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FCC&IC TEST REPORT

Report No.....: AB25060001FW05
FCC ID.....: 2BQHD-DGEN1
IC ID.....: 34121-DGEN1
Applicant.....: Freedom Factory Inc
Address.....: 4 Peddlers Row 295, Newark, Delaware 19702 USA
Manufacturer.....: Freedom Factory Inc
Address.....: 4 Peddlers Row 295, Newark, Delaware 19702 USA
Product Name.....: dGEN1
Trade Mark.....: Freedom Factory
Test Model.....: dGEN1
Additional Model(s).....: /
Standard.....: FCC 47 CFR Part 22 Subpart H;FCC 47 CFR Part 24 Subpart E
FCC 47 CFR Part 27;RSS-Gen Issue 5;RSS-132 Issue 4;RSS-133 Issue 7;RSS-139 Issue 4
Date of Receipt.....: 2025.04.15
Date of Test Date.....: 2025.04.15-2025.06.19
Date of Issue.....: 2025.07.07
Test Result.....: Pass

Compiled by:

(Printed Name + Signature)

Huajie Li

Huajie Li

Supervised by:

(Printed Name + Signature)

Jay Liu

Jay Liu

Approved by:

(Printed Name + Signature)

Mic Cheng

Mic Cheng

Testing Laboratory Name.....: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address.....: 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

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**FCC&IC TEST REPORT**

Test Report No.: AB25060001FW05	<u>2025 07.07</u> Date of issue
--	------------------------------------

EUT.....	: dGEN1
Test Model.....	: dGEN1
Applicant.....	: Freedom Factory Inc
Address.....	: 4 Peddlers Row 295, Newark, Delaware 19702 USA
Telephone.....	: +1(726)842-5475
Fax.....	: /
Manufacturer.....	: Freedom Factory Inc
Address.....	: 4 Peddlers Row 295, Newark, Delaware 19702 USA
Telephone.....	: +1(726)842-5475
Fax.....	: /
Test Result	Positive

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

REPORT VERSION

Version No.	Issue Date	Description
01	2025 07.07	Initial Issue

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1. GENERAL INFORMATION

1.1. GENERAL DESCRIPTION OF EUT

Product Name:	dGEN1	
Trade Mark:	Freedom Factory	
Test Model:	dGEN1	
Additional Model(s):	/	
Model Difference:	/	
Hardware Version:	S891_MB_V2	
Software Version:	/	
Power Supply:	DC 3.85V by battery(4500mAh) or DC 5V 2A from AC/DC adapter	
EUT Supports Function: (Provided by the customer)	GSM Bands:	GSM 850 / PCS 1900
	UTRA Bands:	WCDMA Band II/IV/V
Test Sample(s) Number:	AB25060001-01 (Engineer Sample) AB25060001-02 (Normal Sample)	
Radio Specification Subject to this Report		
Support Networks:	GSM, GPRS, EDGE, WCDMA, HSDPA, HSUPA	
Frequency Range:	GSM/GPRS/EDGE 850:	824.2MHz~848.8MHz
	GSM/GPRS/EDGE 1900:	1850.2MHz~1909.8MHz
	WCDMA Band II:	1852.4MHz~1907.6MHz
	WCDMA Band IV:	1712.4MHz~1752.6MHz
	WCDMA Band V:	826.4MHz~846.6MHz
Modulation Type:	GSM/GPRS:	GMSK
	EDGE:	GMSK, 8PSK
	WCDMA Band:	BPSK
	HSDPA:	QPSK
	HSUPA:	QPSK
GSM/GPRS/EDGE Power Class:	GSM 850: Power Class 4; PCS 1900: Power Class 1	
GPRS/EDGE Class:	Class 12	
UMTS Power Class:	Class 3	
Antenna Type:	PIFA Antenna	
Antenna Gain:	GSM 850:	2.12dBi (Max.)
	PCS 1900:	1.28dBi (Max.)
	WCDMA Band II:	1.28dBi (Max.)
	WCDMA Band IV:	0.06dBi (Max.)
	WCDMA Band V:	2.12dBi (Max.)

1.2. DESCRIPTION OF SUPPORT EQUIPMENT

Description	Manufacturer	Model	Serial Number	Supplied by
AC/DC Adapter	Xiaomi	MDY-11-EX	SA62212LA04358J	Applicant

1.3. DESCRIPTION OF EXTERNAL I/O

I/O Port Description	Quantity	Cable
USB Type-C Interface	1	0.8m, unshielded
Earphone Jack	1	N/A

1.4. GENERAL DESCRIPTION OF APPLIED STANDARDS

The tests were performed according to following standards:

[FCC 47 CFR Part 22 Subpart H](#) - Cellular Radiotelephone Service

[FCC 47 CFR Part 24 Subpart E](#) - Personal Communications Services

[FCC 47 CFR Part 27](#) - Miscellaneous Wireless Communications Services

[FCC 47 CFR Part 2](#) - Frequency Allocations and Radio Treaty Matters; General Rules and Regulations

[ANSI C63.26-2015](#) - American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[KDB 971168 D01](#) - KDB 971168 D01 Power Meas License Digital Systems v03r01

[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

[RSS-Gen Issue 5](#) - General Requirements for Compliance of Radio Apparatus

[RSS-132 Issue 4](#) - Cellular Systems Operating in the Bands 824-849 MHz and 869-894 MHz

[RSS-133 Issue 7](#) - Personal Communications Service Equipment Operating in the Bands 1850-1915 MHz and 1930-1995 MHz

[RSS-139 Issue 4](#) - Advanced Wireless Services Equipment Operating in the Bands 1710-1780 MHz and 2110-2200 MHz

1.5. DESCRIPTION OF TEST FACILITY

Test Lab: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address: 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

Tel.: +(86) 0755 85250797

E-mail: Aibonorm@aibonorm.com

Website: www.Aibonorm.com

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

A2LA-Lab Certificate No.: 7514.01

Aibo Standard Technology (Shenzhen) 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.

FCC Accredited Lab.

Designation Number: CN1411

Test Firm Registration Number: 567066

ISED Wireless Device Testing Laboratories

CAB identifier: CN0185

1.6. MEASUREMENT UNCERTAINTY

The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Items	Measurement Uncertainty
Radiated Spurious Emissions(9KHz~30MHz)	±2.70dB
Radiated Spurious Emissions(25MHz~1000MHz)	±1.60dB
Radiated Spurious Emissions(1GHz~20GHz)	±2.29dB
Radiated Spurious Emissions(20GHz~40GHz)	±5.32dB
RF Conducted Power	±0.57dB
Conducted Spurious Emissions	±1.60dB
RF Frequency	±6.0 x 10 ⁻⁷

Note: All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

1.7. ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	+15°C ~ +35°C
Lative Humidity	20 % ~ 75 %
Air Pressure	98KPa ~ 101KPa

Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NVNT	+15 to +35	3.85	20 to 75
NVLT	-30	3.85	20 to 75
NVHT	+50	3.85	20 to 75
LVLT	-30	3.27	20 to 75
HVHT	+50	4.43	20 to 75

Remark:

1) The EUT just work in such extreme temperature of -30 °C to +50 °C, so here the EUT is tested in the temperature of -30 °C to +50 °C.

2) NV: Normal Voltage; NT: Normal Temperature

LV: Low Extreme Test Voltage; HV: High Extreme Test Voltage.

3) LT: Low Extreme Test Temperature; HT: High Extreme Test Temperature.

1.8. DESCRIPTION OF TEST MODES

Band	Tx/Rx Frequency	RF Channel		
		Low(L)	Middle(M)	High(H)
GSM/GPRS/ EDGE850	Tx (824MHz~849MHz)	Channel 128	Channel 190	Channel 251
		824.2MHz	836.6MHz	848.8MHz
GSM/GPRS/ EDGE1900	Tx (1850MHz~1910MHz)	Channel 512	Channel 661	Channel 810
		1850.2MHz	1880.0MHz	1909.8MHz
WCDMA Band II	Tx (1850MHz~1910MHz)	Channel 9262	Channel 9400	Channel 9538
		1852.4MHz	1880.0MHz	1907.6MHz
WCDMA band V	Tx (824MHz~849MHz)	Channel 4132	Channel 4182	Channel 4233
		826.4MHz	836.4MHz	846.6MHz
WCDMA Band IV	Tx (1710MHz~1755MHz)	Channel 1312	Channel 1412	Channel 1513
		1712.4MHz	1732.4MHz	1752.6MHz

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 3.85Vdc 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.

2. SUMMARY OF TEST RESULT

GSM850 / WCDMA Band V			
FCC&IC Rule	Description of Test Item(s)	Result	Test Engineer
§22.913(a)(5) §RSS-132 5.4	Conducted Output Power and Effective (Isotropic) Radiated Power	Pass	Jacey Fu
§22.913(d) §RSS-132 5.4	Peak-Average Ratio	Pass	Jacey Fu
§2.1049 §RSS-Gen 6.7	99%&26dB Bandwidth	Pass	Jacey Fu
§2.1051, §22.917(a) §RSS-132 5.5	Band Edges at Antenna Terminals	Pass	Jacey Fu
§2.1051, §22.917(a) §RSS-132 5.5	Spurious Emission at Antenna Terminals	Pass	Jacey Fu
§2.1053, §22.917(a) §RSS-132 5.5	Field Strength of Spurious Radiation	Pass	Jacey Fu
§2.1055(a)(1)(b) §2.1055(d)(2) §22.355 §RSS-132 5.3	Frequency Stability	Pass	Jacey Fu
PCS1900 / WCDMA Band II			
FCC&IC Rule	Description of Test Item(s)	Result	Test Engineer
§2.1046, §24.232(c) §RSS-133 5.5	Conducted Output Power and Effective (Isotropic) Radiated Power	Pass	Jacey Fu
§24.232(d) §RSS-133 5.5	Peak-Average Ratio	Pass	Jacey Fu
§2.1049 §RSS-Gen 6.7	99%&26dB Bandwidth	Pass	Jacey Fu
§2.1051, §24.238(a) §RSS-133 5.6	Band Edges at Antenna Terminals	Pass	Jacey Fu
§2.1051, §24.238(a) §RSS-133 5.6	Spurious Emission at Antenna Terminals	Pass	Jacey Fu
§2.1053, §24.238(a)	Field Strength of Spurious Radiation	Pass	Jacey Fu

§RSS-133 5.6			
§2.1055(a)(1)(b) §2.1055(d) (2) §24.235 §RSS-133 5.4	Frequency Stability	Pass	Jacey Fu
WCDMA Band IV			
FCC&IC Rule	Description of Test Item(s)	Result	Test Engineer
§2.1046, §27.50(d)(4) §RSS-139 5.5	Conducted Output Power and Effective (Isotropic) Radiated Power	Pass	Jacey Fu
§27.50(d)(5) §RSS-139 5.5	Peak-Average Ratio	Pass	Jacey Fu
§2.1049 §RSS-Gen 6.7	99%&26dB Bandwidth	Pass	Jacey Fu
§2.1051, §27.53(h) §RSS-139 5.6	Band Edges at Antenna Terminals	Pass	Jacey Fu
§2.1051, §27.53(h) §RSS-139 5.6	Spurious Emission at Antenna Terminals	Pass	Jacey Fu
§2.1053, §27.53(h) §RSS-139 5.6	Field Strength of Spurious Radiation	Pass	Jacey Fu
§2.1055(a)(1)(b) §2.1055(d)(2) §27.54 §RSS-139 5.4	Frequency Stability	Pass	Jacey Fu

3. MEASUREMENT INSTRUMENTS LIST

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
1	Loop Antenna	Schwarzbeck	FMZB 1519	1519-025	07/02/2024	07/01/2025
2	Power Amplifier	HZEMC	HPA-9K0133	HYP A23029	02/19/2025	02/18/2026
3	Broadband Antenna	Schwarzbeck	VULB 9168	01763	02/19/2025	02/18/2026
4	Attenuator	PRM	ATT50-6-3	ATT50-6-3	01/20/2025	01/19/2026
5	Spectrum Analyzer	R&S	FSV40-N	101365	01/20/2025	01/19/2026
6	Horn Antenna	Schwarzbeck	BBHA 9120 D	02786	02/19/2025	02/18/2026
7	Horn Antenna	Schwarzbeck	ZLB7-18-40G-77	072410839	02/19/2025	02/18/2026
8	Power Amplifier	HZEMC	PA0118-43	HYP A23030	02/19/2025	02/18/2026
9	Power Amplifier	HZEMC	PA01840-45	HYP A23031	02/19/2025	02/18/2026
10	EMI Test Receiver	R&S	ESCI	101196	01/20/2025	01/19/2026
11	LISN	R&S	ENV216	102374	01/20/2025	01/19/2026
12	Pulse Limiter	Schwarzbeck	ESH3-Z2	0357.8810.54	01/20/2025	01/19/2026
13	MXA Signal Analyzer	Keysight	N9020A	MY52091389	01/20/2025	01/19/2026
14	Power Sensor	Agilent	U2021XA	MY54110007	01/31/2025	01/30/2026
15	Power Sensor	Agilent	U2021XA	MY54110009	01/31/2025	01/30/2026
16	MXG Vector Signal Generator	Agilent	N5182A	MY47070153	01/20/2025	01/19/2026
17	Analog Signal Source	Keysight	N5173B	MY60403029	01/20/2025	01/19/2026
18	Vector Signal Generator	R&S	SMCV100B	106103	01/20/2025	01/19/2026
19	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	118780	01/20/2025	01/19/2026
20	DC POWER SUPPLY	MAISHENG	MT-305DS	2021040016	02/28/2025	02/27/2026
21	Const Temp. & Humidity Chamber	GRT	GR-HWX-150L	GR25010601	01/20/2025	01/19/2026
Test Software						
Software name		Model		Version		
Radiated Emission Measurement Software		FASLAB		V4.1		
RF Conducted Measurement Software(2G/3G/4G)		MTS 8200		V2.0.0.0		

4. CONDUCTED OUTPUT POWER AND MAXIMUM ERP/EIRP

4.1. 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)

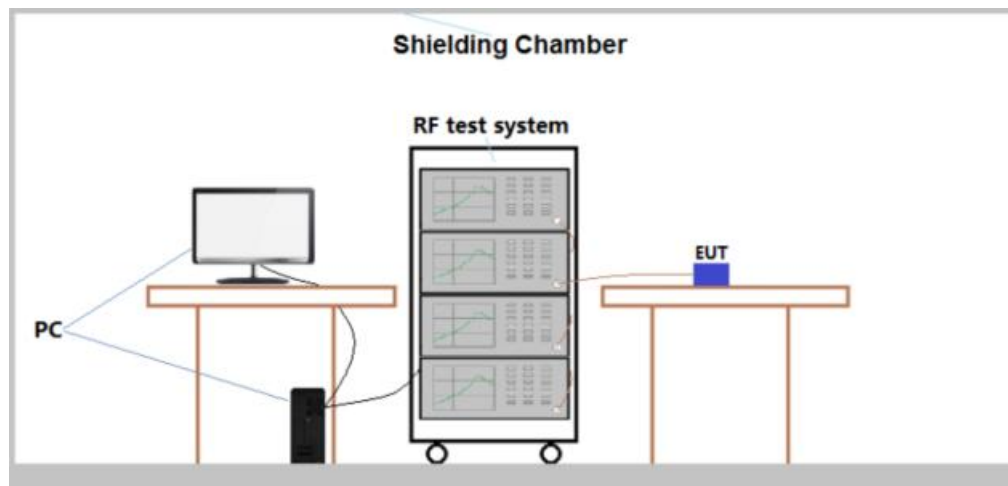
Mobile and portable stations are limited to 2 watts EIRP.

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.

4.2. TEST SETUP



4.3. TEST PROCEDURE

For Conducted Output Power Measurement:

Refer to KDB 971168 D01v03r01 & ANSI C63.26-2015 for test method.

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA and link up with simulator (CMW500). Set the EUT to transmit under low, middle and high channel and record the power level.

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

For ERP/EIRP:

According to KDB 412172 D01 Power Approach,

- $ERP \text{ or } EIRP = PT + GT - LC$
- $ERP = EIRP - 2.15$

where

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

4.4. TEST RESULT

Pass.

Please refer to the Appendix for GSM Test Data.

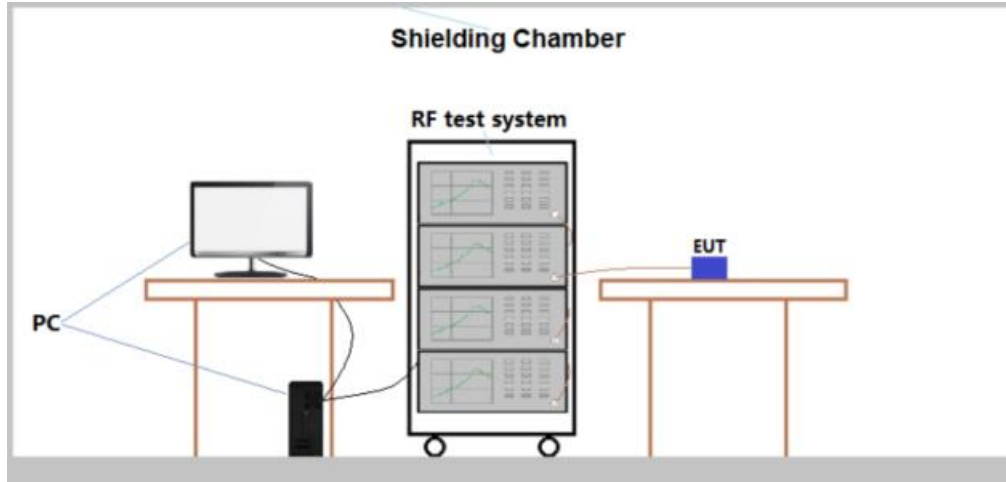
Please refer to the Appendix for WCDMA Test Data.

5. PEAK-AVERAGE RATIO

5.1. 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.

5.2. TEST SETUP



5.3. TEST PROCEDURE

Refer to KDB 971168 D01v03r01 Section 5.7 for test method.

The transmitter output was connected to the RF test system.

- 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.

5.4. TEST RESULT

Pass.

Please refer to the Appendix for GSM Test Data.

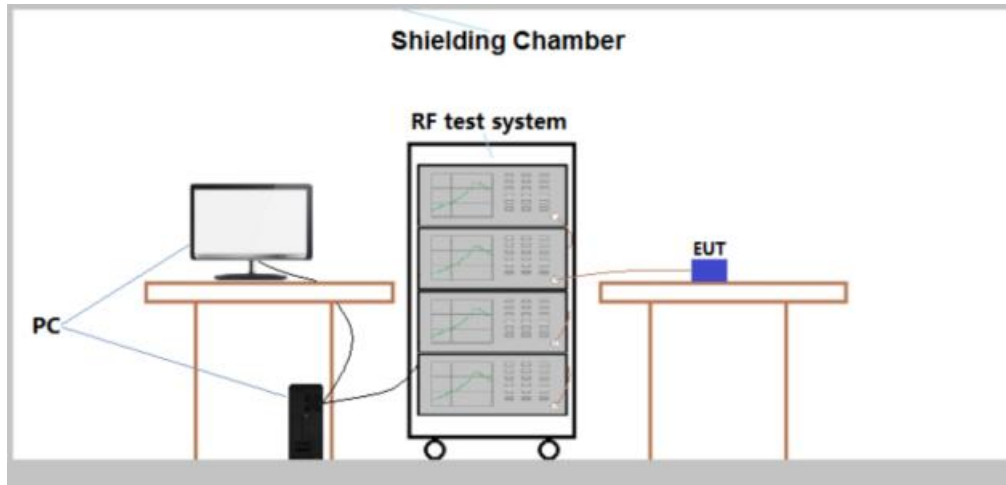
Please refer to the Appendix for WCDMA Test Data.

6. 26DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

6.1. LIMIT

No Limit, for reporting purposes only.

6.2. TEST SETUP



6.3. TEST PROCEDURE

Refer to ANSI C63.26-2015 & KDB 971168 D01v03r01 Section 4 for test method.

The transmitter output was connected to the RF test system. 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.

6.4. TEST RESULT

Pass.

Please refer to the Appendix for GSM Test Data.

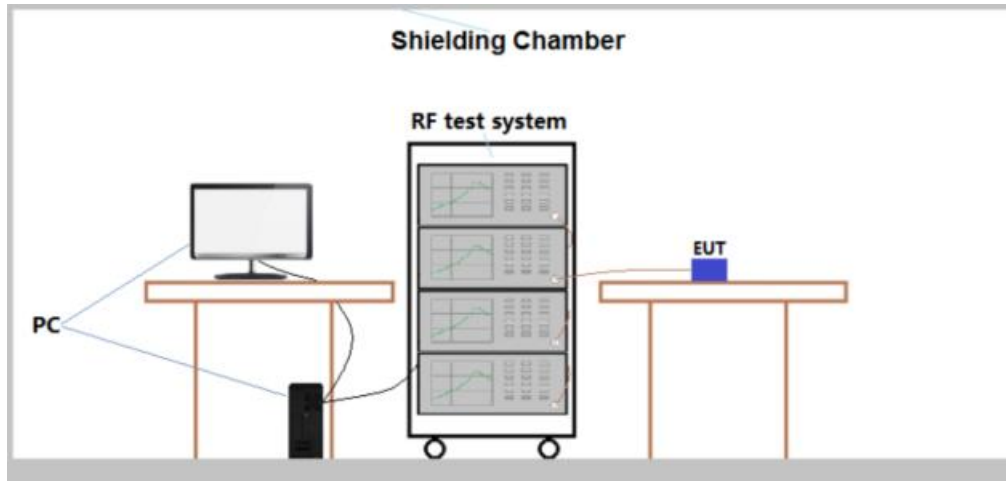
Please refer to the Appendix for WCDMA Test Data.

7. BAND EDGE AT ANTENNA TERMINALS

7.1. 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.

7.2. TEST SETUP



7.3. TEST PROCEDURE

Refer to ANSI C63.26-2015 & KDB 971168 D01v03r01 for test method.

The transmitter output was connected to the RF test system.

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.

7.4. TEST RESULT

Pass.

Please refer to the Appendix for GSM Test Data.

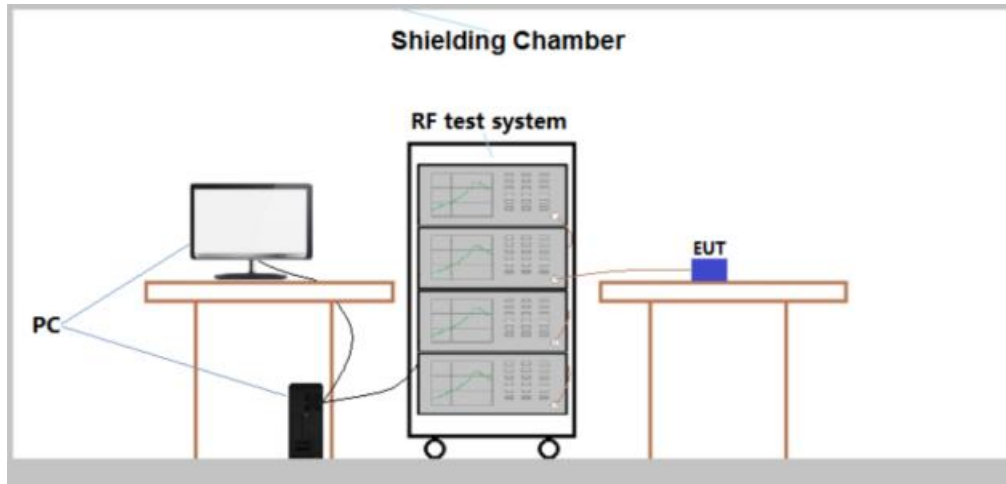
Please refer to the Appendix for WCDMA Test Data.

8. SPURIOUS EMISSIONS AT ANTENNA TERMINALS

8.1. 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.

8.2. TEST SETUP



8.3. TEST PROCEDURE

Refer to ANSI C63.26-2015 & KDB 971168 D01v03r01 for test method.

The EUT was connect to the communication simulator. All measurements were done at low, middle and high operational frequency range. 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.

8.4. TEST RESULT

Pass.

Please refer to the Appendix for GSM Test Data.

Please refer to the Appendix for WCDMA Test Data.

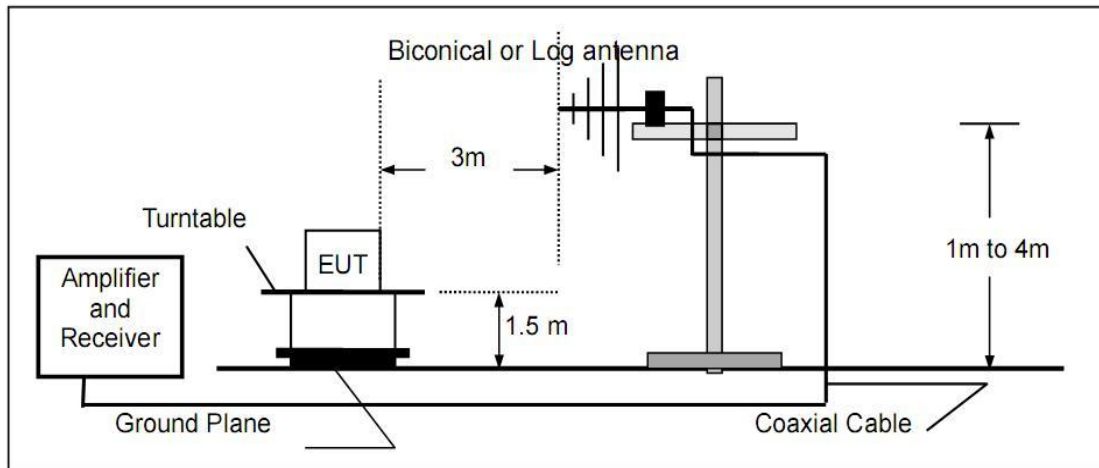
9. FIELD STRENGTH OF SPURIOUS RADIATION

9.1. LIMIT

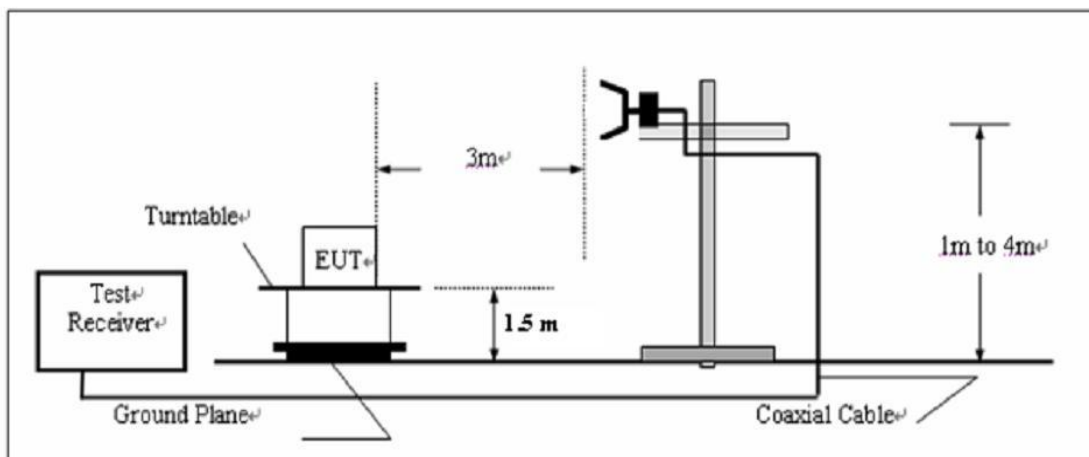
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13 dBm.

9.2. TEST SETUP

Radiated Below 1GHz

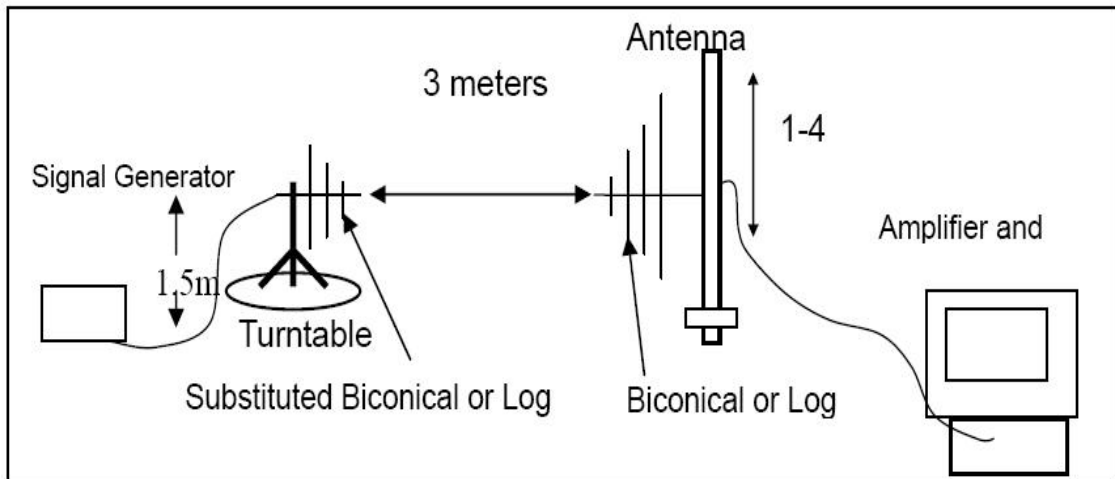


Radiated Above 1GHz

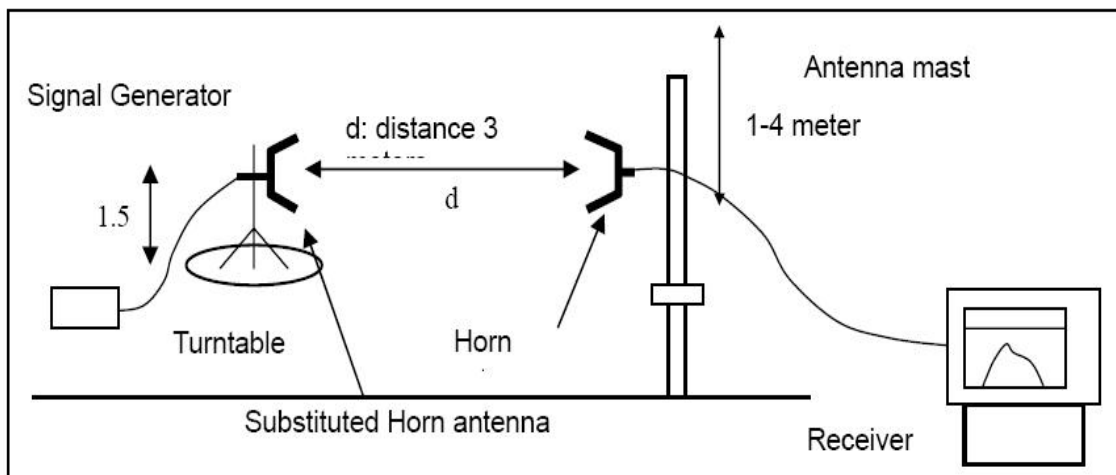


Substitution Method

Radiated Below 1GHz



Radiated Above 1 GHz



9.3. TEST PROCEDURE

Refer to KDB 971168 D01 v03r01 Section 7 for test method.

(1) EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.

(2) A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

(3) The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, and the maximum value of the receiver should be recorded as (P_r).

(4) The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

(5) An amplifier should be connected to the Signal Source output port. And the cable should be connecting

between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}), the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.

(6) The measurement results are obtained as described below:

$$\text{Power(EIRP)} = P_{\text{Mea}} - P_{\text{Ag}} - P_{\text{cl}} + G_a$$

We used signal generator which signal level can up to 33dBm, so we not used power Amplifier for substitution test; The measurement results are amend as described below:

$$\text{Power(EIRP)} = P_{\text{Mea}} - P_{\text{cl}} + G_a$$

(7) This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.

ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15\text{dBi}$.

(8) Test frequency range should extend to 10th harmonic of highest fundamental frequency.

9.4. TEST RESULT

Pass.

Remark:

a) By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Y axis" position was the worst, and test data recorded in this report.

b) Pre-scan all modes and recorded the worst case in this report.

c) Radiated spurious emission test from 9KHz to 10th harmonic of fundamental was verified, and the emission levels from 9kHz to 30MHz are attenuated 20dB below the limit and not recorded in report.

The worst measurement data as follows:

GSM 850_Low Channel								
Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1648.40	-43.25	3.86	3.00	8.56	-38.55	-13.00	-25.55	H
2472.60	-44.25	4.29	3.00	6.98	-41.56	-13.00	-28.56	H
1648.40	-39.52	3.86	3.00	8.56	-34.82	-13.00	-21.82	V
2472.60	-42.00	4.29	3.00	6.98	-39.31	-13.00	-26.31	V
GSM 850_Middle Channel								
Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.20	-41.46	3.90	3.00	8.58	-36.78	-13.00	-23.78	H
2509.80	-46.61	4.32	3.00	6.8	-44.13	-13.00	-31.13	H
1673.20	-37.87	3.90	3.00	8.58	-33.19	-13.00	-20.19	V
2509.80	-42.93	4.32	3.00	6.8	-40.45	-13.00	-27.45	V
GSM 850_High Channel								
Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1697.60	-46.77	3.91	3.00	9.06	-41.62	-13.00	-28.62	H
2546.40	-49.51	4.32	3.00	6.65	-47.18	-13.00	-34.18	H
1697.60	-43.30	3.91	3.00	9.06	-38.15	-13.00	-25.15	V
2546.40	-45.35	4.32	3.00	6.65	-43.02	-13.00	-30.02	V
PCS 1900_Low Channel								
Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3700.40	-45.24	5.26	3.00	9.88	-40.62	-13.00	-27.62	H
5550.60	-46.22	6.11	3.00	11.36	-40.97	-13.00	-27.97	H
3700.40	-41.88	5.26	3.00	9.88	-37.26	-13.00	-24.26	V
5550.60	-44.07	6.11	3.00	11.36	-38.82	-13.00	-25.82	V
PCS 1900_Middle Channel								
Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760.00	-44.10	5.32	3.00	10.03	-39.39	-13.00	-26.39	H
5640.00	-48.36	6.19	3.00	11.41	-43.14	-13.00	-30.14	H
3760.00	-39.55	5.32	3.00	10.03	-34.84	-13.00	-21.84	V
5640.00	-44.92	6.19	3.00	11.41	-39.70	-13.00	-26.70	V
PCS 1900_High Channel								
Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3819.60	-48.82	5.36	3.00	9.62	-44.56	-13.00	-31.56	H
5729.40	-51.74	6.24	3.00	11.46	-46.52	-13.00	-33.52	H
3819.60	-45.24	5.36	3.00	9.62	-40.98	-13.00	-27.98	V
5729.40	-47.09	6.24	3.00	11.46	-41.87	-13.00	-28.87	V

WCDMA Band II_Low Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3704.8	-39.43	5.26	3.00	9.88	-34.81	-13.00	-21.81	H
5557.2	-45.06	6.11	3.00	11.36	-39.81	-13.00	-26.81	H
3704.8	-44.64	5.26	3.00	9.88	-40.02	-13.00	-27.02	V
5557.2	-48.49	6.11	3.00	11.36	-43.24	-13.00	-30.24	V

WCDMA Band II_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760.0	-38.39	5.32	3.00	10.03	-33.68	-13.00	-20.68	H
5640.0	-43.84	6.19	3.00	11.41	-38.62	-13.00	-25.62	H
3760.0	-43.26	5.32	3.00	10.03	-38.55	-13.00	-25.55	V
5640.0	-48.01	6.19	3.00	11.41	-42.79	-13.00	-29.79	V

WCDMA Band II_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3815.2	-43.27	5.36	3.00	9.62	-39.01	-13.00	-26.01	H
5722.8	-51.36	6.24	3.00	11.46	-46.14	-13.00	-33.14	H
3815.2	-46.57	5.36	3.00	9.62	-42.31	-13.00	-29.31	V
5722.8	-53.28	6.24	3.00	11.46	-48.06	-13.00	-35.06	V

WCDMA Band IV_Low Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3424.8	-45.95	4.62	3.00	9.81	-40.76	-13.00	-27.76	H
5137.2	-50.03	5.94	3.00	10.86	-45.11	-13.00	-32.11	H
3424.8	-48.79	4.62	3.00	9.81	-43.60	-13.00	-30.60	V
5137.2	-53.09	5.94	3.00	10.86	-48.17	-13.00	-35.17	V

WCDMA Band IV_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.2	-41.03	4.63	3.00	9.84	-35.82	-13.00	-22.82	H
5197.8	-46.12	5.94	3.00	10.86	-41.20	-13.00	-28.20	H
3465.2	-44.08	4.63	3.00	9.84	-38.87	-13.00	-25.87	V
5197.8	-49.88	5.94	3.00	10.86	-44.96	-13.00	-31.96	V

WCDMA Band IV_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3505.2	-47.82	4.65	3.00	9.9	-42.57	-13.00	-29.57	H
5257.8	-51.64	5.95	3.00	10.91	-46.68	-13.00	-33.68	H
3505.2	-50.35	4.65	3.00	9.9	-45.10	-13.00	-32.10	V
5257.8	-54.22	5.95	3.00	10.91	-49.26	-13.00	-36.26	V

WCDMA Band V_Low Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain (dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1652.8	-47.67	3.86	3.00	8.56	-42.97	-13.00	-29.97	H
2479.2	-49.04	4.29	3.00	6.98	-46.35	-13.00	-33.35	H
1652.8	-44.07	3.86	3.00	8.56	-39.37	-13.00	-26.37	V
2479.2	-44.49	4.29	3.00	6.98	-41.80	-13.00	-28.80	V

WCDMA Band V_Middle Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain (dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1672.8	-49.27	3.90	3.00	8.58	-44.59	-13.00	-31.59	H
2509.2	-51.19	4.32	3.00	6.8	-48.71	-13.00	-35.71	H
1672.8	-45.59	3.90	3.00	8.58	-40.91	-13.00	-27.91	V
2509.2	-45.38	4.32	3.00	6.8	-42.90	-13.00	-29.90	V

WCDMA Band V_High Channel

Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance (m)	G _a Antenna Gain (dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1693.2	-51.74	3.91	3.00	9.06	-46.59	-13.00	-33.59	H
2539.8	-54.93	4.32	3.00	6.65	-52.60	-13.00	-39.60	H
1693.2	-49.54	3.91	3.00	9.06	-44.39	-13.00	-31.39	V
2539.8	-50.95	4.32	3.00	6.65	-48.62	-13.00	-35.62	V

10. FREQUENCY STABILITY

10.1. LIMIT

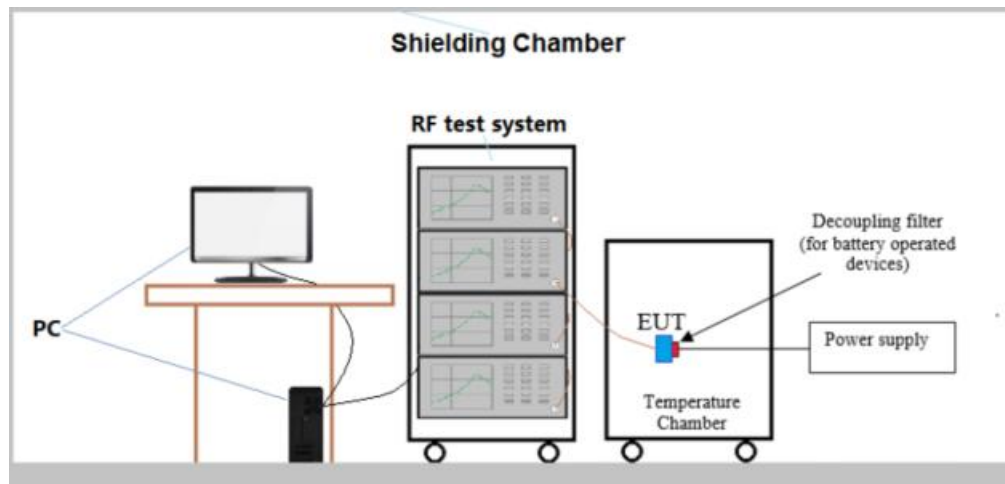
FCC 47 CFR Part 22.355,

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.

10.2. TEST SETUP



10.3. TEST PROCEDURE

Refer to ANSI C63.26-2015 & KDB 971168 D01v03r01 for test method.

1) The transmitter output was connected to the RF test system.

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

b) Voltage = low voltage, Normal voltage and High voltage.

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).

10.4. TEST RESULT

Pass.

Please refer to the Appendix for GSM Test Data.

Please refer to the Appendix for WCDMA Test Data.

11. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files for Test Setup Photos of the EUT.

12. EXTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

13. INTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

*****THE END*****