

FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

Avantari Technologies Private Limited

Dhyana

AVDH18JA01

FCC ID: 2AUGNAVDH18JA01

Prepared for : Avantari Technologies Private Limited

**Plot No. 185, Road No.76, Jubilee Hills, Hyderabad, Telangana,
India. Pin code-500033.**

Prepared By : Audix Technology (Shenzhen) Co., Ltd.

**No. 6, Kefeng Road, Science & Technology Park,
Nanshan District , Shenzhen, Guangdong, China**

Tel: (0755) 26639496

Report Number : ACS-F19214

Date of Test : Aug.23~25, 2019

Date of Report : Dec.12, 2019

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TEST REPORT CERTIFICATION

Applicant : Avantari Technologies Private Limited
Manufacturer : Avantari Technologies Private Limited
Product : Dhyana
FCC ID : 2AUGNAVDH18JA01
(A) Model No. : AVDH18JA01
(B) Test Voltage : DC 5V From PC Input AC 120V/60Hz

Tested for comply with:
FCC CFR 47 Part 15 Subpart C

Test procedure used:
ANSI C63.10:2013

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements.

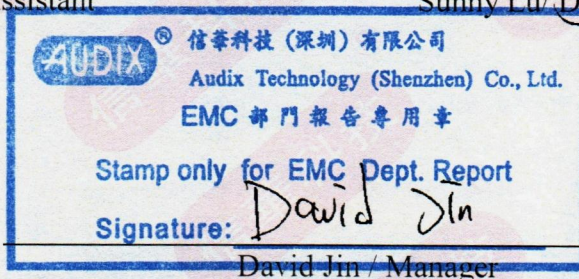
The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC and IC requirements.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test : Aug.23~25, 2019 Report of date: Dec.12, 2019

Prepared by : Monica Liu Reviewed by : Sunny Lu
Monica Liu / Assistant Sunny Lu / Deputy Manager



Approved & Authorized Signer :

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission	FCC Part 15: 15.207	PASS
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.205	PASS

2. GENERAL INFORMATION

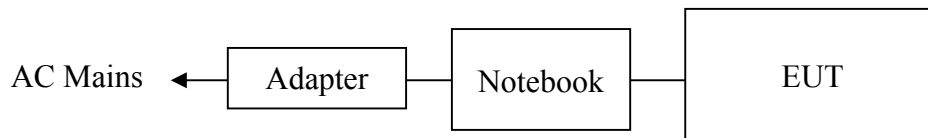
2.1. Description of Equipment Under Test

Applicant	Avantari Technologies Private Limited Plot No. 185, Road No.76, Jubilee Hills, Hyderabad, Telangana, India. Pin code-500033.
Manufacturer	Kaynes Technology India Private Limited No. 23-25. Belagola Food Industrial Estate. Metagall. P.O., Mysore, Karnataka, India. Pin code-570016.
Product	Dhyana
Model No.	AVDH18JA01
FCC ID	2AUGNAVDH18JA01
Radio Frequency	250kHz
USB Cable	Shielded, Detachable, 0.1m
Sample Type	Prototype production
Date of Receipt	Aug.10, 2019
Date of Test	Aug.23~25, 2019

2.2. Tested Supporting System Details

	Description	ACS No.	Manufacturer	Model	Serial Number
1.	Notebook	N/A	SONY	SVF143A1QT	N/A
		Power Adapter: Manufacturer: SONY, Model: VGP-AC19V77 Input: 100-240V~, 1.5A, 50/60Hz Output: 19.5V----3.3A Power Cord: Unshielded, Detachable, 1.8m			

2.3. Block Diagram of connection between EUT and simulators



(EUT: Dhyana)

2.4. Test Facility Site Description

Name of Firm

Audix Technology (Shenzhen) Co., Ltd.
: No. 6, Kefeng Road, Science & Technology Park,
Nanshan District , Shenzhen, Guangdong, China

EMC Lab.

Certificated by Industry Canada
: Registration Number: IC 5183A-1
Valid Date: May.07, 2020

 Certificated by DAkkS, Germany
: Registration No: D-PL-12151-01-00
Valid Date: Dec.07, 2021

Accredited by NVLAP, USA
: NVLAP Code: 200372-0
Valid Date: Mar.31, 2020

Certificated by FCC USA.
: Designation No.: CN5022
Valid Date: Mar.31, 2020

2.5. Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	2.6dB (150KHz to 30MHz)
Uncertainty for Radiation Emission test in 10m chamber	3.8dB(30~200MHz, Polarization: H)
	3.6dB(30~200MHz, Polarization: V)
	3.6dB(200M~1GHz, Polarization: H)
	3.8dB(200M~1GHz, Polarization: V)
Uncertainty for DC power test	0.1 %
Uncertainty for test site temperature and humidity	0.6°C
	3%

Note: EMI uncertainty is evaluated by CISPR16-4-2.

The value of measurement uncertainty of EMI is less than U_{CISPR} .

The value is not calculated in the test results.

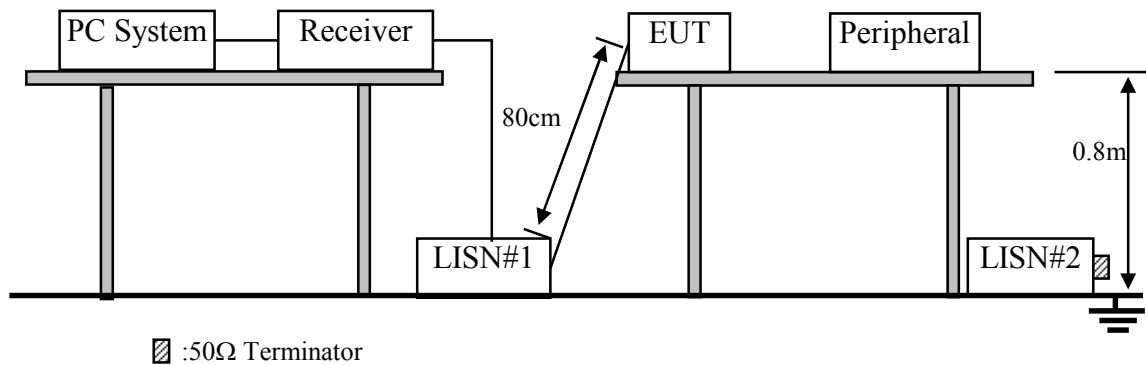
3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	1# Shielding Room	AUDIX	N/A	N/A	May.17,18	3 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100842	Apr.14,19	1 Year
3.	L.I.S.N.#1	Rohde & Schwarz	ENV216	102160	Dec.01,18	1 Year
4.	A.M.N	Kyoritsu	K NW-403D	8-1750-2	Apr.18,19	1 Year
5.	Terminator	Hubersuhner	50Ω	No.1	Apr.14,19	1 Year
6.	Terminator	Hubersuhner	50Ω	No.2	Apr.14,19	1 Year
7.	RF Cable	Fujikura	RG55/U	No.1	Apr.13,19	1 Year
8.	Test Software	AUDIX	e3	6.100913a	N/A	N/A

Note: N/A means Not applicable.

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4.Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1.Dhyana (EUT)

Model Number : AVDH18JA01

Serial Number : N/A

3.4.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

3.5.Operating Condition of EUT

3.5.1. Setup the EUT as shown in Section 3.2.

3.5.2. Turn on the power of all equipments.

3.5.3. Let the EUT worked in test mode (Charging Mode) and tested it.

3.6.Test Procedure

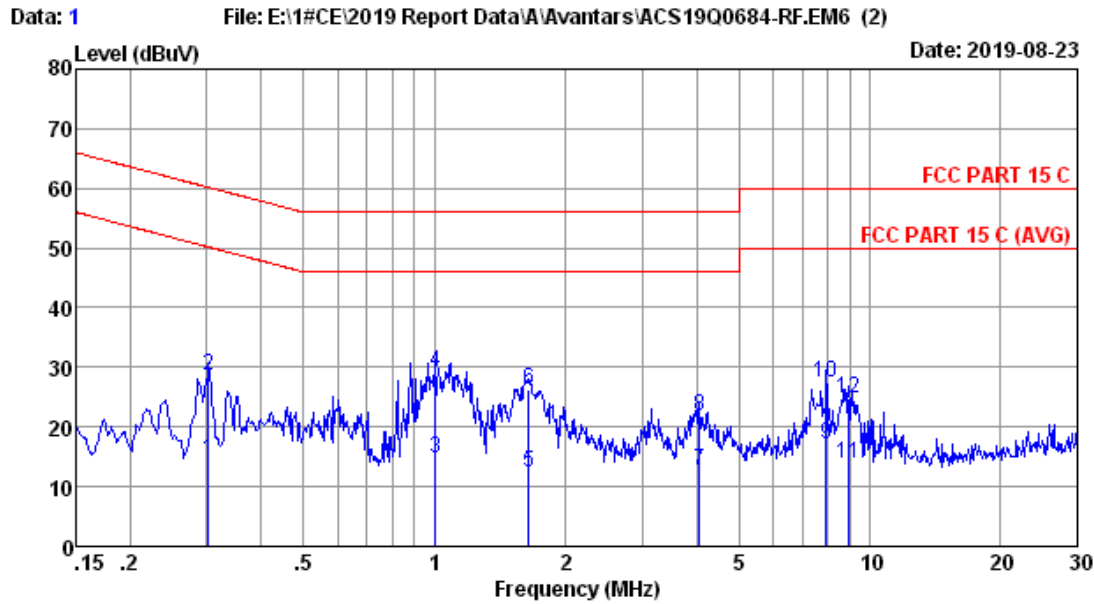
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power Via PC connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC MP-5 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.7.Power Line Conducted Emission Test Results

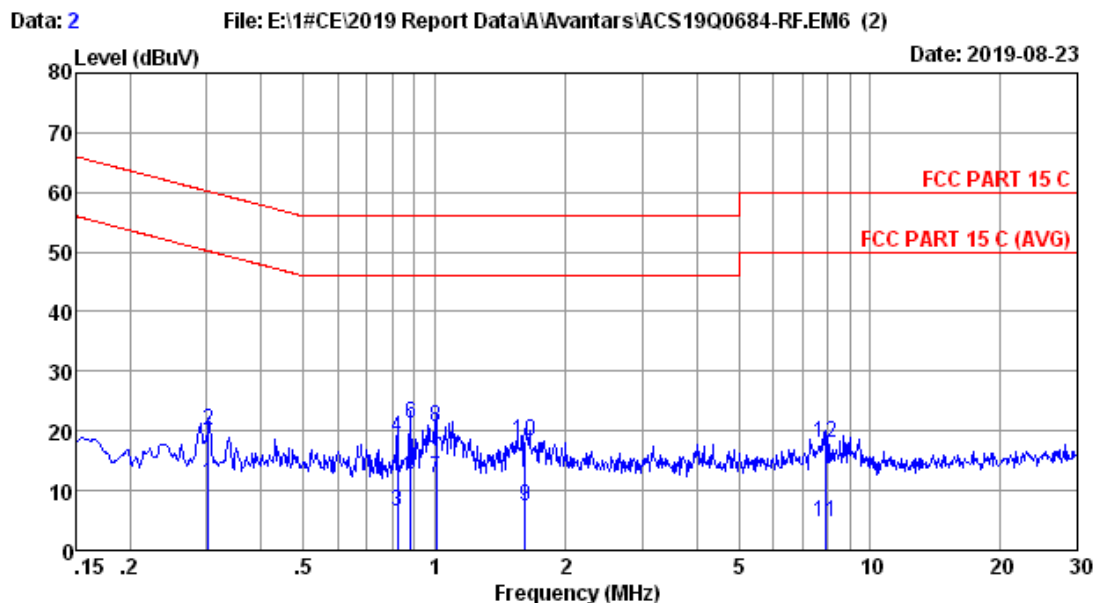
PASS. (All emissions not reported below are too low against the prescribed limits.)



Site no :1# Conduction Data No :1
 Dis./Lisn :2018 ENV216-L LISN phase:
 Limit :FCC PART 15 C
 Env./Ins. :Temp:24.3°C Humi:50% Engineer :Evan
 EUT :AVDH18JA01
 Power Rating :AC 120V/60Hz
 Test Mode :Charging

No	Freq (MHz)	LISN Factor (dB)	Cable loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.302	9.40	0.03	4.96	14.39	50.19	35.80	Average
2	0.302	9.40	0.03	19.18	28.61	60.19	31.58	QP
3	1.005	9.40	0.03	5.34	14.77	46.00	31.23	Average
4	1.005	9.40	0.03	19.74	29.17	56.00	26.83	QP
5	1.645	9.46	0.04	2.83	12.33	46.00	33.67	Average
6	1.645	9.46	0.04	16.68	26.18	56.00	29.82	QP
7	4.070	9.50	0.06	3.16	12.72	46.00	33.28	Average
8	4.070	9.50	0.06	12.31	21.87	56.00	34.13	QP
9	7.935	9.50	0.09	7.46	17.05	50.00	32.95	Average
10	7.935	9.50	0.09	17.89	27.48	60.00	32.52	QP
11	8.964	9.50	0.09	4.28	13.87	50.00	36.13	Average
12	8.964	9.50	0.09	15.29	24.88	60.00	35.12	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+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.



Site no :1# Conduction Data No :2
 Dis./Lisn :2018 ENV216-N LISN phase:
 Limit :FCC PART 15 C
 Env./Ins. :Temp:24.3°C Humi:50% Engineer :Evan
 EUT :AVDH18JA01
 Power Rating :AC 120V/60Hz
 Test Mode :Charging

No	Freq (MHz)	LISN Factor (dB)	Cable loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.302	9.40	0.03	1.72	11.15	50.19	39.04	Average
2	0.302	9.40	0.03	10.63	20.06	60.19	40.13	QP
3	0.822	9.40	0.03	-2.96	6.47	46.00	39.53	Average
4	0.822	9.40	0.03	9.61	19.04	56.00	36.96	QP
5	0.880	9.40	0.03	3.14	12.57	46.00	33.43	Average
6	0.880	9.40	0.03	11.89	21.32	56.00	34.68	QP
7	1.010	9.40	0.03	2.79	12.22	46.00	33.78	Average
8	1.010	9.40	0.03	11.35	20.78	56.00	35.22	QP
9	1.619	9.40	0.04	-2.18	7.26	46.00	38.74	Average
10	1.619	9.40	0.04	8.80	18.24	56.00	37.76	QP
11	7.935	9.50	0.09	-4.73	4.86	50.00	45.14	Average
12	7.935	9.50	0.09	8.48	18.07	60.00	41.93	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+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.

4. RADIATED EMISSION MEASUREMENT

4.1. Test Equipment

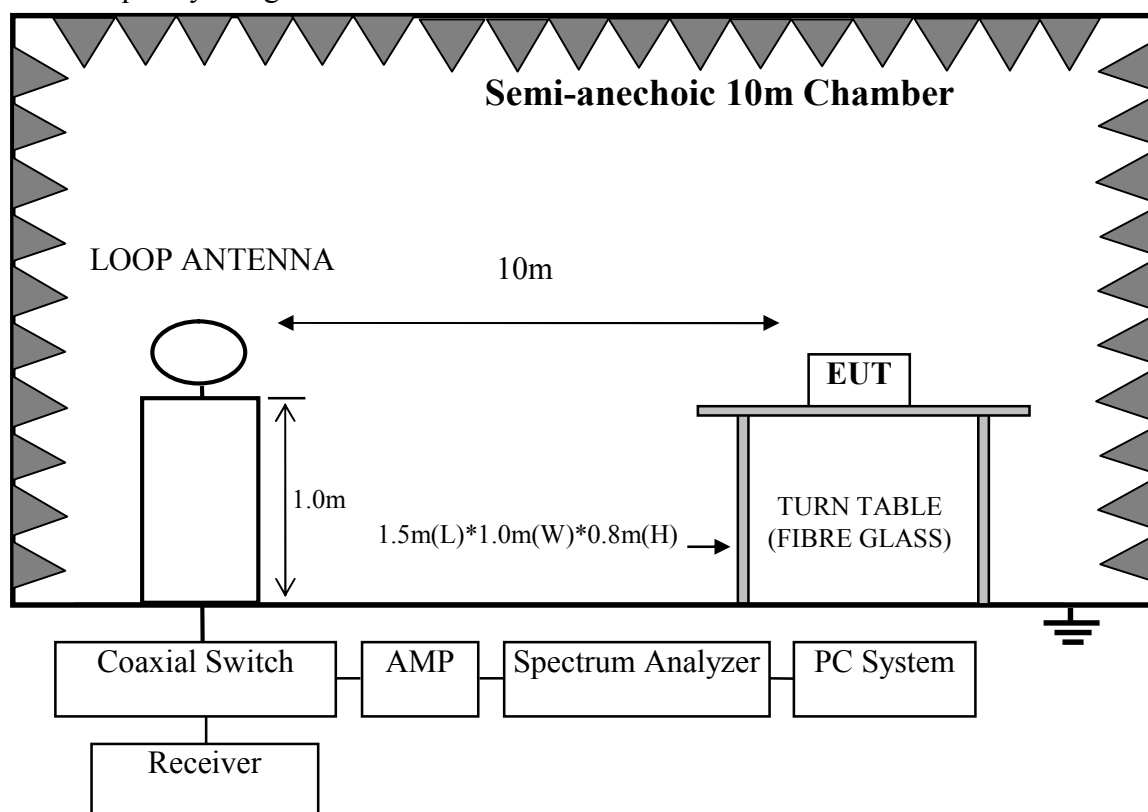
Frequency range: 9kHz-30MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	10m Chamber(NSA)	AUDIX	N/A	N/A	Apr.15,19	1 Year
2.	10m Chamber(SE)	AUDIX	N/A	N/A	Apr.15,18	3 Year
3.	Signal Analyzer	Rohde & Schwarz	FSV30	103670	Oct.14,18	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR3	101931	Apr.14,19	1 Year
5.	Amplifier	EMCI	EMC9135	980347	Jun.30,19	1 Year
6.	Loop Antenna	Chase	HLA6120	1062	Apr.18,19	1 Year
7.	RF Cable	SPUMA	CFD400NL-LW	No.4	Jun.30,19	1 Year
8.	Coaxial Switch	Anritsu	MP59B	6201397221	Apr.14,19	1 Year
9.	Coaxial Switch	Anritsu	MP59B	6201397220	Apr.14,19	1 Year
10.	Test Software	AUDIX	e3	6.100913a	N/A	N/A

Note: N/A means Not applicable.

4.2. Block Diagram of Test Setup

Frequency Range: 9kHz-30MHz



4.3. Radiated Emission Limit Standard:

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT μV/m
0.009 ~ 0.490	300	2400/F(kHz)
0.490 ~ 1.705	30	24000/F(kHz)
1.705 ~ 30	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960MHz	3	500

- Remark :
- (1) Emission level dBμV = 20 log Emission level μV/m
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
 - (4) 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.

4.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4.1. Dhyana (EUT)

Model Number : AVDH18JA01
Serial Number : N/A

4.5. Operating Condition of EUT

- 4.5.1. Setup the EUT as shown in Section 4.2.
- 4.5.2. Turn on the power of all equipments.
- 4.5.3. Let the EUT worked in test mode (Charging Mode) and tested it.

4.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 10 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

For frequency range below 30MHz the Loop antenna was used at 10m measurement distance with antenna heights of 1m and antenna loop front and side faced to the EUT.

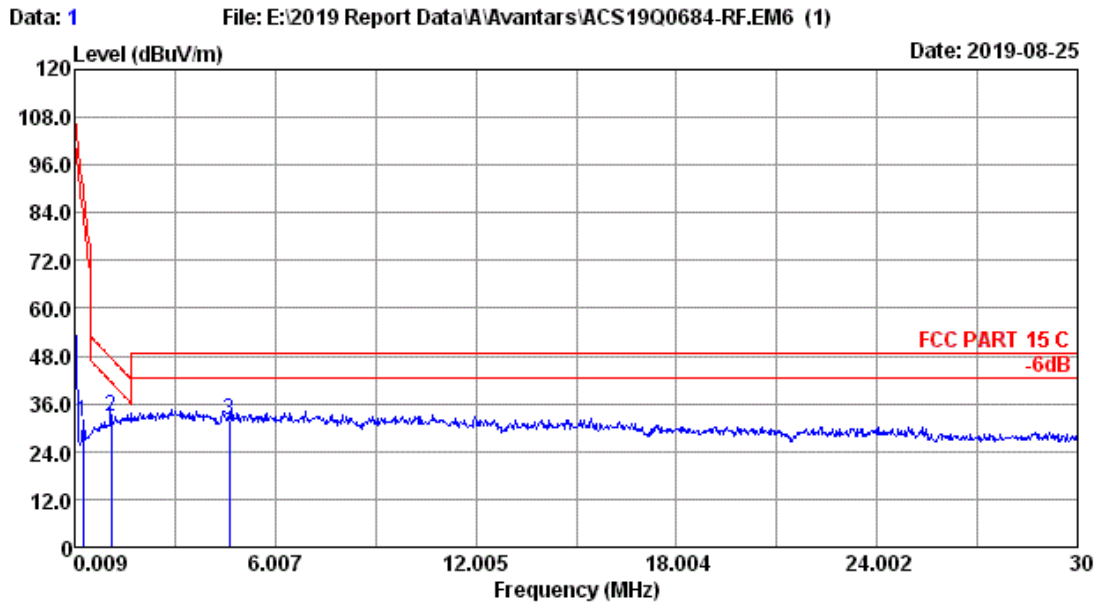
The axis of the antenna was rotated to maximize the emission. A CISPR quasi-peak detector is used for measurements below 30MHz and RBW/VBW is 9kHz/30kHz.

The limit 1.705MHz to 30MHz in clause 4.3 are specified at 30 meters, and measurements were made at 10 meters, the limit is translated to 10 meters by using a formula as follows:

$$\text{Limit}_{30\text{m}} = \text{Limit}_{10\text{m}} + 40\log(30\text{m}/10)$$

4.7. Radiated Emission Test Results

PASS.



Site no. : 10m Chamber Data no. : 1
 Dis. / Ant. : 10m 2019 HLA6120-10-E Ant. pol. :
 Limit : FCC PART 15C
 Env. / Ins. : 23.5°C/56% Engineer : Zero
 Power rating : DC 5V From PC Input AC 120V/60Hz
 EUT : Dhyana M/N:AVDH18JA01
 Test Mode : Charing Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	0.25	20.25	0.34	11.00	31.59	90.21	58.62	QP
2	1.09	19.78	0.34	12.50	32.62	47.54	14.92	QP
3	4.63	18.71	0.64	12.60	31.95	48.63	16.68	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

5. DEVIATION TO TEST SPECIFICATIONS

[NONE]

..... End of Report