

TEST REPORT

Applicant: Shanghai Sunmi Technology Co.,Ltd.

Address of Applicant: Room 605, Block 7, KIC Plaza, No.388 Song Hu Road Yang Pu District, Shanghai 200433, China

Manufacturer: Shanghai Sunmi Technology Co.,Ltd.

Address of Manufacturer: Room 605, Block 7, KIC Plaza, No.388 Song Hu Road Yang Pu District, Shanghai 200433, China

Equipment Under Test (EUT)

Product Name: POS System

Model No.: W3500

Marketing Name: D1

Applicable standards: FCC CFR Title 47 Part 15 Subpart B:2016

Date of sample receipt: May 27, 2017

Date of Test: May 28-June 14, 2017

Date of report issued: June 15, 2017

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo

Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	June 15, 2017	Original

Prepared by:

Tiger Chen

Date:

June 15, 2017

Project Engineer

Reviewed by:

Andy Wu

Date:

June 15, 2017

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part15.107	Pass
Radiated Emissions	Part15.109	Pass

Pass: The EUT comply with the essential requirements in the standard.

5 General Information

5.1 General Description of EUT

Product Name:	POS System
Model No.:	W3500
Power supply:	Adapter Model: ADS-65HI-19A-1 24036E Input: AC 100-240V 50/60Hz 1.2A max Output: DC24V 1.5A

5.2 Test mode and Test voltage

Test mode:	
LAN mode	Keep the EUT in Ping with PC mode
TF card Playing mode	Keep the EUT in TF card playing mode
USB mode	Keep the EUT in storage data in USB flash disk mode.

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Apple	PC	A1278	C1MN99ERDTY3
DELL	KEYBOARD	SK-8115	N/A
DELL	MOUSE	MOC5UO	N/A
Kingston	TF card	SD-C01G	N/A
Kingston	USB disk	4GB	N/A

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 22, 2016.

- **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016

5.7 Test Location

The test was performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

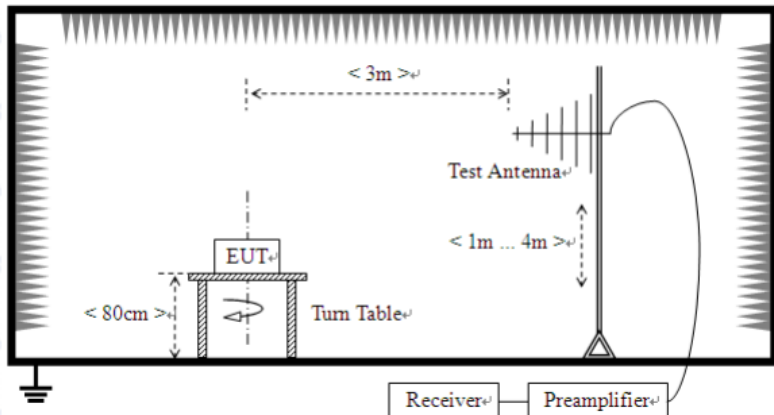
Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	June.29 2016	June.28 2017
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	June.29 2016	June.28 2017
5	Double-ridged horn antenna	SCHWARZBECK	9120D	GTS208	June.29 2016	June.28 2017
6	Horn Antenna	ETS-LINDGREN	3160-09	GTS218	June.29 2016	June.28 2017
7	RF Amplifier	HP	8347A	GTS204	June.29 2016	June.28 2017
8	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	June.29 2016	June.28 2017
9	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
10	Coaxial Cable	GTS	N/A	GTS211	June.29 2016	June.28 2017
11	Coaxial Cable	GTS	N/A	GTS210	June.29 2016	June.28 2017
12	Coaxial Cable	GTS	N/A	GTS212	June.29 2016	June.28 2017
13	Thermo meter	N/A	N/A	GTS256	June.29 2016	June.28 2017

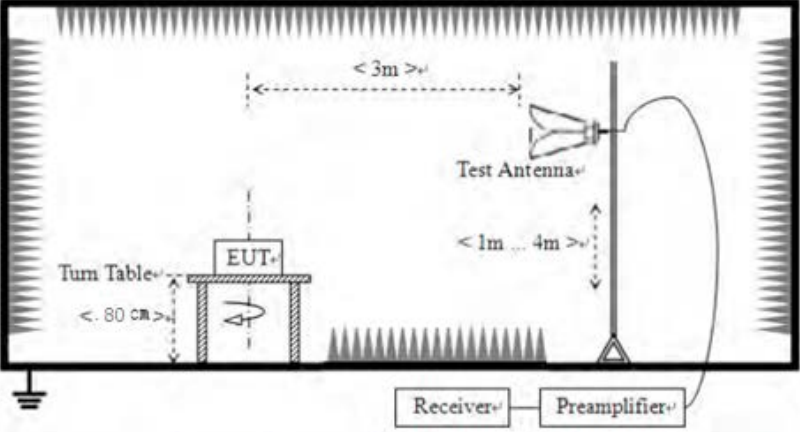
Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.16 2014	May.15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 29 2016	June. 28 2017
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 29 2016	June. 28 2017
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 29 2016	June. 28 2017
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 29 2016	June. 28 2017

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	Barometer	ChangChun	DYM3	GTS257	June. 29 2016	June. 28 2017

7 Test Results and Measurement Data

7.1 Radiated Emission

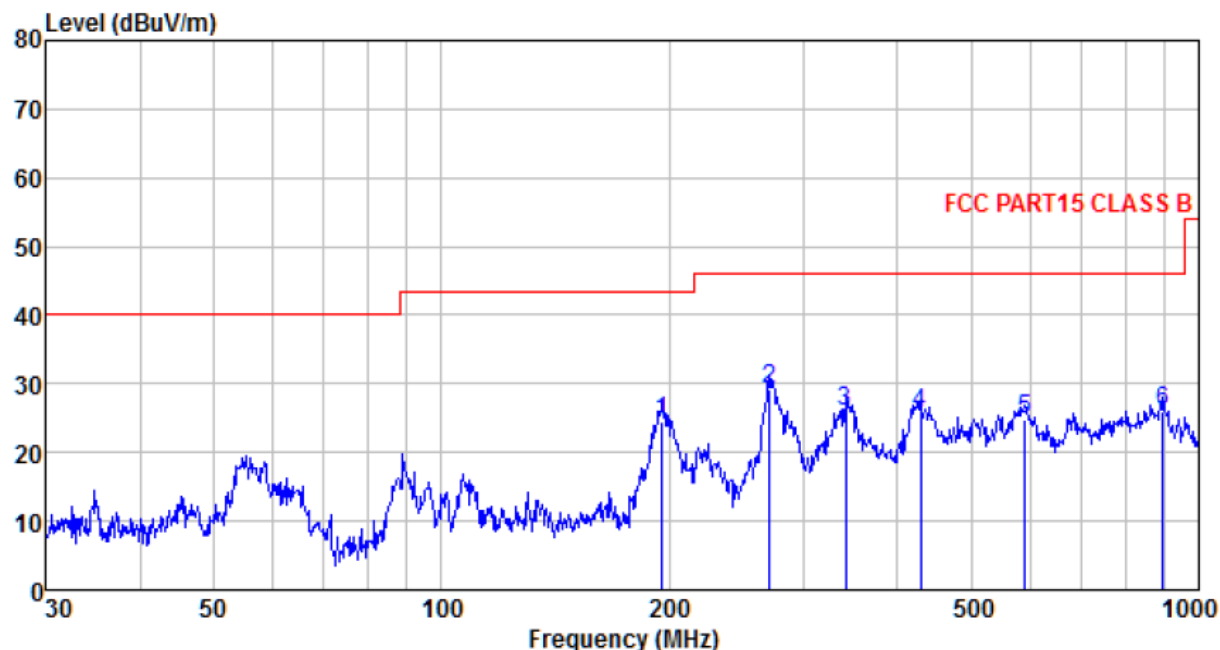
Test Requirement:	FCC Part15 B Section 15.109				
Test Method:	ANSI C63.4:2014				
Test Frequency Range:	30MHz to 6000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.00		Quasi-peak Value
	88MHz-216MHz		43.50		Quasi-peak Value
	216MHz-960MHz		46.00		Quasi-peak Value
	960MHz-1GHz		54.00		Quasi-peak Value
	Above 1GHz		54.00		Average Value
			74.00		Peak Value
Test setup:	Below 1GHz				
	<div></div>				
	Above 1GHz				

	
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Measurement Record:	Uncertainty: $\pm 4.50\text{dB}$
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details, only show the worst case.
Test results:	Pass

Measurement Data

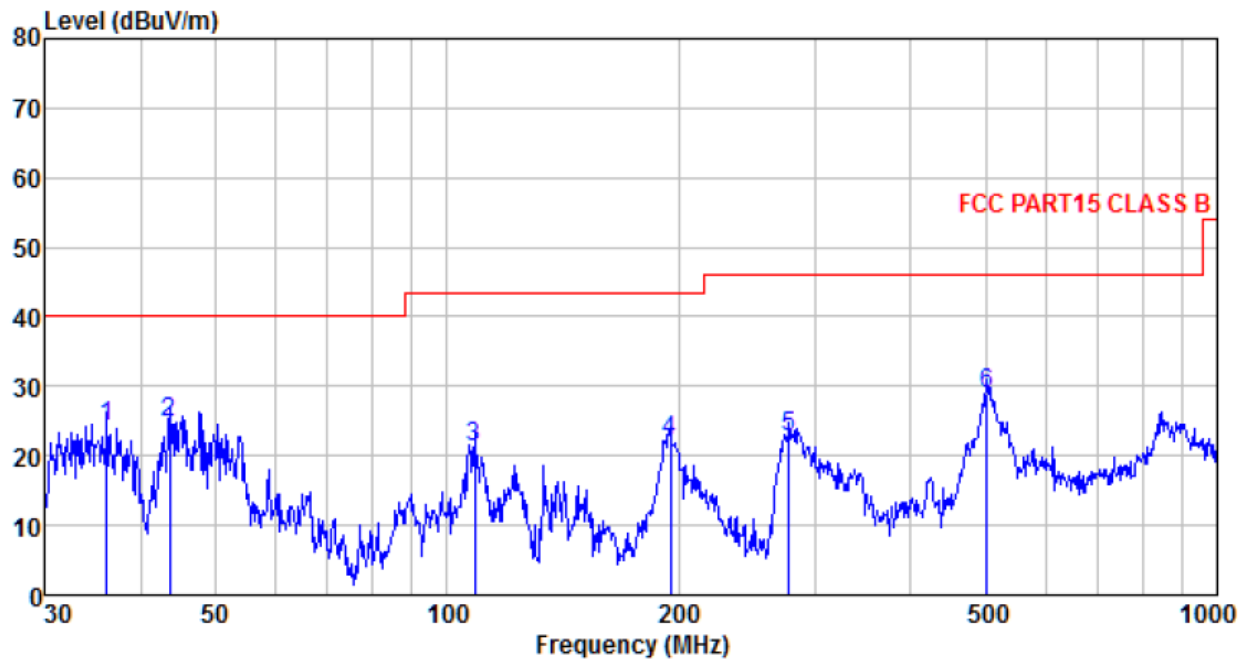
Below 1GHz

Test mode:	LAN mode	Antenna Polarity:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
195.822	41.82	10.03	1.82	29.21	24.46	43.50	-19.04	QP
271.325	44.39	12.53	2.23	29.81	29.34	46.00	-16.66	QP
341.979	38.78	14.32	2.58	29.77	25.91	46.00	-20.09	QP
429.523	36.05	16.11	2.99	29.44	25.71	46.00	-20.29	QP
588.905	31.39	19.09	3.68	29.30	24.86	46.00	-21.14	QP
896.997	28.09	22.17	4.83	29.10	25.99	46.00	-20.01	QP

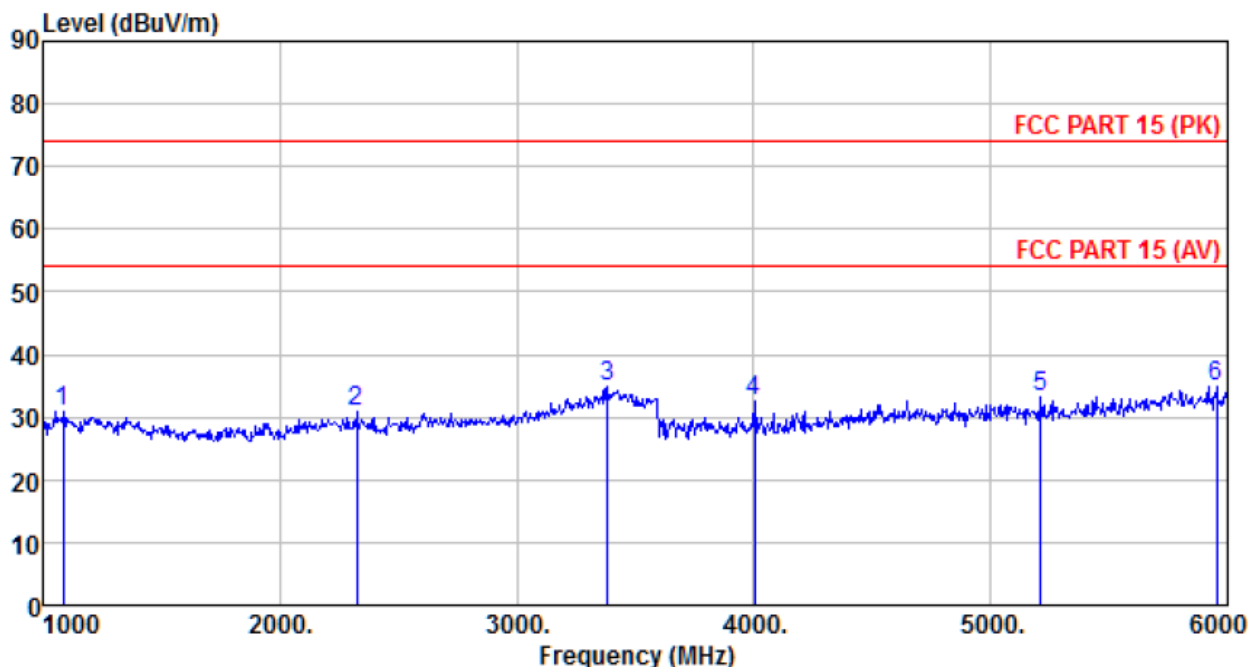
Test mode:	LAN mode	Antenna Polarity:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
36.127	42.55	11.20	0.62	30.06	24.31	40.00	-15.69	QP
43.659	41.88	12.25	0.70	30.03	24.80	40.00	-15.20	QP
108.647	38.21	11.50	1.27	29.64	21.34	43.50	-22.16	QP
195.137	39.54	10.03	1.81	29.22	22.16	43.50	-21.34	QP
278.067	37.47	12.82	2.26	29.85	22.70	46.00	-23.30	QP
502.940	37.43	17.55	3.32	29.30	29.00	46.00	-17.00	QP

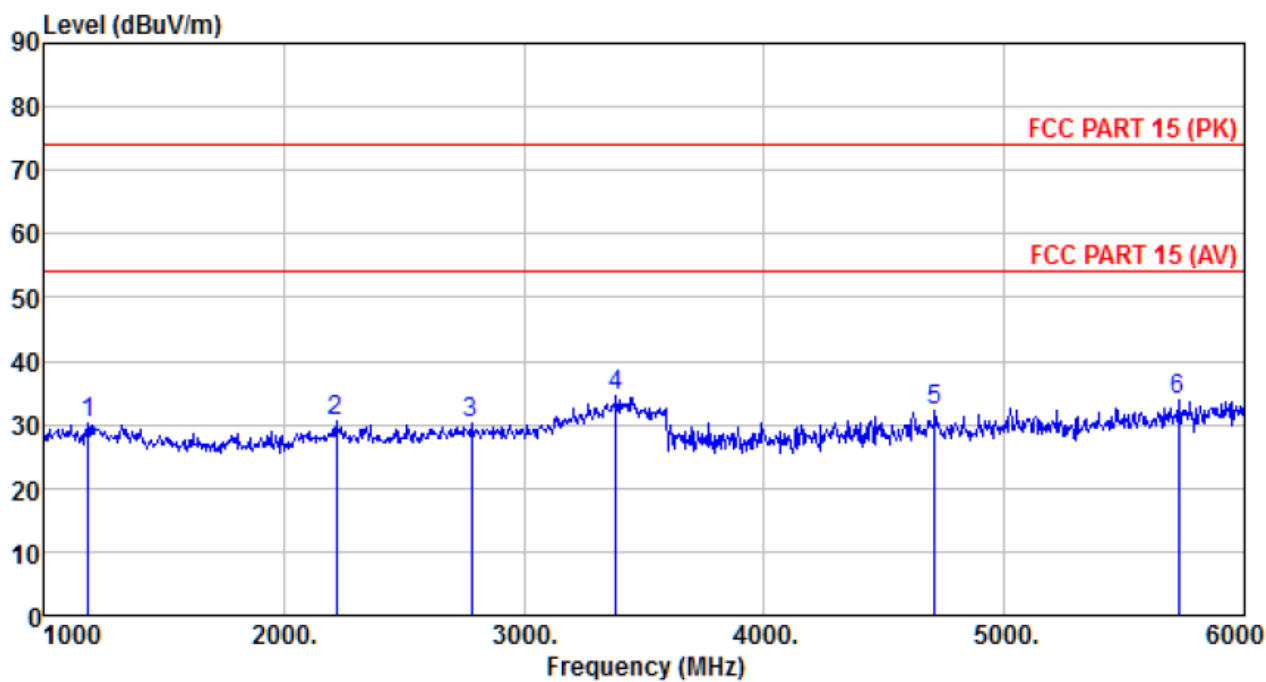
Above 1GHz

Test mode:	LAN mode	Antenna Polarity:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
1085.000	37.75	24.72	4.37	35.85	30.99	74.00	-43.01	Peak
2325.000	34.43	27.84	5.32	36.66	30.93	74.00	-43.07	Peak
3385.000	36.85	28.57	6.74	37.31	34.85	74.00	-39.15	Peak
4005.000	32.49	29.71	7.87	37.50	32.57	74.00	-41.43	Peak
5210.000	29.76	31.92	9.08	37.39	33.37	74.00	-40.63	Peak
5955.000	28.38	32.84	10.13	36.37	34.98	74.00	-39.02	Peak

Test mode:	LAN mode	Antenna Polarity:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
1185.000	36.50	25.27	4.45	35.91	30.31	74.00	-43.69	Peak
2220.000	34.06	27.98	5.21	36.58	30.67	74.00	-43.33	Peak
2780.000	33.15	28.34	5.74	37.02	30.21	74.00	-43.79	Peak
3385.000	36.48	28.57	6.74	37.31	34.48	74.00	-39.52	Peak
4710.000	29.61	31.66	8.52	37.64	32.15	74.00	-41.85	Peak
5725.000	28.21	32.53	9.83	36.68	33.89	74.00	-40.11	Peak

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

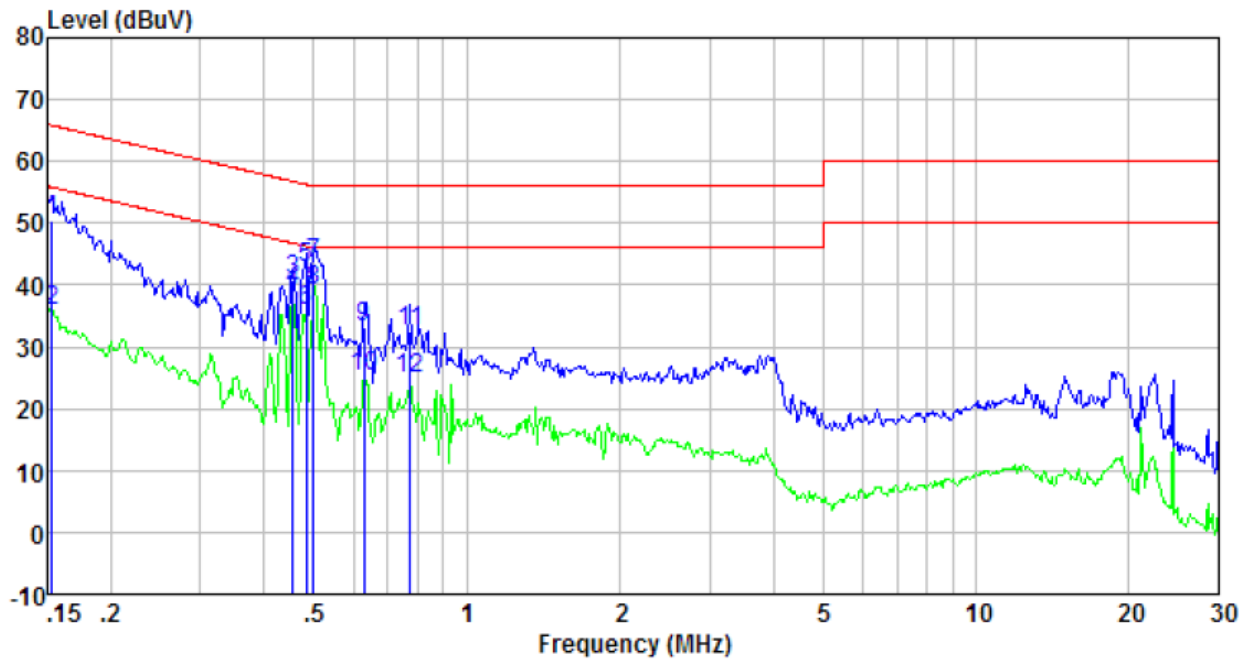
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

7.2 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107																		
Test Method:	ANSI C63.4:2014																		
Test Frequency Range:	150kHz to 30MHz																		
Class / Severity:	Class B																		
Receiver setup:	RBW=9kHz, VBW=30kHz																		
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>0.5-30</td><td>60</td><td>50</td></tr></table>					Frequency range (MHz)	Limit (dBμV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	0.5-30	60	50
Frequency range (MHz)	Limit (dBμV)																		
	Quasi-peak	Average																	
0.15-0.5	66 to 56*	56 to 46*																	
0.5-5	56	46																	
0.5-30	60	50																	
Test setup:	<div><p style="text-align: center;">Reference Plane</p><p style="text-align: center;">Test table/Insulation plane</p><p><i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p></div>																		
Test procedure	<div><div>1.</div><div>The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment.</div></div> <div><div>2.</div><div>The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs).</div></div> <div><div>3.</div><div>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.</div></div>																		
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.: 1 012mbar														
Test Instruments:	Refer to section 6 for details																		
Test mode:	Refer to section 5.2 for details, only show the worst case.																		
Test results:	Pass																		

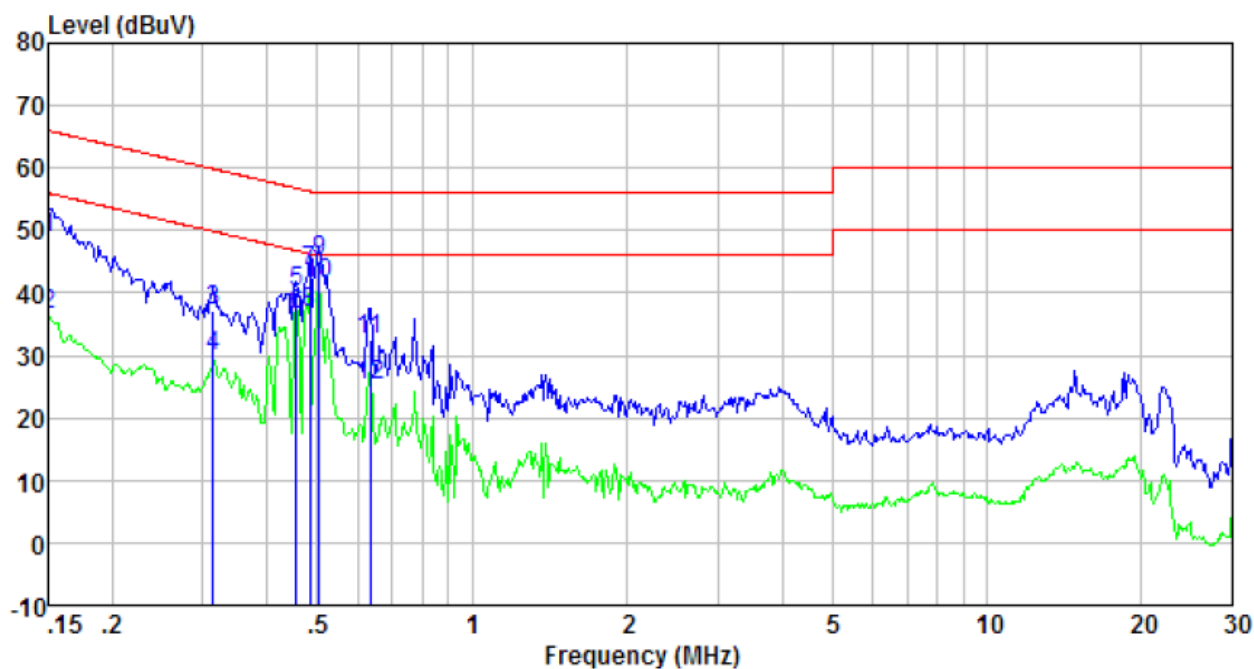
Measurement Data

Test mode:	LAN mode	Phase Polarity:	Line
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Freq MHz	Reading level dBuV	LIISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.153	50.01	0.42	0.12	50.55	65.82	-15.27	QP
0.153	35.41	0.42	0.12	35.95	55.82	-19.87	Average
0.456	40.16	0.40	0.11	40.67	56.76	-16.09	QP
0.456	38.76	0.40	0.11	39.27	46.76	-7.49	Average
0.484	42.31	0.39	0.11	42.81	56.27	-13.46	QP
0.484	35.41	0.39	0.11	35.91	46.27	-10.36	Average
0.499	43.04	0.38	0.11	43.53	56.01	-12.48	QP
0.499	38.66	0.38	0.11	39.15	46.01	-6.86	Average
0.627	32.82	0.30	0.12	33.24	56.00	-22.76	QP
0.627	24.89	0.30	0.12	25.31	46.00	-20.69	Average
0.775	32.18	0.27	0.13	32.58	56.00	-23.42	QP
0.775	24.53	0.27	0.13	24.93	46.00	-21.07	Average

Test mode:	LAN mode	Phase Polarity:	Neutral
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Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
0.150	48.24	0.41	0.12	48.77	66.00	-17.23	QP
0.150	36.10	0.41	0.12	36.63	56.00	-19.37	Average
0.313	36.57	0.42	0.10	37.09	59.88	-22.79	QP
0.313	29.29	0.42	0.10	29.81	49.88	-20.07	Average
0.456	39.71	0.37	0.11	40.19	56.76	-16.57	QP
0.456	36.12	0.37	0.11	36.60	46.76	-10.16	Average
0.484	42.99	0.36	0.11	43.46	56.27	-12.81	QP
0.484	36.43	0.36	0.11	36.90	46.27	-9.37	Average
0.505	44.63	0.35	0.11	45.09	56.00	-10.91	QP
0.505	40.99	0.35	0.11	41.45	46.00	-4.55	Average
0.634	32.08	0.26	0.13	32.47	56.00	-23.53	QP
0.634	24.65	0.26	0.13	25.04	46.00	-20.96	Average

Notes:

- The following Quasi-Peak and Average measurements were performed on the EUT:
- Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

8 Test Setup Photo

Radiated Emission:



Conducted Emission



9 EUT Constructional Details

Reference to the test report No. : GTS201705000240F01

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