TEST REPORT

Applicant:	Lightcomm Technology Co., Ltd.
Address of Applicant:	RM 1808 18/F FO TAN INDUSTRIAL CENTRE NOS. 26-28 AU PUI WAN STREET FO TAN SHATIN NEW TERRITORIES, HONG KONG
Manufacturer/Factory:	Huizhou Hengdu Electronics Co., Ltd.
Address of Manufacturer/Factory:	DIP South Area, Huiao Highway, Huizhou, Guangdong, China

Equipment Under Test (EUT)

Product Name:	MID
Model No.:	MID7009-MA, KTAB17
FCC ID:	XMF-MID7009
Applicable standards:	FCC CFR Title 47 Part 15 Subpart B
Date of sample receipt:	March 01, 2018
Date of Test:	March 02-12, 2018
Date of report issued:	March 13, 2018
Test Result :	PASS *

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

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*March 13, 2018*	*Original*

Prepared by: Bill. Yuan ***Date:*** *March 13, 2018*

Project Engineer

Reviewed by: Andy. Wu ***Date:*** *March 13, 2018*

Reviewer

3 Contents

4 Test Summary

Test Item	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission	FCC Part15.107	ANSI C63.4	Class B	PASS
Radiated Emissions #	FCC Part15.109	ANSI C63.4	Class B	PASS

Remark:

1. Pass: The EUT complies with the essential requirements in the standard.

2. # Refer to FCC Part 15.33 (b)(1) conditional testing procedure :

The highest frequency generated or used in the EUT	*Test frequency range of Radiated emission*
<108MHz	*30MHz ~ 1GHz*
108MHz ~ 500MHz	*30MHz ~ 2GHz*
500MHz ~ 1GHz	*30MHz ~ 5GHz*
>1GHz	*30MHz ~ 5th harmonic of the highest frequency or 40 GHz, whichever is lower.*

5 General Information

5.1 General Description of EUT

Product Name:	MID
Model No.:	MID7009-MA, KTAB17
Test Model No:	MID7009-MA
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The only differences model name for commercial purpose.	
Serial No.:	0010218150001
Test sample(s) ID:	GTS201803000025-2
Sample(s) Status	Normal sample
Hardware:	MID7009MA_MB_V1.1
Software:	3.18.35 ubuntu@ip-10-1-1-43 #1 Tue Apr 3 11:56:24 UTC 2018
Power supply:	Adapter: Model:TEKA036-1203000UK Input: AC 100-240V, 50/60Hz, 1.2A Output: DC 12V, 3A Lithium ion Polymer Battery: DC 3.80V, 4500mAh, 17Wh

5.2 Test mode and Test voltage

Test mode:	
PC mode	Keep the EUT in connect charging base and PC mode.
REC mode	Keep the EUT in connect charging base and REC mode.
USB mode	Keep the EUT in connect charging base and USB playing mode.
FM mode	Keep the EUT in connect charging base and FM receiver mode.
Test voltage	
AC120V 60Hz	

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Lenovo	Notebook PC	M6900	EA05257893
DELL	MONITOR	N/A	N/A
DELL	KEYBOARD	SK-8115	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.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383, January 08, 2018.

● **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

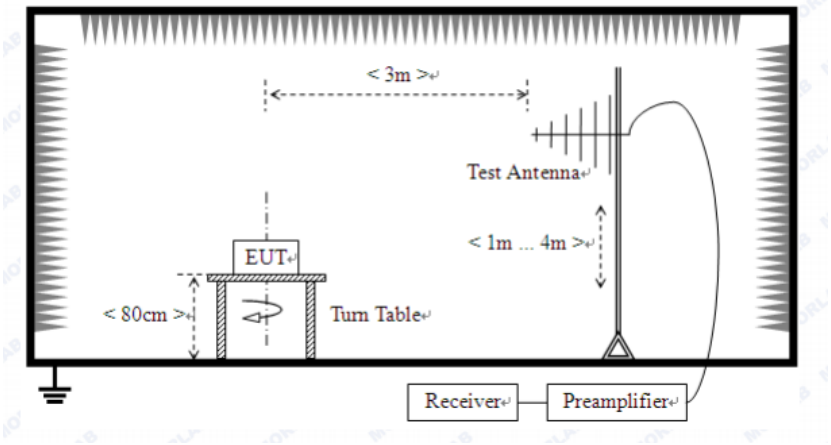
Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	June.28 2017	June.27 2018
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	June.28 2017	June.27 2018
5	Double-ridged horn antenna	SCHWARZBECK	9120D	GTS208	June.28 2017	June.27 2018
6	Horn Antenna	ETS-LINDGREN	3160-09	GTS218	June.28 2017	June.27 2018
7	RF Amplifier	HP	8347A	GTS204	June.28 2017	June.27 2018
8	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	June.28 2017	June.27 2018
9	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
10	Coaxial Cable	GTS	N/A	GTS211	June.28 2017	June.27 2018
11	Coaxial Cable	GTS	N/A	GTS210	June.28 2017	June.27 2018
12	Coaxial Cable	GTS	N/A	GTS212	June.28 2017	June.27 2018
13	Thermo meter	N/A	N/A	GTS256	June.28 2017	June.27 2018

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.28 2017	June.27 2018
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June.28 2017	June.27 2018
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June.28 2017	June.27 2018
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.28 2017	June.27 2018

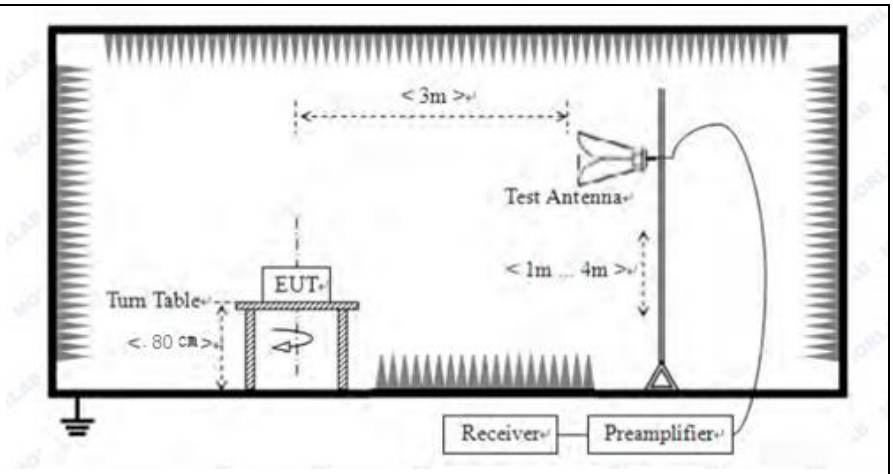
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
1	Barometer	ChangChun	DYM3	GTS257	June.28 2017	June.27 2018

7 Test Results and Measurement Data

7.1 Radiated Emission

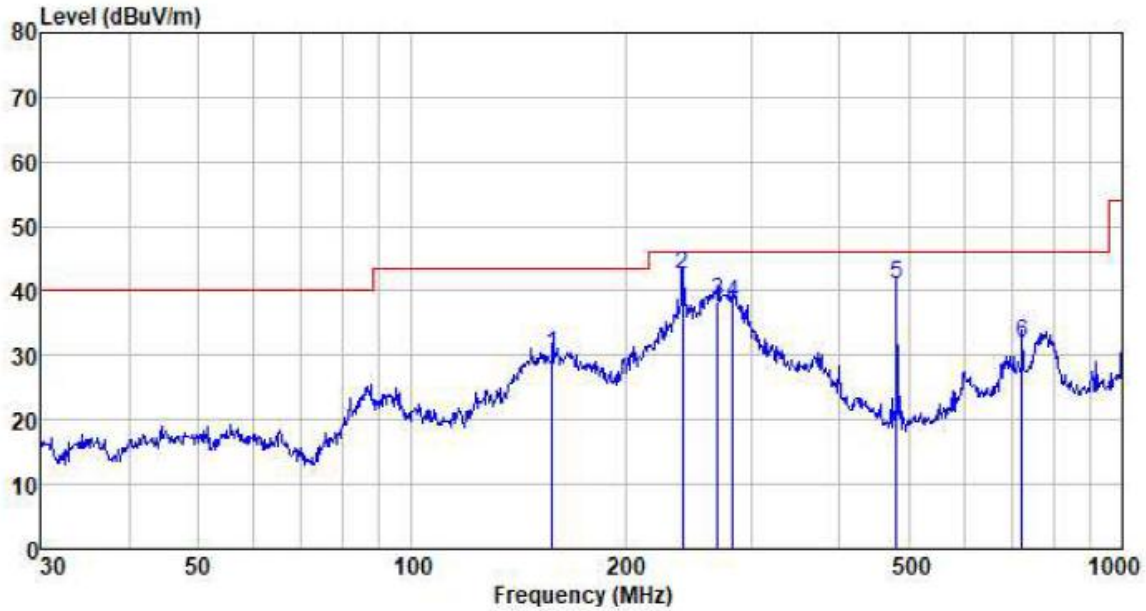
<table>
<tr><td>Test Requirement:</td><td>FCC Part15 B Section 15.109</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4:2014</td></tr>
<tr><td>Test Frequency Range:</td><td>30MHz to 6000MHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (dBuV/m @3m)</th><th>Remark</th></tr>
<tr><td>30MHz-88MHz</td><td>40.00</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.50</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.00</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.00</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average Value</td></tr>
<tr><td>74.00</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Test setup:</td><td>Below 1GHz
 

Above 1GHz</td></tr>
</table>

	
Test Procedure:	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: ± 4.50dB
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

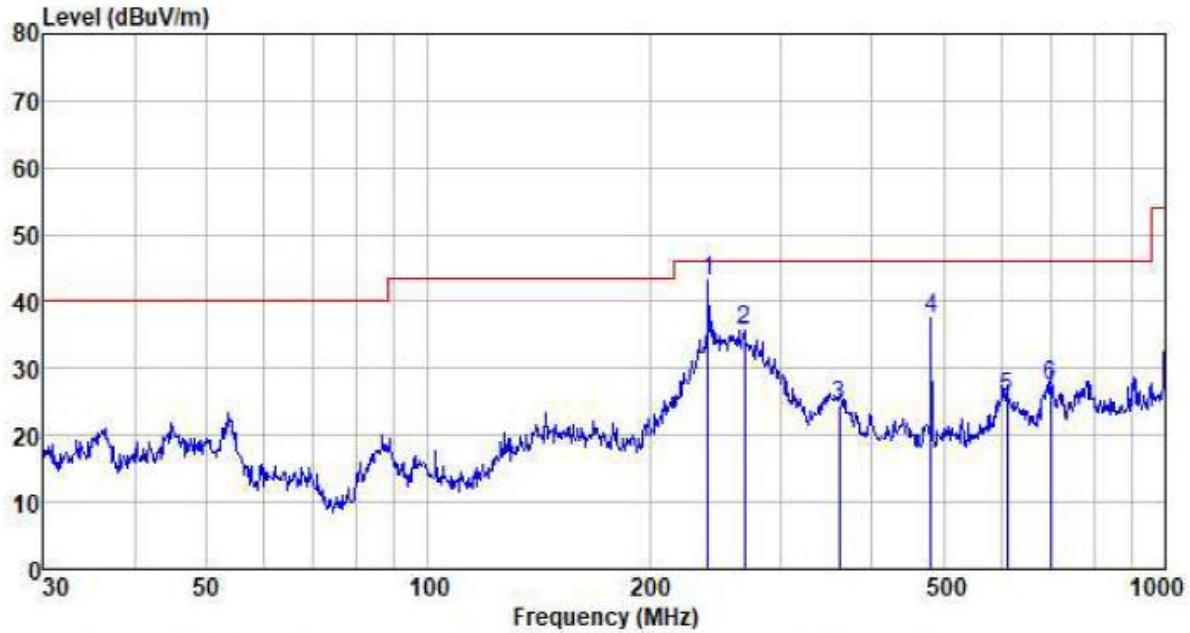
Measurement Data
Below 1GHz

Test mode:	PC mode	Antenna Polarity:	Horizontal



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
157.559	57.35	8.15	1.62	37.12	30.00	43.50	-13.50	QP
240.830	65.92	11.85	2.08	37.37	42.48	46.00	-3.52	QP
269.428	60.88	12.76	2.22	37.40	38.46	46.00	-7.54	QP
282.985	60.21	13.13	2.28	37.41	38.21	46.00	-7.79	QP
480.528	58.44	16.93	3.22	37.51	41.08	46.00	-4.92	QP
721.726	45.42	20.03	4.17	37.63	31.99	46.00	-14.01	QP

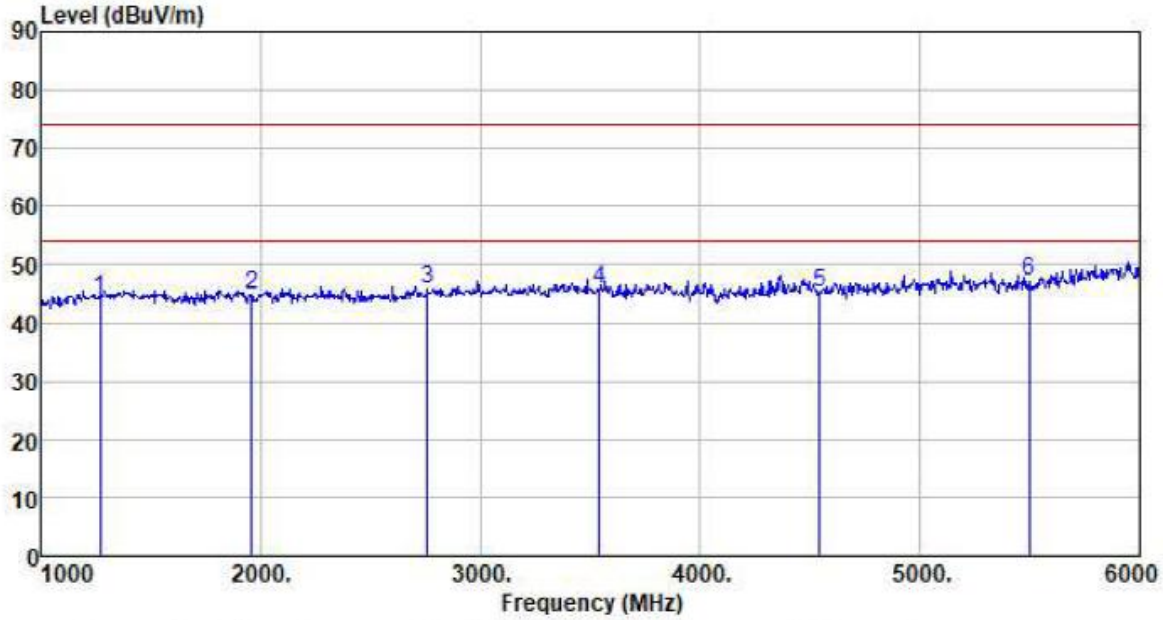
Test mode:	PC mode	Antenna Polarity:	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV	dBuV/m	dB	
239.987	66.45	11.85	2.07	37.37	43.00	46.00	-3.00	QP
268.485	58.26	12.73	2.21	37.40	35.80	46.00	-10.20	QP
361.714	44.47	14.72	2.68	37.49	24.38	46.00	-21.62	QP
480.528	54.91	16.93	3.22	37.51	37.55	46.00	-8.45	QP
609.922	39.83	19.51	3.76	37.55	25.55	46.00	-20.45	QP
699.305	41.47	19.60	4.08	37.63	27.52	46.00	-18.48	QP

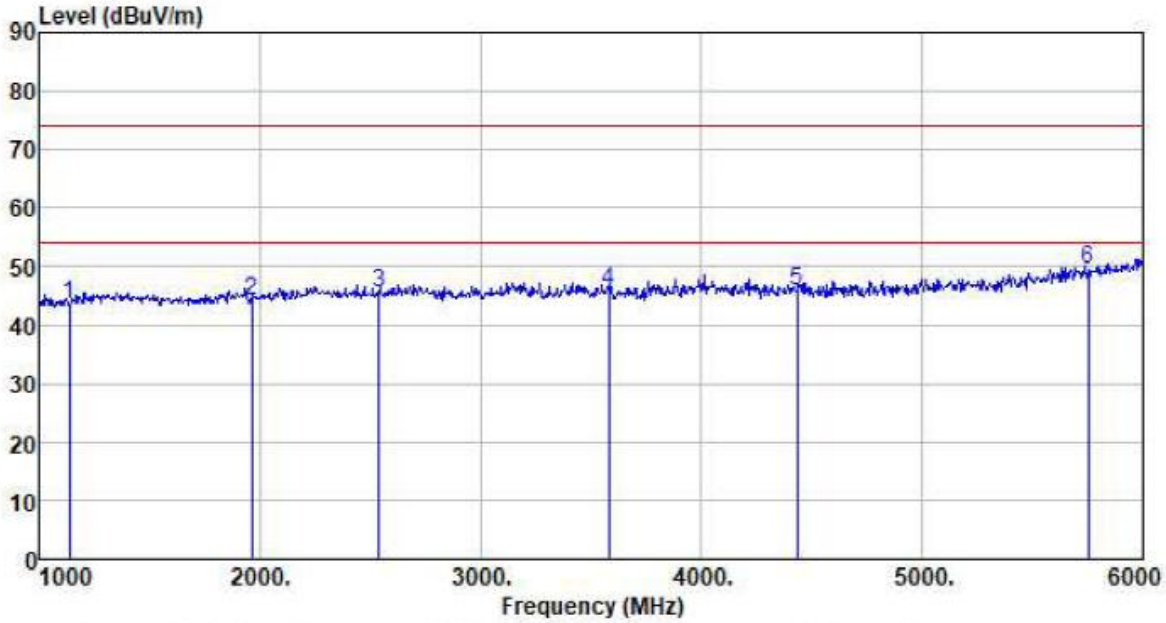
Above 1GHz

Test mode:	PC mode	Antenna Polarity:	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV	dBuV/m	dB	
1270.000	50.11	25.57	4.52	35.96	44.24	74.00	-29.76	Peak
1960.000	50.24	25.97	4.94	36.37	44.78	74.00	-29.22	Peak
2760.000	48.90	28.28	5.72	37.01	45.89	74.00	-28.11	Peak
3540.000	47.09	29.06	7.03	37.36	45.82	74.00	-28.18	Peak
4545.000	42.90	31.42	8.38	37.61	45.09	74.00	-28.91	Peak
5495.000	42.79	31.98	9.49	37.01	47.25	74.00	-26.75	Peak

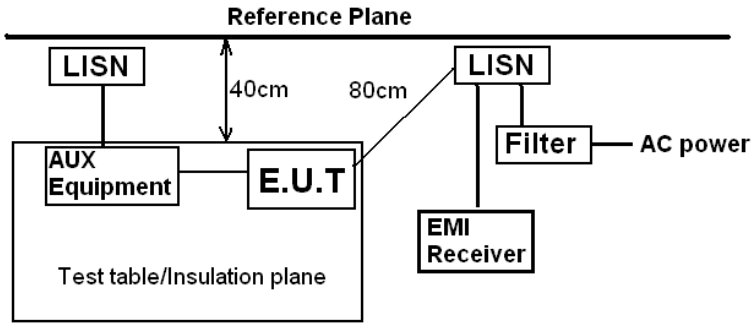
Test mode:	PC mode	Antenna Polarity:	Vertical



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
1140.000	50.06	24.94	4.42	35.88	43.54	74.00	-30.46	Peak
1965.000	49.57	25.99	4.94	36.38	44.12	74.00	-29.88	Peak
2540.000	49.12	27.60	5.53	36.83	45.42	74.00	-28.58	Peak
3580.000	47.08	29.11	7.11	37.38	45.92	74.00	-28.08	Peak
4435.000	43.83	31.20	8.27	37.59	45.71	74.00	-28.29	Peak
5750.000	43.78	32.56	9.86	36.66	49.54	74.00	-24.46	Peak

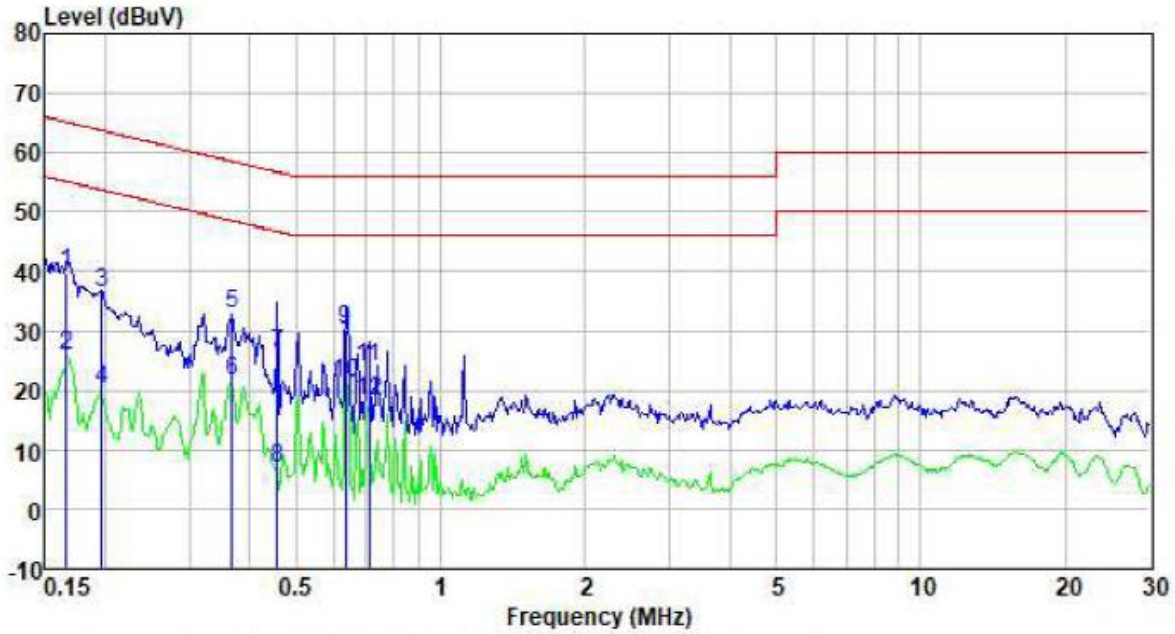
Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

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>
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test procedure	1. 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. 2. 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). 3. 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.
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

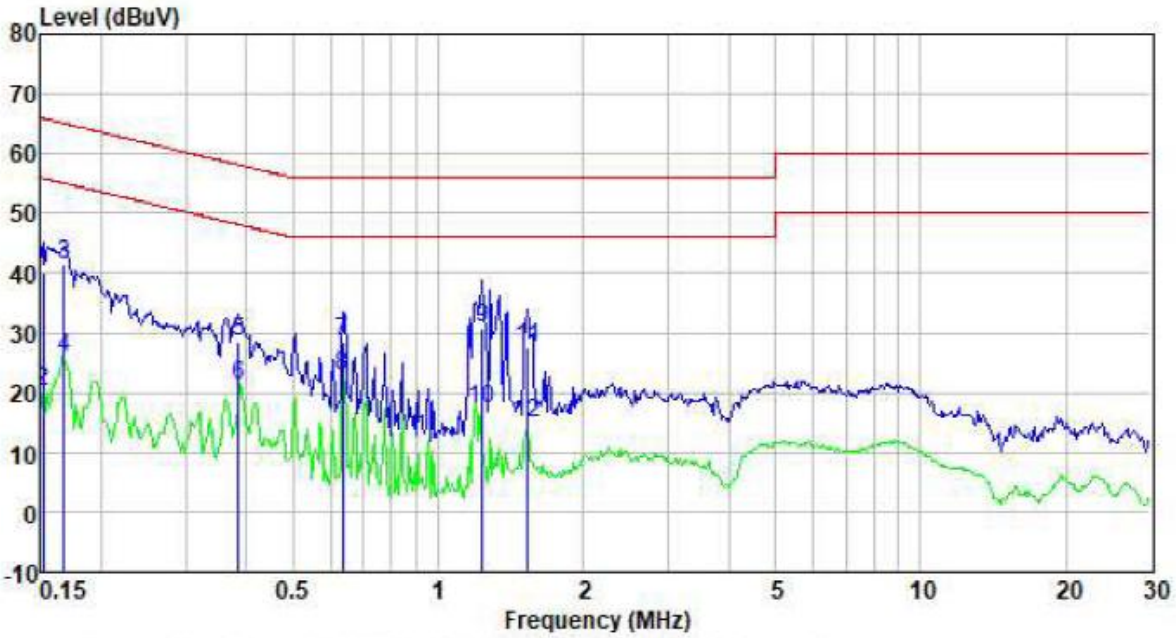
Measurement Data

Test mode:	PC mode	Phase Polarity:	Line



Freq	Reading level	lISN/ISN factor	Cable loss	level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.166	39.17	0.40	0.08	39.65	65.16	-25.51	QP
0.166	25.50	0.40	0.08	25.98	55.16	-29.18	Average
0.197	36.13	0.40	0.11	36.64	63.76	-27.12	QP
0.197	19.83	0.40	0.11	20.34	53.76	-33.42	Average
0.367	32.27	0.37	0.10	32.74	58.56	-25.82	QP
0.367	21.13	0.37	0.10	21.60	48.56	-26.96	Average
0.456	25.90	0.33	0.11	26.34	56.76	-30.42	QP
0.456	6.47	0.33	0.11	6.91	46.76	-39.85	Average
0.634	29.74	0.28	0.12	30.14	56.00	-25.86	QP
0.634	20.80	0.28	0.12	21.20	46.00	-24.80	Average
0.708	23.58	0.26	0.13	23.97	56.00	-32.03	QP
0.708	17.73	0.26	0.13	18.12	46.00	-27.88	Average

Test mode:	PC mode	Phase Polarity:	Neutral



Freq	Reading level	lISN/ISN factor	Cable loss	level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.152	39.52	0.40	0.07	39.99	65.91	-25.92	QP
0.152	19.70	0.40	0.07	20.17	55.91	-35.74	Average
0.168	40.90	0.40	0.09	41.39	65.08	-23.69	QP
0.168	25.43	0.40	0.09	25.92	55.08	-29.16	Average
0.385	28.20	0.36	0.10	28.66	58.17	-29.51	QP
0.385	20.62	0.36	0.10	21.08	48.17	-27.09	Average
0.634	28.04	0.28	0.12	28.44	56.00	-27.56	QP
0.634	22.64	0.28	0.12	23.04	46.00	-22.96	Average
1.236	30.48	0.20	0.16	30.84	56.00	-25.16	QP
1.236	16.81	0.20	0.16	17.17	46.00	-28.83	Average
1.535	27.24	0.20	0.17	27.61	56.00	-28.39	QP
1.535	14.44	0.20	0.17	14.81	46.00	-31.19	Average

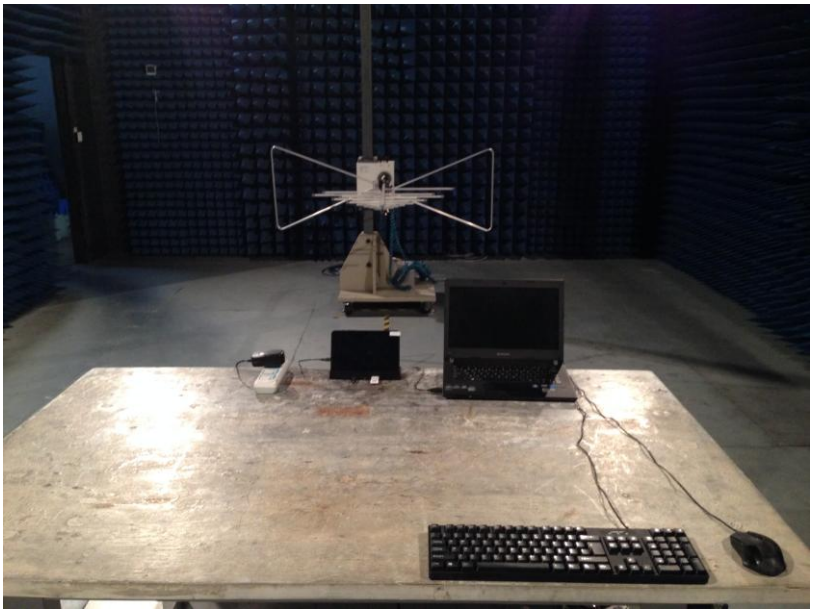
Notes:

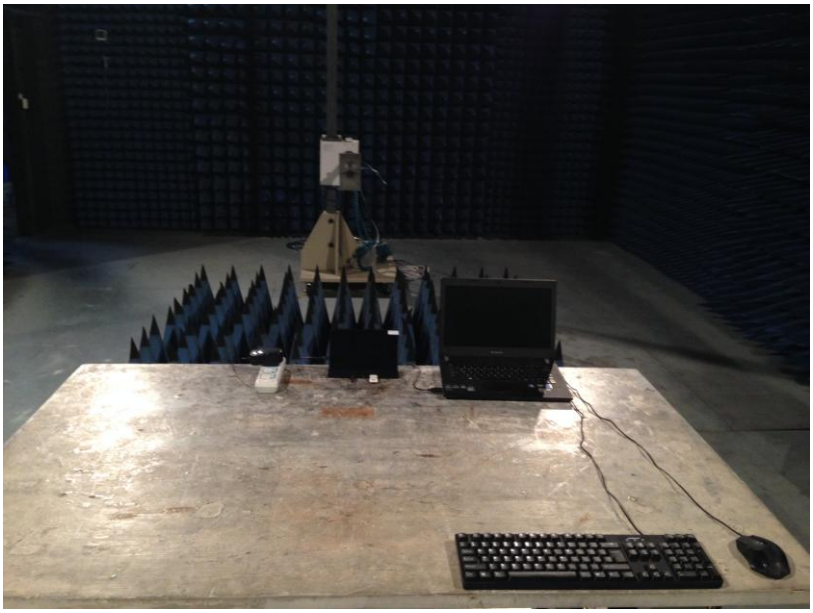
1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. 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. GTS201803000025F01

------End------