



Test Report No.: GJW2023-6450-RF

TEST REPORT

FCC ID	:	2BCXO-C6AM
Applicant	:	XCharge Energy USA Inc
Product Name	:	DC Electric Vehicle Charging Station C6AM150JC; C6AM150CC; C6AM150CO; C6AM120JC; C6AM120CC; C6AM120CO;
Model No.	:	C6AM90JC; C6AM90CC; C6AM90CO; C6AM60JC; C6AM60CC; C6AM60CO.

CVC Testing Technology Co., Ltd.

Applicant		Name: XCharge Energy USA Inc	
		Address: 326 N LBJ Dr, Suite 173, San Marcos, TX 78666 United States	
Manufacturer		Name: XCharge Energy USA Inc	
		Address: 326 N LBJ Dr, Suite 173, San Marcos, TX 78666 United States	
Equipment Under Test		Product Name : DC Electric Vehicle Charging Station Model No. : C6AM150JC, C6AM90JC Trade mark : / Serial no. : / Sampling : 2-1, 2-2	
Date of Receipt.	2022.09.20	Date of Testing	2022.10.10
Test Specification		Test Result	
FCC Part 15 Subpart C 10-1-2021 Edition		PASS	
Evaluation of Test Result		The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC Issue Date: 2023.11.17	
Approved by: Chen HuaWen 		Reviewed by: Xu Zhenfei 	
		Tested by: Lu Weiji 	
Other Aspects: NONE.			
Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			
This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC .			

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1. General Product Information

1.1 General information

Product:	DC Electric Vehicle Charging Station
Model no.:	C6AM150JC; C6AM150CC; C6AM150CO; C6AM120JC; C6AM120CC; C6AM120CO; C6AM90JC; C6AM90CC; C6AM90CO; C6AM60JC; C6AM60CC; C6AM60CO.
FCC ID:	2BCXO-C6AM
Options and accessories:	N/A
Rating:	DC 5V (for RF module)
Rated input Current:	Max.200A for “C6AM150” series and “C6AM120” series Max.300A for “C6AM90” series and “C6AM60” series
Rated output voltage:	CCS1 connector: 200VDC-1000VDC CHAdEMO connector: 200VDC-500VDC
Rated output Current:	CCS1 connector: Max. 250A CHAdEMO connector: Max. 125A
Rated input Current:	Max.200A for “C6AM150” series and “C6AM120” series Max.300A for “C6AM90” series and “C6AM60” series
RF Transmission Frequency:	13.56MHz
Modulation:	ASK
Antenna Type:	Integrate antenna
Description of the EUT:	EUT is a DC Electric Vehicle Charging Station with IC card reader, it can be grouped with other modules to act as a DC Charging station The products contains an approved LTE module, FCC ID: 2APNR-GM500U1A. The LTE module supports LTE: Band 2, Band 4, Band 5 and Band 12.

2. Test Sites

2.1 Test Facilities

The tests and measurements refer to this report were performed by RF testing Lab. of CVC Testing Technology Co., Ltd.

Add.: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou,Guangdong,510663, People's Republic of China

Telephone : +86-20-32293888

Fax : +86-20-32293889

FCC Registration Number: 0029680543

FCC firm designation number: CN1282

2.2 Description of Non-standard Method and Deviations

The testing and measurement methods used in this report are applied by all standard methods. Not any non-standard method or deviation from the used standards was used.

2.3 List of Test and Measurement Instruments

Refer to 10.Test Equipment List.

3. Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2021 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to ANSI C63.10 (2013).

4. Summary of measurement results

Technical Requirements				
Test Condition		Pages	Test Site	Test Result
FCC Rules	Test Item	13	1	P
§15.207	Conducted emission AC power port			
§15.225(a), (b), (c), (d), 15.209, 15.205	Filed Strength Measurement	22	1	P
§15.225 (e)	Frequency Stability	36	1	P
§15.215(c)	Occupied Bandwidth	37	1	P
Note : The EUT uses a PCB integrated. In accordance to §15.203, it is considered sufficiently to comply with the provisions of this section.				

Note 1: N/A=Not Applicable.

5. General Remarks

This submittal(s) (test report) is intended for FCC ID: 2BCXO-C6AM, complies with Section 15.207, 15.209, 15.215, 15.225 of the FCC Part 15 Subpart C 10-1-2021 Edition.

C6AM series DC charger has multiple models, power modules work simultaneously and evenly distribute the output power. Due to the variance in technical and customer requirements, there are differences which may reflect in the maximum output power, the installed connectors. Below shows the detail difference between each of them. The rest components that do not mentioned remain the same.

Rated output power for each C6 series charger:

Model	Input Voltage	Power Module (QTY)	Connector1 (kW)	Connector2 (kW)
C6AM150JC	480V	5	65 (CHAdEMO)	150 (CCS1)
C6AM150CC	480V	5	150 (CCS1)	150 (CCS1)
C6AM150CO	480V	5	150 (CCS1)	N/A
C6AM120JC	480V	4	65(CHAdEMO)	120 (CCS1)
C6AM120CC	480V	4	120 (CCS1)	120 (CCS1)
C6AM120CO	480V	4	120 (CCS1)	N/A
C6AM90JC	208V	5	65(CHAdEMO)	95 (CCS1)
C6AM90CC	208V	5	95 (CCS1)	95 (CCS1)
C6AM90CO	208V	5	95 (CCS1)	N/A
C6AM60JC	208V	4	60(CHAdEMO)	60 (CCS1)
C6AM60CC	208V	4	60 (CCS1)	60 (CCS1)
C6AM60CO	208V	4	60 (CCS1)	N/A

For C6AM150JC model (dual connectors), require 480V input voltage. It has 5 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A), DC fuse 2 breaks at 160A (RS306-1-S5P-160A1250V-D). Two WDR-120-12 power switch(480V) and one WDR 480-48 power switch(480V). One Ex9C400 set coil that used for 277V.

Connector 1 (CHAdEMO connector) has a maximum output power of 60kw, connector 2 (standard CCS1 connector) has a maximum output power of 150kw.

For C6AM150CC model (dual connectors), require 480V input voltage. It has 5 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A), DC fuse 2 breaks at 250A (RS306-01-S5P-250A). Two WDR-120-12 power switch(480V) and one WDR 480-48 power switch(480V). One Ex9C400 set coil that used for 277V.

Connector 1 (standard CCS1 connector) has a maximum output power of 150kw, connector 2 (standard CCS1 connector) has a maximum output power of 150kw.

For C6AM150CO model (single connector), require 480V input voltage. It has 5 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A). Two WDR-120-12 power switch(480V) and one WDR 480-48 power switch(480V). One Ex9C400 set coil that used for 277V.

Connector (standard CCS1 connector) has a maximum output power of 150kw.

For C6AM120JC model (dual connectors), require 480V input voltage. It has 4 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A), DC fuse 2 breaks at 160A (RS306-1-S5P-160A1250V-D). Two WDR-120-12 power switch(480V) and one WDR 480-48 power switch(480V). One Ex9C400 set coil that used for 277V.

Connector 1 (CHAdEMO connector) has a maximum output power of 60kw, connector 2 (standard CCS1 connector) has a maximum output power of 120kw.

For C6AM120CC model (dual connectors), require 480V input voltage. It has 4 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A), DC fuse 2 breaks at 250A (RS306-01-S5P-250A). Two WDR-120-12 power switch(480V) and one WDR 480-48 power switch(480V). One Ex9C400 set coil that used for 277V.

Connector 1 (standard CCS1 connector) has a maximum output power of 120kw, connector 2 (standard CCS1 connector) has a maximum output power of 120kw.

For C6AM120CO model (single connector), require 480V input voltage. It has 4 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A). Two WDR-120-12 power switch(480V) and one WDR 480-48 power switch(480V). One Ex9C400 set coil that used for 277V.

Connector (standard CCS1 connector) has a maximum output power of 120kw.

For C6AM90JC model (dual connectors), require 208V input voltage. It has 5 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A), DC fuse 2 breaks at 160A (RS306-1-S5P-160A1250V-D). Two NDR-120-12 power switch(208V) and one NDR 480-48 power switch(208V). One Ex9C400 set coil that used for 208V.

Connector 1 (CHAdEMO connector) has a maximum output power of 60kw, connector 2 (the standard CCS1 connector) has a maximum output power of 95kw.

For C6AM90CC model (dual connectors), require 208V input voltage. It has 5 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A), DC fuse 2 breaks at 250A (RS306-01-S5P-250A). Two NDR-120-12 power switch(208V) and one NDR 480-48 power switch(208V). One Ex9C400 set coil that used for 208V.

Connector 1 (standard CCS1 connector) has a maximum output power of 95kw, connector 2 (standard CCS1 connector) has a maximum output power of 95kw.

For C6AM90CO model (single connector), require 208V input voltage. It has 5 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A). Two NDR-120-12 power switch(208V) and one NDR 480-48 power switch(208V). One Ex9C400 set coil that used for 208V.

Connector (standard CCS1 connector) has a maximum output power of 95kw.

For C6AM60JC model, require 208V input voltage. It has 4 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A), DC fuse 2 breaks at 160A (RS306-1-S5P-160A1250V-D). Two NDR-120-12 power switch(208V) and one NDR 480-48 power switch(208V). One Ex9C400 set coil that used for 208V.

Connector 1 (CHAdEMO connector) has a maximum output power of 60kw, connector 2 (standard CCS1 connector) has a maximum output power of 60kw.

For C6AM60CC model, require 208V input voltage. It has 4 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A), DC fuse 2 breaks at 250A (RS306-01-S5P-250A). Two NDR-120-12 power switch(208V) and one NDR 480-48 power switch(208V). One Ex9C400 set coil that used for 208V.

Connector 1 (standard CCS1 connector) has a maximum output power of 60kw, connector 2 (standard CCS1 connector) has a maximum output power of 60kw.

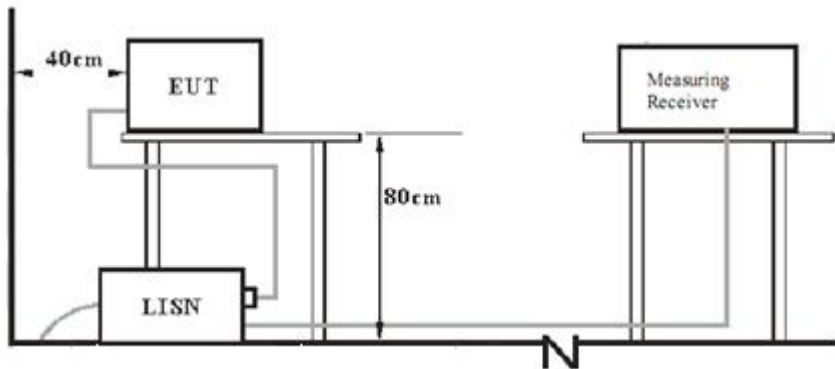
For C6AM60CO model (single connector), require 208V input voltage. It has 4 power modules (UR100030-SW), DC fuse 1 breaks at 250A (RS306-01-S5P-250A). Two NDR-120-12 power switch(208V) and one NDR 480-48 power switch(208V). One Ex9C400 set coil that used for 208V.

Connector (standard CCS1 connector) has a maximum output power of 60kw.

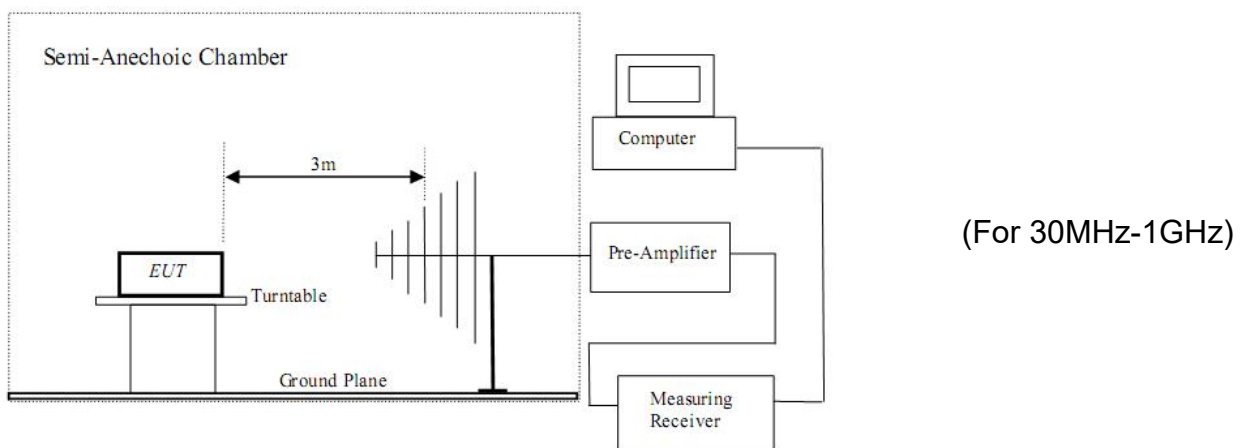
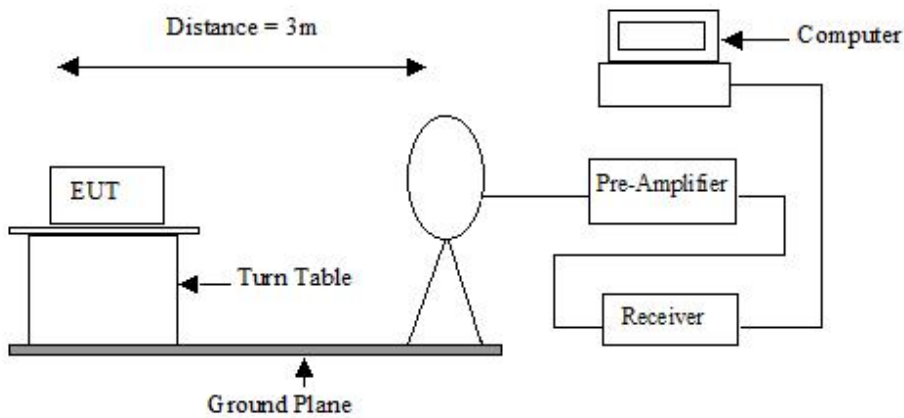
EMC parts, tests have been applied on C6AM150JC and C6AM90JC.

6. Test Setups

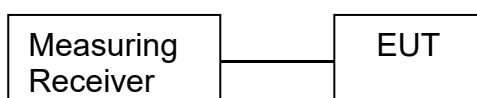
6.1 AC Power Line Conducted Emission test setups



6.2 Radiated test setups



6.3 Conducted RF test setups



7. Test Methodology

7.1 Conducted Emission

The EUT was placed on a table, which is 0.8m above ground plane, the power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).

Maximum procedure was performed to ensure EUT compliance, A EMI test receiver is used to test the emissions from both sides of AC line.

7.2 Radiated Emission

The sample was placed 0.8m above the ground plane on a standard emission test site *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, considered typical configuration, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

*On a standard emission test site with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules.

7.3 Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

$FS = R + \text{System Factor}$

$\text{System Factor} = AF + CF + FA - PA$

Where FS = Net Field Strength in dBuV/m at 3 meters.

R = Reading of Spectrum Analyzer / Test Receiver in dBuV.

AF = Antenna Factor in dB.

CF = Cable Attenuation Factor in dB.

FA = Filter Attenuation Factor in dB.

PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

8. Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MODEL NO.	MANUFACTURE R
Resistance load	200KW	KAPTOP

Remark: All the auxiliary equipment are used to make this “DC Electric Vehicle Charging Station” works as its representative configuration for conducted emission test.

9. Technical Requirement

9.1 Conducted Emission Measurement

Test Requirement:

FCC part 15 section 15.207

Limits of 15.207:

Frequency (MHz)	Conducted limit(dB μ V)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-5	73	60
5-30	73	60

* Decreases with the logarithm of the frequency.

Test Method:

ANSI C63.10:2013

Test Date:

2022-10-10

Mode of Operation:

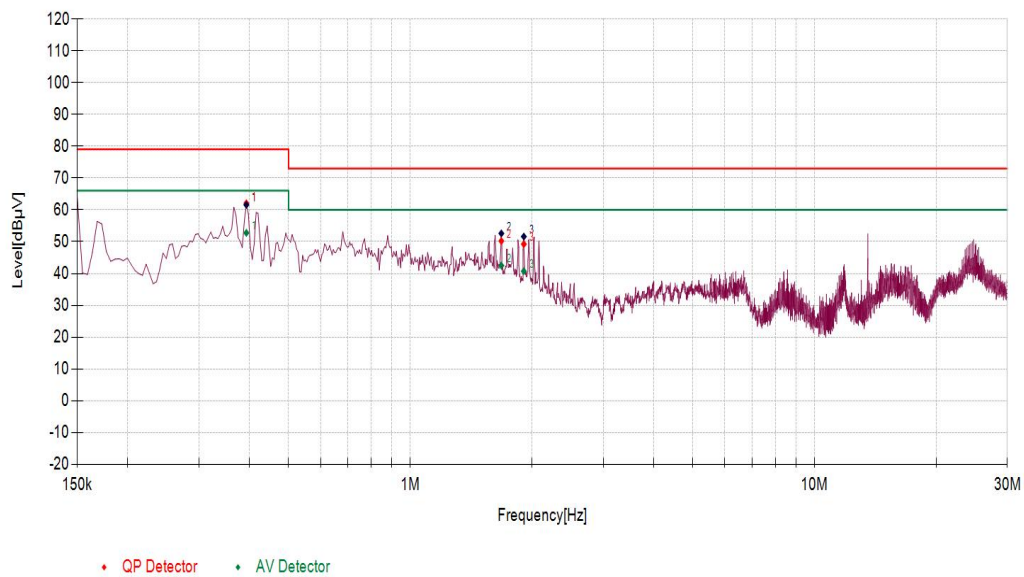
Test EUT in a representative configuration that can read card.

Detector Function

Quasi-peak and Average

Test data:

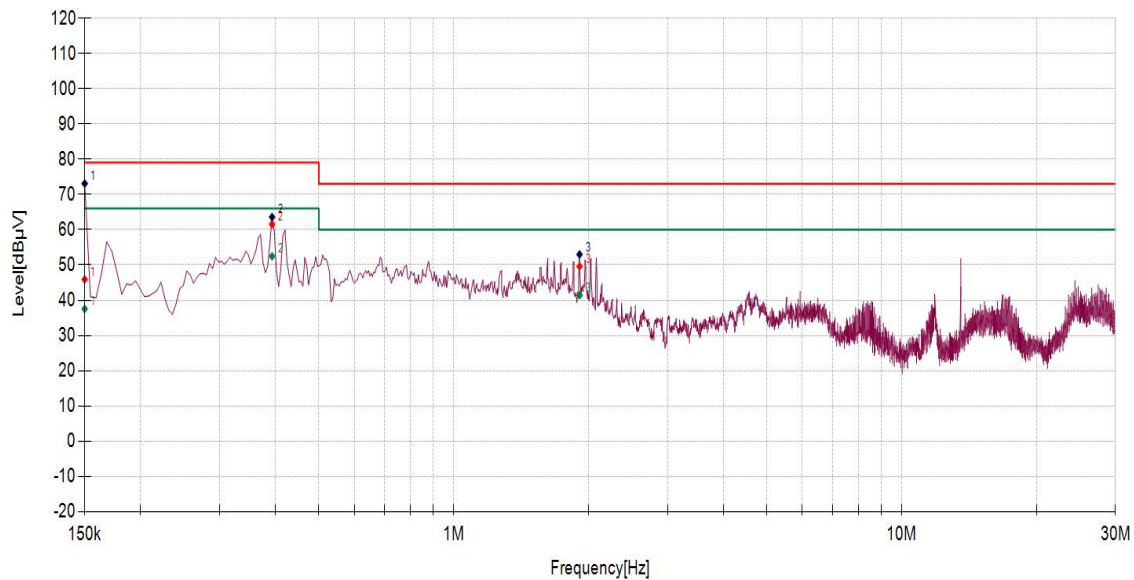
Conducted emission



Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Pass/Fail
0.3930	10.02	62.07	79.00	16.93	52.78	66.00	13.22	PASS
1.6800	10.12	50.21	73.00	22.79	42.49	60.00	17.51	PASS
1.9095	10.13	49.23	73.00	23.77	40.73	60.00	19.27	PASS

Test mode : C6AM90JC
 Operating Mode : Test EUT in a representative configuration with reading card.
 (Supply voltage: AC 208V)
 Conduct Line/Port : L1
 Test By : Carlos chen
 Test Date : 2022-09-30

Conducted emission

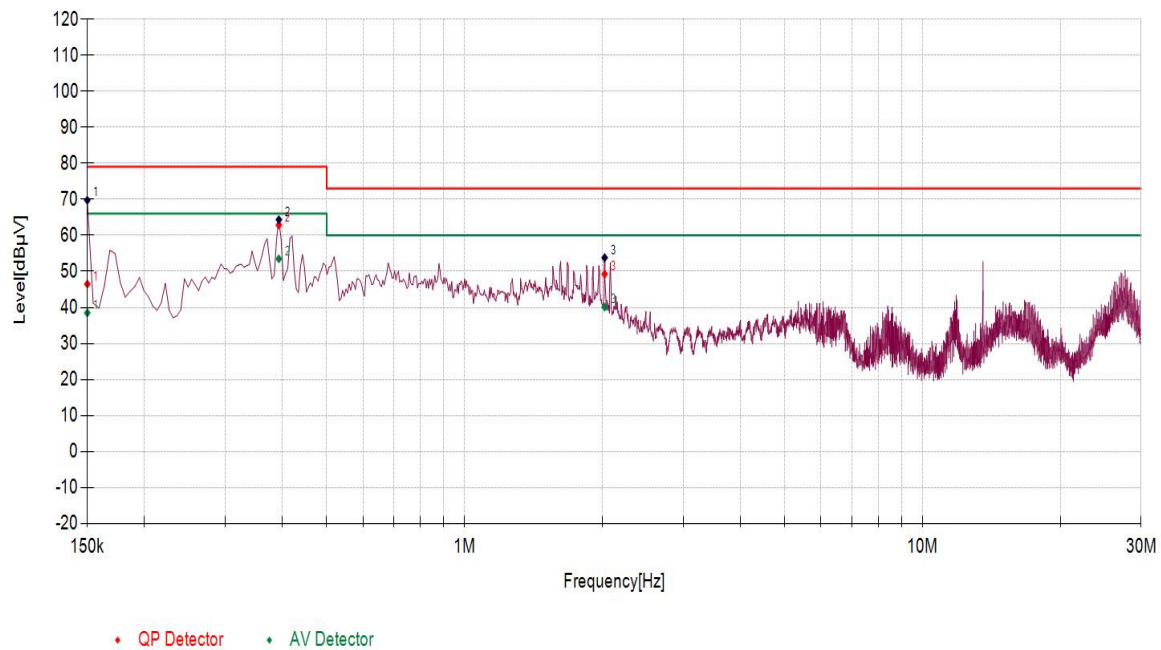


• QP Detector • AV Detector

Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Pass/Fail
0.1500	10.07	45.90	79.00	33.10	37.53	66.00	28.47	PASS
0.3930	10.08	61.57	79.00	17.43	52.46	66.00	13.54	PASS
1.9095	10.20	49.60	73.00	23.40	41.41	60.00	18.59	PASS

Test mode : C6AM90JC
 Operating Mode : Test EUT in a representative configuration with reading card.
 (Supply voltage: AC 208V)
 Conduct Line/Port : L2 (Supply voltage: AC 208V)
 Test By : Carlos chen
 Test Date : 2022-09-30

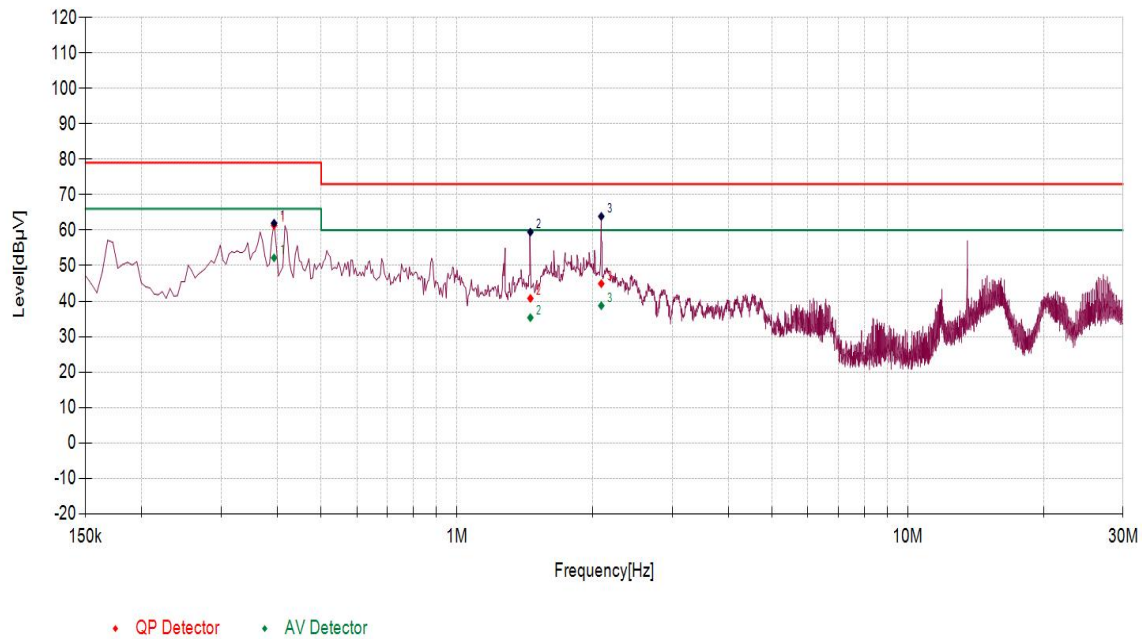
Conducted emission



Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Pass/Fail
0.1500	10.09	46.48	79.00	32.52	38.47	66.00	27.53	PASS
0.3930	10.11	62.87	79.00	16.13	53.48	66.00	12.52	PASS
2.0220	10.21	49.25	73.00	23.75	40.10	60.00	19.90	PASS

Test mode : C6AM90JC
 Operating Mode : Test EUT in a representative configuration with reading card.
 (Supply voltage: AC 208V)
 Conduct Line/Port : L3
 Test By : Carlos chen
 Test Date : 2022-09-30

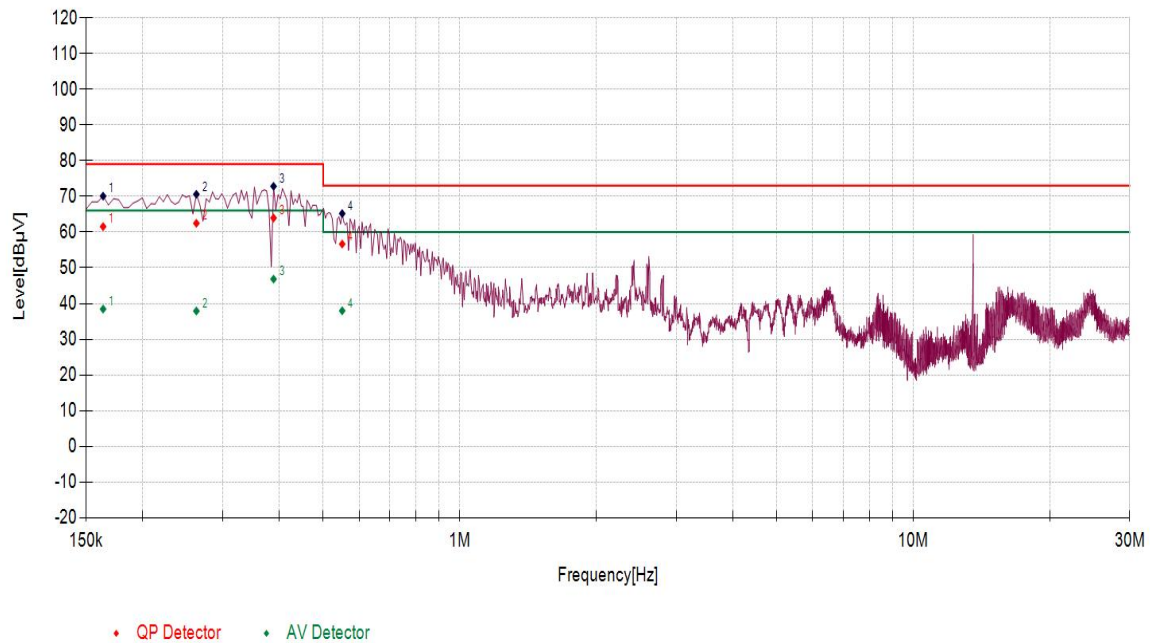
Conducted emission



Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Pass/Fail
0.3930	9.99	61.39	79.00	17.61	52.20	66.00	13.80	PASS
1.4550	10.08	40.77	73.00	32.23	35.33	60.00	24.67	PASS
2.0895	10.12	44.91	73.00	28.09	38.71	60.00	21.29	PASS

Test mode : C6AM90JC
 Operating Mode : Test EUT in a representative configuration with reading card.
 (Supply voltage: AC 208V)
 Conduct Line/Port : N
 Test By : Carlos chen
 Test Date : 2022-09-30

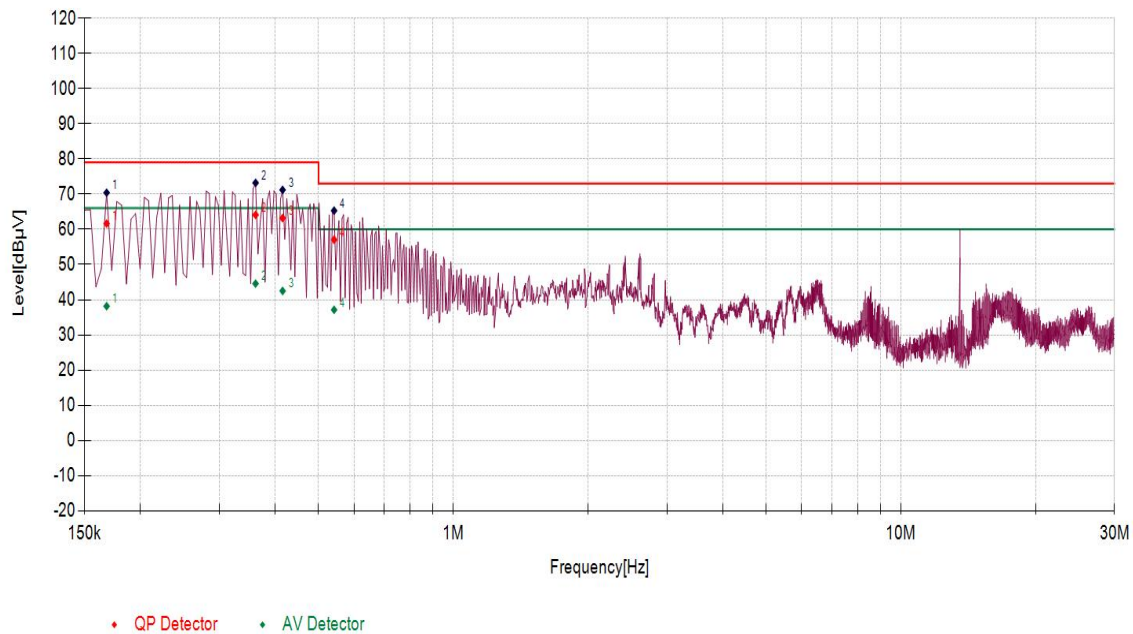
Conducted emission



Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Pass/Fail
0.1635	10.02	61.53	79.00	17.47	38.44	66.00	27.56	PASS
0.2625	10.02	62.46	79.00	16.54	37.91	66.00	28.09	PASS
0.3885	10.02	63.95	79.00	15.05	46.83	66.00	19.17	PASS
0.5505	10.04	56.66	73.00	16.34	37.96	60.00	22.04	PASS

Test mode : C6AM150JC
 Operating Mode : Test EUT in a representative configuration with reading card.
 (Supply voltage: AC 480V)
 Conduct Line/Port : L1
 Test By : Carlos chen
 Test Date : 2022-10-10

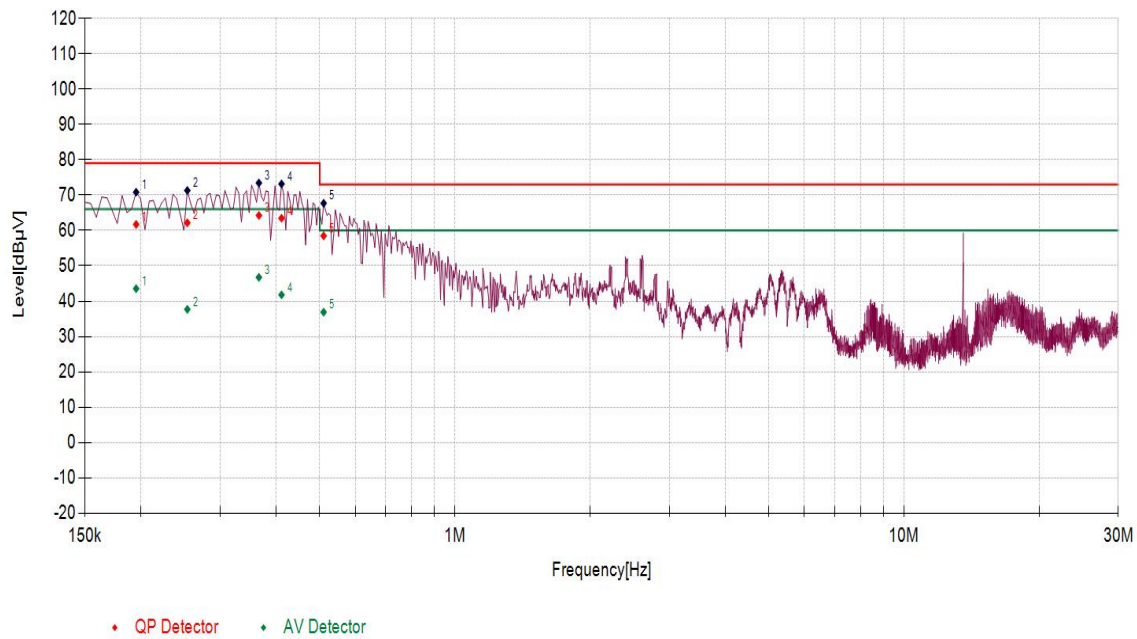
Conducted emission



Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Pass/Fail
0.1680	10.07	61.63	79.00	17.37	38.16	66.00	27.84	PASS
0.3615	10.08	64.10	79.00	14.90	44.58	66.00	21.42	PASS
0.4155	10.08	63.20	79.00	15.80	42.50	66.00	23.50	PASS
0.5415	10.10	57.04	73.00	15.96	37.13	60.00	22.87	PASS

Test mode : C6AM150JC
 Operating Mode : Test EUT in a representative configuration with reading card.
 (Supply voltage: AC 480V)
 Conduct Line/Port : L2
 Test By : Carlos chen
 Test Date : 2022-10-10

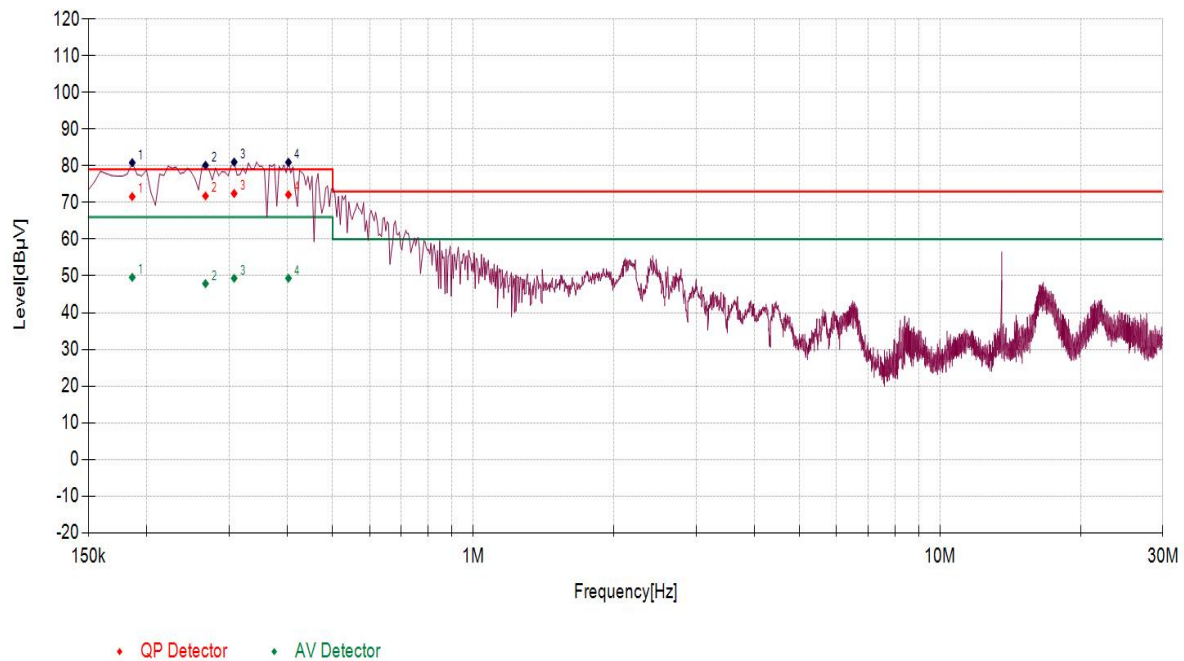
Conducted emission



Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Pass/Fail
0.1950	10.10	61.71	79.00	17.29	43.54	66.00	22.46	PASS
0.2535	10.10	62.17	79.00	16.83	37.68	66.00	28.32	PASS
0.3660	10.11	64.25	79.00	14.75	46.73	66.00	19.27	PASS
0.4110	10.11	63.47	79.00	15.53	41.78	66.00	24.22	PASS
0.5100	10.11	58.48	73.00	14.52	36.89	60.00	23.11	PASS

Test mode : C6AM150JC
 Operating Mode : Test EUT in a representative configuration with reading card.
 (Supply voltage: AC 480V)
 Conduct Line/Port : L3
 Test By : Carlos chen
 Test Date : 2022-10-10

Conducted emission



Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Pass/Fail
0.1860	9.99	71.62	79.00	7.38	49.61	66.00	16.39	PASS
0.2670	9.98	71.79	79.00	7.21	47.90	66.00	18.10	PASS
0.3075	9.99	72.46	79.00	6.54	49.36	66.00	16.64	PASS
0.4020	9.99	72.14	79.00	6.86	49.37	66.00	16.63	PASS

Test mode : C6AM150JC
 Operating Mode : Test EUT in a representative configuration with reading card.
 (Supply voltage: AC 480V)
 Conduct Line/Port : N
 Test By : Carlos chen
 Test Date : 2022-10-10

Test result: PASS

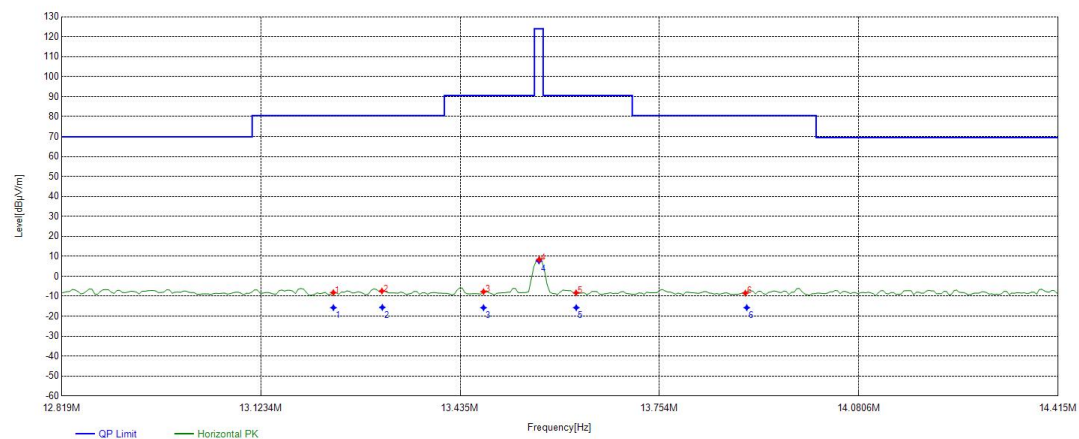
9.2 Field strength of Fundamental Emission Measurement

Test Requirement: FCC part 15 section 15.225 (a),(b),(c),(d), 15.205
 (A) ANSI C63.10-2013 - Section 11.12.2.3 (quasi-peak measurements) The specifications for measurements using the CISPR quasi-peak detector can be found in CISPR 16-1-1. As an alternative to CISPR quasi-peak measurement, compliance can be determined for the applicable emission requirements using a peak detector

Limits of 15.209:

Frequency (MHz)	Field strength dB(uv/m) at 3m	Field strength dB(uv/m) at 10m
1.705 - 13.110	69.5	48.58
13.110 - 13.410	80.5	59.98
13.410 - 13.553	90.5	69.58
13.553 - 13.567	124	103.08
13.567 - 13.710	90.5	69.58
13.710 - 14.010	80.5	59.98
14.010 -30.000	69.5	48.58

Test Method: ANSI C63.10:2013
 Test Date: 2022-09-10~2022-10-10
 Mode of Operation: Continuously transmitting mode.
 Detector Function: ANSI C63.10-2013 - Section 11.12.2.4 (peak power measurements)
 Measurement BW: 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
 2. RBW = as specified in Table 1
 3. VBW $\geq$ 3 x RBW
 4. Detector = Peak
 5. Trace mode = max hold
 6. Sweep = auto couple
 7. Allow the trace was allowed to stabilize



Frequency [MHz]	Polarity	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Pass/Fail
13.2359	Horizontal	-19.98	11.78	-8.20	80.50	88.70	PK	PASS
13.3118	Horizontal	-19.97	12.56	-7.41	80.50	87.91	PK	PASS
13.472	Horizontal	-19.97	12.23	-7.74	90.50	98.24	PK	PASS
13.5606	Horizontal	-19.96	28.37	8.41	124.00	115.59	PK	PASS
13.6196	Horizontal	-19.96	11.64	-8.32	90.50	98.82	PK	PASS
13.8937	Horizontal	-19.94	11.46	-8.48	80.50	88.98	PK	PASS

Test mode

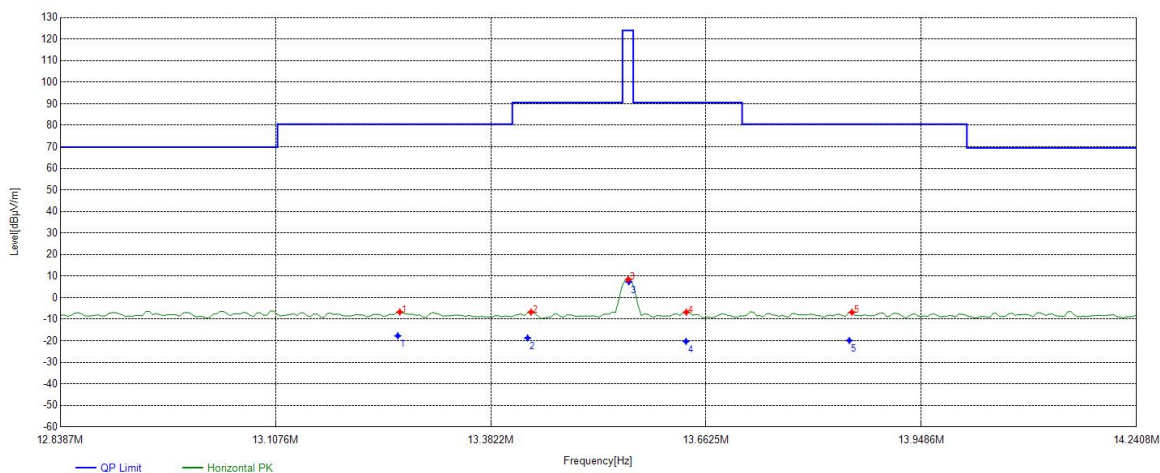
Antenna polarization

:

:

C6AM150JC

Horizontal (Power supply DC:5V)



Frequency [MHz]	Polarity	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detect or	Pass/Fail
13.2654	Vertical	-19.98	13.33	-6.65	80.50	87.15	PK	PASS
13.4341	Vertical	-19.97	13.28	-6.69	90.50	97.19	PK	PASS
13.56	Vertical	-19.96	28.42	8.46	124.00	115.54	PK	PASS
13.6365	Vertical	-19.96	13.23	-6.73	90.50	97.23	PK	PASS
13.8557	Vertical	-19.94	13.14	-6.80	80.50	87.30	PK	PASS

Test mode

Antenna polarization

:

C6AM150JC

:

Vertical (Power supply DC:5V)

9.3 Filed Strength Measurement

Test Requirement:

FCC part 15 section 15.225 (a),(b),(c),(d), 15.205
 (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters. (124 dB μ V/m@3m)
 (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (90.5 dB μ V/m@3m)
 (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters. (80.5 dB μ V/m@3m)
 (d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

Limits of 15.209:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30-88	100	10
88-216	150	10
216-960	210	10
Above 960	500	10

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Method:

ANSI C63.10:2013

Test Date:

2022-09-10~2022-10-10

Mode of Operation:

Continuously transmitting mode.

Detector Function

Quasi-peak (Below 1000 MHz)

Average and Peak (Above 1000 MHz)

Measurement BW

200Hz(9KHz-150KHz)

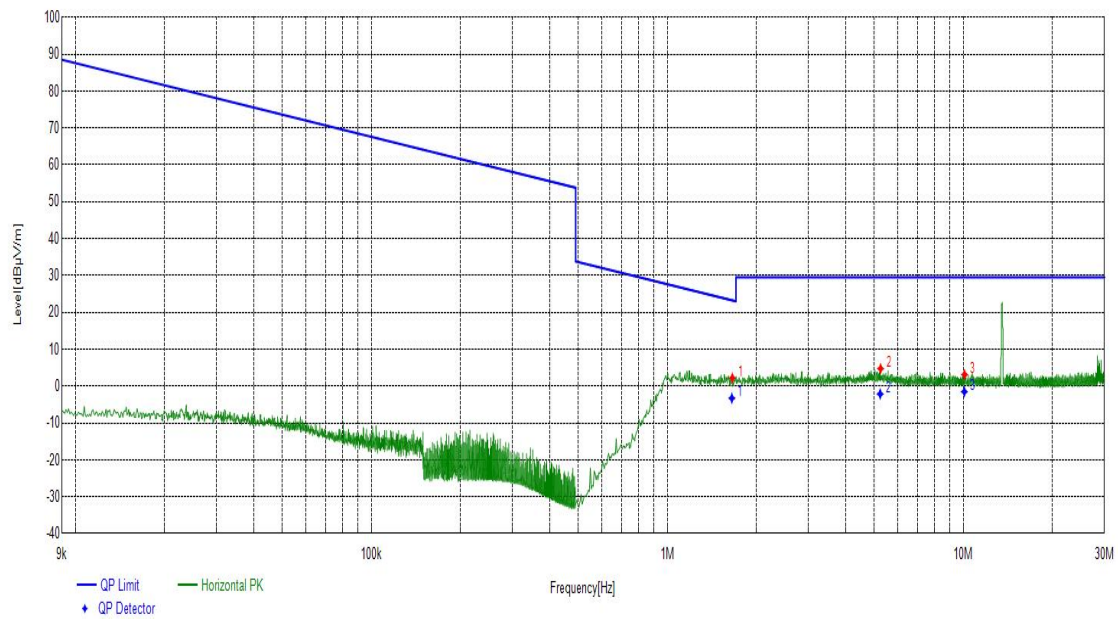
9KHz(150KHz-30MHz)

120 kHz (30MHz-1000 MHz)

1 MHz (Above 1000 MHz)

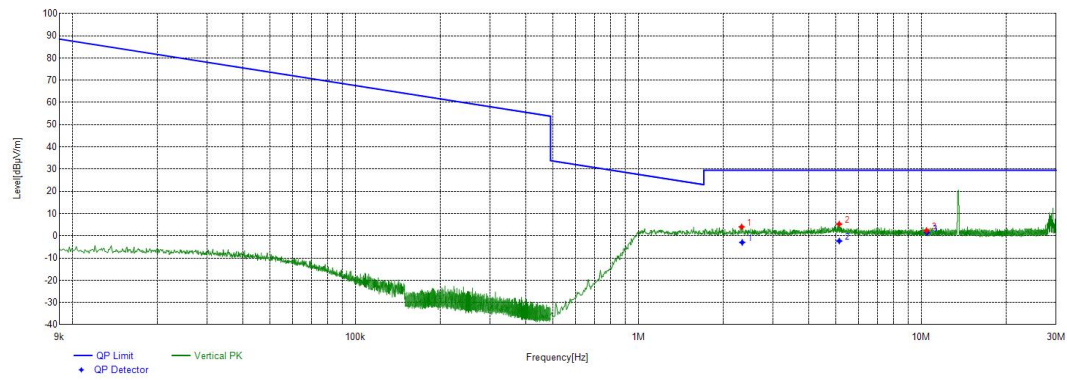
Test data:

Emission 9KHz-30MHz



No significant emission was detected within 10 dB to limit

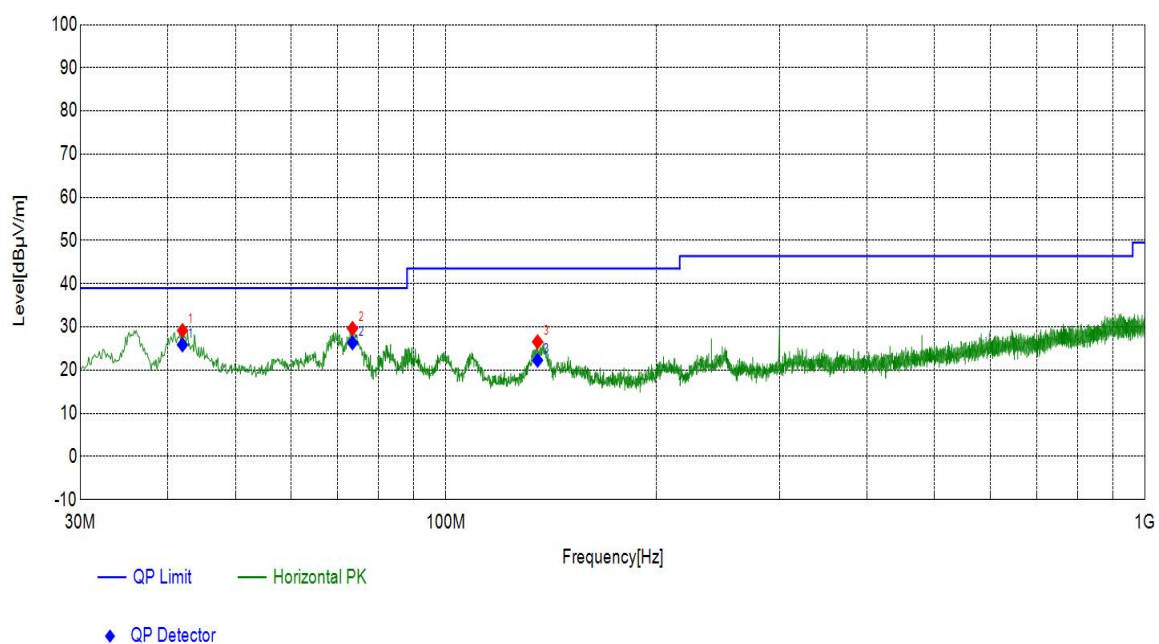
Test mode : C6AM90JC
Antenna polarization : Horizontal (Power supply AC:208V)



No significant emission was detected within 10 dB to limit

Test mode : C6AM90JC
Antenna polarization : Vertical(Power supply AC:208V)

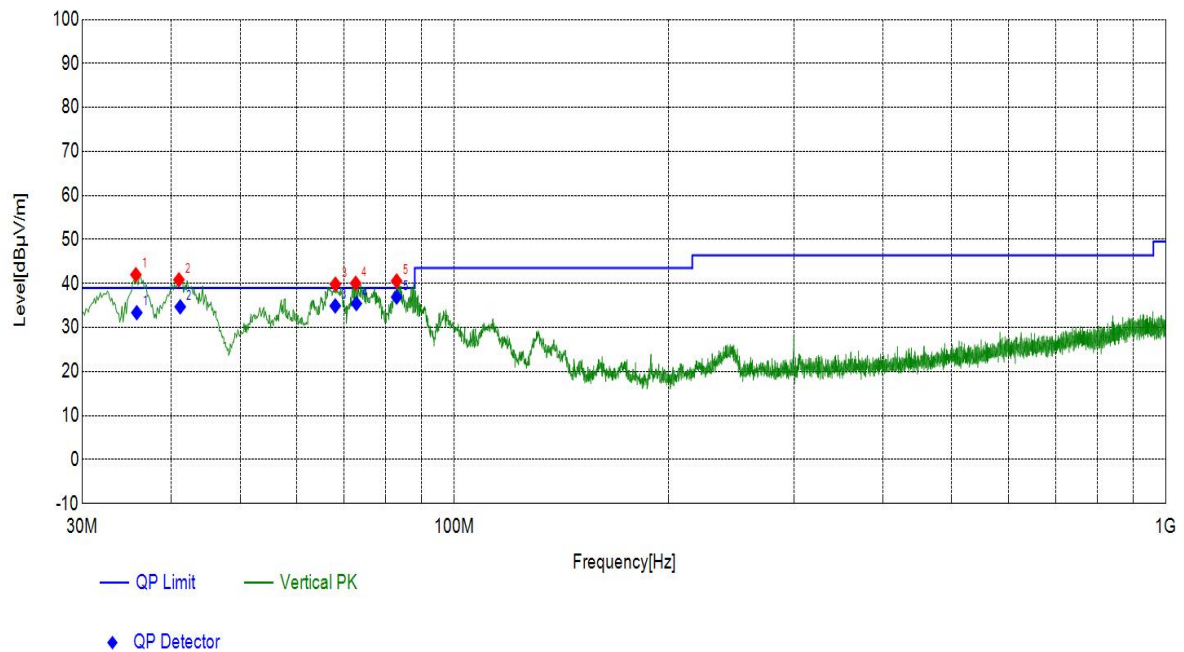
Emission 30MHz -1GHz



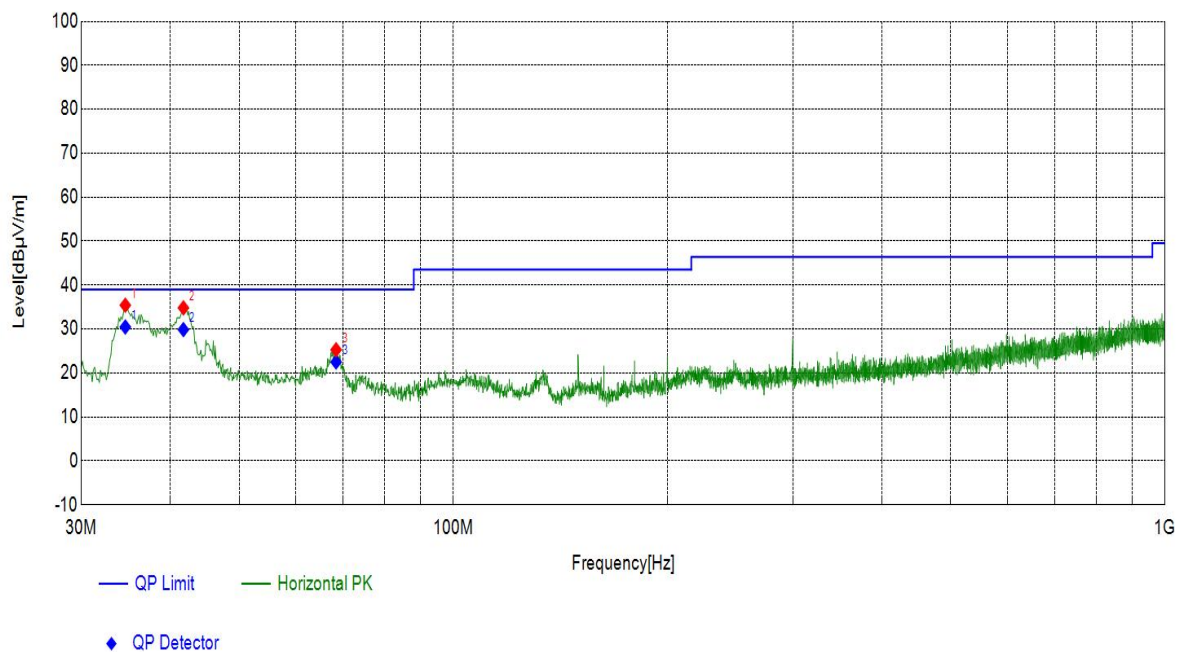
Frequency [MHz]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]
42.0037	25.86	39.00	13.14	210	280
73.5288	26.34	39.00	12.66	150	320
135.245	22.27	43.50	21.23	189	180

Test mode : C6AM90JC
 Antenna polarization : Horizontal (Power supply AC:208V)

Antenna polarization Vertical

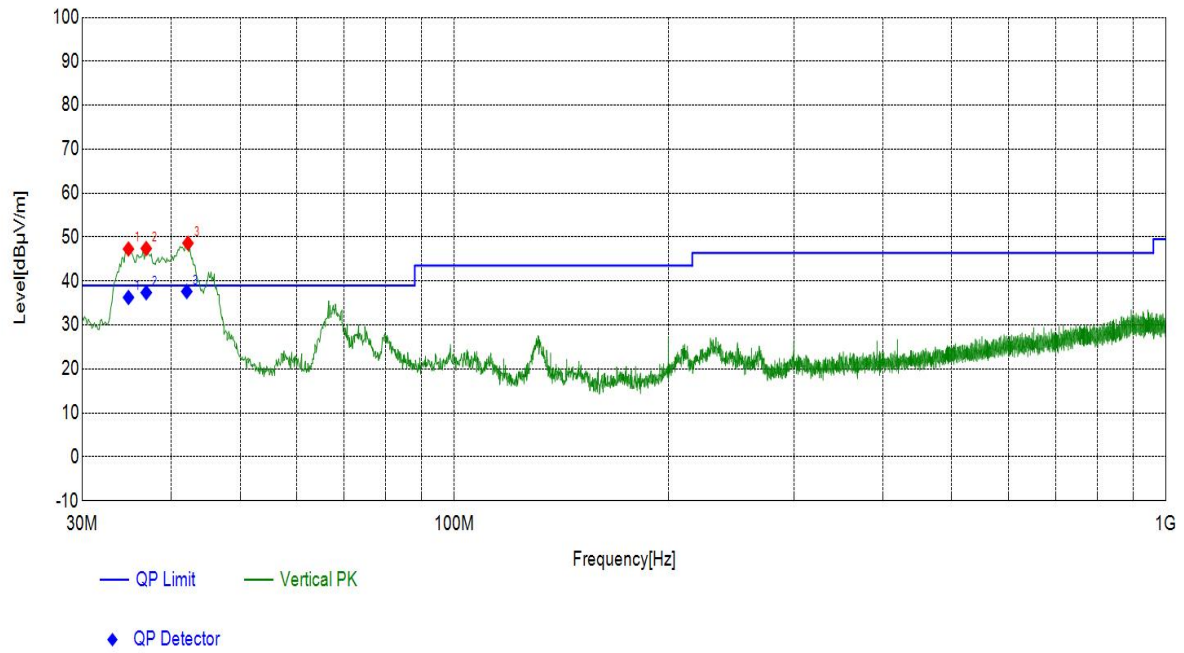


Test mode : C6AM90JC
 Antenna polarization : Vertical (Power supply AC:208V)



Frequency [MHz]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]
34.6075	30.47	39.00	8.53	155	40
41.7612	29.87	39.00	9.13	192	70
68.4362	22.50	39.00	16.50	224	110

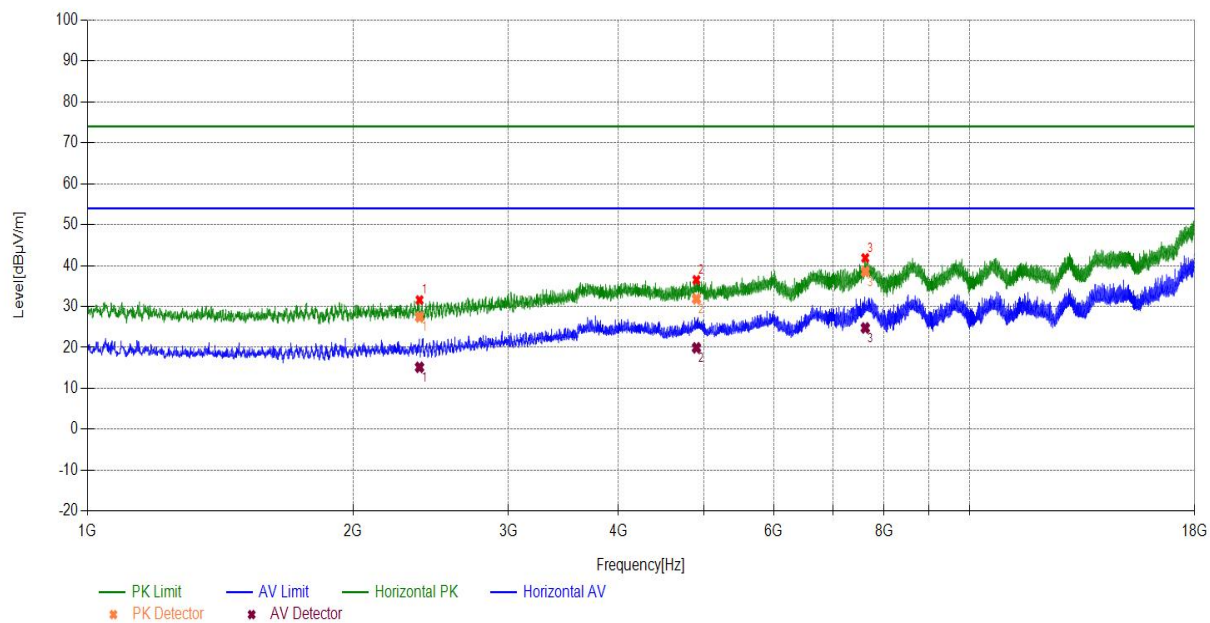
Test mode : C6AM150JC
 Antenna polarization : Horizontal (Power supply AC:480V)



Frequency [MHz]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]
34.85	36.26	39.00	2.74	172	250
36.9112	37.37	39.00	1.63	150	250
42.0832	37.63	39.00	1.37	262	30

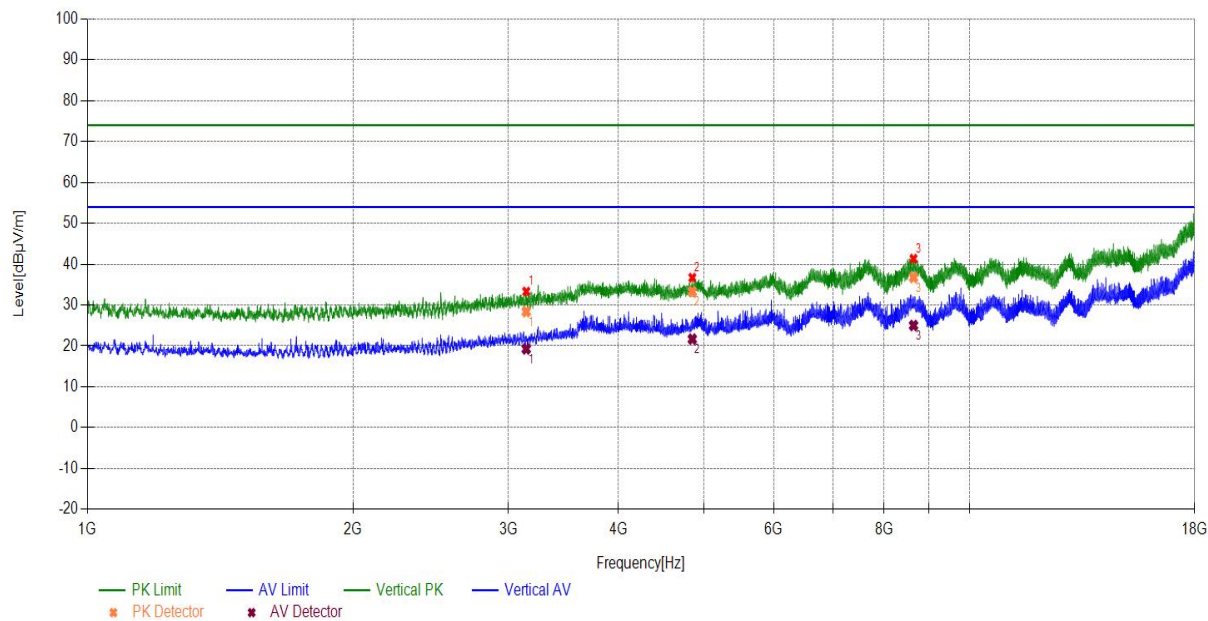
Test mode : C6AM150JC
 Antenna polarization : Horizontal (Power supply AC:480V)

Emission 1GHz -18GHz



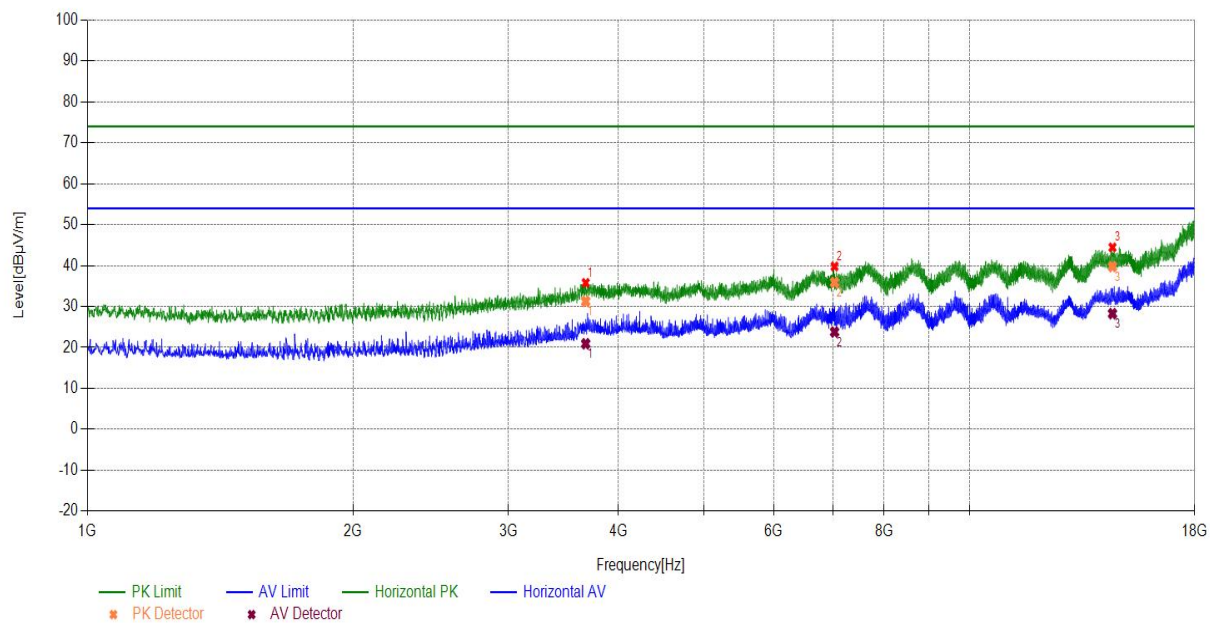
Test mode : C6AM90JC
Antenna polarization : Horizontal (Power supply AC:208V)

Emission 1GHz -18GHz



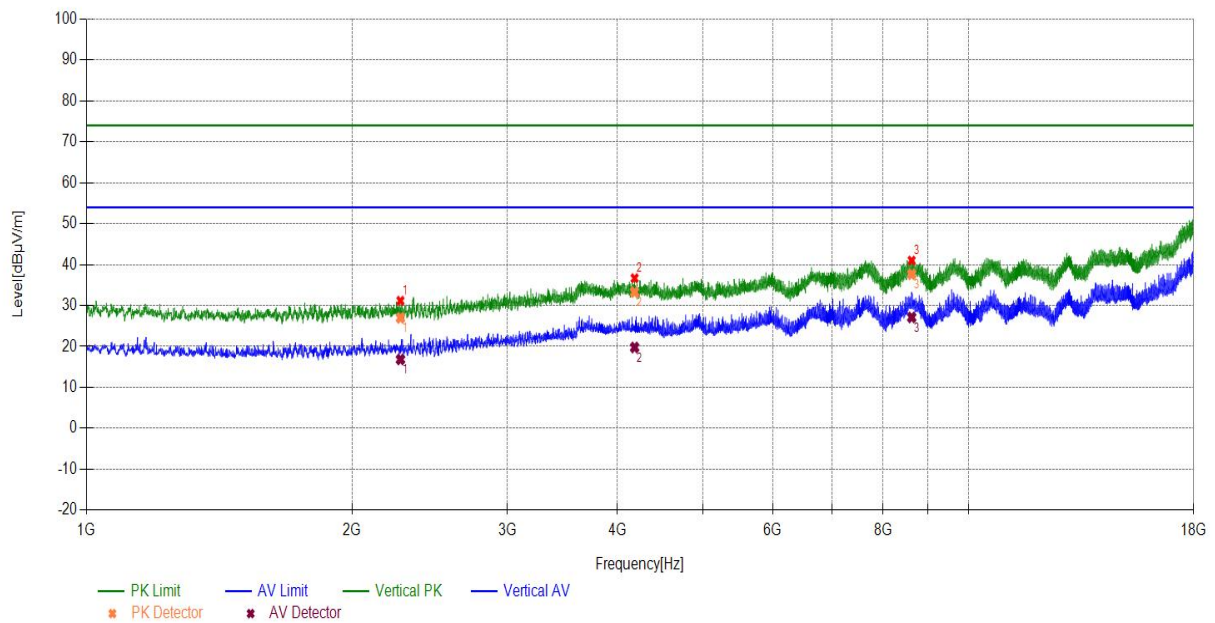
Test mode : C6AM90JC
Antenna polarization : Vertical (Power supply AC:208V)

Emission 1GHz -18GHz



Test mode : C6AM150JC
Antenna polarization : Horizontal (Power supply AC:480V)

Emission 1GHz -18GHz



Test mode : C6AM150JC
Antenna polarization : Vertical (Power supply AC:480V)

Test result: PASS

9.4 Frequency Stability

Test Requirement: FCC Part 15 C Section 15.225(e)
 The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test Method: ANSI C63.10:2013
 Test Date: 2022-10-10
 Mode of Operation: Continuously transmitting mode.
 Detector Function: Maxpeak
 Measurement BW: RBW:1KHz
 VBW:3KHz

Test data:

Nominal Operating Frequency: 13.56MHz,
 Limit: within +/- 1.356KHz of the operating frequency.
 Power supply:3.0V for RF module.

Frequency stability vs. temperature		
Temperature (°C)	Measured Frequency (MHz)	Frequency error (KHz)
50	13.560650	0.04
40	13.560642	0.04
30	13.560642	0.04
20	13.560645	0.04
10	13.560645	0.04
0	13.560642	0.04
-10	13.560642	0.04
-20	13.560641	0.04

Frequency stability vs. voltage		
Voltage (VDC)	Measured Frequency (MHz)	Frequency error (KHz)
4.25	13.560637	0.06
4.5	13.560642	0.06
4.75	13.560642	0.06
5.0	13.560642	0.06
5.25	13.560642	0.06
5.5	13.560642	0.06
5.75	13.560642	0.06

Result: PASS

9.5 Occupied Bandwidth

Test Requirement:

FCC Part 15 C Section 15.215 (c)
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Test Method:

ANSI C63.10:2013

Test Date:

2022-10-10

Mode of Operation:

Continuously transmitting mode.

Detector Function

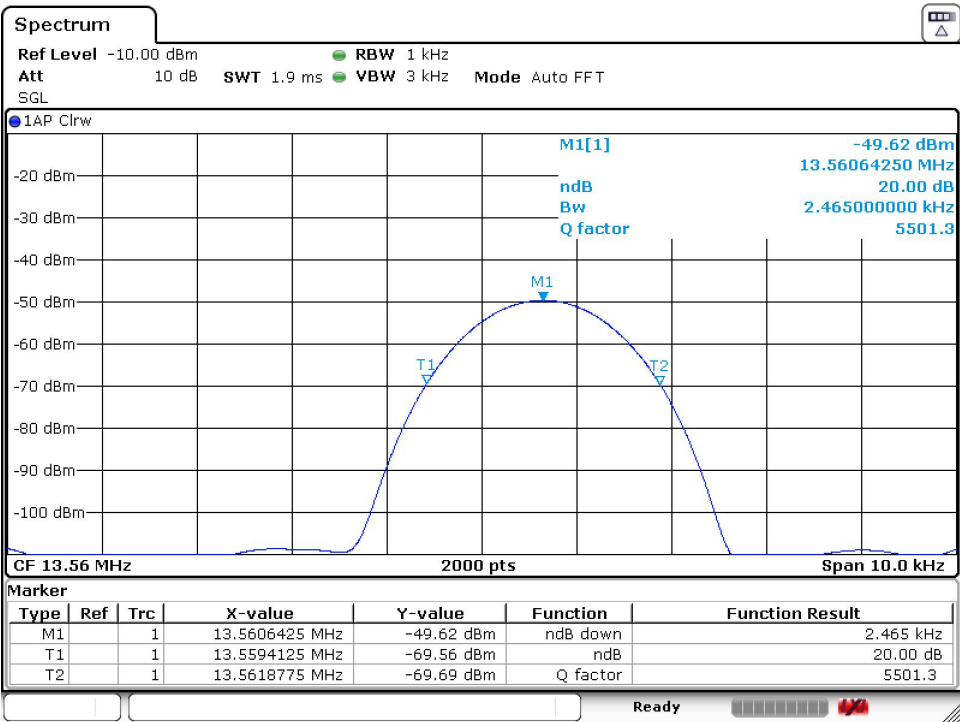
Maxpeak

Measurement BW

RBW:1KHz
VBW:3KHz

Test data:

20dB bandwidth:



Result: PASS

10. Test Equipment List

List of Test Instruments

	Description	Manufacturer	Model no.	Serial no.	CAL. DUE DATE
C	Signal Analyzer	Rohde & Schwarz	FSV40	101030	2024-7-6
	Programmable temperature and humidity chamber	MHG-408CASI	TaiLi	A81002	2024-7-6
	DC power supply	INSTEK	GPR-30600	EH873394	N/A
CE	EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2024-7-6
	LISN	Rohde & Schwarz	ENV432	101318	2024-7-6
RE	EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2024-7-6
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2024-6-28
	Horn Antenna	Rohde & Schwarz	HF907	102294	2024-6-28
	Loop Antenna	Rohde & Schwarz	HFH2-Z2	100398	2024-7-6
	Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2024-7-6
	Signal Generator	Rohde & Schwarz	SMY01	839369/005	2024-7-6
	Attenuator	Agilent	8491A	MY39264334	2024-7-6
	3m Semi-anechoic chamber	TDK	9X6X6	----	2024-7-7
	Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

C - Conducted RF tests

- Occupied bandwidth
- Frequency Stability

11. System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

ITEMS	EXTENDED UNCERTAINTY
Uncertainty for Conducted Emission 150kHz-30MHz (for test using AMN ENV432 or ENV4200)	3.21dB
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.46dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.91dB; Vertical: 4.89dB;
Uncertainty for Conducted RF test with TS 8997	RF Power Conducted: 1.16dB Frequency test involved: 0.6×10 ⁻⁷ or 1%

12. Appendix A – Setup Photos

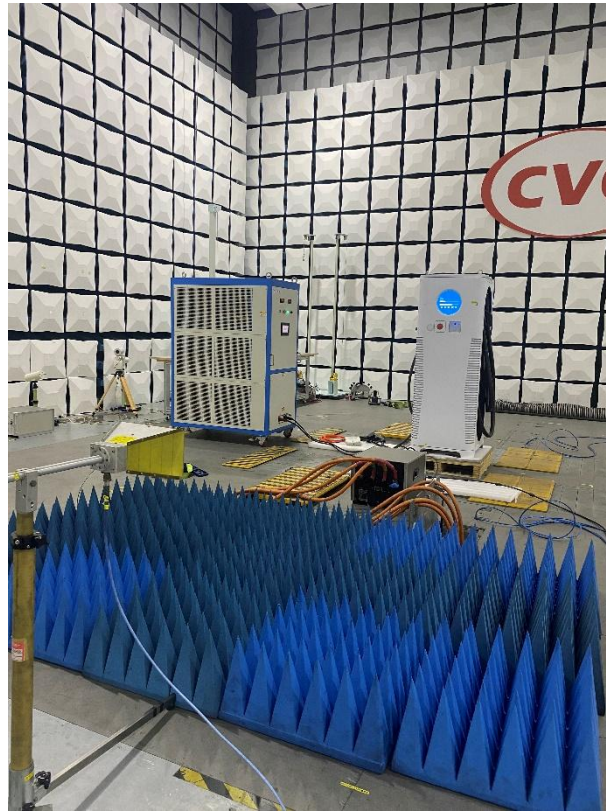
Setup photo of radiated emission (9KHz-30MHz)



Setup photo of radiated emission (30MHz-1GHz)



Setup photo of radiated emission (1GHz-18GHz)



Setup photo of conducted emission (150KHz-30MHz)



13. Appendix B – EUT Photos

C6AM150JC





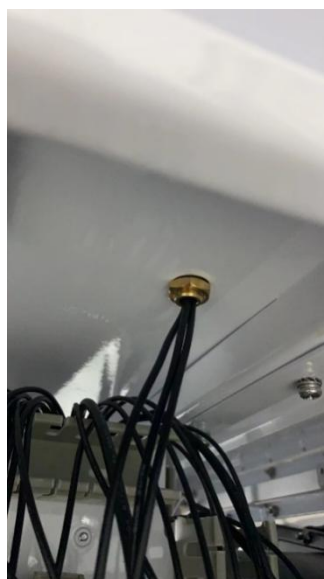




LTE module



LTE Antenna position



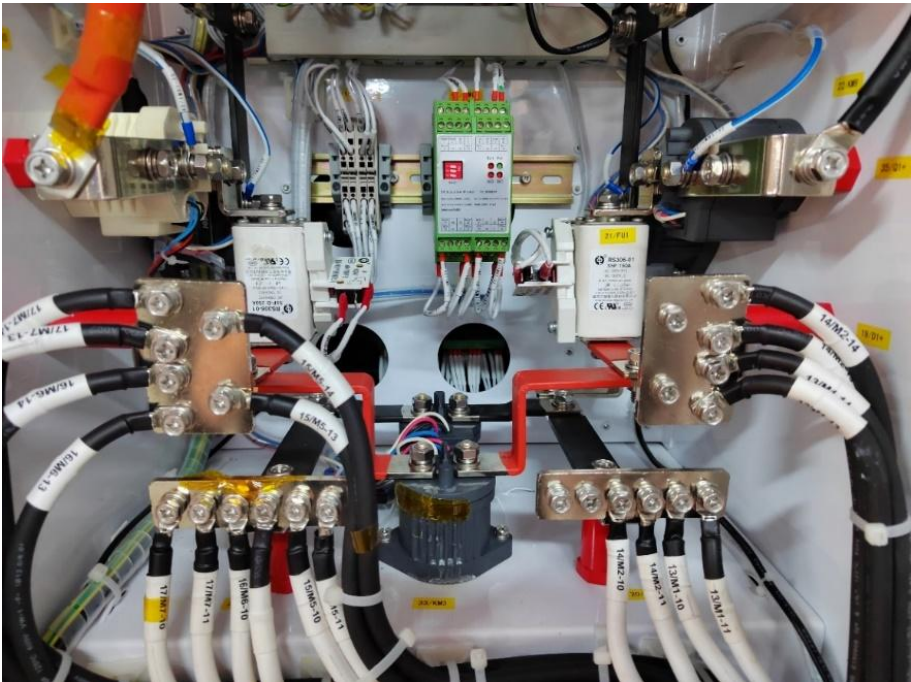
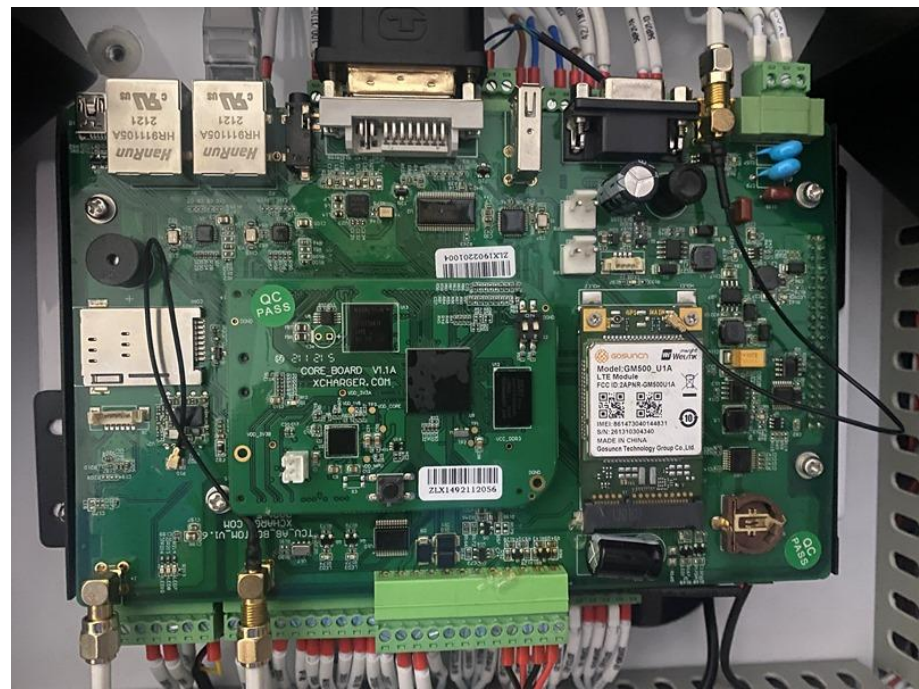


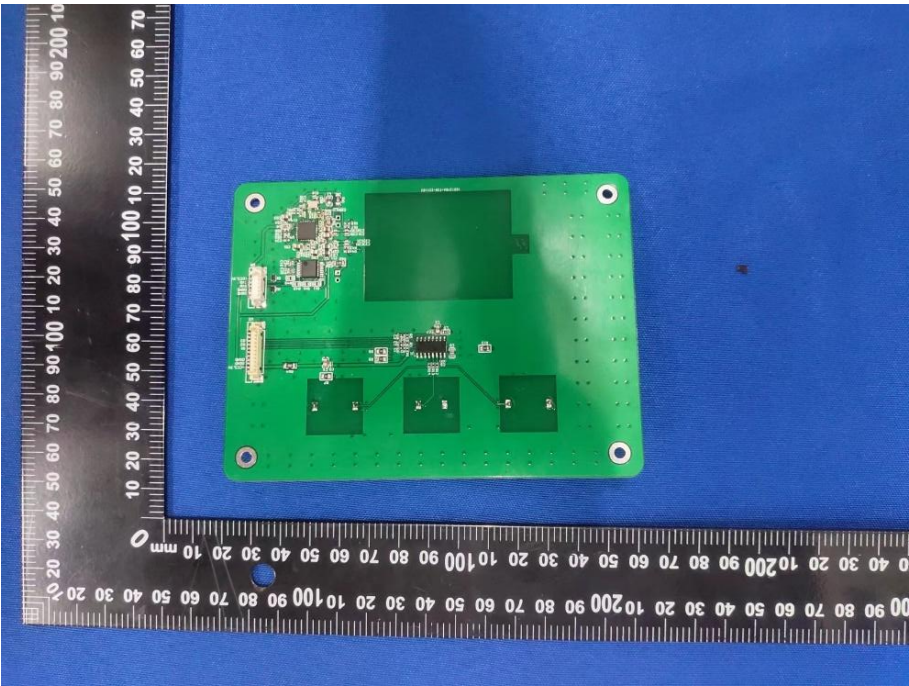
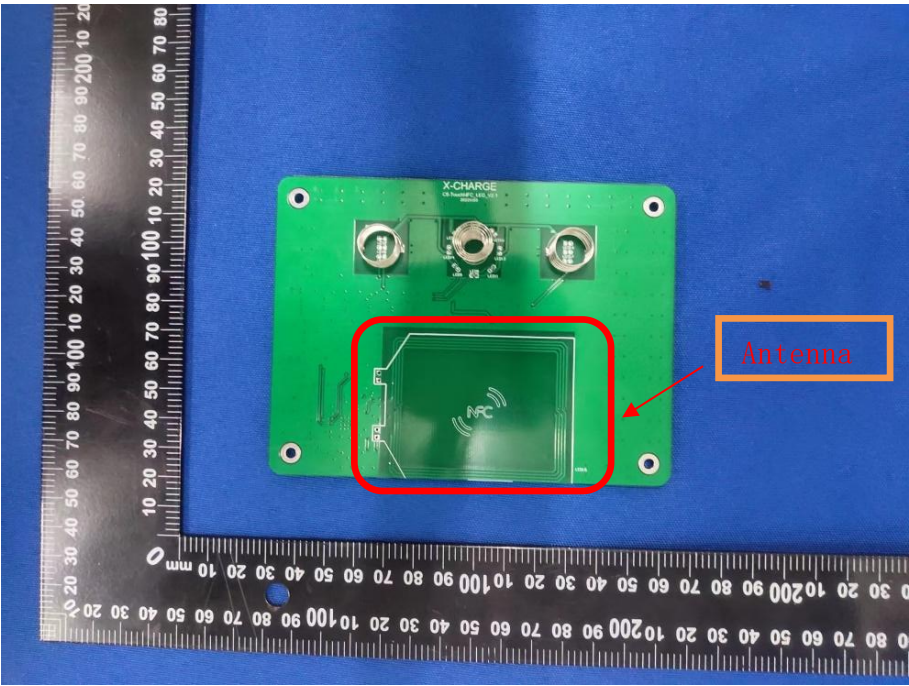
200-500V AC Power module



C6AM90JC. 100-240V power module







End of This Report