FCC TEST REPORT

Product Name:	Mobile Phone
Trade Mark:	BOLD
Model No.:	T5
Report Number:	200113001RFM-1
Test Standards:	FCC 47 CFR Part 22 Subpart H FCC 47 CFR Part 24 Subpart E
FCC ID:	YHLBOLDT5
Test Result:	PASS
Date of Issue:	March 12, 2020

Prepared for:

BLU Products, Inc.
10814 NW 33rd St # 100 Doral, FL 33172 ,USA

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
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Prepared by: _____ Henry Lu, Team Leader

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Approved by: _____ Billy Li, Technical Director

Date: March 12, 2020

Version

Version No.	Date	Description
V1.0	March 12, 2020	Original

CONTENTS

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	BLU Products, Inc.
Address of Applicant:	10814 NW 33rd St # 100 Doral, FL 33172 ,USA
Manufacturer:	BLU Products, Inc.
Address of Manufacturer:	10814 NW 33rd St # 100 Doral, FL 33172 ,USA

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	Mobile Phone	
Model No.:	T5	
Trade Mark:	BOLD	
DUT Stage:	Identical Prototype	
EUT Supports Function:	GSM Bands:	GSM850/1900
	UTRA Bands:	Band II/ Band V
	E-UTRA Bands:	FDD Band 2/ Band 4/ Band 5/ Band 7
		TDD Band 38
	2.4 GHz ISM Band:	IEEE 802.11b/g/n
		Bluetooth V4.2
Sample Received Date:	January 13, 2020	
Sample Tested Date:	January 13, 2020 to March 4, 2020	

1.2.2 Description of Accessories

Adapter	
Model No.:	US-WW-1003
Input:	100-240 V~50/60 Hz 0.2 A
Output:	5.0 V ⎓ 1000mA
DC Cable:	0.80 Meter, Unshielded without ferrite
Manufacturer:	ShenZhen NanBang Electronics co., LTD

Battery	
Model No.:	C775443200L
Battery Type:	Lithium-ion Rechargeable Battery
Rated Voltage:	3.8 Vdc
Limited Charge Voltage:	4.35 Vdc
Rated Capacity:	2000 mAh
Manufacturer:	Shenzhen Aerospace Electronic Co., Ltd.

Earphone	
Cable Type:	Unshielded
Length:	1.20 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 V:	826.4-846.6 MHz
Max RF Output Power:	GSM/GPRS 850:	31.89dBm
	EDGE 850:	24.53dBm
	GSM/GPRS 1900:	28.11dBm
	EDGE 1900:	24.14dBm
	WCDMA Band II:	21.84dBm
	WCDMA Band V:	22.12dBm
Emission Designator:	GSM/GPRS 850:	247KGXW
	EDGE 850:	245KG7W
	GSM/GPRS 1900:	248KGXW
	EDGE 1900:	245KG7W
	WCDMA Band II:	4M17F9W
	WCDMA Band V:	4M16F9W
Antenna Type:	PIFA Antenna	
Antenna Gain:	GSM 850:	-1.5 dBi
	PCS 1900:	-1.5 dBi
	WCDMA Band II:	-1.5 dBi
	WCDMA Band V:	-1.5 dBi
GPRS/EDGE Class:	Class 12	
Normal Test Voltage:	3.8 Vdc	
Extreme Test Voltage:	3.5 to 4.4Vdc	
Extreme Test Temperature:	-30 °C to +55 °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	0.30 Meter	UnionTrust

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New 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/EN 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: 2005 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

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 emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

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

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☒	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 03, 2018	Dec. 03, 2021
☒	Receiver	R&S	ESIB26	100114	Nov. 24, 2019	Nov. 23, 2020
☐	Loop Antenna	ETS-LINDGREN	6502	00202525	Nov. 24, 2019	Nov. 23, 2020
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Nov. 16, 2019	Nov. 15, 2020
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	Nov. 16, 2019	Nov. 15, 2020
☒	Preamplifier	HP	8447F	2805A02960	Nov. 16, 2019	Nov. 15, 2020
☐	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	3142E-PA	00201891	Nov. 24, 2019	Nov. 23, 2020
☐	6dB Attenuator	Talent	RA6A5-N-18	18103002	Nov. 24, 2019	Nov. 23, 2020
☐	Horn Antenna	ETS-LINDGREN	3117	00164202	Nov. 24, 2019	Nov. 23, 2020
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	Nov. 16, 2019	Nov. 15, 2020
☐	Horn Antenna	ETS-LINDGREN	3116C	00200180	May 18, 2019	May 18, 2020
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Nov. 16, 2019	Nov. 15, 2020
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

RF Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☒	Receiver	R&S	ESR7	1316.3003K07 -101181-K3	Nov. 24, 2019	Nov. 23, 2020
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Nov. 24, 2019	Nov. 23, 2020
☒	Wideband Radio Communication Tester	R&S	CMW500	120932	Jul. 19, 2019	Jul. 19, 2020
☐	Wideband Radio Communication Tester	R&S	CMW500	119583	Jul. 31, 2019	Jul. 31, 2020
☐	Universal Radio Communication Tester	R&S	CMU200	114713	Nov. 24, 2019	Nov. 23, 2020
☒	DC Source	KIKUSUI	PWR400L	LK003024	Sep. 09, 2019	Sep. 08, 2020
☐	Temp & Humidity chamber	Espec	GL(U)04K A(W)	16921H201P3	Sep. 09, 2019	Sep. 08, 2020
☒	Temp & Humidity chamber	Votisch	VT4002	58566133290 020	Jun. 05, 2018	Jun. 05, 2020

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	3.8	20 to 75
TL/VL	-30	3.5	20 to 75
TH/VL	+55	3.5	20 to 75
TL/VH	-30	4.4	20 to 75
TH/VH	+55	4.4	20 to 75

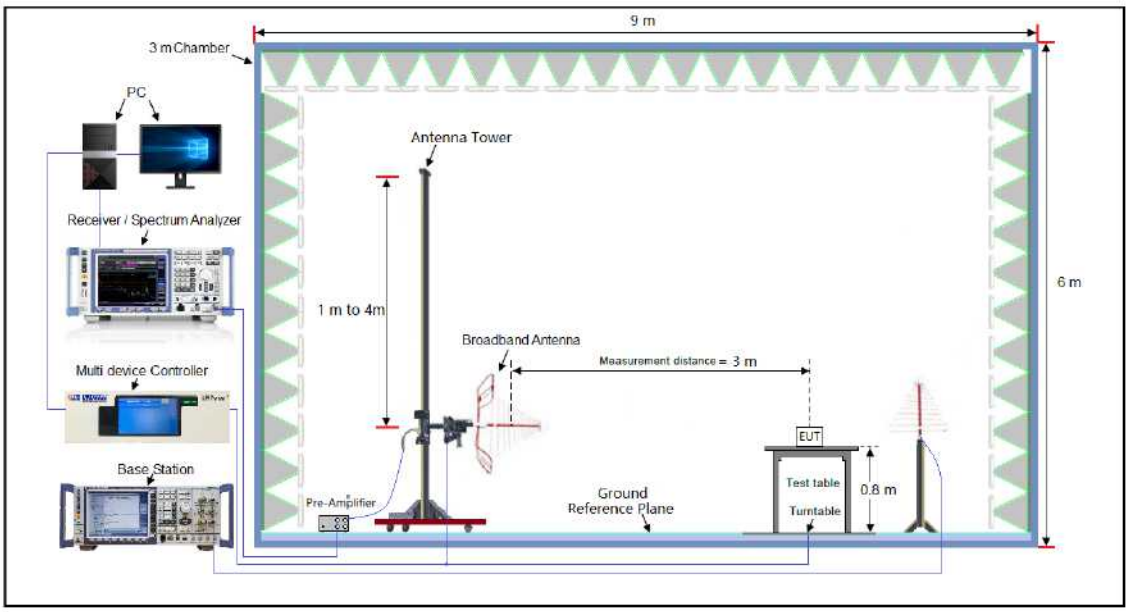
Remark:

1) The EUT just work in such extreme temperature of -30 °C to +55 °C and the extreme voltage of 3.5 V to 4.4 V, so here the EUT is tested in the temperature of -30 °C to +55 °C and the voltage of 3.5 V to 4.4 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.

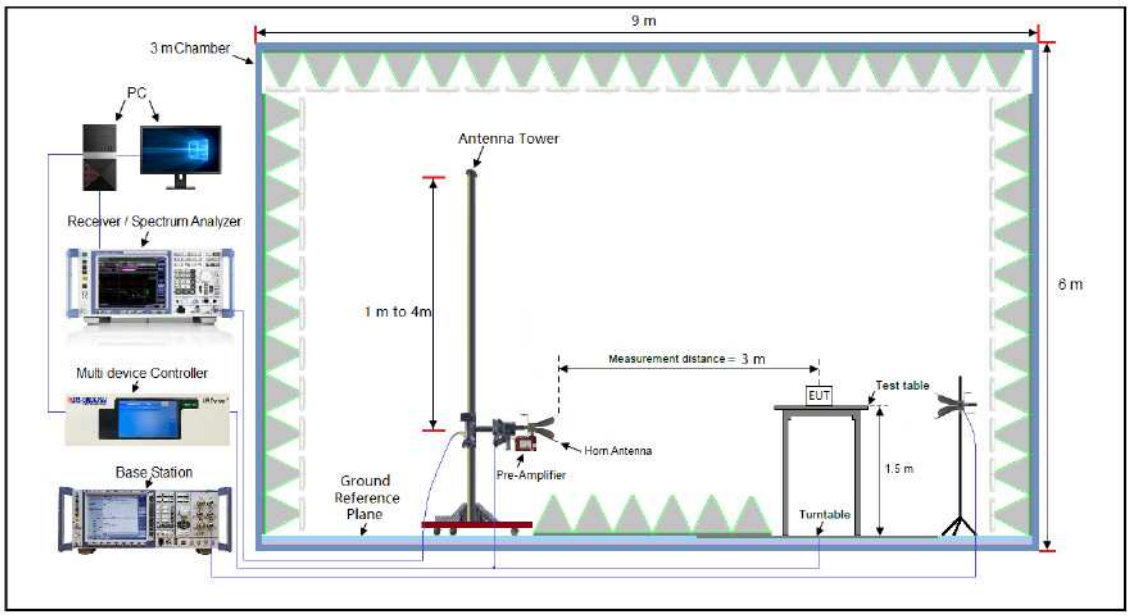
4.2 TEST SETUP

4.2.1 For Radiated Emissions test setup

Radiated Emissions 30MHz to 1GHz Test setup

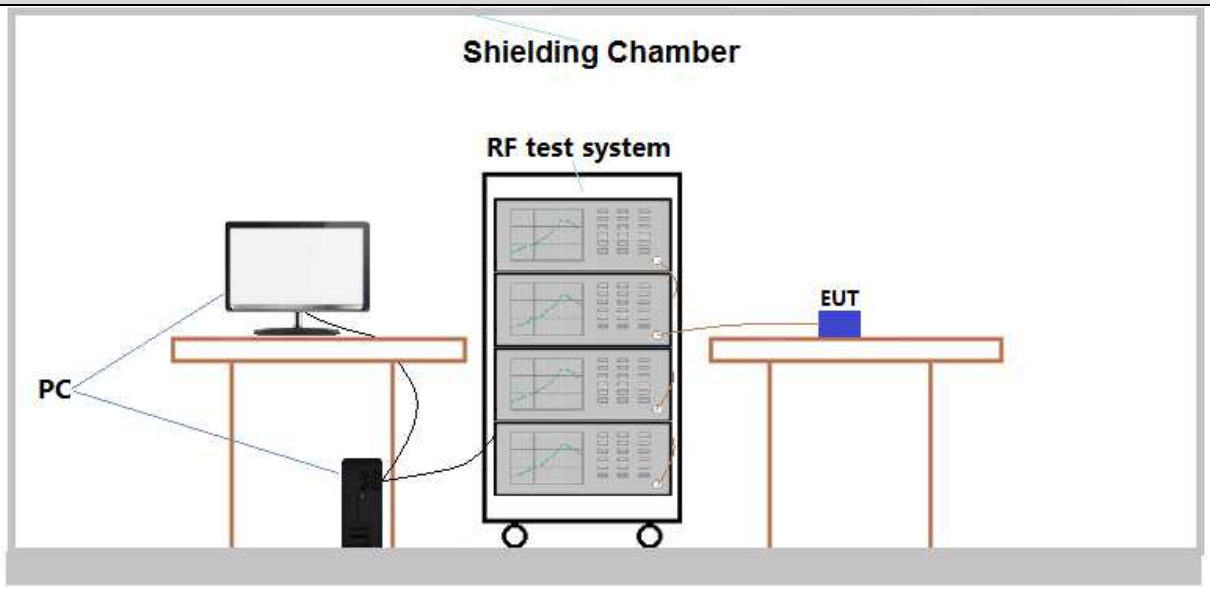


Radiated Emissions Above 1GHz Test setup

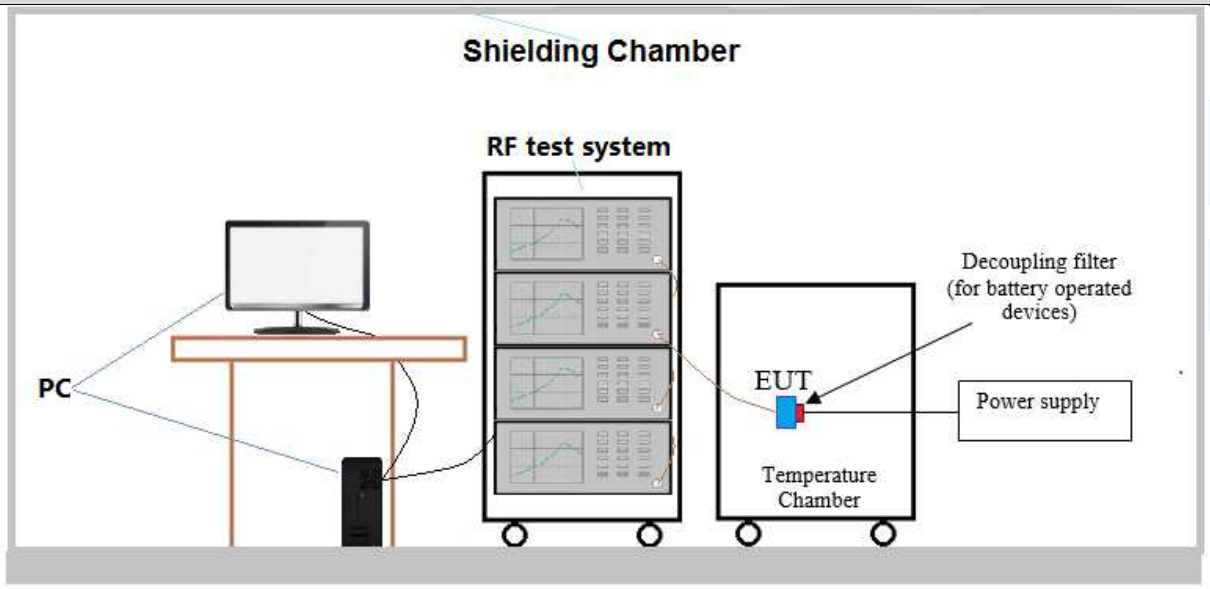


4.2.2 For Conducted RF test setup

Normal Environment



Extreme Environment



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

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 3.8Vdc rechargeable Li-on 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.
The worst case was found when positioned as the table below.

Bands	Mode	Antenna Port	Worst-case axis positioning
GSM 850	1TX	Chain 0	Y axis
PCS 1900	1TX	Chain 0	Y axis
WCDMA Band II	1TX	Chain 0	Y axis
WCDMA Band V	1TX	Chain 0	Y axis

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)	33.39	33.19	33.17
GPRS (GMSK, 1Tx-slot)	33.36	33.23	33.20
GPRS (GMSK, 2Tx-slot)	31.32	31.25	31.28
GPRS (GMSK, 3Tx-slot)	29.44	29.47	29.50
GPRS (GMSK, 4Tx-slot)	27.47	27.44	27.51
EDGE (8PSK, 1Tx-slot)	25.74	26.03	25.72
EDGE (8PSK, 2Tx-slot)	24.56	24.77	24.64
EDGE (8PSK, 3Tx-slot)	22.16	22.17	22.12
EDGE (8PSK, 4Tx-slot)	19.63	19.67	19.25

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)	28.56	29.49	29.61
GPRS (GMSK, 1Tx-slot)	29.58	29.46	29.58
GPRS (GMSK, 2Tx-slot)	27.53	27.20	26.88
GPRS (GMSK, 3Tx-slot)	26.03	25.68	25.38
GPRS (GMSK, 4Tx-slot)	23.95	23.64	23.37
EDGE (8PSK, 1Tx-slot)	25.61	26.22	25.57
EDGE (8PSK, 2Tx-slot)	25.61	25.64	24.96
EDGE (8PSK, 3Tx-slot)	24.67	24.95	24.54
EDGE (8PSK, 4Tx-slot)	22.94	23.28	22.78

WCDMA Band II Maximum Average Power (dBm)			
Channel	**9262**	**9400**	**9538**
Frequency(MHz)	**1852.4 MHz**	**1880.0 MHz**	**1907.6 MHz**
RMC 12.2kbps	23.37	23.45	23.62
HSDPA Subtest-1	23.17	23.28	23.13
HSDPA Subtest-2	23.22	23.03	23.07
HSDPA Subtest-3	23.00	22.80	22.87
HSDPA Subtest-4	23.04	22.84	22.93
HSUPA Subtest-1	22.83	22.74	22.67
HSUPA Subtest-2	21.04	21.20	21.23
HSUPA Subtest-3	21.40	21.14	21.20
HSUPA Subtest-4	21.50	21.36	21.39
HSUPA Subtest-5	23.40	23.23	23.20

WCDMA Band V Maximum Average Power (dBm)			
Channel	**4132**	**4182**	**4233**
Frequency(MHz)	**826.4 MHz**	**836.4 MHz**	**846.6 MHz**
RMC 12.2kbps	23.34	23.32	23.25
HSDPA Subtest-1	22.56	22.68	22.18
HSDPA Subtest-2	20.26	22.33	21.86
HSDPA Subtest-3	21.85	21.97	21.48
HSDPA Subtest-4	21.88	21.97	21.54
HSUPA Subtest-1	22.39	22.47	21.92
HSUPA Subtest-2	20.75	20.78	20.37
HSUPA Subtest-3	20.53	20.74	20.33
HSUPA Subtest-4	20.47	20.62	20.08
HSUPA Subtest-5	23.24	23.26	22.80

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/IVV	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 24	Personal Communications Services
4	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
5	KDB 971168 D01	KDB 971168 D01 Power Meas License Digital Systems v03r01

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),

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.

Test Procedure:

$$\textbf{ERP or EIRP} = P_{Meas} + G_T - L_C$$

where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

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

Bands	Modulation	Max. Conducted Avg. Power	Ant. Gain	Limit	ERP		Result
		(dBm)	(dBi)	(W)	(dBm)	(W)	
GSM 850 (824-849 MHz)	GSM	33.39	-1.50	7.0	31.89	1.545254	Pass
	EDGE	26.03	-1.50		24.53	0.283792	Pass
WCDMA Band V (824-849 MHz)	RMC 12.2kbps	23.34	-1.50	7.0	21.84	0.152757	Pass
	HSUPA	22.68	-1.50		21.18	0.131220	Pass
	HSDPA	23.26	-1.50		21.76	0.149968	Pass

Bands	Modulation	Max. Conducted Avg. Power	Ant. Gain	Limit	EIRP		Result
		(dBm)	(dBi)	(W)	(dBm)	(W)	
PCS 1900 (1850-1910 MHz)	GPRS	29.61	-1.50	2.0	28.11	0.647143	Pass
	EDGE	25.64	-1.50		24.14	0.259418	Pass
WCDMA Band II (1850-1910 MHz)	RMC 12.2kbps	23.62	-1.50	2.0	22.12	0.162930	Pass
	HSUPA	23.28	-1.50		21.78	0.150661	Pass
	HSDPA	23.40	-1.50		21.90	0.154882	Pass

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),

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.

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),

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 EUT was connected to Spectrum Analyzer and Base Station via power divider. 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.

Some regulatory requirements specify a PAPR limit when the output power limits are specified in terms of average power. If it becomes necessary to provide measurement data to demonstrate compliance to a PAPR limit, then the appropriate procedure from those provided in 5.2.3 shall be utilized to determine the peak power (or peak PSD) and the appropriate procedure from those provided in 5.2.4 shall be used to determine the average power (or average PSD). The data from these measurements is then used in Equation (2) to determine the PAPR of a narrowband CW-like signal. See 5.2.3.4 for guidance on determining the PAPR of a broadband noise-like signal.

PAPR (dB) = PPk (dBm or dBW)-PAvg (dBm or dBW)

where:

PAPR peak-to-average power ratio, in dB;

PPk measured peak power or peak PSD level, in dBm or dBW;

PAvg measured average power or average PSD level, in dBm or dBW.

OR

c

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.

a) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth
b) Set the number of counts to a value that stabilizes the measured CCDF curve
c) 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

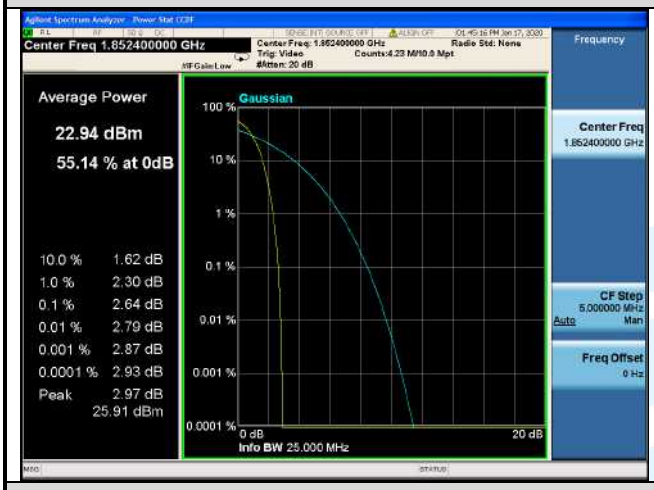
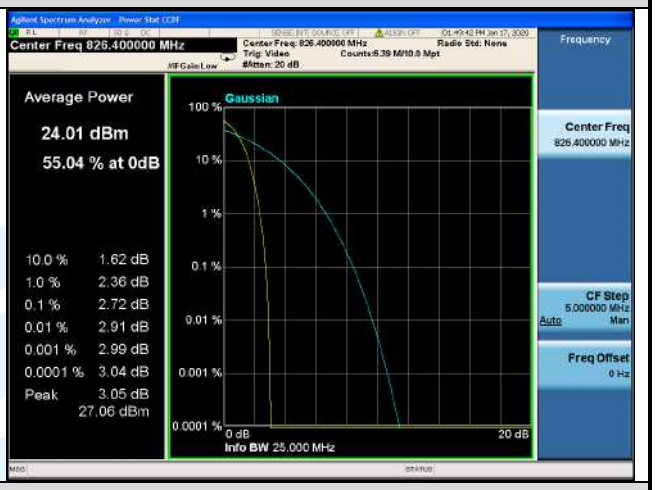
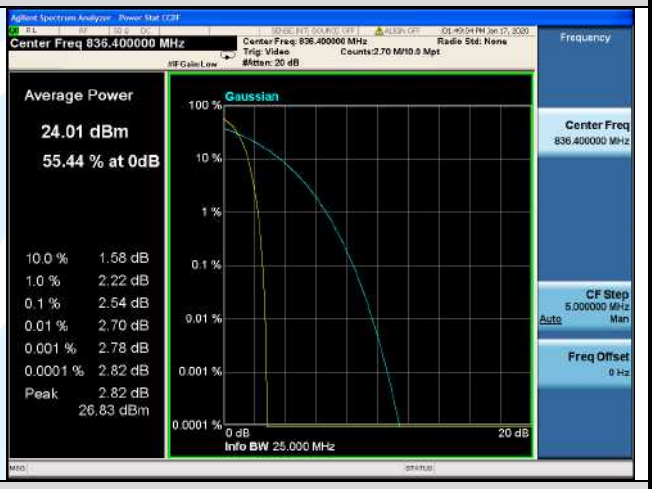
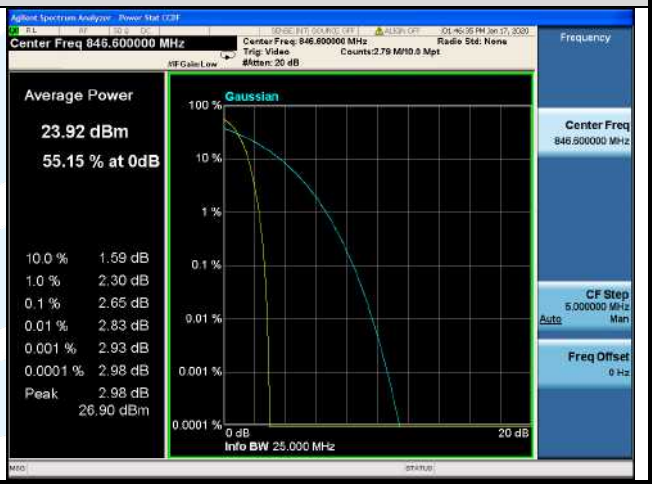
Test Data: See table below

Bands	Modulation	Peak-to-average ratio (dB)			Limit	Result
		Lowest	Middle	Highest	(dBm)	
GSM 850	GSM	0.31	0.28	0.31	13	Pass
	EDGE	0.27	0.27	0.29	13	Pass
PCS 1900	GSM	0.32	0.32	0.31	13	Pass
	EDGE	0.30	0.30	0.35	13	Pass
WCDMA Band II	RMC 12.2kbps	2.64	2.16	2.35	13	Pass
WCDMA Band V	RMC 12.2kbps	2.72	2.54	2.65	13	Pass

The test plots as follows:

GSM 850	
GSM	**EDGE**
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

PCS 1900	
GSM	EDGE
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

WCDMA Band II_RMC 12.2kbps	WCDMA Band V_RMC 12.2kbps
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

5.5 99%&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),

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

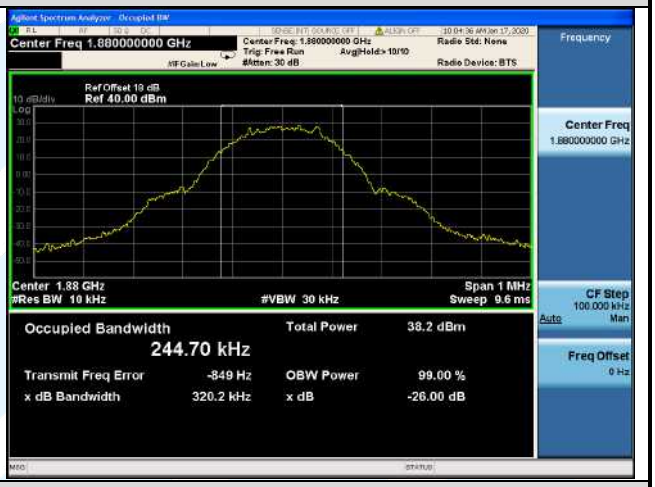
Test Data: See table below

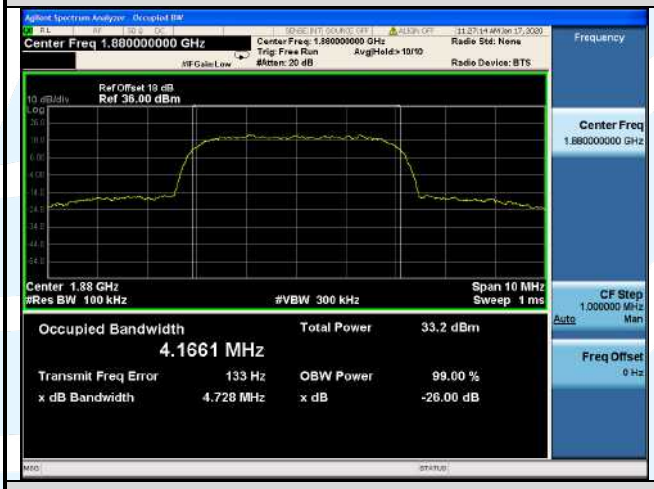
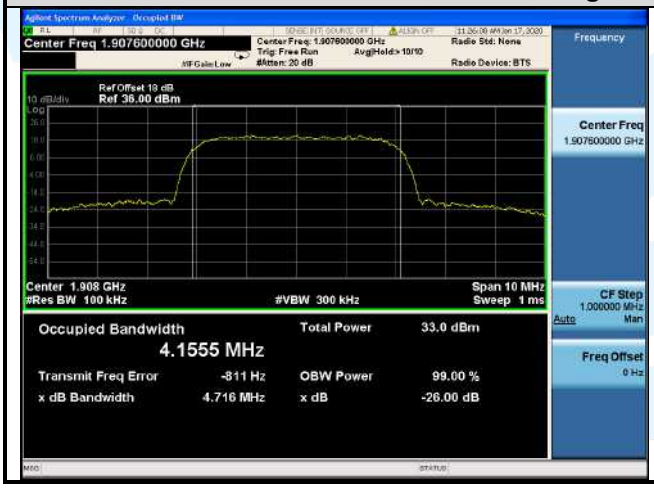
Bands	Modulation	Channel	Frequency (MHz)	26 dB BW (kHz)	99% BW (kHz)
GSM 850	GSM	128	824.2	317.8	246.57
		190	836.6	317.7	245.71
		251	848.8	318.3	245.59
	EDGE	128	824.2	322.7	243.80
		190	836.6	320.7	244.51
		251	848.8	321.4	242.58
PCS 1900	GSM	512	1850.2	315.1	248.03
		661	1880.0	317.5	244.72
		810	1909.8	315.4	246.49
	EDGE	512	1850.2	326.5	243.87
		661	1880.0	320.2	244.70
		810	1909.8	317.6	243.60

Bands	Modulation	Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
WCDMA Band II	RMC 12.2kbps	9262	1852.4	4.700	4.1535
		9400	1880.0	4.728	4.1661
		9538	1907.6	4.716	4.1555
WCDMA Band V	RMC 12.2kbps	4132	826.4	4.689	4.1549
		4182	836.4	4.697	4.1555
		4233	846.6	4.693	4.1569

The test plots as follows:

GSM 850	
GSM	**EDGE**
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

PCS 1900	
GSM	EDGE
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

WCDMA Band II_RMC 12.2kbps	WCDMA Band V_RMC 12.2kbps
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

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),

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.

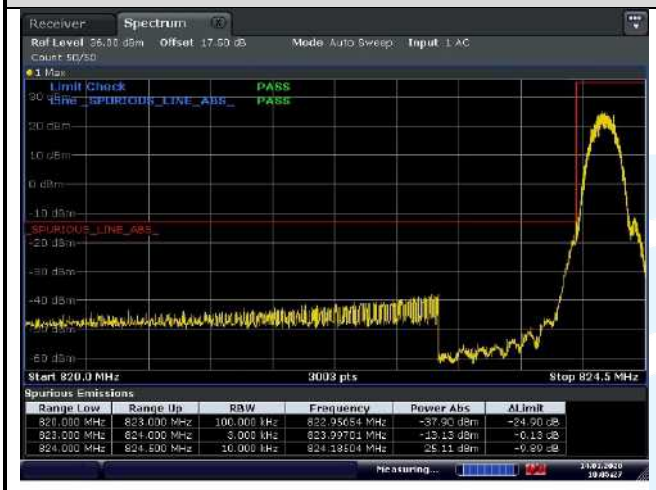
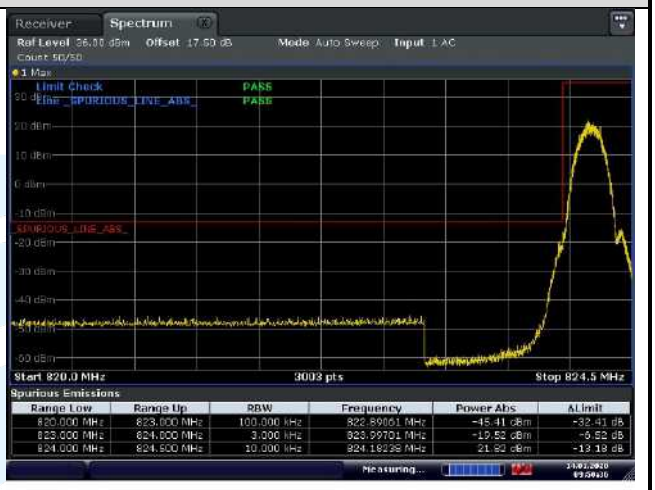
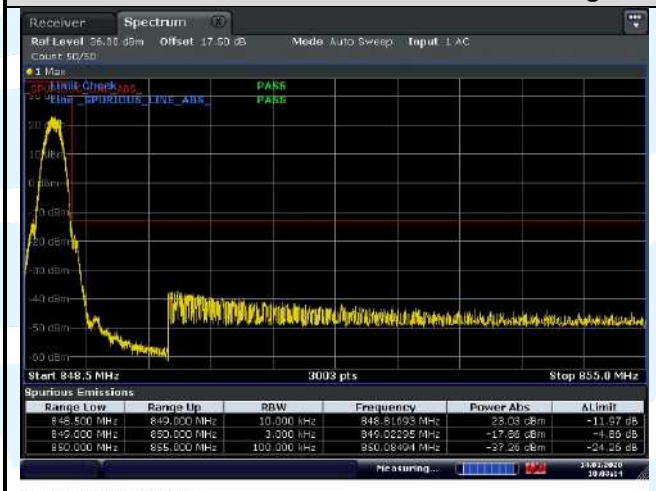
Test Setup: Refer to section 4.2.2 for details.

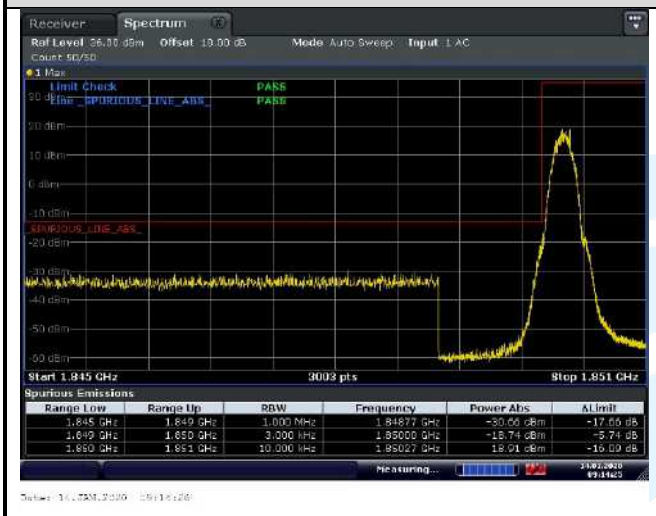
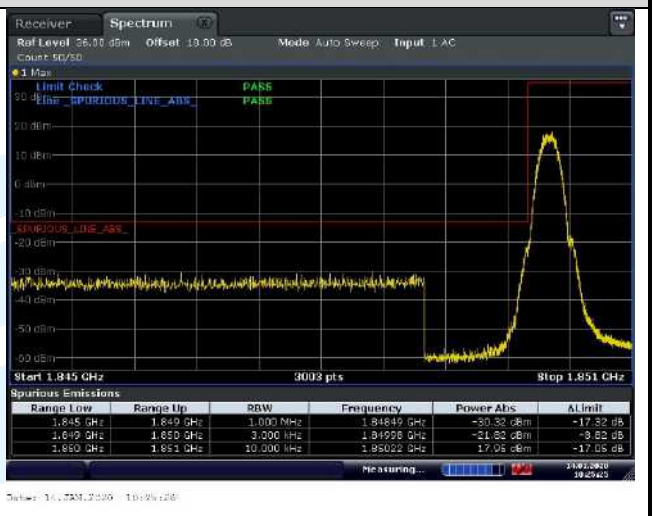
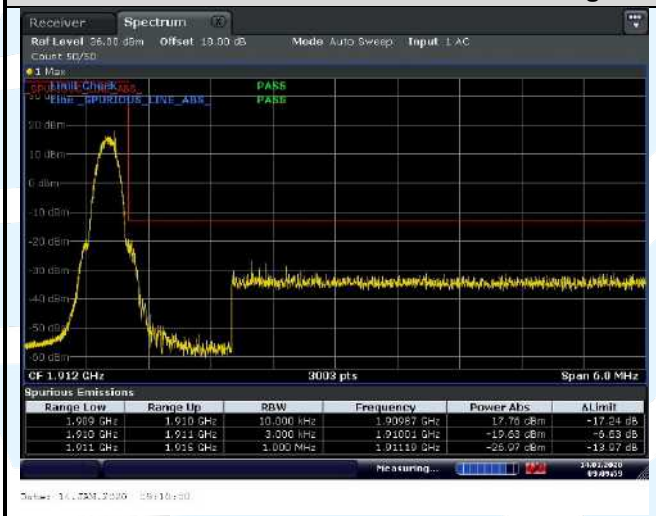
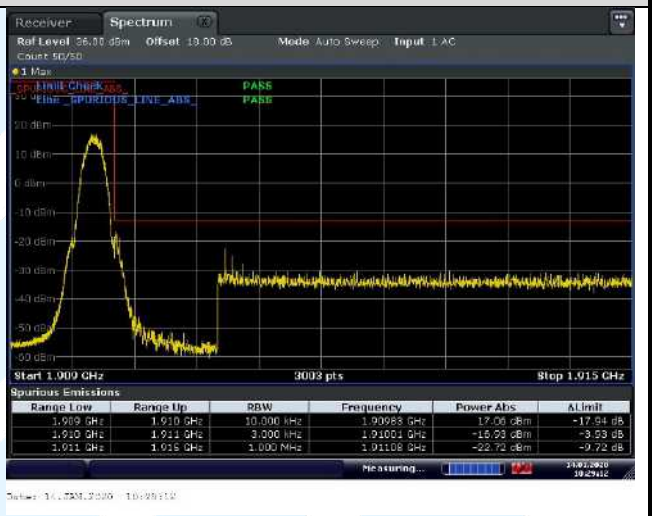
Instruments Used: Refer to section 3 for details

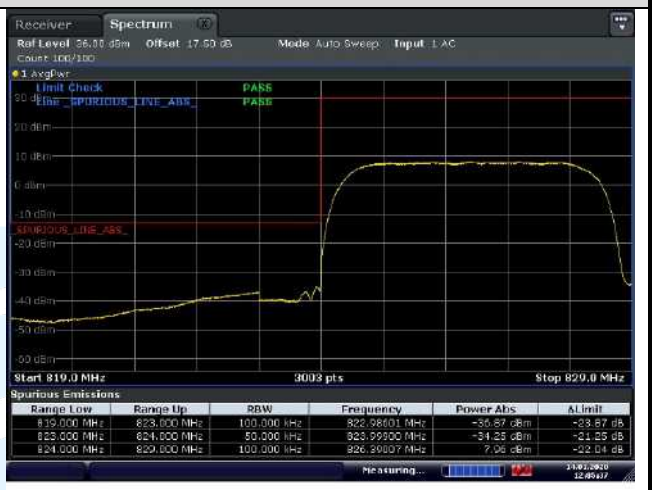
Test Mode: Link mode

Test Results: Pass

The test plots as follows:

GSM 850	
GSM	**EDGE**
Lowest Channel	
	
Highest Channel	
	

PCS 1900	
GSM	EDGE
Lowest Channel	
	
Highest Channel	
	

WCDMA Band II_RMC 12.2kbps	WCDMA Band V_RMC 12.2kbps
Lowest Channel	
	
Highest Channel	
	

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),

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: Pass

The test plots as follows:

GSM 850	
GSM	EDGE
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

PCS 1900	
GSM	EDGE
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

WCDMA Band II_RMC 12.2kbps	WCDMA Band V_RMC 12.2kbps
Lowest Channel	
	
Middle Channel	
	
Highest Channel	
	

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),

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 measurement data as follows:

GSM 850_Below 1G							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
GSM_ Lowest Channel							
1	53.756	-71.36	17.90	-53.46	-13.00	-40.46	Horizontal
2	235.135	-74.43	23.79	-50.64	-13.00	-37.64	Horizontal
3	723.793	-77.65	35.48	-42.17	-13.00	-29.17	Horizontal
4	36.014	-78.93	23.65	-55.28	-13.00	-42.28	Vertical
5	235.135	-76.27	23.79	-52.48	-13.00	-39.48	Vertical
6	776.485	-70.72	34.75	-35.97	-13.00	-22.97	Vertical
GSM_ Middle Channel							
1	33.101	-75.23	25.65	-49.58	-13.00	-36.58	Horizontal
2	227.016	-70.08	23.34	-46.74	-13.00	-33.74	Horizontal
3	300.699	-69.96	25.70	-44.26	-13.00	-31.26	Horizontal
4	32.640	-77.56	25.84	-51.72	-13.00	-38.72	Vertical
5	225.427	-70.82	23.26	-47.56	-13.00	-34.56	Vertical
6	300.699	-70.78	25.69	-45.09	-13.00	-32.09	Vertical
GSM_ Highest Channel							
1	31.959	-77.65	26.23	-51.42	-13.00	-38.42	Horizontal
2	227.016	-73.69	23.34	-50.35	-13.00	-37.35	Horizontal
3	300.699	-71.17	25.70	-45.47	-13.00	-32.47	Horizontal
4	33.101	-77.59	25.54	-52.05	-13.00	-39.05	Vertical
5	227.016	-74.27	23.34	-50.93	-13.00	-37.93	Vertical
6	300.699	-72.63	25.69	-46.94	-13.00	-33.94	Vertical

GSM 850_Above 1G							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
GSM_ Lowest Channel							
1	1648.400	-49.98	3.17	-46.81	-13.00	-33.81	Horizontal
2	4121.000	-54.40	16.37	-38.03	-13.00	-25.03	Horizontal
3	1648.400	-53.64	3.25	-50.39	-13.00	-37.39	Vertical
4	4121.000	-49.63	16.14	-33.49	-13.00	-20.49	Vertical
GSM_ Middle Channel							
1	3346.400	-60.18	13.47	-46.71	-13.00	-33.71	Horizontal
2	4183.000	-61.55	16.42	-45.13	-13.00	-32.13	Horizontal
3	3346.400	-59.58	13.17	-46.41	-13.00	-33.41	Vertical
4	4183.000	-50.54	16.18	-34.36	-13.00	-21.36	Vertical
GSM_ Highest Channel							
1	2546.400	-49.84	11.46	-38.38	-13.00	-25.38	Horizontal
2	4244.000	-56.69	16.45	-40.24	-13.00	-27.24	Horizontal
3	2546.400	-64.08	11.25	-52.83	-13.00	-39.83	Vertical
4	4244.000	-58.60	16.20	-42.40	-13.00	-29.40	Vertical

PCS 1900_Below 1G							
No.	Frequency (MHz)	SA Reading (dBm)	Correction factor (dB/m)	EIRP Result (dBm)	Limit (dBm)	Margin (dB)	Ant. Pol.
GSM_ Lowest Channel							
1	33.570	-86.22	25.40	-60.82	-13.00	-47.82	Horizontal
2	101.180	-83.16	20.28	-62.88	-13.00	-49.88	Horizontal
3	793.028	-83.92	36.45	-47.47	-13.00	-34.47	Horizontal
4	33.570	-90.22	25.23	-64.99	-13.00	-51.99	Vertical
5	101.180	-86.94	20.28	-66.66	-13.00	-53.66	Vertical
6	986.044	-87.00	39.68	-47.32	-13.00	-34.32	Vertical
GSM_ Middle Channel							
1	42.931	-88.18	20.93	-67.25	-13.00	-54.25	Horizontal
2	106.281	-86.20	20.19	-66.01	-13.00	-53.01	Horizontal
3	938.714	-86.35	39.49	-46.86	-13.00	-33.86	Horizontal
4	32.184	-90.13	26.14	-63.99	-13.00	-50.99	Vertical
5	106.281	-87.19	20.19	-67.00	-13.00	-54.00	Vertical
6	932.141	-87.11	38.25	-48.86	-13.00	-35.86	Vertical
GSM_ Highest Channel							
1	30.639	-91.34	26.92	-64.42	-13.00	-51.42	Horizontal
2	101.180	-86.76	20.28	-66.48	-13.00	-53.48	Horizontal
3	965.474	-86.62	40.21	-46.41	-13.00	-33.41	Horizontal
4	31.073	-90.91	26.85	-64.06	-13.00	-51.06	Vertical
5	106.281	-86.68	20.19	-66.49	-13.00	-53.49	Vertical
6	992.997	-85.60	39.89	-45.71	-13.00	-32.71	Vertical

PCS 1900_Above 1G							
No.	Frequency	SA Reading	Correction factor	EIRP Result	Limit	Margin	Ant. Pol.
	(MHz)	(dBm)	(dB/m)	(dBm)	(dBm)	(dB)	
GSM_ Lowest Channel							
1	3700.400	-60.30	15.35	-44.95	-13.00	-31.95	Horizontal
2	9251.000	-49.77	20.72	-29.05	-13.00	-16.05	Horizontal
3	3700.400	-57.00	15.09	-41.91	-13.00	-28.91	Vertical
4	9251.000	-47.20	20.62	-26.58	-13.00	-13.58	Vertical
GSM_ Middle Channel							
1	3760.000	-59.61	15.54	-44.07	-13.00	-31.07	Horizontal
2	9400.000	-42.70	20.81	-21.89	-13.00	-8.89	Horizontal
3	3760.000	-58.23	15.29	-42.94	-13.00	-29.94	Vertical
4	9400.000	-43.26	20.71	-22.55	-13.00	-9.55	Vertical
GSM_ Highest Channel							
1	3819.600	-64.87	15.73	-49.14	-13.00	-36.14	Horizontal
2	9549.000	-45.86	20.65	-25.21	-13.00	-12.21	Horizontal
3	3819.600	-59.89	15.49	-44.40	-13.00	-31.40	Vertical
4	9549.000	-44.33	20.55	-23.78	-13.00	-10.78	Vertical

WCDMA Band II _Below 1G							
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	31.292	-68.08	3.45	-64.63	-13.00	-51.63	Horizontal
2	104.798	-64.69	-2.66	-67.35	-13.00	-54.35	Horizontal
3	972.283	-69.45	17.18	-52.27	-13.00	-39.27	Horizontal
4	31.073	-69.72	3.71	-66.01	-13.00	-53.01	Vertical
5	263.115	-68.75	2.54	-66.21	-13.00	-53.21	Vertical
6	932.141	-69.77	15.09	-54.68	-13.00	-41.68	Vertical
RMC 12.2kbps_ Middle Channel							
1	54.135	-59.42	-5.10	-64.52	-13.00	-51.52	Horizontal
2	103.335	-64.77	-2.65	-67.42	-13.00	-54.42	Horizontal
3	798.620	-68.55	13.05	-55.50	-13.00	-42.50	Horizontal
4	45.733	-65.83	-3.83	-69.66	-13.00	-56.66	Vertical
5	105.537	-67.16	-2.67	-69.83	-13.00	-56.83	Vertical
6	703.731	-68.92	11.36	-57.56	-13.00	-44.56	Vertical
RMC 12.2kbps_ Highest Channel							
1	55.288	-57.88	-5.18	-63.06	-13.00	-50.06	Horizontal
2	104.798	-62.10	-2.66	-64.76	-13.00	-51.76	Horizontal
3	674.677	-65.62	11.91	-53.71	-13.00	-40.71	Horizontal
4	33.335	-64.08	2.27	-61.81	-13.00	-48.81	Vertical
5	102.612	-63.19	-2.63	-65.82	-13.00	-52.82	Vertical
6	925.613	-66.59	14.93	-51.66	-13.00	-38.66	Vertical

WCDMA Band II _Above 1G							
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	3704.800	-69.84	15.37	-54.47	-13.00	-41.47	Horizontal
2	5557.200	-66.78	17.05	-49.73	-13.00	-36.73	Horizontal
3	3704.800	-70.85	15.11	-55.74	-13.00	-42.74	Vertical
4	5557.200	-67.99	16.85	-51.14	-13.00	-38.14	Vertical
RMC 12.2kbps_ Middle Channel							
1	3760.000	-72.23	15.54	-56.69	-13.00	-43.69	Horizontal
2	5640.000	-68.46	17.18	-51.28	-13.00	-38.28	Horizontal
3	3760.000	-69.23	15.29	-53.94	-13.00	-40.94	Vertical
4	5640.000	-67.66	16.98	-50.68	-13.00	-37.68	Vertical
RMC 12.2kbps_ Highest Channel							
1	3815.200	-70.85	15.72	-55.13	-13.00	-42.13	Horizontal
2	5722.800	-68.91	17.48	-51.43	-13.00	-38.43	Horizontal
3	3815.200	-72.46	15.48	-56.98	-13.00	-43.98	Vertical
4	5722.800	-69.65	17.28	-52.37	-13.00	-39.37	Vertical

WCDMA Band V_Below 1G							
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	31.292	-89.41	32.49	-56.92	-13.00	-43.92	Horizontal
2	89.787	-84.26	25.08	-59.18	-13.00	-46.18	Horizontal
3	798.620	-86.70	42.45	-44.25	-13.00	-31.25	Horizontal
4	38.365	-86.57	28.04	-58.53	-13.00	-45.53	Vertical
5	89.787	-84.51	25.08	-59.43	-13.00	-46.43	Vertical
6	684.226	-86.41	39.97	-46.44	-13.00	-33.44	Vertical
RMC 12.2kbps_ Middle Channel							
1	30.639	-90.73	32.82	-57.91	-13.00	-44.91	Horizontal
2	89.787	-85.46	25.08	-60.38	-13.00	-47.38	Horizontal
3	798.620	-87.82	42.45	-45.37	-13.00	-32.37	Horizontal
4	30.425	-90.28	33.18	-57.10	-13.00	-44.10	Vertical
5	106.281	-87.96	26.10	-61.86	-13.00	-48.86	Vertical
6	703.731	-87.96	40.79	-47.17	-13.00	-34.17	Vertical
RMC 12.2kbps_ Highest Channel							
1	33.101	-89.67	31.55	-58.12	-13.00	-45.12	Horizontal
2	89.787	-84.37	25.08	-59.29	-13.00	-46.29	Horizontal
3	804.252	-87.27	42.46	-44.81	-13.00	-31.81	Horizontal
4	31.073	-89.68	32.75	-56.93	-13.00	-43.93	Vertical
5	201.454	-86.21	28.16	-58.05	-13.00	-45.05	Vertical
6	771.047	-86.69	40.47	-46.22	-13.00	-33.22	Vertical

WCDMA Band V _Above 1G							
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	1652.800	-65.60	3.22	-62.38	-13.00	-49.38	Horizontal
2	2479.200	-70.83	11.45	-59.38	-13.00	-46.38	Horizontal
3	1652.800	-65.53	3.30	-62.23	-13.00	-49.23	Vertical
4	2479.200	-69.87	11.25	-58.62	-13.00	-45.62	Vertical
RMC 12.2kbps_ Middle Channel							
1	1672.800	-66.98	3.44	-63.54	-13.00	-50.54	Horizontal
2	2509.200	-66.83	11.46	-55.37	-13.00	-42.37	Horizontal
3	1672.800	-67.75	3.50	-64.25	-13.00	-51.25	Vertical
4	2509.200	-62.71	11.26	-51.45	-13.00	-38.45	Vertical
RMC 12.2kbps_ Highest Channel							
1	1693.200	-66.16	3.66	-62.50	-13.00	-49.50	Horizontal
2	2539.800	-70.00	11.46	-58.54	-13.00	-45.54	Horizontal
3	1693.200	-66.17	3.71	-62.46	-13.00	-49.46	Vertical
4	2539.800	-70.00	11.25	-58.75	-13.00	-45.75	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

5.9 FREQUENCY STABILITY

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

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,

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°C
   b) Voltage =low voltage, 3.5 Vdc, Normal, 3.8 Vdc and High voltage, 4.4 Vdc.
2) Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20ºC 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.

3) Frequency Stability vs Voltage:

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

Equipment Used: Refer to section 3 for details.

Test Result: Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 850							
GPRS	190 / 836.6	VL	TN	41	0.0490	± 2.5	Pass
		VN		42	0.0502	± 2.5	Pass
		VH		39	0.0466	± 2.5	Pass
		VN	50	40	0.0478	± 2.5	Pass
			40	44	0.0526	± 2.5	Pass
			30	35	0.0418	± 2.5	Pass
			20	41	0.0490	± 2.5	Pass
			10	44	0.0526	± 2.5	Pass
			0	43	0.0514	± 2.5	Pass
			-10	44	0.0526	± 2.5	Pass
			-20	35	0.0418	± 2.5	Pass
			-30	36	0.0430	± 2.5	Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
GSM 850							
EDGE	190 / 836.6	VL	TN	39	0.0466	± 2.5	Pass
		VN		42	0.0502	± 2.5	Pass
		VH		39	0.0466	± 2.5	Pass
		VN	50	36	0.0430	± 2.5	Pass
			40	41	0.0490	± 2.5	Pass
			30	42	0.0502	± 2.5	Pass
			20	44	0.0526	± 2.5	Pass
			10	36	0.0430	± 2.5	Pass
			0	44	0.0526	± 2.5	Pass
			-10	37	0.0442	± 2.5	Pass
			-20	39	0.0466	± 2.5	Pass
			-30	33	0.0394	± 2.5	Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Result
PCS 1900							
GPRS	661 / 1880.0	VL	TN	39	0.0207	N/A	Pass
		VN		41	0.0218		Pass
		VH		38	0.0202		Pass
		VN	50	36	0.0191		Pass
			40	38	0.0202		Pass
			30	33	0.0176		Pass
			20	37	0.0197		Pass
			10	37	0.0197		Pass
			0	33	0.0176		Pass
			-10	38	0.0202		Pass
			-20	41	0.0218		Pass
			-30	35	0.0186		Pass

Modulation	Channel/ Frequency (MHz)	Voltage (Vdc)	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Pass/ Fail
PCS 1900							
EDGE	661 / 1880.0	VL	TN	38	0.0202	N/A	Pass
		VN		34	0.0181		Pass
		VH		39	0.0207		Pass
		VN	50	36	0.0191		Pass
			40	41	0.0218		Pass
			30	31	0.0165		Pass
			20	33	0.0176		Pass
			10	34	0.0181		Pass
			0	31	0.0165		Pass
			-10	33	0.0176		Pass
			-20	36	0.0191		Pass
			-30	29	0.0154		Pass

Modulation	Channel/ Frequency	Voltage	Temperature	Deviation	Deviation	Limit	Result
	(MHz)	(Vdc)	(℃)	(Hz)	(ppm)	(ppm)	
WCDMA Band II							
RMC 12.2kbps	9400 / 1880.0	VL	TN	31	0.0165	N/A	Pass
		VN		33	0.0176		Pass
		VH		29	0.0154		Pass
		VN	50	31	0.0165		Pass
			40	33	0.0176		Pass
			30	41	0.0218		Pass
			20	33	0.0176		Pass
			10	33	0.0176		Pass
			0	31	0.0165		Pass
			-10	37	0.0197		Pass
			-20	30	0.0160		Pass
			-30	30	0.0160		Pass

Modulation	Channel/ Frequency	Voltage	Temperature	Deviation	Deviation	Limit	Result
	(MHz)	(Vdc)	(℃)	(Hz)	(ppm)	(ppm)	
WCDMA Band V							
RMC 12.2kbps	4182 / 836.4	VL	TN	31	0.0371	± 2.5	Pass
		VN		23	0.0275	± 2.5	Pass
		VH		31	0.0371	± 2.5	Pass
		VN	50	22	0.0263	± 2.5	Pass
			40	29	0.0347	± 2.5	Pass
			30	28	0.0335	± 2.5	Pass
			20	22	0.0263	± 2.5	Pass
			10	34	0.0407	± 2.5	Pass
			0	31	0.0371	± 2.5	Pass
			-10	25	0.0299	± 2.5	Pass
			-20	26	0.0311	± 2.5	Pass
			-30	34	0.0407	± 2.5	Pass

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***