Test Report

Client Information:

Applicant: AURUM (HK) CO LTD.
Applicant add.: NO.160.Dayong Rd. YongKang City.Tainan Hsien.710, Taiwan

EUT Information:

EUT Name: Wireless Handheld Screen Receiver
Model No.: AEC-711C
Brand Name: N/A
FCC ID: VQXAEC711C

Prepared By:

Asia Institute Technology (Dongguan) Limited
Add. : No.6 Binhe Road, Tianxin Village, Huangjiang,
Dongguan, Guangdong, China.
Date of Receipt: Jun 23, 2010 Date of Test: Jun 24-28, 2010
Date of Issue: Jun 29, 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: Jim He
Test director

Approved by: Bovey Yang
Technical director

1 Contents

2 Test Summary

2.1 Compliance with FCC Part 15 subpart C

Test	FCC rule part	Result
Antenna requirement	Section 15.203	**PASS**
Conduction Emissions	Section 15.207	**N/A**
Radiated Emissions	Section 15.249(a) Section 15.249(d)	**PASS**
Band edges	Section 15.249(d)	**PASS**
Occupied Bandwidth	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	±1.38dB
2	Radiated Emission Test	±3.57dB

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-Ming Street.GuangMing Xin District Shenzhen City Guangdong Province. China
EUT Name:	Wireless Handheld Screen Receiver
Model No:	AEC-711C
Operation frequency:	2402 MHz to 2480MHz
Channel Number:	40
Modulation Technology:	GFSK
Antenna Type:	extended wire lay on PCB
Brand Name:	N/A
Serial No:	N/A
Power Supply Range:	DC 6V from adapter AC 120V/60Hz
Power Supply:	DC 6V from adapter AC 120V/60Hz
Power Cord:	DC Line: 1.5m/ Unshielded/ Undetachable/ Without Ferrite Core

Model description: N/A

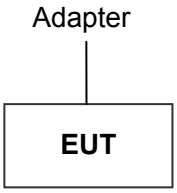
Description of Channel:

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)

1. Block diagram of EUT configuration



(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	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	2010.07.02	2011.07.01
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

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

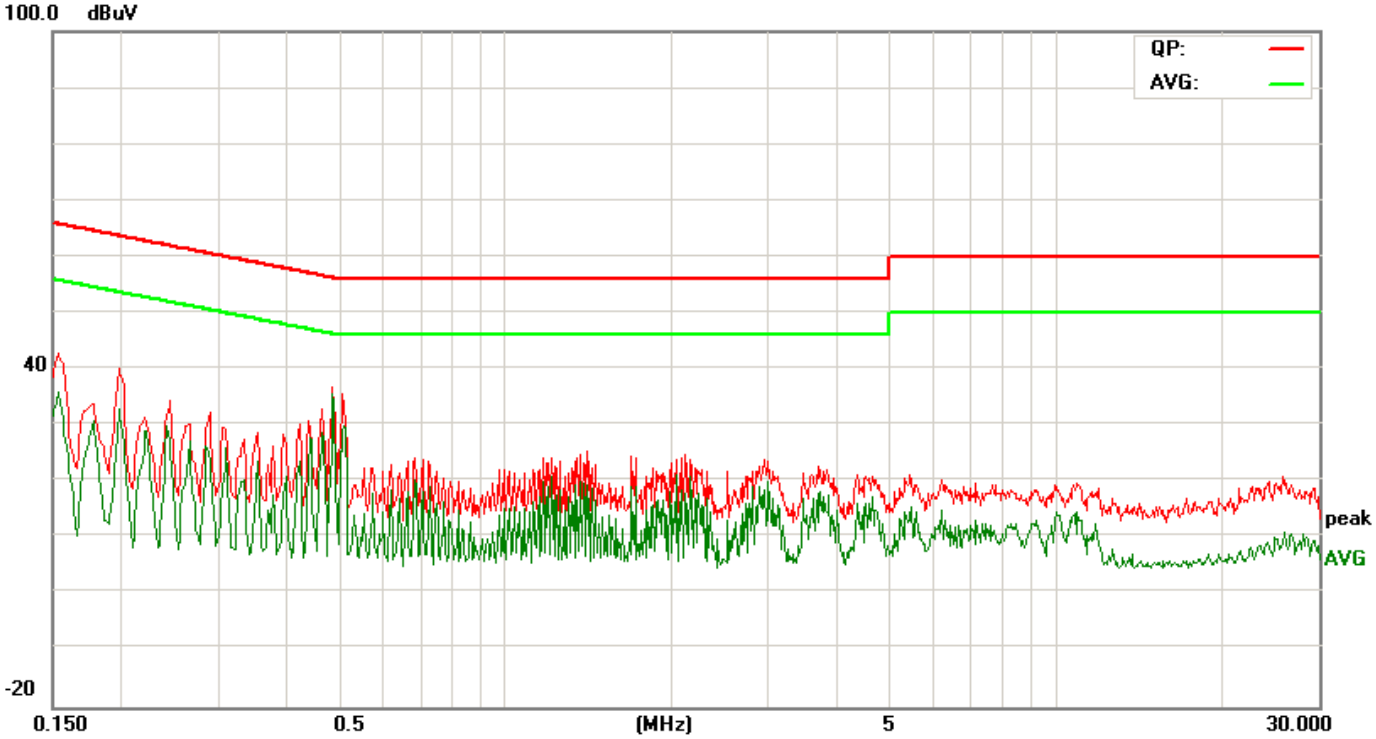
EUT was placed upon a wooden test table 0.8m above the horizontal metal reference plane and 0.4m from the vertical ground plane, and it was connected to an AMN. The closest distance between the boundary of the EUT and the surface of the AMN is 0.8m. All peripherals were connected to another AMN, and 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

Test Data: 2010-6-26

Operating Environment: 20.3°C, 58% RH, 102 Kpa

Line --Operating mode: running

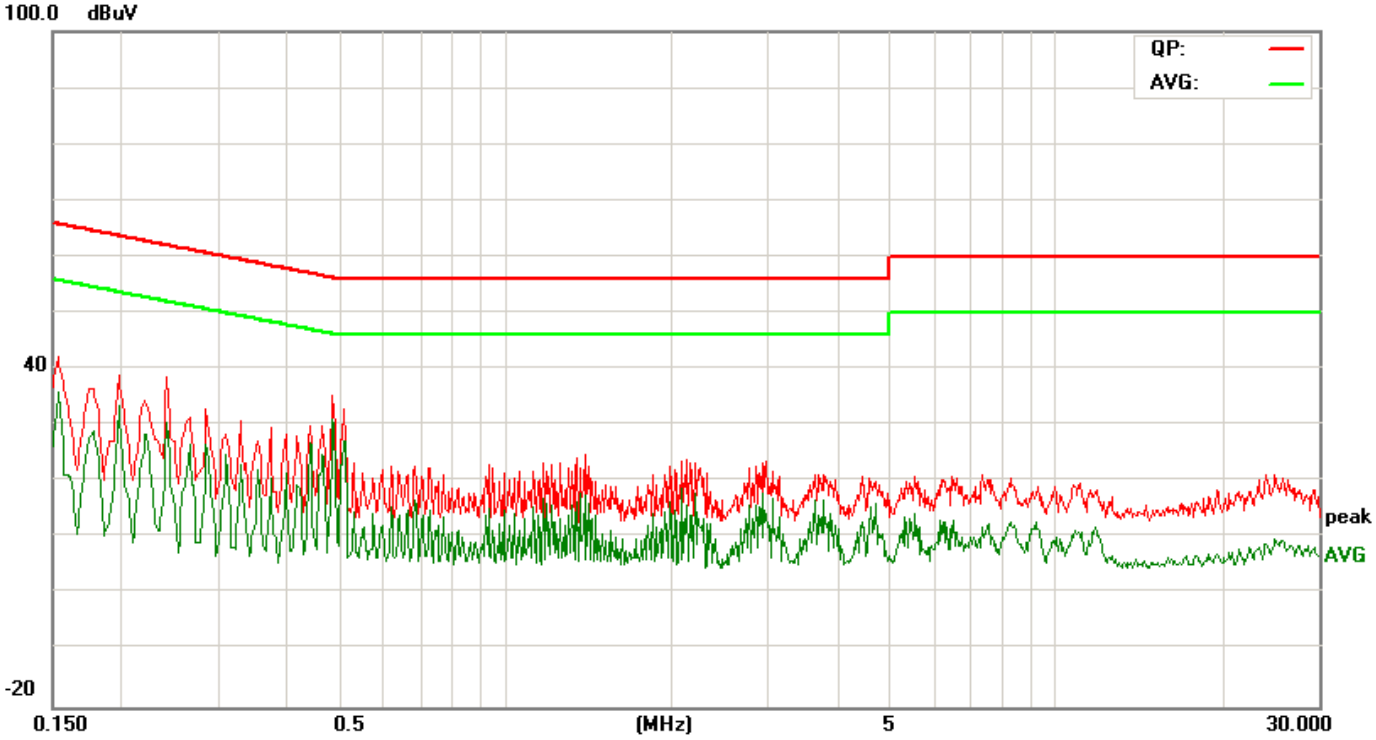


Line

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
0.1554	29.64	11.82	41.46	65.71	-24.25	QP
0.1995	27.65	11.15	38.80	63.63	-24.83	QP
0.2430	21.74	10.91	32.65	61.99	-29.34	QP
0.2908	17.36	10.76	28.12	60.50	-32.38	QP
0.3557	13.00	10.62	23.62	58.83	-35.21	QP
***0.4863**	**23.59**	**10.38**	**33.97**	**56.23**	**-22.26**	**QP**

Frequency (MHz)	Regtading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
0.1547	22.41	11.84	34.25	55.74	-21.49	AVG
0.1995	19.10	11.15	30.25	53.63	-23.38	AVG
0.2430	17.88	10.91	28.79	51.99	-23.20	AVG
0.2908	11.09	10.76	21.85	50.50	-28.65	AVG
0.3557	6.93	10.62	17.55	48.83	-31.28	AVG
***0.4863**	**23.94**	**10.38**	**34.32**	**46.23**	**-11.91**	**AVG**

Neutral --Operating mode: running



Neutral

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
0.1540	29.25	11.85	41.10	65.78	-24.68	QP
0.1785	24.11	11.41	35.52	64.56	-29.04	QP
0.1996	24.62	11.14	35.76	63.63	-27.87	QP
0.2430	24.11	10.91	35.02	61.99	-26.97	QP
0.3260	11.52	10.67	22.19	59.55	-37.36	QP
***0.4860**	**24.96**	**10.38**	**35.34**	**56.24**	**-20.90**	**QP**

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
0.1540	24.09	11.85	35.94	55.78	-19.84	AVG
0.1785	16.68	11.41	28.09	54.56	-26.47	AVG
0.1986	20.28	11.16	31.44	53.67	-22.23	AVG
0.2420	19.78	10.91	30.69	52.03	-21.34	AVG
0.3303	11.76	10.67	22.43	49.44	-27.01	AVG
***0.4860**	**20.88**	**10.38**	**31.26**	**46.24**	**-14.98**	**AVG**

Note: '*' means the worst case

Quasi peak/Average = Reading Level + Factor

Factor= Cable Loss + LISN insertion loss

6.3 Radiated Emissions Measurement

6.3.1 Limit

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 (dBμV/m)	Field Strength of Harmonics(dBμV/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.

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)
	μV/m	dBμV/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: 2010-6-27

Frenqucy Range: 30MHz to 1GHz

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

Measurement Distance: 3 m

Operating Environment: 25.3°C, 55% 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
38.730	13.900	0.654	14.554	-25.446	40.000	QUASIPEAK
50.370	14.040	1.948	15.988	-24.012	40.000	QUASIPEAK
62.010	14.220	2.223	16.443	-23.557	40.000	QUASIPEAK
***143.490**	**16.140**	**14.280**	**30.420**	**-13.080**	**43.500**	**QUASIPEAK**
201.690	13.540	12.950	26.490	-17.010	43.500	QUASIPEAK
295.780	16.990	15.273	32.263	-13.737	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
39.700	14.000	14.878	28.878	-11.122	40.000	QUASIPEAK
49.400	14.050	15.409	29.459	-10.541	40.000	QUASIPEAK
59.100	14.250	15.310	29.560	-10.440	40.000	QUASIPEAK
***143.490**	**16.140**	**18.389**	**34.529**	**-8.971**	**43.500**	**QUASIPEAK**
191.990	14.030	11.315	25.345	-18.155	43.500	QUASIPEAK
288.020	16.790	14.486	31.276	-14.724	46.000	QUASIPEAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Test Data: 2010-6-27
Frenqucy Range: 1GHz to 25GHz
RBW/VBW:1MHz/1MHz for Peak, 1MHz/10Hz for Average
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
1200.000	29.280	27.348	56.628	-17.372	74.000	PEAK
***1201.100**	**29.280**	**22.687**	**51.967**	**-2.033**	**54.000**	**AVERAGE**
1576.000	29.920	15.847	45.767	-28.233	74.000	PEAK
2400.000	31.669	8.987	40.656	-33.344	74.000	PEAK
2400.000	31.669	5.651	37.32	-16.68	54.000	AVERAGE
2402.000	33.897	56.622	90.519	-23.481	114.000	PEAK
2402.300	33.897	53.368	87.265	-6.735	94.000	AVERAGE
4804.000	40.150	8.012	48.162	-25.838	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
1200.000	29.280	29.044	58.324	-15.676	74.000	PEAK
1202.330	29.280	13.314	42.594	-11.406	54.000	AVERAGE
2035.000	31.877	11.562	43.439	-30.561	74.000	PEAK
2400.000	33.900	12.125	46.025	-27.975	74.000	PEAK
2400.000	33.900	9.265	43.165	-10.835	54.000	PEAK
2402.000	33.897	56.590	90.487	-23.513	114.000	PEAK
***2402.340**	**33.897**	**54.228**	**88.125**	**-5.875**	**94.000**	**AVERAGE**
4804.250	40.010	12.564	52.574	-21.426	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	29.410	8.536	37.946	-36.054	74.000	PEAK
1564.000	29.985	10.587	40.572	-33.428	74.000	PEAK
2440.000	33.924	61.562	95.486	-18.514	114.000	PEAK
***2440.000**	**33.924**	**55.213**	**89.155**	**-4.845**	**94.000**	**AVERAGE**
2948.000	35.911	11.481	47.392	-26.608	74.000	PEAK
4880.760	39.981	8.221	48.202	-25.798	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
1210.000	29.120	11.487	40.607	-33.393	74.000	PEAK
1554.000	30.110	12.521	42.631	-31.369	74.000	PEAK
2440.100	33.924	50.930	83.854	-31.146	114.000	PEAK
***2440.000**	**33.924**	**46.514**	**80.438**	**-13.562**	**94.000**	**AVERAGE**
3240.000	36.522	11.021	47.543	-26.457	74.000	PEAK
4880.000	40.100	6.235	46.335	-27.665	74.000	PEAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Middle Channel :2440 MHz

(b)Antenna polarization: Horizontal

Frequency (MHz)	Correct Factor (Db)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (Db)	Limit (dBuV/m)	Detector Type
1401000	29.800	12.925	42.725	-31.275	74.000	PEAK
2560.000	32.890	14.365	47.255	-26.745	74.000	PEAK
2480.000	34.271	57.214	91.485	-22.515	114.000	PEAK
*2480.000	34.271	44.915	79.186	-14.814	94.000	AVERAGE
2483.500	34.135	11.265	45.615	-28.385	74.000	PEAK
***2483.500**	**34.135**	**5.871**	**40.006**	**-13.994**	**54.000**	**AVERAGE**
3250.000	37.157	8.562	45.719	-28.281	74.000	PEAK
4996.000	40.354	6.571	46.925	-27.075	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
1245.000	29.423	12.115	41.538	-32.462	74.000	PEAK
2315.000	33.458	13.142	46.600	-27.400	74.000	PEAK
2480.000	34.210	56.114	90.324	-23.676	114.000	PEAK
***2480.000**	**34.210**	**55.268**	**89.478**	**-4.522**	**94.000**	**AVERAGE**
2483.500	33.570	10.118	43.688	-30.312	74.000	PEAK
2483.500	33.570	7.814	41.384	-12.616	54.000	AVERAGE
3080.000	36.002	8.598	44.600	-29.400	74.000	PEAK
4960.000	40.263	5.115	45.378	-28.622	74.000	PEAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

High Channel :2480MHz

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=100kHz,VBW≧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

Please refer to report section 6.3.2 which met the requirement of limits in 15.209

6.5 Occupied Bandwidth

6.5.1 Limit

Intentional radiators operating under the alternative provisions to the general emission limits,as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band.

6.5.2 Test procedure

(1) Connected the antenna port to the Spectrum Analyzer , set the Spectrum Analyzer as RBW=100kHz,VB𝕎≧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 frenqucy (MHz)	20dB bandwidth (KHz)	Limit (KHz)	Conclusion
Low	2402	1430	N/A	Pass
Mid	2440	1560	N/A	Pass
High	2480	1400	N/A	Pass

Low: 2402MHz

Mid: 2440MHz

High: 2480MHz