



LP0002-2020

TEST REPORT

For

台灣特斯拉汽車有限公司

114 臺北市內湖區民權東路 6 段 11 巷 6 號

Brand: TESLA

Model: 1733130

Report Type: Original Report	Product Type: Automotive Part
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by A2LA*, NIST, or any agency of the Federal Government.

* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "*" (Rev.2)

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R2109306-NCC-02	Original Report	2022-01-18

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test report was prepared on behalf of 台灣特斯拉汽車有限公司 and their product model: 1733130, or the “EUT” as referred to in this report. It is an automotive part (Fascia Endpoint) with BLE radio, Ultra Wide-band (UWB) radio and UHF receiver.

EUT receive date: 2021-10-06

1.2 Mechanical Description of EUT

1733130 measures approximately 12.7 cm (Length), 6.35 cm (Width), and 1.91 cm (Height).

The data gathered are from a production sample provided by 台灣特斯拉汽車有限公司, Inc., serial number: ED321272000008.

1.3 Objective

This report was prepared on behalf of 台灣特斯拉汽車有限公司., in accordance with LP0002-2020

The objective was to determine compliance with LP0002-2020 rules for Peak Fundamental Emission, Antenna Requirements, UWB Bandwidth, Average Radiated Emissions, Radiated Spurious Emissions and Ceasing Transmission requirements.

1.4 Related Submittal(s)/Grant(s)

N/A

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and FCC KDB 393761 D01 UWB FAQ v02: Ultra-Wideband (UWB) Devices Frequently Asked Questions.

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Parameter	Measurement uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.57 dB
Power Spectral Density, conducted	±1.48dB
Unwanted Emissions, conducted	±1.57dB
All emissions, radiated	±4.0 dB
AC power line Conducted Emission	±2.0 dB
Temperature	±2 ° C
Humidity	±5 %
DC and low frequency voltages	±1.0 %
Time	±2 %
Duty Cycle	±3 %

1.7 Test Facility Registrations

BACLs test facilities that are used to perform Radiated and Conducted Emissions tests are currently recognized by the Federal Communications Commission as Accredited with NIST Designation Number US1129.

BACL's test facilities that are used to perform Radiated and Conducted Emissions tests are currently registered with Industry Canada under Registration Numbers: 3062A-1, 3062A-2, and 3062A-3.

BACL is a Chinese Taipei Bureau of Standards Metrology and Inspection (BSMI) validated Conformity Assessment Body (CAB), under Appendix B, Phase I Procedures of the APEC Mutual Recognition Arrangement (MRA). BACL's BSMI Lab Code Number is: SL2-IN-E-1002R.

BACL's test facilities that are used to perform AC Line Conducted Emissions, Telecommunications Line Conducted Emissions, Radiated Emissions from 30 MHz to 1 GHz, and Radiated Emissions from 1 GHz to 6 GHz are currently recognized as Accredited in accordance with the Voluntary Control Council for Interference [VCCI] Article 15 procedures under Registration Number A-0027.

1.8 Test Facility Accreditations

Bay Area Compliance Laboratories Corp. (BACL) is:

A- An independent, 3rd-Party, Commercial Test Laboratory accredited to ISO/IEC 17025:2017 by A2LA (Test Laboratory Accreditation Certificate Number 3297.01), in the fields of: Electromagnetic Compatibility and Telecommunications. Unless noted by an Asterisk (*) in the Compliance Matrix (See Section 3 of this Test Report), BACL's ISO/IEC 17025:2017 Scope of Accreditation includes all of the Test Method Standards and/or the Product Family Standards detailed in this Test Report.

BACL's ISO/IEC 17025:2017 Scope of Accreditation includes a comprehensive suite of EMC Emissions, EMC Immunity, Radio, RF Exposure, Safety and wireline Telecommunications test methods applicable to a wide range of product categories. These product categories include Central Office Telecommunications Equipment

[including NEBS - Network Equipment Building Systems], Unlicensed and Licensed Wireless and RF devices, Information Technology Equipment (ITE); Telecommunications Terminal Equipment (TTE); Medical Electrical Equipment; Industrial, Scientific and Medical Test Equipment; Professional Audio and Video Equipment; Industrial and Scientific Instruments and Laboratory Apparatus; Cable Distribution Systems, and Energy Efficient Lighting.

B- A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3297.02) to certify

- For the USA (Federal Communications Commission):
 - 1- All Unlicensed radio frequency devices within FCC Scopes A1, A2, A3, and A4;
 - 2- All Licensed radio frequency devices within FCC Scopes B1, B2, B3, and B4;
 - 3- All Telephone Terminal Equipment within FCC Scope C.
- For the Canada (Industry Canada):
 - 1 All Scope 1-Licence-Exempt Radio Frequency Devices;
 - 2 All Scope 2-Licensed Personal Mobile Radio Services;
 - 3 All Scope 3-Licensed General Mobile & Fixed Radio Services;
 - 4 All Scope 4-Licensed Maritime & Aviation Radio Services;
 - 5 All Scope 5-Licensed Fixed Microwave Radio Services
 - 6 All Broadcasting Technical Standards (BETS) in the Category I Equipment Standards List.
- For Singapore (Info-Communications Development Authority (IDA)):
 - 1 All Line Terminal Equipment: All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2011, Annex 2
 - 2. All Radio-Communication Equipment: All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2011, Annex 2
- For the Hong Kong Special Administrative Region:
 - 1 All Radio Equipment, per KHCA 10XX-series Specifications;
 - 2 All GMDSS Marine Radio Equipment, per HKCA 12XX-series Specifications;
 - 3 All Fixed Network Equipment, per HKCA 20XX-series Specifications.
- For Japan:
 - 1 MIC Telecommunication Business Law (Terminal Equipment):
 - All Scope A1 - Terminal Equipment for the Purpose of Calls;
 - All Scope A2 - Other Terminal Equipment
 - 2 Radio Law (Radio Equipment):
 - All Scope B1 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 1 of the Radio Law
 - All Scope B2 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 2 of the Radio Law
 - All Scope B3 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 3 of the Radio Law

C- A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3297.03) to certify Products to USA's Environmental Protection Agency (EPA) ENERGY STAR Product Specifications for:

- 1 Electronics and Office Equipment:
 - for Telephony (ver. 3.0)
 - for Audio/Video (ver. 3.0)
 - for Battery Charging Systems (ver. 1.1)
 - for Set-top Boxes & Cable Boxes (ver. 4.1)
 - for Televisions (ver. 6.1)
 - for Computers (ver. 6.0)
 - for Displays (ver. 6.0)
 - for Imaging Equipment (ver. 2.0)
 - for Computer Servers (ver. 2.0)
- 2 Commercial Food Service Equipment

- for Commercial Dishwashers (ver. 2.0)
- for Commercial Ice Machines (ver. 2.0)
- for Commercial Ovens (ver. 2.1)
- for Commercial Refrigerators and Freezers
- 3 Lighting Products
 - For Decorative Light Strings (ver. 1.5)
 - For Luminaires (including sub-components) and Lamps (ver. 1.2)
 - For Compact Fluorescent Lamps (CFLs) (ver. 4.3)
 - For Integral LED Lamps (ver. 1.4)
- 4 Heating, Ventilation, and AC Products
 - for Residential Ceiling Fans (ver. 3.0)
 - for Residential Ventilating Fans (ver. 3.2)
- 5 Other
 - For Water Coolers (ver. 3.0)

D- A NIST Designated Phase-I and Phase-II Conformity Assessment Body (CAB) for the following economies and regulatory authorities under the terms of the stated MRAs/Treaties:

- Australia: ACMA (Australian Communication and Media Authority) – APEC Tel MRA -Phase I;
- Canada: (Innovation, Science and Economic development Canada - ISED) Foreign Certification Body – FCB – APEC Tel MRA -Phase I & Phase II;
- Chinese Taipei (Republic of China – Taiwan):
 - o BSMI (Bureau of Standards, Metrology and Inspection) APEC Tel MRA -Phase I;
 - o NCC (National Communications Commission) APEC Tel MRA -Phase I;
- European Union:
 - o EMC Directive 2014/30/EU US-EU EMC & Telecom MRA CAB (NB)
 - o Radio Equipment (RE) Directive 2014/53/EU US-EU EMC & Telecom MRA CAB (NB)
 - o Low Voltage Directive (LVD) 2014/35/EU
- Hong Kong Special Administrative Region: (Office of the Telecommunications Authority – OFTA) APEC Tel MRA -Phase I & Phase II
- Israel – US-Israel MRA Phase I
- Republic of Korea (Ministry of Communications - Radio Research Laboratory) APEC Tel MRA -Phase I
- Singapore: (Infocomm Media Development Authority - IMDA) APEC Tel MRA -Phase I & Phase II;
- Japan: VCCI - Voluntary Control Council for Interference US-Japan Telecom Treaty VCCI Side Letter-
- USA:
 - o ENERGY STAR Recognized Test Laboratory – US EPA
 - o Telecommunications Certification Body (TCB) – US FCC;
 - o Nationally Recognized Test Laboratory (NRTL) – US OSHA
- Vietnam: APEC Tel MRA -Phase I;

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.10-2013.

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

2.2 EUT Exercise Software

Python scripts were provided by Tesla Motors, Inc., and was verified to be compliant with the standard requirements being tested against. The following channel frequencies were selected for testing. All the modes were measured for fundamental field strength, and the corresponding power settings used are listed below.

Radio	Frequency (MHz)	Mode	Power Setting
UWB	6988.8 MHz (Channel 6)	0	1
		4	-0.75
		13	-0.5
	7488 MHz (Channel 8)	0	0.25
		4	-1.25
		13	-0.75
	7987.2 MHz (Channel 9)	0	0.5
		4	-1.25
		13	-0.75

Note: UHF receiver on device was enabled during testing.

Please refer to the Operational Description for detailed description of the test modes.

2.3 Equipment Modifications

None

2.4 Remote Support Equipment

Manufacturer	Description	Model	S/N
HP	Laptop	Zbook Studio G3	00329-00000-00003-AA284
PJRC	Teensy	Teensy-LC	M26M6VFT1N1SJCRFKCJ

2.5 Local Support Equipment

Manufacturer	Description	Model	S/N
Volteq	DC Power Supply	HY5003D	160402343
BACL	USB Cable	-	-
BACL	RS-232	-	-

*Note: Not for sale, only for support testing.

2.6 Interface Ports and Cabling

Cable Description	Length (m)	To	From
Power Cables	< 1 m	EUT	DC Power Supply
RF Cable	1 m	EUT	PSA
USB Type A to Micro USB Type B Cable	< 1 m	PC	Teensy
RS-232 Cable	< 1 m	Teensy	EUT

3 Summary of Test Results

Results reported relate only to the product tested.

LP0002-2020 Rules	Description of Test	Results
LP0002-2020 §3.2	Antenna Requirement	Compliant
LP0002-2020 §3.3	AC Line Conducted Emissions	N/A ¹
LP0002-2020 §6.20.2	RF Exposure	Compliant
LP0002-2020 §5.12.3.3, §3.6	Radiated Spurious Emissions	Compliant
LP0002-2020 §5.12.3.3(2)	Peak Fundamental Emission	Compliant
LP0002-2020 §5.12.2.1, §5.12.2.2, §5.12.2.3, §5.12.2.4	Emission Bandwidth	Compliant
LP0002-2020 §5.12.3.3(3)(B)	Cease Transmission	Compliant

Note¹: Device is powered by car battery.

4 LP0002-2020 §3.2 - Antenna Requirements

4.1 Applicable Standards

According to LP-0002-2020 §3.2,

Antenna requirement: Low-power radio frequency transmitter or transceiver (receiver) shall utilize a permanently, semi-permanently attached antenna or uses a unique coupling of the antenna and at any cable connector between the transmitter and the antenna. The antenna shall be an omni-directional type. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector or other than authorized is prohibited. Such standard connectors are for example: BNC, F type, N type, M type, UG type, RCA, SMA, SMB, and other standard type antenna connectors.

4.2 Antenna Description

External/Internal/Integral	Maximum Antenna Gain (dBi)	Antenna Type
Integral	4.67	Chip Antenna

Antenna gain is information provided by customer.

Antenna brand name: Amphenol

Antenna model: Rear UWB Antenna

5 LP0002-2020 §6.20.2 - RF Exposure

5.1 Applicable Standards

According to LP0002-2020 §6.20.2, for purposes of RF exposure assessment requirements, Maximum Permissible Exposure (MPE) shall be measured, if separation distance of at least 20 centimeters is normally maintained between radiating structures and the body of the user or nearby persons. Limits are as follows:

6.20.2.1 Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-3.0	614	1.63	*100	6
3-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500	-----	-----	f/300	6
1,500-100,000	-----	-----	5.0	6

Note 1: asterisk (*) is plane-wave equivalent power density.

Note 2: f is the testing frequency in MHz.

6.20.2.2 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
300-1,500	-----	-----	f/1500	30
1,500-100,000	-----	-----	1.0	30

Note 1: asterisk (*) is plane-wave equivalent power density.

Note 2: f is the testing frequency in MHz.

5.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

5.3 MPE Results

UWB Standalone

Maximum average e.i.r.p. (dBm): -41.626

Maximum average e.i.r.p. (mW): 0.000069

Prediction distance (cm): 20

Prediction frequency (MHz): 6988.8

Power density of prediction frequency at 20 cm (mW/cm²): 0.00000001

limit for uncontrolled exposure at prediction frequency (mW/cm²): 1.0

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.00000001 mW/cm². Limit is 1.0 mW/cm².

Worst Case MPE Co-location Calculation: UWB and BLE

Radio	Max Conducted Power (dBm)	Evaluated Distance (cm)	Worst-Case Exposure Level	Limit	Worst-Case Ratios	Sum of Ratios	Limit
Worst Case							
BLE	3.07	20	0.00084 mW/cm ²	1.0 mW/cm ²	0.084%	0.084%	100%
UWB	-41.626*	20	0.00000001 mW/cm ²	1.0 mW/cm ²	0.000001%		

Note*: UWB radio output power was measured as e.i.r.p.

6 LP0002-2020 §5.12.3.3 & §3.6 – Radiated Emissions

6.1 Applicable Standards

As per LP0002-2020 §5.12.3.3:

(1) Radiated emission:

(A) The radiated emissions at or below 960 MHz from a device operating under the provisions of this section shall meet the emission levels in Section 3.6.

(B) The radiated emissions above 960 MHz from a device operating under the provisions of this section shall be less than or equal to the following average limits when measured using a resolution bandwidth of 1 MHz:

Frequency (MHz)	EIRP (dBm)
960~1610	-75.3
1610~1990	-63.3
1990~4224	-61.3
4224~4752	-41.3
4752~6336	-61.3
6336~8976	-41.3
8976 以上	-61.3
Note: The tighter limit applies at the band overlap.	

(C) Radiated emission from the GPS band: In addition to the radiated emission limits specified in the table in paragraph (A) and (B) of this section, UWB transmitters operating under the provisions of this section shall be less than or equal to the following average limits when measured using a resolution bandwidth over 1 kHz:

frequency (MHz)	EIRP (dBm)
1164~1240	-85.3
1559~1610	-85.3

(3) Others:

(A) UWB devices operating under the provisions of this section must be hand held, i.e., they are relatively small devices that are primarily hand held while being operated and do not employ a fixed infrastructure.

As Per LP0002-2020 §3.6: If the transmitter and receiver of the low-power radio-frequency device are sold in one set, the corresponding type approval review documents shall be submitted; otherwise the transmitter and receiver should be applied for approval together. The receiver radiated field strength must not exceed the emission specified in Section 3.6 and the receiver shall not receive, demodulate frequency listed in Section 3.5.

6.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.10-2013.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

6.3 Measurement Procedure

The EUT host, and all support equipment power cords were connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

For radiated testing the EUT was set 1 meter away from the testing antenna, which was varied from 1-4 meter, and the EUT was placed on a turntable, which was 0.8 meter and 1.5 meter above the ground plane for below and above 960 MHz measurements, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna's polarity should be changed between horizontal and vertical.

The spectrum analyzer or receiver was set as:

Below 960 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 960 MHz:

The measurements were based on ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices section 10.3: Radiated measurement procedure above 960MHz.

6.4 Corrected Amplitude and Margin Calculation

For emissions below 1 GHz,

The Corrected Amplitude (CA) is calculated by adding the Correction Factor to the S.A. Reading. The basic equation is as follows:

$$CA = \text{S.A. Reading} + \text{Correction Factor}$$

For example, a corrected amplitude of 40.3 dBuV/m = S.A. Reading (32.5 dBuV) + Correction Factor (7.8 dB/m)

The Correction Factor is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) together. This calculation is done in the measurement software, and reported in the test result section. The basic equation is as follows:

$$\text{Correction Factor} = AF + CL + \text{Atten} - Ga$$

For emission above 1 GHz,

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to indicated Amplitude (Ai) reading. The basic equation is as follows:

$$CA = Ai + AF + CL + \text{Atten} - Ga$$

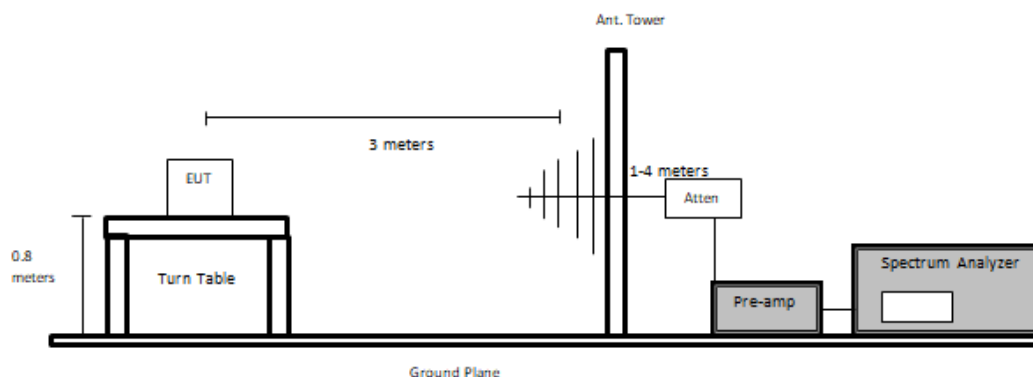
For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

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

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

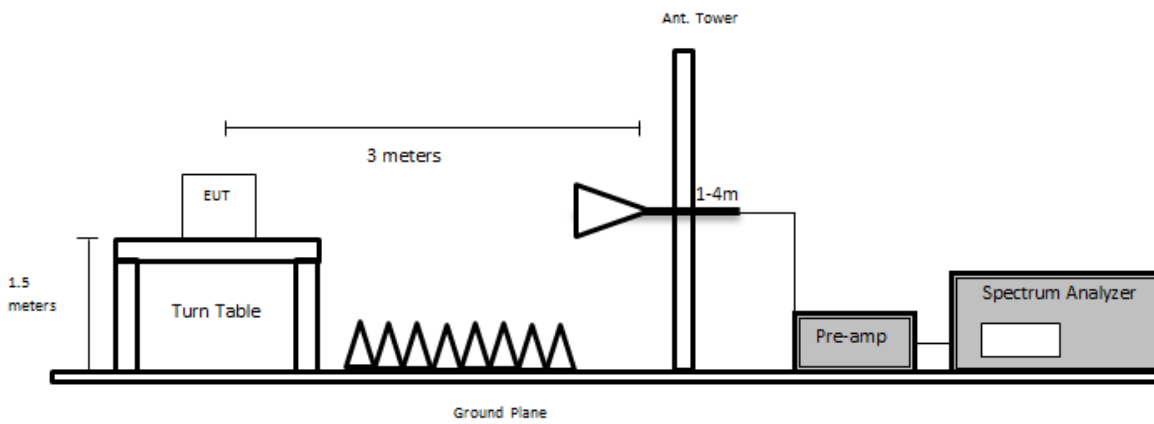
6.5 Test Setup Block Diagram

Below 1GHz:

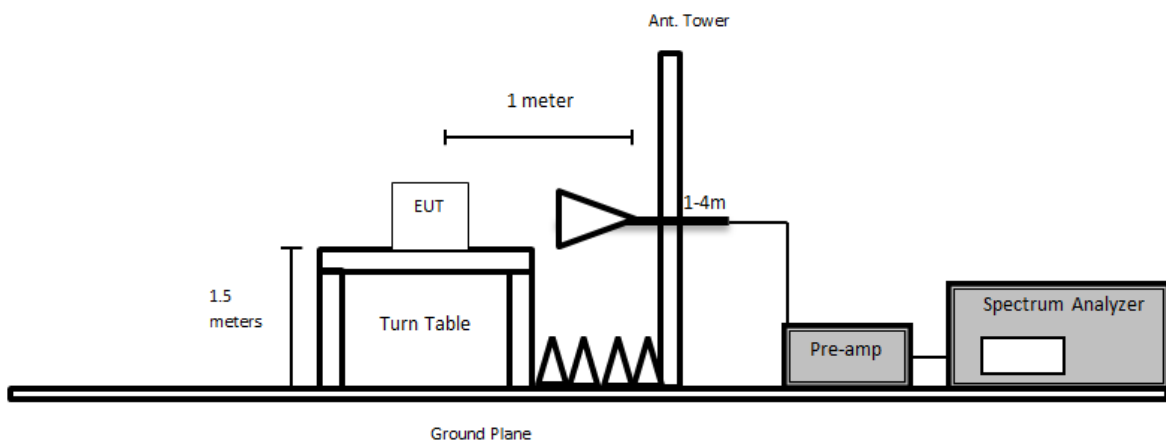


1 GHz to 18 GHz (Asset #784 and #1192 Antenna used):

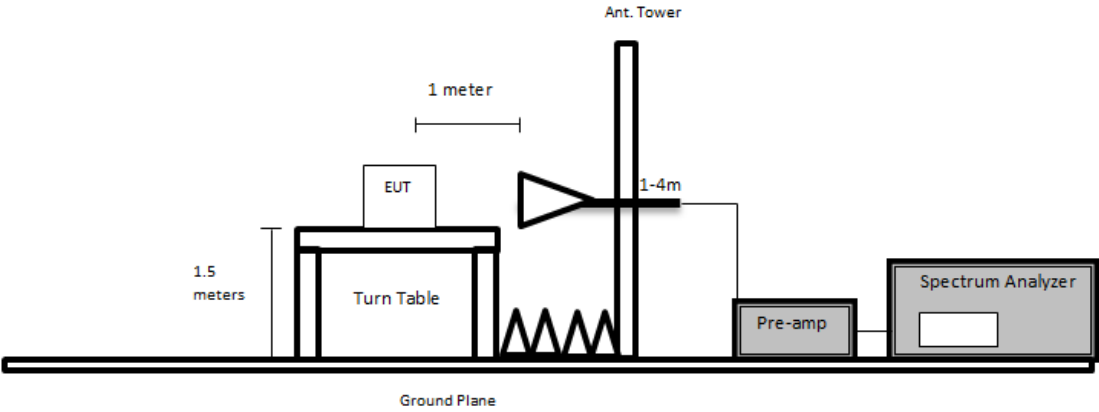
At 3 meters:



At 1 meter:



18 GHz to 40 GHz (Asset #91 and #92 Antennas used):



6.6 Test Equipment List and Details

Asset #	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
831	Rohde & Schwarz	EMI Test Receiver	ESU-40	100433	2021-09-20	1 year
912	Rohde & Schwarz	Signal Analyzer	FSV40	101203	2021-04-26	2 years
655	Rohde & Schwarz	Spectrum Analyzer	FSQ26	200749	2019-11-07	27 months
624	Agilent	Spectrum Analyzer	E4446A	MY48250 238	2021-06-23	1 year
-	Sunol Science Corp	System Controller	SC110V	122303-1	N/R	N/A
321	Sunol Sciences	Biconilog Antenna	JB3	A020106-2	2020-11-22	2 years
784	ETS Lindgren	Horn Antenna w/ built in Preamplifier	3117 PA	203557	2020-06-20	2 years
1192	ETS Lindgren	Horn Antenna	3117	00218973	2021-09-14	2 years
91	Wisewave	Horn Antenna	ARH-4223-02	10555-02	2020-02-05	2 years
92	Wisewave	Horn Antenna	ARH-2823-02	10555-02	2020-02-27	2 years
1081	Fairview Microwave	Times Microwave LMR 400 UltraFex Coaxial Cable 35'	FMC0101405-420	BACL190 4161	2021-06-18	1 year
-	-	SMA cable1	-	-	Each time ¹	N/A
-	-	SMA cable2	-	-	Each time ¹	N/A
1101	IW Microwave	157 Series Cable Armored with 2.92mm Male Plugs on Both Sides	KPS-1571AN-2400	DC 1922	2021-07-06	1 year
1077	Insulted Wire Corp.	157 Series 2.92 SM (x2) Armored 33 ft. Cable	KPS-1571AN-3960-KPS	DC 1917	2021-03-03	1 year
459	HP	Pre Amplifier	8447D	2443A043 74	2020-11-02	15 months
714	Keysight Technologies	RF Limiter	11867A	MY42242 932	2021-03-03	1 year
827	AH Systems	Preamplifier	PAM 1840 VH	170	2021-08-03	1 year
658	HP/Agilent	Preamplifier	8449B OPT HO2	3008A011 3	2021-05-06	1 year
-	Vasona	Test software	V6.0 build 11	10400213	N/R	N/R

Note¹: cables included in the test set-up will be checked each time before testing.

Statement of Traceability: **BACL Corp.** attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".

6.7 Test Environmental Conditions

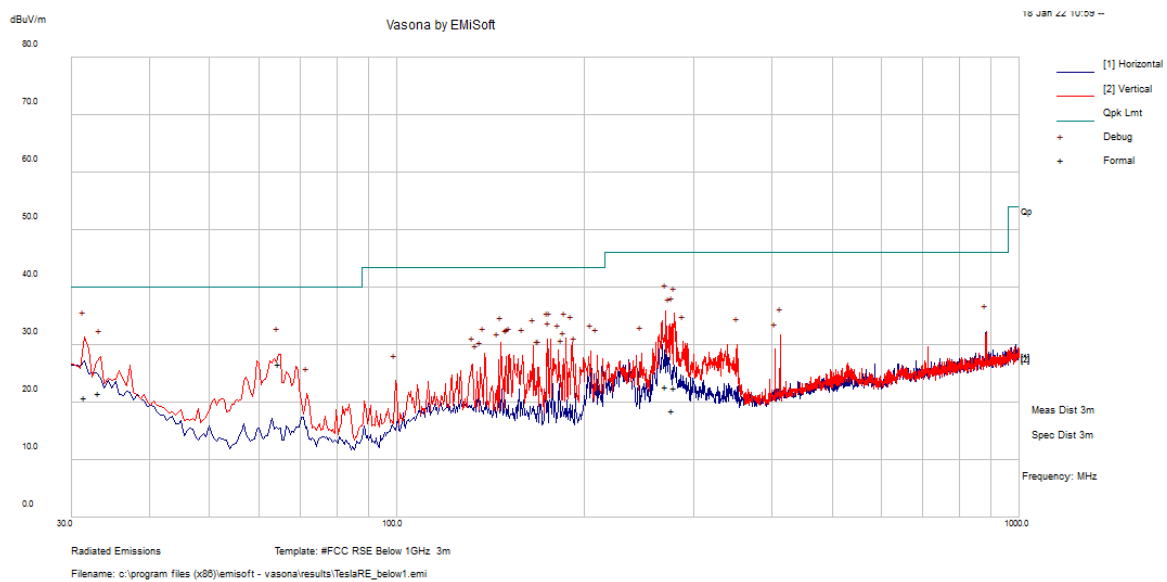
Temperature:	20-22 °C
Relative Humidity:	42-50 %
ATM Pressure:	102.7 kPa

The testing was performed by Christian McCaig from 2021-10-18 to 2022-01-18 in 5m3 in 5m3

6.8 Test Results below 960 MHz

Worst Case Channel: 6988.8 MHz, Mode 0

30 MHz – 1 GHz Worst case measured at 3 meters



Freq. (MHz)	S.A. Reading (dBμV)	Corr. Factor (dB/m)	Corrected Amp. (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comment
31.4908	19.43	1.32	20.75	174	V	237	40	-19.25	QP
270.810	27.44	-4.75	22.69	193	V	205	46	-23.31	QP
279.168	27.34	-4.74	22.6	132	V	174	46	-23.4	QP
64.651	37.33	-10.66	26.67	122	V	202	40	-13.33	QP
33.1573	21.61	0.02	21.63	174	V	7	40	-18.37	QP
277.090	23.29	-4.74	18.55	279	V	150	46	-27.45	QP

6.9 Test Results above 960 MHz

Note: Measurements were performed at 3m distance.

Average Radiated Fundamental Field Strength

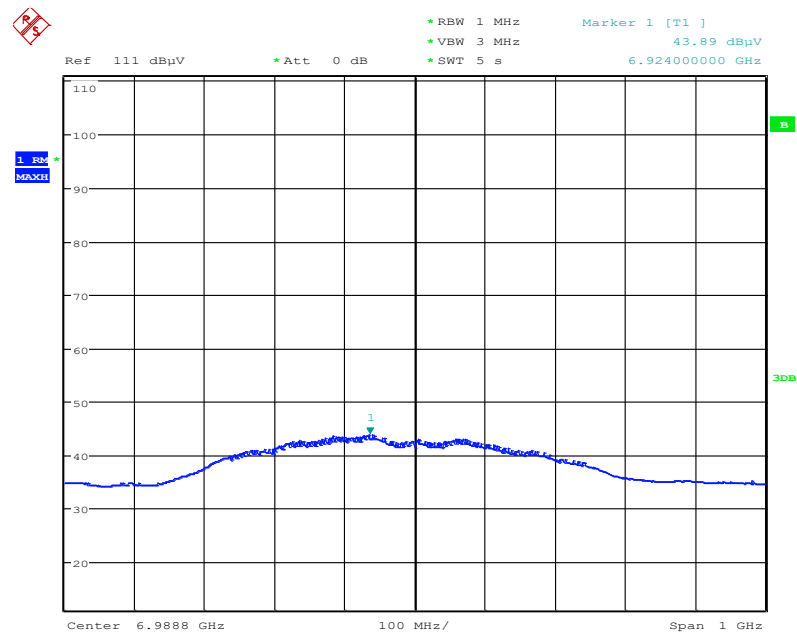
Channel Number	Channel Freq. (MHz)	Mode	PSA Reading (dB μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Pre Amp Gain (dB)	Corrected Field Strength (dB μ V/m @ 3m)	EIRP (dBm) ¹	Limit (dBm)	Margin (dB)
6	6988.8	0	43.89	35.7	12.295	38.211	53.674	-41.626	-41.3	-0.356
		4	42.93	35.7	12.295	38.211	52.714	-42.586	-41.3	-1.286
		13	42.92	35.7	12.295	38.211	52.704	-42.596	-41.3	-1.296
8	7488	0	42.84	35.9	12.8	38.340	53.200	-42.100	-41.3	-0.800
		4	42.32	35.9	12.8	38.340	53.045	-42.255	-41.3	-0.955
		13	42.74	35.9	12.8	38.340	53.100	-42.200	-41.3	-0.900
9	7987.2	0	43.3	35.9	12.8	38.905	53.095	-42.205	-41.3	-0.935
		4	42.64	35.9	12.8	38.905	53.177	-42.123	-41.3	-0.823
		13	43.24	35.9	12.8	38.905	53.035	-42.265	-41.3	-0.965

Note¹: EIRP [dBm] = Field Strength [dB μ V/m at 3 meters] – 95.3, according to ANSI C63.10 Section 10.3.9

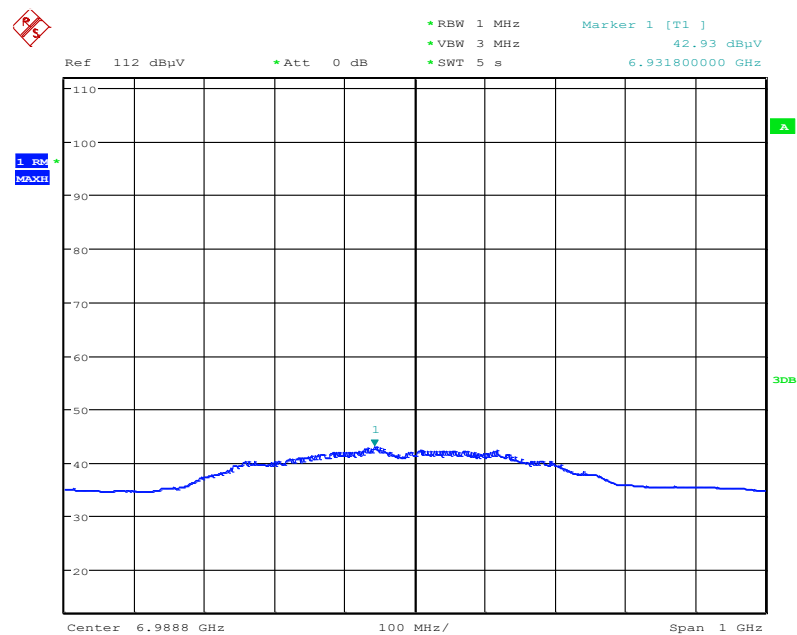
Please refer to the following plots.

Channel 6 (6988.8 MHz), Fundamental Average Measurements

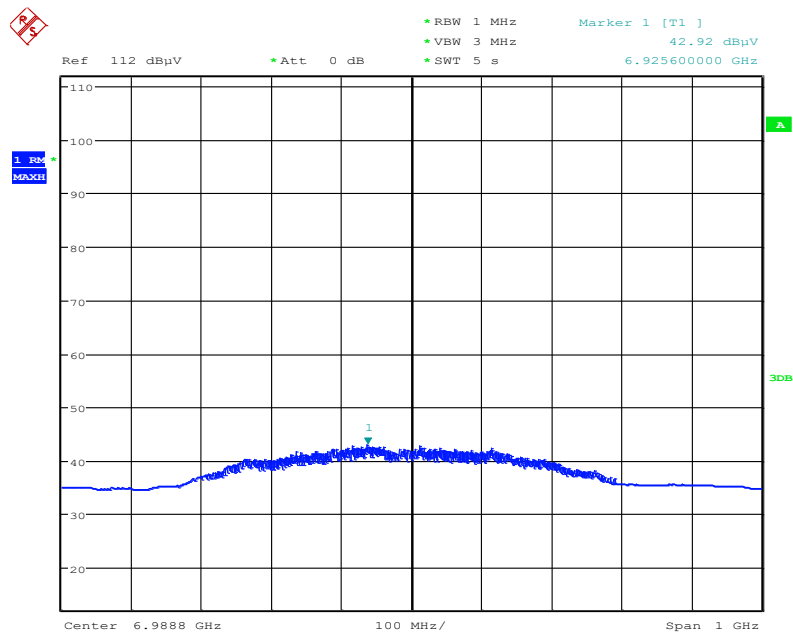
Mode 0



Mode 4

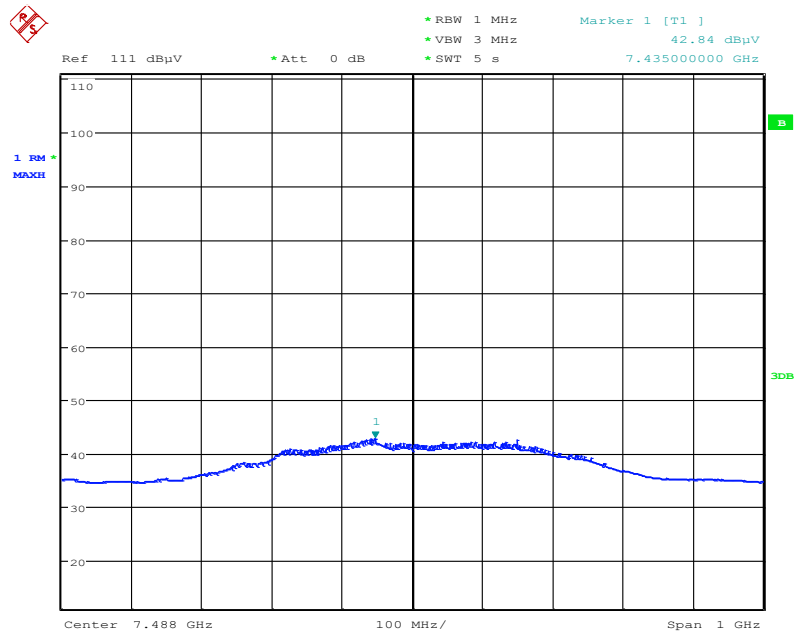


Mode 13

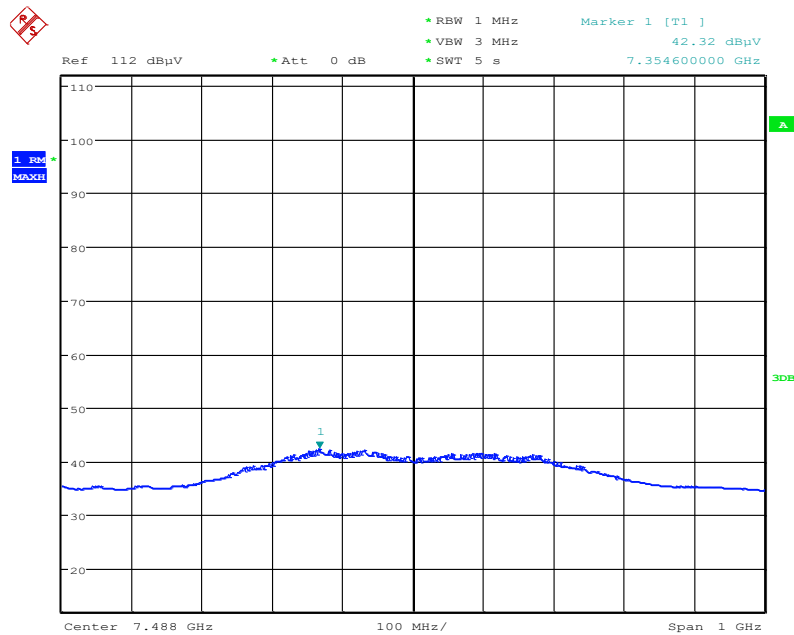


Channel 8 (7488 MHz), Fundamental Average Measurements

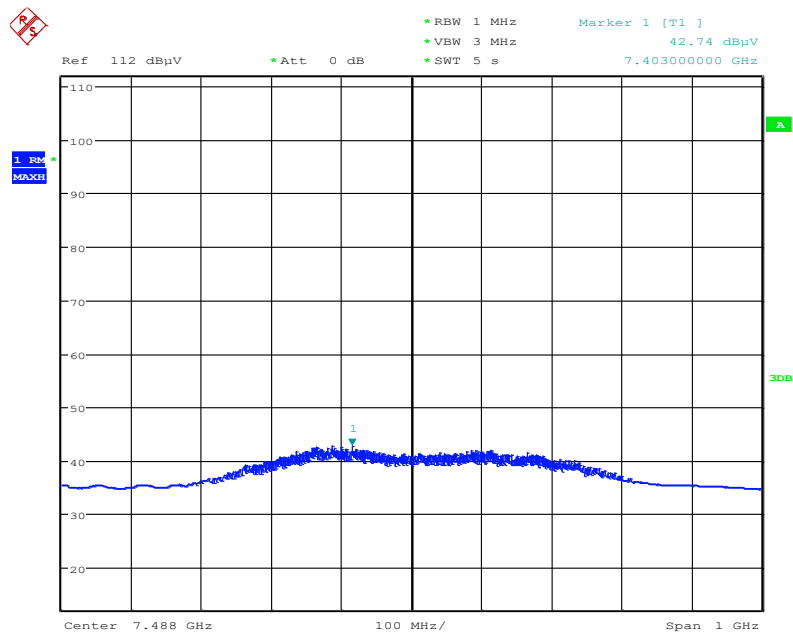
Mode 0



Mode 4

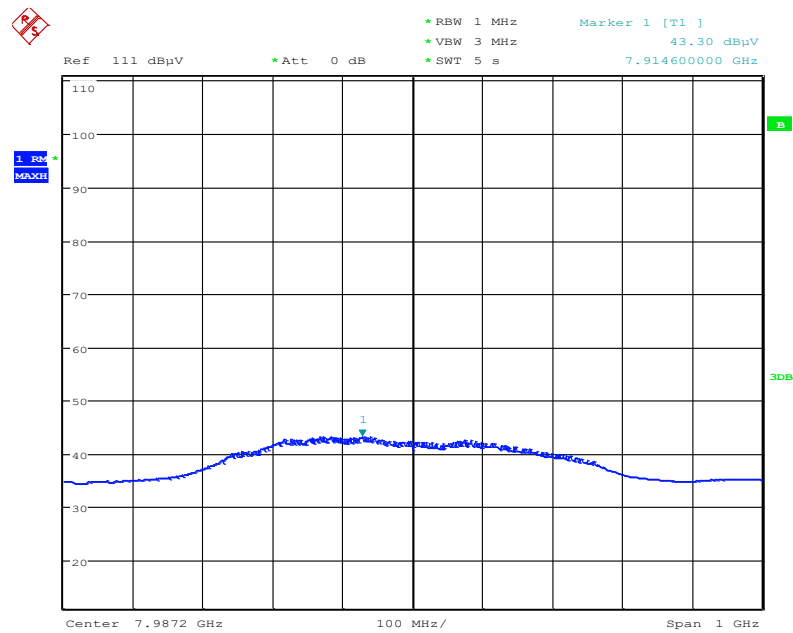


Mode 13

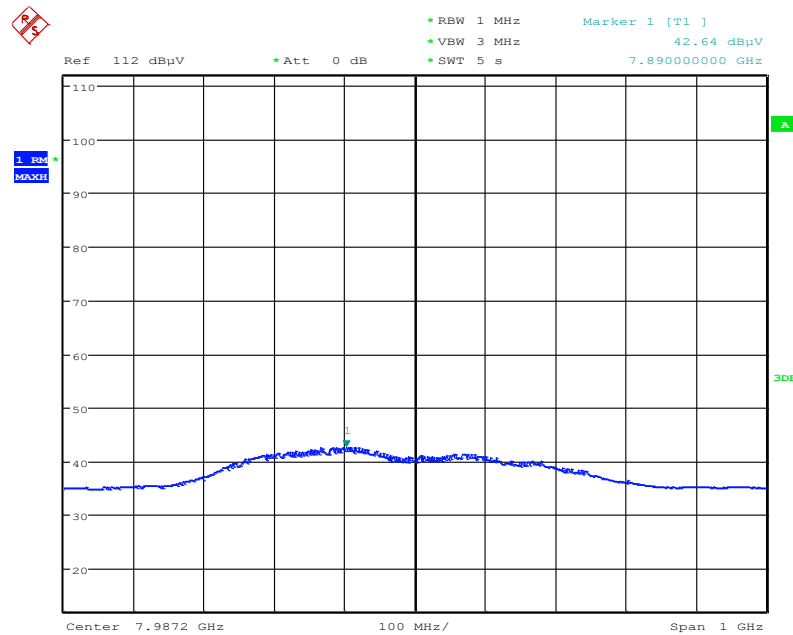


Channel 9 (7987.2 MHz), Fundamental Average Measurements

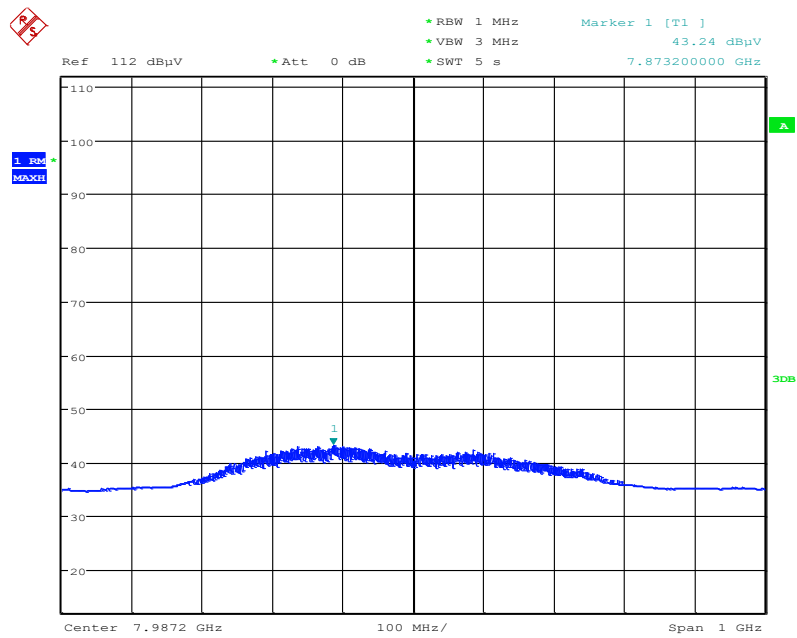
Mode 0



Mode 4



Mode 13



Average Radiated Spurious Emissions: 960 MHz-26.5 GHz

Note: Measurement was performed at 1m distance.

Note: For Spurious Emissions testing, pre-scan was performed for all modes, and Mode 0 was selected to demonstrate compliance as the worst case configuration.

Note: For Spurious Emissions in 960MHz to 2GHz range, “Baseline” scans were performed to show that displayed “failing” emissions in screenshots are from the support equipment, i.e., laptop, Teensy, and the connection in between, but not from the EUT. “Baseline” scans were performed with the laptop on and Teensy plugged in, EUT was powered off.

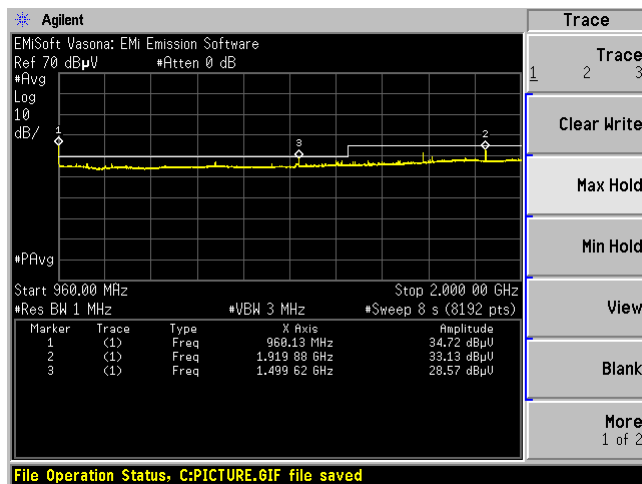
Note: In radiated measurement screenshots from 960MHz to 26.5GHz, shown emissions account for equipment factors to show corrected values compared to applicable limits.

Note: According to ANSI C63.10 Section 10.3.9, measured field strength in dBμV/m was converted to EIRP in dBm to compare with the limit. The equation below was used,

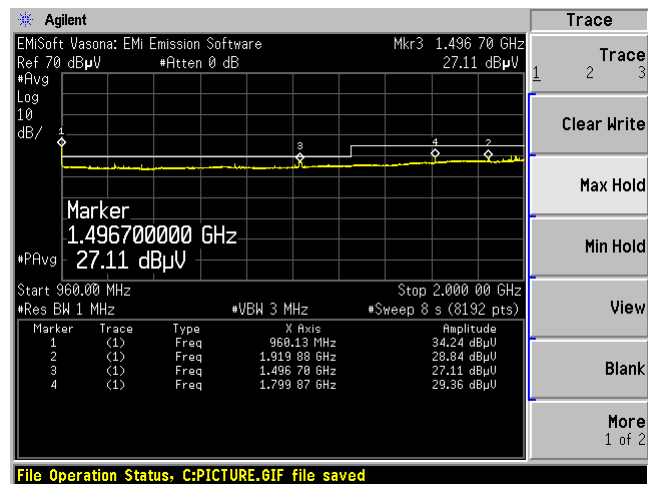
$$\text{EIRP (dBm)} = E (\text{dB}\mu\text{V/m}) - 95.3 \text{ dB}$$

Baseline Scans

960 MHz-2 GHz H-Pol Baseline



960 MHz-2 GHz V-Pol Baseline

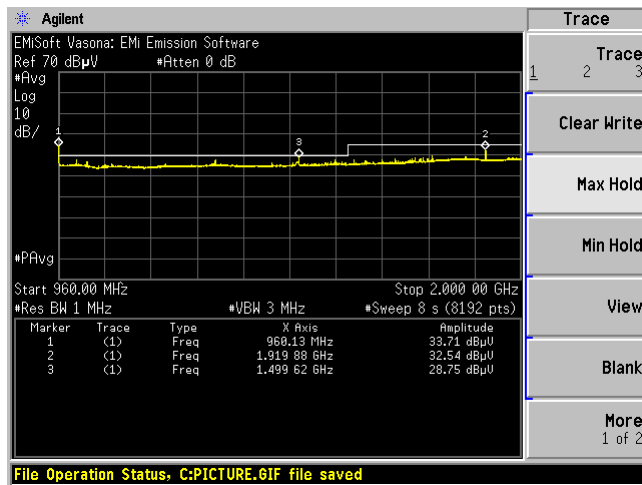


Channel 6 (6988.8 MHz), Mode 0

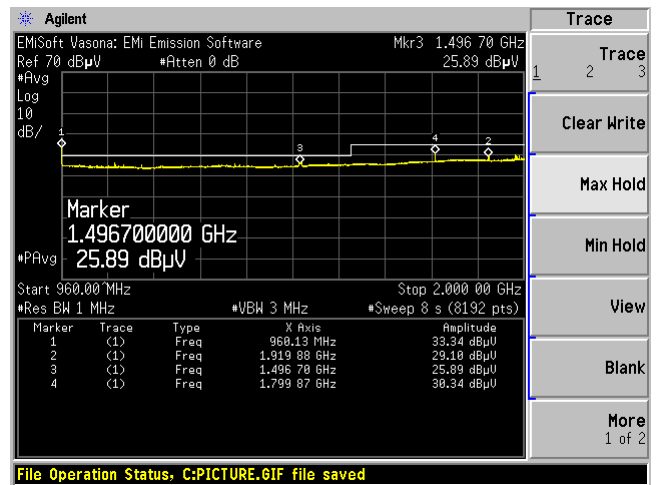
Measured Emission Frequency (GHz)	Antenna Pol (H/V)	Field Strength (dBμV/m at 1m)	Corrected Average Field Strength (dBμV/m at 3m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
13.98	V	37.49	27.95	-67.35	-61.3	-6.05
13.98	H	40.18	30.64	-64.66	-61.3	-3.36
25.3	V	38.43	28.89	-66.41	-61.3	-5.11
25.3	H	38.54	29.00	-66.30	-61.3	-5.00

Please refer to the following plots.

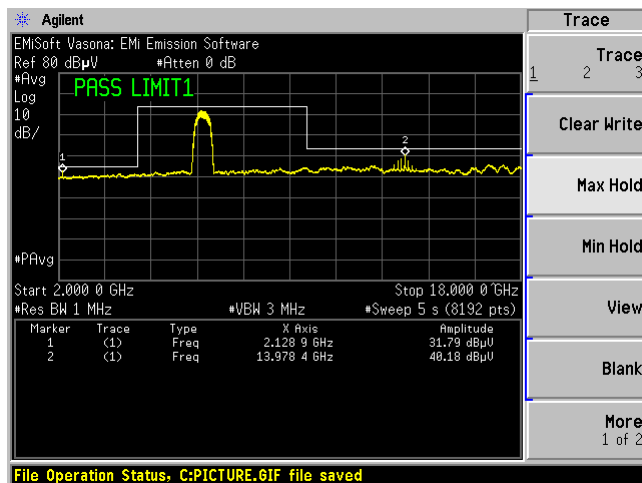
960 MHz-2 GHz H-Pol



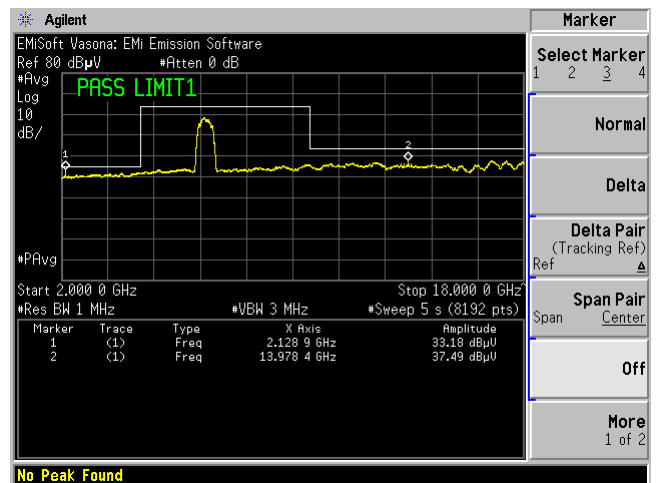
960 MHz-2 GHz V-Pol



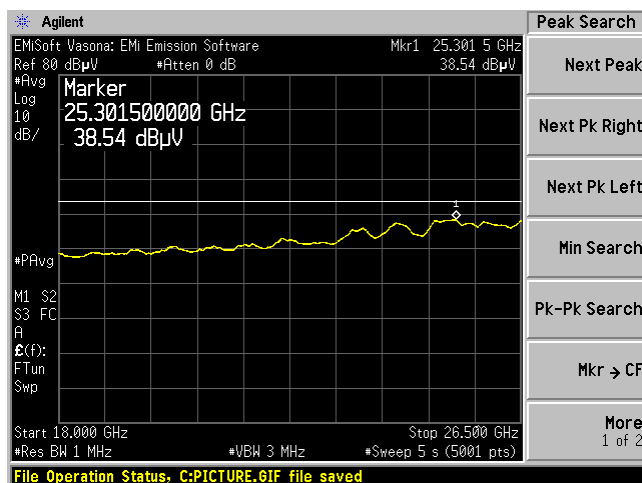
2 GHz-18 GHz H-Pol



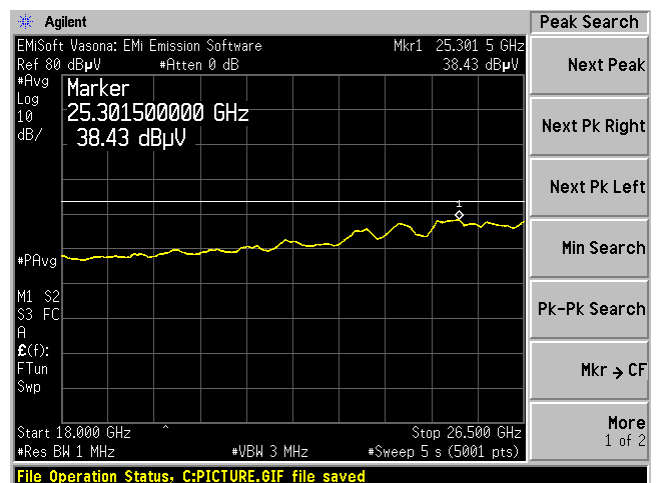
2 GHz-18 GHz V-Pol



18 GHz-26.5 GHz H-Pol



18 GHz-26.5 GHz V-Pol

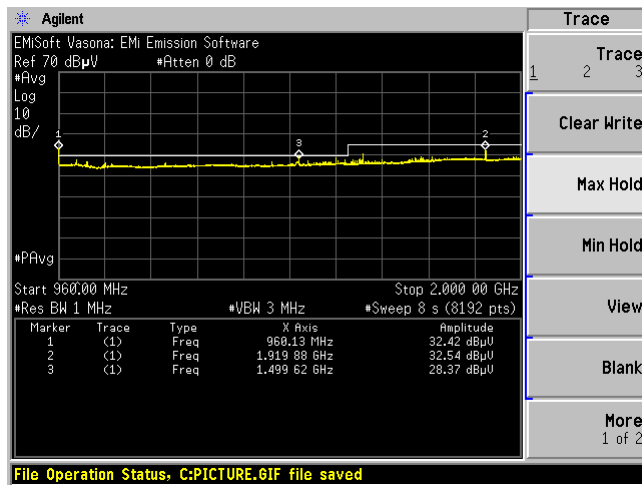


Channel 8 (7488 MHz), Mode 0

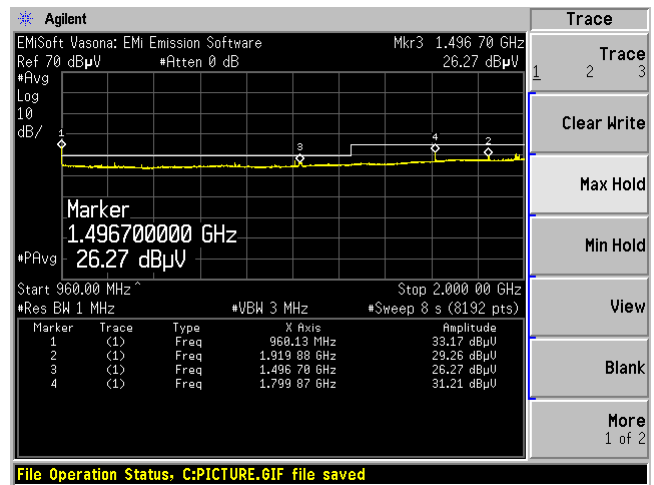
Measured Emission Frequency (GHz)	Antenna Pol (H/V)	Field Strength (dBμV/m at 1m)	Corrected Average Field Strength (dBμV/m at 3m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
14.85	V	35.72	26.18	-69.12	-61.3	-7.82
14.98	H	41.53	31.99	-63.31	-61.3	-2.01
25.3	V	38.53	28.99	-66.31	-61.3	-5.01
25.3	H	38.48	28.94	-66.36	-61.3	-5.06

Please refer to the following plots.

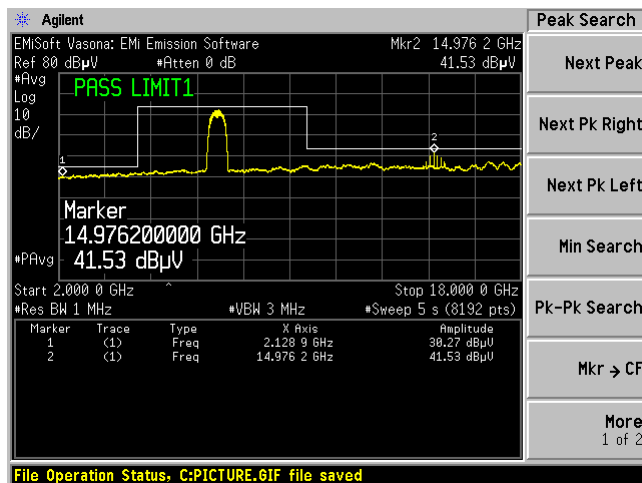
960 MHz-2 GHz H-Pol



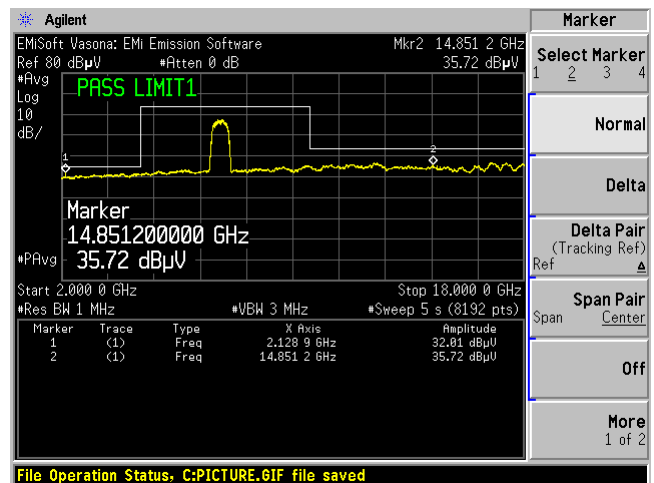
960 MHz-2 GHz V-Pol



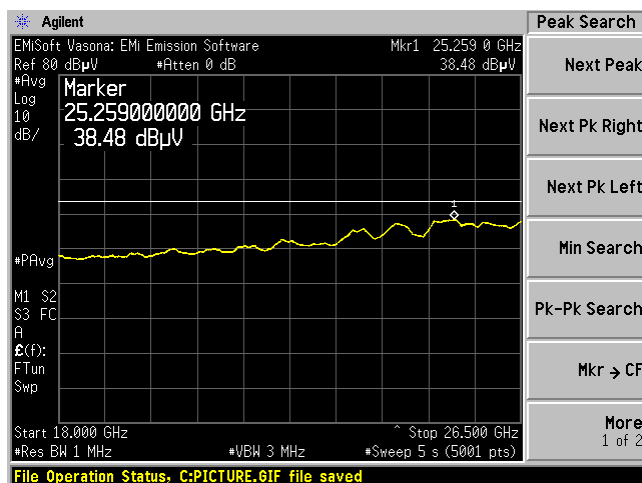
2 GHz-18 GHz H-Pol



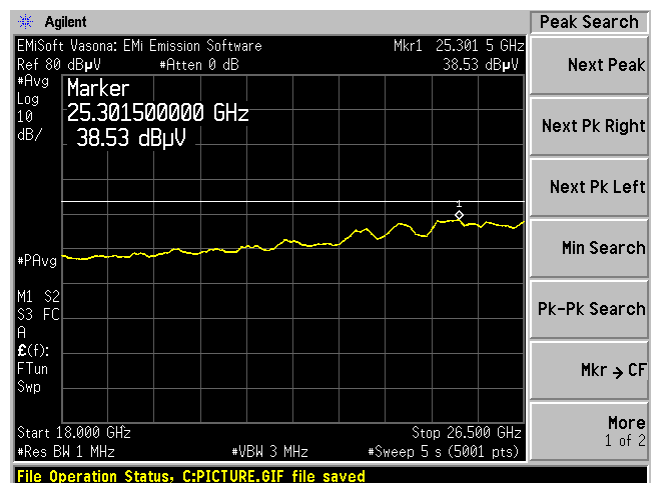
2 GHz-18 GHz V-Pol



18 GHz-26.5 GHz H-Pol



18 GHz-26.5 GHz V-Pol

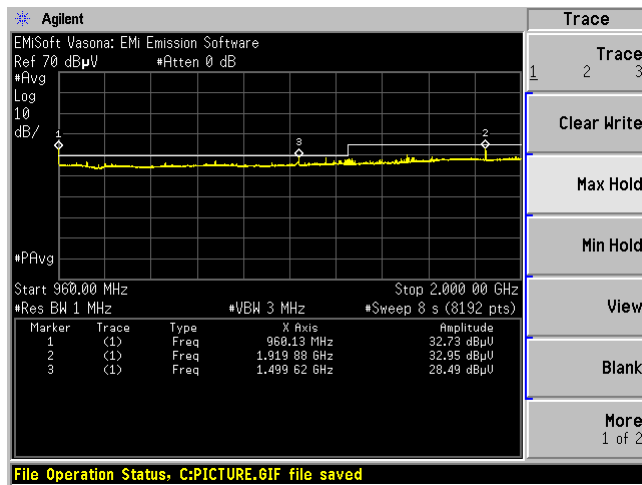


Channel 9 (7987.2 MHz), Mode 0

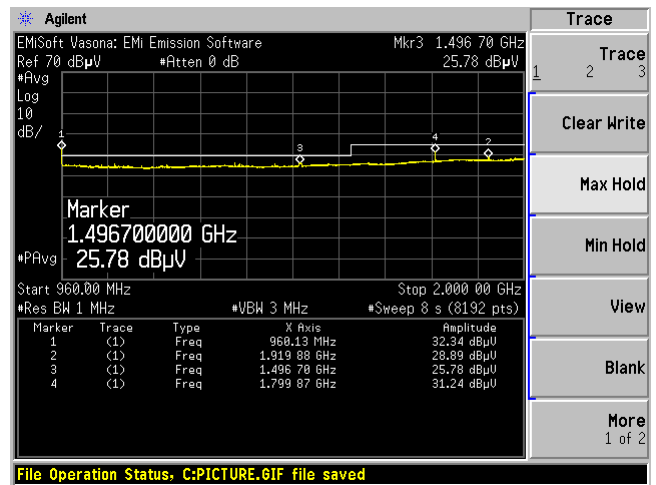
Measured Emission Frequency (GHz)	Antenna Pol (H/V)	Field Strength (dBμV/m at 1m)	Corrected Average Field Strength (dBμV/m at 3m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
15.85	V	38.07	28.53	-66.77	-61.3	-5.47
15.85	H	41.50	31.96	-63.34	-61.3	-2.04
25.3	V	38.40	28.86	-66.44	-61.3	-5.14
25.3	H	38.43	28.89	-66.41	-61.3	-5.11

Please refer to the following plots.

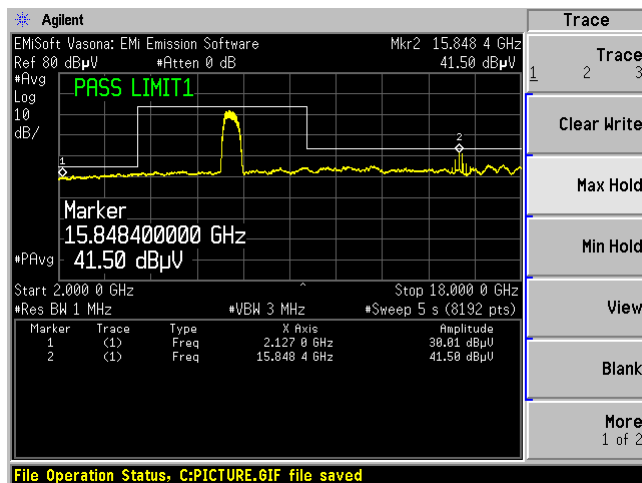
960 MHz-2 GHz H-Pol



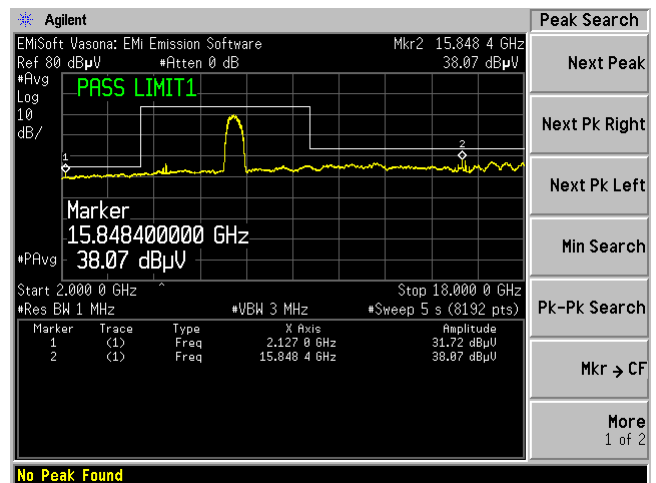
960 MHz-2 GHz V-Pol



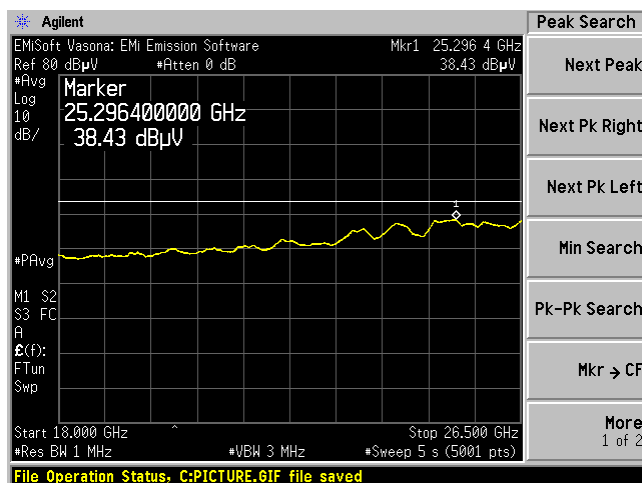
2 GHz-18 GHz H-Pol



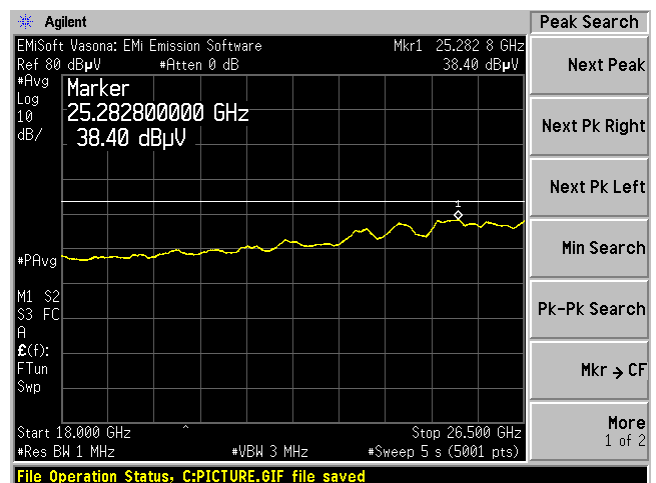
2 GHz-18 GHz V-Pol



18GHz-26.5GHz H-Pol



18GHz-26.5GHz V-Pol



Average Radiated Spurious Emissions: 26.5-40 GHz

Note: Measurement was performed at 1m distance.

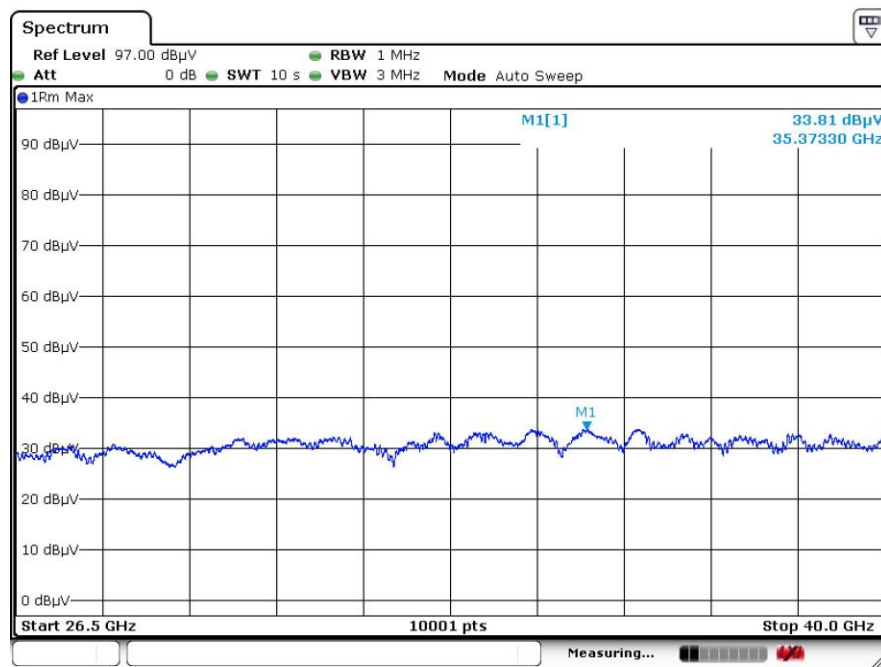
Note: For Spurious Emissions testing, pre-scan was performed for all modes, and Mode 0 was selected to demonstrate compliance as the worst case configuration.

Note: In radiated measurement screenshots from 26.5GHz to 40GHz, shown emissions do not account for equipment factors. In this case, highest emission was chosen and corrected value was calculated given equipment factors in order to compare to limit.

Channel 6 (6988.8 MHz), Mode 0

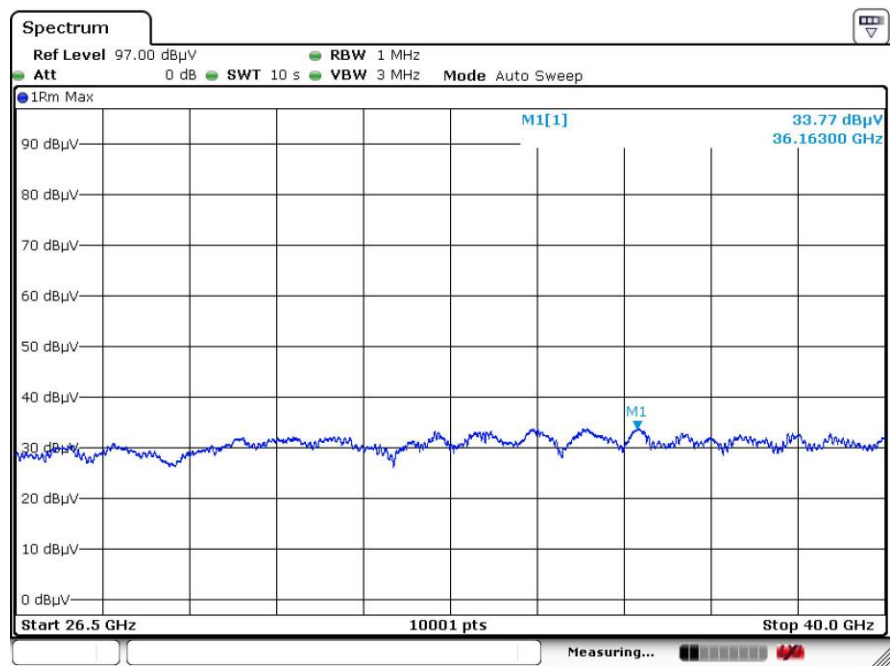
Measured Emission Frequency (GHz)	PSA Reading (dBμV)	Antenna Pol (H/V)	Antenna Factor (dB)	Cable Loss (dB)	Pre Amp Gain (dB)	Field Strength (dBμV/m at 1m)	Corrected Average Field Strength (dBμV/m @ 3m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
35.37	33.81	H	40.26	2.25	35.266	41.054	31.514	-63.786	-61.3	-2.486
36.16	33.77	V	40.26	2.25	35.266	41.014	31.474	-63.826	-61.3	-2.526

26.5-40 GHz H-Pol



Date: 7.JAN.2022 14:32:20

26.5-40 GHz V-Pol

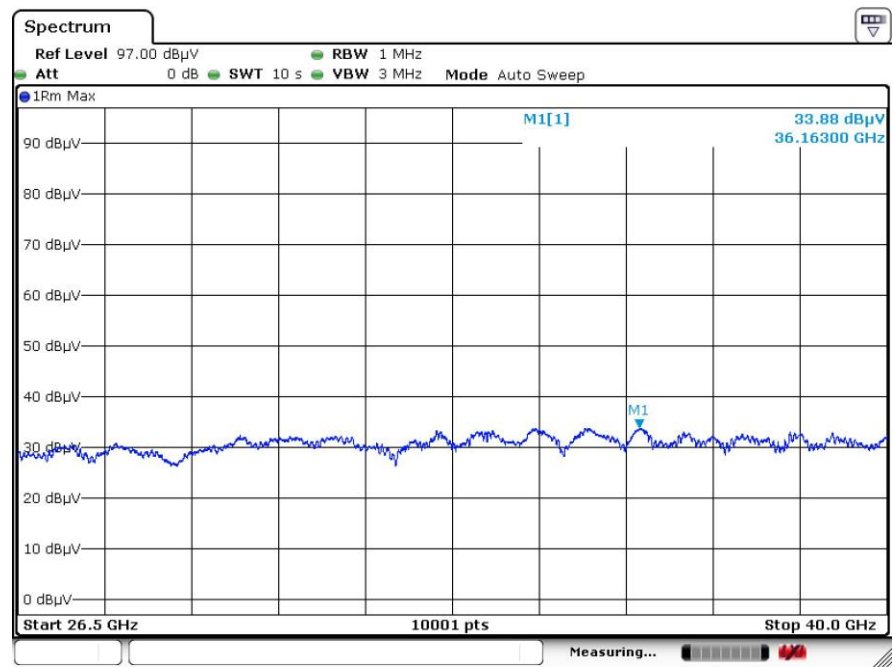


Date: 7.JAN.2022 14:33:49

Channel 8 (7488 MHz), Mode 0

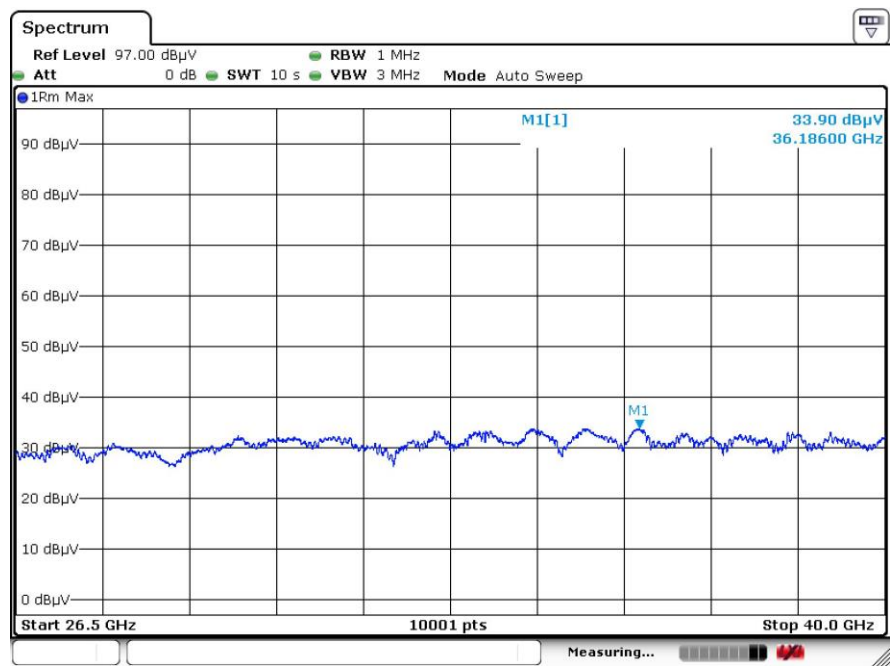
Measured Emission Frequency (GHz)	PSA Reading (dBμV)	Antenna Pol (H/V)	Antenna Factor (dB)	Cable Loss (dB)	Pre Amp Gain (dB)	Field Strength (dBμV/m at 1m)	Corrected Average Field Strength (dBμV/m @ 3m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
36.16	33.88	H	40.26	2.25	35.266	41.124	31.584	-63.716	-61.3	-2.416
36.19	33.90	V	40.26	2.25	35.266	41.144	31.604	-63.696	-61.3	-2.396

26.5-40 GHz H-Pol



Date: 7 JAN 2022 14:30:10

26.5-40 GHz V-Pol

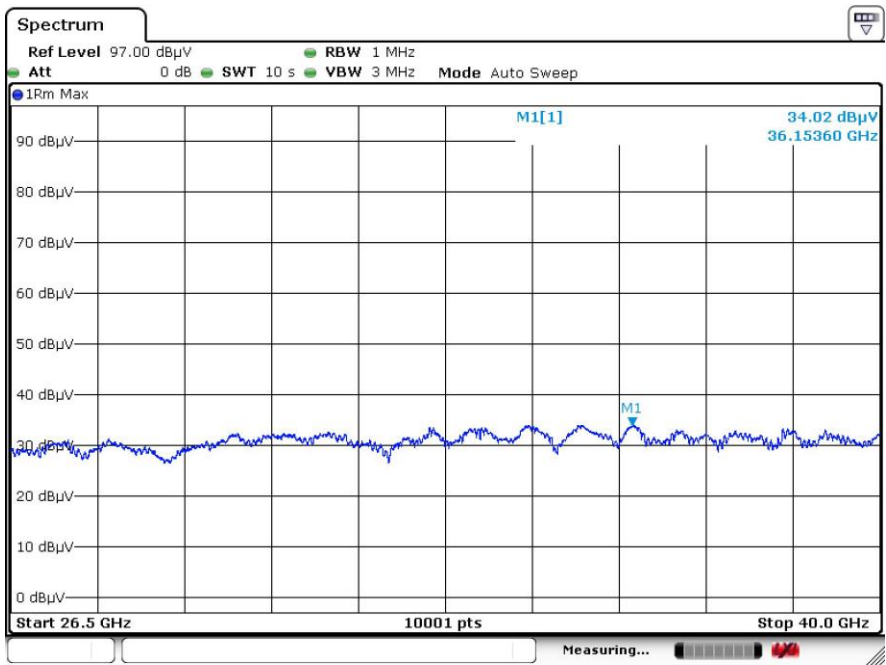


Date: 7.JAN.2022 14:28:08

Channel 9 (7987.2 MHz), Mode 0

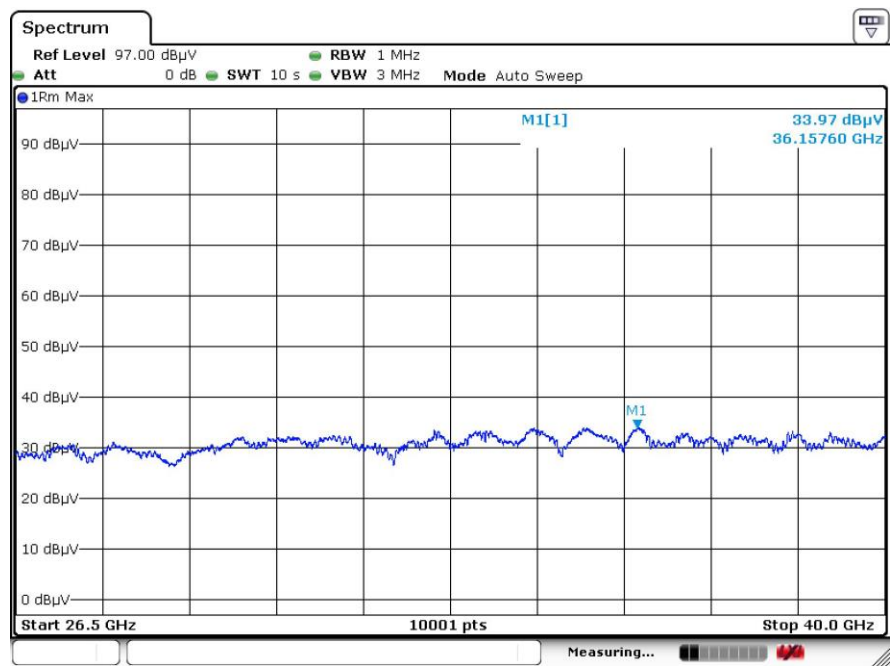
Measured Emission Frequency (GHz)	PSA Reading (dBμV)	Antenna Pol (H/V)	Antenna Factor (dB)	Cable Loss (dB)	Pre Amp Gain (dB)	Field Strength (dBμV/m at 1m)	Corrected Average Field Strength (dBμV/m @ 3m)	EIRP (dBm)	Limit (dBm)	Margin (dB)
36.15	34.02	H	40.26	2.25	35.266	41.264	31.724	-63.576	-61.3	-2.276
36.16	33.97	V	40.26	2.25	35.266	41.214	31.674	-63.626	-61.3	-2.326

26.5-40 GHz H-Pol



Date: 7. JAN 2022 14:23:54

26.5-40 GHz V-Pol



Date: 7.JAN.2022 14:25:58

Additional Radiated Average Spurious Emissions with RBW of 1 kHz

Note: For Spurious Emissions testing, pre-scan was performed for all modes, and Mode 0 was selected to demonstrate compliance as the worst case configuration.

Note: In radiated measurement screenshots from 1164 MHz to 1240 MHz and 1559 MHz to 1610 MHz, shown emissions account for equipment factors to show corrected values compared to applicable limits.

Note: According to ANSI C63.10 Section 10.3.9, measured field strength in dBμV/m was converted to EIRP in dBm to compare with the limit. The equation below was used,

$$\text{EIRP (dBm)} = E (\text{dB}\mu\text{V/m}) - 95.3$$

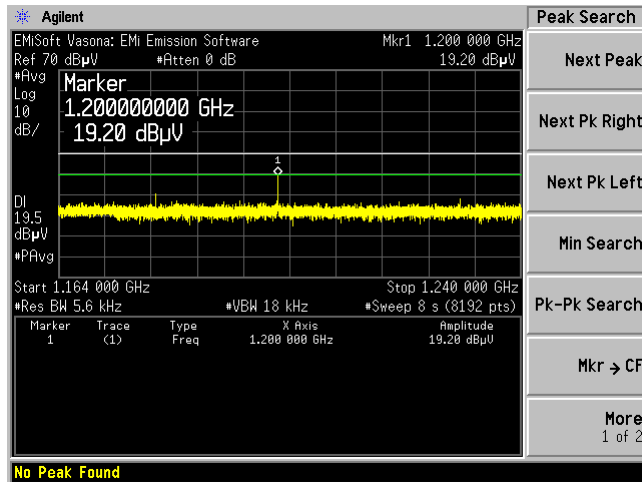
Mode 0

Channel	Freq. Range (MHz)	Antenna Pol. (H/V)	Highest Emission Freq. (MHz)	Highest Emission (dBuV/m @ 1 meter)	Corrected Value (dBuV/m @ 3 meters)	EIRP (dBm)	Limit (dBm)	Margin (dB)
6	1164-1240	H	1200	19.20	9.66	-85.64	-85.3	-0.34
		V	1200	12.43	2.89	-92.41	-85.3	-7.11
	1559-1610	H	1560	14.50	4.96	-90.34	-85.3	-5.04
		V	1560	14.84	5.3	-90.00	-85.3	-4.70
8	1164-1240	H	1200	17.61	8.07	-87.23	-85.3	-1.93
		V	1200	14.30	4.76	-90.54	-85.3	-5.24
	1559-1610	H	1560	15.32	5.78	-89.52	-85.3	-4.22
		V	1560	14.75	5.21	-90.09	-85.3	-4.79
9	1164-1240	H	1200	18.42	8.88	-86.42	-85.3	-1.12
		V	1200	12.89	3.35	-91.95	-85.3	-6.65
	1559-1610	H	1560	16.43	6.89	-88.41	-85.3	-3.11
		V	1560	13.51	3.97	-91.33	-85.3	-6.03

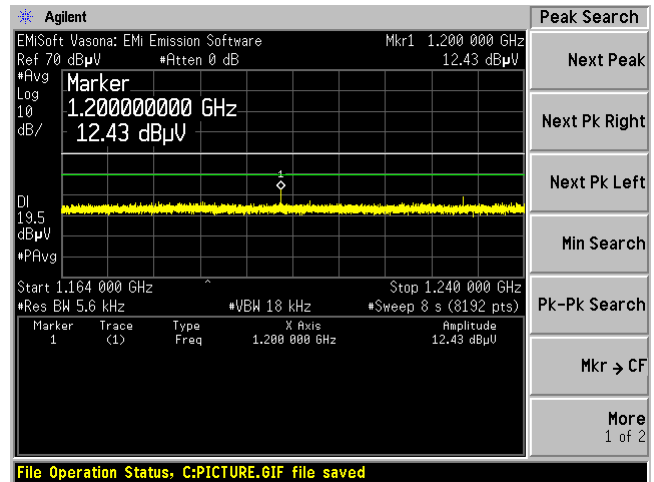
Channel 6

1164 MHz-1240 MHz

H-Pol

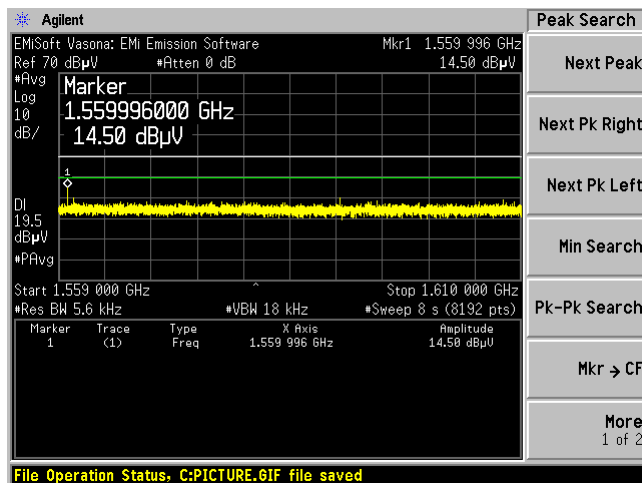


V-Pol

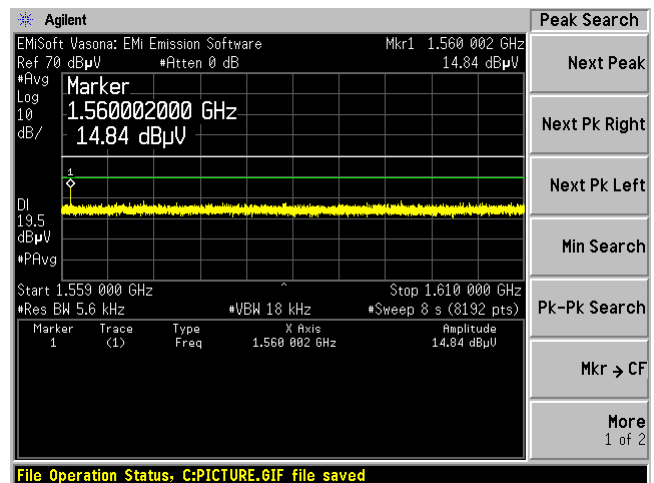


1559 MHz-1610 MHz

H-Pol



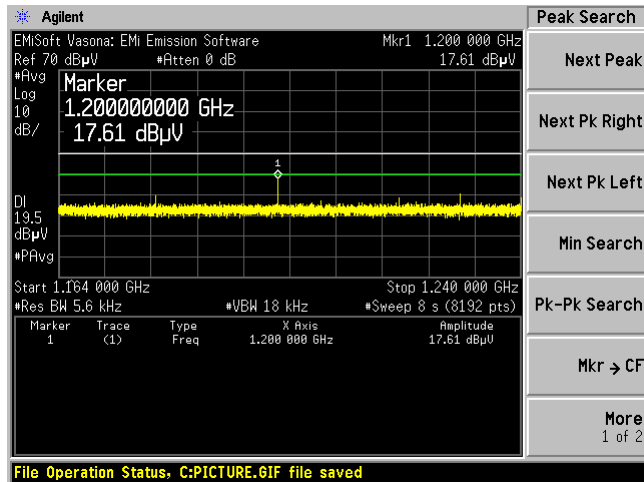
V-Pol



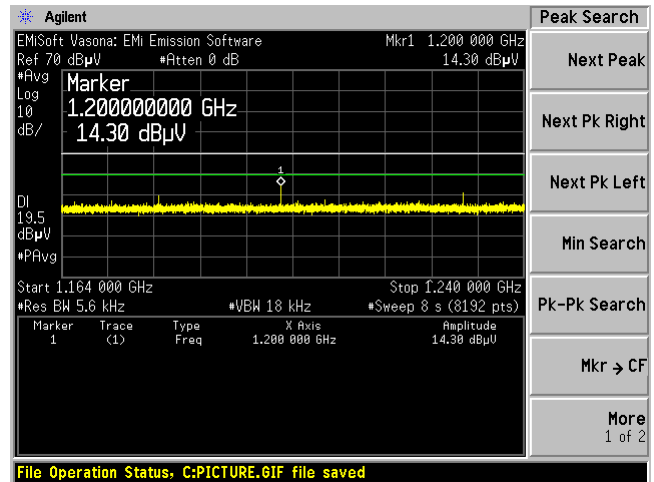
Channel 8

1164 MHz-1240 MHz

H-Pol

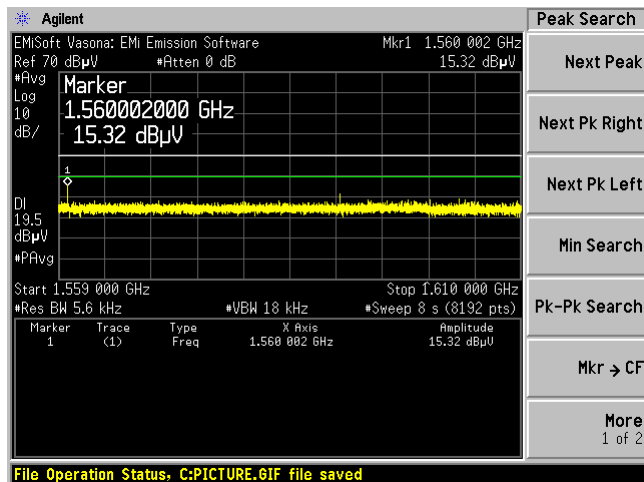


V-Pol

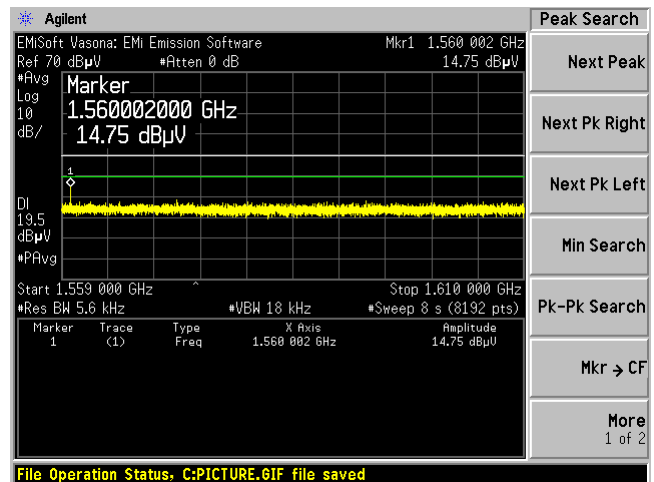


1559 MHz-1610 MHz

H-Pol



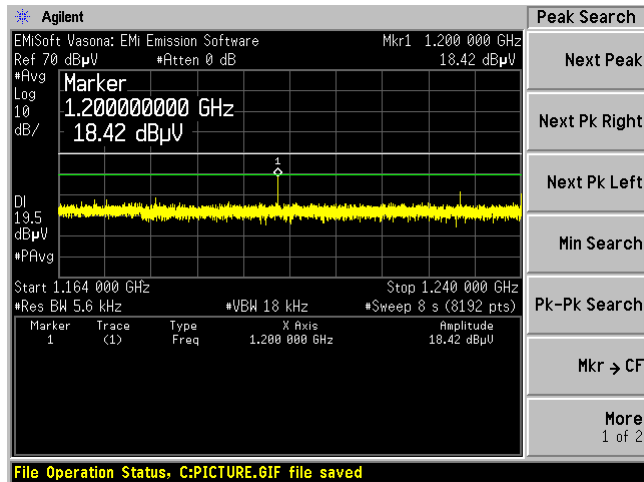
V-Pol



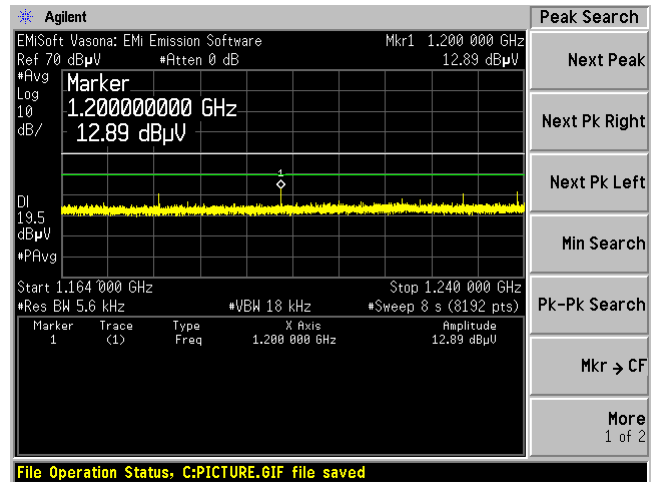
Channel 9

1164 MHz-1240 MHz

H-Pol

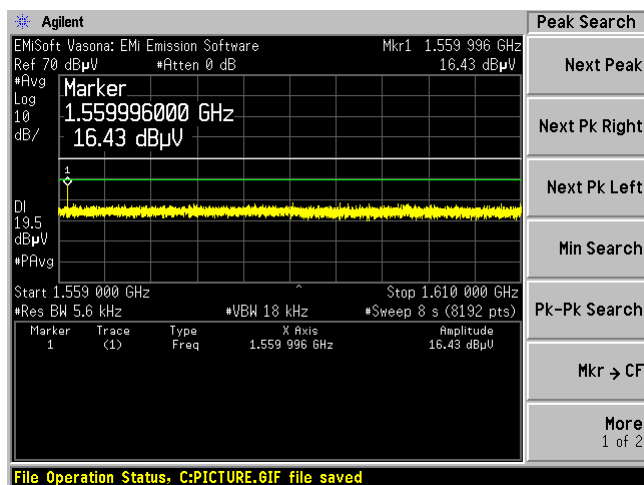


V-Pol

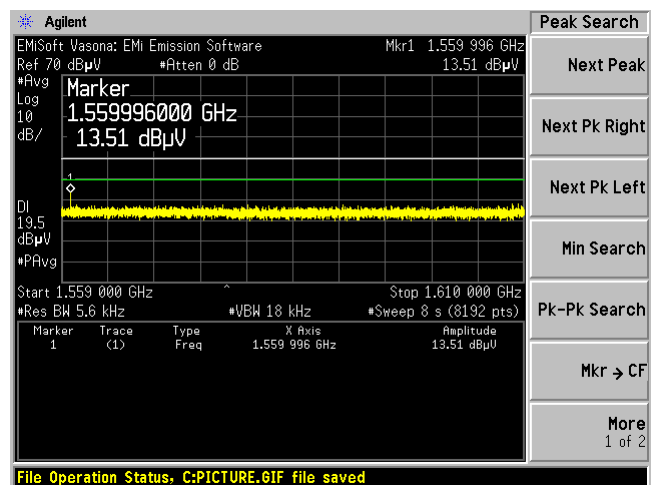


1559 MHz-1610 MHz

H-Pol



V-Pol



Note: Higher RBE 5.6 kHz was used to show compliance instead of 1 kHz.

6.10 Rx Radiated Emissions Test Results

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	LP0002-2020		Note
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Receiver											
1500	49.39	45	150	H	28	4.136	37.589	43.937	54	-10.063	Peak
1500	50.15	285	150	V	28	4.136	37.589	44.697	54	-9.303	Peak
500	32.85	0	150	H	27.5	1.98	30.194	32.136	46	-13.864	Peak
500	41.08	115	150	V	27.5	1.98	30.194	40.366	46	-5.634	Peak

Note: the peak measurements were recorded and compared with QP (below 1 GHz) and Average (above 1 GHz) limits.

7 LP0002-2020 §5.12.3.3(2) - Peak Fundamental Emission

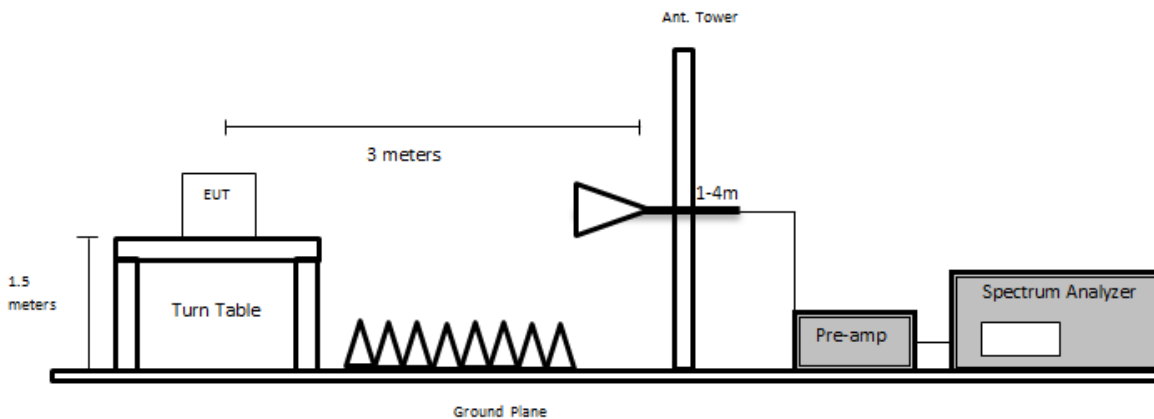
7.1 Applicable Standards

According to LP0002-2020 §5.12.3.3(2): Peak radiated emission limit: Within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M , the peak emission 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 5.12.4.6.

7.2 Measurement Procedure

The measurements were based on ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices section 10.3: Radiated measurement procedure above 960MHz.

7.3 Test Setup Block Diagram



7.4 Test Equipment List and Details

Asset #	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
655	Rohde & Schwarz	Spectrum Analyzer	FSQ26	200749	2019-11-07	27 months
-	Sunol Science Corp	System Controller	SC110V	122303-1	N/R	N/A
1192	ETS Lindgren	Horn Antenna	3117	00218973	2021-09-14	2 years
-	-	SMA cable1	-	-	Each time ¹	N/A
1101	IW Microwave	157 Series Cable Armored with 2.92mm Male Plugs on Both Sides	KPS-1571AN-2400	DC 1922	2021-07-06	1 year
658	HP/Agilent	Preamplifier	8449B OPT HO2	3008A0113	2021-05-06	1 year

Note¹: cables included in the test set-up will be checked each time before testing.

Statement of Traceability: **BACL Corp.** attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".

7.5 Test Environmental Conditions

Temperature:	23° C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Christian McCaig from 2021-10-18 to 2022-01-11 in 5m3.

7.6 Test Results

Channel Number	Channel Frequency (MHz)	Mode	PSA Reading (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Pre Amp Gain (dB)	Corrected Field Strength (dBμV/m @ 3m)	Limit ¹ (dBμV/m at 3m)	Margin (dB)
6	6988.8	0	76.75	35.7	12.295	38.211	86.534	87.24	-0.706
		4	68.71	35.7	12.295	38.211	78.494	87.24	-8.746
		13	72.19	35.7	12.295	38.211	81.974	87.24	-5.266
8	7488	0	76.00	35.9	12.80	38.340	86.360	87.24	-0.880
		4	67.89	35.9	12.80	38.340	78.615	87.24	-8.625
		13	71.99	35.9	12.80	38.340	82.350	87.24	-4.890
9	7987.2	0	76.54	35.9	12.80	38.905	86.335	87.24	-0.905
		4	68.88	35.9	12.80	38.905	79.417	87.24	-7.823
		13	72.97	35.9	12.80	38.905	82.765	87.24	-4.475

Note¹: Radiated Peak limit determined using a 20 MHz measurement BW. (i.e. $20 \cdot \log(20/50) = -7.96$ dB), then adding 95.2 dB for field strength at 3 meters as instructed to in LP0002-2020§5.12.4.6

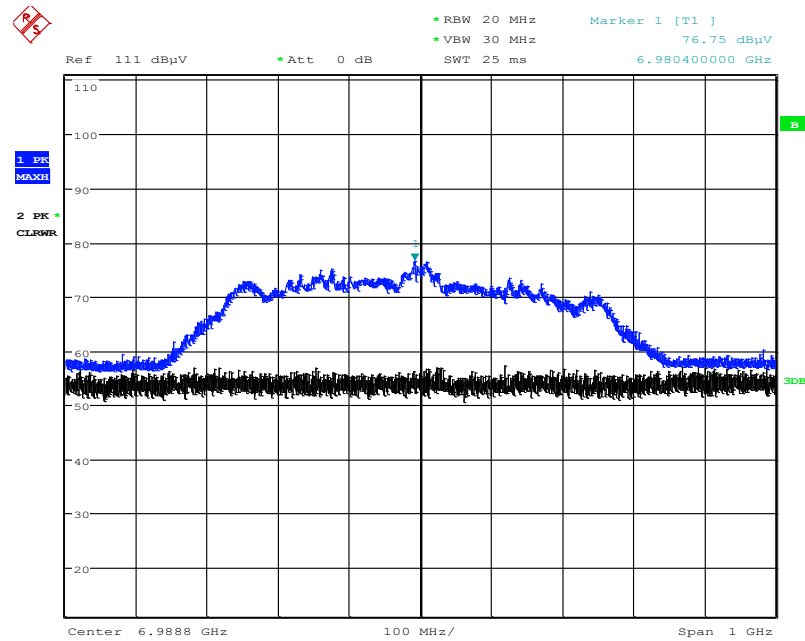
Channel Number	Channel Frequency (MHz)	Mode	f _M (MHz)	Range of UWB BW ² (MHz)	Result
6	6988.8	0	6980.4	6712.1-7257.1	Pass
		4	6846.4	6675.8-7263.8	Pass
		13	6926.6	6684.8-7258.8	Pass
8	7488	0	7479.8	7221.0-7760.0	Pass
		4	7346.8	7200.0-7801.0	Pass
		13	7363.8	7216.0-7783.0	Pass
9	7987.2	0	7995.8	7710.2-8249.2	Pass
		4	7843.8	7689.2-8266.2	Pass
		13	7862.4	7695.2-8257.2	Pass

Note²: please refer to Section 8.5 of this report for the UWB bandwidth measurement result.

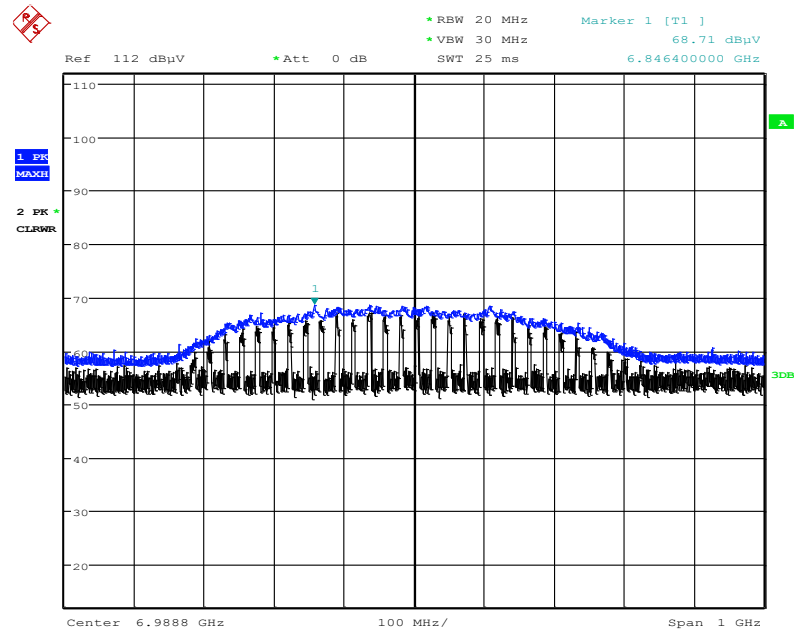
Please refer to the following plots.

Channel 6 (6988.8 MHz), Fundamental Peak Measurements

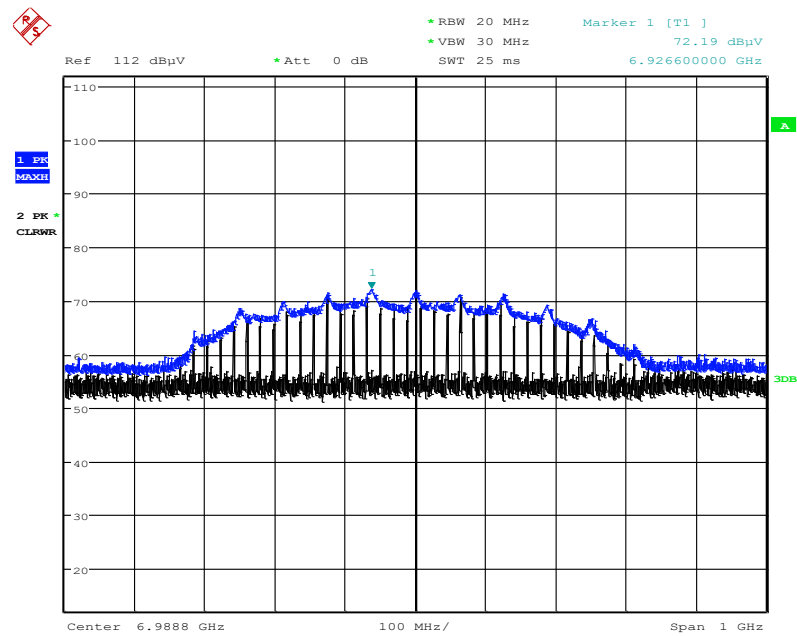
Mode 0



Mode 4

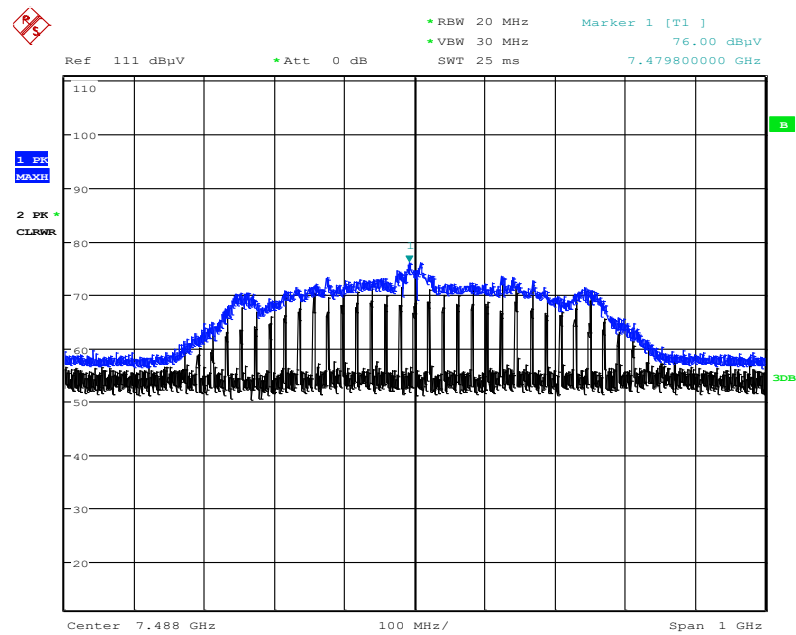


Mode 13

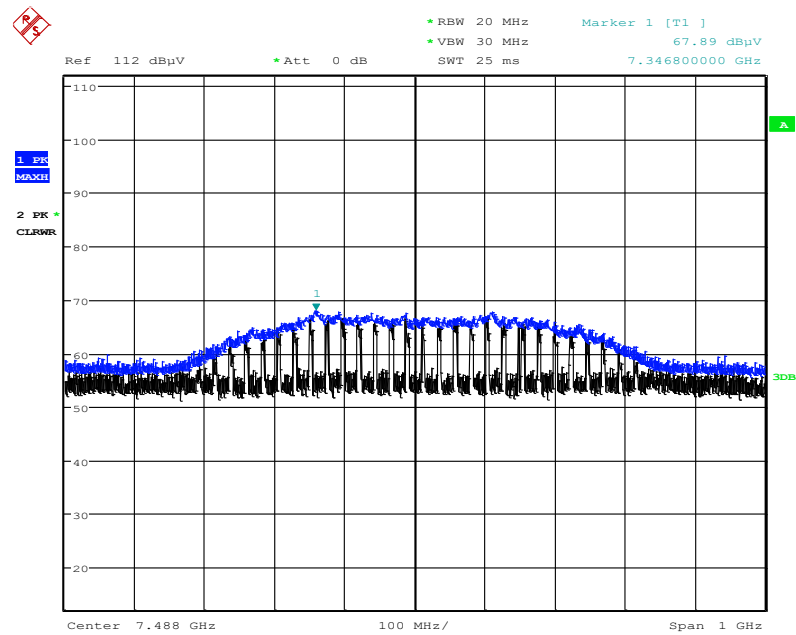


Channel 8 (7488 MHz), Fundamental Peak Measurements

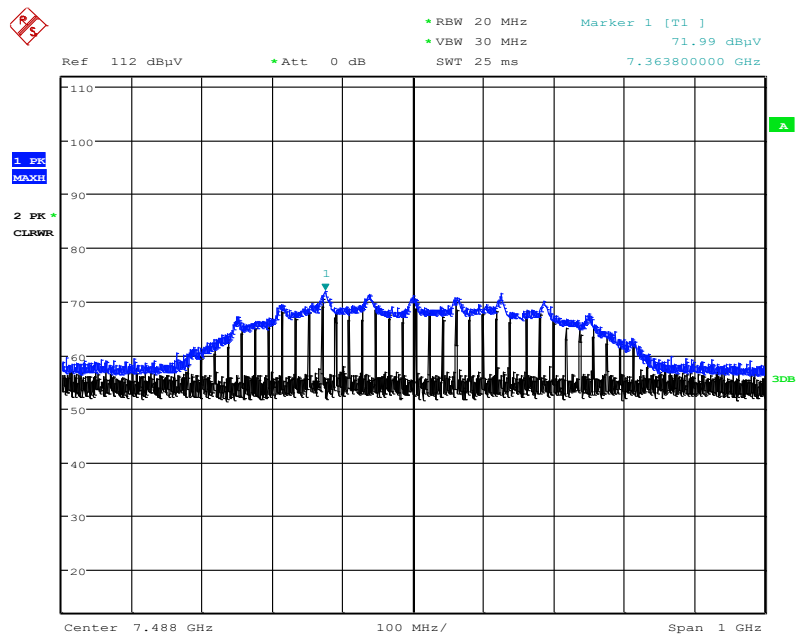
Mode 0



Mode 4

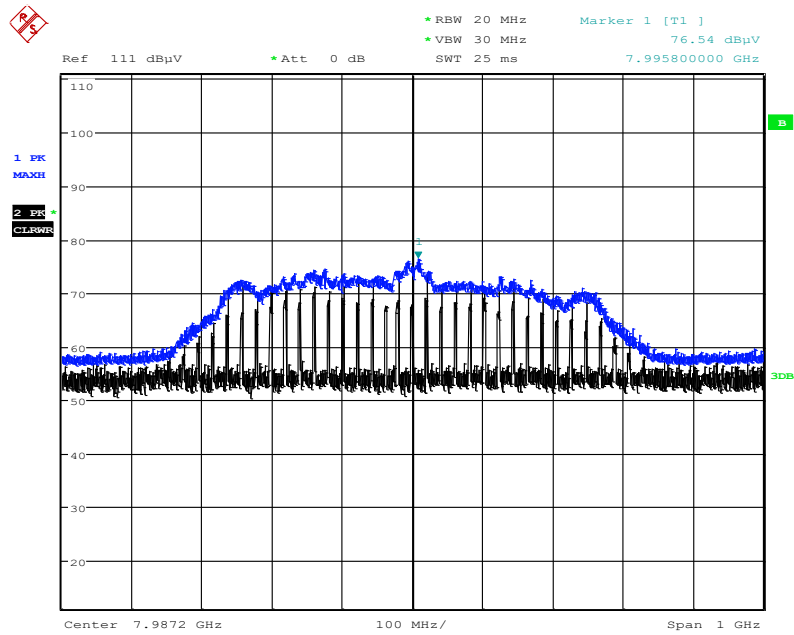


Mode 13

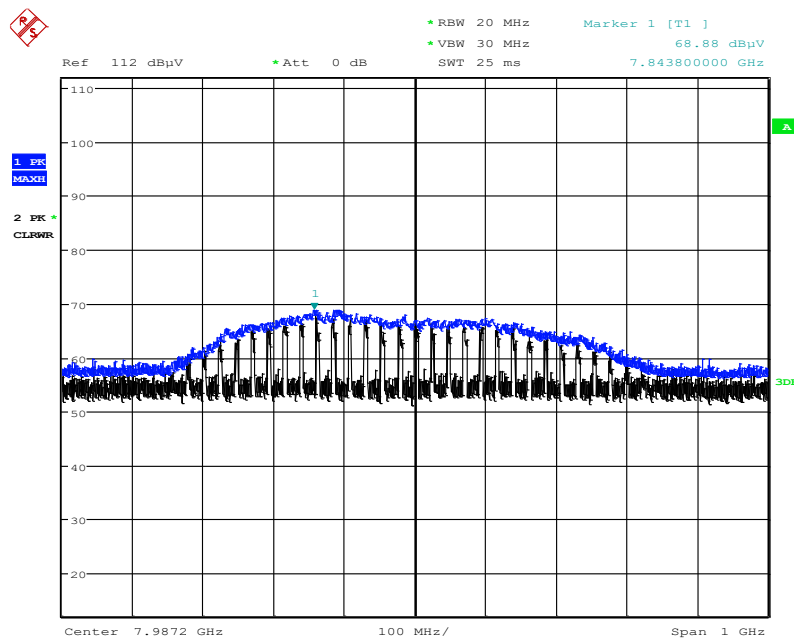


Channel 9 (7987.2 MHz), Fundamental Peak Measurements

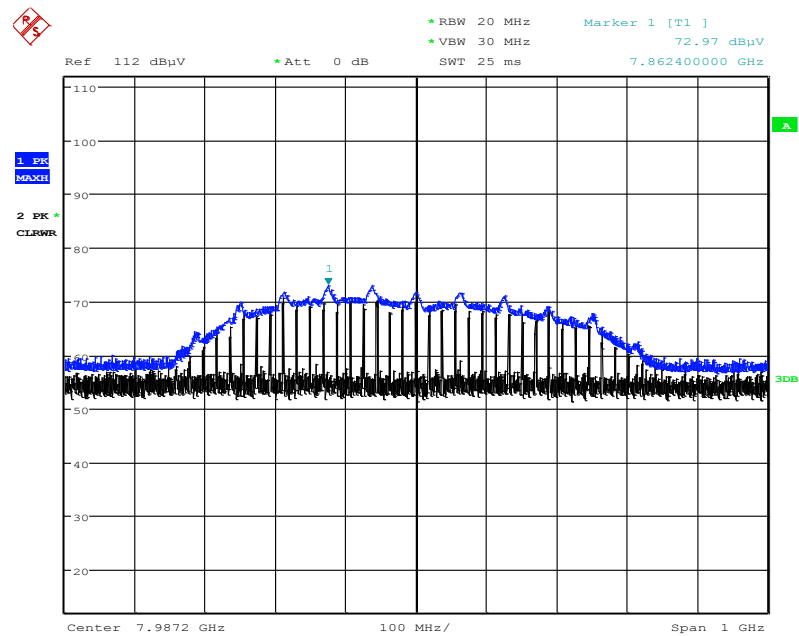
Mode 0



Mode 4



Mode 13



8 LP0002-2020 §5.12.2.1, §5.12.2.2, §5.12.2.3, §5.12.2.4 -Emission Bandwidth

8.1 Applicable Standards

According to LP0002-2020 5.12.2.1: UWB Bandwidth: For the purpose of the 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 f_H and the lower boundary is designated f_L . The frequency at which the highest radiated emission occurs is designated f_M .

According to LP0002-2020 5.12.2.2: Center frequency: Central frequency f_C is equal to $(f_H + f_L)/2$.

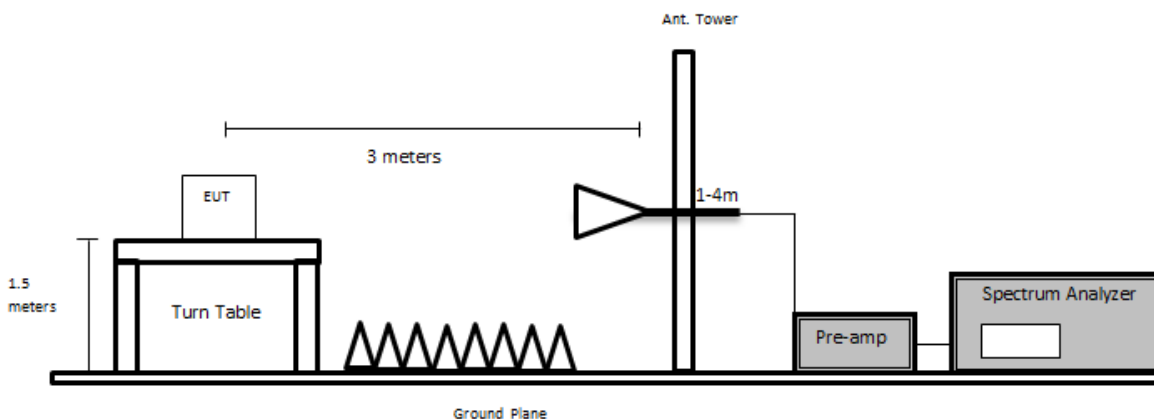
According to LP0002-2020 5.12.2.3: Fractional bandwidth: Fractional bandwidth is equal to $2(f_H + f_L)/(f_H + f_L)$.

According to LP0002-2020 5.12.2.4: Ultra-wideband transmitter: An intentional radiator that, at any point in time, has a fractional bandwidth greater than 0.20 or has a UWB bandwidth greater than 500 MHz, regardless of the fractional bandwidth.

8.2 Measurement Procedure

The UWB bandwidth measurements were based on ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices section 10.1: Evaluation of -10dB bandwidth.

8.3 Test Setup Block Diagram



8.4 Test Equipment List and Details

Asset #	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
655	Rohde & Schwarz	Spectrum Analyzer	FSQ26	200749	2019-11-07	27 months
-	Sunol Science Corp	System Controller	SC110V	122303-1	N/R	N/A
1192	ETS Lindgren	Horn Antenna	3117	00218973	2021-09-14	2 years
-	-	SMA cable1	-	-	Each time ¹	N/A
1101	IW Microwave	157 Series Cable Armored with 2.92mm Male Plugs on Both Sides	KPS-1571AN-2400	DC 1922	2021-07-06	1 year
658	HP/Agilent	Preamplifier	8449B OPT HO2	3008A0113	2021-05-06	1 year

Note¹: cables included in the test set-up will be checked each time before testing.

Statement of Traceability: **BACL Corp.** attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".

8.5 Test Environmental Conditions

Temperature:	23° C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Christian McCaig from 2021-10-18 to 2022-01-11 in 5m3.

8.6 Test Results

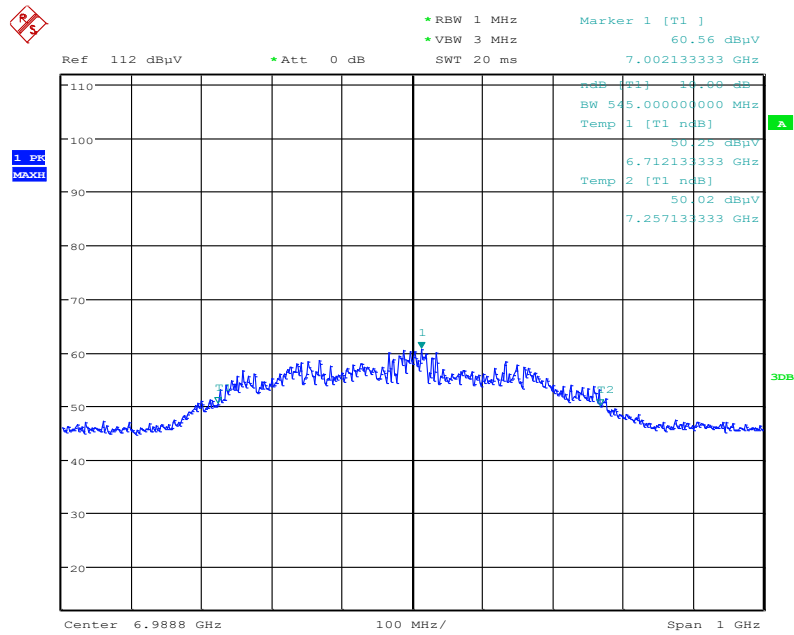
10 dB Bandwidth

Channel	Frequency (MHz)	Mode	10 dB BW (MHz)	10 dB BW limit (MHz)	10 dB BW within 3100MHz-10600MHz
6	6988.8	0	545	>500	Pass
		4	588	>500	Pass
		13	574	>500	Pass
8	7488	0	539	>500	Pass
		4	601	>500	Pass
		13	567	>500	Pass
9	7987.2	0	539	>500	Pass
		4	577	>500	Pass
		13	552	>500	Pass

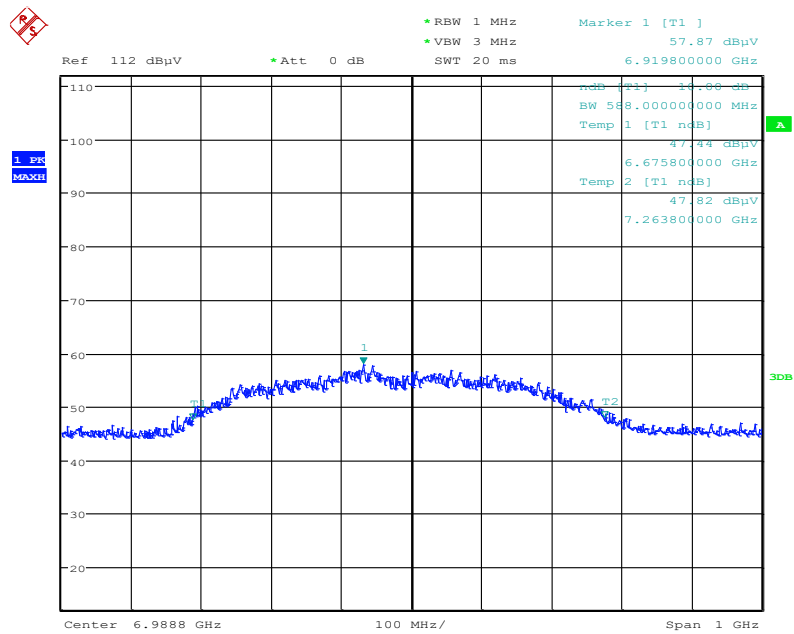
Please refer to the following plots.

Channel 6 (6988.8 MHz), 10dB Bandwidth

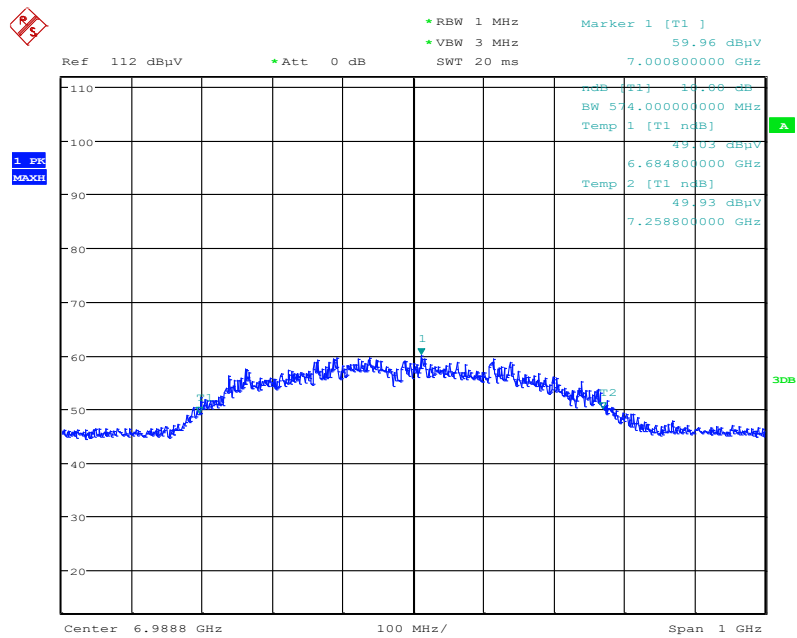
Mode 0



Mode 4

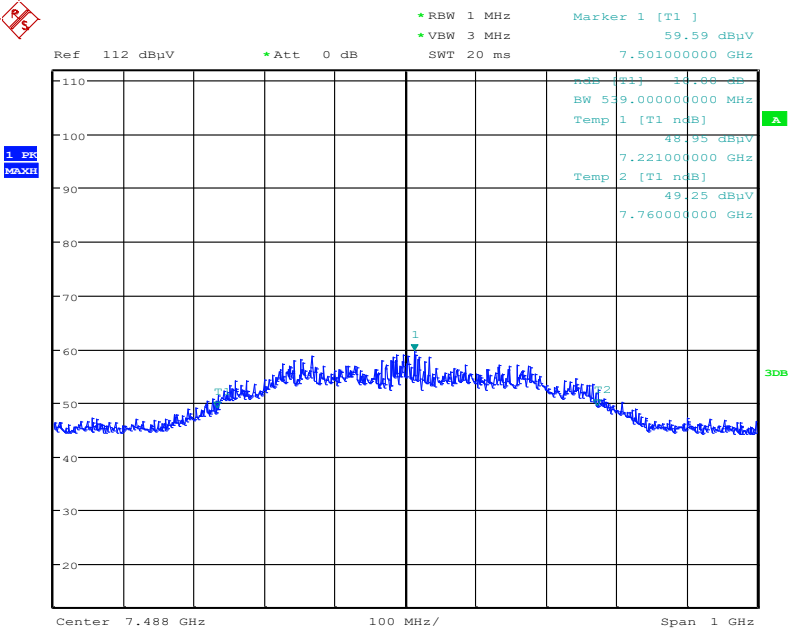


Mode 13

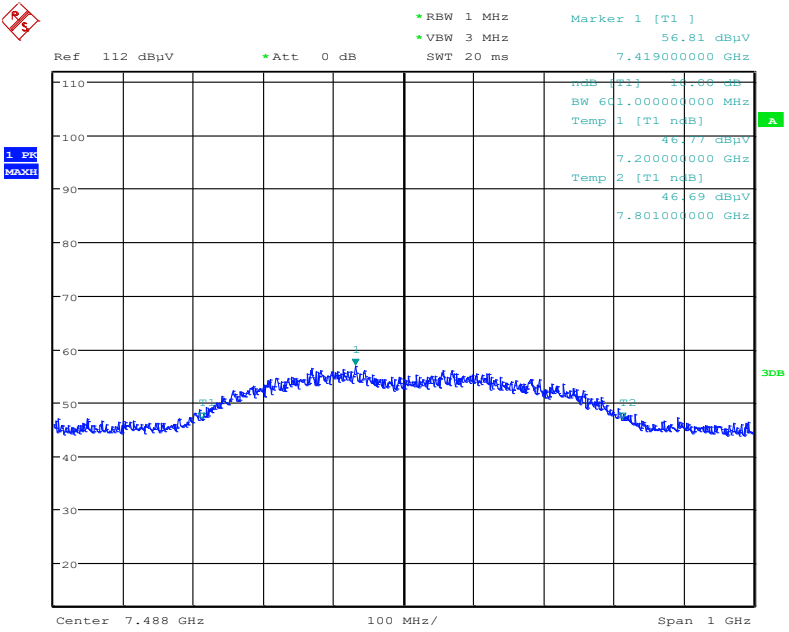


Channel 8 (7488 MHz), 10dB Bandwidth

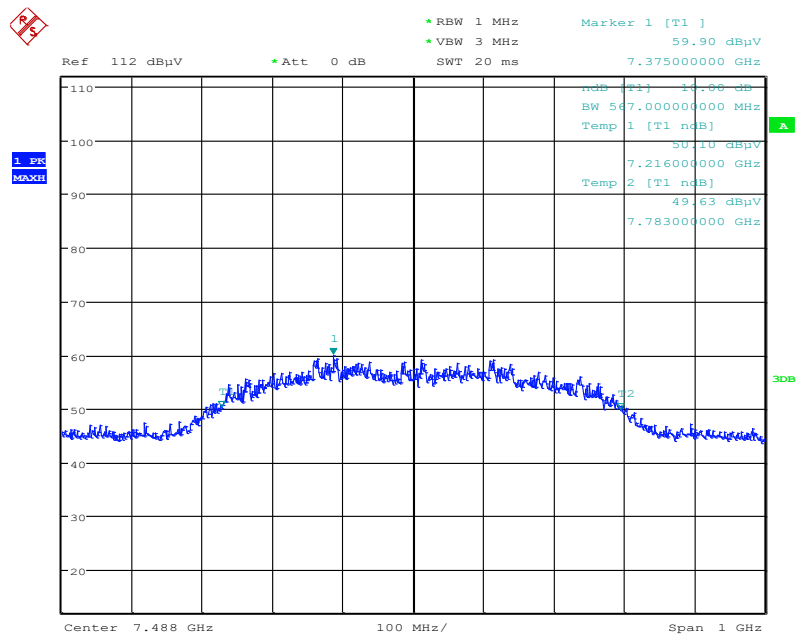
Mode 0



Mode 4

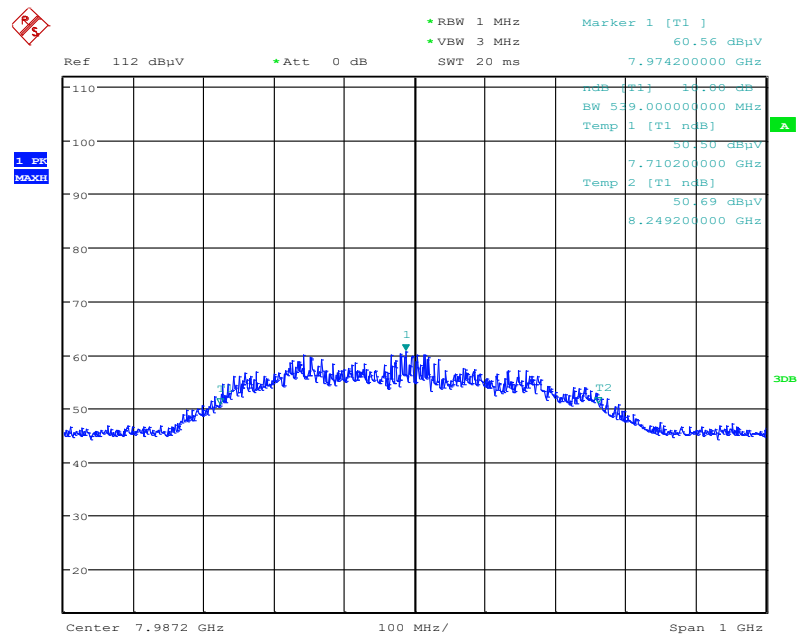


Mode 13

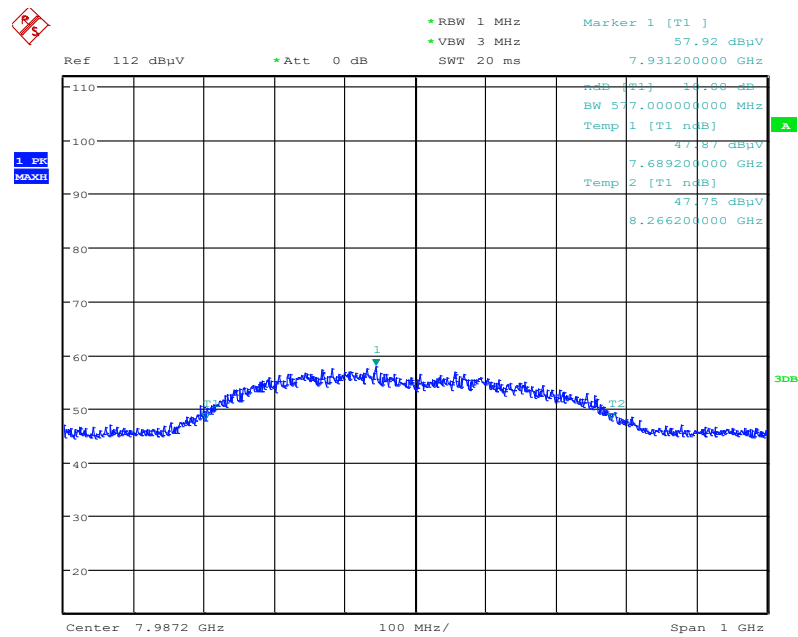


Channel 9 (7987.2 MHz), 10dB Bandwidth

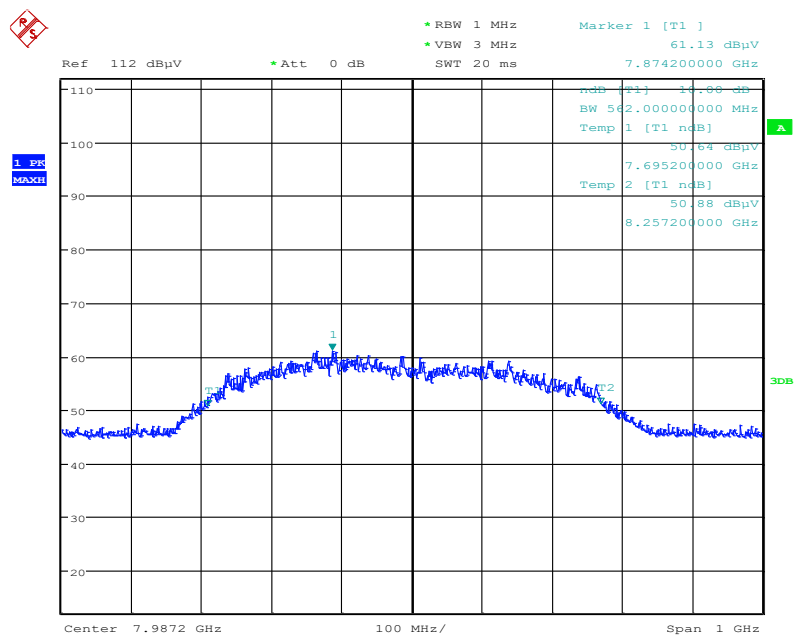
Mode 0



Mode 4



Mode 13



9 LP0002-2020 §5.12.3.3(3)(B) - Cease Transmission

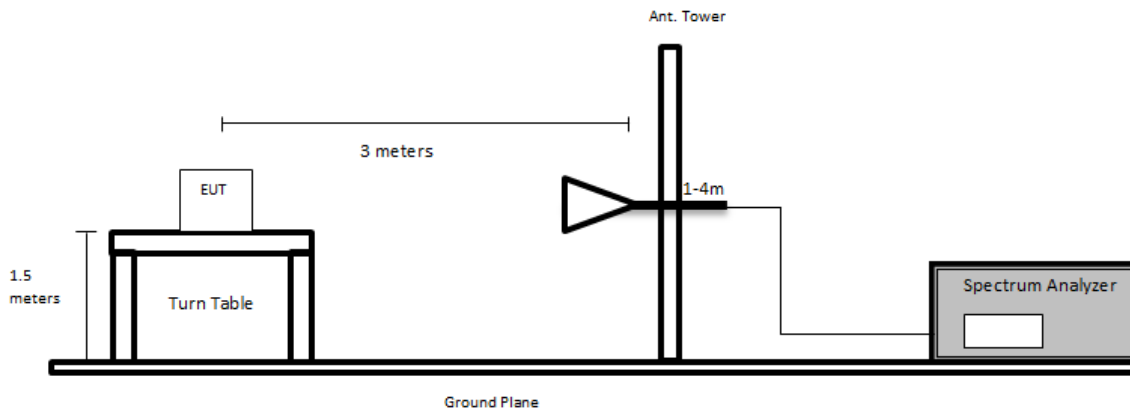
9.1 Applicable Standards

According to LP0002-2020 §5.12.3.3(3)(B): A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmissions is being received.

9.2 Measurement Procedure

A support UWB radio device was paired with the EUT for this testing. Transmission was monitored over a 20 second period. Both EUT and support equipment were switched on and paired for UWB ranging from the transmission off state. The support equipment was then powered off, and the transmission time from EUT was monitored and recorded. The first marker marks the time the support equipment was switched off, and the second marker marks the time the EUT stopped transmission.

9.3 Test Setup Block Diagram



9.4 Test Equipment List and Details

Asset #	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
912	Rohde & Schwarz	Signal Analyzer	FSV40	101203	2021-04-26	1 year
1192	ETS Lindgren	Horn Antenna	3117	00218973	2021-09-14	2 years
-	-	SMA cable1	-	-	Each time ¹	N/A

Note¹: cables included in the test set-up will be checked each time before testing.

Statement of Traceability: BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".

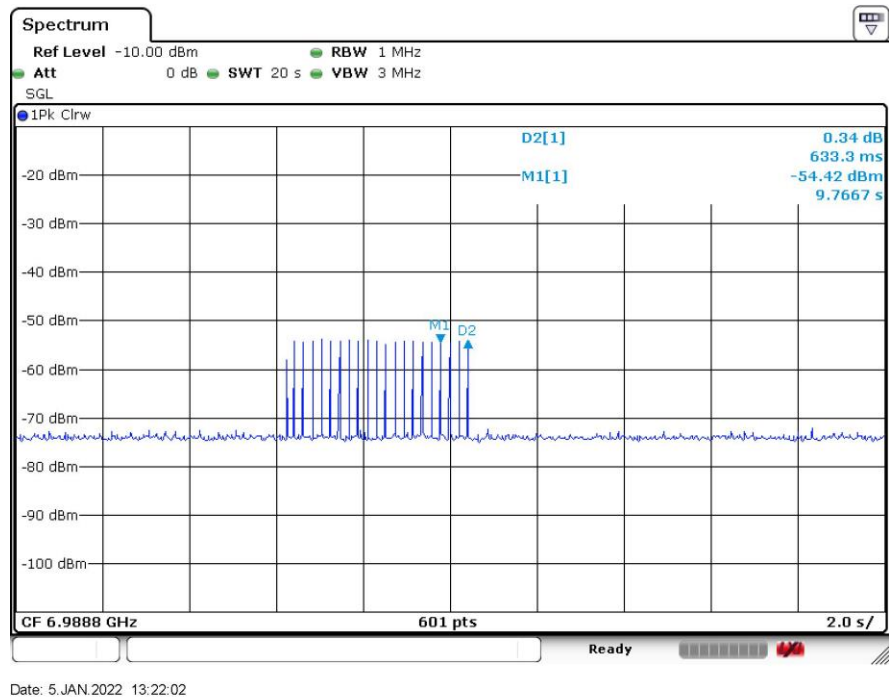
9.5 Test Environmental Conditions

Temperature:	23° C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Christian McCaig on 2022-01-05 in 5m chamber 3.

9.6 Test Results

Transmission Time (Seconds)	Limit (Seconds)
0.633	< 10



Note: The cease of transmission function operates the same way on all channels of this device. Therefore, only channel 6 was selected for testing.

10 Annex A (Normative) - Test Setup Photographs

Please refer to the attachment

11 Annex B (Normative) - EUT External Photographs

Please refer to the attachment

12 Annex C (Normative) - EUT Internal Photographs

Please refer to the attachment

13 Annex D (Normative) - A2LA Electrical Testing Certificate**Accredited Laboratory**

A2LA has accredited

BAY AREA COMPLIANCE LABORATORIES CORP.

Sunnyvale, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This laboratory also meets A2LA R222 - Specific Requirements EPA ENERGY STAR Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Presented this 10th day of March 2021.

A blue ink signature of Trace McInturf.

Trace McInturf, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3297.02
Valid to September 30, 2022

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

Please follow the web link below for a full ISO 17025 scope

<https://www.a2la.org/scopepdf/3297-02.pdf>

--- END OF REPORT ---