



**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A11060401
Report No.: FCC A11060401
FCC ID : WQJ-IDCA-12X1
Page: 1 of 27
Date: Jul. 29, 2011

Product Name: Xpress CM100 reader
Model No.: IDCA-1261, IDCA-1221
Applicant: ID TECH TAIWAN Co.
10721 Walker Street, Cypress, CA 90630, USA
Date of Receipt: Jun. 04, 2011
Finished date of Test: Jul. 29, 2011
Applicable Standards: 47 CFR Part 15, Subpart C
47 CFR Part 15, Subpart B
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.

Tested By : Richard Lin, Date: 7/29/2011
(Richard Lin)

Approved By : Johnson Ho, Date: 7/29/2011
(Johnson Ho, Director)



FMNG-059.10 REPORT

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p>TEST REPORT</p>	<p>Reference No.: A11060401 Report No.:FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:2 of 27 Date: Jul. 29, 2011</p>
---	---------------------------	--

Table of Contents

1. DOCUMENT POLICY AND TEST STATEMENT	3
1.1 DOCUMENT POLICY	3
1.2 TEST STATEMENT	3
1.3 EUT MODIFICATION	3
2. DESCRIPTION OF EUT AND TEST MODE	4
2.1 GENERAL DESCRIPTION OF EUT	4
2.2 DESCRIPTION OF EUT INTERNAL DEVICE	5
2.3 DESCRIPTION OF TEST MODE	5
2.4 DESCRIPTION OF SUPPORT UNIT	5
2.5 EUT OPERATING CONDITION	6
2.6 DESCRIPTION OF MODEL DIFFERENCE	6
3. DESCRIPTION OF APPLIED STANDARDS	7
3.1 SUMMARY OF TEST RESULTS	7
4. FREQUENCY TOLERANCE	8
4.1 PROCEDURE	8
4.2 TEST EQUIPMENT	8
4.3 TEST SETUP	9
4.4 TEST RESULT	10
5. TECHNICAL CHARACTERISTICS TEST	12
5.1 CONDUCTED EMISSION TEST	12
5.1.1 LIMIT	12
5.1.2 TEST EQUIPMENT	12
5.1.3 TEST SETUP	13
5.1.4 TEST PROCEDURE	13
5.1.5 TEST RESULT	14
5.2 RADIATED EMISSION TEST	16
5.2.1 LIMIT	16
5.2.2 TEST EQUIPMENT	17
5.2.3 TEST SET-UP	18
5.2.4 TEST PROCEDURE	錯誤! 尚未定義書籤。
5.2.5 TEST RESULT	19
6. ANTENNA APPLICATION	22
6.1 ANTENNA REQUIREMENT	22
6.2 RESULT	22
7. PHOTOS OF TESTING	23
8. TERMS OF ABBREVIATION	27

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	TEST REPORT	Reference No.: A11060401 Report No.:FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:3 of 27 Date: Jul. 29, 2011
---	--------------------	---

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.
- DC power source from PC : 5Vdc/0.35A (from USB port) or RS232 external power adapter which has Input: AC 100V ~ 240V, 50/60Hz, 0.2A Output: DC +5V, 1A

1.3 EUT MODIFICATION

- No modification in SRT Lab.

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p>TEST REPORT</p>	<p>Reference No.: A11060401 Report No.:FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:4 of 27 Date: Jul. 29, 2011</p>
---	---------------------------	--

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

USB :

PRODUCT	Xpress CM100 reader
MODEL NO.	IDCA-1261
POWER SUPPLY	DC power source from PC : 5Vdc/0.35A
CABLE	NA
FREQUENCY BAND	13.553MHz ~ 13.567MHz
CARRIER FREQUENCY	13.56MHz
NUMBER OF CHANNEL	1
MODULATION TYPE	ASK
ANTENNA TYPE	PCB Printed
ANTENNA GAIN	3 dBi
OPERATING TEMPERATURE RANGE	-30 ~ 80°C

RS232 (series product) :

PRODUCT	Xpress CM100 reader
MODEL NO.	IDCA-1221
POWER SUPPLY	DC power source from RS232 external power adapter : DC +5V, 1A
CABLE	NA
FREQUENCY BAND	13.553MHz ~ 13.567MHz
CARRIER FREQUENCY	13.56MHz
NUMBER OF CHANNEL	1
MODULATION TYPE	ASK
ANTENNA TYPE	PCB Printed
ANTENNA GAIN	3 dBi
OPERATING TEMPERATURE RANGE	-30 ~ 80°C

NOTE : For more detailed information, please refer to the EUT's specification or user's manual

provided by manufacturer.

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<h1>TEST REPORT</h1>	Reference No.: A11060401 Report No.: FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page: 5 of 27 Date: Jul. 29, 2011
---	----------------------	---

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND / MAKER	MODEL #	FCC ID / DOC	REMARK
Adapter	DVE	DSC-6PFA-05	DOC	External power adapter, output 5V for RS232 model IDCA-1221 used.

2.3 DESCRIPTION OF TEST MODE

Mode		
1	TX	USB
2		RS232

NOTE : The axis X,Y and Z we evaluate in chamber, the X axis is worst case.

X axis:



Y axis:



Z axis:



2.4 DESCRIPTION OF SUPPORT UNIT

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	ACER	Aspire SA85	DoC	1.5m unshielded power cable
2	CRT Monitor	SAMSUNG	757NF	DOC	1.5m shielded data cable. 1.8m unshielded power cord
3	Keyboard	ACER	6311-AT	DoC	1.8m unshielded data cable.
4	Mouse	IBM	MU29J	DoC	1.5m unshielded data cable.
5	Modem	ACEEX	DM-1414	DoC	1.5m unshielded power cord 1.5m shielded data cable.
6	Printer	EPSON	STYLUS C20SX	N/A	1.5m unshielded power cord 1.2m shielded data cable.
7	VISA MSD TEST CARD	VIVO	510-1017-00	N/A	N/A

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



**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A11060401
Report No.:FCC A11060401
FCC ID : WQJ-IDCA-12X1
Page:6 of 27
Date: Jul. 29, 2011

2.5 EUT OPERATING CONDITION

1. Setup the EUT and all peripheral devices .
2. Turn on the power of all equipment and EUT.
3. Set the EUT under continuous transmission condition or standby.
4. The EUT was set to the highest available power level.

2.6 DESCRIPTION OF MODEL DIFFERENCE

Project	Model	IDCA-1261	IDCA-1221
RF Module		○	○
Lay out		○	○
Antenna		○	○
I/O Port		○	○
Software		○	○
Power supply	USB DC +5V	×	External power adapter : DC +5V for RS232 model used
Main Board		○	○
Packing		○	○
Color		○	○

NOTE : ○ is same , ✗ is different

Above emission testing, Both conditions were evaluated. The USB mode was worse case. So, we used the worse case as our final test.

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p>TEST REPORT</p>	<p>Reference No.: A11060401 Report No.:FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:7 of 27 Date: Jul. 29, 2011</p>
---	---------------------------	--

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
15.207	AC Power Conducted Emission	Pass
15.225(a)(b)(c)(d)	Radiated Emission (9kHz ~ 30MHz)	Pass
15.225(d), 15.209	Radiated Emission (30MHz ~ 1GHz)	Pass
15.225(e)	Frequency stability	Pass

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p>TEST REPORT</p>	<p>Reference No.: A11060401 Report No.:FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:8 of 27 Date: Jul. 29, 2011</p>
---	---------------------------	--

4. FREQUENCY TOLERANCE

4.1 PROCEDURE

The frequency stability of the transmitter is measured by:

- (a) Temperature: The temperature is varied from -20°C to +50°C using an environmental chamber.
- (b) Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the voltage normally input to the device or at the power supply terminals if cables are not normally supplied.

The frequency tolerance of the carrier shall be maintained within $\pm 0.01\%$ of the operating frequency.

4.2 TEST EQUIPMENT

The following test equipment was used for the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE oF CAL. & CAL. CENTER
TEMPERATURE & HUMIDITY CHAMBER	-40 to 150°C 20 to 95%	KSON	THS-D4C-180-LN2/3 324	JUN. 2012 ETC
POWER SENSOR	DC-18GHz 0.3 μ W-100mW 50 Ω	BOOTON	51011-EMC/ 31184	NOV. 2011 ETC
SPECTRUM	9kHz-40GHz	ROHDE & SCHWARZ	FSP40/ 100093	DEC. 2011 ETC

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



**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

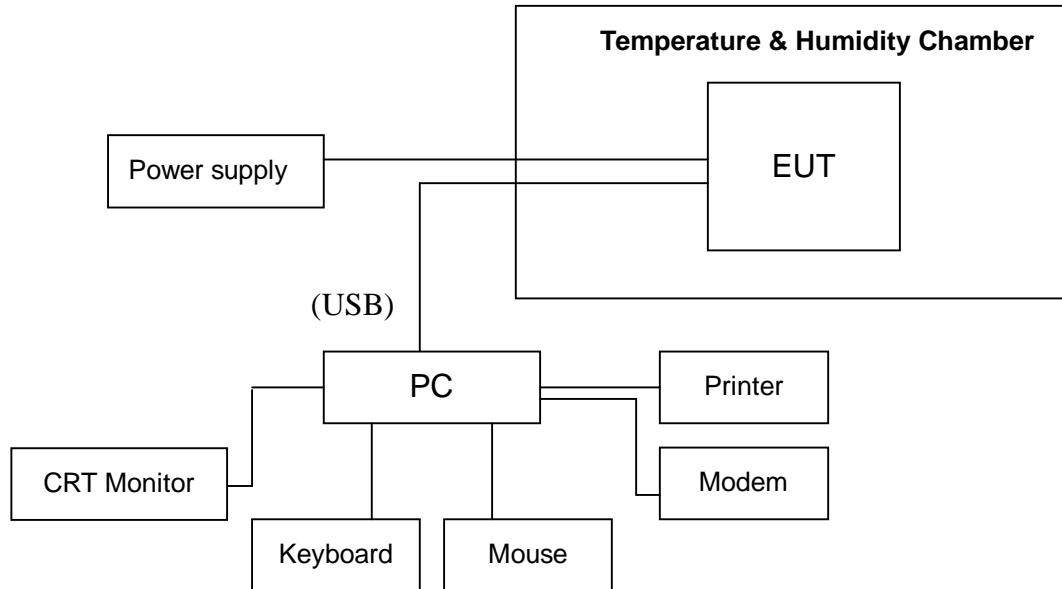
TEST REPORT

Reference No.: A11060401
Report No.: FCC A11060401
FCC ID : WQJ-IDCA-12X1
Page: 9 of 27
Date: Jul. 29, 2011

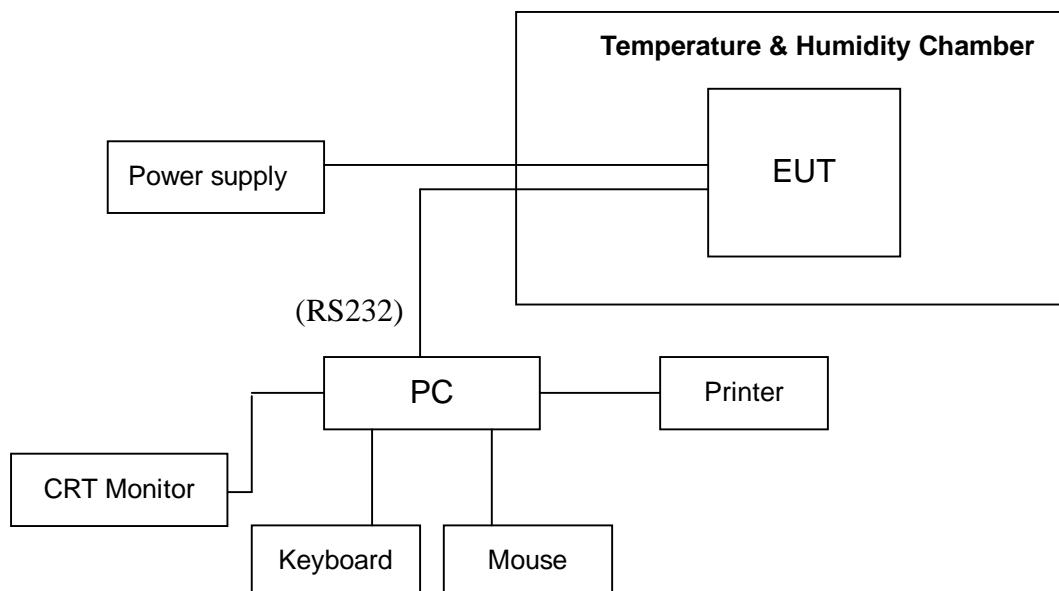
4.3 TEST SETUP

The tested unit was stayed in a Temperature & Humidity chamber and supplied with a power source for extreme condition (see configue below). It was adjusted to the maximum output power during the test.

USB :



RS232 :





**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A11060401
Report No.: FCC A11060401
FCC ID : WQJ-IDCA-12X1
Page: 10 of 27
Date: Jul. 29, 2011

4.4 TEST RESULT

Operating Frequency : 13,560,000Hz

Reference Voltage : 5Vdc

Deviation Limit : ±0.01%

Temperature: 22°C Humidity: 56 %RH

Test Mode: USB Tested By: Richard Lin

Test result: Pass Tested Date: JUL. 15, 2011

Voltage (%)	Power (VDC)	Temperature (°C)	Frequency (Hz)	Deviation (%)
100	5	+20°C (Ref)	13,559,571	0.0031637
100		-20	13,559,685	0.0023230
100		-10	13,559,677	0.0023820
100		0	13,559,652	0.0025664
100		10	13,559,614	0.0028466
100		25	13,559,562	0.0032301
100		30	13,559,553	0.0032965
100		40	13,559,544	0.0033628
100		50	13,559,551	0.0033112
85	4.25	20	13,559,571	0.0031637
115	5.75	20	13,559,592	0.0030088



**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A11060401
Report No.: FCC A11060401
FCC ID : WQJ-IDCA-12X1
Page:11 of 27
Date: Jul. 29, 2011

Temperature: 22°C Humidity: 56 %RH
Test Mode: RS232 Tested By: Richard Lin
Test result: Pass Tested Date: JUL. 15, 2011

Voltage (%)	Power (VDC)	Temperature (°C)	Frequency (Hz)	Deviation (%)
100	5	+20°C (Ref)	13,559,573	0.0031490
100		-20	13,559,686	0.0023156
100		-10	13,559,679	0.0023673
100		0	13,559,656	0.0025369
100		10	13,559,617	0.0028245
100		25	13,559,565	0.0032080
100		30	13,559,554	0.0032891
100		40	13,559,546	0.0033481
100		50	13,559,552	0.0033038
85	4.25	20	13,559,573	0.0031490
115	5.75	20	13,559,594	0.0029941

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p>TEST REPORT</p>	<p>Reference No.: A11060401 Report No.: FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:12 of 27 Date: Jul. 29, 2011</p>
---	---------------------------	--

5. TECHNICAL CHARACTERISTICS TEST

5.1 CONDUCTED EMISSION TEST

5.1.1 LIMIT

Frequency (MHz)	Class A (dB μ V)		Class B (dB μ V)	
	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.

5.1.2 TEST EQUIPMENT

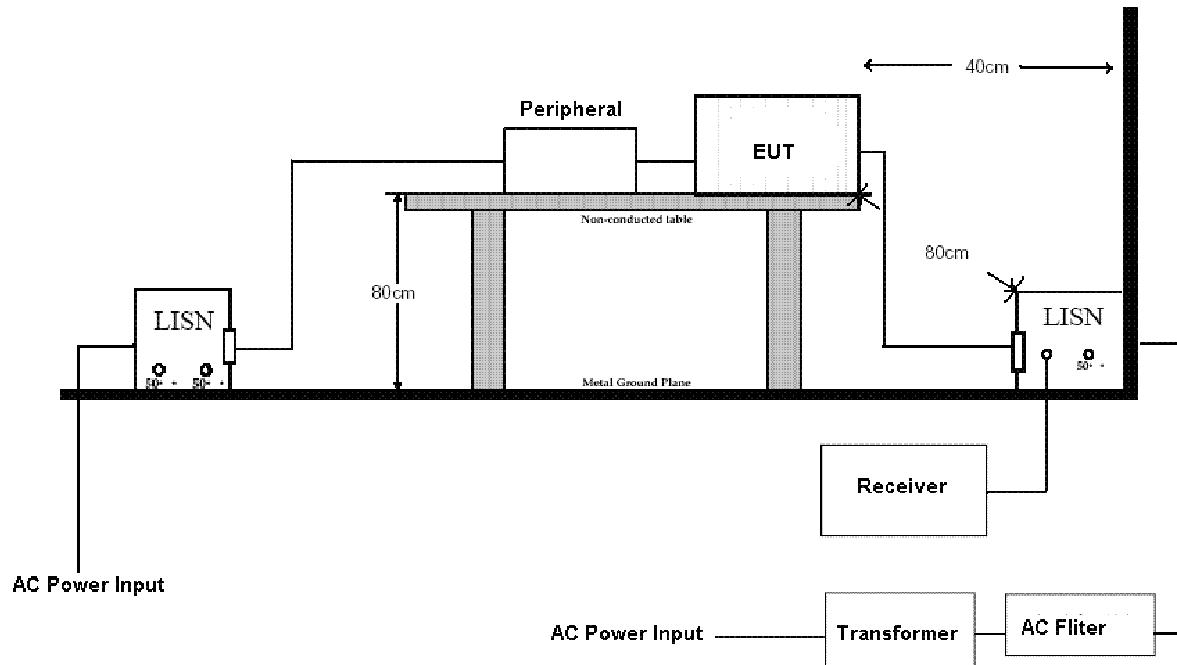
The following test equipment was used for the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9kHz TO 2.75 GHz	ROHDE & SCHWARZ	ESHS30 / 826003/008	SEP. 2011 ETC
LISN	50 μ H, 50 ohm	FCC	FCC-LISN-50-25-2 / 01017	JUL. 2012 ETC
LISN	50 μ H, 50 ohm	SOLAR	9252-50-R24-BNC / 951315	NOV. 2011 ETC
50 OHM TERMINATOR	50 ohm	HP	11593A / #2	MAY 2012 ETC
COAXIAL CABLE	5M	TIMES	RG214/U / #5M(L1TCAB013)	MAY. 2012 ETC
Filter	2 LINE, 30A	FIL.COIL	FC-943 / 771	NCR
GROUND PLANE	2M (H) x 3M (W)	SRT	N/A	NCR
GROUND PLANE	2.5M (H) x 3M (W)	SRT	N/A	NCR

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



5.1.3 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.
3. With a 50ohm resistor to replace the antenna on the EUT.

5.1.4 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/50 μ H 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.

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p>TEST REPORT</p>	<p>Reference No.: A11060401 Report No.: FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:14 of 27 Date: Jul. 29, 2011</p>
---	---------------------------	--

5.1.5 TEST RESULT

Temperature:	23 °C	Humidity:	56 %RH
Tested By:	Richard Lin	Tested Mode:	USB
Receiver Detector:	Q.P. and AV.	Modulation Type:	ASK
Frequency Range:	0.15 – 30 MHz	Tested Date:	Jul. 18, 2011

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBmV)		Emission Level (dBmV)		Limit (dBmV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.153	0.30	35.71	33.30	36.01	33.60	65.91	55.91	-29.90	-22.31
4.170	0.14	30.78	30.00	30.92	30.14	56.00	46.00	-25.08	-15.86
4.477	0.15	29.49	25.70	29.64	25.85	56.00	46.00	-26.36	-20.15
8.339	0.20	31.94	29.31	32.14	29.51	60.00	50.00	-27.86	-20.49
13.556	0.28	42.54	42.19	42.82	42.47	60.00	50.00	-17.18	-7.53
27.782	0.53	39.00	27.81	39.53	28.34	60.00	50.00	-20.47	-21.66

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBmV)		Emission Level (dBmV)		Limit (dBmV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.378	0.18	28.19	27.09	28.37	27.27	59.49	49.49	-31.12	-22.22
0.606	0.13	26.56	25.87	26.69	26.00	56.00	46.00	-29.31	-20.00
2.804	0.15	32.87	31.76	33.02	31.91	56.00	46.00	-22.98	-14.09
3.942	0.17	30.82	30.11	30.99	30.28	56.00	46.00	-25.01	-15.72
8.339	0.23	31.38	28.30	31.61	28.53	60.00	50.00	-28.39	-21.47
13.556	0.31	41.02	40.59	41.33	40.90	60.00	50.00	-18.67	-9.10

NOTE :

1. Measurement uncertainty is ±3.61dB
2. Emission level = Reading value + 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.

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<h1>TEST REPORT</h1>	Reference No.: A11060401 Report No.: FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:15 of 27 Date: Jul. 29, 2011
---	----------------------	---

Temperature:	23 °C	Humidity:	56 %RH
Tested By:	Richard Lin	Tested Mode:	RS232
Receiver Detector:	Q.P. and AV.	Modulation Type:	ASK
Frequency Range:	0.15 – 30 MHz	Tested Date:	Jul. 18, 2011

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBmV)		Emission Level (dBmV)		Limit (dBmV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.411	0.11	35.05	25.16	35.16	25.27	58.54	48.54	-23.38	-23.27
0.414	0.11	33.43	19.24	33.54	19.35	58.46	48.46	-24.92	-29.11
0.692	0.11	26.36	17.55	26.47	17.66	56.00	46.00	-29.53	-28.34
2.240	0.11	24.09	13.58	24.20	13.69	56.00	46.00	-31.80	-32.31
13.556	0.28	31.96	27.15	32.24	27.43	60.00	50.00	-27.76	-22.57
27.813	0.53	41.84	24.46	42.37	24.99	60.00	50.00	-17.63	-25.01

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBmV)		Emission Level (dBmV)		Limit (dBmV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.405	0.14	30.86	25.55	31.00	25.69	58.71	48.71	-27.71	-23.02
0.411	0.14	29.75	21.55	29.89	21.69	58.54	48.54	-28.65	-26.85
0.711	0.13	21.51	11.88	21.64	12.01	56.00	46.00	-34.36	-33.99
4.457	0.18	17.08	9.07	17.26	9.25	56.00	46.00	-38.74	-36.75
4.516	0.18	18.25	9.85	18.43	10.03	56.00	46.00	-37.57	-35.97
27.823	0.60	39.30	27.03	39.90	27.63	60.00	50.00	-20.10	-22.37

NOTE :

1. Measurement uncertainty is ±3.61dB
2. Emission level = Reading value + 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.

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p>TEST REPORT</p>	<p>Reference No.: A11060401 Report No.:FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:16 of 27 Date: Jul. 29, 2011</p>
---	---------------------------	---

5.2 RADIATED EMISSION TEST

5.2.1 LIMIT

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 @30m (uV/m)	Field strength @30m (dBuV/m)	Field strength @3m (dBuV/m)
Below 13.110	30	29.5	69.5
13.110 ~13.410	106	40.5	80.5
13.410~13.553	334	50.5	90.5
13.553~13.567	15,848	84	124
13.567~13.710	334	50.5	90.5
13.710~14.010	106	40.5	80.5
Above 14.010	30	29.5	69.5

NOTE :

1. BuV/m=20*log(uV/m)
2. Distance factor=40dB / decade(15.31(f))

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 (dBmV/m)
0.009 - 0.490	300	2400/F(KHz)
0.490 - 1.705	30	24000/F(KHz)
1.705 - 30	30	30
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
Above 960	3	54.0

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<p>TEST REPORT</p>	<p>Reference No.: A11060401 Report No.: FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:17 of 27 Date: Jul. 29, 2011</p>
---	---------------------------	--

5.2.2 TEST EQUIPMENT

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

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DU DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	20 MHz TO 1000 MHz	ROHDE & SCHWARZ	ESVS30 / 841977/003	DEC. 2011 ETC
BI-LOG ANTENNA	30 MHz TO 2 GHz	SCHAFFNER	CBL6141A / 4181	MAY. 2012 ETC
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	NOV. 2011 SRT
COAXIAL CABLE	30M	TIMES	LMR-400 / #30M	MAY. 2012 ETC
FILTER	2 LINE, 30A	FIL.COIL	FC-943 / 869	NCR
SPECTRUM ANALYZER	9K- 40GHz	R&S	FSP40/ 100093	DEC. 2011 ETC
PRE-AMPLIFIER	1GHz TO 26.5GHz	HP	8449B/ 3008A01995	JAN. 2012 ETC
HORN ANTENNA	1GHz TO 18GHz	EMCO	3115/ 6881	NOV. 2011 ETC
HORN ANTENNA	18GHz TO 40GHz	EMCO	3116/ 00032255	FEB. 2012 ETC
K-TYPE CABLE	15M	HUBER SUHNER	SF 102-40/2*11 /23932/2	MAY. 2012 ETC
K-TYPE CABLE	1M	HUBER SUHNER	SF 102-40/2*11 /23934/2	NOV. 2011 ETC
Loop Antenna	10KHz TO 30MHz	ETS.LINDGREN	00063889	JUN. 2012 ETC

NOTE :

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



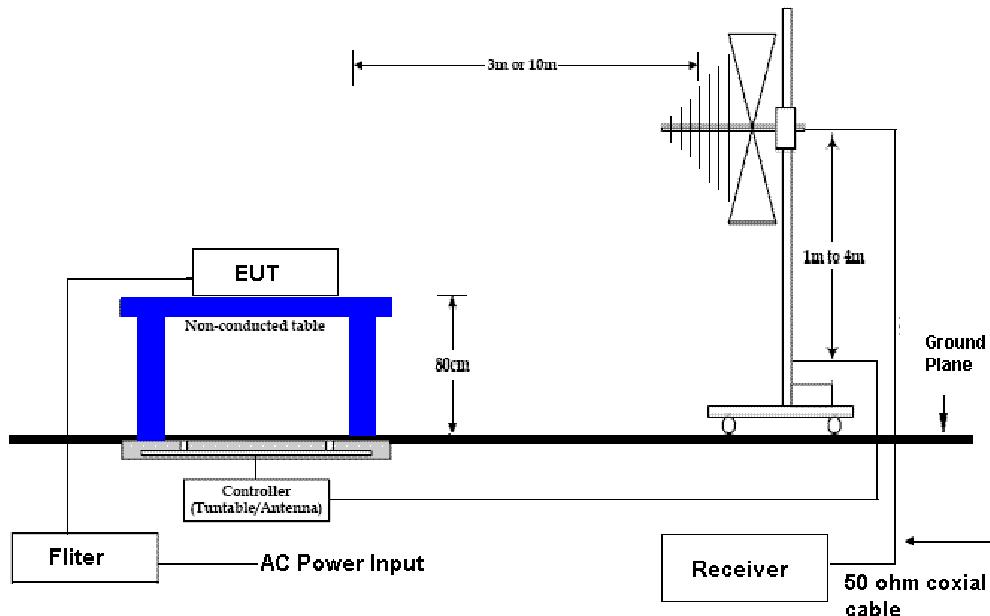
**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A11060401
Report No.: FCC A11060401
FCC ID : WQJ-IDCA-12X1
Page: 18 of 27
Date: Jul. 29, 2011

5.2.3 TEST SET-UP

Below 1GHz



NOTE :

1. 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.

5.2.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2003. The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz. When the frequency spectrum measured started from 10 MHz to 30 MHz, then use antenna is a loop antenna. When 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. 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.

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<h1>TEST REPORT</h1>	Reference No.: A11060401 Report No.: FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page: 19 of 27 Date: Jul. 29, 2011
---	----------------------	--

5.2.5 TEST RESULT

Temperature:	23 °C	Humidity:	62 %RH
Tested By:	Richard Lin	Tested Mode:	USB
Receiver Detector:	Q.P. or AV.	Modulation Type:	ASK
Frequency Range:	9K – 30MHz	Tested Date:	Jul. 19, 2011

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
13.56	0.570	34.13	71.48	106.18	124.00	-17.82

NOTE :

1. Below 30Mhz was applied Average Detector.
2. There was no detected Restricted bands and Radiated suprious emission below 30MHz.
3. The 30m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows;

$$3 \text{ m Limit(dB}\mu\text{V/m)} = 20\log(X) + 40\log(30/3) = 20\log(15848) + 40\log(30/3) = 124\text{dB}\mu\text{V}$$

Temperature:	23 °C	Humidity:	62 %RH
Tested By:	Richard Lin	Tested Mode:	RS232
Receiver Detector:	Q.P. or AV.	Modulation Type:	ASK
Frequency Range:	9K – 30MHz	Tested Date:	Jul. 19, 2011

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
13.56	0.570	34.13	69.24	103.94	124.00	-20.06

NOTE :

1. Below 30Mhz was applied Average Detector.
2. There was no detected Restricted bands and Radiated suprious emission below 30MHz.
3. The 30m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows;

$$3 \text{ m Limit(dB}\mu\text{V/m)} = 20\log(X) + 40\log(30/3) = 20\log(15848) + 40\log(30/3) = 124\text{dB}\mu\text{V}$$

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<h1>TEST REPORT</h1>	Reference No.: A11060401 Report No.: FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page: 20 of 27 Date: Jul. 29, 2011
---	----------------------	--

Temperature:	23 °C	Humidity:	62 %RH
Tested By:	Richard Lin	Tested Mode:	USB
Receiver Detector:	Q.P. or AV.	Modulation Type:	ASK
Frequency Range:	30M – 1GHz	Tested Date:	Jul. 19, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	AZ(°)	EL(m)
68.3710	1.20	8.30	21.4	30.9	40.0	-9.1	35	1.83
131.4590	1.61	12.61	19.8	34.0	43.5	-9.5	108	1.72
174.2620	1.80	10.80	26.1	38.7	43.5	-4.8	247	1.65
204.1760	1.94	11.96	22.7	36.6	43.5	-6.9	153	1.61
230.9580	2.10	12.70	15.7	30.5	46.0	-15.5	92	1.46
284.3390	2.34	13.24	21.3	36.9	46.0	-9.1	314	1.33

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	AZ(°)	EL(m)
70.7790	1.20	8.00	20.7	29.9	40.0	-10.1	56	1.32
143.5820	1.70	12.67	16.2	30.6	43.5	-12.9	99	1.34
174.7380	1.80	10.80	21.4	34.0	43.5	-9.5	135	1.41
204.1610	1.94	11.96	17.3	31.2	43.5	-12.3	182	1.49
310.8530	2.44	14.14	14.7	31.3	46.0	-14.7	261	1.52
790.4530	4.06	22.06	8.4	34.5	46.0	-11.5	301	1.61

NOTE :

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

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	<h1>TEST REPORT</h1>	Reference No.: A11060401 Report No.: FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page: 21 of 27 Date: Jul. 29, 2011
---	----------------------	--

Temperature:	23 °C	Humidity:	62 %RH
Tested By:	Richard Lin	Tested Mode:	RS232
Receiver Detector:	Q.P. or AV.	Modulation Type:	ASK
Frequency Range:	30M – 1GHz	Tested Date:	Jul. 19, 2011

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	AZ(°)	EL(m)
68.3140	1.20	8.30	21.3	30.8	40.0	-9.2	66	1.91
184.7590	1.84	10.66	18.6	31.1	43.5	-12.4	173	1.82
199.2370	1.90	11.71	21.6	35.2	43.5	-8.3	265	1.68
284.1850	2.34	13.24	18.1	33.7	46.0	-12.3	52	1.61
790.9180	4.06	22.06	4.3	30.4	46.0	-15.6	129	1.44
933.9710	4.57	23.83	4.8	33.2	46.0	-12.8	233	1.38

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	AZ(°)	EL(m)
92.5310	1.40	8.92	22.7	33.0	43.5	-10.5	201	1.35
107.1580	1.47	10.64	26.0	38.1	43.5	-5.4	184	1.39
184.7720	1.84	10.66	19.2	31.7	43.5	-11.8	93	1.47
199.2460	1.90	11.71	24.2	37.8	43.5	-5.7	102	1.53
790.5140	4.06	22.06	7.5	33.6	46.0	-12.4	309	1.61
924.3890	4.55	23.63	4.9	33.1	46.0	-12.9	226	1.68

NOTE :

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

 <p>Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan</p>	TEST REPORT	Reference No.: A11060401 Report No.:FCC A11060401 FCC ID : WQJ-IDCA-12X1 Page:22 of 27 Date: Jul. 29, 2011
---	--------------------	--

6. Antenna application

6.1 Antenna requirement

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

6.2 Result

The EUT's antenna used a PCB printed. Gain of antenna types is 3dBi that meet the requirement.



7. PHOTOS OF TESTING

- Radiated test (below 3M , USB)





TEST REPORT

- Radiated test (below 1G , USB)





TEST REPORT

- Radiated test (below 30M , RS232)





TEST REPORT

- Radiated test (below 1G , RS232)





**Spectrum Research &
Testing Lab., Inc.**
No. 101-10, Ling 8,
Shan-Tong Li, Chung-Li
City, Taoyuan, Taiwan

TEST REPORT

Reference No.: A11060401
Report No.:FCC A11060401
FCC ID : WQJ-IDCA-12X1
Page:27 of 27
Date: Jul. 29, 2011

8. 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