

FCC TEST REPORT

Product Name: Smart Phone
Trade Mark: BOLD, BLU
Model No.: K10
Add. Model No.: G54
Report Number: 24040810587RFM-1
Test Standards: FCC 47 CFR Part 22 Subpart H
FCC 47 CFR Part 24 Subpart E
FCC 47 CFR Part 27 Subpart L
FCC ID: YHLBLUK10K
Test Result: PASS
Date of Issue: June 5, 2024

Prepared for:

BLU Products, Inc.
8600 NW 36th Street, Suite #300 | Miami, FL 33166

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
**Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and
technology park, Longhua district, Shenzhen, China**

TEL: +86-755-2823 0888

FAX: +86-755-2823 0886

Prepared by:

David Chen

David Chen
Senior Project Engineer

Reviewed by:

Henry Lu

Henry Lu
Team Leader

Approved by:

Robben Chen

Robben Chen
Assistant Manager

Date:

June 5, 2024

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

Version

Version No.	Date	Description
V1.0	June 5, 2024	Original



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

CONTENTS

1. GENERAL INFORMATION	4
1.1 CLIENT INFORMATION	4
1.2 EUT INFORMATION	4
1.2.1 GENERAL DESCRIPTION OF EUT	4
1.2.2 DESCRIPTION OF ACCESSORIES.....	5
1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD.....	6
1.4 DESCRIPTION OF SUPPORT UNITS	7
1.5 TEST LOCATION.....	7
1.6 TEST FACILITY.....	7
1.7 DEVIATION FROM STANDARDS.....	7
1.8 ABNORMALITIES FROM STANDARD CONDITIONS.....	7
1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER	7
1.10 MEASUREMENT UNCERTAINTY	8
2. TEST SUMMARY	9
3. EQUIPMENT LIST	11
4. TEST CONFIGURATION	12
4.1 ENVIRONMENTAL CONDITIONS FOR TESTING	12
4.2 TEST SETUP	13
4.2.1 FOR RADIATED EMISSIONS TEST SETUP	13
4.2.2 FOR CONDUCTED RF TEST SETUP	14
4.3 TEST CHANNELS	15
4.4 SYSTEM TEST CONFIGURATION	15
4.5 PRE-SCAN.....	16
5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION	18
5.1 REFERENCE DOCUMENTS FOR TESTING	18
5.2 MAXIMUM ERP/EIRP	18
5.3 CONDUCTED OUTPUT POWER	20
5.4 PEAK-TO-AVERAGE RATIO	21
5.5 99%&26dB BANDWIDTH.....	22
5.6 BAND EDGE AT ANTENNA TERMINALS	23
5.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS	24
5.8 FIELD STRENGTH OF SPURIOUS RADIATION.....	25
5.9 FREQUENCY STABILITY	30
APPENDIX A RF TEST DATA.....	31
A.1 GSM 850.....	31
A.2 PCS 1900	39
A.3 WCDMA BAND II/ BAND IV/ BAND V	47
APPENDIX 1 PHOTOS OF TEST SETUP	55
APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS.....	55

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	BLU Products, Inc.
Address of Applicant:	8600 NW 36th Street, Suite #300 Miami, FL 33166
Manufacturer:	BLU Products, Inc.
Address of Manufacturer:	8600 NW 36th Street, Suite #300 Miami, FL 33166

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Smart Phone		
Model No.:	K10		
Add. Model No.:	G54		
Trade Mark:	BOLD, BLU		
DUT Stage:	Identical Prototype		
EUT Supports Function: (Provided by the customer)	GSM Bands:	GSM850/PCS 1900	
	UTRA Bands:	WCDMA Band II/ Band IV/ Band V	
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7/ Band 12/ / Band 13/ Band 17/ Band 66/ Band 71	
	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
		Bluetooth 5.0	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac
	RNSS Band:	1559 MHz to 1610 MHz	BDS/ Galileo/ GPS/ GLONASS
BSR:	VHF Band II	FM	
Software Version:	BOLD_K0110_V13.0.03.01_GENERIC 28-04-2024 23:21(Provided by the customer)		
Hardware Version:	KE15Z_02A (Provided by the customer)		
Sample Received Date:	April 7, 2024		
Sample Tested Date:	April 7, 2024 to May 20, 2024		
Note: The additional model G54 is identical with the test model K10 except the model number for marketing purpose.			

Remark:

The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

1.2.2 Description of Accessories

Adapter	
Model No.:	US-HJ-2024
Input:	100-240 V~50/60 Hz 0.3 A
Output:	5.0 V $\overline{\overline{=}}$ 2000 mA 10.0W

Cable	
Connector:	USB Cable
Cable Type:	Unshielded without ferrite
Length:	1.0 Meter

Battery	
Model No.:	C906548500P
Battery Type:	Lithium-ion Polymer Battery
Rated Voltage:	3.87 Vdc
Typical Capacity:	5000 mAh
Rated Capacity:	4900 mAh

Earphone	
1.2 Meter	

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Support Networks:	GSM, GPRS, EDGE, WCDMA, HSDPA, HSUPA	
Type of Modulation:	GSM/GPRS:	GMSK
	EDGE:	GMSK, 8PSK
	WCDMA	BPSK
	HSDPA:	QPSK
	HSUPA:	QPSK
Frequency Range:	GSM/GPRS/EDGE 850:	824.2-848.8 MHz
	GSM/GPRS/EDGE 1900:	1850.2-1909.8 MHz
	WCDMA Band II:	1852.4-1907.6 MHz
	WCDMA Band IV:	1712.4-1752.6 MHz
	WCDMA Band V:	826.4-846.6 MHz
Max RF Output Power (ERP/EIRP):	GSM/GPRS 850:	27.28 dBm
	EDGE 850:	20.59 dBm
	GSM/GPRS 1900:	28.38 dBm
	EDGE 1900:	25.76 dBm
	WCDMA Band II:	21.49 dBm
	WCDMA Band IV:	21.46 dBm
	WCDMA Band V:	17.21 dBm
Emission Designator:	GSM/GPRS 850:	243KGXW
	EDGE 850:	243KG7W
	GSM/GPRS 1900:	244KGXW
	EDGE 1900:	245KG7W
	WCDMA Band II:	4M17F9W
	WCDMA Band IV:	4M17F9W
	WCDMA Band V:	4M16F9W
Antenna Type: (Provided by the customer)	PIFA Antenna	
Antenna Gain: (Provided by the customer)	GSM 850:	-3.7 dBi
	PCS 1900:	-1.2 dBi
	WCDMA Band II:	-1.2 dBi
	WCDMA Band IV:	-1.4 dBi
	WCDMA Band V:	-3.7 dBi
GPRS/EDGE Class:	Class 12	
Sample No.:	Radiated: S202404073065-ZJA01/6	
	Conducted: S202404073065-ZJA05/6	
Normal Test Voltage:	3.87 Vdc	
Extreme Test Voltage:	3.4 to 4.45Vdc	
Extreme Test Temperature:	-20 °C to +60 °C	

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
--	--	--	--	--

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.1 Meter	Applicant

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China 518109

Telephone: +86 (0) 755 2823 0888

Fax: +86 (0) 755 2823 0886

1.6 TEST FACILITY

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

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories

CAB identifier: CN0032

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

None.

1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted Output Power	±0.7 dB
2	99%&26dB Bandwidth	±1.86 %
3	Emission Mask	±2.7 dBm
4	Spurious emissions at antenna terminals	±2.7 dBm
5	Field strength of spurious radiation	30 MHz-1 GHz: ±4.9 dB 1 GHz-18 GHz: ±4.8 dB 18 GHz-40 GHz: ±5.1 dB
6	Frequency stability	±6.5 x 10 ⁻⁸
7	Humidity	±3.9 %
8	Temperature	±0.62 °C
9	DC Voltages	±0.68 %

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

2. TEST SUMMARY

FCC 47 CFR Part 22 Subpart H Test Cases			
Test Item	Test Requirement	Test Method	Result
Effective Radiated Power (ERP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 22.913(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 22.917(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 22.917(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 22.355	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 24 Subpart E Test Cases			
Test Item	Test Requirement	Test Method	Result
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 24.232(d)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 24.238(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 24.238(a)(b)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 24.235	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

FCC 47 CFR Part 27 Subpart L Test Cases			
Test Item	Test Requirement	Test Method	Result
Equivalent Isotropic Radiated Power (EIRP)	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Conducted Output Power	FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Peak-to-average ratio	FCC 47 CFR Part 27.50(d)(5)	KDB 971168 D01v03r01	PASS
99%&26dB Bandwidth	FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	FCC 47 CFR Part 27.53(h)(1)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(h)	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS
Frequency stability	FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54	ANSI C63.26-2015 & KDB 971168 D01v03r01	PASS

Disclaimer and Explanations:

The declared of product specification and data (e.g. antenna gain, RF specification, etc) for EUT presented in the report are provided by the customer, and the customer takes all the responsibilities for the accuracy of product specification.

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	3m SAC	ETS-LINDGREN	3M	Euroshiedpn-CT001270-1317	11-Nov-2023	10-Nov-2026
☒	Receiver	R&S	ESIB26	100114	27-Oct-2023	26-Oct-2024
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	29-Mar-2024	28-Mar-2025
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	30-Oct-2023	29-Oct-2024
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	30-Oct-2023	29-Oct-2024
☒	Preamplifier	HP	8447F	2805A02960	31-Oct-2023	30-Oct-2024
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	1-Apr-2024	31-Mar-2025
☒	Pre-amplifier	ETS-Lindgren	00118385	00201874	1-Apr-2024	31-Mar-2025
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	30-Oct-2023	29-Oct-2024
☒	Pre-amplifier	ETS-Lindgren	00118384	00202652	30-Oct-2023	29-Oct-2024
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

RF Conducted Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	EXA Signal Analyzer	KEYSIGHT	N9010B	MY62060155	29-Mar-2024	28-Mar-2025
☒	DC Source	KIKUSUI	PWR400L	LK003024	N/A	N/A
☒	Digital multimeter	FLUKE	15B+	30701460WS15	31-Oct-2023	30-Oct-2024
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290020	29-Mar-2024	28-Mar-2025
☒	Wideband Radio Communication Tester	R&S	CMW500	119583	29-Mar-2024	28-Mar-2025
☒	Wideband Radio Communication Tester	R&S	CMW500	120932	29-Mar-2024	28-Mar-2025

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

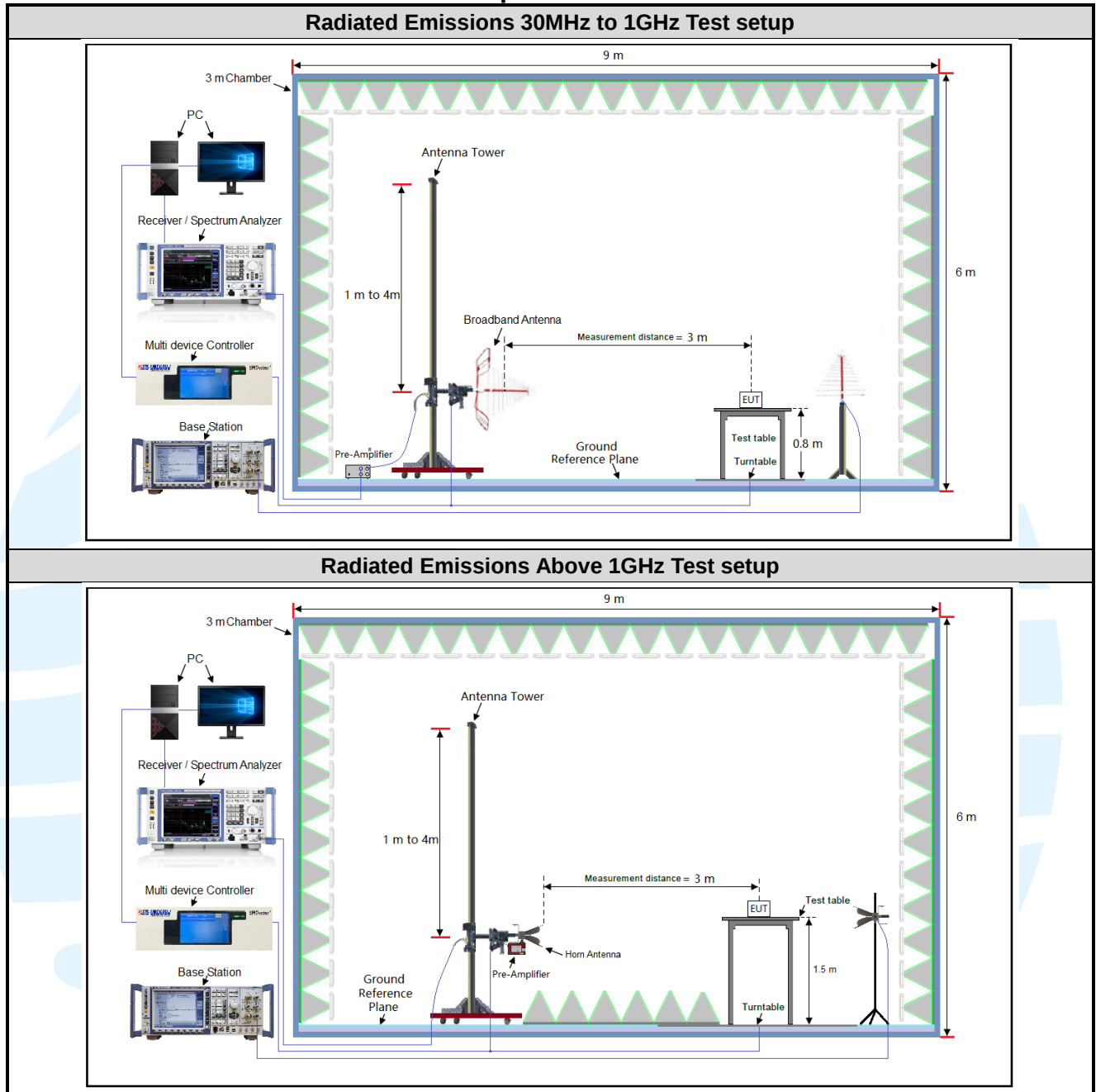
Test Environment	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
TN/VN	+15 to +35	3.87	20 to 75
TL/VL	-20	3.4	20 to 75
TH/VL	+60	3.4	20 to 75
TL/VH	-20	4.45	20 to 75
TH/VH	+60	4.45	20 to 75

Remark:

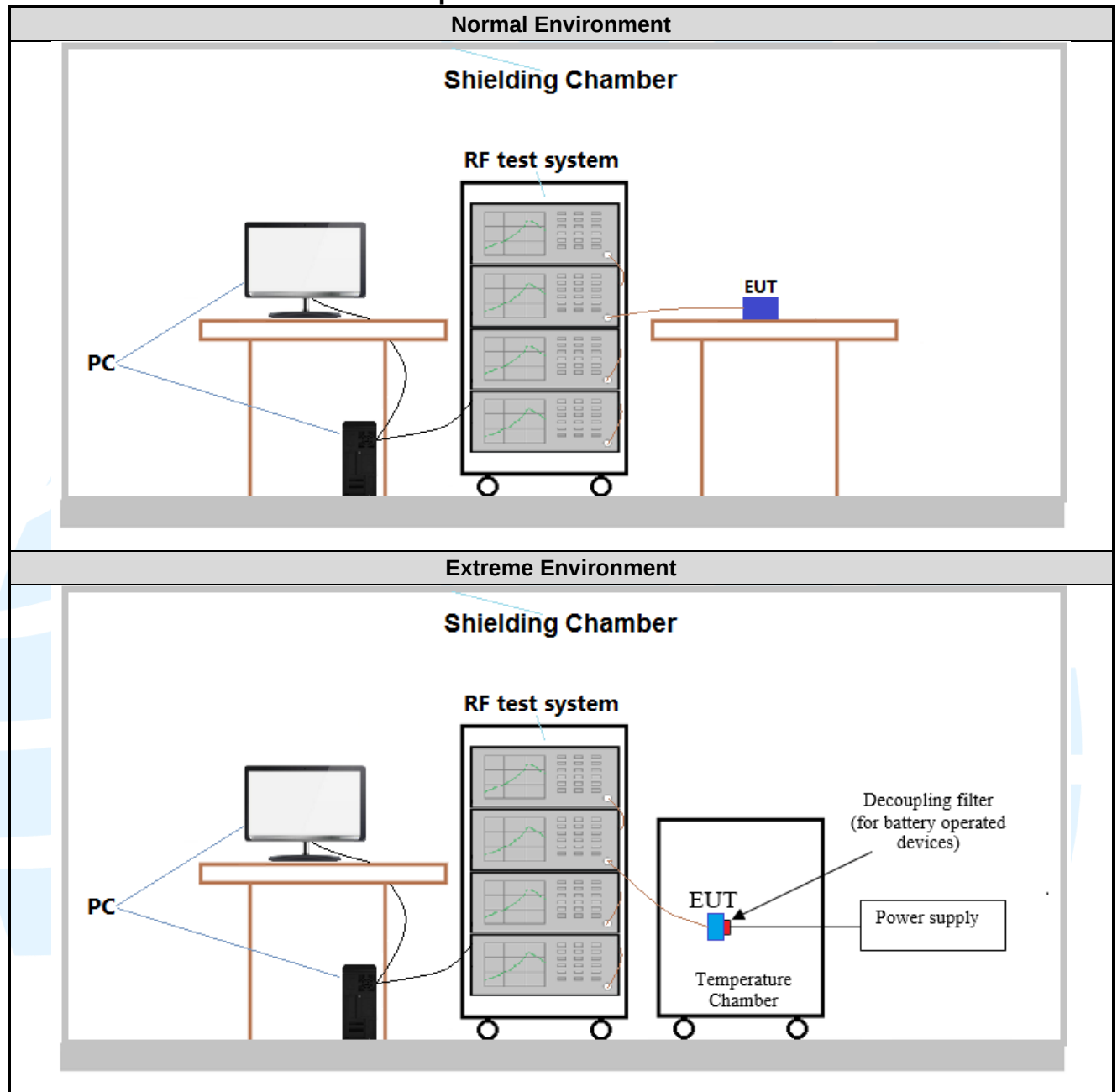
- 1) The EUT just work in such extreme temperature of -20 °C to +60 °C and the extreme voltage of 3.4 V to 4.45 V, so here the EUT is tested in the temperature of -20 °C to +60 °C and the voltage of 3.4 V to 4.45 V.
- 2) VN: Normal Voltage; TN: Normal Temperature;
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup



4.2.2 For Conducted RF test setup



4.3 TEST CHANNELS

Bands	Tx/Rx Frequency	RF Channel		
		Low(L)	Middle(M)	High(H)
GSM/GPRS/ EDGE850	Tx (824 MHz ~ 849 MHz)	Channel 128	Channel 190	Channel 251
		824.2 MHz	836.6 MHz	848.8 MHz
WCDMA band V	Tx (824 MHz ~ 849 MHz)	Channel 4132	Channel 4182	Channel 4233
		826.4 MHz	836.4 MHz	846.6 MHz

Bands	Tx/Rx Frequency	RF Channel		
		Low(L)	Middle(M)	High(H)
GSM/GPRS/ EDGE1900	Tx (1850 MHz-1910 MHz)	Channel 512	Channel 661	Channel 810
		1850.2 MHz	1880.0 MHz	1909.8 MHz
WCDMA Band II	Tx (1850 MHz-1910 MHz)	Channel 9262	Channel 9400	Channel 9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz

Bands	Tx/Rx Frequency	RF Channel		
		Low(L)	Middle(M)	High(H)
WCDMA Band IV	Tx (1710 MHz-1755 MHz)	Channel 1312	Channel 1412	Channel 1513
		1712.4 MHz	1732.4 MHz	1752.6 MHz

4.4 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3.87Vdc battery. Only the worst case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.5 PRE-SCAN

Pre-scan under all rate at lowest middle and highest channel, find the transmitter power as below:
SIM 1 Card Conducted transmitter power measurement result.

GSM 850 Maximum Average Power (dBm)			
Channel	128	190	251
Frequency(MHz)	824.2 MHz	836.6 MHz	848.8 MHz
GSM (GMSK, 1Tx-slot)	33.07	33.06	33.13
GPRS (GMSK, 1Tx-slot)	33.04	33.05	33.13
GPRS (GMSK, 2Tx-slot)	30.97	31.02	31.10
GPRS (GMSK, 3Tx-slot)	29.10	29.19	29.30
GPRS (GMSK, 4Tx-slot)	27.04	27.12	27.22
EDGE (8PSK, 1Tx-slot)	25.91	25.74	26.44
EDGE (8PSK, 2Tx-slot)	24.30	23.93	24.74
EDGE (8PSK, 3Tx-slot)	22.45	22.59	22.95
EDGE (8PSK, 4Tx-slot)	19.68	19.71	20.01

PCS 1900 Maximum Average Power (dBm)			
Channel	512	661	810
Frequency(MHz)	1850.2 MHz	1880.0 MHz	1909.8 MHz
GSM (GMSK, 1Tx-slot)	29.58	29.52	29.48
GPRS (GMSK, 1Tx-slot)	29.56	29.52	29.48
GPRS (GMSK, 2Tx-slot)	27.42	27.42	27.38
GPRS (GMSK, 3Tx-slot)	25.91	25.89	25.88
GPRS (GMSK, 4Tx-slot)	23.92	23.90	23.89
EDGE (8PSK, 1Tx-slot)	26.96	26.74	26.81
EDGE (8PSK, 2Tx-slot)	25.52	25.22	25.08
EDGE (8PSK, 3Tx-slot)	22.50	22.85	21.59
EDGE (8PSK, 4Tx-slot)	20.03	19.58	19.78

WCDMA Band II Maximum Average Power (dBm)			
Channel	9262	9400	9538
Frequency (MHz)	1852.4 MHz	1880.0 MHz	1907.6 MHz
RMC 12.2K	22.64	22.69	22.56
HSDPA Subtest-1	22.01	22.17	21.99
HSDPA Subtest-2	21.74	21.86	21.68
HSDPA Subtest-3	21.53	21.66	21.48
HSDPA Subtest-4	21.53	21.55	21.34
HSUPA Subtest-1	21.75	21.82	21.56
HSUPA Subtest-2	21.87	21.98	21.75
HSUPA Subtest-3	22.00	22.07	21.80
HSUPA Subtest-4	21.84	21.95	21.71
HSUPA Subtest-5	21.97	22.15	21.86

WCDMA Band IV Maximum Average Power (dBm)			
Channel	1312	1412	1513
Frequency (MHz)	1712.4 MHz	1732.4 MHz	1752.6 MHz
RMC 12.2K	22.86	22.84	22.83
HSDPA Subtest-1	22.16	22.25	22.29
HSDPA Subtest-2	22.30	22.38	22.34
HSDPA Subtest-3	22.23	22.34	22.25
HSDPA Subtest-4	22.16	22.27	22.16
HSUPA Subtest-1	21.93	22.02	21.78
HSUPA Subtest-2	22.07	22.16	22.10
HSUPA Subtest-3	22.07	22.21	22.13
HSUPA Subtest-4	22.03	22.20	22.09
HSUPA Subtest-5	22.18	22.25	22.16

WCDMA Band V Maximum Average Power (dBm)			
Channel	4132	4182	4233
Frequency (MHz)	826.4 MHz	836.4 MHz	846.6 MHz
RMC 12.2K	23.06	23.03	23.05
HSDPA Subtest-1	21.86	21.81	21.83
HSDPA Subtest-2	21.59	21.53	21.74
HSDPA Subtest-3	21.29	21.10	20.99
HSDPA Subtest-4	21.17	21.12	20.99
HSUPA Subtest-1	22.31	22.32	22.53
HSUPA Subtest-2	22.68	22.60	22.80
HSUPA Subtest-3	22.70	22.62	22.81
HSUPA Subtest-4	22.66	22.53	22.75
HSUPA Subtest-5	22.08	22.06	22.08

Pre-scan all bandwidth and RB, find worse case mode are chosen to the report, the worse mode applicability and tested channel detail as below:

Band	Radiated	Conducted
GSM/GPRS/EDGE 850/1900	1) GSM (GMSK, 1Tx-slot) Link 2) GPRS (GMSK, 1Tx-slot) Link 3) EDGE (8PSK, 1Tx-slot) Link	1) GSM (GMSK,1Tx-slot) Link 2) GPRS (GMSK, 1Tx-slot) Link 3) EDGE (8PSK, 1Tx-slot) Link
WCDMA Band II/IV/V	RMC 12.2kbps Link	RMC 12.2kbps Link

5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 22	Public Mobile Services
3	FCC 47 CFR Part 27	Miscellaneous Wireless Communications Services
4	FCC 47 CFR Part 24	Personal Communications Services
5	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
6	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v03r01
7	KDB 412172 D01 Determining ERP and EIRP v01r01	Guidelines for determining the effective radiated power (ERP) and isotropically radiated power (EIRP) of an RF transmitting system

5.2 MAXIMUM ERP/EIRP

Test Requirement: FCC 47 CFR Part 2.1046(a),
FCC 47 CFR Part 22.913(a),
FCC 47 CFR Part 24.232(c),
FCC 47 CFR Part 27.50(d)(4)

Test Method: KDB 971168 D01v03r01 Section 5.6 & ANSI C63.26-2015

Limit:

FCC 47 CFR Part 22.913(a)

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC 47 CFR Part 24.232(c)

Mobile and portable stations are limited to 2 watts EIRP.

FCC 47 CFR Part 27.50(d)(4)

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

Test Procedure:

According to KDB 412172 D01 Power Approach,

- $ERP \text{ or } EIRP = P_T + G_T - L_C$
- $ERP = EIRP - 2.15$

where

- P_T = transmitter output power, expressed in dBW, dBm, or PSD;
- G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
- L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

Test Setup: Refer to section 4.2.1 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: See table below

Band		Ant. Gain (dBi)	Maximum ERP/EIRP (dBm)				Maximum ERP/EIRP (W)				Result
			Low	Mid	High	Limit (dBm)	Low	Mid	High	Limit (W)	
PCS 1900	GSM	-1.2	28.38	28.32	28.28	33.01	0.6887	0.6792	0.6730	2	Pass
	GPRS		28.36	28.32	28.28	33.01	0.6855	0.6792	0.6730	2	Pass
	EGPRS		25.76	25.54	25.61	33.01	0.3767	0.3581	0.3639	2	Pass
GSM 850	GSM	-3.7	27.22	27.21	27.28	38.45	0.5272	0.5260	0.5346	7	Pass
	GPRS		27.19	27.20	27.28	38.45	0.5236	0.5248	0.5346	7	Pass
	EGPRS		20.06	19.89	20.59	38.45	0.1014	0.0975	0.1146	7	Pass

Band		Ant. Gain (dBi)	Maximum ERP/EIRP (dBm)				Maximum ERP/EIRP (W)				Result
			Low	Mid	High	Limit (dBm)	Low	Mid	High	Limit (W)	
WCDMA Band II	RMC 12.2K	-1.2	21.44	21.49	21.36	33.01	0.1393	0.1409	0.1368	2	Pass
	HSDPA		20.81	20.97	20.79	33.01	0.1205	0.1250	0.1199	2	Pass
	HSUPA		20.80	20.95	20.66	33.01	0.1202	0.1245	0.1164	2	Pass
WCDMA Band IV	RMC 12.2K	-1.4	21.46	21.44	21.43	30	0.1400	0.1393	0.1390	1	Pass
	HSDPA		20.90	20.98	20.94	30	0.1230	0.1253	0.1242	1	Pass
	HSUPA		20.78	20.85	20.76	30	0.1197	0.1216	0.1191	1	Pass
WCDMA Band V	RMC 12.2K	-3.7	17.21	17.18	17.20	38.45	0.0526	0.0522	0.0525	7	Pass
	HSDPA		16.01	15.96	15.98	38.45	0.0399	0.0394	0.0396	7	Pass
	HSUPA		16.85	16.77	16.96	38.45	0.0484	0.0475	0.0497	7	Pass

Note: The maximum ERP/EIRP is calculated from max output power and antenna gain, the antenna gain provided by the customer, and the customer takes all the responsibilities for the accuracy of antenna gain.

5.3 CONDUCTED OUTPUT POWER

Test Requirement: FCC 47 CFR Part 2.1046(a),
FCC 47 CFR Part 22.913(a),
FCC 47 CFR Part 24.232(c),
FCC 47 CFR Part 27.50(d)(4)

Test Method: KDB 971168 D01v03r01 & ANSI C63.26-2015

Limit:

FCC 47 CFR Part 22.913(a)

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

FCC 47 CFR Part 24.232(c)

Mobile and portable stations are limited to 2 watts EIRP.

FCC 47 CFR Part 27.50(d)(4)

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

Test Procedure:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA2000, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: The full result refer to section 4.5 for details.

5.4 PEAK-TO-AVERAGE RATIO

Test Requirement: FCC 47 CFR Part 22.913(a),
FCC 47 CFR Part 24.232(c),
FCC 47 CFR Part 27.50(d)(5)

Test Method: KDB 971168 D01v03r01 Section 5.7

Limit: In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB

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.

- Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth
- Set the number of counts to a value that stabilizes the measured CCDF curve
- Record the maximum PAPR level associated with a probability of 0.1 %

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: Please refer to Appendix A

5.599%&26DB BANDWIDTH

Test Requirement: FCC 47 CFR Part 2.1049(h),
FCC 47 CFR Part 22.917(b),
FCC 47 CFR Part 24.238(b),
FCC 47 CFR Part 27.53(h)

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01 Section 4

Limit: No Limit, 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 99% and -26dB bandwidths was also measured and recorded.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Pass

Test Data: Please refer to Appendix A

5.6 BAND EDGE AT ANTENNA TERMINALS

Test Requirement: FCC 47 CFR Part 2.1051,
FCC 47 CFR Part 22.917(a),
FCC 47 CFR Part 24.238(a),
FCC 47 CFR Part 27.53(h)(1)

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01

Limit:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13 dBm.

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.

For each band edge measurement:

- 1) Set the spectrum analyzer span to include the block edge frequency.
- 2) Set a marker to point the corresponding band edge frequency in each test case.
- 3) Set display line at -13 dBm
- 4) Set resolution bandwidth to at least 1% of emission bandwidth.
- 5) Set spectrum analyzer with RMS detector.
- 6) Record the max trace plot into the test report

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Please refer to Appendix A

5.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Test Requirement: FCC 47 CFR Part 2.1051,
FCC 47 CFR Part 22.917(a)(b),
FCC 47 CFR Part 24.238(a)(b),
FCC 47 CFR Part 27.53(h)(1)

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01

Limit:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13 dBm.

Test Procedure:

The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range. b. Measuring frequency range is from 30 MHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.2.2 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Please refer to Appendix A

5.8 FIELD STRENGTH OF SPURIOUS RADIATION

Test Requirement: FCC 47 CFR Part 2.1053,
FCC 47 CFR Part 22.917(a)(b),
FCC 47 CFR Part 24.238(a)(b),
FCC 47 CFR Part 27.53(h)(1)

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01 Section 7

Limits:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13 dBm.

Test Setup: Refer to section 4.2.1 for details.

Test Procedures: KDB 971168 D01v03r01 Section 7

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The worst measurement data as follows:

GSM 850							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
Lowest Channel							
1	754.963	-86.58	40.87	-45.71	-13.00	-32.71	Horizontal
2	776.485	-86.32	41.14	-45.18	-13.00	-32.18	Horizontal
3	992.997	-86.66	44.47	-42.19	-13.00	-29.19	Horizontal
4	1648.400	-51.48	0.79	-50.69	-13.00	-37.69	Horizontal
5	2472.600	-54.29	4.70	-49.59	-13.00	-36.59	Horizontal
6	776.485	-87.02	41.14	-45.88	-13.00	-32.88	Vertical
7	958.714	-86.54	43.89	-42.65	-13.00	-29.65	Vertical
8	1000.000	-85.97	44.50	-41.47	-13.00	-28.47	Vertical
9	1648.400	-55.10	0.79	-54.31	-13.00	-41.31	Vertical
10	2472.600	-51.56	4.70	-46.86	-13.00	-33.86	Vertical
Middle Channel							
1	809.924	-86.80	42.08	-44.72	-13.00	-31.72	Horizontal
2	906.304	-86.97	43.57	-43.40	-13.00	-30.40	Horizontal
3	992.997	-86.66	44.47	-42.19	-13.00	-29.19	Horizontal
4	1673.200	-55.09	0.88	-54.21	-13.00	-41.21	Horizontal
5	2509.800	-49.75	4.90	-44.85	-13.00	-31.85	Horizontal
6	906.304	-86.31	43.57	-42.74	-13.00	-29.74	Vertical
7	925.613	-86.37	43.47	-42.90	-13.00	-29.90	Vertical
8	958.714	-86.71	43.89	-42.82	-13.00	-29.82	Vertical
9	1673.200	-53.19	0.88	-52.31	-13.00	-39.31	Vertical
10	2497.244	-46.07	4.88	-41.19	-13.00	-28.19	Vertical
Highest Channel							
1	637.795	-86.99	39.10	-47.89	-13.00	-34.89	Horizontal
2	787.475	-86.69	41.53	-45.16	-13.00	-32.16	Horizontal
3	925.613	-86.93	43.47	-43.46	-13.00	-30.46	Horizontal
4	1697.600	-46.20	0.97	-45.23	-13.00	-32.23	Horizontal
5	2546.400	-50.15	4.94	-45.21	-13.00	-32.21	Horizontal
6	598.707	-87.35	38.31	-49.04	-13.00	-36.04	Vertical
7	798.620	-87.19	41.73	-45.46	-13.00	-32.46	Vertical
8	938.714	-85.39	43.51	-41.88	-13.00	-28.88	Vertical
9	1697.600	-57.59	0.97	-56.62	-13.00	-43.62	Vertical
10	2546.400	-42.03	4.94	-37.09	-13.00	-24.09	Vertical

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

PCS 1900							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
Lowest Channel							
1	844.803	-80.21	13.42	-66.79	-13.00	-53.79	Horizontal
2	899.958	-80.26	14.32	-65.94	-13.00	-52.94	Horizontal
3	986.044	-80.85	15.44	-65.41	-13.00	-52.41	Horizontal
4	3700.400	-64.31	8.94	-55.37	-13.00	-42.37	Horizontal
5	5550.600	-64.11	12.43	-51.68	-13.00	-38.68	Horizontal
6	637.795	-79.33	9.66	-69.67	-13.00	-56.67	Vertical
7	945.334	-81.24	14.69	-66.55	-13.00	-53.55	Vertical
8	979.139	-81.19	15.25	-65.94	-13.00	-52.94	Vertical
9	3700.400	-64.42	8.94	-55.48	-13.00	-42.48	Vertical
10	5550.600	-66.10	12.43	-53.67	-13.00	-40.67	Vertical
Middle Channel							
1	793.028	-79.56	12.44	-67.12	-13.00	-54.12	Horizontal
2	838.887	-79.56	13.30	-66.26	-13.00	-53.26	Horizontal
3	992.997	-80.50	15.56	-64.94	-13.00	-51.94	Horizontal
4	3760.000	-62.78	9.14	-53.64	-13.00	-40.64	Horizontal
5	5640.000	-62.83	12.33	-50.50	-13.00	-37.50	Horizontal
6	713.692	-79.30	11.53	-67.77	-13.00	-54.77	Vertical
7	739.214	-79.16	11.58	-67.58	-13.00	-54.58	Vertical
8	979.139	-80.36	15.25	-65.11	-13.00	-52.11	Vertical
9	3760.000	-63.54	9.14	-54.40	-13.00	-41.40	Vertical
10	5640.000	-64.10	12.33	-51.77	-13.00	-38.77	Vertical
Highest Channel							
1	798.620	-80.18	12.53	-67.65	-13.00	-54.65	Horizontal
2	912.695	-81.27	14.49	-66.78	-13.00	-53.78	Horizontal
3	965.474	-81.40	14.91	-66.49	-13.00	-53.49	Horizontal
4	3819.600	-65.70	9.34	-56.36	-13.00	-43.36	Horizontal
5	5729.400	-63.84	12.23	-51.61	-13.00	-38.61	Horizontal
6	787.475	-78.87	12.31	-66.56	-13.00	-53.56	Vertical
7	906.304	-80.48	14.53	-65.95	-13.00	-52.95	Vertical
8	979.139	-81.59	15.25	-66.34	-13.00	-53.34	Vertical
9	3819.600	-63.39	9.34	-54.05	-13.00	-41.05	Vertical
10	5729.400	-65.32	12.23	-53.09	-13.00	-40.09	Vertical

WCDMA Band II							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
RMC 12.2kbps _ Lowest Channel							
1	793.028	-79.35	12.44	-66.91	-13.00	-53.91	Horizontal
2	821.387	-79.62	13.20	-66.42	-13.00	-53.42	Horizontal
3	862.802	-79.62	13.74	-65.88	-13.00	-52.88	Horizontal
4	3704.8	-65.78	8.95	-56.83	-13.00	-43.83	Horizontal
5	5557.2	-66.60	12.43	-54.17	-13.00	-41.17	Horizontal
6	868.886	-80.11	13.80	-66.31	-13.00	-53.31	Vertical
7	925.613	-80.77	14.46	-66.31	-13.00	-53.31	Vertical
8	986.044	-81.05	15.44	-65.61	-13.00	-52.61	Vertical
9	3704.8	-65.21	8.95	-56.26	-13.00	-43.26	Vertical
10	5557.2	-67.47	12.43	-55.04	-13.00	-42.04	Vertical
RMC 12.2kbps _ Middle Channel							
1	856.76	-80.81	13.67	-67.14	-13.00	-54.14	Horizontal
2	887.398	-80.58	14.17	-66.41	-13.00	-53.41	Horizontal
3	938.714	-80.84	14.52	-66.32	-13.00	-53.32	Horizontal
4	3760	-64.78	9.14	-55.64	-13.00	-42.64	Horizontal
5	5640	-67.70	12.33	-55.37	-13.00	-42.37	Horizontal
6	862.802	-80.73	13.74	-66.99	-13.00	-53.99	Vertical
7	899.958	-81.05	14.32	-66.73	-13.00	-53.73	Vertical
8	972.283	-81.29	15.04	-66.25	-13.00	-53.25	Vertical
9	3760	-64.62	9.14	-55.48	-13.00	-42.48	Vertical
10	5640	-67.59	12.33	-55.26	-13.00	-42.26	Vertical
RMC 12.2kbps _ Highest Channel							
1	771.047	-80.57	11.94	-68.63	-13.00	-55.63	Horizontal
2	827.179	-80.88	13.16	-67.72	-13.00	-54.72	Horizontal
3	919.132	-80.16	14.53	-65.63	-13.00	-52.63	Horizontal
4	3815.2	-63.27	9.32	-53.95	-13.00	-40.95	Horizontal
5	5722.8	-68.03	12.25	-55.78	-13.00	-42.78	Horizontal
6	815.635	-80.73	13.04	-67.69	-13.00	-54.69	Vertical
7	868.886	-80.89	13.80	-67.09	-13.00	-54.09	Vertical
8	1000.000	-81.17	15.60	-65.57	-13.00	-52.57	Vertical
9	3815.2	-62.35	9.32	-53.03	-13.00	-40.03	Vertical
10	5722.8	-67.68	12.25	-55.43	-13.00	-42.43	Vertical

WCDMA Band IV							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
RMC 12.2kbps_ Lowest Channel							
1	708.694	-79.99	11.44	-68.55	-13.00	-55.55	Horizontal
2	754.963	-79.98	11.60	-68.38	-13.00	-55.38	Horizontal
3	912.695	-80.92	14.49	-66.43	-13.00	-53.43	Horizontal
4	3424.8	-63.39	7.74	-55.65	-13.00	-42.65	Horizontal
5	5137.2	-65.55	11.35	-54.20	-13.00	-41.20	Horizontal
6	833.013	-80.28	13.24	-67.04	-13.00	-54.04	Vertical
7	875.013	-80.40	13.93	-66.47	-13.00	-53.47	Vertical
8	919.132	-80.98	14.53	-66.45	-13.00	-53.45	Vertical
9	3424.8	-64.10	7.74	-56.36	-13.00	-43.36	Vertical
10	5137.2	-66.42	11.35	-55.07	-13.00	-42.07	Vertical
RMC 12.2kbps_ Middle Channel							
1	602.929	-79.50	8.92	-70.58	-13.00	-57.58	Horizontal
2	787.475	-80.63	12.31	-68.32	-13.00	-55.32	Horizontal
3	906.304	-81.40	14.53	-66.87	-13.00	-53.87	Horizontal
4	3464.8	-63.21	7.96	-55.25	-13.00	-42.25	Horizontal
5	5197.2	-66.41	11.45	-54.96	-13.00	-41.96	Horizontal
6	713.692	-79.53	11.53	-68.00	-13.00	-55.00	Vertical
7	776.485	-79.62	11.90	-67.72	-13.00	-54.72	Vertical
8	856.76	-79.89	13.67	-66.22	-13.00	-53.22	Vertical
9	3464.8	-63.02	7.96	-55.06	-13.00	-42.06	Vertical
10	5197.2	-65.49	11.45	-54.04	-13.00	-41.04	Vertical
RMC 12.2kbps_ Highest Channel							
1	821.387	-79.65	13.20	-66.45	-13.00	-53.45	Horizontal
2	868.886	-79.22	13.80	-65.42	-13.00	-52.42	Horizontal
3	945.334	-79.67	14.69	-64.98	-13.00	-51.98	Horizontal
4	3505.2	-63.08	8.17	-54.91	-13.00	-41.91	Horizontal
5	5257.8	-65.01	11.65	-53.36	-13.00	-40.36	Horizontal
6	703.731	-80.01	11.46	-68.55	-13.00	-55.55	Vertical
7	821.387	-80.52	13.20	-67.32	-13.00	-54.32	Vertical
8	958.714	-80.34	14.93	-65.41	-13.00	-52.41	Vertical
9	3505.2	-64.33	8.17	-56.16	-13.00	-43.16	Vertical
10	5257.8	-64.63	11.65	-52.98	-13.00	-39.98	Vertical

WCDMA Band V							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
RMC 12.2kbps _ Lowest Channel							
1	739.214	-87.30	40.87	-46.43	-13.00	-33.43	Horizontal
2	793.028	-86.40	41.65	-44.75	-13.00	-31.75	Horizontal
3	925.613	-86.34	43.47	-42.87	-13.00	-29.87	Horizontal
4	2479.2	-60.15	4.75	-55.40	-13.00	-42.40	Horizontal
5	3305.6	-55.54	7.17	-48.37	-13.00	-35.37	Horizontal
6	611.462	-87.34	38.60	-48.74	-13.00	-35.74	Vertical
7	669.952	-87.22	39.73	-47.49	-13.00	-34.49	Vertical
8	952.000	-86.20	43.79	-42.41	-13.00	-29.41	Vertical
9	2479.2	-60.52	4.75	-55.77	-13.00	-42.77	Vertical
10	3296.8	-58.82	7.12	-51.70	-13.00	-38.70	Vertical
RMC 12.2kbps _ Middle Channel							
1	718.725	-87.43	40.83	-46.60	-13.00	-33.60	Horizontal
2	804.252	-87.09	41.94	-45.15	-13.00	-32.15	Horizontal
3	958.714	-86.68	43.89	-42.79	-13.00	-29.79	Horizontal
4	2509.2	-62.32	4.90	-57.42	-13.00	-44.42	Horizontal
5	3345.6	-56.02	7.36	-48.66	-13.00	-35.66	Horizontal
6	684.226	-87.20	40.19	-47.01	-13.00	-34.01	Vertical
7	862.802	-87.14	42.85	-44.29	-13.00	-31.29	Vertical
8	912.695	-86.73	43.52	-43.21	-13.00	-30.21	Vertical
9	2509.2	-60.85	4.90	-55.95	-13.00	-42.95	Vertical
10	3345.6	-58.03	7.36	-50.67	-13.00	-37.67	Vertical
RMC 12.2kbps _ Highest Channel							
1	523.876	-87.68	37.10	-50.58	-13.00	-37.58	Horizontal
2	887.398	-86.82	43.24	-43.58	-13.00	-30.58	Horizontal
3	992.997	-87.52	44.47	-43.05	-13.00	-30.05	Horizontal
4	2539.8	-61.63	4.93	-56.70	-13.00	-43.70	Horizontal
5	3386.4	-58.78	7.56	-51.22	-13.00	-38.22	Horizontal
6	35.762	-82.20	31.76	-50.44	-13.00	-37.44	Vertical
7	703.731	-87.58	40.80	-46.78	-13.00	-33.78	Vertical
8	804.252	-86.95	41.94	-45.01	-13.00	-32.01	Vertical
9	2539.8	-62.36	4.93	-57.43	-13.00	-44.43	Vertical
10	3386.4	-59.76	7.56	-52.20	-13.00	-39.20	Vertical

Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

5.9 FREQUENCY STABILITY

Test Requirement: FCC 47 CFR Part 2.1055 &
FCC 47 CFR Part 22.355 &
FCC 47 CFR Part 24.235 &
FCC 47 CFR Part 27.54

Test Method: ANSI C63.26-2015 & KDB 971168 D01v03r01

Limits:

FCC 47 CFR Part 22.355,

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

FCC 47 CFR Part 24.235, FCC 47 CFR Part 27.54

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

Test Setup: Refer to section 4.2.2 for details.

Test Procedures:

1) Use CMW 500 with Frequency Error measurement capability.

a) Temp. = -30° to $+50^{\circ}\text{C}$

b) Voltage = low voltage, 3.4 Vdc, Normal, 3.87 Vdc and High voltage, 4.45 Vdc.

2) Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C 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 $+50^{\circ}\text{C}$ is reached.

3) Frequency Stability vs Voltage:

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

Equipment Used: Refer to section 3 for details.

Test Results: Please refer to Appendix A

APPENDIX A RF TEST DATA

A.1 GSM 850

Frequency Stability

Band	Channel	Freq (MHz)	Deviation (Hz)	Deviation (ppm)	Limit(ppm)	Verdict	Environment
GSM 850	190	836.6	-12.72	-0.01521	±2.5	PASS	VL
GSM 850	190	836.6	-13.88	-0.01659	±2.5	PASS	VN
GSM 850	190	836.6	-11.43	-0.01366	±2.5	PASS	VH
GSM 850	190	836.6	-9.07	-0.01084	±2.5	PASS	-30°C
GSM 850	190	836.6	-12.17	-0.01455	±2.5	PASS	-20°C
GSM 850	190	836.6	-11.4	-0.01362	±2.5	PASS	-10°C
GSM 850	190	836.6	-12.43	-0.01486	±2.5	PASS	0°C
GSM 850	190	836.6	-8.94	-0.01069	±2.5	PASS	10°C
GSM 850	190	836.6	-11.56	-0.01382	±2.5	PASS	20°C
GSM 850	190	836.6	-9.65	-0.01154	±2.5	PASS	30°C
GSM 850	190	836.6	-9.72	-0.01162	±2.5	PASS	40°C
GSM 850	190	836.6	-8.2	-0.0098	±2.5	PASS	50°C

Frequency Stability EGPRS

Band	Channel	Freq (MHz)	Slots	Deviation (Hz)	Deviation (ppm)	Limit(ppm)	Verdict	Environment
GSM 850	190	836.6	1 Tx	-0.97	-0.00116	±2.5	PASS	VL
GSM 850	190	836.6	1 Tx	-5.13	-0.00614	±2.5	PASS	VN
GSM 850	190	836.6	1 Tx	0.68	0.00081	±2.5	PASS	VH
GSM 850	190	836.6	1 Tx	0.32	0.00039	±2.5	PASS	-30°C
GSM 850	190	836.6	1 Tx	-0.84	-0.001	±2.5	PASS	-20°C
GSM 850	190	836.6	1 Tx	1.58	0.00189	±2.5	PASS	-10°C
GSM 850	190	836.6	1 Tx	0.32	0.00038	±2.5	PASS	0°C
GSM 850	190	836.6	1 Tx	-1.49	-0.00178	±2.5	PASS	10°C
GSM 850	190	836.6	1 Tx	-1.13	-0.00135	±2.5	PASS	20°C
GSM 850	190	836.6	1 Tx	1.81	0.00216	±2.5	PASS	30°C
GSM 850	190	836.6	1 Tx	1.0	0.0012	±2.5	PASS	40°C
GSM 850	190	836.6	1 Tx	-0.71	-0.00085	±2.5	PASS	50°C

Peak to Average Ratio

Band	Channel	Freq (MHz)	Slots	Result (dB)	Limit (dB)	Verdict
GSM 850	190	836.6	1 Tx	0.11	13	PASS
GSM 850	251	848.8	1 Tx	0.11	13	PASS
GSM 850	128	824.2	1 Tx	0.11	13	PASS
GPRS 850	190	836.6	1 Tx	0.11	13	PASS
GPRS 850	251	848.8	1 Tx	0.11	13	PASS
GPRS 850	128	824.2	1 Tx	0.10	13	PASS
EGPRS 850	190	836.6	1 Tx	6.17	13	PASS
EGPRS 850	251	848.8	1 Tx	5.55	13	PASS
EGPRS 850	128	824.2	1 Tx	6.53	13	PASS

Test Graphs

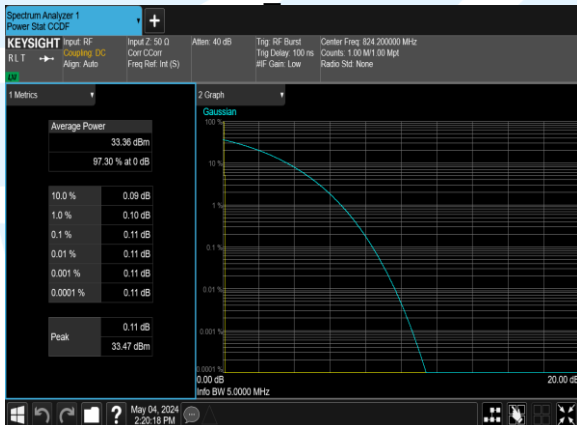
GSM850 Channel190



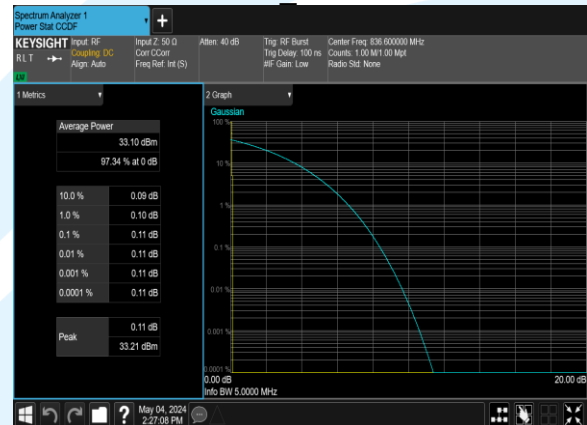
GSM850 Channel251



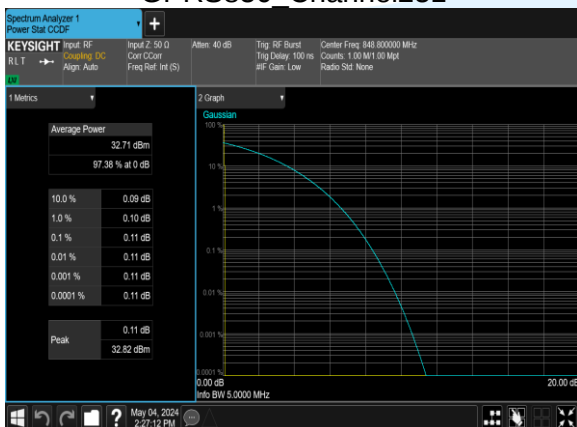
GSM850 Channel128



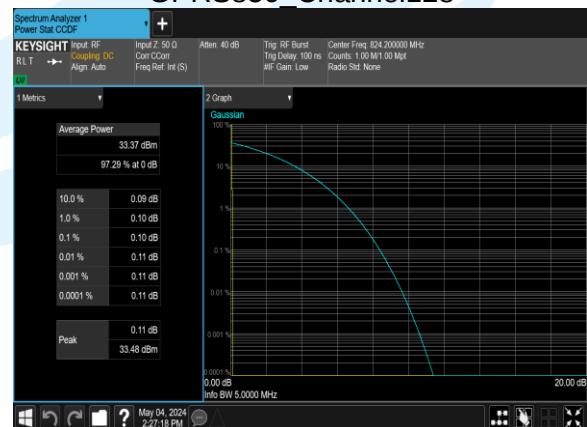
GPRS850 Channel190



GPRS850 Channel251



GPRS850 Channel128



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

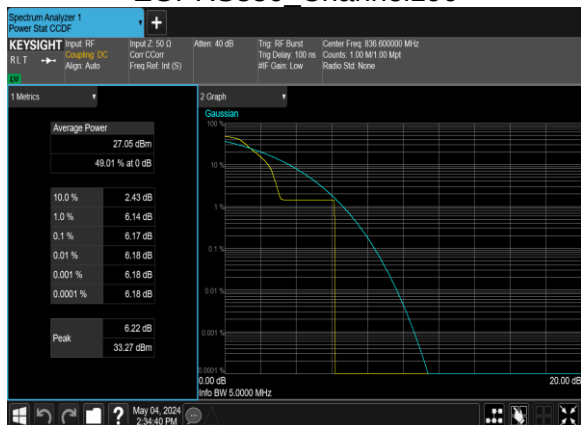
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

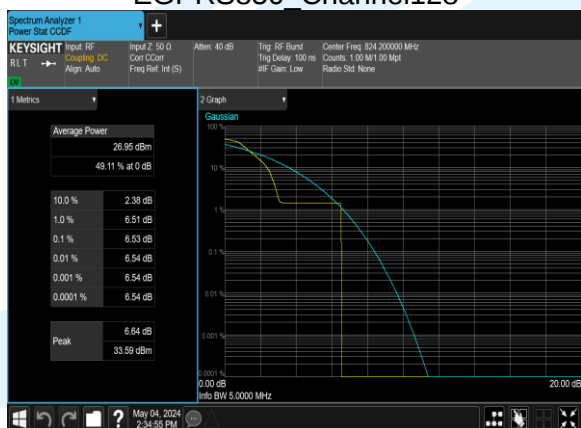
EGPRS850 Channel190



EGPRS850 Channel251



EGPRS850 Channel128

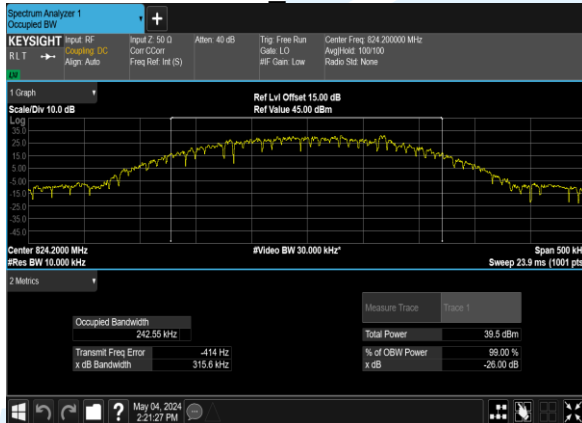


Occupied Bandwidth

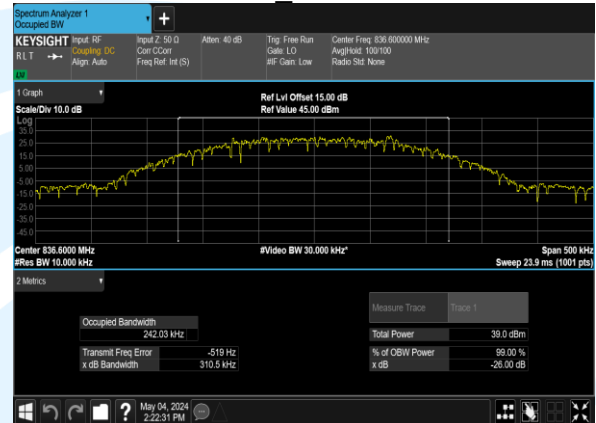
Band	Channel	Freq (MHz)	Slots	OBW (MHz)	26dB BW (MHz)
GSM 850	128	824.2	1 Tx	0.24255	0.3156
GSM 850	190	836.6	1 Tx	0.24203	0.3105
GSM 850	251	848.8	1 Tx	0.24229	0.3093
GPRS 850	190	836.6	1 Tx	0.24342	0.3148
GPRS 850	251	848.8	1 Tx	0.24319	0.3154
GPRS 850	128	824.2	1 Tx	0.24289	0.3159
EGPRS 850	190	836.6	1 Tx	0.23423	0.3112
EGPRS 850	251	848.8	1 Tx	0.23651	0.3035
EGPRS 850	128	824.2	1 Tx	0.24277	0.315

Test Graphs

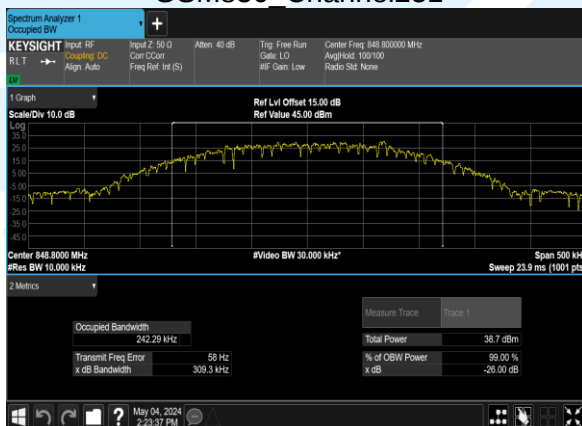
GSM850 Channel128



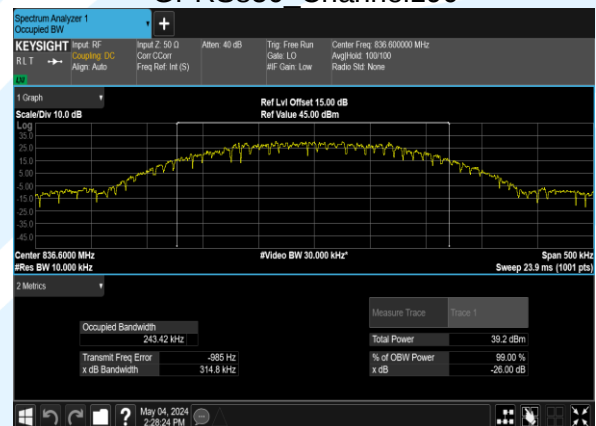
GSM850 Channel190



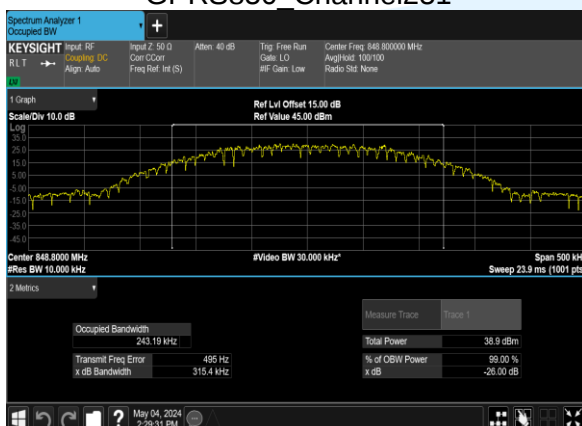
GSM850 Channel251



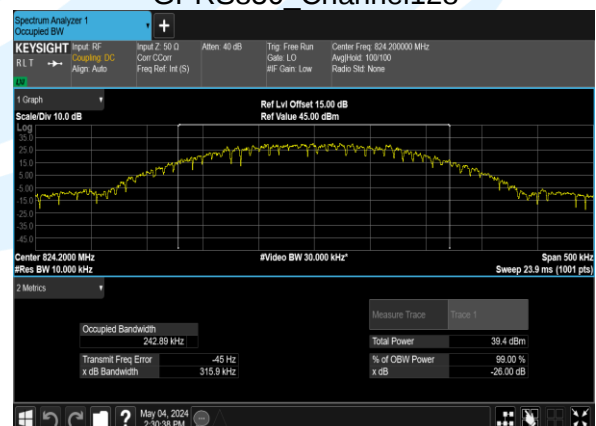
GPRS850 Channel190



GPRS850 Channel251



GPRS850 Channel128



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

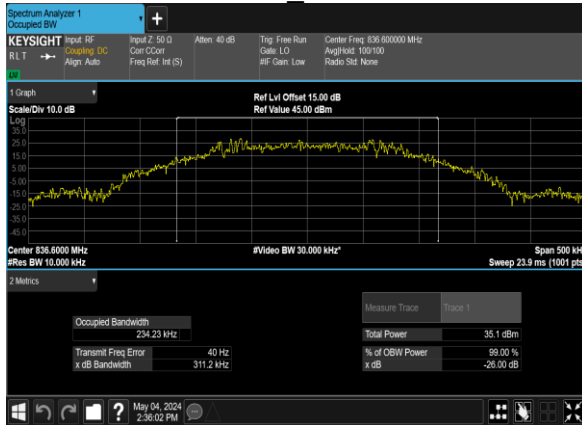
Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

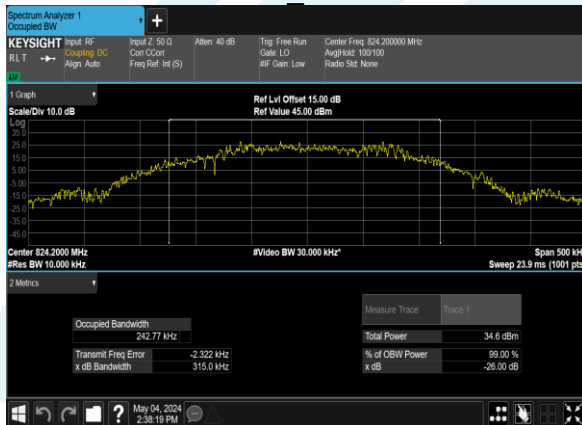
EGPRS850 Channel190



EGPRS850 Channel251



EGPRS850 Channel128

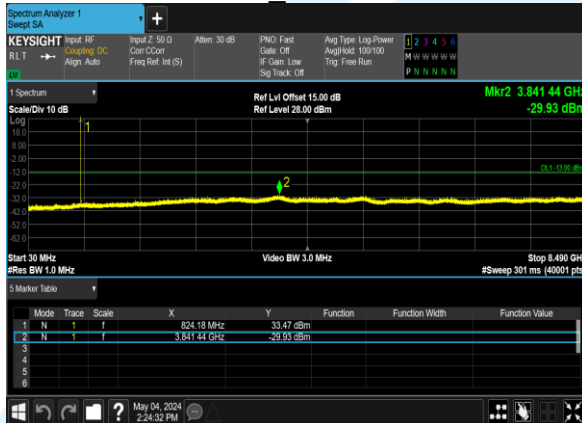


Conducted Spurious Emissions

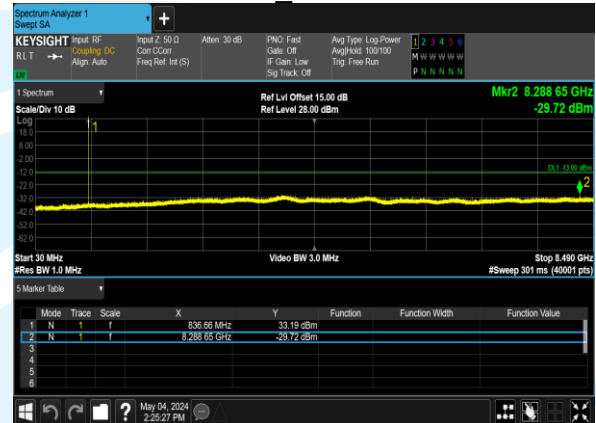
Band	Channel	Freq (MHz)	Slots	Result (dBm)	Limit (dBm)	Verdict
GSM 850	128	824.2	1 Tx	-29.93	-13	PASS
GSM 850	190	836.6	1 Tx	-29.72	-13	PASS
GSM 850	251	848.8	1 Tx	-29.5	-13	PASS
GPRS 850	190	836.6	1 Tx	-30.01	-13	PASS
GPRS 850	251	848.8	1 Tx	-29.86	-13	PASS
GPRS 850	128	824.2	1 Tx	-30.05	-13	PASS
EGPRS 850	128	824.2	1 Tx	-29.65	-13	PASS
EGPRS 850	251	848.8	1 Tx	-29.96	-13	PASS
EGPRS 850	190	836.6	1 Tx	-29.12	-13	PASS

Test Graphs

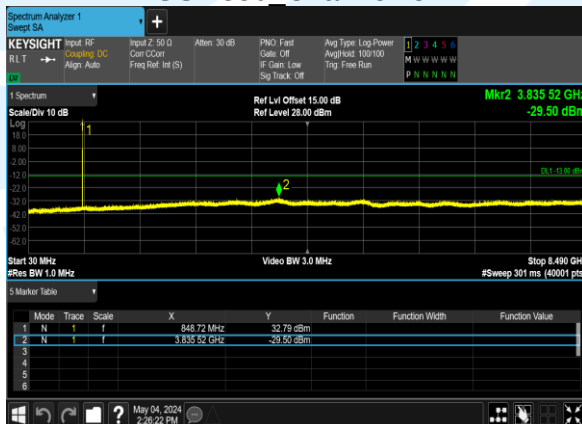
GSM850 Channel128



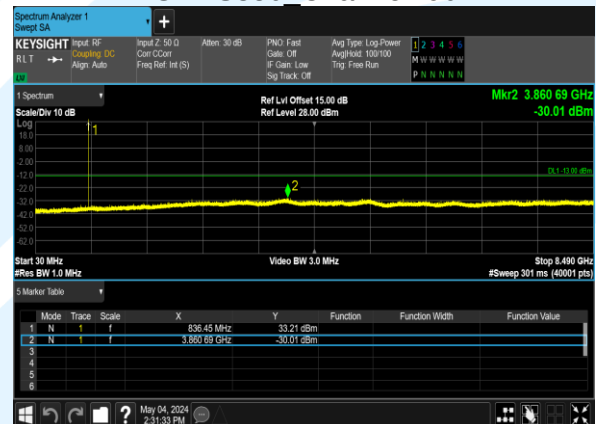
GSM850 Channel190



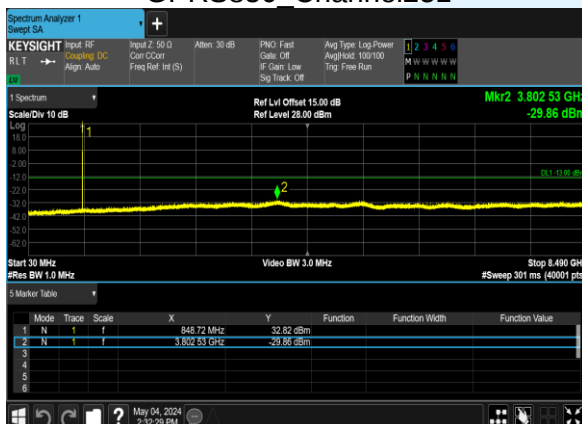
GSM850 Channel251



GPRS850 Channel190



GPRS850 Channel251



GPRS850 Channel128



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

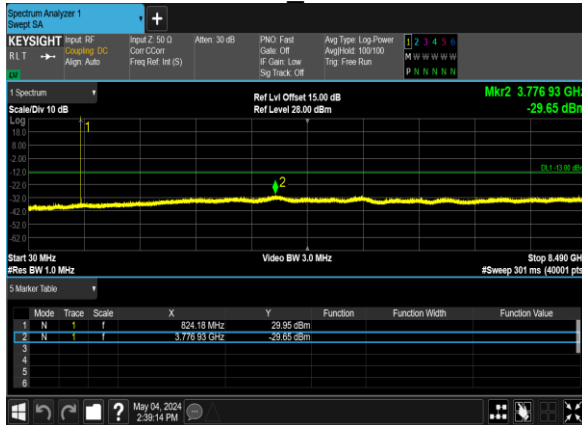
Fax: +86-755-28230886

E-mail: info@uttlab.com

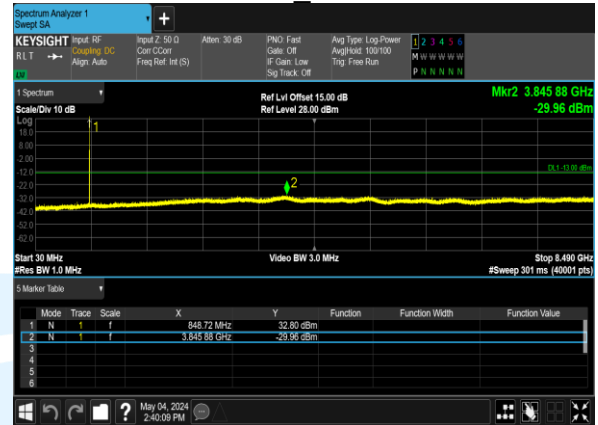
<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

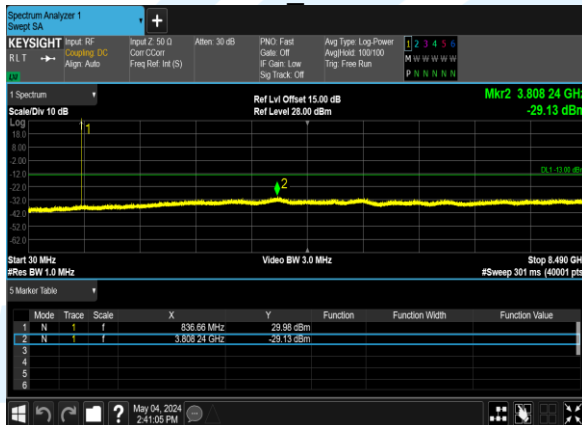
EGPRS850 Channel128



EGPRS850 Channel251



EGPRS850 Channel190

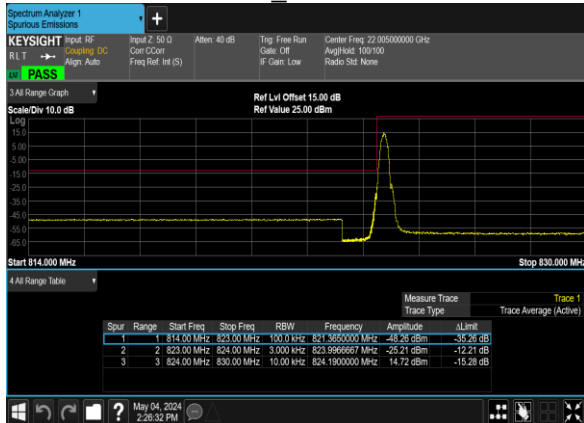


Conducted Band Edge

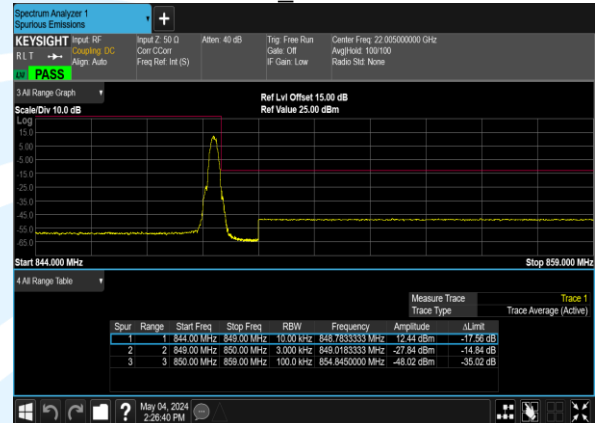
Band	Channel	Freq (MHz)	Slots	Result	Verdict
GSM 850	128	824.2	1 Tx	see graph	PASS
GSM 850	251	848.8	1 Tx	see graph	PASS
GPRS 850	251	848.8	1 Tx	see graph	PASS
GPRS 850	128	824.2	1 Tx	see graph	PASS
EGPRS 850	251	848.8	1 Tx	see graph	PASS
EGPRS 850	128	824.2	1 Tx	see graph	PASS

Test Graphs

GSM850_Channel128



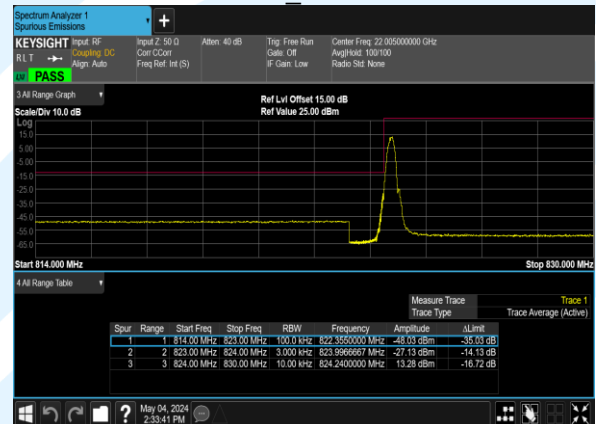
GSM850_Channel251



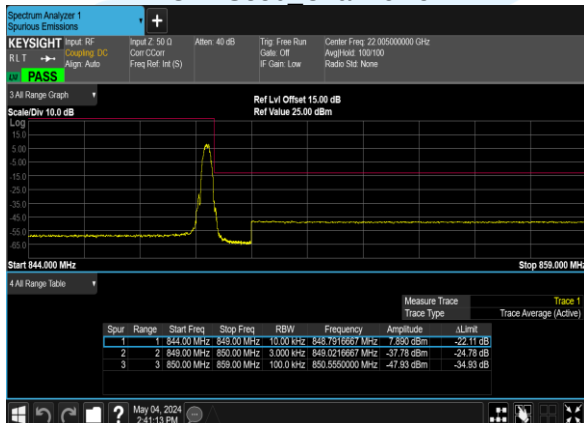
GPRS850_Channel251



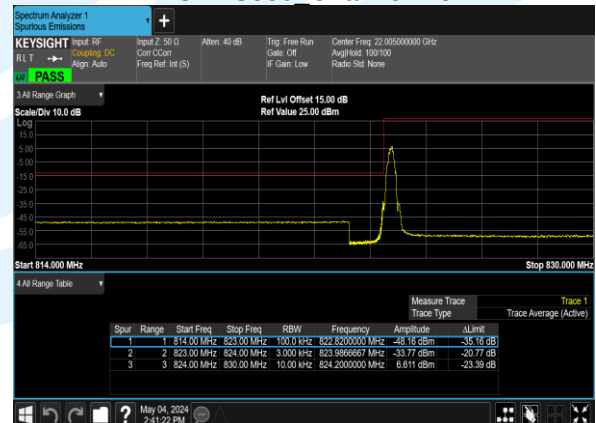
GPRS850_Channel128



EGPRS850_Channel251



EGPRS850_Channel128



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1

A.2 PCS 1900

Frequency Stability

Band	Channel	Freq (MHz)	Deviation (Hz)	Deviation (ppm)	Limit(ppm)	Verdict	Environment
PCS 1900	661	1880.0	0.32	0.00017	±2.5	PASS	VL
PCS 1900	661	1880.0	0.32	0.00017	±2.5	PASS	VN
PCS 1900	661	1880.0	5.62	0.00299	±2.5	PASS	VH
PCS 1900	661	1880.0	11.36	0.00605	±2.5	PASS	-30°C
PCS 1900	661	1880.0	13.69	0.00728	±2.5	PASS	-20°C
PCS 1900	661	1880.0	13.27	0.00706	±2.5	PASS	-10°C
PCS 1900	661	1880.0	17.21	0.00915	±2.5	PASS	0°C
PCS 1900	661	1880.0	4.36	0.00232	±2.5	PASS	10°C
PCS 1900	661	1880.0	-3.2	-0.0017	±2.5	PASS	20°C
PCS 1900	661	1880.0	10.85	0.00577	±2.5	PASS	30°C
PCS 1900	661	1880.0	12.4	0.00659	±2.5	PASS	40°C
PCS 1900	661	1880.0	5.59	0.00297	±2.5	PASS	50°C

Band	Channel	Freq (MHz)	Slots	Deviation (Hz)	Deviation (ppm)	Limit(ppm)	Verdict	Environment
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	VL
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	VN
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	VH
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	-30°C
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	-20°C
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	-10°C
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	0°C
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	10°C
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	20°C
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	30°C
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	40°C
PCS 1900	661	1880.0	1 Tx	-999.99	-0.53191	±2.5	PASS	50°C

Peak to Average Ratio

Band	Channel	Freq (MHz)	Slots	Result (dB)	Limit (dB)	Verdict
PCS 1900	661	1880.0	1 Tx	0.10	13	PASS
PCS 1900	810	1909.8	1 Tx	0.11	13	PASS
PCS 1900	512	1850.2	1 Tx	0.10	13	PASS
GPRS 1900	661	1880.0	1 Tx	0.11	13	PASS
GPRS 1900	810	1909.8	1 Tx	0.11	13	PASS
GPRS 1900	512	1850.2	1 Tx	0.10	13	PASS
EGPRS 1900	661	1880.0	1 Tx	3.24	13	PASS
EGPRS 1900	810	1909.8	1 Tx	3.39	13	PASS
EGPRS 1900	512	1850.2	1 Tx	3.16	13	PASS

Test Graphs

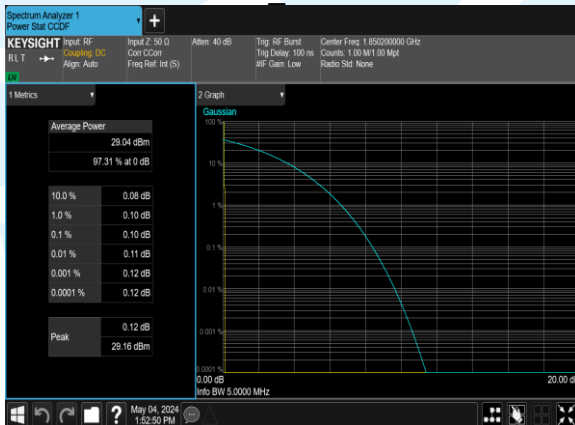
PCS1900 Channel661



PCS1900 Channel810



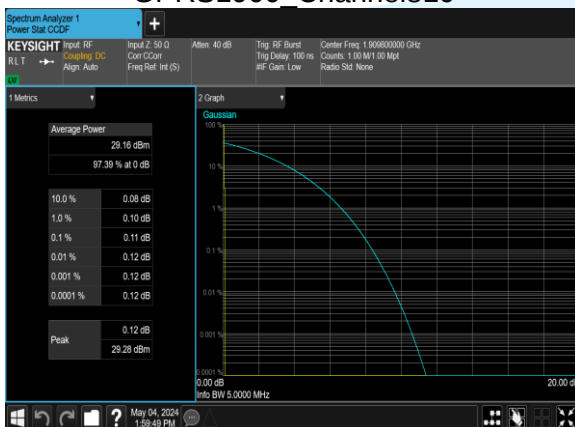
PCS1900 Channel512



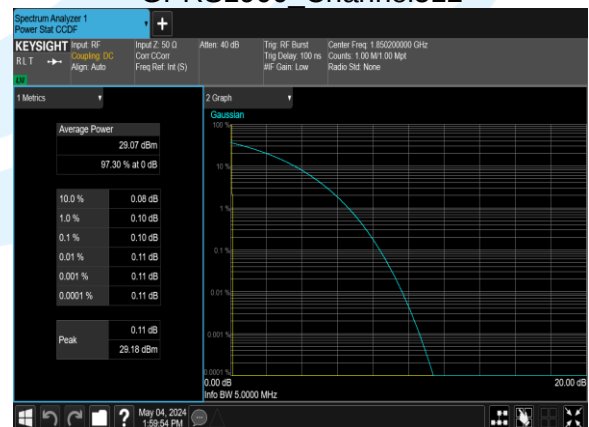
GPRS1900 Channel661



GPRS1900 Channel810



GPRS1900 Channel512



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC23G-V1.1