



# REPORT

For

## Universal Global Scientific Industrial Co., Ltd.

No. 141, Lane 351, Taiping Road, Sec. 1, Tsautuen  
Nantou County  
542007, Taiwan

Date: 26 January 2021  
Report No.: 15323-1E  
Revision No.: 0  
Project No.: 15323  
Model No.: WM-BN-BM-26\_A  
FCC ID: COF-WMBNBM26A  
IC ID: 10293A-WMBNBM26A

### ONE STOP GLOBAL CERTIFICATION SOLUTIONS




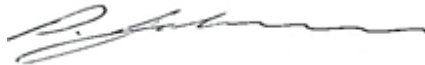
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## TEST REPORT

### Radiated Spurious for FCC 47 CFR Part 15 Subpart C and ISED RSS-247 Issue 2

<b>Report Reference No</b> .....:	15323-1E	
<b>Report Revision History</b> .....	✓ Rev. 0: 26 January 2021	
<b>Conclusion</b> .....	The submitted sample was found to <b>COMPLY</b> with the test requirement.	
Compiled by (+ signature) .....	Jeremy Lee	
Approved by (+ signature) .....	David Johanson	
Date of issue.....:	26 January 2021	
Total number of pages .....	22	
<b>FCC Site Registration No.:</b> .....	721268	
<b>IC Site Registration No.:</b> .....	5970A	
<b>Testing Laboratory</b> .....:	LabTest Certification Inc.	
Address .....	Unit 205 – 8291 92st Delta, B.C. V4G 0A4, Canada	
<b>Applicant's name</b> .....	Universal Global Scientific Industrial Co., Ltd.	
Address .....	141, Lane 351, Sec. 1, Taping Road, Tsautuen, Nantou 542007, Taiwan	
<b>Manufacture's Name</b> .....	Universal Global Scientific Industrial Co. Ltd.	
Address .....	141, Lane 351, Sec. 1, Taping Road, Tsautuen, Nantou 542007, Taiwan	
<b>Test specification:</b>		
Standards .....	<ul style="list-style-type: none"> <li>➤ FCC 47 CFR Part 15, Subpart C; 2021</li> <li>➤ IC RSS-247 Issue 2, February 2017</li> </ul>	
Test procedure.....:	<ul style="list-style-type: none"> <li>➤ ANSI C63.10:2013</li> <li>➤ ANSI C63.4:2014</li> <li>➤ RSS-Gen, Issue 5, April 2018</li> <li>➤ KDB 558074 D01 15.247 Meas Guidance v05</li> </ul>	
Non-standard test method.....:	N/A	
Test Report Form(s) Originator.....:	Jeremy Lee	
Master TRF.....:	1036_Rev2 – RF Report Template	
<b>Test item description :</b>		
Trade Mark .....	n/p	
Model/Type reference .....	WM-BN-BM-26_A	

Serial Number .....	n/p
FCC ID .....	COF-WMBNBM26A
IC ID .....	10293A- WMBNBM26A
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)
<b>Testing:</b>	
Date of receipt of test item.....	08 December 2020 & 14 January 2021
Date (s) of performance of tests .....	15 Dec. 2020 & 19 Jan. 2021

## Revision History

Revision	Date	Reason For Change	Author(s)
0	26 January 2021	Initial Data	Jeremy Lee

## Description of Radio Module

Application for .....	802.11b/g/n + BT Wireless LAN Module
Brand .....	UGSI
Test Model .....	WM-BN-BM-26_A
EUT Frequency Range (in MHz) .....	2412.0 – 2462.0 MHz
Conducted Output Peak Power(referenced by Report No.: RF160819E01H) .....	802.11b: +21.63dBm at Channel 6 802.11g: +24.44dBm at Channel 6 802.11n(HT20): +24.49dBm at Channel 6
Conducted Output Average Power(referenced by Report No.: RF160819E01H) .....	802.11b: +19.57dBm at Channel 6 802.11g: +19.06dBm at Channel 6 802.11n(HT20): +18.34Bm at Channel 6
Type of Modulation .....	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Transfer Rate .....	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n(HT20): up to 72Mbps
Number of Channel .....	802.11b: 11 802.11g: 11 802.11n(HT20): 11

Antenna Type/Gain.....:	No Antenna, U.FI Port on Module.
Equipment mobility .....	No.
<b>Nominal Voltages for:</b>	<input type="checkbox"/> stand-alone equipment <input checked="" type="checkbox"/> combined (or host) equipment
Supply Voltage:	<input checked="" type="checkbox"/> 3.6V__ DC <input type="checkbox"/> n/p__ Amps
If DC Power:	<input type="checkbox"/> Internal Power Supply <input checked="" type="checkbox"/> External Power Supply or AC/DC adapter <input type="checkbox"/> Battery

Note:

1. This report is prepared for FCC Class II Permissive change. The difference compared with the Report No.: RF160819E01H as the following:

Antenna	Original	as added
Brand	YAGEO	Inventek Systems
Product Name	ANT3216LL11R2400A	W2.4-5P-U
Type	Chip	PCB
Gain(dBi)	3.68	2.6

2. According to above conditions, only Radiated Unwanted Emissions need to be performed. And all data were verified to meet the requirements.
3. There are only WLAN technology used with above Antenna.

## Program details

Testing Facility by procedure:	
<input checked="" type="checkbox"/>	<b>All Testing:</b> LabTest Certification Inc.
Testing location/ address.....:	Unit 3128-20800 Westminster HWY, Richmond, B.C. V6V 2W3 Canada

Summary of testing:	
<b>Tests performed (name of test and test clause):</b> Radiated Field strength and Emissions. AC Power Line Conducted Emissions	<b>Testing location:</b> In SAC, Richmond On GRP, Richmond
<p>The tests indicated in Test Summary were performed on the product constructed as described below. The test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted. Based on the results of our investigation, we have concluded the product tested <b>complies</b> with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. LabTest does not make any claims of compliance for samples or variants which were not tested.</p>	

## Description of Equipment Under Test and Variant Models

<p><b>Description:</b>                  The EUT is Pre-approved Single Modular unit, manufactured by Universal Global Scientific Industrial Co., Ltd.  <b>FCC ID: COF-WMBNBM26A</b>  <b>IC ID: 10293A-WMBNBM26A</b></p> <p>It is installed in HOST Unit. The output port of EUT is connected to the antenna, W2.4-5P-U, which is installed in HOST Unit.</p>
<p><b>Variant Models:</b>                  The following variant models were not tested as part of this evaluation but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.</p>
None

### Client Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	802.11b/g/n + BT Wireless LAN Module	UGSI	WM-BN-BM-26_A	Pre-Certified
EUT	Antenna	Inventek Systems	W2.4-5P-U	PCB Antenna with U.FI connector and 90 mm cable length
SIM	Host Unit	Eight Sleep	HUB	Installed Radio module and Antenna
SIM	Laptop	Apple	MacBook Air	For Control of Radio
SIM	In circuit programmer	STMicroelectronics	ST-LINK/V2	For Control of Radio
SIM	Programming Board	Eight Sleep	221000	For Control of Radio
SIM	Control POD	Apple	iPhone 6	Installed App for normal operating

Abbreviations:  
 EUT - Equipment Under Test,  
 SIM - Simulator (Not Subjected to Test)

### Software and Firmware

Use*	Description	Version
SIM	App	4.4.1(1036)

Abbreviations:  
 EUT - Equipment Under Test,  
 AE - Auxiliary/Associated Equipment, or  
 SIM - Simulator (Not Subjected to Test)

### Power Interface

Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	3.0	-	-	DC	-	via Programming Board
2	115	-	-	AC-60Hz	-	via HUB

### EUT Operation Modes

Mode #	Description
1	Keep Radio on as changing its channel as based on origin test report of manufacturer, RF160819E01H by Bureau Veritas Consumer Products Services (H.K.) Ltd..
2	Keep operating HUB by App as normal operating

## EUT Configuration Modes

Mode #	Description
1	EUT on test table and Programming board was connected to Macbook via 2 USB cables.
2	EUT on test table and connected to iPhone via WiFi.

## Test Equipment Verified for function

Model #	Description	Checked Function	Results
N9038A	EMI Receiver	Frequency and Amplitude	In Tolerance
SAS-540	Antenna, 30 to 250MHz	Checked structure	Normal – no damage.
VUSLP9111B	Antenna, 250 to 1,000MHz	Checked structure	Normal – no damage.
JB1	Antenna, 30 to 2000MHz	Checked structure	Normal – no damage.
SAS-571	Antenna, 1 to 18GHz	Checked structure	Normal – no damage.
SAS-572	Antenna, 18 to 25GHz	Checked structure	Normal – no damage.
8449B	Pre-Amplifier	Gain	In Tolerance
LIN-120C	LISN	Checked Insertion Losses	In Tolerance
AL-130	Antenna, 9kHz to 30MHz	Checked structure	Normal – no damage.

## Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests:

Parameter	Uncertainty
Radio Frequency	± 0.2 ppm
RF Power, Conducted	± 1 dB
Radiated Emission, 30 to 250MHz	± 4.37 dB
Radiated Emission, 250 to 1000MHz	± 4.29 dB
Radiated Emission, 1 to 6GHz	± 5.02 dB
Radiated Emission, 6 to 18GHz	± 5.02 dB
Conducted Measurements, 0.15 to 30MHz	± 1.71 dB

Uncertainty figures are valid to a confidence level of 95%.



## Result Summary

The Compliance Status is a judgment based on the direct measurements and calculated highest emissions to appropriate standard limits. Measurement uncertainty values, provided on calibration certificates, were not be used in the judgment of the final status of compliance.

<b>47 CFR FCC Part 15, Subpart C(15.247) and IC RSS-247</b>			
<b>Test Type</b>	<b>Regulation</b>	<b>Measurement Method</b>	<b>Result</b>
<b>15.247 &amp; RSS-247</b>			
Unwanted Radiated Emissions	FCC 15.247(d) & RSS-247	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6	P
<b>General</b>			
AC Power Line Conducted Emissions	FCC 15.207(a) & RSS-Gen	ANSI C63.4:2014	P
Antenna Requirement	FCC 15.203 & RSS-Gen	-	P

## Unwanted Radiated Emissions

Governing Doc	FCC 15.247(d) & RSS-247	Room Temperature (°C)	21.4 to 23.8		
Basic Standard	KDB 558074 D01 15.247 Meas Guidance v05 ANSI C63.10:2013, Clause 6	Relative Humidity (%)	32.6 to 44.7		
Test Location	Richmond	Barometric Pressure (kPa)	101.8 to 103.0		
Test Engineer	Jeremy Lee	Date	19 Jan. 2021		
EUT Voltage	<input checked="" type="checkbox"/> DC via USB <input type="checkbox"/> 115VAC @ 60Hz				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
Spectrum Analyzer	Keysight	N9038A	702	27-May-2020	27-May-2021
Horn Antenna	A.H Systems	SAS-571	227C	12-Aug-2020	12-Aug-2022
Horn Antenna	A.H Systems	SAS-572	227D	11-Dec-2018	11-Dec-2021
Broadband Antenna	Sunol	JB1	371	24-Sep-2020	24-Sep-2022
LPDA Antenna	Schwarzbeck Mess	VUSLP9111B	996	26-Mar-2019	26-Mar-2021
BiCon Antenna	A.H Systems	SAS-540	1115	29-Apr-2019	29-Apr-2021
RF Preamplifier	Agilent	8449B	273	IHC <sup>1</sup>	IHC <sup>1</sup>
RF Cable	MRO	n/a	n/a	IHC <sup>1</sup>	IHC <sup>1</sup>
RF Cable	MRO Elec.	SMA-SMA-12FT	n/a	IHC <sup>1</sup>	IHC <sup>1</sup>
Used Software	<input checked="" type="checkbox"/> Tile! 7 v7.3.0.6				
Used Template	_FCC_RadEmi_30-1000MHz_Spur_20201008 _FCC_RadEmi_1-18GHz_Spur_20200824 _FCC_RadEmi_18-26.5GHz_Spur_20200810				
Note1) In House Calibration Ref. # 6					
Note2) In House Calibration Ref. # 7					
Detector:	<input checked="" type="checkbox"/> Peak	<input checked="" type="checkbox"/> Quasi-Peak	<input checked="" type="checkbox"/> AVG(over 1GHz)		
RBW/VBW:	<input checked="" type="checkbox"/> 120/300kHz	<input checked="" type="checkbox"/> 1/3MHz			
Type of Facility:	<input checked="" type="checkbox"/> SAC	<input checked="" type="checkbox"/> FSOATS	<input type="checkbox"/> <i>in-situ</i>		
Distance:	<input checked="" type="checkbox"/> 3meter	<input type="checkbox"/> 10meter	<input type="checkbox"/> 1meter		
Arrangement of EUT:	<input checked="" type="checkbox"/> Table-top only	<input type="checkbox"/> Floor-standing only	<input type="checkbox"/> Rack Mounted		
The EUT was found to <b>MEET</b> the Radiated Unwanted Emissions requirements of Title 47 CFR, FCC Part 15.247 and Canada RSS-247 for a DTS transmitter. The frequencies with significant RF signal strength were recorded and plotted as shown in the Data Charts and Graphs.					
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>					

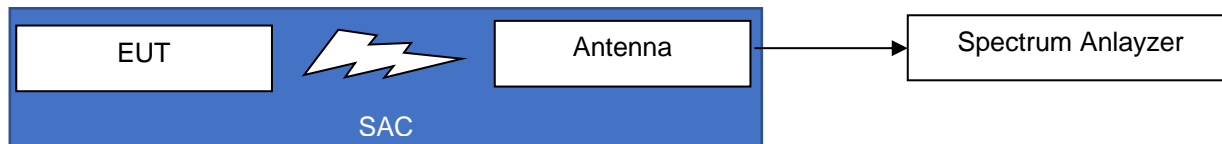
## Test setup

### Description of test set-up:

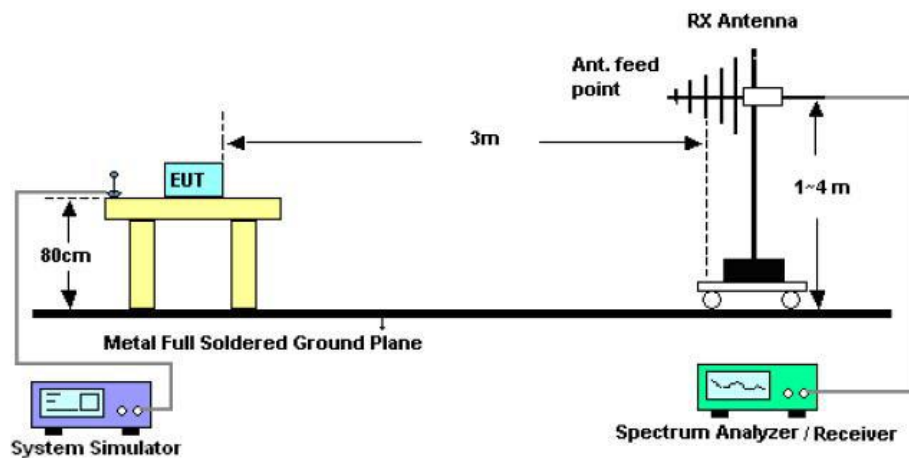
The test setup was assembled in accordance with Title 47, CFR FCC Part 15, RSS GEN and ANSI C63.10. The EUT was placed on non-conductive pedestal, centered on a flush mounted 1.2-meter diameter turntable inside a 3-meter Semi-Anechoic Chamber. The EUT was operated in continuous transmitting with proper modulation. The unit has the capability to operate on 11 channels, controllable via laptop PC. The applicable limits apply at a 3-meter distance. The calculations to determine these limits are detailed in the following pages. The test sample was operated on the highest output power channel and mode, 1Mbps, Channel # 06.

The EUT with ANT was placed on a 0.8 m for under 1GHz and 1.5m for over 1GHz non-conducting table above a Turn table in SAC.

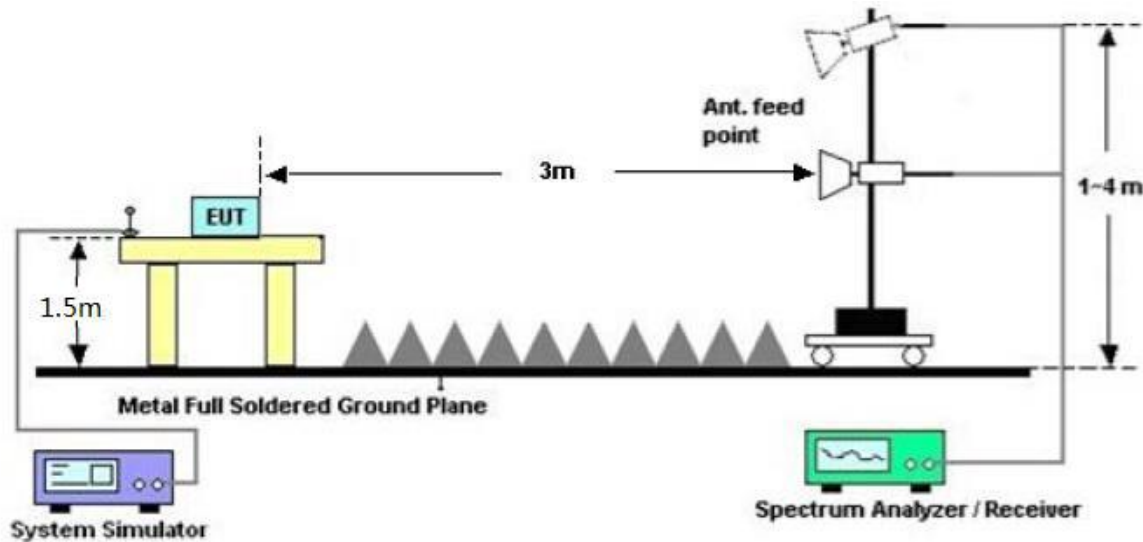
The EUT was set to **Operation Mode #1 with configuration Mode #1 & power interface #1**.



- Tested with JB-1 under 1GHz as followed by ANSI C63.10



- Tested with SAS-571 & SAS-572 over 1GHz as followed by ANSI C63.10



### Measurement Procedure

Test procedure is based on the FCC15.31(a)(3) - Other intentional and unintentional radiators are to be measured for compliance using the following procedure excluding sections 4.1.5.2, 5.7, 9 and 14: ANSI C63.4-2014: "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" (incorporated by reference, see § 15.38). This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51.

This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially, the primary emission frequencies are identified by positioning a broadband receive antenna three meter from the EUT. A scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7, from 30 to 25000 MHz with the receiver in the peak mode. The receiver IF bandwidth was 100 kHz/1MHz and scan step was about 25 kHz/250kHz. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters and rotated to produce horizontal and vertical polarities while the turntable is rotated to determine the worst emitting configuration. Measurements were then made using CISPR quasi peak when the peak readings were within 10dB of the limit line. The numerical results are included herein to demonstrate compliance.

### Test Result

- Radiated Emissions level (dB $\mu$ V/m) = Analyzer level (dB $\mu$ V) + AFCL (dB/m)
- AFCL (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Pre-Amplifier Gain (dB)
- Margin (dB) = Limit (dB $\mu$ V/m) - Field Strength level (dB $\mu$ V/m)

### Calculation of Radiated Emission Limits

The maximum peak output power of an intentional radiator in the 2400-2483.5 MHz band, as specified in Title 47 CFR 15.247 (b)(3) and RSS-247 is 1 Watt. The harmonic and spurious RF emissions, as measured in any 100 kHz bandwidth, as specified in 15.247 (d) and RSS-247, shall be at least 20 dB below the measured power of the desired signal, and must also meet the requirements described in 15.205(c) for FCC and section 2.2, 2.6.

The following table depicts the general radiated emission limits above 30 MHz. These limits are obtained from Title 47 CFR, Part 15.209, for radiated emissions measurements. These limits were applied to any signals found in the 15.205 restricted bands. The mentioned limits correspond to those limits listed in RSS-247.

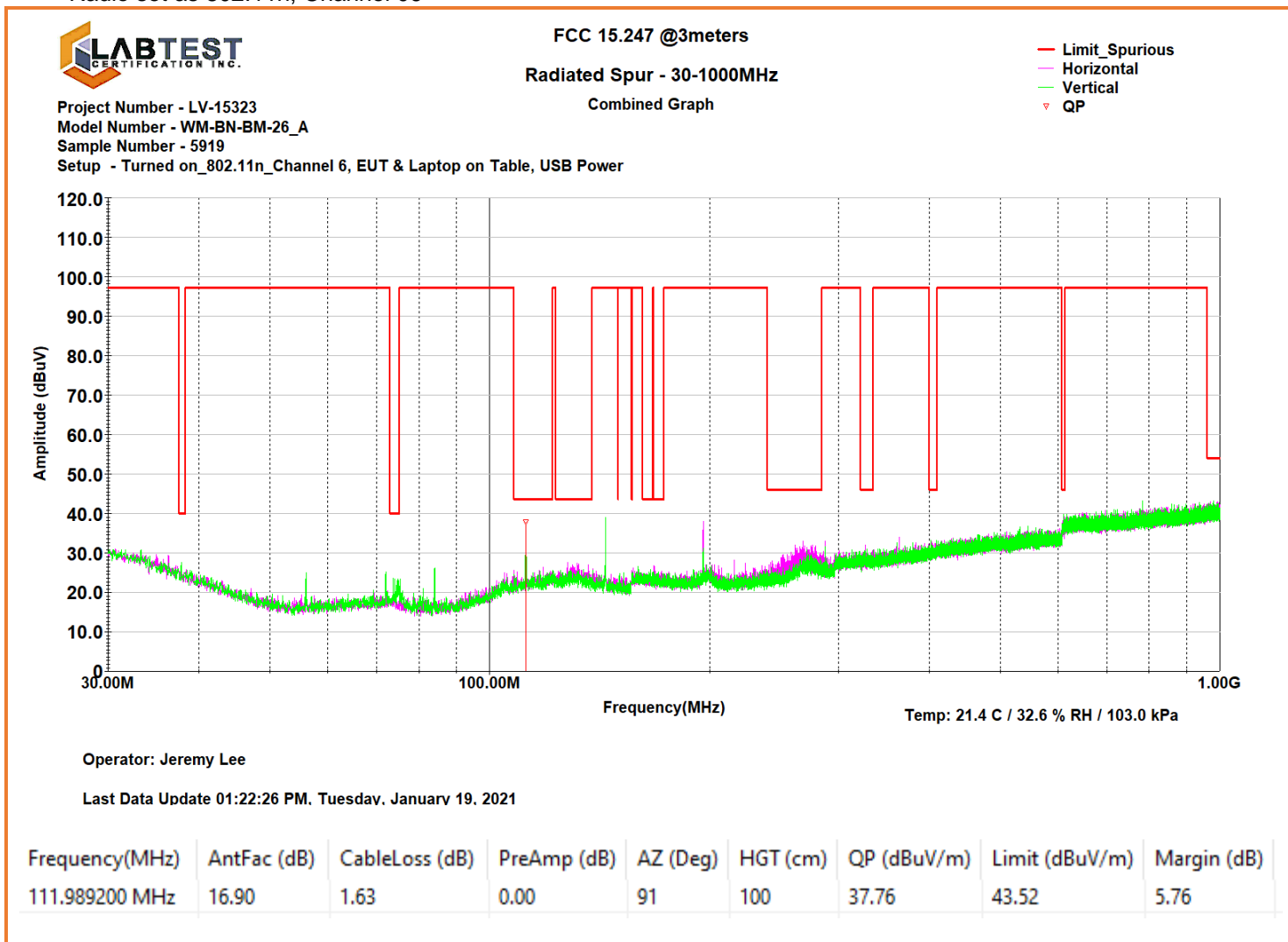
Frequency (MHz)	3m Limit( $\mu$ V/m)	3m Limit(dBuV/m)
30-88	100(QP)	40.0(QP)
88-216	150(QP)	43.5(QP)
216-960	200(QP)	46.0(QP)
960-25000	500(AVG)/5000(PEAK)	54.0(AVG)/74.0(Peak)

Sample conversion of field strength ( $\mu$ V/m to dB $\mu$ V/m):

$$\text{dB}\mu\text{V/m} = 20 \log_{10} (100) = 40 \text{ dB}\mu\text{V/m (from 30-88 MHz)}$$

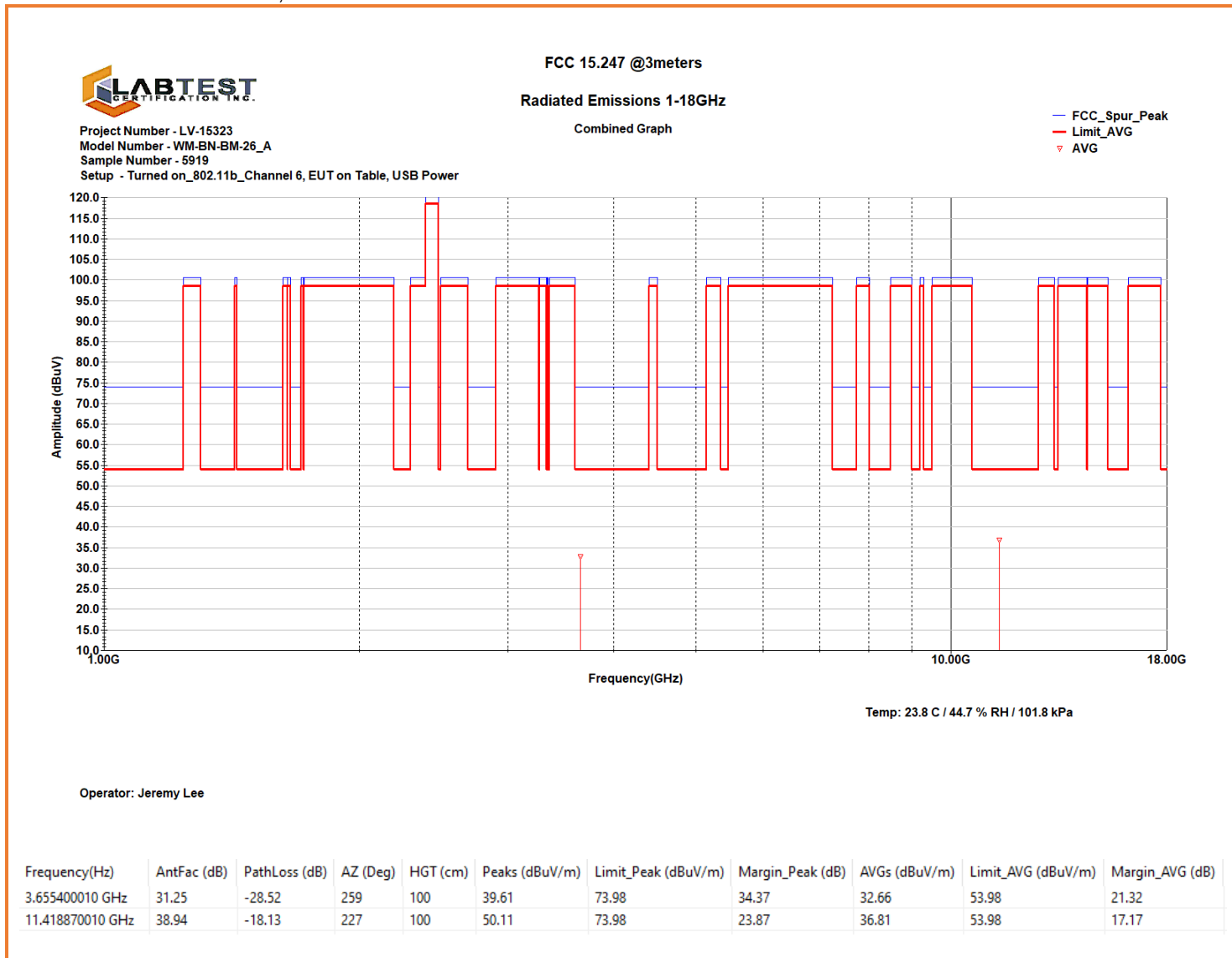
**Graphical Representation for Emission - Radiated 30to1000MHz**

- Radio set as 802.11n, Channel 06

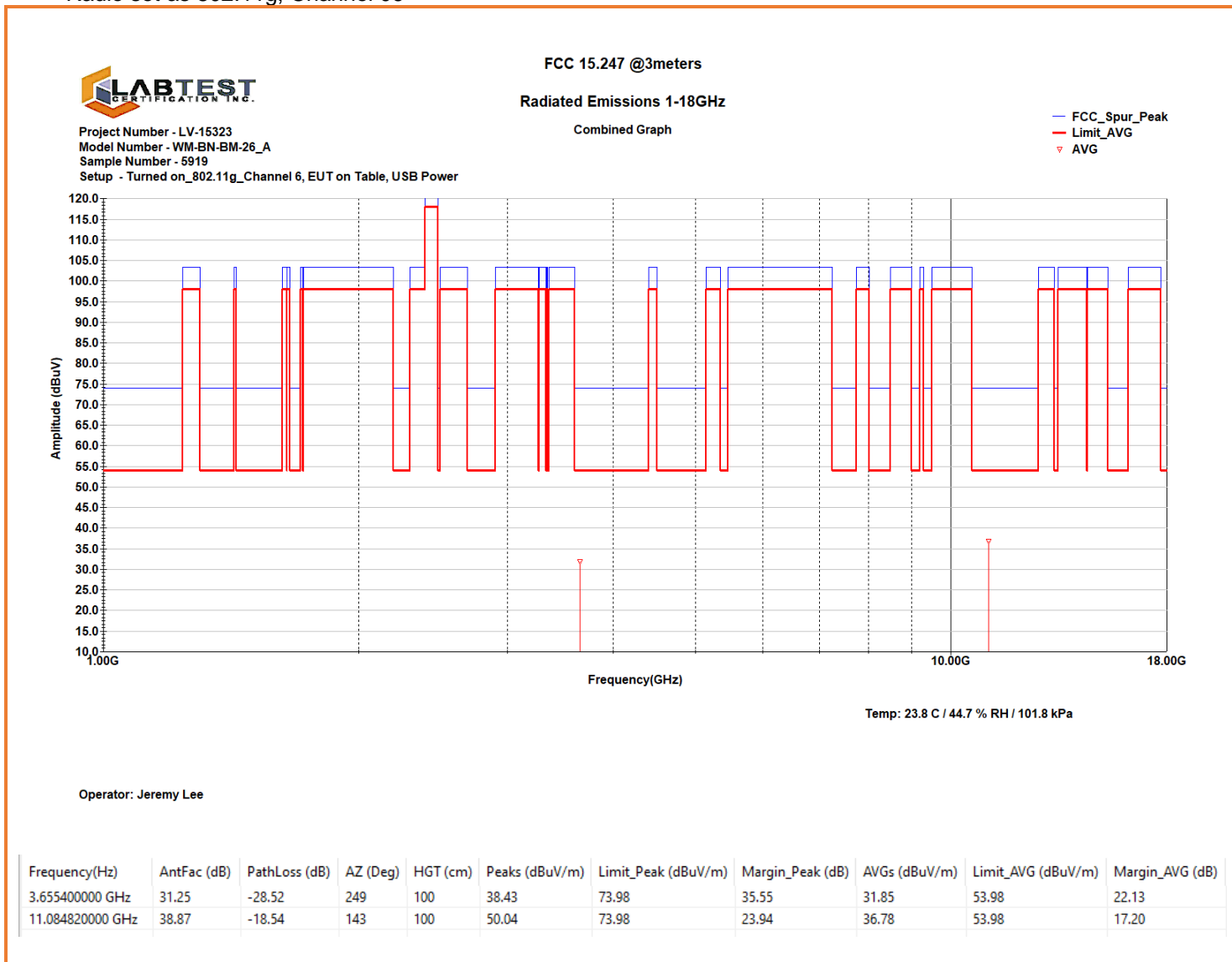


**Graphical Representation for Emission - Radiated 1 to 18GHz**

- Radio set as 802.11b, Channel 06

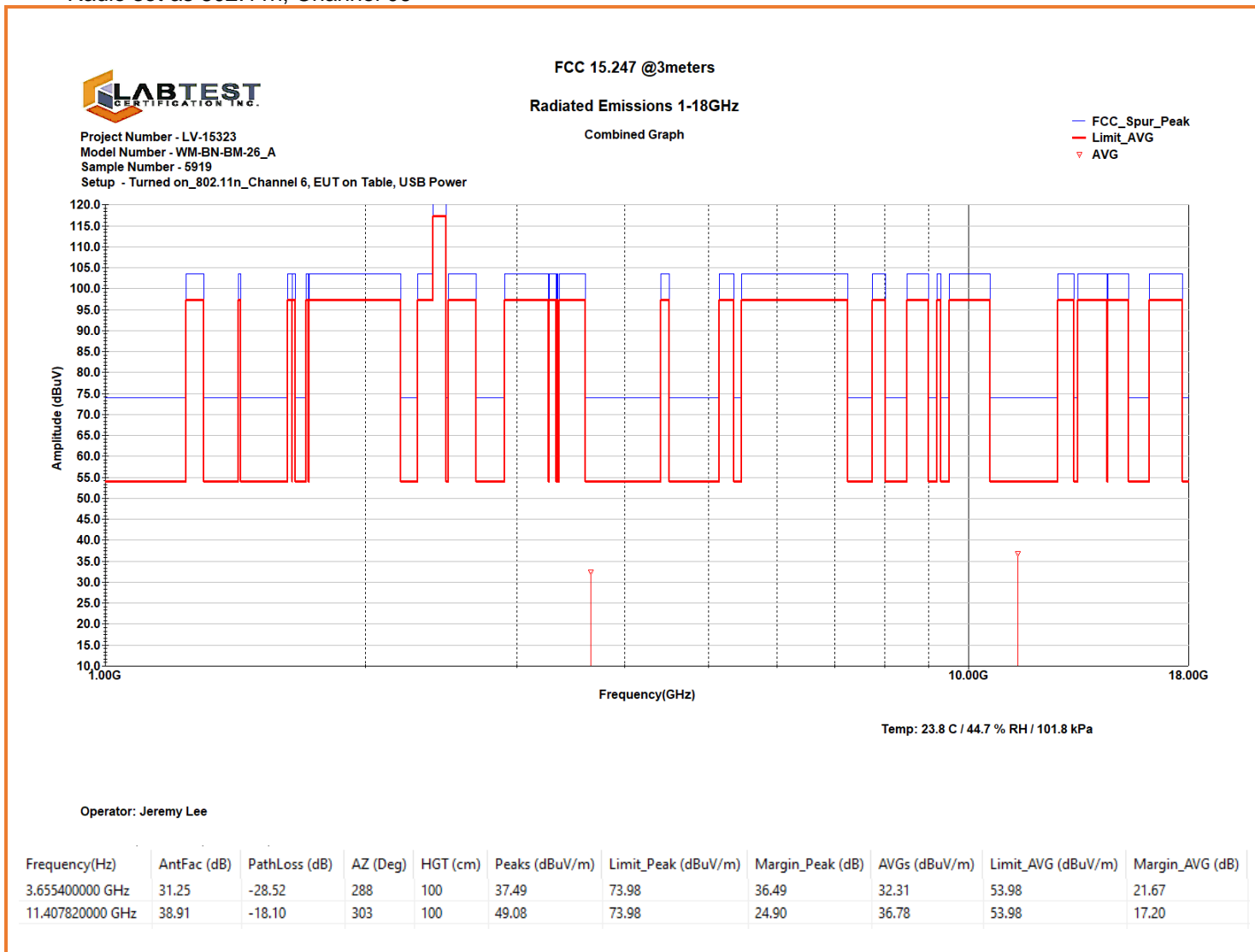


- Radio set as 802.11g, Channel 06





- Radio set as 802.11n, Channel 06



**Graphical Representation for Emission - Radiated 18 to 25GHz**

- Radio set as 802.11b, Channel 06

All emissions were measured under noise level.

- Radio set as 802.11n, Channel 06

All emissions were measured under noise level.

- Radio set as 802.11g, Channel 06

All emissions were measured under noise level.

## AC Power Line Conducted Emissions

Governing Doc	FCC 15.207(a) & RSS-Gen	Room Temperature (°C)	20.3		
Basic Standard	ANSI C63.4	Relative Humidity (%)	40.6		
Test Location	Richmond	Barometric Pressure (kPa)	101.5		
Test Engineer	Jeremy Lee	Date	15 Dec. 2020		
EUT Voltage	<input type="checkbox"/> DC <input checked="" type="checkbox"/> 115VAC @ 60Hz				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
EMC Analyzer	KeySight	N9038A	702	27-May-2020	27-May-2021
LISN	Com-Power	LIN-120C	920	11-Dec-2020	11-Dec-2021
RF Cable	MRO	n/a	n/a	IHC <sup>1</sup>	IHC <sup>1</sup>
AC Power Source	California Instruments	5001i	059	IHC <sup>2</sup>	IHC <sup>2</sup>
Used Software	<input checked="" type="checkbox"/> Tile! 7 v7.3.0.6				
Used Template	_FCC_ConEmi_AC Mains_LSN120C_TRON_20201215				
Note1) In House Calibration Ref. # 6					
Note2) In House Calibration Ref. # 7					
Frequency Range:	<input checked="" type="checkbox"/> 150kHz-30MHz <input type="checkbox"/> 9-150kHz				
Detector:	<input checked="" type="checkbox"/> Peak <input type="checkbox"/> Quasi-Peak <input type="checkbox"/> Averaging				
RBW/VBW:	<input checked="" type="checkbox"/> 9/30kHz <input type="checkbox"/> 200/300Hz				
Coupling device:	<input checked="" type="checkbox"/> AMN <input type="checkbox"/> AAN <input type="checkbox"/> Current Probe <input type="checkbox"/> CVP				
Arrangement of EUT:	<input checked="" type="checkbox"/> Table-top only <input type="checkbox"/> Floor-standing only <input type="checkbox"/> Rack Mounted				
Compliant <input checked="" type="checkbox"/>	Non-Compliant <input type="checkbox"/>				

### Test Method

This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially a scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7, from 150 kHz to 30 MHz on each phase with the receiver in the peak mode. The measuring bandwidth was set up 9 kHz. Measurements were then made using CISPR16-1 quasi peak and averaging detectors when the peak readings were within 10dB of the Quasi-peak limit line.

### Test Result

- Conducted Emissions (QP/AV) level (dBµV) = Analyzer level (dBµV) + Corr. (dB)
- Corr. (dB) = Insertion Loss of LISN (dB) + Cable Loss (dB)
- Margin (dB) = QP/AV Limit (dBµV) – QP/AV level (dBµV)

### Test setup

Description of test set-up:

The EUT was placed on a 0.8m non-conducting table above a ground reference plane (GRP).  
 The EUT was set to **Operation Mode #2 with configuration Mode #2 & power interface #1**

### Measurement Graphical representation for Emission

#### - Graph of Line 1(Hot)

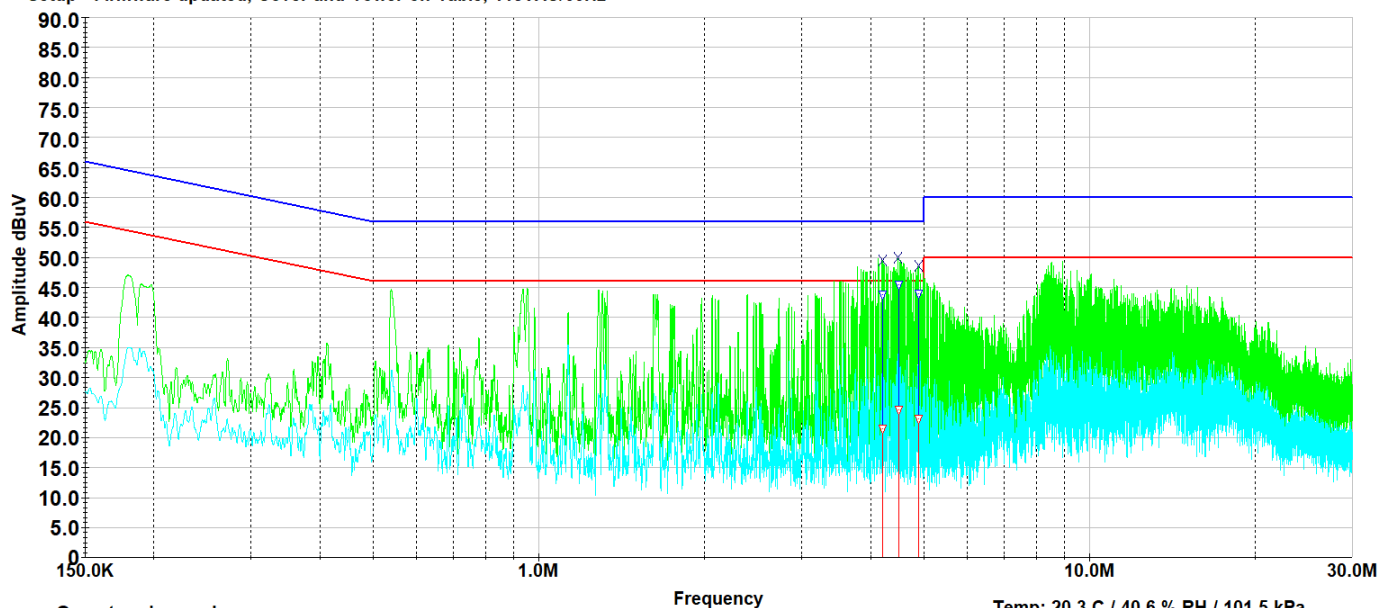


FCC 15.107\_Class B  
 Conducted Emissions - 150K-30MHz  
 Line 1 - Hot Line

- QP Limit
- Average Limit
- Line 1 Scan
- Ave Trace
- × Suspects
- ▼ QP
- ▼ Ave

Project Number - 15323  
 Model Number - POD  
 Serial Number - 56F2 & 5721  
 Sample Number - 5919 & 5920

Setup - Firmware updated, Cover and Tower on Table, 115VAC/60Hz



Operator: Jeremy Lee

Temp: 20.3 C / 40.6 % RH / 101.5 kPa

02\_FCC\_ConEmi\_AC Mains\_updated FW.til

Company: Eight Sleep Inc.

Last Data Update 04:24:44 PM, Tuesday, December 15, 2020

Contact: Daipan Lee

#### - Table of Line 1(Hot)

Frequency(MHz)	Peak (dBuV)	QP (dBuV)	QP Limit (dBuV)	Margin_QP (dB)	AVG (dBuV)	AVG Limit (dBuV)	Margin_AVG (dB)	LISN Losses (dB)	Path Losses (dB)
4.21080 MHz	49.55	43.82	56.00	12.18	21.51	46.00	24.49	10.33	0.05
4.49655 MHz	49.10	45.49	56.00	10.51	24.63	46.00	21.37	10.34	0.05
4.88895 MHz	49.10	43.95	56.00	12.05	23.16	46.00	22.84	10.34	0.05

**- Graph of Line 2(Neutral)**



FCC 15.107\_Class B

Conducted Emissions - 150K-30MHz

Line 2 - Neutral Line

- QP Limit
- Average Limit
- Line 2 Scan
- Ave Trace
- × Suspects
- ▽ QP
- ▽ Ave

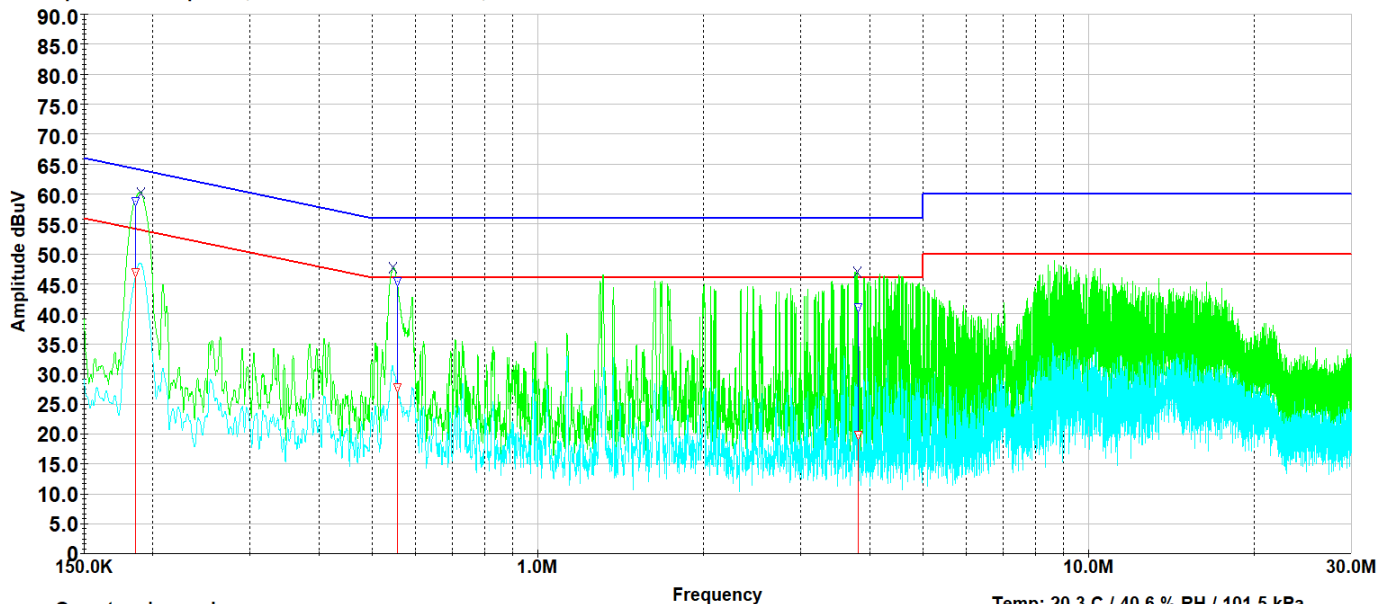
Project Number - 15323

Model Number - POD

Serial Number - 56F2 & 5721

Sample Number - 5919 & 5920

Setup - Firmware updated, Cover and Tower on Table, 115VAC/60Hz



Operator: Jeremy Lee

Temp: 20.3 C / 40.6 % RH / 101.5 kPa

02\_FCC\_ConEmi\_AC Mains\_updated FW.til

Company: Eight Sleep Inc.

Last Data Update 04:23:13 PM, Tuesdav, December 15, 2020

Contact: Daipan Lee

**- Table of Line 2(Neutral)**

Frequency(MHz)	Peak (dBuV)	QP (dBuV)	QP Limit (dBuV)	Margin_QP (dB)	AVG (dBuV)	AVG Limit (dBuV)	Margin_AVG (dB)	LISN Losses (dB)	Path Losses (dB)
185.86500 KHz	61.29	58.86	64.22	5.36	46.98	54.22	7.24	10.74	0.01
555.22500 KHz	48.15	45.37	56.00	10.63	27.73	46.00	18.27	10.35	0.02
3.81615 MHz	46.40	41.13	56.00	14.87	19.84	46.00	26.16	10.33	0.04

## Antenna Requirement

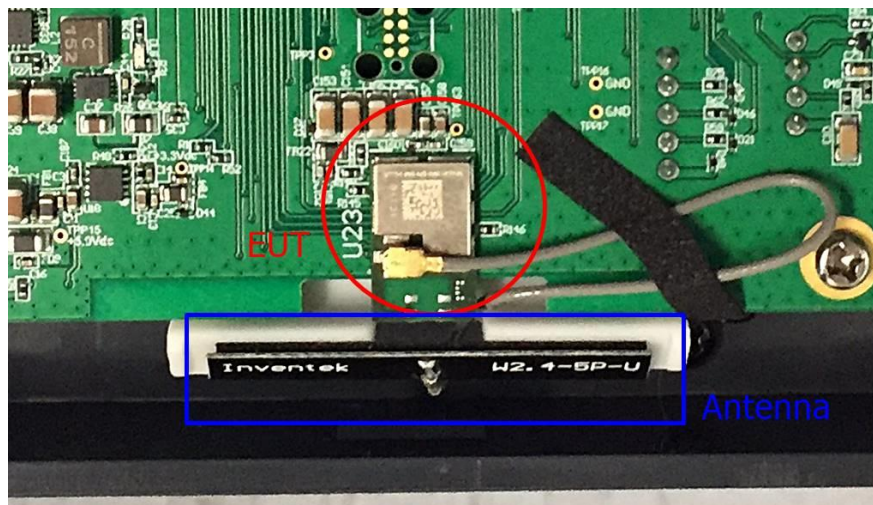
Governing Doc	FCC 15.203	Room Temperature (°C)	n/a
Basic Standard	n/a	Relative Humidity (%)	n/a
Test Location	Richmond	Barometric Pressure (kPa)	n/a
Test Engineer	Jeremy Lee	Date	26 JAN. 2021
EUT Voltage	<input type="checkbox"/> DC	<input checked="" type="checkbox"/> 115VAC @ 60Hz	
Compliant <input checked="" type="checkbox"/>	Non-Compliant <input type="checkbox"/>	Not Applicable <input type="checkbox"/>	

## Results

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 use of a standard antenna jack or electrical connector is prohibited.

The Antenna, W2.4-5P-U, is permanently attached to EUT with U.FI connector and 90mm Coaxial cable in HOST Unit. The antenna can be replaced but not be used standard antenna jack.

Please see EUT photo for details.



END REPORT