

Report No.: AR/2021/3001701

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TEST REPORT

Application No: AR/2021/30017

Applicant: Xiaomi Communications Co., Ltd.

Address of Applicant #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing,

China, 100085

Manufacturer: Xiaomi Communications Co., Ltd.

Address of Manufacturer: #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing,

China, 100085

EUT Description: Mobile Phone **Model No.:** 21061110AG

Trade Mark: POCO

FCC ID: 2AFZZK110AG

Standard(s): 47 CFR Part 15, Subpart B

Date of Receipt: 2021/4/21

Date of Test: 2021/4/21 to 2021/5/14

Date of Issue: 2021/5/14

Test Result: Pass*

Authorized Signature:

Simon Ling

Wireless Laboratory Manager



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t (86-29) 6282 7885

sgs.china@sgs.com

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



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	Revision Record								
Version	Chapter	Date	Modifier	Remark					
01		2021/5/14		Original					

Authorized for issue by:	
Prepared By	(Leah Chen) / Engineer
Checked By	Daniel Wang (Daniel Wang) /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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GENERAL INFORMATION

SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD.

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1 General Information

Product Name:	Mobile Phone								
Model No.(EUT):	21061110AG								
Trade Mark:	POCO								
Hardware Version:	P2								
Software Version:	MIUI 12	MIUI 12							
	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						
Frequency Bands:	LTE Band 26	814~849	859~894						
	LTE Band 38	2570~2620	2570~2620						
	LTE Band 41	2496~2690	2496~2690						
	NR SA Band 41	2496~2690	2496~2690						
	NR SA Band 77	3700~3980	3700~3980						
	Wi-Fi 2.4G	2412~2462	2412~2462						
	Bluetooth	2402~2480	2402~2480						
	Wi-Fi 5G	5150~5850	5150~5850						
	NFC	13.56							
	GNSS(GPS+Glonass + Beidou+Galileo)	1599~1610							



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1.1 Description of Support Units

Description	Manufacturer	Model No.	Serial No.	
Laptop	Lenovo	L480	REF. No.SEA1800	
Mouse	Lenovo	3D optical Mouse	REF. No.:SEA2400	
Router	NETGEAR	R6020	REF. No.SEA2200	

1.2 Test Location

All tests were performed at:

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:	Leah Chen, Ken Liu, Andy Yao

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.

Test Site No.:	SG	S Xian Site No.	FCC Designation No.
	CO01-XA	03CH01-XA	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(μ V)-56dB(μ V) quasi-peak, 56dB(μ V)-46dB(μ V) average

0.5M-5MHz 56dB(μ V) quasi-peak, 46dB(μ V) average 5M-30MHz 60dB(μ V) quasi-peak, 50dB(μ V) 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 a: Transfer data between the EUT and the PC+USB cable1
modes to find b: Transfer data between the EUT and the PC+USB cable2
the worst case:

C: CSM 850 Idla+BT+WI AN +CBS BX+playing MP4 (SD card

c: GSM 850 Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)

+battery1+Cable(worst)+adapter

d: WCDMA Band V Idle+BT+WLAN +GPS Rx+NFC+playing MP4 (SD card)

+battery2+ Cable(worst)+adapter

e: LTE Band 5 Idle+BT+WLAN +GPS Rx+NFC+camera (Front) +battery(worst)+

Cable(worst)+adapter

f: LTE Band 26 Idle+BT+WLAN +GPS Rx+ NFC+camera (Front)+battery(worst)+

Cable(worst)+adapter

g: LTE Band 41 Idle+BT+WLAN +GPS Rx+ NFC+camera (Front)+battery(worst)+

Cable(worst)+audio cabke+earphone

The worst case c: GSM 850 Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)

for final test: +battery1+Cable(worst)+adapter



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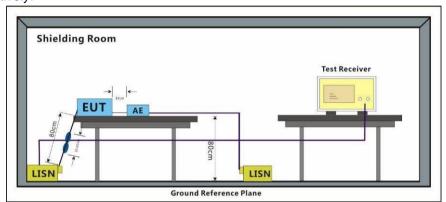


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2.1.2 Test Setup Procedures

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.



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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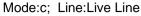
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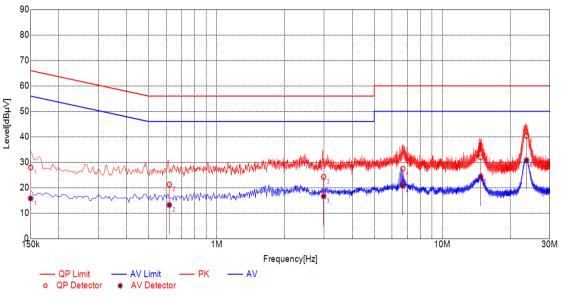
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Test Graph

Final Data List										
NO.	Freq. [MHz]	Factor [dB]	QP Value [dΒμV]	QP Limit [dΒμV]	QP Margin [dB]	AV Value [dΒμV]	AV Limit [dΒμV]	AV Margin [dB]		
1	0.1500	10.10	27.98	66.00	38.02	15.79	56.00	40.21		
2	0.6174	10.10	21.25	56.00	34.75	13.21	46.00	32.79		
3	2.9839	10.10	24.24	56.00	31.76	16.65	46.00	29.35		
4	6.6952	10.10	27.46	60.00	32.54	20.77	50.00	29.23		
5	14.8094	10.11	31.94	60.00	28.06	24.25	50.00	25.75		
6	23.6504	10.11	40.32	60.00	19.68	30.77	50.00	19.23		



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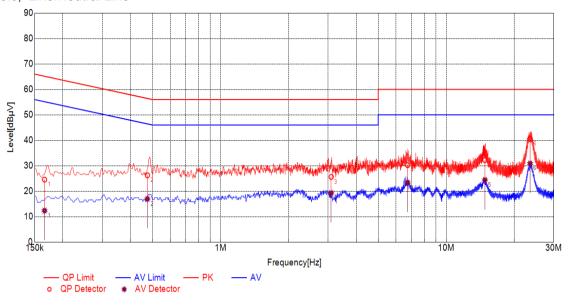
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Mode:c; Line:Neutral Line



Test Graph

Final Data List										
NO.	Freq. [MHz]	Factor [dB]	QP Value [dΒμV]	QP Limit [dΒμV]	QP Margin [dB]	ΑV Value [dBμV]	ΑV Limit [dBμV]	AV Margin [dB]		
1	0.1660	10.10	24.54	65.16	40.62	12.35	55.16	42.81		
2	0.4740	10.10	26.26	56.44	30.18	16.96	46.44	29.48		
3	3.0925	10.10	25.62	56.00	30.38	19.25	46.00	26.75		
4	6.7461	10.10	30.22	60.00	29.78	23.33	50.00	26.67		
5	14.8460	10.11	32.20	60.00	27.80	24.40	50.00	25.60		
6	23.5542	10.11	40.61	60.00	19.39	30.88	50.00	19.12		



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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:

30 MHz - 88 MHz $40.0 (\text{dB}\mu\text{V/m})$ quasi-peak 88 MHz - 216 MHz $43.5 (\text{dB}\mu\text{V/m})$ quasi-peak $46.0 (\text{dB}\mu\text{V/m})$ quasi-peak 960 MHz - 1000 MHz $54.0 (\text{dB}\mu\text{V/m})$ 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 a: Transfer data between the EUT and the PC+USB cable1 b: Transfer data between the EUT and the PC+USB cable2 the worst case:

c: GSM 850 Idle+BT+WLAN +GPS Rx+playing MP4 (SD card)

+battery1+Cable(worst)+adapter

d: WCDMA Band V Idle+BT+WLAN +GPS Rx+NFC+playing MP4 (SD card)

+battery2+ Cable(worst)+adapter

e: LTE Band 5 Idle+BT+WLAN +GPS Rx+ NFC+camera (Front) +battery(worst)+

Cable(worst)+adapter

f: LTE Band 26 Idle+BT+WLAN +GPS Rx+ NFC+camera (Front)+battery(worst)+

Cable(worst)+adapter

g: LTE Band 41 Idle+BT+WLAN +GPS Rx+ NFC+camera (Front)+battery(worst)+

Cable(worst)+audio cabke+earphone

The worst case

e: LTE Band 5 Idle+BT+WLAN +GPS Rx+NFC+camera (Front) +battery(worst)+

for final test: Cable(worst)+adapter



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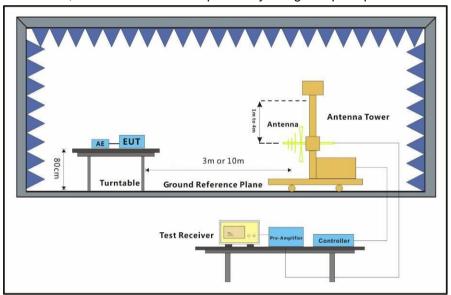


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2.2.2 Test Setup Procedures

- 1. The EUT was placed in a semi Anechoic Chamber as show below
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest radiation.
- 4. The antenna height is adjusted between 1 to 4 meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- 6. Set the test-receiver system to Peak Detect Function with specified bandwidth with Maximum Hold Mode, and the trace was allowed to stabilize.
- 7. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the guasi-peak method and reported.



2.2.3 Measurement Data

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

The three polarities of X,Y,Z were measured by EUT, but only the worst data had been displayed.



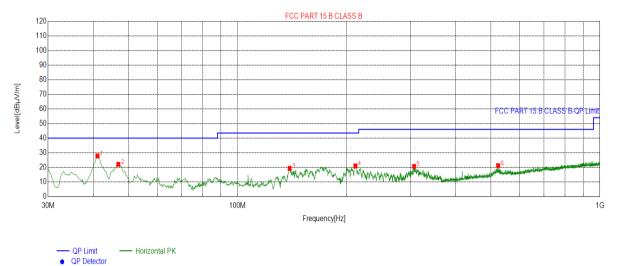
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Mode:e; Polarization:Horizontal



Suspected List

Cuspc	ouspeoted List								
Suspected List									
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	
1	41.0602	27.79	-22.15	40.00	12.21	189	183	Horizontal	
2	46.8814	22.07	-21.39	40.00	17.93	156	250	Horizontal	
3	139.243	19.32	-25.88	43.50	24.18	209	232	Horizontal	
4	211.426	20.97	-21.73	43.50	22.53	178	40	Horizontal	
5	307.087	20.63	-18.89	46.00	25.37	164	307	Horizontal	
6	523.634	21.20	-13.69	46.00	24.80	217	96	Horizontal	



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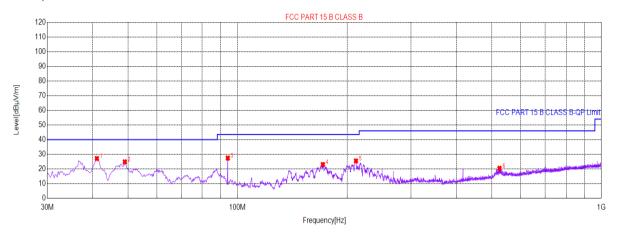
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Mode:e; Polarization:Vertical



- ∩P Limit QP Detector

Vertical PK

Suspected List

Ouspec	Suspected List							
Suspe	Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	41.0602	27.11	-22.15	40.00	12.89	188	223	Vertical
2	49.0158	24.83	-21.37	40.00	15.17	198	151	Vertical
3	94.0328	27.44	-23.85	43.50	16.06	213	352	Vertical
4	171.648	23.04	-25.06	43.50	20.46	176	356	Vertical
5	211.620	25.49	-21.72	43.50	18.01	185	290	Vertical
6	524.993	20.44	-13.65	46.00	25.56	194	208	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(dBµV/m) peak, 54(dBµV/m) average

Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

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+WLAN +GPS Rx+playing MP4 (SD card)

+battery1+Cable(worst)+adapter

d: WCDMA Band V Idle+BT+WLAN +GPS Rx+NFC+playing MP4 (SD card)

+battery2+ Cable(worst)+adapter

e: LTE Band 5 Idle+BT+WLAN +GPS Rx+ NFC+camera (Front) +battery(worst)+

Cable(worst)+adapter3

f: LTE Band 26 Idle+BT+WLAN +GPS Rx+ NFC+camera (Front) +battery(worst)+

Cable(worst)+adapter(worst)

g: LTE Band 41 Idle+BT+WLAN +GPS Rx+ NFC+camera (Front)+batterv(worst)+

Cable(worst)+audio cabke+earphone

The worst case

d: WCDMA Band V Idle+BT+WLAN +GPS Rx+NFC+playing MP4 (SD card)

for final test: +battery2+ Cable(worst)+adapter



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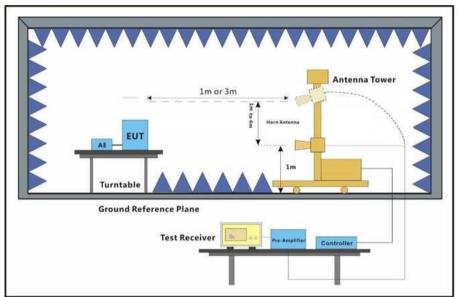


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2.3.2 Test Setup Procedures

- 1. The EUT was placed in a full Anechoic Chamber as show below
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest radiation.
- 4. The antenna height is adjusted between 1 to 4 meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- 6. Set the test-receiver system to Peak and AV Detect Function with specified bandwidth with Maximum Hold Mode, and the trace was allowed to stabilize.



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.

The three polarities of X,Y,Z were measured by EUT, but only the worst data had been displayed. Scan from 1GHz to 30GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed.



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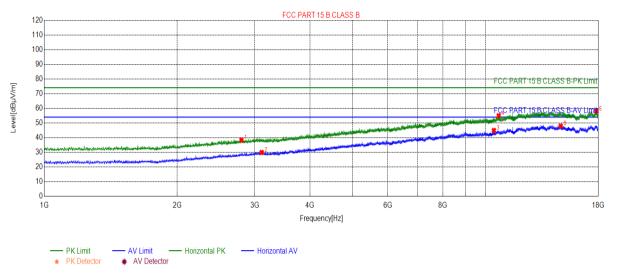
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Mode:d; Polarization:Horizontal



Suspected List

uspeci	uspected List							
Susp	Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2797.83	38.22	-22.83	74.00	35.78	278	228	Horizontal
2	3108.95	29.90	-22.23	54.00	24.10	351	349	Horizontal
3	10438.0	44.89	-2.30	54.00	9.11	299	79	Horizontal
4	10706.6	54.92	-2.30	74.00	19.08	216	224	Horizontal
5	14794.4	47.86	2.20	54.00	6.14	135	186	Horizontal
6	17812.9	58.11	-0.23	74.00	15.89	300	228	Horizontal



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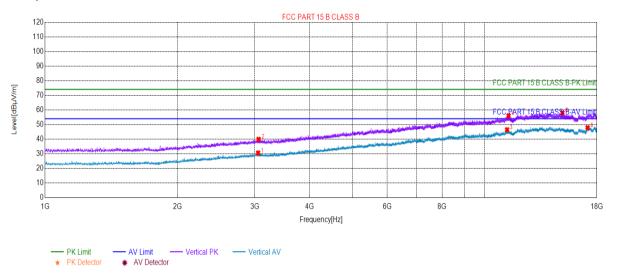
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Mode:d; Polarization:Vertical



Suspected List

Susp	Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	3052.00	30.52	-21.90	54.00	23.48	167	17	Vertical
2	3059.65	39.87	-21.96	74.00	34.13	245	9	Vertical
3	11243.8	46.42	-1.49	54.00	7.58	339	39	Vertical
4	11330.5	55.97	-1.17	74.00	18.03	285	281	Vertical
5	15023.1	57.95	2.13	74.00	16.05	316	161	Vertical
6	17134.6	47.84	-1.44	54.00	6.16	160	138	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



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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		
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		

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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	2021-04-01	2022-03-31		
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2021-04-01	2022-03-31		
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		



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4 Measurement Uncertainty

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



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5 Photographs

5.1 Test Setup

Refer to Appendix A Setup Photos.

5.2 EUT Constructional Details (EUT Photos)

Refer to Photographs of EUT Constructional Details

- End of the Report -



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