



REPORT

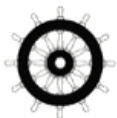
For

Guard RFID Solutions Inc.

#140 – 766 Cliveden Place
Delta, British Columbia
V3M 6C7, Canada

Date: 07 July 2021
Report No.: 20.01.20237-1
Revision No.: 1
Project No.: 20237
Equipment: Wireless Charger for RFID TAG
Model No.: Wi-Fi Tag Charger
FCC ID: VZKWTC
IC: 9937A-WTC




ONE STOP GLOBAL CERTIFICATION SOLUTIONS



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TEST REPORT_FCC 15.209 & RSS-210	
Licence-Exempt Radio Apparatus: Category I Equipment	
Report Reference No.....:	20.01.20237-1
Report Revision History.....:	✓ Rev. 1: 07 July 2021
Compiled by (+ signature).....:	Jeremy Lee 
Approved by (+ signature).....:	David Johanson 
Date of issue	07 July 2021
Total number of pages	29
FCC Site Registration No.: CA5970	
IC Site Registration No.: CA5970	
Testing Laboratory LabTest Certification Inc.	
Address	
Unit 205 – 8291 92 ST. Delta, B.C. V4G 0A4, Canada	
Applicant's name.....: Guard RFID Solutions Inc.	
Address	
#140-766 Cliveden Place, Delta, BC, V3M 6C7, Canada	
Manufacture's Name Same as Applicant	
Address	
Same as Applicant	
Test specification:	
Standards	<ul style="list-style-type: none"> ➤ FCC Part 15, Subpart C, 2020 ➤ IC RSS-210 Issue 9 August 2016
Test procedure	<ul style="list-style-type: none"> ➤ ANSI C63.10:2013 ➤ ANSI C63.4:2014 ➤ RSS-Gen, Issue 5, April 2018
Non-standard test method.....:	N/A
Test Report Form(s) Originator	Jeremy Lee
Master TRF	1036_Rev2 – RF Report Template
Test item description :	
Trade Mark	
Model/Type reference	Wi-Fi Tag Charger

Serial Number	100002
FCC ID	VZKWTC
IC ID	n/p
Possible test case verdicts:	
- 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)
Testing:	
Date of receipt of test item	05 April 2021
Date (s) of performance of tests.....	06 April 2021

Revision History

Revision	Date	Reason For Change	Author(s)
1	1 13 April 2019	First version	Jeremy Lee
2	07 July 2021	Corrected FCC ID from VZKWCT and table on page 16	Daniel Lee

Device Under Test Description

Application for	Wireless Charger
Operating Transmit Frequency	136.547 to 144.051kHz
Operating Receive Frequency	n/a
Number of Channels	10
Equipment mobility	No
Distance to User.....	> 20cm
Operating condition	-10 to +50 °C (-14 to 122 °F)
Mass of equipment.....	1.0kg(2.3lb)
Dimension	190.5 mm X 295.91 mm X 25 mm (7.50" X 11.65 " X 0.98")
Nominal Voltages for:	<input checked="" type="checkbox"/> stand-alone equipment <input type="checkbox"/> combined (or host) equipment
Supply Voltage:	_____ AC _____ Amps ___5V___ DC ___5.0___ 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 <ul style="list-style-type: none"> <input type="checkbox"/> Nickel Cadmium <input checked="" type="checkbox"/> Alkaline, 4 X AA <input type="checkbox"/> Nickel-Metal Hydride <input type="checkbox"/> Lithium-Ion <input type="checkbox"/> Other
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Program details

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

Summary of testing:	
Tests performed (name of test and test clause): Radiated Field strength and Emissions Conducted Emissions	Testing location: 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.</p> <p>Based on the results of our investigation, we have concluded the product tested complies 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>Description: The WiFi Tag Charger(WTC) is designed to provide contactless charging for ST-4-WIFI Staff Tags. While the ST-4-WIFI tags can operate up to a month on each charge, the WTC can recharge each tag within 6 hours to ensure minimal interruption to normal operations. The WTC maintains the same charge rate whether you are charging one tag or 10 simultaneously.</p> <p>When the ST-4-WIFI tag is in the WTC, one LED is blue to show that it is placed correctly in the WTC while the other LED will flash yellow to show that it is charging and becomes solid yellow when charging is complete. It is recommended that extra tags be available for use while depleted tags are being recharged.</p>

Variant Models:

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.

None

Client Equipment Used During Test

Use*	Product Type	Manufacturer	Model	Comments
EUT	Wireless Charger	Guard RFID	Wi-Fi Tag Charger	
AE	RFID TAG	Guard RFID	ST-4	10EA
SIM	AC/DC Adapter	Qualtek	ATS036T-W050U	I/P: 115VAC/60Hz, 1A Max. O/P: 5VDC, 5A

Software and Firmware

Use*	Description	Version
n/a		

Input/Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	DC Input	DC	N	N	Connected to AC Network via ATS036T-W050U

Power Interface

Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	5.0	n/p	n/p	DC	n/a	Via ATS036T-W050U

EUT Operation Modes

Mode #	Description
1	No Charging Mode.
2	Full Charging Mode.

EUT Configuration Modes

Mode #	Description
1	No ST-4 on EUT, the AC/DC Adapter was connected to Extension Cord and DC cable of Adapter was connected to EUT permanatly.
2	The AC/DC Adapter was connected to Extension Cord and DC cable of Adapter was connected to EUT permanatly.10 X ST-4 on EUT for Charging as see below;

Test Equipment Verified for function

Model #	Description	Checked Function	Results
N9038A	Spectrum Analyzer	Frequency and Amplitude	In Tolerance
AL-130	Antenna, 9kHz to 30MHz	Checked structure	Normal – no damage.
SAS-540	Antenna, 30 to 300MHz	Checked structure	Normal – no damage.
JB1	Antenna, 30 to 2000MHz	Checked structure	Normal – no damage.
LIN-120C	LISN	Checked Insertion Losses	In Tolerance
5001i	AC Power Source	Measured the Output power	In Tolerance

Measurement Uncertainty

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

Parameter	Uncertainty
Radiated Emission, 30 to 250MHz	± 4.37 dB
Radiated Emission, 250 to 1000MHz	± 4.29 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.

FCC Part 15.209 and IC RSS-210			
Test Type	Regulation	Measurement Method	Result
15.209			
Field Strength	FCC Part 15.209 & IC RSS-216	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5 & 6.6	P
Spurious Emissions (Unwanted Emissions)	FCC Part 15.209 & IC RSS-216	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5 & 6.6	P
The Bandwidth of the emission	FCC Part 15.209 & IC RSS-216	ANSI C63.10:2013, Clause 6.9	P
General			
AC Power Line Conducted Emissions	FCC 15.207(a) & RSS-Gen	ANSI C63.4:2014	P
Radiated Emissions-Intentional radiators	FCC 15.209(a) & RSS-Gen	ANSI C63.4:2014	P
Antenna Requirement	FCC 15.203 & RSS-Gen	-	P

Field Strength

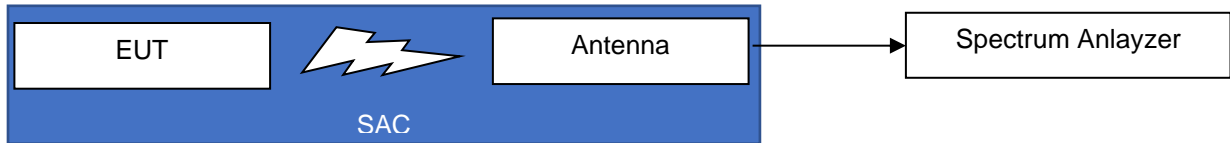
Governing Doc	FCC Part 15.209 & IC RSS-216	Room Temperature (°C)	21.1			
Basic Standard	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5 & 6.6	Relative Humidity (%)	31.6			
Test Location	Richmond	Barometric Pressure (kPa)	102.1			
Test Engineer	Jeremy Lee	Date	06 April 2021			
Test Voltage	<input type="checkbox"/> 5VDC <input checked="" type="checkbox"/> 115VAC @ 60Hz					
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due	
Spectrum Analyzer	Keysight	N9038A	702	26-Apr-2018	26-Apr-2019	
Loop Antenna	Com-Power	AL-130	241	18-Nov-2019	18-Nov-2021	
Turn Table	Sunol	SM46C	235C	IHC ¹	IHC ¹	
EMC Shielded Enclosure	USC	USC-26	374	IHC ¹	IHC ¹	
RF Cable	MRO	n/a	n/a	IHC ²	IHC ²	
Used Software	<input checked="" type="checkbox"/> Tile 7! v7.3.0.6					
Used Template of Tile 7!						
Note1) In House Calibration Ref. # 4						
Note2) In House Calibration Ref. # 6						
Detector:	<input checked="" type="checkbox"/> Peak/AVG <input type="checkbox"/> Quasi-Peak					
RBW/VBW:	<input checked="" type="checkbox"/> 9/100kHz <input type="checkbox"/> 1/3MHz					
Type of Facility:	<input checked="" type="checkbox"/> SAC <input 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					
Frequency (kHz)	Detector	POL	Emissions (dBuV/m)	Limit ¹ (dBuV/m)	Margin (dB)	Comments
139.633	Peak	H	82.96	104.70	21.74	P
Note 1) Converted from 2400/F(kHz) uV/m at 300 meters to dBuV/m at 3 meters.						
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>						

Test setup

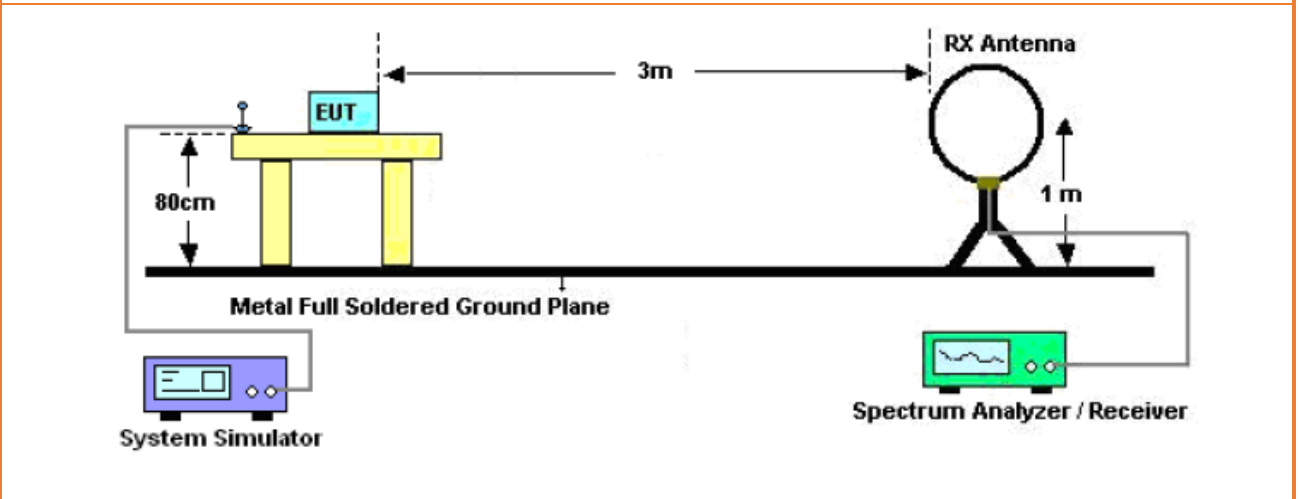
Description of test set-up:

The EUT was placed on a 0.8 m non-conducting table above a Turn table in SAC.

The EUT was set to **Operation Mode #2 with configuration Mode #2.**



- Tested with AL-130 Active Loop Antenna as followed by ANSI C63.10, Table 1



Measurement Procedure

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. A test was made with an Spectrum Analyzer, controlled by Test Software, Tile7!, at 135 to 145kHz with the Analyzer in the peak mode. The IF bandwidth was 200Hz. The Peak was selected the highest level of 10 separate emissions. To ensure that the maximum emission, the receive antenna is varied and rotated to produce max level while the turntable is rotated to determine the worst emitting configuration. The numerical results are included herein to demonstrate compliance.

Test Result

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

Spurious Emissions (Unwanted Emissions)

Governing Doc	FCC Part 15.209 & IC RSS-216	Room Temperature (°C)	21.1				
Basic Standard	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5 & 6.6	Relative Humidity (%)	31.6				
Test Location	Richmond	Barometric Pressure (kPa)	102.1				
Test Engineer	Jeremy Lee	Date	06 April 2021				
Test Voltage	<input type="checkbox"/> 5VDC <input checked="" type="checkbox"/> 115VAC @ 60Hz						
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due		
Spectrum Analyzer	Keysight	N9038A	702	26-Apr-2018	26-Apr-2019		
Loop Antenna	Com-Power	AL-130	241	18-Nov-2019	18-Nov-2021		
LPDA Antenna	A.H.Systems	SAS-510-2	227B	07-Feb-2018	07-Feb-2020		
Double-ridged Guide Horn Antenna	A.H.Systems	SAS-571	227C	18-Oct-2018	18-Oct-2020		
Motion Controller	Sunol	SC104V	235A	IHC ¹	IHC ¹		
Antenna Tower	Sunol	TWR95-4	235B	IHC ¹	IHC ¹		
Turn Table	Sunol	SM46C	235C	IHC ¹	IHC ¹		
EMC Shielded Enclosure	USC	USC-26	374	IHC ¹	IHC ¹		
RF Cable	MRO	n/a	n/a	IHC ²	IHC ²		
RF Cable	A.H. Systems	SAC-26G-3	227D	IHC ²	IHC ²		
RF Preamplifier	Agilent	8449B	273	IHC ²	IHC ²		
Used Software	<input checked="" type="checkbox"/> Tile 7! v7.3.0.6						
Used Template of Tile 7!							
Note1) In House Calibration Ref. # 4 & 5							
Note2) In House Calibration Ref. # 6							
Detector:	<input checked="" type="checkbox"/> Peak/AVG		<input checked="" type="checkbox"/> Quasi-Peak				
RBW/VBW:	<input checked="" type="checkbox"/> 9/100kHz	<input checked="" type="checkbox"/> 120/300kHz	<input checked="" type="checkbox"/> 1/3MHz(over 1G)				
Type of Facility:	<input checked="" type="checkbox"/> SAC	<input checked="" type="checkbox"/> FSOATS(over 1G)	<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				
Frequency (MHz)	Orthogonal	Detector	POL	Emissions (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Comments
867.84	X	QP ¹⁾	H	36.26	60.83	24.57	P
		QP ¹⁾	V	36.35	60.83	24.48	P
	Y	QP ¹⁾	H	36.26	60.83	24.57	P

		QP ¹⁾	V	36.30	60.83	24.53	P
	Z	QP ¹⁾	H	36.28	60.83	24.55	P
		QP ¹⁾	V	36.32	60.83	24.51	P
1301.76	Z	Peak	V	36.26	73.98	41.72	P
		AVG	V	20.74	53.98	20.74	P
1735.68	X	Peak	H	36.73	80.83	44.10	P
	X	AVG	H	23.06	60.83	37.77	P
2169.60	X	Peak	H	36.74	80.83	44.09	P
		AVG	H	24.36	60.83	36.47	P
2603.52	Z	Peak	V	36.73	80.83	44.10	P
		AVG	V	23.70	60.83	37.13	P
3037.44	X	Peak	H	63.11	80.83	17.72	P
	Z	AVG	V	27.00	60.83	33.83	P
3471.36	Z	Peak	V	37.27	80.83	43.56	P
	X	AVG	H	25.01	60.83	35.82	P
3905.28	X	Peak	H	39.68	73.98	34.30	P
		AVG	H	28.26	53.98	25.72	P
4339.20	Z	Peak	V	45.02	73.98	28.96	P
	X	AVG	H	25.58	53.98	28.40	P

Note 1) Measured by CISPR quasi-peak detector.

Compliant

Non-Compliant

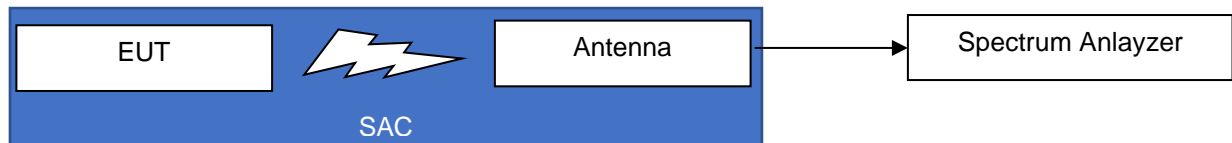
Not Applicable

Test setup

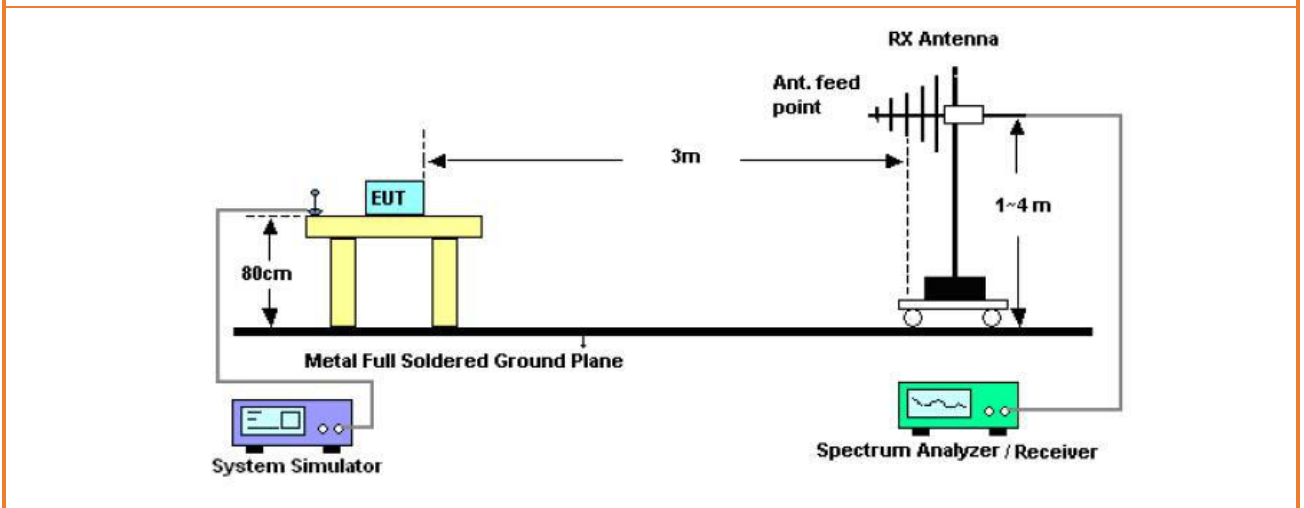
Description of test set-up:

The EUT 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.

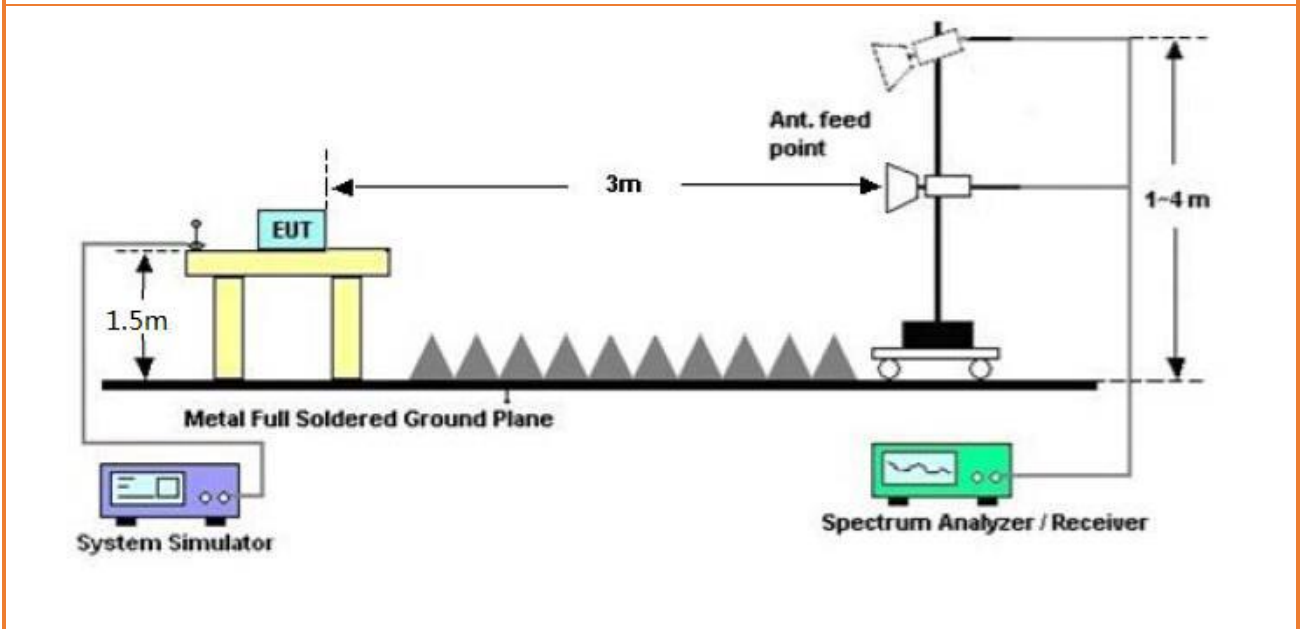
The EUT was set to **Operation Mode #3 with configuration Mode #1, 2 & 3.**



- Tested with SAS-510-2 for 867.84MHz, LPDA Antenna as followed by ANSI C63.10, Table 1



- Tested with SAS-571 for over 1GHz, Double-ridged Guided Horn Antenna as followed by ANSI C63.10, Table 1



Measurement Procedure

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 test was made with an Spectrum Analyzer, controlled by Test Software, Tile7!, for all Harmonics UP TO 10th with the Analyzer in the peak mode. The IF bandwidth was 120 kHz(under 1GHz) and 1MHz(over 1GHz). 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(under 1GHz) and Averaging (over 1GHz). It was repeated again for three different Orthogonals as described in configuration mode. The numerical results are included herein to demonstrate compliance. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Test Result

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

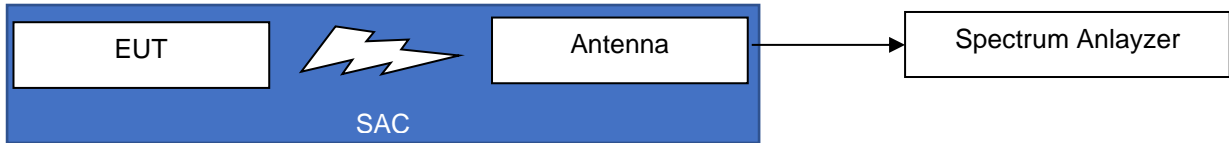
The Bandwidth of the emission

Governing Doc	FCC Part 15.209 & IC RSS-216,	Room Temperature (°C)	21.1		
Basic Standard	ANSI C63.10:2013, Clause 6.9	Relative Humidity (%)	31.6		
Test Location	Richmond	Barometric Pressure	102.1		
Test Engineer	Jeremy Lee	Date	06 April 2021		
Test Voltage	<input type="checkbox"/> 5VDC <input checked="" type="checkbox"/> 115VAC @ 60Hz				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
Spectrum Analyzer	Keysight	N9038A	702	26-Apr-2018	26-Apr-2019
Active Loop Antenna	Com-Power	AL-130	241	18-Nov-2019	18-Nov-2021
Motion Controller	Sunol	SC104V	235A	IHC ¹	IHC ¹
Antenna Tower	Sunol	TWR95-4	235B	IHC ¹	IHC ¹
Turn Table	Sunol	SM46C	235C	IHC ¹	IHC ¹
EMC Shielded Enclosure	USC	USC-26	374	IHC ¹	IHC ¹
RF Cable	MRO	n/a	n/a	IHC ²	IHC ²
Note1) In House Calibration Ref. # 4 Note2) In House Calibration Ref. # 6					
Frequency(kHz)	Test Method	Bandwidth(Hz)	Limit		Comments
140.062	20dB ¹	27	N/A		P
	99% ²	29	N/A		P
Note 1) referenced for FCC 15.215(c), Note 2) referenced by RSS-216					
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>					

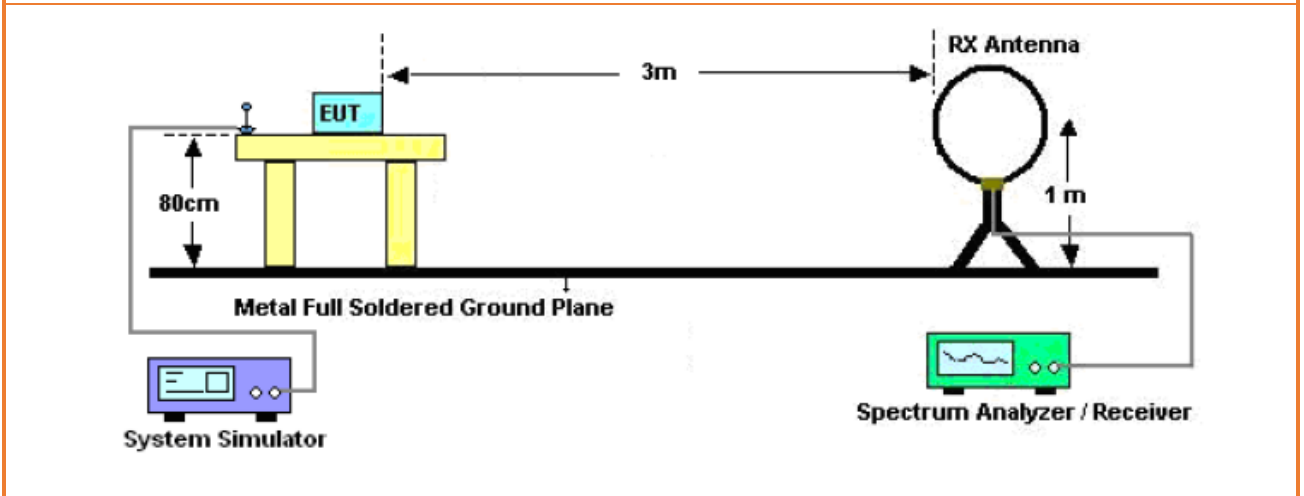
Test setup

Description of test set-up:

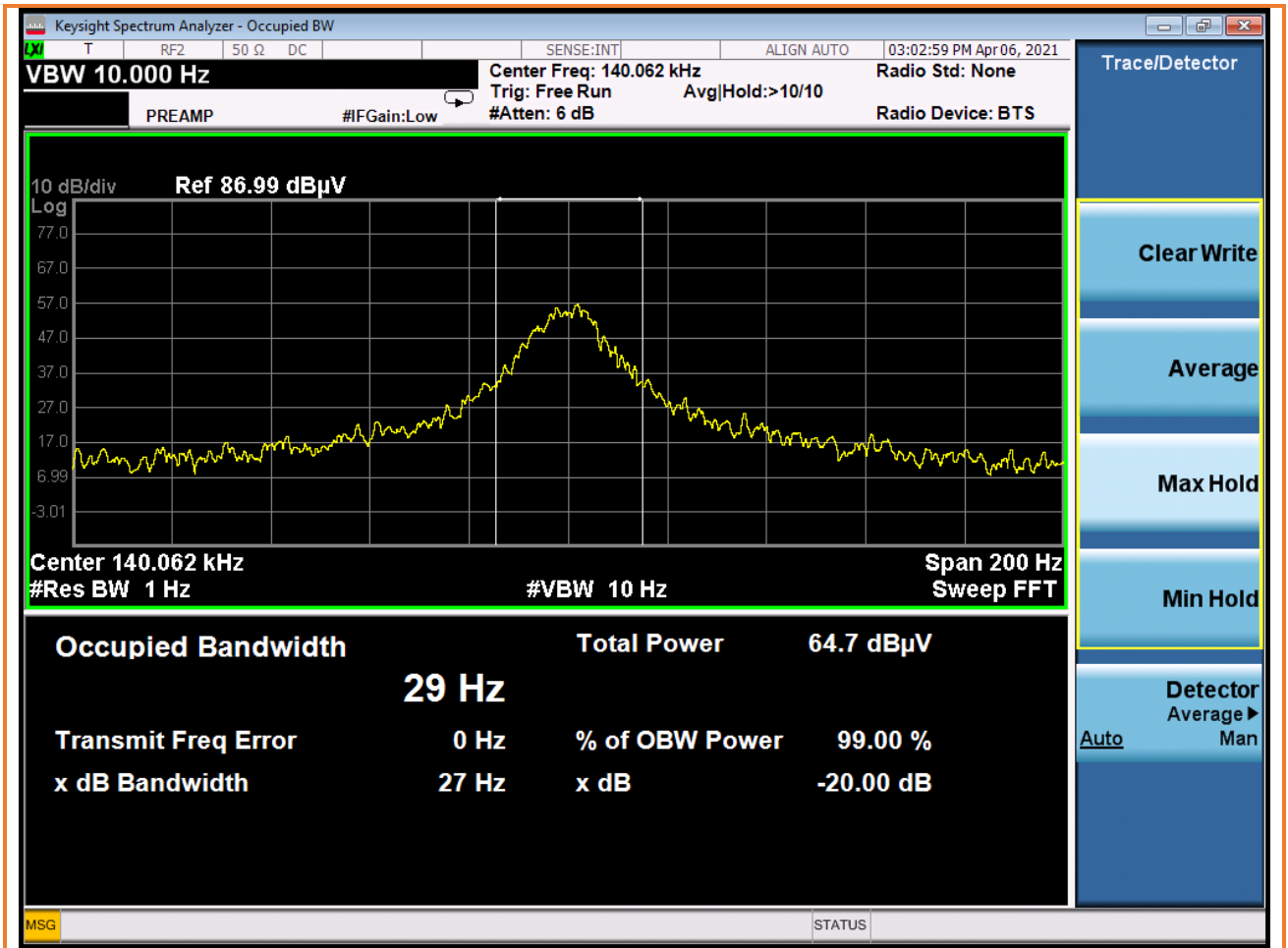
The EUT was placed on a 0.8 m non-conducting table above a Turn table in SAC.
The EUT was set to **Operation Mode #3 with configuration Mode #1.**



- Tested with AL-130 Active Loop Antenna as followed by ANSI C63.10, Table 1



Results



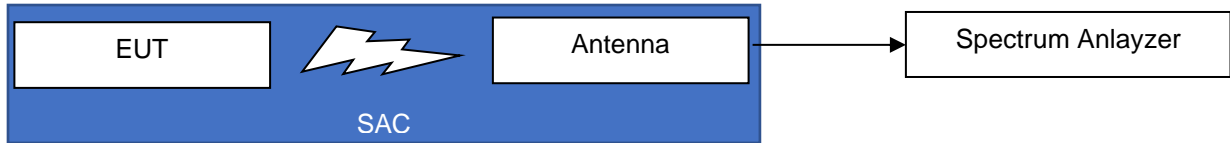
Radiated Emissions

Governing Doc	FCC 15.209(a) & RSS-Gen	Room Temperature (°C)	20.8 to 21.3		
Basic Standard	ANSI C63.4:2014 & ANSI C63.10:2013, Clause 6.5	Relative Humidity (%)	31.2 to 31.8		
Test Location	Richmond	Barometric Pressure (kPa)	102.1 to 102.3		
Test Engineer	Jeremy Lee	Date	05 to 06 April 2021		
Test Voltage	<input type="checkbox"/> 5VDC <input checked="" type="checkbox"/> 115VAC @ 60Hz				
Test Equipment Used	Manufacturer	Model	Identifier	Calibration	Calibration due
Spectrum Analyzer	KeySight	N9038A	702	27-May-2020	27-May-2021
Broadband Antenna	Sunol	JB1	371	24-Sep-2020	24-Sep-2022
BiCon Antenna	A.H Systems	SAS-540	1115	29-Apr-2019	29-Apr-2021
Motion Controller	Sunol	SC104V	235A	IHC ¹	IHC ¹
Antenna Tower	Sunol	TWR95-4	235B	IHC ¹	IHC ¹
Turn Table	Sunol	SM46C	235C	IHC ¹	IHC ¹
EMC Shielded Enclosure	USC	USC-26	374	IHC ¹	IHC ¹
RF Cable	MRO	n/a	n/a	IHC ²	IHC ²
AC Power Source	California Instruments	5001i	059	IHC ³	IHC ³
Used Software	<input checked="" type="checkbox"/> Tile 7! v7.3.0.6				
Used Template of Tile 7!	_FCC_RadEmi_30-250MHz_Final_20200727 _FCC_RadEmi_30-1000MHz_20200727				
Note1) In House Calibration Ref. # 4 Note2) In House Calibration Ref. # 6 Note3) In House Calibration Ref. # 7					
Frequency Range:	<input type="checkbox"/> 9kHz-30MHz	<input checked="" type="checkbox"/> 30-1000MHz	<input type="checkbox"/> 1-5GHz		
Detector:	<input checked="" type="checkbox"/> Peak (for Prescan)	<input type="checkbox"/> Quasi-Peak(for Formal)			
RBW/VBW:	<input type="checkbox"/> 9/30kHz	<input checked="" type="checkbox"/> 120/300kHz	<input 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		
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>					

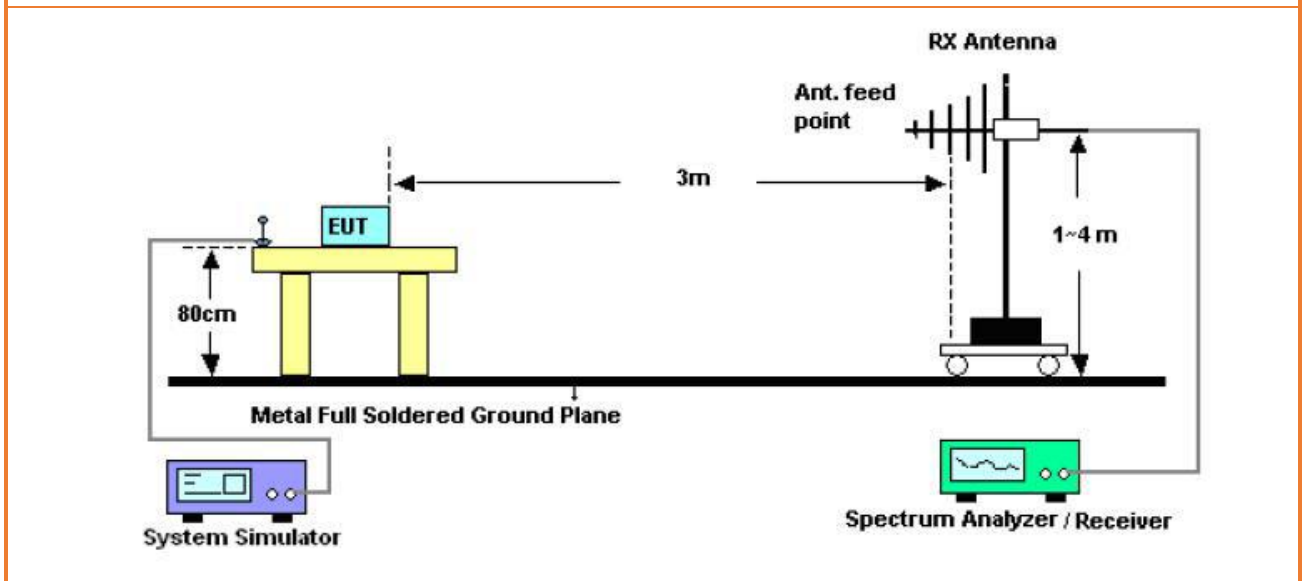
Test setup

Description of test set-up:

The EUT was placed on a 0.8 m non-conducting table above a Turn table in SAC.
The EUT was set to **Operation Mode #1 & #2 with configuration Mode #1 & #2.**



- Radiated Emission 30 to 1000MHz, with JB-1



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.

NOTE to Paragraph (a)(3): Digital devices tested to show compliance with the provisions of §§ 15.107(e) and 15.109(g) must be tested following the ANSI C63.4 procedure described in paragraph (a)(3) of this section.[As stated in the adopting R&O, ANSI C63.4 is not used for measurements below 30 MHz.]

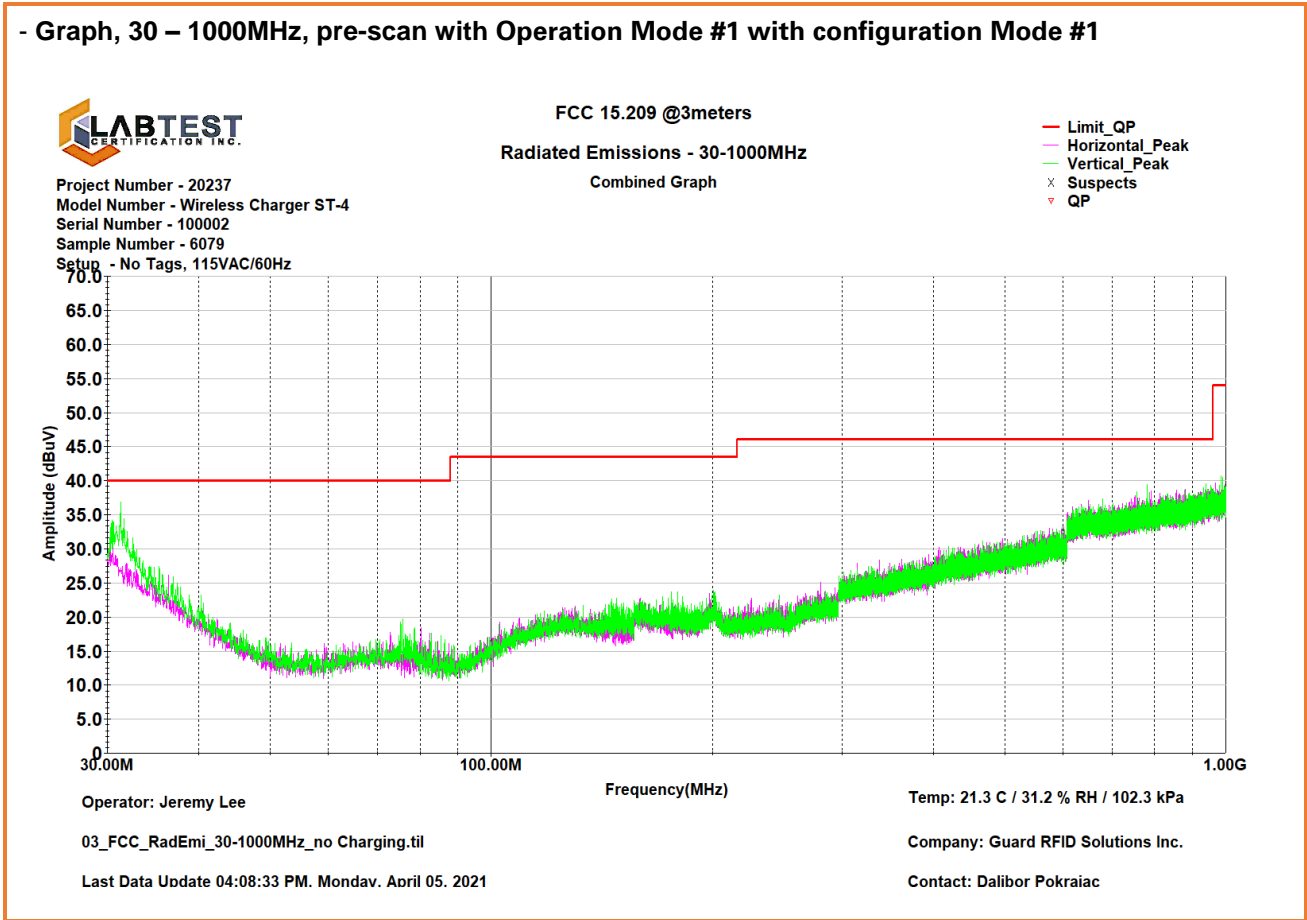
This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (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 1000 MHz with the receiver in the peak mode. The receiver IF bandwidth was 120 kHz and scan step was about 25 kHz. 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 μ V/m) = Analyzer level (dB μ V) + AFCL (dB/m)
- AFCL (dB/m) = Antenna Factor (dB/m) +Cable Loss (dB) - Pre-Amplifier Gain(dB)
- Margin (dB) = Limit (dB μ V/m) - Field Strength level (dB μ V/m)

Graphical Representation for Emission - Radiated 30MHz to 1GHz

- Graph, 30 – 1000MHz, pre-scan with Operation Mode #1 with configuration Mode #1



- Graph, 30 – 1000MHz, pre-scan with Operation Mode #2 with configuration Mode #2



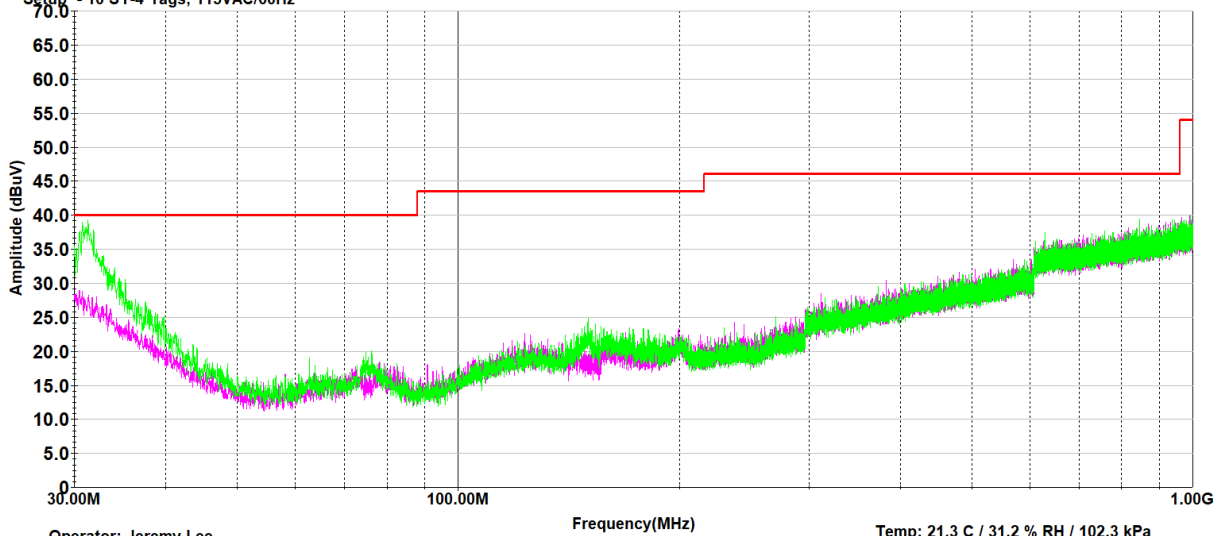
FCC 15.209 @3meters

Radiated Emissions - 30-1000MHz

Combined Graph

- Limit_QP
- Horizontal_Peak
- Vertical_Peak
- × Suspects
- ▼ QP

Project Number - 20237
Model Number - Wireless Charger ST-4
Serial Number - 100002
Sample Number - 6079
Setup - 10 ST-4 Tags, 115VAC/60Hz



Operator: Jeremy Lee

Temp: 21.3 C / 31.2 % RH / 102.3 kPa

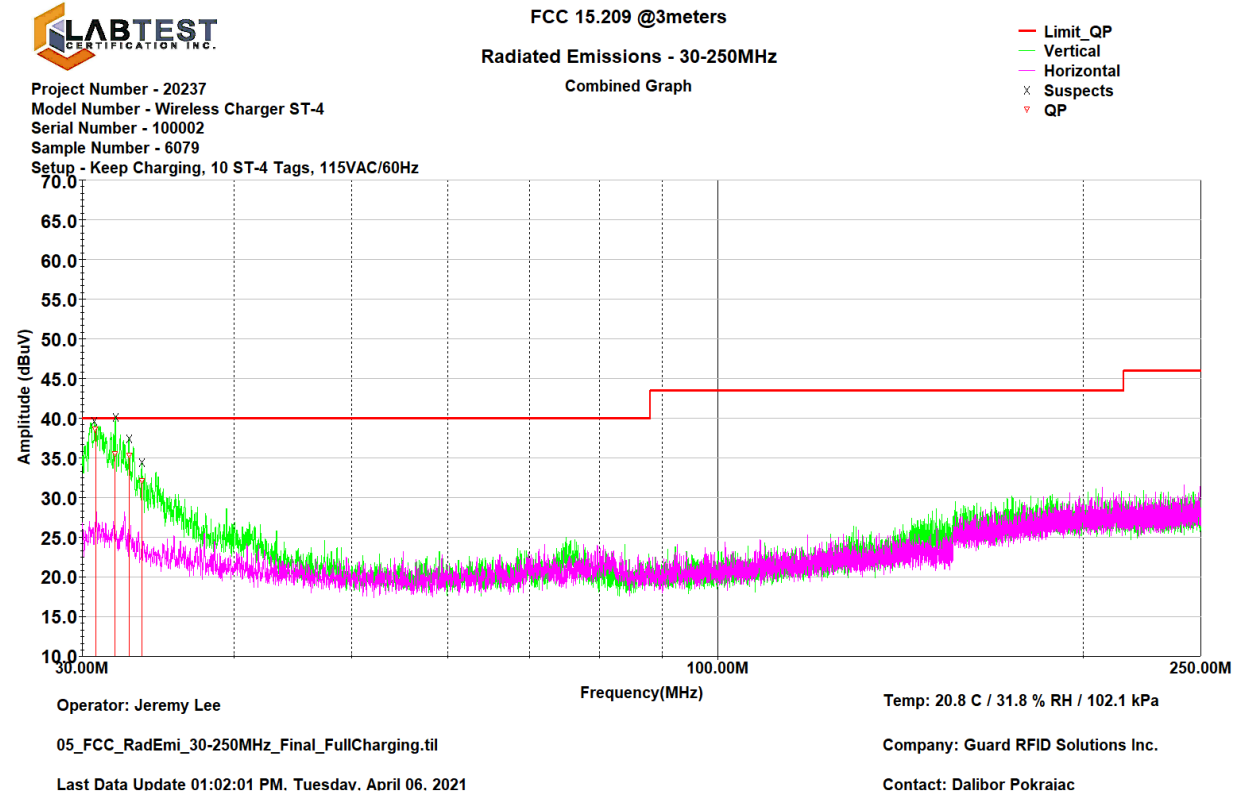
04_FCC_RadEmi_30-1000MHz_Full Charging.til

Company: Guard RFID Solutions Inc.

Last Data Update 04:29:38 PM. Mondav. April 05. 2021

Contact: Dalibor Pokraiac

- Graph, 30 – 250MHz, Final with Operation Mode #2 with configuration Mode #2



- Table: Vertical

Frequency(MHz)	Ant Fac (dB)	Cable loss (dB)	Preamp (dB)	AZ (Deg)	HGT (cm)	Peak (dBuV)	QP (dBuV)	Limit (dBuV)	Margin (dB)
30.7585 MHz	19.47	0.81	0.00	313	162	42.06	38.61	40.00	1.39
31.8925 MHz	19.22	0.82	0.00	280	221	39.75	35.46	40.00	4.54
32.7830 MHz	18.81	0.83	0.00	254	100	38.80	35.26	40.00	4.74
33.5860 MHz	18.52	0.84	0.00	360	102	36.98	32.12	40.00	7.88

Test Conditions and Results - Emission - Conducted Emissions-voltage AC mains port

Governing Doc	FCC 15.207 & RSS-Gen	Room Temperature (°C)	20.5		
Basic Standard	ANSI C63.4	Relative Humidity (%)	31.4		
Test Location	Richmond	Barometric Pressure (kPa)	102.4		
Test Engineer	Jeremy Lee	Date	05 APRIL 2021		
Test Voltage	<input type="checkbox"/> 5VDC <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
EMC Shielded Enclosure	USC	USC-26	374	IHC ¹	IHC ¹
RF Cable	MRO	n/a	n/a	IHC ²	IHC ²
AC Power Source	California Instruments	5001i	059	IHC ³	IHC ³
Used Software	<input checked="" type="checkbox"/> Tile! 7 v7.3.0.6				
Used Template	_FCC_ConEmi_AC Mains_LSN120C_TROFF_20201215				
Note1) In House Calibration Ref. # 4 Note2) In House Calibration Ref. # 6 Note3) 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"/> <input type="checkbox"/> Non-Compliant				

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

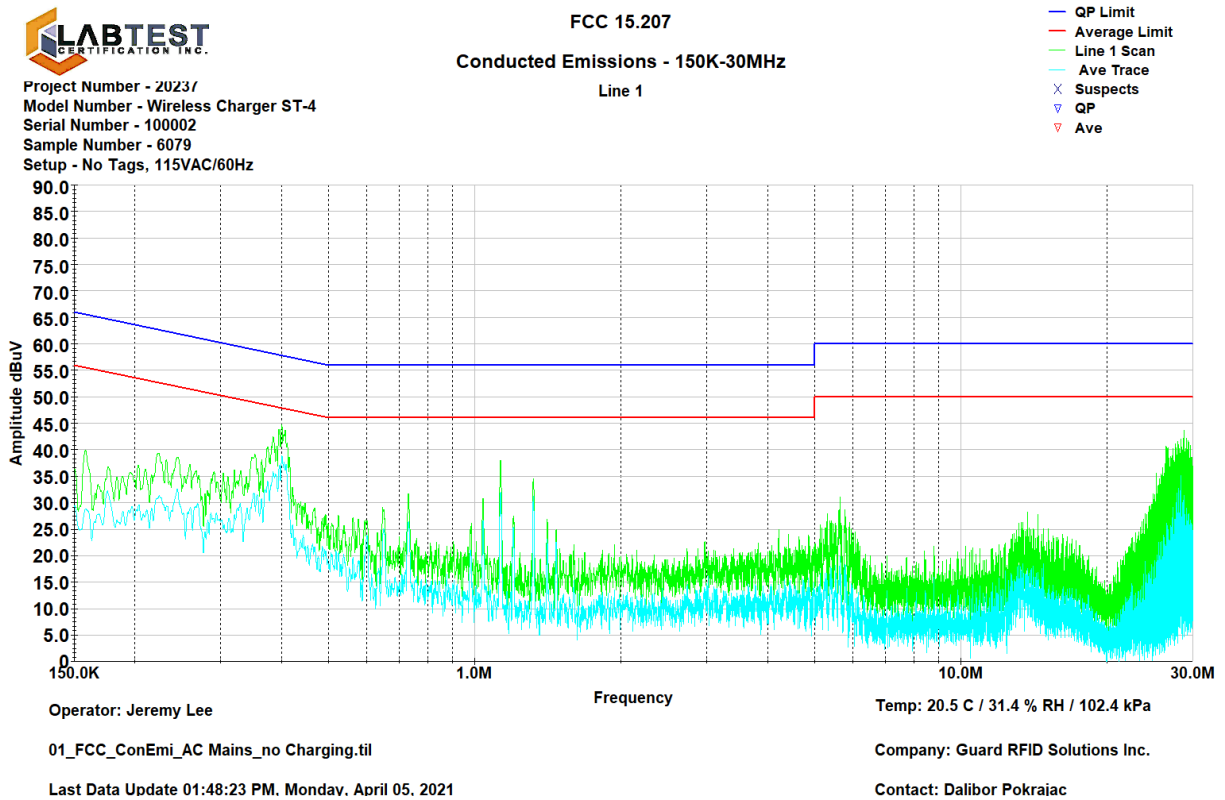
Test setup

Description of test set-up:

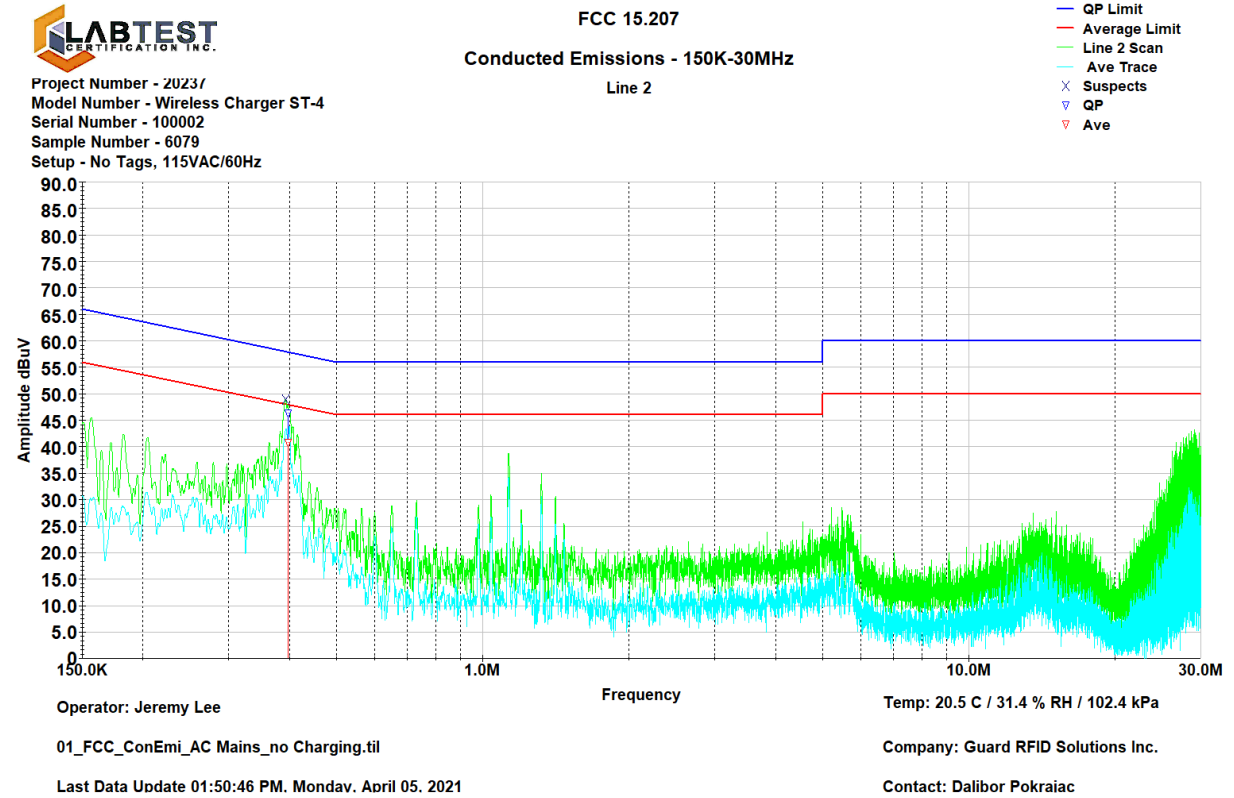
The EUT was placed on a 0.8m non-conducting table above a ground reference plane (GRP).
The EUT was set to **Operation Mode #1 & #2 with configuration Mode #1 & #2.**

Measurement Graphical representation for Emission

- Graph of Line 1(Hot), Operation Mode #1 with configuration Mode #1.



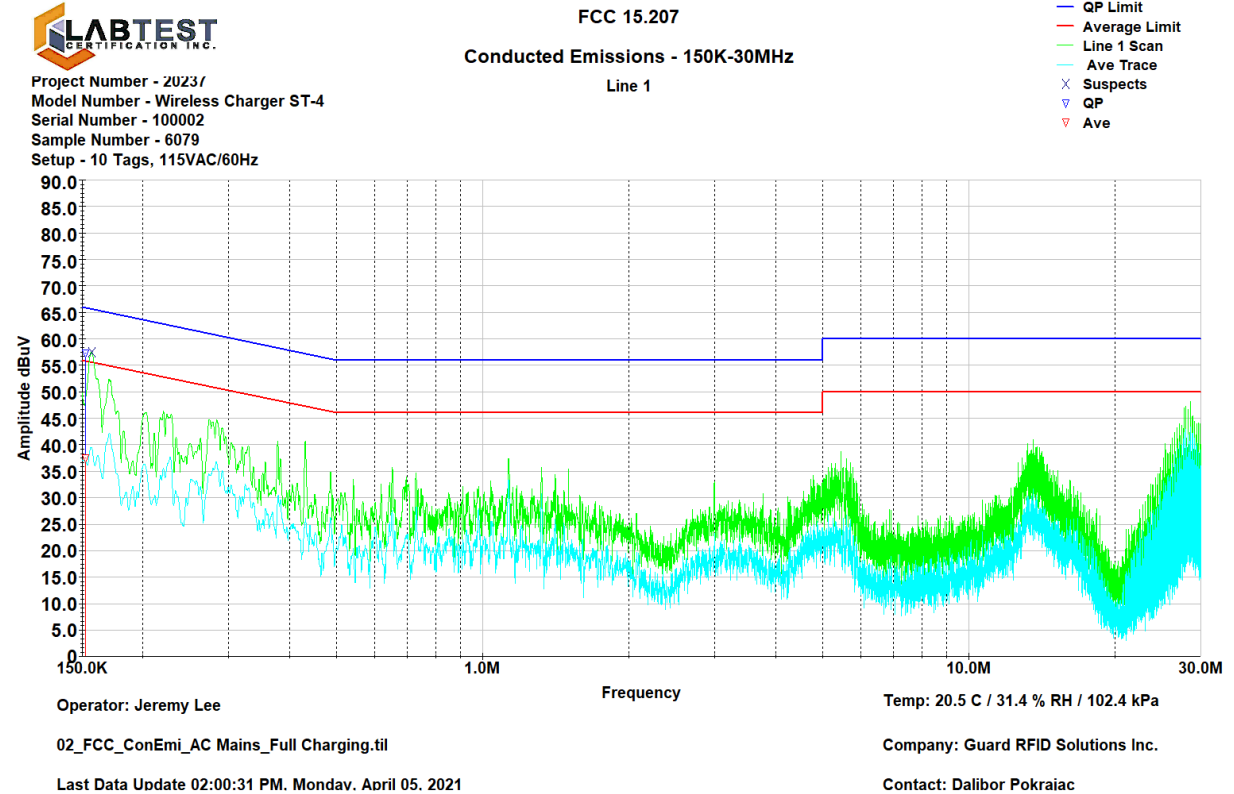
- Graph of Line 2(Neutral), Operation Mode #1 with configuration Mode #1.



- 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)
396.96000 KHz	9.39	46.38	57.92	11.54	40.74	47.92	7.17	0.16	0.01

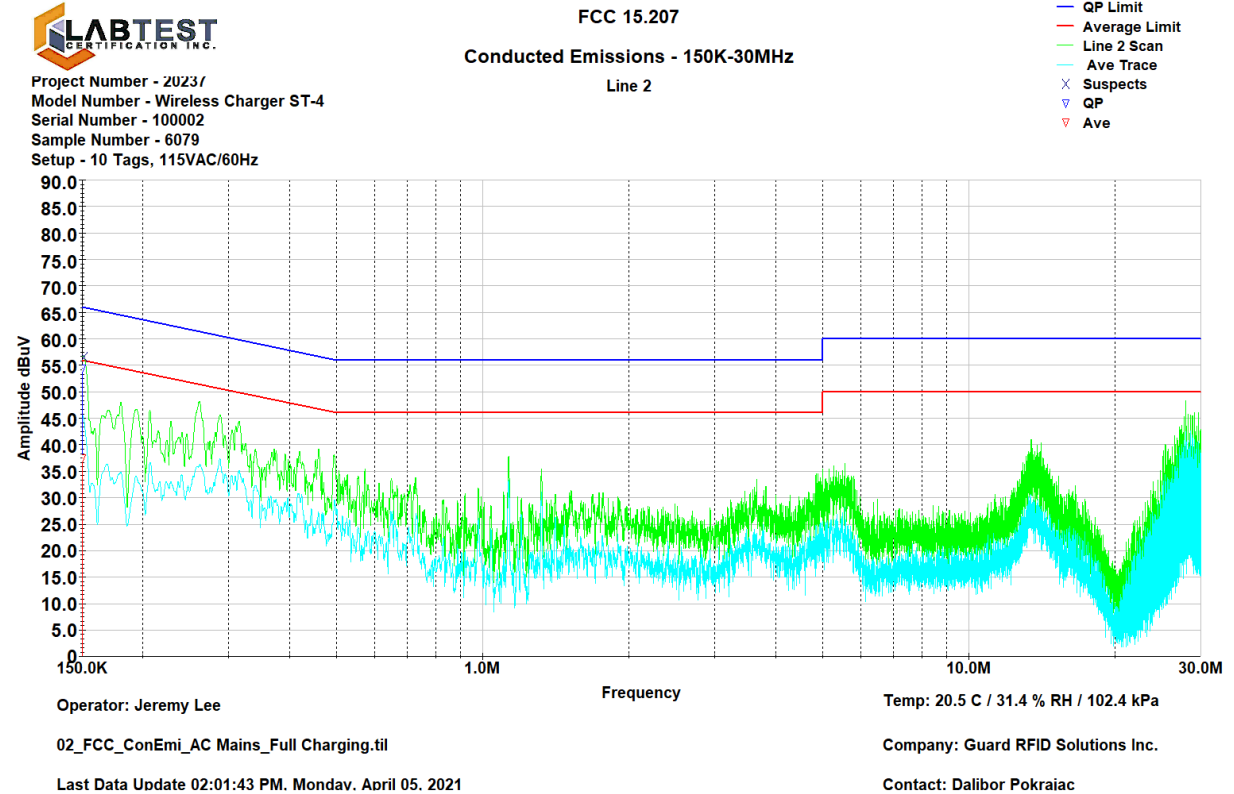
- Graph of Line 1(Hot), Operation Mode #2 with configuration Mode #2.



- 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)
152.52000 KHz	57.70	57.27	65.86	8.59	37.56	55.86	18.30	0.56	0.01

- Graph of Line 2(Neutral), Operation Mode #2 with configuration Mode #2.



- Table of Line 2(Neutral)

Frequency(MHz)	Peak (dBuV)	QP (dBuV)	QP Limit (dBuV)	Margin_QP (dB)	AVG (dBuV)	AVG Limit (dBuV)	Margin_AVG (d...	LISN Losses (dB)	Path Losses (dB)
150.00000 KHz	58.85	54.40	66.00	11.60	37.51	56.00	18.49	0.60	0.01

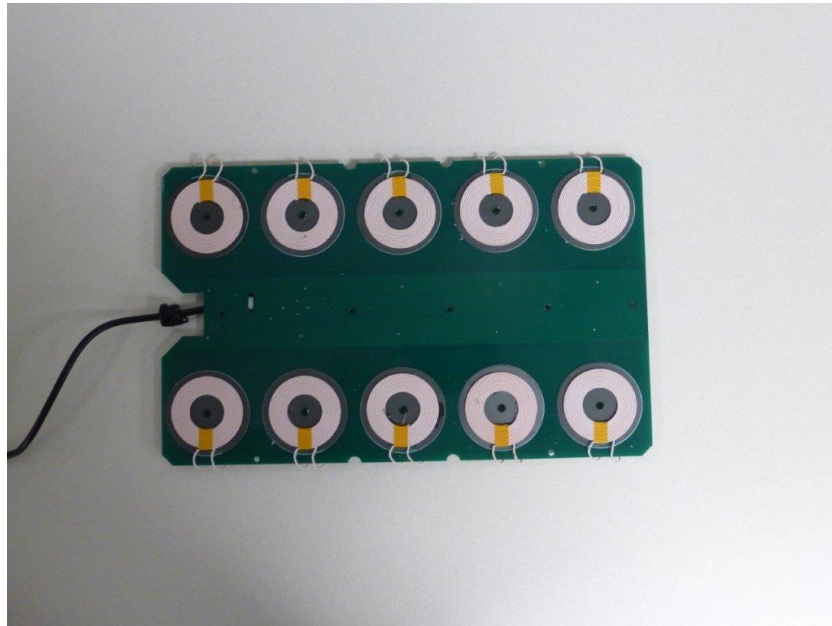
Antenna Requirement

Governing Doc	FCC 15.203 & RSS-Gen	Room Temperature (°C)	21.1
Basic Standard	N/A	Relative Humidity (%)	31.6
Test Location	Richmond	Barometric Pressure (kPa)	102.1
Test Engineer	Jeremy Lee	Date	06 April 2021
Test Voltage	<input type="checkbox"/> 5VDC <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 EUT has Internal antenna, which accordance to the above sections, is considered sufficient to comply with the provisions of these sections. Please see EUT photo for details.



END OF REPORT