



# Electromagnetic Compatibility Test Report

Company Name: Identive Technologies AG  
Equipment Under Test: NFC Desktop Reader  
Model Number: ADRB-USB-V2 / ADRB-232-V2

Requirements:  
*47 CFR PART 2, SUBPART J, PARAGRAPH 2.906*  
*Subpart C – Intentional Radiators*  
*Part 15.225*

Verified by: Bob Cole  
Authorized Signatory  
Report #3892-1  
Dated: 08/08/13



ACCREDITED BY THE NATIONAL VOLUNTARY LABORATORY  
ACCREDITATION PROGRAM FOR THE SPECIFIC SCOPE  
OF ACCREDITATION UNDER LAB CODE #: 200092-0

## Statement of Compliance

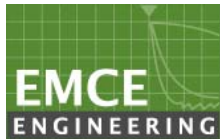
We, EMCE Engineering, declare under our sole responsibility that the product tested complies with the following listed standards:

Equipment under Test: NFC Desktop Reader  
Model Number: ADRB-USB-V2 / ADRB-232-V2  
Serial Number: N/A  
Report Number: 3892-1  
Test Date: 07/18/13  
Company: Identive Technologies AG  
Street Address: Dagobertstrasse 9  
City, State & ZIP: 55116 Mainz  
Country: Germany

This Statement of Compliance is based upon compliance of the product with the following FCC Rules:

*47 CFR PART 2, SUBPART J,  
PARAGRAPH 2.906  
Subpart C – Intentional Radiators  
Part 15.225,*

Issued by Test Laboratory:



Lab Code:200092-0  
EMCE Engineering  
44366 S. Grimmer Blvd.  
Fremont, CA 94538  
510-490-4307 Office / 510-490-3441 Fax

Verified By:

A handwritten signature in black ink, appearing to read "R. Cole".

Bob Cole  
Authorized Signatory

**EMCE Engineering**  
44366 S. Grimmer Blvd. Fremont, CA 94538  
510-490-4307 510-490-3441 Fax

## Test Location

EMCE  
Electro Magnetic Controlled Environment  
44366 S. Grimmer Blvd.  
Fremont, CA 94538 USA

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## Accreditation

EMCE Engineering, has been placed on the Federal Communications Commission's list of recognized facilities for Parts 15 and 18 DoC approvals. Per the request of EMCE Engineering, the facility has been added to the list of those who perform Measurement Services for the public on a fee basis. This list is published periodically and is also available on the FCC Website. Additionally, EMCE Engineering, has been approved by the National Institute for Standards and Technology under the NVLAP program (Lab Code 200092-0).

## Disclaimer

EMCE Engineering, Inc., assumes no responsibility for the continuing validity of test data when the Equipment under Test is not under the continuous physical control of EMCE. The signature below attests to the fact that all measurements reported herein were performed by myself or were made under my supervision, and are correct to the best of my knowledge and belief as of the date specified. EMCE assumes full responsibility for the completeness of these measurements. Tests were conducted by qualified EMCE Engineering, Inc. personnel utilizing test equipment maintained in a "current" state of calibration with traceability to NIST.

- This report or certificate does not represent endorsement by NVLAP, NIST or any agency of the US Government.
- This report or certificate shall not be reproduced except in full without the written approval of the issuer.

## Administrative Information

Equipment under Test: NFC Desktop Reader  
Model Number: ADRB-USB-V2 / ADRB-232-V2  
Serial Number: N/A  
Report Number: 3892-1  
Test Date: 07/18/13  
Company: Identive Technologies AG  
Street Address: Dagobertstrasse 9  
City, State & ZIP: 55116 Mainz  
Country: Germany

## EUT DESCRIPTION

The equipment under test is an Identive Technologies AG NFC Desktop Reader, M/N:  
ADRB-USB-V2 / ADRB-232-V2

## MAXIMUM OPERATING FREQUENCY

EUT operates at 13.56 MHz:

Per EN55022, Radiated Emissions must be scanned to a range covering 9 kHz – 1 GHz.

## TESTING CONFIGURATION

The EUT model name ADRB-USB-V2 / ADRB-232-V2 was set up per the applicable specification during EMI testing.

## INDUSTRY CANADA ICES-003 COMPLIANCE STATEMENT

This Class [\*] digital apparatus complies with Canadian ICES-003.  
Cet appareil numérique de la classe [\*] est conforme à la norme NMB-003 du Canada.

## TEST SUMMARY

The electromagnetic compatibility requirements on tested model name ADRB-USB-V2 / ADRB-232-V2 for this test are listed below. All results listed in this report are related exclusively to the above-mentioned model as the equipment under test, and confers no endorsement or certification of any other component, host, or subsystem used in the testing configuration.

<i>Specification</i>	<i>Description</i>	<i>Test Results</i>	<i>Comments</i>
<i>FCC Part 15.207</i>	<i>Conducted Emission</i>	<i>Passed</i>	
<i>FCC Part 15.225</i>	<i>Radiated Emission</i>	<i>Passed</i>	

## TEST MODE JUSTIFICATION

<i>Test Standard</i>	<i>Configuration Info</i>	<i>Comments</i>
<i>FCC Part 15.225 Class B Radiated Emissions</i>		
<i>FCC Part 15.207 Conducted Emissions</i>		

## EQUIPMENT MODIFICATIONS

There were no modifications installed by EMCE Engineering.



## TEST SYSTEM DETAILS

### EUT

<i>Model name:</i>	<i>ADRB-USB-V2 / ADRB-232-V2</i>
<i>Description:</i>	<i>NFC Desktop Reader</i>
<i>Manufacturer:</i>	<i>Identive Technologies AG</i>

### Support Equipment

<i>Description</i>	<i>Model Number</i>	<i>Serial Number</i>	<i>Manufacturer</i>	<i>Power Cable Description</i>
<i>Printer</i>	<i>C62</i>	<i>TH6AJ14084</i>	<i>Epson</i>	<i>Unshielded / 1 Meter</i>
<i>Laptop PC</i>	<i>dv4000</i>	<i>N/A</i>	<i>HP</i>	<i>Unshielded / 1 Meter</i>

### Cable Description

<i>From</i>	<i>To</i>	<i>Length (Meters)</i>	<i>Shielded (Y/N)</i>	<i>Ferrite Loaded (Y/N)</i>
<i>Printer</i>	<i>Laptop PC</i>	<i>1m</i>	<i>Y</i>	<i>N</i>
<i>Laptop PC</i>	<i>Power</i>	<i>1.5</i>	<i>Y</i>	<i>N</i>
<i>Printer</i>	<i>Power</i>	<i>1.5</i>	<i>N</i>	<i>N</i>
<i>EUT</i>	<i>Laptop</i>	<i>0.5</i>	<i>Y</i>	<i>N</i>

# ATTACHMENT 1

## EMISSION TEST RESULTS



EN 55022B Radiated Emissions  
 30 MHz – 1 GHz

Customer: **Identive Technologies AG**  
 Specification: **EN55022B RADIATED**  
 Work Order #: **3892** Date: 7/18/2013  
 Test Type: **Radiated Scan** Time: 12:24:39  
 Equipment: **NFC/MIFARE Desktop Reader, USB** Sequence#: 11  
 Manufacturer: Identive Technologies AG Tested By: Bob Cole  
 Model: ADRBv2-USB  
 S/N: Engineering Sample

**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	03/09/2012	03/09/2014	701
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610

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

Function	Manufacturer	Model #	S/N
NFC/MIFARE Desktop Reader, USB*	Identive Technologies AG	ADRBv2-USB	Engineering Sample

**Support Devices:**

Function	Manufacturer	Model #	S/N
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**Test Conditions / Notes:**

NO Card in field

**Transducer Legend:**

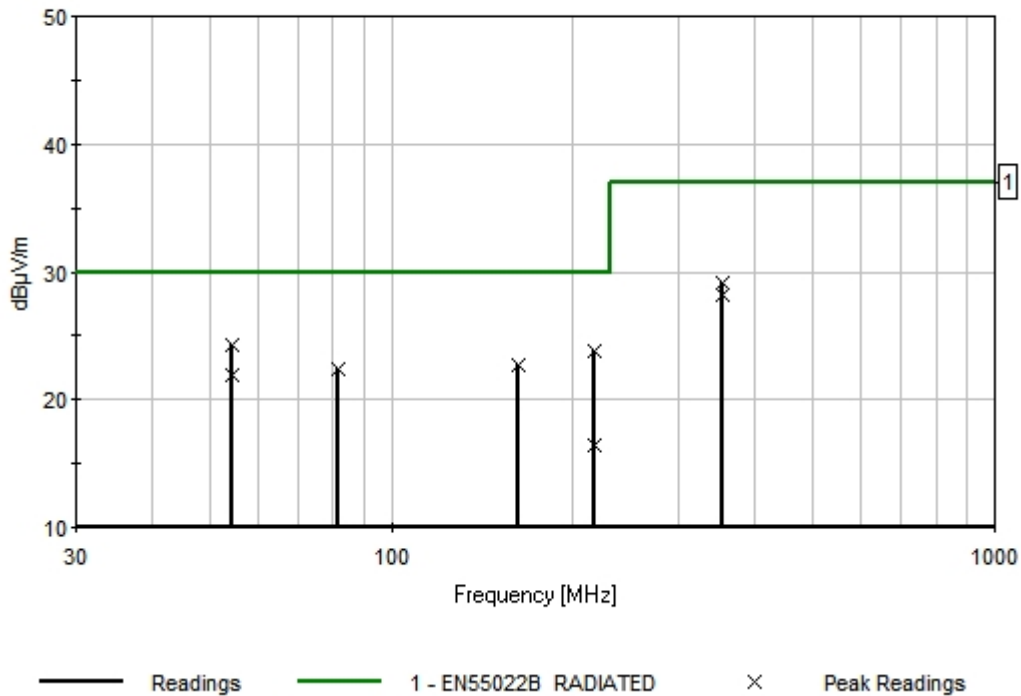
T1=150' LMR 900  
 T2=8447 Pre-Amp Asset 377  
 T3=Sunol JB6 S/N A42610

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	54.240M	43.1	+0.9	+26.8	+7.1		+0.0 183	24.3	30.0	-5.7	Vert 155
2	216.960M	38.3	+1.8	+26.9	+10.6		+0.0 197	23.8	30.0	-6.2	Vert 188
3	162.720M	35.6	+1.6	+26.7	+12.2		+0.0 160	22.7	30.0	-7.3	Vert 213
4	81.360M	40.8	+1.2	+27.0	+7.4		+0.0 161	22.4	30.0	-7.6	Vert 182
5	352.560M	39.3	+2.4	+27.0	+14.5		+0.0 165	29.2	37.0	-7.8	Horiz 256
6	54.240M	40.7	+0.9	+26.8	+7.1		+0.0 200	21.9	30.0	-8.1	Horiz 230
7	352.568M	38.3	+2.4	+27.0	+14.5		+0.0 206	28.2	37.0	-8.8	Vert 229
8	216.960M	31.0	+1.8	+26.9	+10.6		+0.0 169	16.5	30.0	-13.5	Horiz 204

Date: 7/18/2013 Time: 12:24:39 Identive, Inc. WO#: 3892  
 EN55022B RADIATED Test Distance: 10 Meters Sequence#: 11 Ext ATTN: 0 dB





## Peak Output Power

Per CFR 47, Section 15.225 and RSS-210 Issue 8

Customer:	<b>Identive Technologies AG</b>		
Specification:	<b>RFID FCC Mask 3 Meter</b>		
Work Order #:	<b>3892</b>	Date:	7/8/2013
Test Type:	<b>Radiated Scan</b>	Time:	3:54:59 PM
Equipment:	<b>NFC/MIFARE Desktop Reader, USB</b>	Sequence#:	6
Manufacturer:	Identive Technologies AG	Tested By:	Bob Cole
Model:	ADRBv2-USB		
S/N:	Engineering Sample		

**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
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610

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

Function	Manufacturer	Model #	S/N
NFC/MIFARE Desktop Reader, USB*	Identive Technologies AG	ADRBv2-USB	Engineering Sample

**Support Devices:**

Function	Manufacturer	Model #	S/N

**Test Conditions / Notes:**

NO Card in field
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**Transducer Legend:**

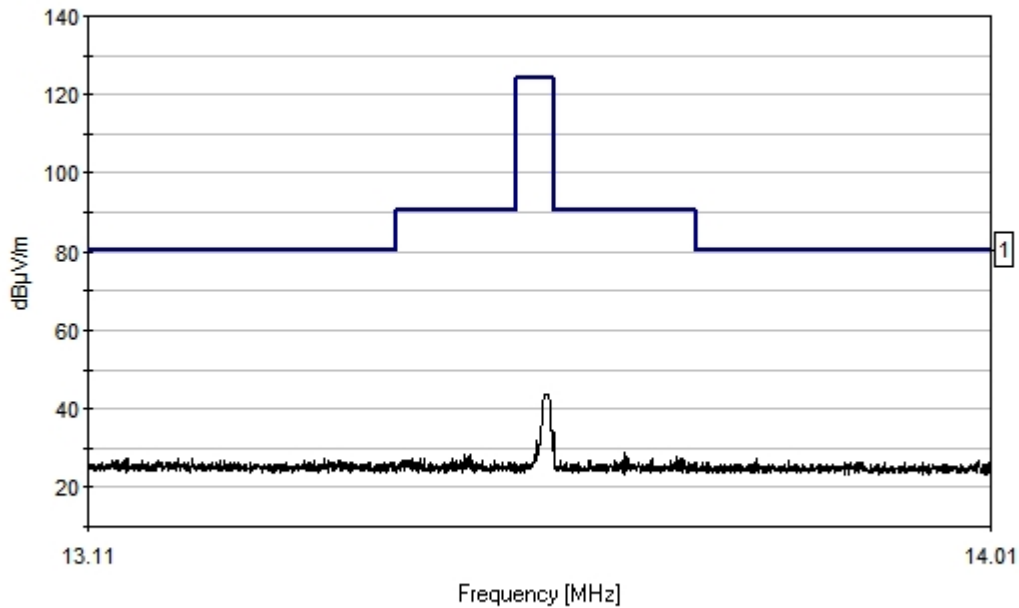
T1=LP-105 Loop Antenna	T2=8447 Pre-Amp Asset 377
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Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB		Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	13.149M	24.9	+19.9	+27.3		+10.0	27.5	80.5	-53.0	Vert
2	13.148M	24.5	+19.9	+27.3		+10.0	27.1	80.5	-53.4	Vert
3	13.198M	24.5	+19.9	+27.3		+10.0	27.1	80.5	-53.4	Vert
4	13.211M	24.5	+19.9	+27.3		+10.0	27.1	80.5	-53.4	Vert
5	13.341M	24.6	+19.8	+27.3		+10.0	27.1	80.5	-53.4	Vert
6	13.771M	24.9	+19.5	+27.3		+10.0	27.1	80.5	-53.4	Vert

Date: 7/8/2013 Time: 3:54:59 PM Identive, Inc. WO#: 3892  
 RFID FCC Mask 3 Meter Test Distance: 3 Meters Sequence#: 6 Ext ATTN: 0 dB



— Sweep Data      — 1 - RFID FCC Mask 3 Meter



FCC Part 15.209 Radiated Emissions  
 9 kHz – 30 MHz

Customer: **Identive Technologies AG**  
 Specification: **15.209 9k-30M FCC Limits**  
 Work Order #: **3892** Date: 7/8/2013  
 Test Type: **Radiated Scan** Time: 2:50:23 PM  
 Equipment: **NFC/MIFARE Desktop Reader, USB** Sequence#: 1  
 Manufacturer: **Identive Technologies AG** Tested By: Bob Cole  
 Model: **ADRBv2-USB**  
 S/N: **Engineering Sample**

**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
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610

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

Function	Manufacturer	Model #	S/N
NFC/MIFARE Desktop Reader, USB*	Identive Technologies AG	ADRBv2-USB	Engineering Sample

**Support Devices:**

Function	Manufacturer	Model #	S/N
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**Test Conditions / Notes:**

WITH Card in field
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**Transducer Legend:**

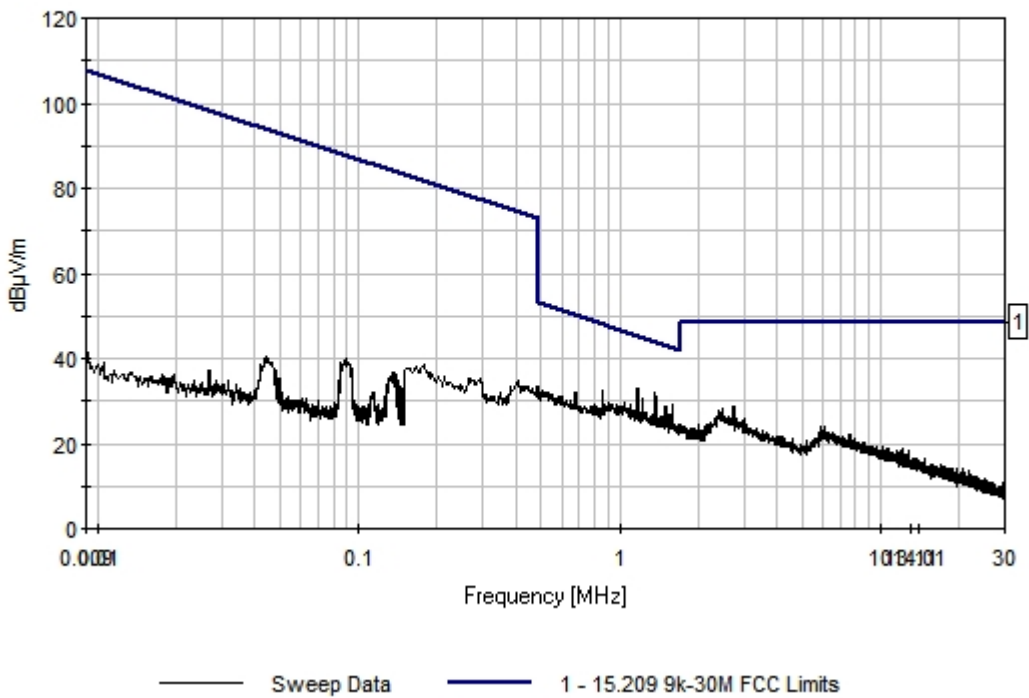
T1=LP-105 Loop Antenna	T2=8447 Pre-Amp Asset 377
------------------------	---------------------------

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	dB	dB	Dist Table	Corr dB $\mu$ V/m	Spec dB $\mu$ V/m	Margin dB	Polar Ant
1	12.195M	25.6	+20.6	+27.3			+0.0	18.9	48.6	-29.7	Vert
2	12.132M	25.1	+20.6	+27.3			+0.0	18.4	48.6	-30.2	Vert
3	11.889M	25.0	+20.8	+27.4			+0.0	18.4	48.6	-30.2	Vert
4	12.808M	25.5	+20.1	+27.3			+0.0	18.3	48.6	-30.3	Vert
5	20.799M	25.3	+16.0	+27.2			+0.0	14.1	48.6	-34.5	Vert
6	21.663M	25.3	+15.6	+27.2			+0.0	13.7	48.6	-34.9	Vert

Date: 7/8/2013 Time: 2:50:23 PM Identive, Inc. WO#: 3892  
 15.209 9k-30M FCC Limits Test Distance: 10 Meters Sequence#: 1 Ext ATTN: 0 dB







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

Customer: **Identive Technologies AG**  
Specification: **15.207 B COND [QP]**  
Work Order #: **3892**  
Test Type: **Conducted Emissions**  
Equipment: **NFC/MIFARE Desktop Reader, USB**  
Manufacturer: **Identive Technologies AG**  
Model: **ADRBv2-USB**  
S/N: **Engineering Sample**

Date: 7/9/2013  
Time: 3:08:09 PM  
Sequence#: 2  
Tested By: Bob Cole  
120V 60Hz

**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 Transient Limiter	3107A02941	05/02/2013	05/02/2014	006
EMCO 3810-2 LISN	4576	05/17/2012	05/17/2014	007
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610

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

Function	Manufacturer	Model #	S/N
NFC/MIFARE Desktop Reader, USB*	Identive Technologies AG	ADRBv2-USB	Engineering Sample

**Support Devices:**

Function	Manufacturer	Model #	S/N
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**Test Conditions / Notes:**

Quasi-Peak measurements meet Average Limits
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**Transducer Legend:**

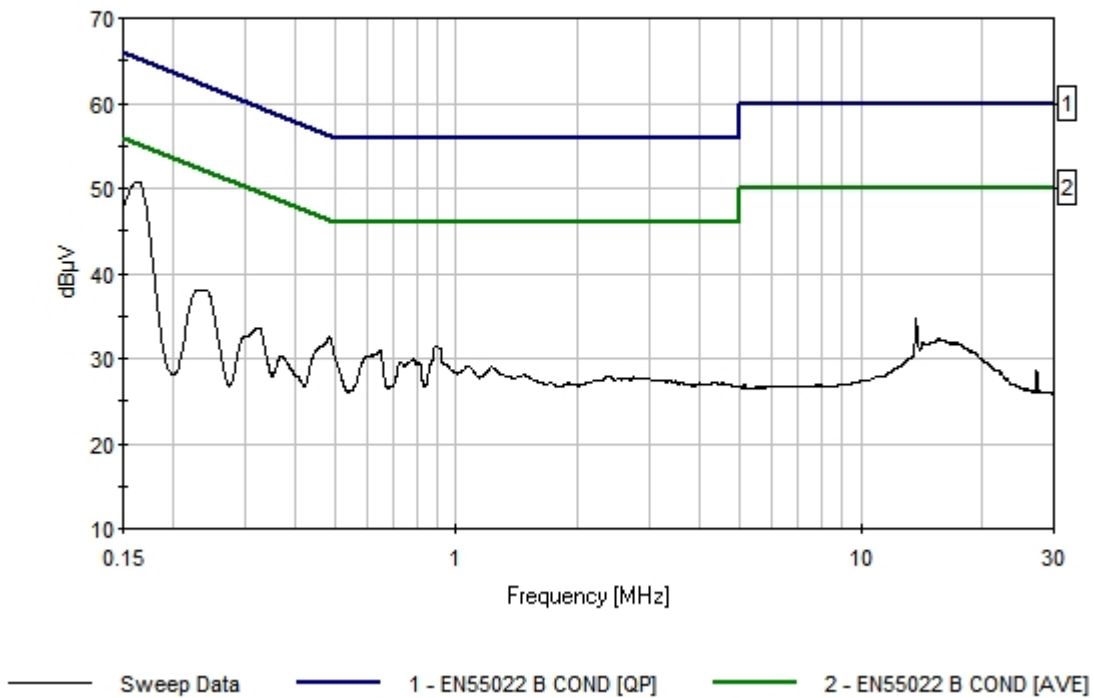
T1=25' LMR #001	T2=HP 11947A Trans. Limiter TL1
T3=EMCO 3810-2 LISN S/N 9807-1988	

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	164.544k	39.5	+0.0	+10.1	+1.1		+0.0	50.7	65.2	-14.5	Black
2	485.239k	21.8	+0.0	+10.0	+0.7		+0.0	32.5	56.2	-23.7	Black
3	241.627k	26.9	+0.0	+10.0	+1.0		+0.0	37.9	62.0	-24.1	Black
4	885.506k	20.9	+0.0	+9.9	+0.5		+0.0	31.3	56.0	-24.7	Black
5	642.314k	20.4	+0.0	+9.9	+0.6		+0.0	30.9	56.0	-25.1	Black
6	13.679M	23.7	+0.0	+10.0	+0.9		+0.0	34.6	60.0	-25.4	Black

Date: 7/9/2013 Time: 3:08:09 PM Identive, Inc. WO#: 3892  
 EN55022 B COND [QP] Test Lead: Line 1 120V 60Hz Sequence#: 2 Ext ATTN: 0 dB





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

Customer: **Identive Technologies AG**  
 Specification: **15.207 B COND [QP]**  
 Work Order #: **3892** Date: 7/9/2013  
 Test Type: **Conducted Emissions** Time: 3:18:27 PM  
 Equipment: **NFC/MIFARE Desktop Reader, USB** Sequence#: 5  
 Manufacturer: Identive Technologies AG Tested By: Bob Cole  
 Model: ADRBv2-USB 120V 60Hz  
 S/N: Engineering Sample

**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 Transient Limiter	3107A02941	05/02/2013	05/02/2014	006
EMCO 3810-2 LISN	4576	05/17/2012	05/17/2014	007
EMITest Measurement Software	v4.01 Build 195	05/01/2012	05/01/2014	610

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

Function	Manufacturer	Model #	S/N
NFC/MIFARE Desktop Reader, USB*	Identive Technologies AG	ADRBv2-USB	Engineering Sample

**Support Devices:**

Function	Manufacturer	Model #	S/N
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**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

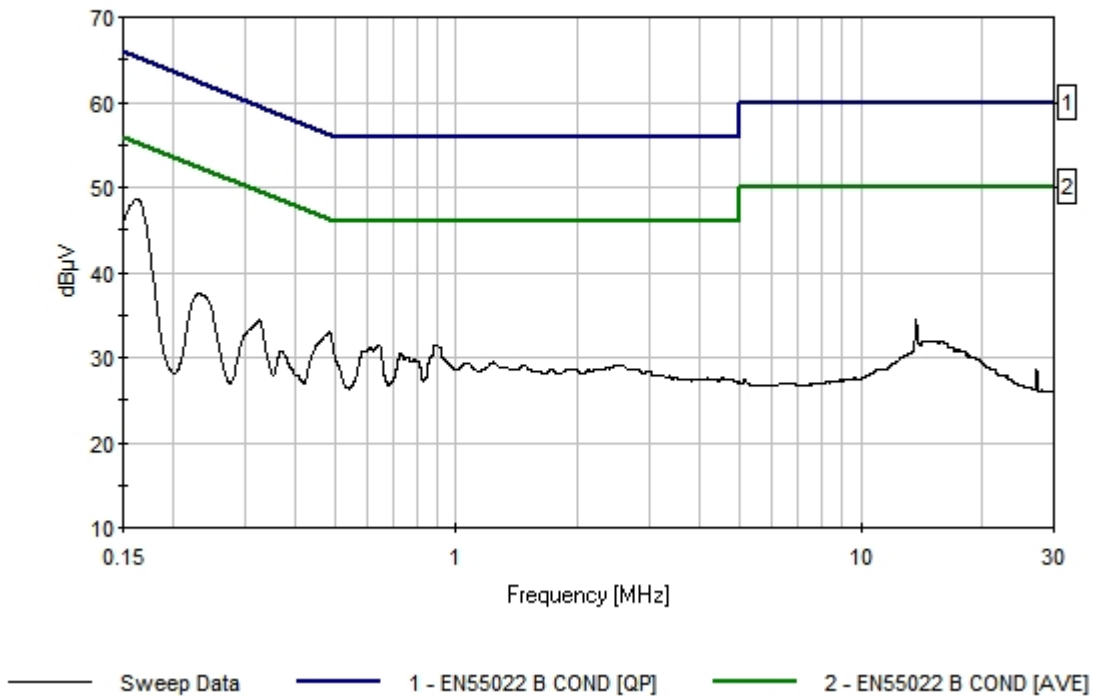
**Measurement Data:**

Reading listed by margin.

Test Lead: Line 2

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	162.362k	37.4	+0.0	+10.1	+1.1		+0.0	48.6	65.3	-16.7	Line
2	485.239k	22.3	+0.0	+10.0	+0.7		+0.0	33.0	56.2	-23.2	Line
3	643.769k	20.9	+0.0	+9.9	+0.6		+0.0	31.4	56.0	-24.6	Line
4	232.901k	26.6	+0.0	+10.0	+1.0		+0.0	37.6	62.3	-24.7	Line
5	881.253k	20.9	+0.0	+9.9	+0.5		+0.0	31.3	56.0	-24.7	Line
6	325.255k	23.5	+0.0	+10.0	+0.9		+0.0	34.4	59.6	-25.2	Line

Date: 7/9/2013 Time: 3:18:27 PM Identive, Inc. WO#: 3892  
 EN55022 B COND [QP] Test Lead: Line 2 120V 60Hz Sequence#: 5 Ext ATTN: 0 dB





### Frequency Stability

*CFR 47, Section 15.225(e) and Sec 15.31(e)*

<u>Temperature (Celcius)</u>	<u>Voltage (DC)</u>	<u>Transmit Frequency (MHz)</u>	<u>Upper Limit (MHz)</u>	<u>Lower Limit (MHz)</u>	<u>Pass / Fail</u>
20	5.0	13.56019	13.561356	13.558644	PASS
20	4.25	13.55972	13.561356	13.558644	PASS
20	5.75	13.56112	13.561356	13.558644	PASS
+50	5.0	13.56121	13.561356	13.558644	PASS
-20	5.0	13..55985	13.561356	13.558644	PASS

## ATTACHMENT 2

### CERTIFICATIONS

### EMCE NVLAP ACCREDITATION

United States Department of Commerce  
National Institute of Standards and Technology



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**Certificate of Accreditation to ISO/IEC 17025:2005**

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NVLAP LAB CODE: 200092-0

**Universal Compliance Labs dba EMCE Engineering**  
Fremont, CA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:*

**ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

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2013-01-01 through 2013-12-31

*Effective dates*



A handwritten signature in black ink, appearing to read "Michael R. Mello".

---

*For the National Institute of Standards and Technology*

NVLAP-01C (REV. 2009-01-28)

**EMCE Engineering**  
44366 S. Grimmer Blvd. Fremont, CA 94538  
510-490-4307 510-490-3441 Fax