

FCC TEST REPORT

Product Name: Personal Emergency Response System
Trade Mark: IdentiFind
Model No.: IF-4G
Report Number: 180621015EMC-1
Test Standards: FCC 47 CFR Part 15 Subpart B
Test Result: PASS
Date of Issue: August 7, 2018

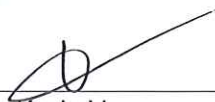
Prepared for:

Identifind LLC
1504 Penny Ln, Keller, Texas, United States

Prepared by:

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Version

Version No.	Date	Description
V1.0	August 7, 2018	Original

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Identifind LLC
Address of Applicant:	1504 Penny Ln, Keller, Texas, United States
Manufacturer:	Identifind LLC
Address of Manufacturer:	1504 Penny Ln, Keller, Texas, United States

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Personal Emergency Response System
Model No.:	IF-4G
Add. Model No.:	N/A
Trade Mark:	IdentiFind
DUT Stage:	Identical Prototype
Power Supply:	100-240~50/60Hz or/and 3.6 V Battery
Classification of digital devices:	Class B
Highest Internal Frequency:	1.91 GHz
Sample Received Date:	June 22, 2018
Sample Tested Date:	June 28, 2018 to July 28, 2018

1.2.2 Description of Accessories

Adapter	
Model No.:	S005BNU0500100
Input:	100-240 V~50/60 Hz 0.15 A
Output:	5.0 V $\equiv$ 1000 mA
AC Cable:	N/A
DC Cable:	N/A

Battery	
Battery Type:	Ni-Mh Battery
Rated Voltage:	3.6 Vdc
Rated Capacity:	2500 mAh

1.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested independently

1.4 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

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1.5 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.9 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart B Test Cases			
Test Item	Test Requirement	Test Method	Result
Conducted Emission	FCC 47 CFR Part 15.107	ANSI C63.4-2014	PASS
Radiated Emission	FCC 47 CFR Part 15.109	ANSI C63.4-2014	PASS



3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☒	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 20, 2015	Dec. 19, 2018
☒	Receiver	R&S	ESIB26	100114	Dec. 10, 2017	Dec. 10, 2018
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Dec. 17, 2017	Dec. 17, 2018
☒	Preamplifier	HP	8447F	2805A02960	Dec. 10, 2017	Dec. 10, 2018
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	May 22, 2018	May 22, 2019
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Dec. 17, 2017	Dec. 17, 2018
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

Conducted Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
☒	Receiver	R&S	ESR7	1316.3003K07-101181-K3	Dec. 10, 2017	Dec. 10, 2018
☒	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	Dec. 10, 2017	Dec. 10, 2018
☒	LISN	R&S	ESH2-Z5	860014/024	Dec. 10, 2017	Dec. 10, 2018
☒	Test Software	Audix	e3	Software Version: 9.160323		

Figure 2. Above 1GHz

The diagram illustrates the test setup for radiated emissions of tabletop equipment (Above 1 GHz) inside a 3 m Chamber. The setup includes the following components and dimensions:

- 3 m Chamber:** The overall dimensions of the test chamber are 9 m (width) and 6 m (height).
- Antenna Tower:** A vertical structure used to position the antenna, with a height range of 1 m to 4 m.
- Receiver / Spectrum Analyzer:** Connected to the antenna tower and a PC for data processing.
- Multi device Controller:** Connected to the test equipment and the spectrum analyzer.
- AE / EUT (Antenna Equipment / Under Test):** The device being tested, placed on a test table.
- Test table:** The table supporting the AE / EUT, with a height of 0.8 m.
- Measurement distance = 3 m:** The distance between the antenna tower and the test table.
- Ground Reference Plane:** A plane used for reference, located below the test table.
- Pre-Amplifier:** A component used to amplify the signal from the antenna.
- Hom Antenna:** A horn antenna used for measuring radiated emissions.
- Nonconductive Table 1.5 x 1 Meter:** A table used to support the AE / EUT.
- Dimensions:** The test table is 10 cm high, and the AE / EUT is 40 cm high. The measurement distance is 3 m.

The diagram also shows a detailed view of the AE / EUT setup on the test table, including the nonconductive table, the AE / EUT, and the measurement distance.

Figure 3. Conducted Emissions setup

Figure 3. Conducted Emissions setup

The diagram illustrates the setup for measuring conducted emissions from tabletop equipment. The entire setup is contained within a **Shielding Room**. On the left, a **PC** and a **Receiver** are connected to a **Pulse Limiter**. The receiver is connected to **LISN 1** (Line Impedance Stabilization Network), which is connected to the **AC Mains**. The **AC Mains** is connected to the **Test table**. The **Test table** is supported by **Insulation ≤ 0.15 m** and is **40 cm** high. On the test table, there are two **EUT/AE** (Equipment Under Test / Antenna Equipment) units, each **10 cm** apart from each other and from the **EUT/AE PSU** (Power Supply Unit). The **EUT/AE PSU** is connected to the **AC Mains** via **LISN 2**. The **AC Mains** is connected to the **Test table** via **LISN 1** and **LISN 2**. The **Test table** is **80 cm** wide. The **Ground Reference Plane** is indicated at the bottom of the setup.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic (according to KDB 896810 D02 SDoC FAQ v01r01) of the highest fundamental frequency or to 40 GHz, whichever is lower.

5. REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part15 Subpart B	Unintentional Radiators
2	ANSI C63.4-2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

6. EMC REQUIREMENTS SPECIFICATION

6.1 RADIATED EMISSION

Test Requirement: FCC 47 CFR Part 15.109

Test Method: ANSI C63.4-2014

Receiver Setup:

Frequency: (f) (MHz)	Detector type	Measurement receiver bandwidth	
		RBW	VBW
$30 \leq f \leq 1\,000$	Quasi Peak	120 kHz	300 kHz
$f \geq 1000$	Peak	1 MHz	3 MHz
	Average	1 MHz	3 MHz

Measured frequency range

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705-108	1000.
108-500	2000.
500-1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Limits:

Limits for Class B devices

Frequency (MHz)	limits at 3m (dB μ V/m)		
	QP Detector	PK Detector	AV Detector
30-88	40.0	--	--
88-216	43.5	--	--
216-960	46.0	--	--
960 to 1000	54.0	--	--
Above 1000	--	74.0	54.0

Remark:

- The lower limit shall apply at the transition frequencies.
- Emission level (dB μ V/m) = 20 log Emission level (μ V/m).
- For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Test Setup: Refer to section 4.3.1 for details.

Test Procedures:

- From 30 MHz to 1GHz test procedure as below:
 - The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
 - Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

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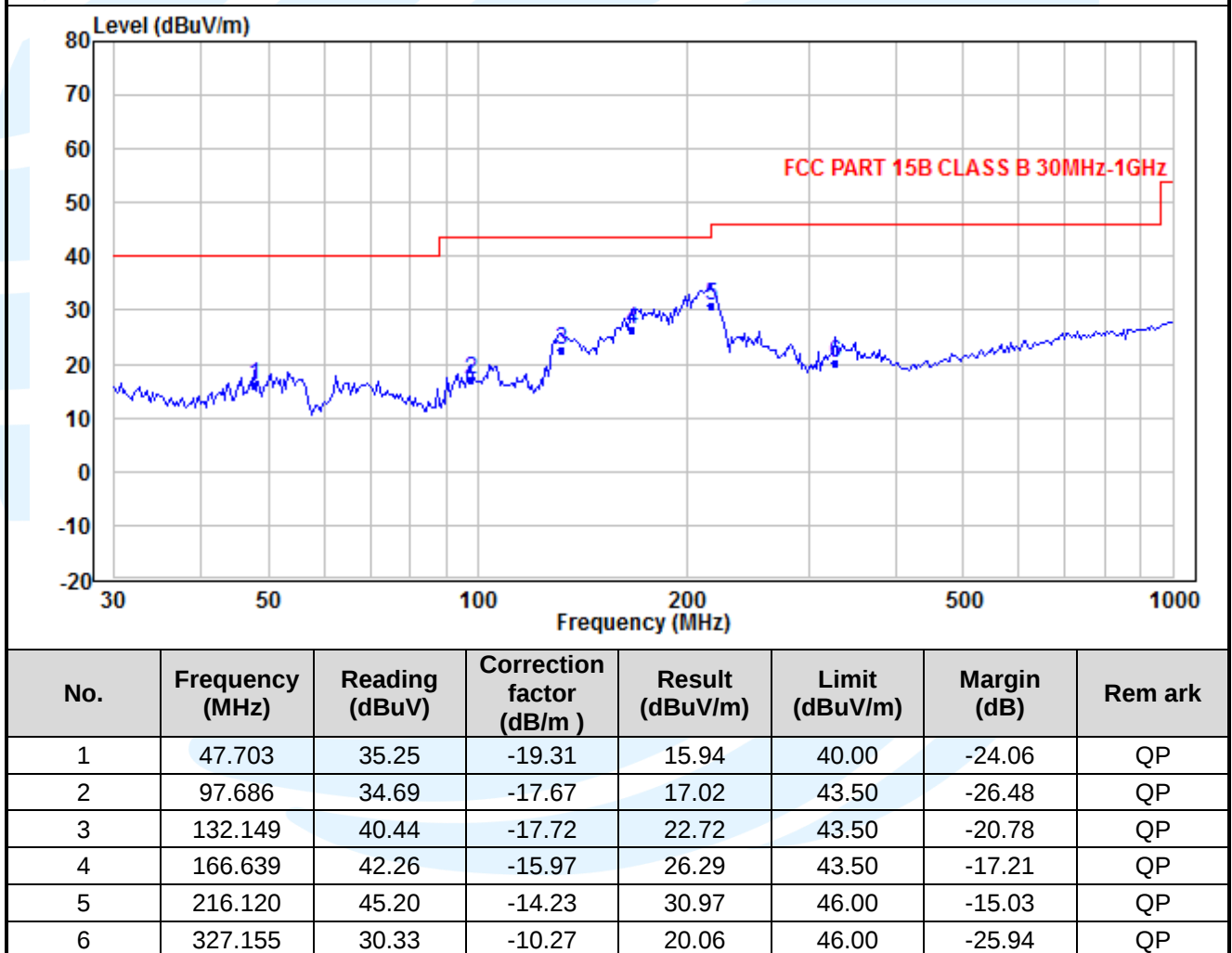
- 3) For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.
2. Above 1GHz test procedure as below:
 - 1) The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
 - 2) Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
 - 3) For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

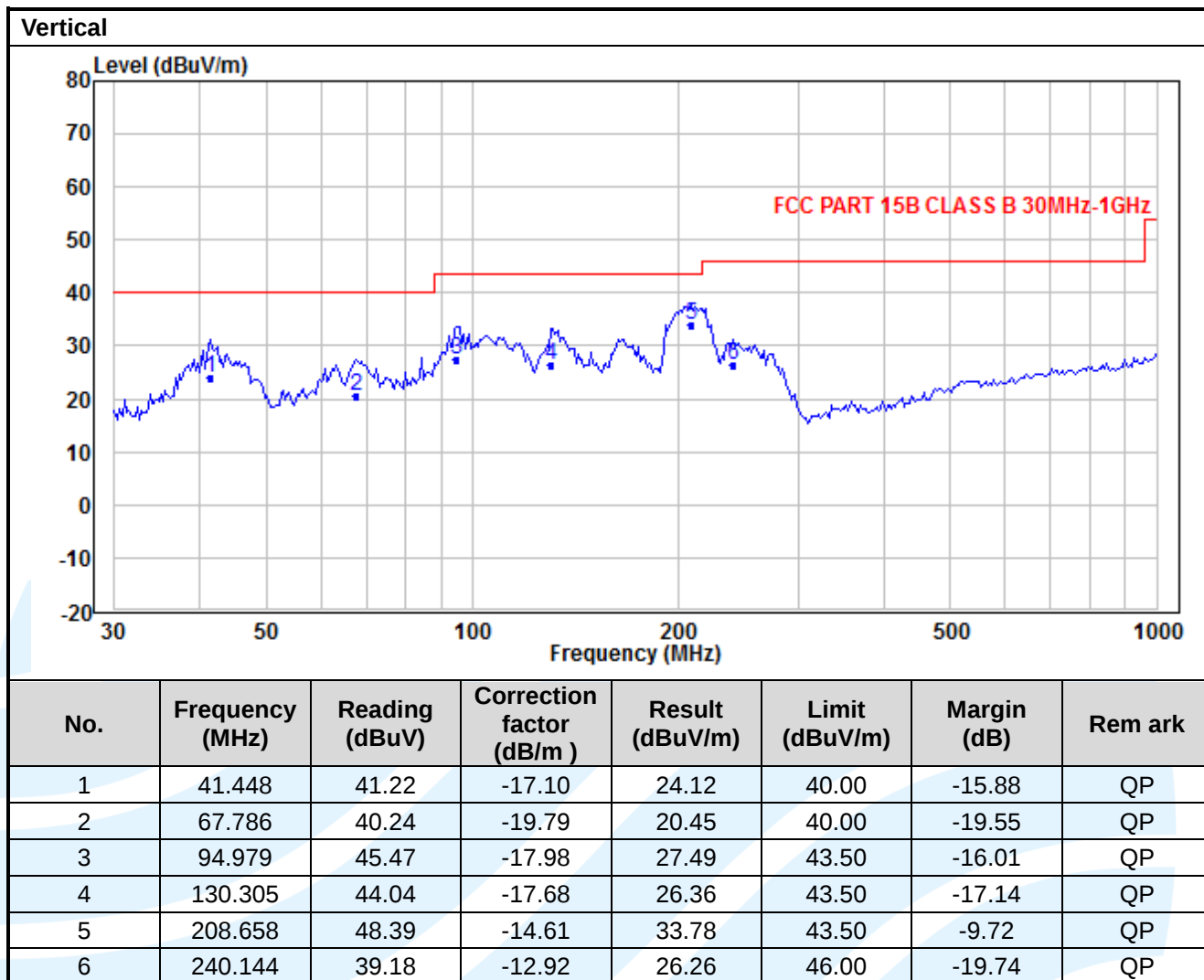
Equipment Used: Refer to section 3 for details.

Test Result: Pass

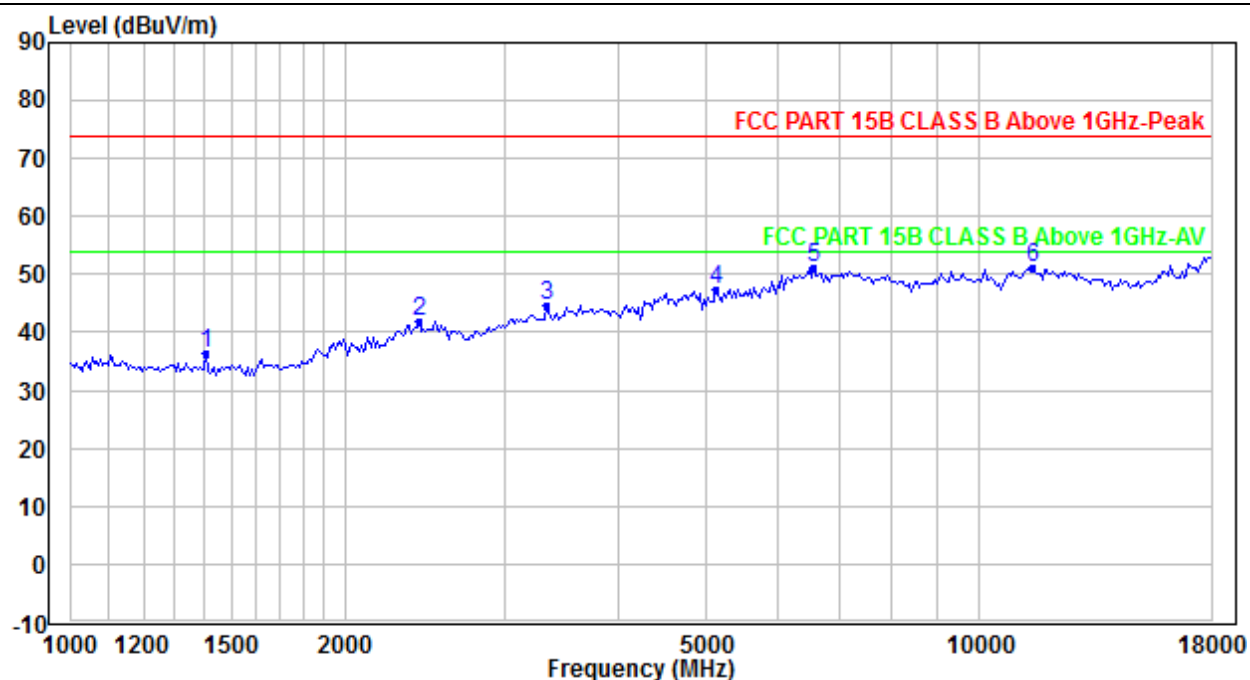
The worst measurement data as follows:

Below 1GHz(Quasi Peak):
Mode1
Horizontal

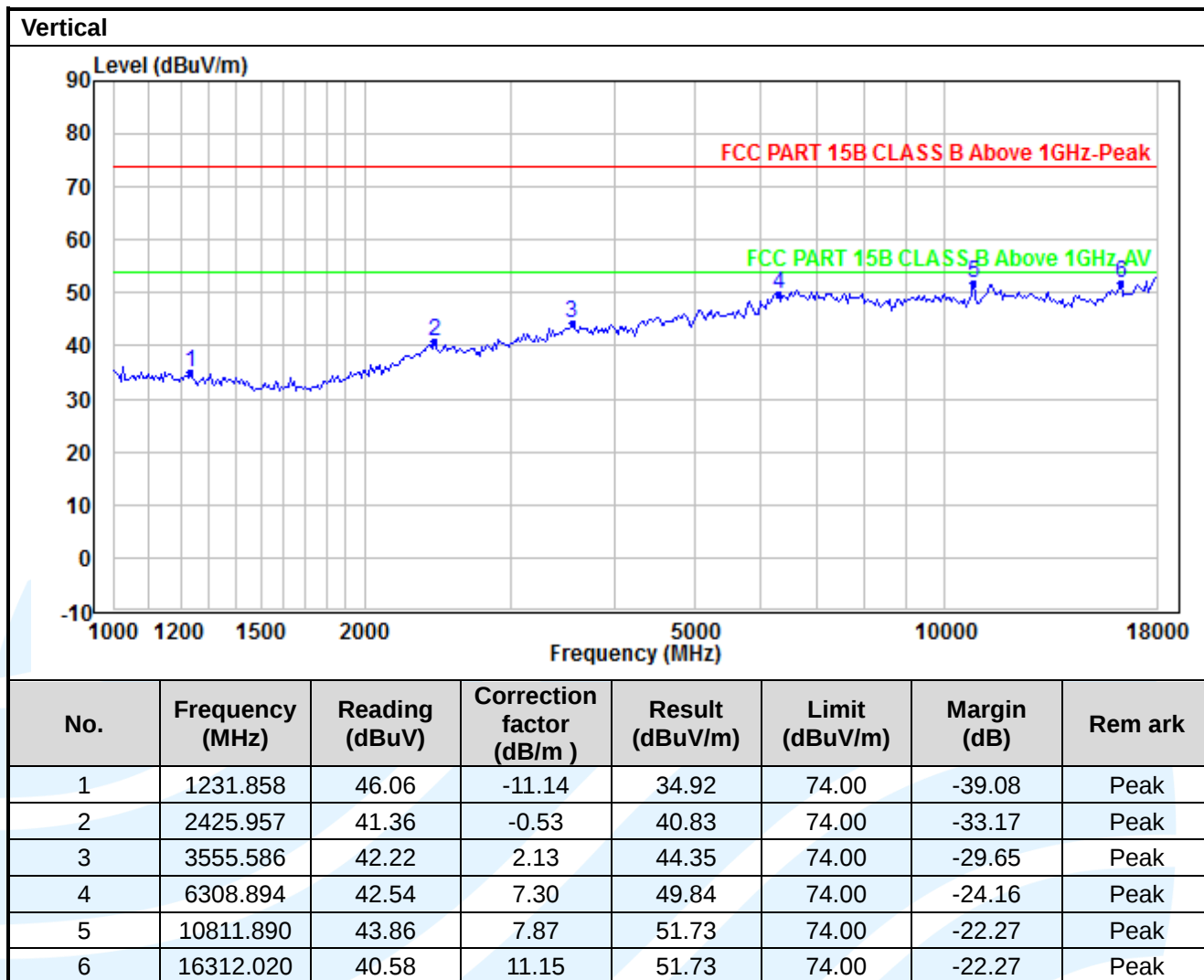




Above 1GHz(Peak & Average)
Mode3
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Rem ark
1	1407.405	46.87	-10.36	36.51	74.00	-37.49	Peak
2	2411.946	42.48	-0.53	41.95	74.00	-32.05	Peak
3	3336.106	43.48	1.16	44.64	74.00	-29.36	Peak
4	5121.445	44.14	3.16	47.30	74.00	-26.70	Peak
5	6569.953	43.70	7.36	51.06	74.00	-22.94	Peak
6	11456.650	41.89	9.15	51.04	74.00	-22.96	Peak



Remark:

- As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.
- All possible modes of operation were investigated. Only the worst case emissions reported.
- Margin = Result – Limit

6.2 CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15.107

Test Method: ANSI C63.4-2014

Limits:

Limits for Class B devices

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup: Refer to section 4.3.2 for details.

Test Procedures:

- 1) The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- 2) The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- 3) For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

Equipment Used: Refer to section 3 for details.

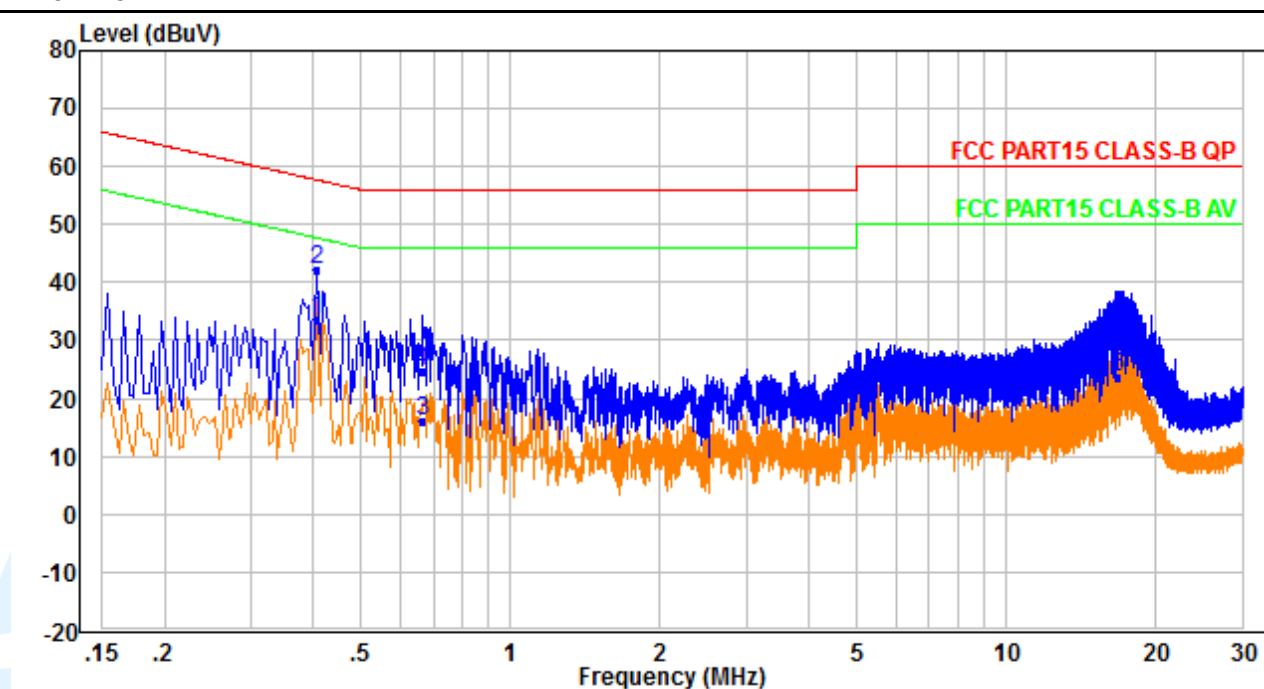
Test Result: Pass

The worst measurement data as follows:

Quasi Peak and Average:

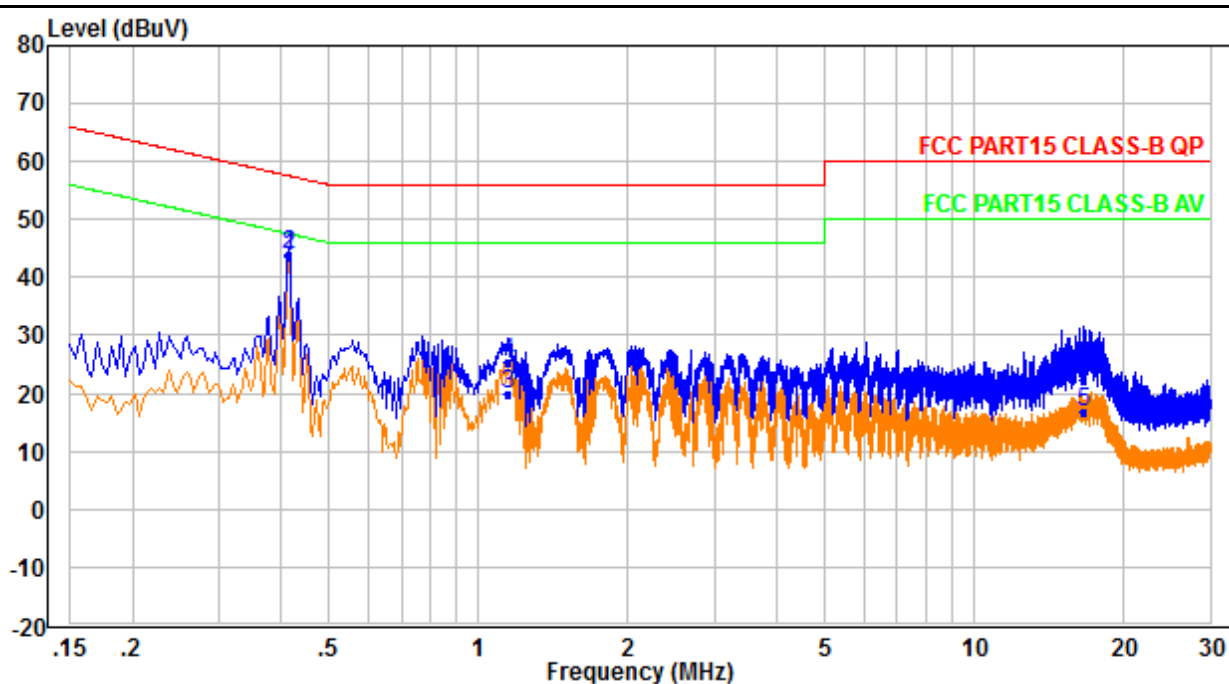
Mode 1

Live Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.406	22.91	10.66	33.57	47.73	-14.16	Average
2	0.406	31.71	10.66	42.37	57.73	-15.36	QP
3	0.666	5.90	10.24	16.14	46.00	-29.86	Average
4	0.666	14.60	10.24	24.84	56.00	-31.16	QP
5	16.861	11.60	12.21	23.81	50.00	-26.19	Average
6	16.861	21.10	12.21	33.31	60.00	-26.69	QP

Neutral Line



No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Remark
1	0.414	33.10	10.38	43.48	47.57	-4.09	Average
2	0.414	33.60	10.38	43.98	57.57	-13.59	QP
3	1.146	9.61	10.40	20.01	46.00	-25.99	Average
4	1.146	15.11	10.40	25.51	56.00	-30.49	QP
5	16.709	4.60	12.28	16.88	50.00	-33.12	Average
6	16.709	10.00	12.28	22.28	60.00	-37.72	QP

Remark:

1. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

***** End of Report *****

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.
