

Test Report # 4125-1 Dated 6/12/2015

# **Intentional Radiator Test Report**

Test Standards: FCC Part 15.225 (Subpart C – Intentional Radiators) Industry Canada RSS-210, Issue 8(December 2010)

> Prepared For: Identiv, Inc. 1900B Carnegie Ave, Santa Ana, CA 92705 USA

Product Name : uTrust TS Keypad Reader / uTrust TS Network Keypad Reader

> Model Name : 8210 (uTrust TS Keypad Reader) 8230 (uTrust TS Network Keypad Reader)

**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	6/12/15	Initial Issue



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### 1.0 GENERAL INFORMATION

<b>—</b>	
Test Laboratory:	EMCE Engineering
	44366 S. Grimmer Blvd.
	Fremont, CA 94538 US
	Tel: 510-490-4307, Fax: 510-490-3441
	bob@universalcompliance.com
	FCC registration number : 743299
	Test Site : FCC : US5291, IC : 3324A
Applicant Name :	Identiv, Inc.
	1900B Carnegie Ave
	Santa Ana, CA 92705
	Tel: 510-933-3300
	Contact Person: Calai Bhoopathi
Application Purpose :	Original
EUT Description	RFID Smartcard Reader
Product Name	uTrust TS Keypad Reader / uTrust TS Network Keypad Reade
Model Name :	8210 (uTrust TS Keypad Reader)
	8230 (uTrust TS Network Keypad Reader)
Applied Standards :	FCC 47 CFR §15.207, 15.209, 15.225: 2010 &
	Canadian Standards RSS-GEN Issue 4(November 2014)/
	RSS-210 Issue 1(December 2010)
FCC ID :	FCC ID: MBPTSKP-02
IC :	IC: 7485A-TSKPR2
RF Operating Frequency (ies)	13.56MHz, 125 kHz
Field Strength (at what distance)	56.84dBuV/m @10m and 18.23dBuV/m@10m
Modulation	ASK
Emission Designator	68K5K1D, 18K8K1D
Receipt of EUT :	4/20/2015
Date of Testing :	4/25/2015 – 5/1/2015
Date of Testing.	

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

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### 2.0 EUT AND ACCESSORY INFORMATION

EUT									
Product Name:	uTrust TS I	uTrust TS Keypad Reader / uTrust TS Network Keypad Reader							
Model Name:	8210 (uTrust	8210 (uTrust TS Keypad Reader) / 8230 (uTrust TS Network Keypad Reader)							
Manufacturer:		Identiv,	Inc.						
	Support	Equipment							
Description	Model Number	Serial Number	Manufacturer	Power Cable Description					
Netbook PC	Acer Aspire	NUSH6AA0012410 25337600	Acer	Unshielded / 1.5 Meter					
	Cable I	Description							
From	То	Length (Meters)	Shielded (Y/N)	Ferrite Loaded (Y/N)					
EUT	Netbook	5.0	N	N					



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### 3.0 SUMMARY OF TEST RESULTS

Test S	tandard		Deco /			
47 CFR Part 15.225: 2010	RSS 210 Issue 8 (December 2010)	Description	Pass / Fail			
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				
15.225(c)	RSS210(A2.6)	Limit in the band of 13.110 – 13.410 MHz and 13.710 – 14.010 MHz				
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 0	ANSI C63.4: 2009/ RSS Gen Issue 4 (November 2014)					
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.



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### 4.0 MODIFICATIONS

There were no modifications.



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### 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).



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# 5.2 Conducted Emissions Voltage

Requirement(s): 47 CFR §15.207

Requirement:

	Conducted limit (dBµV)		
Frequency of emission (MHz)	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.
- 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 ConditionsTemperature24°CRelative Humidity45%Atmospheric Pressure1010mbar

Test Date : 4/27/2015

Tested By : Bob Cole

#### Results: Pass



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### 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:	Micron Consumer Products Group		
Specification:	FCC 15_207 COND [QP]		
Work Order #:	4125	Date:	4/27/2015
Test Type:	Conducted Emissions	Time:	16:31:35
Equipment:	Access Control Pad	Sequence#:	13
Manufacturer:	Idenity, Inc.	Tested By:	Bob Cole
Model:	8210 (uTrust TS Keypad Reader) / 8230		120V 60Hz
	(uTrust TS Network Keypad Reader)		
S/N:	1		

#### Test Equipment:

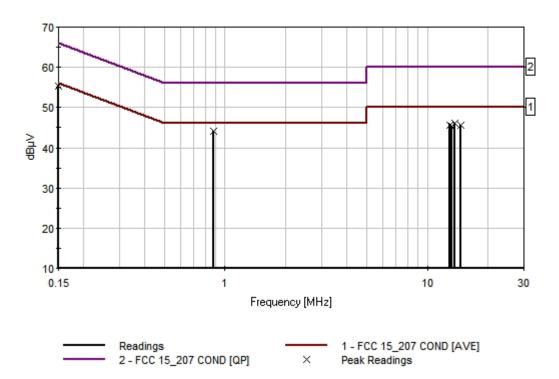
Function	S/N	Calibration	Date C	al Due Date	Asset #
Equipment Under	<i>Test</i> (* = EUT):				
Function	Manufact	urer	Model #		S/N
UTrust Keypad Rea	der / Idenity, Ir		8210 (uTrust		1
uTrust Network Key	/pad		Reader) / 823	60 (uTrust TS	
Reader*			Network Key	pad Reader)	
Support Devices:					
Function	Manufact	urer	Model #		S/N
Laptop PC	Acer		Aspire One72	25-0687	NUSH6AA0012410253376
					00
Printer	Epson		C62		N/A
Test Conditions / N	lotes:				
Transducer Legen	d:				
T1=25' LMR #001			T2=HP 11947	7A Trans. Limit	ter TL1
Ext Attn: 0 dB					

Measu	rement Data:	Rea	ding liste	d by freq	uency.			Test Lead	1: Line 1		
#	Freq	Rdng	T1	T2			Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	769.139k	19.3	+0.1	+9.9			+0.0	29.3	56.0	-26.7	Line
	QP										
2	769.139k	8.9	+0.1	+9.9			+0.0	18.9	56.0	-37.1	Line
	Ave										
3	1.729M	24.8	+0.1	+9.9			+0.0	34.8	56.0	-21.2	Line
	QP										
4	1.729M	18.7	+0.1	+9.9			+0.0	28.7	56.0	-27.3	Line
	Ave										



ENGINEERING	FCC ID: MBPTSKP-02 IC: 7485A-TSKPR2	Test Report # 4125-1 Dated 6/12/2015
5 6.753M 24.5 QP	+0.1 +10.0 +0.0	34.6 60.0 -25.4 Line
6 6.753M 18.9 Ave	+0.1 +10.0 +0.0	29.0 60.0 -31.0 Line
7 7.880M 25.3 QP	+0.1 +10.0 +0.0	35.4 60.0 -24.6 Line
8 7.880M 19.8 Ave	+0.1 +10.0 +0.0	29.9 60.0 -30.1 Line
9 8.746M 21.8 QP	+0.1 +10.0 +0.0	31.9 60.0 -28.1 Line
10 8.746M 16.2 Ave	+0.1 +10.0 +0.0	26.3 60.0 -33.7 Line

EMCE Engineering Date: 1/6/2015 Time: 5:59:42 AM Identive, Inc. WO#: 4097 FCC 15\_207 COND [QP] Test Lead: Line 1 120V 60Hz Sequence#: 1 Ext ATTN: 0 dB





### 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:	Micron Consumer Products Group		
Specification:	FCC 15_207 COND [QP]		
Work Order #:	4124	Date:	4/27/2015
Test Type:	Conducted Emissions	Time:	16:08:12
Equipment:	Access Control Pad	Sequence#:	12
Manufacturer:	Idenity, Inc.	Tested By:	Bob Cole
Model:	8210 (uTrust TS Keypad Reader) / 8230		120V 60Hz
	(uTrust TS Network Keypad Reader)		
S/N·	1		

S/N:

#### Test Equipment:

Function	S/N	Calibration	Date	Cal Due Date	Asset #
Equipment Under Tes	<i>t</i> (* = EUT):				
Function	Manufacturer		Model #		S/N
UTrust Keypad Reader	/ Idenity, Inc.		8210 (uTru	ist TS Keypad	1
uTrust Network Keypac	1		Reader) / 8	3230 (uTrust TS	
Reader*			Network K	(Leypad Reader)	
Support Devices:					
Function	Manufacturer		Model #		S/N
Laptop PC	Acer		Aspire One	e725-0687	NUSH6AA0012410253376
					00
Printer	Epson		C62		N/A
Test Conditions / Note	25:				

Transducer Legend:

	aucer Begenn										
T1=25'	LMR #001	T2=HP 11947A Trans. Limiter TL1									
Ext A	Ext Attn: 0 dB										
Measur	rement Data:	Rea	ding liste	d by freq	uency.			Test Lead	1: Line 1		
#	Freq	Rdng	T1	T2			Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	600.040k	30.5	+0.1	+9.9			+0.0	40.5	56.0	-15.5	Line
(	QP										
2	600.098k	33.4	+0.1	+9.9			+0.0	43.4	56.0	-12.6	Line
	Ave										
3	758.413k	18.9	+0.1	+9.9			+0.0	28.9	56.0	-27.1	Line
(	QP										
4	758.431k	26.0	+0.1	+9.9			+0.0	36.0	56.0	-20.0	Line
1	Ave										
5	1.719M	28.7	+0.1	+9.9			+0.0	38.7	56.0	-17.3	Line
1	Ave										

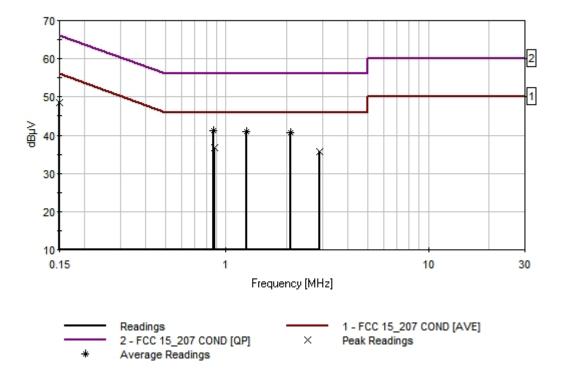
EMCE Engineering, Inc., 44366 S. Grimmer Blvd., Fremont, CA 94538 Page Tel:510-490-4307 Fax: 510-490-3441 e-mail: bob@universalcompliance.com Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of Accreditation under Lab Code 200092-0

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ENGINEERING					: MBPTSKP-02 7485A-TSKPR2	Test Report # 4125-1 Dated 6/12/2015			
6	1.719M	25.3	+0.1	+9.9	+0.0	35.3	56.0	-20.7	Line
Q	P								
7	3.966M	22.4	+0.1	+10.0	+0.0	32.5	56.0	-23.5	Line
A	ve								
8	3.966M	18.0	+0.1	+10.0	+0.0	28.1	56.0	-27.9	Line
Q	QP								
9	7.782M	30.2	+0.1	+10.0	+0.0	40.3	60.0	-19.7	Line
A	ve								
10	7.782M	25.9	+0.1	+10.0	+0.0	36.0	60.0	-24.0	Line
Q	Р								
11	8.135M	27.2	+0.1	+10.0	+0.0	37.3	60.0	-22.7	Line
Ave									
12	8.135M	22.8	+0.1	+10.0	+0.0	32.9	60.0	-27.1	Line
Q	P								

EMCE Engineering Date: 1/6/2015 Time: 06:16:20 Identive, Inc. WO#: 4097 FCC 15\_207 COND [QP] Test Lead: Line 2 120V 60Hz Sequence#: 2 Ext ATTN: 0 dB



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### 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  $(dB\mu V/m) + ACF (dB) + Cable Loss (dB) - Distance Correction Factor$ 

- 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 26°C Relative Humidity 42.2%

Test Date : 5/4/2015

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, Inc.		
Specification:	15.209 9k-30M FCC Limits 10M		
Work Order #:		Date:	5/4/2015
Test Type:	Radiated Scan	Time:	12:22:11 PM
Equipment:	Access Control Pad	Sequence#:	1
Manufacturer:	Identiv, Inc.	Tested By:	Test Engineer
Model:	8210 (uTrust TS Keypad Reader) / 8230		
	(uTrust TS Network Keypad Reader)		
a a .			

S/N:

Test Equipment:

Functio	n	S/N		C	Calibration	n Date	Cal	Due Date	As	set #	
Equipr	nent Under Z	Test (* = $\mathbf{I}$	EUT):								
Functio			Ianufactu	rer		Model	#		S/N		
Access	Control Key	pad Io	lentiv, In	с.		8210 (uTrust TS Keypad					
							· · · · · ·	uTrust TS			
						Networ	rk Keypa	d Reader)			
	rt Devices:										
Functio			Ianufactu	rer		Model			S/N		
Power (	Over Etherne	t T	P-Link			TL-PO	E150S V	er 3.0	2144545	000690	
Test C	onditions / N	otes:									
Transa	lucer Legend	l:									
T1=100	T1=100' LMR 900 Rad Cable 12-2013 T2=8447 Pre-Amp Asset 377										
T3=LP-	105 Loop Fa	ctors						•			
Ext A	Ext Attn: 0 dB										
Measur	ement Data:	Re	eading lis	ted by m				est Distance	e: 10 Meter	rs	
#	Freq	Rdng	T1	T2	T3		Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table		dBµV/m	dB	Ant
1	1.540M	16.4	+0.2	+27.4	+50.8		+0.0	40.0	53.9	-13.9	Vert
2	1 40214	15.0	+0.2	+27.4	+50.9		+0.0	39.5	54.1	-14.6	Vert
2	1.493M	15.8	+0.2	+27.4	+30.9		+0.0	39.3	34.1	-14.0	ven
3	1.640M	15.4	+0.2	+27.4	+50.5		+0.0	38.7	53.3	-14.6	Vert
5		1011						2017	00.0	1.1.5	
4	1.352M	16.1	+0.2	+27.5	+51.4		+0.0	40.2	55.0	-14.8	Vert
5	866.065k	17.3	+0.2	+27.5	+53.5		+0.0	43.5	58.9	-15.4	Vert
6	845.158k	17.1	+0.2	+27.5	+53.6		+0.0	43.4	59.1	-15.7	Vert

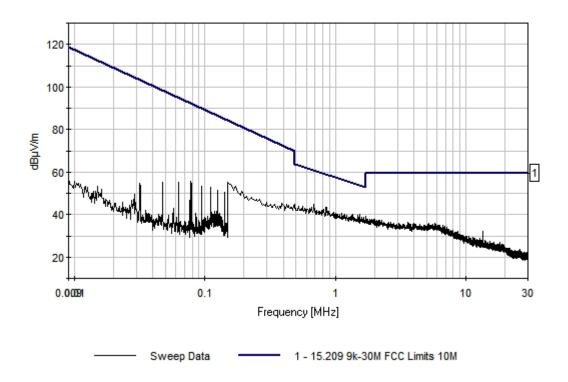
EMCE Engineering, Inc., 44366 S. Grimmer Blvd., Fremont, CA 94538PaTel:510-490-4307 Fax: 510-490-3441 e-mail: <a href="mailto:bob@universalcompliance.com">bob@universalcompliance.com</a>Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope ofAccreditation under Lab Code 200092-0

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ENC	ENGINEERING			FCC ID: MBPTSKP-02 IC: 7485A-TSKPR2			Те	Test Report # 4125-1 Dated 6/12/2015			
7	1.326M	15.3	+0.2	+27.5	+51.5	+0.0	39.5	55.2	-15.7	Vert	
8	688.356k	17.5	+0.2	+27.5	+54.7	+0.0	44.9	60.9	-16.0	Vert	
9	1.122M	15.6	+0.2	+27.5	+52.3	+0.0	40.6	56.6	-16.0	Vert	
10	1.174M	15.3	+0.2	+27.5	+52.0	+0.0	40.0	56.2	-16.2	Vert	
11	1.221M	15.1	+0.2	+27.5	+51.9	+0.0	39.7	55.9	-16.2	Vert	
12	808.571k	16.1	+0.2	+27.5	+53.9	+0.0	42.7	59.5	-16.8	Vert	
13	782.437k	15.4	+0.2	+27.5	+54.0	+0.0	42.1	59.7	-17.6	Vert	
14	557.687k	15.5	+0.2	+27.6	+55.7	+0.0	43.8	62.7	-18.9	Vert	
15	1.723M	16.0	+0.2	+27.4	+50.2	+0.0	39.0	59.5	-20.5	Vert	

EMCE Engineering Date: 5/4/2015 Time: 12:22:11 PM Customer WO#: 15.209 9k-30M FCC Limits 10M Test Distance: 10 Meters Sequence#: 1 Ext ATTN: 0 dB



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### 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  $(dB\mu V/m) + ACF (dB) + Cable Loss(dB) - Distance Correction Factor$ 

- 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.	<b>Environmental Conditions</b>	Temperature	24°C
		Relative Humidity	45%
		Atmospheric Pressure	1010mbar

Test Date : 4/29/2015

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:	Identive, Inc.		
Specification:	FCC 15.209 30-1000 10M		
Work Order #:	4125	Date:	4/29/2015
Test Type:	Radiated Scan	Time:	11:49:38
Equipment:	Access Control Pad	Sequence#:	2
Manufacturer:	Identiv	Tested By:	Bob Cole
Model:	8210 (uTrust TS Keypad Reader) / 8230		
	(uTrust TS Network Keypad Reader)		
S/N:	N/A		

Test Equipment:

271.201M

216.460M

244.081M

4

5

6

27.4

29.7

28.2

+0.3

+0.2

+0.3

+27.0

+26.9

+27.0

Function	S/N		C	alibration	Date	Cal	Due Date	As	set #	
Equipment Und	er Test (* = ]	EUT):								
Function	Ν	/lanufactu	rer		Model	#		S/N		
Access Control P	ad* I	dentiv			8210 (u	ITrust TS	Keypad	N/A		
					Reader	) / 8230 (	uTrust TS			
					Networ	k Keypa	d Reader)			
Support Devices	•									
Function	Ν	/lanufactu	rer		Model	#		S/N		
Power Over Ether	rnet T	P-Link			TL-PO	E150S V	er 3.0	2144545	000690	
Test Conditions	Test Conditions / Notes:									
	, 1100000									
Tuansduson Loa	and									
Transducer Leg		12 2013			T2-84/	17 Dro 1	np Asset 3	77		
T3=Sunol JB6 S/		12-2015			12-04-	+/ 110-A	пр Азэсс 5	//		
Ext Attn: 0 d										
Measurement Da		eading list	ted by m	argin.		Τe	est Distance	e: 10 Meter	s	
# Freq	Rdng	T1	T2	T3		Dist	Corr	Spec	Margin	Polar
MHz	dBµV	dB	dB	dB	dB	Table	$dB\mu V/m$	dBµV/m	dB	Ant
1 162.718	M 37.9	+0.0	+26.7	+12.2		+0.0	23.4	33.5	-10.1	Vert
						156				110
2 298.3201	M 35.9	+0.4	+27.0	+13.6		+0.0	22.9	36.0	-13.1	Vert
						284				292
3 149.1671	M 30.2	-0.1	+26.7	+12.7		+0.0	16.1	33.5	-17.4	Vert
						180				140

+13.3

+10.6

+11.5

+0.0

+0.0

+0.0

156

14.0

13.6

13.0

36.0

36.0

36.0

-22.0

-22.4

-23.0

Vert

127

Horiz 294

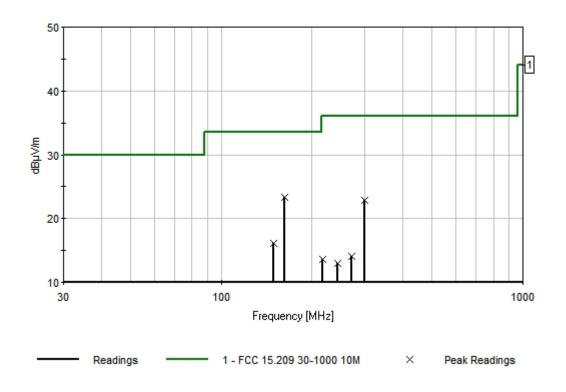
Horiz

294



Test Report # 4125-1 Dated 6/12/2015

EMCE Engineering Date: 4/29/2015 Time: 11:49:38 Identive, Inc. WO#: 4125 FCC 15.209 30-1000 10M Test Distance: 10 Meters Sequence#: 2 Ext ATTN: 0 dB



# 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 : 4/29/2015

Tested By : Bob Cole

Results: Pass

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

Reference Frequency: 13.559981 MHz

Temperature (ºC)	Measured Freq. (MHz)	Freq. Drift (Hz)	Freq. Deviation (Limit: 0.01%)	Pass/Fail			
50	13.560172	191	<0.01	Pass			
40	13.560107	126	<0.01	Pass			
30	13.560018	37	<0.01	Pass			
20		Reference (13.559980 MHz)					
10	13.559942	39	<0.01	Pass			
0	13.559912	69	<0.01	Pass			
-10	13.559891	90	<0.01	Pass			
-20	13.559858	123	<0.01	Pass			

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

Carrier Frequency: 13.559981 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	13.559984	3	<0.01	Pass
5.75	13.559988	7	<0.01	Pass

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# 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 : 4/29/2015

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.



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### 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 Group, Inc		
Specification:	RFID FCC Mask 10 Meter		
Work Order #:	4125	Date:	4/29/2015
Test Type:	Radiated Scan	Time:	12:00:45 PM
Equipment:	Access Control Pad	Sequence#:	3
Manufacturer:	Identiv	Tested By:	Bob Cole
Model:	8210 (uTrust Keypad Reader) / 8230		
	(uTrust Network Keypad Reader)		
S/N:	N/A		

#### Test Equipment:

Function S	/N	Calibration Date	Cal Due Date	Asset #
Equipment Under Test	(* = <b>EUT</b> ):			
Function	Manufacturer	Model #		S/N
Access Control Keypad	Identiv, Inc.	8210 (uTr	ust Keypad	N/A
		Reader) /	8230 (uTrust	
		Network H	Keypad Reader)	
Support Devices:				
Function	Manufacturer	Model #		S/N
Power Over Ethernet	TP-Link	TL-POE1:	50S Ver 3.0	2144545000690
Test Conditions / Notes				

Test Conditions / Notes:

#### Transducer Legend:

T1=100' LMR 900 Rad Cable 12-2013

T2=8447 Pre-Amp Asset 377

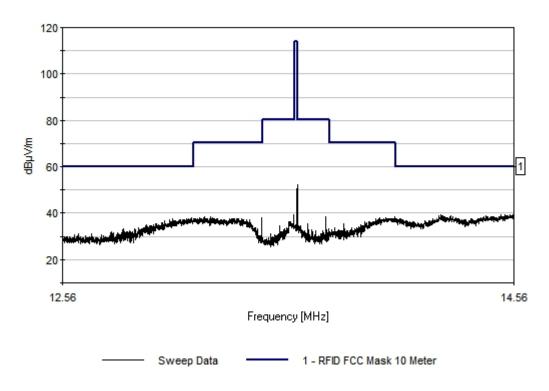
#### T3=LP-105 Loop Factors Ext Attn: 0 dB

$\mathbf{u}$										
<i>Measurement Data:</i> Reading listed by amplitude.					itude. Test Distance: 10 Meters					
Freq	Rdng	T1	T2	T3		Dist	Corr	Spec	Margin	Polar
MHz	dBµV	dB	dB	dB	dB	Table	$dB\mu V/m$	dBµV/m	dB	Ant
13.566M	39.7	+0.2	+27.3	+39.7		+0.0	52.3	114.0	-61.7	Vert
14.518M	27.4	+0.2	+27.3	+39.1		+0.0	39.4	60.0	-20.6	Vert
14.218M	27.2	+0.2	+27.3	+39.3		+0.0	39.4	60.0	-20.6	Vert
14.426M	26.9	+0.2	+27.3	+39.1		+0.0	38.9	60.0	-21.1	Vert
13.549M	26.7	+0.2	+27.3	+39.7		+0.0	39.3	80.5	-41.2	Vert
	ement Data: Freq MHz 13.566M 14.518M 14.218M 14.218M 14.426M	ement Data:     Rea       Freq     Rdng       MHz     dBμV       13.566M     39.7       14.518M     27.4       14.218M     27.2       14.426M     26.9	ement Data:     Reading lister       Freq     Rdng     T1       MHz     dBµV     dB       13.566M     39.7     +0.2       14.518M     27.4     +0.2       14.218M     27.2     +0.2       14.426M     26.9     +0.2	ement Data:     Reading listed by amp       Freq     Rdng     T1     T2       MHz     dBµV     dB     dB       13.566M     39.7     +0.2     +27.3       14.518M     27.4     +0.2     +27.3       14.218M     27.2     +0.2     +27.3       14.426M     26.9     +0.2     +27.3	ement Data:     Reading listed by amplitude.       Freq     Rdng     T1     T2     T3       MHz     dBµV     dB     dB     dB       13.566M     39.7     +0.2     +27.3     +39.7       14.518M     27.4     +0.2     +27.3     +39.1       14.218M     27.2     +0.2     +27.3     +39.3       14.426M     26.9     +0.2     +27.3     +39.1	ement Data:     Reading listed by amplitude.       Freq     Rdng     T1     T2     T3       MHz     dBµV     dB     dB     dB     dB       13.566M     39.7     +0.2     +27.3     +39.7       14.518M     27.4     +0.2     +27.3     +39.1       14.218M     27.2     +0.2     +27.3     +39.3       14.426M     26.9     +0.2     +27.3     +39.1	ement Data:Reading listed by amplitude.TeFreqRdngT1T2T3DistMHzdB $\mu$ VdBdBdBdBdBTable13.566M39.7+0.2+27.3+39.7+0.014.518M27.4+0.2+27.3+39.1+0.014.218M27.2+0.2+27.3+39.3+0.014.426M26.9+0.2+27.3+39.1+0.0	ement Data:Test DistanceFreqRdngT1T2T3DistCorrMHzdB $\mu$ VdBdBdBdBdBTabledB $\mu$ V/m13.566M39.7+0.2+27.3+39.7+0.052.314.518M27.4+0.2+27.3+39.1+0.039.414.218M27.2+0.2+27.3+39.3+0.039.414.426M26.9+0.2+27.3+39.1+0.038.9	ment Data:Test Distance: 10 MeterFreqRdngT1T2T3DistCorrSpecMHzdB $\mu$ VdBdBdBdBdBTabledB $\mu$ V/mdB $\mu$ V/m13.566M39.7+0.2+27.3+39.7+0.052.3114.014.518M27.4+0.2+27.3+39.1+0.039.460.014.218M27.2+0.2+27.3+39.3+0.039.460.014.426M26.9+0.2+27.3+39.1+0.038.960.0	ement Data:Reading listed by amplitude.Test Distance: 10 MetersFreqRdngT1T2T3DistCorrSpecMarginMHzdB $\mu V$ dBdBdBdBdBTabledB $\mu V/m$ dB $\mu V/m$ dB13.566M39.7+0.2+27.3+39.7+0.052.3114.0-61.714.518M27.4+0.2+27.3+39.1+0.039.460.0-20.614.218M27.2+0.2+27.3+39.3+0.039.460.0-20.614.426M26.9+0.2+27.3+39.1+0.038.960.0-21.1



ENGINEERING			FCC ID: MBPTSKP-02 IC: 7485A-TSKPR2			Test Report # 4125-1 Dated 6/12/2015				
6	14.209M	26.7	+0.2	+27.3	+39.3	+0.0	38.9	60.0	-21.1	Vert
7	13.691M	26.1	+0.2	+27.3	+39.6	+0.0	38.6	80.5	-41.9	Vert

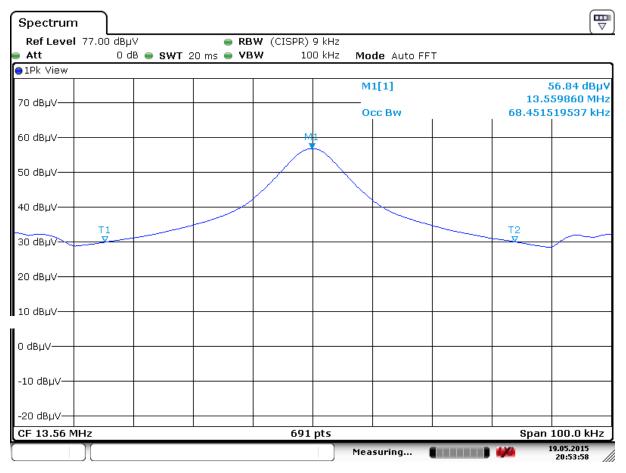
EMCE Engineering Date: 4/29/2015 Time: 12:00:45 PM Identive, Inc. WO#: 4125 RFID FCC Mask 10 Meter Test Distance: 10 Meters Sequence#: 3 Ext ATTN: 0 dB





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13.56 MHz Peak Power / 99% OBW							
Frequency (MHz)	Corrected Amplitude Reading (dBuV/m @ 10M)	99% OBW					
13.558	56.84	68.45 kHz					



Date: 19 MAY.2015 20:53:59



Test Report # 4125-1 Dated 6/12/2015

125	125 kHz Peak Power / 99% OBW					
Frequency	Corrected Amplitude Reading (dBuV/m @ 10M)	99% OBW				
125 kHz	18.23	18.84 kHz				

70 dBµV   125.0000     60 dBµV   0cc Bw     50 dBµV   18.842257598     40 dBµV   1     30 dBµV   1     10 dBµV   1	Spectrum									
IPk View     MI[1]     18.23 de 125.0000 l       70 dBµV     Occ Bw     18.842257598 l       60 dBµV     0cc Bw     18.842257598 l       50 dBµV     0     0       30 dBµV     1     0       10 dBµV     1     1						•				`
70 dBµV M1[1] 18.23 dE   70 dBµV 0cc Bw 125.0000 l   60 dBµV 0cc Bw 18.842257598 l   50 dBµV 10 dBµV 10 dBµV   10 dBµV 11 dEµV 11 dEµV		0 di	3 👄 SWT 🔅	26.9 ms 👄 <b>\</b>	/BW	10 kHz	Mode Auto	FFT		
0 dbµV 0cc Bw 18.842257598 l   60 dbµV 10 dbµV 10 dbµV   10 dbµV 11 dbµV	-					м	1[1]			18.23 dBµ'
50 dBµV 40 dBµV 30 dBµV 20 dBµV 10 dBµV -10 dBµV	70 dBµV					0	cc Bw	I		
40 dBµV 30 dBµV 20 dBµV 10 dBµV -10 dBµV	60 dBµV									
30 dBµV 20 dBµV 10 dBµV -10 dBµV	50 dBµV									
20 dBμV 10 dBμV 0] dBμV -10 dBμV	40 dBµV									
	30 dBµV									
	20 dBµV				м	1				
$\overline{X}_{10}$ $\overline{B}_{\mu}^{\mu}$ $\overline{M}_{\mu}$ $\overline{M}$	10 dBµV									
$\overline{X}_{10}$ $\overline{B}_{\mu}^{\mu}$ $\overline{M}_{\mu}$ $\overline{M}$										
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	10 0000	, in the second s					9 - 9 - 9 - 9 - 9 - 9 - 9 - 9 - 9 - 9 -	and and		man the
-20 dBµV										1
CF 125.0 kHz 691 pts Span 20.0 kl	CF 125.0 kH	z			691	pts				

Date: 19 MAY .2015 21:09:12



Test Report # 4125-1 Dated 6/12/2015

### 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	25.5°C
	Relative Humidity	47.2%

Test Date : 5/19/2015

Tested By : Bob Cole

Results: Pass

Frequency	Occupied Bandwidth (99%)
13.56 MHz	68.45 kHz
125 kHz	18.84 kHz



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# 6.0 TEST EQUIPMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer Hewlett-Packard	8566B	3014A06947	5/2/14	5/2/16
Quasi-Peak Adapter Hewlett-Packard	85650A	3145A01673	5/2/14	5/2/16
EMI Analyzer System Hewlett-Packard	8593EM	3497A5703	5/17/14	5/17/16
Signal Analyzer Rohde-Schwarz	FSV7	101468	1/28/14	1/28/17
HP 84125 EMI Measurement System	84125B	US36432003	5/1 /13	5/1/16
Pre-Amplifier(100KHz-1.3GHz) Hewlett-Packard	8447D	2443A03587	5/1/14	5/1/16
LISN(9KHz-30MHz) EMCO	3816-2	9807-1988	7/10/14	7/10/15
LISN(9KHz-30MHz) EMCO	3816-2	4576	7/1014	7/10/15
BiConiLog Antenna Sunol Sciences	JB6	1090	8/14/14	8/14/16
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 /16
RF Signal Cable EMCE	100' LMR	N/A	5/1 /13	5/1 /16