CONFORMANCE TEST REPORT
FOR
FCC 47 CFR, Part 15 Subpart C

Report No.: 12-12-MAS-296-14

Client:	Scientech Electronics Co., Ltd.
Product:	Alarm Base Unit
Model:	LS-30
Manufacturer/supplier:	Scientech Electronics Co., Ltd.

Date test item received:	2012/12/28
Date test campaign completed:	2013/07/10
Date of issue:	2013/07/10

Total number of pages of this test report: 28 pages

Total number of pages of photos: External photos 3 pages
Internal photos 11 pages
Setup photos 3 pages

Prepared By	Technical Acceptance By	Approved By
Phillip Luo	Perry Lin	James Cheng

ELECTRONICS TESTING CENTER, TAIWAN
NO.8, LANE 29, WENMING RD.,
LESHAN TSUEN, GUISHAN SHIANG,
TAOYUAN COUNTY, TAIWAN 33383, R.O.C.

TEL: (03) 3276170~4
INT: +886-3-3276170~4
FAX: (03) 3276188
INT: +886-3-3276188

Client	: Scientech Electronics Co., Ltd.
Address	: 4F, No. 501-17, Zhong Zheng Rd., Xin Dian Dist., New Taipei City 23148, Taiwan
Manufacturer	: Scientech Electronics Co., Ltd.
Address	: 4F, No. 501-17, Zhong Zheng Rd., Xin Dian Dist., New Taipei City 23148, Taiwan
EUT	: Alarm Base Unit
Trade name	: LifeSOS
Model No.	: LS-30
Power Source	: Adapter: 101U-150080-1 I/P: 100-240VAC，50-60Hz，0.28A O/P: DC 15V，0.8A
Regulations applied	: FCC 47 CFR, Part 15 Subpart C

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

The compliance test is only certified for the test equipment and the results of the testing report relate only to the item tested. The compliance test of this report was conducted in accordance with the appropriate standards. It's not intention to assure the quality and performance of the product. This report shall not be reproduced except in full, without the approval of ETC. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

Laboratory Introduction: Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

① ISO9001: TüV Product Service

② ISO/IEC 17025: BSMI, TAF, NCC, NVLAP, ILAC MRA, UL, Compliance

③ Filing: FCC, Industry Canada, VCCI

④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through TAF

⑤ FCC Registration Number: 91095, 392735, 278818

⑥ Industry Canada Site Registration Number: IC 2949A-2

NVLAP Lab Code 200133-0

Table of Contents Page

1. GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : Alarm Base Unit
b) Model No. : LS-30
c) Serial No. : ----
d) FCC ID : TYLLS30N
e) Working Frequency : 433 MHz

1.2 Characteristics of Device:

LS-30 is a wireless alarm base unit, with home automation functions.

This device is including 433MHz transmitter and 915MHz receiver.

1.3 Test Methodology

Both Conducted and radiated testing were performed according to the procedures in chapter 13 of ANSI C63.4 (2003).
The equipment under test was operated continuously in its normal operating mode for the purpose of the measurements. In order to secure the continuous operation of the device under test, the circuit rewired by the manufacturer to affect its intended operation.
The receiving antenna was varied from 1 to 4 meters and the wooden turntable was rotated through 360 degrees to obtain the highest reading on the field strength meter or on the display of the spectrum analyzer. And also, each emission was to be maximized by changing the orientation of the equipment Alarm Base Unit under test.

1.4 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.
This site has been accreditation as a FCC filing site.

1.5 Test Summary

Requirement	FCC Paragraph #	Test Pass
Radiated Emission	15.231(b)(e)&15.209	☒
Bandwidth of Emission	15.231(c)	☒
Conducted Emission	15.207	N/A
Limit of Transmission Time	15.231(a)(1)&15.231(e)	☒

2. DEFINITION AND LIMITS

2.1 Definition

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
0.495 - 0.505 **	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

Remark "**" : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.3 Limitation

(1) Conducted Emission Limits :

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the conducted limit is the following:

Frequency MHz	**Quasi Peak dB μ V**	**Average dB μ V**
0.15 - 0.5	66-56	56-46
0.5 - 5.0	56	46
5.0 - 30.0	60	50

(2) Radiated Emission Limits :

According to 15.231 (b) , in addition to the provisions of section 15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Frequency Band (MHz)	Field strength of Fundamental (uV/m)	Field strength of Spurious (uV/m)
40.66-40.70	2250	225
70-130	1250	125
130-174	*1,250 to 3,750	*125 to 375
174-260	3750	375
260-470	*3,750 to 12,500	*375 to 1250
Above 470	12500	1250

* Linear interpolations.

According to 15.231(e) ,Periodic operation in the band 40.66-40.70 MHz and above 70 MHz, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Frequency Band (MHz)	Field strength of Fundamental (uV/m)	Field strength of Spurious (uV/m)
40.66-40.70	1000	100
70-130	500	50
130-174	*500-1500	*50-150
174-260	1500	150
260-470	*1500-5000	*150-500
Above 470	5000	500

* Linear interpolations.

According to 15.205 (b), the field strength of emissions appearing within the Restricted Bands shield not exceed. The general radiated limits in 15.209, as following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

For intentional radiator device, according to § 15.209(a), the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table::

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(3) Limit of transmission time

According to 15.231(a)(1), a manually operated Alarm Base Unit shall employ a switch that will automatically deactivate the Alarm Base Unit within not more than 5 seconds of being released.
According to 15.231(e) , devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To comply with the FCC RF exposure compliance requirement, this device and its antenna must not be co-located or operating to conjunction with any other antenna or Alarm Base Unit.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For the purposes of this test report ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide operational and control features to the EUT during the test.

3.2 Devices for Tested System

Device	Manufacture	Model	Cable Description
* Alarm Base Unit	Scientech Electronics Co., Ltd.	LS-30	1.8m Unshielded / Adapter

Remark :

1. “*” means equipment under test.
2. For radiated emission pretest, the position in which the maximum noise occurred was "X axis" which the device operates by vertical position. Choose test position"X-axis" as final test and record the result.

4. RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For periodic operation intentional radiator, the radiated emission shall comply with § 15.231(b).

4.2 Measurement Procedure

A.Preliminary Measurement For Portable Devices.

For portable devices, the following procedure was performed to determine the maximum emission axis of EUT (X , Y and Z axis):

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antennna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. The axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.
4. The position in which the maximum noise occurred was “X axis”. (Please see the test setup photos)

B. Final Measurement

1. Setup the configuration per figure 3 and 4 for frequencies measured below and above 1 GHz respectively.
2. For emission frequencies measured below 1 GHz, it is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions. For emission frequencies measured above 1 GHz, a pre-scan be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

   Note : A filter was used to avoid pre-amplifier saturated when measure TX operation mode.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.
7. Check the six frequencies of highest emission with varying the datarate, placement of ANT. cables associated with EUT to obtain the worse case and record the result.

Figure 1 : Frequencies measured below 1 GHz configuration

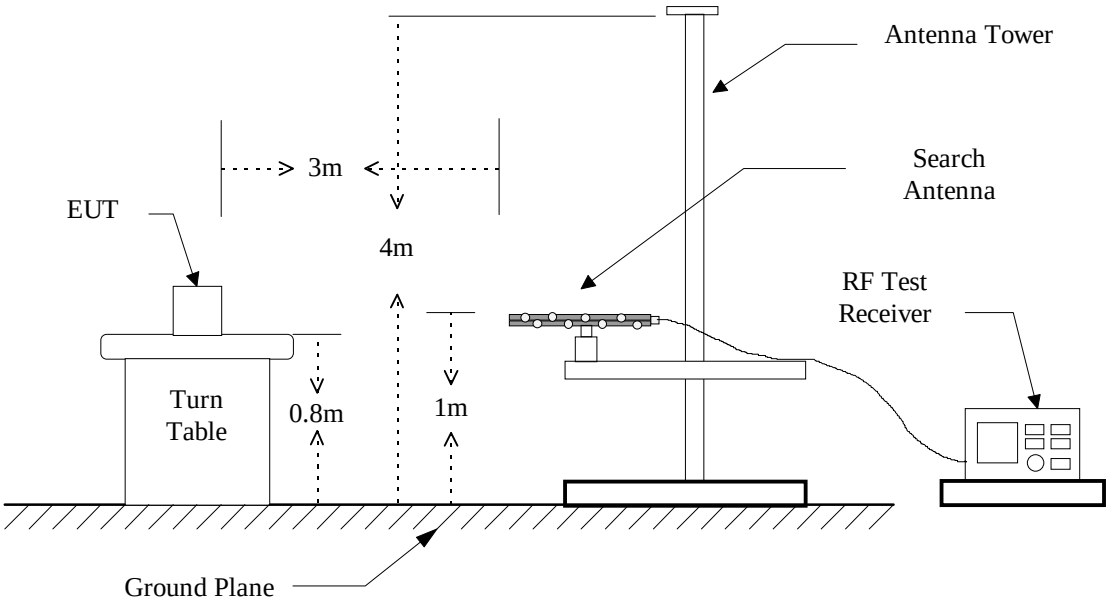
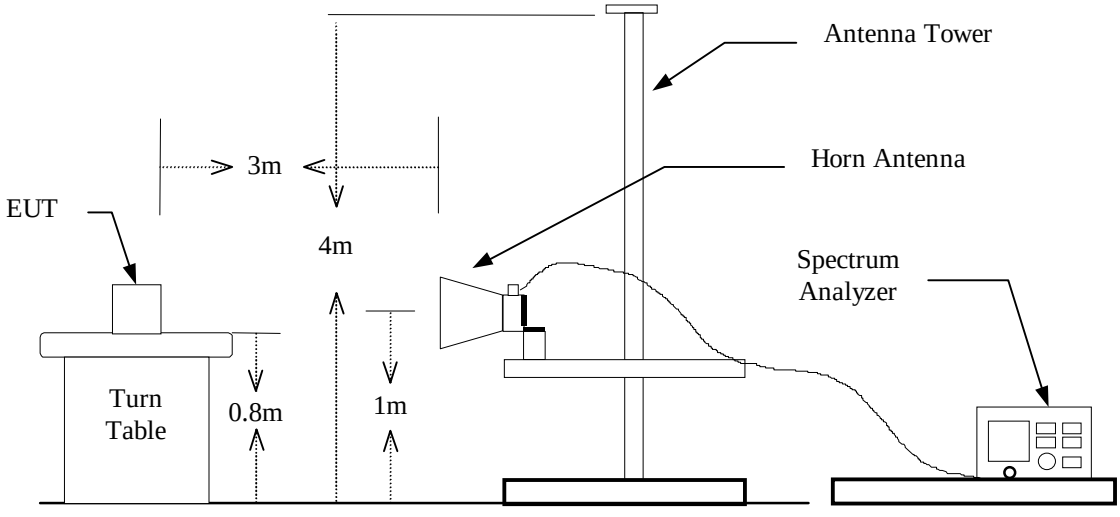


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Test Data

4.3.1 Fundamental and Harmonic of Transmitter
Operated mode : Transmitting
Test Date : Jul. 09, 2013 Temperature : 24℃ Humidity : 58%

Frequency	Ant Pol	Reading (dBuV/m) @3m		Correct Factor	Duty Factor	Result (dBuV/m) @3m			Limit (dBuV/m) @3m			Margin
(MHz)	H/V	Peak	QP	(dB)	(dB)	Peak	QP	AVG	Peak	QP	AVG	(dB)
Fundamental												
433.8830	H	62.8	----	19.58	-6.097	82.4	----	76.3	100.8	----	80.8	-4.5
433.8830	V	58.3	----	19.58	-6.097	77.9	----	71.8	100.8	----	80.8	-9.0
Harmonic												
867.7660	H	24.5	----	25.30	-6.097	49.8	----	43.7	80.8	----	60.8	-17.1
867.7660	V	21.7	----	25.30	-6.097	47.0	----	40.9	80.8	----	60.8	-19.9
*1301.6490	H	57.6	----	-12.86	-6.097	44.7	----	38.6	74.0	----	54.0	-15.4
*1301.6490	V	59.4	----	-12.86	-6.097	46.5	----	40.4	74.0	----	54.0	-13.6
1735.5320	H	63.3	----	-10.65	-6.097	52.7	----	46.6	80.8	----	60.8	-14.2
1735.5320	V	61.4	----	-10.65	-6.097	50.8	----	44.7	80.8	----	60.8	-16.1
2169.4150	H	63.8	----	-8.69	-6.097	55.1	----	49.0	80.8	----	60.8	-11.8
2169.4150	V	60.3	----	-8.69	-6.097	51.6	----	45.5	80.8	----	60.8	-15.3
2603.2980	H	54.3	----	-7.28	-6.097	47.0	----	40.9	80.8	----	60.8	-19.9
2603.2980	V	55.3	----	-7.28	-6.097	48.0	----	41.9	80.8	----	60.8	-18.9
3037.1810	H	48.8	----	-5.84	-6.097	43.0	----	36.9	80.8	----	60.8	-23.9
3037.1810	V	49.0	----	-5.84	-6.097	43.2	----	37.1	80.8	----	60.8	-23.7
3471.0640	H	----	----	-4.60	-6.097	----	----	----	80.8	----	60.8	----
3471.0640	V	----	----	-4.60	-6.097	----	----	----	80.8	----	60.8	----
*3904.9470	H	----	----	-2.97	-6.097	----	----	----	74.0	----	54.0	----
*3904.9470	V	----	----	-2.97	-6.097	----	----	----	74.0	----	54.0	----
*4338.8300	H	----	----	-2.63	-6.097	----	----	----	74.0	----	54.0	----
*4338.8300	V	----	----	-2.63	-6.097	----	----	----	74.0	----	54.0	----

Note:

1. Peak Result =Peak Reading + Correct Factor

2. AVG Result = Peak Result + Duty Factor

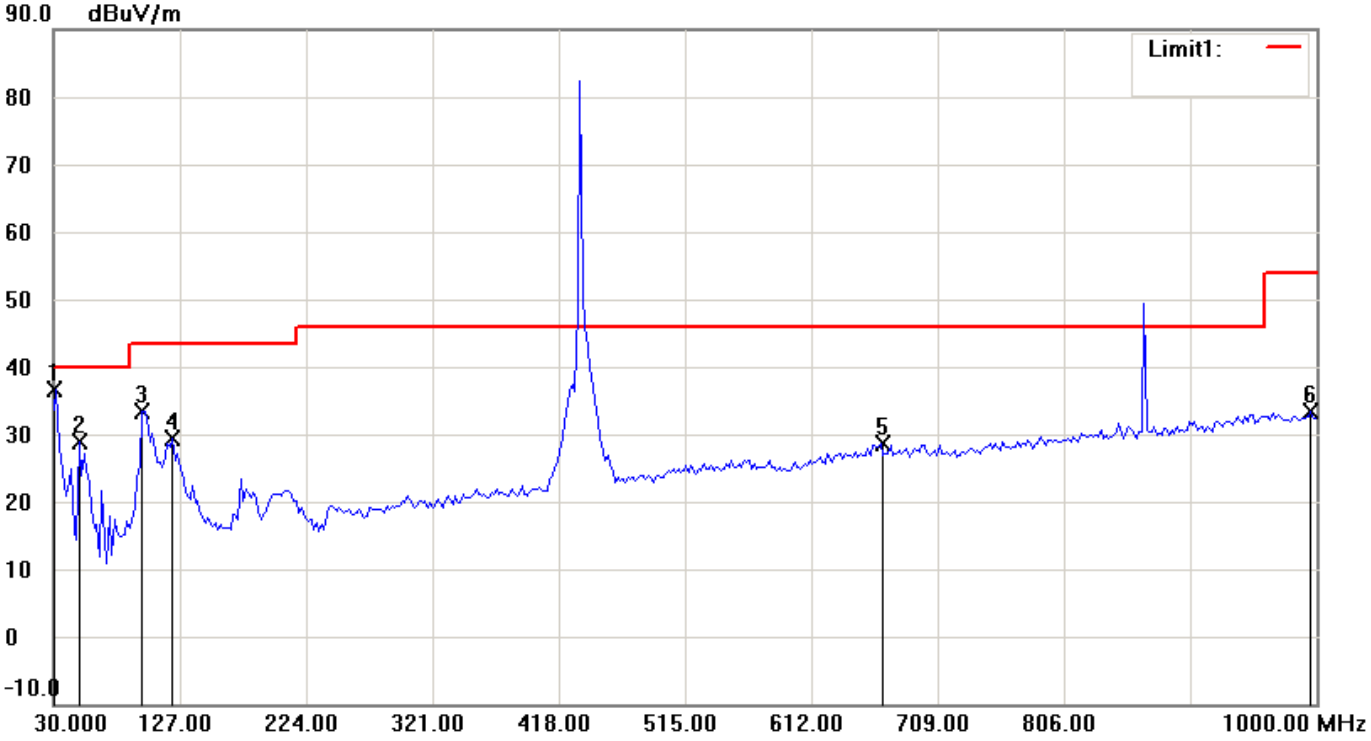
3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.

4. "" means the frequency is in the Restricted Bands.*

4.3.2 Other Emission

A. 30MHz to 1GHz

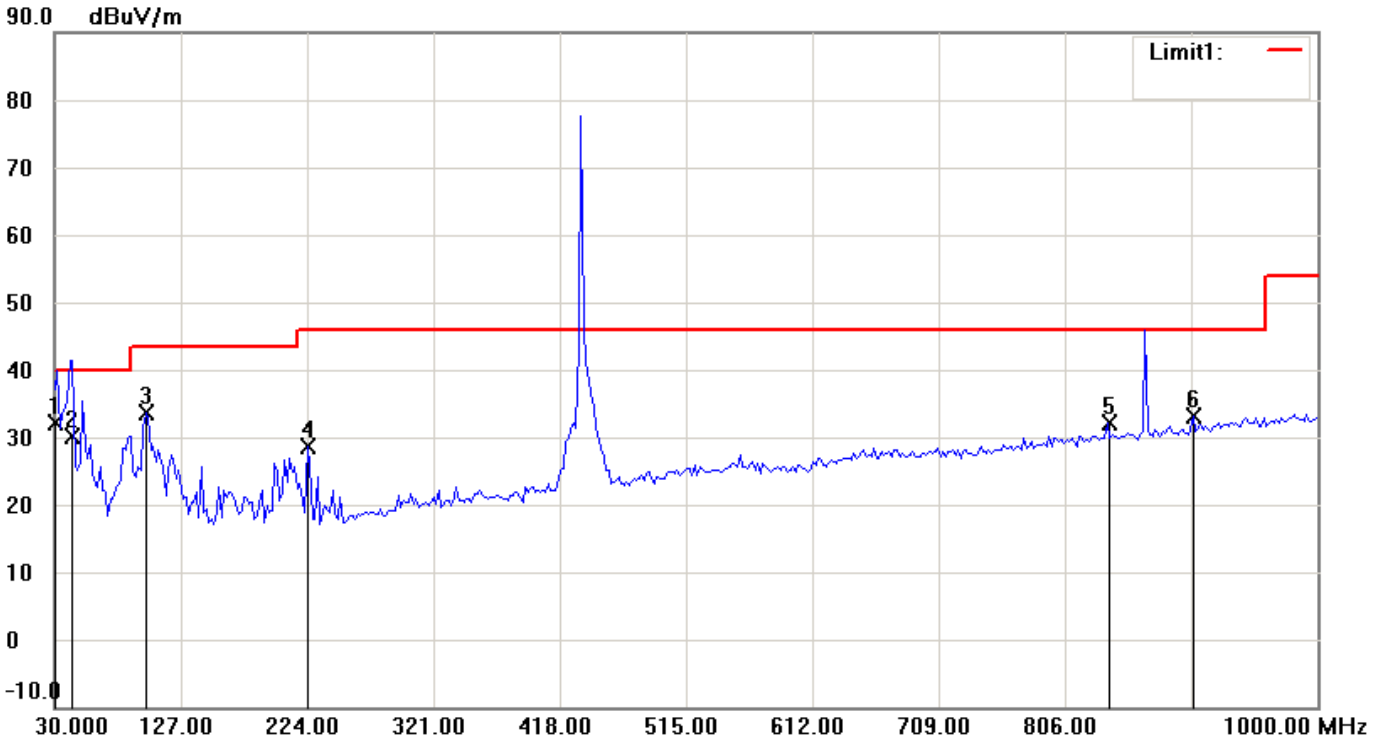
File: LS-30(07-09) **Data:** #6 **Date:** 2013/7/9 **Time:** pm 05:44:59 **Temperature:** 24 ℃ **Humidity:** 58 %



Condition: FCC_30-1000MHz **Polarization:** Horizontal
EUT: **Distance:** 3m
Model:
Test Mode:
Note: X-axis

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	31.9438	17.18	peak	19.39	36.57	40.00	-3.43
2	49.4388	17.97	peak	10.84	28.81	40.00	-11.19
3	98.0361	21.99	peak	11.45	33.44	43.50	-10.06
4	121.3627	16.28	peak	13.11	29.39	43.50	-14.11
5	665.6513	3.22	peak	25.34	28.56	46.00	-17.44
6	996.1122	3.09	peak	30.18	33.27	54.00	-20.73

File: **LS-30(07-09)** **Data:** **#7** **Date:** **2013/7/9** **Temperature:** **24 ℃**
Time: **pm 05:53:50** **Humidity:** **58 %**



Condition: **FCC_30-1000MHz** **Polarization:** **Vertical**
EUT: **Distance:** **3m**
Model:
Test Mode:
Note: **X-axis**

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.5170	11.93	QP	20.17	32.10	40.00	-7.90
2	42.9575	16.14	QP	13.88	30.02	40.00	-9.98
3	99.9800	21.98	peak	11.69	33.67	43.50	-9.83
4	224.3888	14.48	peak	14.10	28.58	46.00	-17.42
5	838.6573	4.49	peak	27.52	32.01	46.00	-13.99
6	904.7495	4.75	peak	28.36	33.11	46.00	-12.89

B. above 1GHz

Frequency (MHz)	Ant Pol H / V	Reading (dBuV) Peak	Correct Factor (dB)	Duty Factor (dB)	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) AVG	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) AVG	Margins (dB)
Radiated emission frequencies above 1 GHz to 4.5 GHz were too low to be measured.									

C. below 30MHz

Frequency (MHz)	. Reading (dBuV/m) Peak	Duty (dB)	Factor (dB)	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) QP	Result @3m (dBuV/m) AVG	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) AVG
Radiated emission frequencies from 9 kHz to 30 MHz were too low to be measured.								

Note : 1. Place of Measurement: Measuring site of the ETC.

2. Remark "***" means that the emissions level is too low to be measured.

3. Remark "#" means the noise was low, so record the peak value.

4. Item "Margin" referred to Q.P. limit while there is only peak result.

5. The estimated measurement uncertainty of the result measurement is
   ±4.2dB (9kHz≦f≦30MHz)
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz)
   ±4.1dB (1GHz≦f<18GHz).

4.4 Field Strength Calculation

(a) Field Strength:

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + CORR. FACTOR

where CORR. FACTOR = Antenna FACTOR + Cable FACTOR

(b) Duty Factor:

$$20\log\frac{40\times 0.44(\text{ms})+38\times 0.841(\text{ms})}{100(\text{ms})} = \text{-6.097 dB}$$

The plotted graph of Duty Factor please see page 17 ~ 19.

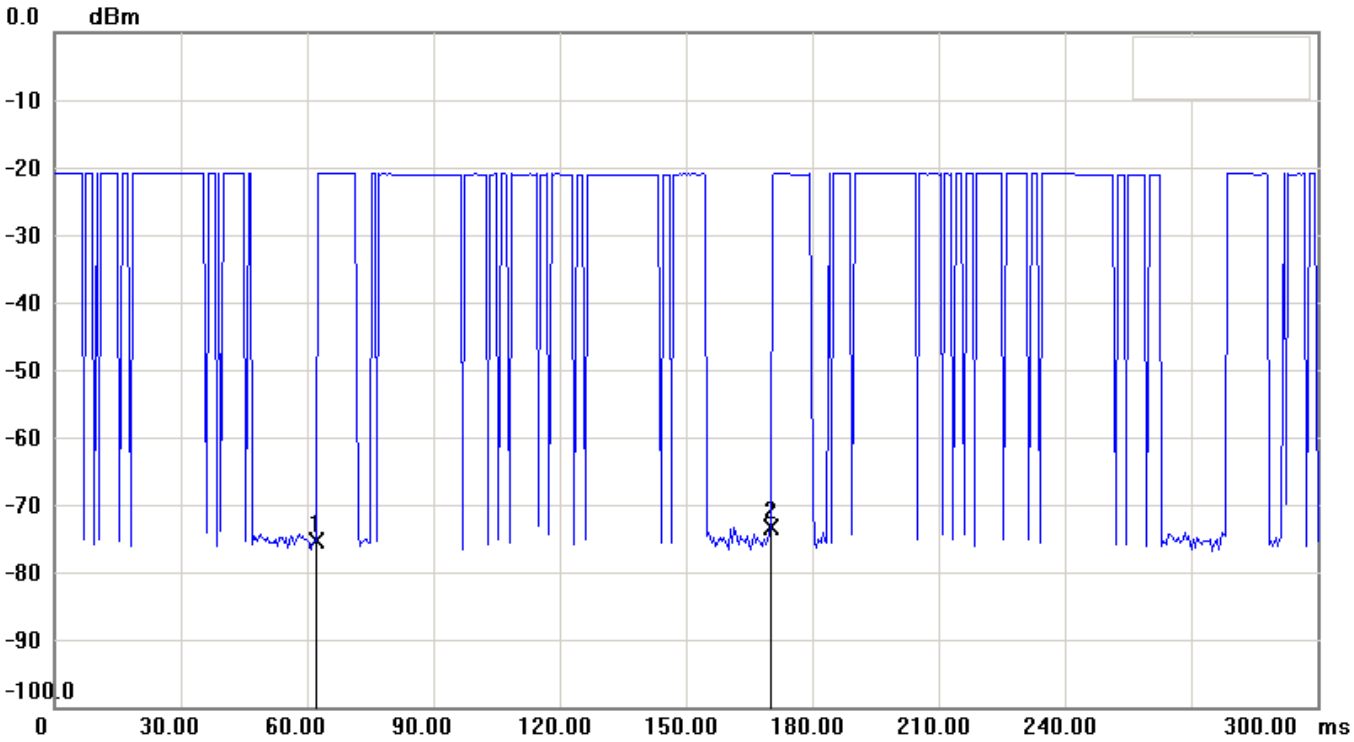
4.5 Radiated Test Equipment

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
EMI Receiver	R&S	ESIB7	13054414-001	07/10/2013
BiLog Antenna	ETC	MCTD2986	----	11/25/2013
Horn Antenna	EMCO	3115	9107-3729	07/17/2013
PRE-Amplifier	Agilent	8449B	----	11/20/2013
Spectrum Analyzer	Rohde & Schwarz	FSU46	13040904-001	01/08/2014
Loop Antenna	EMCO	6512	----	07/21/2013
PRE-Amplifier	EMCI	PA303N	----	06/09/2014

Note: The standards used to perform this calibration are traceable to NML/ROC, NIST/USA and NPL.

File: LS-30 **Data: #3** **Date: 2013/3/19** **Temperature: 20 ℃**
Time: PM 02:26:52 **Humidity: 54 %**

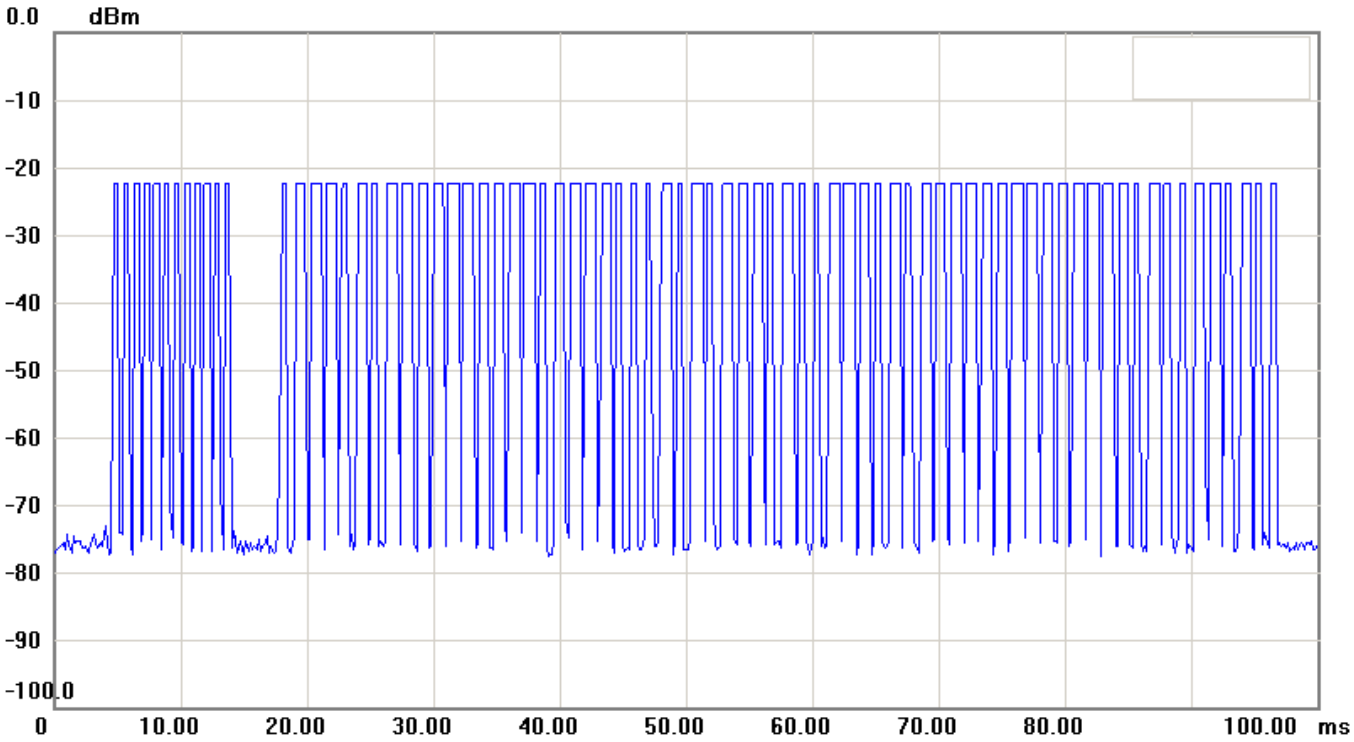


Condition: **RF Conducted**
EUT: **Sweep Time: 300ms** **Att.: 10dB**
Model: **RBW: 1000 KHz** **VBW: 1000 KHz**
Test Mode:
Note: **duty cycle1**

No.	Sweep time(ms)	Level(dBm)
1	62.0000	-75.42
2	170.0000	-73.32

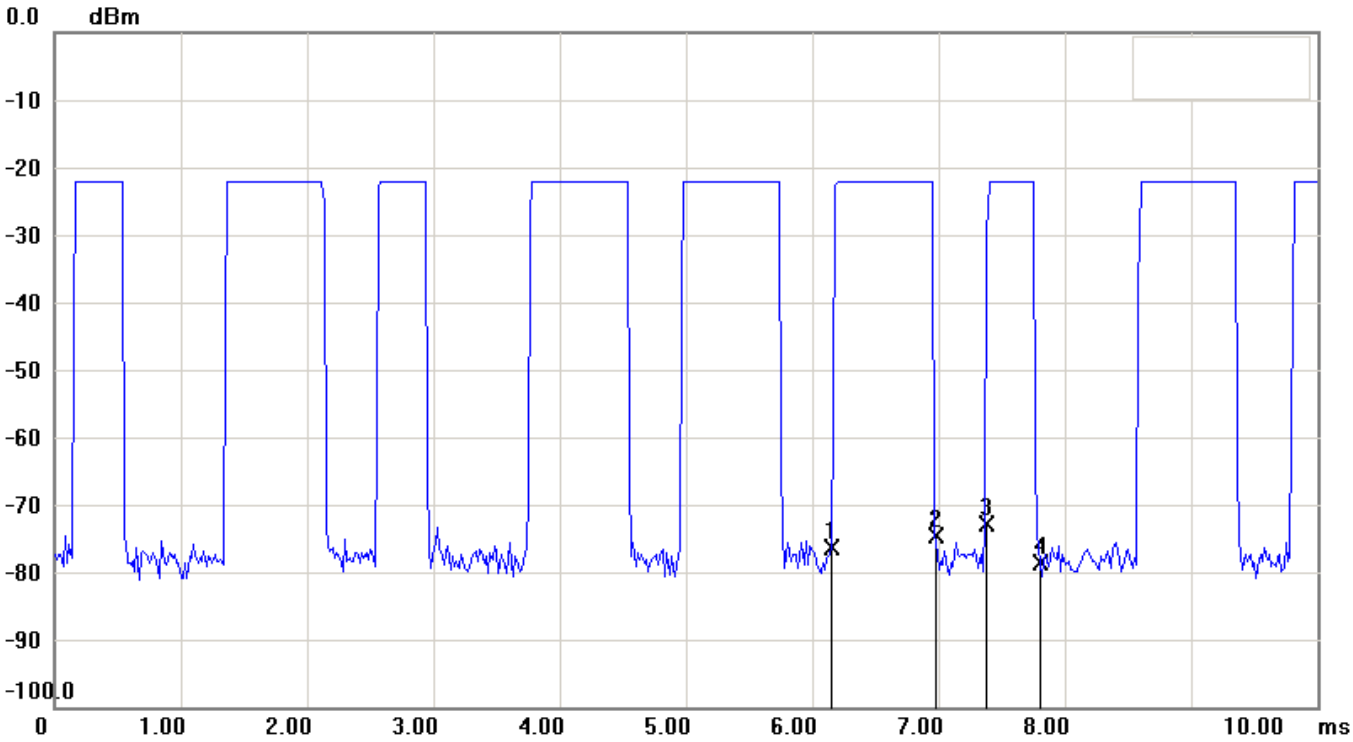
No.		△Time(ms)	△Level(dB)
1	mk2-mk1	108	2.1

File: LS-30 **Data: #4** **Date: 2013/3/19** **Temperature: 20 ℃**
Time: PM 02:29:34 **Humidity: 54 %**



Condition: **RF Conducted**
EUT: **Sweep Time: 100ms** **Att.: 10dB**
Model: **RBW: 1000 KHz** **VBW: 1000 KHz**
Test Mode:
Note: **duty cycle2**

File: LS-30 **Data: #6** **Date: 2013/3/19** **Temperature: 20 ℃**
Time: PM 02:31:59 **Humidity: 54 %**



Condition: **RF Conducted**
EUT: **Sweep Time: 10ms Att.: 10dB**
Model: **RBW: 1000 KHz VBW: 1000 KHz**
Test Mode:
Note: **duty cycle 3**

No.	Sweep time(ms)	Level(dBm)
1	6.1500	-76.46
2	6.9667	-74.67
3	7.3667	-72.97
4	7.8000	-78.65

No.		△Time(ms)	△Level(dB)
1	mk2-mk1	0.8167	1.79
2	mk4-mk3	0.4333	-5.68

4.6 Measuring Instrument Setup

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	EMI Test Receiver	Peak	120 kHz	300 kHz
1000 to 4500	EMI Test Receiver	Peak	1 MHz	1 MHz

5. BANDWIDTH OF EMISSION

5.1 Applicable Standard Plot Graphic of Bandwidth

Per FCC rule §15.231(c), the permitted emission bandwidth is no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the centre frequency.

5.2 Test Equipment

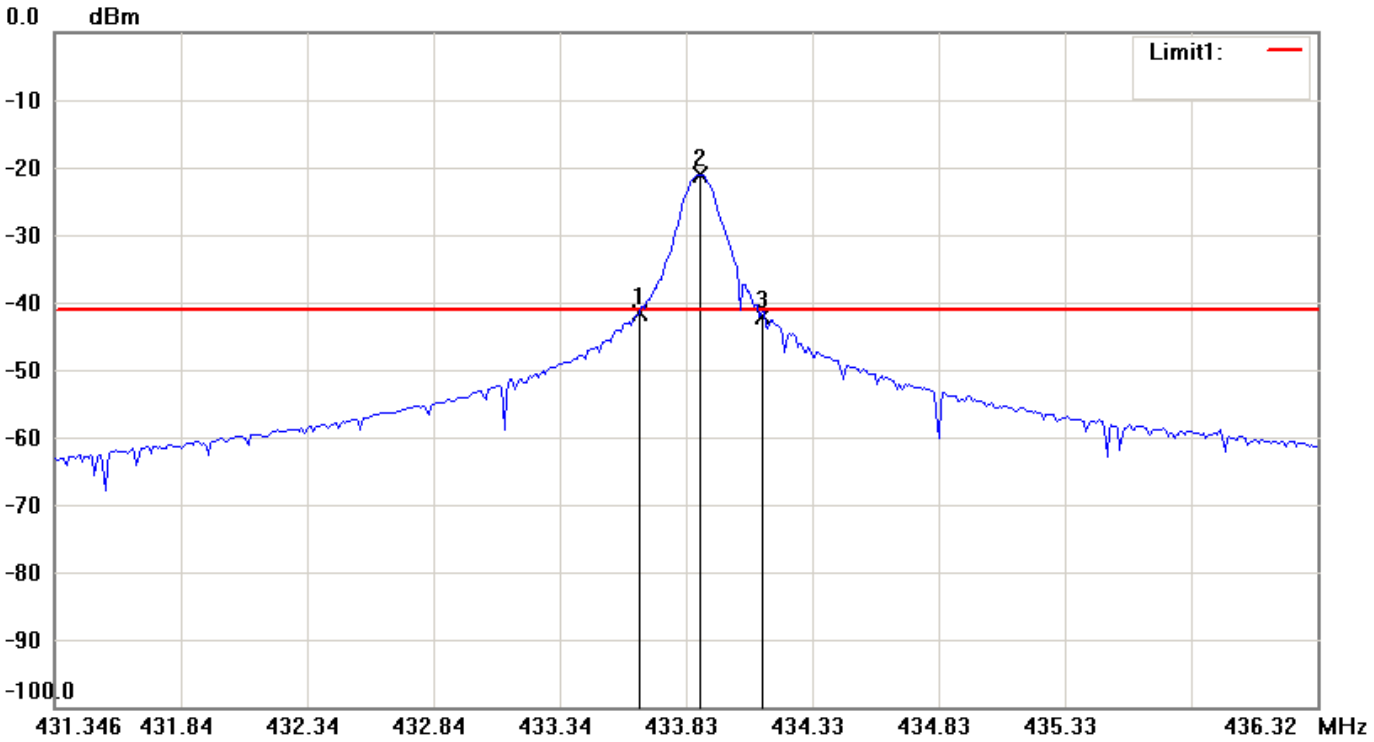
Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	Agilent	E4446A	09/27/2013

5.3 Test Result

Test Date : Mar. 19, 2013 Temperature : 20℃ Humidity : 54%

Center Frequency	433.883 MHz
Limit	433.883 MHz ×0.25%＝1084.7 kHz
20dB Bandwidth of Emission	472.5 kHz
Chart	Page 22
Result	PASS

File: LS-30 **Data: #1** **Date: 2013/3/19** **Temperature: 20 ℃**
Time: PM 02:20:39 **Humidity: 54 %**



Condition: **RF Conducted**
EUT: **Sweep Time: 1ms** **Att.: 10dB**
Model: **RBW: 100 KHz** **VBW: 300 KHz**
Test Mode:
Note: **20dB BW**

No.	Frequency(MHz)	Level(dBm)
1	433.6510	-41.60
2	433.8831	-21.08
3	434.1235	-42.18

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	0.4725	-0.58

6. CONDUCTED EMISSION MEASUREMENT

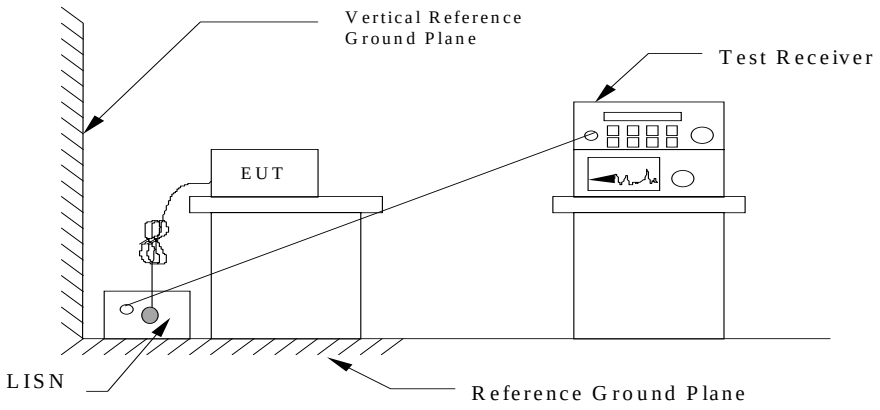
6.1 Standard Applicable

For unintentional and intentional device, Line Conducted Emission Limits are in accordance to §15.107(a) and §15.207(a) respectively. Both Limits are identical specification.

6.2 Measurement Procedure

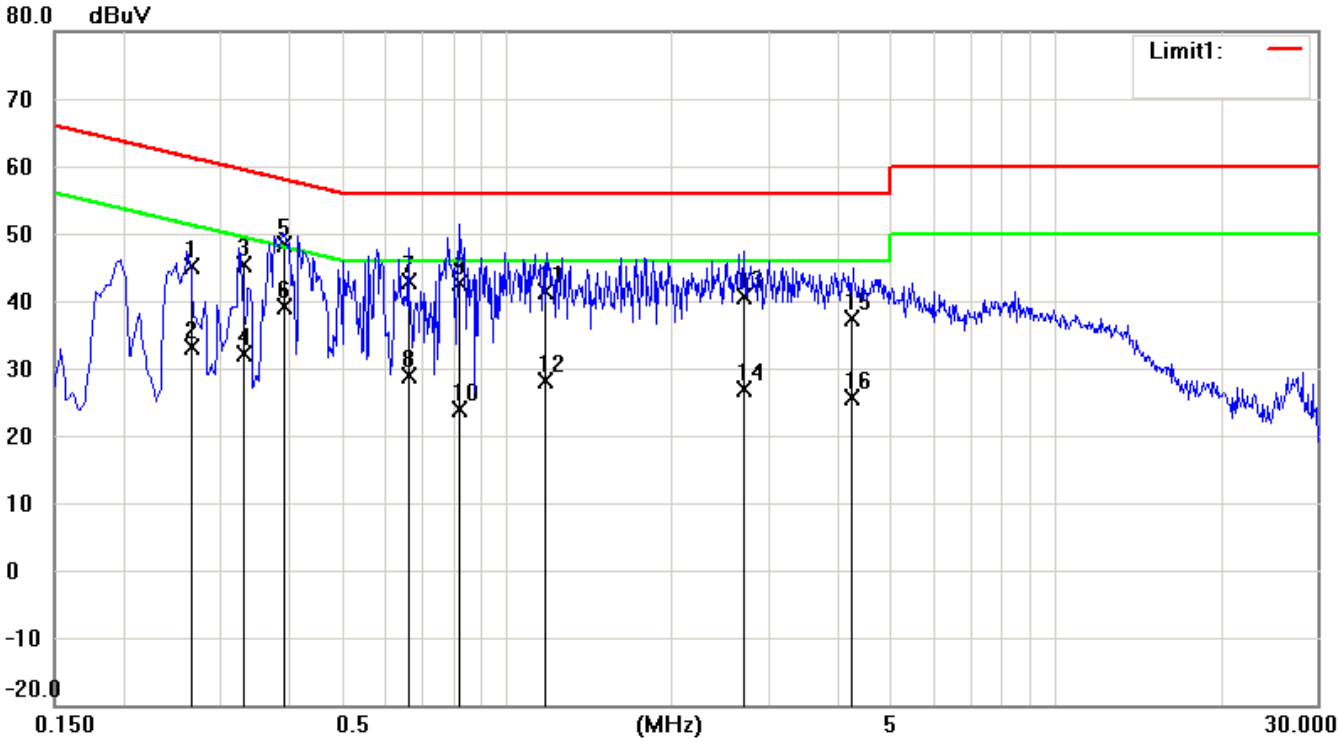
1. Setup the configuration per figure 3.
2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
3. Record the 6 highest emissions relative to the limit.
4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3 : Conducted emissions measurement configuration



6.3 Conducted Emission Data

File: LS-30 **Data:** #1 **Date:** 2013/3/21 **Time:** PM 05:37:07 **Temperature:** 23 ℃ **Humidity:** 65 %

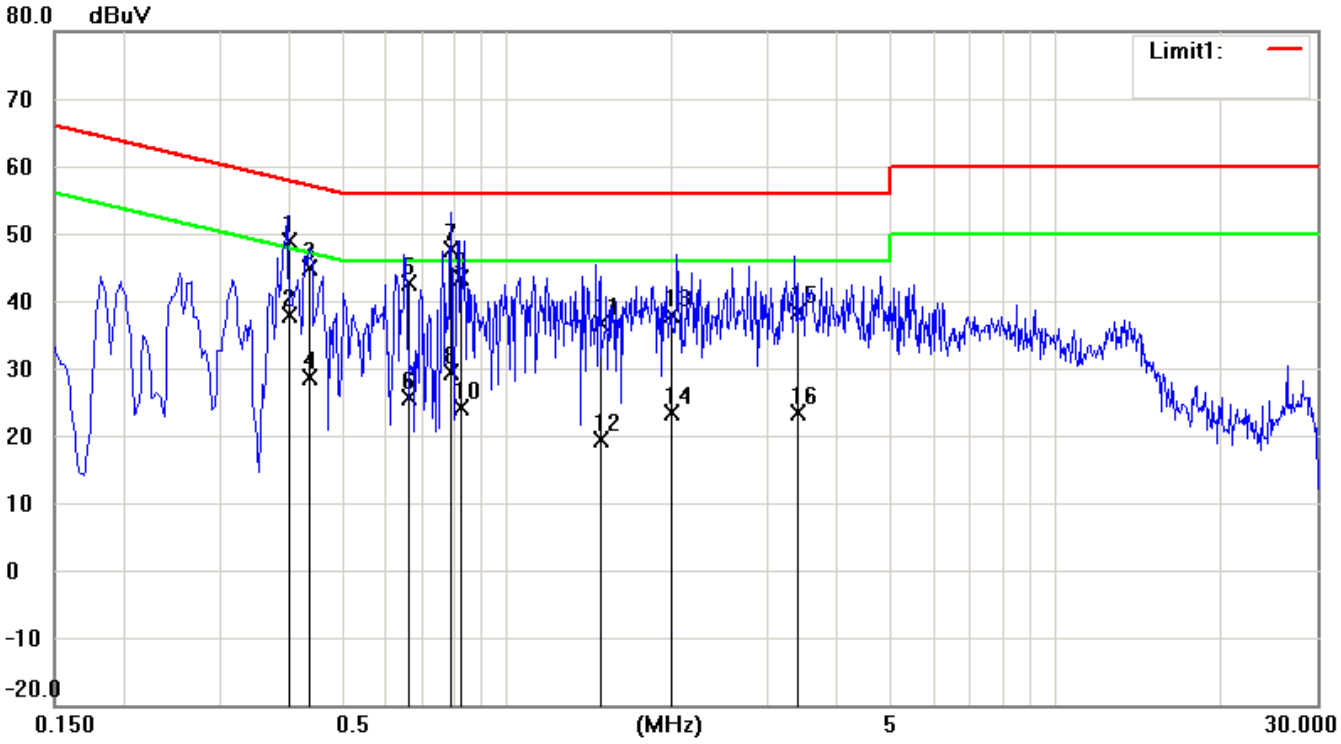


Condition: **Phase:** L1
EUT:
Model:
Test Mode:
Note:

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected dB	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.2650	35.55	QP	9.63	45.18	61.27	-16.09
2	0.2650	23.38	AVG	9.63	33.01	51.27	-18.26
3	0.3305	35.75	QP	9.63	45.38	59.44	-14.06
4	0.3305	22.44	AVG	9.63	32.07	49.44	-17.37
5	0.3938	38.63	QP	9.64	48.27	57.98	-9.71
6	0.3938	29.40	AVG	9.64	39.04	47.98	-8.94
7	0.6600	33.29	QP	9.64	42.93	56.00	-13.07
8	0.6600	19.13	AVG	9.64	28.77	46.00	-17.23
9	0.8147	33.06	QP	9.66	42.72	56.00	-13.28
10	0.8147	14.29	AVG	9.66	23.95	46.00	-22.05
11	1.1811	31.65	QP	9.67	41.32	56.00	-14.68
12	1.1811	18.47	AVG	9.67	28.14	46.00	-17.86
13	2.7053	30.92	QP	9.71	40.63	56.00	-15.37
14	2.7053	17.28	AVG	9.71	26.99	46.00	-19.01
15	4.2427	27.72	QP	9.75	37.47	56.00	-18.53
16	4.2427	15.89	AVG	9.75	25.64	46.00	-20.36

Note: 1. Place of measurement: EMC LAB. of the ETC.
2. "***" means the value was too low to be measured.
3. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
4. "#" means the noise was too low, so record the peak value.
5. The estimated measurement uncertainty of the result measurement is ±2.5dB.

File: LS-30 **Data:** #2 **Date:** 2013/3/21 **Time:** PM 05:43:53 **Temperature:** 23 ℃ **Humidity:** 65 %



Condition: **Phase:** N
EUT:
Model:
Test Mode:
Note:

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected dB	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.4000	39.13	QP	9.64	48.77	57.85	-9.08
2	0.4000	28.16	AVG	9.64	37.80	47.85	-10.05
3	0.4373	35.15	QP	9.64	44.79	57.11	-12.32
4	0.4373	19.05	AVG	9.64	28.69	47.11	-18.42
5	0.6627	33.01	QP	9.64	42.65	56.00	-13.35
6	0.6627	15.87	AVG	9.64	25.51	46.00	-20.49
7	0.7926	37.97	QP	9.66	47.63	56.00	-8.37
8	0.7926	19.64	AVG	9.66	29.30	46.00	-16.70
9	0.8280	33.79	QP	9.66	43.45	56.00	-12.55
10	0.8280	14.42	AVG	9.66	24.08	46.00	-21.92
11	1.4782	26.97	QP	9.67	36.64	56.00	-19.36
12	1.4782	9.64	AVG	9.67	19.31	46.00	-26.69
13	1.9950	28.28	QP	9.70	37.98	56.00	-18.02
14	1.9950	13.62	AVG	9.70	23.32	46.00	-22.68
15	3.3742	28.71	QP	9.73	38.44	56.00	-17.56
16	3.3742	13.64	AVG	9.73	23.37	46.00	-22.63

Note: 1. Place of measurement: EMC LAB. of the ETC.
2. "***" means the value was too low to be measured.
3. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
4. "#" means the noise was too low, so record the peak value.
5. The estimated measurement uncertainty of the result measurement is ±2.5dB.

6.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR (Included Cable Loss)

6.5 Conducted Measurement Equipment

The following test equipment are used during the conducted test.

Equipment	Manufacturer	Model No.	Next Cal. Due
EMI Test Receiver	R&S	ESCI	07/03/2013
V-LISN	R&S	ENV216	04/19/2013
V-LISN	R&S	ENV216	12/11/2013

7. LIMIT OF TRANSMISSION TIME

7.1 Applicable Standard

According to 15.231(a)(1), a manually operated Alarm Base Unit shall employ a switch that will automatically deactivate the Alarm Base Unit within not more than 5 seconds of being released.

7.2 Test Equipment

Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	Agilent	E4446A	09/27/2013

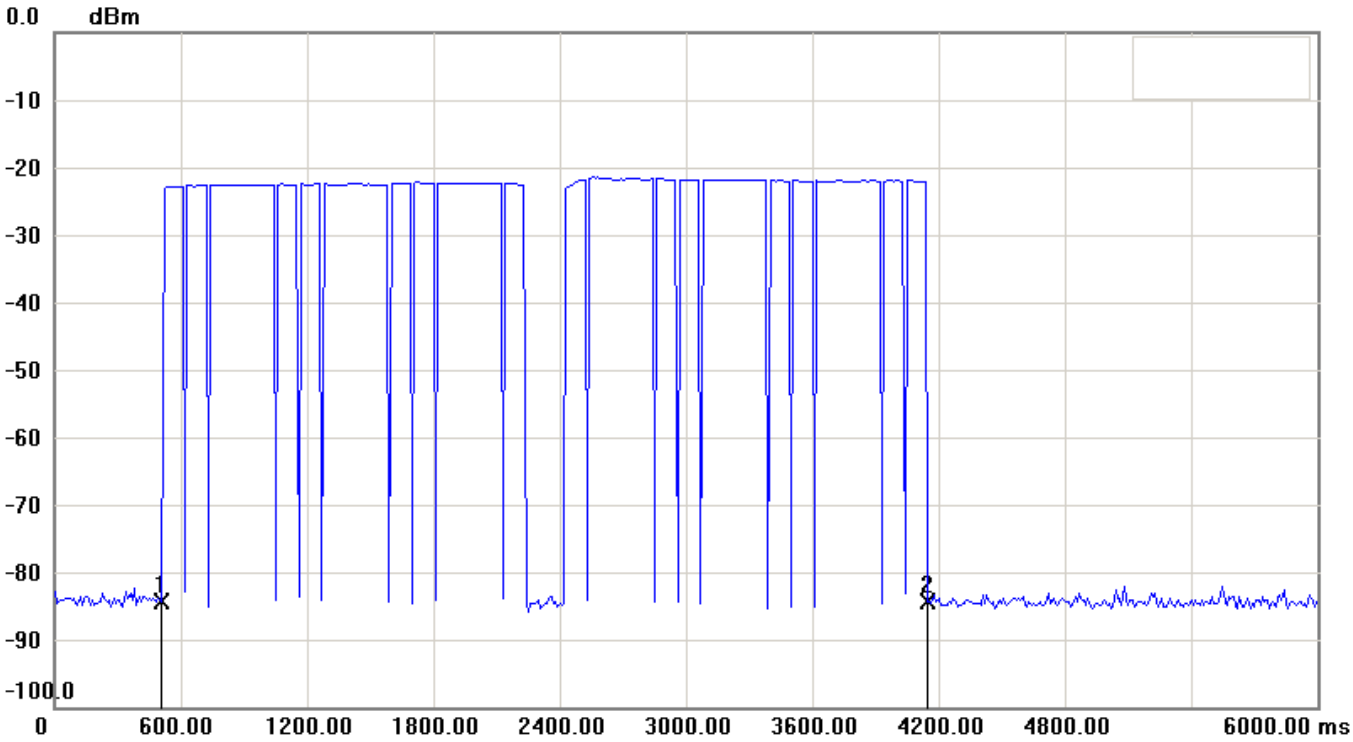
7.3 Test Result

Test Date : Mar. 19, 2013 Temperature : 20℃ Humidity : 54%

This Alarm Base Unit is operated by manual and active time is 3.64 second after being released.

Note : Please refer to page 28 for chart

File: LS-30 **Data: #2** **Date: 2013/3/19** **Temperature: 20 ℃**
Time: PM 02:24:14 **Humidity: 54 %**



Condition: **RF Conducted**
EUT: **Sweep Time: 6000ms Att.: 10dB**
Model: **RBW: 100 KHz VBW: 300 KHz**
Test Mode:
Note: **Realease time**

No.	Sweep time(ms)	Level(dBm)
1	510.0000	-84.37
2	4150.00000	-84.32

No.		△Time(ms)	△Level(dB)
1	mk2-mk1	3640	0.05