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 :
Contactless RFID Smartcard Reader

Model Name :
CLOUD 3700F

Application Purpose : Original

Prepared by:

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

Revision History

Rev.	Issue Date	Description
0	5/26/2014	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: Robert Poddar
Application Purpose :	Original
EUT Description	RFID
Product Name	Contactless RFID Smartcard Reader
Model Name :	CLOUD 3700F
Applied Standards :	47 CFR §15.207, 15.209, 15.225: 2010 & Canadian Standards RSS-GEN Issue 3, RSS-210 Issue 8
FCC ID :	MBPCLOUD 3700F-001
IC :	7485A-CLOUD 3700F-001
RF Operating Frequency (ies)	13.56MHz
Modulation	ASK
Emission Designator	13K6K1D
Receipt of EUT :	4/10/14
Date of Testing :	4/10/14 – 5/21/14
Date of Report :	5/26/14

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 3700F*
Description:	*Contactless RFID Smartcard Reader*
Manufacturer:	Identive Group, Inc.

Support Equipment				
Description	*Model Number*	*Serial Number*	*Manufacturer*	*Power Cable Description*
Netbook PC	*Acer Aspire*	*NUSH6AA0012410 25337600*	*Acer*	*Unshielded / 1.5 Meter*

Cable Description				
From	*To*	*Length (Meters)*	*Shielded (Y/N)*	*Ferrite Loaded (Y/N)*
EUT	*Netbook*	*0.5*	*Y*	*N*

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: 2009/ 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.
008 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. "Ave" 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 : 4/13/2014

Tested By : Bob Cole

Results: Pass

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

Test Location: EMCE Engineering •44366 S. Grimmer Blvd • Fremont, CA 94538 •

Customer:	**Identiv GmbH**		
Specification:	**EN55022 B COND [QP]**		
Work Order #:	**4031**	Date:	4/13/2014
Test Type:	**Conducted Emissions**	Time:	2:35:33 PM
Equipment:	**RFID USB Smartcard Reader**	Sequence#:	3
Manufacturer:	Identiv GmbH	Tested By:	Bob Cole
Model:	CLOUD 3700F		120V/600Hz
S/N:	008		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610
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
EMCO 3810-2 LISN	4576	05/17/2012	05/17/2014	007

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

Function	Manufacturer	Model #	S/N
RFID USB Smartcard Reader*	Identiv GmbH	CLOUD 3700F	008

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Acer	Aspire One725-0687	NUSH6AA001241025337600

Test Conditions / Notes:

Host Laptop Acer Aspire One725-0687
EUT USB Cable connected to LEFT side of Lap Top
NO Ferrite on EUT USB Cable

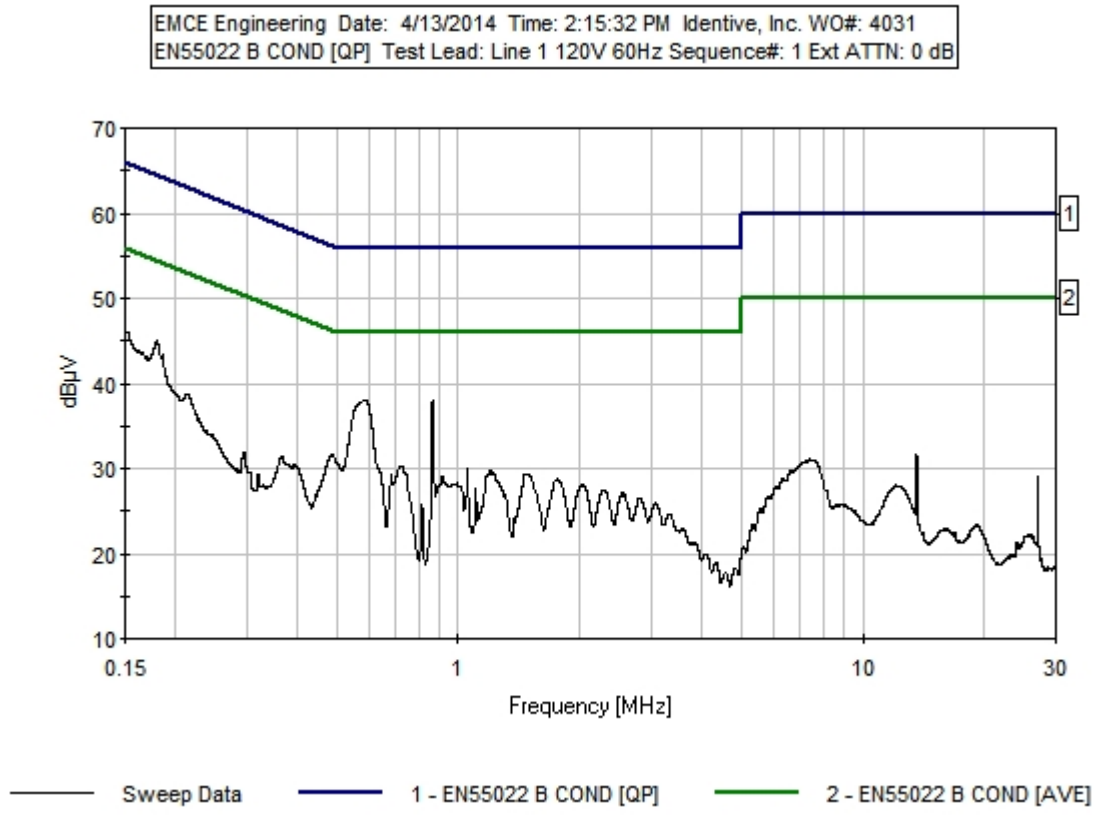
Transducer Legend:

T1=25' LMR #001	T2=EMCO 3810-2 LISN S/N 9807-1988

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	614.098k	39.0	+0.0	+0.7			+0.0	39.7	56.0	-16.3	Line
2	151.358k	46.1	+0.0	+1.1			+0.0	47.2	65.9	-18.7	Line
3	863.068k	36.1	+0.0	+0.5			+0.0	36.6	56.0	-19.4	Line
4	1.053M	32.4	+0.0	+0.5			+0.0	32.9	56.0	-23.1	Line
5	673.351k	32.1	+0.0	+0.6			+0.0	32.7	56.0	-23.3	Line
6	682.771k	32.1	+0.0	+0.6			+0.0	32.7	56.0	-23.3	Line



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

Test Location: EMCE Engineering •44366 S. Grimmer Blvd • Fremont, CA 94538 •

Customer: **Identiv GmbH**
Specification: **EN55022 B COND [QP]**
Work Order #: **4031** Date: 4/13/2014
Test Type: **Conducted Emissions** Time: 2:24:18 PM
Equipment: **RFID USB Smartcard Reader** Sequence#: 2
Manufacturer: Identiv GmbH Tested By: Bob Cole
Model: CLOUD 3700F 120V 60Hz
S/N: 008

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610
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
EMCO 3810-2 LISN	4576	05/17/2012	05/17/2014	007

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

Function	Manufacturer	Model #	S/N
RFID USB Smartcard Reader*	Identiv GmbH	CLOUD 3700F	008

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Acer	Aspire One725-0687	NUSH6AA001241025337600

Test Conditions / Notes:

Host Laptop Acer Aspire One725-0687
EUT USB Cable connected to LEFT side of Lap Top
NO Ferrite on EUT USB Cable

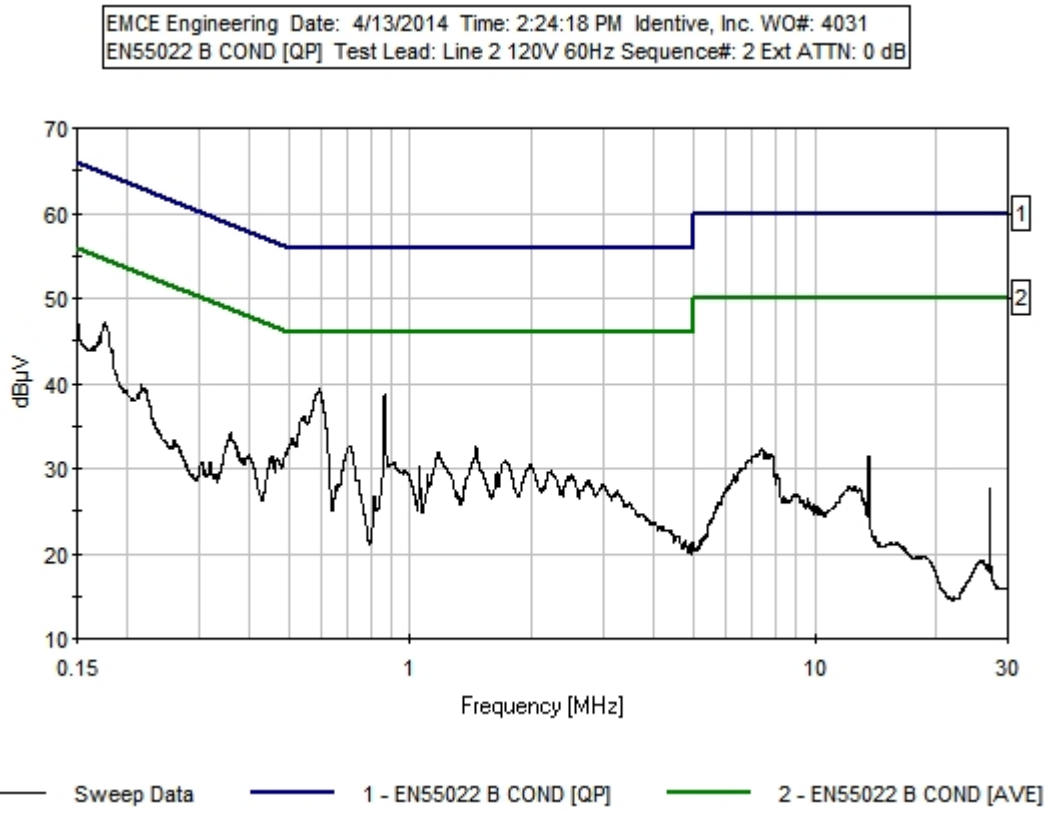
Transducer Legend:

T1=25' LMR #001	T2=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	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	594.949k	38.8	+0.0	+0.7			+0.0	39.5	56.0	-16.5	Line
2	863.068k	38.1	+0.0	+0.5			+0.0	38.6	56.0	-17.4	Line
3	176.304k	46.1	+0.0	+1.1			+0.0	47.2	64.7	-17.5	Line
4	150.339k	46.7	+0.0	+1.1			+0.0	47.8	66.0	-18.2	Line
5	704.345k	32.0	+0.0	+0.6			+0.0	32.6	56.0	-23.4	Line
6	1.453M	31.9	+0.0	+0.6			+0.0	32.5	56.0	-23.5	Line



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 : 4/14/2014

Tested By : Bob Cole

Results: Pass

FCC Part 15.209 Radiated Emissions
9 kHz – 30 MHz

Test Location: EMCE Engineering 44366 S. Grimmer Blvd Fremont, CA 94538

Customer: **Identiv GmbH**
Specification: **15.209 9k-30M FCC Limits 10M**
Work Order #: **4031** Date: 4/14/2014
Test Type: **Radiated Scan** Time: 9:18:45 AM
Equipment: **Contact/Contactless Card Reader** Sequence#: 1
Manufacturer: Identiv GmbH Tested By: Bob Cole
Model: Cloud 4000
S/N: 008

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8593EM	3497A5703	05/01/2012	05/01/2014	609
HP 8447D PreAmp	2443A03587	05/01/2013	05/01/2014	008
Empire Devices Loop Antenna	000114	01/15/2014	01/15/2015	114
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610

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

Function	Manufacturer	Model #	S/N
RFID USB Smartcard Reader	Identiv GmbH	CLOUD 3700F	008

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Acer	Aspire One725-0687	NUSH6AA001241025337600

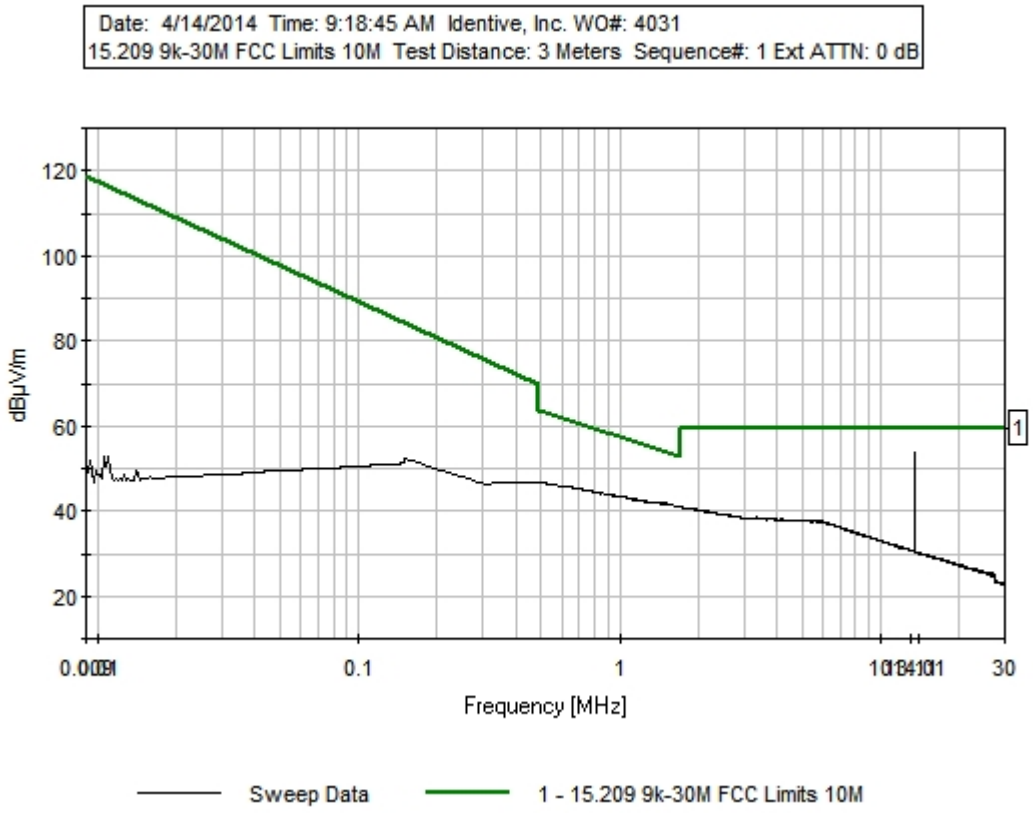
Test Conditions / Notes:

Host Laptop: Acer Aspire One725-0687
EUT: CLOUD 3700F RFID USB Smart Card Reader

Transducer Legend:

T1=8447 Pre-Amp Asset 377 T2=25' LMR #001
T3=LP-105 Loop Factors

Ext Attn: 0 dB


Date: 4/14/2014 Time: 9:18:45 AM Identive, Inc. WO#: 4031
15.209 9k-30M FCC Limits 10M Test Distance: 3 Meters Sequence#: 1 Ext ATTN: 0 dB
120
100
80
60
40
20
dBµV/m
0.1
1
30
Frequency [MHz]
1
Sweep Data
1 - 15.209 9k-30M FCC Limits 10M

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 : 4/14/2014

Tested By : Bob Cole

Results: Pass

FCC Part 15B Radiated Emissions
30 MHz – 1 GHz

Test Location: EMCE Engineering •44366 S. Grimmer Blvd • Fremont, CA 94538 •

Customer: **Identiv GmbH**
Specification: **EN55022B RADIATED**
Work Order #: **4031** Date: 4/14/2014
Test Type: **Maximized Emissions** Time: 10:30:00
Equipment: **RFID USB Smartcard Reader** Sequence#: 3
Manufacturer: Identiv GmbH Tested By: Bob Cole
Model: CLOUD 3700F
S/N: 008

***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
Sunol Sciences JB6 Antenna	1090	08/14/2012	08/14/2014	701
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610

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

Function	Manufacturer	Model #	S/N
RFID USB Smartcard Reader*	Identiv GmbH	CLOUD 3700F	008

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Acer	Aspire One725-0687	NUSH6AA001241025337600

Test Conditions / Notes:

Host Laptop: Acer Aspire One725-0687
EUT: CLOUD 3700F RFID USB Smart Card Reader

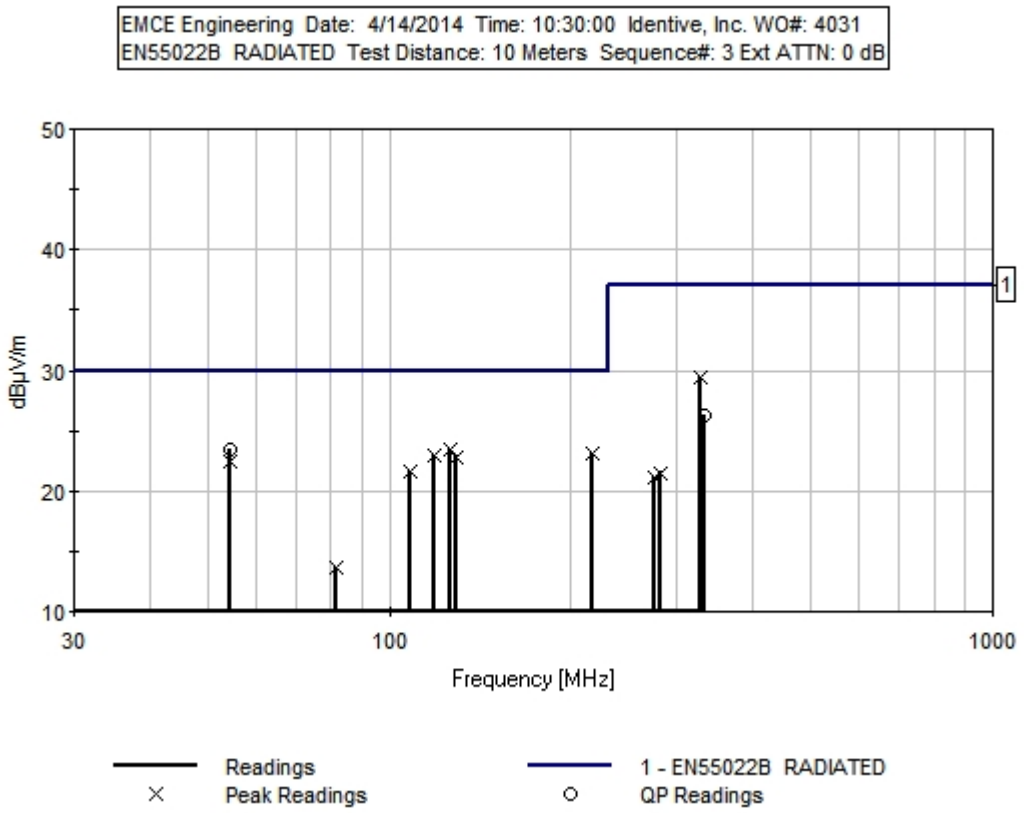
Transducer Legend:

T1=8447 Pre-Amp Asset 377 T2=Sunol JB6 S/N A42610 2012
T3=100' LMR 900 Rad Cable 12-2013

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	54.361M QP	42.5	+26.8	+7.8	+0.0		+0.0 250	23.5	30.0	-6.5	Vert 140
^	54.359M	48.6	+26.8	+7.8	+0.0		+0.0 250	29.6	30.0	-0.4	Vert 140
3	125.978M	36.1	+26.7	+14.2	-0.1		+0.0	23.5	30.0	-6.5	Vert
4	216.945M	38.1	+26.9	+11.7	+0.2		+0.0	23.1	30.0	-6.9	Horiz
5	118.276M	36.7	+26.7	+13.0	-0.1		+0.0 109	22.9	30.0	-7.1	Vert 152
6	129.012M	35.4	+26.7	+14.1	-0.1		+0.0 153	22.7	30.0	-7.3	Vert 162
7	328.500M	40.9	+27.0	+15.0	+0.5		+0.0 142	29.4	37.0	-7.6	Vert 109
8	54.349M	41.4	+26.8	+7.8	+0.0		+0.0	22.4	30.0	-7.6	Horiz
9	108.473M	37.6	+26.8	+10.9	+0.0		+0.0 214	21.7	30.0	-8.3	Vert 103
10	332.410M QP	37.7	+27.0	+15.1	+0.5		+0.0 140	26.3	37.0	-10.7	Vert 115
^	332.413M	42.5	+27.0	+15.1	+0.5		+0.0 140	31.1	37.0	-5.9	Vert 115
12	280.482M	34.2	+27.0	+13.9	+0.4		+0.0	21.5	37.0	-15.5	Horiz
13	275.347M	33.9	+27.0	+13.8	+0.4		+0.0	21.1	37.0	-15.9	Horiz
14	81.402M	33.3	+27.0	+7.4	-0.1		+0.0	13.6	30.0	-16.4	Horiz


EMCE Engineering Date: 4/14/2014 Time: 10:30:00 Identive, Inc. WO#: 4031
EN55022B RADIATED Test Distance: 10 Meters Sequence#: 3 Ext ATTN: 0 dB
50
40
30
20
10
dBµV/m
30
100
1000
Frequency [MHz]
1
Readings
Peak Readings
1 - EN55022B RADIATED
QP Readings

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 : 4/17/2014

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: 13.559948 MHz at -20°C and +50ºC

Temperature (ºC)	Measured Freq. (MHz)	Freq. Drift (Hz)	Freq. Deviation (Limit: 0.01%)	Pass/Fail
50	13.559829	119	<0.01	Pass
40	13.559874	74	<0.01	Pass
30	13.559888	60	<0.01	Pass
20	Reference (13.56 MHz)			
10	13.559982	34	<0.01	Pass
0	13.559982	34	<0.01	Pass
-10	13.559910	37	<0.01	Pass
-20	13.559877	71	<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: 13.55489 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	13.559492	3	<0.01	Pass
5.75	13.559494	6	<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 : 4/13/2014

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

Test Location: EMCE Engineering •44366 S. Grimmer Blvd • Fremont, CA 94538 •

Customer: **Identiv GmbH**
Specification: **RFID FCC Mask 3 Meter**
Work Order #: **4031** Date: 4/13/2014
Test Type: **Radiated Scan** Time: 3:05:45 PM
Equipment: **RFID USB Smartcard Reader** Sequence#: 1
Manufacturer: Identiv GmbH Tested By: Bob Cole
Model: CLOUD 3700F
S/N: 008

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8593EM	3497A5703	02/17/2012	02/17/2014	609
HP 8447D PreAmp	2443A03587	05/01/2013	05/01/2014	008
Empire Devices Loop Antenna	000114	01/15/2014	01/15/2015	114

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

Function	Manufacturer	Model #	S/N
RFID USB Smartcard Reader*	Identiv GmbH	CLOUD 3700F	008

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Acer	Aspire One725-0687	NUSH6AA001241025337600

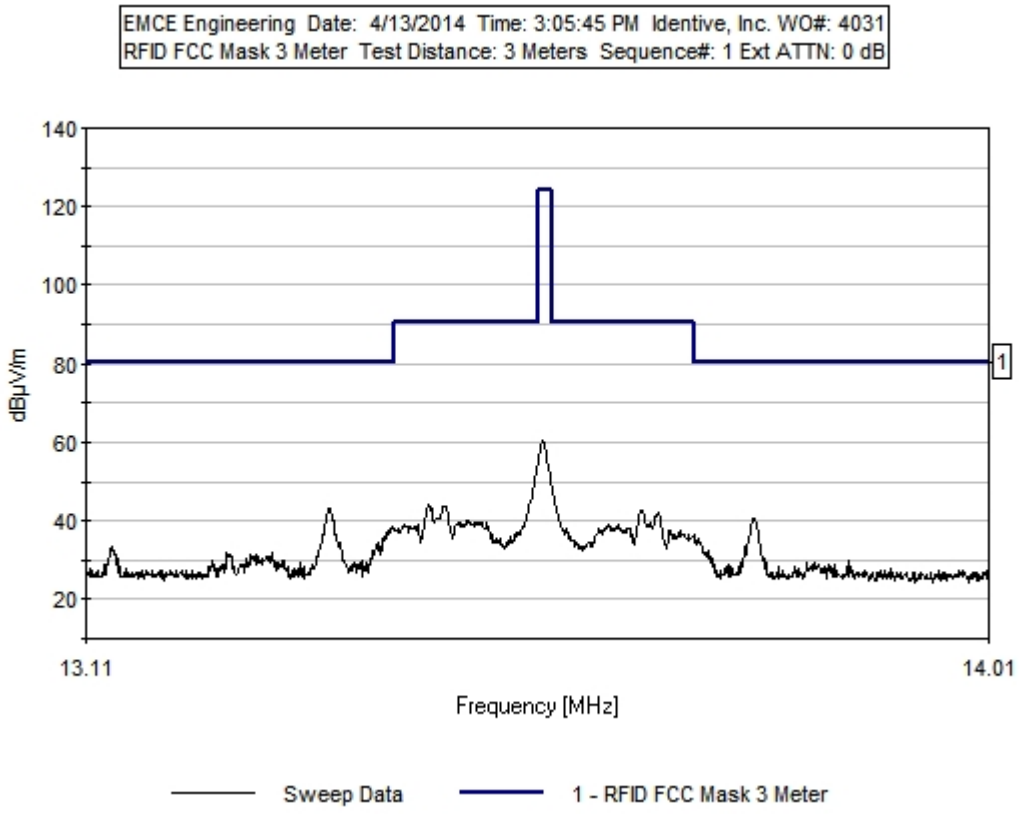
Test Conditions / Notes:

Host Laptop: Aspire One725-0687
EUT: CLOUD 3700F RFID USB Smart Card Reader

Transducer Legend:

T1=25' LMR #001 T2=8447 Pre-Amp Asset 377
T3=LP-105 Loop Factors

Ext Attn: 0 dB



Frequency (MHz)	Corrected Amplitude Reading (dBuV/m @ 3M)
13.558	60.3

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.

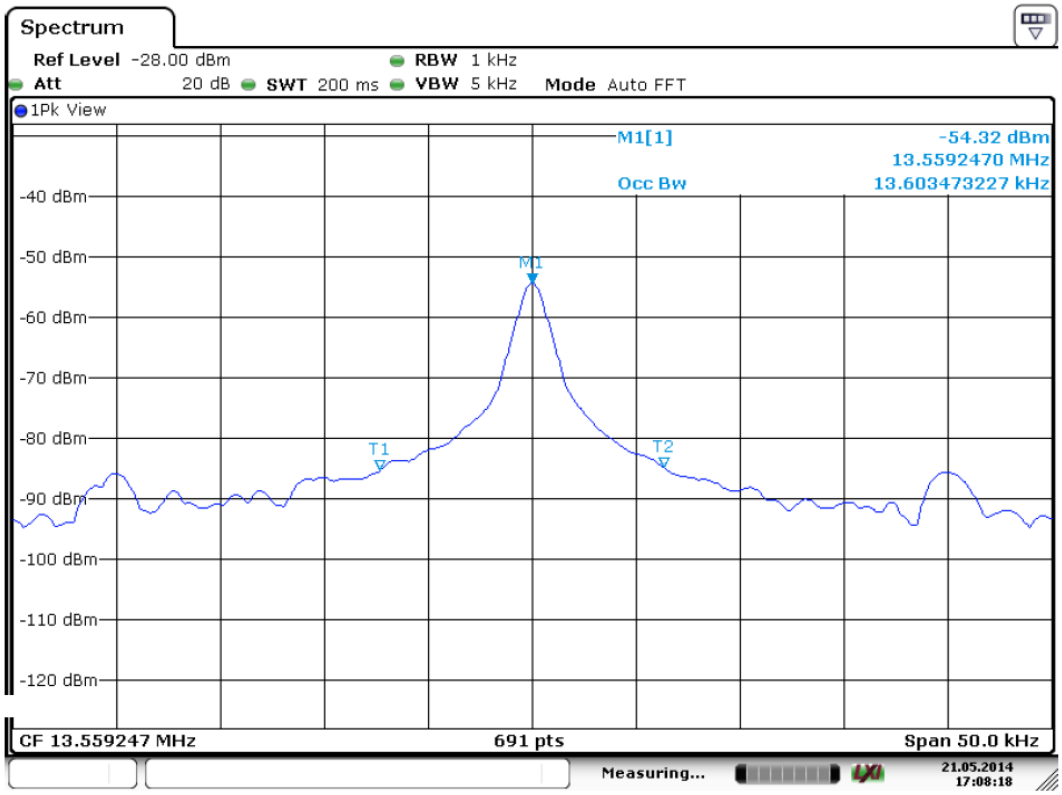
Environmental Conditions	Temperature	24°C
	Relative Humidity	45%
	Atmospheric Pressure	1010mbar

Test Date : 5/21/2014

Tested By : Bob Cole

Results: Pass

Frequency	Occupied Bandwidth (99%)
13.5589 MHz	13.60 KHz



6.0 TEST EQUIPMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer Hewlett-Packard	8566B	3014A06947	5/2/12	5/2/14
Quasi-Peak Adapter Hewlett-Packard	85650A	3145A01673	5/2/13	5/2/15
EMI Analyzer System Hewlett-Packard	8593EM	3497A5703	5/17/12	5/17/14
Signal Analyzer Rohde-Schwarz	FSV7	1321.3008K7	3/10/14	3/10/16
HP 84125 EMI Measurement System	84125B	US36432003	5/1 /13	5/1/15
Pre-Amplifier(100KHz-1.3GHz) Hewlett-Packard	8447D	2443A03587	5/1/13	5/1/15
LISN(9KHz-30MHz) EMCO	3810-2	9807-1988	5/17/12	5/17/14
LISN(9KHz-30MHz) EMCO	3810-2	4576	5/17/12	5/17/14
BiConiLog Antenna Sunol Sciences	JB6	1090	8/14/12	8/14/14
Loop Antenna Empire Devices	LP105	000114	1/15/14	1/15/16
Webber Temperature Chamber	WE4-100-200	3-60-32	8/15/13	8/15/15
RF Signal Cable Murata	25’ LMR	N/A	5/10 /13	5/10 /15
RF Signal Cable EMCE	100’ LMR	N/A	5/1 /13	5/1 /15