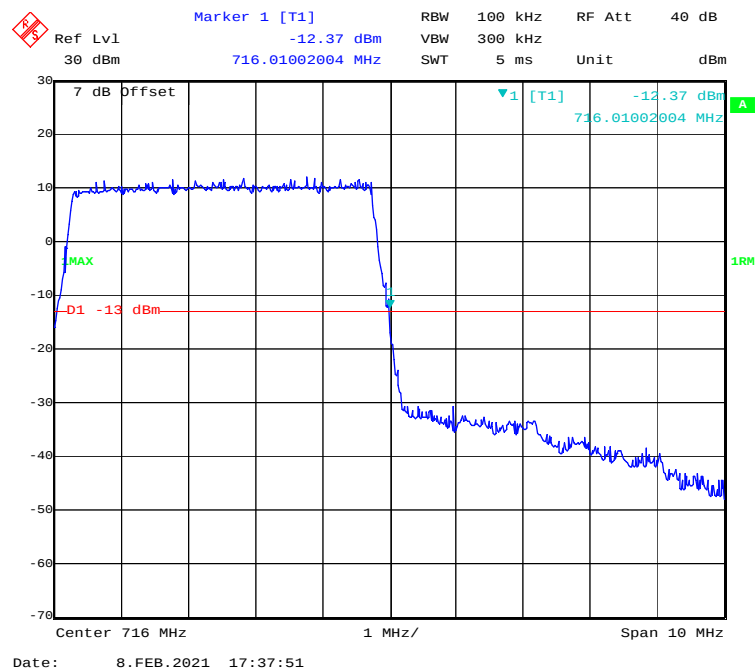


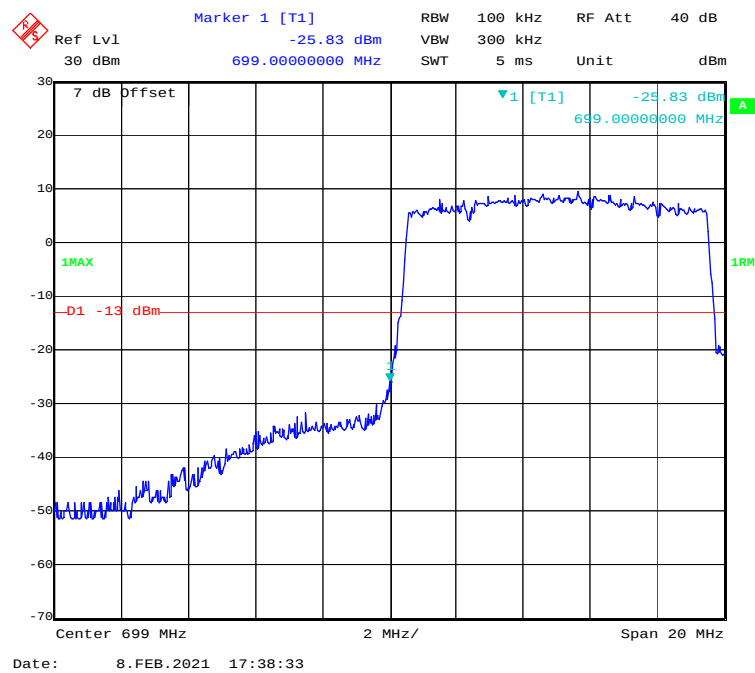
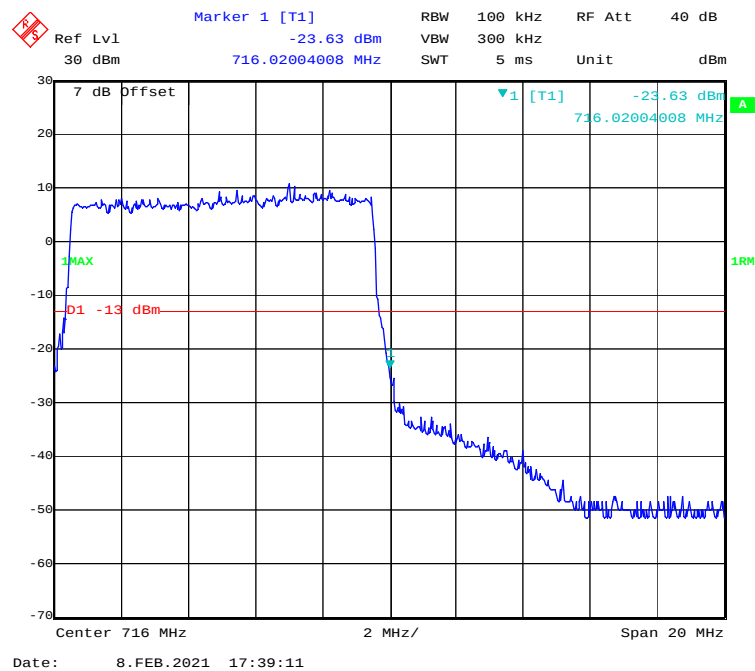
16-QAM (3 MHz, FULL RB) - Left Band Edge**16-QAM (3 MHz, FULL RB) - Right Band Edge**

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



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



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

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

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

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

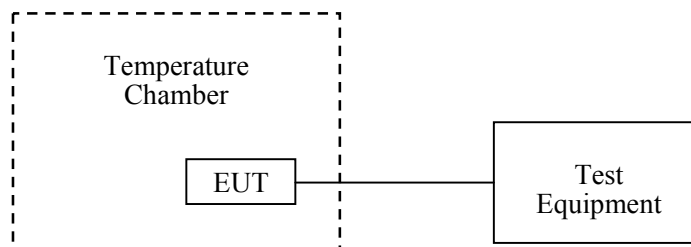
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Data**Environmental Conditions**

Temperature:	23.2°C
Relative Humidity:	51 %
ATM Pressure:	101.3kPa

The testing was performed by Tyrone Wang on 2021-02-08.

EUT operation mode: Transmitting

Test Result: Compliance.

Powered by DC Source(worst case)

WCDMA Band V:

Middle Channel, $f_0 = 836.6$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	DC 12 V	6	0.007172	2.5
-20		18	0.021516	2.5
-10		14	0.016734	2.5
0		16	0.019125	2.5
10		12	0.014344	2.5
20		7	0.008367	2.5
30		13	0.015539	2.5
40		19	0.022711	2.5
50		12	0.014344	2.5
20	V min.= 9	8	0.009563	2.5
20	V max.= 35	7	0.008367	2.5

WCDMA Band II:

WCDMA Mode, Middle Channel, $f_o=1880.0$ MHz				
Temperature (°C)	Power Supplied (V_{AC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	DC 12 V	17	0.009043	pass
-20		15	0.007979	pass
-10		7	0.003723	pass
0		18	0.009574	pass
10		9	0.004787	pass
20		15	0.007979	pass
30		8	0.004255	pass
40		12	0.006383	pass
50		11	0.005851	pass
20	V min.= 9	7	0.003723	pass
20	V max.= 35	16	0.008511	pass

WCDMA Band IV:

WCDMA Mode, Low Channel & High Channel					
Temperature	Power Supplied	F_L	F_H	F_L Limit	F_H Limit
(°C)	(V_{AC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	DC 12 V	1710.3461	1754.9708	1710	1755
-20		1710.353	1754.9363	1710	1755
-10		1710.3455	1754.921	1710	1755
0		1710.4052	1754.7788	1710	1755
10		1710.4541	1754.6465	1710	1755
20		1710.3418	1754.9216	1710	1755
30		1710.3297	1754.9061	1710	1755
40		1710.4636	1754.828	1710	1755
50		1710.4087	1754.7475	1710	1755
20	V min.= 9	1710.461	1754.9666	1710	1755
20	V max.= 35	1710.4632	1754.7078	1710	1755

LTE Band 2:

Middle Channel, f_0 =1880.0 MHz (QPSK) /Channel Bandwidth:20MHz				
Temperature (°C)	Power Supplied (V_{AC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	DC 12 V	17	0.009043	PASS
-20		13	0.006915	PASS
-10		12	0.006383	PASS
0		16	0.008511	PASS
10		17	0.009043	PASS
20		13	0.006915	PASS
30		16	0.008511	PASS
40		14	0.007447	PASS
50		13	0.006915	PASS
20	V min.= 9	12	0.006383	PASS
20	V max.= 35	20	0.010638	PASS

Middle Channel, f_0 =1880.0 MHz (16-QAM) /Channel Bandwidth:20MHz				
Temperature (°C)	Power Supplied (V_{AC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	DC 12 V	16	0.008511	PASS
-20		7	0.003723	PASS
0		18	0.009574	PASS
0		12	0.006383	PASS
10		15	0.007979	PASS
20		15	0.007979	PASS
30		6	0.003191	PASS
40		10	0.005319	PASS
50		9	0.004787	PASS
20	V min.= 9	11	0.005851	PASS
20	V max.= 35	19	0.010106	PASS

LTE Band 4:

Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz					
Temperature	Power Supplied	F _L	F _H	F _L Limit	F _H Limit
(°C)	(V _{AC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	DC 12 V	1710.9469	1754.0606	1710	1755
-20		1710.9484	1754.0681	1710	1755
-10		1710.9493	1754.0654	1710	1755
0		1710.9424	1754.0688	1710	1755
10		1710.9412	1754.0619	1710	1755
20		1710.9457	1754.0651	1710	1755
30		1710.9420	1754.0603	1710	1755
40		1710.9456	1754.0655	1710	1755
50		1710.9439	1754.0695	1710	1755
20	V min.= 9	1710.9494	1754.0638	1710	1755
20	V max.= 35	1710.9438	1754.0626	1710	1755

Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz					
Temperature	Power Supplied	F _L	F _H	F _L Limit	F _H Limit
(°C)	(V _{AC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	DC 12 V	1710.9481	1754.0606	1710	1755
-20		1710.9468	1754.0673	1710	1755
-10		1710.9477	1754.0644	1710	1755
0		1710.9437	1754.0688	1710	1755
10		1710.9423	1754.0644	1710	1755
20		1710.9468	1754.0698	1710	1755
30		1710.9417	1754.0649	1710	1755
40		1710.9427	1754.0605	1710	1755
50		1710.9499	1754.0667	1710	1755
20	V min.= 9	1710.9402	1754.0688	1710	1755
20	V max.= 35	1710.9446	1754.0618	1710	1755

LTE Band 12:

Low Channel & High Channel (QPSK) /Channel Bandwidth:10MHz					
Temperature	Power Supplied	F _L	F _H	F _L Limit	F _H Limit
(°C)	(V _{AC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	DC 12 V	699.5316	715.4685	699	716
-20		699.5304	715.4681	699	716
-10		699.5311	715.4661	699	716
0		699.5308	715.4667	699	716
10		699.5305	715.4656	699	716
20		699.5310	715.4689	699	716
30		699.5311	715.4677	699	716
40		699.5314	715.4688	699	716
50		699.5318	715.4686	699	716
20	V min.= 9	699.5314	715.4676	699	716
20	V max.= 35	699.5321	715.4682	699	716

Low Channel & High Channel (16-QAM) /Channel Bandwidth:10MHz					
Temperature	Power Supplied	F _L	F _H	F _L Limit	F _H Limit
(°C)	(V _{AC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	DC 12 V	699.5312	715.4681	699	716
-20		699.5338	715.4683	699	716
-10		699.5302	715.4687	699	716
0		699.5316	715.4681	699	716
10		699.5328	715.4684	699	716
20		699.5311	715.4683	699	716
30		699.5345	715.4686	699	716
40		699.5323	715.4688	699	716
50		699.5341	715.4686	699	716
20	V min.= 9	699.5338	715.4689	699	716
20	V max.= 35	699.5339	715.4683	699	716

Declarations

1: BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.

2: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

4: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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