

# FCC Test Report

## FCC ID: 2AOWK-5002

**Product:** 5G Smart Phone

**Trade Mark:** ulefone

**Model Number:** GQ5002

Armor 12 5G, Armor 12T 5G, Armor 12P 5G,

**Family Model:** Armor 12E 5G, Armor 12S 5G, Armor 10 5G,  
Armor 11 5G, Armor 11T 5G, Armor 13 5G

**Report No.:** STR210706002009E

**Prepared for**

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**Prepared by**

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**TEST RESULT CERTIFICATION****Applicant's name**.....: Shenzhen Gotron Electronic CO.,LTD.

Address.....: 7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China

**Manufacturer's Name**.....: Shenzhen Gotron Electronic CO.,LTD.

Address.....: 7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China

**Product description**

Product name.....: 5G Smart Phone

Model and/or type reference ..: GQ5002

Family Model.....: Armor 12 5G, Armor 12T 5G, Armor 12P 5G, Armor 12E 5G, Armor 12S 5G, Armor 10 5G, Armor 11 5G, Armor 11T 5G, Armor 13 5G

FCC Part15B

**Standards**.....: ANSI C63.4:2014

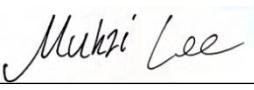
This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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**Date of Test**.....:

Date (s) of performance of tests.....: Jul 06. 2021 ~Sep 07, 2021

Date of Issue.....: Sep 07, 2021

Test Result.....: **Pass**Testing Engineer : 

(Mukzi Lee)

Authorized Signatory :



(Alex Li)

Table of Contents	Page
<b>1 . TEST SUMMARY</b>	4
<b>1.1 TEST FACILITY</b>	5
<b>1.2 MEASUREMENT UNCERTAINTY</b>	5
<b>2 . GENERAL INFORMATION</b>	6
<b>2.1 GENERAL DESCRIPTION OF EUT</b>	6
<b>2.2 DESCRIPTION OF TEST SETUP</b>	8
<b>2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL</b>	9
<b>2.4 MEASUREMENT INSTRUMENTS LIST</b>	10
<b>3 . EMC EMISSION TEST</b>	11
<b>3.1 CONDUCTED EMISSION MEASUREMENT</b>	11
<b>3.1.1 POWER LINE CONDUCTED EMISSION</b>	11
<b>3.1.2 TEST PROCEDURE</b>	12
<b>3.1.3 TEST SETUP</b>	12
<b>3.1.4 EUT OPERATING CONDITIONS</b>	12
<b>3.1.5 TEST RESULTS</b>	13
<b>3.2 RADIATED EMISSION MEASUREMENT</b>	15
<b>3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT</b>	15
<b>3.2.2 TEST PROCEDURE</b>	15
<b>3.2.3 TEST SETUP</b>	16
<b>3.2.4 TEST RESULTS</b>	17
<b>3.2.5 TEST RESULTS(1000~18000MHz)</b>	19

**. TEST SUMMARY**

Test procedures according to the technical standards:

<b>EMC Emission</b>				
Standard	Test Item	Limit	Judgment	Remark
FCC Part15B ANSI C63.4: 2014	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	

**NOTE:**

- (1) 'N/A' denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed.

**TEST FACILITY**

Shenzhen NTEK Testing Technology Co., Ltd

Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

IC-Registration                    The Certificate Registration Number is 9270A.

    CAB identifier:CN0074

FCC- Accredited                    Test Firm Registration Number: 463705.

    Designation Number: CN1184

**MEASUREMENT UNCERTAINTY**

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**.

**A. Conducted Measurement :**

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
NTEKC01	ANSI	150 KHz ~ 30MHz	±2.80dB	

**B. Radiated Measurement :**

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
NTEKA01	ANSI	30MHz~1000MHz	±2.64dB	
		1GHz~6GHz	±2.40dB	
		6GHz~26.5GHz	±2.52dB	

**. GENERAL INFORMATION****GENERAL DESCRIPTION OF EUT**

Equipment	5G Smart Phone				
Trade Mark	ulefone				
Model Name	GQ5002				
Family Model	Armor 12 5G, Armor 12T 5G, Armor 12P 5G, Armor 12E 5G, Armor 12S 5G, Armor 10 5G, Armor 11 5G, Armor 11T 5G, Armor 13 5G				
Model Difference	All the model are the same circuit and RF module, except the Model names.				
Product Description	<p>The EUT is a 5G Smart Phone.</p> <table border="1"><tr><td>Connecting I/O port:</td><td>Micro USB, Earphone</td></tr><tr><td>Operation Frequency:</td><td>5.825GHz</td></tr></table> <p>Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.</p>	Connecting I/O port:	Micro USB, Earphone	Operation Frequency:	5.825GHz
Connecting I/O port:	Micro USB, Earphone				
Operation Frequency:	5.825GHz				
Power Source	DC 3.85V/ 5180mAh, 19.94Wh from battery or DC 5V from Adapter.				
Adapter	<p>Model: HJ-FC038K7-US</p> <p>Input: AC 100-240V~50/60Hz 0.6A</p> <p>Output: DC 5.0V---3.0A DC 9.0V---2.0A DC 12.0V---1.5A</p>				
HW Version	A200-04				
SW Version	Armor 12 5G_AH1_EEA_V01				

**DESCRIPTION OF TEST MODES**

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	USB Data Transmission
Mode 2	TF card Playing
Mode 3	REC
Mode 4	FM
Mode 5	GPS

For Conducted Test	
Final Test Mode	Description
Mode 1	USB Data Transmission
Mode 2	TF card Playing
Mode 3	REC
Mode 4	FM
Mode 5	GPS

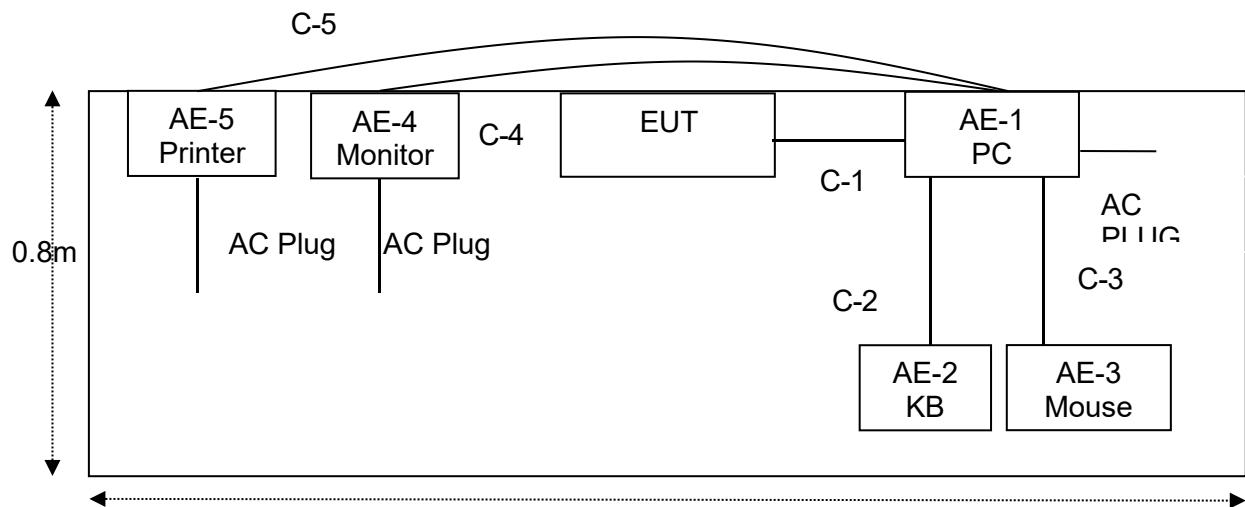
For Radiated Test	
Final Test Mode	Description
Mode 1	USB Data Transmission
Mode 2	TF card Playing
Mode 3	REC
Mode 4	FM
Mode 5	GPS

Note: Final Test Mode: Through Pre-scan, find the mode 1 is the worst case.

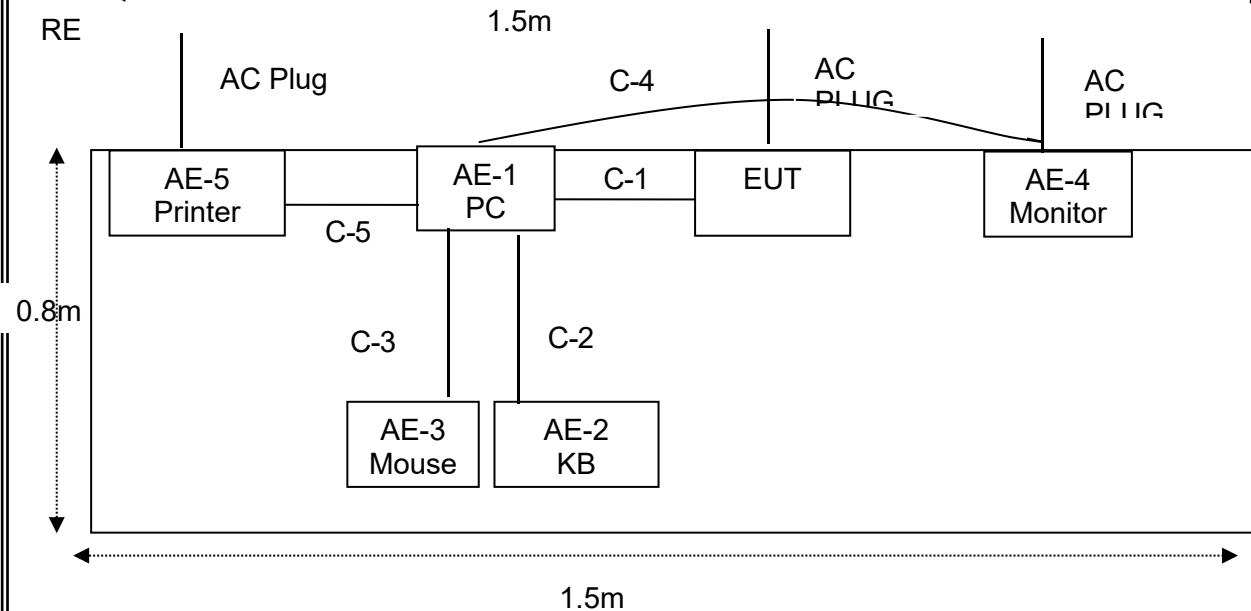
Only the worst case mode is recorded in the report.

DESCRIPTION OF TEST SETUP

CE



RE



**DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
AE-1	PC	DELL	FT4Y23X	N/A	Peripherals
AE-2	KB	N/A	N/A	N/A	Peripherals
AE-3	Mouse	DELL	MS111-P	N/A	Peripherals
AE-4	Monitor	DELL	IN2020MB	N/A	Peripherals
AE-5	Printer	Canon	L11121E	N/A	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Length	Note
C-1	USB Cable	NO	NO	1.0m	
C-2	USB Cable	NO	NO	1.2m	
C-3	USB Cable	NO	NO	1.2m	
C-4	HDMI Cable	YES	YES	1.0m	
C-5	USB Cable	NO	NO	1.2m	
C-6	Earphone Cable	NO	NO	1.2m	

**Note:**

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in «Length» column.
- (3) "YES" means "shielded" "with core"; "NO" means "unshielded" "without core".

### MEASUREMENT INSTRUMENTS LIST

#### Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2021.04.27	2022.04.26	1 year
2	Test Receiver	R&S	ESPI	101318	2021.04.27	2022.04.26	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2021.03.29	2022.03.28	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2021.04.27	2022.04.26	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2021.04.27	2022.04.26	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2021.03.29	2022.03.28	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2021.04.27	2022.04.26	1 year
8	Amplifier	EMC	EMC051835SE	980246	2021.04.27	2022.04.26	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2021.04.27	2022.04.26	1 year
10	Power Meter	DARE	RPR3006W	15I00041S NO84	2021.04.27	2022.04.26	1 year
11	Power Sensor	R&S	URV4-Z4	0395.1619.05	2021.04.27	2022.04.26	1 year
12	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2019.06.28	2022.06.27	3 year
13	High Test Cable(1G-40 GHz)	N/A	R-03	N/A	2019.06.28	2022.06.27	3 year
14	High Test Cable(1G-40 GHz)	N/A	R-04	N/A	2019.06.28	2022.06.27	3 year
15	Test Receiver	R&S	ESCI	101160	2021.04.27	2022.04.26	1 year

#### AC Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2021.04.27	2022.04.26	1 year
2	LISN	R&S	ENV216	101313	2021.04.27	2022.04.26	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	2021.04.27	2022.04.26	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2020.05.11	2023.05.10	3 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2020.05.11	2023.05.10	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2020.05.11	2023.05.10	3 year
7	Test Cable (9KHz-30MHz)	N/A	C03	N/A	2020.05.11	2023.05.10	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable which is scheduled for calibration every 3 years.

**. EMC EMISSION TEST****CONDUCTED EMISSION MEASUREMENT****POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)**

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

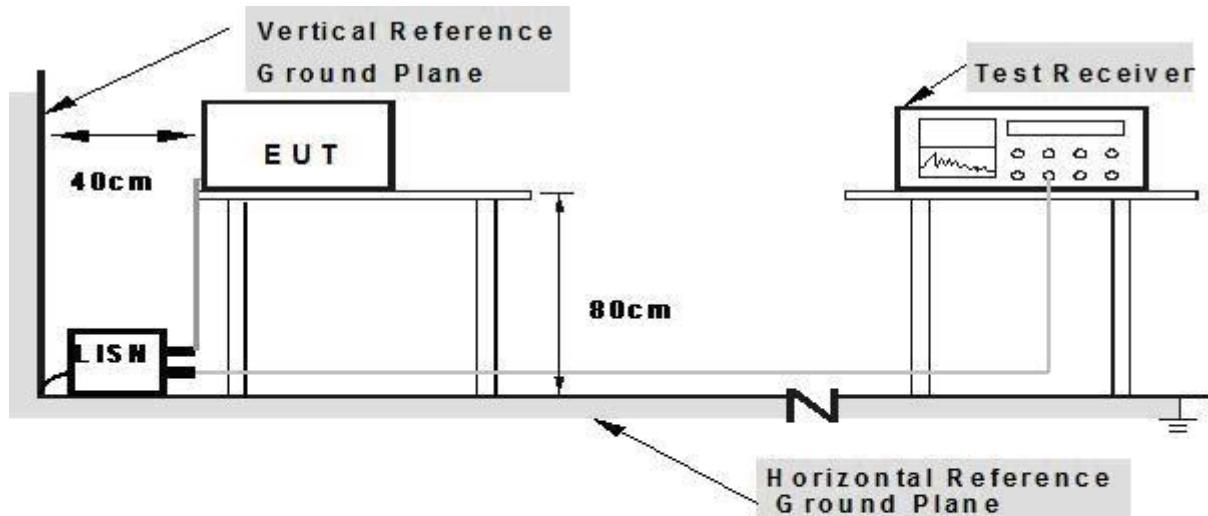
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

#### TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### TEST SETUP



**Note: 1. Support units were connected to second LISN.**  
**2. Both of LISNs (AMM) are 80 cm from EUT and at least 80 cm from other units and other metal planes**

#### EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

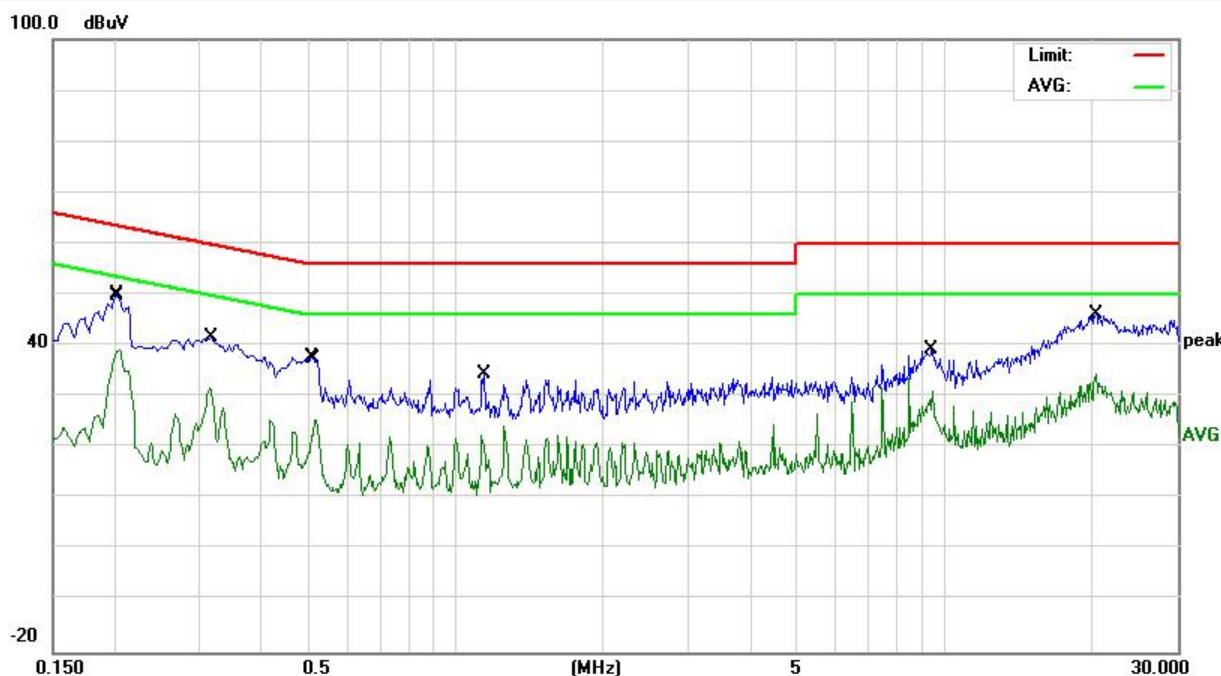
## TEST RESULTS

EUT:	5G Smart Phone	Model Name.:	GQ5002
Temperature:	24.5 °C	Relative Humidity:	52%
Pressure:	1010hPa	Test Date:	2021-7-13
Test Mode:	Mode 1	Phase :	L
Test Voltage:	DC 5V from PC AC 120V/60Hz		

Frequency (MHz)	Reading Level (dB $\mu$ V)	Correct Factor (dB)	Measure-ment (dB $\mu$ V)	Limits (dB $\mu$ V)	Margin (dB)	Remark
0.2020	40.32	9.63	49.95	63.52	-13.57	QP
0.2060	29.53	9.63	39.16	53.36	-14.20	AVG
0.3140	22.27	9.63	31.90	49.86	-17.96	AVG
0.3180	32.08	9.63	41.71	59.76	-18.05	QP
0.5100	28.11	9.64	37.75	56.00	-18.25	QP
0.5180	15.86	9.65	25.51	46.00	-20.49	AVG
1.1340	12.66	9.75	22.41	46.00	-23.59	AVG
1.1420	24.59	9.75	34.34	56.00	-21.66	QP
9.4459	29.39	9.71	39.10	60.00	-20.90	QP
9.4779	21.41	9.71	31.12	50.00	-18.88	AVG
20.4060	36.36	9.85	46.21	60.00	-13.79	QP
20.4060	24.60	9.85	34.45	50.00	-15.55	AVG

## Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

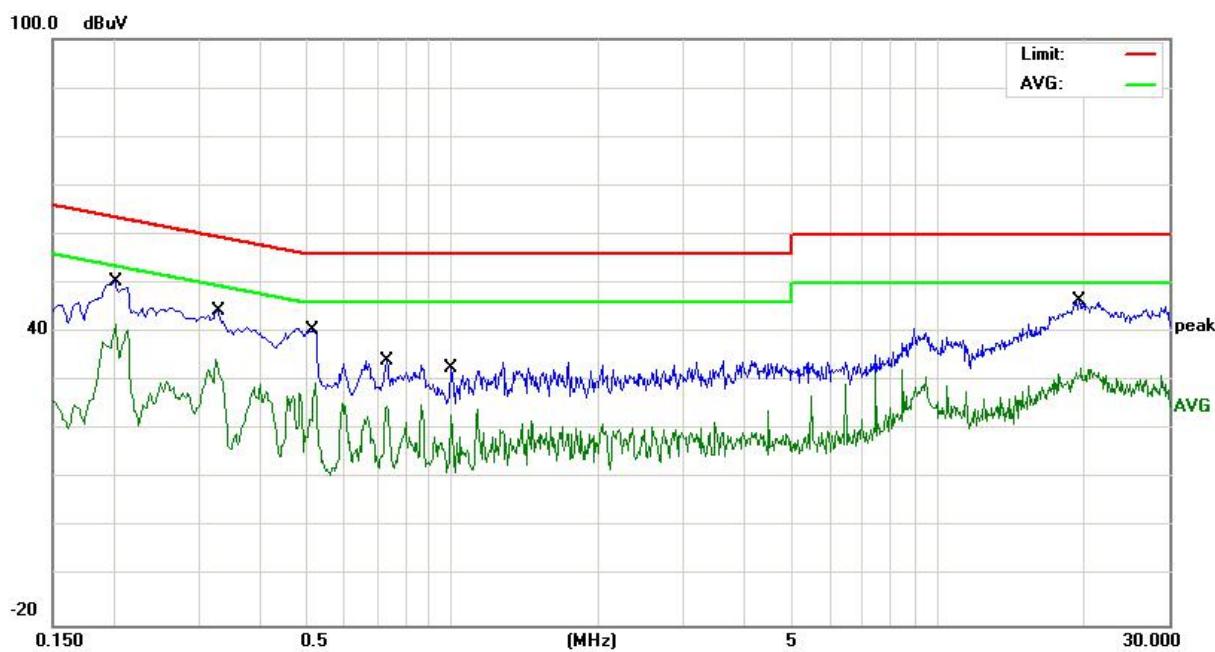


EUT:	5G Smart Phone	Model Name. :	GQ5002
Temperature:	24.5 °C	Relative Humidity:	52%
Pressure:	1010hPa	Test Date:	2021-7-13
Test Mode:	Mode 1	Phase :	N
Test Voltage:	DC 5V from PC AC 120V/60Hz		

Frequency (MHz)	Reading Level (dB $\mu$ V)	Correct Factor (dB)	Measure-ment (dB $\mu$ V)	Limits (dB $\mu$ V)	Margin (dB)	Remark
0.2020	40.63	9.63	50.26	63.52	-13.26	QP
0.2020	32.00	9.63	41.63	53.52	-11.89	AVG
0.3260	24.82	9.67	34.49	49.55	-15.06	AVG
0.3300	34.82	9.67	44.49	59.45	-14.96	QP
0.5180	30.74	9.73	40.47	56.00	-15.53	QP
0.5220	20.07	9.73	29.80	46.00	-16.20	AVG
0.7340	24.59	9.65	34.24	56.00	-21.76	QP
0.7340	15.10	9.65	24.75	46.00	-21.25	AVG
0.9940	13.45	9.75	23.20	46.00	-22.80	AVG
0.9980	22.96	9.75	32.71	56.00	-23.29	QP
19.6059	36.70	9.75	46.45	60.00	-13.55	QP
19.8219	22.76	9.75	32.51	50.00	-17.49	AVG

## Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



## RADIATED EMISSION MEASUREMENT

### LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

#### Notes:

- (1) The limit for radiated test was performed according to as following:  
FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

## TEST PROCEDURE

### Test Arrangement for Radiated Emissions up to 1 GHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

### Test Arrangement for Radiated Emissions above 1 GHz.

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Note: For the hand-held device, the EUT should be measured for all 3 axes and only the worst case is recorded in the report

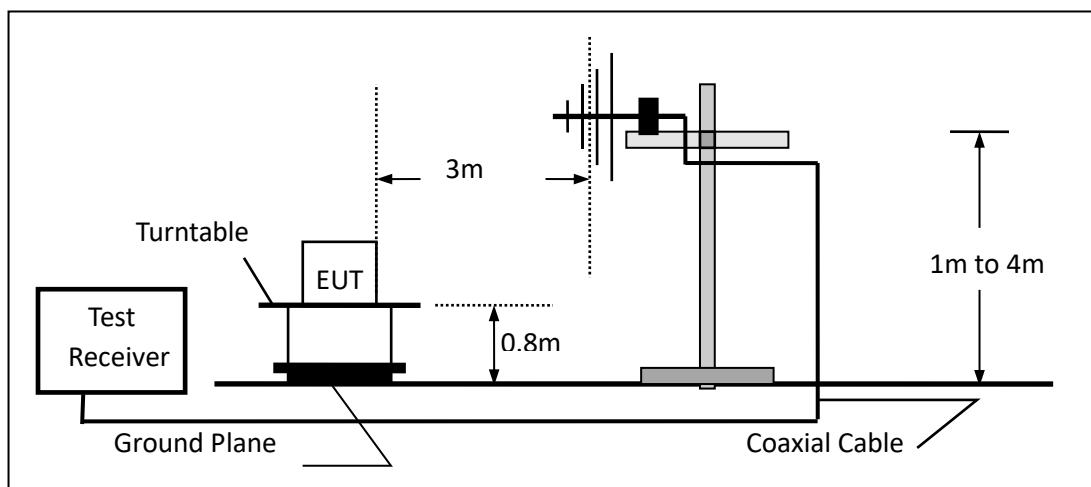
During the radiated emission test, according to ANSI C63.4-2014(4.2), the Spectrum Analyzer was Version 1.2

set with the following configurations:

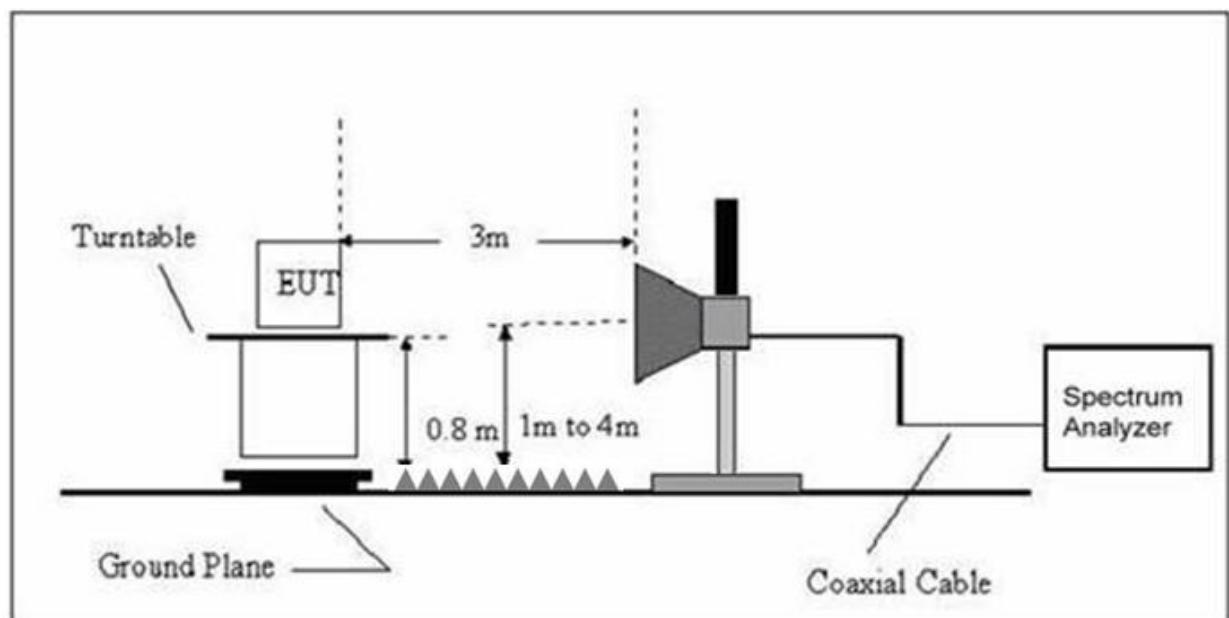
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Avg	1 MHz	10 Hz

### TEST SETUP

For Radiated Emission 30~1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



## TEST RESULTS

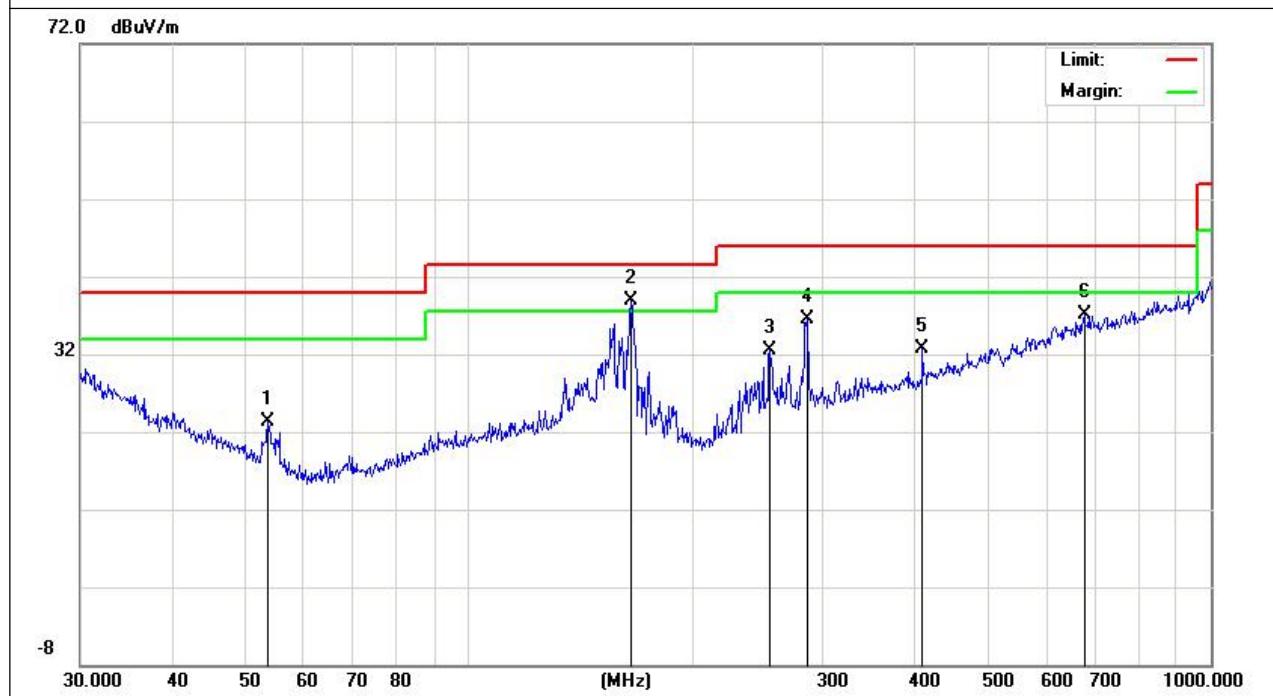
## TEST RESULTS (30~1000 MHz)

EUT:	5G Smart Phone	Model Name:	GQ5002
Temperature:	24.5 °C	Relative Humidity:	55%
Pressure:	1010 hPa	Test Date :	2021-7-15
Test Mode :	Mode 1	Polarization :	Horizontal
Test Power :	DC 5V from PC AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	53.6932	10.26	13.09	23.35	40.00	-16.65	QP
H	165.4866	21.46	17.43	38.89	43.50	-4.61	QP
H	254.7283	11.74	20.72	32.46	46.00	-13.54	QP
H	285.9778	15.77	20.64	36.41	46.00	-9.59	QP
H	408.9460	8.83	23.94	32.77	46.00	-13.23	QP
H	675.2080	7.44	29.70	37.14	46.00	-8.86	QP

## Remark:

Factor = Antenna Factor + Cable Loss - Amplifier.



EUT:	5G Smart Phone	Model Name :	GQ5002
Temperature:	24.5 °C	Relative Humidity:	55%
Pressure:	1010 hPa	Test Date :	2021-7-15
Test Mode :	Mode 1	Polarization :	Vertical
Test Power :	DC 5V from PC AC 120V/60Hz		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	53.6931	19.31	13.09	32.40	40.00	-7.60	QP
V	126.7723	13.42	18.03	31.45	43.50	-12.05	QP
V	134.5592	21.83	18.37	40.20	43.50	-3.30	QP
V	165.4866	19.93	17.43	37.36	43.50	-6.14	QP
V	240.8302	18.05	18.60	36.65	46.00	-9.35	QP
V	616.3718	10.48	28.64	39.12	46.00	-6.88	QP

Remark:

Factor = Antenna Factor + Cable Loss - Amplifier.



## TEST RESULTS(1000~18000MHz)

EUT:	5G Smart Phone	Model Name :	GQ5002
Temperature:	24.5 °C	Relative Humidity:	55%
Pressure:	1010 hPa	Test Date :	2021-7-15
Test Mode :	Mode 1		
Test Power :	DC 5V from PC AC 120V/60Hz		

All the modulation modes have been tested, and the worst result was report as below:

Polar (H/V)	Frequency	Reading	Correc t	Result	Limit	Over Limit	Remar k
	(MHz)	(dBuV/m)	dB/m	(dBuV/m )	(dBuV/m )	(dB)	
V	2870.00	39.15	7.98	47.13	74.00	26.87	peak
V	3422.50	36.10	9.83	45.93	74.00	28.07	peak
V	4230.00	36.04	11.39	47.43	74.00	26.57	peak
V	4782.50	35.67	12.01	47.68	74.00	26.32	peak
V	6312.50	34.10	13.70	47.80	74.00	26.20	peak
V	10477.50	33.45	19.09	52.54	74.00	21.46	peak
H	2487.5	39.23	6.17	45.4	74.00	-28.6	peak
H	2955	39.39	8.56	47.95	74.00	-26.05	peak
H	3422.5	36.21	9.83	46.04	74.00	-27.96	peak
H	4230	36.8	11.39	48.19	74.00	-25.81	peak
H	5420	34.34	13.31	47.65	74.00	-26.35	peak
H	8947.5	33.53	17.94	51.47	74.00	-22.53	peak

Remark:

Result = Reading + Correct, Over Limit= Result - Limit

Note: Only the worst results data points are reported in the report.

Other emissions are attenuated 20dB below the limit that does not recorded in the report.

END OF REPORT