

FCC 47 CFR PART 15 SUBPART C

Product Type : Bluetooth Magnetic Stripe Reader
Applicant : ID TECH
Address : 10721 Walker Street, Cypress, CA 90630, USA
Trade Name : ID TECH
Model Number : ID-80125001-zyx
Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2012
Canada RSS-210 ISSUE 8: Dec., 2010
Canada RSS-Gen ISSUE 3: Dec., 2010
ANSI C63.4-2009
Application Purpose : Class II Permissive Change
Receive Date : Dec. 18, 2012
Test Period : Jan. 02 ~ Jan. 18, 2013
Issue Date : Jan. 22, 2013

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jan. 08, 2013	Initial Issue	
01	Jan. 22, 2013	Add radiated emissions below 1GHz results.	Joyce Liao

Verification of Compliance

Issued Date: 01/22/2013

Product Type : Bluetooth Magnetic Stripe Reader
Applicant : ID TECH
Address : 10721 Walker Street, Cypress, CA 90630, USA
Trade Name : ID TECH
Model Number : ID-80125001-zyx
FCC ID : WQJ-ID80125001ZYX
EUT Rated Voltage : DC 5V, 40mA
Test Voltage : 120 Vac / 60 Hz
Applicable Standard : FCC 47 CFR PART 15 SUBPART C: Oct., 2012
Canada RSS-210 ISSUE 8: Dec., 2010
Canada RSS-Gen ISSUE 3: Dec., 2010
ANSI C63.4-2009
Test Result : Complied
Application Purpose : Class II Permissive Change
Performing Lab. : A Test Lab Techno Corp.

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<http://www.atl-lab.com.tw/e-index.htm>



The above equipment was tested by A Test Lab Techno Corp. 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: 2009 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, 15.247 .

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

Approved By



(Manager)

(Murphy Wang)

Reviewed By



(Testing Engineer)

(Fly Lu)

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1 General Information

1.1. Summary of Test Result

Standard		Item		Remark
15.247	RSS-GEN			
15.207	7.2.2	AC Power Conducted Emission	PASS	-----
-----	6	Receiver Radiated Emissions	N/A	Note 2
Standard		Item		Remark
15.247	RSS-210			
15.247(c)	A8.5	Transmitter Radiated Emissions	PASS	Note 2
15.247(b)(1)	A8.4 (2)	Max. Output Power	N/A	Note 2
15.247(a)(1)	A8.1 (1)	20dB RF Bandwidth	N/A	Note 2
15.247(a)(1)(iii)	A8.1 (2)	Carrier Frequency Separation	N/A	Note 2
15.247(a)(1)(iii)	A8.1 (4)	Number of Hopping	N/A	Note 2
15.247(a)(1)(iii)	A8.1 (4)	Time of Occupancy (Dwell Time)	N/A	Note 2
15.247(c)	A8.5	Out of Band Conducted Spurious Emission	N/A	Note 2
15.247(c)	A8.5	Band Edge Measurement	N/A	Note 2
15.203	-	Antenna Requirement	N/A	Note 2

Note 1: The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

Note 2: The EUT has modified PCB layout (the radio circuit has no changed). Engineer evaluated it only need to verify AC power conducted emission and radiated emissions below 1GHz test.

1.2. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.24 dB.

Radiated Emission

The measurement uncertainty of 30 MHz - 1GHz is evaluated as ± 3.072 dB.

2 EUT Description

Product	Bluetooth Magnetic Stripe Reader
Trade Name	ID TECH
Model Number	ID-80125001-zyx z = for color of the rubber, 0 represent default dark grey color y = for color of unit, 0 represent default black color x = customer logo, 1 represent <IDTECH> logo
Applicant	ID TECH 10721 Walker Street, Cypress, CA 90630, USA
Manufacturer	ID TECH 10721 Walker Street, Cypress, CA 90630, USA
FCC ID	WQJ-ID80125001ZYX
Frequency Range	2402 ~ 2480 MHz
Modulation Type	GFSK for 1Mbps
Antenna Type	Multilayer Chip Antenna
Antenna Gain	2.5 dBi
RF Output Power (Conducted)	2.40 dBm / 0.00174 W

3 Test Methodology

3.1. Mode of Operation

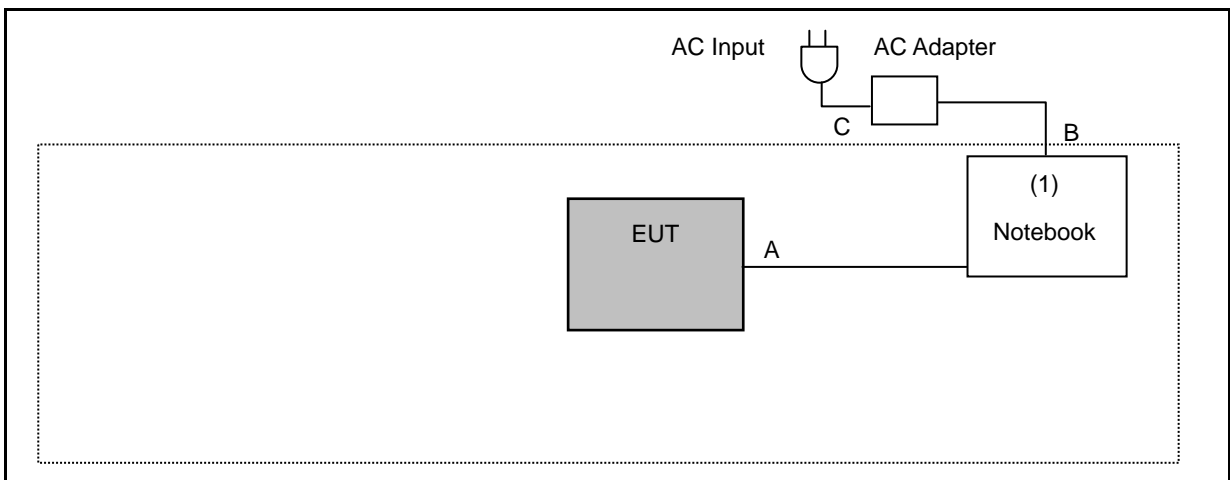
Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Normal Operation Mode

3.2. EUT Exercise Software

1	Setup the EUT and Bluetooth Tester (CBT) as shown on 3.3.
2	Turn on the power of all equipment.
3	EUT run test program.

3.3. Configuration of Test System Details



Signal Cable Type		Signal Cable Description
A	USB Cable	Shielded, 0.6 m
B	DC Power Cable	Non-Shielded, 1.8 m
C	AC Power Cable	Non-Shielded, 2.0m

Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model Number	Serial Number	Power Cord
1.	Notebook	DELL	D531	CN-OXM006-48643-87A-3398	Non-Shielded, 2.0m

3.4. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950

4 Conducted Emission Measurement

4.1. Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

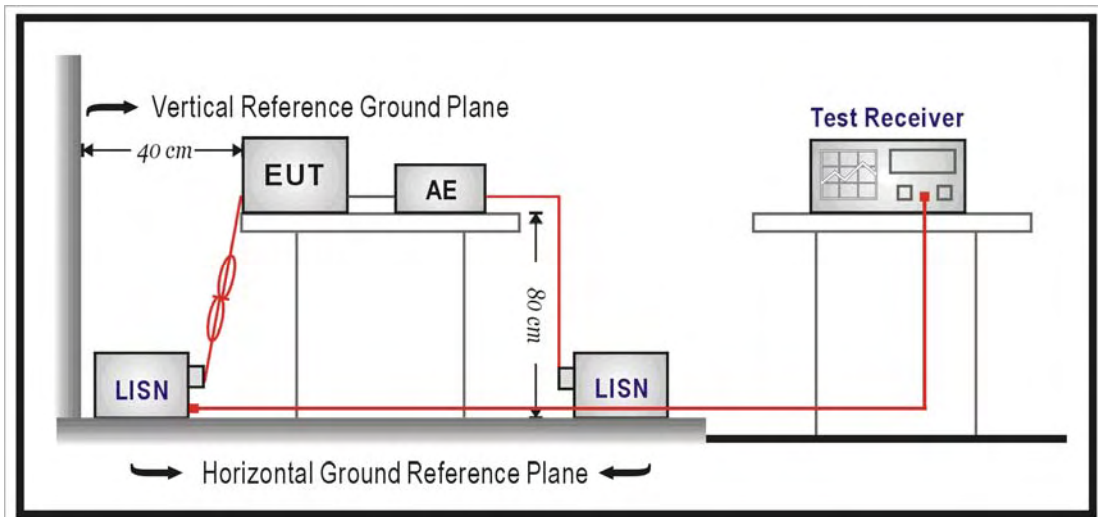
4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	06/18/2012	(1)
LISN	R&S	ENV216	101040	03/07/2012	(1)
LISN	R&S	ENV216	101041	03/07/2012	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years. (3) Calibration period 3 years.

Note: N.C.R. = No Calibration Request.

4.3. Test Setup



4.4. Test Procedure

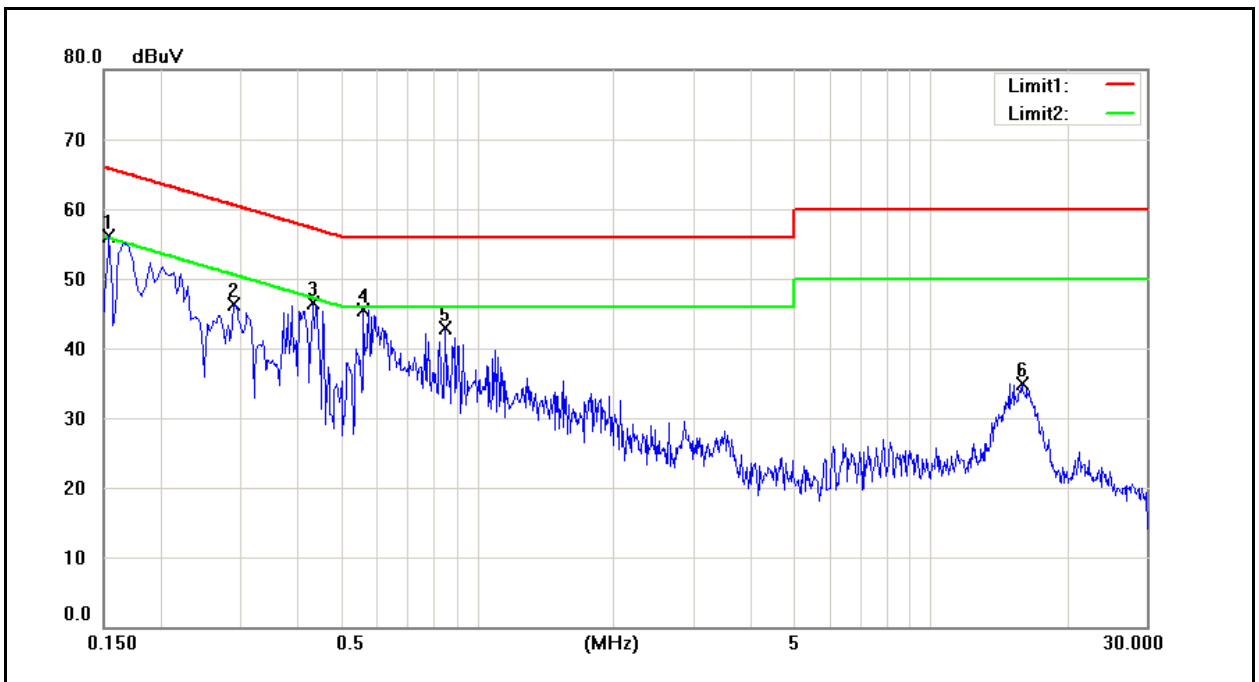
The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

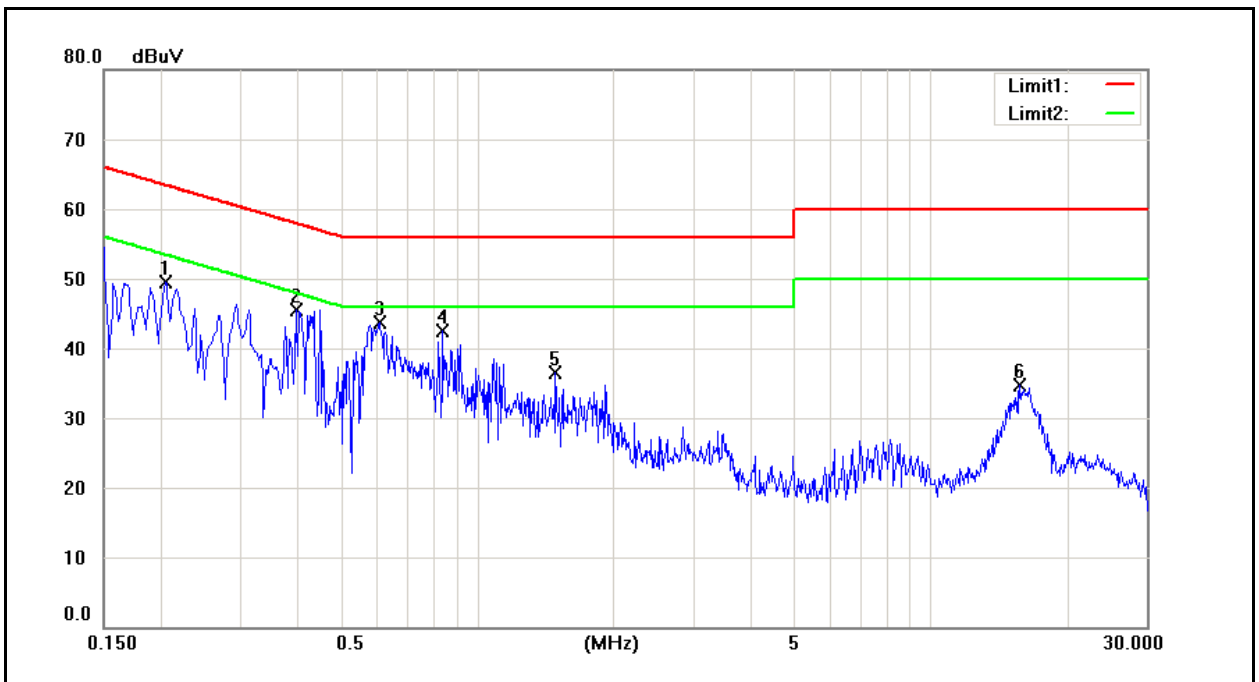
4.5. Test Result

Standard:	FCC Part 15C	Line:	L1
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	ID-80125001-001	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	1	Date:	01/02/2013
		Test By:	Fly Lu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1540	42.86	26.09	9.72	52.58	35.81	65.78	55.78	-13.20	-19.97	Pass
2	0.2900	34.59	31.35	9.72	44.31	41.07	60.52	50.52	-16.21	-9.45	Pass
3	0.4340	32.20	18.58	9.72	41.92	28.30	57.18	47.18	-15.26	-18.88	Pass
4	0.5620	31.98	19.07	9.71	41.69	28.78	56.00	46.00	-14.31	-17.22	Pass
5	0.8500	27.45	14.75	9.73	37.18	24.48	56.00	46.00	-18.82	-21.52	Pass
6	15.9220	19.56	12.63	9.91	29.47	22.54	60.00	50.00	-30.53	-27.46	Pass

Standard:	FCC Part 15C	Line:	N
Test item:	Conducted Emission	Power:	AC 120V/60Hz
Model Number:	ID-80125001-001	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Test Mode:	1	Date:	01/02/2013
		Test By:	Fly Lu
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.2060	35.64	25.20	9.64	45.28	34.84	63.37	53.37	-18.09	-18.53	Pass
2	0.3980	31.11	15.66	9.64	40.75	25.30	57.90	47.90	-17.15	-22.60	Pass
3	0.6100	29.11	18.44	9.65	38.76	28.09	56.00	46.00	-17.24	-17.91	Pass
4	0.8420	26.33	12.06	9.67	36.00	21.73	56.00	46.00	-20.00	-24.27	Pass
5	1.4940	20.18	13.14	9.69	29.87	22.83	56.00	46.00	-26.13	-23.17	Pass
6	15.7940	18.58	11.86	9.98	28.56	21.84	60.00	50.00	-31.44	-28.16	Pass

5 Radiated Interference Measurement

5.1. Limit

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 ($\mu\text{V}/\text{m}$ at 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

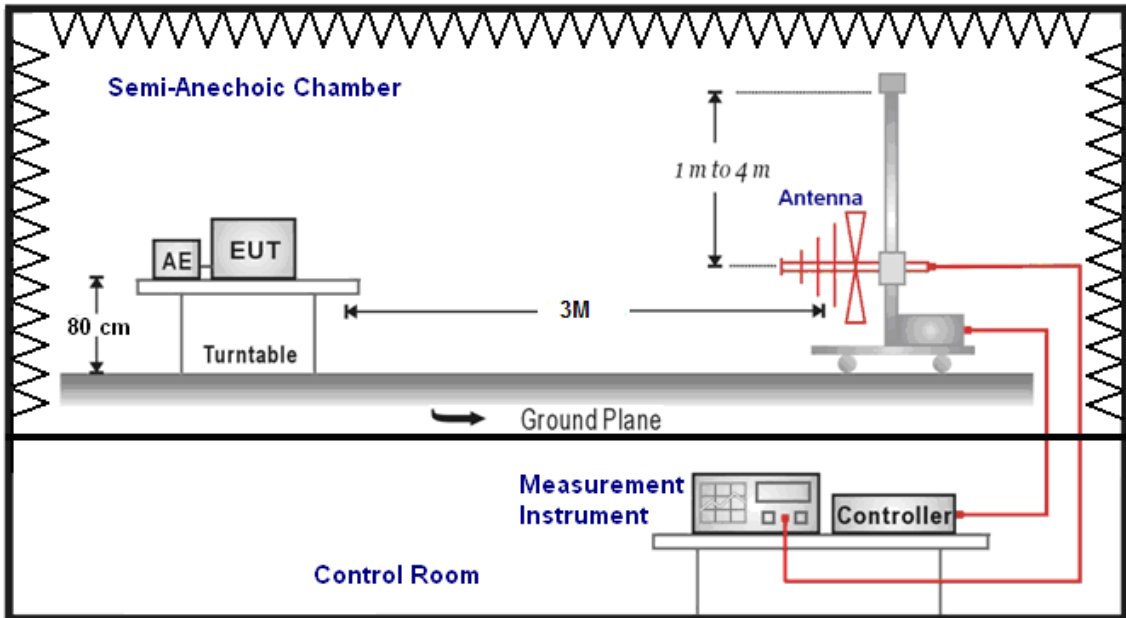
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this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

5.2. Test Instruments

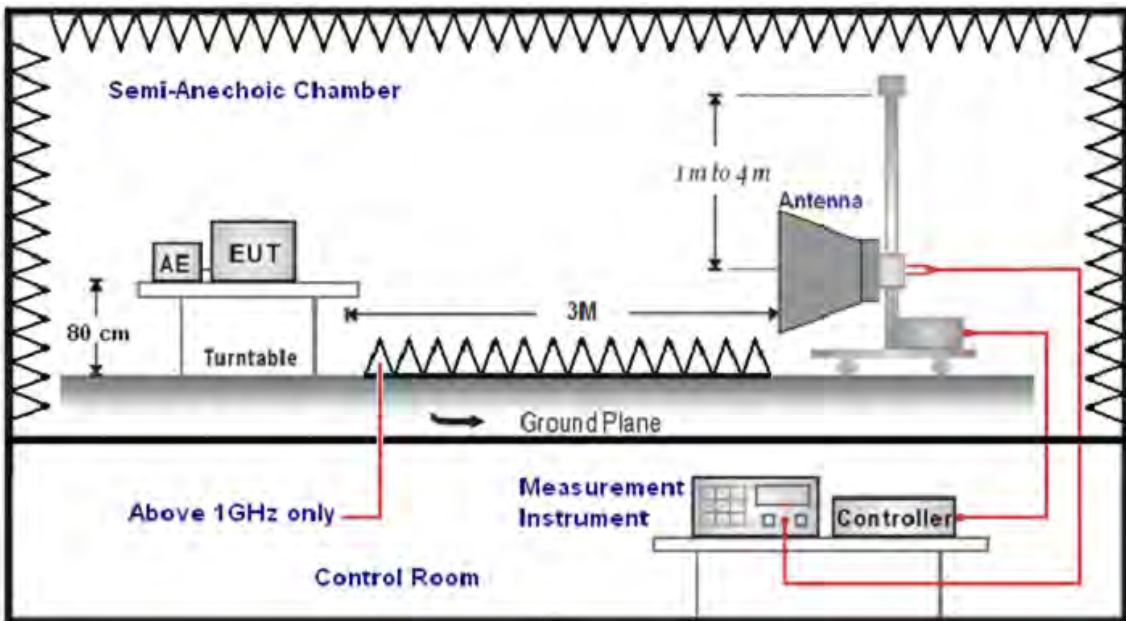
3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	04/16/2012	(1)
Spectrum Analyzer	Agilent	E4446A	MY46180578	04/16/2012	(1)
Pre Amplifier	Agilent	8449B	3008A02237	02/22/2012	(1)
Pre Amplifier	Agilent	8447D	2944A10961	02/22/2012	(1)
Broadband Antenna (30MHz~1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	06/29/2012	(1)
Horn Antenna (1~18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	06/15/2012	(1)
Horn Antenna (18~40GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/21/2012	(1)
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	08/14/2012	(3)
Test Site	ATL	TE01	888001	08/28/2012	(1)

5.3. Setup

Below 1GHz



Above 1GHz



5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test. The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5.5. Test Result

Below 1GHz

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	ID-80125001-001	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	01/18/2013
Ant.Polar.:	Horizontal	Test By:	Fly Lu

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	124.5000	45.46	-16.18	29.28	43.50	-14.22	QP
2	266.5000	42.54	-11.58	30.96	46.00	-15.04	QP
3	384.0000	39.85	-8.71	31.14	46.00	-14.86	QP
4	615.5000	34.58	-4.69	29.89	46.00	-16.11	QP
5	749.5000	28.55	-2.27	26.28	46.00	-19.72	QP
6	863.0000	30.21	-0.66	29.55	46.00	-16.45	QP

Standard:	FCC Part 15C	Test Distance:	3m
Test item:	Radiated Emission	Power:	AC 120V/60Hz
Model Number:	ID-80125001-001	Temp.(°C)/Hum.(%RH):	26(°C)/60%RH
Mode:	1	Date:	01/18/2013
Ant.Polar.:	Vertical	Test By:	Fly Lu

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	108.5000	42.68	-13.83	28.85	43.50	-14.65	QP
2	258.0000	38.59	-11.80	26.79	46.00	-19.21	QP
3	381.0000	34.25	-8.71	25.54	46.00	-20.46	QP
4	480.0000	31.22	-7.38	23.84	46.00	-22.16	QP
5	687.5000	30.66	-3.59	27.07	46.00	-18.93	QP
6	872.5000	26.60	-0.50	26.10	46.00	-19.90	QP

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).