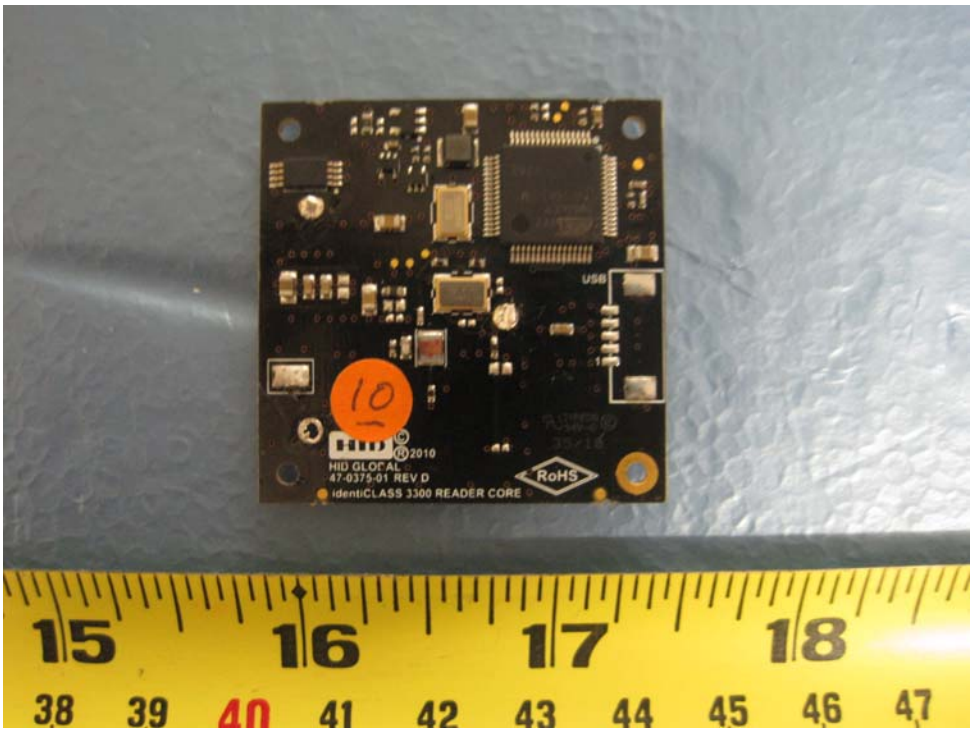
HID GLOBAL CORPORATION

RFID READER MODULE, OPERATING ON 13.56 MHZ

Model: identiCLASS 3300 Reader Core

Oct 14th 2010
Report No.: SL10100404-HID-016_3300(FCC,IC)
(This report supersedes None)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:	
David Zhang	Bai
David Zhang Test Engineer	Leslie Bai Engineering Reviewer

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Test result presented in this test report is applicable to the representative sample only.

EMC Test Report

To: FCC Part 15.207, 15.209, 15.225, RSS-GEN, RSS-210

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1 Executive Summary & EUT information

The purpose of this test programmed was to demonstrate compliance of the 13.56MHz RFID Reader Module, Model:identiCLASS 3300 Reader Core against the current Stipulated Standards.

The equipment under test radio operating frequency is13.56 MHz.

The test has demonstrated that this unit complies with stipulated standards.

EUT Information

EUT Description	:	13.56MHz RFID Reader Module
Model No	:	identiCLASS 3300 Reader Core
Serial No	:	N/A
Input Power	:	5 VDC
Classification Per Stipulated Test Standard	:	RFID Reader Module

2 TECHNICAL DETAILS

Purpose	Compliance testing of RFID Reader Module, operating on 13.56 MHz with stipulated standard
Applicant / Client	HID Global Corporation
Manufacturer	HID Global Corporation 15730 Barranca Parkway Irvine, CA 92618 USA
Laboratory performing the tests	SIEMIC Laboratories
Test report reference number	SL10100404-HID-016_3300(FCC,IC)
Date EUT received	Oct 7th 2010
Standard applied	47 CFR §15.207, 15.209, 15.225: 2010 & Canadian Standards RSS-GEN Issue 2: 2007, RSS-210 Issue 7: 2007
Dates of test (from – to)	Oct 7th-14th 2010
No of Units:	1
Equipment Category:	DXX
Model :	identiCLASS 3300 Reader Core
RF Operating Frequency (ies)	13.56 MHz (RFID)
Number of Channels :	13.56 MHz (1)
FCC ID :	JQ6- identiCLASSA
IC ID :	2236B- identiCLASA

3 MODIFICATION

NONE

4 TEST SUMMARY

The product was tested in accordance with the following specifications. All testing has been performed according to below product classification:

RFID Reader

Test Results Summary

Test Standard		Description	Pass / Fail
47 CFR Part 15.225: 2010	RSS 210 Issue 7: 2007		
15.203		Antenna Requirement	Pass
15.207(a)	RSS Gen(7.2.2)	Conducted Emissions Voltage	Pass
15.225(a)	RSS210(A2.6)	Limit in the band of 13.553 – 13.567 MHz	Pass
15.225(b)	RSS210(A2.6)	Limit in the band of 13.410 – 13.553 MHz and 13.567 – 13.710 MHz	Pass
15.225(c)	RSS210(A2.6)	Limit in the band of 13.110 – 13.410 MHz and 13.710 – 14.010 MHz	Pass
15.225(d), 15.209	RSS210(A2.6)	Limit outside the band of 13.110 – 14.010 MHz	Pass
15.225(e)	RSS210(A2.6)	Frequency Stability	Pass
	RSS-210(5.9.1)	Occupied Bandwidth	Pass

ANSI C63.4: 2009/ RSS-Gen Issue 2: 2007

PS: All measurement uncertainties are not taken into consideration for all presented test result.

5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

5.1 Antenna Requirement

Requirement(s): 47 CFR §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna requirement must meet at least one of the following:

a) Antenna must be permanently attached to the device.
b) Antenna must use a unique type of connector to attach to the device.
c) Device must be professionally installed. Installer shall be responsible for ensuring that the correct antenna is employed with the device.

1) The antenna requires a unique cable to connect to the main board which meets the requirement.

5.2 Conducted Emissions Voltage

Requirement(s): 47 CFR §15.207

Requirement:

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

Procedures:

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ±3.5dB.
4. Environmental Conditions

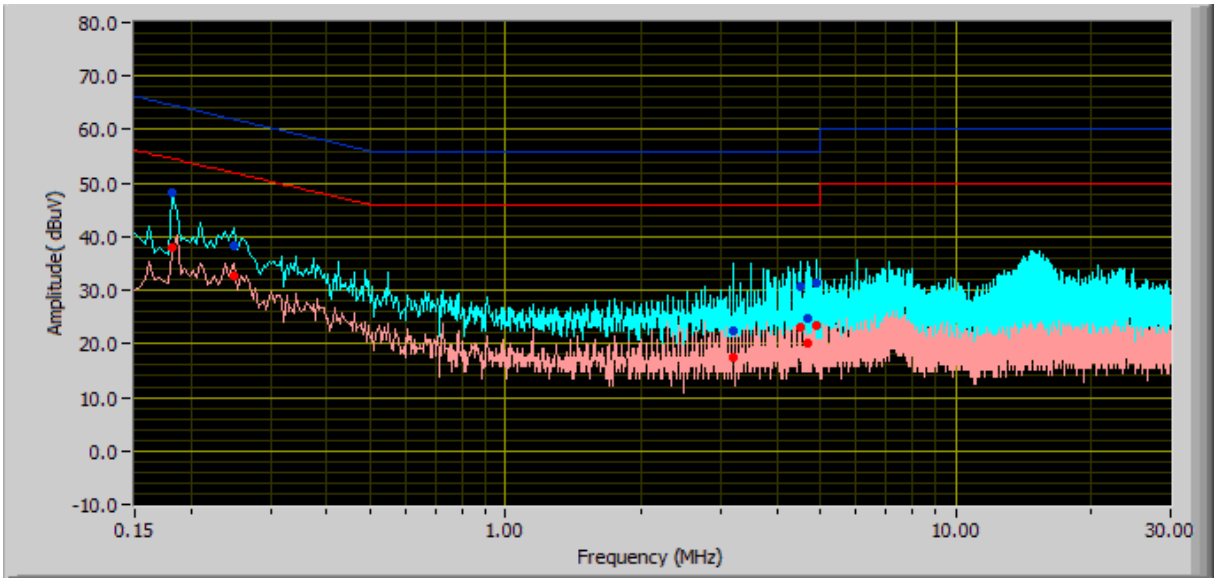
Temperature	24ºC
Relative Humidity	54%
Atmospheric Pressure	1019mbar

   Test Date : Oct 7th-14th 2010
   Tested By : David Zhang

Results: Pass

Test configuration 1 : identiCLASS 3300 Reader Core with antenna ID1

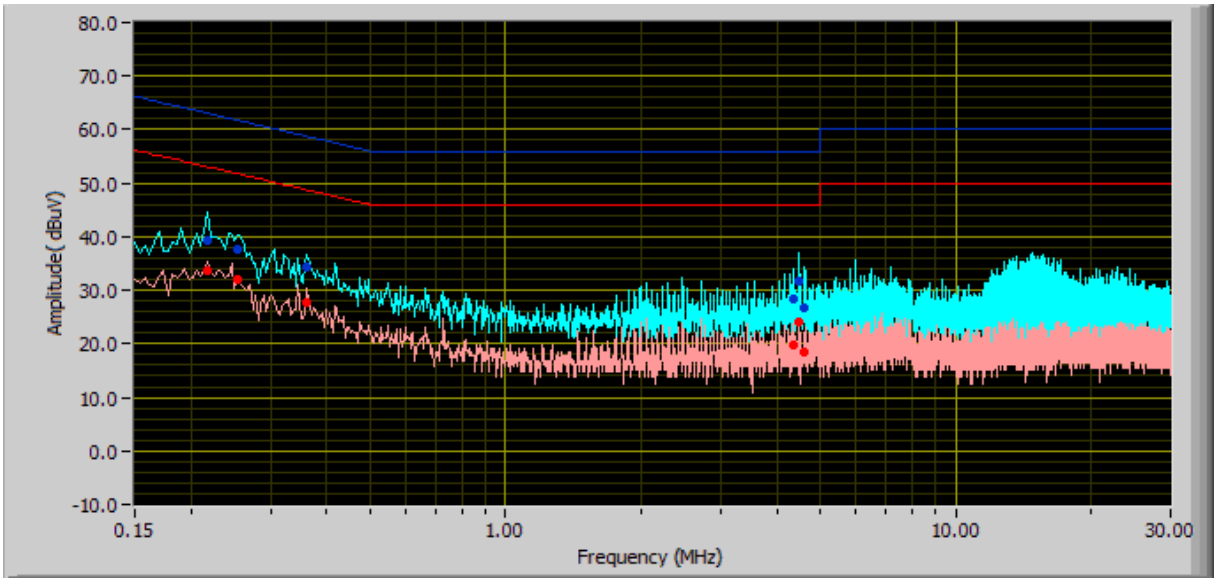
Quasi-Peak Limit Average Limit



120VAC, Phase Line

Frequency (MHz)	QP Value (dBµV)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Avg Value (dBµV)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Line
0.18	48.29	64.55	Pass	-16.27	38.03	54.55	Pass	-16.53	L
0.25	38.23	61.86	Pass	-23.63	32.56	51.86	Pass	-19.30	L
4.89	31.30	56.00	Pass	-24.70	23.51	46.00	Pass	-22.49	L
4.53	30.82	56.00	Pass	-25.18	23.12	46.00	Pass	-22.88	L
4.71	24.62	56.00	Pass	-31.38	20.18	46.00	Pass	-25.82	L
3.19	22.27	56.00	Pass	-33.73	17.52	46.00	Pass	-28.48	L

Quasi-Peak Limit Average Limit

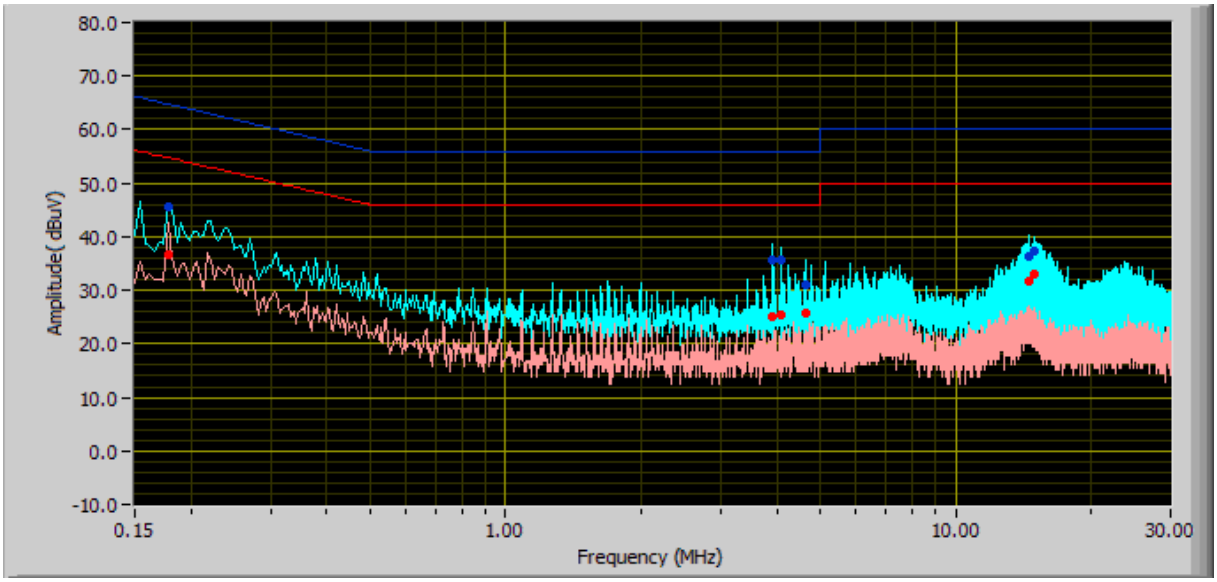


120VAC, Neutral Line

Frequency (MHz)	QP Value (dBµV)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Avg Value (dBµV)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Line
0.22	39.26	63.02	Pass	-23.76	33.67	53.02	Pass	-19.36	N
4.47	31.67	56.00	Pass	-24.33	24.10	46.00	Pass	-21.90	N
0.25	37.64	61.73	Pass	-24.09	31.99	51.73	Pass	-19.74	N
4.60	26.68	56.00	Pass	-29.32	18.44	46.00	Pass	-27.56	N
4.34	28.47	56.00	Pass	-27.53	19.80	46.00	Pass	-26.20	N
0.36	34.21	58.73	Pass	-24.52	27.85	48.73	Pass	-20.88	N

Test configuration 2 : identiCLASS 3300 Reader Core with antenna ID3

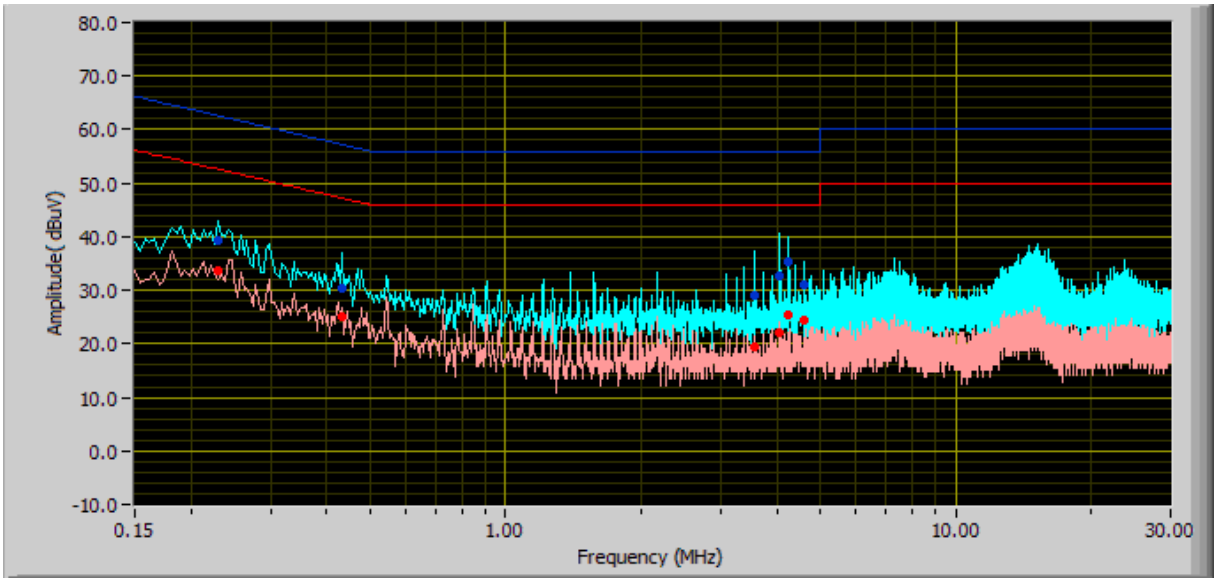
Quasi-Peak Limit Average Limit



120VAC, Phase Line

Frequency (MHz)	QP Value (dBµV)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Avg Value (dBµV)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Line
3.93	35.66	56.00	Pass	-20.34	25.17	46.00	Pass	-20.83	L
4.11	35.66	56.00	Pass	-20.34	25.50	46.00	Pass	-20.50	L
0.18	45.71	64.74	Pass	-19.03	36.66	54.74	Pass	-18.08	L
14.49	36.31	60.00	Pass	-23.69	31.62	50.00	Pass	-18.38	L
14.92	37.38	60.00	Pass	-22.62	33.11	50.00	Pass	-16.89	L
4.65	31.00	56.00	Pass	-25.00	25.79	46.00	Pass	-20.21	L

Quasi-Peak Limit Average Limit



120VAC, Neutral Line

Frequency (MHz)	QP Value (dBµV)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Avg Value (dBµV)	Class B Limit (dB)	Pass / Fail	Margin (dB)	Line
4.05	32.80	56.00	Pass	-23.20	22.26	46.00	Pass	-23.74	N
4.23	35.28	56.00	Pass	-20.72	25.31	46.00	Pass	-20.69	N
3.57	29.14	56.00	Pass	-26.86	19.60	46.00	Pass	-26.40	N
0.23	39.17	62.57	Pass	-23.40	33.58	52.57	Pass	-18.99	N
0.43	30.47	57.19	Pass	-26.72	25.12	47.19	Pass	-22.07	N
4.59	31.15	56.00	Pass	-24.85	24.27	46.00	Pass	-21.73	N

5.3 Radiated Emission < 30MHz (9kHz - 30MHz, H-Field)

Requirement(s): 47 CFR §15.225 & RSS-210 (A2.6)

Procedures: For < 30MHz, Radiated emissions were measured according to ANSI C63.4. The EUT was set to transmit at the highest output power. The EUT was set 10 meter away from the measuring antenna. The loop antenna was positioned 1 meter above the ground from the centre of the loop. The measuring bandwidth was set to 10 kHz. (Note: During testing the receive antenna was rotated about its axis to maximize the emission from the EUT.)

The limit is converted from microvolt/meter to decibel microvolt/meter.

Sample Calculation: Corrected Amplitude = Raw Amplitude (dBμV/m) + ACF (dB) + Cable Loss(dB) – Distance Correction Factor

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, is +/- 6dB.
4. Environmental Conditions

Temperature	22°C
Relative Humidity	52%
Atmospheric Pressure	1019mbar

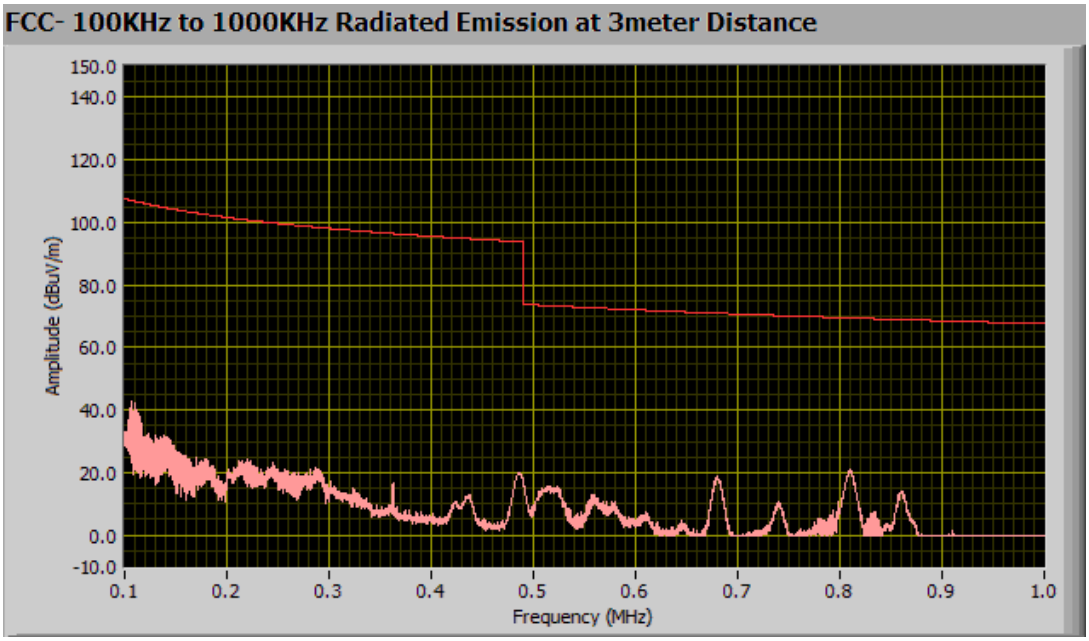
Test Date : Oct 7th-14th 2010
Tested By : David Zhang

Results: Pass

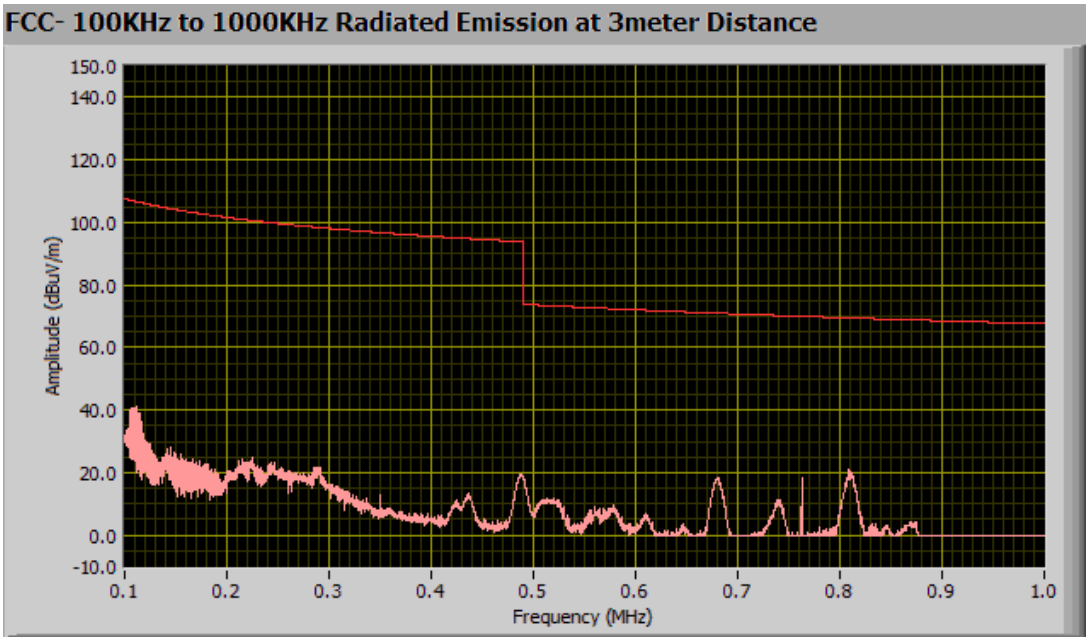
100KHz ~ 1MHz

Test configuration 1 : identiCLASS 3300 Reader Core with antenna ID1

Dipole Antenna at 0 degree General Emission Limit @ 3 Meter

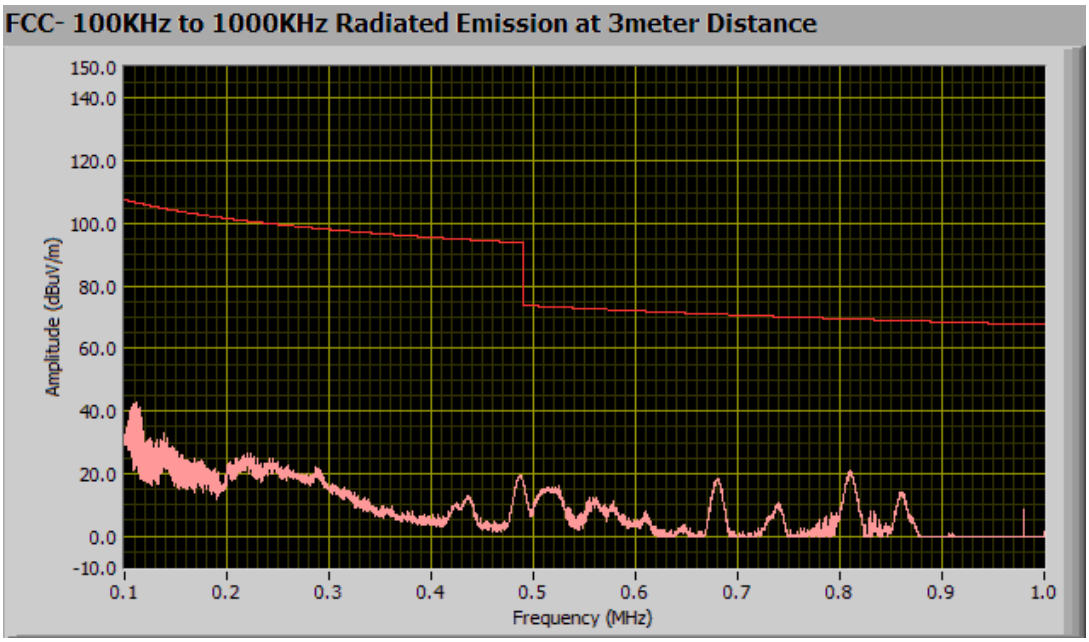


Dipole Antenna at 90 degree

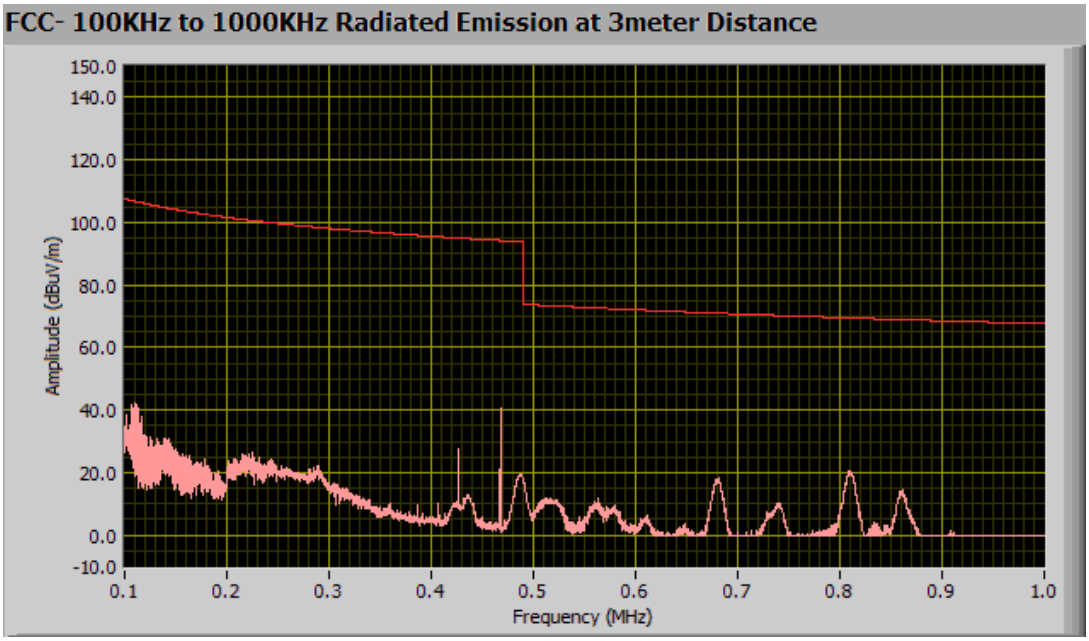


Test configuration 2 : identiCLASS 3300 Reader Core with antenna ID3

Dipole Antenna at 0 degree General Emission Limit @ 3 Meter



Dipole Antenna at 90 degree

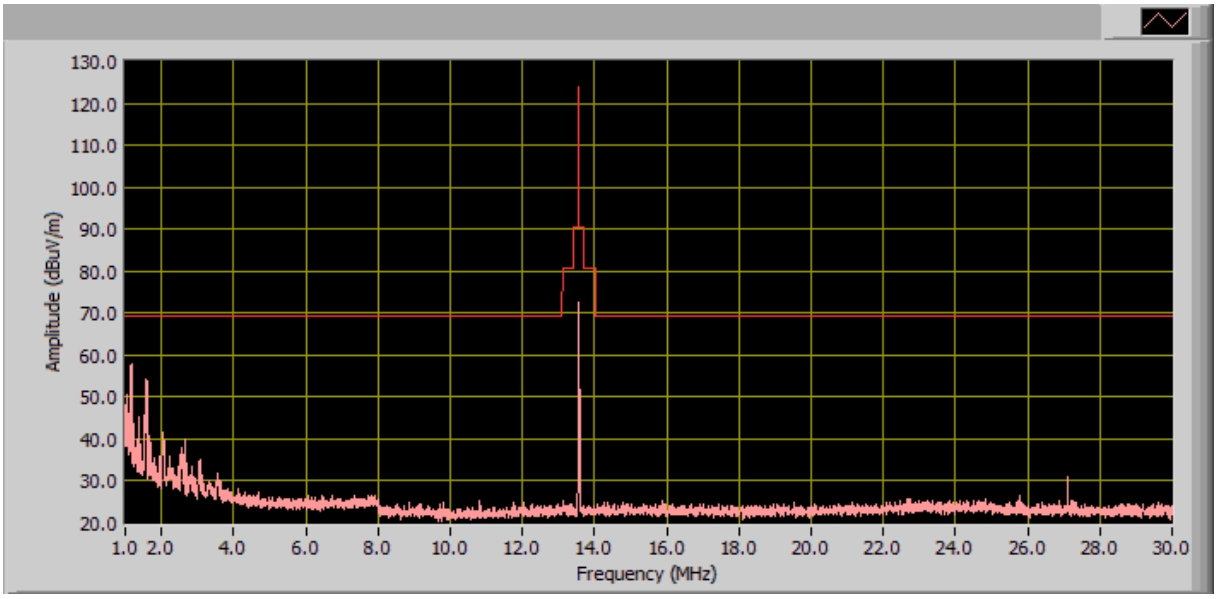


1MHz ~ 30MHz

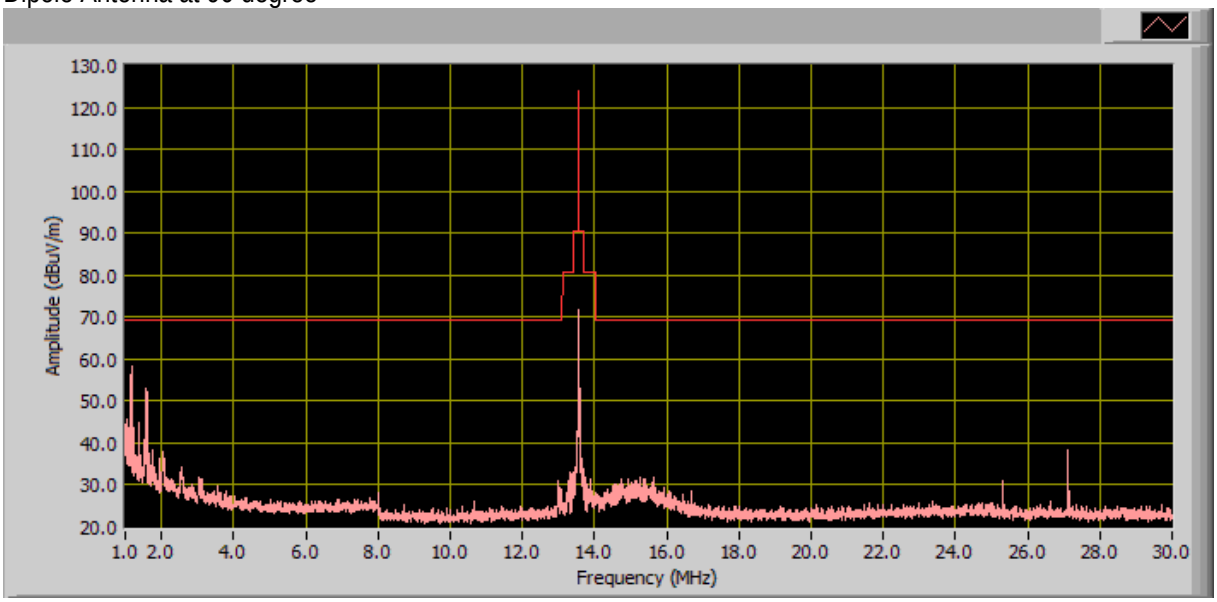
Test configuration 1 : identiCLASS 3300 Reader Core with antenna ID1

Dipole Antenna at 0 degree

General Emission Limit @ 3 meter



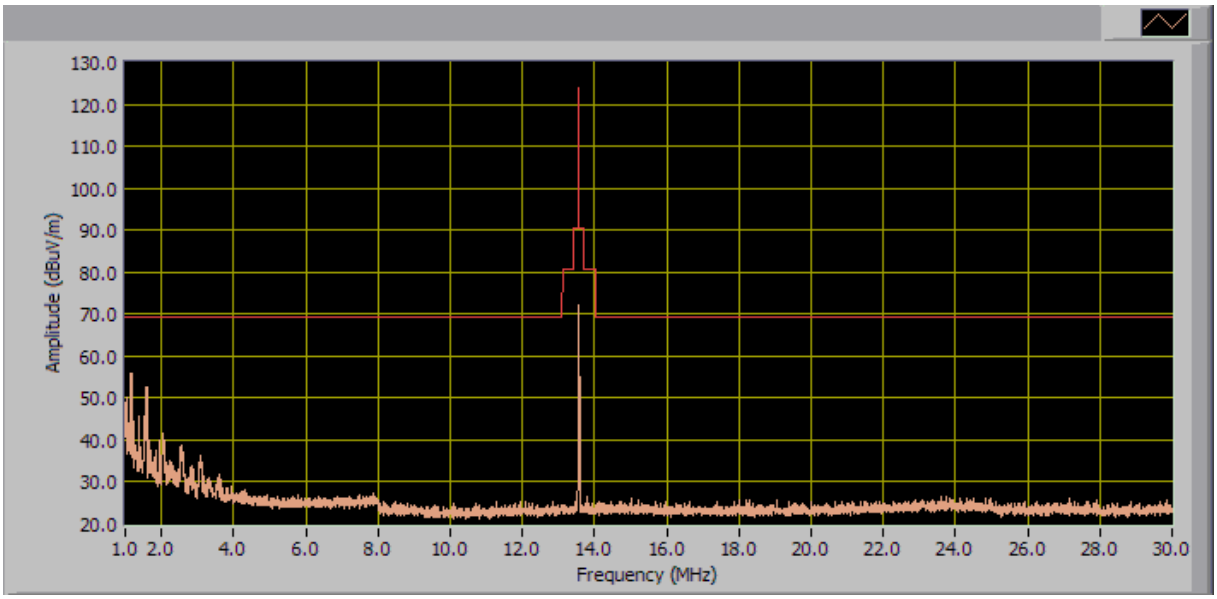
Dipole Antenna at 90 degree



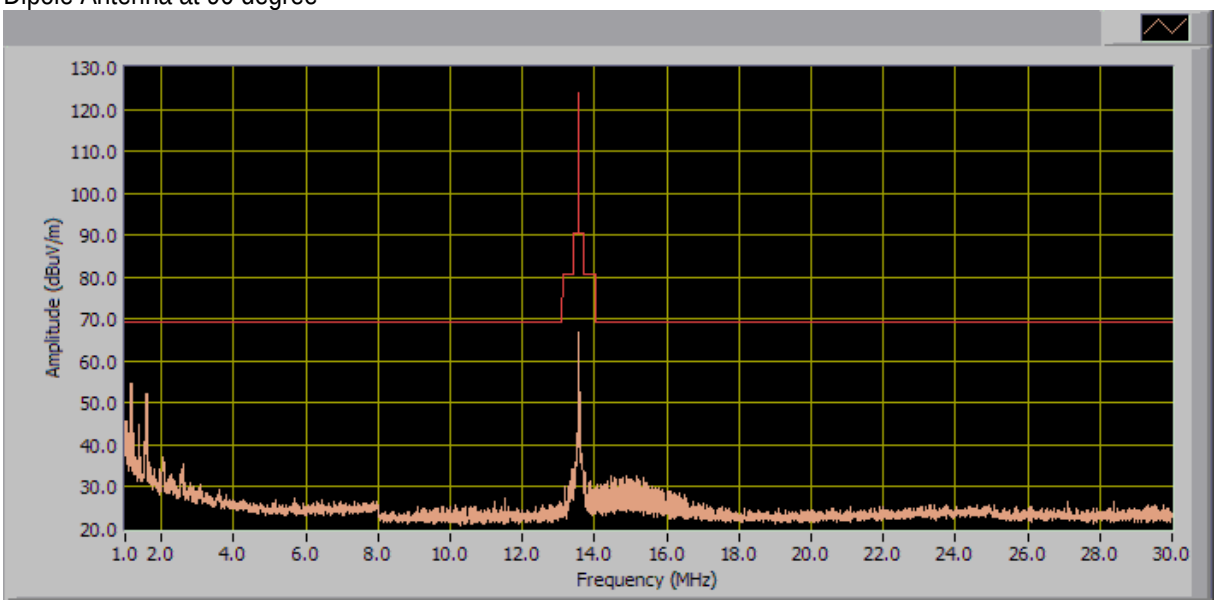
Test configuration 2 : identiCLASS 3300 Reader Core with antenna ID3

Dipole Antenna at 0 degree

General Emission Limit @ 3 meter



Dipole Antenna at 90 degree



5.4 Radiated Emissions > 30 MHz (30MHz - 1 GHz, E-Field)

Requirement(s): 47 CFR §15.209; 47 CFR §15.225(d) & RSS-210 (A2.6)

Procedures: For > 30MHz, Radiated emissions were measured according to ANSI C63.4. The EUT was set to transmit at the highest output power. The EUT was set 10 meter away from the measuring antenna. The Log periodic antenna was positioned 1 meter above the ground from the centre of the antenna. The measuring bandwidth was set to 120 kHz. (Note: During testing the receive antenna was raise from 1~4 meters to maximize the emission from the EUT.)

The limit is converted from microvolt/meter to decibel microvolt/meter.

Sample Calculation: Corrected Amplitude = Raw Amplitude (dBμV/m) + ACF (dB) + Cable Loss(dB) – Distance Correction Factor

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, is +/- 6dB.
4. Environmental Conditions

Temperature	22°C
Relative Humidity	53%
Atmospheric Pressure	1019mbar

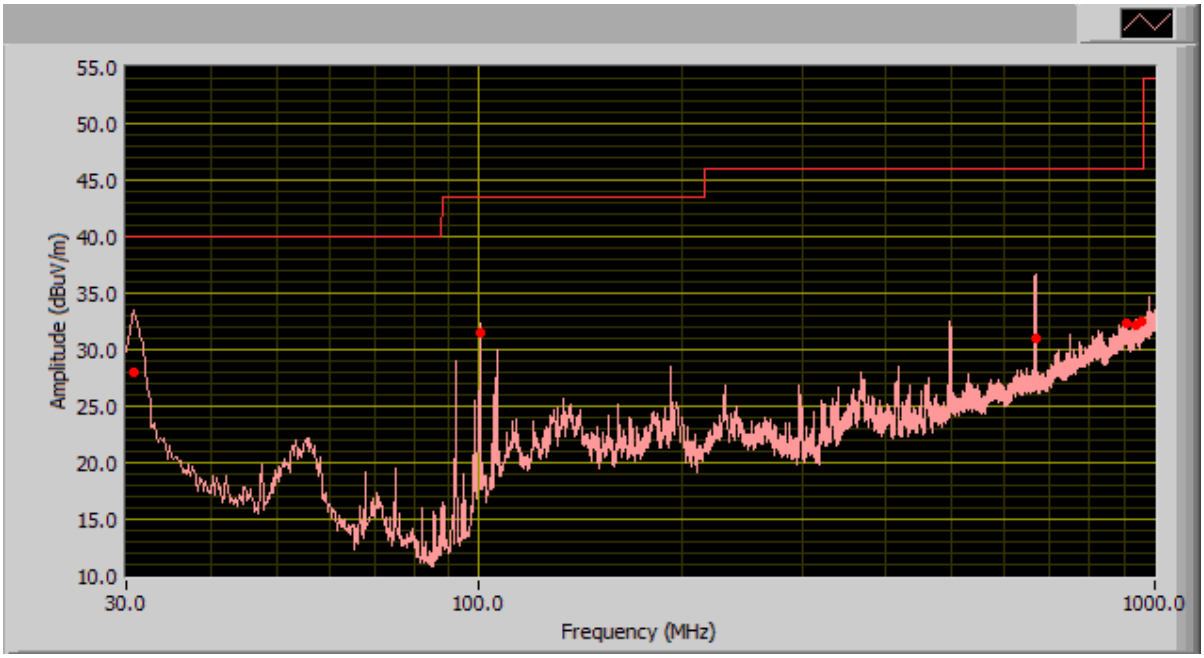
Test Date : Oct 7th-14th 2010
Tested By : David Zhang

Results: Pass

Test configuration 1 : identiCLASS 3300 Reader Core with antenna ID1, SAM card ID0

30MHz ~ 1000MHz

General Emission Limit @ 3 meter



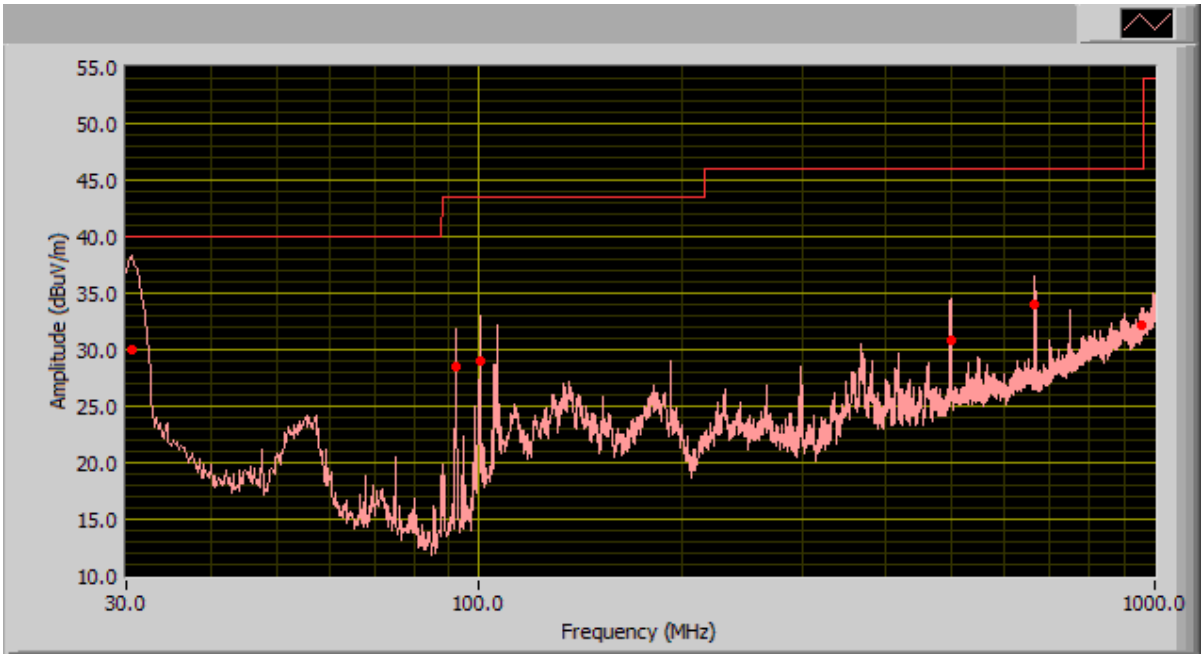
30MHz ~1000MHz Result @ 3m

Frequency (MHz)	Corrected Quasi-Peak (dBµV/m) @ 3m	Turntable position (deg)	Polarity	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)
30.64	27.93	53.00	V	118.00	40.00	-12.07
666.16	31.05	133.00	H	186.00	46.00	-14.95
100.23	31.45	70.00	V	109.00	43.50	-12.05
935.98	32.09	276.00	H	291.00	46.00	-13.91
958.84	32.46	360.00	V	385.00	46.00	-13.54
906.76	32.31	95.00	V	375.00	46.00	-13.69

Test configuration 2 : identiCLASS 3300 Reader Core with antenna ID1, SAM card ID1

30MHz ~ 1000MHz

General Emission Limit @ 3 meter



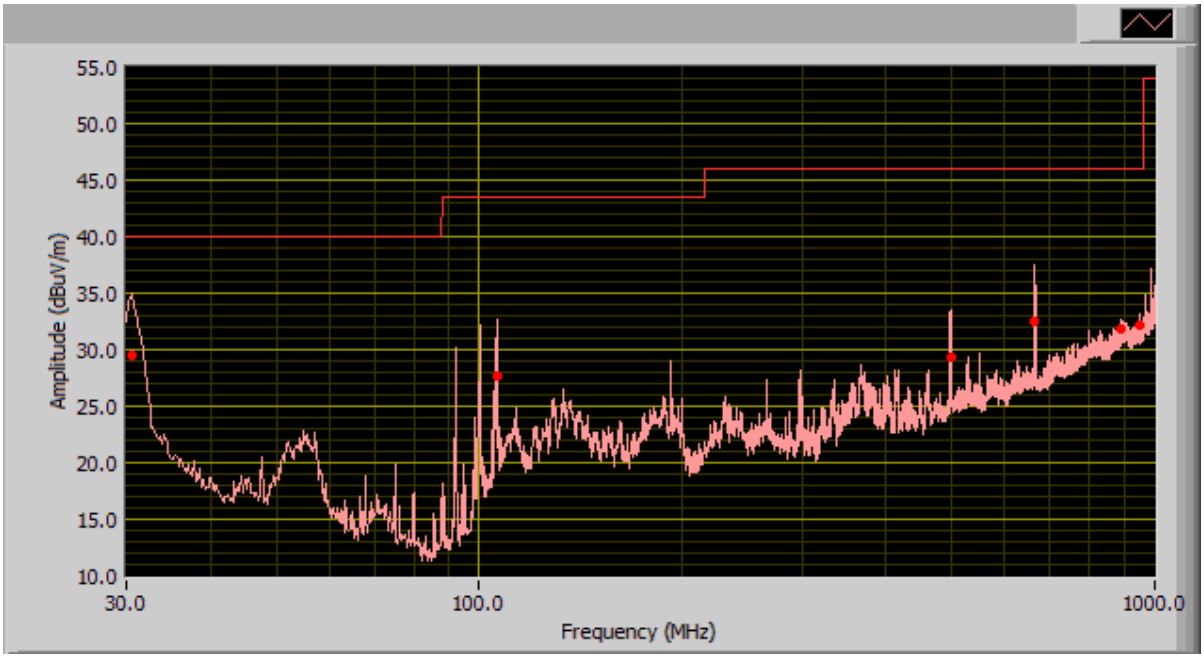
30MHz ~1000MHz Result @ 3m

Frequency (MHz)	Corrected Quasi-Peak (dBµV/m) @ 3m	Turntable position (deg)	Polarity	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)
30.56	29.95	313.00	V	126.00	40.00	-10.05
663.71	33.95	101.00	H	103.00	46.00	-12.05
100.28	28.99	109.00	V	121.00	43.50	-14.51
499.67	30.81	175.00	V	103.00	46.00	-15.19
92.26	28.58	207.00	V	114.00	43.50	-14.92
954.31	32.20	317.00	V	313.00	46.00	-13.80

Test configuration 3 : identiCLASS 3300 Reader Core with antenna ID3, SAM card ID0

30MHz ~ 1000MHz

General Emission Limit @ 3 meter



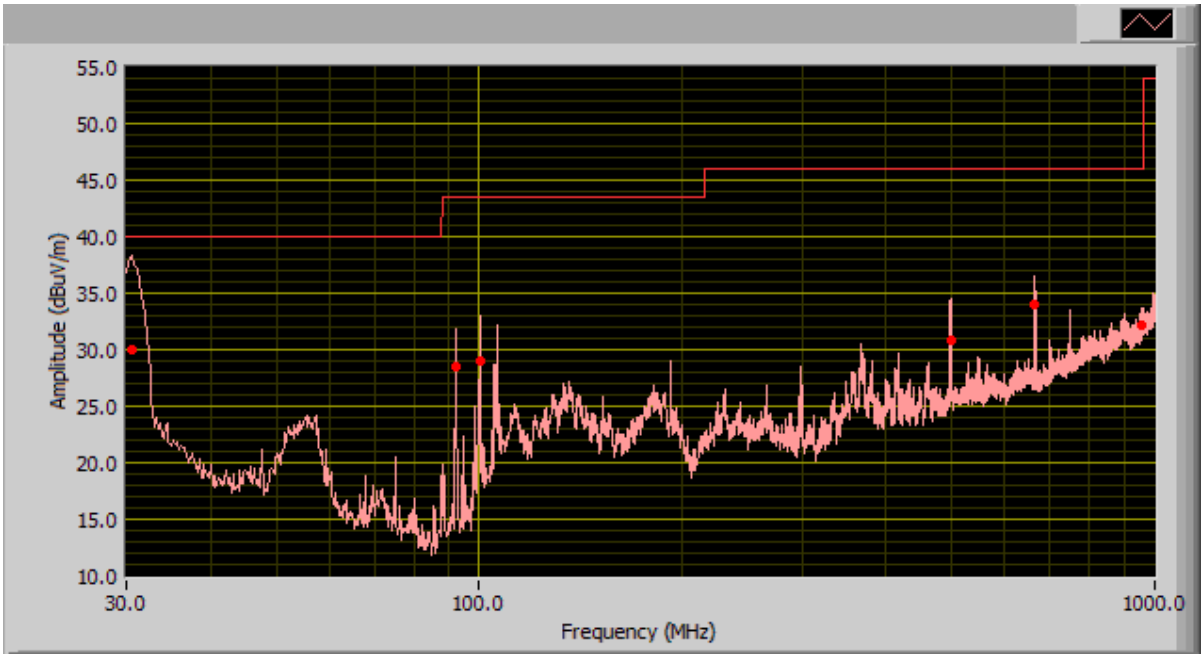
30MHz ~1000MHz Result @ 3m

Frequency (MHz)	Corrected Quasi-Peak (dBµV/m) @ 3m	Turntable position (deg)	Polarity	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)
30.62	29.51	149.00	V	103.00	40.00	-10.49
663.69	32.43	94.00	H	112.00	46.00	-13.57
106.46	27.58	224.00	V	111.00	43.50	-15.92
499.67	29.30	187.00	V	108.00	46.00	-16.70
949.09	32.08	18.00	V	261.00	46.00	-13.92
890.88	31.91	67.00	V	173.00	46.00	-14.09

Test configuration 4 : identiCLASS 3300 Reader Core with antenna ID3, SAM card ID1

30MHz ~ 1000MHz

General Emission Limit @ 3 meter



30MHz ~1000MHz Result @ 3m

Frequency (MHz)	Corrected Quasi-Peak (dBµV/m) @ 3m	Turntable position (deg)	Polarity	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)
30.56	29.95	313.00	V	126.00	40.00	-10.05
663.71	33.95	101.00	H	103.00	46.00	-12.05
100.28	28.99	109.00	V	121.00	43.50	-14.51
499.67	30.81	175.00	V	103.00	46.00	-15.19
92.26	28.58	207.00	V	114.00	43.50	-14.92
954.31	32.20	317.00	V	313.00	46.00	-13.80

5.5 Frequency Stability

Requirement(s): 47 CFR §15.225(e) & RSS-210 (A2.6)

Procedures: Frequency Stability was measured according to 47 CFR §2.1055. Measurement was taken with spectrum analyzer. The spectrum analyzer bandwidth and span was set to read in hertz. A voltmeter was used to monitor when varying the voltage.

Limit: ±0.01% of 13.56 MHz = 1356 Hz, ±0.01% of 125 kHz = 125 Hz

Environmental Conditions	Temperature	23°C
	Relative Humidity	57%
	Atmospheric Pressure	1019mbar

Test Date : Oct 7th-14th 2010
Tested By : David Zhang

Results: Pass

Frequency Stability versus Temperature: The Frequency tolerance of the carrier signal shall be maintained within ± 0.01% of the operating frequency over a temperature variation of -20ºC to +50ºC at normal supply voltage.

Reference Frequency: 13.5635170 MHz at -20°C and +50ºC

Temperature (ºC)	Measured Freq. (MHz)	Freq. Drift (Hz)	Freq. Deviation (Limit: 0.01%)	Pass/Fail
50	13.563483	34	<0.01	Pass
40	13.563493	24	<0.01	Pass
30	13.563501	16	<0.01	Pass
20	Reference (13.5635170 MHz)			
10	13.563491	26	<0.01	Pass
0	13.563496	21	<0.01	Pass
-10	13.563501	16	<0.01	Pass
-20	13.563503	14	<0.01	Pass

Frequency Stability versus Input Voltage: The Frequency tolerance of the carrier signal shall be maintained within ± 0.01%, the frequency of the transmitter was measured at 85% and at 115% of the rated power supply voltage at 20ºC environmental temperature.

Carrier Frequency: 13.5635170 MHz at 20°C at 5VDC

Measured Voltage ±15% of nominal (DC)	Measured Freq. (MHz)	Freq. Drift (Hz)	Freq. Deviation (Limit: 0.01%)	Pass/Fail
4.25	13.563500	17	<0.01	Pass
5.75	13.563493	24	<0.01	Pass

5.6 Fundamental Field Strength Test Result

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, is +/- 6dB.
4. Environmental Conditions

Temperature	23°C
Relative Humidity	54%
Atmospheric Pressure	1019mbar

Test Date : Oct 7th-14th 2010
Tested By : David Zhang

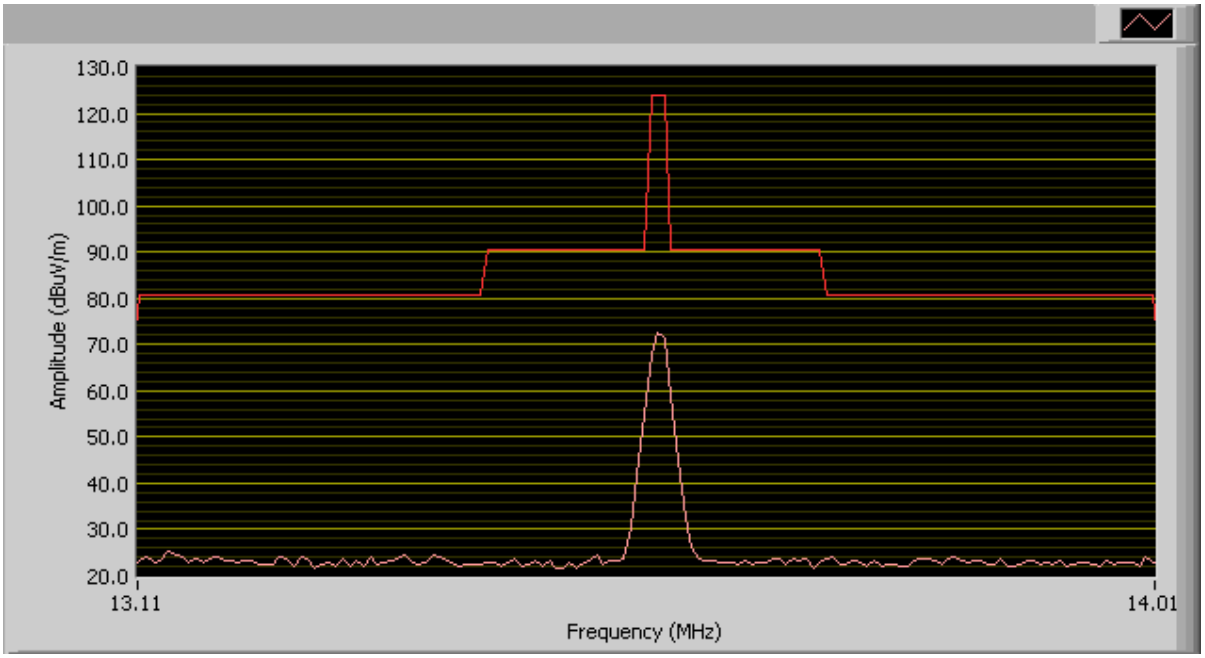
Test Requirement :

13.56 MHz ---The field strength of any emissions within allowed operating band shall not exceed 10mV/m at 30 meters.

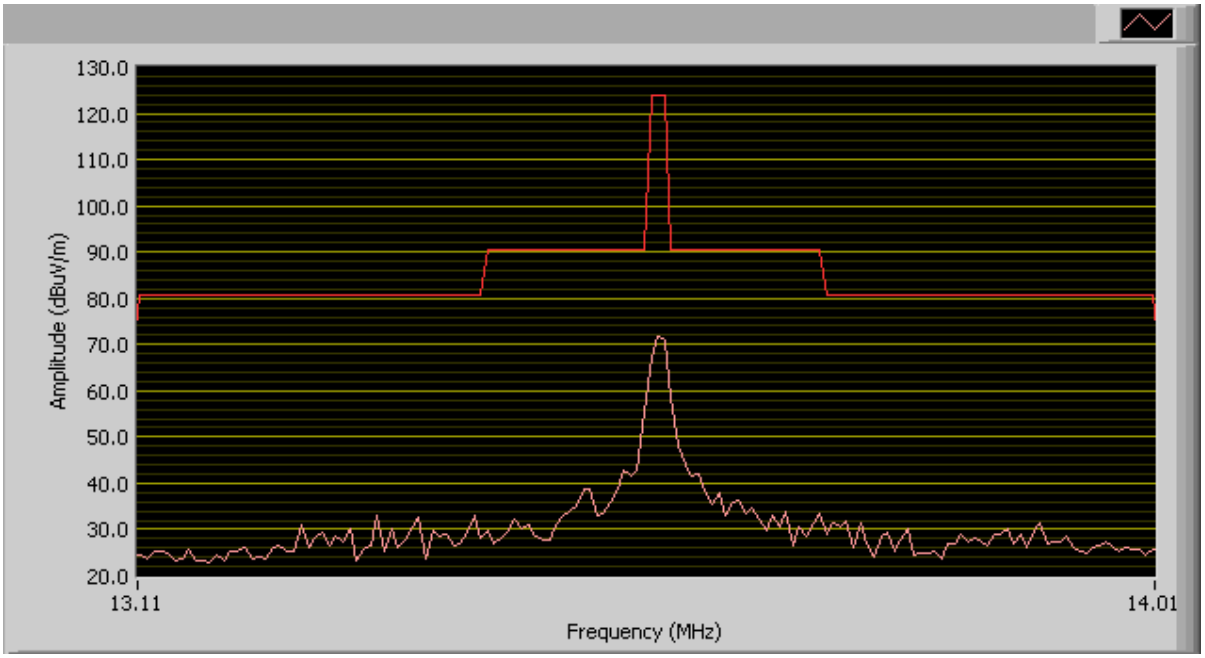
Test configuration 1 : identiCLASS 3300 Reader Core with antenna ID1

Dipole Antenna at 0 degree

General Emission Limit @ 3 meter



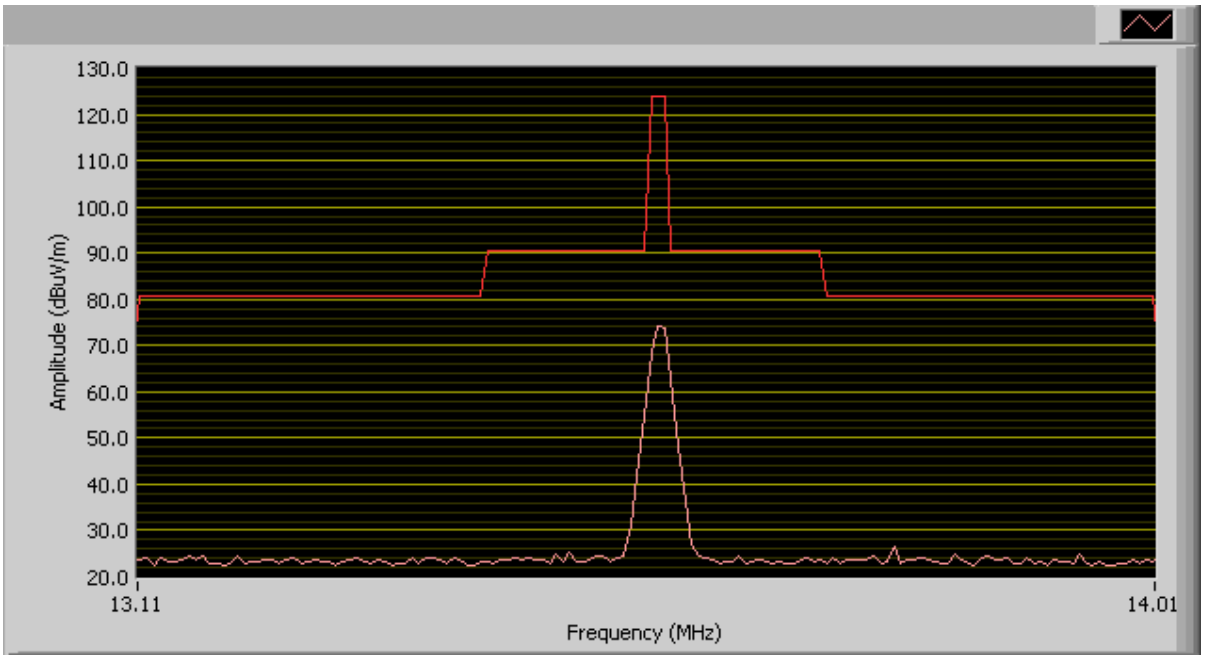
Dipole Antenna at 90 degree



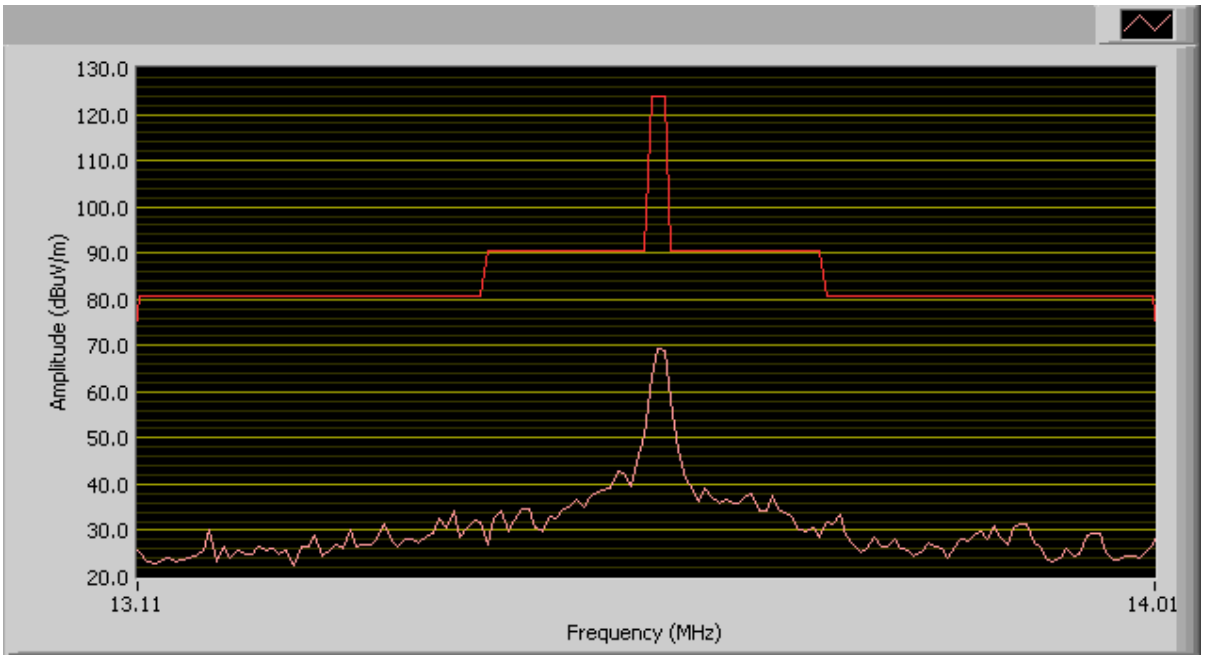
Test configuration 2 : identiCLASS 3300 Reader Core with antenna ID3

Dipole Antenna at 0 degree

General Emission Limit @ 3 meter



Dipole Antenna at 90 degree



5.7 Occupied Bandwidth

Requirement(s): RSS-210 (5.9.1)

Procedures: Occupied Bandwidth was measured according to RSS-210 (5.9.1). Measurement was taken with spectrum analyzer. The spectrum analyzer bandwidth and span was set to read in hertz.

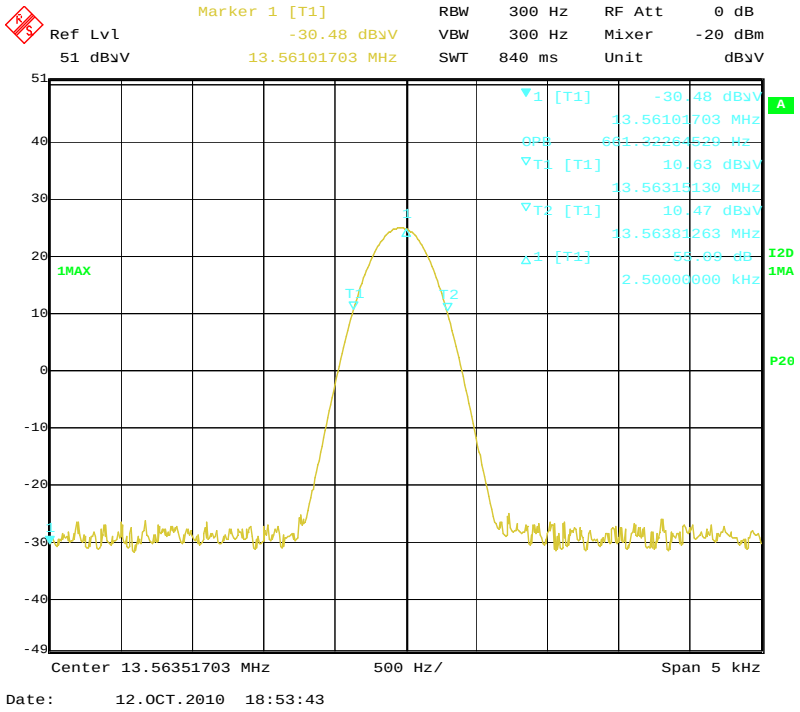
Environmental Conditions	Temperature	23°C
	Relative Humidity	53%
	Atmospheric Pressure	1019mbar

Test Date : Oct 7th-14th 2010
Tested By : David Zhang

Results: Pass

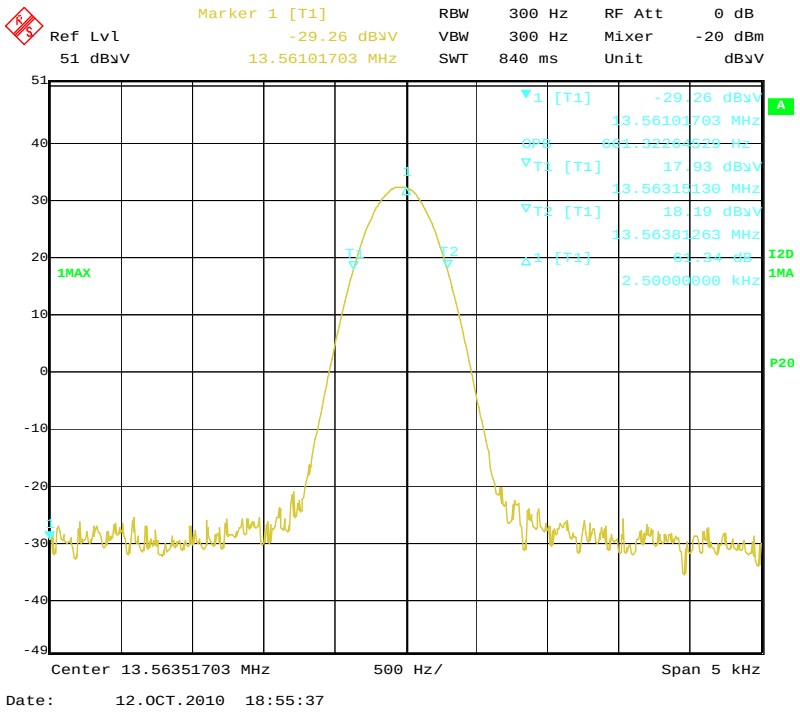
Test configuration 1 : identiCLASS 3300 Reader Core with antenna ID1

Plots: 13.56 MHz



Test configuration 2 : identiCLASS 3300 Reader Core with antenna ID3

Plots: 13.56 MHz



Annex A. TEST INSTRUMENT & METHOD

Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

Instrument	Model	Serial #	Calibration Due
Conducted Emissions			
R & S Receiver	ESIB 40	100179	05/19/2011
R&S LISN	ESH2-Z5	861741/013	05/18/2011
CHASE LISN	MN2050B	1018	05/18/2011
Radiated Emissions			
Spectrum Analyzer	8564E	1937A01160	05/17/2011
R & S Receiver	ESIB 40	100179	05/19/2011
R&S LISN	ESH2-Z5	838979/005	5/18/2011
CHASE LISN	MN2050B	1018	05/18/2011
Antenna(1 ~18GHz)	3115	10SL0059	06/2/2011
Sunol Sciences, Inc. antenna (30MHz~2GHz)	JB1	A030702	06/1/2011
ETS-Lingren Loop Antenna	6512	00049120	07/18/2011
Pre-Amplifier(1 ~ 26GHz)	8449	3008A00715	05/17/2011
Horn Antenna (18~40GHz)	AH-840	101013	06/2/2011
Microwave Pre-Amp (18~40GHz)	PA-840	181251	Every 2000 Hours
DMM	Fluke	73III	05/17/2011
Variac	KRM	AEEC-2090	Functional verification
Environment Chamber	Test Equity	1007H	06/01/2011

Annex A.ii. CONDUCTED EMISSIONS TEST DESCRIPTION

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.

2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.

3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.

4. All other supporting equipments were powered separately from another main supply.

Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.

2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.

3. High peaks, relative to the limit line, were then selected.

4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 KHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.

5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

Sample Calculation Example

At 20 MHz limit = 250 μV = 47.96 dBμV

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dBμV
(Calibrated for system losses)

Therefore, Q-P margin = 47.96 – 40.00 = 7.96 i.e. 7.96 dB below limit

Annex A. iii RADIATED EMISSIONS TEST DESCRIPTION

EUT Characterisation

EUT characterisation, over the frequency range from 100kHz – 1GHz to 10th Harmonic , was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

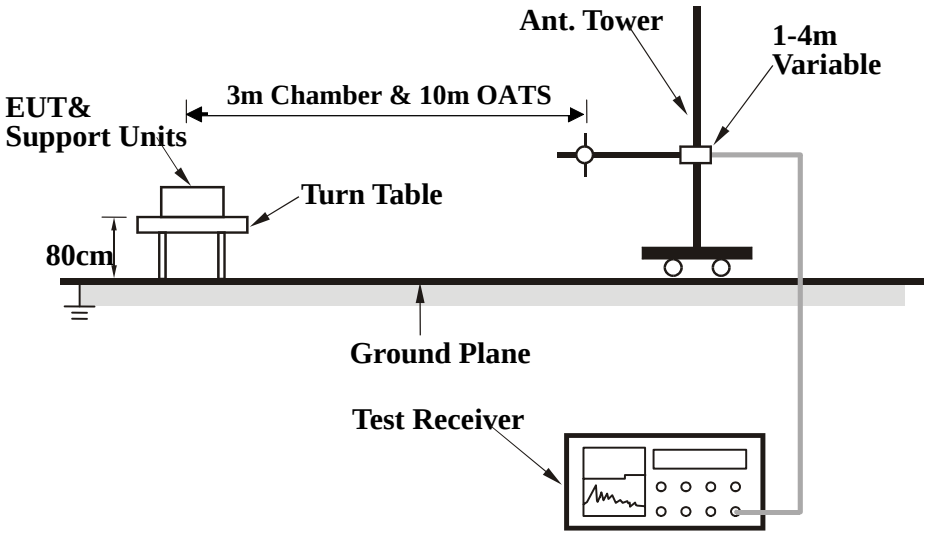
The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred; clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS) at 10m distance.

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.

2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.

3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



Test Method

The following procedure was performed to determine the maximum emission axis of EUT:
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 antenna 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. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

Final Radiated Emission Measurement
1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.

2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.

3. For emission frequencies measured below 1 GHz, set the spectrum analyzer on a 100 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.

5. Repeat step 4 until all frequencies need to be measured were complete.

6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100 kHz	100 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Sample Calculation Example

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

Peak = Reading + Corrected Factor

where
Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)
And the average value is

Average = Peak Value + Duty Factor or
Set RBW = 1MHz, VBW = 10Hz.

Note :
If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.

Annex B. TEST SETUP PHOTOGRAPHS

Please See Attachment

Annex B. i. EUT INTERNAL PHOTOGRAPHS

Please see attachment

Annex B. ii. EUT EXTERNAL PHOTOGRAPHS

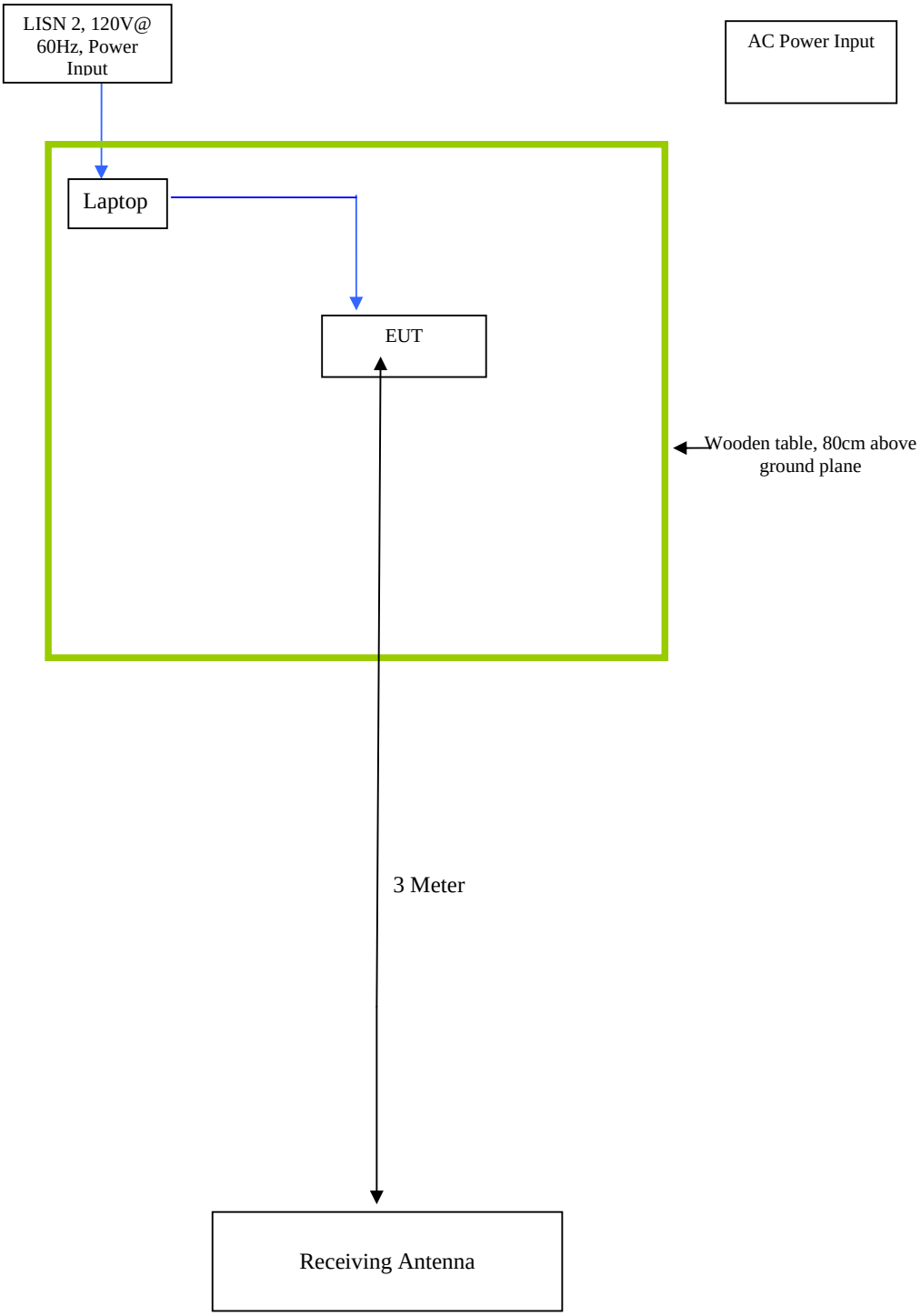
Please see attachment

Annex C. SUPPORTING EQUIPMENT DESCRIPTION

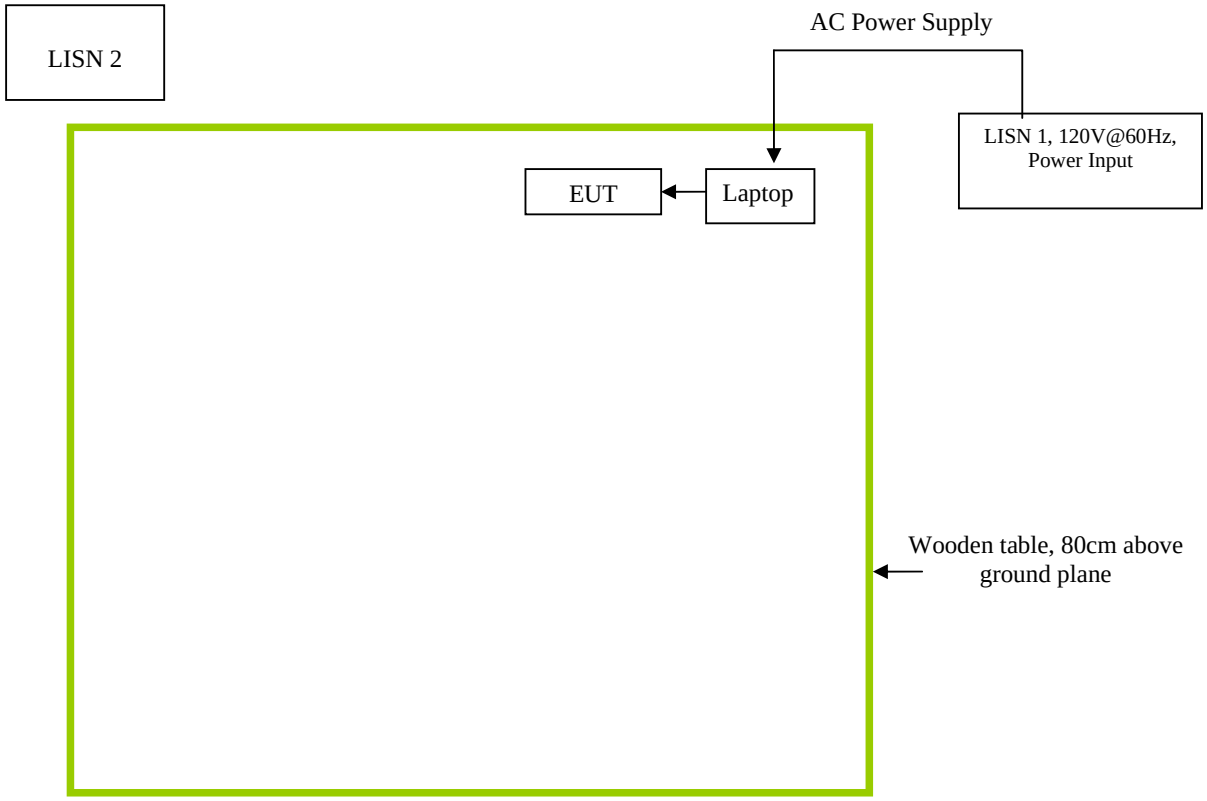
The following is a description of supporting equipment and details of cables used with the EUT.

Equipment Description (Including Brand Name)	Model & Serial Number	Cable Description (List Length, Type & Purpose)
Laptop/Dell	Vostro 1310/9Q0314J	Shielded USB Cable,100cm

Block Configuration Diagram for Radiated Emission



Block Configuration Diagram for Conducted Emission



Annex C. EUT OPERATING CONDITIONS

The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
Emissions Testing	The EUT was controlled by itself.
Others Testing	The EUT was controlled by itself.

Annex D USER MANUAL, BLOCK & CIRCUIT DIAGRAM

Please see attachment

Annex E SIEMIC ACCREDITATION

SIEMIC ACCREDITATION DETAILS: A2LA 17025 & ISO Guide 65 : 2742.01 , 2742.2

ilac-MRA

THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

SIEMIC LABORATORIES
San Jose, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 18 June 2005*).

Presented this 11th day of July 2008.

President
For the Accreditation Council
Certificate Number 2742.01
Valid to September 30, 2010

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED PRODUCT CERTIFICATION BODY

A2LA has accredited

SIEMIC INC.

San Jose, CA

for technical competence as a

Product Certification Body

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC Guide 65:1996 *General requirements for bodies operating product certification systems*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system for a Telecommunications Certification Body (TCB) meeting FCC (U.S.), IDA (Singapore) and IC (Canada) requirements.

Presented this 9th day of January 2009.

President
For the Accreditation Council
Certificate Number: 2742.02
Valid to: September 30, 2010

For the product certification schemes to which this accreditation applies, please refer to the certification body's Scope of Accreditation.

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 65:1996

SIEMIC INC.
2206 Ringwood Ave.
San Jose, CA 95131
Mr. Snell Leong (Authorized Representative) Phone: 408 526 1188
www.siemic.com

PRODUCT CERTIFICATION CONFORMITY ASSESSMENT BODY (CAB)

Valid to: September 30, 2010 Certificate Number: 2742.02

In recognition of the successful completion of the A2LA Certification Body Accreditation Program evaluation, including the US Federal Communications Commission (FCC), Industry Canada (IC) and Singapore (IDA) requirements for the indicated types of product certifications, accreditation is granted to this organization to perform the following product certification schemes:

Economy	Scope
Federal Communication Commission - (FCC)	
Unlicensed Radio Frequency Devices	A1, A2, A3, A4
Licensed Radio Frequency Devices	B1, B2, B3, B4
Telephone Terminal Equipment	C

**Please refer to FCC TCB Program Roles and Responsibilities, v04, released February 14, 2008 detailing scopes, roles and responsibilities. http://www.fcc.gov/oet/ea/FCC-Overview-TCB-Program.pdf*

Industry Canada - (IC)	
Radio	All Radio Standards Specifications (RSS) in Category I Equipment Standards List Radio

**Please refer to Industry Canada (IC) website at: http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/h_sf01342e.html*

IDA – Singapore	
Line Terminal Equipment	All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2008, Annex 2
Radio-Communication Equipment	All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2008, Annex 2

**Please refer to Info-Communication Development Authority (iDA) Singapore website at: http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies_and_Regulation_Level2/20060609145118/MRARecScheme.pdf*

SIEMIC ACCREDITATION DETAILS: FCC Test Site Registration No. 783147

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

December 20, 2007

Registration Number: 783147

SIEMIC Laboratories
2206 Ringwood Avenue,
San Jose, CA 95131

Attention: Leslie Bai

Re: Measurement facility located at San Jose
3 & 10 meter site
Date of Renewal: December 20, 2007

Dear Sir or Madam:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website www.fcc.gov under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Phyllis Parrish
Industry Analyst

SIEMIC ACCREDITATION DETAILS: Industry of Canada CAB ID : US0160

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

March 4, 2009

Mr. Leslie Bai
SIEMIC, Inc.
2206 Ringwood Avenue
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by Industry Canada (IC), under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name:	SIEMIC, Inc.
Physical Location:	2206 Ringwood Avenue, San Jose, CA 95131 USA
Identification No.:	US0160
Recognized Scope:	CS-03 Part I, II, V, VI, VII and VIII

You may submit test data to IC to verify that the equipment to be imported into Canada satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at http://ts.nist.gov/mra. Please contact Ms. Ramona Saar at (301) 975-5521 or ramona.saar@nist.gov if you have any questions.

Sincerely,

David F. Alderman
Group Leader, Standards Coordination and Conformity Group
Standards Services Division

Enclosure

cc: CAB Program Manager

NIST

SIEMIC ACCREDITATION DETAILS: Industry of Canada Test Site Registration No. 4842-1

Industry Canada Industrie Canada

May 27, 2010

OUR FILE: 46405-4842
Submission No: 140856

Siemic Inc.
2206 Ringwood Ave
San Jose, CA, 95131
USA

Attention: Snell Leong

Dear Sir/Madame:

The Bureau has received your application for the renewal of a 3m alternative test site. Be advised that the information received was satisfactory to Industry Canada. The following number(s) is now associated to the site(s) for which registration / renewal was sought **(4842A-1).** Please reference the appropriate site number in the body of test reports containing measurements performed on the site. In addition, please keep for your records the following information;

- Your primary code is: **4842**

- The company number associated to the site(s) located at the above address is: **4842A**

Furthermore, to obtain or renew a unique site number, the applicant shall demonstrate that the site has been accredited to ANSI C63.4-2003 or later. A scope of accreditation indicating the accreditation by a recognized accreditation body to ANSI C63.4-2003 or later shall be accepted. Please indicate in a letter the previous assigned site number if applicable and the type of site (example: 3 metre OATS or 3 metre chamber). If the test facility is not accredited to ANSI C63.4-2003 or later, the test facility shall submit test data demonstrating full compliance with the ANSI standard. The Bureau will evaluate the filing to determine if recognition shall be granted.

The frequency for re-validation of the test site and the information that is required to be filed or retained by the testing party shall comply with the requirements established by the accrediting organization. However, in all cases, test site re-validation shall occur on an interval not to exceed two years. There is no fee or form associated with an OATS filing. OATS submissions are encouraged to be submitted electronically to the Bureau using the following URL;
http://strategis.ic.gc.ca/epic/internet/inceb-bhst.nsf/en/h_tt00052e.html.

If you have any questions, you may contact the Bureau by e-mail at certification.bureau@ic.gc.ca Please reference our file and submission number above for all correspondence.

Yours sincerely,

Dalwinder Gill
For: Wireless Laboratory Manager
Certification and Engineering Bureau
3701 Carling Ave., Building 94
P.O. Box 11490, Station "H"
Ottawa, Ontario K2H 8S2
Email: dalwinder.gill@ic.gc.ca
Tel. No. (613) 998-8363
Fax. No. (613) 990-4752

SIEMIC ACCREDITATION DETAILS: FCC DOC CAB Recognition : US1109

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

August 28, 2008

Siemic Laboratories
2206 Ringwood Ave.,
San Jose, CA 95131

Attention: Leslie Bai

Re: Accreditation of Siemic Laboratories
Designation Number: US1109
Test Firm Registration #: 540430

Dear Sir or Madam:

We have been notified by American Association for Laboratory Accreditation that Siemic Laboratories has been accredited as a Conformity Assessment Body (CAB).

At this time Siemic Laboratories is hereby designated to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Parts 15 and 18 of the Commission's Rules.

This designation will expire upon expiration of the accreditation or notification of withdrawal of designation.

Sincerely,

George Tannahill

George Tannahill
Electronics Engineer

SIEMIC ACCREDITATION DETAILS: Australia CAB ID : US0160

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

November 20, 2008

Mr. Leslie Bai
SIEMIC, Inc.
2206 Ringwood Avenue
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Australian Communications and Media Authority (ACMA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name:	Siemic, Inc.
Physical Location:	2206 Ringwood Avenue, San Jose, CA 95131
Identification No.:	US0160
Recognized Scope:	EMC: AS/NZS 4251.1 (until 5/31/2009), AS/NZS 4251.2 (until 5/31/2009), AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR 22, AS/NZS 61000.6.3, AS/NZS 61000.6.4 Radiocommunications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771 Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06, AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/NZS 60950.1

You may submit test data to ACMA to verify that the equipment to be imported into Australia satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements. Recognized CABs are listed on the NIST website at http://ts.nist.gov/mra. Please contact Ms. Ramona Saar, at (301) 975-5521 or ramona.saar@nist.gov if you have questions.

Sincerely,

David F. Alderman

David F. Alderman
Group Leader, Standards Coordination and Conformity Group
Standards Services Division

Enclosure

cc: Snell Leong, Siemic, Inc.; Ramona Saar, NIST

NIST

SIEMIC ACCREDITATION DETAILS: Korea CAB ID: US0160

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

October 1, 2008

Mr. Leslie Bai
SIEMIC, Inc.
2206 Ringwood Avenue
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Radio Research Agency (RRA) Korea Communications Commission (KCC) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name:	SIEMIC, Inc.
Physical Location:	2206 Ringwood Avenue, San Jose, CA 95131
Identification No.:	US0160
Recognized Scope:	**EMI:** KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI **EMS:** KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN-61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS **Wireless:** RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68 **Wired:** President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6 President Notice 20664, RRL Notice 2008-7 with attachment 4

You may submit test data to RRA/KCC to verify that the equipment to be imported into Korea satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at http://ts.nist.gov/mra. If you have any questions please contact Ramona Saar at (301) 975-5521 or ramona.saar@nist.gov.

Sincerely,

David F. Alderman
Group Leader, Standards Coordination and Conformity Group
Standards Services Division

Enclosure

cc: Ramona Saar

NIST

SIEMIC ACCREDITATION DETAILS: Taiwan BSMI Accreditation No. SL2-IN-E-1130R

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

May 3, 2006

Mr. Leslie Bai
SIEMIC Laboratories
2206 Ringwood Avenue
San Jose, CA 95131

Dear Mr. Bai:

I am pleased to inform you that your laboratory has been recognized by the Chinese Taipei's Bureau of Standards, Metrology, and Inspection (BSMI) under the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Arrangement (MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. You may submit test data to BSMI to verify that the equipment to be imported into Chinese Taipei satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements. The pertinent designation information is as follows:

- BSMI number: **SL2-IN-E-1130R** (Must be applied to the test reports)
- U.S Identification No: **US0160**
- Scope of Designation: **CNS 13438**
- Authorized signatory: **Mr. Leslie Bai**

The names of all recognized CABs will be posted on the NIST website at http://ts.nist.gov/mra. If you have any questions, please contact Mr. Dhillon at 301-975-5521. We appreciate your continued interest in our international conformity assessment activities.

Sincerely,

David F. Alderman
Group Leader, Standards Coordination and Conformity Group

cc: Jogindar Dhillon

NIST

SIEMIC ACCREDITATION DETAILS: Taiwan NCC CAB ID: US0160

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

November 25, 2008

Mr. LeslieBai
SIEMIC, Inc.
2206 Ringwood Avenue
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the National Communications Commission (NCC) for the requested scope expansion under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name:	SIEMIC, Inc.
Physical Location:	2206 Ringwood Avenue, San Jose, CA 95131
Identification No.:	US0160
Current Scope:	LP0002
Additional Scope:	PSTN01, ADSL01, ID0002, IS6100 and CNS 14336

You may submit test data to NCC to verify that the equipment to be imported into China satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at http://ts.nist.gov/mra. If you have any questions please contact Ramona Saar at (301) 975-5521 or ramona.saar@nist.gov.

Sincerely,

David F. Alderman
Group Leader, Standards Coordination and Conformity Group
Standards Services Division

Enclosure

cc: Ramona Saar

NIST

SIEMIC ACCREDITATION DETAILS: Mexico NOM Recognition

CANIETI

CAMARA NACIONAL DE LA INDUSTRIA ELECTRONICA, DE TELECOMUNICACIONES E INFORMATICA

Laboratorio Valentín V. Rivero

México D.F. a 16 de octubre de 2006.

LESLIE BAI
DIRECTOR OF CERTIFICATION
SIEMIC LABORATORIES, INC.
ACCESSING GLOBAL MARKETS
P R E S E N T E

En contestación a su escrito de fecha 5 de septiembre del año en curso, le comento que estamos muy interesados en su intención de firmar un Acuerdo de Reconocimiento Mutuo, para lo cual adjunto a este escrito encontrara el Acuerdo en idioma ingles y español prellenado de los cuales le pido sea revisado y en su caso corregido, para que si esta de acuerdo poder firmarlo para mandarlo con las autoridades Mexicanas para su visto bueno y así poder ejercer dicho acuerdo.

Aprovecho este escrito para mencionarle que nuestro intermediario gestor será la empresa Isatel de México, S. A. de C. V., empresa que ha colaborado durante mucho tiempo con nosotros en lo relacionado a la evaluación de la conformidad y que cuenta con amplia experiencia en la gestoría de la certificación de cumplimiento con Normas Oficiales Mexicanas de producto en México.

Me despido de ustad enviándole un cordial saludo y esperando sus comentarios al Acuerdo que nos ocupa.

Atentamente:

Ing. Faustino Gómez González
Gerente Técnico del Laboratorio de CANIETI.

Cuitlahuac 71
Hipódromo Condesa
06100 México, D.F.
Tel. 5264-0908 con 12 líneas
Fax 5264-0488
www.canieti.org

SIEMIC ACCREDITATION DETAILS: Hong Kong OFTA CAB ID : US0160

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

December 8, 2008

Mr. Leslie Bai
SIEMIC, Inc.
2206 Ringwood Avenue
San Jose, CA 95131

Dear Mr. Bai:

NIST is pleased to inform you that your laboratory has been recognized by the Office of the Telecommunications Authority (OFTA) under the Asia Pacific Economic Cooperation for Telecommunications Equipment Mutual Recognition Arrangement (APEC Tel MRA). Your laboratory is now designated to act as a Conformity Assessment Body (CAB) under Appendix B, **Phase I** Procedures, of the APEC Tel MRA. The pertinent information about your laboratory's designation is as follows:

CAB Name:	SIEMIC, Inc.
Physical Location:	2206 Ringwood Avenue, San Jose, California 95131 USA
Identification No.:	US0160
Recognized Scope:	**Radio:** HKTA 1002, 1007, 1008, 1010, 1015, 1016, 1020, 1022, 1026, 1027, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1039, 1041, 1042, 1043, 1044, 1046, 1047, 1048, 1049, 1051 **Telecom:** HKTA 2011, 2012, 2013, 2014, 2017, 2018, 2022, 2024, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033

You may submit test data to OFTA to verify that the equipment to be imported into Hong Kong satisfies the applicable requirements. The designation of your organization will remain in force as long as its accreditation for the designated scope remains valid and comply with the designation requirements.

Recognized CABs are listed on the NIST website at http://ts.nist.gov/mra. If you have any questions please contact Ramona Saar at (301) 975-5521 or ramona.saar@nist.gov.

Sincerely,

David F. Alderman

David F. Alderman
Group Leader, Standards Coordination and Conformity Group
Standards Services Division

Enclosure

cc: Ramona Saar

NIST

SIEMIC ACCREDITATION DETAILS: VCCI Radiated Test Site Registration No. R-3083

VCCI Council

CERTIFICATE

Company: SIEMIC Inc.
<Member No. 3081 >

Facility: SIEMIC Inc.
(Radiation 3 meter site)

Location of Facility:
2206 Ringwood Avenue, San Jose, CA 95131 USA

This is to certify that the following measuring facility has been registered in accordance with the Rules for Voluntary Control Measures

Registration No.: R-3083
Date of Registration: June 12 , 2009
This Certificate is valid until September 30 , 2010

VCCI Council

SIEMIC ACCREDITATION DETAILS: VCCI Conducted (Main Port) Test Site Registration No. C-3421

VCCI Council

CERTIFICATE

Company: SIEMIC Inc.

<Member No. 3081 >

Facility: SIEMIC Inc.

(Main Ports Conducted Interference Measurement)

Location of Facility:

2206 Ringwood Avenue, San Jose, CA 95131 USA

This is to certify that the following measuring facility has been registered in accordance with the Rules for Voluntary Control Measures

Registration No.: C-3421

Date of Registration: June 12 , 2009

This Certificate is valid until September 30 , 2010

VCCI Council

SIEMIC ACCREDITATION DETAILS: VCCI Conducted (Telecom Port) Test Site Registration No. T-1597

VCCI Council

CERTIFICATE

Company: SIEMIC Inc.

<Member No. 3081 >

Facility: SIEMIC Inc.

(Telecominication Ports Conducted Interference Measurement)

Location of Facility:

2206 Ringwood Avenue, San Jose, CA 95131 USA

This is to certify that the following measuring facility has been registered in accordance with the Rules for Voluntary Control Measures

Registration No.: T-1597

Date of Registration: June 12 , 2009

This Certificate is valid until September 30 , 2010

VCCI Council

Annex F Test Procedure

See attachment below

TEST PROCEDURE
ELECTROMAGNETIC INTERFERENCE
FOR
identiCLASS Models 3300 & 3500

6 October 2010

Prepared By

HID Global Corporation
10385 Westmoor Drive, Suite 300
Westminster, Colorado

PREPARED BY:

Robert Cresswell

6 October 2010

X _____

Robert Cresswell date
Manager, Engineering, Compliance
HID Global Corporation.
Westminster, Colorado, USA

APPROVED BY

S. Holland 7 OCT 2010

X _____

Steve Holland date
Engineering Projects and Quality Director
HID Global Corporation
Cardiff, Glamorgan CF157AB, UK

1. SCOPE

1.1 General

This EMC Test Procedure delineates the Electromagnetic Interference / Electromagnetic Compatibility (EMI/EMC), for the testing of the identiClass project.

1.2 Purpose

The purpose of this EMC Test Procedure is to ensure that the qualification test laboratory, Siemic Inc. understands the correct test setup and standards that are applied to demonstrate compliance with the Federal Communications Commission, Industry Canada and European requirements for Modular Approvals. Each test configuration will be established and setup by Siemic Inc,.and will be described in this procedure. This procedure will be reviewed prior to testing and red-lined if necessary.

2. Applicable Documents

The following documents form a part of this EMC Test Procedure to the extent specified herein. Unless a specific issue or revision is listed, the referenced documents shall be of that issue or revision in effect on the date of request for certification.

2.1 Documents

FCC Part 15, Subpart B	Telecommunications Title: CFR 47 of the Code of Federal Regulations, Unintentional Radiators
FCC Part 15, Subpart C	Telecommunications Title: CFR 47 of the Code of Federal Regulations, Intentional Radiators
RSS Gen Issue 2	General Requirements and Information for the Certification of Radiocommunication Equipment
RSS 210 Issue 7	Low Power License-exempt Radiocommunication Devices Cat 1 Equipment
ETSI EN 300 330-1 V1.3.1	Electromagnetic Compatibility and Radio Spectrum matters; Short rage Devices; Radio Equipment in the Frequency Range 9kHz to 25 MHz and Inductive Loop Systems.
ETSI EN 301 489-1 V1.8.1	Electromagnetic Compatibility and Radio Spectrum Matters; ElectroMagnetic Compatibility Standard for Radio Equipment and Services

3. Test Specification Summary.

FCC and IC Requirements		
Test Standards		**Description**
47 CFR Part 15.225:2009	RSS 210 Issue 7: 2007	
15.203		Antenna Requirements
15.207 (a)	RSS Gen (7.2.2)	Conducted Emissions Voltage
15.225 (a)	RSS 210 (A2.6)	Limit in band of 13.553-13.567 MHz
15.225 (b)	RSS 210 (A2.6)	Limit in band of 13.410-13.553 MHz and 13.567-13.710 MHz
15.225 (c)	RSS 210 (A2.6)	Limit in band 13.110-13.410 MHz and 13.710-14.010 MHz
15.225(d), 15.209	RSS 210 (A2.6)	Limit outside band 13.110-14.010 MHz
15.225(e)	RSS 210 (A2.6)	Frequency Stability
	RSS 210(5.9.1)	Occupied Bandwidth

ETSI European Specification Requirements*—Limited Testing		
Test Standards		**Description**
EN 300 330-1	V1.3.1	Transmitter Carrier Output Level
		Permitted Frequency Range of the Modulation Bandwidth
		Transmitter Spurious Emissions
EN 301 489-1	V1.8.1	ElectroStatic Discharge Immunity: Coupling Planes only
		Radiated RF Immunity

*The identiCLASS module is intended to be mounted inside a final chassis, with other assemblies and subsystems including a power supply. The final assembly will provide filtering and isolation from external interference sources and therefore a limited set of immunity tests will be performed.

3.1 Electrostatic Discharge (ESD). The identiCLASS assembly's shall be handled in compliance with good engineering practices regarding ESD.

Personnel in contact with the identiCLASS assembly's shall be grounded to common earth ground with the hardware. ESD protective gloves or finger cots with surface resistively of less than or equal to 10^9 ohms/square shall be worn any time an ESD part, sub-assembly or assembly is handled or processed to reduce the possibility of ESD Damage.

3.2 Shielded enclosure. The radio frequency testing shall be performed at an accredited Open Area Test Site (OATS) or in a test chamber with 80 dB of shielding effectiveness to electric fields and plane wave interference. Shielding capacity is as follows:

a) Magnetic Fields: 40 dB min at 1 kHz
80 dB min at 1 MHz

b) Electric Fields 80 dB min from 10 kHz to 10 GHz

c) Plane Waves: 80 dB min from 100 MHz to 18 GHz

3.3 Power. Power for the shielded enclosure shall be filtered from 14 kHz to 10 GHz with an insertion loss greater than 80 dB.

3.4 Test equipment operation. Measurements shall be made using equipment that will automatically generate amplitude versus frequency profile of emissions data that is continuous in operation. The resulting data plot shall account for all cable loss, antenna factors and amplifier gain and the like as applicable and shall include the appropriate limits for that test. Verification techniques used to demonstrate proper performance of the emissions collection software shall also be included in the final test report.

3.6 Susceptibility monitoring. During susceptibility testing, the system shall be checked for proper operation after each event by presenting a card to the reader. The monitoring software shall be used to identify the card ATR number.

4. TEST DESCRIPTIONS

A detailed description of each test setup and configuration is located in the appendix to this procedure. The appendix for each test includes photographs of each configuration.

5. EQUIPMENT REQUIRED

The equipment used during the test shall be identified in the final test report.

6. TEST SETUP

6.1 General. Complete details of the test setup for EMI/EMC testing of the identiCLASS are listed in the applicable appendix..

The test procedures are written in accordance with the source documents presented in Paragraph 2. Test personnel are authorized to change the order of testing as long as none of the source document constraints are violated.

6.2 EMC/EMI test configuration. General test setups for identiCLASS EMC/EMI tests follows.

6.2.1 General for all testing:.

a. The testing consists of two (2) RFID readers: Core Reader 3300 and Standard Reader 3500. Each Reader has two sets of external antennas and the Core Reader 3300 has two SAM modules that connect through a ribbon cable to the Core Reader.

b. Power is supplied to each Reader through the USB cable, 36 inch shielded cable.

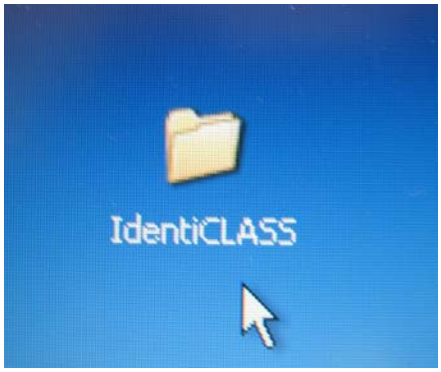
c. The Laptop USB ports and not able to directly power the reader boards and therefore a USB HUB is used to provide power. The USB Hub is inserted into the Laptop PCMCI slot.

d. During susceptibility testing (ESD Coupling Plane and Radiated) ensure SAM ID1 and antenna: ID3 are connected to the Reader Core 3300. For the Standard Reader, ensure both large antenna (ID3) are connected to the Reader board.

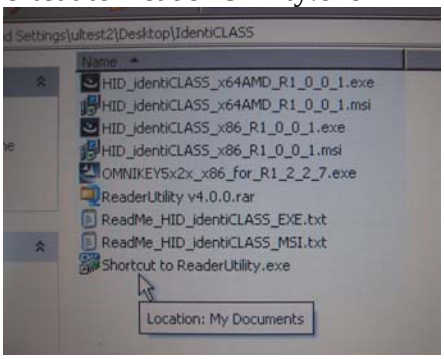
e. Place the Laptop in the chamber, and in Class B configuration for all radiated emissions and radio testing.

f. Active the laptop and start the identiCLASS test program

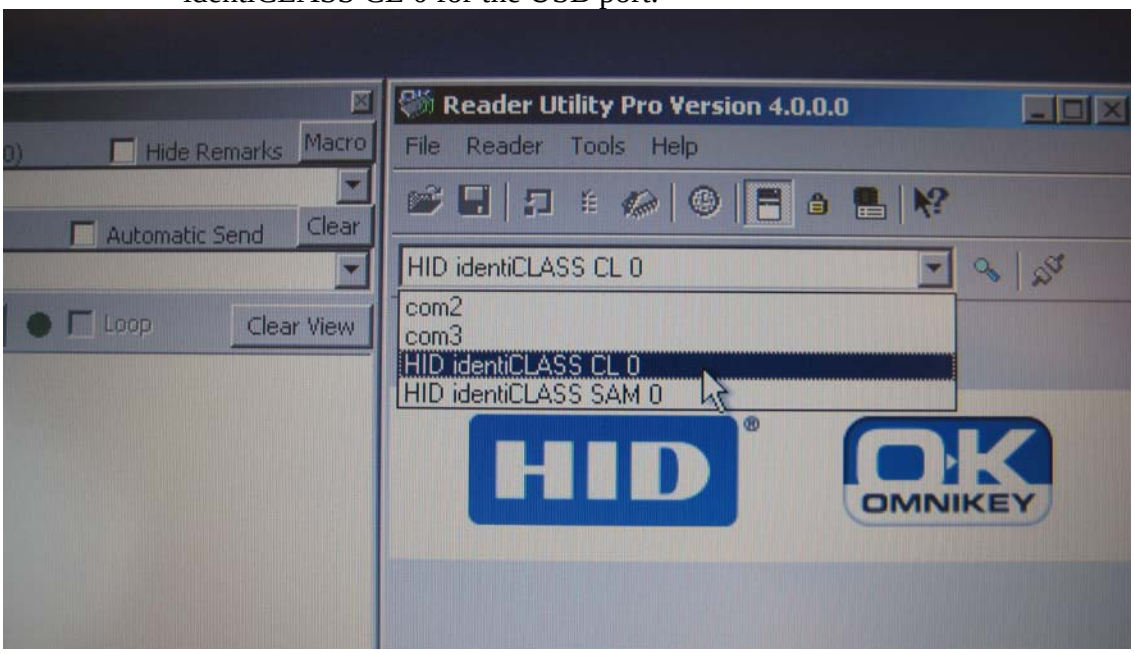
- Select the identiCLASS folder located on the desktop.



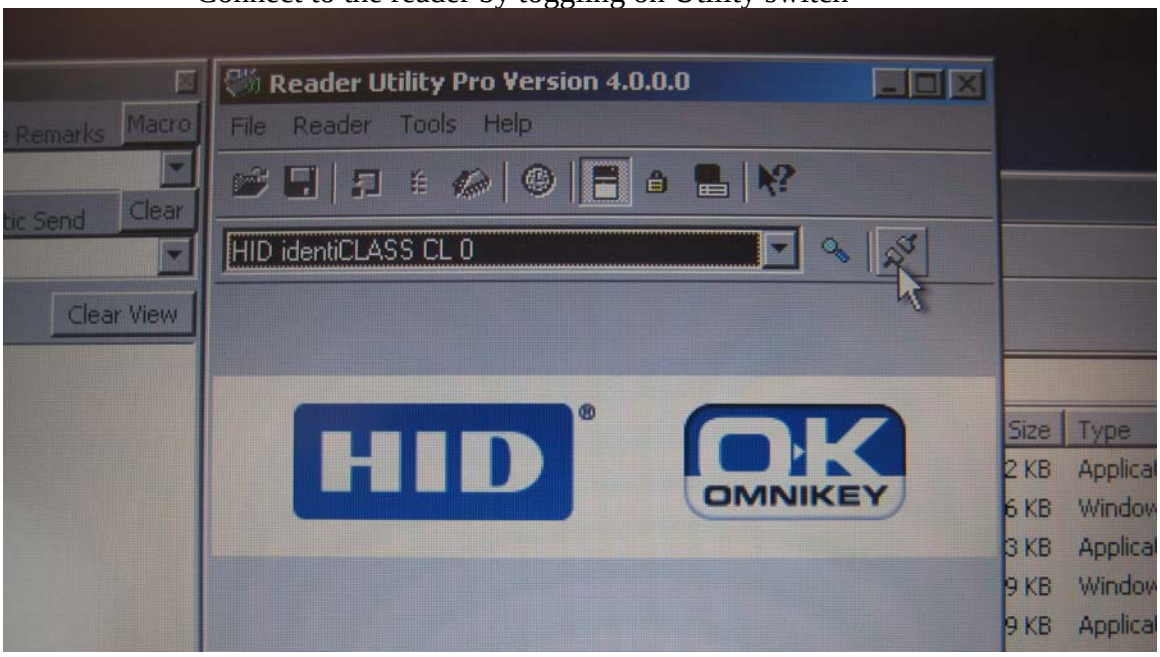
- Select the Shortcut to Reader Unility.exe



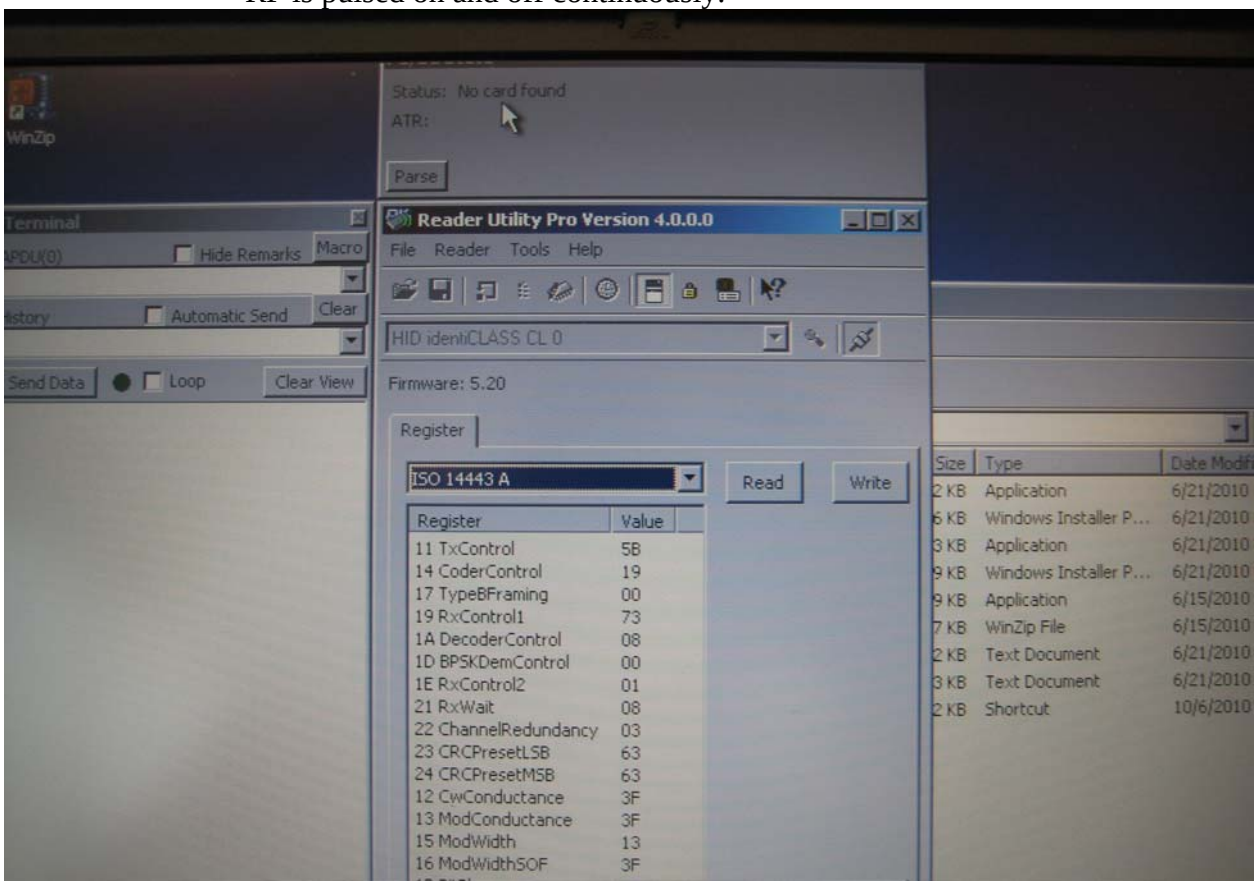
- Within the Reader Utility, and using the Drop-Down menu, select HID identiCLASS CL 0 for the USB port.



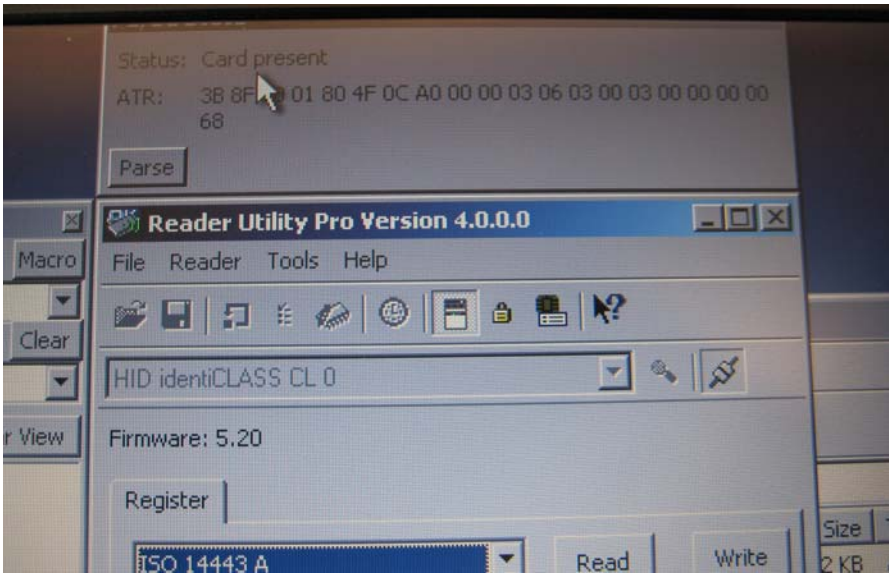
- Connect to the reader by toggling on Utility switch



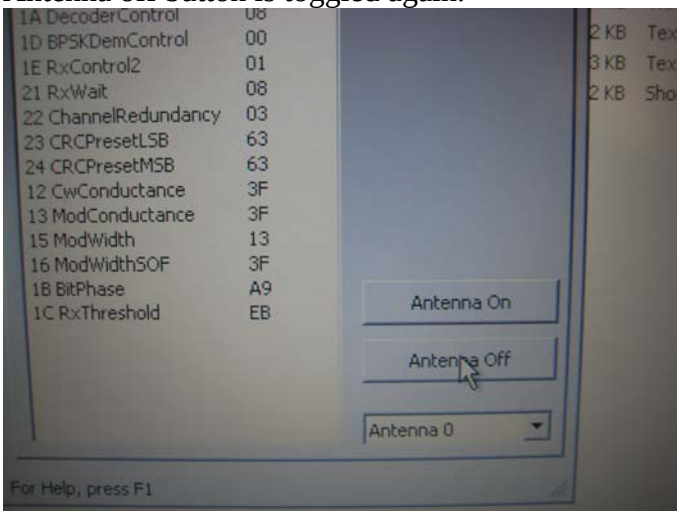
- The reader is now connected and if a card is not presented to the reader, the ATR (located at the upper left corner) will indicate No card found. In this mode, the reader RF is on briefly and then off for a small period of time. The RF is pulsed on and off continuously.

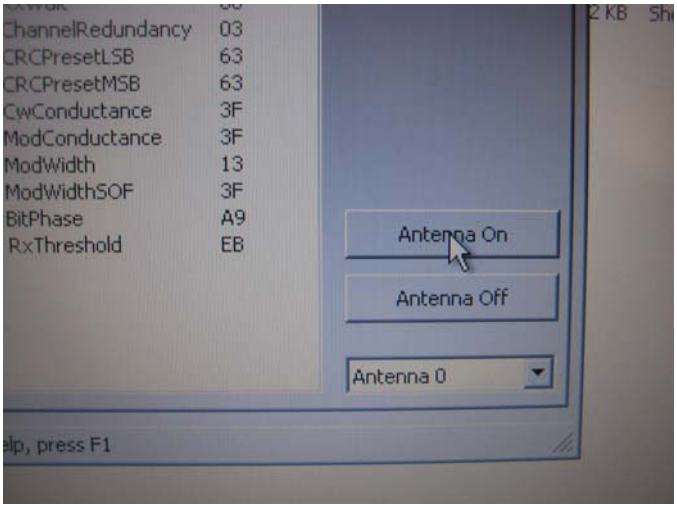


- Presenting a card to the Reader, the ATR numbering on the card can be read. During the susceptibility testing, this mode will be used to verify proper operation after the event is done.



- To switch the RF on continuously for easier carrier measurements, switch off the antenna and then switch it back on. This mode will keep the RF on until the Antenna off button is toggled again.



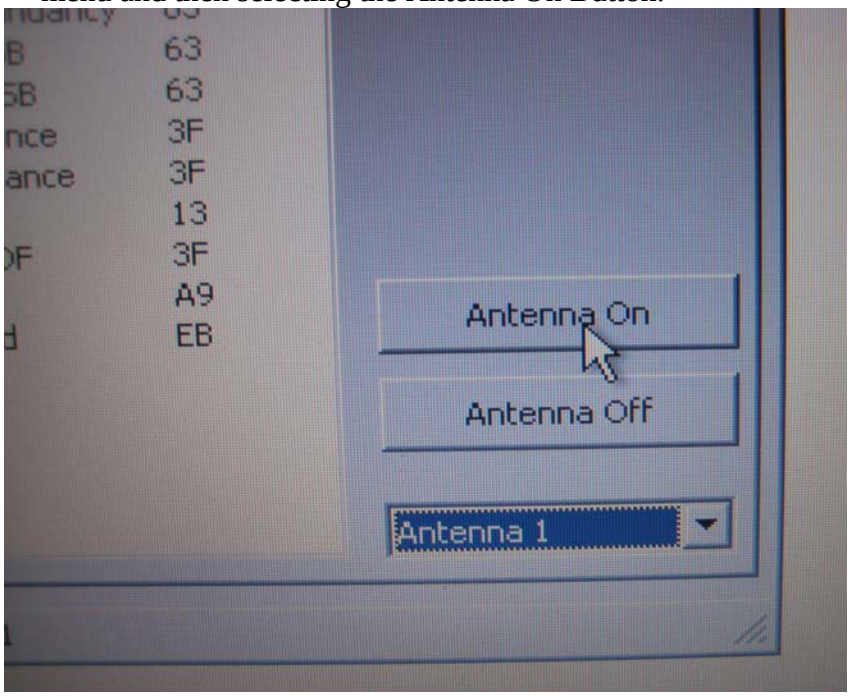


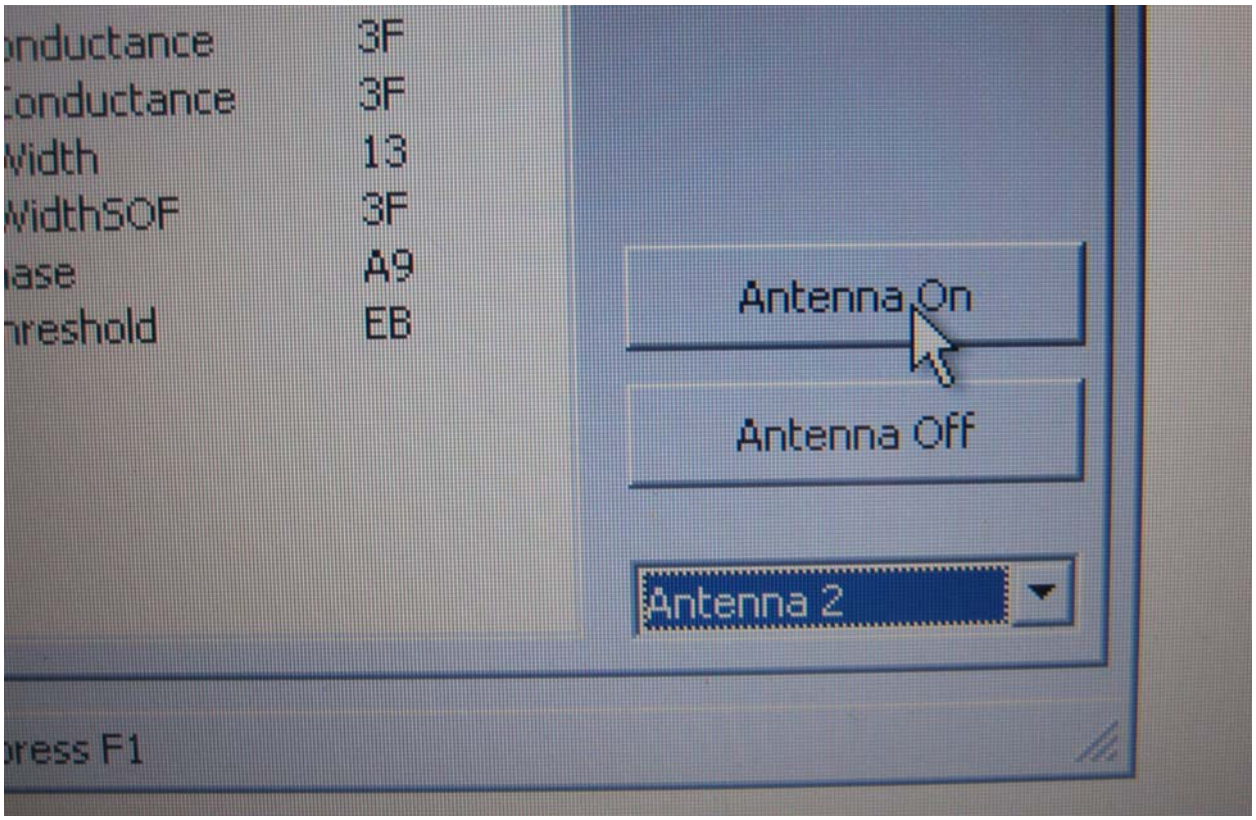
Note:

In this mode, a card can not be read; therefore this mode should only be used for emissions and radio testing.

To regain pulsed RF, so a card can be read, exit from the Utility Program and disconnect the USB cable from the Laptop. Reconnect the USB cable and restart the Utility Program as described above.

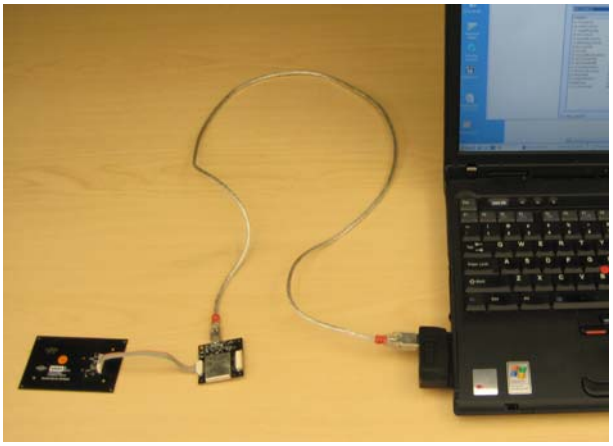
- Antenna 0 is the internal antenna only on Standard Reader: 3500. The external antennas are turned on by selecting the antenna from the Drop-Down menu and then selecting the Antenna On Button.



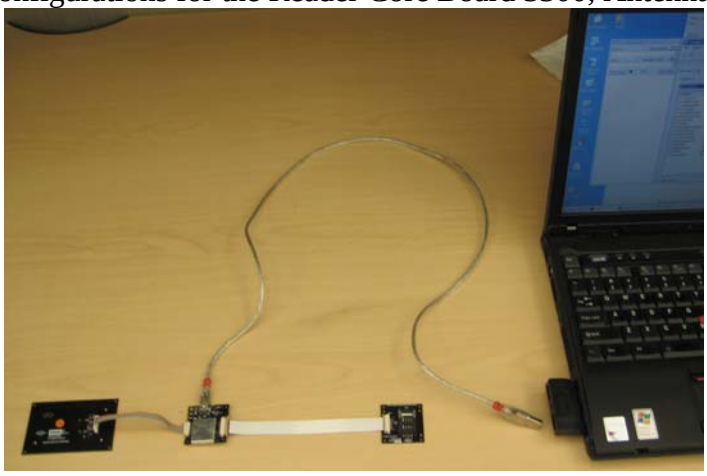


6.2.2 Test Configurations.

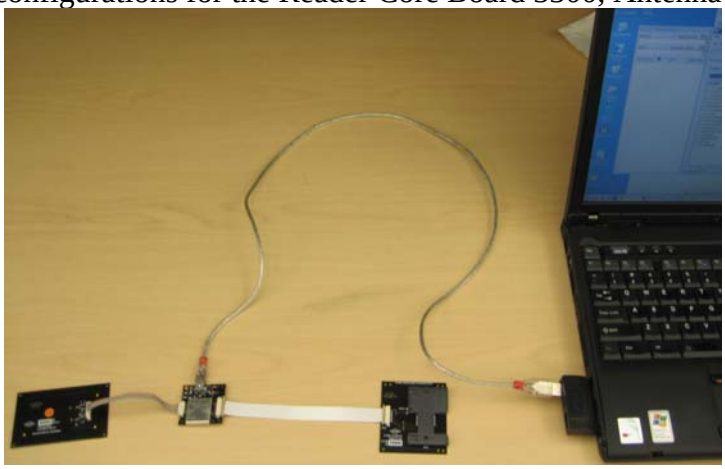
a. The test configurations for the Reader Core Board 3300, Just Antenna:
   a. No internal antenna, all external antennas
   b. Attach ID1 antenna
   c. Do not connect either of the SAM Cards.



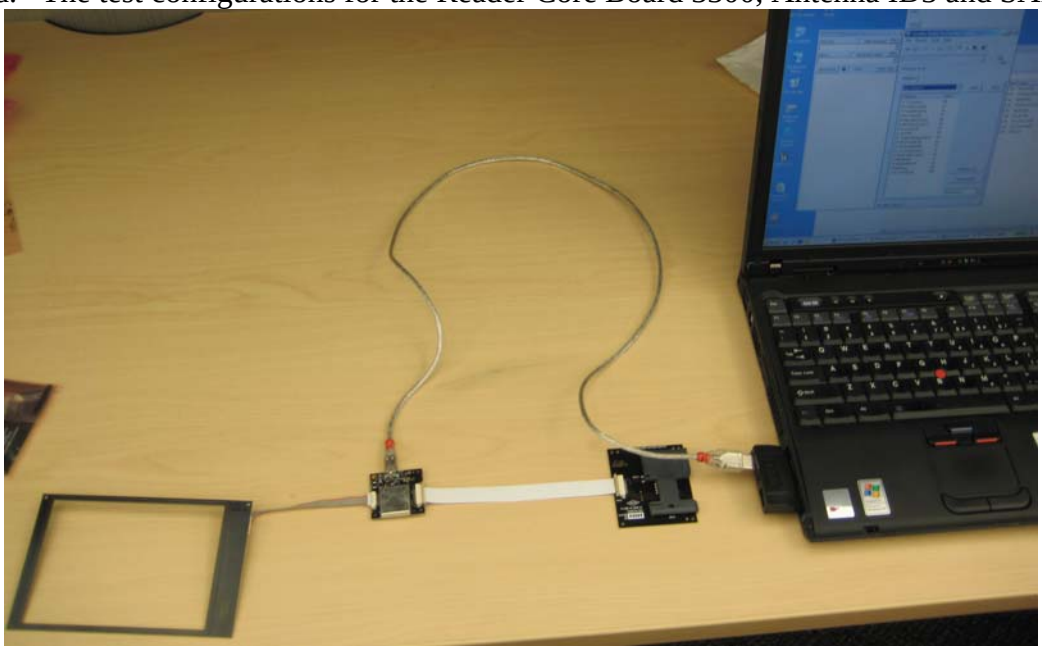
b. The test configurations for the Reader Core Board 3300, Antenna ID1 and SAM ID0:



c. The test configurations for the Reader Core Board 3300, Antenna ID1 and SAM ID1:



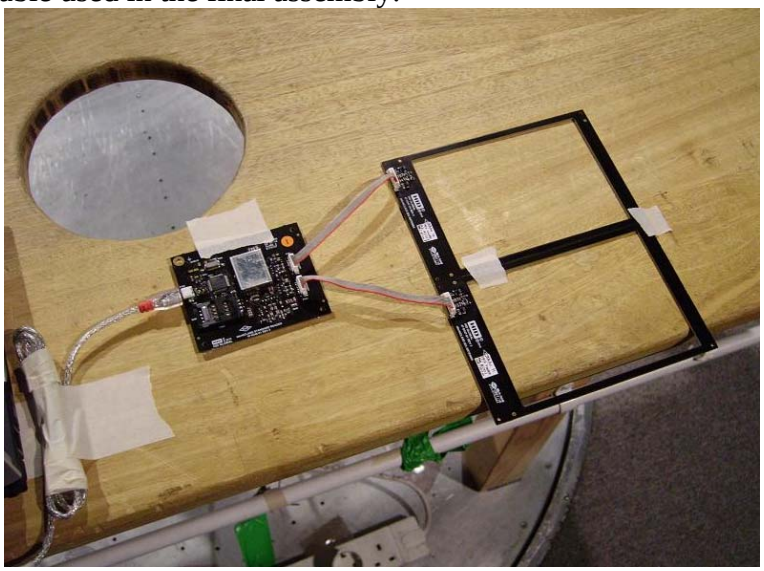
d. The test configurations for the Reader Core Board 3300, Antenna ID3 and SAM ID1:



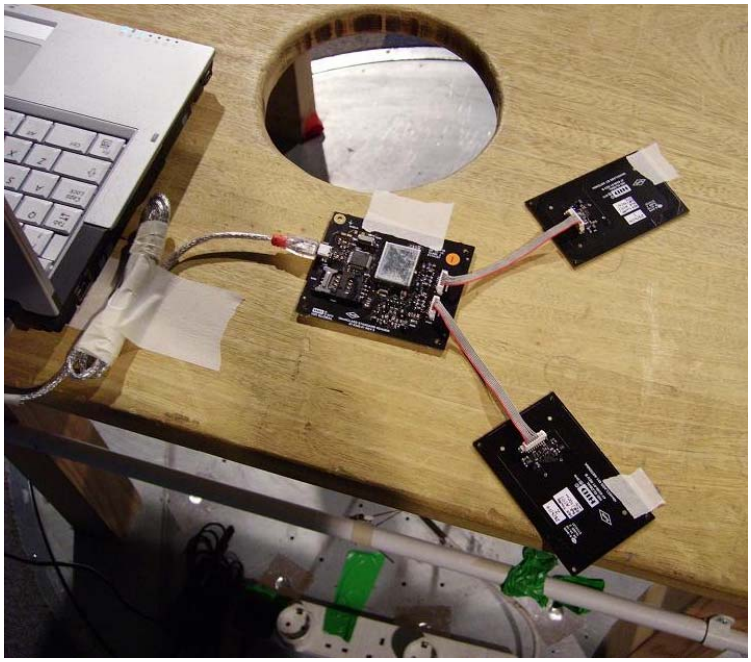
The test configurations for the Standard Reader Board 3500:

a. Internal antenna, all external antennas disconnected

e. The test configurations for the Standard Reader Board 3500:
   a. Internal antenna, ID3 external antennas connected (2 antennas)
   b. The USB Cable shall be in a serpentine configuration to simulate the actual length of cable used in the final assembly.



f. The test configurations for the Standard Reader Board 3500:
   a. Internal antenna, ID1 external antennas connected (2 antennas)
   b. The USB Cable shall be in a serpentine configuration to simulate the actual length of cable used in the final assembly.
   c.



g. The test configurations for the Standard Reader Board 3500:
   a. Internal antenna, ID1 external antenna connected (1 antennas)

h. The test configurations for the Standard Reader Board 3500:
   a. Internal antenna, ID3 external antenna connected (1 antennas)