

FCC TEST REPORT  
for  
KO JA (Cayman) Co., Ltd Taiwan Branch  
  
Slim Touch Keyboard  
Model No.: TK01301BL

Prepared for : KO JA (Cayman) Co., Ltd Taiwan Branch  
Address : 8F, No.168, Liancheng Road, Zhonghe Dist, New Taipei City,  
Taiwan

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Report Number : 201207836F  
Date of Test : Jul. 23~Aug. 07, 2012  
Date of Report : Aug. 07, 2012

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APPENDIX I (ExternalPhotos) (1 Page)

APPENDIX II (InternalPhotos) (2 Pages)

## TEST REPORT

Applicant : KO JA (Cayman) Co., Ltd Taiwan Branch  
Manufacturer : Huai An Jiaguan Electronic Technology Co., LTD.  
EUT : Slim Touch Keyboard  
Model No. : TK01301BL  
Serial No. : N/A  
Rating : DC 5V, 350mA  
Trade Mark : N/A

## Measurement Procedure Used:

FCC Part15 Subpart C, Paragraph 15.207, 15.249 & 15.209

The device described above is tested by Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Anbotek Compliance Laboratory Limited

Date of Test : Jul. 23~Aug. 07, 2012

Andy chen

Prepared by :

(Tested Engineer / Andy Chen)

Jerry Du

Reviewer :

(Project Manager / Jerry Du)

Tom. Chen

Approved & Authorized Signer :

(Manager / Tom Chen)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT : Slim Touch Keyboard

Model Number : TK01301BL

Test Power Supply : DC 5V

Frequency : 2402~2480MHz

Antenna : Printed Antenna:1.87dBi

Specification

Application KO JA (Cayman) Co., Ltd Taiwan Branch

Address : 8F, No.168, Liancheng Road, Zhonghe Dist, New Taipei City,  
Taiwan

Manufacturer : Huai An Jiaguan Electronic Technology Co., LTD.

Address 2 Hongdo West Road, Huai'an Economic&Technological  
Development Zone, Huai'an City, Jiangsu Province, China

Date of receiver : Jul. 23, 2012

Date of Test : Jul. 23~Aug. 07, 2012

## 1.2.Auxiliary Equipment Used during Test

PC	: Manufacturer: DELL M/N: OPTIPLEX 380 S/N: 1J63X2X CE , FCC: DOC
MONITOR	: Manufacturer: DELL M/N: E170Sc S/N: CN-00V539-64180-055-0UPS CE , FCC: DOC
MOUSE	: Manufacturer: DELL M/N: M-UARDEL7 S/N: N/A CE , FCC: DOC Cable: 1m, unshielded
Printer	: Manufacturer:Brother M/N: MFC-3360C S/N: N/A CE, FCC:DOC
Power Line	: Non-Shielded, 1.5m
VGA Cable	: Non-Shielded, 1.5m
USB Cable	: Non-Shielded, 0.5m

### 1.3. Description of Test Facility

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

**CNAS - LAB Code: L3503**

Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

**FCC-Registration No.: 752021**

Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, August 20, 2010.

**IC-Registration No.: 8058A-1**

Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A-1, August 30, 2010.

**Test Location**

All Emissions tests were performed at  
Anbotek Compliance Laboratory Limited. at 1/F, 1 /Building, SEC Industrial Park,  
No. 4 Qianhai Road, Nanshan District, Shenzhen, 518054, China

### 1.4. Measurement Uncertainty

Radiation Uncertainty : Ur = 4.3dB

Conduction Uncertainty : Uc = 3.4dB

## 2. Test Procedure

**GENERAL:** This report shall NOT be reproduced except in full without the written approval of Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

**RADIATION INTERFERENCE:** The test procedure used was ANSI STANDARD C63.4-2009 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

**Example:**

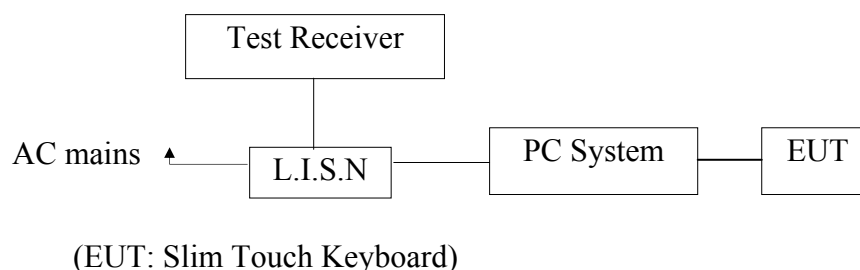
Freq (MHz) METER READING + ACF = FS  
20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

**ANSI STANDARD C63.4-2009 10.1.7 MEASUREMENT PROCEDURES:** The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

### 3. Conducted Limits

#### 3.1. Block Diagram of Test Setup

##### 3.1.1. Block diagram of connection between the EUT and simulators



#### 3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The lower limit shall apply at the transition frequencies.

#### 3.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Slim Touch Keyboard  
Model Number : TK01301BL  
Applicant : KO JA (Cayman) Co., Ltd Taiwan Branch

#### 3.4. Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in test mode (Charging) and measure it.



## Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Nov. 12, 2012	1 Year
2.	LISN	SchwarzBeck	NSLK 8126	8126377	May 19, 2012	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 19, 2012	1 Year
4.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A

Conduction Uncertainty

:

Uc = 3.4dB

## 3.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

## 3.6. Power Line Conducted Emission Measurement Results

**PASS.**

The frequency range from 150KHz to 30 MHz is investigated.

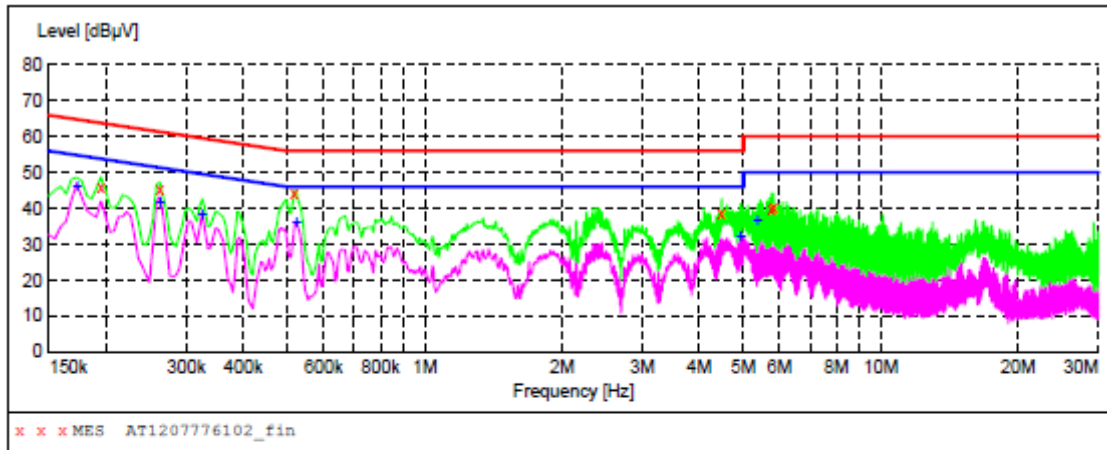
Please refer the following pages.

FCC ID: ZSI- TK01301BL

**CONDUCTED EMISSION TEST DATA**

EUT: Slim Touch Keyboard M/N: TK01301BL  
 Operating Condition: Charging  
 Test Site: 1# Shielded Room  
 Operator: Andy Chen  
 Test Specification: AC 120V/60Hz for PC  
 Comment: Live Line  
 Tem:25°C Hum:50%

**SCAN TABLE: "Voltage (150K~30M) FIN"**  
 Short Description: 150K-30M Disturbance Voltages

**MEASUREMENT RESULT: "AT1207776102\_fin"**

7/25/2012 9:28AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.195000	45.90	10.1	64	17.9	QP	L1	GND
0.262500	45.40	10.1	61	16.0	QP	L1	GND
0.519000	44.40	10.1	56	11.6	QP	L1	GND
4.478500	38.50	10.5	56	17.5	QP	L1	GND
5.761000	39.60	10.5	60	20.4	QP	L1	GND
5.824000	40.30	10.5	60	19.7	QP	L1	GND

**MEASUREMENT RESULT: "AT1207776102\_fin2"**

7/25/2012 9:28AM

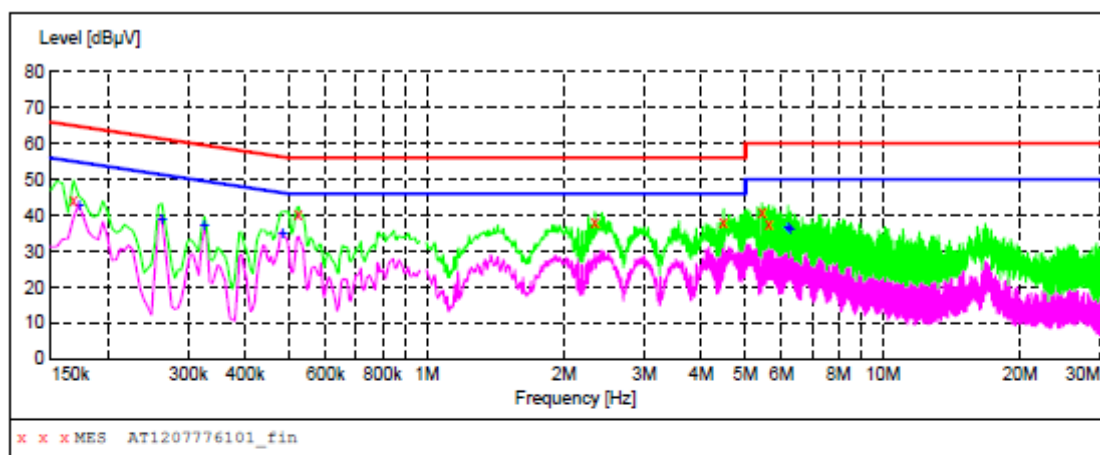
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.172500	46.70	10.1	55	8.1	AV	L1	GND
0.262500	42.30	10.1	51	9.1	AV	L1	GND
0.325500	38.90	10.1	50	10.7	AV	L1	GND
0.523500	36.30	10.1	46	9.7	AV	L1	GND
4.928500	32.50	10.5	46	13.5	AV	L1	GND
5.374000	36.80	10.5	50	13.2	AV	L1	GND

FCC ID: ZSI- TK01301BL

**CONDUCTED EMISSION TEST DATA**

EUT: Slim Touch Keyboard M/N: TK01301BL  
 Operating Condition: Charging  
 Test Site: 1# Shielded Room  
 Operator: Andy Chen  
 Test Specification: AC 120V/60Hz for PC  
 Comment: Neutral Line  
 Tem:25°C Hum:50%

**SCAN TABLE: "Voltage (150K~30M) FIN"**  
 Short Description: 150K~30M Disturbance Voltages

**MEASUREMENT RESULT: "AT1207776101\_fin"**

7/25/2012 9:25AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.168000	44.10	10.1	65	21.0	QP	N	GND
0.523500	40.60	10.1	56	15.4	QP	N	GND
2.336500	38.30	10.3	56	17.7	QP	N	GND
4.478500	38.00	10.5	56	18.0	QP	N	GND
5.437000	41.00	10.5	60	19.0	QP	N	GND
5.635000	37.40	10.5	60	22.6	QP	N	GND

**MEASUREMENT RESULT: "AT1207776101\_fin2"**

7/25/2012 9:25AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.172500	43.20	10.1	55	11.6	AV	N	GND
0.262500	39.30	10.1	51	12.1	AV	N	GND
0.325500	37.40	10.1	50	12.2	AV	N	GND
0.483000	35.60	10.1	46	10.7	AV	N	GND
6.206500	36.90	10.5	50	13.1	AV	N	GND
6.269500	36.70	10.5	50	13.3	AV	N	GND

## 4. Radiation Interference

### 4.1. Requirements (15.249, 15.209):

FIELD STRENGTH of Fundamental:	FIELD STRENGTH of Harmonics	S15.209	
902-928 MHZ		30 - 88 MHz	40 dBuV/m @3M
2.4-2.4835 GHz		88 - 216 MHz	43.5
94 dBuV/m @3m	54 dBuV/m @3m	216 - 960 MHz	46
		ABOVE 960 MHz	54dBuV/m

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 15.209, whichever is the lesser attenuation.

### 4.2 Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz. The EUT is tested in 9\*6\*6 Chamber.

The test results are listed in Section 5.3.

### 4.3 Test Results

PASS.

Please refer the following pages.

FCC ID: ZSI- TK01301BL

**Data:**

Horizontal CH Low(2402MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
239.98	1.58	13.50	38.90	57.46	33.66	46.00	-12.34	QP
2402.00	2.17	31.21	35.30	86.55	84.63	114.0	-29.37	Peak
2402.00	2.17	31.21	35.30	84.71	82.79	94.0	-11.21	AV
4804.10	2.56	34.01	34.71	41.15	43.01	74.0	-30.99	Peak
4804.10	2.56	34.01	34.71	38.26	40.12	54.0	-13.88	AV
7207.97	2.98	36.16	35.15	38.33	42.32	74.0	-31.68	Peak
7207.97	2.98	36.16	35.15	35.55	39.54	54.0	-14.46	AV
9608.00	---	---	---	---	---	---	---	---
12010.00	---	---	---	---	---	---	---	---
14412.00	---	---	---	---	---	---	---	---
16814.00	---	---	---	---	---	---	---	---
19216.00	---	---	---	---	---	---	---	---
21618.00	---	---	---	---	---	---	---	---
24020.00	---	---	---	---	---	---	---	---

CH Middle(2441MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
312.18	1.60	13.52	38.82	56.41	32.71	46.00	-13.29	QP
2441.00	2.19	31.22	34.60	85.36	84.17	114.0	-29.83	Peak
2441.00	2.19	31.22	34.60	83.55	82.36	94.0	-11.64	AV
4882.08	2.57	35.00	34.58	39.62	42.61	74.0	-31.39	Peak
4882.08	2.57	35.00	34.58	37.47	40.46	54.0	-13.54	AV
7323.05	3.00	36.17	35.14	38.80	42.83	74.0	-31.17	Peak
7323.05	3.00	36.17	35.14	36.08	40.11	54.0	-13.89	AV
9764.00	---	---	---	---	---	---	---	---
12205.00	---	---	---	---	---	---	---	---
14646.00	---	---	---	---	---	---	---	---
17087.00	---	---	---	---	---	---	---	---
19528.00	---	---	---	---	---	---	---	---
21969.00	---	---	---	---	---	---	---	---
24410.00	---	---	---	---	---	---	---	---

FCC ID: ZSI- TK01301BL

CH High(2480MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
312.18	1.60	13.52	38.82	53.21	29.51	46.00	-16.49	QP
2480.00	2.20	31.65	36.00	92.77	90.62	114.0	-23.38	Peak
2480.00	2.20	31.65	36.00	89.51	87.36	94.0	-6.64	AV
4960.05	2.58	35.06	34.79	41.76	44.61	74.0	-29.39	Peak
4960.05	2.58	35.06	34.79	39.28	42.13	54.0	-11.87	AV
7439.97	3.02	36.19	34.90	39.53	43.84	74.0	-30.16	Peak
7439.97	3.02	36.20	35.20	37.40	41.42	54.0	-12.58	AV
9920.00	---	---	---	---	---	---	---	---
12400.00	---	---	---	---	---	---	---	---
14880.00	---	---	---	---	---	---	---	---
17360.00	---	---	---	---	---	---	---	---
19840.00	---	---	---	---	---	---	---	---
22320.00	---	---	---	---	---	---	---	---
24800.00	---	---	---	---	---	---	---	---

Vertical CH Low(2402MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
30.42	1.43	12.13	38.45	53.51	28.62	40.00	-11.38	QP
2402.00	2.17	31.21	35.30	84.23	82.31	114.0	-31.69	Peak
2402.00	2.17	31.21	35.30	81.85	79.93	94.0	-14.07	AV
4804.10	2.56	34.01	34.71	41.05	42.91	74.0	-31.09	Peak
4804.10	2.56	34.01	34.71	38.61	40.47	54.0	-13.53	AV
7207.93	2.98	36.16	35.15	37.46	41.45	74.0	-32.55	Peak
7207.93	2.98	36.16	35.15	34.50	38.49	54.0	-15.51	AV
9608.00	---	---	---	---	---	---	---	---
12010.00	---	---	---	---	---	---	---	---
14412.00	---	---	---	---	---	---	---	---
16814.00	---	---	---	---	---	---	---	---
19216.00	---	---	---	---	---	---	---	---
21618.00	---	---	---	---	---	---	---	---
24020.00	---	---	---	---	---	---	---	---

FCC ID: ZSI- TK01301BL

CH Middle(2441MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
143.82	1.50	13.40	38.89	53.91	29.92	43.50	-13.58	QP
2441.01	2.19	31.22	34.60	82.35	81.16	114.0	-32.84	Peak
2441.01	2.19	31.22	34.60	81.01	79.82	94.0	-14.18	AV
4882.11	2.57	35.00	34.58	40.15	43.14	74.0	-30.86	Peak
4882.11	2.57	35.00	34.58	37.86	40.85	54.0	-13.15	AV
7323.05	3.00	36.17	35.14	38.70	42.73	74.0	-31.27	Peak
7323.05	3.00	36.17	35.14	36.01	40.04	54.0	-13.96	AV
9764.00	---	---	---	---	---	---	---	---
12205.00	---	---	---	---	---	---	---	---
14646.00	---	---	---	---	---	---	---	---
17087.00	---	---	---	---	---	---	---	---
19528.00	---	---	---	---	---	---	---	---
21969.00	---	---	---	---	---	---	---	---
24410.00	---	---	---	---	---	---	---	---

CH High(2480MHz)								
Frequency	Cable	Ant	Preamp	Read	Level	Limit	Over	Remark
MHz	Loss	Factor	Factor	Level	dBμV/m	dBμV/m	Limit	
	dB	dB/m	dB	dBμV			dB	
408.80	1.62	13.54	38.45	51.17	27.82	46.00	-18.12	QP
2480.00	2.20	31.65	36.00	83.52	81.37	114.0	-32.63	Peak
2480.00	2.20	31.65	36.00	82.03	79.88	94.0	-14.12	AV
4960.10	2.58	35.06	34.79	40.08	42.93	74.0	-31.07	Peak
4960.10	2.58	35.06	34.79	38.10	40.95	54.0	-13.05	AV
7439.97	3.02	36.19	34.90	38.58	42.89	74.0	-31.11	Peak
7439.97	3.02	36.20	35.20	36.34	40.36	54.0	-13.64	AV
9920.00	---	---	---	---	---	---	---	---
12400.00	---	---	---	---	---	---	---	---
14880.00	---	---	---	---	---	---	---	---
17360.00	---	---	---	---	---	---	---	---
19840.00	---	---	---	---	---	---	---	---
22320.00	---	---	---	---	---	---	---	---
24800.00	---	---	---	---	---	---	---	---

**NOTE: “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.**

## 5. Occupied Bandwidth

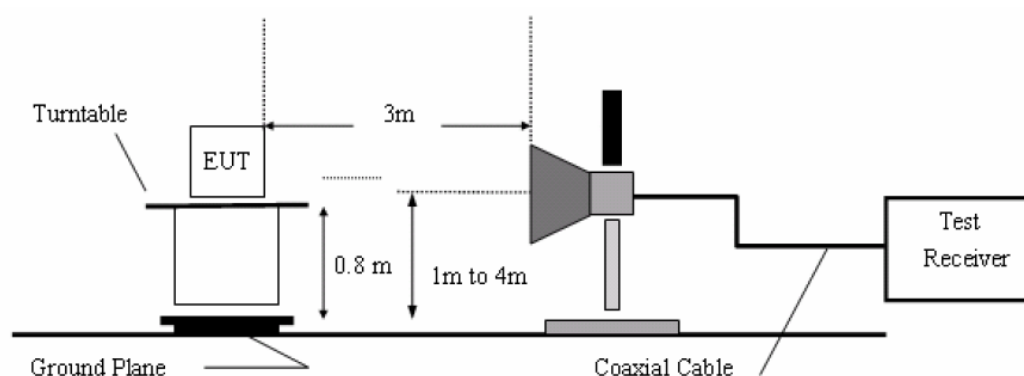
### 5.1. Requirements (15.249):

The field strength of any emissions appearing outside the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

### 5.2. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

### 5.3. Test Configuration:



### 5.4. Test Results

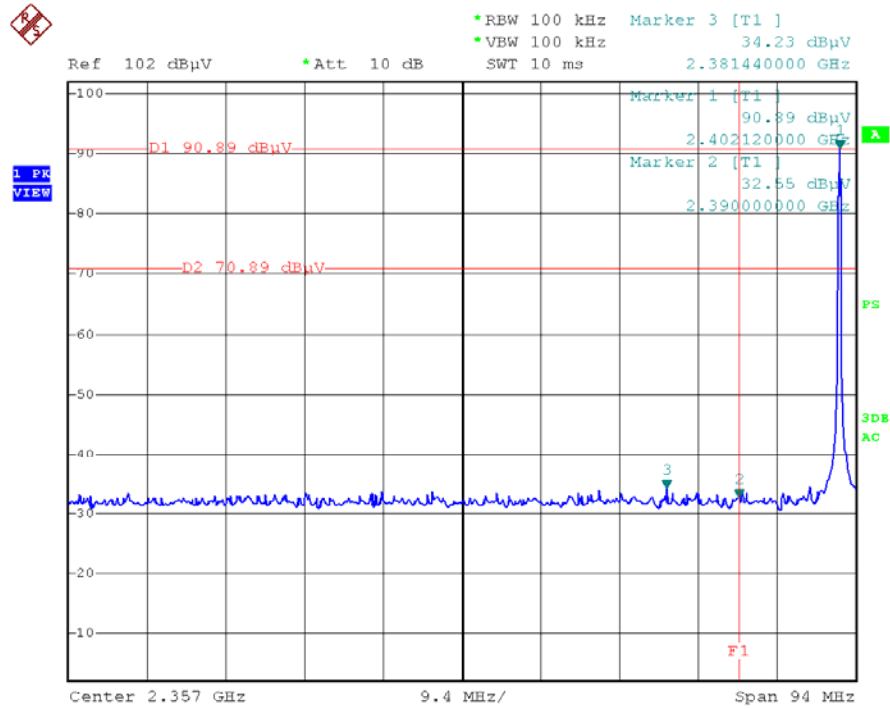
Pass.

Please refer the following plot.

(Note: Marker 3 means the highest value in 2.39GHz~2.4GHz or 2.4835~2.5GHz)

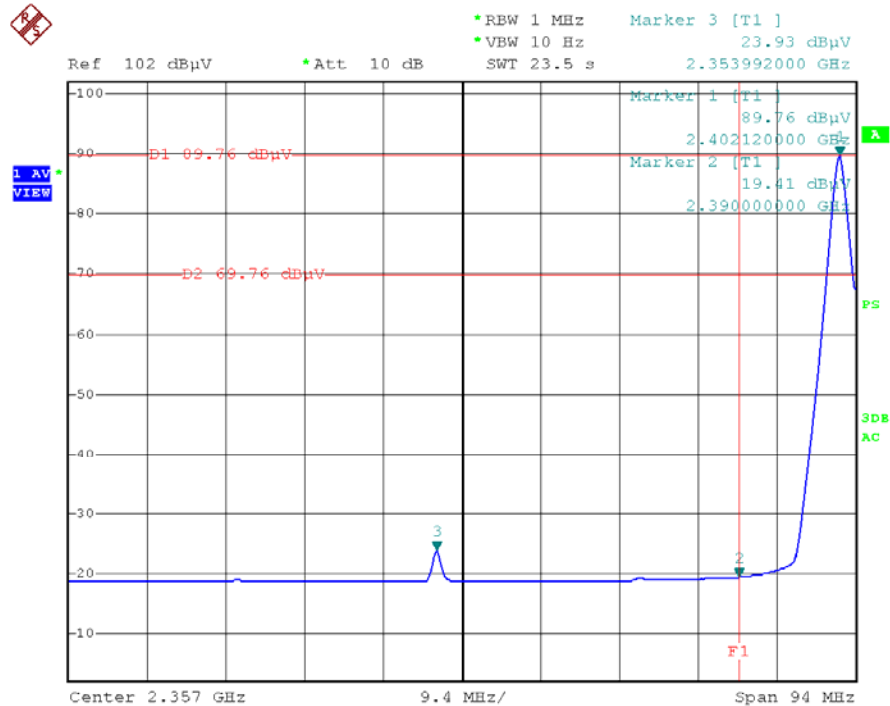


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L

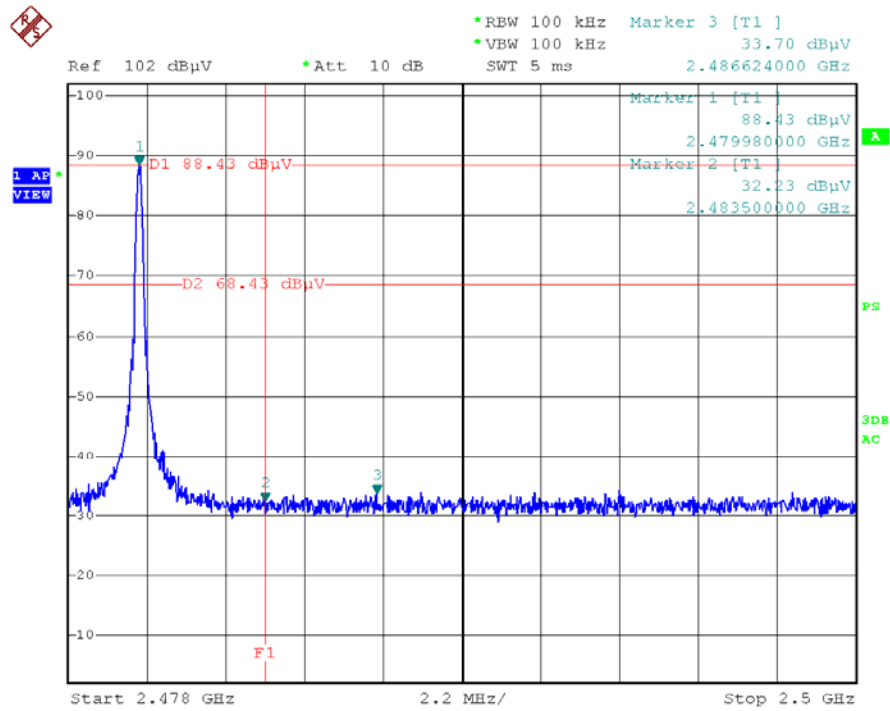
Date: 7.AUG.2012 10:55:14



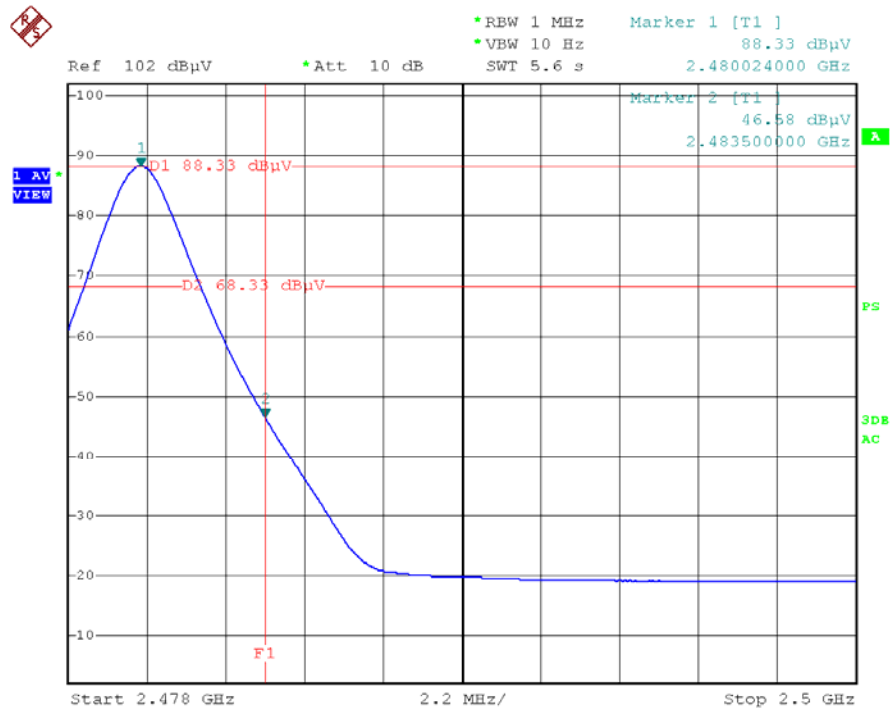
L

Date: 7.AUG.2012 10:58:51

FCC ID: ZSI- TK01301BL



H  
Date: 7.AUG.2012 11:10:08



H  
Date: 7.AUG.2012 11:02:07