FCC CFR47 PART 27
CERTIFICATION TEST REPORT
FCC ID: 2AOWK-5013

Product:	Mobile Phone
Trade Mark:	ulefone
Model Number:	GQ5013
Family Model:	Armor 30 Pro, Armor 30 Ultra, Armor 30T Ultra, Armor 30T Pro, Armor 30 Lite, Armor 30s, Armor 30s Pro
Report No.:	S24120305305007
Issue Date:	Mar. 21, 2025

Prepared for

Shenzhen Gotron Electronic CO.,LTD.

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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 name ..... :	Mobile Phone
Trade Mark ..... :	ulefone
Model and/or type reference .:	GQ5013
Family Model ..... :	Armor 30 Pro, Armor 30 Ultra, Armor 30T Ultra, Armor 30T Pro, Armor 30 Lite, Armor 30s, Armor 30s Pro
Test Sample number..... :	S241203053005
Date of Test..... :	Dec. 03, 2024 ~ Mar. 19, 2025
Standards ..... :	FCC CFR 47 Part 27
Test procedure	ANSI C63.26:2015 ANSI/TIA-603-E-2016

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

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Prepared By :	Reviewed By :	Approved By :
Gavan Zhang	Aaron Cheng	Alex Li
(Project Engineer)	(Supervisor)	(Manager)

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Equipment	Mobile Phone
Trade Mark	ulefone
Model Name	GQ5013
Family Model	Armor 30 Pro, Armor 30 Ultra, Armor 30T Ultra, Armor 30T Pro, Armor 30 Lite, Armor 30s, Armor 30s Pro
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2AOWK-5013
Frequency Bands:	U.S. Bands: ☒NR FDD Band 71 Uplink: 663MHz-698MHz, Downlink: 617MHz-652MHz;
Frequency Range:	NR FDD: n71
Type of Modulation:	DFT-s-OFDM:PI/2 BPSK/QPSK/16-QAM/64QAM/256QAM CP-OFDM: QPSK/16-QAM/64QAM/256QAM
Subcarrier spacing	☒15KHz, ☒30KHz, ☐60KHz
NR architecture	☒SA , ☐NSA
Antenna:	IFA Antenna
Antenna gain:	N71: -4 dBi;
Adapter	Model: HJ-PD66W-US Input: 100-240V~50/60Hz, 1.5A Output: 5.0V⎓3.0A OR 9.0V⎓3.0A OR 12.0V⎓3.0A OR 15.0V⎓3.0A OR 20.0V⎓3.25A OR 11.0V⎓6.0A 66W MAX
Battery	DC 3.87V, 12800mAh, 49.536Wh
Power supply	DC 3.87V from battery or DC 5V/9V/11V/12V/15V/20V from adapter
Extreme Vol. Limits:	DC 3.29V to DC 4.45V (Nominal DC 3.87V) (Note 1)
HW Version	N/A
SW Version	N/A
** Note1: The High Voltage 4.45V and Low Voltage 3.29V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AOWK-5013** filing to comply with the FCC Part 27.

1.3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 27, ANSI C63.26:2015.

1.4 TEST FACILITY

The test site used to collect the radiated data is located at:

ShenZhen NTEK Testing Technology Co., Ltd.
No. 24 Xinfa East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China
The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.26:2015& ANSI C63.4: 2014.

FCC Registration No.:463705

IC Registration No.:9270A,

CNAS Registration No.:L5516

1.5 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, 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 %.

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5dB

1.6 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

1.7 WORST-CASE CONFIGURATION AND MODE

The worst-case scenario for all measurements is based on the investigation results.
The device has NR Bands of: Band 71.
The RB Size was selected to measure for peak or average ERP and EIRP, which was based on the conducted power verification baseline data.
For the fundamental investigation of radiated emissions, the EUT is investigated for vertical and horizontal antenna orientations and X Y and Z orientations of the EUT alone. After the investigations the worst case was determined to be at X orientation for all LTE bands.

1.8 SUMMARY OF TEST RESULTS

FCC Part27, Subpart L, KDB 971168 D01 Power Meas License Digital Systems v03			
FCC Rule	**Test Item**	**Verdict**	**Remark**
2.1046	Conducted Output Power	PASS	
27.50(d)(5) KDB 971168 D01 Clause 5.7	Peak-to-Average Ratio	PASS	
2.1049 KDB 971168 D01 Clause 4.2	Occupied Bandwidth	PASS	
2.1051 27.53(c), (g), (h) KDB 971168 D01 Clause 6	Band Edge	PASS	
27.50(b)(10), (c)(10) KDB 971168 D01 Clause 5.6	Effective Radiated Power	PASS	
27.50(h)(2), (d)(4) KDB 971168 D01 Clause 5.6	Equivalent Isotropic Radiated Power	PASS	
2.1053 27.53(c)(g)(h)(m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	
2.1051 27.53(c)(g)(h)(m) KDB 971168 D01 Clause 6	Conducted Emission	PASS	

Remark:

1. “N/A” denotes test is not applicable in this Test Report.
2. All test items were verified and recorded according to the standards and without any deviation during the test.
3. No modifications are made to the EUT during all test items.

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

2.3 CONFIGURATION OF EUT SYSTEM

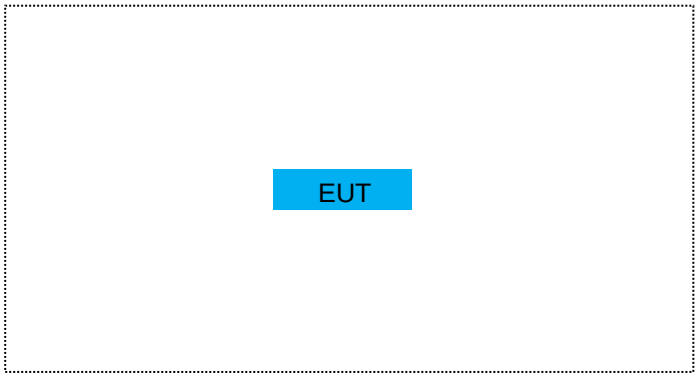
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	GQ5013	FCC ID: 2AOWK-5013	EUT

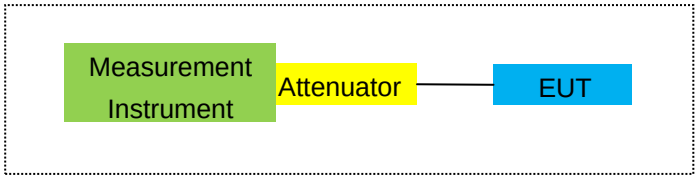
Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.

2.4 TEST SETUP

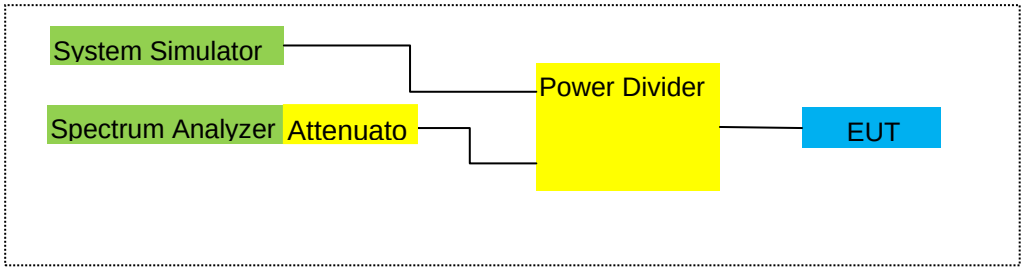
For Radiated Test Cases



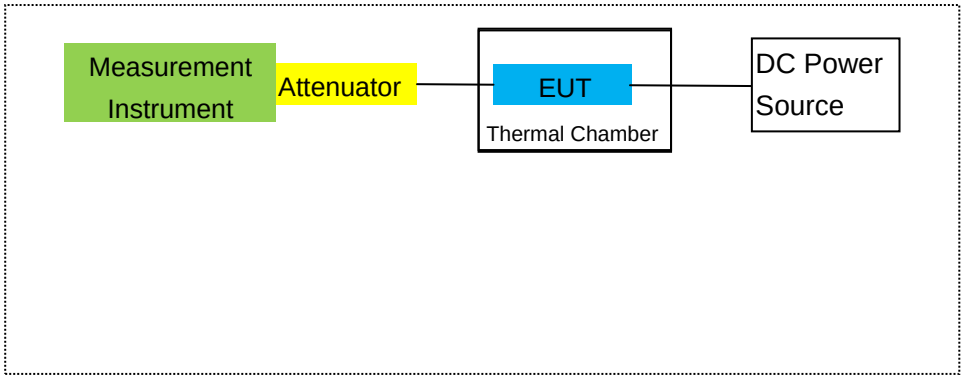
For Conducted Output Power



For Peak-to Average Ratio, Occupied Bandwidth, Conducted Band edge and Conducted Spurious Emission



For Frequency Stability



Note: EUT built-in battery-powered, the battery is fully-charged.

3.TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2024.04.25	2025.04.24	1 year
2	Test Receiver	R&S	ESPI	101318	2024.04.26	2025.04.25	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2024.05.12	2025.05.11	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2024.05.12	2027.05.11	3 year
7	Amplifier	EM	EM-30180	060538	2024.04.26	2025.04.25	1 year
8	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
9	Power Meter	R&S	NRVS	100696	2024.04.26	2025.04.25	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2024.04.26	2025.04.25	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2024.04.26	2025.04.25	1 year
15	LISN	R&S	ENV216	101313	2024.04.25	2025.04.24	1 year
16	LISN	EMCO	3816/2	00042990	2024.04.25	2025.04.24	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
18	Field strength probe	narda	EP601	711WX81278	2024.03.20	2025.03.19	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Attenuator	MCE	24-10-34	BN9258	N/A	N/A	N/A
23	Spectrum Analyzer	Agilent	E4440A	MY41000130	2024.04.26	2025.04.25	1 year
24	EMI Test Receiver	R&S	ESCI	101160	2024.04.26	2025.04.25	1 year
25	Universal Radio Communication Tester	R&S	CMU200	105747	2024.04.26	2025.04.25	1 year

26	High and Low Temperature Box	WEISS	WT 20/40 EMC Simpac	58226119460030	2024.05.30	2027.05.29	3 year
27	DC Power Source	N/A	PS-6005D	20170402923	2024.04.25	2027.04.24	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2024.04.25	2025.04.24	1 year
29	Communication Tester	R&S	CMW500	148500	2024.05.30	2025.05.29	1 year
30	Radio Communication Analyzer	Anritsu	MT8821C	SN 6262186364	2024.04.25	2025.04.24	1 year
31	Radio Communication Test Station	Anritsu	MT8000A	SN 6262192315	2024.04.25	2025.04.24	1 year

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

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFtest	MTS 8200 NR	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	raditeq	RadiMation	2023.1.3	RadiatedTest
4	Farad	EZ-EMC_CE	AIT-03A	AC Conducted Test

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

NR Measurement Procedure:

All NR bands conducted power peak and average are obtained from the MT8821C telecommunication test set. The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS 38.521-1 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table Table 6.2.2.3-1: of the 3GPP TS 38.521-1 (V15.3.0) (07-2019).

Table 6.2.2.3-1: UE Power Class

EUTRA band	Class 1 (dBm)	Tolerance (dB)	Class 2 (dBm)	Tolerance (dB)	Class 3 (dBm)	Tolerance (dB)	Class 4 (dBm)	Tolerance (dB)
1					23	±2		
2					23	±2[2]		
3					23	±2[2]		
4					23	±2		
5					23	±2		
40					23	±2		
41					23	±2[2]		
42					23	+2/-3		
43					23	+2/-3		
44					23	+2/[-3]		
45					23	±2		
47			26	±2	23	±2		

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS 38.521-1 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of “NS_01”.3

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

MODES TESTED

NR Band 71

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §27.53(c)(g)(h)(m)

FCC: §2.1046,

LIMITS

The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is 65 + 10log10(P) = -35dBm in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

TEST PROCEDURE

The transmitter output was connected to a CMW500Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

Set a marker to point the corresponding band edge frequency in each test case.

Set display line

Set resolution bandwidth to at least 1% of emission bandwidth.

MODES TESTED

NR Band 71

RESULTS

Test data reference attachment.

Note: Both DFT-s-OFDM:PI/2 BPSK/QPSK/16-QAM/64QAM/256QAM

CP-OFDM: QPSK/16-QAM/64QAM/256QAM has been tested, the worst case is CP_QPSK mode, the report just reported the worst case.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §27.53(c)(g)(h)(m)

LIMITS

The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.
The minimum permissible attenuation level for Band 7 is as following.
Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.
Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.
For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is 65 + 10log10(P) = -35dBm in a 6.25kHz bandwidth.
Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.
For each out of band emissions measurement:
Set display line
Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

NR Band 71

MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

Test data reference attachment.

Note: Both DFT-s-OFDM:PI/2 BPSK/QPSK/16-QAM/64QAM/256QAM

CP-OFDM: QPSK/16-QAM/64QAM/256QAM has been tested, the worst case is CP_QPSK mode, the report just reported the worst case.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §27.50 (h)(2), (b)(10), (c)(10), (d)(4)

LIMITS:

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.
27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.
27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.
27.50 (h)(2)Mobile and other user stations in the 2500–2570 MHz and 2620–2690 MHz bands. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17
KDB 971168 v02r01 RF power output using broadband peak and average power meter method.
KDB 971168 D01 Power Meas License Digital Systems v02r01, “Measurement Guidance for Certification of Licensed Digital Transmitters”

MODES TESTED

NR Band 71

RESULTS

Pass

8.2 NR BAND 71

Radiated Power (EIRP) for N71 /SCS (30kHz)										
Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
10.0MHz DFT_QPSK	1@1	668	-2.81	5.12	29.16	2.15	19.08	80.910	Horizontal	Pass
		680.5	-2.36	5.18	28.92	2.15	19.23	83.753	Horizontal	Pass
		693	-2.2	5.23	28.91	2.15	19.33	85.704	Horizontal	Pass
15.0MHz DFT_QPSK	1@1	670.5	-2.6	5.12	28.97	2.15	19.10	81.283	Horizontal	Pass
		680.5	-2.4	5.18	28.92	2.15	19.19	82.985	Horizontal	Pass
		690.5	-2.08	5.22	28.91	2.15	19.46	88.308	Horizontal	Pass
20.0MHz DFT_QPSK	1@1	673	-2.53	5.13	28.97	2.15	19.16	82.414	Horizontal	Pass
		680.5	-2.36	5.18	28.92	2.15	19.23	83.753	Horizontal	Pass
		688	-2.11	5.21	28.89	2.15	19.42	87.498	Horizontal	Pass

Radiated Power (EIRP) for N71 /SCS (30kHz)										
Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
10.0MHz DFT_QPSK	1@1	668	-4.21	5.12	29.16	2.15	17.68	58.614	Vertical	Pass
		680.5	-3.68	5.18	28.92	2.15	17.91	61.802	Vertical	Pass
		693	-4.48	5.23	28.91	2.15	17.05	50.699	Vertical	Pass
15.0MHz DFT_QPSK	1@1	670.5	-4.42	5.12	28.97	2.15	17.28	53.456	Vertical	Pass
		680.5	-3.88	5.18	28.92	2.15	17.71	59.020	Vertical	Pass
		690.5	-3.97	5.22	28.91	2.15	17.57	57.148	Vertical	Pass
20.0MHz DFT_QPSK	1@1	673	-4.5	5.13	28.97	2.15	17.19	52.360	Vertical	Pass
		680.5	-4.54	5.18	28.92	2.15	17.05	50.699	Vertical	Pass
		688	-3.83	5.21	28.89	2.15	17.70	58.884	Vertical	Pass

Radiated Power (EIRP) for N71 /SCS (30kHz)										
Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
10.0MHz DFT_16QAM	1@1	668	-3.78	5.12	29.16	2.15	18.11	64.714	Horizontal	Pass
		680.5	-3.26	5.18	28.92	2.15	18.33	68.077	Horizontal	Pass
		693	-3.14	5.23	28.91	2.15	18.39	69.024	Horizontal	Pass
15.0MHz DFT_16QAM	1@1	670.5	-3.46	5.12	28.97	2.15	18.24	66.681	Horizontal	Pass
		680.5	-3.24	5.18	28.92	2.15	18.35	68.391	Horizontal	Pass
		690.5	-2.94	5.22	28.91	2.15	18.60	72.444	Horizontal	Pass
20.0MHz DFT_16QAM	1@1	673	-3.47	5.13	28.97	2.15	18.22	66.374	Horizontal	Pass
		680.5	-3.3	5.18	28.92	2.15	18.29	67.453	Horizontal	Pass
		688	-3.04	5.21	28.89	2.15	18.49	70.632	Horizontal	Pass

Radiated Power (EIRP) for N71 /SCS (30kHz)										
Mode	RB/ RB Position	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Factor Gain (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP	
10.0MHz DFT_16QAM	1@1	668	-4.72	5.12	29.16	2.15	17.17	52.119	Vertical	Pass
		680.5	-3.78	5.18	28.92	2.15	17.81	60.395	Vertical	Pass
		693	-3.77	5.23	28.91	2.15	17.76	59.704	Vertical	Pass
15.0MHz DFT_16QAM	1@1	670.5	-3.79	5.12	28.97	2.15	17.91	61.802	Vertical	Pass
		680.5	-3.89	5.18	28.92	2.15	17.70	58.884	Vertical	Pass
		690.5	-4.42	5.22	28.91	2.15	17.12	51.523	Vertical	Pass
20.0MHz DFT_16QAM	1@1	673	-3.77	5.13	28.97	2.15	17.92	61.944	Vertical	Pass
		680.5	-3.91	5.18	28.92	2.15	17.68	58.614	Vertical	Pass
		688	-4.11	5.21	28.89	2.15	17.42	55.208	Vertical	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor Gain (dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

ERP=EIRP-2.15

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

FCC: §2.1051, §27.53(c)(g)(h)(m)

LIMIT

For Band 7, the minimum permissible attenuation level of any spurious emission is 55 + log10 (P [Watts]).
The minimum permissible attenuation level of any spurious emission is 43 + log10 (P [Watts]), where P is the transmitter power in Watts.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power, P (dBW), as follows:
a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than 43 + 10 Log10 (p), dB; and
b. for mobile subscriber equipment, the attenuation shall not be less than 43 + 10 Log10 (p), dB at the channel edges and 55 + 10 Log10 (p) at 5.5 MHz away and beyond the channel edges where p in (a) and (b) is the transmitter power measured in watts.

MODES TESTED

NR Band 71

RESULTS

PASS

9.1 NR N71

QPSK NR N71 10MHZ SCS 30kHz

Test Results for Low Channel 688MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1376	-51.14	6.14	27.3	-29.98	-13	-16.98	Horizontal
1376	-46.58	6.14	27.3	-25.42	-13	-12.42	Vertical
2064	-50.81	6.58	28.51	-28.88	-13	-15.88	Vertical
2064	-52.01	6.58	28.51	-30.08	-13	-17.08	Horizontal
251.8	-41.81	0.67	15.17	-27.31	-13	-14.31	Vertical
402.7	-39.02	0.93	15.06	-24.89	-13	-11.89	Horizontal
Test Results for Mid Channel 680.5MHz							
1361	-49.26	6.15	27.32	-28.09	-13	-15.09	Horizontal
1361	-44.28	6.15	27.32	-23.11	-13	-10.11	Vertical
2041.5	-45.03	6.61	28.51	-23.13	-13	-10.13	Vertical
2041.5	-53.44	6.61	28.51	-31.54	-13	-18.54	Horizontal
206.5	-40.83	0.65	16.34	-25.14	-13	-12.14	Vertical
386.9	-41.42	1.46	15.28	-27.60	-13	-14.60	Horizontal
Test Results for High Channel 693MHz							
1386	-49.50	6.18	27.32	-28.36	-13	-15.36	Horizontal
1386	-46.19	6.18	27.32	-25.05	-13	-12.05	Vertical
2079	-46.54	6.68	28.89	-24.33	-13	-11.33	Vertical
2079	-51.26	6.68	28.89	-29.05	-13	-16.05	Horizontal
196.8	-37.02	0.62	16.26	-21.38	-13	-8.38	Vertical
361.2	-44.50	1.39	15.28	-30.61	-13	-17.61	Horizontal

16QAM NR N71 10MHZ SCS 30kHz

Test Results for Low Channel 688MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1376	-50.81	6.14	27.3	-29.65	-13	-16.65	Horizontal
1376	-51.01	6.14	27.3	-29.85	-13	-16.85	Vertical
2064	-53.83	6.58	28.51	-31.90	-13	-18.90	Vertical
2064	-51.59	6.58	28.51	-29.66	-13	-16.66	Horizontal
249.5	-36.55	0.65	16.15	-21.05	-13	-8.05	Vertical
372.3	-39.78	1.46	15.84	-25.40	-13	-12.40	Horizontal
Test Results for Mid Channel 680.5MHz							
1361	-48.79	6.15	27.32	-27.62	-13	-14.62	Horizontal
1361	-52.09	6.15	27.32	-30.92	-13	-17.92	Vertical
2041.5	-51.07	6.61	28.51	-29.17	-13	-16.17	Vertical
2041.5	-52.06	6.61	28.51	-30.16	-13	-17.16	Horizontal
186.8	-38.55	0.61	16.25	-22.91	-13	-9.91	Vertical
371.3	-38.52	1.14	16.02	-23.64	-13	-10.64	Horizontal
Test Results for High Channel 693MHz							
1386	-45.05	6.18	27.32	-23.91	-13	-10.91	Horizontal
1386	-48.63	6.18	27.32	-27.49	-13	-14.49	Vertical
2079	-47.56	6.68	28.89	-25.35	-13	-12.35	Vertical
2079	-50.90	6.68	28.89	-28.69	-13	-15.69	Horizontal
169.4	-36.56	0.61	16.35	-20.82	-13	-7.82	Vertical
414.7	-43.95	1.42	16.04	-29.33	-13	-16.33	Horizontal

QPSK NR N71 20MHZ SCS 30kHz

Test Results for Low Channel 688MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1376	-48.89	6.14	27.3	-27.73	-13	-14.73	Horizontal
1376	-48.56	6.14	27.3	-27.40	-13	-14.40	Vertical
2064	-50.62	6.59	28.51	-28.70	-13	-15.70	Vertical
2064	-53.62	6.59	28.51	-31.70	-13	-18.70	Horizontal
228.4	-40.85	0.58	15.08	-26.35	-13	-13.35	Vertical
381.4	-41.84	0.79	15.20	-27.43	-13	-14.43	Horizontal
Test Results for Mid Channel 680.5MHz							
1361	-51.37	6.16	27.32	-30.21	-13	-17.21	Horizontal
1361	-47.69	6.16	27.32	-26.53	-13	-13.53	Vertical
2041.5	-48.83	6.68	28.51	-27.00	-13	-14.00	Vertical
2041.5	-49.71	6.68	28.51	-27.88	-13	-14.88	Horizontal
173.6	-37.99	0.60	15.10	-23.49	-13	-10.49	Vertical
471.8	-42.00	1.43	15.29	-28.14	-13	-15.14	Horizontal
Test Results for High Channel 693MHz							
1386	-49.92	6.21	27.32	-28.81	-13	-15.81	Horizontal
1386	-52.73	6.21	27.32	-31.62	-13	-18.62	Vertical
2079	-49.63	6.71	28.89	-27.45	-13	-14.45	Vertical
2079	-50.82	6.71	28.89	-28.64	-13	-15.64	Horizontal
200.0	-35.53	0.61	16.20	-19.94	-13	-6.94	Vertical
470.7	-41.03	1.55	15.76	-26.82	-13	-13.82	Horizontal

16QAM NR N71 20MHZ SCS 30kHz

Test Results for Low Channel 688MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit （dBm）	Margin(dBm)	Polarity
1376	-48.85	6.14	27.3	-27.69	-13	-14.69	Horizontal
1376	-45.68	6.14	27.3	-24.52	-13	-11.52	Vertical
2064	-51.57	6.59	28.51	-29.65	-13	-16.65	Vertical
2064	-53.14	6.59	28.51	-31.22	-13	-18.22	Horizontal
283.5	-36.28	0.70	16.13	-20.85	-13	-7.85	Vertical
274.6	-37.32	1.01	15.43	-22.90	-13	-9.90	Horizontal
Test Results for Mid Channel 680.5MHz							
1361	-45.94	6.16	27.32	-24.78	-13	-11.78	Horizontal
1361	-48.17	6.16	27.32	-27.01	-13	-14.01	Vertical
2041.5	-53.53	6.68	28.51	-31.70	-13	-18.70	Vertical
2041.5	-50.98	6.68	28.51	-29.15	-13	-16.15	Horizontal
199.8	-39.12	0.65	15.27	-24.50	-13	-11.50	Vertical
418.3	-44.39	1.45	15.41	-30.43	-13	-17.43	Horizontal
Test Results for High Channel 693MHz							
1386	-49.19	6.21	27.32	-28.08	-13	-15.08	Horizontal
1386	-52.12	6.21	27.32	-31.01	-13	-18.01	Vertical
2079	-45.53	6.71	28.89	-23.35	-13	-10.35	Vertical
2079	-53.32	6.71	28.89	-31.14	-13	-18.14	Horizontal
221.7	-37.24	0.63	15.30	-22.57	-13	-9.57	Vertical
465.9	-44.89	1.39	16.57	-29.71	-13	-16.71	Horizontal

10. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §27.54

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

Temp. = −30° to +50°C

Voltage =low voltage, DC 3.29V, Normal, DC 3.87V and High voltage, DC 4.45V.

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to -30ºC and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50ºC is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

MODES TESTED

NR Band 71

RESULTS

See the following pages.

10.1 NR BAND 71

N71 QPSK, (20MHz CH 134264 RB Allocation 135@67)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.29	3500	12.4	0.003533	2.5
3.87	3500	14.0	0.003993	2.5
4.45	3500	13.4	0.003827	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	3500	12.4	0.003549	2.5
Extreme (50C)	3500	11.2	0.003200	2.5
Extreme (40C)	3500	14.2	0.004053	2.5
Extreme (30C)	3500	13.4	0.003838	2.5
Extreme (10C)	3500	14.0	0.004010	2.5
Extreme (0C)	3500	12.0	0.003419	2.5
Extreme (-10C)	3500	12.7	0.003619	2.5
Extreme (-20C)	3500	14.5	0.004143	2.5
Extreme (-30C)	3500	14.5	0.004153	2.5

N71 16QAM, (20MHz CH 134264 RB Allocation 135@67)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
6.58	3500	9.7	0.002769	2.5
7.74	3500	9.0	0.002562	2.5
8.90	3500	8.3	0.002382	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	3500	9.8	0.002806	2.5
Extreme (50C)	3500	9.1	0.002604	2.5
Extreme (40C)	3500	8.5	0.002418	2.5
Extreme (30C)	3500	9.5	0.002712	2.5
Extreme (10C)	3500	9.1	0.002604	2.5
Extreme (0C)	3500	8.3	0.002371	2.5
Extreme (-10C)	3500	9.3	0.002644	2.5
Extreme (-20C)	3500	9.1	0.002593	2.5
Extreme (-30C)	3500	8.6	0.002449	2.5

***Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

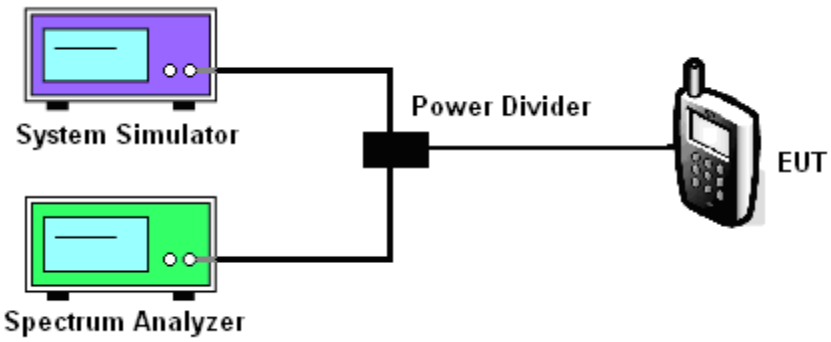
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. For GSM/EGPRS operating modes:
   a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.
   b. Set EUT in maximum power output, and triggered the burst signal.
   c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.
4. For UMTS operating modes:
   a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
   b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

11.4 Test Setup



11.5 MODES TESTED

NR Band 71

Test data reference attachment.

----END OF REPORT----