

RF Test Report

Applicant : Getac Technology Corporation
Product Type : Wireless Module
Trade Name : Getac
Model Number : EM7511
Test Specification : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
FCC 47 CFR PART 27L
ANSI C63.26
Receive Date : Mar. 06, 2019
Test Period : Apr. 09 ~ May 03, 2019
Issue Date : Jun. 18, 2019

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

Test Firm MRA designation number: TW0010

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	May 10, 2019	Initial Issue	Nina Lin
01	Jun. 18, 2019	Page 21 & 22 Added Test Photographs	Nina Lin



Verification of Compliance

Issued Date: Jun. 18, 2019

Applicant : Getac Technology Corporation
Product Type : Wireless Module
Trade Name : Getac
Model Number : EM7511
FCC ID : QYLEM7511U
EUT Rated Voltage : DC 3.7 V
Test Voltage : 120 Vac, 60 Hz
Applicable Standard : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
FCC 47 CFR PART 27L
ANSI C63.26
Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Fly Lu Reviewed By : Eric Ou Yang
(Manager) (Fly Lu) (Testing Engineer) (Eric Ou Yang)



TABLE OF CONTENTS

1	General Information	5
1.1.	EUT Description	5
1.2.	Mode of Operation.....	6
1.3.	EUT Test Step.....	6
1.4.	Configuration of Test System Details	7
1.5.	Test Instruments	9
1.6.	Test Site Environment.....	9
1.7.	Summary of Test Result.....	10
2	Measurement Procedure	11
2.1.	RF Output Power Test	11
2.2.	Effective Radiated Power / Equivalent Isotropic Radiated Power Test	12
2.3.	Field Strength of Spurious Radiation Test	15
3	Test Results.....	18
	Appendix A: Conducted Output Power	18
	Appendix B: Effective Radiated Power / Equivalent Isotropic Radiated Power Test	20
	Appendix C: Field Strength of Spurious Radiation	21



1 General Information

1.1. EUT Description

Applicant	Getac Technology Corporation 5F.,Building A,No.209,Sec.1 Nangang.,Rd., Taipei City, 11568, Taiwan			
Manufacturer	Sierra Wireless Inc. 13811 Wireless Way, Richmond, BC, V6V 3A4, Canada			
Product Type	Wireless Module			
Trade Name	Getac			
Model Number	EM7511			
FCC ID	QYLEM7511U			
Class II Permissive Change	This is to request a Class II permissive change for FCC ID:QYLEM7511U , originally granted on 2019/4/30 The major change filed under this application is: Change #1: Additional Chassis added, Getac, model number: UX10 #2: Addition one antenna, the antenna type is same, the antenna gain is low than the original application. #3: Disable LTE band 30 & LTE band 48 by software.			
Host Information	Product Type: Tablet Trade Name: Getac Model Name: UX10			
IMEI No.	351664100100110			
Mode	Band	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
WCDMA(RMC12.2K)/ HSDPA/ HSUPA	II	1852.4 ~ 1907.6	1932.4 ~ 1987.6	QPSK
	V	826.4 ~ 846.6	871.4 ~ 891.6	QPSK
	IV	1712.4 ~ 1752.6	2112.4 ~ 2152.6	QPSK
Antenna information	ANT	Type	Max. Gain (dBi)	
	MAIN	FPC Antenna	WCDMA/ HSDPA/ HSUPA Band II	3.01
			WCDMA/ HSDPA/ HSUPA Band V	0.47
			WCDMA/ HSDPA/ HSUPA Band IV	3.16
	AUX	FPC Antenna	WCDMA/ HSDPA/ HSUPA Band II	3.23
			WCDMA/ HSDPA/ HSUPA Band V	0.30
WCDMA/ HSDPA/ HSUPA Band IV			0.95	
Operate Temp. Range	-40 ~ 85 °C			

Frequency Band	Max. RF Output Power (W)	E.R.P. /E.I.R.P. (W)	
WCDMA/ HSDPA/ HSUPA Band II	0.485	---	(E.I.R.P.)
WCDMA/ HSDPA/ HSUPA Band V	0.493	---	(E.R.P.)
WCDMA/ HSDPA/ HSUPA Band IV	0.514	0.475	(E.I.R.P.)

1.2. Mode of Operation

ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
WCDMA Band II Link Mode
WCDMA Band V Link Mode
WCDMA Band IV Link Mode

Note: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

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

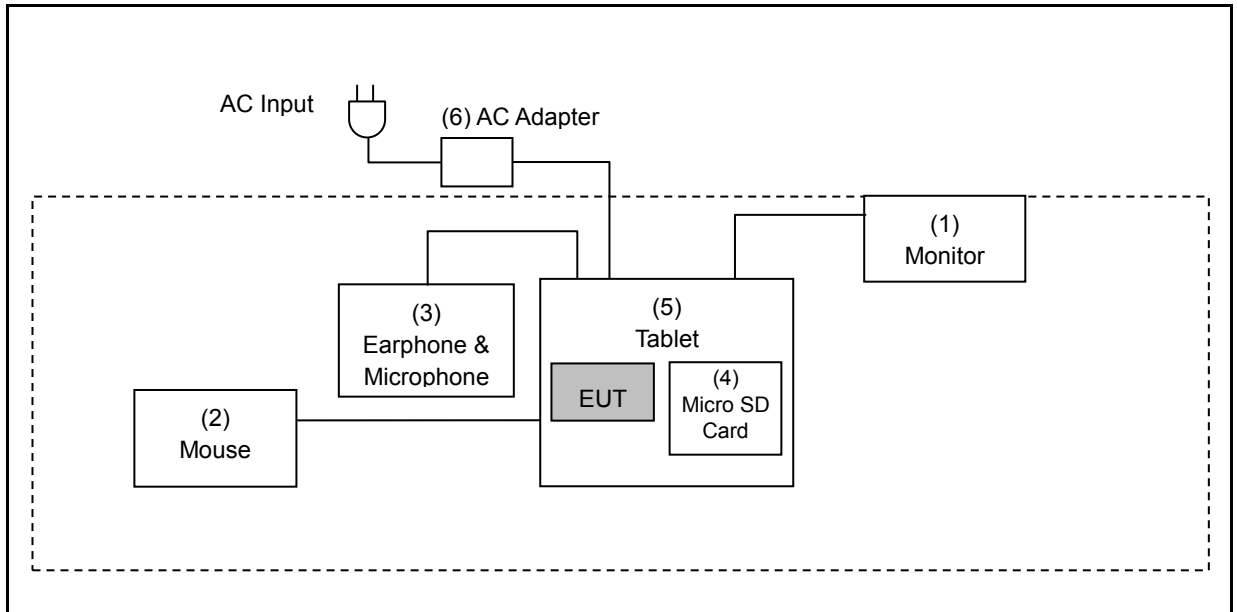
1.3. EUT Test Step

1	Setup the EUT shown on "Configuration of Test System Details".
2	Turn on the power of all equipment.

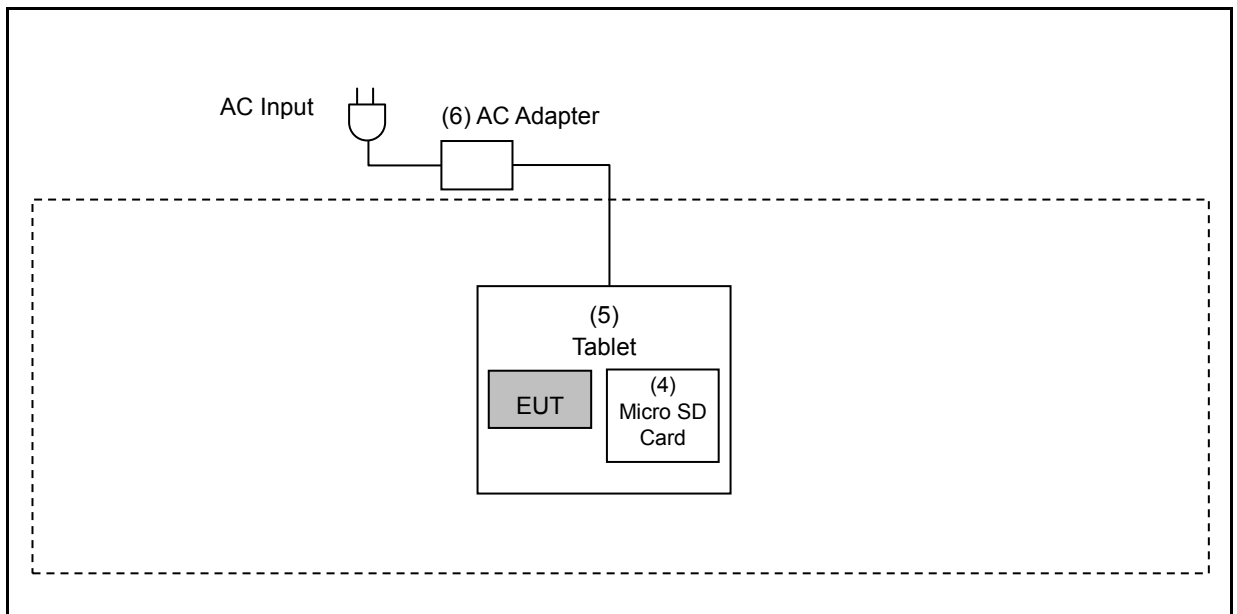
Measurement Software			
No.	Description	Software	Version
1	Radiated Emission	EZ EMC	1.1.4.4

1.4. Configuration of Test System Details

Radiated Emission_ Below 1 GHz



Radiated Emission_ Above 1 GHz





Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	Monitor	DELL	P2415Qb	CN-0D3C8Y-74261-523 -0HUL	---
(2)	Mouse	Logitech	M-UAG96B	---	---
(3)	Earphone & Microphone	HTC	---	---	---
(4)	Micro SD Card	Transcend	---	---	---
(5)	Tablet	Getac	UX10	---	---
(6)	AC adapter	FSP	FSP065-RBBN3	---	---

1.5. Test Instruments

For Conducted

Test Period: Apr. 09, 2019

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Universal Radio Communication Tester	Agilent	E5515C	MY47511156	09/11/2018	1 year
Universal Radio Communication Tester	R&S	CMU200	112387	03/11/2019	1 year
Power Supply	KEITHLEY	2303	4045290	02/12/2019	1 year

For Radiated Emissions

Test Period: May 03, 2019

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
EXA Signal Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	01/14/2019	1 year
Pre Amplifier (1~26.5 GHz)	Agilent	8449B	3008A02237	10/16/2018	1 year
Pre Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	01/14/2019	1 year
Trilog Broadband Antenna	Schwarzbeck Mess-Elektronik	VULB9168	416	10/23/2018	1 year
Horn Antenna (1~18 GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	08/23/2018	1 year
RF Cable	EMCI	EMC104-N-N-6000	TE01-1	02/20/2019	1 year
Microwave Cable	EMCI	EMC104-SM-SM-13000	170814	10/30/2018	1 year
Microwave Cable	EMCI	EMC102-KM-KM-14000	151001	02/20/2019	1 year

1.6. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	990

Test Setting Condition		
N.V.	Normal Voltage	AC 120 V
N.T.	Normal Temperature	+25 °C



1.7. Summary of Test Result

FCC Rule	Description	Result
§2.1046	Conducted Output Power	Pass
§22.913(a)(5)	Effective Radiated Power	N/A (Note2)
§24.232(c) §27.50(d)(4)	Equivalent Isotropic Radiated Power	Pass (Note2)
§24.232(d) §27.50 KDB 971168 D01 (5.7.1)	Peak to average ratio	N/A (Note1)
§2.1049 §22.917(a) §24.238(a) §27.53(g)	Emission Bandwidth & Occupied Bandwidth	N/A (Note1)
§2.1051 §22.917(a) §24.238(a) §27.53(h)	Band Edge Measurement	N/A (Note1)
§2.1051 §22.917(a) §24.238(a) §27.53(h)	Conducted Spurious Emission	N/A (Note1)
§2.1053 §22.917(a) §24.238(a) §27.53(h)	Field Strength of Spurious Radiation	Pass (Note2)
§2.1055 §22.355 §24.235 §27.54	Frequency Stability for Temperature & Voltage	N/A (Note1)

Note1: Class II permissive change. No need for verification.

Note2: Effective Radiated Power / Equivalent Isotropic Radiated Power and Field Strength of Spurious Radiation is tested using the worst Conducted Output Power.

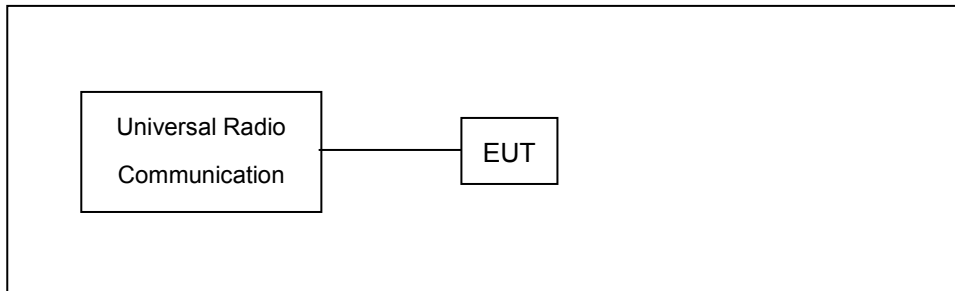
2 Measurement Procedure

2.1. RF Output Power Test

■ **Limit**

N/A

■ **Test Setup**



■ **Test Procedure**

- a. The EUT was set up for the maximum power with with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

■ **Uncertainty**

The measurement uncertainty is defined as for RF output power measurement is 1.2 dB.

2.2. Effective Radiated Power / Equivalent Isotropic Radiated Power Test

■ Limit

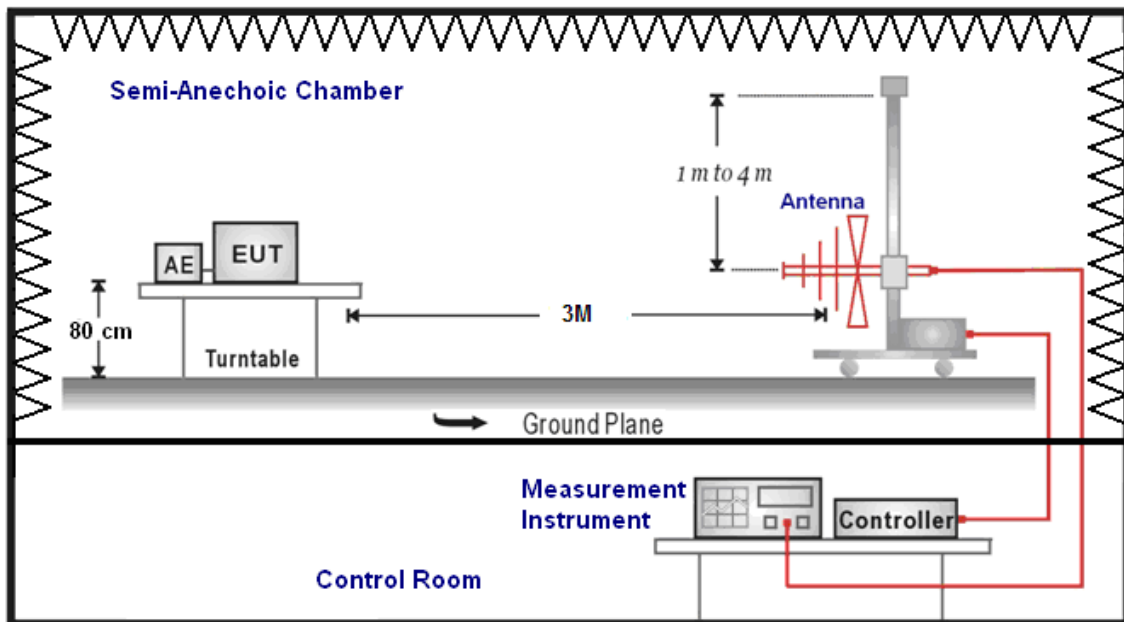
For FCC Part 22.913(a)(5): The E.R.P. of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

For FCC Part 24.232(c): The E.I.R.P. of Mobile and portable stations test transmitters must not exceed 2 Watts.

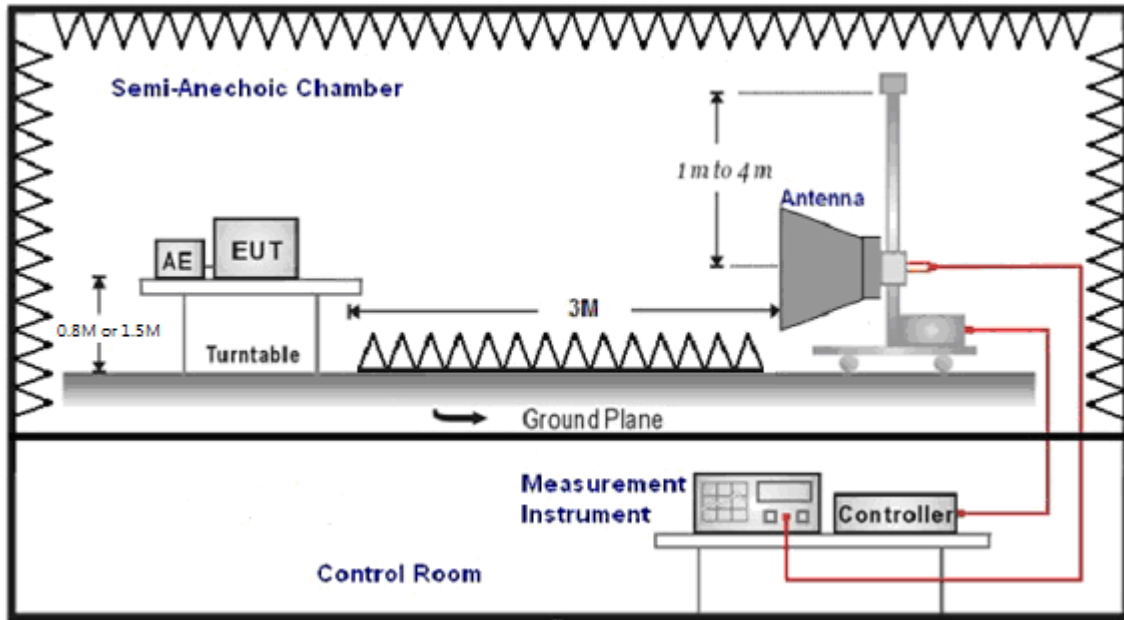
For FCC Part 27.50(d)(4): The EIRP of Mobile and portable stations transmitters are limited to 1 watt for 1710~1755 MHz.

■ Setup

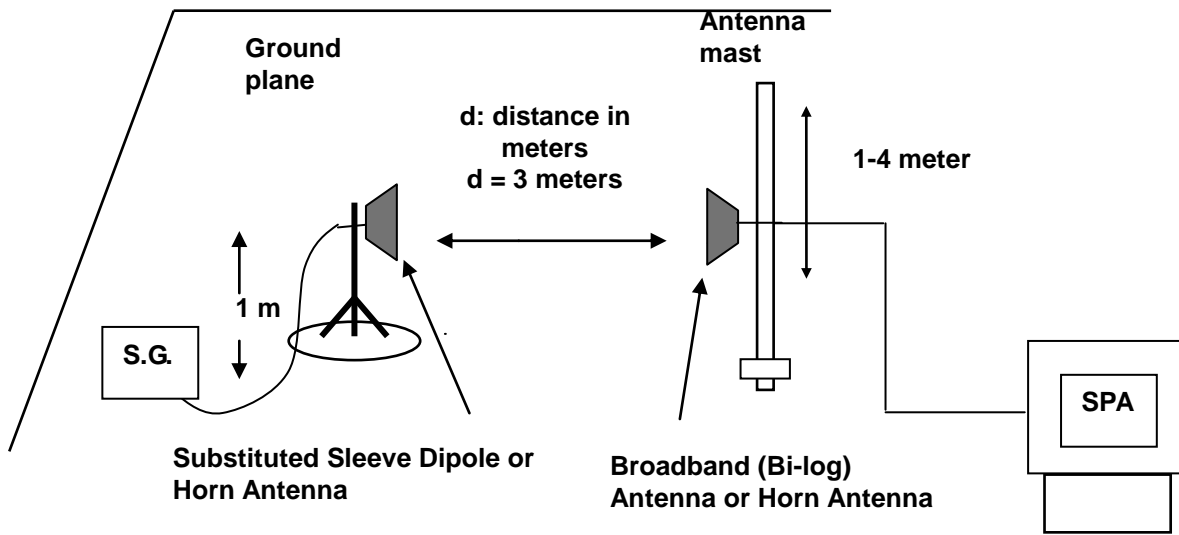
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

- a. The EUT was set up for the maximum power with wwan link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).
- b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (1.5 m for above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. $E.I.R.P. = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$
- e. $E.R.P. = E.I.R.P. - 2.15 \text{ dB}$

Note: 1. Below 1 GHz Substituted Method Test : Sleeve dipole antenna to Bi-Log Antenna

2. Above 1 GHz Substituted Method Test : Horn antenna to Horn Antenna

■ Uncertainty

The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is $\pm 3.072 \text{ dB}$.

2.3. Field Strength of Spurious Radiation Test

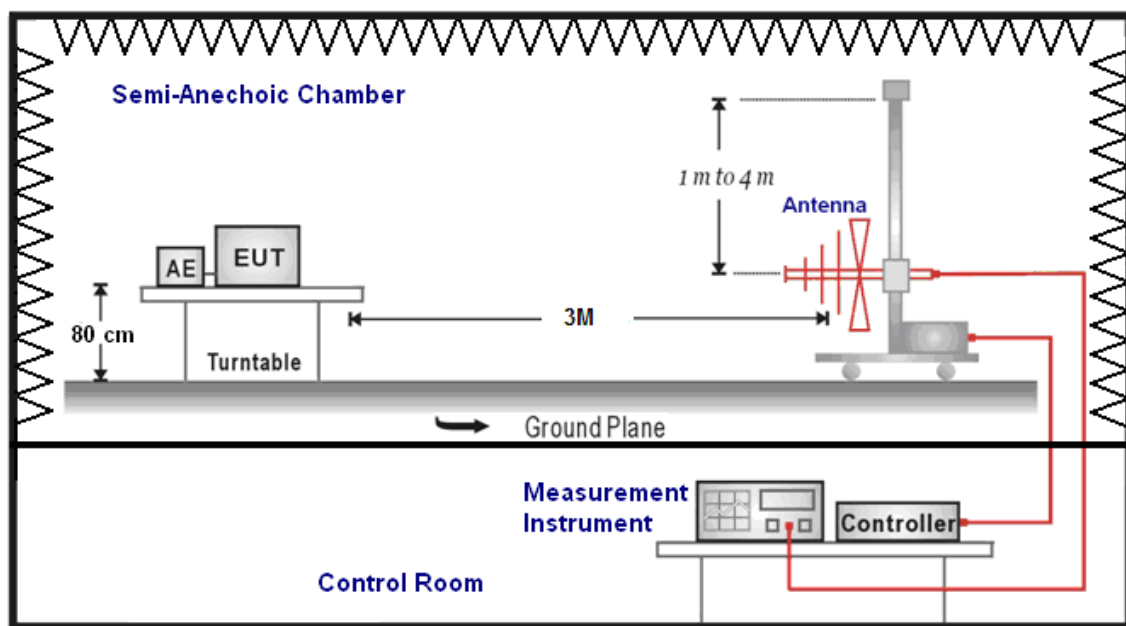
■ Limit

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.

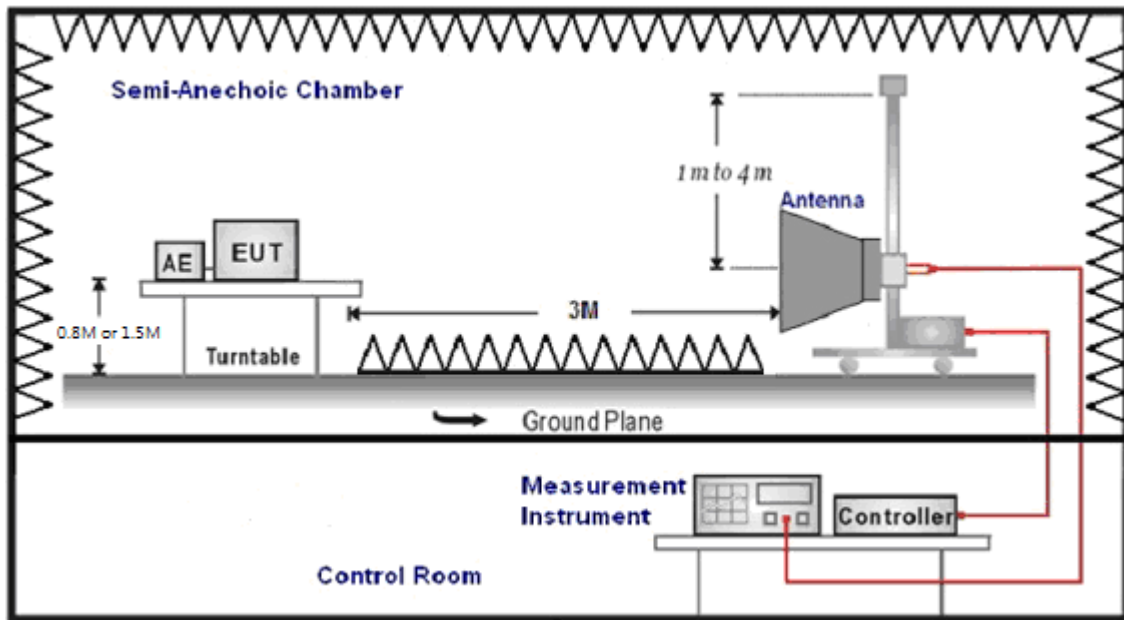
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

■ Setup

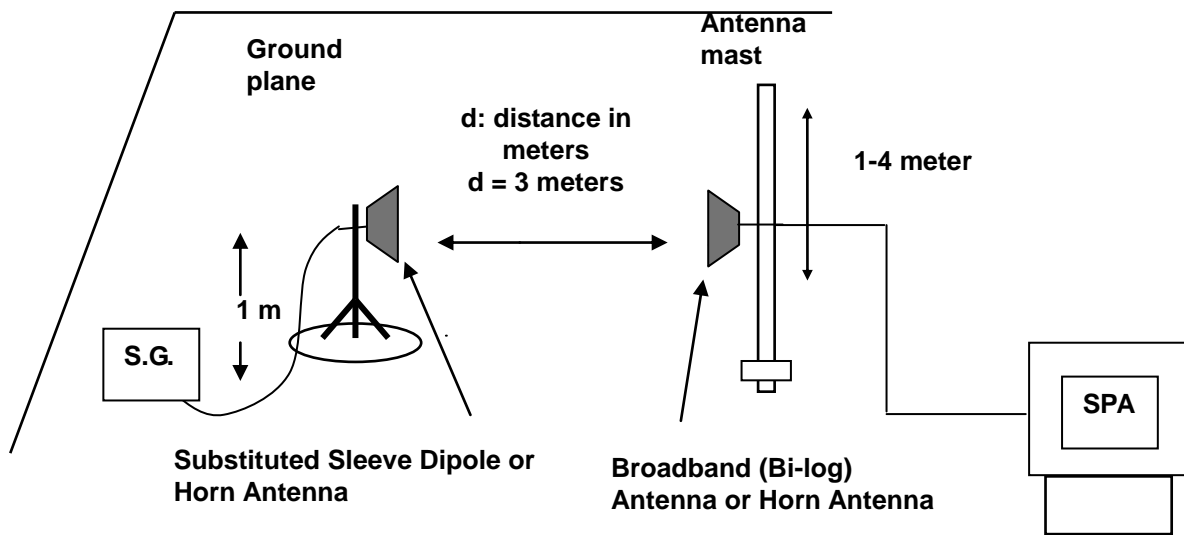
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP





■ Test Procedure

For FCC

- a. The EUT was set up for the maximum power with wwan link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).
- b. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (1.5 m for above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn
- e. E.R.P. = E.I.R.P.- 2.15 dB
- f. Measurement range 9 kHz - 10 th Harmonic



3 Test Results

Appendix A: Conducted Output Power

Bands	Modulation Type	Sub-Test	Frequency (MHz)	Burst Average Power		Peak Power	
				(dBm)	(W)	(dBm)	(W)
WCDMA Band II	QPSK	-----	1852.4	23.54	0.226	26.86	0.485
			1880.0	23.47	0.222	26.82	0.481
			1907.6	23.45	0.221	26.81	0.480
HSDPA Band II	QPSK	1	1852.4	22.71	0.187	25.99	0.397
			1880.0	22.64	0.184	25.84	0.384
			1907.6	22.62	0.183	25.90	0.389
		2	1852.4	22.18	0.165	25.43	0.349
			1880.0	22.11	0.163	25.35	0.343
			1907.6	22.09	0.162	25.33	0.341
		3	1852.4	22.16	0.164	25.28	0.337
			1880.0	22.09	0.162	25.30	0.339
			1907.6	22.07	0.161	25.27	0.337
		4	1852.4	22.58	0.181	25.66	0.368
			1880.0	22.51	0.178	25.77	0.378
			1907.6	22.49	0.177	25.68	0.370
HSUPA Band II	QPSK	1	1852.4	22.17	0.165	25.28	0.337
			1880.0	22.10	0.162	25.28	0.337
			1907.6	22.08	0.161	25.18	0.330
		2	1852.4	20.14	0.103	23.35	0.216
			1880.0	20.07	0.102	23.31	0.214
			1907.6	20.05	0.101	23.20	0.209
		3	1852.4	21.14	0.130	24.24	0.265
			1880.0	21.07	0.128	24.36	0.273
			1907.6	21.05	0.127	24.19	0.262
		4	1852.4	20.11	0.103	23.24	0.211
			1880.0	20.04	0.101	23.22	0.210
			1907.6	20.02	0.100	23.24	0.211
		5	1852.4	22.05	0.160	25.29	0.338
			1880.0	21.98	0.158	25.14	0.327
			1907.6	21.96	0.157	25.11	0.324

Note: The peak power testing result was used peak detector.



Bands	Modulation Type	Sub-Test	Frequency (MHz)	Burst Average Power		Peak Power	
				(dBm)	(W)	(dBm)	(W)
WCDMA Band V	QPSK	----	826.4	23.62	0.230	26.88	0.488
			836.6	23.57	0.228	26.93	0.493
			846.6	23.49	0.223	26.79	0.478
HSDPA Band V	QPSK	1	826.4	22.70	0.186	25.97	0.395
			836.6	22.75	0.188	25.93	0.392
			846.6	22.62	0.183	25.87	0.386
		2	826.4	22.16	0.164	25.40	0.347
			836.6	22.21	0.166	25.46	0.352
			846.6	22.08	0.161	25.32	0.340
		3	826.4	22.14	0.164	25.29	0.338
			836.6	22.19	0.166	25.34	0.342
			846.6	22.06	0.161	25.32	0.340
		4	826.4	22.59	0.182	25.68	0.370
			836.6	22.64	0.184	25.90	0.389
			846.6	22.51	0.178	25.75	0.376
HSUPA Band V	QPSK	1	826.4	22.12	0.163	25.27	0.337
			836.6	22.17	0.165	25.30	0.339
			846.6	22.04	0.160	25.10	0.324
		2	826.4	20.09	0.102	23.38	0.218
			836.6	20.14	0.103	23.39	0.218
			846.6	20.01	0.100	23.15	0.207
		3	826.4	21.05	0.127	24.19	0.262
			836.6	21.10	0.129	24.41	0.276
			846.6	20.97	0.125	24.11	0.258
		4	826.4	20.06	0.101	23.26	0.212
			836.6	20.11	0.103	23.28	0.213
			846.6	19.98	0.100	23.19	0.208
		5	826.4	21.95	0.157	25.23	0.333
			836.6	22.00	0.158	25.10	0.324
			846.6	21.87	0.154	25.03	0.318

Note: The peak power testing result was used peak detector.



Bands	Modulation Type	Sub-Test	Frequency (MHz)	Burst Average Power		Peak Power	
				(dBm)	(W)	(dBm)	(W)
WCDMA Band IV	QPSK	----	1712.4	23.67	0.233	27.03	0.505
			1732.6	23.74	0.237	27.11	0.514
			1752.6	23.59	0.229	26.94	0.494
HSDPA Band IV	QPSK	1	1712.4	22.82	0.191	26.10	0.407
			1732.6	22.89	0.195	26.07	0.405
			1752.6	22.74	0.188	25.99	0.397
		2	1712.4	22.31	0.170	25.58	0.361
			1732.6	22.38	0.173	25.58	0.361
			1752.6	22.23	0.167	25.50	0.355
		3	1712.4	22.29	0.169	25.38	0.345
			1732.6	22.36	0.172	25.52	0.356
			1752.6	22.21	0.166	25.45	0.351
		4	1712.4	22.68	0.185	25.84	0.384
			1732.6	22.75	0.188	26.05	0.403
			1752.6	22.60	0.182	25.80	0.380
HSUPA Band IV	QPSK	1	1712.4	22.26	0.168	25.43	0.349
			1732.6	22.33	0.171	25.51	0.356
			1752.6	22.18	0.165	25.27	0.337
		2	1712.4	20.25	0.106	23.52	0.225
			1732.6	20.32	0.108	23.57	0.228
			1752.6	20.17	0.104	23.28	0.213
		3	1712.4	21.21	0.132	24.36	0.273
			1732.6	21.28	0.134	24.57	0.286
			1752.6	21.13	0.130	24.31	0.270
		4	1712.4	20.19	0.104	23.40	0.219
			1732.6	20.26	0.106	23.49	0.223
			1752.6	20.11	0.103	23.31	0.214
		5	1712.4	22.11	0.163	25.35	0.343
			1732.6	22.18	0.165	25.32	0.340
			1752.6	22.03	0.160	25.19	0.330

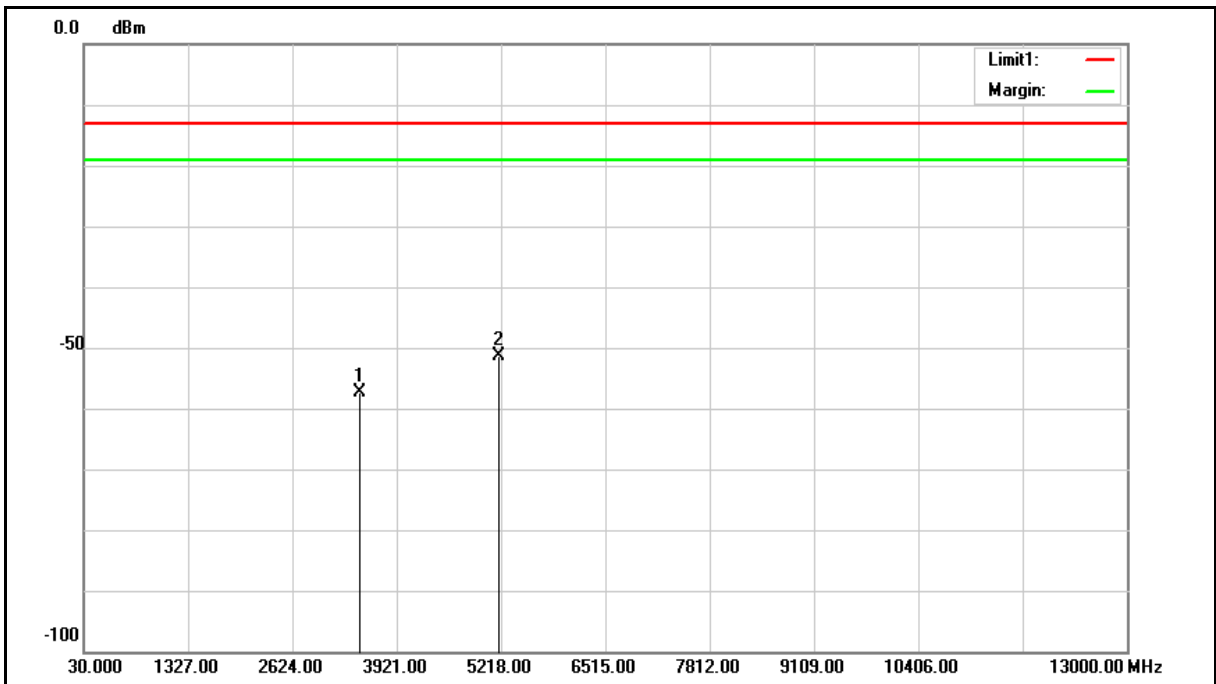
Note: The peak power testing result was used peak detector.

Appendix B: Effective Radiated Power / Equivalent Isotropic Radiated Power Test

Band 4								
Band	Modulation	Frequency (MHz)	Ant. Polar.	Read Level (dBm)	Correction Factor (dBm)	E.I.R.P.		Limit (W)
						(dBm)	(W)	
WCDMA	QPSK	1732.6	H	17.67	8.18	25.85	0.385	< 1
			V	18.60	8.17	26.77	0.475	< 1

Appendix C: Field Strength of Spurious Radiation

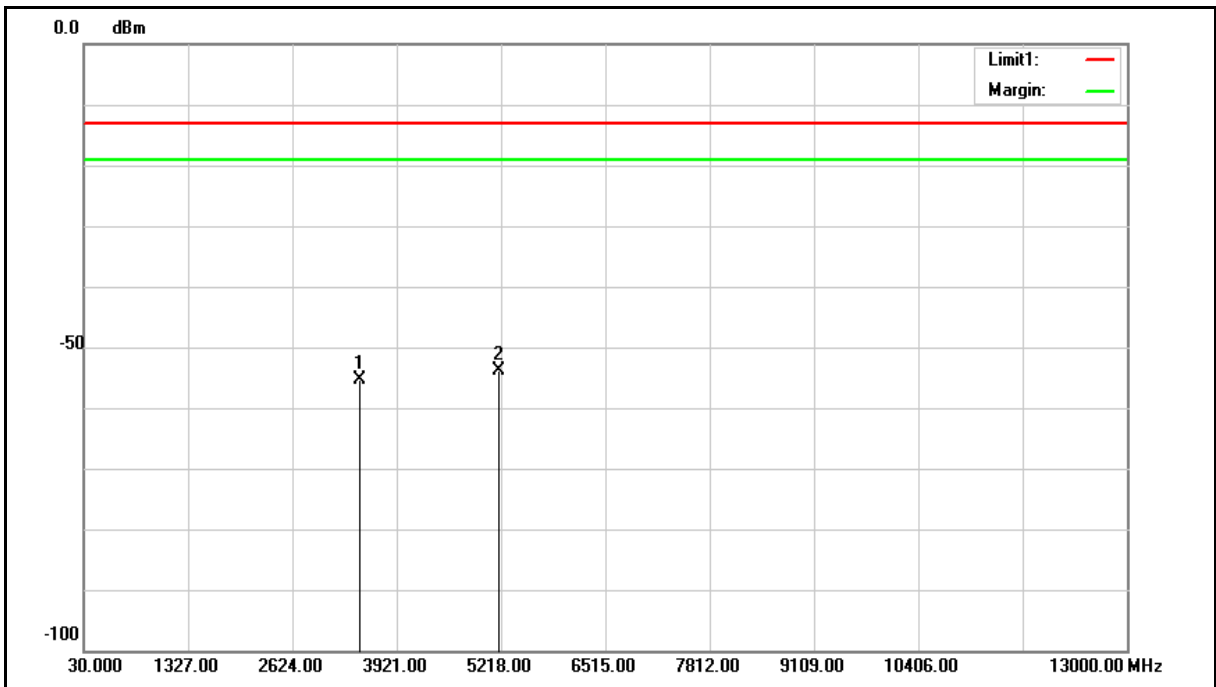
Standard:	Part 22H&24E&27	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1732.6 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 4_CH1413_H		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3465.200	-70.62	13.36	-57.26	-13.00	-44.26	peak
2	5197.800	-69.26	18.01	-51.25	-13.00	-38.25	peak



Standard:	Part 22H&24E&27	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1732.6 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	3 G_BAND 4_CH1413_V		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3465.200	-68.78	13.36	-55.42	-13.00	-42.42	peak
2	5197.800	-71.82	18.01	-53.81	-13.00	-40.81	peak