FCC Test Report

Client Information:

Applicant: KEY MOUSE ELECTRONIC ENTERPRISE CO., LTD.
Applicant add.: No.3, Wugong 5th Rd., Sinjhuang City, Taipei County 242, Taiwan

EUT Information:

EUT Name: Wireless Keyboard
Model No.: KA-7A81,KA-xxyy(x=0~9, A~Z; y=0~9, A~Z)
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: Aug. 20, 2009 Date of Test: Aug.20. ~ Aug.26, 2009
Date of Issue: Aug. 26, 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 NVLAP or any agency of the U.S. government.

NVLAP Lab. Code: 200800-0

Reviewed by: Tovey. Yang
Test director

Approved by: Steven Lin
Technical director

1 Contents

2 Test Summary

2.1 Compliance with FCC Part 15 subpart C

Test	Test Requirement	Stanadard 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	±1.38dB
2	Radiated Emission Test	±3.57dB

3 Test Facility

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

.NVLAP- Lab Code: 200800-0

Asia Institute Technology (Dongguan) Limited has been accredited by NVLAP on April 29, 2008.

.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:	DONGGUAN EASTECH ELECTRICAL PRODUCTS CO., LTD.
Manufacturer Address:	No.182, Kuiqing Rd., Qinghuang Industrial District, Qingxi Town, Dongguan City, Guangdong, 523650, China
EUT Name:	Wireless Keyboard
Model No:	KA-7A81, KA-xxyy(x=0~9, A~Z; y=0~9, A~Z)
Operation frequency:	2405 MHz to 2476MHz
Channel Number:	16
Modulation Technology:	GFSK
Antenna Type:	extended wire lay on PCB
Brand Name:	N/A
Serial No:	N/A
Power Supply Range:	DC 3V from battery
Power Supply:	DC 3V from battery
Power Cord:	N/A

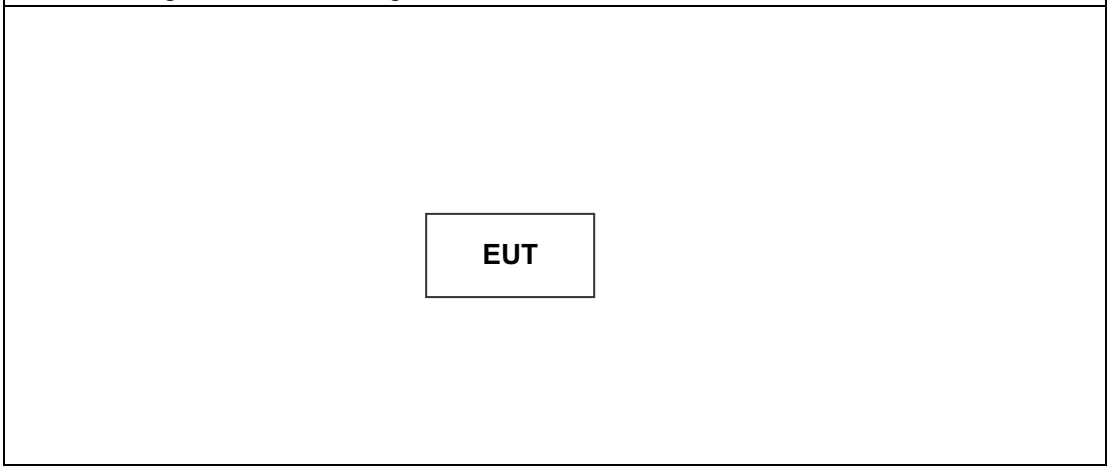
Model description: KA-xxyy(x=0~9, A~Z; y=0~9, A~Z)
All the models are totally identical, 'x' means the product's color depend on different markets' requirement. 'y' means the export country depend on different markets' requirement.

Description of Channel:

channel	Frequency (MHz)	channel	Frequency (MHz)
0	2405	9	2431
1	2425	10	2454
2	2448	11	2475
3	2471	12	2411
4	2407	13	2439
5	2428	14	2457
6	2451	15	2476
7	2473		
8	2409		

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	2009.04.17	2010.04.16
2	EMI Measuring Receiver	Schaffner	SCR3501	235	2009.03.09	2009.09.08
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2009.03.09	2009.09.08
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	2009.03.09	2009.09.08
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	2009.03.10	2009.09.09

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 (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.

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)
	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: 2009-8-24

Frenqucy 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
55.220	13.960	0.215	14.175	-25.825	40.000	QUASIPEAK
156.100	16.600	0.561	17.161	-26.339	43.500	QUASIPEAK
194.900	13.830	1.972	15.802	-27.698	43.500	QUASIPEAK
286.080	16.740	0.421	17.161	-28.839	46.000	QUASIPEAK
371.440	19.050	0.286	19.336	-26.664	46.000	QUASIPEAK
***870.020**	**29.120**	**0.280**	**29.400**	**-16.600**	**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
137.670	15.730	2.550	18.280	-25.220	43.500	QUASIPEAK
211.390	13.810	2.150	15.960	-27.540	43.500	QUASIPEAK
243.400	15.280	2.095	17.375	-28.625	46.000	QUASIPEAK
287.050	16.760	0.722	17.482	-28.518	46.000	QUASIPEAK
366.590	18.900	0.456	19.356	-26.644	46.000	QUASIPEAK
***621.700**	**24.910**	**1.012**	**25.922**	**-20.078**	**46.000**	**QUASIPEAK**

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Test Data: 2009-8-24
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
1695.000	30.475	11.871	42.346	-31.654	74.000	PEAK
2200.000	32.850	13.650	46.500	-27.500	74.000	PEAK
2400.000	33.897	11.301	45.198	-28.802	74.000	PEAK
2405.000	33.913	59.290	93.203	-20.797	114.000	PEAK
***2405.000**	**33.913**	**57.893**	**91.806**	**-2.194**	**94.000**	**AVERAGE**
3170.000	36.111	10.909	47.020	-6.980	54.000	PEAK
3975.000	37.698	-1.881	35.817	-18.183	54.000	PEAK
4804.000	40.010	6.579	46.589	-27.411	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
1490.000	29.919	11.531	41.450	-32.550	74.000	PEAK
1935.000	31.487	12.325	43.812	-30.188	74.000	PEAK
2035.000	31.877	12.726	44.603	-29.397	74.000	PEAK
2400.000	33.897	11.856	45.753	-28.247	74.000	PEAK
2405.000	33.913	57.360	91.273	-22.727	114.000	PEAK
***2405.000**	**33.913**	**56.360**	**90.273**	**-3.727**	**94.000**	**AVERAGE**
4810.250	40.010	6.150	46.160	-27.840	74.000	PEAK

Note: '*' means the worst case
Measurement Level = Reading Level + Factor
Factor=Ant Factor + Cable Loss
Low Channel:2405 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1930.000	31.468	12.222	43.690	-30.310	74.000	PEAK
2285.000	33.299	12.971	46.271	-27.729	74.000	PEAK
2439.000	33.997	58.439	92.436	-21.564	114.000	PEAK
***2439.860**	**33.997**	**56.487**	**92.436**	**-3.516**	**94.000**	**AVERAGE**
2935.000	35.725	10.956	46.681	-27.319	74.000	PEAK
4870.760	40.125	6.646	46.771	-27.229	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
1715.000	30.591	11.341	41.933	-32.067	74.000	PEAK
2160.000	32.616	14.098	46.714	-27.286	74.000	PEAK
2439.000	33.997	56.970	90.967	-23.033	114.000	PEAK
***2439.234**	**33.997**	**54.170**	**90.967**	**-8.833**	**94.000**	**AVERAGE**
3180.000	36.126	10.420	46.546	-27.454	74.000	PEAK
4870.458	40.125	3.689	43.814	-30.186	74.000	PEAK

Note: '*' means the worst case
Measurement Level = Reading Level + Factor
Factor=Ant Factor + Cable Loss
Middle Channel :2439 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1400.000	29.910	12.024	41.934	-32.066	74.000	PEAK
2165.000	32.639	13.841	46.481	-27.519	74.000	PEAK
2477.000	34.107	56.770	90.877	-23.123	114.000	PEAK
***2477.279**	**34.107**	**56.170**	**90.277**	**-3.723**	**94.000**	**AVERAGE**
2483.500	34.135	9.856	43.991	-30.009	74.000	PEAK
2810.000	35.508	11.299	46.807	-27.193	74.000	PEAK
3195.000	36.153	10.314	46.466	-27.534	74.000	PEAK
4950.000	40.263	6.075	46.338	-27.662	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	11.787	41.211	-32.789	74.000	PEAK
2305.000	33.391	12.742	46.133	-27.867	74.000	PEAK
2477.000	34.107	55.409	89.516	-24.484	114.000	PEAK
***2477.128**	**34.107**	**54.809**	**88.916**	**-5.084**	**94.000**	**AVERAGE**
2483.500	34.135	9.609	43.744	-30.256	74.000	PEAK
3070.000	35.949	11.269	47.218	-26.782	74.000	PEAK
4950.000	40.263	4.311	44.574	-29.426	74.000	PEAK

Note: '*' means the worst case
Measurement Level = Reading Level + Factor
Factor=Ant Factor + Cable Loss
High Channel :2476 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≧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 6.2.3 which met the requirement of limits in 15.209

6.5 Occupied Bandwidth

6.5.1 Limit

Fcc part15.239 (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=10Hz,VBW≧RBW, Sweep time=Auto, Detector Function=Peak

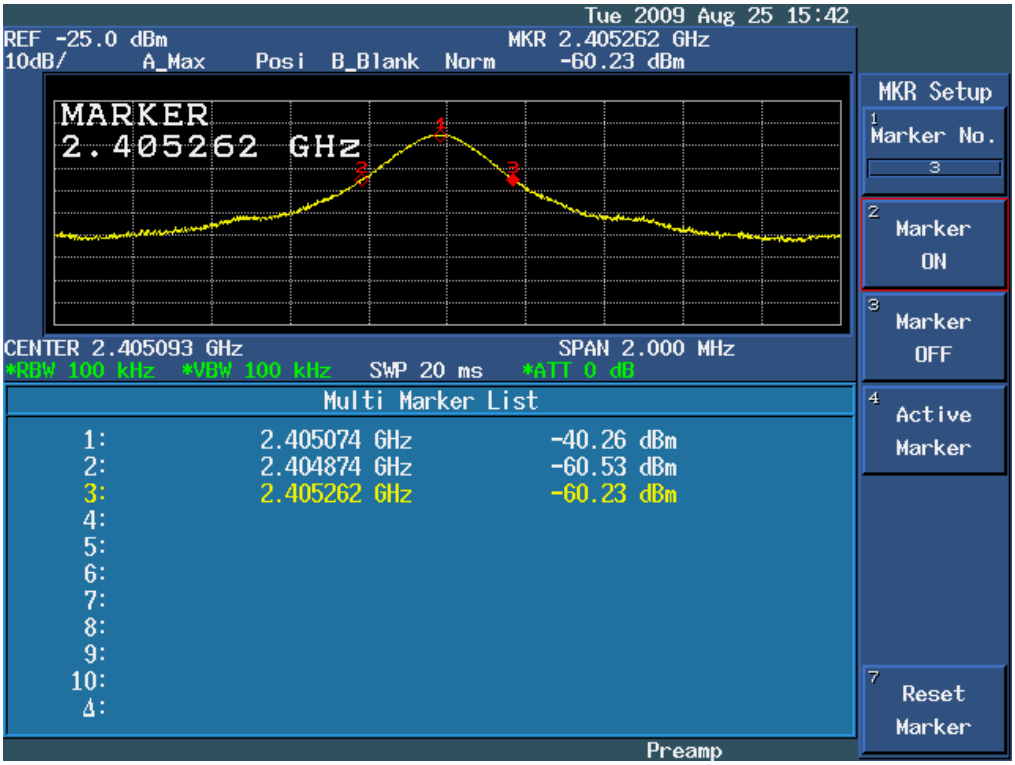
(2) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission.

(3) The above procedure shall be repeated at the lowest, and the highest frequency of the stated frequency range with modulated mode.

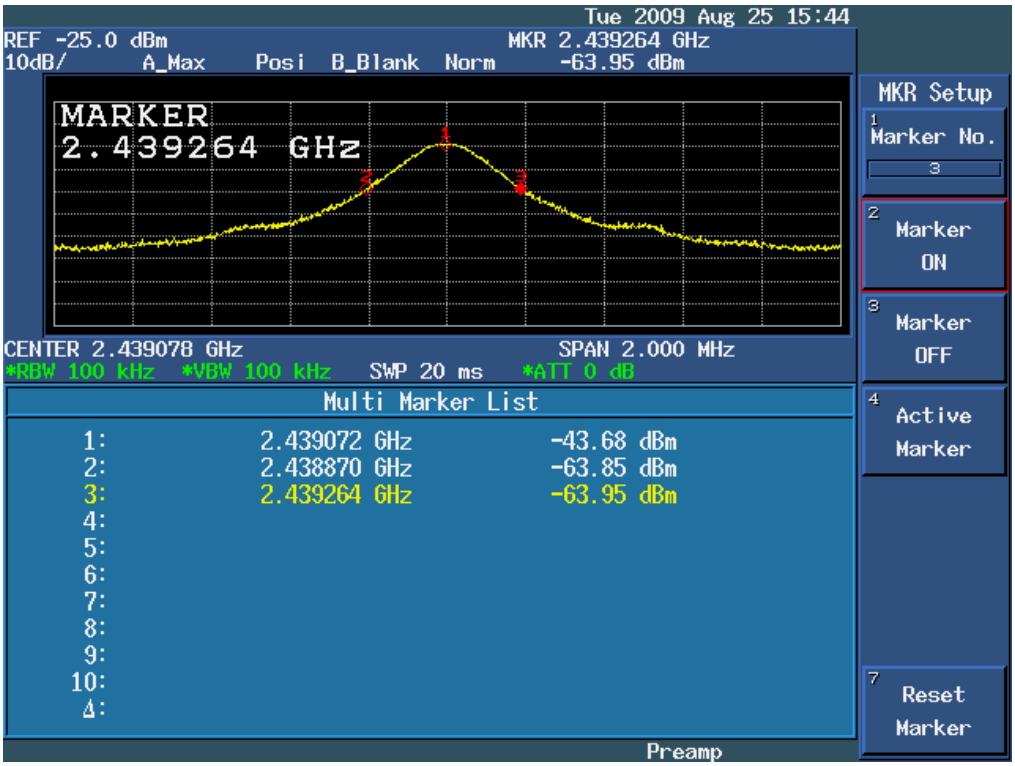
6.5.3 Test Result

channel	Channel frenqucy (MHz)	20dB bandwidth (KHz)	Limit (KHz)	Conclusion
Low	2405	388	N/A	Pass
Mid	2439	394	N/A	Pass
High	2476	382	N/A	Pass

(1) Low: 2405MHz



(2) Mid: 2439MHz



(3) High: 2476MHz