

FCC CFR47 PART 15 SUBPART C(15.247)
CERTIFICATION
TEST REPORT

FOR

Dongguan Zhanxin Electronics Technology Co., Ltd

Bluetooth Stereo Headset

Model No.: HE01

Prepared for : Dongguan Zhanxin Electronics Technology Co., Ltd
Address : Jiuwei Industrial Zone, Qishi Town, Dongguan City, Guangdong, China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : 1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd., Bao'an District, Shenzhen, Guangdong, China

Date of receipt of test sample : May 16, 2012
Number of tested samples : 1
Serial number : Prototype
Date of Test : May 16, 2012 - May 30, 2012
Date of Report : May 30, 2012

TEST REPORT**FCC CFR 47 PART 15 C(15.247)****Report Reference No. : LCS120516093TF**

Date of Issue : May 30, 2012

Testing Laboratory Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.Address : 1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd.,
Bao'an District, Shenzhen, Guangdong, ChinaTesting Location/ Procedure..... : Full application of Harmonised standards ☒
Partial application of Harmonised standards ☐
Other standard testing method ☐**Applicant's Name..... : Dongguan Zhanxin Electronics Technology Co., Ltd**Address : Jiuwei Industrial Zone, Qishi Town, Dongguan City,
Guangdong, China**Test Specification**

Standard : FCC CFR 47 PART 15 Subpart C, ANSI C63.4-2003

Test Report Form No. : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen LCS Compliance Testing Laboratory Ltd. is acknowledged as copyright owner and source of the material. Shenzhen LCS Compliance Testing Laboratory Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test Item Description. : Bluetooth Stereo Headset

Trade Mark : N/A

Manufacturer..... : Dongguan Zhanxin Electronics Technology Co., Ltd

Model/ Type reference..... : HE01

Ratings : DC 5.0V

Result : **Positive****Compiled by:**

Ada Liang/ File administrators

Supervised by:

Vito Cao/ Technique principal

Approved by:

Gavin Liang/ Manager

EMC -- TEST REPORT

Test Report No. : LCS120516093TFMay 30, 2012

Date of issue

Type / Model..... : HE01

EUT..... : Bluetooth Stereo Headset

Applicant..... : Dongguan Zhanxin Electronics Technology Co., LtdAddress..... : Jiuwei Industrial Zone, Qishi Town, Dongguan City,
Guangdong, China

Telephone..... : /

Fax..... : /

Manufacturer..... : Dongguan Zhanxin Electronics Technology Co., LtdAddress..... : Jiuwei Industrial Zone, Qishi Town, Dongguan City,
Guangdong, China

Telephone..... : /

Fax..... : /

Factory..... : Dongguan Zhanxin Electronics Technology Co., LtdAddress..... : Jiuwei Industrial Zone, Qishi Town, Dongguan City,
Guangdong, China

Telephone..... : /

Fax..... : /

Test Result:**Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1 Description of Device (EUT).....	5
1.2 Description of Test Facility	5
1.3 Statement of the measurement uncertainty	5
1.4 Measurement Uncertainty	6
1.5 Description Of Test Modes.....	6
2. TEST METHODOLOGY	7
2.1 EUT Configuration	7
2.2 EUT Exercise.....	7
2.3 General Test Procedures	7
2.4 Table for Carrier Frequencies	7
3. CONNECTION DIAGRAM OF TEST SYSTEM.....	8
4. FCC PART 15.247 REQUIREMENTS	9
4.1 Peak Power	9
4.2 Band Edges Measurement	11
4.3 Frequency Separation	15
4.4 Number Of Hopping Frequency	19
4.5 Time Of Occupancy (Dwell Time).....	21
4.6 Spurious Emissions.....	24
5. RADIATED EMISSION MEASUREMENT	28
5.1 Test Equipment.....	28
5.2 Block Diagram of Test Setup.....	28
5.3 Radiated Emission Limit	29
5.4 Test Results.....	29
6. ANTENNA REQUIREMENT	32
6.1 Standard Applicable.....	32
6.2 Antenna Connected Construction	32
7. MANUFACTURER/ APPROVAL HOLDER DECLARATION	33

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Bluetooth Stereo Headset
Model Number	:	HE01
Power Supply	:	DC 5.0V
Modulation Type	:	FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK)
Data Rate (Mbps)	:	GFSK: 1 ; $\pi/4$ -QPSK: 2 ; 8DPSK: 3
Frequency Range	:	2402.00-2480.00MHz
Channel Number	:	79
Conducted Output Power	:	0.93dBm

1.2 Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, June 04, 2010
The Certificate Registration Number. is L4595.

Accredited by FCC, July 14, 2011
The Certificate Registration Number. is 899208.

Accredited by Industry Canada, May. 02, 2011
The Certificate Registration Number. is 9642A-1

1.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional

deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.4 Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	30MHz~200MHz	$\pm 2.96\text{dB}$	(1)
		200MHz~1000MHz	$\pm 3.10\text{dB}$	(1)
Conduction Uncertainty	:	150kHz~30MHz	$\pm 1.63\text{dB}$	(1)
Power disturbance	:	30MHz~300MHz	$\pm 1.60\text{dB}$	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

1.5 Description Of Test Modes

The EUT has been tested under operating condition.

This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item.

Investigation has been done on all the possible configurations for searching the worst cases. So found EUT operated in 8DPSK mode was worse case.

The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	Connector
AC Power Conducted Emissions	Normal Link	3Mbps	Hopping 0~78	-
Max. Conducted Output Power	8DPSK	3Mbps	0/39/78	1
Hopping Channel Separation	8DPSK	3Mbps	0~1/39~40/77~78	1
Number of Hopping Frequency	8DPSK	3Mbps	0~78	1
Dwell Time	3DH1/3DH3/3DH5	3Mbps	39	1
Radiated Emissions Below 1GHz	8DPSK	3Mbps	39	1
Radiated Emissions Above 1GHz	8DPSK	3Mbps	0/39/78	1
Band Edge Emissions	8DPSK	3Mbps	0/78	1

For Radiated spurious emission test below 1GHz, Channel 39 has been evaluated to be the worst case, so it was recorded in the report.

For Radiated spurious emission test above 1GHz, Channel 0, Channel 39 and Channel 78 has been evaluated to be the worst case, so it was recorded in the report.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR PART 15C 15.207, 15.209, 15.247 and DA 00-705

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

2.3 General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

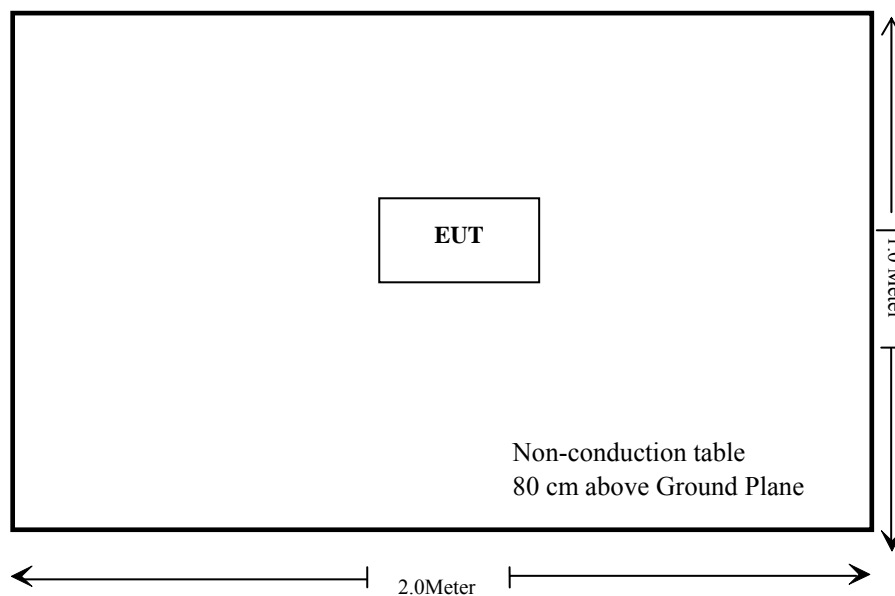
2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4

2.4 Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	0	2402	40	2442
	1	2403	:	:
	:	:	77	2479
	38	2440	78	2480
	39	2441	-	-

3. CONNECTION DIAGRAM OF TEST SYSTEM



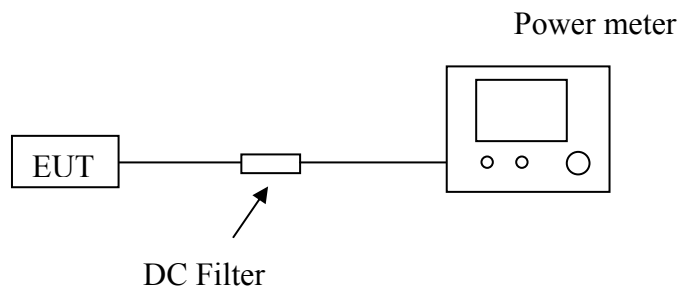
4. FCC PART 15.247 REQUIREMENTS

4.1 Peak Power

4.1.1 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2011-06-21	2012-06-20
2	Power Sensor	Agilent	E9327A	US40441788	2011-06-21	2012-06-20
3	Power Meter	Agilent	E4416A	QB41292714	2011-06-21	2012-06-20
4	DC Filter	MPE	23872C	N/A	2011-06-21	2012-06-20

4.1.2 Block Diagram of Test Setup



4.1.3 Limit

According to § 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 125mW.

According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.

4.1.4 Test Procedure

1. The transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the peak power value.
3. Repeat above procedures on all channels needed to be tested.

4.1.5 Test Results

GFSK mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2402	-0.76	0.84	1000	Pass
Mid	2441	-0.18	0.96	1000	Pass
High	2480	-0.32	0.93	1000	Pass

$\pi/4$ -QPSK mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2402	-0.36	0.92	1000	Pass
Mid	2441	0.49	1.12	1000	Pass
High	2480	0.09	1.02	1000	Pass

8DPSK mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2402	-0.22	0.95	1000	Pass
Mid	2441	0.93	1.24	1000	Pass
High	2480	0.29	1.07	1000	Pass

4.2 Band Edges Measurement

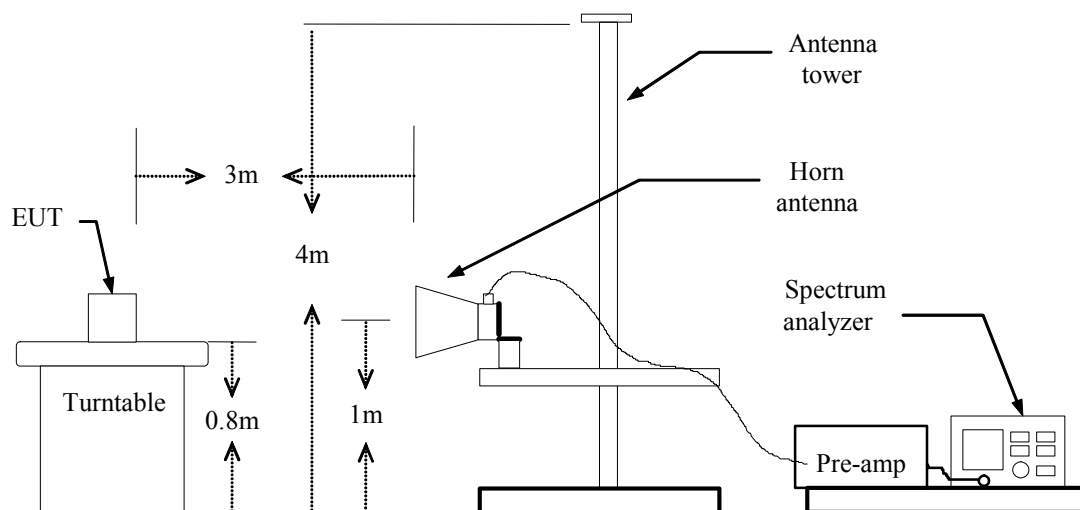
4.2.1 Limit

According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

4.2.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2011-06-21	2012-06-20
2	Antenna	Schwarzbeck	VULB9163	142	2011-06-21	2012-06-20
3	Horn-antenna	Schwarzbeck	BBHA9120D	D:266	2011-06-21	2012-06-20
4	DC Filter	MPE	23872C	N/A	2011-06-21	2012-06-20

4.2.3 Block Diagram of Test Setup



4.2.4 Test Procedure

The EUT is placed on a turntable, which is 0.8m above the ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

Peak: RBW=VBW=1MHz / Sweep=AUTO

Repeat the procedures until the peak versus polarization are measured.

4.2.5 Test Results

CH Low

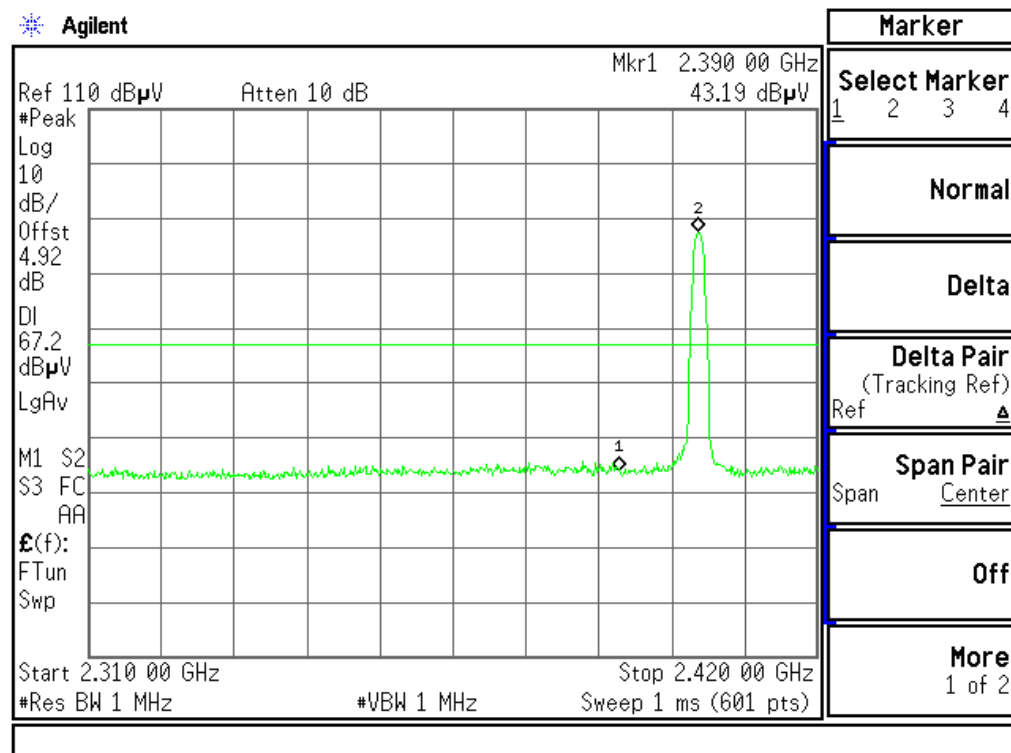
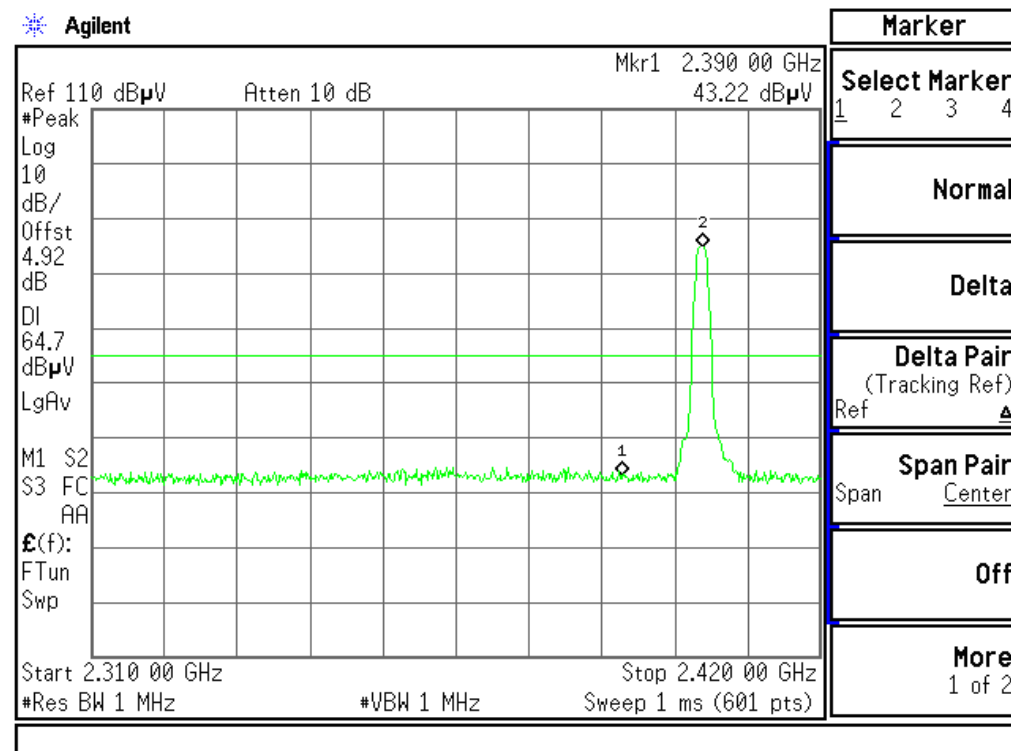
Frequency (MHz)	Ant Pol H/V	PK Value (dBuV)	Ave Value (dBuV)	PK Limit (dBuV)	Ave Limit (dBuV)	PK Margin (dB)	Ave Margin (dB)
2390.00	V	43.19	33.27	74.00	54.00	30.81	20.73
2390.00	H	43.22	33.56	74.00	54.00	30.78	20.44

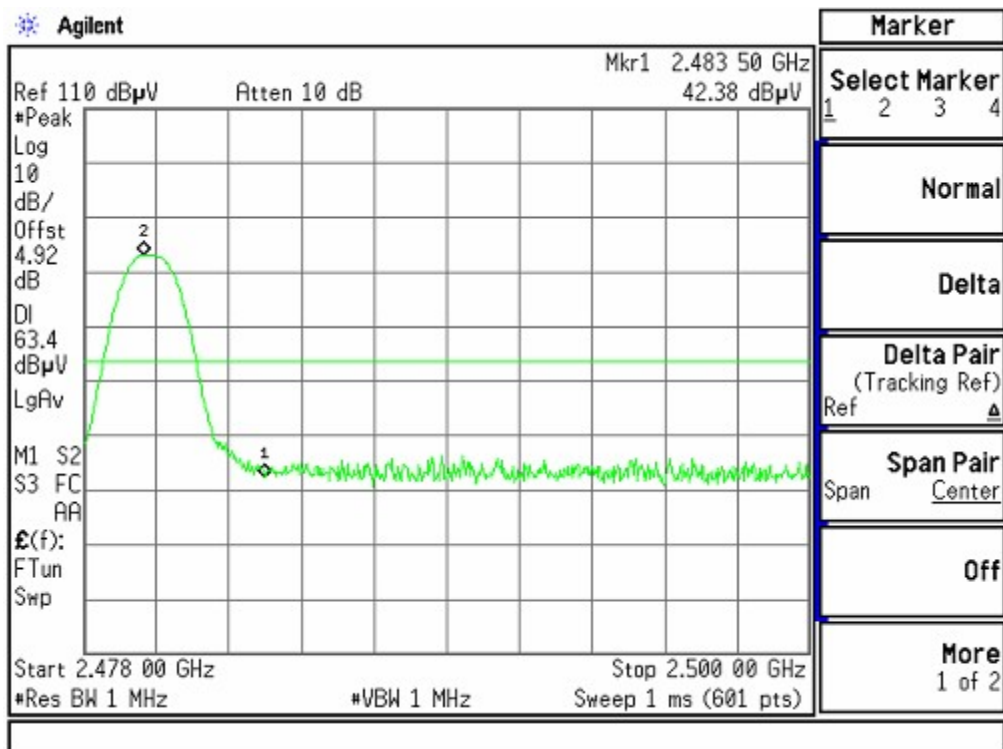
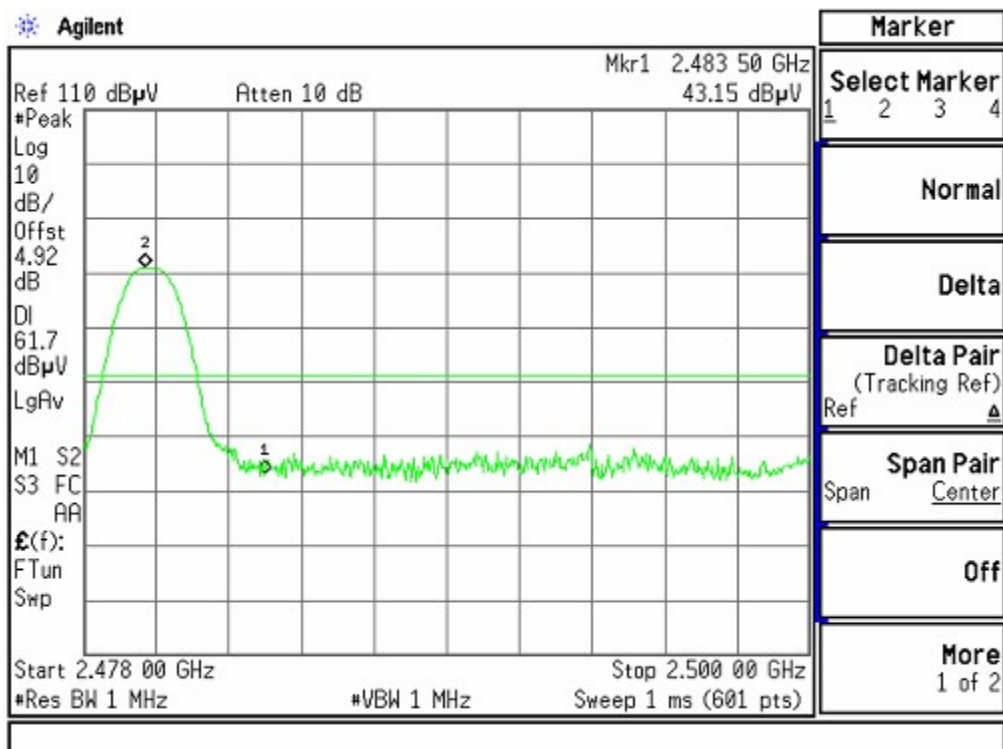
CH High

Frequency (MHz)	Ant Pol H/V	PK Value (dBuV)	Ave Value (dBuV)	PK Limit (dBuV)	Ave Limit (dBuV)	PK Margin (dB)	Ave Margin (dB)
2483.50	V	42.38	33.48	74.00	54.00	31.62	20.52
2483.50	H	43.15	33.62	74.00	54.00	30.85	20.38

* The test data graph please refer to the following page.

Note : The attenuate 20 below fundamental level is less then FCC 15.209 limit, the attenuate 20 below fundamental level is marked in the test data graph.

Band Edges (CH Low)**Detector mode: Peak****Polarity: Vertical****Detector mode: Peak****Polarity: Horizontal**

Band Edges (CH High)**Detector mode: Peak****Polarity: Vertical****Detector mode: Peak****Polarity: Horizontal**

4.3 Frequency Separation

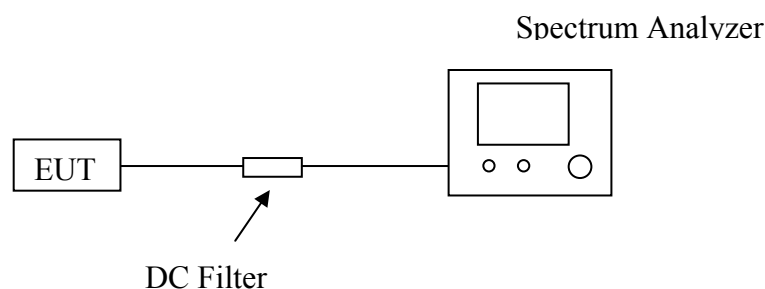
4.3.1 Limit

According to § 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.

4.3.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2011-06-21	2012-06-20
2	RF Cable	Hubersuhne	Sucoflex104	FP2RX2	2011-06-21	2012-06-20
3	DC Filter	MPE	23872C	N/A	2011-06-21	2012-06-20

4.3.3 Block Diagram of Test Setup



4.3.4 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
3. Set center frequency of Spectrum Analyzer = middle of hopping channel.
4. Set the Spectrum Analyzer as RBW = 100kHz, VBW = 100kHz, Span = 3MHz, Sweep = auto.
5. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

4.3.5 Test Results

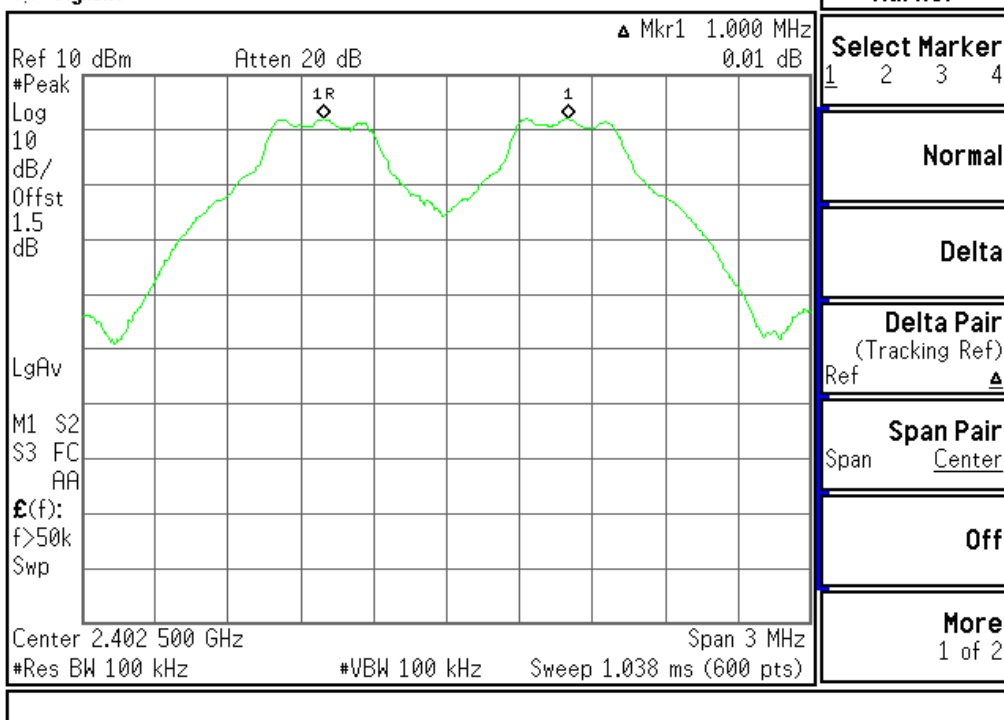
Channel Separation (MHz)	Limit20dB Bandwidth(kHz)	Result
1.000	942.569	Pass

The test data graph please refer to the following page.

Measurement of Channel Separation

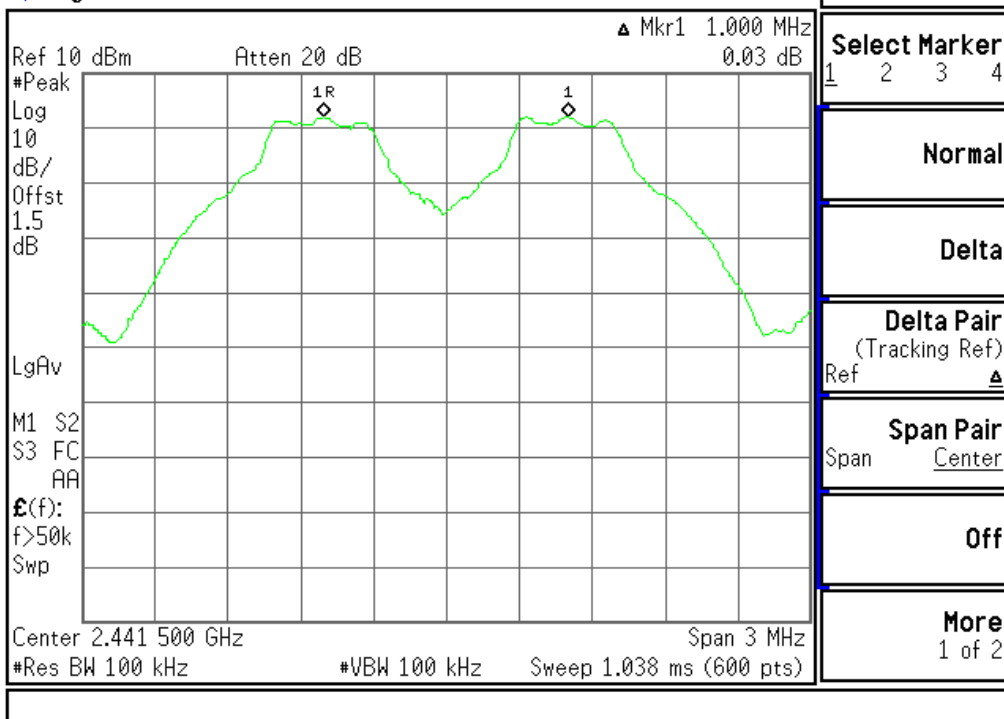
Test frequency: 2402MHz

Agilent



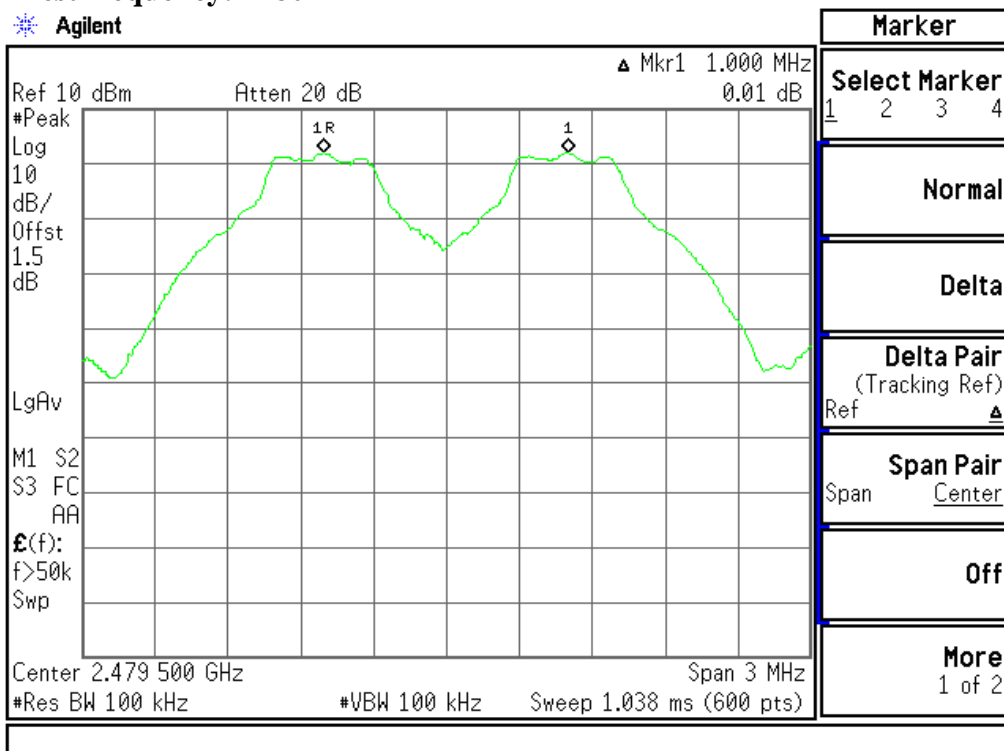
Test frequency: 2441MHz

Agilent

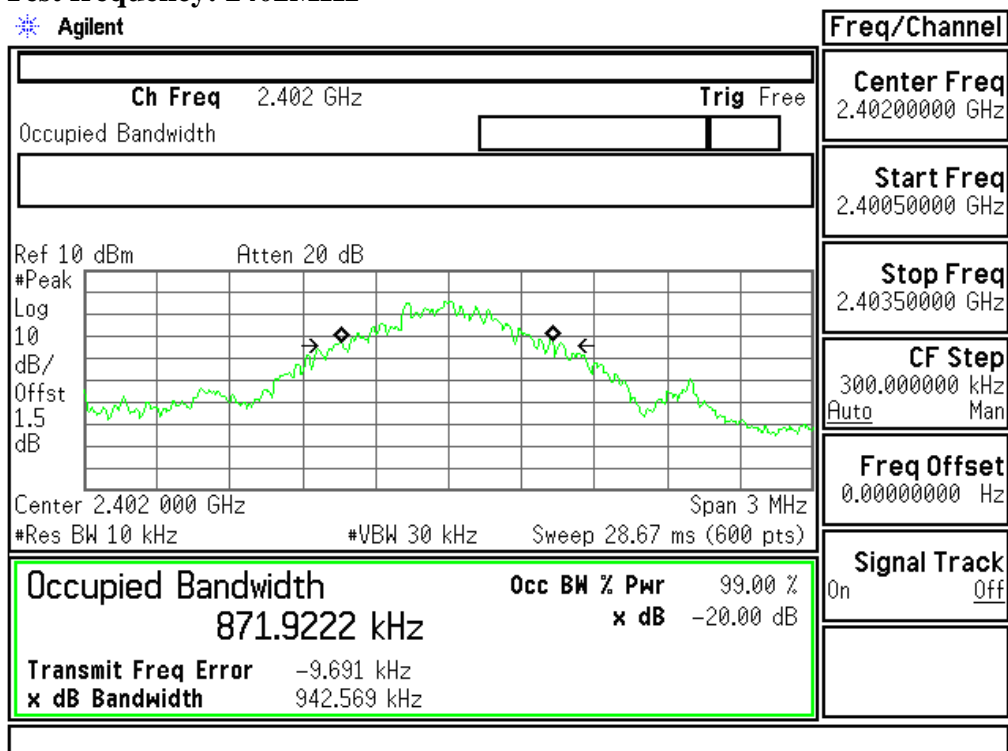


Test frequency: 2480MHz

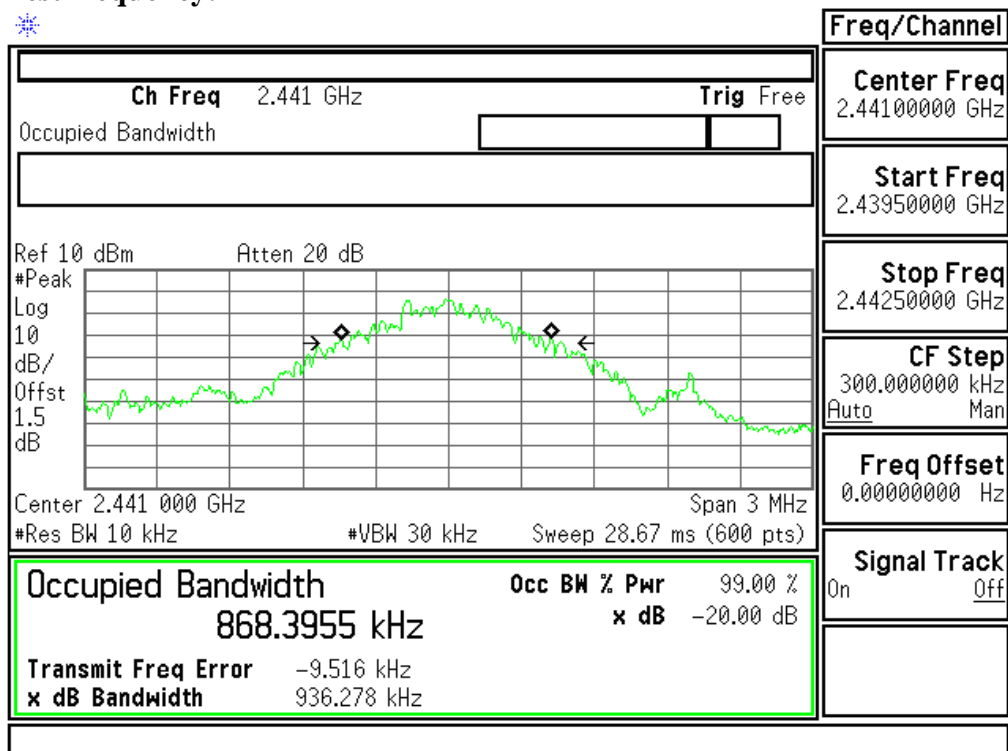
Agilent

**Measurement of 20dB Bandwidth****Test frequency: 2402MHz**

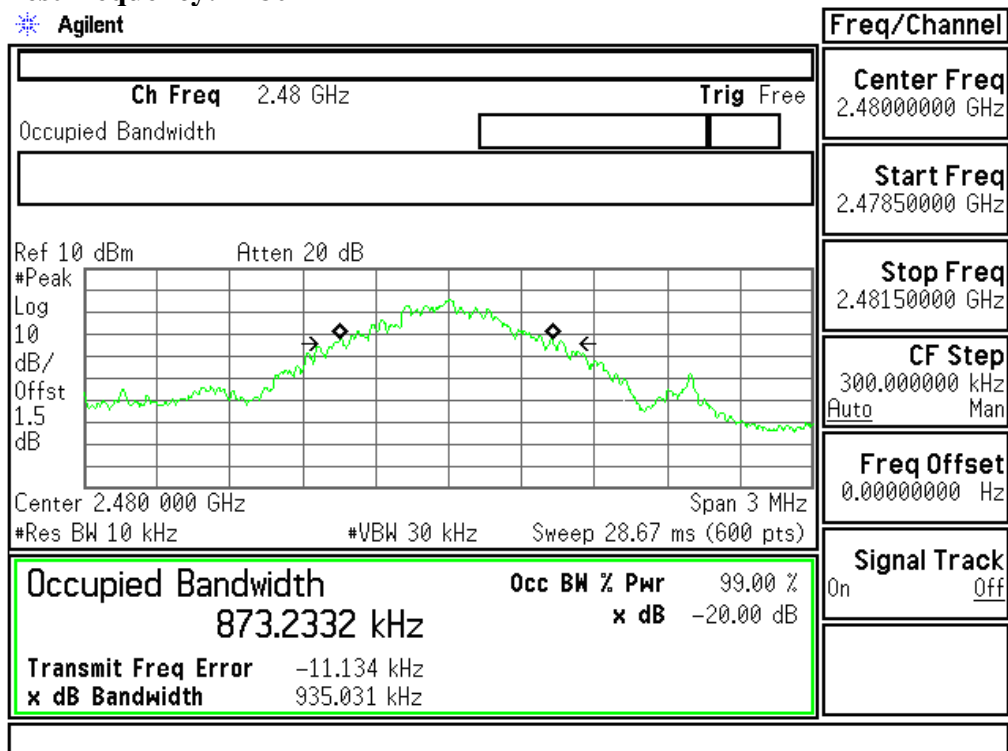
Agilent



Test frequency: 2441MHz



Test frequency: 2480MHz



4.4 Number Of Hopping Frequency

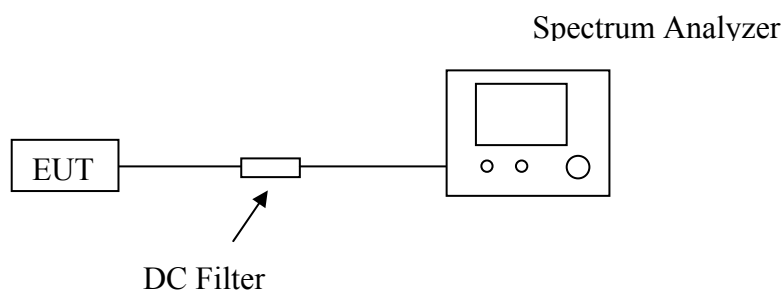
4.4.1 Limit

According to § 15.247(a)(1)(ii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 75 hopping frequencies.

4.4.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2011-06-21	2012-06-20
2	RF Cable	Hubersuhne	Sucoflex104	FP2RX2	2011-06-21	2012-06-20
3	DC Filter	MPE	23872C	N/A	2011-06-21	2012-06-20

4.4.3 Block Diagram of Test Setup



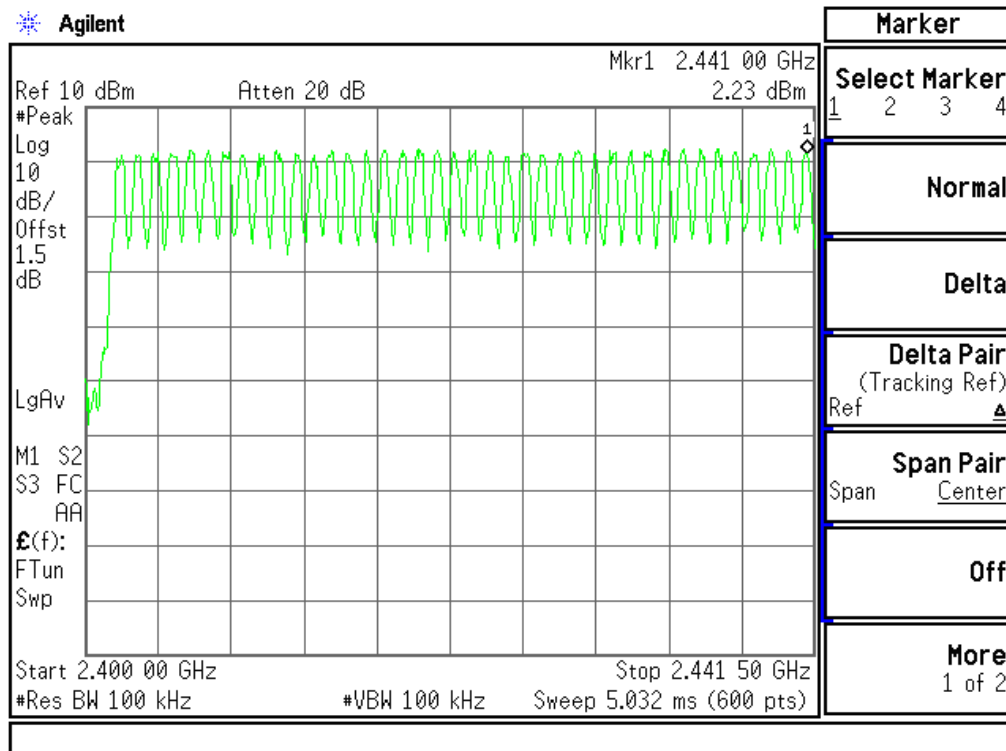
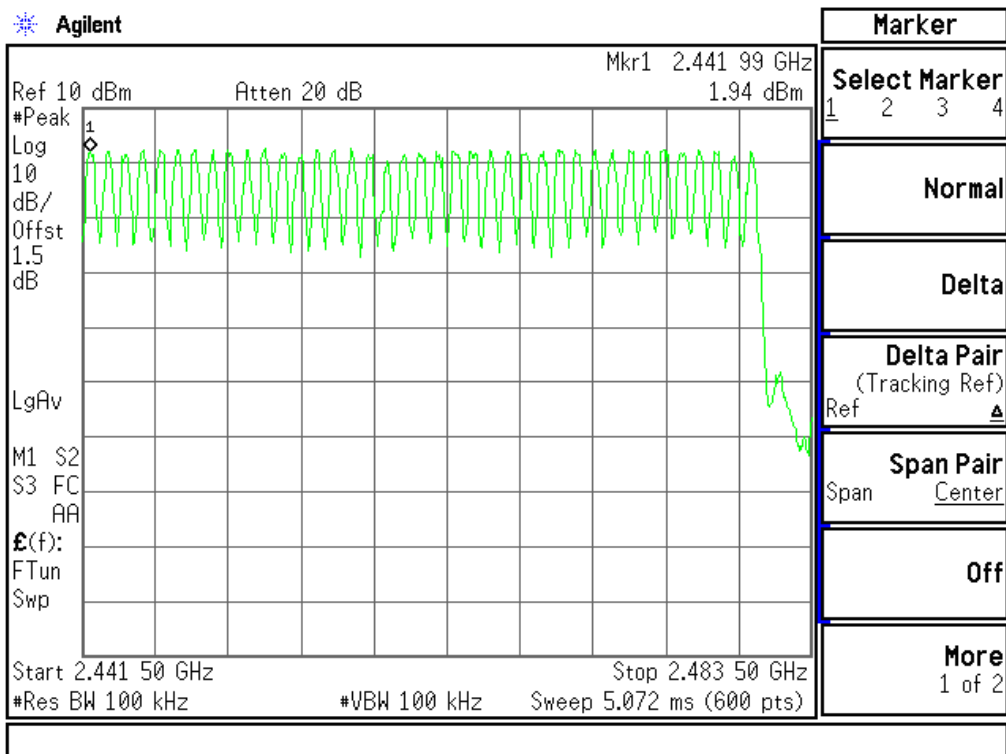
4.4.4 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
3. Set Spectrum Analyzer Start=2400MHz, Stop = 2483.5MHz, Sweep = auto.
4. Set the Spectrum Analyzer as RBW, VBW=100kHz.
5. Max hold, view and count how many channel in the band.

4.4.5 Test Results

Result (No. of CH)	Limit (No. of CH)	Result
79	>75	PASS

The test data graph please refer to the following page.

Channel Number**2.4 GHz – 2.4415 GHz****2.4415 GHz – 2.4835 GHz**

4.5 Time Of Occupancy (Dwell Time)

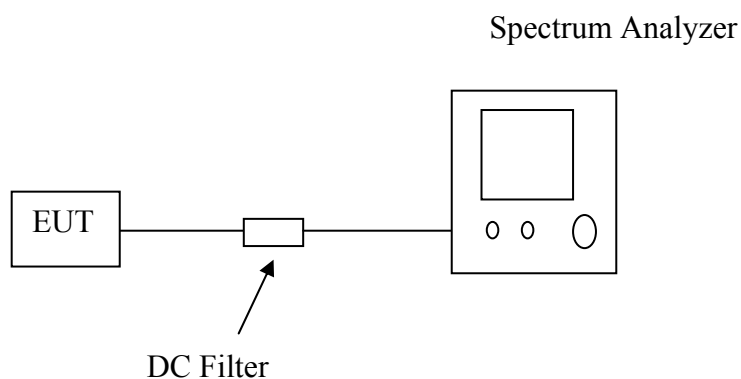
4.5.1 Limit

According to § 15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

4.5.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2011-06-21
2	RF Cable	Hubersuhne	Sucoflex104	FP2RX2	2011-06-21
3	DC Filter	MPE	23872C	N/A	2011-06-21

4.5.3 Block Diagram of Test Setup



4.5.4 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
3. Set center frequency of Spectrum Analyzer = operating frequency.
4. Set the Spectrum Analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
5. Repeat above procedures until all frequency measured were complete.

4.5.5 Test Results

DH 1

$$0.400 * (1600/2)/79 * 31.6 = 128.00 \text{ (ms)}$$

DH 3

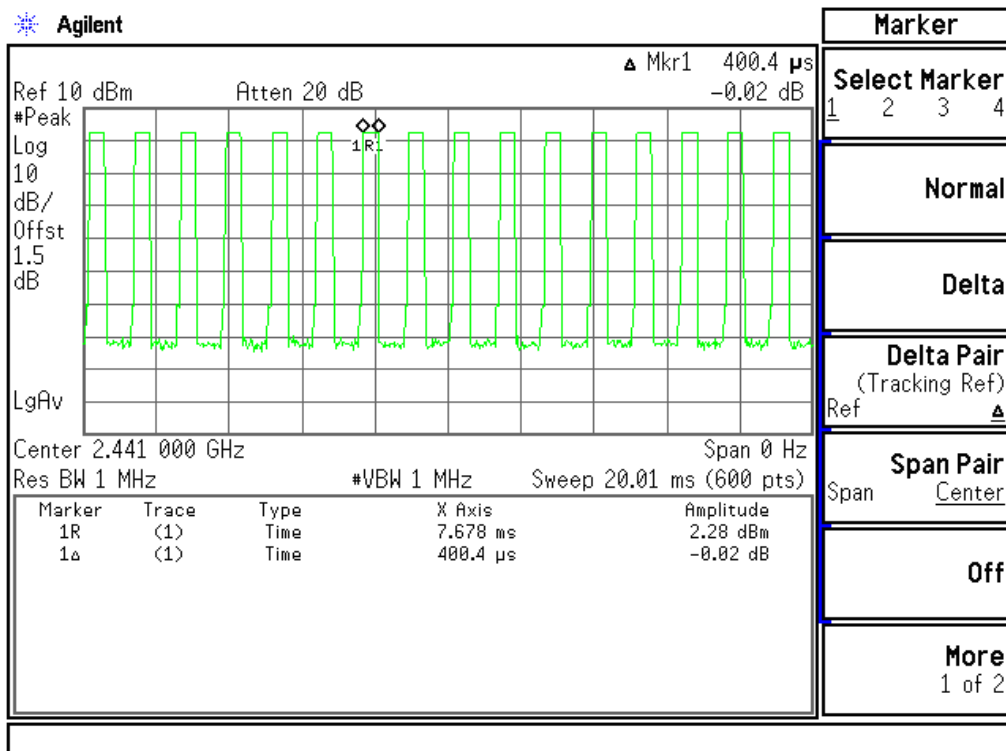
$$1.64 * (1600/4)/79 * 31.6 = 262.40 \text{ (ms)}$$

DH 5

$$2.932 * (1600/6)/79 * 31.6 = 312.77 \text{ (ms)}$$

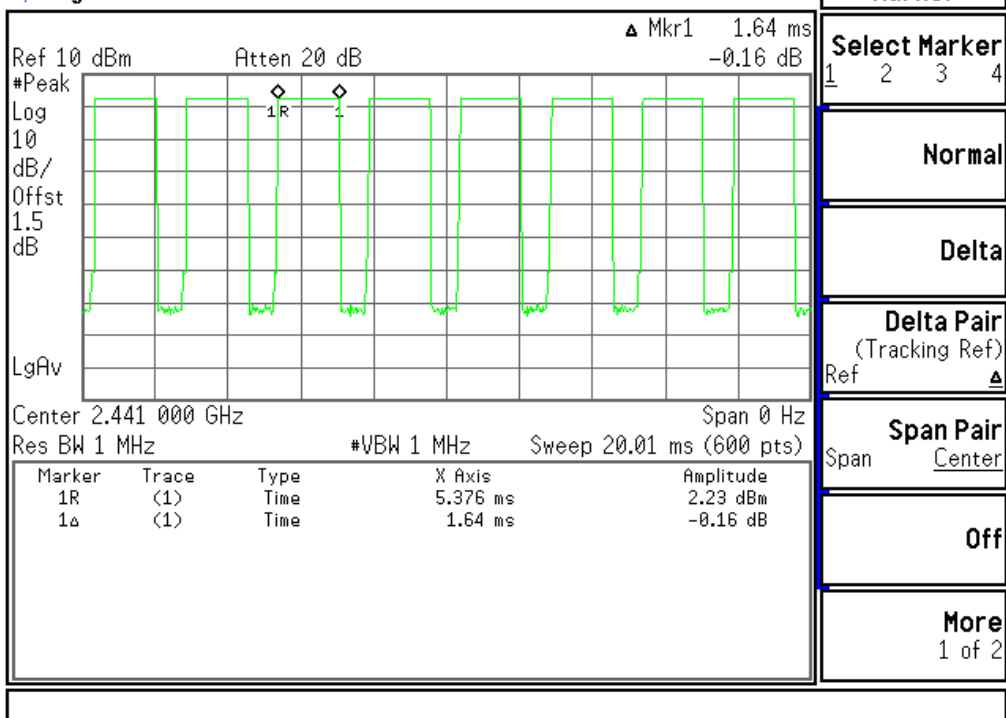
The test data graph please refer to the following:

Middle Channel For DH1



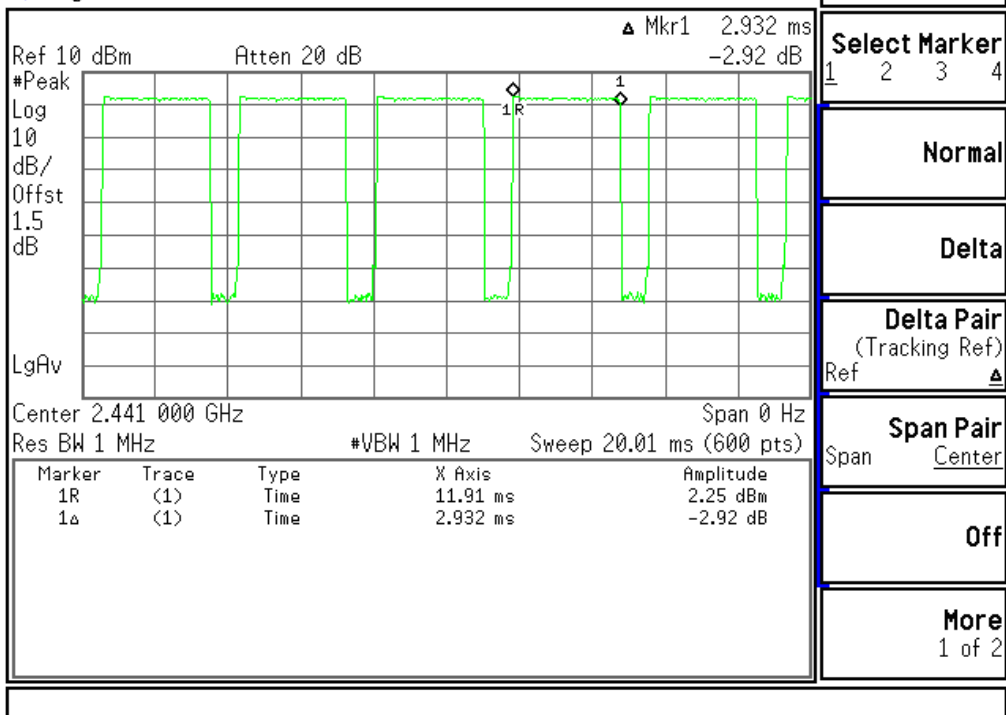
Middle Channel For DH3

Agilent



Middle Channel For DH5

Agilent



4.6 Spurious Emissions

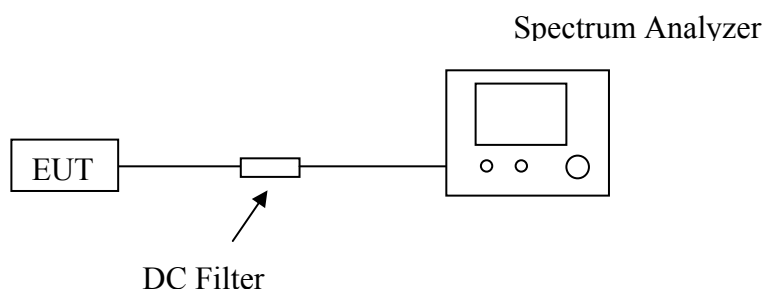
4.6.1 Limit

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. 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)).

4.6.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2011-06-21	2012-06-20
2	RF Cable	Hubersuhne	Sucoflex104	FP2RX2	2011-06-21	2012-06-20
3	DC Filter	MPE	23872C	N/A	2011-06-21	2012-06-20

4.6.3 Block Diagram of Test Setup



4.6.4 Test Procedure

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

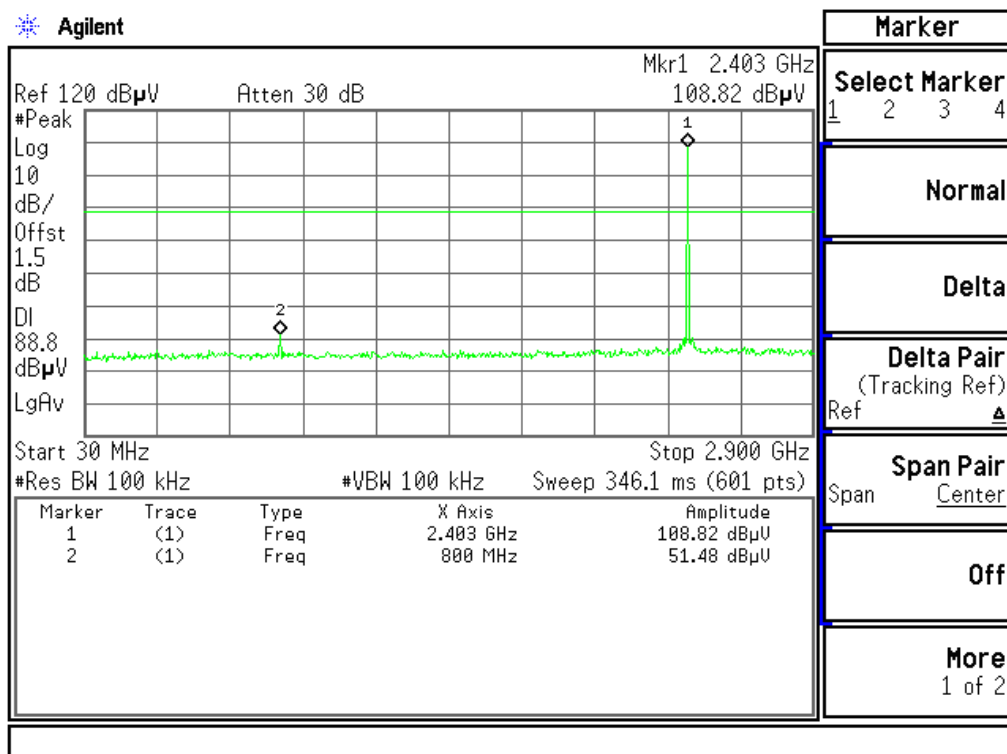
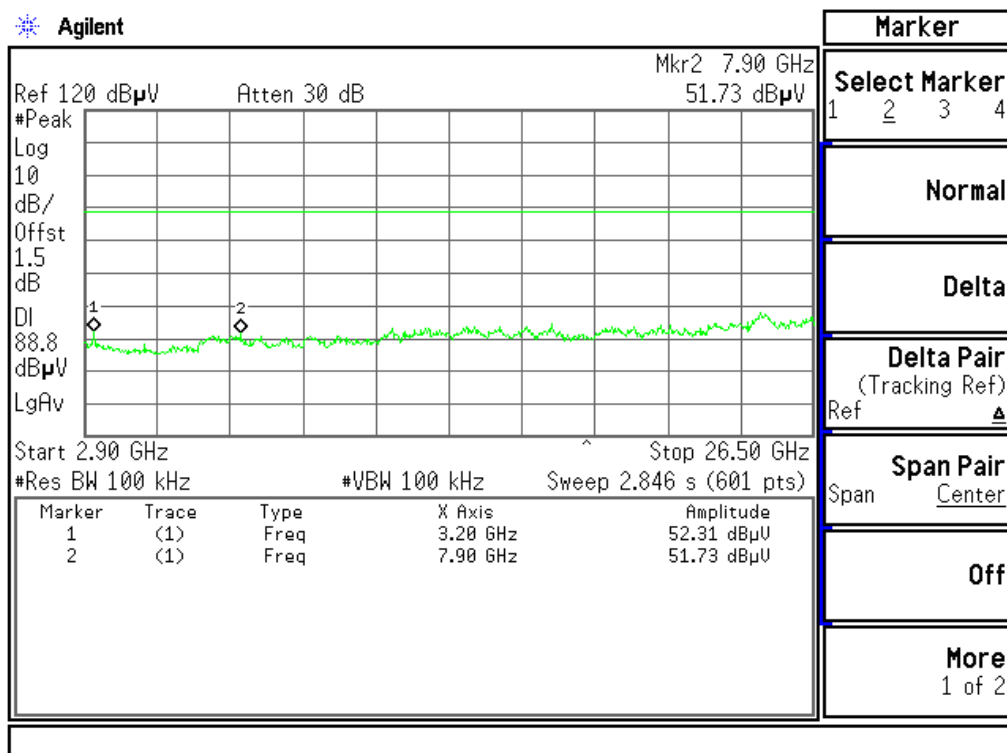
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 100 KHz.

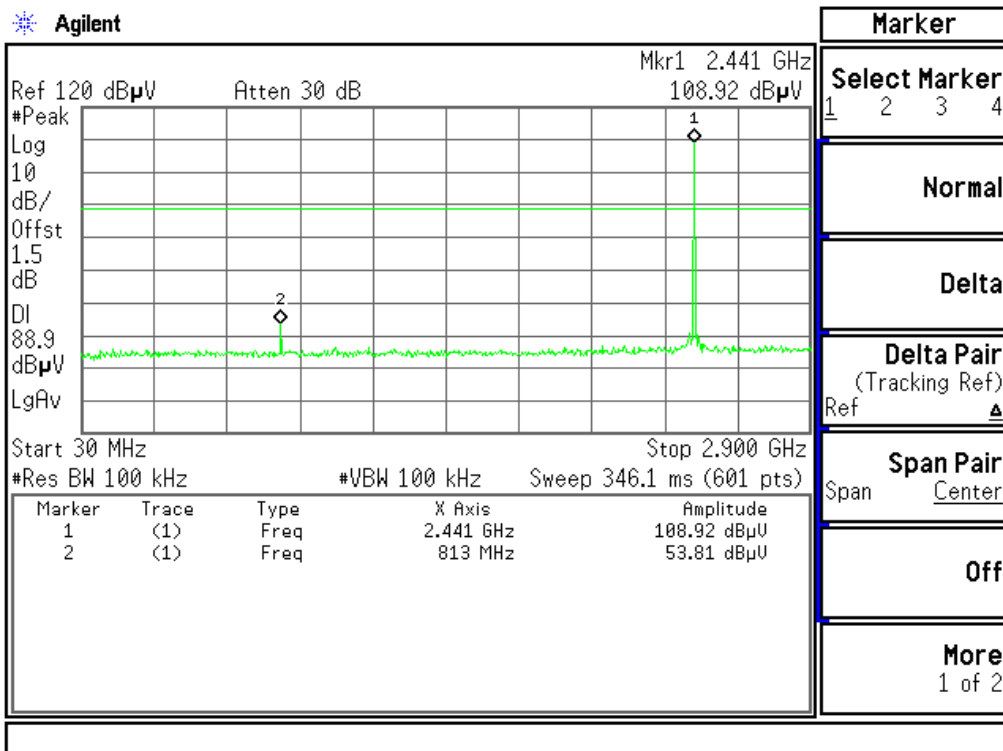
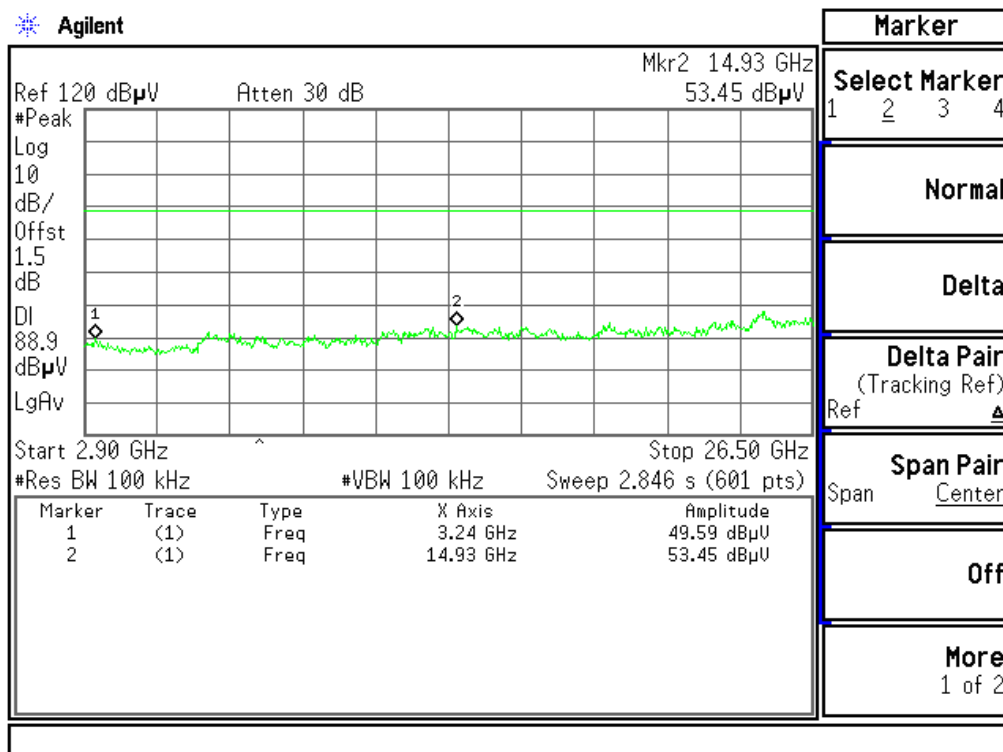
Measurements are made over the 9kHz to 26.5GHz range with the transmitter set to the lowest, middle, and highest channels. *No emission found between lowest internal used/generated frequency to 30 MHz.*

4.6.5 Test Results

No non-compliance noted

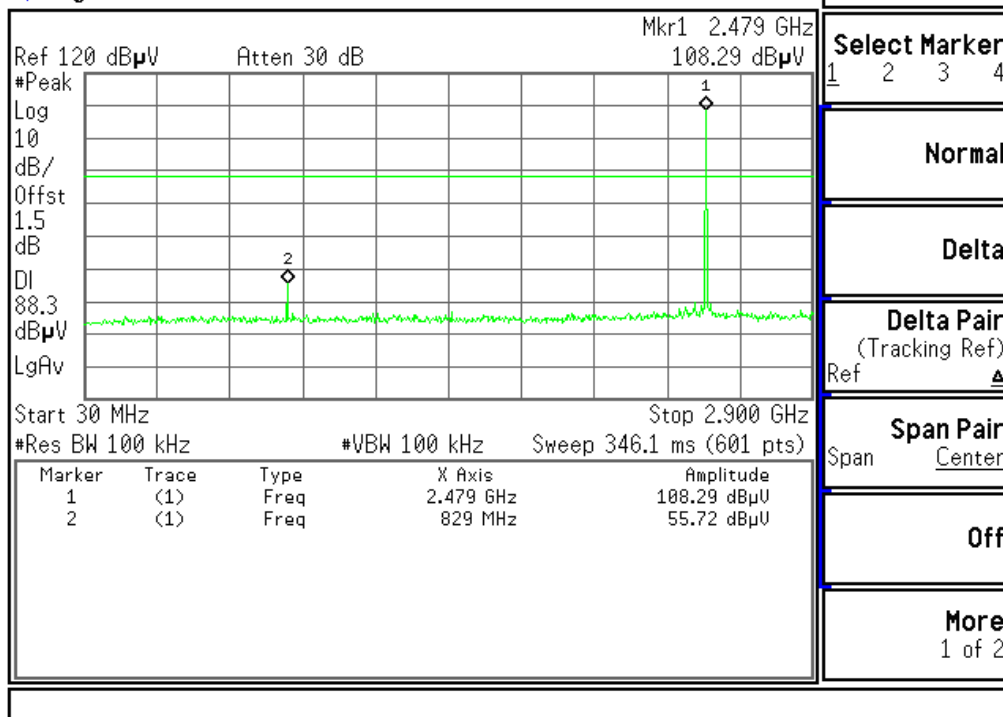
The test data graph please refer to the following page.

Test Plot**CH Low****30MHz ~ 2.9GHz****2.9GHz ~ 26.5GHz**

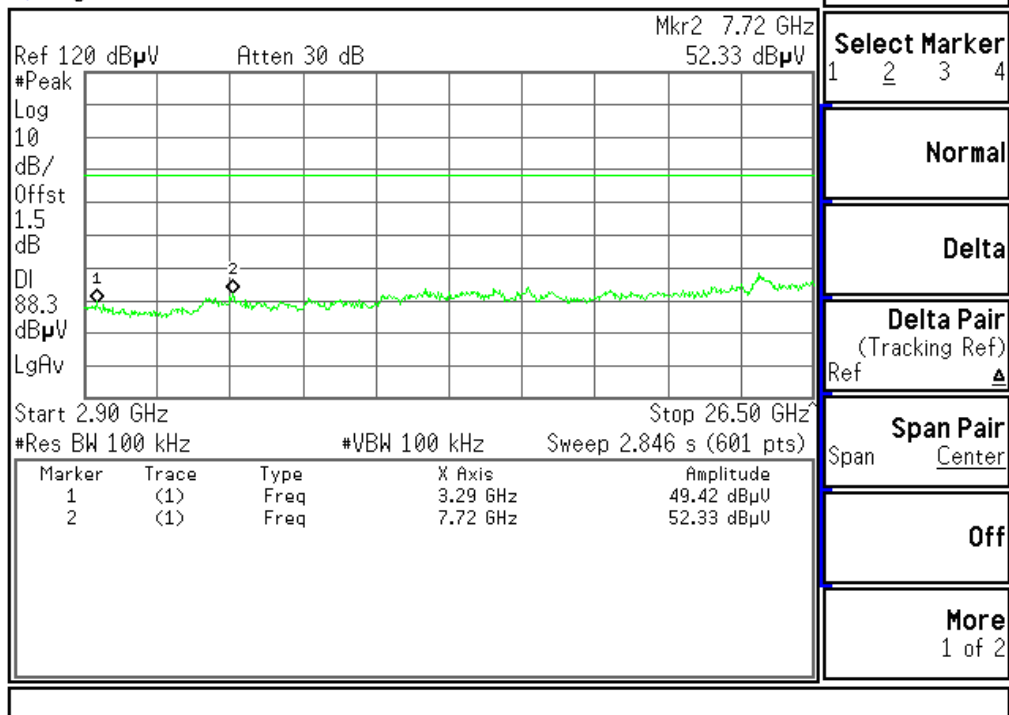
CH Mid**30MHz ~ 2.9GHz****2.9GHz ~ 26.5GHz**

CH High**30MHz ~ 2.9GHz**

* Agilent

**2.9GHz ~ 26.5GHz**

* Agilent

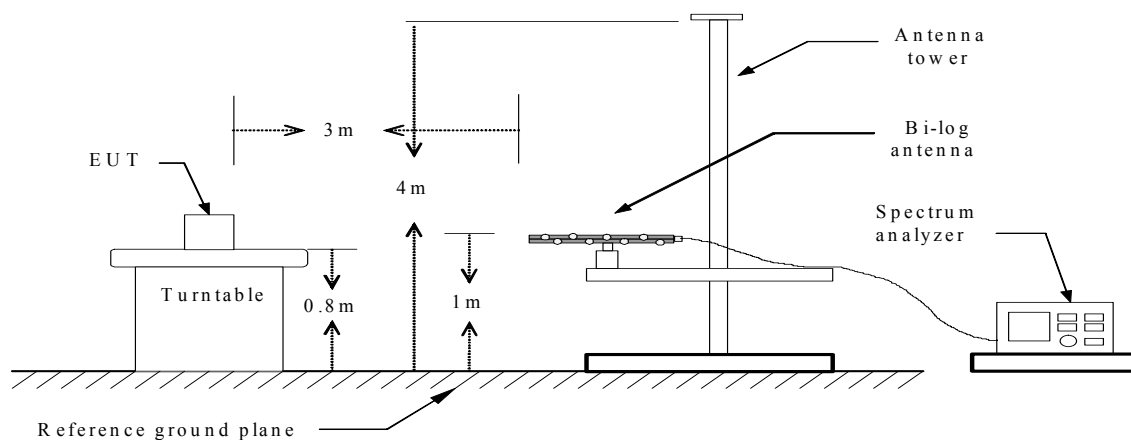


5. RADIATED EMISSION MEASUREMENT

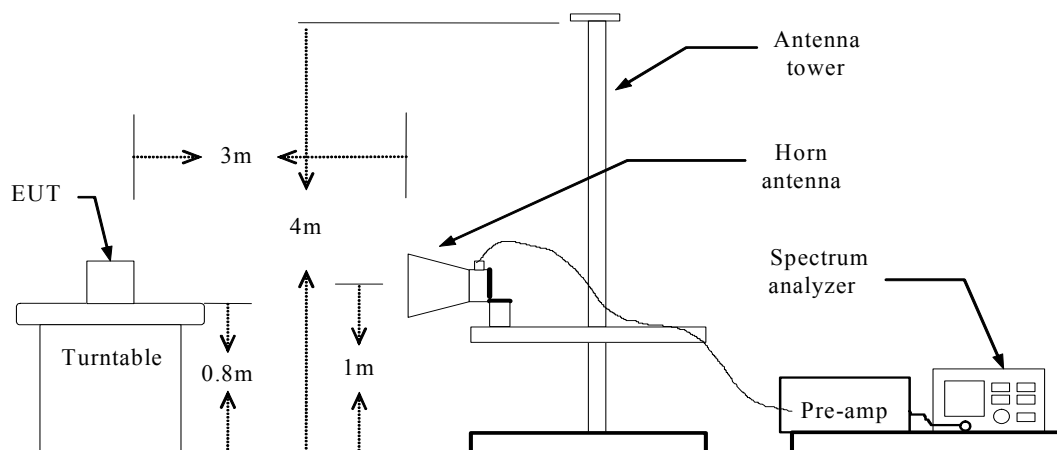
5.1 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2011-06-21	2012-06-20
2	Test Receiver	R & S	ESCS30	828985/018	2011-06-21	2012-06-20
3	Loop antenna	EMCO	6502	0042963	2011-06-21	2012-06-20
4	Log per Antenna	Schwarzbeck	VULB9163	142	2011-06-21	2012-06-20
5	Horn-antenna	SCHWARZBEC K	BBHA9120D	D:266	2011-06-21	2012-06-20
6	DC Filter	MPE	23872C	N/A	2011-06-21	2012-06-20

5.2 Block Diagram of Test Setup



Below 1 GHz



Above 1 GHz

5.3 Radiated Emission Limit

15.205 (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	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

Part 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector.

Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

Part 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

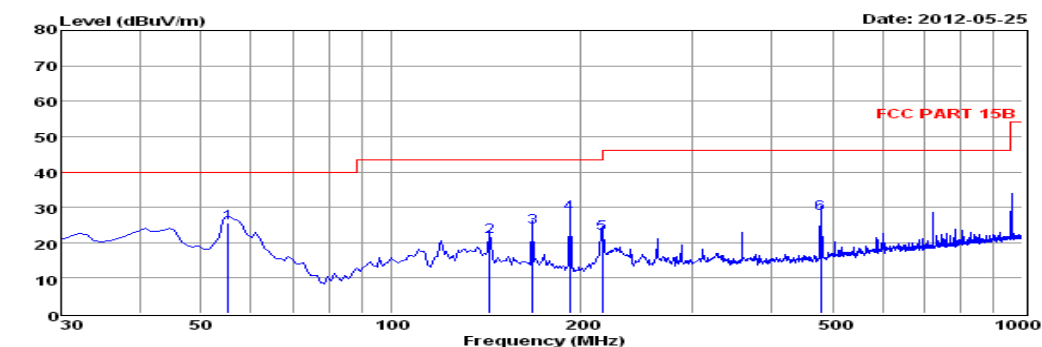
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100**	3
88–216	150**	3
216–960	200**	3
Above 960	500	3

5.4 Test Results

PASS.

The test data please refer to following page.

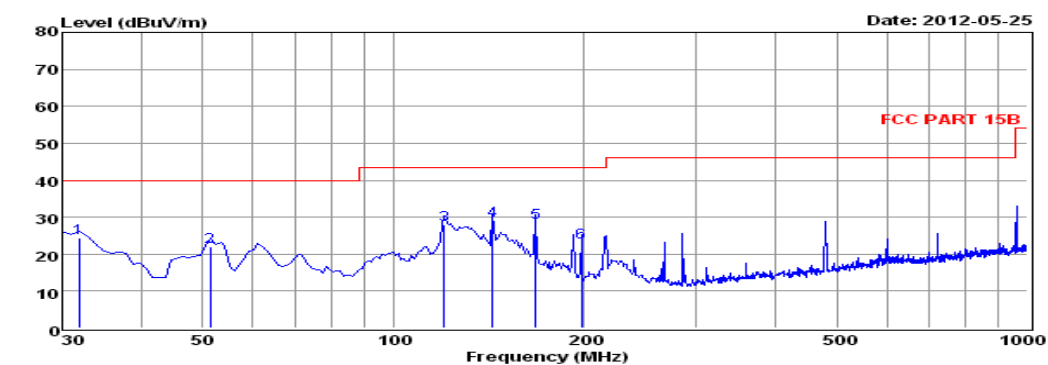
Below 1GHz



Env. /Ins: 24°C/56%
 EUT: Bluetooth Stereo Headset
 M/N: HEO1
 Power Rating: DV 5V
 Test Mode: ON
 Operator: KANO
 Memo:
 pol: HORIZONTAL

	Freq.	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	55.22	42.28	0.46	13.01	30.15	25.60	40.00	-14.40	QP
2	143.49	42.91	0.71	8.21	30.20	21.63	43.50	-21.87	QP
3	167.74	44.82	0.77	8.90	30.20	24.29	43.50	-19.21	QP
4	191.99	47.09	0.76	10.56	30.20	28.21	43.50	-15.29	QP
5	216.24	40.96	0.88	11.08	30.19	22.73	46.00	-23.27	QP
6	479.11	40.85	1.39	16.05	30.06	28.23	46.00	-17.77	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.
 3. The emission levels that are 20dB below the official limit are not reported.



Env. / Ins: 24°C/56%
EUT: Bluetooth Stereo Headset
M/N: HEO1
Power Rating: DV 5V
Test Mode: ON
Operator: KANO
Memo:
pol: VERTICAL

	Freq.	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	31.94	41.67	0.37	12.32	30.12	24.24	40.00	-15.76	QP
2	51.34	38.50	0.54	13.19	30.15	22.08	40.00	-17.92	QP
3	120.21	47.01	0.64	10.45	30.20	27.90	43.50	-15.60	QP
4	143.49	50.31	0.71	8.21	30.20	29.03	43.50	-14.47	QP
5	167.74	49.20	0.77	8.90	30.20	28.67	43.50	-14.83	QP
6	197.81	42.12	0.84	10.57	30.20	23.33	43.50	-20.17	QP

Note: 1. All readings are Quasi-peak values.
2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.
3. The emission levels that are 20dB below the official limit are not reported.

Above 1GHz

Operation Mode: TX/ CH Low
Temperature: 23°C

Test Date: 2012-05-25
Humidity: 50 % RH

Freq. (MHz)	Ant. Pol H/V	Peak	AV	Ant. / CL CF (dB)	Actual Fs		Peak	AV	PK Margin (dB)	AV Margin (dB)
		Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
4804.23	V	42.37	29.46	10.98	53.35	40.44	74	54	-20.65	-13.56
7207.74	V	33.28	20.75	18.54	51.82	39.29	74	54	-22.18	-14.71
4804.48	H	42.13	30.52	10.98	53.11	41.5	74	54	-20.89	-12.5
7206.62	H	34.27	22.67	18.53	52.80	41.2	74	54	-21.20	-12.8

Operation Mode: TX/ CH Mid
Temperature: 23°C

Test Date: 2012-05-25
Humidity: 50 % RH

Freq. (MHz)	Ant. Pol H/V	Peak	AV	Ant. / CL CF (dB)	Actual Fs		Peak	AV	PK Margin (dB)	AV Margin (dB)
		Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
4882.78	V	41.22	27.52	10.98	52.20	38.50	74	54	-21.80	-15.5
7324.49	V	31.64	21.93	18.54	50.18	40.47	74	54	-23.82	-13.53
4882.72	H	41.68	30.17	10.98	52.66	41.15	74	54	-21.34	-12.85
7324.13	H	34.16	22.43	18.53	52.69	40.96	74	54	-21.31	-13.04

Operation Mode: TX/ CH High
Temperature: 23°C

Test Date: 2012-05-25
Humidity: 50 % RH

Freq. (MHz)	Ant. Pol H/V	Peak	AV	Ant. / CL CF (dB)	Actual Fs		Peak	AV	PK Margin (dB)	AV Margin (dB)
		Reading (dBuV)	Reading (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)		
4960.11	V	42.06	28.24	10.98	53.04	39.22	74	54	-23.96	-14.78
7441.69	V	32.16	21.69	18.54	50.70	40.23	74	54	-23.30	-13.77
4960.25	H	39.45	27.61	10.98	50.43	38.59	74	54	-51.53	-15.41
7440.00	H	32.21	21.36	18.53	50.74	39.89	74	54	-51.26	-14.11

Notes:

1. Measuring frequencies from 9k~10th harmonic (ex. 26GHz), No emission found between lowest internal used/generated frequency to 30 MHz.
2. Radiated emissions measured in frequency range from 9k~10th harmonic (ex. 26GHz) were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

6. ANTENNA REQUIREMENT

6.1 Standard Applicable

According to §15.203, Antenna requirement.

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak 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.

6.2 Antenna Connected Construction

The directional gains of antenna used for transmitting is 1.84 dBi, and EUT is equipped with an onboard PCB antenna and no consideration of replacement. Please see EUT photo for details.

7. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

HE02	HE03	HE04	HE05
------	------	------	------

Belong to the tested device:

Product description : Bluetooth Stereo Headset

Model name : HE01

No additional models were tested.

-----THE END OF REPORT-----