FCC PART 15.247

TEST REPORT

For

XMT Lab

8F.-2, No.13, Ln.50, Baoqing St., Xitun Dist., Taichung City 407, Taiwan(R.O.C.)

Model: GS1 FCC ID: 2AHAUGS1

Report Type Original Report	Product Type: Gecko Switch

Test Engineer : David. Hsu

Report Number : RTWA160307001-00A

Report Date : 2016.05.17

Reviewed By: Jerry.Chang

Prepared By: Bay Area Compliance Laboratories Corp.(Taiwan)
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The EUT was received on 2016-03-07

The EUT test completion date of 2016-04-27.

Revision History

Revision	Issue Date	Description
1.0	2016.05.17	Original Report

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	:	XMT Lab 8F.-2, No.13, Ln.50, Baoqing St., Xitun Dist., Taichung City 407, Taiwan(R.O.C.)
Manufacturer	:	XMT Lab 8F.-2, No.13, Ln.50, Baoqing St., Xitun Dist., Taichung City 407, Taiwan(R.O.C.)
Product	:	Gecko Switch
Model	:	GS1
Trade Name	:	N/A
Frequency Range	:	2402 ~ 2480 MHz
Transmit Power	:	BT BLE Mode: 7 dBm
Modulation Technique	:	BT BLE Mode: GFSK
Transmit Data Rate	:	BT BLE Mode: 1 Mbps
Number of Channels	:	BT BLE Mode:40 Channels
Antenna Specification	:	PCB Antenna / Gain: 2.3 dBi
Voltage Range	:	Main: AC 110V Remote: DC 3 V from Battery.
Dimension	:	Main: 75.8 mm (L) × 130 mm (W) ×48 mm (H) Remote: 75.8 mm (L) × 130 mm (W) ×15 mm (H)
Date of Test	:	Mar. 07, 2016~May. 17, 2016

**All measurement and test data in this report was gathered from production sample serial number: 16030701 (Assigned by BACL, Taiwan). The EUT supplied by the applicant was received on 2016-03-07.*

Designation Number: TW1101

Sample Difference: The major RF part of sample are identical to the module, except different Power supply mode.

Difference	Main	Remote
Voltage	AC110V	DC3V
Test Item	ALL test items	Radiation Spurious Emission

Objective

This report is prepared on behalf of *XMT Lab* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commission's rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

The objective is to determine compliance with FCC Part 15.247 rules for Output Power, Antenna Requirements, 6 dB Bandwidth, and power spectral density, 100 kHz Bandwidth of Band Edges Measurement, AC Line Conducted Emissions, Conducted and Radiated Spurious Emissions.

Related Submittal(s)/Grant(s)

N/A

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Taiwan) to collect test data is located on the 70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

Test site at Bay Area Compliance Laboratories Corp. (Taiwan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2014. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 431084. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For BT BLE mode, 40 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2402	--	--
2	2404	35	2472
3	2406	36	2474
4	2408	37	2476
--	--	38	2478
19	2440	39	2480

Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

uEnergyTest

Support Equipment List and Details

No.	Description	Manufacturer	Model Number	Data Cable				Power Cable	
				Cable Name	Length	Shielded	With Core	Length	Shielded
1	NB	DELL	E6410	USB	1.0	Unshielded	N/A	1.2 m	Unshielded

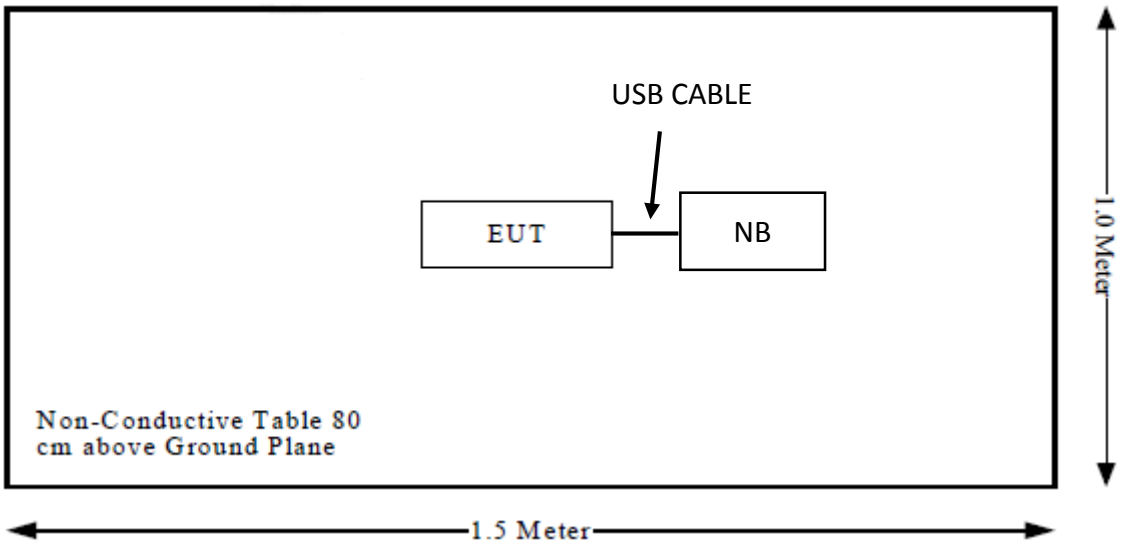
External Cable List and Details

Cable Description	Length (m)	From Port	To
USB CABLE	1.0	EUT	NB

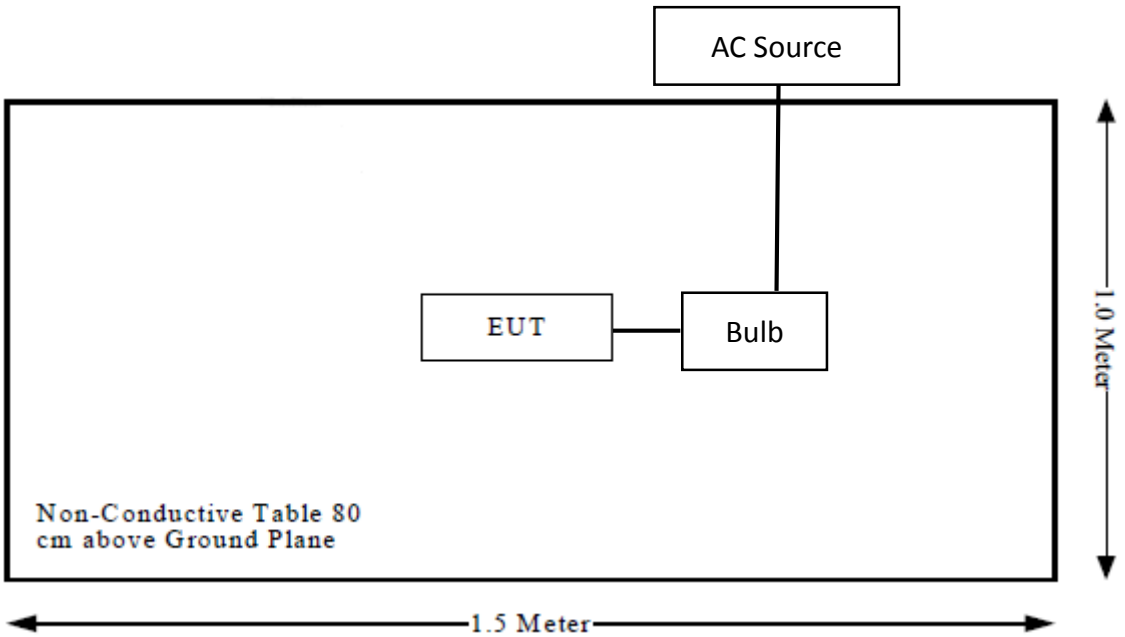
Block Diagram of Test Setup

See test photographs attached in Exhibit A for the actual connections between EUT and support equipment.

Remote:



Main:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.247 (i), §1.1307 (b) (1)&§2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209,§15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

FCC§15.247 (i), §1.1307 (b) (1) &§2.1093 - RF EXPOSURE

Applicable Standard

According to FCC §2.1093 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 General RF Exposure Guidance

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances

≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·

[$\sqrt{}$ f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. f(GHz) is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

For worst case:

Frequency	Tune-up Power		Evaluation Distance	Power Density	Threshold (1-g SAR)	SAR Test Exclusion
(MHz)	(dBm)	(mW)	(cm)	(mW/cm^2)	(mW/cm^2)	
2480	9.60	9.12	0.5	**2.904**	3	Yes

Test Result: No SAR test is required.

FCC §15.203–ANTENNA REQUIREMENT

Applicable Standard

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.

b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna does not exceed 2.3 dBi.

Antenna Connector Construction

Manufacturer	Model	Type	Antenna Gain	Result
INPAQ	PCB Layout	PCB Antenna	2.3 dBi	Compliance

The EUT has one integral antenna arrangement, which was permanently attached, fulfill the requirement of this section. Please refer to the internal photos.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC §15.207

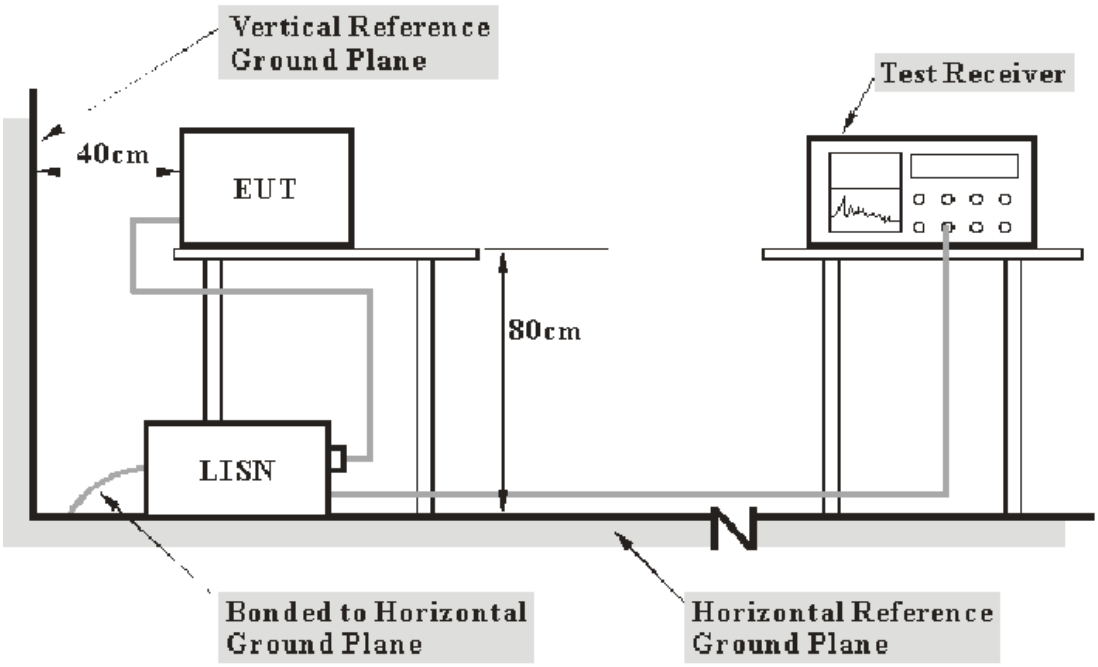
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN/ISN and receiver, LISN/ISN voltage division factor, LISN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Taiwan) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Expanded Measurement uncertainty
AC Mains	2.71 dB (k=2, 95% level of confidence)
CAT 3	3.81 dB (k=2, 95% level of confidence)
CAT 5	4.24 dB (k=2, 95% level of confidence)
CAT 6	4.71 dB (k=2, 95% level of confidence)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	LISN	ENV216	101248	2015/8/3	2016/8/2
Rohde & Schwarz	EMI Test Receiver	ESCI	100540	2015/7/25	2016/7/24
EMEC	RF Cable	EM-CB5D	001	2015/7/29	2016/7/28
FCC	ISN	FCC-TLISN-T8-02-09	111154	2015/7/7	2016/7/6
EMCO	LISN	3816/2	00075848	2015/7/8	2016/7/7
Rohde & Schwarz	Pulse Limiter	ESH3Z2	TXZEM025	2015/8/28	2016/8/27
BACL	CVP	CVP	150604	2015/8/6	2016/8/5
FCC	Single Balanced Telecom Pair ISN	FCC-TLISN-T4-02	20271	2015/8/25	2016/8/24
AUDIX	Software	E3	V9.150826k	N.C.R	N.C.R

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Factor & Margin Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

Over Limit = Level – Limit Line

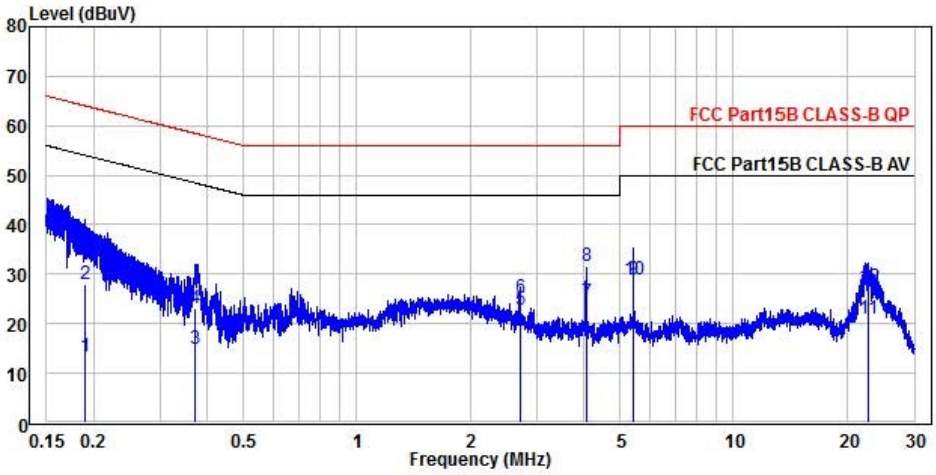
Test Data

Environmental Conditions

Temperature:	24℃
Relative Humidity:	57 %
ATM Pressure:	101.0 kPa

The testing was performed by Lung Hu on 2016-04-22.

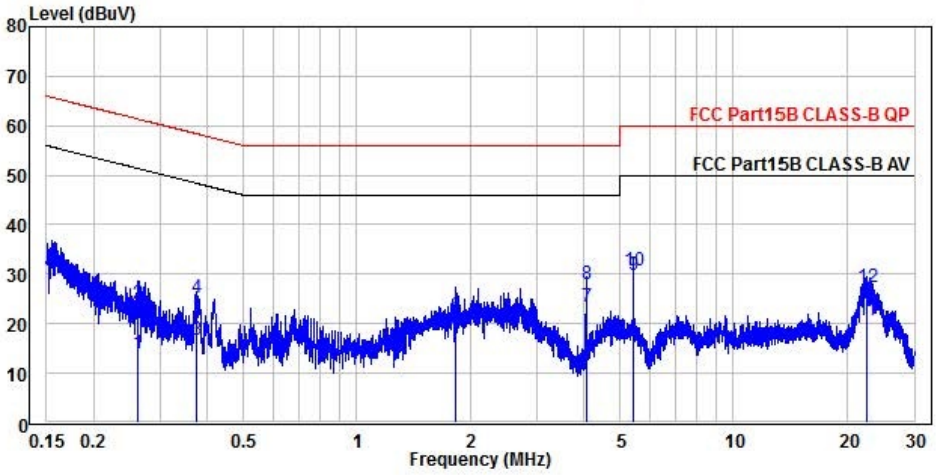
Main: AC 120V/60 Hz, Line



Condition: FCC Part15B CLASS-B QP R&S ENV216 Line
: RBW:10.000kHz VBW:30.000kHz SWT:0.010sec DET:Peak
EUT : SWITCH
Mode : L
Note : 120V/60HZ

	Freq	Level	Limit Line	Over Limit	Factor	Read Level	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	
1	0.190	13.45	54.06	-40.61	19.69	-6.24	Average
2	0.190	28.04	64.06	-36.02	19.69	8.35	QP
3	0.370	14.81	48.50	-33.69	19.68	-4.87	Average
4	0.370	23.16	58.50	-35.34	19.68	3.48	QP
5	2.711	22.76	46.00	-23.24	19.77	2.99	Average
6	2.711	25.26	56.00	-30.74	19.77	5.49	QP
7	4.068	24.24	46.00	-21.76	19.80	4.44	Average
8	4.068	31.57	56.00	-24.43	19.80	11.77	QP
9	5.420	28.79	50.00	-21.21	19.82	8.97	Average
10	5.420	28.82	60.00	-31.18	19.82	9.00	QP
11	22.631	21.00	50.00	-29.00	19.88	1.12	Average
12	22.631	27.40	60.00	-32.60	19.88	7.52	QP

Main: AC 120V/60 Hz, Neutral



Condition: FCC Part15B CLASS-B QP R&S ENV216 Neutral
: RBW:10.000kHz VBW:30.000kHz SWT:0.010sec DET:Peak
EUT : SWITCH
Mode : N
Note : 120V/60HZ

	Freq	Level	Limit Line	Over Limit	Factor	Read Level	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	
1	0.261	14.12	51.39	-37.27	19.70	-5.58	Average
2	0.261	24.09	61.39	-37.30	19.70	4.39	QP
3	0.375	16.63	48.39	-31.76	19.69	-3.06	Average
4	0.375	25.34	58.39	-33.05	19.69	5.65	QP
5	1.832	18.83	46.00	-27.17	19.75	-0.92	Average
6	1.832	21.75	56.00	-34.25	19.75	2.00	QP
7	4.064	23.34	46.00	-22.66	19.80	3.54	Average
8	4.064	28.12	56.00	-27.88	19.80	8.32	QP
9	5.420	29.90	50.00	-20.10	19.83	10.07	Average
10	5.420	30.69	60.00	-29.31	19.83	10.86	QP
11	22.429	20.78	50.00	-29.22	19.97	0.81	Average
12	22.429	27.34	60.00	-32.66	19.97	7.37	QP

FCC§15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

FCC§15.247 (d); §15.209; §15.205;

Measurement Uncertainty

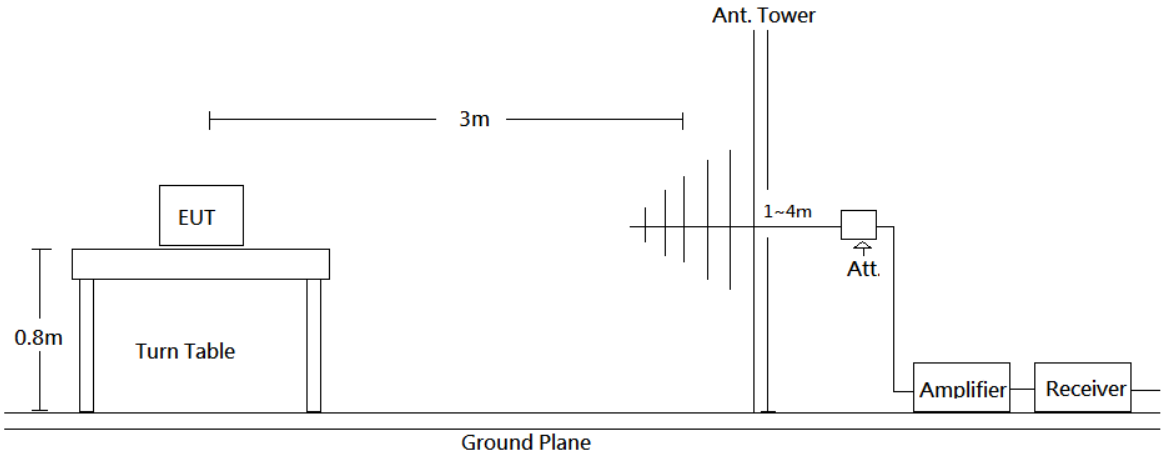
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Taiwan) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report

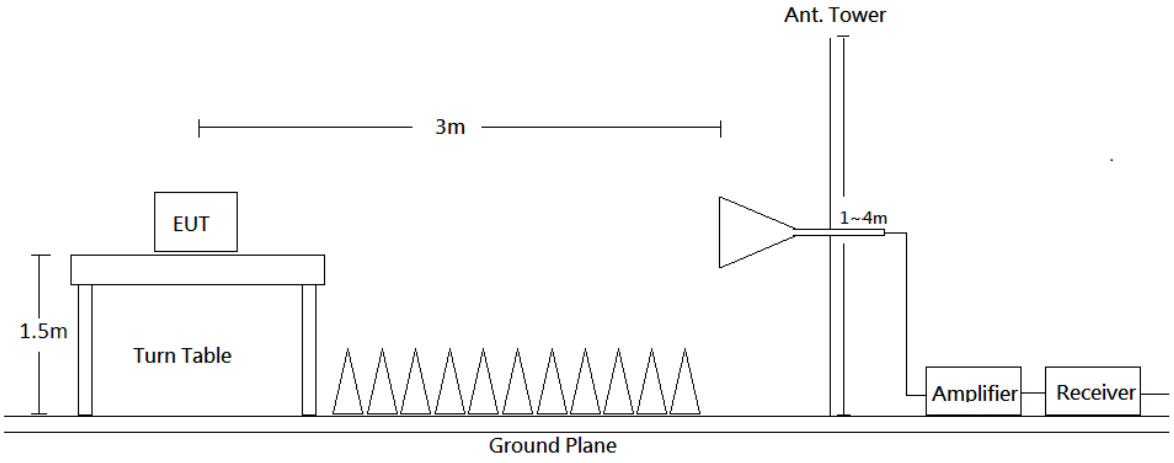
Frequency	Measurement uncertainty
30 MHz~200 MHz	4.21 dB (k=2, 95% level of confidence)
200 MHz~1 GHz	4.41 dB (k=2, 95% level of confidence)
1 GHz~6 GHz	4.51 dB (k=2, 95% level of confidence)
6 GHz~18 GHz	4.88 dB (k=2, 95% level of confidence)
18 GHz~26 GHz	4.30 dB (k=2, 95% level of confidence)
26 GHz~40 GHz	4.30 dB (k=2, 95% level of confidence)

EUT Setup

Below 1GHz:



Above 1GHz:



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209 and FCC 15.247 Limits.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 26.5 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations

Measurement method 6.3 in ANSI C63.10.

Set RBW = 1 MHz, VBW= 3MHz for f > 1 GHz for peak measurement. For average measurement: • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

Test Equipment List and Details

3M Chamber					
Manufacturer	**Description**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Interval**
ETS-Lindgren	Loop Antenna	6502	00035796	2015/7/23	2018/7/22
Sunol Sciences	Broadband Antenna	JB6	A050115	2015/06/15	2016/06/14
EMEC	EMEC Attenuator	UNAT-6+	15542	2015/06/15	2016/06/14
EMCO	Horn Antenna	3115	9311-4158	2016/05/08	2017/05/07
ETS-Lindgren	Horn Antenna	3116	00062638	2015/9/7	2016/9/6
Sonoma	Amplifier	310N	130601	2015/07/02	2016/07/01
EMEC	Preamplifier	EM01G18G	060657	2015/12/21	2016/12/20
EMEC	Preamplifier	EM18G40G	060656	2015/12/21	2016/12/20
Rohde & Schwarz	EMI Test Receiver	ESR7	101419	2015/11/04	2016/11/03
Rohde & Schwarz	Spectrum Analyzer	FSEK30	825084/006	2015/12/24	2016/12/23
UTIFLEX	Mircoflex Cable	UFB197C-1-2362-70U-70U	225757-001	2015/07/03	2016/07/02
UTIFLEX	Mircoflex Cable	UFB311A-Q-1440-300300	220480-006	2015/11/04	2016/11/03
UTIFLEX	Mircoflex Cable	UFA210A-1-3149-300300	MFR64639 226389-001	2015/12/02	2016/12/01
ROSNAL	Mircoflex Cable	K1K50-UP0264-K1K50-80CM	160309-2	2016/03/24	2017/03/23
ROSNAL	Mircoflex Cable	K1K50-UP0264-K1K50-450CM	160309-1	2016/03/24	2017/03/23
Champro	Turn Table	TT-2000	060772-T	N.C.R	N.C.R
Champro	Antenna Tower	AM-BS-4500-B	060772-A	N.C.R	N.C.R
Champro	Controller	EM1000	060772	N.C.R	N.C.R
Farad	software	EZ_EMC	BACL-03A1	N.C.R	N.C.R

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Factor & Margin Calculation

The Correct Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Result –Limit

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.209 Limit. Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$Lm + U(Lm) \leq Llim + Ucispr$

In BACL, *U(Lm)* is less than *U*cispr, if *L*m is less than *L*lim, it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

Temperature:	26℃
Relative Humidity:	60 %
ATM Pressure:	101.0 kPa

The testing was performed by David. Hsu on 2016-05-17.

Mode: Test Mode

Remote:

Below 1 GHz

2402MHz

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	30.0000	21.50	-3.62	17.88	40.00	-22.12	334	360	QP
2	136.7000	32.30	-10.93	21.37	43.50	-22.13	300	52	QP
3	195.8700	36.50	-11.60	24.90	43.50	-18.60	100	295	QP
4	352.0400	30.90	-8.94	21.96	46.00	-24.04	100	170	QP
5	387.9300	40.30	-8.21	32.09	46.00	-13.91	203	0	QP
6	775.9300	22.10	-1.60	20.50	46.00	-25.50	271	0	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	145.4300	28.80	-11.25	17.55	43.50	-25.95	200	310	QP
2	195.8700	32.00	-11.60	20.40	43.50	-23.10	300	7	QP
3	220.1200	31.40	-13.00	18.40	46.00	-27.60	200	308	QP
4	391.8100	39.90	-8.12	31.78	46.00	-14.22	100	354	QP
5	779.8100	22.00	-1.50	20.50	46.00	-25.50	300	173	QP
6	947.6200	20.20	2.40	22.60	46.00	-23.40	200	189	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

2440MHz

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	144.4600	38.11	-11.21	26.90	43.50	-16.60	100	213	QP
2	193.9300	41.55	-11.97	29.58	43.50	-13.92	100	38	QP
3	387.9300	44.23	-8.21	36.02	46.00	-9.98	100	357	QP
4	575.1400	28.53	-4.82	23.71	46.00	-22.29	100	62	QP
5	888.4500	27.04	0.84	27.88	46.00	-18.12	100	244	QP
6	1000.0000	25.18	3.69	28.87	54.00	-25.13	100	75	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	37.7600	35.48	-9.25	26.23	40.00	-13.77	100	25	QP
2	145.4300	37.31	-11.25	26.06	43.50	-17.44	100	122	QP
3	220.1200	38.06	-13.00	25.06	46.00	-20.94	100	43	QP
4	391.8100	42.01	-8.12	33.89	46.00	-12.11	100	153	QP
5	627.5200	28.56	-3.98	24.58	46.00	-21.42	100	77	QP
6	913.6700	27.01	1.48	28.49	46.00	-17.51	100	347	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

2480MHz

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	30.0000	25.95	-3.62	22.33	40.00	-17.67	100	214	QP
2	144.4600	39.11	-11.21	27.90	43.50	-15.60	100	69	QP
3	195.8700	41.70	-11.60	30.10	43.50	-13.40	100	41	QP
4	220.1200	41.77	-13.00	28.77	46.00	-17.23	100	223	QP
5	387.9300	41.73	-8.21	33.52	46.00	-12.48	100	179	QP
6	627.5200	28.97	-3.98	24.99	46.00	-21.01	100	128	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	37.7600	35.48	-9.25	26.23	40.00	-13.77	100	299	QP
2	154.1600	35.49	-11.44	24.05	43.50	-19.45	100	38	QP
3	195.8700	38.25	-11.60	26.65	43.50	-16.85	100	254	QP
4	294.8100	30.14	-10.08	20.06	46.00	-25.94	100	117	QP
5	399.5700	39.71	-7.97	31.74	46.00	-14.26	100	43	QP
6	732.2800	28.77	-2.51	26.26	46.00	-19.74	100	79	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Above 1 GHz:

2402MHz

Horizontal:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1797.595	44.85	2.81	47.66	75.34	-27.68	100	102	peak
2	2402.806	90.51	4.83	95.34	N/A	N/A	100	353	peak
3	2402.806	87.90	4.83	92.73	N/A	N/A	100	353	AVG
4	2450.902	49.16	4.95	54.11	75.34	-21.23	100	60	peak

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4803.607	56.74	0.74	57.48	74.00	-16.52	100	323	peak
2	4803.607	46.35	0.74	47.09	54.00	-6.91	100	323	AVG
3	7208.417	57.49	6.60	64.09	75.34	-11.25	100	199	peak
4	7208.417	44.43	6.60	51.03	72.73	-21.70	100	199	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1941.884	44.03	3.53	47.56	75.34	-27.78	100	249	peak
2	2402.806	91.99	4.83	96.82	N/A	N/A	100	309	peak
3	2402.806	87.58	4.83	92.41	N/A	N/A	100	309	AVG
4	2450.902	50.41	4.95	55.36	75.34	-19.98	100	38	peak

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	7208.417	51.81	6.60	58.41	76.82	-18.41	100	14	peak
2	7208.417	40.75	6.60	47.35	72.41	-25.06	100	14	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

2440MHz

Horizontal:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1937.876	44.27	3.50	47.77	75.84	-28.07	100	99	peak
2	2442.886	90.91	4.93	95.84	N/A	N/A	100	223	peak
3	2442.886	88.68	4.93	93.61	N/A	N/A	100	233	AVG
4	2490.982	49.01	5.05	54.06	74.00	-19.94	100	63	peak
5	2490.982	42.74	5.05	47.79	54.00	-6.21	100	63	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4873.748	56.46	1.00	57.46	74.00	-16.54	100	333	peak
2	4873.748	45.57	1.00	46.57	54.00	-7.43	100	333	AVG
3	7328.657	59.08	7.04	66.12	74.00	-7.88	100	199	peak
4	7328.657	45.36	7.04	52.40	54.00	-1.60	100	199	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1997.996	44.03	3.80	47.83	76.35	-28.52	100	114	peak
2	2442.886	91.42	4.93	96.35	N/A	N/A	100	50	peak
3	2442.886	89.80	4.93	94.73	N/A	N/A	100	50	AVG
4	2490.982	47.96	5.05	53.01	74.00	-20.99	100	35	peak

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	7328.657	51.87	7.04	58.91	74.00	-15.09	100	17	peak
2	7328.657	40.33	7.04	47.37	54.00	-6.63	100	17	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

2480MHz

Horizontal:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1577.154	43.91	1.70	45.61	74.00	-28.39	100	106	peak
2	2478.958	92.09	5.03	97.12	N/A	N/A	100	224	peak
3	2478.958	90.20	5.03	95.23	N/A	N/A	100	224	AVG
4	2527.054	49.58	5.17	54.75	77.12	-22.37	100	63	peak
5	2527.054	43.67	5.17	48.84	75.23	-26.39	100	63	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4953.908	56.83	1.32	58.15	74.00	-15.85	100	320	peak
2	4953.908	45.00	1.32	46.32	54.00	-7.68	100	320	AVG
3	7438.878	59.21	7.46	66.67	74.00	-7.33	100	198	peak
4	7438.878	45.06	7.46	52.52	54.00	-1.48	100	198	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1917.836	44.38	3.40	47.78	76.01	-28.23	100	163	peak
2	2478.958	90.98	5.03	96.01	N/A	N/A	100	27	peak
3	2478.958	87.84	5.03	92.87	N/A	N/A	100	27	AVG
4	2531.062	48.08	5.20	53.28	76.01	-22.73	100	37	peak

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4953.908	53.67	1.32	54.99	74.00	-19.01	100	209	peak
2	4953.908	43.19	1.32	44.51	54.00	-9.49	100	209	AVG
3	7448.898	52.44	7.50	59.94	74.00	-14.06	100	110	peak
4	7448.898	42.75	7.50	50.25	54.00	-3.75	100	110	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Mode: Test Mode

Main:

Below 1 GHz

2402MHz

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	144.4600	36.61	-11.21	25.40	43.50	-18.10	100	117	QP
2	220.1200	37.27	-13.00	24.27	46.00	-21.73	100	74	QP
3	289.9600	32.78	-10.15	22.63	46.00	-23.37	100	228	QP
4	395.6900	39.09	-8.05	31.04	46.00	-14.96	100	247	QP
5	678.9300	28.52	-3.36	25.16	46.00	-20.84	100	61	QP
6	868.0800	27.27	0.36	27.63	46.00	-18.37	100	151	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	154.1600	35.49	-11.44	24.05	43.50	-19.45	100	359	QP
2	188.1100	39.86	-12.88	26.98	43.50	-16.52	100	142	QP
3	289.9600	31.99	-10.15	21.84	46.00	-24.16	100	211	QP
4	353.9800	37.56	-8.91	28.65	46.00	-17.35	100	137	QP
5	399.5700	37.71	-7.97	29.74	46.00	-16.26	100	40	QP
6	545.0700	30.21	-5.39	24.82	46.00	-21.18	100	201	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

2440MHz

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	144.4600	37.61	-11.21	26.40	43.50	-17.10	100	53	QP
2	201.6900	37.00	-11.16	25.84	43.50	-17.66	100	189	QP
3	220.1200	38.27	-13.00	25.27	46.00	-20.73	100	325	QP
4	395.6900	40.09	-8.05	32.04	46.00	-13.96	100	3	QP
5	702.2100	27.51	-3.07	24.44	46.00	-21.56	100	290	QP
6	868.0800	26.77	0.36	27.13	46.00	-18.87	100	14	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	154.1600	35.99	-11.44	24.55	43.50	-18.95	100	338	QP
2	183.2600	42.11	-13.13	28.98	43.50	-14.52	100	277	QP
3	220.1200	36.06	-13.00	23.06	46.00	-22.94	100	164	QP
4	399.5700	37.21	-7.97	29.24	46.00	-16.76	100	238	QP
5	552.8300	31.50	-5.27	26.23	46.00	-19.77	100	311	QP
6	803.0900	29.46	-0.99	28.47	46.00	-17.53	100	3	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

2480MHz

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	30.0000	25.95	-3.62	22.33	40.00	-17.67	100	106	QP
2	195.8700	41.20	-11.60	29.60	43.50	-13.90	100	292	QP
3	387.9300	42.23	-8.21	34.02	46.00	-11.98	100	186	QP
4	593.5700	29.59	-4.45	25.14	46.00	-20.86	100	346	QP
5	808.9100	28.38	-0.87	27.51	46.00	-18.49	100	289	QP
6	931.1300	26.69	1.94	28.63	46.00	-17.37	100	166	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	37.7600	32.48	-9.25	23.23	40.00	-16.77	100	230	QP
2	154.1600	35.99	-11.44	24.55	43.50	-18.95	100	60	QP
3	183.2600	41.61	-13.13	28.48	43.50	-15.02	100	102	QP
4	289.9600	31.49	-10.15	21.34	46.00	-24.66	100	3	QP
5	399.5700	38.71	-7.97	30.74	46.00	-15.26	100	320	QP
6	749.7400	29.69	-2.19	27.50	46.00	-18.50	100	129	QP

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Above 1 GHz:

2402MHz

Horizontal:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1765.531	57.38	-7.41	49.97	75.73	-25.76	100	179	peak
2	2402.806	100.97	-5.24	95.73	N/A	N/A	100	350	peak
3	2402.806	96.17	-5.24	90.93	N/A	N/A	100	350	AVG
4	2450.902	59.18	-5.13	54.05	75.73	-21.68	100	208	peak

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4803.607	56.74	0.63	57.37	75.73	-18.36	100	358	peak
2	4803.607	46.29	0.63	46.92	70.93	-24.01	100	358	AVG
3	7208.417	56.11	6.42	62.53	75.73	-13.20	100	358	peak
4	7208.417	43.86	6.42	50.28	70.93	-20.65	100	358	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1689.379	57.10	-7.79	49.31	74.00	-24.69	100	356	peak
2	2402.806	99.54	-5.24	94.30	N/A	N/A	100	215	peak
3	2402.806	96.25	-5.24	91.01	N/A	N/A	100	215	AVG
4	2450.918	62.09	-5.13	56.96	74.30	-17.34	100	175	peak

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	7208.417	51.20	6.42	57.62	74.30	-16.68	100	358	peak
2	7208.417	41.75	6.42	48.17	71.01	-22.84	100	358	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

2440MHz

Horizontal:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1977.956	56.62	-6.35	50.27	75.37	-25.10	100	343	peak
2	2438.878	100.53	-5.16	95.37	N/A	N/A	100	238	peak
3	2438.878	97.42	-5.16	92.26	N/A	N/A	100	238	AVG
4	2494.990	61.62	-5.01	56.61	74.00	-17.39	100	290	peak
5	2494.990	55.28	-5.01	50.27	54.00	-3.73	100	290	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4883.767	55.65	0.94	56.59	74.00	-17.41	100	330	peak
2	4883.767	46.89	0.94	47.83	54.00	-6.17	100	330	AVG
3	7328.657	57.70	6.86	64.56	74.00	-9.44	100	351	peak
4	7328.657	45.93	6.86	52.79	54.00	-1.21	100	351	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1993.988	56.29	-6.29	50.00	74.37	-24.37	100	295	peak
2	2442.886	99.51	-5.14	94.37	N/A	N/A	100	48	peak
3	2442.886	97.41	-5.14	92.27	N/A	N/A	100	48	AVG
4	1993.988	56.29	-6.29	50.00	74.37	-24.37	100	295	peak

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	7328.657	49.71	6.86	56.57	74.00	-17.43	100	351	peak
2	7328.657	43.76	6.86	50.62	54.00	-3.38	100	351	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

2480MHz

Horizontal:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1961.924	55.46	-6.44	49.02	75.41	-26.39	100	360	peak
2	2478.958	100.46	-5.05	95.41	N/A	N/A	100	328	peak
3	2478.958	96.39	-5.05	91.34	N/A	N/A	100	328	AVG
4	2531.062	60.64	-4.88	55.76	75.41	-19.65	100	341	peak
5	2531.062	55.12	-4.88	50.24	71.34	-21.10	100	341	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4963.928	55.19	1.24	56.43	74.00	-17.57	100	341	peak
2	4963.928	46.58	1.24	47.82	54.00	-6.18	100	341	AVG
3	7328.657	54.75	6.86	61.61	74.00	-12.39	100	351	peak
4	7328.657	45.01	6.86	51.87	54.00	-2.13	100	351	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

Vertical:

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	1889.780	57.52	-6.79	50.73	74.91	-24.18	100	98	peak
2	2482.966	99.96	-5.05	94.91	N/A	N/A	100	242	peak
3	2482.966	95.77	-5.05	90.72	N/A	N/A	100	242	AVG
4	2531.062	58.28	-4.88	53.40	74.91	-21.51	100	168	peak

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	4963.928	55.19	1.24	56.43	74.00	-17.57	100	341	peak
2	4963.928	46.58	1.24	47.82	54.00	-6.18	100	341	AVG
3	7328.657	54.75	6.86	61.61	74.00	-12.39	100	351	peak
4	7328.657	45.01	6.86	51.87	54.00	-2.13	100	351	AVG

Note: Result = Reading + Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

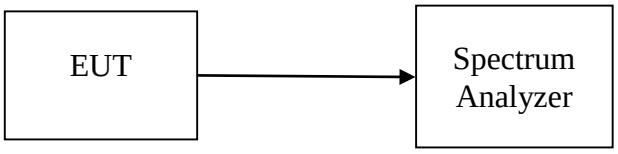
FCC§15.247(a) (2) – 6 dB EMISSION BANDWIDTH

Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSU26	200268	2016/5/7	2017/5/6
WOKEN	Cable	SFL402	00100A1F6A192S	2015/12/18	2016/12/17

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Result:

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2402	0.678	>500	PASS
Mid	2440	0.674	>500	PASS
High	2480	0.686	>500	PASS

Please refer to the following tables and plots.

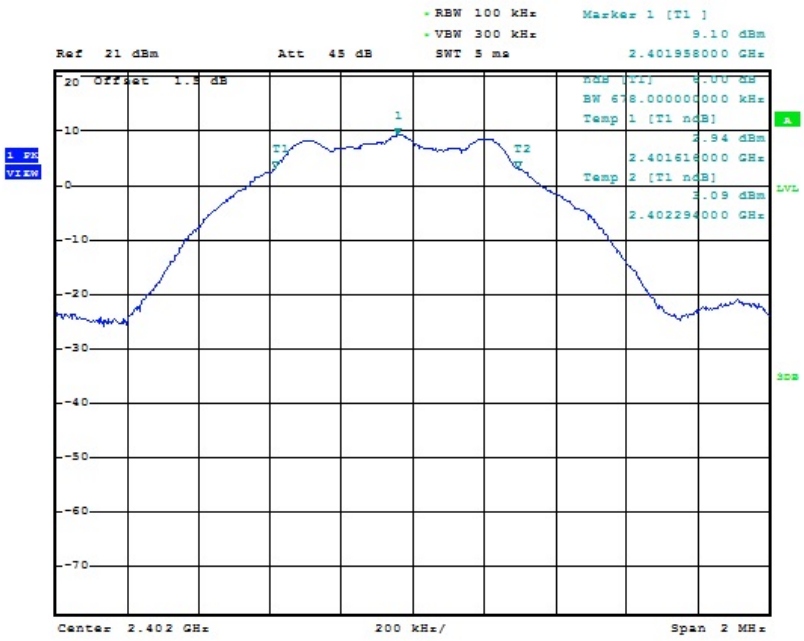
Test Data

Environmental Conditions

Temperature:	26℃
Relative Humidity:	60 %
ATM Pressure:	101.0 kPa

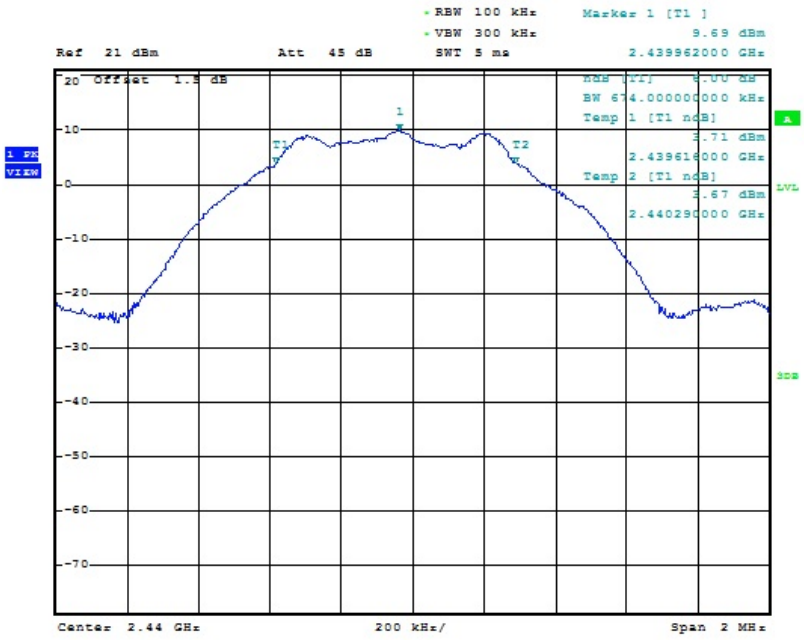
The testing was performed by David. Hsu on 2016-04-22.

Low Channel



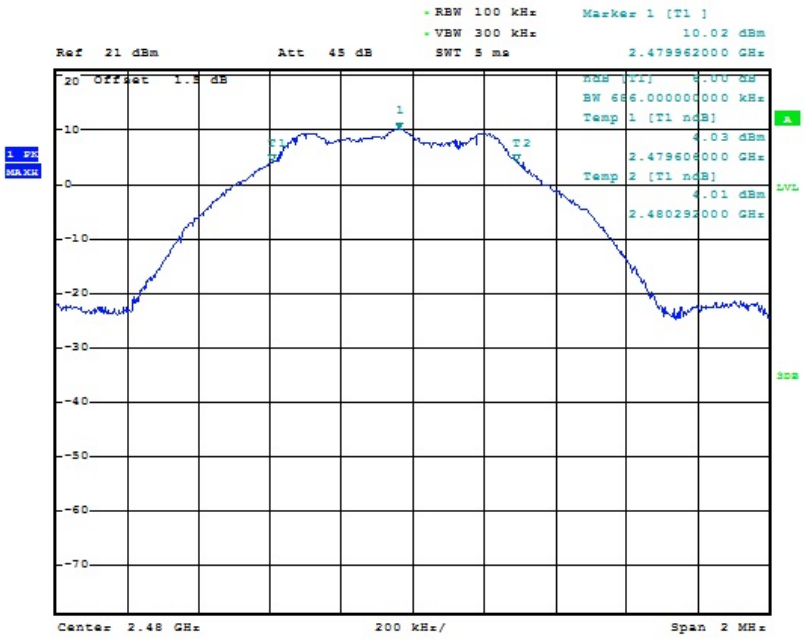
Date: 22.APR.2016 12:38:31

Middle Channel



Date: 22.APR.2016 12:37:40

High Channel



Date: 22.APR.2016 12:41:17

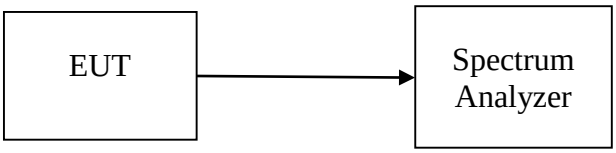
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI Test Receiver.
3. Add a correction factor to the display.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2016-05-09	2017-05-08
WOKEN	Cable	SFL402	00100A1F6A192S	2015/12/18	2016/12/17

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Result:

Channel	Frequency	Conducted Output Power	Limit	Result
	(MHz)	(dBm)	(dBm)	
Low	2402	9.29	30	PASS
Middle	2440	9.13	30	PASS
High	2480	8.93	30	PASS

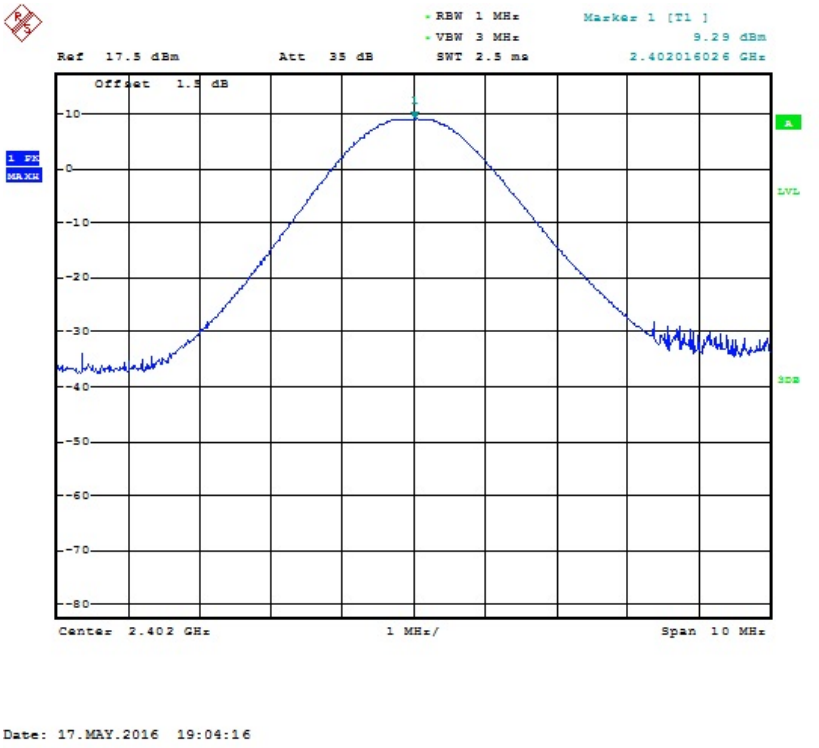
Test Data

Environmental Conditions

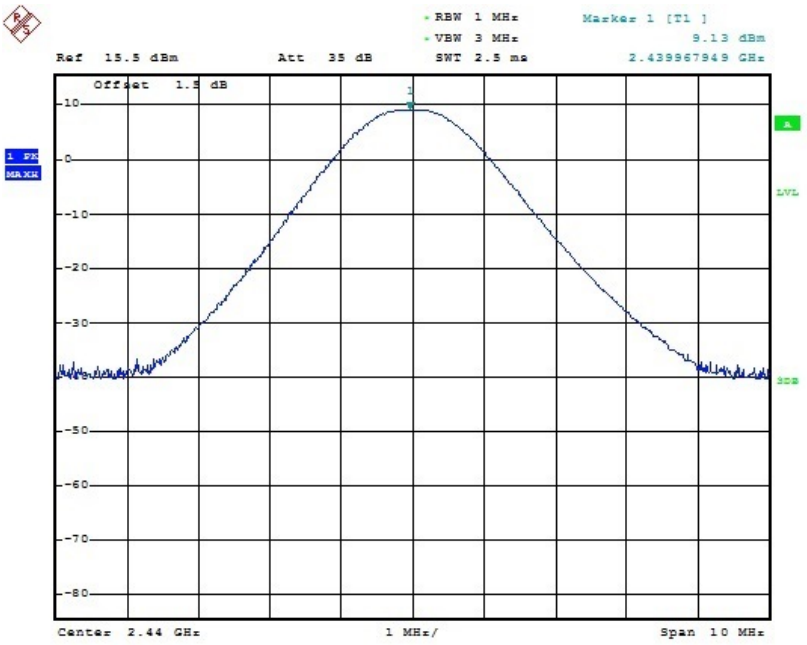
Temperature:	24℃
Relative Humidity:	62 %
ATM Pressure:	101.0 kPa

The testing was performed by David. Hsu on 2016-05-17.

Low Channel

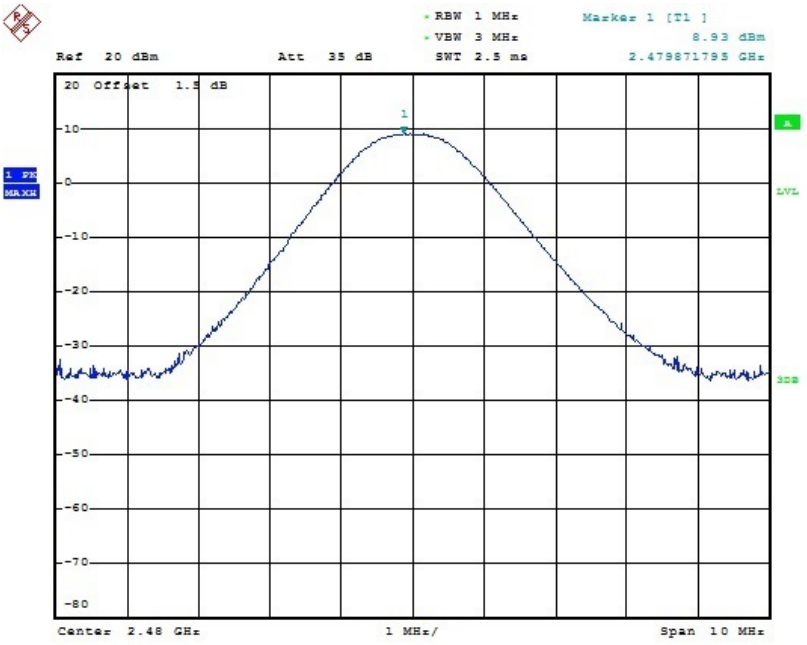


Middle Channel



Date: 17.MAY.2016 19:07:30

High Channel



Date: 17.MAY.2016 19:09:22

FCC§15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2016-05-09	2017-05-08
WOKEN	Cable	SFL402	00100A1F6A192S	2015/12/18	2016/12/17

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Result: PASS

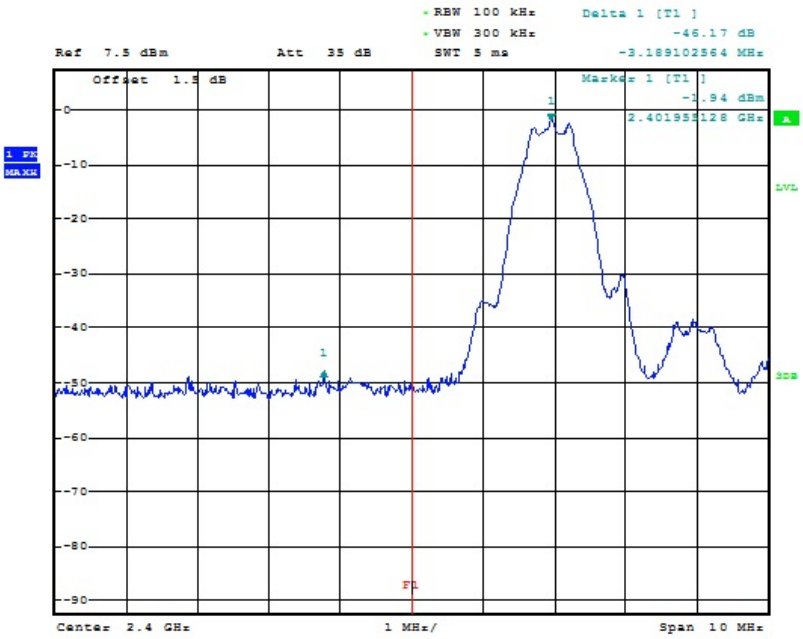
Test Data

Environmental Conditions

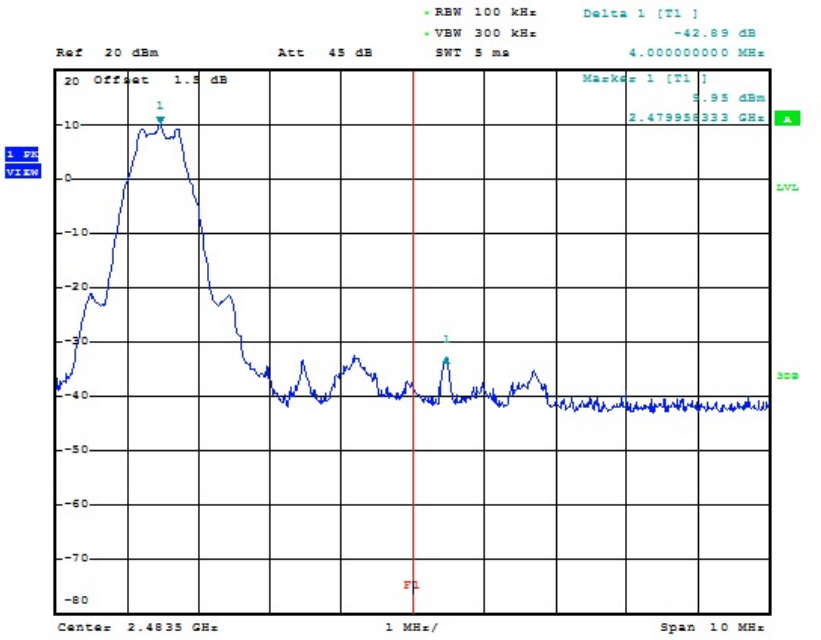
Temperature:	25℃
Relative Humidity:	58 %
ATM Pressure:	101.0 kPa

The testing was performed by David. Hsu on 2016-04-21.

Band Edge, Left Side



Band Edge, Right Side



Date: 21.APR.2016 12:50:25

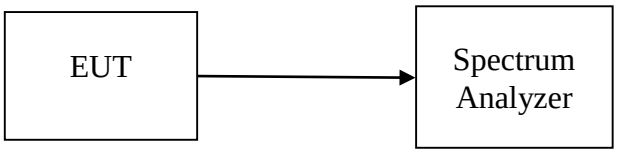
FCC§15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency be measured and set SA to 1.5MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value. (DTS)
4. Repeat above procedures until all frequencies measured were complete.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2016-05-09	2017-05-08
WOKEN	Cable	SFL402	00100A1F6A192S	2015/12/18	2016/12/17

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Result:

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low	2402	-7.12	8	PASS
Middle	2440	-6.35	8	PASS
High	2480	-5.70	8	PASS

Please refer to the following tables and plots.

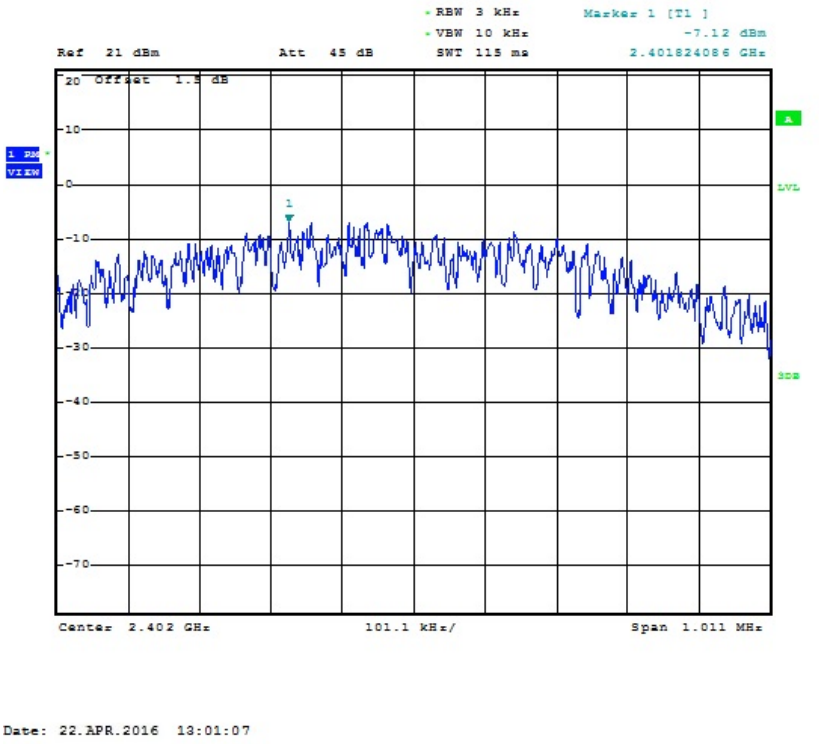
Test Data

Environmental Conditions

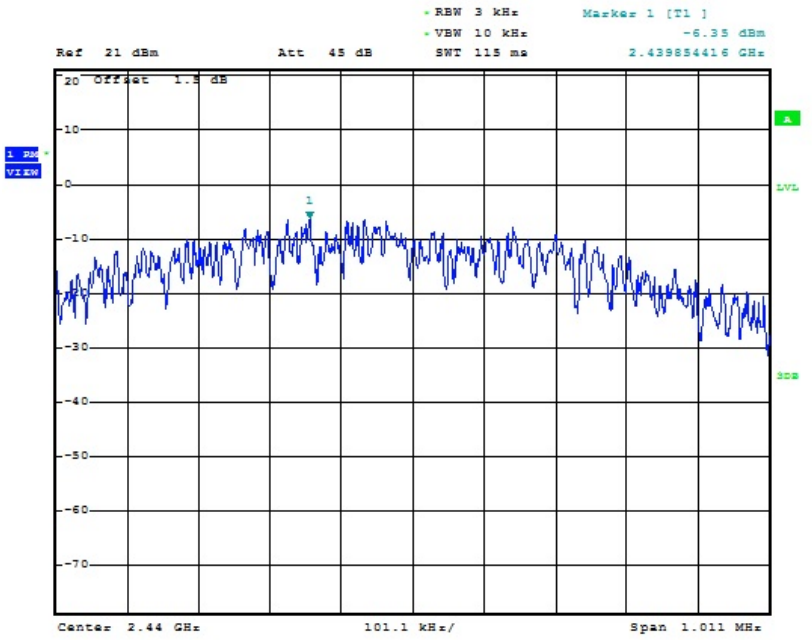
Temperature:	25℃
Relative Humidity:	60 %
ATM Pressure:	101.0 kPa

The testing was performed by David. Hsu on 2016-04-22.

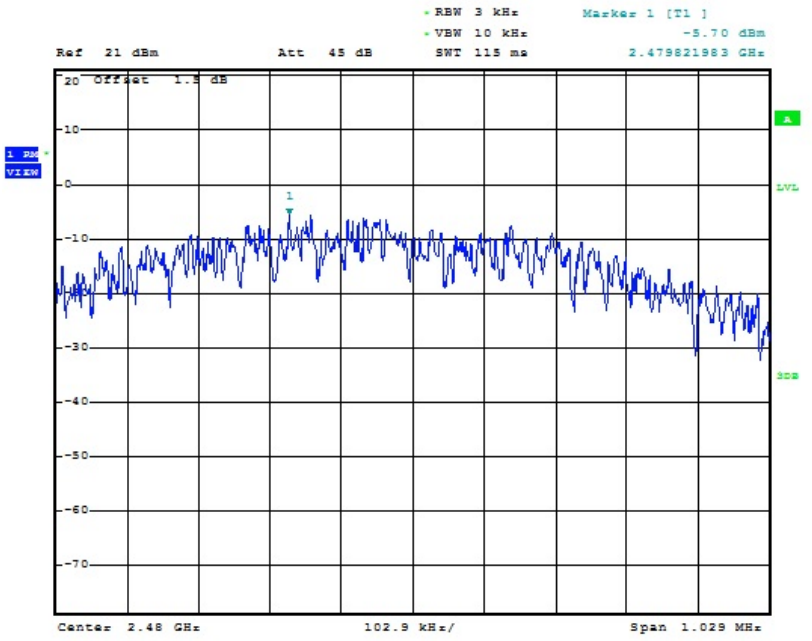
Power Spectral Density, Low Channel



Power Spectral Density, Middle Channel



Power Spectral Density, High Channel



******* END OF REPORT *******