



FCC Test Report

Product Name: Wireless Gateway

Model Number: B970

Report No: SYBH(R) 015122007EB-3
FCC ID: QISB970

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REPORT ON

FCC 47CFR part 15 subpart C Test of
HUAWEI GPRS/GSM/EDGE Wireless Gateway

M/N: B970

Report No: SYBH(R) 015122007EB-3

FCC ID: QISB970

REGULATION

FCC CFR47 Part 2: Subpart J;

FCC CFR47 Part 15: Subpart C;

CONCLUSION

PASS

General Manager

2008.05.21

Date

张兴海

Name

signature



Technical Responsibility
For Area of Testing

2008.05.21

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Name

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1 Summary

The table below summarizes the measurements and results for the GPRS/GSM/EDGE Wireless Gateway with WLAN - B970. Detailed results and descriptions are shown in the following pages.

Table 1 Summary of results

FCC Measurement Specification	Description	Result
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

HUAWEI B970 Wireless Gateway is subscriber equipment in the GSM system, also supports wireless Internet accessing function, routing function, and network address translation (NAT) function. The GSM/GPRS/EDGE frequency band includes 850M, EGSM900, DCS1800 and PCS1900, the WLAN frequency is 2.4G.

B970 implements such functions as RF signal receiving/transmitting, EDGE/GPRS/GSM protocol processing, data service, etc. Externally it provides USB interface (to connect to the notebook etc.), USIM card interface, RJ11 interface (to connect to fixed telephone), and RJ45 interface (to connect to pc). It has four internal antennas as default.

2.1.2 Support function and Service

The Wireless Gateway B970 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!				

3 Test Site Description

The test site of:

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



The test site description has been submitted to and registration granted under the registration number **97456** on Aug 20. 2006. The test site has been accredited by



and the accredited number is **2174.01** in Jan of 2006.

3.1 Testing Period

The test have been performed during the period of

May.18, 2008 to May.19, 2008

3.2 General Set up Description

The WLAN digitally modulated systems of Wireless Gateway B970 (EUT) can Support 2.4GHz Band. For compliance with FCC regulation 47CFR part15 subpart C, we set the EUT as following test mode 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	
digital modulation support:	☐ YES	☒ 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):	0.09 (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:	650mA

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:	 +2.8V
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

Wireless Gateway With WLAN		
B970		
Board and Module		
Equipment Designation / Description	Model	Remarks
-Main board	WLA1GCPU Ver.C WLA1TIPU Ver.C	020DYQ1076700493

4.2.2 Adapter Technical Data

AC/DCAdapter Model	UE15W1-050200SPAV
Manufacturer	Huawei Technologies CO.,LTD
Input Voltage	100-240V ~50/60Hz 0.5 A
Output Voltage	5V  2A
Rated Power	<9W
S/N	UEP7328002672

4.2.3 FCC Identification

Grantee Code: QIS
Product Code: B970
FCC Identification: QISB970

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	09.05.2008
Test Receiver Display Unit	R&S	ESMI 804.8932.52	829214/011	05.22.2009
Test Receiver RF Unit	R&S	ESMI 1032.5640.53	829550/008	05.22.2009
Receiver	R&S	ESIB 26	100318	05.29.2008
Receiver	R&S	ESCS30	830245/018	05.29.2008
Pre-Amplifier	Agilent	8447D	2944A10146	05.20.2008
Pre-Amplifier	Agilent	83017A	3950M00246	03.04.2009
BiLog Antenna	Schaffner	CBL 6112B	2536	06.07.2008
Horn Antenna	R&S	HF906 4044.4507.02	359287/006	12.13.2008
Horn Antenna	ETS-Lindgren	3117	3606061621	07.15.2008
Horn Antenna	ETS-Lindgren	3160	3606061623	07.15.2008
Signal Generator	R&S	SMR 40	100325	07.03.2008
Artificial Mains Network	R&S	ENV4200	100001	05.20.2008
Universal Radio Communication Tester	R&S	CMU200	108035	07.03.2008

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, 7, 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
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6.1.3 Test Method and Setup

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

Test setup

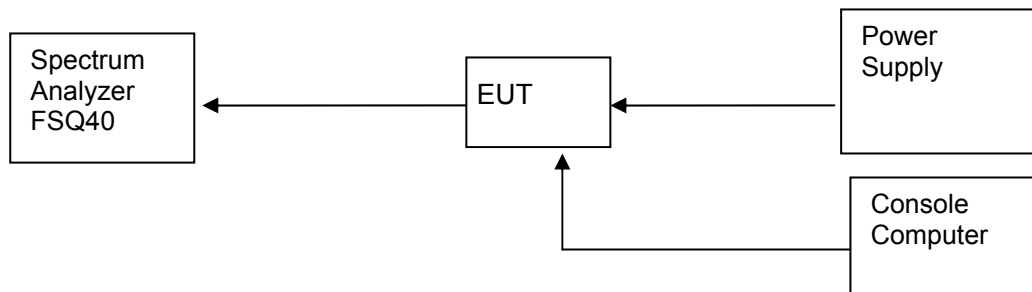


Figure 1. Test Set-up

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	10.257	Pass
	M	6dB Bandwidth	7	2.442	10.642	Pass
	T	6dB Bandwidth	11	2.462	10.642	Pass
TM2	B	6dB Bandwidth	1	2.412	16.538	Pass
	M	6dB Bandwidth	7	2.442	16.538	Pass
	T	6dB Bandwidth	11	2.462	16.539	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, 7, 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
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6.2.3 Test Method and Setup

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

Test setup

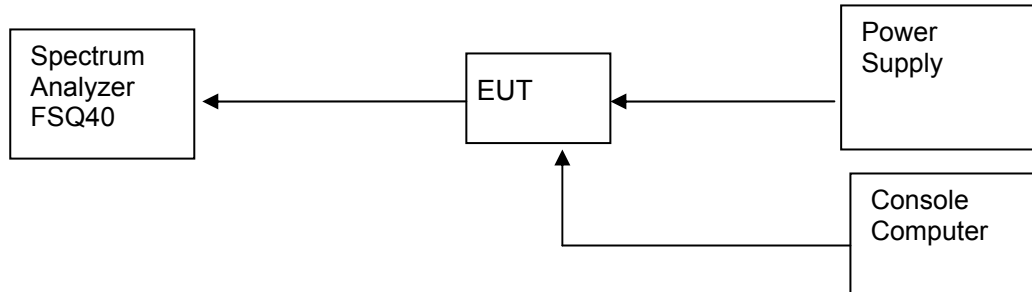


Figure 2. Test Set-up

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	28.42	< 30	Pass
	Middle	7	2442	28.12	< 30	Pass
	Top	11	2462	28.14	< 30	Pass
TM2	Bottom	1	2412	23.93	< 30	Pass
	Middle	7	2442	23.30	< 30	Pass
	Top	11	2462	23.50	< 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
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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

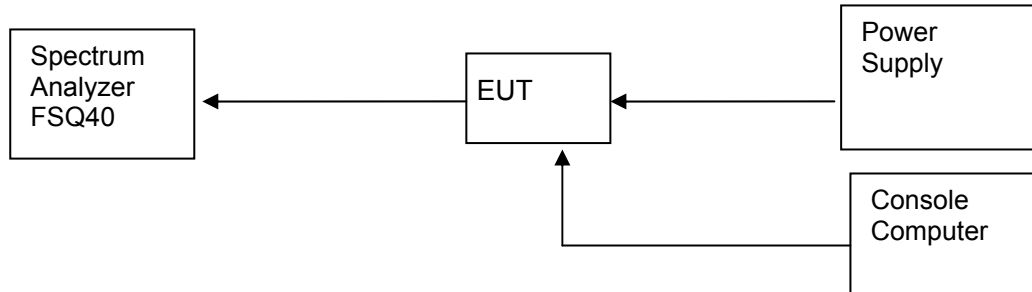


Figure 3. Test Set-up

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	10.48	-29.33	-9.52	Pass
	High Edge	11	2462	9.77	-39.32	-10.23	Pass
TM2	Low Edge	1	2412	4.28	-27.29	-15.72	Pass
	High Edge	11	2462	6.13	-35.99	-13.87	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, 7, 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
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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

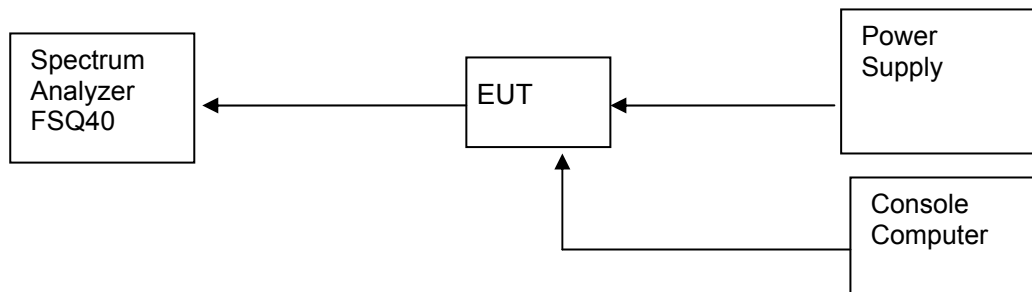


Figure 4. Test Set-up

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	22.7	-15.09	2.7	Pass
	9kHz-26GHz	7	2442	22.05	-15.82	2.05	Pass
	9kHz-26GHz	11	2462	21.46	-16.22	1.46	Pass
TM2	9kHz-26GHz	1	2412	19.27	-19.79	-0.73	Pass
	9kHz-26GHz	7	2442	18.2	-17.15	-1.8	Pass
	9kHz-26GHz	11	2462	19.08	-16.13	-0.92	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, 7, 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

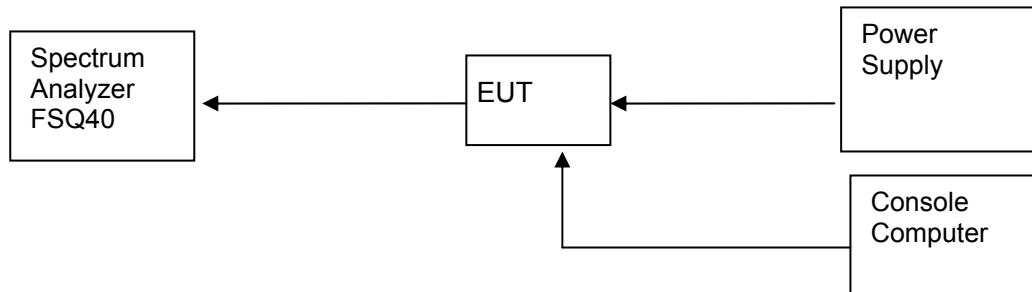


Figure 5. Test Set-up

6.5.4 Measurement Results

6.5.4.1 Measurement Results

Table 32 Measurement Results

Test condition	Channel No.	Carrier Frequency [MHz]	Measured Power spectral density [dBm]	Limit [dBm]	Result
TM1	1	2412	-4.54	8	Pass
	7	2442	-4.83	8	Pass
	11	2462	-4.46	8	Pass
TM2	1	2412	-8.51	8	Pass
	7	2442	-6.57	8	Pass
	11	2462	-7.87	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, 7, 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 10th 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
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.

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

Measurement bandwidth: 30 MHz – 1000 MHz: 120 k Hz

Measurement bandwidth: 1000 MHz – 10th Carrier Frequency: 1 MHz

Test set up

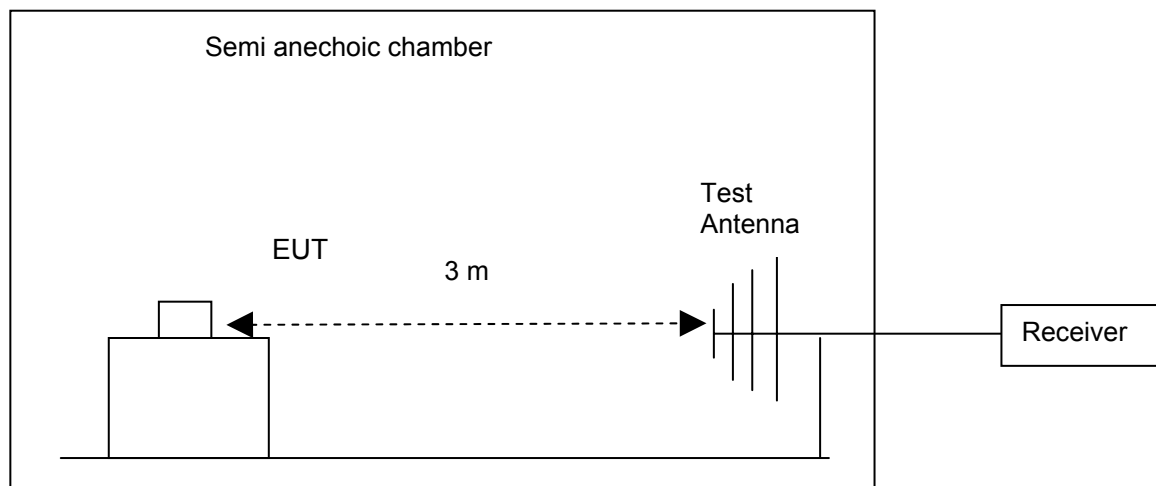


Figure 6. Test Set up

6.6.4 Measurement Results

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

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
37.860000	33.40	-8.5	40	6.6	107.0	104.00	VERTICAL
39.300000	33.20	-9.3	40	6.8	100.0	34.00	VERTICAL
59.280000	17.60	-16.2	40	22.4	142.0	280.00	VERTICAL
172.320000	15.20	-11.9	43.5	28.3	141.0	360.00	HORIZONTAL
192.300000	17.10	-12.1	43.5	26.4	166.0	343.00	HORIZONTAL
359.760000	19.40	-5.4	46	26.6	110.0	62.00	VERTICAL
1100.000000	41.30	-6.5	54.0	12.7	200.0	240.00	HORIZONTAL
1423.000000	45.8	-4.3	54.0	8.2	100.0	90.00	HORIZONTAL
2412.000000	72.10	2.0	54.0	-18.1	110.0	0.00	VERTICAL
3750.000000	43.50	7.0	54.0	10.5	100.0	0.00	VERTICAL
5925.500000	48.60	12.7	54.0	5.4	200.0	300.00	HORIZONTAL
12921.000000	44.00	31.6	54.0	10.0	100.0	150.00	HORIZONTAL
2310.000000	40.60	1.9	54.0	13.4	174.0	216.00	VERTICAL
2390.000000	48.30	1.9	54.0	5.7	126.0	233.00	VERTICAL



2483.500000	40.30	2.3	54.0	13.7	150.0	80.00	VERTICAL
2500.000000	40.10	2.5	54.0	13.9	177.0	10575.00	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
40.200000	30.10	-12.1	40.0	9.9	115.0	344.00	VERTICAL
50.820000	28.50	-17.3	40.0	11.5	100.0	14.00	VERTICAL
171.660000	15.50	-14.3	43.5	28.0	175.0	117.00	HORIZONTAL
229.500000	16.40	-12.5	46.0	29.6	218.0	171.00	VERTICAL
507.000000	24.60	-5.6	46.0	21.4	210.0	22.00	VERTICAL
941.400000	30.40	0.6	46.0	15.6	100.0	173.00	VERTICAL
1100.000000	41.70	-6.5	54.0	12.3	200.0	0.00	HORIZONTAL
2442.000000	71.90	2.1	54.0	-17.9	100.0	270.00	VERTICAL
3750.000000	42.00	7.0	54.0	12.0	100.0	120.00	VERTICAL
5925.500000	49.80	12.7	54.0	4.2	110.0	90.00	VERTICAL
12924.500000	45.00	31.6	54.0	9.0	200.0	270.00	HORIZONTAL
25998.000000	50.00	52.1	54.0	4.0	210.0	180.00	VERTICAL

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
38.780000	30.20	-5.8	40.0	9.8	107.0	41.00	VERTICAL
52.840000	27.70	-17.3	40.0	12.3	108.0	268.00	VERTICAL
146.520000	19.40	-14.7	43.5	24.1	227.0	243.00	HORIZONTAL
213.000000	19.00	-13.2	43.5	24.5	144.0	294.00	HORIZONTAL
541.740000	25.50	-4.6	46.0	20.5	256.0	0.00	VERTICAL
741.400000	30.60	0.2	46.0	15.4	100.0	24.00	VERTICAL
1100.000000	40.90	-6.5	54.0	13.1	200.0	272.00	VERTICAL
2462.000000	72.30	2.3	54.0	-18.3	100.0	200.00	VERTICAL
3750.000000	40.90	7.0	54.0	13.1	100.0	4.00	VERTICAL
5087.500000	45.60	12.1	54.0	8.4	110.0	276.00	VERTICAL
9980.000000	45.20	25.1	54.0	8.8	300.0	286.00	HORIZONTAL
22248.500000	50.0	48.8	54.0	4.0	100.0	193.00	VERTICAL
2310.000000	40.10	1.9	54.0	13.9	118.0	66.00	VERTICAL
2390.000000	40.70	1.9	54.0	13.3	152.0	249.00	VERTICAL
2483.500000	48.30	2.3	54.0	5.7	135.0	79.00	VERTICAL
2500.000000	42.10	2.5	54.0	11.9	164.0	148.00	VERTICAL

Notes:

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 (dBμV)	
	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.

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

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

Test Set-up

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

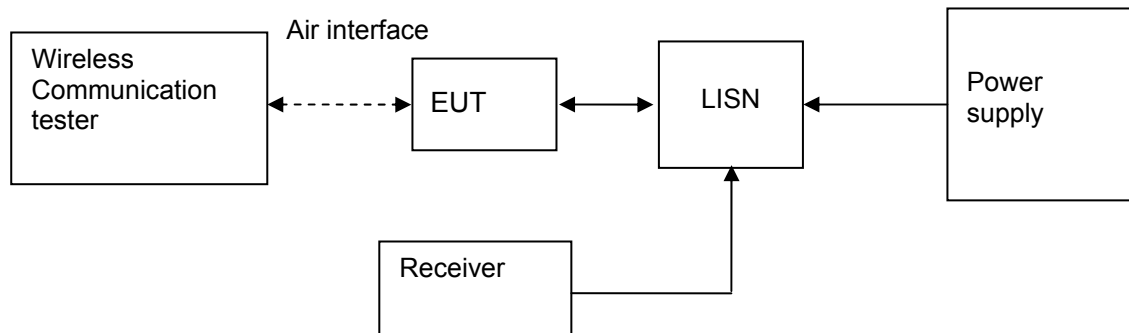


Figure 7. Test Set-up

6.7.4 Measurement Results

Table 42 MEASUREMENT RESULT:QP DECTER

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.388500	47.20	10.0	58	10.9	QP	L3	GND
0.870000	47.20	10.0	56	8.8	QP	L3	GND
2.022000	46.60	10.1	56	9.4	QP	L3	GND
2.629500	46.00	10.1	56	10.0	QP	L3	GND
5.464500	42.70	10.1	60	17.3	QP	N	GND
20.175000	32.40	10.3	60	27.6	QP	L3	GND

Table 43 MEASUREMENT RESULT: AV DECTER

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.352500	40.60	10.1	49	8.3	AV	L3	GND
0.847500	39.50	10.0	46	6.5	AV	N	GND
1.959000	39.50	10.1	46	6.5	AV	N	GND
1.963500	39.10	10.1	46	6.9	AV	N	GND
2.607000	38.10	10.1	46	7.9	AV	N	GND
5.743500	37.70	10.1	50	12.3	AV	L3	GND

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 (dBμV/m)	U=2.2dB; k=2 U=5dB; k=2
Conducted emission test for power port	Disturbance Voltage(dBμV)	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	9 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	12 pages
Appendix G	Measurement Results Conducted emission test for power port	2 pages
Appendix H	Photos of Test Setup	4 pages

(END OF REPORT)