

## TEST REPORT

**Applicant:** Vonino Electronics Limited

**Address of Applicant:** UNIT 1109, 11/F., KOWLOON CENTRE 33 ASHLEY ROAD,  
TSIM SHA TSUI, KOWLOON, HONG KONG

**Manufacturer:** Vonino Electronics Limited

**Address of Manufacturer:** UNIT 1109, 11/F., KOWLOON CENTRE 33 ASHLEY ROAD,  
TSIM SHA TSUI, KOWLOON, HONG KONG

**Factory:** Shenzhen Universal IoT Corporation Limited

**Address of Factory:** 1/3/4/5/F, Building 4, Baokun Science and Technology Industrial  
Park, Dalang Street, Longhua Town, Baoan District, Shenzhen,  
China

**Equipment Under Test (EUT)**

Product Name: MID

Model No.: Magnet W10

**Applicable standards:** EN 55032:2015  
EN 55024:2010/A1:2015  
EN 61000-3-2:2014  
EN 61000-3-3:2013

**Date of sample receipt:** September 19, 2017

**Date of Test:** September 20-25, 2017

**Date of report issued:** September 26, 2017

**Test Result :** PASS \*

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

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 2014/30/EU are considered.



**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

<i>Version No.</i>	<i>Date</i>	<i>Description</i>
00	September 26, 2017	Original

**Prepared By:**

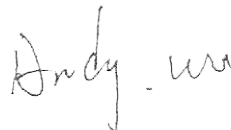


**Date:**

September 26, 2017

**Project Engineer**

**Check By:**



**Date:**

September 26, 2017

**Reviewer**

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## 4 Test Summary

Test item	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission	EN 55032	EN 55032	Class B	Pass
Conducted Emission	EN 55032	EN 55032	Class B	Pass
Harmonic Emission	EN 61000-3-2	EN 61000-3-2	N/A	N/A
Flicker Emission	EN 61000-3-3	EN 61000-3-3	Clause 5	Pass
Electrostatic discharge	EN 55024	EN 61000-4-2	Contact $\pm 4$ kV Air $\pm 2, \pm 4, \pm 8$ kV	Pass
Radio-frequency electromagnetic field Amplitude modulated	EN 55024	EN 61000-4-3	3V/m 80%, 1kHz, AM	Pass
Electrical fast transients	EN 55024	EN 61000-4-4	AC $\pm 1.0$ kV	Pass
Surges	EN 55024	EN 61000-4-5	$\pm 1$ kV D.M $\pm 2$ kV C.M	Pass
Radio-frequency continuous conducted	EN 55024	EN 61000-4-6	3Vrms (emf), 80%, 1kHz Amp. Mod.	Pass
Voltage dips and Voltage interruptions	EN 55024	EN 61000-4-11	0 % $U_T^*$ for 0.5per 0 % $U_T^*$ for 250per 70 % $U_T^*$ for 25per	Pass

*Remark:*

1. *Pass: Comply with the essential requirements in the standard.*
2. *N/A: not applicable*
3.  *$U_T$ : the nominal supply voltage; D.M: Differential Mode; C.M: Common Mode.*

## 5 General Information

### 5.1 General Description of EUT

Product Name:	MID
Model No.:	Magnet W10
Power Supply:	DC3.7V (2 x 3.7V 7800mAh Rechargeable battery) Adaptor Model :CMW05020-001 Input: AC 100-240V, 50-60Hz, 0.2A Output: DC 5V, 2A

### 5.2 Test mode and Test voltage

<b>Test mode:</b>	
PC mode	Keep the EUT in data exchange with PC mode
Operation mode	Keep the EUT in operation mode and HDMI output
OTG mode	Keep the EUT in USB mode and HDMI output
TF card mode	Keep the EUT in TF card mode and HDMI output
REC mode	Keep the EUT in video record mode and HDMI output
<b>Test voltage:</b>	
AC 230V/50Hz	

### 5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
PHILIPS	LCD TV	19PFL3120/T3	AU1A1212002906
Apple	PC	A1278	C1MN99ERDTY3
DELL	KEYBOARD	SK-8115	N/A
DELL	MOUSE	N/A	N/A
Kingston	TF card	SD-C01G	N/A

### 5.4 Deviation from Standards

None.
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## 5.5 Abnormalities from Standard Conditions

None.
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## 5.6 Monitoring of EUT for All Immunity Test

Visual:	Monitor the display of the EUT.
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Audio:	Monitor the sound of the EUT.
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## 5.7 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.

## 5.8 Test Location

RI test was performed at:
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China Shenzhen Academy of Metrology and Quality Inspection, Metrology and Quality Inspection building, Central Section of LongZhu Road, Nan Shan, Shenzhen, China.
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All other tests were performed at:
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Global United Technology Services Co., Ltd.
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Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
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Tel: 0755-27798480
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Fax: 0755-27798960
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## 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 2017	June. 28 2018
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	June. 29 2017	June. 28 2018
5	Double-ridged horn antenna	SCHWARZBECK	9120D	GTS208	June. 29 2017	June. 28 2018
6	RF Amplifier	HP	8347A	GTS204	June. 29 2017	June. 28 2018
7	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	June. 29 2017	June. 28 2018
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	N/A	N/A
10	Coaxial Cable	GTS	N/A	GTS211	N/A	N/A
11	Thermo meter	KTJ	TA328	GTS256	June. 29 2017	June. 28 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. 29 2017	June. 28 2018
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	June. 29 2017	June. 28 2018
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 29 2017	June. 28 2018
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 29 2017	June. 28 2018
6	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	June. 29 2017	June. 28 2018
9	ISN	EMTEST	FCC-TLISN-T8-02	GTS563	June. 29 2017	June. 28 2018

EFT, Surge, Voltage dips and Interruption:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	EMTEST system	EMTEST	UCS500N	GTS239	June. 29 2017	June. 28 2018
2	Thermo meter	KTJ	TA328	GTS233	June. 29 2017	June. 28 2018
3	capacitive Clamp	EMTEST	HFK	GTS557	June. 29 2017	June. 28 2018

ESD:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	ESD Simulator	KIKUSUI	KES4021A	GTS242	June. 29 2017	June. 28 2018
2	Thermo meter	KTJ	TA328	GTS243	June. 29 2017	June. 28 2018

<b>Harmonic/ Flicker:</b>						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	HARMONIC/FLICKER ANALYZER	KIKUSUI	KHA1000	GTS235	June. 29 2017	June. 28 2018
2	AC POWER SUPPLY	KIKUSUI	PCR4000LE	GTS236	June. 29 2017	June. 28 2018
3	LINE IMPEDANCE NETWORK	KIKUSUI	LIN1020JF	GTS237	June. 29 2017	June. 28 2018
4	Thermo meter	KTJ	TA328	GTS256	June. 29 2017	June. 28 2018

<b>Conducted Immunity:</b>						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Signal Generator	R&S	SMA100B	17-307827	June. 28 2017	June. 27 2018
2	CDN	LIONCEL	CDN-M3-16	170702	June. 28 2017	June. 27 2018
3	ATT	RFLIGHT	NTWPA	14103467	June. 28 2017	June. 27 2018

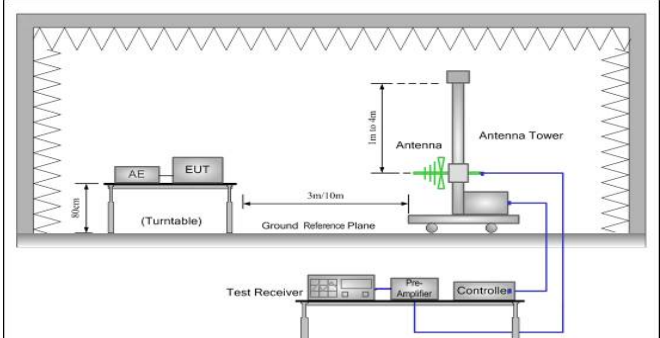
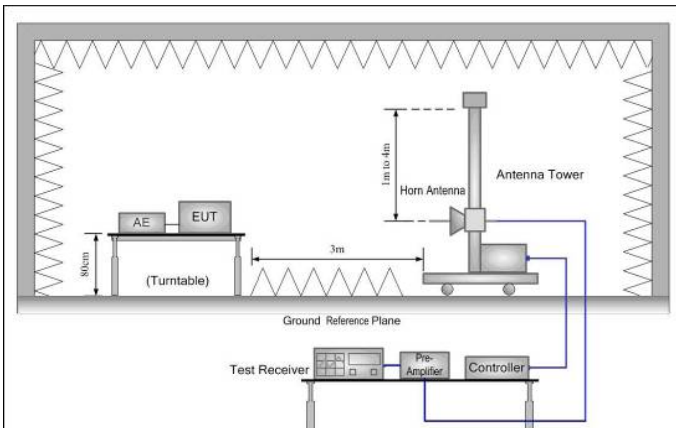
<b>Radiated Immunity:</b>						
Item	Test Equipment	Manufacturer	Model No.	Serial NO.	Cal.Date (mm-dd-yy)	Cal.Due Date (mm-dd-yy)
1	Signal Generator	Rohde & Schwarz	SMT03	100059	Jan. 16 2017	Jan. 15 2018
2	Power Amplifier	AR	150W1000	300999	Jan. 16 2017	Jan. 15 2018
3	Power Amplifier	AR	25S1G4AM1	305993	Jan. 16 2017	Jan. 15 2018
4	Power Amplifier	AR	150A220M6	305965	Jan. 16 2017	Jan. 15 2018
5	Broadband antenna	CHASE	CBL6111C	2576	Jan. 16 2017	Jan. 15 2018
6	Horn Antenna	AR	AT4002A	2783	Jan. 16 2017	Jan. 15 2018

<b>General used equipment:</b>						
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 2017	June. 28 2018



## 7 Emission Test Results

### 7.1 Radiated Emission

Test Requirement:	EN 55032																								
Test Method:	EN 55032																								
Test Frequency Range:	30MHz to 6GHz																								
Class / Severity:	Class B																								
Test site:	Measurement Distance: 3m																								
Receiver setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120KHz</td> <td>300KHz</td> <td>Quasi-peak</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak</td> </tr> <tr> <td>AV</td> <td>1MHz</td> <td>3MHz</td> <td>Average</td> </tr> </tbody> </table>				Frequency	Detector	RBW	VBW	Value	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak	Above 1GHz	Peak	1MHz	3MHz	Peak	AV	1MHz	3MHz	Average		
Frequency	Detector	RBW	VBW	Value																					
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak																					
Above 1GHz	Peak	1MHz	3MHz	Peak																					
	AV	1MHz	3MHz	Average																					
Limit:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dB<math>\mu</math>V/m @3m)</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>30MHz-230MHz</td> <td>40.00</td> <td>Quasi-peak</td> </tr> <tr> <td>230MHz-1GHz</td> <td>47.00</td> <td>Quasi-peak</td> </tr> <tr> <td>1GHz-3GHz</td> <td>70.00</td> <td>Peak</td> </tr> <tr> <td>1GHz-3GHz</td> <td>50.00</td> <td>Average</td> </tr> <tr> <td>3GHz-6GHz</td> <td>74.00</td> <td>Peak</td> </tr> <tr> <td>3GHz-6GHz</td> <td>54.00</td> <td>Average</td> </tr> </tbody> </table>				Frequency	Limit (dB $\mu$ V/m @3m)	Value	30MHz-230MHz	40.00	Quasi-peak	230MHz-1GHz	47.00	Quasi-peak	1GHz-3GHz	70.00	Peak	1GHz-3GHz	50.00	Average	3GHz-6GHz	74.00	Peak	3GHz-6GHz	54.00	Average
Frequency	Limit (dB $\mu$ V/m @3m)	Value																							
30MHz-230MHz	40.00	Quasi-peak																							
230MHz-1GHz	47.00	Quasi-peak																							
1GHz-3GHz	70.00	Peak																							
1GHz-3GHz	50.00	Average																							
3GHz-6GHz	74.00	Peak																							
3GHz-6GHz	54.00	Average																							
Test setup:	<p>Below 1GHz:</p>  <p>Above 1GHz:</p> 																								

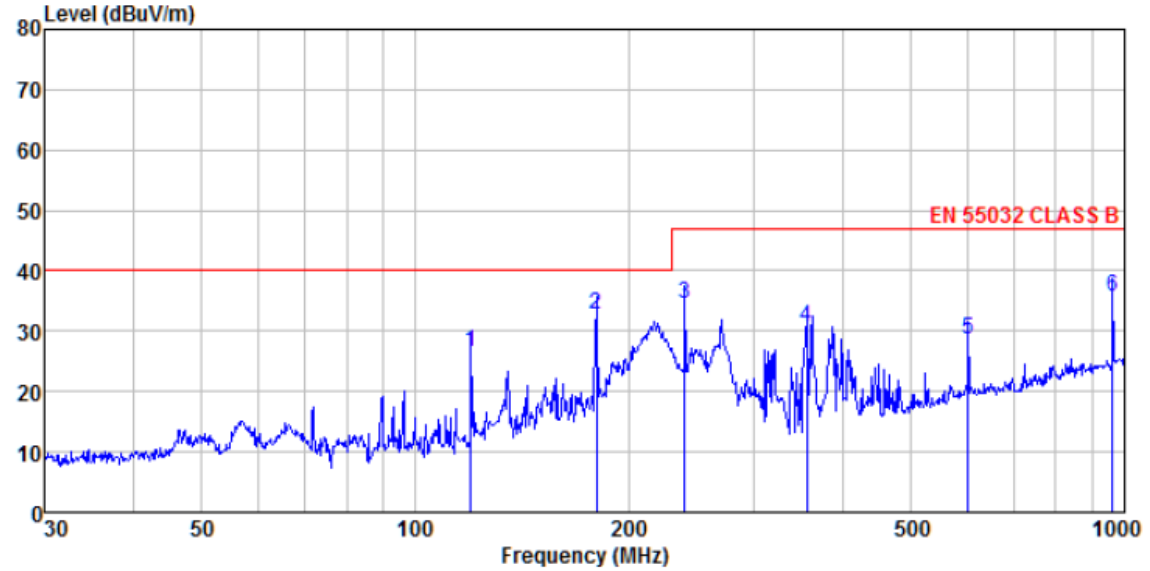
Test Procedure:	<p><b>From 30MHz to 1GHz:</b></p> <ol style="list-style-type: none"> <li>1. The radiated emissions test was conducted in a semi-anechoic chamber.</li> <li>2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.</li> <li>3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.</li> <li>4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.</li> </ol> <p><b>Above 1GHz:</b></p> <ol style="list-style-type: none"> <li>1. The radiated emissions test was conducted in a fully-anechoic chamber.</li> <li>2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.</li> <li>3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT.</li> <li>4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.</li> </ol>
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Measurement Record:	Uncertainty: ± 4.50dB
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details , Only show test data of the worse mode on the test report.
Test results:	Pass

## Measurement Data

**Below 1GHz:**

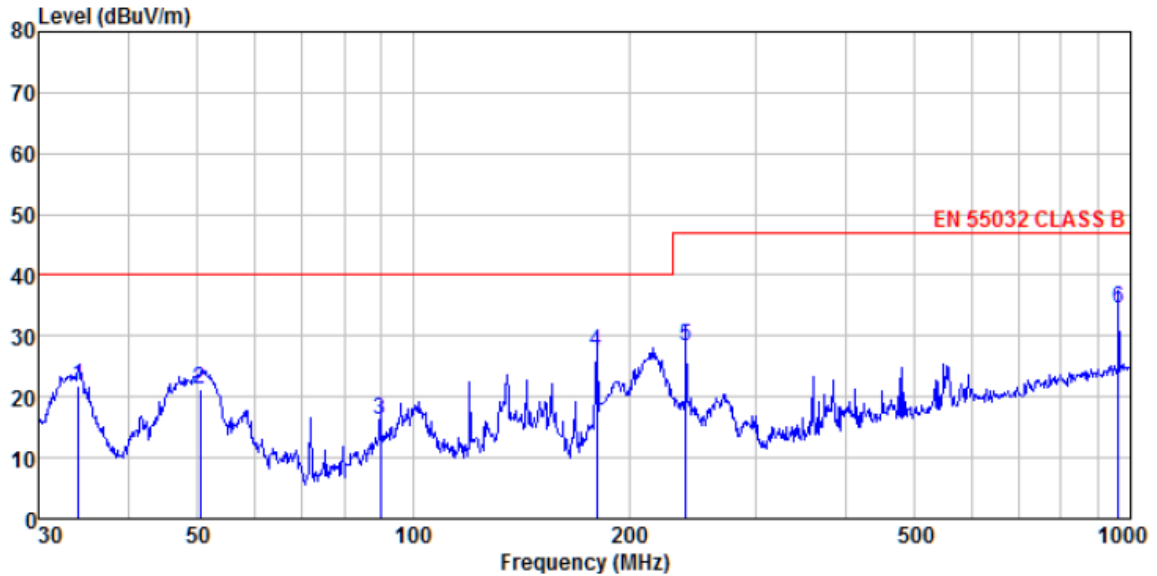
Horizontal:

Operation mode:



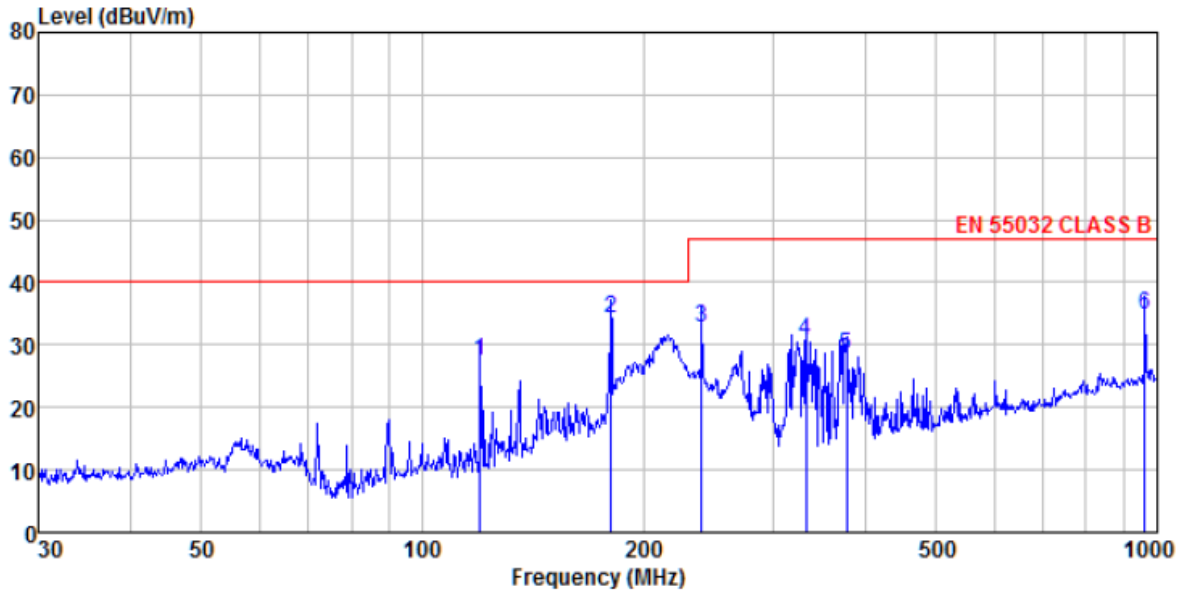
	Freq	ReadLevel	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	119.856	45.62	9.40	29.72	1.36	26.66	40.00	-13.34	QP
2	180.017	51.61	8.80	29.48	1.74	32.67	40.00	-7.33	QP
3	239.987	50.51	11.56	29.72	2.07	34.42	47.00	-12.58	QP
4	356.676	43.43	14.62	29.85	2.65	30.85	47.00	-16.15	QP
5	601.427	34.98	19.30	29.39	3.73	28.62	47.00	-18.38	QP
6	962.162	37.32	22.57	29.24	5.09	35.74	47.00	-11.26	QP

Vertical:



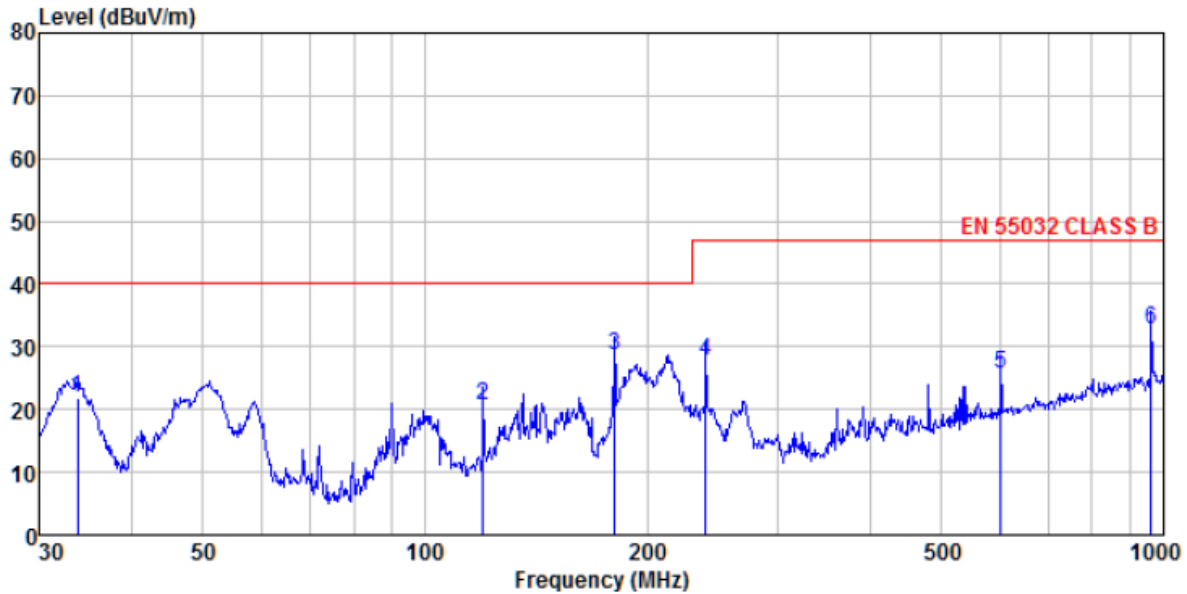
	Read Freq	Antenna Level	Preamp Factor	Cable Factor	Cable Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	34.156	40.12	11.25	30.10	0.60	21.87	40.00	-18.13	QP
2	50.409	38.35	12.20	30.08	0.77	21.24	40.00	-18.76	QP
3	89.905	34.38	10.60	29.85	1.11	16.24	40.00	-23.76	QP
4	180.017	46.41	8.80	29.48	1.74	27.47	40.00	-12.53	QP
5	239.987	44.56	11.56	29.72	2.07	28.47	47.00	-18.53	QP
6	962.162	36.10	22.57	29.24	5.09	34.52	47.00	-12.48	QP

OTG mode:  
Horizontal:



	Read Freq	Antenna Level	Preamp Factor	Cable Loss	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	
1	119.856	46.30	9.40	29.72	1.36	27.34	40.00	-12.66 QP
2	180.649	53.10	8.80	29.48	1.74	34.16	40.00	-5.84 QP
3	239.987	48.98	11.56	29.72	2.07	32.89	47.00	-14.11 QP
4	332.519	44.04	14.15	30.00	2.53	30.72	47.00	-16.28 QP
5	377.259	40.15	15.03	29.73	2.75	28.20	47.00	-18.80 QP
6	962.162	36.36	22.57	29.24	5.09	34.78	47.00	-12.22 QP

Vertical:



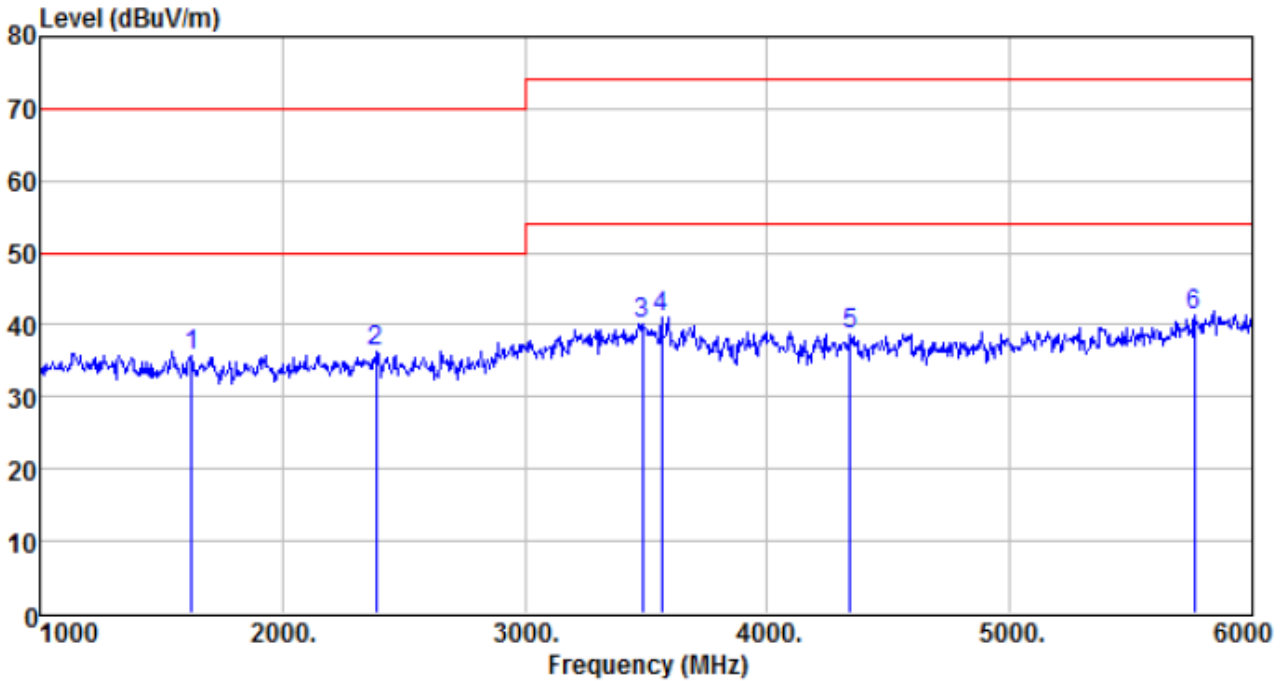
Site : 3m chamber

Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	33.799	40.11	11.25	30.10	0.59	21.85	40.00	-18.15 QP
2	119.856	39.72	9.40	29.72	1.36	20.76	40.00	-19.24 QP
3	180.649	47.55	8.80	29.48	1.74	28.61	40.00	-11.39 QP
4	239.987	43.70	11.56	29.72	2.07	27.61	47.00	-19.39 QP
5	601.427	32.08	19.30	29.39	3.73	25.72	47.00	-21.28 QP
6	962.162	34.34	22.57	29.24	5.09	32.76	47.00	-14.24 QP

Above 1GHz:

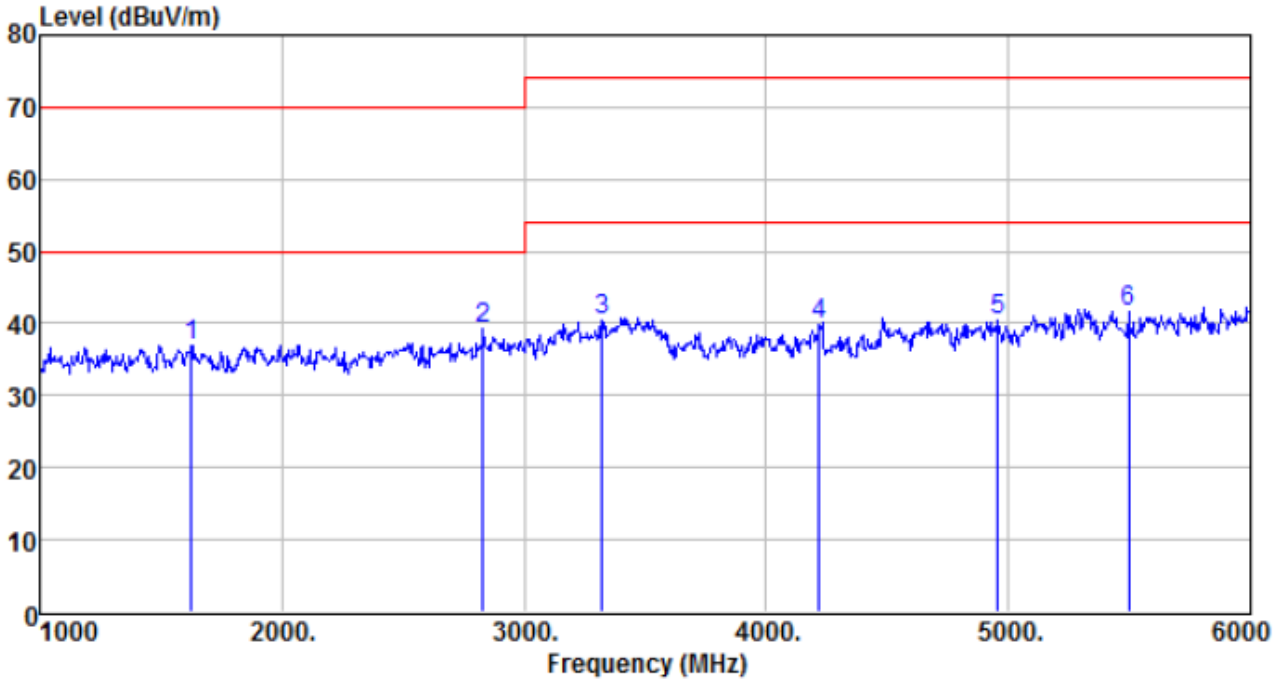
OTG mode

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
1625.000	39.81	24.92	4.76	33.82	35.67	70.00	-34.33	Peak
2385.000	37.24	27.61	5.38	34.03	36.20	70.00	-33.80	Peak
3485.000	37.06	28.93	6.93	32.77	40.15	74.00	-33.85	Peak
3565.000	37.44	29.10	7.09	32.67	40.96	74.00	-33.04	Peak
4340.000	31.38	30.88	8.19	31.86	38.59	74.00	-35.41	Peak
5760.000	31.26	32.59	9.88	32.27	41.46	74.00	-32.54	Peak

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
1625.000	41.15	24.92	4.76	33.82	37.01	70.00	-32.99	Peak
2830.000	38.55	28.39	5.78	33.51	39.21	70.00	-30.79	Peak
3320.000	38.47	28.39	6.60	32.97	40.49	74.00	-33.51	Peak
4220.000	33.41	30.27	8.08	31.94	39.82	74.00	-34.18	Peak
4955.000	31.88	31.91	8.73	32.16	40.36	74.00	-33.64	Peak
5495.000	32.71	31.98	9.49	32.42	41.76	74.00	-32.24	Peak

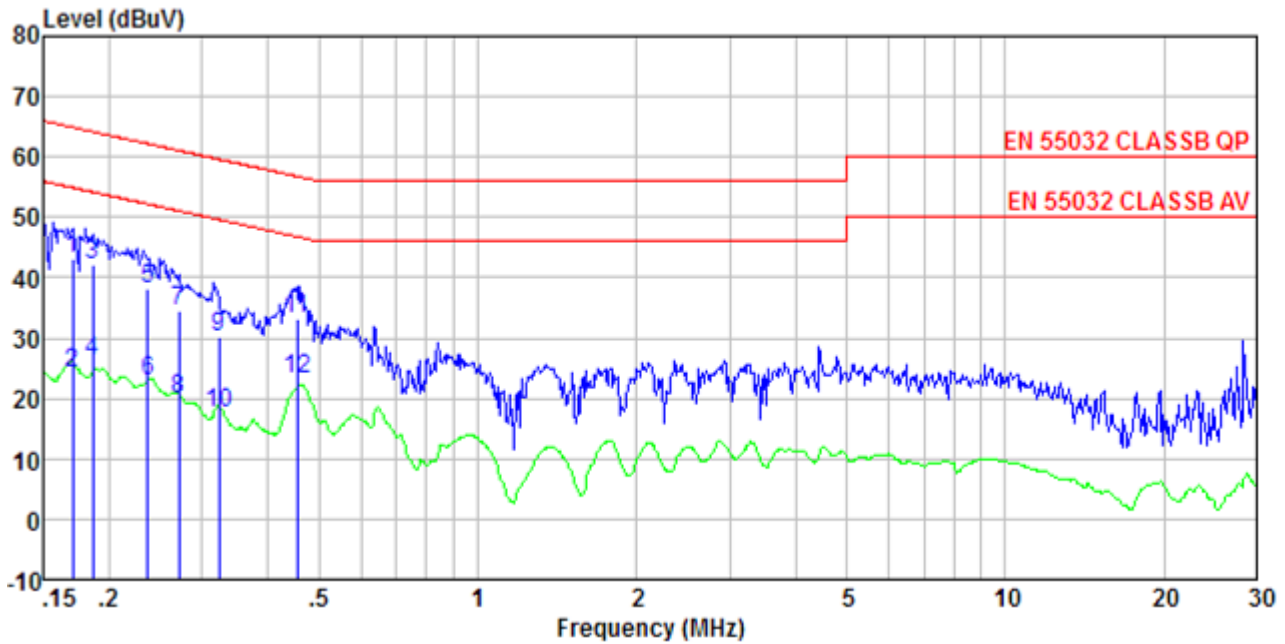


## 7.2 Conducted Emission

Test Requirement:	EN 55032														
Test Method:	EN 55032														
Test Frequency Range:	150kHz to 30MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9kHz, VBW=30kHz														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dB<math>\mu</math>V)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <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>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p>* Decreases with the logarithm of the frequency.</p>	Frequency range (MHz)	Limit (dB $\mu$ V)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dB $\mu$ V)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test setup:	<p><i>Remark</i>                  EUT: Equipment Under Test                  LISN: Line Impedance Stabilization Network                  Test table height=0.8m</p>														
Test procedure:	<ol style="list-style-type: none"> <li>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(LISN). The provide a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>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).</li> <li>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 EN55032 Class B on conducted measurement.</li> </ol>														
Test environment:	Temp.: 24 °C    Humid.: 51%    Press.: 1012mbar														
Measurement Record:	Uncertainty: $\pm 3.45$ dB														
Test Instruments:	Refer to section 6 for details														
Test mode:	Refer to section 5.2 for details , Only show test data of the worse mode on the test report.														
Test results:	Pass														

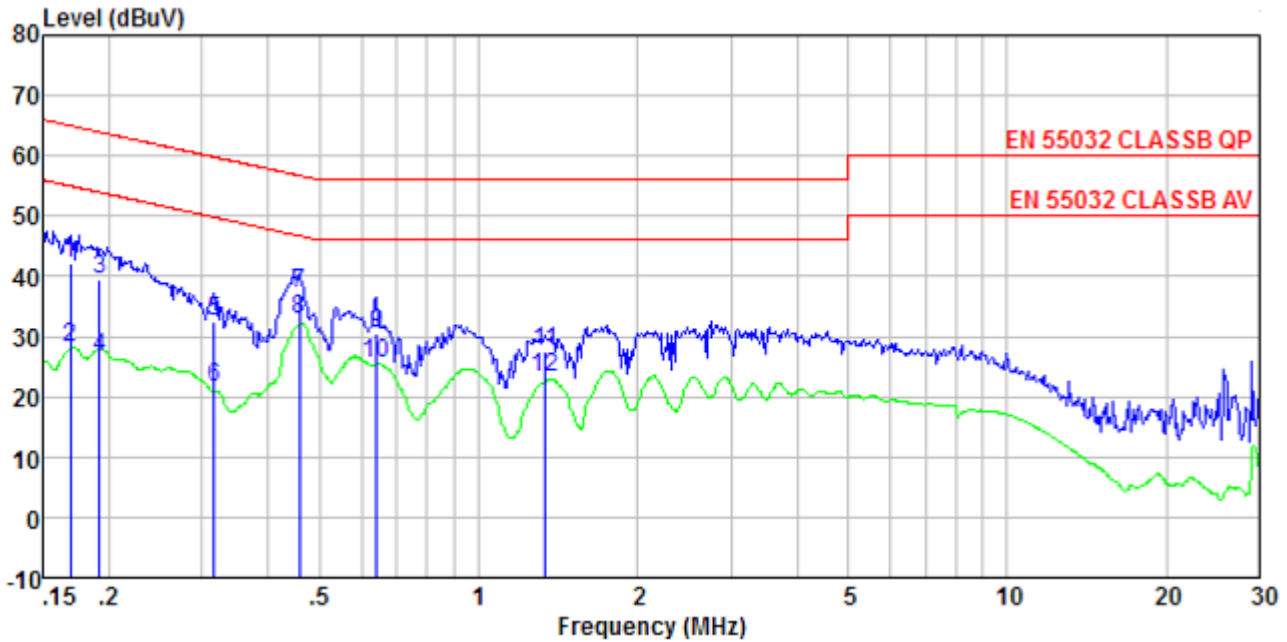
### Measurement Data

Test mode:	Operation mode	Phase Polarity:	Line
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	Freq	Read Level	Cable Loss	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.170	42.54	0.12	0.54	43.08	64.94	-21.86	QP
2	0.170	23.81	0.12	0.54	24.35	54.94	-30.59	Average
3	0.186	41.75	0.13	0.55	42.30	64.20	-21.90	QP
4	0.186	25.73	0.13	0.55	26.28	54.20	-27.92	Average
5	0.237	37.66	0.12	0.56	38.22	62.22	-24.00	QP
6	0.237	22.28	0.12	0.56	22.84	52.22	-29.38	Average
7	0.272	33.83	0.11	0.55	34.38	61.07	-26.69	QP
8	0.272	19.20	0.11	0.55	19.75	51.07	-31.32	Average
9	0.323	29.59	0.10	0.53	30.12	59.62	-29.50	QP
10	0.323	16.94	0.10	0.53	17.47	49.62	-32.15	Average
11	0.454	32.80	0.11	0.51	33.31	56.80	-23.49	QP
12	0.454	22.75	0.11	0.51	23.26	46.80	-23.54	Average

Test mode:	Operation mode	Phase Polarity:	Neutral
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	Read Freq	Cable Loss	Factor	Level	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dB	
1	0.169	41.56	0.12	0.53	42.09	64.99	-22.90 QP
2	0.169	27.66	0.12	0.53	28.19	54.99	-26.80 Average
3	0.192	39.06	0.13	0.54	39.60	63.93	-24.33 QP
4	0.192	25.87	0.13	0.54	26.41	53.93	-27.52 Average
5	0.317	31.85	0.10	0.52	32.37	59.80	-27.43 QP
6	0.317	21.09	0.10	0.52	21.61	49.80	-28.19 Average
7	0.459	36.68	0.11	0.48	37.16	56.71	-19.55 QP
8	0.459	32.49	0.11	0.48	32.97	46.71	-13.74 Average
9	0.641	30.25	0.13	0.39	30.64	56.00	-25.36 QP
10	0.641	25.28	0.13	0.39	25.67	46.00	-20.33 Average
11	1.338	27.18	0.13	0.34	27.52	56.00	-28.48 QP
12	1.338	22.88	0.13	0.34	23.22	46.00	-22.78 Average

**Notes:**

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

## 7.3 Harmonic Emission

Test Requirement:	EN 61000-3-2
Test Method:	N/A: See Remark Below
Remark	<p>There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2.</p> <p>For further details, please refer to Clause 7, Note 1 of EN 61000-3-2 which states:</p> <p>“For the following categories of equipment limits are not specified in this edition of the standard. Note 1: Equipment with a rated power of 75W or less, other than lighting equipment.”</p>

## 7.4 Flicker Emission

Test Requirement:	EN 61000-3-3					
Test Method:	EN 61000-3-3					
Class/Severity:	Clause 5 of EN 61000-3-3					
Measurement Time:	10 min					
Detector:	As per EN 61000-3-3					
Test environment:	Temp.:	24 °C	Humid.:	51%	Press.:	1 012mbar
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details, Only show test data of the worse mode on the test report.					
Test results:	Pass					

### Measurement Data Operation mode

	EUT values	Limit	Result
Pst	0.036	1.00	PASS
dc [%]	0.012	3.30	PASS
dmax [%]	0.065	4.00	PASS
dt [s]	0.000	0.50	PASS

## 8 Immunity Test Results

### 8.1 Performance Criteria Description in Clause 7 of EN 55024

<p>Criterion A:</p>	<p>The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
<p>Criterion B:</p>	<p>After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.</p> <p>During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.</p> <p>If the minimum performance level ( or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
<p>Criterion C:</p>	<p>Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.</p> <p>Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>

## 8.2 Electrostatic discharge

Test Requirement:	EN 55024
Test Method:	EN 61000-4-2
Discharge Voltage:	Contact Discharge: $\pm 4\text{kV}$ Air Discharge: $\pm 2\text{kV}$ , $\pm 4\text{kV}$ , $\pm 8\text{kV}$ HCP/VCP: $\pm 4\text{kV}$
Polarity:	Positive & Negative
Number of Discharge:	Contact Discharge: Minimum 25 times at each test point, Air Discharge: Minimum 10 times at each test point.
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum
Performance Criterion:	Criterion B
Test setup:	
Test Procedure:	<p><b>1. Air discharge:</b> The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure was repeated until all the air discharge completed</p> <p><b>2. Contact Discharge:</b> The test was applied on conductive surfaces of EUT. the generator was re-triggered for a new single discharge and repeated 25 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated.</p> <p><b>3. Indirect discharge for horizontal coupling plane</b> At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge. Consideration should be given to exposing all sides of the EUT.</p> <p><b>4. Indirect discharge for vertical coupling plane</b> At least 10 single discharges were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X</p>

	0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1 012mbar
Test mode:	Refer to section 6.0 for details
Test Instruments:	Refer to section 5.2 for details
Test results:	Pass

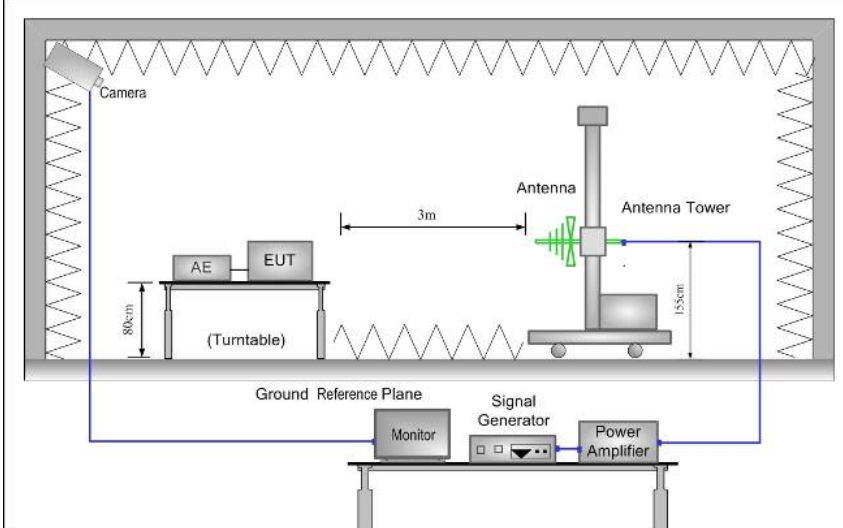
**Measurement Record:**

Test points:	I: Metallic parts, screws			
	II: All plastic seams, surface			
<b>Direct discharge</b>				
Discharge Voltage (KV)	Type of discharge	Test points	Observations (Performance Criterion)	Result
± 4	Contact	I	A	Pass
± 2, ± 4, ± 8	Air	II	A	Pass
<b>Indirect discharge</b>				
Discharge Voltage (KV)	Type of discharge	Test points	Observation Performance	Result
± 4	HCP-Bottom/Top/ Front/Back/Left/Right	Edge of the HCP	A	Pass
± 4	VCP-Bottom/Top/ Front/Back/Left/Right	Center of the VCP	A	Pass

Remark:

A: No degradation in performance of the EUT was observed.

## 8.3 Radio-frequency electromagnetic field Amplitude modulated

Test Requirement:	EN 55024
Test Method:	EN 61000-4-3
Frequency range:	80MHz to 1GHz
Test Level:	3V/m
Modulation:	80%, 1kHz Amplitude Modulation
Performance Criterion:	Criterion A
Test setup:	
Test Procedure:	<ol style="list-style-type: none"> <li>1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items.</li> <li>2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length.</li> <li>3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area).</li> <li>4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value.</li> <li>5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0,5 s.</li> <li>6. The test normally was performed with the generating antenna facing each side of the EUT.</li> <li>7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally.</li> </ol>



	8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

**Measurement Record:**

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)	Result
80 MHz-1 GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A	Pass
			H		A	Pass
			V	Rear	A	Pass
			H		A	Pass
			V	Left	A	Pass
			H		A	Pass
			V	Right	A	Pass
			H		A	Pass
			V	Top	A	Pass
			H		A	Pass
			V	Bottom	A	Pass
			H		A	Pass

*Remark:*

*A: No degradation in performance of the EUT was observed.*

## 8.4 Electrical fast transients

Test Requirement:	EN 55024
Test Method:	EN 61000-4-4
Test Level:	1.0kV
Polarity:	Positive & Negative
Test signal specification:	Rise time=5ns, Duration time=50ns; Burst Duration=15ms, Burst Period=300ms; Repetition Frequency=5KHz
Test Duration:	2 minute per level & polarity
Performance Criterion:	Criterion B
Test setup:	<p>The diagram illustrates the test setup. An EMC Tester and EUT are positioned on a non-conducted table. The table is supported by a wood support 0.1m + 0.01m thick. A ground reference plane is shown below the table, with a 10cm gap between the table and the plane. A grounding cable is connected to the table, with a height of 80cm from the ground reference plane.</p>
Test Procedure:	<ol style="list-style-type: none"> <li>1. The EUT and its simulators were placed on the ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness.</li> <li>2. This reference ground plane was project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane was more than 0.5m.</li> <li>3. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables.</li> <li>4. The length of power lines between the coupling device and the EUT is 0.5m</li> <li>5. The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.</li> <li>6. Each of the Line and Neutral conductors is impressed with burst noise for 2 minutes.</li> </ol>
Test environment:	Temp.: 26 °C Humid.: 54% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

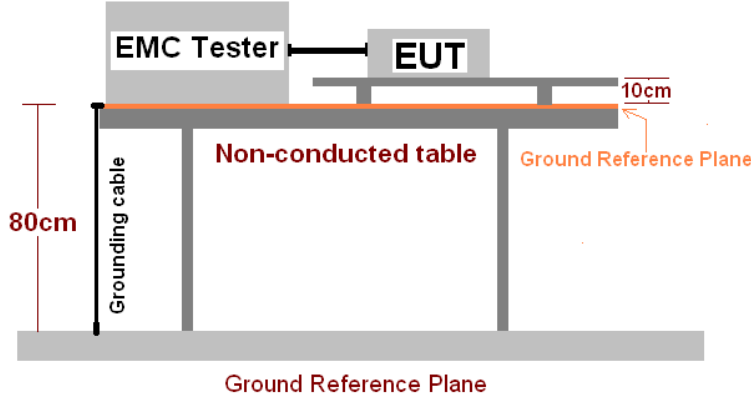
### Measurement Record:

Lead under Test	Level ( $\pm$ kV)	Coupling Direct/Clamp	Observations (Performance Criterion)	Result
L	$\pm 1.0$	Direct	A	Pass
N	$\pm 1.0$	Direct	A	Pass
L-N	$\pm 1.0$	Direct	A	Pass

*Remark:*

*A: No degradation in performance of the EUT was observed.*

## 8.5 Surges

Test Requirement:	EN 55024
Test Method:	EN 61000-4-5
Test Level:	1kV line to line: Differential mode 2kV line to earth: Common mode
Polarity:	Positive & Negative
Generator source impedance:	2Ω (line-line coupling) 12Ω (line-earth coupling)
Test signal specification:	Rise time=1.2us, Duration time=50us; Test Interval: 60s between each surge;
No. of surges:	5 positive, 5 negative at 0°, 90°, 180°, 270°.
Performance Criterion:	Criterion B
Test setup:	 <p>The diagram illustrates the test setup. An EMC Tester and EUT are positioned on a non-conducted table. The table is 80cm high. A 10cm gap is maintained between the EMC Tester and the EUT. A Ground Reference Plane is indicated below the table.</p>
Test Procedure:	<ol style="list-style-type: none"> <li>1. For line-to-line coupling mode, provide a 1kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points, and for active line / neutral lines to ground are same except test level is 2kV.</li> <li>2. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test.</li> <li>3. Different phase angles are done individually.</li> <li>4. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.</li> </ol>
Test environment:	Temp.: 26 °C Humid.: 53% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

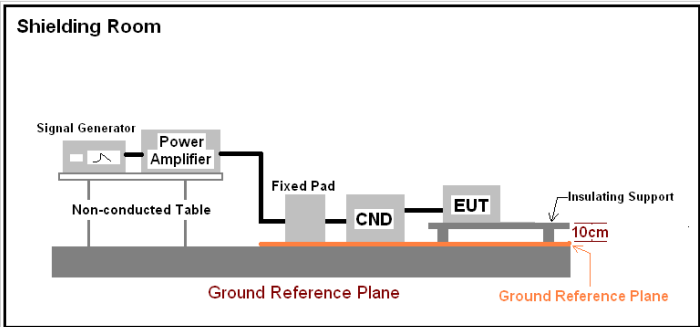
### Measurement Record:

Location	Level(kV)	Pulse No	Surge Interval	Phase(deg)	Observations (Performance Criterion)	Result
L-N	± 1	5	60s	0°	A	Pass
				90°	A	Pass
				180°	A	Pass
				270°	A	Pass

*Remark:*

*A: No degradation in performance of the EUT was observed.*

## 8.6 Radio-frequency continuous conducted

Test Requirement:	EN 55024
Test Method:	EN 61000-4-6
Frequency range:	0.15MHz to 80MHz
Test Level:	3V rms on AC Ports (unmodulated emf into 150 Ω)
Performance Criterion:	Criterion A
Test setup:	
Test Procedure:	<ol style="list-style-type: none"> <li>1. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).</li> <li>2. The disturbance signal described below is injected to EUT through CDN.</li> <li>3. The EUT operates within its operational mode(s) under intended climatic conditions after power on.</li> <li>4. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.</li> </ol>
Test environment:	Temp.: 24 °C Humid.: 51% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

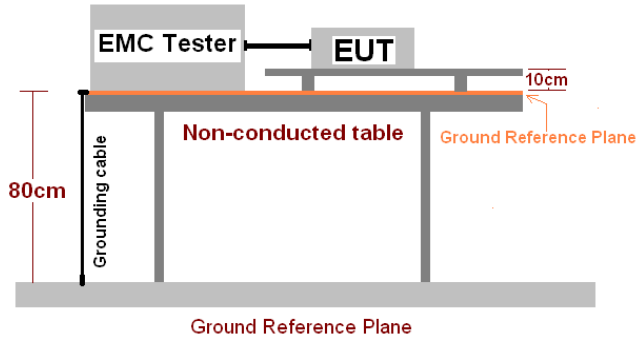
### Measurement Record:

Frequency	Injected Position	Level	Modulation	Observations (Performance Criterion)	Result
150kHz to 80MHz	AC Mains	3Vrms	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=2seconds	A	Pass

Remark:

A: No degradation in performance of the EUT was observed.

## 8.7 Voltage dips and Voltage interruptions

Test Requirement:	EN 55024
Test Method:	EN 61000-4-11
Test Level:	0% of VT(Supply Voltage) for 0.5 period 70% of VT(Supply Voltage) for 25 period 0% of VT(Supply Voltage) for 250 period
Number of Dips / Interruptions:	3 per Level
Performance Criterion:	>95% VD, 0.5 period----Performance criterion: B 30% VD, 25 period----Performance criterion: C >95% VI, 250 period----Performance criterion: C
Test setup:	 <p>The diagram illustrates the test setup. An EMC Tester and an EUT (Equipment Under Test) are placed on a non-conducted table. The table is 80cm high and has a 10cm clearance from the ground reference plane. A grounding cable is connected to the table. The ground reference plane is shown at the bottom of the diagram.</p>
Test Procedure:	<ol style="list-style-type: none"> <li>The EUT and test generator were setup as shown on above setup photo.</li> <li>The interruptions are introduced at selected phase angles with specified duration.</li> <li>Record any degradation of performance.</li> </ol>
Test environment:	Temp.: 26 °C Humid.: 53% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

### Measurement Record:

Test Level % $U_T$	Duration (Periods)	Phase angle	No. of drop out	Time between dropout	Observations (Performance Criterion)	Result
0	0.5	0°, 90°, 180°, 270°	3	10s	A	Pass
70	25	0°, 90°, 180°, 270°	3	10s	A	Pass
0	250	0°, 90°, 180°, 270°	3	10s	B	Pass

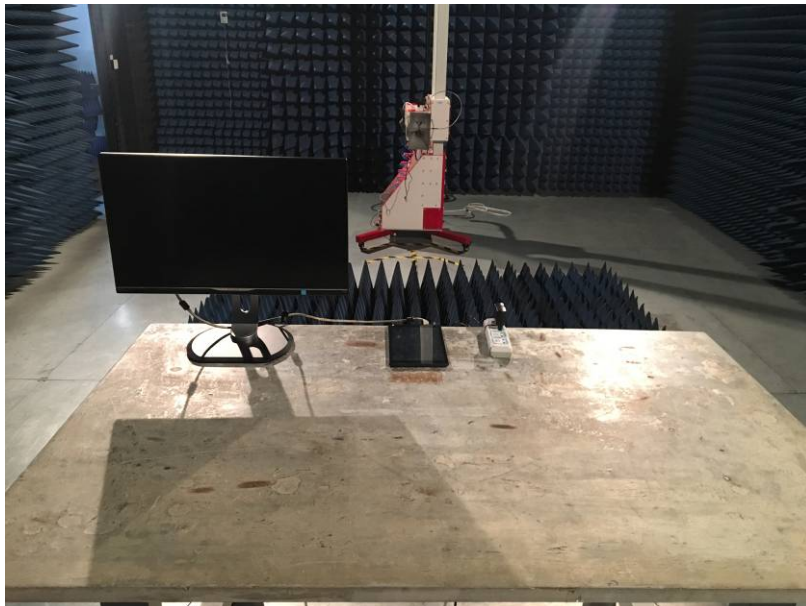
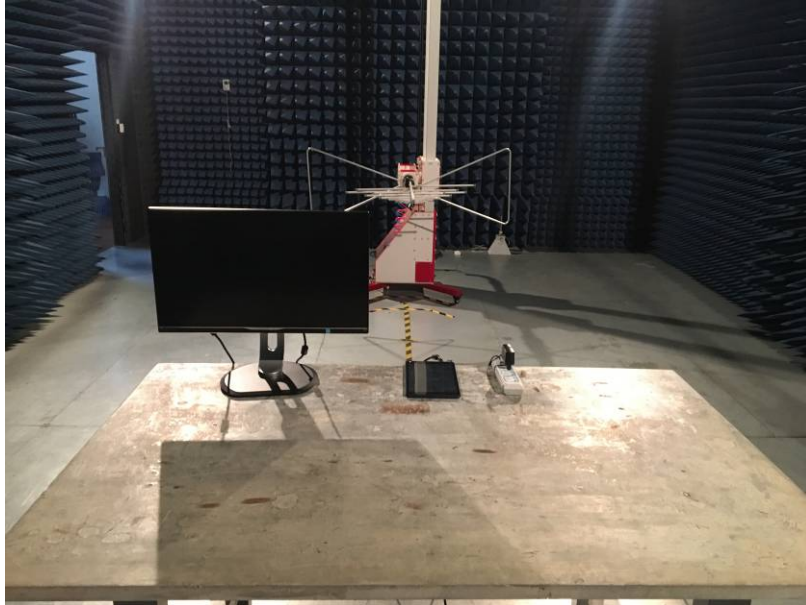
### Remark:

A: No degradation in performance of the EUT was observed.

B: During the test, the adaptor stops work, but it can recover automatically after the test.

## 9 Test Setup Photo

Radiated Emission





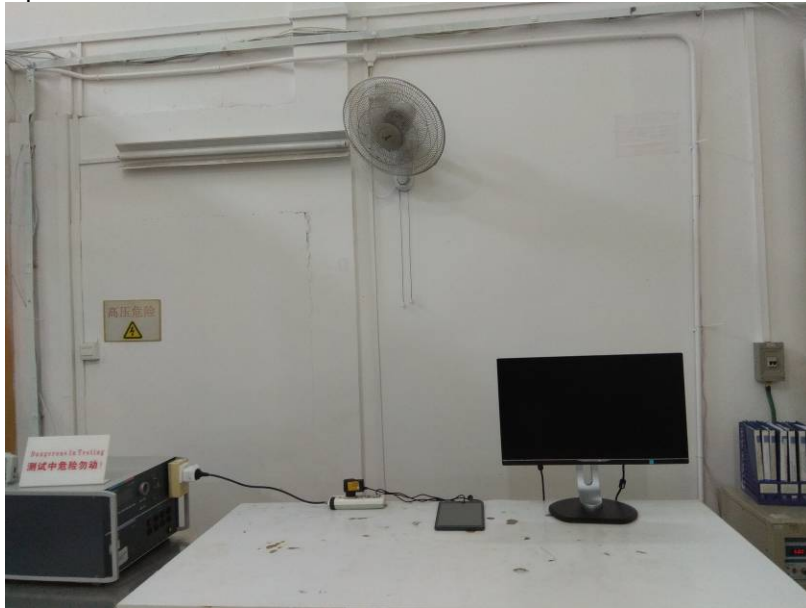
## Conducted Emission



## ESD



## Surges/EFT/V-dips



## Flicker



## 10 EUT Constructional Details

Reference to the test report No. : GTS201709000150E01

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