

Technical Compliance Statement FCC and ISED Test Report

For the following information

Ref. File No.: C1M2005205

Product	:	APC Charge Mobile Power Supply for Surface Hub 2
Model Number	:	(1)CSH2 (2)CSH2-I
Brand	:	APC by Schneider Electric
Applicant	:	American Power Conversion Holdings Inc., Taiwan Branch
Manufacturer	:	American Power Conversion Holdings Inc., Taiwan Branch
Rules and Standards	:	Title 47 FCC CFR, Part 15, Subpart B, Class B
		ICES-003 Issue 6, Class B
		ANSI C63.4-2014

We hereby certify that the above product has been tested by us and complied with above FCC and ICES official limits. The test was performed according to the procedures ANSI C63.4-2014. The equipment might be marketed in US or Canada in accordance with the rules of 47 CFR FCC Part 2 and ISED regulations.

The test data and results are issued on the test report EM-F200250.

Signature

Alex Deng/Deputy Manager Date:2020. 06. 16

Test Laboratory: AUDIX Technology Corporation, EMC Department NVLAP Lab. Code: 200077-0 FCC OET Designation: TW1004 & TW1090 Web Site: www.audixtech.com

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.



TEST REPORT

Product: APC Charge Mobile Power Supply for Surface Hub 2 Model:(1)CSH2 (2)CSH2-I Brand: APC by Schneider Electric

Applicant for: American Power Conversion Holdings Inc., Taiwan Branch 5F., No. 189, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 11494, Taiwan (R.O.C.)

Prepared by: Audix Technology Corporation, EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan



TESTING NVLAP LAB CODE 200077-0

File No.:Report No.:Date of Report:

C1M2005205 EM-F200250 2020, 06, 16

The test report is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.



Test Report

Applicant Monufacturer	: American Power Conversion Holdings Inc., Taiwan Branch
Manufacturer	: American Power Conversion Holdings Inc., Taiwan Branch
EUT Description	
(1) Product	: APC Charge Mobile Power Supply for Surface Hub 2
(2) Model	: (1)CSH2 (2)CSH2-I
(3) Brand	: APC by Schneider Electric
(4) Power Rating	: AC 110-240V, 50-60Hz
(4)Test Voltage	: AC 120V/60Hz
Rules of Compliance and Appli	cable Standards:

Title 47 FCC CFR, Part 15, Subpart B, Class B ICES-003 Issue 6, Class B ANSI C63.4-2014

The device described above was tested by Audix Technology Corporation to determine the maximum emission levels emanating from the device. All of the tests were requested by the applicant and the results thereof based upon the information that the applicant provided to us. We, Audix Technology Corporation assumes full responsibility for the accuracy and completeness of these measurements. This report is made under FCC Part 2.938 and ICES-003 chapter 7, and shows that the EUT is technically compliance with the class B limit for both FCC rule and ICES standard described as above.

No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Audix Technology Corporation.

Date of Report: 2020.06.16 Reviewed by:

(Ariel Chen/Administrator)

Approved by:

(Alex Deng/Deputy Manager)

Name of the Representative of the Responsible Party:

Signature:



Table of Content

1.	Revision of Test Report	4
2.	Summary of Test Result	5
2.1.	Test Result	
2.2.	Description of Test Firm	6
3.	General Information	
	Description of Application	
	Description of the EUT	
3.3.	Highest Frequency within EUT	8
3.4.	Determination of Worse Case Operating Modes	8
3.5.	Final Test Configuration Mode	
4.	Measurement Arrangement	
4.1.	Equipment and cables arrangement	9
	Method of Exercising EUT	
	List of Supported Units under Test	
4.4.	List of Used Cables under Test	10
5.	Measurement of Conducted Emissions	
-	List of Test Instruments	
	Test Setup	
	Power-line Conducted Emission Limits	
	Measurement Procedure	
5.5.	Measurement Result	
6.	Measurement of Radiated Emissions	
	List of Test Instruments	
	Test Setup	
	Radiation Emission Limits	
	Measurement Procedure	
6.5.		
7.	Measurement Uncertainty List	
8.	Photographs	
8.1.		
8.2.	Radiated Emissions Measurement	35

APPENDIX (Photos of EUT)



1. Revision of Test Report

Issued Date	Revision Summary	Report Number
2020. 06. 16	Original Report.	EM-F200250



2. Summary of Test Result

2.1. Test Result

Test Item	Referred Rules/Standard	Limit	Result	
Power-lineconducted	Title 47 FCC CFR Part 15		Pass	
emission	Subpart B and ICES-003 Issue 6	Class B	Margin 4.22dB at 1.637MHz	
Dedicted emission	Title 47 FCC CFR Part 15		Pass	
Radiated emission (30 – 1000MHz)	Subpart B and ICES-003 Issue 6	Class B	Margin 3.10dB at 173.770MHz (Horizontal, 4m/45°)	
Radiated emission	Title 47 FCC CFR Part 15		Pass	
(Above 1GHz)	Subpart B and ICES-003 Issue 6	Class B	Margin 23.25dB at 1484.748MHz	

Note :

1. The uncertainties value is not used in determining the result.

- 2. N/A is an abbreviation for Not Applicable.
- 3. Special measures: None
- 4. Decision and justification not to measure: None
- 5. The FCC Part 15 Subpart B emission measurement results are deemed satisfactory evidence of compliance with ICES-003 regulations.



2.2. Description of Test Firm

Name of Test Firm	Audix Technology Corporation / EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099303 Website : www.audixtech.com Contact e-mail: attemc_report@audixtech.com
Accreditations	The laboratory is accredited by following organizations under ISO/IEC 17025:2017 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724
Test Facilities	 FCC OET Designation Number under APEC MRA by BSMI is : TW1004 & TW1090 (1) No. 3 Shielding Room (2) No. 6 Open Area Test Site (3) No.2 3m Semi Anechoic Chamber



3. General Information

3.1. Description of Application

Applicant	American Power Conversion Holdings Inc., Taiwan Branch 5F., No. 189, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 11494, Taiwan (R.O.C.)
Product	APC Charge Mobile Power Supply for Surface Hub 2
Brand	APC by Schneider Electric
Model Number	(1)CSH2 (2)CSH2-I The difference between above models was in sales marketing.

3.2. Description of the EUT

Test Model	CSH2
Serial Number	N/A
Power Rating	AC Input: 110-240Vac, 8A, 50-60Hz AC Output: 110-240Vac, 4A, 403W DC Output: 24V, 16.2A, 388W
Firmware Version	N/A
Sample Status	Trial sample
Date of Receipt	2020. 05. 21
Date of Test	2020. 06. 04 ~ 16
I/O Ports List	 USB x1 AC Out x1 DC Out x1 AC Inx1
Accessories Supplied	None



3.3. Highest Frequency within EUT

The highest frequency is 192MHz of EUT.

3.4. Determination of Worse Case Operating Modes

None

3.5. Final Test Configuration Mode

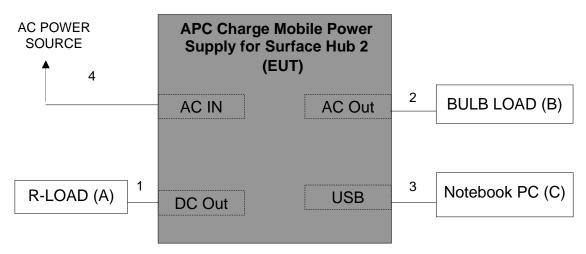
Test Item	Operating Mode	
	Online Discharge Mode	
Power-line conducted emission	Online Charge Mode	
	Battery Mode	
	Online Discharge Mode	
Radiated emission (30-1000MHz)	Online Charge Mode	
	Battery Mode	
Radiated emission (above 1GHz)	Online Charge Mode	





4. Measurement Arrangement

- 4.1. Equipment and cables arrangement
- Connection Diagram of EUT and Peripheral Devices



4.2. Method of Exercising EUT

The methods for exercising the EUT during the measurement specified in ANSI C63.4-2014 clause 11.2, 11.3 and figure 16 were used.

1. Turn on the power of all equipments.

2. Set EUT under Online Discharge or Online Charge or battery mode.

- 3. The AC outputs of EUT was linked to bulb loads with full load.
- 4. The other peripheral devices were driven and operated in turn during all testing.



4.3. List of Supported Units under Test

Item	Product	Brand	Model No.	Serial No.	Approval
А	R-Load (388W)	N/A	N/A	N/A	N/A
В	Bulb Load (400W)	N/A	N/A	N/A	N/A
С	Notebook PC	Lenovo	81LG	PF210KKS	By DoC

4.4. List of Used Cables under Test

Item	Туре	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remark
1	DC Power Cord	1	1.2	No	0	Provided by LAB
2	AC Power Cord	1	1.0	No	0	Provided by LAB
3	USB Cable	1	1.2	Yes	0	Provided by LAB
4	AC Power Cord (2C)	1	1.9	No	0	Provided by LAB for above sup- ported units



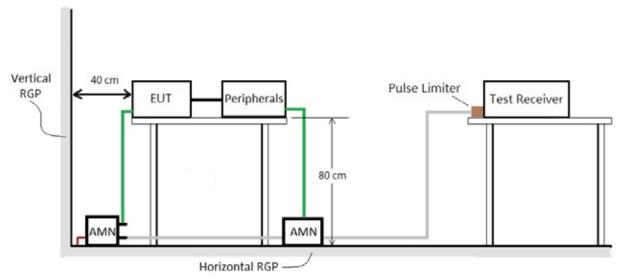
5. Measurement of Conducted Emissions

5.1. List of Test Instruments

Item	Equipment	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Inter- val
1	Test Receiver	R&S	ESR3	101772	2020. 02. 04	1 Year
2	A.M.N.	R&S	ENV4200	100003	2019. 09. 10	1 Year
3	L.I.S.N.	Kyoritsu	KNW-407	8-1370-9	2020. 01. 17	1 Year
4	Pulse Limiter	R&S	ESH3-Z2	100041	2020. 01. 05	1 Year
5	Signal Cable	CDM Elec- tronics, Inc.	RG-142	CE-02	2020. 01. 31	1 Year
6	Digital Ther- mo-Hygro Me- ter	YICHUN	TFC-9606	No.3 S/R	2020. 04. 17	1 Year
7	Test Software	Audix	e3	V6.120703a	N.C.R.	N.C.R.

5.2. Test Setup

The EUT and test equipment were configured in accordancewith the requirement of ANSI C63.4-2014 clause 5.2.





5.3. Power-line Conducted Emission Limits

• For FCC §15.107 and ICES-003§6.1

Frequency Range	Class A	A Limits	Class B Limits		
(MHz)	Quasi Peak dB(µV)	Average dB(μV)	Quasi Peak dB(µV)	Average dB(μV)	
0.15 – 0.50	79	66	66 – 56*	56 – 46*	
0.50 - 5.0	73	60	56	46	
5.0 - 30	13	00	60	50	

Note:* Decreases with the logarithm of the frequency.

5.4. Measurement Procedure

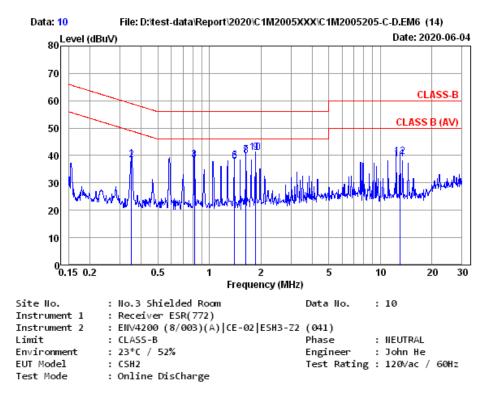
The power-line conducted emission measurement was performed in accordance with the procedure of ANSI C63.4-2014clause 7.3.

- Setup the EUT and associated equipment described as section 4.1, and they were located 40cm from the vertical conducting plane.
- Connect the EUT power cord to the main A.M.N and associated equipment to the second A.M.N. All ports of the A.M.N not connecting to the measuring equipment was terminated into 50 ohm resistive load.
- Setup the resolution bandwidth of the test receiver at 9kHz(while testing within 0.15 to 30MHz).
- Operate the EUT system as described in section 4.2.
- Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, all of the interconnecting cables were manipulated.
- For the exploratory measurement, determine the highest emission amplitude relative to the limit on each of the EUT power cord with the peak detector by each of the EUT operation over the specified frequency range and record it.
- For final measurement, select the EUT operation mode that produced the highest amplitude in the exploratory measurement to determine the highest emissions with each specified detector and record it. All of the current-carrying conductors of each of the EUT power cords, except the ground conductor, must be measured over the specified frequency range.
- The measurement result was calculated by following formula: Emission Level = Reading (Receiver) + Factor(A.M.N)+ Cable Loss + Pulse Limiter
- If the average limit is met when using a Quasi-Peak detector receiver, the EUT is deemed to meet both limits and measurement with the average detector is unnecessary.



5.5. Measurement Result

Test Phase	Neutral	Test Result	Pass
Test Mode	Online Discharge Mode		



	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.350	10.30	0.04	9.85	18.46	38.65	48.96	10.31	Average
2	0.350	10.30	0.04	9.85	18.25	38.44	58.96	20.52	QP
3	0.818	10.27	0.05	9.86	18.14	38.32	46.00	7.68	Average
4	0.818	10.27	0.05	9.86	18.01	38.19	56.00	17.81	QP
5	1.403	10.28	0.06	9.86	17.84	38.04	46.00	7.96	Average
6	1.403	10.28	0.06	9.86	17.67	37.87	56.00	18.13	QP
7	1.636	10.28	0.06	9.86	19.87	40.07	46.00	5.93	Average
8	1.636	10.28	0.06	9.86	19.71	39.91	56.00	16.09	QP
9	1.869	10.29	0.07	9.86	20.95	41.17	46.00	4.83	Average
10	1.869	10.29	0.07	9.86	20.80	41.02	56.00	14.98	QP
11	13.089	11.00	0.14	9.93	17.68	38.75	50.00	11.25	Average
12	13.089	11.00	0.14	9.93	18.41	39.48	60.00	20.52	QP

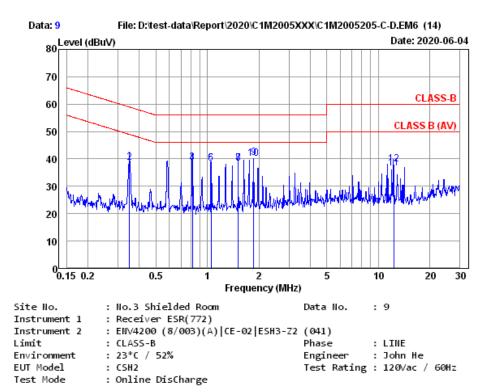
Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

 If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement

with average detector is unnecessary.



Test Phase	Line	Test Result	Pass
Test Mode	Online Discharge Mode		



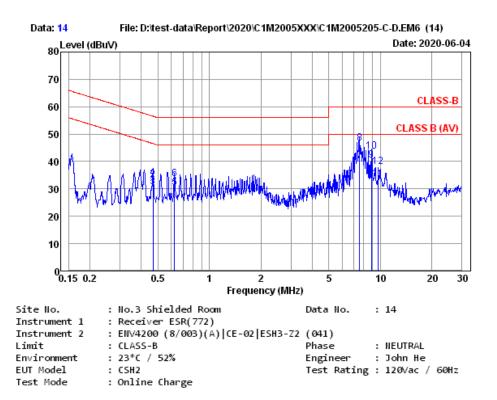
	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.350	10.25	0.04	9.85	18.69	38.83	48.95	10.12	Average
2	0.350	10.25	0.04	9.85	18.51	38.65	58.95	20.30	QP
3	0.817	10.25	0.05	9.86	18.45	38.61	46.00	7.39	Average
4	0.817	10.25	0.05	9.86	18.31	38.47	56.00	17.53	QP
5	1.051	10.25	0.05	9.86	18.35	38.51	46.00	7.49	Average
6	1.051	10.25	0.05	9.86	18.20	38.36	56.00	17.64	QP
7	1.518	10.27	0.06	9.86	18.31	38.50	46.00	7.50	Average
8	1.518	10.27	0.06	9.86	18.17	38.36	56.00	17.64	QP
9	1.868	10.28	0.07	9.86	20.18	40.39	46.00	5.61	Average
10	1.868	10.28	0.07	9.86	20.05	40.26	56.00	15.74	QP
11	12.266	10.73	0.14	9.92	15.81	36.60	50.00	13.40	Average
12	12.266	10.73	0.14	9.92	17.37	38.16	60.00	21.84	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

 If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.





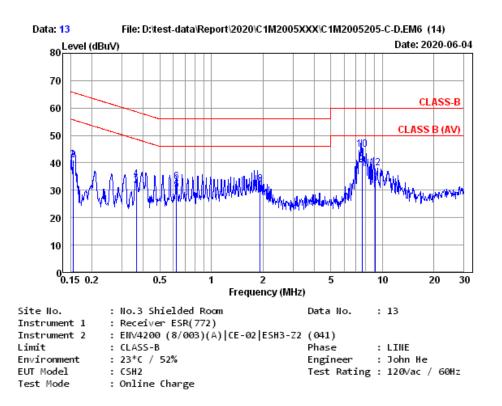


	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Ewission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.467	10.29	0.04	9.85	9.90	30.08	46.56	16.48	Average
2	0.467	10.29	0.04	9.85	13.28	33.46	56.56	23.10	QP
3	0.469	10.29	0.04	9.85	10.40	30.58	46.54	15.96	Average
4	0.469	10.29	0.04	9.85	13.70	33.88	56.54	22.66	QP
5	0.625	10.28	0.04	9.85	10.20	30.37	46.00	15.63	Average
6	0.625	10.28	0.04	9.85	13.50	33.67	56.00	22.33	QP
7	7.548	10.47	0.12	9.90	19.65	40.14	50.00	9.86	Average
8	7.548	10.47	0.12	9.90	26.13	46.62	60.00	13.38	QP
9	8.858	10.50	0.12	9.91	19.89	40.42	50.00	9.58	Average
10	8.858	10.50	0.12	9.91	23.26	43.79	60.00	16.21	QP
11	9.742	10.52	0.13	9.91	13.14	33.70	50.00	16.30	Average
12	9.742	10.52	0.13	9.91	17.41	37.97	60.00	22.03	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



Test Phase	Line	Test Result	Pass
Test Mode	Online Charge Mode		

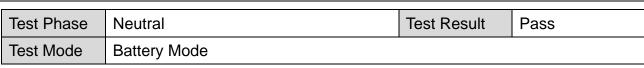


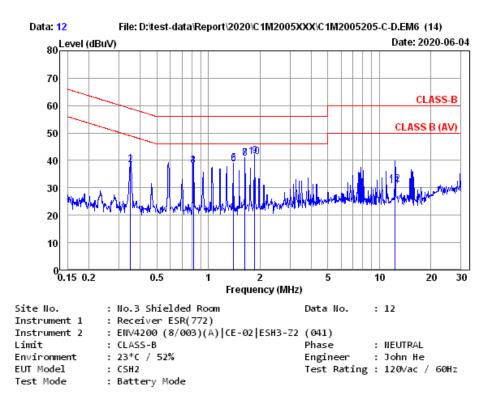
	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.155	10.20	0.04	9.85	14.67	34.76	55.74	20.98	Average
2	0.155	10.20	0.04	9.85	20.93	41.02	65.74	24.72	QP
3	0.364	10.25	0.04	9.85	11.40	31.54	48.64	17.10	Average
4	0.364	10.25	0.04	9.85	13.89	34.03	58.64	24.61	QP
5	0.626	10.25	0.04	9.85	9.92	30.06	46.00	15.94	Average
6	0.626	10.25	0.04	9.85	13.01	33.15	56.00	22.85	QP
7	1.925	10.28	0.07	9.86	8.12	28.33	46.00	17.67	Average
8	1.925	10.28	0.07	9.86	12.01	32.22	56.00	23.78	QP
9	7.604	10.41	0.12	9.90	18.82	39.25	50.00	10.75	Average
10	7.604	10.41	0.12	9.90	24.47	44.90	60.00	15.10	QP
11	9.058	10.44	0.13	9.91	12.55	33.03	50.00	16.97	Average
12	9.058	10.44	0.13	9.91	17.74	38.22	60.00	21.78	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

 If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.





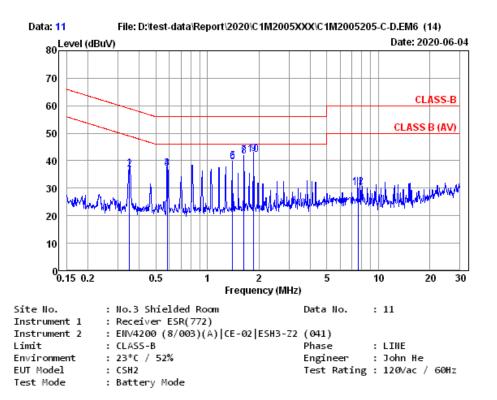


	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	E⊞ission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.350	10.30	0.04	9.85	18.48	38.67	48.95	10.28	Average
2	0.350	10.30	0.04	9.85	18.26	38.45	58.95	20.50	QP
3	0.818	10.27	0.05	9.86	17.97	38.15	46.00	7.85	Average
4	0.818	10.27	0.05	9.86	17.82	38.00	56.00	18.00	QP
5	1.403	10.28	0.06	9.86	18.74	38.94	46.00	7.06	Average
6	1.403	10.28	0.06	9.86	18.58	38.78	56.00	17.22	QP
7	1.636	10.28	0.06	9.86	20.59	40.79	46.00	5.21	Average
8	1.636	10.28	0.06	9.86	20.44	40.64	56.00	15.36	QP
9	1.870	10.29	0.07	9.86	21.37	41.59	46.00	4.41	Average
10	1.870	10.29	0.07	9.86	21.23	41.45	56.00	14.55	QP
11	12.391	10.91	0.14	9.93	9.82	30.80	50.00	19.20	Average
12	12.391	10.91	0.14	9.93	10.17	31.15	60.00	28.85	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



Test Phase	Line	Test Result	Pass
Test Mode	Battery Mode		



	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.351	10.25	0.04	9.85	17.07	37.21	48.94	11.73	Average
2	0.351	10.25	0.04	9.85	16.85	36.99	58.94	21.95	QP -
3	0.583	10.25	0.04	9.85	17.20	37.34	46.00	8.66	Average
4	0.583	10.25	0.04	9.85	17.06	37.20	56.00	18.80	QP
5	1.402	10.26	0.06	9.86	19.61	39.79	46.00	6.21	Average
6	1.402	10.26	0.06	9.86	19.49	39.67	56.00	16.33	QP
7	1.637	10.27	0.06	9.86	21.59	41.78	46.00	4.22	Average
8	1.637	10.27	0.06	9.86	21.44	41.63	56.00	14.37	QP
9	1.870	10.28	0.07	9.86	22.27	42.48	46.00	3.52	Average
10	1.870	10.28	0.07	9.86	22.13	42.34	56.00	13.66	QP
11	7.596	10.41	0.12	9.90	9.78	30.21	50.00	19.79	Average
12	7.596	10.41	0.12	9.90	10.09	30.52	60.00	29.48	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

 If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



6. Measurement of Radiated Emissions

6.1. List of Test Instruments

• For measurement of 30 to 1000MHz frequency range

ltem	Equipment	Manufacture Model No. Serial No.		Cal. Date	Cal. In- terval	
1	Spectrum Analyzer	Agilent	N9010A-503	MY51120074	2019. 10. 16	1 Year
2	Test Receiver	R&S	ESCS30	100337	2020. 05. 06	1 Year
3	Amplifier	HP	8447D	2727A05737	2020. 01. 05	1 Year
4	Bilog Antenna	Schaffner	CBL6112B	2818	2020. 01. 17	1 Year
5	Signal Cable	HUBER+SU HNER	RG217U	RE-07	2020. 01. 31	1 Year
6	Test Software	Audix	e3	V5.04507	N.C.R.	N.C.R.
7	Digital Ther- mo-Hygro Meter	iMax	HTC-1	No.6 O/S	2020. 04. 17	1 Year

• For measurement of above 1GHz frequency range

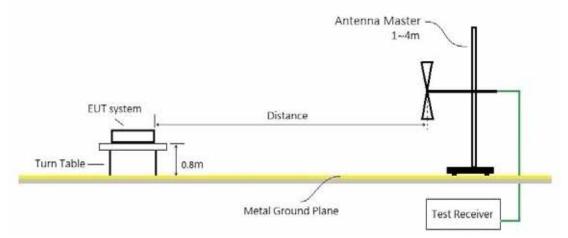
Item	Туре	Manufacture	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Keysight	N9010B-526	MY57410128	2020. 01. 12	1 Year
- 2	Microwave Preamplifier	Agilent	8449B	3008A02681	2020. 03. 20	1 Year
3	Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00227045	2020. 03. 10	1 Year
4	Digital Thermo -Hygro Meter	iMax	HTC-1	No.3 3m A/C	2020. 04. 17	1 Year
5	Signal Cable	HUBER+SUHN ER	SUCOFLEX 104	RE-15	2020. 01. 31	1 Year
6	Test Software	Audix	e3	V9.20180702	N.C.R.	N.C.R.



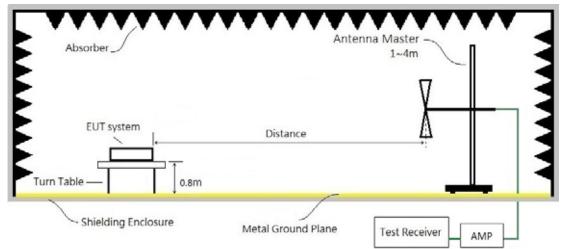
6.2. Test Setup

The EUT and test equipment were configured in accordance with the requirement of ANSI C63.4-2014 clause 5.4. and 5.5.

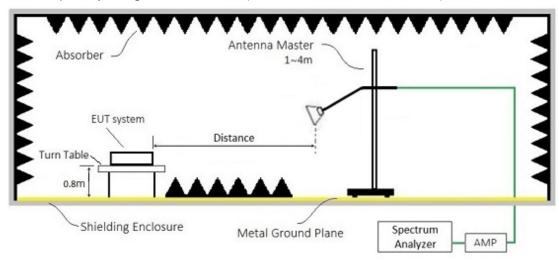
• For frequency range 30 to 1000MHz (at Open Area Test Site)



• For frequency range 30 to 1000MHz (at SemiAnechoic Chamber)



• For frequency rangeabove 1GHz (at SemiAnechoic Chamber)





6.3. Radiation Emission Limits

• For Below 1GHz, FCC §15.109(a)(g)/CISPR 22 and ICES-003§6.2

	Distance	Class A Limits	Class B Limits
Frequency Range (MHz)	Distance (meter)	Quasi-Peak	Quasi-Peak
	(meter)	[dB(µV/m)]	[dB(µV/m)]
30 – 230	10	40	30
230 – 1000	10	47	37
30 – 230	3	50	40
230 – 1000	3	57	47

• For Above 1GHz, FCC §15.109(a)(g)/CISPR 22 and ICES-003§6.2

	Distance	Class A	A Limits	Class E	3 Limits
Frequency Range (MHz)	(meter)	Peak	Average	Peak	Average
(101112)	(meter)	[dB(µV/m)]	[dB(µV/m)]	[dB(µV/m)]	[dB(µV/m)]
Above 1000	3	79.54	59.54	73.98	53.98

- The tighter limit applies at the edge between two frequency bands.
- Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the E.U.T.
- The limits from 30 to 1000MHz are referred to CISPR 22 standard, which are in accordance with the requirement of FCC Part 15.38 (b)(3), Part 15.109 (a)(g) and ICES-003 section 5(a)(i).
- The limits above 1GHz are referred to FCC Part 15.109(a)
- Required highest frequency for radiated measurement

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 fre- quency or 40 GHz, whichever is low- er.



6.4. Measurement Procedure

The radiated emission measurement was performed in accordance with the procedure of the ANSI C63.4-2014 clause 8.3.

- The EUT and peripherals were placed on the rotatable non-conduction table, which is 0.8meters above the ground reference plane at the semianechoic chamber or OATS as described in section 4.1 and 6.2.
- The measurement distance is set as specified in section 6.3. The specified distance is between the horizontal projection onto the ground plane of the closest periphery of the EUT and the projection onto the ground plane of the center of the axis of the elements of the receiving antenna.
- The resolution bandwidth of the test receiver was at 120kHz (testing from 30 to 1000MHz) or 1MHz (testing above 1000MHz).
- Operate the EUT system as described in section 4.2.
- For the exploratory measurement, determine the highest emission amplitude relative to the limit on each of antenna polarization with the peak detector by each of the EUT operations over the specified frequency range and record it.
- For final measurement, select the EUT operation mode that produced the highest amplitude in the exploratory measurement to determine the highest emissions with each specified detector and record it.
- In order to determine the maximum emission level, must rotate the table in 360 degree and move the receiving antenna between 1~4m height above the ground reference plane.
- In order to find the maximum emission, all of the interconnecting cables were manipulated, except for the bundled cable.
- Both polarizations of receiving antenna were determined.
- The measurement result was calculated by following formulas:

(30 - 1000MHz)

Emission Level =Reading (Receiver) + Cable Loss+ Antenna Factor

(Above 1GHz)

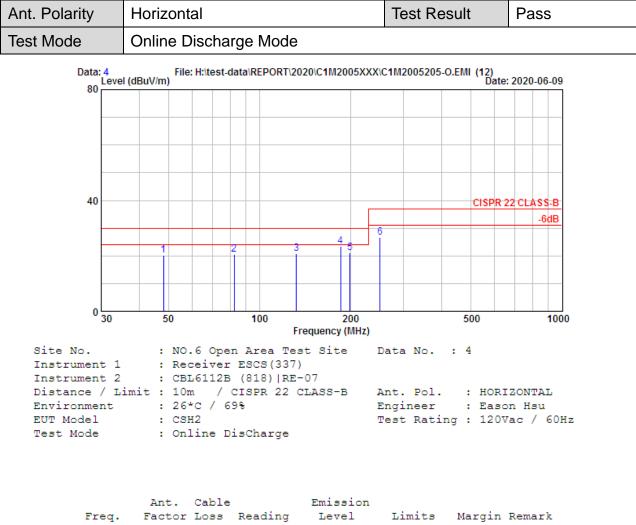
Emission Level =Reading (Spectrum) + Cable Loss+ Antenna Factor – Preamp Gain

• The 3dB bandwidth of the horn antenna is minimum 52 degree (w=2.93m at 3m distance) for 1~6 GHz.



6.5. Measurement Result

• For frequency range 30–1000MHz



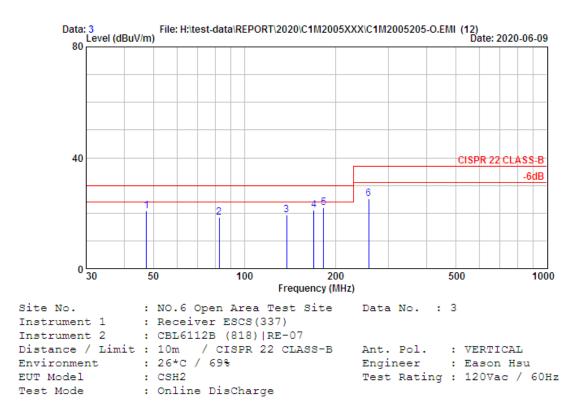
	Freq. (MHz)				Level (dBµV/m)		(dB)	Remark
1	48.170	14.67	0.93	4.57	20.18	30.00	9.82	QP
2	82.540	13.40	1.25	5.98	20.63	30.00	9.37	QP
3	132.570	17.24	1.68	1.82	20.74	30.00	9.26	QP
4	185.800	14.89	2.18	6.40	23.47	30.00	6.53	QP
5	199.410	14.97	2.24	3.90	21.11	30.00	8.89	QP
6	250.563	18.05	2.42	6.21	26.68	37.00	10.32	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emissions not reported are 20 dB lower than the specified limit.



Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Online Discharge Mode		



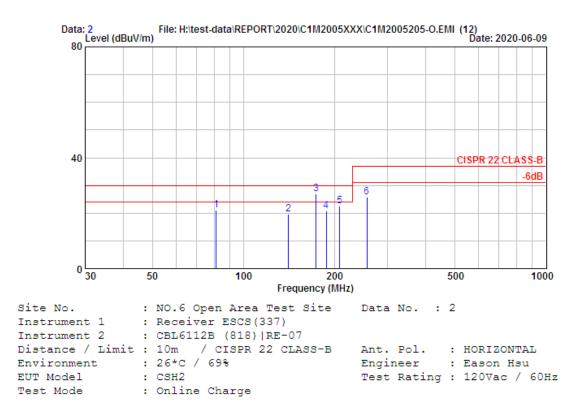
	Freq. (MHz)	Factor			Emission Level (dBµV/m)		Margin (dB)	Remark
1	47.519	15.04	0.93	4.87	20.84	30.00	9.16	QP
2	82.500	13.33	1.25	3.80	18.38	30.00	11.62	QP
3	137.874	16.97	1.72	0.55	19.24	30.00	10.76	QP
4	169.800	15.29	2.04	3.80	21.13	30.00	8.87	QP
5	183.100	14.87	2.17	4.80	21.84	30.00	8.16	QP
6	257.869	18.19	2.45	4.59	25.23	37.00	11.77	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emissions not reported are 20 dB lower than the specified limit.



Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Online Charge Mode		

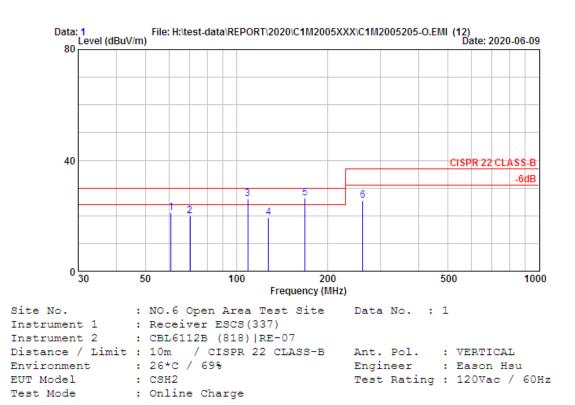


	Freq. (MHz)			Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	81.310	13.08	1.24	6.80	21.12	30.00	8.88	QP
2	140.914	16.81	1.75	1.02	19.58	30.00	10.42	QP
3	173.770	15.11	2.09	9.70	26.90	30.00	3.10	QP
4	187.710	14.90	2.19	3.80	20.89	30.00	9.11	QP
5	208.100	15.50	2.27	4.80	22.57	30.00	7.43	QP
6	256.180	18.17	2.44	5.18	25.80	37.00	11.20	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading. 2. The emissions not reported are 20 dB lower than the specified limit.



Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Online Charge Mode		



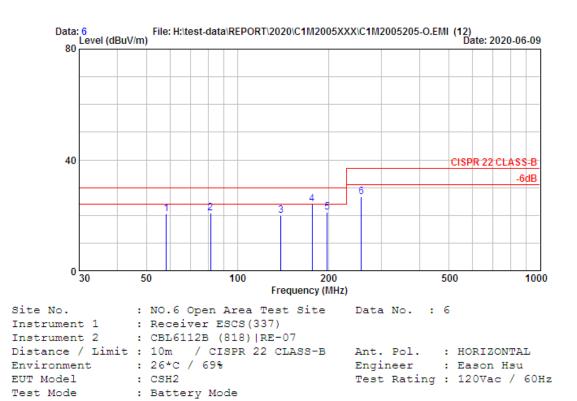
	Freq. (MHz)			Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	60.824	12.21	1.06	7.70	20.97	30.00	9.03	QP
2	70.240	12.31	1.14	6.40	19.85	30.00	10.15	QP
3	109.040	17.28	1.48	7.20	25.96	30.00	4.04	QP
4	127.766	17.51	1.64	0.24	19.39	30.00	10.61	QP
5	168.770	15.32	2.03	8.90	26.25	30.00	3.75	QP
6	261.587	18.28	2.47	4.68	25.43	37.00	11.57	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emissions not reported are 20 dB lower than the specified limit.



Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Battery Mode		

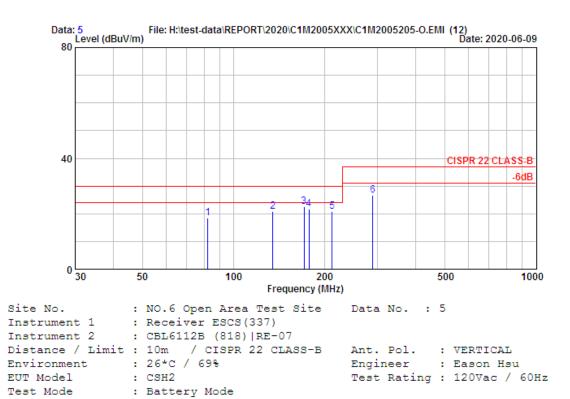


	Freq. (MHz)			Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	58.217	12.45	1.03	6.89	20.38	30.00	9.62	QP
2	81.700	13.21	1.24	6.40	20.85	30.00	9.15	QP
3	139.426	16.89	1.74	1.40	20.03	30.00	9.97	QP
4	176.900	14.98	2.12	6.80	23.90	30.00	6.10	QP
5	198.340	14.96	2.24	3.90	21.10	30.00	8.90	QP
6	257.191	18.19	2.45	5.89	26.53	37.00	10.47	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading. 2. The emissions not reported are 20 dB lower than the specified limit.



Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Battery Mode		



	Freq. (MHz)			Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
L	82.360	13.33	1.25	3.90	18.48	30.00	11.52	QP
2	135.143	17.12	1.70	1.99	20.80	30.00	9.20	QP
3	171.510	15.21	2.07	5.30	22.58	30.00	7.42	QP
4	177.640	14.95	2.13	4.62	21.70	30.00	8.30	QP
5	212.285	15.79	2.29	2.60	20.68	30.00	9.32	QP
6	288.708	18.77	2.58	5.29	26.64	37.00	10.36	QP

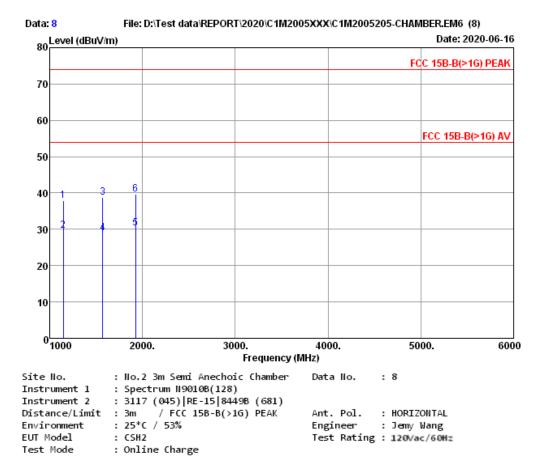
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emissions not reported are 20 dB lower than the specified limit.



• For frequency range 1 – 6 GHz

Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Online Charge Mode		

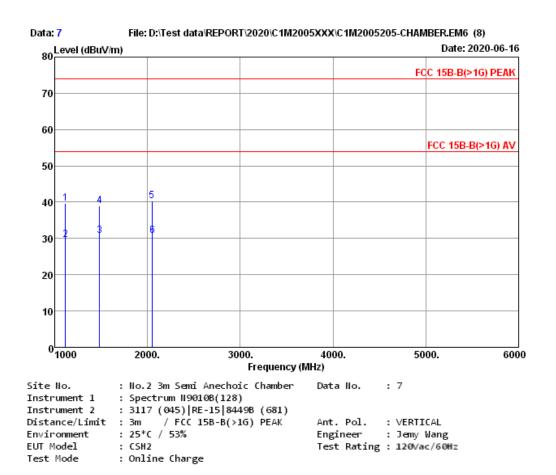


•	Factor (dB/m)	Loss (dB)	Gain (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV∕m)	Margin (dB)	Remark
15.000	28.33	4.21	36.15	41.60	37.99	73.98	35.99	Peak
6.174	28.33	4.21	36.14	33.15	29.55	53.98	24.43	Average
0.000	28.60	4.85	35.70	41.11	38.86	73.98	35.12	Peak
2.293	28.60	4.85	35.70	31.16	28.91	53.98	25.07	Average
24.775	30.49	5.43	35.55	30.04	30.41	53.98	23.57	Average
25.000	30.49	5.43	35.55	39.41	39.78	73.98	34.20	Peak
	1Hz) 15.000 16.174 70.000 72.293 24.775	HZ) (dB/m) 15.000 28.33 16.174 28.33 70.000 28.60 22.293 28.60 24.775 30.49	HHZ (dB/m) (dB) 15.000 28.33 4.21 16.174 28.33 4.21 70.000 28.60 4.85 22.293 28.60 4.85 24.775 30.49 5.43	Hz) (dB/m) (dB) (dB) 15.000 28.33 4.21 36.15 16.174 28.33 4.21 36.14 70.000 28.60 4.85 35.70 72.293 28.60 4.85 35.70 24.775 30.49 5.43 35.55	Hz (dB/m) (dB) (dB) (dBµV) 15.000 28.33 4.21 36.15 41.60 16.174 28.33 4.21 36.14 33.15 70.000 28.60 4.85 35.70 41.11 22.293 28.60 4.85 35.70 31.16 24.775 30.49 5.43 35.55 30.04	Hz (dB/m) (dB) (dB) (dBμV) (dBμV/m) 45.000 28.33 4.21 36.15 41.60 37.99 46.174 28.33 4.21 36.14 33.15 29.55 70.000 28.60 4.85 35.70 41.11 38.86 22.293 28.60 4.85 35.70 31.16 28.91 24.775 30.49 5.43 35.55 30.04 30.41	Hz (dB, m) (dB) (dB, m) (dB, m) <t< td=""><td>Hz (dB/m) (dB) (dB, (dB, (dB, (dB, V))) (dB, V/m) (dB, V/m)</td></t<>	Hz (dB/m) (dB) (dB, (dB, (dB, (dB, V))) (dB, V/m) (dB, V/m)

The emissions not reported are 20 dB lower than the specified limit.



Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Online Charge Mode		



		Ant.	Cable	Preamp		Emission	1		
	Freq. (MHz)	Factor (dB/m)	Loss (dB)	Gain (dB)	Reading (dBµV)	Level (dBµV/m)	Limits (dBµV∕m)	Margin (dB)	Remark
1	1115.000	28.57	4.18	36.18	43.07	39.64	73.98	34.34	Peak
2	1116.105	28.57	4.18	36.18	33.17	29.74	53.98	24.24	Average
3	1484.748	27.73	4.66	35.74	34.08	30.73	53.98	23.25	Average
4	1485.000	27.73	4.66	35.74	42.39	39.04	73.98	34.94	Peak
5	2050.000	31.10	5.63	35.53	39.21	40.41	73.98	33.57	Peak
6	2052.223	31.13	5.63	35.53	29.44	30.67	53.98	23.31	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Preamp Gain + Reading.

2. The emissions not reported are 20 dB lower than the specified limit.



7. Measurement Uncertainty List

The measurement uncertainty was estimated for test on the EUT according to CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage of K=2.

The uncertainties value is not used in determining the PASS/FAIL results.

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Conducted emissions	9kHz-150kHz	±3.7dB
at AC mains power port	150kHz-30MHz	±3.5dB
Conducted emissionsat wired network port	150kHz-30MHz	±3.5dB
Conducted emissionsat broadcast receiver tuner port	150kHz-30MHz	±3.5dB
Conducted emissions Power Clamp (No. 7 Shielded Room)	30MHz-300MHz	±4.4dB
Conducted emissions Power Clamp (No. 8 Shielded Room)	30MHz-300MHz	±4.4dB
Radiated, magnetic field (Triple-Loop Antenna)	9kHz-30MHz	±0.5dB
Dedicted magnetic field (Lean Antenne)	9kHz-150kHz	±3.1dB
Radiated, magnetic field (Loop Antenna)	150kHz-30MHz	±3.0dB
	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.1dB
	30MHz-200MHz, 3m, Vertical	±4.3dB
	200MHz-1000MHz, 3m, Vertical	±4.2dB
Radiated emissions	30MHz-200MHz, 10m, Horizontal	±4.3dB
(No.1 10m Semi Anechoic Chamber)	200MHz-1000MHz, 10m, Horizontal	±3.9dB
	30MHz-200MHz, 10m, Vertical	±4.3dB
	200MHz-1000MHz, 10m, Vertical	±3.9dB
	1GHz-6GHz, 3m	±4.1dB
	6GHz-18GHz, 3m	±4.4dB
	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.2dB
	30MHz-200MHz, 3m, Vertical	±4.1dB
	200MHz-1000MHz, 3m, Vertical	±4.4dB
Radiated emissions	30MHz-200MHz, 10m, Horizontal	±4.3dB
(No.2 10m Semi Anechoic Chamber)	200MHz-1000MHz, 10m, Horizontal	±4.0dB
	30MHz-200MHz, 10m, Vertical	±4.1dB
	200MHz-1000MHz, 10m, Vertical	±4.1dB
	1GHz-6GHz, 3m	±4.2dB
	6GHz-18GHz, 3m	±4.4dB



Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
	30MHz-200MHz, 3m, Horizontal	±4.1dB
	200MHz-1000MHz, 3m, Horizontal	±3.9dB
Radiated emissions	30MHz-200MHz, 3m, Vertical	±4.2dB
(No.1 3m Semi Anechoic Chamber)	200MHz-1000MHz, 3m, Vertical	±4.1dB
	1GHz-6GHz, 3m	±4.2dB
	6GHz-18GHz, 3m	±4.6dB
	30MHz-200MHz, 3m, Horizontal	±3.7dB
	200MHz-1000MHz, 3m, Horizontal	±4.0dB
Radiated emissions	30MHz-200MHz, 3m, Vertical	±4.2dB
(No.2 3m Semi Anechoic Chamber)	200MHz-1000MHz, 3m, Vertical	±4.5dB
	1GHz-6GHz, 3m	±4.3dB
	6GHz-18GHz, 3m	±4.7dB
	30MHz-200MHz, 3m, Horizontal	±3.9dB
Radiated emissions	200MHz-1000MHz, 3m, Horizontal	±3.9dB
(No.3 3m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±4.1dB
	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.0dB
Radiated emissions	30MHz-200MHz, 3m, Vertical	±4.3dB
(No.4 3m Semi Anechoic Chamber)	200MHz-1000MHz, 3m, Vertical	±4.4dB
	1GHz-6GHz, 3m	±4.5dB
	6GHz-18GHz, 3m	±4.6dB
	30MHz-200MHz, 3m, Horizontal	±4.0dB
	200MHz-1000MHz, 3m, Horizontal	±3.9dB
Radiated emissions	30MHz-200MHz, 3m, Vertical	±4.2dB
(No.5 3m Semi Anechoic Chamber)	200MHz-1000MHz, 3m, Vertical	±4.3dB
	1GHz-6GHz, 3m	±4.3dB
	6GHz-18GHz, 3m	±4.7dB



Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
	30MHz-200MHz, 3m, Horizontal	±4.4dB
	200MHz-1000MHz, 3m, Horizontal	±4.2dB
	30MHz-200MHz, 3m, Vertical	±4.2dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.4dB
(No.3 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±4.4dB
	200MHz-1000MHz, 10m, Horizontal	±4.0dB
	30MHz-200MHz, 10m, Vertical	±4.2dB
	200MHz-1000MHz, 10m, Vertical	±4.2dB
	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.4dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.9dB
(No.5 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±4.3dB
	200MHz-1000MHz, 10m, Horizontal	±4.2dB
	30MHz-200MHz, 10m, Vertical	±4.4dB
	200MHz-1000MHz, 10m, Vertical	±4.7dB
	30MHz-200MHz, 3m, Horizontal	±3.6dB
	200MHz-1000MHz, 3m, Horizontal	±4.4dB
	30MHz-200MHz, 3m, Vertical	±4.0dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.2dB
(No.6 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±3.6dB
	200MHz-1000MHz, 10m, Horizontal	±4.2dB
	30MHz-200MHz, 10m, Vertical	±4.0dB
	200MHz-1000MHz, 10m, Vertical	±4.0dB
	30MHz-200MHz, 3m, Horizontal	±3.6dB
	200MHz-1000MHz, 3m, Horizontal	±4.5dB
	30MHz-200MHz, 3m, Vertical	±4.3dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.7dB
(No.7 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±3.6dB
	200MHz-1000MHz, 10m, Horizontal	±4.3dB
	30MHz-200MHz, 10m, Vertical	±4.3dB
	200MHz-1000MHz, 10m, Vertical	±4.5dB
	30MHz-200MHz, 3m, Horizontal	±3.8dB
	200MHz-1000MHz, 3m, Horizontal	±4.2dB
	30MHz-200MHz, 3m, Vertical	±4.5dB
Radiated emissions	200MHz-1000MHz, 3m, Vertical	±4.3dB
(No.8 Open Area Test Site)	30MHz-200MHz, 10m, Horizontal	±3.7dB
	200MHz-1000MHz, 10m, Horizontal	±4.0dB
	30MHz-200MHz, 10m, Vertical	±4.5dB
	200MHz-1000MHz, 10m, Vertical	±4.1dB



8. Photographs

8.1. Powerline Conducted Emission Measurement



Front View of Conducted Measurement



Back View of Conducted Measurement



8.2. Radiated Emissions Measurement

• For Frequency Range 30 – 1000MHz



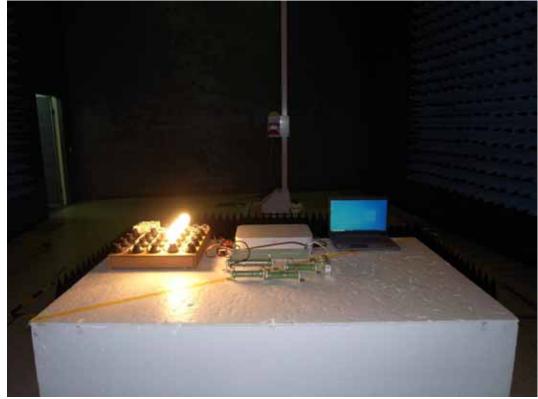
Front View of Radiated Measurement



Back View of Radiated Measurement



• For Frequency Range 1 – 6GHz



Front View of Radiated Measurement



Back View of Radiated Measurement



APPENDIX (Photos of EUT)



Figure 1 General Appearance(Front& Side View)



Figure 2 General Appearance(Back & Side View)





Figure 3 General Appearance(I/O View)



Figure 4 General Appearance(I/O View)





Figure 5 General Appearance(LabelView)



Figure 6 Internal View (Removed Covers)





Figure 7 Internal View (Removed Covers)



Figure 8 Internal View (Removed Covers)



Audix Technology Corporation Report No.: EM-F200250



Figure 9 Internal View (Battery, Front & Side View)



Figure 10 Internal View (Battery Label View)





Figure 11 Internal View (Main Board, Front View)



Figure 12 Internal View (Main Board, Back View)

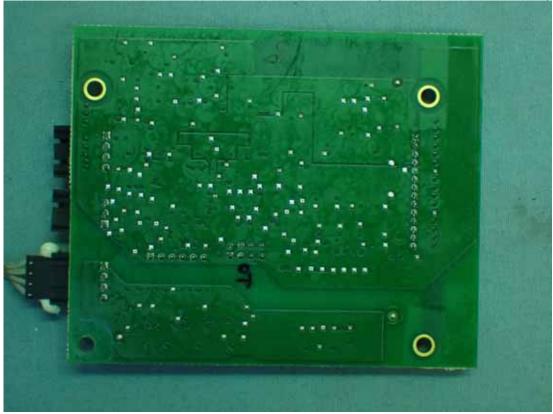




Figure 13 Internal View (Internal Board, Front View)



Figure 14 Internal View (Internal Board, Back View)

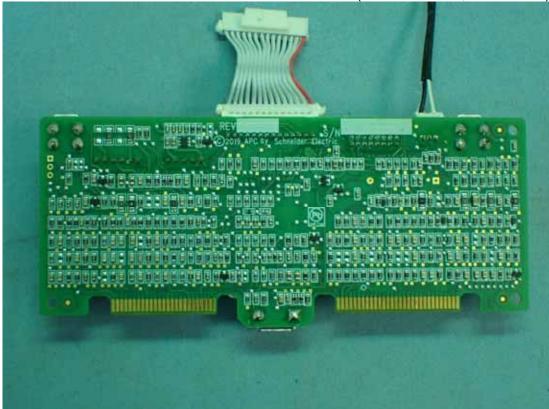




Figure 15 Internal View (Power Board, Front View)

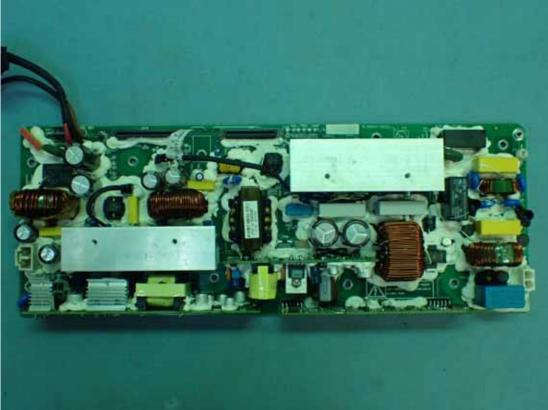


Figure 16 Internal View (Power Board, Back View)





Figure 17 Internal View (Internal Board, Front View)

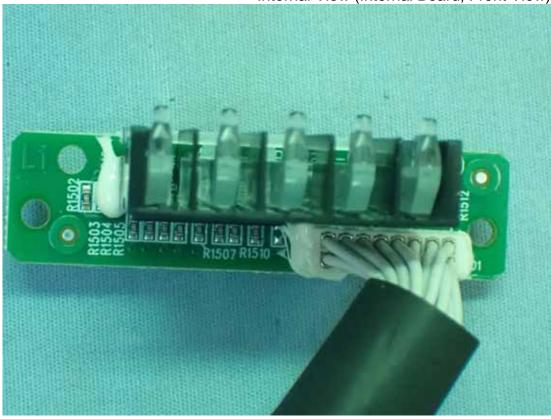


Figure 18 Internal View (Internal Board, Back View)





Figure 19 Internal View (FAN View)

