

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.: AEC-752C
Brand Name: N/A

Prepared By:

Asia Institute Technology (Dongguan) Limited
Add. : No.6 Binhe Road, Tianxin Village, Huangjiang,
Dongguan, Guangdong, China.

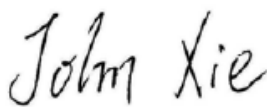
Date of Receipt: Sep. 20, 2009 Date of Test: Nov. 10 ~ 15, 2009
Date of Issue: Nov. 16, 2009 Test Result: **Pass**

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.

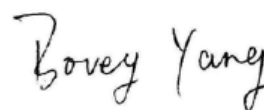
*This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by:



Test director

Approved by:



Technical director

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2 Test Summary

2.1 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

2.2 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.

3.1 Deviation from standard

None

3.2 Abnormalities from standard conditions

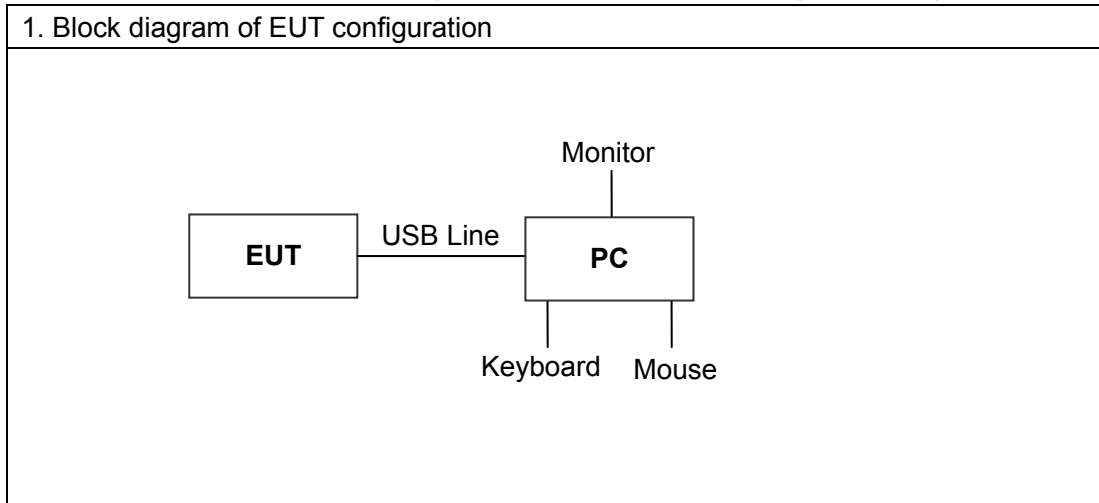
4 General Information

4.1 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:	AEC-752C						
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:	DC 5V						
Power Supply:	DC 5V						
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	2478
10	2420	20	2440	30	2460	40	2480

4.2 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

4.3 Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	Personal computer	H P	DX2310	CNG8250MZ3	1.8m/unshielded /detachable	N/A
2	Mouse	Microsoft	X800898	30603	N/A	1.5m/unshielded /undetachable
3	Keyboard	DELL	SK-8115	CN-ONM432-71616-81M-OLKB	N/A	1.5m/unshielded /undetachable
4	Monitor	DELL	T980KACDK21SN	TWS20006045	1.8m/unshielded /detachable	1.8m/shielded /detachable

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	2009.04.17	2010.04.16
2	EMI Measuring Receiver	Schaffner	SCR3501	235	2009.04.08	2010.04.07
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2009.09.08	2010.03.07
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2009.04.08	2010.04.07
5	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2009.07.15	2010.07.14
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9120A	451	2009.07.15	2010.07.14
7	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2009.09.08	2010.03.07
8	EMI Test Receiver	R&S	ESCI	100124	2008.12.29	2009.12.28
9	LISN	Kyoritsu	KNW-242	8-837-4	2009.04.08	2010.04.07
10	LISN	Kyoritsu	KNW-407	8-1789-3	2009.04.08	2010.04.07
11	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2009.09.08	2010.03.07

6 Test Result

6.1 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.

6.2 Conduction Emissions Measurement

6.2.1 limit

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	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.

6.2.2 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.

6.2.3 Test result

Cause the EUT only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Measurements to demonstrate compliance with the conducted limits are not required for devices

6.3 Radiated Emissions Measurement

6.3.1 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

6.3.2 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.

6.3.3 Test Result

Test Data: 2009-11-10

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
124.090	14.690	19.583	34.273	-9.227	43.500	QUASIPeAK
*143.490	16.140	22.623	38.763	-4.737	43.500	QUASIPeAK
480.080	21.960	9.885	31.845	-14.155	46.000	QUASIPeAK
675.050	25.840	10.976	36.816	-9.184	46.000	QUASIPeAK
825.400	28.840	9.769	38.609	-7.391	46.000	QUASIPeAK
975.750	30.160	13.576	43.736	-10.264	54.000	QUASIPeAK

(b) Antenna polarization: vertical

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
124.090	14.690	16.153	30.843	-12.657	43.500	QUASIPeAK
*143.490	16.140	21.428	37.568	-5.932	43.500	QUASIPeAK
675.050	25.840	7.468	33.308	-12.692	46.000	QUASIPeAK
748.770	27.960	5.691	33.651	-12.349	46.000	QUASIPeAK
825.400	28.840	6.051	34.891	-11.109	46.000	QUASIPeAK
975.750	30.160	12.756	42.916	-11.084	54.000	QUASIPeAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Test Data: 2009-11-15

Frequency Range: 1GHz to 25GHz

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

Measurement Distance: 3 m

Operating Environment: 20.3°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
1125.000	29.002	19.854	48.856	-25.144	74.000	PEAK
1201.000	29.280	10.300	39.580	-14.420	54.000	AVERAGE
1201.000	29.280	24.770	54.050	-19.950	74.000	PEAK
1725.000	30.651	17.961	48.612	-25.388	74.000	PEAK
2025.000	31.822	18.377	50.199	-23.801	74.000	PEAK
*2402.000	33.897	74.434	108.331	-5.669	114.000	PEAK
2402.000	33.903	38.912	72.815	-21.185	94.000	AVERAGE
4800.000	40.003	6.955	46.958	-27.042	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
1070.000	28.805	18.708	47.513	-26.487	74.000	PEAK
1125.000	29.002	18.409	47.411	-26.589	74.000	PEAK
1201.000	29.280	24.966	54.246	-19.754	74.000	PEAK
1201.000	29.280	11.150	40.430	-13.570	54.000	AVERAGE
1575.000	29.922	19.285	49.207	-24.793	74.000	PEAK
2100.000	32.257	19.674	51.931	-22.069	74.000	PEAK
*2402.000	33.897	74.052	107.949	-6.051	114.000	PEAK
2402.000	33.903	35.822	69.725	-24.275	94.000	AVERAGE
2995.000	35.795	11.972	47.767	-26.233	74.000	PEAK
5175.000	41.187	6.251	47.438	-26.562	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
1140.000	29.060	20.128	49.188	-24.812	74.000	PEAK
1220.000	29.337	24.480	53.817	-20.183	74.000	PEAK
1220.000	29.337	9.680	39.017	-14.983	54.000	AVERAGE
1600.000	29.920	15.397	45.317	-28.683	74.000	PEAK
1750.000	30.810	16.786	47.596	-26.404	74.000	PEAK
2055.000	31.997	17.971	49.968	-24.032	74.000	PEAK
*2440.000	33.997	74.424	108.421	-5.579	114.000	PEAK
2440.000	34.010	47.070	81.080	-12.920	94.000	AVERAGE
4880.000	40.137	7.321	47.458	-26.542	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
1070.000	28.805	20.318	49.123	-24.877	74.000	PEAK
1215.000	29.329	24.035	53.364	-20.636	74.000	PEAK
1220.000	29.337	9.680	39.017	-14.983	54.000	AVERAGE
1445.000	29.928	17.659	47.587	-26.413	74.000	PEAK
1495.000	29.915	17.812	47.727	-26.273	74.000	PEAK
1750.000	30.810	18.536	49.346	-24.654	74.000	PEAK
*2440.000	33.997	69.572	103.569	-10.431	114.000	PEAK
2440.000	34.010	35.200	69.210	-24.790	94.000	AVERAGE
2995.000	35.795	12.222	48.017	-25.983	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
1160.000	29.130	19.522	48.652	-25.348	74.000	PEAK
1240.000	29.406	8.274	37.680	-16.320	54.000	AVERAGE
1240.000	29.410	23.528	52.938	-21.062	74.000	PEAK
1780.000	30.990	16.376	47.366	-26.634	74.000	PEAK
1935.000	31.487	15.185	46.672	-27.328	74.000	PEAK
2090.000	32.203	20.052	52.255	-21.745	74.000	PEAK
*2480.000	34.107	74.307	108.414	-5.586	114.000	PEAK
2480.000	34.117	46.996	81.113	-12.887	94.000	AVERAGE
4960.000	40.280	8.711	48.991	-25.009	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
1240.000	29.406	11.794	41.200	-12.800	54.000	AVERAGE
1240.000	29.410	26.231	55.641	-18.359	74.000	PEAK
1780.000	30.990	17.345	48.335	-25.665	74.000	PEAK
1935.000	31.487	15.802	47.289	-26.711	74.000	PEAK
2090.000	32.203	20.809	53.012	-20.988	74.000	PEAK
2480.000	34.117	34.716	68.833	-25.167	94.000	AVERAGE
*2480.000	34.123	68.645	102.768	-11.232	114.000	PEAK
4960.000	40.280	4.399	44.679	-29.321	74.000	PEAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

High Channel :2480 MHz

6.4 Band edges

6.4.1 Limit

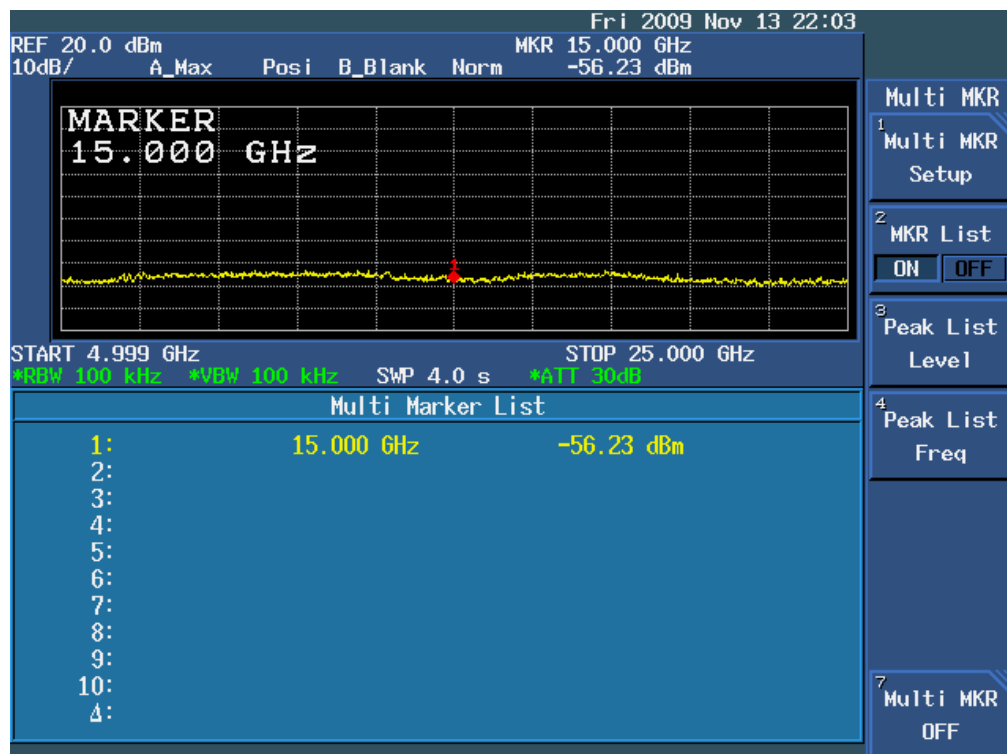
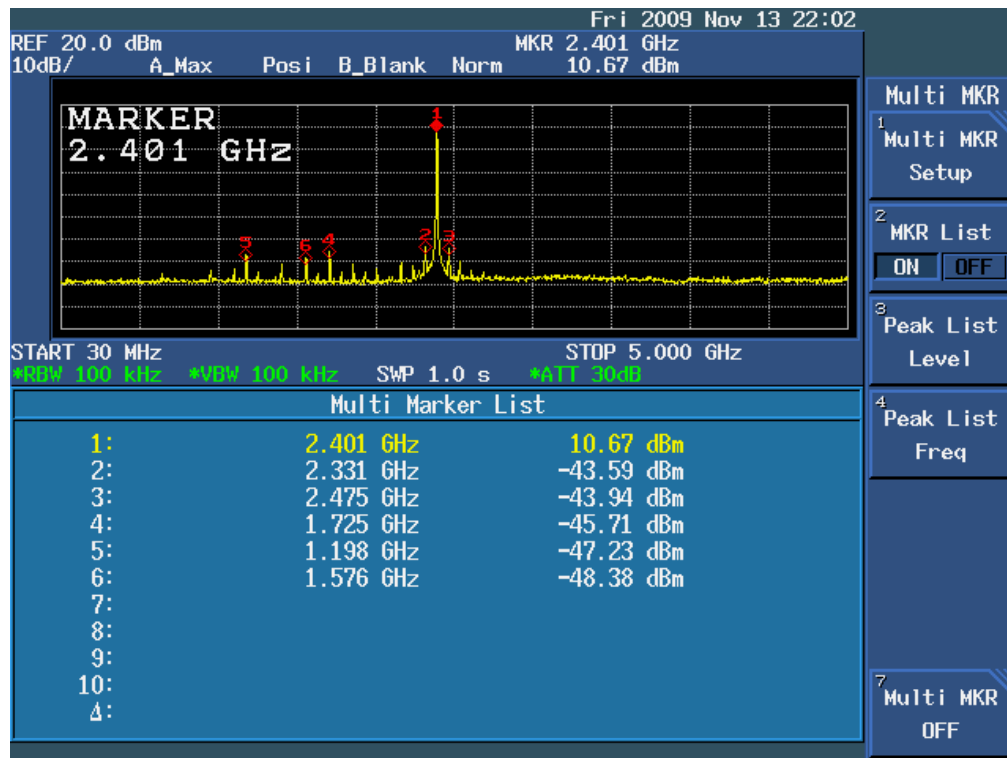
Fcc part15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

6.4.2 Test procedure

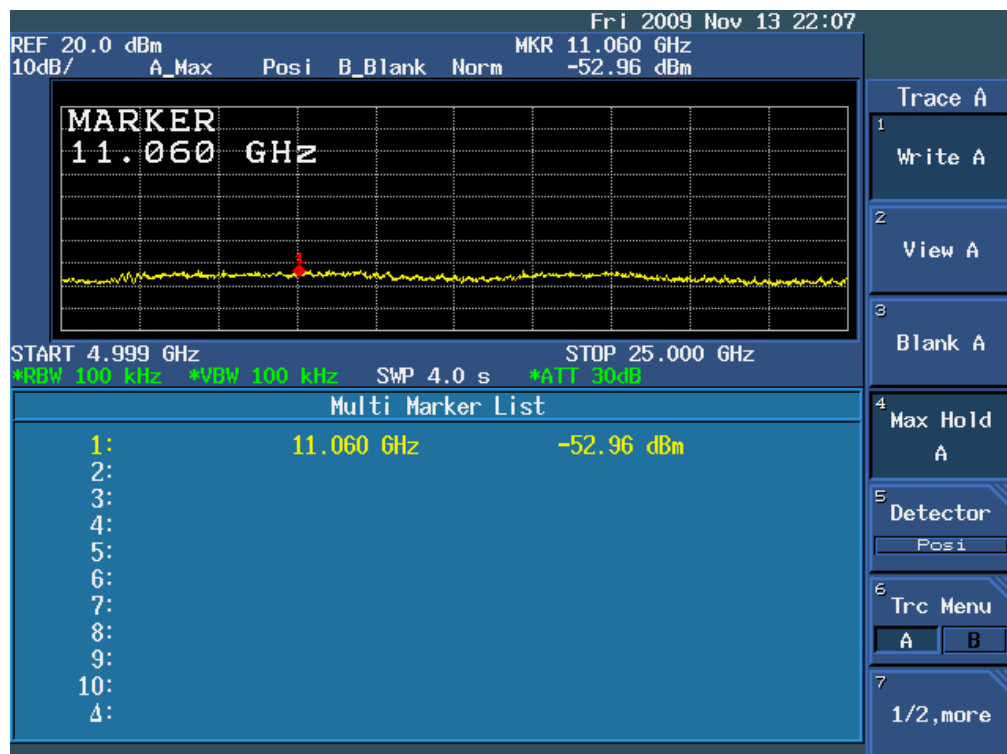
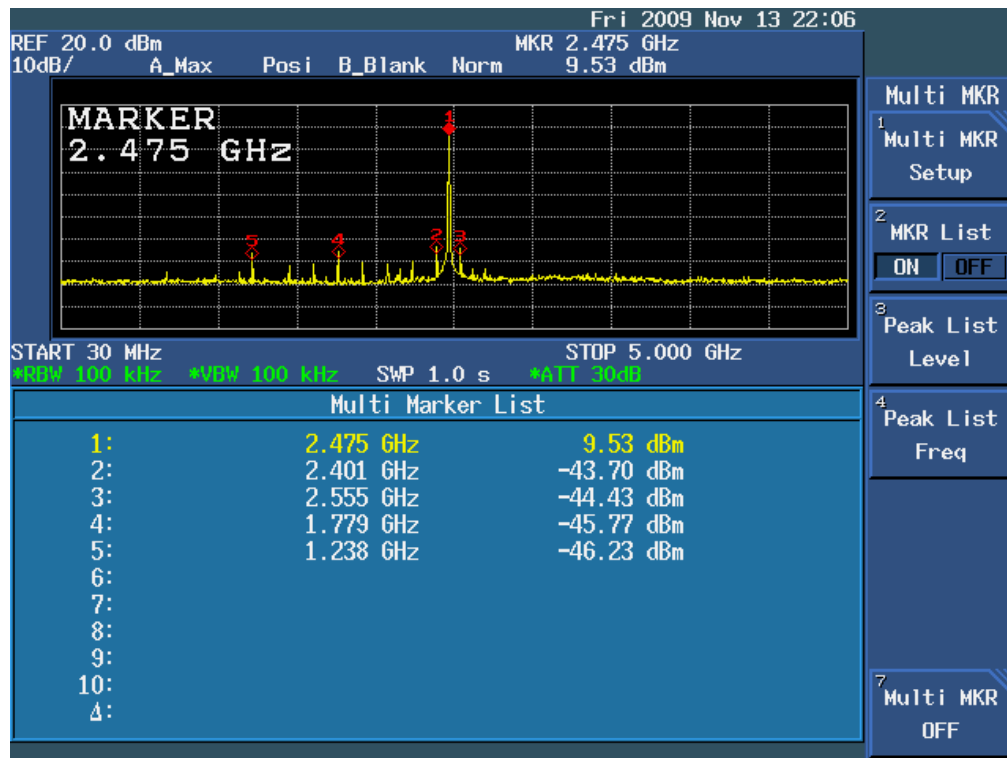
- (1) Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as RBW=100Hz, VBW \geq RBW, Sweep time=Auto, Detector Function=Peak
- (2) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the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

6.4.3 Test Result

(1) Low Channel : 2.402 GHz



(2) High Channel : 2.480 GHz



6.5 Occupied Bandwidth

6.5.1 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.

6.5.2 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

6.5.3 Test Result

channel	Channel frequency (MHz)	20dB bandwidth (MHz)	Limit (MHz)	Conclusion
Low	2402	1.625	N/A	Pass
Mid	2440	1.275	N/A	Pass
High	2480	1.685	N/A	Pass

(1) Low: 2402MHz



(2) Mid: 2440MHz



(3) High: 2480MHz

