FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Electronic Swinghandle

Model: H3-EM-68-100 / H3-EM-68-100-10 / H3-EM-68-200 / H3-EM-68-200-10 / H3-EM-68-300 / H3-EM-68-300-10

Trade Name: SOUTHCO

Issued to

Southco,. Inc
210 N. Brinton Lake Rd., Concordville, PA 19331, U.S.A.

Issued by

Compliance Certification Services Inc.
No.11, Wu-Gong 6th Rd., Wugu Industrial Park,
New Taipei City 248, Taiwan (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: July 9, 2012

Testing Laboratory
1309

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		July 9, 2012		Initial Issue	ALL	Kelly Cheng

TABLE OF CONTENTS

TEST RESULT CERTIFICATION

Applicant:	Southco,. Inc 210 N. Brinton Lake Rd., Concordville, PA 19331, U.S.A.
Equipment Under Test:	Electronic Swinghandle
Trade Name:	SOUTHCO
Model:	H3-EM-68-100 / H3-EM-68-100-10 / H3-EM-68-200 / H3-EM-68-200-10 / H3-EM-68-300 / H3-EM-68-300-10
Date of Test:	June 27 ~ July 2, 2012

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

Miller Lee
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Gina Lo
Section Manager
Compliance Certification Services Inc.

EUT DESCRIPTION

<table>
<tr><td>Product</td><td>Electronic Swinghandle</td></tr>
<tr><td>Trade Name</td><td>SOUTHCO</td></tr>
<tr><td>Model Number</td><td>H3-EM-68-100 / H3-EM-68-100-10 / H3-EM-68-200 /
H3-EM-68-200-10 / H3-EM-68-300 / H3-EM-68-300-10</td></tr>
<tr><td>Model Difference</td><td>
<table>
<tr><th>Series Model</th><th>Brand</th><th>Description with the model differences</th></tr>
<tr><td>H3-EM-68-100</td><td>-</td><td>latch with standard lockplug, no Southco logo</td></tr>
<tr><td>H3-EM-68-100-10</td><td>Southco</td><td>latch with standard lockplug, with Southco logo</td></tr>
<tr><td>H3-EM-68-200</td><td>-</td><td>latch with PK-58-02-11 lockplug, no Southco logo</td></tr>
<tr><td>H3-EM-68-200-10</td><td>Southco</td><td>latch with PK-58-02-11 lockplug, with Southco logo</td></tr>
<tr><td>H3-EM-68-300</td><td>-</td><td>latch with PK-58-02-RS001 lockplug, no Southco logo</td></tr>
<tr><td>H3-EM-68-300-10</td><td>Southco</td><td>latch with PK-58-02-RS001 lockplug, with Southco logo</td></tr>
</table>
</td></tr>
<tr><td>Received Date</td><td>June 11 2012</td></tr>
<tr><td>Power Supply</td><td>DC 12V 20mA</td></tr>
<tr><td>Frequency Range</td><td>125kHz</td></tr>
<tr><td>Modulation Technique</td><td>FSK</td></tr>
<tr><td>Number of Channels</td><td>1 Channel</td></tr>
<tr><td>Antenna Specification</td><td>Gain: -4.37 dBi</td></tr>
<tr><td>Antenna Designation</td><td>Loop Antenna</td></tr>
</table>

Remark:

1. *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*
2. *This submittal(s) (test report) is intended for FCC ID: **YKRH3EM68** filing to comply with Section 15.209 of the FCC Part 15, Subpart C Rules.*

TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 (2003) and FCC CFR 47 Part 2, 15.207, 15.209.

1.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

1.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

1.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.

1.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, 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 - 5.15
[1]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 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	([2])
13.36 - 13.41	322 - 335.4		

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

1.5 DESCRIPTION OF TEST MODES

The EUT (model: H3-EM-68) had been tested under engineering test mode condition and the EUT staying in continuous transmitting mode.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

INSTRUMENT CALIBRATION

1.6 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

1.7 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once two years.*

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	11/02/2012
EMI Test Receiver	R&S	ESCI	100064	02/02/2013
Pre-Amplifier	Mini-Circults	ZFL-1000LN	SF350700823	01/11/2013
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1415367	11/18/2012
Bilog Antenna	Sunol Sciences	JB3	A030105	10/05/2012
Horn Antenna	EMCO	3117	00055165	01/11/2013
Horn Antenna	EMCO	3116	00026370	10/17/2012
Loop Antenna	EMCO	6502	8905/2356	06/09/2013
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Site NSA	CCS	N/A	N/A	12/25/2012
Test S/W	EZ-EMC (CCS-3A1RE)			

Conducted Emission Test Site A				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCI	101203	07/26/2012
LISN	R&S	ESH3-Z5	848773/014	12/07/2012
LISN	SCHWARZBECK	NSLK 8127	8127-541	12/14/2012
Coaxial Cable	Commate	CFD300-NL	NA	12/07/2012
Test S/W	CCS-3A1-CE			

1.8 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 1.2159
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

***Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*

FACILITIES AND ACCREDITATIONS

1.9 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.10 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

1.11 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	TAF Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	Canada IC 2324G-1 IC 2324G-2

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

SETUP OF EQUIPMENT UNDER TEST

1.12 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

1.13 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	Adapter	Jentec	CH1812-B	N/A	N/A	N/A	N/A
2.	Proximity Card	Southco	EA-C2-021	N/A	N/A	N/A	N/A
3.	ID Receiver	Southco	EA-P4-101	N/A	N/A	N/A	N/A
4.	DC Power Supply	Agilent	E3640A	MY40001774	N/A	N/A	N/A

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

FCC PART 15.209 REQUIREMENTS

1.14 RADIATED EMISSIONS

LIMIT

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m at meter)	Measurement Distance (meter)
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

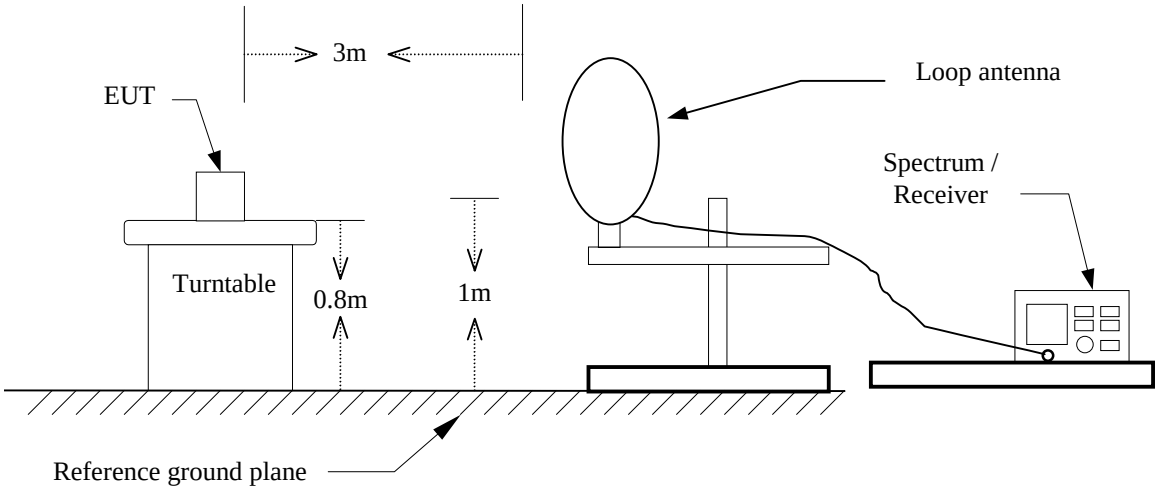
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

2. In the emission table above, the tighter limit applies at the band edges.

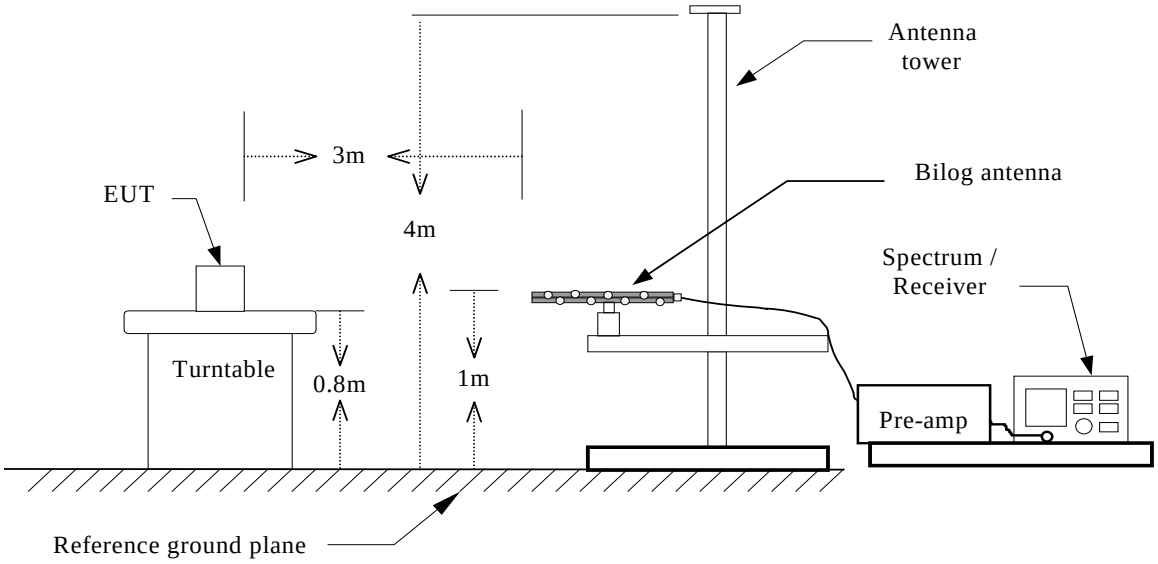
Frequency (Hz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

9kHz ~ 30MHz



30MHz ~ 1GHz



TEST PROCEDURE

For 9kHz~30MHz

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, The center of the loop shall be 1 m above the ground then to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by rotated of receiving antenna axis
6. Set the spectrum analyzer in the following setting as:
   RBW=10kHz / VBW=30kHz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

For 30MHz~1GHz

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
   RBW=100kHz / VBW=300kHz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

For Below 30MHz

Operation Mode:	TX mode	**Test Date:**	June 27, 2012
Temperature:	26°C	**Tested by:**	Shawn Wu
Humidity:	50 % RH		.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Detector Mode (PK/QP/AVG)
0.13	68.53	35.11	103.64	120.06	-16.42	Peak
0.34	42.01	28.49	70.50	104.39	-33.88	Peak
0.37	42.39	27.94	70.33	102.19	-31.85	Peak
0.39	41.00	27.71	68.71	101.26	-32.56	Peak
0.43	40.57	26.98	67.55	98.37	-30.82	Peak
0.46	39.59	26.31	65.90	95.71	-29.81	Peak
11.80	11.77	5.96	17.73	69.50	-51.77	Peak
14.31	11.67	5.64	17.31	69.50	-52.19	Peak
15.69	11.19	5.53	16.72	69.50	-52.78	Peak
16.77	10.63	5.49	16.12	69.50	-53.38	Peak
19.57	9.83	5.40	15.24	69.50	-54.26	Peak
21.59	10.35	5.42	15.77	69.50	-53.73	Peak

Remark:

1. *Measuring frequencies from 9kHz to the 1GHz.*
2. *Radiated emissions measured were made with an instrument using peak/quasi-peak/average detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).*

For 30 ~ 1000MHz

Operation Mode:	TX mode	**Test Date:**	June 27, 2012
Temperature:	26°C	**Tested by:**	Shawn Wu
Humidity:	50 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Detector Mode (PK/QP/AVG)	Ant.Pol. (H/V)
47.78	66.80	-32.00	34.80	40.00	-5.20	Peak	V
89.82	67.52	-33.56	33.97	43.50	-9.53	Peak	V
149.63	59.95	-28.32	31.64	43.50	-11.86	Peak	V
342.02	54.29	-25.39	28.90	46.00	-17.10	Peak	V
448.72	53.09	-22.87	30.22	46.00	-15.78	Peak	V
697.68	46.79	-19.01	27.78	46.00	-18.22	Peak	V
138.32	63.86	-27.96	35.90	43.50	-7.60	Peak	H
148.02	64.09	-28.26	35.83	43.50	-7.67	Peak	H
173.88	64.82	-29.45	35.38	43.50	-8.12	Peak	H
342.02	58.57	-25.39	33.18	46.00	-12.82	Peak	H
354.95	56.83	-25.07	31.77	46.00	-14.23	Peak	H
746.18	51.72	-18.17	33.54	46.00	-12.46	Peak	H

Remark:

1. *Measuring frequencies from 9kHz to the 1GHz.*
2. *Radiated emissions measured were made with an instrument using peak/quasi-peak/average detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).*

1.15 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

***** *Decreases with the logarithm of the frequency.*

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Operation Mode:	Normal Link	**Test Date:**	July 2, 2012
Temperature:	26°C	**Tested by:**	David Shi
Humidity:	60% RH		

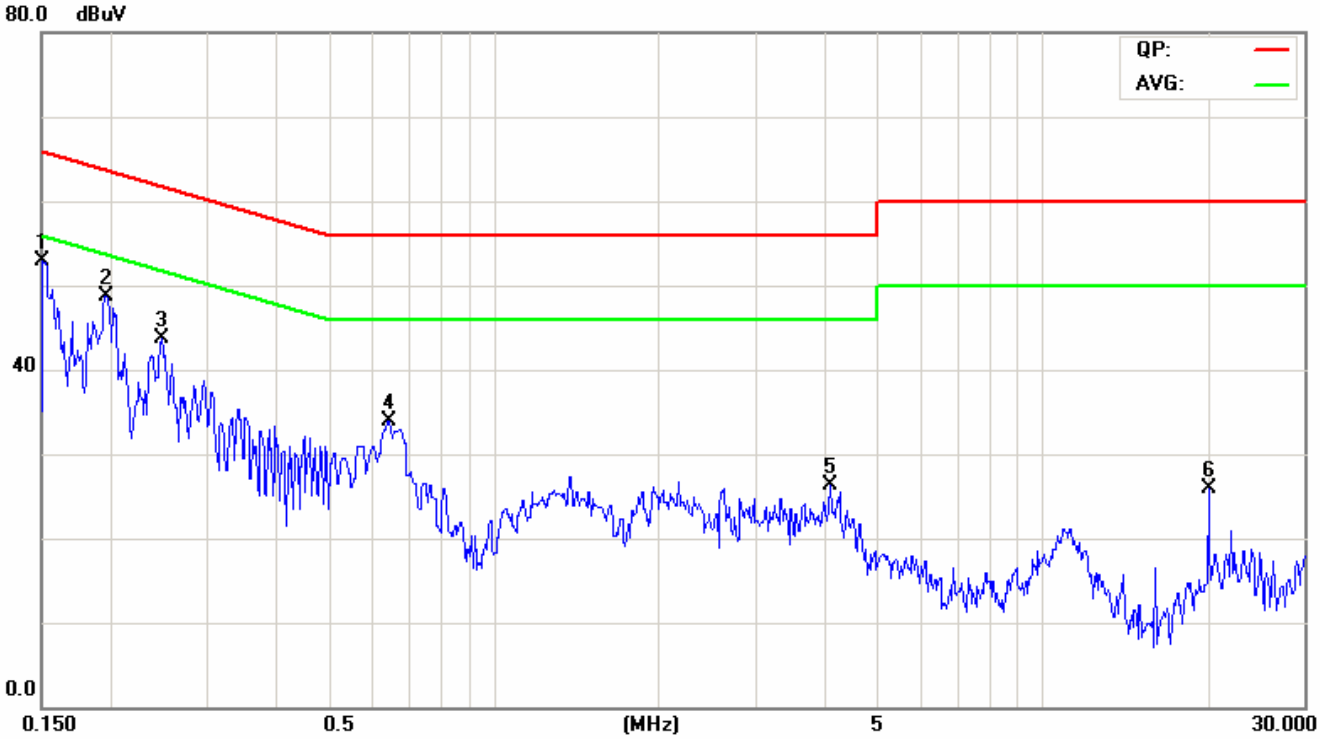
Frequency (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1518	48.09	32.84	0.07	48.16	32.91	65.90	55.90	-17.74	-22.99	L1
0.1956	44.41	30.79	0.06	44.47	30.85	63.80	53.80	-19.33	-22.95	L1
0.2487	38.18	25.66	0.06	38.24	25.72	61.80	51.80	-23.56	-26.08	L1
0.6484	30.32	23.43	0.07	30.39	23.50	56.00	46.00	-25.61	-22.50	L1
4.0735	19.17	11.54	0.12	19.29	11.66	56.00	46.00	-36.71	-34.34	L1
20.0001	24.33	22.09	0.33	24.66	22.42	60.00	50.00	-35.34	-27.58	L1
0.1510	48.17	31.92	0.03	48.20	31.95	65.94	55.94	-17.74	-23.99	L2
0.2013	39.89	29.19	0.03	39.92	29.22	63.56	53.56	-23.64	-24.34	L2
0.2468	36.21	27.01	0.03	36.24	27.04	61.86	51.86	-25.62	-24.82	L2
0.6531	33.83	28.06	0.02	33.85	28.08	56.00	46.00	-22.15	-17.92	L2
3.8726	19.25	11.15	0.07	19.32	11.22	56.00	46.00	-36.68	-34.78	L2
20.0000	25.09	22.86	0.26	25.35	23.12	60.00	50.00	-34.65	-26.88	L2

Remark:

1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;*
4. *L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*
5. *"-" means Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.*

Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)