

Report No.: ZR/2020/4000201-01

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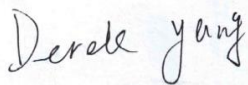
TEST REPORT

Application No.: ZR/2020/40002
Applicant: vivo Mobile Communication Co., Ltd.
Address of Applicant: #283, BBK Road, Wusha, Chang'An, DongGuan City, China
Manufacturer: vivo Mobile Communication Co., Ltd.
Address of Manufacturer: #283, BBK Road, Wusha, Chang'An, DongGuan City, China
EUT Name: Mobile phone
Model No.: vivo 1938
Trade mark: vivo
FCC ID: 2AUCY-V1938
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2020/4/3
Date of Test: 2020/4/3 to 2020/5/11
Date of Issue: 2021/8/14

Test Result:	Pass*
---------------------	--------------

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

Authorized Signature:



Derek Yang

Wireless Laboratory Manager



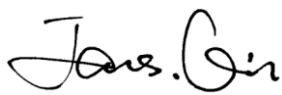

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Shenzhen Branch

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020/5/22		Original
02		2021/5/29	James Qin	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		2021/8/14	James Qin	1. Update Support Units. 2. Remove the information of lab A(SZ) in section 4.5 and 4.6

This report supersedes our previous report ZR/2020/4000201, issued on 2020/5/22, which is hereby deemed null and void.

Authorized for issue by:		
Prepared By		 (James Qin) / Engineer
Checked By		 (Jim Huang) / Reviewer



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 phone		
Model No.:	vivo 1938		
Trade Mark:	vivo		
Hardware Version:	MP_0.1		
Software Version:	PD1987F_EX_A_2.7.1		
Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module		
Antenna Type:	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated		
Power Supply:	DC 3.82V from internal rechargeable battery or from AC/DC adapter Model No.: V1020E-US, V1020D-US AC Input: 100-240V 50/60Hz 0.35A DC Output: DC 5V 2A.		
Cable:	USB cable: 100cm shielded Earphone cable: 115cm unshielded		
Supported Frequency Range	Band	TX	RX
	GSM850	824 to 849 MHz	869 to 894 MHz
	GSM1900	1850 to 1910 MHz	1930 to 1990 MHz
	UMTS Band II	1850 to 1910 MHz	1930 to 1990 MHz
	UMTS Band IV	1710 to 1755 MHz	2110 to 2155 MHz
	UMTS Band V	824 to 849 MHz	869 to 894 MHz
	CDMA BC0	824 to 849 MHz	869 to 894 MHz
	LTE Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	LTE Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	LTE Band 5	824 to 849 MHz	869 to 894 MHz
	LTE Band 7	2500 to 2570 MHz	2620 to 2690 MHz
	LTE Band 38	2570 to 2620 MHz	2570 to 2620 MHz
	LTE Band 41	2500 to 2690MHz	2500 to 2690MHz

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>e: Transfer data between the EUT and the PC+USB cable1</p> <p>f: Transfer data between the EUT and the PC+USB cable2</p> <p>g: Telecom Idle+BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapter1</p> <p>h: GSM850 +BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapter2</p> <p>i: GSM1900 +BT+WLAN +GPS Rx+camera (Front) +earphone+battery+Cable(worst)+ Cable(worst)+adapter(Worst)</p> <p>j: UMTS Band II+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>k: UMTS Band IV+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>l: UMTS Band V+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>m: CDMA BC0+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>n: LTE Band 2+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>o: LTE Band 4+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>p: LTE Band 5+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>q: LTE Band 7+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>r: LTE Band 38+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)</p> <p>s: LTE Band 41+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(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)



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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

- **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
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2019-07-16	2020-07-15
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
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2020-04-02	2021-04-01

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
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
Filter bank	Tonscend	JS0806-F	XAW03-05-01	NCR	NCR
Filter bank	Tonscend	JS0806s	XAW03-05-02	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



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Measurement Software	Tonscend	TS+ RSE V3.0.0.2	XAW02-05-01	NCR	NCR
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2020-04-02	2021-04-01



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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

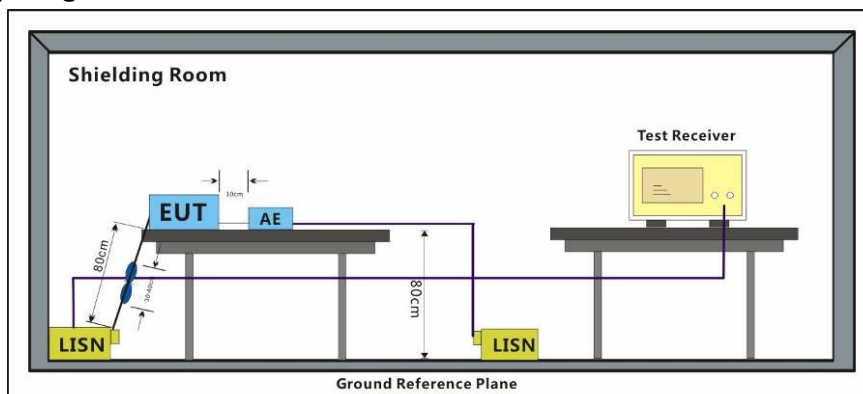
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.3 °C Humidity: 54.1 % RH Atmospheric Pressure: 1010 mbar

The worst case e: Transfer data between the EUT and the PC+USB cable1
for final test:

6.1.2 Test Setup Diagram



6.1.3 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.

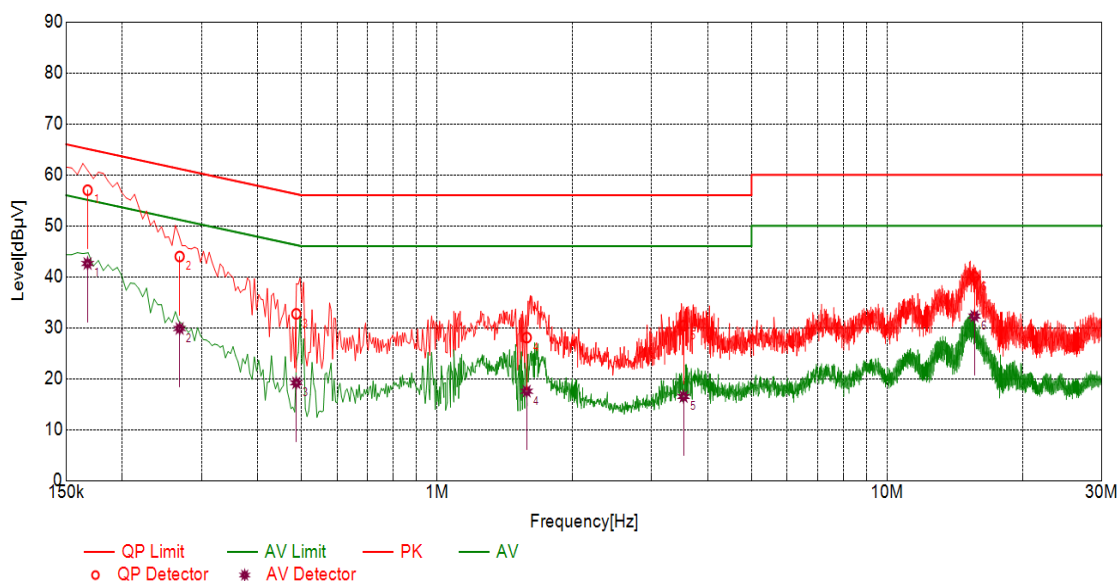


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Mode:e; Line:Live Line



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	0.1675	10.10	56.99	65.08	8.09	42.60	55.08	12.48	L
2	0.2682	10.10	43.98	61.17	17.19	29.85	51.17	21.32	L
3	0.4871	10.10	32.73	56.22	23.49	19.19	46.22	27.03	L
4	1.5829	10.10	28.06	56.00	27.94	17.54	46.00	28.46	L
5	3.5311	10.10	30.40	56.00	25.60	16.50	46.00	29.50	L
6	15.6340	10.11	39.95	60.00	20.05	32.29	50.00	17.71	L

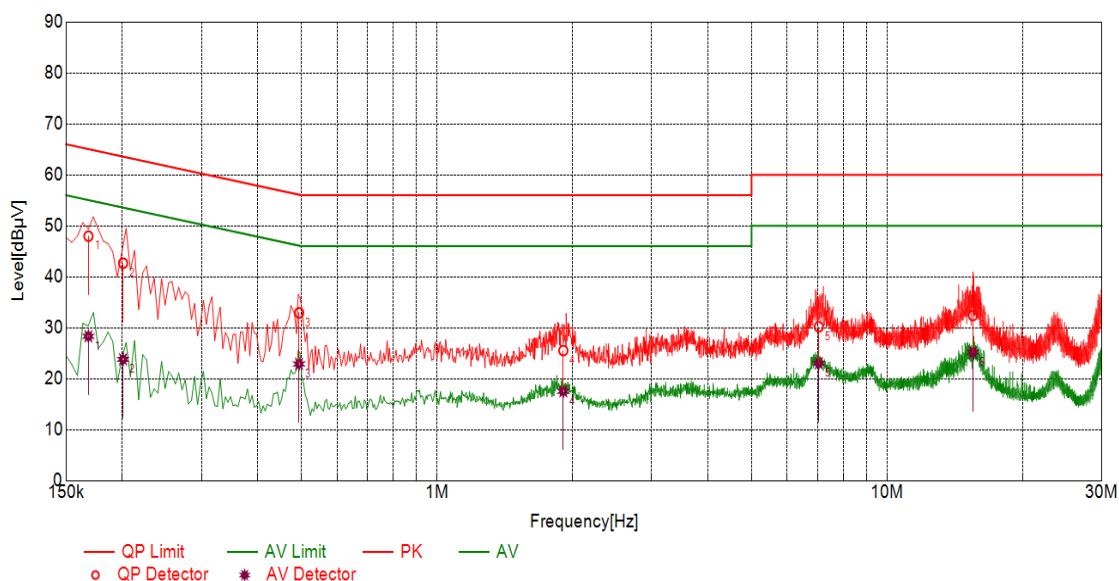


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Mode:e; Line:Neutral Line



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	0.1682	10.10	47.97	65.05	17.08	28.32	55.05	26.73	N
2	0.2008	10.10	42.66	63.58	20.92	23.80	53.58	29.78	N
3	0.4940	10.10	32.93	56.10	23.17	22.89	46.10	23.21	N
4	1.9088	10.10	25.52	56.00	30.48	17.53	46.00	28.47	N
5	7.0515	10.10	30.18	60.00	29.82	23.02	50.00	26.98	N
6	15.5095	10.11	32.41	60.00	27.59	25.19	50.00	24.81	N



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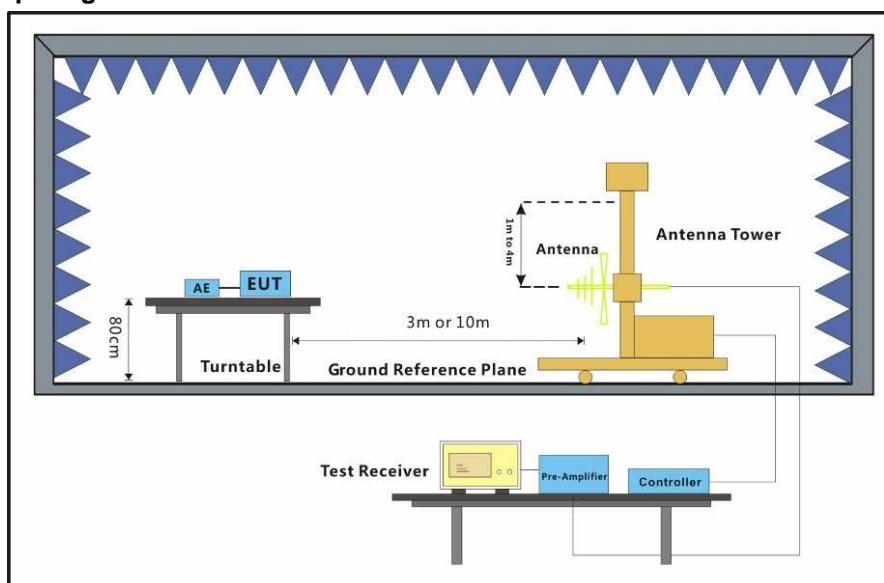
6.2 Radiated Emissions (30MHz-1GHz)

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

6.2.1 E.U.T. Operation

Operating Environment:
Temperature: 22.4 °C Humidity: 52 % RH Atmospheric Pressure: 1010 mbar
The worst case e: Transfer data between the EUT and the PC+USB cable1
for final test:

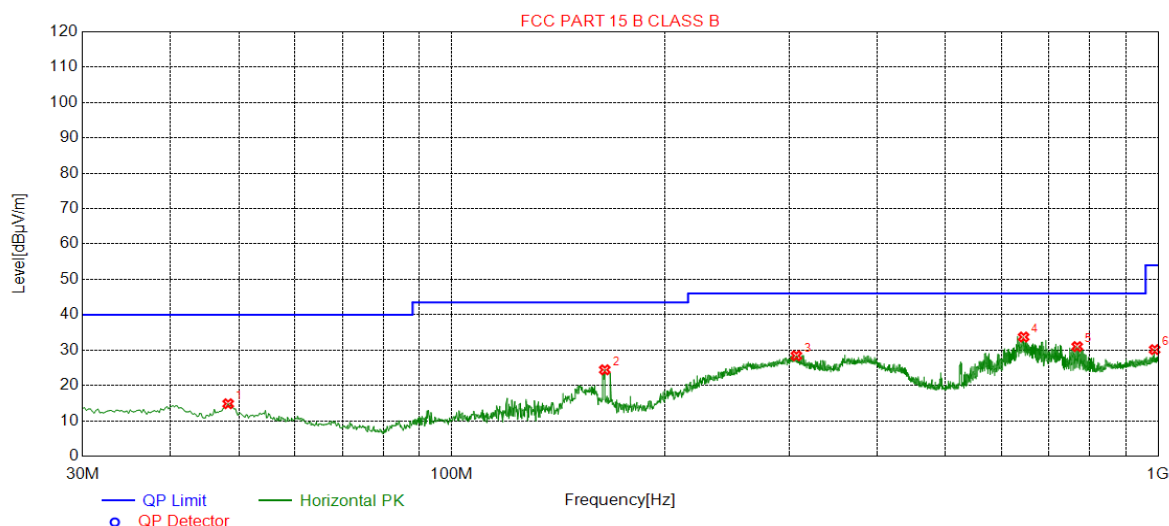
6.2.2 Test Setup Diagram



6.2.3 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.

Mode:e; Polarization:Horizontal



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.2396	14.83	-30.38	40.00	25.17	213	107	Horizontal
2	164.662	24.43	-34.35	43.50	19.07	172	0	Horizontal
3	307.475	28.41	-28.05	46.00	17.59	126	289	Horizontal
4	644.909	33.70	-20.09	46.00	12.30	145	70	Horizontal
5	768.123	30.99	-18.13	46.00	15.01	202	42	Horizontal
6	988.745	30.13	-14.95	54.00	23.87	160	66	Horizontal

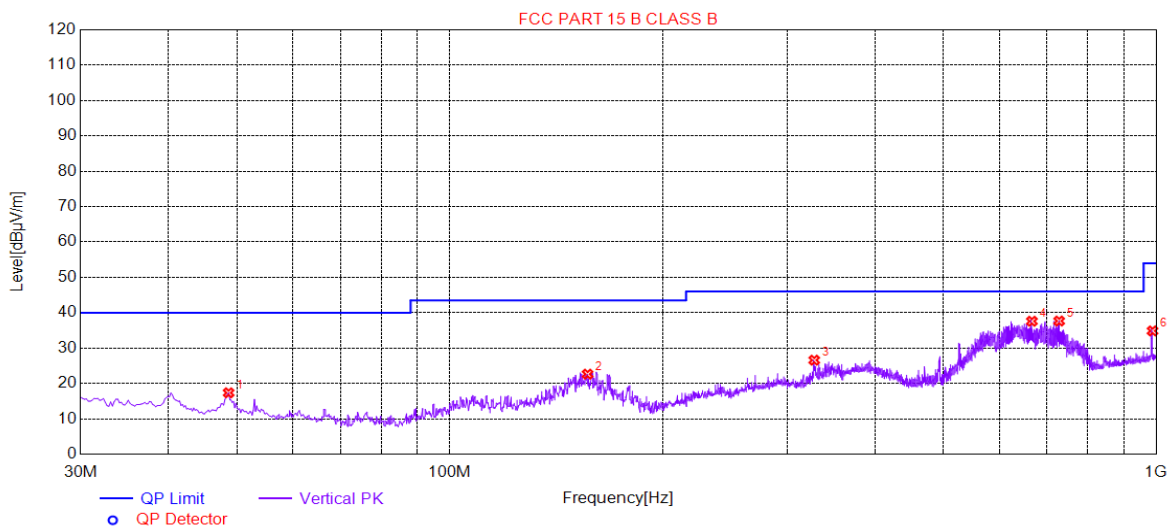


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Mode:e; Polarization:Vertical



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.6277	17.36	-30.38	40.00	22.64	285	37	Vertical
2	156.707	22.64	-34.78	43.50	20.86	207	346	Vertical
3	328.043	26.59	-27.47	46.00	19.41	297	20	Vertical
4	667.029	37.59	-19.85	46.00	8.41	298	169	Vertical
5	728.927	37.66	-18.83	46.00	8.34	233	172	Vertical
6	988.357	34.86	-14.95	54.00	19.14	161	329	Vertical

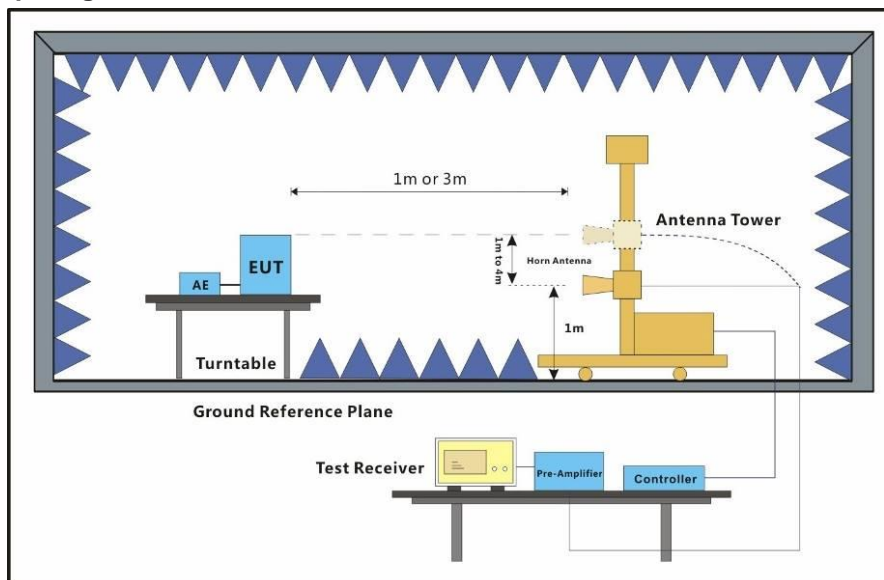
6.3 Radiated Emissions (above 1GHz)

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) 1000M to18000MHz

6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.4 °C Humidity: 52 % RH Atmospheric Pressure: 1010 mbar
 The worst case i: Telecom Idle+BT+WLAN +GPS Rx+camera (Front) +earphone+battery+
 for final test: Cable(worst)+ Cable(worst)+adapter(Worst)

6.3.2 Test Setup Diagram



6.3.3 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.



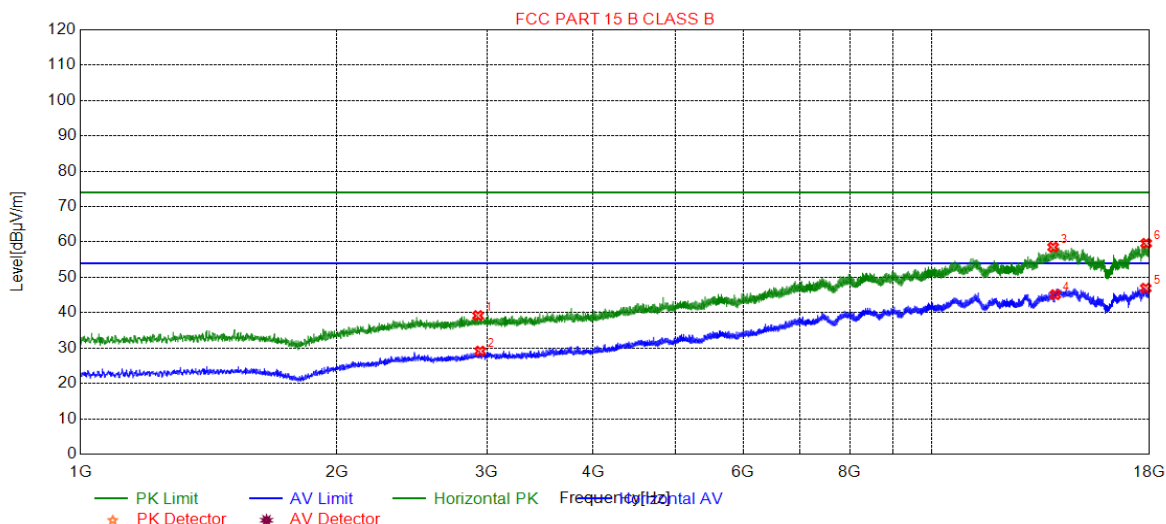
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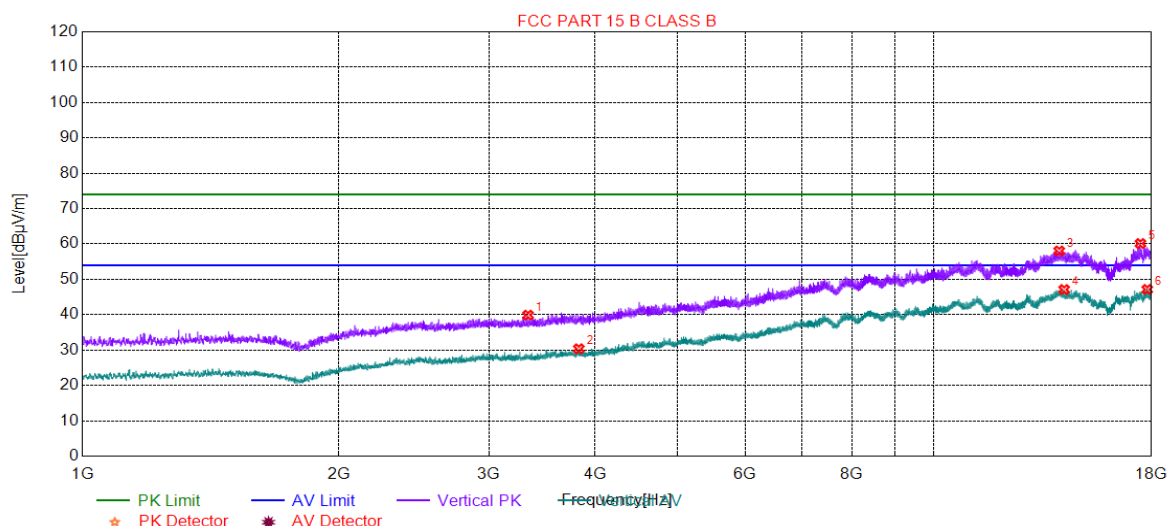
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Mode:i; Polarization:Horizontal



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2929.59	39.19	-24.68	74.00	34.81	141	193	Horizontal
2	2946.59	29.13	-24.64	54.00	24.87	160	357	Horizontal
3	13869.6	58.54	2.05	74.00	15.46	155	3	Horizontal
4	13947.8	45.09	2.20	54.00	8.91	214	320	Horizontal
5	17818.0	46.93	0.59	54.00	7.07	203	3	Horizontal
6	17835.9	59.61	0.49	74.00	14.39	201	269	Horizontal

Mode:i; Polarization:Vertical



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	3335.91	39.88	-23.68	74.00	34.12	187	344	Vertical
2	3826.39	30.37	-22.09	54.00	23.63	212	192	Vertical
3	14023.5	58.03	2.27	74.00	15.97	277	168	Vertical
4	14212.2	47.11	2.04	54.00	6.89	182	269	Vertical
5	17467.0	60.13	1.22	74.00	13.87	168	153	Vertical
6	17790.8	47.15	0.72	54.00	6.85	250	16	Vertical

7 Photographs

7.1 Test Setup

Refer to Appendix A - Photographs of Set-Up for ZR/2020/40002.

7.2 EUT Constructional Details (EUT Photos)

Please refer to internal and external photo.

- End of the Report -



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