

APPLICATION FOR CERTIFICATION
On Behalf of

Advanced Card Systems Limited

Contactless Smart Card Reader

Model Number: ACR122U

Prepared for : Advanced Card Systems Limited
Units 2010-2013, 20/F, Chevalier Commercial Centre, 8
Wang Hoi Road, Kowloon, Hong Kong, China

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number : ACS-F08177
Date of Test : Mar.24~25, 2008
Date of Report : Mar.31, 2008

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TEST REPORT CERTIFICATION

Applicant : Advanced Card Systems Limited
 Manufacturer : Guang Dong Farbell Electronics Technology Co., Ltd.
 EUT Description : Contactless Smart Card Reader
 (A) MODEL NO. : ACR122U
 (B) SERIAL NO. : N/A
 (C) POWER SUPPLY : DC 5V From USB
 (D) TEST VOLTAGE : DC 5V From PC Input AC 120V/60Hz

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart C 2007

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both radiated and conducted emissions.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test: Mar.24~25, 2008

Prepared by: YoYo Wang
YoYo Wang / Assistant

Reviewer: Skyle Li
Skyle Li / Engineer



Approved & Authorized Signer: Ken Lu
Ken Lu / Deputy Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Conducted Emission Test	FCC Part 15: 15.207 ANSI C63.4: 2003	PASS
Radiated Emission Test	FCC Part 15: 15.205, 15.209 FCC Part 15: 15.225(a)(b)(c)(d) ANSI C63.4: 2003	PASS
Frequency Tolerance Test	FCC Part 15: 15.225(e)	PASS
Bandwidth Emission Test	FCC Part 15: 15.215	PASS

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description	:	Contactless Smart Card Reader
Model Number	:	ACR122U
Operation frequency	:	13.56MHz
Modulation	:	ASK&BPSK
Applicant	:	Advanced Card Systems Limited Units 2010-2013, 20/F, Chevalier Commercial Centre, 8 Wang Hoi Road, Kowloon, Hong Kong, China
Manufacturer	:	Guang Dong Farbell Electronics Technology Co., Ltd. The Heng Men Second Industrial Zone, Nan Lang Town, ZhongShan City, GuangDong, China
USB Cable	:	Unshielded, Undetachabled, 1.5m
Date of Test	:	Mar.24~25, 2008
Date of Receipt	:	Mar.23, 2008
Sample Type	:	Series Production

2.2. Tested Supporting System Details

2.2.1. NOTEBOOK

M/N	:	PP09S
S/N	:	N/A
Manufacturer	:	DELL
Power Adaptor	:	Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachabled, 4.0m (Bond one ferrite core)
FCC ID	:	PIWW360BT

2.3. Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block, Shenzhen
Science & Industrial Park, Nantou,
Shenzhen, Guangdong, China

3m Anechoic Chamber : Jun. 13, 2006 File on Federal
Communication Commission
Registration Number: 90454

3m & 10m Anechoic Chamber : Jan. 31, 2007 File on Federal
Communication Commission
Registration Number: 794232

EMC Lab. : Accredited by DATech, German
Registration Number: DAT-P-091/99-01
Feb. 02, 2004

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Apr. 01, 2007

2.4. Measurement Uncertainty

No.	Item	Uncertainty	Remark
1.	Conducted Emission Test	1.22dB	
2.	Radiated Emission Test	3.14dB	3m Chamber
3.	Radiated Emission Test	3.18dB	10m Chamber
4.	RF frequency	$\pm 0.5 \times 10^{-7}$	
5.	RF power, conducted	± 3 dB	

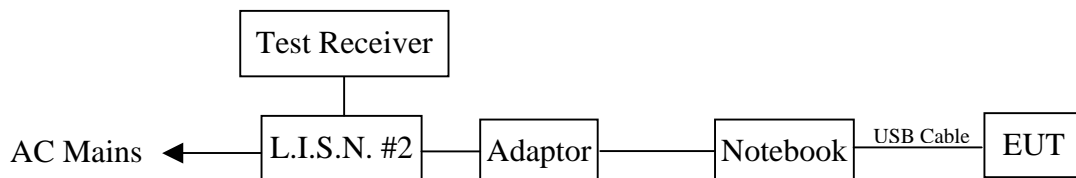
3. CONDUCTED EMISSION TEST

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Dec.19, 07	1 Year
2.	L.I.S.N.#2	Kyoritsu	KNW-407	8-1636-1	May 11, 07	1 Year
3.	Terminator	Hubersuhner	50Ω	No. 1	May 11, 07	1 Year
4.	RF Cable	MIYAZAKI	5D-2W	LISN Cable 1#	Jan.09, 08	1/2 Year
5.	Coaxial Switch	Anritsu	MP59B	M55367	Jan.09, 08	1/2 Year
6.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100340	Jan.09, 08	1/2 Year

3.2. Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and simulators



(EUT: Contactless Smart Card Reader)

3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB (μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. Contactless Smart Card Reader (EUT)

Model Number : ACR122U

Serial Number : N/A

3.4.2. Support Equipment : As Tested Supporting System Detail, in Section 2.2.

3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT and simulator as shown as Section 3.2.
- 3.5.2. Turned on the power of all equipment.
- 3.5.3. Let the EUT worked in test mode (TX) and measured it.

3.6. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). Please refer the block diagram of the test setup and photographs. Power on the PC and let it work normally, we use a keyboard test soft ware, let EUT working in test mode, then test it. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC Part 15C on Conducted Emission Test.

The bandwidth of test receiver (R & S ESHS10) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked.

The test results are reported on Section 3.7.

3.7. Power Line Conducted Emission Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

The EUT with the following test modes was tested and selected (mode 1) to read Q.P values and average values, all the test results are listed in next pages.

EUT: Contactless Smart Card Reader Model No. : ACR122U

Test Date: Mar.24, 2008 Temperature: 25°C Humidity: 58%

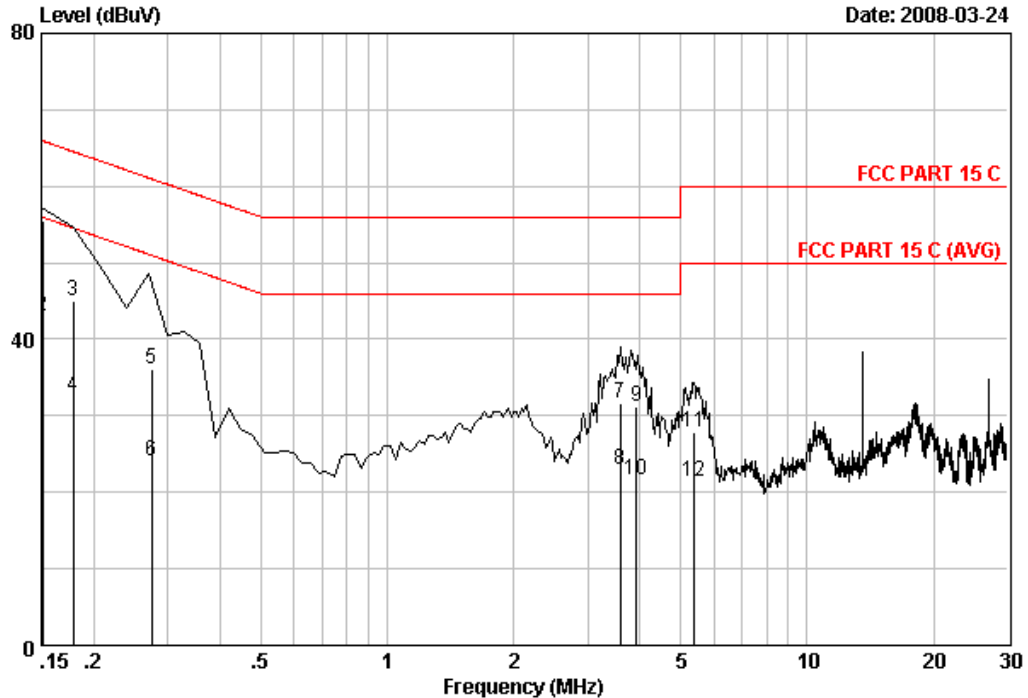
The details of test modes are as follows :

No.	Test Mode	Reference Test Data No.	
		VA	VB
1.	TX Mode	# 1	# 2



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Data: 1 File: D:\emc 002\DATA\2008 Report\A\Advanced\ACS8Q315.EMI (2)



Site no :AUDIX No.1 Conduction Data no :1
 Dis./Ant. :-- KNW407 VA (1#)
 Limit :FCC PART 15 C
 Env./Ins. :25*C/58% ESHS10 Engineer :Skyle
 EUT :Contactless Smart Card Reader M/N:ACR122U
 Power Rating :DC 5V From PC Input 120V/60Hz
 Test Mode :TX Mode
 Memo :

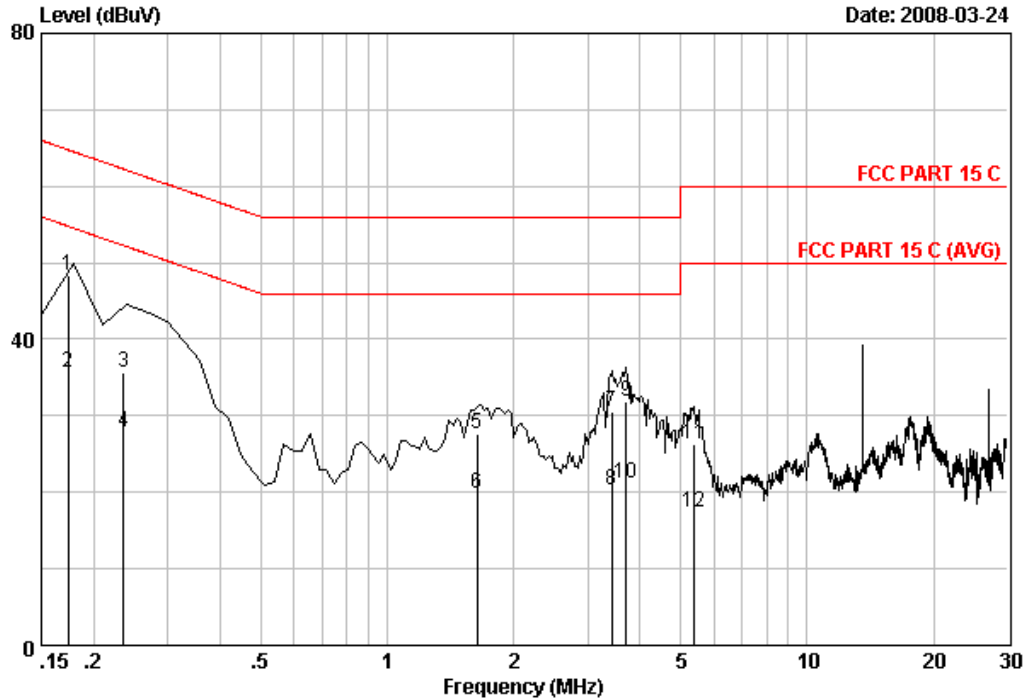
No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	0.22	10.15	45.19	55.56	65.94	10.38	QP
2	0.15	0.22	10.15	32.59	42.96	55.94	12.98	Average
3	0.18	0.18	10.15	34.70	45.03	64.53	19.50	QP
4	0.18	0.18	10.15	22.30	32.63	54.53	21.90	Average
5	0.28	0.12	10.15	25.80	36.07	60.97	24.90	QP
6	0.28	0.12	10.15	13.80	24.07	50.97	26.90	Average
7	3.58	0.09	10.18	21.39	31.66	56.00	24.34	QP
8	3.58	0.09	10.18	12.69	22.96	46.00	23.04	Average
9	3.92	0.09	10.18	21.00	31.27	56.00	24.73	QP
10	3.92	0.09	10.18	11.30	21.57	46.00	24.43	Average
11	5.37	0.10	10.20	17.50	27.80	60.00	32.20	QP
12	5.37	0.10	10.20	11.10	21.40	50.00	28.60	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
 2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.



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Data: 2 File: D:\emc 002\DATA\2008 Report\A\Advanced\ACS8Q315.EMI (2)



Site no :AUDIX No.1 Conduction Data no :2
 Dis./Ant. :-- KNW407 VB (1#)
 Limit :FCC PART 15 C
 Env./Ins. :25*C/58% ESHS10 Engineer :Skyle
 EUT :Contactless Smart Card Reader M/N:ACR122U
 Power Rating :DC 5V From PC Input 120V/60Hz
 Test Mode :TX Mode
 Memo :

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17	0.20	10.15	37.90	48.25	64.77	16.52	QP
2	0.17	0.20	10.15	25.40	35.75	54.77	19.02	Average
3	0.24	0.14	10.15	25.40	35.69	62.25	26.56	QP
4	0.24	0.14	10.15	17.60	27.89	52.25	24.36	Average
5	1.64	0.05	10.15	17.50	27.70	56.00	28.30	QP
6	1.64	0.05	10.15	9.60	19.80	46.00	26.20	Average
7	3.43	0.08	10.17	20.31	30.56	56.00	25.44	QP
8	3.43	0.08	10.17	10.11	20.36	46.00	25.64	Average
9	3.71	0.08	10.18	21.56	31.82	56.00	24.18	QP
10	3.71	0.08	10.18	11.00	21.26	46.00	24.74	Average
11	5.38	0.10	10.20	16.09	26.39	60.00	33.61	QP
12	5.38	0.10	10.20	7.11	17.41	50.00	32.59	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

4. RADIATED EMISSION TEST

4.1. Test Equipment

The following test equipments are used during the radiated emission test:

Frequency rang: 30~1000MHz

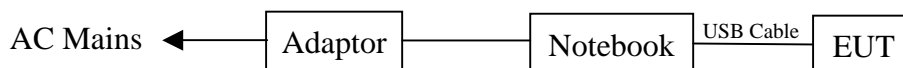
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Dec.20.07	1/2 Year
2.	EMI Spectrum	Agilent	E7403A	MY42000106	May 11, 07	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	Dec.19, 07	1 Year
4.	Amplifier	HP	8447D	2944A04738	Jan.09, 08	1/2 Year
5.	Bilog Antenna	Schaffner	CBL6111C	2598	Feb.21, 08	1 Year
6.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.1	Jan.09, 08	1/2 Year
7.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.2	Jan.09, 08	1/2 Year
8.	RF Cable	FUJIKURAw	RG-55/U	3# Chamber No.3	Jan.09, 08	1/2 Year
9.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.4	Jan.09, 08	1/2 Year
10.	Coaxial Switch	Anritsu	MP59B	M73989	Jan.09, 08	1/2 Year

Frequency rang: 1.705~30MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	10m Chamber	AUDIX	N/A	N/A	Dec.10.07	1/2 Year
2.	EMC Analyzer	Agilent	E7405A	MY42000131	May.11, 07	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	Dec.19, 07	1 Year
4.	Amplifier	Agilent	8447D	2944A10684	Jan. 09, 08	1/2
5.	Loop Antenna	CHASE	HLA6120	6120	May.11, 07	1 Year
6.	RF Cable	JINGCHENG	KLMR400	10m Chamber No.1	Jan. 09, 08	1/2 Year
7.	RF Cable	JINGCHENG	JBY400	10m Chamber No.2	Jan. 09, 08	1/2 Year
8.	RF Cable	JINGCHENG	JBY400	10m Chamber No.3	Jan. 09, 08	1/2 Year
9.	RF Cable	JINGCHENG	JBY400	10m Chamber No.4	Jan. 09, 08	1/2 Year
10.	Coaxial Switch	Anritsu	MP59B	M74389	Jan. 09, 08	1/2 Year

4.2. Block Diagram of Test Setup

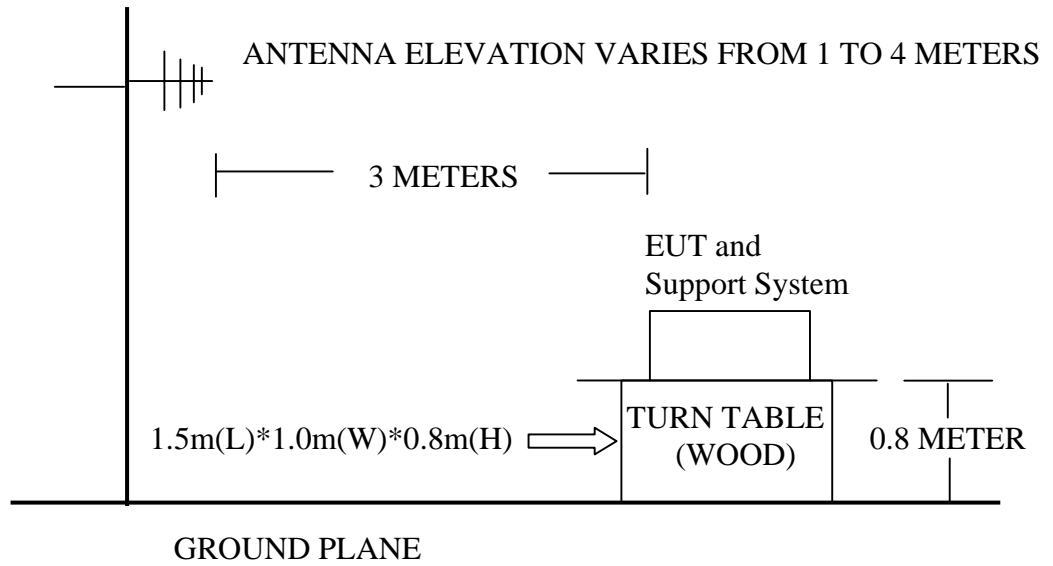
4.2.1. Block diagram of connection between the EUT and simulators



(EUT: Contactless Smart Card Reader)

4.2.2.In Anechoic Chamber

ANTENNA TOWER



4.3.Radiated Emission Limit

Frequency (MHz)	Measurement Distance (m)	Field Strength (dB μ V/m)[QP]
1.705 ~ 13.110	10	48.64
13.110 ~ 13.410	10	59.60
13.410 ~ 13.553	10	69.60
13.553 ~ 13.567	10	103.10
13.567 ~ 13.710	10	69.60
13.710 ~ 14.010	10	59.60
14.010 ~ 30	10	48.64
30 ~ 88	3	40.00
88 ~ 216	3	43.50
216 ~ 960	3	46.00
960 ~ 1000	3	54.00

- Remark :
- (1) Emission level dB μ V = 20 log Emission level μ V/m
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.4.EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4.1.Contactless Smart Card Reader (EUT)

Model Number : ACR122U
 Serial Number : N/A

4.4.2.Support Equipment : As Tested Supporting System Detail, in Section 2.2.

4.5. Operating Condition of EUT

- 4.5.1. Setup the EUT as shown in Section 4.2.
- 4.5.2. Turned on the power of all equipment.
- 4.5.3. Let the EUT work in test mode (TX) and tested it.

4.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it work normally, we use a keyboard test software, let EUT working in test mode, then test it. For frequency range 30MHz to 1000MHz, EUT is set 3m away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

For frequency range below 30MHz the Loop antenna was used at 10m measurement distance with antenna heights of 1m and antenna loop front and side faced to the EUT. The axis of the antenna was rotated to maximize the emission. A CISPR quasi-peak detector is used for measurements below 30MHz and RBW/VBW is 9kHz/30kHz.

The limit 1.75MHz to 30MHz in clause 4.3 are specified at 30 meters, and measurements were made at 10 meters, the limit is translated to 10 meters by using a formula as follows:

$$\text{Limit}_{30\text{m}} = \text{Limit}_{10\text{m}} + 40\log(30\text{m}/10)$$

4.7. Test Results

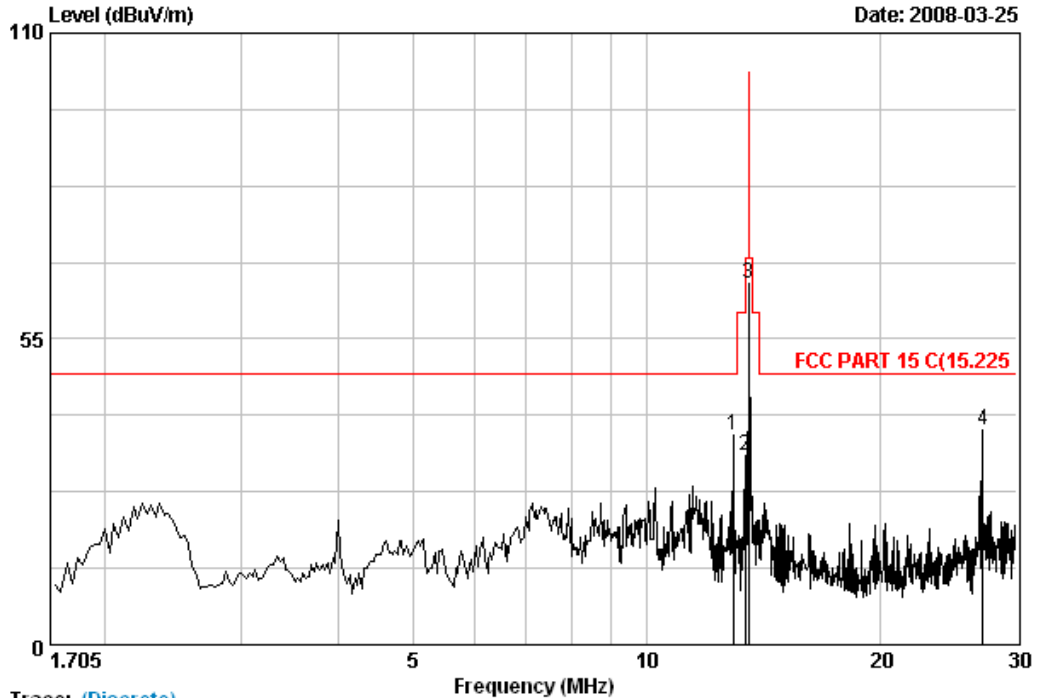
PASS. (The frequency range from 30MHz to 1000MHz and 1.705MHz to 30MHz is investigated. Please see the following pages.)



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Data: 1 File: D:\emc 002\DATA\2008 Report\Advanced\ACS8Q315.EMI

Date: 2008-03-25



Trace: (Discrete)

Site no. : 10m Chamber Test Site Data no. : 1
 Dis. / Ant. : 10m FACTOR Ant. pol. : Front
 Limit : CISPR 22B(10M)
 Env. / Ins. : 25°C/57% ESVS10 Engineer : Skyle
 EUT : Contactless Smart Card Reader M/N:ACR122U
 Power Rating : DC 5V From PC Input 120V/60Hz
 Test Mode : TX Mode

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Magin (dB)	Remark
1	12.93	19.78	1.10	16.85	37.73	48.64	10.91	QP
2	13.40	19.80	1.12	13.18	34.10	59.60	25.50	QP
3	13.56	19.80	1.12	44.00	64.92	103.10	38.18	QP
4	27.13	20.66	1.35	16.60	38.61	48.64	10.03	QP

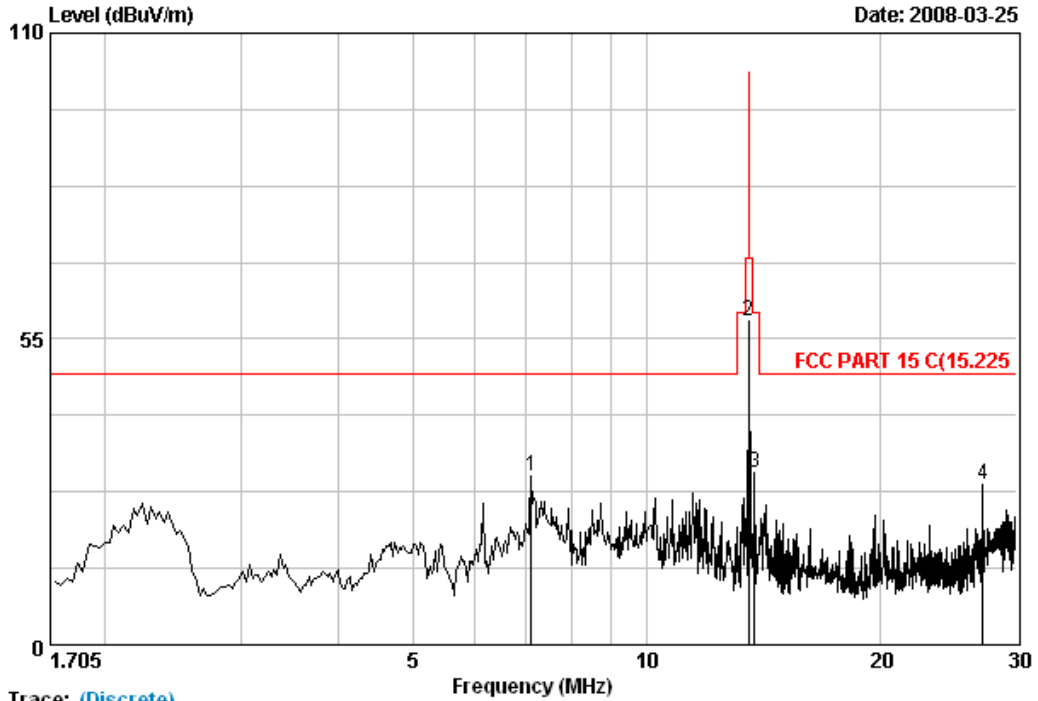
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Data: 2 File: D:\emc 002\DATA\2008 Report\Advanced\ACS8Q315.EMI

Date: 2008-03-25



Trace: (Discrete)

Site no. : 10m Chamber Test Site Data no. : 1
Dis. / Ant. : 10m FACTOR Ant. pol. : Side
Limit : CISPR 22B(10M)
Env. / Ins. : 25°C/57% ESVS10 Engineer : Skyle
EUT : Contactless Smart Card Reader M/N:ACR122U
Power Rating : DC 5V From PC Input 120V/60Hz
Test Mode : TX Mode

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	7.11	19.06	0.94	10.40	30.40	48.64	18.24	QP
2	13.56	19.80	1.12	37.16	58.08	103.10	45.02	QP
3	13.79	19.80	1.12	9.96	30.88	59.60	28.72	QP
4	27.13	20.66	1.35	6.73	28.74	48.64	19.90	QP

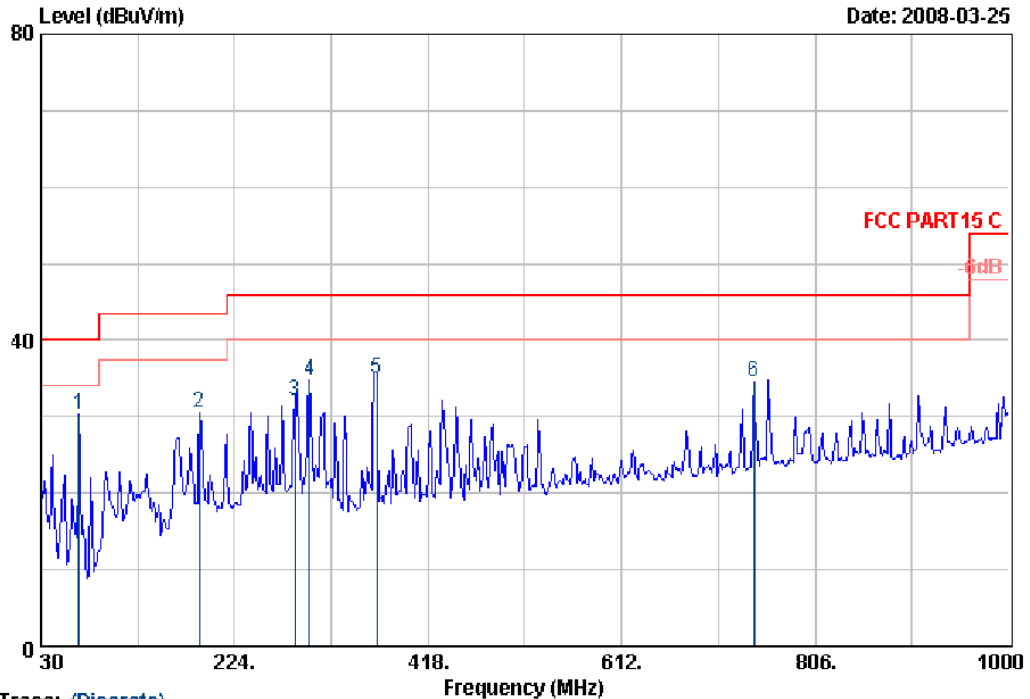
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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Data: 1 File: D:\2008 Report Data\Advanced\ACS0Q315.EMI (2)

Date: 2008-03-25



Trace: (Discrete)

Site no. : 3# Chamber Radiation Data no. : 1
 Dis. / Ant. : 3m 2598 Ant. pol. : HORIZONTAL
 Limit : FCC PART15 C
 Env. / Ins. : 24°C/56% ESVS20 Engineer : Skyle
 EUT : Contactless Smart Card Reader M/N:ACR122u
 Power Rating : DC 5V From PC Input 120v/60Hz
 Test Mode : TX Mode

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	67.83	6.02	0.92	23.38	30.32	40.00	9.68	QP
2	189.08	9.36	1.30	19.89	30.55	43.50	12.95	QP
3	284.14	13.38	1.59	17.12	32.09	46.00	13.91	QP
4	298.69	13.78	1.60	19.45	34.83	46.00	11.17	QP
5	366.59	15.43	1.76	17.78	34.97	46.00	11.03	QP
6	744.89	21.80	2.62	10.12	34.54	46.00	11.46	QP

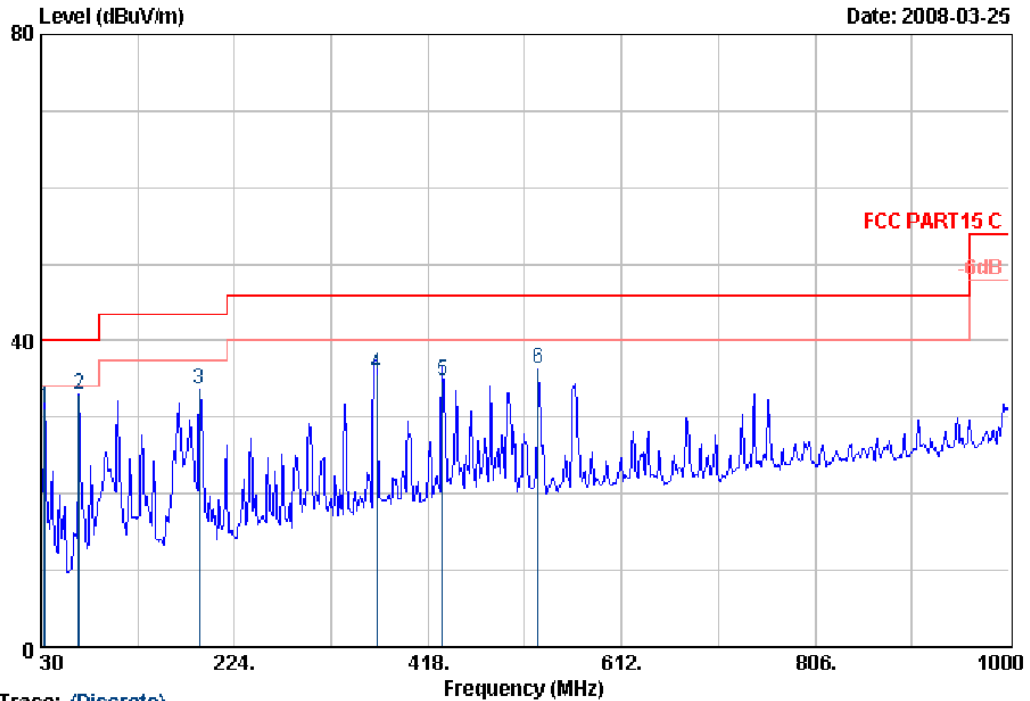
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Data: 2 File: D:\2008 Report Data\Advanced\ACS8Q315.EMI (2)

Date: 2008-03-25



Trace: (Discrete)

Site no. : 3# Chamber Radiation Data no. : 2
 Dis. / Ant. : 3m 2598 Ant. pol. : VERTICAL
 Limit : FCC PART15 C
 Env. / Ins. : 24°C/56% ESVS20 Engineer : Skyle
 EUT : Contactless Smart Card Reader M/N:ACR122u
 Power Rating : DC 5V From PC Input 120v/60Hz
 Test Mode : TX Mode

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	33.88	17.48	0.70	13.01	31.19	40.00	8.81	QP
2	67.83	6.02	0.92	26.05	32.99	40.00	7.01	QP
3	189.08	9.36	1.30	22.93	33.59	43.50	9.91	QP
4	366.59	15.43	1.76	18.45	35.64	46.00	10.36	QP
5	432.55	17.00	1.98	15.73	34.71	46.00	11.29	QP
6	528.58	18.40	2.09	15.72	36.21	46.00	9.79	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

5. FREQUENCY TOLERANCE TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	MY41440292	May 11, 07	1 Year
2.	Antenna	EMCO	3115	9607-4877	Jan. 23, 07	1.5 Year
3.	HF Cable	Hubersuhne	Sucoflex104	-	May 11, 07	1 Year
4.	Temperature controller	Terchy	MHQ-1120cl uB	A60223	May 11, 07	1 Year

5.2. Test Information

EUT:	Contactless Smart Card Reader
M/N:	ACR122U
Test Date:	Mar.25, 2008
Ambient Temperature:	23°C
Relative Humidity:	54%
Test standard:	FCC PART 15C: 15.225(e)
Test mode:	TX
Test Frequency:	13.56MHz
Test By:	Skyle

5.3. Test Procedure

The EUT was placed in an environmental test chamber and powered such that control element received normal voltage and the transmitter provided maximum RF output.

5.4. Test Results

Pass (The testing data was attached in the next page.)

Test condition		Measurement Freq (Hz)	Freq Tolerance (Hz)	Limit (Hz)	Test Result
Voltage (V)	Temperature (Degree C)				
120	-20	1356.25	25	1356	PASS
	-10	1356.08	8	1356	PASS
	0	1356.52	52	1356	PASS
	+10	1356.16	16	1356	PASS
	+20	1356.24	24	1356	PASS
	+30	1356.20	20	1356	PASS
	+40	1356.82	82	1356	PASS
	+50	1356.37	37	1356	PASS
102	+20	1356.54	54	1356	PASS
110		1356.28	28	1356	PASS
120		1356.20	20	1356	PASS
130		1356.81	81	1356	PASS
138		1356.49	49	1356	PASS
<p>NOTE: 1,Frequency stability with variation of ambient temperature was measured form -20°C to 50°C at frequency 13.56MHz and rated power input AC 120V/60Hz</p> <p>2,Frequency stability with variation of primary supply voltage was measured at 85%(120V) and 115%(138V) of rated AC power supply input voltage of 120V at frequency 13.56MHz and at a temperature of 20°C.</p> <p>3,Limit = 13.56MHz * (+/- 0.01%) = +/- 1356Hz</p>					

6. BANDWIDTH EMISSION TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	MY41440292	May 11, 07	1 Year
2.	Antenna	EMCO	3115	9607-4877	Jan. 23, 07	1.5 Year
3.	HF Cable	Hubersuhne	Sucoflex104	-	May 11, 07	1 Year

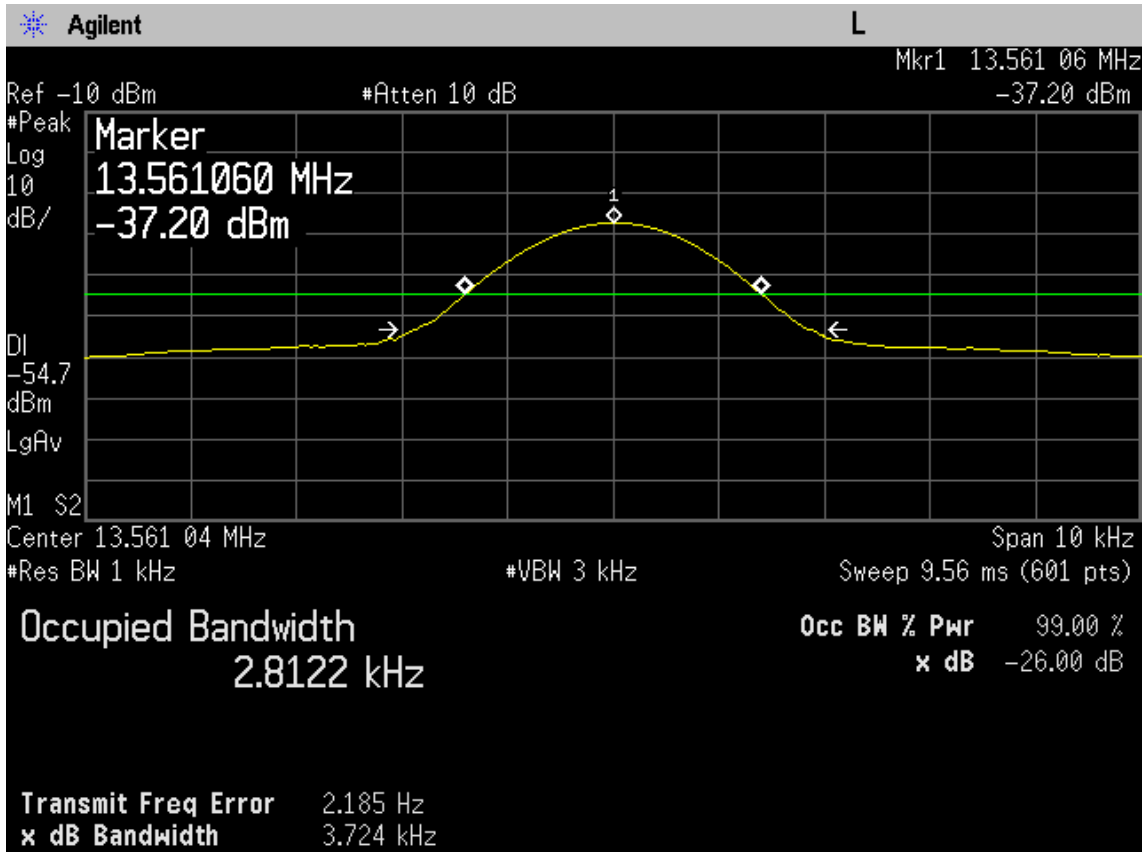
6.2. Test Information

EUT:	Contactless Smart Card Reader
M/N:	ACR122U
Test Date:	Mar.25, 2008
Ambient Temperature:	23°C
Relative Humidity:	54%
Test standard:	FCC PART 15C: 15.215
Test mode:	TX
Test Frequency:	13.56MHz
Test By:	Skyle

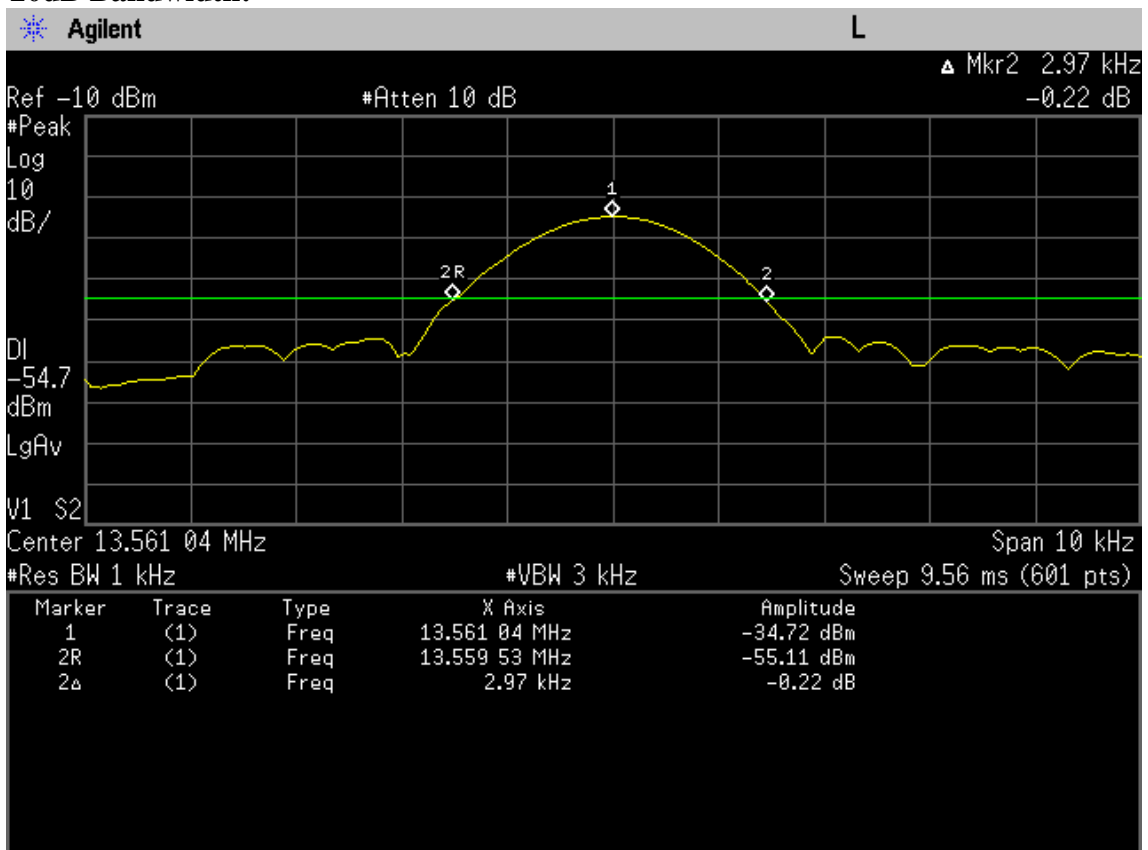
6.3. Test Results

Pass (The testing data was attached in the next page.)

99% Bandwidth:



20dB Bandwidth:



7. DEVIATION TO TEST SPECIFICATIONS

[NONE]