

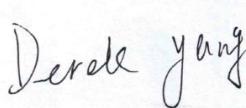
Report No.: ZR/2020/A003802-01  
Page: 1 of 36

## **TEST REPORT**

<b>Application No:</b>	ZR/2020/A0038
<b>Applicant:</b>	TCL Communication Ltd
<b>Address of Applicant</b>	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
<b>Manufacturer:</b>	TCL Communication Ltd
<b>Address of Manufacturer:</b>	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
<b>EUT Description:</b>	LTE/WCDMA/GSM mobile phone
<b>Model No.:</b>	5028A
<b>Trade Mark:</b>	alcatel
<b>FCC ID:</b>	2ACCJH113
<b>Standard(s) :</b>	47 CFR Part 15, Subpart B
<b>Date of Receipt:</b>	2020-10-29
<b>Date of Test:</b>	2019-11-13 to 2019-11-27(for original report ZR/2019/B000407-01) 2020-11-01 to 2020-11-03(for new report ZR/2020/A003802-01)
<b>Date of Issue:</b>	2021-08-16
<b>Test Result:</b>	<b>Pass*</b>

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

Authorized Signature:



Derek Yang

Wireless Laboratory Manager



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<b>Revision Record</b>				
<b>Version</b>	<b>Chapter</b>	<b>Date</b>	<b>Modifier</b>	<b>Remark</b>
01		2020/11/10		Original
02		2021/07/24	Sherlock Fang	1. Modify data conversion error of antenna height 2. Update equipment list
03		2021/8/16	Sherlock Fang	1. Update Support Units, Test facility and Test Location

\*This report supersedes our previous report ZR/2020/A003802, issued on 2020/11/10, which is hereby deemed null and void.

<b>Authorized for issue by:</b>		
<b>Prepared By</b>		 (Sherlock Fang) / Engineer
<b>Checked By</b>		 (Jim Huang) / Reviewer



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## Test Summary

<b>Emission Part</b>				
<b>Item</b>	<b>Standard</b>	<b>Method</b>	<b>Requirement</b>	<b>Result</b>
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

<b>Internal Source</b>	<b>Upper Frequency</b>
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

**Remark:**

This test report (Report No.: ZR/2020/A003802-01) is base on the original test report (Report No.: ZR/2019/B000407-01).

Review this report and original report, this report only add a battery according to the declaration letter from client.

Considering to the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

Therefore in this report was performed based on the worst case of the original report with report number ZR/2019/B000407-01 and other test data in this report are base on the previous report with report number ZR/2019/B000407-01.



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## 1 General Information

Product Name:	LTE/WCDMA/GSM mobile phone		
Model No.(EUT):	5028A		
Trade Mark:	alcatel		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band II	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 2	1850~1910	1930~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 7	2500~2570	2620~2690
	LTE Band 12	699~716	729~746
	LTE Band 13	777~787	746~756
	LTE Band 17	704~716	734~746
	LTE Band 66	1710~1780	2110~2200
	Wi-Fi 2.4G	2412~2472	2412~2472
	Bluetooth	2402~2480	2402~2480

**Accessory:**

	No.	P/N	Remark	Comment
Adapter	1	CBA0059AGAC5	UC13US; 5.0 V,2000 mA, PUAN;	-
	2	CBA0059AGAC7	UC13US; 5.0 V,2000 mA,; CHENGYANG	
USB cable	1	CDA0000024C8	PUAN	-
	2	CDA0000024C2	JUWEI	
Headset	1	CCB0046A10C1	JUWEI; alcatel Logo	-
	2	CCB0046A10C4	MEIHAO; alcatel Logo	
	3	CCB0046A15C1	JUWEI	Same with CCB0046A10C1, only remove alcatel logo
	4	CCB0046A15C4	MEIHAO	Same with CCB0046A10C4, only remove alcatel logo
Battery	1	CAC3860024C1	TLp038D1; BYD	-
	2	CAC3860025C7	TLp038D7; VEKEN;	
	3	CAC3860032CA	TLp038DA;Tianmao	

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## 1.1 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Router	NETGEAR	R6020	No.XA1401
Computer	Lenovo	L480	No.XA1402
Mouse	A4TECH	OP-520NU USB	No.XA1403

## 1.2 Test Location

Company:	SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD.
Address:	1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, Xi'an, Shaanxi China
Post code:	710086
Test engineer:	Ben Huang, Leah Chen

## 1.3 Test Facility

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

- **A2LA (Certificate No. 4854.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4854.01.

- **FCC –Designation Number: CN1271.**

## 1.4 Deviation from Standards

None

## 1.5 Abnormalities from Standard Conditions

None

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## 2 Emission Test Results

### 2.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

#### 2.1.1 E.U.T. Operation

##### Operating Environment:

Temperature:	18.9 °C	Humidity:	55.1 % RH	Atmospheric Pressure:	1000 mbar
Pretest these modes to find the worst case:	e: Transfer data between the EUT and the PC+USB cable1				
	f: Transfer data between the EUT and the PC+USB cable2				
	g: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapter1				
	h: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapter2				
	i: Telecom Idle+BT+WLAN +GPS Rx+camera (Front) +earphone+battery+Cable(worst)+ Cable(worst)+adapter(Worst)				
	j: Telecom Idle+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)				
	k: GSM 850+BT+WLAN +GPS Rx+FM+earphone+battery+Cable(worst)+adapter(Worst)				
	l: GSM 1900+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)				
	m: WCDMA Band II+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)				
	n: WCDMA Band IV+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)				
	o: WCDMA Band V+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)				
	p: LTE band 2+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)				
	q: LTE band 4+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)				
	r: LTE band 5+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)				
	s: LTE band 7+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)				
	t: LTE band 12+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)				

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Cable(worst)+adapter(Worst)

u: LTE band 13+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

v: LTE band 17+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

w: LTE band 66+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

The worst case  
for final test:

e: Transfer data between the EUT and the PC+USB cable1

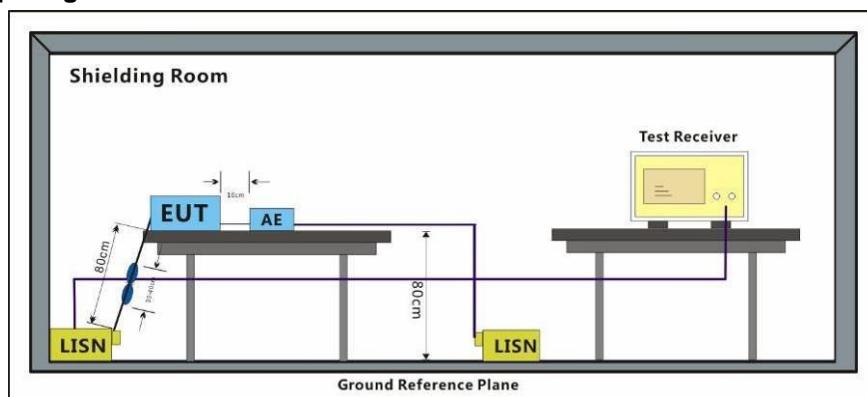
g: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)+earphone1+battery+Cable1+adapter1

h: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)+earphone1+battery+Cable1+adapter2

i: Telecom Idle+BT+WLAN +GPS Rx+camera (Front) +earphone+battery+Cable1+Cable1+adapter2

j: Telecom Idle+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable1+adapter2

### 2.1.2 Test Setup Diagram



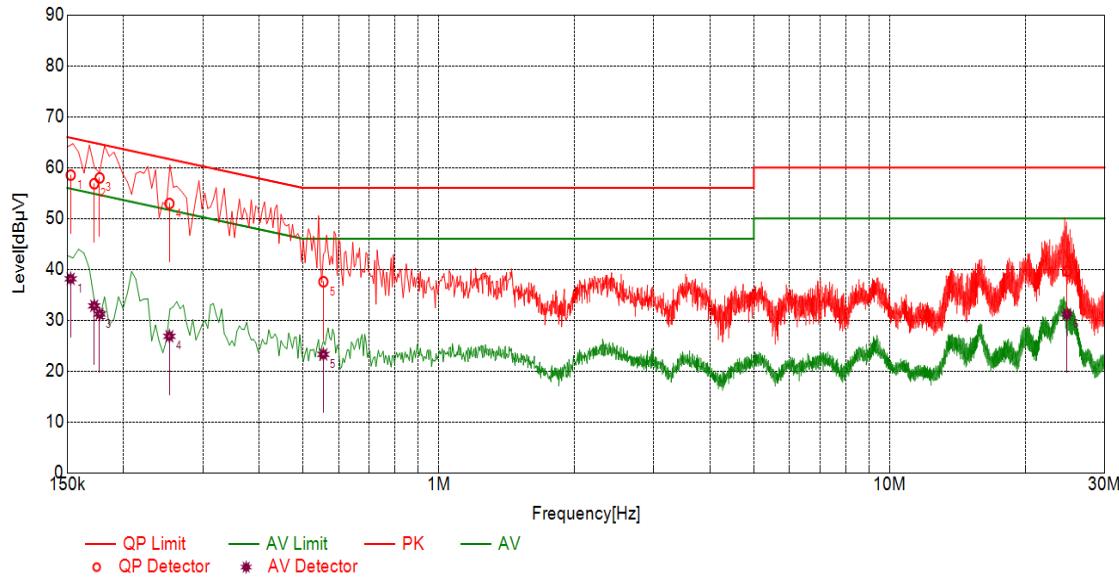
### 2.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

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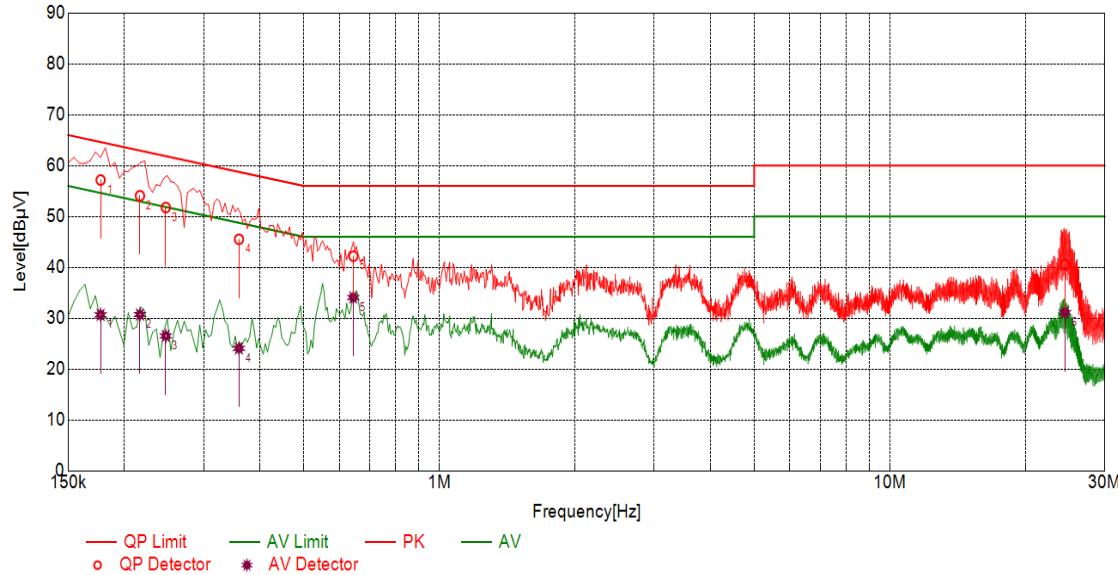
**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type
1	0.1527	10.10	58.52	65.85	7.33	38.13	55.85	17.72	L
2	0.1722	10.10	56.82	64.85	8.03	32.82	54.85	22.03	L
3	0.1770	10.10	57.97	64.63	6.66	31.21	54.63	23.42	L
4	0.2528	10.10	52.93	61.67	8.74	26.84	51.67	24.83	L
5	0.5550	10.10	37.56	56.00	18.44	23.28	46.00	22.72	L
6	24.7380	10.11	39.63	60.00	20.37	31.20	50.00	18.80	L

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Mode:e; Line:Neutral Line

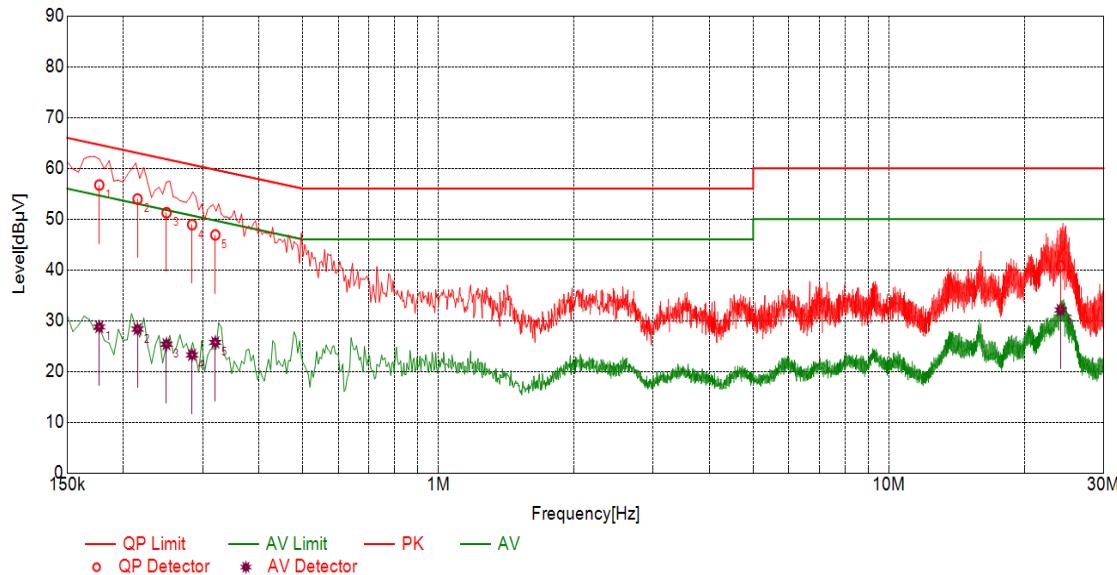
**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type
1	0.1771	10.10	57.16	64.62	7.46	30.65	54.62	23.97	N
2	0.2165	10.10	54.07	62.95	8.88	30.72	52.95	22.23	N
3	0.2471	10.10	51.75	61.85	10.10	26.51	51.85	25.34	N
4	0.3591	10.10	45.52	58.75	13.23	24.07	48.75	24.68	N
5	0.6443	10.10	42.19	56.00	13.81	34.07	46.00	11.93	N
6	24.4792	10.11	40.52	60.00	19.48	31.11	50.00	18.89	N

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Mode:g; Line:Live Line

**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type
1	0.1768	10.10	56.72	64.63	7.91	28.75	54.63	25.88	L
2	0.2150	10.10	53.95	63.01	9.06	28.33	53.01	24.68	L
3	0.2493	10.10	51.26	61.78	10.52	25.36	51.78	26.42	L
4	0.2841	10.10	48.91	60.70	11.79	23.25	50.70	27.45	L
5	0.3199	10.10	46.89	59.71	12.82	25.71	49.71	24.00	L
6	24.0577	10.11	40.82	60.00	19.18	32.11	50.00	17.89	L

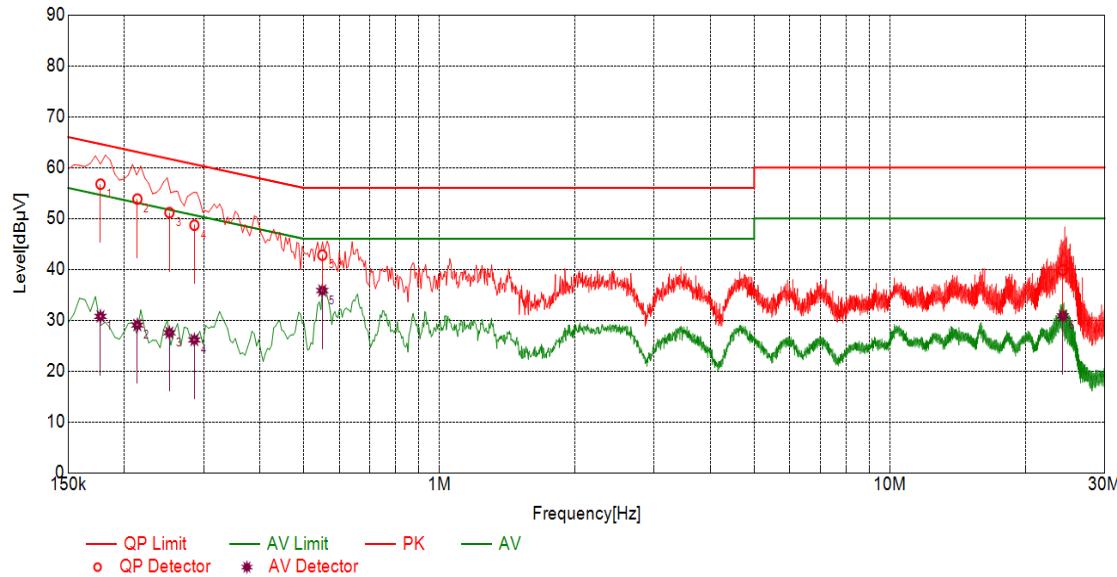
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Mode:g; Line:Neutral Line

**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type
1	0.1770	10.10	56.74	64.63	7.89	30.75	54.63	23.88	N
2	0.2137	10.10	53.81	63.06	9.25	29.04	53.06	24.02	N
3	0.2517	10.10	51.14	61.70	10.56	27.54	51.70	24.16	N
4	0.2860	10.10	48.68	60.64	11.96	26.12	50.64	24.52	N
5	0.5499	10.10	42.79	56.00	13.21	35.83	46.00	10.17	N
6	24.2000	10.11	39.86	60.00	20.14	30.85	50.00	19.15	N

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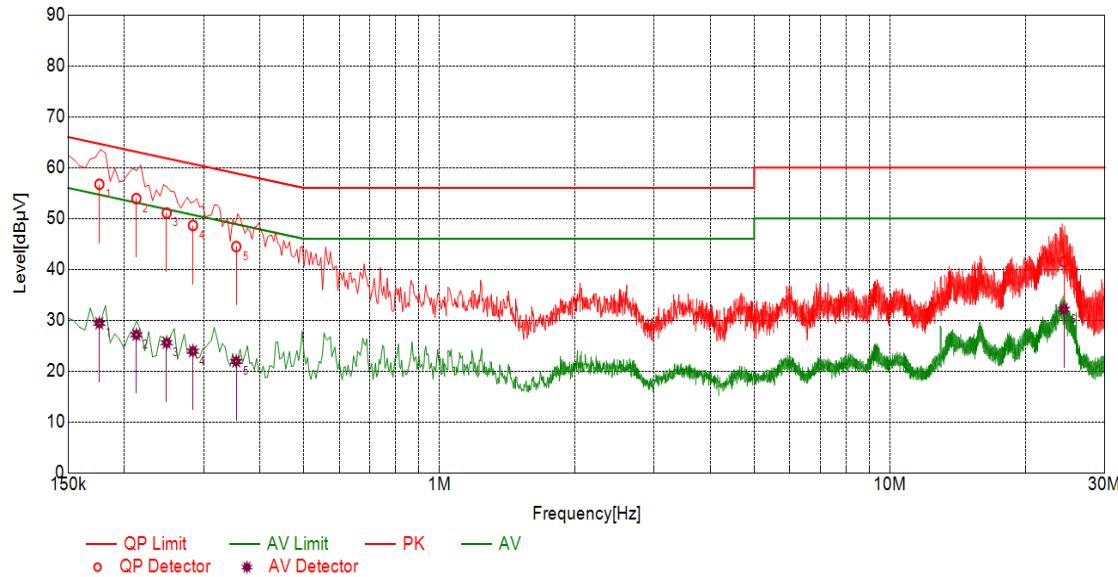
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Mode:h; Line:Live Line

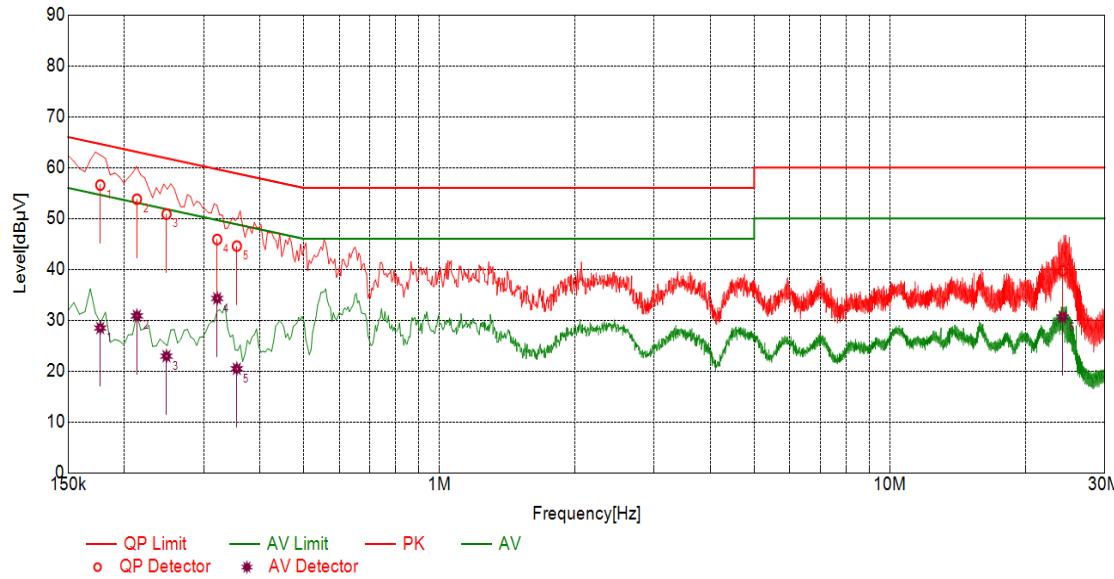
**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type
1	0.1760	10.10	56.72	64.67	7.95	29.38	54.67	25.29	L
2	0.2126	10.10	53.90	63.10	9.20	27.13	53.10	25.97	L
3	0.2482	10.10	51.06	61.82	10.76	25.57	51.82	26.25	L
4	0.2839	10.10	48.63	60.70	12.07	23.91	50.70	26.79	L
5	0.3542	10.10	44.47	58.86	14.39	21.89	48.86	26.97	L
6	24.3428	10.11	41.49	60.00	18.51	32.13	50.00	17.87	L

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Mode:h; Line:Neutral Line

**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type
1	0.1768	10.10	56.56	64.64	8.08	28.47	54.64	26.17	N
2	0.2132	10.10	53.78	63.08	9.30	30.85	53.08	22.23	N
3	0.2480	10.10	50.84	61.82	10.98	22.93	51.82	28.89	N
4	0.3214	10.10	45.87	59.67	13.80	34.28	49.67	15.39	N
5	0.3553	10.10	44.58	58.84	14.26	20.45	48.84	28.39	N
6	24.1668	10.11	39.74	60.00	20.26	30.63	50.00	19.37	N

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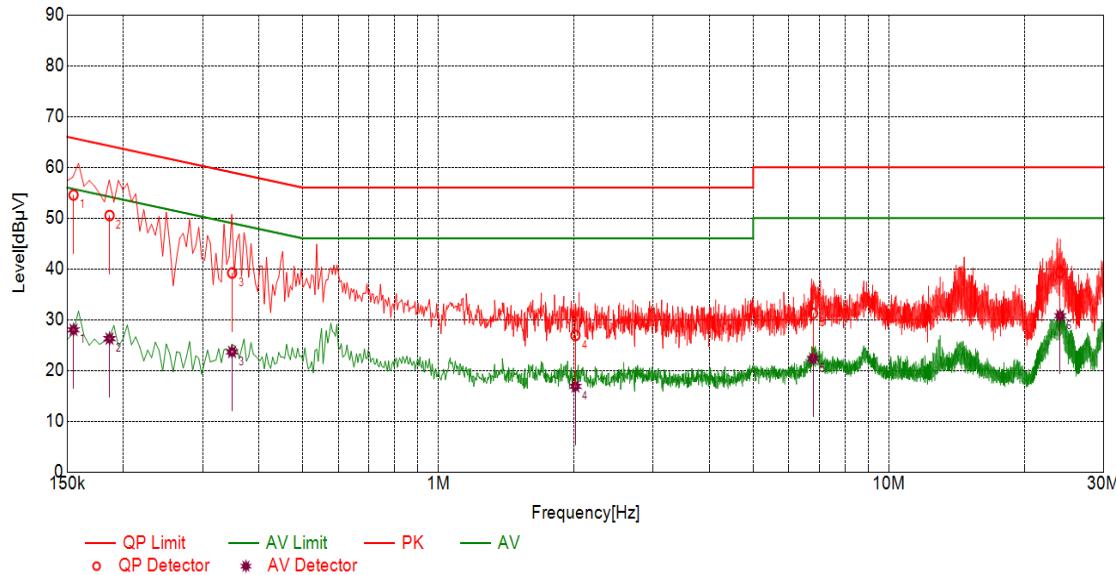


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**Test on the worst case:**

Mode:i; Line:Live Line

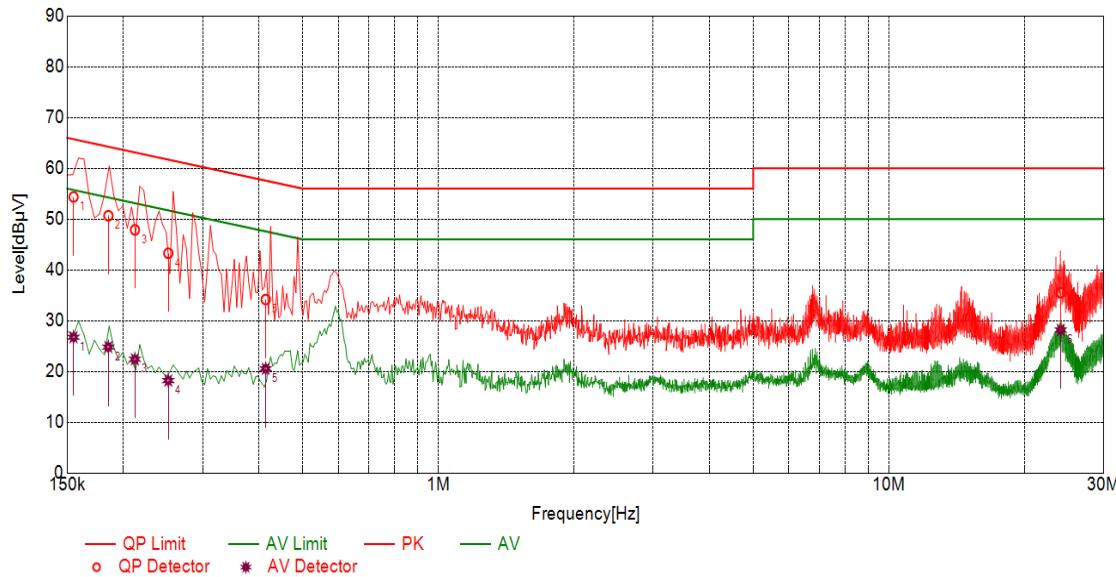
**Test Graph**

Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]
1	0.1550	10.10	54.54	65.73	11.19	27.99	55.73	27.74
2	0.1863	10.10	50.51	64.20	13.69	26.27	54.20	27.93
3	0.3486	10.10	39.20	59.00	19.80	23.65	49.00	25.35
4	2.0153	10.10	26.91	56.00	29.09	16.87	46.00	29.13
5	6.7898	10.10	31.25	60.00	28.75	22.34	50.00	27.66
6	24.0123	10.11	39.30	60.00	20.70	30.77	50.00	19.23

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Mode:i; Line:Neutral Line

**Test Graph**

Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]
1	0.1550	10.10	54.36	65.73	11.37	26.74	55.73	28.99
2	0.1852	10.10	50.66	64.25	13.59	24.80	54.25	29.45
3	0.2121	10.10	47.89	63.12	15.23	22.40	53.12	30.72
4	0.2516	10.10	43.27	61.71	18.44	18.21	51.71	33.50
5	0.4139	10.10	34.16	57.57	23.41	20.54	47.57	27.03
6	24.0736	10.11	35.50	60.00	24.50	28.16	50.00	21.84

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## 2.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B
Test Method:	ANSI C63.4:2014
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz -88MHz	40.0(dB $\mu$ V/m) quasi-peak
88MHz-216MHz	43.5(dB $\mu$ V/m) quasi-peak
216MHz-960MHz	46.0(dB $\mu$ V/m) quasi-peak
960MHz-1000MHz	54.0(dB $\mu$ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

### 2.2.1 E.U.T. Operation

#### Operating Environment:

Temperature: 25 °C      Humidity: 66.5 % RH      Atmospheric Pressure: 1010 mbar

Pretest these modes to find the worst case: e: Transfer data between the EUT and the PC+USB cable1

f: Transfer data between the EUT and the PC+USB cable2

g: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)+earphone1+battery+Cable(worst)+adapter1

h: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)+earphone1+battery+Cable(worst)+adapter2

i: Telecom Idle+BT+WLAN +GPS Rx+camera (Front) +earphone+battery+Cable(worst)+Cable(worst)+adapter(Worst)

j: Telecom Idle+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)

k: GSM 850+BT+WLAN +GPS Rx+FM+earphone+battery+Cable(worst)+adapter(Worst)

l: GSM 1900+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)

m: WCDMA Band II+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)

n: WCDMA Band IV+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)

o: WCDMA Band V+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)

p: LTE band 2+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)

q: LTE band 4+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

r: LTE band 5+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

s: LTE band 7+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

t: LTE band 12+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+

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Cable(worst)+adapter(Worst)

u: LTE band 13+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

v: LTE band 17+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

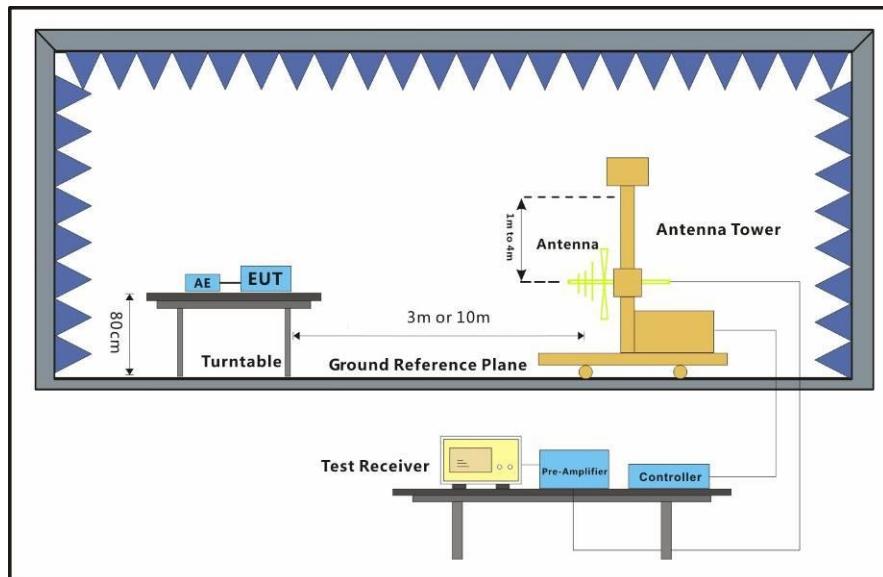
w: LTE band 66+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)

The worst case  
for final test:

f: Transfer data between the EUT and the PC+USB cable2

h: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)  
+earphone1+battery+ Cable1+adapter2

## 2.2.2 Test Setup Diagram



## 2.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

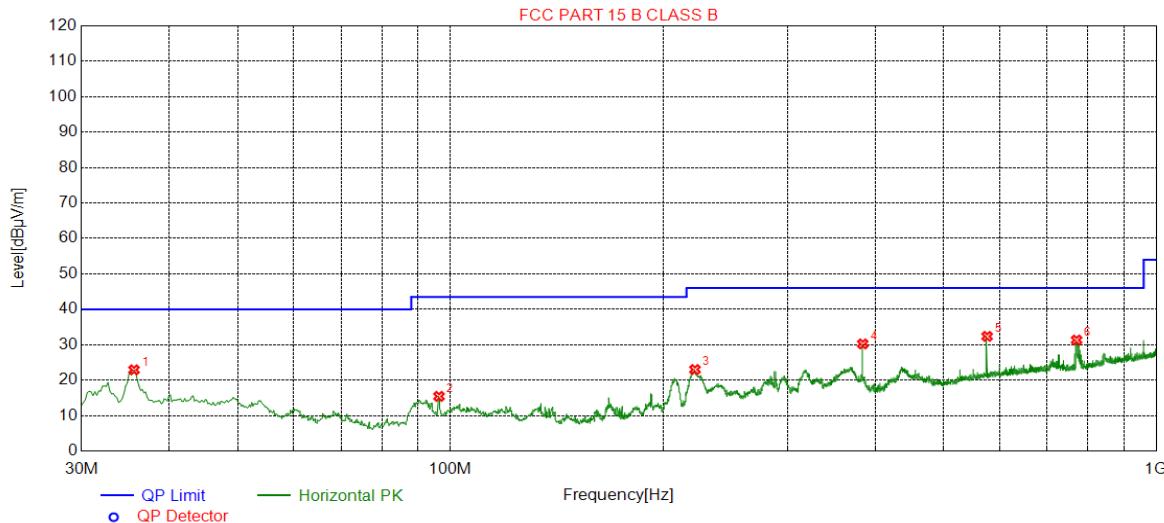
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Mode:f; Polarization:Horizontal



<b>Suspected List</b>								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.6271	22.91	-29.76	40.00	17.09	137	258	Horizontal
2	96.3613	15.43	-32.65	43.50	28.07	218	88	Horizontal
3	222.0984	23.00	-30.65	46.00	23.00	145	214	Horizontal
4	383.9268	30.24	-25.95	46.00	15.76	216	20	Horizontal
5	576.0252	32.36	-21.31	46.00	13.64	124	49	Horizontal
6	771.2282	31.32	-18.10	46.00	14.68	189	68	Horizontal

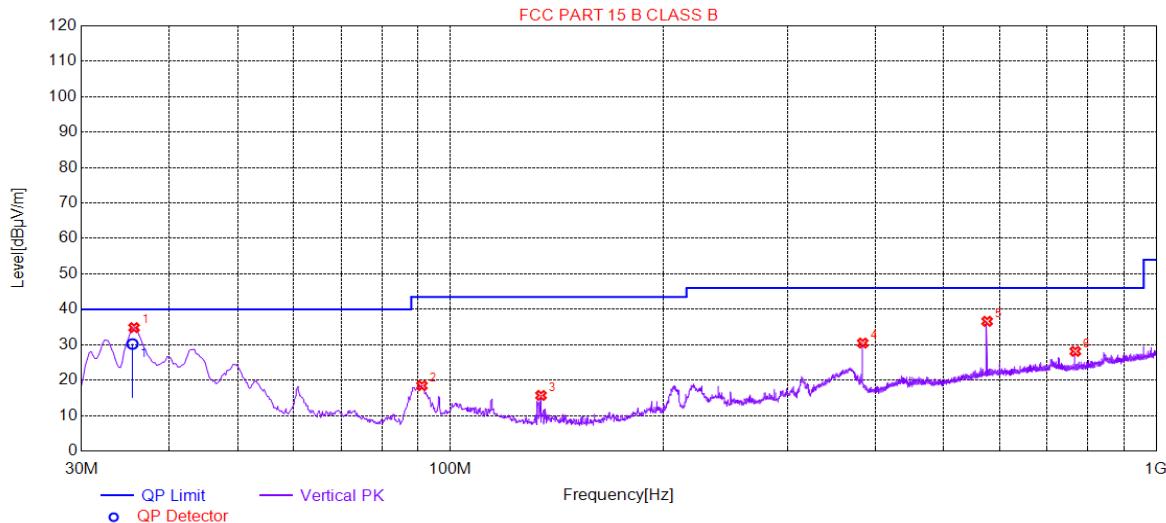
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Mode:f; Polarization:Vertical

**Suspected List**

<b>Suspected List</b>								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.6271	34.82	-29.76	40.00	5.18	257	14	Vertical
2	91.1222	18.45	-33.53	43.50	25.05	276	80	Vertical
3	134.3929	15.70	-35.28	43.50	27.80	245	284	Vertical
4	383.9268	30.47	-25.95	46.00	15.53	259	195	Vertical
5	576.0252	36.61	-21.31	46.00	9.39	205	295	Vertical
6	768.1236	28.14	-18.13	46.00	17.86	232	44	Vertical

**Final Data List**

<b>Final Data List</b>								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dB $\mu$ V/m]	QP Limit [dB $\mu$ V/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.4391	-29.82	30.21	40.00	9.79	121.6	359.5	Vertical

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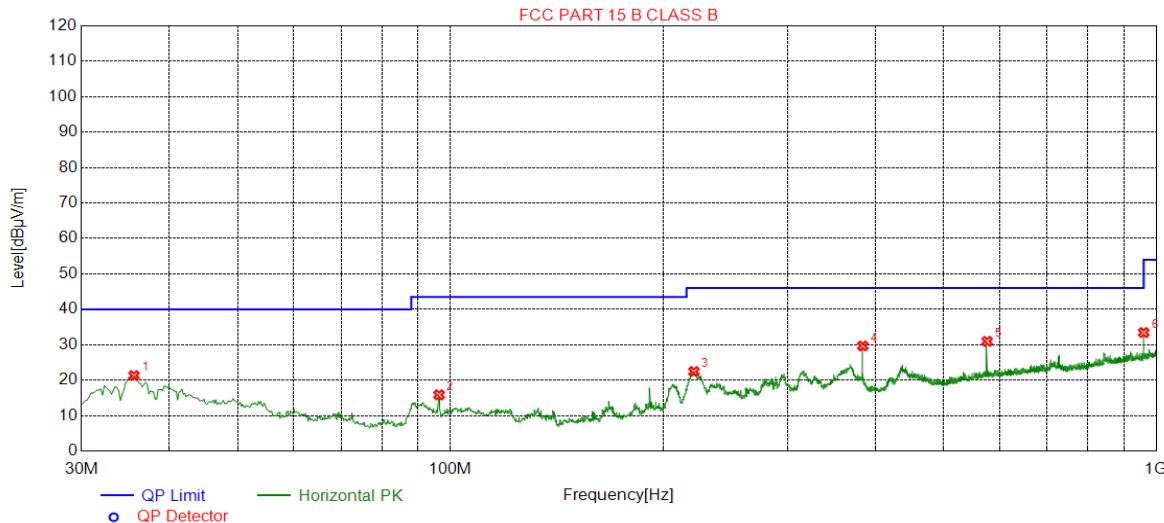
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Mode:h; Polarization:Horizontal

**Suspected List**

<b>Suspected List</b>								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.6271	21.30	-29.76	40.00	18.70	170	256	Horizontal
2	96.3613	15.86	-32.65	43.50	27.64	174	259	Horizontal
3	221.322	22.45	-30.67	46.00	23.55	140	238	Horizontal
4	383.926	29.66	-25.95	46.00	16.34	223	346	Horizontal
5	576.025	30.95	-21.31	46.00	15.05	188	163	Horizontal
6	960.028	33.44	-15.34	54.00	20.56	236	289	Horizontal

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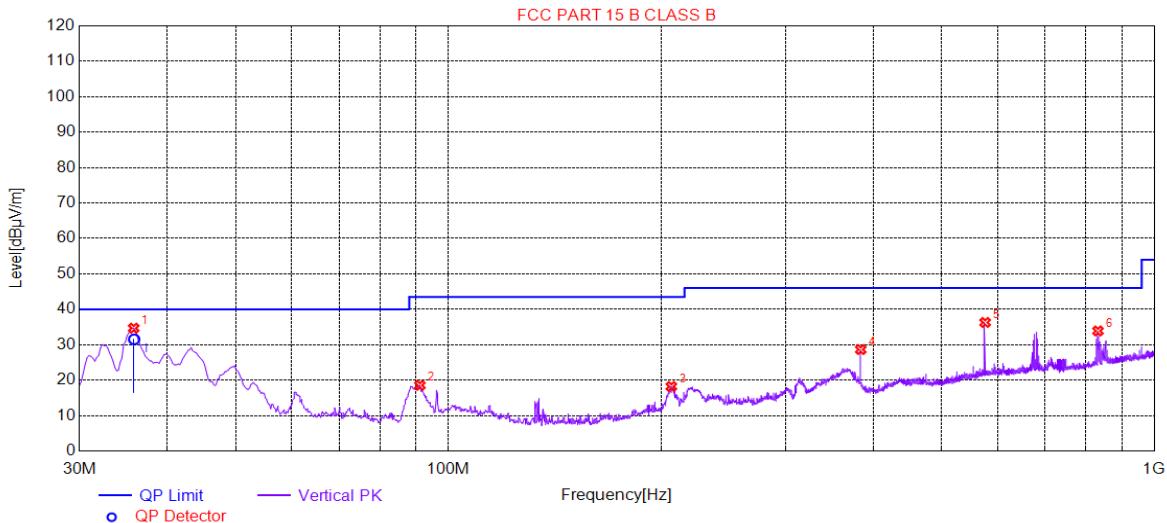
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Mode:h; Polarization:Vertical

**Suspected List**

NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.8212	34.67	-29.69	40.00	5.33	210	340	Vertical
2	91.1222	18.54	-33.53	43.50	24.96	244	76	Vertical
3	206.9634	18.22	-31.04	43.50	25.28	202	220	Vertical
4	383.9268	28.64	-25.95	46.00	17.36	199	165	Vertical
5	576.0252	36.29	-21.31	46.00	9.71	248	289	Vertical
6	832.3505	33.89	-17.20	46.00	12.11	163	314	Vertical

**Final Data List**

Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dB $\mu$ V/m]	QP Limit [dB $\mu$ V/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.8642	-29.68	31.52	40.00	8.48	102.1	328.2	Vertical

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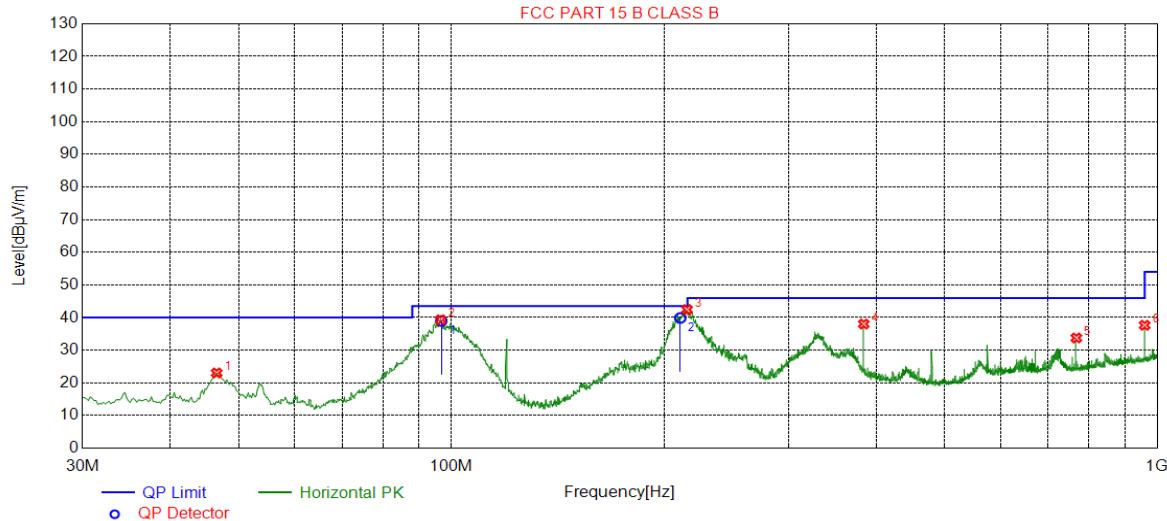


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## Test on the worst case:

Mode:h; Polarization:Horizontal



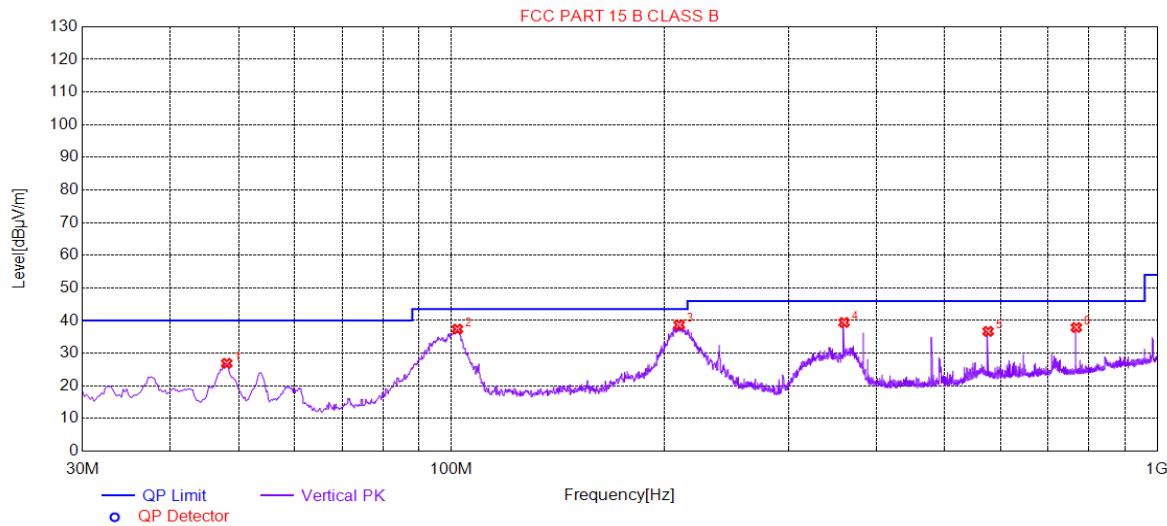
## Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	46.4933	23.05	-30.41	40.00	16.95	187	98	Horizontal
2	96.5553	39.31	-32.61	43.50	4.19	165	54	Horizontal
3	215.695	42.45	-30.83	43.50	1.05	252	18	Horizontal
4	383.926	38.03	-25.95	46.00	7.97	168	131	Horizontal
5	768.123	33.77	-18.13	46.00	12.23	187	65	Horizontal
6	960.028	37.66	-15.34	54.00	16.34	254	88	Horizontal

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Mode:h; Polarization:Vertical

**Suspected List**

Suspected List								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.0456	26.91	-30.39	40.00	13.09	241	337	Vertical
2	101.988	37.39	-32.00	43.50	6.11	258	158	Vertical
3	210.262	38.69	-30.97	43.50	4.81	269	261	Vertical
4	360.060	39.43	-26.60	46.00	6.57	271	103	Vertical
5	576.025	36.70	-21.31	46.00	9.30	228	115	Vertical
6	768.123	37.90	-18.13	46.00	8.10	263	191	Vertical

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## 2.3 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B  
Test Method: ANSI C63.4:2014  
Frequency Range: Above 1GHz  
Measurement Distance: 3m  
Limit:  
Above 1GHz 74(dB $\mu$ V/m) peak, 54(dB $\mu$ V/m) average  
Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 18000MHz

### 2.3.1 E.U.T. Operation

Operating Environment:

Temperature: 21.7 °C      Humidity: 56.4 % RH      Atmospheric Pressure: 1010 mbar  
Pretest these modes to find the worst case:  
e: Transfer data between the EUT and the PC+USB cable1  
f: Transfer data between the EUT and the PC+USB cable2  
g: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapter1  
h: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapter2  
i: Telecom Idle+BT+WLAN +GPS Rx+camera (Front) +earphone+battery+Cable(worst)+Cable(worst)+adapter(Worst)  
j: Telecom Idle+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)  
k: GSM 850+BT+WLAN +GPS Rx+FM+earphone+battery+Cable(worst)+adapter(Worst)  
l: GSM 1900+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)  
m: WCDMA Band II+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)  
n: WCDMA Band IV+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)  
o: WCDMA Band V+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)  
p: LTE band 2+BT+WLAN +GPS Rx+ FM+earphone+battery+Cable(worst)+adapter(Worst)  
q: LTE band 4+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)  
r: LTE band 5+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)  
s: LTE band 7+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)  
t: LTE band 12+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)  
u: LTE band 13+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+Cable(worst)+adapter(Worst)  
v: LTE band 17+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+

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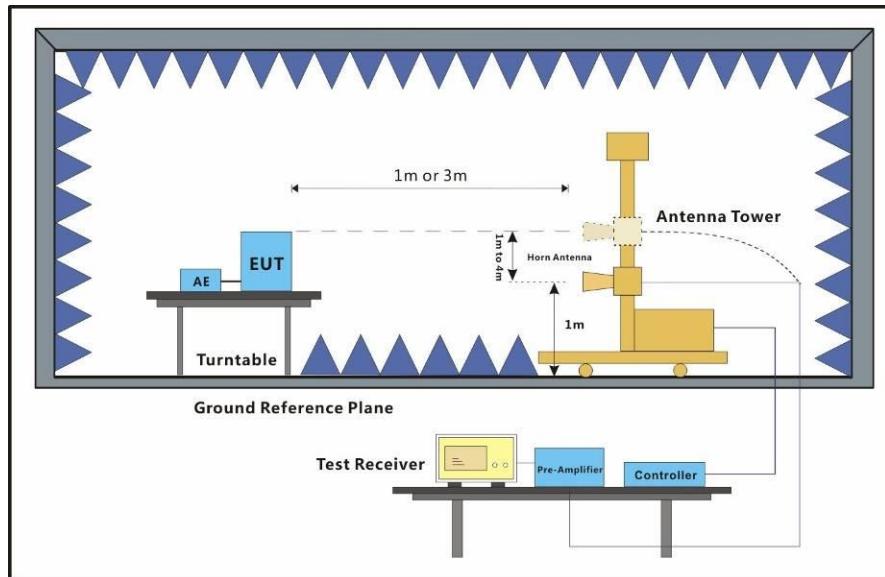
Cable(worst)+adapter(Worst)

w: LTE band 66+BT+WLAN +GPS Rx+ FM+earphone(worst)+battery(worst)+  
Cable(worst)+adapter(Worst)The worst case  
for final test:

e: Transfer data between the EUT and the PC+USB cable1

j: Telecom Idle+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+  
Cable1+adapter2

### 2.3.2 Test Setup Diagram



### 2.3.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

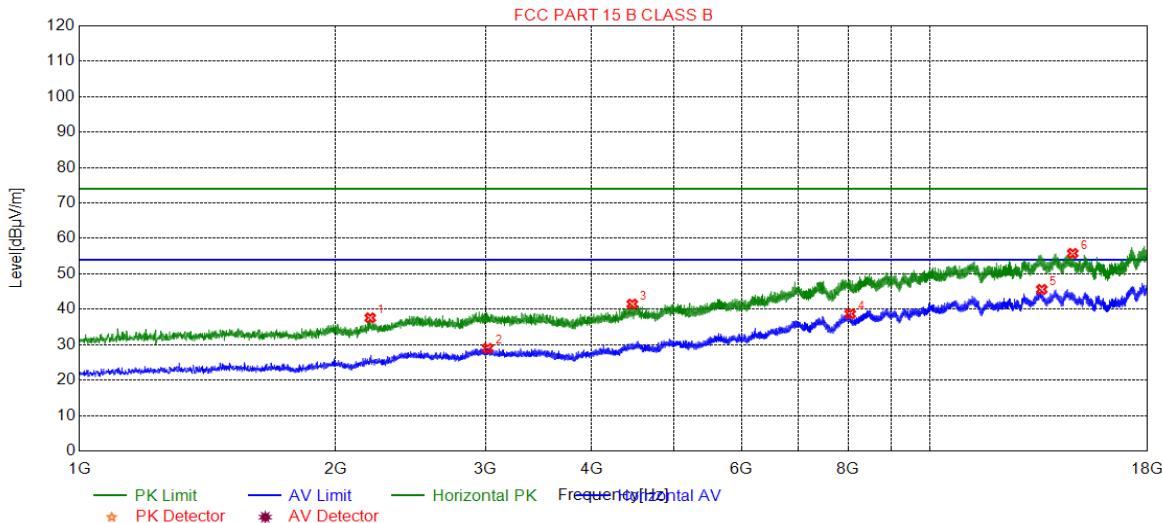
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Mode:e; Polarization:Horizontal

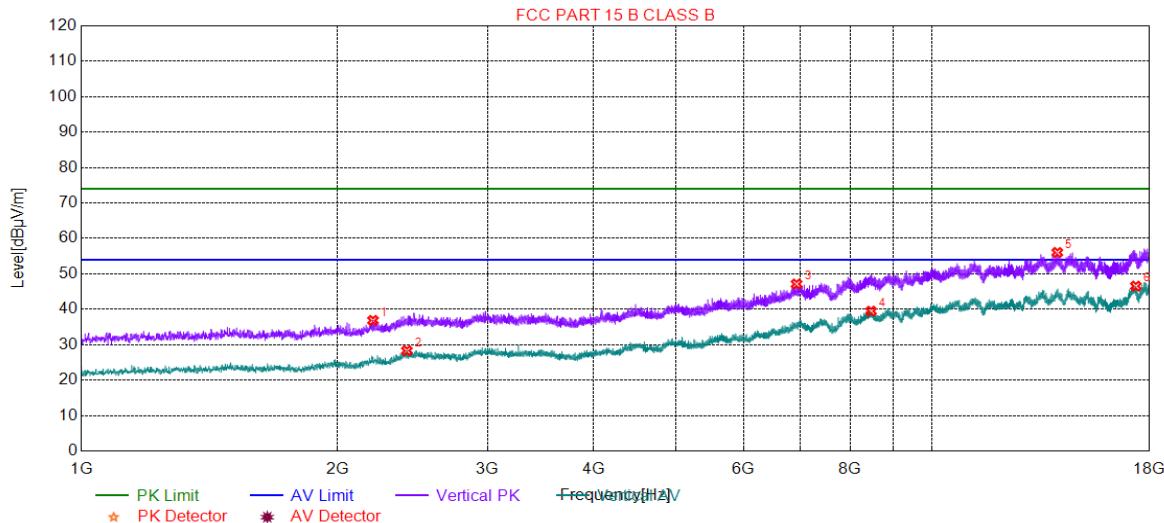


<b>Suspected List</b>								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2196.8598	37.59	-27.47	74.00	36.41	175	74	Horizontal
2	3018.0009	28.97	-24.40	54.00	25.03	173	225	Horizontal
3	4463.9232	41.49	-20.47	74.00	32.51	231	225	Horizontal
4	8049.4025	38.71	-10.33	54.00	15.29	140	18	Horizontal
5	13519.426	45.62	-0.46	54.00	8.38	128	18	Horizontal
6	14697.584	55.78	-1.16	74.00	18.22	176	175	Horizontal

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Mode:e; Polarization:Vertical

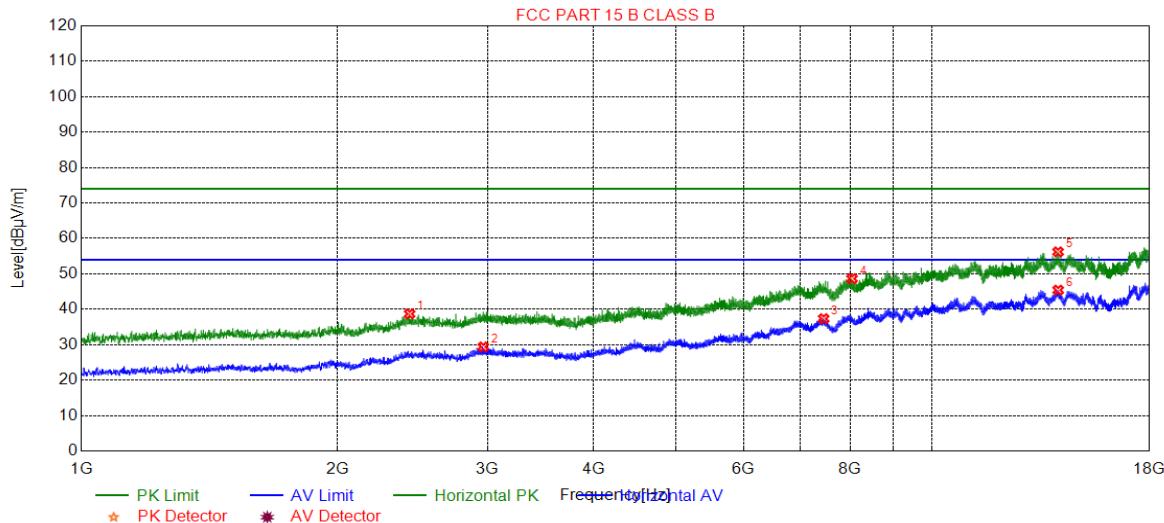


<b>Suspected List</b>								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2201.1101	36.86	-27.43	74.00	37.14	214	241	Vertical
2	2412.7706	28.32	-25.99	54.00	25.68	299	0	Vertical
3	6924.7962	47.14	-12.91	74.00	26.86	208	0	Vertical
4	8471.0236	39.48	-9.16	54.00	14.52	287	291	Vertical
5	14020.101	56.03	-0.64	74.00	17.97	234	141	Vertical
6	17341.217	46.54	-1.60	54.00	7.46	299	90	Vertical

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Mode:j; Polarization:Horizontal

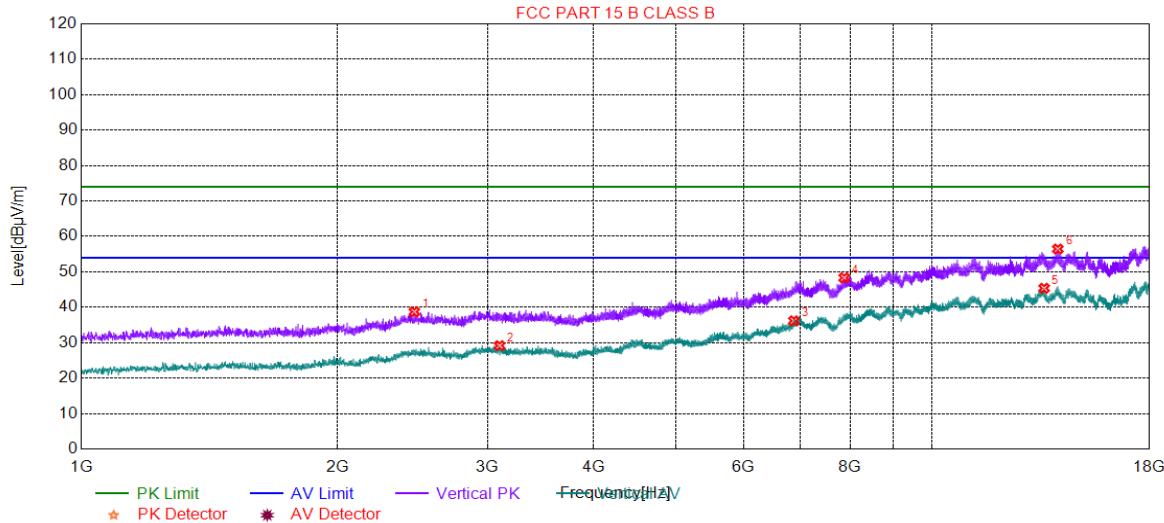


Suspected List								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2430.6215	38.71	-25.97	74.00	35.29	200	170	Horizontal
2	2966.1483	29.39	-24.54	54.00	24.61	205	120	Horizontal
3	7450.9725	37.35	-12.01	54.00	16.65	208	69	Horizontal
4	8046.0023	48.64	-10.30	74.00	25.36	119	271	Horizontal
5	14050.702	56.21	-0.67	74.00	17.79	186	271	Horizontal
6	14054.102	45.41	-0.67	54.00	8.59	165	360	Horizontal

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Mode:j; Polarization:Vertical



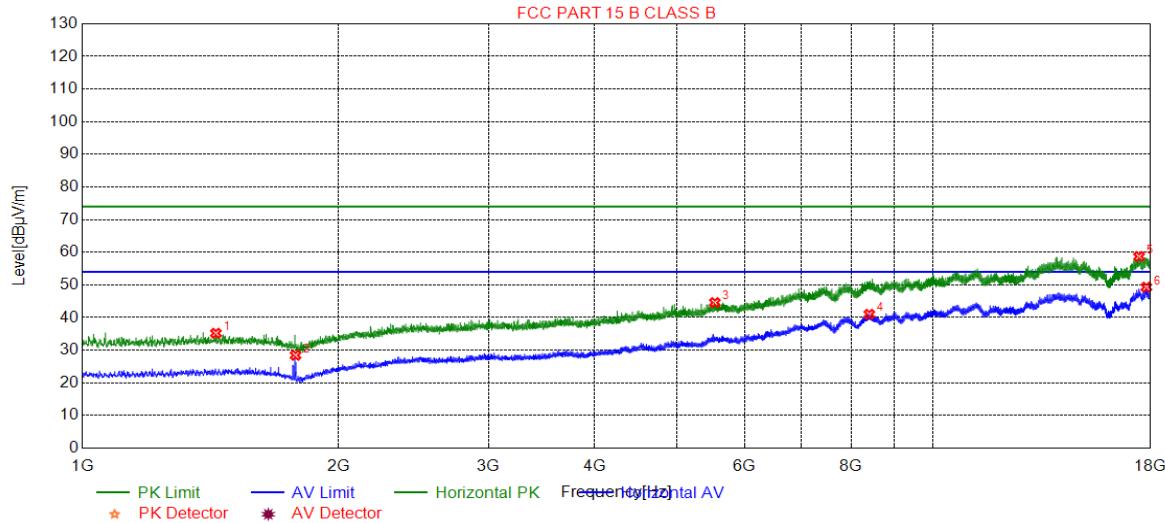
<b>Suspected List</b>								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2462.0731	38.74	-25.94	74.00	35.26	221	142	Vertical
2	3100.4550	29.17	-24.45	54.00	24.83	200	243	Vertical
3	6874.6437	36.18	-13.32	54.00	17.82	288	142	Vertical
4	7876.8438	48.32	-10.79	74.00	25.68	265	342	Vertical
5	13529.626	45.38	-0.60	54.00	8.62	212	0	Vertical
6	14040.502	56.45	-0.66	74.00	17.55	258	243	Vertical

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**Test on the worst case:**

Mode:e; Polarization:Horizontal

**Suspected List**

<b>Suspected List</b>								
NO.	Freq. [MHz]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1435.22	35.21	-30.34	74.00	38.79	321	154	Horizontal
2	1780.33	28.47	-32.12	54.00	25.53	214	206	Horizontal
3	5536.67	44.60	-15.97	74.00	29.40	258	344	Horizontal
4	8408.12	41.02	-7.77	54.00	12.98	210	41	Horizontal
5	17446.6	58.70	0.96	74.00	15.30	159	92	Horizontal
6	17795.1	49.34	0.71	54.00	4.66	198	79	Horizontal

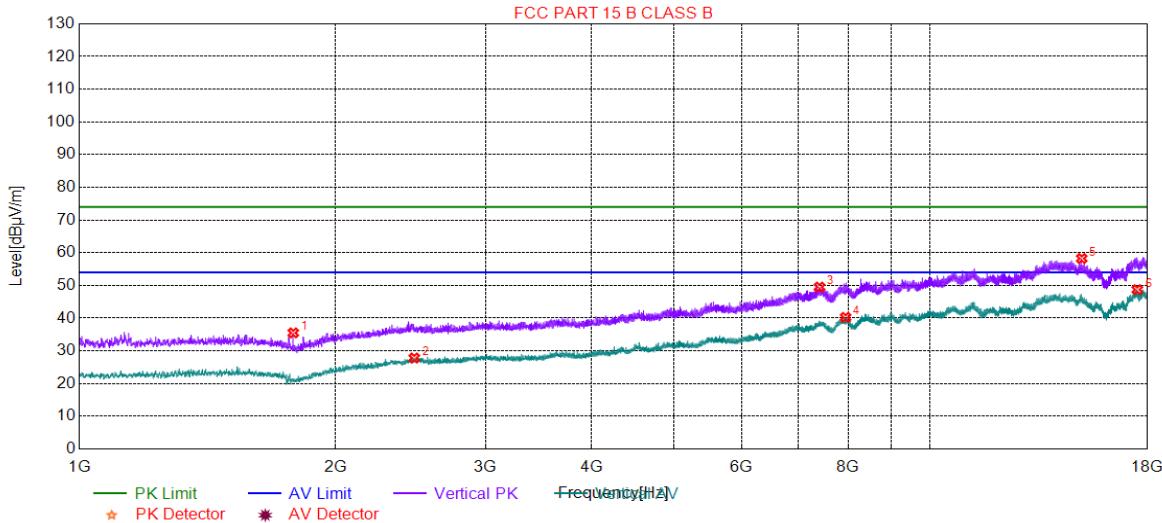
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Mode:e; Polarization:Vertical

**Suspected List**

<b>Suspected List</b>								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1783.73	35.51	-32.17	74.00	38.49	184	117	Vertical
2	2474.82	27.82	-26.01	54.00	26.18	241	280	Vertical
3	7408.47	49.51	-9.96	74.00	24.49	231	193	Vertical
4	7949.94	40.26	-8.44	54.00	13.74	254	280	Vertical
5	15059.7	58.26	1.72	74.00	15.74	365	155	Vertical
6	17504.4	48.72	1.61	54.00	5.28	184	91	Vertical

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### 3 Equipment List

CE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2019-06-27	2020-06-26
				2020-04-02	2021-04-01
				2019-09-07	2020-09-06
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2020-09-11	2021-09-10
				2019-07-16	2020-07-15
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2020-08-04	2021-08-03
				2018-12-16	2019-12-15
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2019-12-06	2020-12-05
				NCR	NCR



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RE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Semi-Anechoic Chamber	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
MXA signal analyzer	Keysight	N9020A	XAW01-06-01	2019-06-27	2020-06-26
				2020-04-02	2021-04-01
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2019-06-27	2020-06-26
				2020-04-02	2021-04-01
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
				2020-09-11	2021-09-10
Receiving antenna (30MHz-3GHz)	Schwarzbeck	VULB 9163	XAW01-09-01	2019-10-13	2021-10-12
Receiving antenna (1GHz~18GHz)	Schwarzbeck	BBHA 9120D	XAW01-09-02	2019-10-13	2021-10-12
Receiving antenna (15GHz~40GHz)	Schwarzbeck	BBHA 9170	XAW01-09-03	2019-10-13	2021-10-12
Directional antenna rack controller	Max-Full	MF-7802BS	XAW03-03-01	NCR	NCR
High-speed antenna rack controller	Max-Full	MF-7802	XAW03-04-01	NCR	NCR
Amplifier	Tonscend	TAP00903040	XAW01-41-01	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2018-12-10	2019-12-09
				2019-12-03	2020-12-02
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2019-12-06	2020-12-05
				2020-11-06	2021-11-05
Measurement Software	Tonscend	TS+ RE V3.0.0.2	XAW02-05-01	NCR	NCR

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## 4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 6GHz)
		± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)



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## 5 Photographs

### 5.1 Test Setup

Refer to Appendix A - Photographs of Set-Up for ZR/2020/A0038

### 5.2 EUT Constructional Details (EUT Photos)

Refer to Photographs of EUT Constructional Details

- End of the Report -



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