

FCC RF Test Report

(WPT)

Applicant: Shen Zhen Conquest Communication Equipment Co., Ltd.

Address of Applicant: 2nd Floor, Building B, Yong xiang Street East on the 17th,
Bantian Street, Longgang District, Shen Zhen, Guangdong,
China

Equipment Under Test (EUT)

Product Name: 5G digital mobile phone

Model No.: conquest-S20

Trade Mark: CONQUEST

FCC ID: 2AWTK-S20

Applicable Standards: FCC CFR Title 47 Part 15C (§15.209)

Date of Sample Receipt: 09 Mar., 2022

Date of Test: 10 Mar., to 17 Apr., 2022

Date of Report Issue: 18 Apr., 2022

Test Result: PASS

Tested by:
Test Engineer**Date:**

18 Apr., 2022

Reviewed by:
Project Engineer**Date:**

18 Apr., 2022

Approved by:
Manager**Date:**

18 Apr., 2022

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

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2 Version

Version No.	Date	Description
00	18 Apr., 2022	Original

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4 General Information

4.1 Client Information

Applicant:	Shen Zhen Conquest Communication Equipment Co., Ltd.
Address:	2nd Floor, Building B, Yong xiang Street East on the 17th, Bantian Street, Longgang District, Shen Zhen, Guangdong, China
Manufacturer/Factory:	Shen Zhen Conquest Communication Equipment Co., Ltd.
Address:	2nd Floor, Building B, Yong xiang Street East on the 17th, Bantian Street, Longgang District, Shen Zhen, Guangdong, China

4.2 General Description of E.U.T.

Product Name:	5G digital mobile phone
Model No.:	conquest-S20
Operation Frequency:	125.0kHz~203.0kHz
Modulation Type:	ASK
Antenna Type:	Coil Antenna
Test Sample Condition:	The test samples were provided in good working order with no visible defects.
Power Supply:	Rechargeable Li-ion Polymer Battery DC3.85V, 8000mAh
AC Adapter:	Model: HJ-FC001K7-US Input: AC100-240V, 50/60Hz, 0.6A Output: DC 5.0V, 3.0A or 9.0V, 2.0A or 12.0V, 1.5A
Wireless Charger:	Input: DC 12.0V, 2.0A or 9.0V, 2.0A or 5.0V, 2A Output: 15W/ 10W/ 7.5W/ 5W

4.3 Test Mode and Environment

Test Mode:	
Transmitting mode:	Keep the EUT in transmitting mode with modulation
Remark: Pre-scan input 12V/9V/5V and output 15W/10W/7.5W/5W of the power supply, found input 12V and output 15W was worse case mode. So the report only reflects the worse mode.	
Operating Environment:	
Temperature:	15°C ~ 35°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1010 mbar

4.4 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
N/A	N/A	N/A	N/A	N/A

4.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Conducted Emission for LISN (9kHz ~ 150kHz)	±3.11 dB
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.62 dB
Radiated Emission (9kHz ~ 30MHz) (3m SAC)	±3.13 dB
Radiated Emission (30MHz ~ 1GHz) (3m SAC)	±4.45 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	±5.34 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	±5.34 dB
Note: All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.	

4.6 Additions to, Deviations, or Exclusions From the Method

No

4.7 Laboratory Facility

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

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

4.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info-JYTee@lets.com, Website: <http://jyt.lets.com>

4.9 Test Instruments List

Radiated Emission(3m SAC):					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal.Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	WXJ001-1	01-19-2021	01-18-2024
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	02-17-2022	02-16-2023
Loop Antenna	Schwarzbeck	FMZB 1519 B	WXJ002-4	02-17-2022	02-16-2023
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXG001-7	02-17-2022	02-16-2023
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	02-17-2022	02-16-2023
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	02-17-2022	02-16-2023
Coaxial Cable (9kHz ~ 30MHz)	JYT	JYT3M-1G-BB-5M	WXG001-6	02-17-2022	02-16-2023
Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/C	
Test Software	Tonscend	TS+	Version: 3.0.0.1		

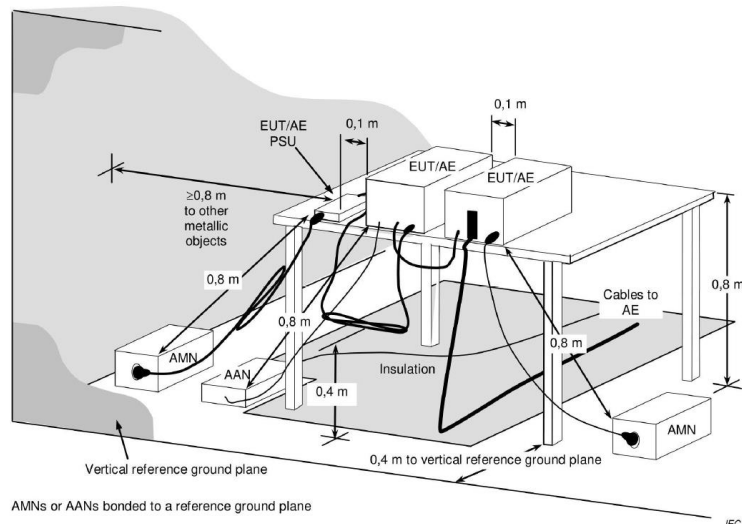
Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal.Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI 3	WXJ003	02-17-2022	02-16-2023
LISN	Rohde & Schwarz	ENV432	WXJ005-2	02-17-2022	02-16-2023
LISN	Rohde & Schwarz	ESH3-Z5	WXJ005-1	06-18-2021	06-17-2022
LISN Coaxial Cable (9kHz ~ 30MHz)	JYTSZ	JYTCE-1G-NN-2M	WXG003-1	02-17-2022	02-16-2023
RF Switch	TOP PRECISION	RSU0301	WXG003	N/C	
Test Software	AUDIX	E3	Version: 6.110919b		

Conducted method:					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal.Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	11-27-2021	11-26-2022

5 Measurement Setup and Procedure

5.1 Test Setup

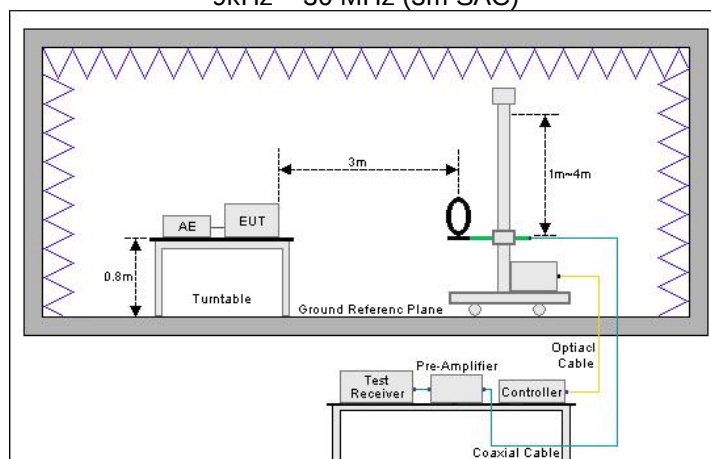
1) Conducted emission measurement:



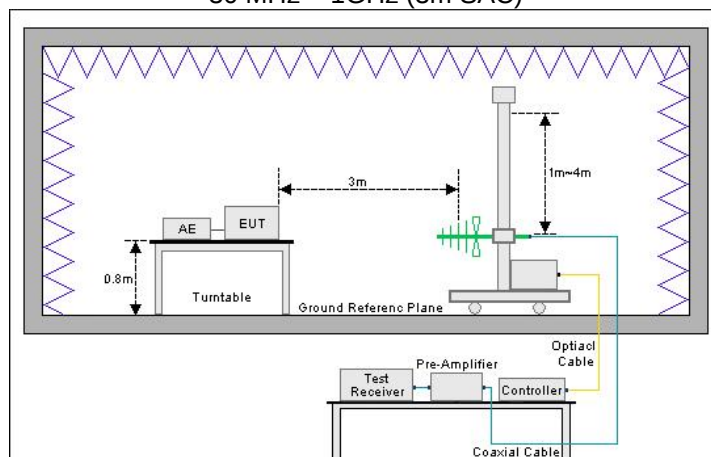
Note: The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

2) Radiated emission measurement:

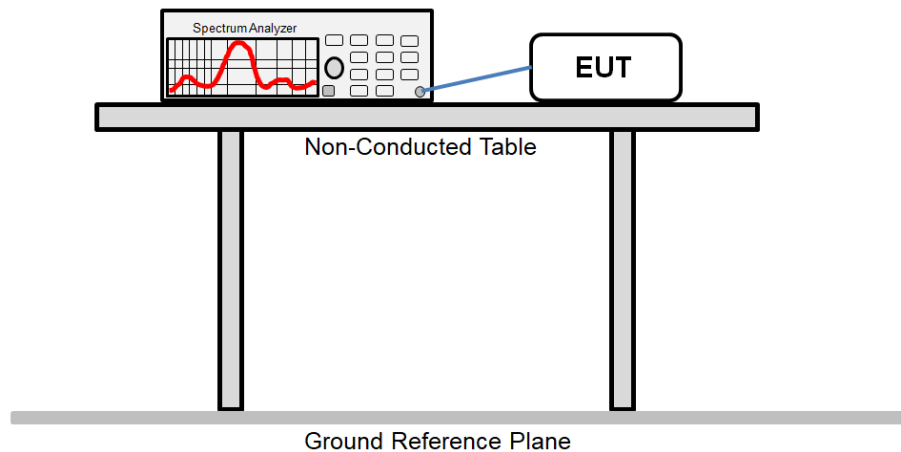
9kHz ~ 30 MHz (3m SAC)



30 MHz ~ 1GHz (3m SAC)



Conducted test method:



5.2 Test Procedure

Test method	Test step
Conducted emission	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
Radiated emission	1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m. 2. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method	1. The antenna port of EUT was connected to the RF port of the spectrum analyzer through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. The test data is saved by the screenshot function of the spectrum analyzer.

6 Test Results

6.1 Summary

6.1.1 Clause and Data Summary

Test items	Standard clause	Test data	Result
Antenna Requirement	15.203	See Section 6.2	Pass
AC Power Line Conducted Emission	15.207	See Section 6.3	Pass
20dB Bandwidth	15.215(c)	See Section 6.4	Pass
Field Strength of Fundamental	15.209	See Section 6.5	Pass
Field Strength of Spurious Emissions	15.209	See Section 6.6	Pass
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: Not Applicable.			
Test Method:	ANSI C63.4-2014 ANSI C63.10-2013		

6.1.2 Test Limit

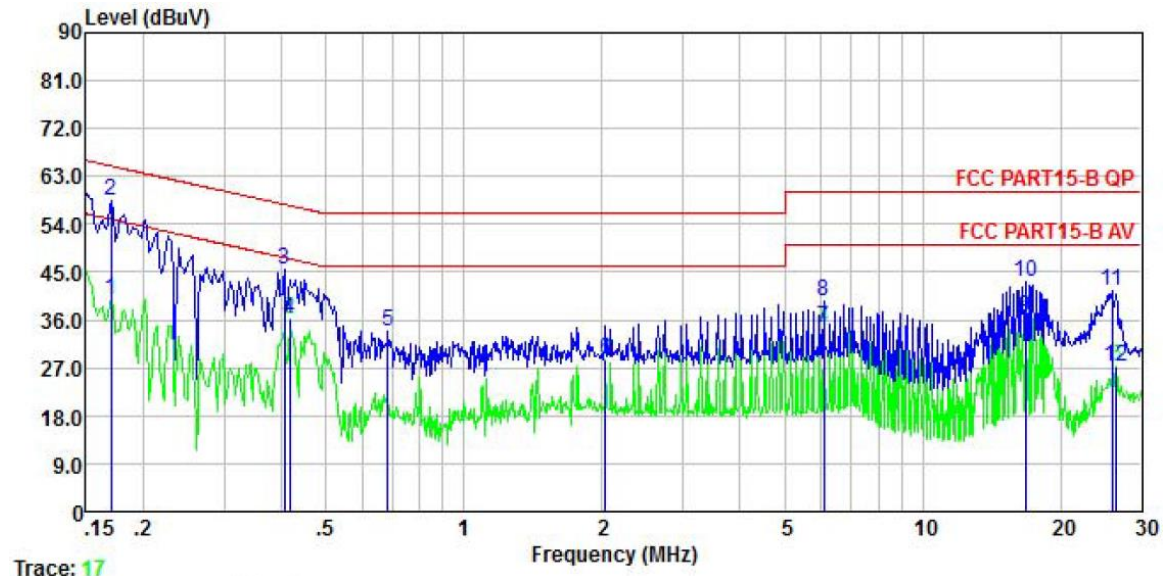
Test items	Limit																								
AC Power Line Conducted Emission	<table><tr><th rowspan="2">Frequency (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-Peak</th><th>Average</th></tr><tr><td>0.15 – 0.5</td><td>66 to 56 Note 1</td><td>56 to 46 Note 1</td></tr><tr><td>0.5 – 5</td><td>56</td><td>46</td></tr><tr><td>5 – 30</td><td>60</td><td>50</td></tr></table> Note 1: The limit level in dBμV decreases linearly with the logarithm of frequency. Note 2: The more stringent limit applies at transition frequencies.	Frequency (MHz)	Limit (dBμV)		Quasi-Peak	Average	0.15 – 0.5	66 to 56 Note 1	56 to 46 Note 1	0.5 – 5	56	46	5 – 30	60	50										
Frequency (MHz)	Limit (dBμV)																								
	Quasi-Peak	Average																							
0.15 – 0.5	66 to 56 Note 1	56 to 46 Note 1																							
0.5 – 5	56	46																							
5 – 30	60	50																							
20dB Bandwidth	N/A																								
Field Strength of Fundamental	<table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009 – 0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490 – 1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705 – 30.0</td><td>30</td><td>30</td></tr><tr><td>30 – 88</td><td>100**</td><td>3</td></tr><tr><td>88 – 216</td><td>150**</td><td>3</td></tr><tr><td>216 – 960</td><td>200**</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	0.009 – 0.490	2400/F(kHz)	300	0.490 – 1.705	24000/F(kHz)	30	1.705 – 30.0	30	30	30 – 88	100**	3	88 – 216	150**	3	216 – 960	200**	3	Above 960	500	3
Frequency (MHz)		Field strength (microvolts/meter)	Measurement distance (meters)																						
0.009 – 0.490		2400/F(kHz)	300																						
0.490 – 1.705		24000/F(kHz)	30																						
1.705 – 30.0		30	30																						
30 – 88		100**	3																						
88 – 216		150**	3																						
216 – 960		200**	3																						
Above 960		500	3																						
Field Strength of Spurious Emissions																									

6.2 Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
E.U.T Antenna:	The EUT make use of a coil antenna.

6.3 AC Power Line Conducted Emission

Product name:	5G digital mobile phone	Product model:	conquest-S20
Test by:	Mike	Test mode:	Charing mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz		

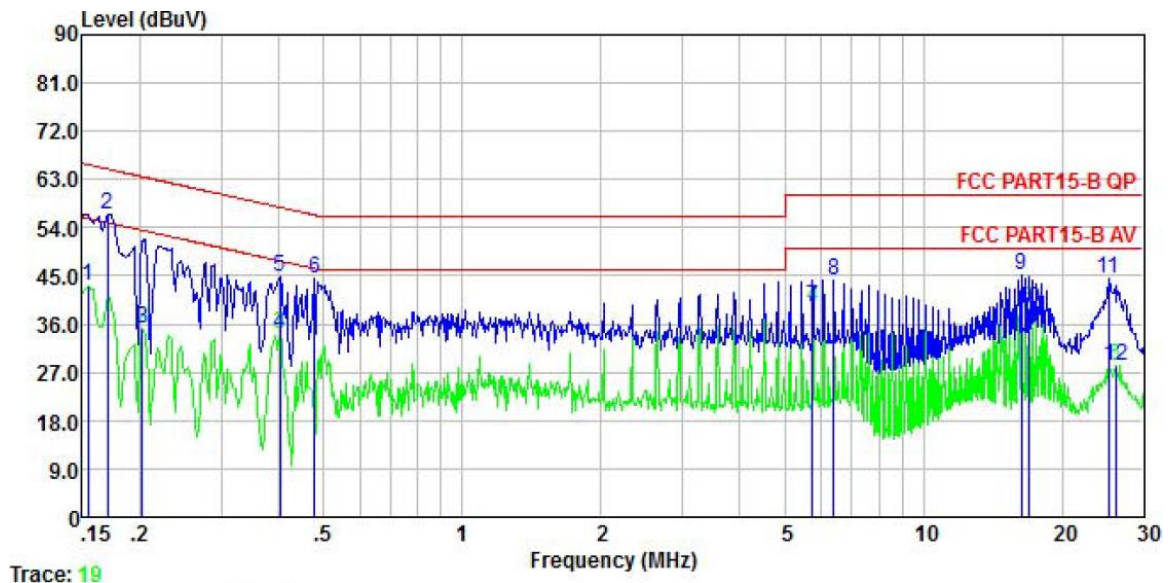


	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.170	39.96	0.04	0.01	40.01	54.94	-14.93	Average
2	0.170	58.49	0.04	0.01	58.54	64.94	-6.40	QP
3	0.406	45.37	0.04	0.04	45.45	57.73	-12.28	QP
4	0.417	35.99	0.04	0.04	36.07	47.51	-11.44	Average
5	0.683	33.84	0.04	0.03	33.91	56.00	-22.09	QP
6	2.033	28.41	0.07	0.20	28.68	46.00	-17.32	Average
7	6.089	34.39	0.14	0.09	34.62	50.00	-15.38	Average
8	6.089	39.13	0.14	0.09	39.36	60.00	-20.64	QP
9	16.750	36.13	0.29	0.16	36.58	50.00	-13.42	Average
10	16.750	42.65	0.29	0.16	43.10	60.00	-16.90	QP
11	25.864	41.04	0.37	0.21	41.62	60.00	-18.38	QP
12	26.418	26.73	0.37	0.21	27.31	50.00	-22.69	Average

Remark:

1. Level = Read level + LISN Factor + Cable Loss.

Product name:	5G digital mobile phone	Product model:	conquest-S20
Test by:	Mike	Test mode:	Charing mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz		



	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	43.06	0.05	0.01	43.12	55.78	-12.66	Average
2	0.170	56.51	0.05	0.01	56.57	64.94	-8.37	QP
3	0.202	35.01	0.04	0.04	35.09	53.54	-18.45	Average
4	0.402	33.98	0.04	0.04	34.06	47.81	-13.75	Average
5	0.402	44.78	0.04	0.04	44.86	57.81	-12.95	QP
6	0.479	44.49	0.04	0.03	44.56	56.36	-11.80	QP
7	5.744	38.84	0.12	0.09	39.05	50.00	-10.95	Average
8	6.386	44.07	0.13	0.09	44.29	60.00	-15.71	QP
9	16.312	44.61	0.26	0.16	45.03	60.00	-14.97	QP
10	16.928	38.38	0.27	0.16	38.81	50.00	-11.19	Average
11	25.188	43.80	0.36	0.19	44.35	60.00	-15.65	QP
12	26.139	27.78	0.37	0.21	28.36	50.00	-21.64	Average

Remark:

1. Level = Read level + LISN Factor + Cable Loss.

6.4 20dB Bandwidth

Test Frequency (kHz)	20dB bandwidth (kHz)	Limits
126.5	246	N/A
202.5	245	

Remark: For report purpose only.

Test plot as follows:

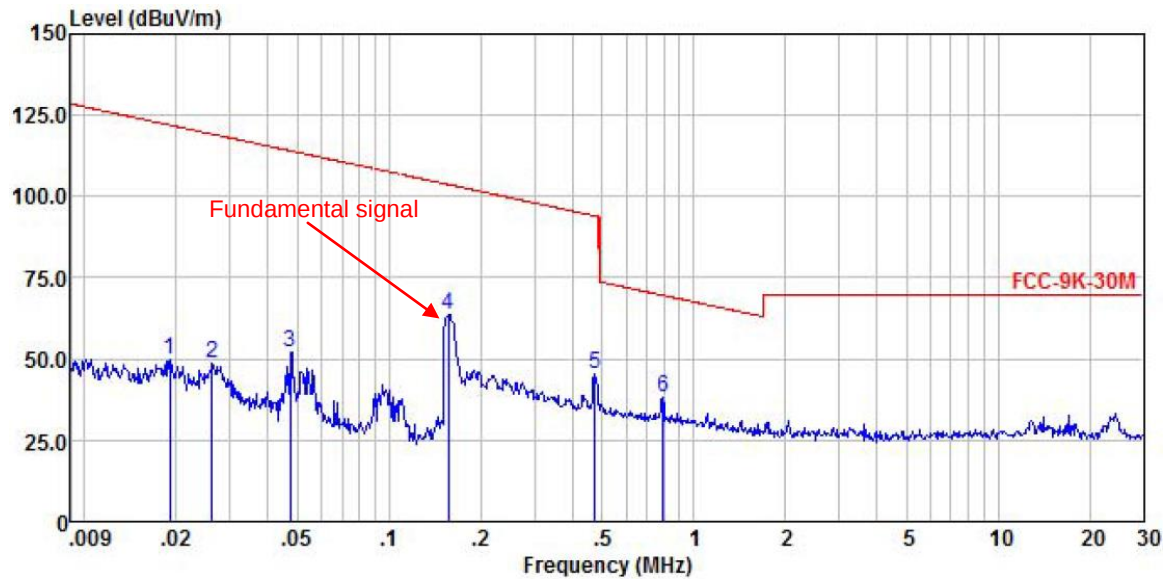


6.5 Field Strength of Fundamental

Peak Value					
Test Frequency (kHz)	H-field @3m (dBμV)	Limit @3m (dBμV)	Margin (dB)	Polarization	Result
158.00	67.88	103.6	35.72	Horizontal	Pass
158.00	62.30	103.6	41.30	Vertical	Pass
Average Value					
Test Frequency (kHz)	H-field@3m (dBμV)	Limit@3m (dBμV)	Margin (dB)	Polarization	Result
158.00	55.64	63.65	8.01	Horizontal	Pass
158.00	56.12	63.65	7.53	Vertical	Pass
Remark: Pre-scan 125.0kHz~203.0kHz of all frequency point channel, found 158kHz frequency point of field strength was worse case, so the report only reflects the worse mode.					

6.6 Field Strength of Spurious Emissions

Product Name:	5G digital mobile phone	Product Model:	conquest-S20
Test By:	Mike	Test mode:	Charing mode
Test Frequency:	9 kHz – 30 MHz	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz		

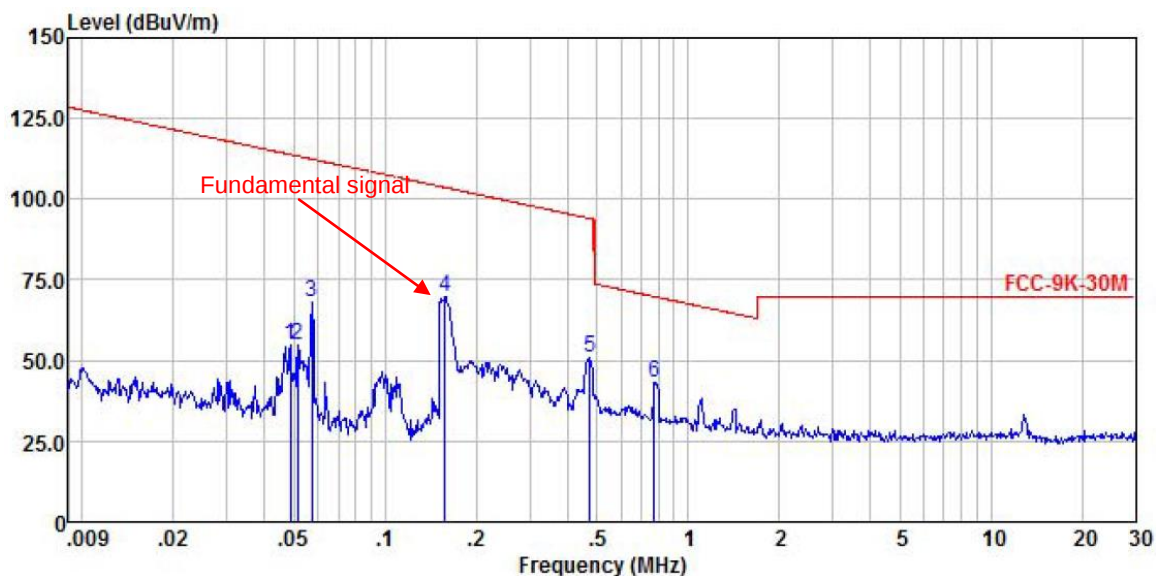


	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	0.019	29.49	20.32	0.01	0.00	49.82	122.02
2	0.026	28.21	20.24	0.01	0.00	48.46	119.20
3	0.047	31.64	20.56	0.02	0.00	52.22	114.06
4	0.156	43.47	20.22	0.03	0.00	63.72	103.74
5	0.475	24.75	20.78	0.07	0.00	45.60	94.07
6	0.792	17.38	20.60	0.09	0.00	38.07	69.64

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

Product Name:	5G digital mobile phone	Product Model:	conquest-S20
Test By:	Mike	Test mode:	Charing mode
Test Frequency:	9 kHz – 30 MHz	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz		



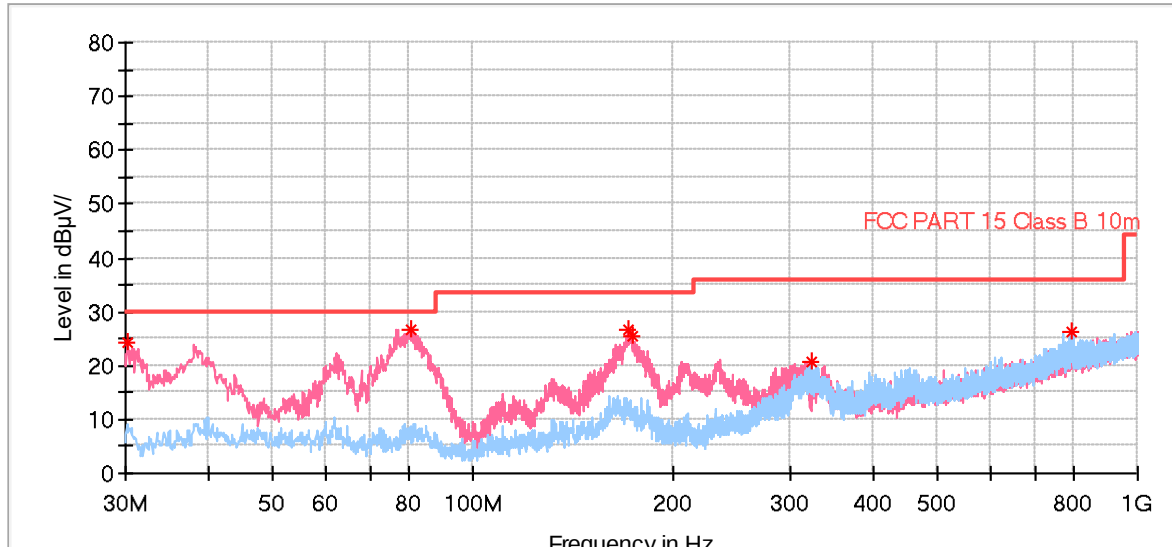
	Read	Antenna	Cable	Preamp	Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	0.049	34.31	20.58	0.02	0.00	54.91	113.84	-58.93 QP
2	0.051	33.92	20.59	0.02	0.00	54.53	113.35	-58.82 QP
3	0.057	47.48	20.56	0.02	0.00	68.06	112.44	-44.38 QP
4	0.158	49.30	20.22	0.03	0.00	69.55	103.67	-34.12 QP
5	0.475	29.99	20.78	0.07	0.00	50.84	94.07	-43.23 QP
6	0.773	22.26	20.61	0.09	0.00	42.96	69.85	-26.89 QP

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

Product Name:	5G digital mobile phone	Product Model:	conquest-S20
Test By:	Mike	Test mode:	Charing mode
Test Frequency:	30 MHz – 1000 MHz	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz		

Full Spectrum



Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.291000	24.22	30.00	5.78	100.0	V	38.0	-17.6
80.440000	26.68	30.00	3.32	100.0	V	25.0	-20.1
171.038000	26.67	33.50	6.83	100.0	V	54.0	-16.5
173.366000	25.54	33.50	7.96	100.0	V	54.0	-16.7
322.746000	20.68	36.00	15.32	100.0	H	300.0	-13.8
798.337000	26.22	36.00	9.78	100.0	H	249.0	-2.5

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

-----End of report-----