Product Name:	Pico Dongle
Model No.:	GM-130012/R
Applicant:	KYE Systems Corp. (Genius) No. 492, Sec. 5, Chongxin Rd., Sanchong Dist., New Taipei City, 24160, Taiwan (R.O.C.)
Date of Receipt:	July 10, 2013
Finished date of Test:	Aug. 31, 2013
Applicable Standards:	47 CFR Part 15, Subpart B 47 CFR Part 15, Subpart C ANSI C63.4: 2003

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

This report compared to original Report NO.: FCCA13050304 issued on May. 08, 2013 differs in change layout (avoid pressure to the pad iron) Circuit has not changed.

Tested By: _____ Date: 8/31/2013
(Jeff Lo)

Approved By: _____ Date: 8/31/2013
(Johnson Ho, Director)

Revisions History

Report No.	Issue Date	Revisions
FCCA13050304	May. 08, 2013	Initial issue
FCCA13050304-01	Aug. 31, 2013	Class II change:Layout has changed

Table of Contents

1: DOCUMENT POLICY AND TEST STATEMENT

1.1: DOCUMENT POLICY

The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.

1.2: TEST STATEMENT

The test results in the report apply only to the unit tested by SRT Lab.

There was no deviation from the requirements of test standards during the test.
AC power source, 120 VAC/60Hz for PC (TX, from USB port), was used during the test.

1.3: EUT MODIFICATION

No modification in SRT Lab.

2: DESCRIPTION OF EUT AND TEST MODE

2.1: GENERAL DESCRIPTION OF EUT

PRODUCT	Pico Dongle
MODEL NO.	GM-130012/R
POWER SUPPLY	AC power source of PC for TX applied USB port : AC 120V/60Hz
CABLE	N/A
FREQUENCY BAND	2.400GHz ~ 2.4835 GHz
CARRIER FREQUENCY	2.409GHz ~ 2.475 GHz
NUMBER OF CHANNEL	8
RATED RF OUTPUT POWER	85.39 dBuV (-21.60 dBm, 0.00000692 W)
MODULATION TYPE	GFSK
MODE OF OPERATION	Simplex
ANTENNA TYPE	Printed PCB Antenna
ANTENNA GAIN	0 dBi
OPERATING TEMPERATURE RANGE	0 ~ 50 °C

NOTE:

For more detailed information, please refer to the EUT's specification or user's manual provided by the manufacturer.

2.2: DESCRIPTION OF EUT INTERNAL DEVICES

DEVICE	BRAND /MAKER	MODEL #	FCC ID / DOC	REMARK
2.4GHz Wireless Mouse	Genius	GM-130012/T	FSUGMZKP	N/A

2.3: TEST MODES

Total of 16 channels are provided; low, medium and high channels were chosen for test.

Test modes shown below:

TEST MODE	CHANNEL	FREQUENCY (MHZ)
1	Ch 01 (TX)	2409
2	Ch 04 (TX)	2435
3	Ch 08 (TX)	2475
4	Standby	N/A
5	Link (RX + TX)	N/A

2.4: CHANNEL AND FREQUENCY TABLE

Channel	Frequecy	Channel	Frequecy
CH01	2409 MHz	CH05	2444 MHz
CH02	2416 MHz	CH06	2454 MHz
CH03	2425 MHz	CH07	2464 MHZ
CH04	2435 MHz	CH08	2475 MHz

2.5: SUPPORT UNITS

The EUT was configured by the requirement of ANSI C63.4:2003. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DOC	CABLE
1	PC Computer	Acer	Aspire SA85	DoC	1.8 m unshielded power cord
2	Keyboard	WinTEK	WM530	DoC	1.8m unshielded data cable.
3	Mouse	WinTEK	WSS30	DoC	1.5m unshielded data cable.
4	Monitor	Samsung	PG17IS	DoC	1.8 m unshielded power cord 1.5 m shielded data cable
5	Printer	Epson	Stylus C20SX	N/A	1.5 m unshielded power cord 1.2 m shielded data cable
6	Modem	Aceex	DM-1414	DoC	1.5 m unshielded power cord 1.2 m shielded data cable

NOTE: For the actual test configuration, please refer to the photos of testing.

2.6: EUT OPERATING CONDITION

1. Setup the EUT and all peripheral devices.
2. Turn on the power of all equipments and EUT.
3. Set the EUT under continuous transmission condition, standby or linked to the USB dongle for testing.
4. Set the EUT to the highest available power level.

3: DESCRIPTION OF APPLIED STANDARDS

The EUT is a wireless product. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C

47 CFR Part 15, Subpart B

ANSI C63.4: 2003

All tests have been performed and recorded as the above standards.

3.1: SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

STANDARD SECTION	TEST TYPE AND LIMIT RESULTS	RESULTS
15.33(a) 15.249	Transmitter Radiated Emissions Limit: Section 4.1.1	PASS
15.203	Antenna requirement Limit: max. 6dBi	PASS
15.207	AC Power Conducted Emission	PASS
15.247(d)	Band Edge Measurement (for reference only): Limit: 20dB less than the peak value of fundamental frequency	PASS

4: TECHNICAL CHARACTERISTICS TEST

4.1: RADIATED EMISSION TEST

4.1.1: LIMITS

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Distance (m)	Field Strength	
0.009 - 0.490	300	2400/F(KHz)	uV/m
0.490 - 1.705	30	24000/F(KHz)	
1.705 – 30	30	30	
30 – 88	3	40.0	dBuV/m
88 – 216	3	43.5	
216 – 960	3	46.0	
Above 960	3	54.0	

Note :

1. Distance extrapolation factor = 40*log(specific distance / test distance (dB)
2. 30 uV/m (at 30m) = 20*log(30uV) + 40*log(30m/3m) = 70 dBuV/m (at 3m).
3. Transmitters that require Crystal Controlled Oscillators with values below 30 MHz requires the Test Report to show “Spurious Radiated Emissions” results below 30 MHz per FCC Part 15.33(a).

FCC Part15, Subpart C Section 15.249, limit of intentional radiators (average):

Fundamental Frequency (MHz)	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928	50	500
2400 - 2483.5	50	500
5725 - 5875	50	500
24000 - 24250	250	2500

NOTE :

1. In the emission tables above , the tighter limit applies at the band edges.
2. 50 mV/m = 94 dBuV/m
3. 500 uV/m = 54 dBuV/m

FCC Part 15, Section15.35(b) limit of radiated emission for frequency above 1000 MHz. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit.

Frequency (MHz)	Class A (dBuV/m) (at 3 m)		Class B (dBuV/m) (at 3 m)	
	Peak	Average	Peak	Average
Above 1000	80.0	60.0	74.0	54.0

4.1.2: TEST EQUIPMENT

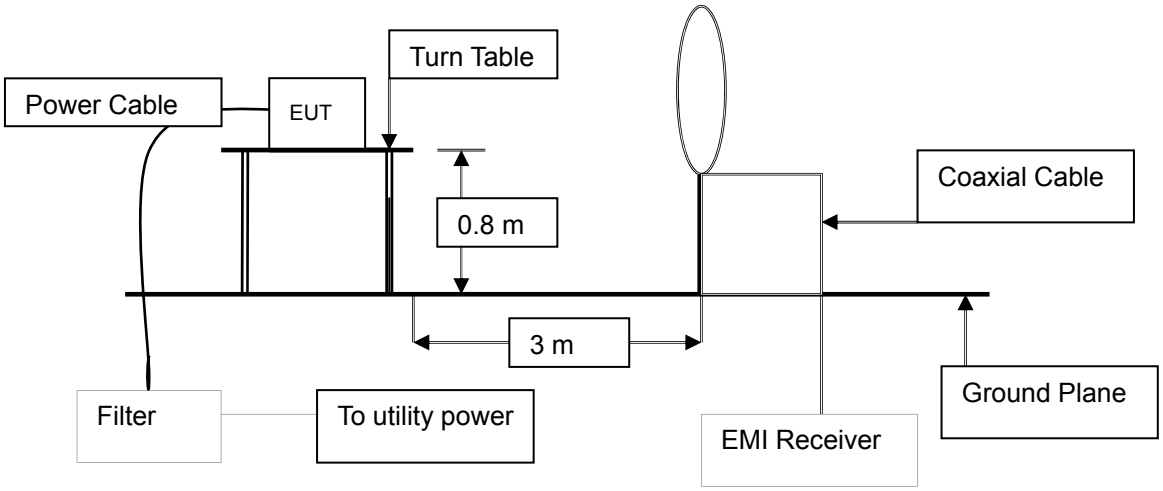
The following test equipment was used during the radiated emission test:

EQUIPMENT / FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	20 MHz ~ 1000 MHz	ROHDE & SCHWARZ	ESVS30 / 841977/003	DEC. 02,2013 ETC
BI-LOG ANTENNA	30 MHz ~ 2 GHz	SCHAFFNER	CBL6141A / 4181	SEP. 30, 2014 ETC
OPEN AREA TEST SITE	3 – 10 M MEASUREMENT	SRT	A02 / SRT002	MAR. 09, 2014 SRT
COAXIAL CABLE	30 M	TIMES	LMR-400 / #30M (L1TCAB014)	MAY 21, 2014 ETC
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 869	NCR
CDN	0.15 MHz ~ 300 MHz	LUTHI	CDN L-801 M2/M3 / 2790	MAY. 24, 2014 ETC
SPECTRUM ANALYZER	9 kHz ~ 40GHz	ROHDE & SCHWARZ	FSP40 / 100093	DEC. 12, 2013 ETC
PRE-AMPLIFIER	1 GHz ~ 26.5 GHz	AGILENT	8449B/ 3008A01995	DEC. 18,2013 ETC
HORN ANTENNA	1 GHz ~ 18 GHz	EMC TEST	3115/ 6881	OCT. 24, 2013 ETC
HORN ANTENNA	18 GHz ~ 40 GHz	EMCO	3116 / 00032255	JAN. 07,2014 ETC
CABLE	UP TO 18 GHz	JYE BAO	G1.5m / 001	JAN. 11,2014 ETC
CABLE	UP TO 18 GHz	JYE BAO	G3.5m / 002	JAN. 11,2014 ETC
K-TYPE CABLE	UP TO 40 GHz	HUBER+SUHNER	SF 102-40/2*11/ 23934/2	OCT. 24,2013 ETC
ANECHOIC CHAMBER	3 M MEASUREMENT	SRT	A01 / SRT001	MAY. 13, 2014 SRT
FILTER	2 LINE, 30 A	FIL.COIL	FC-943/ 869	NCR

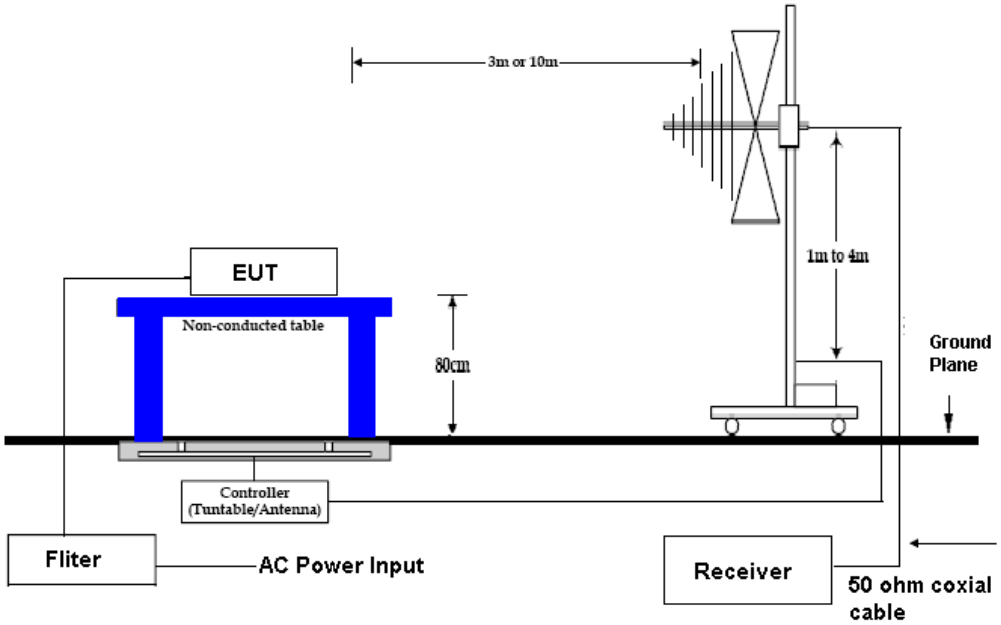
NOTE:
The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.1.3: TEST SET-UP

9 kHz – 30 MHz

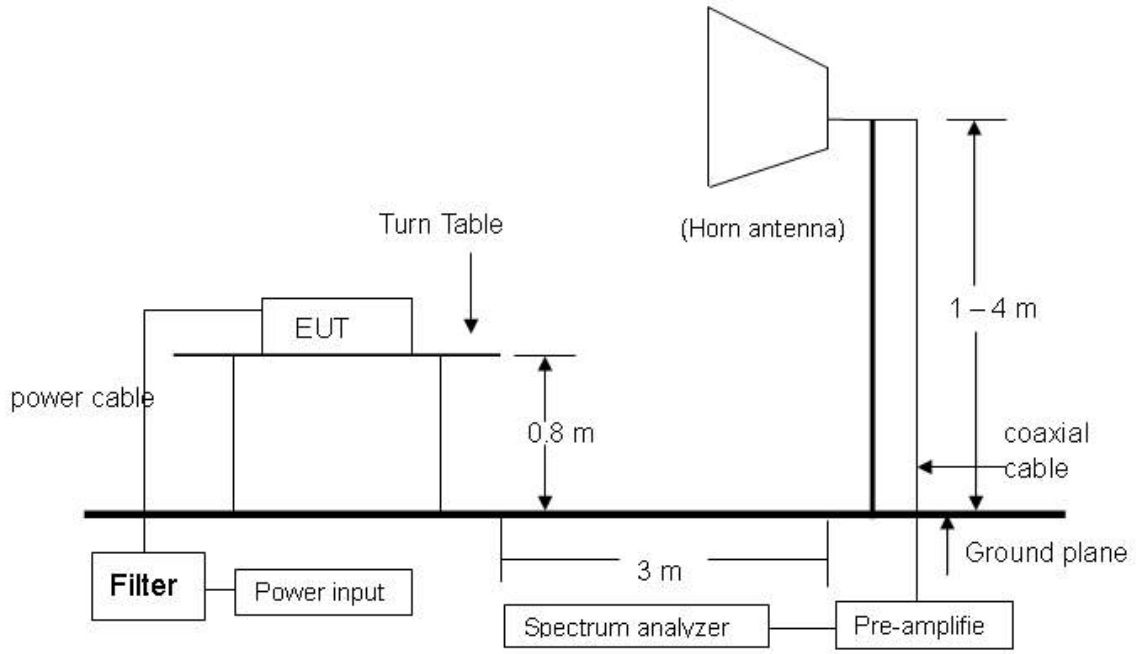


30 MHz - 1000 MHz:



NOTE :
The EUT system was put on a wooden table with 0.8m heights above a ground plane.
For the actual test configuration, please refer to the photos of testing.

1 GHz – 25 GHz:



NOTE :
The EUT system was put on a wooden table with 0.8m heights above a ground plane.
For the actual test configuration, please refer to the photos of testing.

4.1.4: TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2008. The measurements were made at an open area test site with 3 meters measurement distance. The frequency spectrum measured started from 9 kHz. Under 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.
First, note the margin of 6 highest frequencies, then manually find the maximum data. This procedure can be referred from the SRT LAB test procedures.

4.1.5: TEST RESULTS: 9 k – 30 MHz

Temperature:	23 °C	Humidity:	55 RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	1 (Ch01)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
3.76	0.35	20.24	32.60	53.18	70.00	-16.82
5.68	0.43	20.33	30.46	51.22	70.00	-18.78
9.58	0.55	20.48	33.24	54.27	70.00	-15.73
12.13	0.61	20.61	27.64	48.85	70.00	-21.15
22.65	0.80	21.13	27.47	49.40	70.00	-20.60
28.65	0.89	21.43	30.47	52.79	70.00	-17.21

Temperature:	23 °C	Humidity:	55 RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	2 (Ch04)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4.03	0.36	20.25	31.90	52.51	70.00	-17.49
7.93	0.50	20.42	30.66	51.57	70.00	-18.43
9.55	0.55	20.48	33.44	54.47	70.00	-15.53
11.89	0.60	20.59	27.84	49.04	70.00	-20.96
19.11	0.74	20.95	27.67	49.37	70.00	-20.63
28.62	0.89	21.43	30.27	52.59	70.00	-17.41

NOTE :
The emission limits for the bands other than 9-90 kHz and 110-490 kHz are based on measurements employing a quasi-peak detector.

Temperature:	23 °C	Humidity:	55 RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	3 (Ch08)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
4.06	0.36	20.25	29.27	49.88	70.00	-20.12
8.29	0.51	20.43	39.52	60.46	70.00	-9.54
9.58	0.55	20.48	32.83	53.86	70.00	-16.14
13.33	0.63	20.67	28.82	50.12	70.00	-19.88
15.54	0.68	20.78	27.91	49.37	70.00	-20.63
28.68	0.89	21.43	27.03	49.36	70.00	-20.64

Temperature:	23°C	Humidity:	55 RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	4 (Standby)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
8.35	0.51	20.43	39.81	60.75	70.00	-9.25
9.58	0.55	20.48	32.77	53.80	70.00	-16.20
13.78	0.64	20.69	27.90	49.23	70.00	-20.77
19.20	0.75	20.96	27.65	49.35	70.00	-20.65
22.65	0.80	21.13	27.38	49.31	70.00	-20.69
28.68	0.89	21.43	29.84	52.17	70.00	-17.83

NOTE :
The emission limits for the bands other than 9-90 kHz and 110-490 kHz are based on measurements employing a quasi-peak detector.

Temperature:	23 °C	Humidity:	55 RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	5 (Link)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
3.94	0.36	20.25	31.79	52.39	70.00	-17.61
6.58	0.46	20.36	34.85	55.67	70.00	-14.33
9.58	0.55	20.48	34.10	55.13	70.00	-14.87
19.17	0.75	20.96	28.20	49.90	70.00	-20.10
21.18	0.78	21.06	27.69	49.53	70.00	-20.47
28.68	0.89	21.43	31.60	53.93	70.00	-16.07

4.1.6: TEST RESULTS: 30 -1000 MHz

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	1 (CH01)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
165.88	1.93	11.70	19.26	32.89	43.50	-10.61	228.00	3.58
199.23	2.13	11.71	20.34	34.18	43.50	-9.33	76.00	3.48
299.67	2.70	13.85	19.81	36.36	46.00	-9.64	263.00	3.17
312.32	2.78	14.21	18.97	35.96	46.00	-10.04	306.00	3.13
555.90	3.98	18.99	13.39	36.36	46.00	-9.64	279.00	2.37
702.90	4.56	20.84	9.41	34.81	46.00	-11.19	173.00	1.92

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
199.27	2.13	11.71	16.51	30.35	43.50	-13.16	142.00	1.52
299.65	2.70	13.85	19.95	36.50	46.00	-9.50	297.00	1.83
312.36	2.78	14.21	22.67	39.66	46.00	-6.34	63.00	1.87
355.83	3.01	15.33	18.21	36.55	46.00	-9.45	102.00	2.01
374.50	3.10	15.82	19.27	38.19	46.00	-7.81	67.00	2.07
868.28	5.23	23.24	4.19	32.66	46.00	-13.34	99.00	3.59

NOTE :
1. Measurement uncertainty is ±4.73dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	2 (CH04)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
199.75	2.13	11.71	21.49	35.33	43.50	-8.18	358.00	3.48
222.06	2.26	13.04	26.20	41.50	46.00	-4.50	36.00	3.41
300.63	2.71	13.90	19.25	35.86	46.00	-10.14	271.00	3.16
554.77	3.97	18.97	13.36	36.31	46.00	-9.69	177.00	2.38
598.42	4.12	19.76	10.11	34.00	46.00	-12.00	254.00	2.24
702.21	4.56	20.84	8.67	34.07	46.00	-11.93	191.00	1.92

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
199.79	2.13	11.71	19.20	33.04	43.5	-10.47	66	1.53
300.67	2.71	13.90	20.43	37.04	46.0	-8.96	172	1.84
312.27	2.78	14.21	22.21	39.20	46.0	-6.80	259	1.87
375.32	3.11	15.85	19.17	38.13	46.0	-7.88	175	2.07
533.43	3.88	18.66	13.21	35.75	46.0	-10.25	181	2.56
869.05	5.24	23.24	10.99	39.47	46.0	-6.54	40	3.60

NOTE :

1. Measurement uncertainty is ±4.73dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	3 (CH08)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
90.14	1.45	8.90	23.28	33.63	43.50	-9.87	214.00	3.81
165.38	1.93	11.70	19.37	33.00	43.50	-10.50	311.00	3.58
198.29	2.12	11.62	19.62	33.36	43.50	-10.14	278.00	3.48
300.63	2.71	13.90	18.51	35.12	46.00	-10.88	14.00	3.16
533.91	3.88	18.66	19.18	41.72	46.00	-4.28	255.00	2.44
869.05	5.24	23.24	10.66	39.14	46.00	-6.87	36.00	1.41

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
198.25	2.12	11.62	21.54	35.28	43.50	-8.22	104.00	1.52
223.03	2.27	13.01	23.58	38.86	46.00	-7.14	305.00	1.60
311.98	2.77	14.19	22.74	39.70	46.00	-6.30	117.00	1.86
333.61	2.89	14.76	23.76	41.41	46.00	-4.59	156.00	1.94
374.59	3.10	15.82	19.42	38.34	46.00	-7.66	111.00	2.07
935.98	5.47	24.07	10.65	40.19	46.00	-5.81	309.00	3.81

NOTE :

1. Measurement uncertainty is ±4.73dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	4 (Standby)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
198.27	2.12	11.62	17.63	31.37	43.5	-12.13	266	3.48
299.29	2.70	13.85	20.31	36.86	46.0	-9.14	138	3.17
311.48	2.77	14.19	22.40	39.36	46.0	-6.64	259	3.13
374.64	3.10	15.82	17.37	36.29	46.0	-9.71	135	2.93
531.86	3.87	18.63	13.27	35.77	46.0	-10.23	11	2.45
978.24	5.63	24.62	11.35	41.60	54.0	-12.40	130	1.07

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
198.24	2.12	11.62	10.15	23.89	43.5	-19.61	204	1.52
533.49	3.88	18.66	5.21	27.75	46.0	-18.25	355	2.56
553.74	3.97	18.95	9.32	32.24	46.0	-13.76	140	2.62
600.38	4.13	19.80	10.79	34.72	46.0	-11.28	117	2.76
697.13	4.54	20.78	10.84	36.15	46.0	-9.85	35	3.06
890.11	5.30	23.28	11.06	39.64	46.0	-6.36	267	3.66

NOTE :

1. Measurement uncertainty is ±4.73dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	3 m
Receiver Detector:	Q.P.	Tested Mode:	5 (Link)
Tested By:	Jeff Lo	Tested Date:	Aug. 31, 2013

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
165.48	1.93	11.70	19.04	32.67	43.5	-10.83	214	3.58
198.74	2.12	11.62	20.32	34.06	43.5	-9.44	151	3.48
221.13	2.26	13.07	23.50	38.83	46.0	-7.17	24	3.41
532.64	3.87	18.65	15.98	38.50	46.0	-7.50	114	2.45
578.89	4.06	19.40	13.62	37.08	46.0	-8.92	11	2.30
696.21	4.53	20.77	10.00	35.30	46.0	-10.70	181	1.94

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
198.77	2.12	11.62	18.37	32.11	43.5	-11.39	282	1.52
299.66	2.70	13.85	21.64	38.19	46.0	-7.81	77	1.83
311.27	2.77	14.19	22.82	39.78	46.0	-6.22	304	1.87
374.32	3.10	15.82	18.42	37.34	46.0	-8.66	345	2.06
531.46	3.87	18.63	13.10	35.60	46.0	-10.40	215	2.55
578.85	4.06	19.40	12.92	36.38	46.0	-9.62	330	2.70

NOTE :

1. Measurement uncertainty is ±4.73dB.
2. "*": Measurement does not apply for this frequency.
3. Emissiom Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

4.1.7: TEST RESULTS: 1 - 25 GHz

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	1 – 25 GHz	Measured Distance:	3 m
Receiver Detector:	PK. or AV.	Tested Mode:	1 (CH01)
Tested By:	Jeff Lo	Tested Channel:	2409 MHz
Tested Date:	Aug. 31, 2013	Modulation Type:	GFSK

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1801.32	-31.93	26.48	48.19	37.08	42.74	31.63	74.00	54.00	-31.26	-22.37	40.00	2.26
2461.37	-31.08	28.49	47.24	36.54	44.65	33.95	74.00	54.00	-29.35	-20.05	291.00	2.06
3241.92	-30.24	31.08	44.52	33.76	45.36	34.60	74.00	54.00	-28.64	-19.40	280.00	1.83
3711.23	-29.57	32.11	43.92	32.13	46.46	34.67	74.00	54.00	-27.54	-19.33	172.00	1.69
4521.72	-28.70	32.85	41.79	30.05	45.94	34.20	74.00	54.00	-28.06	-19.80	160.00	1.44
5626.44	-27.08	34.67	38.82	28.40	46.41	35.99	74.00	54.00	-27.59	-18.01	51.00	1.11

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1804.12	-31.93	26.49	47.54	37.42	42.11	31.99	74.00	54.00	-31.89	-22.01	111.00	1.24
2859.14	-30.79	30.04	43.95	34.28	43.20	33.53	74.00	54.00	-30.80	-20.47	182.00	1.56
3305.27	-30.12	31.21	44.63	33.16	45.72	34.25	74.00	54.00	-28.28	-19.75	179.00	1.69
3655.62	-29.62	31.97	43.82	32.23	46.17	34.58	74.00	54.00	-27.83	-19.42	173.00	1.80
4365.16	-28.88	32.80	42.05	31.46	45.97	35.38	74.00	54.00	-28.03	-18.62	262.00	2.01
5439.12	-26.99	34.61	42.16	32.17	49.78	39.79	74.00	54.00	-24.22	-14.21	347.00	2.33

NOTE :

1. Measurement uncertainty is ±2.4dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level =Reading Value +Ant. Factor +Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	1 – 25 GHz	Measured Distance:	3 m
Receiver Detector:	PK. or AV.	Tested Mode:	1 (CH01 Fundamental)
Tested By:	Jeff Lo	Tested Channel:	2409 MHz
Tested Date:	Aug. 31, 2013	Modulation Type:	GFSK

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2409.00	-31.14	28.35	88.17	77.61	85.38	74.82	114.0	94.00	-28.62	-19.18	213	2.08
4818.00	-28.47	33.56	39.07	28.98	44.17	34.08	74.00	54.00	-29.83	-19.92	144	1.91
7227.00	-27.04	36.64	37.84	26.54	47.44	36.14	74.00	54.00	-26.56	-17.86	253	1.84
9636.00	-25.62	38.24	37.80	26.38	50.42	39.00	74.00	54.00	-23.58	-15.00	102	1.73
12045.00	-23.80	39.30	35.05	24.34	50.55	39.84	74.00	54.00	-23.45	-14.16	311	1.66
14454.00	-21.15	40.81	41.33	30.59	60.99	50.25	74.00	54.00	-13.01	-3.75	267	1.53

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2409.00	-31.14	28.35	88.18	77.21	85.39	74.42	114.0	94.00	-28.61	-19.58	25	1.42
4818.00	-28.47	33.56	40.29	30.59	45.39	35.69	74.00	54.00	-28.61	-18.31	301	2.15
7227.00	-27.04	36.64	39.69	28.58	49.29	38.18	74.00	54.00	-24.71	-15.82	188	2.87
9636.00	-25.62	38.24	37.67	26.14	50.29	38.76	74.00	54.00	-23.71	-15.24	197	2.91
12045.00	-23.80	39.30	35.40	25.55	50.90	41.05	74.00	54.00	-23.10	-12.95	125	3.11
14454.00	-21.15	40.81	39.21	29.19	58.87	48.85	74.00	54.00	-15.13	-5.15	122	3.29

NOTE :

1. Measurement uncertainty is ±2.4dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level =Reading Value +Ant. Factor +Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	1 – 25 GHz	Measured Distance:	3 m
Receiver Detector:	PK. or AV.	Tested Mode:	2 (CH04)
Tested By:	Jeff Lo	Tested Channel:	2435 MHz
Tested Date:	Aug. 31, 2013	Modulation Type:	GFSK

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1801.13	-31.93	26.48	48.56	37.36	43.11	31.91	74.00	54.00	-30.89	-22.09	40	2.26
3159.68	-30.39	30.92	44.38	33.24	44.90	33.76	74.00	54.00	-29.10	-20.24	280	1.85
3674.34	-29.60	32.02	43.99	33.05	46.41	35.47	74.00	54.00	-27.59	-18.53	172	1.70
4134.64	-29.14	32.80	42.33	31.46	45.99	35.12	74.00	54.00	-28.01	-18.88	164	1.56
5449.47	-26.96	34.63	42.36	30.68	50.02	38.34	74.00	54.00	-23.98	-15.66	56	1.17
5764.30	-27.39	34.65	41.71	30.37	48.97	37.63	74.00	54.00	-25.03	-16.37	52	1.07

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1801.16	-31.93	26.48	48.41	37.66	42.96	32.21	74.00	54.00	-31.04	-21.79	111	1.24
2740.53	-30.87	29.56	45.48	35.80	44.17	34.49	74.00	54.00	-29.83	-19.51	184	1.52
3290.17	-30.15	31.18	45.22	34.48	46.25	35.51	74.00	54.00	-27.75	-18.49	180	1.69
3895.11	-29.40	32.55	43.62	32.06	46.77	35.21	74.00	54.00	-27.23	-18.79	269	1.87
4870.93	-28.42	33.69	40.85	30.25	46.11	35.51	74.00	54.00	-27.89	-18.49	253	2.16
5300.11	-27.41	34.42	42.25	31.54	49.26	38.55	74.00	54.00	-24.74	-15.45	348	2.29

NOTE :

1. Measurement uncertainty is ±2.4dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level =Reading Value +Ant. Factor +Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	1 – 25 GHz	Measured Distance:	3 m
Receiver Detector:	PK. or AV.	Tested Mode:	2 (CH04 Fundamental)
Tested By:	Jeff Lo	Tested Channel:	2435 MHz
Tested Date:	Aug. 31, 2013	Modulation Type:	GFSK

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m).
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2435	-31.11	28.42	86.61	75.54	83.92	72.85	114	94	-30.08	-21.15	82	2.33
4870	-28.42	33.69	40.94	30.13	46.20	35.39	74	54	-27.80	-18.61	99	2.00
7305	-26.99	36.83	39.75	29.59	49.59	39.43	74	54	-24.41	-14.57	284	1.72
9740	-25.46	38.34	38.65	27.41	51.53	40.29	74	54	-22.47	-13.71	135	1.47
12175	-23.45	39.30	35.09	24.53	50.94	40.38	74	54	-23.06	-13.62	77	1.36
14610	-21.24	40.44	40.22	30.11	59.42	49.31	74	54	-14.58	-4.69	299	1.29

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2435	-31.11	28.42	86.61	75.38	83.92	72.69	114	94	-30.08	-21.31	148	1.15
4870	-28.42	33.69	43.04	32.92	48.30	38.18	74	54	-25.70	-15.82	230	1.41
7305	-26.99	36.83	40.47	30.50	50.31	40.34	74	54	-23.69	-13.66	2	1.89
9740	-25.46	38.34	39.91	29.89	52.79	42.77	74	54	-21.21	-11.23	144	2.01
12175	-23.45	39.30	36.17	25.13	52.02	40.98	74	54	-21.98	-13.02	75	2.23
14610	-21.24	40.44	40.22	30.41	59.42	49.61	74	54	-14.58	-4.39	359	2.37

NOTE :

1. Measurement uncertainty is ±2.4dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level =Reading Value +Ant. Factor +Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	1 – 25 GHz	Measured Distance:	3 m
Receiver Detector:	PK. or AV.	Tested Mode:	3 (CH08)
Tested By:	Jeff Lo	Tested Channel:	2475 MHz
Tested Date:	Aug. 31, 2013	Modulation Type:	GFSK

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1400.13	-32.75	25.24	48.10	37.14	40.59	29.63	74	54	-33.41	-24.37	275	2.38
1805.63	-31.93	26.50	48.37	37.59	42.94	32.16	74	54	-31.06	-21.84	70	2.26
3105.44	-30.49	30.81	44.45	33.15	44.77	33.47	74	54	-29.23	-20.53	127	1.87
3925.09	-29.37	32.62	43.75	32.38	47.00	35.63	74	54	-27.00	-18.37	351	1.62
4505.11	-28.72	32.81	42.33	31.40	46.43	35.50	74	54	-27.57	-18.50	88	1.45
5440.17	-26.99	34.62	41.35	30.99	48.97	38.61	74	54	-25.03	-15.39	333	1.17

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1135.64	-33.69	24.82	49.72	38.57	40.85	29.70	74.00	54.00	-33.15	-24.30	150	1.04
1805.65	-31.93	26.50	48.84	37.46	43.41	32.03	74.00	54.00	-30.59	-21.97	288	1.24
2740.78	-30.87	29.56	43.98	32.10	42.67	30.79	74.00	54.00	-31.33	-23.21	351	1.52
3040.91	-30.62	30.68	45.84	34.91	45.90	34.97	74.00	54.00	-28.10	-19.03	353	1.61
3725.58	-29.55	32.14	43.90	32.11	46.49	34.70	74.00	54.00	-27.51	-19.30	139	1.82
4225.25	-29.04	32.80	42.76	31.82	46.52	35.58	74.00	54.00	-27.48	-18.42	61	1.97

NOTE :

1. Measurement uncertainty is ±2.4dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level =Reading Value +Ant. Factor +Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	1 – 25 GHz	Measured Distance:	3 m
Receiver Detector:	PK. or AV.	Tested Mode:	3 (CH08 Fundamental)
Tested By:	Jeff Lo	Tested Channel:	2475 MHz
Tested Date:	Aug. 31, 2013	Modulation Type:	GFSK

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2475.00	-31.06	28.53	83.14	72.16	80.61	69.63	114.0	94.00	-33.39	-24.37	214	2.04
4952.00	-28.36	33.88	41.23	30.41	46.76	35.94	74.00	54.00	-27.24	-18.06	322	1.99
7428.00	-26.91	37.13	39.06	28.85	49.28	39.07	74.00	54.00	-24.72	-14.93	87	1.83
9904.00	-25.21	38.50	38.37	27.66	51.67	40.96	74.00	54.00	-22.33	-13.04	92	1.76
12380.00	-22.91	39.30	35.86	24.53	52.25	40.92	74.00	54.00	-21.75	-13.08	169	1.63
14856.00	-21.43	39.85	40.23	30.12	58.64	48.53	74.00	54.00	-15.36	-5.47	137	1.55

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2475.00	-31.06	28.53	83.12	72.73	80.59	70.20	114.0	94.00	-33.41	-23.80	265	1.43
4952.00	-28.36	33.88	40.21	30.11	45.74	35.64	74.00	54.00	-28.26	-18.36	358	1.57
7428.00	-26.91	37.13	39.06	29.88	49.28	40.10	74.00	54.00	-24.72	-13.90	145	1.69
9904.00	-25.21	38.50	38.37	27.45	51.67	40.75	74.00	54.00	-22.33	-13.25	132	1.77
12380.00	-22.91	39.30	35.86	24.38	52.25	40.77	74.00	54.00	-21.75	-13.23	111	1.86
14856.00	-21.43	39.85	40.23	30.09	58.64	48.50	74.00	54.00	-15.36	-5.50	23	1.97

NOTE :

1. Measurement uncertainty is ±2.4dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level =Reading Value +Ant. Factor +Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	1 – 25 GHz	Measured Distance:	3 m
Receiver Detector:	PK. or AV.	Tested Mode:	4 (Standby)
Tested By:	Jeff Lo	Tested Channel:	N/A
Tested Date:	Aug. 31, 2013	Modulation Type:	GFSK

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
3295.44	-30.14	31.19	44.24	33.88	45.29	34.93	74.00	54.00	-28.71	-19.07	345	1.81
3625.73	-29.65	31.90	43.48	32.12	45.74	34.38	74.00	54.00	-28.27	-19.63	109	1.71
4085.66	-29.20	32.80	42.79	31.47	46.39	35.07	74.00	54.00	-27.61	-18.93	341	1.57
4870.07	-28.42	33.69	41.35	30.63	46.61	35.89	74.00	54.00	-27.39	-18.11	146	1.34
5345.29	-27.28	34.48	41.67	30.11	48.87	37.31	74.00	54.00	-25.13	-16.69	332	1.20
5635.91	-27.10	34.67	39.80	29.37	47.37	36.94	74.00	54.00	-26.63	-17.06	253	1.11

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2945.05	-30.73	30.38	45.05	35.04	44.70	34.69	74.00	54.00	-29.30	-19.31	292	1.58
3520.13	-29.74	31.65	44.22	33.21	46.13	35.12	74.00	54.00	-27.87	-18.88	118	1.76
4255.81	-29.00	32.80	42.69	31.09	46.49	34.89	74.00	54.00	-27.51	-19.11	332	1.98
4885.96	-28.41	33.72	41.83	31.55	47.14	36.86	74.00	54.00	-26.86	-17.14	268	2.17
5270.38	-27.50	34.38	40.68	30.73	47.55	37.60	74.00	54.00	-26.45	-16.40	186	2.28
5770.31	-27.40	34.65	41.23	31.78	48.48	39.03	74.00	54.00	-25.52	-14.97	148	2.43

NOTE :

1. Measurement uncertainty is ±2.4dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level =Reading Value +Ant. Factor +Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

Temperature:	23 ˚C	Humidity:	55 %RH
Frequency Range:	1 – 25 GHz	Measured Distance:	3 m
Receiver Detector:	PK. or AV.	Tested Mode:	5 (Link)
Tested By:	Jeff Lo	Tested Channel:	All
Tested Date:	Aug. 31, 2013	Modulation Type:	GFSK

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1800.09	-31.93	26.48	50.58	40.14	45.13	34.69	74.00	54.00	-28.87	-19.31	154	2.26
3070.13	-30.56	30.74	45.26	34.86	45.44	35.04	74.00	54.00	-28.56	-18.96	106	1.88
3705.49	-29.57	32.09	44.93	33.27	47.45	35.79	74.00	54.00	-26.55	-18.21	263	1.69
4295.87	-28.96	32.80	43.30	32.62	47.14	36.46	74.00	54.00	-26.86	-17.54	204	1.51
5040.11	-28.20	34.06	41.08	30.44	46.94	36.30	74.00	54.00	-27.06	-17.70	72	1.29
5660.94	-27.16	34.67	39.61	28.98	47.12	36.49	74.00	54.00	-26.88	-17.51	192	1.10

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
3255.08	-30.22	31.11	44.69	33.26	45.58	34.15	74.00	54.00	-28.42	-19.85	334	1.68
3580.25	-29.69	31.79	44.51	33.78	46.62	35.89	74.00	54.00	-27.38	-18.11	276	1.77
4260.56	-29.00	32.80	41.97	31.51	45.77	35.31	74.00	54.00	-28.23	-18.69	61	1.98
4865.55	-28.43	33.68	41.62	30.49	46.87	35.74	74.00	54.00	-27.13	-18.26	97	2.16
5310.61	-27.38	34.43	40.34	29.86	47.39	36.91	74.00	54.00	-26.61	-17.09	83	2.29
5800.72	-27.46	34.64	39.83	28.48	47.01	35.66	74.00	54.00	-26.99	-18.34	28	2.44

NOTE :

1. Measurement uncertainty is ±2.4dB.
2. "*": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emissiom Level =Reading Value +Ant. Factor +Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field stregth of fundamental frequency.

4.2 CONDUCTED EMISSION TEST

4.2.1 LIMIT

Frequency (MHz)	Class A (dBµV)		Class B (dBµV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE :

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

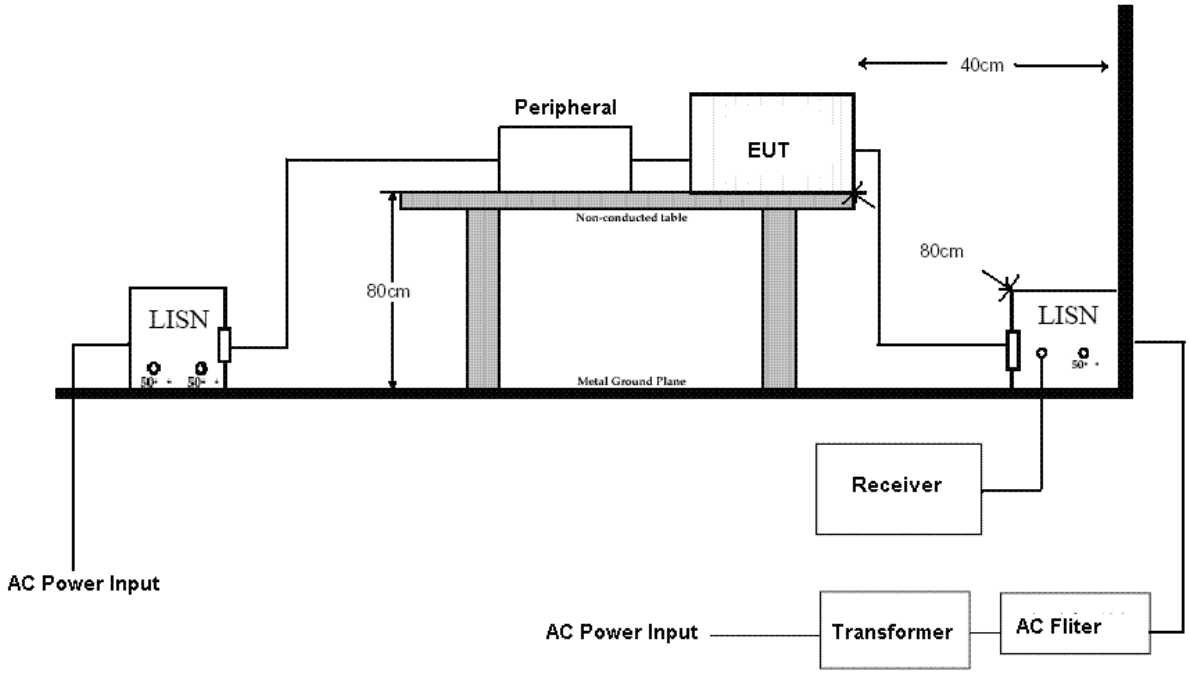
4.2.2 TEST EQUIPMENT

The following test equipment was used for the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz ~ 2.75 GHz	ROHDE & SCHWARZ	ESCS30 / 100376	DEC. 2013 ETC
EMI TEST RECEIVER	9 kHz ~ 30 MHz	ROHDE & SCHWARZ	ESHS30 / 826003/008	JAN. 2014 ETC
LISN	50 µH, 50 ohm	FCC	FCC-LISN-50-25-2 / 01017	JUN. 2014 ETC
LISN	50 µH, 50 ohm	SOLAR	9252-50-R-24-BNC/ 951315	OCT. 2013 ETC
LISN	50 µH, 50 ohm	EMCO	3825/2/ 9204-1952	JUN. 2014 ETC
50Ω BNC TYPE TERMINATOR	50 ohm	N/A	B00-CD-204/ L1TEQU008	JUN. 2014 ETC
50Ω BNC TYPE TERMINATOR	50 ohm	N/A	B00-CD-357/ L1TEQU009	JUN. 2014 ETC
COAXIAL CABLE	5 M	HUBER+SUHNER	RG214/U / #5M(L1TCAB013)	MAY. 2014 ETC
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 771	NCR
GROUND PLANE	2 M (H) x 3 M (W)	SRT	N/A	NCR
GROUND PLANE	2.5 M (H) x 3 M (W)	SRT	N/A	NCR
PULSE LIMITER	9 kHz ~ 30 MHz	ROHDE & SCHWARZ	ESH3Z2/ L1TTES010	JAN. 2014 ETC

NOTE : The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.2.3 TEST SETUP



NOTE :

1. The EUT was put on a wooden table with 0.8m heights above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.

4.2.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR22:2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm/50μH as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

4.2.5 TEST RESULT

Temperature:	23 ˚C	Humidity:	58 %RH
Tested By:	Jeff Lo	Tested Mode:	Link
Receiver Detector:	Q.P. and AV.	Modulation Type:	GFSK
Frequency Range:	0.15 – 30 MHz	Tested Date:	Aug. 31, 2013

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.150	0.12	41.86	38.89	41.98	39.01	66.00	56.00	-24.02	-16.99
0.153	0.12	40.54	37.55	40.66	37.67	65.84	55.84	-25.18	-18.17
0.678	-0.05	29.90	27.79	29.85	27.74	56.00	46.00	-26.15	-18.26
2.972	-0.01	31.26	29.28	31.25	29.27	56.00	46.00	-24.75	-16.73
3.002	-0.01	29.28	25.54	29.27	25.53	56.00	46.00	-26.73	-20.47
19.746	0.31	37.10	29.09	37.41	29.40	60.00	50.00	-22.59	-20.60

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.150	0.12	46.16	43.96	46.28	44.08	66.00	56.00	-19.72	-11.92
0.153	0.12	44.70	42.42	44.82	42.54	65.84	55.84	-21.02	-13.30
0.529	-0.01	30.00	29.30	29.99	29.29	56.00	46.00	-26.01	-16.71
3.081	0.03	27.94	25.47	27.97	25.50	56.00	46.00	-28.03	-20.50
3.695	0.03	28.48	28.04	28.51	28.07	56.00	46.00	-27.49	-17.93
17.480	0.34	36.58	30.39	36.92	30.73	60.00	50.00	-23.08	-19.27

NOTE :

1. Measurement uncertainty is ±3.61dB
2. Emission level = Reading valus + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

4.3: BAND EDGE TEST

4.3.1: LIMIT

This test is for reference only.

FCC Part15, Subpart C Section 15.247. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Operating Frequency Range (MHz)	Spurious Emission Frequency (MHz)	Limit	
		Peak Power Ratio to Emission (dBc)	Emission Level (dBuV/m)
902 - 928	<902	>20	NA
	>928	>20	NA
	960-1240	NA	54
2400 - 2483.5	<2400	>20	NA
	>2483.5-2500	NA	54
5725 - 5850	<5350-5460	NA	54
	<5725	>20	NA
	>5850	>20	NA

4.3.2: TEST EQUIPMENT

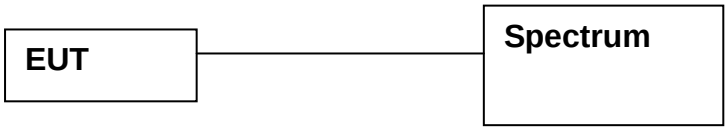
The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE oF CAL. & CAL. CENTER
SPECTRUM ANALYZER	9kHz-40GHz	ROHDE & SCHWARZ	FSP40/ 100093	DEC. 13, 2013 ETC
EMI TEST RECEIVER	9kHz-6GHz	ROHDE & SCHWARZ	ESL/ 100176	MAR. 2014 ETC
HORN ANTENNA	1 GHz - 18 GHz	EMCO	3115/ 9602-4681	OCT. 24, 2013 ETC
PRE- AMPLIFIER	1 GHz - 26.5 GHz	HP	8449B/ 3008A01995	DEC. 18,2013 ETC
ANECHOIC CHAMBER	3 M MEASUREMENT	SRT	A01 / SRT001	MAY.13, 2014SRT
K-TYPE CABLE	1 m	HUBER SUHNER	SF 102-40/2*11/ 23934/2	OCT. 24, 2013 ETC
RF CABLE	1.5M	JYEBAO	A30A30-L 142 / EQF-0035	DEC.19, 2013 ETC
RF CABLE	3.5M	JYEBAO	A30A30-L 142 (G3.5M)/ EQF-0036(002)	DEC.19, 2013 ETC
FILTER	2 LINE, 30 A	FIL.COIL	FC-943/ 869	NCR

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

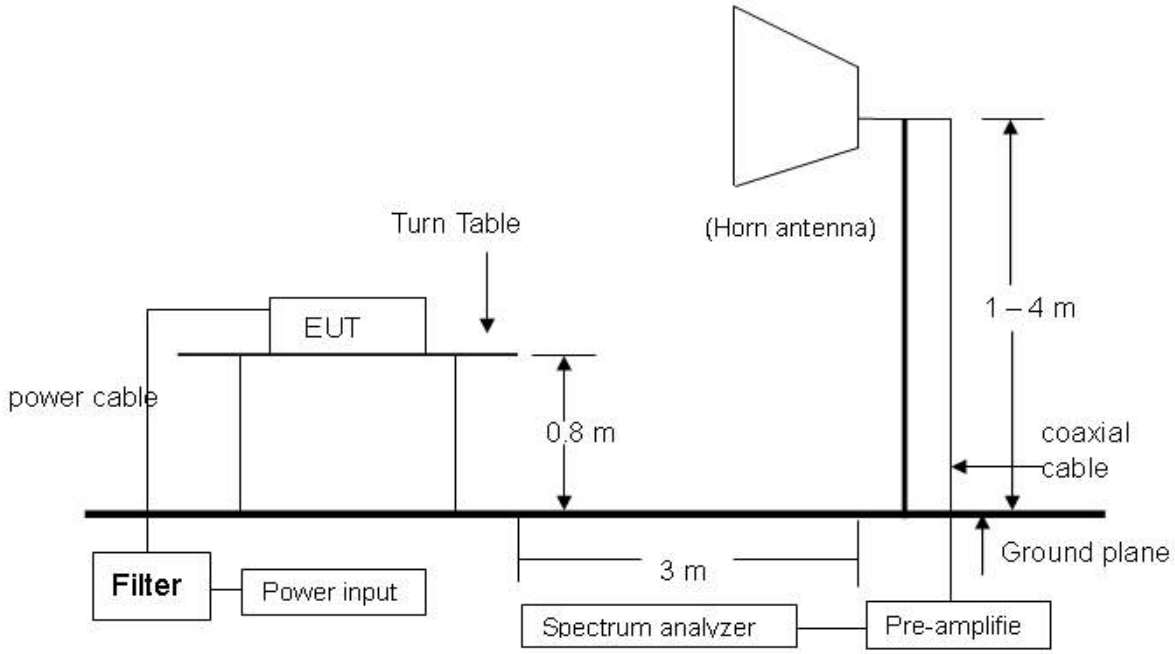
4.3.3: TEST SET-UP

For RF Conducted test (dBc)



The EUT was connected to a spectrum through a 50Ω RF cable.

FOR Radiated emission test



NOTE :
The EUT system was put on a wooden table with 0.8m heights above a ground plane.
For the actual test configuration, please refer to the photos of testing.

4.3.4: TEST PROCEDURE

1. The EUT was operating in continuous transmission mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.
2. The EUT was tested according to the requirement of ANSI C63.4 and CISPR 22. The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz. All readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak and average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

4.3.5: EUT OPERATING CONDITION

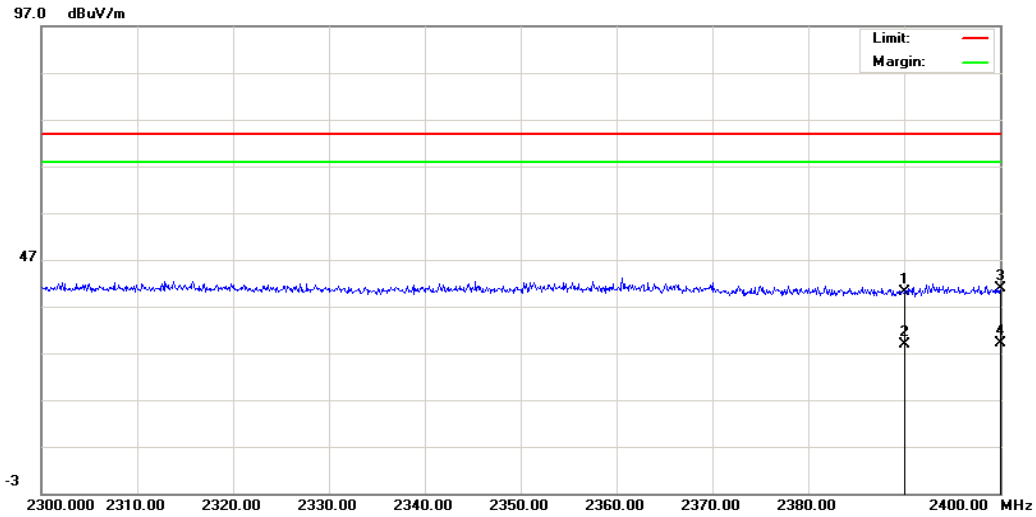
1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.

4.3.6: TEST RESULTS: RADIATED

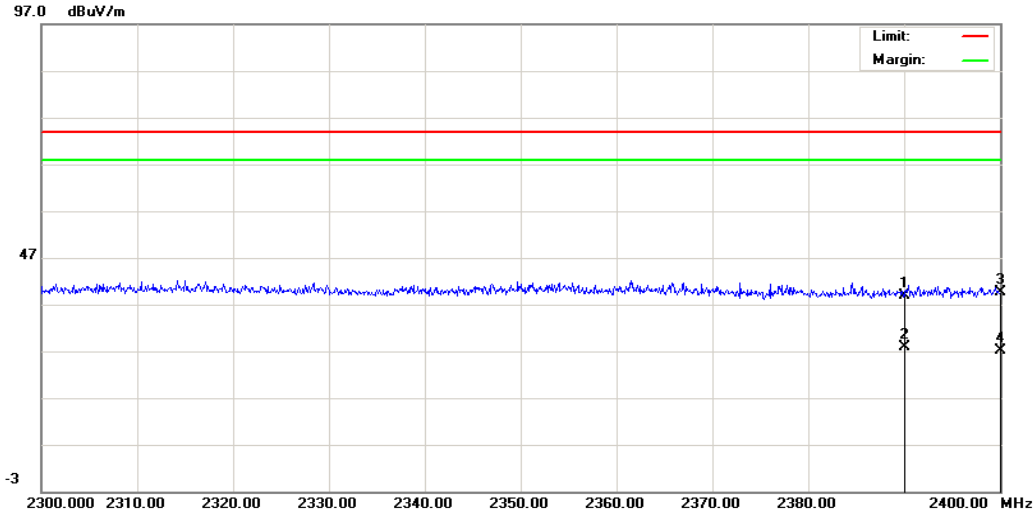
Temperature:	23 ˚C	Humidity:	55 %RH
Spectrum Detector:	PK. or AV.	Tested Mode:	N/A
Tested By:	Jeff Lo	Modulation Type:	GFSK
Tested Date:	Aug. 31, 2013		

Below 2400MHz											
Frequency (MHz)	Ant. Pol. (H/V)	Correct Factor (dB)	Ant. Fac. (dB)	Reading (dBuV)		Emission (dBuV/m)		Limit Line (dBuV/m)		Over Limit (dBuV/m)	
				PK	AV	PK	AV	PK	AV	PK	AV
2400.00	H	-31.15	28.32	44.48	31.55	41.65	28.72	74	54	-32.35	-25.28
2390.00	H	-31.16	28.29	43.12	30.29	40.25	27.42	74	54	-33.75	-26.58
2400.00	V	-31.15	28.32	43.61	31.57	40.78	28.74	74	54	-33.22	-25.26
2390.00	V	-31.16	28.29	41.56	29.94	38.69	27.07	74	54	-35.31	-26.93

Horizontal:

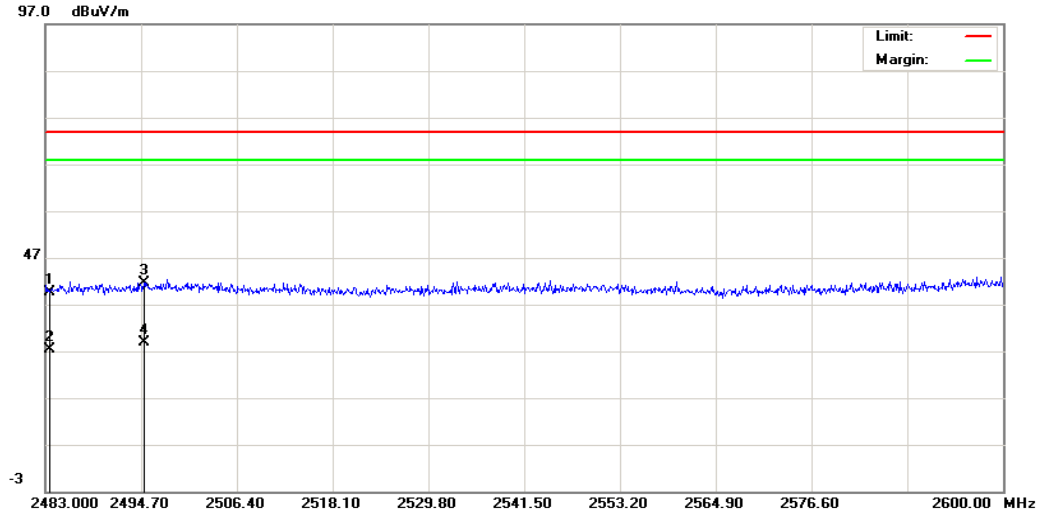


Vertical:

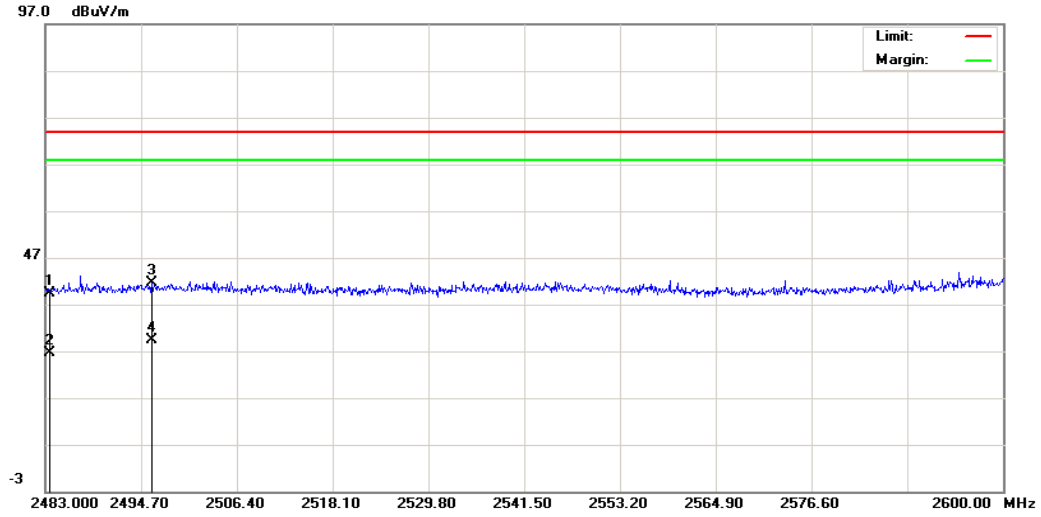


Above 2483.5 MHz											
Frequency (MHz)	Ant. Pol. (H/V)	Correct Factor (dB)	Ant. Fac. (dB)	Reading (dBuV)		Emission (dBuV/m)		Limit Line (dBuV/m)		Over Limit (dBuV/m)	
				PK	AV	PK	AV	PK	AV	PK	AV
2483.50	H	-31.05	28.55	43.04	31.13	40.54	28.63	74.00	54.00	-33.46	-25.37
2494.47	H	-31.04	28.58	44.07	32.64	41.62	30.19	74.00	54.00	-32.38	-23.81
2483.50	V	-31.05	28.55	43.04	31.51	40.54	29.01	74.00	54.00	-33.46	-24.99
2496.46	V	-31.03	28.59	45.17	32.28	42.72	29.83	74.00	54.00	-31.28	-24.17

Horizontal:



Vertical:



5: ANTENNA APPLICATION

5.1: ANTENNA REQUIREMENT

The EUT's antenna met the requirement of FCC part15C section15.203 and 15.204.

5.2: RESULT

The EUT has a mono pole antenna. The antenna gain is 0 dBi that meets the requirement.

6: PHOTOS OF TESTING

- Radiated test (9 k - 30 MHz ,TX and standby)

- Radiated test (9 k - 30 MHz ,link)

- Radiated test (below 1G ,TX and standby)

- Radiated test (below 1G ,Link)

- Radiated test (above 1G , TX and standby)

- Radiated test (above 1G , Link)

7: TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction