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

FOR

Extech Instruments Corporation

Wireless Receiver

Model No.: EX3000

Prepared for	:	Extech Instruments Corporation
Address	:	9 Townsend West, Nashua, NH 03063, USA
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	:	December 23, 2011
Number of tested samples	:	1
Report Number	:	LCS1112233665FB
Date of Test	:	December 23, 2011 - January 13, 2012
Date of Report	:	January 13, 2012

TEST REPORT
FCC CFR 47 PART 15 C(15.247)

Report Reference No.	**:**	**LCS1112233665FB**
Date of issue	:	January 13, 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, China
Testing location/ procedure	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's name	**:**	**Extech Instruments Corporation**
Address	:	9 Townsend West, Nashua, NH 03063, USA
Test specification		
Standard	:	FCC CFR 47 PART 15 Subpart C: 2011, ANSI C63.4-2009
Test Report Form No.....	**:**	LCSEMC-1.0
TRF Originator	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	:	Dated 2011-03

Test item description.	**:**	**Wireless Receiver**
Trade Mark	:	EXTECH
Manufacturer.....	:	Meet (China) Ltd.
Model/Type reference.....	:	EX3000
Ratings	:	DC 3.7V (Frequency Range:2402.00-2480.00MHz)
Result	:	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Bobo Li	Vito Cao	Gavin Liang
Bobo Li/ File administrators	Vito Cao/ Technique principal	Gavin Liang/ Manager

EMC -- TEST REPORT

Test Report No. : LCS1112233665FB	January 13, 2012 Date of issue

Type / Model.....	: EX3000
EUT.....	: Wireless Receiver
Applicant.....	**: EXTECH INSTRUMENTS CORPORATION**
Address.....	: 9 Townsend West, Nashua, NH 03063, USA
Telephone.....	: /
Fax.....	: /
Contact.....	: /
Manufacturer.....	**: Meet (China) Ltd.**
Address.....	: Flat C, 11/F., China Trade Centre, 122-124 Wai Yip St., Kwun Tong, Kowloon, Hong Kong
Telephone.....	: /
Fax.....	: /
Contact.....	: /
Factory.....	: /
Address.....	: /
Telephone.....	: /
Fax.....	: /
Contact.....	: /

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

Test Report Description Page

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT : Wireless Receiver

Model Number : EX3000

Power Supply : DC 3.7V

Frequency Range : 2402.00-2480.00MHz, GFSK

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	±2.96dB	(1)
		200MHz~1000MHz	±3.10dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)

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

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 Description Of Test Modes

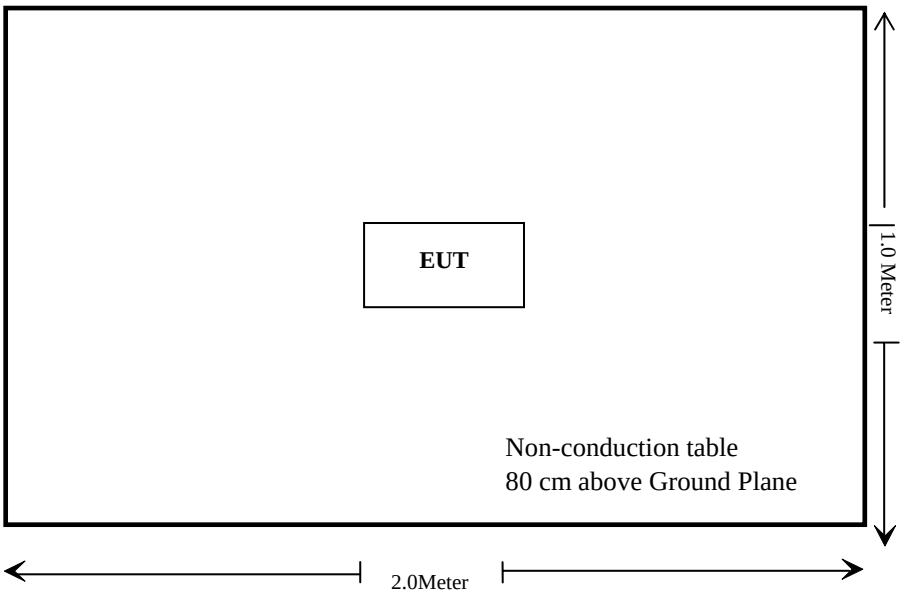
The EUT has been tested under operating condition.

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

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only.

Then, the worst case is FHSS Channel Low (2402MHz), Mid (2442MHz) and High (2480MHz), these were chosen for full testing.

3. CONNECTION DIAGRAM OF TEST SYSTEM



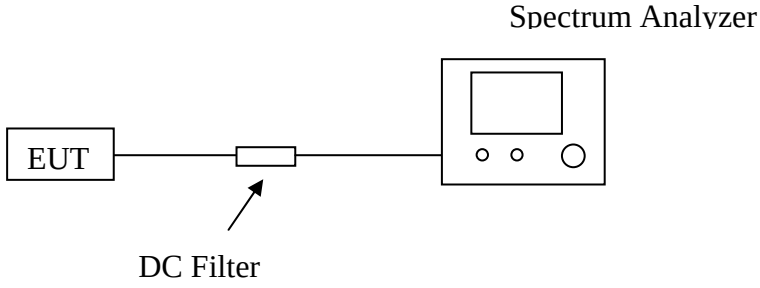
4. FCC PART 15.247 REQUIREMENTS

4.1 Peak Power

4.1.1 Test Equipment

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

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 125 mW.

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

The transmitter output is connected to the Power Meter or spectrum analyzer.

4.1.5 Test Results

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2402	0.93	1.24	125	Pass
Mid	2442	-0.22	0.95	125	Pass
High	2480	0.29	1.07	125	Pass

4.2 Band Edges Measurement

4.2.1 Limit

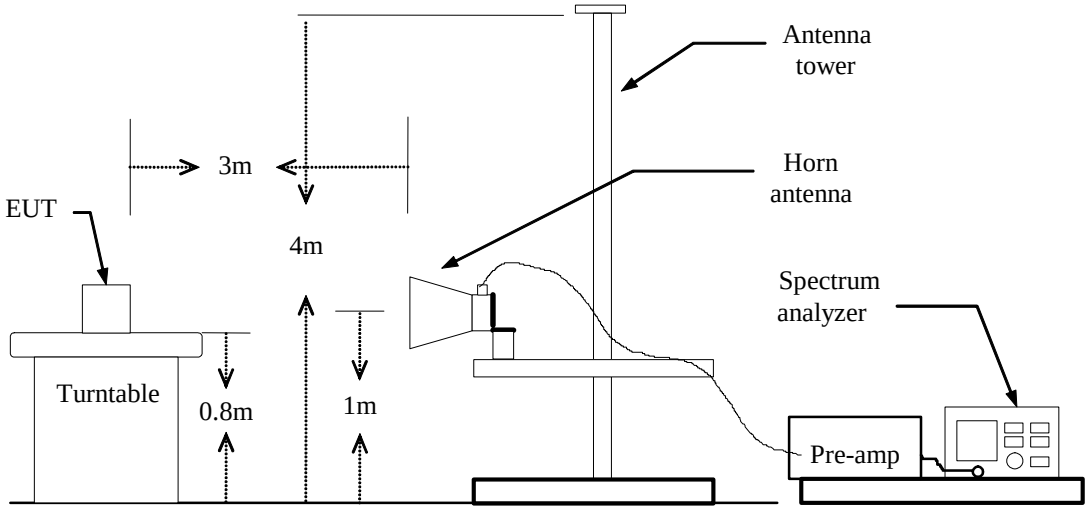
According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains 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 in15.209(a).

4.2.2 Test Equipment

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

4
4

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

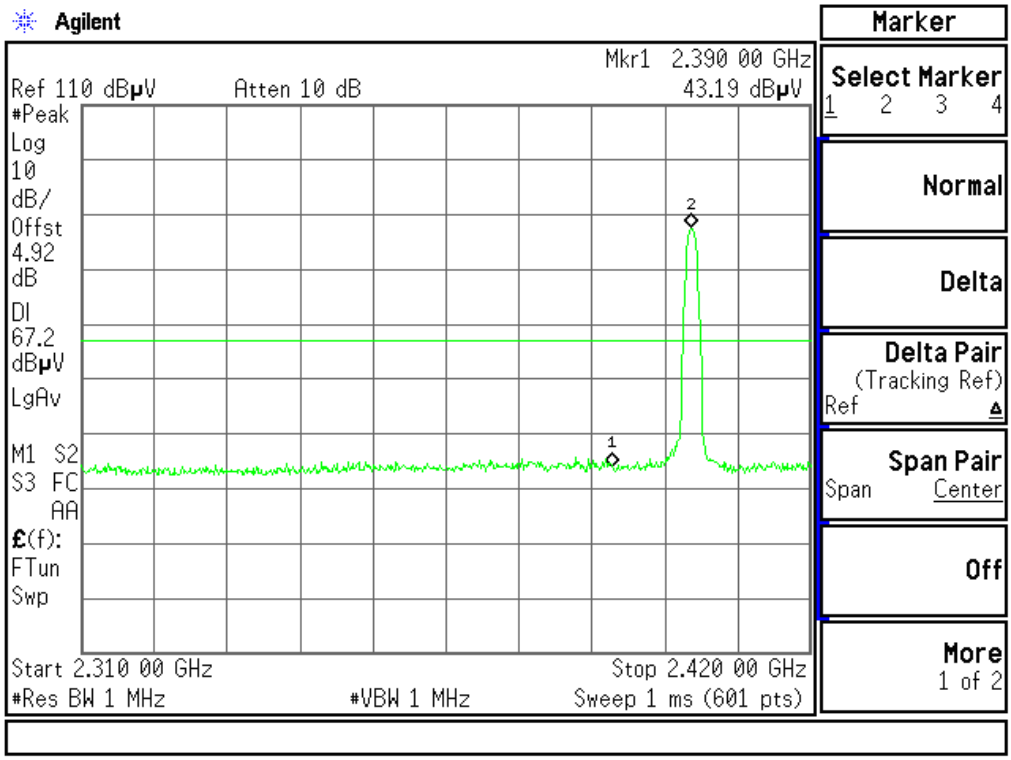
Frequency (MHz)	Ant Pol H/V	PK Value (dBuV)	Ave Value (dBuV)	PK Limit (dBuV)	Ave Limit (dBuV)	PK Margin (dB)	Ave Margin (dB)
2483.50	V	42.38	33.48	74.00	54.00	31.62	20.52
2483.50	H	43.15	33.62	74.00	54.00	30.85	20.38

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

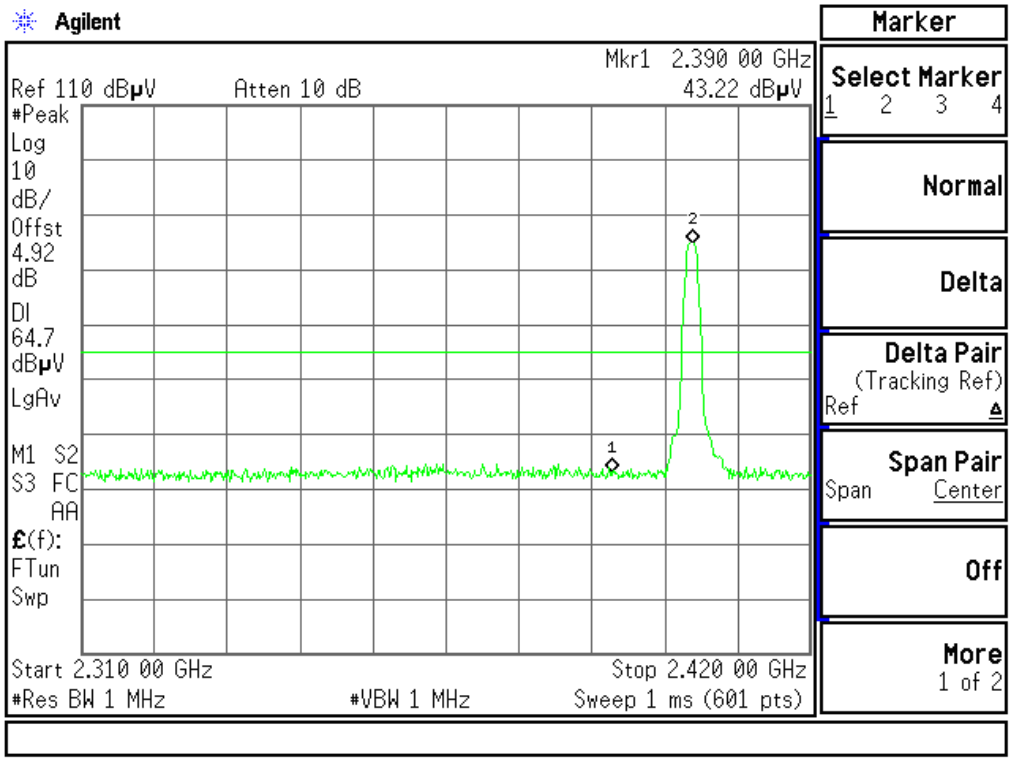
Note : The attenuate 20 below fundamental level is less then FCC 15.209 limit, the attenuate 20 below fundamental level is marked in the test data graph.

Band Edges (CH Low)

Detector mode: Peak Polarity: Vertical

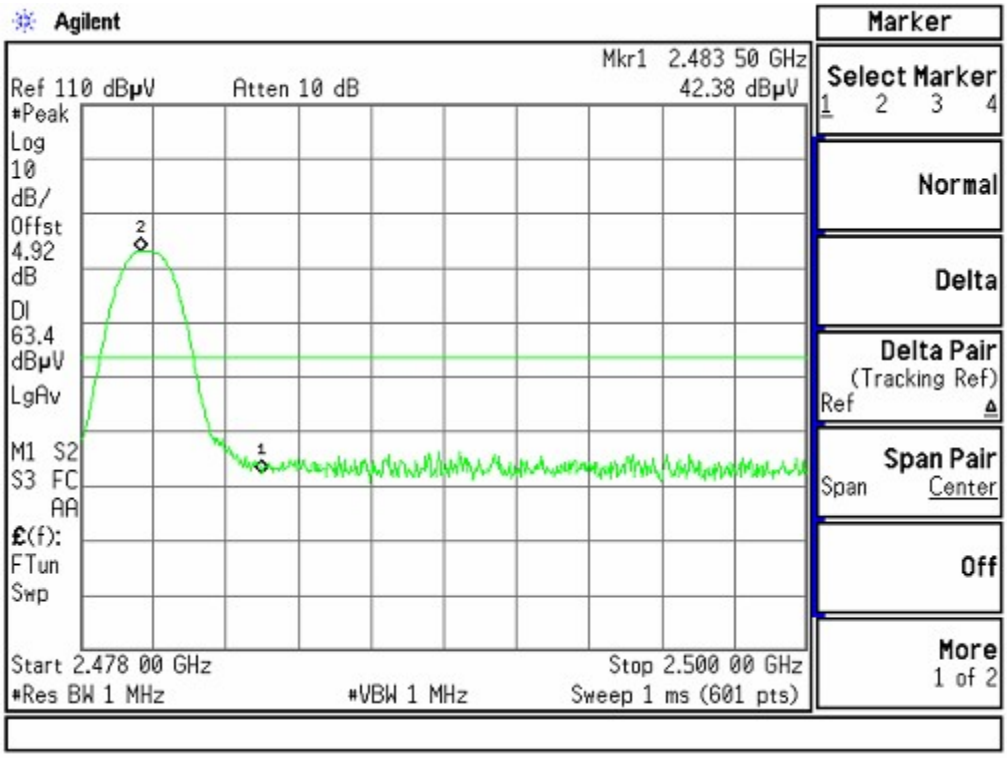


Detector mode: Peak Polarity: Horizontal

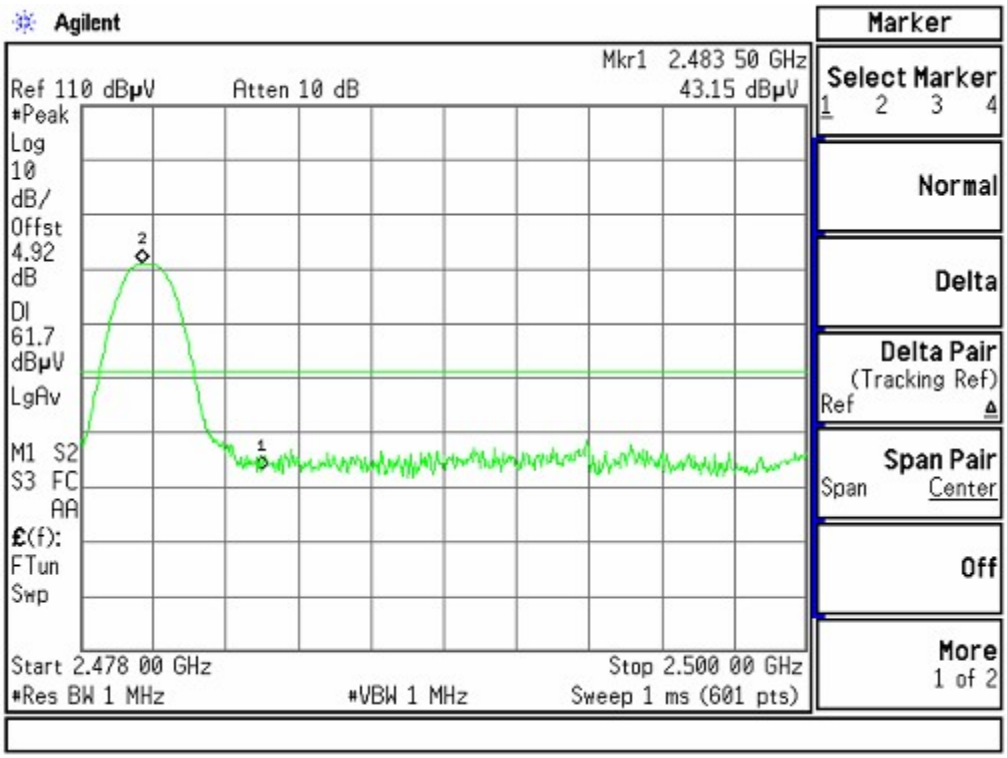


Band Edges (CH High)

Detector mode: Peak Polarity: Vertical



Detector mode: Peak Polarity: Horizontal



4.3 Frequency Separation

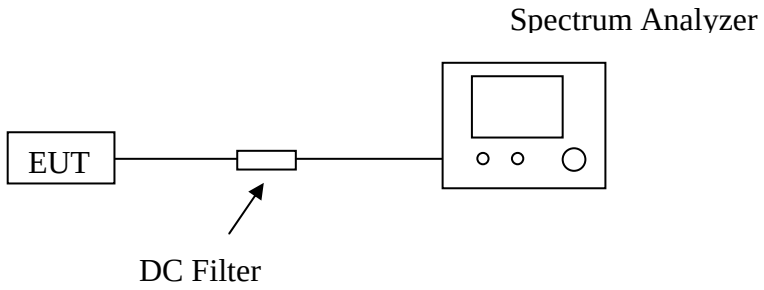
4.3.1 Limit

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.	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

4.3.3 Block Diagram of Test Setup



4.3.4 Test Procedure

A. Place the EUT on the table and set it in transmitting mode.
B. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrurm Analyzer.
C. Set center frequency of Spectrum Analyzer = middle of hopping channel.
D. Set the Spectrurm Analyzer as RBW = 30kHz, VBW = 100kHz, Span = 4MHz, Sweep = auto.
E. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

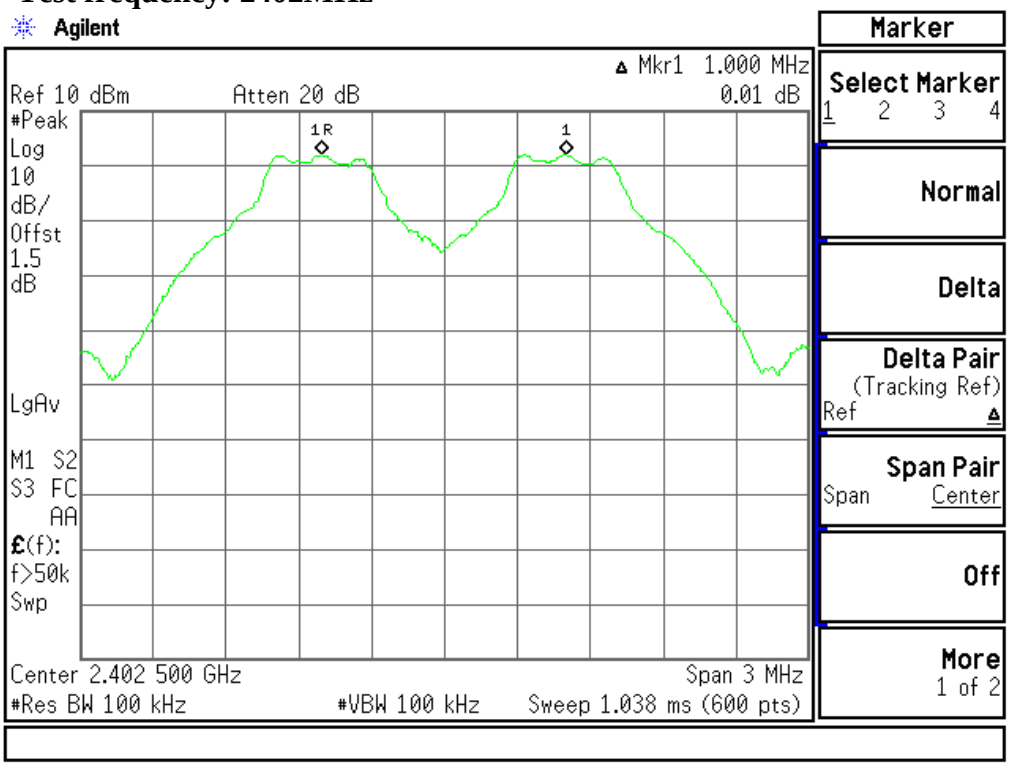
4.3.5 Test Results

Channel Separation (MHz)	20dB Bandwith (kHz)	Limit (kHz)	Result
1.000	942.569	>628.38	Pass

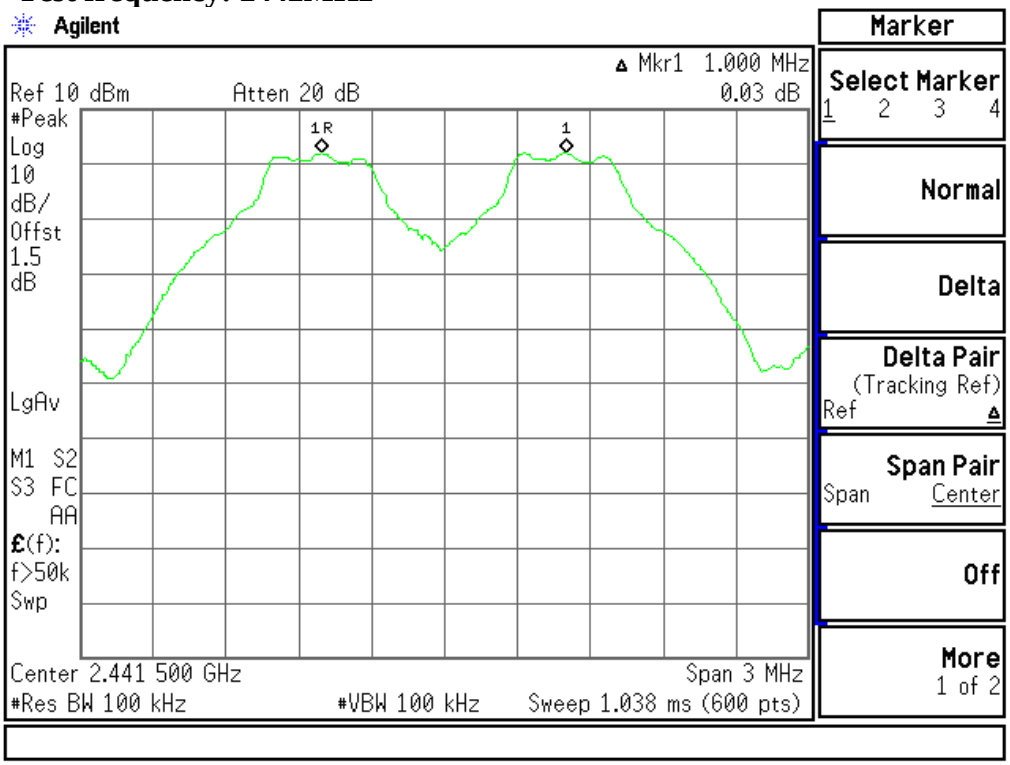
The test data graph please refer to the following page.

Measurement of Channel Separation

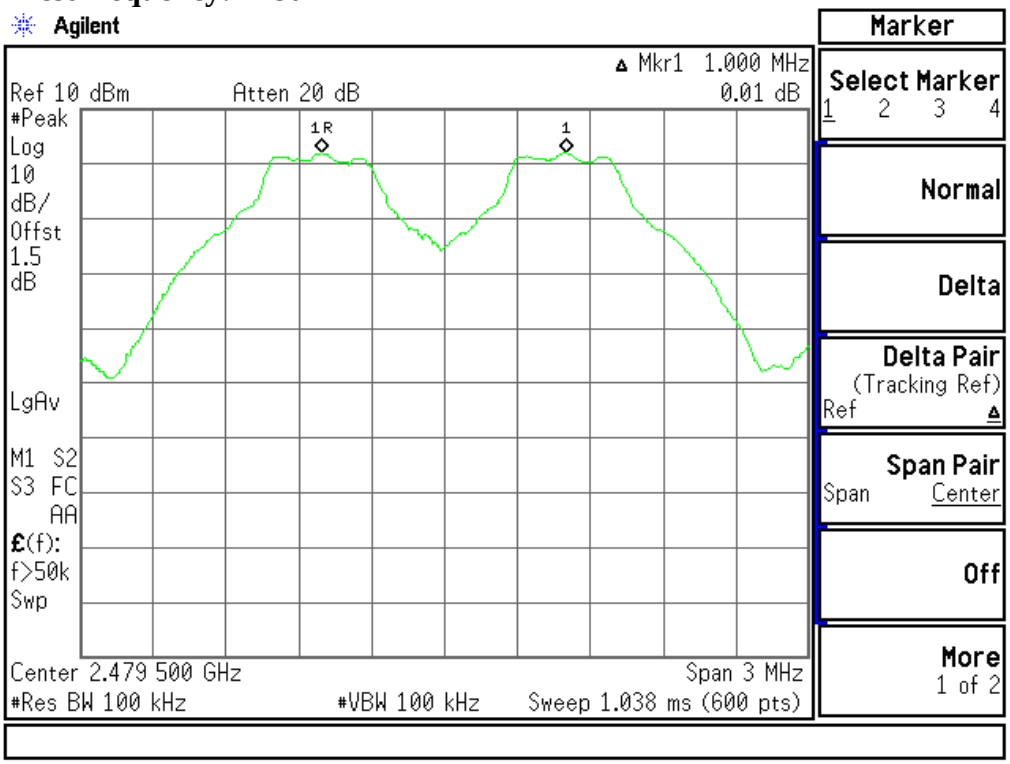
Test frequency: 2402MHz



Test frequency: 2442MHz

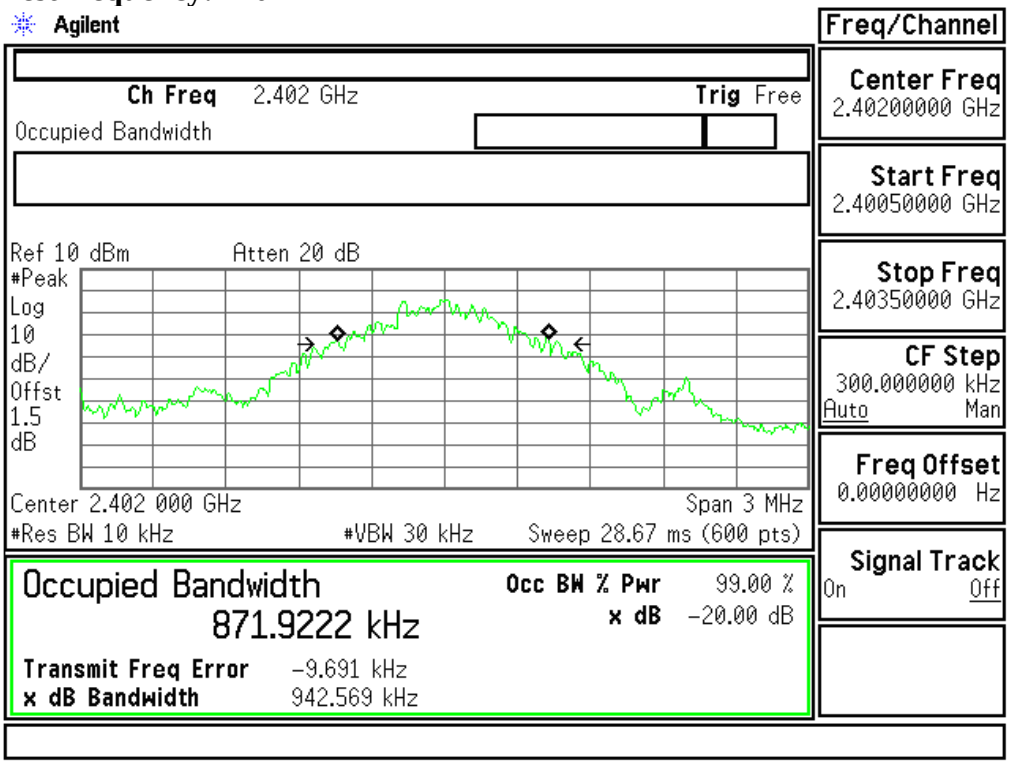


Test frequency: 2480MHz

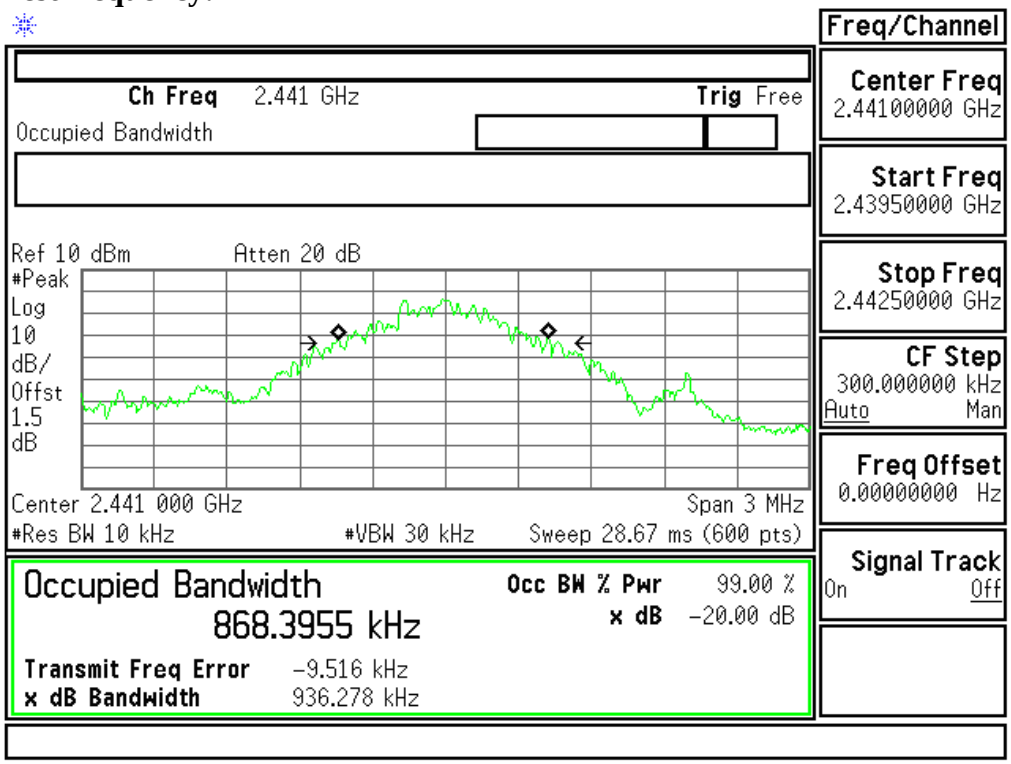


Measurement of 20dB Bandwidth

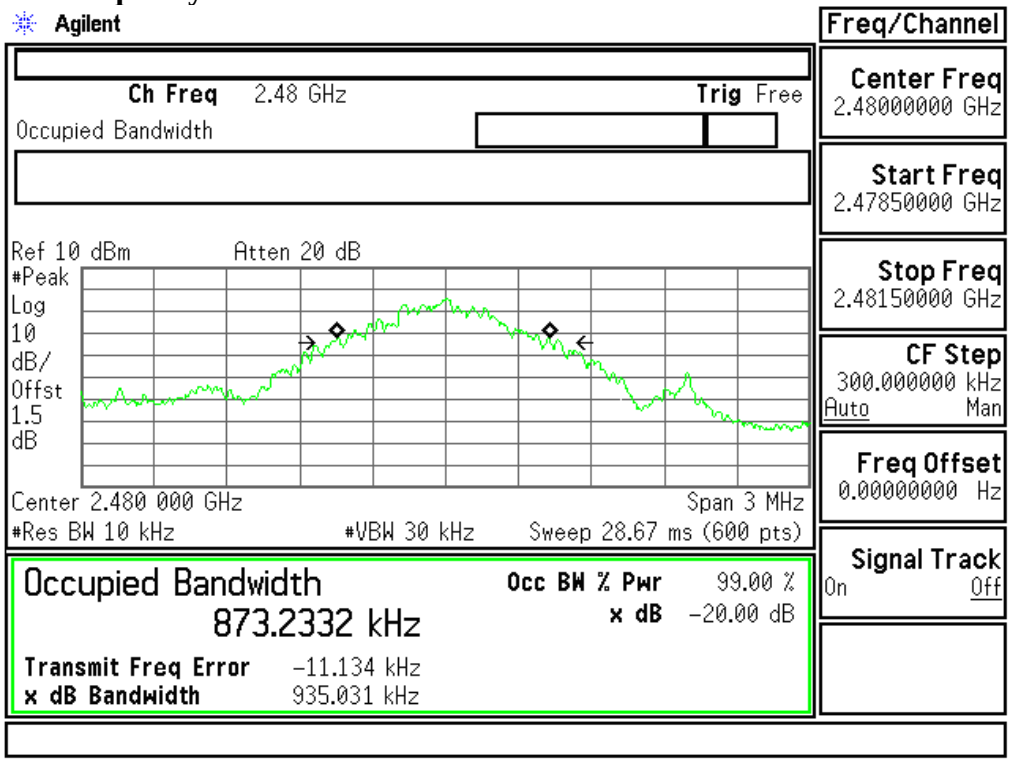
Test frequency: 2402MHz



Test frequency: 2442MHz



Test frequency: 2480MHz



4.4 Number Of Hopping Frequency

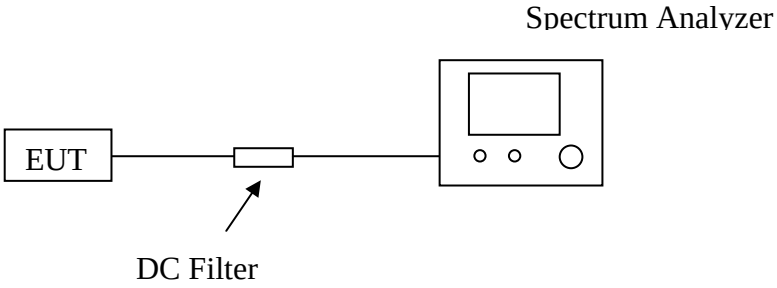
4.4.1 Limit

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.	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

4.4.3 Block Diagram of Test Setup



4.4.4 Test Procedure

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

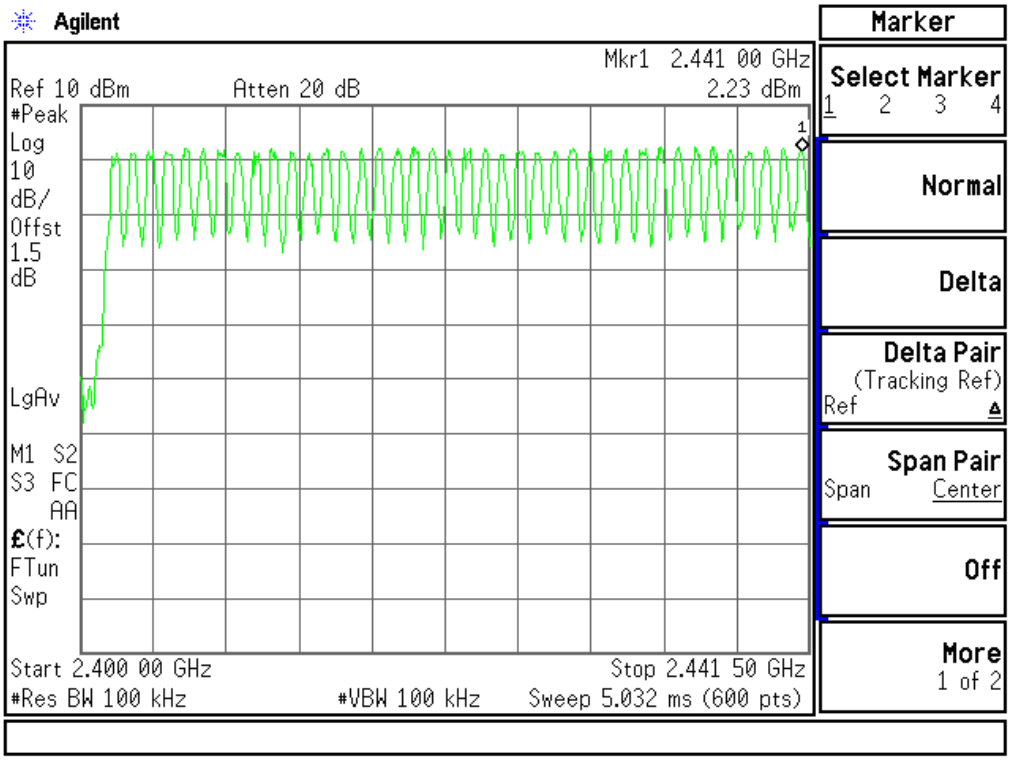
4.4.5 Test Results

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

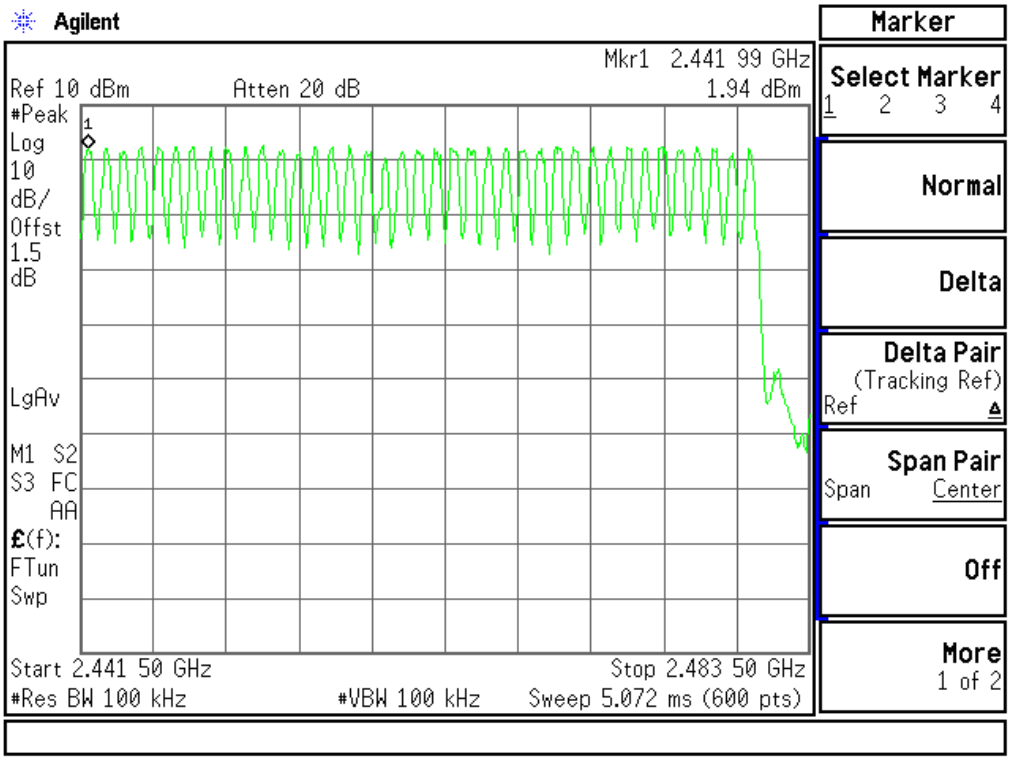
The test data graph please refer to the following page.

Channel Number

2.4 GHz – 2.4415 GHz



2.4415 GHz – 2.4835 GHz



4.5 Time Of Occupancy (Dwell Time)

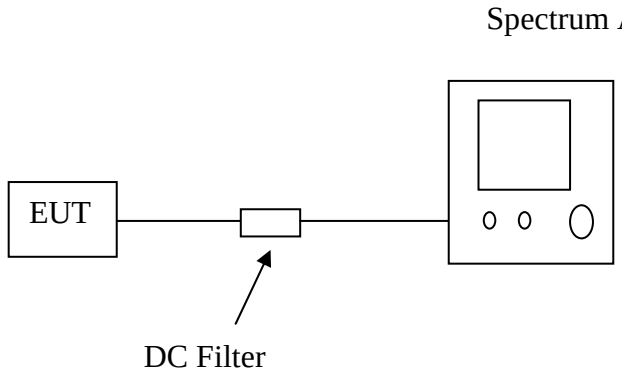
4.5.1 Limit

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

A. Place the EUT on the table and set it in transmitting mode.
B. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
C. Set center frequency of Spectrum Analyzer = operating frequency.
D. Set the Spectrum Analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
E. 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 (ms)

DH 3

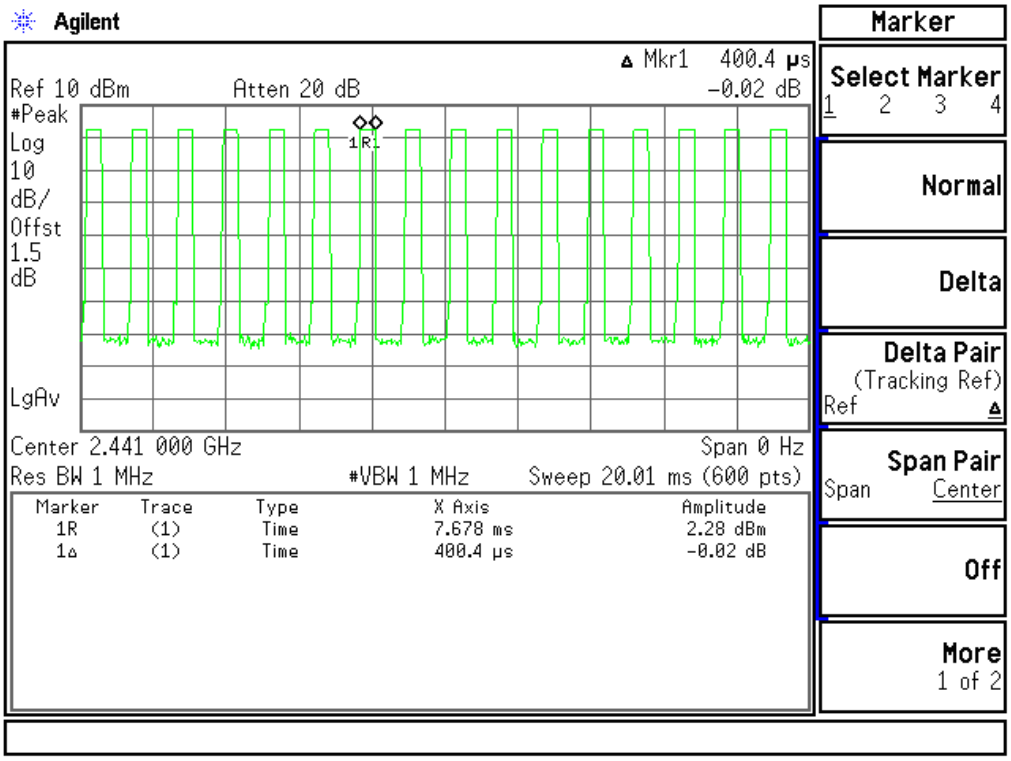
1.64 * (1600/4)/79 * 31.6 = 262.40 (ms)

DH 5

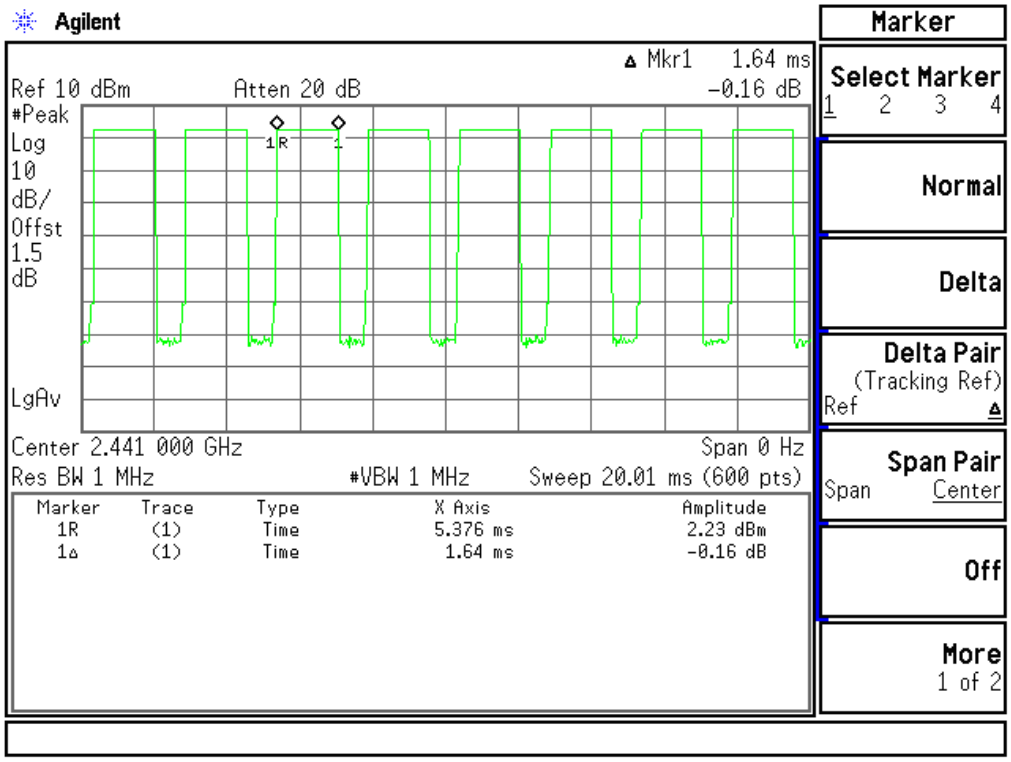
2.932* (1600/6)/79 * 31.6 = 312.77 (ms)

The test data graph please refer to the following:

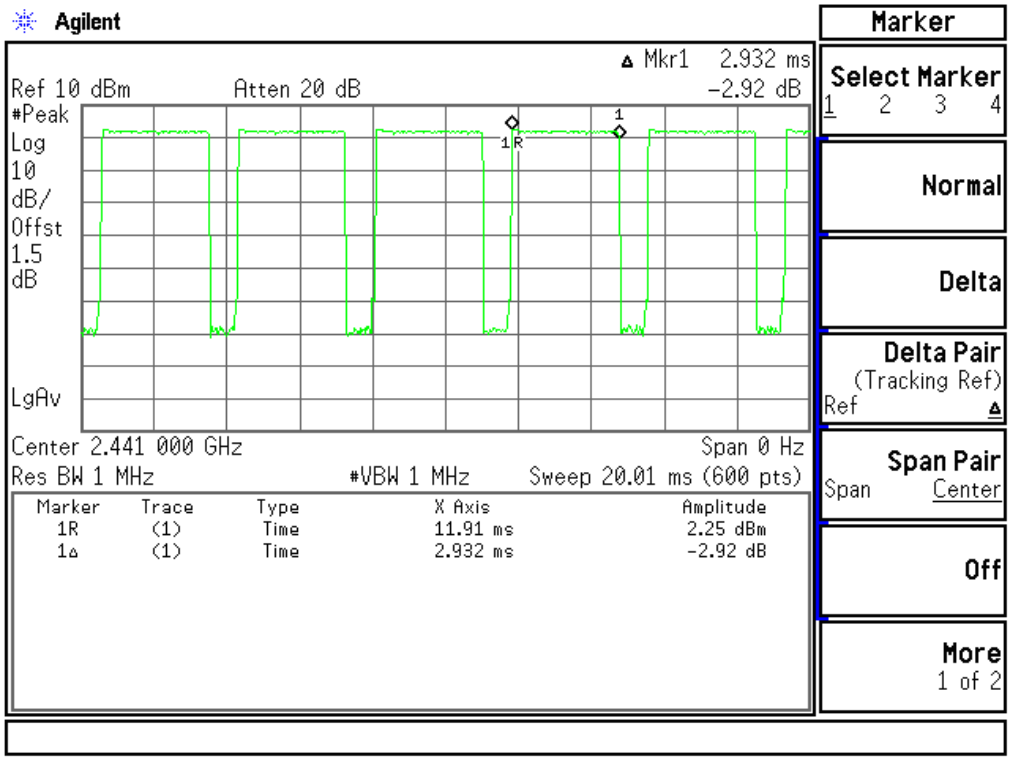
Middle Channel For DH1



Middle Channel For DH3



Middle Channel For DH5



4.6 Spurious Emissions

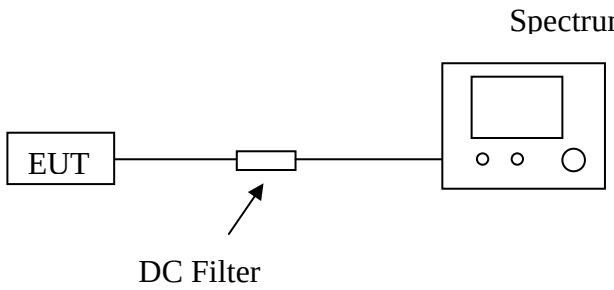
4.6.1 Limit

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.	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

4.6.3 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

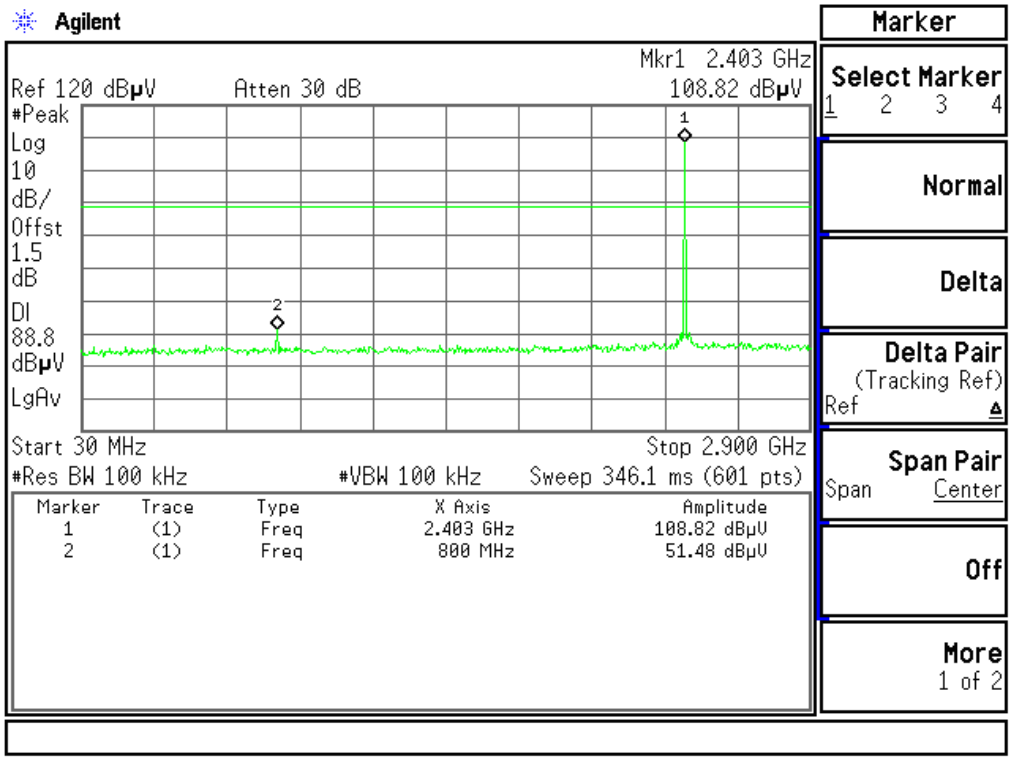
No non-compliance noted

The test data graph please refer to the following page.

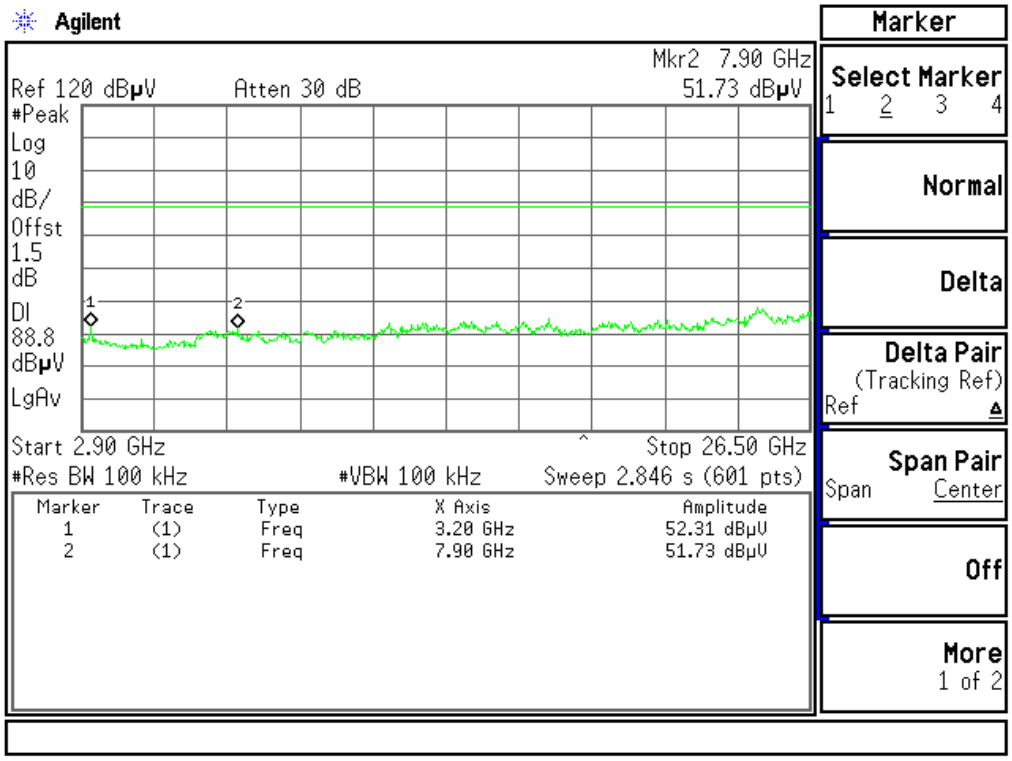
Test Plot

CH Low

30MHz ~ 2.9GHz

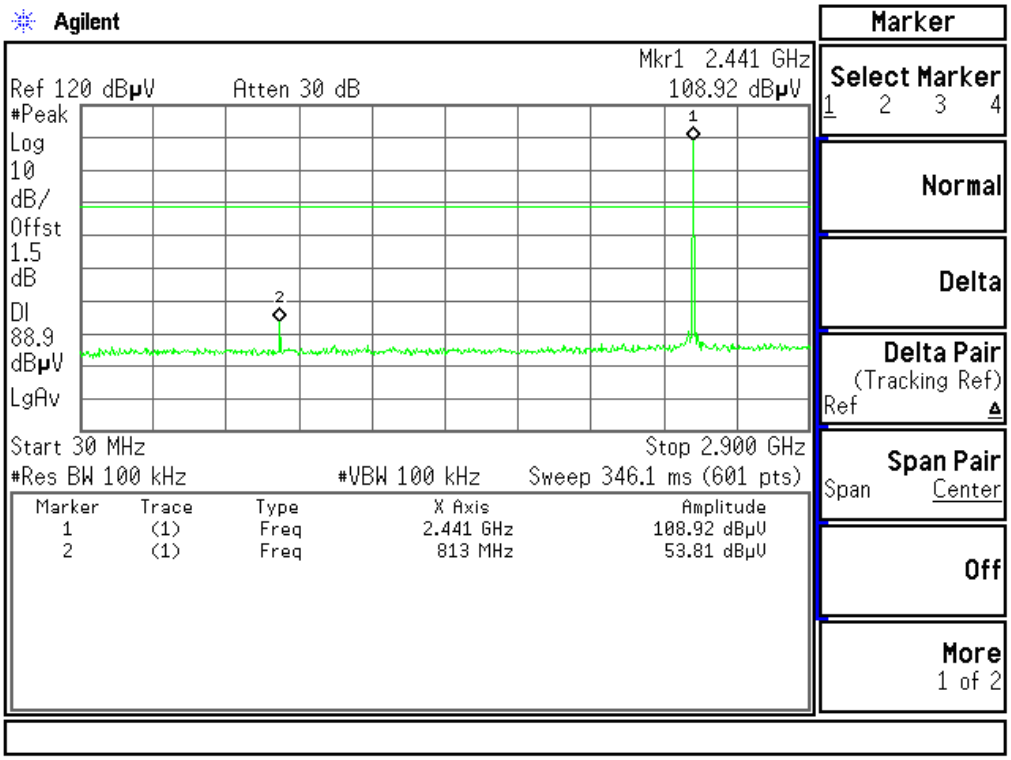


2.9GHz ~ 26.5GHz

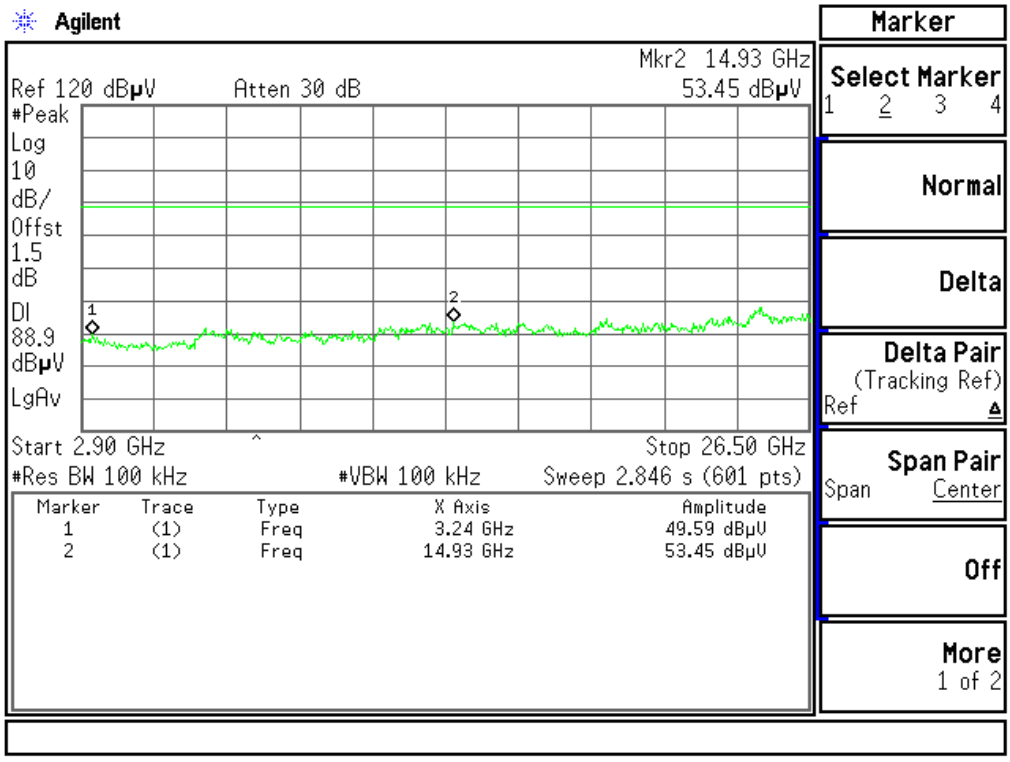


CH Mid

30MHz ~ 2.9GHz

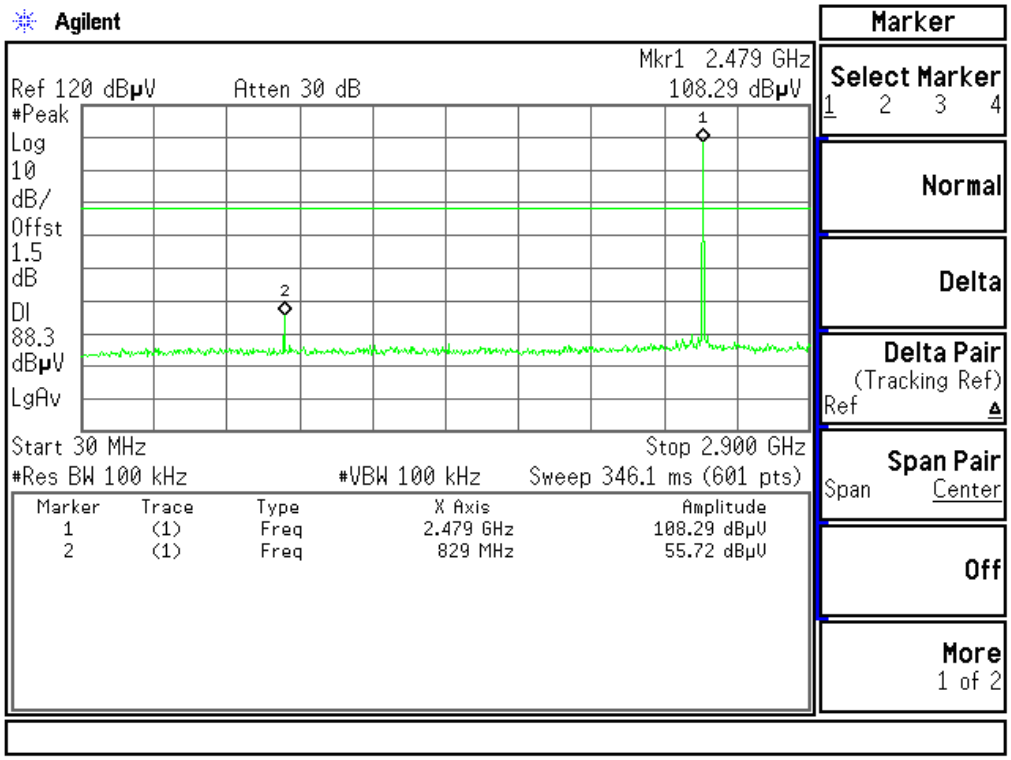


2.9GHz ~ 26.5GHz

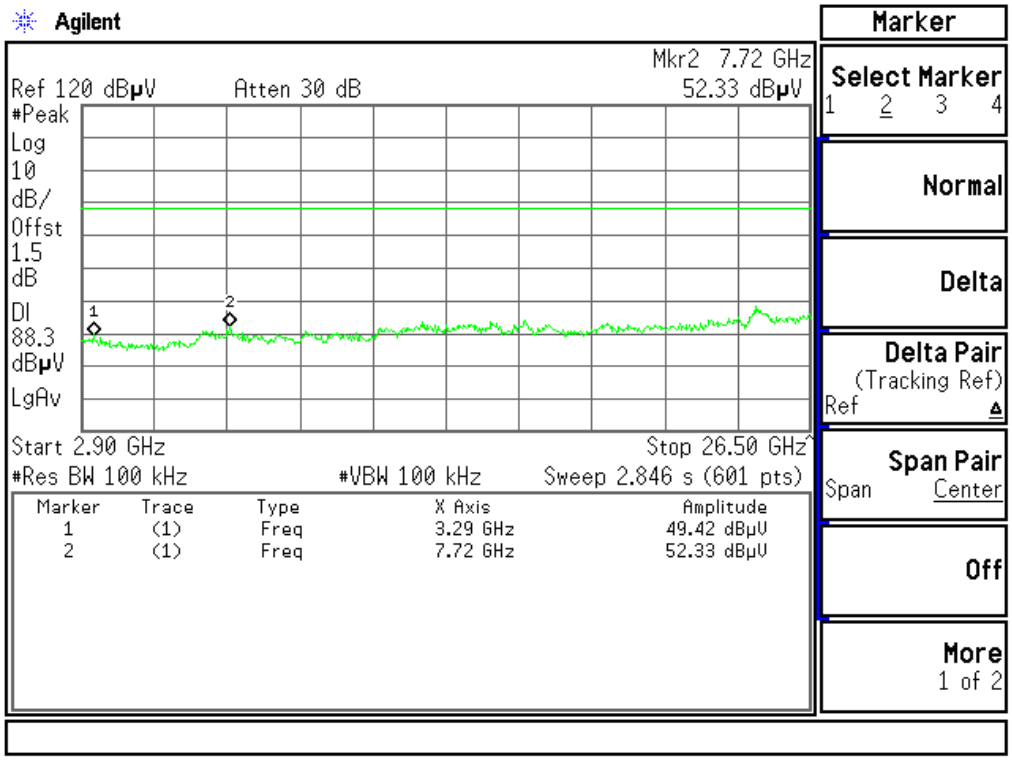


CH High

30MHz ~ 2.9GHz



2.9GHz ~ 26.5GHz

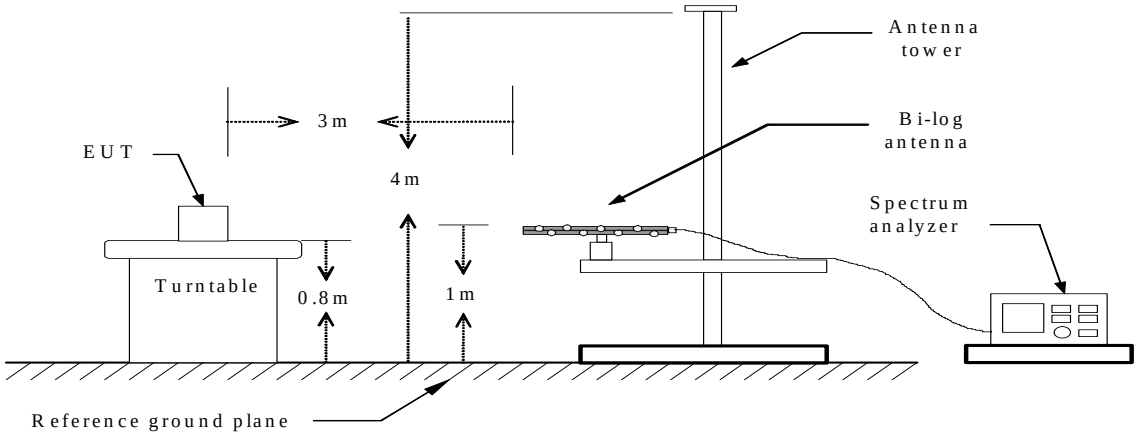


5. RADIATED EMISSION MEASUREMENT

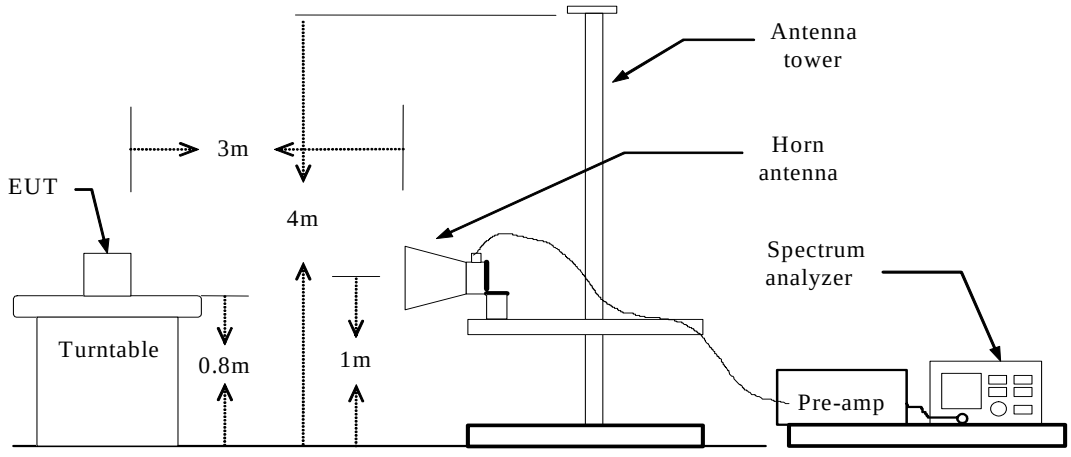
5.1 Test Equipment

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

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:

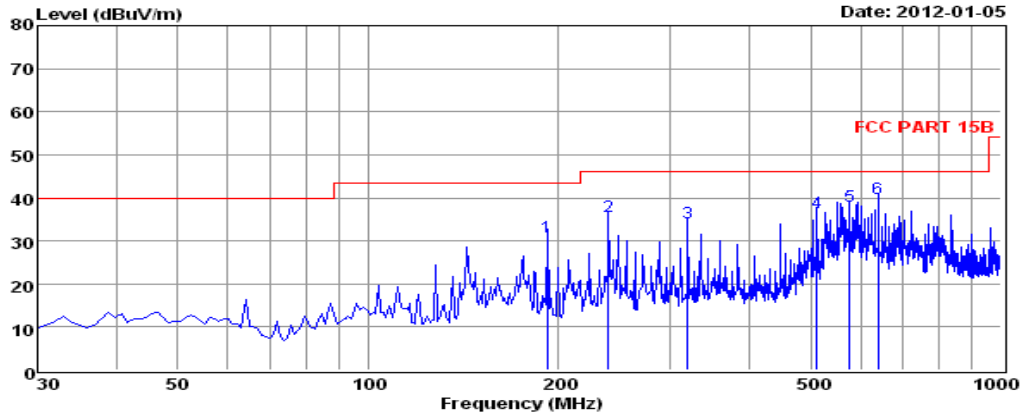
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100**	3
88–216	150**	3
216–960	200**	3
Above 960	500	3

5.4 Test Results

PASS.

The test data please refer to following page.

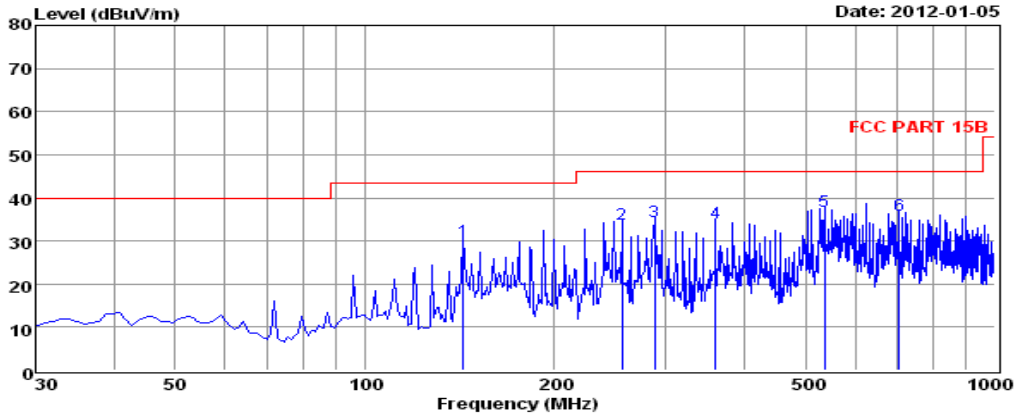
Below 1GHz



Env. /Ins: 24℃/56%
EUT: Wireless Receiver
M/N: EX3000
Power Rating: DC 3.7V
Test Mode: On
Operator: Willis
Memo:
pol: VERTICAL

	Freq.	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	191.99	49.70	0.76	10.56	30.20	30.82	43.50	-12.68	QP
2	239.52	52.88	1.01	12.07	30.18	35.78	46.00	-10.22	QP
3	320.03	49.86	1.16	13.33	30.14	34.21	46.00	-11.79	QP
4	512.09	48.47	1.49	16.81	30.04	36.73	46.00	-9.27	QP
5	576.11	48.45	1.49	18.00	30.01	37.93	46.00	-8.07	QP
6	640.13	49.71	1.56	18.59	30.02	39.84	46.00	-6.16	QP

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



Env. /Ins: 24℃/56%
EUT: Wireless Receiver
M/N: EX3000
Power Rating: DC 3.7V
Test Mode: On
Operator: Willis
Memo:
pol: HORIZONTAL

	Freq.	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	143.49	51.35	0.71	8.21	30.20	30.07	43.50	-13.43	QP
2	256.01	50.95	1.02	12.06	30.17	33.86	46.00	-12.14	QP
3	288.02	50.64	1.05	12.83	30.16	34.36	46.00	-11.64	QP
4	359.80	48.59	1.18	14.43	30.12	34.08	46.00	-11.92	QP
5	536.34	48.28	1.46	17.26	30.03	36.97	46.00	-9.03	QP
6	704.15	45.57	1.68	18.86	30.05	36.06	46.00	-9.94	QP

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

Above 1GHz

Operation Mode: TX/ CH Low **Test Date:** 12-23-2011
Temperature: 23°C **Humidity:** 50 % RH

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs Peak (dBuV/m)	Actual Fs AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)
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 **Test Date:** 12-23-2011
Temperature: 23°C **Humidity:** 50 % RH

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs Peak (dBuV/m)	Actual Fs AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)
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	-2131	-13.04

Operation Mode: TX/ CH High **Test Date:** 12-23-2011
Temperature: 23°C **Humidity:** 50 % RH

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs Peak (dBuV/m)	Actual Fs AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	PK Margin (dB)	AV Margin (dB)
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 9 kHz to the 1GHz, No emission found between lowest internal used/generated frequency to 30 MHz.*
2. *Radiated emissions measured in frequency range from 9 kHz to 1000MHz 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.*
4. *The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.*

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 the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

7. RADIO FREQUENCY EXPOSURE

7.1 Limit

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

7.2 EUT Specification

Frequency Range		Center frequency (MHz)	60/f SAR Limitation (mw)
Low Frequency (MHz)	High Frequency (MHz)		
2402	2480	2441	24.58

Conducted Power (dBm)	Max Antenna Gain (dBi)	EIRP (mw)
0.93	1.84	1.892

7.3 Test Results

Threshold at which no SAR required is 24.58 mw.

Maximum Tx Output power is 1.892 mw EIRP.

Conclusion: No SAR is required.

8. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

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Belong to the tested device:

Product description : Wireless Receiver
Model name : EX3000

No additional models were tested.

---------- END REPORT ----------