

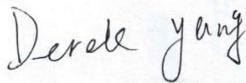
TEST REPORT

Application No: ZR/202070004
Applicant: LG Electronics USA, Inc.
Address of Applicant: 111 Sylvan Avenue, North Building Englewood Cliffs, NJ 07632
Manufacturer: Huaqin Telecom Technology Co.,Ltd.
Address of Manufacturer: No.1 Building, No.9 Building, No.399,Keyuan Road,Zhangjiang Hi-tech Park,Shanghai,P.R.China
EUT Name: Mobile handset
Model No.: LM-K520EMW
Trade mark: LG
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2020/7/2
Date of Test: 2020/7/3 to 2020/7/23
Date of Issue: 2021/8/16

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Derek Yang

Wireless Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020/7/31		Original
02		2021/5/26	Sherlock Fang	1. The test site information of lab B(XI 'AN) added in section 4.5 and 4.6 2. Modify data conversion error of antenna height 3. Update equipment list
03		2021/8/16	Sherlock Fang	1. Update Support Units 2. Remove the information of lab A(SZ) in section 4.5 and 4.6

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



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
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

Internal Source	Upper Frequency
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



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4 General Information

4.1 General Description of EUT

EUT Description::	Mobile handset
Model No.:	LM-K520EMW
Trade Mark:	LG
Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module
Antenna Type:	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated

Battery			
Battery	ATL	BL-T51	3.87V; 3900mAh
Earphone			
Earphone	Cresyn	EAB64468444	
USB Cable			
USB Cable1	Ningbo Broad	DC15WB-G	1.0m shielded cable without core
USB Cable2	Luxshare	DC15WX-G	1.0m shielded cable without core
Adapter			
Adapter1 (US)	Phihong	MCS-V02WH	I/P: 100-240 Vac, 0.4A ,50/60HZ O/P: 5Vdc 2A
Adapter2 (US)	Aohai	MCS-V02WA2	I/P: 100-240 Vac, 0.4A ,50/60HZ O/P: 5Vdc 2A
Adapter3 (US)	Sunlin	MCS-V02WR	I/P: 100-240 Vac, 0.4A ,50/60HZ O/P: 5Vdc 2A

4.2 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



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4.3 Test modes

Pretest these modes to find the worst case and show the worse data in the test items:	<p>a: Transfer data between the EUT and the PC+USB cable1</p> <p>b: Transfer data between the EUT and the PC+USB cable2</p> <p>c: GSM 850 Idle+BT+WLAN+USB cable(worst)+GPS RX+FM RX+playing MP4+earphone+Adaptor1</p> <p>d: GSM 1900 Idle+BT+WLAN+USB cable(worst)+GPS RX+FM RX+camera(Front)+earphone+Adaptor2</p> <p>e: WCDMA Band II Idle+BT+WLAN+USB cable(worst)+GPS RX+FM RX+camera(rear)+earphone+Adaptor3</p> <p>f: WCDMA Band V Idle+BT+WLAN +USB cable(worst)+GPS RX+FM RX+earphone+Adaptor(worst)</p>
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4.4 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)

4.5 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



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4.6 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.**

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None



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5 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	2020-04-02	2021-04-01
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-03	2019-12-11	2020-12-10
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2019-12-06	2020-12-05
Measurement Software	Tonscend	TS+ CE V2.5	XAW02-05-02	NCR	NCR

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	2020-04-02	2021-04-01
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2020-04-02	2021-04-01
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
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	2019-11-18	2020-11-17
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2019-11-18	2020-11-17
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2019-12-03	2020-12-02
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2019-11-18	2020-11-17
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2019-12-06	2020-12-05
Measurement Software	Tonscend	TS+ RE V3.0.0.2	XAW02-05-01	NCR	NCR



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6 Emission Test Results

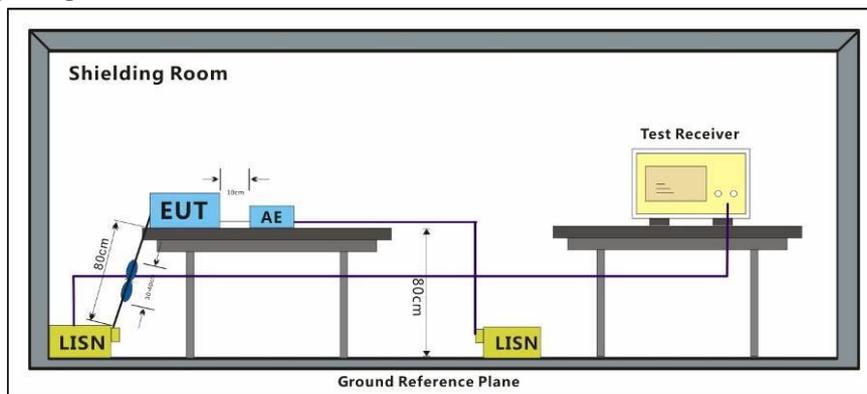
6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

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:	20.3 °C Humidity: 58.1 % RH Atmospheric Pressure: 1005 mbar
The worst case for final test:	e: WCDMA Band V Idle+BT+WLAN +USB cable(worst)+GPS RX+FM RX+earphone+Adaptor(worst)

2.1.2 Test Setup Diagram



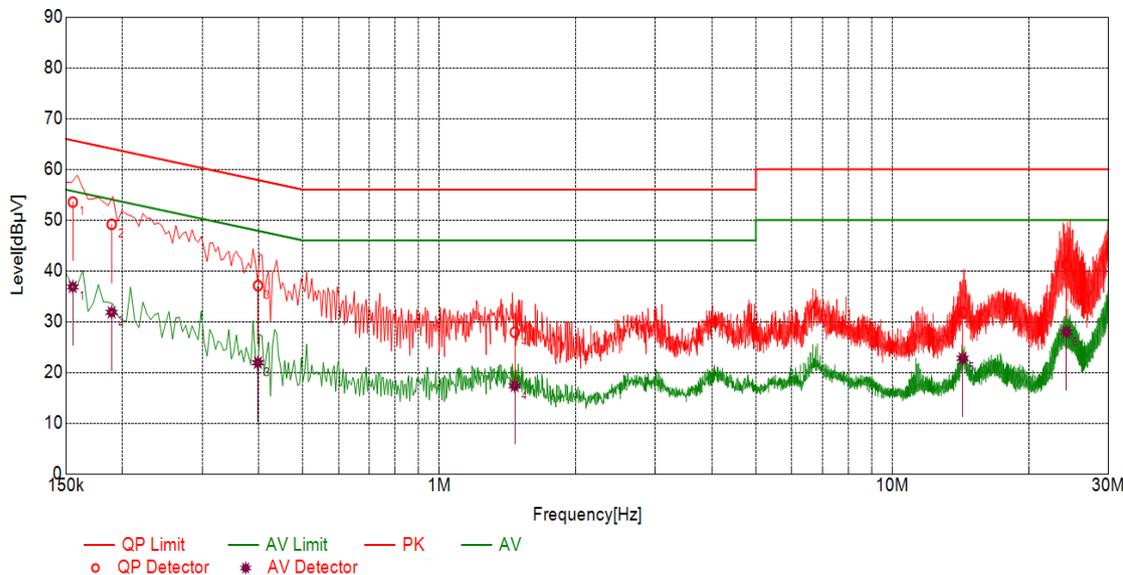
2.1.3 Measurement Data

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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Mode:e; 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]	Type
1	0.1554	10.10	53.56	65.71	12.15	36.83	55.71	18.88	L
2	0.1893	10.10	49.17	64.07	14.90	31.82	54.07	22.25	L
3	0.3982	10.10	37.09	57.89	20.80	21.90	47.89	25.99	L
4	1.4679	10.10	27.91	56.00	28.09	17.33	46.00	28.67	L
5	14.2958	10.11	31.82	60.00	28.18	22.77	50.00	27.23	L
6	24.2012	10.11	41.28	60.00	18.72	27.94	50.00	22.06	L

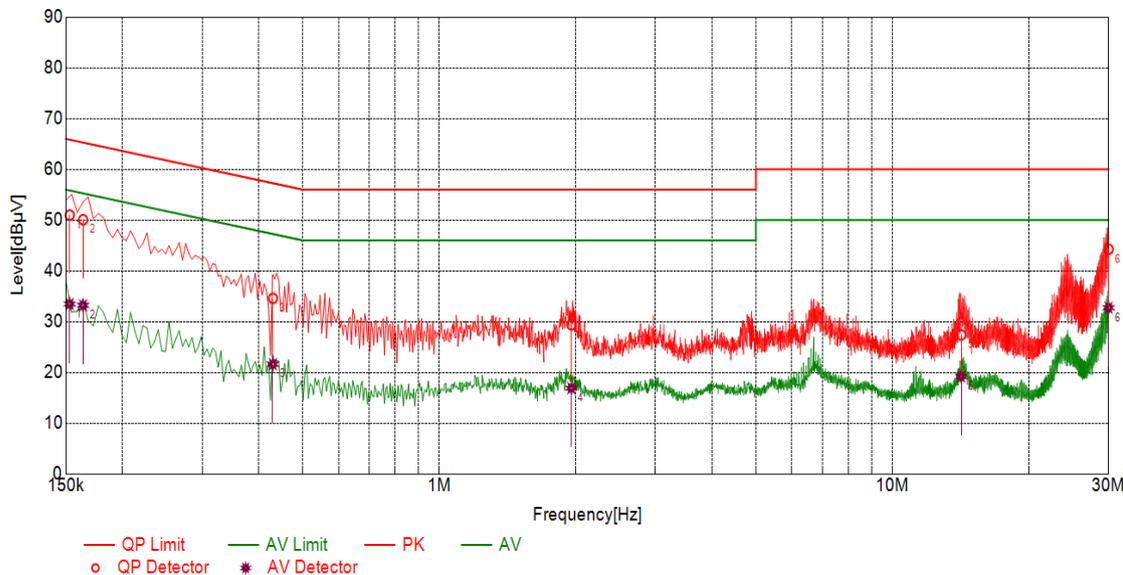


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Mode:e; Line:Neutral Line



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]	Type
1	0.1530	10.10	50.99	65.83	14.84	33.46	55.83	22.37	N
2	0.1638	10.10	50.07	65.27	15.20	33.19	55.27	22.08	N
3	0.4296	10.10	34.59	57.26	22.67	21.61	47.26	25.65	N
4	1.9572	10.10	29.39	56.00	26.61	16.88	46.00	29.12	N
5	14.1892	10.11	27.39	60.00	32.61	19.18	50.00	30.82	N
6	29.9989	10.11	44.26	60.00	15.74	32.73	50.00	17.27	N



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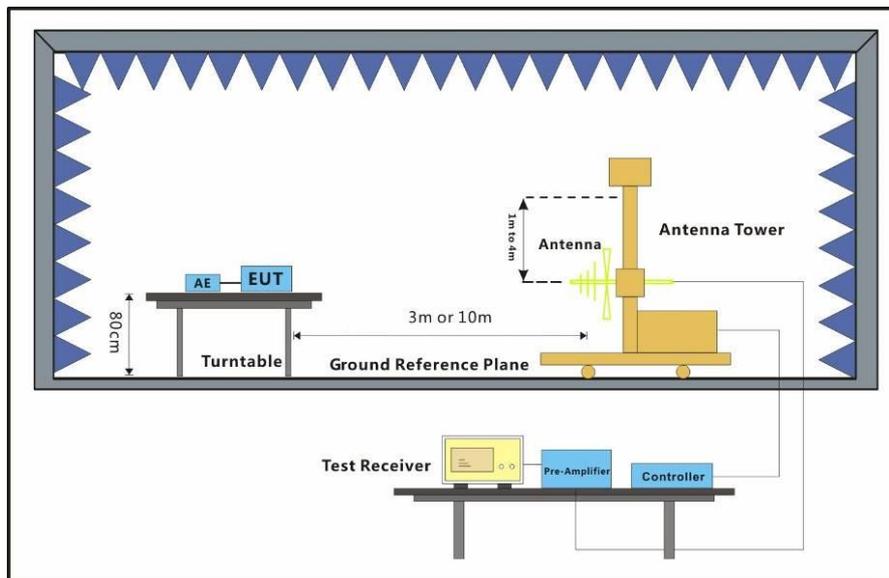
6.2 Radiated Emissions (30MHz-1GHz)

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(dBμV/m) quasi-peak
 88MHz-216MHz 43.5(dBμV/m) quasi-peak
 216MHz-960MHz 46.0(dBμV/m) quasi-peak
 960MHz-1000MHz 54.0(dBμV/m) quasi-peak
 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

2.1.4 E.U.T. Operation

Operating Environment:
 Temperature: 25.4 °C Humidity: 51 % RH Atmospheric Pressure: 1005 mbar
 The worst case a: Transfer data between the EUT and the PC+USB cable1
 for final test:

2.1.5 Test Setup Diagram



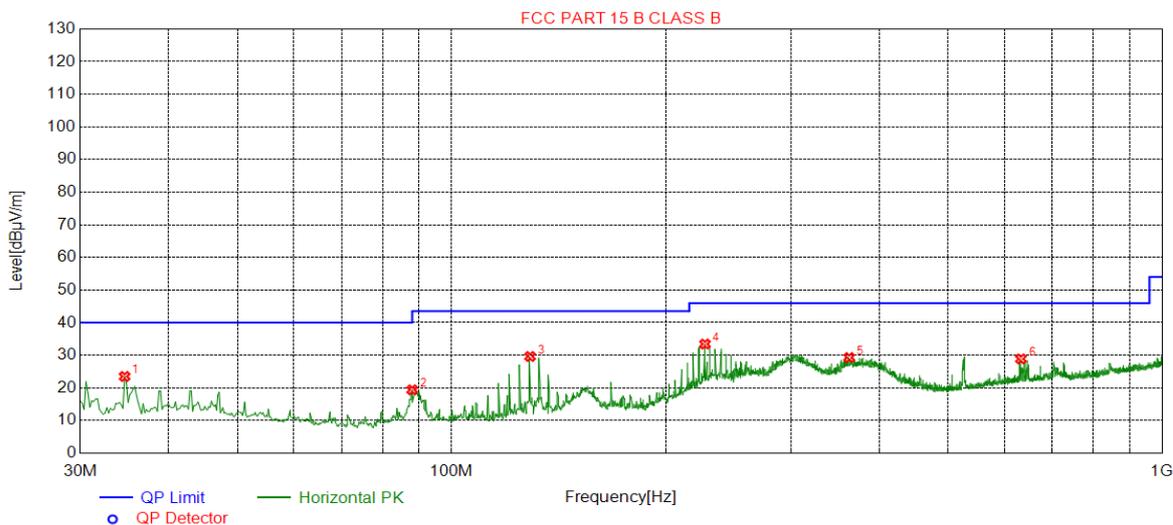
2.1.6 Measurement Data

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:a; Polarization:Horizontal



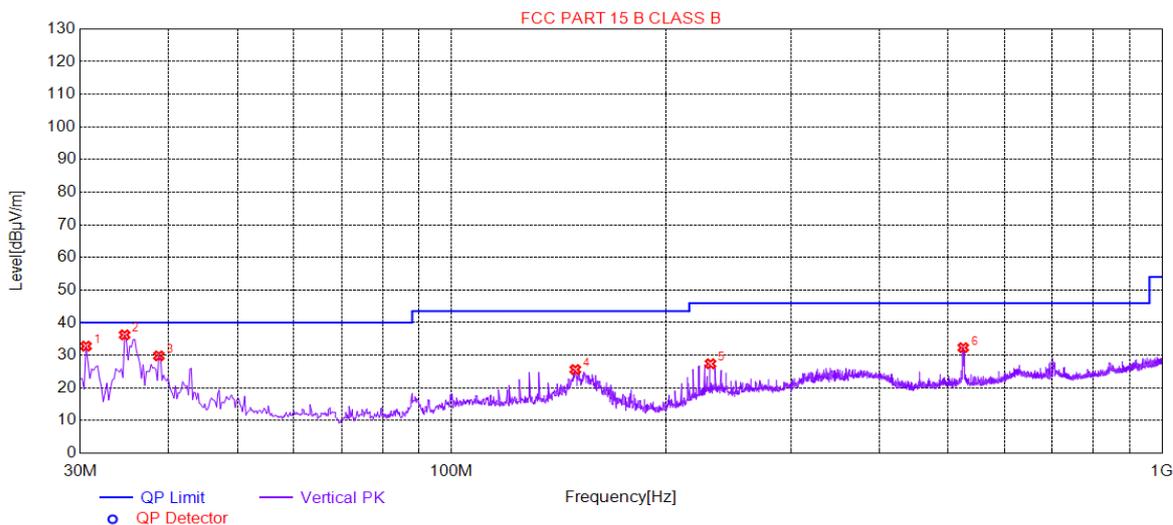
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.6569	23.53	-29.97	40.00	16.47	131	310	Horizontal
2	88.0176	19.43	-34.20	43.50	24.07	205	255	Horizontal
3	128.959	29.65	-34.92	43.50	13.85	155	64	Horizontal
4	227.337	33.47	-30.49	46.00	12.53	216	51	Horizontal
5	362.776	29.32	-26.53	46.00	16.68	106	48	Horizontal
6	632.878	28.90	-20.24	46.00	17.10	202	54	Horizontal



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Mode:a; Polarization:Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	30.5821	32.82	-30.07	40.00	7.18	227	76	Vertical
2	34.6569	36.28	-29.97	40.00	3.72	266	85	Vertical
3	38.7317	29.84	-28.75	40.00	10.16	270	300	Vertical
4	149.333	25.65	-35.11	43.50	17.85	195	0	Vertical
5	231.412	27.42	-30.36	46.00	18.58	180	14	Vertical
6	524.993	32.35	-22.68	46.00	13.65	192	338	Vertical



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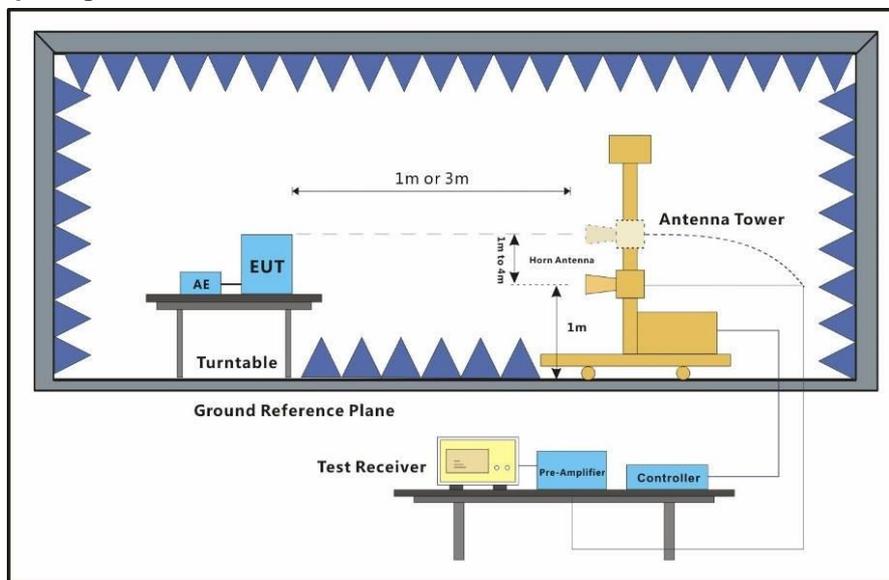
6.3 Radiated Emissions (above 1GHz)

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(dBμV/m) peak, 54(dBμV/m) average
 Detector: Peak for pre-scan (1000kHz resolution bandwidth) 100M to18000MHz

2.1.7 E.U.T. Operation

Operating Environment:
 Temperature: 23.3 °C Humidity: 56.2 % RH Atmospheric Pressure: 1005 mbar
 The worst case e: WCDMA Band V Idle+BT+WLAN +USB cable(worst)+GPS RX+FM
 for final test: RX+earphone+Adaptor(worst)

2.1.8 Test Setup Diagram



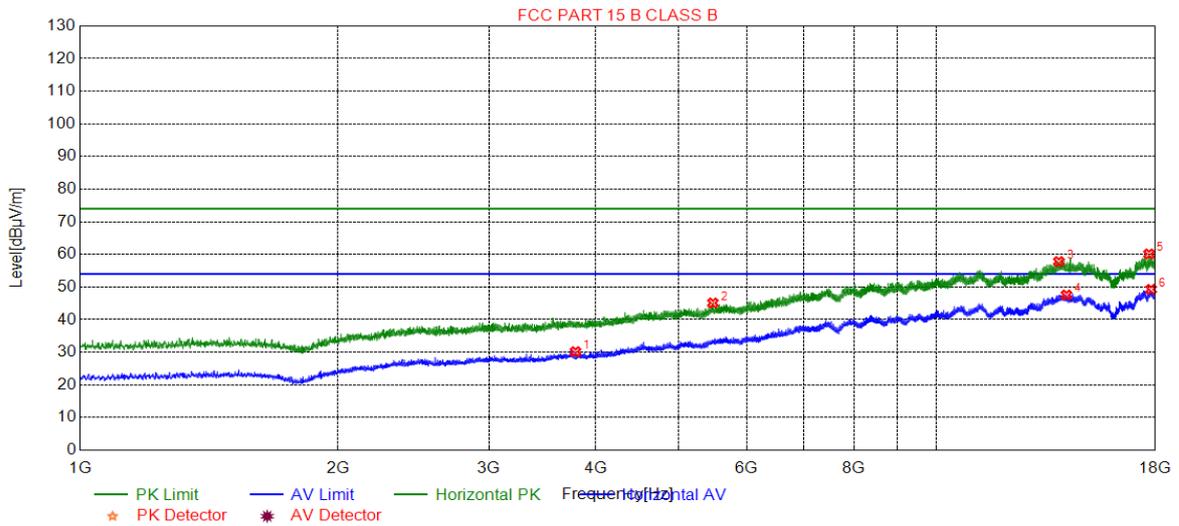
2.1.9 Measurement Data

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



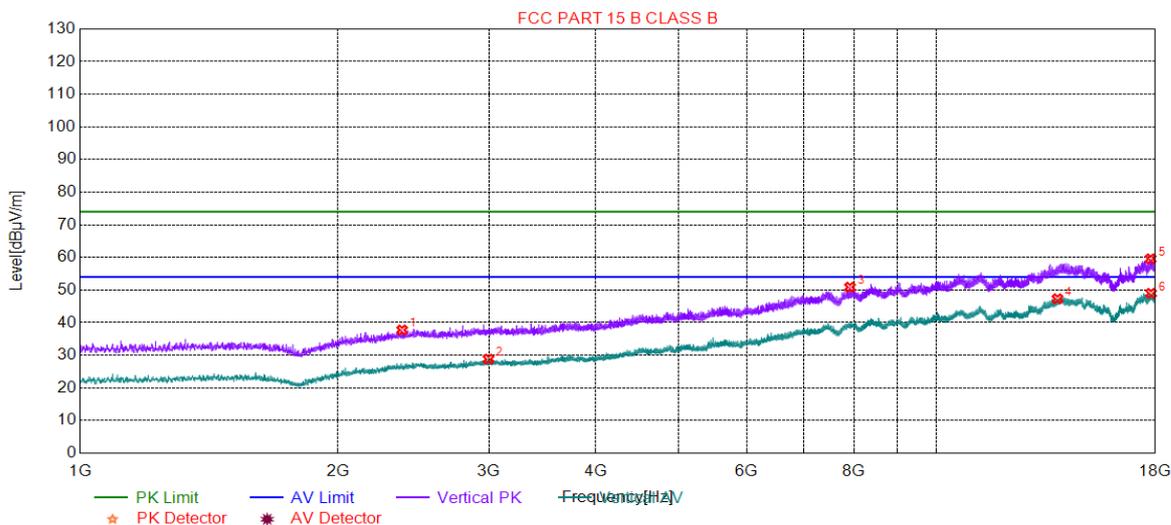
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	3787.28	30.20	-22.19	54.00	23.80	151	156	Horizontal
2	5478.87	45.14	-16.10	74.00	28.86	154	355	Horizontal
3	13883.2	57.82	2.10	74.00	16.18	245	42	Horizontal
4	14171.4	47.57	2.15	54.00	6.43	246	344	Horizontal
5	17694.8	60.15	1.03	74.00	13.85	156	231	Horizontal
6	17788.3	49.30	0.73	54.00	4.70	177	4	Horizontal



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Mode:e; Polarization:Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2376.21	37.77	-26.57	74.00	36.23	184	242	Vertical
2	2997.59	28.84	-24.53	54.00	25.16	244	90	Vertical
3	7920.19	50.87	-8.64	74.00	23.13	237	90	Vertical
4	13833.9	47.34	1.91	54.00	6.66	150	156	Vertical
5	17768.7	59.58	0.80	74.00	14.42	283	156	Vertical
6	17786.6	49.00	0.74	54.00	5.00	191	204	Vertical



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7 Photographs

7.1 Test Setup Photos

Refer to Photographs of Appendix A - Photographs of Set-Up for ZR/2020/70004

7.2 EUT Constructional Details (EUT Photos)

Refer to Photographs of EUT Constructional Details

- End of the Report -



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