FCC PART 90

TEST REPORT

For

Shenzhen Huafurui Technology Co., Ltd.

Unit 1401 & 1402, 14/F, Jinqi Zhigu Mansion (No.4 Building of Chongwen Garden), Crossing of the Liuxian Street and Tangling Road, Taoyuan Street, Nanshan District, Shenzhen, P.R. China

FCC ID: 2AHZ5KK7

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

Report Number:	SZ1210609-22464E-00
Report Date:	2021-06-21
Reviewed By:	Jacob Kong RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".

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.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Smartphone
Tested Model	KINGKONG 7
Frequency Range	LTE Band 26(Part 90S): 814-824MHz(TX); 859-869MHz(RX)
Modulation Technique	4G: QPSK, 16QAM
Antenna Specification*	LTE Band 26: 0.53dBi (provided by the applicant)
Voltage Range	DC 3.85V battery
Date of Test	2021-06-17 to 2021-06-25
Sample serial number	SZ1210506-15265E-SA-S_4NK (Assigned by BACL, Shenzhen)
Received date	2021-05-06
Sample/EUT Status	Good condition

Objective

This test report is in accordance with Part 2-Subpart J, Part 90 of the Federal Communication Commissions rules.

The objective is to determine the compliance of the 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.

Test Methodology

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

Part 90 – Private Land Mobile Radio Services

ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.
Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±0.73dB
Unwanted Emission, conducted		±1.6dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1℃
Humidity		±6%
Supply voltages		±0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Test was performed as below table:

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE B26(Part 90S)	1.4	814.7	819	823.3
	3	815.5	819	822.5
	5	816.5	819	821.5
	10	/	819	/

Equipment Modifications

No modification was made to the EUT.

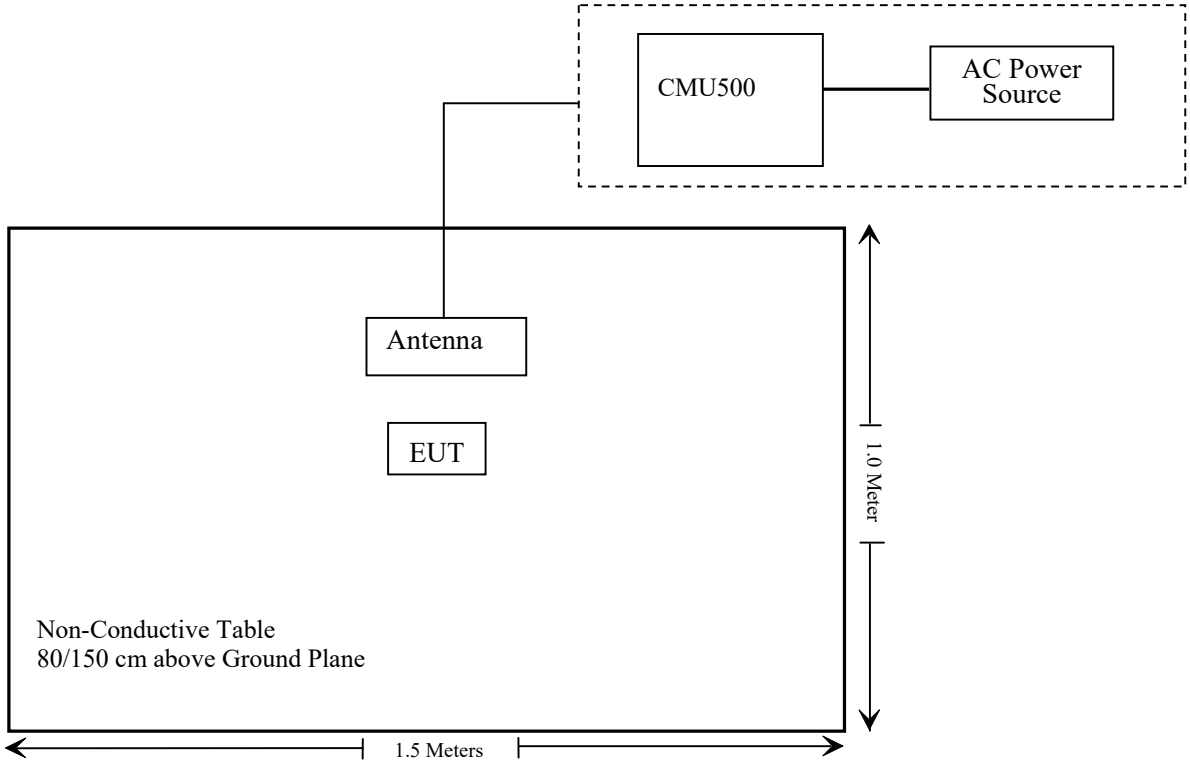
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-116218-UY

External I/O Cable

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

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§ 1.1307 , §2.1093	RF Exposure (SAR)	Compliant*
§2.1046; § 90.635	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049	Occupied Bandwidth	Compliant
§ 2.1051; §90.691	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; §90.691	Field Strength of Spurious Radiation	Compliant
§90.691	Band Edge	Compliant
§ 2.1055; § 90.213	Frequency stability	Compliant

Note: * Please refer to SAR report released by BACL, report number: SZ1210506-15265E-SAA.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/08/04	2021/08/03
Sonoma instrument	Pre-amplifier	310 N	186238	2020/08/04	2021/08/03
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2020/12/22	2023/12/21
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2020/11/29	2021/11/28
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Sunol Sciences	Horn Antenna	3115	9107-3694	2021/01/15	2024/01/14
A.H.System	Horn Antenna	SAS-200/571	135	2018/09/01	2021/08/31
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2020/11/29	2021/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2020/11/29	2021/11/28
Unknown	High Pass filter	1.3GHz	101120	2021/04/20	2022/04/20
Agilent	Signal Generator	N5183A	MY51040755	2020/12/29	2021/12/28
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/08/04	2021/08/03

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2021/04/02	2022/04/01
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/08/04	2021/08/03
Unknown	RF Cable	Unknown	2301 276	2020/11/29	2021/11/28
Unknown	RF Cable	Unknown	DLO J5/W6102	2020/11/29	2021/11/28
Weinschel	Power divider	1515	MY628	2020/11/29	2021/11/28
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2020/08/04	2021/08/03
instek	DC Power Supply	GPS-3030DD	EM832096	NCR	NCR
ESPEC	Temperature & Humidity Chamber	EL-10KA	9107726	2021/02/23	2022/02/22
Fluke	Digital Multimeter	287	19000011	2020/07/23	2021/07/22

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

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

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: SZ1210506-15265E-SAA.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 90 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, § 90.635 - RF OUTPUT POWER

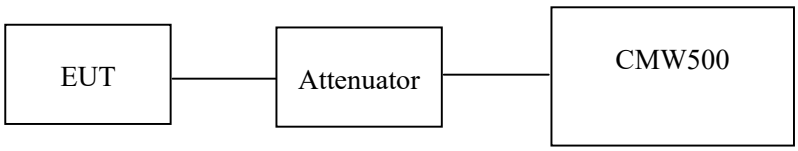
Applicable Standard

According to §90.635(b), The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Test Procedure

Conducted method:

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



Test Data

Environmental Conditions

Temperature:	28.2 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Zero Yan on 2021-06-24.

Test Mode: Transmitting

Test Result: *Pass. Please refer to following table.*

LTE Band 26(Part 90S)

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.81	23.85	23.94	21.69	21.73	21.82
		RB1#3	23.96	24.00	24.12	21.84	21.88	22.00
		RB1#5	23.79	23.79	23.97	21.67	21.67	21.85
		RB3#0	23.92	23.96	23.94	21.80	21.84	21.82
		RB3#3	23.93	23.95	23.81	21.81	21.83	21.69
		RB6#0	22.91	22.92	22.91	20.79	20.80	20.79
	16QAM	RB1#0	22.82	23.00	22.74	20.70	20.88	20.62
		RB1#3	22.95	23.16	22.93	20.83	21.04	20.81
		RB1#5	22.80	23.01	22.79	20.68	20.89	20.67
		RB3#0	23.06	22.89	22.89	20.94	20.77	20.77
		RB3#3	23.07	22.94	22.86	20.95	20.82	20.74
		RB6#0	21.90	21.99	21.88	19.78	19.87	19.76
3.0	QPSK	RB1#0	23.93	23.99	24.04	21.81	21.87	21.92
		RB1#8	23.91	23.93	23.99	21.79	21.81	21.87
		RB1#14	23.56	23.63	23.76	21.44	21.51	21.64
		RB6#0	22.49	22.89	22.75	20.37	20.77	20.63
		RB6#9	22.66	22.98	22.85	20.54	20.86	20.73
		RB15#0	22.68	23.03	22.89	20.56	20.91	20.77
	16QAM	RB1#0	23.16	23.12	22.79	21.04	21.00	20.67
		RB1#8	23.19	23.10	23.01	21.07	20.98	20.89
		RB1#14	23.16	23.10	22.78	21.04	20.98	20.66
		RB6#0	21.95	21.93	21.84	19.83	19.81	19.72
		RB6#9	22.00	21.94	21.94	19.88	19.82	19.82
		RB15#0	22.02	21.97	22.16	19.90	19.85	20.04

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	23.94	23.98	24.04	21.82	21.86	21.92
		RB1#13	23.83	24.14	24.15	21.71	22.02	22.03
		RB1#24	23.71	23.95	24.03	21.59	21.83	21.91
		RB15#0	22.85	23.09	23.23	20.73	20.97	21.11
		RB15#10	23.01	23.16	23.15	20.89	21.04	21.03
		RB25#0	23.02	23.11	23.15	20.90	20.99	21.03
	16QAM	RB1#0	22.65	23.26	23.11	20.53	21.14	20.99
		RB1#13	22.88	23.48	23.21	20.76	21.36	21.09
		RB1#24	22.85	23.33	23.03	20.73	21.21	20.91
		RB15#0	22.06	22.11	22.24	19.94	19.99	20.12
		RB15#10	22.15	22.16	22.20	20.03	20.04	20.08
		RB25#0	22.12	22.13	22.20	20.00	20.01	20.08
10.0	QPSK	RB1#0	/	24.12	/	/	22.00	/
		RB1#25	/	24.26	/	/	22.14	/
		RB1#49	/	24.10	/	/	21.98	/
		RB25#0	/	23.15	/	/	21.03	/
		RB25#25	/	23.18	/	/	21.06	/
		RB50#0	/	23.16	/	/	21.04	/
	16QAM	RB1#0	/	23.28	/	/	21.16	/
		RB1#25	/	23.40	/	/	21.28	/
		RB1#49	/	23.26	/	/	21.14	/
		RB25#0	/	22.23	/	/	20.11	/
		RB25#25	/	22.24	/	/	20.12	/
		RB50#0	/	22.19	/	/	20.07	/

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)
For Band 26: Antenna Gain =0.53dBi =-1.62dBd (0dBd=2.15dBi)
Cable Loss=0.5dB*(provided by the applicant)
Limit:≤50dBm

Peak-to-average ratio (PAR)

10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.65	/	13	Pass
QPSK (50RB Size)	/	5.42	/	13	Pass
16QAM (1RB Size)	/	5.71	/	13	Pass
16QAM (50RB Size)	/	6.31	/	13	Pass

FCC §2.1049 - OCCUPIED BANDWIDTH

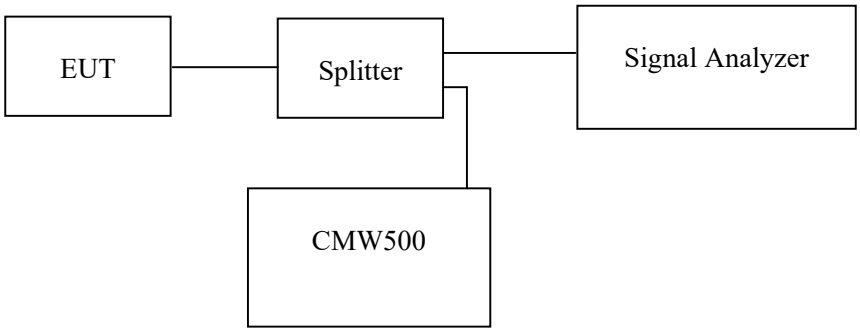
Applicable Standard

FCC 47 §2.1049.

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 1% to 5% of the anticipated emission bandwidth and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

Temperature:	23~26 ℃
Relative Humidity:	52~56 %
ATM Pressure:	101.0 kPa

The testing was performed by Zero Yan on 2021-6-24

EUT operation mode: Transmitting

Test Result: Pass

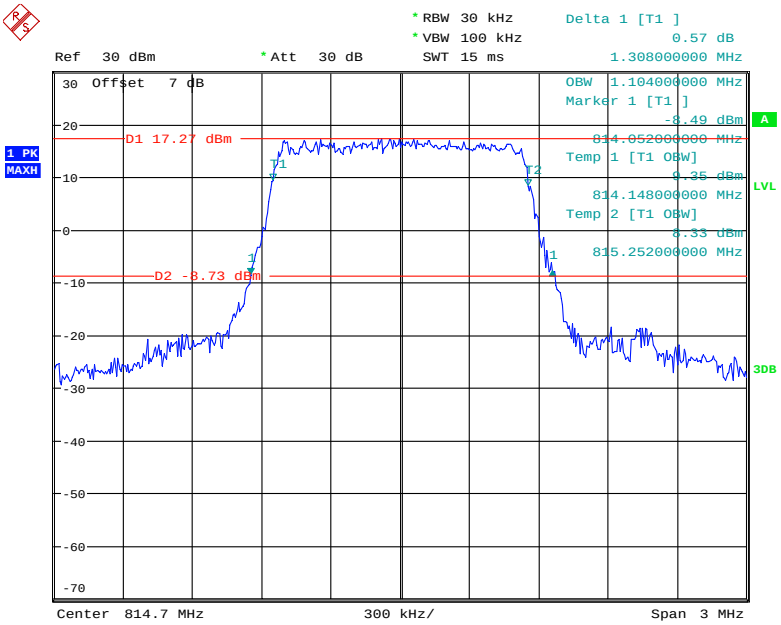
Please refer to the following tables and plots.

LTE Band 26:

Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	Low	1.104	1.308
		Middle	1.104	1.284
		High	1.098	1.308
	16QAM	Low	1.092	1.290
		Middle	1.098	1.290
		High	1.110	1.320
3	QPSK	Low	2.676	2.868
		Middle	2.700	2.880
		High	2.688	2.880
	16QAM	Low	2.676	2.868
		Middle	2.688	2.892
		High	2.688	2.868
5	QPSK	Low	4.520	4.940
		Middle	4.520	4.940
		High	4.500	4.920
	16QAM	Low	4.500	4.900
		Middle	4.500	4.940
		High	4.520	4.940
10	QPSK	Middle	8.960	9.680
	16QAM	Middle	8.960	9.560

Please refer to following plots:

Band 26_1.4 MHz_Low_QPSK_RB6#0



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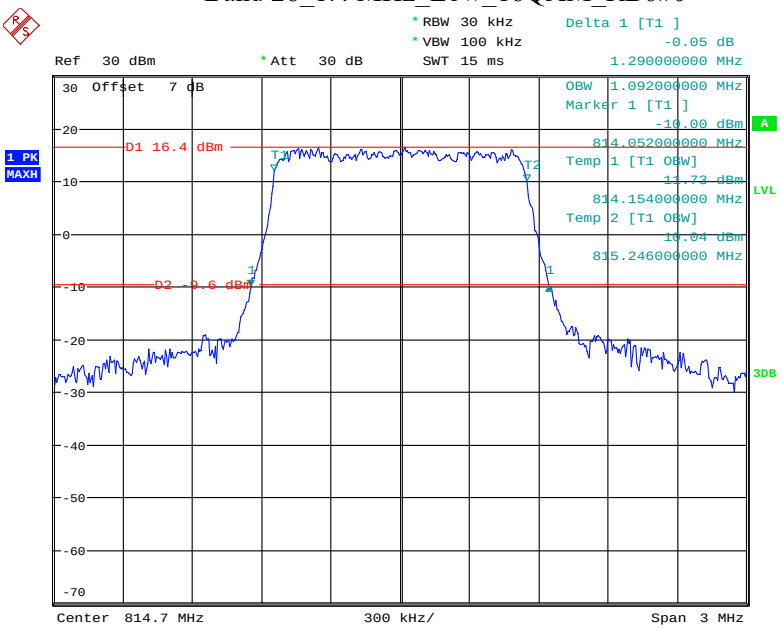
Band 26_1.4 MHz_Low_16QAM_RB6#0



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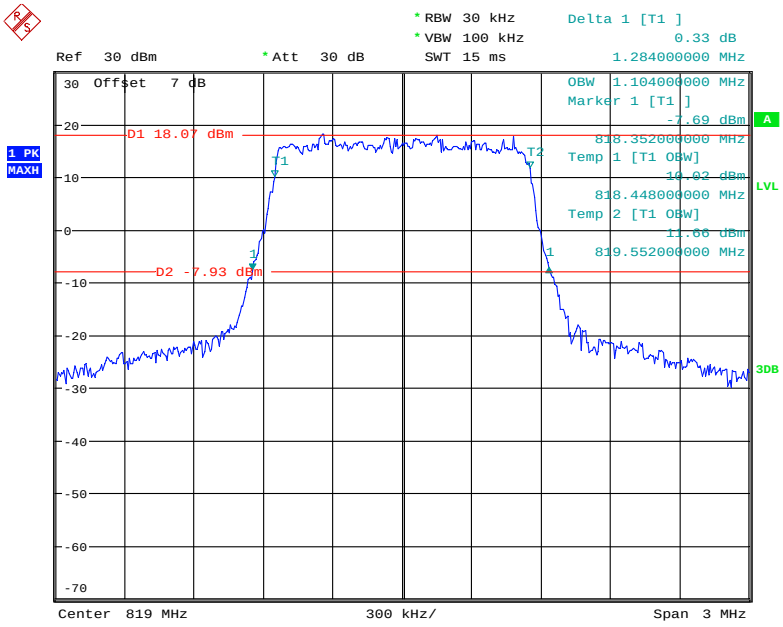
Band 26_1.4 MHz_Middle_QPSK_RB6#0



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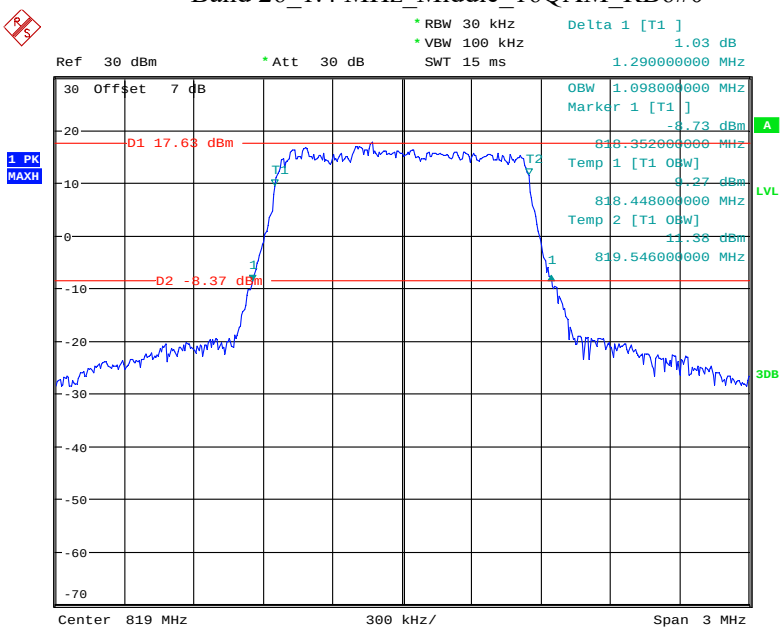

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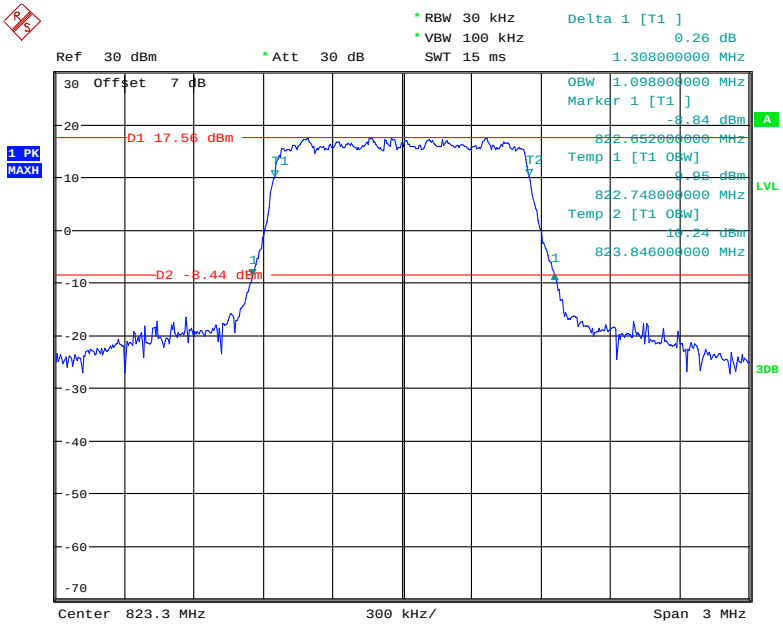

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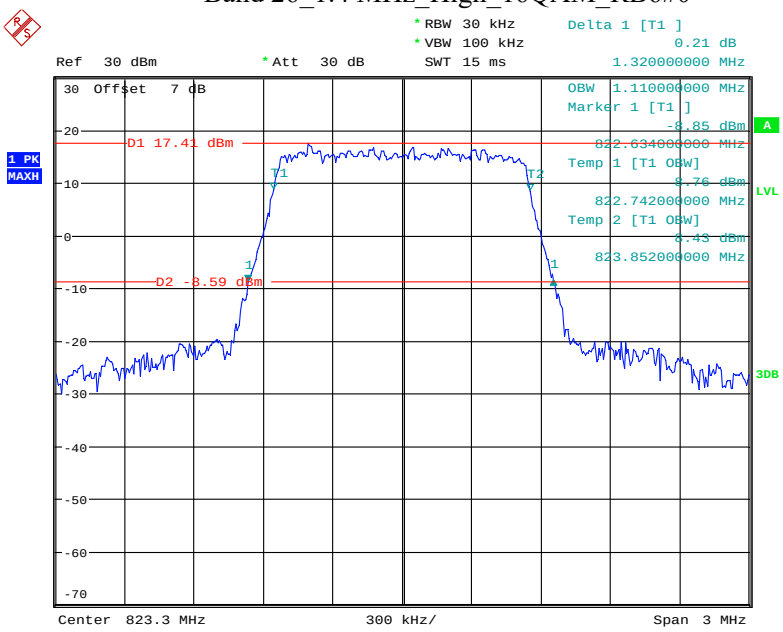

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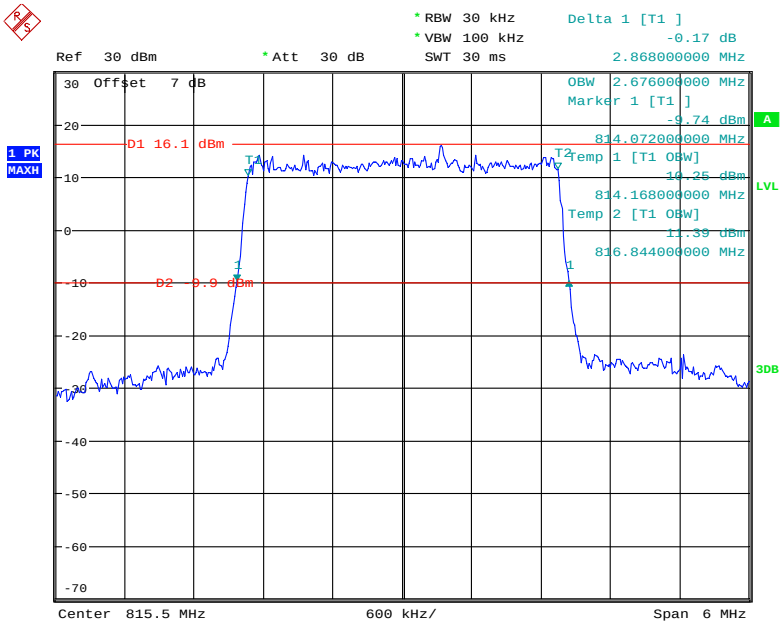

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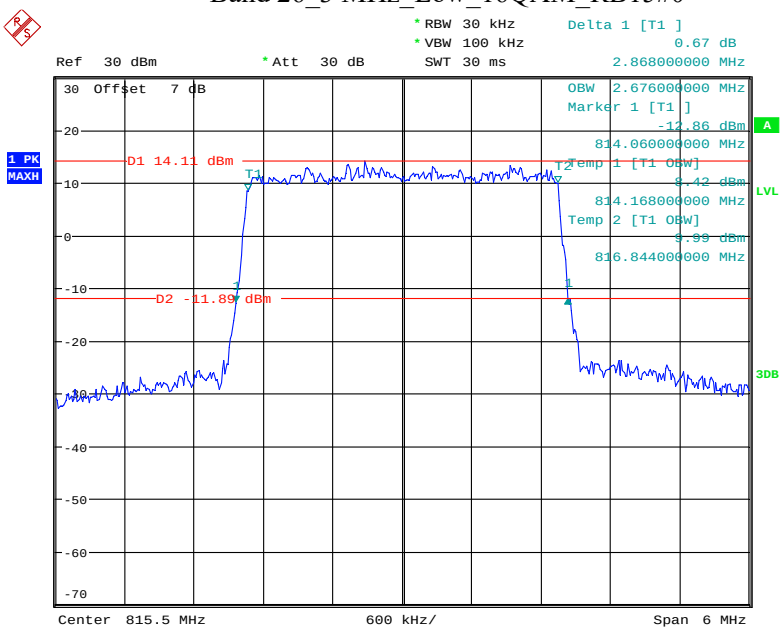

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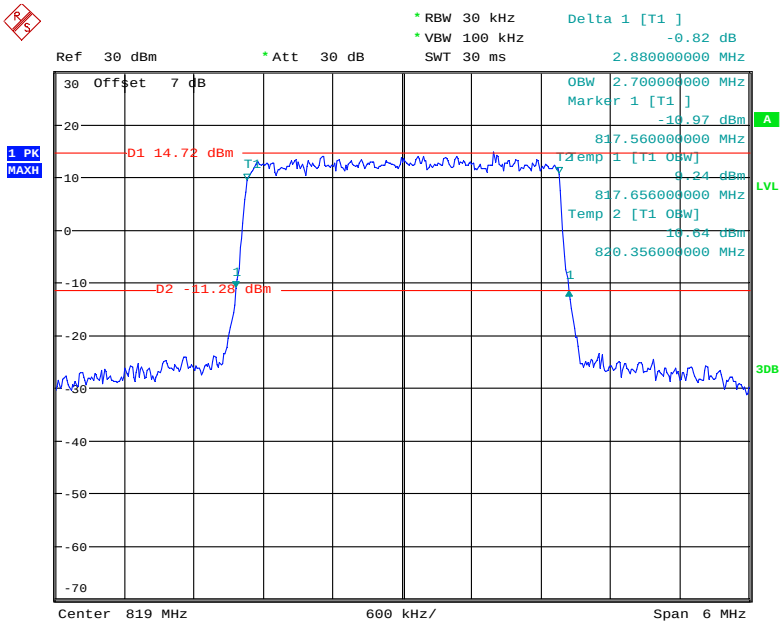

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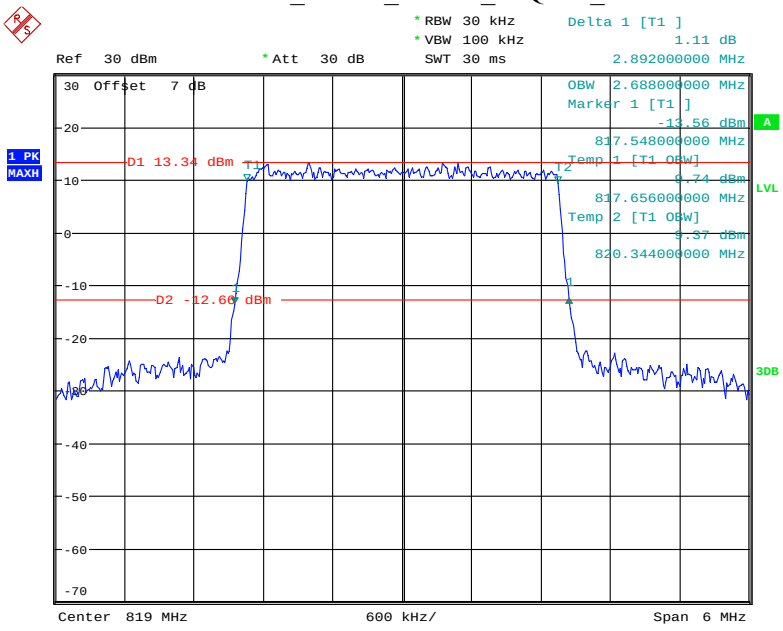
Band 26_3 MHz_Middle_16QAM_RB15#0



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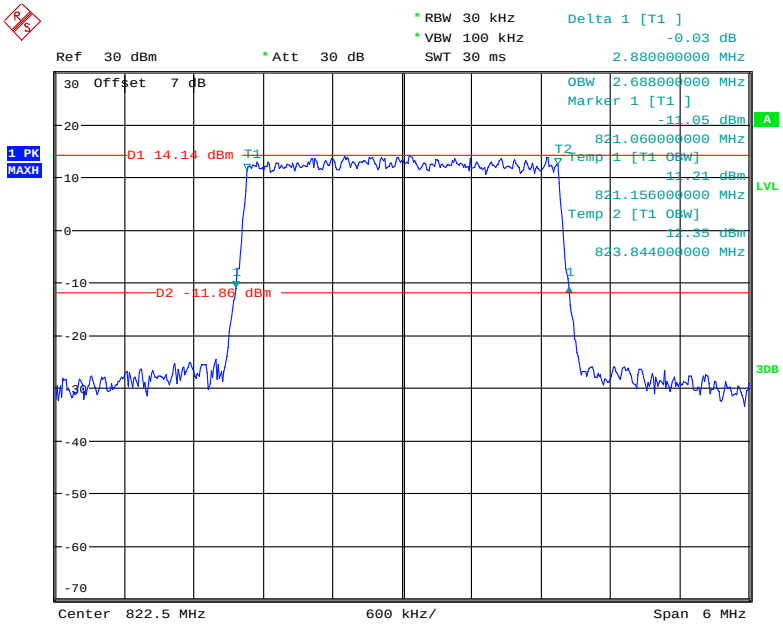
Band 26_3 MHz_High_QPSK_RB15#0



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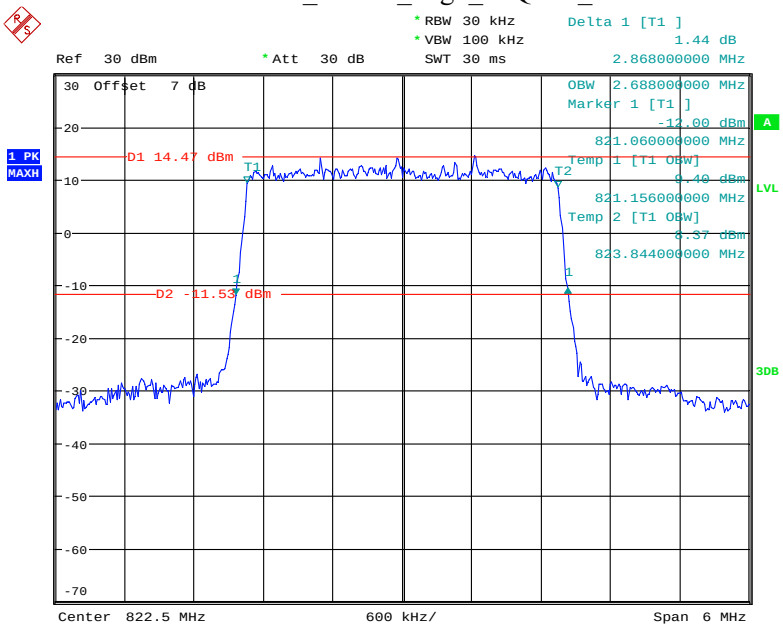
Band 26_3 MHz_High_16QAM_RB15#0



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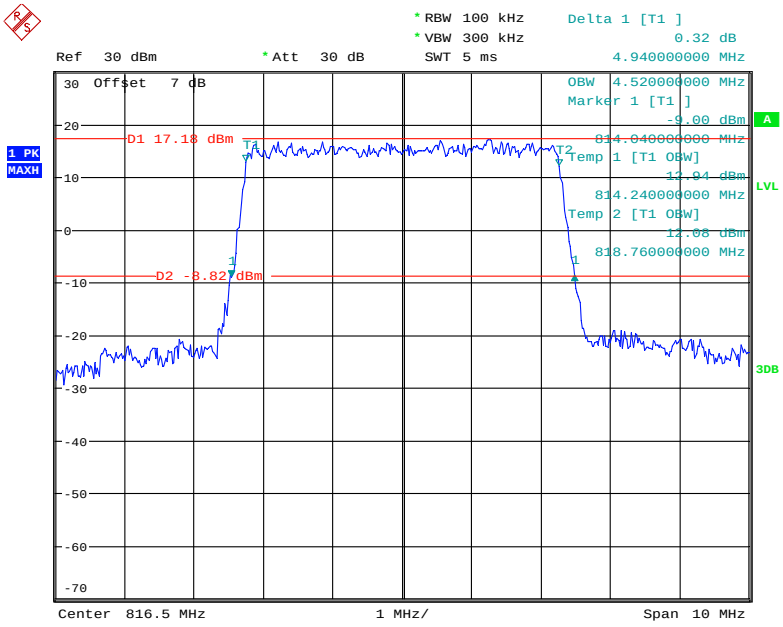
Band 26_5 MHz_Low_QPSK_RB25#0



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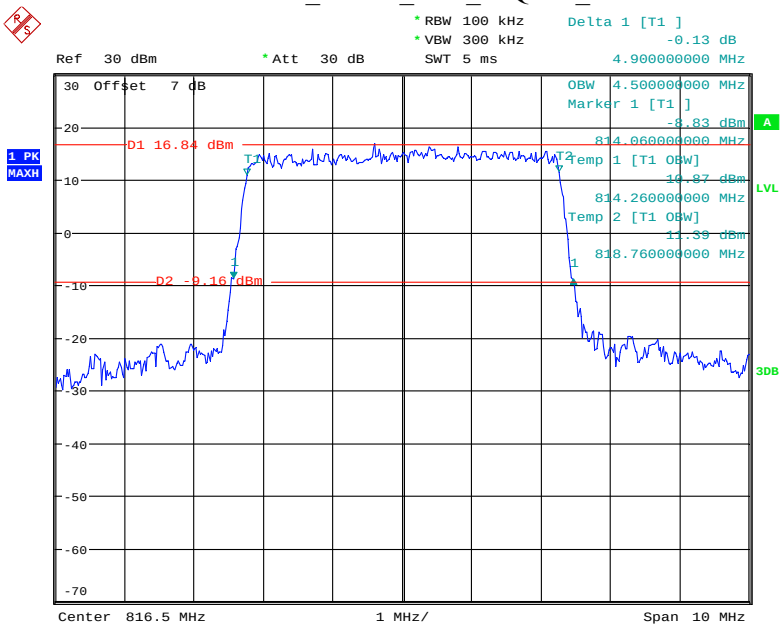

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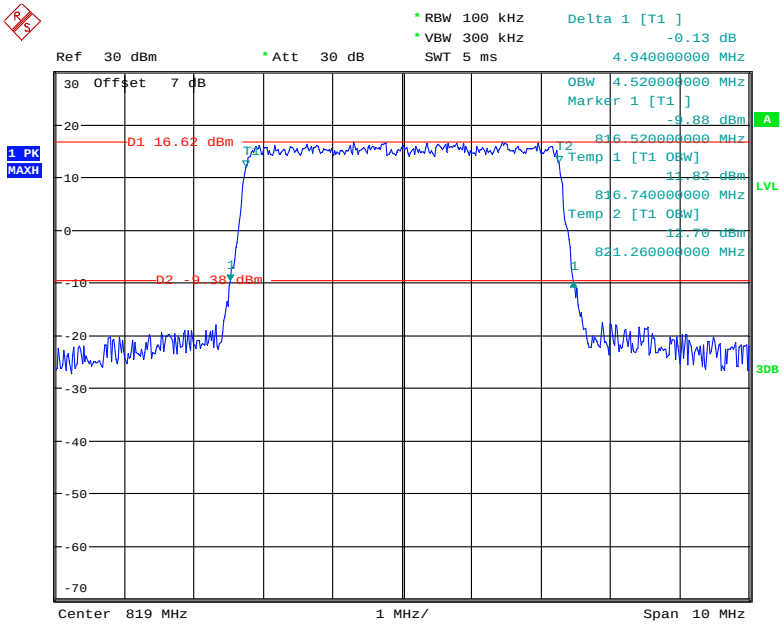

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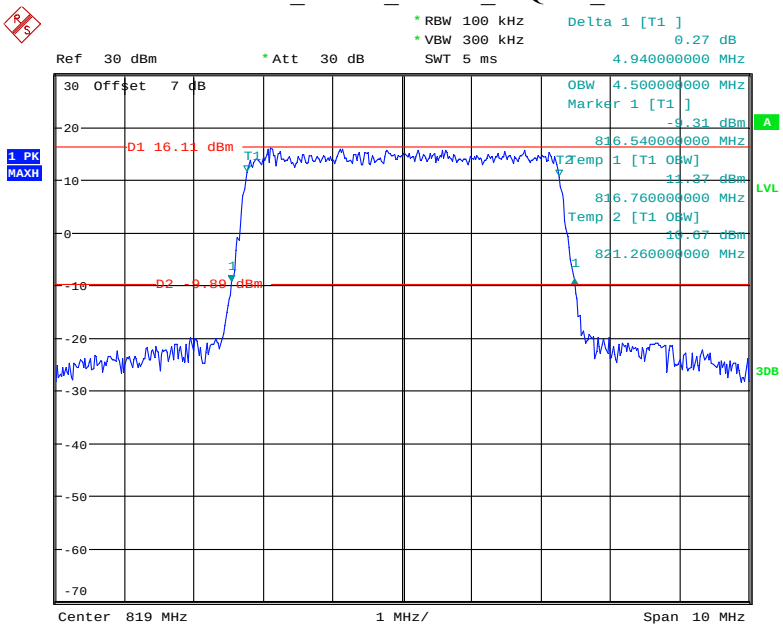

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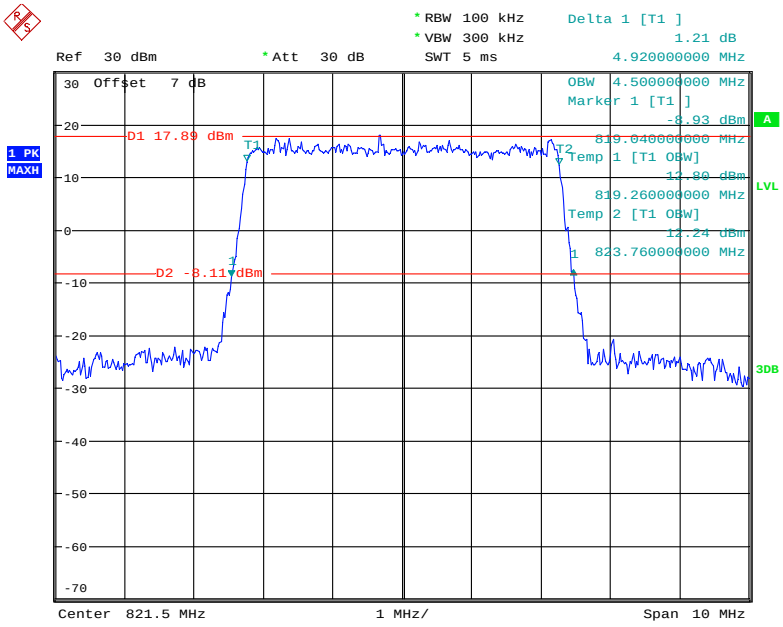
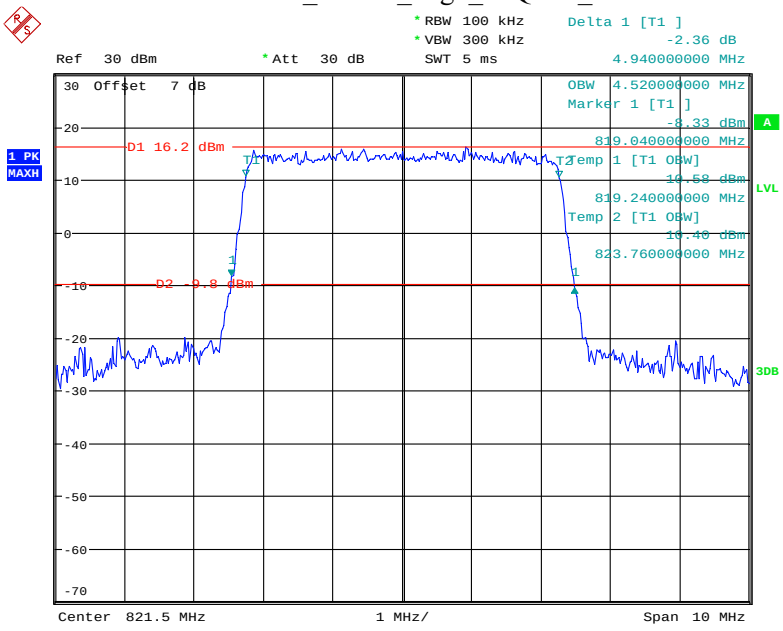
Band 26_5 MHz_High_QPSK_RB25#0



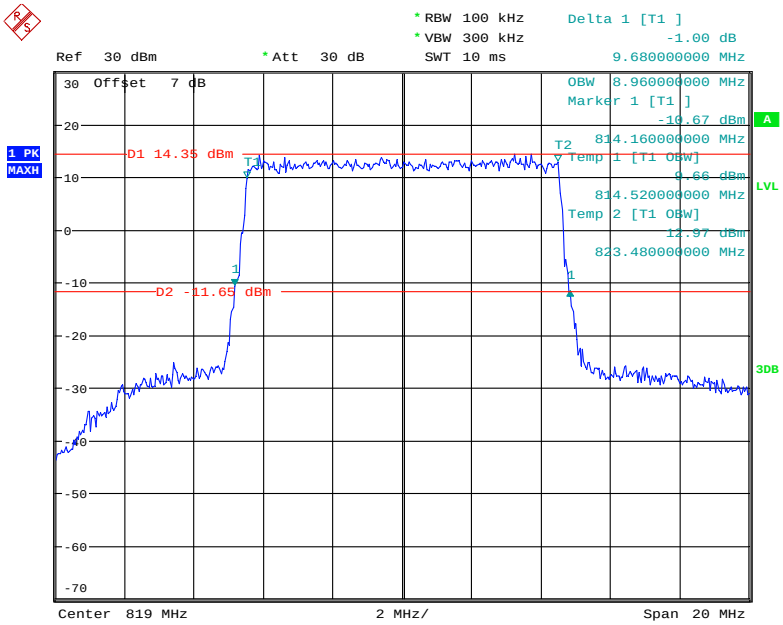
Date: 24.JUN.2021 15:25:09

Band 26_5 MHz_High_16QAM_RB25#0



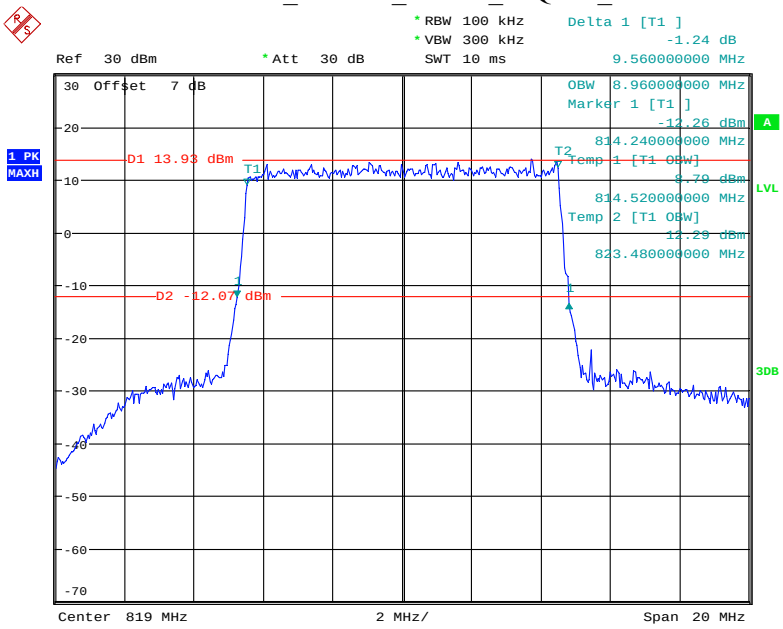
Date: 24.JUN.2021 15:25:31

Band 26_10 MHz_Middle_QPSK_RB50#0



Date: 24.JUN.2021 15:25:59

Band 26_10 MHz_Middle_16QAM_RB50#0



Date: 24.JUN.2021 15:26:23

FCC §2.1051, §90.691 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

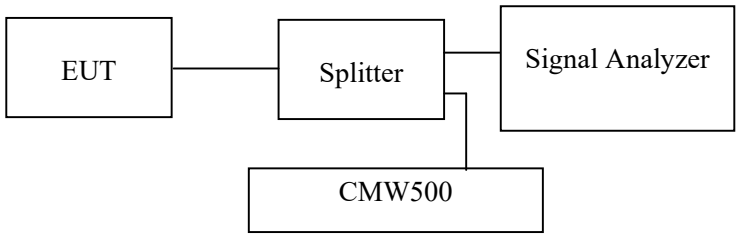
Applicable Standard

FCC §2.1051, §90.691.

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

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10^{th} harmonic.



Test Data

Environmental Conditions

Temperature:	28.2 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Zero Yan on 2021-06-24.

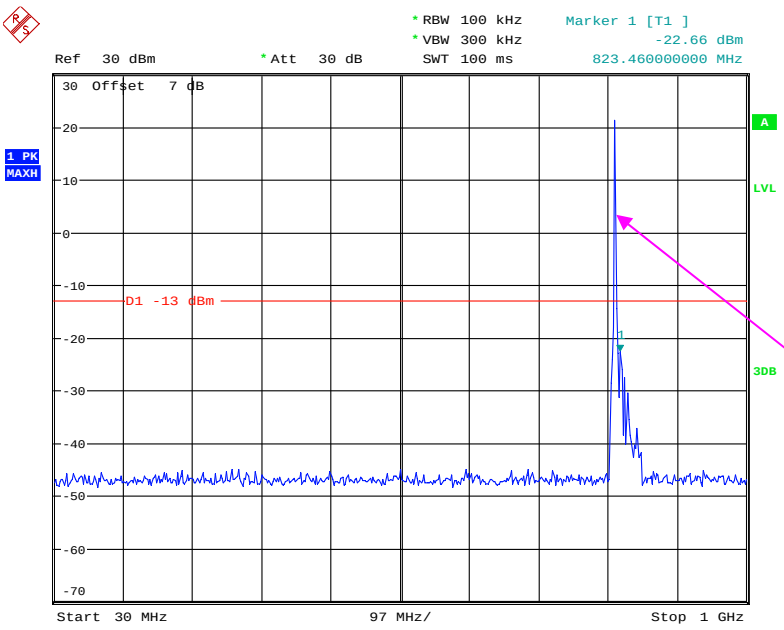
EUT operation mode: Transmitting

Test result: Pass

Please refer to the following plots.

Please refer to following plots:

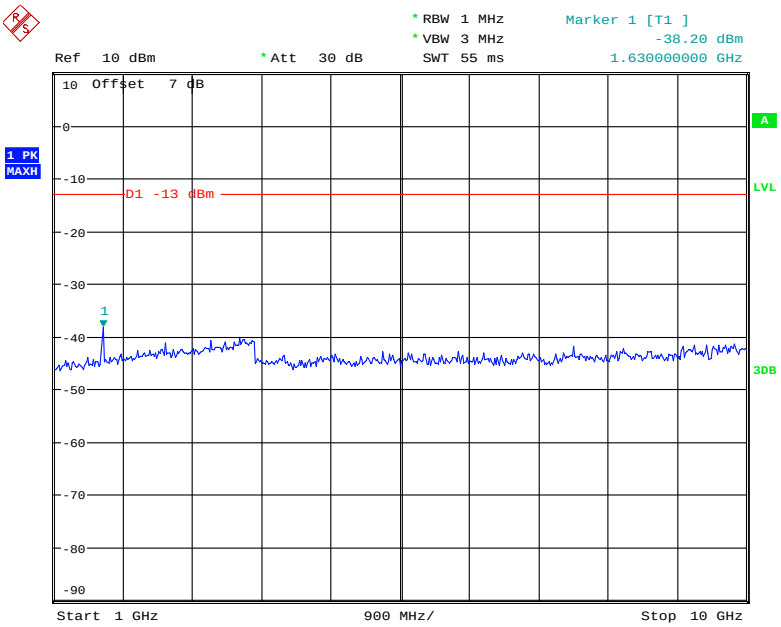
Band 26_1.4 MHz_Low_QPSK_RB6#0_1(30MHz-1GHz)



Fundamental test

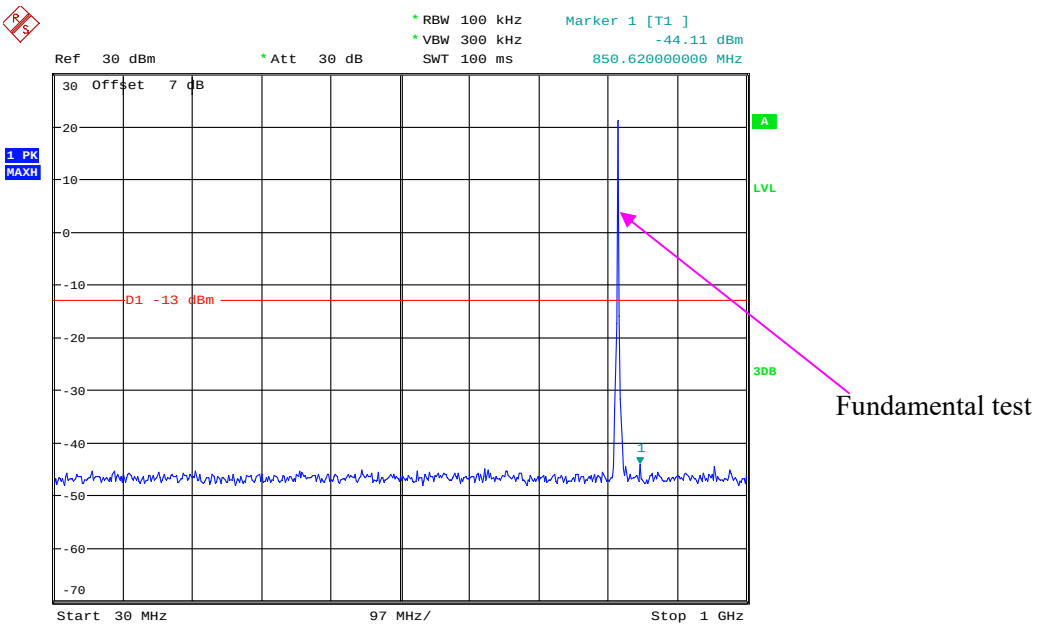
Date: 24.JUN.2021 15:27:11

Band 26_1.4 MHz_Low_QPSK_RB6#0_2(1GHz-10GHz)



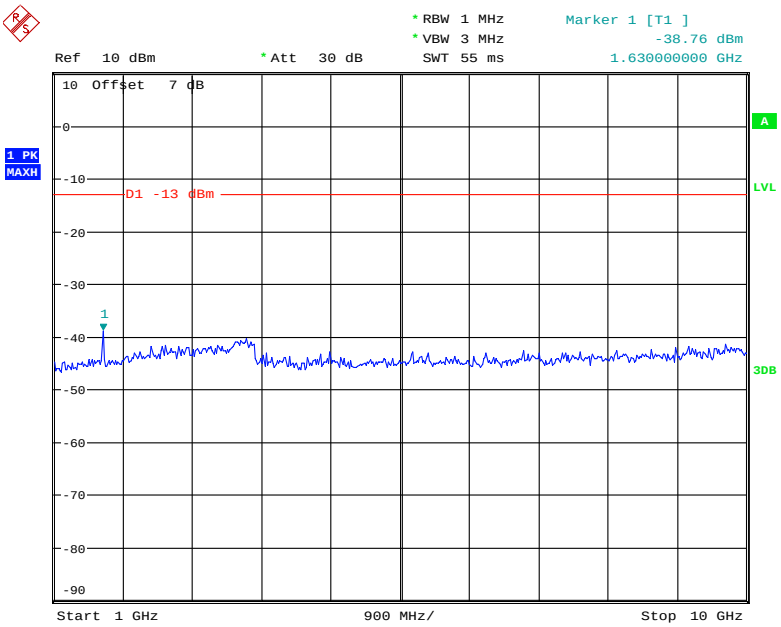
Date: 24.JUN.2021 15:27:26

Band 26_1.4 MHz_Middle_QPSK_RB6#0_1(30MHz-1GHz)



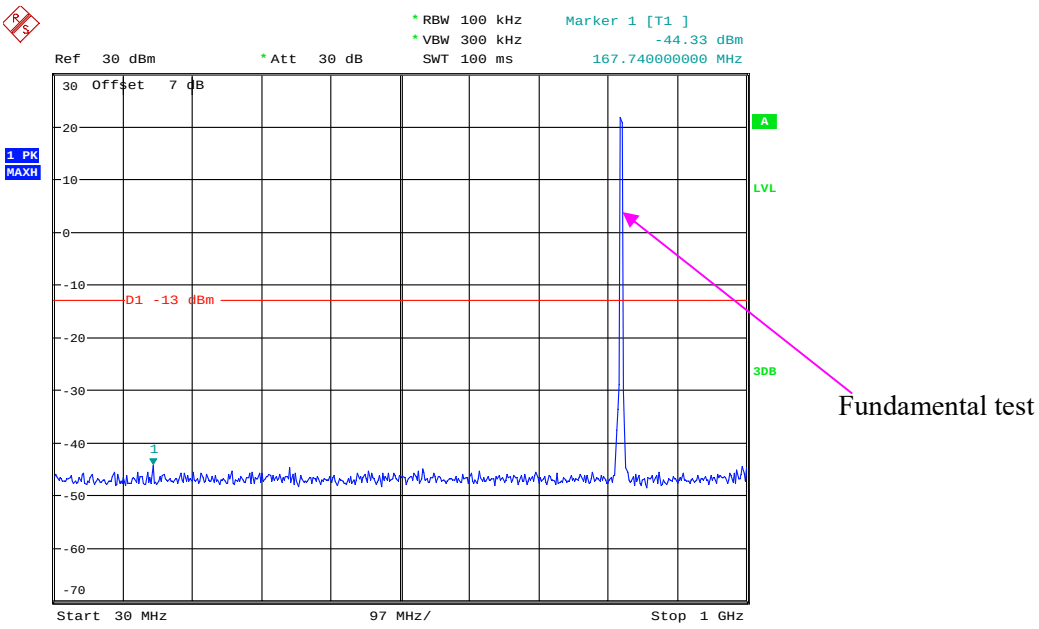
Date: 24.JUN.2021 15:27:47

Band 26_1.4 MHz_Middle_QPSK_RB6#0_2(1GHz-10GHz)



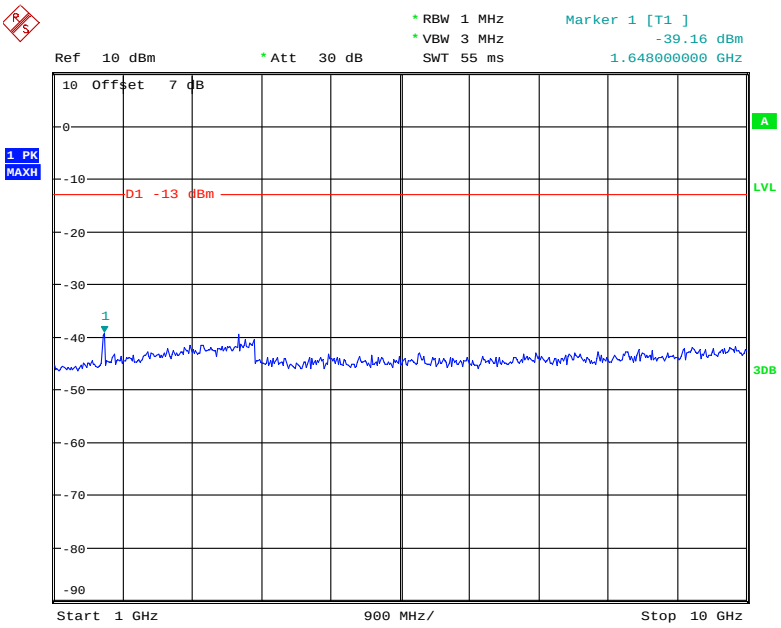
Date: 24.JUN.2021 15:27:58

Band 26_1.4 MHz_High_QPSK_RB6#0_1(30MHz-1GHz)



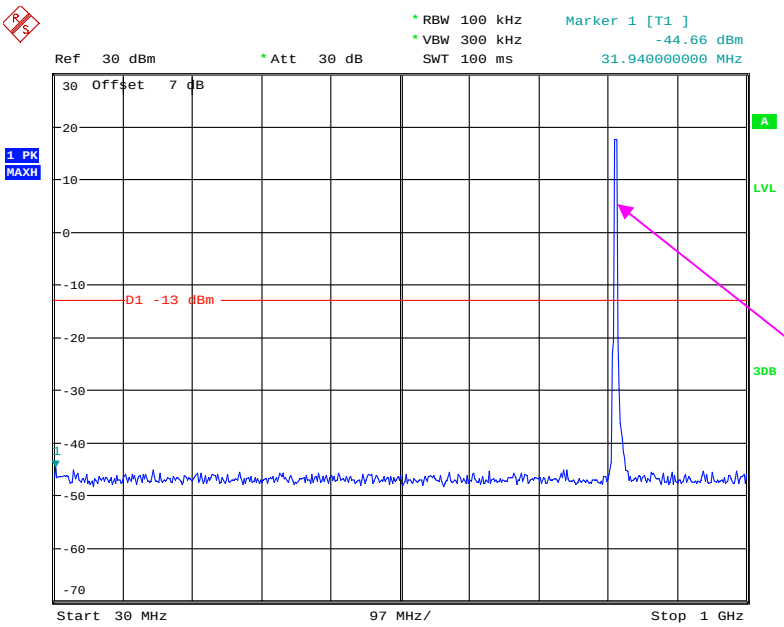
Date: 24.JUN.2021 15:28:16

Band 26_1.4 MHz_High_QPSK_RB6#0_2(1GHz-10GHz)



Date: 24.JUN.2021 15:28:27

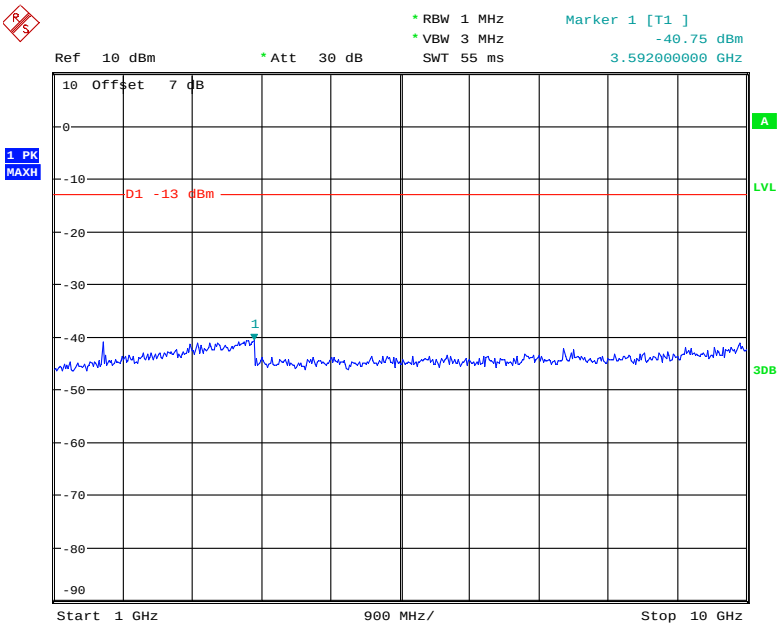
Band 26_3 MHz_Low_QPSK_RB15#0_1(30MHz-1GHz)



Fundamental test

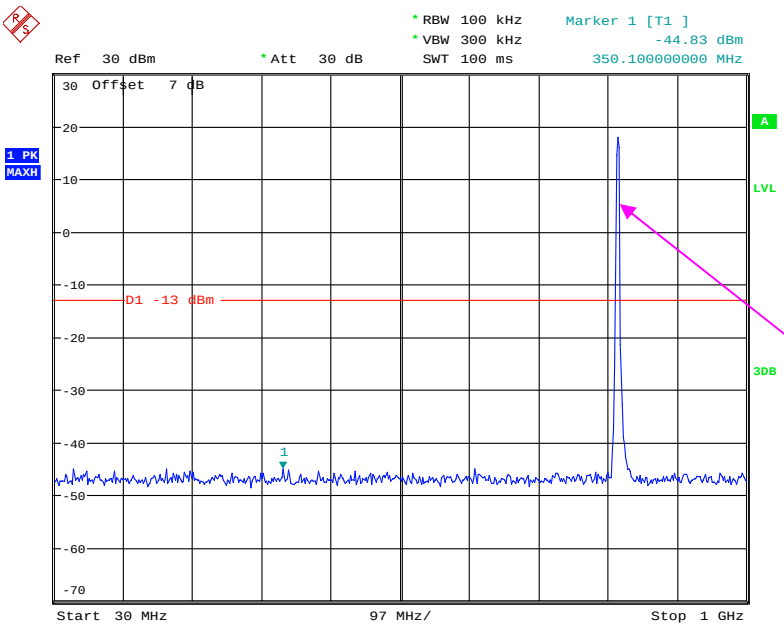
Date: 24.JUN.2021 15:28:48

Band 26_3 MHz_Low_QPSK_RB15#0_2(1GHz-10GHz)



Date: 24.JUN.2021 15:28:59

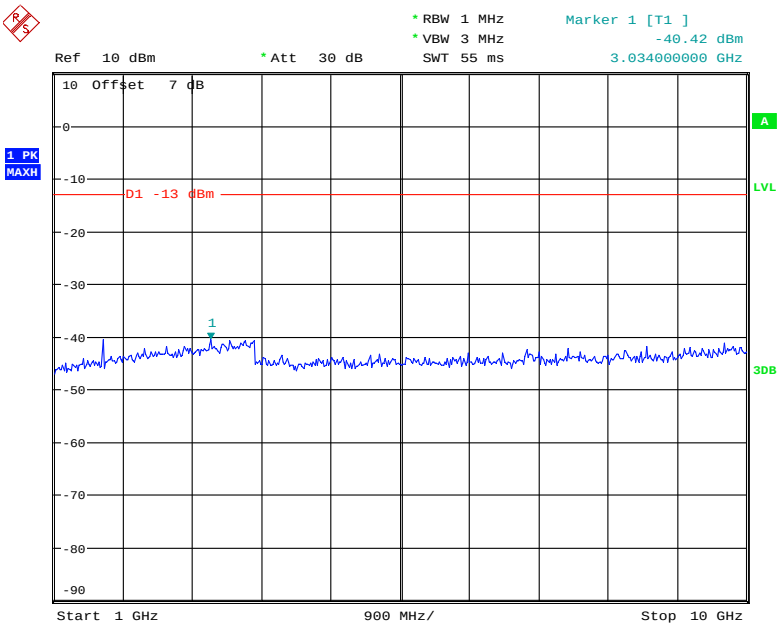
Band 26_3 MHz_Middle_QPSK_RB15#0_1(30MHz-1GHz)



Fundamental test

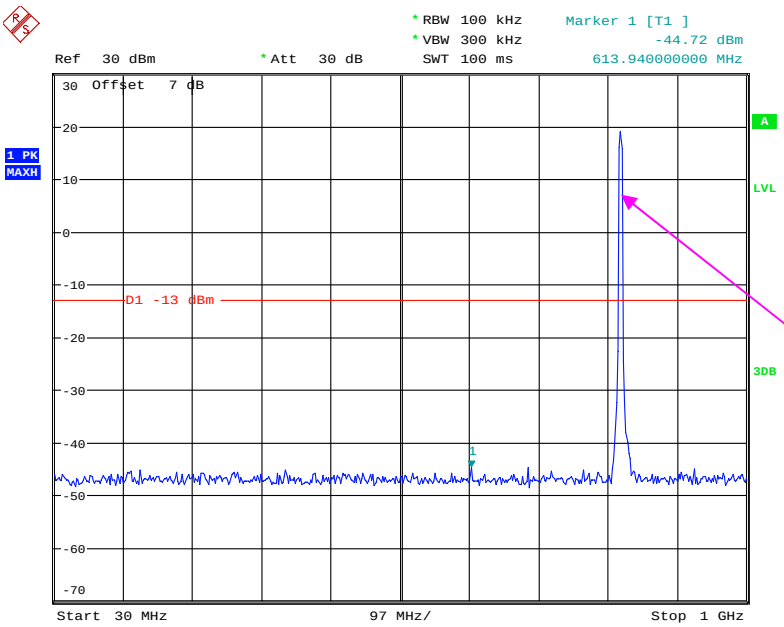
Date: 24.JUN.2021 15:29:17

Band 26_3 MHz_Middle_QPSK_RB15#0_2(1GHz-10GHz)



Date: 24.JUN.2021 15:29:28

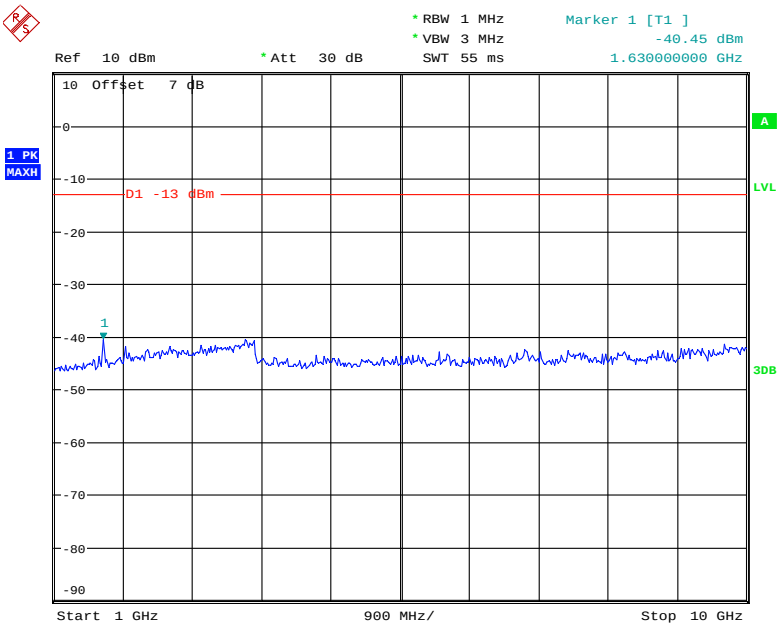
Band 26_3 MHz_High_QPSK_RB15#0_1(30MHz-1GHz)



Fundamental test

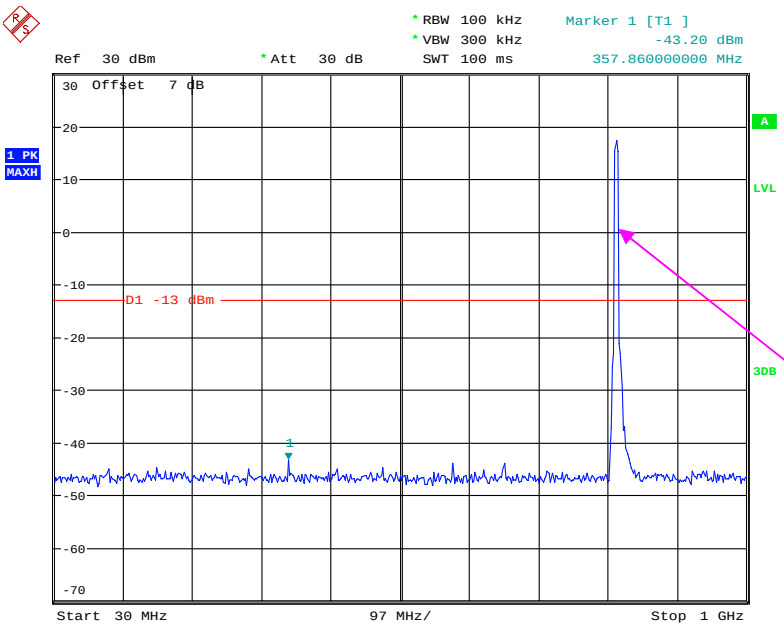
Date: 24.JUN.2021 15:29:46

Band 26_3 MHz_High_QPSK_RB15#0_2(1GHz-10GHz)



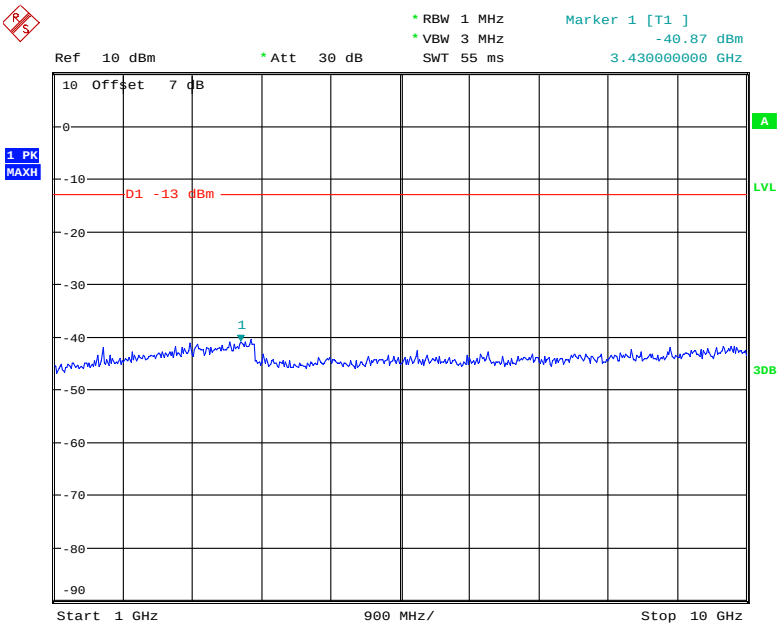
Date: 24.JUN.2021 15:29:57

Band 26_5 MHz_Low_QPSK_RB25#0_1(30MHz-1GHz)



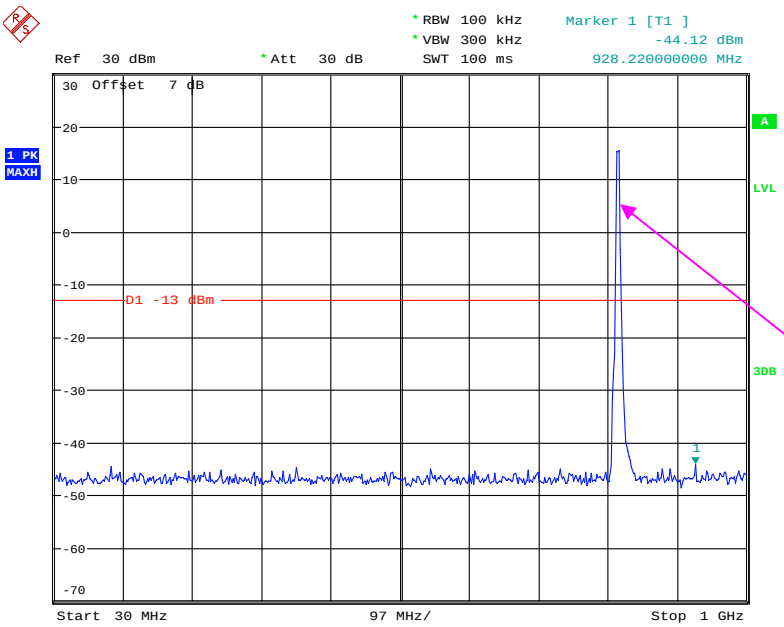
Date: 24.JUN.2021 15:30:21

Band 26_5 MHz_Low_QPSK_RB25#0_2(1GHz-10GHz)



Date: 24.JUN.2021 15:30:33

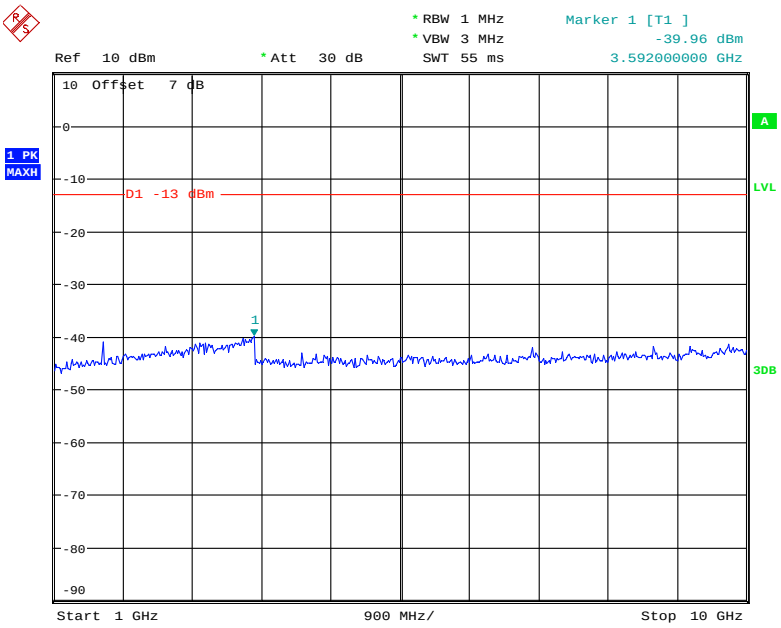
Band 26_5 MHz_Middle_QPSK_RB25#0_1(30MHz-1GHz)



Fundamental test

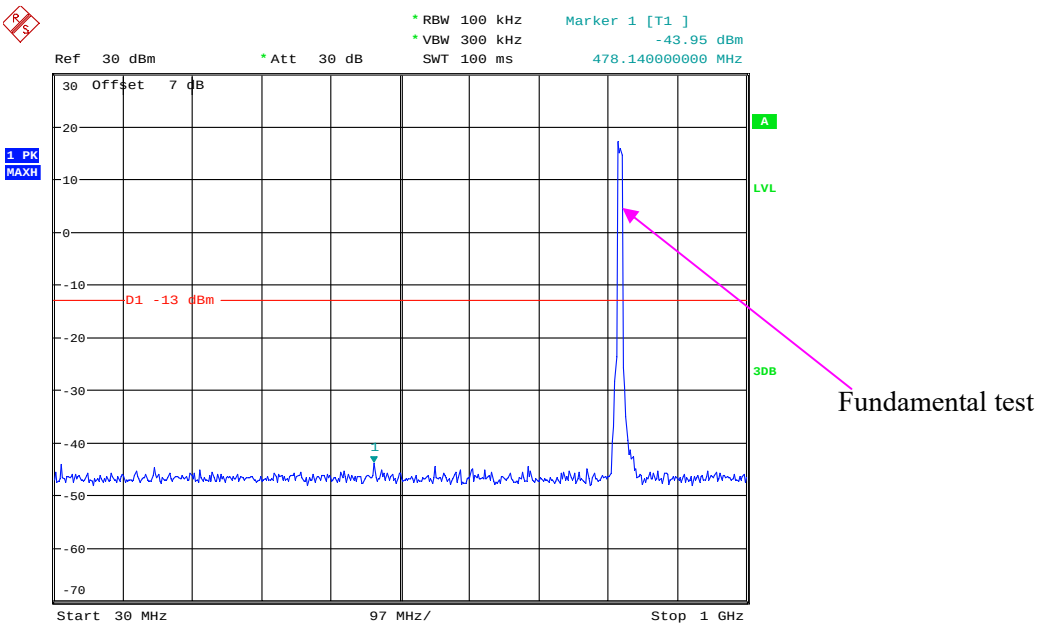
Date: 24.JUN.2021 15:30:50

Band 26_5 MHz_Middle_QPSK_RB25#0_2(1GHz-10GHz)



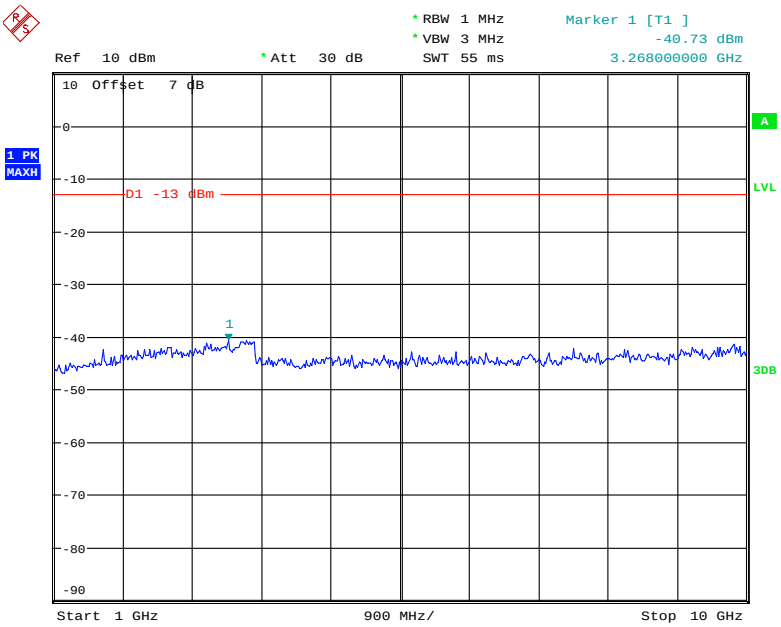
Date: 24.JUN.2021 15:31:05

Band 26_5 MHz_High_QPSK_RB25#0_1(30MHz-1GHz)



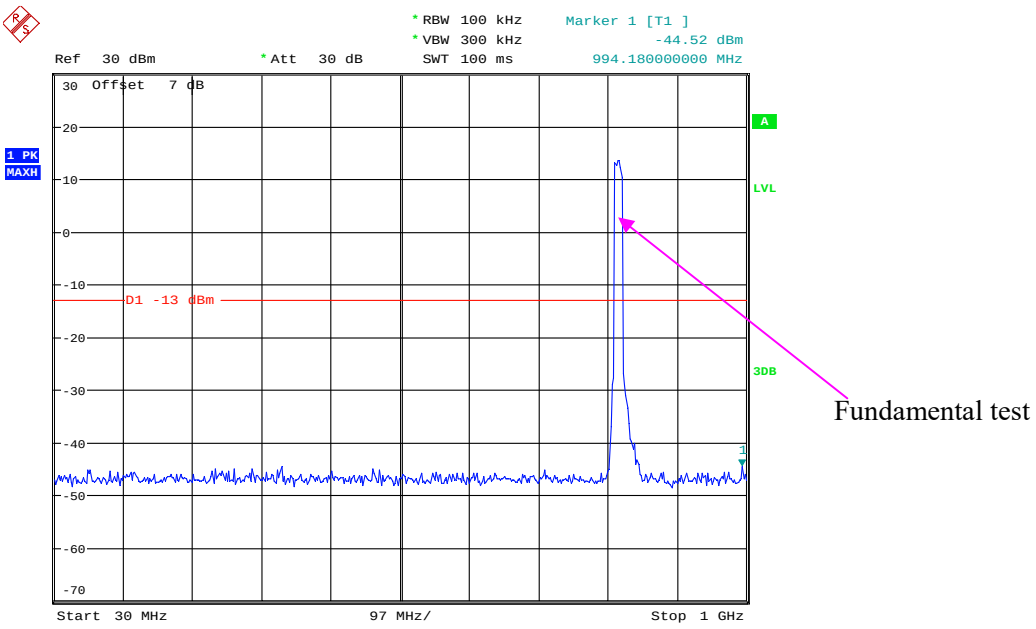
Date: 24.JUN.2021 15:31:25

Band 26_5 MHz_High_QPSK_RB25#0_2(1GHz-10GHz)



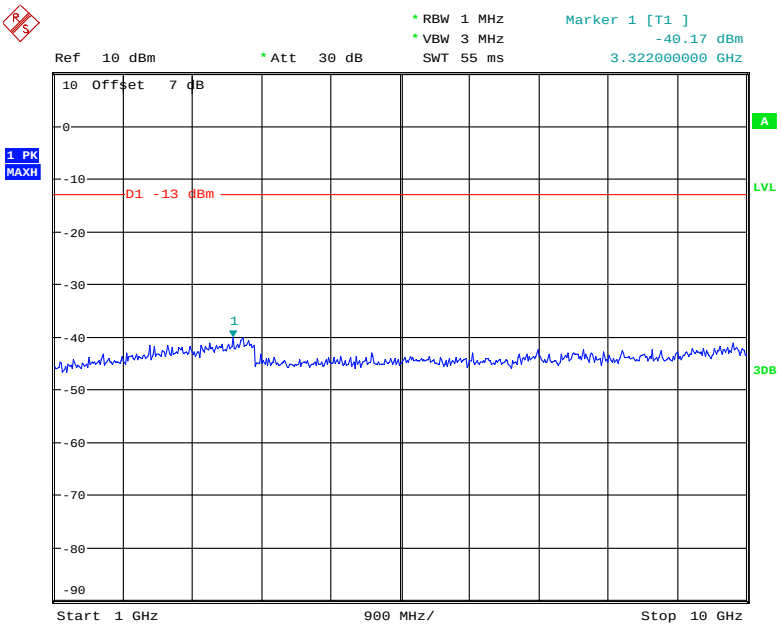
Date: 24.JUN.2021 15:31:37

Band 26_10 MHz_Middle_QPSK_RB50#0_1(30MHz-1GHz)



Date: 24.JUN.2021 15:31:59

Band 26_10 MHz_Middle_QPSK_RB50#0_2(1GHz-10GHz)



Date: 24.JUN.2021 15:32:10

FCC § 2.1053; § 90.691 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §90.691

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 receiving 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.

Test Data

Environmental Conditions

Temperature:	27.3~30.0 ℃
Relative Humidity:	46.0~52.0 %
ATM Pressure:	101.0 kPa

The testing was performed by Williarm on 2021-06-17 for below 1GHz and Zero Yan on 2021-06-17 for above 1GHz.

EUT operation mode: Transmitting

Test Result: *Pass.*

Please refer to the following tables and plots.

30 MHz ~ 10 GHz:

LTE Band: *(Pre-scan with all the bandwidth, and worst case as below)*

Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dBd/dBi)			
Band 26(Part 90S)										
1.4MHz Low Channel										
946.2	30.47	287	1.8	H	-66.0	1.36	0.0	-67.36	-13	54.36
946.2	31.62	282	2.5	V	-62.4	1.36	0.0	-63.76	-13	50.76
1629.40	54.23	239	1.3	H	-53.8	1.40	8.70	-46.50	-13	33.50
1629.40	51.09	300	2.1	V	-56.8	1.40	8.70	-49.50	-13	36.50
2444.10	55.71	21	2.3	H	-48.6	2.30	10.10	-40.80	-13	27.80
2444.10	50.63	217	1.9	V	-52.8	2.30	10.10	-45.00	-13	32.00
3258.80	44.59	267	1.2	H	-56.3	1.50	11.70	-46.10	-13	33.10
3258.80	44.67	149	2.4	V	-56.3	1.50	11.70	-46.10	-13	33.10
1.4MHz Middle Channel										
954.2	31.37	356	2.3	H	-65.1	1.36	0.0	-66.46	-13	53.46
954.2	30.69	320	1.4	V	-63.4	1.36	0.0	-64.76	-13	51.76
1638.00	53.95	169	1.1	H	-54.1	1.40	8.70	-46.80	-13	33.80
1638.00	51.42	77	1.9	V	-56.4	1.40	8.70	-49.10	-13	36.10
2457.00	55.54	95	1.4	H	-47.8	2.60	10.20	-40.20	-13	27.20
2457.00	50.11	358	1.5	V	-52.6	2.60	10.20	-45.00	-13	32.00
3276.00	44.73	113	2.1	H	-56.2	1.50	11.70	-46.00	-13	33.00
3276.00	44.42	107	2.1	V	-56.5	1.50	11.70	-46.30	-13	33.30
1.4MHz High Channel										
966.4	30.48	65	2.5	H	-66.0	1.36	0.0	-67.36	-13	54.36
966.4	31.37	29	1.3	V	-62.7	1.36	0.0	-64.06	-13	51.06
1646.60	55.01	241	2.3	H	-53.1	1.40	8.70	-45.80	-13	32.80
1646.60	51.97	107	1.2	V	-55.9	1.40	8.70	-48.60	-13	35.60
2469.90	54.9	169	2.5	H	-48.5	2.60	10.20	-40.90	-13	27.90
2469.90	50.01	172	2.2	V	-52.7	2.60	10.20	-45.10	-13	32.10
3293.20	44.87	343	1.8	H	-56.0	1.50	11.70	-45.80	-13	32.80
3293.20	44.39	218	1.9	V	-56.5	1.50	11.70	-46.30	-13	33.30

Note:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level
dBd is for the ERP, dBi is for EIRP.

FCC § 22.917 (a);§ 90.691 - BAND EDGES

Applicable Standard

According to § 90.691, (a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

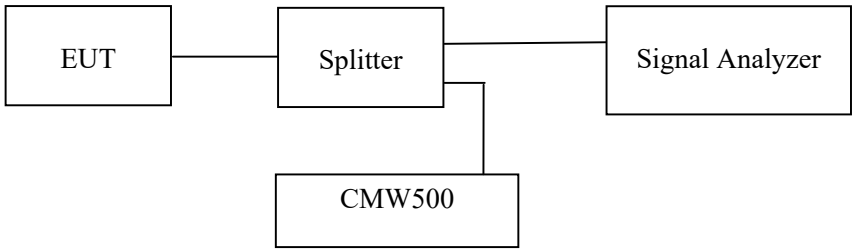
(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section

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:	28.2~28.6 ℃
Relative Humidity:	52~56 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Zero Yan on 2021-06-25.

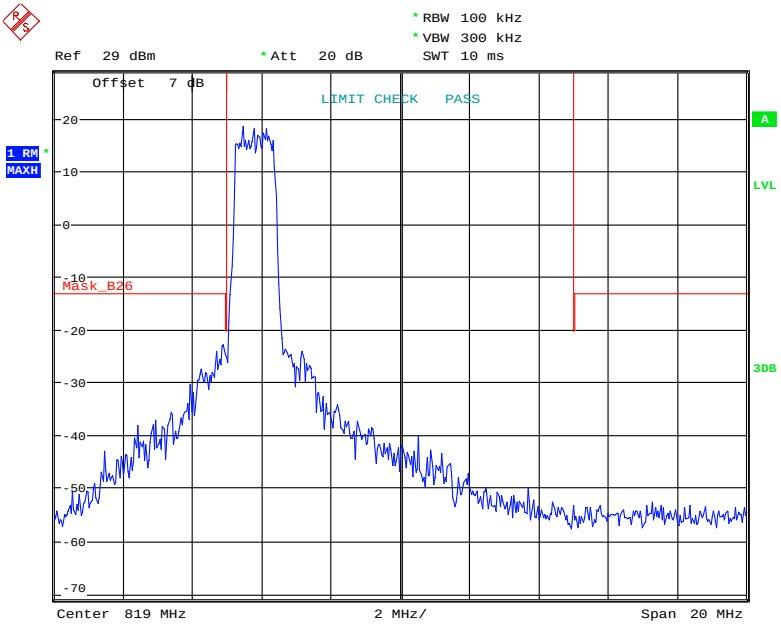
EUT operation mode: Transmitting (Worst case)

Test Result: Pass

Please refer to the following plots.

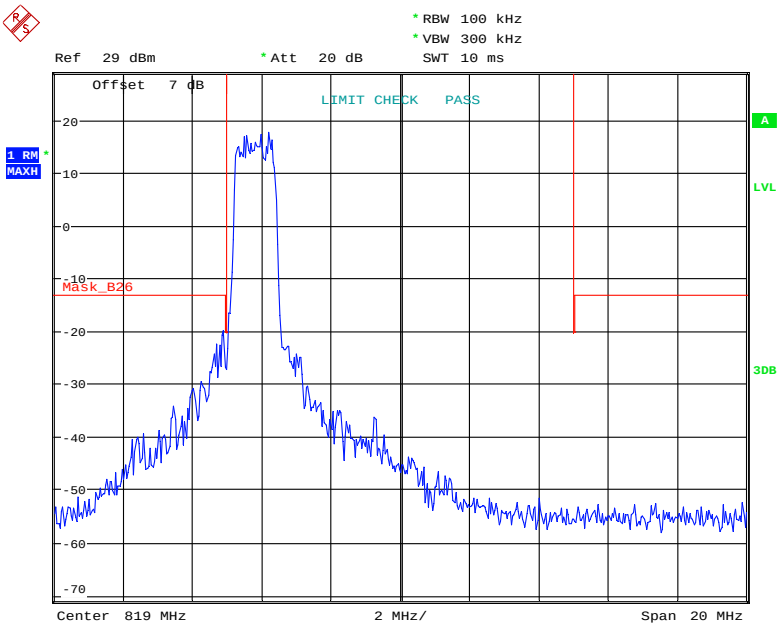
Please refer to following plots:

Band 26_1.4 MHz_Low_QPSK_RB6#0



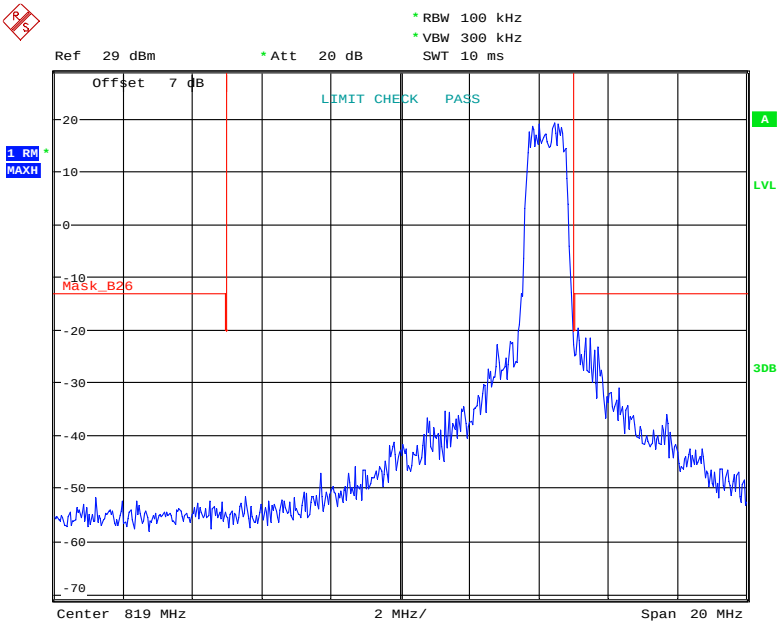
Date: 25.JUN.2021 09:23:36

Band 26_1.4 MHz_Low_16QAM_RB6#0



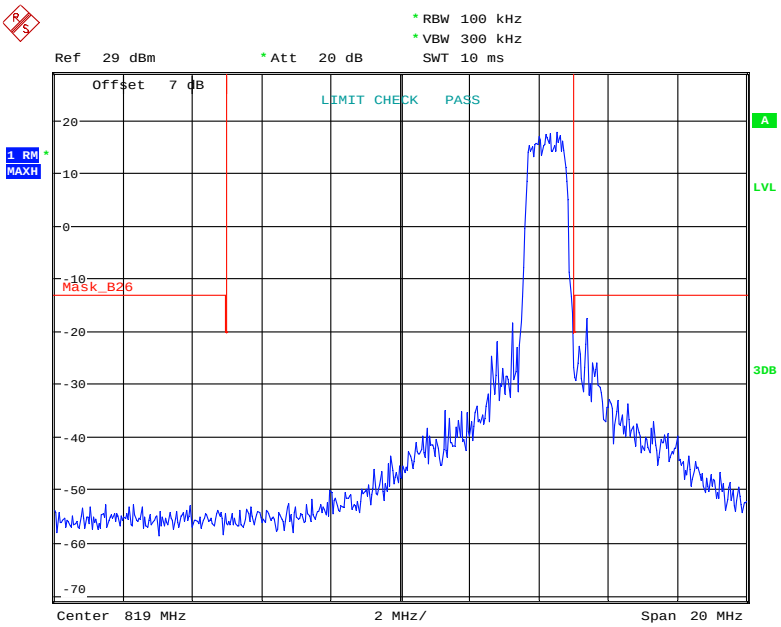
Date: 25.JUN.2021 09:24:14

Band 26_1.4 MHz_High_QPSK_RB6#0



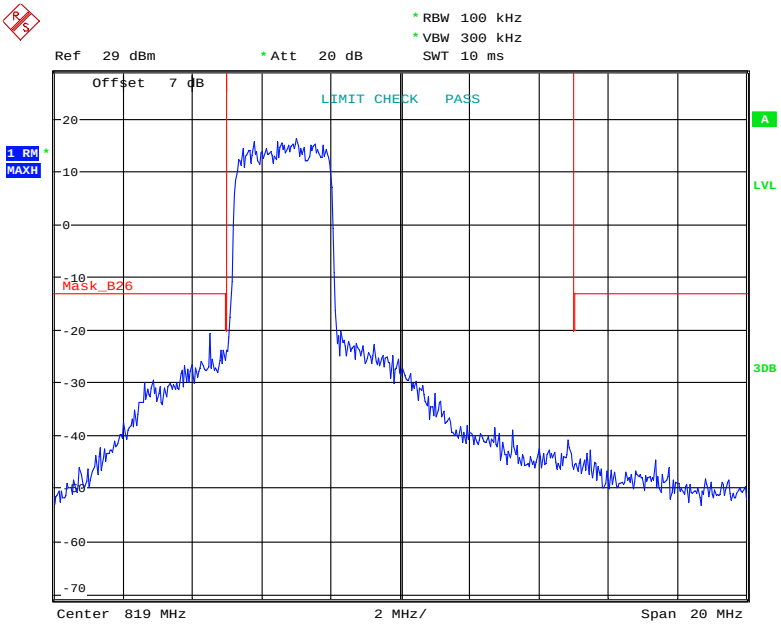
Date: 25.JUN.2021 09:26:12

Band 26_1.4 MHz_High_16QAM_RB6#0



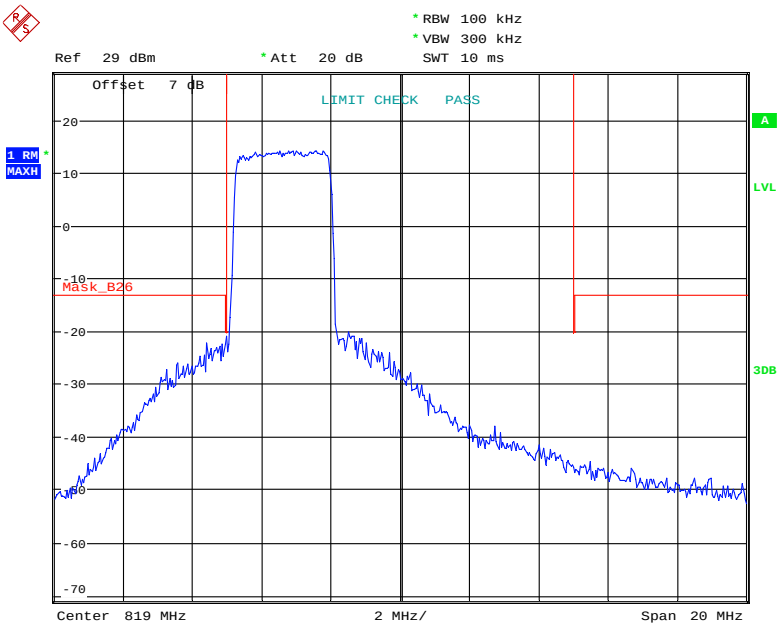
Date: 25.JUN.2021 09:25:34

Band 26_3 MHz_Low_QPSK_RB15#0



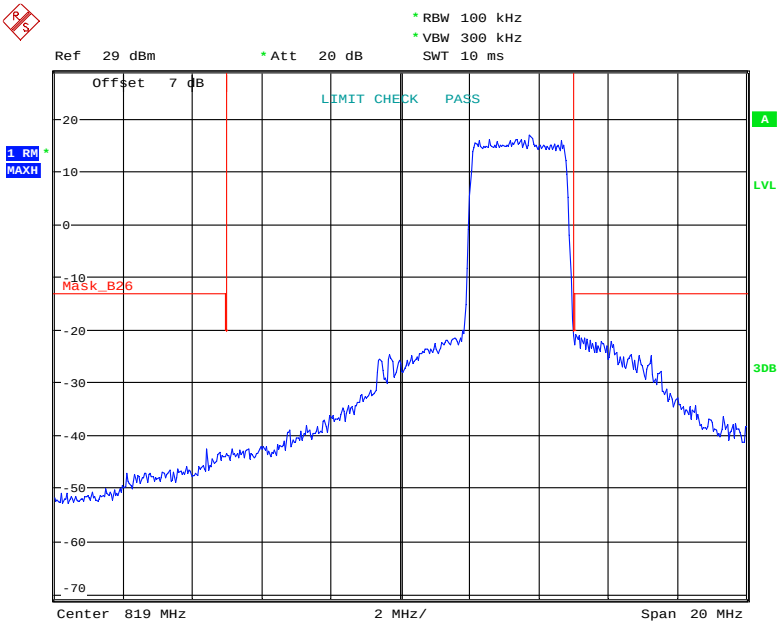
Date: 25.JUN.2021 09:22:03

Band 26_3 MHz_Low_16QAM_RB15#0



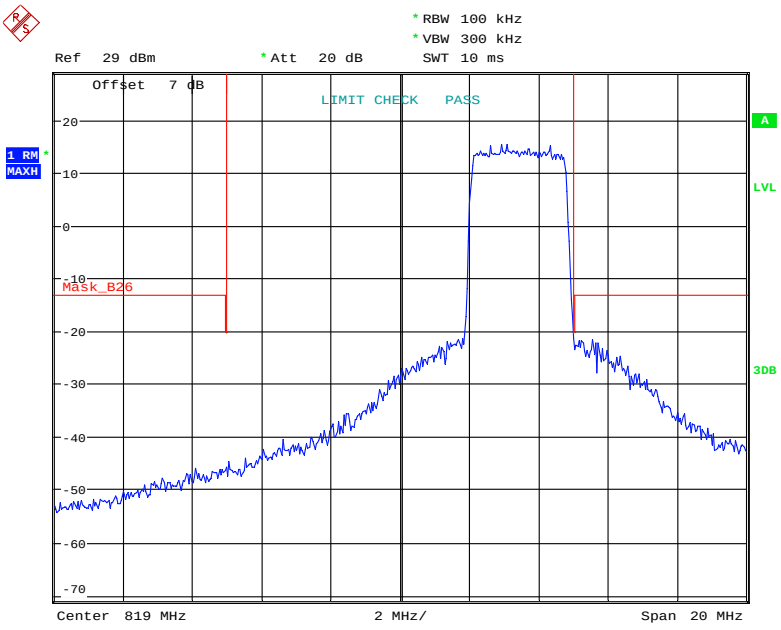
Date: 25.JUN.2021 09:21:05

Band 26_3 MHz_High_QPSK_RB15#0



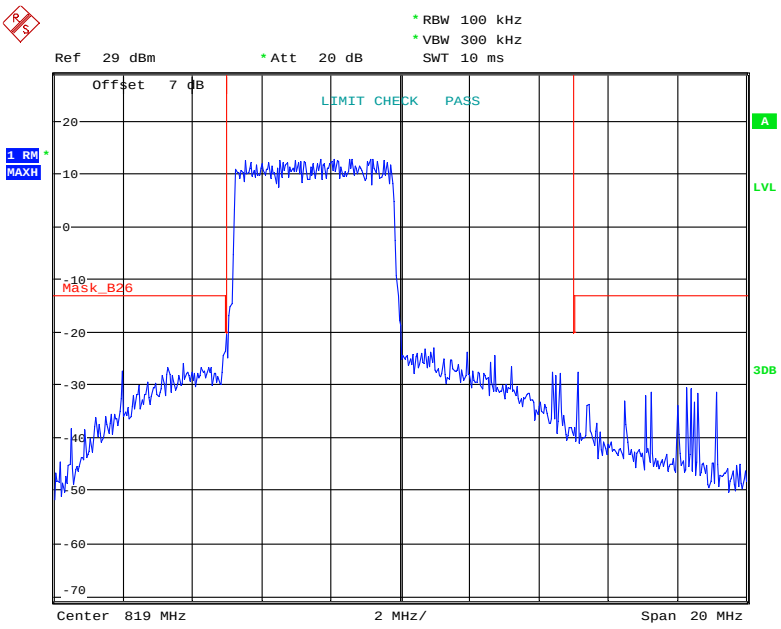
Date: 25.JUN.2021 09:18:13

Band 26_3 MHz_High_16QAM_RB15#0



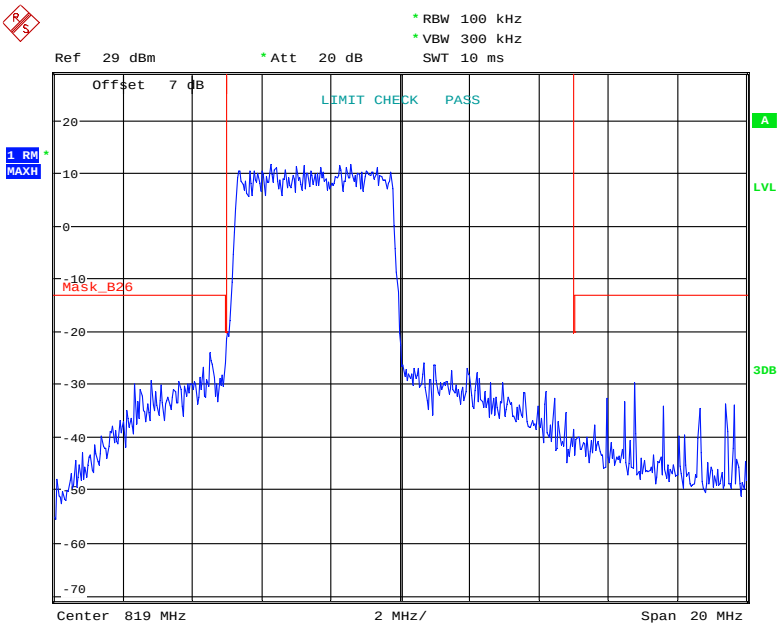
Date: 25.JUN.2021 09:19:10

Band 26_5 MHz_Low_QPSK_RB25#0



Date: 25.JUN.2021 09:12:41

Band 26_5 MHz_Low_16QAM_RB25#0



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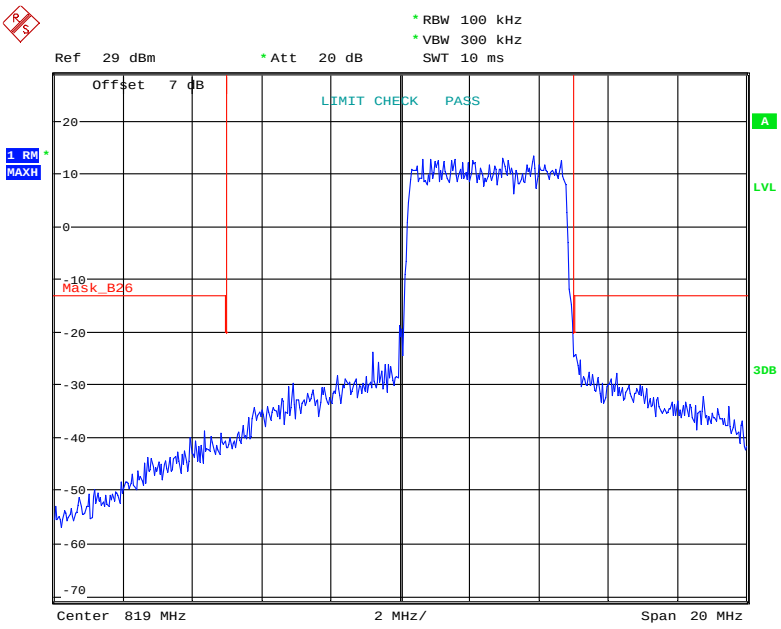
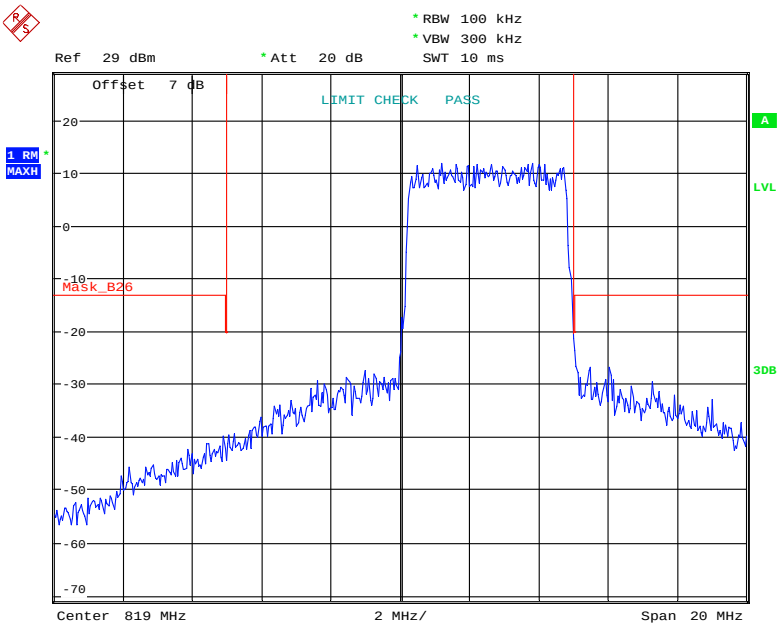
Band 26_5 MHz_High_QPSK_RB25#0



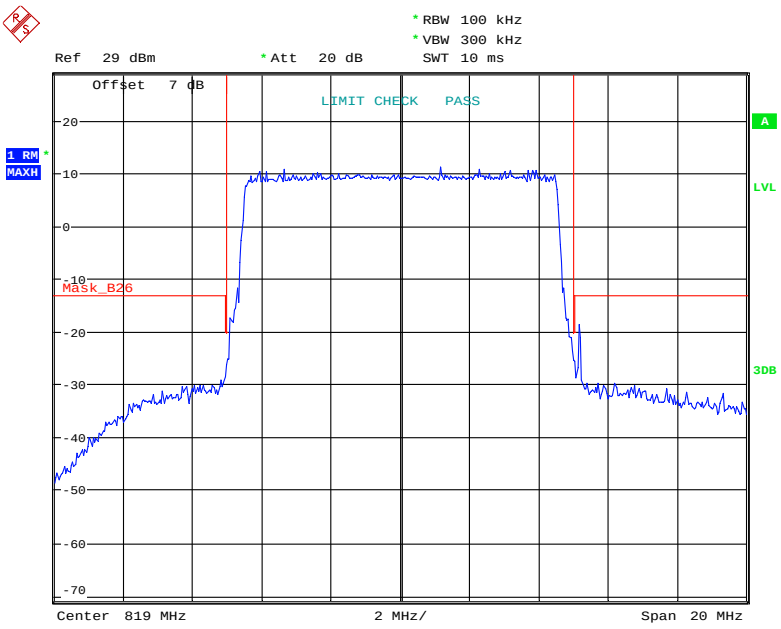
Date: 25.JUN.2021 09:15:27

Band 26_5 MHz_High_16QAM_RB25#0



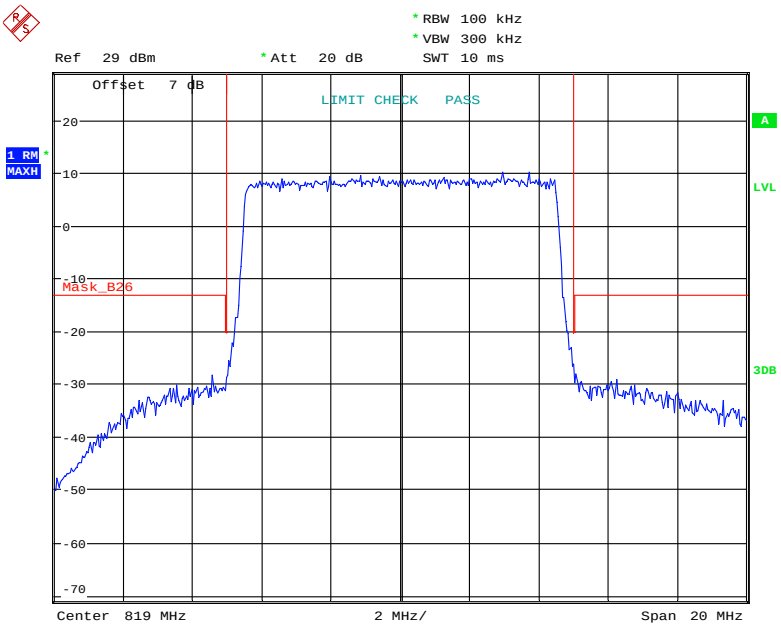
Date: 25.JUN.2021 09:14:31

Band 26_10 MHz_QPSK_RB50#0



Date: 25.JUN.2021 09:06:57

Band 26_10 MHz _16QAM_RB50#0



Date: 25.JUN.2021 09:11:50

FCC § 2.1055; § 90.213 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055, §90.213.

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 §90.213, unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table:

TABLE 1 TO §90.213(a)—MINIMUM FREQUENCY STABILITY

[Parts per million (ppm)]

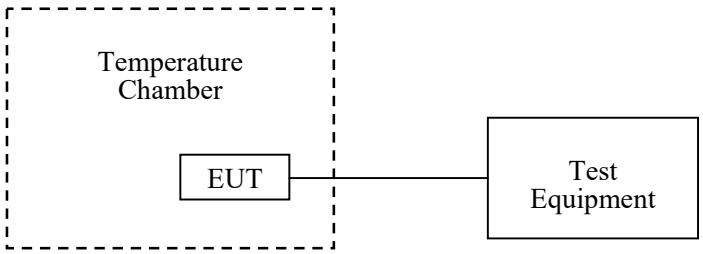
Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	[1 2 3]100	100	200
25-50	20	20	50
72-76	5		50
150-174	[5 11]5	[6]5	[4 6]50
216-220	1.0		1.0
220-222[12]	0.1	1.5	1.5
421-512	[7 11 14]2.5	[8]5	[8]5
806-809	[14]1.0	1.5	1.5
809-824	[14]1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	[14]0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928[13]	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	[9]300	300	300
Above 2450[10]			

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:	28.2~28.6 ℃
Relative Humidity:	52~56 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Zero Yan on 2021-06-24.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

LTE:
QPSK:

10.0 MHz Middle Channel, f_o=819MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	-6.28	-0.0077	pass
-20		-9.97	-0.0122	pass
-10		-6.13	-0.0075	pass
0		6.17	0.0075	pass
10		7.92	0.0097	pass
20		6.46	0.0079	pass
30		-6.52	-0.0080	pass
40		7.18	0.0088	pass
50		-9.69	-0.0118	pass
20	3.47	-8.17	-0.0100	pass
	4.24	-7.05	-0.0086	pass

16QAM:

10.0 MHz Middle Channel, f_o=819MHz				
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Frequency Error (Hz)**	**Frequency Error (ppm)**	**Result**
-30	3.85	-5.69	-0.0069	pass
-20		-6.68	-0.0082	pass
-10		9.77	0.0119	pass
0		-7.62	-0.0093	pass
10		-9.91	-0.0121	pass
20		-9.82	-0.0120	pass
30		-6.68	-0.0082	pass
40		-8.85	-0.0108	pass
50		5.67	0.0069	pass
20	3.47	6.05	0.0074	pass
	4.24	7.52	0.0092	pass

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