

# FCC REPORT

**Applicant:** Aqua trading(shenzhen) limited

**Address of Applicant:** No.22D, NEO Building Block B, No.6011.Shennan avenue  
Futian District, Shenzhen, China

**Equipment Under Test (EUT)**

Product Name: Smartphone

Model No.: EK4e

Trade mark: AKUA

**FCC ID:** 2AGE2-EK4E

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

**Date of sample receipt:** 07 Jul., 2016

**Date of Test:** 07 Jul., to 25 Jul., 2016

**Date of report issued:** 26 Jul., 2016

**Test Result:** Pass \*

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

Authorized Signature:



Bruce Zhang  
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 CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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## 2 Version

Version No.	Date	Description
00	26 Jul., 2016	Original

**Tested by:**

*Steven Liu*

**Date:**

26 Jul., 2016

**Test Engineer**

**Reviewed by:**

*MT. Liang*

**Date:**

26 Jul., 2016

**Project Engineer**

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## 4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part 15.107	Pass
Radiated Emission	Part 15.109	Pass

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

## 5 General Information

### 5.1 Client Information

Applicant:	Aqua trading(shenzhen)limited
Address of Applicant:	No.22D,NEO Building Block B, No.6011.Shennan avenue Futian District,Shenzhen, China
Manufacturer	Shenzhen First Element Technology Co.,Ltd
Address of Manufacturer:	13A-D, Floor 13, south 4th avenue, TaiBang technology Bldg, Nanshan district, high-tech park, Shenzhen, China.
Factory:	SHENZHEN NEWCHABRIDGE COMMUNICATION CO.,LTD.
Address of Factory:	Newchabridge Industrial Park, Baolong NO.6 Rd, Baolong Industrial City, Longgang District, Shenzhen,China.

### 5.2 General Description of E.U.T.

Product Name:	Smartphone
Model No.:	EK4e
Power supply:	Rechargeable Li-ion Battery DC3.8V-1400mAh
AC adapter :	Model: aifeng4S Input: AC100-240V 50/60Hz 0.15A Output: DC 5.0V, 1A

### 5.3 Test Mode

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)
Charging+Recording mode	Keep the EUT in Charging+Recording mode
Charging+Playing mode	Keep the EUT in Charging+Playing mode
FM mode	Keep the EUT in FM receiver mode
GPS mode	Keep the EUT in GPS receiver mode
The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

### 5.4 Measurement Uncertainty

Items	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	2.14 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

## 5.5 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC
HP	Printer	CB495A	05257893	DoC

## 5.6 Laboratory Facility

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

- **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. 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 out files. Registration 817957, February 27, 2012.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

## 5.7 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282

Fax: +86-755-23116366

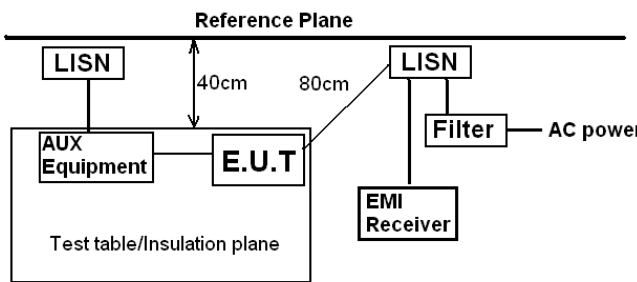
## 5.8 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m SAC	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK	VULB9163	CCIS0005	03-25-2016	03-25-2017
3	Horn Antenna	SCHWARZBECK	BBHA9120D	CCIS0006	03-25-2016	03-25-2017
4	Pre-amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2016	03-31-2017
5	Pre-amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2016	03-31-2017
6	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP30	CCIS0023	03-28-2016	03-28-2017
7	EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	03-28-2016	03-28-2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	08-23-2014	08-22-2017
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	03-24-2016	03-24-2017
3	LISN	CHASE	MN2050D	CCIS0074	03-26-2016	03-26-2017
4	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2016	03-31-2017
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

## 6 Test results and Measurement Data

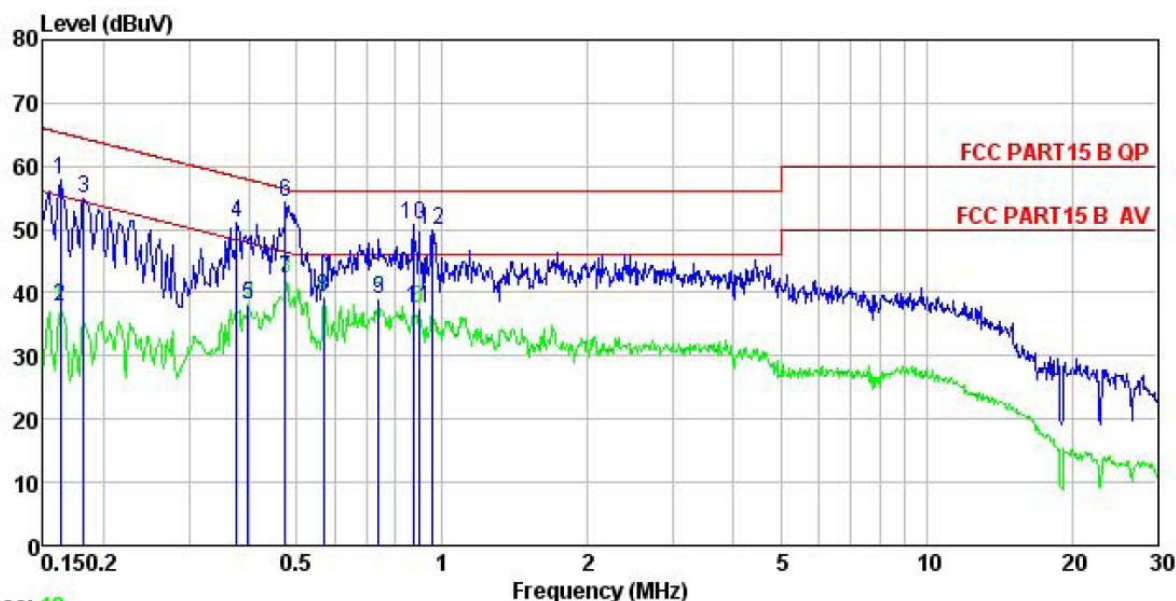
### 6.1 Conducted Emission

Test Requirement:	FCC Part 15 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:	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		
	0.5-30	60		50		
* Decreases with the logarithm of the frequency.						
Test setup:	<div><p style="text-align: center;"><b>Reference Plane</b></p><p>Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p></div>					
Test procedure	<div>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.</div> <div>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).</div> <div>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.</div>					
Test environment:	Temp.:	23 °C	Humid.:	56%	Press.:	101kPa
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					



## Measurement data:

Line:



Trace: 19

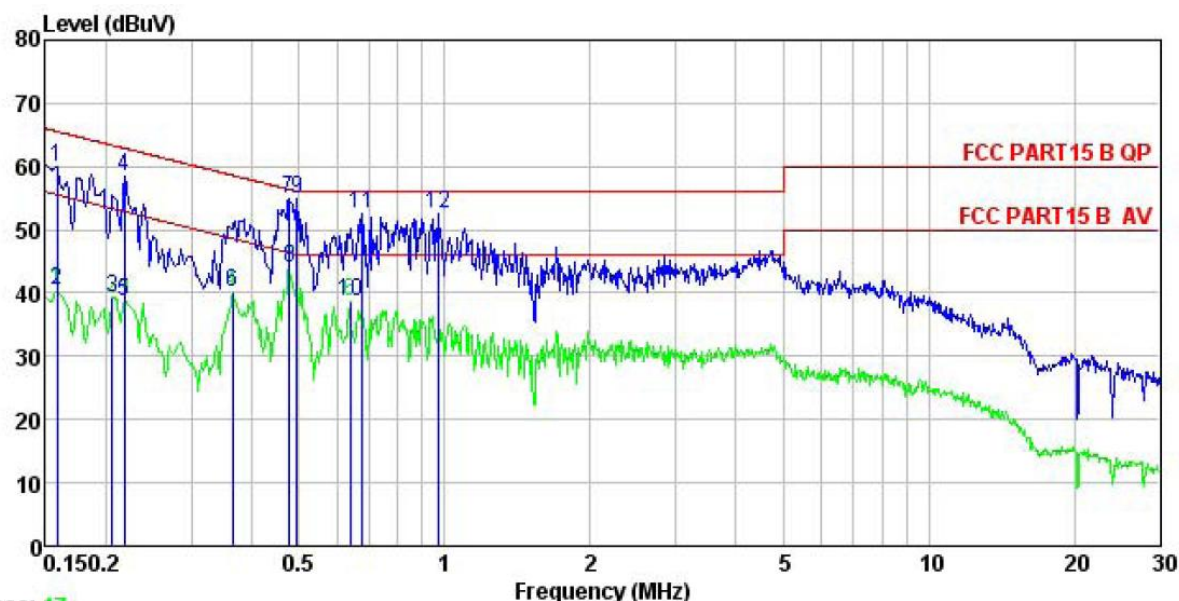
Site : CCIS Shielding Room  
 Condition : FCC PART15 B QP LISN LINE  
 EUT : Smartphone  
 Model : EK4e  
 Test Mode : PC mode  
 Power Rating : AC 120/60Hz  
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa  
 Test Engineer: steven  
 Remark :

	Freq	Read	LISN	Cable	Level	Limit	Over	
	MHz	dBuV	Factor	Loss	dBuV	dBuV	Limit	Remark
			dB	dB			dB	
1	0.162	47.00	0.14	10.77	57.91	65.34	-7.43	QP
2	0.162	26.81	0.14	10.77	37.72	55.34	-17.62	Average
3	0.182	44.08	0.15	10.77	55.00	64.42	-9.42	QP
4	0.377	39.99	0.22	10.72	50.93	58.34	-7.41	QP
5	0.398	27.04	0.24	10.72	38.00	47.90	-9.90	Average
6	0.474	43.36	0.24	10.75	54.35	56.45	-2.10	QP
7	0.474	31.08	0.24	10.75	42.07	46.45	-4.38	Average
8	0.570	28.24	0.27	10.77	39.28	46.00	-6.72	Average
9	0.739	28.00	0.31	10.79	39.10	46.00	-6.90	Average
10	0.871	39.67	0.28	10.83	50.78	56.00	-5.22	QP
11	0.894	26.51	0.28	10.84	37.63	46.00	-8.37	Average
12	0.953	38.68	0.27	10.86	49.81	56.00	-6.19	QP

## 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.

Neutral:



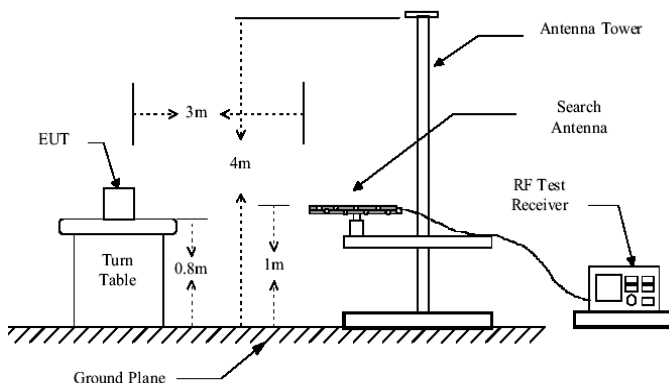
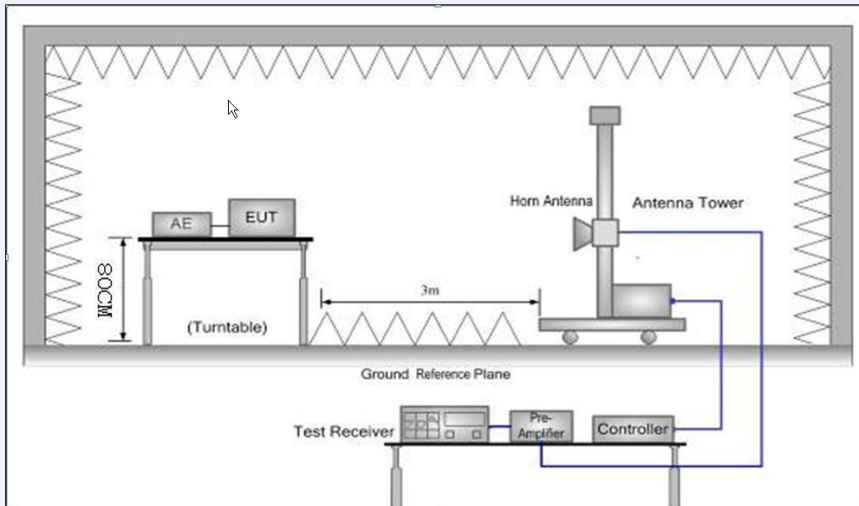
Site : CCIS Shielding Room  
 Condition : FCC PART15 B QP LISN NEUTRAL  
 EUT : Smartphone  
 Model : EK4e  
 Test Mode : PC mode  
 Power Rating : AC 120/60Hz  
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa  
 Test Engineer: steven  
 Remark :

	Read	LISN	Cable	Limit	Over	
Freq	Level	Factor	Loss	Line	Limit	Remark
MHz	dBuV	dB	dB	dBuV	dB	
1	0.158	48.97	0.13	10.78	59.88	65.56 -5.68 QP
2	0.158	29.47	0.13	10.78	40.38	55.56 -15.18 Average
3	0.206	28.37	0.15	10.76	39.28	53.36 -14.08 Average
4	0.219	47.63	0.16	10.76	58.55	62.88 -4.33 QP
5	0.219	27.87	0.16	10.76	38.79	52.88 -14.09 Average
6	0.365	29.07	0.22	10.73	40.02	48.61 -8.59 Average
7	0.476	43.81	0.24	10.75	54.80	56.41 -1.61 QP
8	0.479	32.96	0.24	10.75	43.95	46.36 -2.41 Average
9	0.497	43.90	0.24	10.76	54.90	56.05 -1.15 QP
10	0.637	27.55	0.30	10.77	38.62	46.00 -7.38 Average
11	0.675	41.46	0.32	10.77	52.55	56.00 -3.45 QP
12	0.968	41.43	0.27	10.86	52.56	56.00 -3.44 QP

## 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.

## 6.2 Radiated Emission

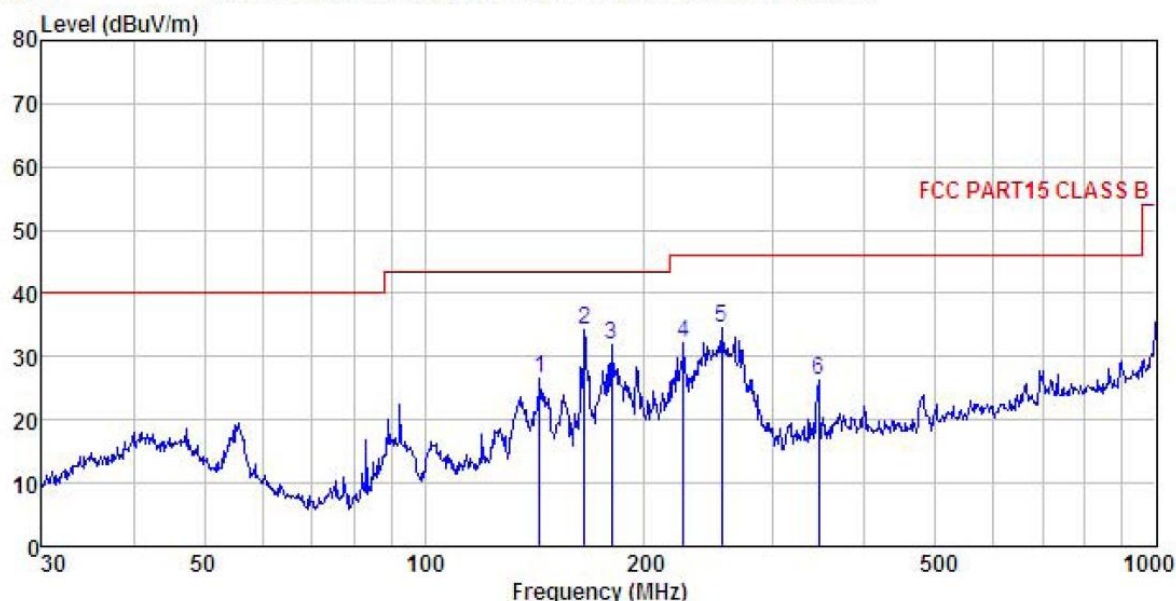
Test Requirement:	FCC Part 15 B Section 15.109				
Test Method:	ANSI C63.4:2014				
Test Frequency Range:	30MHz to 6000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
RMS		1MHz	3MHz	Average Value	
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		54.0		Average Value
		74.0		Peak Value	
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				
					

Test Procedure:	<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> </ol>					
Test environment:	Temp.:	25 °C	Humid.:	55%	Press.:	1 01kPa
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					

## Measurement Data:

### Below 1GHz

Horizontal:

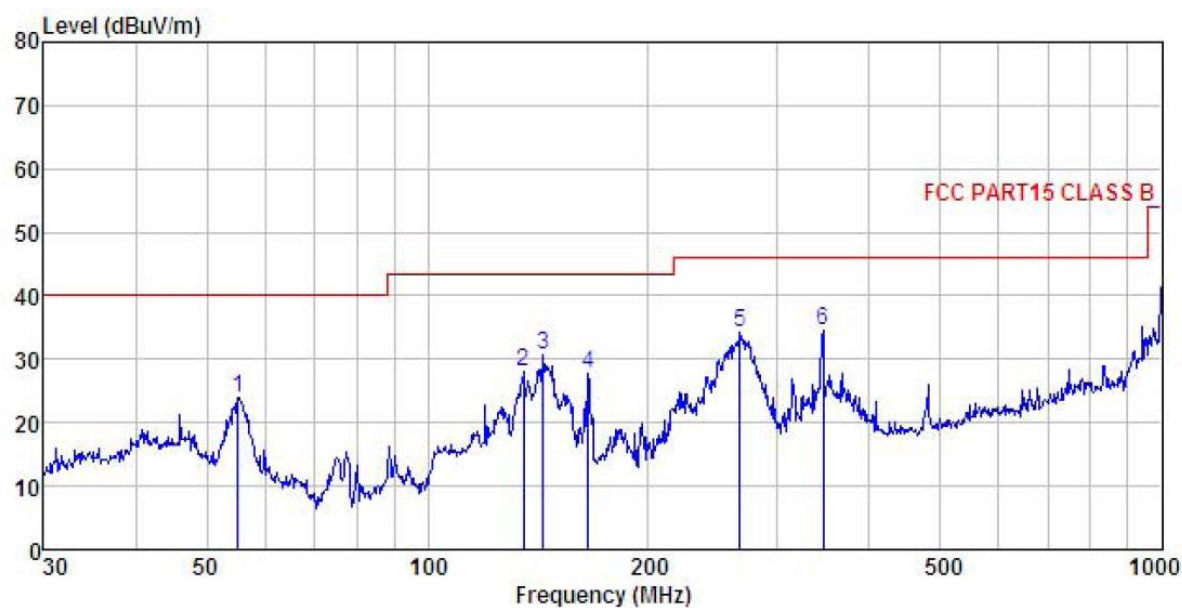


Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) HORIZONTAL  
 EUT : Smartphone  
 Model : EK4e  
 Test mode : PC Mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: steven  
 REMARK :

	Freq	ReadAntenna Level	Cable Factor	Preamp Loss	Preamp Factor	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	143.830	42.00	11.34	2.44	29.25	26.53	43.50	-16.97	QP
2	165.487	50.84	9.84	2.62	29.09	34.21	43.50	-9.29	QP
3	180.017	48.86	9.20	2.73	28.97	31.82	43.50	-11.68	QP
4	226.099	46.56	11.57	2.84	28.67	32.30	46.00	-13.70	QP
5	254.728	48.46	11.81	2.82	28.53	34.56	46.00	-11.44	QP
6	345.595	37.84	14.02	3.08	28.55	26.39	46.00	-19.61	QP



Vertical:

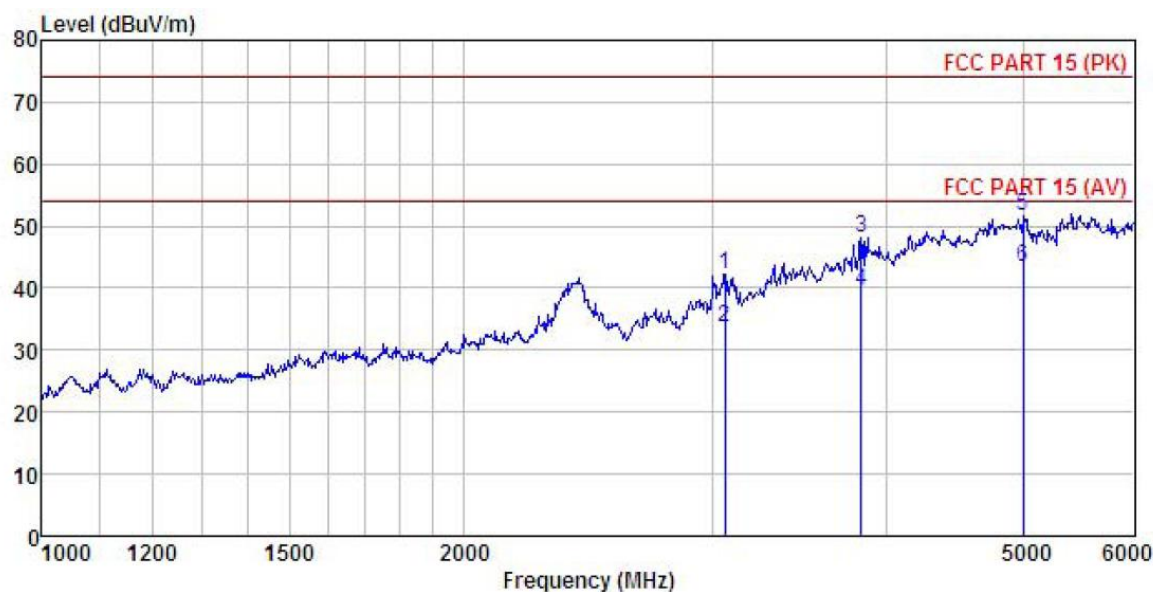


Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) VERTICAL  
 EUT : Smartphone  
 Model : EK4e  
 Test mode : PC Mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: steven  
 REMARK :

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	55.221	39.83	12.65	1.36	29.80	24.04	40.00 -15.96 QP
2	135.032	43.17	11.98	2.34	29.30	28.19	43.50 -15.31 QP
3	143.830	46.16	11.34	2.44	29.25	30.69	43.50 -12.81 QP
4	165.487	44.29	9.84	2.62	29.09	27.66	43.50 -15.84 QP
5	266.609	48.08	11.95	2.85	28.51	34.37	46.00 -11.63 QP
6	345.595	45.92	14.02	3.08	28.55	34.47	46.00 -11.53 QP

## Above 1GHz

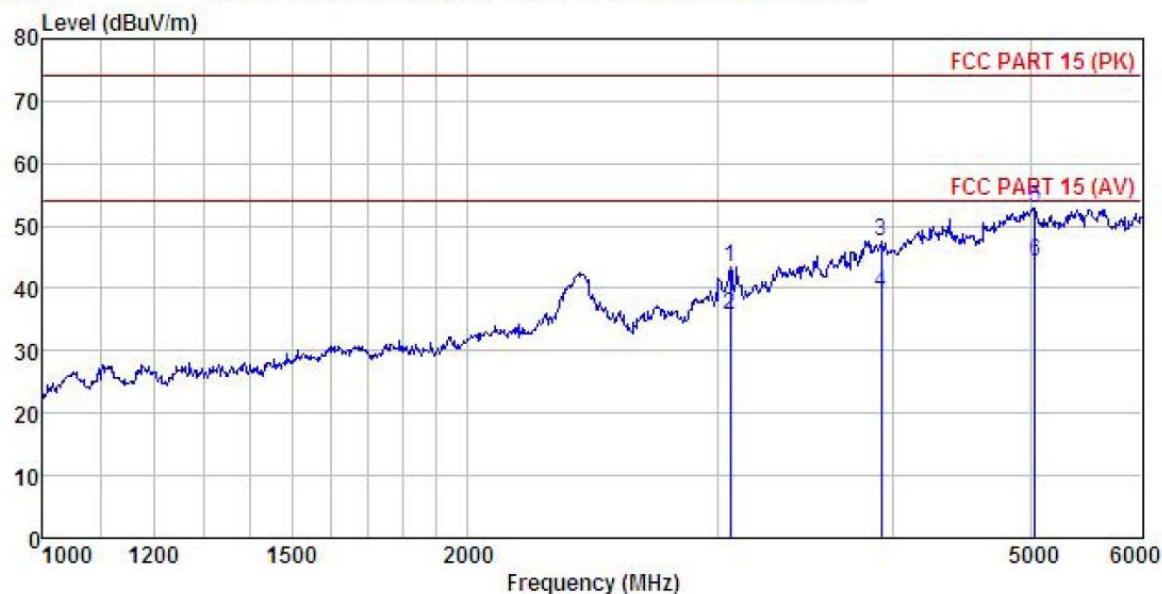
Horizontal:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL  
 EUT : Smartphone  
 Model : EK4e  
 Test mode : PC Mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: steven  
 REMARK :

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
	Level	Factor	Loss	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m dB
1	3067.443	48.93	25.93	7.96	40.59	42.23	74.00 -31.77 Peak
2	3067.443	40.37	25.93	7.96	40.59	33.67	54.00 -20.33 Average
3	3836.743	48.52	30.86	9.35	40.68	48.05	74.00 -25.95 Peak
4	3836.743	40.12	30.86	9.35	40.68	39.65	54.00 -14.35 Average
5	4999.149	43.97	36.90	10.78	39.98	51.67	74.00 -22.33 Peak
6	4999.149	35.69	36.90	10.78	39.98	43.39	54.00 -10.61 Average

Vertical:



Site : 3m chamber  
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL  
 EUT : Smartphone  
 Model : EK4e  
 Test mode : PC Mode  
 Power Rating : AC120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: steven  
 REMARK :

	ReadAntenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	3067.443	50.06	25.93	7.96	40.59	43.36	74.00
2	3067.443	42.32	25.93	7.96	40.59	35.62	54.00
3	3919.754	47.45	31.63	9.49	40.94	47.63	74.00
4	3919.754	38.96	31.63	9.49	40.94	39.14	54.00
5	5038.212	45.18	36.77	10.82	40.01	52.76	74.00
6	5038.212	36.84	36.77	10.82	40.01	44.42	54.00