

FCC Test Report

Client Information:

Applicant: Aurum Electronics Corp.
Applicant add.: No.160, Dayong Rd., Tainan Hsien Yongkang City, Taiwan

EUT Information:

EUT Name: THE INTELLIGENT MOTION SENSOR TRACKING LIGHT
Model No.: AEC9331CU-SP8
Brand Name: N/A
FCC ID: VQX-AEC9331CU-8
IC ID: 7507A-AEC9331CU-8

Prepared By:

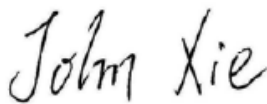
Asia Institute Technology (Dongguan) Limited
Add. : No.6 Binhe Road, Tianxin Village, Huangjiang,
Dongguan, Guangdong, China.
Date of Receipt: May 20, 2010 Date of Test: May. 21 ~ 28, 2010
Date of Issue: Jun. 1, 2010 Test Result: **Pass**

Test procedure used: ANSI C63.4-2003

This device described above has been tested by Asia Institute Technology (Dongguan) Limited, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

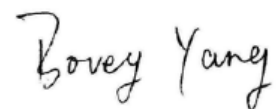
*This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by:



Test director

Approved by:



Technical director

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2 Test Summary

Compliance with FCC Part 15 subpart C

Test	Test Requirement	Standard Paragraph	Result
Antenna requirement	FCC Part 15 C:2008	Section 15.203	PASS
Conduction Emissions	FCC Part 15 C:2008	Section 15.249	N/A
Radiated Emissions	FCC Part 15 C:2008	Section 15.249(a) Section 15.249(d)	PASS
Band edges	FCC Part 15 C:2008	Section 15.249(d)	PASS
Occupied Bandwidth	FCC Part 15 C:2008	Section 15.215	PASS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, The following measurements uncertainty Level have estimated based on ANSI C63.4:2003, the maximum value of the uncertainty as below

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	Radiated Emission Test	$\pm 3.57\text{dB}$

3 Test Facility

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

.FCC- Registration No: 248337

The 3m Semi-Anechoic Chamber, 3m/10m Open Area Test Site and Shielding Room of Asia Institute Technology (Dong guan) Limited have been registered by Federal Communications Commission (FCC) on Dec.07, 2006.

.Industry Canada(IC)-Registration No: IC6819A-1 & IC6819A-2

The 3m Semi-Anechoic Chamber and 3m/10m Open Area Test Site of Asia Institute Technology (Dongguan) Limited have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing on Nov.07, 2006.

.VCCI- Registration No: R-2482 & C-2730

The 3m/10m Open Area Test Site and Shielding Room of Asia Institute Technology (Dongguan) Limited have been registered by Voluntary Control Council for Interference on Jan.24, 2007.

.TUV Rhineland

Asia Institute Technology (Dongguan) Limited has been assessed on Jan.16, 2007 that it can carry out EMC tests by order and under supervision of TUV Rhineland.

.ITS- Registration No: TMPSHA031

Asia Institute Technology (Dongguan) Limited has been assessed and included in Intertek Shanghai TMP Program regarding Laboratory facilities and test equipment on Nov.10, 2006.

Deviation from standard

None

Abnormalities from standard conditions

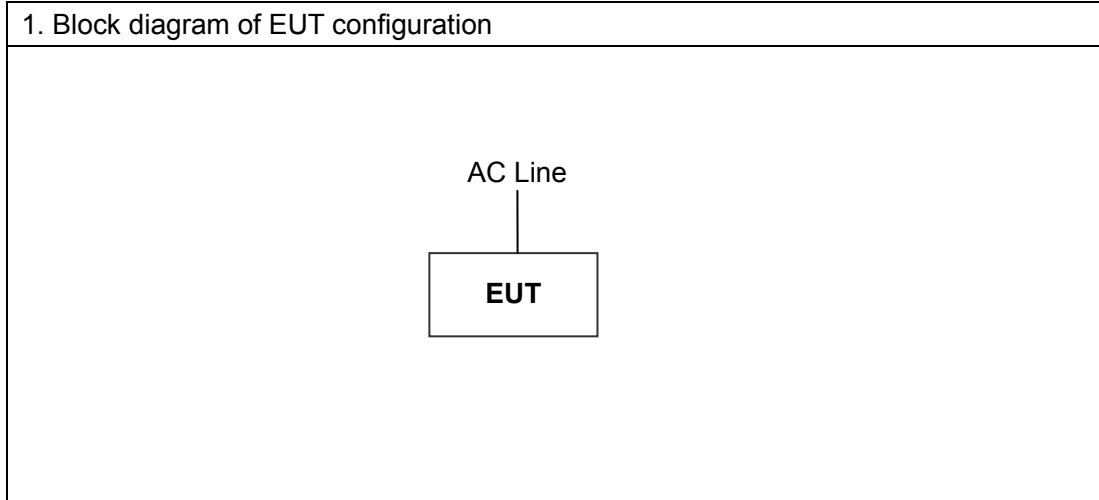
4 General Information

General Description of EUT

Manufacturer:	Aurum(HK) CO., LTD.						
Manufacturer Address:	4th industrial area, Her-Shoei-Kou, Gong-Ming Street, Guangming Xin District, Shenzhen City, Guangdong Province, China						
EUT Name:	THE INTELLIGENT MOTION SENSOR TRACKING LIGHT						
Model No:	AEC93361CU-SP8						
Operation frequency:	2402 MHz to 2480MHz						
Channel Number:	N/A						
Modulation Technology:	GFSK						
Antenna Type:	extended wire lay on PCB						
Brand Name:	N/A						
Serial No:	N/A						
Power Supply Range:	AC 120V/ 60Hz						
Power Supply:	AC 120V/ 60Hz						
Power Cord:	N/A						
Model description: N/A							
Description of Channel:							
channel	Frequency (MHz)	channel	Frequency (MHz)	channel	Frequency (MHz)	channel	Frequency (MHz)
1	2402	11	2422	21	2442	31	2462
2	2404	12	2424	22	2444	32	2464
3	2406	13	2426	23	2446	33	2466
4	2408	14	2428	24	2448	34	2468
5	2410	15	2430	25	2450	35	2470
6	2412	16	2432	26	2452	36	2472
7	2414	17	2434	27	2454	37	2474
8	2416	18	2436	28	2456	38	2476
9	2418	19	2438	29	2458	39	2480
10	2420	20	2440	30	2460		

Description of Test conditions

- (1) EUT was tested in normal configuration (Please See following Block diagram)



- (2) E.U.T. test conditions:

15.31(e): For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

- (3) 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

- (4) Frequency range of radiated measurements:

According to the 15.33, the test range will be up to the tenth harmonic of the highest fundamental frequency

Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	N/A	N/A	N/A	N/A	N/A	N/A

5 Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	ADVANTEST	R3182	150900201	2010.04.17	2011.04.16
2	EMI Measuring Receiver	Schaffner	SCR3501	235	2010.04.07	2011.04.06
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2010.03.07	2010.09.06
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2010.04.08	2011.04.07
5	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2009.07.02	2010.07.01
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9120A	451	2009.07.15	2010.07.14
7	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2010.03.07	2010.09.06
8	EMI Test Receiver	R&S	ESCI	100124	2009.12.28	2010.12.27
9	LISN	Kyoritsu	KNW-242	8-837-4	2010.04.07	2011.04.06
10	LISN	Kyoritsu	KNW-407	8-1789-3	2010.04.07	2011.04.06
11	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2010.03.07	2010.09.06

6 Test Result

Antenna requirement

6.1.1 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.

6.1.2 EUT Antenna

The antenna is integrated on the main PCB and no consideration of replacement.

Conduction Emissions Measurement

6.1.3 limit

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

Note:Decreases with the logarithm of the frequency.

6.1.4 Test procedure

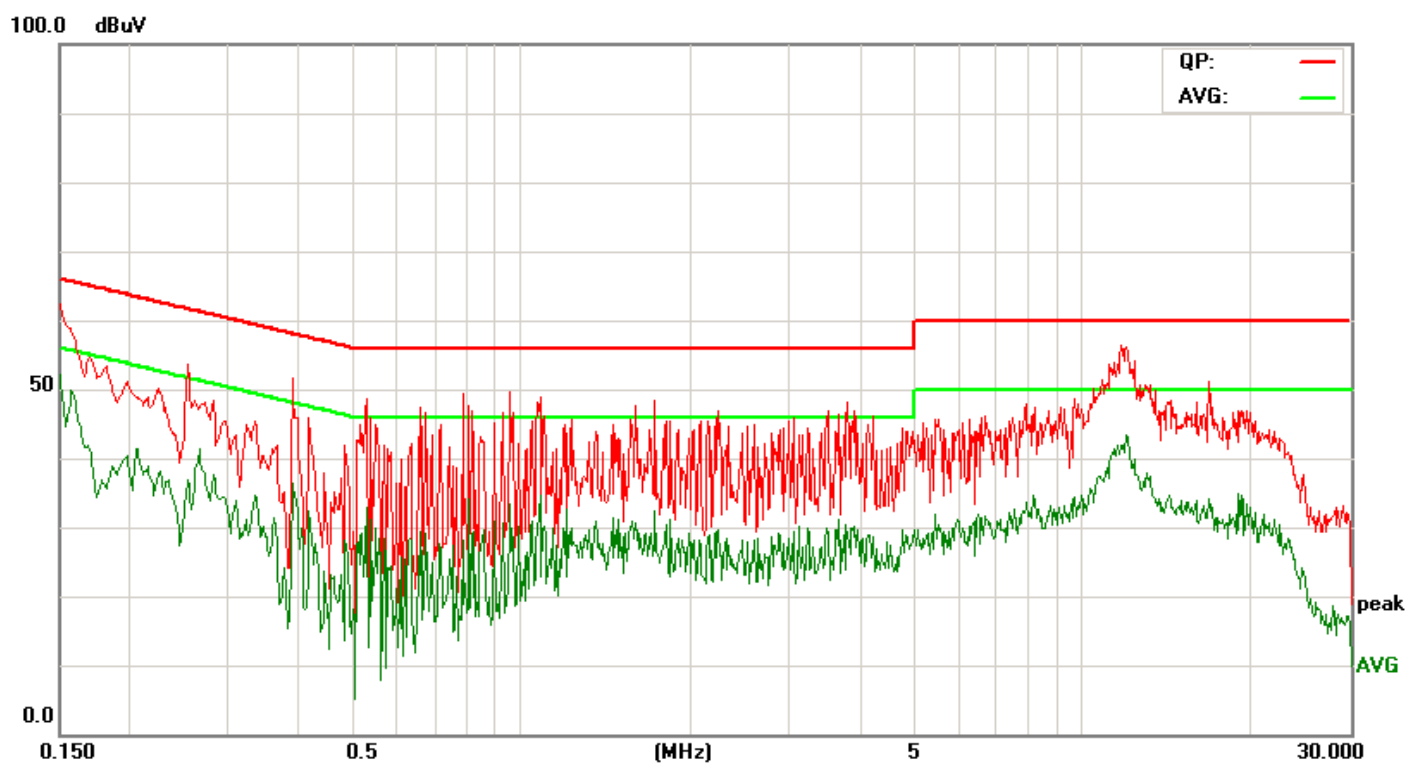
EUT was placed upon a wooden test table 0.8m above the horizontal metal reference plane and 0.4m from the vertical ground plane, and it was connected to an AMN. The closest distance between the boundary of the EUT and the surface of the AMN is 0.8m. All peripherals were connected to another AMN, and placed at a distance of 10cm from each other. A spectrum and receiver was connected to the RF output port of the AMN. Both average and quasi-peak value were detected.

6.1.5 Test result

Test Data: 2010-5-28

Operating Environment: 25.3°C, 57% RH, 102 Kpa

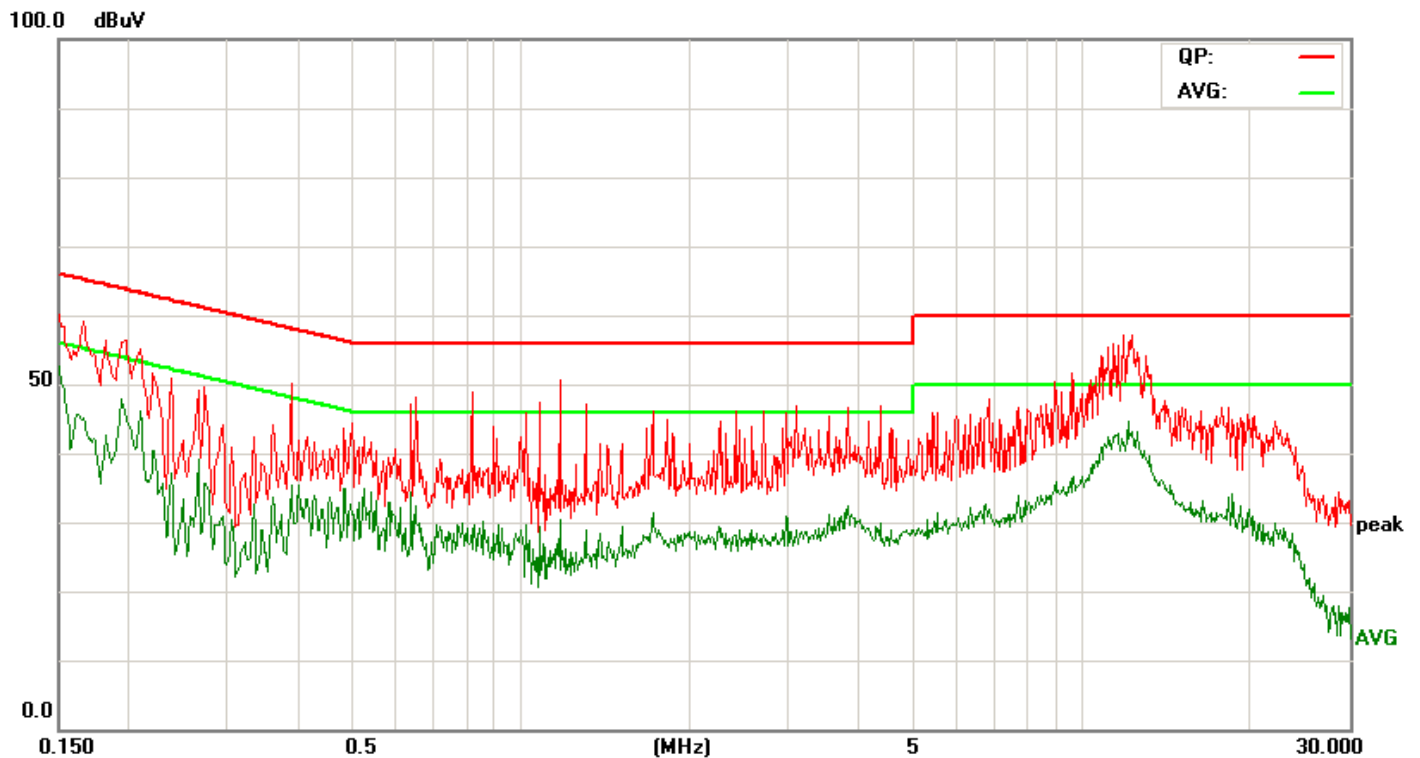
Line --Operating mode: running



Line

Frequency (MHz)	Reading Level (dBuV)	Factor (dB)	Quasi peak (dBμV)	Limit (dBμV)	Margin (dB)	Reading Level (dBuV)	Average (dBμV)	Limit (dBμV)	Margin (dB)
*0.1500	50.55	11.94	62.49	66.00	-3.51	40.25	52.19	56.00	-3.81
0.3900	41.06	10.56	51.62	58.06	-6.44	25.92	36.48	48.06	-11.58
0.7860	39.17	10.24	49.41	56.00	-6.59	23.79	34.03	46.00	-11.97
3.5400	33.54	11.20	44.74	56.00	-11.26	21.58	32.78	46.00	-13.20
11.7420	55.01	1.33	56.34	60.00	-3.66	42.00	43.33	50.00	-6.67
20.0543	40.84	1.96	42.80	60.00	-7.20	31.40	33.36	50.00	-16.64

Neutral --Operating mode: running



Neutral

Frequency (MHz)	Reading Level (dBuV)	Factor (dB)	Quasi peak (dBμV)	Limit (dBμV)	Margin (dB)	Reading Level (dBuV)	Average (dBμV)	Limit (dBμV)	Margin (dB)
0.1500	48.12	11.94	60.06	66.00	-5.94	39.60	51.54	56.00	-4.46
0.1980	45.30	11.16	56.46	63.69	-7.23	36.67	47.83	53.86	-6.03
1.1740	40.39	10.18	50.57	56.00	-5.43	20.29	30.47	46.00	-15.53
4.3500	38.56	9.21	47.77	56.00	-8.23	21.57	30.78	46.00	-15.22
*11.8740	54.91	1.33	56.24	60.00	-3.76	43.18	44.51	50.00	-5.49
18.5721	42.10	1.14	43.24	60.00	-16.76	35.46	36.6	50.00	-13.4

Radiated Emissions Measurement

6.1.6 Limit

Fcc part15.249 (a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency of Emission (MHz)	Field Strength of fundamental (dB μ V/m)	Field Strength of Harmonics(dB μ V/m)
902-928	94	54
2400-2483.5	94	54
5725-5875	94	54
24000-24250	108	68

Note: Field strength limits are specified at a distance of 3 meters. the above field strength limits in paragraphs of this section 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.

Fcc part15.249 (d)Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Frequency of Emission (MHz)	Field Strength		Measurement Distance (meters)
	μ V/m	dB μ V/m	
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

6.1.7 Test procedure

EUT was placed upon a wooden test table which was placed on the turn table 0.8m above the horizontal metal ground plane, and operating in the mode as mentioned above. A receiving antenna was placed 3m away from the EUT. During testing, turn around the turn table and move the antenna from 1m to 4m to find the maximum field-strength reading. All peripherals were placed at a distance of 10cm between each other. Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

6.1.8 Test Result

Test Data: 2010-05-28

Frequency Range: 30MHz to 1GHz

RBW/VBW: 100KHz/300KHz for spectrum, RBW=120KHz for receiver

Measurement Distance: 3 m

Operating Environment: 25.3°C, 58% RH, 102 Kpa

(a) Antenna polarization: Horizontal

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
61.040	13.606	7.632	21.238	-18.762	40.000	QUASIPeAK
94.020	10.954	9.681	20.635	-22.865	43.500	QUASIPeAK
*180.350	14.033	15.392	29.425	-14.075	43.500	QUASIPeAK
239.520	13.580	16.496	30.076	-15.924	46.000	QUASIPeAK
287.050	15.173	13.410	28.583	-17.417	46.000	QUASIPeAK
386.960	17.532	8.354	25.886	-20.114	46.000	QUASIPeAK

(b) Antenna polarization: vertical

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
36.790	13.238	17.924	31.162	-8.838	40.000	QUASIPeAK
57.160	13.497	12.627	26.124	-13.876	40.000	QUASIPeAK
*90.140	10.601	27.032	37.633	-5.867	43.500	QUASIPeAK
143.490	15.071	10.975	26.046	-17.454	43.500	QUASIPeAK
239.520	13.580	14.519	28.099	-17.901	46.000	QUASIPeAK
288.020	15.201	18.920	34.121	-11.879	46.000	QUASIPeAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Test Data: 2010-05-28

Frequency Range: 1GHz to 25GHz

RBW/VBW: 1MHz/1MHz for Peak, 1MHz/10Hz for Average

Measurement Distance: 3 m

Operating Environment: 20.5°C, 58% RH, 102 Kpa

(a) Antenna polarization: Horizontal

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1200.000	29.280	12.419	41.699	-32.301	74.000	PEAK
1876.000	31.320	12.729	44.049	-29.951	74.000	PEAK
2176.000	32.705	15.764	48.469	-25.531	74.000	PEAK
2400.000	33.784	15.586	49.370	-24.630	74.000	PEAK
*2400.000	33.784	8.210	41.994	-12.006	54.000	AVERAGE
2402.000	33.903	55.544	89.447	-24.553	114.000	PEAK
2402.000	33.903	49.800	83.703	-10.297	94.000	AVERAGE
2995.000	35.795	11.496	47.291	-26.709	74.000	PEAK
4945.000	40.255	4.583	44.838	-29.162	74.000	PEAK

(b) Antenna polarization: vertical

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1498.000	29.919	17.461	47.380	-26.620	74.000	PEAK
1726.000	30.656	13.938	44.594	-29.406	74.000	PEAK
2176.000	32.705	14.467	47.172	-26.828	74.000	PEAK
2400.000	33.125	12.737	45.862	-28.138	74.000	PEAK
2400.000	33.125	5.687	38.812	-15.188	54.000	AVERAGE
2402.000	33.903	55.583	89.486	-24.514	114.000	PEAK
*2402.000	33.903	48.200	82.103	-11.897	94.000	AVERAGE
4804.000	40.010	2.318	42.328	-31.672	74.000	PEAK

Note: '**' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Low Channel:2402 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1220.000	29.329	21.090	50.419	-23.581	74.000	PEAK
1495.000	29.915	19.007	48.922	-25.078	74.000	PEAK
1905.000	31.398	20.293	51.691	-22.309	74.000	PEAK
1296.000	29.588	13.847	43.434	-30.566	74.000	PEAK
2058.000	32.011	14.563	46.574	-27.426	74.000	PEAK
2440.000	34.010	55.489	89.499	-24.501	114.000	PEAK
*2440.000	34.010	47.500	81.510	-12.490	94.000	AVERAGE
4880.000	40.137	3.055	43.192	-30.808	74.000	PEAK

(b) Antenna polarization: vertical

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1220.000	29.337	28.612	57.949	-16.051	74.000	PEAK
*1220.000	29.337	16.050	45.387	-8.613	54.000	AVERAGE
1750.000	30.810	13.872	44.682	-29.318	74.000	PEAK
2058.000	32.011	15.798	47.809	-26.191	74.000	PEAK
2212.000	32.915	14.016	46.931	-27.069	74.000	PEAK
2362.000	33.696	16.345	50.041	-23.959	74.000	PEAK
2440.000	34.010	55.458	89.468	-24.532	114.000	PEAK
2440.000	34.010	43.587	77.597	-16.403	94.000	AVERAGE
4880.000	40.137	2.649	42.786	-31.214	74.000	PEAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Middle Channel :2440 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBUV)	Measure Level (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Detector Type
1782.000	30.993	15.611	46.604	-27.396	74.000	PEAK
2092.000	32.214	18.938	51.152	-22.848	74.000	PEAK
2246.000	33.095	17.605	50.700	-23.300	74.000	PEAK
2480.000	34.123	55.263	89.386	-24.614	114.000	PEAK
*2480.000	34.123	49.500	83.623	-10.377	94.000	AVERAGE
2483.500	35.795	11.597	47.392	-26.608	74.000	PEAK
2483.500	35.795	2.546	38.341	-15.659	54.000	AVERAGE
4956.000	40.273	4.729	45.002	-28.998	74.000	PEAK

(b) Antenna polarization: vertical

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBUV)	Measure Level (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Detector Type
1239.000	29.392	30.517	59.909	-14.091	74.000	PEAK
1782.000	30.993	13.704	44.697	-29.303	74.000	PEAK
1936.000	31.490	18.551	50.041	-23.959	74.000	PEAK
2246.000	33.095	15.958	49.053	-24.947	74.000	PEAK
*2480.000	32.580	50.500	83.080	-10.920	94.000	AVERAGE
2480.000	32.580	65.274	97.854	-16.142	114.000	PEAK
2483.500	34.795	12.353	47.145	-26.855	74.000	PEAK
2483.500	34.795	4.200	38.995	-15.005	54.000	AVERAGE
4955.000	40.272	6.528	46.800	-27.200	74.000	PEAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

High Channel :2480 MHz

Band edges

6.1.9 Limit

Fcc part15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

6.1.10 Test procedure

- (1) Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as RBW=100KHz, VBW \geq RBW, Sweep time=Auto, Detector Function=Peak
- (2) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission.
- (3) The above procedure shall be repeated at the lowest, and the highest frequency of the stated frequency range.

6.1.11 Test Result

Please refer to report section 6.2.3 which met the requirement of limits in 15.209

Occupied Bandwidth

6.1.12 Limit

Fcc part15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

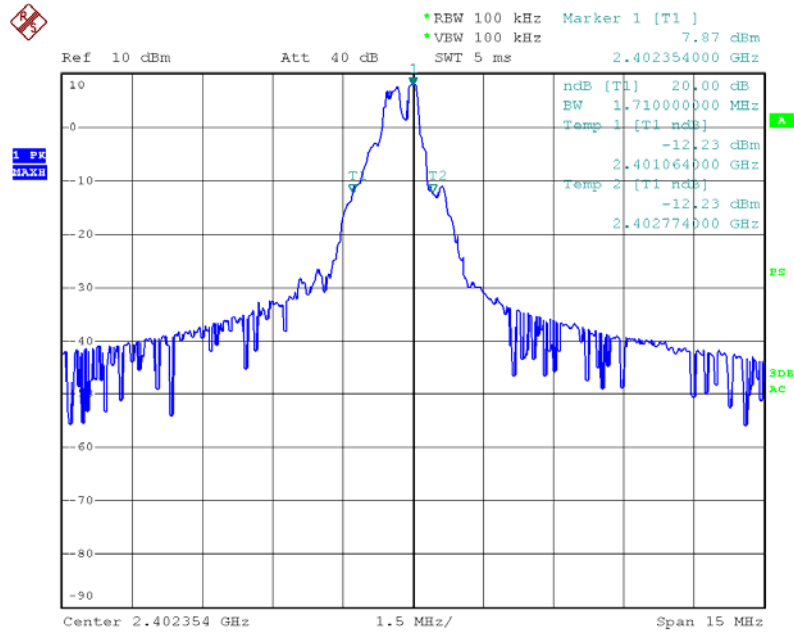
6.1.13 Test procedure

- (1) Connected the antenna port to the Spectrum Analyzer , set the Spectrum Analyzer as RBW=100kHz,VBW \geq RBW,Sweep time=Auto, Detector Function=Peak
- (2) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission.
- (3) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. also shall be performed at different modes of operation

6.1.14 Test Result

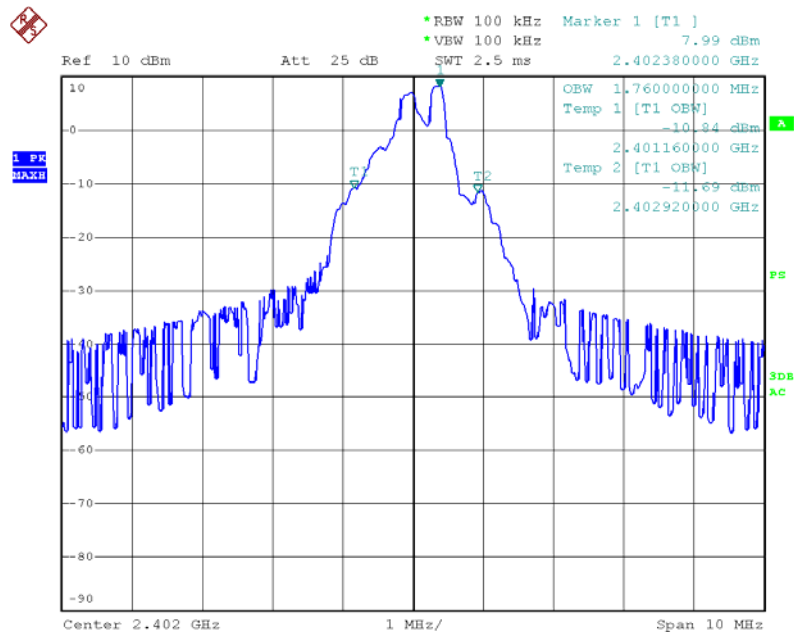
channel	Channel frequency (MHz)	20dB bandwidth (MHz)	99% bandwidth (MHz)	Limit (MHz)	Conclusion
Low	2402	1.71	1.76	N/A	Pass
Mid	2440	2.09	1.84	N/A	Pass
High	2478	2.09	1.88	N/A	Pass

(1) Low: 2402MHz



Date: 26.MAY.2010 22:57:52

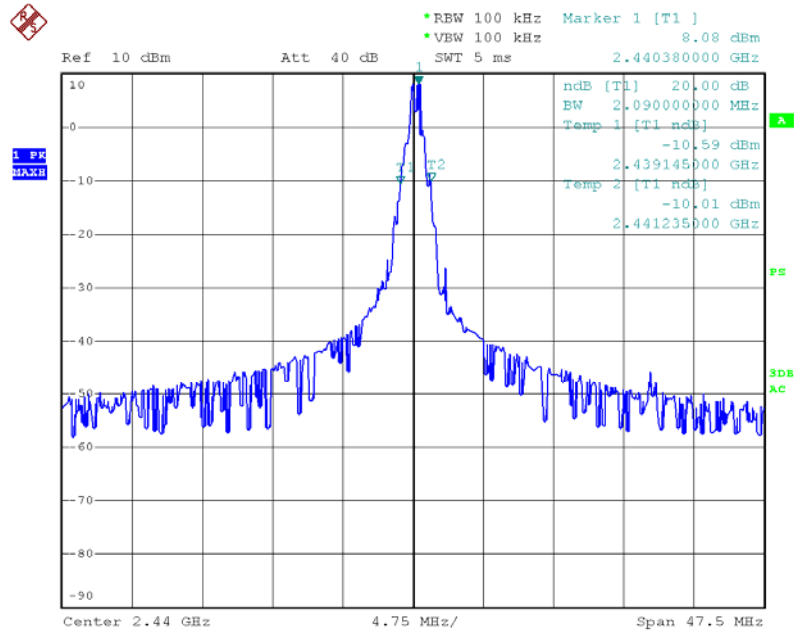
20dB bandwidth



Date: 3.JUN.2010 21:45:54

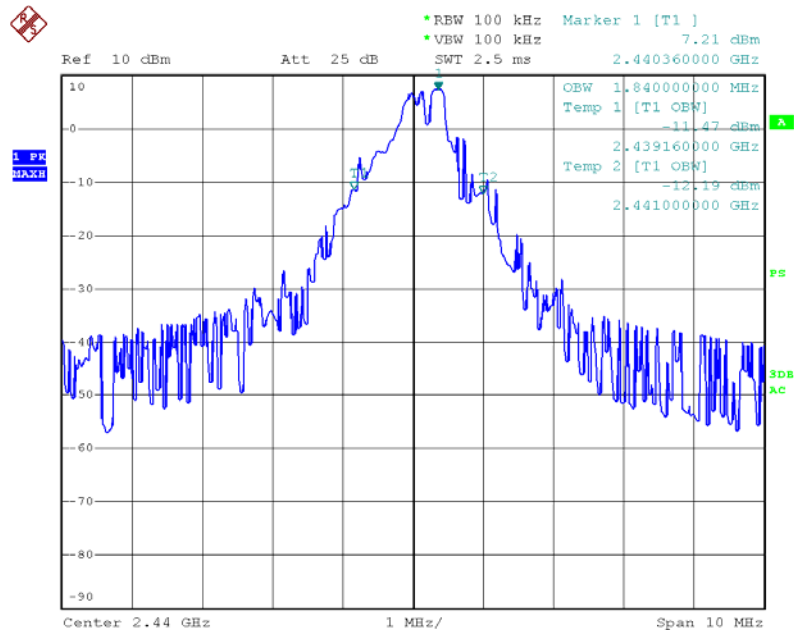
99% bandwidth

(2) Mid: 2440MHz



Date: 26.MAY.2010 23:32:52

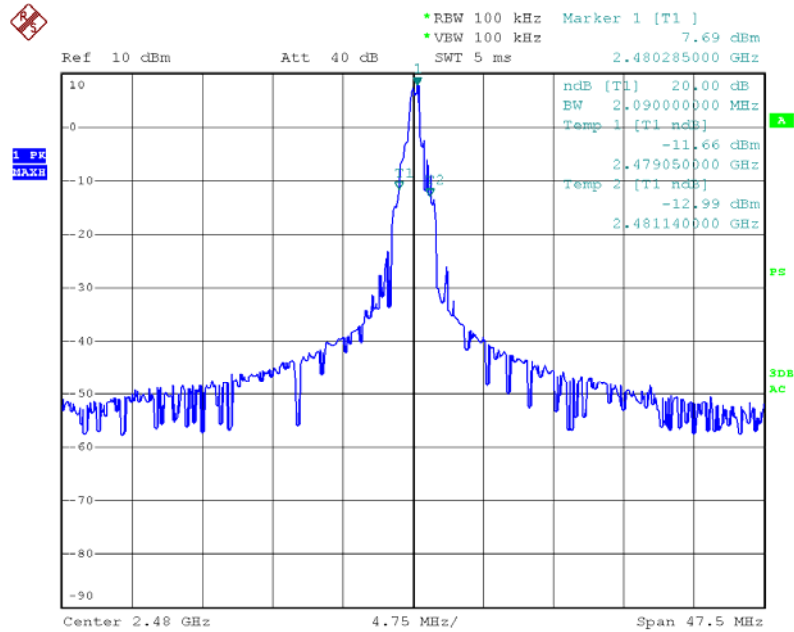
20dB bandwidth



Date: 3.JUN.2010 21:52:33

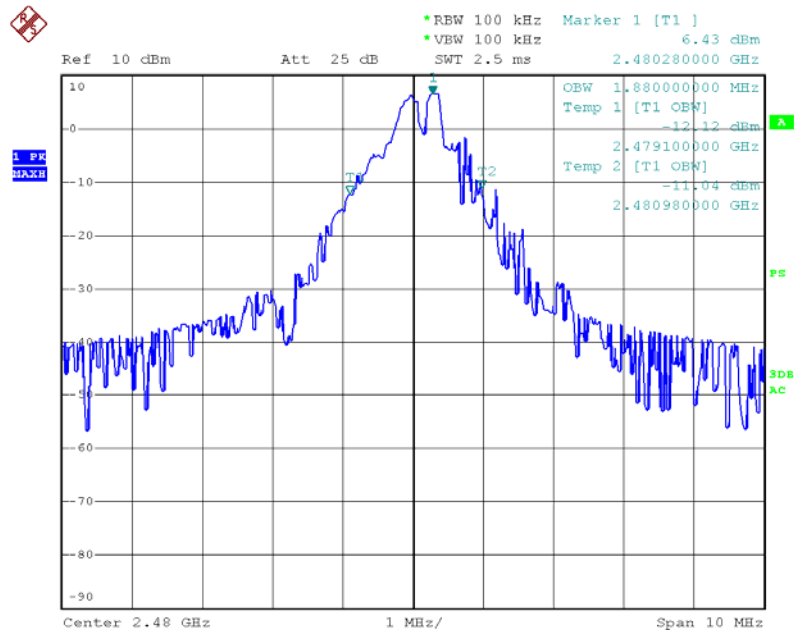
99% bandwidth

(3) High: 2480MHz



Date: 26.MAY.2010 23:34:33

20dB bandwidth



Date: 3.JUN.2010 21:50:03

99% bandwidth