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d'essai accrédité N°1-1633

Rapport d'essai / Test report

N° 201002-6084CR-R1-E

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: INGENICO

Rue Claude Chappe

B.P. 344

07503 GUILHERAND GRANGES - FRANCE

Objet / Subject

: Essais de compatibilité électromagnétique conformément aux

normes

FCC CFR 47 Part 15, Subpart B et C.

Electromagnetic compatibility tests according to the standards

FCC CFR 47 Part 15, Subpart B and C

Matériel testé / Apparatus under test :

Produit / Product

: Lecteur de carte bancaire / Bank payment terminal

Marque / Trade mark

: INGENICO

Constructeur / Manufacturer

: INGENICO

Type / Model

iPP2x0-01Txxxxx

Type sous test / Model under test

: iPP250-01T1123B iPP280-01T1341A

N° de série / serial number

: 10217PP70112149 10217PP70112144

FCC ID

: XKB-IPP2XXCL

Date des essais / Test date

: Du 7 Septembre au 23 Novembre 2010 / From September 7th to November 23 rd, 2010

Lieu d'essai / Test location

: LCIE SUD-EST

ZI Centr'Alp - 170 rue de Chatagnon

38430 MOIRANS - France

Test réalisé par / Test performed by

: Jonathan PAUC

Ce document comporte / Composition of document : 60 pages.

MOIRANS, 7 FEVRIER 2011 / FEBRUARY 7TH ,2011

Ecrit par / Written by, Jonathan PAUC

Approuvé par / Approved by, Jacques LORQUIN

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1. Test Program

Standard: - FCC Part 15, Subpart B (Digital Devices)

- ANSI C63.4 (2003)

EMISSION TEST		LIMITS	RESULTS (Comments)	
Limits for conducted disturbance at mains ports	Frequency	Quasi-peak value (dBµV)	Average value (dBµV)	
150kHz-30MHz	150-500kHz	66 to 56	56 to 46	COMPLY
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 30MHz-12.5GHz	88MHz-216MI 216MHz-960N	m z : 40 dBμV/m Hz : 43.5 dBμV/m //Hz : 46.0 dBμV/n lz : 54.0 dBμV/m		COMPLY

Standard: - FCC Part 15, Subpart C

- ANSI C63.4 (2003)

EMISSION TEST		LIMITS	RESULTS (Comments)	
Limits for conducted disturbance at mains ports	Frequency	Quasi-peak value (dBµV)	Average value (dBµV)	
150kHz-30MHz	150-500kHz	66 to 56	56 to 46	COMPLY
	0.5-5MHz	56	46	
	5-30MHz	60	50	
Radiated emissions 9kHz-30MHz	Measure at 36 490kHz-1.705	: 67.6dBµV/m /F(k	m /F(kHz)	COMPLY
Radiated emissions 30MHz-12.5GHz*	88MHz-216MI 216MHz-960N	m z : 40 dBμV/m Hz : 43.5 dBμV/m //Hz : 46.0 dBμV/m Hz : 54.0 dBμV/m	1	COMPLY
Fundamental frequency tolerance	Operation wi	thin the band) MHz §15.2	225	COMPLY
Bandedge compliance	Operation wi 13.110-14.010	thin the band) MHz §15.2	225	COMPLY

^{*§15.33:} The highest internal source of a testing device is defined like more the highest frequency generated or used in the testing device or on which the testing device works or agrees.

⁻ If the highest frequency of the internal sources of the testing device is lower than 108 MHz, measurement must be only performed until 1GHz.

⁻ If the highest frequency of the internal sources of the testing device ranges between 108 MHz and 500 MHz, measurement must be only performed until 2GHz.

⁻ If the highest frequency of the internal sources of the testing device ranges between 500 MHz and 1 GHz, measurement must be only performed until 5GHz

If the highest frequency of the internal sources of the testing device is above 1 GHz, measurement must be only performed until 5 times the highest frequency or 40 GHz, while taking smallest of both.



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2. System test configuration

2.1. JUSTIFICATION

The system was configured for testing in a typical fashion (as a customer would normally use it) see §2.6:

The apparatus iPP250 is a product with full option, the others product iPP280 and iPP220, the PWB is identical only soft option and LCD screen are changed, see below the summary of changes of each apparatus.

iPP250 : Screen display with backlight, (Ref: VLFM1659) iPP280 : Screen display with backlight, iPP220 : Screen display without backlight, (Ref: VLFM1632)

Consequently all the tests are performed on the iPP250 (Worst case) on the results are available for iPP280 and iPP220.

For iPP280 complementary test are performed on the worst case for validation of LCD screen

2.2. HARDWARE IDENTIFICATION

Equipment under test (EUT):

E.U.T.: iPP250-01T1123B
Serial number: 10217PP70112149
Model with all options

Screen display reference: VLFM1659

Power supply interface:

1: 5Vdc 2: 8-14Vdc



E.U.T.: iPP280-01T1341A
Serial number: 10217PP70112144
Model with all options

Model with all options

Screen display reference :VLFM1632

Power supply interface:

1: 5Vdc 2: 8-14Vdc



Highest internal frequency: 57 MHz



Input/output:

- 1 x Power supply "Type RJ45" -



Auxiliaries used for testing:

- 1 x Laptop TOSHIBA SATELLITE PS141E-04YC (Configuration n3) sn : 13594938G

- 1 x Payment Terminal ICT 220 01T1036C (Configuration n°1 & 2) sn: 10204CT70252285

- 1 x Power supply SAGEM AD5632 (Configuration n⁹4) sn : None

- 1 x Contact Less Card

I/O cables used for testing:

- Configuration 1: 1 x USB cable "untwisted" (2m) shielded, Ref: 296110769 (16/10)

- Configuration 2: 1 x USB cable "Twisted" (2m) (POE) shielded, Ref: INGH-296101129

- Configuration 3: 1 x USB cable (2m) (AC/DC adapter input), shielded, Ref: 296107803 (11/10)

- Configuration 4: 1 x RS232 cable (2m), unshielded, Ref: 296110706 (16/10)

2.3. RUNNING MODE

<u>Sequence n</u> :

Sequence nº2:

A reading process are performed on contactless Card

sequence n°1 + serial communication on COM0

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Configuration				
Running mode	1	2	3	4
Sequence nୁ	Х	Х	Х	
Sequence n ^o 2				Х



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2.4. EQUIPMENT MODIFICATIONS

A ferrite (ref: Wurth elektronik 742 727 33) on EUT cable has been necessary during testing for configuration 3.

Configuration 3



2.5. EUT EXERCISE SOFTWARE

IPP2XX: 8203700108

Appli test CEM: APPLI CEM V1.1



2.6. EUT CONFIGURATION

<u>Configuration 1</u>: <u>Communication access</u>: - USB

Power supply: - (5Vdc) Provided by ICT220 Equipment (Auxilliary Equipment)

ICT220 is powered by a Power supply adapter Type: 152810 (SAGEM MONETEL)

Option Cable: - Ref: 296110769 (16/10) "Untwisted"



Configuration 2: Communication access: - USB

Power supply: - (5Vdc) Provided by ICT220 Equipment (Auxilliary Equipment)

ICT220 is powered by a Power supply adapter Type 152810 (SAGEM MONETEL)

Option Cable: - Ref: INGH-296101129 "twisted"





<u>Configuration 3</u>: <u>Communication access</u>: - USB

Power supply: - Power supply adapter Type FW7650L/05 (SAGEM MONETEL) "5Vdc"

Option Cable: - Ref: 296107803 (11/10)





Configuration 4: <u>Communication access</u>: - RJ11

Power supply: - Power through AC/DC power supply adapter type "8Vdc"

Option Cable: - Ref: 296110706 (16/10)



Remark:

Power supply (SAGEM AD5632) In this configuration permits to emulate a 8Vdc power supply source



3. RADIATED EMISSION DATA

3.1. CLIMATIC CONDITIONS

Date of test : From October 12th to 14th, 2010

Test performed by : J. PAUC Atmospheric pressure : 1002mb Relative humidity : 41% Ambient temperature : 23℃

3.2. TEST SETUP

The installation of EUT is identical for pre-characterization measurement in a 3 meters semi anechoic chamber and for measures on a 10 meters Open site.





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Configuration na





Configuration n²







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Configuration n3





Configuration n²4

3.3. TEST SEQUENCE AND RESULTS

3.3.1. Pre-characterization at 3 meters [9kHz-30MHz]

A pre-scan of all the setup has been performed in a 3 meters semi anechoic chamber.

The distance between EUT and antenna is 3 meters. For Pre-characterization, the loop antenna was rotated during the test for maximized the emission measurement. Measurement performed on 3 axis of EUT.

Frequency band investigated is 9kHz to 30MHz. The pre-characterization graphs are obtained in PEAK detection. **See graph for 9kHz-30MHz band:**

Configuration n ^a	Emr#17	(See annex 1)
Configuration n ^o 2	Emr#18	(See annex 1)
Configuration nช	Emr#19	(See annex 1)
Configuration n ^o 4	Emr#20	(See annex 1)
Configuration n ^o 1	Emr#21	(See annex 1)
Configuration n ²	Emr#22	(See annex 1)
Configuration nช	Emr#23	(See annex 1)
Configuration n ^o 4	Emr#24	(See annex 1)
	Configuration n ² Configuration n ³ Configuration n ⁴ Configuration n ¹ Configuration n ² Configuration n ³	Configuration n ² Emr#18 Configuration n ³ Emr#19 Configuration n ⁴ Emr#20 Configuration n ⁹ Emr#21 Configuration n ² Emr#22 Configuration n ³ Emr#23



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3.3.2. Pre-characterization [30MHz-1GHz]

For frequency band 30MHz to 1GHz, a pre-scan of all the setup has been performed in a 3 meters semi anechoic chamber.

The distance between EUT and antenna is 3 meters. Test is performed in horizontal (H) and vertical (V) polarization with a log-periodic antenna. The EUT is being rotated on 360° and on 3 axis during the measurement. The precharacterization graphs are obtained in PEAK detection.

See graphs for 30MHz-1GHz:

Configuration n ^o H polarization V polarization H polarization V polarization	iPP250-01T1123B	Emr#1	(See annex 1)
	iPP250-01T1123B	Emr#2	(See annex 1)
	iPP280-01T1341A	Emr#9	(See annex 1)
	iPP280-01T1341A	Emr#10	(See annex 1)
Configuration n ² H polarization V polarization H polarization V polarization	iPP250-01T1123B	Emr#3	(See annex 1)
	iPP250-01T1123B	Emr#4	(See annex 1)
	iPP280-01T1341A	Emr#11	(See annex 1)
	iPP280-01T1341A	Emr#12	(See annex 1)
Configuration n ³ H polarization V polarization H polarization V polarization	iPP250-01T1123B	Emr#5	(See annex 1)
	iPP250-01T1123B	Emr#6	(See annex 1)
	iPP280-01T1341A	Emr#13	(See annex 1)
	iPP280-01T1341A	Emr#14	(See annex 1)
Configuration n ²⁴ H polarization V polarization H polarization V polarization	iPP250-01T1123B iPP250-01T1123B iPP280-01T1341A iPP280-01T1341A	Emr#7 Emr#8 Emr#15 Emr#16	(See annex 1) (See annex 1) (See annex 1)



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3.3.3. Characterization on 10 meters open site below 30 MHz

The product has been tested according to ANSI C63.4 (2003), FCC part 15 subpart C. Radiated Emissions were measured on an open area test site. A description of the facility is on file with the FCC.

The product has been tested at a distance of **10 meters** from the antenna and compared to the FCC part 15 subpart C §15.225 limits in the frequency range 13.553MHz 13.567MHz. Measurement bandwidth was 9kHz.

Antenna height was 1m for both horizontal and vertical polarization.

Antenna was rotated around its vertical axis.

Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on 3 axis of EUT. A summary of the worst case emissions found in all test configurations and modes is shown on clauses 3.2.

Worst configuration: Configuration na

Frequency (MHz)	QPeak Limit (dBμV/m) @ 30m		Qpeak-Limit (Margin dB)	Turntable Angle (deg)	Ant. Pol./ Angle (deg)	Tot Corr (dB)
13.56* ¹	84.0	44.8	-39.2	270	90	35.3
27.12* ¹	29.5	24.2	-5.3	270	90	39.3

^{*1:} Measure have been done at 10m distance and corrected according to requirements of 15.209.e) (M@30m = M@10m-19.1dB)

Limits Sub clause §15.225

Frequency (MHz)	Field strength (dBµV/m)	Measurement distance (m)
13.553-13.567	15 848 84 dBµV/m	30
13.410-13.553	334	30
13.567-13.710	50.5 dBµV/m	30
13.110-13.410	106	30
13.710-14.010	40.5 dBμV/m	30

See chapter 5 of this test report for band edge measurements.



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

The product has been tested at a distance of **10 meters** from the antenna and compared to the FCC part 15 subpart B §15.109 limits and C §15.209 limits. Measurement bandwidth was 120kHz from 30 MHz to 1GHz Antenna height search was performed from 1m to 4m for both horizontal and vertical polarization. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on 3 axis of EUT.

A summary of the worst case emissions found in all test configurations and modes is shown on clause 3.2

Worst case final data result between iPP280 and iPP250 by configuration:

Configuration n ?:

No	Frequency (MHz)	QPeak Limit (dBμV/m)		Qpeak-Limit (Margin, dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)	Comments
1	40.671	40	34.5	-5.5	168	V	150	12.0	None
2	54.242	40	22.0	-18.0	158	V	150	11.5	None
3	81.359	40	21.9	-18.1	158	V	150	7.9	None
4	213.001	43.5	25.7	-17.8	82	V	200	15.8	None
5	221.120	46	33.1	-12.9	127	V	100	15.3	None
6	229.360	46	28.7	-17.3	136	V	200	14.8	None
7	250.002	46	26.6	-19.4	47.6	V	150	13.6	None
8	290.005	46	28.6	-17.4	86	V	200	17.4	None

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

Configuration n2:

No	Frequency (MHz)	QPeak Limit (dBμV/m)	•	Qpeak-Limit (Margin, dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)	Comments
1	40.671	40	35.0	-5.0	298;5	V	100	12.0	None
2	54.242	40	27.4	-12.6	233	V	200	11.5	None
3	81.359	40	19.5	-20.5	225	V	100	7.9	None
4	147.452	43.5	30.7	-12.8	108	V	200	14.7	None
5	213.001	43.5	27.9	-15.6	80	V	200	15.6	None
6	221.120	46	30.8	-15.2	325	V	200	14.9	None
7	229.360	46	34.4	-11.6	339	V	400	14.6	None
8	253.951	46	26.6	-19.4	119.3	V	200	14.2	None
9	454.856	46	35.5	-10.5	75	V	250	21.0	None

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



Configuration n3:

No	Frequency (MHz)	QPeak Limit (dBµV/m)	Qpeak * (dBµV/m)	Qpeak-Limit (Margin, dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)	Comments
1	40.673	40	35.2	-4.8	48	V	200	12.0	None
2	54.240	40	27.9	-12.1	63	V	150	11.5	None
3	33.641	40	25.4	-14.6	98	V	146	7.9	None

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

Configuration n⁴:

No	Frequency (MHz)	QPeak Limit (dBµV/m)	Qpeak * (dBµV/m)	Qpeak-Limit (Margin, dB)	Angle (deg)	Pol	Hgt (cm)	Tot Corr (dB)	Comments
1	40.68	40	32.0	-8.0	10	V	100	12.0	None
2	54.237	40	26.5	-13.5	85	٧	200	11.5	None

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

RESULTS: PASS

3.4. FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follow:

FS = RA + AF + CF - AG

Where FS = Field Strength

RA = Receiver Amplitude AF = Antenna Factor CF = Cable Factor AG = Amplifier Gain

Assume a receiver reading of 52.5dBµV is obtained. The antenna factor of 7.4 and a cable factor of 1.1 are added. The amplifier gain of 29dB is subtracted, giving a field strength of 32 dBµV/m.

 $FS = 52.5 + 7.4 + 1.1 - 29 = 32 \, dB\mu V/m$

The 32 dBµV/m value can be mathematically converted to its corresponding level in µV/m.

Level in μ V/m = Common Antilogarithm [(32dB μ V/m)/20] = 39.8 μ V/m.



4. Fundamental frequency tolerance (15.225e)

4.1. TEST CONDITIONS

Date of test : November 19th, 2010

Test performed by : J. PAUC Atmospheric pressure : 954mb Relative humidity : 39% Ambient temperature : 23℃

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency when the temperature is varied from -20% to +50% at the no minal power voltage and the primary power voltage is varied from 85% to 115% of the rated supply voltage at 20%.

4.2. Temperature and voltage fluctuation

Temperature has been set at +20°C, -20°C and +50°C.

Different setup was performed in order to test the different power configuration.

Voltage is varied from:

Setup 1 : Primary of ICT220 Auxilliary equipment power supply : 93.5V/60Hz to 126V/60Hz (Configuration n⁹ & 2) Setup 2 : Primary of FW7650L/05 Sagem monetel power supply : 93.5V/60Hz to 126V/60Hz (Configuration n⁹)

Setup 3: Primary of iPP250: 6.8Vdc to 16.1vdc (Configuration n4)

Frequency of carrier: 13.56 MHz Upper limit: 13.561356 MHz Lower limit: 13.558644 MHz

The equipment (RF box) is set in a climatic chamber. Measure is performed on one channel of RF module.

Setup 1 / Configuration n 4 & 2:

Temperature	-20℃	20℃	+50℃
Voltage			
Mains voltage: 110V/60Hz			
Frequency Drift (MHz)	+ 0.000065	REF	- 0.000023
Carrier level (dBc)	+ 1.79	REF	- 2.46
Mains voltage: 93,5V/60Hz			
Frequency Drift (MHz)	+ 0.000072	+ 0.000008	- 0.000028
Carrier level (dBc)	+ 1.74	+ 0.26	- 2.27
Mains voltage: 126V/60Hz			
Frequency Drift (MHz)	+ 0.000065	+ 0.000008	- 0.000025
Carrier level (dBc)	+ 1.99	- 0.02	- 2.25

Frequency drift measured is **72 Hz** when the temperature is varied from -20°C to +50°C and voltage is varied from $110V/60Hz \pm 15$ % (Laptop power supply adapter "Primary" Type 152810).



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Setup 2 / Configuration n3:

Temperature	-20℃	20℃	+50℃
Voltage			
Mains voltage: 110V/60Hz			
Frequency Drift (MHz)	+ 0.000057	REF	- 0.000035
Carrier level (dBc)	+ 2.41	REF	- 4.24
Mains voltage: 93,5V/60Hz			
Frequency Drift (MHz)	+ 0.000064	+ 0.000003	- 0.000040
Carrier level (dBc)	+ 2.46	- 0.02	- 4.41
Mains voltage: 126V/60Hz			
Frequency Drift (MHz)	+ 0.000059	+ 0.000012	- 0.000026
Carrier level (dBc)	+ 2.42	+ 0.00	- 4.71

Frequency drift measured is **64 Hz** when the temperature is varied from -20°C to +50°C and voltage is varied from $110\text{V}/60\text{Hz} \pm 15\%$ (Power supply adapter "Primary" Type FW7650L/05).

Setup 3 / Configuration n⁴:

Temperature	-20℃	20℃	+50℃
Voltage			
Mains voltage: 11Vdc			
(Middle Voltage : 8-14Vdc)			
Frequency Drift (MHz)	+ 0.000045	REF	- 0.000043
Carrier level (dBc)	+ 7.53	REF	+ 5.59
Mains voltage: 6.8Vdc			
Min Voltage «8Vdc» -15%			
Frequency Drift (MHz)	+ 0.000042	+ 0.000000	- 0.000038
Carrier level (dBc)	+ 7.48	- 0.04	+ 5.50
Mains voltage: 16.1Vdc			
Max Voltage «14Vdc» +15%			
Frequency Drift (MHz)	+ 0.000050	- 0.000007	- 0.000043
Carrier level (dBc)	+ 7.48	- 0.18	+ 5.38

Frequency drift measured is **50 Hz** when the temperature is varied from -20℃ to +50℃ and voltage is varied from Min Voltage «8Vdc» -15% to Max Voltage «14Vdc» +15% (iPP250 power supply : 8-14V)



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5. BAND-EDGE COMPLIANCE §15.209

5.1. CLIMATIC CONDITIONS

Date of test : November 19th, 2010

Test performed by : J. PAUC
Atmospheric pressure : 954mb
Relative humidity : 39%
Ambient temperature : 23℃

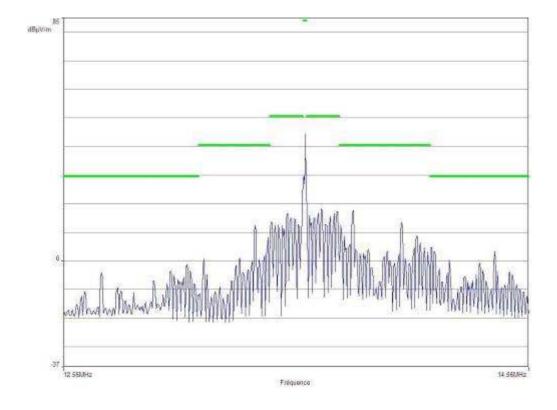
5.2. EQUIPMENT CONFIGURATION

See § 2.6.

5.3. Frequency band 13.110-14.010MHz

Following plots show radiated emission level in the frequency band 13.110-14.010MHz with a RBW of 9kHz and a quasi-peak detector. The graphs are obtained with a measuring receiver ESU8.

Configuration n2: Worst case





6. CONDUCTED EMISSION DATA

6.1. CLIMATIC CONDITIONS

Date of test : November 23rd, 2010 Test performed by : Jonathan PAUC

Atmospheric pressure : 1010mb Relative humidity : 43% Ambient temperature : 25℃

6.2. SETUP FOR CONDUCTED EMISSIONS MEASUREMENT

The product has been tested according to ANSI C63.4-(2003) and FCC Part 15 subpart B and C.

The product has been tested with 110V/60Hz power line voltage and compared to the FCC Part 15 subpart B §15.107 and C §15.207 limits. Measurement bandwidth was 9kHz from 150 kHz to 30 MHz.

Measurement is made with a Rohde & Schwarz ESU8 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 / 50μ H.

The Peak data are shown on plots in annex 1. Quasi-Peak and Average measurements are detailed in a table with frequencies and levels measured.

Interconnecting cables and equipment's were moved to position that maximized emission. A summary of the worst case emissions found in all test configurations and modes is shown on the following page.



6.3. TEST SETUP

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 trough the LISN (measure).





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Configuration na



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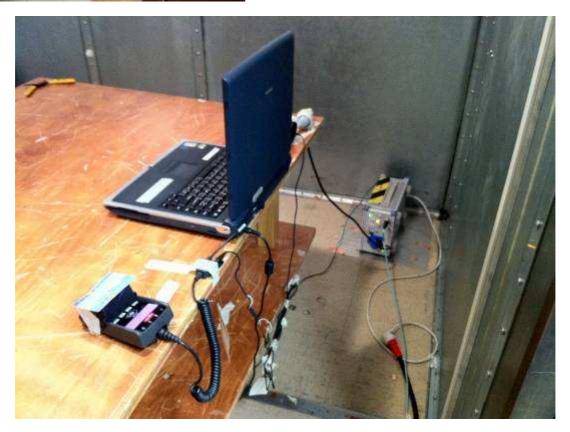
Configuration n2



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Configuration n3

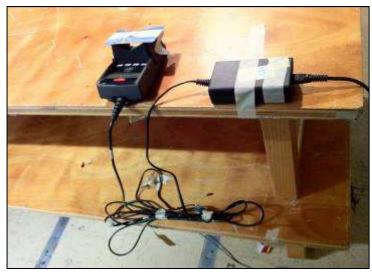


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Configuration n4



6.4. TEST SEQUENCE AND RESULTS

Measurements are performed on the phase (L1) and neutral (N) of power line voltage.

A measurement is also performed with a 50Ω dummy load replacing the transmitter antenna in order to demonstrate that some 13.56MHz may be cross-coupled to AC line connection.

Graphs are obtained in PEAK detection.

Measures are also performed in Quasi-Peak and Average for any strong signal.

Configuration n1:

Measure on L:	graph Emc#1	iPP250	(see annex 1)
Measure on N:	graph Emc#2	iPP250	(see annex 1)
Configuration n ² :			
Measure on L:	graph Emc#3	iPP250	(see annex 1)
Measure on N:	graph Emc#4	iPP250	(see annex 1)
Measure on L:	graph Emc#9	iPP280 (Worst case)	(see annex 1)
Measure on N:	graph Emc#10	iPP280 (Worst case)	(see annex 1)
Configuration nช:			
Measure on L:	graph Emc#5	iPP250	(see annex 1)
Measure on N:	graph Emc#6	iPP250	(see annex 1)
Configuration n ⁴ :			
Measure on L:	graph Emc#7	iPP250	(see annex 1)
Measure on N:	graph Emc#8	iPP250	(see annex 1)

RESULT: PASS



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7. TEST EQUIPMENT LIST (MOIRANS SITE)

N°LCIE		TYPE	COMPANY	REF	commentaire
RADIATED	EMISSION MEAS	SUREMENT (PRE-SCAN SEMI-ANECH	OIC CHAMBER #2)	l	
	A5329032VO	Absorption clamp	LUTHI	MDS21	
	A5329044VO	Absorption clamp	RHODE ET SCHWARZ	85024A	
Χ	A4049060VO	Adapter quasi-peak	HEWLETT PACKARD	HP85650A	
Χ	A7102024VO	Amplifier 8 GHz	HEROTEK	A1080304A	
Χ	A7486006VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447F	
	A7085008VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	
	A7085009VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	
	A7085010VO	Amplifier 10MHz – 1300 MHz	A-INFO INC	JXWBLA-T	
X	C2040146VO	Antenna Bi-Log XWing	TESEQ	CBL6144	
	C2042027VO	Antenna horn	EMCO	3115	
	C2042028VO	Antenna horn 26GHz	SCHWARZBECK	BBHA 9170	
X	C2040052VO	Antenna Loop	ELECTRO-METRICS	EM-6879	
X	A5329045VO	Cable EMR (s-Anechoic chamber)			
X	A5329056VO	Cable Radiat EMI (Pre-amp/Analyzer)			
Х	A5329057VO	Cable Radiat. EMI (Pre-amp/cage)			
X	A2642019	Measurement Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	
X	A4060030VO	Pre-selector RF	HEWLETT PACKARD	HP85685A	
X	A3169050VO	Radiated emission comb generator	BARDET		
X	D3044015VO	Semi-Anechoic chamber #2	SIEPEL		
Х	A4060029VO	Spectrum analyzer	HEWLETT PACKARD	HP8568B	
X	A4060028VO	Spectrum analyzer display	HEWLETT PACKARD	HP85662A	
X	F2000404VO	Turntable chamber	ETS Lingren	Model 2165	
Х	F2000393VO	Turntable controller chamber	ETS Lingren	Model 2066	
RADIATED	EMISSION MEAS	UREMENT (OPEN AREA TEST SITE)	T	T	
	A5329032VO	Absorption clamp	LUTHI	MDS21	
	A5329044VO	Absorption clamp	RHODE ET SCHWARZ	85024A	
X	A4049059VO	Adapter quasi-peak	HEWLETT PACKARD	HP85650A	
	A7102024VO	Amplifier 8 GHz	HEROTEK	A1080304A	
	A7102026VO	Amplifier 8-26GHz	ALDETEC	ALS01452	
	A7085008VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	
	A7085009VO	Amplifier 0.1MHz – 1300 MHz	HEWLETT PACKARD	8447D	
V	A7085010VO	Amplifier 10MHz – 1300 MHz	A-INFO INC	JXWBLA-T	
Х	C2040050VO	Antenna biconic	EMCO	3104C	
	C2040051VO	Antenna Bi-log	CHASE EMCO	CBL6111A	
	C2042027VO	Antenna horn Antenna horn 26GHz	SCHWARZBECK	3115 BBHA 9170	
Х	C2042028VO C2040056VO		EMCO	3146	
		Antenna log-periodic	ELECTRO-METRICS	EM-6879	
X	C2040052VO F2000288VO	Antenna Loop Antenna mast	EMCO	1050	
X		Cable EMR OATS	SUCOFLEX	106G	
X	A5329048VO A5329199VO	Cable OATS (Mast at 10m)	UTIFLEX	1000	
X	A5329199VO A5329188VO	Cable OATS (Mast at 10m)	UTIFLEX		
^	A5329166VO A5329076VO	Cable OATS (Mast at 1011) Cable OATS (Mast at 3m)	UTIFLEX		
	A5329076VO A5329196VO	Cable OATS (Mast at 5m) Cable OATS (Turntable)	UTIFLEX		
	A5329196VO A5329187VO	Cable OATS (Turntable)	UTIFLEX		
	A2640011VO	Measurement receiver 9kHz–30MHz	ROHDE ET SCHWARZ	ESH3	
Х	A2642019	Measurement Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	
X	A4060027VO	Pre-selector RF	HEWLETT PACKARD	HP85685A	
X	A3169050VO	Radiated emission comb generator	BARDET	111 000007	
X	A4060017VO	Spectrum analyzer	HEWLETT PACKARD	HP8568B	
	A4060017VO A4060018VO	Spectrum Analyzer 9KHz – 26.5GHz	HEWLETT PACKARD	8593E	
	A4060016VO	Spectrum analyzer 9kHz –1.8GHz	HEWLETT PACKARD	8591E	
Х	A4060010VO	Spectrum analyzer display	HEWLETT PACKARD	HP85662A	
X	F2000403VO	Turntable	ETS LINDGREN	Model 2187	
X	F2000405VO	Turntable / Antenna mast controller	ETS LINDGREN	Model 2066	
	. 2000200 0	dolo / / titolina mast sontiolioi	J LINDONLIN	1110401 2000	
CONDUCTE	D MEASUREME	NT EMISSION	<u> </u>	1	
	A5329061VO	Cable Conduct. EMI			



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	N°LCIE	TYPE	COMPANY	REF	commentaire
Х	A5329189VO	Shielded cable	UTIFLEX		
	A5329076VO	Shielded cable	UTIFLEX		
	A5329206VO	Shielded cable	UTIFLEX		
	A5329207VO	Shielded cable	UTIFLEX		
	A5329060VO	Shielded cable	UTIFLEX		
	A5329071VO	Shielded cable	UTIFLEX		
Χ	A3169049VO	Conducted emission comb generator	BARDET		
	A4040015	Clickmeter	SCHAFFNER	DIA1512D	
	A5329037VO	Current injection probe	SCHAFFNER	CIP8213	
	A1290017VO	Current probe	SCHAFFNER	CSP9160	
	A5329036VO	Direct Injection Module 100+50 Ohms	LCIE	MID01-100 ohms	
	A7156004VO	Direct Injection Module 100+50 Ohms	LUTHI	CR100A	
	A5329042VO	Ferrite Tube	LUTHI	FTC 101	
	A1092042VO	Ferrite Tube	LUTHI	FTC101	
	C2320059VO	LISN	EMCO	3810/2SH	
	C2320068VO	LISN	EMCO	3825/2	
	C2320061VO	LISN	TELEMETER ELECTRONIC	NNB-2/16Z	
	C2320062VO	LISN tri-phase ESH2-Z5	RHODE ET SCHWARZ	33852.19.53	
	C2320063VO	LISN tri-phase ESH2-Z5	RHODE ET SCHWARZ	33852.19.53	
Χ	C2320123VO	LISN	RHODE ET SCHWARZ	ENV216	
	A2640011VO	Measurement receiver 9kHz-30MHz	ROHDE ET SCHWARZ	ESH3	
Χ	A2642019VO	Measurement Receiver 20Hz - 8GHz	ROHDE & SCHWARZ	ESU8	
	C2320067VO	ISN 2 x 2 wires	RHODE ET SCHWARZ	ENY22	
	C2320066VO	ISN 4 wires	RHODE ET SCHWARZ	ENY41	
	C2320124VO	ISN 4 wires	TESEQ	T400A	
	D3044016VO	Semi-Anechoic chamber #1	SIEPEL		
	D3044017VO	Semi-Anechoic chamber #3	SIEPEL		
	D3044015VO	Semi-Anechoic chamber #2	SIEPEL		
Χ	D3044010VO	Faraday Cage	RAY PROOF		
X	A4049061VO	Transient limiter	HEWLETT PACKARD	11947A	
	A4089117VO	Voltage probe	LCIE		
FUNDAME	NTAL FREQUENC	CY TOLERANCE		•	•
Χ	D1022117VO	Climatic chamber	BIA CLIMATIC	CL 6-25	200 105 6
Х	B2082009VO	Frequency Counter	Hewlett Packard	HP 5350B	
Χ	A2240015VO	Passive loop antenna	EMCO	7405-901	/
Х		BNC cable 50Ω			
	A5329206VO	Shielded cable	UTIFLEX		
	C2040052VO	Antenna Loop	ELECTRO-METRICS	EM-6879	690234
	A4060018VO	Spectrum Analyzer 9KHz – 26.5GHz	HEWLETT PACKARD	8593E	3409u00537
Х	A2642019	Measurement Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	100131
BAND-ED	GE COMPLIANCE			•	
	A2240015VO	Passive loop antenna	EMCO	7405-901	/
		BNC cable 50Ω			
Х	A5329198VO	Shielded cable	UTIFLEX		
X	C2040052VO	Antenna Loop	ELECTRO-METRICS	EM-6879	690234
	A4060018VO	Spectrum Analyzer 9KHz – 26.5GHz	HEWLETT PACKARD	8593E	3409u00537
Х	A2642019	Measurement Receiver 20Hz – 8GHz		ESU8	100131



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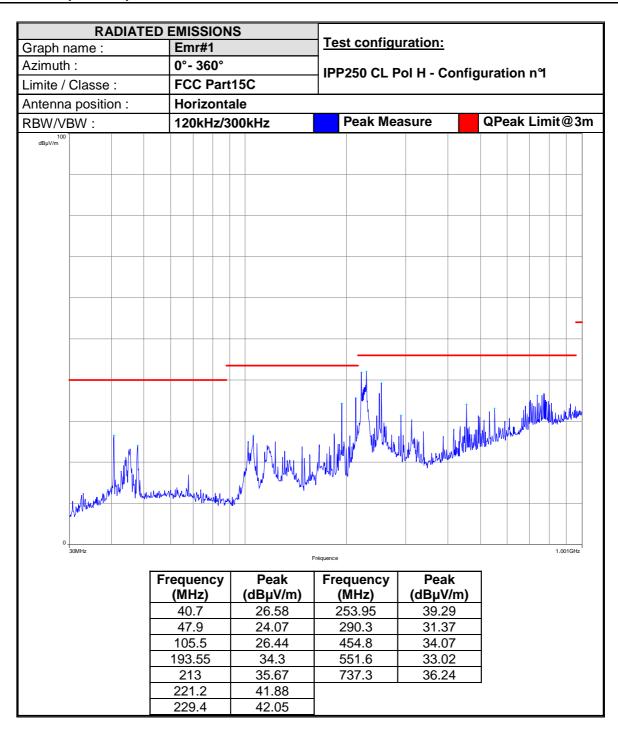
8. UNCERTAINTIES CHART

Type de mesure / Kind of measurement	Incertitude élargie laboratoire / Wide uncertainty laboratory (k=2) ± x	Incertitude limite du CISPR / CISPR uncertainty limit ± y
Mesure des perturbations conduites en tension sur le réseau d'énergie Measurement of conducted disturbances in voltage on the power port	3.57 dB	3.6 dB
Mesure des perturbations conduites en tension sur le réseau de télécommunication Measurement of conducted disturbances in voltage on the telecommunication port.	3.28 dB	A l'étude / Under consid.
Mesure des perturbations discontinues conduites en tension Measurement of discontinuous conducted disturbances in voltage	3.47 dB	3.6 dB
Mesure des perturbations conduites en courant Measurement of conducted disturbances in current	2.90 dB	A l'étude / Under consid.
Mesure du champ électrique rayonné sur le site en espace libre de Moirans Measurement of radiated electric field on the Moirans open area test site	5.07 dB	5.2 dB

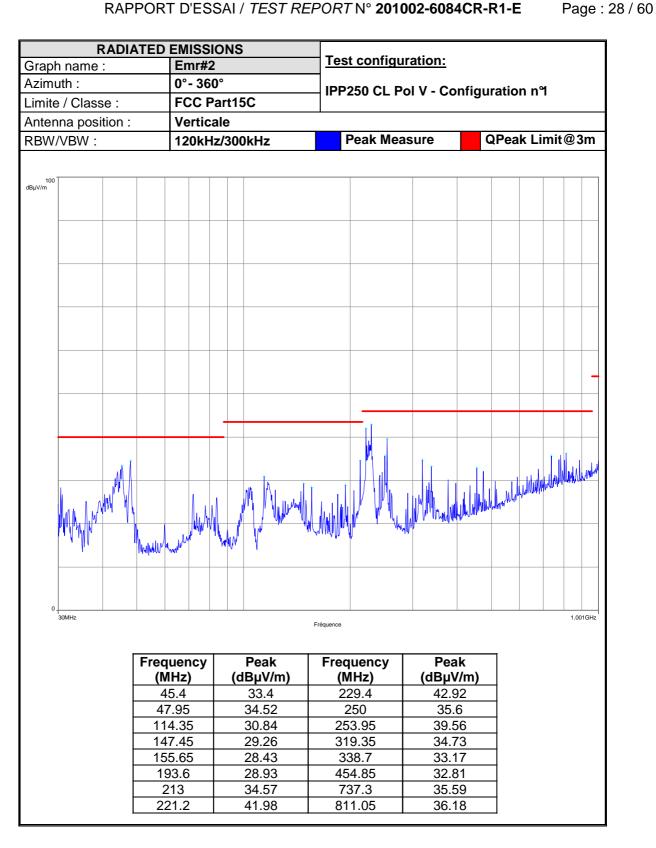


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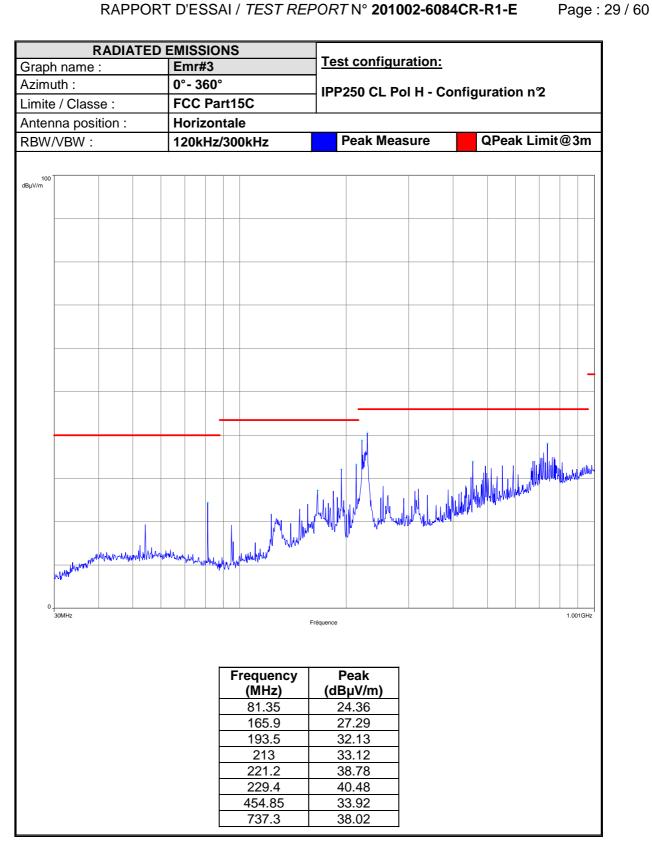
9. ANNEX 1 (GRAPHS)



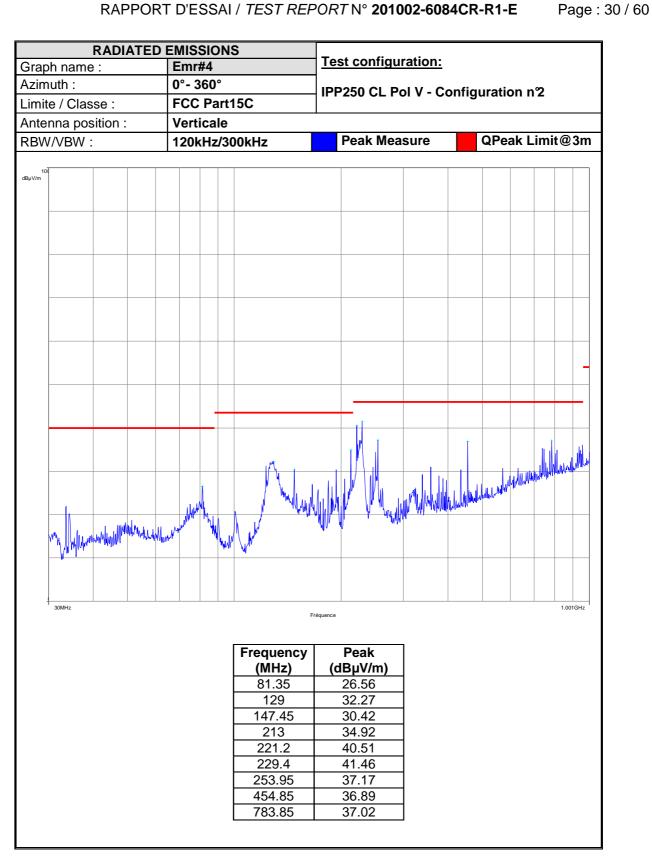










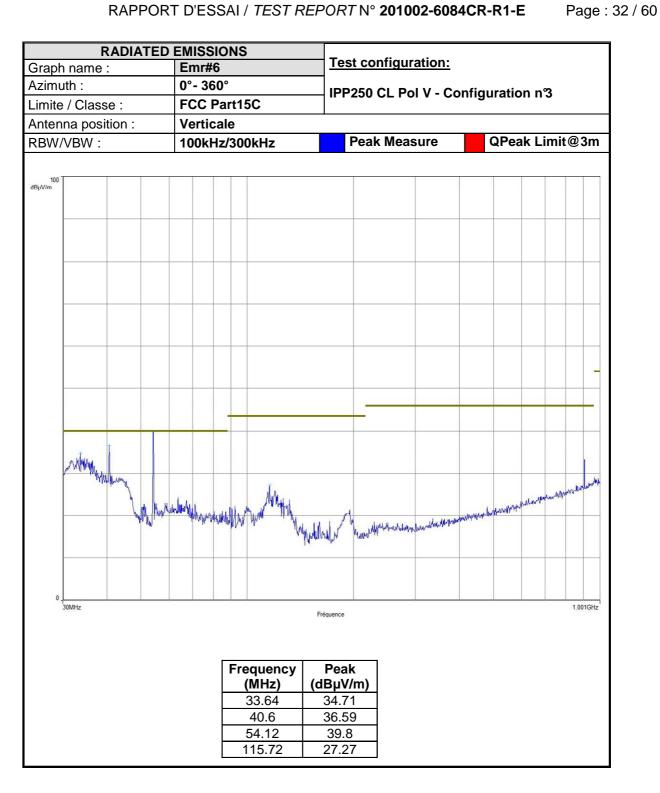




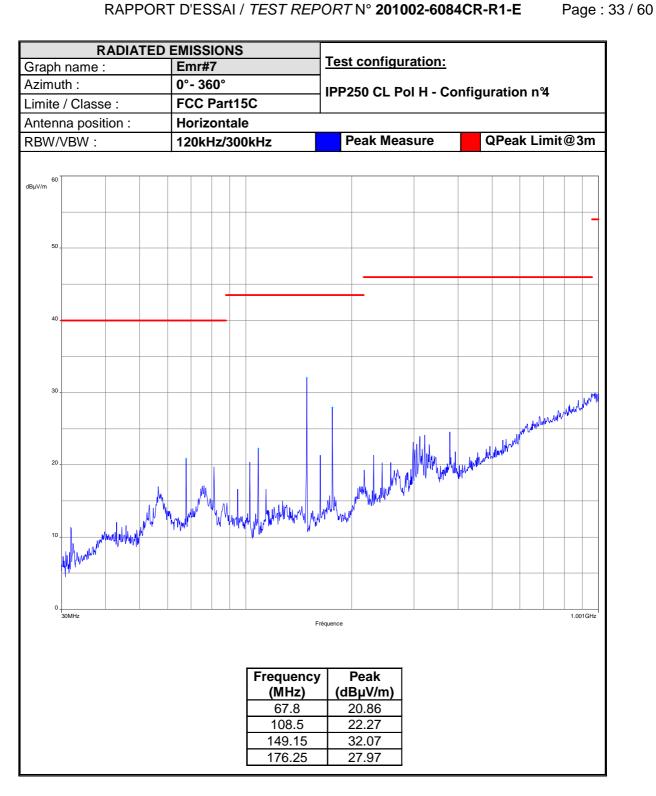
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	R	ADIA	TED	EMIS	SIO	NS						_						
Graph name : Emr#5							<u> </u>	Test configuration:										
Azimuth : Limite / Classe :				0°- 360° FCC Part15C					IF	P2	50 CL Po	л н - С	onfia	uratio	n n	જ		
									"	– IPP250 CL Pol H - Configuration nሜ								
Anteni	Antenna position : Horizontale																	
RBW/	/VBW :			100k	Hz/	300)kHz	Z		P	eak Meas	sure		QPea	ak L	imi	t@:	3m
dBμV/m																		
																		_
-	menter of the second	M	pW Indian	n of the specifical	N photos	L. Jan	Media	h hammer of the second	Who have	Ą	Andrew Spirite	niproduktorikera	with distributed as	a daplicapora	whereteel	lah/wid	h _a dheire	adoN
0 1	30MHz																1.00	01GHz
3	ywell ik								Fréquen	ce							1.00	
							-	Frequ (MI 40. 54.	56	(d	Peak ΒμV/m) 38.59 30.2							

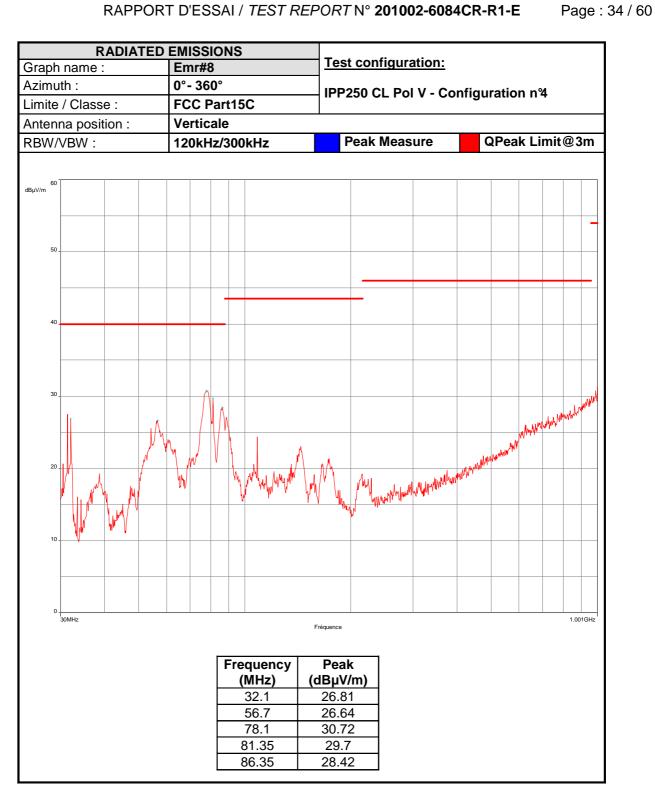






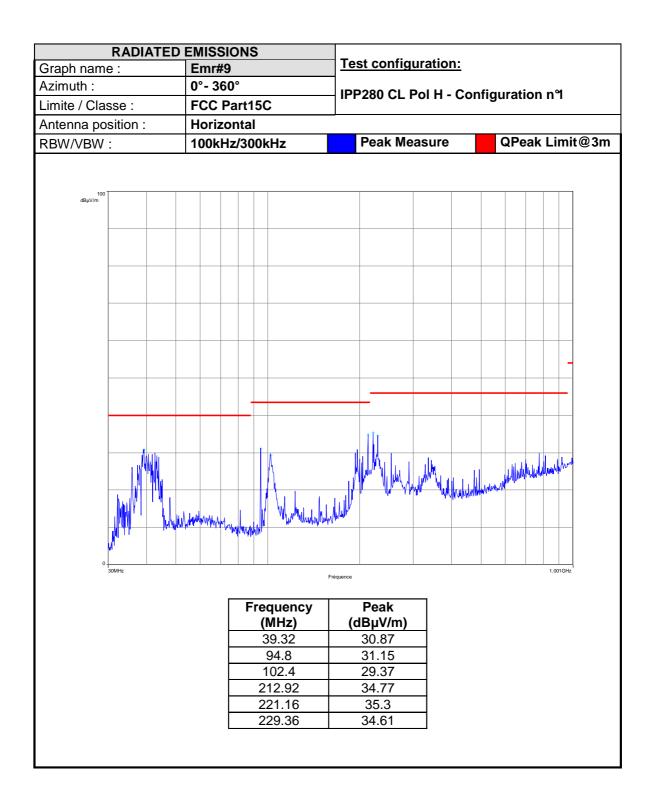








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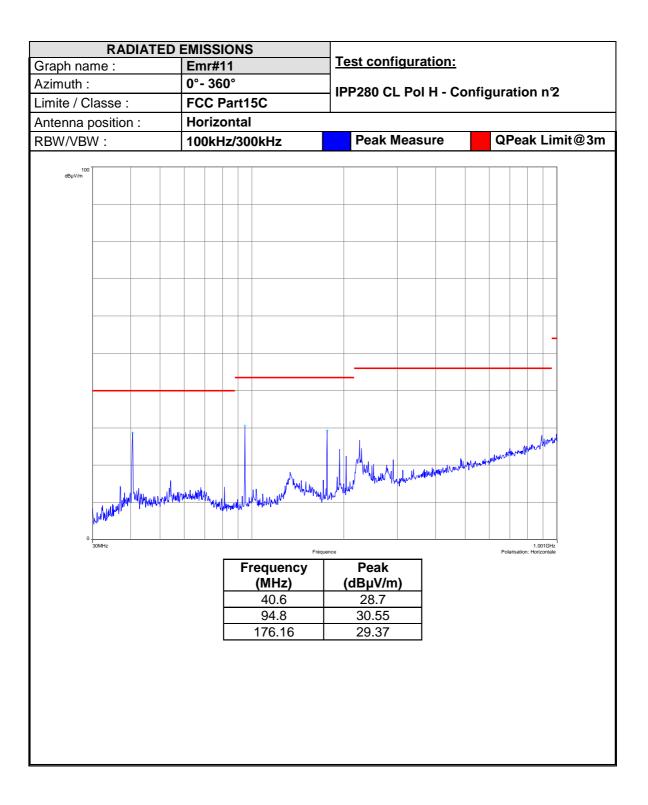


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	EMISSIONS	Tost configuration:					
	Emr#10	Test configuration:					
	0°- 360°	IPP280 CL Pol V - Config	uration n⁴				
	FCC Part15C						
	Vertical						
RBW/VBW:	100kHz/300kHz	Peak Measure	QPeak Limit@3n				
dByV/m dByV/m		Peak (dΒμV/m) 42.19 47.89 45.19 31.83 36.52 37.3					

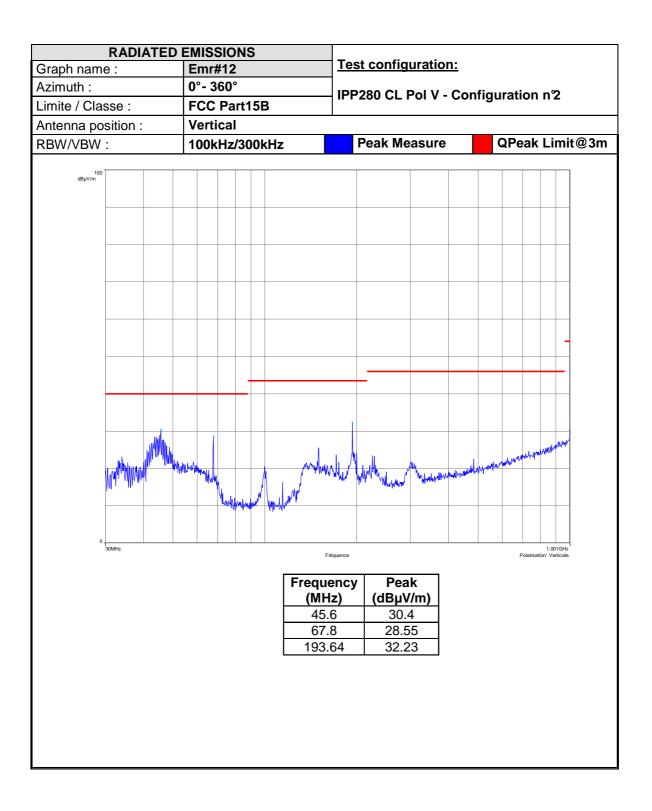


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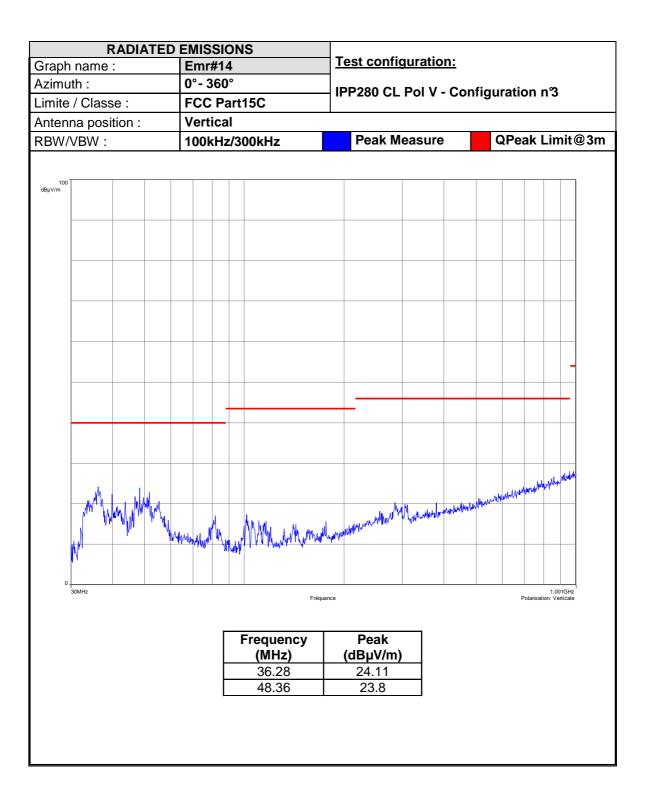


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	KAD	IATE	ED E	MIS	SIC	NC	S				_						
Graph nam	ne :		_	Em					Test configuration:								
Azimuth:				0°-					- IPP280 CL Pol H - Configuration n ³								
Limite / Cla	asse :			FCC				С					J u. u.				
Antenna po		:		Hor													
RBW/VBW	<i>!</i> :			100	kH:	z/3	00	kHz		Peak Mea	sure		QP	eak	Lin	nit@	3m
dBμV/m																	
						_											
											Lukumin	Alwahireh	appen/htt	page sproft set	المجارميل	A Agenda Malan	-
h _{oo} ld	NANAMATA MARANTARA	* 	MUMM	pulmungay	N.,/1	l _{walle} wil	w\v ^a ll	Mayormalanada	destination land	nululus Mariellin da de la companya	Anne Millor Market						-
0	IHz															1.001GHz	

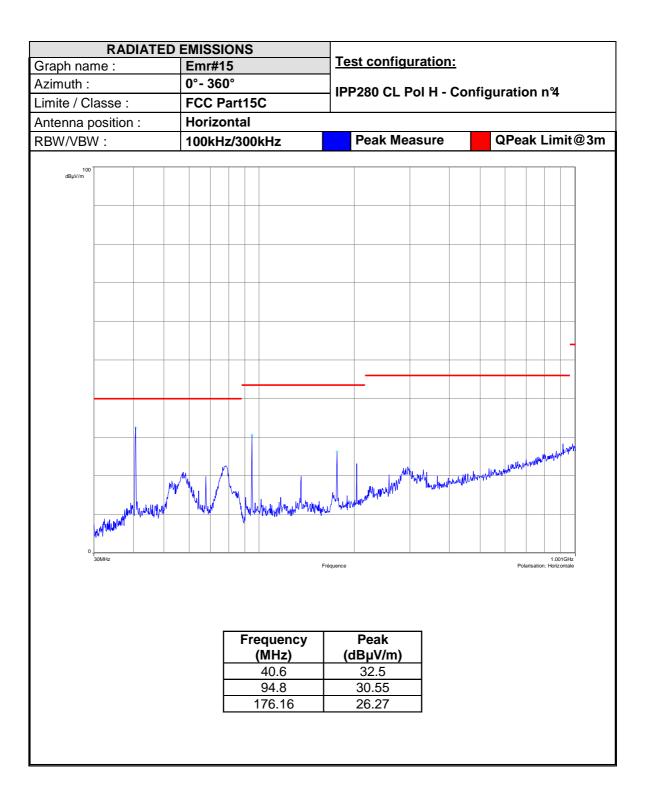


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	RAD	DIATED	EMISS					4.					
Graph	n name :		Emr#			Test configuration:							
Azimı	uth:		0°- 36	0°		IDD	− − IPP280 CL Pol V - Configuration n⁴						
Limite / Classe : FCC Part15C						iiiigu	ialio	4					
Anten	na position	n :	Vertic	al									
		100kF	100kHz/300kHz			Peak Meas	sure	QPeak Limit@3m					
100 dBµV/m													
	MA	/_		\ _{mu}			μŅ		. 1 1 1	والمليان الماليان الما	1292-1-1902-1	puly MM	nnlw
	V VIIIV		Why wy w		Mayor Array	_{dep} hologies	and have some faller	Marine Herman	l _v vydydl/Na ^{rdol} l	ing of various			
					·								
0	30MHz					Fréquence					Polari	1.00 sation: Ve	01GHz erticale
				Fr	equency		Peak	1					
					(MHz)	(dl	3μV/m)						
					40.56		29.4	_					
					52.72		28.39	1					
					81.32		26.41]					



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RADIATED EMISSIONS Graph name: Emr#17 0°- 359° Azimuth: IPP250 CL Parallel - Configuration n°1 Frequency Band: 9kHz-30MHz Antenna position: **Parallel** 200Hz / 600Hz (9kHz to 150kHz) Peak Measure QPeak Limit@3m RBW/VBW: 9kHz / 30kHz (150kHz to 30MHz) moon make when the complete with the complete wi Frequency Peak Lvl (MHz) (dBµV/m) 13.586 58.88 27.142 47.92 *Carrier Frequency



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RAD	IATED EMISSIONS	Test configuration:				
Graph name :	Emr#18					
Azimuth :	0°- 360°	IPP250 CL Parrallel - Configuration n	າ2			
_imite / Classe :	FCC 9k-30MHz/Tx	(9kHz-30MHz)	(9kHz-30MHz)			
Antenna position :	Parrallel	<u> </u>				
RBW/VBW :	200Hz / 600Hz (9kHz to 150kH 9kHz / 30kHz (150kHz to 30M		3m			
130 January 130 Ja						
30 - 21 9kHz	Frequency Pea (MHz) (dB	ak Lvi puV/m)	BOMHz 1			
		8.97				
	27.142 4	8.22				



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RA	DIATED EMISSIONS		
Graph name :	Emr#19		
Azimuth :	0°- 360°	IPP250 CL Parallel	- Configuration n3
Frequency Band:	9kHz-30MHz		-
Antenna position :			
RBW/VBW:	200Hz / 600Hz (9kHz to 150kHz)	Peak	QPeak
RBW/VBW.	9kHz / 30kHz (150kHz to 30MHz)	Measure	Limit@3m
24447T			
130 dBμV/m			
~			
\sim			
h			
	\forall	$\overline{}$	
	M am		
	W W		
	My.		
	agreed more work of the		
30	was your	No all was the control of the contro	W.
30		and the standard by the standard of the standa	Mary House Mayor Union and the
21			
9kHz	Fréquence		30MHz
		eak Lvl	
		BμV/m)	
		58.48 50.82	
*Carrier Frequenc		00.02	
Samoi i requent	<u> </u>		



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RADIATED EMISSIONS Graph name: Emr#20 0°-360° PP250 CL Parallel - Configuration n^o4 Azimuth: 9kHz - 30MHz Frequency Band: **Parallel** Antenna position: 200Hz / 600Hz (9kHz to 150kHz) QPeak **Peak** RBW/VBW: Limit@3m 9kHz / 30kHz (150kHz to 30MHz) Measure Fréquence Frequency Peak Lvl (MHz) (dBµV/m) 13.574 59.08 27.142 48.62 *Carrier Frequency



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RADIATED EMISSIONS Graph name: Emr#21 Azimuth: 0°-359° IPP280 CL Parallel - Configuration n^a Frequency Band: 9kHz-30MHz Antenna position: **Parallel** 200Hz / 600Hz (9kHz to 150kHz) Peak Measure QPeak Limit@3m RBW/VBW: 9kHz / 30kHz (150kHz to 30MHz) mark white white was the company of Frequency Peak Lvl (MHz) (dBµV/m) 13.586 57.43 27.142 46.6 *Carrier Frequency



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RAD	IATED EMISSIONS	Test configuration	n:
Graph name :	Emr#22	- 1000 comigaration	<u></u>
Azimuth :	0°-360°		el - Configuration nº2
_imite / Classe :	FCC 9k-30MHz/Tx	(9kHz-30MHz)	
Antenna position :	Parrallel	_	
RBW/VBW :	200Hz / 600Hz (9kHz to 150kHz 9kHz / 30kHz (150kHz to 30MH		QPeak Limit@3m
130 dB _l µV/m			
30	Marana Janasan	Make Meta when the work was to a state who	wanted was been for a road for a road for the state of th
9kHz	Fréquer	ce	30MHz ¹
	Frequency Peak (MHz) (dBµ 13.602 57.	V/m)	
	27.142 47.		

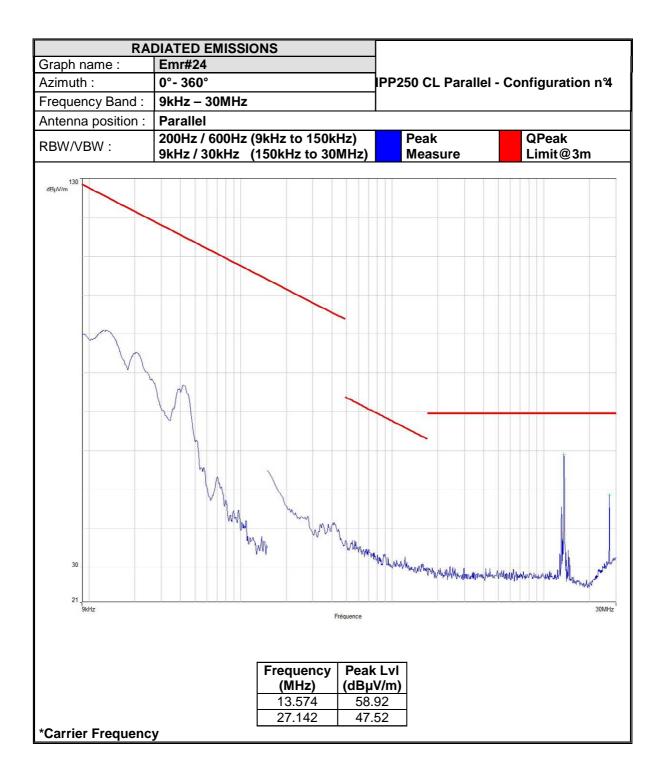


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RADIATED EMISSIONS Graph name: Emr#23 Azimuth: 0°-360° IPP280 CL Parallel - Configuration ท3 9kHz-30MHz Frequency Band: Antenna position: **Parallel** 200Hz / 600Hz (9kHz to 150kHz) QPeak Peak RBW/VBW: 9kHz / 30kHz (150kHz to 30MHz) Limit@3m Measure Frequency Peak Lvl (MHz) (dBµV/m) 13.574 59.13 27.142 52.41 *Carrier Frequency



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CONDUCTED EMISSIONS Graph name: Emc#1 Voltage / Frequency: 110Vac/60Hz IPP 250 CL (Phase) 110V/60Hz Config 1 EN 55011 / Limite / Classe: EN55022/B Peak Measure **QPeak Limit** Line/Port: **Phase Average Limit Average Measure** RBW / VBW: 9kHz/30kHz 100 dBpV 1 150kHz LimQPeak QPeak-LimQPeak Frequency Avg Lim Avg Avg-LimAvg QPeak Results (MHz) (dBµV) (dB_µV) (dB_µV) (dB) (dBµV) (dB) COMPLY 1.362 19.24 46 -26.76 32.23 56 -23.77 2.122 21.18 46 -24.82 33.42 56 -22.58 **COMPLY COMPLY** 13.558 8.35 50 -41.65 34.94 60 -25.06 27.014 0.67 50 -49.33 21.88 60 -38.12 **COMPLY**



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CONDU	CTED EMIS	SIONS				
Graph name :	Emc					
Voltage / Frequenc	y : 110V	ac/60Hz	IP.	P 250 CL (N	Neutral) 110V/60H	lz Config 1
Limite / Classe :	_	5011 / 5022/B		1 230 01 (1	1007/001	12 001111g 1
Line/Port :	Neut	ral		Peak Meas	sure QPe	ak Limit
RBW / VBW :	9kHz	/30kHz		Average N	leasure Ave	rage Limit
100 dB _I /V			Fréquence	My mandy		30MH;
			ODI-	1 : OD1-	QPeak-LimQPeak	Results
Frequency Av		Avg-LimAvg	QPeak	LimQPeak		Results
Frequency Avg (MHz) (dBµ 13.558 20.1	V) (dBµV)	Avg-LimAvg (dBμV) -29.81	(dBµV) 36.44	(dBµV)	(dBµV) -23.56	COMPLY



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		CONDUC	CTED EMIS	SIONS					
Graph	name	:	Emc#3						
Voltage	e / Fre	quency:	230Va	c/50Hz	IPF	IPP 250 CL (Phase) 120V/60Hz Config 2			
Limite /	/ Class	se :	EN 550)11 / EN55022/	В				
Line/Port : Phase						Peak Measu	ure	QPeak L	_imit
RBW /	RBW / VBW : 9kHz/30kHz					Average Me	easure	Average	Limit
dB _µ V									•
0,	1	hymn M	May Moland May	Mark Mark	Mutualla	while	The second section		
	150kHz				Fréquence				30MHz [*]
Frequ (Mh		Avg (dBµV)	Lim Avg (dBµV)	Avg-LimAvg (dBµV)	QPeak (dBµV)	LimQPeak (dBµV)	QPeak-Lir (dBµ		Results
13.5		39.95	50	-10.05	50.32	60	-9.6		COMPLY
27.0	086	15.22	50	-34.78	38.12	60	-21.8	38	COMPLY



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CONDUCTE	DEMISSIONS				
Graph name :	Emc#4	Test configuration:			
Voltage / Frequency :	110Vac/60Hz				
Limite / Classe :	EN 55011 / EN55022/B	IPP 250 CL (Neutral) 11	0V/60Hz Config 2		
Line/Port :	Neutral	Peak Measure	QPeak Limit		
RBW / VBW :	9kHz/30kHz	Average Measure	Average Limit		
100 dBpV					
usp*					
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0			I I I I I I I I I I I I I I I I I I I		
150kHz	Fréc	quence	30MHz		

	Frequency	Peak			
	(MHz)	(BµV)			
	13.558	48.75			
	27.194	39.83			

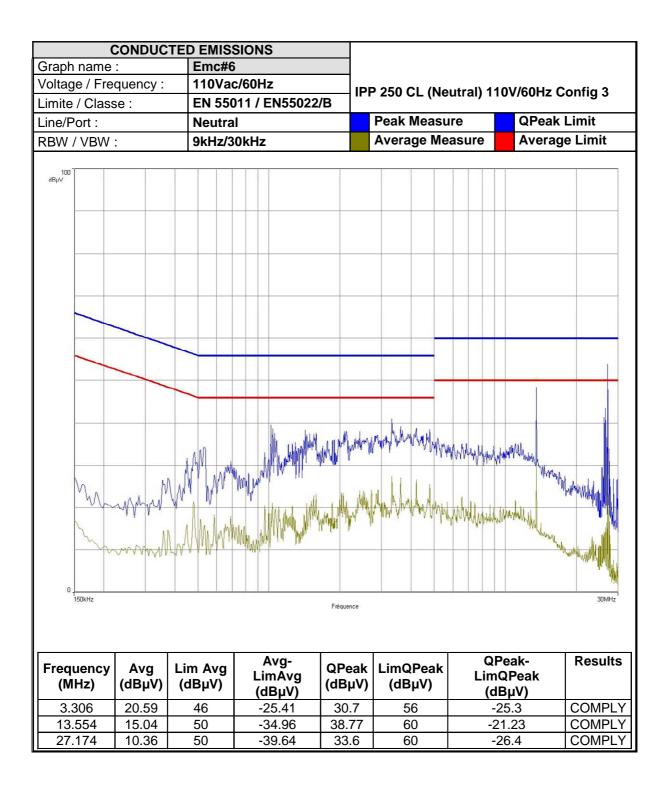


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CONDUCTED EMISSIONS Test configuration: Graph name: Emc#5 Voltage / Frequency: 110Vac/60Hz IPP 250 CL (Phase) 110V/60Hz Config 3 EN 55011 / EN55022/B Limite / Classe: Peak Measure **QPeak Limit** Line/Port: **Phase** 9kHz/30kHz Average Measure Average Limit RBW / VBW: 100 dBµV Fréquence Frequency Lim Avg Avg-LimAvg QPeak LimQPeak QPeak-LimQPeak Avg Results (dBµV) (MHz) (dB_µV) (dBµV) (dBµV) (dBµV) (dBµV) 13.566 13.91 50 -36.09 28.83 60 -31.17 COMPLY 27.042 10.28 -39.72 38.21 -21.79 COMPLY 50 60



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Graph name : Emc#7 Voltage / Frequency : 110Vac/60Hz Limite / Classe : EN 55011 / EN55022/B Line/Port : Phase RBW / VBW : 9kHz/30kHz Peak Measure QPeak Limit Average Measure Average Limit
Limite / Classe : EN 55011 / EN55022/B Line/Port : Phase Peak Measure QPeak Limit RBW / VBW : 9kHz/30kHz Average Measure Average Limit
Line/Port : Phase Peak Measure QPeak Limit RBW / VBW : 9kHz/30kHz Average Measure Average Limit
RBW / VBW : 9kHz/30kHz Average Measure Average Limit
100
100 dej/V
0 ISOkHz Fréquence
Frequency Avg Lim Avg Avg-LimAvg QPeak LimQPeak QPeak-LimQPeak Resu (MHz) (dΒμV) (dΒμV) (dΒμV) (dΒμV) (dΒμV)
13.474 10.4 50 -39.6 29.36 60 -30.64 COMF
27.066 0.71 50 -49.29 17.55 60 -42.45 COMF



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CONDUCTE	D EMISSIONS					
Graph name :	Emc#8					
Voltage / Frequency :	110Vac/60Hz	IPP 250 CL (Neutral) 110V/60Hz Config 4				
Limite / Classe :	EN 55011 / EN55022/B	IFF 250 CL (Neutral) 11	0 V/00H2 Colling 4			
Line/Port :	Neutral	Peak Measure	QPeak Limit			
RBW / VBW :	9kHz/30kHz	Average Measure	Average Limit			
	•					
100 dBpV						
			T T			
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VVV WWWW	al mary home in a sound of the	No. of the second secon				
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0 150kHz			30MHz			
	F	réquence				
	Frequenc	cy Peak				
	(MHz)	(dBµV)				
	13.506					
	27.086	31.14				



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	CONDUC	TED EMIS	SIONS					
Graph name		Emc#9						
Voltage / Fre	quency:	230Va	c/50Hz	IPF	IPP 280 CL (Phase) 120V/60Hz Config 2			
Limite / Class	se:	EN 550)11 / EN55022/					
Line/Port : Phase					Peak Measu	ure QPeak	Limit	
RBW / VBW	:	9kHz/3	0kHz		Average Me	easure Average	e Limit	
100 dBµV								
			lu a	1 1			•	
	hymn	Mary Man		halphay w	Who should will you			
150kHz				Fréquence			30MHz [*]	
Frequency	Avg	Lim Avg	Avg-LimAvg	QPeak			Results	
(MHz) 13.558	(dBµV) 39.95	(dBμV) 50	(dΒμV) -10.05	(dBµV) 50.32	(dΒμV) 60	(dΒμV) -9.68	COMPLY	
27.086	15.22	50	-34.78	38.12	60	-9.88	COMPLY	
27.000	10.22		0 7.70	00.12		21.00	1 0 0 W 1 L 1	



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CONDUCTE	EMISSIONS					
Graph name :	Emc#10	Test configuration:				
Voltage / Frequency :	110Vac/60Hz					
Limite / Classe :	EN 55011 / EN55022/B	IPP 280 CL (Neutral) 110	0V/60Hz Config 2			
Line/Port :	Neutral	Peak Measure	QPeak Limit			
RBW / VBW :	9kHz/30kHz	Average Measure	Average Limit			
100 dBpV	Washing Market and the second	Peak (BµV) 48.75 39.83	30MHz			