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Zigbee & RF4CE Template: Release August 30th, 2016

TEST REPORT

N°: 144049-691870B

Version : 01

Subject

**Radio spectrum matters
tests according to standards:
47 CFR Part 15.247 & RSS-247 Issue 1 & RSS-Gen Issue 4**

Issued to

**NXP Semiconductors
2 Esplanade Anton Philips, Campus Effiscience,
Colombelles BP20000
14906 Caen Cedex 9
FRANCE**

Apparatus under test

↻ Product	JN5169-001-U00-2
↻ Trade mark	NXP
↻ Manufacturer	NXP Semiconductors
↻ Model under test	JN5169-001-U00-2
↻ Serial number	-
↻ IC	8764A-JN5169U0V2
↻ FCC ID	XXMJN5169U0V2

Test date

: September 13, 2016 to September 22, 2016

Test location

Fontenay Aux Roses

Composition of document

38 pages

Document issued on

October 12, 2016

**Written by :
Armand MAHOUNGOU
Tests operator**

**Approved by :
Stéphane PHOUDIAH
Technical manager**



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LCIE

Laboratoire Central des Industries Electriques
Une société de Bureau Veritas

33, Av du Général Leclerc
92266 Fontenay Aux Roses
FRANCE

Tél : +33 1 40 95 60 60
contact@lcie.fr
www.lcie.fr



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1. TEST PROGRAM

References

- 47 CFR Part 15.247
- RSS 247 Issue 1
- RSS Gen Issue 4
- KDB 558074 D01 DTS Meas Guidance v03r05
- ANSI C63.10-2013

Radio requirement:

Clause (47CFR Part 15.247 & RSS-247 Issue 1 & RSS-Gen Issue 4) Test Description	Test result - Comments			
Occupied Bandwidth ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
6dB Bandwidth ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA()	<input type="checkbox"/> NP(1)
Duty Cycle ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Maximum Conducted Output Power ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Power Spectral Density ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Conducted Spurious Emission at the Band Edge ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA()	<input type="checkbox"/> NP(1)
Unwanted Emissions into Non-Restricted Frequency Bands ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA()	<input type="checkbox"/> NP(1)
AC Power Line Conducted Emission ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA(2)	<input type="checkbox"/> NP(1)
Unwanted Emissions into Restricted Frequency Bands ℱ	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input type="checkbox"/> NA	<input type="checkbox"/> NP(1)
Receiver Radiated emissions ℱ	<input checked="" type="checkbox"/> PASS	<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

PASS: EUT complies with standard's requirement

FAIL: EUT does not comply with standard's requirement

NA: Not Applicable


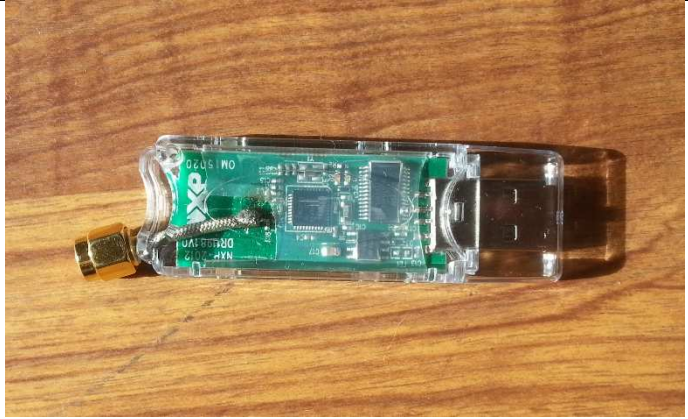
NP: Test Not Performed

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

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):
NXP JN5169-001-U00-2

Serial Number: -

 <p>EUT radiated</p>	 <p>EUT conducted</p>
<p>Equipment Under Test</p>	

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
Personal computer	-	-	-



Equipment information:

Type:	<input checked="" type="checkbox"/> ZIGBEE		<input type="checkbox"/> RF4CE	
Frequency band:	[2400 – 2483.5] MHz			
Number of Channel:	16			
Spacing channel:	5MHz			
Channel bandwidth:	2MHz			
Antenna Type:	<input checked="" type="checkbox"/> Integral	<input type="checkbox"/> External	<input type="checkbox"/> Dedicated	
Antenna connector:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Temporary for test	
Transmit chains:	1			
Receiver chains:	1			
Type of equipment:	<input type="checkbox"/> Stand-alone	<input checked="" type="checkbox"/> Plug-in	<input type="checkbox"/> Combined	
Ad-Hoc mode:	<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No	
Duty cycle:	<input checked="" type="checkbox"/> Continuous duty	<input type="checkbox"/> Intermittent duty	<input type="checkbox"/> 100% duty	
Equipment type:	<input checked="" type="checkbox"/> Production model		<input type="checkbox"/> Pre-production model	
Operating temperature range:	Tmin:	<input type="checkbox"/> -20°C	<input type="checkbox"/> 0°C	<input checked="" type="checkbox"/> -40°C
	Tnom:	20°C		
	Tmax:	<input type="checkbox"/> 35°C	<input type="checkbox"/> 55°C	<input checked="" type="checkbox"/> 85°C
Type of power source:	<input type="checkbox"/> AC power supply	<input checked="" type="checkbox"/> DC power supply		<input type="checkbox"/> Battery
Operating voltage range:	Vnom:	<input type="checkbox"/> 120V/60Hz	<input checked="" type="checkbox"/> 3.3 Vdc	

Antenna Characteristic

Antenna assembly	Gain (dBi)	Frequency Band (MHz)	Impedance(Ω)
1	1.0	2440	50



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CHANNEL PLAN	
Channel	Frequency (MHz)
Cmin: 11	2405
12	2410
13	2415
14	2420
15	2425
16	2430
17	2435
Cmid: 18	2440
19	2445
20	2450
21	2455
22	2460
23	2465
24	2470
25	2475
Cmax: 26	2480

DATA RATE		
Data Rate (Mbps)	Modulation Type	Worst Case Modulation
0.25	O-QPSK	<input checked="" type="checkbox"/>

2.2. RUNNING MODE

The EUT is set in the following modes during tests:

Hardware Configuration:

- 1 sample in RF radiated mode
- 1 sample in RF conducted mode:
- Connector Type:
 - SMA

Software Configuration:

Tx Test:

- Emission: Set the EUT in permanent emission
- Modulation: Set the EUT in modulated mode
- Channel: Set the EUT in channel declared
- Power Setting: Set the EUT at the Highest power

Rx Test:

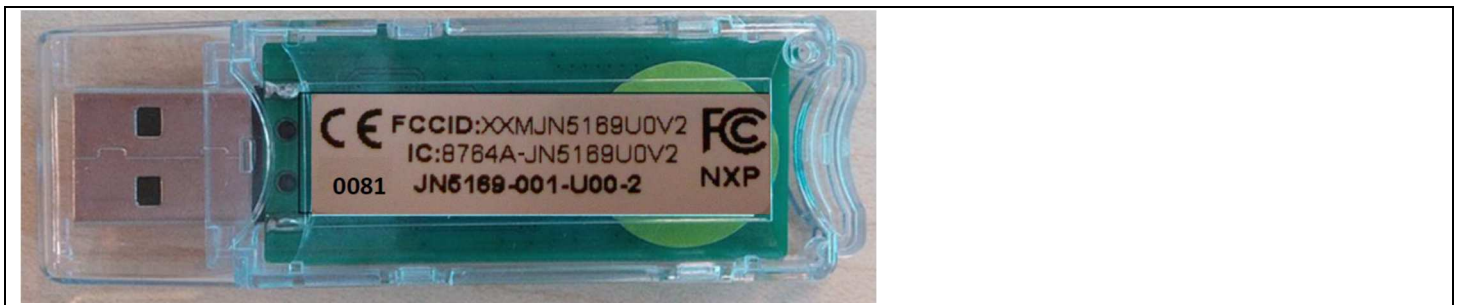
- Reception: Set the EUT in permanent reception
- Modulation: Set the EUT in modulated mode
- Channel: Set the EUT in channel declared

Following commands with the specific test software “**CMET 4.04**” are used to set the product:

-Channel Power and attenuator configuration:

Channel	Power	2.5dB Att
11	5	<input type="checkbox"/>
18	5	<input type="checkbox"/>
26	4	<input checked="" type="checkbox"/>

2.3. EQUIPMENT LABELLING



2.4. EQUIPMENT MODIFICATION

- None Modification:

3. OCCUPIED BANDWIDTH

3.1. TEST CONDITIONS

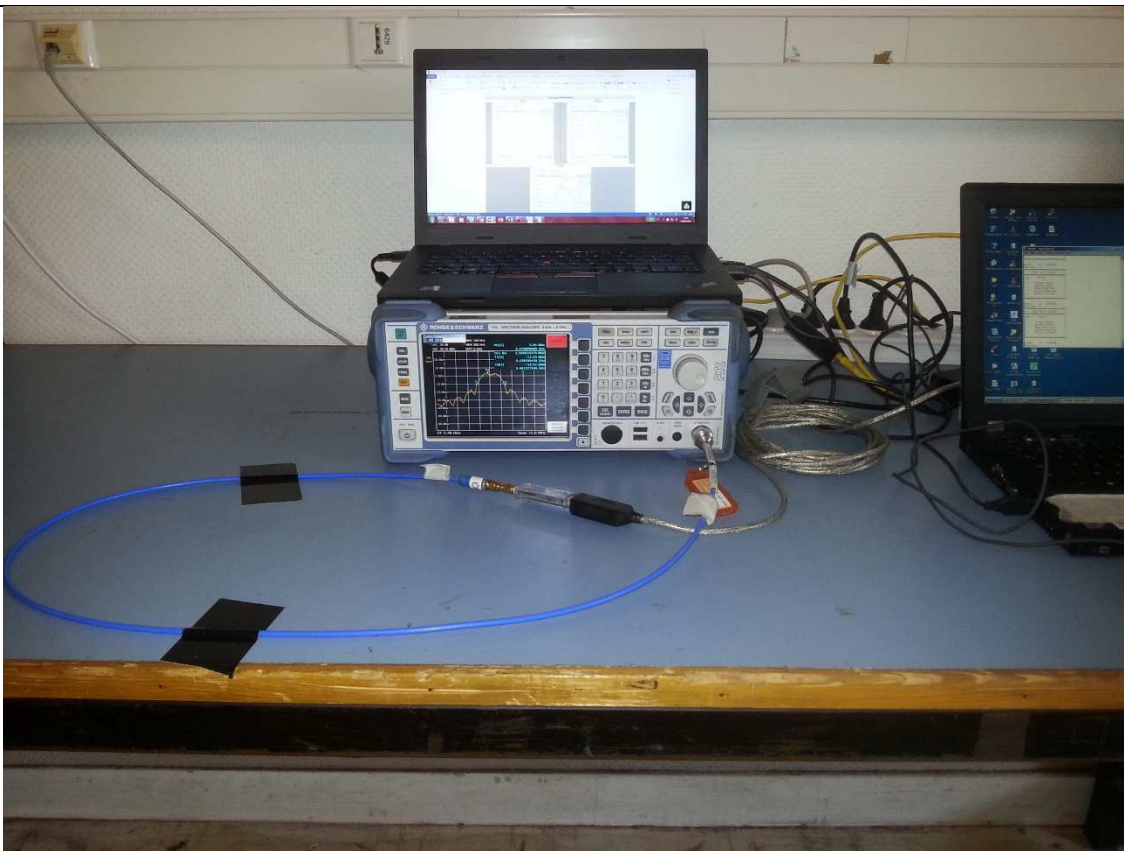
Test performed by : Armand MAHOUNGOU
Date of test : September 13, 2016
Ambient temperature : 26 °C
Relative humidity : 41 %

3.2. TEST SETUP

- The Equipment Under Test is installed:
 - On a table
 - In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
 - Conducted Method
 - Radiated Method

- Test Procedure:
 - RSS-Gen Issue 4 § 6.6
 - ANSI C63.10 § 6.9.2



Photograph for Occupied bandwidth



3.1. LIMIT

None

3.2. TEST EQUIPMENT LIST

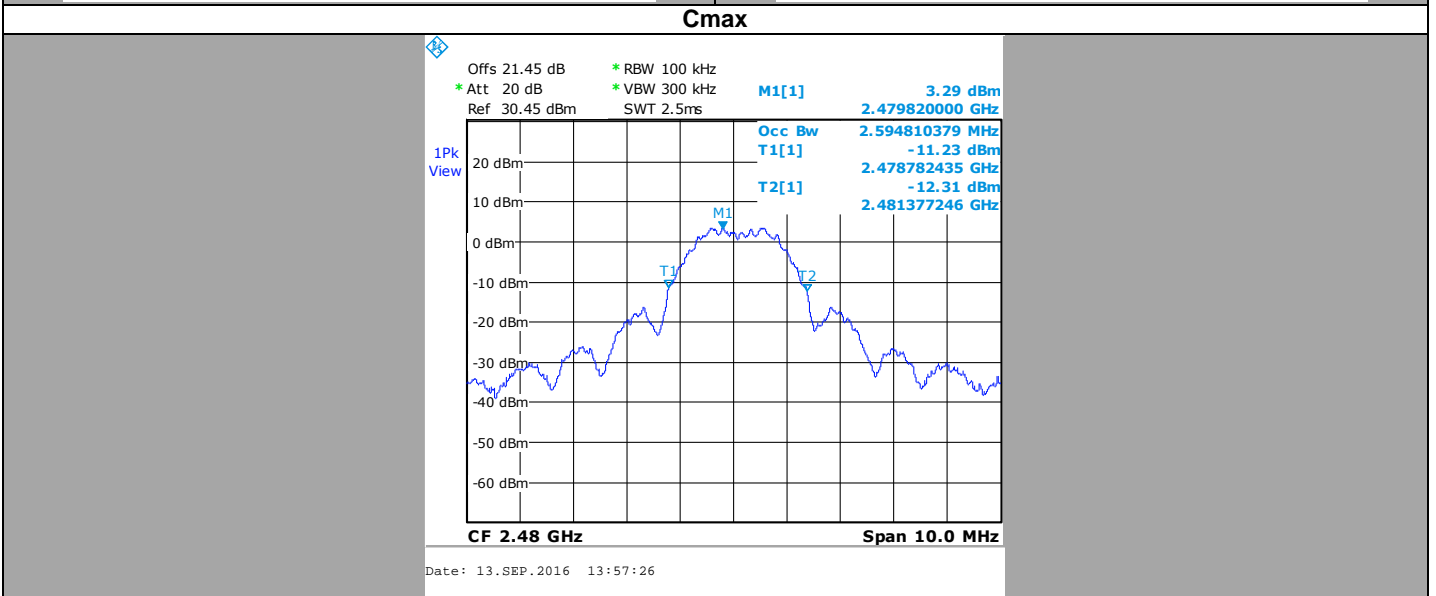
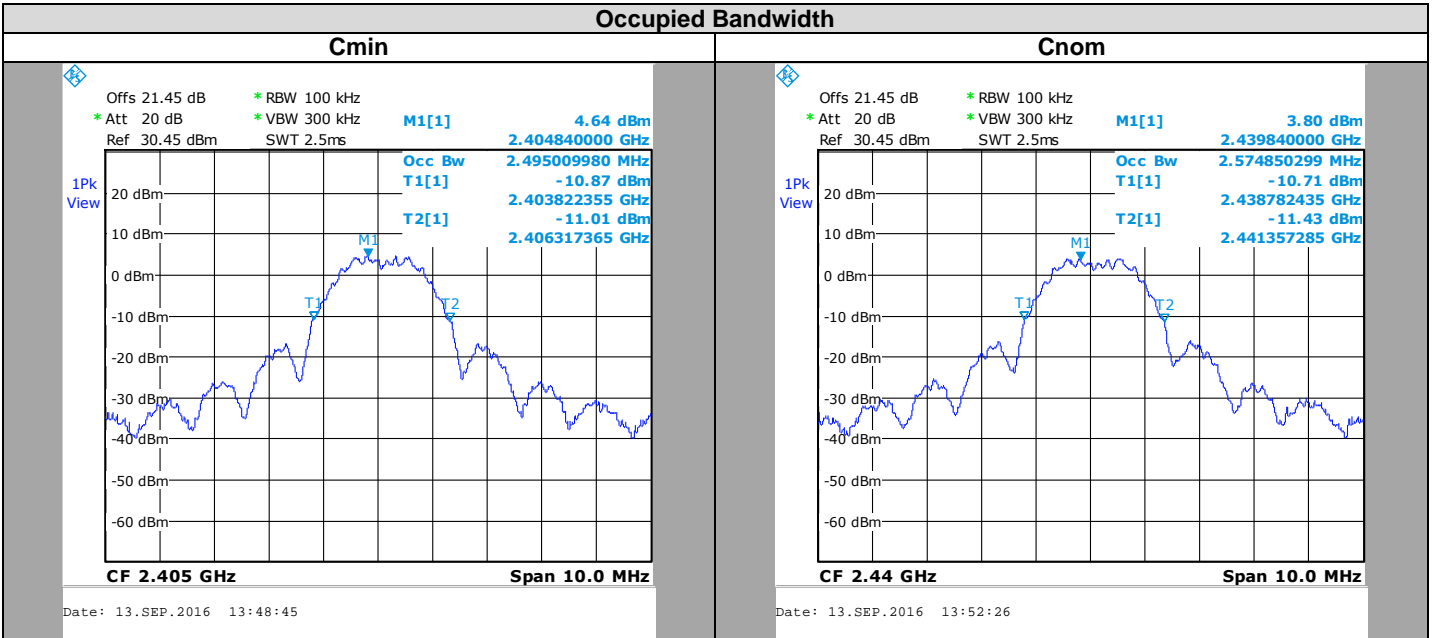
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Spectrum analyzer	ROHDE & SCHWARZ	FSL6	A4060032	2015/04	2017/04
RF cable & 20 dB attenuator	Télédyn	920-0202-048	A5329675	2015/10	2016/10

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



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3.3. RESULTS



Channel	Occupied Bandwidth (MHz)
Cmin	2.495
Cnom	2.575
Cmax	2.595

3.1. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **NXP JN5169-001-U00-2**, SN: -, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS-GEN ISSUE 4** limits.

4. 6dB EMISSION BANDWIDTH

4.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : September 13, 2016
Ambient temperature : 26 °C
Relative humidity : 41 %

4.2. TEST SETUP

- The Equipment Under Test is installed:

- On a table
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- Conducted Method
- Radiated Method

- Test Procedure:

- KDB 558074 D01 DTS Meas Guidance v03r05 § 8.1
- KDB 558074 D01 DTS Meas Guidance v03r05 § 8.2



Photograph for 6dB emission bandwidth



4.3. LIMIT

The 6dB bandwidth shall be at least 500kHz

4.4. TEST EQUIPMENT LIST

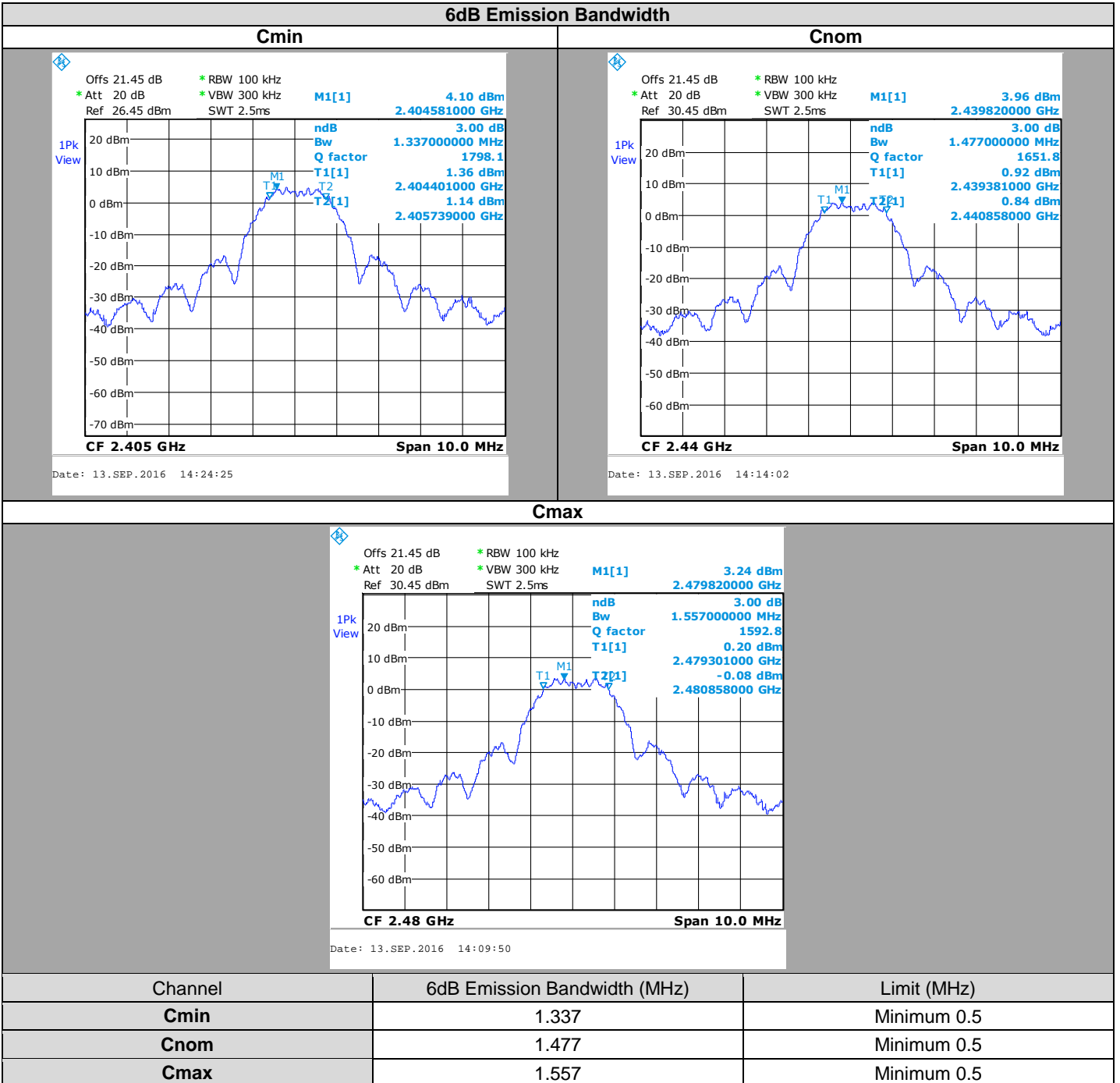
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Spectrum analyzer	ROHDE & SCHWARZ	FSL6	A4060032	2015/04	2017/04
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10

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



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4.5. RESULTS



4.6. CONCLUSION

6dB Emission Bandwidth measurement performed on the sample of the product **NXP JN5169-001-U00-2**, SN: -, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

5. MAXIMUM CONDUCTED OUTPUT POWER

5.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : September 13, 2016 to September 14, 2016
Ambient temperature : 29 °C & 27 °C
Relative humidity : 40 % & 42 %

5.2. TEST SETUP

- The Equipment Under Test is installed:

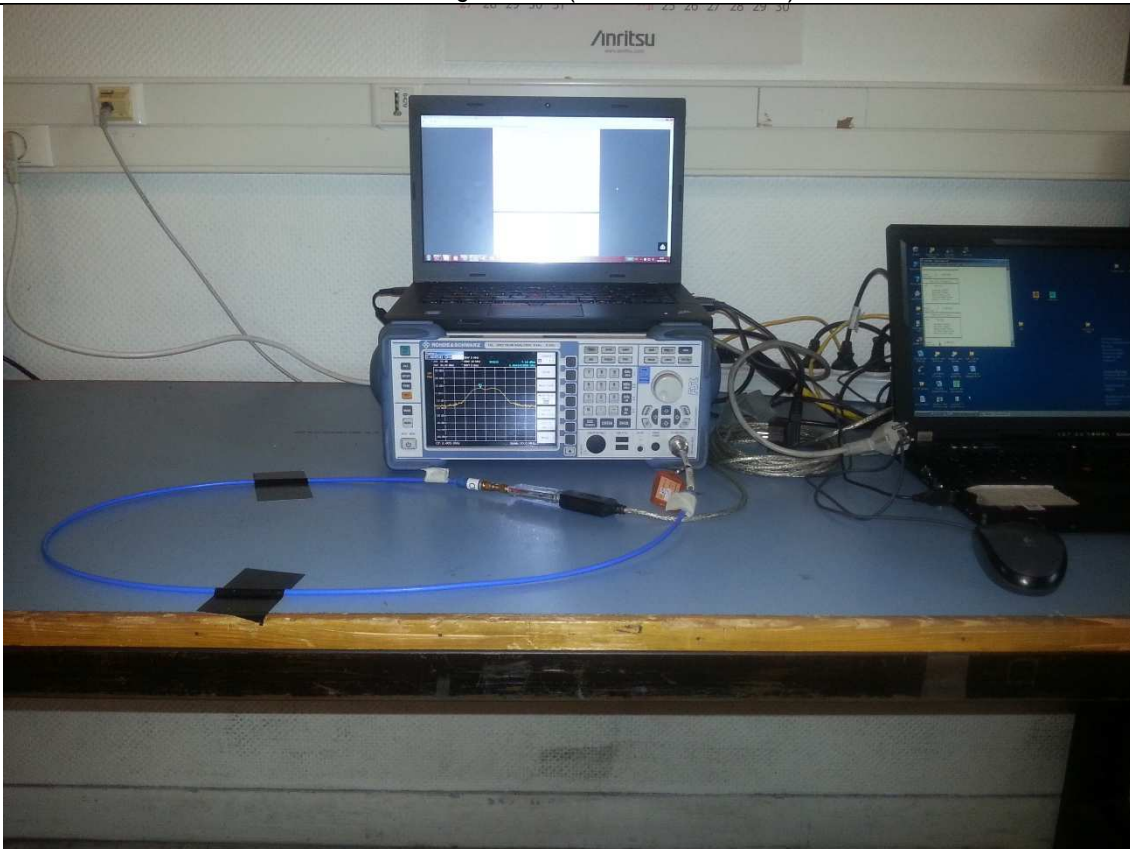
- On a table
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- Conducted Method
- Radiated Method

- Test Procedure:

- KDB 558074 D01 DTS Meas Guidance v03r05 § 9.1.1 (RBW \geq DTS bandwidth)
- KDB 558074 D01 DTS Meas Guidance v03r05 § 9.2.2.2 (Method AVGSA-1)
- KDB 558074 D01 DTS Meas Guidance v03r05 § 9.2.2.4 (Method AVGSA-2)



Photograph for Maximum Conducted Output Power



5.3. LIMIT

Maximum Conducted Output power:
2400MHz-2483.5MHz: Shall not exceed 30dBm
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

5.4. TEST EQUIPMENT LIST

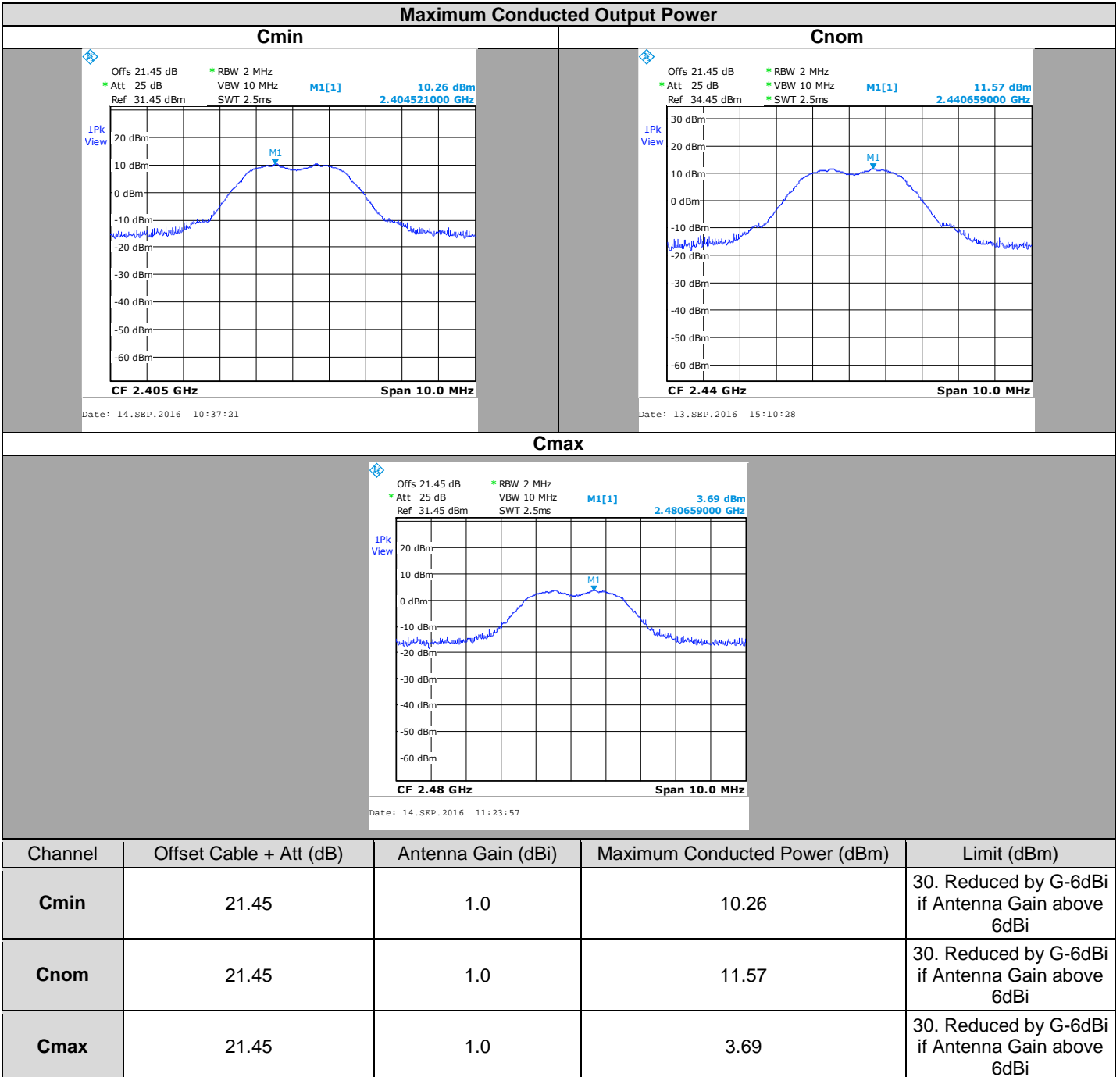
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Spectrum analyzer	ROHDE & SCHWARZ	FSL6	A4060032	2015/04	2017/04
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329675	2015/10	2016/10

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



L C I E

5.5. RESULTS



5.6. CONCLUSION

Maximum Conducted Output Power measurement performed on the sample of the product **NXP JN5169-001-U00-2**, SN: -, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

6. POWER SPECTRAL DENSITY

6.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : September 13, 2016 to September 14, 2016
Ambient temperature : 28°C & 29°C
Relative humidity : 41 % & 43 %

6.2. TEST SETUP

- The Equipment Under Test is installed:

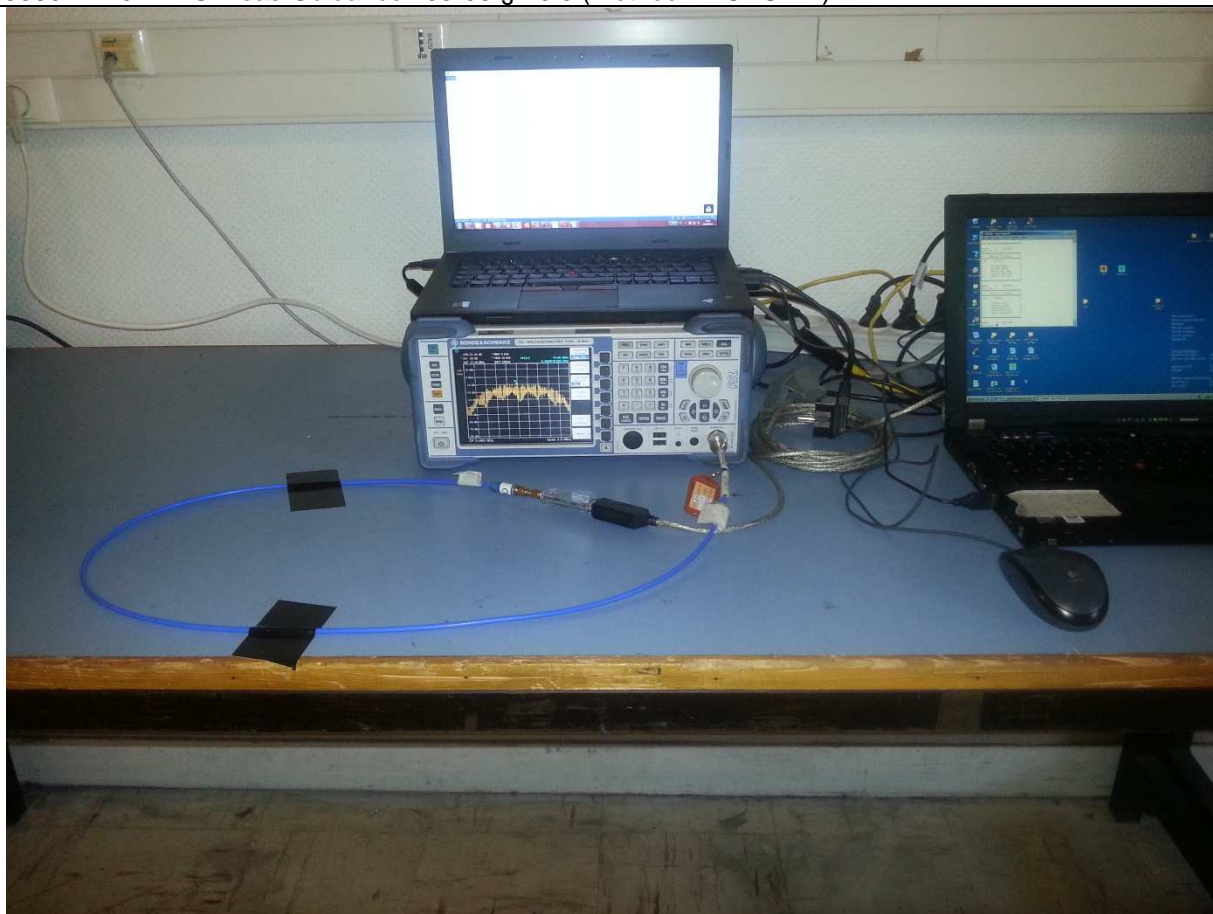
- On a table
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- Conducted Method
- Radiated Method

- Test Procedure:

- KDB 558074 D01 DTS Meas Guidance v03r05 § 10.2 (Method PKPSD)
- KDB 558074 D01 DTS Meas Guidance v03r05 § 10.3 (Method AVGPSD-1)



Photograph for Power Spectral Density



6.3. LIMIT

Power Spectral Density:

2400MHz-2483.5MHz: Shall not exceed 8dBm/3kHz

Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

6.4. TEST EQUIPMENT LIST

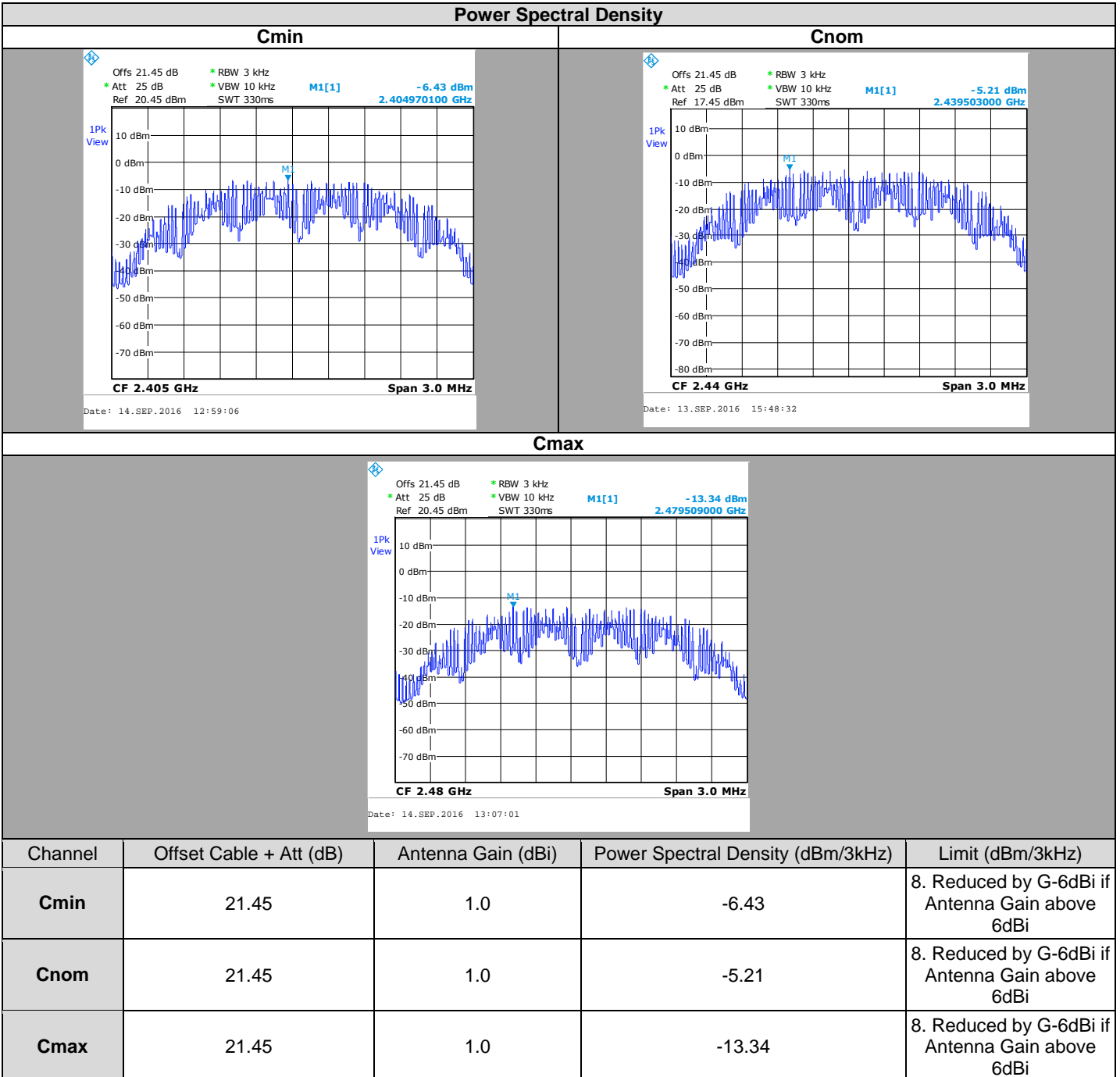
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Spectrum analyzer	ROHDE & SCHWARZ	FSL6	A4060032	2015/04	2017/04
RF cable & 20 dB attenuator	Téledyne	920-0202-048	A5329675	2015/10	2016/10

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



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6.5. RESULTS



6.6. CONCLUSION

Power Spectral Density measurement performed on the sample of the product **NXP JN5169-001-U00-2**, SN: -, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

7. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS AT THE BAND EDGE

7.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : September 13, 2016
Ambient temperature : 29°C
Relative humidity : 43 %

7.2. TEST SETUP

- The Equipment Under Test is installed:

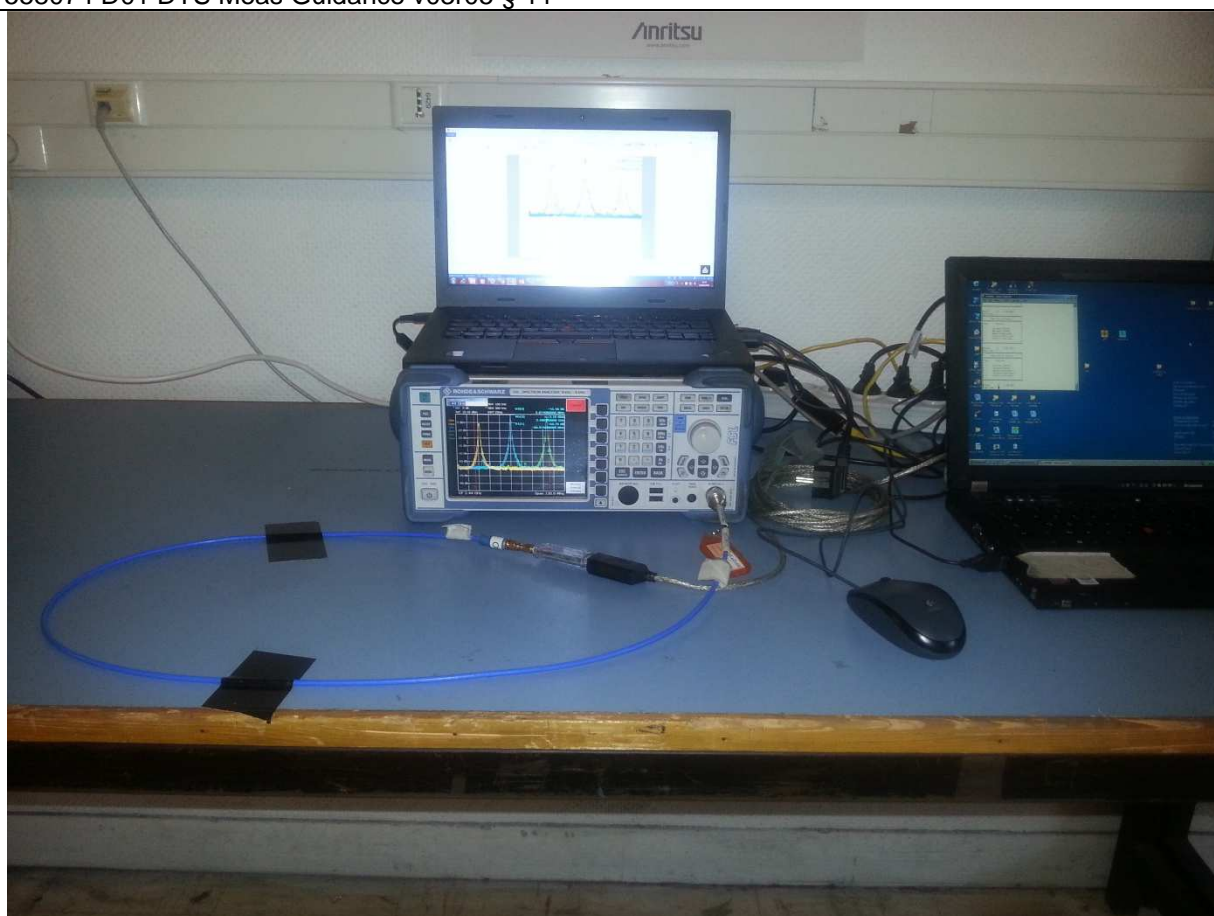
- On a table
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- Conducted Method
- Radiated Method

- Test Procedure:

- KDB 558074 D01 DTS Meas Guidance v03r05 § 11



Photograph for Unwanted Emission into non-restricted frequency bands at the band edge



7.3. LIMIT

All Spurious Emissions must be at least 20dB (Maximum Conduced Power) below the Fundamental Radiator Level at the Band Edge Edge "2400MHz & 2483,5MHz"

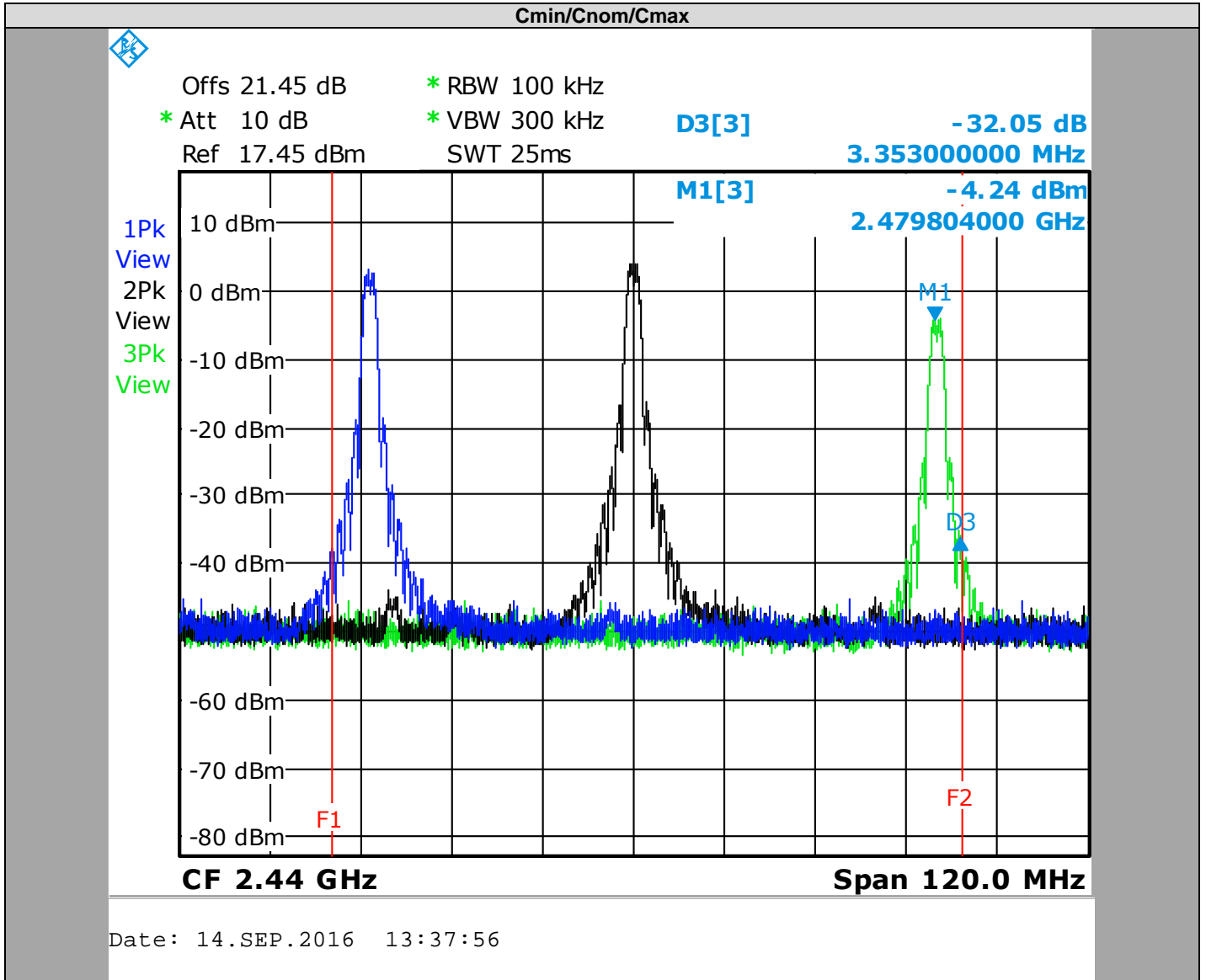
7.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Spectrum analyzer	ROHDE & SCHWARZ	FSL6	A4060032	2015/04	2017/04
RF cable & 20 dB attenuator	Télédynne	920-0202-048	A5329675	2015/10	2016/10

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



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Frequency (MHz)	Level (dBc)	Limit (dBc)
2400	-	-
2483.5	32.05	20

7.1. CONCLUSION

Unwanted Emission into non-restricted frequency bands at the band edge measurement performed on the sample of the product **NXP JN5169-001-U00-2**, SN: -, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

8. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS

8.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : September 13, 2016
Ambient temperature : 26 °C
Relative humidity : 39 %

8.2. TEST SETUP

- The Equipment Under Test is installed:

- On a table
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

- Conducted Method
- Radiated Method

- Test Procedure:

- KDB 558074 D01 DTS Meas Guidance v03r05 § 11



Photograph for Unwanted Emission into non-restricted frequency bands



8.3. LIMIT

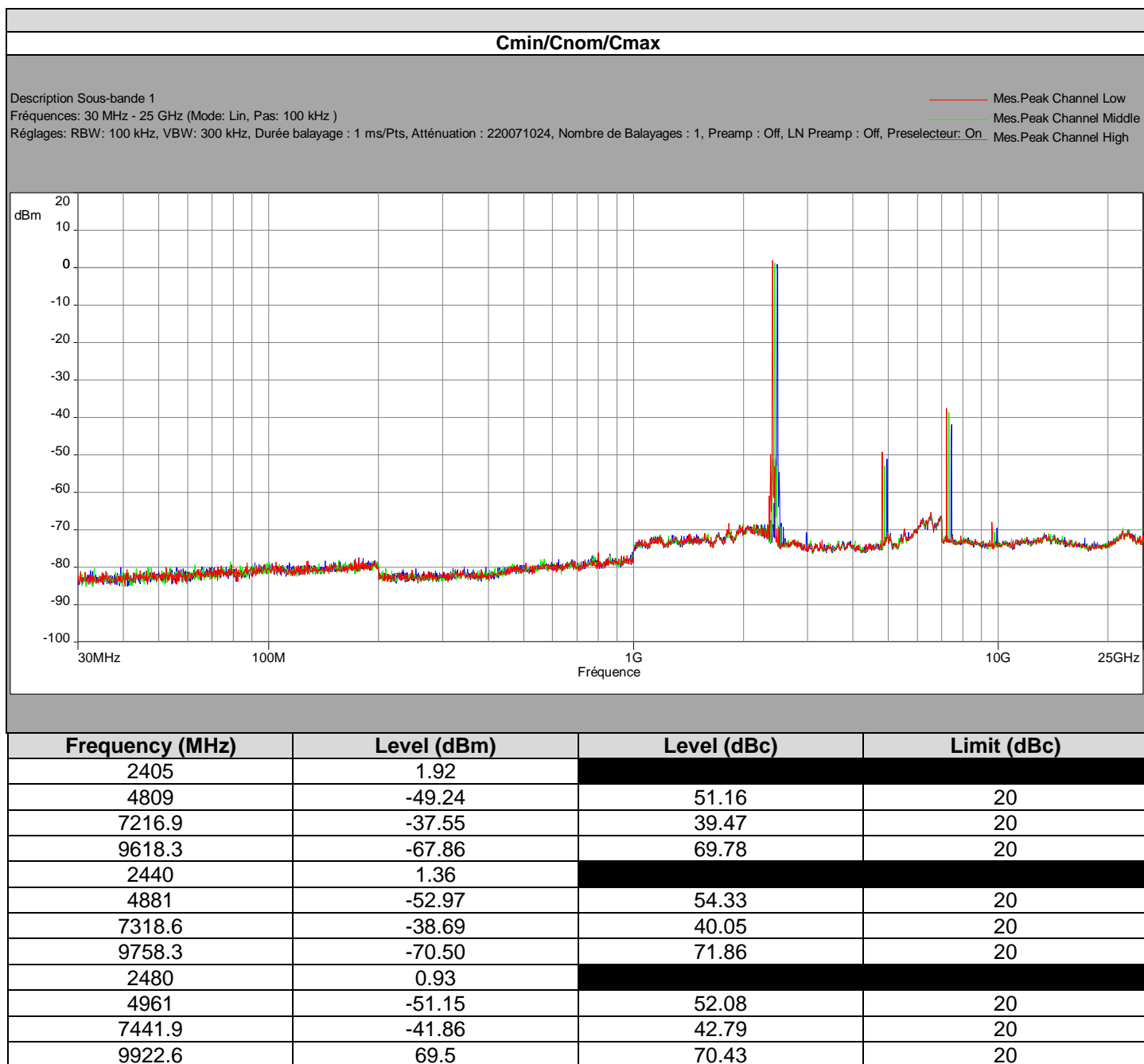
All Spurious Emissions must be at least 20dB (Maximum Conduced Power) below the Fundamental Radiator Level

8.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESI40 1088 740K40	A2642010	2016/07	2017/07
Measurement RF cable	-	Cordon 082-5454-1.5mtr	A5329624	2016/07	2018/07
Attenuator 3 dB	MINI CIRCUITS	BW-S3W2+	A7122210	2015/11	2016/11
Rejector filter 2,4GHz	-	2.45GHz	A7484048	2015/12	2016/12

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

8.5. RESULTS



8.6. CONCLUSION

Unwanted Emission into non-restricted frequency bands measurement performed on the sample of the product **NXP JN5169-001-U00-2**, SN: -, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247 & RSS 247 ISSUE 1** limits.

9. AC POWER LINE CONDUCTED EMISSIONS

9.1. TEST CONDITIONS

Test performed by : Willy DACLINAT
Date of test : September 22, 2016
Ambient temperature : 23 °C
Relative humidity : 45 %

9.2. 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 $50\Omega / 50\mu\text{H}$. Interconnecting cables and equipment's were moved to position that maximized emission.



Photograph for AC Power Line Conducted Emissions (Front view)



9.3. LIMIT

Quasi-Peak

0,15kHz to 0,5MHz: 66dB μ V to 56dB μ V*

0,5MHz to 5MHz: 56dB μ V

5MHz to 30MHz: 60dB μ V

Average

0,15kHz to 0,5MHz: 56dB μ V to 46dB μ V*

0,5MHz to 5MHz: 46dB μ V

5MHz to 30MHz: 50dB μ V

*Decreases with the logarithm of the frequency

9.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015/12	2016/12
Cable	CABLES & CONNECTIQUES		A5329411	2016/06	2017/06
V LISN	ROHDE & SCHWARZ	ENV216	C2320163	2016/03	2017/03

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

9.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None Divergence:

9.6. RESULTS

Cnom Phase

Description Sous-bande 1

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9 kHz, VBW: Auto, Durée balayage : 50 ms/Pts, Atténuation : 71986704, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: On

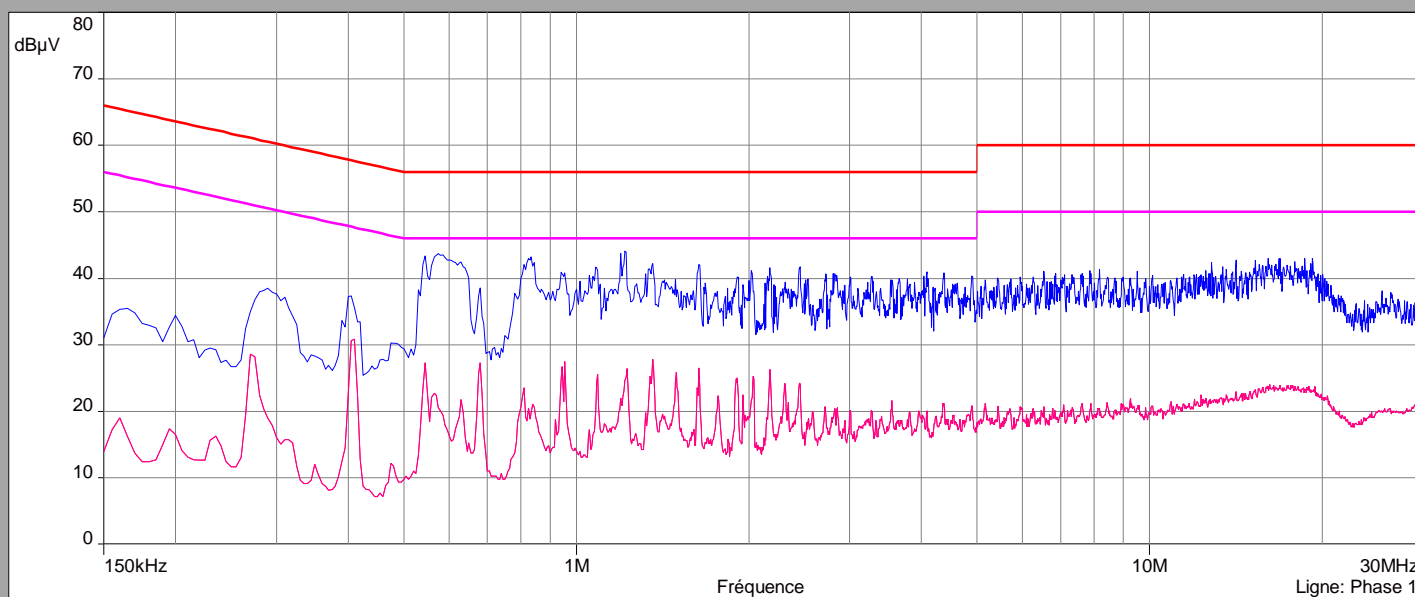
Ligne:Phase 1

FCC/FCC 15.207 - Classe:B - Moyenne/

FCC/FCC 15.207 - Classe:B - QCrête/

Mes.Peak (Phase 1)

Mes.Avg (Phase 1)



Line

Description Sous-bande 2

Fréquences: 150 kHz - 30 MHz (Mode: Lin, Pas: 5 kHz)

Réglages: RBW: 9 kHz, VBW: Auto, Durée balayage : 50 ms/Pts, Atténuation : 71986736, Nombre de Balayages : 1, Preamp : Off, LN Preamp : Off, Preselecteur: On

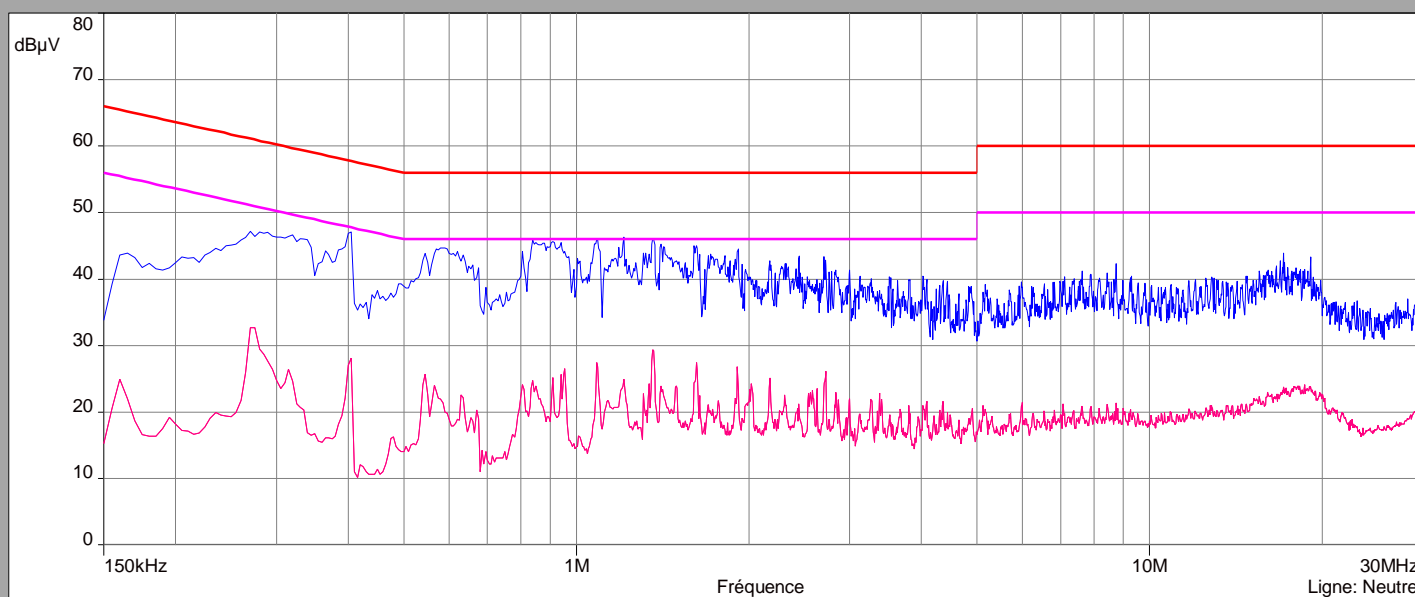
Ligne:Neutre

FCC/FCC 15.207 - Classe:B - Moyenne/

FCC/FCC 15.207 - Classe:B - QCrête/

Mes.Peak (Neutre)

Mes.Avg (Neutre)





Phase Line					
Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.545	43.34	-	56	27.25	46
1.36	42.19	-	56	27.82	46
2.45	41.73	-	56	24.24	46
4.38	40.84	-	56	21.24	46
8.18	41.37	-	60	21.28	50
19.23	43.02	-	60	18.94	50

Neutral Line					
Frequency (MHz)	Peak Level (dBµV)	Quasi-Peak Level (dBµV)	Quasi-Peak Limit (dBµV)	Average Level (dBµV)	Average Limit (dBµV)
0.405	47.12	-	57.75	28.13	47.75
1.08	45.95	-	56	27.45	46
1.62	45.01	-	56	27.25	46
2.70	43.34	-	56	26.07	46
8.74	42.26	-	60	21.41	50
19.1	43.27	-	60	24.12	50

9.7. CONCLUSION

Ac Power Line Conducted Emission measurement performed on the sample of the product **NXP JN5169-001-U00-2**, SN: -, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 & RSS 247 ISSUE 1 limits.

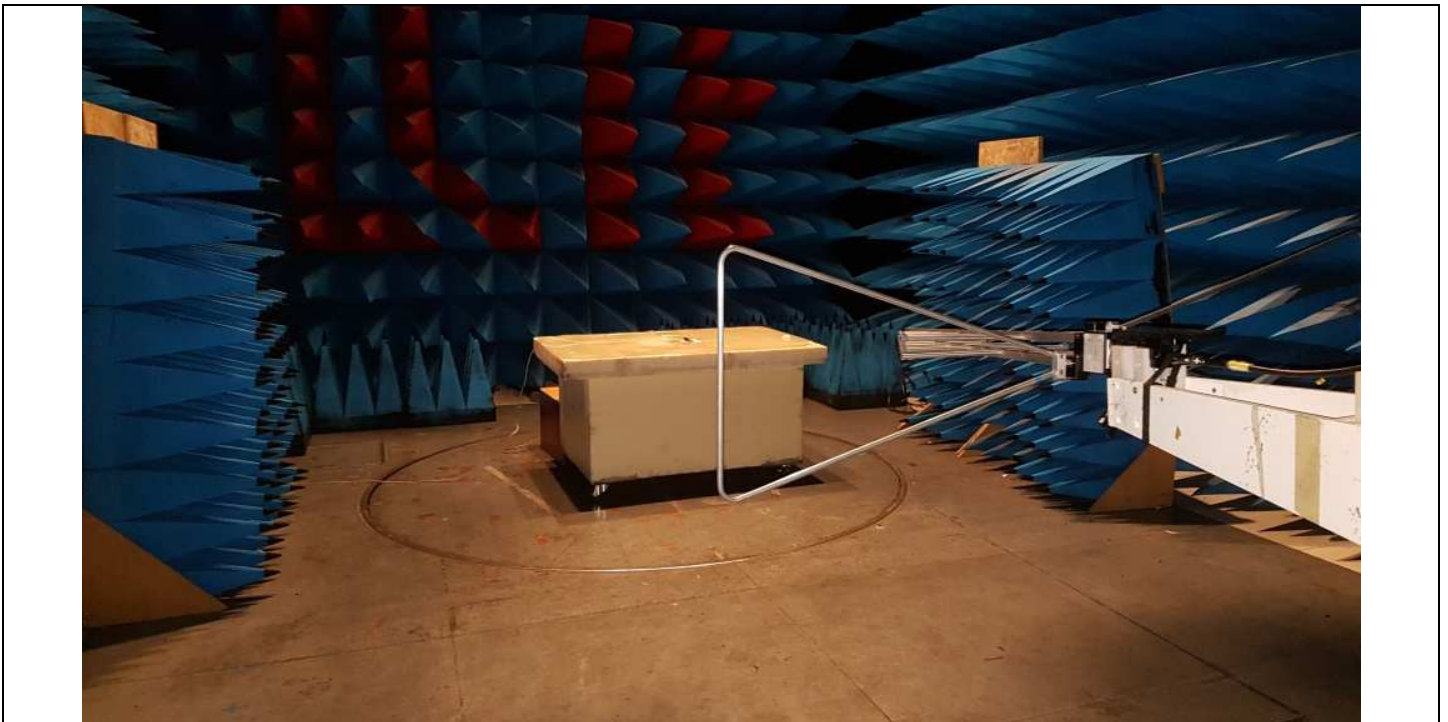
10. UNWANTED EMISSIONS IN RESTRICTED FREQUENCY BANDS

10.1. TEST CONDITIONS

Test performed by : Willy DACLINAT
Date of test : September 22, 2016
Ambient temperature : 23 °C
Relative humidity : 44 %

10.2. TEST SETUP

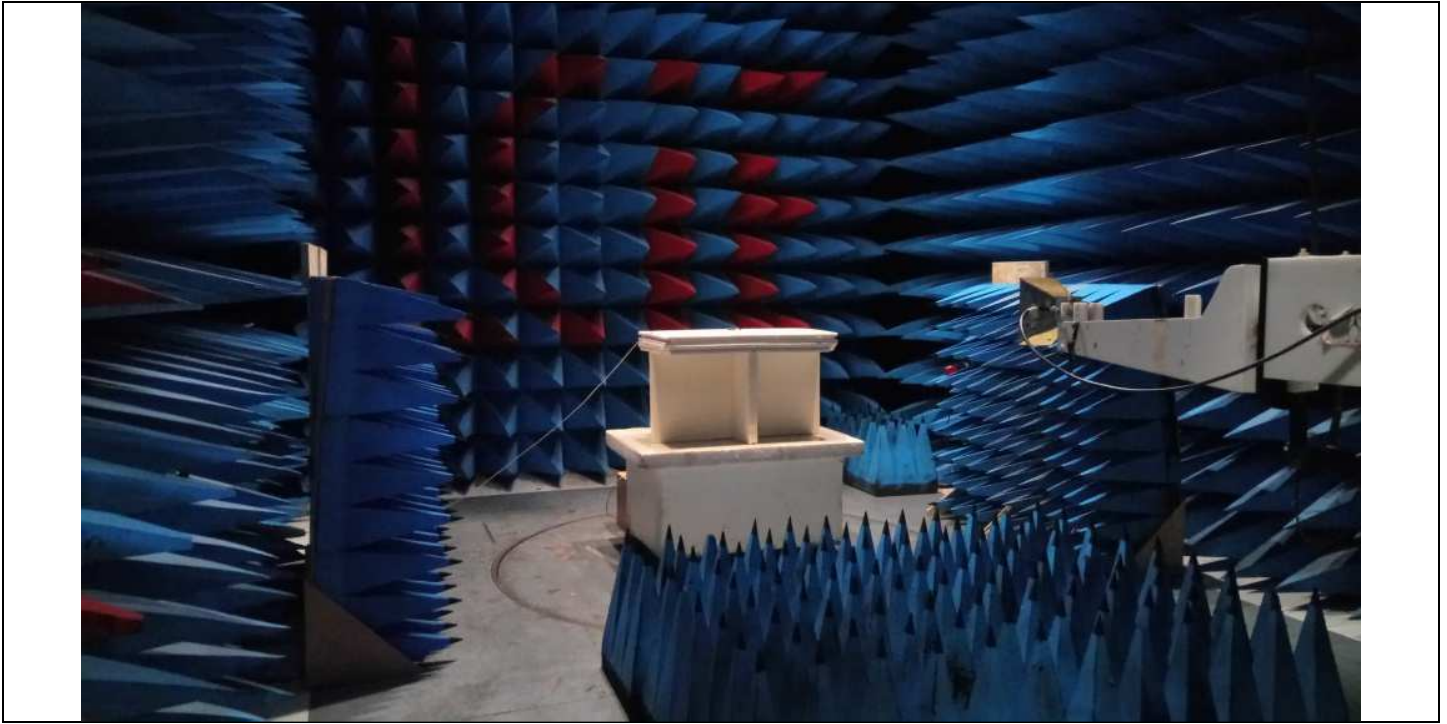
The product has been tested according to ANSI C63.10 (2013). The EUT is placed **ina semi-anechoic chamber**. Distance between measuring antenna and the EUT is **3m**. Test is performed in horizontal (H) and vertical (V) polarization with **bilog** antenna below 1GHz and with a horn antenna above 1GHz. 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.



Photograph for Unwanted Emission in restricted frequency bands



L C I E



Photograph for Unwanted Emission in restricted frequency bands

10.3. LIMIT

Limit at 3m:

30MHz to 88MHz:	40dB μ V/m QPeak
88MHz to 216MHz:	43,5dB μ V/m QPeak
216MHz to 960MHz:	46dB μ V/m QPeak
960MHz to 1000MHz:	54dB μ V/m QPeak
Above 1000MHz:	74dB μ V/m Peak 54dB μ V/m Average

Limit at 10m:

30MHz to 88MHz:	29.5dB μ V/m QPeak
88MHz to 216MHz:	33dB μ V/m QPeak
216MHz to 960MHz:	35.5dB μ V/m QPeak
960MHz to 1000MHz:	43.5dB μ V/m QPeak
Above 1000MHz:	63.5B μ V/m Peak 43.5B μ V/m Average



10.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESIB26	A2642021	2015/12	2016/12
Cable	CABLES & CONNECTIQUES	2.9MD/CSU440AA/2.9MD/2000	A5329358	2016/02	2017/02
Cable	CABLES & CONNECTIQUES	3.5MD/CSU528AA/3.5MD/4000	A5329374	2016/08	2017/08
Preamplifier	BONN Elektronik	BLNA 3018-8F305	A7080053	2016/04	2017/04
Bilog antenna	SCHWARZBECK	VULB 9160	C2040150	2016/03	2017/03
Horn antenna	EMCO	3115	C2042018	2016/08	2017/08
Rejector filter 2,4GHz	-	2.45GHz	A7484048	2015/12	2016/12
Semi anechoic chamber	SIEPEL	-	D3044008	2014/05	2017/05

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

10.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

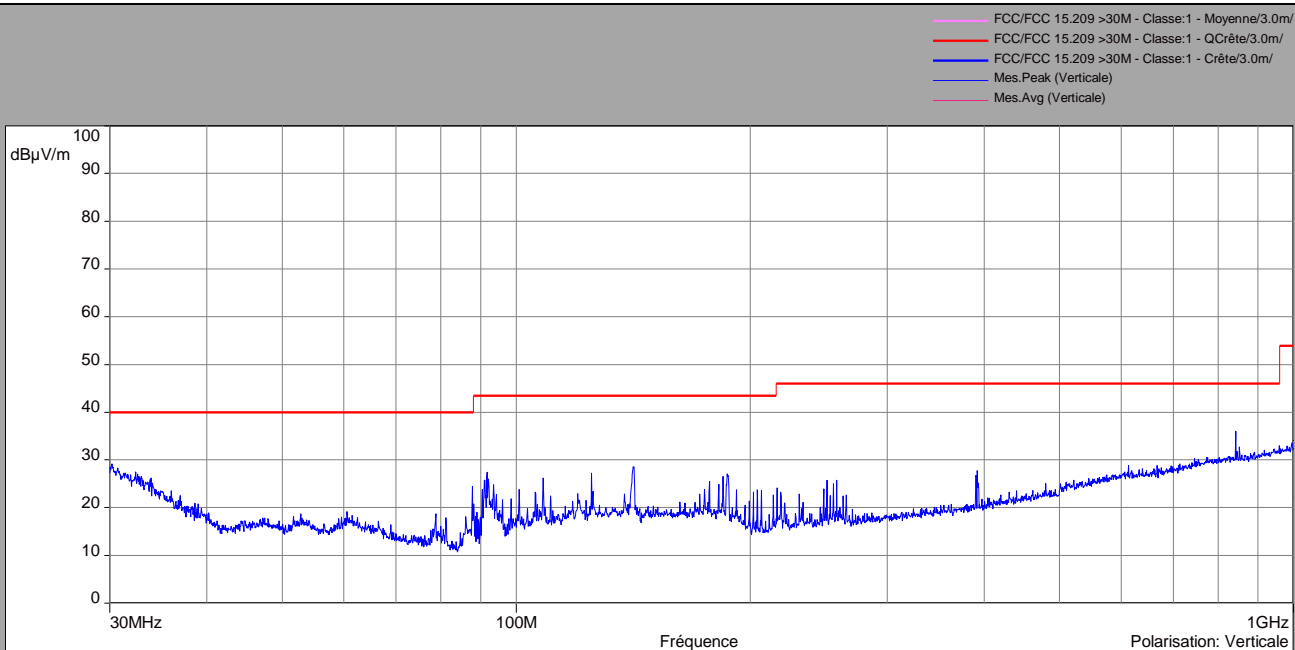
None Divergence:

10.6. RESULTS

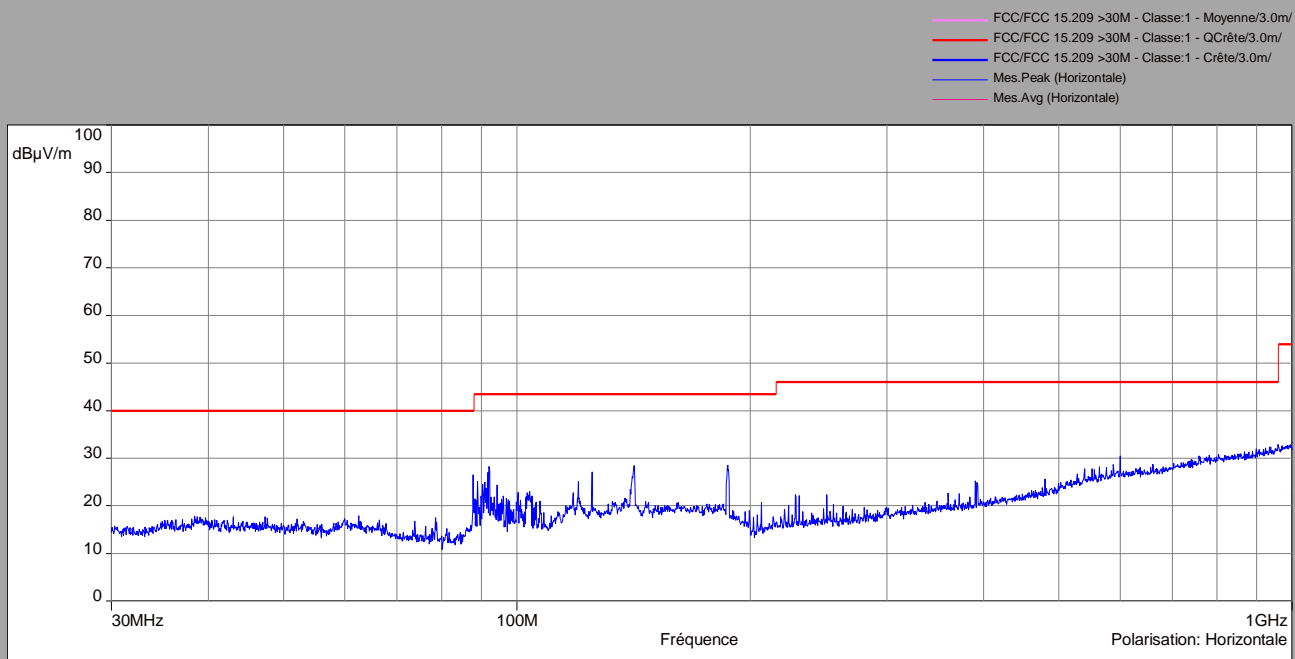
Below 1GHz

Cnom

Vertical Polarization



Horizontal polarization

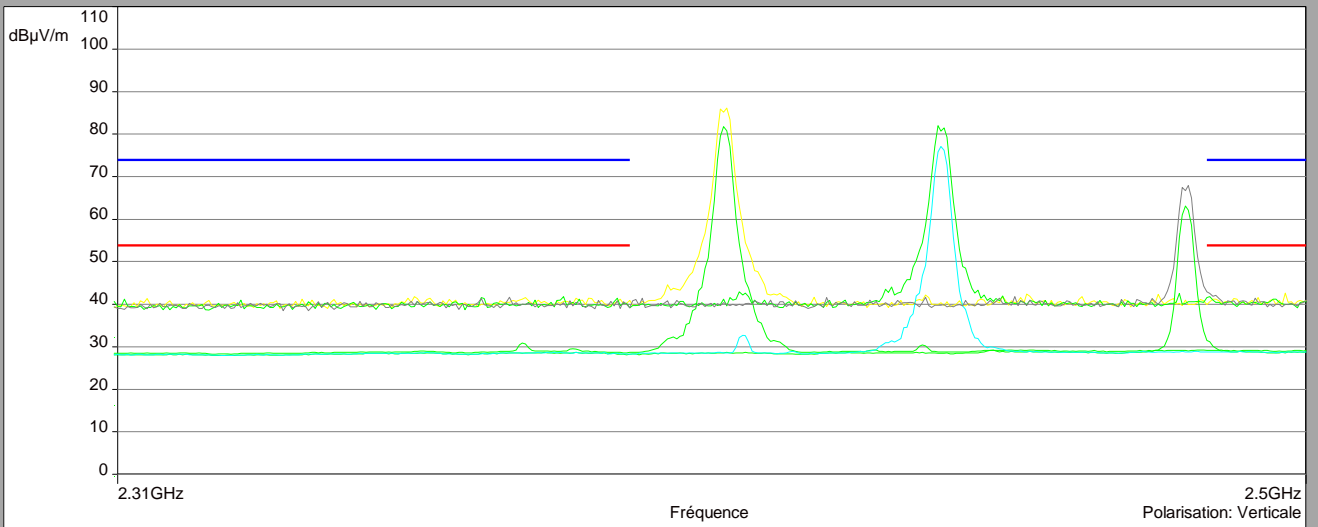




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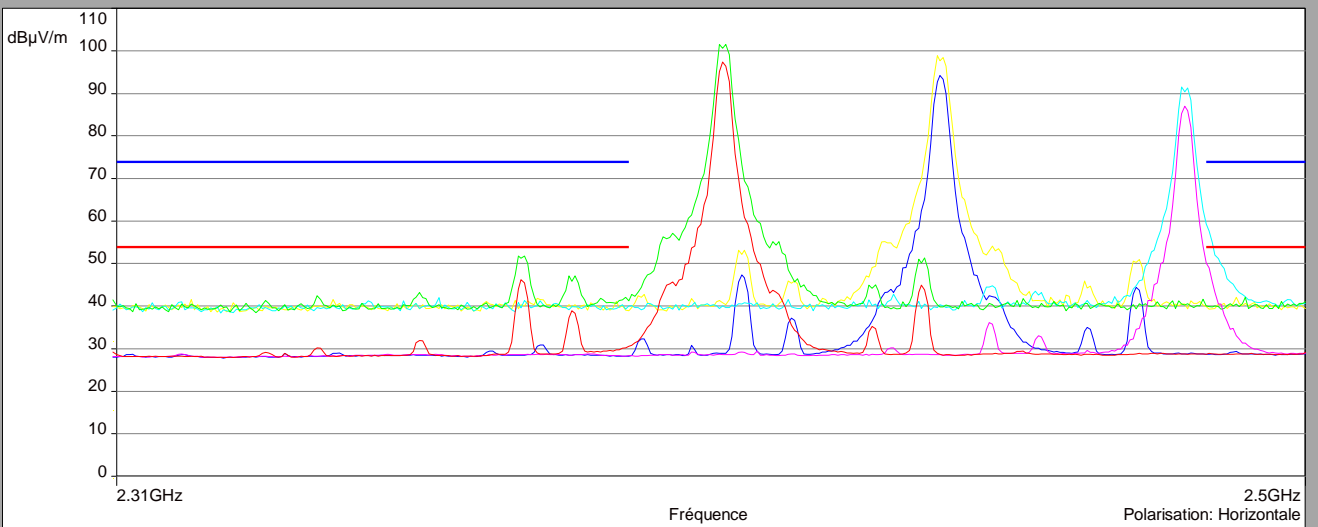
Above 1GHz
Cmin/Cnom/Cmax
Vertical Polarization

- FCC/FCC 15.209 >30M Open 2.4GHz - Classe:1 - Moyenne/3.0m/
- FCC/FCC 15.209 >30M Open 2.4GHz - Classe:1 - Crête/3.0m/
- Cmax Lev 4 avec att - Mes.Peak (161) (Verticale)
- Cnom - Mes.Avg (159) (Verticale) (Verticale)
- Cnom - Mes.Peak (159) (Verticale)
- Cmin - Mes.Avg (158) (Verticale)
- Cmax Lev 4 avec att - Mes.Avg (161) (Verticale)
- Cmin - Mes.Peak (158) (Verticale)



Horizontal polarization

- FCC/FCC 15.209 >30M Open 2.4GHz - Classe:1 - Moyenne/3.0m/
- FCC/FCC 15.209 >30M Open 2.4GHz - Classe:1 - Crête/3.0m/
- Cmin - Mes.Avg (158) (Horizontale)
- Cmax Lev 4 avec att - Mes.Avg (161) (Horizontale)
- Cmin - Mes.Peak (158) (Horizontale)
- Cmax Lev 4 avec att - Mes.Peak (161) (Horizontale)
- Cnom - Mes.Avg (159) (Horizontale) (Horizontale)
- Cnom - Mes.Peak (159) (Horizontale)





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Below 1GHz				
Polarization	Frequency (MHz)	Peak Level (dB μ V/m)	QPeak Level (dB μ V/m)	Limit (dB μ V/m)
Vertical	30.2	29.15	-	40
Vertical	91.7	27.42	-	43.5
Horizontal	92.1	28.28	-	43.5
Vertical	108.3	26.22	-	43.5
Vertical	125	29.23	-	43.5
Horizontal	125	27.10	-	43.5
Vertical	141.4	28.60	-	43.5
Horizontal	141.65	28.48	-	43.5
Vertical	186.75	27.07	-	43.5
Horizontal	186.95	28.52	-	43.5
Horizontal	390.5	25.25	-	43.5
Vertical	258.44	25.72	-	46
Vertical	391.88	27.82	-	46
Vertical	842.66	36.06	-	46

Above 1GHz						
Cmin/Cnom/Cmax						
Polarization	Frequency (MHz)	Duty cycle correction (dB)	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)
Horizontal	1440	-	37.06	54	26.63	74
Vertical	1928	-	27.63	54	41.03	74
Horizontal	2373	-	46.27	54	51.84	74
Horizontal	2381	-	38.90	54	47.07	74
Vertical	2390	-	28.23	54	40.51	74
Horizontal	2390	-	30.58	54	41.19	74
Vertical	2483.5	-	31.51	54	42.94	74
Horizontal	2483.5	-	50.21	54	59.34	74
Horizontal	3466	-	31.45	54	45.44	74
Vertical	4809	-	39.71	54	49.89	74
Horizontal	4818	-	36.43	54	49.14	74
Vertical	5511	-	37.50	54	50.56	74

10.7. CONCLUSION

Unwanted Emission in restricted frequency bands measurement performed on the sample of the product **NXP JN5169-001-U00-2**, SN: -, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 & RSS 247 ISSUE 1 limits.

11. UNCERTAINTIES CHART

47 CFR Part 15.209 & 15.207 Kind of test	Wide uncertainty laboratory (k=2) $\pm x(\text{dB}) / (\text{Hz}) /$ 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 (Ecuellas)	4,88	6.3
Measurement of radiated electric field from 1 to 18GHz on the Ecuellas site	5.16	/
Measurement of radiated electric field from 30 to 1000MHz in vertical position on the OATS (Ecuellas)	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 (Ecuellas)	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