

FCC TEST REPORT
For
GIANT ALARM SYSTEM CO., LTD
Touch Switch

Test Model: JJ-TSAB-03

Additional Model No. : See more details at section 2.1

Prepared for	: GIANT ALARM SYSTEM CO., LTD
Address	: No.5 Mansion, Jingpin Park, Huinan Industry Zone, Quanzhou, China
Prepared by	: Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample	: October 28, 2015
Number of tested samples	: 1
Sample number	: 15102801
Date of Test	: October 28, 2015~May 12, 2016
Date of Report	: May 12, 2016

FCC TEST REPORT
FCC CFR 47 PART 15 Subpart B: 2015**Report Reference No. : LCS1510281478E**

Date Of Issue..... : May 12, 2016

Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.Address..... : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,
Bao'an District, Shenzhen, Guangdong, ChinaTesting Location/ Procedure : Full application of Harmonised standards ☒Partial application of Harmonised standards ☐Other standard testing method ☐**Applicant's Name..... : GIANT ALARM SYSTEM CO., LTD**Address..... : No.5 Mansion, Jingpin Park, Huinan Industry Zone, Quanzhou,
China**Test Specification**

Standard : FCC CFR 47 PART 15 Subpart B:2015, ANSI C63.4: 2014

Test Report Form No. : LCSEMC-1.0

TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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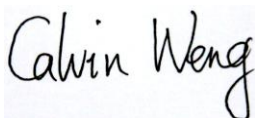
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Test Item Description..... : Touch Switch

Trade Mark..... : N/A

Test Model : JJ-TSAB-03

Ratings : AC 110-250V, 50/60Hz

Result : Positive**Compiled by:**

Calvin Weng/ Administrators

Supervised by:

Glin Lu/ Technique principal

Approved by:

Gavin Liang/ Manager

FCC TEST REPORT

Test Report No. : LCS1510281478EMay 12, 2016

Date of issue

Test Model..... : JJ-TSAB-03

EUT..... : Touch Switch

Applicant..... : GIANT ALARM SYSTEM CO., LTDAddress..... : No.5 Mansion, Jingpin Park, Huinan Industry Zone, Quanzhou,
China

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Factory..... : GIANT ALARM SYSTEM CO., LTDAddress..... : No.5 Mansion, Jingpin Park, Huinan Industry Zone, Quanzhou,
China

Telephone..... : /

Fax..... : /

Test Result**Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
00	2016-05-12	Initial Issue	Gavin Liang

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1. SUMMARY OF STANDARDS AND RESULTS

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

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC CFR 47 PART 15 Subpart B: 2015	Class B	PASS
Radiated disturbance	FCC CFR 47 PART 15 Subpart B: 2015	Class B	PASS

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	: Touch Switch
Model Number	: JJ-TS-01, JJ-TS-02, JJ-TS-03, JJ-TSA-01, JJ-TSA-02, JJ-TSA-03, JJ-TSB-01, JJ-TSB-02, JJ-TSB-03, JJ-TSAB-01, JJ-TSAB-02, JJ-TSAB-03, JJ-TSC-01, JJ-TSC-02, JJ-TSC-03, JJ-US-01, JJ-US-02, JJ-US-03, JJ-USA-01, JJ-USA-02, JJ-USA-03, JJ-USB-01, JJ-USB-02, JJ-USB-03, JJ-USAB-01, JJ-USAB-02, JJ-USAB-03, JJ-USC-01, JJ-USC-02, JJ-USC-03
Model Declaration	: PCB board, structure and internal of the related model(s) are the same, So no additional models were tested.
Test Model	: JJ-TSAB-03
Hardware Version	: V1.0
Software Version	: V1.0
Power Supply	: AC 110-250V, 50/60Hz
Receiving Frequency	: 433.92MHz
Receiving Signal Type	: ASK
Receiving Antenna	: PCB Antenna

2.2. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
--	--	--	--	--

2.3. External I/O

I/O Port Description	Quantity	Cable
Power Input Interface	1	N/A

2.4. Description of Test Facility

CNAS Registration Number. is L4595.

FCC Registration Number. is 899208.

Industry Canada Registration Number. is 9642A-1.

VCCI Registration Number. is C-4260 and R-3804.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001

2.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.6. List Of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal Date	Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	June 18,2015	June 17,2016
Signal analyzer	Agilent	4448A(External mixers to 40GHz)	US44300469	9kHz~40GHz	July 16,2015	July 15,2016
LISN	SCHWARZBECK	LSK 8127	N/A	9KHz~30MHz	June 18,2015	June 17,2016
ISN	MESS Tec	NNB-2/16Z	99079	9KHz-30MHz	June 18,2015	June 17,2016
LISN	EMCO	3819/2NM	9703-1839	KHz-30MHz	June 18,2015	June 17,2016
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9KHz-30MHz	June 18,2015	June 17,2016
ISN	SCHAFFNER	ISN ST08	21653	9KHz-30MHz	June 18,2015	June 17,2016
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	3CH03-HY	30M-1GHz 3m	June 18,2015	June 17,2016
Amplifier	SCHAFFNER	COA9231A	18667	9kHz-2GHz	June 18,2015	June 17,2016
Amplifier	Agilent	8449B	3008A02120	1GHz-26.5GHz	July 16,2015	July 15,2016
Amplifier	MITEQ	AMF-6F-260400	9121372	6.5GHz-40GHz	July 16,2015	July 15,2016
Spectrum Analyzer	Agilent	E4407B	MY41440292	9k-26.5GHz	July 16,2015	July 15,2016
Loop Antenna	R&S	HFH2-Z2	860004/001	9k-30MHz	June 18,2015	June 17,2016
By-log Antenna	SCHWARZBECK	VULB9163	9163-470	30MHz-1GHz	June 10,2015	June 09,2016
Horn Antenna	EMCO	3115	6741	1GHz-18GHz	June 10,2015	June 09,2016
Horn Antenna	SCHWARZBECK	BHA9170	BBHA9170154	15GHz-40GHz	June 10,2015	June 09,2016
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz-1GHz	June 18,2015	June 17,2016
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz-40GHz	June 18,2015	June 17,2016
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	June 18,2015	June 17,2016
RF CABLE-2m	JYE Bao	RG142	CB035-2m	20MHz-1GHz	June 18,2015	June 17,2016

Note: All equipment through GRGT EST calibration

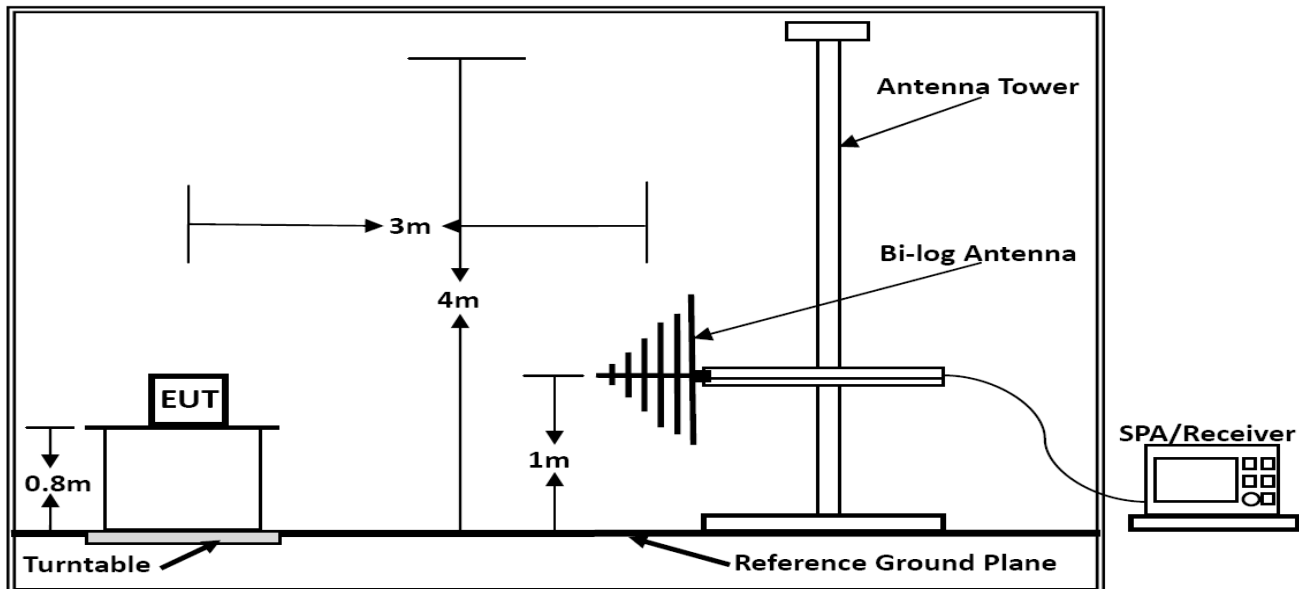
2.7. Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	3.10dB	(1)
		30MHz~200MHz	2.96dB	(1)
		200MHz~1000MHz	3.10dB	(1)
		1GHz~26.5GHz	3.80dB	(1)
		26.5GHz~40GHz	3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	1.63dB	(1)
Power disturbance	:	30MHz~300MHz	1.60dB	(1)

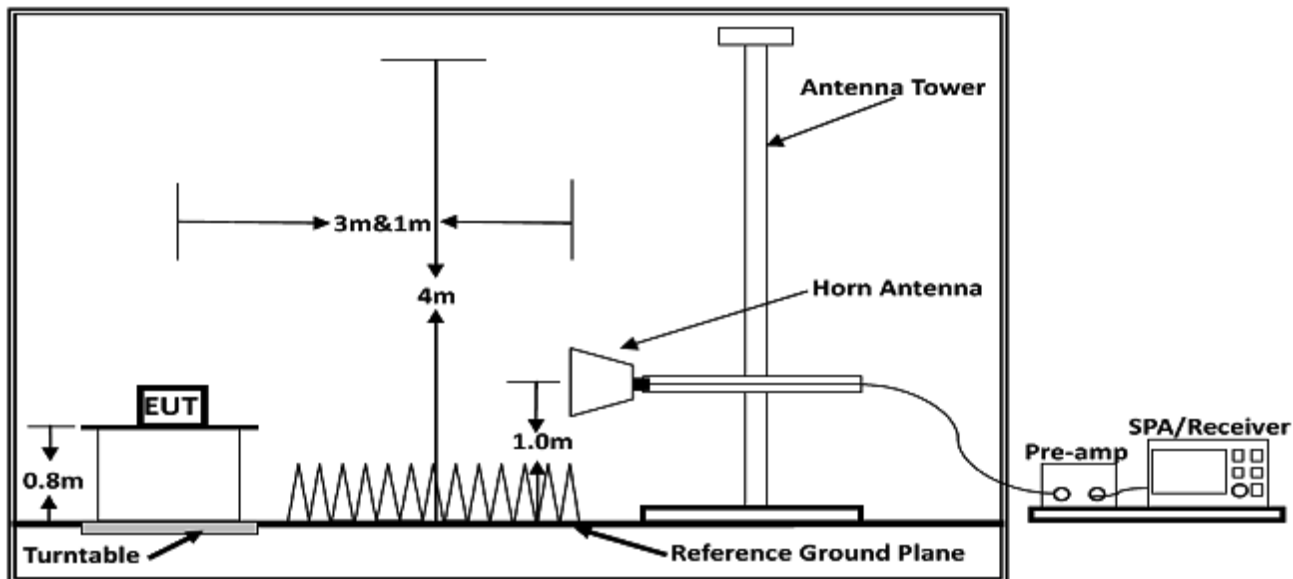
(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. RADIATED EMISSION MEASUREMENT

3.1. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

3.2. Radiated Emission Limits (Class B)

Limits for radiated disturbance Below 1GHz			
Frequency MHz	Distance Meters	Field Strengths Limit	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0

Remark : (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$

(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

Limits for radiated disturbance Above 1GHz			
Frequency (MHz)	Distance (Meters)	Field Strengths Limit	
		Average Limit ($\text{dB}\mu\text{V/m}$)	Peak Limit ($\text{dB}\mu\text{V/m}$)
1000-10 Harmonics	3	54	74

Note: The lower limit applies at the transition frequency.

3.3. Operating Condition of EUT

(1) Setup the EUT as shown in Section 3.1.

(2) Let the EUT work in test mode (Receiving Mode) and measure it.

3.4. Test Procedure

1) Configure the EUT according to ANSI C63.4:2014. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.

2) Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.

3) The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.

4) For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading

5) Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

6) For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.

7) When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be

determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

8) If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.

9) For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

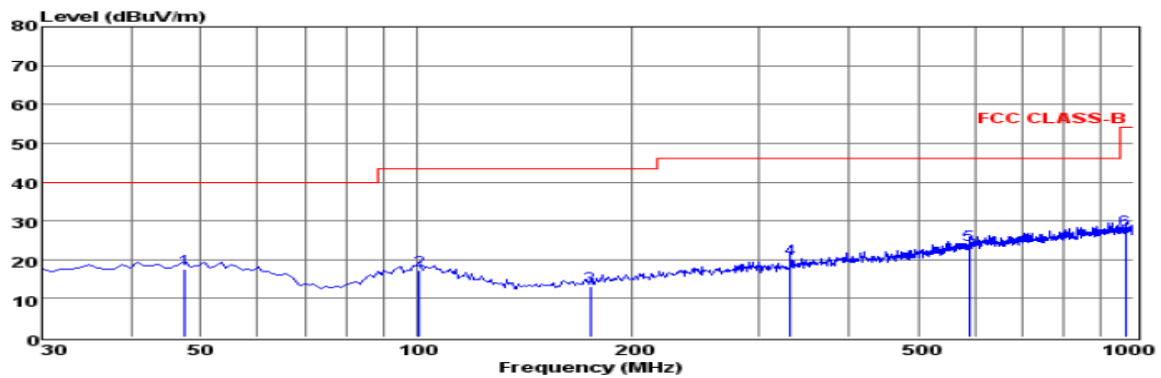
10) In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.

3.5. Test Results

PASS.

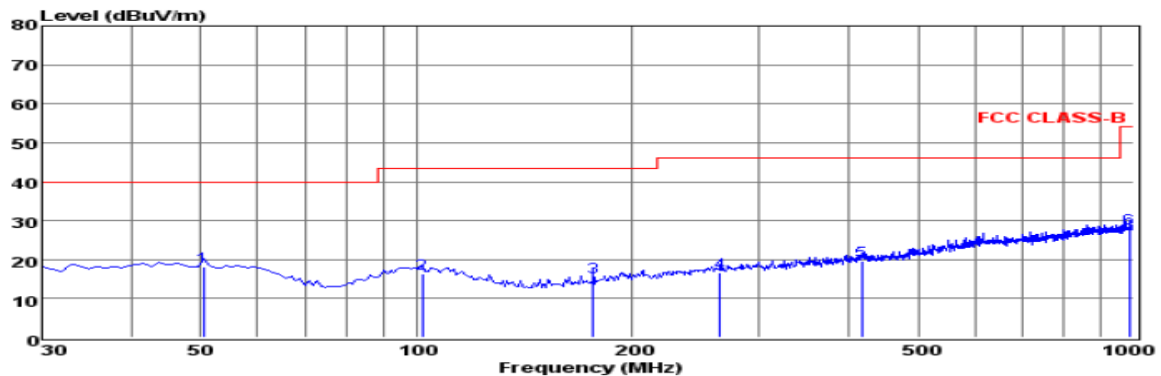
The test data please refer to following page, only the worst test data was recorded.

Below 1GHz:

Env./Ins: 24°C/56%
 EUT: Touch Switch
 M/N: JJ-TSAB-03
 Power Rating: AC 120V/60Hz
 Test Mode: ON
 Operator: Leo
 Memo: RX
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	47.46	3.82	0.35	13.40	17.57	40.00	-22.43	QP
2	100.81	3.52	0.60	13.09	17.21	43.50	-26.29	QP
3	174.53	3.14	0.73	9.29	13.16	43.50	-30.34	QP
4	331.67	5.24	1.11	13.79	20.14	46.00	-25.86	QP
5	589.69	4.19	1.40	18.26	23.85	46.00	-22.15	QP
6	974.78	4.16	1.85	21.58	27.59	54.00	-26.41	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported



Env./Ins: 24°C/56%
 EUT: Touch Switch
 M/N: JJ-TSAB-03
 Power Rating: AC 120V/60Hz
 Test Mode: ON
 Operator: Leo
 Memo: RX
 pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	50.37	4.44	0.54	13.23	18.21	40.00	-21.79	QP
2	101.78	2.82	0.60	13.00	16.42	43.50	-27.08	QP
3	176.47	5.44	0.73	9.43	15.60	43.50	-27.90	QP
4	264.74	3.54	1.03	12.20	16.77	46.00	-29.23	QP
5	418.00	2.93	1.32	15.43	19.68	46.00	-26.32	QP
6	985.45	4.30	1.97	21.65	27.92	54.00	-26.08	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported

Above 1GHz:

Note: Only recorded the worst test result for the worst test case(Input AC 120V/60Hz).

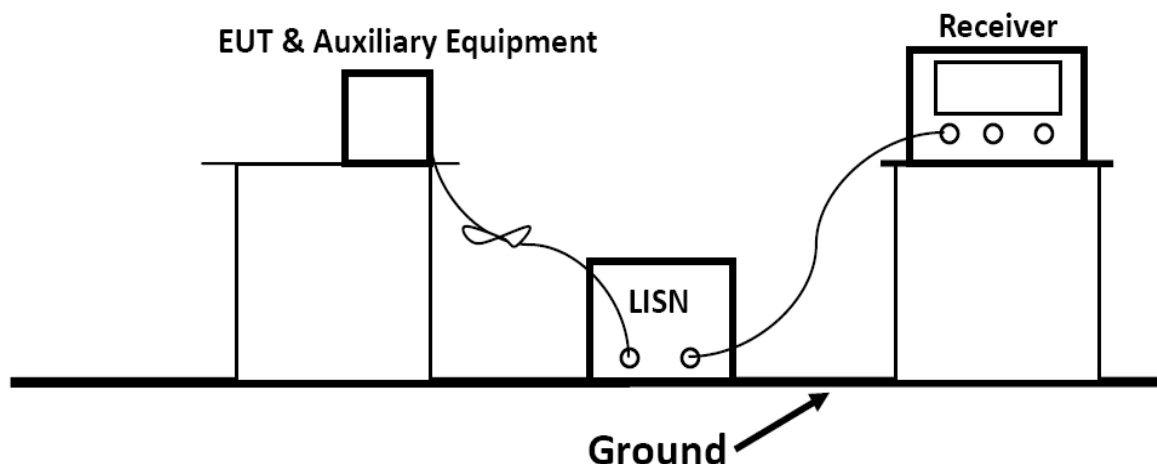
Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol. H/V
1302.00	41.61	26.42	37.01	1.66	32.68	74	-41.32	Peak	H
1302.00	30.47	26.42	37.01	1.66	21.54	54	-32.46	Average	H
1736.00	44.80	27.87	37.10	2.29	37.86	74	-36.14	Peak	H
1736.00	33.51	27.87	37.10	2.29	26.57	54	-27.43	Average	H
2170.00	40.24	29.57	36.94	3.56	36.43	74	-37.57	Peak	H
2170.00	29.53	29.57	36.94	3.56	25.72	54	-28.28	Average	H
2604.00	37.19	33.06	35.04	3.94	39.15	74	-34.85	Peak	H
2604.00	26.41	33.06	35.04	3.94	28.37	54	-25.63	Average	H
4826.00	40.12	36.35	36.78	5.14	44.83	74	-29.17	Peak	H
4826.00	28.77	36.35	36.78	5.14	33.48	54	-20.52	Average	H
1302.00	42.17	26.42	37.01	1.66	33.24	74	-40.76	Peak	V
1302.00	31.61	26.42	37.01	1.66	22.68	54	-31.32	Average	V
1736.00	44.89	27.87	37.10	2.29	37.95	74	-36.05	Peak	V
1736.00	33.64	27.87	37.10	2.29	26.70	54	-27.30	Average	V
2170.00	41.21	29.57	36.94	3.56	37.40	74	-36.60	Peak	V
2170.00	30.18	29.57	36.94	3.56	26.37	54	-27.63	Average	V
2604.00	38.15	33.06	35.04	3.94	40.11	74	-33.89	Peak	V
2604.00	27.49	33.06	35.04	3.94	29.45	54	-24.55	Average	V
4826.00	39.57	36.35	36.78	5.12	44.26	74	-29.74	Peak	V
4826.00	30.11	36.35	36.78	5.12	34.80	54	-19.20	Average	V

Notes:

1. Measuring frequencies from 9k~10th harmonic or 26.5GHz (which is less), No emission found between lowest internal used/generated frequency to 30MHz.
2. Radiated emissions measured in frequency range from 30MHz~10th harmonic or 26.5GHz (which is less) were made with an instrument using Peak detector mode.
3. The radiated emissions from 18GHz to 25GHz are at least 20dB below the official limit and no need to report.

4. POWER LINE CONDUCTED EMISSIONS

4.1. Block Diagram of Test Setup



4.2. Power Line Conducted Emission Limits (Class B)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15~0.50	66-56	56-46
0.50~5.00	56	46
5.00~30.00	60	50

***Notes: (1) *Decreasing linearly with logarithm of frequency.
(2) The lower limit shall apply at the transition frequencies.

4.3. Operating Condition of EUT

- (1) Setup the EUT as shown in Section 4.1.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode (Receiving Mode) and measure it.

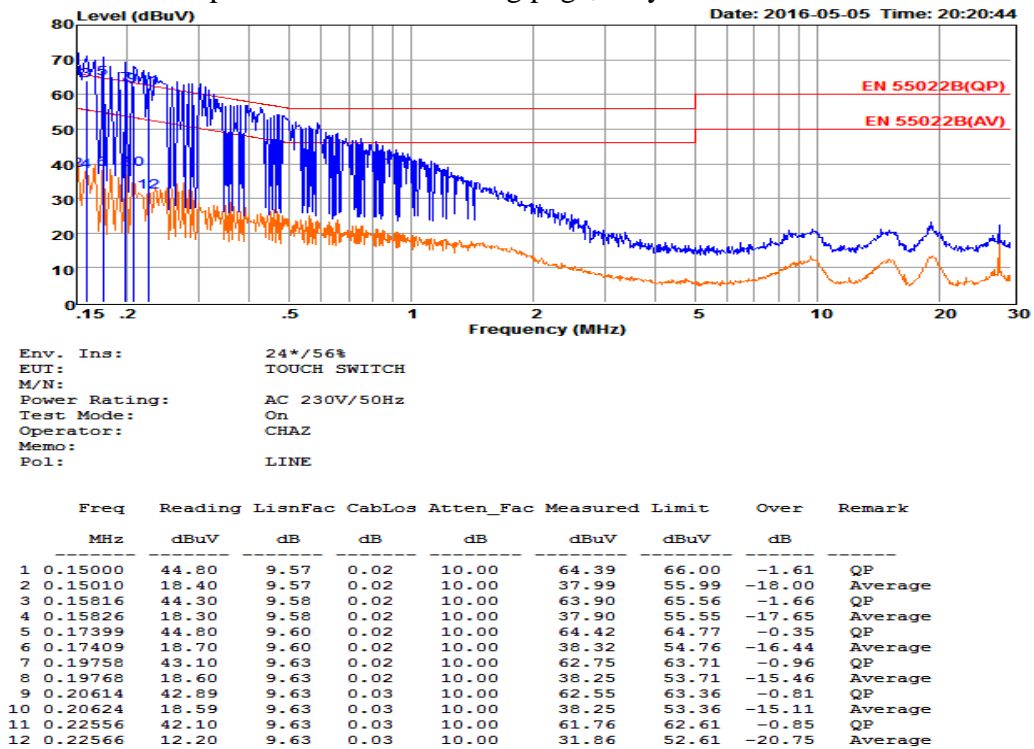
4.4. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of 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 ANSI C63.4-2014 on Conducted Emission Measurement. The bandwidth of test receiver is set at 9kHz. The frequency range from 150kHz to 30MHz is checked.

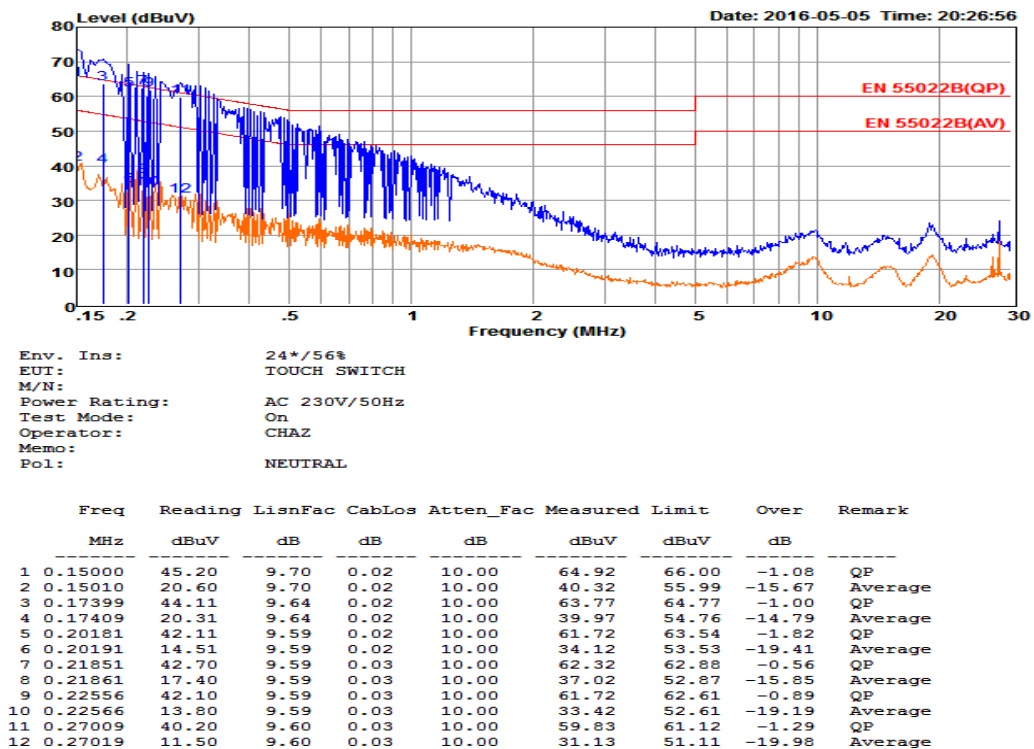
4.5. Test Results

PASS.

The test data please refer to following page, only the worst test data was recorded.



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



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

-----THE END OF REPORT-----