



198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology
Development District, Guangzhou, Guangdong, China 510663

Telephone: +86 (0) 20 82155555

Fax: +86 (0) 20 82075059

Email: sgs_internet_operations@sgs.com

FEDERAL COMMUNICATIONS COMMISSION

Registration number: 282399

Report No.: GLEMO09060171301

Page: 1 of 43

FCC ID: XKNTPWI112-B-C

TEST REPORT

Application No. : GLEMO090601713RF
Applicant: NEWTECH ELECTRONICS LTD.
Manufacturer: NTL MANUFACTURING SHENZHEN LTD.
FCC ID: XKNTPWI112-B-C

Fundamental Carrier Frequency : 2.402GHz to 2.480GHz

Equipment Under Test (EUT):

Name: WIRELESS REMOTE FOR WII

Model: TPWI-112, TPWI-112B, TPWI-112C, TPWI-112D♣



Please refer to section 3 of this report which indicates which item was actually tested and which were electrically identical.

Standards: FCC PART 15 Subpart C: 2008

Date of Receipt: 15 June 2009

Date of Test: 15 June 2009 to 08 July 2009

Date of Issue: 09 July 2009

| | |
|----------------------|---------------|
| Test Result : | PASS * |
|----------------------|---------------|

* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 3 of this report for further detail.

Authorized Signature:

Stephen Guo
Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms_e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

Page: 2 of 43

FCC ID:XKNTPW1112-B-C

2 Version

| Version No. | Date | Description |
|-------------|--------------|-------------|
| 01 | 09 July 2009 | Original |
| | | |
| | | |
| | | |

Prepared By: Angel Liu **Date** 09 July 2009

Project Engineer

Check By: Gavin Wu **Date** 09 July 2009

Reviewer



3 Test Summary

| Test | Test Requirement | Standard Paragraph | Result |
|--|-------------------|----------------------------|--------|
| Antenna Requirement | FCC PART 15 :2008 | Section 15.247 (c) | PASS |
| Occupied Bandwidth | FCC PART 15 :2008 | Section 15.247 (a1) | PASS |
| Carrier Frequencies Separated | FCC PART 15 :2008 | Section 15.247(a)(1) | PASS |
| Hopping Channel Number | FCC PART 15 :2008 | Section 15.247(a)(1)(iii) | PASS |
| Dwell Time | FCC PART 15 :2008 | Section 15.247(a)(1)(iii) | PASS |
| Pseudorandom Frequency Hopping Sequence | FCC PART 15 :2008 | Section 15.247(a)(1) | PASS |
| Maximum Peak Output Power | FCC PART 15 :2008 | Section 15.247(b)(1) | PASS |
| Conducted Spurious Emission (30MHz to 25GHz) | FCC PART 15 :2008 | Section 15.209 &15.247(d) | PASS |
| Radiated Spurious Emission (30MHz to 25GHz) | FCC PART 15 :2008 | Section 15.209 &15.247(d) | PASS |
| Band Edges Measurement | FCC PART 15 :2008 | Section 15.247 (d) &15.205 | PASS |

Remark:

♣Item No.: TPWI-112, TPWI-112B, TPWI-112C, TPWI-112D♣

Only the Item **TPWI-112B** was tested, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above items; only the outer decoration item numbers were different according to the conformation from the applicant (manufacturer).



4 Contents

| | Page |
|---|----------|
| 1 COVER PAGE | 1 |
| 2 VERSION | 2 |
| 3 TEST SUMMARY | 3 |
| 4 CONTENTS | 4 |
| 5 GENERAL INFORMATION | 5 |
| 5.1 CLIENT INFORMATION | 5 |
| 5.2 GENERAL DESCRIPTION OF E.U.T..... | 5 |
| 5.3 DESCRIPTION OF SUPPORT UNITS..... | 5 |
| 5.4 STANDARDS APPLICABLE FOR TESTING | 5 |
| 5.5 TEST LOCATION | 5 |
| 5.6 TEST FACILITY | 6 |
| 5.7 DEVIATION FROM STANDARDS | 6 |
| 5.8 ABNORMALITIES FROM STANDARD CONDITIONS | 6 |
| 5.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER | 6 |
| 6 EQUIPMENTS USED DURING TEST..... | 7 |
| 7 TEST RESULTS | 8 |
| 7.1 E.U.T. TEST CONDITIONS | 8 |
| 7.2 ANTENNA REQUIREMENT..... | 10 |
| 7.2.1 <i>Standard requirement</i> | 10 |
| 7.2.2 <i>EUT Antenna</i> | 10 |
| 7.3 OCCUPIED BANDWIDTH | 11 |
| 7.4 CARRIER FREQUENCIES SEPARATED | 14 |
| 7.5 HOPPING CHANNEL NUMBER..... | 17 |
| 7.6 DWELL TIME | 18 |
| 7.7 PSEUDORANDOM FREQUENCY HOPPING SEQUENCE | 23 |
| 7.7.1 <i>Standard requirement</i> | 23 |
| 7.7.2 <i>EUT Pseudorandom Frequency Hopping Sequence</i> | 23 |
| 7.8 MAXIMUM PEAK OUTPUT POWER..... | 24 |
| 7.9 CONDUCTED SPURIOUS EMISSIONS | 27 |
| 7.10 RADIATED SPURIOUS EMISSIONS | 33 |
| 7.10.1 <i>Harmonic and other spurious emissions</i> | 36 |
| 7.10.2 <i>Radiated Emissions which fall in the restricted bands</i> | 40 |
| 7.11 BAND EDGES REQUIREMENT | 42 |



5 General Information

5.1 Client Information

Applicant: NEWTECH ELECTRONICS LTD.
Address of Applicant: UNIT 604-606, 6/F, CHAI WAN INDUSTRIAL CITY PHASE 2, 70 WING TAI ROAD, CHAI WAN, HONG KONG
Manufacturer: NTL MANUFACTURING SHENZHEN LTD.
Address of Manufacturer: BUILDING A, JIA MING INDUSTRY DISTRICT, CEN XIA ROAD, THE 4TH INDUSTRIAL, FENG HUANG VILLAGE, FU YONG, SHENZHEN, CHINA

5.2 General Description of E.U.T.

Product Name: WIRELESS REMOTE FOR WII
Model: TPWI-112, TPWI-112B, TPWI-112C, TPWI-112D
Number of Channels: 79 Channels
Channel Separation: 1 MHz
Type of Modulation: FHSS/GFSK
Dwell time: Per channel is less than 0.4s.
Antenna Type: Integral
Speciality: Bluetooth 2.0
Power Supply: DC 3.0V (Size "AA"×2 or by rechargeable battery)
Power Supply information supplied: N/A

5.3 Description of Support Units

The EUT has been tested with hardware and software for fixed frequency supplied by applicant.

5.4 Standards Applicable for Testing

The customer requested FCC tests for the EUT.

The standard used was FCC PART 15 Subpart C: 2008. ANSI C63.4:2003. DA 00-705.

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



5.6 Test Facility

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

- **NVLAP – Lab Code: 200611-0**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

- **FCC – Registration No.: 282399**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399. May 31. 2002.

5.7 Deviation from Standards

Biconical and log periodic antennas were used instead of dipole antennas.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

The EUT only use GFSK modulation type and only use DH1 data package as declared by the applicant.



6 Equipments Used during Test

| RE in Chamber | | | | | | |
|---------------|-------------------------------|-------------------|---------------|------------|----------------------|-------------------------|
| No: | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date (dd-mm-yy) | Cal.Due date (dd-mm-yy) |
| EMC0525 | Compact Semi-Anechoic Chamber | ChangZhou ZhongYu | N/A | N/A | N/A | N/A |
| EMC0522 | EMI Test Receiver | Rohde & Schwarz | ESIB26 | 100249 | 28-01-2009 | 28-01-2010 |
| EMC0056 | EMI Test Receiver | Rohde & Schwarz | ESCI | 10036 | 14-07-2008 | 14-07-2009 |
| N/A | EMI Test Software | Audix | E3 | N/A | N/A | N/A |
| EMC0514 | Coaxial cable | SGS | N/A | N/A | 04-12-2008 | 04-12-2009 |
| EMC0524 | Bi-log Type Antenna | Schaffner -Chase | CBL6112B | 2966 | 08-10-2008 | 08-10-2009 |
| EMC0519 | Bilog Type Antenna | Schaffner -Chase | CBL6143 | 5070 | 08-10-2008 | 08-10-2009 |
| EMC0517 | Horn Antenna | Rohde & Schwarz | HF906 | 100095 | 12-08-2008 | 12-08-2009 |
| EMC0040 | Spectrum Analyzer | Rohde & Schwarz | FSP30 | 100324 | 05-12-2008 | 05-12-2009 |
| EMC0520 | 0.1-1300 MHz Pre-Amplifier | HP | 8447D OPT 010 | 2944A06252 | 11-03-2009 | 11-03-2010 |
| EMC0521 | 1-26.5 GHz Pre-Amplifier | Agilent | 8449B | 3008A01649 | 11-03-2009 | 11-03-2010 |
| EMC0075 | 310N Amplifier | Sonama | 310N | 272683 | 10-09-2008 | 10-09-2009 |
| EMC0523 | Active Loop Antenna | EMCO | 6502 | 00042963 | 09-08-2008 | 09-08-2010 |
| EMC0530 | 10m Semi- Anechoic Chamber | ETS | N/A | N/A | 10-08-2008 | 10-08-2009 |

| General used equipment | | | | | | |
|------------------------|----------------|--------------|-----------|------------|----------------------|-------------------------|
| No: | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date (dd-mm-yy) | Cal.Due date (dd-mm-yy) |
| EMC0006 | DMM | Fluke | 73 | 70681569 | 23-12-2008 | 23-12-2009 |
| EMC0007 | DMM | Fluke | 73 | 70671122 | 23-12-2008 | 23-12-2009 |



7 Test Results

7.1 E.U.T. test conditions

| | |
|------------------------|---|
| Power supply: | DC 3V (New battery) |
| 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 |
| Type of antenna: | Integral |
| Operating Environment: | |
| Temperature: | 20.0 -25.0 °C |
| Humidity: | 38-50 % RH |
| Atmospheric Pressure: | 1000 -1010 mbar |
| Test frequencies: | According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table: |

| Frequency range over which device operates | Number of frequencies | Location in the range of operation |
|--|-----------------------|---|
| 1 MHz or less | 1 | Middle |
| 1 to 10 MHz | 2 | 1 near top and 1 near bottom |
| More than 10 MHz | 3 | 1 near top, 1 near middle and 1 near bottom |

EUT channels and frequencies list:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|
| 0 | 2402 | 11 | 2413 | 22 | 2424 |
| 1 | 2403 | 12 | 2414 | 23 | 2425 |
| 2 | 2404 | 13 | 2415 | 24 | 2426 |
| 3 | 2405 | 14 | 2416 | 25 | 2427 |
| 4 | 2406 | 15 | 2417 | 26 | 2428 |
| 5 | 2407 | 16 | 2418 | 27 | 2429 |
| 6 | 2408 | 17 | 2419 | 28 | 2430 |
| 7 | 2409 | 18 | 2420 | 29 | 2431 |
| 8 | 2410 | 19 | 2421 | 30 | 2432 |
| 9 | 2411 | 20 | 2422 | 31 | 2433 |
| 10 | 2412 | 21 | 2423 | 32 | 2434 |



SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

Page: 9 of 43

FCC ID:XKNTPW1112-B-C

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|--------------------|---------|--------------------|---------|--------------------|
| 33 | 2435 | 49 | 2451 | 65 | 2467 |
| 34 | 2436 | 50 | 2452 | 66 | 2468 |
| 35 | 2437 | 51 | 2453 | 67 | 2469 |
| 36 | 2438 | 52 | 2454 | 68 | 2470 |
| 37 | 2439 | 53 | 2455 | 69 | 2471 |
| 38 | 2440 | 54 | 2456 | 70 | 2472 |
| 39 | 2441 | 55 | 2457 | 71 | 2473 |
| 40 | 2442 | 56 | 2458 | 72 | 2474 |
| 41 | 2443 | 57 | 2459 | 73 | 2475 |
| 42 | 2444 | 58 | 2460 | 74 | 2476 |
| 43 | 2445 | 59 | 2461 | 75 | 2477 |
| 44 | 2446 | 60 | 2462 | 76 | 2478 |
| 45 | 2447 | 61 | 2463 | 77 | 2479 |
| 46 | 2448 | 62 | 2464 | 78 | 2480 |
| 47 | 2449 | 63 | 2465 | | |
| 48 | 2450 | 64 | 2466 | | |

Test frequency is the lowest channel: 0 channel(2402MHz), middle channel: 39 channel(2441MHz) and highest channel: 78 channel(2480MHz)

7.2 Antenna Requirement

7.2.1 Standard requirement

15.203 requirement:

For intentional device. According to 15.203. an intentional radiator shall be designed to Ensure that no antenna other than that furnished by the responsible party shall be used with the device.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz bands that are used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

7.2.2 EUT Antenna

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.



Test result: The unit does meet the FCC requirements.



7.3 Occupied Bandwidth

Test Requirement: FCC Part 15 C
Test Method: Based on FCC Part15 C Section 15.247 & DA 00-705
Test Date: June 24, 2009
Test Status: Test in fixing operating frequency at lowest, Middle, 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 a hopping channel;
3. Set the spectrum analyzer: RBW \geq 1% of the 20dB bandwidth (set 200kHz). VBW \geq RBW. Sweep = auto; Detector Function = Peak. Trace = Max Hold.
4. Mark the peak frequency and -20dB points bandwidth.

Test result:

Normal mode:

| Test Channel | bandwidth | 2/3 bandwidth |
|--------------|-----------|---------------|
| Low | 1.2525MHz | 0.835 MHz |
| Middle | 1.2525MHz | 0.835 MHz |
| High | 1.2525MHz | 0.835 MHz |

Result plot as follows:



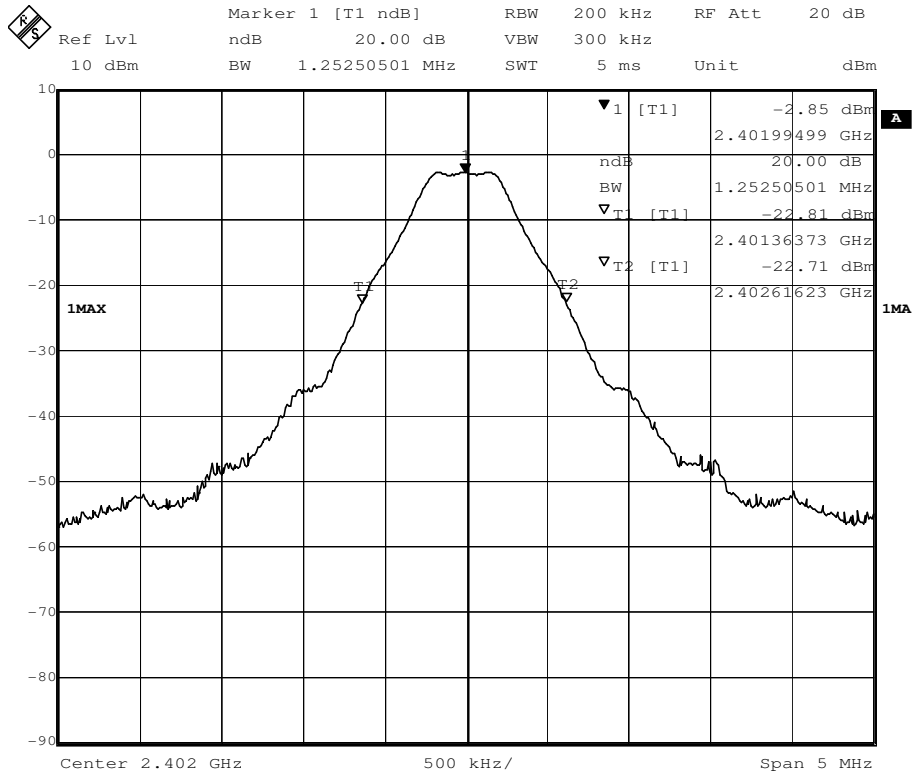
SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

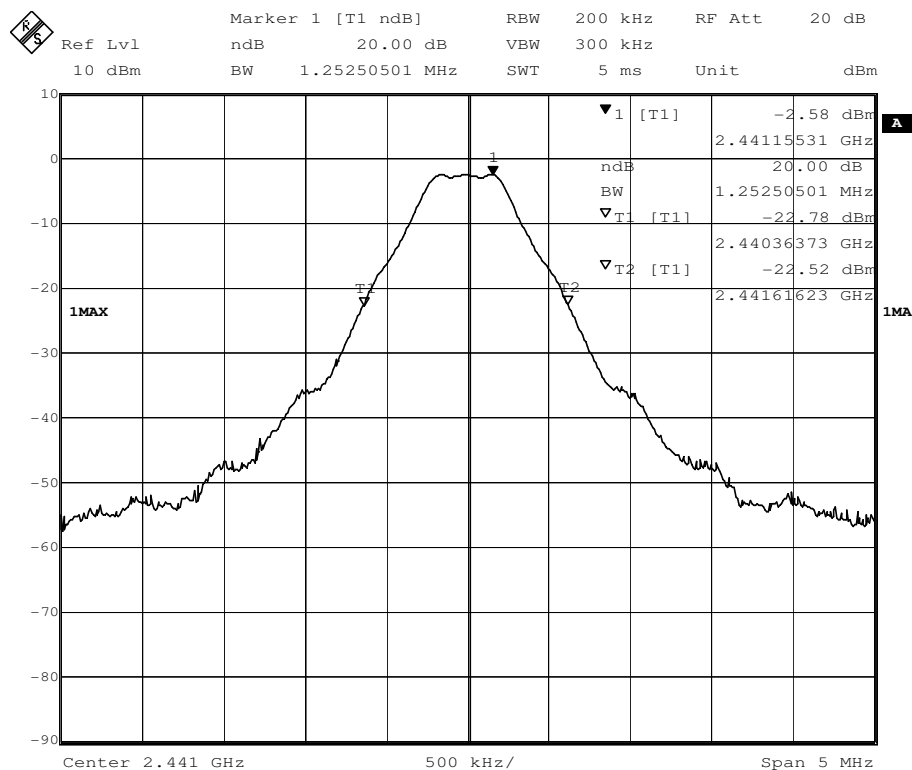
Page: 12 of 43

FCC ID: XKNTPW1112-B-C

Lowest Channel:

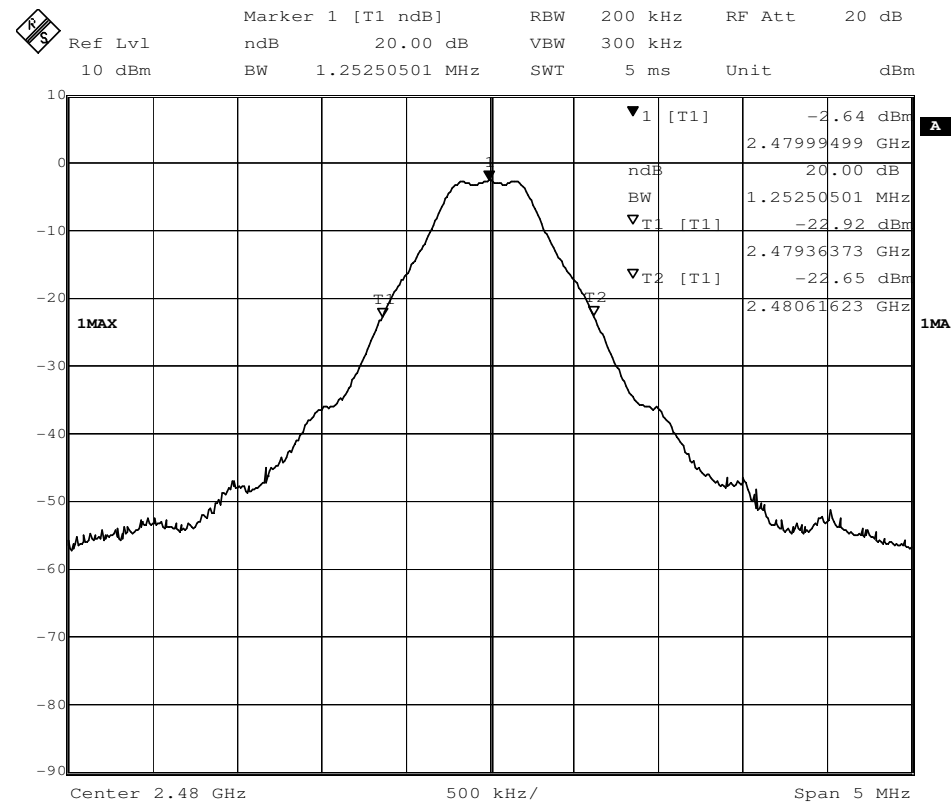


Middle Channel:





Highest Channel:





7.4 Carrier Frequencies Separated

Test Requirement: FCC Part 15 C

Test Method: Based on FCC Part15 C Section 15.247 & DA 00-705

Test Date: June 24, 2009

Test requirements: Regulation 15.247(a),(1) Frequency hopping systems shall have hopping 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 transmitting operating mode.

Test Procedure:

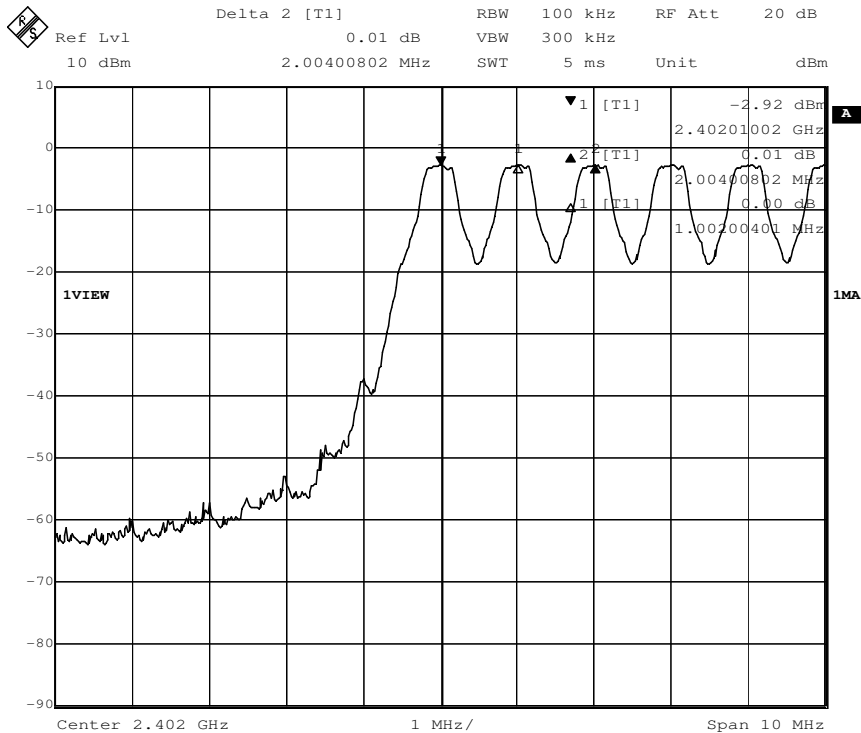
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW \geq 1% of the span (set 100 kHz). VBW \geq RBW, Span = 6MHz. Sweep = auto; Detector Function = Peak. Trace = Max, hold.
3. Allow the trace to stabilize. Use the 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:

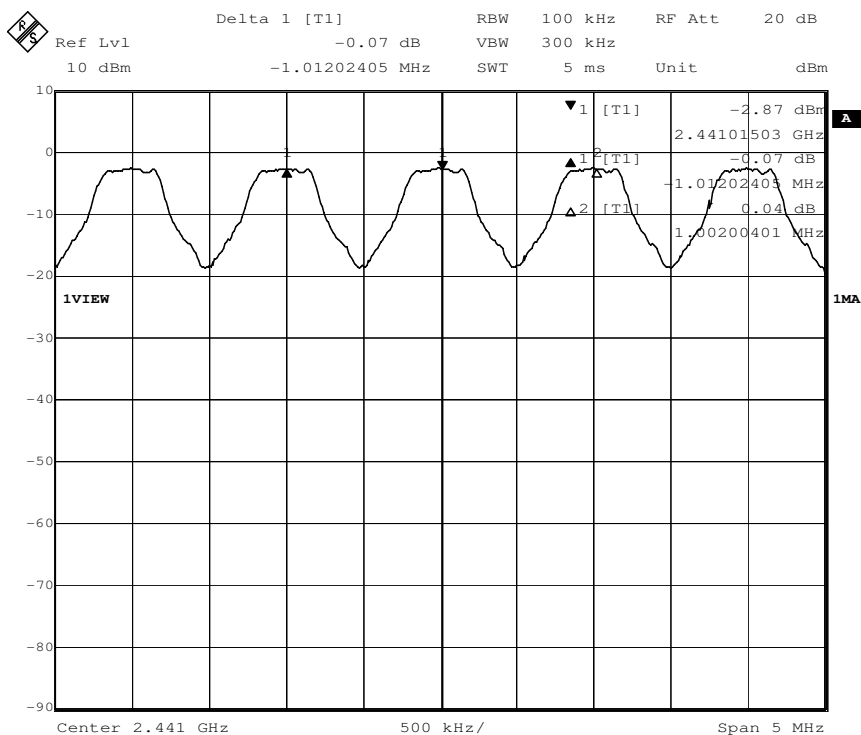
| Test Channel | Carrier Frequencies Separated | PASS/FAIL |
|--|-------------------------------|-----------|
| Lower Channels (channel 0 and channel 1) | 1.002MHz | Pass |
| Middle Channels (channel 39 and channel 40) | 1.012MHz | Pass |
| Upper Channels (channel 77 and channel 78) | 1.002MHz | Pass |
| Remark: Test in Bluetooth normal mode and the limit in normal mode is maximum two-thirds of the 20 dB bandwidth 835KHz. | | |



1. Lowest Channels: Carrier Frequencies Separated

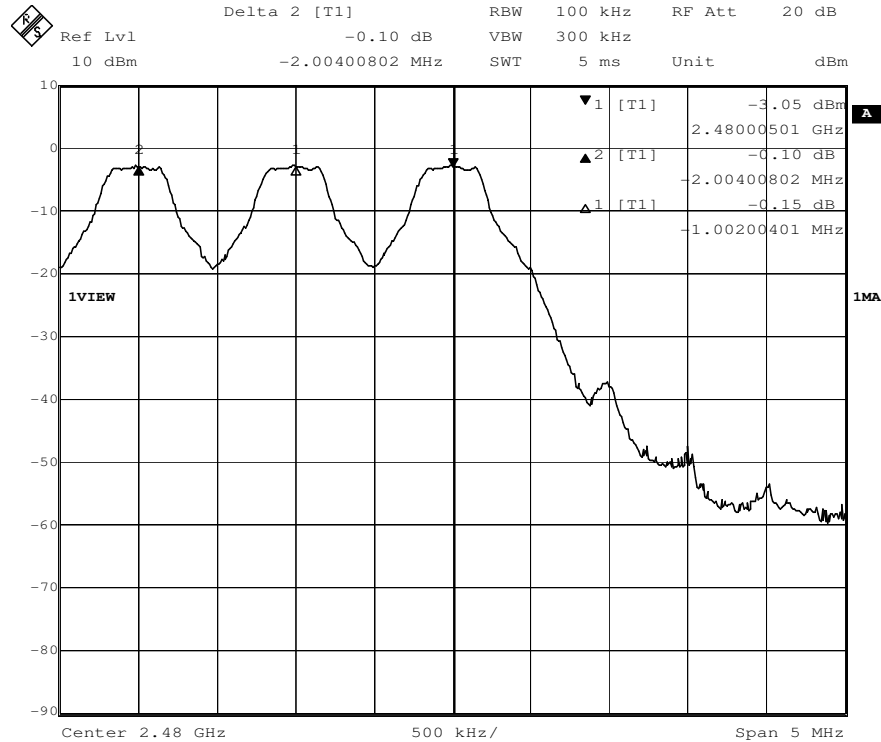


2. Middle Channels: Carrier Frequencies Separated





3. Highest Channels: **Carrier Frequencies Separated**



Test result: The unit does meet the FCC requirements.



7.5 Hopping Channel Number

Test Requirement: FCC Part15 C

Test Method: Based on FCC Part15 C Section 15.247 & DA 00-705

Test Date: June 24, 2009

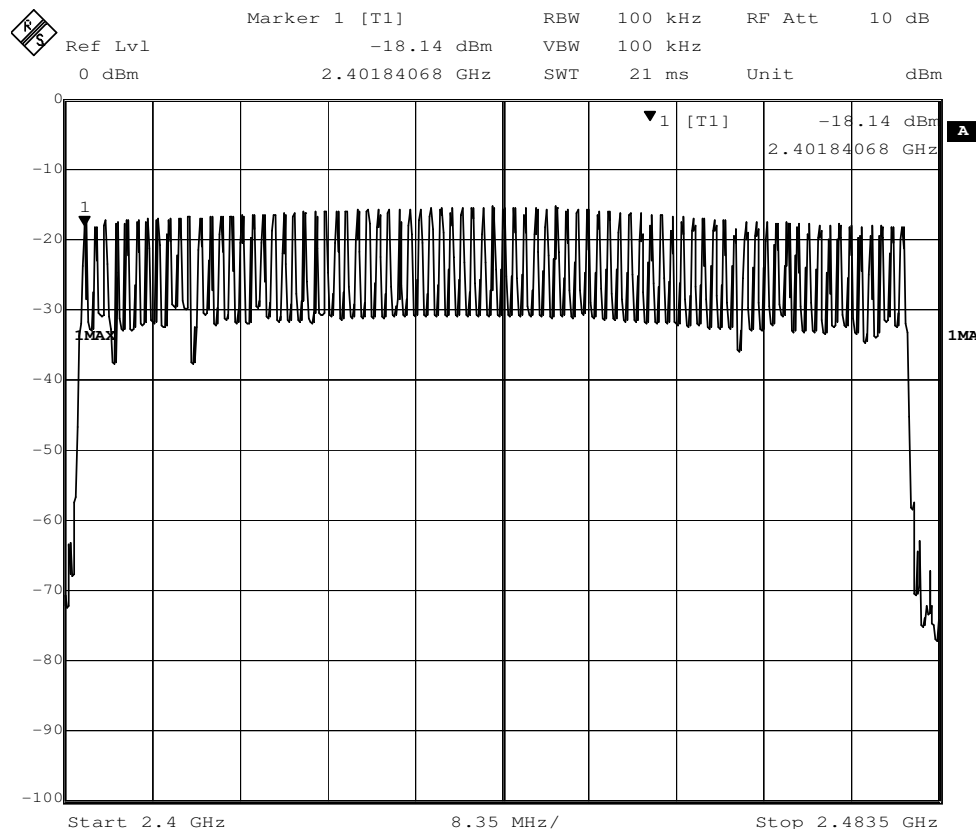
Requirements: Regulation 15.247 (a) (1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

Test Status: Test in hopping transmitting 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 = 100 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.



Test result: The unit does meet the FCC requirements.



7.6 Dwell Time

Test Requirement: FCC Part 15 C

Test Method: Based on FCC Part15 C Section 15.247 & DA 00-705

Test Date: July 08, 2009

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 Status: Test in hopping transmitting 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 spectrum analyzer span = 0. centered on a hopping channel;
- 3.Set RBW = 1MHz and VBW = 1MHz.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.

As declared by the applicant: the EUT only use GFSK modulation type and only use DH1 data package.

Test Result:

The test period: $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31.6 \text{ s}$

1. **Channel 0:** 2.402GHz

DH1 time slot = $(0.076 \text{ (ms)}) \times (1600 / (2 \times 79)) \times 31.6 = 24.320\text{ms}$

2. **Channel 39:** 2.441GHz

DH1 time slot = $(0.076 \text{ (ms)}) \times (1600 / (2 \times 79)) \times 31.6 = 24.320\text{ms}$

3. **Channel 78:** 2.480GHz

DH1 time slot = $(0.076 \text{ (ms)}) \times (1600 / (2 \times 79)) \times 31.6 = 24.320\text{ms}$

The results are not greater than 0.4 seconds.

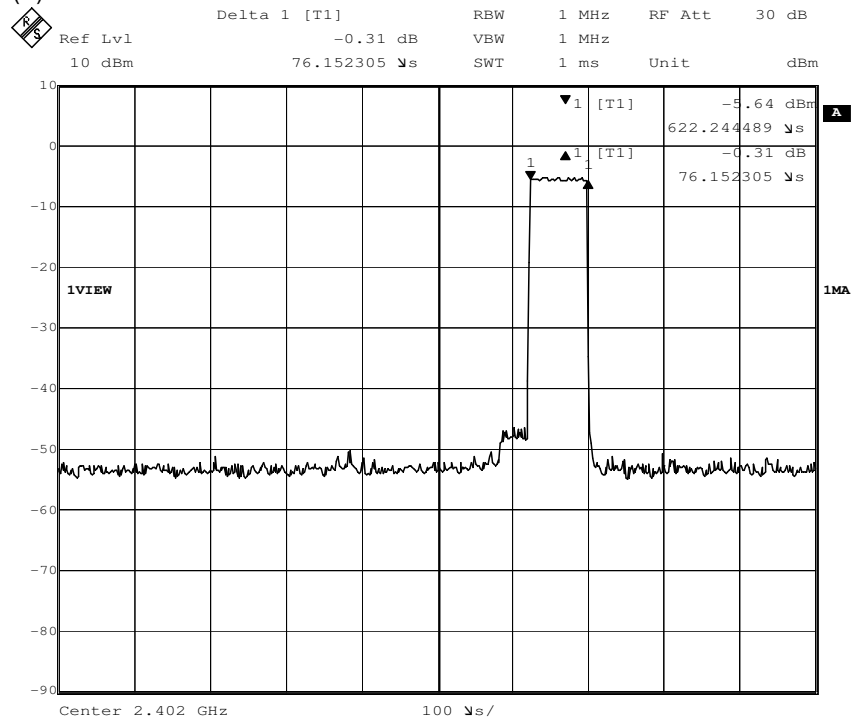
The unit does meet the FCC requirements.



Please refer the graph as below:

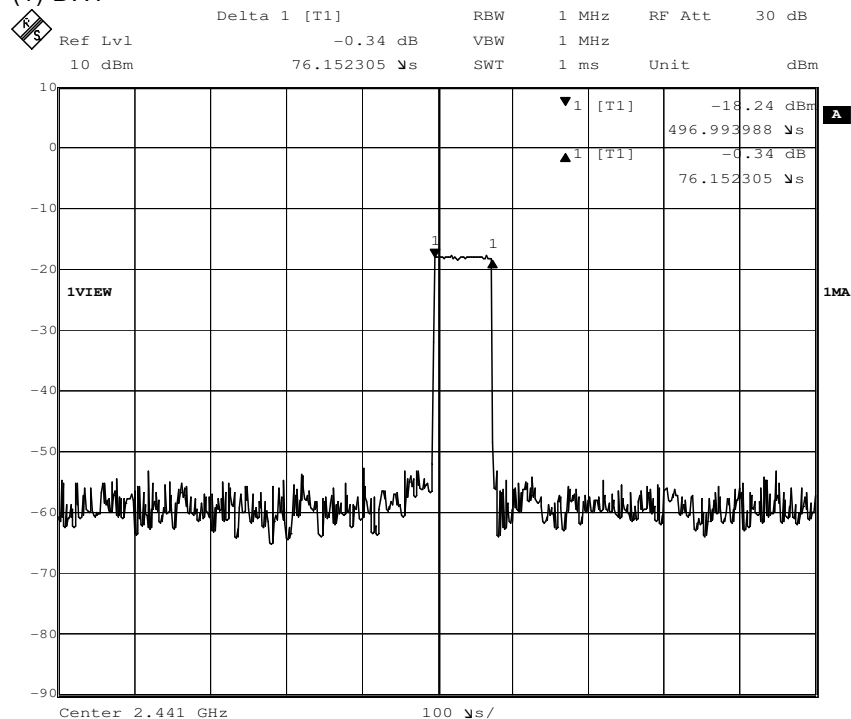
1. Lowest channel (2.402 GHz):

(1). DH1



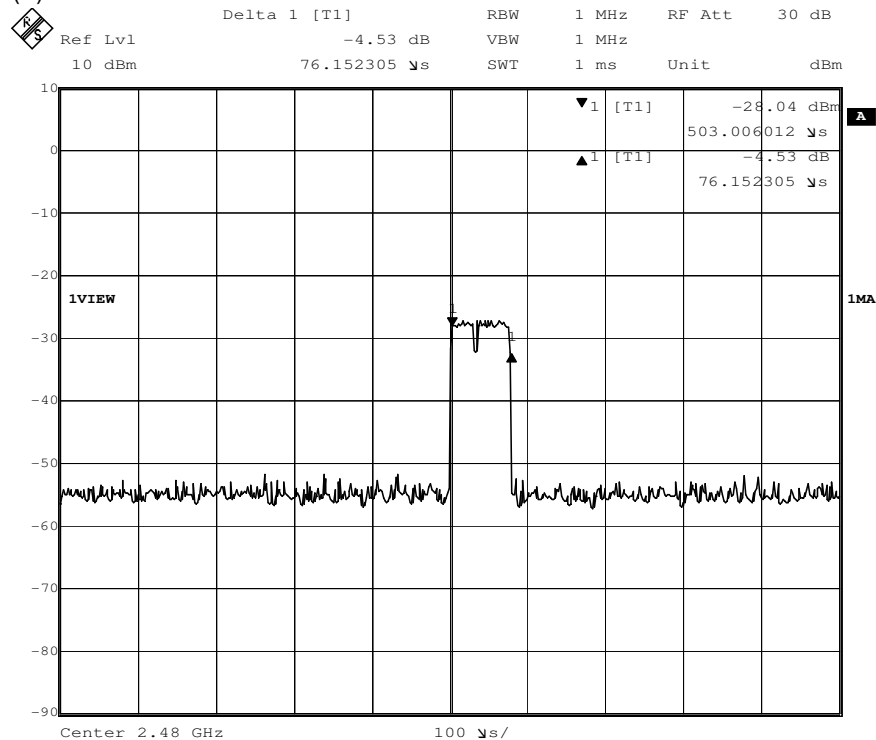
2. Middle Channel (2.441GHz)

(1) DH1



3. Highest channel (2.480GHz)

(1). DH1



Remark:

In communication data link mode (expect inquiry or page mode) the hopping rate is 1600 per second, the 79 channels will be randomly selected for RF channel, and each channel have equal probability to be selected. The hop selection scheme is defined in Clause 2.6 of Part B of Volume 2 of core specification of Bluetooth.

The Dwell time must be calculated via following formula:

$$\text{Dwell time} = \text{Pulse wide} \times (\text{Hopping rate} / \text{Number of channels}) \times \text{Period}$$

$$\text{Period} = 0.4 (\text{seconds/ channel}) \times 79 (\text{channel}) = 31.6 \text{ seconds}$$

So

$$\text{Dwell time DH1} = \text{slot time} \times (1600/2/79) \times 31.6$$

$$\text{Dwell time DH3} = \text{slot time} \times (1600/4/79) \times 31.6$$

$$\text{Dwell time DH5} = \text{slot time} \times (1600/6/79) \times 31.6$$

The **RF channel will remain fixed for duration of a packet**, that means for DH3 packet the RF frequency will remain unchanged during 3 slots (1 slot=1/1600=625us), and for DH5 packet the RF frequency will remain unchanged during 5 slots, illustrated the principle as below:

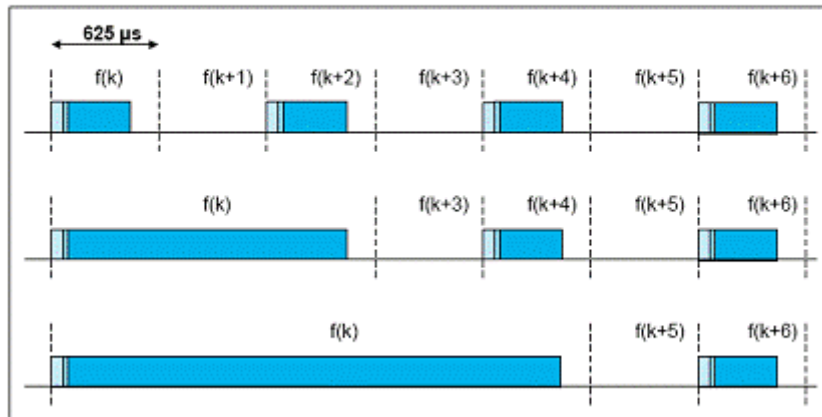


Figure 2.14: Single- and multi-slot packets.

Therefore, in a certain period for different packet types, the quantities of hops (**not hopping rate 1600**) are different, accurately, the quantity of hops for DH1 is double of DH3's and triple of DH5's. "for DH1 packet, 1 hop in 1 slot; for DH3 packet, 1/2 hop in 1 slot; for DH5 packet, 1/3 hop in 1 slot.", explained as below:

From the illustrated hopping scheme:

For DH1, in two slots, there are two hops, i.e. $f(k)$ in Slot(k), $f(k+1)$ in Slot(k+1), means DH1 1 hop in 1 slot;

For DH3, in four slots, there are two hops, i.e. $f(k)$ in Slot(k) & Slot(k+1) & Slot(k+2), $f(k+3)$ in Slot(k+3), means DH3 2 hops in four slots \rightarrow 1/2 hop in 1 slot;

For DH5, in six slots, there are two hops, i.e. $f(k)$ in Slot(k) & Slot(k+1) & Slot(k+2) & Slot(k+3) & Slot(k+4), $f(k+5)$ in Slot(k+5), means DH3 2 hops in six slots \rightarrow 1/3 hop in 1 slot.

The **Hopping rate** in the formula should **not** be fixed value, for DH1, it is $1600/2$; for DH3, it is $1600/4$; for DH5, it is $1600/6$.

To calculate Dwell time of data transmission of Bluetooth system, the worst case is for Bluetooth PICONET that contains two devices only (although Bluetooth PICONET can support up to eight devices), and for Bluetooth data transmission, after device A sending a packet to device B, device A must get response packet from device B to continue data transmission;

For DH1 packet: assume device A is EUT, the worst case is after device A sending a DH1 packet to device B, device A gets a DH1 response packet from device B, that means device A needs 1 time slot for transmitting and 1 time slot for receiving, therefore, the actual hopping rate of device A is half of 1600, i.e. 800 hops per second for EUT;



For DH3 packet: assume device A is EUT, the worst case is after device A sending a DH3 packet to device B, device A gets a DH1 response packet from device B, that means device A needs 3 time slots for transmitting and 1 time slot for receiving, therefore, the actual hopping rate of device A is quarter of 1600, i.e. 400 hops per second for EUT;

For DH5 packet: assume device A is EUT, the worst case is after device A sending a DH5 packet to device B, device A gets a DH1 response packet from device B, that means device A needs 5 time slots for transmitting and 1 time slot for receiving, therefore, the actual hopping rate of device A is sixth of 1600, i.e. $1600/6=266.7$ hops per second for EUT;

7.7 Pseudorandom Frequency Hopping Sequence

7.7.1 Standard requirement

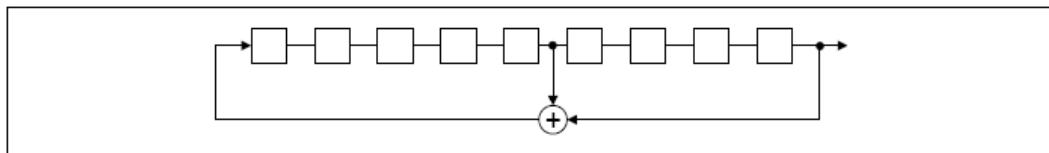
15.247(a)(1) requirement:

Frequency hopping systems shall have hopping 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. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

7.7.2 EUT Pseudorandom Frequency Hopping Sequence

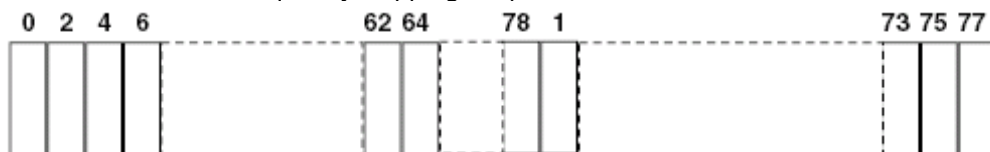
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONES; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: $2^9 - 1 = 511$ bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.



7.8 Maximum Peak Output Power

Test Requirement: FCC Part 15.247 & DA 00-705

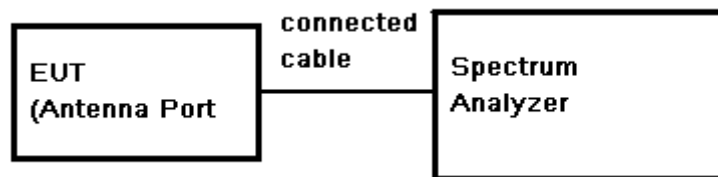
Test Method: Base on ANSI 63.4.

Test Date: June 24, 2009

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 = 2 MHz. VBW = 2 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 (MHz) | Reading Power (dBm) | Cable Loss (dB) | Output Power (dBm) | Limit (dBm) | Margin (dB) |
|--------------|-----------------------------|---------------------|-----------------|--------------------|-------------|-------------|
| Lowest | 2.402 | -0.24 | 0.20 | -0.04 | 30.0 | 30.04 |
| Middle | 2.441 | -0.42 | 0.20 | -0.22 | 30.0 | 30.22 |
| Highest | 2.480 | -0.83 | 0.20 | -0.63 | 30.0 | 30.63 |

Test result: The unit does meet the FCC requirements.

Test result plot as follows:



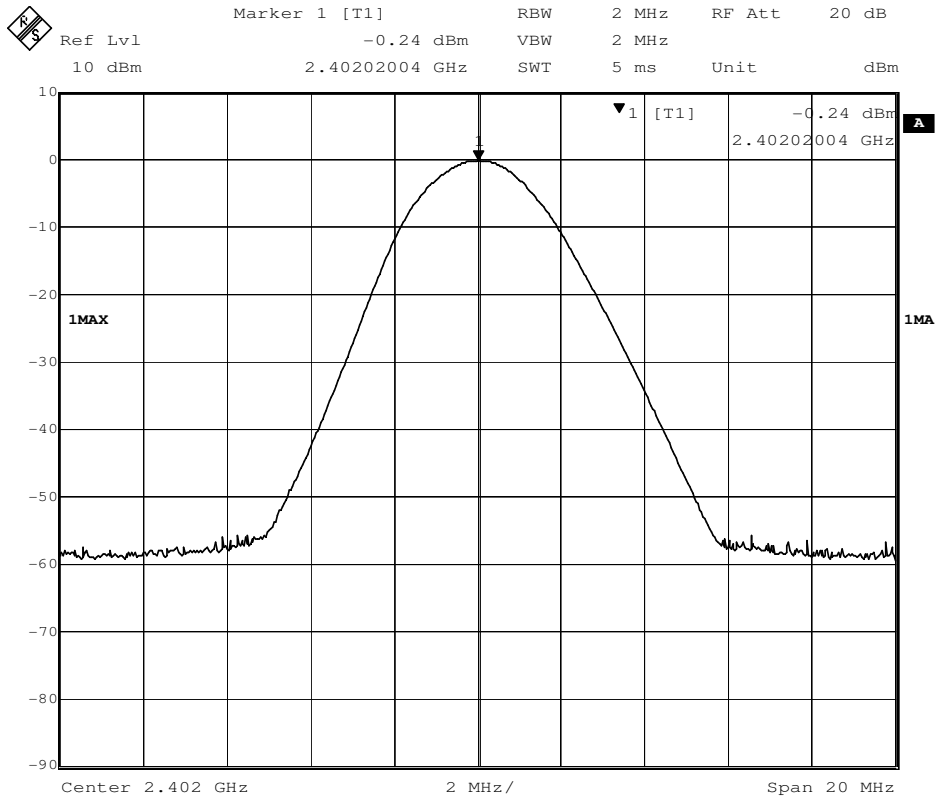
SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

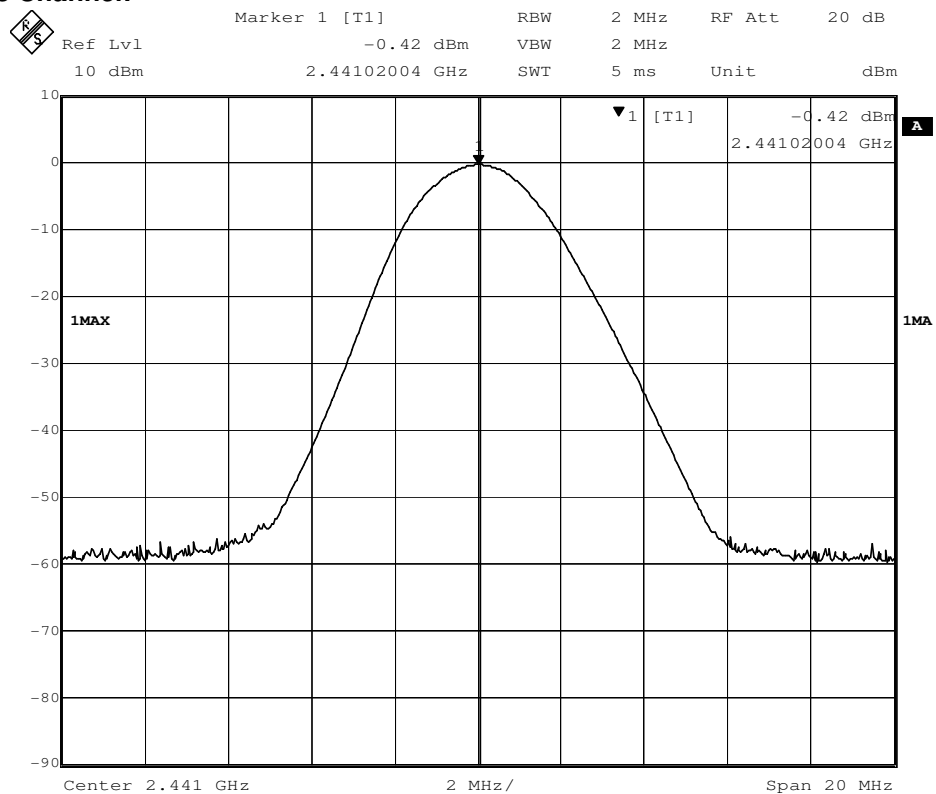
Page: 25 of 43

FCC ID:XKNTPW1112-B-C

Lowest Channel:

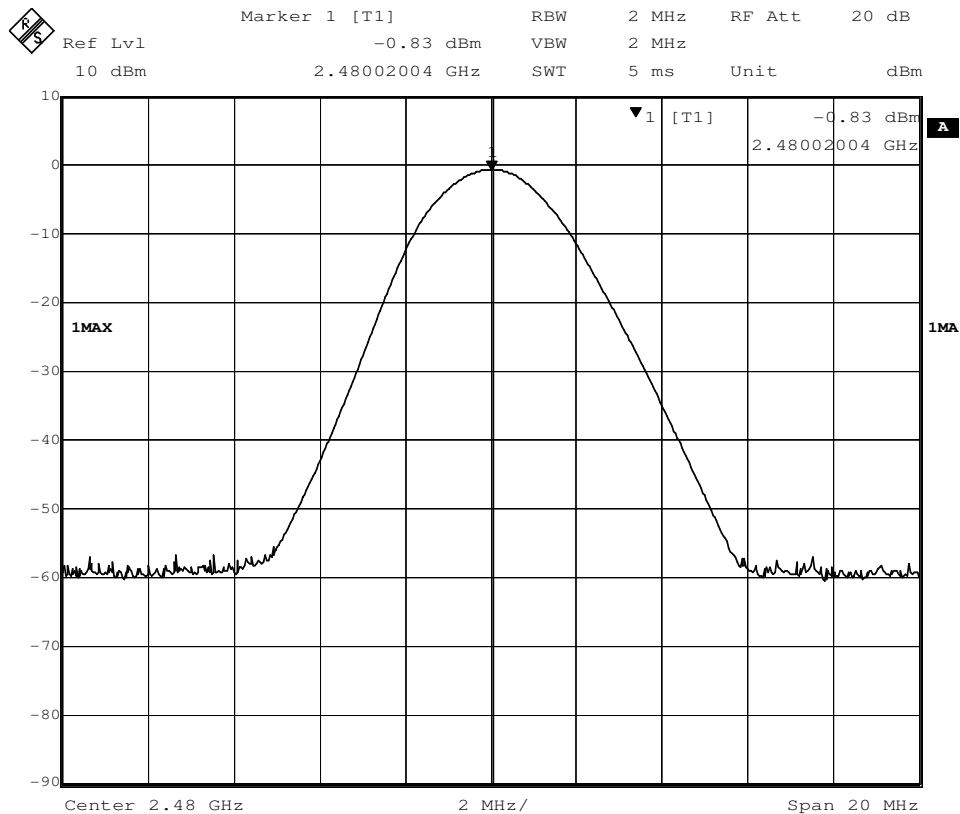


Middle Channel:





Highest Channel:





7.9 Conducted Spurious Emissions

Test Requirement: FCC Part 15.247 & DA 00-705

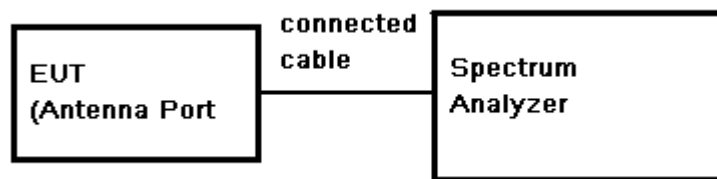
Test Method: Based on FCC Part15 C Section 15.247&15.209:

Test Date: June 24, 2009

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 Status: Test the EUT in continuous transmitting mode at lowest. Middle, highest channel.

Test Configuration:



Test Procedure:

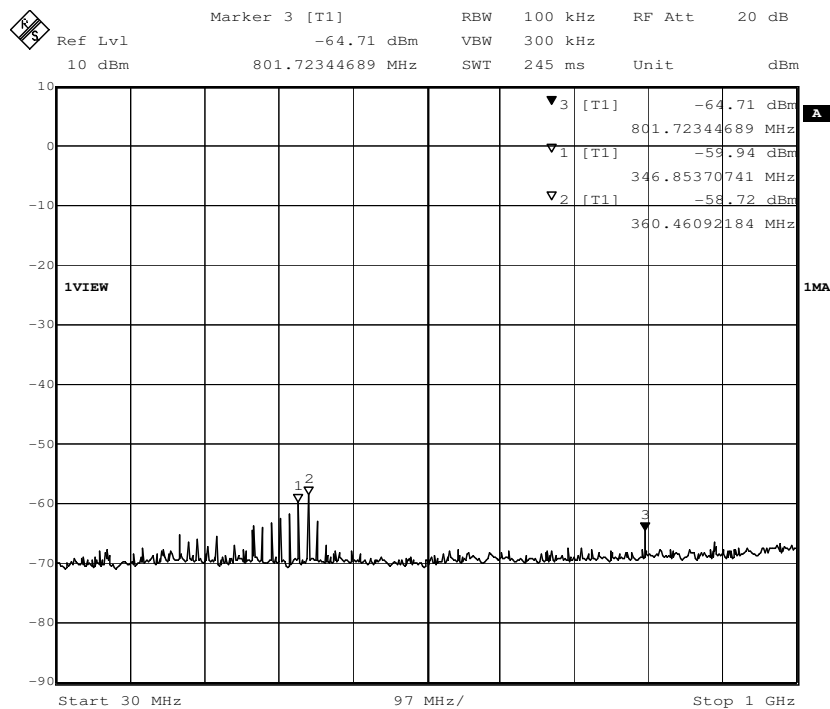
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100KHz. VBW \geq RBW. Sweep = auto; Detector Function = Peak (Max. hold).

Test result plot as follows:

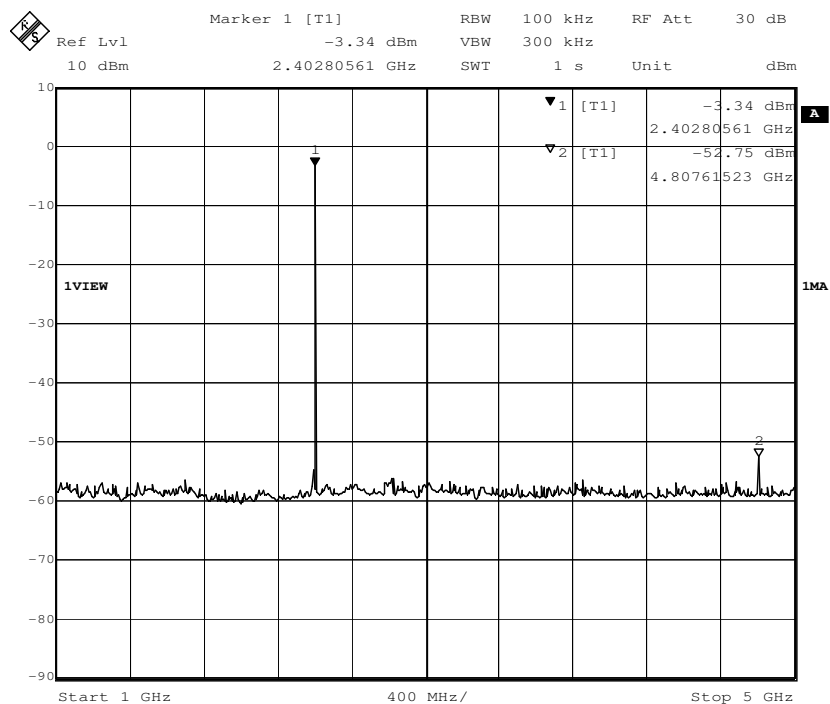


Lowest Channel:

30M to 1GHz



1G to 5GHz





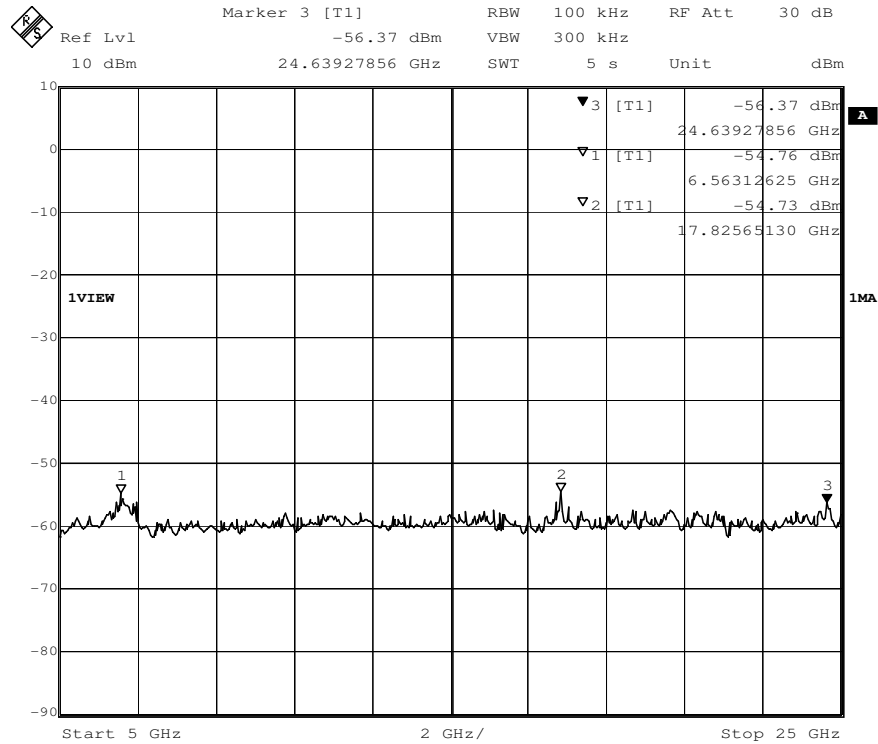
SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

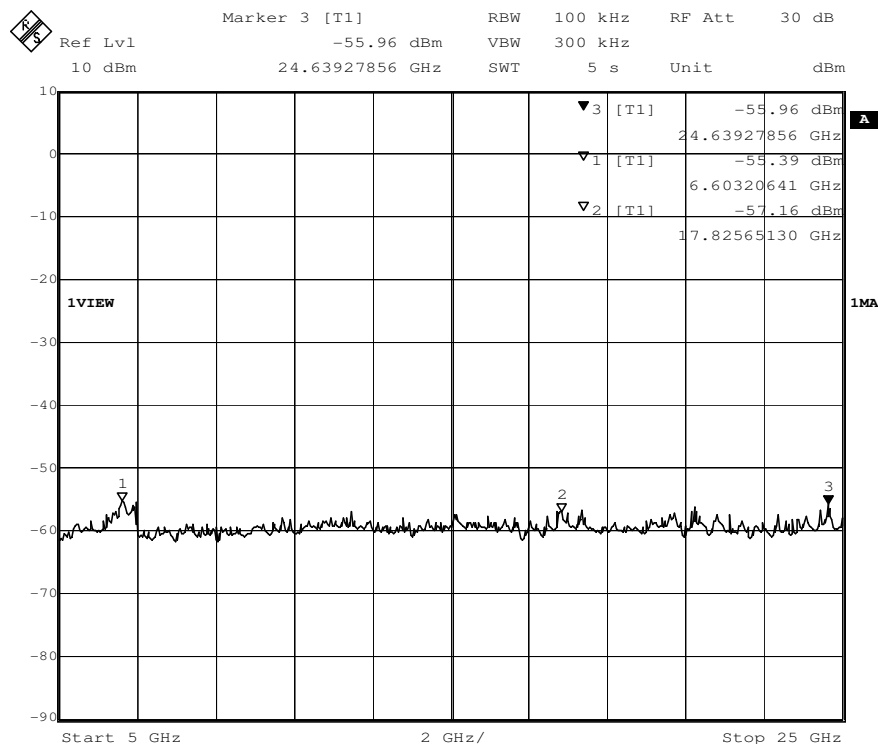
Page: 29 of 43

FCC ID:XKNTPW1112-B-C

5G to 25GHz

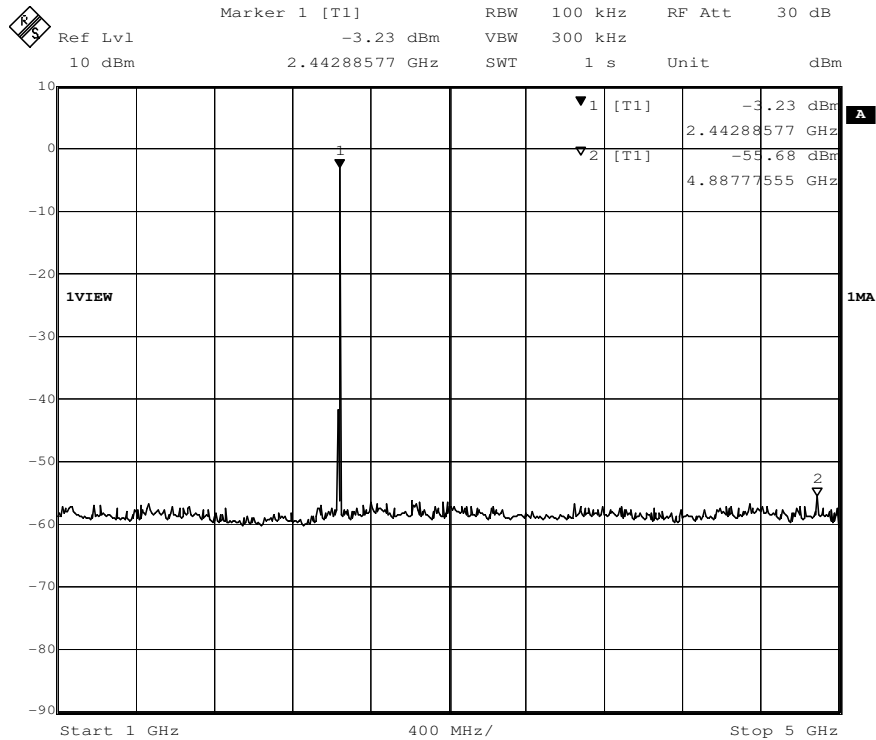


Middle Channel: 30M to 1GHz

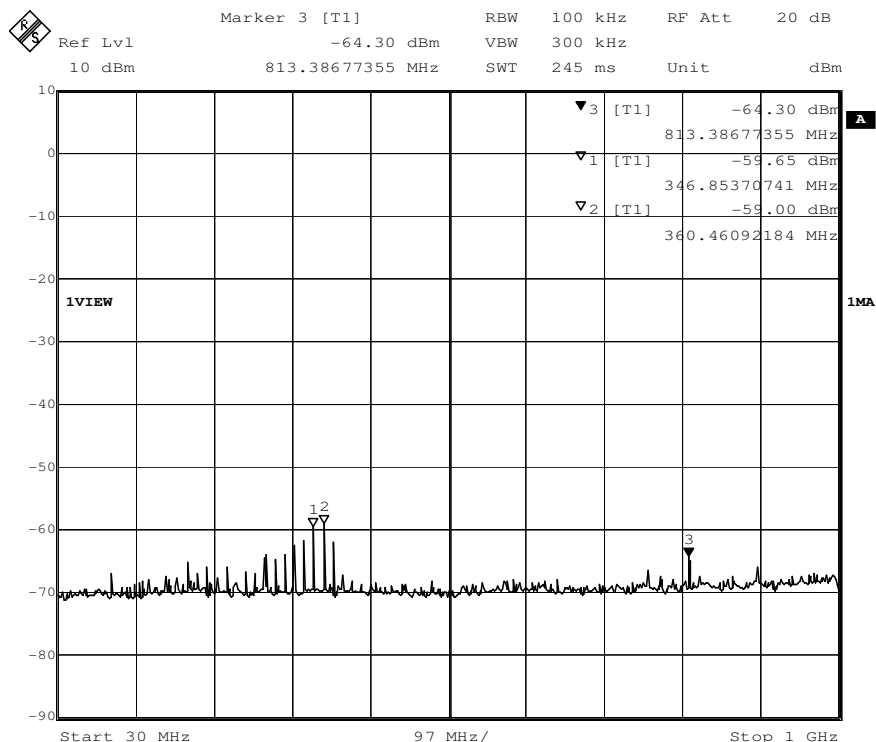




1G to 5GHz



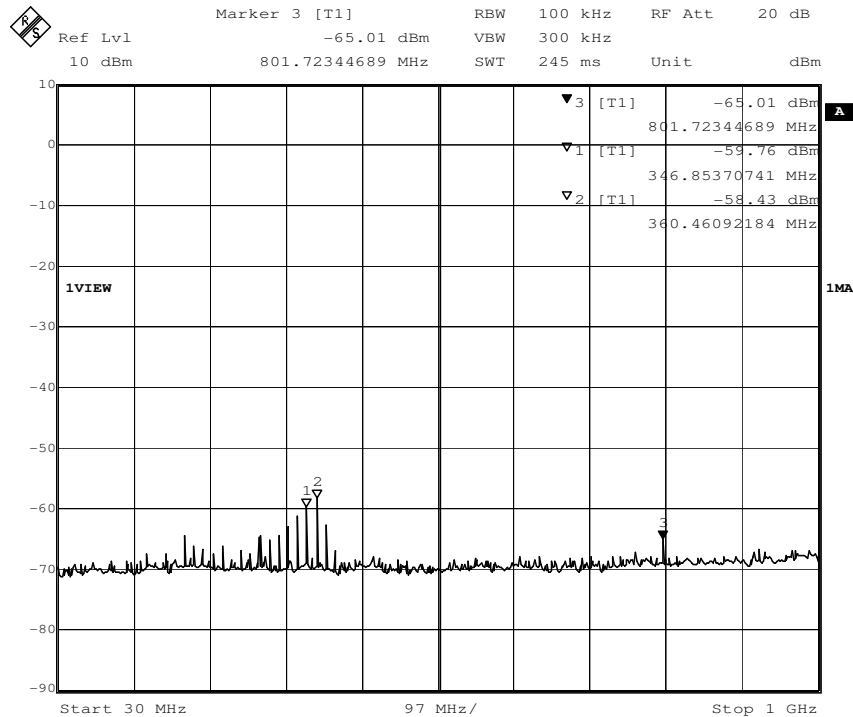
5G to 25GHz



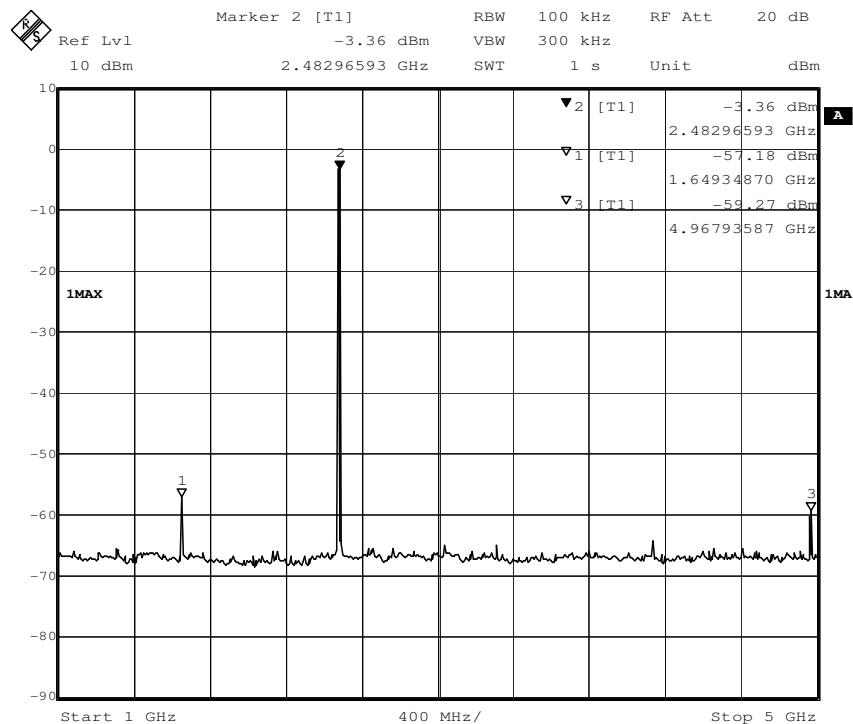


Highest Channel:

30M to 1GHz

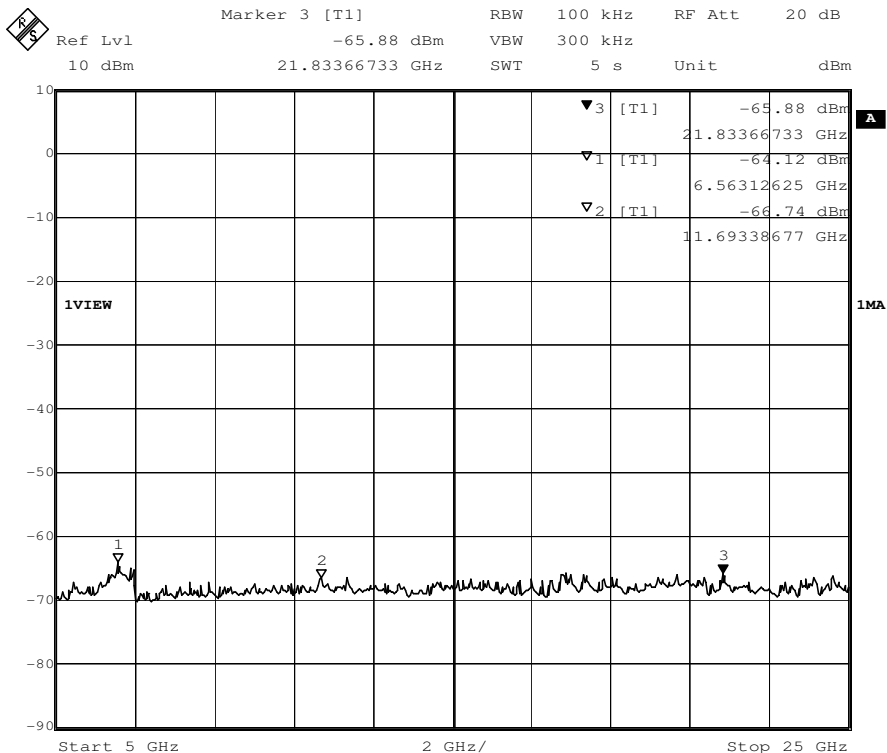


1G to 5GHz





5G to 25GHz





7.10 Radiated Spurious Emissions

| | |
|-------------------|--|
| Test Requirement: | FCC 15.247(d) & 15.209 |
| Test Method: | ANSI C63.4 section 8 & 13 |
| Test Date: | June 25, 2009 |
| Test Status: | Test the EUT in continuous transmitting mode at lowest channel, Middle, highest channel. Pre-test the EUT setup in X, Y, Z three axes, and found the worst case is in Y axis. (please refer to setup photos) |
| Test site: | Measurement Distance: 3m (Semi-Anechoic Chamber) Test instrumentation resolution bandwidth 120 kHz, VBW 300kHz and Quasi-Peak detector applies (30 MHz – 1000 MHz). 1MHz resolution bandwidth, VBW 3MHz and Peak and Average-Peak detector apply (1000 MHz – 25GHz). Receive antenna scan height 1 m – 4 m. polarization Vertical / Horizontal |
| 15.209 Limit: | 40.0 dB μ V/m between 30MHz & 88MHz 43.5 dB μ V/m between 88MHz & 216MHz 46.0 dB μ V/m between 216MHz & 960MHz 54.0 dB μ V/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, and provided the transmitter demonstrates compliance with the peak conducted power limits. |

Test Configuration:

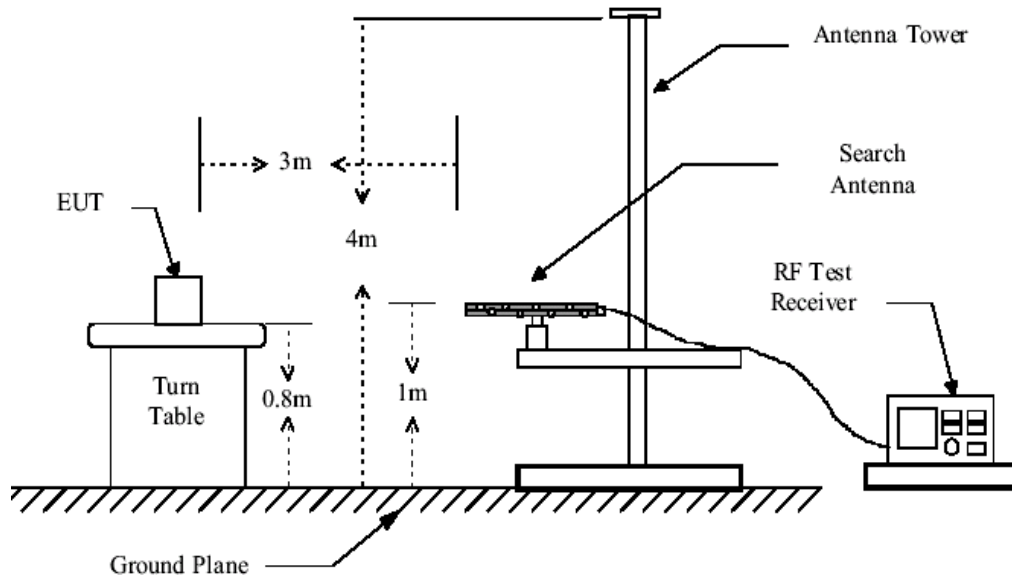


Figure 1. 30MHz to 1GHz radiated emissions test configuration

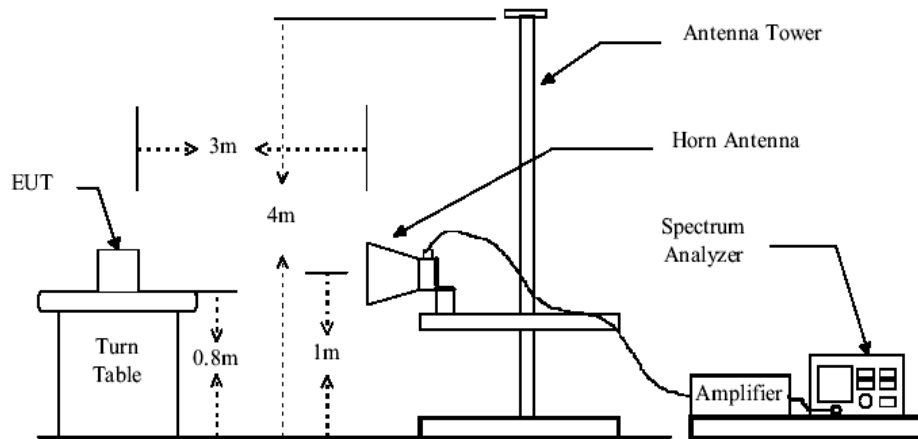


Figure 2. Above 1GHz radiated emissions test configuration



SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

Page: 35 of 43

FCC ID:XKNTPW1112-B-C

Test Procedure: The procedure used was ANSI Standard C63.4-2003. 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.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit.

Submit this data.



7.10.1 Harmonic and other spurious emissions

7.10.1.1 Test at low Channel in transmitting status

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

| Frequency (MHz) | Reading Level (dBμV) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|----------------------|------------------------|-----------------|--------------------|-------------------------|----------------|----------------------|
| 94.978 | 40.77 | 9.00 | 0.90 | 24.50 | 26.17 | 43.50 | Vertical |
| 131.850 | 34.47 | 12.04 | 1.00 | 24.40 | 23.11 | 43.50 | V |
| 199.990 | 43.2 | 10.60 | 1.20 | 24.20 | 30.89 | 43.50 | V |
| 133.790 | 40.04 | 11.88 | 1.00 | 24.40 | 28.55 | 43.50 | Horizontal |
| 161.920 | 41.07 | 10.12 | 1.10 | 24.40 | 27.89 | 43.50 | H |
| 199.990 | 47.95 | 10.60 | 1.20 | 24.20 | 35.55 | 43.50 | H |

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

Peak Measurement:

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|------------------------|-----------------|--------------------|----------------------|-------------------------|----------------|----------------------|
| 4804.000 | 33.19 | 6.20 | 36.30 | 42.52 | 45.62 | 74.00 | Vertical |
| 7206.000 | 36.00 | 8.36 | 32.20 | 40.01 | 48.92 | 74.00 | V |
| 9608.000 | 36.42 | 8.80 | 32.50 | 40.53 | 52.72 | 74.00 | V |
| 4804.000 | 33.19 | 6.90 | 33.01 | 43.51 | 50.59 | 74.00 | Horizontal |
| 7206.000 | 36.08 | 8.36 | 32.20 | 40.24 | 48.70 | 74.00 | H |
| 9608.000 | 36.40 | 8.80 | 32.50 | 35.27 | 48.00 | 74.00 | H |

Average Measurement:

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|------------------------|-----------------|--------------------|----------------------|-------------------------|----------------|----------------------|
| 4804.000 | 33.19 | 6.20 | 36.30 | 38.56 | 41.66 | 54.00 | Vertical |
| 7206.000 | 36.05 | 8.36 | 32.20 | 23.23 | 35.44 | 54.00 | V |
| 9608.000 | 36.40 | 8.80 | 32.50 | 21.47 | 34.17 | 54.00 | V |
| 4804.000 | 33.19 | 6.90 | 33.01 | 36.58 | 43.66 | 54.00 | Horizontal |
| 7206.000 | 36.11 | 8.36 | 32.20 | 22.77 | 35.04 | 54.00 | H |
| 9608.000 | 36.42 | 8.80 | 32.50 | 22.81 | 35.53 | 54.00 | H |

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor –Preamplifier Factor.



SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

Page: 37 of 43

FCC ID: XKNTPW1112-B-C

7.10.1.2 Test at middle Channel in transmitting status

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

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|------------------------|-----------------|--------------------|----------------------|-------------------------|----------------|----------------------|
| 95.960 | 9.24 | 0.90 | 24.50 | 41.55 | 27.19 | 43.50 | Vertical |
| 128.940 | 12.26 | 1.00 | 24.40 | 38.81 | 27.67 | 43.50 | V |
| 198.780 | 10.58 | 1.20 | 24.22 | 43.33 | 30.89 | 43.50 | V |
| 94.990 | 9.00 | 0.90 | 24.50 | 38.36 | 23.76 | 43.50 | Horizontal |
| 167.740 | 10.00 | 1.20 | 24.34 | 43.41 | 30.27 | 43.50 | H |
| 198.780 | 10.58 | 1.20 | 24.22 | 45.68 | 33.24 | 43.50 | H |

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

Peak Measurement:

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|------------------------|-----------------|--------------------|----------------------|-------------------------|----------------|----------------------|
| 4882.000 | 33.27 | 7.20 | 32.97 | 50.55 | 58.04 | 74.00 | Vertical |
| 7323.000 | 36.16 | 6.95 | 32.29 | 36.68 | 47.50 | 74.00 | V |
| 9764.000 | 36.40 | 7.20 | 32.44 | 38.44 | 49.60 | 74.00 | V |
| 4882.000 | 33.27 | 7.20 | 32.97 | 50.31 | 57.81 | 74.00 | Horizontal |
| 7323.000 | 36.16 | 6.95 | 32.29 | 36.95 | 47.77 | 74.00 | H |
| 9764.000 | 36.40 | 7.20 | 32.44 | 38.19 | 49.35 | 74.00 | H |

Average Measurement:

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|------------------------|-----------------|--------------------|----------------------|-------------------------|----------------|----------------------|
| 4882.000 | 33.27 | 7.20 | 32.97 | 42.65 | 50.14 | 54.00 | Vertical |
| 7323.000 | 36.16 | 6.95 | 32.29 | 21.99 | 32.81 | 54.00 | V |
| 9764.000 | 36.40 | 7.20 | 32.44 | 23.46 | 34.62 | 54.00 | V |
| 4882.000 | 33.27 | 7.20 | 32.97 | 45.28 | 52.78 | 54.00 | Horizontal |
| 7323.000 | 36.16 | 6.95 | 32.29 | 22.45 | 33.27 | 54.00 | H |
| 9764.000 | 36.40 | 7.20 | 32.44 | 21.82 | 32.98 | 54.00 | H |

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor –Preamplifier Factor.



SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

Page: 38 of 43

FCC ID:XKNTPW1112-B-C

7.10.1.3 Test at high Channel in transmitting status

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

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|------------------------|-----------------|--------------------|----------------------|-------------------------|----------------|----------------------|
| 137.670 | 11.74 | 1.00 | 24.40 | 40.19 | 28.53 | 43.50 | Vertical |
| 490.750 | 16.99 | 2.00 | 25.40 | 36.65 | 30.24 | 46.00 | V |
| 718.700 | 19.28 | 2.40 | 25.399 | 35.48 | 31.77 | 46.00 | V |
| 95.925 | 9.24 | 0.90 | 24.50 | 40.93 | 26.57 | 43.50 | Horizontal |
| 549.920 | 18.30 | 2.10 | 25.40 | 33.27 | 28.27 | 46.00 | H |
| 934.040 | 20.60 | 2.70 | 24.86 | 35.98 | 24.42 | 46.00 | H |

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

Peak Measurement:

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|------------------------|-----------------|--------------------|----------------------|-------------------------|----------------|----------------------|
| 4960.000 | 33.36 | 7.33 | 32.92 | 50.12 | 57.90 | 74.00 | Vertical |
| 7440.000 | 36.23 | 6.05 | 32.37 | 39.49 | 49.40 | 74.00 | V |
| 9920.000 | 36.50 | 7.04 | 32.50 | 40.16 | 51.20 | 74.00 | V |
| 4960.000 | 33.36 | 7.33 | 32.92 | 50.43 | 58.20 | 74.00 | Horizontal |
| 7440.000 | 36.23 | 6.05 | 32.37 | 39.82 | 49.73 | 74.00 | H |
| 9920.000 | 36.50 | 7.04 | 32.50 | 41.53 | 52.57 | 74.00 | H |

Average Measurement:

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss (dB) | Preamp factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Limit (dBμV/m) | Antenna polarization |
|-----------------|------------------------|-----------------|--------------------|----------------------|-------------------------|----------------|----------------------|
| 4960.000 | 33.36 | 7.33 | 32.92 | 42.56 | 50.34 | 54.00 | Vertical |
| 7440.000 | 36.23 | 6.05 | 32.37 | 24.19 | 34.10 | 54.00 | V |
| 9920.000 | 36.50 | 7.04 | 32.50 | 23.52 | 34.56 | 54.00 | V |
| 4960.000 | 33.36 | 7.33 | 32.92 | 42.57 | 50.34 | 54.00 | Horizontal |
| 7440.000 | 36.23 | 6.05 | 32.37 | 34.35 | 44.26 | 54.00 | H |
| 9920.000 | 36.50 | 7.04 | 32.50 | 31.84 | 42.88 | 54.00 | H |

The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor –Preamplifier Factor.



SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

Page: 39 of 43

FCC ID:XKNTPW1112-B-C

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.

- 1). N/A: For this intentional radiator operates below 25 GHz. The spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 3rd harmonic.
- 2). As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.
- 3). The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

Test result: The unit does meet the FCC requirements.



7.10.2 Radiated Emissions which fall in the restricted bands

Test Requirement: 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: June 25, 2009

Measurement Distance: 3m (Semi-Anechoic Chamber)

Limit: 40.0 dB μ V/m between 30MHz & 88MHz;
43.5 dB μ V/m between 88MHz & 216MHz;
46.0 dB μ V/m between 216MHz & 960MHz;
54.0 dB μ V/m above 960MHz.

Detector: Peak for pre-scan:
100kHz resolution bandwidth and 100kHz video bandwidth within 1GHz.
1MHz resolution bandwidth and 1MHz video bandwidth above 1GHz

Test Result:

Test the EUT in continuous transmitting mode.

1. Low Channel

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss(dB) | Preamplifier factor(dB) | Peak Reading Level (dB μ V) | Average Reading Level (dB μ V) | Peak Emission Level (dB μ V/m) | Average Emission Level (dB μ V/m) |
|-----------------|------------------------|----------------|-------------------------|---------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| 2390.000 | 27.88 | 4.65 | 34.30 | 51.6 | 32.3 | 49.8 | 30.5 |
| 2483.500 | 28.74 | 4.80 | 34.73 | 53.5 | 33.4 | 52.3 | 32.2 |

2. Middle Channel

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss(dB) | Preamplifier factor(dB) | Peak Reading Level (dB μ V) | Average Reading Level (dB μ V) | Peak Emission Level (dB μ V/m) | Average Emission Level (dB μ V/m) |
|-----------------|------------------------|----------------|-------------------------|---------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| 2390.000 | 27.88 | 4.65 | 34.30 | 51.6 | 33.2 | 49.8 | 31.5 |
| 2483.500 | 28.74 | 4.80 | 34.73 | 54.0 | 32.5 | 52.3 | 30.8 |

3. High Channel

| Frequency (MHz) | Antenna factors (dB/m) | Cable loss(dB) | Preamplifier factor(dB) | Peak Reading Level (dB μ V) | Average Reading Level (dB μ V) | Peak Emission Level (dB μ V/m) | Average Emission Level (dB μ V/m) |
|-----------------|------------------------|----------------|-------------------------|---------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| 2390.000 | 27.88 | 4.65 | 34.30 | 52.5 | 33.1 | 50.7 | 31.4 |
| 2483.500 | 28.74 | 4.80 | 34.73 | 54.4 | 32.6 | 52.6 | 30.8 |

Remark: No any other emission which falls in restricted bands can be detected and be reported.

Test result: The unit does meet the FCC requirements.



SGS-CSTC Standards Technical Services Co., Ltd.

Report No.: GLEMO09060171302

Page: 41 of 43

FCC ID:XKNTPW1112-B-C

Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) 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 |
| ¹ 0.495 - 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 | | |



7.11 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: June 24, 2009

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 Measurement: Set RBW of spectrum analyzer to 100 kHz and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge.

Pretest the EUT in hopping on and hopping off, found the worse case was the hopping on, The band edges was measured and recorded the worse case.

The band edges was measured and recorded Result:

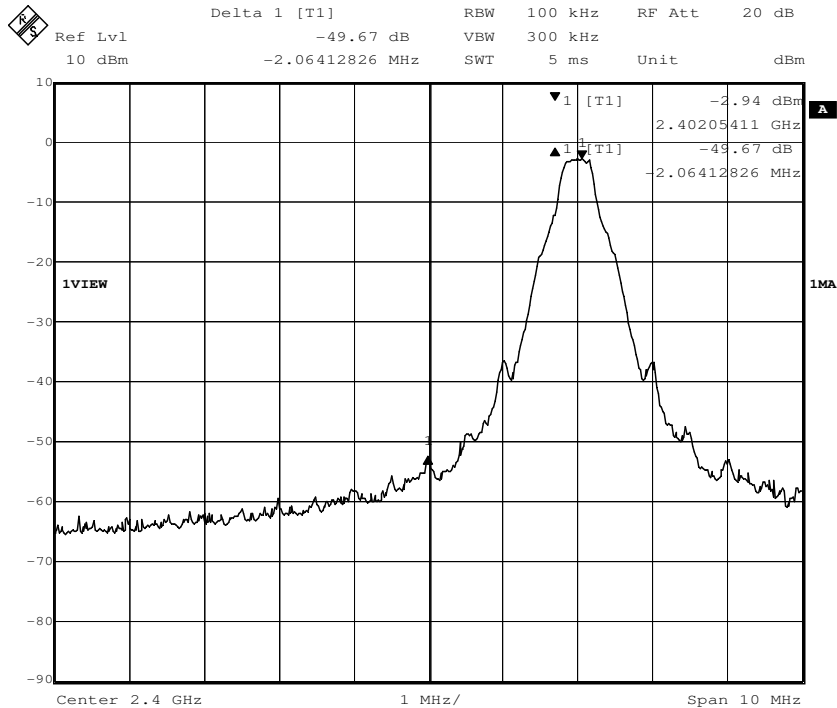
The Lower Edges attenuated more than 20dB.

The Upper Edges attenuated more than 20dB.

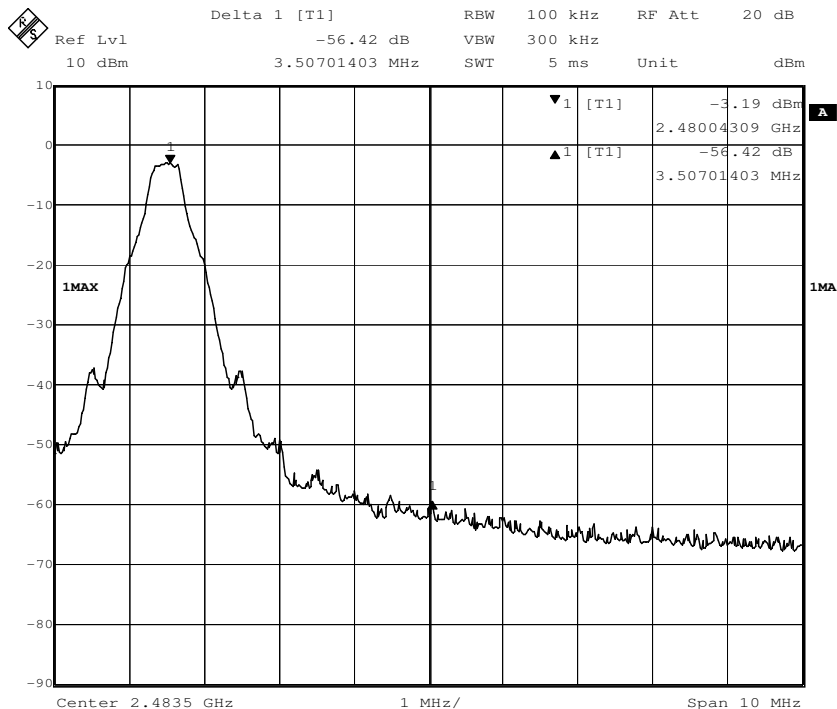
The graph as below. Represents the emissions take for this device.



Lowest Channel:



Highest Channel:



Test result: The unit does meet the FCC requirements.