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TESTING LABORATORY
CERTIFICATE # 4821.01

BACL
Bay Area Compliance Labs Corp.

FCC PART 15F

TEST REPORT

For

Woxu Wireless Co.,Ltd.

4th floor No2 Building Xuzhuang Software Industry Base No 699 8 XuanWu Avenue Nanjing China

FCC ID: 2AKVA-UA220

Report Type:	**Product Type:**
Original Report	UWB Gateway

Report Number: RSZ200618002-00A

Report Date: 2020-11-11

Jacob Kong

Reviewed By: RF Engineer

Prepared By: Bay Area Compliance Laboratories Corp. (Shenzhen)
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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	UWB Gateway
Tested Model	UA-220
Frequency Range	6.24-6.74GHz
Antenna Specification	Internal Antenna: 1dBi
Voltage Range	DC 12V from adapter
Date of Test	2020-07-27 to 2020-11-11
Sample serial number	RSZ200618002-RF-S1 (Assigned by BACL, Shenzhen)
Received date	2020-06-18
Sample/EUT Status	Good condition
Adapter information	Model: UES12LU-120100SPA Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 12.0V, 1.0A

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and F of the Federal Communication Commission's rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart F, and section 15.203, 15.205, 15.207, 15.209 and 15.517 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

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.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF Output Power with Power meter		±0.73dB
RF conducted test with spectrum		±1.6dB
AC Power Lines Conducted Emissions		±1.95dB
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 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, 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 system was configured for testing by manufacturer.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

No exercise software was used.

Support Equipment List and Details

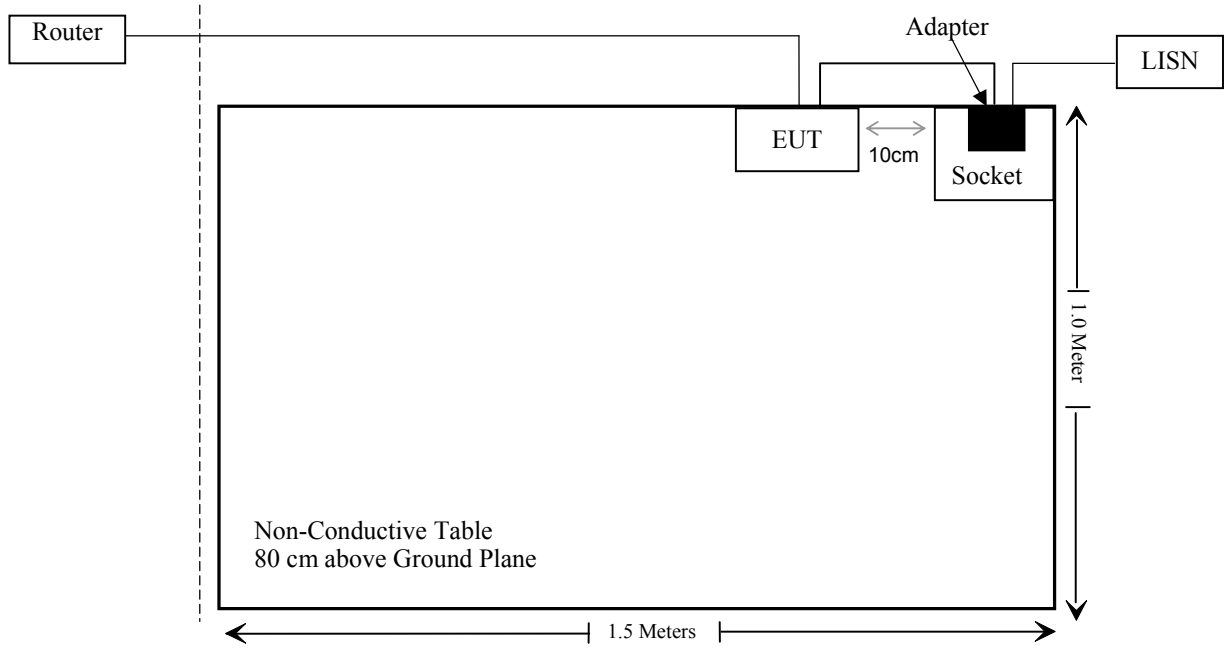
Manufacturer	Description	Model	Serial Number
BULL	Socket	GN-415K	5503290068073
SAGEM	Wireless Router	SAGEM F@ST™ 2604 White	2604

External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded un-detachable AC cable	1.2	Socket	LISN
Unshielded un-detachable DC cable	1.5	EUT	Adapter
Unshielded detachable RJ45 cable	10	Router	EUT

Block Diagram of Test Setup

For conducted emissions



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310, §2.1091	Maximum Permissible Exposure(MPE)	Compliance
§15.517 (a)	General Requirement	Compliance
§15.203, §15.517(a) (3)	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.503 (a)(d), §15.517(b)	UWB Operation bandwidth	Compliance
§15.209, §15.517(c)(d)	Radiated Emissions	Compliance
§15.517(e)	Peak Emission in a 50 MHz bandwidth	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2020/7/9	2021/7/8
Rohde & Schwarz	LISN	ENV216	101613	2020/1/22	2021/1/21
Rohde & Schwarz	Transient Limitor	ESH3Z2	DE25985	2019/11/29	2020/11/28
Unknown	CE Cable	CE Cable	UF A210B-1-0720-504504	2019/11/29	2020/11/28
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Radiated Emission Test (Below 1G)					
R&S	EMI Test Receiver	ESR3	102455	2020/7/9	2021/7/8
Sonoma instrument	Pre-amplifier	310 N	186238	2020/4/20	2021/4/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017/12/22	2020/12/21
Unknown	Cable	Chamber Cable 1	F-03-EM236	2019/11/29	2020/11/28
Unknown	Cable	Chamber Cable 4	EC-007	2019/11/29	2020/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Radiated Emission Test (Above 1G)					
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/7/22	2021/7/21
COM-POWER	Pre-amplifier	PA-122	181919	2019/11/29	2020/11/28
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2019/11/29	2020/11/28
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017/12/22	2020/12/21
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2019/11/29	2020/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2019/11/29	2020/11/28
Ducommun technologies	RF Cable	RG-214	1	2019-11-12	2020/11/12
Ducommun technologies	RF Cable	RG-214	2	2019-11-12	2020/11/12
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2019/10/13	2022/10/12

*** 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).

§1.1310, §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

According to Part 1.1310(e), the maximum exposure level to the public from the RF power of the EUT shall not exceed a power density, S as per the respective limits in the below table, at a distance, d, of 20 cm from the EUT.

Limits for General Population/Uncontrolled Exposure

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

Reference method

KDB 447498 D01 General RF Exposure Guidance v06

OET Bulletin 65, Edition 97-01 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm^2)
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)

Frequency (MHz)	Tune Up EIRP		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
	(dBm)	(mW)			
6490	-9	0.13	20	0.00003	1

The Wi-Fi and UWB can transmit simultaneously,

Refer to the Wi-Fi report, the power density of Wi-Fi is 0.052mW/cm^2, the limit is 1 mW/cm^2.

so consider the transmitting simultaneously case:
The ratio= MPE/Limit$_{UWB}$+ MPE/Limit$_{WIFI}$ =0.00003/1+0.052/1=0.05203<1.0

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Pass

§15.517(a) - GENERAL REQUIREMENT

Applicable Standard

(a) Operation under the provisions of this section is limited to UWB transmitters employed solely for indoor operation.

(1) Indoor UWB devices, by the nature of their design, must be capable of operation only indoors. The necessity to operate with a fixed indoor infrastructure, e.g., a transmitter that must be connected to the AC power lines, may be considered sufficient to demonstrate this.

(2) The emissions from equipment operated under this section shall not be intentionally directed outside of the building in which the equipment is located, such as through a window or a doorway, to perform an outside function, such as the detection of persons about to enter a building.

(3) The use of outdoor mounted antennas, e.g., antennas mounted on the outside of a building or on a telephone pole, or any other outdoors infrastructure is prohibited.

(4) Field disturbance sensors installed inside of metal or underground storage tanks are considered to operate indoors provided the emissions are directed towards the ground.

(5) A communications system shall transmit only when the intentional radiator is sending information to an associated receiver.

Compliance, please see the below information:

(1) The EUT was used only indoors, it was powered by the PoE or DC port from the adapter which connects indirectly to the AC power line, please refer to the details in the user manual.

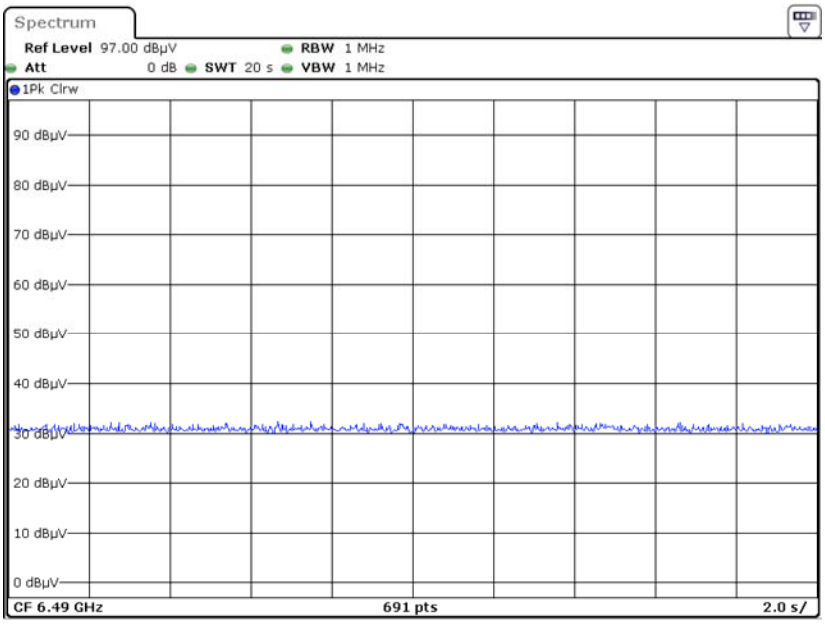
(2) The EUT was never used outdoors, as moisture or water can cause a short circuit. It was showed in the user manual.

(3) The EUT has an internal PCB antenna, please refer to the EUT photos.

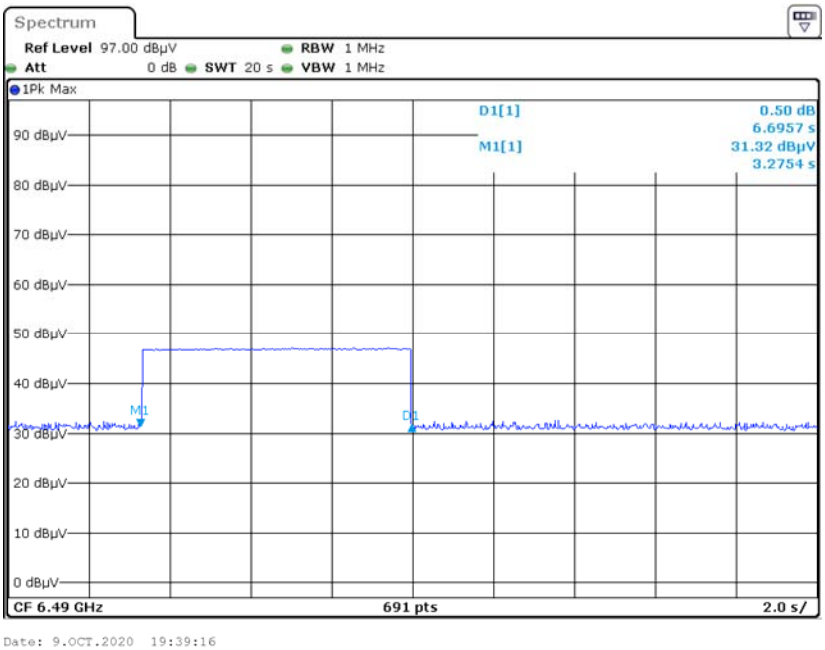
(4) The EUT is not a field disturbance sensor.

(5) A communications system shall transmit only when the intentional radiator is sending information to an associated receiver. Please refer to the below plot 1 and plot 2. According to the test plots, the EUT can meet the requirement of the communications system.

First step: the EUT is switched on, the associated receiver is switched off
Plot 1



Second step: the EUT is switched on, the associated receiver is switched on, after 6.7s the associated receiver is switched off
Plot 2



FCC §15.203, §15.517(a) (3) - ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.
Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

(3) The use of outdoor mounted antennas, e.g., antennas mounted on the outside of a building or on a telephone pole, or any other outdoors infrastructure is prohibited.

Antenna Connector Construction

The EUT has internal antenna arrangement, which was permanently attached and the antenna gain is 1dBi, fulfill the requirement of this section. Please refer to the EUT photos.

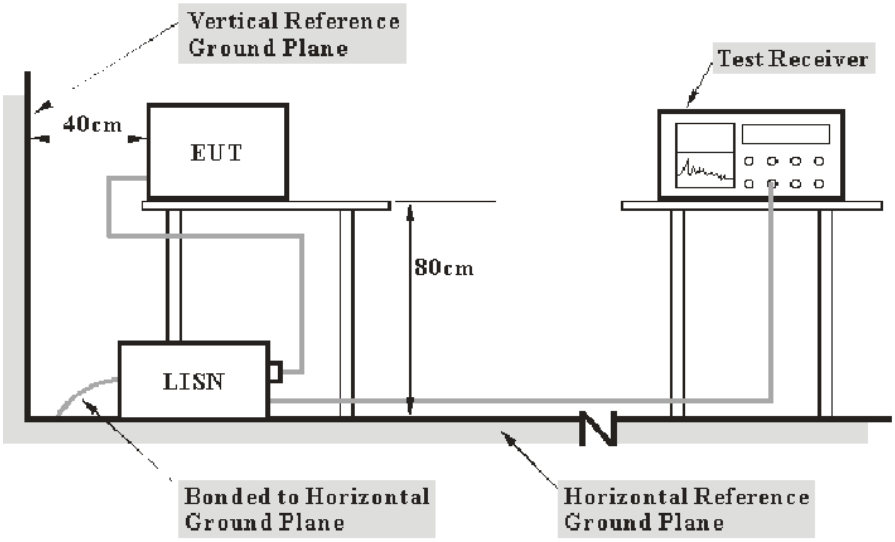
Result: Pass

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Correction Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Data

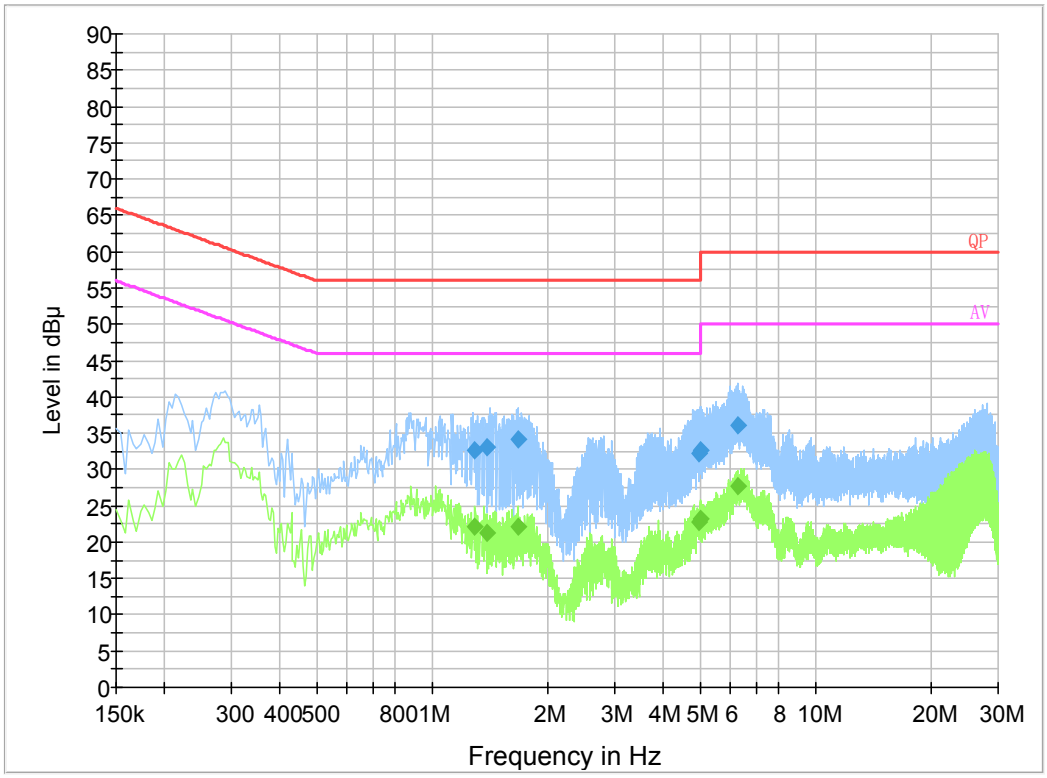
Environmental Conditions

Temperature:	25~27 ℃
Relative Humidity:	60~65 %
ATM Pressure:	100.5~101.0 kPa

The testing was performed by Haiguo Li on 2020-07-27 and 2020-11-11.

EUT operation mode: Transmitting

AC 120V/60Hz, Line:



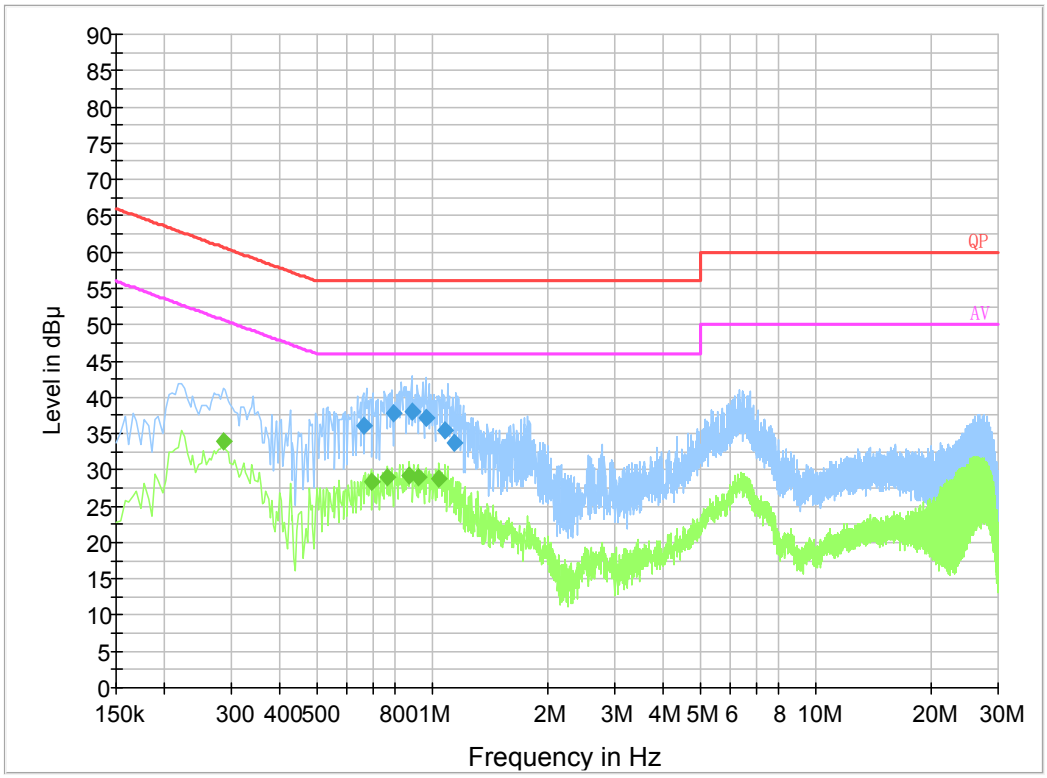
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.290830	32.6	9.000	L1	19.8	23.4	56.0
1.396730	33.1	9.000	L1	19.8	22.9	56.0
1.672830	34.1	9.000	L1	19.9	21.9	56.0
4.983510	32.2	9.000	L1	19.9	23.8	56.0
5.003870	32.7	9.000	L1	19.9	27.3	60.0
6.260130	36.1	9.000	L1	19.9	23.9	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.290830	22.1	9.000	L1	19.8	23.9	46.0
1.396730	21.3	9.000	L1	19.8	24.7	46.0
1.672830	22.1	9.000	L1	19.9	23.9	46.0
4.983510	22.7	9.000	L1	19.9	23.3	46.0
5.003870	23.1	9.000	L1	19.9	26.9	50.0
6.260130	27.6	9.000	L1	19.9	22.4	50.0

AC 120V/60Hz, Neutral:



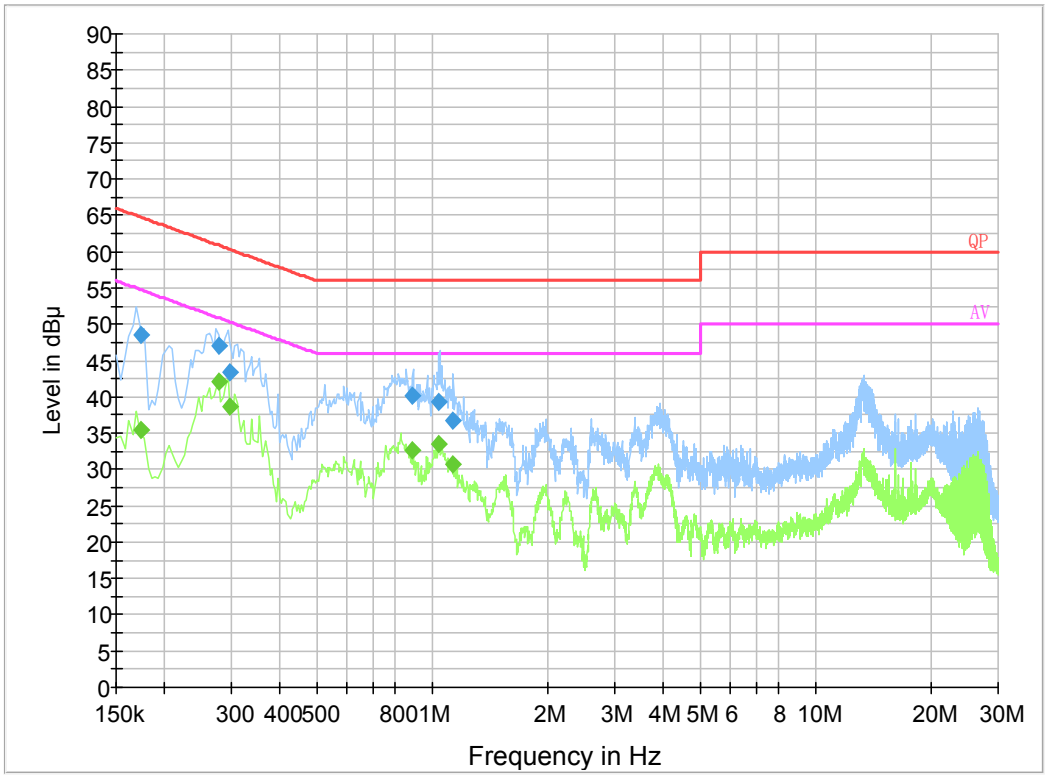
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.663890	36.0	9.000	N	19.8	20.0	56.0
0.790150	37.7	9.000	N	19.8	18.3	56.0
0.884710	37.9	9.000	N	19.7	18.1	56.0
0.963570	37.1	9.000	N	19.8	18.9	56.0
1.085530	35.4	9.000	N	19.8	20.6	56.0
1.140690	33.8	9.000	N	19.8	22.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.286000	34.0	9.000	N	19.7	16.6	50.6
0.694000	28.3	9.000	N	19.8	17.7	46.0
0.766000	29.0	9.000	N	19.8	17.0	46.0
0.874000	29.2	9.000	N	19.7	16.8	46.0
0.918000	29.1	9.000	N	19.8	16.9	46.0
1.046000	28.9	9.000	N	19.8	17.2	46.0

AC 240V/60Hz, Line:



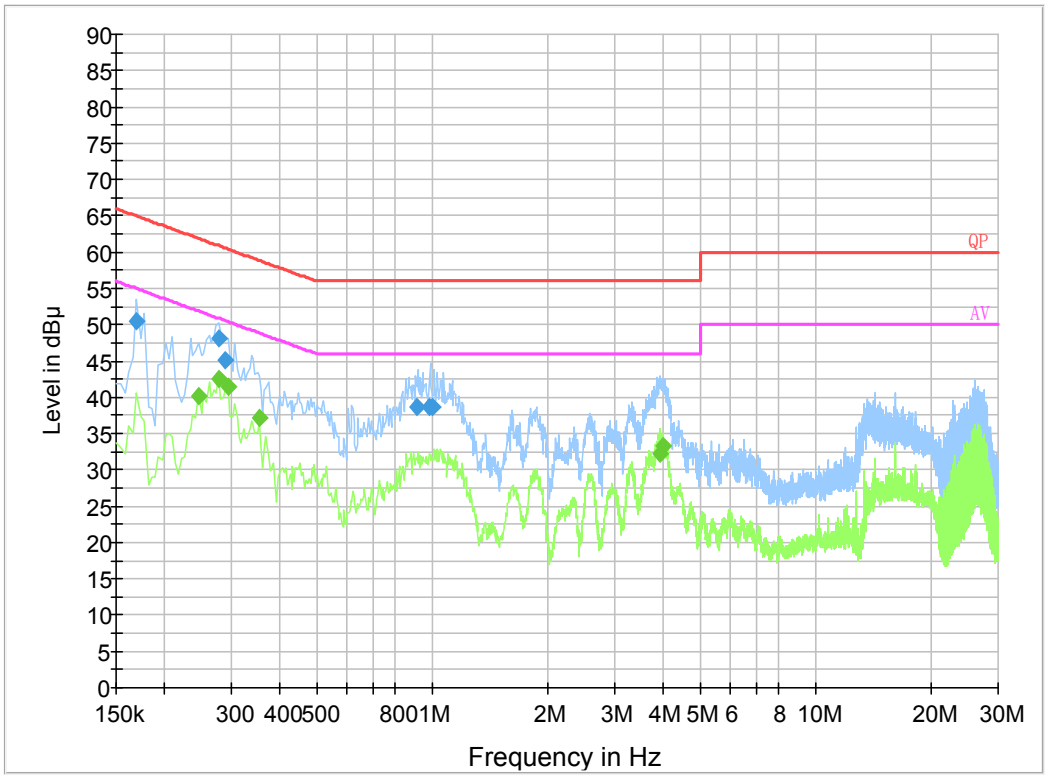
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174500	48.5	9.000	L1	19.9	16.2	64.7
0.278501	47.0	9.000	L1	19.8	13.9	60.9
0.297500	43.3	9.000	L1	19.7	17.0	60.3
0.884590	40.2	9.000	L1	19.8	15.8	56.0
1.046250	39.4	9.000	L1	19.9	16.6	56.0
1.128930	36.7	9.000	L1	19.8	19.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174500	35.5	9.000	L1	19.9	19.3	54.7
0.278501	42.0	9.000	L1	19.8	8.9	50.9
0.297500	38.7	9.000	L1	19.7	11.6	50.3
0.884590	32.7	9.000	L1	19.8	13.3	46.0
1.046250	33.5	9.000	L1	19.9	12.5	46.0
1.128930	30.8	9.000	L1	19.8	15.2	46.0

AC 240V/60Hz, Neutral:



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.169500	50.5	9.000	N	19.8	14.5	65.0
0.277500	48.1	9.000	N	19.7	12.8	60.9
0.289500	45.1	9.000	N	19.7	15.4	60.5
0.916410	38.6	9.000	N	19.7	17.4	56.0
0.987150	38.6	9.000	N	19.8	17.4	56.0
0.998790	38.7	9.000	N	19.8	17.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.246000	40.1	9.000	N	19.8	11.8	51.9
0.278000	42.6	9.000	N	19.7	8.3	50.9
0.294000	41.4	9.000	N	19.7	9.0	50.4
0.354000	37.1	9.000	N	19.9	11.8	48.9
3.926000	32.3	9.000	N	19.9	13.7	46.0
4.010000	33.4	9.000	N	19.9	12.6	46.0

§15.503 (a), §15.503 (d), §15.517(b) –UWB OPEARTION BANDWIDTH

Applicable Standard

15.503(a): UWB bandwidth. For the purpose of this subpart, the UWB bandwidth is the frequency band bounded by the points that are 10 dB below the highest radiated emission, as based on the complete transmission system including the antenna. The upper boundary is designated fH and the lower boundary is designated fL. The frequency at which the highest radiated emission occurs is designated fM.

15.503(d): Ultra-wideband (UWB) transmitter. An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

15.517(b) The UWB bandwidth of a UWB system operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz.

Test Procedure

Refer to the C63.10 -2013 Section 10.1

Test Data

Environmental Conditions

Temperature:	29.2 ℃
Relative Humidity:	54 %
ATM Pressure:	100.5 kPa

The testing was performed by Leven Gan on 2020-09-17.

Test Result: Pass

EUT operation mode: Transmitting

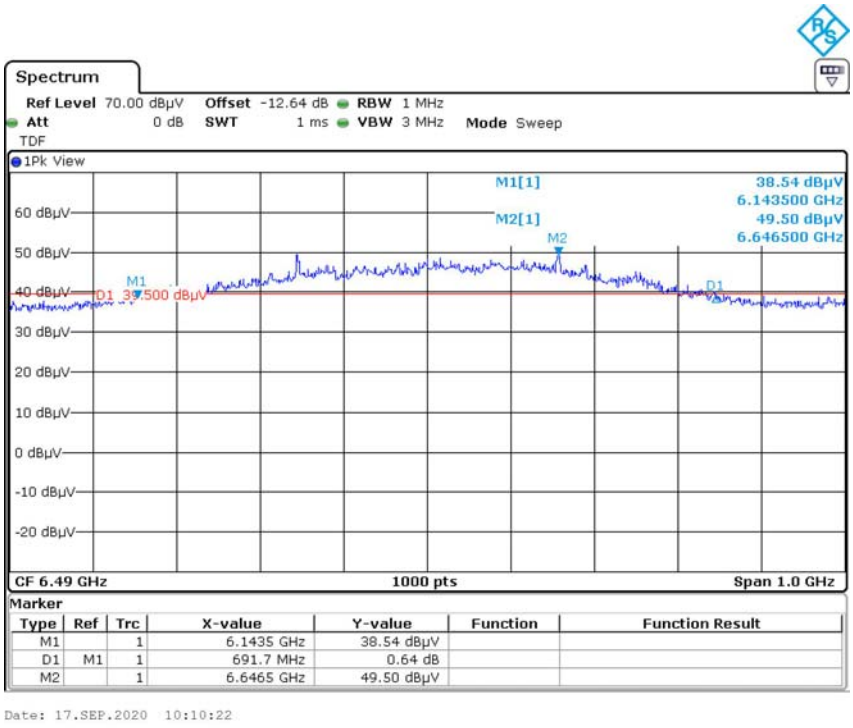
Test distance is 0.7m.

Please refer to the following table and plot.

Item		Result	Limit (MHz)
f_M(MHz)	The highest emission frequency	6646.5	/
f_L(MHz)	10dB below the highest emission	6143.5	>3100
f_H(MHz)	10dB above the highest emission	6835.2	<10600
f_C(MHz)	$(f_H + f_L)/2$	6489.35	/
10dB bandwidth(MHz)	$f_H - f_L$	691.70	≥500
Fractional bandwidth	$2(f_H - f_L)/(f_H + f_L)$	0.107	/

Note: $f_H = f_L$+10dB bandwidth

10dB Bandwidth



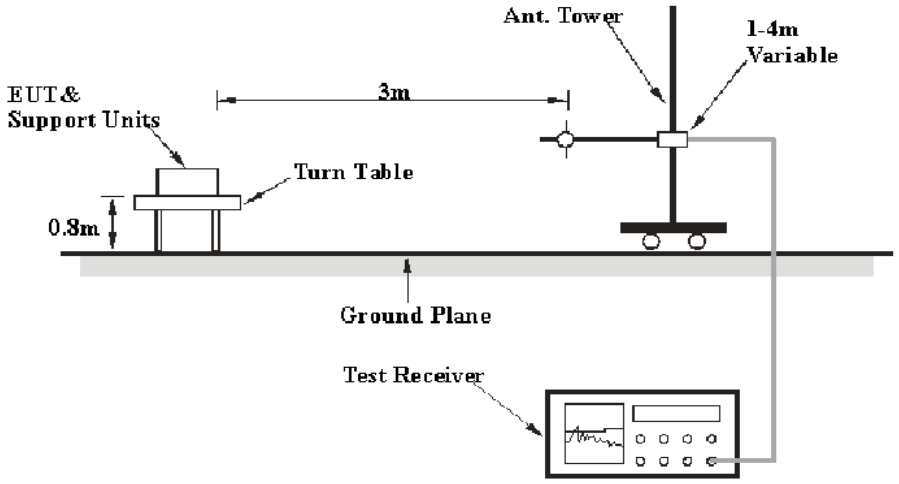
FCC §15.209, §15.517(c), §15.517 (d)- SPURIOUS EMISSIONS

Applicable Standard

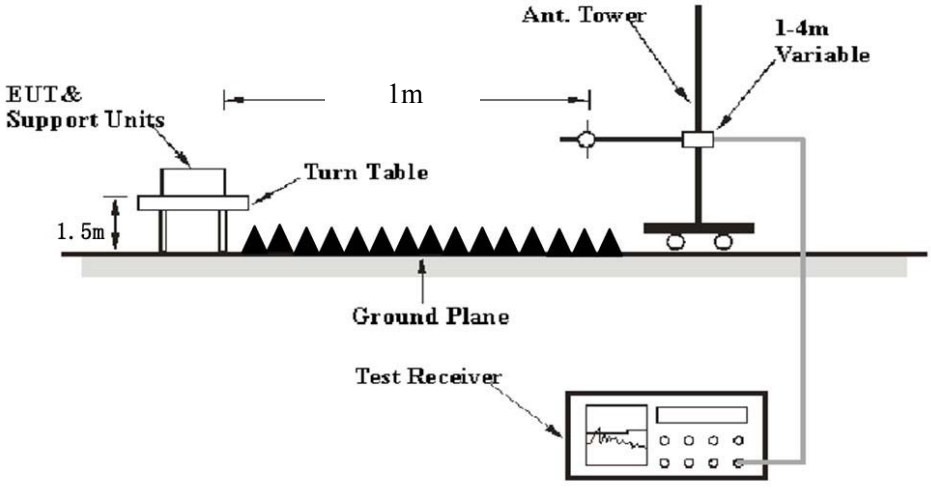
FCC §15.209; §15.517(c), §15.517(d);

EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.517 limits.

EMI Test Receiver & Spectrum Analyzer Setup

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	Average
	10kHz	30kHz	/	Average*

Note: * For the radiated spurious emission in the GPS band.

Test Procedure

Refer to the C63.10 -2013 Section 10.2 & 10.3

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Data

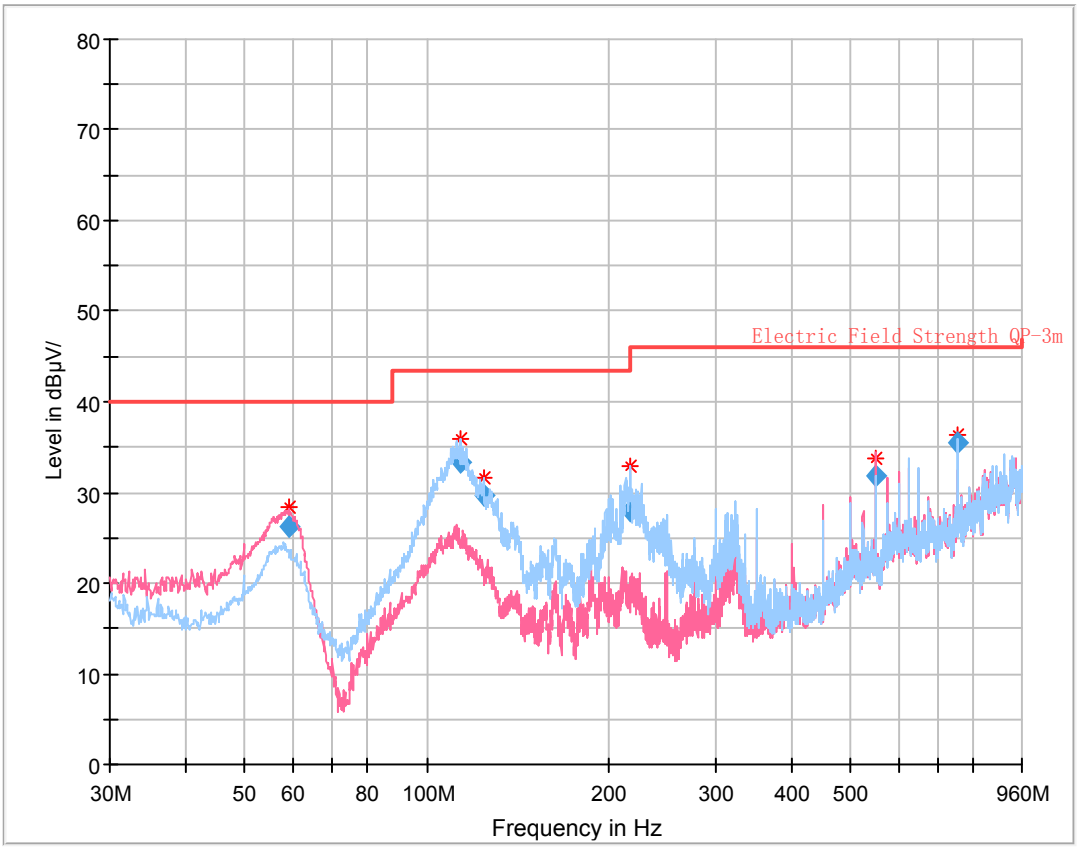
Environmental Conditions

Temperature:	28~29.2 ℃
Relative Humidity:	54~58 %
ATM Pressure:	100.5~101.0 kPa

The testing was performed by Harris He on 2020-07-28 for below 1G and Leven Gan on 2020-09-18 for above 1G.

EUT operation mode: Transmitting

30 MHz~1 GHz:



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
59.216000	26.29	40.00	13.71	115.0	V	0.0	-20.1
113.783750	33.43	43.50	10.07	308.0	H	149.0	-15.0
123.945125	29.63	43.50	13.87	289.0	H	118.0	-14.0
217.203625	27.94	46.00	18.06	134.0	H	302.0	-13.9
550.016875	31.79	46.00	14.21	102.0	V	186.0	-4.1
749.994125	35.54	46.00	10.46	108.0	H	188.0	-0.4

Spurious radiated emission above 960MHz in non GPS band:

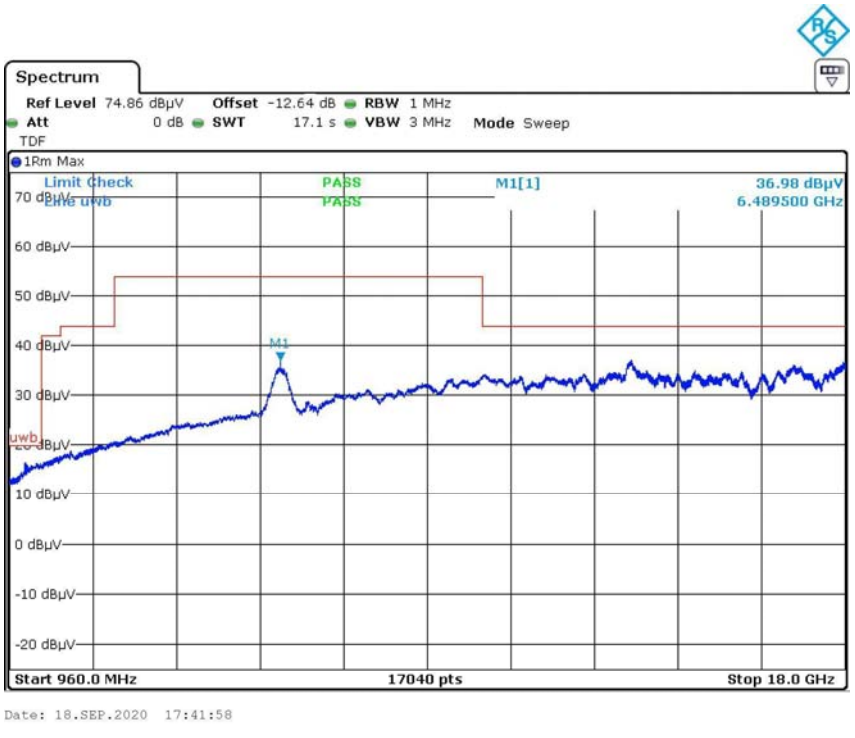
1. The test distance is 0.7m, so the correct factor from 0.7m to 3m is 20log(0.7/3)=-12.64dB which was added into the offset on the spectrum analyzer.

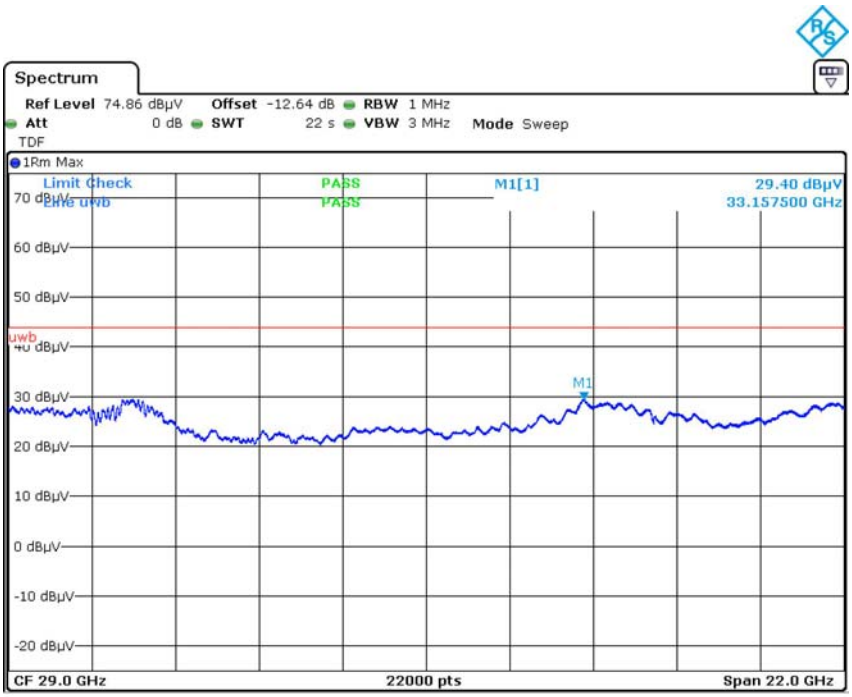
2. E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

3. The antenna factor, cable loss and preamplifier gain have been entered into the analyzer as the transducer factor.

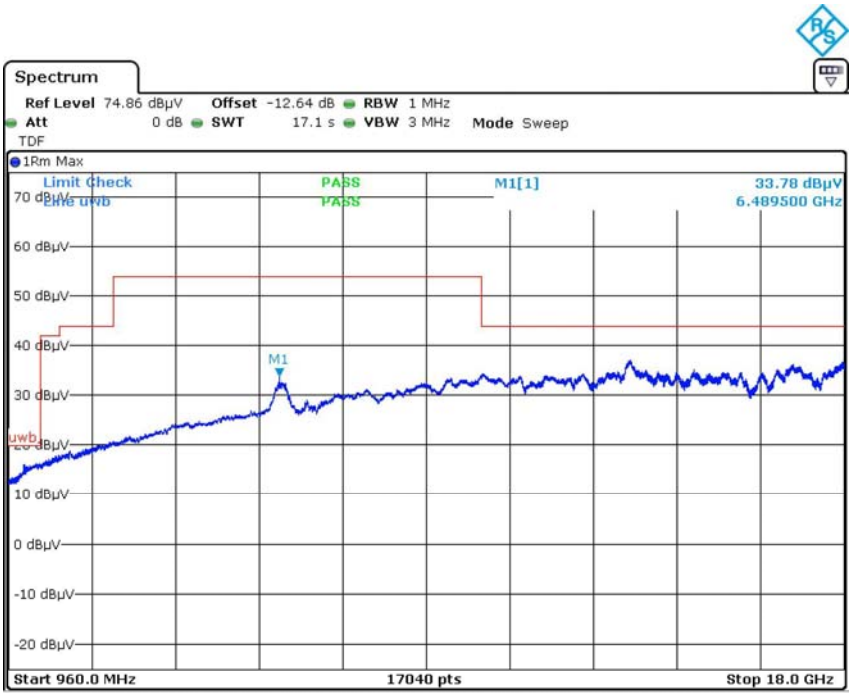
Frequency (MHz)	Corrected Amplitude (dBμV/m)	EIRP (dBm)	Detector	Turntable Degree	Rx Antenna Height (m)	Rx Antenna Polar (H / V)	Part 15.517 EIRP Limit (dBm)	Part 15.517 Margin (dB)
6489.5	36.98	-58.22	RMS	251	1.6	H	-41.3	16.92
33157.5	29.40	-65.80	RMS	124	2.3	H	-61.3	4.50
6489.5	33.78	-61.42	RMS	53	1.8	V	-41.3	20.12
33140.5	29.54	-65.66	RMS	251	1.3	V	-61.3	4.36

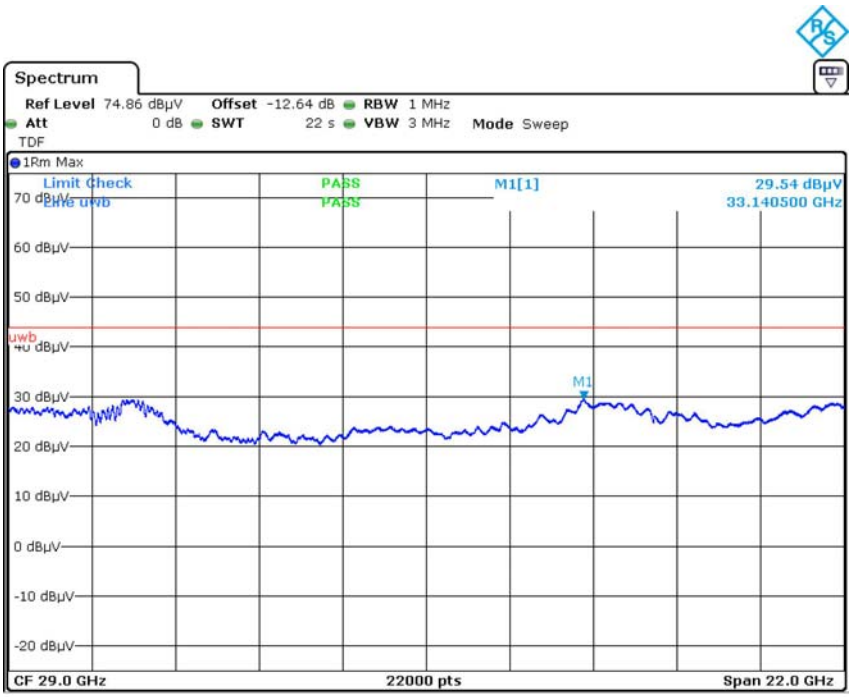
Horizontal




Spectrum
Ref Level 74.86 dBµV Offset -12.64 dB RBW 1 MHz
Att 0 dB SWT 22 s VBW 3 MHz Mode Sweep
TDF
1Rm Max
Limit Check PASS M1[1] 29.40 dBµV
EIRP uwb PASS 33.157500 GHz
70 dBµV
60 dBµV
50 dBµV
uwb
30 dBµV
20 dBµV
10 dBµV
0 dBµV
-10 dBµV
-20 dBµV
M1
CF 29.0 GHz 22000 pts Span 22.0 GHz
Date: 18.SEP.2020 18:17:24

Vertical


Spectrum
Ref Level 74.86 dBµV Offset -12.64 dB RBW 1 MHz
Att 0 dB SWT 17.1 s VBW 3 MHz Mode Sweep
TDF
1Rm Max
Limit Check PASS M1[1] 33.78 dBµV
EIRP uwb PASS 6.489500 GHz
70 dBµV
60 dBµV
50 dBµV
40 dBµV
30 dBµV
uwb
10 dBµV
0 dBµV
-10 dBµV
-20 dBµV
M1
Start 960.0 MHz 17040 pts Stop 18.0 GHz
Date: 18.SEP.2020 17:36:04



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Spurious radiated emission in GPS band:

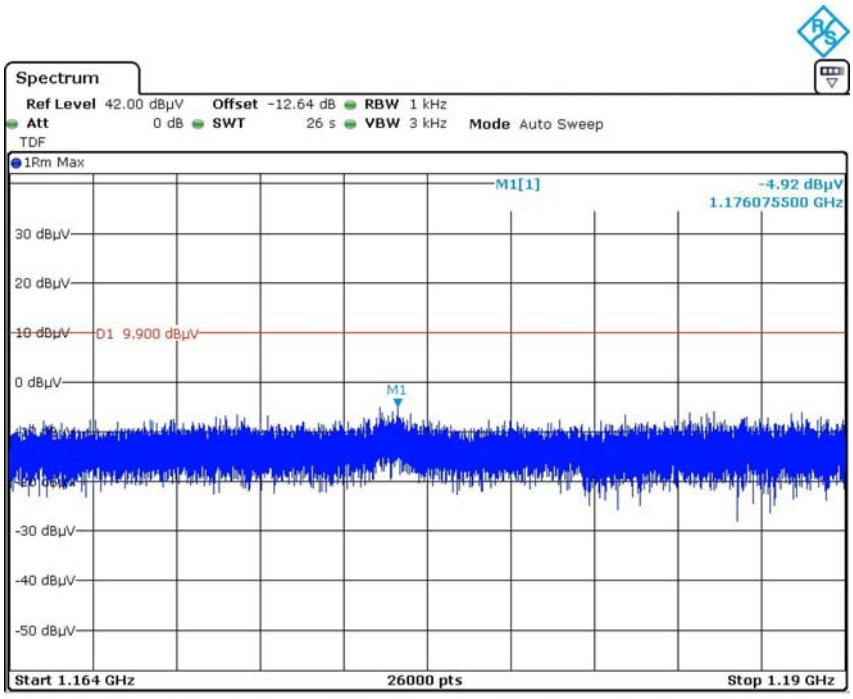
1. The test distance is 0.7m, so the correct factor from 0.7m to 3m is 20log(0.7/3)=-12.64dB which was added into the offset on the spectrum analyzer.

2. E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

3. The antenna factor, cable loss and preamplifier gain have been entered into the analyzer as the transducer factor.

Frequency	Corrected Amplitude (dBμV/m)	EIRP (dBm)	Detector	Turntable	Rx Antenna		Part 15.517	
(MHz)				Degree	Height (m)	Polar (H / V)	EIRP Limit (dBm)	Margin (dB)
1176.08	-4.92	-100.12	RMS	138	2.1	H	-85.3	16.62
1183.84	-7.08	-102.28	RMS	247	1.9	V	-85.3	18.78
1211.59	-6.28	-101.48	RMS	180	1.5	H	-85.3	17.98
1201.38	-6.83	-102.03	RMS	75	1.5	V	-85.3	18.53
1222.59	-4.97	-100.17	RMS	26	1.0	H	-85.3	16.67
1215.45	-7.48	-102.68	RMS	86	2.3	V	-85.3	19.18
1574.40	-5.07	-100.27	RMS	52	1.8	H	-85.3	16.77
1568.66	-5.51	-100.71	RMS	18	1.3	V	-85.3	17.21
1587.34	-3.40	-98.60	RMS	140	2.3	H	-85.3	15.10
1585.81	-5.54	-100.74	RMS	84	1.2	V	-85.3	17.24

Horizontal



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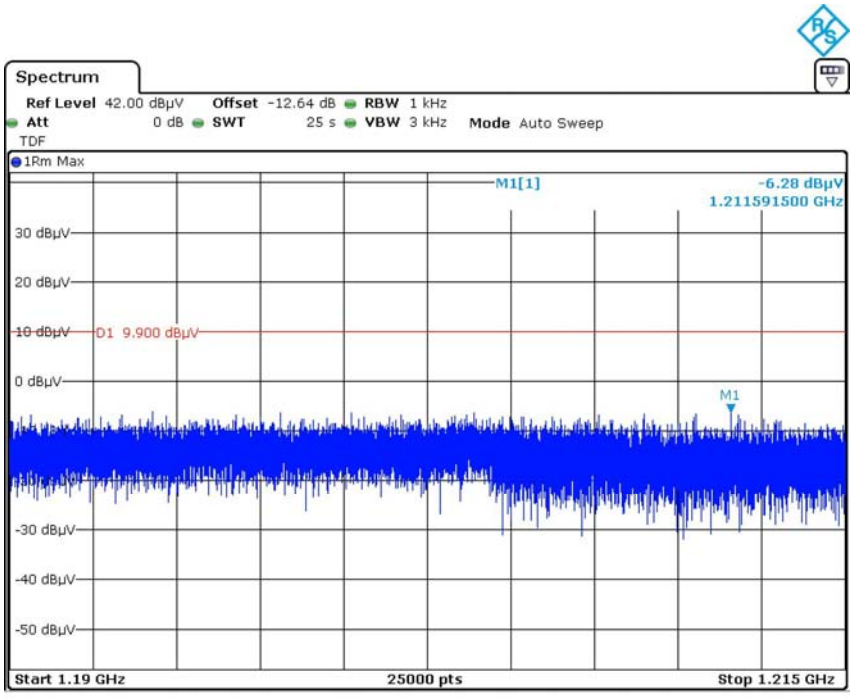

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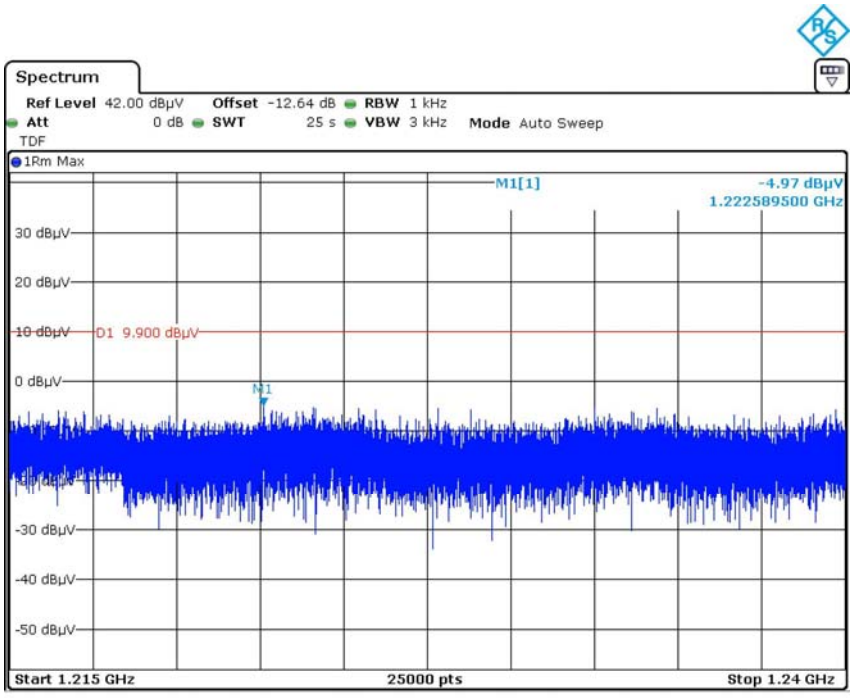

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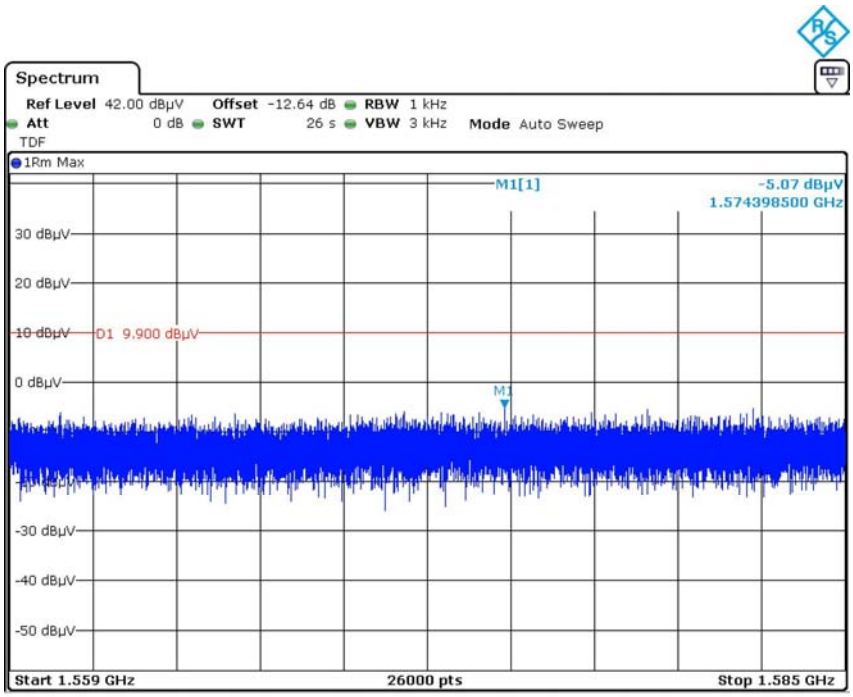

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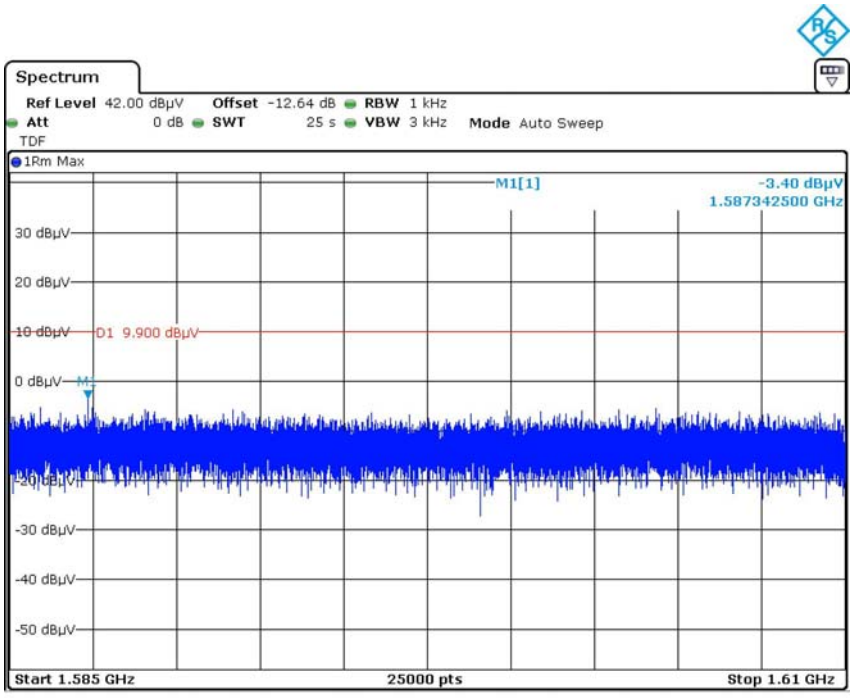

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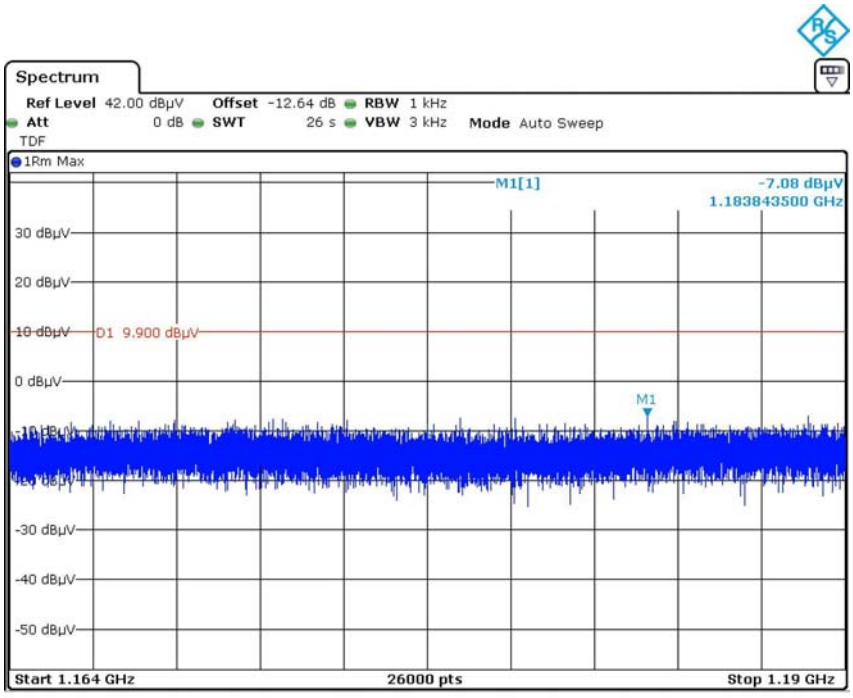
Vertical



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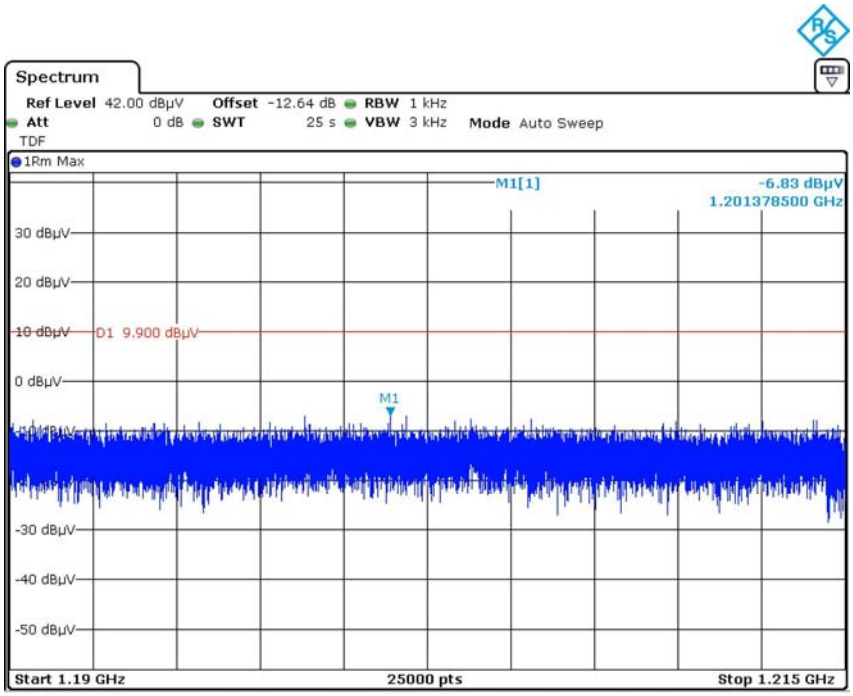

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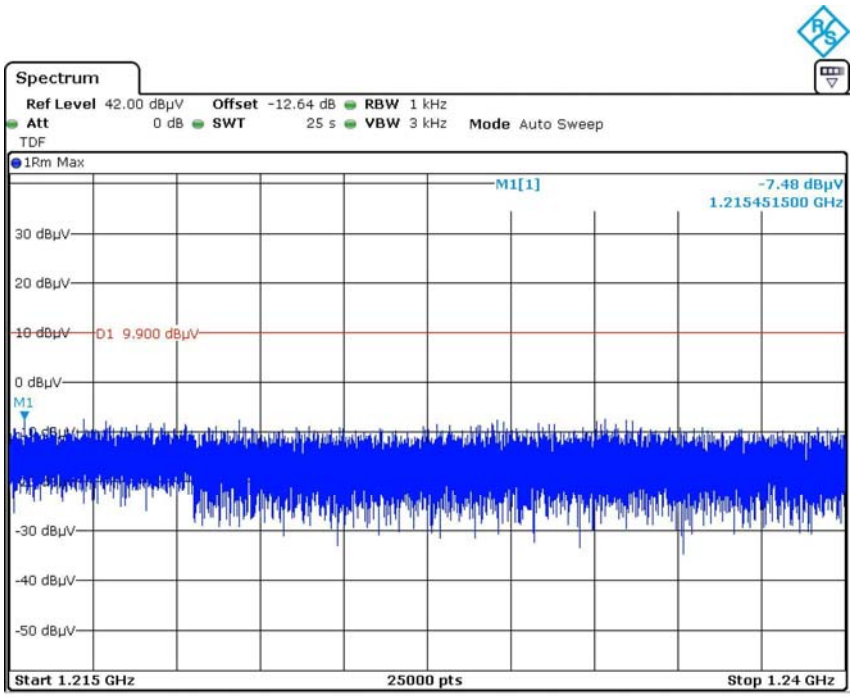

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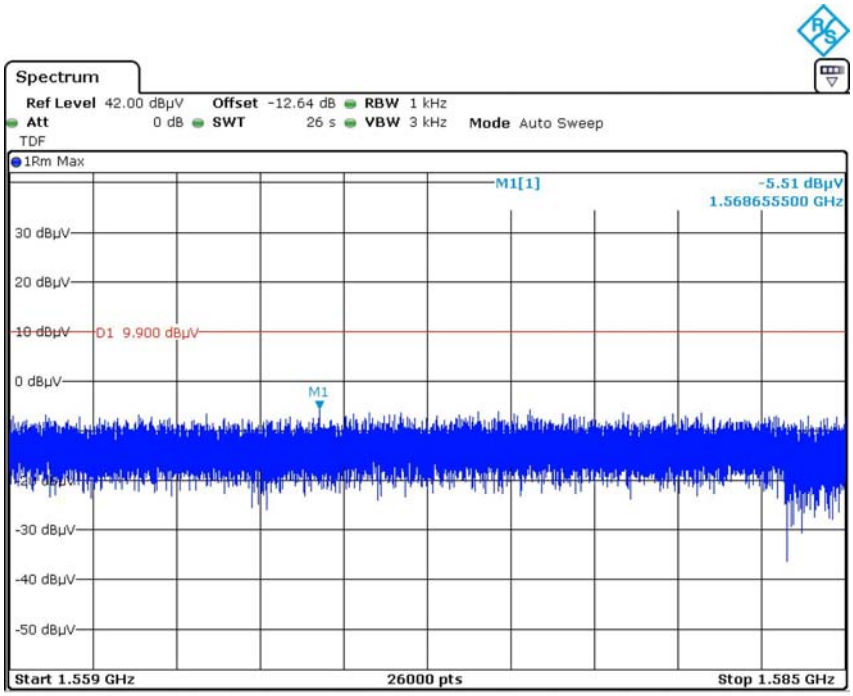

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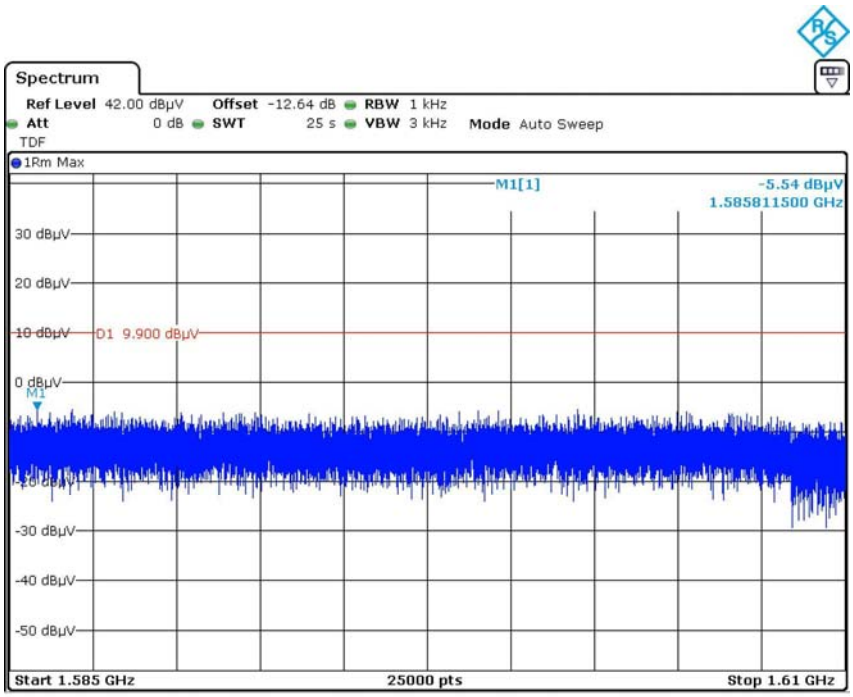

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§15.517(e) - PEAK EMISSION IN A 50 MHZ BANDWIDTH

Applicable Standard

There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M. That limit is 0 dBm EIRP. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in §15.521.

Test Procedure

Refer to the C63.10 -2013 Section 10.3.5.

Test Data

Environmental Conditions

Temperature:	29.2 ℃
Relative Humidity:	54 %
ATM Pressure:	100.5 kPa

The testing was performed by Leven Gan on 2020-09-17.

EUT operation mode: Transmitting

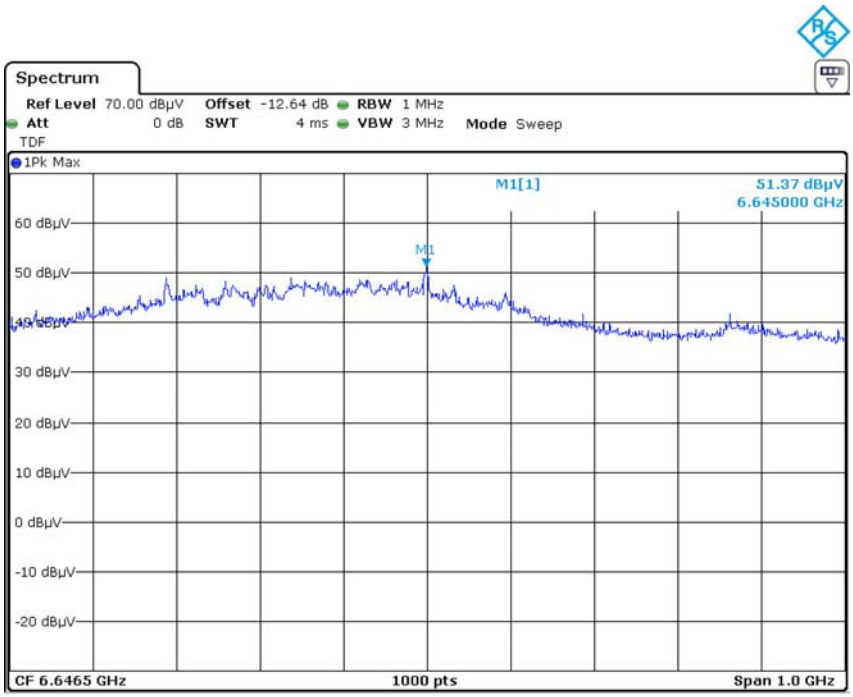
Frequency (MHz)	Reading level (dBμV/m) @0.7m	EIRP (dBm/10MHz)	EIRP (dBm/50MHz)	Limit
				dBm/50MHz
6645	51.37	-43.83	-9.85	0

Note: the correct factor of RBW 1MHz to 50MHz is 20 log (50MHz/1 MHz) =33.98

E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

*The test distance is 0.7m, so the correct factor from 0.7m to 3m is 20*log(0.7/3)=-12.64, which was added into the offset on the spectrum analyzer.*

The antenna factor, cable loss and preamplifier gain have been entered into the analyzer as the transducer factor.



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