Technical Compliance Statement
FCC Test Report

For the following information **Ref. File No.: C1M2107399**

Product	:	UPS (Uninterruptible Power Supply)
Model Number	:	(1)SMT1500X93# (2)SMT1500RMX93# (where # may be max. 10 letters, 0-9, -, or blank) (for marketing purpose)
Brand Name	:	APC by Schneider-Electric
Applicant	:	American Power Conversion Holding Inc., Taiwan Branch
Manufacturer	:	American Power Conversion Holding Inc., Taiwan Branch
Rules and Standards	:	Title 47 FCC CFR, Part 15, Subpart B, Class A ANSI C63.4-2014

We hereby certify that the above product has been tested by us and complied with above FCC 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 regulations.
The test data and results are issued on the test report **EM-F210729**.

Signature

Allen Wang/Assistant General Manager
Date: 2021. 09. 27

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

UPS (Uninterruptible Power Supply)

Model Number: (1)SMT1500X93# (2)SMT1500RMX93# (where # may be max. 10 letters, 0-9, -, or blank) (for marketing purpose)

Brand: APC by Schneider-Electric

Applicant for:

American Power Conversion Holding 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. 491, Zhongfu Rd., Linkou Dist.,
New Taipei City 244, Taiwan

ilac-MRA TAF Testing Laboratory 1724

NVLAP® TESTING NVLAP LAB CODE 200077-0

File No.	:	C1M2107399
Report No.	:	EM-F210729
Date of Report	:	2021. 09. 27

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	:	American Power Conversion Holding Inc., Taiwan Branch
Manufacturer	:	American Power Conversion Holding Inc., Taiwan Branch
EUT Description		
(1) Product	:	UPS (Uninterruptible Power Supply)
(2) Model	:	(1)SMT1500X93# (2)SMT1500RMX93# (where # may be max. 10 letters, 0-9, -, or blank) (for marketing purpose)
(3) Brand	:	APC by Schneider-Electric
(4) Power Rating	:	Input: 120Vac, 50/60Hz Output: 120Vac, 50/60Hz

Rules of Compliance and Applicable Standards:

Title 47 FCC CFR, Part 15, Subpart B, Class A
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 shows that the EUT is technically compliance with the class A limit for FCC rule 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: 2021. 09. 27

Reviewed by: _____ (Iris Chen/Administrator)

Approved by: _____ (Allen Wang/Assistant General Manager)

Name of the Representative of the Responsible Party: _____

Signature: _____

Table of Content

1. Revision of Test Report

Issued Date	Revision Summary	Report Number
2021. 09. 27	Original Report.	EM-F210729

2. Summary of Test Result

2.1. Test Result

Test Item	Referred Rules/Standard	Limit	Result
Power-line conducted emission	Title 47 CFR FCC Part 15 Subpart B	Class A	**Pass** Margin 7.54dB at 1.032MHz
Radiated emission (30 – 1000MHz)	Title 47 CFR FCC Part 15 Subpart B	Class A	**Pass** Margin 3.47dB at 216.030MHz (Vertical, 1m/175°)
Radiated emission (Above 1GHz)	Title 47 CFR FCC Part 15 Subpart B	Class A	**Pass** Margin 18.43dB at 1253.060MHz

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

2.2. Description of Test Firm

Name of Test Firm	Audix Technology Corporation / EMC Department No. 491, Zhongfu Rd., 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. 5 Shielding Room (2) No. 8 Open Area Test Site (3) No. 2 10m Semi Anechoic Chamber

3. General Information

3.1. Description of Application

Applicant	American Power Conversion Holding Inc., Taiwan Branch 5F., No.189, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 11494 Taiwan (R.O.C)
Manufacturer	American Power Conversion Holding Inc., Taiwan Branch 5F., No.189, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 11494 Taiwan (R.O.C)
Product	UPS (Uninterruptible Power Supply)
Brand	APC by Schneider-Electric
Model Number	(1)SMT1500X93# (2)SMT1500RMX93# (where # may be max. 10 letters, 0-9, -, or blank) (for marketing purpose) The difference of above models is in sales marketing.

3.2. Description of the EUT

Test Model	(1)SMT1500X93 (2)SMT1500RMX93
Serial Number	N/A
Power Rating	Input: 120Vac, 50/60Hz Output: 120Vac, 50/60Hz Power: 1440VA; 1000W
Firmware Version	N/A
Sample Status	Production
Date of Receipt	2021. 07. 21 & 2021. 07. 26
Date of Test	2021. 07. 22 ~ 08. 24
I/O Ports List	**SMT1500X93:** • USB port x1 • Group 1 AC Out let x8 • LAN port x1 • AC In x1 **SMT1500RMX93:** • USB port x1 • Group 1 AC Out let x6 • LAN port x1 • AC In x1
Accessories Supplied	• USB Cable • LAN Cable

3.3. Highest Frequency within EUT

The highest frequency operating in EUT is over 400MHz. The highest measured frequency is performed according to the requirement of FCC Part 15.33.

3.4. List of Key Components Under Test

Component	Supplier	Model/Type	Description
1500 Battery Module	CSB Battery Co., Ltd. (MH14533)	GP12170	12 Vdc, 17 Ah
1500RM Battery Module		HR1234W	12 Vdc, 8.5 Ah

3.5. Determination of Worse Case Operating Modes

None

3.6. Final Test Configuration

The worst showed as following configuration was recorded in this report.

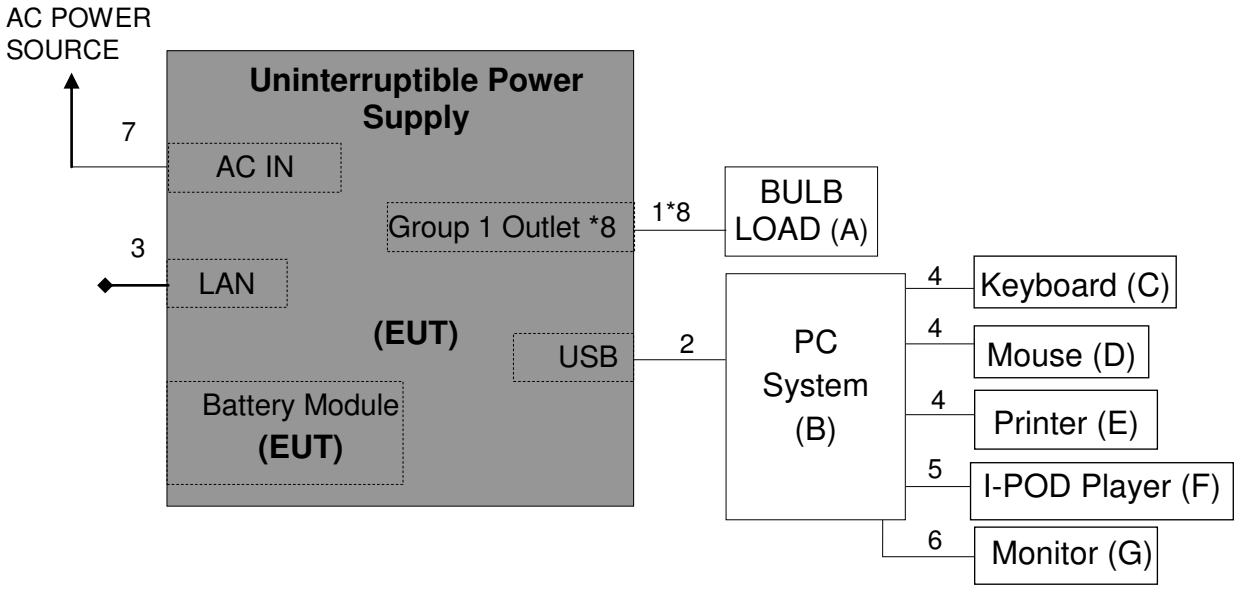
Test Item	Input / Output power	Output Power	Operating Mode
Power-line conducted emission	AC 120V, 60Hz	1000W	Link PC (Line Mode)
	---	---	DC (Battery Mode)
Radiated emission (30 – 1000MHz)	AC 120V, 60Hz	1000W	Link PC (Line Mode)
	---	---	DC (Battery Mode)
Radiated emission (above 1GHz)	AC 120V, 60Hz	1000W	Link PC (Line Mode)

4. Measurement Arrangement

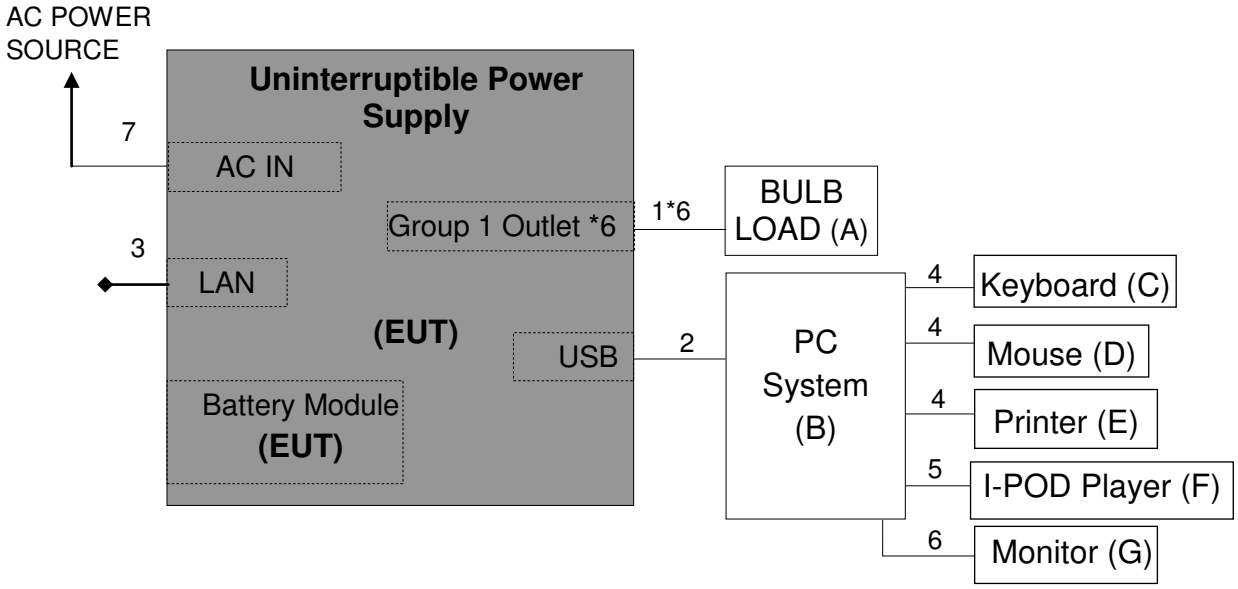
4.1. Equipment and cables arrangement

- Connection Diagram of EUT and Peripheral Devices

"Worst Test Mode"
for M/N SMT1500X93



"Worst Test Mode"
for M/N SMT1500RMX93



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. Setup the pc to drive the EUT through the UPS's software driver.
3. Data was communicated between the PC and EUT through the USB cable. The PC displayed the test software and rating of the EUT by windows 10.
4. Set EUT under line or battery mode.
5. The AC outputs of EUT was linked to bulb loads with full load (1000W).
6. 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.	Approv-al
A	Bulb Load(1000W)	Audix	N/A	N/A	N/A
B	PC System	LENOVO	MT-M 2697-AH5	PBFK914	By DoC
C	USB Keyboard	LENOVO	KU-0225	0904489	By DoC
D	USB Mouse	LENOVO	SM-8823	8SSM50L24506AVLC99 H0496	By DoC
E	Printer	HP	Deskjet 2000	CN25N13K2Z	By DoC
F	I-POD	APPLE	A1204	4H722TA0VTE	By DoC
G	Monitor	LENOVO	LT2452P	VNA9XVX	By DoC

4.4. List of Used Cables under Test

Item	Type	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remark
1	Power Cord **(for M/N SMT1500X93)**	8	1.8	No	0	Provided by LAB
	Power Cord **(for M/N SMT1500RMX93)**	6				
2	USB Cable **(for M/N SMT1500X93)**	1	2.0	No	0	Accessory of EUT
	USB Cable **(for M/N SMT1500RMX93)**		3.0			
3	LAN Cable	1	2.0	No	0	Accessory of EUT
4	USB Cable	3	1.8	Yes	0	Provided by LAB
5	USB Cable	1	1.0	Yes	0	Provided by LAB
6	DP Cable	1	1.8	Yes	0	Provided by LAB
7	AC Power Cord (3C) **(for M/N SMT1500X93)**	1	1.8	No	0	Accessory of EUT
	AC Power Cord (3C) **(for M/N SMT1500RMX93)**		2.3			
8	AC Power Cord	3	1.8	No	0	Provided by LAB for above supported units

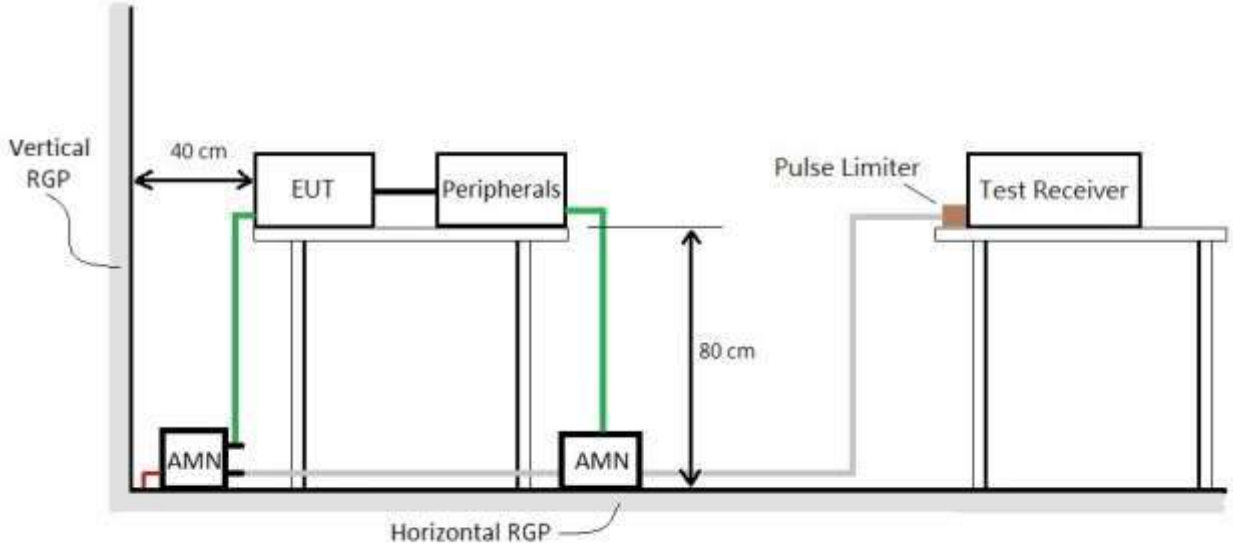
5. Measurement of Conducted Emissions

5.1. List of Test Instruments

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Test Receiver	R&S	ESR3	101773	2021. 05. 19	1 Year
2	A.M.N.	R&S	ENV4200	100003	2020. 09. 16	1 Year
3	L.I.S.N.	Kyoritsu	KNW-407	8-1539-2	2020. 12. 16	1 Year
4	Pulse Limiter	R&S	ESH3-Z2	100355	2021. 01. 04	1 Year
5	Signal Cable	MIYAZAKI	5D2W	CE-04	2021. 01. 29	1 Year
6	Test Software	Audix	e3	V6.120703a	N.C.R.	N.C.R.
7	Digital Ther-mo-Hygro Meter	WISEWIND	5330	No.5 S/R	2021. 04. 15	1 Year

5.2. Test Setup

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



5.3. Power-line Conducted Emission Limits

- For FCC §15.107

Frequency Range (MHz)	Class A Limits		Class B Limits	
	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			60	50

Note: * Decreases with the logarithm of the frequency.

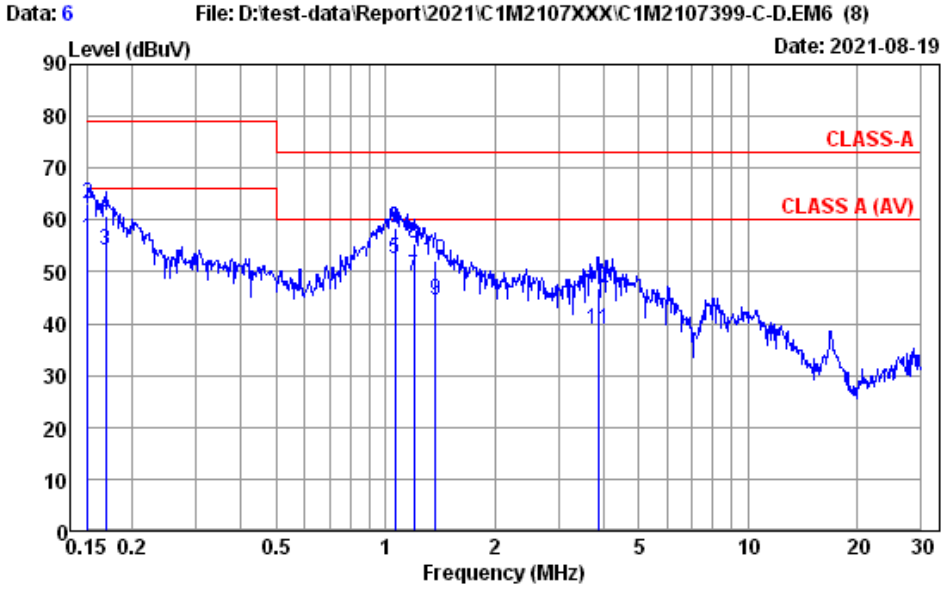
5.4. Measurement Procedure

The power-line conducted emission measurement was performed in accordance with the procedure of ANSI C63.4-2014 clause 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 (dBμV) = Reading (Receiver) (dBμV) + Factor(A.M.N) (dB) + Cable Loss (dB) + Pulse Limiter(dB)
- 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	Link PC (Line Mode)	Test Model	SMT1500X93

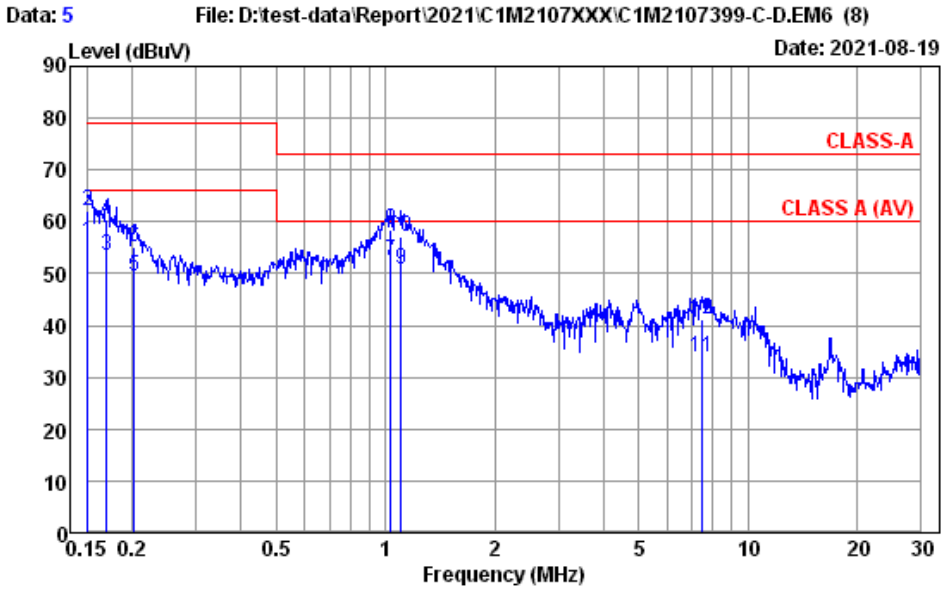


Site No. : No.5 Shielded Room
Data No. : 6
Instrument 1 : Receiver ESR(773)
Instrument 2 : ENV4200 (003)(A)|CE-04|ESH3-Z2 (355)
Limit : CLASS-A
Phase : NEUTRAL
Environment : 25°C / 60%
Engineer : JASON CHOU
EUT Model : SMT1500X93
Test Rating : 120Vac / 60Hz
Test Mode : Link PC(LINE MODE)

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.151	10.16	0.01	9.86	36.47	56.50	66.00	9.50	Average
2	0.151	10.16	0.01	9.86	42.90	62.93	79.00	16.07	QP
3	0.169	10.14	0.01	9.86	33.98	53.99	66.00	12.01	Average
4	0.169	10.14	0.01	9.86	40.81	60.82	79.00	18.18	QP
5	1.065	9.98	0.03	9.86	32.45	52.32	60.00	7.68	Average
6	1.065	9.98	0.03	9.86	38.48	58.35	73.00	14.65	QP
7	1.197	9.99	0.03	9.86	29.11	48.99	60.00	11.01	Average
8	1.197	9.99	0.03	9.86	35.59	55.47	73.00	17.53	QP
9	1.374	9.99	0.04	9.86	24.72	44.61	60.00	15.39	Average
10	1.374	9.99	0.04	9.86	32.39	52.28	73.00	20.72	QP
11	3.860	10.11	0.07	9.87	18.73	38.78	60.00	21.22	Average
12	3.860	10.11	0.07	9.87	26.71	46.76	73.00	26.24	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	Link PC (Line Mode)	Test Model	SMT1500X93

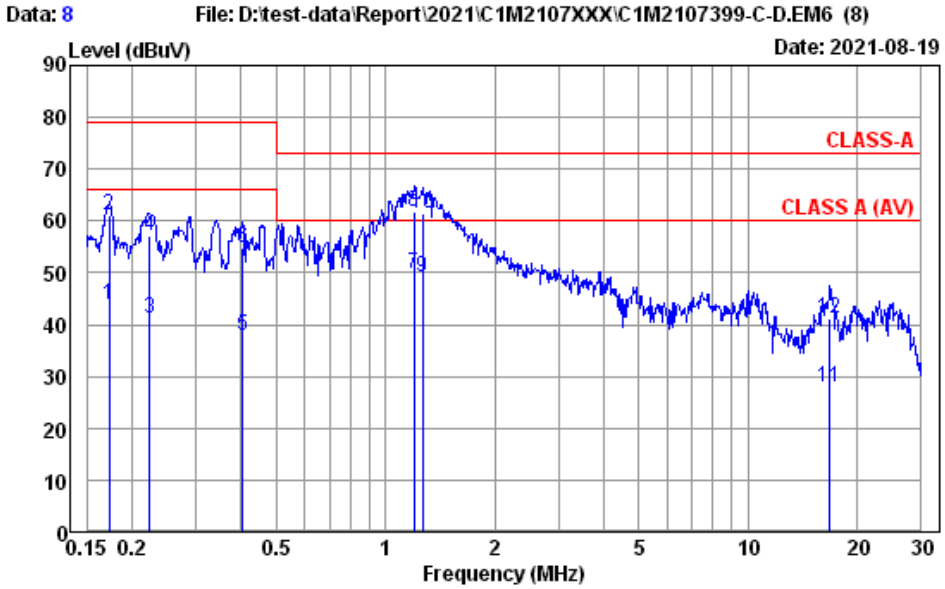


Site No. : No.5 Shielded Room Data No. : 5
Instrument 1 : Receiver ESR(773)
Instrument 2 : ENV4200 (003)(A)|CE-04|ESH3-Z2 (355)
Limit : CLASS-A Phase : LINE
Environment : 25°C / 60% Engineer : JASON CHOU
EUT Model : SMT1500X93 Test Rating : 120Vac / 60Hz
Test Mode : Link PC(LINE MODE)

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.151	10.15	0.01	9.86	36.05	56.07	66.00	9.93	Average
2	0.151	10.15	0.01	9.86	42.14	62.16	79.00	16.84	QP
3	0.170	10.13	0.01	9.86	33.56	53.56	66.00	12.44	Average
4	0.170	10.13	0.01	9.86	40.31	60.31	79.00	18.69	QP
5	0.203	10.11	0.01	9.86	29.37	49.35	66.00	16.65	Average
6	0.203	10.11	0.01	9.86	35.01	54.99	79.00	24.01	QP
7	1.032	9.98	0.03	9.86	32.59	52.46	60.00	7.54	Average
8	1.032	9.98	0.03	9.86	38.43	58.30	73.00	14.70	QP
9	1.106	9.98	0.03	9.86	31.05	50.92	60.00	9.08	Average
10	1.106	9.98	0.03	9.86	37.40	57.27	73.00	15.73	QP
11	7.446	10.39	0.10	9.87	13.48	33.84	60.00	26.16	Average
12	7.446	10.39	0.10	9.87	20.71	41.07	73.00	31.93	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	Neutral	Test Result	Pass
Test Mode	Link PC (Battery Mode)	Test Model	SMT1500X93

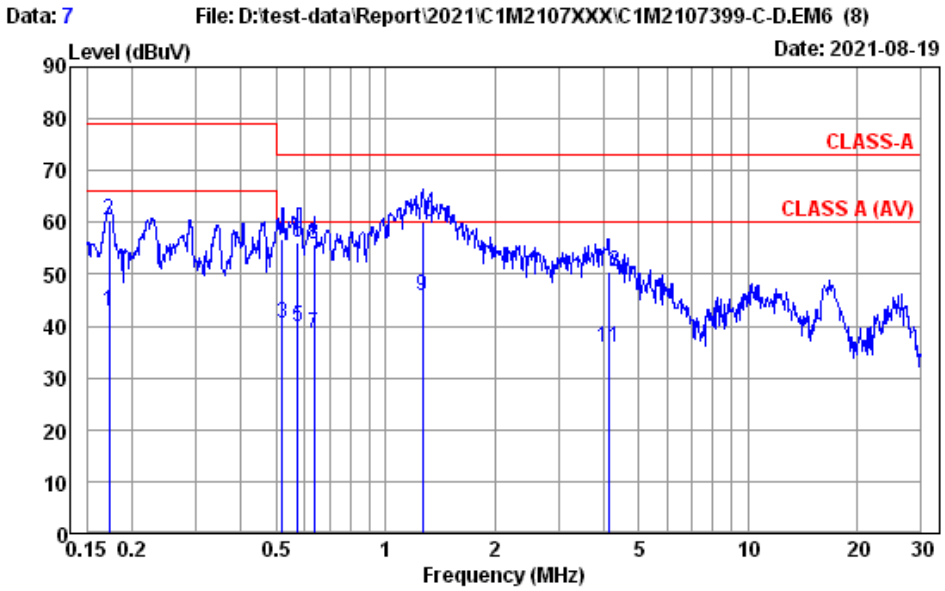


Site No. : No.5 Shielded Room Data No. : 8
Instrument 1 : Receiver ESR(773)
Instrument 2 : ENV4200 (003)(A)|CE-04|ESH3-Z2 (355)
Limit : CLASS-A Phase : LINE
Environment : 25°C / 60% Engineer : JASON CHOU
EUT Model : SMT1500X93 Test Rating :
Test Mode : Link PC(Battery MODE)

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.173	10.13	0.01	9.86	23.98	43.98	66.00	22.02	Average
2	0.173	10.13	0.01	9.86	41.07	61.07	79.00	17.93	QP
3	0.223	10.09	0.01	9.86	21.33	41.29	66.00	24.71	Average
4	0.223	10.09	0.01	9.86	37.30	57.26	79.00	21.74	QP
5	0.404	10.01	0.02	9.86	18.10	37.99	66.00	28.01	Average
6	0.404	10.01	0.02	9.86	34.78	54.67	79.00	24.33	QP
7	1.197	9.99	0.03	9.86	29.89	49.77	60.00	10.23	Average
8	1.197	9.99	0.03	9.86	42.03	61.91	73.00	11.09	QP
9	1.269	9.99	0.04	9.86	29.14	49.03	60.00	10.97	Average
10	1.269	9.99	0.04	9.86	41.60	61.49	73.00	11.51	QP
11	16.839	11.40	0.16	9.92	6.47	27.95	60.00	32.05	Average
12	16.839	11.40	0.16	9.92	19.69	41.17	73.00	31.83	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	Link PC (Battery Mode)	Test Model	SMT1500X93

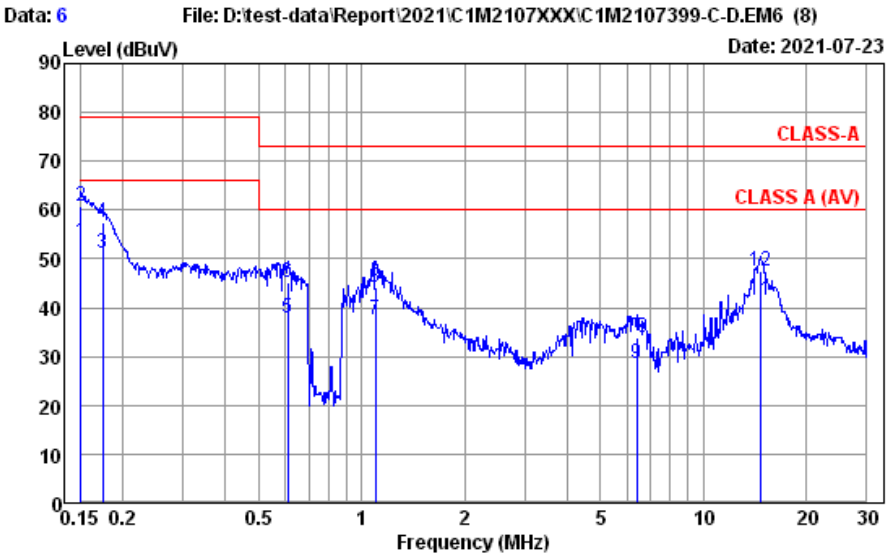


Site No. : No.5 Shielded Room Data No. : 7
Instrument 1 : Receiver ESR(773)
Instrument 2 : ENV4200 (003)(A)|CE-04|ESH3-Z2 (355)
Limit : CLASS-A Phase : NEUTRAL
Environment : 25°C / 60% Engineer : JASON CHOU
EUT Model : SMT1500X93 Test Rating :
Test Mode : Link PC(Battery MODE)

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.173	10.14	0.01	9.86	22.86	42.87	66.00	23.13	Average
2	0.173	10.14	0.01	9.86	40.38	60.39	79.00	18.61	QP
3	0.518	10.01	0.02	9.86	20.54	40.43	60.00	19.57	Average
4	0.518	10.01	0.02	9.86	36.82	56.71	73.00	16.29	QP
5	0.573	10.00	0.02	9.86	19.83	39.71	60.00	20.29	Average
6	0.573	10.00	0.02	9.86	36.14	56.02	73.00	16.98	QP
7	0.634	10.00	0.02	9.86	18.71	38.59	60.00	21.41	Average
8	0.634	10.00	0.02	9.86	35.86	55.74	73.00	17.26	QP
9	1.269	9.99	0.04	9.86	25.86	45.75	60.00	14.25	Average
10	1.269	9.99	0.04	9.86	40.12	60.01	73.00	12.99	QP
11	4.114	10.14	0.07	9.87	15.71	35.79	60.00	24.21	Average
12	4.114	10.14	0.07	9.87	30.56	50.64	73.00	22.36	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	Neutral	Test Result	Pass
Test Mode	Link PC (Line Mode)	Test Model	SMT1500RMX93

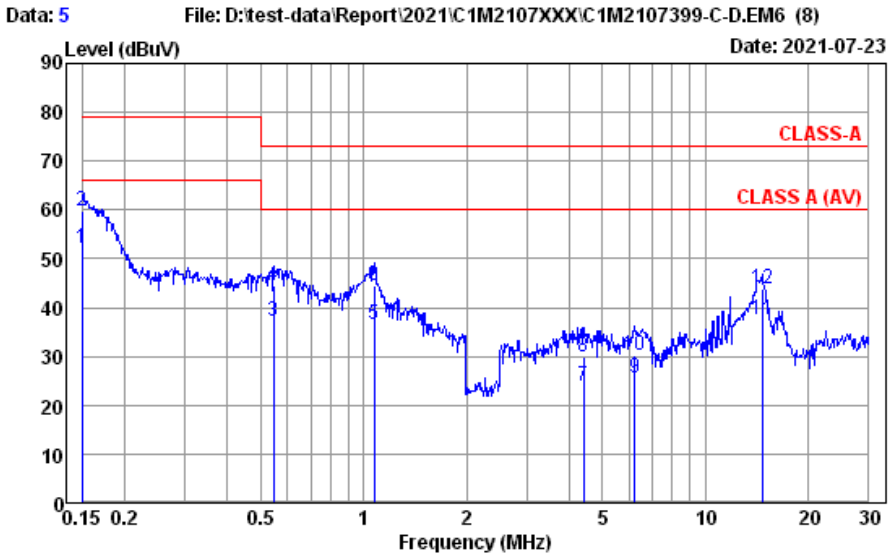


Site No. : No.5 Shielded Room Data No. : 6
Instrument 1 : Receiver ESR(773)
Instrument 2 : ENV4200 (003)(A)|CE-04|ESH3-Z2 (355)
Limit : CLASS-A Phase : NEUTRAL
Environment : 25°C / 55% Engineer : JASON CHOU
EUT Model : SMT1500RMX93 Test Rating : 120Vac / 60Hz
Test Mode : Link PC(LINE MODE)

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.151	10.16	0.01	9.86	33.49	53.52	66.00	12.48	Average
2	0.151	10.16	0.01	9.86	40.83	60.86	79.00	18.14	QP
3	0.175	10.14	0.01	9.86	31.11	51.12	66.00	14.88	Average
4	0.175	10.14	0.01	9.86	37.42	57.43	79.00	21.57	QP
5	0.608	10.00	0.02	9.86	18.11	37.99	60.00	22.01	Average
6	0.608	10.00	0.02	9.86	25.28	45.16	73.00	27.84	QP
7	1.100	9.98	0.03	9.86	17.52	37.39	60.00	22.61	Average
8	1.100	9.98	0.03	9.86	24.36	44.23	73.00	28.77	QP
9	6.386	10.44	0.09	9.87	8.16	28.56	60.00	31.44	Average
10	6.386	10.44	0.09	9.87	13.33	33.73	73.00	39.27	QP
11	14.750	11.75	0.15	9.91	19.60	41.41	60.00	18.59	Average
12	14.750	11.75	0.15	9.91	25.69	47.50	73.00	25.50	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	Link PC (Line Mode)	Test Model	SMT1500RMX93

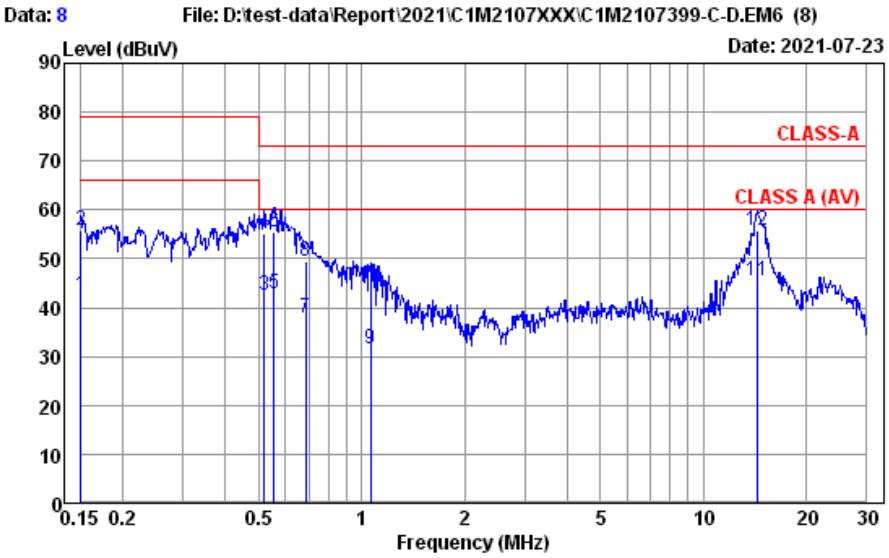


Site No. : No.5 Shielded Room Data No. : 5
Instrument 1 : Receiver ESR(773)
Instrument 2 : ENV4200 (003)(A)|CE-04|ESH3-Z2 (355)
Limit : CLASS-A Phase : LINE
Environment : 25°C / 55% Engineer : JASON CHOU
EUT Model : SMT1500RMX93 Test Rating : 120Vac / 60Hz
Test Mode : Link PC(LINE MODE)

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.150	10.15	0.01	9.86	32.25	52.27	66.00	13.73	Average
2	0.150	10.15	0.01	9.86	39.88	59.90	79.00	19.10	QP
3	0.546	10.00	0.02	9.86	17.28	37.16	60.00	22.84	Average
4	0.546	10.00	0.02	9.86	24.69	44.57	73.00	28.43	QP
5	1.077	9.98	0.03	9.86	16.80	36.67	60.00	23.33	Average
6	1.077	9.98	0.03	9.86	24.62	44.49	73.00	28.51	QP
7	4.407	10.14	0.07	9.87	3.85	23.93	60.00	36.07	Average
8	4.407	10.14	0.07	9.87	9.72	29.80	73.00	43.20	QP
9	6.219	10.31	0.09	9.87	5.32	25.59	60.00	34.41	Average
10	6.219	10.31	0.09	9.87	10.10	30.37	73.00	42.63	QP
11	14.672	11.17	0.15	9.91	16.30	37.53	60.00	22.47	Average
12	14.672	11.17	0.15	9.91	22.63	43.86	73.00	29.14	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	Neutral	Test Result	Pass
Test Mode	Link PC (Battery Mode)	Test Model	SMT1500RMX93

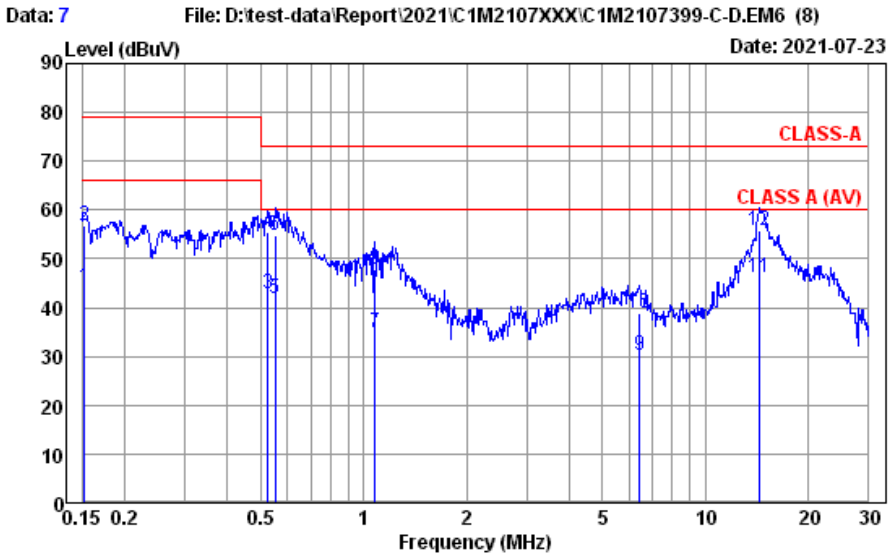


Site No. : No.5 Shielded Room Data No. : 8
Instrument 1 : Receiver ESR(773)
Instrument 2 : ENV4200 (003)(A)|CE-04|ESH3-Z2 (355)
Limit : CLASS-A Phase : LINE
Environment : 25°C / 55% Engineer : JASON CHOU
EUT Model : SMT1500RMX93 Test Rating :
Test Mode : Link PC(Battery MODE)

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.151	10.15	0.01	9.86	22.56	42.58	66.00	23.42	Average
2	0.151	10.15	0.01	9.86	35.71	55.73	79.00	23.27	QP
3	0.518	10.00	0.02	9.86	22.51	42.39	60.00	17.61	Average
4	0.518	10.00	0.02	9.86	35.37	55.25	73.00	17.75	QP
5	0.555	10.00	0.02	9.86	23.05	42.93	60.00	17.07	Average
6	0.555	10.00	0.02	9.86	35.44	55.32	73.00	17.68	QP
7	0.686	9.99	0.02	9.86	17.90	37.77	60.00	22.23	Average
8	0.686	9.99	0.02	9.86	29.76	49.63	73.00	23.37	QP
9	1.065	9.98	0.03	9.86	11.74	31.61	60.00	28.39	Average
10	1.065	9.98	0.03	9.86	23.95	43.82	73.00	29.18	QP
11	14.440	11.15	0.15	9.91	24.39	45.60	60.00	14.40	Average
12	14.440	11.15	0.15	9.91	34.59	55.80	73.00	17.20	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	Link PC (Battery Mode)	Test Model	SMT1500RMX93



Site No. : No.5 Shielded Room Data No. : 7
Instrument 1 : Receiver ESR(773)
Instrument 2 : ENV4200 (003)(A)|CE-04|ESH3-Z2 (355)
Limit : CLASS-A Phase : NEUTRAL
Environment : 25°C / 55% Engineer : JASON CHOU
EUT Model : SMT1500RMX93 Test Rating :
Test Mode : Link PC(Battery MODE)

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.152	10.16	0.01	9.86	24.00	44.03	66.00	21.97	Average
2	0.152	10.16	0.01	9.86	36.67	56.70	79.00	22.30	QP
3	0.524	10.01	0.02	9.86	22.96	42.85	60.00	17.15	Average
4	0.524	10.01	0.02	9.86	35.73	55.62	73.00	17.38	QP
5	0.552	10.01	0.02	9.86	22.12	42.01	60.00	17.99	Average
6	0.552	10.01	0.02	9.86	35.03	54.92	73.00	18.08	QP
7	1.082	9.98	0.03	9.86	14.87	34.74	60.00	25.26	Average
8	1.082	9.98	0.03	9.86	28.09	47.96	73.00	25.04	QP
9	6.420	10.44	0.09	9.87	9.70	30.10	60.00	29.90	Average
10	6.420	10.44	0.09	9.87	18.46	38.86	73.00	34.14	QP
11	14.440	11.69	0.15	9.91	24.25	46.00	60.00	14.00	Average
12	14.440	11.69	0.15	9.91	34.04	55.79	73.00	17.21	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.

6. Measurement of Radiated Emissions

6.1. List of Test Instruments

- For measurement of 30 to 1000MHz frequency range

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	Agilent	N9010A-507	MY51250907	2021. 05. 19	1 Year
2	Test Receiver	R&S	ESCI	100558	2020. 10. 14	1 Year
3	Amplifier	HP	8447D	2944A06891	2021. 01. 04	1 Year
4	Bilog Antenna	Schaffner	CBL6112B	2828	2021. 01. 15	1 Year
5	Signal Cable	HUBER+ SUHNER	RG217U	RE-10	2021. 01. 29	1 Year
6	Test Software	Audix	e3	V5.04507	N.C.R.	N.C.R.
7	Digital Ther-mo-Hygro Meter	WISEWIND	5330	No.8 O/S	2021. 04. 15	1 Year

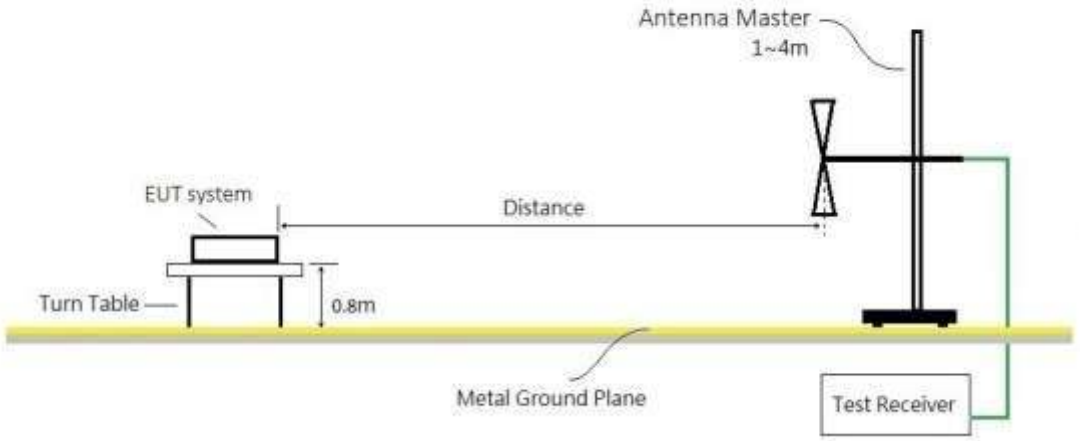
- For measurement of above 1GHz frequency range

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1	Spectrum Analyzer	R&S	FSV40	101425	2020. 10. 29	1 Year
2	Microwave Preamplifier	Agilent	8449B	3008A02681	2021. 03. 11	1 Year
3	Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00227046	2021. 04. 08	1 Year
4	Signal Cable	EMCI	EMC104	RE-28	2021. 05. 26	1 Year
5	Digital Ther-mo-Hygro Meter	iMax	HTC-1	No.2 10m A/C	2021. 04. 15	1 Year
6	Test Software	Audix	e3	V9.20180702	N.C.R.	N.C.R.

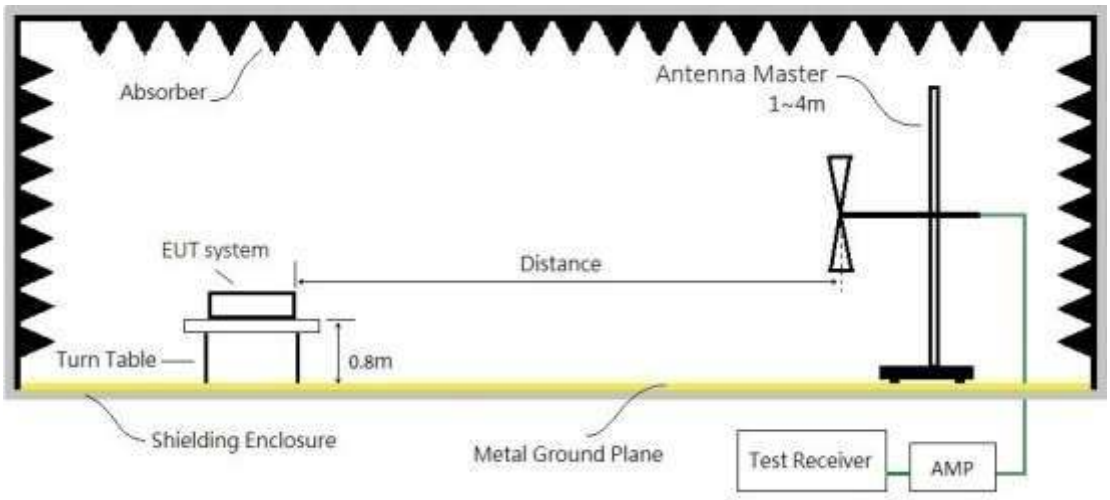
6.2. Test Setup

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

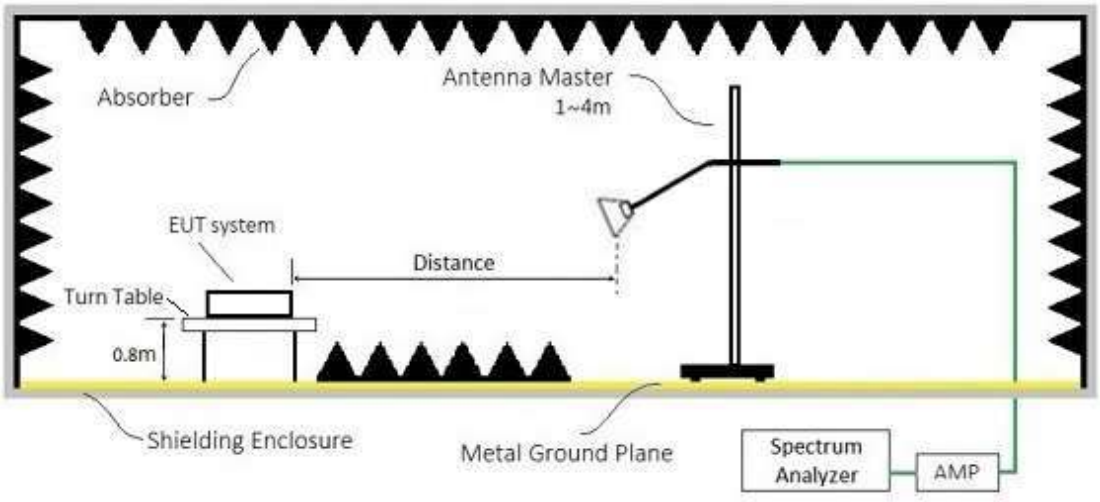
- For frequency range 30 to 1000MHz (at Open Area Test Site)



- For frequency range 30 to 1000MHz (at Semi-Anechoic Chamber)



- For frequency range above 1GHz (at Semi-Anechoic Chamber)



6.3. Radiation Emission Limits

- For Below 1GHz, FCC §15.109(a)(g)/CISPR 22

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

- For Above 1GHz, FCC §15.109(a)(g)/CISPR 22

Frequency Range (MHz)	Distance (meter)	Class A Limits		Class B Limits	
		Peak [dB(μV/m)]	Average [dB(μV/m)]	Peak [dB(μV/m)]	Average [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)
- 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 frequency or 40 GHz, whichever is lower.

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 semi-anechoic 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 (dBμV/m) = Reading (Receiver) (dBμV) + Cable Loss (dB)+ Antenna Factor (dB/m) – Preamp Gain (dB)

  (Above 1GHz)

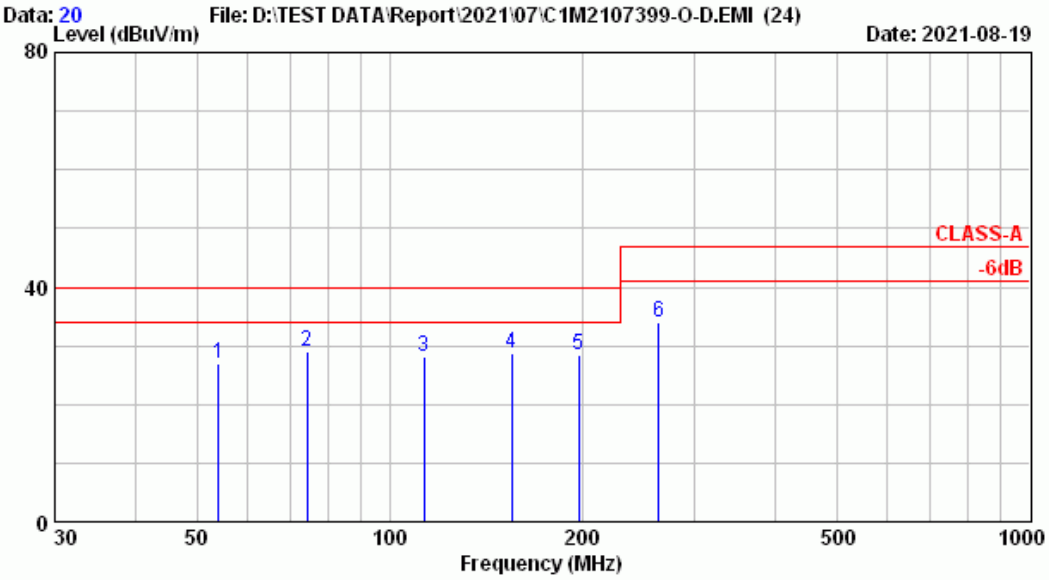
  Emission Level (dBμV/m) = Reading (Spectrum) (dBμV) + Cable Loss (dB)+ Antenna Factor (dB/m) – Preamp Gain (dB)

- 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

Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Link PC (Line Mode)	Test Model	SMT1500X93

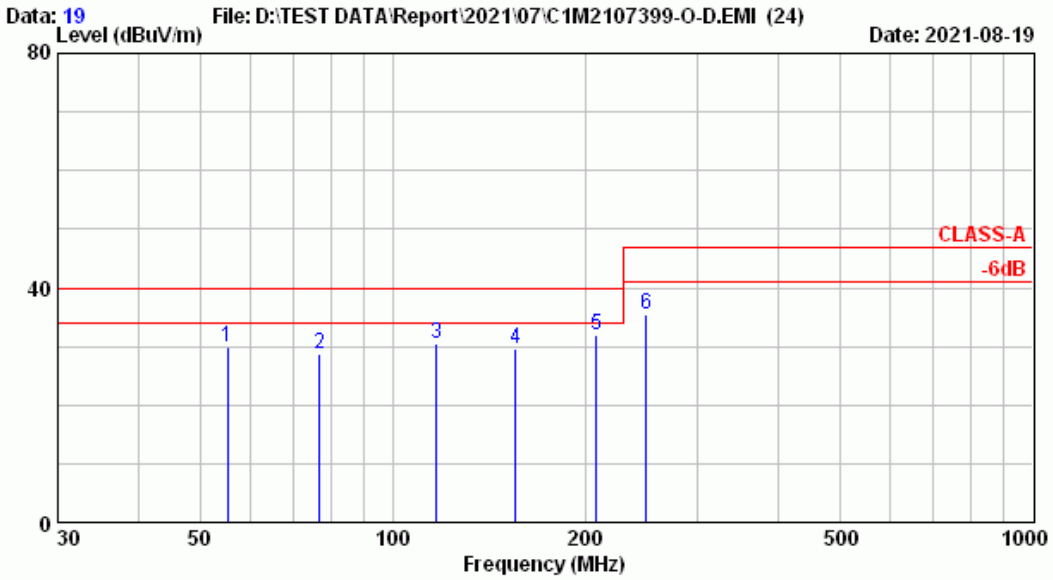


Site No. : No.8 Open Area Test Site Data No. : 20
Instrument 1 : Receiver ESCI(558)
Instrument 2 : CBL6112B (828)|RE-10
Distance / Limit : 10m / CLASS-A Ant. Pol. : HORIZONTAL
Environment : 34*C / 63% Engineer : Gary Tsai
EUT Model : SMT1500X93 Test Rating : 120Vac/60Hz
Test Mode : Link PC(Line Mode)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	54.016	14.14	1.51	11.45	27.10	40.00	12.90	QP
2	74.441	13.26	1.78	13.84	28.88	40.00	11.12	QP
3	113.132	18.10	2.25	7.78	28.14	40.00	11.86	QP
4	155.149	16.54	2.75	9.35	28.64	40.00	11.36	QP
5	197.439	15.48	3.74	9.35	28.57	40.00	11.43	QP
6	262.947	18.82	4.38	10.81	34.01	47.00	12.99	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	Link PC (Line Mode)	Test Model	SMT1500X93

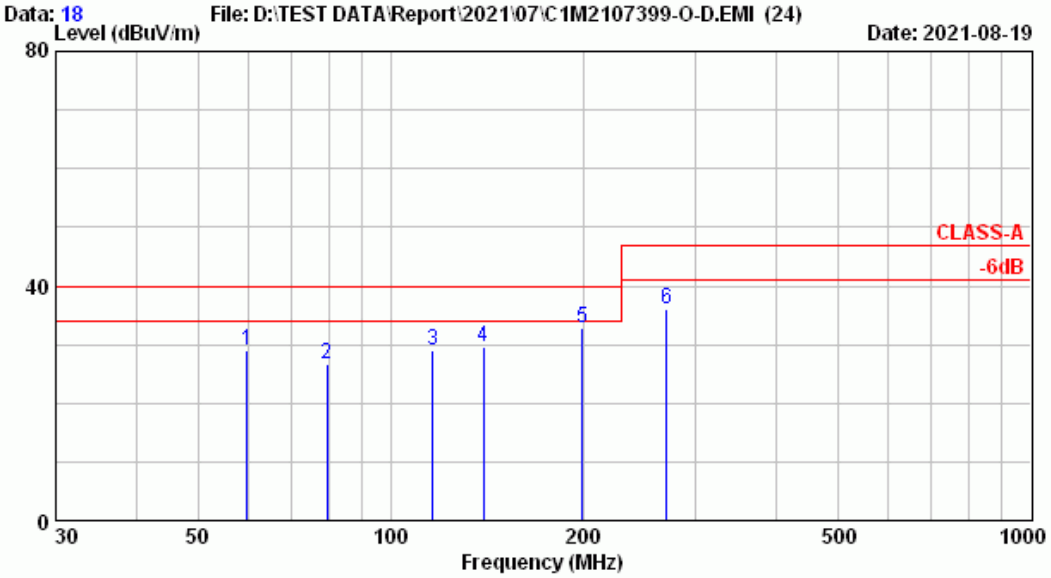


Site No. : No.8 Open Area Test Site Data No. : 19
Instrument 1 : Receiver ESCI(558)
Instrument 2 : CBL6112B (828)|RE-10
Distance / Limit : 10m / CLASS-A Ant. Pol. : VERTICAL
Environment : 34*C / 63% Engineer : Gary Tsai
EUT Model : SMT1500X93 Test Rating : 120Vac/60Hz
Test Mode : Link PC(Line Mode)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	55.201	13.88	1.53	14.42	29.82	40.00	10.18	QP
2	76.820	13.37	1.81	13.45	28.64	40.00	11.36	QP
3	117.254	18.36	2.30	9.87	30.52	40.00	9.48	QP
4	155.588	16.54	2.75	10.30	29.60	40.00	10.40	QP
5	208.083	16.00	3.92	12.10	32.02	40.00	7.98	QP
6	249.023	18.47	4.34	12.59	35.40	47.00	11.60	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	Link PC (Battery Mode)	Test Model	SMT1500X93

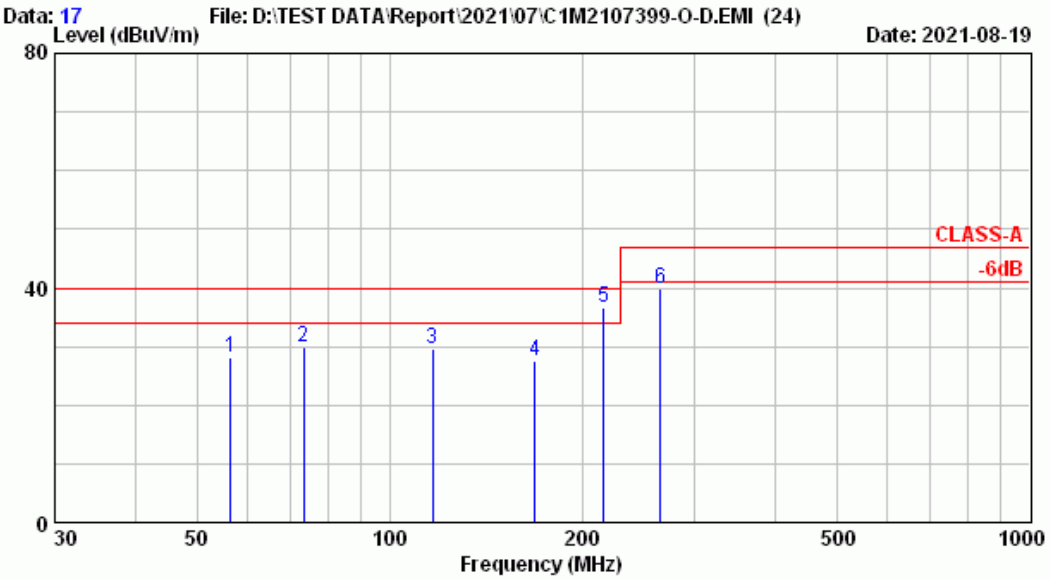


Site No. : No.8 Open Area Test Site Data No. : 18
Instrument 1 : Receiver ESCI(558)
Instrument 2 : CBL6112B (828)|RE-10
Distance / Limit : 10m / CLASS-A Ant. Pol. : HORIZONTAL
Environment : 34*C / 63% Engineer : Gary Tsai
EUT Model : SMT1500X93 Test Rating :
Test Mode : Battery Mode

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	59.650	12.90	1.59	14.63	29.12	40.00	10.88	QP
2	79.650	13.50	1.84	11.33	26.67	40.00	13.33	QP
3	116.374	18.31	2.29	8.44	29.04	40.00	10.96	QP
4	139.650	17.49	2.57	9.67	29.73	40.00	10.27	QP
5	199.650	15.48	3.83	13.38	32.69	40.00	7.31	QP
6	269.984	18.99	4.40	12.67	36.06	47.00	10.94	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	Link PC (Battery Mode)	Test Model	SMT1500X93

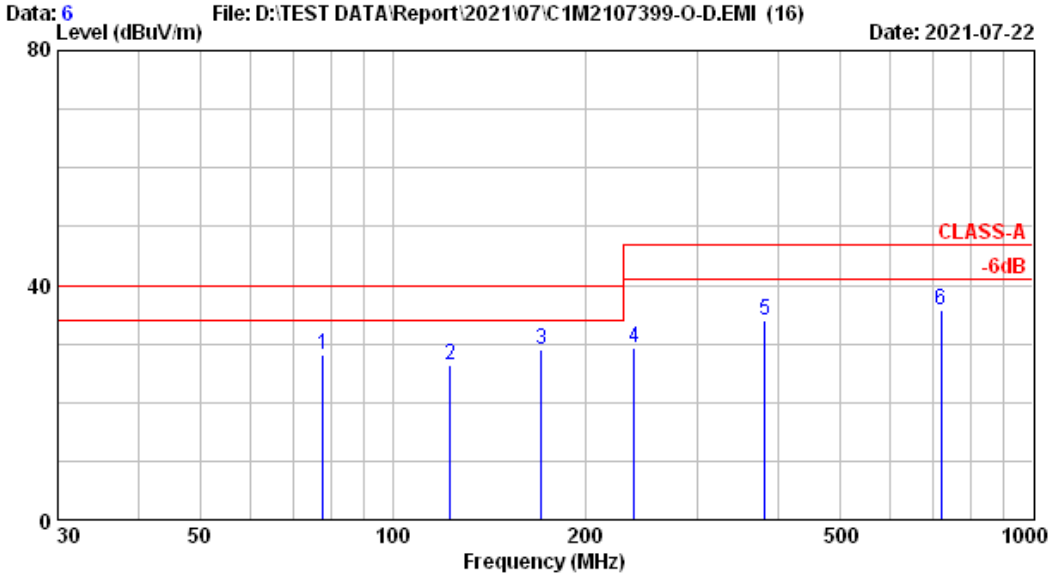


Site No. : No.8 Open Area Test Site Data No. : 17
Instrument 1 : Receiver ESCI(558)
Instrument 2 : CBL6112B (828)|RE-10
Distance / Limit : 10m / CLASS-A Ant. Pol. : VERTICAL
Environment : 34*C / 63% Engineer : Garv Tsai
EUT Model : SMT1500X93 Test Rating :
Test Mode : Battery Mode

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	56.448	13.61	1.55	13.00	28.16	40.00	11.84	QP
2	73.491	13.22	1.77	15.00	30.00	40.00	10.00	QP
3	116.640	18.31	2.29	9.00	29.60	40.00	10.40	QP
4	168.540	15.95	2.95	8.65	27.55	40.00	12.45	QP
5	216.030	16.53	4.01	16.00	36.53	40.00	3.47	QP
6	265.348	18.88	4.39	16.44	39.71	47.00	7.29	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	Link PC (Line Mode)	Test Model	SMT1500RMX93

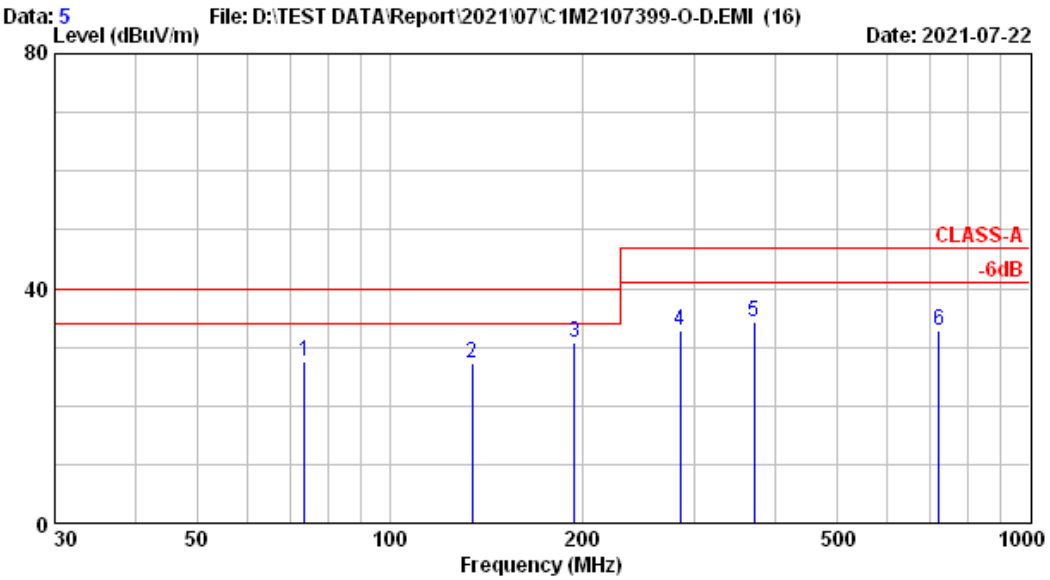


Site No. : No.8 Open Area Test Site Data No. : 6
Instrument 1 : Receiver ESCI(558)
Instrument 2 : CBL6112B (828)|RE-10
Distance / Limit : 10m / CLASS-A Ant. Pol. : HORIZONTAL
Environment : 35*C / 65% Engineer : Gary Tsai
EUT Model : SMT1500RMX93 Test Rating : 120Vac/60Hz
Test Mode : Link PC(Line Mode)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	77.843	13.42	1.82	12.83	28.07	40.00	11.93	QP
2	123.037	18.35	2.37	5.56	26.27	40.00	13.73	QP
3	170.864	15.85	3.00	10.29	29.14	40.00	10.86	QP
4	238.552	17.86	4.24	7.08	29.17	47.00	17.83	QP
5	381.964	21.40	4.50	8.06	33.96	47.00	13.04	QP
6	719.826	25.54	6.32	3.94	35.79	47.00	11.21	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	Link PC (Line Mode)	Test Model	SMT1500RMX93

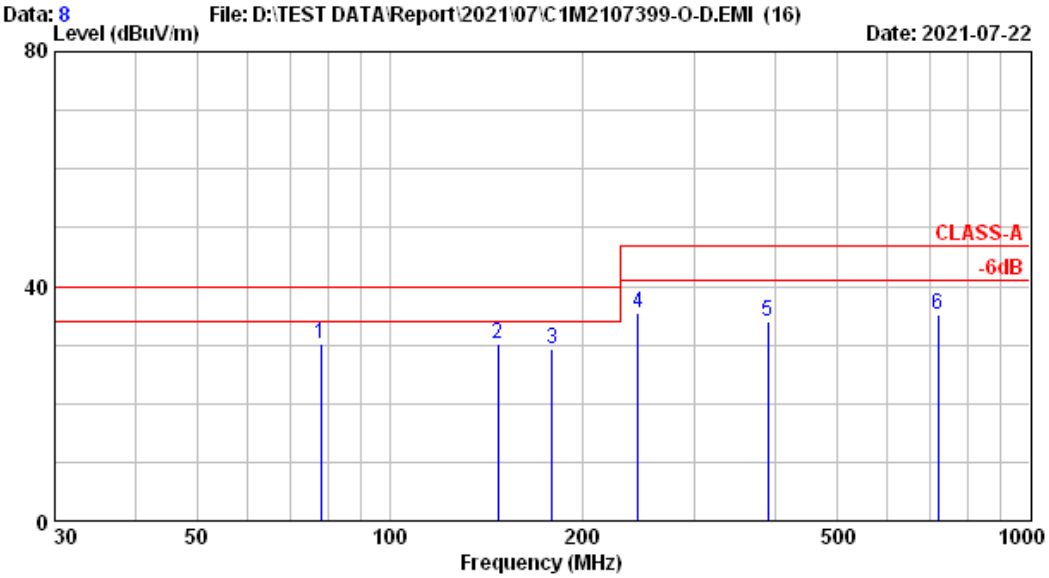


Site No. : No.8 Open Area Test Site Data No. : 5
Instrument 1 : Receiver ESCI(558)
Instrument 2 : CBL6112B (828)|RE-10
Distance / Limit : 10m / CLASS-A Ant. Pol. : VERTICAL
Environment : 35*C / 65% Engineer : Gary Tsai
EUT Model : SMT1500RMX93 Test Rating : 120Vac/60Hz
Test Mode : Link PC(Line Mode)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	73.719	13.22	1.77	12.50	27.50	40.00	12.50	QP
2	134.562	17.75	2.51	7.01	27.26	40.00	12.74	QP
3	194.488	15.49	3.65	11.77	30.90	40.00	9.10	QP
4	284.325	19.29	4.43	9.17	32.89	47.00	14.11	QP
5	371.393	21.19	4.49	8.59	34.27	47.00	12.73	QP
6	720.572	25.54	6.34	1.09	32.96	47.00	14.04	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	Link PC (Battery Mode)	Test Model	SMT1500RMX93

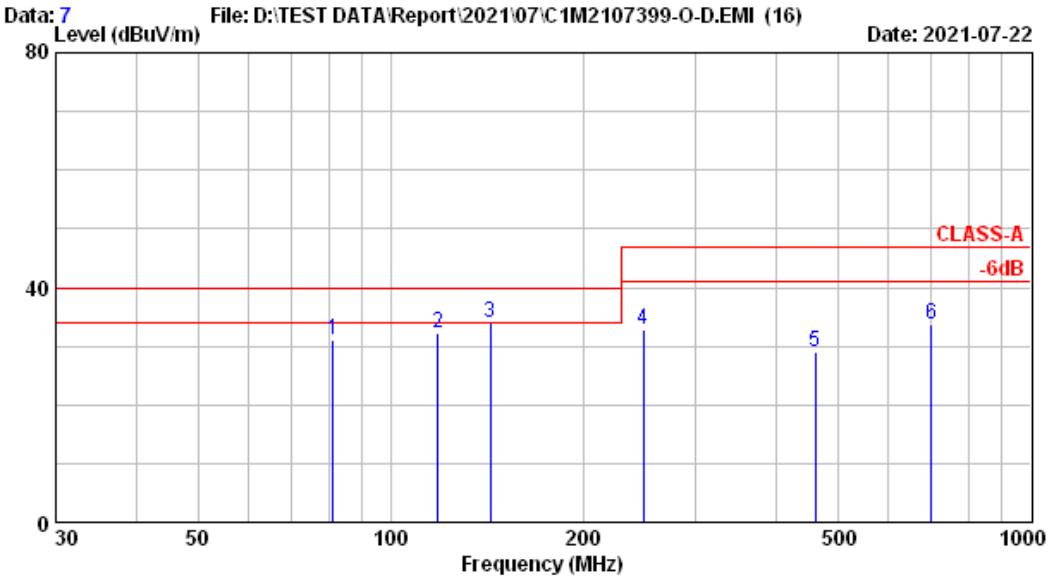


Site No. : No.8 Open Area Test Site Data No. : 8
Instrument 1 : Receiver ESCI(558)
Instrument 2 : CBL6112B (828)|RE-10
Distance / Limit : 10m / CLASS-A Ant. Pol. : HORIZONTAL
Environment : 35*C / 65% Engineer : Gary Tsai
EUT Model : SMT1500RMX93 Test Rating :
Test Mode : Link PC(Battery Mode)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	78.083	13.43	1.83	15.00	30.26	40.00	9.74	QP
2	147.663	16.98	2.67	10.64	30.29	40.00	9.71	QP
3	179.581	15.53	3.14	10.66	29.33	40.00	10.67	QP
4	244.311	18.19	4.29	12.86	35.34	47.00	11.66	QP
5	390.547	21.55	4.50	8.04	34.09	47.00	12.91	QP
6	719.470	25.54	6.32	3.44	35.30	47.00	11.70	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	Link PC (Battery Mode)	Test Model	SMT1500RMX93



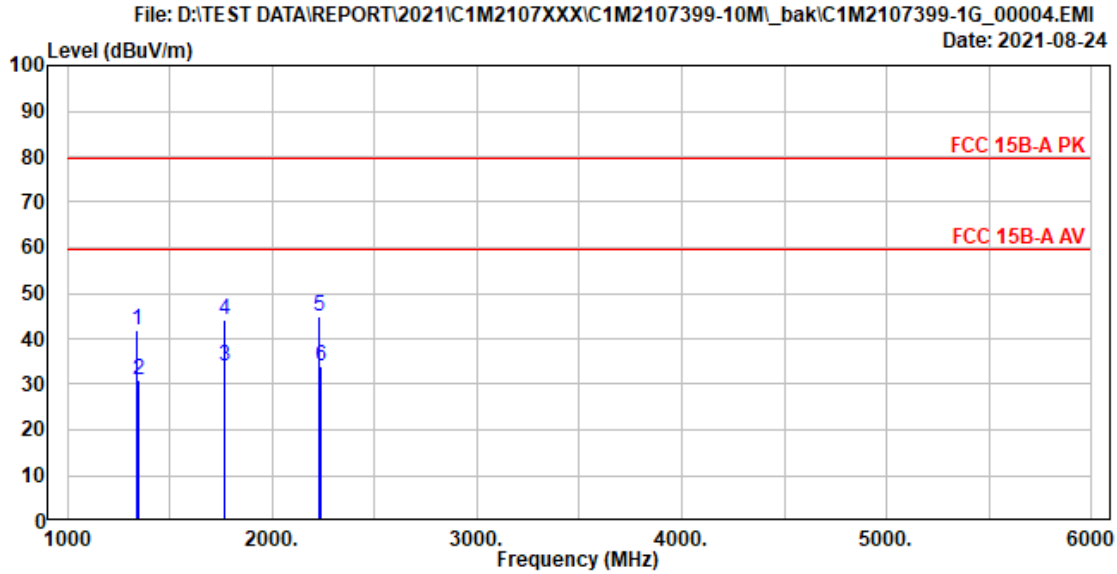
Site No. : No.8 Open Area Test Site Data No. : 7
Instrument 1 : Receiver ESCI(558)
Instrument 2 : CBL6112B (828)|RE-10
Distance / Limit : 10m / CLASS-A Ant. Pol. : VERTICAL
Environment : 35*C / 65% Engineer : Gary Tsai
EUT Model : SMT1500RMX93 Test Rating :
Test Mode : Link PC(Battery Mode)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	81.329	13.76	1.87	15.55	31.18	40.00	8.82	QP
2	118.640	18.43	2.32	11.50	32.25	40.00	7.75	QP
3	143.235	17.27	2.61	14.09	33.97	40.00	6.03	QP
4	248.697	18.43	4.33	9.98	32.74	47.00	14.26	QP
5	460.887	22.93	4.79	1.28	28.99	47.00	18.01	QP
6	700.026	25.52	6.15	1.90	33.57	47.00	13.43	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 above 1GHz.

Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Link PC (Line Mode)	Test Model	SMT1500X93



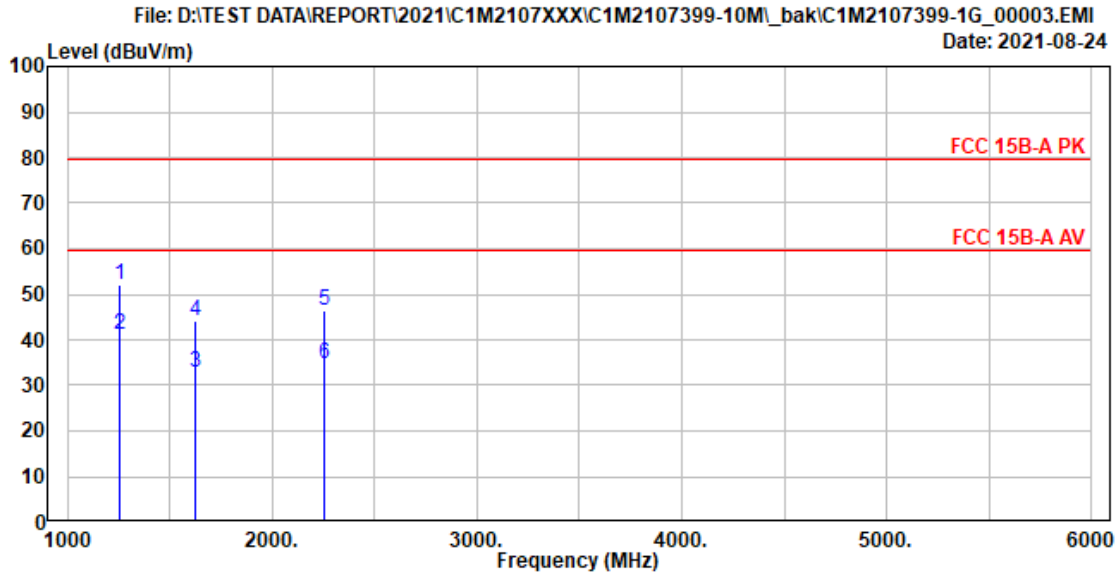
Site No. : No.2 10m Semi Anechoic Chamber
Instrument 1 : Spectrum FSV40(425)
Instrument 2 : 3117 (046)|RE-28|8449B (681)
Distance/Limit : 3m /FCC 15B-A PK
Environment : 22*C/50%
EUT Model : SMT1500X93
Test Mode : Link PC (line Mode)

Data No. : 4
Ant. Pol. : horizontal
Engineer : Ken
Test Rating : 120Vac/60Hz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1340.000	27.48	2.14	35.95	48.38	42.05	79.54	37.49	Peak
2	1342.830	27.49	2.14	35.95	37.14	30.82	59.54	28.72	Average
3	1763.580	29.83	3.07	35.67	36.77	34.00	59.54	25.54	Average
4	1765.000	29.83	3.07	35.67	47.09	44.32	79.54	35.22	Peak
5	2230.000	31.32	3.50	35.64	45.73	44.91	79.54	34.63	Peak
6	2232.718	31.36	3.50	35.64	34.78	34.00	59.54	25.54	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.

Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Link PC (Line Mode)	Test Model	SMT1500X93



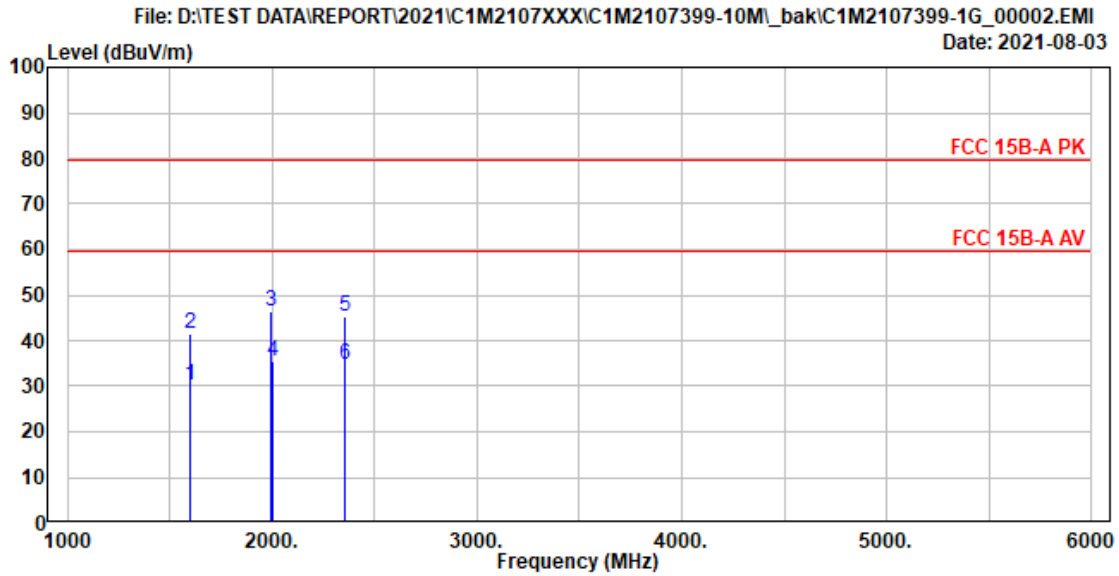
Site No. : No.2 10m Semi Anechoic Chamber
Instrument 1 : Spectrum FSV40(425)
Instrument 2 : 3117 (046)|RE-28|8449B (681)
Distance/Limit : 3m /FCC 15B-A PK
Environment : 22*C/50%
EUT Model : SMT1500X93
Test Mode : Link PC (line Mode)

Data No. : 3
Ant. Pol. : vertical
Engineer : Ken
Test Rating : 120Vac/60Hz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1250.000	27.90	2.08	36.06	58.18	52.10	79.54	27.44	Peak
2	1253.060	27.87	2.08	36.06	47.22	41.11	59.54	18.43	Average
3	1622.380	28.52	2.71	35.73	37.22	32.72	59.54	26.82	Average
4	1625.000	28.55	2.72	35.72	48.55	44.10	79.54	35.44	Peak
5	2250.000	31.60	3.51	35.64	46.82	46.29	79.54	33.25	Peak
6	2253.740	31.62	3.51	35.64	35.25	34.74	59.54	24.80	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.

Ant. Polarity	Horizontal	Test Result	Pass
Test Mode	Link PC (Line Mode)	Test Model	SMT1500RMX93



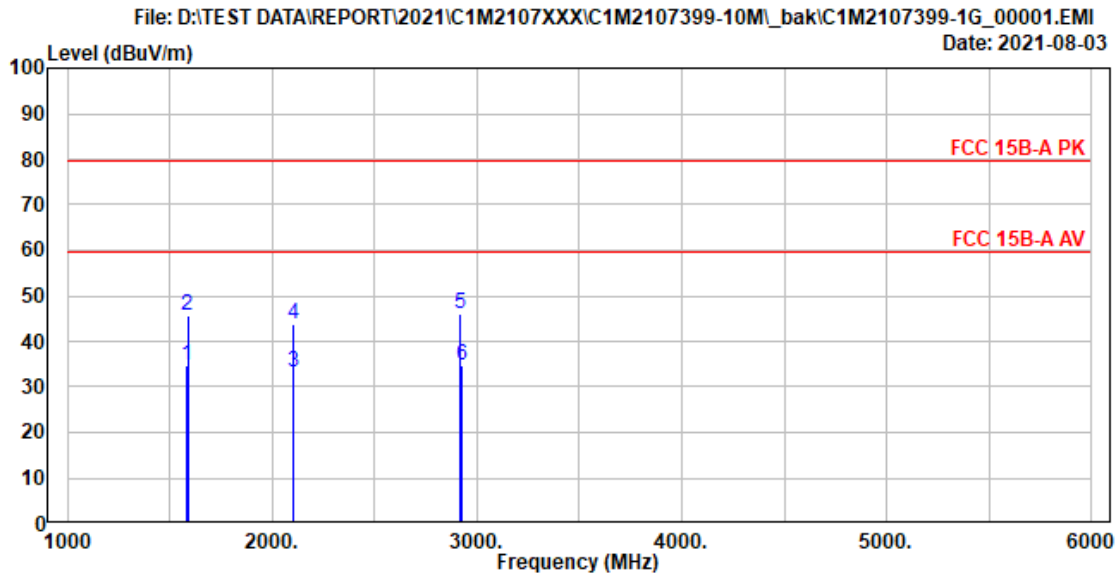
Site No. : No.2 10m Semi Anechoic Chamber
Instrument 1 : Spectrum FSV40(425)
Instrument 2 : 3117 (046)|RE-28|8449B (681)
Distance/Limit : 3m /FCC 15B-A PK
Environment : 22*C/50%
EUT Model : SMT1500RMX93
Test Mode : Link PC (line Mode)

Data No. : 2
Ant. Pol. : horizontal
Engineer : Ken
Test Rating : 120Vac/60Hz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1598.332	28.22	2.64	35.74	35.22	30.34	59.54	29.20	Average
2	1600.000	28.20	2.64	35.74	46.59	41.69	79.54	37.85	Peak
3	1995.000	31.21	3.47	35.58	47.18	46.28	79.54	33.26	Peak
4	1997.334	31.21	3.47	35.58	36.31	35.41	59.54	24.13	Average
5	2350.000	32.10	3.52	35.67	45.31	45.26	79.54	34.28	Peak
6	2352.741	32.08	3.52	35.67	34.82	34.75	59.54	24.79	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.

Ant. Polarity	Vertical	Test Result	Pass
Test Mode	Link PC (Line Mode)	Test Model	SMT1500RMX93



Site No. : No.2 10m Semi Anechoic Chamber
Instrument 1 : Spectrum FSV40(425)
Instrument 2 : 3117 (046)|RE-28|8449B (681)
Distance/Limit : 3m /FCC 15B-A PK
Environment : 22*C/50%
EUT Model : SMT1500RMX93
Test Mode : Link PC (line Mode)

Data No. : 1
Ant. Pol. : vertical
Engineer : Ken
Test Rating : 120Vac/60Hz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1583.742	28.43	2.61	35.74	39.32	34.62	59.54	24.92	Average
2	1585.000	28.41	2.61	35.74	50.56	45.84	79.54	33.70	Peak
3	2103.560	31.49	3.49	35.61	33.72	33.09	59.54	26.45	Average
4	2105.000	31.48	3.49	35.61	44.31	43.67	79.54	35.87	Peak
5	2920.000	32.74	3.79	35.87	45.36	46.02	79.54	33.52	Peak
6	2923.420	32.75	3.79	35.87	34.21	34.88	59.54	24.66	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 at AC mains power port	9kHz-150kHz	±3.7dB
	150kHz-30MHz	±3.4dB
Conducted emissions at wired network port	150kHz-30MHz	±3.4dB
Conducted emissions at broadcast receiver tuner port	150kHz-30MHz	±3.4dB
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	±1.5dB
Radiated, magnetic field (Loop Antenna)	9kHz-150kHz	±3.1dB
	150kHz-30MHz	±3.0dB
Radiated emissions (No.1 10m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Horizontal	±4.5dB
	200MHz-1000MHz, 3m, Horizontal	±4.1dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±4.4dB
	30MHz-200MHz, 10m, Horizontal	±4.4dB
	200MHz-1000MHz, 10m, Horizontal	±3.9dB
	30MHz-200MHz, 10m, Vertical	±4.4dB
	200MHz-1000MHz, 10m, Vertical	±4.1dB
	1GHz-6GHz, 3m	±4.7dB
	6GHz-18GHz, 3m	±4.4dB
Radiated emissions (No.2 10m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Horizontal	±4.1dB
	200MHz-1000MHz, 3m, Horizontal	±4.0dB
	30MHz-200MHz, 3m, Vertical	±4.5dB
	200MHz-1000MHz, 3m, Vertical	±4.4dB
	30MHz-200MHz, 10m, Horizontal	±4.1dB
	200MHz-1000MHz, 10m, Horizontal	±3.8dB
	30MHz-200MHz, 10m, Vertical	±4.4dB
	200MHz-1000MHz, 10m, Vertical	±4.2dB
	1GHz-6GHz, 3m	±4.8dB
	6GHz-18GHz, 3m	±4.4dB

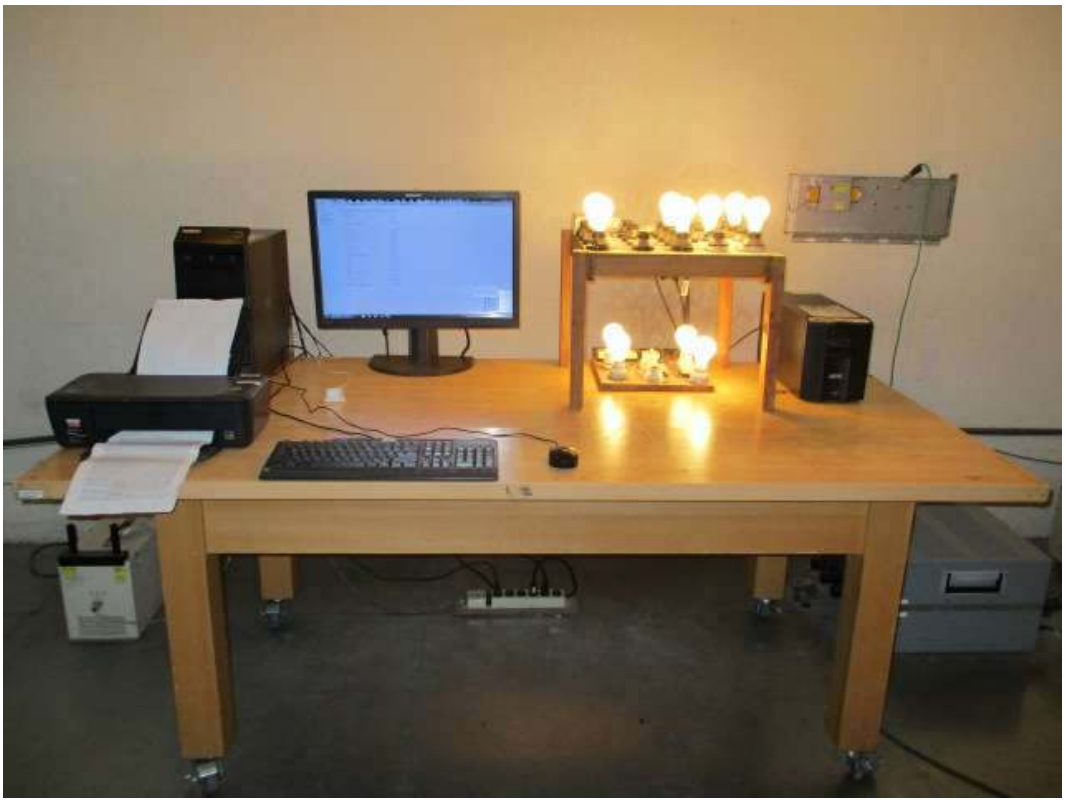
Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Radiated emissions (No.1 3m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Horizontal	±3.8dB
	200MHz-1000MHz, 3m, Horizontal	±4.1dB
	30MHz-200MHz, 3m, Vertical	±4.5dB
	200MHz-1000MHz, 3m, Vertical	±4.5dB
	1GHz-6GHz, 3m	±4.7dB
	6GHz-18GHz, 3m	±4.1dB
Radiated emissions (No.2 3m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Horizontal	±3.6dB
	200MHz-1000MHz, 3m, Horizontal	±3.9dB
	30MHz-200MHz, 3m, Vertical	±4.1dB
	200MHz-1000MHz, 3m, Vertical	±4.6dB
	1GHz-6GHz, 3m	±4.8dB
	6GHz-18GHz, 3m	±4.2dB
Radiated emissions (No.3 3m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Horizontal	±3.9dB
	200MHz-1000MHz, 3m, Horizontal	±4.2dB
	30MHz-200MHz, 3m, Vertical	±4.3dB
	200MHz-1000MHz, 3m, Vertical	±4.5dB
Radiated emissions (No.4 3m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Horizontal	±4.1dB
	200MHz-1000MHz, 3m, Horizontal	±4.5dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±4.8dB
	1GHz-6GHz, 3m	±5.0dB
	6GHz-18GHz, 3m	±4.7dB
Radiated emissions (No.5 3m Semi Anechoic Chamber)	30MHz-200MHz, 3m, Horizontal	±4.2dB
	200MHz-1000MHz, 3m, Horizontal	±4.3dB
	30MHz-200MHz, 3m, Vertical	±4.3dB
	200MHz-1000MHz, 3m, Vertical	±4.7dB
	1GHz-6GHz, 3m	±4.8dB
	6GHz-18GHz, 3m	±4.5dB

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Radiated emissions (No.6 Open Area Test Site)	30MHz-200MHz, 3m, Horizontal	±3.6dB
	200MHz-1000MHz, 3m, Horizontal	±4.1dB
	30MHz-200MHz, 3m, Vertical	±3.6dB
	200MHz-1000MHz, 3m, Vertical	±4.1dB
	30MHz-200MHz, 10m, Horizontal	±3.6dB
	200MHz-1000MHz, 10m, Horizontal	±3.9dB
	30MHz-200MHz, 10m, Vertical	±3.6dB
	200MHz-1000MHz, 10m, Vertical	±3.9dB
Radiated emissions (No.7 Open Area Test Site)	30MHz-200MHz, 3m, Horizontal	±4.0dB
	200MHz-1000MHz, 3m, Horizontal	±4.3dB
	30MHz-200MHz, 3m, Vertical	±4.4dB
	200MHz-1000MHz, 3m, Vertical	±4.7dB
	30MHz-200MHz, 10m, Horizontal	±4.0dB
	200MHz-1000MHz, 10m, Horizontal	±4.2dB
	30MHz-200MHz, 10m, Vertical	±4.4dB
	200MHz-1000MHz, 10m, Vertical	±4.5dB
Radiated emissions (No.8 Open Area Test Site)	30MHz-200MHz, 3m, Horizontal	±4.3dB
	200MHz-1000MHz, 3m, Horizontal	±4.8dB
	30MHz-200MHz, 3m, Vertical	±4.5dB
	200MHz-1000MHz, 3m, Vertical	±4.8dB
	30MHz-200MHz, 10m, Horizontal	±4.3dB
	200MHz-1000MHz, 10m, Horizontal	±4.7dB
	30MHz-200MHz, 10m, Vertical	±4.5dB
	200MHz-1000MHz, 10m, Vertical	±4.6dB

8. Photographs

8.1. Powerline Conducted Emission Measurement

Test Model：SMT1500X93



Front View of Conducted Measurement

Back View of Conducted Measurement

Test Model：SMT1500RMX93

Front View of Conducted Measurement

Back View of Conducted Measurement

8.2. Radiated Emissions Measurement

- For Frequency Range 30 – 1000MHz

Test Model：SMT1500X93

Front View of Radiated Measurement

Back View of Radiated Measurement

Test Model：SMT1500RMX93

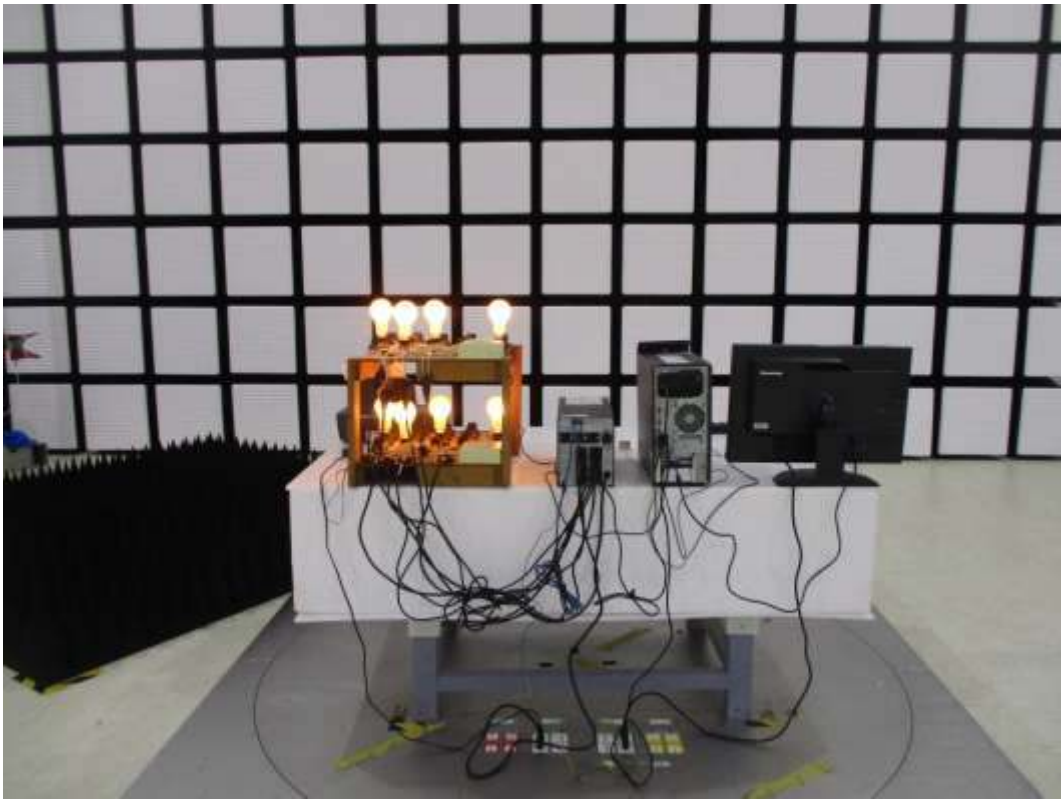
Front View of Radiated Measurement

Back View of Radiated Measurement

- For Frequency Range Above 1GHz

Test Model：SMT1500X93

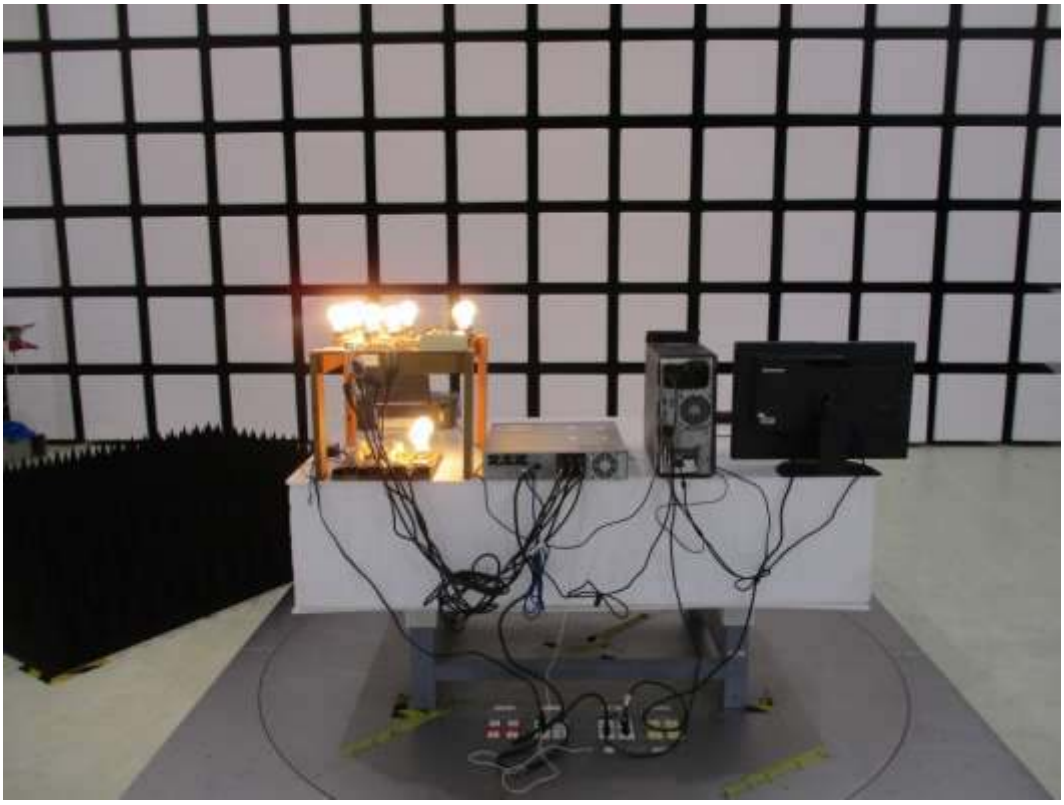
Front View of Radiated Measurement



Back View of Radiated Measurement

Test Model：SMT1500RMX93

Front View of Radiated Measurement



Back View of Radiated Measurement

APPENDIX I

(Photos of EUT)

Test Model：SMT1500X93, Figure 1 - 6

Figure 1
General Appearance (Front View)

Figure 2
General Appearance (Back & Side View)

Figure 3
Appearance (I/O View)

Figure 4
Internal View (Remove Cover)

Figure 5
Internal View (Remove Cover)

Figure 6
TYPE A to A cable, 2M & RJ45 cable, 2M

Test Model：SMT1500RMX93, Figure 7 - 12

Figure 7
General Appearance (Front & Side View)

Figure 8
General Appearance (Back & Side View)

Figure 9
General Appearance (Front View)

Figure 10
General Appearance (Back View)

Figure 11
Internal View (Remove Cover)

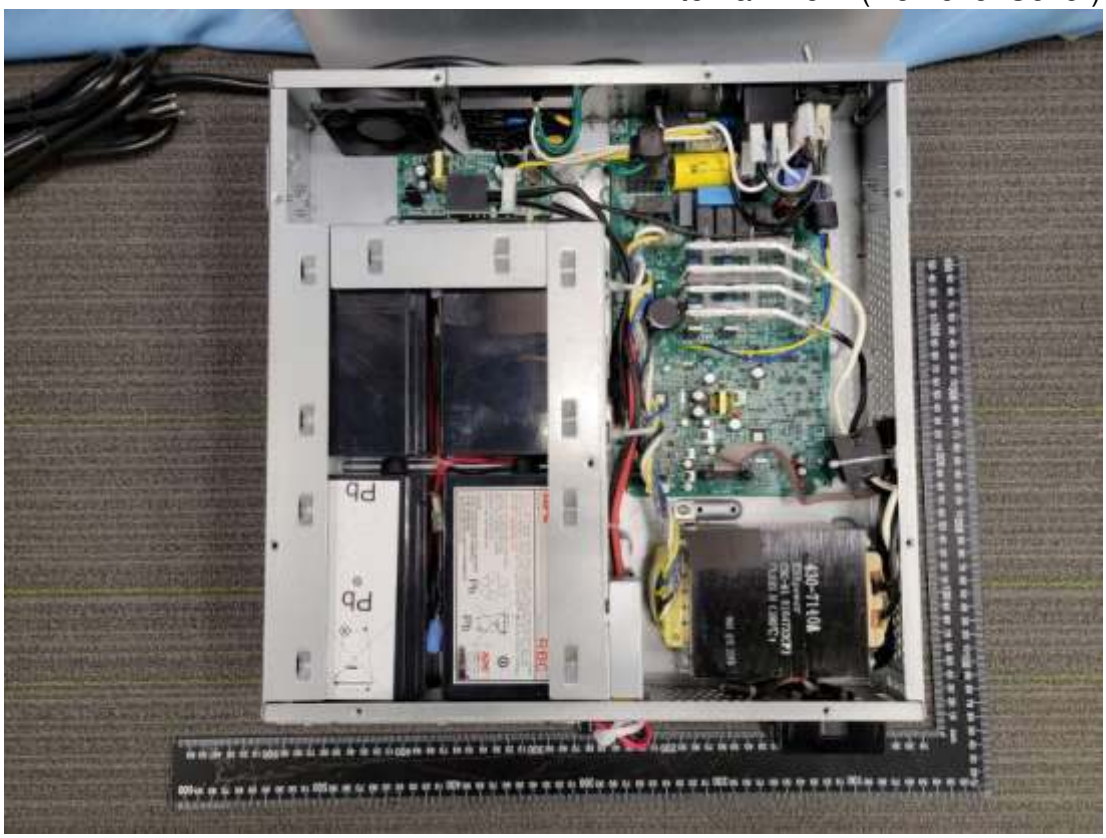


Figure 12
TYPE A to A cable, 3M & RJ45 cable, 2M