



FCC / IC – Test report

Report Number : **60.790.13.036.01** Date of Issue: 03rd January 2014

Model : **MSP101**

Product Type : **SHOE POD**

Applicant : Dayton Industrial Co., Ltd.

Address : 2-12 KWAI FAT ROAD,11-A KWAI CHUNG, NEW
ERRITORIES,HONGKONG

Production Facility : Kendy Electronics (Dongguan) Co.Ltd,

Address : Xingsi Huangtang Village, Hengli Town, Dongguan City, Guangdong
Province, P.R.China

Test Result : **Positive** **Negative**

Total pages including Appendices : 28

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Hong Kong

2. Details about the Test Laboratory

Details about the Test Laboratory

Test site 1

Company name: TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2,
10 Science Park West Avenue,
Science Park, Shatin
HK.

Telephone: 852 2776 1323

Fax: 852 2776 1372

Test site 2

Company name: Audix Technology(Shenzhen) Co., Ltd.
No.6,Ke Feng Road,Block 52,Shenzhen Science & Industry
Park,Nanshan,Shenzhen,Guangdong,China (518057)

Test site 3

Company name: TMC-Telecommunication Metrology Center of M.I.I.T
No 52 Hua Yuanbei Road, Haidian District, Beijing, P.R.China



3. Description of the Equipment Under Test

Description of the Equipment Under Test

Product:	SHOE POD
Model no.:	MSP101
Serial number:	NIL
Options and accessories:	NIL
FCC ID:	O4G-MSPOD
Rated Voltage:	3 VDC
Rated Current:	NIL
Rated Power:	NIL
Frequency:	2402-2480MHz
RF Transmission Frequency:	2402-2480MHz
Antenna gain:	0 dBi
No. of Operated Channel:	40
Modulation:	GFSK
Description of the EUT:	Battery operated – 1x 3.0V CR2032 battery



Hong Kong

4. Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C, Intentional Radiators, 10-1-12 Edition	PART 15 – RADIO FREQUENCY DEVICES Subpart C – Intentional Radiators



5. Summary of Test Standards and Results

Emission Tests					
Test Condition	Pages	Test site	Test Result		
			Pass	Fail	N/A
FCC§15.207(a) – AC Line Conducted Emissions	8	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC §2.1051 & §15.247(d) – Spurious Emissions at Antenna Terminals	11	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC §15.205, §15.209 & §15.247(d) – Spurious Radiated Emissions	14	Site 3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC §15.247(a)(2) – 6 dB & 99% Emission Bandwidth	18	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC §15.247(b) – Peak Output Power	21	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC §15.247(d) – 100 kHz Bandwidth of Band Edges	24	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC §15.247(e) – Power Spectral Density	26	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC §15.203 – Antenna Requirements	29	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: O4G-MSPOD complies with the FCC Part 15, Subpart C Rules.

All the configurations of the product were tested and only the worst test results are listed in the report.

SUMMARY:

All tests according to the regulations cited on page 6 were

- - Performed
- - **Not** Performed

The Equipment Under Test

- - **Fulfills** the general approval requirements.
- - **Does not** fulfill the general approval requirements.

Sample Received Date: 19th December 2013

Testing Start Date: 04th January 2014

Testing End Date: 20th January 2014

- TÜV SÜD HONG KONG LTD. -

Reviewed by:



Edmond FUNG



Prepared by:



CHAN Kwong Ngai



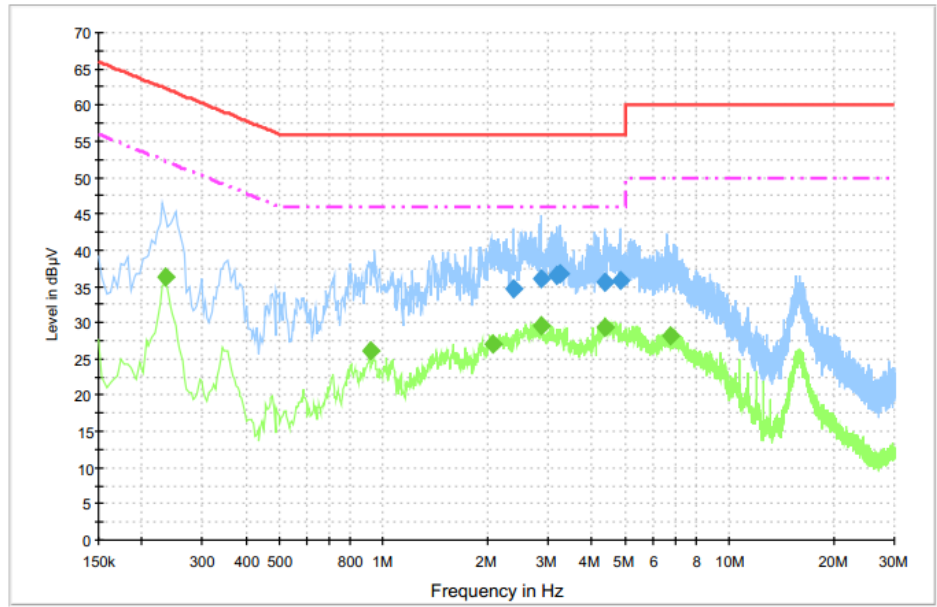
7. Emission Test Results

7.1 AC Line Conducted Emissions

Date of test : 15th January 2014
Test requirement : FCC §2.1051 & §15.247(d)
Test method : Conducted
Operating mode : Transmit mode
Frequency channel : 2402MHz
Remarks : 30MHz-25GHz

Standard:	FCC 15.207	Line:	L
Test item:	Conducted Emission	Power:	AC120V 60Hz
Model Number:	MSP101	Date:	2014/01/10
Mode:	1	Test By:	

Description:



Final Result 1

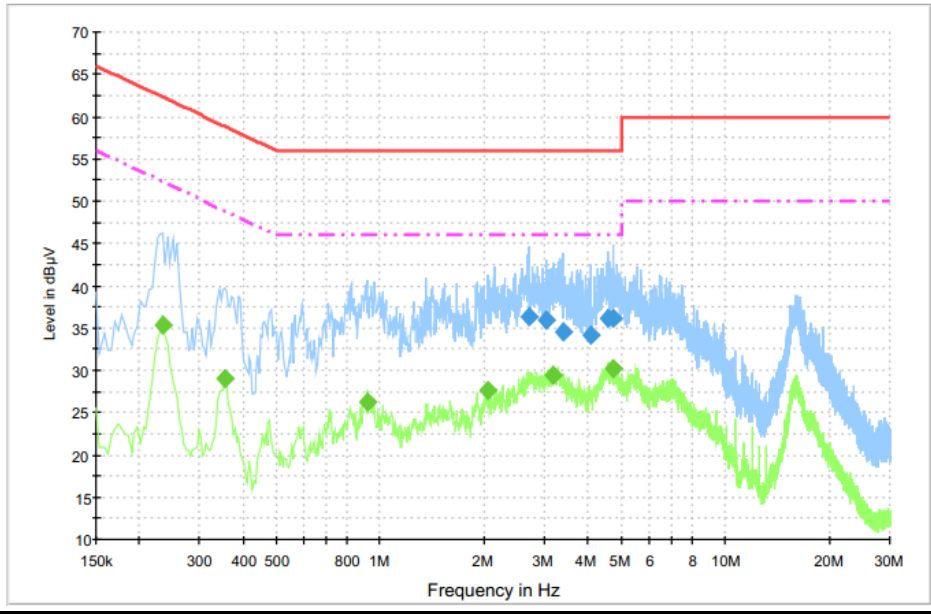
Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.378000	34.8	FLO	L	10.2	21.2	56.0
2.846000	36.0	FLO	L	10.1	20.0	56.0
3.186000	36.4	FLO	L	10.2	19.6	56.0
3.238000	36.7	FLO	L	10.2	19.3	56.0
4.378000	35.6	FLO	L	10.2	20.4	56.0
4.866000	35.7	FLO	L	10.2	20.3	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.234000	36.3	FLO	L	10.0	16.0	52.3
0.914000	26.1	FLO	L	10.1	19.9	46.0
2.070000	27.1	FLO	L	10.1	18.9	46.0
2.846000	29.5	FLO	L	10.1	16.5	46.0
4.394000	29.3	FLO	L	10.2	16.7	46.0
6.754000	28.2	FLO	L	10.3	21.8	50.0

Standard:	FCC 15.207	Line:	N
Test item:	Conducted Emission	Power:	AC120V 60Hz
Model Number:	MSP101	Date:	2014/01/10
Mode:	1	Test By:	

Description:



Final Result 1

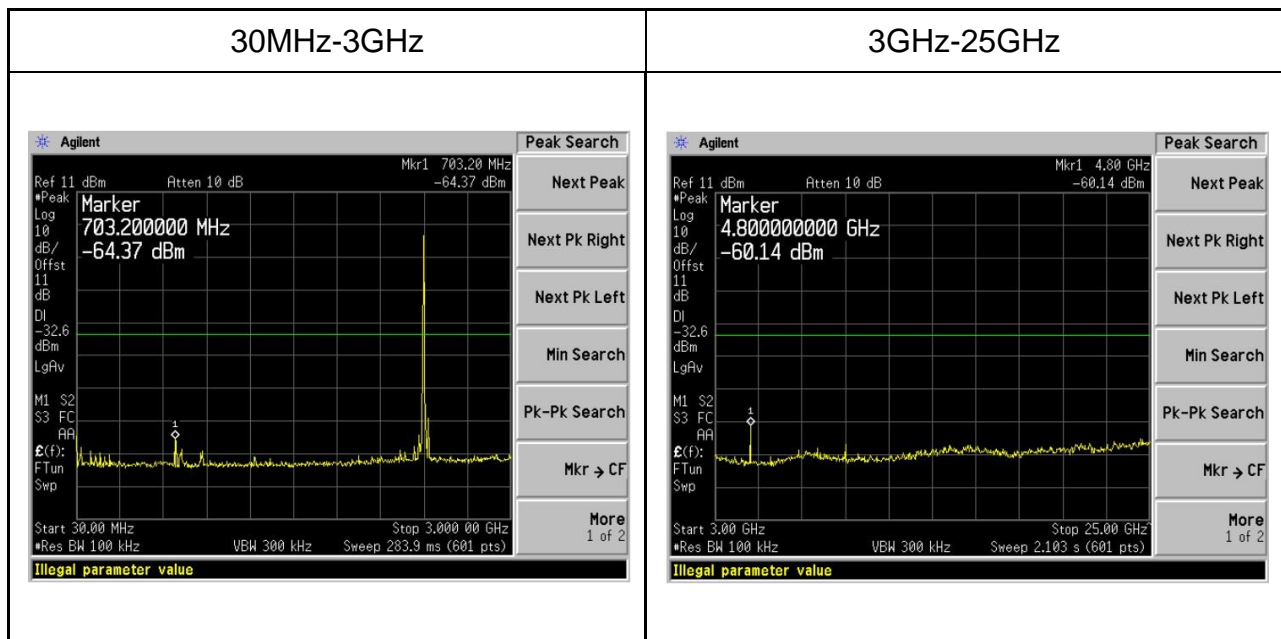
Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.686000	36.3	FLO	N	10.2	19.7	56.0
3.026000	35.9	FLO	N	10.2	20.1	56.0
3.378000	34.5	FLO	N	10.2	21.5	56.0
4.082000	34.1	FLO	N	10.2	21.9	56.0
4.574000	36.1	FLO	N	10.2	19.9	56.0
4.722000	36.2	FLO	N	10.2	19.8	56.0

Final Result 2

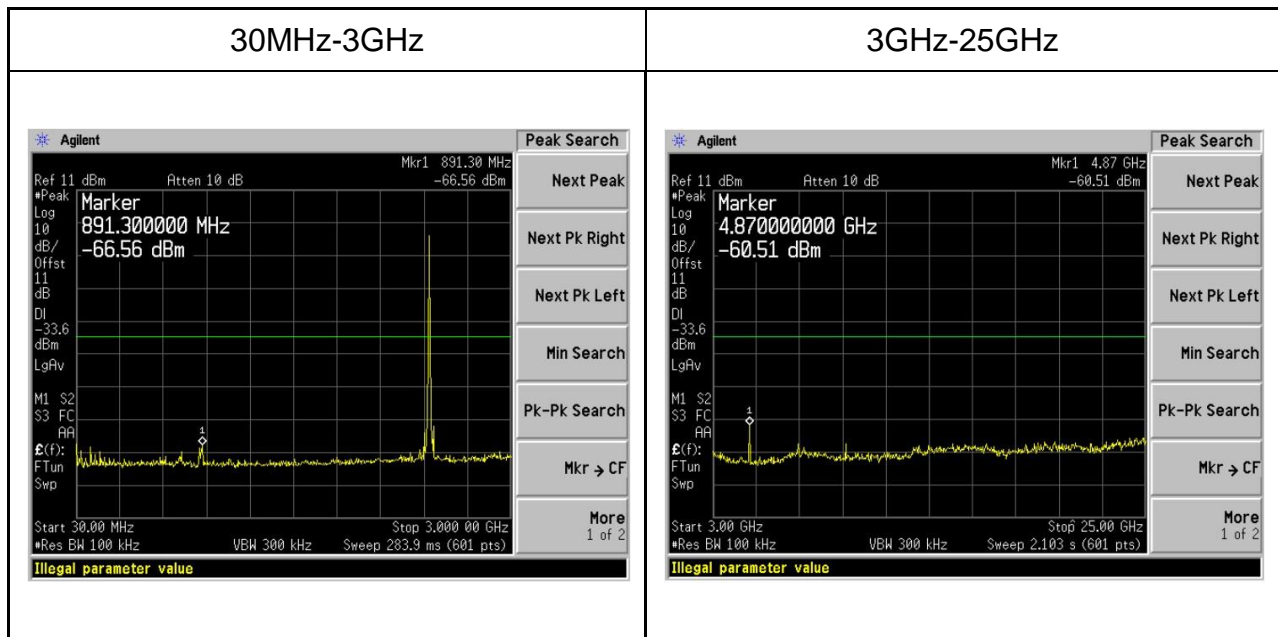
Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.234000	35.3	FLO	N	10.0	17.0	52.3
0.354000	29.0	FLO	N	10.1	19.8	48.9
0.914000	26.2	FLO	N	10.1	19.8	46.0
2.038000	27.5	FLO	N	10.1	18.5	46.0
3.166000	29.4	FLO	N	10.2	16.6	46.0
4.722000	30.1	FLO	N	10.2	15.9	46.0

7.2 Spurious Emissions at Antenna Terminals

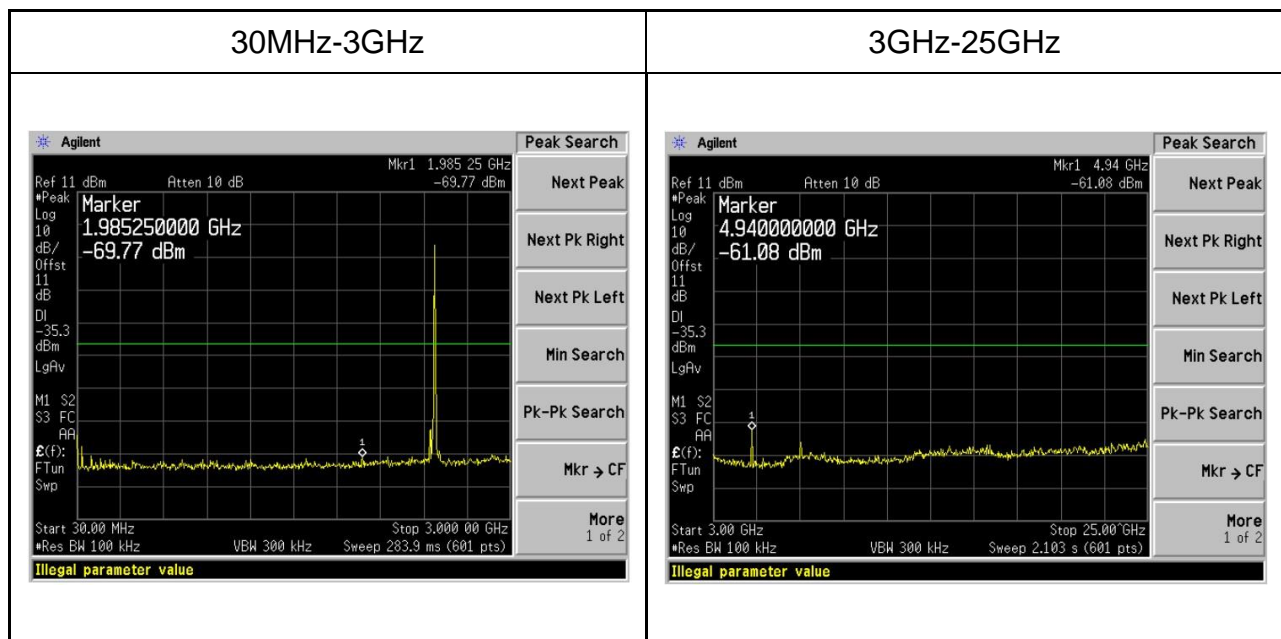
Date of test : 15th January 2014
 Test requirement : FCC §2.1051 & §15.247(d)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2402MHz
 Remarks : 30MHz-25GHz



Date of test : 15th January 2014
 Test requirement : FCC §2.1051 & §15.247(d)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2440MHz
 Remarks : 30MHz-25GHz



Date of test : 15th January 2014
 Test requirement : FCC §2.1051 & §15.247(d)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2480MHz
 Remarks : 30MHz-25GHz



Remark: No emission were detected below 30MHz.

7.3 Spurious Radiated Emissions

Date of test : 06th January 2014

Test requirement : FCC §15.205, §15.209 & §15.247(d)

Test method : Radiated

Operating mode : Transmit mode

Frequency channel : 2402MHz(worst case)

Remarks : 30MHz-1GHz

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dB)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
35.56	42.26	-34.9	7.36	40.0	-32.64	QP	H
48.25	41.52	-33.4	8.12	40.0	-31.88	QP	H
101.85	41.59	-34.7	6.89	43.5	-36.61	QP	H
291.44	49.94	-33.5	16.44	46.0	-29.56	QP	H
326.25	53.32	-32.5	20.82	46.0	-25.18	QP	H
497.16	50.35	-28.2	22.15	46.0	-23.85	QP	H
37.61	47.53	-35.4	12.13	40.0	-27.87	QP	V
44.16	41.53	-34.6	6.93	40.0	-33.07	QP	V
214.85	52.47	-36.0	16.47	43.5	-27.03	QP	V
248.39	51.94	-34.5	17.44	46.0	-28.56	QP	V
497.16	49.71	-29.7	20.01	46.0	-25.99	QP	V
660.85	51.43	-26.6	24.83	46.0	-21.17	QP	V

Remark: All three frequencys (2042MHz、2440MHz and 2480MHz) were performed test, and the 2402MHz was the worst case.

Date of test : 06th January 2014
 Test requirement : FCC §15.205, §15.209 & §15.247(d)
 Test method : Radiated
 Operating mode : Transmit mode
 Frequency channel : 2402MHz
 Remarks : 1GHz-25GHz

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2402	80.8	1.8	82.6	/	/	/	H
2402	75.3	1.8	77.1	/	/	/	H
4804	46.6	5.8	52.4	74.0	-21.6	peak	H
4804	40.9	5.8	46.7	54.0	-7.3	Average	H
7206	42.3	6.8	49.1	74.0	-24.9	peak	H
7206	33.4	6.8	40.2	54.0	-13.8	Average	H
2402	77.1	1.8	78.9	/	/	/	V
2402	70.7	1.8	72.5	/	/	/	V
4804	49.6	5.8	55.4	74.0	-18.6	peak	V
4804	41.8	5.8	47.6	54.0	-6.4	Average	V
7206	44.7	6.8	51.5	74.0	-22.5	peak	V
7206	36.9	6.8	43.7	54.0	-10.3	Average	V

Date of test : 06th January 2014
 Test requirement : FCC §15.205, §15.209 & §15.247(d)
 Test method : Radiated
 Operating mode : Transmit mode
 Frequency channel : 2440MHz
 Remarks : 1GHz-25GHz

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2440	79.3	1.8	81.1	/	/	/	H
2440	73.7	1.8	75.5	/	/	/	H
4880	44.0	5.9	49.9	74.0	-24.1	peak	H
4880	36.6	5.9	42.5	54.0	-11.5	Average	H
7320	40.4	6.8	47.2	74.0	-26.8	peak	H
7320	30.0	6.8	36.8	54.0	-17.2	Average	H
2440	77.3	1.8	79.1	/	/	/	V
2440	71.6	1.8	73.4	/	/	/	V
4880	44.5	5.9	50.4	74.0	-23.6	peak	V
4880	37.7	5.9	43.6	54.0	-10.4	Average	V
7320	49.4	6.8	56.2	74.0	-17.8	peak	V
7320	41.7	6.8	48.5	54.0	-5.5	Average	V

Date of test : 06th January 2014
 Test requirement : FCC §15.205, §15.209 & §15.247(d)
 Test method : Radiated
 Operating mode : Transmit mode
 Frequency channel : 2480MHz
 Remarks : 1GHz-25GHz

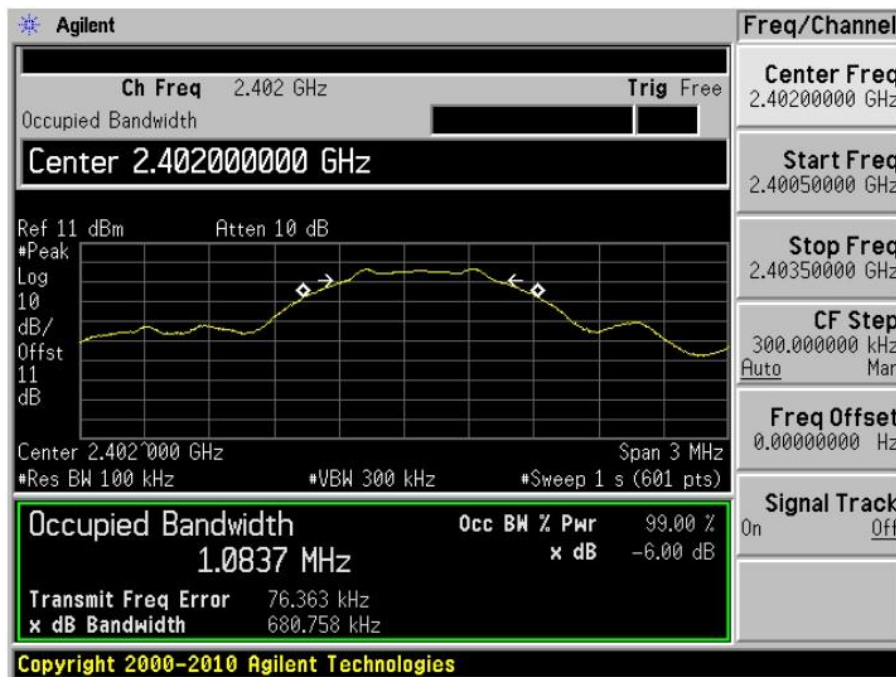
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
2480	79.3	1.9	81.2	/	/	/	H
2480	72.7	1.9	74.6	/	/	/	H
4960	45.2	5.9	51.1	74.0	-22.9	peak	H
4960	33.5	5.9	39.4	54.0	-14.6	Average	H
7440	42.8	6.8	49.6	74.0	-24.4	peak	H
7440	33.3	6.8	40.1	54.0	-13.9	Average	H
2480	76.9	1.9	78.8	/	/	/	V
2480	70.6	1.9	72.5	/	/	/	V
4960	42.4	5.9	48.3	74.0	-25.7	peak	V
4960	35.3	5.9	41.2	54.0	-12.8	Average	V
7440	45.6	6.8	52.4	74.0	-21.6	peak	V
7440	34.9	6.8	41.7	54.0	-12.3	Average	V

7.4 6dB Bandwidth

Date of test : 15th January 2014
 Test requirement : FCC §15.247(a)(2)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2402MHz
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)
2402	680.76	>500

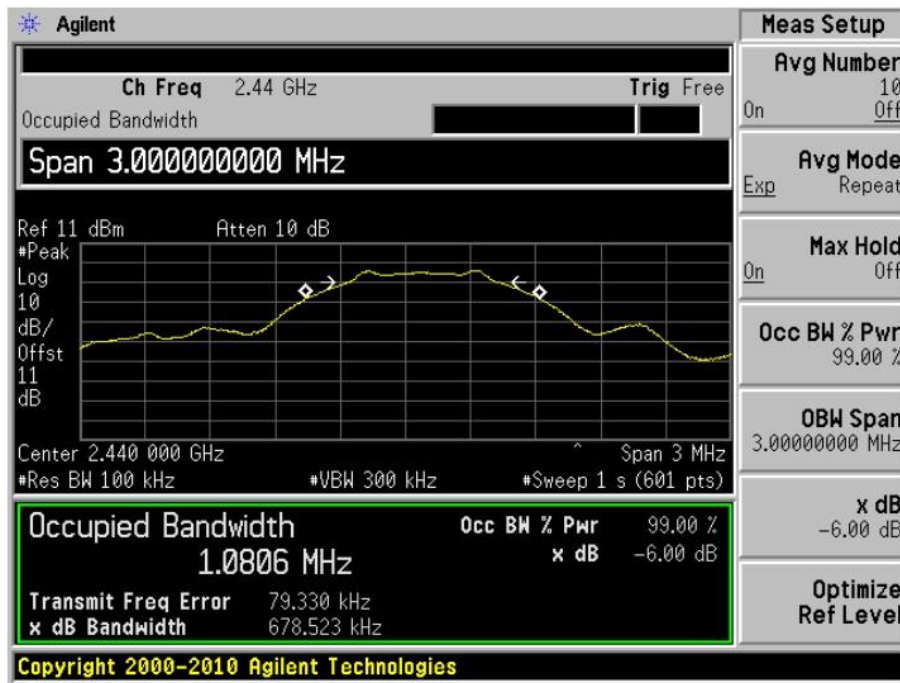




Date of test : 15th January 2014
 Test requirement : FCC §15.247(a)(2)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2440MHz
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

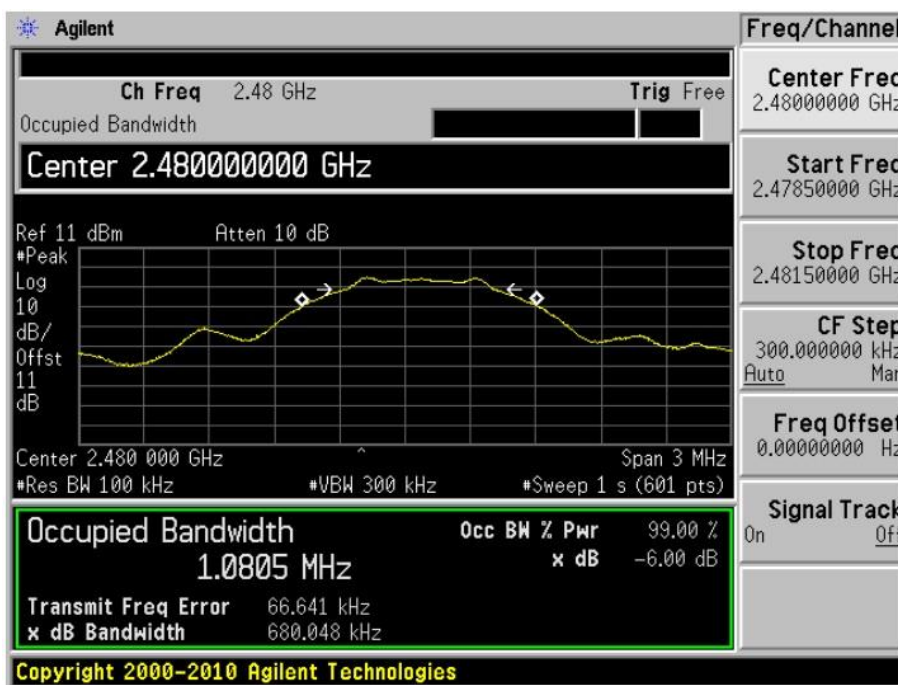
Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)
2440	678.52	>500



Date of test : 15th January 2014
 Test requirement : FCC §15.247(a)(2)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2480MHz
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)
2480	680.05	>500

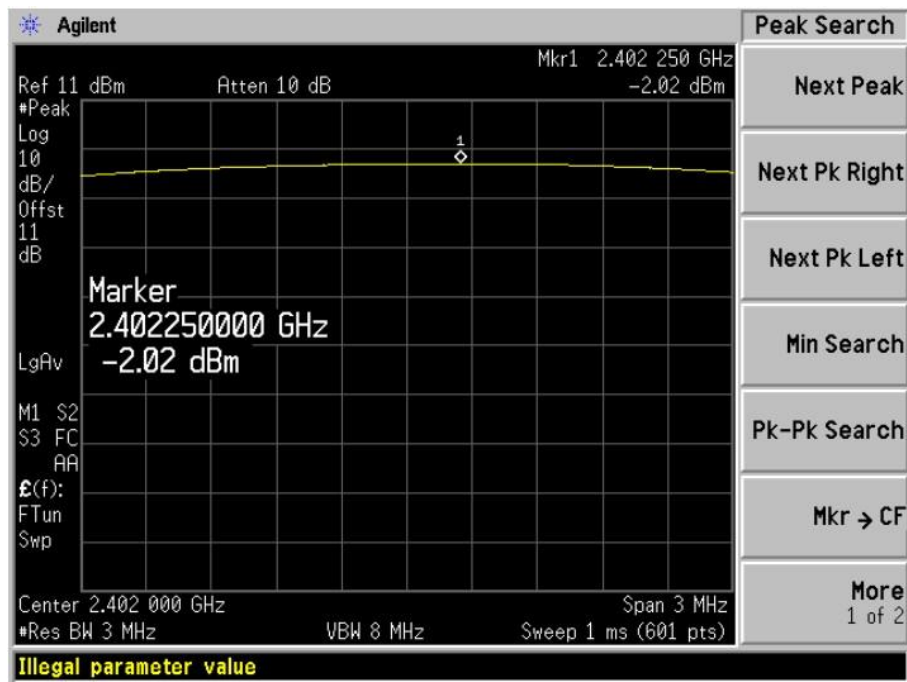


7.5 Peak Output Power Measurements

Date of test : 15th January 2014
 Test requirement : FCC §15.247(b)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2402MHz
 Remarks :

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

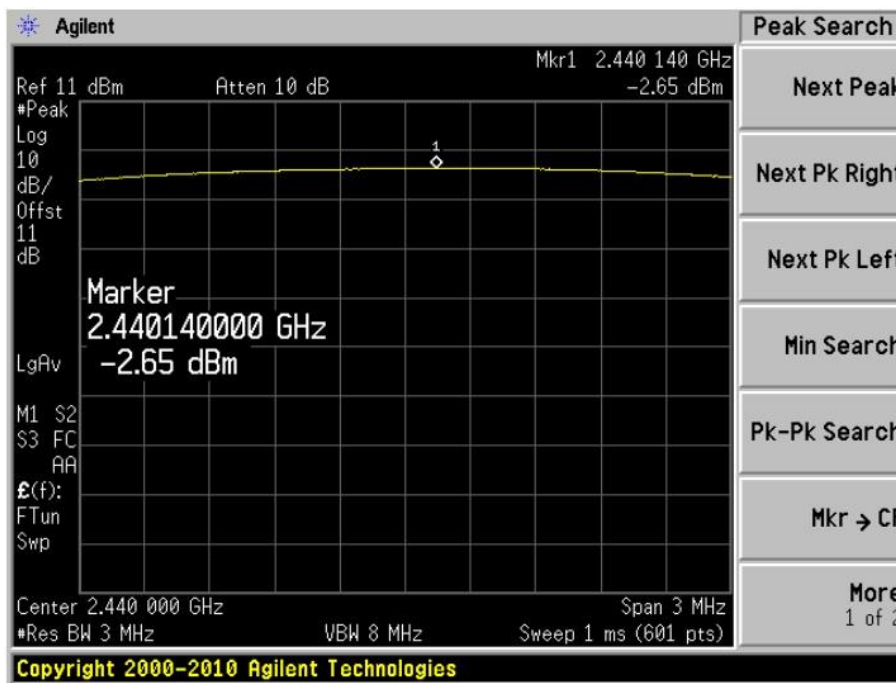
Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
2402	-2.02	30



Date of test : 15th January 2014
 Test requirement : FCC §15.247(b)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2440MHz
 Remarks :

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

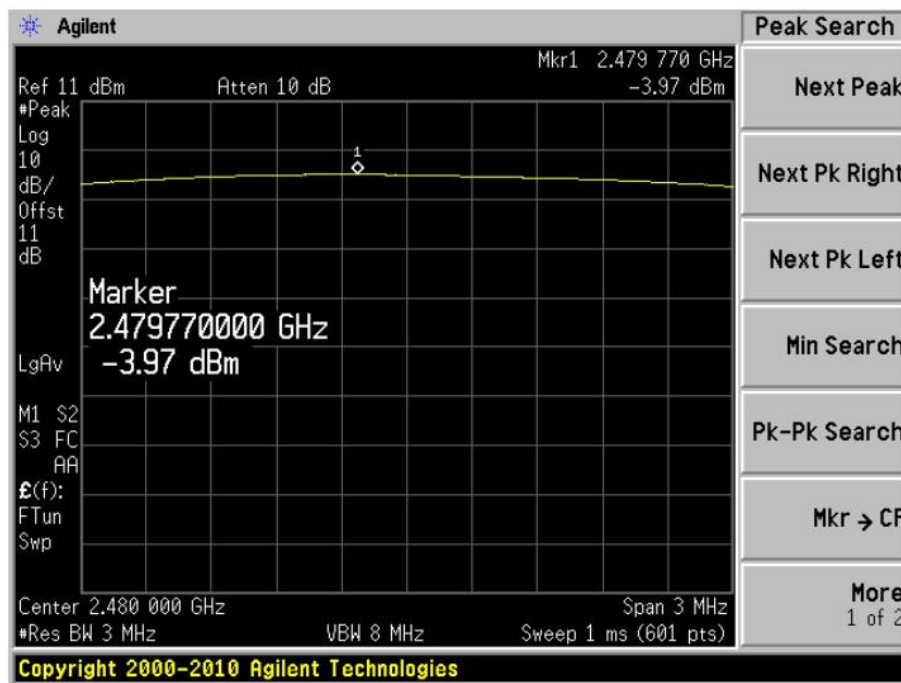
Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
2440	-2.65	30



Date of test : 15th January 2014
 Test requirement : FCC §15.247(b)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2480MHz
 Remarks :

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)
2480	-3.97	30

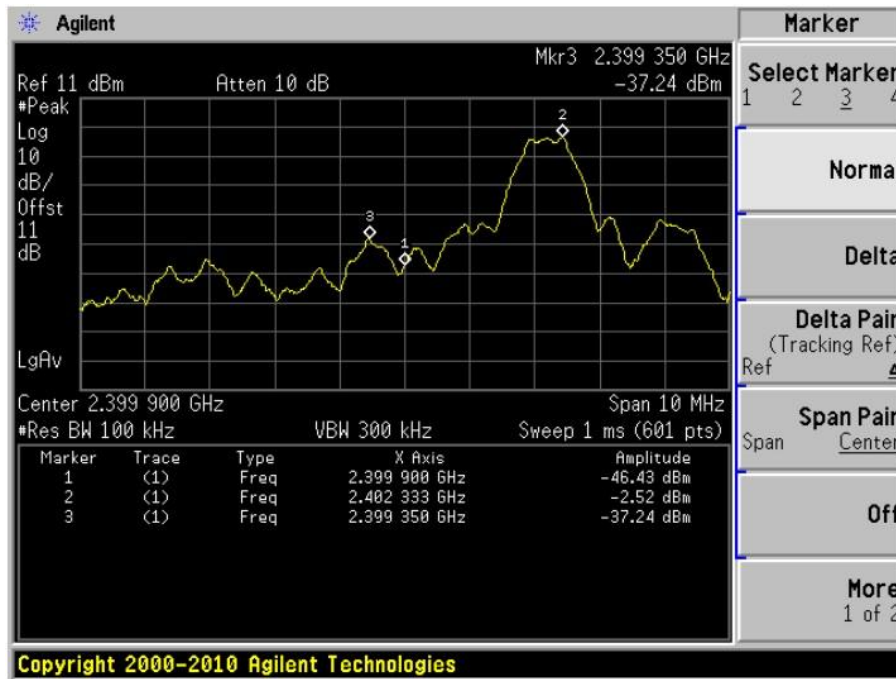


7.6 100 kHz Bandwidth of Band Edges

Date of test : 15th January 2014
 Test requirement : FCC §15.247(d)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2402MHz
 Remarks :

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

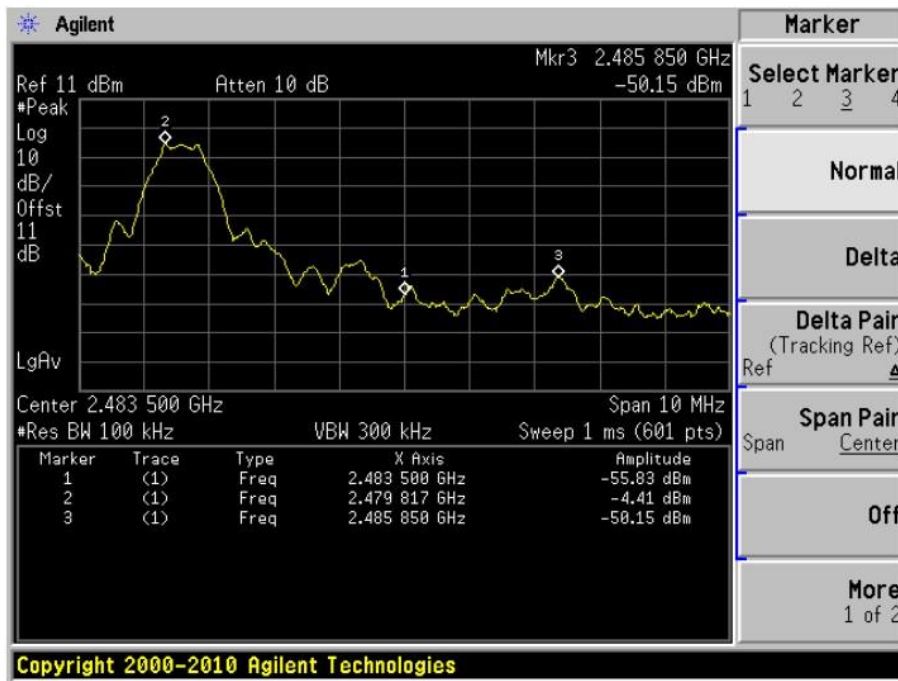
Frequency (MHz)	Delta Peak to Band Emission (dB)	Limit (dB)
2402	34.72	>20



Date of test : 15th January 2014
 Test requirement : FCC §15.247(d)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2480MHz
 Remarks :

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency (MHz)	Delta Peak to Band Emission (dB)	Limit (dB)
2480	45.74	>20

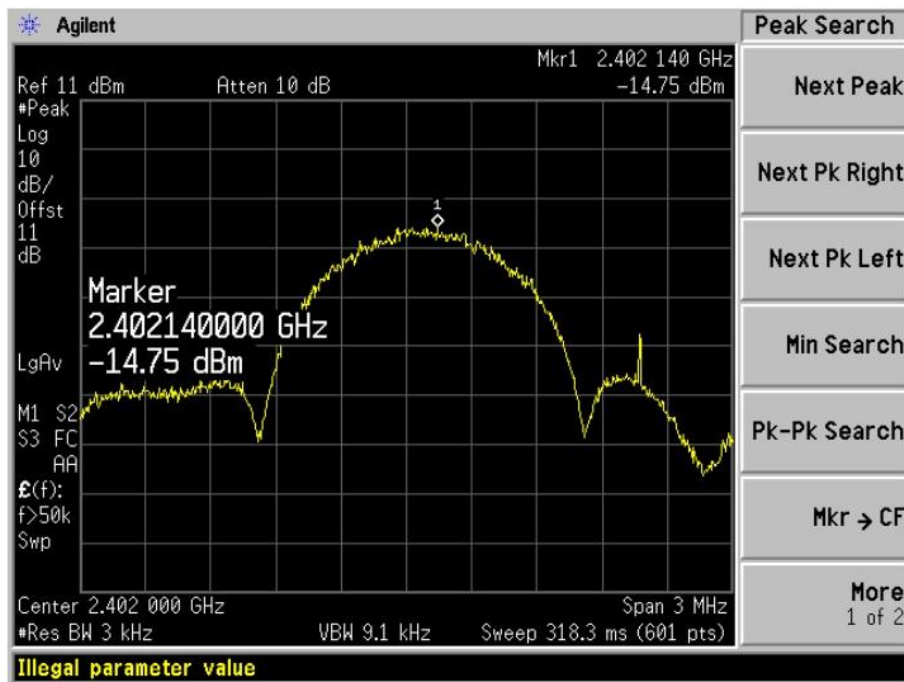


7.7 Power Spectral Density

Date of test : 15th January 2014
 Test requirement : FCC §15.247(e)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2402MHz
 Remarks :

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

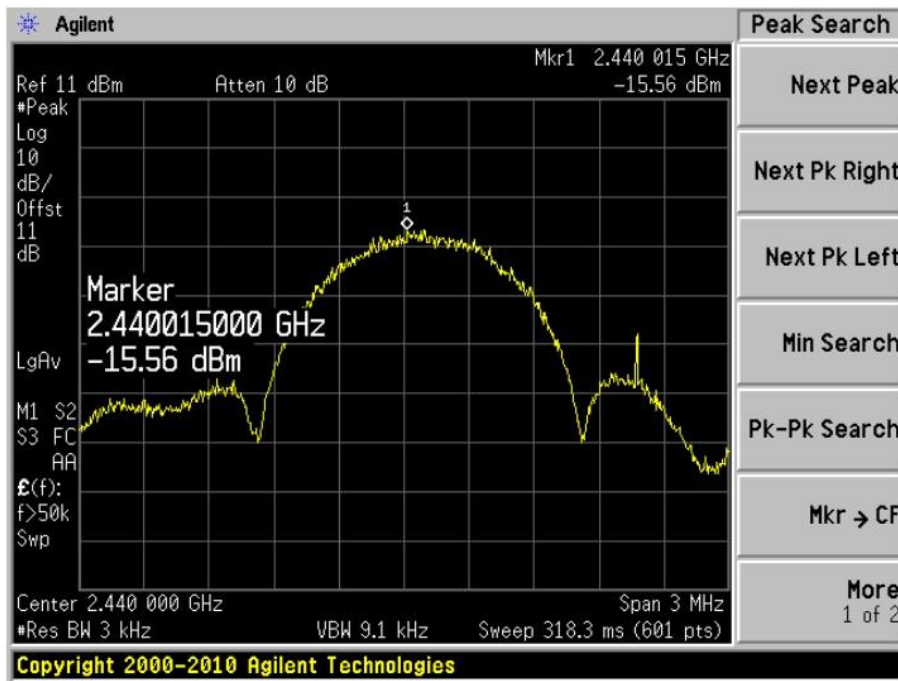
Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
2402	-14.75	<8



Date of test : 15th January 2014
 Test requirement : FCC §15.247(e)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2440MHz
 Remarks :

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

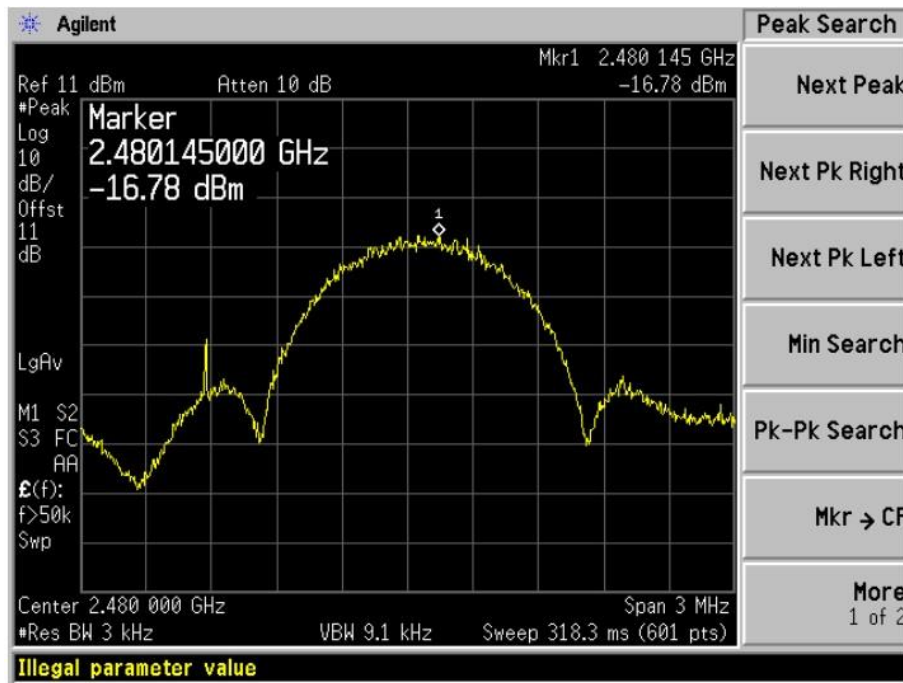
Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
2440	-15.56	<8



Date of test : 15th January 2014
 Test requirement : FCC §15.247(e)
 Test method : Conducted
 Operating mode : Transmit mode
 Frequency channel : 2480MHz
 Remarks :

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
2480	-16.78	<8



7.8 Antenna Requirement

Limit

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. And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Antenna Connector Construction

The antenna used in this product is PCB antenna. And the maximum Gain of this antenna is 0.0 dBi.

8. Test Equipment List

Radiated Emission Test

DESCRIPTION	Type No.	Serial No.	Calibrated date	Calibrated until
Antenna	VULB9163	9163 330	2013.02.25	2014.02.24
Antenna	3117	00066577	2013.04.02	2014.04.01
Antenna	3160-09	00118388	2013.09.06	2014.09.05
Loop Antenna	6512	29604	2013.09.25	2014.09.24
Spectrum Analyzer	E4440A	US42220815	2013.06.14	2014.06.13
Spectrum Analyzer	FSP 40	100378	2013.12.23	2014.12.22
EMI Test Receiver	ESCI	100701	2013.08.04	2014.08.03
Spectrum Analyzer	FSV40	100903	2013.01.27	2014.01.26
Test Cable	SUCOFLEX 104	MY2320/4	2013.02.18	2014.02.17
Amplifier	150A250	326446	2013.03.19	2014.03.17
Temp. & Humid. Chamber	FACT5-2.0	4166	2013.11.22	2014.11.21

9. System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items		Extended Uncertainty
RE	Field strength (dB μ V/m)	U=3.59dB (9kHz-30MHz) U=5.08dB (30MHz-1GHz) U=4.56dB (1GHz-18GHz) U=4.42dB (18GHz-25GHz)
CE	Disturbance Voltage (dB μ V)	U=2.7dB