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RFID 13,56MHz Template: Release October 10th, 2016

# TEST REPORT

N°: 146735-699123

Version : 01

## Subject

**Radio spectrum matters  
tests according to standards:  
47 CFR Part 15.225 & Part 15.210 Issue 9 & RSS-Gen Issue 4**

## Issued to

**INGENICO Terminals SAS**  
28/32 Boulevard de Grenelle  
75015 - Paris  
FRANCE

## Apparatus under test

- ↪ Product
- ↪ Trade mark
- ↪ Manufacturer
- ↪ Model under test
- ↪ Serial number
- ↪ FCC ID
- ↪ IC ID

**Signature capture payment terminal  
Ingenico  
INGENICO  
Lane/8000 CL/USB  
170043413011040100001905  
XKB-L8000CL  
2586D-L8000CL**

## Test date

: January 16, 2017 to February 9, 2017

## Test location

Fontenay Aux Roses & Moirans

## Composition of document

24 pages

## Document issued on

February 17, 2017

**Written by :**  
Mathieu CERISIER  
**Tests operator**



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## PUBLICATION HISTORY

<b>Version</b>	<b>Date</b>	<b>Author</b>	<b>Modification</b>
01	February 13, 2017	Mathieu CERISIER	Creation of the document
02	February 17, 2017	Arnaud FAYETTE	Change limit on conducted test and radiated test



## SUMMARY

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## 1. TEST PROGRAM

### References

- 47 CFR Part 15.225
- RSS 210 Issue 9
- RSS Gen Issue 4
- ANSI C63.10-2013

### Radio requirement:

Clause (47CFR Part 15.225 & RSS-210 Issue 9 & RSS-Gen Issue 4) Test Description	Test result - Comments			
Occupied Bandwidth	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input checked="" type="checkbox"/> NP(1)
AC Power Line Conducted Emission	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA(2)	<input type="checkbox"/> NP(1)
Frequency Tolerance	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Field strength within the band 13.110-14.010MHz	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Field strength outside of the bands 13.110-14.010 MHz	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Receiver Radiated Emissions	<input checked="" type="checkbox"/> PASS (3)	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
This table is a summary of test report, see conclusion of each clause of this test report for detail.				

(1): Limited program

(2): EUT not directly or indirectly connected to the AC Power Public Network

(3) Testing covered the receive mode, and receiver spurious emissions are considered to be the same as transmitter.

PASS: EUT complies with standard's requirement

FAIL: EUT does not comply with standard's requirement

NA: Not Applicable

NP: Test Not Performed



## 2. EQUIPMENT UNDER TEST: CONFIGURATION (DECLARED BY PROVIDER)

### 2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

**Equipment under test (EUT):**  
Ingenico Lane/8000 CL/USB

**Serial Number:** 170043413011040100001905

#### Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Under test	Comments
1	Power supply	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-

#### Equipment information:

Type:	<input checked="" type="checkbox"/> RFID					
Frequency band:	[13.553 to 13.567] MHz					
Spectrum Modulation:	ASK					
Number of Channel:	1					
Antenna Type:	<input checked="" type="checkbox"/> Integral	<input type="checkbox"/> External	<input type="checkbox"/> Dedicated			
Transmit chains:	1					
Receiver chains:	1					
Type of equipment:	<input checked="" type="checkbox"/> Stand-alone	<input type="checkbox"/> Plug-in	<input type="checkbox"/> Combined			
Equipment type:	<input checked="" type="checkbox"/> Production model			<input type="checkbox"/> Pre-production model		
Operating temperature range:	Tmin:	<input checked="" type="checkbox"/> -30°C IC <input checked="" type="checkbox"/> -20°C FCC	<input type="checkbox"/> 0°C	<input type="checkbox"/> X°C		
	Tnom:	20°C				
	Tmax:	<input type="checkbox"/> 35°C	<input checked="" type="checkbox"/> 50°C	<input type="checkbox"/> X°C		
Type of power source:	<input checked="" type="checkbox"/> AC power supply	<input type="checkbox"/> DC power supply		<input type="checkbox"/> Battery		
Operating voltage range:	Vmin:	<input checked="" type="checkbox"/> 102V/60Hz		<input type="checkbox"/> XVdc		
	Vnom:	<input checked="" type="checkbox"/> 120V/60Hz		<input type="checkbox"/> XVdc		
	Vmax:	<input checked="" type="checkbox"/> 138V/60Hz		<input type="checkbox"/> XVdc		

### 2.2. RUNNING MODE

The EUT is set in the following modes during tests:

- Permanent emission with modulation on a fixed channel in the data rate that produced the highest power
- Permanent reception

### 2.3. EQUIPMENT MODIFICATION

None       Modification:



### 3. OCCUPIED BANDWIDTH

#### 3.1. TEST CONDITIONS

Test performed by : Mathieu CERISIER  
Date of test : January 20, 2017  
Ambient temperature : 22 °C  
Relative humidity : 41 %

#### 3.2. TEST SETUP

- The Equipment Under Test is installed:

- On a table
- In a climatic chamber
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- Conducted Method
- Radiated Method

- Test Procedure:

- RSS-Gen Issue 4 § 6.6

#### 3.1. LIMIT

None

#### 3.2. TEST EQUIPMENT LIST

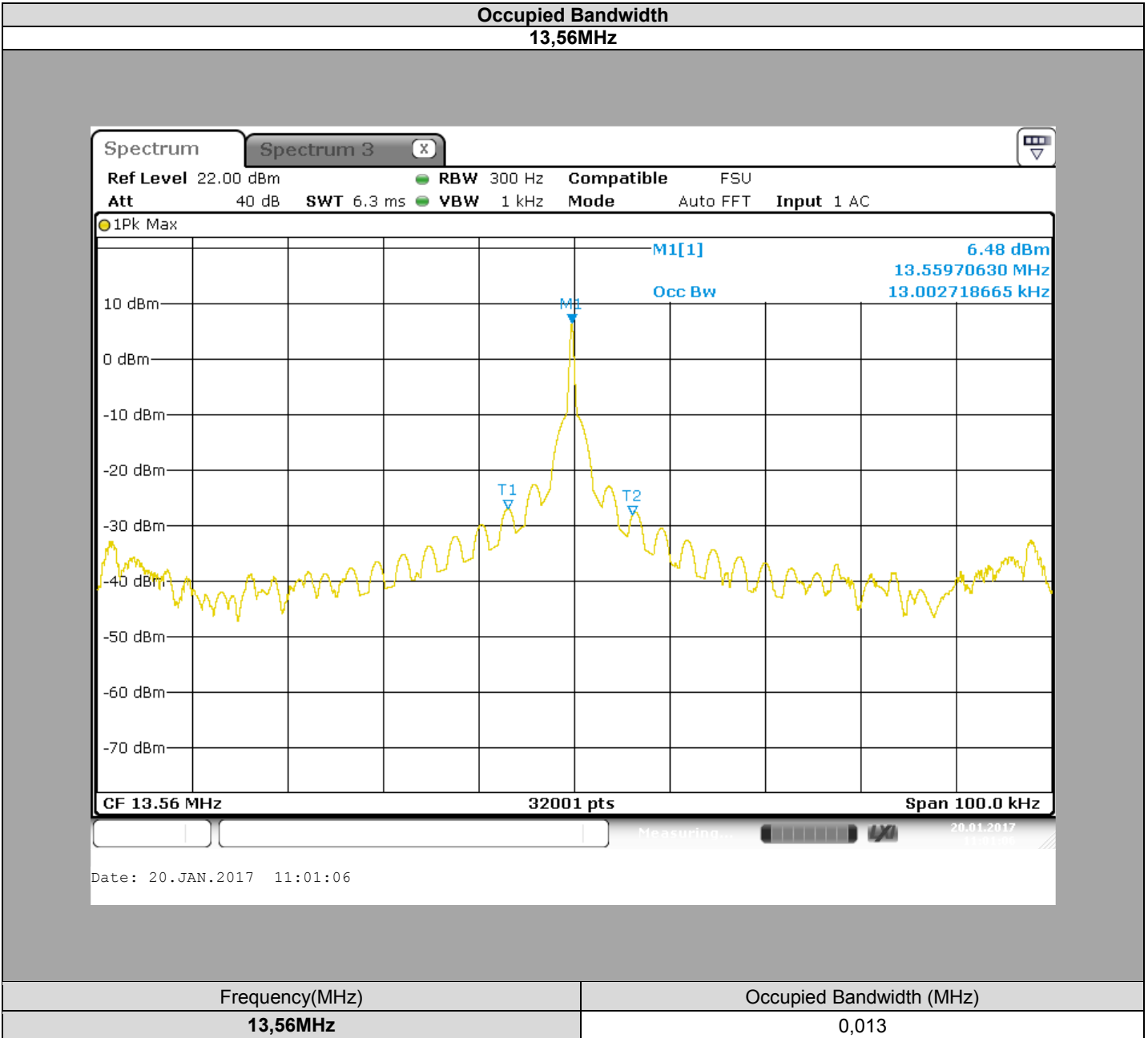
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Calibration date	Calibration due
Multi-meter	KEITHLEY	2000	A1241084	2016/05	2018/05
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7049006	Verified with calibrated multimeter	Verified with calibrated multimeter
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2016/09	2017/09
Climatic chamber	SECASI Technologies	SLT-34	D1024029	Verified with calibrated Thermometer	Verified with calibrated Thermometer
Thermometer	AOIP	TM 6630	B4041042	2016/09	2018/03

Note: In our quality system, the test equipment calibration due is more & less 2 months



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### 3.3. RESULTS



### 3.1. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **Ingenico Lane/8000 CL/USB**, SN: **170043413011040100001905**, in configuration and description presented in this test report, show levels **compliant** to the **RSS-GEN ISSUE 4** limits.



## 4. FREQUENCY TOLERANCE

### 4.1. TEST CONDITIONS

Test performed by : Mathieu CERISIER  
Date of test : January 19, 2017  
Ambient temperature : 21 °C  
Relative humidity : 44 %

### 4.2. TEST SETUP

- The Equipment Under Test is installed:

- On a table
- In a climatic chamber
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- Conducted Method
- Radiated Method

- Test Procedure:

- ANSI C63.10 § 6.8

### 4.3. LIMIT

The Center Frequency shall be inside +/-0.01MHz

### 4.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Calibration date	Calibration due
Multi-meter	KEITHLEY	2000	A1241084	2016/05	2018/05
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7049006	Verified with calibrated multimeter	Verified with calibrated multimeter
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2016/09	2017/09
Climatic chamber	SECASI Technologies	SLT-34	D1024029	Verified with calibrated Thermometer	Verified with calibrated Thermometer
Thermometer	AOIP	TM 6630	B4041042	2016/09	2018/03

Note: In our quality system, the test equipment calibration due is more & less 2 months





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#### 4.5. RESULTS

EUT activation:	0min								
Voltage:	Vnom								
Temperature:	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C
Frequency (MHz)	13,5597	13,5597	13,5597	13,5597	13,5597	13,5597	13,5596	13,5596	13,5596
Frequency Drift (%)	-0,0022	-0,0022	-0,0022	-0,0022	-0,0022	-0,0022	-0,0029	-0,0029	-0,0029
EUT activation:	2min								
Voltage:	Vnom								
Temperature:	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C
Frequency (MHz)	13,5597	13,5597	13,5597	13,5597	13,5597	13,5597	13,5596	13,5596	13,5596
Frequency Drift (%)	-0,0022	-0,0022	-0,0022	-0,0022	-0,0022	-0,0022	-0,0029	-0,0029	-0,0029
EUT activation:	5min								
Voltage:	Vnom								
Temperature:	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C
Frequency (MHz)	13,5597	13,5597	13,5597	13,5597	13,5597	13,5597	13,5596	13,5596	13,5596
Frequency Drift (%)	-0,0022	-0,0022	-0,0022	-0,0022	-0,0022	-0,0022	-0,0029	-0,0029	-0,0029
EUT activation:	10min								
Voltage:	Vnom								
Temperature:	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C
Frequency (MHz)	13,5597	13,5597	13,5597	13,5597	13,5597	13,5597	13,5596	13,5596	13,5596
Frequency Drift (%)	-0,0022	-0,0022	-0,0022	-0,0022	-0,0022	-0,0022	-0,0029	-0,0029	-0,0029

Temperature	Tnom		
Voltage:	Vmin	Vnom	Vmax
Frequency (MHz)	13,5597	13,5597	13,5597
Frequency Drift (%)	-0,0022	-0,0022	-0,0022

#### 4.6. CONCLUSION

Frequency tolerance measurement performed on the sample of the product **Ingenico Lane/8000 CL/USB**, SN: **170043413011040100001905**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.225 & RSS 210 ISSUE 9 limits.



## 5. AC POWER LINE CONDUCTED EMISSIONS

### 5.1. TEST CONDITIONS

Test performed by : Gaetan DESCHAMPS  
Date of test : February 9, 2017  
Ambient temperature : 23°C  
Relative humidity : 32%

### 5.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013) method. The EUT is placed on the ground reference plane, at 80cm from the LISN. The distance between the EUT and the vertical ground plane is 40cm. Auxiliaries are powered by another LISN. The cable has been shorted to 1meter length. The EUT is powered through the LISN. Measurement is made with a receiver in peak mode. This was followed by a Quasi-Peak, i.e. CISPR measurement for any strong signal. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary. The LISN (measure) is 50Ω / 50μH. Interconnecting cables and equipment's were moved to position that maximized emission.

### 5.3. LIMIT

#### Quasi-Peak

0,15kHz to 0,5MHz: 66dBμV to 56dBμV\*  
0,5MHz to 5MHz: 56dBμV  
5MHz to 30MHz: 60dBμV

#### Average

0,15kHz to 0,5MHz: 56dBμV to 46dBμV\*  
0,5MHz to 5MHz: 46dBμV  
5MHz to 30MHz: 50dBμV

\*Decreases with the logarithm of the frequency



#### 5.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Cable + self	-	-	A5329585	2016/04	2017/04
EMC comb generator	LCIE SUD EST	-	A3169098	-	-
LISN	RHODE & SCHWARZ	ENV216	C2320291	2016/12	2017/12
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	2016/08	2017/08
BAT EMC	NEXIO	v3.9.0.10	L1000115	-	-
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206022	2016/08	2017/08
Transient limiter	RHODE & SCHWARZ	ESH3-Z2	A7122204	2017/01	2017/08

Note: In our quality system, the test equipment calibration due is more & less 2 months

#### 5.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None       Divergence:

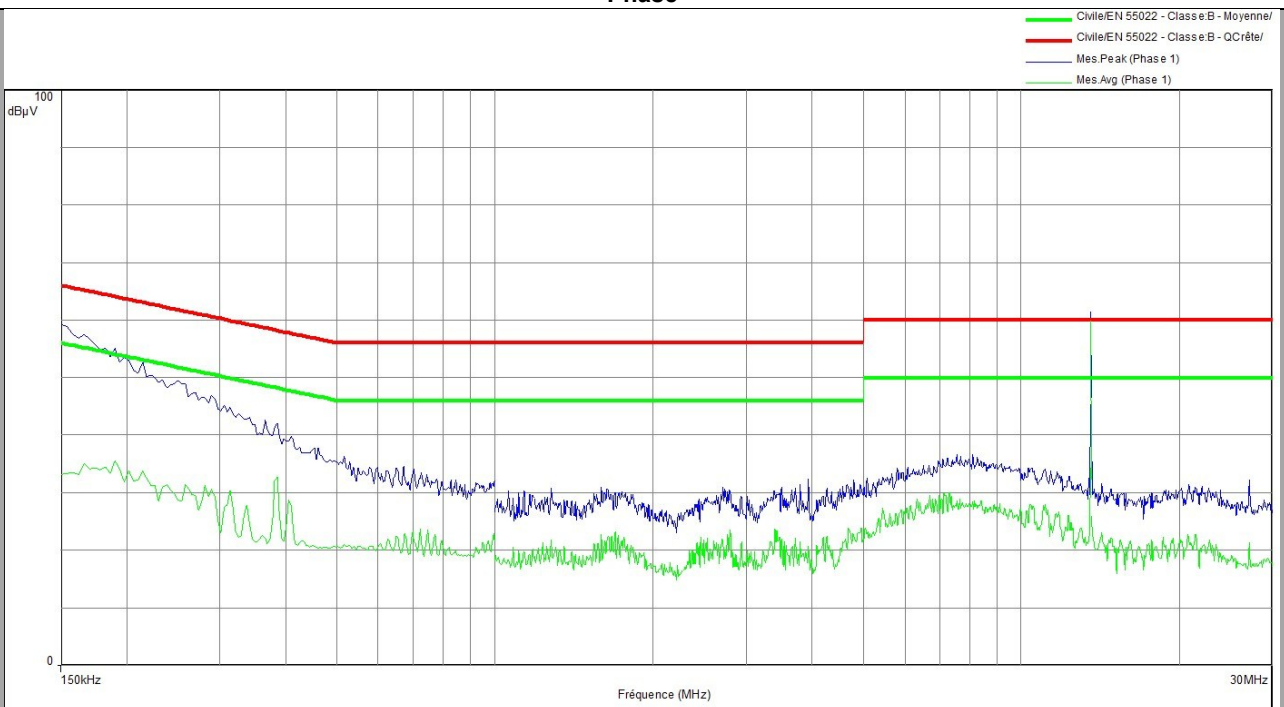


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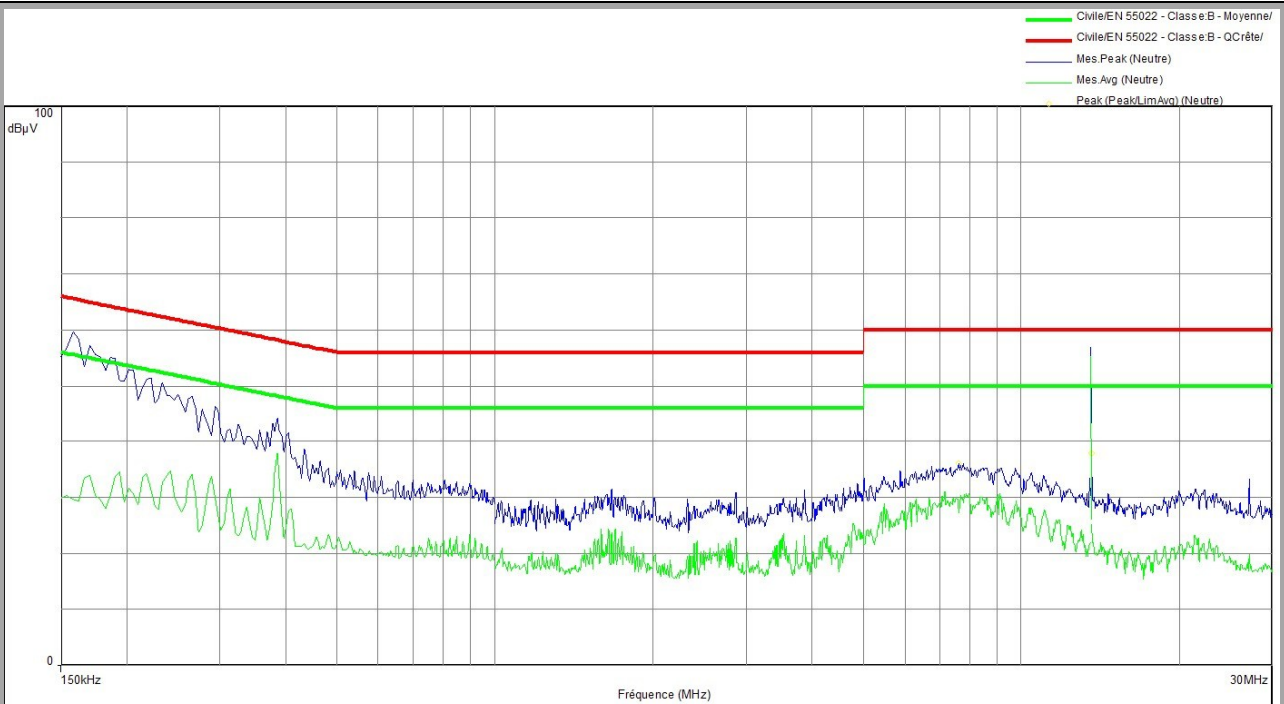
## 5.6. RESULTS

### AC Power Line Conducted Emission (with antenna)

Phase



Line





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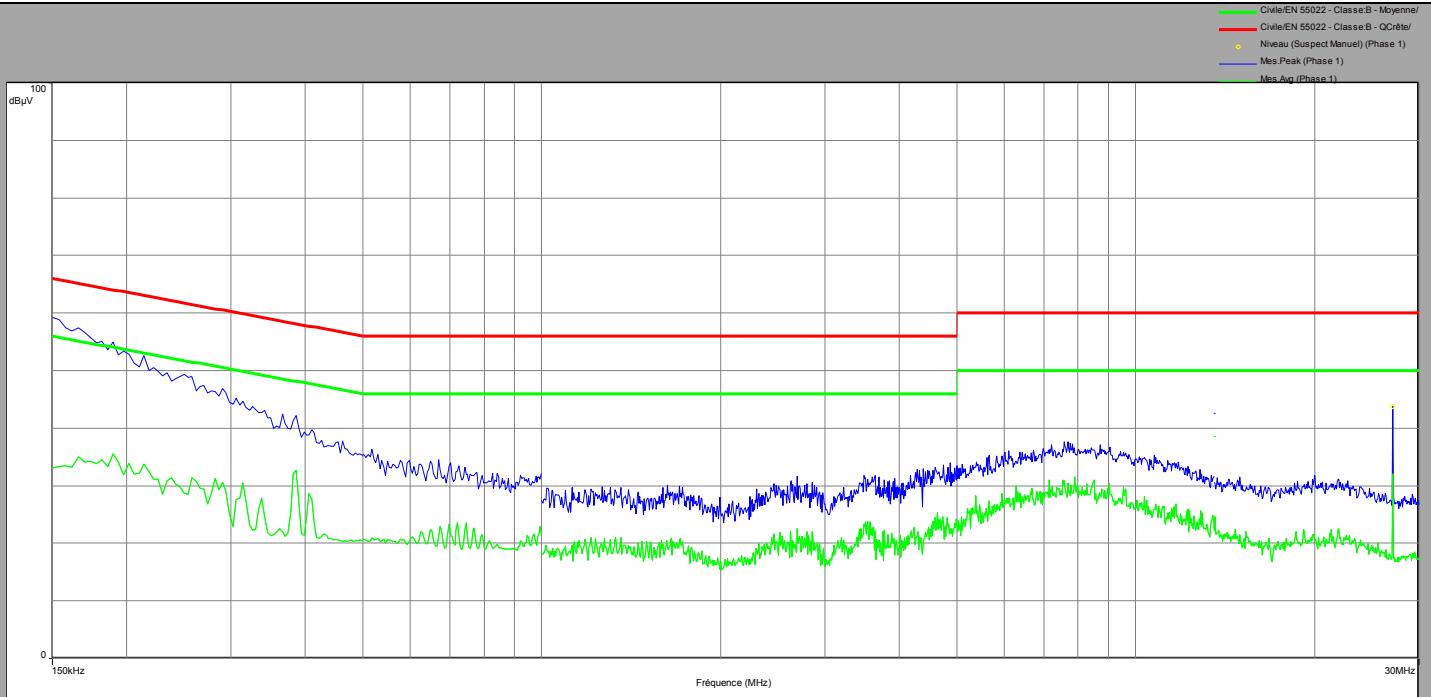
Frequency (MHz)	Peak (dB $\mu$ V)	LimP (dB $\mu$ V)	Peak-LimP (dB)	Line
0.150	59.2	66.0	6.8	Phase
7.540	36.7	60.0	23.3	Phase
13.558*	61.3	60.0	-1.3	Phase
7.612	36.1	60.0	23.9	Neutral
13.590*	37.9	60.0	22.1	Neutral

\*Carrier frequency (radiation and coupling on the measurement)

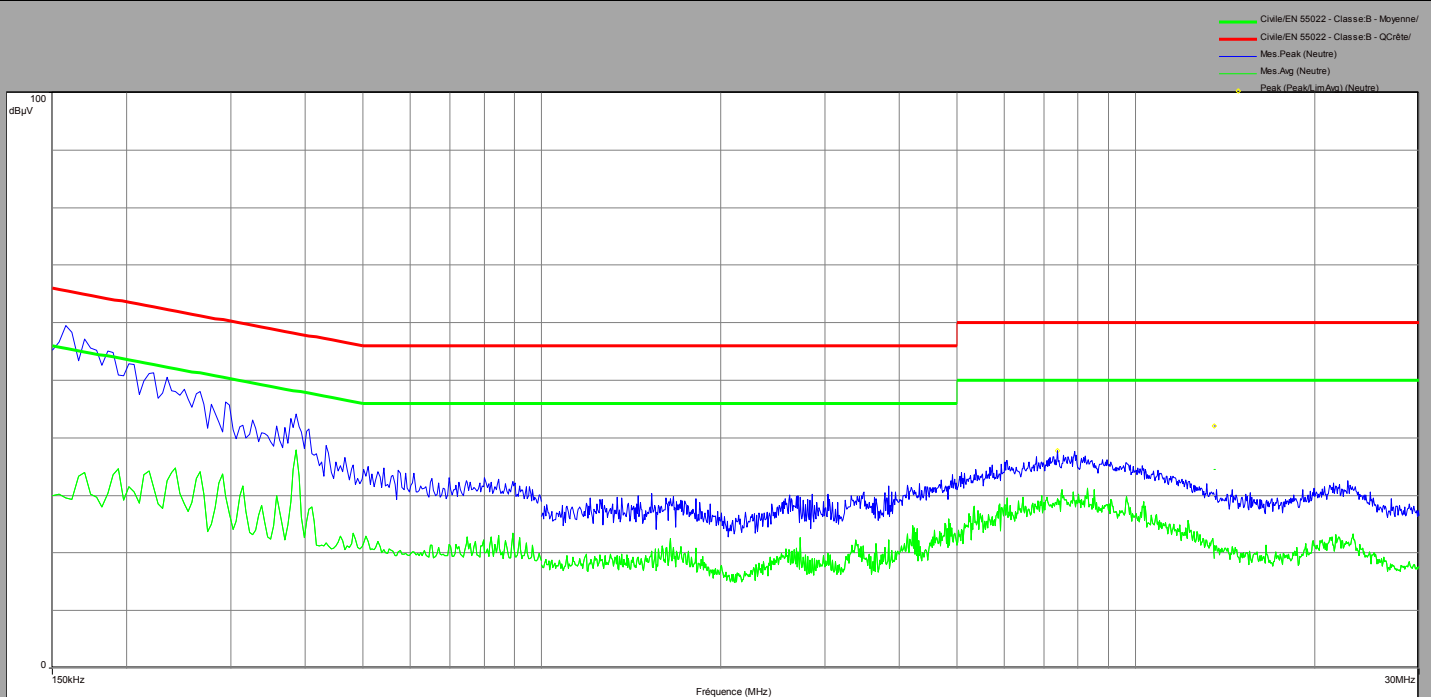


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### AC Power Line Conducted Emission (without antenna) Phase



### Line





Frequency (MHz)	Peak (dB $\mu$ V)	LimP (dB $\mu$ V)	Peak-LimP (dB)	Line
0.150	59.2	66.0	6.8	Phase
7.540	36.7	60.0	23.3	Phase
27.12	50.06	60.0	9.94	Phase
7.612	36.1	60.0	23.9	Neutral

## 5.7. CONCLUSION

Ac Power Line Conducted Emission measurement performed on the sample of the product **Ingenico Lane/8000 CL/USB**, SN: **170043413011040100001905**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.225 & RSS Gen ISSUE 4 limits.



## 6. FIELD STRENGTH OUTSIDE OF THE BANDS 13.110-14.010 MHz

### 6.1. TEST CONDITIONS

Test performed by : Gaetan DESCHAMPS  
Date of test : February 8, 2017  
Ambient temperature : 22°C  
Relative humidity : 30%

### 6.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013). The EUT is placed in full anechoic room (pre-characterization) and **on an open area test site** (characterization). Test is performed in parallel and perpendicular axis with a loop antenna below 30MHz. Measurement bandwidth was 200Hz below 150kHz and 9kHz between 150kHz & 30MHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height was 1m. Distance between measuring antenna and the EUT is 3m (full anechoic room) and **10m** (Open area test site).

Test is performed in horizontal (H) and vertical (V) polarization with **bilog** between 30MHz & 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height search was performed from 1 to 4m. The EUT is place at 1.5m high above 1GHz and at 0.8m high under 1GHz. Distance between measuring antenna and the EUT is **10m**.

### 6.3. LIMIT

#### Limit at 3m:

9kHz to 0,490MHz:  $2400/F(\text{kHz})\mu\text{V}/\text{m}$  (300m) or  $20\log(2400/F(\text{kHz}))\text{dB}\mu\text{V}/\text{m}$  (3m) QPeak  
0,490MHz to 1.705MHz:  $240000/F(\text{kHz})\mu\text{V}/\text{m}$  (30m) or  $20\log(240000/F(\text{kHz}))\text{dB}\mu\text{V}/\text{m}$  (3m) QPeak  
1.705MHz to 30MHz:  $30\mu\text{V}/\text{m}$  (30m) or  $\text{dB}\mu\text{V}/\text{m}$  (3m) QPeak

#### Limit at 10m:

30MHz to 88MHz:  $29.5\text{dB}\mu\text{V}/\text{m}$  QPeak  
88MHz to 216MHz:  $33\text{dB}\mu\text{V}/\text{m}$  QPeak  
216MHz to 960MHz:  $35.5\text{dB}\mu\text{V}/\text{m}$  QPeak  
960MHz to 1000MHz:  $43.5\text{dB}\mu\text{V}/\text{m}$  QPeak  
Above 1000MHz:  $63.5\text{B}\mu\text{V}/\text{m}$  Peak  
 $43.5\text{B}\mu\text{V}/\text{m}$  Average





#### 6.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Amplifier 1-13GHz	LCIE SUD EST	-	A7102067	2016/04	2017/04
Antenna Bi-log	CHASE	CBL6111A	C2040051	2016/06	2018/06
Antenna Loop	ELECTRO-METRICS	EM-6879	C2040052	2015/11	2017/11
Antenna Bi-log	CHASE	CBL6111A	C2040172	2016/06	2018/06
Antenna horn 18GHz	EMCO	3115	C2042029	2016/08	2018/08
Cable Measure @3m 18GHz	-	-	A5329038	2016/10	2017/10
Cable	-	-	A5329069	2016/12	2017/12
Cable Measure @3m	-	-	A5329206	2016/04	2017/04
Cable (OATS)	-	-	A5329623	2016/01	2017/01
Cable Measure @1m	STORMFLEX	0	A5329680	2016/01	2017/01
Cable Measure Analyzer-Amplifier SMA	STORMFLEX	0	A5329681	2016/05	2017/05
Cable Measure @1m	STORMFLEX	0	A5329682	2016/01	2017/01
Semi-Anechoic chamber #3	SIEPEL	-	D3044017	2016/03	2019/03
Radiated emission comb generator	BARDET	-	A3169050	-	-
HF Radiated emission comb generator	LCIE SUD EST	-	A3169088	-	-
OATS	-	-	F2000409	2016/08	2017/08
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	2016/08	2017/08
Spectrum analyzer	ROHDE & SCHWARZ	FSV 30	A4060050	2016/08	2017/08
BAT EMC	NEXIO	v3.9.0.10	L1000115	-	-
Thermo-hygrometer (C3)	OREGON	BAR206	B4204078	2016/10	2017/10
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206022	2016/08	2017/08
Turntable chamber (Cage#3)	ETS Lingren	Model 2165	F2000371	-	-
Turntable / Mast controller (OATS)	ETS Lindgren	Model 2066	F2000372	-	-
Antenna mast (OATS)	ETS Lindgren	2071-2	F2000392	-	-
Turntable (OATS)	ETS Lindgren	Model 2187	F2000403	-	-
Table	LCIE	-	F2000438	-	-
Table	LCIE	-	F2000461	-	-
Turntable controller (Cage#3)	ETS Lingren	Model 2090	F2000444	-	-

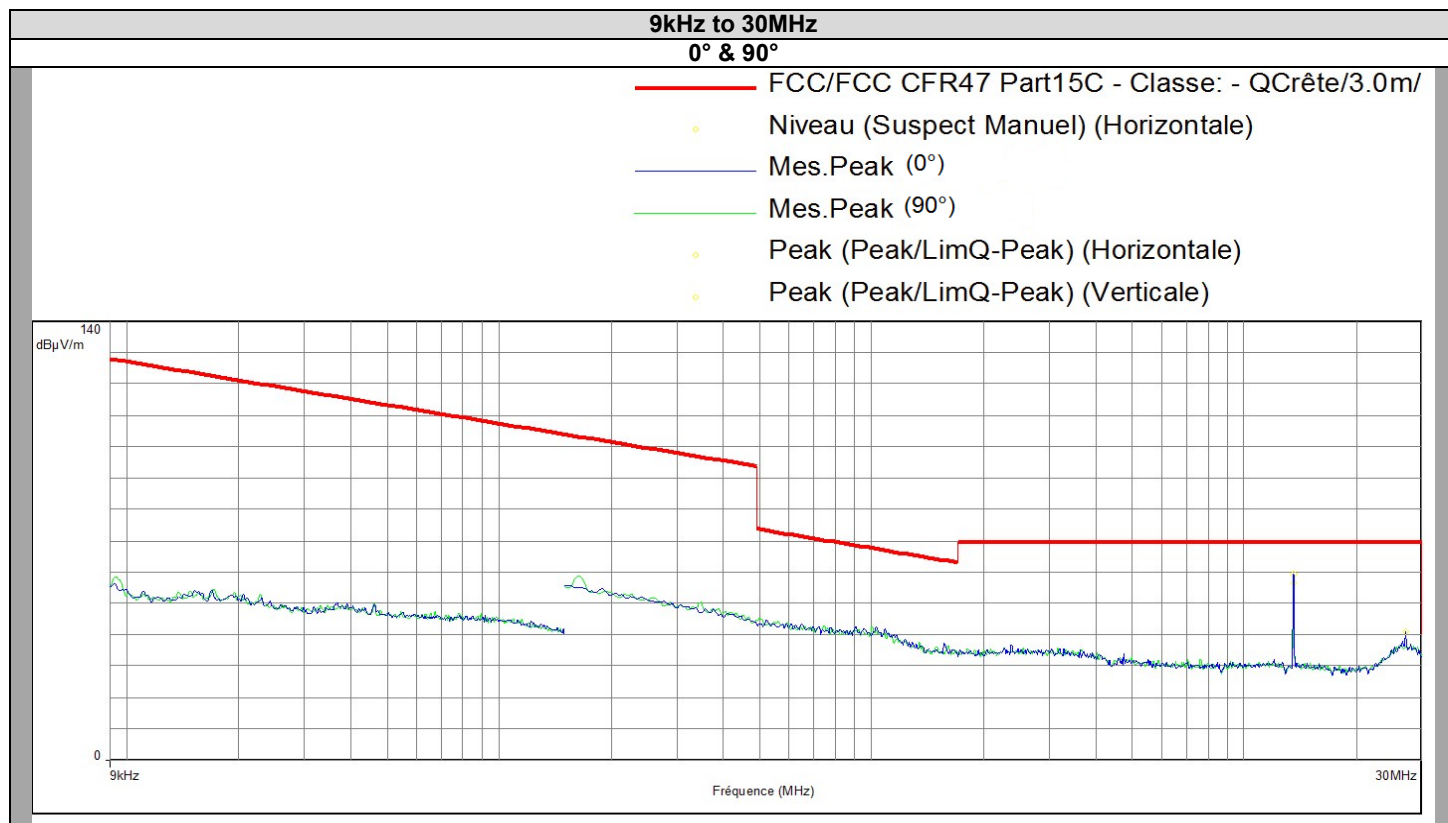
Note: In our quality system, the test equipment calibration due is more & less 2 months

#### 6.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None       Divergence:

## 6.6. RESULTS

Pre-characterization measurement:



Frequency (MHz)	Peak (dBµV/m)	LimQP (dBµV/m)	Peak-LimQP (dB)	Polarization
13.559	59.2	69.5	-10.3	0°
13.559	56.5	69.5	-13.0	90°

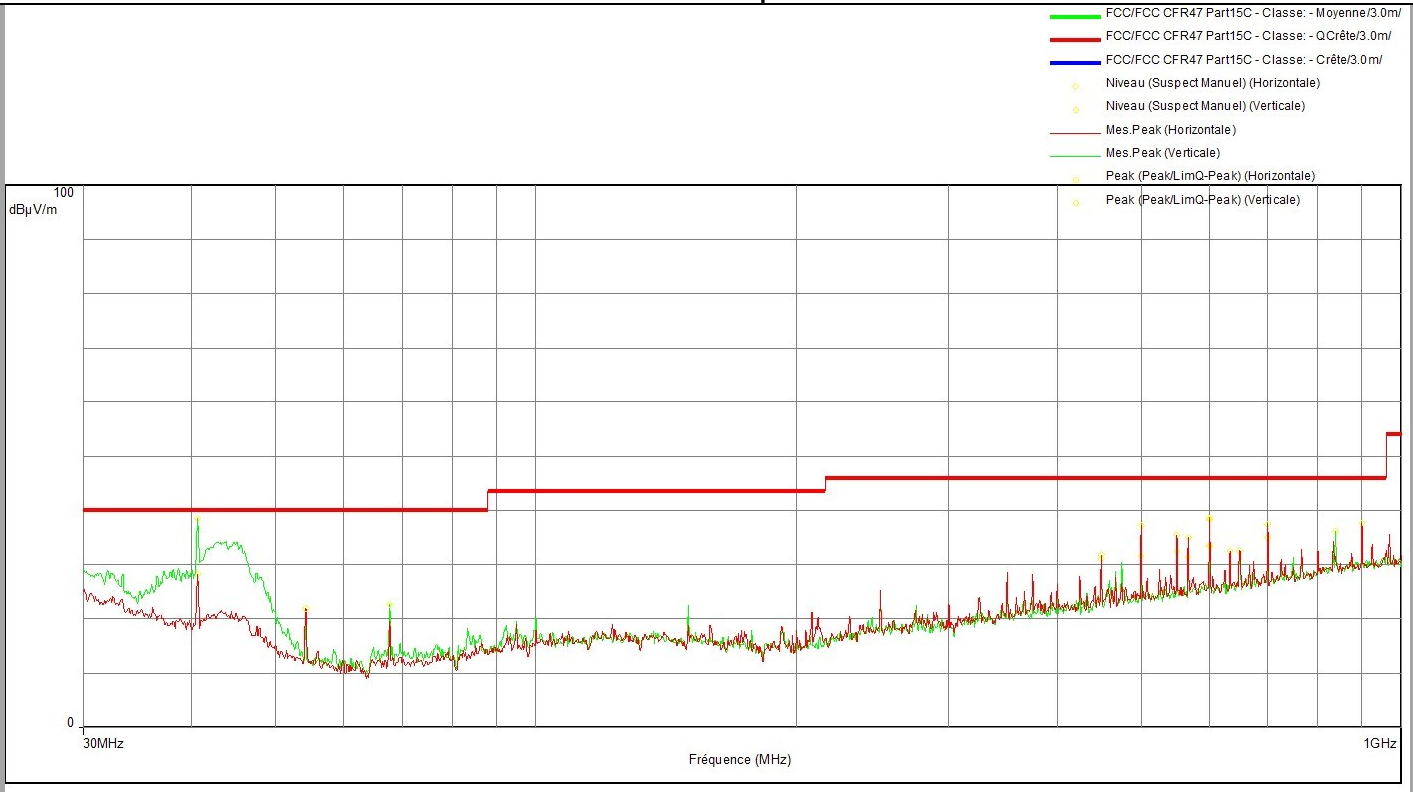
Frequency (MHz)	Peak Level (dBµV/m)	Polarization
27.119	41.1	0°



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30MHz to 1GHz

Vertical & horizontal polarization



Frequency (MHz)	Peak (dBµV/m)	LimQP (dBµV/m)	Peak-LimQP (dB)	Polarization
40.676	28.3	40.0	-11.7	Horizontal
450.000	31.7	46.0	-14.3	Horizontal
500.000	37.2	46.0	-8.8	Horizontal
550.040	35.4	46.0	-10.6	Horizontal
566.680	35.0	46.0	-11.0	Horizontal
600.000	38.3	46.0	-7.7	Horizontal
600.000	38.4	46.0	-7.6	Horizontal
633.320	32.6	46.0	-13.4	Horizontal
650.000	32.4	46.0	-13.6	Horizontal
700.000	37.4	46.0	-8.6	Horizontal
900.040	37.6	46.0	-8.4	Horizontal
40.676	38.4	40.0	-1.6	Vertical
450.000	31.1	46.0	-14.9	Vertical
500.000	31.5	46.0	-14.5	Vertical
550.040	32.6	46.0	-13.4	Vertical
566.680	31.5	46.0	-14.5	Vertical
600.000	33.2	46.0	-12.8	Vertical
600.000	33.4	46.0	-12.6	Vertical
700.000	35.0	46.0	-11.0	Vertical
838.000	36.2	46.0	-9.8	Vertical

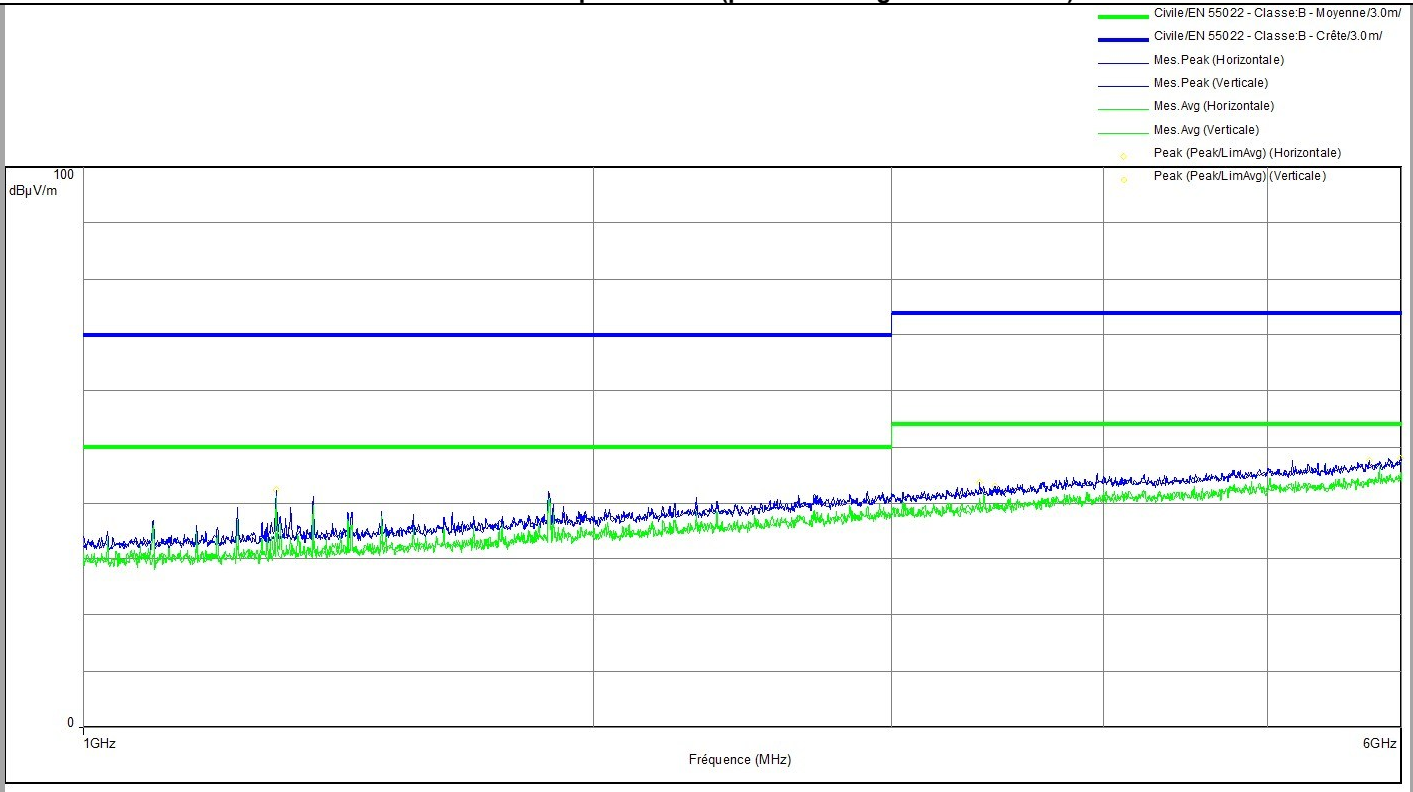
Frequency (MHz)	Peak Level (dBµV/m)	Polarization
54.242	21.9	Horizontal
67.791	22.6	Vertical



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Above 1GHz

Vertical & horizontal polarization (peak & average measurement)



Frequency (MHz)	Peak (dBµV/m)	LimM (dBµV/m)	Peak-LimM (dB)	Polarization
1300.250	42.3	54.0	-11.7	Horizontal
3382.750	43.6	54.0	-10.4	Horizontal
5992.000	48.0	54.0	-6.0	Horizontal
3449.750	43.0	54.0	-11.0	Vertical
5735.750	47.6	54.0	-6.4	Vertical

Results in characterization:

**Characterization on 10 meters open site below 30 MHz**

**Worst case final data result:**

Frequency list has been created with semi-anechoic chamber pre-scan results. Measurements are performed using a QUASI-PEAK detection.

No	Frequency (MHz)	QPeak Limit (dBµV/m) @ 30m	Qpeak (dBµV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
1	27.12	19.7	29.5	-9.8	0	0°	100	41.9	-

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) ( $M@30m = M@10m - 19.1dB$ )

**Characterization on 10 meters open site from 30MHz to 1GHz**

**Worst case final data result:**

Frequency list has been created with semi-anechoic chamber pre-scan results. Measurements are performed using a QUASI-PEAK detection.

Test Frequency (MHz)	Meter Reading dB(µV)	Detector (Pk/QP/Av)	Polarit y (V/H)	Azimuth (Degrees)	Antenn a Height (cm)	Gain/Lo ss Factor (dB)	Transduc er Factor (dB)	Level (dBµV/m)	Limit (dBµV/m)	Margi n (dB)	Remar k
40.680	22.7	QP	V	0	100	-	14.3	37.0	40.0	-3.0	
67.800	22.5	QP	V	0	100	-	7.7	30.2	40.0	-9.8	
500.000	18.0	QP	H	170	200	-	22.1	40.1	46.0	-5.9	
600.019	18.0	QP	H	0	100	-	24.3	42.3	46.0	-3.7	
700.000	18.5	QP	H	0	100	-	25.9	44.4	46.0	-1.6	
900.057	15.5	QP	H	100	100	-	28.9	44.4	46.0	-1.6	

Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) ( $M@3m = M@10m + 10.5dB$ )

**6.7. CONCLUSION**

Field strength outside of the bands 13.110-14.010 MHz measurement performed on the sample of the product **Ingenico Lane/8000 CL/USB**, SN: **170043413011040100001905**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.225 & RSS-Gen ISSUE 4 limits.

## 7. FIELD STRENGTH WITHIN THE BAND 13.110-14.010MHZ

### 7.1. TEST CONDITIONS

Test performed by : Gaetan DESCHAMPS  
 Date of test : February 9, 2017  
 Ambient temperature : 23°C  
 Relative humidity : 32%

### 7.2. TEST SETUP

The product has been tested according to ANSI C63.10 (2013). The EUT is placed **on an open area test site**. Distance between measuring antenna and the EUT is **3m**.

Test is performed in parallel and perpendicular axis with a loop antenna below 30MHz. Measurement bandwidth was 200Hz below 150kHz and 9kHz between 150kHz & 30MHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height was 1m.

The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna height search was performed from 1 to 4m. The EUT is place at 0.8m.

### 7.3. LIMIT

**Limit:**

Below 13.110MHz: 30µV/m (30m) or 69.5dBµV/m (3m) QPeak  
 13.110MHz to 13.410MHz: 106µV/m (30m) or 80.5dBµV/m (3m)  
 13.410MHz to 13.553MHz: 334µV/m (30m) or 90.5dBµV/m (3m)  
 13.553MHz to 13.567MHz: 15848µV/m (30m) or 124dBµV/m (3m)  
 13.567MHz to 13.710MHz: 334µV/m (30m) or 90.5dBµV/m (3m)  
 13.710MHz to 14.010MHz: 106µV/m (30m) or 80.5dBµV/m (3m)  
 Above 14.010MHz: 30µV/m (30m) or 69.5dBµV/m (3m) QPeak

### 7.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Antenna Loop	ELECTRO-METRICS	EM-6879	C2040052	2015/11	2017/11
Cable	-	-	A5329069	2016/12	2017/12
Cable (OATS)	-	-	A5329623	2016/01	2017/01
Radiated emission comb generator	BARDET	-	A3169050	-	-
OATS	-	-	F2000409	2016/08	2017/08
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	2016/08	2017/08
Thermo-hygrometer (PM2)	OREGON	BAR916HG-G	B4206022	2016/08	2017/08
Turntable / Mast controller (OATS)	ETS Lindgren	Model 2066	F2000372	-	-
Antenna mast (OATS)	ETS Lindgren	2071-2	F2000392	-	-
Turntable (OATS)	ETS Lindgren	Model 2187	F2000403	-	-
Table	LCIE	-	F2000461	-	-

Note: In our quality system, the test equipment calibration due is more & less 2 months



### 7.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None       Divergence:

### 7.6. RESULTS

Parallel Axis		
Frequency (MHz)	QPeak Level (dBµV/m) (3m)	Limit (dBµV/m) (3m)
Below 13.110	33.5	69.5
13.110 to 13.410	33.8	80.5
13.410 to 13.553	42	90.5
13.553 to 13.567	59.2	124
13.567 to 13.710	41	90.5
13.710 to 14.010	43	80.5
Above 14.010	31	69.5

Perpendicular Axis		
Frequency (MHz)	QPeak Level (dBµV/m) (3m)	Limit (dBµV/m) (3m)
Below 13.110	34.5	69.5
13.110 to 13.410	37	80.5
13.410 to 13.553	39	90.5
13.553 to 13.567	56.5	124
13.567 to 13.710	39.6	90.5
13.710 to 14.010	38.3	80.5
Above 14.010	33	69.5

### 7.7. CONCLUSION

Field strength within the band 13.110-14.010MHz measurement performed on the sample of the product **Ingenico Lane/8000 CL/USB**, SN: **170043413011040100001905**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.225 & RSS 210 ISSUE 9 limits.

## 8. UNCERTAINTIES CHART

47 CFR Part 15.209 & 15.207 Kind of test	Wide uncertainty laboratory (k=2) ±x(dB) / (Hz)/ ms	Uncertainty limit
Measurement of conducted disturbances in voltage on the AC power port (9 kHz – 150 kHz)	2,67	3.8
Measurement of conducted disturbances in voltage on the AC power port (150 kHz – 30 MHz)	2,67	3.4
Measurement of conducted disturbances in voltage on the telecommunication port. (AAN)	3,67	5.0
Measurement of conducted disturbances in current (current clamp)	2,73	2.9
Measurement of disturbance power	2,67	4.5
Measurement of radiated magnetic field from 10kHz to 30MHz in SAC V01	4,48	/
Measurement of radiated magnetic field from 10kHz to 30MHz in SAC C01	4,48	/
Measurement of radiated electric field from 30 to 1000MHz in horizontal position on the OATS (Ecuelles)	4,88	6.3
Measurement of radiated electric field from 1 to 18GHz on the Ecuelles site	5.16	/
Measurement of radiated electric field from 30 to 1000MHz in vertical position on the OATS (Ecuelles)	4,99	6.3
Measurement of radiated electric field from 30 to 1000MHz in horizontal position in SAC C01	5,08	6.3
Measurement of radiated electric field from 30 to 1000MHz in vertical position in SAC C01	5,16	6.3
Measurement of radiated electric field from 30 to 1000MHz in horizontal position in SAC V01	5,08	6.3
Measurement of radiated electric field from 30 to 1000MHz in vertical position in SAC V01	5,15	6.3
Measurement of radiated electric field from 1 to 6 GHz C01	5,1	5.2
Measurement of radiated electric field from 1 to 6 GHz V01	4,85	5.2
Measurement of radiated magnetic field from 10kHz to 30MHz on the OATS (Ecuelles)	4,48	/

The uncertainty values calculated by the laboratory are lower than limit uncertainty values defined by the CISPR. The conformity of the sample is directly established by the applicable limits values. This table includes all uncertainties maximum feasible for testing in the laboratory, whether or not made in this report