FCC & IC REPORT
(2.4G)

Applicant:	Solaborate LLC
Address of Applicant:	8300 Utica Ave #283, Rancho Cucamonga, CA 91730
Equipment Under Test (EUT)	
Product Name:	HELLO 2
Model No.:	HELLO2
FCC ID:	2ALUI-HELLO2
IC ID:	24458-HELLO2
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 RSS-Gen Issue 5, April 2018 RSS-247 Issue 2, February 2017
Date of sample receipt:	26 Oct., 2018
Date of Test:	26 Oct., to 22 Nov., 2018
Date of report issued:	23 Nov., 2018
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.

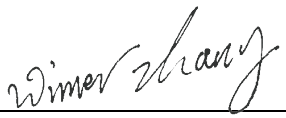
This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

2 Version

Version No.	Date	Description
00	*23 Nov., 2018*	*Original*

Tested by:  ***Date:*** *23 Nov., 2018*

Test Engineer

Reviewed by:  ***Date:*** *23 Nov., 2018*

Project Engineer

3 Contents

Page

4 Test Summary

Test Items	Section		Result
	FCC	IC	
Antenna Requirement	15.203/15.247 (c)	/	Pass
AC Power Line Conducted Emission	15.207	RSS-GEN Section 8.8	Pass
Conducted Peak Output Power	15.247 (b)(3)	RSS-247 Section 5.4 (d)	Pass
6dB Emission Bandwidth 99% Occupied Bandwidth	15.247 (a)(2)	RSS-247 Section 5.2 (a)	Pass
Power Spectral Density	15.247 (e)	RSS-247 Section 5.2 (b)	Pass
Band Edge	15.247(d)	RSS-GEN Section 8.10 RSS-247 Section 5.5	Pass
Conducted and Radiated Spurious Emission	15.205/15.209	RSS-GEN Section 6.13 RSS-247 Section 5.5	Pass
Pass: The EUT complies with the essential requirements in the standard.			

5 General Information

5.1 Client Information

Applicant:	Solaborate LLC
Address:	8300 Utica Ave #283, Rancho Cucamonga, CA 91730
Manufacturer	Shenzhen YITOA Digital Appliance CO.,LTD
Address:	5/F,Yitoa Building,Keji South Road 5th,Hi-tech Industrial Park,Nanshan District, Shenzhen

5.2 General Description of E.U.T.

Product Name:	HELLO 2
Model No.:	HELLO2
Operation Frequency:	2404-2480 MHz
Channel numbers:	65
Channel separation:	1 MHz
Modulation technology:	GFSK
Antenna Type:	FPC
Antenna gain:	1.5 dBi
AC adapter with two plugs :	Model: EA1019AVRS-050 Input: AC100-240V, 50/60Hz, 0.8A Output: DC 5.0V, 3A
Remarks:	EUT has camera cable from two different manufacturers. Their manufacturers and models are: Unison is HELLO2-274-V8.0, and Seasons is HELLO2-274-V8.0.1. They have the same lens, but the Camera cable is different.
Test Sample Condition:	The applicant provided engineering samples for staying in continuously transmitting for testing.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2404MHz	17	2424MHz	34	2444MHz	51	2467MHz
1	2405MHz	18	2425MHz	35	2445MHz	52	2468MHz
2	2406MHz	19	2426MHz	36	2446MHz	53	2469MHz
3	2407MHz	20	2427MHz	37	2450MHz	54	2470MHz
4	2408MHz	21	2428MHz	38	2451MHz	55	2471MHz
5	2409MHz	22	2429MHz	39	2452MHz	56	2472MHz
6	2410MHz	23	2430MHz	40	2453MHz	57	2473MHz
7	2411MHz	24	2434MHz	41	2454MHz	58	2474MHz
8	2412MHz	25	2435MHz	42	2455MHz	59	2475MHz
9	2413MHz	26	2436MHz	43	2456MHz	60	2476MHz
10	2414MHz	27	2437MHz	44	2457MHz	61	2477MHz
11	2418MHz	28	2438MHz	45	2458MHz	62	2478MHz
12	2419MHz	29	2439MHz	46	2459MHz	63	2479MHz
13	2420MHz	30	2440MHz	47	2460MHz	64	2480MHz
14	2421MHz	31	2441MHz	48	2461MHz		
15	2422MHz	32	2442MHz	49	2462MHz		
16	2423MHz	33	2443MHz	50	2466MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test. Channel No. 0, 30 & 64 were selected as Lowest, Middle and Highest channel.

5.3 Test environment and test mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode	Keep the EUT in continuous transmitting with modulation
The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) 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. Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.	

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±2.22 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±2.76 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.28 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.72 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±2.88 dB (k=2)

5.6 Laboratory Facility

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

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **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.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

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
Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.8 Test Instruments list

Radiated Emission:

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	03-16-2018	03-15-2019
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2017	11-20-2018
				11-21-2018	11-20-2019
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	03-07-2018	03-06-2019
Pre-amplifier	CD	PAP-1G18	11804	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2017	11-20-2018
				11-21-2018	11-20-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-07-2018	03-06-2019
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2018	03-06-2019
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2018	03-06-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2018	03-06-2019

Conducted Emission:

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-07-2018	03-06-2019
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-07-2018	03-06-2019
LISN	CHASE	MN2050D	1447	03-19-2018	03-18-2019
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
Cable	HP	10503A	N/A	03-07-2018	03-06-2019
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement:

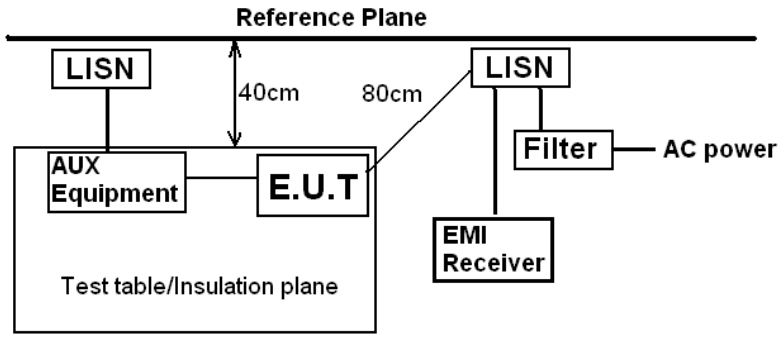
Standard requirement:	FCC Part 15 C Section 15.203 /247(c)

15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
15.247(c) (1)(i) requirement:
(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

E.U.T Antenna:	

The EUT antenna is an FPC antenna which cannot replace by end-user, the best-case gain of the antenna is 1.5 dBi.

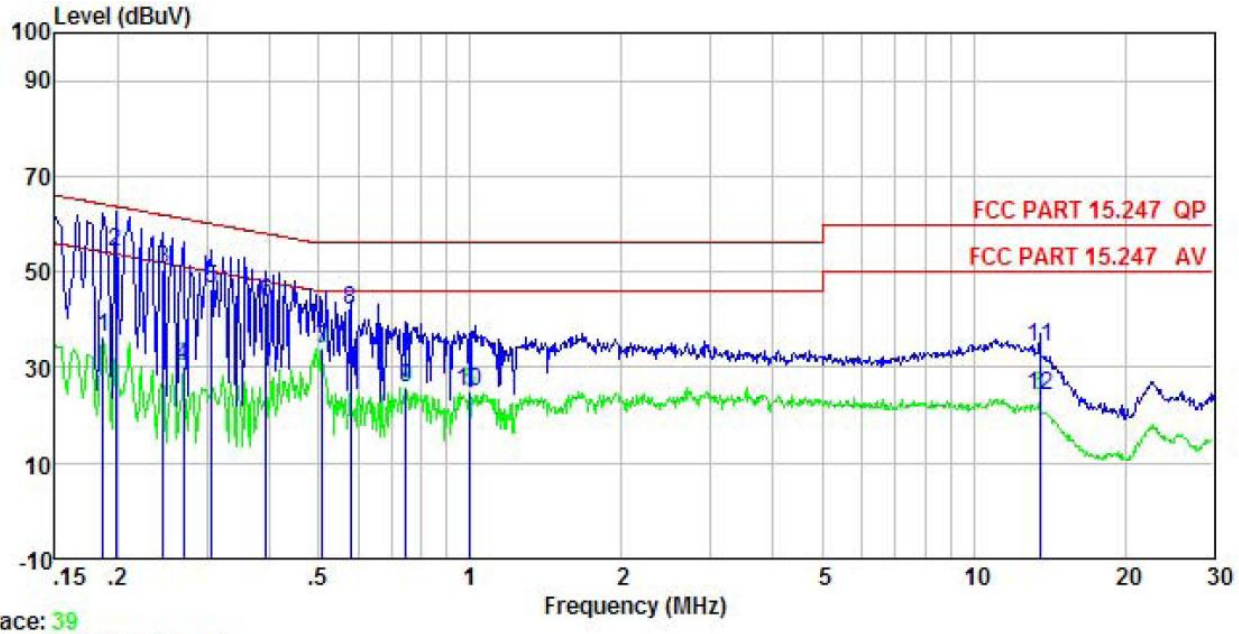
6.2 Conducted Emission

<table>
<tr><td>Test Requirement:</td><td colspan="3">FCC Part 15 C Section 15.207
RSS-GEN Section 8.8</td></tr>
<tr><td>Test Method:</td><td colspan="3">ANSI C63.10: 2013</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="3">150 kHz to 30 MHz</td></tr>
<tr><td>Class / Severity:</td><td colspan="3">Class B</td></tr>
<tr><td>Receiver setup:</td><td colspan="3">RBW=9kHz, VBW=30kHz</td></tr>
<tr><td rowspan="6">Limit:</td><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></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>5-30</td><td>60</td><td>50</td></tr>
<tr><td colspan="3">* Decreases with the logarithm of the frequency.</td></tr>
<tr><td>Test procedure</td><td colspan="3">1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which 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.</td></tr>
<tr><td>Test setup:</td><td colspan="3"> 

Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m</td></tr>
<tr><td>Test Instruments:</td><td colspan="3">Refer to section 5.8 for details</td></tr>
<tr><td>Test mode:</td><td colspan="3">Refer to section 5.3 for details</td></tr>
<tr><td>Test results:</td><td colspan="3">Passed</td></tr>
</table>

Measurement Data:

Neutral:



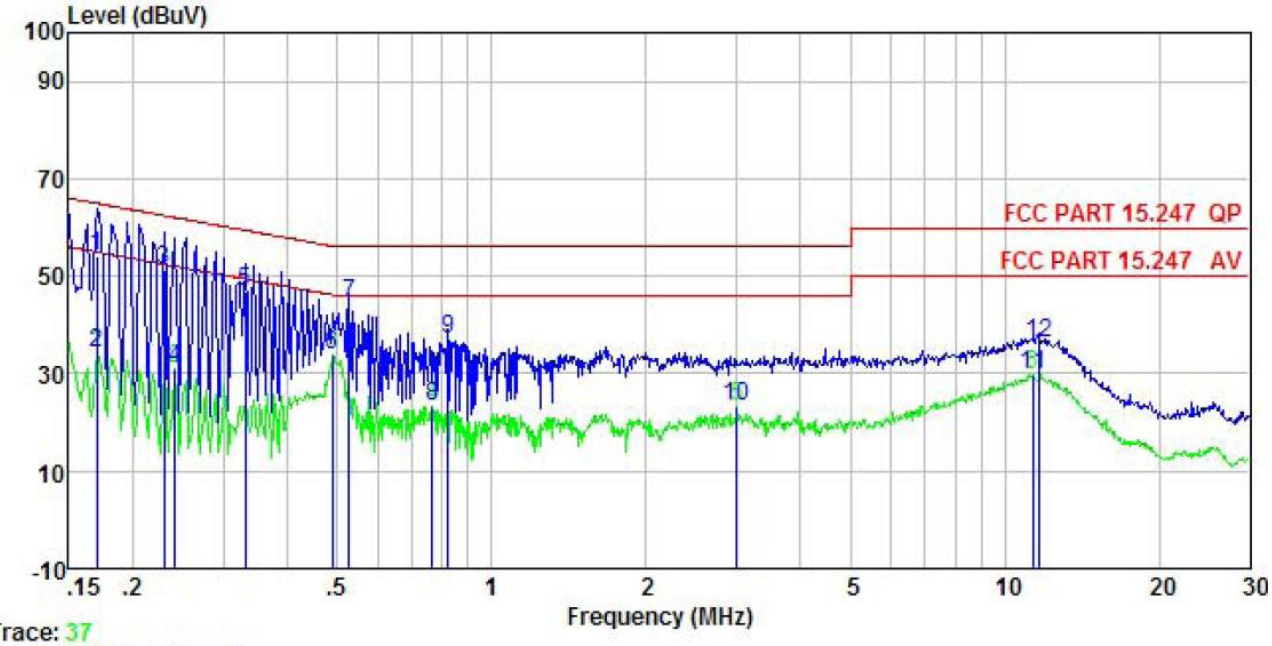
Trace: 39
Site : CCIS Shielding Room
Condition : FCC PART 15.247 QP LISN NEUTRAL
EUT : HELLO 2
Model : HELLO 2
Test Mode : 2.4G-TX mode
Power Rating : AC 120V/60Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Carey
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.186	24.41	0.94	10.76	36.11	54.20	-18.09	Average
2	0.198	42.36	0.92	10.76	54.04	63.71	-9.67	QP
3	0.246	38.66	0.95	10.75	50.36	61.91	-11.55	QP
4	0.270	18.49	0.96	10.75	30.20	51.12	-20.92	Average
5	0.307	34.85	0.97	10.74	46.56	60.06	-13.50	QP
6	0.393	31.92	0.97	10.72	43.61	57.99	-14.38	QP
7	0.510	22.15	0.97	10.76	33.88	46.00	-12.12	Average
8	0.579	30.41	0.97	10.76	42.14	56.00	-13.86	QP
9	0.747	14.14	0.97	10.79	25.90	46.00	-20.10	Average
10	1.000	13.07	0.97	10.87	24.91	46.00	-21.09	Average
11	13.551	22.20	0.93	10.91	34.04	60.00	-25.96	QP
12	13.551	12.33	0.93	10.91	24.17	50.00	-25.83	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.*

Line:



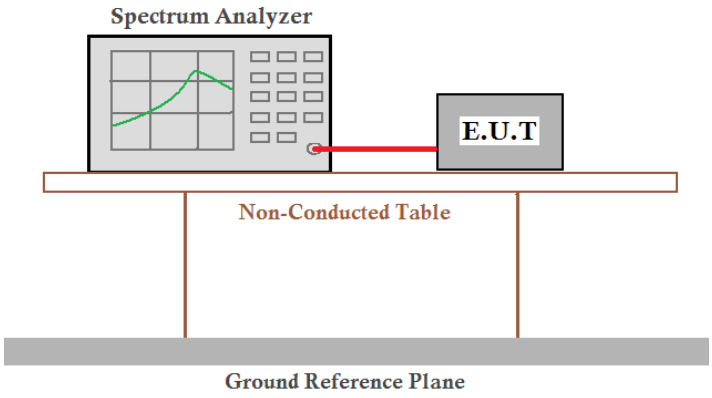
Trace: 37
Site : CCIS Shielding Room
Condition : FCC PART 15.247 QP LISN LINE
EUT : HELLO 2
Model : HELLO 2
Test Mode : 2.4G-TX mode
Power Rating : AC 120V/60Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Carey
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.170	43.35	0.17	10.77	54.29	64.94	-10.65	QP
2	0.170	23.17	0.17	10.77	34.11	54.94	-20.83	Average
3	0.230	40.25	0.14	10.75	51.14	62.44	-11.30	QP
4	0.242	20.12	0.14	10.75	31.01	52.04	-21.03	Average
5	0.330	35.77	0.13	10.73	46.63	59.44	-12.81	QP
6	0.489	22.86	0.12	10.76	33.74	46.19	-12.45	Average
7	0.527	33.55	0.12	10.76	44.43	56.00	-11.57	QP
8	0.767	12.21	0.13	10.80	23.14	46.00	-22.86	Average
9	0.822	25.97	0.13	10.82	36.92	56.00	-19.08	QP
10	3.009	12.27	0.16	10.92	23.35	46.00	-22.65	Average
11	11.317	18.65	0.32	10.93	29.90	50.00	-20.10	Average
12	11.621	25.14	0.32	10.93	36.39	60.00	-23.61	QP

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.*

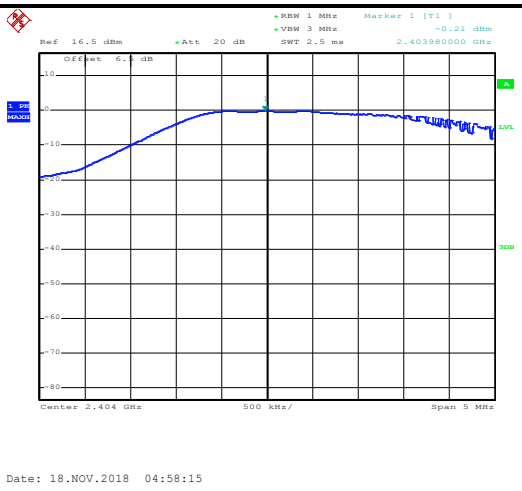
6.3 Conducted Output Power

Test Requirement:	FCC Part 15 C Section 15.247 (b)(3) RSS-247 section 5.4(d)
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

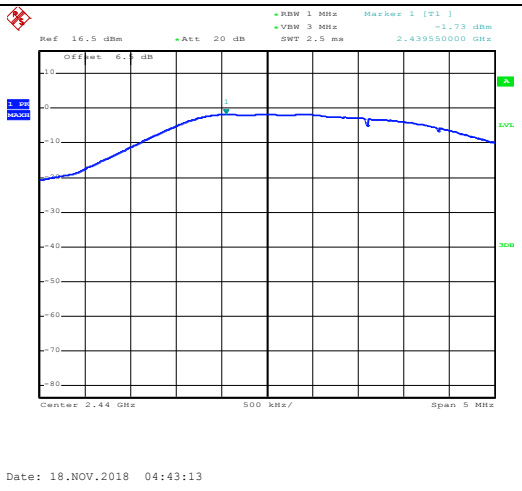
Measurement Data:

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result
Lowest	-0.21	30.00	Pass
Middle	-1.73		
Highest	-3.14		

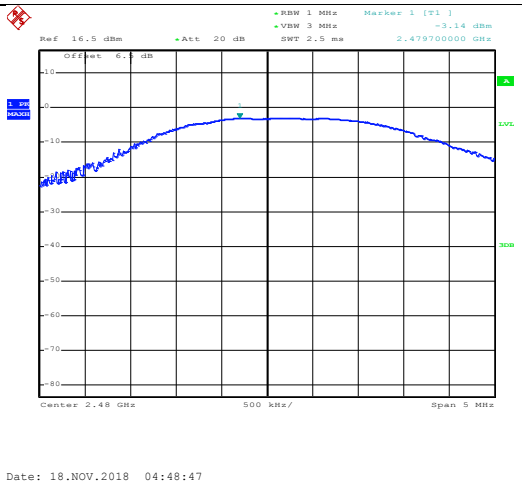
Test plot as follows:



Lowest channel

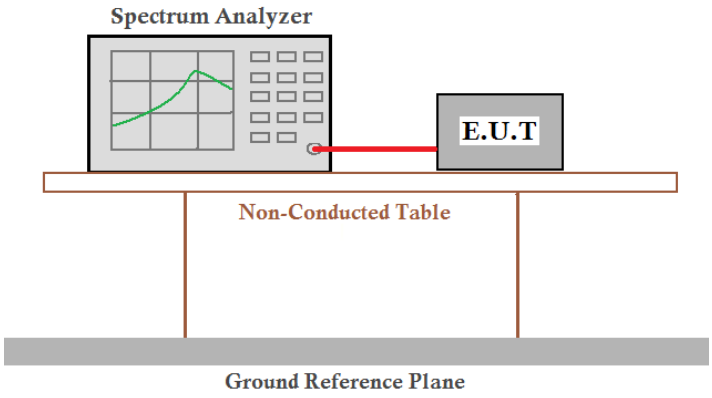


Middle channel



Highest channel

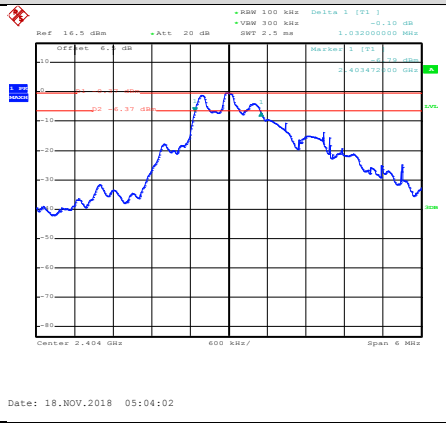
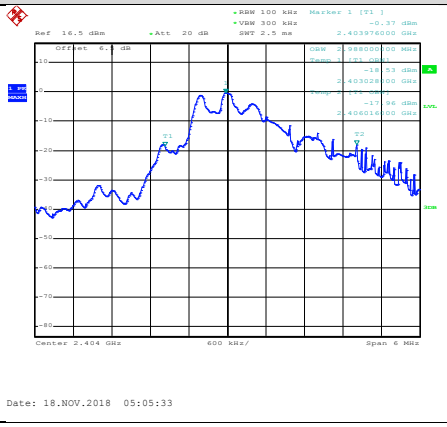
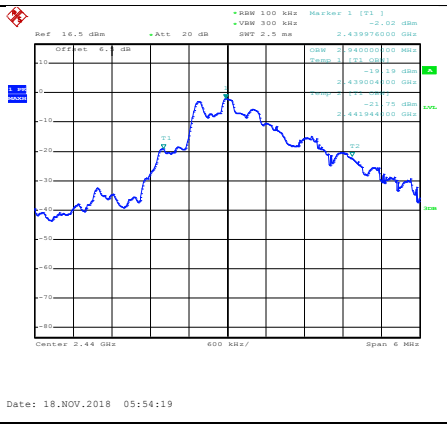
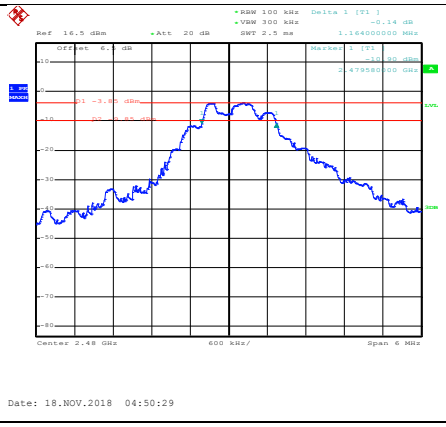
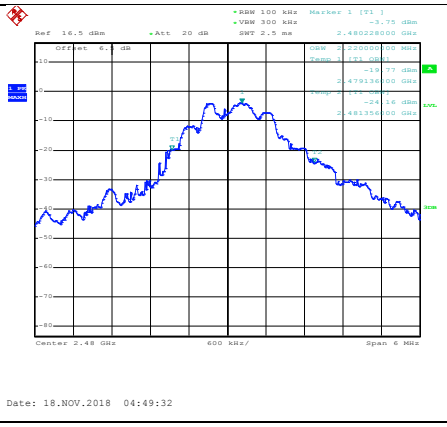
6.4 Occupy Bandwidth

Test Requirement:	FCC Part 15 C Section 15.247 (a)(2) RSS-247 section 5.2(a)
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	>500kHz
Test setup:	
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

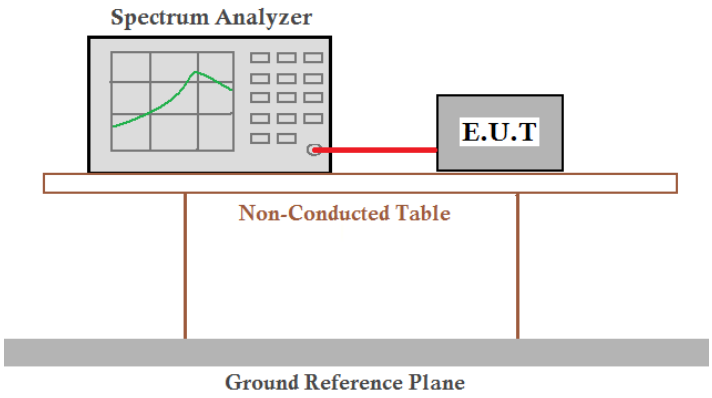
Measurement Data:

Test CH	6dB Emission Bandwidth (MHz)	Limit(kHz)	Result
Lowest	1.032	>500	Pass
Middle	1.068		
Highest	1.164		
Test CH	99% Occupy Bandwidth (MHz)	Limit(kHz)	Result
Lowest	2.988	N/A	N/A
Middle	2.940		
Highest	2.220		

Test plot as follows:

6dB EBW	99% OBW
	
Lowest channel	Lowest channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

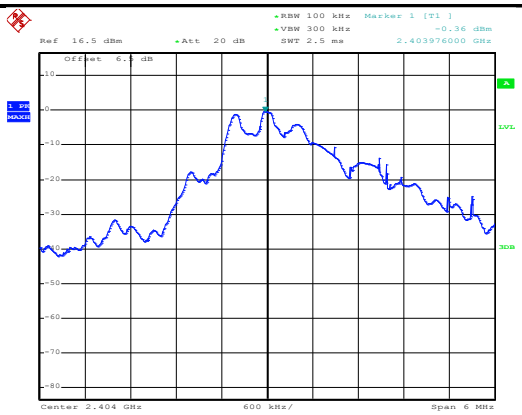
6.5 Power Spectral Density

Test Requirement:	FCC Part 15 C Section 15.247 (e) RSS-247 section 5.2(b)
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	8 dBm
Test setup:	
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

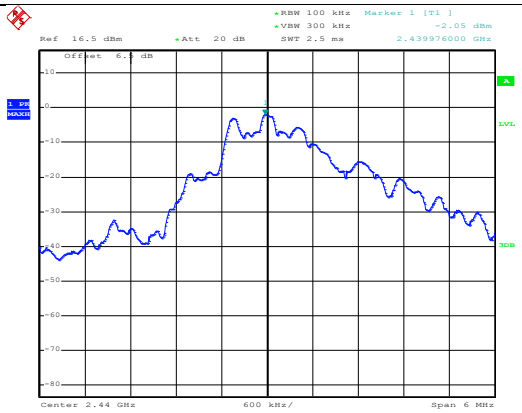
Measurement Data:

Test CH	Power Spectral Density (dBm)	Limit(dBm)	Result
Lowest	-0.36	8.00	Pass
Middle	-2.05		
Highest	-3.65		

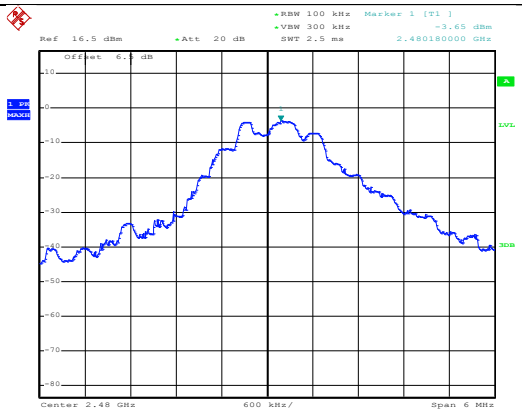
Test plots as follow:



Lowest channel



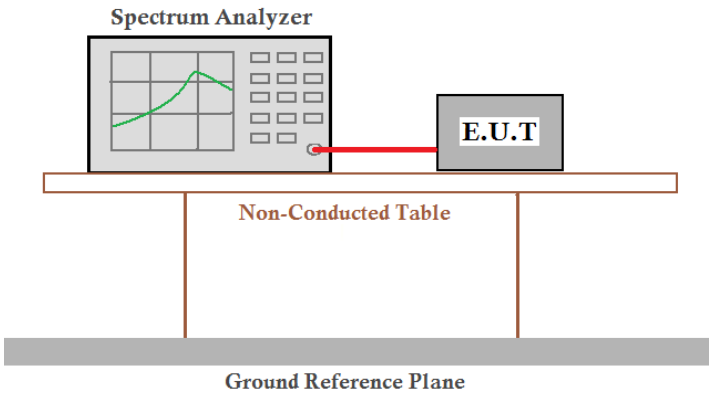
Middle channel



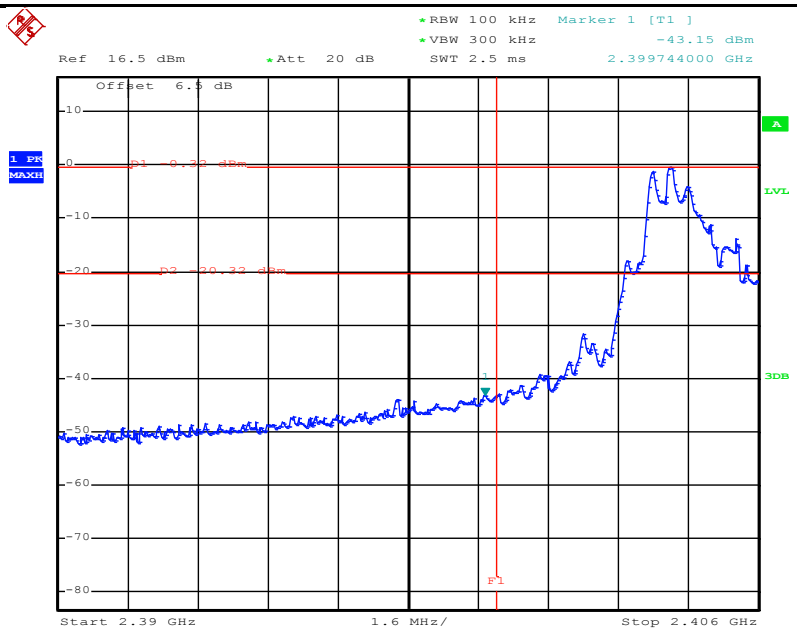
Highest channel

6.6 Band Edge

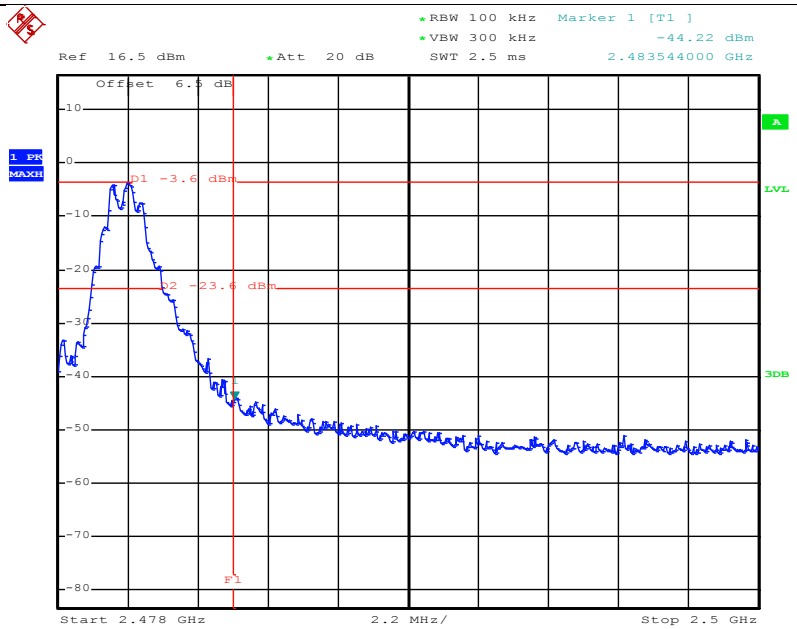
6.6.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d) RSS-247 section 5.5
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plots as follow:



Lowest channel



Highest channel

6.6.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205 RSS-GEN section 8.10
Test Method:	ANSI C63.10: 2013 and KDB558074
Test Frequency Range:	2.3GHz to 2.5GHz
Test Distance:	3m

Receiver setup:

Frequency	Detector	RBW	VBW	Remark
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	RMS	1MHz	3MHz	Average Value

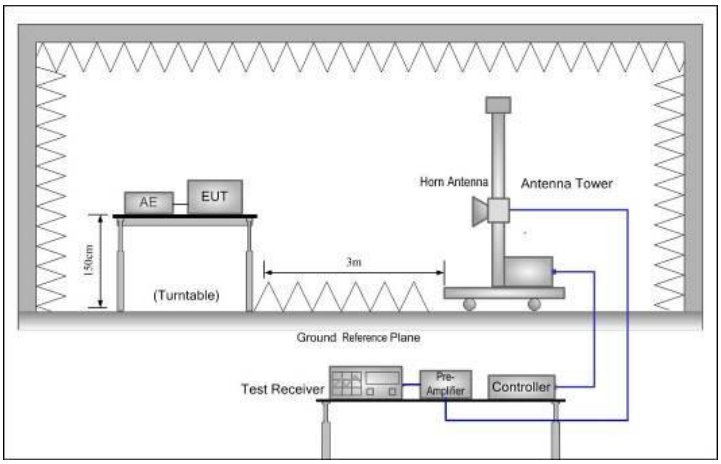
Limit:

Frequency	Limit (dBuV/m @3m)	Remark
Above 1GHz	54.00	Average Value
	74.00	Peak Value

Test Procedure:

1. The EUT was placed on the top of a rotating table 1.5 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 10 dB 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 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

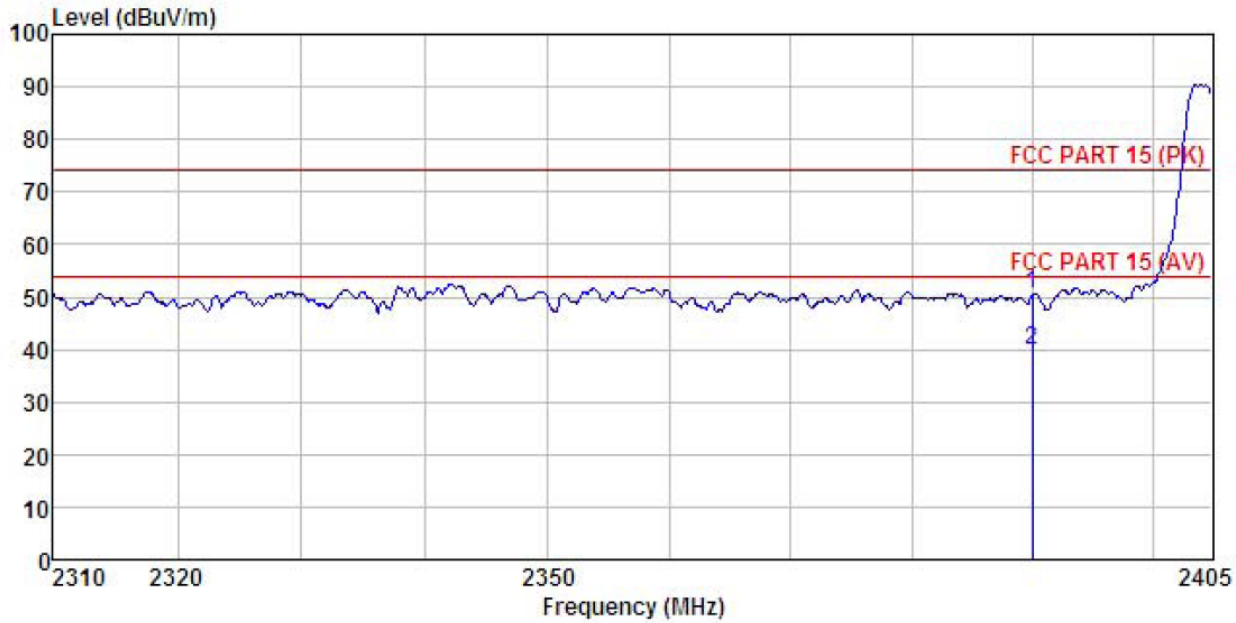
Test setup:



Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test channel: Lowest

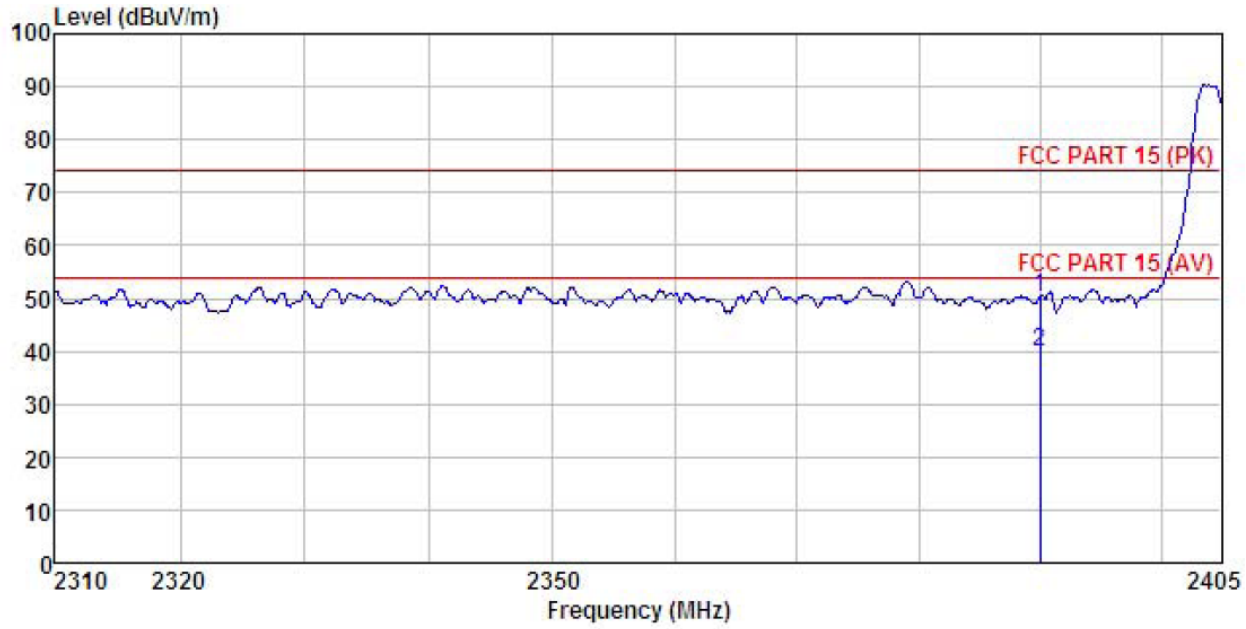
Horizontal:




```
Site          : 3m chamber
Condition     : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
EUT           : 4G Smart Phone
Model         : Elite E4
Test mode     : L mode
Power Rating  : AC120V/60Hz
Environment   : Temp:25.3'C  Huni:57%
Test Engineer: Carey
REMARK        :
```

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	18.33	27.37	4.69	0.00	50.39	74.00	-23.61	Peak
2	2390.000	7.85	27.37	4.69	0.00	39.91	54.00	-14.09	Average

Vertical:

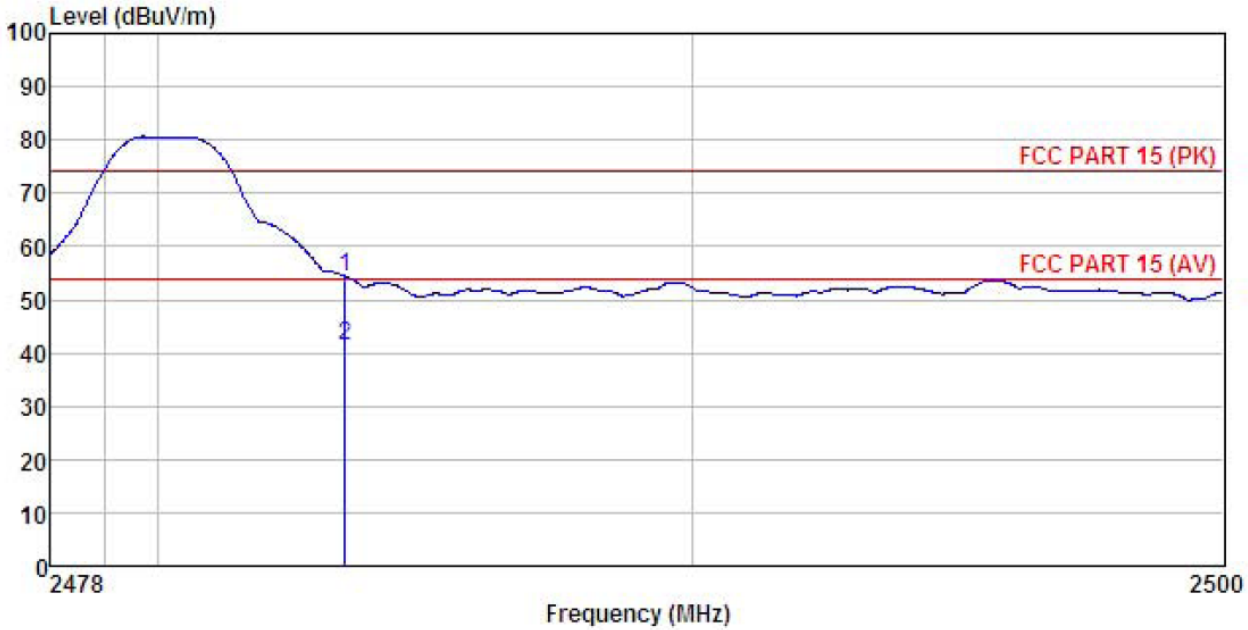


Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) VERTICAL
EUT : 4G Smart Phone
Model : Elite E4
Test mode : L mode
Power Rating : AC120V/60Hz
Environment : Temp:25.3℃ Huni:57%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	18.25	27.37	4.69	0.00	50.31	74.00	-23.69	Peak
2	2390.000	7.96	27.37	4.69	0.00	40.02	54.00	-13.98	Average

Test channel: Highest

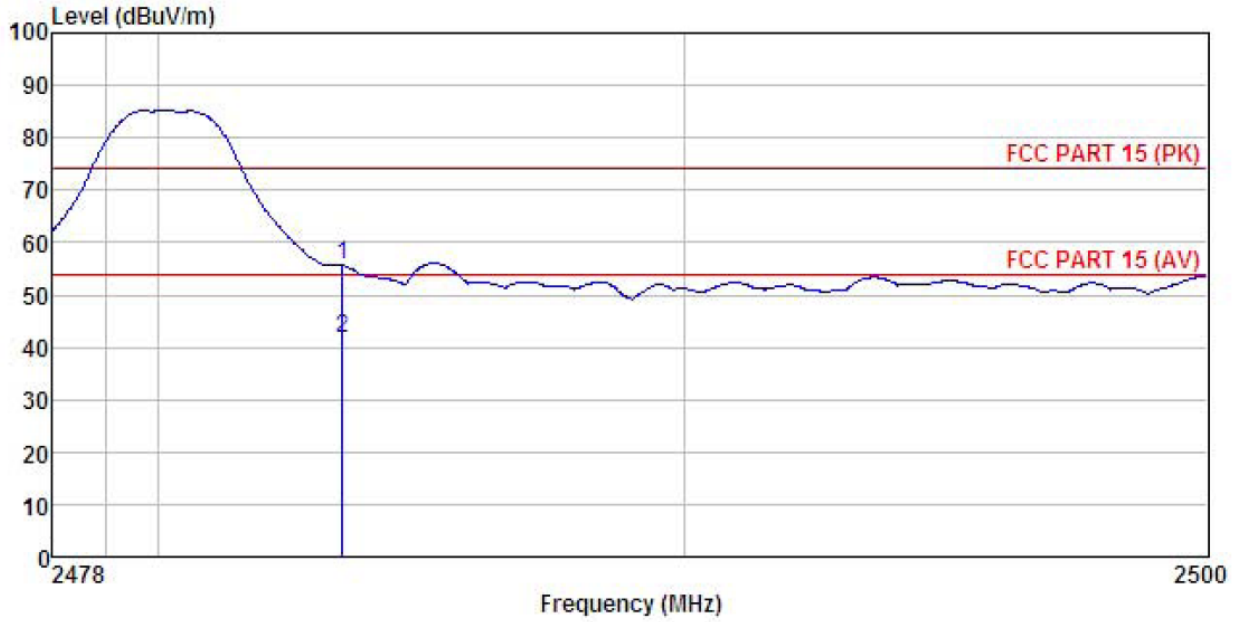
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) HORIZONTAL
EUT : 4G Smart Phone
Model : Elite E4
Test mode : H mode
Power Rating : AC120V/60Hz
Environment : Temp:25.3℃ Huni:57%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	21.92	27.57	4.81	0.00	54.30	74.00	-19.70	Peak
2	2483.500	8.90	27.57	4.81	0.00	41.28	54.00	-12.72	Average

Vertical:

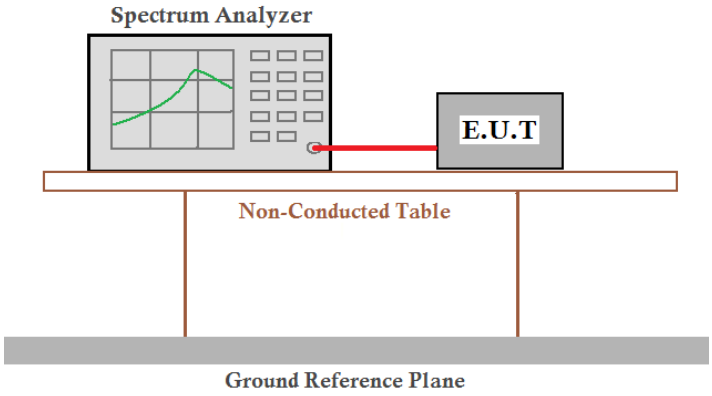


Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18G) VERTICAL
EUT : 4G Smart Phone
Model : Elite E4
Test mode : H mode
Power Rating : AC120V/60Hz
Environment : Temp:25.3℃ Huni:57%
Test Engineer: Carey
REMARK :

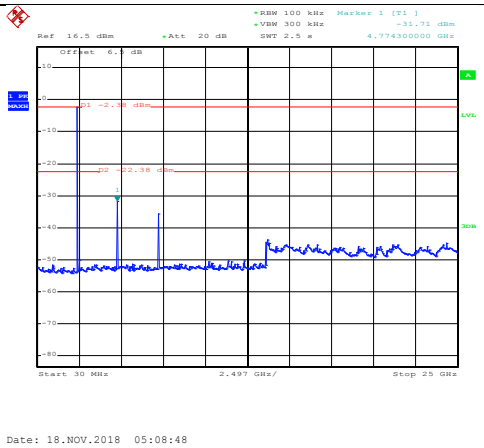
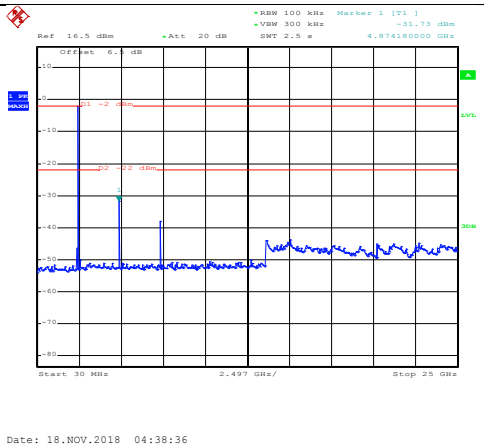
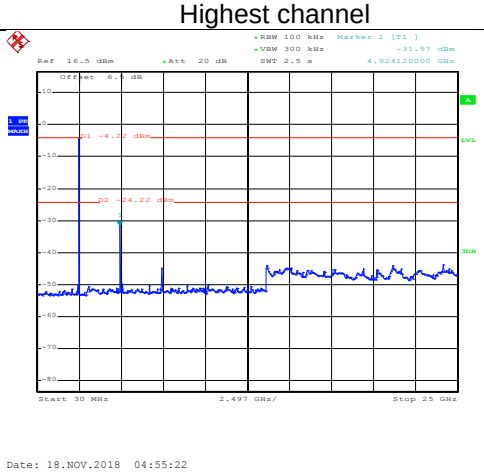
	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	23.18	27.57	4.81	0.00	55.56	74.00	-18.44	Peak
2	2483.500	9.36	27.57	4.81	0.00	41.74	54.00	-12.26	Average

6.7 Spurious Emission

6.7.1 Conducted Emission Method

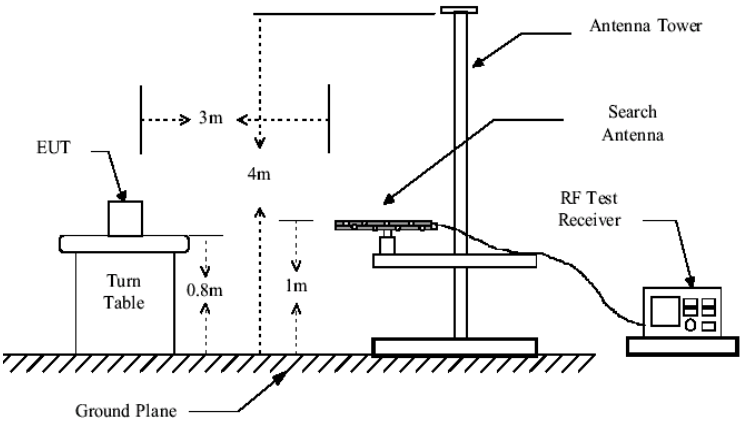
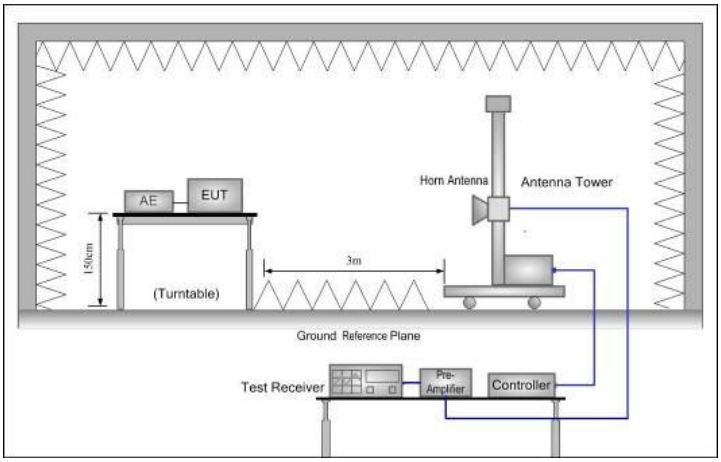
Test Requirement:	FCC Part 15 C Section 15.247 (d) RSS-247 section 5.5
Test Method:	ANSI C63.10:2013 and KDB558074
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

Lowest channel

Date: 18.NOV.2018 05:08:48
30MHz~25GHz
Middle channel

Date: 18.NOV.2018 04:38:36
30MHz~25GHz
Highest channel

Date: 18.NOV.2018 04:55:22
30MHz~25GHz

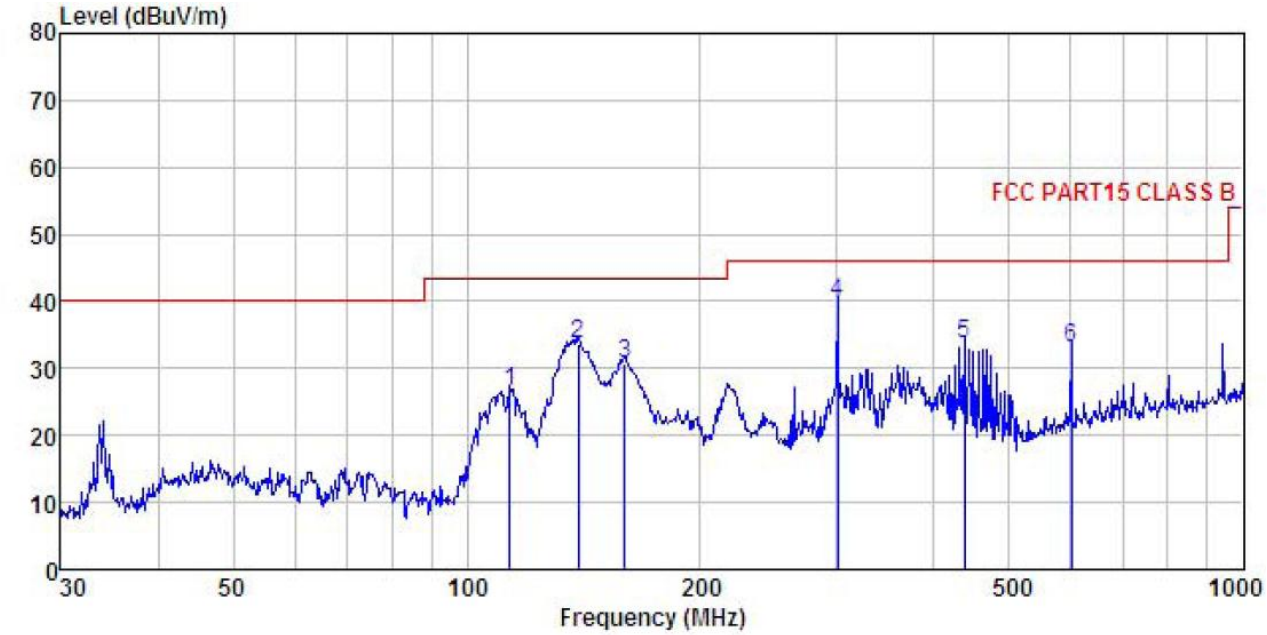
6.7.2 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td colspan="5">FCC Part 15 C Section 15.209 and 15.205
RSS-Gen section 6.13</td></tr>
<tr><td>Test Method:</td><td colspan="5">ANSI C63.10:2013</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="5">9kHz to 25GHz</td></tr>
<tr><td>Test Distance:</td><td colspan="5">3m</td></tr>
<tr><td>Receiver setup:</td><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td></td><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td></td><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
<tr><td>Limit:</td><td colspan="2">Frequency</td><td colspan="2">Limit (dBuV/m @3m)</td><td>Remark</td></tr>
<tr><td></td><td colspan="2">30MHz-88MHz</td><td colspan="2">40.0</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td colspan="2">88MHz-216MHz</td><td colspan="2">43.5</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td colspan="2">216MHz-960MHz</td><td colspan="2">46.0</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td colspan="2">960MHz-1GHz</td><td colspan="2">54.0</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td colspan="2" rowspan="2">Above 1GHz</td><td colspan="2">54.0</td><td>Average Value</td></tr>
<tr><td></td><td colspan="2">74.0</td><td>Peak Value</td></tr>
<tr><td>Test Procedure:</td><td colspan="5">1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) 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 10 dB 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 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</td></tr>
</table>

Test setup:	Below 1GHz  Above 1GHz 
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 2. 9 kHz to 30MHz is too low, so only shows the data of above 30MHz in this report.

Below 1GHz:

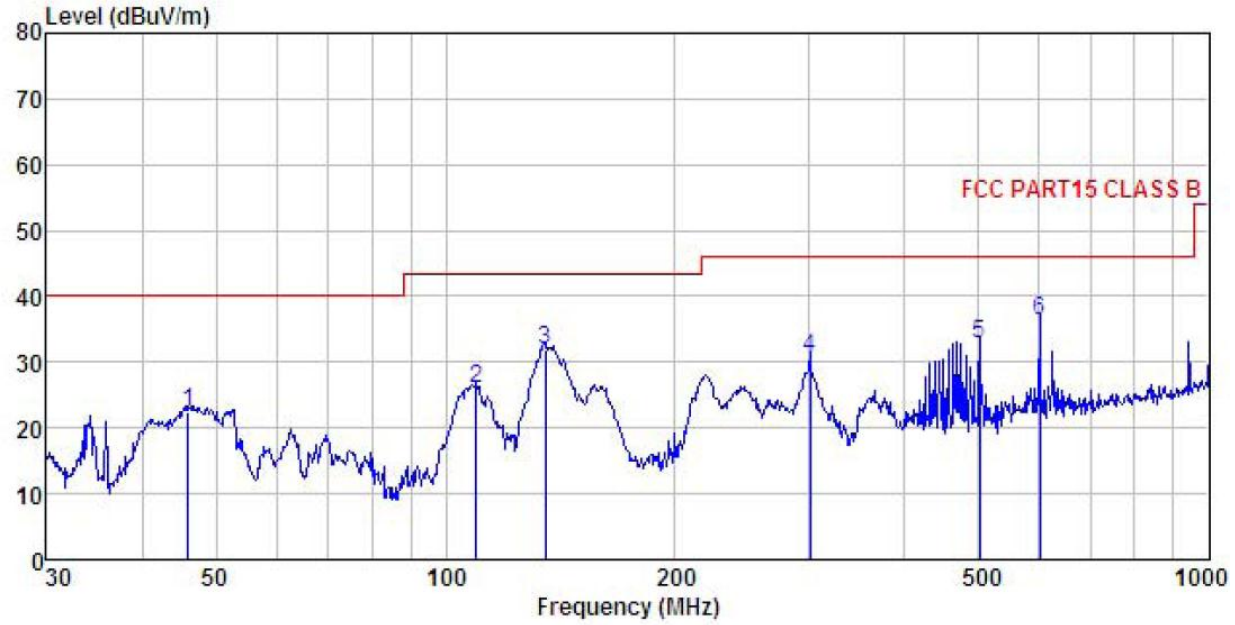
Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) HORIZONTAL
EUT : HELLO 2
Model : HELLO 2
Test mode : 2.4G-TX mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.3℃ Huni:57%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	113.714	42.37	11.50	2.10	29.43	26.54	43.50	-16.96	QP
2	139.361	52.32	8.14	2.39	29.28	33.57	43.50	-9.93	QP
3	159.784	48.05	9.09	2.59	29.13	30.60	43.50	-12.90	QP
4	300.367	51.63	13.61	2.94	28.45	39.73	46.00	-6.27	QP
5	437.120	43.51	15.95	3.17	28.85	33.78	46.00	-12.22	QP
6	601.427	38.80	19.22	3.94	28.93	33.03	46.00	-12.97	QP

Vertical:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) VERTICAL
EUT : HELLO 2
Model : HELLO 2
Test mode : 2.4G-TX mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.3℃ Huni:57%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	46.016	37.24	13.78	1.28	29.85	22.45	40.00	-17.55	QP
2	109.796	40.99	12.29	2.05	29.46	25.87	43.50	-17.63	QP
3	135.032	50.55	8.39	2.34	29.30	31.98	43.50	-11.52	QP
4	300.367	42.47	13.61	2.94	28.45	30.57	46.00	-15.43	QP
5	501.179	40.64	17.51	3.63	28.96	32.82	46.00	-13.18	QP
6	601.427	42.07	19.22	3.94	28.93	36.30	46.00	-9.70	QP

Above 1GHz

Test channel:			Lowest		Level:		Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4808.00	56.05	30.85	6.80	41.81	51.89	74.00	-22.11	Vertical
4808.00	55.05	30.85	6.80	41.81	50.89	74.00	-23.11	Horizontal
Test channel:			Lowest		Level:		Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4808.00	42.14	30.85	6.80	41.81	37.98	54.00	-16.02	Vertical
4808.00	43.11	30.85	6.80	41.81	38.95	54.00	-15.05	Horizontal

Test channel:			Middle		Level:		Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4880.00	54.01	31.20	6.86	41.84	50.23	74.00	-23.77	Vertical
4880.00	53.84	31.20	6.86	41.84	50.06	74.00	-23.94	Horizontal
Test channel:			Middle		Level:		Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4880.00	43.51	31.20	6.86	41.84	39.73	54.00	-14.27	Vertical
4880.00	43.49	31.20	6.86	41.84	39.71	54.00	-14.29	Horizontal

Test channel:			Highest		Level:		Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	55.11	31.63	6.91	41.87	51.78	74.00	-22.22	Vertical
4960.00	51.01	31.63	6.91	41.87	47.68	74.00	-26.32	Horizontal
Test channel:			Highest		Level:		Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	42.69	31.63	6.91	41.87	39.36	54.00	-14.64	Vertical
4960.00	41.39	31.63	6.91	41.87	38.06	54.00	-15.94	Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*