



# FCC Test Report

**Product Name: Wireless Modem**

**Model Number: E5838**

**Report No: SYBHZ(R)E010052009EB-4**  
**FCC ID: QISE5838**

**Reliability Laboratory of Huawei Technologies Co., Ltd.**

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**REPORT ON** FCC 47CFR part 15 subpart C Test of  
HUAWEI E5838 Wireless Modem

M/N: E5838

Report No: SYBHZ(R)E010052009EB-4

FCC ID: QISE5838

**REGULATION** **FCC CFR47 Part 2: Subpart J;**  
**FCC CFR47 Part 15: Subpart C;**

**CONCLUSION** **PASS**

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	Date	Name	signature

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# 1 Summary

The table below summarizes the measurements and results for the Wireless Modem E5838. Detailed results and descriptions are shown in the following pages.

Table 1 Summary of results

<b>FCC Measurement Specification</b>	<b>Description</b>	<b>Result</b>
15.247 (a) (2)	6dB bandwidth measurement	PASS
15.247 (b) (3)	Conducted Peak output power	PASS
15.247 (d)	Band edge compliance measurement	PASS
15.247 (d)	Conducted RF spurious	PASS
15.247 (e)	Power spectral density	PASS
15.247 (d) / 15.205 & 15.209	Radiated spurious emission & Radiated restricted band measurement	PASS
15.207	Conducted emission test for power port	PASS



## 2 Product Description

### 2.1 Production Information

#### 2.1.1 General Description

E5838 is a UMTS/GSM Wireless Modem. It can be used as a WiFi Access Point, Max to 5 WiFi stations can be associating with E5838 simultaneity. It also can be used as a USB modem by connecting with PC via USB cable. It supports wireless internet accessing function. The data service rate is HSUPA 5.75Mbps, and HSDPA 7.2Mbps. The WCDMA frequency is BAND I、BAND II and BAND VIII. The GPRS/EDGE frequency is 850/900/1800/1900 MHz. The WiFi frequency is 2.4G.

**Note: Only WLAN function was considered in this report.**

#### 2.1.2 Support function and Service

The Wireless Modem E5838 (EUT) support the function and service as follows:

Table 2 Service and Test mode List

Service Name	mode	Characteristic	Corresponding Test Mode	Note
Data	DSSS	Modulation: QPSK	TM1	
Data	OFDM	Modulation: 64QAM	TM2	

### 2.2 Modification Information

For original equipment, following table is not application.

Table 3 Modification Information

Model Number	Board/Module	Original Version	New Version	Modify Information
Not applicable!				
Not applicable!				
Not applicable!				



### **3 Test Site Description**

The test site of:

***Huawei Technologies Co. Ltd.  
P.O. Box 518129  
Huawei base, bantian,  
Longgang District, Shenzhen, China***

#### **3.1 Testing Period**

The test have been performed during the period of

May.15, 2009 to May.25, 2009

#### **3.2 General Set up Description**

The WLAN digitally modulated systems of the EUT can Support 2.4GHz Band. For compliance with FCC regulation 47CFR part15 subpart C, we set the EUT as following test modes to do all compliance tests.

##### **WLAN MODE:**

**TM1:** DSSS mode ,QPSK Modulation,11Mbps data rate

**TM2:** OFDM mode,64QAM Modulation,54 Mbps data rate



## 4 Product Description

### 4.1 Technical Characteristics

#### 4.1.1 Frequency Range

Table 4 Frequency Range

Uplink band:	2400 to 2483.5 MHz	
Downlink band:	2400 to 2483.5 MHz	
Hop frequency support:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

#### 4.1.2 Channel Spacing / Separation

Table 5 Channel Spacing / raster

Channel spacing:	22 MHz
Channel raster:	5 MHz

#### 4.1.3 Type of Emission

Table 6 Type of Emission

Emission Designation:	-
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According to CFR 47 (FCC) part 2, subpart C, section 2.201 and 2.202

#### 4.1.4 Antenna Information

Table 7 Antenna Information

Type:	Integrated / Internal
Maximum Gain(dBi):	1.0 (from 2400MHz to 2500MHz)



#### 4.1.5 Environmental Requirements

Table 8 Environmental Requirements

Minimum temperature:	- 10 °C
Maximum temperature:	+ 45 °C
Relative Humidity:	5%-95%

#### 4.1.6 Power Source

Table 9 Power Source

AC voltage nominal:	~120V
AC voltage range	~100V-240V
AC current maximal:	500mA

#### 4.1.7 Tune-up Procedure

According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (9).

Please reference the document Tune-up Procedure in TCF.

#### 4.1.8 Applied DC Voltages and Currents

According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (8).

The voltage and current in the final RF stage is:

Table 10 Applied RF module DC Voltages and Currents

Voltage:	 +3.3V
Current:	100mA According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (8)



## 4.2 EUT Identification List

### 4.2.1 Board Information

Table 11 Board Information

E5838 Wireless Modem		
E5838		
Board and Module		
Equipment Designation / Description	Hardware Version	Remarks
MAINBOARD	WLC1GCPU	E5838

### 4.2.2 Adapter Technical Data

AC/DCAdapter Model	CHG5365-3C
Manufacturer	Shen Zhen Huntkey Power Technology Co.,Ltd
Input Voltage	100-240V ~50/60Hz 0.2 A
Output Voltage	5.3V  650mA
Rated Power	<3.5W
S/N	HKY792700001

AC/DCAdapter Model	TPCA-053065VY
Manufacturer	TECH-POWER INTERNATIONAL CO.,LTD
Input Voltage	100-240V ~50/60Hz 0.2 A
Output Voltage	5.3V  650mA
Rated Power	<3.5W
S/N	TD075032R-0206

### 4.2.3

Type:	Rechargeable Li-ion
Manufacturer:	Huawei Technologies Co., Ltd.
Battery Model:	HB4F1
Rated capacity:	1500mAh
Nominal Voltage:	 +3.7V
Charging Voltage:	 +4.2V

Type:	Rechargeable Li-ion
Manufacturer:	Huawei Technologies Co., Ltd.
Battery Model:	HB4F1L
Rated capacity:	1250mAh
Nominal Voltage:	 +3.7V
Charging Voltage:	 +4.2V



#### 4.2.4 FCC Identification

**Grantee Code:** QIS  
**Product Code:** E5838  
**FCC Identification:** QISE5838



## 5 Main Test Instruments

Table 12 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until (MM.DD.YYYY)
Signal Analyzer	R&S	FSQ 40	100025	10.05.2009
Spectrum Analyzer	Agilent	E4440A	NA	09.26.2009
Test Receiver RF Unit	R&S	ESMI 1032.5640.53	829179/008	05.12.2010
Receiver	R&S	ESCS30	830245/018	04.21.2010
Pre-Amplifier	Agilent	8447D	2944A10146	05.11.2010
Pre-Amplifier	Agilent	83017A	3950M00246	03.04.2010
BiLog Antenna	Schaffner	CBL 6112B	2536	06.07.2009
Horn Antenna	R&S	HF906 4044.4507.02	359287/006	12.13.2009
Horn Antenna	ETS-Lindgren	3117	00062553	07.15.2009
Horn Antenna	ETS-Lindgren	3160	00060006	08.02.2009
Signal Generator	R&S	SMR 40	100325	05.12.2010
Artificial Mains Network	R&S	ENV4200	100001	05.11.2010
Universal Radio Communication Tester	R&S	CMU200	108035	09.21.2009



## 6 Transmitter Measurements

### 6.1 6dB bandwidth measurement

#### 6.1.1 Test Conditions

Table 13 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	23.5 °C
Relative humidity:	55%
Test Configurations:	TM1/TM2 at channel No.1, 6, 11

#### 6.1.2 Test Specifications and Limits

##### 6.1.2.1 Specification

CFR 47 (FCC) part 15.247 (a) (2) and KDB 558074

##### 6.1.2.2 Supporting Standards

Table 14 Supporting Standards:

ANSI/TIA-603-C:2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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##### 6.1.2.3 Limits

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Table 15 Limits

Limits	≥ 500kHz
--------	----------

#### 6.1.3 Test Method and Setup

- (a) Connect test port of EUT to spectrum analyzer.
- (b) Set the EUT to transmit maximum output power at 2.4GHz, then set the measured frequency number and test the 6dB bandwidth with spectrum analyzer.

## Test setup

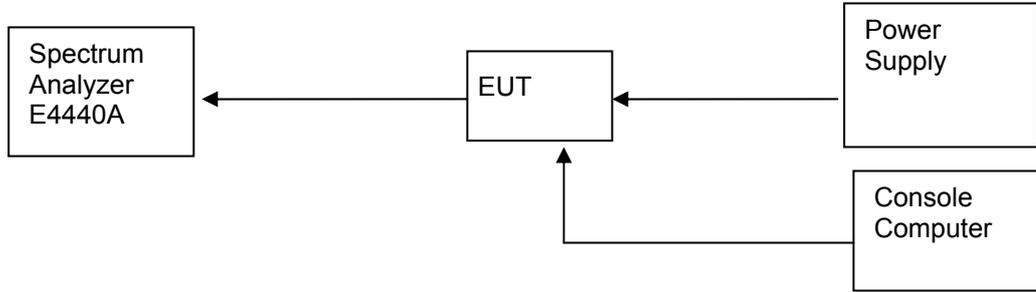


Figure 1. Test Set-up

### 6.1.4 Measurement Results

Table 16 Measurement Results

Test condition	Channel Position	Bandwidth Type	Channel Number	Frequency [GHz]	Measured Bandwidth [MHz]	Result
TM1	B	6dB Bandwidth	1	2.412	10.11	Pass
	M	6dB Bandwidth	6	2.437	10.12	Pass
	T	6dB Bandwidth	11	2.462	9.71	Pass
TM2	B	6dB Bandwidth	1	2.412	16.26	Pass
	M	6dB Bandwidth	6	2.437	15.66	Pass
	T	6dB Bandwidth	11	2.462	15.62	Pass

### 6.1.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
For the measurement results refer to appendix A.



## 6.2 Peak output power

### 6.2.1 Test Conditions

Table 17 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	23.5°C
Relative humidity:	55 %
Test Configurations:	TM1/TM2 at channel No.1, 6, 11

### 6.2.2 Test Specifications and Limits

#### 6.2.2.1 Specification

CFR 47 (FCC) part 15.247 (b) (3) and KDB 558074

#### 6.2.2.2 Supporting Standards

Table 18 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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#### 6.2.2.3 Limits

Compliance with part 15.247 (b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level.

Table 19 Limits

2.4GHz and 5.8GHz system using digital modulation	1 Watt / 30 dBm
---	-----------------

### 6.2.3 Test Method and Setup

- (a) Connect test port of EUT to spectrum analyzer.
- (b) Set the EUT to transmit maximum output power.
- (c) Then set the EUT to transmit at high, middle and low frequency and measure the conducted output power separately.

**Test setup**

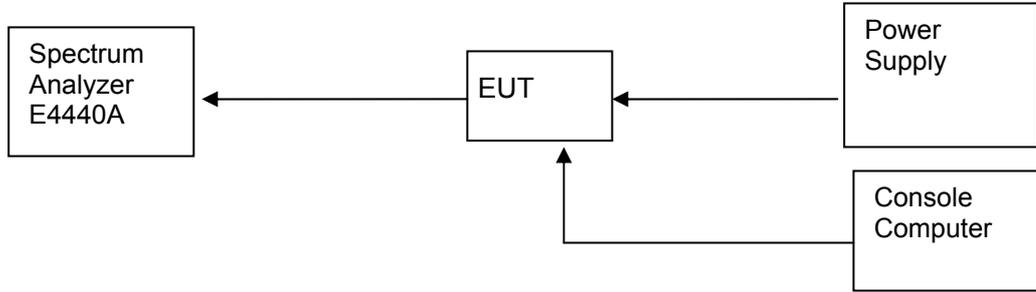


Figure 2. Test Set-up

**6.2.4 Measurement Results**

Table 20 Measurement Results

Test condition	Channel	Channel No.	Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Limit [dBm]	Result
TM1	Bottom	1	2412	17.18	< 30	Pass
	Middle	6	2437	18.17	< 30	Pass
	Top	11	2462	18.67	< 30	Pass
TM2	Bottom	1	2412	15.22	< 30	Pass
	Middle	6	2437	16.11	< 30	Pass
	Top	11	2462	16.67	< 30	Pass

**6.2.5 Conclusion**

The equipment **PASSED** the requirement of this clause.  
 For the measurement results refer to appendix B.



## 6.3 Band edge spurious emission

### 6.3.1 Test Conditions

Table 21 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	20°C
Relative humidity:	50 %
Test Configurations:	TM1/TM2 at channel No. 1, 11

### 6.3.2 Test Specifications and Limits

#### 6.3.2.1 Specification

CFR 47 (FCC) part 15.247(d) and KDB 558074

#### 6.3.2.2 Supporting Standards

Table 22 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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#### 6.3.2.3 Limits

Compliance with part 15.247 (d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

Table 23 Limits

Band edge spurious:	20 dBc/100kHz
---------------------	---------------

### 6.3.3 Test Method and Setup

- (a) Connect test port of EUT to spectrum analyzer
- (b) Set the EUT to transmit maximum output power at 2.4GHz
- (c) Then set the EUT to transmit at high, low frequency and measure the conducted band edge spurious separately.

## Test setup

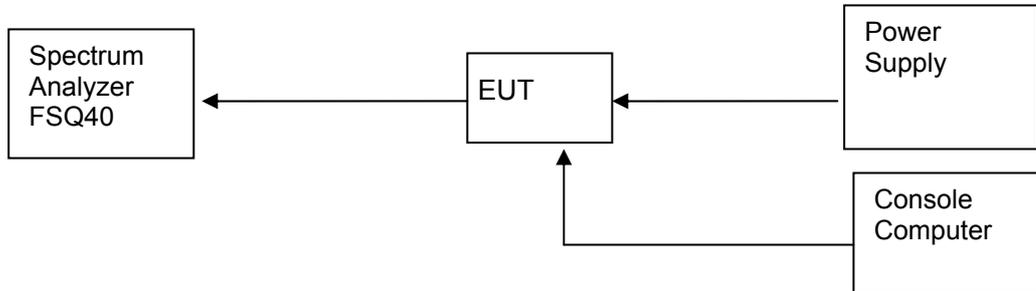


Figure 3. Test Set-up

## 6.3.4 Measurement Results

Table 24 Measurement Results

Test condition		Channel No.	Carrier Frequency [MHz]	Carrier Power [dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Result
TM1	Low Edge	1	2412	6.14	-27.77	-13.86	Pass
	High Edge	11	2462	9.24	-40.74	-10.76	Pass
TM2	Low Edge	1	2412	3.72	-30.76	-16.28	Pass
	High Edge	11	2462	3.86	-36.95	-16.14	Pass

## 6.3.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
 For the measurement results refer to appendix C.



## 6.4 Conducted RF spurious

### 6.4.1 Test Conditions

Table 25 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	22 °C
Relative humidity:	53 %
Test Configurations:	TM1/TM2 at channel No.1, 6, 11

### 6.4.2 Test Specifications and Limits

#### 6.4.2.1 Specification

CFR 47 (FCC) part 15.247 (d) and KDB 558074

#### 6.4.2.2 Supporting Standards

Table 26 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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#### 6.4.2.3 Limits

Compliance with part 15.247 (d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

Table 27 Limits

Band edge spurious:	20 dBc/100kHz
---------------------	---------------

### 6.4.3 Test Method and Setup

- (a) Connect test port of EUT to spectrum analyzer
- (b) Set the EUT to transmit maximum output power at 2.4GHz and.
- (c) Then set the EUT to transmit at high, middle and low frequency and measure the conducted band edge spurious separately.

## Test setup

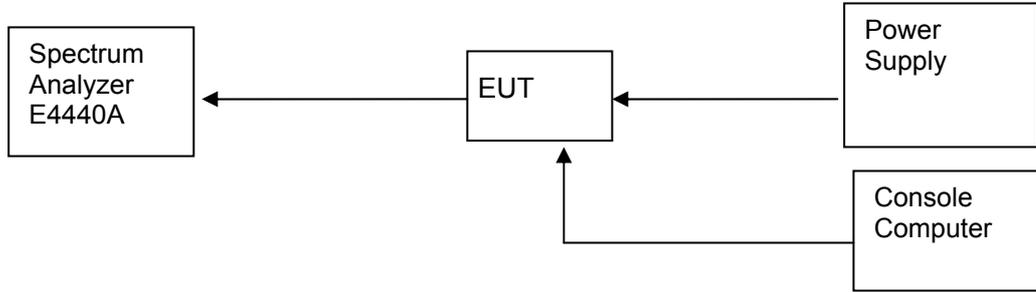


Figure 4. Test Set-up

## 6.4.4 Measurement Results

Table 28 Measurement Results

Test condition	Test Frequency Range	Channel No.	Carrier Frequency [MHz]	Carrier Power [dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Result
TM1	9kHz-26GHz	1	2412	6.26	-40.50	-13.74	Pass
	9kHz-26GHz	6	2437	6.28	-41.15	-13.72	Pass
	9kHz-26GHz	11	2462	9.41	-40.31	-10.59	Pass
TM2	9kHz-26GHz	1	2412	2.94	-40.99	-17.06	Pass
	9kHz-26GHz	6	2437	2.43	-40.58	-17.57	Pass
	9kHz-26GHz	11	2462	2.63	-41.17	-17.37	Pass

## 6.4.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
For the measurement results refer to appendix D.



## 6.5 Power spectral density

### 6.5.1 Test Conditions

Table 29 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	22 °C
Relative humidity:	53 %
Test Configurations:	TM1/TM2 at channel No.1, 6, 11

### 6.5.2 Test Specifications and Limits

#### 6.5.2.1 Specification

CFR 47 (FCC) part 15.247 (e) and KDB 558074

#### 6.5.2.2 Supporting Standards

Table 30 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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#### 6.5.2.3 Limits

Compliance with part 15.247 (e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. The same method of determining the conducted output power shall be used to determine the power spectral density.

Table 31 Limits

Band edge spurious:	8 dBm/3kHz
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### 6.5.3 Test Method and Setup

- (a) Connect test port of EUT to spectrum analyzer
- (b) Set the EUT to transmit maximum output power at 2.4GHz and.
- (c) Then set the EUT to transmit at high, middle and low frequency and measure the conducted band edge spurious separately.

**Test setup**

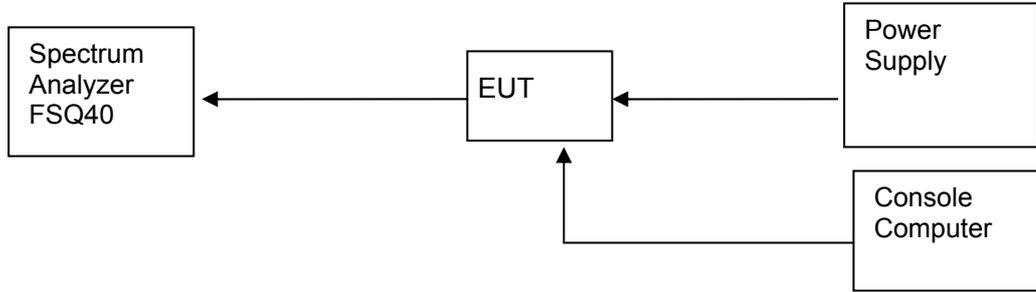


Figure 5. Test Set-up

**6.5.4 Measurement Results**

Table 32 Measurement Results

Test condition	Channel No.	Carrier Frequency [MHz]	Measured Power spectral density [dBm]	Limit [dBm]	Result
TM1	1	2412	-8.01	8	Pass
	6	2437	-5.87	8	Pass
	11	2462	-4.89	8	Pass
TM2	1	2412	-10.23	8	Pass
	6	2437	-9.75	8	Pass
	11	2462	-9.50	8	Pass

**6.5.5 Conclusion**

The equipment **PASSED** the requirement of this clause.  
 For the measurement results refer to appendix E.



## 6.6 Radiated spurious emission & spurious in restricted band

### 6.6.1 Test Conditions

Table 33 Test Conditions

Preconditioning:	0.5 hour
Measured at:	enclosure
Ambient temperature:	25 °C
Relative humidity:	55 %
Test Configurations:	TM1/TM2 at channel No.1, 6, 11

### 6.6.2 Test Specifications and Limits

#### 6.6.2.1 Specification

CFR 47 (FCC) part 15.247 (d), 15.205 & 15.209 and KDB 558074

#### 6.6.2.2 Supporting Standards

Table 34 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI C63.4: 2003	Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

#### 6.6.2.3 Limits

According to part 15.247 (d) / 15.205 & 15.209, all spurious emission in the frequency range from 30MHz to 10<sup>th</sup> harmonics of carrier frequency should be meet the requirement of following table.

Table 35 Limits

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (meters)	Detector
0.009 - 0.490	2400/F(kHz)	20*lg(2400/F(kHz))	300	QP
0.490 - 1.705	24000/F(kHz)	20*lg(24000/F(kHz))	30	QP
1.705 - 30	30	29.5	30	QP
30 – 88	100	40	3	QP
88 – 216	150	43.5	3	QP
216 – 960	200	46	3	QP
960 -1000	500	54	3	QP
Above 1000	500	54	3	PK

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table 42).

### 6.6.3 Test Method and Setup

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2003). The EUT was set-up on insulator 80cm above the Ground Plane. The set-up and test methods were according to ANSI C63.4. The Radiated Disturbance measurements were

made using a Rohde and Schwarz Test Receiver and control software.

A preliminary scan and a final scan of the emissions were made by using test script of software; the emissions were measured using a Quasi-Peak Detector below 1GHz, and AV detector above 1GHz. The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0° to 360°, The receive antenna has two polarizations V and H.

The EUT was communicated with the BTS simulator through Air interface. The EUT operated on the typical channel.

Measurement bandwidth: 30 MHz – 1000 MHz: 120 kHz

Measurement bandwidth: 1000 MHz – 10<sup>th</sup> Carrier Frequency: 1 MHz

### Test set up

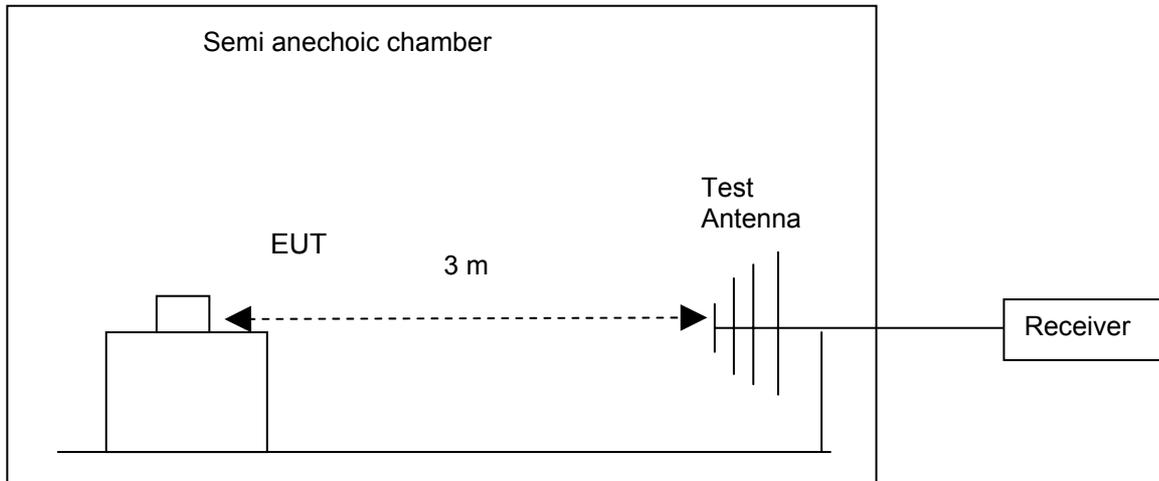


Figure 6. Test Set up

### 6.6.4 Measurement Results

Note 1: The following measurement results exceed the limit line is the carrier frequency.

Note 2: This test was carried out in all the test modes, here only the worst test result was shown.

#### Measured Result of channel: 1 (2412MHz)

Table 36 MEASUREMENT RESULT

Frequency (MHz)	Level (dBμV/m)	Transd (dB)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
35.520000	33.40	-9.0	40.0	6.6	107.0	0.00	VERTICAL
40.920000	32.70	-12.1	40.0	7.3	115.0	337.00	VERTICAL
43.380000	34.00	-13.2	40.0	6.0	115.0	355.00	HORIZONTAL
145.920000	26.90	-14.5	43.5	16.6	124.0	92.00	HORIZONTAL
184.320000	21.30	-13.4	43.5	22.2	227.0	216.00	HORIZONTAL
944.520000	30.00	1.7	46.0	16.0	231.0	0.00	HORIZONTAL
1898.000000	11.50	-8.6	54.0	42.5	176.0	55.00	HORIZONTAL
2412.000000	74.80	-6.8	54.0	-10.8	296.0	65.00	VERTICAL
4254.000000	20.80	-0.7	54.0	33.2	237.0	35.00	VERTICAL
6415.000000	23.20	1.5	54.0	30.8	150.0	164.00	HORIZONTAL
10980.000000	29.60	11.9	54.0	24.4	200.0	270.00	HORIZONTAL
17865.000000	41.10	26.0	54.0	12.9	299.0	230.00	HORIZONTAL
19003.500000	31.30	18.6	54.0	22.7	137.0	297.00	VERTICAL
19487.000000	30.10	18.9	54.0	23.9	217.0	235.00	VERTICAL



20895.00000	32.10	20.2	54.0	21.9	141.0	266.00	VERTICAL
22460.00000	33.20	20.3	54.0	20.8	234.0	294.00	VERTICAL
24583.00000	32.40	22.0	54.0	21.6	150.0	227.00	HORIZONTAL
26496.00000	34.20	27.9	54.0	19.8	192.0	338.00	HORIZONTAL
2310.00000	13.50	-7.3	54.0	40.5	105.0	273.00	VERTICAL
2390.00000	15.20	-6.9	54.0	38.8	219.0	13.00	HORIZONTAL
2483.50000	14.30	-6.7	54.0	39.7	101.0	233.00	VERTICAL
2500.00000	13.40	-6.6	54.0	40.6	270.0	66.00	VERTICAL

**Measured Result of channel: 7 (2442MHz)**

Table 37 MEASUREMENT RESULT

Frequency (MHz)	Level (dBµV/m)	Transd (dB)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
35.520000	33.40	-9.0	40.0	6.6	190.0	246.00	VERTICAL
40.920000	32.70	-12.1	40.0	7.3	185.0	255.00	VERTICAL
43.380000	34.00	-13.2	40.0	6.0	127.0	349.00	VERTICAL
147.960000	26.70	-14.5	43.5	16.8	171.0	306.00	HORIZONTAL
185.840000	21.50	-13.4	43.5	22.0	262.0	249.00	VERTICAL
944.520000	32.60	1.7	46.0	13.4	101.0	196.00	HORIZONTAL
1716.000000	10.0	-9.9	54.0	44.0	268.0	188.00	HORIZONTAL
2442.000000	75.10	-6.9	54.0	-21.1	100.0	251.00	VERTICAL
4213.000000	20.20	-0.6	54.0	33.8	261.0	226.00	VERTICAL
6356.000000	22.70	5.5	54.0	31.3	131.0	52.00	HORIZONTAL
10875.000000	29.60	12.1	54.0	24.4	269.0	318.00	HORIZONTAL
17842.000000	42.20	25.5	54.0	11.8	103.0	122.00	VERTICAL
18776.000000	30.90	18.5	54.0	23.1	133.0	88.00	HORIZONTAL
19493.000000	30.00	18.9	54.0	24.0	183.0	142.00	HORIZONTAL
21785.000000	32.10	20.5	54.0	21.9	282.0	84.00	HORIZONTAL
24193.000000	30.80	21.5	54.0	23.2	243.0	62.00	VERTICAL
25287.000000	30.80	23.1	54.0	23.2	124.0	220.00	HORIZONTAL
26494.000000	38.20	27.9	54.0	15.8	113.0	87.00	HORIZONTAL

**Measured Result of channel: 11 (2462MHz)**

Table 38 MEASUREMENT RESULT

Frequency (MHz)	Level (dBµV/m)	Transd (dB)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
35.520000	33.40	-9.0	40.0	6.6	261.0	296.00	HORIZONTAL
40.920000	32.70	-12.1	40.0	7.3	230.0	8.00	HORIZONTAL
43.380000	34.00	-13.2	40.0	6.0	122.0	317.00	VERTICAL
145.920000	26.80	-14.5	43.5	16.7	146.0	240.00	HORIZONTAL
184.320000	20.70	-13.4	43.5	22.8	283.0	207.00	VERTICAL
944.520000	30.20	1.7	46.0	15.8	288.0	350.00	VERTICAL
1620.000000	9.70	-10.9	54.0	44.3	129.0	30.00	HORIZONTAL
2462.000000	75.70	-6.8	54.0	-21.7	161.0	285.00	HORIZONTAL
4245.000000	20.50	-0.4	54.0	33.5	294.0	10.00	HORIZONTAL
6576.000000	21.40	5.3	54.0	32.6	154.0	173.00	HORIZONTAL
10895.000000	28.60	12.2	54.0	25.4	205.0	65.00	HORIZONTAL
17849.000000	40.60	25.9	54.0	13.4	196.0	248.00	VERTICAL
19483.000000	30.50	18.9	54.0	23.5	271.0	214.00	VERTICAL
20481.000000	31.00	19.7	54.0	23.0	163.0	224.00	HORIZONTAL
21782.000000	31.20	20.5	54.0	22.8	262.0	319.00	VERTICAL
23532.000000	30.80	20.5	54.0	23.2	208.0	277.00	VERTICAL
24206.000000	30.50	21.5	54.0	23.5	156.0	49.00	HORIZONTAL
26498.000000	34.30	27.9	54.0	19.7	120.0	346.00	VERTICAL
2310.000000	13.00	-7.1	54.0	42.0	161.0	344.00	HORIZONTAL



2390.000000	13.00	-6.9	54.0	42.0	182.0	209.00	VERTICAL
2483.500000	39.10	-6.7	54.0	14.9	227.0	245.00	VERTICAL
2500.000000	12.90	-6.6	54.0	41.1	121.0	224.00	VERTICAL

Note: Because the PK value is smaller than AV Limit line, so the AV value is certainly smaller than AV limit line.

### 6.6.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
For the measurement results refer to appendix F.



## 6.7 Conducted Emission at Power Port

### 6.7.1 Test Conditions

Table 39 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Power port
Ambient temperature:	23.5°C
Relative humidity:	55 %
Test Configurations:	TM1 at channel No. 7

### 6.7.2 Test Specifications and Limits

#### 6.7.2.1 Specification

CFR 47 (FCC) part 15.207 and KDB 558074

#### 6.7.2.2 Supporting Standards

Table 40 Supporting Standards:

ANSI C63.4: 2003	Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
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#### 6.7.2.3 Limits

Compliance with part15.207, conducted emission must meet the requirement of following table.

Table 41 Limits

Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

Note: \* Decreases with the logarithm of the frequency.

### 6.7.3 Test Method and Setup

The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4: 2003.

Conducted Disturbance at AC Port measurements were undertaken on the L and N Lines. The emissions were measured using a Quasi-Peak Detector and Average Detector.

The EUT was communicated with the BTS simulator through Air interface, the BTS simulator controls the Wireless Modem to transmitter the maximum power which defined in specification of product. The Wireless Modem operated on the typical channel.

Measurement bandwidth (RBW) for 150kHz to 30 MHz: 9 kHz;

## Test Set-up

The EUT was setup in the screened chamber and operated under nominal conditions.

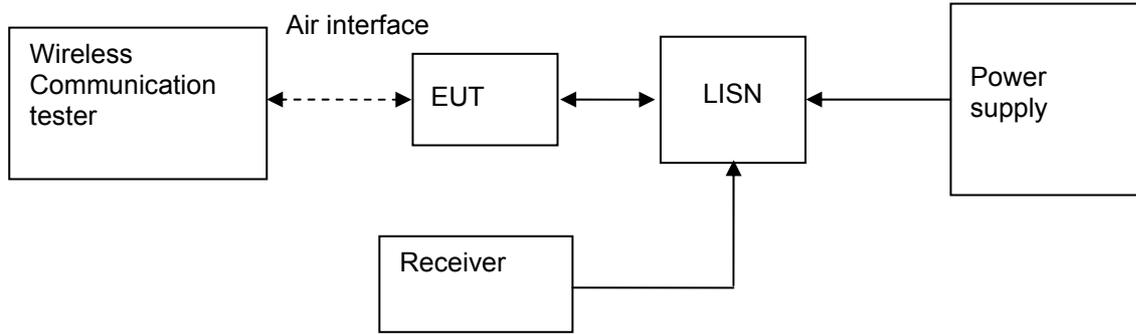


Figure 7. Test Set-up

## 6.7.4 Measurement Results

Table 42 MEASUREMENT RESULT:QP DECTER

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
0.195000	52.60	10.1	64	11.2	N	FLO
0.289500	47.10	10.0	61	13.4	L1	FLO
1.324500	37.70	10.1	56	18.3	N	FLO
2.134500	33.20	10.1	56	22.8	N	FLO
2.211000	30.50	10.1	56	25.5	N	FLO
13.650000	36.90	10.3	60	23.1	L1	FLO

Table 43 MEASUREMENT RESULT:AV DECTER

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
0.168000	30.30	10.0	55	24.7	N	FLO
0.843000	12.30	10.0	46	33.7	L3	FLO
1.824000	17.00	10.1	46	29.0	N	FLO
4.317000	16.10	10.1	46	29.9	L3	FLO
10.230000	25.30	10.1	50	24.7	N	FLO
12.408000	14.50	10.2	50	35.5	N	FLO

## 6.7.5 Conclusion

The equipment **PASSED** the requirement of this clause.  
For the measurement results refer to appendix G.



## 7 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Table 44 System Measurement Uncertainty

Items		Extended Uncertainty
20dB bandwidth measurement	Magnitude (%)	U=0.2%; k=2
Peak output power	Power(dBm)	U=0.39dB; k=2
Band edge compliance measurement	Disturbance Power(dBm)	U=2.0dB; k=2
Conducted RF spurious	Disturbance Power(dBm)	U=0.4dB; k=2
Power spectral density	Disturbance Power(dBm)	U=0.4dB; k=2
Radiated spurious emission & Radiated restricted band measurement	Field strength (dB $\mu$ V/m)	U=2.2dB; k=2 U=5dB; k=2
Conducted emission test for power port	Disturbance Voltage(dB $\mu$ V)	U=4dB; k=2



## 8 Appendices

Appendix A	Measurement Results 6dB bandwidth measurement	7 pages
Appendix B	Measurement Results Peak output power	7 pages
Appendix C	Measurement Results Band edge compliance measurement	5 pages
Appendix D	Measurement Results Conducted RF spurious	19 pages
Appendix E	Measurement Results Power spectral density	7 pages
Appendix F	Measurement Results Radiated spurious emission	15 pages
Appendix G	Measurement Results Conducted emission test for power port	2 pages
Appendix H	Photos of Test Setup	4 pages

(END OF REPORT)