



TESTING LABORATORY
CERTIFICATE#4323.01



FCC PART 22H, PART 27 TEST REPORT

For

Shanghai Rising Digital Co.,Ltd.

No 318 ,Chuanda Road , Pudong New District Shanghai China

FCC ID: 2AJONSEID3I0A

Report Type: Original Report	Product Type: Sany Encourage Integrated Display
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Shanghai Rising Digital Co.,Ltd.
Tested Model:	SEID-3I0A(G)
Product Type:	Sany Encourage Integrated Display
Power Supply:	DC 9~16V (Typical :DC 12V)
RF Function:	LTE
Maximum conducted Output Power:	LTE Band 5: 22.40dBm, LTE Band 41: 22.23 dBm
Operating Band/Frequency:	LTE Band 5: 824-849 MHz(TX), 869-894 MHz(RX) LTE Band 41: 2555-2655 MHz(TX), 2555-2655MHz(RX)
Modulation Type:	LTE: QPSK,16QAM
Antenna Type:	MONOPOLE Antenna
*Maximum Antenna Gain:	LTE Band 5: 4 dBi LTE Band 41: 4 dBi

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: RSHA200422001-1(Assigned by the BACL. The EUT supplied by the applicant was received on 2020-04-22)*

Objective

This type approval report is prepared on behalf of *Shanghai Rising Digital Co.,Ltd.* in accordance with Part 2, Part 22-Subpart H and Part 27 of the Federal Communication Commission's rules.

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

Related Submittal(s)/Grant(s)

No Related Submittal(s)/Grant(s)

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-Part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 27 – Miscellaneous wireless communications services

Applicable Standards: ANSI C63.26-2015.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		3.19dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emission	30MHz~1GHz	5.91dB
	1GHz~6GHz	4.68dB
	6GHz~18GHz	4.92dB
	18GHz~40GHz	5.21dB
Occupied Bandwidth		0.5kHz
Temperature		1.0°C
Humidity		6%

Test Facility

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

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

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to ANSI C63.26-2015.

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

Channel List

Mode		Channel		Frequency (MHz)
LTE Band 5	1.4M	Low	20407	824.7
		Middle	20525	836.5
		High	20643	848.3
	3M	Low	20415	825.5
		Middle	20525	836.5
		High	20635	847.5
	5M	Low	20425	826.5
		Middle	20525	836.5
		High	20625	846.5
	10M	Low	20450	829.0
		Middle	20525	836.5
		High	20600	844.0
LTE Band 41	5M	Low	40265	2557.5
		Middle	40740	2605.0
		High	41215	2652.5
	10M	Low	40290	2560.0
		Middle	40740	2605.0
		High	41190	2650.0
	15M	Low	40315	2562.5
		Middle	40740	2605.0
		High	41165	2647.5
	20M	Low	40340	2565.0
		Middle	40740	2605.0
		High	41140	2645.0

Equipment Modifications

No modifications were made to the EUT.

Support Equipment List and Details

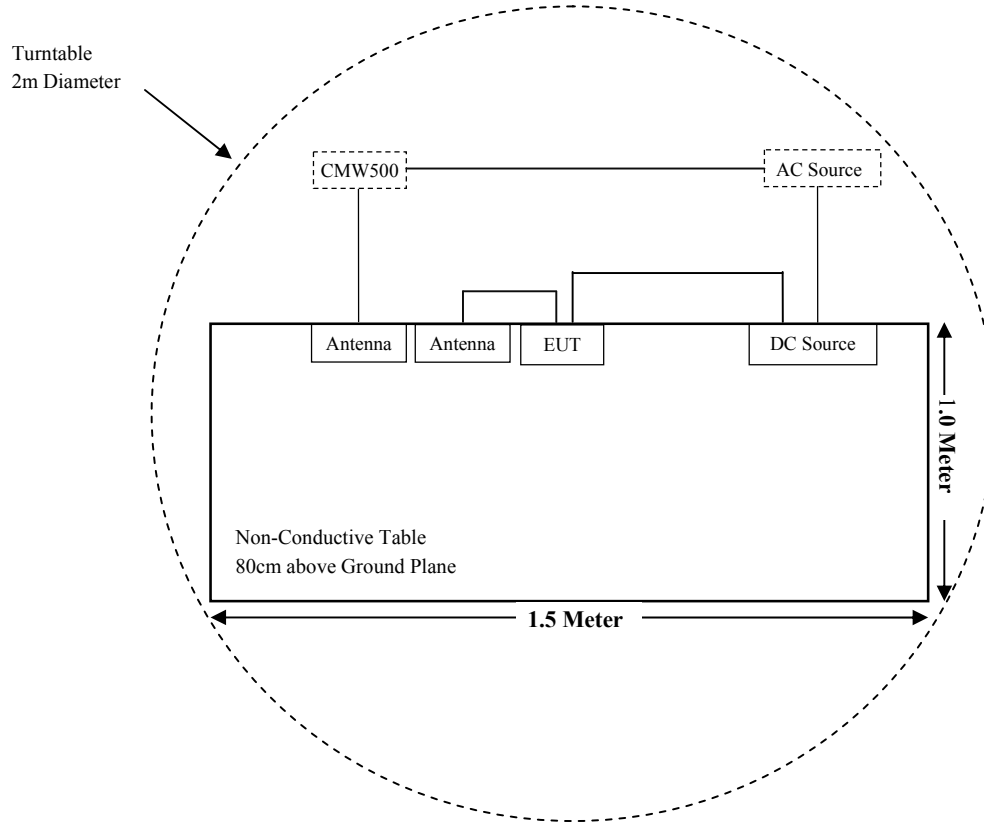
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	104478
Aihuaxin technology	Antenna	/	/
Waylens Inc.	Antenna	/	/
ZHAOXIN	DC Power Supply	RXN-605D	DC002

External I/O Cable

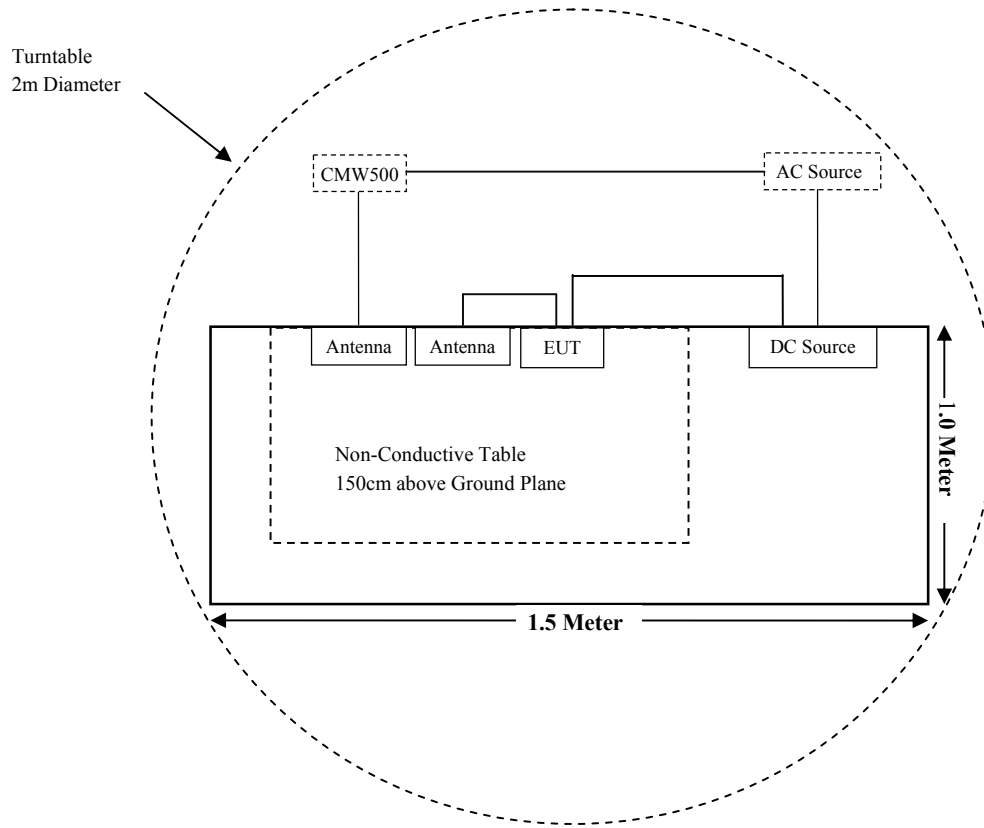
Cable Description	Length (m)	From Port	To
Power Cable	1.0	EUT	DC Source
Power Cable	1.0	DC Source	AC Source

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
§1.1310 & §2.1091	Maximum Permissible Exposure(MPE)	Compliant
§2.1046; § 22.913 (a);§ 27.50 (h);	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917;§27.53;	Occupied Bandwidth	Compliant
§ 2.1051; § 22.917 (a); §27.53 (m)	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a);§27.53 (m)	Spurious Radiated Emissions	Compliant
§ 22.917 (a);§27.53 (m)	Band Edge	Compliant
§ 2.1055; § 22.355;§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	HP 8341B	2624A00116	2020-11-30	2021-11-29
Sunol Sciences	Broadband Antenna	JB3	A090314-1	2020-08-05	2023-08-04
Sunol Sciences	Bilog antenna	JB3	A060217	2020-11-28	2021-11-27
Sonoma Instrument	Pre-amplifier	310N	171205	2020-08-14	2021-08-13
Rohde & Schwarz	Auto test Software	EMC32	100361	N/A	N/A
R & S	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04
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
Radiated Emission Test (Chamber 2#)					
R & S	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04
HP	Signal Generator	HP 8341B	2624A00116	2020-11-30	2021-11-29
Rohde & Schwarz	EMI Test Receiver	ESU40	100207	2021-03-16	2022-03-15
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2020-07-15	2023-07-14
ETS-LINDGREN	Horn Antenna	3115	6229	2020-01-10	2023-01-09
ETS-LINDGREN	Horn Antenna	3116	00084159	2019-12-12	2022-12-11
ETS-LINDGREN	Horn Antenna	3116	2516	2020-01-17	2023-01-16
A.H.Systems,inc	Amplifier	PAM-0118P	512	2021-02-20	2022-02-19
EM Electronics Corporation	Amplifier	EM18G40G	060726	2020-03-22	2021-03-21
Rohde & Schwarz	Auto test Software	EMC32	100361	N/A	N/A
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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Mini-Circuits	Power splitter	ZFRSC-14-S+	SF019411452	2020-11-10	2021-11-09
Rohde & Schwarz	Signal Analyzer	FSV40	101116	2020-08-05	2021-08-04
R & S	Wideband Radio Communication Tester	CMW500	104478	2020-08-05	2021-08-04
BACL	Temperature & Humidity Chamber	BTH-150	30023	2020-11-25	2021-11-24
EAST	Regulated DC Power Supply	MCH-303D-II	14070562	2020-10-10	2021-10-09
Shanghai Rising	RF Cable	Shanghai Rising C01	C01	Each Time	N/A

* **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 subpart 1.1310 and 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

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

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

Calculated Formulary:

Predication of MPE limit at a given distance

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

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

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

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

Calculated Data:

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)			
LTE Band 5	824-849	4.00	2.51	22.50	177.83	20	0.0888	0.55
LTE Band 41	2555-2655	4.00	2.51	22.50	177.83	20	0.0888	1.00

Note:

For the above tune up power were declared by the manufacturer.

Conclusion: The device meets MPE at distance 20cm.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H, Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC §2.1046; § 22.913 (a); §27.50 (h) - 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 §27.50(a) (3), Mobile and portable stations.(i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

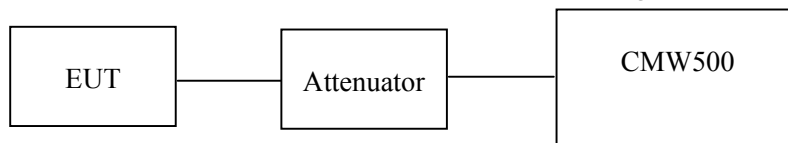
According to §27.50(h) (2), Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

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

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the CMW500 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 360° 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:

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

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

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

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

Test Data**Environmental Conditions**

Temperature:	24.9 °C
Relative Humidity:	49 %
ATM Pressure:	101.3 kPa

The testing was performed by Stone Zhang on 2021-04-10.

Conducted Power:

Maximum Output Power:

LTE Band 5

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4M	QPSK	1#0	21.68	21.98	21.85
		1#3	21.62	21.97	21.82
		1#5	21.64	21.91	21.89
		3#0	21.55	21.91	21.95
		3#1	21.56	21.95	21.89
		3#3	21.51	21.92	21.91
		6#0	21.63	21.96	21.97
	16-QAM	1#0	21.68	21.94	22.00
		1#3	21.62	21.95	21.98
		1#5	21.68	21.93	22.01
		3#0	21.64	21.88	21.98
		3#1	21.69	21.87	21.97
		3#3	21.68	21.85	22.04
		6#0	21.65	21.93	21.97
3M	QPSK	1#0	21.68	21.97	22.04
		1#7	21.81	22.05	22.11
		1#14	21.76	22.17	22.16
		8#0	21.73	22.18	22.07
		8#4	21.71	22.20	22.17
		8#7	21.74	22.22	22.23
		15#0	21.64	22.29	22.23
	16-QAM	1#0	21.72	22.40	22.24
		1#7	21.85	22.34	22.30
		1#14	21.78	22.22	22.38
		8#0	21.78	22.17	22.30
		8#4	21.82	22.11	22.30
		8#7	21.83	22.22	22.31
		15#0	21.84	22.18	22.31

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	21.79	22.07	22.22
		1#12	21.83	22.10	22.29
		1#24	21.73	22.10	22.16
		12#0	21.73	22.05	22.23
		12#6	21.82	22.06	22.17
		12#11	21.79	22.04	22.18
		25#0	21.85	21.94	22.21
	16-QAM	1#0	21.79	21.85	22.30
		1#12	21.83	21.80	22.20
		1#24	21.83	21.72	22.07
		12#0	21.76	21.67	22.04
		12#6	21.84	21.71	22.01
		12#11	21.88	21.70	22.06
		25#0	21.88	21.73	21.99
10M	QPSK	1#0	22.00	21.73	22.00
		1#24	22.06	21.77	22.02
		1#49	22.13	21.77	22.00
		25#0	22.07	21.72	22.01
		25#12	22.08	21.74	22.08
		25#24	22.01	21.75	22.05
		50#0	22.01	21.75	22.10
	16-QAM	1#0	21.92	21.75	22.21
		1#24	21.86	21.84	22.22
		1#49	21.77	21.89	22.21
		25#0	21.65	21.84	22.12
		25#12	21.70	21.90	22.04
		25#24	21.77	21.89	22.01
		50#0	21.85	21.84	22.06

LTE Band 41

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5M	QPSK	1#0	22.00	21.41	21.69
		1#12	22.23	21.79	21.94
		1#24	21.42	21.57	21.23
		12#0	21.97	21.96	21.98
		12#6	21.42	21.62	21.12
		12#11	21.52	21.93	21.09
		25#0	21.48	21.72	21.87
	16-QAM	1#0	21.81	21.51	21.82
		1#12	21.95	21.50	21.66
		1#24	22.14	21.16	21.29
		12#0	21.83	21.84	21.56
		12#6	22.10	21.64	21.72
		12#11	21.31	21.83	21.92
		25#0	22.03	21.92	21.55
10M	QPSK	1#0	21.11	21.26	22.12
		1#24	21.99	21.31	21.84
		1#49	21.04	21.93	21.52
		25#0	21.51	21.44	22.08
		25#12	21.41	21.68	22.06
		25#24	21.27	21.54	21.42
		50#0	21.86	21.78	21.53
	16-QAM	1#0	22.02	21.45	22.20
		1#24	21.85	21.18	21.72
		1#49	21.35	21.16	22.05
		25#0	21.04	21.65	21.73
		25#12	21.90	21.56	21.87
		25#24	21.50	21.67	21.92
		50#0	21.83	21.85	21.69

Test Bandwidth	Test Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15M	QPSK	1#0	20.88	21.87	21.16
		1#37	21.52	21.18	21.68
		1#74	20.86	22.06	22.13
		36#0	21.37	21.49	21.88
		36#17	21.61	21.52	21.61
		36#35	20.96	21.95	21.73
		75#0	21.20	21.94	21.74
	16-QAM	1#0	20.94	21.65	21.20
		1#37	21.02	21.21	21.89
		1#74	20.93	21.62	21.18
		36#0	21.49	22.01	21.41
		36#17	21.18	21.78	21.87
		36#35	21.33	21.31	21.54
		75#0	21.66	21.41	21.94
20M	QPSK	1#0	21.71	21.91	21.39
		1#49	21.06	21.20	21.34
		1#99	21.27	21.20	21.30
		50#0	21.83	21.79	21.47
		50#24	21.14	21.05	21.10
		50#49	21.85	21.32	21.25
		100#0	20.92	21.15	21.00
	16-QAM	1#0	21.69	21.27	21.24
		1#49	20.92	21.35	21.54
		1#99	21.44	21.60	21.39
		50#0	21.68	21.74	21.39
		50#24	21.04	21.70	21.26
		50#49	21.73	21.11	21.12
		100#0	21.12	21.78	21.01

Peak-to-average ratio (PAR):

LTE Band 5

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	10M	3.08	3.11	3.18	13
	50 RB		5.16	5.10	5.20	13
16-QAM	1 RB	10M	4.07	4.18	4.14	13
	50 RB		6.16	6.10	6.02	13

LTE Band 41

Test Modulation		Test Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit(dB)
QPSK	1 RB	20M	3.16	3.07	3.13	13
	100RB		5.17	5.09	5.10	13
16-QAM	1 RB	20M	4.04	4.16	4.14	13
	100RB		6.20	6.02	6.08	13

Radiated Power:

ERP:

LTE Band 5

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4M BW Low Channel								
824.70	H	87.03	23.16	0.62	-1.18	21.36	38.45	17.09
824.70	V	86.04	22.17	0.62	-1.18	20.37	38.45	18.08
16-QAM 1.4M BW Low Channel								
824.70	H	87.16	23.29	0.62	-1.18	21.49	38.45	16.96
824.70	V	86.12	22.25	0.62	-1.18	20.45	38.45	18.00
QPSK 3M BW Low Channel								
825.50	H	87.17	23.30	0.62	-1.18	21.50	38.45	16.95
825.50	V	86.17	22.30	0.62	-1.18	20.50	38.45	17.95
16-QAM 3M BW Low Channel								
825.50	H	87.12	23.25	0.62	-1.18	21.45	38.45	17.00
825.50	V	86.01	22.14	0.62	-1.18	20.34	38.45	18.11
QPSK 5M BW Low Channel								
826.50	H	87.19	23.32	0.62	-1.18	21.52	38.45	16.93
826.50	V	86.15	22.28	0.62	-1.18	20.48	38.45	17.97
16-QAM 5M BW Low Channel								
826.50	H	87.13	23.26	0.62	-1.18	21.46	38.45	16.99
826.50	V	86.12	22.25	0.62	-1.18	20.45	38.45	18.00
QPSK 10M BW Low Channel								
829.00	H	87.02	23.15	0.62	-1.18	21.35	38.45	17.10
829.00	V	86.17	22.30	0.62	-1.18	20.50	38.45	17.95
16-QAM 10M BW Low Channel								
829.00	H	87.15	23.28	0.62	-1.18	21.48	38.45	16.97
829.00	V	86.1	22.23	0.62	-1.18	20.43	38.45	18.02

LTE Band 5

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4M BW Middle Channel								
836.50	H	87.17	23.30	0.63	-1.14	21.53	38.45	16.92
836.50	V	86.16	22.29	0.63	-1.14	20.52	38.45	17.93
16-QAM 1.4M BW Middle Channel								
836.50	H	87.06	23.19	0.63	-1.14	21.42	38.45	17.03
836.50	V	86.06	22.19	0.63	-1.14	20.42	38.45	18.03
QPSK 3M BW Middle Channel								
836.50	H	87.04	23.17	0.63	-1.14	21.40	38.45	17.05
836.50	V	86.03	22.16	0.63	-1.14	20.39	38.45	18.06
16-QAM 3M BW Middle Channel								
836.50	H	87.08	23.21	0.63	-1.14	21.44	38.45	17.01
836.50	V	86.17	22.30	0.63	-1.14	20.53	38.45	17.92
QPSK 5M BW Middle Channel								
836.50	H	87.04	23.17	0.63	-1.14	21.40	38.45	17.05
836.50	V	86.09	22.22	0.63	-1.14	20.45	38.45	18.00
16-QAM 5M BW Middle Channel								
836.50	H	87.1	23.23	0.63	-1.14	21.46	38.45	16.99
836.50	V	86.18	22.31	0.63	-1.14	20.54	38.45	17.91
QPSK 10M BW Middle Channel								
836.50	H	87.19	23.32	0.63	-1.14	21.55	38.45	16.90
836.50	V	86.03	22.16	0.63	-1.14	20.39	38.45	18.06
16-QAM 10M BW Middle Channel								
836.50	H	87.07	23.20	0.63	-1.14	21.43	38.45	17.02
836.50	V	86.11	22.24	0.63	-1.14	20.47	38.45	17.98

LTE Band 5

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 1.4M BW High Channel								
848.30	H	87.04	23.17	0.63	-1.11	21.43	38.45	17.02
848.30	V	86	22.13	0.63	-1.11	20.39	38.45	18.06
16-QAM 1.4M BW High Channel								
848.30	H	87.01	23.14	0.63	-1.11	21.40	38.45	17.05
848.30	V	86.05	22.18	0.63	-1.11	20.44	38.45	18.01
QPSK 3M BW High Channel								
847.50	H	87	23.13	0.63	-1.11	21.39	38.45	17.06
847.50	V	86.04	22.17	0.63	-1.11	20.43	38.45	18.02
16-QAM 3M BW High Channel								
847.50	H	87.11	23.24	0.63	-1.11	21.50	38.45	16.95
847.50	V	86.11	22.24	0.63	-1.11	20.50	38.45	17.95
QPSK 5M BW High Channel								
846.50	H	87.02	23.15	0.63	-1.11	21.41	38.45	17.04
846.50	V	86.14	22.27	0.63	-1.11	20.53	38.45	17.92
16-QAM 5M BW High Channel								
846.50	H	87.18	23.31	0.63	-1.11	21.57	38.45	16.88
846.50	V	86.16	22.29	0.63	-1.11	20.55	38.45	17.90
QPSK 10M BW High Channel								
844.00	H	87.1	23.23	0.63	-1.11	21.49	38.45	16.96
844.00	V	86.01	22.14	0.63	-1.11	20.40	38.45	18.05
16-QAM 10M BW High Channel								
844.00	H	87.04	23.17	0.63	-1.11	21.43	38.45	17.02
844.00	V	86.09	22.22	0.63	-1.11	20.48	38.45	17.97

EIRP:

LTE Band 41

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5M BW Low Channel								
2557.5	H	85.79	12.80	0.89	10.02	21.93	33	11.07
2557.5	V	84.94	11.95	0.89	10.02	21.08	33	11.92
16-QAM 5M BW Low Channel								
2557.5	H	85.68	12.69	0.89	10.02	21.82	33	11.18
2557.5	V	84.42	11.43	0.89	10.02	20.56	33	12.44
QPSK 10M BW Low Channel								
2560	H	85.51	12.52	0.89	10.02	21.65	33	11.35
2560	V	84.85	11.86	0.89	10.02	20.99	33	12.01
16-QAM 10M BW Low Channel								
2560	H	85.67	12.68	0.89	10.02	21.81	33	11.19
2560	V	84.45	11.46	0.89	10.02	20.59	33	12.41
QPSK 15M BW Low Channel								
2562.5	H	85.99	13.00	0.89	10.01	22.12	33	10.88
2562.5	V	84.48	11.49	0.89	10.01	20.61	33	12.39
16-QAM 15M BW Low Channel								
2562.5	H	85.12	12.13	0.89	10.01	21.25	33	11.75
2562.5	V	84.31	11.32	0.89	10.01	20.44	33	12.56
QPSK 20M BW Low Channel								
2565	H	85.77	12.78	0.89	10.01	21.90	33	11.10
2565	V	84.19	11.20	0.89	10.01	20.32	33	12.68
16-QAM 20M BW Low Channel								
2565	H	85.12	12.13	0.89	10.01	21.25	33	11.75
2565	V	84.38	11.39	0.89	10.01	20.51	33	12.49

LTE Band 41

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5M BW Middle Channel								
2605	H	85.81	12.82	0.9	9.95	21.87	33	11.13
2605	V	84.08	11.09	0.9	9.95	20.14	33	12.86
16-QAM 5M BW Middle Channel								
2605	H	85.31	12.32	0.9	9.95	21.37	33	11.63
2605	V	84.8	11.81	0.9	9.95	20.86	33	12.14
QPSK 10M BW Middle Channel								
2605	H	85.49	12.50	0.9	9.95	21.55	33	11.45
2605	V	84.94	11.95	0.9	9.95	21.00	33	12.00
16-QAM 10M BW Middle Channel								
2605	H	85.77	12.78	0.9	9.95	21.83	33	11.17
2605	V	84.83	11.84	0.9	9.95	20.89	33	12.11
QPSK 15M BW Middle Channel								
2605	H	85.6	12.61	0.9	9.95	21.66	33	11.34
2605	V	84.65	11.66	0.9	9.95	20.71	33	12.29
16-QAM 15M BW Middle Channel								
2605	H	85.79	12.80	0.9	9.95	21.85	33	11.15
2605	V	84.46	11.47	0.9	9.95	20.52	33	12.48
QPSK 20M BW Middle Channel								
2605	H	85.12	12.13	0.9	9.95	21.18	33	11.82
2605	V	84.21	11.22	0.9	9.95	20.27	33	12.73
16-QAM 20M BW Middle Channel								
2605	H	85.18	12.19	0.9	9.95	21.24	33	11.76
2605	V	84.89	11.90	0.9	9.95	20.95	33	12.05

LTE Band 41

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Submitted Level (dBm)	Cable loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5M BW High Channel								
2652.5	H	85.29	12.30	0.9	9.89	21.29	33	11.71
2652.5	V	84.46	11.47	0.9	9.89	20.46	33	12.54
16-QAM 5M BW High Channel								
2652.5	H	85	12.01	0.9	9.89	21.00	33	12.00
2652.5	V	84.3	11.31	0.9	9.89	20.30	33	12.70
QPSK 10M BW High Channel								
2650	H	85.58	12.59	0.9	9.89	21.58	33	11.42
2650	V	84.94	11.95	0.9	9.89	20.94	33	12.06
16-QAM 10M BW High Channel								
2650	H	85.02	12.03	0.9	9.89	21.02	33	11.98
2650	V	84.64	11.65	0.9	9.89	20.64	33	12.36
QPSK 15M BW High Channel								
2647.5	H	85.6	12.61	0.9	9.89	21.60	33	11.40
2647.5	V	84.43	11.44	0.9	9.89	20.43	33	12.57
16-QAM 15M BW High Channel								
2647.5	H	85.25	12.26	0.9	9.89	21.25	33	11.75
2647.5	V	84.59	11.60	0.9	9.89	20.59	33	12.41
QPSK 20M BW High Channel								
2645	H	85.28	12.29	0.9	9.9	21.29	33	11.71
2645	V	84.61	11.62	0.9	9.9	20.62	33	12.38
16-QAM 20M BW High Channel								
2645	H	85.41	12.42	0.9	9.9	21.42	33	11.58
2645	V	84.37	11.38	0.9	9.9	20.38	33	12.62

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, §27.53 - OCCUPIED BANDWIDTH

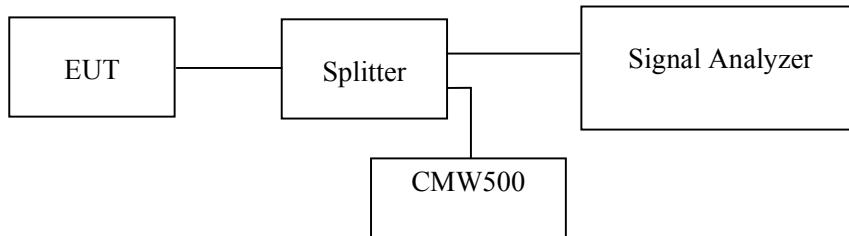
Applicable Standards

FCC 47 §2.1049, §22.917, §22.905, §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 30 kHz/ 100 kHz/300 kHz (LTE), and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

Temperature:	225.3 °C
Relative Humidity:	50 %
ATM Pressure:	100.7 kPa

The testing was performed by Stone Zhang on 2021-03-26.

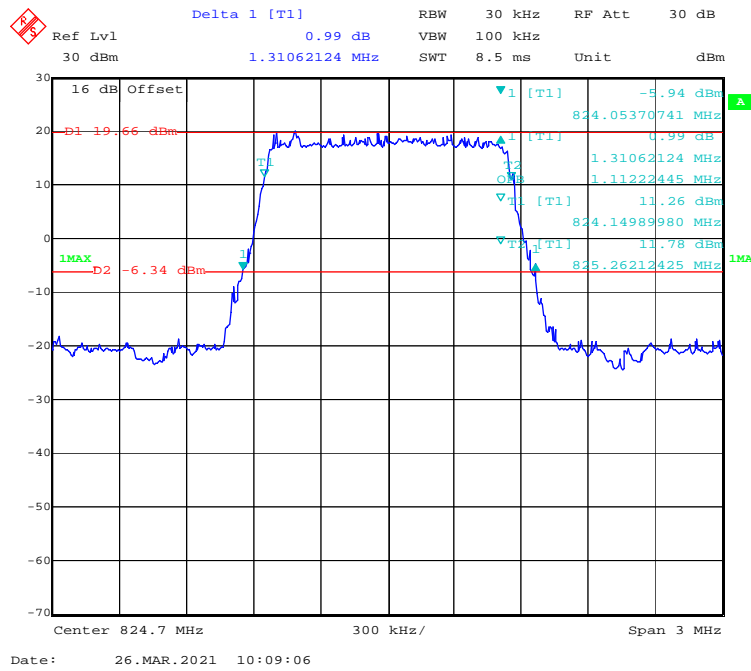
EUT operation mode: Transmitting

Test Result: Compliant.

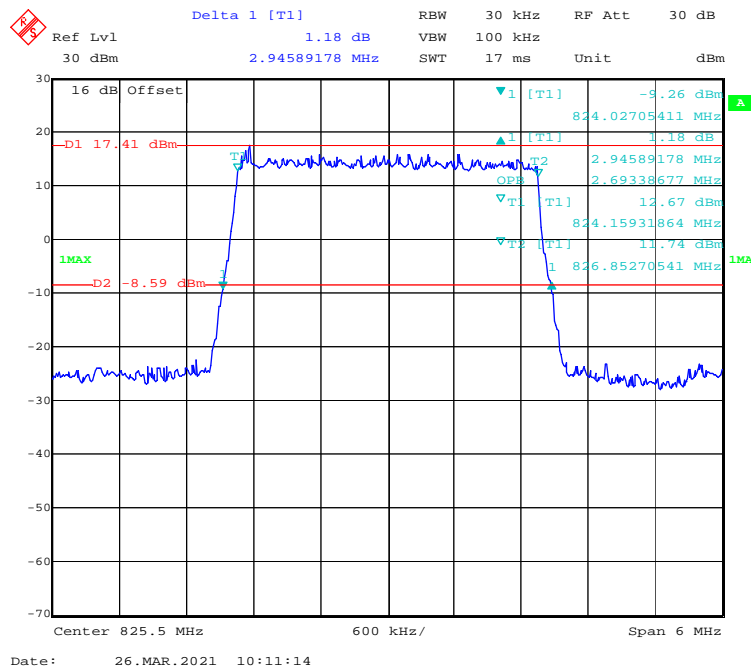
LTE Band 5:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	1.4M	Low	1.311	1.112
	3M		2.946	2.693
	5M		5.010	4.529
	10M		9.739	9.018
	1.4M	Middle	1.293	1.106
	3M		2.946	2.705
	5M		5.030	4.529
	10M		9.539	8.938
	1.4M	High	1.293	1.100
	3M		2.946	2.693
	5M		4.990	4.529
	10M		9.699	8.978
16-QAM	1.4M	Low	1.287	1.094
	3M		2.922	2.693
	5M		5.030	4.529
	10M		9.780	9.018
	1.4M	Middle	1.305	1.100
	3M		2.922	2.681
	5M		4.970	4.529
	10M		9.659	8.937
	1.4M	High	1.323	1.106
	3M		2.922	2.693
	5M		5.010	4.549
	10M		9.699	8.978

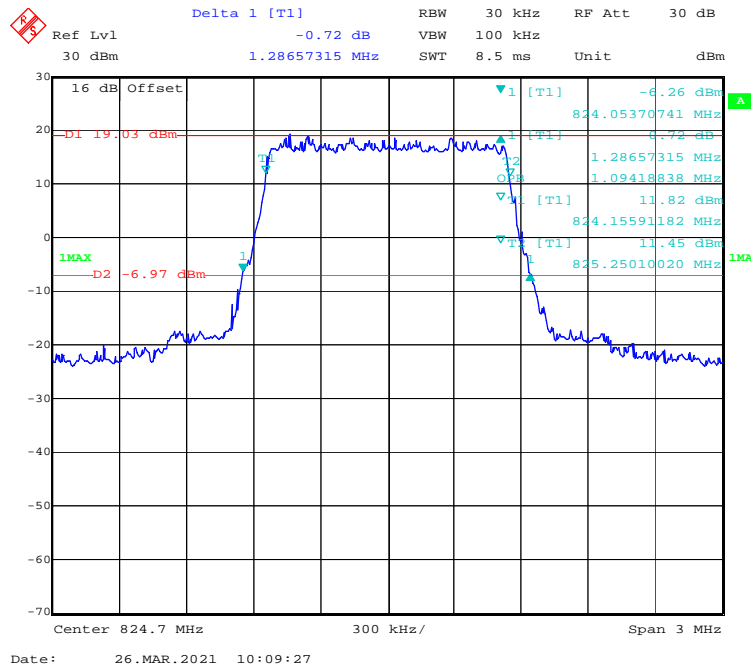
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



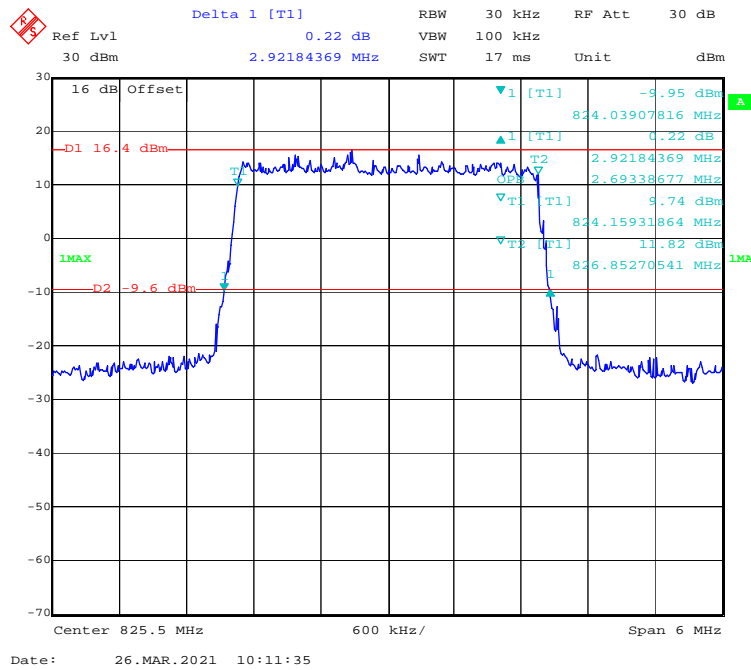
QPSK (3.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



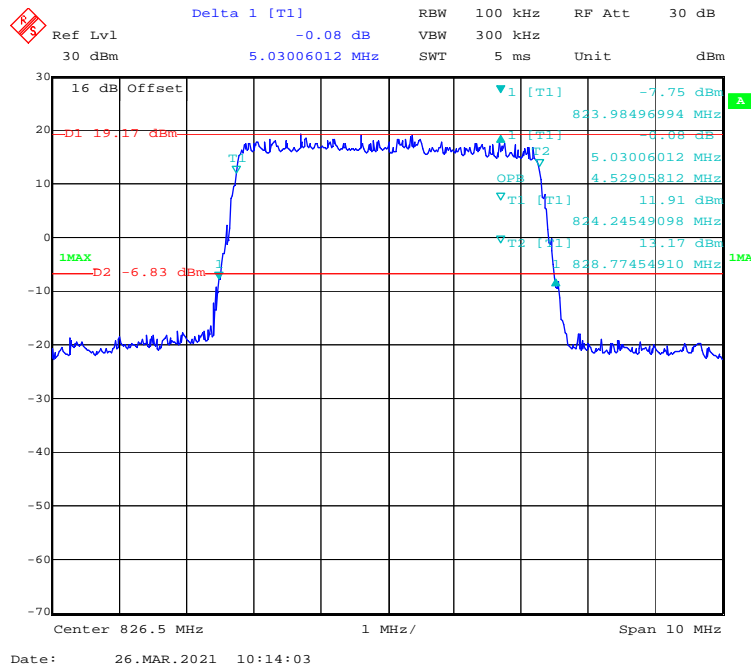
16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



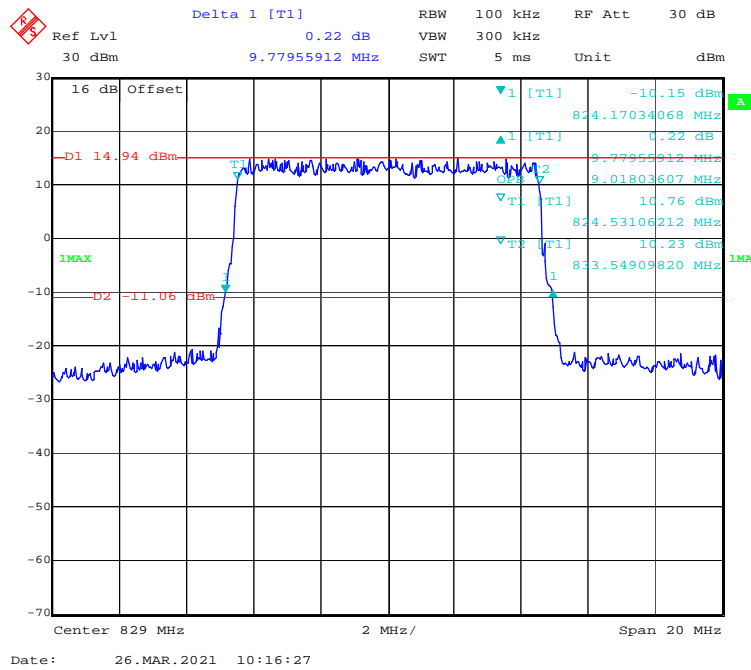
16-QAM (3.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



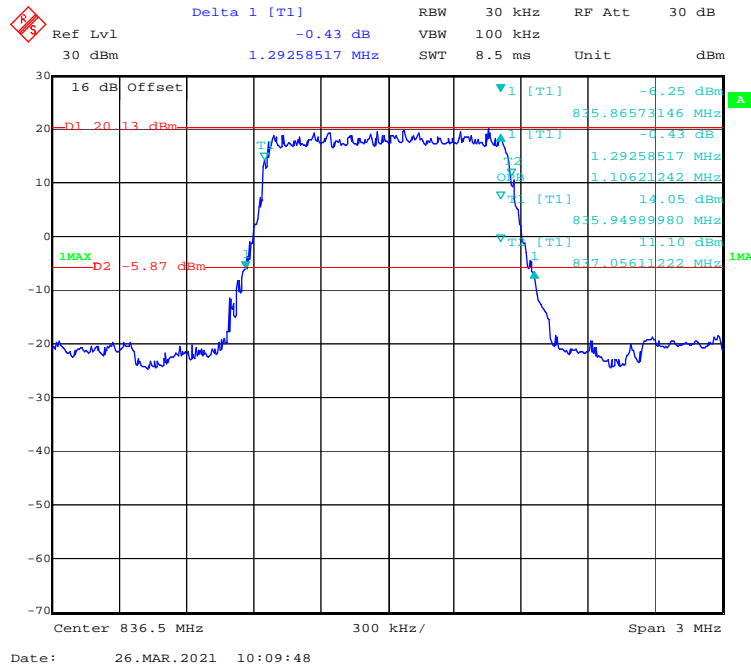
16-QAM (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



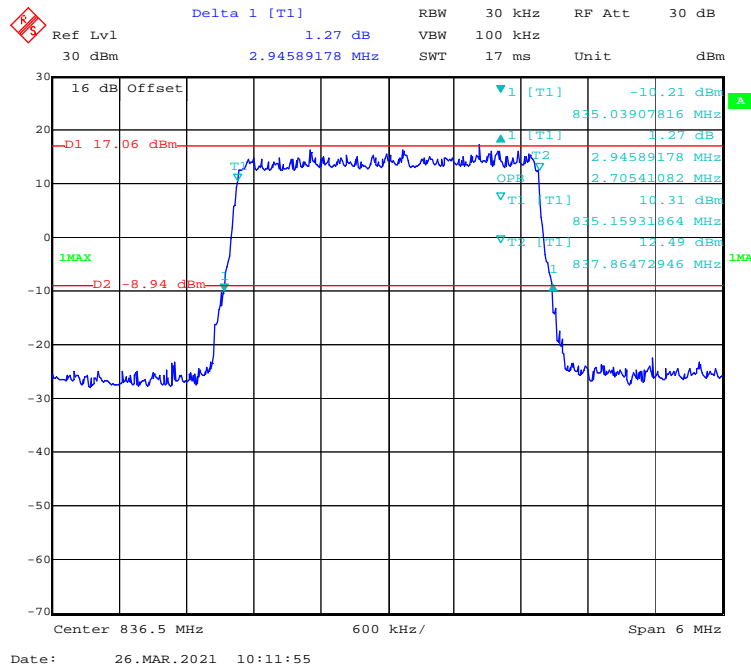
16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



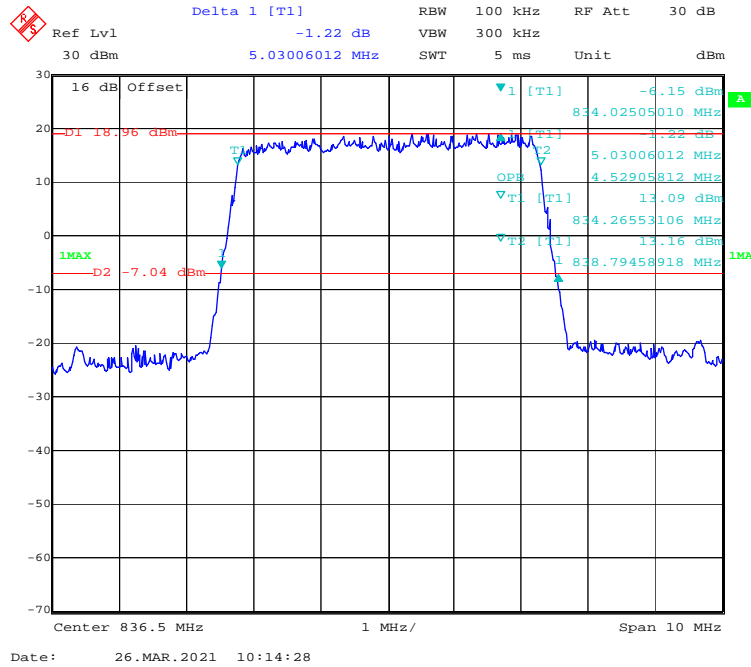
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



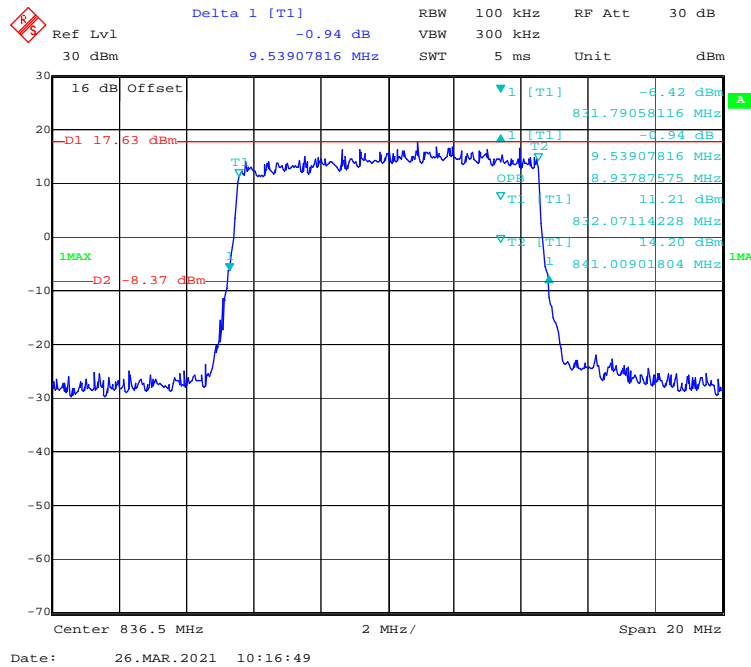
QPSK (3.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



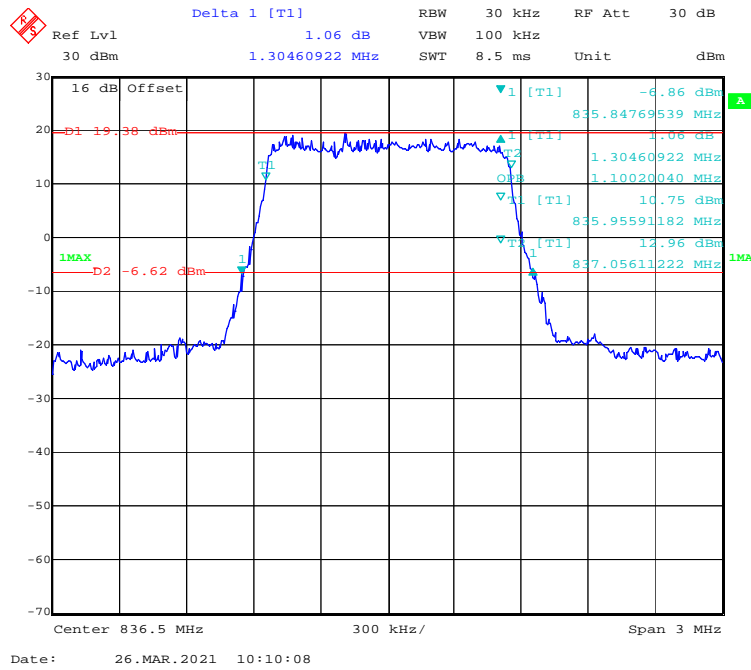
QPSK (5.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



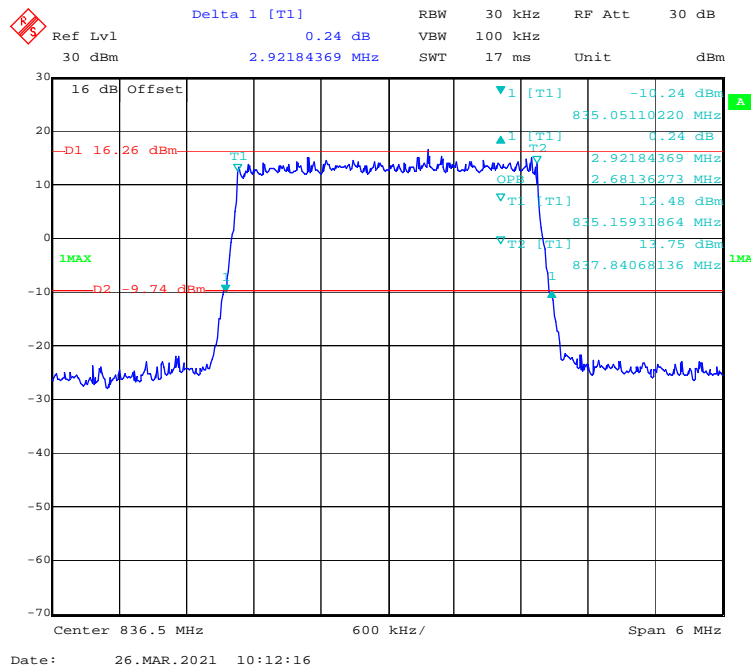
QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



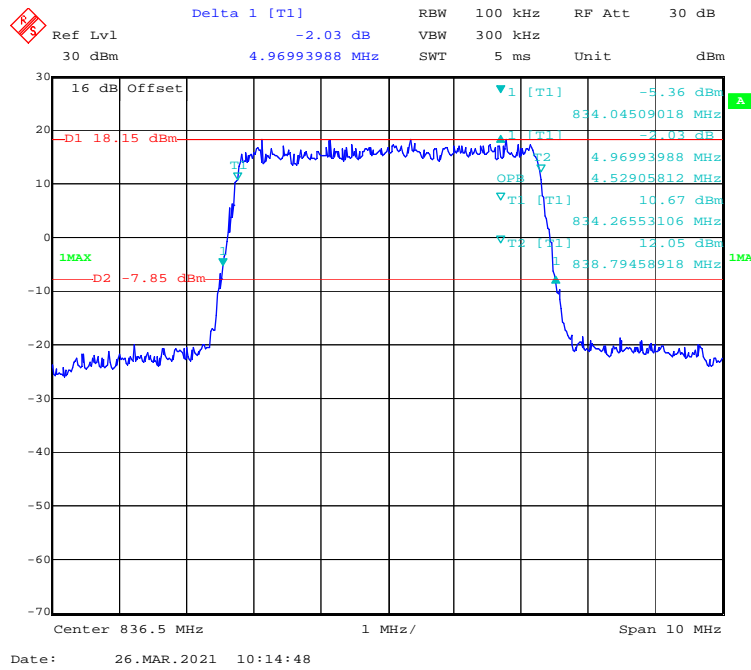
16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



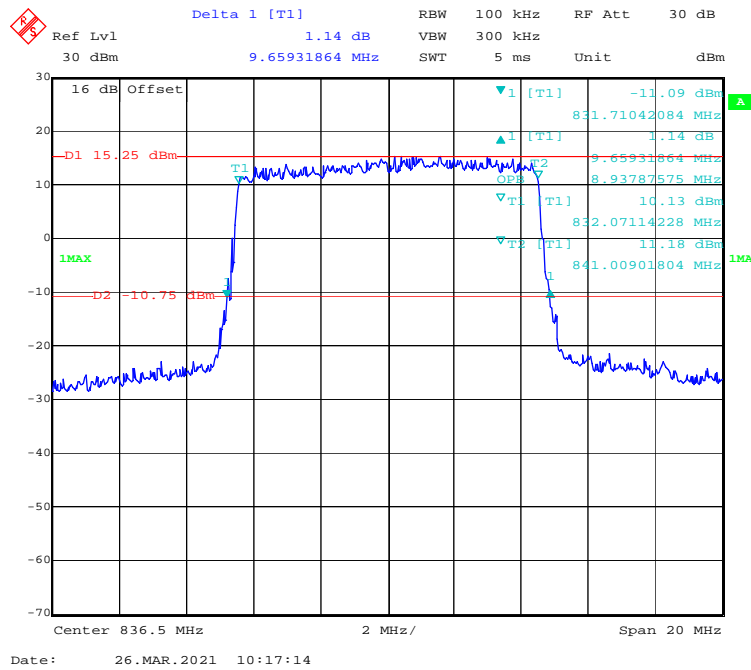
16-QAM (3.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



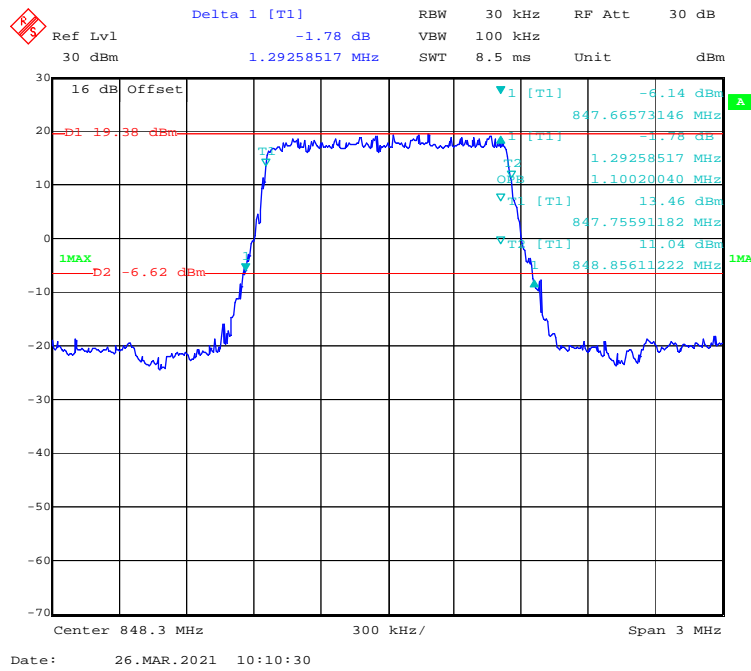
16-QAM (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



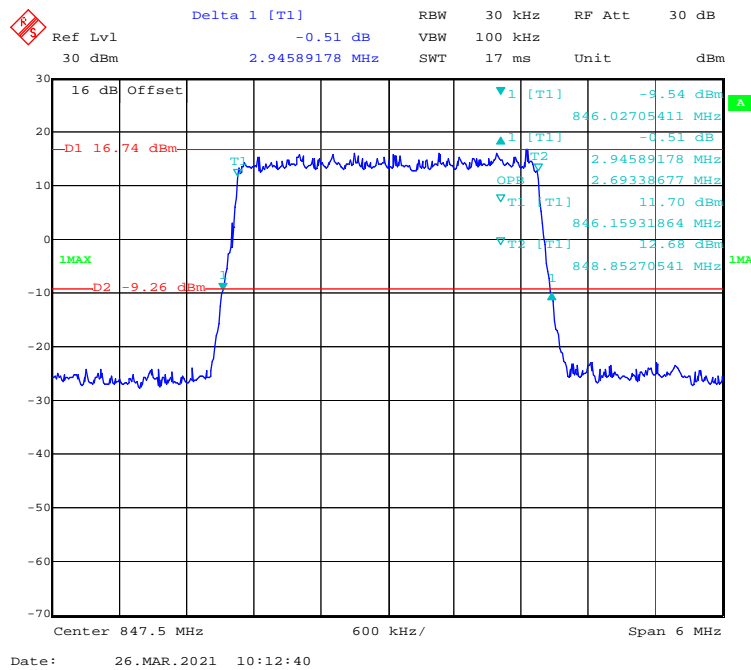
16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



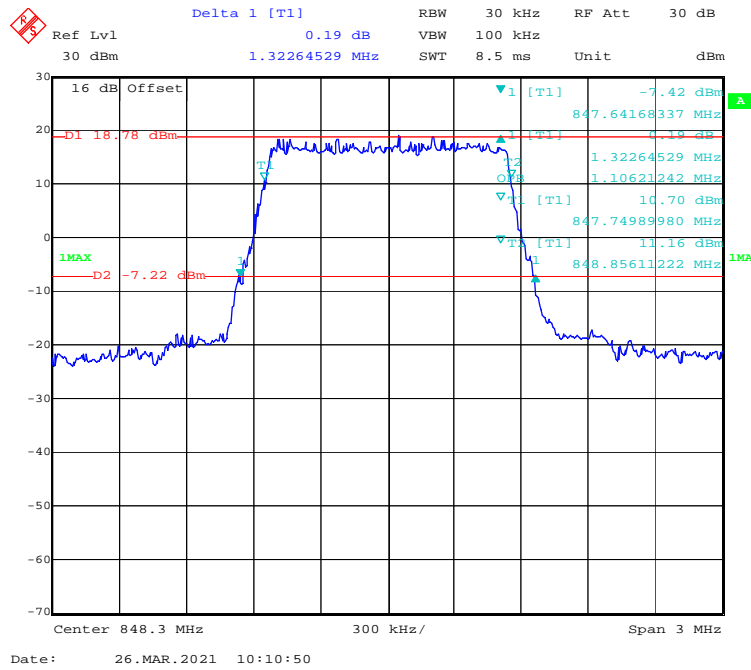
QPSK (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



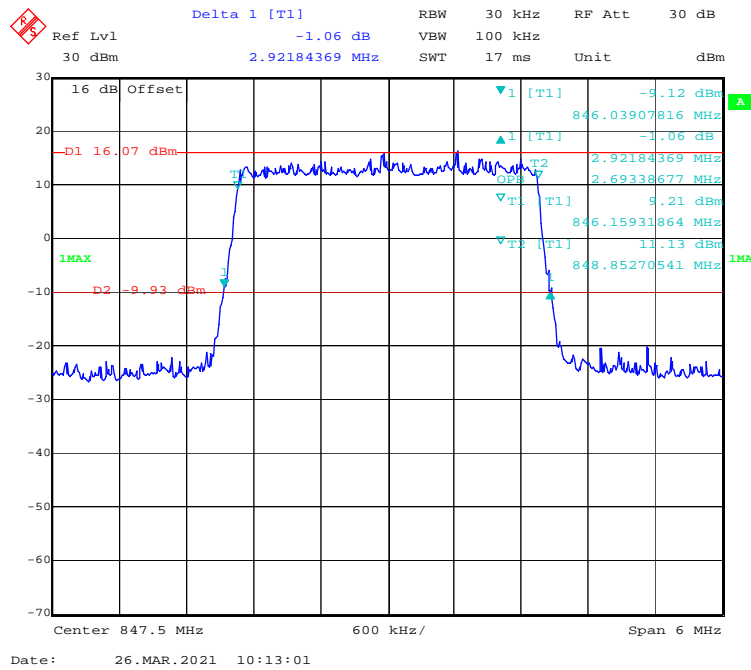
QPSK (3.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



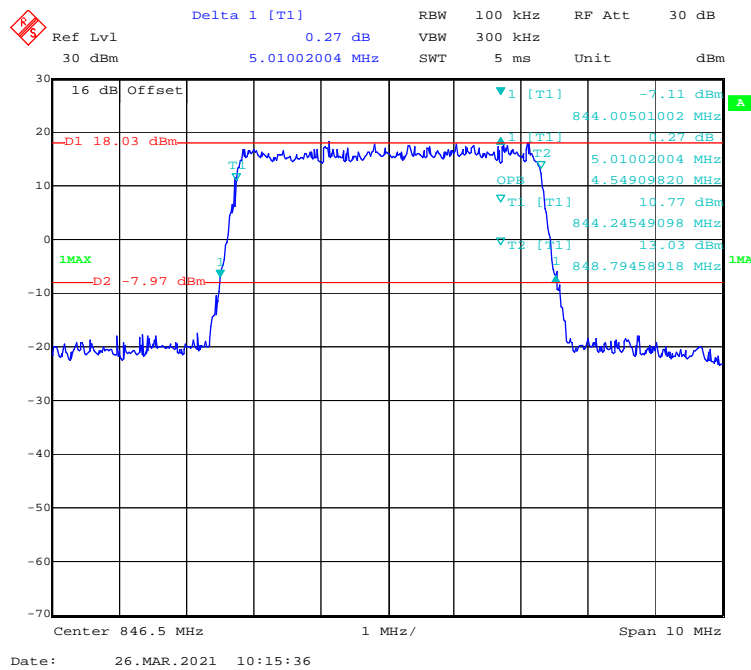
16-QAM (1.4 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



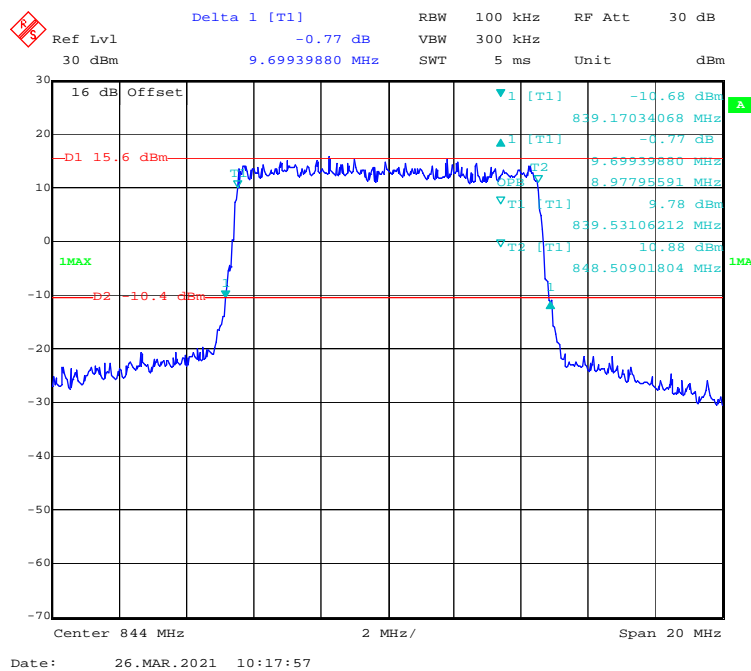
16-QAM (3.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



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



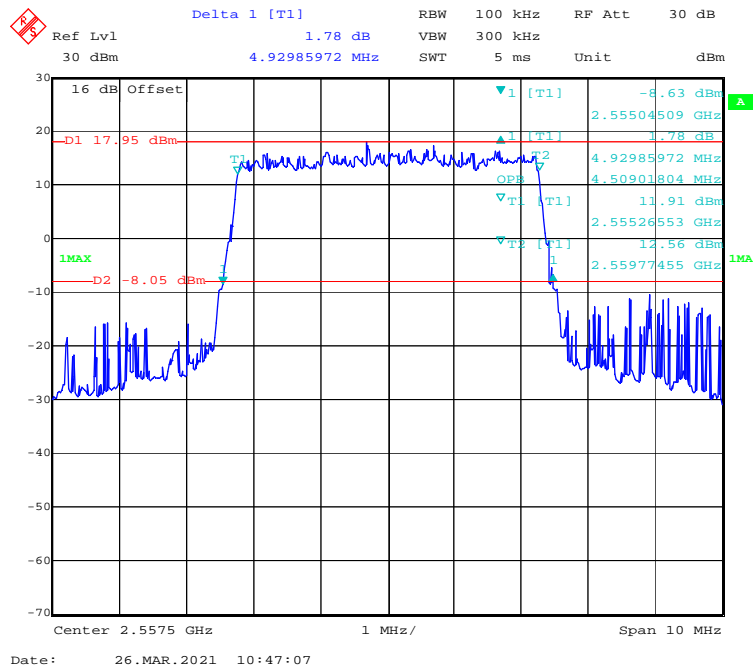
16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



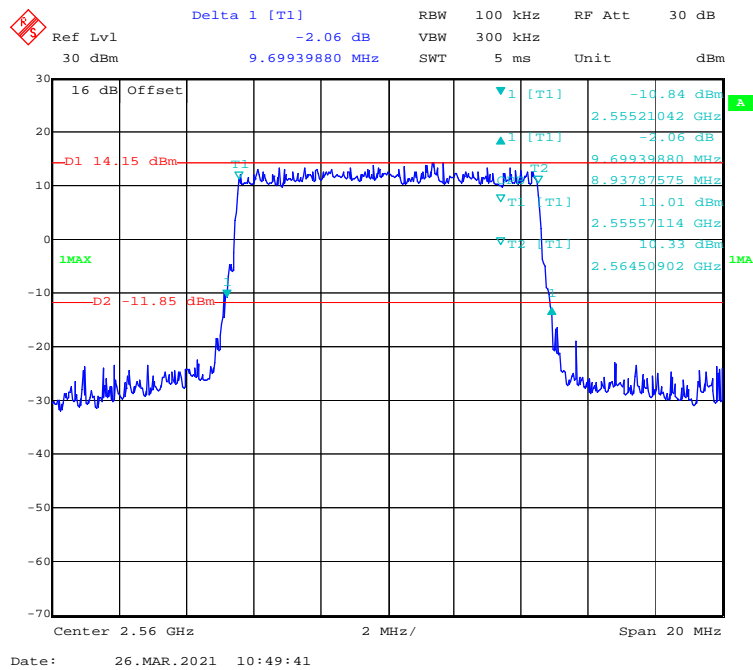
LTE Band 41:

Test Modulation	Test Bandwidth	Test Channel	26 dB Bandwidth	99% Occupied Bandwidth
			MHz	MHz
QPSK	5M	Low	4.930	4.509
	10M		9.699	8.938
	15M		15.391	13.527
	20M		19.399	17.876
	5M	Middle	5.010	4.509
	10M		9.619	8.938
	15M		14.790	13.467
	20M		19.319	17.876
	5M	High	4.990	4.549
	10M		9.490	8.978
	15M		15.090	13.407
	20M		19.559	17.876
16-QAM	5M	Low	5.030	4.509
	10M		9.619	8.938
	15M		15.631	13.467
	20M		19.319	17.956
	5M	Middle	4.990	4.509
	10M		9.579	8.978
	15M		14.910	13.467
	20M		21.323	17.956
	5M	High	5.030	4.529
	10M		9.659	8.978
	15M		14.790	13.527
	20M		19.238	17.876

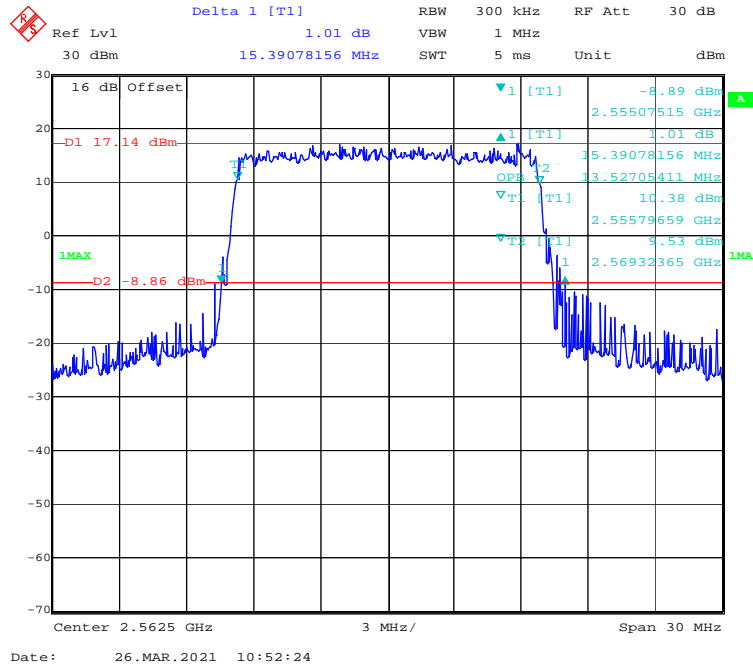
QPSK (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



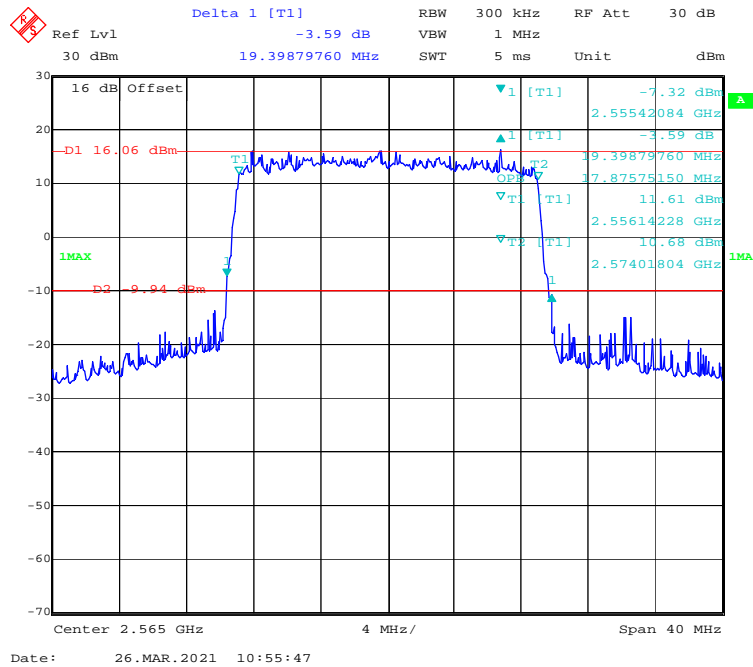
QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



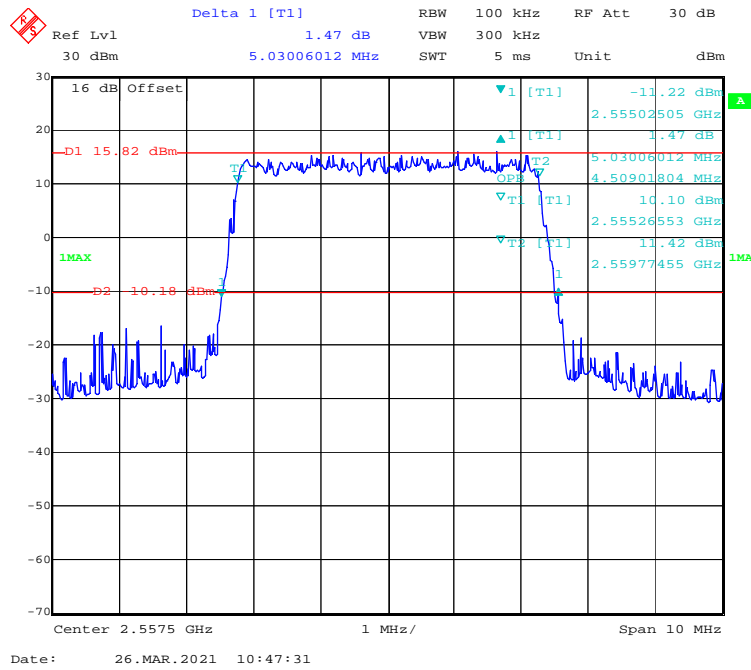
QPSK (15.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



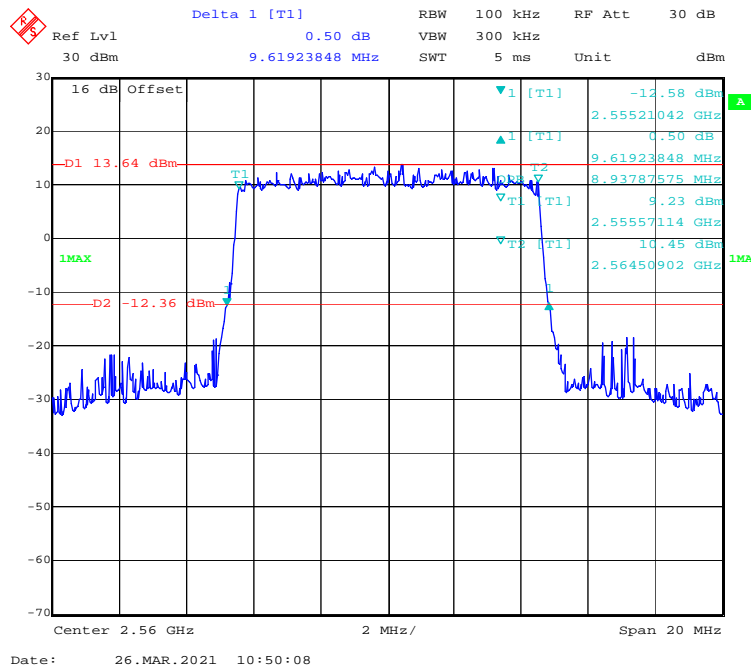
QPSK (20.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



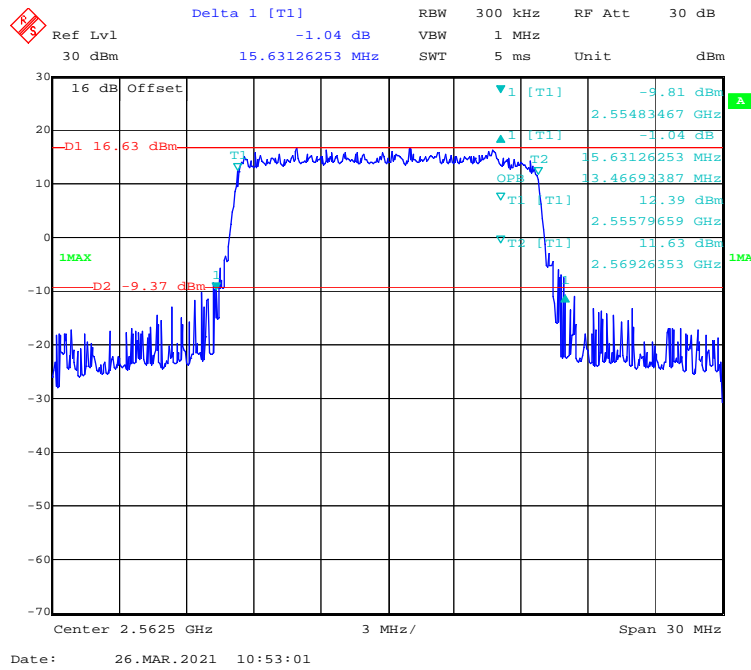
16-QAM (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



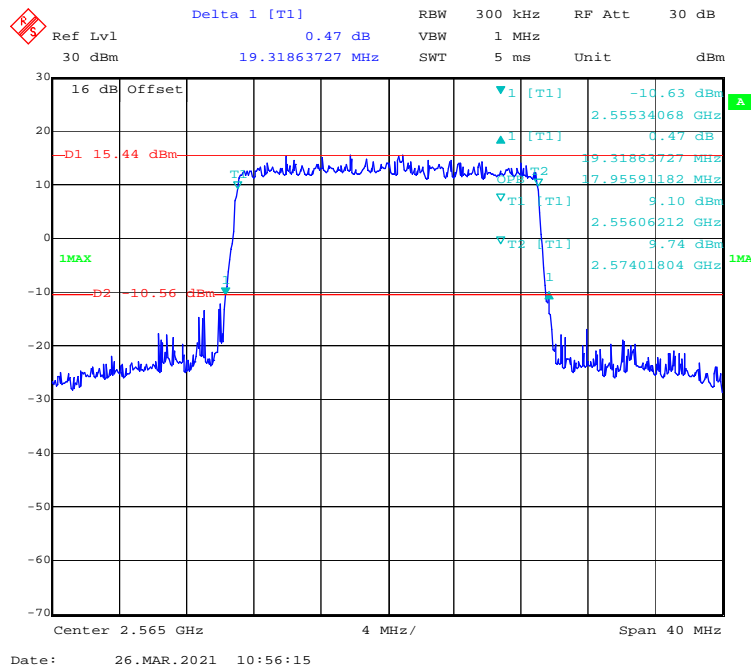
16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



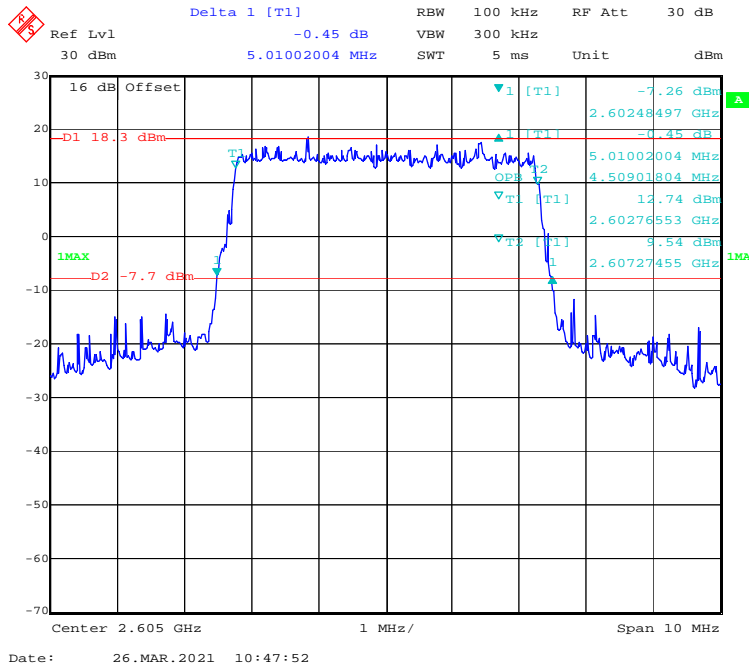
16-QAM (15.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



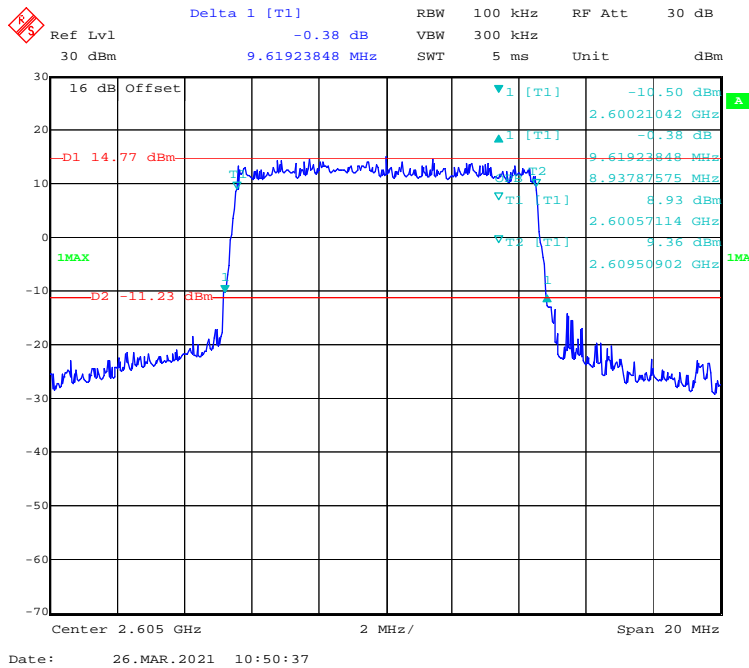
16-QAM (20.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Low channel



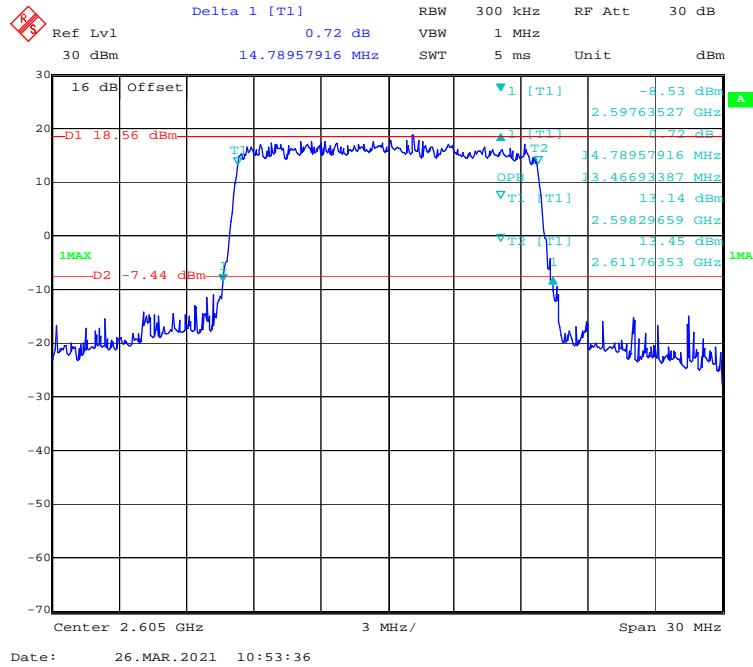
QPSK (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



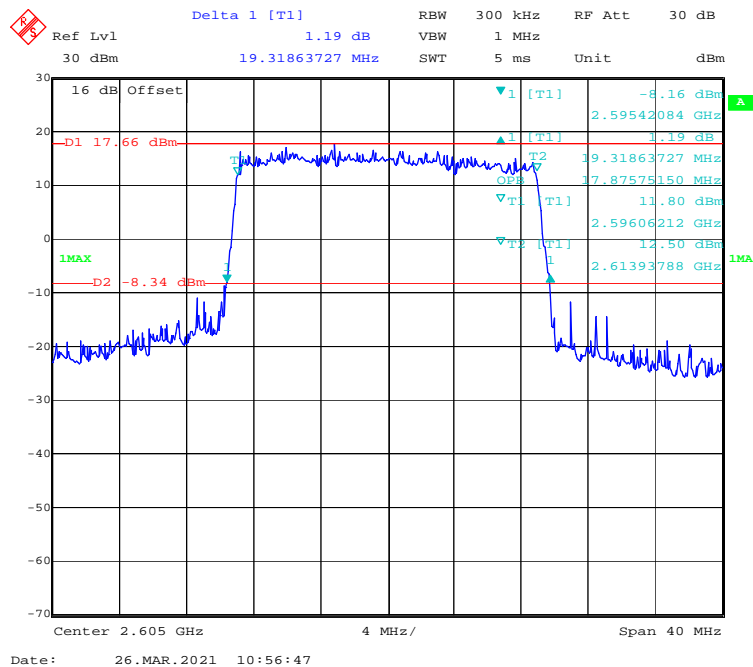
QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



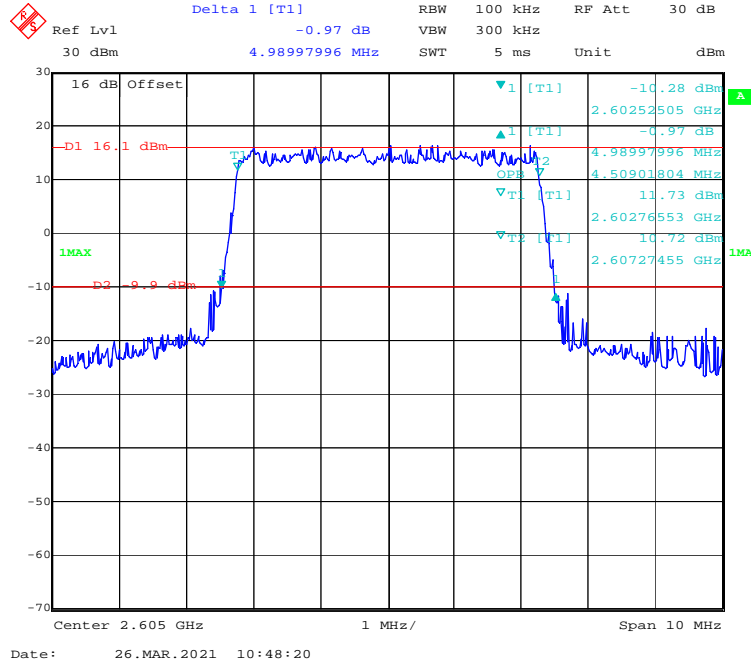
QPSK (15.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



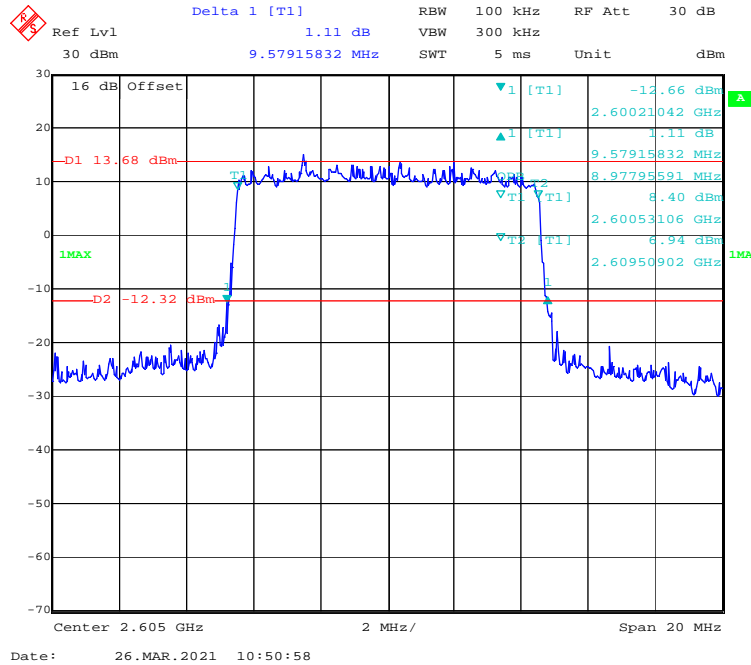
QPSK (20.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



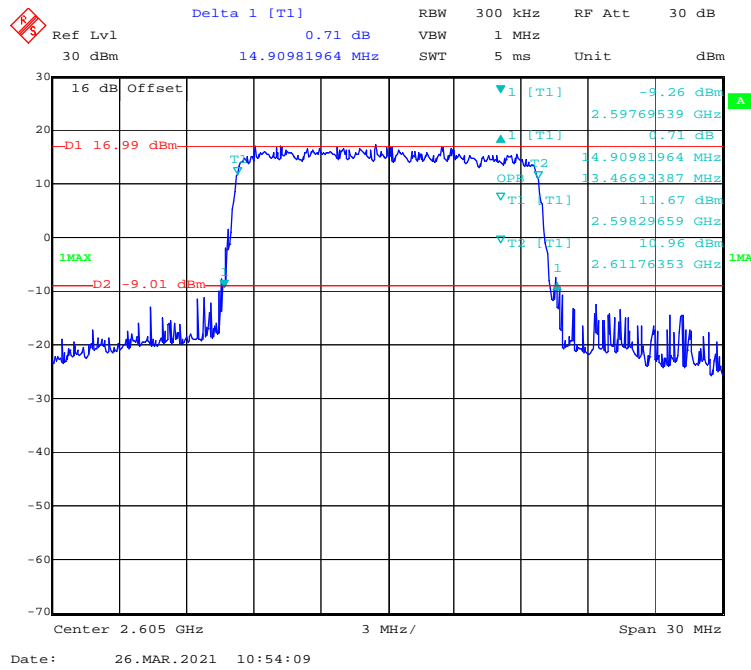
16-QAM (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



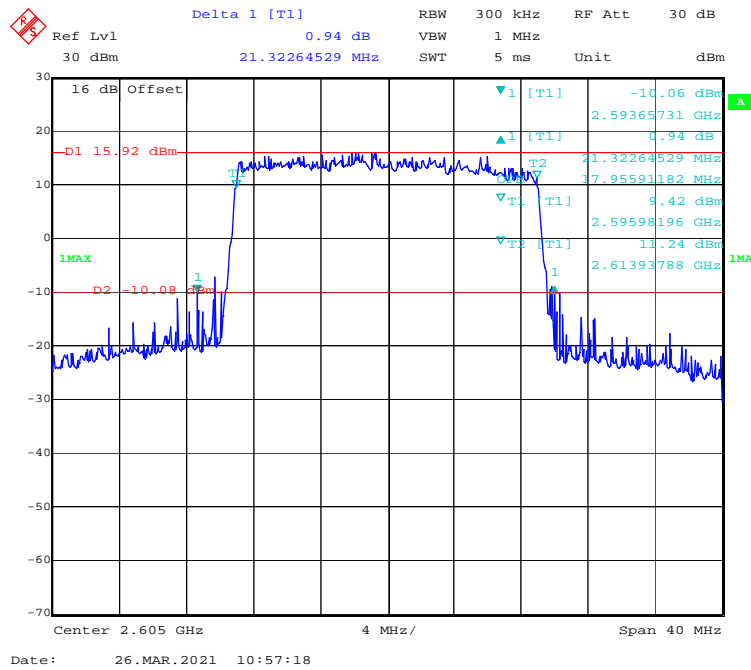
16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



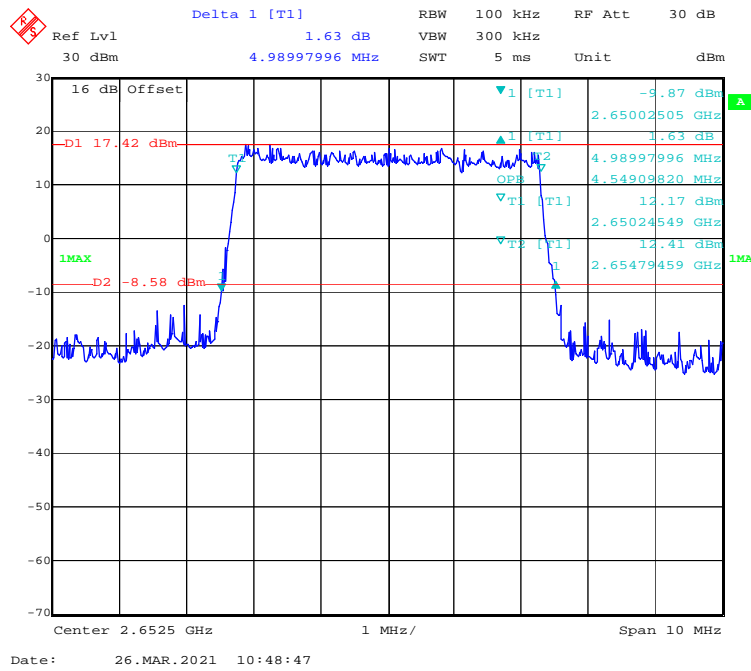
16-QAM (15.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



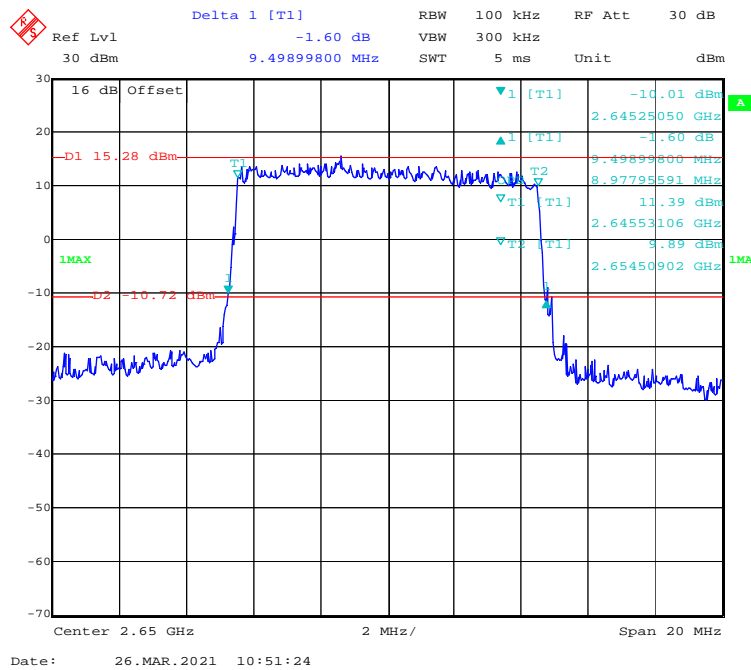
16-QAM (20.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, Middle channel



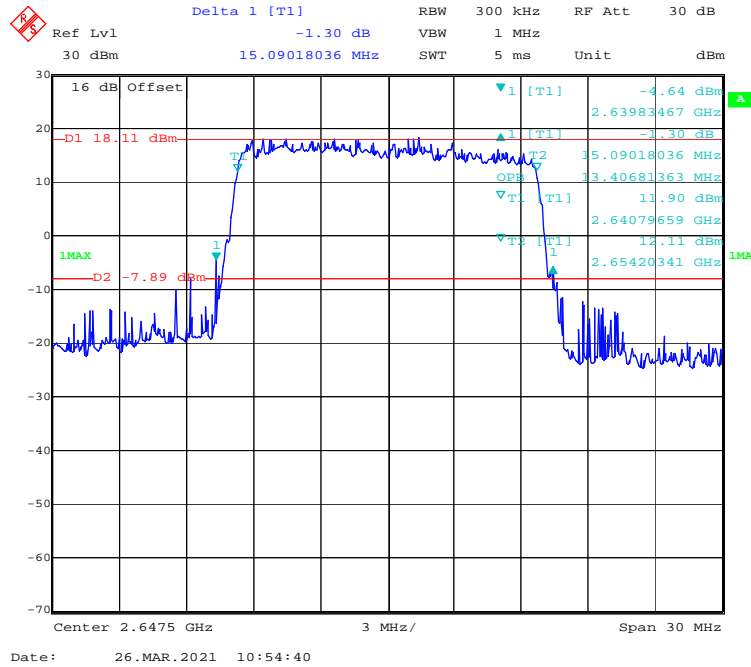
QPSK (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



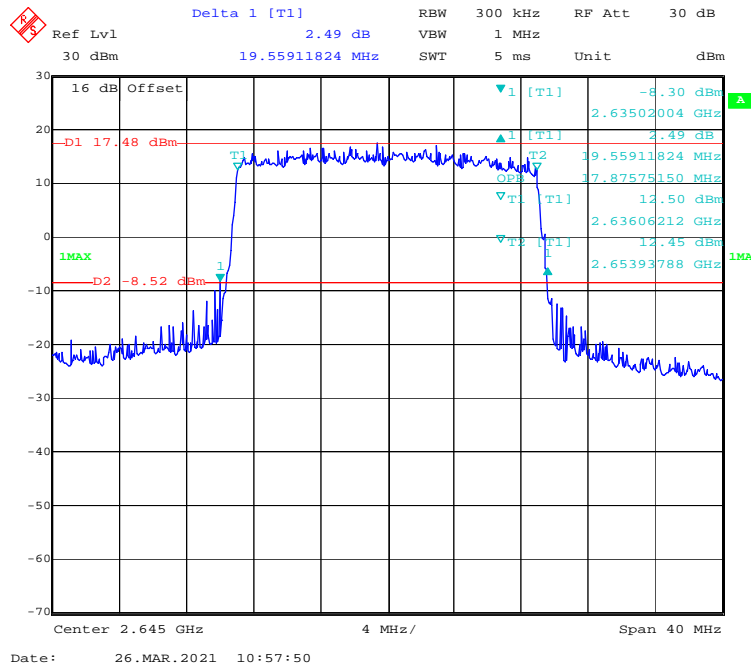
QPSK (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



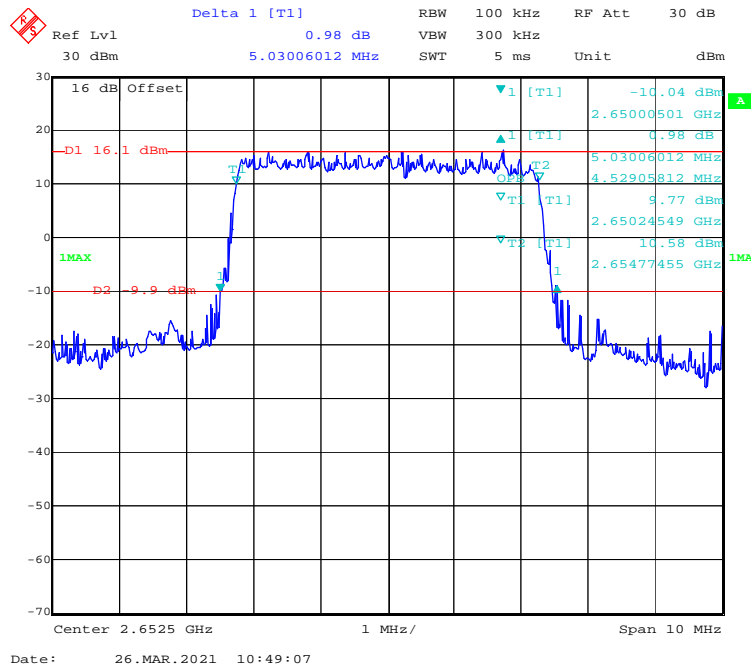
QPSK (15.0MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



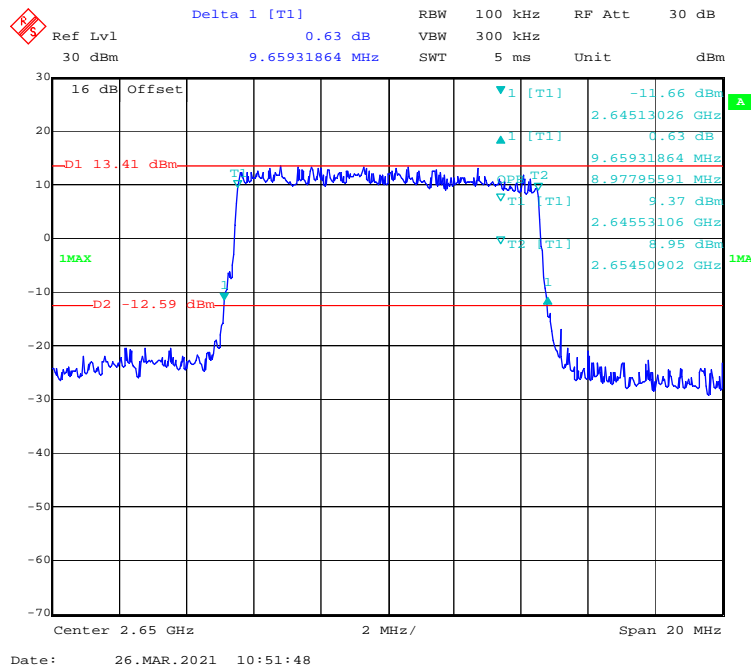
QPSK (20.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



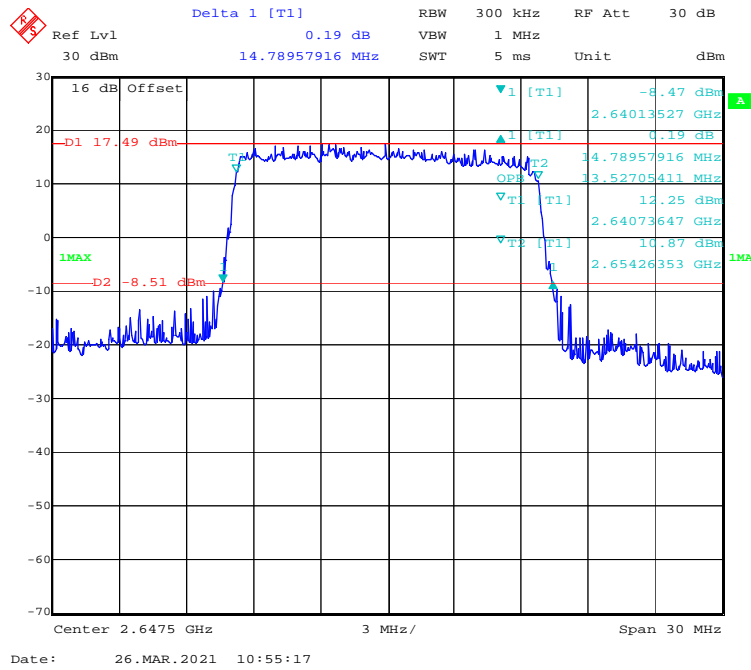
16-QAM (5.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



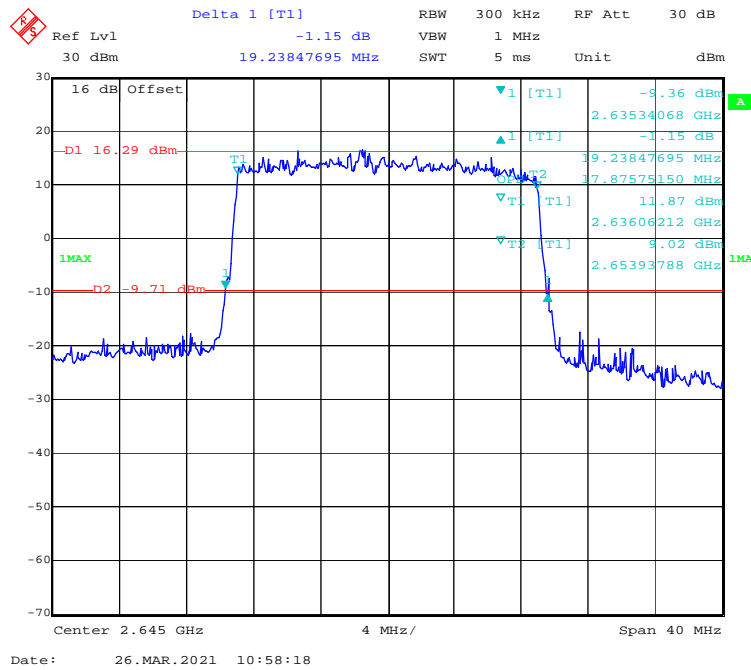
16-QAM (10.0 MHz) - 99% Occupied & 26 dB Emissions Bandwidth, High channel



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



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



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

Applicable Standards

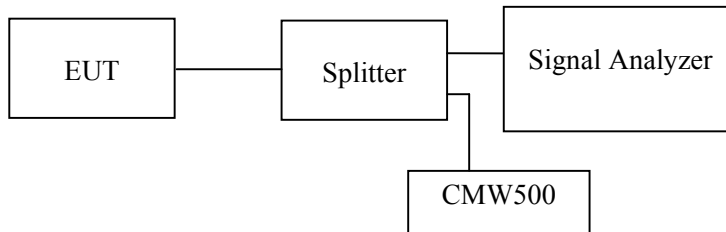
FCC §2.1051, §22.917(a) and §27.53 (m).

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

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

Test Procedure

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



Test Data

Environmental Conditions

Temperature:	24.9 °C
Relative Humidity:	52 %
ATM Pressure:	100.7 kPa

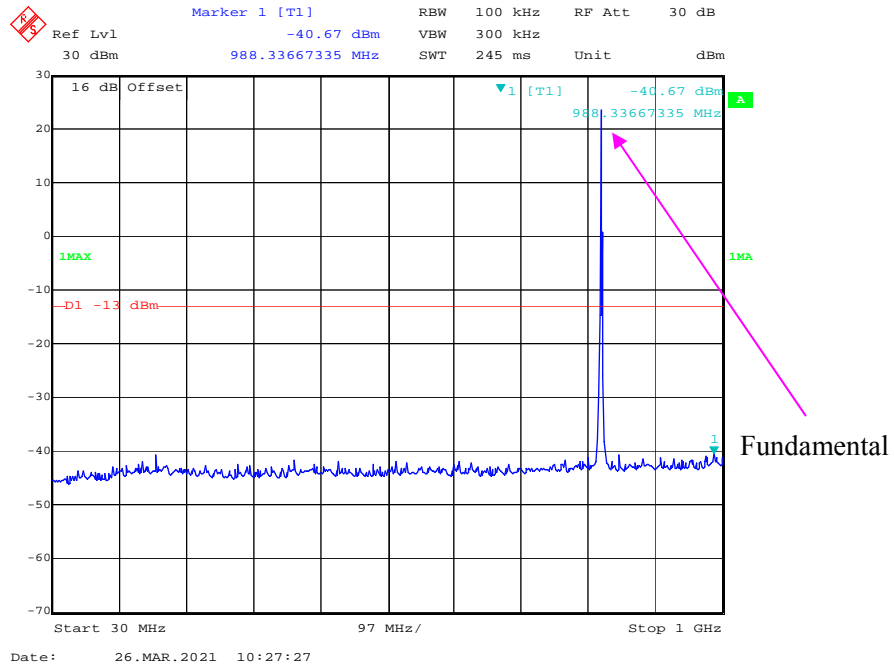
The testing was performed by Stone Zhang on 2021-03-26.

EUT operation mode: Transmitting

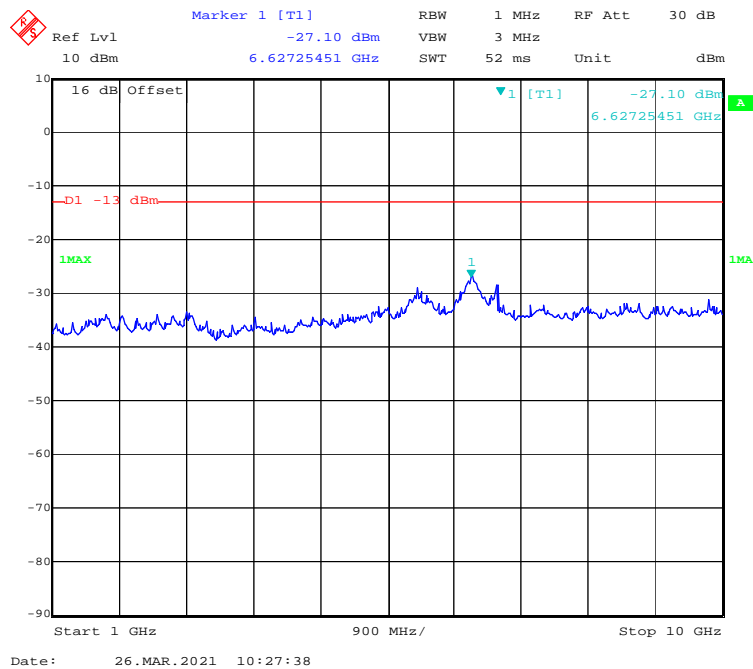
Test Result: Compliance.

LTE Band 5:

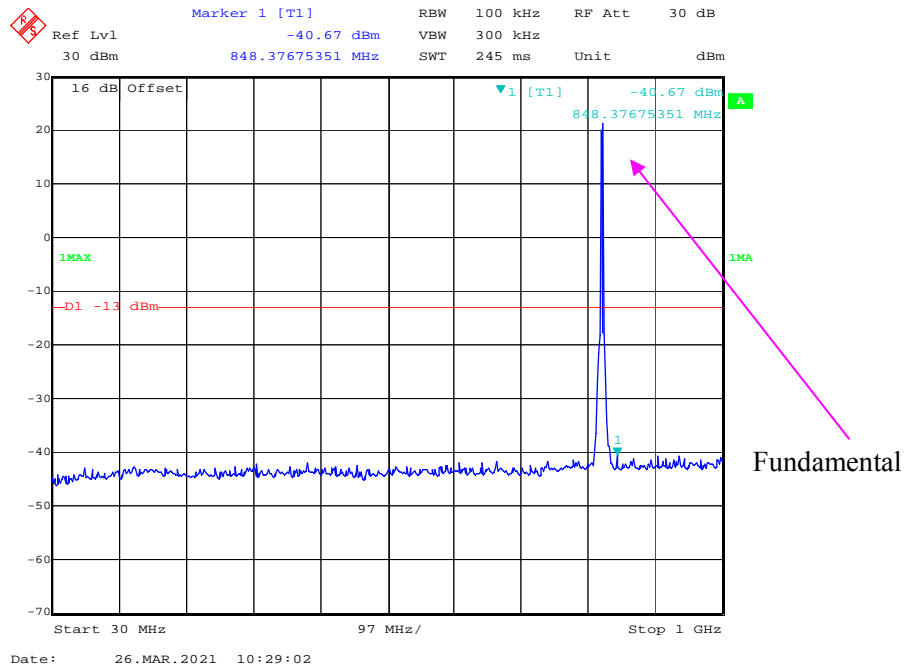
30 MHz – 1 GHz (QPSK, 1.4 MHz, Low Channel)



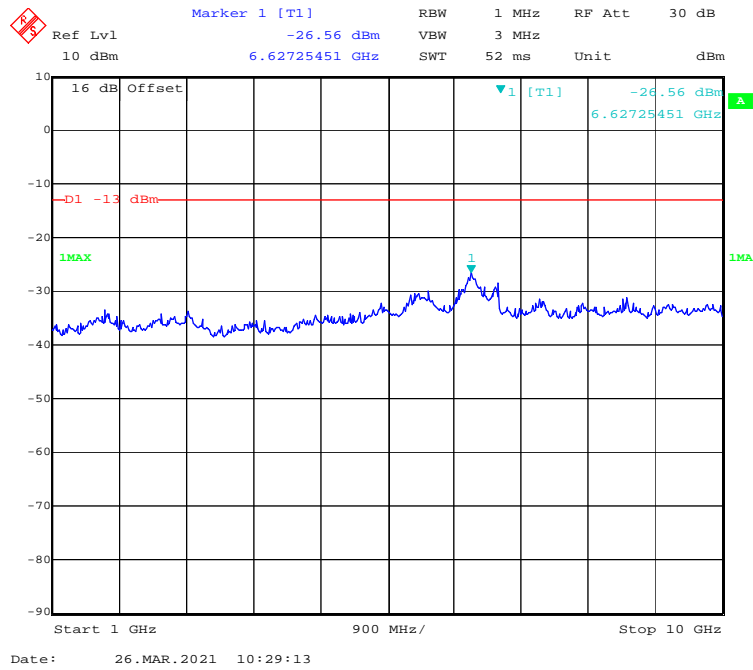
1 GHz – 10 GHz (QPSK, 1.4 MHz, Low Channel)



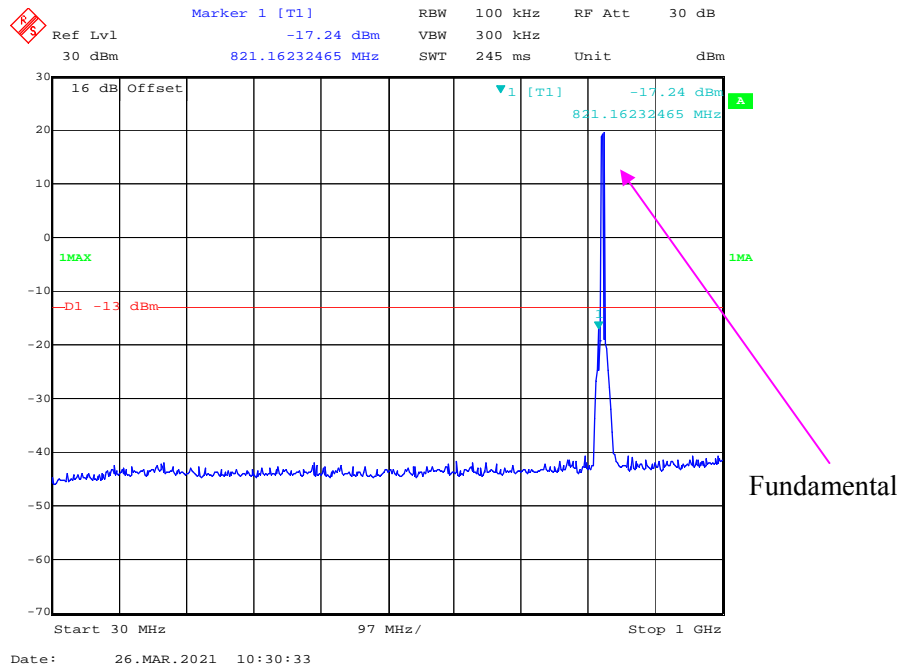
30 MHz – 1 GHz (QPSK, 3.0 MHz, Low Channel)



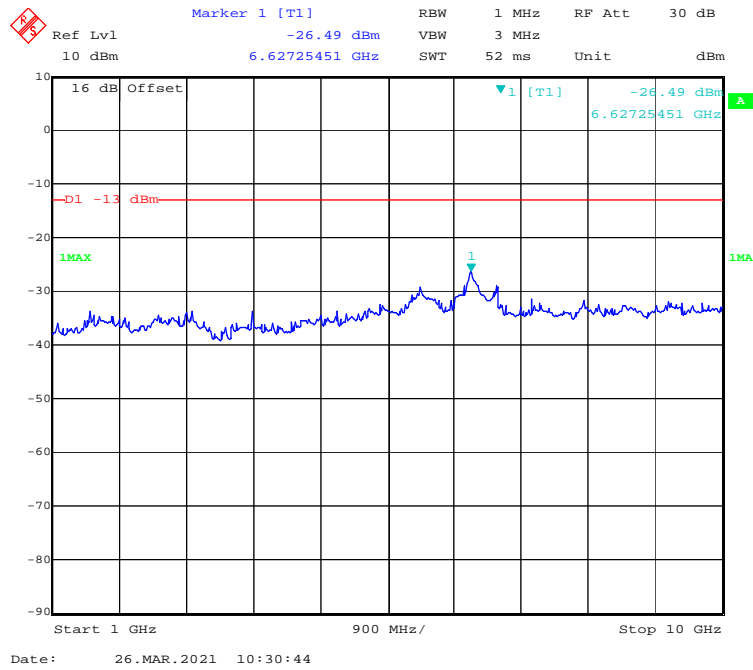
1 GHz – 10 GHz (QPSK, 3.0 MHz, Low Channel)



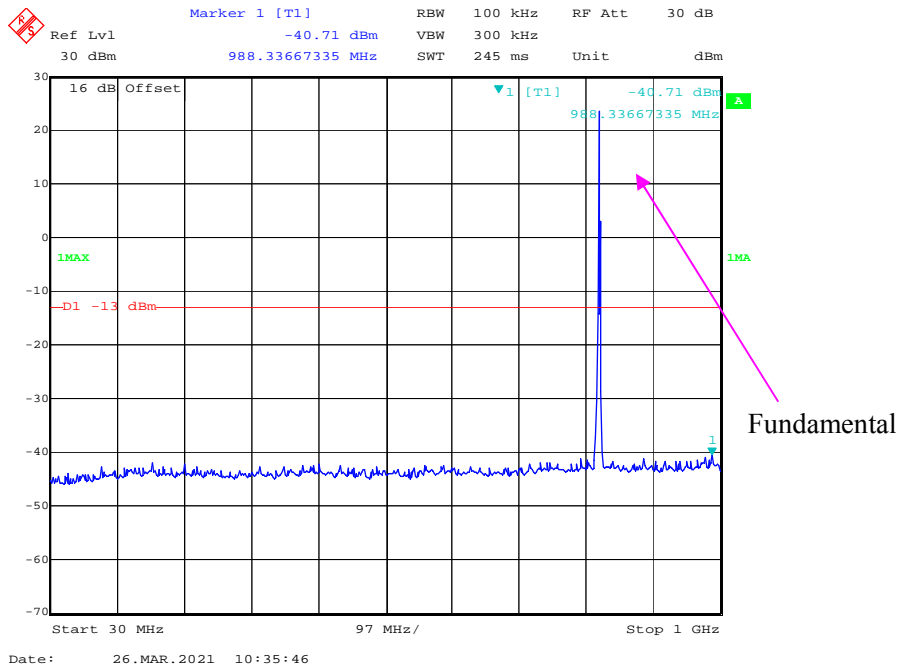
30 MHz – 1 GHz (QPSK, 5.0 MHz, Low Channel)



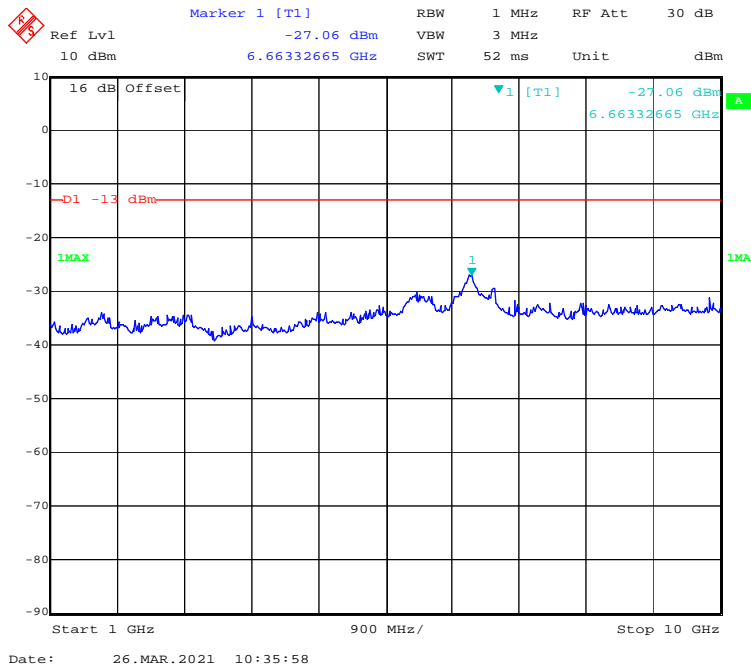
1 GHz – 10 GHz (QPSK, 5.0MHz, Low Channel)



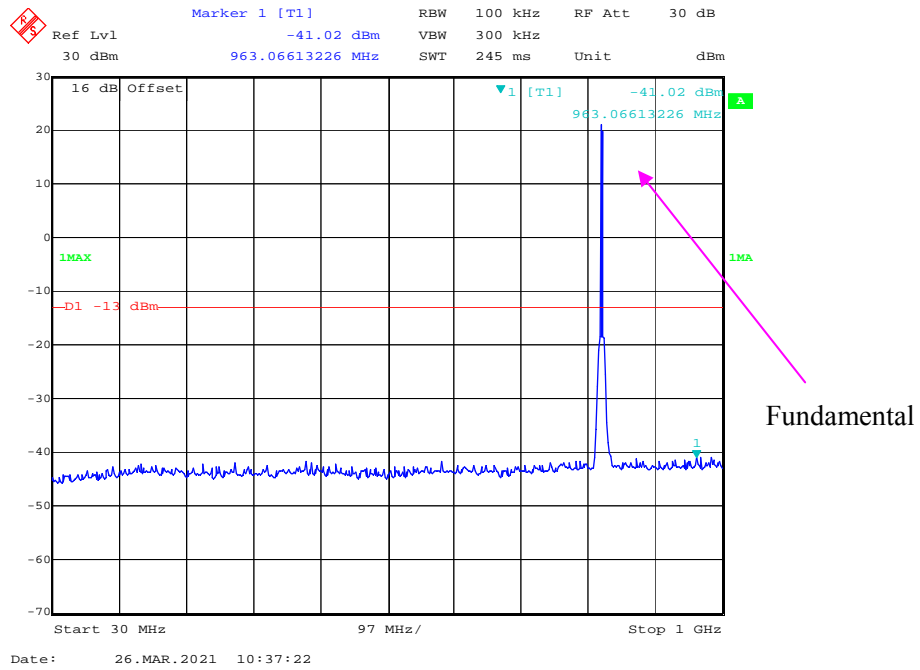
30 MHz – 1 GHz (16QAM, 1.4 MHz, Low Channel)



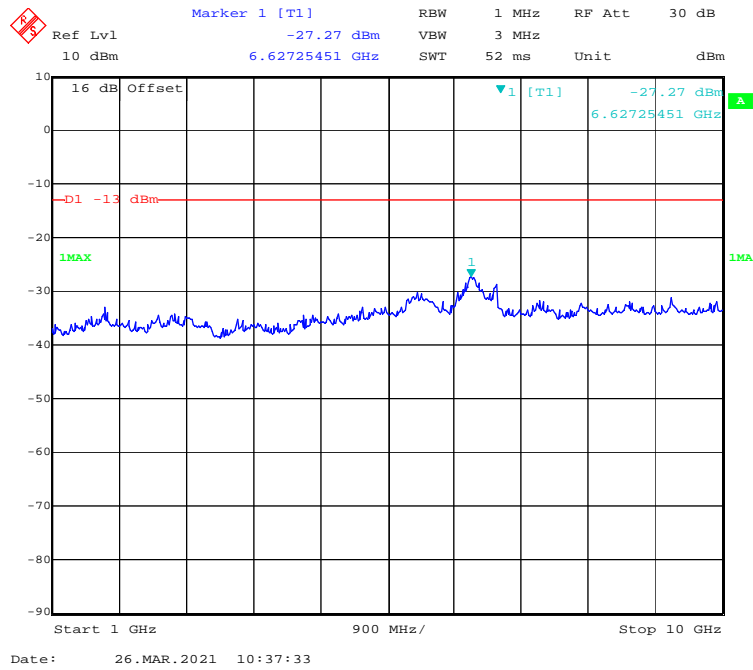
1 GHz – 10 GHz (16QAM, 1.4 MHz, Low Channel)



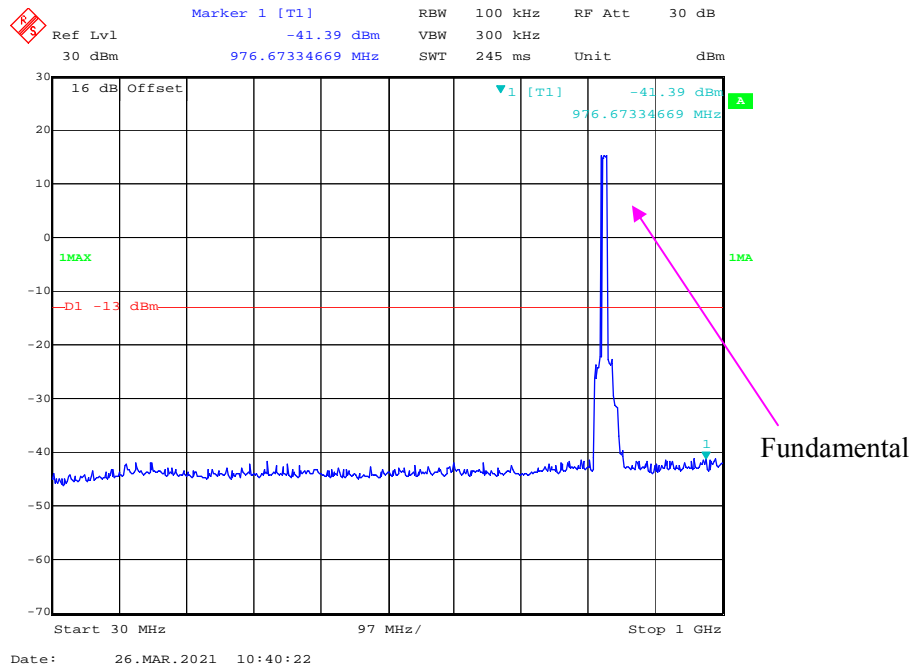
30 MHz – 1 GHz (16QAM, 3.0 MHz, Low Channel)



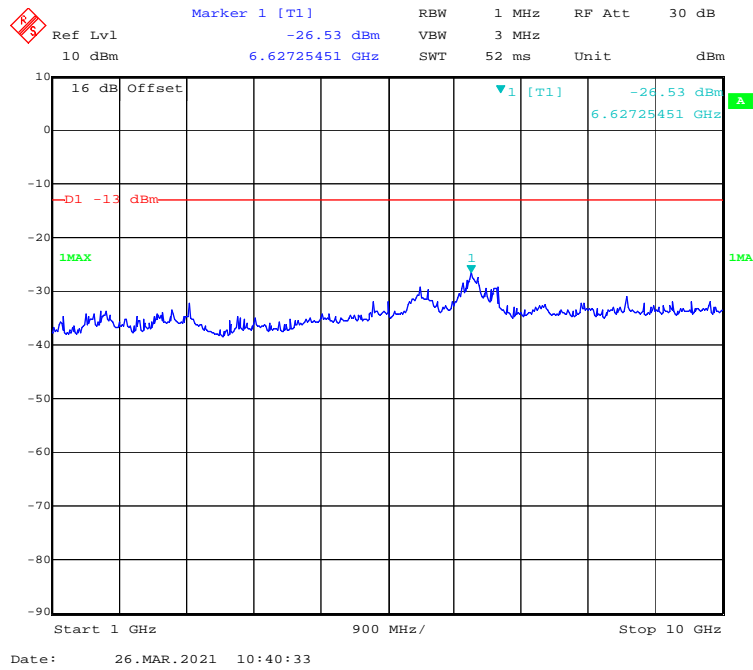
1 GHz – 10 GHz (16QAM, 3.0 MHz, Low Channel)



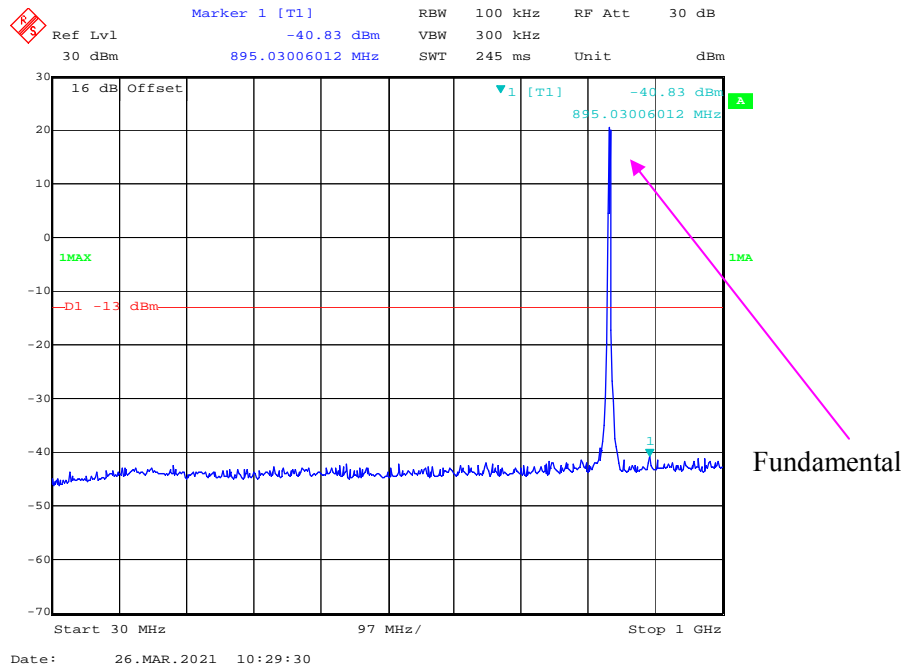
30 MHz – 1 GHz (16QAM, 10.0 MHz, Low Channel)



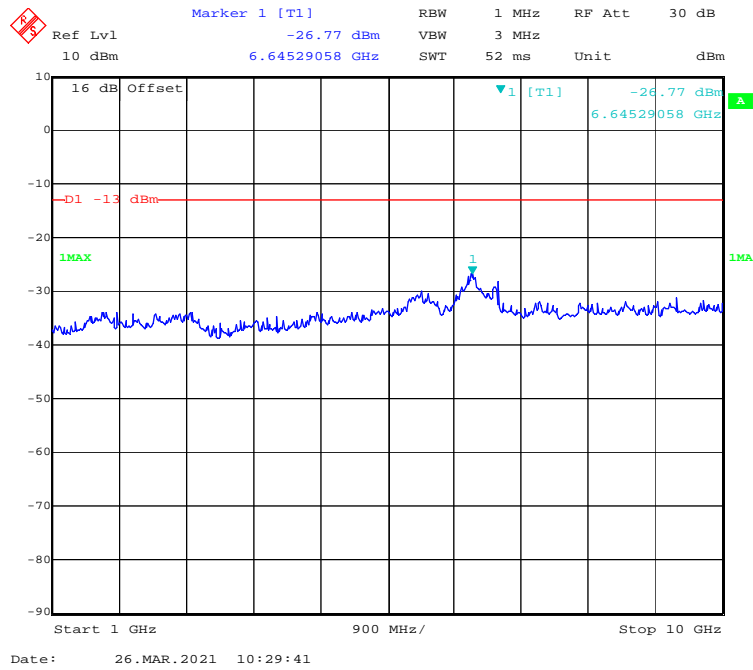
1 GHz – 10 GHz (16QAM, 10.0 MHz, Low Channel)



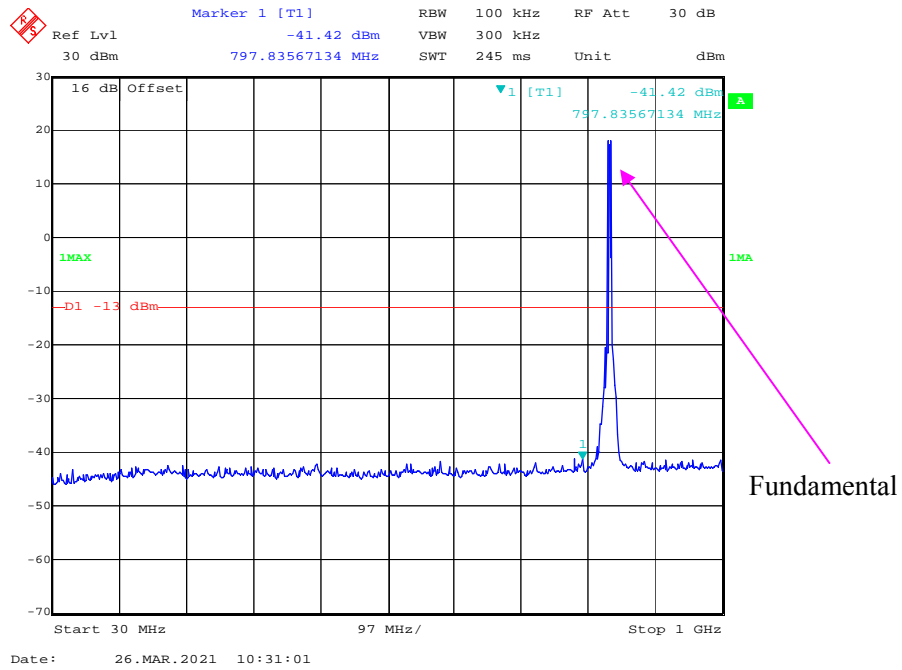
30 MHz – 1 GHz (QPSK, 3.0 MHz, Middle Channel)



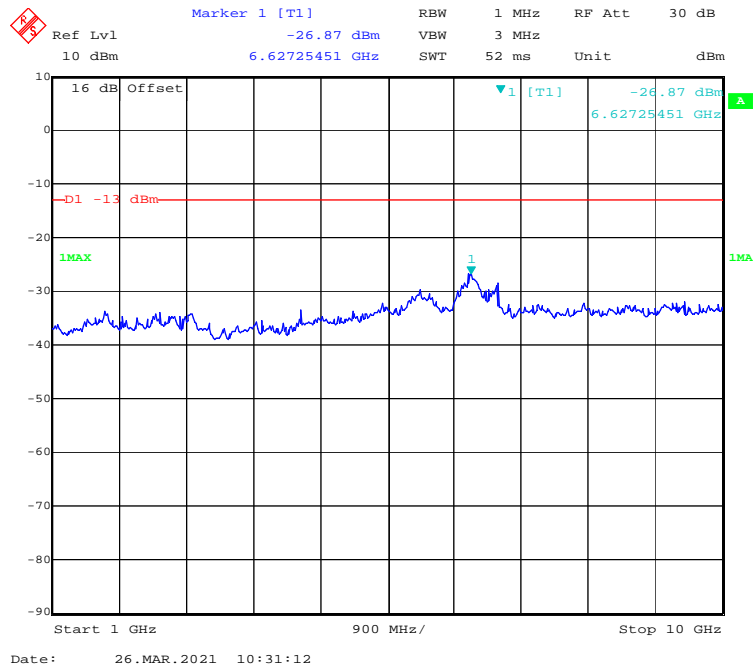
1 GHz – 10 GHz (QPSK, 3.0 MHz, Middle Channel)



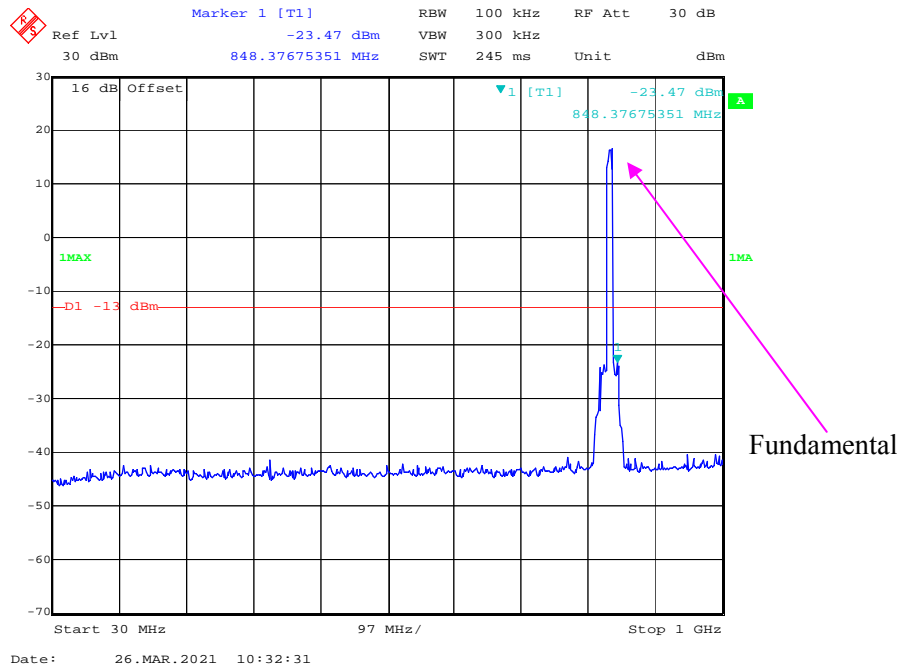
30 MHz – 1 GHz (QPSK, 5.0 MHz, Middle Channel)



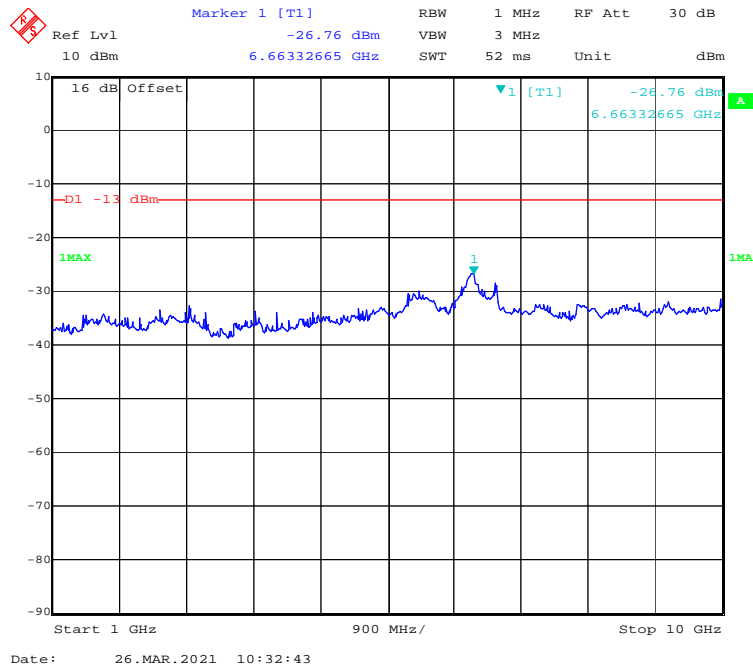
1 GHz – 10 GHz (QPSK, 5.0MHz, Middle Channel)



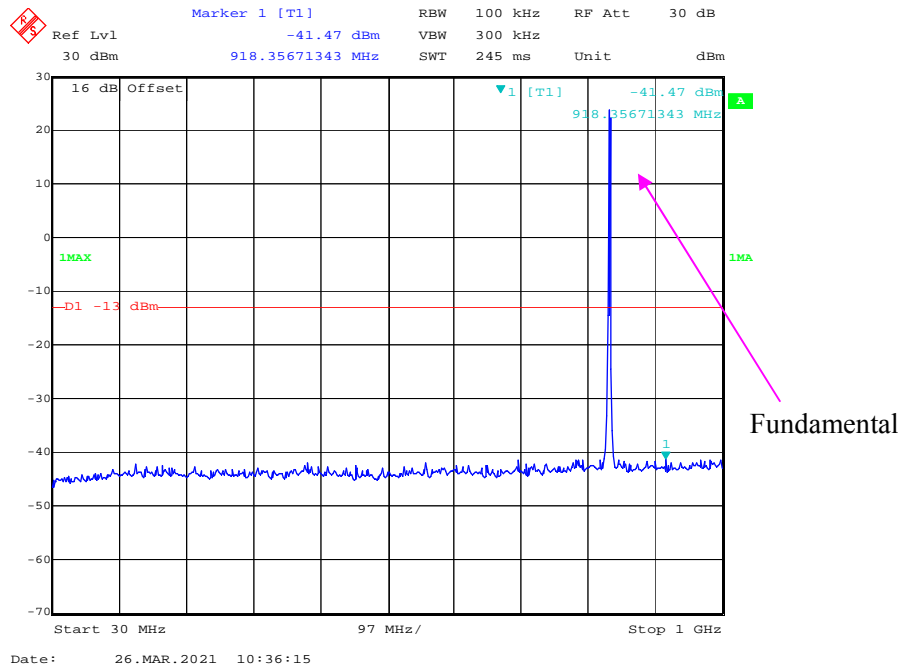
30 MHz – 1 GHz (QPSK, 10.0 MHz, Middle Channel)



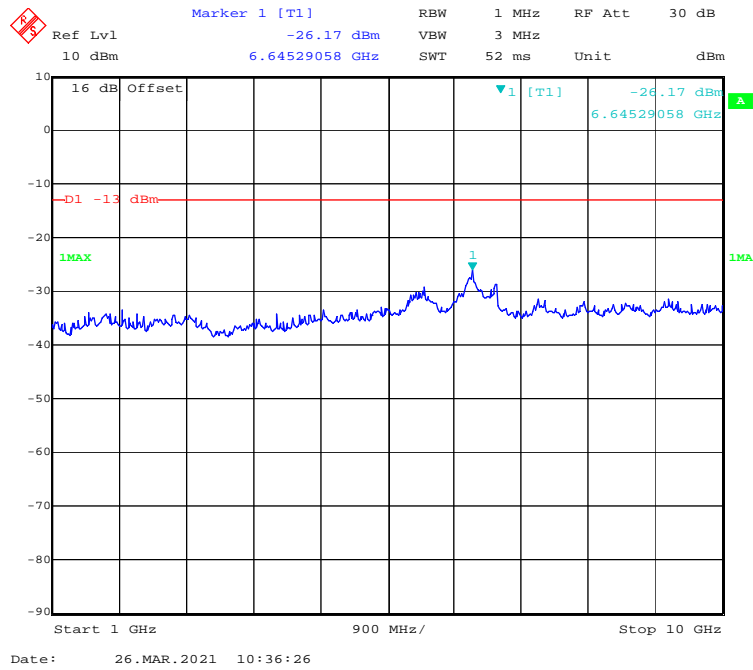
1 GHz – 10 GHz (QPSK, 10.0 MHz, Middle Channel)



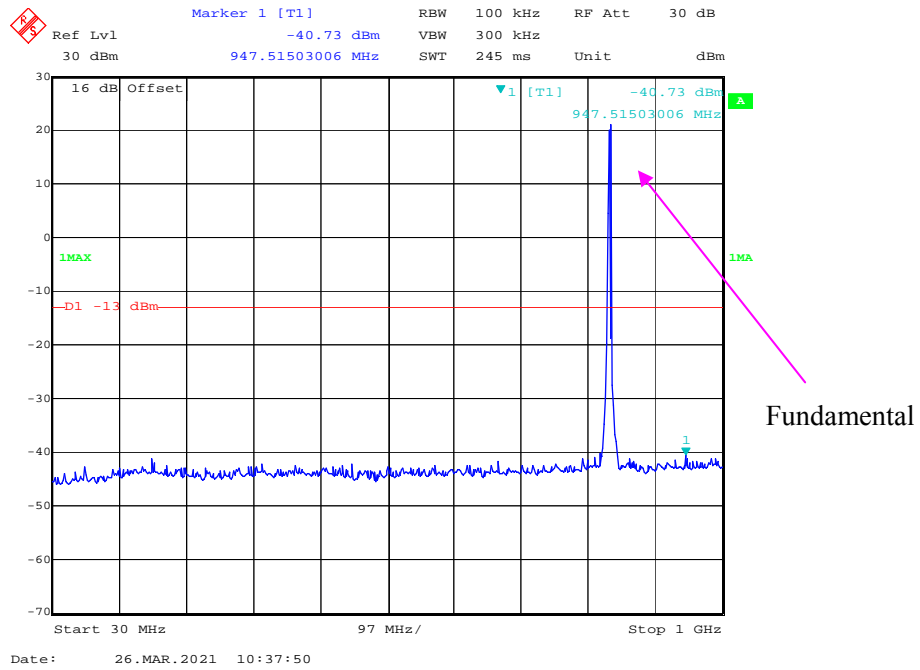
30 MHz – 1 GHz (16QAM, 1.4 MHz, Middle Channel)



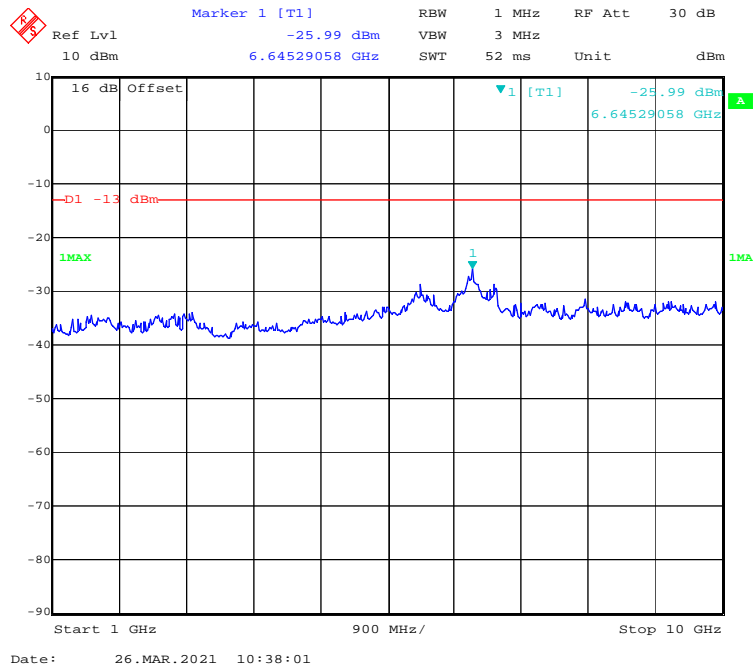
1 GHz – 10 GHz (16QAM, 1.4 MHz, Middle Channel)



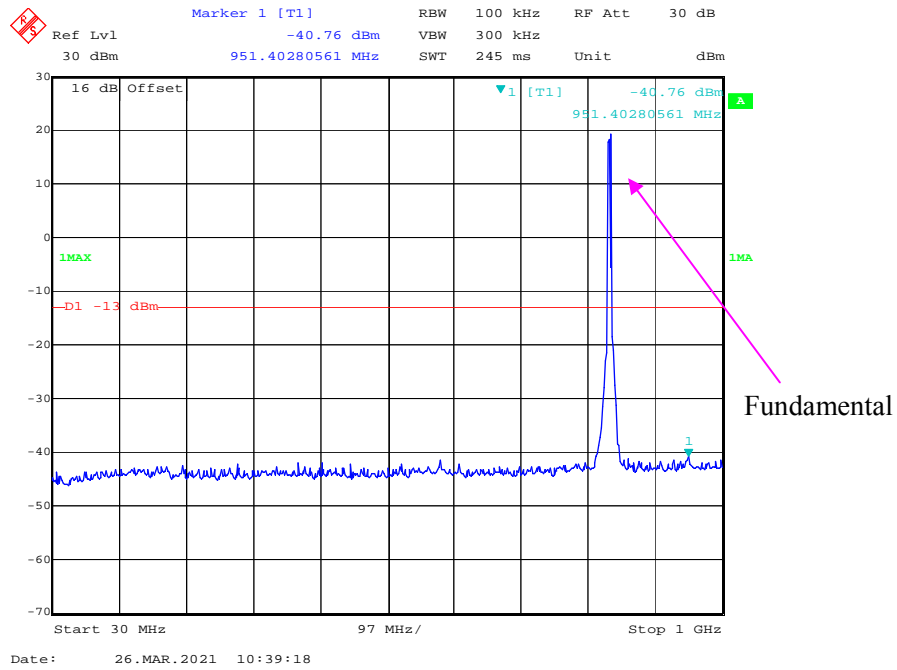
30 MHz – 1 GHz (16QAM, 3.0 MHz, Middle Channel)



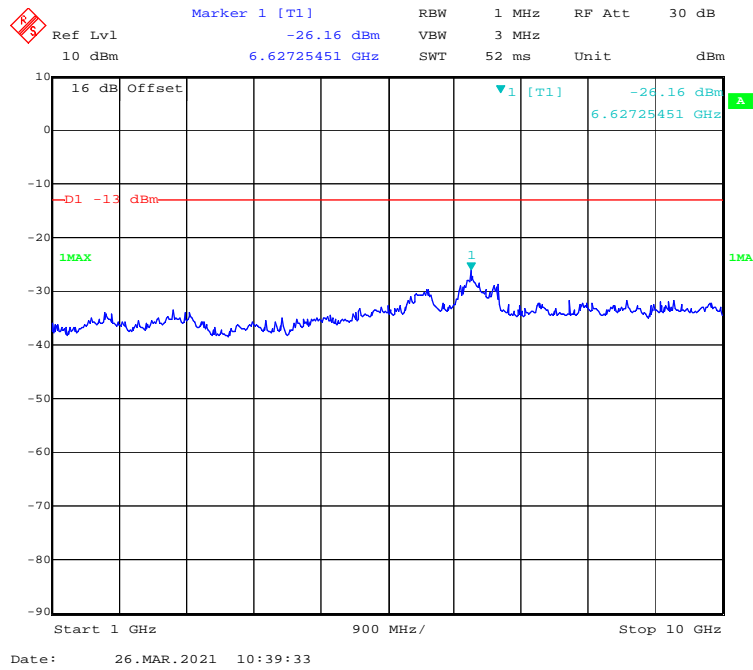
1 GHz – 10 GHz (16QAM, 3.0 MHz, Middle Channel)



30 MHz – 1 GHz (16QAM, 5.0 MHz, Middle Channel)

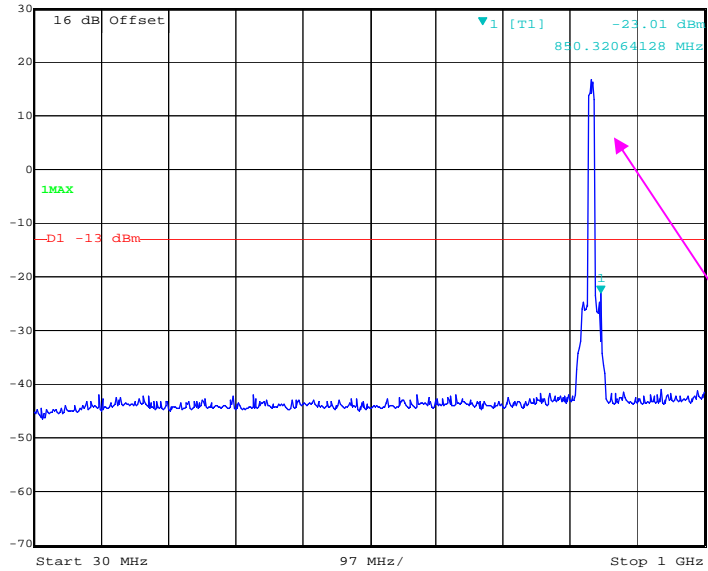


1 GHz – 10 GHz (16QAM, 5.0MHz, Middle Channel)



30 MHz – 1 GHz (16QAM, 10.0 MHz, Middle Channel)

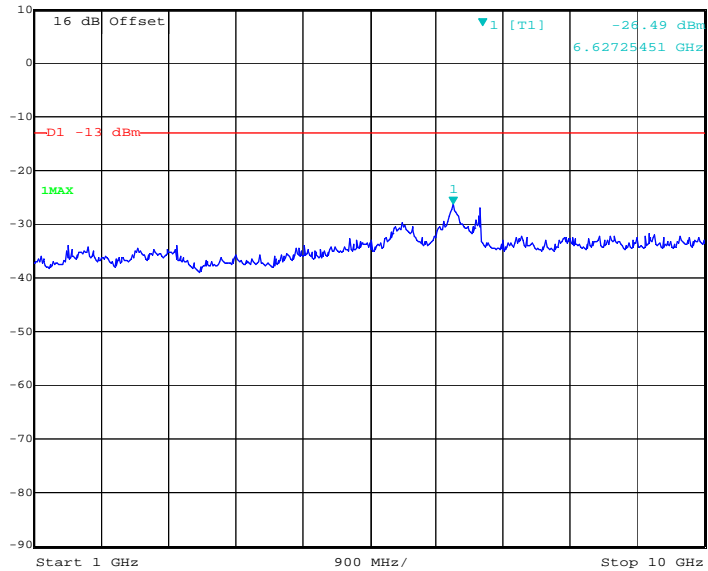
Marker 1 [T1] RBW 100 kHz RF Att 30 dB
Ref Lvl -23.01 dBm VBW 300 kHz
30 dBm 850.32064128 MHz SWT 245 ms Unit dBm



Date: 26.MAR.2021 10:40:52

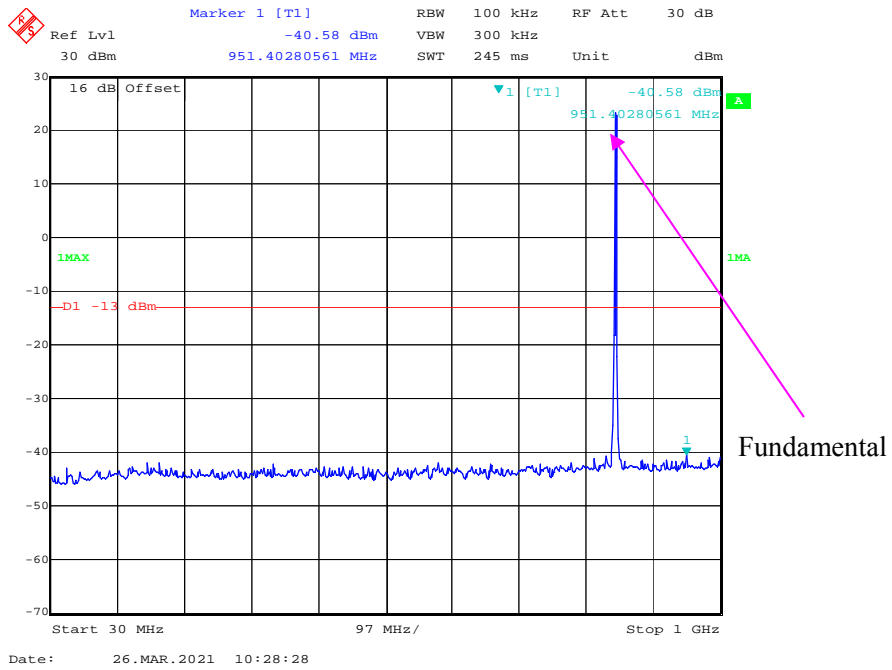
1 GHz – 10 GHz (16QAM, 10.0 MHz, Middle Channel)

Marker 1 [T1] RBW 1 MHz RF Att 30 dB
Ref Lvl -26.49 dBm VBW 3 MHz
10 dBm 6.62725451 GHz SWT 52 ms Unit dBm

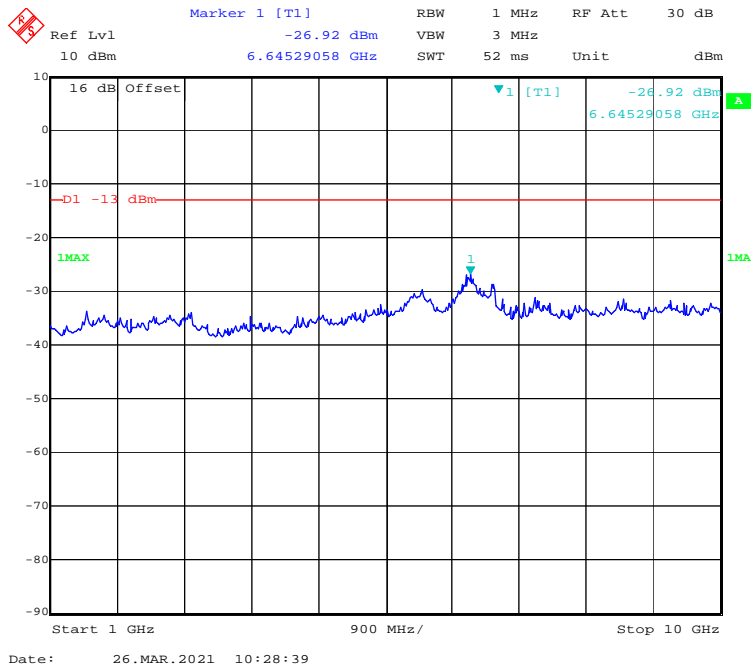


Date: 26.MAR.2021 10:41:03

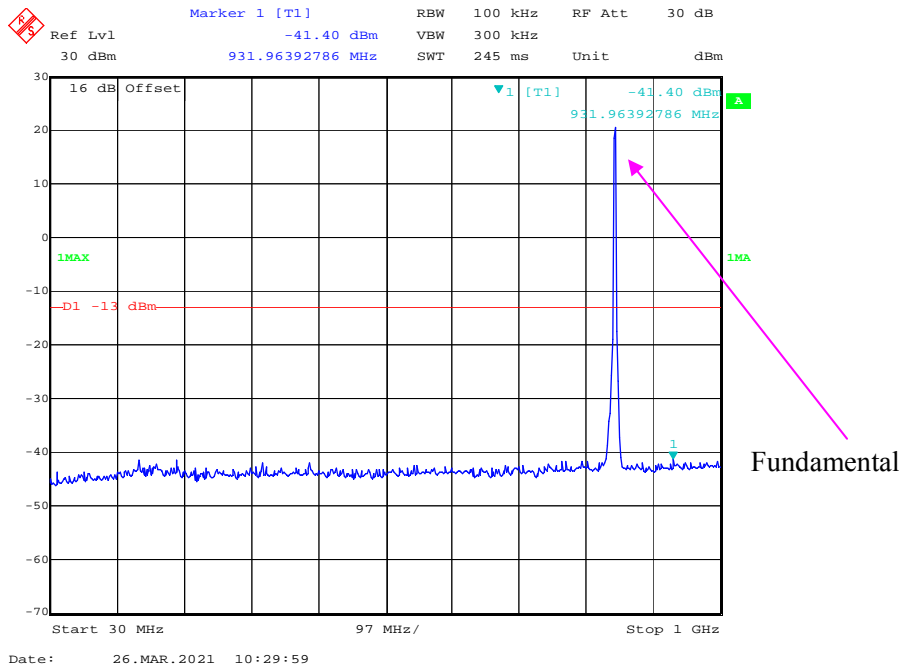
30 MHz – 1 GHz (QPSK, 1.4 MHz, High Channel)



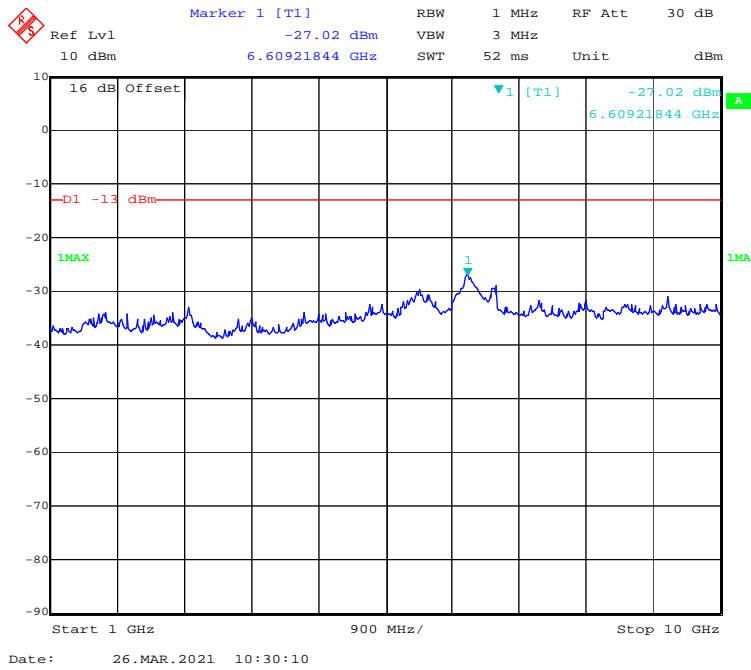
1 GHz – 10 GHz (QPSK, 1.4 MHz, High Channel)



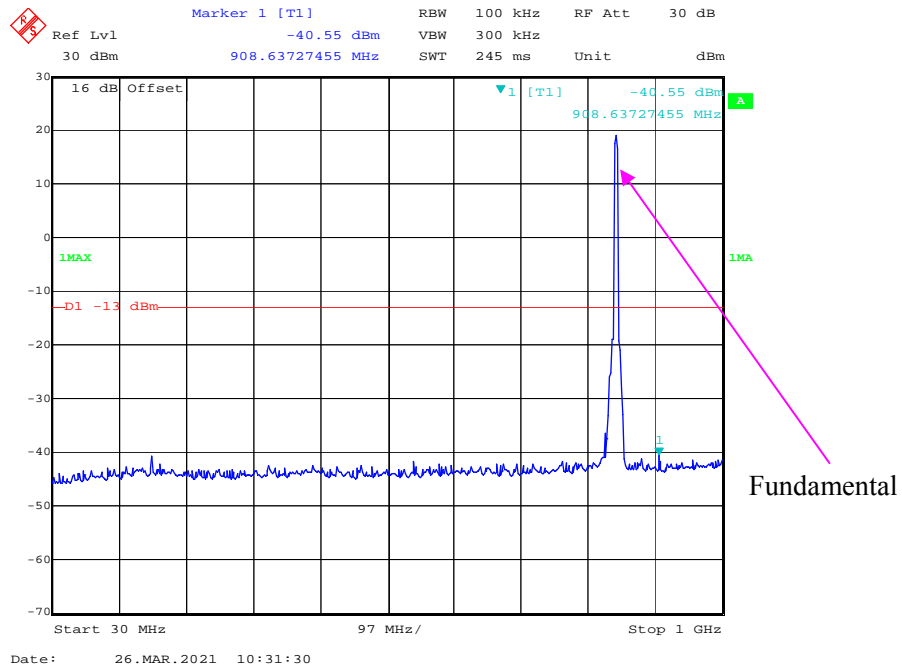
30 MHz – 1 GHz (QPSK, 3.0 MHz, High Channel)



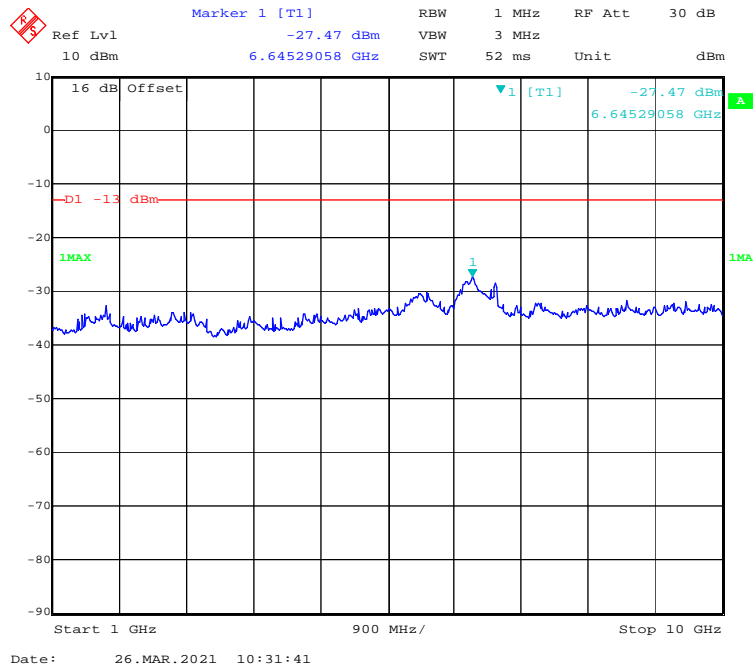
1 GHz – 10 GHz (QPSK, 3.0 MHz, High Channel)



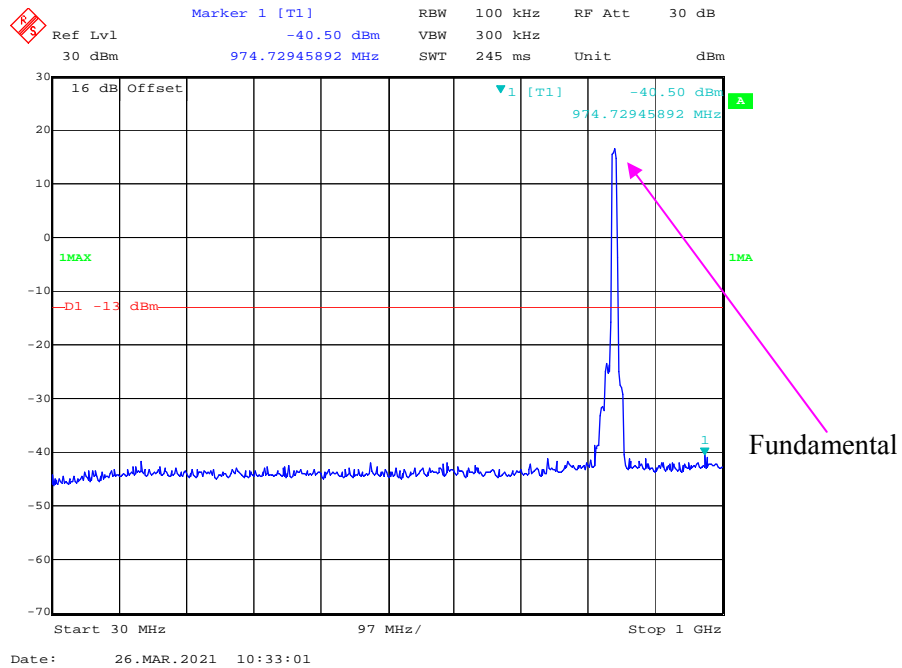
30 MHz – 1 GHz (QPSK, 5.0 MHz, High Channel)



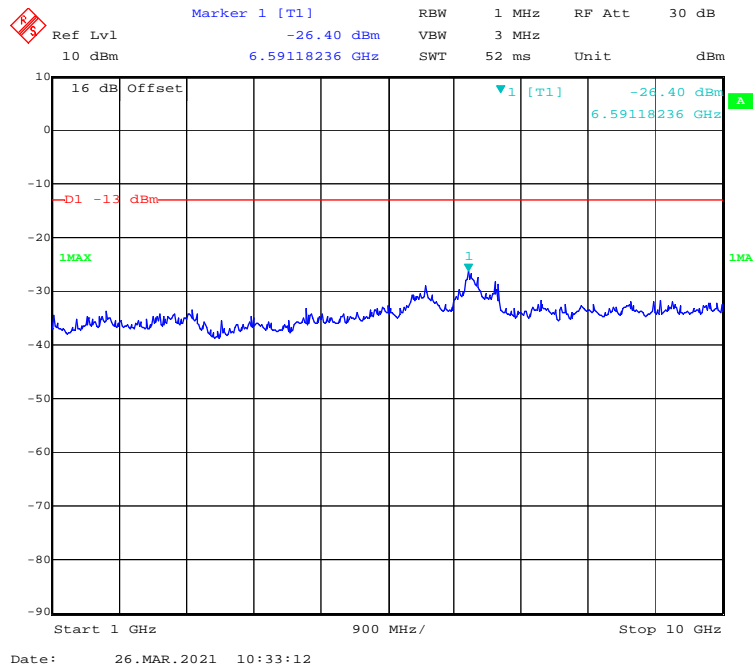
1 GHz – 10 GHz (QPSK, 5.0MHz, High Channel)



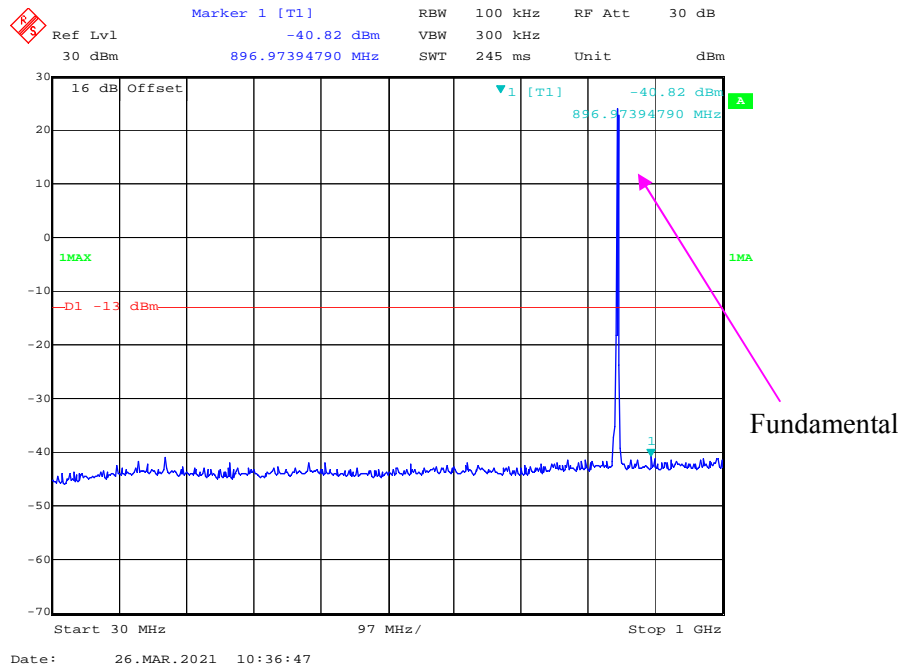
30 MHz – 1 GHz (QPSK, 10.0 MHz, High Channel)



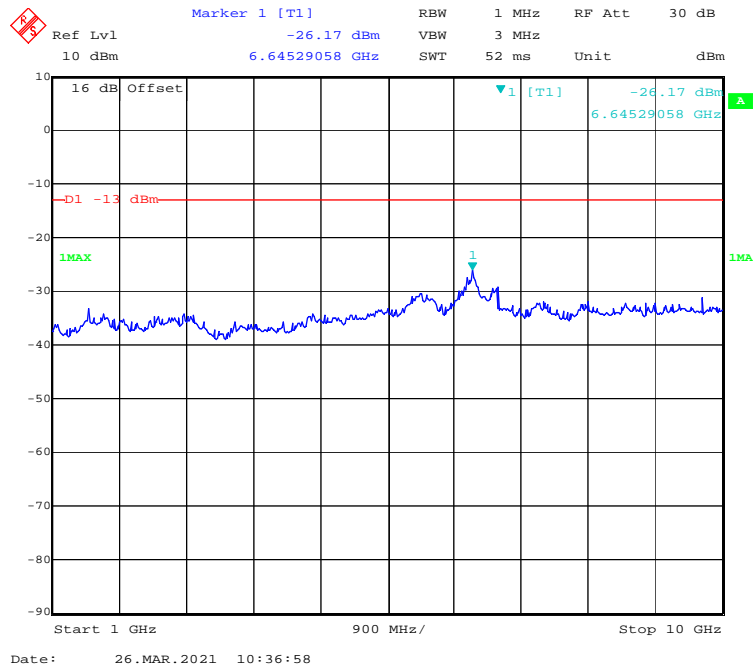
1 GHz – 10 GHz (QPSK, 10.0 MHz, High Channel)



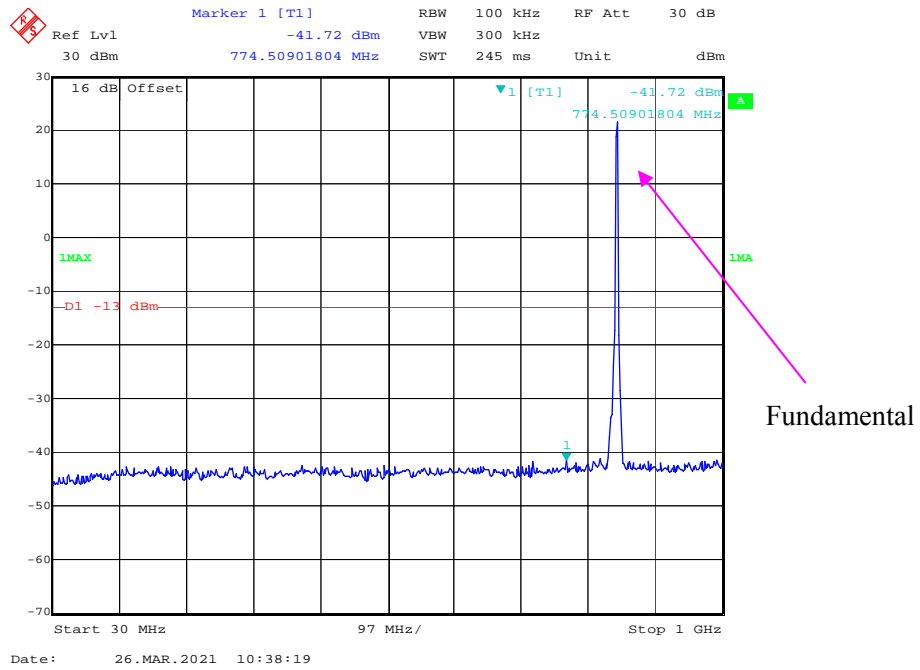
30 MHz – 1 GHz (16QAM, 1.4 MHz, High Channel)



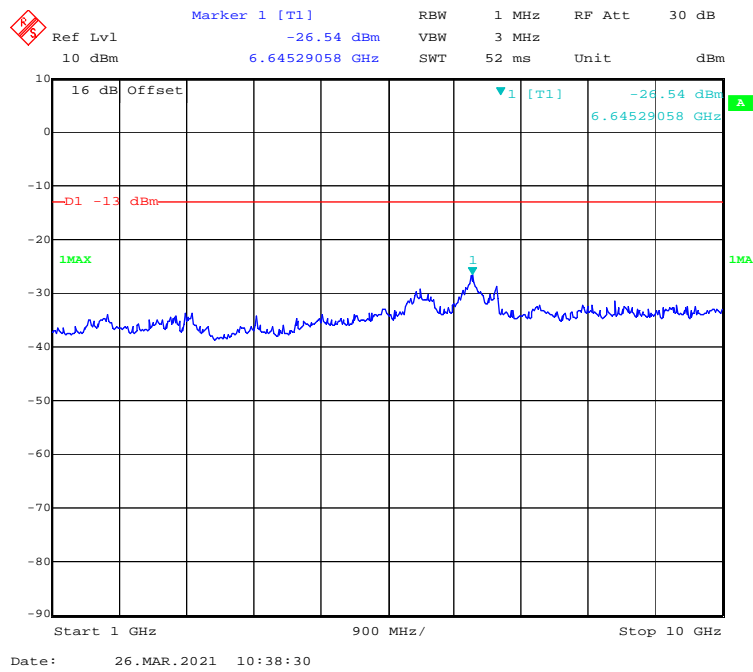
1 GHz – 10 GHz (16QAM, 1.4 MHz, High Channel)



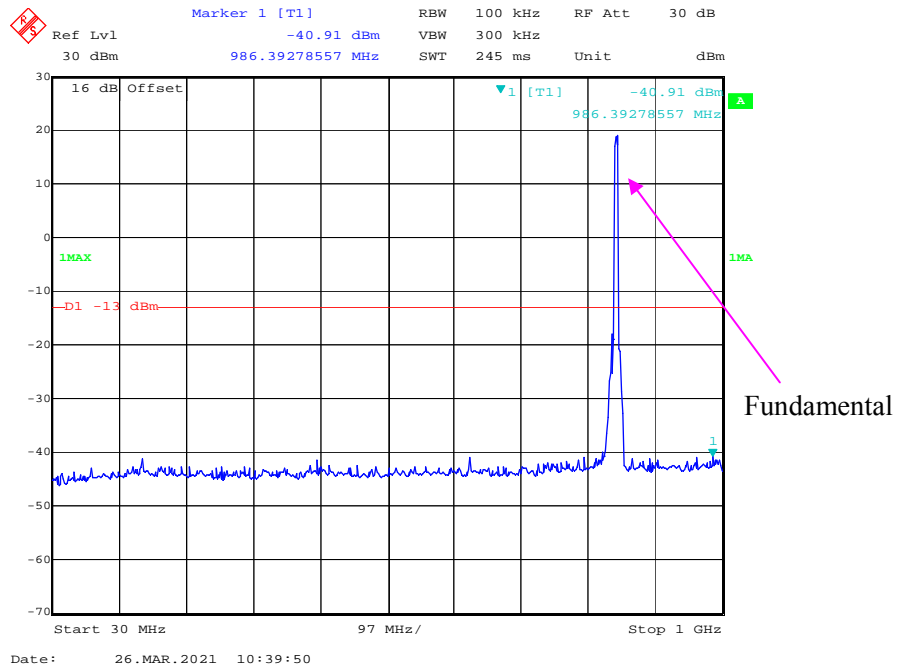
30 MHz – 1 GHz (16QAM, 3.0 MHz, High Channel)



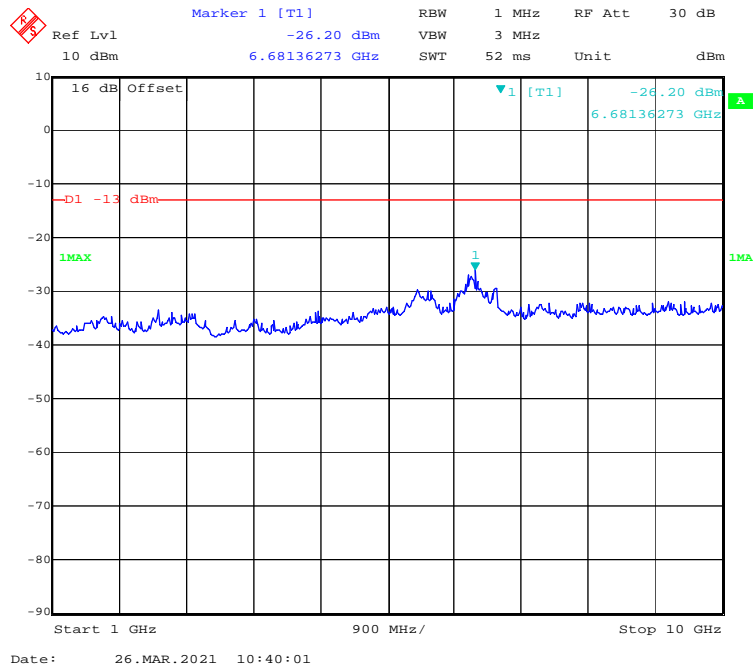
1 GHz – 10 GHz (16QAM, 3.0 MHz, High Channel)



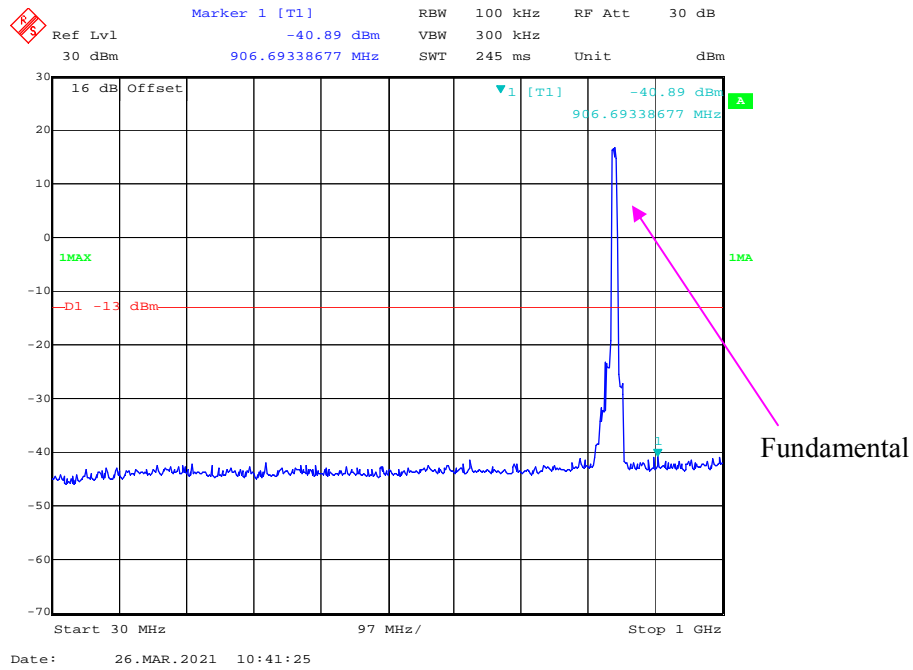
30 MHz – 1 GHz (16QAM, 5.0 MHz, High Channel)



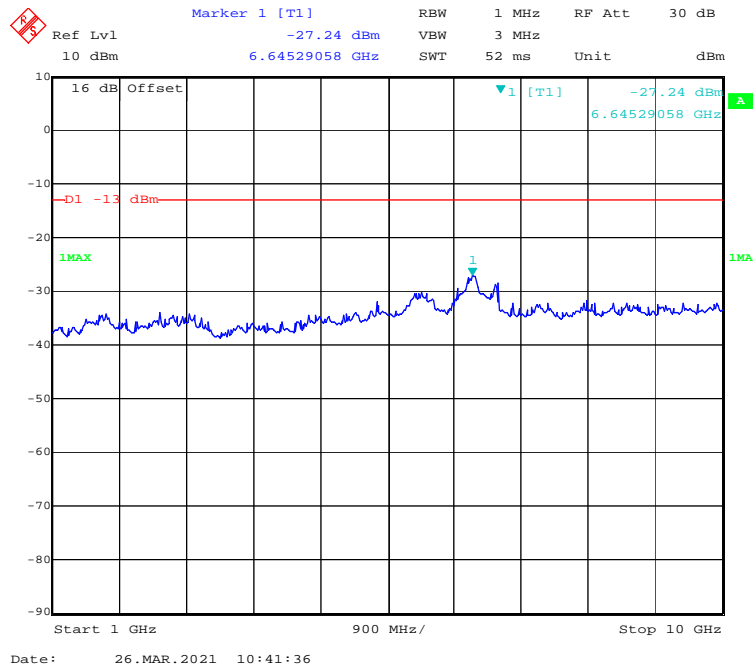
1 GHz – 10 GHz (16QAM, 5.0MHz, High Channel)



30 MHz – 1 GHz (16QAM, 10.0 MHz, High Channel)

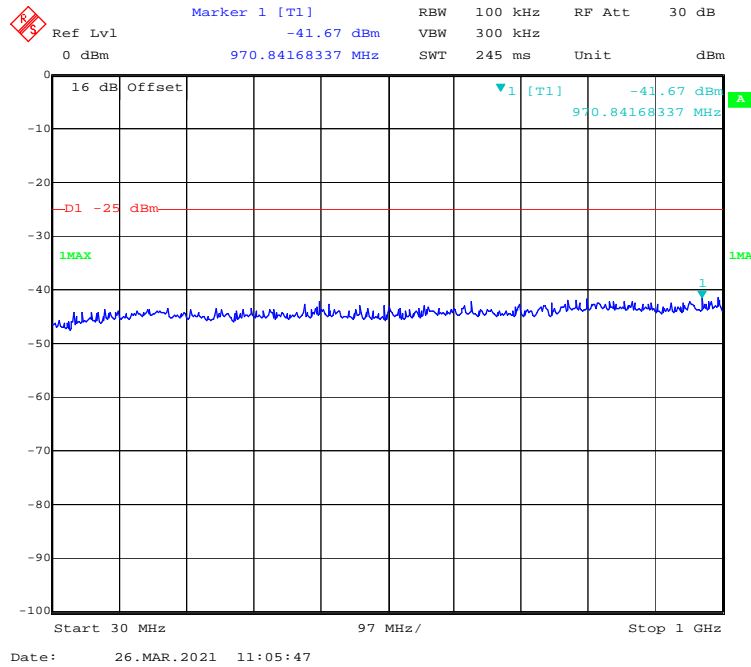


1 GHz – 10 GHz (16QAM, 10.0 MHz, High Channel)

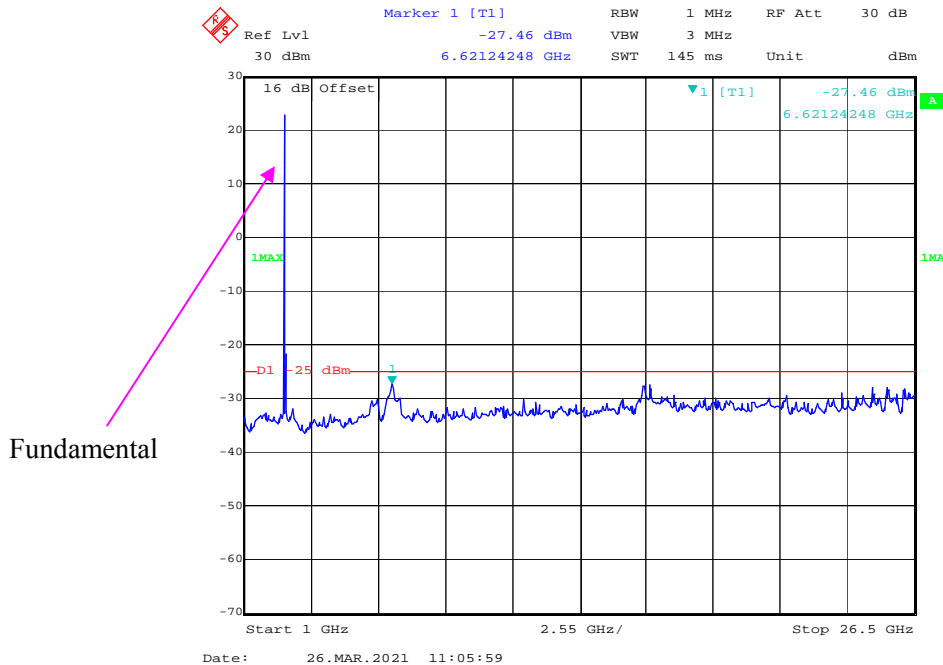


LTE Band 41

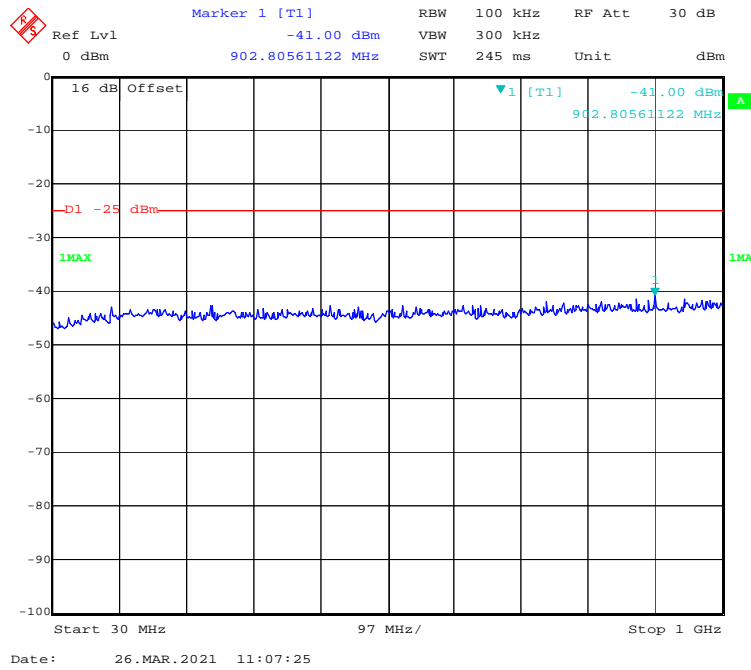
30 MHz - 1 GHz (QPSK, 5.0 MHz, Low Channel)



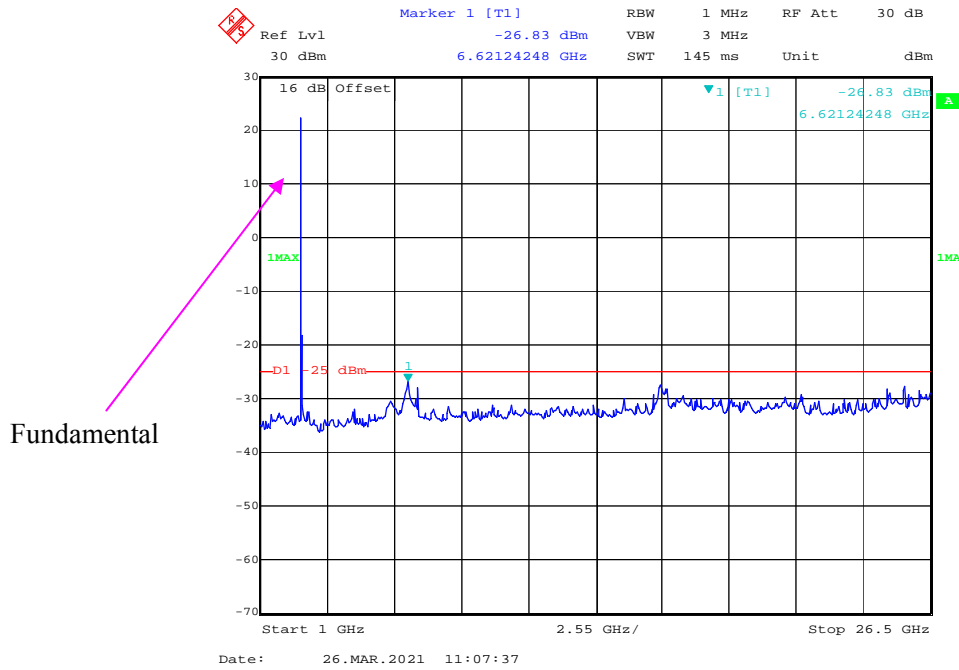
1 GHz – 26.5 GHz (QPSK, 5.0 MHz, Low Channel)



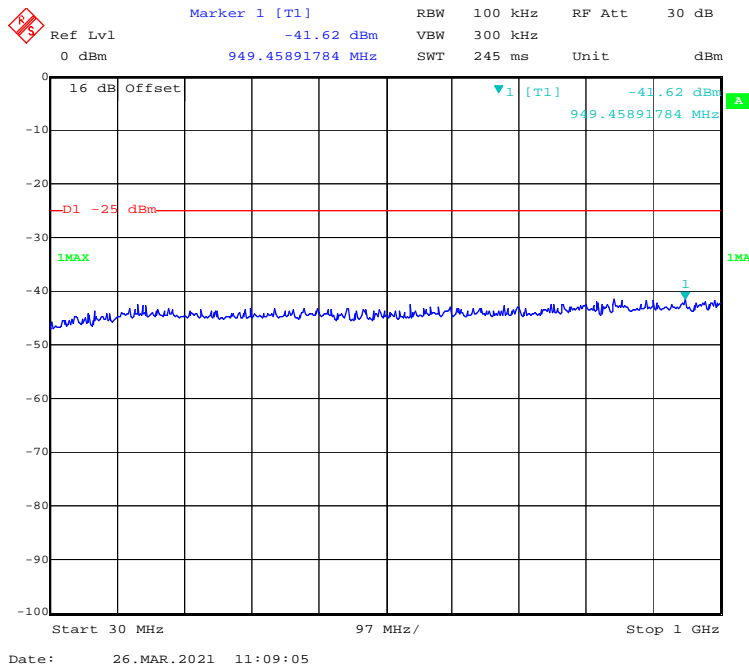
30 MHz - 1 GHz (QPSK, 10.0 MHz, Low Channel)



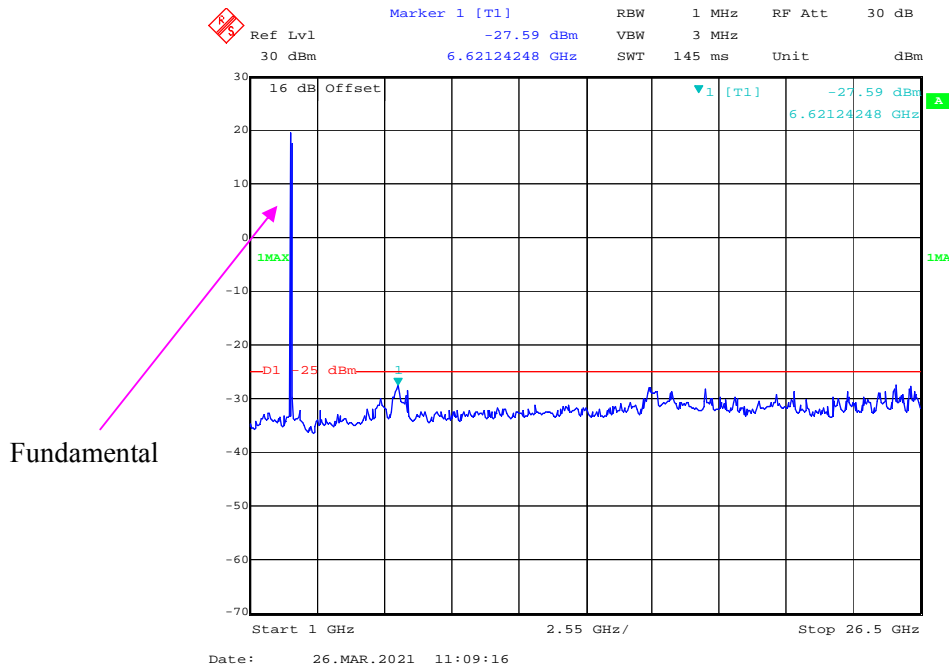
1 GHz – 26.5 GHz (QPSK, 10.0 MHz, Low Channel)



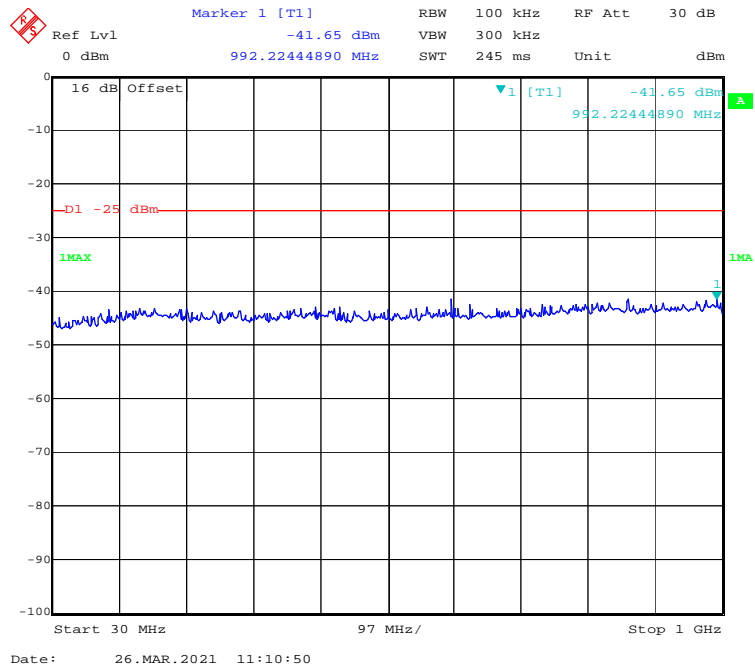
30 MHz - 1 GHz (QPSK, 15.0 MHz, Low Channel)



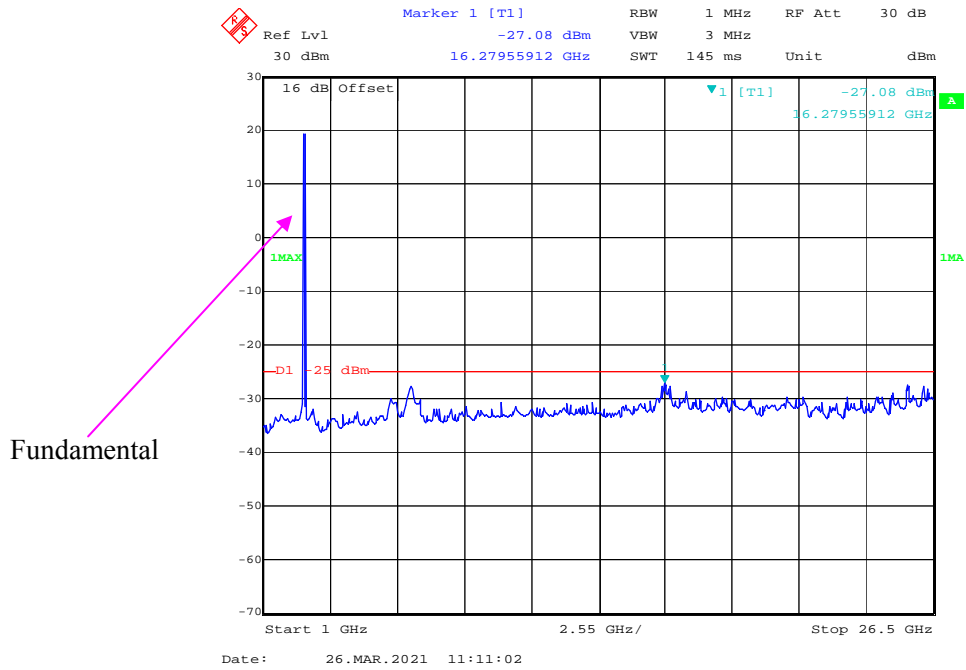
1 GHz – 26.5 GHz (QPSK, 15.0MHz, Low Channel)



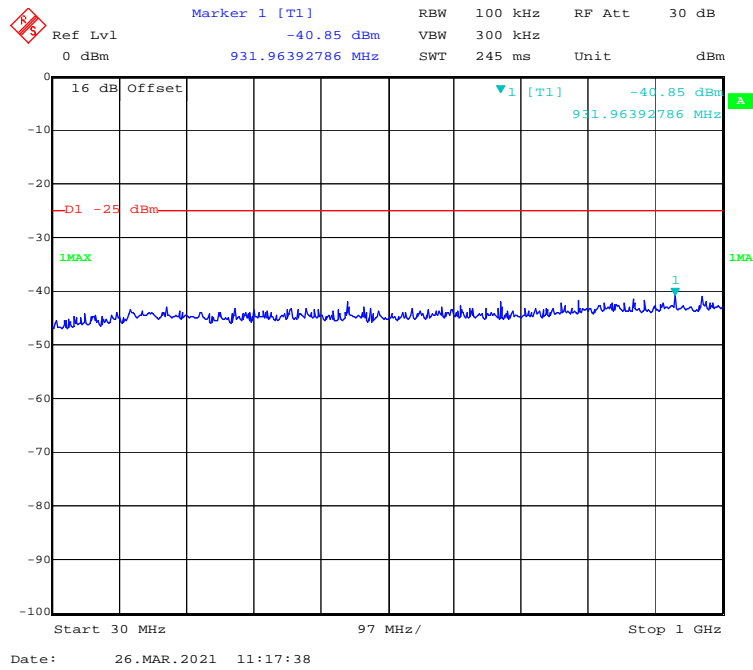
30 MHz - 1 GHz (QPSK, 20.0 MHz, Low Channel)



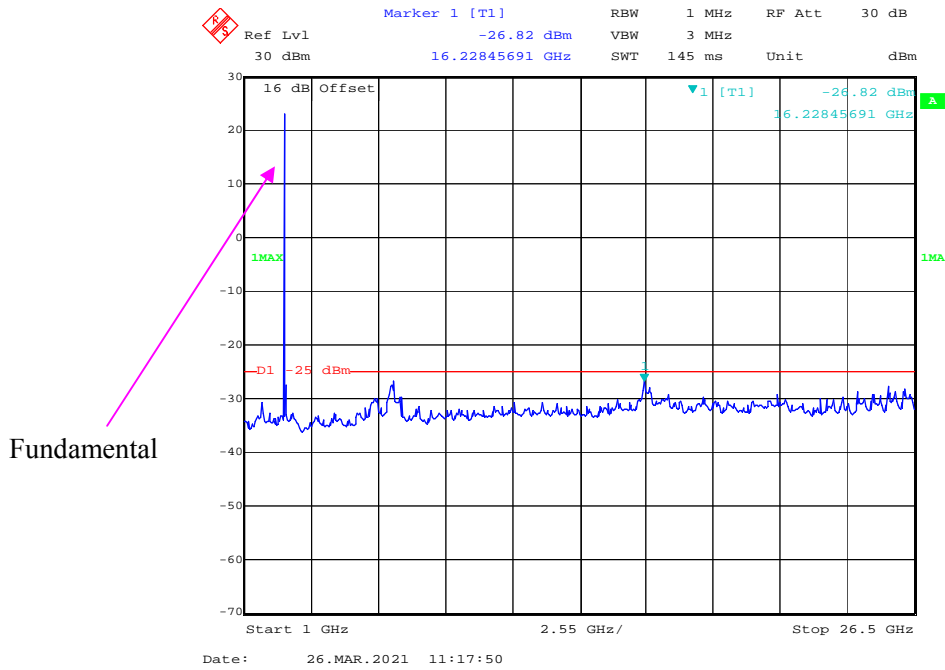
1 GHz – 26.5 GHz (QPSK, 20.0 MHz, Low Channel)



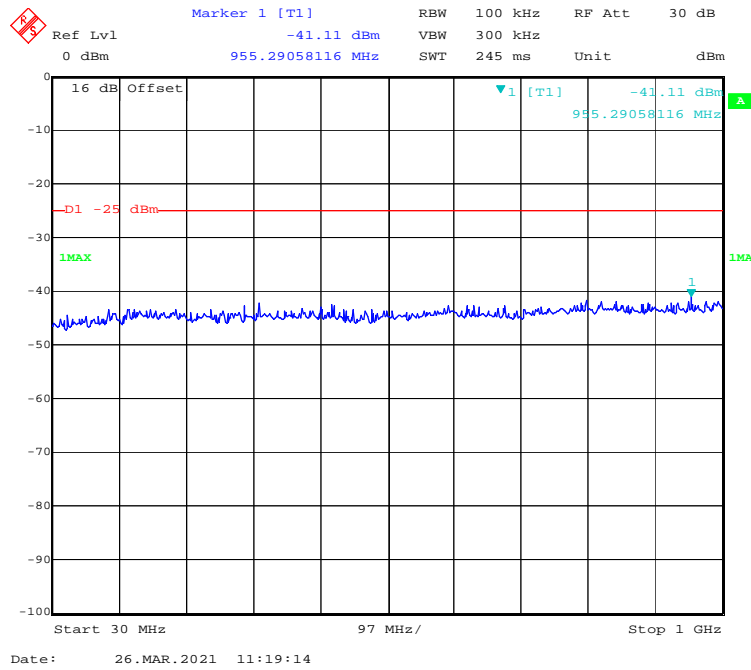
30 MHz - 1 GHz (16QAM, 5.0 MHz, Low Channel)



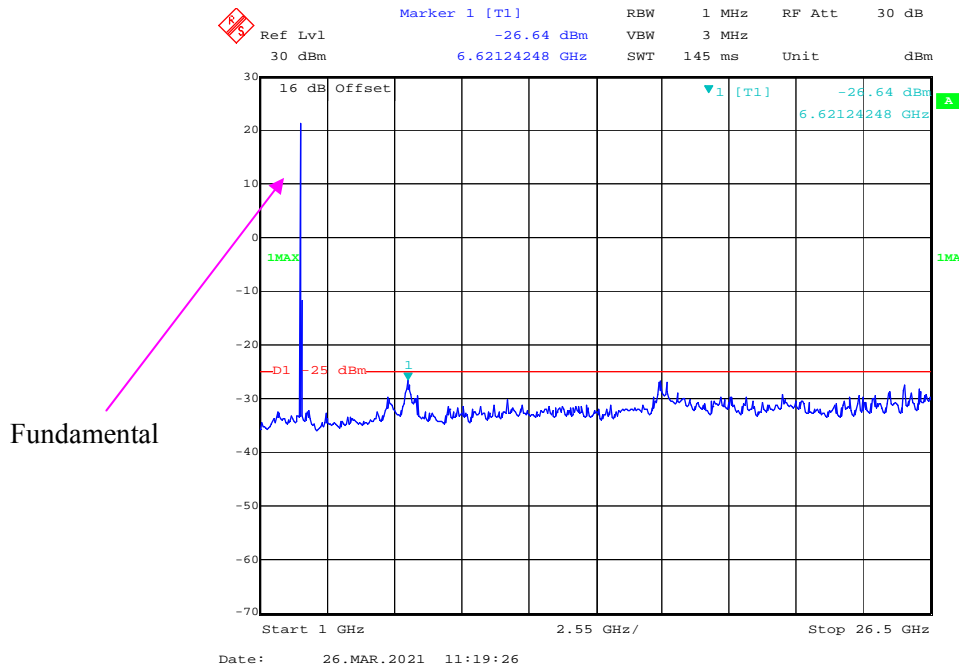
1 GHz – 26.5 GHz (16QAM, 5.0 MHz, Low Channel)



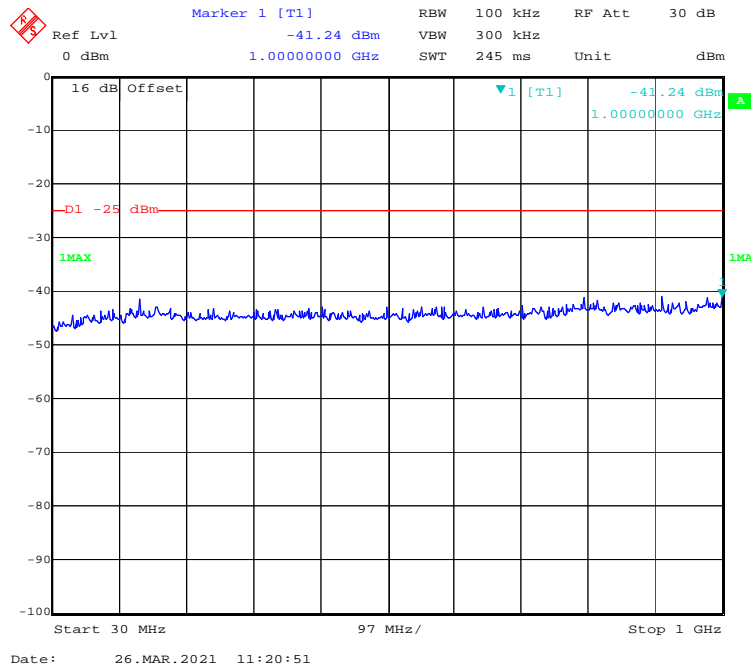
30 MHz - 1 GHz (16QAM, 10.0 MHz, Low Channel)



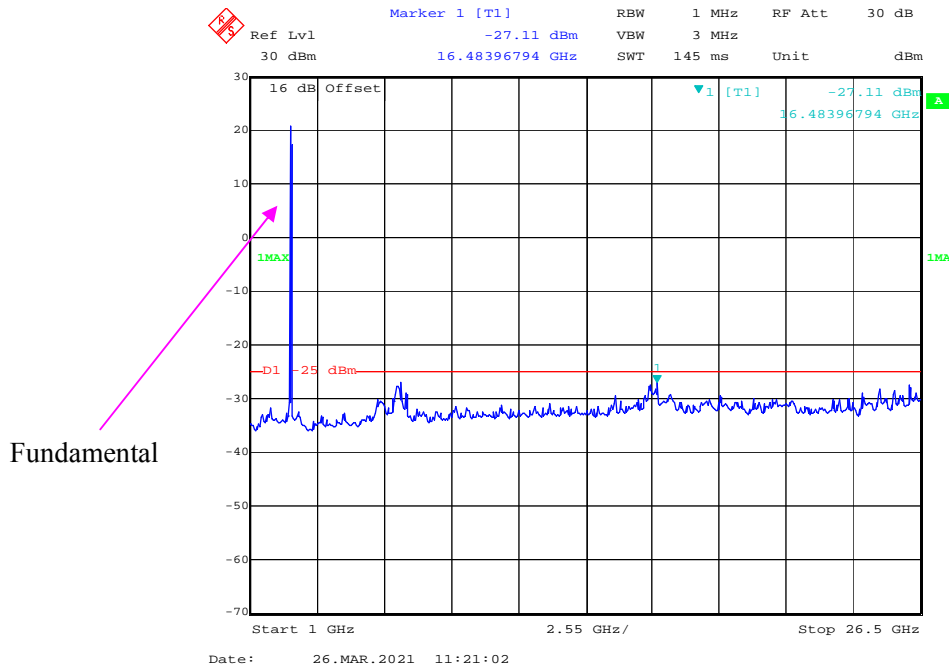
1 GHz – 26.5 GHz (16QAM, 10.0 MHz, Low Channel)



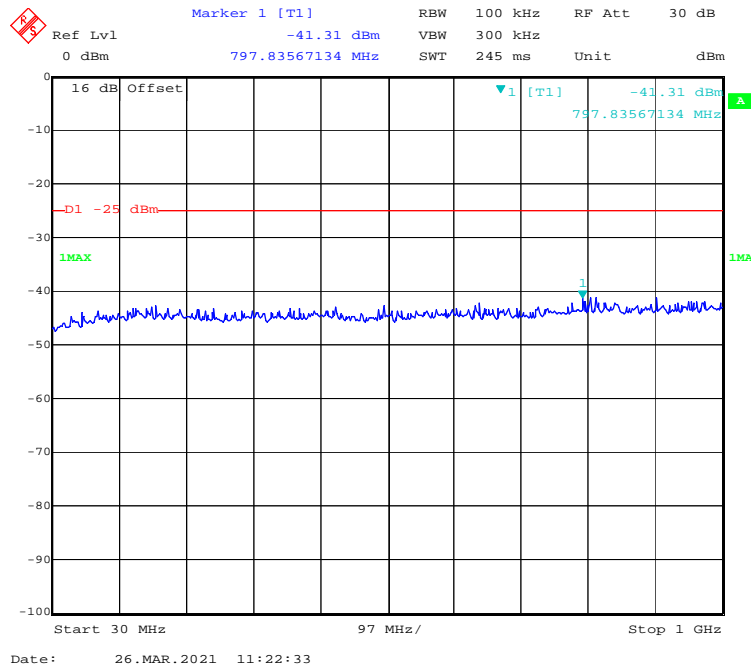
30 MHz - 1 GHz (16QAM, 15.0 MHz, Low Channel)



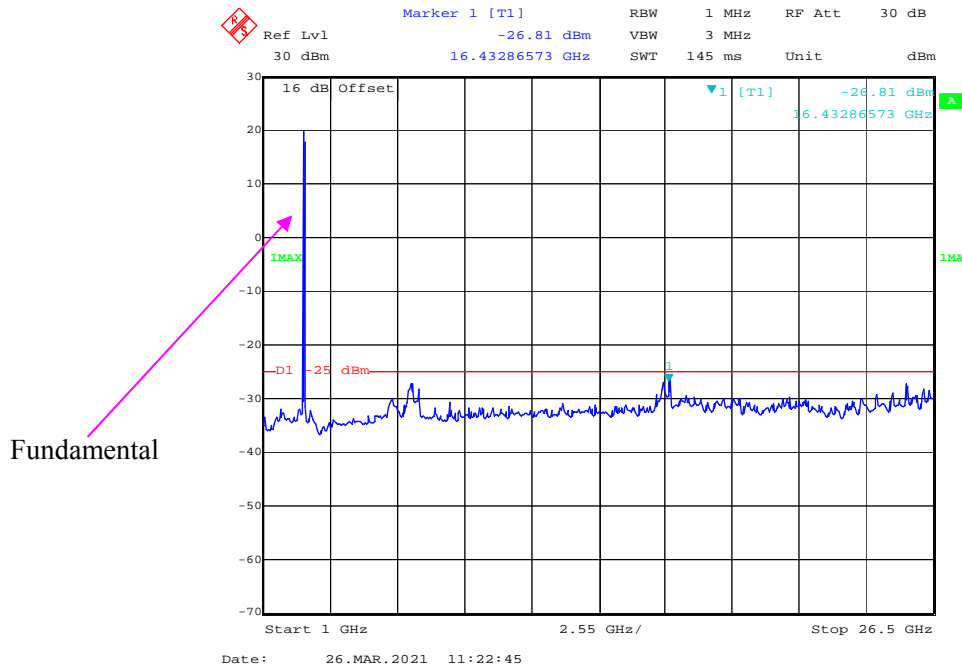
1 GHz – 26.5 GHz (16QAM, 15.0MHz, Low Channel)



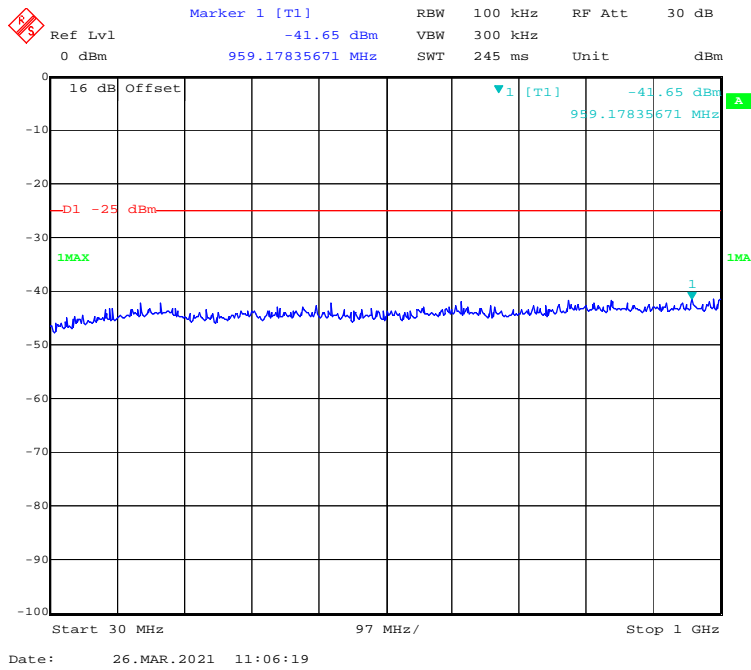
30 MHz - 1 GHz (16QAM, 20.0 MHz, Low Channel)



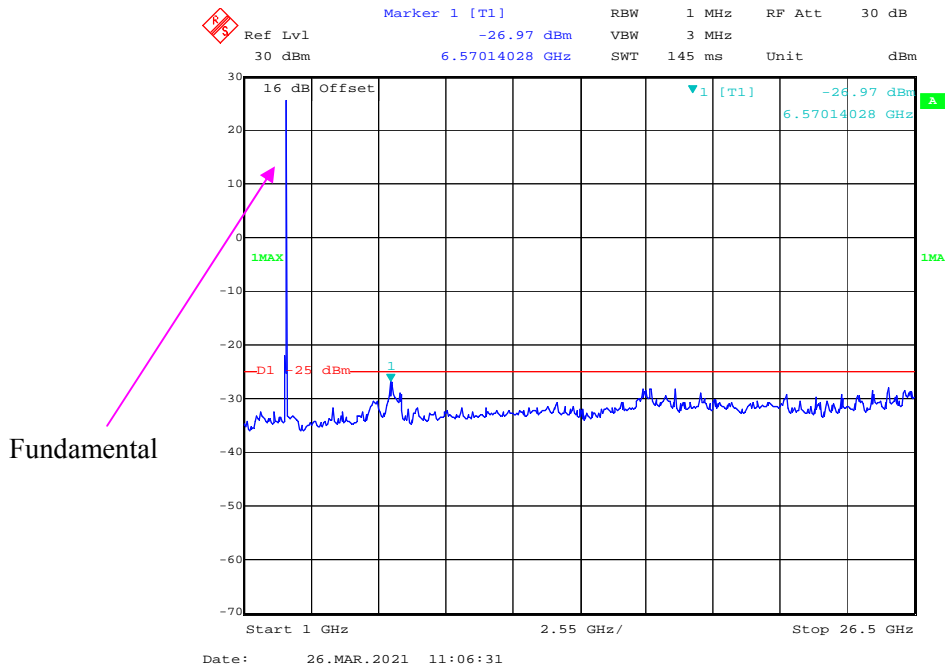
1 GHz – 26.5 GHz (16QAM, 20.0 MHz, Low Channel)



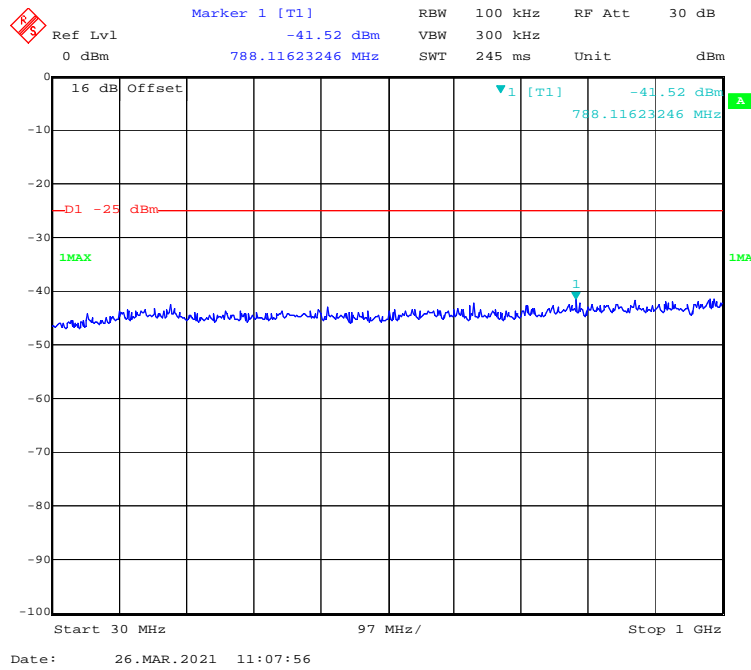
30 MHz - 1 GHz (QPSK, 5.0 MHz, Middle Channel)



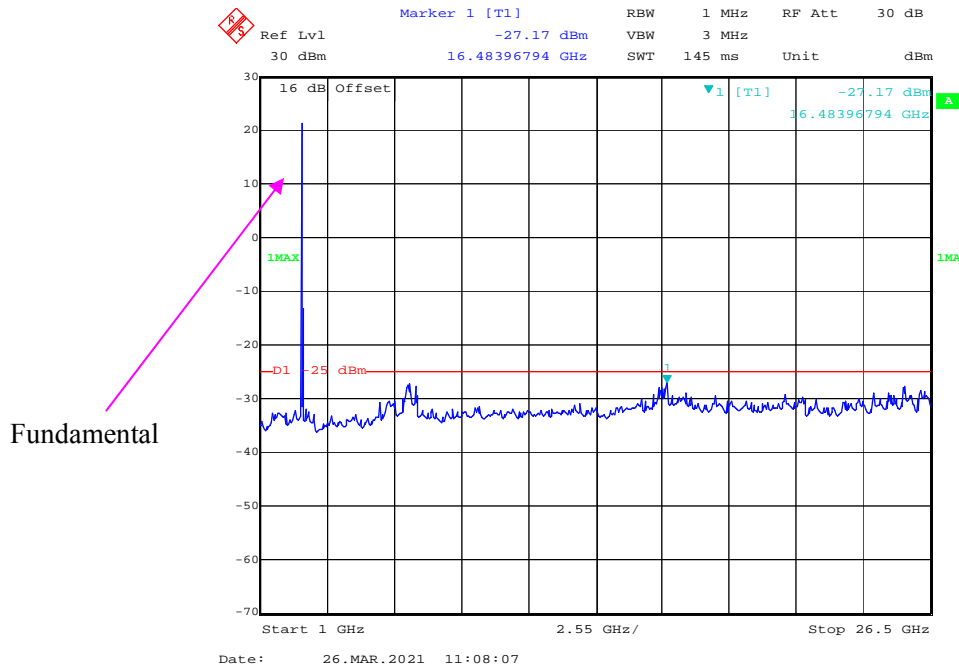
1 GHz – 26.5 GHz (QPSK, 5.0 MHz, Middle Channel)



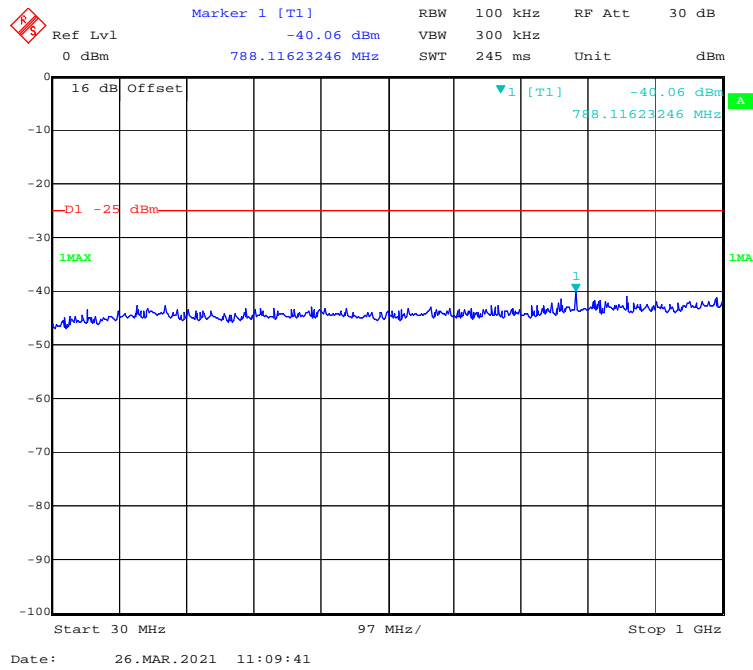
30 MHz - 1 GHz (QPSK, 10.0 MHz, Middle Channel)



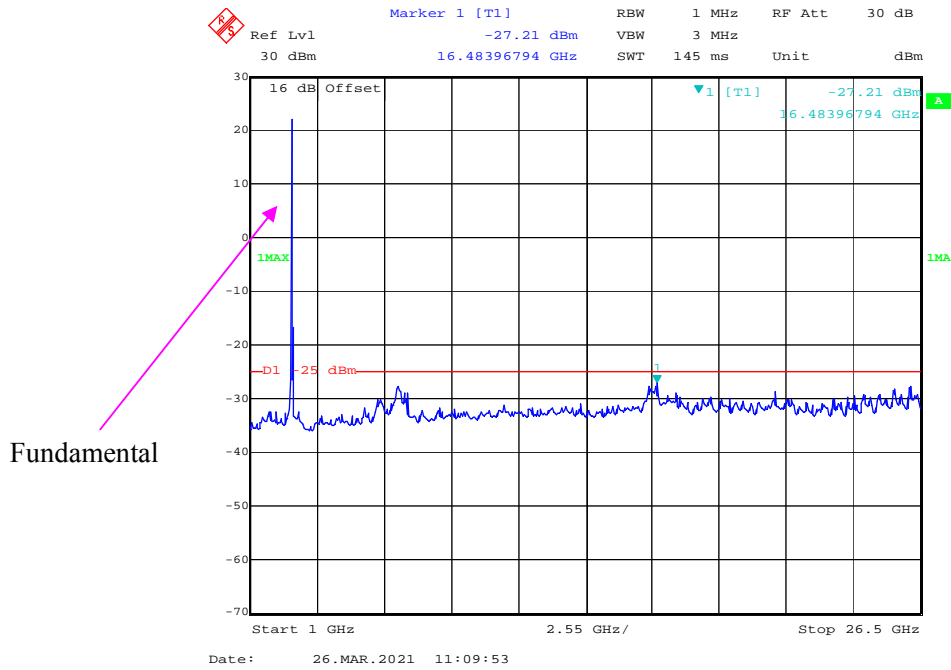
1 GHz – 26.5 GHz (QPSK, 10.0 MHz, Middle Channel)



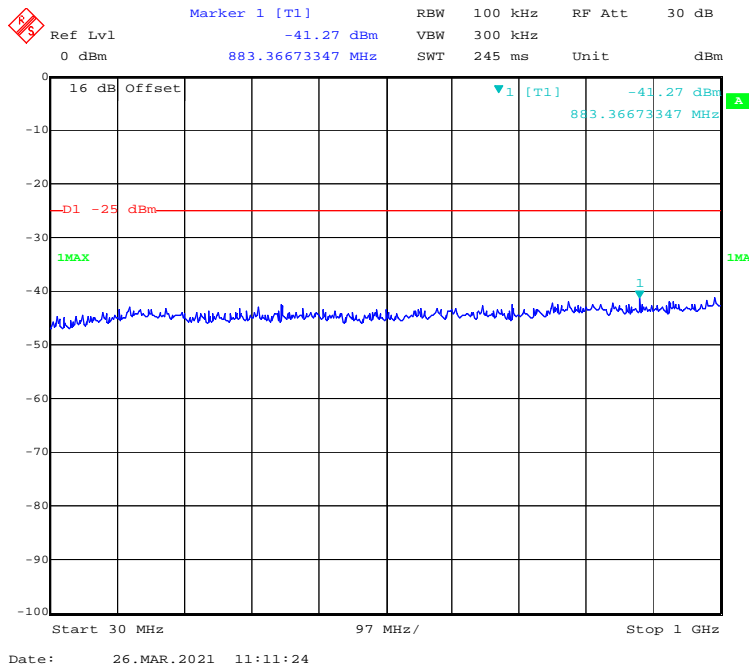
30 MHz - 1 GHz (QPSK, 15.0 MHz, Middle Channel)



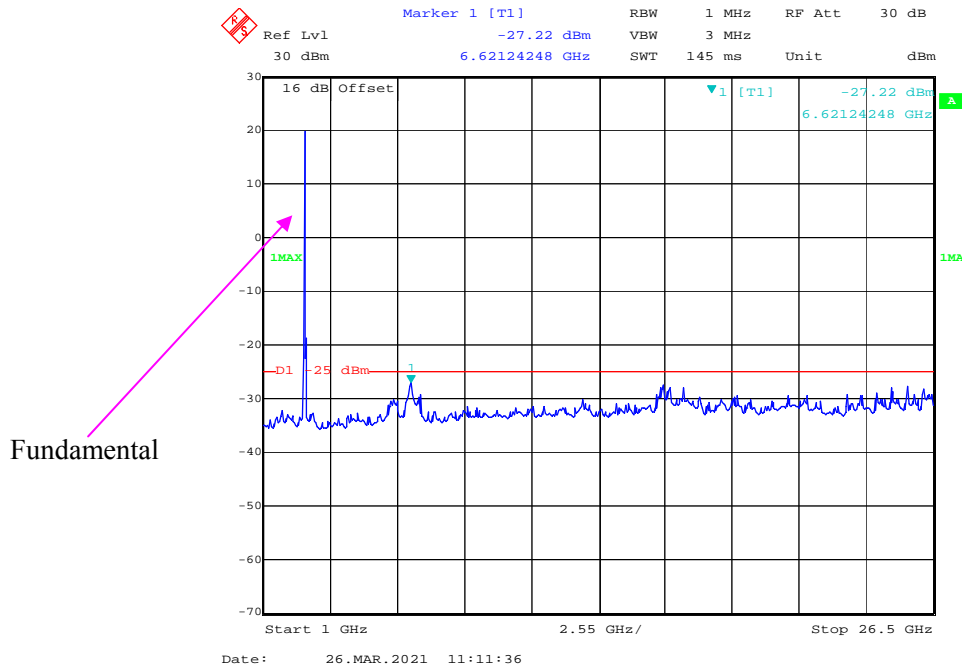
1 GHz – 26.5 GHz (QPSK, 15.0MHz, Middle Channel)



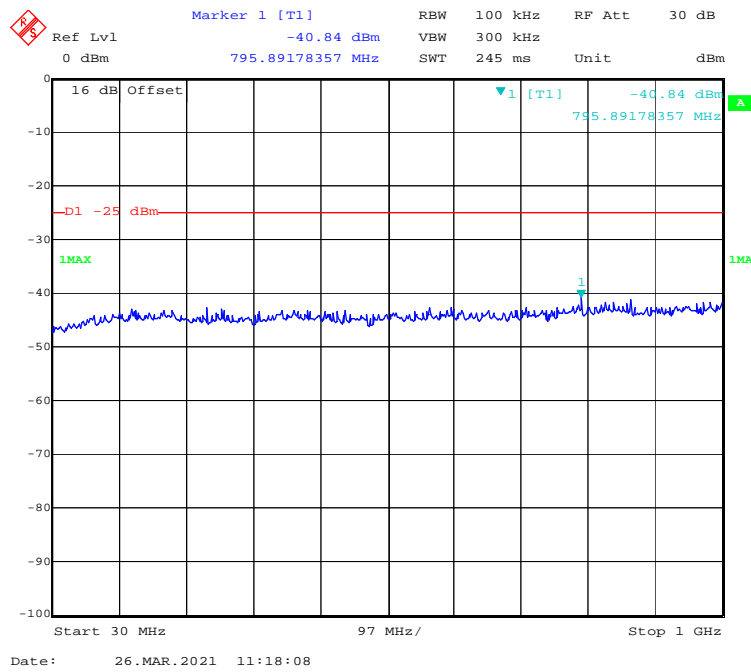
30 MHz - 1 GHz (QPSK, 20.0 MHz, Middle Channel)



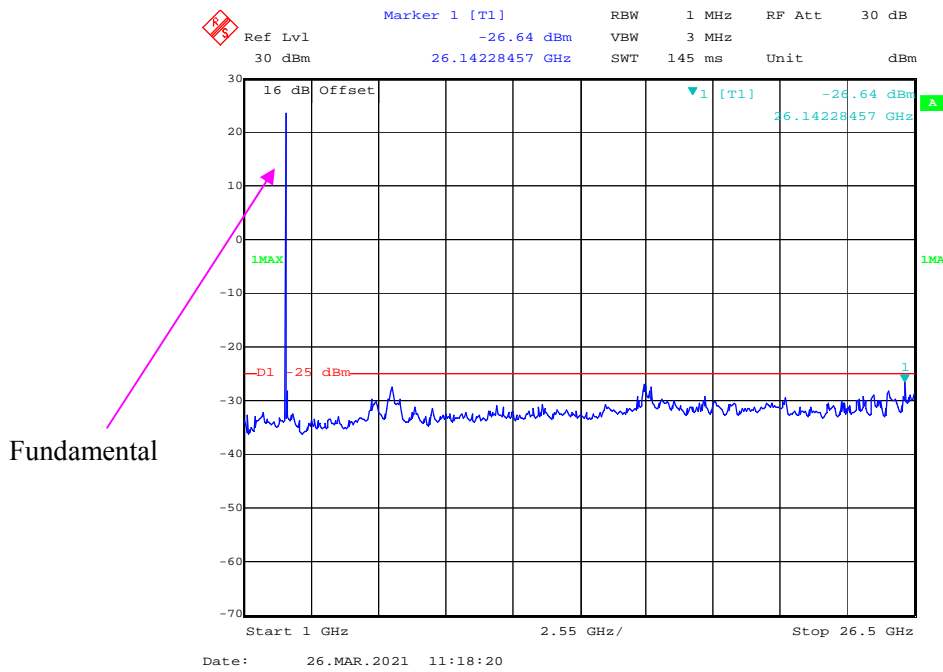
1 GHz – 26.5 GHz (QPSK, 20.0 MHz, Middle Channel)



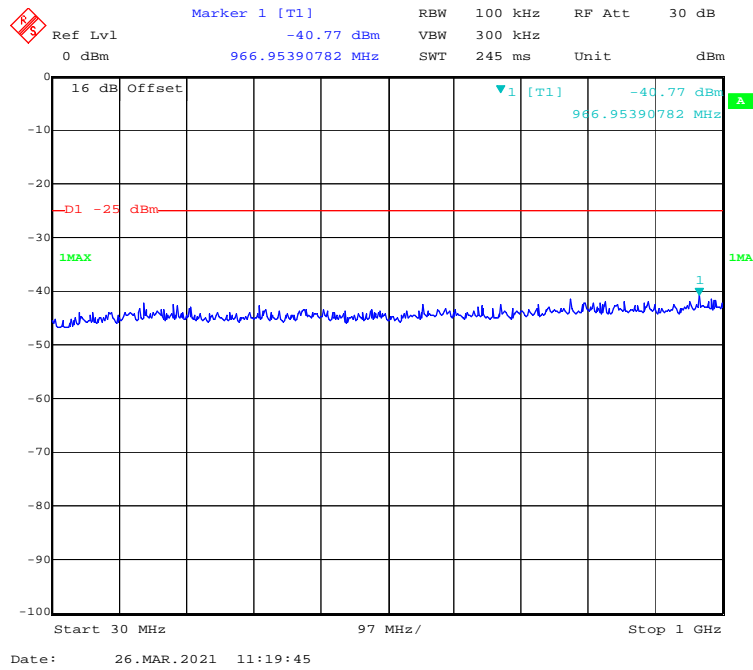
30 MHz - 1 GHz (16QAM, 5.0 MHz, Middle Channel)



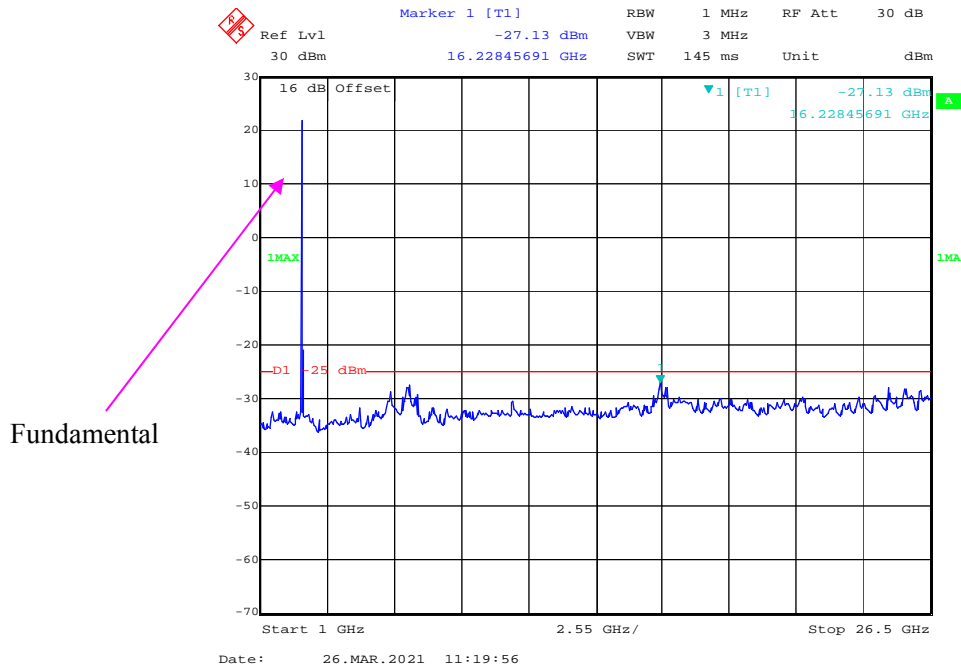
1 GHz – 26.5 GHz (16QAM, 5.0 MHz, Middle Channel)



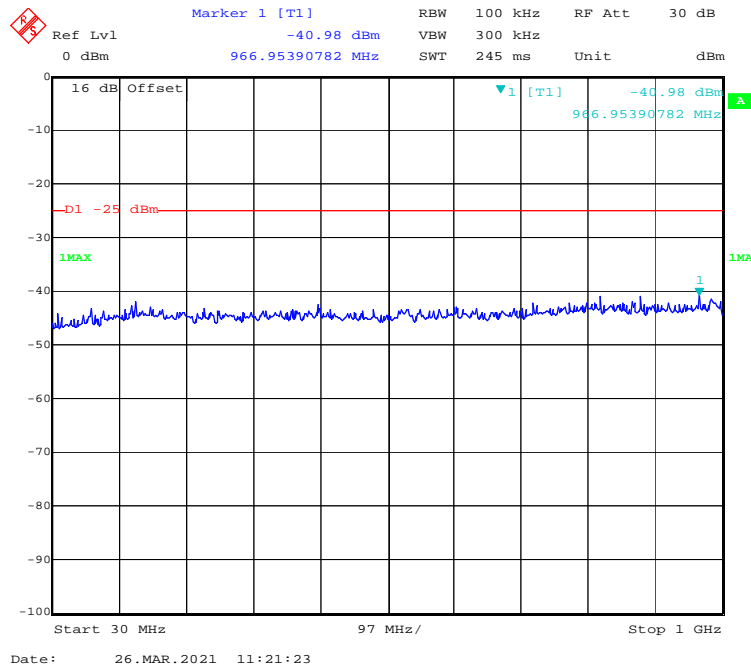
30 MHz - 1 GHz (16QAM, 10.0 MHz, Middle Channel)



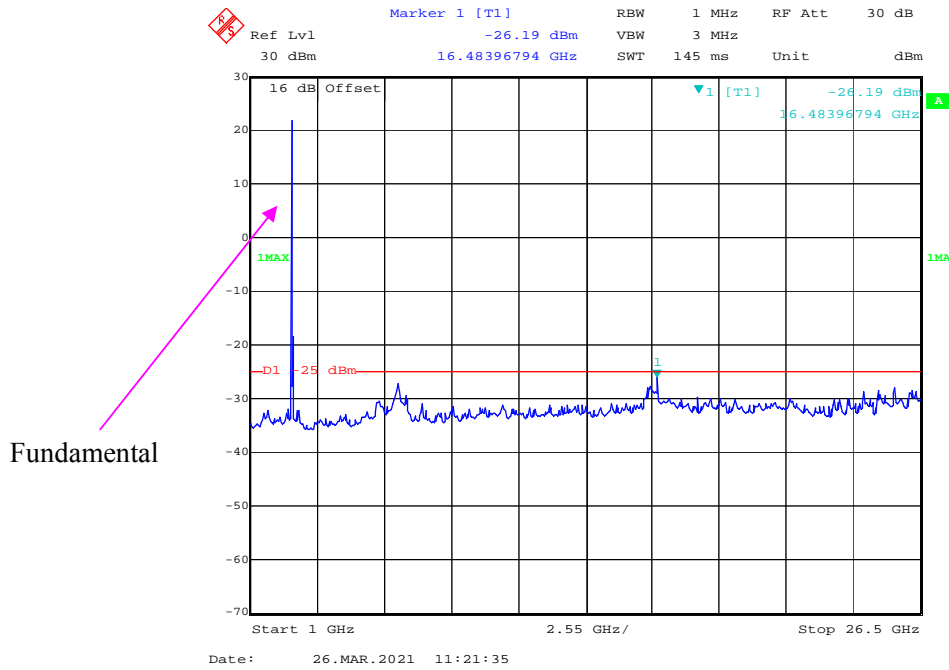
1 GHz – 26.5 GHz (16QAM, 10.0 MHz, Middle Channel)



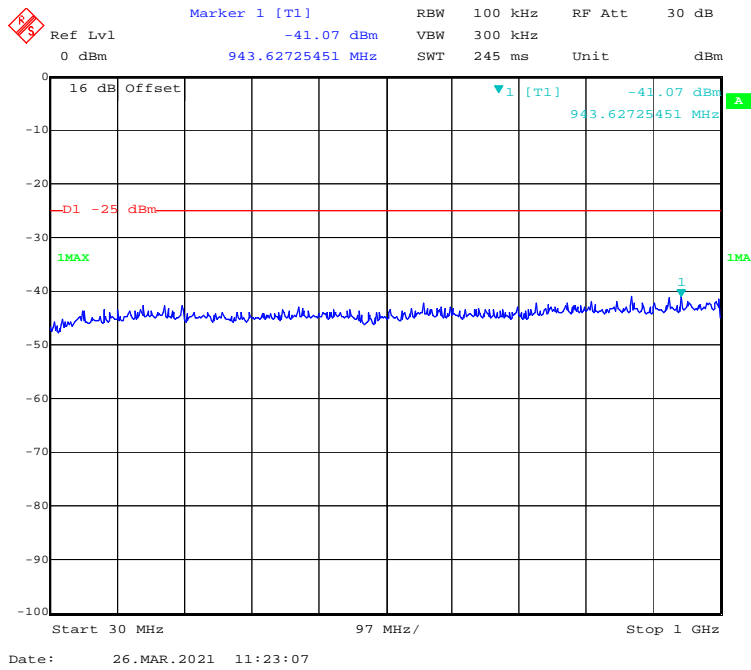
30 MHz - 1 GHz (16QAM, 15.0 MHz, Middle Channel)



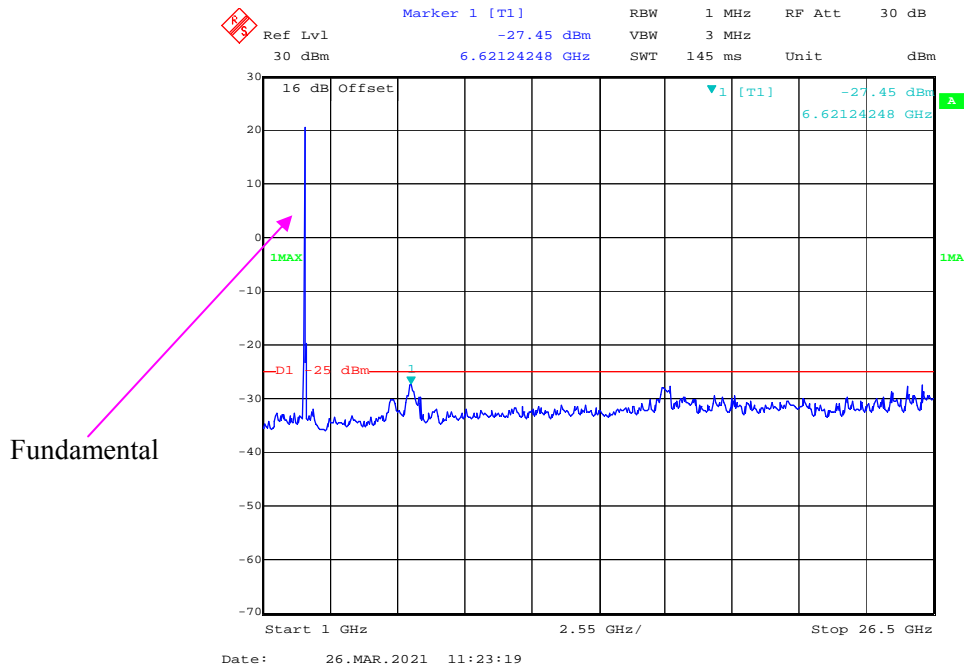
1 GHz - 26.5 GHz (16QAM, 15.0MHz, Middle Channel)



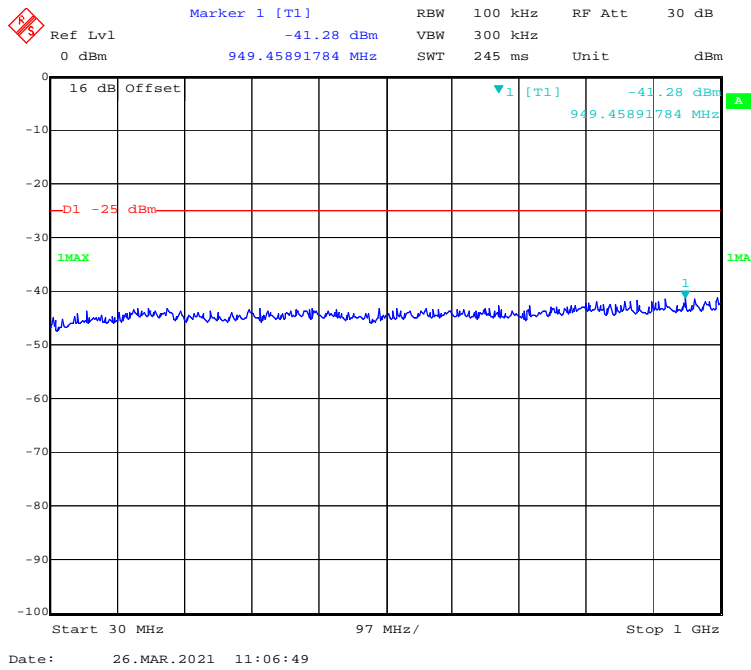
30 MHz - 1 GHz (16QAM, 20.0 MHz, Middle Channel)



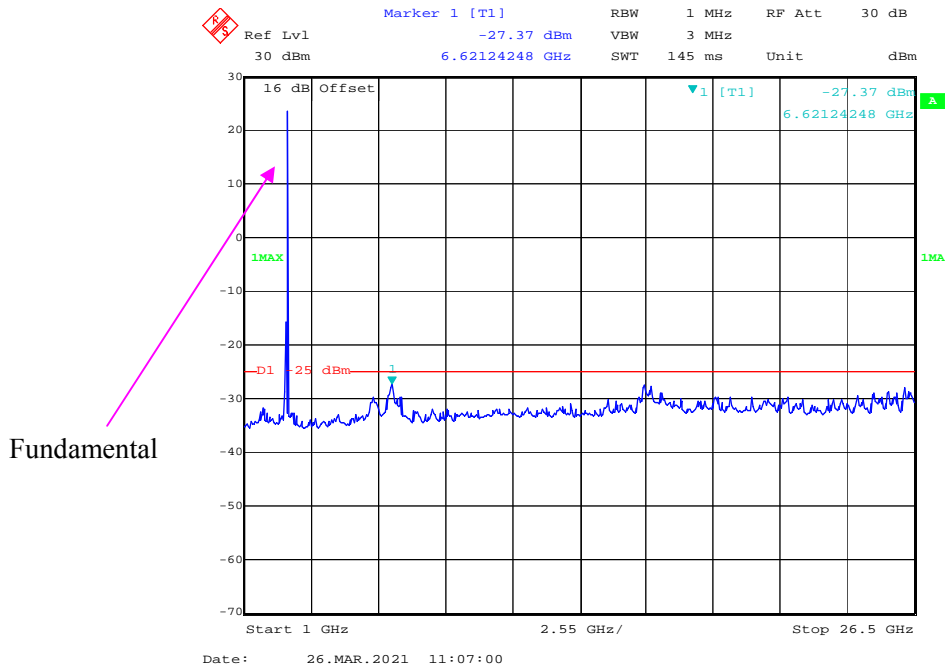
1 GHz – 26.5 GHz (16QAM, 20.0 MHz, Middle Channel)



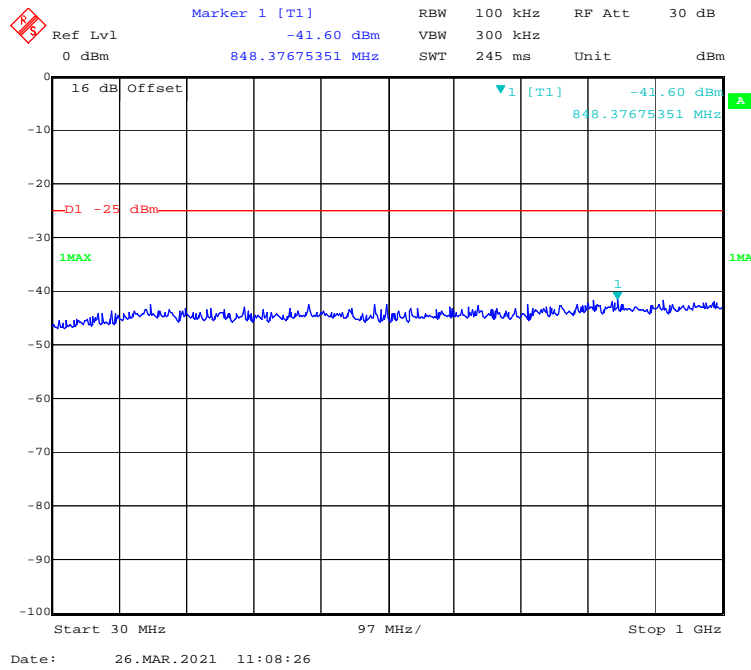
30 MHz - 1 GHz (QPSK, 5.0 MHz, High Channel)



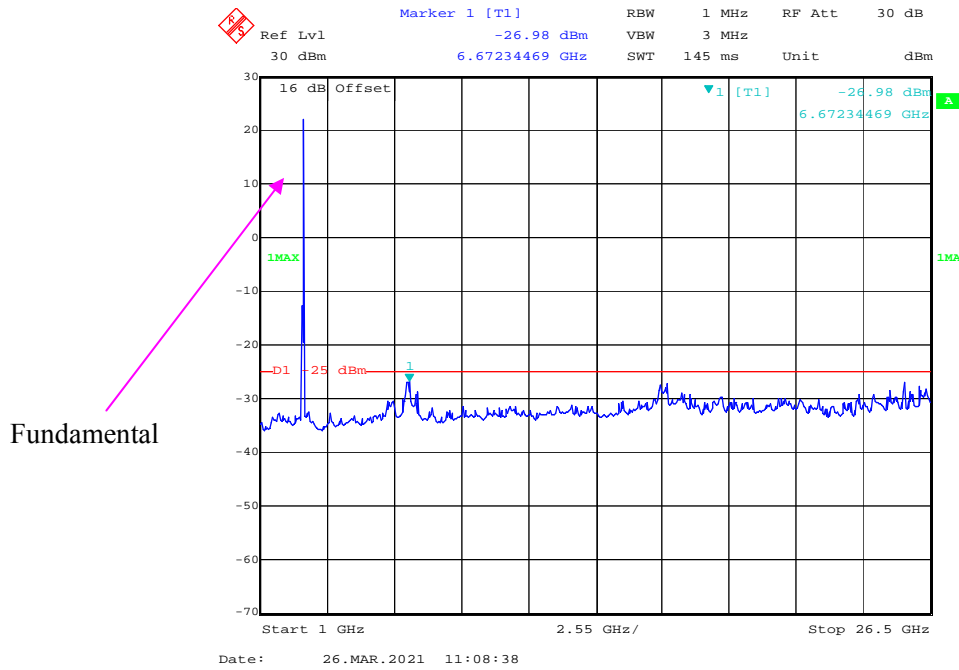
1 GHz – 26.5 GHz (QPSK, 5.0 MHz, High Channel)



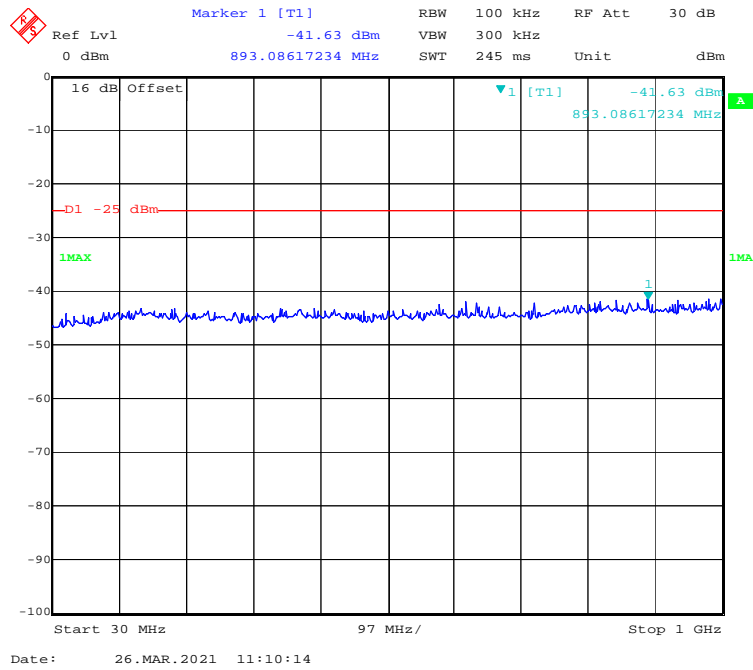
30 MHz - 1 GHz (QPSK, 10.0 MHz, High Channel)



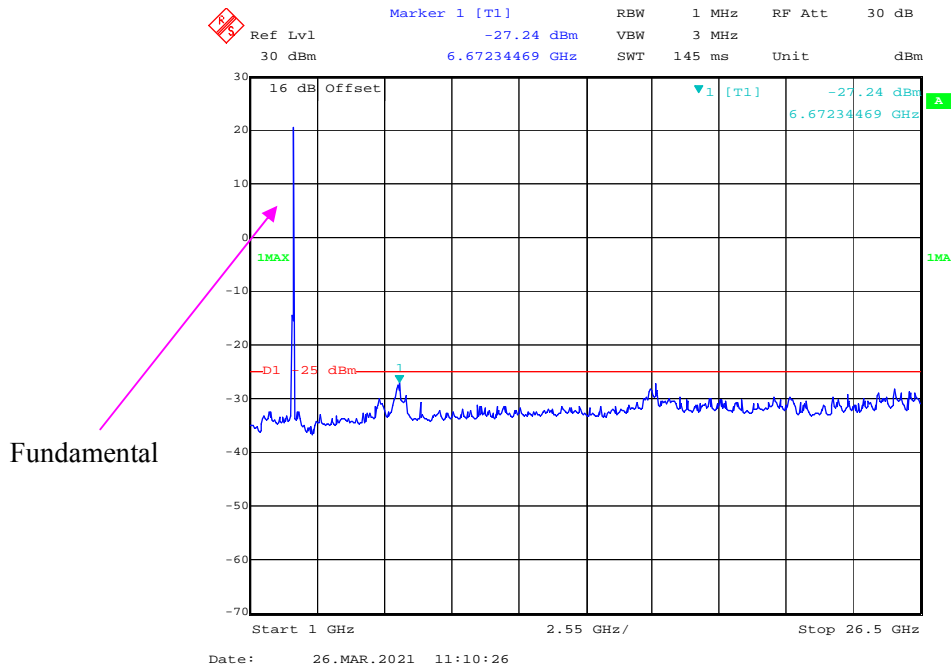
1 GHz – 26.5 GHz (QPSK, 10.0 MHz, High Channel)



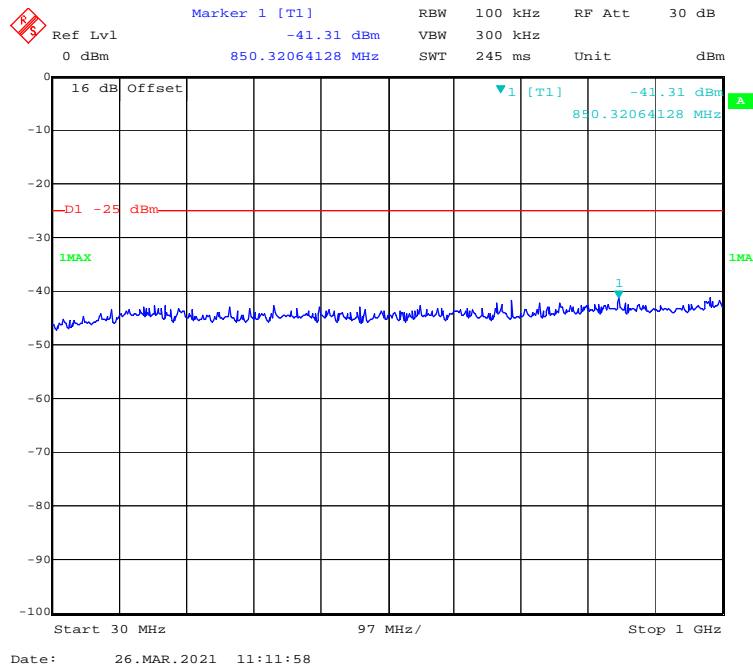
30 MHz - 1 GHz (QPSK, 15.0 MHz, High Channel)



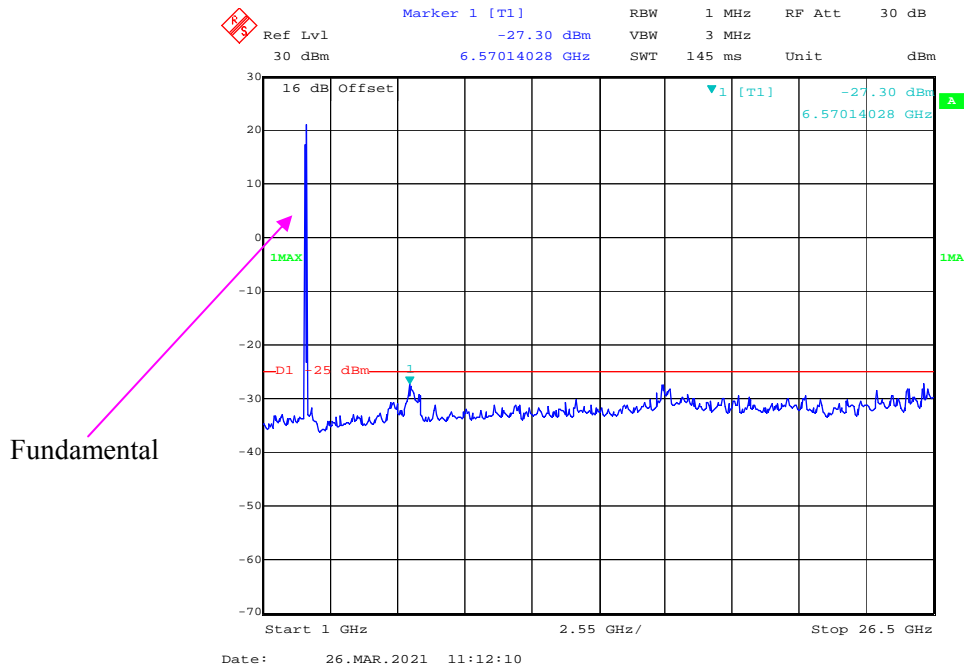
1 GHz – 26.5 GHz (QPSK, 15.0MHz, High Channel)



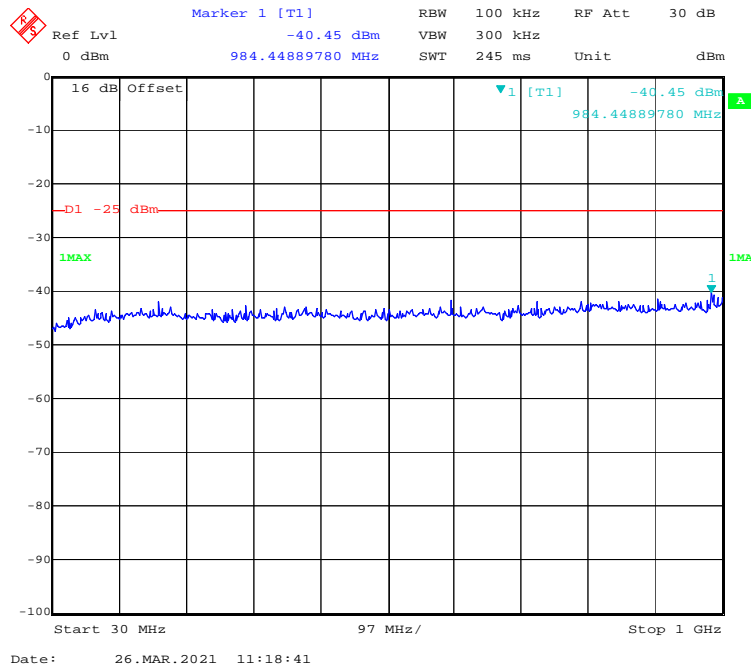
30 MHz - 1 GHz (QPSK, 20.0 MHz, High Channel)



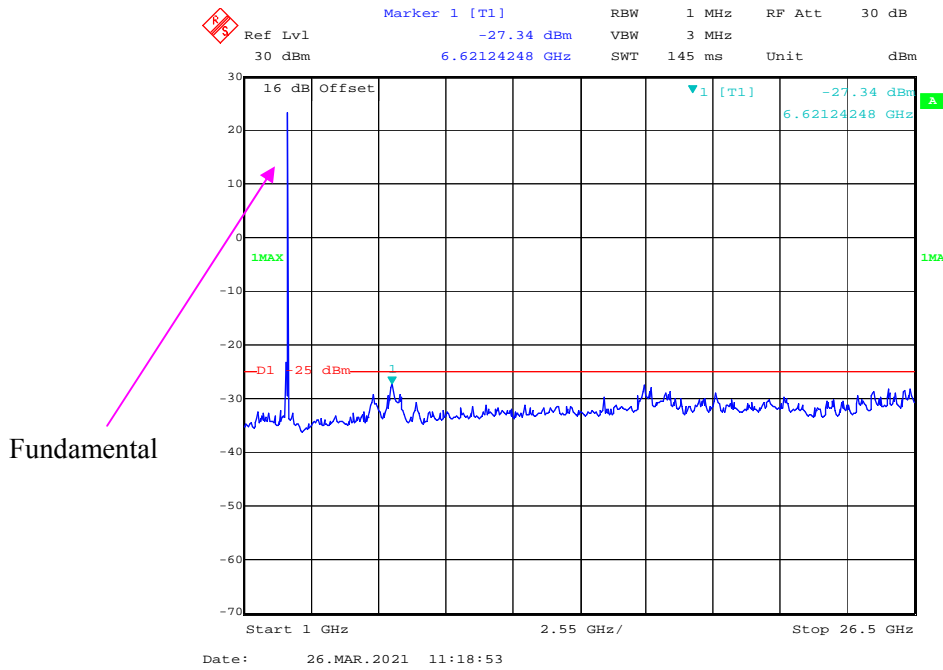
1 GHz – 26.5 GHz (QPSK, 20.0 MHz, High Channel)



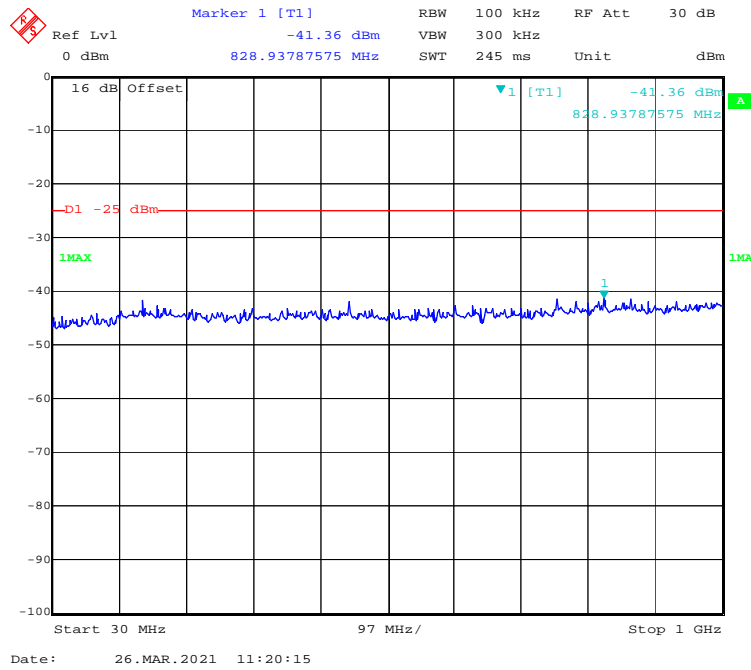
30 MHz - 1 GHz (16QAM, 5.0 MHz, High Channel)



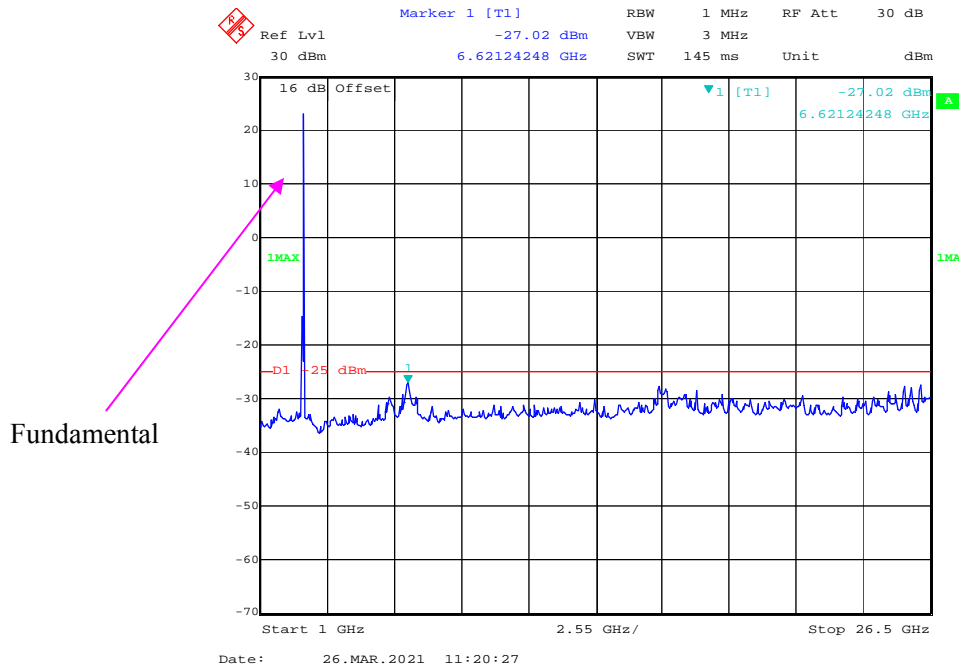
1 GHz – 26.5 GHz (16QAM, 5.0 MHz, High Channel)



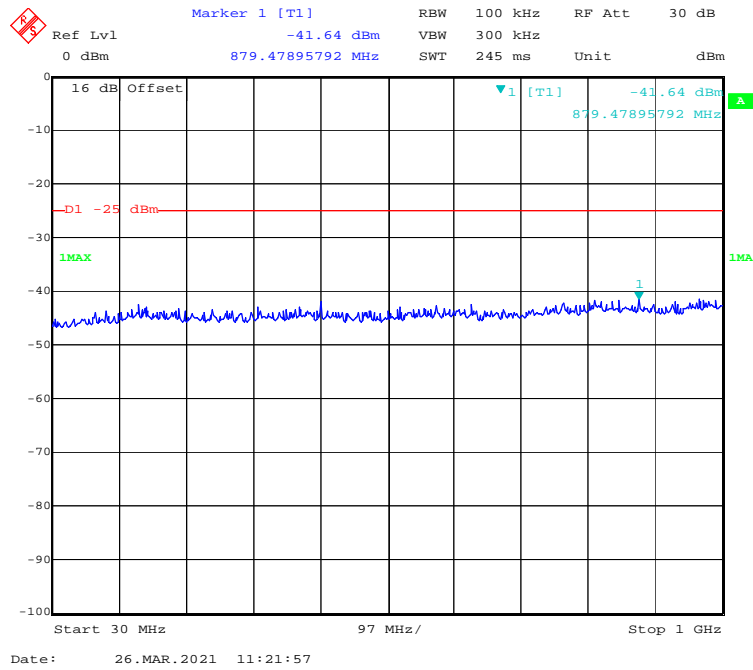
30 MHz - 1 GHz (16QAM, 10.0 MHz, High Channel)



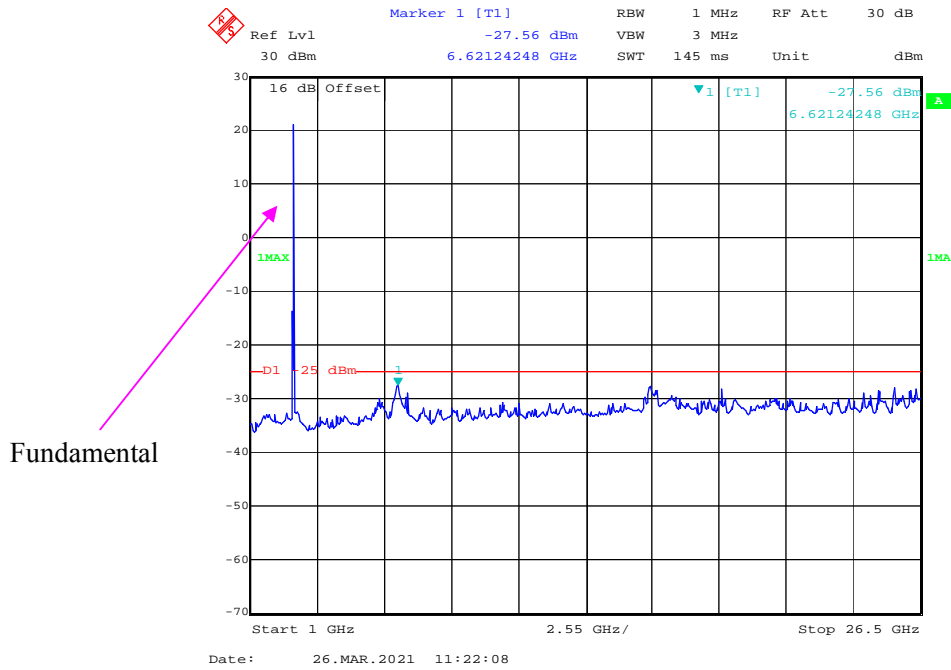
1 GHz – 26.5 GHz (16QAM, 10.0 MHz, High Channel)



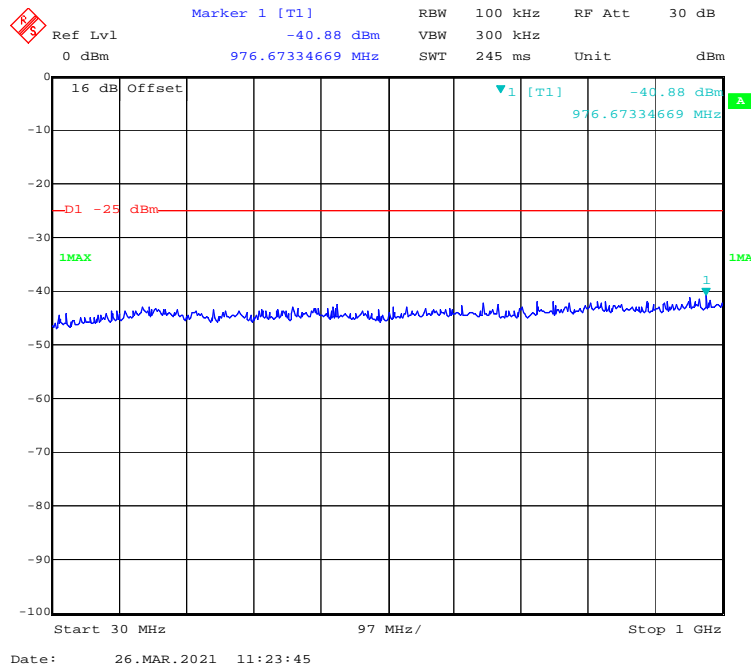
30 MHz - 1 GHz (16QAM, 15.0 MHz, High Channel)



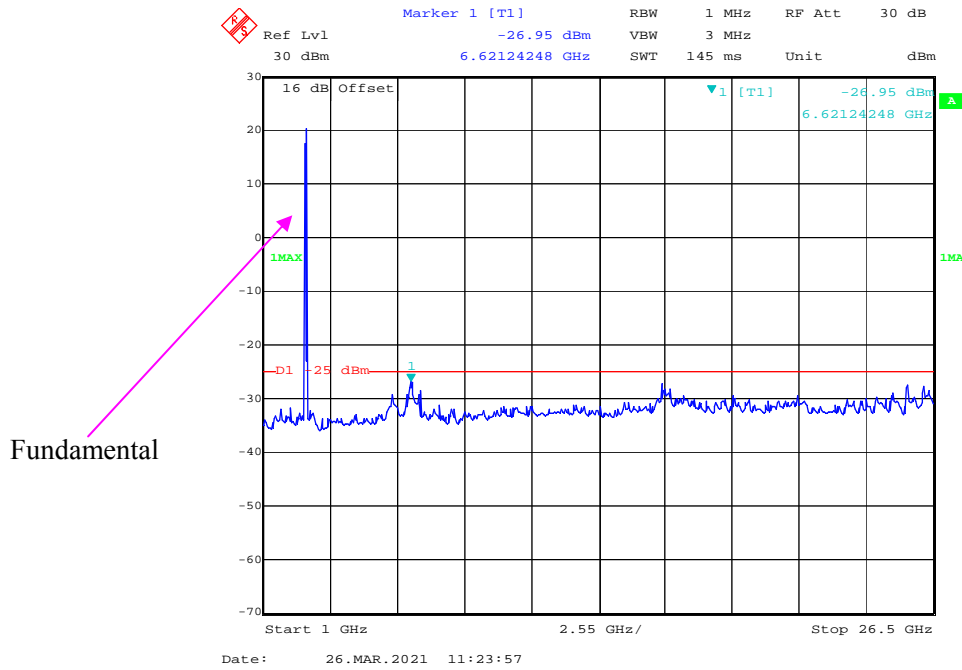
1 GHz – 26.5 GHz (16QAM, 15.0MHz, High Channel)



30 MHz - 1 GHz (16QAM, 20.0 MHz, High Channel)



1 GHz – 26.5 GHz (16QAM, 20.0 MHz, High Channel)



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

Applicable Standards

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

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

27.53 (m), for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Test Procedure

The 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:	23.5 °C
Relative Humidity:	50 %
ATM Pressure:	101.9 kPa

The testing was performed by Stone Zhang on 2021-04-10.

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

30 MHz ~ 10 GHz:

LTE Band 5:

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										
459.84	49.98	150	100	H	-49.34	0.55	-1.71	-51.60	-13	38.60
459.84	52.67	229	200	V	-46.65	0.55	-1.71	-48.91	-13	35.91
1649.40	53.25	74	150	H	-60.09	0.84	8.44	-52.49	-13	39.49
1649.40	51.37	230	100	V	-61.97	0.84	8.44	-54.37	-13	41.37
16-QAM 1.4MHz Bandwidth Low Channel										
459.74	51.35	121	150	H	-47.97	0.55	-1.71	-50.23	-13	37.23
459.74	53.37	121	150	V	-45.95	0.55	-1.71	-48.21	-13	35.21
1649.40	53.28	81	200	H	-60.06	0.84	8.44	-52.46	-13	39.46
1649.40	49.87	202	200	V	-63.47	0.84	8.44	-55.87	-13	42.87

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 Middle Channel										
459.86	51.26	287	100	H	-48.06	0.55	-1.71	-50.32	-13	37.32
459.86	54.38	237	200	V	-44.94	0.55	-1.71	-47.20	-13	34.20
1673	45.96	193	150	H	-57.43	0.84	8.48	-49.79	-13	36.79
1673	43.59	250	100	V	-59.8	0.84	8.48	-52.16	-13	39.16
16-QAM 1.4MHz Bandwidth Middle Channel										
459.92	50.67	152	150	H	-48.65	0.55	-1.71	-50.91	-13	37.91
459.92	52.34	82	150	V	-46.98	0.55	-1.71	-49.24	-13	36.24
1673	45.77	65	200	H	-57.62	0.84	8.48	-49.98	-13	36.98
1673	43.43	193	200	V	-59.96	0.84	8.48	-52.32	-13	39.32

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										
459.69	49.98	159	100	H	-49.34	0.55	-1.71	-51.60	-13	38.60
459.69	52.32	232	200	V	-47	0.55	-1.71	-49.26	-13	36.26
1696.60	50.66	220	150	H	-62.35	0.84	8.51	-54.68	-13	41.68
1696.60	48.28	163	100	V	-64.73	0.84	8.51	-57.06	-13	44.06
16-QAM 1.4MHz Bandwidth High Channel										
459.68	51.72	338	150	H	-47.6	0.55	-1.71	-49.86	-13	36.86
459.68	51.46	176	150	V	-47.86	0.55	-1.71	-50.12	-13	37.12
1696.60	50.65	35	200	H	-62.36	0.84	8.51	-54.69	-13	41.69
1696.60	48.11	56	200	V	-64.9	0.84	8.51	-57.23	-13	44.23

LTE Band 41:

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Low Channel										
459.85	49.87	256	150	H	-49.48	0.55	-1.71	-51.74	-25	26.74
459.85	52.98	229	200	V	-46.37	0.55	-1.71	-48.63	-25	23.63
5115	43.01	189	100	H	-62.37	1.09	10.3	-53.16	-25	28.16
5115	39.69	190	100	V	-65.69	1.09	10.3	-56.48	-25	31.48
16-QAM 5MHz Bandwidth Low Channel										
459.64	49.88	180	200	H	-49.47	0.55	-1.71	-51.73	-25	26.73
459.64	52.78	82	150	V	-46.57	0.55	-1.71	-48.83	-25	23.83
5115	42.15	45	150	H	-63.23	1.09	10.3	-54.02	-25	29.02
5115	40.12	124	100	V	-65.26	1.09	10.3	-56.05	-25	31.05

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth Middle Channel										
459.67	48.86	150	150	H	-50.49	0.55	-1.71	-52.75	-25	27.75
459.67	51.64	86	200	V	-47.71	0.55	-1.71	-49.97	-25	24.97
5210	31.15	210	100	H	-63.68	1.11	10.3	-54.49	-25	29.49
5210	28.95	314	100	V	-65.88	1.11	10.3	-56.69	-25	31.69
16-QAM 5MHz Bandwidth Middle Channel										
459.63	48.56	196	200	H	-50.79	0.55	-1.71	-53.05	-25	28.05
459.63	51.04	93	150	V	-48.31	0.55	-1.71	-50.57	-25	25.57
5210	31.27	113	150	H	-63.56	1.11	10.3	-54.37	-25	29.37
5210	29.38	295	100	V	-65.45	1.11	10.3	-56.26	-25	31.26

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
QPSK 5MHz Bandwidth High Channel										
459.84	49.85	301	150	H	-49.5	0.55	-1.71	-51.76	-25	26.76
459.84	51.89	288	200	V	-47.46	0.55	-1.71	-49.72	-25	24.72
5305	42.66	87	100	H	-61.66	1.12	10.3	-52.48	-25	27.48
5305	40.51	52	100	V	-63.81	1.12	10.3	-54.63	-25	29.63
16-QAM 5MHz Bandwidth High Channel										
459.64	48.65	134	200	H	-50.7	0.55	-1.71	-52.96	-25	27.96
459.64	51.48	15	150	V	-47.87	0.55	-1.71	-50.13	-25	25.13
5305	40.78	80	150	H	-63.54	1.12	10.3	-54.36	-25	29.36
5305	39.07	21	100	V	-65.25	1.12	10.3	-56.07	-25	31.07

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); FCC§27.53 (m)- BAND EDGES

Applicable Standards

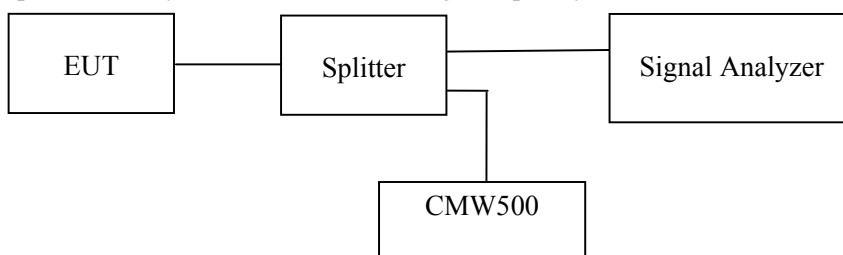
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC §27.53 (m), for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 +10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Test Procedure

The 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:	23-25.3 °C
Relative Humidity:	47-50 %
ATM Pressure:	100.7-101.3kPa

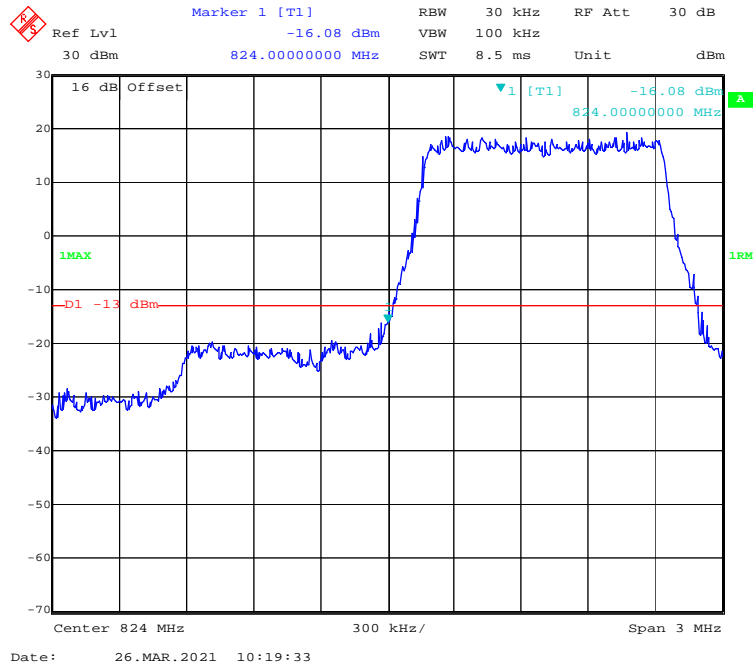
The testing was performed by Stone Zhang from 2021-03-26 to 2021-05-31.

EUT operation mode: Transmitting

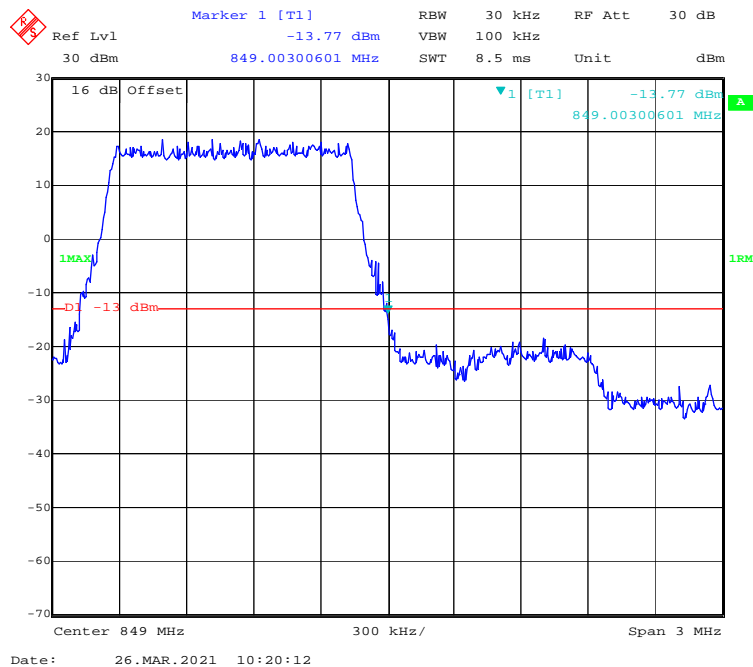
Test Result: Compliant.

LTE Band 5:

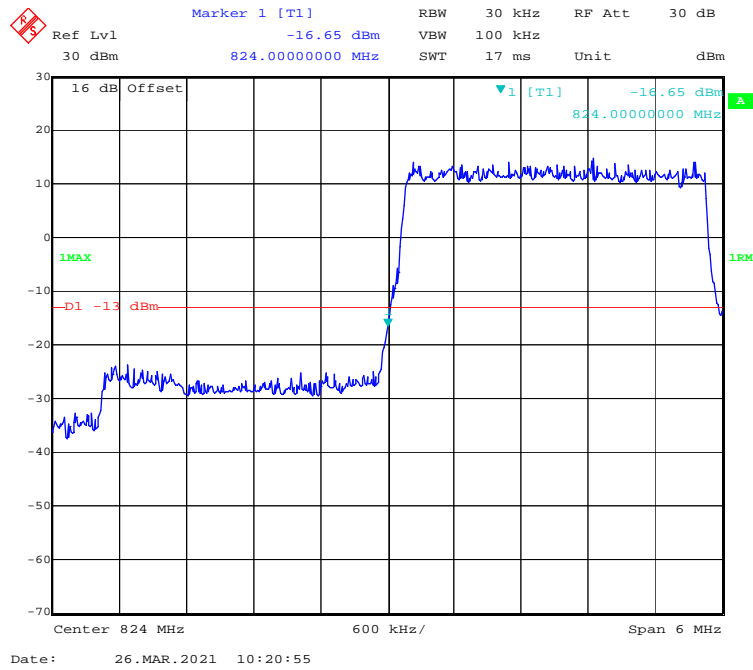
QPSK (1.4 MHz, FULL RB) - Left Band Edge



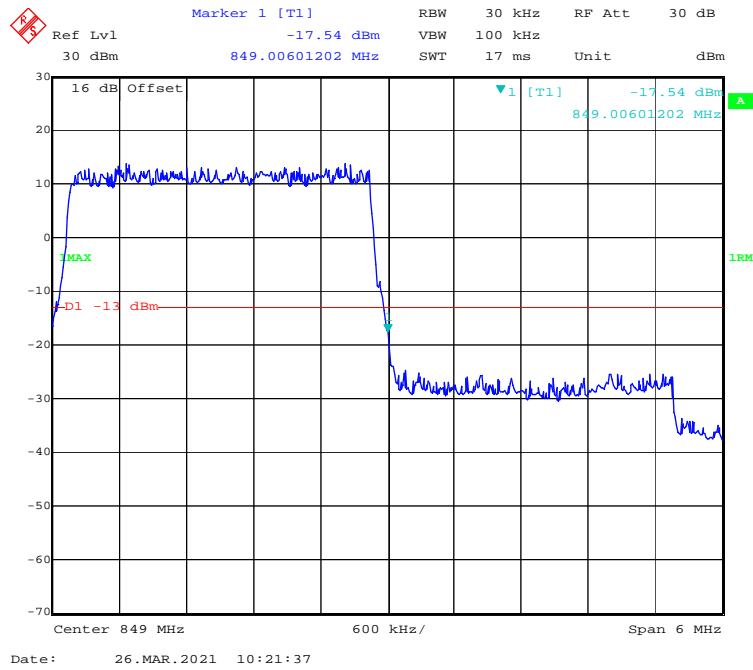
QPSK (1.4 MHz, FULL RB) - Right Band Edge



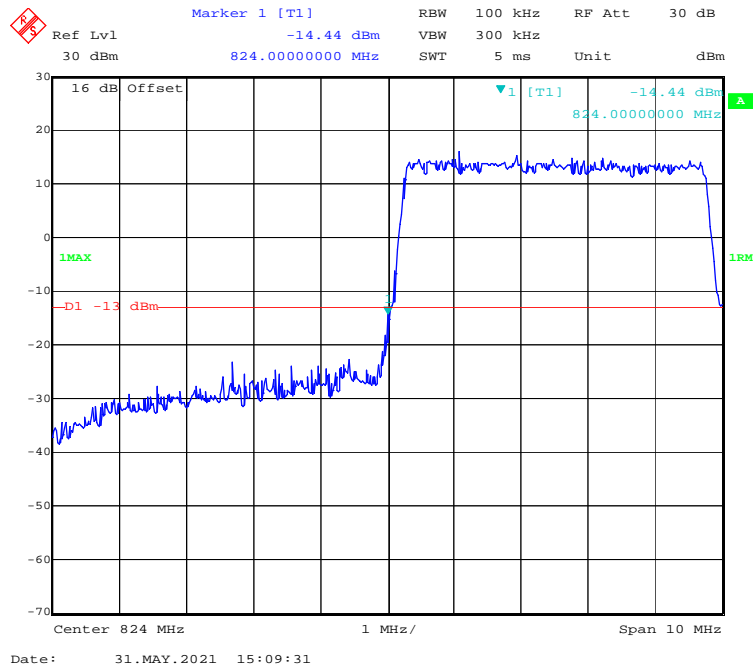
QPSK (3.0 MHz, FULL RB) - Left Band Edge



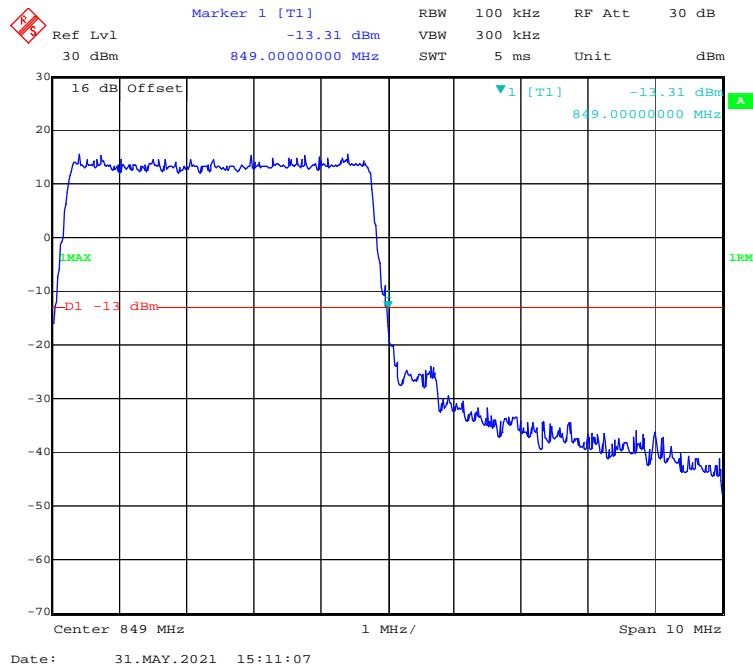
QPSK (3.0 MHz, FULL RB) - Right Band Edge



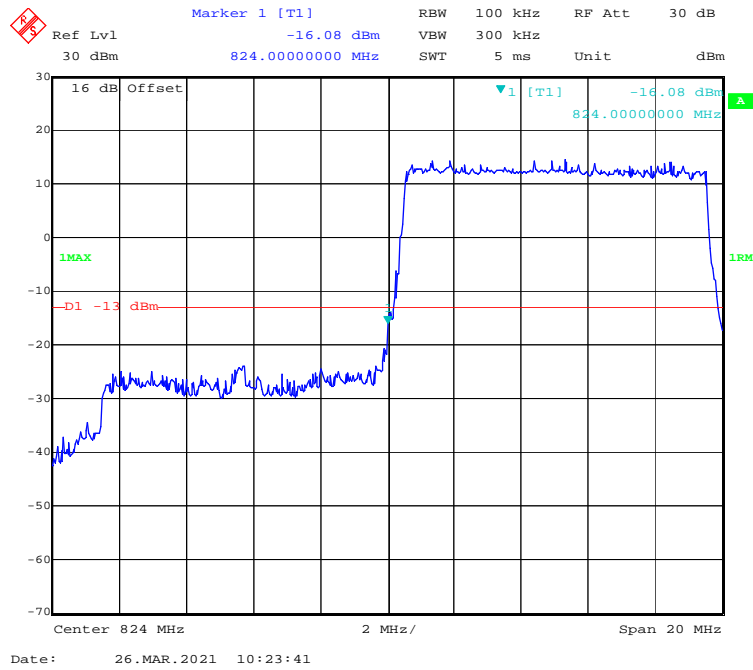
QPSK (5.0 MHz, FULL RB) - Left Band Edge



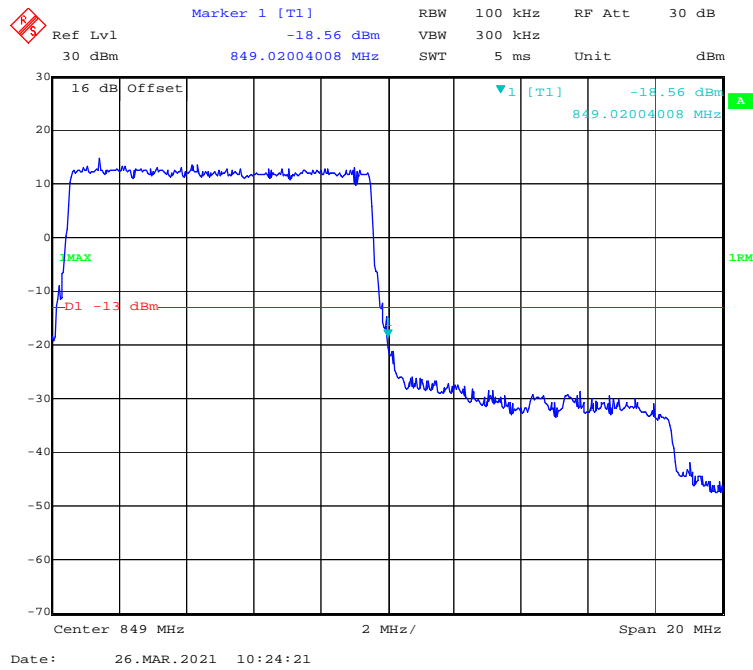
QPSK (5.0 MHz, FULL RB) - Right Band Edge



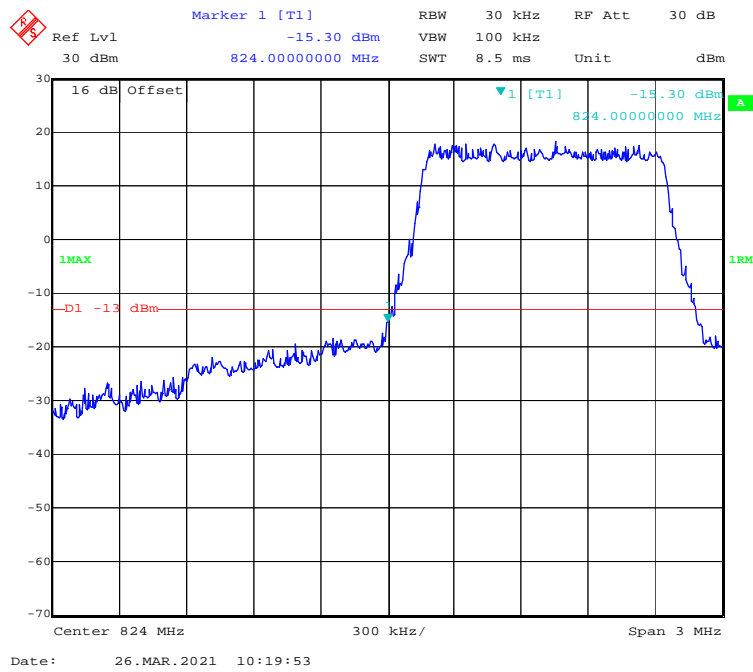
QPSK (10.0 MHz, FULL RB) - Left Band Edge



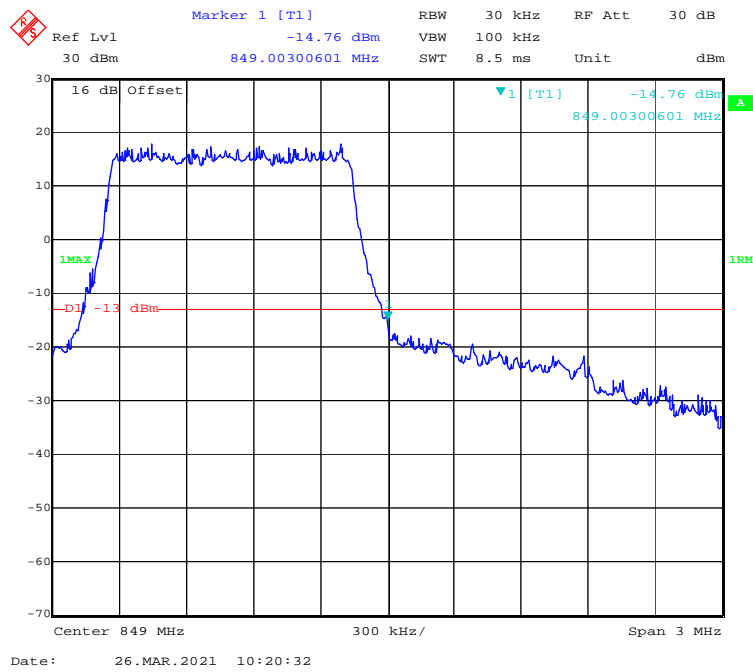
QPSK (10.0 MHz, FULL RB) - Right Band Edge



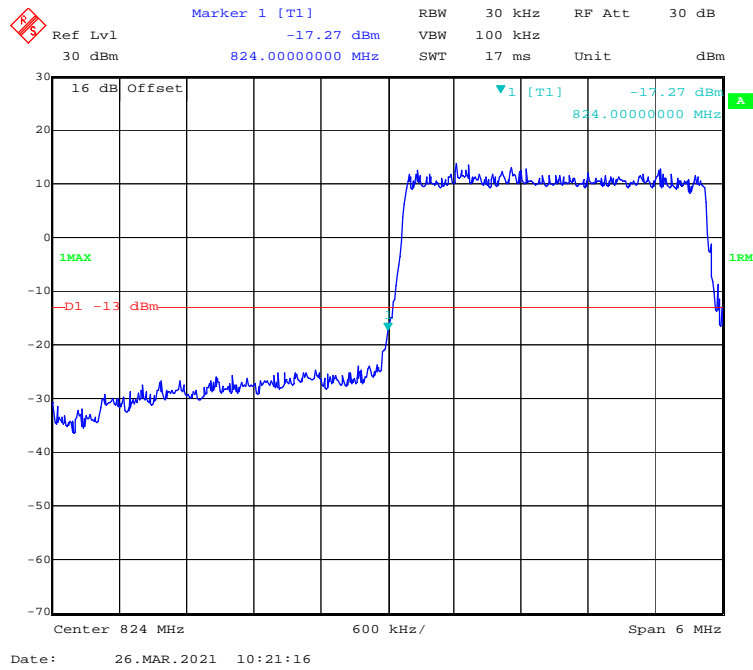
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



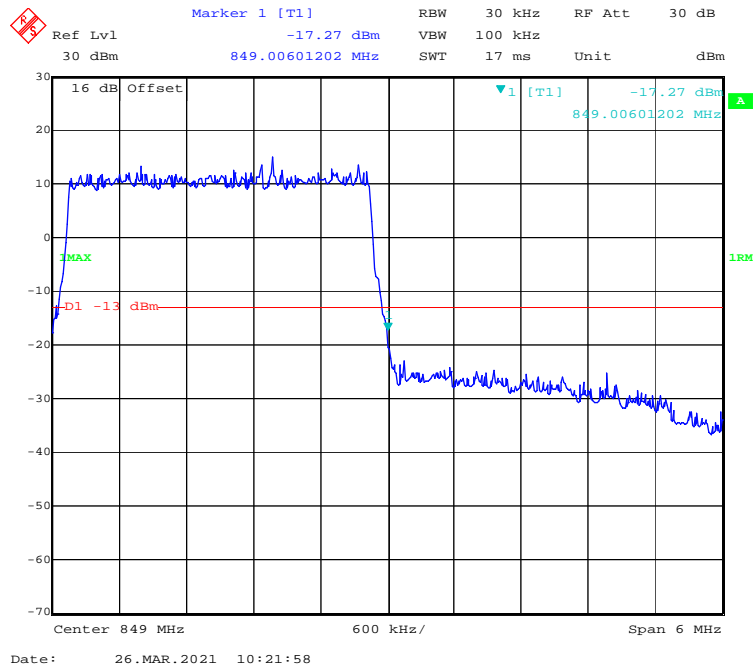
16-QAM (1.4 MHz, FULL RB) - Right Band Edge



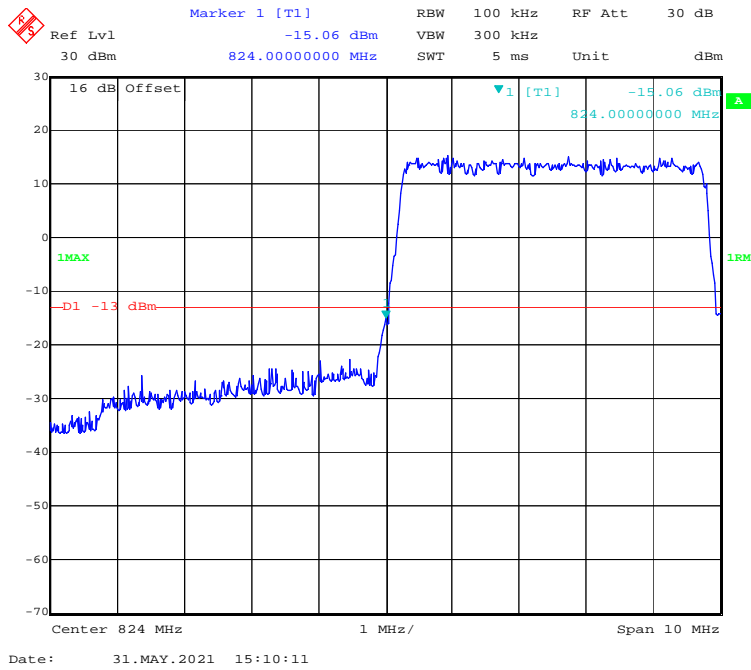
16-QAM (3.0 MHz, FULL RB) - Left Band Edge



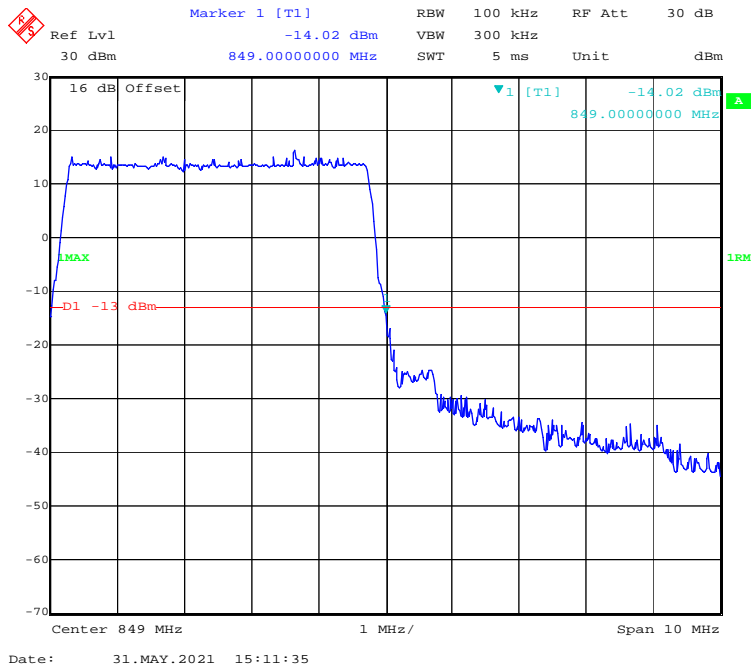
16-QAM (3.0 MHz, FULL RB) - Right Band Edge



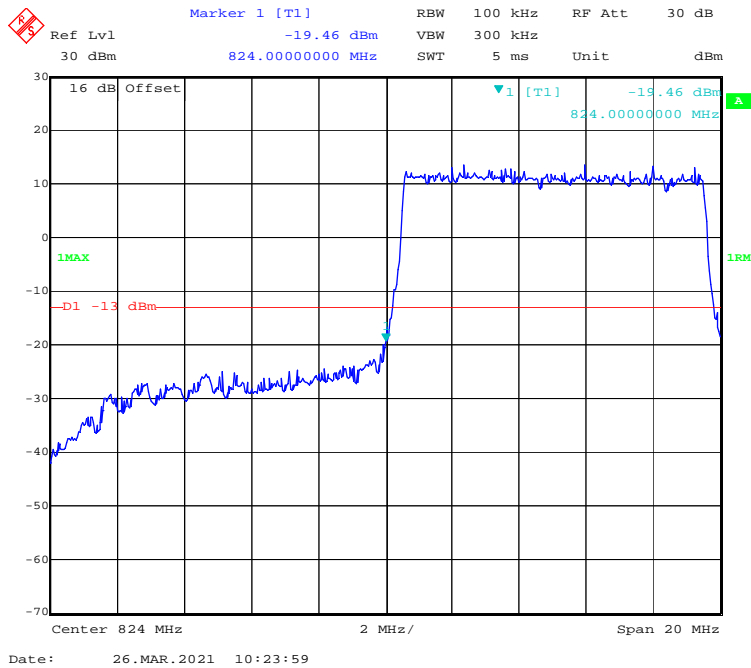
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



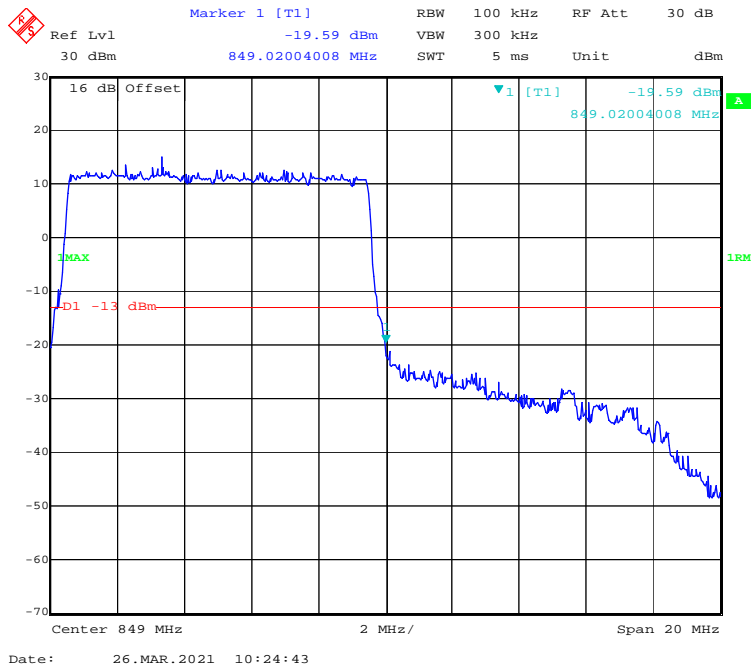
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



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

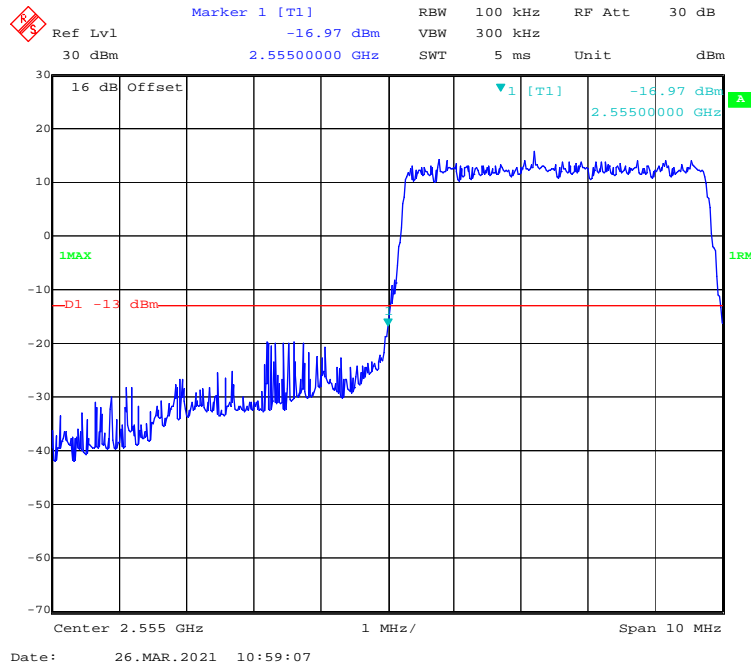


16-QAM (10.0 MHz, FULL RB) - Right Band Edge

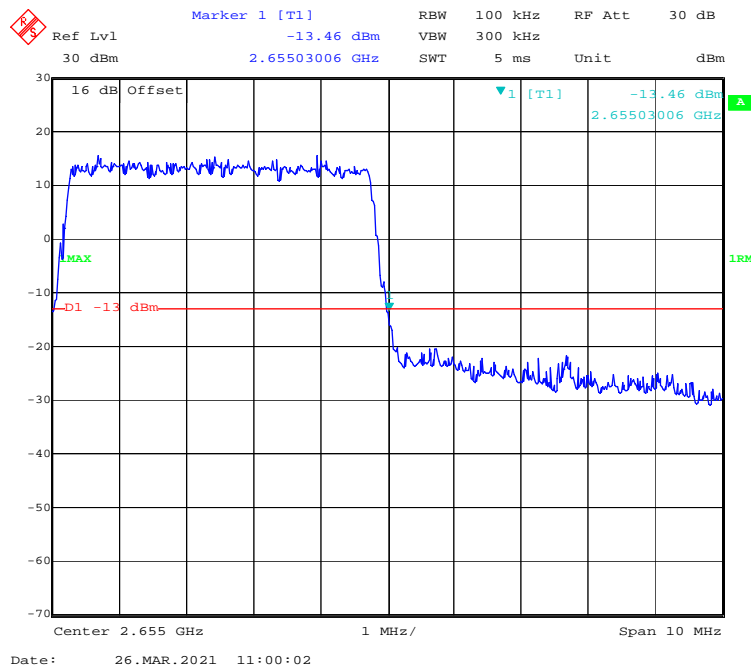


LTE Band 41:

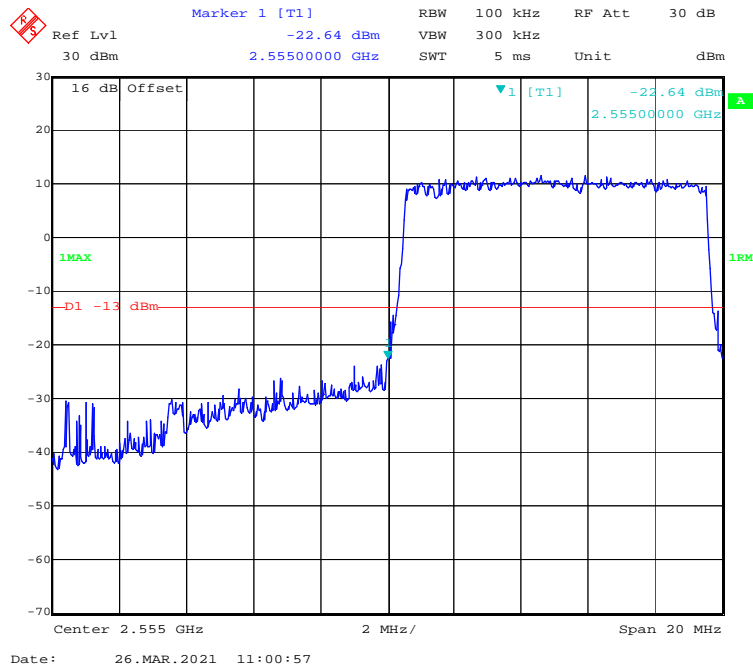
QPSK (5.0 MHz, FULL RB) - Left Band Edge



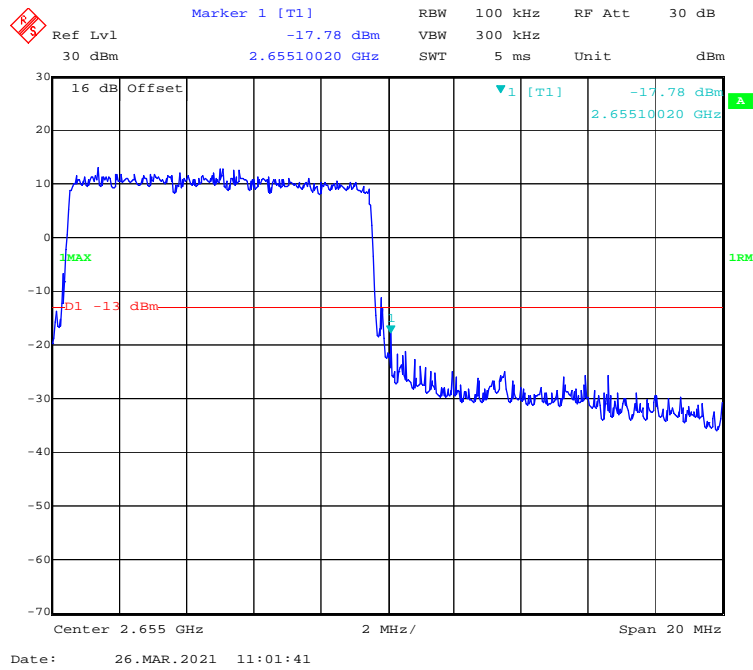
QPSK (5.0 MHz, FULL RB) - Right Band Edge



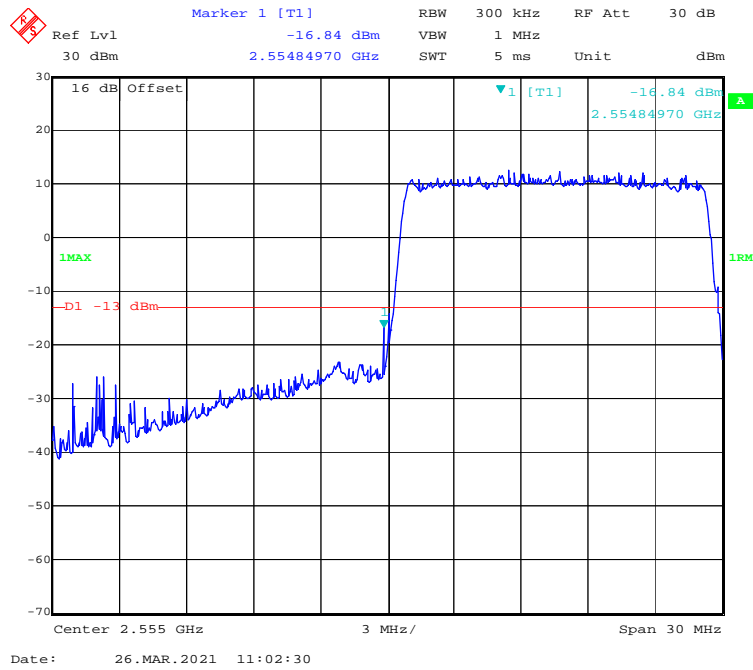
QPSK (10.0 MHz, FULL RB) - Left Band Edge



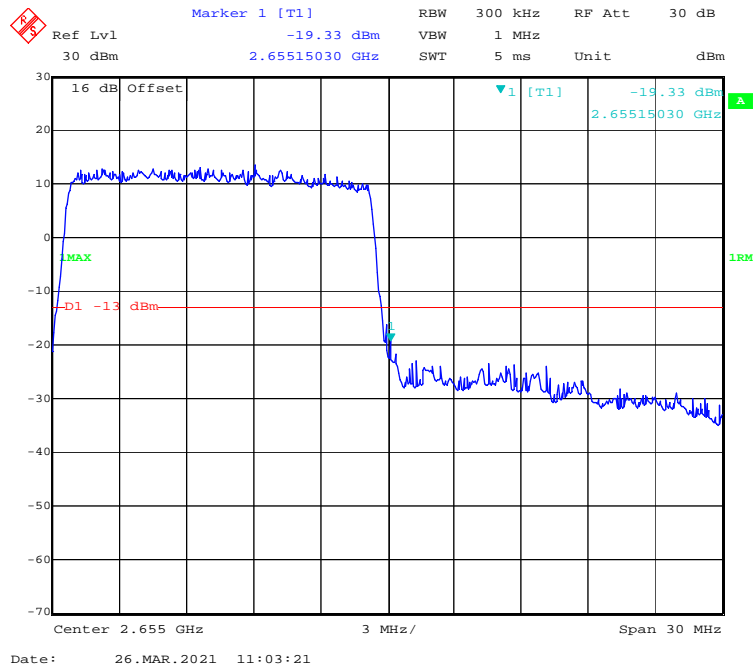
QPSK (10.0 MHz, FULL RB) - Right Band Edge



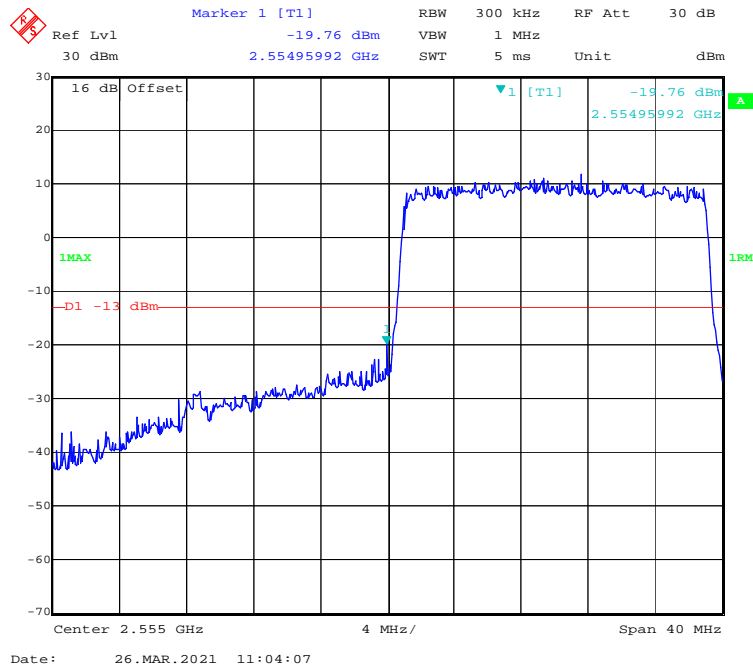
QPSK (15.0 MHz, FULL RB) - Left Band Edge



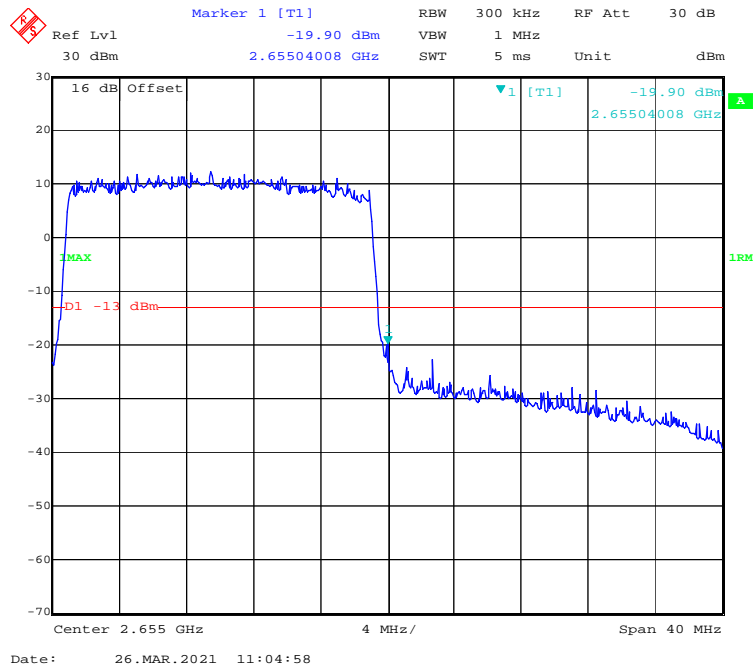
QPSK (15.0 MHz, FULL RB) - Right Band Edge



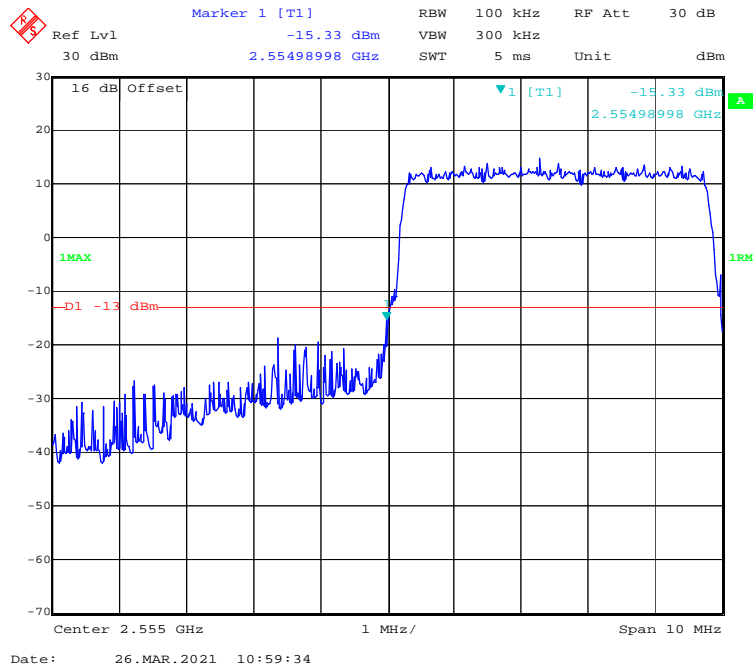
QPSK (20.0 MHz, FULL RB) - Left Band Edge



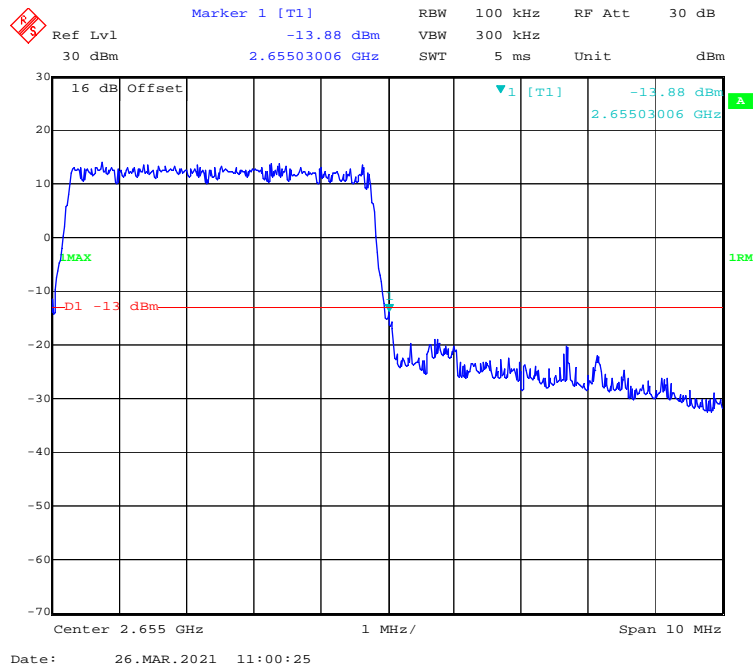
QPSK (20.0 MHz, FULL RB) - Right Band Edge



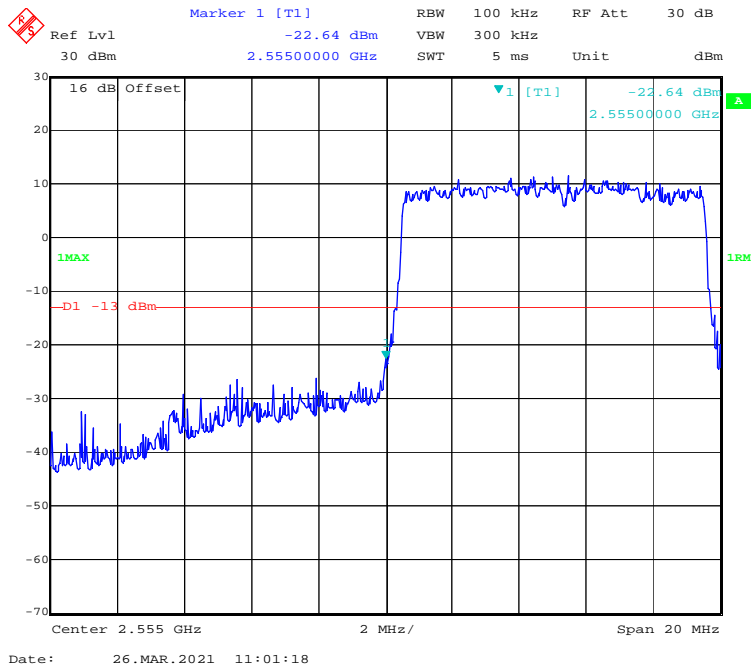
16-QAM (5.0 MHz, FULL RB) - Left Band Edge



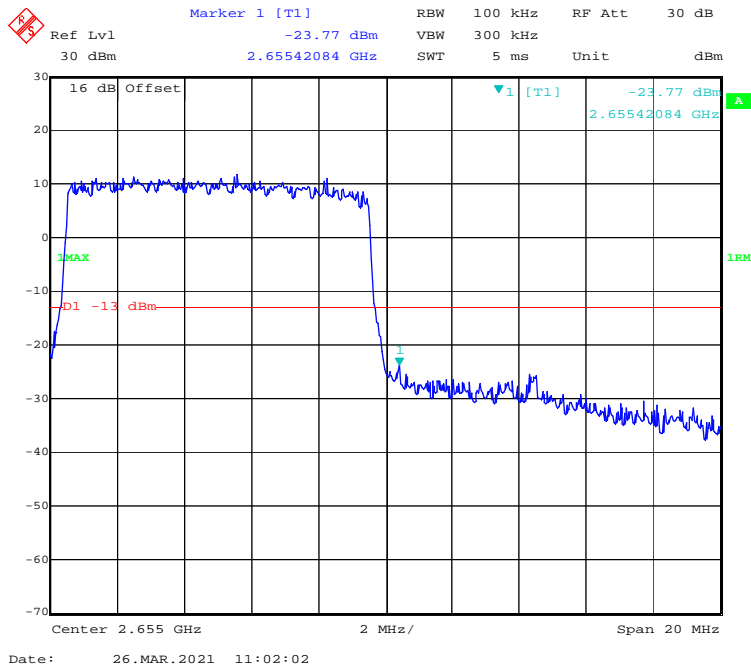
16-QAM (5.0 MHz, FULL RB) - Right Band Edge



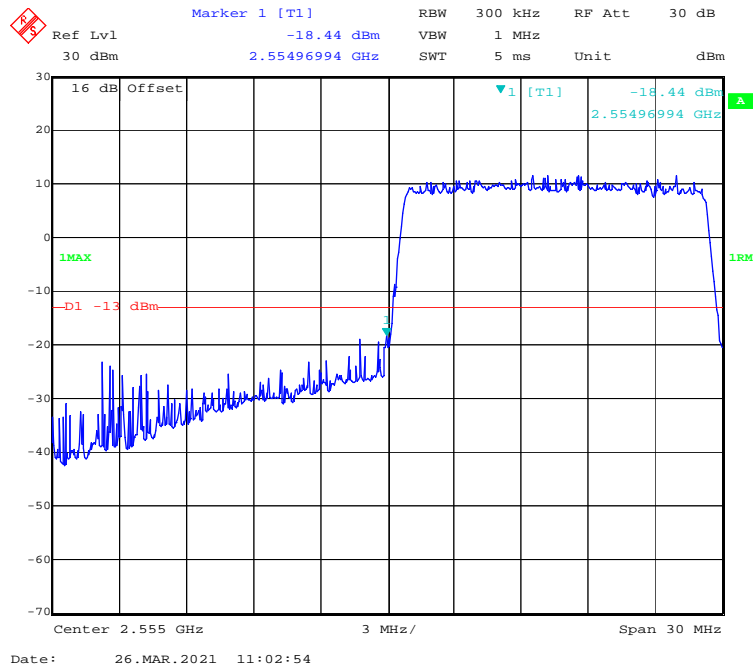
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



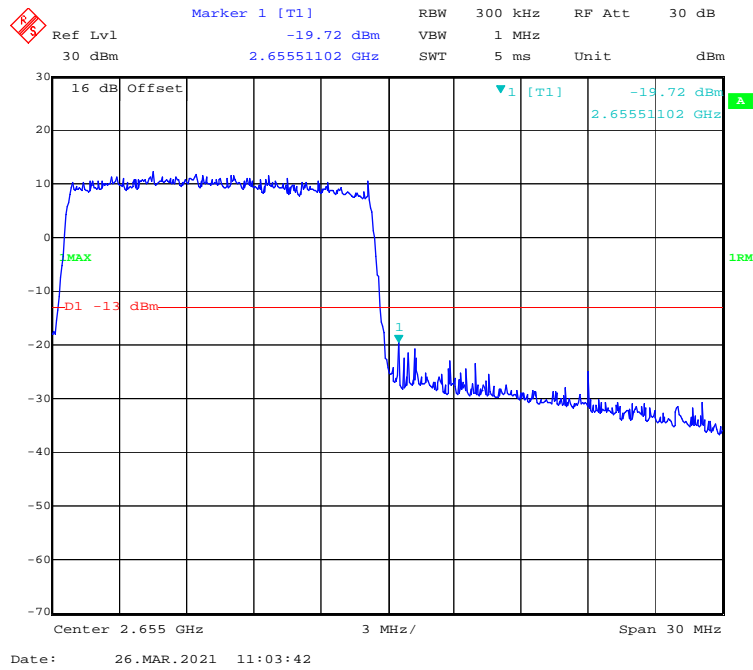
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



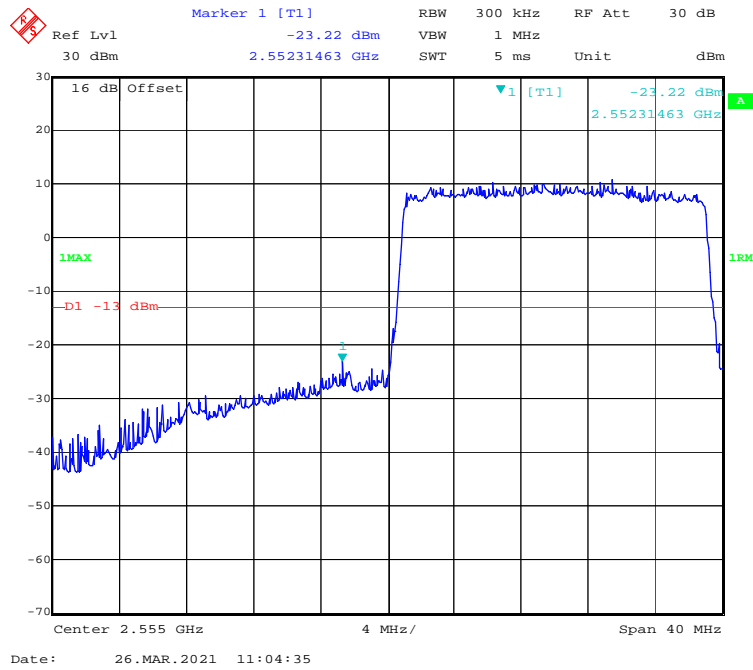
16-QAM (15.0 MHz, FULL RB) - Left Band Edge



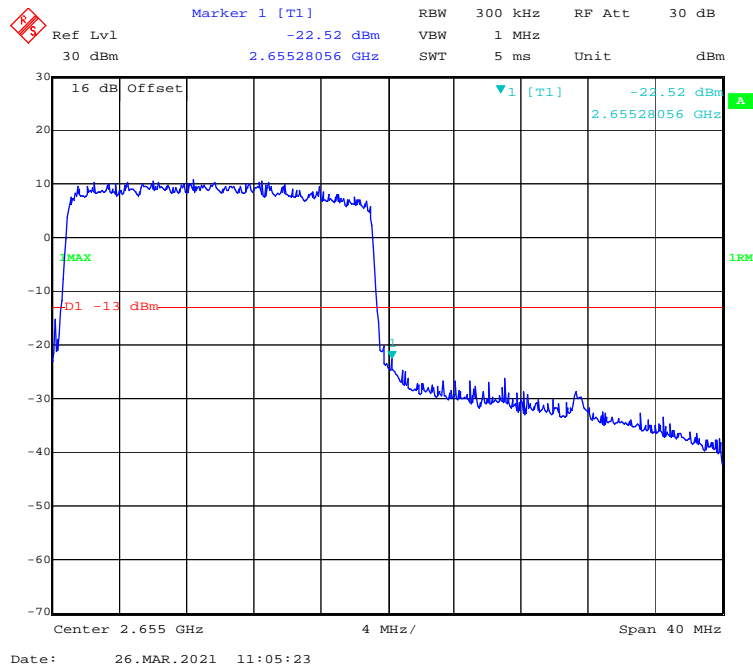
16-QAM (15.0 MHz, FULL RB) - Right Band Edge



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



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



FCC § 2.1055; § 22.355; FCC §27.54- FREQUENCY STABILITY

Applicable Standards

FCC § 2.1055, §22.355 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

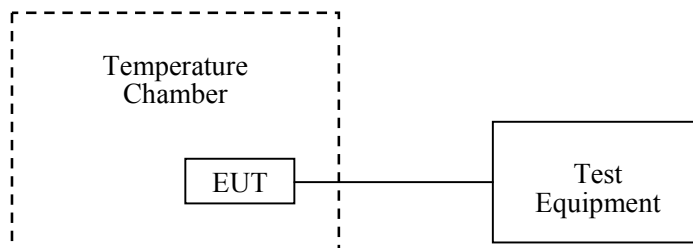
According to §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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:	24.9 °C
Relative Humidity:	52 %
ATM Pressure:	101.9 kPa

The testing was performed by Stone Zhang on 2021-04-10.

EUT operation mode: Transmitting

Test Result: Compliant.

LTE Band 5:

Middle Channel, $f_0 = 836.5$ MHz (QPSK) /Channel Bandwidth:10MHz				
Temperature	Power Supplied	Frequency Error	Frequency Error	Limit
(°C)	(V _{DC})	(Hz)	(ppm)	(ppm)
-30	12	17	0.0203	2.5
-20		14	0.0167	2.5
-10		11	0.0132	2.5
0		9	0.0108	2.5
10		13	0.0155	2.5
20		16	0.0191	2.5
30		8	0.0096	2.5
40		12	0.0143	2.5
50		16	0.0179	2.5
20		V min.=9	12	0.0143
20	V max.= 16	15	0.0179	2.5

Middle Channel, $f_0 = 836.5$ MHz (16-QAM) /Channel Bandwidth:10MHz				
Temperature	Power Supplied	Frequency Error	Frequency Error	Limit
(°C)	(V _{DC})	(Hz)	(ppm)	(ppm)
-30	12	18	0.0215	2.5
-20		15	0.0179	2.5
-10		16	0.0191	2.5
0		13	0.0155	2.5
10		14	0.0167	2.5
20		9	0.0108	2.5
30		15	0.0179	2.5
40		14	0.0167	2.5
50		13	0.0132	2.5
20		V min.=9	14	0.0167
20	V max.= 16	11	0.0132	2.5

LTE Band 41:

Low Channel & High Channel (QPSK) /Channel Bandwidth:20MHz					
Temperature	Power Supplied	F _L	F _H	F _L Limit	F _H Limit
(°C)	(V _{DC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	12	2555.0587	2654.9593	2555	2655
-20		2555.0579	2654.9537	2555	2655
-10		2555.0544	2654.9516	2555	2655
0		2555.0568	2654.9525	2555	2655
10		2555.0544	2654.9559	2555	2655
20		2555.0506	2654.9589	2555	2655
30		2555.0567	2654.9505	2555	2655
40		2555.0557	2654.9523	2555	2655
50		2555.056	2654.9514	2555	2655
20		V min.= 9	2555.0555	2654.9583	2555
20	V max.= 16	2555.052	2654.9545	2555	2655

Low Channel & High Channel (16-QAM) /Channel Bandwidth:20MHz					
Temperature	Power Supplied	F _L	F _H	F _L Limit	F _H Limit
(°C)	(V _{DC})	(MHz)	(MHz)	(MHz)	(MHz)
-30	12	2555.0593	2654.9518	2555	2655
-20		2555.0587	2654.9552	2555	2655
-10		2555.0557	2654.9589	2555	2655
0		2555.0568	2654.9536	2555	2655
10		2555.0584	2654.9592	2555	2655
20		2555.0504	2654.9548	2555	2655
30		2555.0518	2654.9502	2555	2655
40		2555.0595	2654.9545	2555	2655
50		2555.0523	2654.9518	2555	2655
20		V min.= 9	2555.0528	2654.951	2555
20	V max.= 16	2555.0514	2654.952	2555	2655

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.

5: This report cannot be reproduced except in full, without prior written approval of the Company.

6: This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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