RF TEST REPORT

Report No.:	SET2022-14274
Product Name:	CPE
Model No.:	RT2
FCC ID:	2AZYA-RT2
Applicant:	Senwa Global International, S.A. de C.V.
Address:	Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del. Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico, Mexico
Dates of Testing:	10/11/2022 - 10/25/2022
Issued by:	CCIC Southern Testing Co., Ltd.
Lab Location:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China. **Tel**：86 755 26627338 **Fax**：86 755 26627238

Test Report

Product.....:	CPE
Trade Name .....:	SENWA
Applicant.....:	Senwa Global International, S.A. de C.V.
Applicant Address.....:	Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del. Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico, Mexico
Manufacturer.....:	Senwa Global International, S.A. de C.V.
Manufacturer Address.....:	Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del. Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico, Mexico
Test Standards.....:	47 CFR Part 2/22/24
Test Result.....:	Pass

Tested by .....: 2022.10.26

Chuiwang Zhang, Test Engineer

Reviewed by.....: 2022.10.26

Chris You, Senior Engineer

Approved by.....: 2022.10.26

Tao Hou, Manager

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Change History		
Issue	Date	Reason for change
1.0	2022.10.26	First edition

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	CPE	
Model No.	RT2	
Hardware Version	RT2_TELCEL_Ver 1.0	
Software Version	RT2_TELCEL_Ver 1.0	
EUT supports Radios application	WCDMA/HSPA	
Frequency Range	WCDMA 850:	Tx: 826.4 - 846.6MHz (at intervals of 200kHz); Rx: 871.4 - 891.6MHz (at intervals of 200kHz)
	WCDMA 1900:	Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz); Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)
Maximum Output Power to Antenna	WCDMA 850: 23.75dBm WCDMA 1900: 24.34dBm	
Type of Modulation	WCDMA: QPSK(Uplink) HSDPA: QPSK(Uplink) HSUPA: QPSK(Uplink)	
Antenna Type	External Antenna	
Antenna gain	WCDMA 850: 1.53 dBi WCDMA 1900: 3.36 dBi,	
Power supply	DC 12V from Adapter	

1.2. Maximum ERP/EIRP, Frequency Tolerance and Emission Designator

System	Type of Modulation	Emission Designator	Frequency Tolerance (ppm)	Maximum EIRP/ERP(W)
WCDMA 850	QPSK	4M13F9W	0.0063	0.167
WCDMA 1900	QPSK	4M13F9W	0.0055	0.496

1.3. Test Standards and Results

The purpose of the report is to conduct testing according to the following FCC/IC certification standards:

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22	Public Mobile Services
3	47 CFR Part 24	Personal Communications Services
4	KDB 971168 D01 Power Meas License Digital Systems v03r01	Measurement Guidance For Certification of Licensed Digital Transmitters
5	KDB 412172 D01 Determining ERP and EIRP v01r01	Guidelines for Determining the Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) of an RF Transmitting Systems
6	ANSI/TIA-603-E-2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
7	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

Test detailed items/section required by FCC rules and results are as below:

No.	FCC Rule	Description	Limit	Result
1	2.1046	Conducted Output Power	Reporting Only	PASS
2	22.913(a)(5)	Effective Radiated Power	ERP < 7Watts	PASS
	24.232 (c)	Equivalent Isotropic Radiated Power	EIRP < 2Watts	PASS
3	22.913(d) 24.232(d) 27.50(d)(5)	Peak to Average Radio	< 13dBm	PASS
4	2.1049	Occupied Bandwidth	Reporting Only	PASS
5	2.1055 22.355 24.235	Frequency Stability (W850)	< ±2.5ppm	PASS
		Frequency Stability (W1900)	Within the Authorized Band	PASS
6	2.1051 22.917 24.238	Conducted Spurious Emission and Conducted Band Edge	< $43+10\log_{10}$(P[Watts])	PASS
7	2.1053 22.917 24.238	Radiated Spurious Emissions	< $43+10\log_{10}$(P[Watts])	PASS

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.4. Test Configuration of Equipment Under Test

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 9000 MHz for WCDMA Band V.
2. 30 MHz to 20000 MHz for WCDMA Band II.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Modes		
Band	Radiated TCs	Conducted TCs
WCDMA Band V	RMC 12.2kbps Link	RMC 12.2kbps Link
WCDMA Band II	RMC 12.2kbps Link	RMC 12.2kbps Link

Note: The maximum power levels are chosen to test as the worst case configuration as follows:

RMC 12.2kbps mode for WCDMA band V,

RMC 12.2kbps mode for WCDMA band II, only these modes were used for all tests.

1.5. Measurement Results Explanation Example

For all conduction test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + Power Splitter + attenuator factor..

Following shows an offset computation example with cable loss 1dB, 3dB Power Splitter, 10dB attenuator.

Example: Offset (dB) = RF cable loss(dB) + Power Splitter(dB) + attenuator factor(dB).

= 1 + 3 + 10 = 14 (dB)

1.6. Laboratory Facilities

FCC-Registration No.: 406086

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until April 19th, 2023.

ISED Registration: 11185A-1

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Jun. 30th, 2023.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

1.7. Test Environment Conditions

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

Temperature (°C):	15℃- 35℃
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

2. 47 CFR Part 2 Requirements

2.1. Conducted Output Power and ERP/EIRP

2.1.1. Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

The EIRP of mobile transmitters must not exceed 2 Watts for PCS1900 and W1900.

The ERP of mobile transmitters must not exceed 7 Watts for GSM850 and W850.

According to KDB 412172 D01 Determining ERP and EIRP v01r01.

EIRP = $P_T + _{GT} - L_C$, ERP = EIRP - 2.15, where

P_T = transmitter output power in dBm;

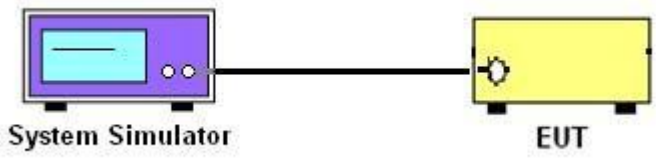
G_T = gain of the transmitting antenna in dBi;

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB.

2.1.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.1.3. Test Setup



2.1.4. Test Procedures

1. The transmitter output port was connected to the system simulator.

2. Set EUT at maximum power through system simulator.

3. Select lowest, middle, and highest channels for each band and different modulation.

4. Measure and record the power level from the system simulator.

2.1.5. Test Results of Conducted Output Power and ERP/EIRP

WCDMA 850							
EUT Mode		Average power (dBm)			Ant. Gain (dBi)	Max. ERP (dBm)	ERP Limit (dBm)
		4132	4183	4233			
		826.4MHz	836.6MHz	846.6MHz			
RMC	12.2 kbps	22.69	22.85	22.73	1.53	22.23	38.45
HSDPA	Subtest 1	21.80	22.07	21.65			
	Subtest 2	22.24	22.57	22.33			
	Subtest 3	21.72	21.89	21.80			
	Subtest 4	21.67	21.85	21.76			
HSUPA	Subtest 1	20.15	20.31	20.26			
	Subtest 2	20.66	20.84	20.77			
	Subtest 3	21.18	21.32	21.25			
	Subtest 4	20.20	20.05	20.28			
	Subtest 5	22.19	21.95	22.07			

WCDMA 1900							
EUT Mode		Average power (dBm)			Ant. Gain (dBi)	Max. EIRP (dBm)	EIRP Limit (dBm)
		9262	9400	9538			
		1852.4MHz	1880.0MHz	1907.6MHz			
RMC	12.2 kbps	23.49	23.57	23.60	3.36	26.96	33
HSDPA	Subtest 1	22.24	22.50	22.33			
	Subtest 2	22.96	23.07	23.16			
	Subtest 3	20.92	21.21	20.89			
	Subtest 4	21.96	21.77	22.06			
HSUPA	Subtest 1	20.89	21.19	20.97			
	Subtest 2	21.13	21.68	21.35			
	Subtest 3	19.88	20.09	19.87			
	Subtest 4	22.19	21.91	22.38			
	Subtest 5	20.40	20.72	20.39			

2.2. Peak-to-average power ratio (PAPR)

2.2.1. Requirement

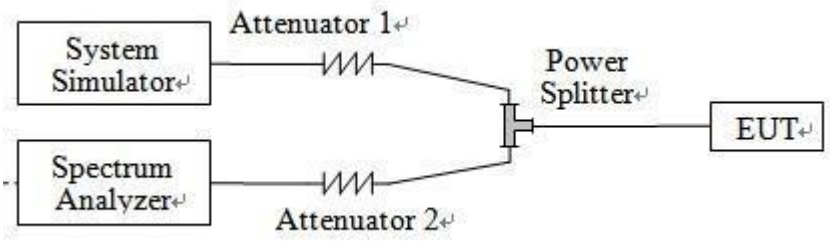
Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth.

In measuring transmissions in this band using an average power technique, the Peak-to-average power ratio (PAPR) of the transmission may not exceed 13 dB.

2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.2.3. Test Description

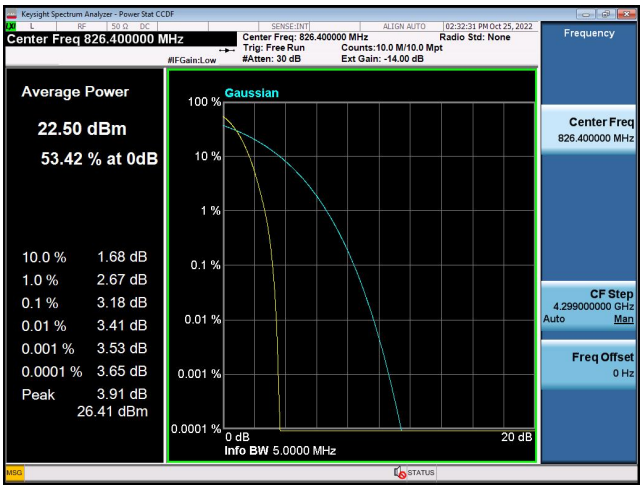
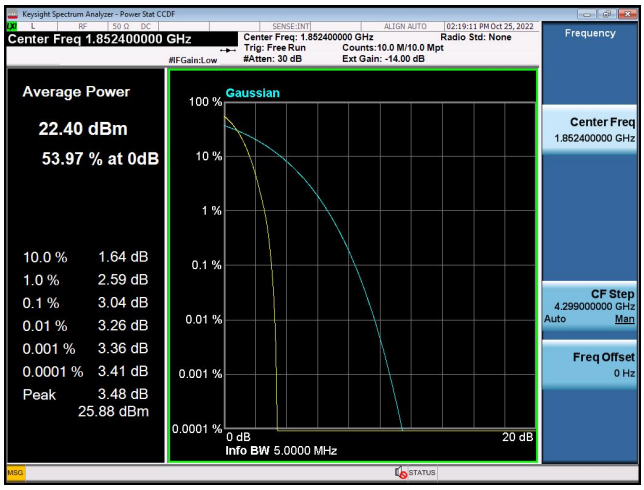
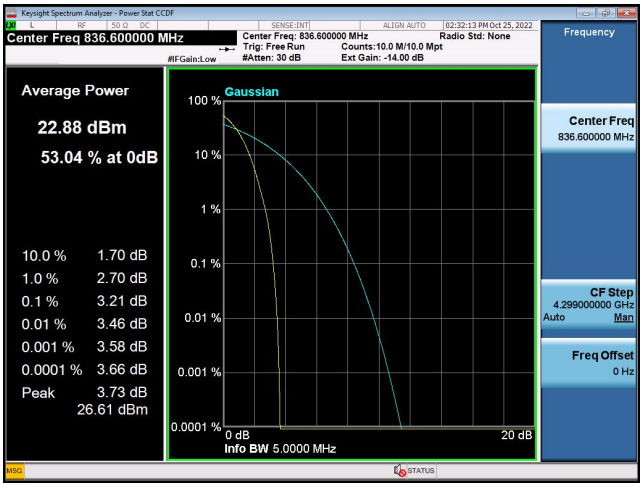
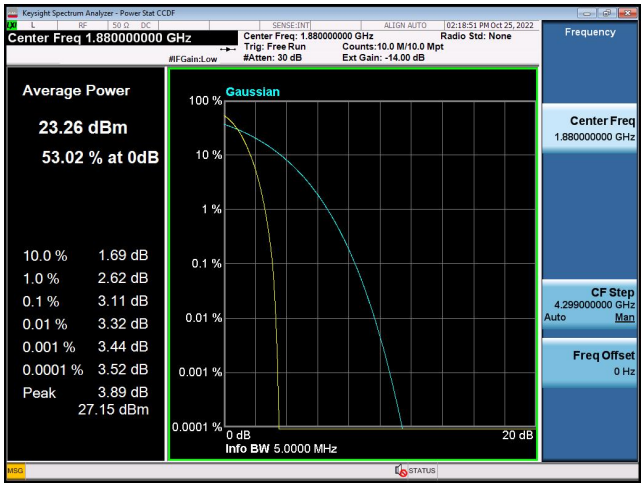
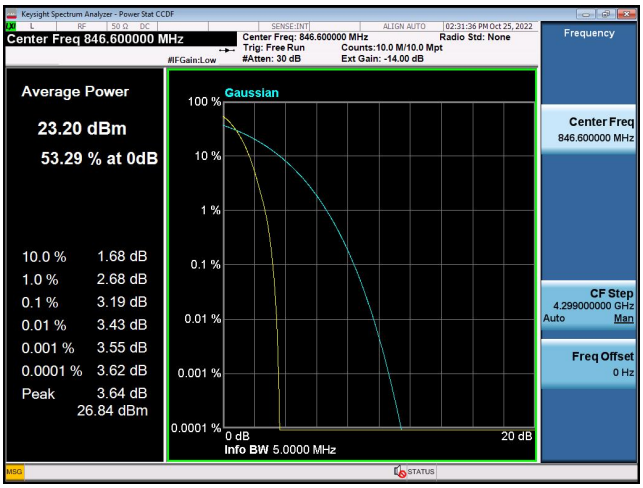
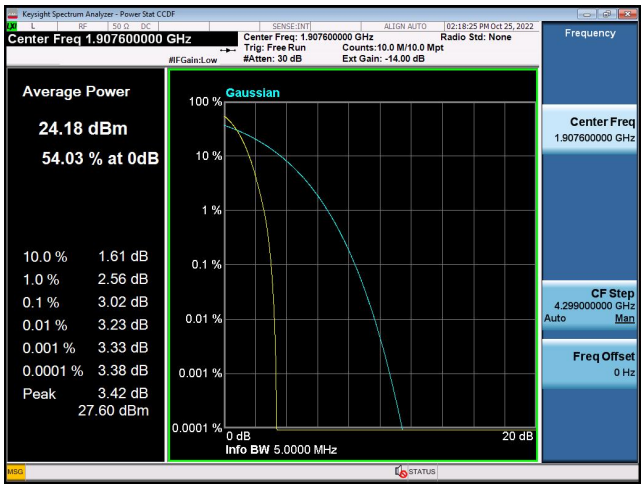


2.2.4. Test Procedures

1. The testing follows the of KDB 971168 D01 v03r01 Section 5.7.2 and ANSI C63.26-2015 Section 5.2.3.4.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider, Path loss compensation is then performed on the spectrum analyzer and the system simulator respectively.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth.
5. Set the number of counts to a value that stabilizes the measured CCDF curve.
6. Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level.
7. Repeat step 3~6 at other frequency and modulations.

2.2.5. Test Results of Peak-to-average power ratio (PAPR)

Band	Channel	Frequency (MHz)	Peak to Average radio	Limit	Verdict
			dB	dB	
WCDMA 850MHz	4132	826.4	3.18	13	PASS
	4183	836.6	3.21		PASS
	4233	846.6	3.19		PASS
WCDMA 1900MHz	9262	1852.4	3.04	13	PASS
	9400	1880.0	3.11		PASS
	9538	1907.6	3.02		PASS

WCDMA 850-4132	WCDMA 1900
	
WCDMA 850-4183	WCDMA 1900-9400
	
WCDMA 850-4233	WCDMA 1900-9538
	

2.3. 99% Occupied Bandwidth and 26dB Emission Bandwidth

2.3.1. Requirement

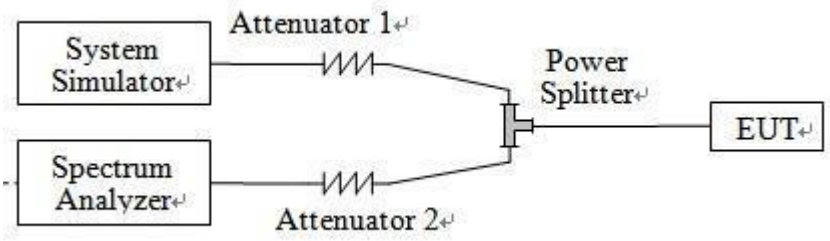
The Occupied Bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.3.3. Test Setup

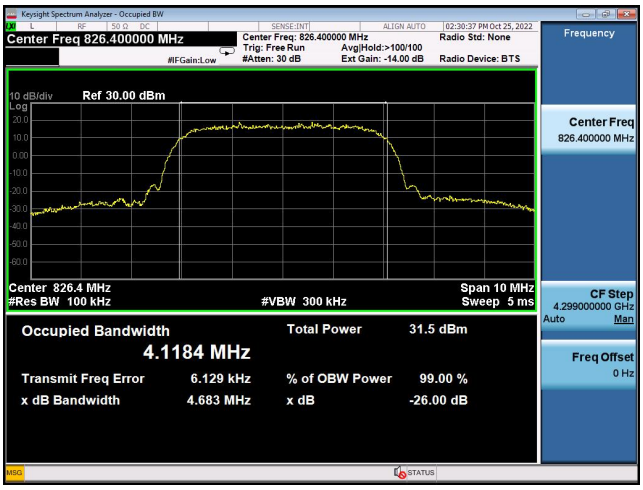
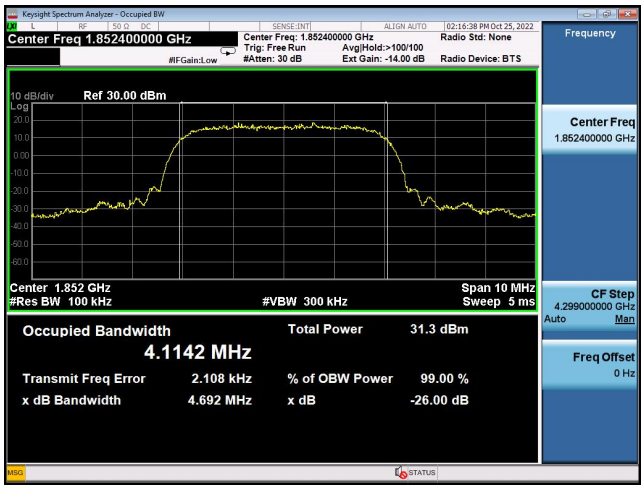
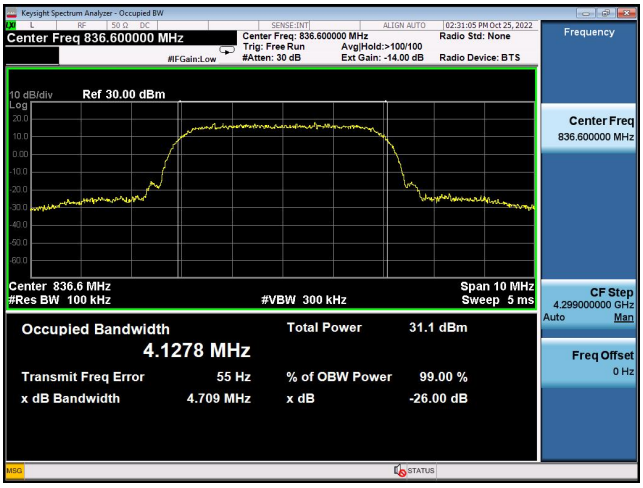
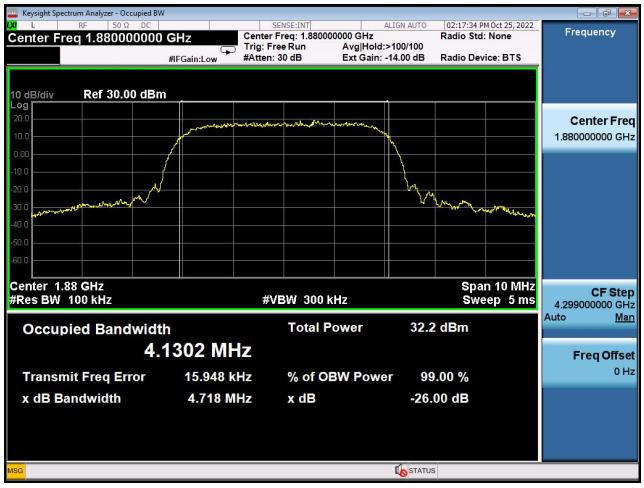
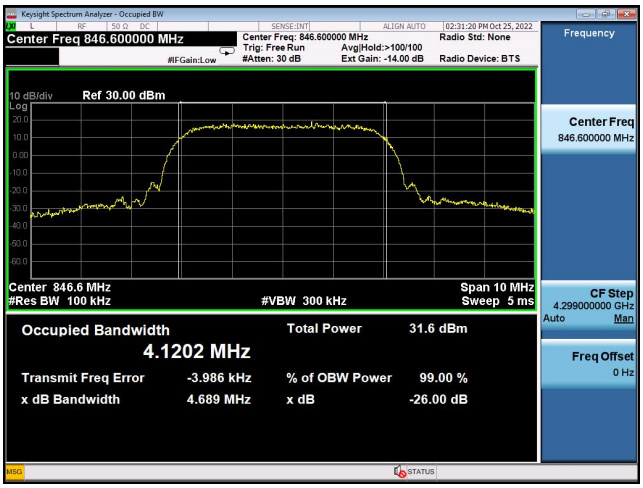
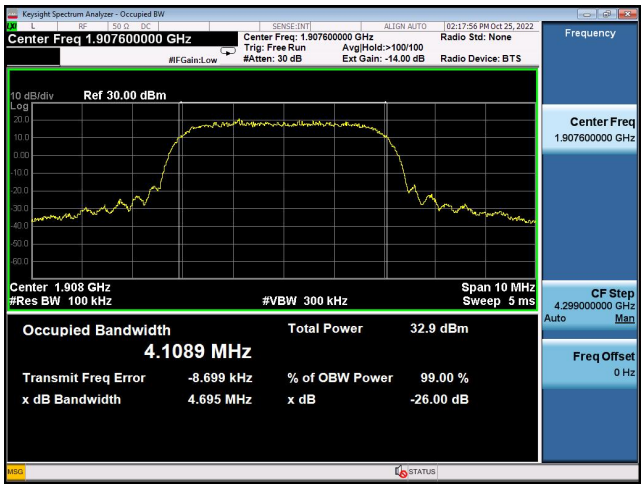


2.3.4. Test Procedures

1. The testing follows the of KDB 971168 D01 v03r01 Section 4 and ANSI C63.26-2015 Section 5.4.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider, Path loss compensation is then performed on the spectrum analyzer and the system simulator respectively.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
4. Set span to be approximately 1.5 to 5 times the OBW.
5. The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW.
6. Set VBW ≥ 3 × RBW.
7. Set Detection mode = peak.
8. Set Trace mode = max hold.
9. Allow trace to stabilize.
10. Repeat step 3~9 at other frequency and modulations.

2.3.5. Test Result of 99% Occupied Bandwidth and 26dB Emission Bandwidth

Band	Channel	Frequency (MHz)	26dB EBW (kHz)	99% OBW (kHz)	Verdict
WCDMA 850MHz	4132	826.4	4863	4118.4	PASS
	4183	836.6	4709	4127.8	PASS
	4233	846.6	4689	4120.2	PASS
WCDMA 1900MHz	9262	1852.4	4692	4114.2	PASS
	9400	1880.0	4718	4130.2	PASS
	9538	1907.6	4695	4108.9	PASS

WCDMA 850-4132	WCDMA 1900-9262
	
WCDMA 850-4183	WCDMA 1900-9400
	
WCDMA 850-4233	WCDMA 1900-9538
	

2.4. Conducted Band Edge

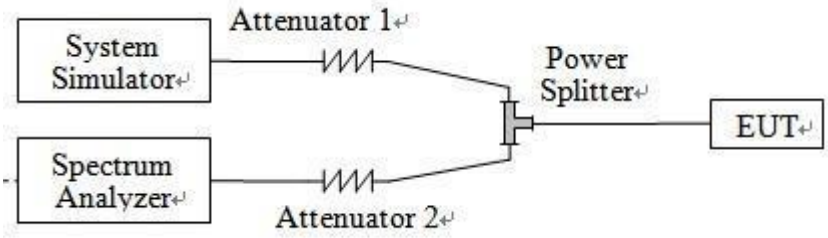
2.4.1. Requirement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

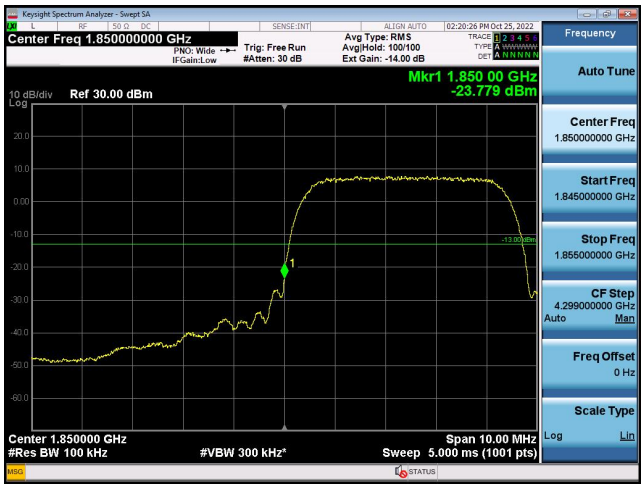
2.4.3. Test Setup



2.4.4. Test Procedures

1. The testing follows the of KDB 971168 D01 v03r01 Section 6 and ANSI C63.26-2015 Section 5.7.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider, Path loss compensation is then performed on the spectrum analyzer and the system simulator respectively.
3. Span was set large enough so as to capture all out of band emissions near the Channel Edge.
4. Use RBW ≥ 1% EBW in the 1 megahertz bands immediately outside and adjacent to the licensee's authorized frequency channel, and use RBW = 1 MHz outside 1 MHz of the authorized frequency channel.
5. Set VBW ≥ 3 × RBW
6. Set Detector = power averaging (rms).
7. Set the number of points in sweep ≥ 2 × span / RBW.
8. Set sweep trigger to “free run.”
9. Set the Sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time).
10. Perform a trace average of at least 100 traces.
11. Repeat step 3~10 at other frequency and modulations.

2.4.5. Test Result of Conducted Band Edge

WCDMA 850-4132	WCDMA 1900-9262
	
WCDMA 850-4233	**WCDMA 1900-9538**
	

2.5. Conducted Spurious Emission

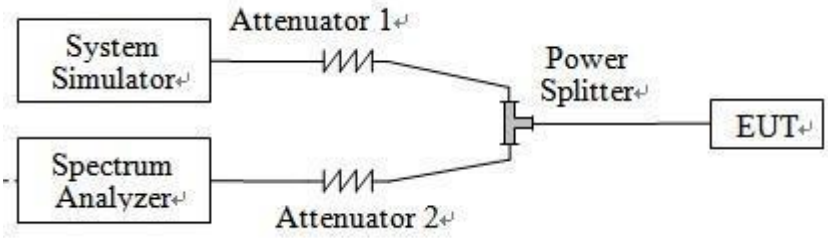
2.5.1. Requirement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.5.3. Test Setup

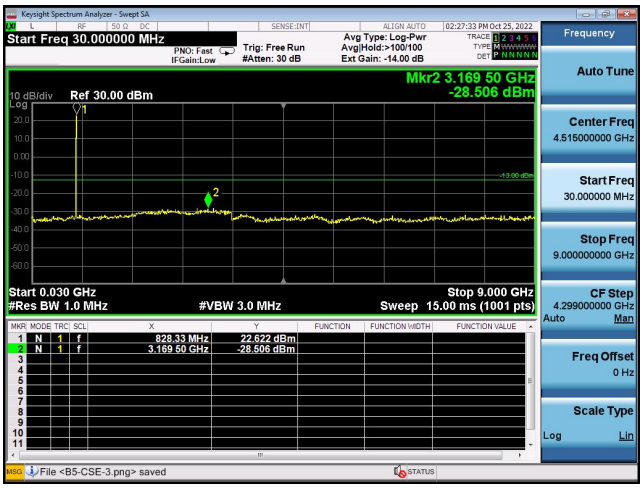
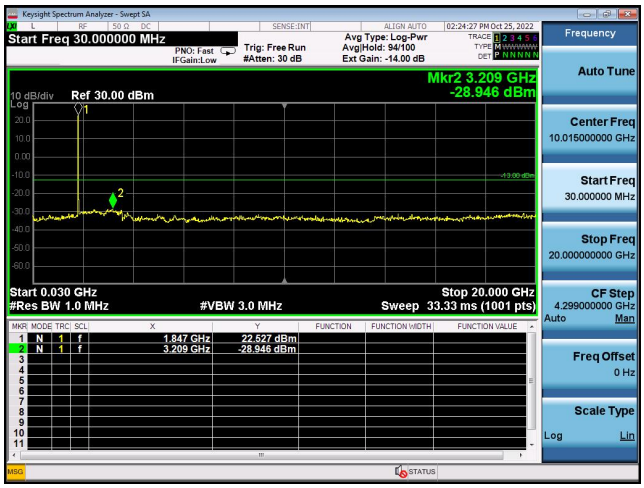
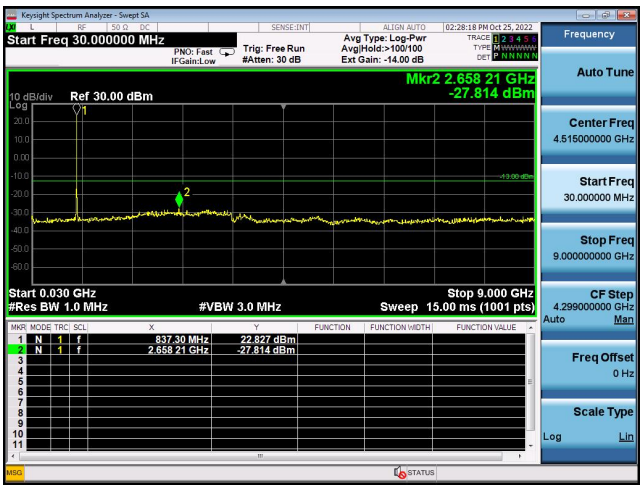
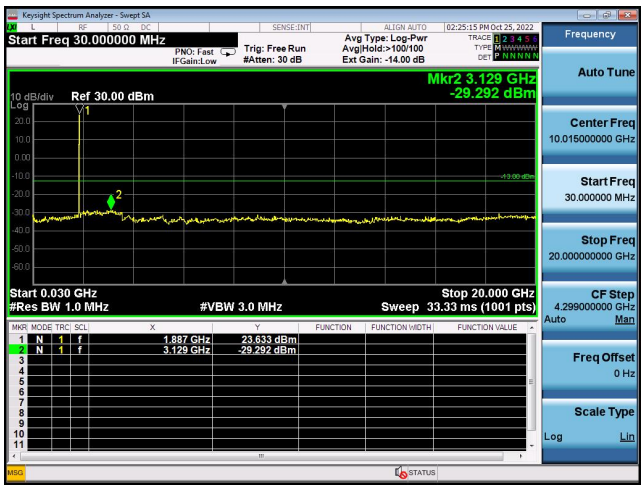
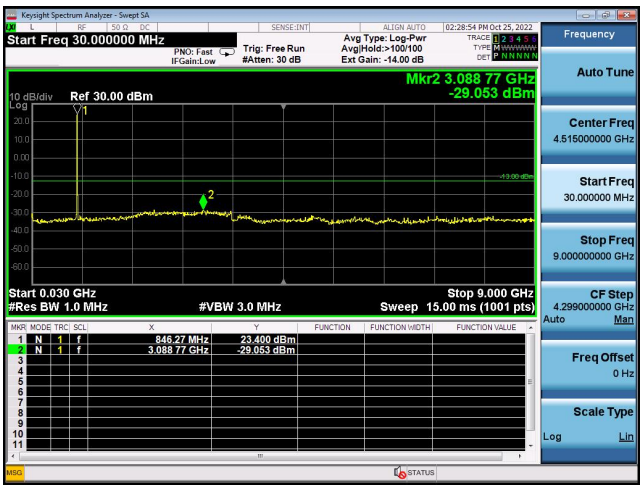
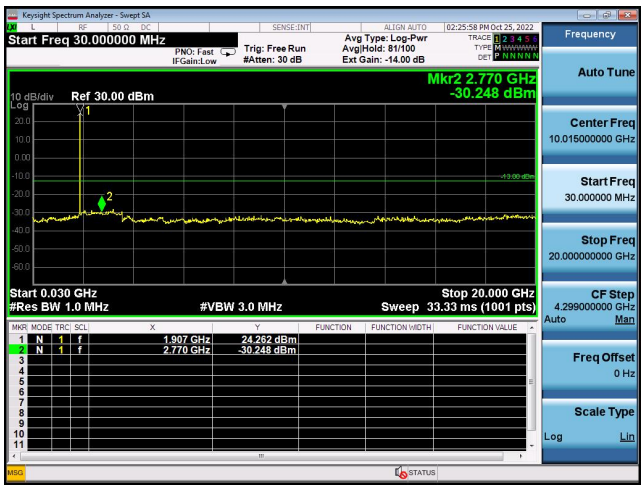


2.5.4. Test Procedures

1. The testing follows the of KDB 971168 D01 v03r01 Section 6 and ANSI C63.26-2015 Section 5.7.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider, Path loss compensation is then performed on the spectrum analyzer and the system simulator respectively.
3. Set the spectrum analyzer start frequency to 9kHz and stop frequency to the tenth harmonic of the highest fundamental frequency.
4. Set RBW = 1MHz, VBW ≥ 3 × RBW
5. Set Detector = peak.
6. Set Trace mode = max hold.
7. Set Sweep time = auto-couple.
8. Identify and measure the highest spurious emission levels in each frequency range.
9. Compare the results with the corresponding limit in the applicable regulation.
10. Repeat step 3~9 at other frequency and modulations.

Note: For 9 kHz to 30MHz: the amplitude of spurious emissions is attenuated by more than 20dB below the permissible value, so we not provide the test result here.

2.5.5. Test Result of Conducted Spurious Emission

WCDMA 850-4132, 30MHz ~9GHz	WCDMA 1900-9262, 30MHz ~20GHz
	
WCDMA 850-4183, 30MHz ~9GHz	WCDMA 1900-9400, 30MHz ~20GHz
	
WCDMA 850-4233, 30MHz ~9GHz	WCDMA 1900-9538, 30MHz ~20GHz
	

2.6. Radiated Spurious Emission

2.6.1. Requirement

The radiated spurious emission was measured by substitution method according to ANSI/TIA-603-E-2016.

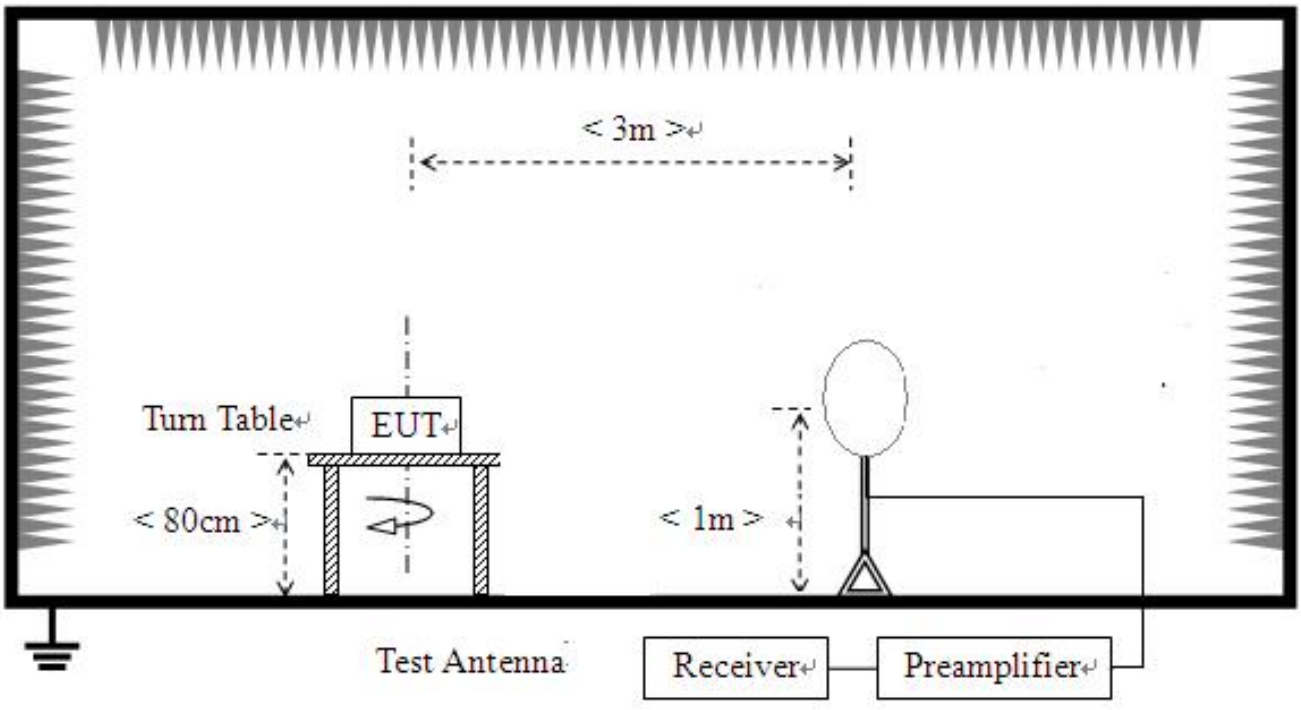
The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

2.6.2. Measuring Instruments

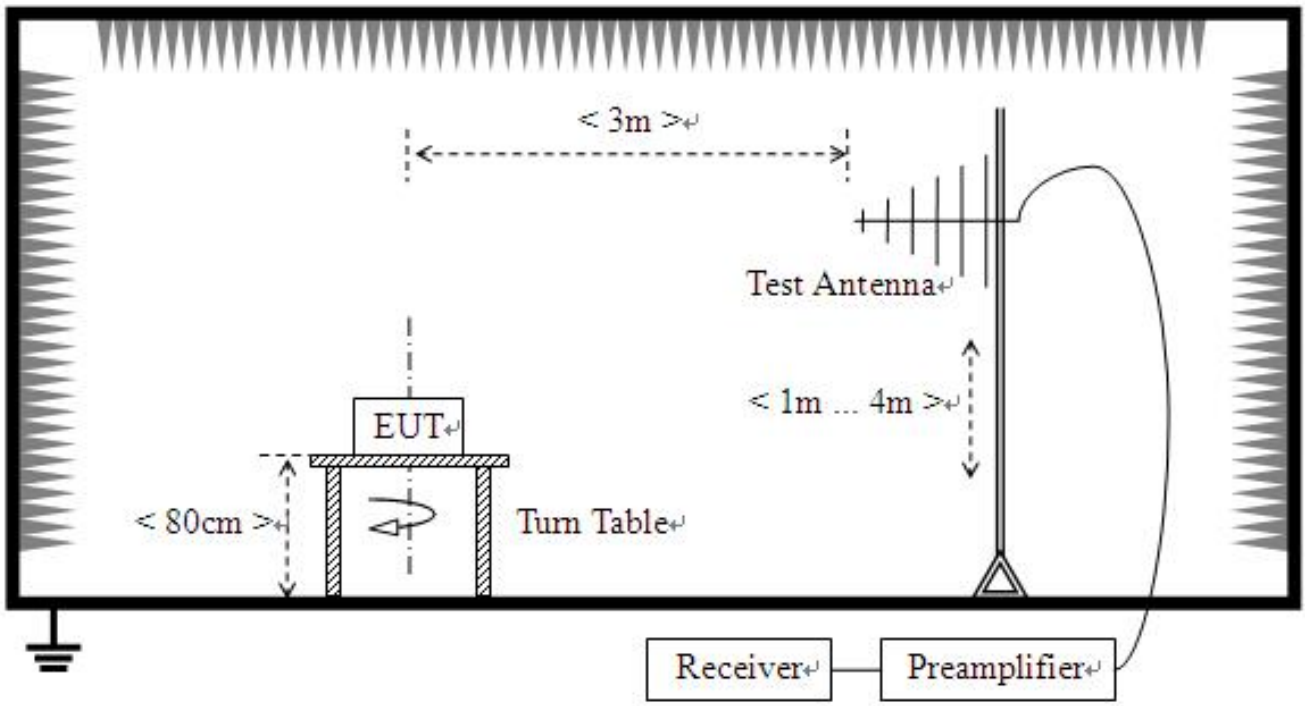
The measuring equipment is listed in the section 3 of this test report.

2.6.3. Test Setup

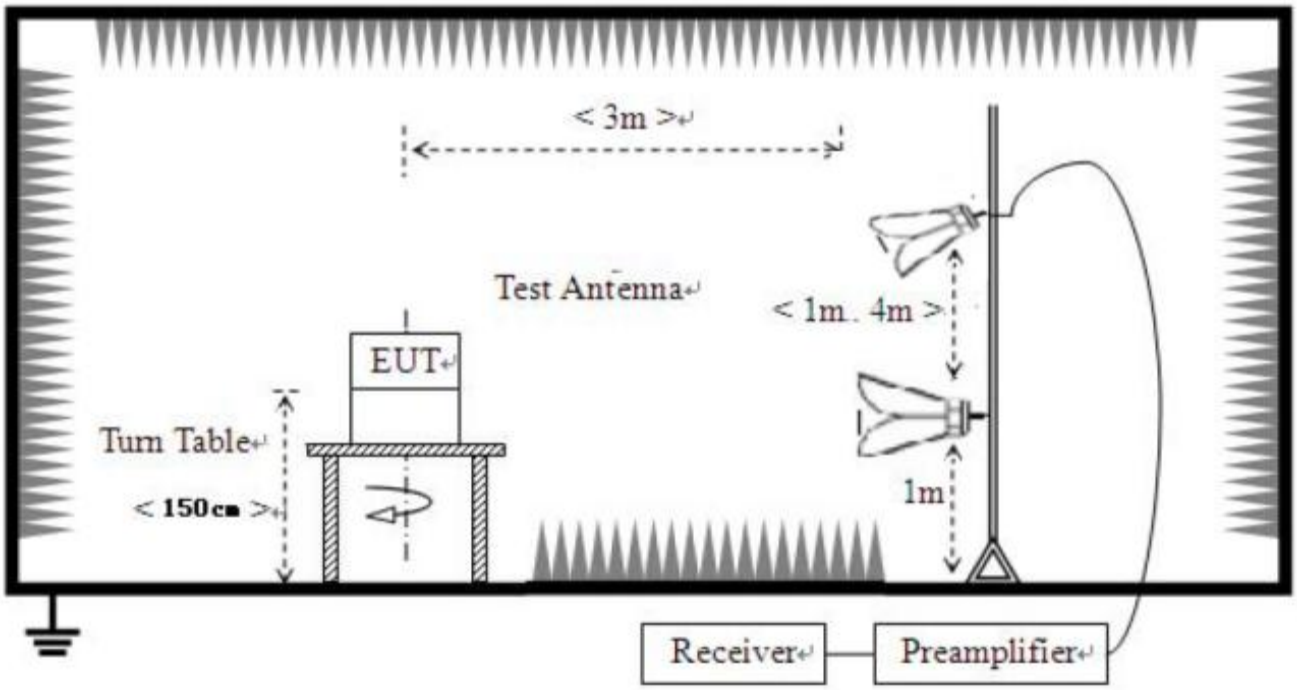
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.6.4. Test Procedures

1. The EUT was placed on a rotatable wooden table with 0.8 meter (for below 1GHz) / 1.5 meters (for above 1GHz) above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
11. This device employs GMSK and 8PSK technology with GSM, GPRS and EGPRS capabilities. All configurations were investigated and the worst case emissions were found in GSM mode.
12. This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, HSUPA capabilities. All configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2Kbps.
13. All Spurious Emission tests were performed in X, Y, Z axis direction and low, middle, high channel. And only the worst axis test condition was recorded in this test report.
13. The spectrum is measured from 9 kHz to the 10^{th} harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. The worst case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.

2.6.5. Test Result of Radiated Spurious Emission

Note: 1. The emission levels of above 18GHz are lower than the limit 20dB and not show in test report.

Note: 2. Absolute Level = Reading Level + Factor.

Note: 3. Worst-Case test data provide as below.

30MHz~9GHz: WCDMA 850 Middle Channel							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	31.94	-93.63	-70.10	-13.00	57.10	23.53	Horizontal
2	68.8	-87.79	-68.43	-13.00	55.43	19.36	Horizontal
3	103.72	-87.43	-68.09	-13.00	55.09	19.34	Horizontal
4	939.86	-97.12	-59.80	-13.00	46.80	37.32	Horizontal
5	2129	-49.71	-44.96	-13.00	31.96	4.75	Horizontal
6	4872	-57.79	-43.05	-13.00	30.05	14.74	Horizontal
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	68.8	-88.27	-67.19	-13.00	54.19	21.08	Vertical
2	103.72	-86.96	-62.86	-13.00	49.86	24.10	Vertical
3	365.62	-86.99	-60.05	-13.00	47.05	26.94	Vertical
4	1870	-49.82	-46.57	-13.00	33.57	3.25	Vertical
5	2128	-48.44	-43.69	-13.00	30.69	4.75	Vertical
6	4906	-58.16	-43.44	-13.00	30.44	14.72	Vertical

30MHz~20GHz: WCDMA 1900 Middle Channel							
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	31.94	-92.96	-69.43	-13.00	56.43	23.53	Horizontal
2	67.83	-85.15	-65.79	-13.00	52.79	19.36	Horizontal
3	103.72	-86.95	-67.61	-13.00	54.61	19.34	Horizontal
4	118.27	-94.75	-74.86	-13.00	61.86	19.89	Horizontal
5	4852	-57.88	-43.14	-13.00	30.14	14.74	Horizontal
6	7480.12	-58.67	-39.00	-13.00	26.00	19.67	Horizontal
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Polarity
1	41.64	-92.96	-73.03	-13.00	60.03	19.93	Vertical
2	68.8	-87.40	-66.32	-13.00	53.32	21.08	Vertical
3	103.72	-87.00	-62.90	-13.00	49.90	24.10	Vertical
4	365.62	-85.79	-58.85	-13.00	45.85	26.94	Vertical
5	879.72	-87.23	-50.70	-13.00	37.70	36.53	Vertical
6	7678.5	-58.36	-38.98	-13.00	25.98	19.38	Vertical

2.7. Frequency Stability

2.7.1. Requirement

According to FCC requirement, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency. According to FCC section 2.1055, the test conditions are:

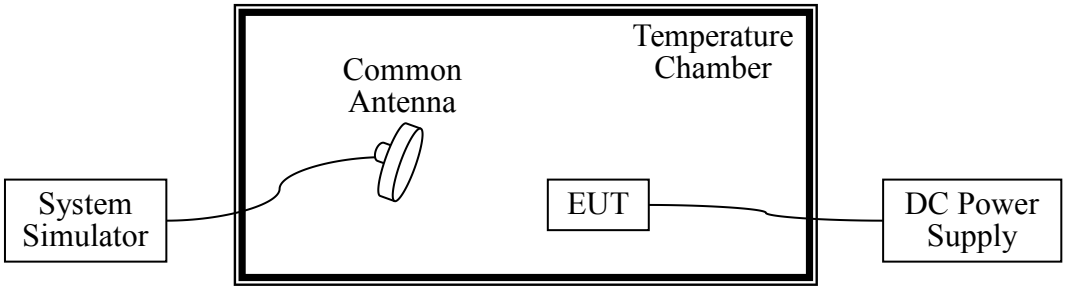
(1) The temperature is varied from -30° C to +50°C at intervals of not more than 10°C.

(2) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.7.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.7.3. Test Setup



2.7.4. Test Procedures

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. The nominal, highest and lowest extreme voltages were tested, which are specified by the applicant; the normal temperature here used is 25°C.
5. The variation in frequency was measured for the worst case.

2.7.5. Test Result of Frequency Stability

WCDMA Band V, RMC 12.2Kbps, Channel=4183, Frequency=836.6 MHz				
Power (VDC)	Temperature (℃)	Deviation (ppm)	Limit(ppm)	Result
3.87	-30	0.0055	±2.5	PASS
	-20	0.0041		
	-10	0.0028		
	0	0.0026		
	+10	0.0033		
	+20	0.0038		
	+30	0.0022		
	+40	**0.0070**		
	+50	0.0029		
4.45	+25	0.0034		
3.50	+25	0.0027		

WCDMA Band II, RMC 12.2Kbps, Channel=9400, Frequency=1880.0 MHz				
Power (VDC)	Temperature (℃)	Deviation (ppm)	Limit(ppm)	Result
3.87	-30	0.0055	Within authorized band for WCDMA II	PASS
	-20	0.0043		
	-10	**0.0063**		
	0	0.0052		
	+10	0.0022		
	+20	0.0034		
	+30	0.0050		
	+40	0.0037		
	+50	0.0025		
4.45	+20	0.0024		
3.50	+20	0.0036		

3. List of measuring equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Receiver	ROHDE&SCHWARZ	ESW26	A180502935	2022.07.21	2023.07.20
2	5M Anechoic Chamber	Albatross	SAC-5MAC 12.8x6.8x6.4m	A0304210	2019.03.25	2023.03.24
3	Loop Antenna	Schwarz beck	HFH2-Z2	A0304220	2022.05.02	2025.05.01
4	Broadband antenna (30MHz~1GHz)	R&S	HL562	A0304224	2020.06.19	2023.06.18
5	EMI Horn Ant. (1-18G)	ETC	1209	A150402241	2021.01.02	2024.01.01
6	Horn antenna (18GHz~26.5GHz)	AR	AT4510	A0804450	2020.06.19	2023.06.18
7	Amplifier 30M~1GHz	MILMEGA	80RF1000-10004	A140101634	2020.09.22	2023.09.21
8	Amplifier 1G~18GHz	MILMEGA	AS0104R-800/400	A160302517	2021.12.23	2022.12.22
9	Spectrum Analyzer	KEYSIGHT	N9030A	A160702554	2022.03.25	2023.03.24
10	Test Receiver	R&S	ESIB7	A0501375	2022.04.18	2023.04.17
11	Broadband Ant.	2786	ETC	A150402240	2021.09.16	2024.03.03
12	3M Anechoic Chamber	Albatross	SAC-3MAC 9*6*6m	A0412375	2019.03.26	2023.03.25
13	Temperature chamber	TABAI	PS-232	A8708054	2022.08.18	2023.08.17
14	Wideband Radio Communication tester	R&S	CMW500	A130101034	2022.06.23	2023.06.22
15	Wideband Radio Communication tester	R&S	CMW500	A150802214	2022.06.17	2023.06.16
16	Test Receiver	KEYSIGHT	N9038A	A141202036	2022.07.21	2023.07.20
17	LISN	ROHDE&SCHWARZ	ENV216	A140701847	2022.07.21	2023.07.20
18	Cable	MATCHING PAD	W7	/	2022.07.21	2023.07.20

4. Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence . 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.

Uncertainty of Conducted Emission Measurement (150kHz~30MHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	2.8dB

Uncertainty of Radiated Emission Measurement (9kHz~30MHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	3.5dB

Uncertainty of Radiated Emission Measurement (30MHz~1GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	3.91dB

Uncertainty of Radiated Emission Measurement (1GHz~18GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	4.5dB

Uncertainty of Radiated Emission Measurement (18GHz~40GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	4.9dB

Uncertainty of RF Conducted Measurement (9kHz~40GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	1.2dB

** END OF REPORT **