

FCC Report

Applicant: Akyumen Technologies Corp.

Address of Applicant: 7401 Wiles Road, Suite 123, Coral Spring, Florida, United States

Equipment Under Test (EUT)

Product Name: Tablet Projector

Model No.: FALCON 2W

Trade mark: Akyumen

FCC ID: 2ADLDFALCON2W

Applicable standards: FCC CFR Title 47 Part 15 Subpart B:2015

Date of sample receipt: October 17, 2016

Date of Test: October 18-24, 2016

Date of report issue: October 26, 2016

Test Result : PASS *

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

Authorized Signature:



Robinson Lo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	<i>October 26, 2016</i>	<i>Original</i>

Prepared By:

Zolward.Pan

Date:

October 26, 2016

Project Engineer

Check By:

Andy Wu

Date:

October 26, 2016

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 complies with the essential requirements in the standard.

Remark: Test according to ANSI C63.4: 2014.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 Client Information

Applicant:	Akyumen Technologies Corp.
Address of Applicant:	7401 Wiles Road, Suite 123, Coral Spring, Florida, United States
Manufacturer/ Factory:	Akyumen Technologies Corp.
Address of Manufacturer/ Factory:	7401 Wiles Road, Suite 123, Coral Spring, Florida, United States

5.2 General Description of EUT

Product Name:	Tablet Projector
Model No.:	FALCON 2W
Power Supply:	Adapter Model No.: CGSW-05003000 Input: AC 100-240V, 50/60Hz, 0. 5A Output: DC 5.0V, 3A or DC 3.7V 2*3400mAh Li-ion Battery

5.3 Test mode

Test mode:	
Burning test mode(HDMI output)	Keep the EUT in burning test and HDMI output status.
Projection mode	Keep the EUT in projection operation status.
REC mode	Keep the EUT in video record mode.
playing mode	Keep the EUT in video playing mode.

Remark: All of the mode was tested, and found the burning test mode and HDMI output status was the worst case. So only the case was record in the report.

5.4 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.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone,
Xixiang Road, Baoan District, Shenzhen, Guangdong, China
Tel: 0755-27798480
Fax: 0755-27798960

5.6 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC Approval
Polaroid	LCD TV	N/A	PLV68155S67	FCC DoC
DANYIN	Earphone	DT-301	DT3011103001592	FCC DoC

5.7 Deviation from Standards

Biconical, log.per. antenna and horn antenna were used instead of dipole antenna.
Semi-anechoic Chamber was used as alternation of open air test sites, and all test suites were performed with radiated method in it.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.

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 waveguide horn	SCHWARZBECK	9120D	GTS208	June 29 2016	June 28 2017
6	RF Amplifier	HP	8347A	GTS204	June 29 2016	June 28 2017
7	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	June 29 2016	June 28 2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	June 29 2016	June 28 2017
10	Coaxial Cable	GTS	N/A	GTS211	June 29 2016	June 28 2017
11	Thermo meter	N/A	N/A	GTS256	June 29 2016	June 28 2017
12	Loop Antenna	Zhinan	ZN30900A	GTS534	June. 29 2016	June. 28 2017

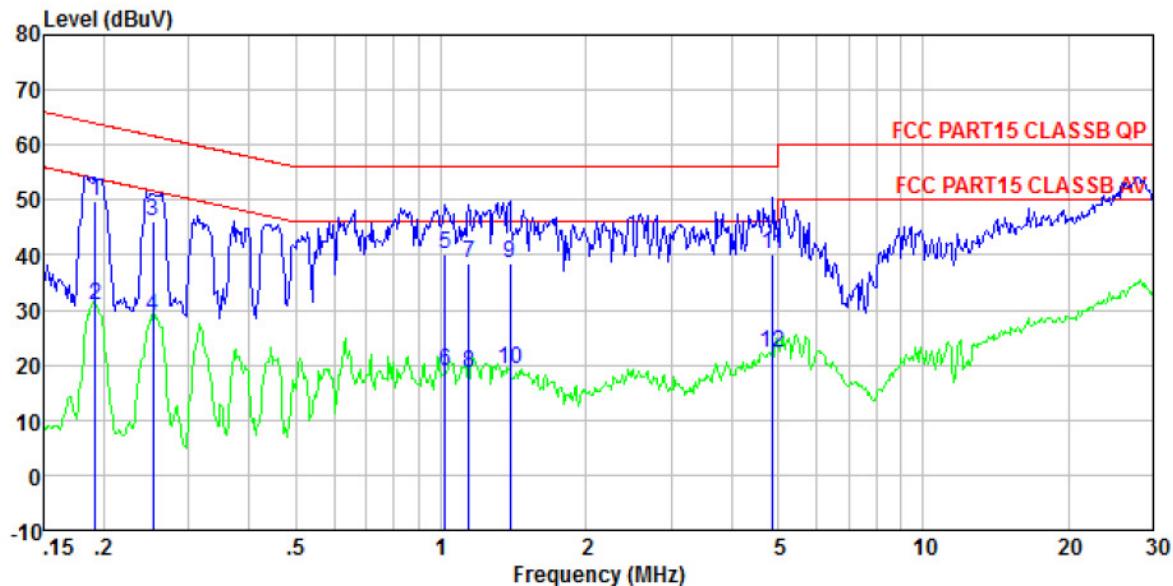
Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May 16 2014	May 15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June 29 2016	June 28 2017
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	June 29 2016	June 28 2017
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 29 2016	June 28 2017
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June 29 2016	June 28 2017
6	Coaxial Cable	GTS	N/A	GTS227	June 29 2016	June 28 2017
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	June 29 2016	June 28 2017

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

7 Test Results and Measurement Data

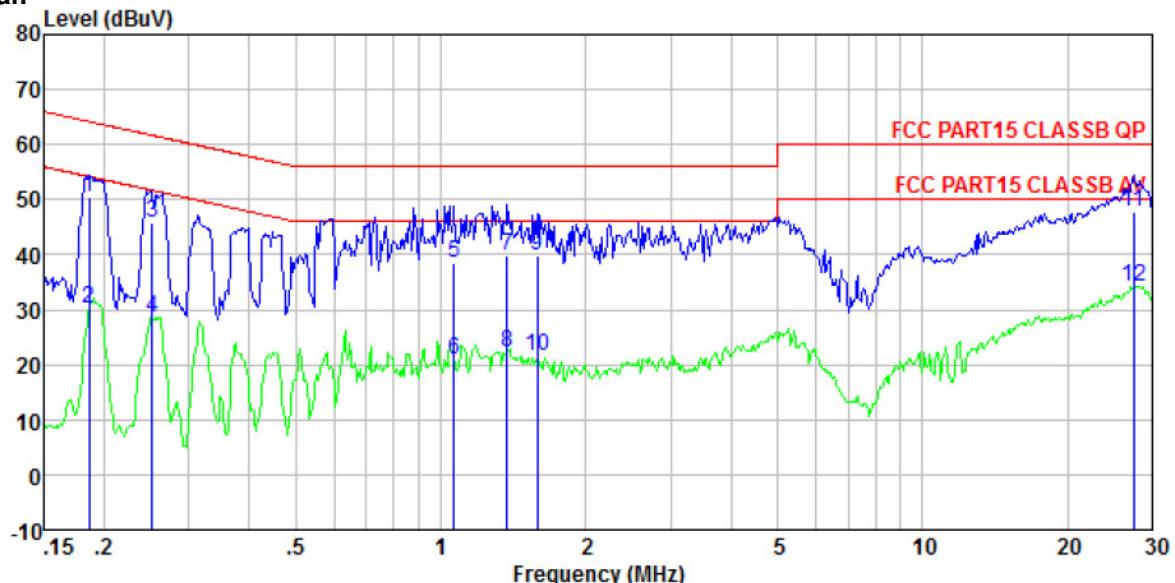
7.1 Conducted Emissions

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, Sweep time=auto																
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</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>			Frequency range (MHz)	Limit (dBuV)		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 (dBuV)																
	Quasi-peak	Average															
0.15-0.5	66 to 56*	56 to 46*															
0.5-5	56	46															
5-30	60	50															
	<p>* Decreases with the logarithm of the frequency.</p>																
Test setup:	<p>Reference Plane</p> <p>Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>																
Test procedure:	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides 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 refer 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 Instruments:	Refer to section 6 for details																
Test mode:	Refer to section 5.3 for details																
Test results:	Pass																

Measurement Data
Line:


Site : Shielded room
 Condition : FCC PART15 CLASSB QP LINE
 Job No. : 0216
 Test mode : Burning test mode(HDMI output)
 Test Engineer: Boy

Freq	Read	LISN	Cable	Limit	Over	Remark
	MHz	Level	Level Factor	Loss	Line	
1	0.192	49.12	49.68	0.43	0.13	63.93 -14.25 QP
2	0.192	30.43	30.99	0.43	0.13	53.93 -22.94 Average
3	0.253	45.62	46.17	0.44	0.11	61.64 -15.47 QP
4	0.253	28.19	28.74	0.44	0.11	51.64 -22.90 Average
5	1.021	39.72	40.10	0.25	0.13	56.00 -15.90 QP
6	1.021	18.53	18.91	0.25	0.13	46.00 -27.09 Average
7	1.141	38.28	38.65	0.24	0.13	56.00 -17.35 QP
8	1.141	18.26	18.63	0.24	0.13	46.00 -27.37 Average
9	1.388	38.27	38.63	0.23	0.13	56.00 -17.37 QP
10	1.388	18.85	19.21	0.23	0.13	46.00 -26.79 Average
11	4.874	39.83	40.19	0.21	0.15	56.00 -15.81 QP
12	4.874	21.94	22.30	0.21	0.15	46.00 -23.70 Average

Neutral:


Site : Shielded room
 Condition : FCC PART15 CLASSB QP NEUTRAL
 Job No. : 0216
 Test mode : Burning test mode(HDMI output)
 Test Engineer: Boy

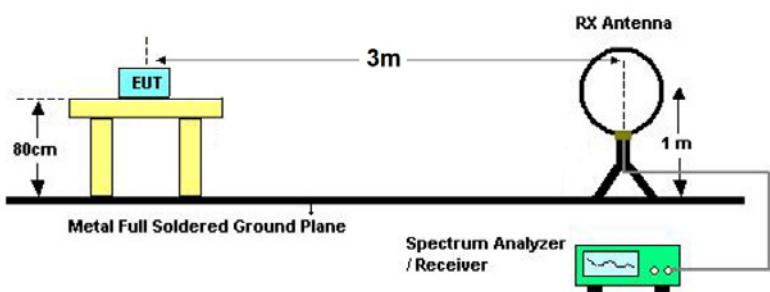
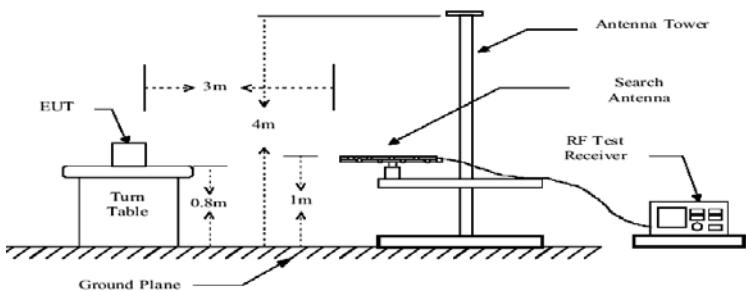
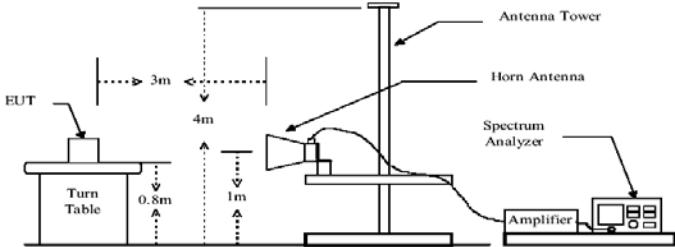
Freq	Read		LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV					
1	0.186	49.76	50.30	0.41	0.13	64.20	-13.90 QP
2	0.186	29.55	30.09	0.41	0.13	54.20	-24.11 Average
3	0.252	45.42	45.95	0.42	0.11	61.69	-15.74 QP
4	0.252	27.92	28.45	0.42	0.11	51.69	-23.24 Average
5	1.065	38.13	38.47	0.21	0.13	56.00	-17.53 QP
6	1.065	20.60	20.94	0.21	0.13	46.00	-25.06 Average
7	1.374	39.63	39.97	0.21	0.13	56.00	-16.03 QP
8	1.374	21.95	22.29	0.21	0.13	46.00	-23.71 Average
9	1.585	39.35	39.69	0.20	0.14	56.00	-16.31 QP
10	1.585	21.06	21.40	0.20	0.14	46.00	-24.60 Average
11	27.416	47.06	47.68	0.39	0.23	60.00	-12.32 QP
12	27.416	33.48	34.10	0.39	0.23	50.00	-15.90 Average

Notes:

1. An initial pre-scan was performed on the line 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

7.2 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109																									
Test Method:	ANSI C63.4:2014																									
Test Frequency Range:	30MHz to 6GHz																									
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)																									
Receiver setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120kHz</td> <td>300kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td>Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td></td> <td>Peak</td> <td>1MHz</td> <td>10Hz</td> <td>Average Value</td> </tr> </tbody> </table>					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	
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:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBuV/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <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>Above 1GHz</td> <td>54.00</td> <td>Average Value</td> </tr> <tr> <td></td> <td>74.00</td> <td>Peak Value</td> </tr> </tbody> </table>					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
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 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 camber. 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 rota 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 setup:	Below 30MHz 					
	0MHz ~ 1GHz 					
	Above 1GHz 					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Measurement Record:	Uncertainty: $\pm 4.5\text{dB}$					
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

Remark: The emission levels of the frequencies which below 30MHz are very lower than the limit were not show in test report.

Note:

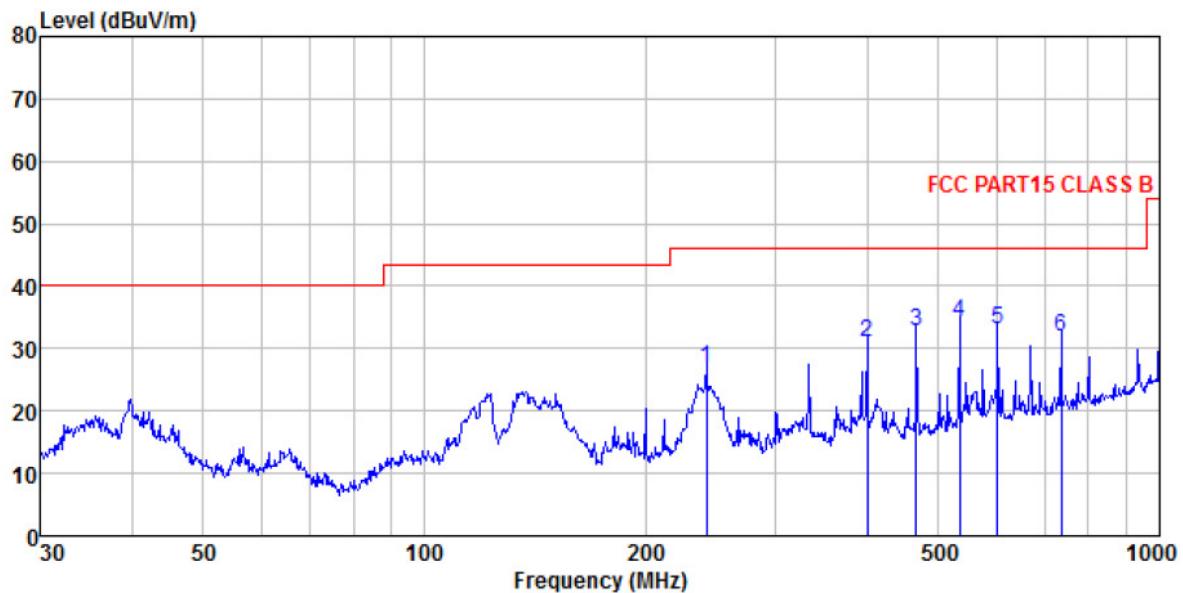
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

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

Measurement Data

Below 1G

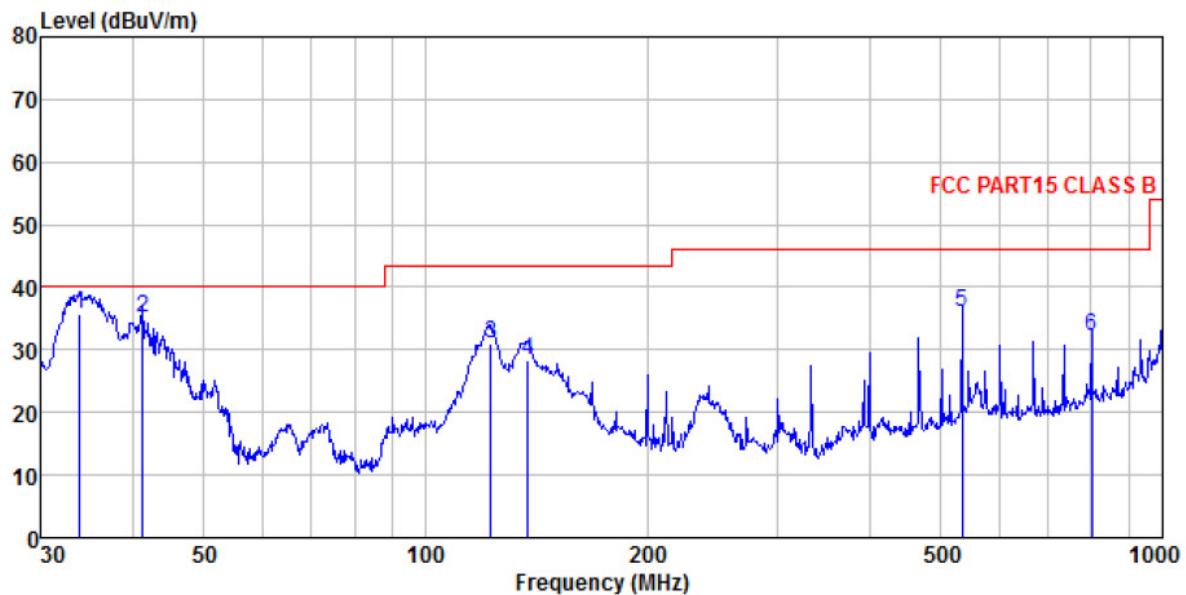
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m HORIZONTAL
 Job NO. : 0216
 Test Mode : Burning test mode(HDMI output)
 Test Engineer: Sky

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	
1	241.676	40.24	14.09	2.08	29.57	26.84	46.00 -19.16 QP
2	400.432	40.69	17.10	2.85	29.50	31.14	46.00 -14.86 QP
3	467.235	41.29	17.77	3.17	29.36	32.87	46.00 -13.13 QP
4	533.832	40.79	19.26	3.46	29.30	34.21	46.00 -11.79 QP
5	601.427	38.26	20.46	3.73	29.30	33.15	46.00 -12.85 QP
6	734.491	35.64	21.24	4.22	29.20	31.90	46.00 -14.10 QP

Vertical:

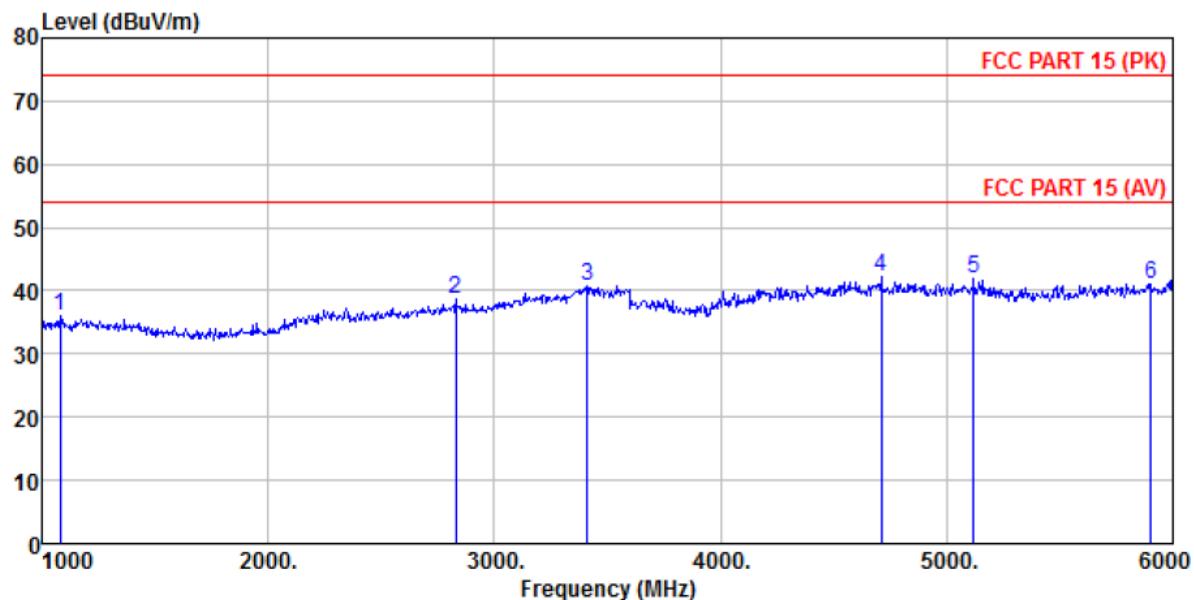


Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VERTICAL
 Job NO. : 0216
 Test Mode : Burning test mode(HDMI output)
 Test Engineer: Sky

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	
1	33.917	51.00	14.31	0.60	30.08	35.83	40.00 -4.17 QP
2	41.277	48.79	15.57	0.68	30.04	35.00	40.00 -5.00 QP
3	122.404	47.14	12.09	1.38	29.56	31.05	43.50 -12.45 QP
4	137.420	45.97	10.35	1.49	29.47	28.34	43.50 -15.16 QP
5	533.832	42.55	19.26	3.46	29.30	35.97	46.00 -10.03 QP
6	801.786	34.99	22.06	4.46	29.20	32.31	46.00 -13.69 QP

Above 1G

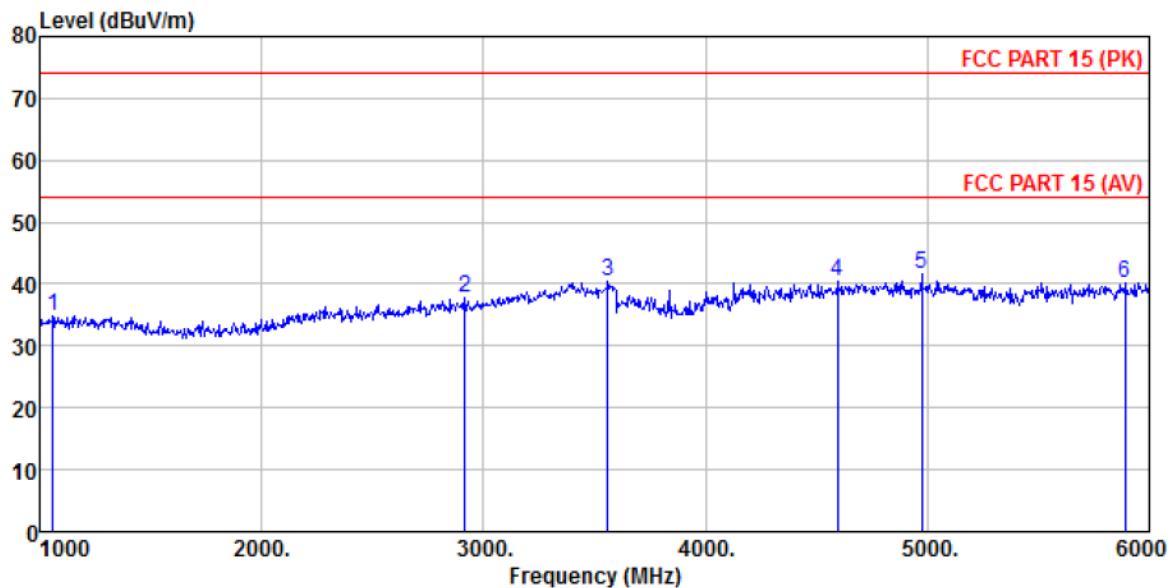
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m HORIZONTAL
 Job NO. : 0216
 Test Mode : Burning test mode (HDMI output)
 Test Engineer: Sky

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	
1	1080.000	39.74	24.70	4.37	32.89	35.92	74.00 -38.08 Peak
2	2830.000	38.07	28.39	5.78	33.51	38.73	74.00 -35.27 Peak
3	3410.000	38.18	28.64	6.78	32.85	40.75	74.00 -33.25 Peak
4	4710.000	33.98	31.66	8.52	32.04	42.12	74.00 -31.88 Peak
5	5120.000	33.23	32.05	8.94	32.24	41.98	74.00 -32.02 Peak
6	5905.000	30.36	32.78	10.06	32.18	41.02	74.00 -32.98 Peak

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m VERTICAL
 Job NO. : 0216
 Test Mode : Burning test mode(HDMI output)
 Test Engineer: Sky

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark
	MHz	Level	Factor	Loss	Factor	Level	
1	1060.000	38.81	24.65	4.35	32.87	34.94	74.00 -39.06 Peak
2	2915.000	36.88	28.44	5.85	33.41	37.76	74.00 -36.24 Peak
3	3560.000	36.88	29.09	7.07	32.67	40.37	74.00 -33.63 Peak
4	4595.000	32.37	31.51	8.42	31.98	40.32	74.00 -33.68 Peak
5	4975.000	33.07	31.94	8.74	32.17	41.58	74.00 -32.42 Peak
6	5890.000	29.43	32.76	10.06	32.19	40.06	74.00 -33.94 Peak

Note:

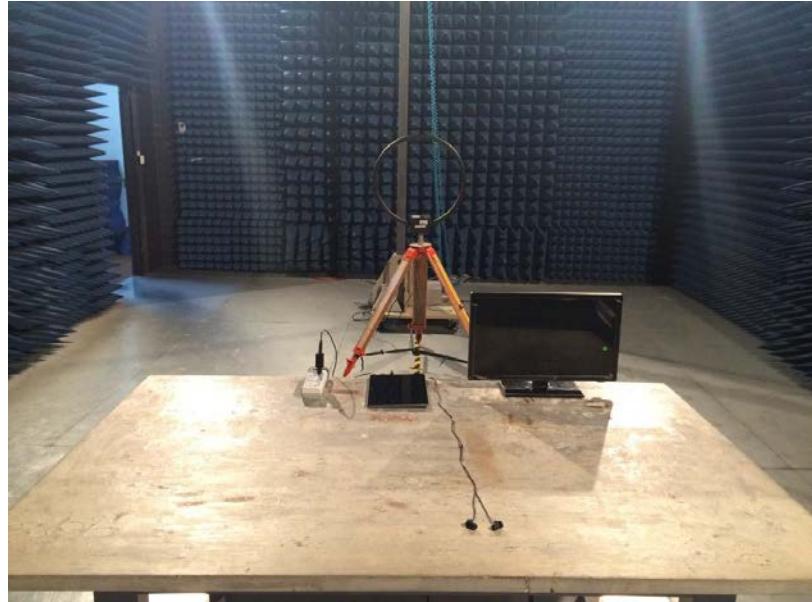
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

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

Remark: There are no emission in the band which above 6GHz. So the data was not record on the report.

8 Test Setup Photo

Radiated Emission



Radiated Emission



Conducted Emission



9 EUT Constructional Details

Reference to the test report No. : GTS201609000216E01

----- End -----