

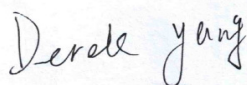
TEST REPORT

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: 2020/5/22

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		2020/5/22		Original

Authorized for issue by:			
			
		(Mike Hu) /Project Engineer	
			
		(David Chen) /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:	☒ Portable Device, ☐ Module		
Antenna Type:	☐ External, ☒ 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.
Laptop	Lenovo	T430u	REF. No.SEA1800
Mouse	Lenovo	M-U0025-O	REF. No.:SEA2400



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Router	NETGEAR	DGN2200	REF. No.SEA2200
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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:	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: GSM850 +BT+WLAN +GPS Rx+playing MP4 (SD card) +earphone1+battery+Cable(worst)+adapter2 i: GSM1900 +BT+WLAN +GPS Rx+camera (Front) +earphone+battery+Cable(worst)+ Cable(worst)+adapter(Worst) j: UMTS Band II+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) k: UMTS Band IV+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) l: UMTS Band V+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) m: CDMA BC0+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) n: LTE Band 2+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) o: LTE Band 4+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) p: LTE Band 5+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) q: LTE Band 7+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) r: LTE Band 38+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst) s: LTE Band 41+BT+WLAN +GPS Rx+camera (Back) +earphone+battery+Cable(worst)+adapter(Worst)
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4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.5dB (30MHz-1GHz)
		± 4.8dB (1GHz-6GHz)
3	Temperature test	± 1 °C
4	Humidity test	± 3%



4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.6 Test Facility

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

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	GB-88	SEM001-06	2017-05-10	2020-05-09
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2019-07-12	2020-07-11
LISN	Rohde & Schwarz	ENV216	SEM007-01	2019-09-25	2020-09-24
LISN	ETS-LINDGREN	3816/2	SEM007-02	2020-03-13	2021-03-12
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2020-03-13	2021-03-12

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2019-03-31	2021-03-30
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2019-07-12	2020-07-11
EMI Test Receiver (9kHz-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2020-03-13	2021-03-12
Trilog-Broadband Antenna(30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2020-06-28
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2020-03-13	2021-03-12

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2019-07-12	2020-07-11
EXA Spectrum Analyzer	AgilentTechnologies Inc	N9010A	SEM004-09	2020-03-13	2021-03-12
Horn Antenna(1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2020-03-13	2021-03-12
Pre-Amplifier(0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2019-09-27	2020-09-26



General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2019-09-27	2020-09-26
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2019-09-27	2020-09-26
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2019-09-27	2020-09-26
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-03-13	2021-03-12



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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

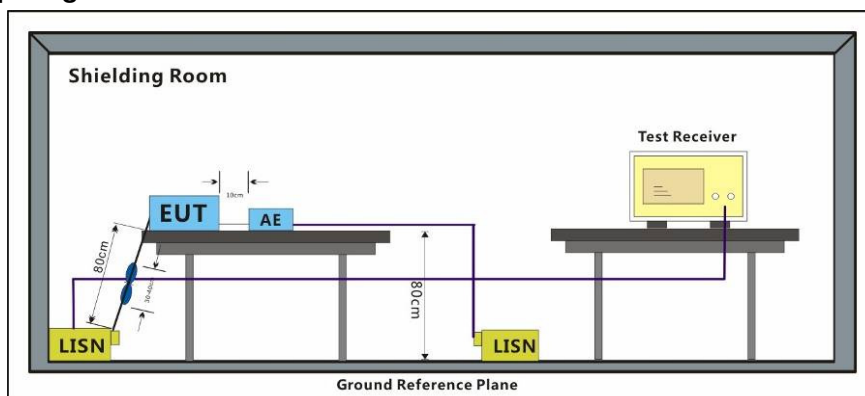
6.1.1 E.U.T. Operation

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:

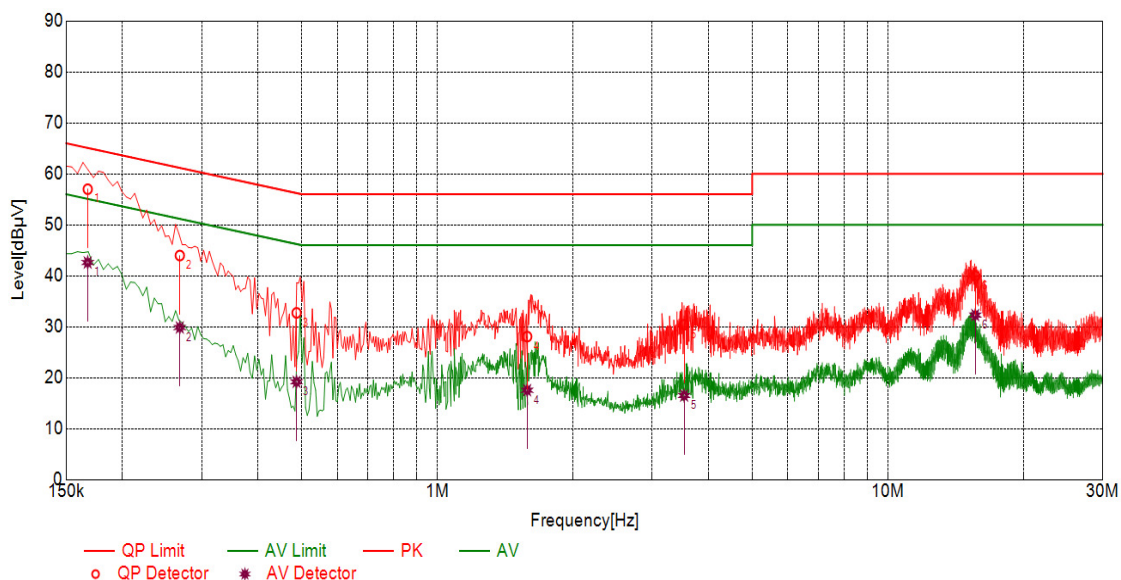
6.1.2 Test Setup Diagram



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.

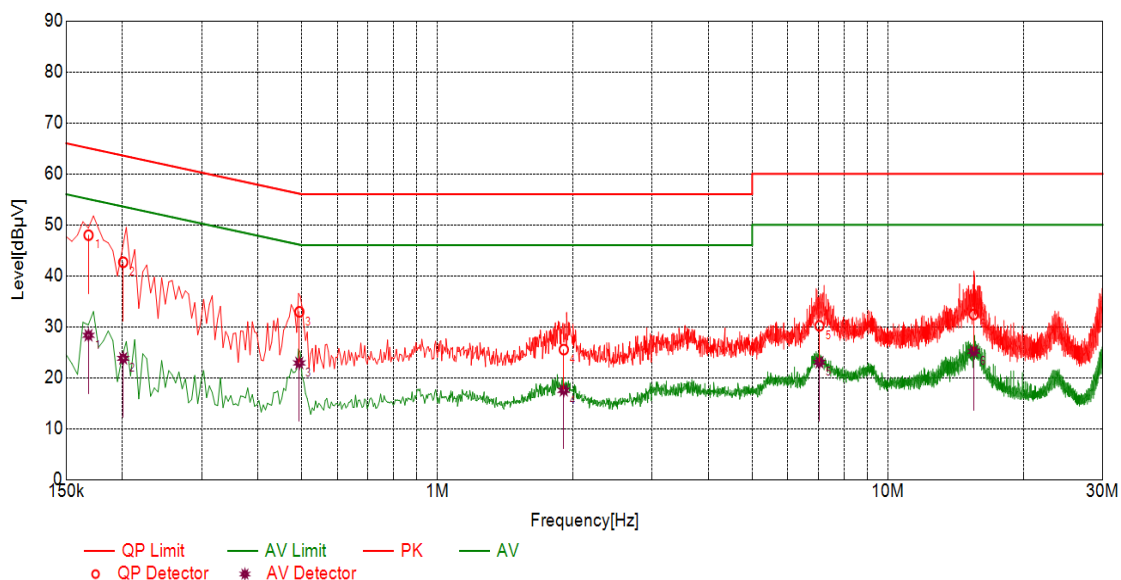
Mode:e; Line:Live Line



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



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



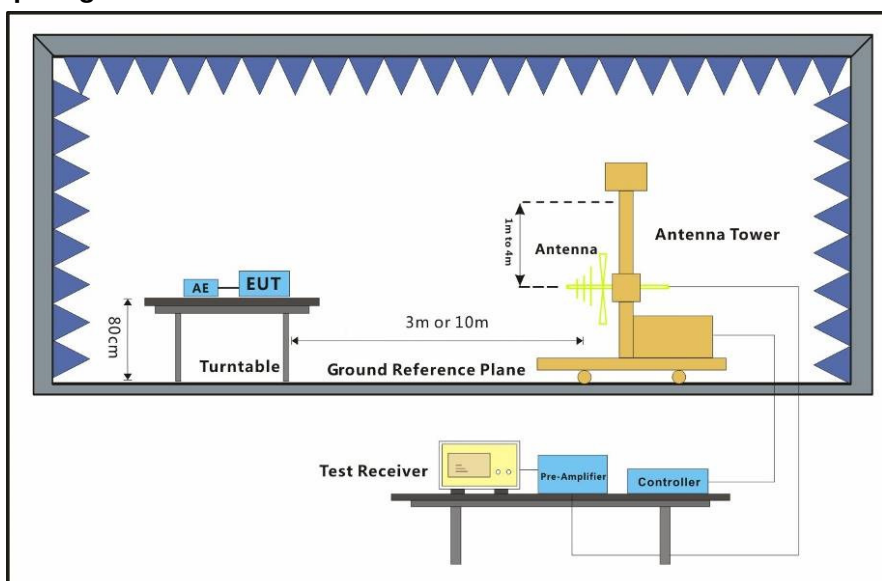
6.2 Radiated Emissions (30MHz-1GHz)

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:

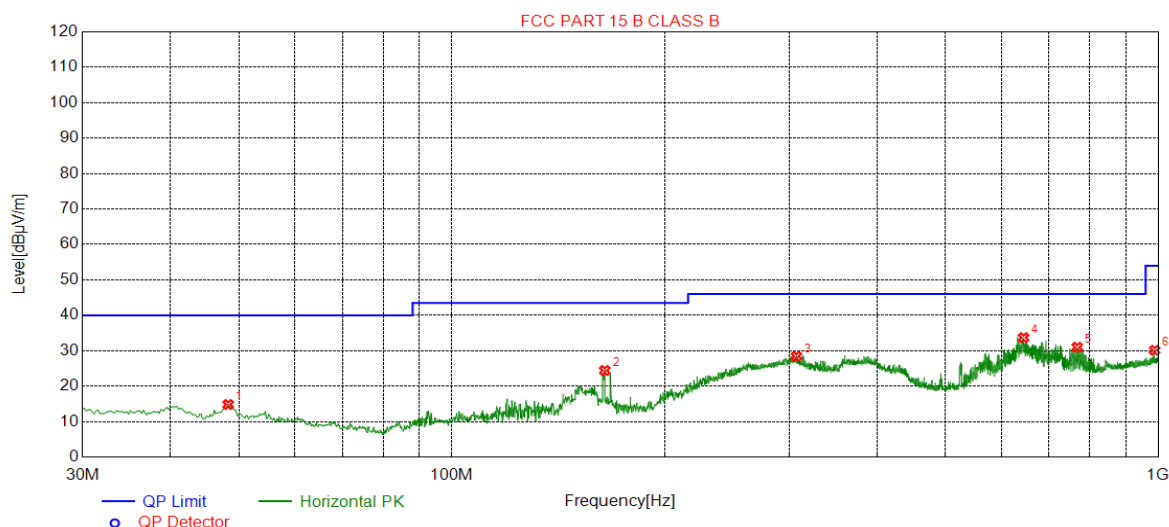
6.2.2 Test Setup Diagram



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	200	107	Horizontal
2	164.662	24.43	-34.35	43.50	19.07	200	0	Horizontal
3	307.475	28.41	-28.05	46.00	17.59	100	289	Horizontal
4	644.909	33.70	-20.09	46.00	12.30	100	70	Horizontal
5	768.123	30.99	-18.13	46.00	15.01	200	42	Horizontal
6	988.745	30.13	-14.95	54.00	23.87	200	66	Horizontal



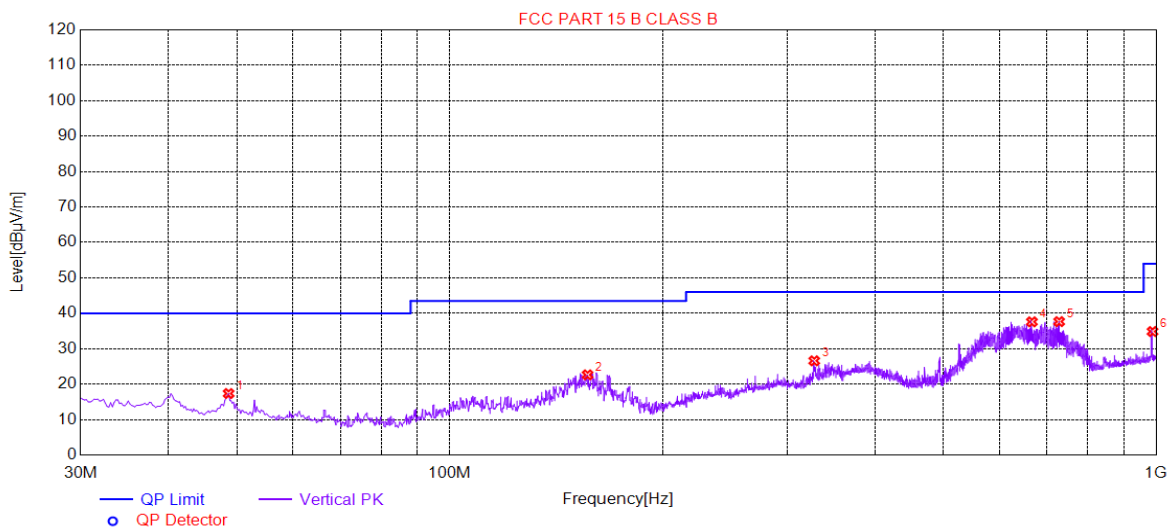
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Mode:e; Polarization:Vertical



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	100	37	Vertical
2	156.707	22.64	-34.78	43.50	20.86	100	346	Vertical
3	328.043	26.59	-27.47	46.00	19.41	100	20	Vertical
4	667.029	37.59	-19.85	46.00	8.41	100	169	Vertical
5	728.927	37.66	-18.83	46.00	8.34	100	172	Vertical
6	988.357	34.86	-14.95	54.00	19.14	100	329	Vertical

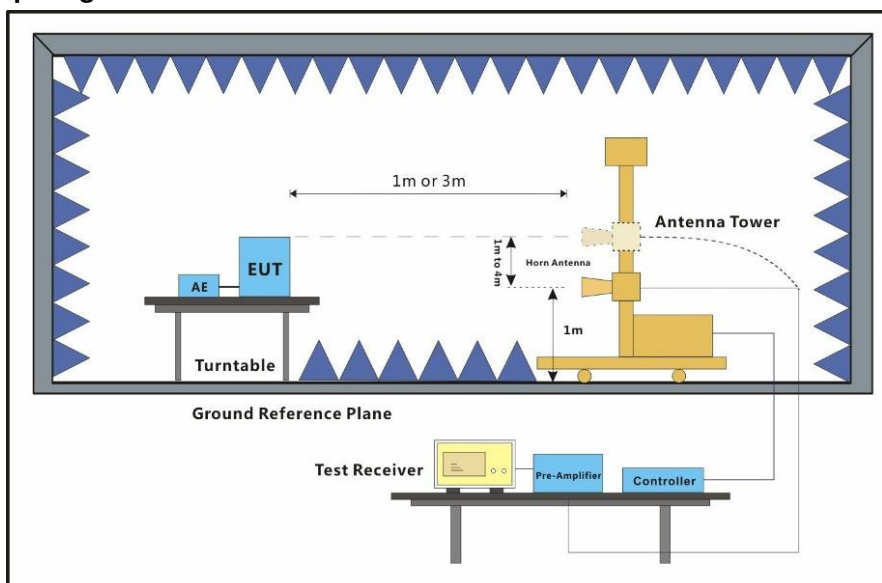
6.3 Radiated Emissions (above 1GHz)

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 to 18000MHz

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.

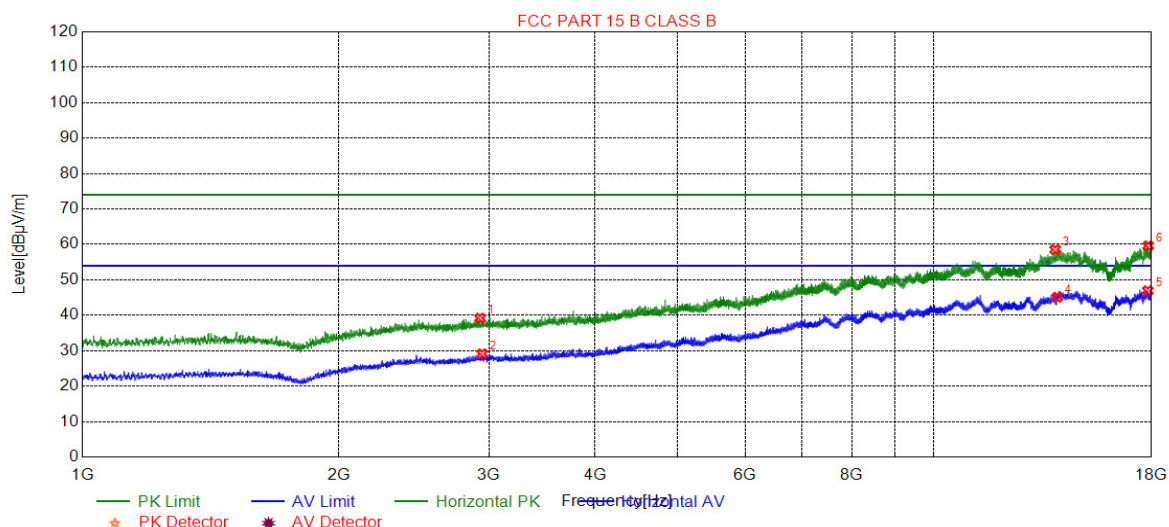


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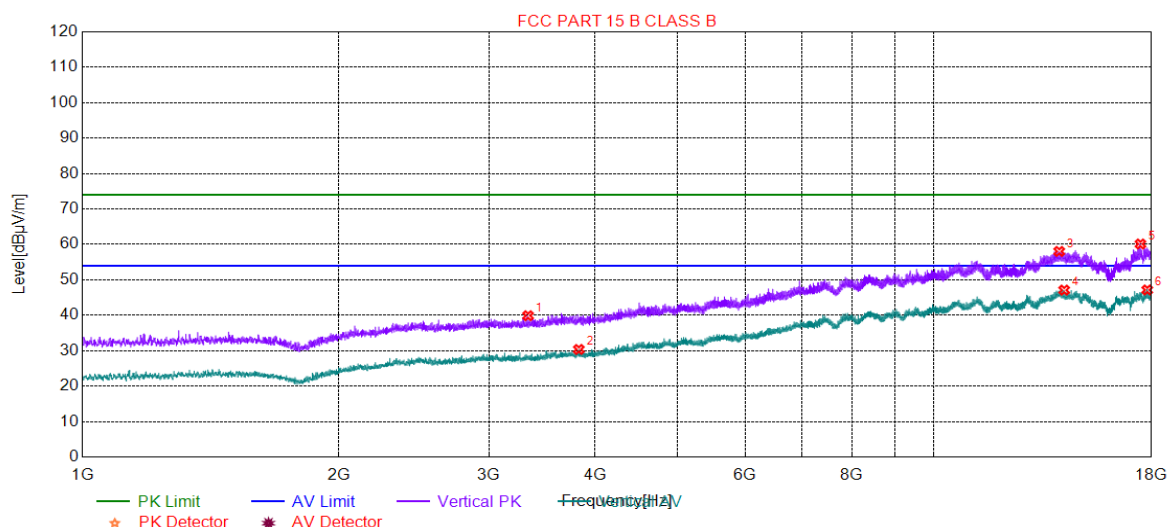
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Mode:i; Polarization:Horizontal



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	100	193	Horizontal
2	2946.59	29.13	-24.64	54.00	24.87	200	357	Horizontal
3	13869.6	58.54	2.05	74.00	15.46	100	3	Horizontal
4	13947.8	45.09	2.20	54.00	8.91	200	320	Horizontal
5	17818.0	46.93	0.59	54.00	7.07	100	3	Horizontal
6	17835.9	59.61	0.49	74.00	14.39	100	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	100	344	Vertical
2	3826.39	30.37	-22.09	54.00	23.63	100	192	Vertical
3	14023.5	58.03	2.27	74.00	15.97	200	168	Vertical
4	14212.2	47.11	2.04	54.00	6.89	100	269	Vertical
5	17467.0	60.13	1.22	74.00	13.87	100	153	Vertical
6	17790.8	47.15	0.72	54.00	6.85	200	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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