588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666 Report No.: SHEMO10090121602

+86 (0) 21 6191 5655 Page: 1 of 42

Tino.Pan@sgs.com

TEST REPORT

Application No.: SHEMO10090121602

Applicant: Lenovo Mobile Communication Technology LTD.

FCC ID: YCNT90

Fundamental 2.402GHz to 2.480GHz

Carrier Frequency:

Equipment Under Test (EUT):

EUT Name: GSM/GPRS Mobile

Brand Name: LANIX Model No: T90

Standards: FCC PART 15 Subpart C : 2009

Date of Receipt: Sep 25, 2010

Date of Test: Sep 25, 2010 to Oct 14, 2010

Date of Issue: Oct 14, 2010

Test Result : PASS *

Tino Pan

E&E Section Manager

SGS-CSTC(Shanghai) Co., Ltd.

Thunder Jin

E&E Project Engineer

SGS-CSTC(Shanghai)Co.,Ltd

Thunder Jin

^{*:} In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 2 of this report for further detail.

ReportNo.: SHEMO10090121602

Page: 2 of 42

2 Test Summary

Test items	FCC Rules	Result
Occupied Bandwidth	Section 15.247 (a1)	PASS
Carrier Frequencies Separated	Section 15.247(a)(1)	PASS
Hopping Channel Number	Section 15.247(a)(1)(iii)	PASS
Dwell Time	Section 15.247(a)(1)(iii)	PASS
Maximum Peak Output Power	Section 15.247(b)(1)	PASS
Conducted Emission	Section 15.207	PASS
Conducted Spurious Emission (30MHz to 25GHz)	Section 15.209 &15.247(d)	PASS
Radiated Spurious Emission (30MHz to 25GHz)	Section 15.209 &15.247(d)	PASS
Band Edges Measurement	Section 15.247 (d) &15.205	PASS

ReportNo.: SHEMO10090121602

Page: 3 of 42

3 Contents

			Page
1	C	OVER PAGE	1
2	T	EST SUMMARY	2
3	C	ONTENTS	3
4		ENERAL INFORMATION	
	4.1	CLIENT INFORMATION	4
	4.2	GENERAL DESCRIPTION OF E.U.T.	
	4.3	DESCRIPTION OF SUPPORT UNITS	
	4.4	STANDARDS APPLICABLE FOR TESTING	4
	4.5	TEST LOCATION	5
	4.6	TEST FACILITY	5
5	E	QUIPMENTS USED DURING TEST	6
6	TJ	EST RESULTS	7
	6.1	E.U.T. TEST CONDITIONS	7
	6.2	CONDUCTED EMISSIONS AT MAINS TERMINALS	7
	6.3	OCCUPIED BANDWIDTH	
	6.4	CARRIER FREQUENCIES SEPARATED	
	6.5	HOPPING CHANNEL NUMBER	
	6.6	DWELL TIME	
	6.7	MAXIMUM PEAK OUTPUT POWER	
	6.8	RF EXPOSURE COMPLIANCE REQUIREMENT	
		8.1 Standard requirement	
	_	8.2 EUT RF Exposure	
	6.9	CONDUCTED SPURIOUS EMISSIONS	
	6.10	RADIATED SPURIOUS EMISSIONS	
		10.1 Radiated Emissions which fall in the restricted bands	
	6.11	BAND EDGES REQUIREMENT	40

ReportNo.: SHEMO10090121602

Page: 4 of 42

4 General Information

4.1 Client Information

Applicant: Lenovo Mobile Communication Technology LTD.

Address of Applicant: No.999,Qishan North 2nd Road,Information&Optoelectronics Park,Torch

Hi-tech Industry Development Zone, Xiamen, P.R. China P.C:361006

Manufacturer: Lenovo Mobile Communication Technology LTD.

Address of Manufacturer: No.999, Qishan North 2nd Road, Information & Optoelectronics Park, Torch

Hi-tech Industry Development Zone, Xiamen, P.R. China P.C:361006

4.2 General Description of E.U.T.

EUT Name: GSM/GPRS Mobile

Brand Name: LANIX Model No: T90

FCC ID: YCNT90

Edition: Bluetooth V2.0

EDR Support: No

Number of Channels: 79 Channels

Channel Separation: 1 MHz

Type of Modulation: FHSS (Frequency Hopping Spread Spectrum)

Dwell time Per channel is less than 0.4s

Antenna Type integral/dedicated

Battery Information: T90-BAT, 3.7V 880mAh / 3.25Wh Adapter information: T90-C, 100-240V~ 50/60Hz 150mA

IMEI: 863189000725702, 863189000725611

Hardware Version: H402

Software Version: LANIX_T90_S107_100830

4.3 Description of Support Units

The EUT has been tested independently.

4.4 Standards Applicable for Testing

The customer requested FCC tests for the EUT.

The standard used was FCC PART 15 Subpart C, ANSI C63.4:2003.

ReportNo.: SHEMO10090121602 Page: 5 of 42

4.5 Test Location

All the tests were performance at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666 Fax: +86 21 6191 5655

4.6 Test Facility

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

• CNAS (No. CNAS L0599)

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the

competence in the field of testing. Date of expiry: 2011-07-29.

• FCC – Registration No.: 402683

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2012-03-17.

• Industry Canada (IC) – IC Assigned Code: 8617A

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with

Registration No.: 8617A. Expiry Date: 2011-09-29.

• VCCI (Member No.: 3061)

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3172 and C-3514 respectively. Date of Registration: 2009-11-30. Date of Expiry:

2012-03-17.

ReportNo.: SHEMO10090121602 Page: 6 of 42

5 Equipments Used during Test

				•		
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2010-6-4	2011-6-3
2	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2010-6-4	2011-6-3
3	Horn Antenna	Rohde & Schwarz	HF906	100284	2010-4-11	2011-4-10
4	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2010-6-4	2011-6-3
5	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2009-10-9	2010-10-8
6	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY-2003P		2009-10-15	2010-10-14
7	CLAMP METER	FLUKE	316	86080010	2010-04-27	2011-04-26
8	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2009-10-15	2010-10-14
9	High-low temperature cabinet	Shanghai YuanZhen	GW2050		2010-6-18	2011-6-17
10	DC power	KIKUSUI	PMC35-3	NF100260	2010-1-16	2011-1-15
11	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2010-5-8	2011-5-7
12	Power meter	Rohde & Schwarz	NRP	101641	2010-5-5	2011-5-4
13	СВТ	Rohde & Schwarz	10082	EMC0070	2009-12-23	2010-12-22
14	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2010-6-4	2011-6-3
15	High pass Filter	FSCW	HP 12/2800- 5AA2	19A45-02	2010-4-11	2011-4-10
16	Broadband Horn ANTENNA	SCHWARZBECK	BBHA9170	9170-373	2010-6-4	2011-6-3

ReportNo.: SHEMO10090121602 Page: 7 of 42

6 Test Results

6.1 E.U.T. test conditions

Power supply: AC adapter or battery inside.

Requirements: 15.31(e) For intentional radiators, measurements of the variation of the

input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests

shall be performed using a new battery.

Type of antenna: integral/dedicated

Operating Environment:

Temperature: 20.0-25.0 °C
Humidity: 38-52% RH
Atmospheric Pressure: 992 -1010 mbar

6.2 Conducted Emissions at Mains Terminals

Test Requirement: FCC Part 15.207
Test Method: ANSI C63.4
Test Date: Sep 29, 2010

Frequency Range: 150KHz to 30MHz

Detector: Peak for pre-scan (9kHz Resolution Bandwidth)

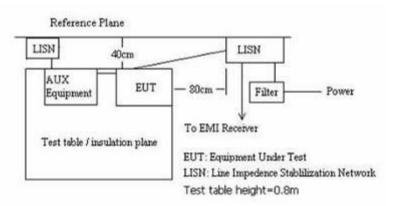
Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit

EUT Operation: The EUT is in Bluetooth mode connected with adapter.

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

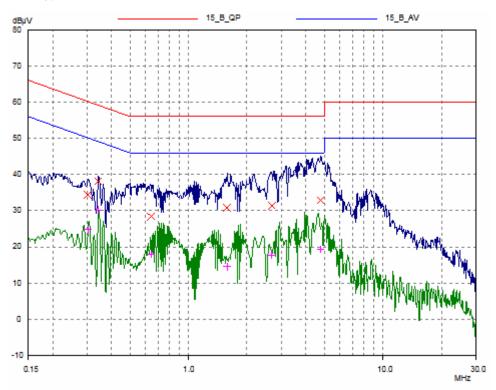
Test Setup:



ReportNo.: SHEMO10090121602

Page: 8 of 42

L Line:



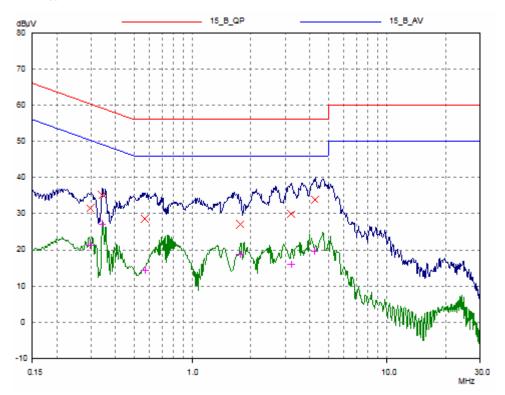
Final	Measurement	Results

Frequency	QP Level	QP Limit	QP Delta
MHz	dBµV	dBµV	dB
0.30242	34.37	60.18	25.81
0.34354	38.11	59.12	21.01
0.63959	28.41	56.00	27.59
1.57379	30.77	56.00	25.23
2.68413	31.43	56.00	24.57
4.802	32.89	56.00	23.11
Frequency	AV Level	AV Limit	AV Delta
MHz	dBµV	dΒμV	dB
0.30242	24.76	50.18	25.42
0.34354	30.17	49.12	18.95
0.63959	17.92	46.00	28.08
1.57379	14.57	46.00	31.43
2.68413	17.75	46.00	28.25
4.802	19.36	46.00	26.64

ReportNo.: SHEMO10090121602

Page: 9 of 42

N Line:



Final Measurement Results

Frequency	QP Level	QP Limit	QP Delta
MHz	dBµ∨	dBμV	dB
0.29764	31.45	60.31	28.86
0.34354	35.19	59.12	23.93
0.56754	28.61	56.00	27.39
1.75952	27.05	56.00	28.95
3.224	29.93	56.00	26.07
4.26103	33.89	56.00	22.11
Frequency	AV Level	AV Limit	AV Delta
MHz	dBµ∨	dBμ∨	dB
0.29764	21.29	50.31	29.02
0.34354	27.21	49.12	21.91
0.56754	14.40	46.00	31.60
1.75952			
1.75952	18.70	46.00	27.30
3.224	18.70 15.91	46.00 46.00	27:30 30:09

ReportNo.: SHEMO10090121602

Page: 10 of 42

6.3 Occupied Bandwidth

Test Requirement: FCC Part 15 C

Test Method: Based on FCC Part15 C Section 15.247

Test Date: Oct 12, 2010

Test Status: Test in fixing operating frequency at the lowest, Middle, and highest

channel.

Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

- 2. Set the spectrum analyzer: Span = approximately 2 to 3 times the 20dB bandwidth, centered on the hopping channel;
- 3. Set the spectrum analyzer: RBW >= 1% of the 20dB bandwidth. VBW >= RBW. Sweep = auto; Detector Function = Peak. Trace = Max Hold.
- 4. Mark the peak frequency and -20dB points.

Test result: Pass

Normal mode:

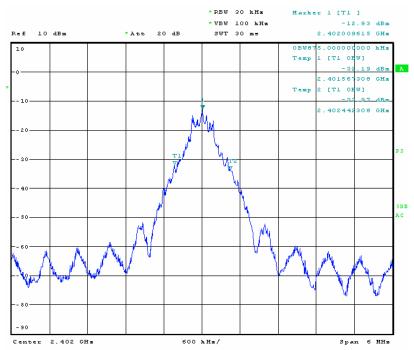
Test Channel	Bandwidth(kHz)		
Low	875.0		
Middle	875.0		
High	875.0		

ReportNo.: SHEMO10090121602

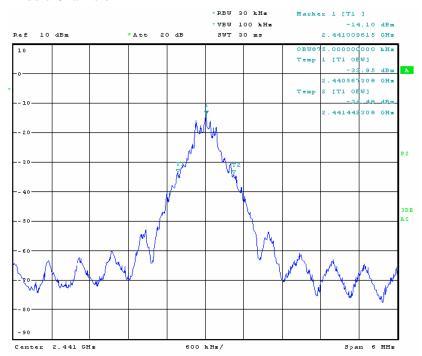
Page: 11 of 42

Result plot as follows:

Lowest Channel:



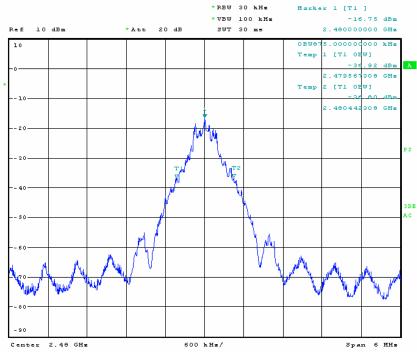
Middle Channel:



ReportNo.: SHEMO10090121602

Page: 12 of 42

Highest Channel:



13 of 42 Page:

ReportNo.: SHEMO10090121602

6.4 Carrier Frequencies Separated

FCC Part 15 C Test Requirement:

Test Method: Based on FCC Part15 C Section 15.247

Test Date: Oct 12, 2010

Regulation 15.247(a),(1) Frequency hopping systems shall have hopping Test requirements:

channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater

than 125 mW.

Test Status: Test in hopping operating mode.

Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

- 2. Set the spectrum analyzer: RBW >= 1% of the span (set 100 kHz). VBW >= RBW, Span = 6MHz. Sweep = auto; Detector Function = Peak. Trace = Max,hold.
- 3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

Test result:

Test Channel	Carrier Frequencies Separated	PASS/FAIL
Lower Channels (channel 0 and channel 1)	1.0000MHz	PASS
Middle Channels (channel 39 and channel 40)	1.0000MHz	PASS
Upper Channels (channel 77 and channel 78)	1.0000MHz	PASS

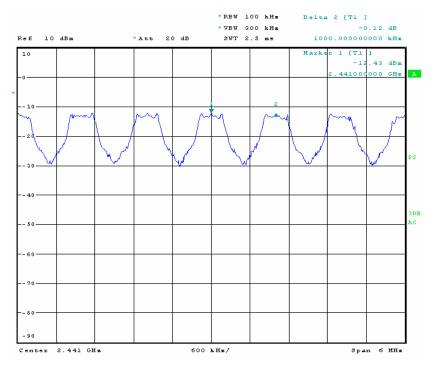
ReportNo.: SHEMO10090121602

Page: 14 of 42

Low Channels:



Middle Channels:



ReportNo.: SHEMO10090121602

Page: 15 of 42

High Channels:



Page: 16 of 42

ReportNo.: SHEMO10090121602

6.5 Hopping Channel Number

Test Requirement: FCC Part15 C

Test Method: Based on FCC Part15 C Section 15.247

Test Date: Oct 12, 2010

Requirements: Regulation 15.247 (a) (1)(iii) Frequency hopping systems in the 2400-

2483.5 MHz band shall use at least 15 channels.

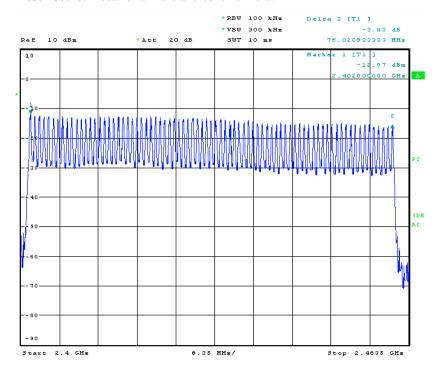
Test Status: Test in hopping operating mode.

Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

- 2. Set the spectrum analyzer: RBW = 100 kHz. VBW = 300 kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
- 3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
- 4. Set the spectrum analyzer: start frequency = 2400MHz. stop frequency = 2483.5MHz. Submit the test result graph.

Test result: Total channels are 79 channels.



ReportNo.: SHEMO10090121602

17 of 42 Page:

6.6 Dwell Time

FCC Part 15 C Test Requirement:

Test Method: Based on FCC Part15 C Section 15.247

Test Date: Oct 13, 2010

Test requirements: Regulation 15.247(a)(1)(iii) Frequency hopping systems in

> the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided

that a minimum of 15 channels are used.

Test in fixed channel operating mode. Test Status:

Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

- 2. Set spectrum analyzer span = 0. centered on a hopping channel;
- 3. Set RBW = 1MHz and VBW = 3MHz. Sweep = as necessary to capture the entire dwell time per hopping channel. Detector Function = Peak. Trace = Max hold;
- 4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s). An oscilloscope may be used instead of a spectrum analyzer.

Test Result:

Dwell time = Pulse wide x (Hopping rate / Number of channels) x Period

Normal mode: The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

1. Channel 0: 2.402GHz

time slot = 2.9295 (ms) * (1600/(6*79)) * 31.6 = 312 ms

2. Channel 39: 2.441GHz

time slot = 2.9279 (ms) * (1600/(6*79)) * 31.6 = 312 ms

3. Channel 78: 2.480GHz

time slot = 2.9063 (ms) * (1600/(6*79)) * 31.6 = 310 ms

The results are not greater than 0.4 seconds.

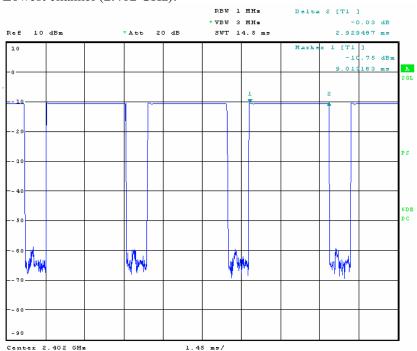
Note: we tested the DH1, DH3 and DH5 packet formats, and the DH5 shown was the longest case.

ReportNo.: SHEMO10090121602

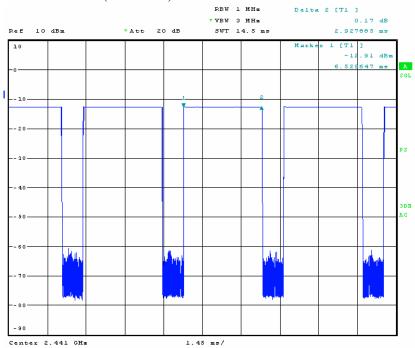
Page: 18 of 42

Please refer the graph as below:

Lowest channel (2.402 GHz):



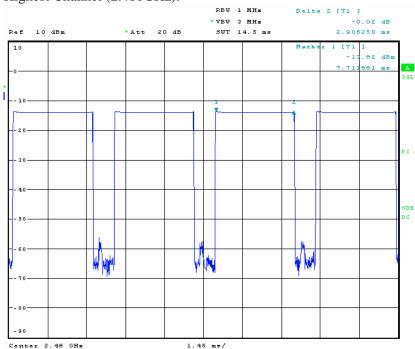
Middle Channel (2.441GHz):



ReportNo.: SHEMO10090121602

Page: 19 of 42

Highest Channel (2.480GHz):



Page: 20 of 42

ReportNo.: SHEMO10090121602

6.7 Maximum Peak Output Power

Test Requirement: FCC Part 15.247
Test Method: Base on ANSI 63.4.

Test Date: Oct 12, 2010

Test Limit: Regulation 15.247 (b)(1)For frequency hopping systems operating in

the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in

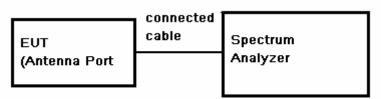
the 2400-2483.5 MHz band: 0.125 watts.

Refer to the result "Hopping channel number" of this document. The 1

watt (30.0dBm) limit applies.

Test mode: Test in fixing frequency transmitting mode.

Test Configuration:



Test Procedure:

- 1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2. Set the spectrum analyzer: RBW >= 1 MHz. VBW >= RBW MHz. Sweep = auto; Detector Function = Peak
- 3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

Test Result:

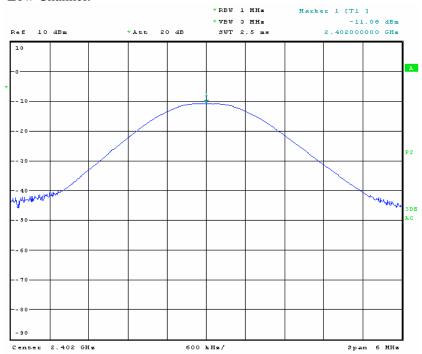
Test Channel	Fundamental Frequency	Reading Power	Cable Loss	Attenuation (dB)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	(GHz) 2.402	(dBm) -11.08	(dB) 0.5	5.8	-4.78	30.0	34.78
Middle	2.441	-12.16	0.5	5.9	-5.76	30.0	35.76
High	2.480	-14.58	0.5	5.9	-8.18	30.0	38.18

ReportNo.: SHEMO10090121602

Page: 21 of 42

Test result plot as follows:

Low Channel:



Middle Channel:



ReportNo.: SHEMO10090121602

Page: 22 of 42

High Channel:



ReportNo.: SHEMO10090121602
Page: 23 of 42

6.8 RF Exposure Compliance Requirement

6.8.1 Standard requirement

15.247(b)(4) requirement:

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section. if transmitting antennas of directional gain greater than 6 dBi are used. the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1). (b)(2). and (b)(3) of this section. as appropriate. by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TCB Exclusion List (7 July 2002)

Exposure category	low threshold	high threshold	
general population	$(60/fGHz)$ mW. d < 2.5 cm $(120/fGHz)$ mW. d \geq 2.5 cm	(900/fGHz) mW. d < 20 cm	
occupational	(375/fGHz) mW. d < 2.5 cm $(900/\text{fGHz}) \text{ mW. d} \ge 2.5 \text{ cm}$	(2250/fGHz) mW. d < 20 cm	

6.8.2 EUT RF Exposure

The Max Conducted Peak Output Power is -4.78dBm; And the max antenna gain is -5 dBi in the actual used. According to the formula, calculate the EIRP test result: EIRP= -4.78+(-5)= -9.29dBm① SAR requirement:

S = 60 / f(GHz) = 60/2.4 = 25 mW = 14.0 dBm ②;

(1) < (2).

So the SAR report is not required.

ReportNo.: SHEMO10090121602

Page: 24 of 42

6.9 Conducted Spurious Emissions

Test Requirement: FCC Part 15.247

Test Method: Based on FCC Part15 C Section 15.247&15.209:

Test Date: Oct 13, 2010

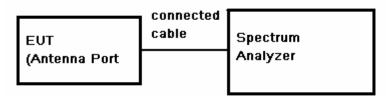
Test requirements: (d) In any 100 kHz bandwidth outside the frequency band in which the

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.

Test the low, Middle, high channel transmitting mode.

Test Configuration:

Test Status:



Test Procedure:

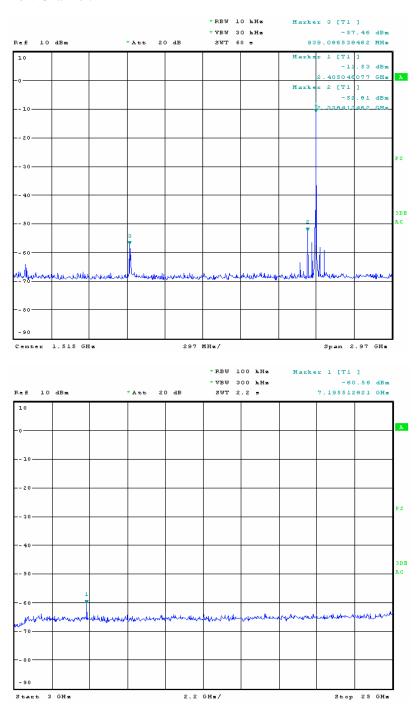
- 1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2. Set the spectrum analyzer:

Below 3GHz, RBW = 10kHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold) Above 3GHz, RBW = 100kHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold)

ReportNo.: SHEMO10090121602

Page: 25 of 42

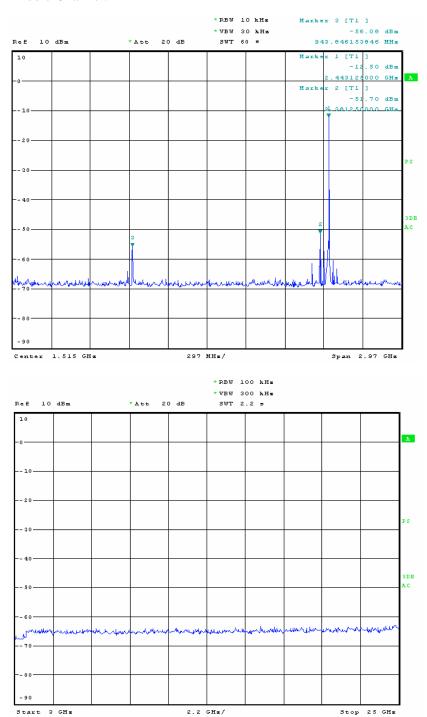
Low Channel:



ReportNo.: SHEMO10090121602

Page: 26 of 42

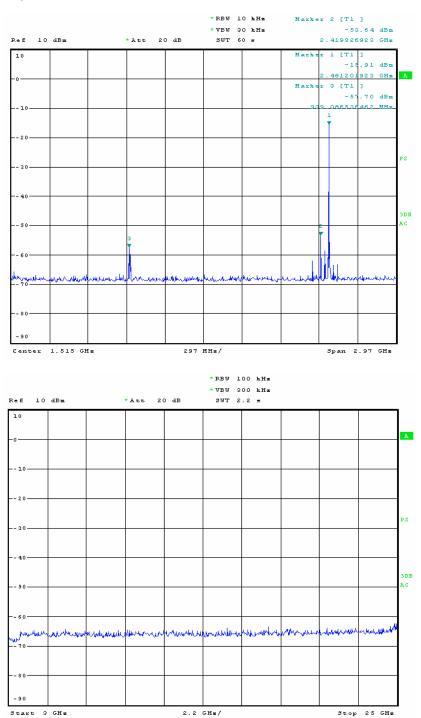
Middle Channel:



ReportNo.: SHEMO10090121602

Page: 27 of 42

High Channel:



ReportNo.: SHEMO10090121602

Page: 28 of 42

6.10 Radiated Spurious Emissions

Test Requirement: FCC 15.247(d) & 15.209

Test Method: ANSI C63.4 section 8 & 13

Test Date: Oct 12, 2010 to Oct 14, 2010

Test Status: Test low channel, Middle, high channel transmitting mode;

Receiver mode

Test site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Test instrumentation resolution bandwidth 120 kHz and Quasi-Peak

detector applies (30 MHz - 1000 MHz).

For PK value:

RBW = 1 MHz for $f \ge 1$ GHz VBW \ge RBW; Sweep = auto Detector function = peak

Trace = max hold For AV value:

RBW = 1 MHz for $f \ge 1$ GHz VBW =10Hz; Sweep = auto Detector function = peak

Trace = max hold

Receive antenna scan height 1 m - 4 m. polarization Vertical / Horizontal

15.209 Limit: 40.0 dBμV/m between 30MHz & 88MHz

43.5 dBµV/m between 88MHz & 216MHz

46.0 dBµV/m between 216MHz & 960MHz

54.0 dBµV/m above 960MHz

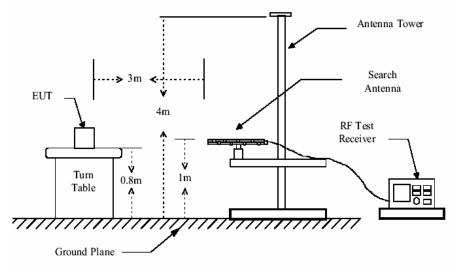
15.247(d) limit: (d) In any 100 kHz bandwidth outside the frequency band in which the

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

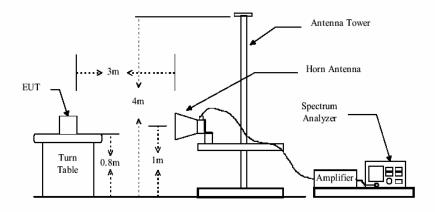
Contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

ReportNo.: SHEMO10090121602 Page: 29 of 42

Test Configuration:



Below 1GHz radiated emissions test configuration



Above 1GHz radiated emissions test configuration

Test Procedure: The procedure used was ANSI Standard C63.4-2001. The receiver was scanned from 30MHz to 25GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Pre-test were performed for there spatial orthogonal(X, Y, Z), the worst test data (X orthogonal)was submitted.

ReportNo.: SHEMO10090121602

Page: 30 of 42

Transmitter mode:

Test in Channel Low in transmitting status- Vertical polarization

30MHz~1GHz Spurious Emissions, Quasi-Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
30.0	14.2	0.18	24.6	26.70	16.48	40.0
200.0	10.9	0.25	24.5	26.00	12.65	43.5
830.0	22.8	0.42	24.0	22.95	22.17	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4804.00	30.8	1.2	0.5	43.4	58.6	47.7	74.0
7206.00	36.0	1.7	0.8	43.1	48.6	44.0	74.0
9608.00	37.8	2.2	0.9	43.9	50.6	47.6	74.0

Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4804.00	30.8	1.2	0.5	43.4	53.5	42.6	54.0
7206.00	36.0	1.7	0.8	43.1	42.6	38.0	54.0
9608.00	37.8	2.2	0.9	43.9	43.7	40.7	54.0

ReportNo.: SHEMO10090121602

Page: 31 of 42

Test in Channel Low in transmitting status- Horizontal polarization

30MHz~1GHz Spurious Emissions, Quasi-Peak Measurement:

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
30.00	14.2	0.18	24.6	26.00	15.78	40.0
200.00	10.9	0.25	24.5	27.00	13.65	43.5
830.00	22.8	0.42	24.0	22.51	21.73	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4804.00	30.8	1.2	0.5	43.4	61.0	50.1	74.0
7206.00	36.0	1.7	0.8	43.1	49.0	44.4	74.0
9608.00	37.8	2.2	0.9	43.9	49.8	46.8	74.0

Average Measurement

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Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4804.00	30.8	1.2	0.5	43.4	56.0	45.1	54.0
7206.00	36.0	1.7	0.8	43.1	44.6	40.0	54.0
9608.00	37.8	2.2	0.9	43.9	43.6	40.6	54.0

ReportNo.: SHEMO10090121602

Page: 32 of 42

Test in Channel Middle in transmitting status- Vertical polarization

30MHz~1GHz Spurious Emissions, Quasi-Peak Measurement

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Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)				
30.00	14.2	0.18	24.6	26.22	16.00	40.0				
200.00	10.9	0.25	24.5	27.55	14.20	43.5				
830.00	22.8	0.42	24.0	23.23	22.45	46.0				

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp factor(dB)	Emission Reading	Emission Level	Limit
					(dBµV)	(dBµV/m)	(dBµV/m)
4882.00	30.9	1.3	0.5	43.3	58.3	47.7	74.0
7323.00	36.2	1.8	0.6	43.1	47.0	42.5	74.0
9764.00	38.1	2.3	0.9	43.9	49.0	46.4	74.0

Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4882.00	30.9	1.3	0.5	43.3	54.0	43.4	54.0
7323.00	36.2	1.8	0.6	43.1	42.5	38.0	54.0
9764.00	38.1	2.3	0.9	43.9	44.0	41.4	54.0

ReportNo.: SHEMO10090121602

Page: 33 of 42

Test in Channel Middle in transmitting status- Horizontal polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement

	1	/ _				
Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
30.00	14.2	0.1	24.6	25.70	15.4	40.0
200.00	10.9	0.2	24.5	27.27	13.87	43.5
830.00	22.8	0.4	24.0	21.55	20.75	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4882.00	30.9	1.3	0.5	43.3	60.0	49.4	74.0
7323.00	36.2	1.8	0.6	43.1	47.8	43.3	74.0
9764.00	38.1	2.3	0.9	43.9	49.0	46.4	74.0

Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4882.00	30.9	1.3	0.5	43.3	55.0	44.1	54.0
7323.00	36.2	1.8	0.6	43.1	43.3	38.7	54.0
9764.00	38.1	2.3	0.9	43.9	43.8	40.8	54.0

ReportNo.: SHEMO10090121602 Page: 34 of 42

Test in Channel High in transmitting status- Vertical polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading	Emission Level	Limit
				(dBµV)	(dBµV/m)	(dBµV/m)
30.00	14.2	0.2	24.6	25.40	15.20	40.0
200.00	10.9	0.3	24.5	26.70	13.40	43.5
830.00	22.8	0.4	24.0	21.60	20.80	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4960.00	31.1	1.4	0.7	43.4	57.5	47.3	74.0
7440.00	36.4	2.0	0.7	43.2	48.7	44.6	74.0
9920.00	38.3	2.6	1.0	44.1	48.8	46.6	74.0

Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4960.00	31.1	1.4	0.7	43.4	52.0	41.8	54.0
7440.00	36.4	2.0	0.7	43.2	44.0	39.9	54.0
9920.00	38.3	2.6	1.0	44.1	44.0	41.8	54.0

ReportNo.: SHEMO10090121602

Page: 35 of 42

Test in Channel High in transmitting status- Horizontal polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
30.00	14.2	0.2	24.6	24.42	14.22	40.0
200.00	10.9	0.3	24.5	27.45	14.15	43.5
830.00	22.8	0.4	24.0	22.20	21.40	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4960.00	31.1	1.4	0.7	43.4	59.0	48.8	74.0
7440.00	36.4	2.0	0.7	43.2	49.0	44.9	74.0
9920.00	38.3	2.6	1.0	44.1	49.0	46.8	74.0

Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Filter (dB)	Preamp factor(dB)	Emission Reading (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)
4960.00	31.1	1.4	0.7	43.4	54.0	43.8	54.0
7440.00	36.4	2.0	0.7	43.2	44.6	40.5	54.0
9920.00	38.3	2.6	1.0	44.1	44.4	42.2	54.0

ReportNo.: SHEMO10090121602

36 of 42 Page:

6.10.1 Radiated Emissions which fall in the restricted bands

Section 15.247(d) In addition, radiated emissions which fall in the

restricted bands, as defined in Section 15.205(a), must also comply with

the radiated emission limits specified in Section 15.209(a) (see Section

15.205(c)).

Test Method: Base on ANSI 63.4

Test Date: Oct 13, 2010

Test Requirement:

Measurement Distance: 3m (Semi-Anechoic Chamber)

Limit: 40.0 dBμV/m between 30MHz & 88MHz;

43.5 dBµV/m between 88MHz & 216MHz;

46.0 dBµV/m between 216MHz & 960MHz;

54.0 dBµV/m above 960MHz.

For PK value: Detector:

> $RBW = 1 MHz \text{ for } f \ge 1 GHz$ $VBW \ge RBW$: Sweep = auto Detector function = peak

Trace = max holdFor AV value:

 $RBW = 1 MHz \text{ for } f \ge 1 GHz$ VBW = 10Hz; Sweep = autoDetector function = peak

Trace = max hold

ReportNo.: SHEMO10090121602

Page: 37 of 42

Test Result:

Low Channel

Frequency	Antenna factors	Cable	Filter	Preamp
(MHz)	(dB/m)	loss(dB)	(dB)	(dB)
2390.000	27.88	1.1	0.5	42.4
2483.500	28.74	1.2	0.6	42.6

Peak Reading Level (dBµV)	Average Reading Level (dBµV)	Peak Emission Level (dBµV/m)	Average Emission Level (dBµV/m)
43.15	34.39	30.23	21.47
44.25	34.6	32.19	22.54

Middle Channel

Frequency	Antenna factors	Cable	Filter	Preamp
(MHz)	(dB/m)	loss(dB)	(dB)	(dB)
2390.000	27.88	1.1	0.5	42.4
2483.500	28.74	1.2	0.6	42.6

Peak Reading Level (dBµV)	Average Reading Level (dBµV)	Peak Emission Level (dBµV/m)	Average Emission Level (dBµV/m)
43.84	34.38	30.92	21.46
43.59	34.13	31.53	22.07

ReportNo.: SHEMO10090121602

Page: 38 of 42

High Channel

Frequency	Antenna factors	Cable	Filter	Preamp
(MHz)	(dB/m)	loss(dB)	(dB)	(dB)
2390.000	27.88	1.1	0.5	42.4
2483.500	28.74	1.2	0.6	42.6

Peak Reading Level (dBµV)	Average Reading Level (dBµV)	Peak Emission Level (dBµV/m)	Average Emission Level (dBµV/m)
43.81	34.23	30.89	21.31
43.17	33.10	31.11	21.04

Remark:

- 1. No any other emission which fall in restricted bands can be detected and be reported.
- 2. Test Level =Receiver Reading + Antenna Factor + Cable loss + Filter Preamp.

ReportNo.: SHEMO10090121602

Page: 39 of 42

3.All frequencies within the "Restricted bands" have been evaluated to compliance. Section 15.205

Restricted bands of operation. Except as shown in paragraph of this section. only spurious emissions are

permitted in any of the frequency bands listed below:					
MHz	MHz	MHz	GHz		
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15		
10.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46		
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75		
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5		
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2		
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5		
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7		
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4		
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5		
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2		
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4		
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12		
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0		
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8		
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5		
12.57675 - 12.57725	240 - 285	3600 - 4400			
13.36 - 13.41	322 - 335.4				

angnai) Co., Ltd. Page: 40 of 42

ReportNo.: SHEMO10090121602

6.11 Band Edges Requirement

Test Requirement: FCC Part 15 C

Test Method: Based on ANSI 63.4

Operation within the band 2400 – 2483.5 MHz

Test Date: Oct 12, 2010

Requirements: Section 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. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section

15.205(c)).

Method of Set RBW of spectrum analyzer to 100 kHz and VBW of spectrum analyzer to 300 kHz with suitable frequency span including 100 kHz bandwidth from

band edge.

The band edges was measured and recorded.

The band edges was measured and recorded Result:

The Lower Edges attenuated more than 20dB.

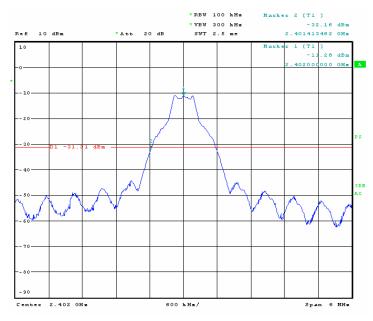
The Upper Edges attenuated more than 20dB.

The graph as below. represents the emissions take for this device.

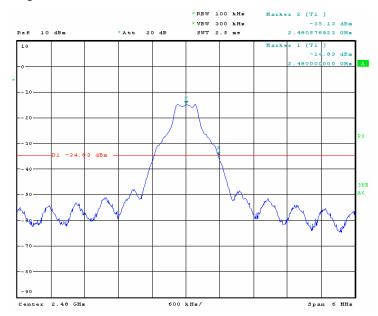
ReportNo.: SHEMO10090121602

Page: 41 of 42

Low Channel:



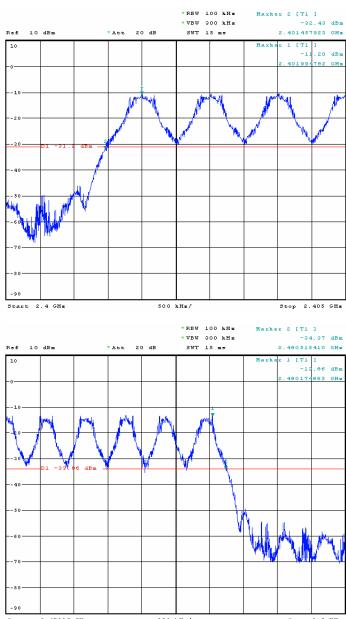
High Channel:



ReportNo.: SHEMO10090121602

Page: 42 of 42

Hopping Mode:



The End of Report