

TEST REPORT

Application No: ZR/2020/C0043
Applicant: Sony Mobile Communications, Inc.
Address of Applicant: 4-12-3 Higashi-shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan
Manufacturer: Sony Mobile Communications, Inc.
Address of Manufacturer: 4-12-3 Higashi-shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan
EUT Description: GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS and NFC
Trade Mark: Sony
FCC ID: PY7-76625R
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2020/12/11
Date of Test: 2020/12/11 to 2021/1/26
Date of Issue: 2021/4/21

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

Authorized Signature:



Simon Ling

Wireless Laboratory Manager



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Report No.: ZR/2020/C004307

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021/3/10		Original
02		2021/4/21	Eason wang	Update equipment list

Authorized for issue by:		
Prepared By		 _____ (Eason Wang) /Engineer
Checked By		 _____ (David Chen) /Reviewer



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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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1 General Information

EUT Description:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS and NFC		
Trade Mark:	Sony		
S/N:	005059ADNVM2		
Frequency Bands:	Band	Tx (MHz)	Rx (MHz)
	GSM850	824~849	869~894
	GSM1900	1850~1910	1930~1990
	WCDMA Band IV	1710~1755	2110~2155
	WCDMA Band V	824~849	869~894
	LTE Band 4	1710~1755	2110~2155
	LTE Band 12	699~716	729~746
	LTE Band 41	2496 to 2690	2496 to 2690
	Wi-Fi 2.4G	2400~2483.5	2400~2483.5
	Bluetooth	2400~2483.5	2400~2483.5
	Wi-Fi 5G	5150~5850	5150~5850
	FM	88~108	
	GNSS(GPS/Glonass/Beidou/Galileo)	1559~1610	
	NFC	13.56	



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Accessory:

Description	Model No.
Adapter1	UCH-32
Earphone1	SBH82D
USB cable1	UCB24
USB cable2	UCB20



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1.1 Description of Support Units

Description	Manufacturer	Model No.	Certificate Type
Laptop	Lenovo	L480	FCC SDOC
Mouse	Lenovo	3D optical Mouse	FCC SDOC
Router	NETGEAR	R6020	FCC SDOC

1.2 Test Location

All tests were performed at:

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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

No tests were sub-contracted.

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 No.: 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:

- a: Transfer data between the EUT and the PC+USB cable1
- b: Transfer data between the EUT and the PC+USB cable2
- c: GSM 850 Idle+BT+2.4G WLAN + NFC +GPS Rx+ playing MP4 +earphone1 +Cable(worst)+adapter1
- d: WCDMA Band V Idle+BT+5G WLAN + NFC +GPS Rx+ playing MP4 +earphone1 + Cable(worst)+adapter1
- e: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (Back) +earphone1 + Cable(worst)+adapter1
- f: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (front) +earphone1 + Cable(worst)+adapter1
- g: LTE Band 12 Idle+BT+5G WLAN + NFC+FM +GPS Rx +earphone1 + Cable(worst)+adapter1

The worst case for final test:

- e: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (Back) +earphone(worst) + Cable(worst)+adapter1
- a: Transfer data between the EUT and the PC+USB cable1



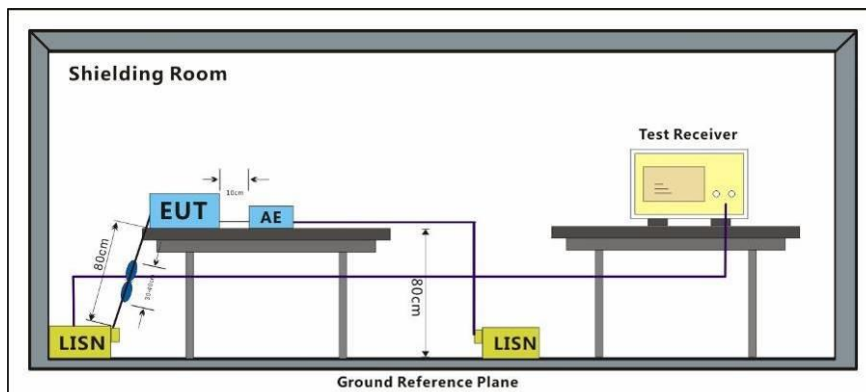
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2.1.2 Test Setup Diagram



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.



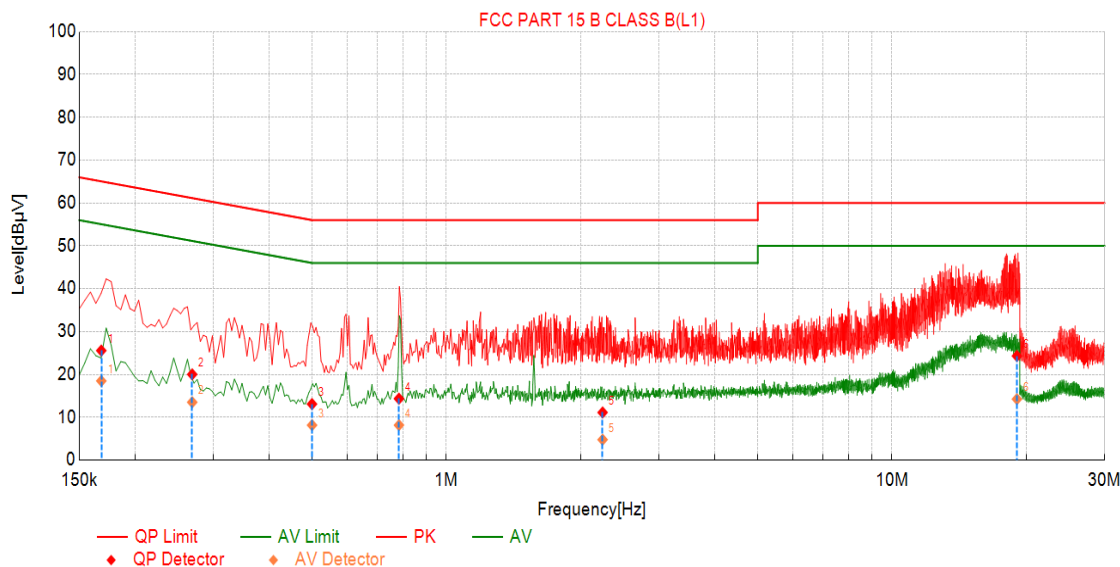
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Mode:e; Line:Live Line



Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1682	25.56	65.05	39.49	18.48	55.05	36.57	PASS
2	0.2690	20.01	61.15	41.14	13.51	51.15	37.64	PASS
3	0.4996	13.08	56.01	42.93	8.15	46.01	37.86	PASS
4	0.7829	14.34	56.00	41.66	8.16	46.00	37.84	PASS
5	2.2420	11.12	56.00	44.88	4.77	46.00	41.23	PASS
6	19.0649	24.30	60.00	35.70	14.23	50.00	35.77	PASS



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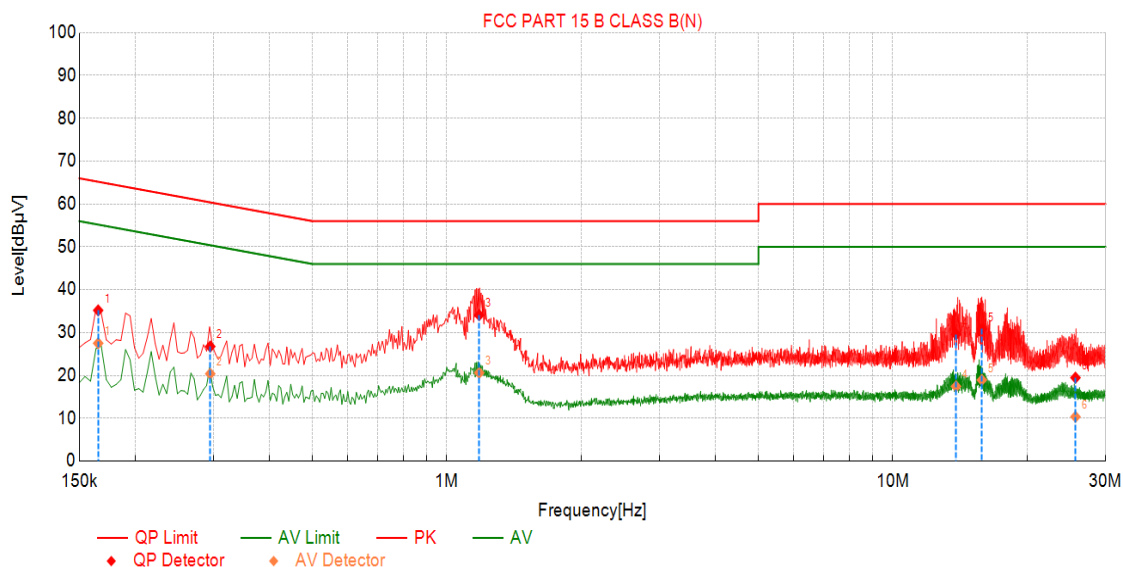
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Mode:e; Line:Neutral Line



Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1654	35.18	65.19	30.01	27.51	55.19	27.68	PASS
2	0.2950	26.74	60.38	33.64	20.38	50.38	30.00	PASS
3	1.1823	34.08	56.00	21.92	20.60	46.00	25.40	PASS
4	13.8644	29.59	60.00	30.41	17.44	50.00	32.56	PASS
5	15.8342	30.84	60.00	29.16	18.93	50.00	31.07	PASS
6	25.6768	19.46	60.00	40.54	10.34	50.00	39.66	PASS



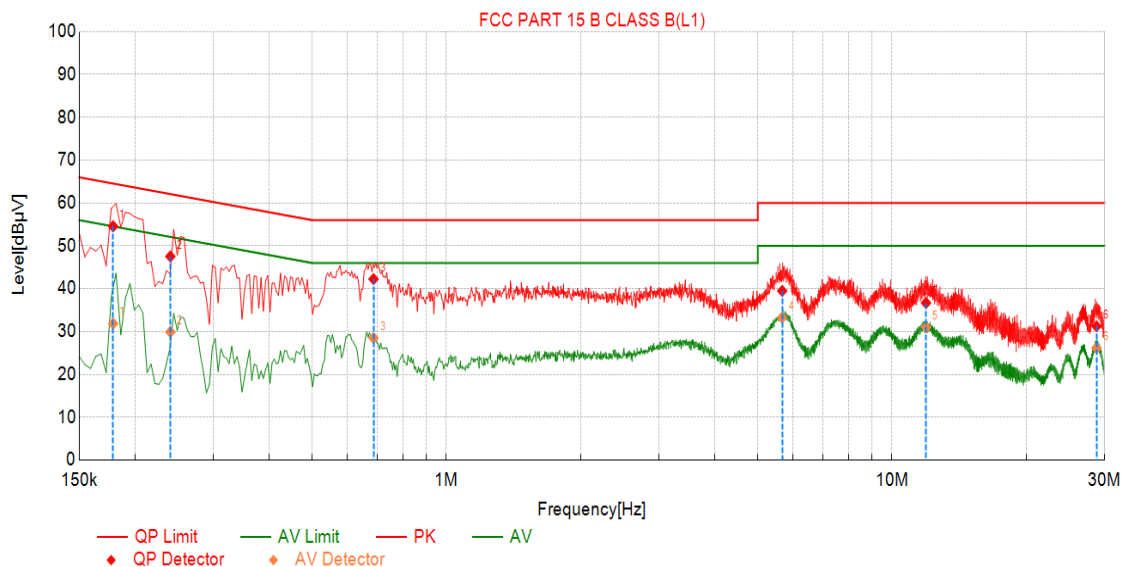
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Mode:a; Line:Live Line



Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1788	54.56	64.54	9.98	31.87	54.54	22.67	PASS
2	0.2403	47.53	62.08	14.55	29.92	52.08	22.16	PASS
3	0.6864	42.24	56.00	13.76	28.50	46.00	17.50	PASS
4	5.6705	39.49	60.00	20.51	33.26	50.00	16.74	PASS
5	11.9246	36.68	60.00	23.32	31.01	50.00	18.99	PASS
6	28.7586	31.24	60.00	28.76	26.17	50.00	23.83	PASS



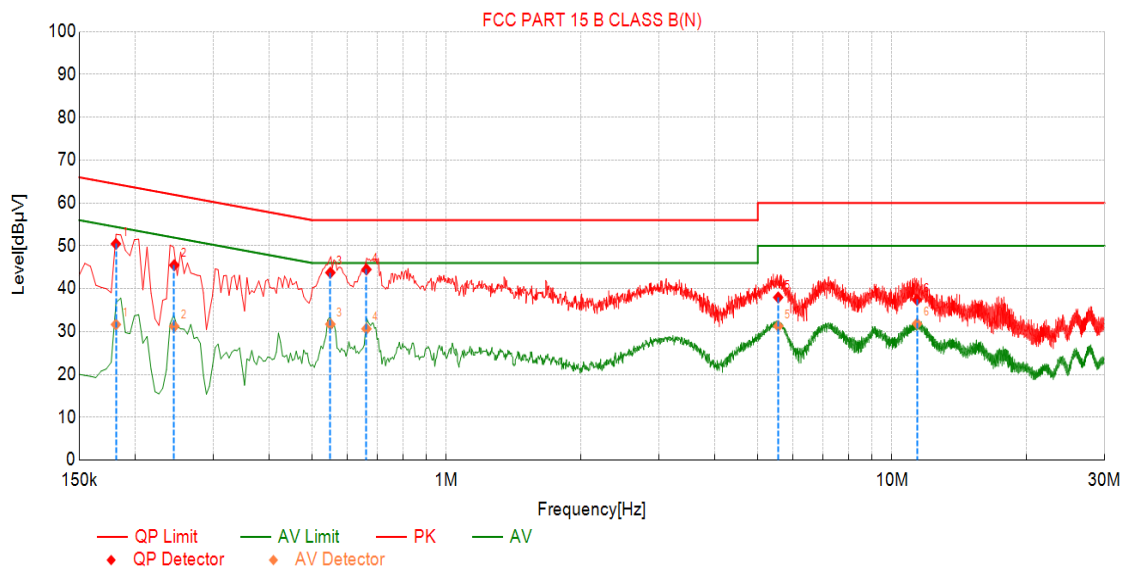
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Mode:a; Line:Neutral Line



Final Data List

NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1814	50.46	64.42	13.96	31.65	54.42	22.77	PASS
2	0.2452	45.48	61.92	16.44	31.22	51.92	20.70	PASS
3	0.5493	43.75	56.00	12.25	31.72	46.00	14.28	PASS
4	0.6619	44.49	56.00	11.51	30.63	46.00	15.37	PASS
5	5.5543	37.96	60.00	22.04	31.26	50.00	18.74	PASS
6	11.3791	37.41	60.00	22.59	31.82	50.00	18.18	PASS



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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(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

2.2.1 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:

- a: Transfer data between the EUT and the PC+USB cable1
- b: Transfer data between the EUT and the PC+USB cable2
- c: GSM 850 Idle+BT+2.4G WLAN + NFC +GPS Rx+ playing MP4 +earphone1
+Cable(worst)+adapter1
- d: WCDMA Band V Idle+BT+5G WLAN + NFC +GPS Rx+ playing MP4
+earphone1 + Cable(worst)+adapter1
- e: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (Back) +earphone1
+ Cable(worst)+adapter1
- f: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (front) +earphone1
+ Cable(worst)+adapter1
- g: LTE Band 12 Idle+BT+5G WLAN + NFC+FM +GPS Rx +earphone1 +
Cable(worst)+adapter1

The worst case
for final test:

- a: Transfer data between the EUT and the PC+USB cable1
- e: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (Back) +earphone1
+ Cable(worst)+adapter1



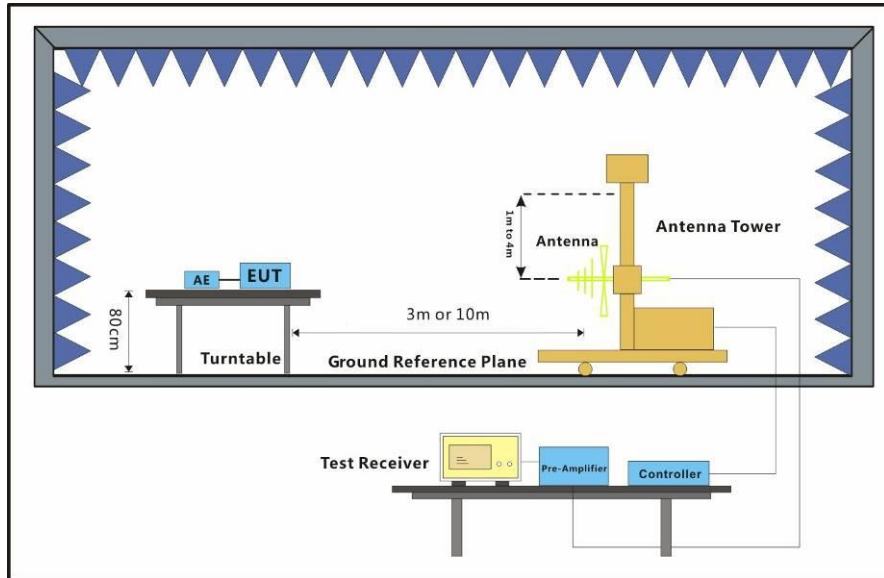
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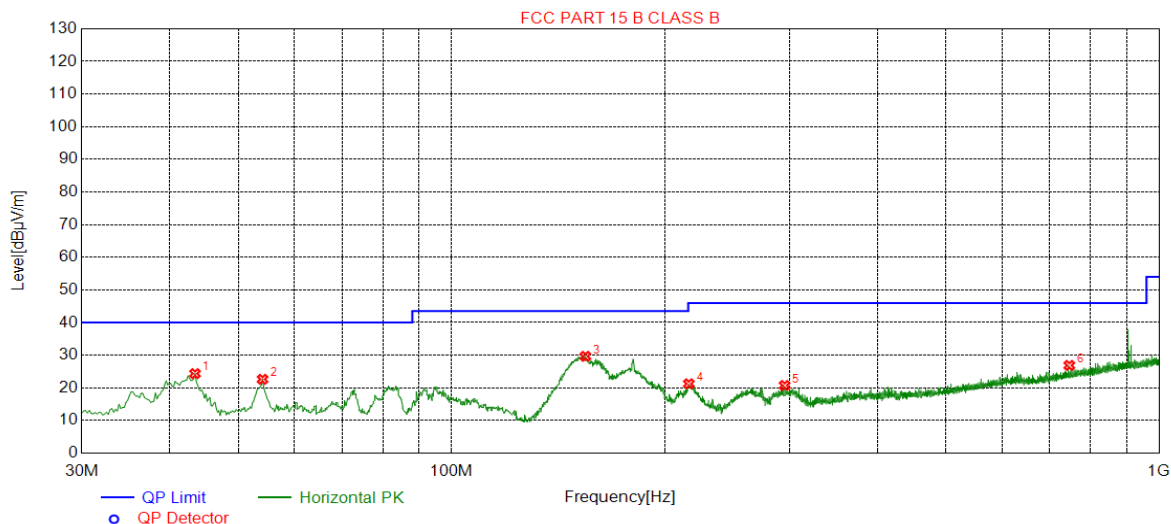
2.2.2 Test Setup Diagram



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. Three orthogonal axes of X,Y,Z are tested by EUT using BiConiLog antenna with 2 orthogonal polarities, but only the worst data had been displayed

Mode:a; Polarization:Horizontal

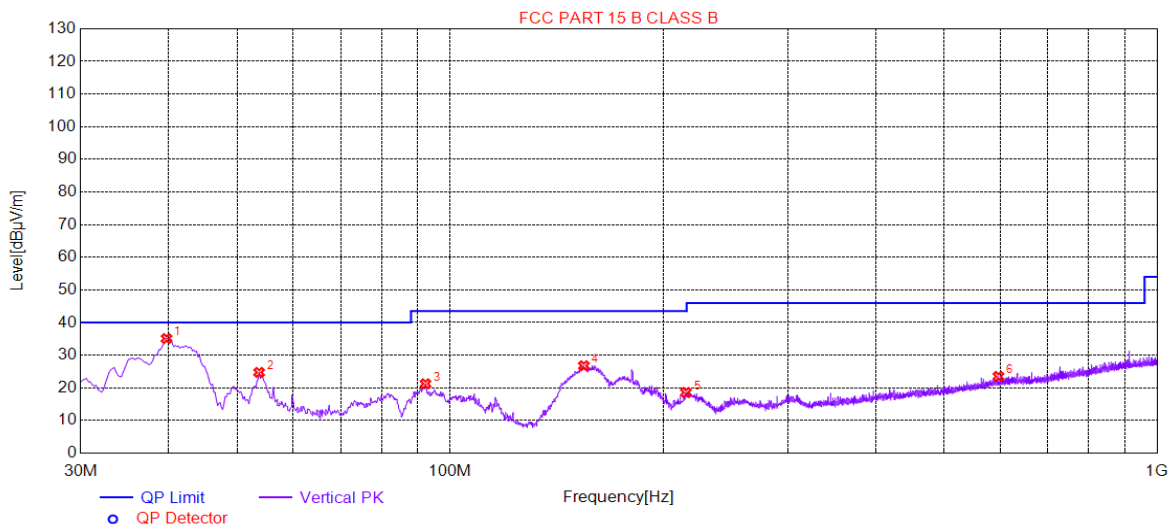


Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	43.3887	24.38	-29.76	40.00	15.62	366	225	Horizontal
2	54.0608	22.64	-30.98	40.00	17.36	346	210	Horizontal
3	154.572	29.67	-34.87	43.50	13.83	219	248	Horizontal
4	216.471	21.26	-30.81	46.00	24.74	274	114	Horizontal
5	295.639	20.75	-28.43	46.00	25.25	283	140	Horizontal
6	746.779	26.89	-18.41	46.00	19.11	394	219	Horizontal



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	39.7019	35.11	-28.44	40.00	4.89	379	337	Vertical
2	53.6727	24.75	-30.92	40.00	15.25	284	337	Vertical
3	92.2865	21.27	-33.34	43.50	22.23	242	109	Vertical
4	154.572	26.78	-34.87	43.50	16.72	267	268	Vertical
5	215.501	18.61	-30.83	43.50	24.89	204	48	Vertical
6	596.399	23.54	-20.73	46.00	22.46	369	236	Vertical



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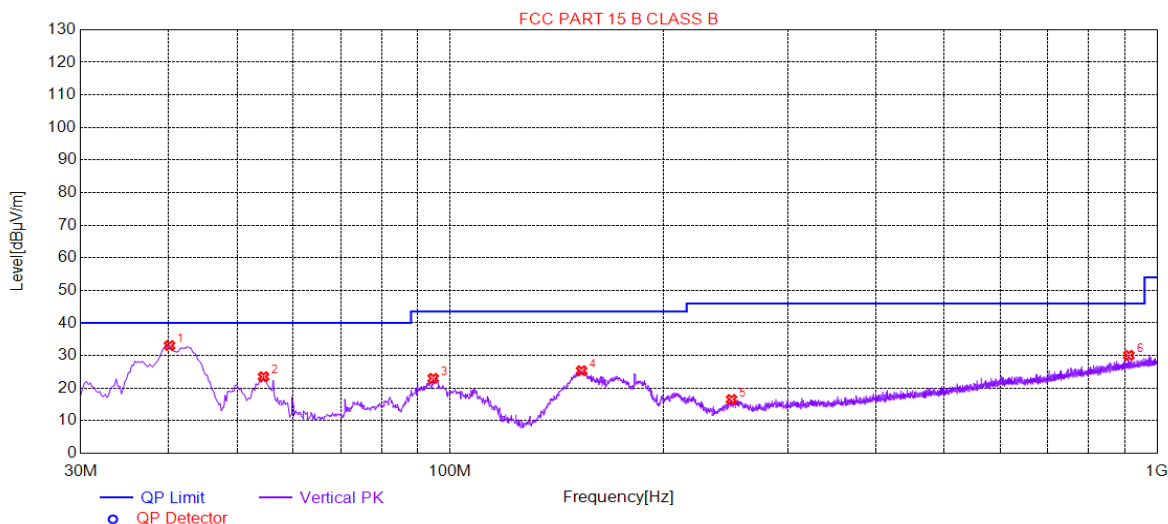
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Mode:e; Polarization:Horizontal

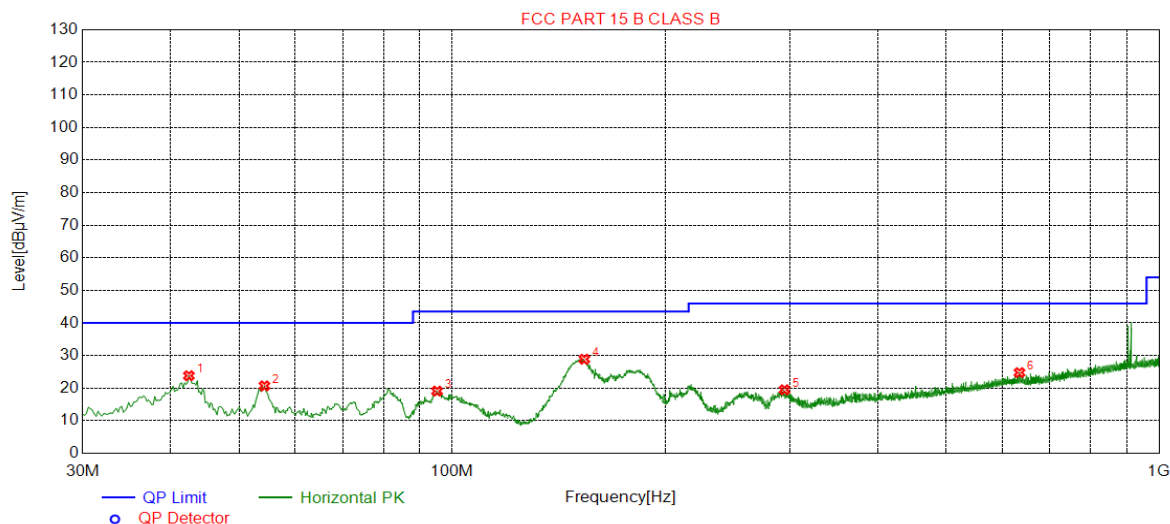


Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.0900	33.08	-28.38	40.00	6.92	399	346	Vertical
2	54.4489	23.52	-31.04	40.00	16.48	364	311	Vertical
3	94.6149	23.02	-32.95	43.50	20.48	166	135	Vertical
4	153.408	25.37	-34.93	43.50	18.13	185	346	Vertical
5	250.040	16.55	-29.66	46.00	29.45	170	320	Vertical
6	912.100	30.09	-15.90	46.00	15.91	226	104	Vertical



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	42.4185	23.83	-29.35	40.00	16.17	105	263	Horizontal
2	54.2549	20.71	-31.01	40.00	19.29	269	235	Horizontal
3	95.1970	19.11	-32.85	43.50	24.39	137	283	Horizontal
4	153.796	28.90	-34.91	43.50	14.60	127	249	Horizontal
5	295.251	19.51	-28.45	46.00	26.49	220	126	Horizontal
6	634.624	24.78	-20.21	46.00	21.22	387	126	Horizontal



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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(dBμV/m) peak, 54(dBμV/m) average
 Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to30000MHz

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:

- a: Transfer data between the EUT and the PC+USB cable1
- b: Transfer data between the EUT and the PC+USB cable2
- c: GSM 850 Idle+BT+2.4G WLAN + NFC +GPS Rx+ playing MP4 +earphone1 +Cable(worst)+adapter1
- d: WCDMA Band V Idle+BT+5G WLAN + NFC +GPS Rx+ playing MP4 +earphone1 + Cable(worst)+adapter1
- e: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (Back) +earphone1 + Cable(worst)+adapter1
- f: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (front) +earphone1 + Cable(worst)+adapter1
- g: LTE Band 12 Idle+BT+5G WLAN + NFC+FM+GPS Rx +earphone1 + Cable(worst)+adapter1

The worst case for final test:

- e: LTE Band 12 Idle+BT+5G WLAN + NFC +GPS Rx+ camera (Back) +earphone1 + Cable(worst)+adapter1
- b: Transfer data between the EUT and the PC+USB cable2



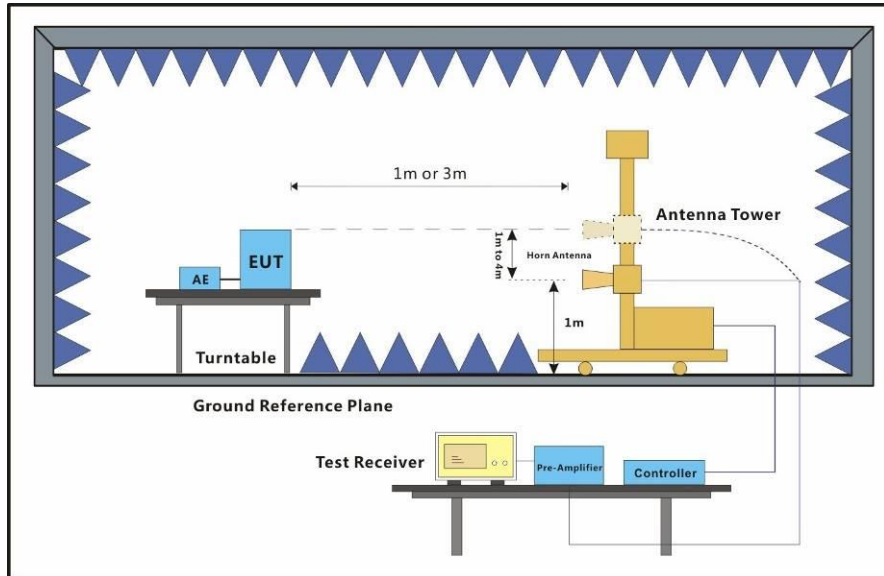
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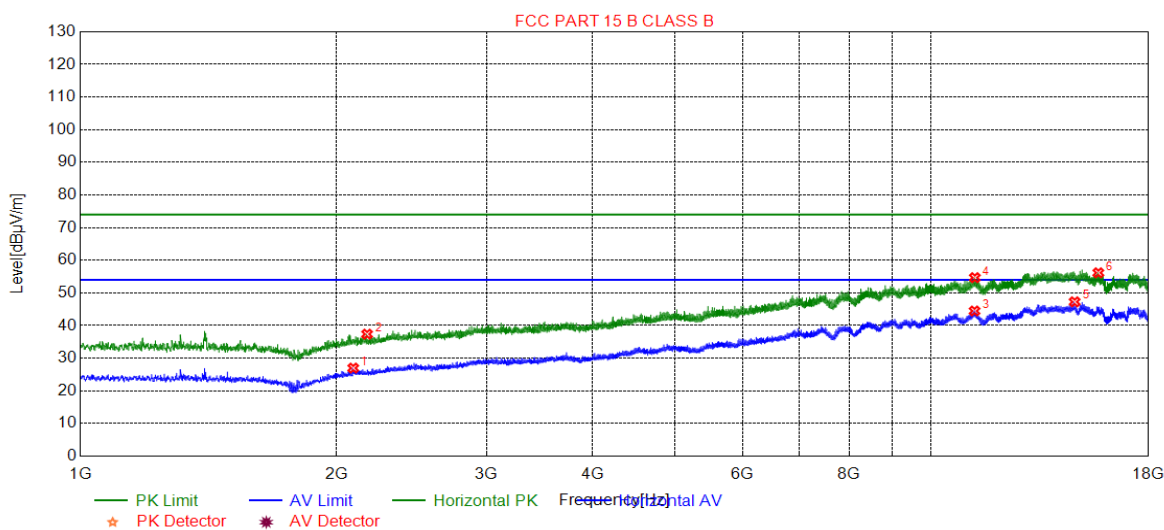
2.3.2 Test Setup Diagram



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. Three orthogonal axes of X,Y,Z are tested by EUT using Horn antenna with 2 orthogonal polarities, but only the worst data had been displayed.

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	2092.30	26.99	-27.64	54.00	27.01	206	101	Horizontal
2	2172.20	37.39	-27.59	74.00	36.61	394	173	Horizontal
3	11238.7	44.48	-3.20	54.00	9.52	314	80	Horizontal
4	11248.1	54.68	-3.18	74.00	19.32	357	208	Horizontal
5	14734.9	47.28	0.83	54.00	6.72	298	173	Horizontal
6	15710.8	56.17	0.32	74.00	17.83	174	208	Horizontal

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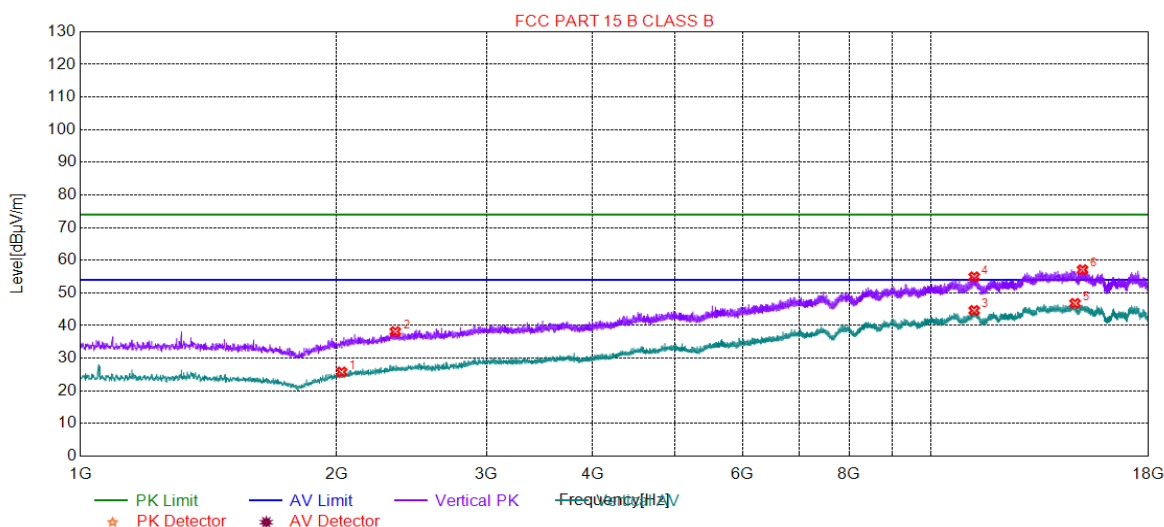
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Mode:e; Polarization:Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2027.70	25.78	-28.31	54.00	28.22	211	359	Vertical
2	2344.76	38.17	-26.56	74.00	35.83	377	16	Vertical
3	11228.5	44.65	-3.22	54.00	9.35	275	66	Vertical
4	11228.5	54.94	-3.22	74.00	19.06	180	318	Vertical
5	14751.1	46.81	0.85	54.00	7.19	295	102	Vertical
6	15052.9	57.11	1.13	74.00	16.89	238	323	Vertical



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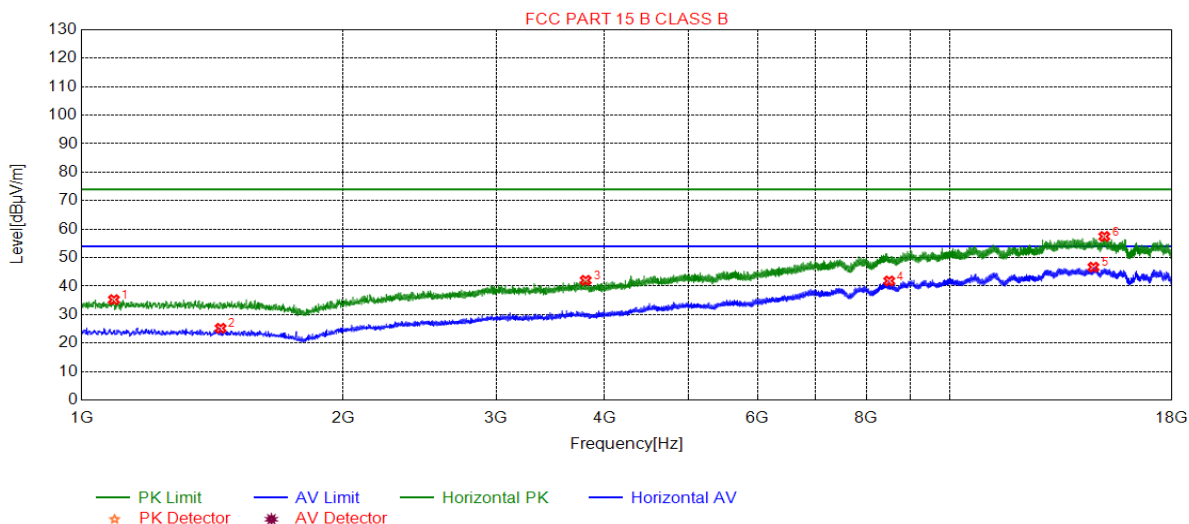
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Mode:b; Polarization:Horizontal

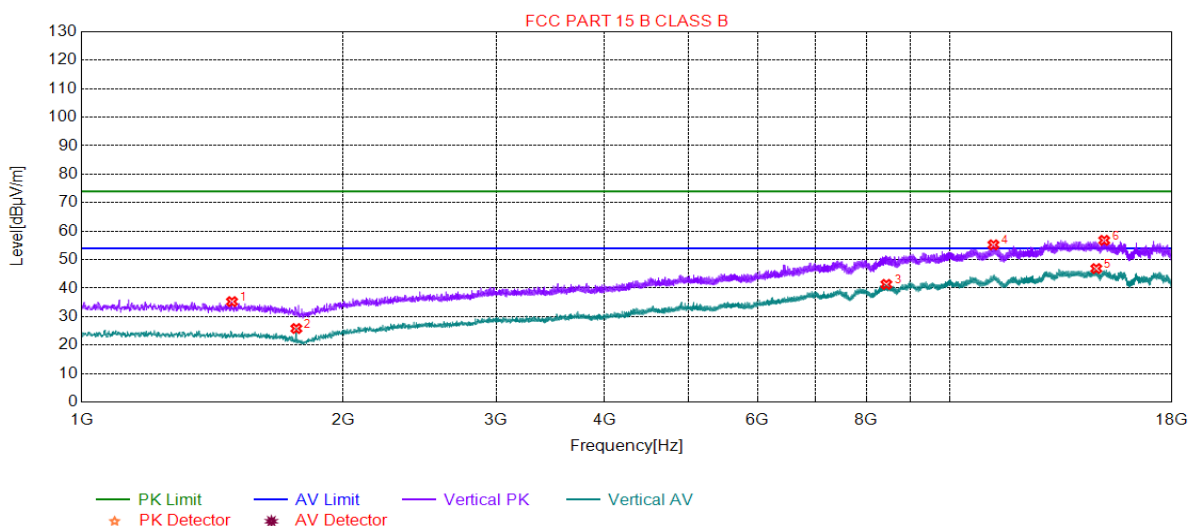


Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1089.25	35.27	-30.20	74.00	38.73	240	280	Horizontal
2	1445.42	25.22	-29.99	54.00	28.78	397	344	Horizontal
3	3804.29	42.05	-21.15	74.00	31.95	379	193	Horizontal
4	8505.87	41.83	-7.37	54.00	12.17	156	150	Horizontal
5	14614.2	46.68	0.65	54.00	7.32	151	237	Horizontal
6	15042.7	57.44	1.13	74.00	16.56	386	64	Horizontal



Mode:b; Polarization:Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1489.62	35.28	-30.09	74.00	38.72	152	296	Vertical
2	1766.73	25.84	-31.78	54.00	28.16	159	274	Vertical
3	8441.27	41.33	-7.54	54.00	12.67	224	37	Vertical
4	11212.4	55.21	-3.26	74.00	18.79	168	252	Vertical
5	14724.7	46.88	0.82	54.00	7.12	242	274	Vertical
6	15037.6	56.79	1.14	74.00	17.21	200	274	Vertical

Remark:

1) Scan from 1GHz to 40GHz, The disturbance between 18GHz to 40GHz was very low, so only 1GHz to 18GHz test data had been displayed. The amplitude of emissions from the Eut which are attenuated more than 20dB below the limit need not be reported.



SGS-CSTC Standards Technical Services (Xi'an) Co., Ltd.
Wireless Laboratory

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3 Equipment List

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	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	2020-10-26	2021-10-25
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2020-10-26	2021-10-25
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2020-10-27	2021-10-26
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2020-10-26	2021-10-25
5G UXM	Keysight	E7515B	XAW01-04-01	2020-09-11	2021-09-10
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2020-11-06	2021-11-05
Measurement Software	Tonscend	TS+ RE V3.0.0.2	XAW02-05-01	NCR	NCR

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	2020-09-11	2021-09-10
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2020-08-04	2021-08-03
5G UXM	Keysight	E7515B	XAW01-19-02	2020-09-11	2021-09-10
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2020-11-06	2021-11-05
Measurement Software	Tonscend	TS+ CE V2.5	XAW02-05-02	NCR	NCR



4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	$\pm 3.0\text{dB}$ (150kHz to 30MHz)
2	Radiated Emission	$\pm 4.8\text{dB}$ (Below 1GHz)
		$\pm 4.8\text{dB}$ (1GHz to 6GHz)
		$\pm 4.5\text{dB}$ (6GHz to 18GHz)
		$\pm 5.02\text{dB}$ (Above 18GHz)



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5 Photographs

5.1 Test Setup

Refer to Appendix A JBP & CXX Setup Photos.

5.2 EUT Constructional Details (EUT Photos)

Refer to Photographs of EUT Constructional Details

- End of the Report -



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