Report No.: DDT-R21020104-1E2

Issued Date: Apr. 06, 2021

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	Dongguan Hax Electronic Co., Ltd.
Address	:	4/Floor, 4/Plant, Allmerit Intelligent Park, Tangxia, 523710, Dongguan, China
Equipment under Test	:	EAS SYSTEM
Model No.	:	EAS SYSTEM HAX3002
Trade Mark	:	/
FCC ID	:	2AZGZHAX3002
Manufacturer	:	Dongguan Hax Electronic Co., Ltd.
Address	:	4/Floor, 4/Plant, Allmerit Intelligent Park, Tangxia, 523710, Dongguan, China

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, **E-mail:** ddt@dgddt.com, **http:** //www.dgddt.com

REPORT

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Test Report Declare

Applicant	:	Dongguan Hax Electronic Co., Ltd.
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Equipment under Test	:	EAS SYSTEM
Model No.	:	EAS SYSTEM HAX3002
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Manufacturer	:	Dongguan Hax Electronic Co., Ltd.
Address	:	4/Floor, 4/Plant, Allmerit Intelligent Park, Tangxia, 523710, Dongguan, China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C

Test procedure used:

ANSI C63.10:2013

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd and in the configuration testedthe equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-R21020104-1E2		
Date of Receipt:	Feb. 01, 2021	**Date of Test:**	Feb. 01, 2021~ Apr. 06, 2021

Prepared By:

Ella Gong

Ella Gong/Engineer

Approved By:

DONGGUAN DONGDIAN TESTING SERVICE CO., LTD. APPROVED

Damon Hu

Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Apr. 06, 2021	

1 Summary of Test Results

Description of Test Item	Standard	Results
20dB Bandwidth	FCC Part 15: 15.215	PASS
6dB Bandwidth	FCC Part 15: 15.223	PASS
Radiated Emission	FCC Part 15: 15.209&15.223	PASS
Power Line Conducted Emissions	FCC Part 15: 15.207	PASS
Antenna requirement	FCC Part 15: 15.203	PASS

2 General Test Information

2.1. Description of EUT

EUT* Name	:	EAS SYSTEM
Model Number	:	EAS SYSTEM HAX3002
PCB Model	:	HAX4200
EUT function description	:	Please reference user manual of this device
Power supply	:	INPUT: AC 100-240v ~ 50-60Hz, 2.5A OUTPUT: 24V 3.34V
Operation frequency	:	8.2MHz
Antenna Type	:	Inductive loop coil antenna
Sample Type	:	Series production

Note: EUT is the ab. of equipment under test.

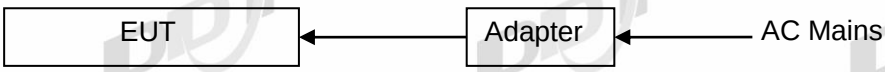
2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Serial No.	Other
/	/	/	/	/

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number or Type	EMC Compliance	Other
AC Adapter	N/A	N/A	N/A	INPUT: AC 100-240v ~ 50-60Hz, 2.5A OUTPUT: 24V⎓3.34V

2.4. Block diagram of EUT configuration for test



2.5. Deviations of test standard

No Deviation.

2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25℃
Humidity range:	40-75%
Pressure range:	86-106kPa

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com

CNAS Accreditation No. L6451; A2LA Accreditation No. 3870.01

FCC Designation Number: CN1182; FCC Test Firm Registration Number: 540522

Industry Canada site registration number: 10288A

2.8. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	3.32dB (150kHz-30MHz)
	3.72dB (9kHz-150kHz)
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz to 18GHz)	4.10dB(1-6GHz)
	4.40dB (6GHz-18GHz)
Bandwidth	1.1%
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

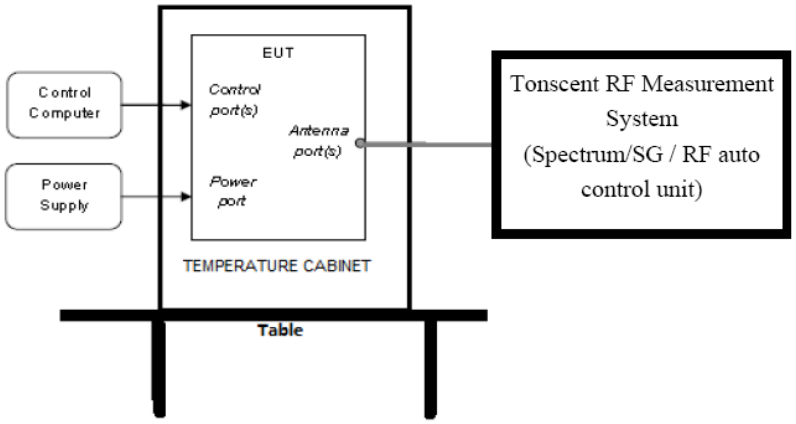
3 Equipment used during test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☐**RF Connected Test (Tonscend RF Measurement System 1#)**					
Spectrum analyzer	R&S	FSU26	101272	Jul. 01, 2020	1 Year
Spectrum analyzer	Agilent	N9020D	MY49100362	Sep. 28, 2020	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jul. 01, 2020	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Sep. 24, 2020	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180737	Jul. 01, 2020	1 Year
Power Sensor	Agilent	U2021XA	MY55150010	Jul. 01, 2020	1 Year
Power Sensor	Agilent	U2021XA	MY55150011	Jul. 01, 2020	1 Year
DC Power Source	MATRIS	MPS-3005L-3	D813058W	Apr. 25, 2020	1 Year
RF Cable	Micable	C10-01-01-1	100309	Sep. 28, 2020	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Jul. 01, 2020	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.7	N/A	N/A
☒**RF Connected Test (Tonscend RF Measurement System 2#)**					
Spectrum analyzer	R&S	FSU26	200071	Sep. 25, 2020	1 Year
Spectrum analyzer	Agilent	N9020D	MY49100362	Sep. 28, 2020	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jul. 01, 2020	1 Year
Vector Signal Generator	Agilent	N5182A	MY19060405	Jul. 01, 2020	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180912	Jul. 01, 2020	1 Year
RF Control Unit	Tonsend	JS0806-2	DDT-ZC01449	Jul. 01, 2020	1 Year
DC Power Source	MATRIS	MPS-3005L-3	D813058W	Apr. 25, 2020	1 Year
RF Cable	Micable	C10-01-01-1	100309	Sep. 28, 2020	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Jul. 01, 2020	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.7	N/A	N/A
☐**Radiation 1#chamber**					
EMI Test Receiver	R&S	ESU8	100316	Sep. 24, 2020	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jul. 01, 2020	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Nov. 13, 2020	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Nov. 18, 2020	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Nov. 13, 2020	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Apr. 11, 2020	1 Year
Pre-amplifier	A.H.	PAM-0118	360	Sep. 28, 2020	1 Year

RF Cable	HUBSER	CP-X2+ CP-X1	W11.03+ W12.02	Sep. 24, 2020	1 Year
RF Cable	N/A	5m+6m+1m	06270619	Sep. 30, 2020	1 Year
MI Cable	HUBSER	C10-01-01-1M	1091629	Sep. 30, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
☒**Radiation 2#chamber**					
EMI Test Receiver	R&S	ESCI	101364	Sep. 28, 2020	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jul. 01, 2020	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	9163-994	Nov. 13, 2020	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Nov. 18, 2020	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120	02108	Jul. 11, 2020	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Apr. 11, 2020	1 Year
Pre-amplifier	TERA-MW	TRLA-0040 G35	1013 03	Sep. 28, 2020	1 Year
RF Cable	N/A	14+1.5m	06270619	Sep. 28, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
☒**Power Line Conducted Emissions Test 1#**					
EMI Test Receiver	R&S	ESU8	100316	Sep. 24, 2020	1 Year
LISN 1	R&S	ENV216	101109	Sep. 28, 2020	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 28, 2020	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 24, 2020	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 24, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
☐**Power Line Conducted Emissions Test 2#**					
Test Receiver	R&S	ESPI	101761	Sep. 24, 2020	1 Year
LISN 1	R&S	ENV216	101170	Sep. 28, 2020	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 28, 2020	1 Year
Pulse Limiter	R&S	KH43101	43101180156 8-12#	Jul. 01, 2020	1 Year
CE Cable 2	HUBSER	N/A	W11.02	Sep. 24, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

4 20dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

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, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.3. Test Procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30 kHz RBW and 100 kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.4. Test Result

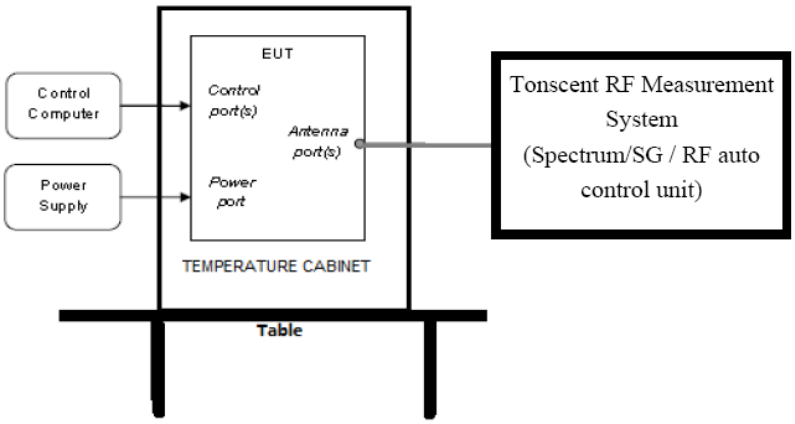
Freq. (MHz)	20dB bandwidth Result (kHz)	Conclusion
8.2	912.1	PASS

4.5. Original test data

Graphs


5 6dB Bandwidth

5.1. Block diagram of test setup



5.2. Limits

15.223(a)The field strength of any emission within the band 1.705-10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters.

However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts/meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level. For the purposes of this section, bandwidth is determined at the points 6 dB down from the modulated carrier. The emission limits in this paragraph are based on measurement instrumentation employing an average detector. The provisions in §15.35(b) for limiting peak emissions apply.

5.3. Test Procedure

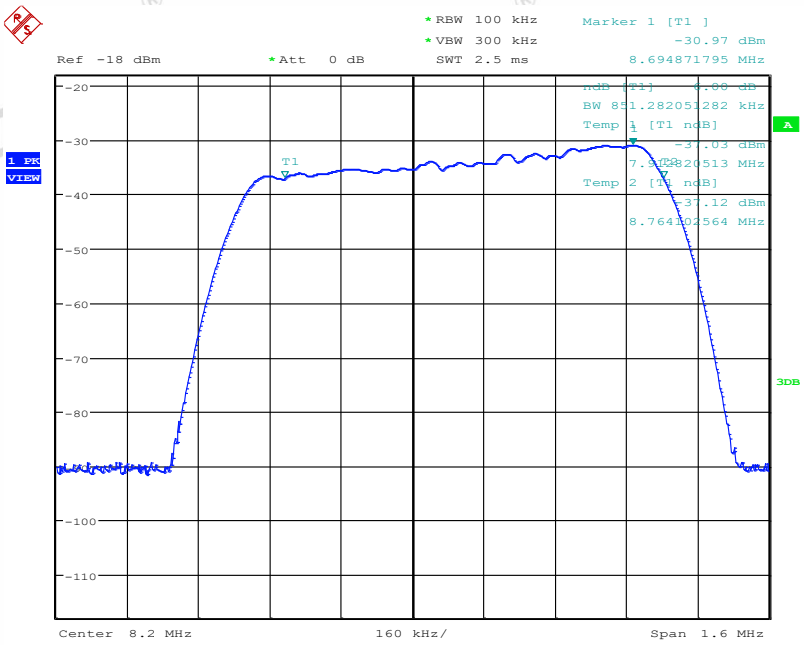
(3) Connect EUT's antenna output to spectrum analyzer by RF cable.

(4) The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 300 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

5.4. Test Result

Freq. (MHz)	6 dB bandwidth Result (kHz)	10% of the center frequency(kHz)	Conclusion
8.2	851.28	⩾820	PASS

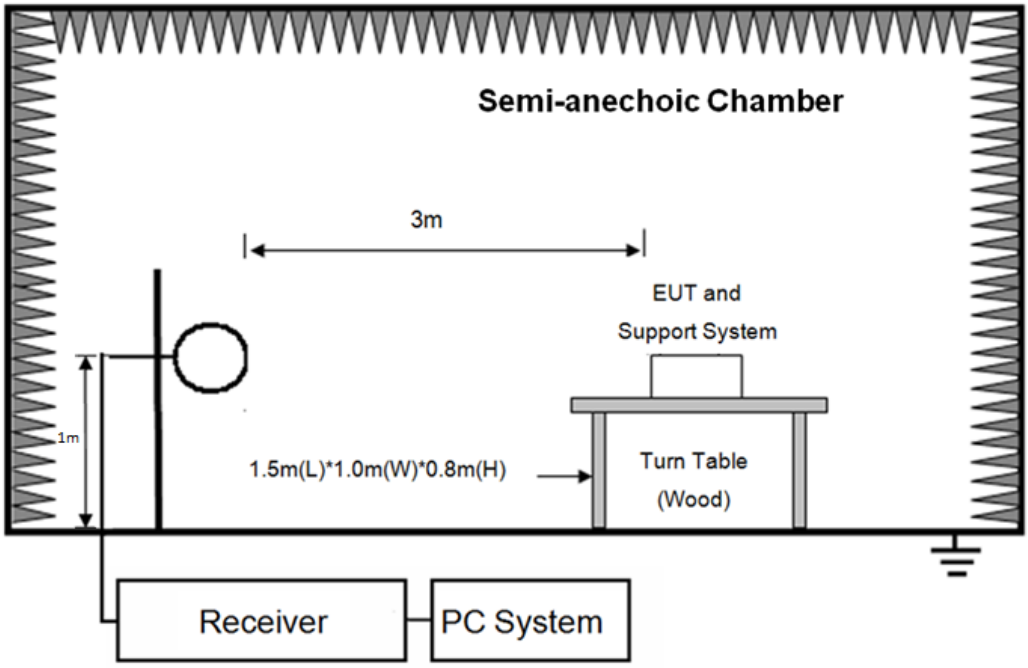
5.5. Original test data

Graphs


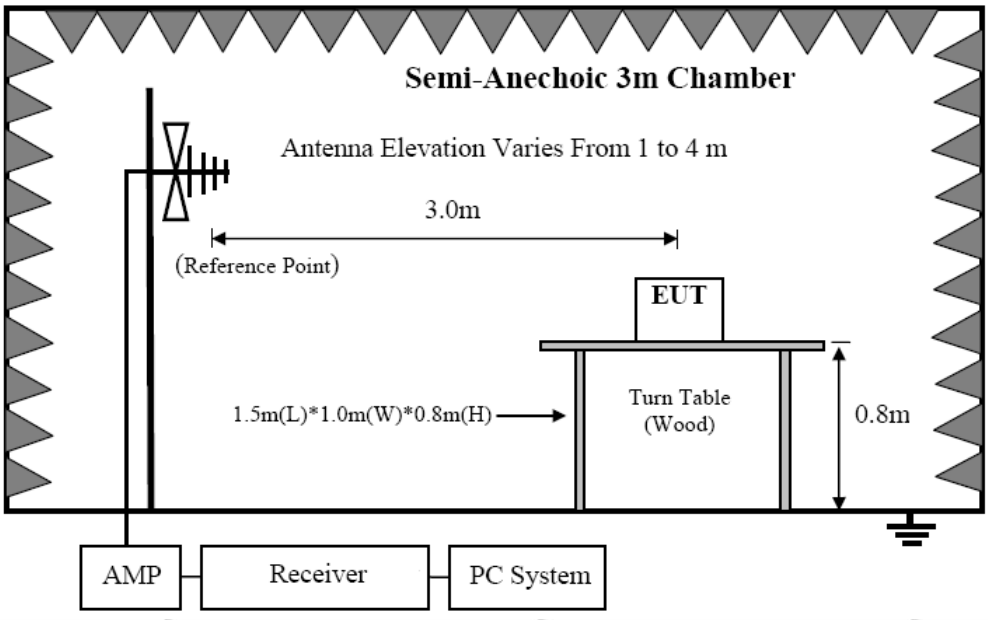
6 Radiated Emission

6.1. Block diagram of test setup

In 3m Anechoic Chamber Test Setup Diagram for 9kHz~30MHz



In 3m Anechoic Chamber Test Setup Diagram for 30MHz~1GHz



6.2. Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

Note: (1)The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000MHz.Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$Limit_{3m}(dBuV/m) = Limit_{300m}(dBuV/m) + 40Log(300m/3m) = Limit_{300m}(dBuV/m) + 80$
$Limit_{3m}(dBuV/m) = Limit_{30m}(dBuV/m) + 40Log(30m/3m) = Limit_{30m}(dBuV/m) + 40$

6.3. Test Procedure

(1) EUT was placed on a non-metallic table, 150 cm above the ground plane inside a semi-anechoic chamber.

(2) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used	Test antenna distance
9kHz-30MHz	Active Loop antenna	3m
30MHz-1GHz	Trilog Broadband Antenna	3m

According ANSI C63.10:2013 clause 6.4.4.2 and 6,5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9kHz to 1GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1m to 4m(Except loop antenna, it's

fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions. Spectrum frequency from 9kHz to 1GHz (tenth harmonic of fundamental frequency) was investigated.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(5) The emissions from 9kHz to 1GHz were measured based on CISPR QP detector except for the frequency bands 9-90kHz, 110-490kHz, for emissions from 9kHz-90kHz,110kHz-490kHz and above 1GHz were measured based on average detector, for emissions above 1GHz, peak emissions also be measured and need comply with Peak limit.

(6) The emissions from 9kHz to 1GHz, QP or average values were measured with EMI receiver with below RBW.

Frequency band	RBW
9kHz-150kHz	200Hz
150kHz-30MHz	9kHz
30MHz-1GHz	120kHz

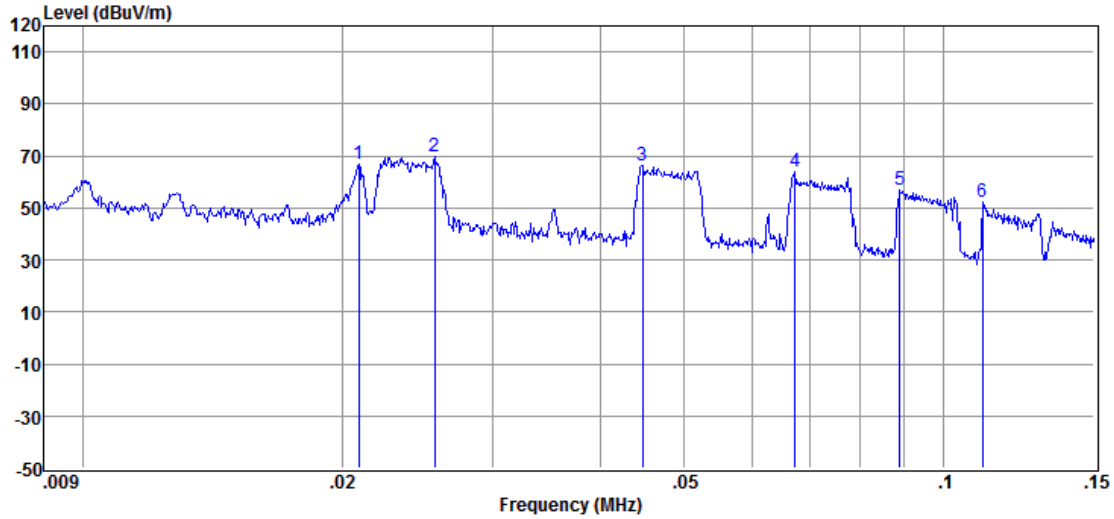
6.4. Test result

PASS. (See below detailed test result)

Below 30MHz:

TR-4-E-009 Radiated Emission Test Result

Test Site	:	DDT 3m Chamber 2#	D:\2021 RE2# Test Data\menjin\FCC 9K-30M .EM6		
Test Date	:	2021-03-17	**Tested By**	:	Jacky
EUT	:	EAS SYSTEM	**Model Number**	:	EAS SYSTEM HAX3002
Power Supply	:	AC 120V/60Hz	**Test Mode**	:	Working mode
Condition	:	Temp:24.5°C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	:	2019 FMZB1519/3m/VERTICAL
Memo	:				

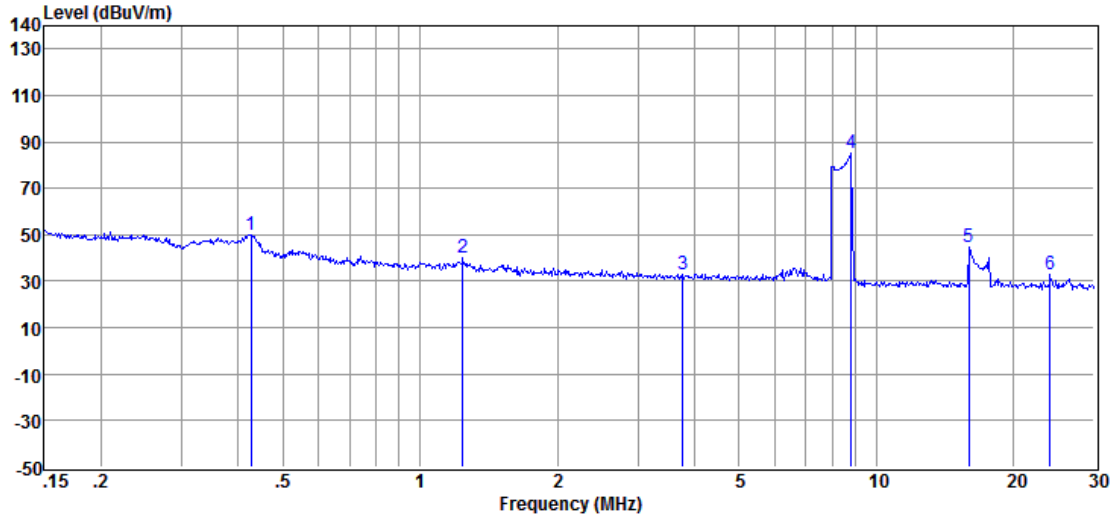


Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	AMP Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	0.02	42.76	21.10	0.00	2.85	66.71	121.58	-54.87	Peak	VERTICAL
2	0.03	45.91	21.07	0.00	2.87	69.85	118.06	-48.21	Peak	VERTICAL
3	0.04	42.51	21.01	0.00	2.92	66.44	115.56	-49.12	Peak	VERTICAL
4	0.07	39.73	21.00	0.00	2.96	63.69	110.70	-47.01	Peak	VERTICAL
5	0.09	33.14	21.00	0.00	2.99	57.13	108.52	-51.39	Peak	VERTICAL
6	0.11	27.97	20.98	0.00	3.01	51.96	106.77	-54.81	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - AMP Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: 9k-150kHz, RBW: 200Hz; 150k-30Mhz, RBW: 9kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	:	DDT 3m Chamber 2#	D:\2021 RE2# Test Data\menjin\FCC 9K-30M .EM6		
Test Date	:	2021-03-17	**Tested By**	:	Jacky
EUT	:	EAS SYSTEM	**Model Number**	:	EAS SYSTEM HAX3002
Power Supply	:	AC 120V/60Hz	**Test Mode**	:	Working mode
Condition	:	Temp:24.5°C,Humi:55%,Press:101.4kPa	**Antenna/Distance**	:	2019 FMZB1519/3m/VERTICAL
Memo	:				



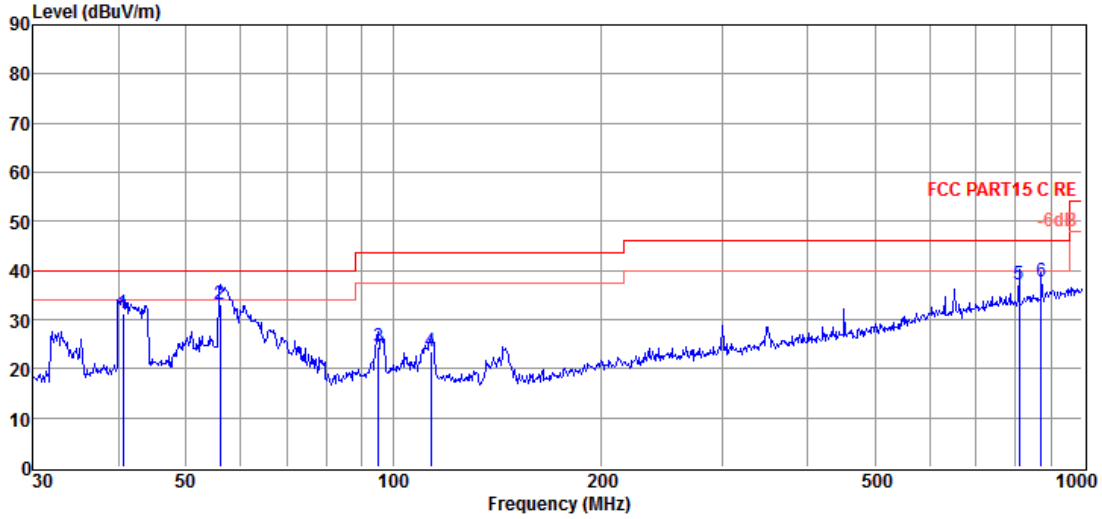
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	AMP Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	0.43	26.15	20.98	0.00	3.08	50.21	94.93	-44.72	Peak	VERTICAL
2	1.24	15.61	21.04	0.00	3.14	39.79	65.73	-25.94	Peak	VERTICAL
3	3.76	9.10	20.76	0.00	3.22	33.08	69.54	-36.46	Peak	VERTICAL
4	8.82	61.27	20.70	0.00	3.32	85.29	100	-14.71	Peak	VERTICAL
5	8.82	74.68	20.70	0.00	3.32	77.86	80	-2.14	Average	VERTICAL
5	15.97	20.62	20.74	0.00	3.43	44.79	69.54	-24.75	Peak	VERTICAL
6	24.02	8.63	20.65	0.00	3.53	32.81	69.54	-36.73	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - AMP Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: 9k-150kHz, RBW: 200Hz; 150k-30Mhz, RBW: 9kHz, Sweep time: auto.

Above 30MHz:

TR-4-E-009 Radiated Emission Test Result

Test Site	:	DDT 3m Chamber 2#	D:\2021 RE2# Test Data\menjin\FCC BELOW1G.EM6		
Test Date	:	2021-03-17	**Tested By**	:	Kennys
EUT	:	EAS SYSTEM	**Model Number**	:	EAS SYSTEM HAX3002
Power Supply	:	AC 120V/60Hz	**Test Mode**	:	Working mode
Condition	:	Temp:24.5°C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	:	2020 VULB 9163 2#/3m/VERTICAL
Memo					

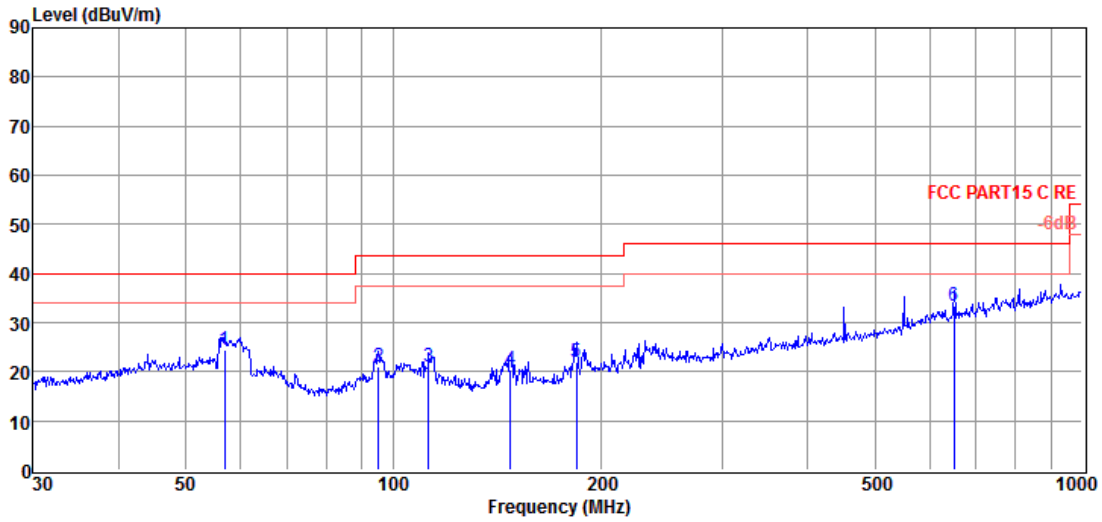


Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	40.56	15.79	11.62	3.77	31.18	40.00	-8.82	QP	VERTICAL
2	56.00	17.16	12.00	3.92	33.08	40.00	-6.92	QP	VERTICAL
3	95.09	10.30	9.72	4.37	24.39	43.50	-19.11	QP	VERTICAL
4	113.32	8.97	10.02	4.51	23.50	43.50	-20.00	QP	VERTICAL
5	810.27	8.74	20.98	7.39	37.11	46.00	-8.89	QP	VERTICAL
6	872.18	8.51	21.57	7.61	37.69	46.00	-8.31	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	:	DDT 3m Chamber 2#	D:\2021 RE2# Test Data\menjin\FCC BELOW1G.EM6		
Test Date	:	2021-03-17	**Tested By**	:	Kennys
EUT	:	EAS SYSTEM	**Model Number**	:	EAS SYSTEM HAX3002
Power Supply	:	AC 120V/60Hz	**Test Mode**	:	Working mode
Condition	:	Temp:24.5°C,Humi:55%,Press:100.1kPa	**Antenna/Distance**	:	2020 VULB 9163 2#/3m/HORIZONTAL
Memo	:				

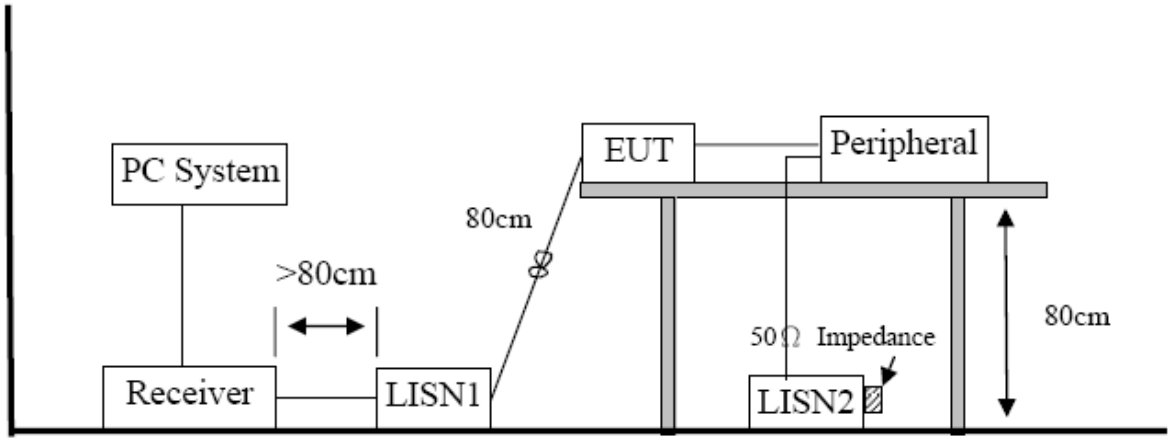


Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	56.99	8.62	11.80	3.93	24.35	40.00	-15.65	QP	HORIZONTAL
2	95.09	6.91	9.72	4.37	21.00	43.50	-22.50	QP	HORIZONTAL
3	112.52	6.28	10.16	4.50	20.94	43.50	-22.56	QP	HORIZONTAL
4	147.92	7.89	7.76	4.74	20.39	43.50	-23.11	QP	HORIZONTAL
5	184.49	7.37	9.70	4.96	22.03	43.50	-21.47	QP	HORIZONTAL
6	651.94	7.31	19.32	6.91	33.54	46.00	-12.46	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

7 Power Line Conducted Emission

7.1. Block diagram of test setup



7.2. Power Line Conducted Emission Limits

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

Note 1: * Decreasing linearly with logarithm of frequency.

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

7.3. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

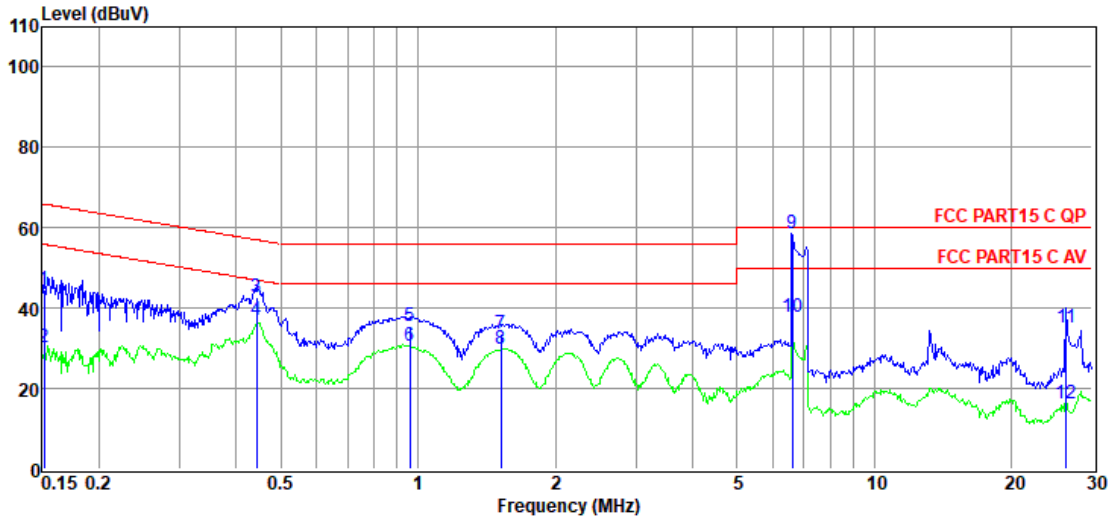
7.4. Test Result

PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.
Note2: "-----" means Peak detection; "-----" means Average detection.
Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/60Hz, recorded worse case (AC 120V/60Hz).

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 5# Shield Room	D:\2021 report data\Q21020104-1E\20210222 CE.EM6	
Test Date	: 2021-03-10	**Tested By**	: Caesar Peng
EUT	: EAS SYSTEM	**Model Number**	: EAS SYSTEM HAX3002
Power Supply	: AC 120V/60Hz	**Test Mode**	: Working mode
Condition	: Temp:24.5°C,Humi:55.5%,Press:100.1kPa	**LISN**	: 2020 ENV 216 2#/LINE
Memo	:		



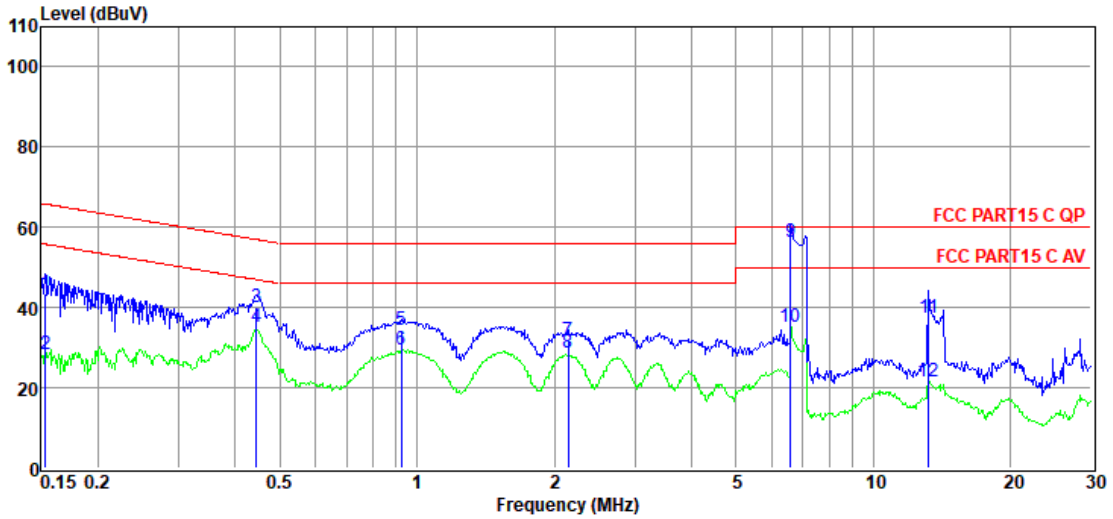
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	25.21	9.41	0.02	10.01	44.65	65.91	-21.26	QP	LINE
2	0.15	10.70	9.41	0.02	10.01	30.14	55.91	-25.77	Average	LINE
3	0.44	23.37	9.45	0.02	10.01	42.85	57.02	-14.17	QP	LINE
4	0.44	17.58	9.45	0.02	10.01	37.06	47.02	-9.96	Average	LINE
5	0.96	15.92	9.43	0.03	10.01	35.39	56.00	-20.61	QP	LINE
6	0.96	11.21	9.43	0.03	10.01	30.68	46.00	-15.32	Average	LINE
7	1.52	14.24	9.43	0.04	10.01	33.72	56.00	-22.28	QP	LINE
8	1.52	10.37	9.43	0.04	10.01	29.85	46.00	-16.15	Average	LINE
9	6.60	39.14	9.54	0.09	10.01	58.78	60.00	-1.22	QP	LINE
10	6.60	18.19	9.54	0.09	10.01	37.83	50.00	-12.17	Average	LINE
11	26.28	15.52	9.38	0.18	10.03	35.11	60.00	-24.89	QP	LINE
12	26.28	-3.31	9.38	0.18	10.03	16.28	50.00	-33.72	Average	LINE

Note:

1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 5# Shield Room	D:\2021 report data\Q21020104-1E\20210222 CE.EM6	
Test Date	: 2021-03-10	**Tested By**	: Caesar Peng
EUT	: EAS SYSTEM	**Model Number**	: EAS SYSTEM HAX3002
Power Supply	: AC 120V/60Hz	**Test Mode**	: Working mode
Condition	: Temp:24.5°C,Humi:55.5%,Press:100.1kPa	**LISN**	: 2020 ENV 216 2#/NEUTRAL
Memo	:		



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBµV)	(dB)	(dB)	(dB)	(dBµV)	(dBµV)	(dB)		
1	0.15	24.06	9.38	0.02	10.01	43.47	65.82	-22.35	QP	NEUTRAL
2	0.15	9.03	9.38	0.02	10.01	28.44	55.82	-27.38	Average	NEUTRAL
3	0.44	20.83	9.40	0.02	10.01	40.26	56.98	-16.72	QP	NEUTRAL
4	0.44	15.58	9.40	0.02	10.01	35.01	46.98	-11.97	Average	NEUTRAL
5	0.92	15.13	9.41	0.03	10.01	34.58	56.00	-21.42	QP	NEUTRAL
6	0.92	9.92	9.41	0.03	10.01	29.37	46.00	-16.63	Average	NEUTRAL
7	2.14	12.40	9.41	0.05	10.01	31.87	56.00	-24.13	QP	NEUTRAL
8	2.14	9.18	9.41	0.05	10.01	28.65	46.00	-17.35	Average	NEUTRAL
9	6.59	36.85	9.52	0.09	10.01	56.47	60.00	-3.53	QP	NEUTRAL
10	6.59	15.56	9.52	0.09	10.01	35.18	50.00	-14.82	Average	NEUTRAL
11	13.20	17.68	9.63	0.13	10.02	37.46	60.00	-22.54	QP	NEUTRAL
12	13.20	1.79	9.63	0.13	10.02	21.57	50.00	-28.43	Average	NEUTRAL

Note:

1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

8 Antenna Requirements

For intentional device, according to FCC 47 CFR Section 15.203, An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

END OF REPORT