Intentional Radiator Test Report

Test Standards:
FCC Part 15.225 (Subpart C – Intentional Radiators)
Industry Canada RSS-210, Issue 8

Prepared For:
Identive Group, Inc.
1900 Carnegie Ave, Bldg B
Santa Ana, CA 92705

Product Name :
Dual Interface Smart Card Reader Module

Model Name :
CLOUD 4000 F DTC

Application Purpose : Original

Prepared by:

EMCE Engineering, Inc.
44366 S. Grimmer Blvd.
Fremont, CA 94538
USA

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Revision History

Rev.	Issue Date	Description
0	9/9/13	Initial Issue

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1.0 GENERAL INFORMATION

Test Laboratory:	EMCE Engineering 44366 S. Grimmer Blvd. Fremont, CA 94538 USA Tel: 510-490-4307, Fax: 510-490-3441 bob@universalcompliance.com
	FCC registration number : 743299
	Test Site : FCC : US5291, IC : 3324A
Applicant Name :	Identive Group, Inc. 1900 Carnegie Ave, Bldg B Santa Ana, CA 92705 Tel: 925-217-3257
	Contact Person: Calaimany Bhoopathi
Application Purpose :	Original
EUT Description	RFID
Product Name	Dual Interface Smart Card Reader Module
Model Name :	CLOUD 4000 F DTC
Applied Standards :	47 CFR §15.207, 15.209, 15.225: 2010 & Canadian Standards RSS-GEN Issue 3, RSS-210 Issue 8
FCC ID :	MBPCLOUD4000F-001
IC :	7485A-4000F001
RF Operating Frequency (ies)	13.56MHz
Modulation	ASK
Emission Designator	10K5K1D
Receipt of EUT :	7/18/13
Date of Testing :	7/25/13 – 8/19/13
Date of Report :	9/9/13

The tests listed in this report have been completed to demonstrated compliance to the CFR 47 Section 15.225, as well as Industry Canada Radio Standard RSS-210, Issue 8.

Contents approved:

Name: Bob Cole
Title: President

2.0 EUT AND ACCESSORY INFORMATION

EUT	
Model name:	*CLOUD 4000 F DTC*
Description:	*Dual Interface Smart Card Reader Module*
Manufacturer:	*Identive Group, Inc.*

Support Equipment				
Description	*Model Number*	*Serial Number*	*Manufacturer*	*Power Cable Description*
Printer	*C62*	*TH6AJ14084*	*Epson*	*Unshielded / 1 Meter*
Laptop PC	*dv4000*	*N/A*	*HP*	*Unshielded / 1 Meter*

Cable Description				
From	*To*	*Length (Meters)*	*Shielded (Y/N)*	*Ferrite Loaded (Y/N)*
Printer	*Laptop PC*	*1m*	*Y*	*N*
Laptop PC	*Power*	*1.5*	*Y*	*N*
Printer	*Power*	*1.5*	*N*	*N*
EUT	*Laptop*	*0.5*	*Y*	*Y*

3.0 SUMMARY OF TEST RESULTS

Test Standard		Description	Pass / Fail
47 CFR Part 15.225: 2010	RSS 210 Issue 8		
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: 2003/ RSS-Gen Issue 3 PS: All measurement uncertainties are not taken into consideration for all presented test result.			

PASS The EUT passed that particular test.
FAIL The EUT failed that particular test.
N/A Not Applicable due to product type.

4.0 MODIFICATIONS

There were no modifications.

5.0 TEST 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 RFID antenna is integral to the main board permanently to the device which meets the requirement (See Internal Photographs submitted as another Exhibit).

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 measurement at a confidence level of approximately 95% (in the case where distributions normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) ±3.5dB.
4. Environmental Conditions

Temperature	24ºC
Relative Humidity	45%
Atmospheric Pressure	1010mbar

Test Date : 8/18/2013

Tested By : Bob Cole

Results: Pass

FCC Part 15.207 Line Conducted Emissions
120V / 60 Hz - Line 1
150kHz – 30 MHz

Customer:	**Identive, Inc.**		
Specification:	**EN55022 B COND [QP]**		
Work Order #:	**3915**	Date:	8/18/2013
Test Type:	**Conducted Emissions**	Time:	12:28:10 PM
Equipment:	**Dual Interface Smart Card Reader Module**	Sequence#:	2
Manufacturer:	Identive Group, Inc.	Tested By:	Bob Cole
Model:	Cloud 4000 F DTC		120V 60Hz
S/N:	N/A		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Dual Interface Smart Card Reader Module*	Identive Group, Inc.	Cloud 4000 F DTC	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	HP	dv4000	

Test Conditions / Notes:

Quasi-Peak Measurements meet Average Limits

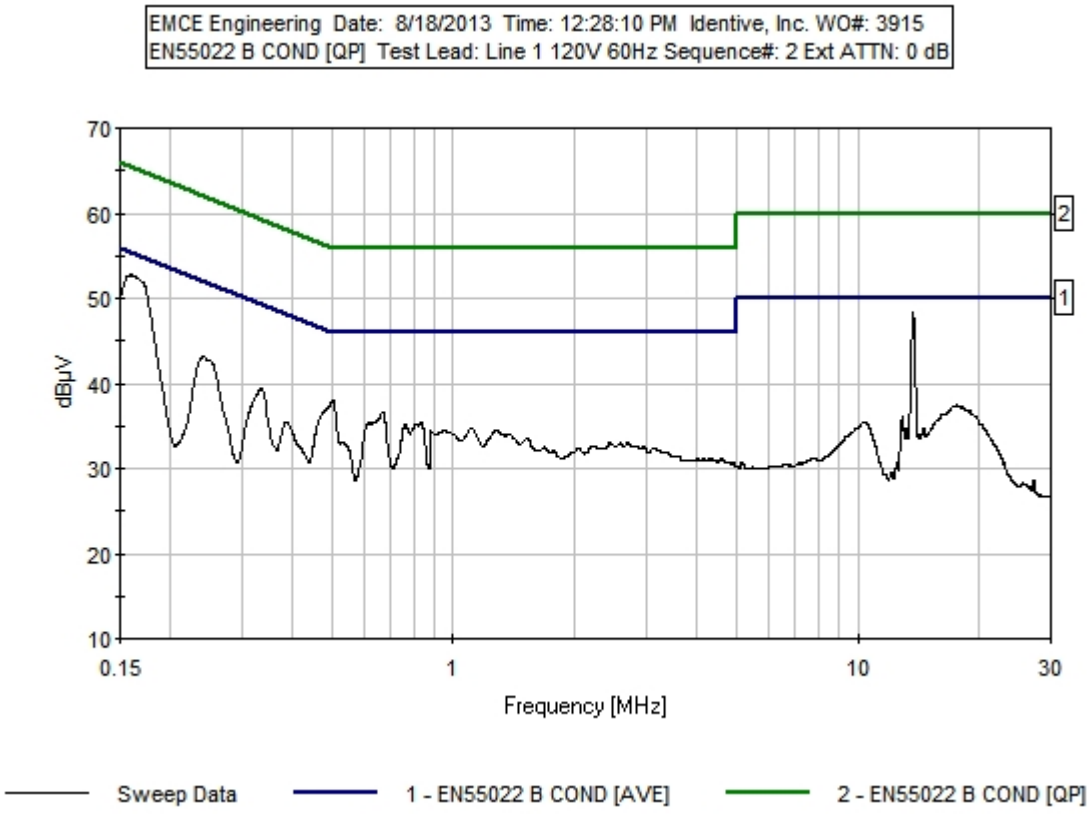
Transducer Legend:

T1=25' LMR #001 T2=EMCO 3810-2 LISN S/N 9807-1988
T3=HP 11947A Trans. Limiter TL1

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Line 1

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	13.688M QP	37.5	+0.0	+0.9	+10.0		+0.0	48.4	60.0	-11.6	Line
2	162.362k QP	41.5	+0.0	+1.1	+10.1		+0.0	52.7	65.3	-12.6	Line
3	501.965k QP	27.2	+0.0	+0.7	+10.0		+0.0	37.9	56.0	-18.1	Line
4	241.627k QP	32.1	+0.0	+1.0	+10.0		+0.0	43.1	62.0	-18.9	Line
5	669.948k QP	26.2	+0.0	+0.6	+9.9		+0.0	36.7	56.0	-19.3	Line
6	334.709k QP	28.5	+0.0	+0.8	+10.0		+0.0	39.3	59.3	-20.0	Line


EMCE Engineering Date: 8/18/2013 Time: 12:28:10 PM Identive, Inc. WO#: 3915
EN55022 B COND [QP] Test Lead: Line 1 120V 60Hz Sequence#: 2 Ext ATTN: 0 dB
70
60
50
40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
1 - EN55022 B COND [AVE]
2 - EN55022 B COND [QP]

FCC Part 15.207 Line Conducted Emissions
120V / 60 Hz - Line 2
150kHz – 30 MHz

Customer:	**Identive, Inc.**		
Specification:	**EN55022 B COND [QP]**		
Work Order #:	**3915**	Date:	8/18/2013
Test Type:	**Conducted Emissions**	Time:	12:35:29 PM
Equipment:	**Dual Interface Smart Card Reader Module**	Sequence#:	3
Manufacturer:	Identive Group, Inc.	Tested By:	Bob Cole
Model:	Cloud 4000 F DTC		120V 60Hz
S/N:	N/A		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Dual Interface Smart Card Reader Module*	Identive Group, Inc.	Cloud 4000 F DTC	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	HP	dv4000	

Test Conditions / Notes:

Quasi-Peak Measurements meet Average Limits

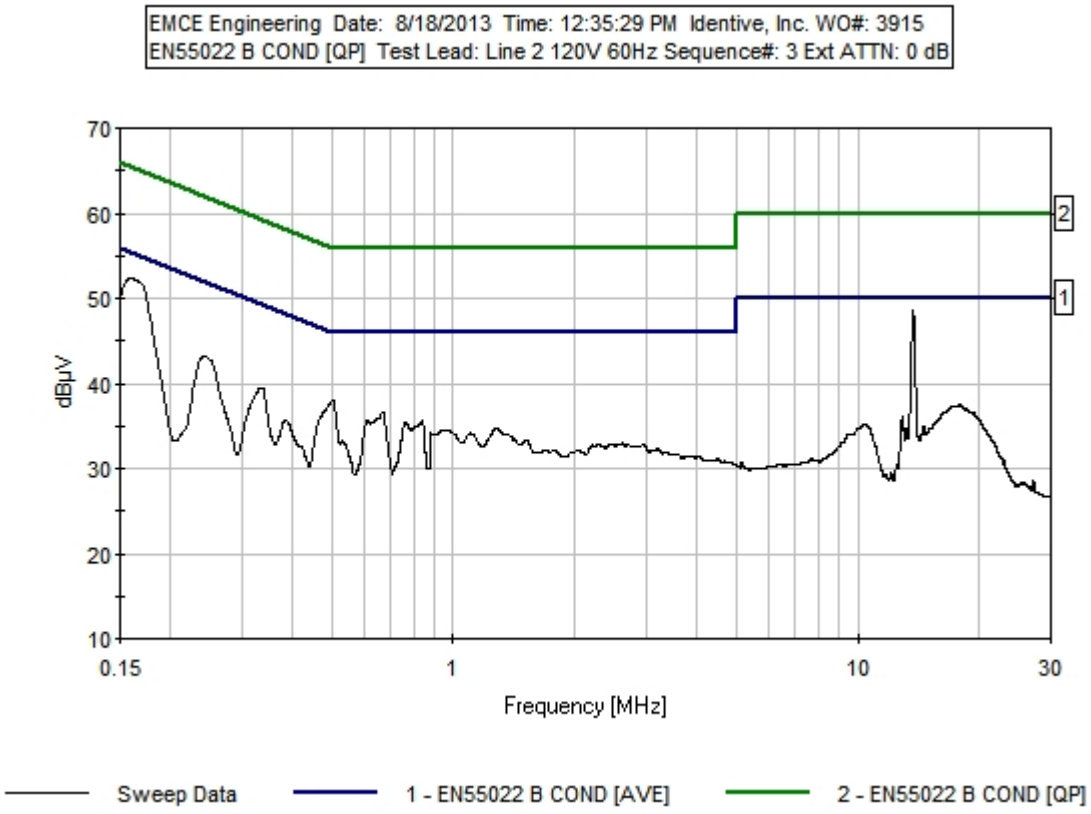
Transducer Legend:

T1=25' LMR #001 T2=HP 11947A Trans. Limiter TL1
T3=EMCO 3810-2 LISN S/N 9807-1988

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Line 2

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	13.697M	37.7	+0.0	+10.0	+0.9		+0.0	48.6	60.0	-11.4	Line
2	158.726k	41.2	+0.0	+10.1	+1.1		+0.0	52.4	65.5	-13.1	Line
3	503.419k	27.4	+0.0	+10.0	+0.7		+0.0	38.1	56.0	-17.9	Line
4	241.627k	32.2	+0.0	+10.0	+1.0		+0.0	43.2	62.0	-18.8	Line
5	666.312k	26.2	+0.0	+9.9	+0.6		+0.0	36.7	56.0	-19.3	Line
6	334.709k	28.7	+0.0	+10.0	+0.8		+0.0	39.5	59.3	-19.8	Line


EMCE Engineering Date: 8/18/2013 Time: 12:35:29 PM Identive, Inc. WO#: 3915
EN55022 B COND [QP] Test Lead: Line 2 120V 60Hz Sequence#: 3 Ext ATTN: 0 dB
70
60
50
40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
1 - EN55022 B COND [AVE]
2 - EN55022 B COND [QP]

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

Requirement(s): 47 CFR §15.225 & RSS-210 (A2.6) & RSS-310 (3.7)

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 3 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	24ºC
Relative Humidity	45%
Atmospheric Pressure	1010mbar

Test Date : 8/18/2013

Tested By : Bob Cole

Results: Pass

FCC Part 15.209 Radiated Emissions
9 kHz – 30 MHz

Customer:	**Identive, Inc.**		
Specification:	**15.209 9k-30M FCC Limits**		
Work Order #:	**3915**	Date:	8/18/2013
Test Type:	**Radiated Scan**	Time:	11:48:35 AM
Equipment:	Dual Interface Smart Card Reader Module	Sequence#:	7
Manufacturer:	Identive Group, Inc.	Tested By:	Bob Cole
Model:	Cloud 4000 F DTC		
S/N:			

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B Spectrum Analyzer	3014A06947	05/02/2012	05/02/2014	598
HP 85650A Quasi Peak Adapter	3145A01673	05/02/2013	05/02/2014	003
HP 8447D PreAmp	2443A03587	05/01/2013	05/01/2014	008
Empire Devices Loop Antenna	N/A	03/06/2013	03/06/2014	114
HP 84125B RF Measurement System	2542A11087	05/02/2012	04/02/2014	001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Dual Interface Smart Card Reader Module *	Identive Group, Inc.	Cloud 4000 F DTC	

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	HP	dv4000	

Test Conditions / Notes:

WITH Card in field

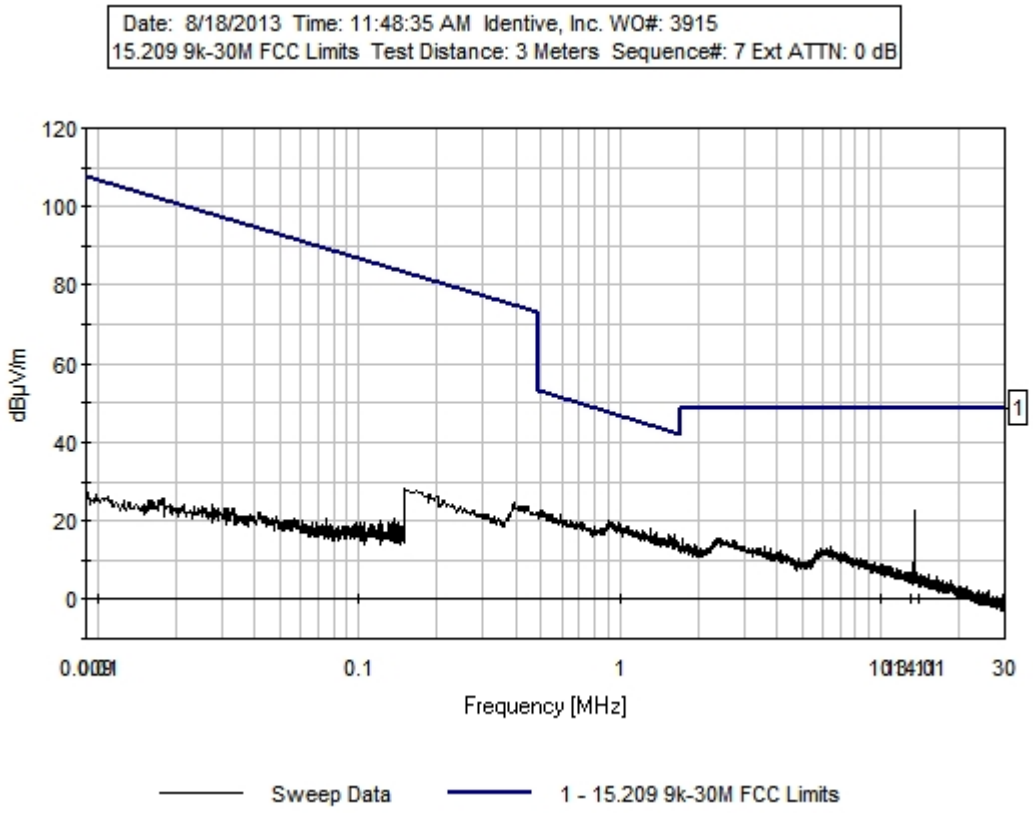
Transducer Legend:

T1=8447 Pre-Amp Asset 377	T2=LP-105 Loop Antenna

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	13.546M	40.4	+27.3	+19.7			-10.0	22.8	48.6	-25.8	Vert
2	1.632M	25.4	+27.4	+28.5			-10.0	16.5	42.4	-25.9	Vert
3	1.318M	24.9	+27.5	+30.4			-10.0	17.8	44.3	-26.5	Vert
4	1.538M	24.6	+27.4	+29.1			-10.0	16.3	42.9	-26.6	Vert
5	1.559M	24.6	+27.4	+28.9			-10.0	16.1	42.8	-26.7	Vert
6	1.385M	24.7	+27.5	+30.0			-10.0	17.2	43.9	-26.7	Vert



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	24°C
Relative Humidity	45%
Atmospheric Pressure	1010mbar

Test Date : 8/18/2013

Tested By : Bob Cole

Results: Pass

FCC Part 15B Radiated Emissions
30 MHz – 1 GHz

Customer:	**Identive, Inc.**		
Specification:	**FCC Part 15B RADIATED**		
Work Order #:	**3915**	Date:	8/18/2013
Test Type:	**Radiated Scan**	Time:	12:34:42
Equipment:	Dual Interface Smart Card Reader Module	Sequence#:	8
Manufacturer:	Identive Group, Inc.	Tested By:	Bob Cole
Model:	Cloud 4000 F DTC		
S/N:			

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B Spectrum Analyzer	3014A06947	05/02/2012	05/02/2014	598
HP 85650A Quasi Peak Adapter	3145A01673	05/02/2013	05/02/2014	003
HP 8447D PreAmp	2443A03587	05/01/2013	05/01/2014	008
Empire Devices Loop Antenna	N/A	03/06/2013	03/06/2014	114
HP 84125B RF Measurement System	2542A11087	05/02/2012	04/02/2014	001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Dual Interface Smart Card Reader Module *	Identive Group, Inc.	Cloud 4000 F DTC	

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	HP	dv4000	

Test Conditions / Notes:

WITH Card in field

Transducer Legend:

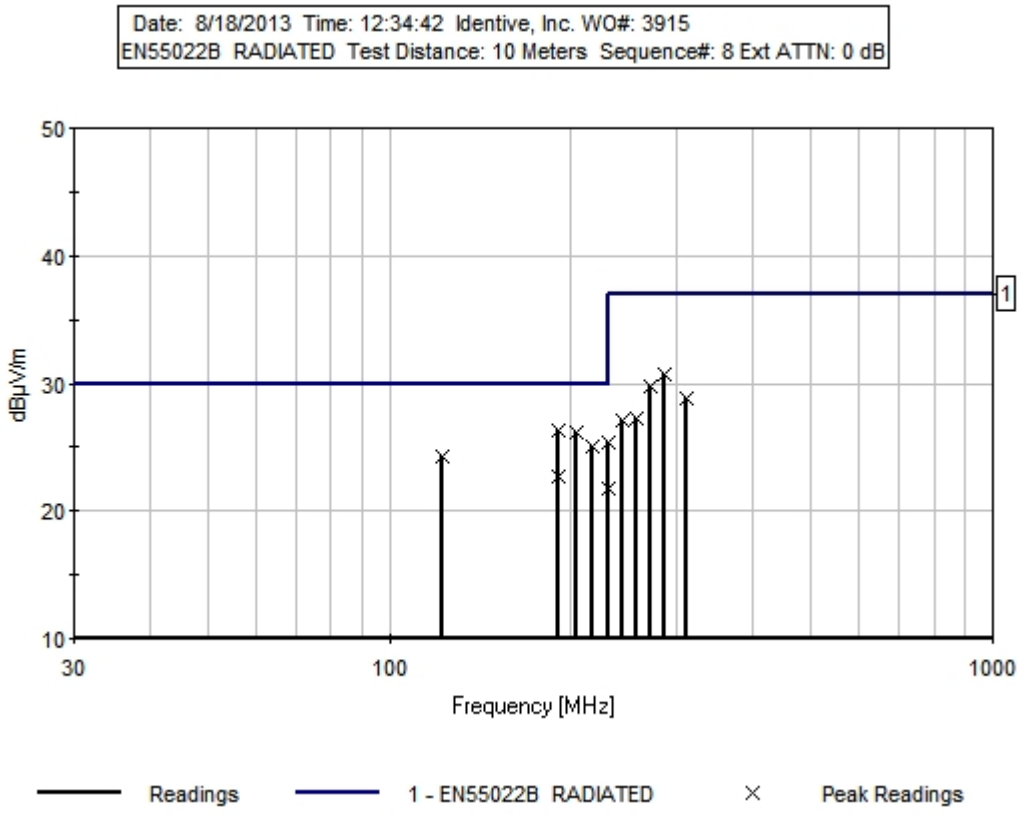
T1=150' LMR 900 T2=8447 Pre-Amp Asset 377
T3=Sunol JB6 S/N A42610

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	189.840M	40.4	+1.7	+26.8	+11.0		+0.0 110	26.3	30.0	-3.7	Horiz 253
2	203.385M	39.8	+1.8	+26.9	+11.4		+0.0	26.1	30.0	-3.9	Vert 100
3	216.960M	39.6	+1.8	+26.9	+10.6		+0.0	25.1	30.0	-4.9	Horiz 326

4	122.040M	36.1	+1.4	+26.7	+13.4	+0.0 359	24.2	30.0	-5.8	Horiz 191
5	284.745M	42.2	+2.1	+27.0	+13.4	+0.0 315	30.7	37.0	-6.3	Horiz 288
6	189.835M	36.8	+1.7	+26.8	+11.0	+0.0 359	22.7	30.0	-7.3	Vert 104
7	271.185M	41.4	+2.0	+27.0	+13.3	+0.0 359	29.7	37.0	-7.3	Horiz 326
8	311.865M	39.9	+2.2	+27.0	+13.7	+0.0	28.8	37.0	-8.2	Horiz 320
9	257.625M	40.4	+1.9	+27.0	+12.0	+0.0 179	27.3	37.0	-9.7	Horiz 275
10	244.065M	40.7	+1.9	+27.0	+11.5	+0.0 227	27.1	37.0	-9.9	Horiz 310
11	230.520M	39.4	+1.8	+27.0	+11.1	+0.0 359	25.3	37.0	-11.7	Horiz 252
12	230.505M	35.8	+1.8	+27.0	+11.1	+0.0 359	21.7	37.0	-15.3	Vert 100



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 13.5589 MHz = 1355 Hz

Environmental Conditions		
	Temperature	24°C
	Relative Humidity	45%
	Atmospheric Pressure	1010mbar

Test Date : 8/18/2013

Tested By : Bob Cole

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: 13.5589 MHz at -20°C and +50ºC

Temperature (ºC)	Measured Freq. (MHz)	Freq. Drift (Hz)	Freq. Deviation (Limit: 0.01%)	Pass/Fail
50	13.5594	500	<0.01	Pass
40	13.5593	400	<0.01	Pass
30	13.5591	200	<0.01	Pass
20	Reference (13.5592 MHz)			
10	13.5589	0	<0.01	Pass
0	13.5590	100	<0.01	Pass
-10	13.5593	400	<0.01	Pass
-20	13.5596	700	<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: 13.5589 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	13.5592	300	<0.01	Pass
5.75	13.5592	300	<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	24°C
Relative Humidity	45%
Atmospheric Pressure	1010mbar

Test Date : 8/18/2013

Tested By : Bob Cole

Test Requirement:

13.56MHz

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

Peak Output Power
Per CFR 47, Section 15.225 and RSS-210 Issue 8 A2.6

Customer:	**Identive, Inc.**		
Specification:	**RFID FCC Mask 3 Meter**		
Work Order #:	**3915**	Date:	8/18/2013
Test Type:	**Radiated Scan**	Time:	11:43:04 AM
Equipment:	Dual Interface Smart Card Reader Module	Sequence#:	6
Manufacturer:	Identive Group, Inc.	Tested By:	Bob Cole
Model:	Cloud 4000 F DTC		
S/N:			

Function	Manufacturer	Model #	S/N
Dual Interface Smart Card Reader Module *	Identive Group, Inc.	Cloud 4000 F DTC	

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B Spectrum Analyzer	3014A06947	05/02/2012	05/02/2014	598
HP 85650A Quasi Peak Adapter	3145A01673	05/02/2013	05/02/2014	003
HP 8447D PreAmp	2443A03587	05/01/2013	05/01/2014	008
Empire Devices Loop Antenna	N/A	03/06/2013	03/06/2014	114
HP 84125B RF Measurement System	2542A11087	05/02/2012	04/02/2014	001

***Equipment Under Test* (* = EUT):**

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	HP	dv4000	

Test Conditions / Notes:

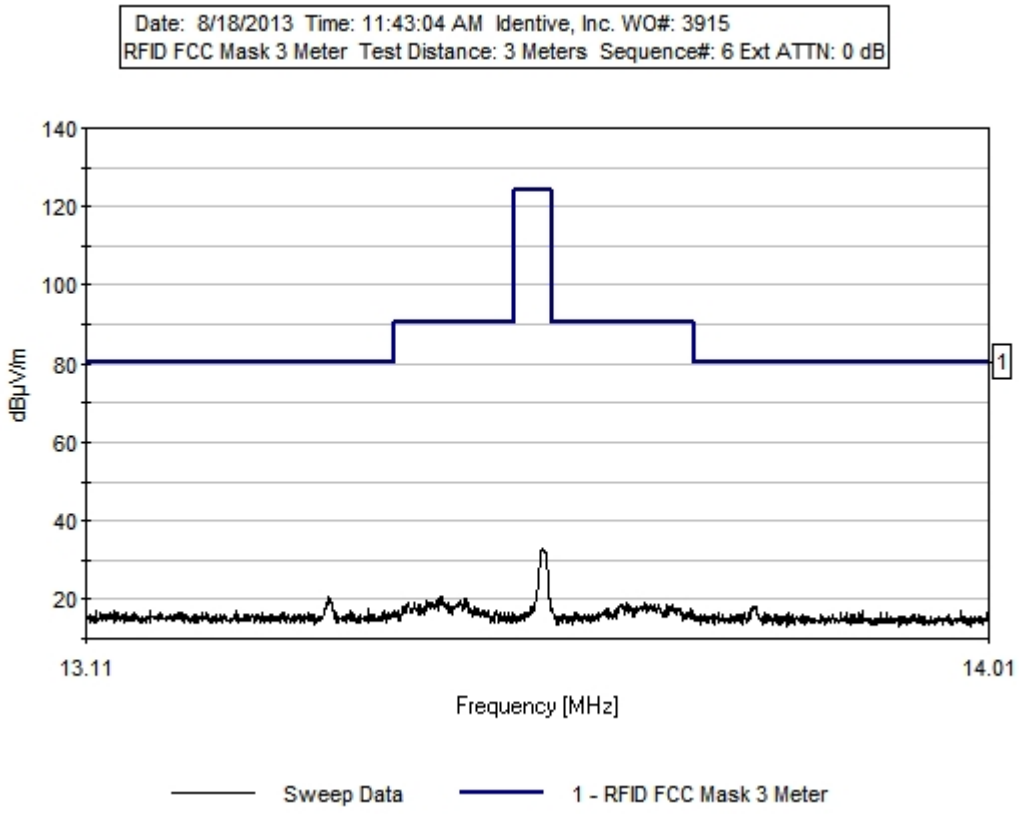
WITH Card in field

Transducer Legend:

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng					Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant



Frequency (MHz)	Corrected Amplitude Reading (dBuV/m)
13.5589	23.00

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.

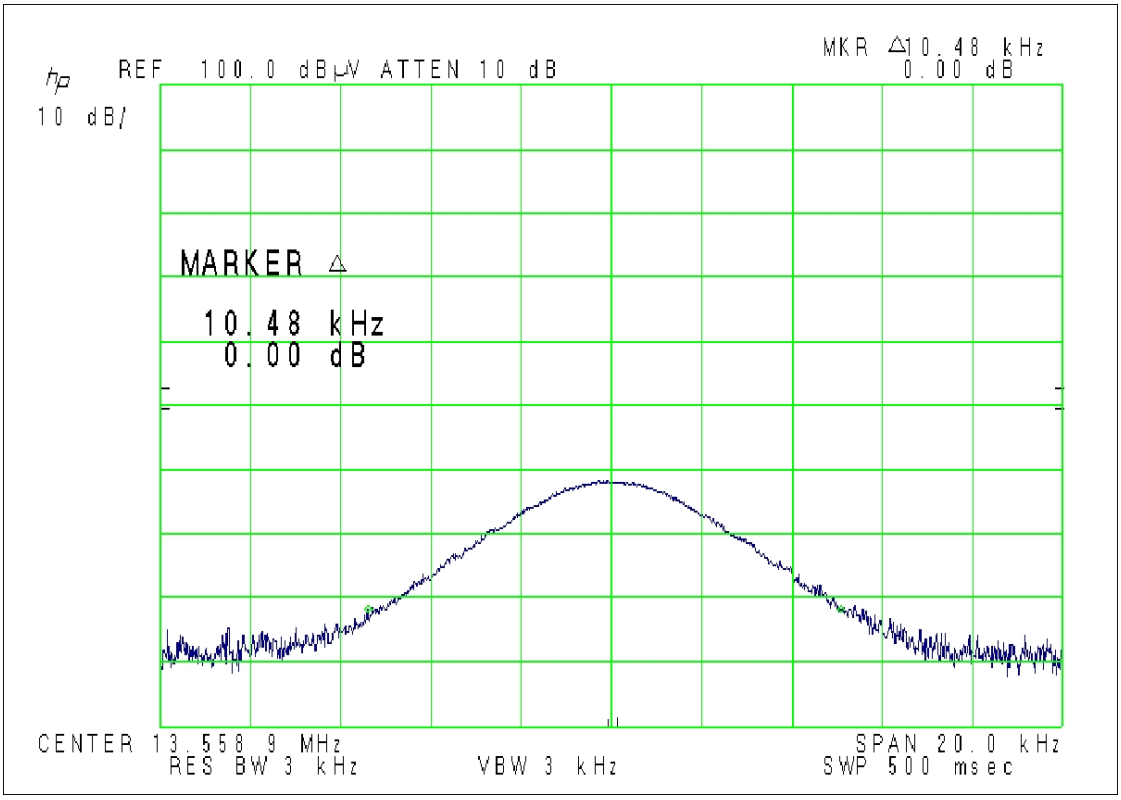
Environmental Conditions	Temperature	24°C
	Relative Humidity	45%
	Atmospheric Pressure	1010mbar

Test Date : 8/18/2013

Tested By : Bob Cole

Results: Pass

Frequency	Occupied Bandwidth (99%)
13.5589 MHz	10.48 KHz



6.0 TEST EQUIPMENT

Antenna Conducted Emissions Measurements:

Equipment	Type	Manufacturer	Calibration Date	Calibration Due Date
EMI Analyzer System	84125B	Hewlett-Packard	5/1/12	5/1/14
Spectrum Analyzer	8566B	Hewlett-Packard	5/2/12	5/2/14
Pre-Amp	83051A	Hewlett-Packard	5/1 /13	5/1/14
Pre-Amp	83017A	Hewlett-Packard	5/1 /13	5/1/14
Pre-Amp	8744D	Hewlett-Packard	5/2/13	5/2/14
Cable	0.25 meters	Murata	5/10/13	5/10/14

Radiated Emissions Measurements:

Equipment	Type	Manufacturer	Calibration Date	Calibration Due Date
EMI Analyzer System	84125B	Hewlett-Packard	5/1/12	5/1/14
Spectrum Analyzer	8566B	Hewlett-Packard	5/2/12	5/2/14
Antenna	JB6 BiConiLog	Sunol Sciences	2/15/12	2/15/14
Pre-Amp	83051A	Hewlett-Packard	5/1 /13	5/1 /14
Pre-Amp	83017A	Hewlett-Packard	5/1 /13	5/1 /14
Pre-Amp	8744D	Hewlett-Packard	5/2/13	5/2/14
Horn Antenna	SAS 200/571	AH Systems	2/19/12	2/19/14
Cable	N – N (30 Meters)	EMCE	5/1 /13	5/1 /14