



7.3. LIMIT

Power Spectral Density:
2400MHz-2483.5MHz: Shall not exceed 8dBm/3kHz
Limits are reduced by G-6dBi if Overall Antenna Gain above 6dBi

7.4. TEST EQUIPMENT LIST

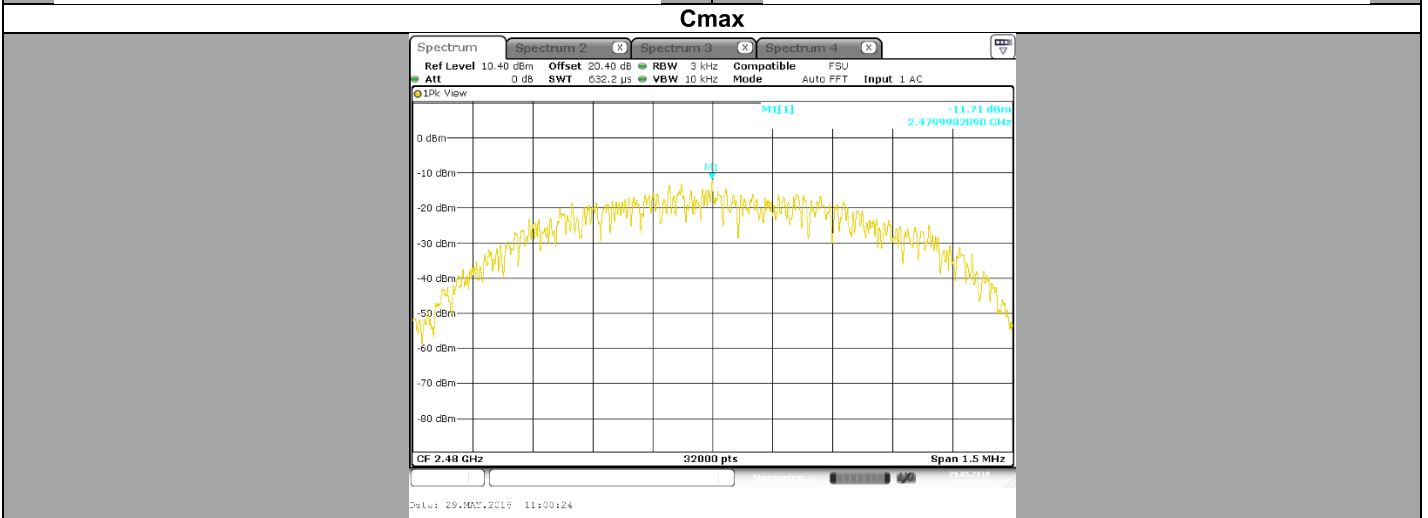
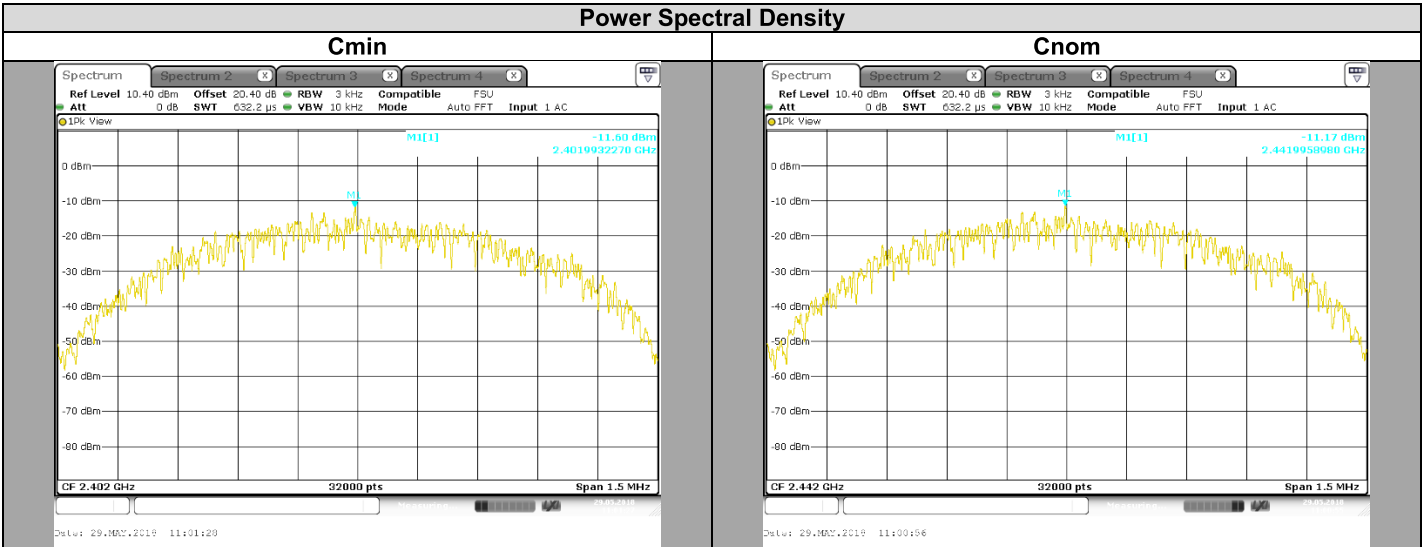
DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2017/09	2018/09
Multi-meter	KEITHLEY	2000	A1242090	2016/06	2018/06
Programmable AC/DC power supply	KIKUSUI	PCR500M	A7040079	2016/06	2018/06
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329676	2017/09	2018/09

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



L C I E

7.5. RESULTS



Channel	Offset Cable + Att (dB)	Antenna Gain (dBi)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
Cmin	20,4	2.5	-11,6	8
Cnom	20,4	2.5	-11,17	8
Cmax	20,4	2.5	-11,71	8

7.6. CONCLUSION

Power Spectral Density measurement performed on the sample of the product **SAGEMCOM DCIWA384 UHD AIt US V2**, SN: **253764997**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247** limits.

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

8.1. TEST CONDITIONS

Test performed by : Mathieu CERISIER
Date of test : May 29, 2018
Ambient temperature : 26 °C
Relative humidity : 43 %

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 v04 § 11



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



8.3. LIMIT

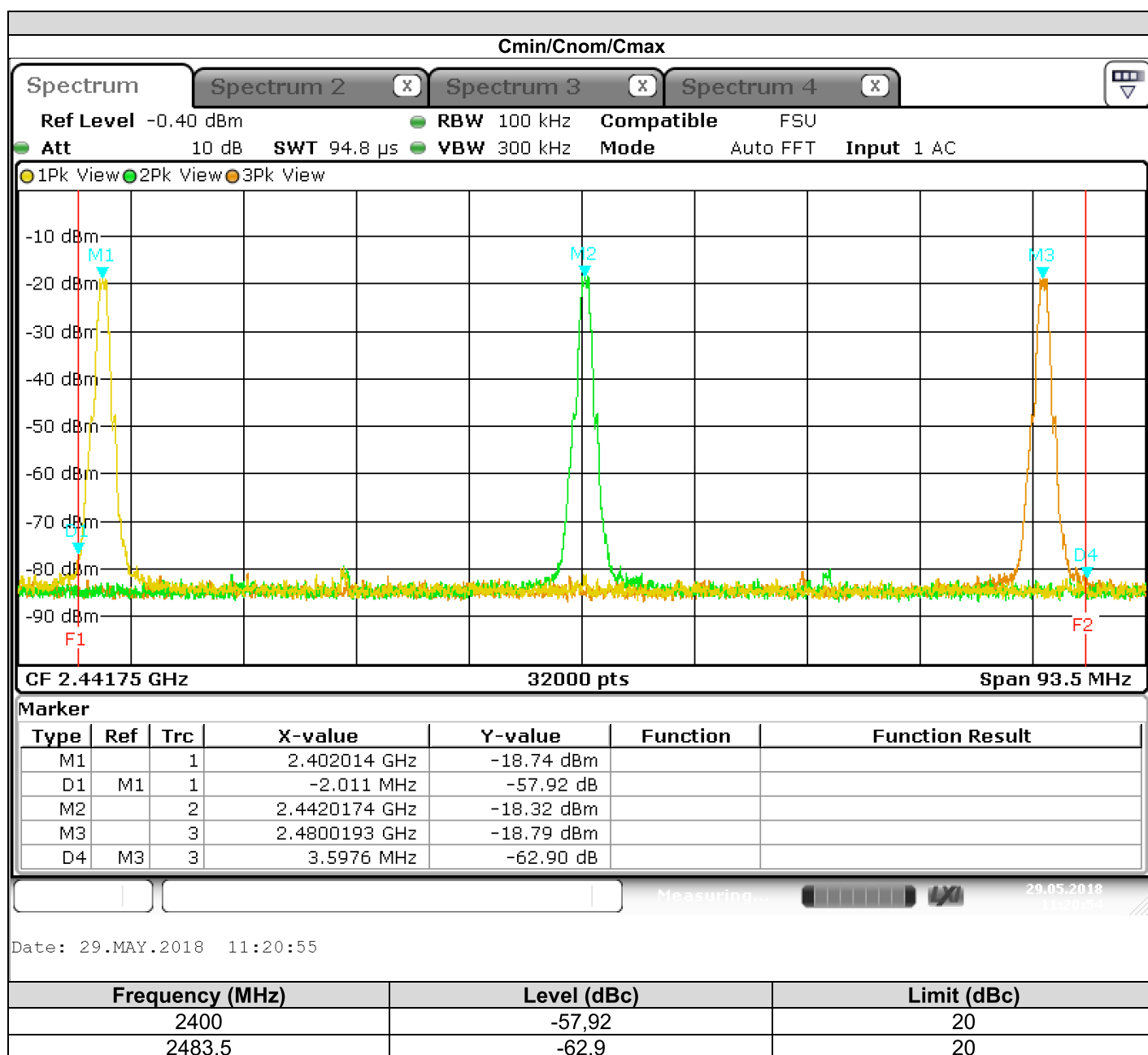
All Spurious Emissions must be at least 20dB below the Fundamental Radiator Level at the Band Edge Edge “2400MHz & 2483,5MHz”

8.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2017/09	2018/09
Multi-meter	KEITHLEY	2000	A1242090	2016/06	2018/06
Programmable AC/DC power supply	KIKUSUI	PCR500M	A7040079	2016/06	2018/06
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329676	2017/09	2018/09

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 at the band edge measurement performed on the sample of the product **SAGEMCOM DCIWA384 UHD Ait US V2**, SN: **253764997**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247** limits.

9. UNWANTED EMISSIONS INTO NON-RESTRICTED FREQUENCY BANDS

9.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU
Date of test : May 23, 2018
Ambient temperature : 24 °C
Relative humidity : 47 %

9.2. TEST SETUP

- The Equipment Under Test is installed:

- On a table
- In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:

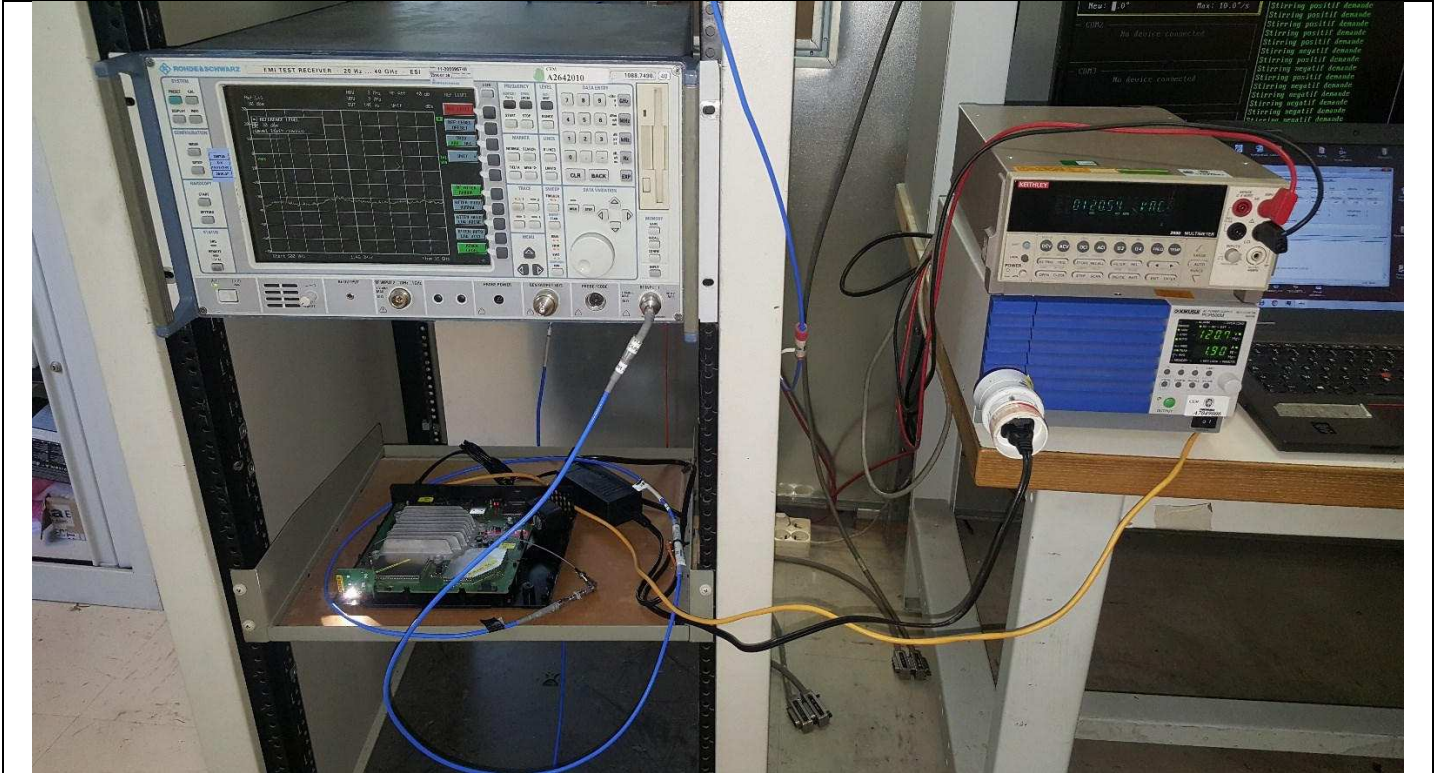
- Conducted Method
- Radiated Method

- Test Procedure:

- KDB 558074 D01 DTS Meas Guidance v04 § 11



Photograph for Unwanted Emission into non-restricted frequency bands



Photograph for Unwanted Emission into non-restricted frequency bands



9.3. LIMIT

All Spurious Emissions must be at least 20 below the Fundamental Radiator Level

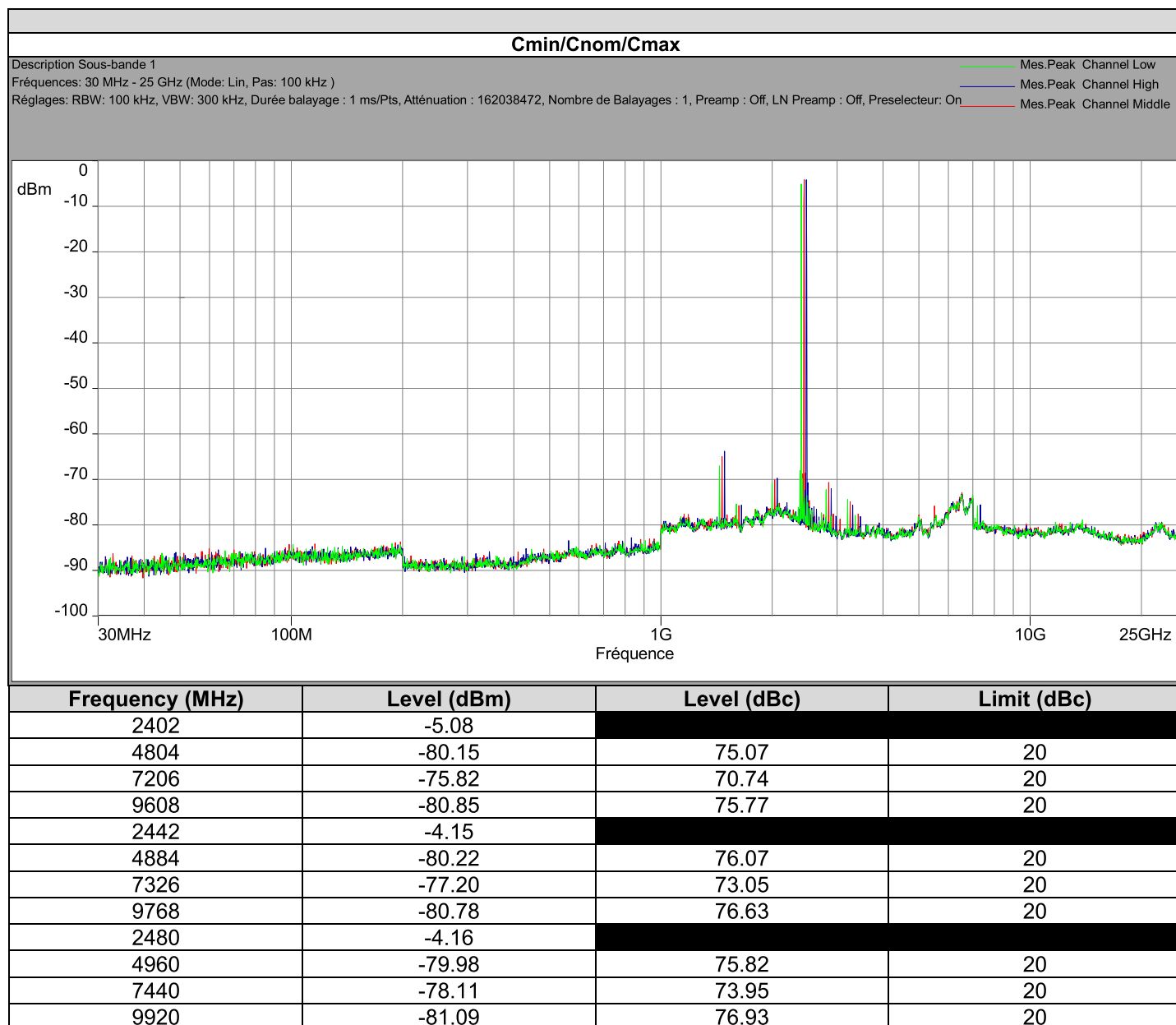
9.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
EMI receiver	ROHDE & SCHWARZ	ESI40 1088 740K40	A2642010	2016/07	2018/07
Cable Conducted S36 chamber	TELEDYNE	084-0555-2MTR	A5329758	2017/11	2018/11
Attenuator 3dB Cable Spurious Conducted	-	WA54-3-12	A7122223	2017/11	2018/11
Power supply	KIKUSUI	PCR500M	A7040079	Cal with Multimeter	
Multimeter	KEITHLEY	2000	A1242090	2017/05	2019/05
Rejector filter 2,4GHz	-	2.45GHz	A7484048	2017/09	2018/09

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



9.5. RESULTS



9.6. CONCLUSION

Unwanted Emission into non-restricted frequency bands measurement performed on the sample of the product **SAGEMCOM DCIWA384 UHD AIt US V2**, SN: **253764997**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.247** limits.

10. AC POWER LINE CONDUCTED EMISSIONS

10.1. TEST CONDITIONS

Test performed by : Laurent DENEUX
Date of test : June 7, 2018
Ambient temperature : 21 °C
Relative humidity : 53 %

10.2. TEST SETUP

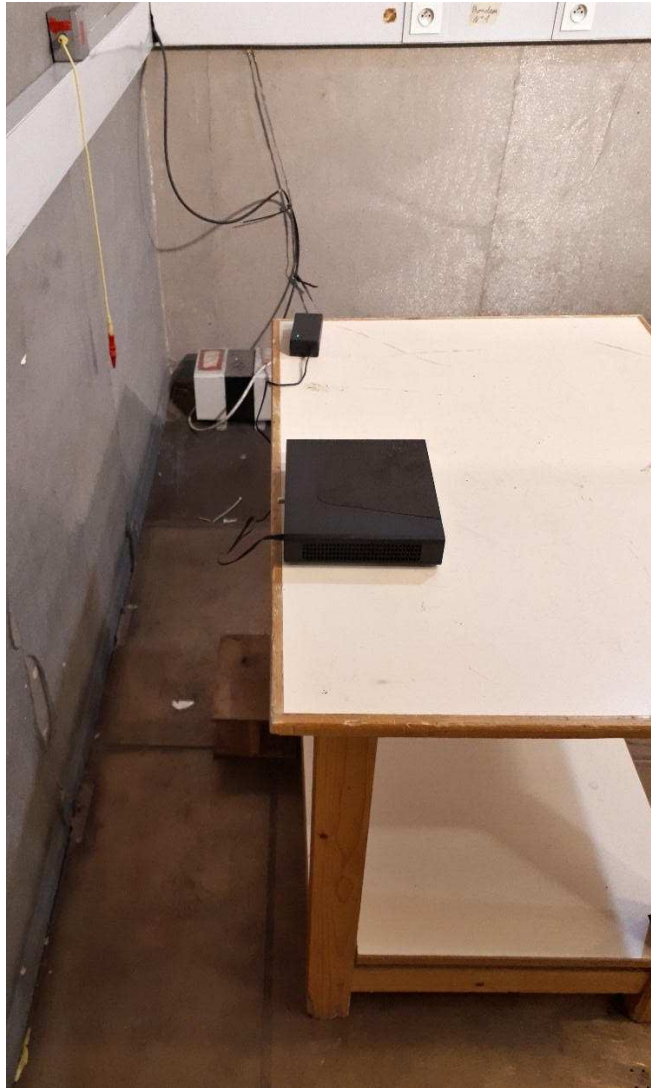
The product has been tested according to ANSI C63.10 (2013) method. The EUT is placed on the ground reference plane, at 80cm from the LISN. The distance between the EUT and the vertical ground plane is 40cm. Auxiliaries are powered by another LISN. The cable has been shorted to 1meter length. The EUT 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)



L C I E



Photograph for AC Power Line Conducted Emissions (Rear view)

10.3. 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

10.4. TEST EQUIPMENT LIST

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Receiver	RHODE & SCHWARZ	ESIB26	A2642021	2015/12	2018/12
V ISLN	ROHDE & SCHWARZ	ESH2-Z5	C2322001	2017/08	2018/08
Pulse limiter	ROHDE & SCHWARZ	ESH3-Z2	A2649008	2017/09	2018/09
Cable	-	-	A5329417	2017/10	2018/10
Cable	-	-	A5329589	2017/08	2018/08
Reference ground plan 2 x 3m	L.C.I.E.	-	-	-	-

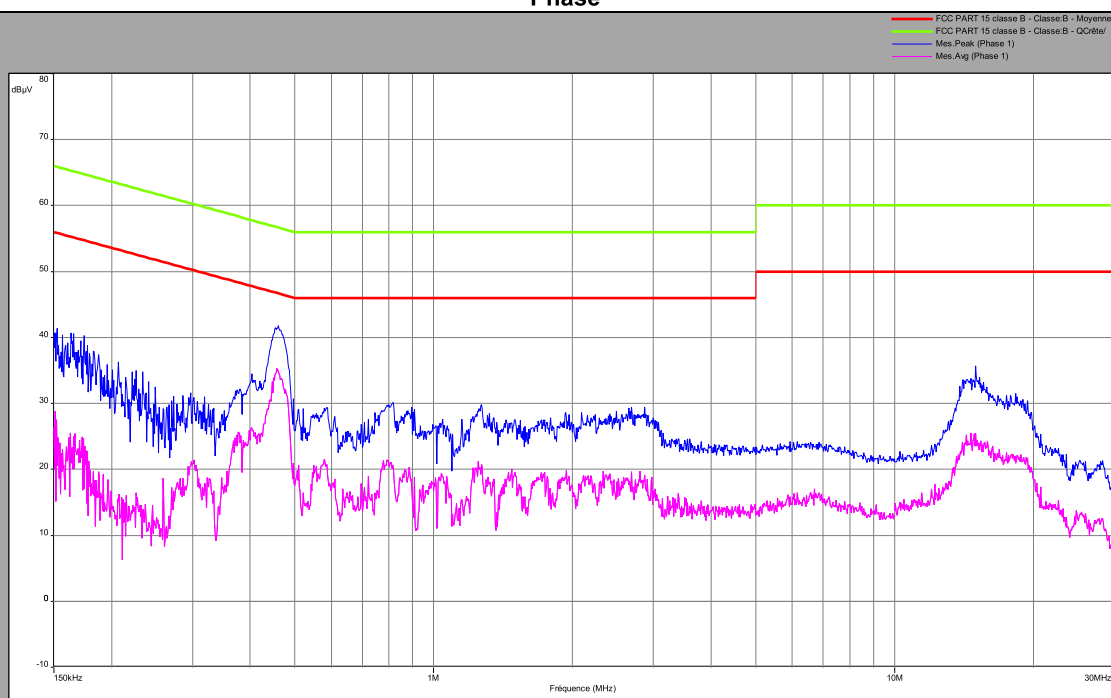
Note: In our quality system, the test equipment calibration due is more & less 2 months

10.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

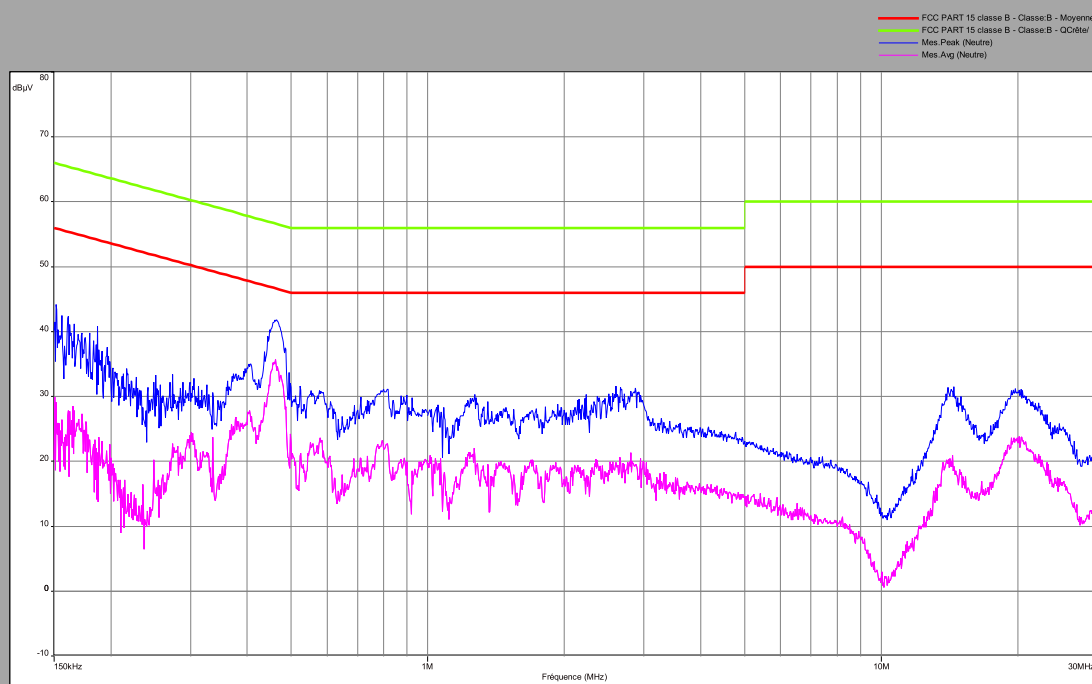
None Divergence:

10.6. RESULTS

Channel Phase



Line





L C I E

Phase Line							
Frequency (MHz)	Peak Level (dB μ V)	Quasi-Peak Level (dB μ V)	Quasi-Peak Limit (dB μ V)	Margin Quasi-Peak (dB μ V)	Average Level (dB μ V)	Average Limit (dB μ V)	Margin Average (dB μ V)
0,152	40,2	-	65,8	25,6	27,6	55,8	28,2
0,457	41,4	-	56,7	15,3	35,3	46,7	11,4
1,268	29,8	-	56	26,2	21,3	46	24,7
2,684	29,4	-	56	26,6	19,6	46	26,4
15	35,6	-	60	24,4	25,4	50	24,6

Neutral Line							
Frequency (MHz)	Peak Level (dB μ V)	Quasi-Peak Level (dB μ V)	Quasi-Peak Limit (dB μ V)	Margin Quasi-Peak (dB μ V)	Average Level (dB μ V)	Average Limit (dB μ V)	Margin Average (dB μ V)
0,161	42,4	-	65,4	23	27,8	55,4	27,6
0,462	41,4	-	56,6	15,2	35,7	46,6	10,9
2,8	30,8	-	56	25,2	21,4	46	24,6
14	30,5	-	60	29,5	19,5	50	30,5
20,3	31,1	-	60	28,9	23,7	50	26,3

10.7. CONCLUSION

Ac Power Line Conducted Emission measurement performed on the sample of the product **SAGEMCOM DCIWA384 UHD Alt US V2**, SN: **253764997**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 limits.

11. UNWANTED EMISSIONS IN RESTRICTED FREQUENCY BANDS

11.1. TEST CONDITIONS

Test performed by : Armand MAHOUNGOU & Laurent DENEUX
Date of test : May 16, 2018 to June 7, 2018
Ambient temperature : 20 to 24 °C
Relative humidity : 43 to 47%

11.2. TEST SETUP

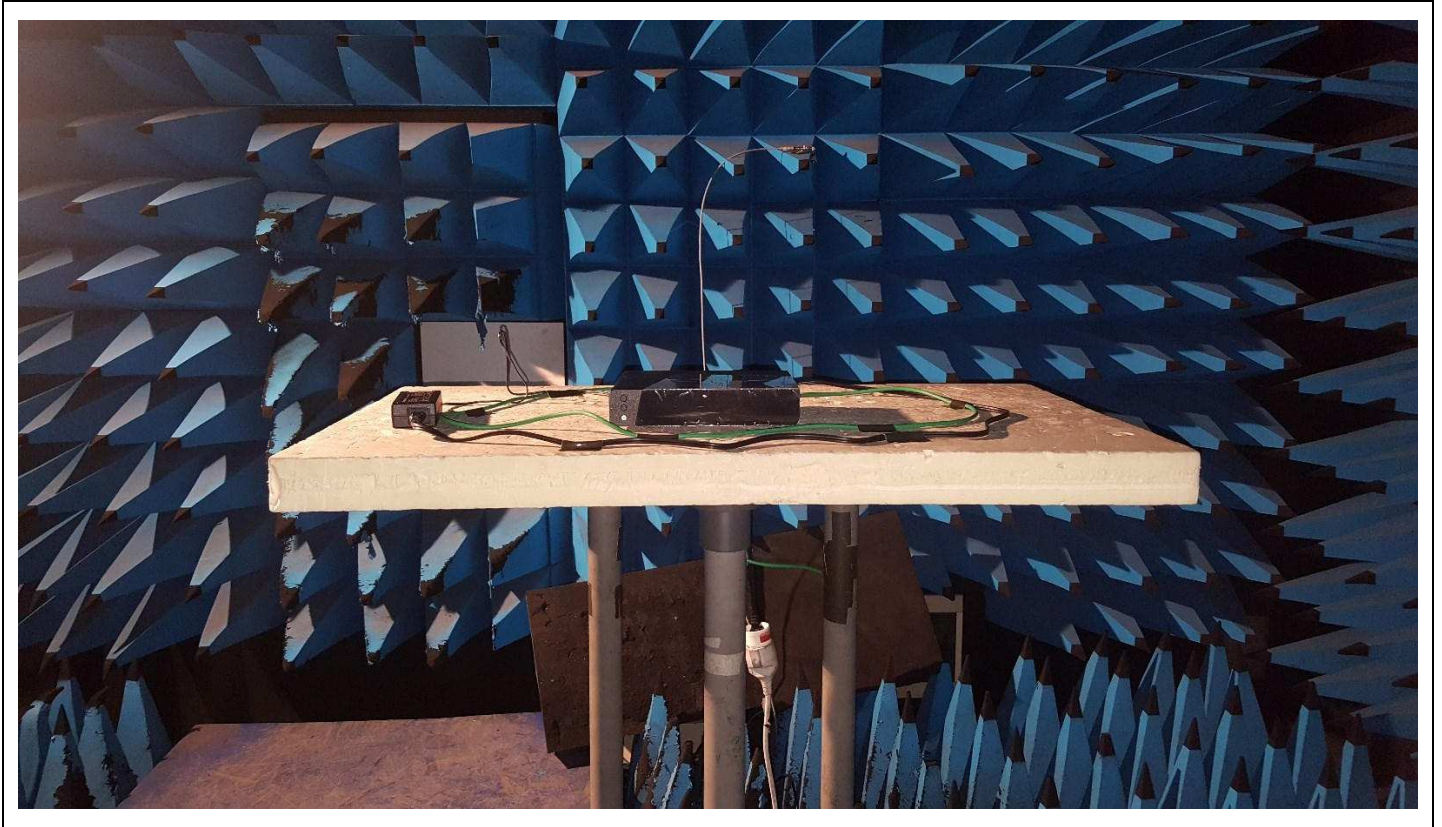
The product has been tested according to ANSI C63.10 (2013). The EUT is placed **on an open area test site** below 1GHz and **in a full anechoic chamber** above 1GHz. Distance between measuring antenna and the EUT is **10m** below 1GHz and **3m** above 1GHz and below 30MHz.

Test is performed in parallel, perpendicular and ground parallel 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.

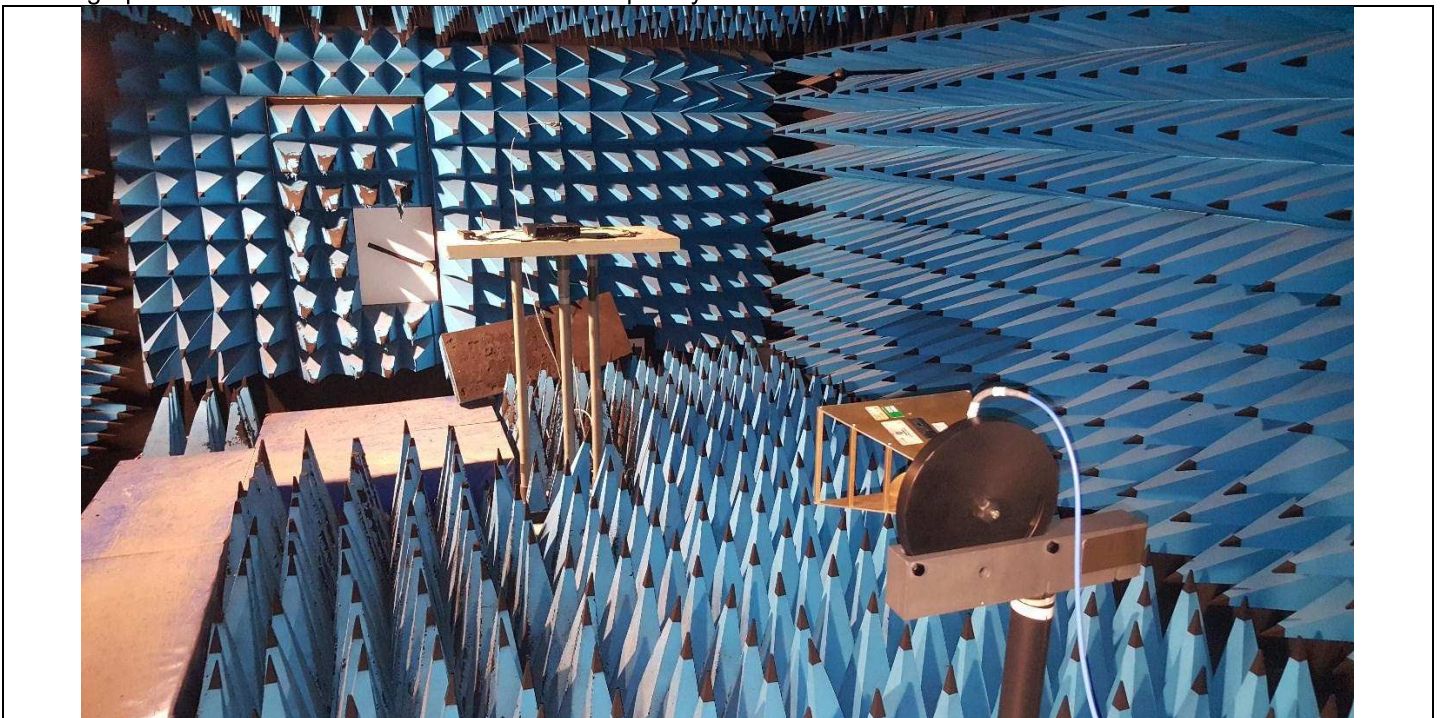
Test is performed in horizontal (H) and vertical (V) polarization with **bilog** antenna below 1GHz and with a horn antenna above 1GHz. Measurement bandwidth was 120kHz below 1GHz and 1MHz above 1GHz. The level has been maximised by the turntable rotation of 360 degrees range on the 3 axis of EUT. Antenna 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.



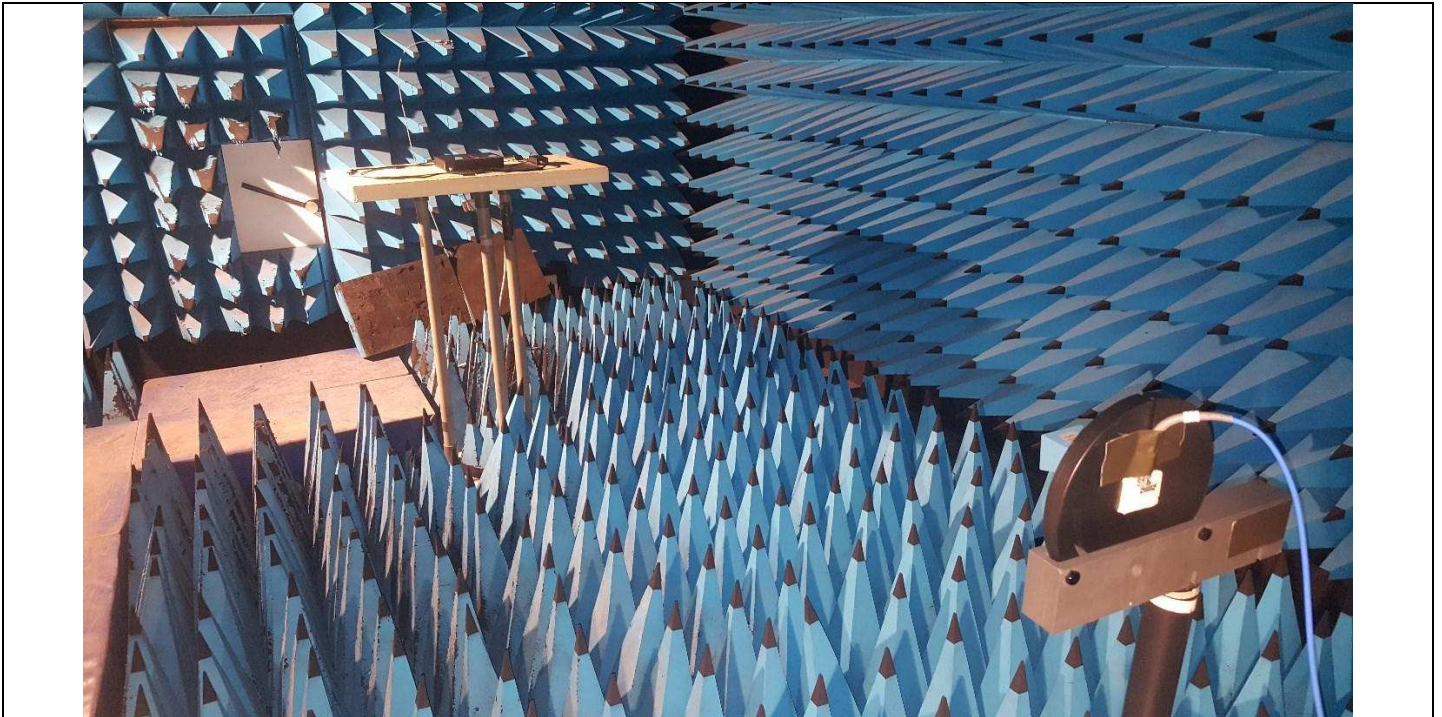
Photograph for Unwanted Emission in restricted frequency bands



Photograph for Unwanted Emission in restricted frequency bands



Photograph for Unwanted Emission in restricted frequency bands



Photograph for Unwanted Emission in restricted frequency bands

11.3. LIMIT

Limit at 3m:

9kHz to 0,490MHz:	2400/F(kHz) μ V/m (300m) or 20log(2400/F(kHz))dB μ V/m (3m) QPeak
0,490MHz to 1.705MHz:	240000/F(kHz) μ V/m (30m) or 20log(240000/F(kHz))dB μ V/m (3m) QPeak
1.705MHz to 30MHz:	30 μ V/m (30m) or dB μ V/m (3m) QPeak
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:	63.5 μ V/m Peak 43.5 μ V/m Average



11.4. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Full anechoic chamber	SIEPEL	-	D3044019	2014/10	2018/10
Preamplifier	LCIE	LCIE-ALB-001	A7080073	2016/08	2018/08
Horn antenna	AH SYSTEMS	SAS 571	C2042041	2017/09	2018/09
Horn antenna (18-26,5GHz)	PASTERNAK	PE9852/2F-20	C2042048	2017/12	2019/12
Rejector filter 2,4GHz	-	2.45GHz	A7484048	2017/09	2018/09
EMI receiver	ROHDE & SCHWARZ	ESI40 1088 740K40	A2642010	2016/07	2018/07
Cable S36 chamber	TELEDYNE	084-0505-1MTR	A5329757	2018/03	2019/03
Cable S36 chamber	TELEDYNE	084-0555-1.5MTR	A5329759	2018/03	2019/03
Cable S36 chamber	TELEDYNE	084-0555-3MTR	A5329760	2018/03	2019/03
Open test site	LCIE	-	F2000400	2017/06	2019/06
EMI Test Receiver	ROHDE & SCHWARZ	ESIB 26	A2642021	2016/12	2018/12
Bilog antenna	CHASE	CBL 6112A	C2040040	2018/04	2019/04
Cable	-	-	A5329449	2017/09	2018/09
Cable	-	-	A5329380	2017/09	2018/09
Cable	-	-	A5329444	2017/09	2018/09
Loop antenna	SCHWARZBECK	FMZB1513	C2040209	2018/03	2020/03

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

11.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

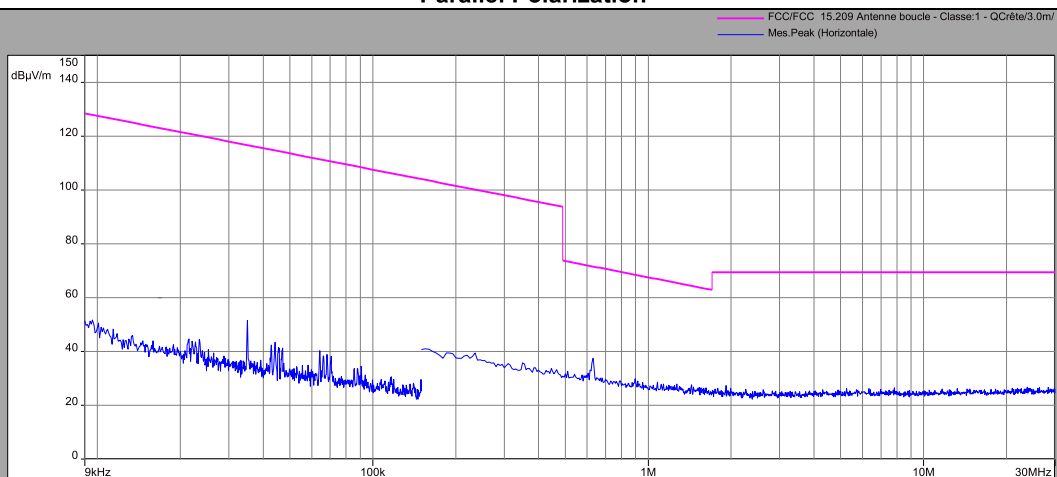
None Divergence:

11.6. RESULTS

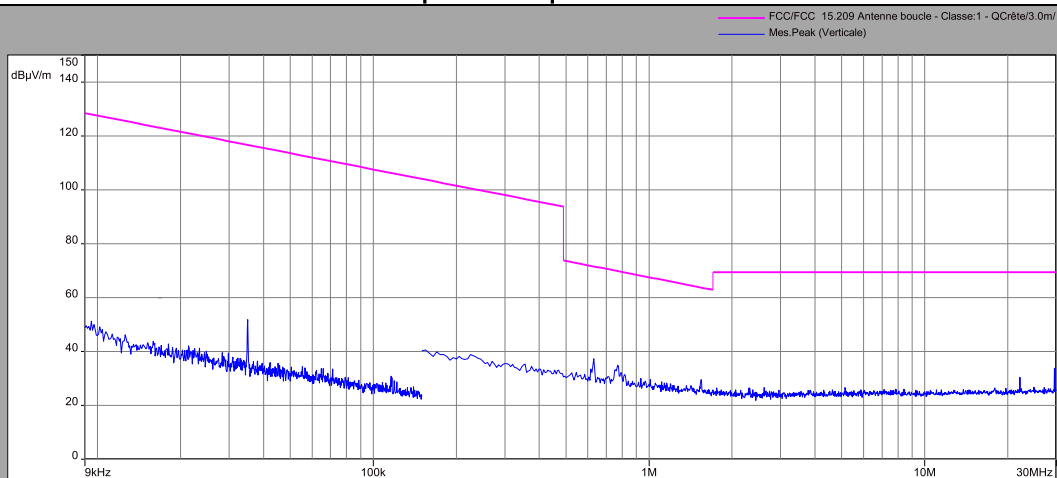
9kHz – 30 MHz

Cmin

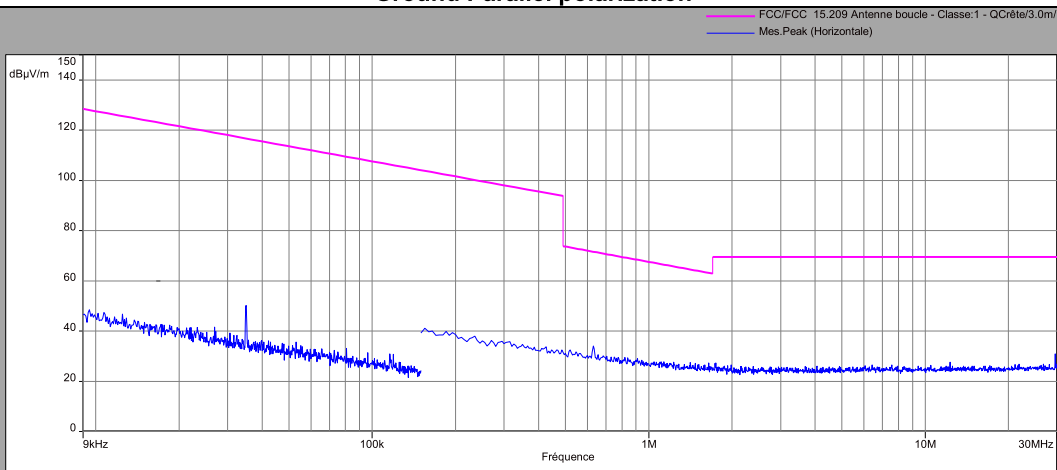
Parallel Polarization



Perpendicular polarization



Ground Parallel polarization



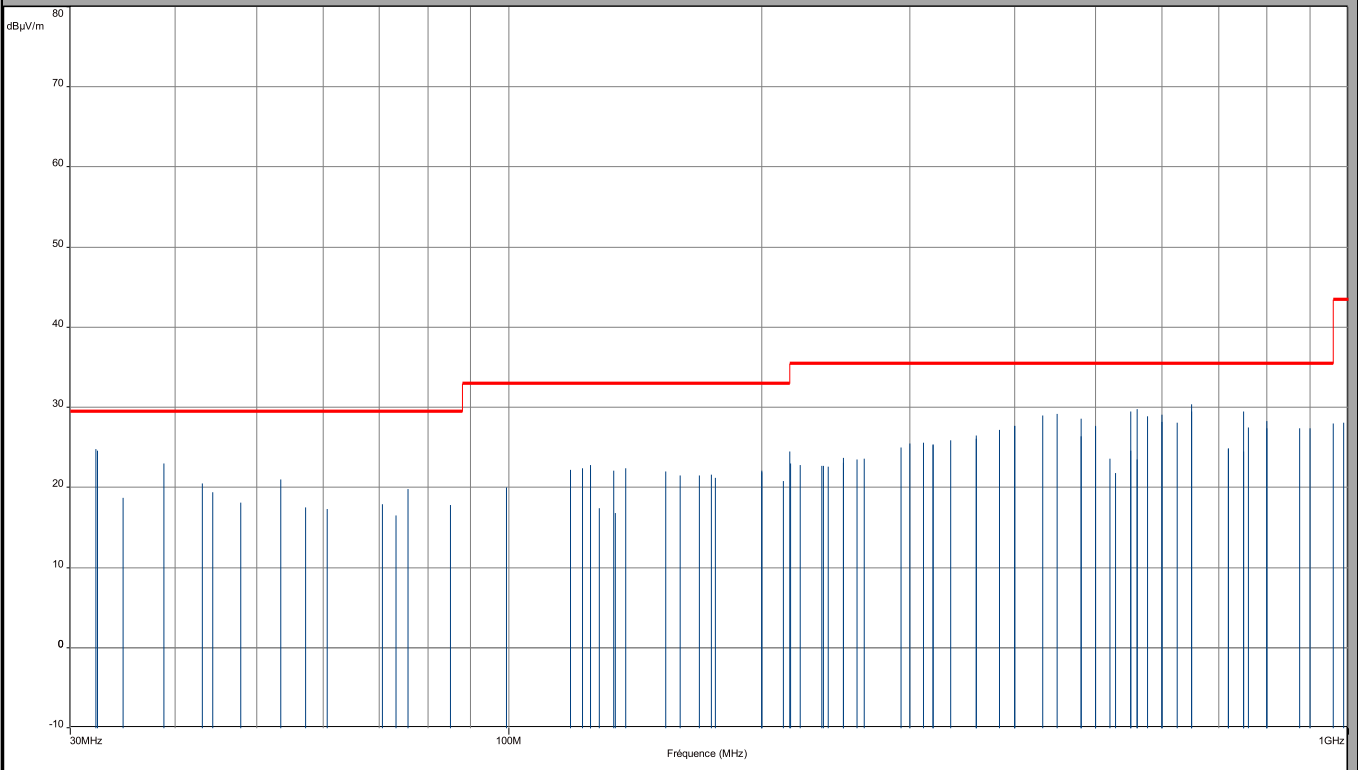


Below 1GHz

Channel

Vertical & horizontal Polarization

FCC Part 15 (intentional radiator) S209 - Classe - - QCr6e/10.0m/
Mes. Q-Peak (Verticale)
Mes. Q-Peak (Horizontale)
Finaux Manuel (Verticale)

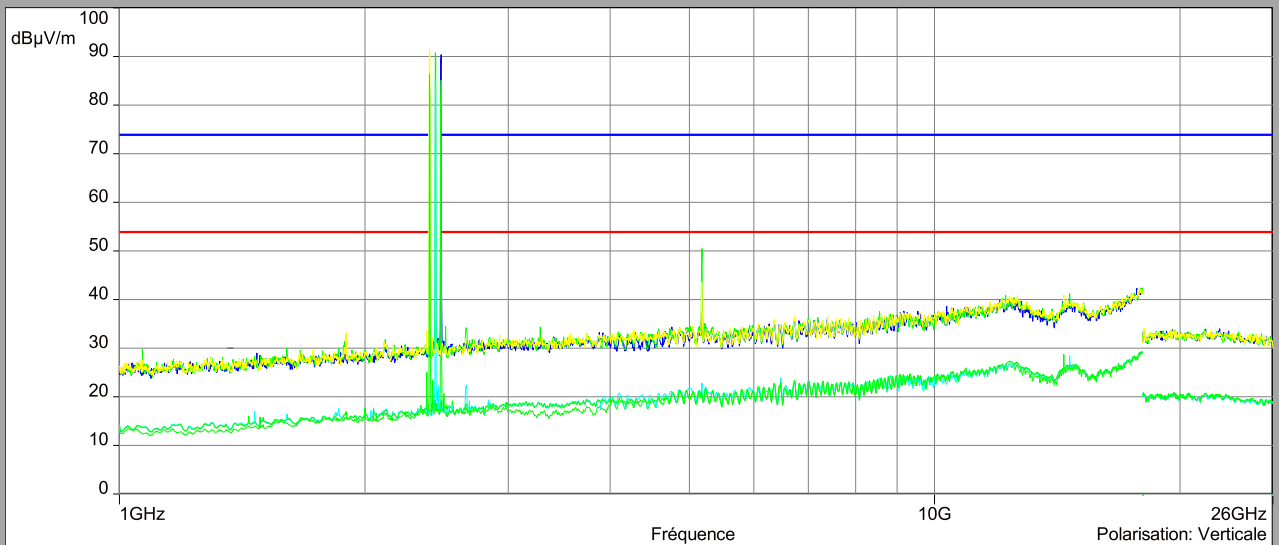




L C I E

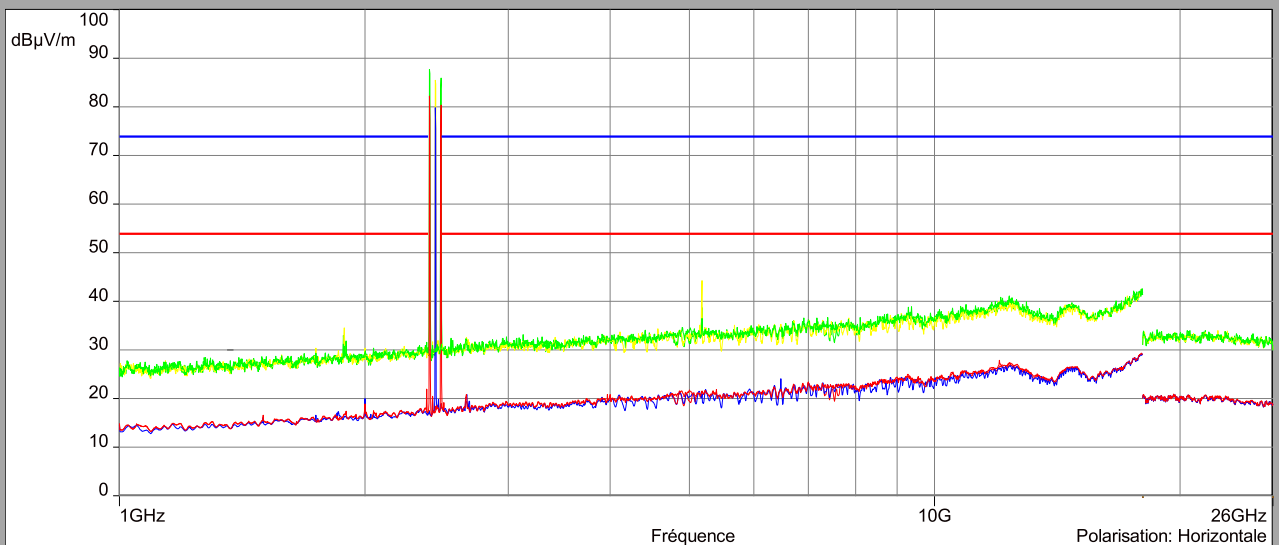
Above 1GHz
Cmin/Cnom/Cmax
Vertical Polarization

- FCC/FCC 15.209 2400MHz-2483MHz Band - Classe:1 - Moyenne/3.0m/
- FCC/FCC 15.209 2400MHz-2483MHz Band - Classe:1 - Crête/3.0m/
- Mes.Avg Channel Low (Verticale)
- Mes.Peak Channel Low (Verticale)
- Mes.Avg Channel Middle (Verticale)
- Mes.Peak Channel Middle (Verticale)
- Mes.Avg Channel High (Verticale)
- Mes.Peak Channel High (Verticale)



Horizontal polarization

- FCC/FCC 15.209 2400MHz-2483MHz Band - Classe:1 - Moyenne/3.0m/
- FCC/FCC 15.209 2400MHz-2483MHz Band - Classe:1 - Crête/3.0m/
- Mes.Avg Channel Low (Horizontale)
- Mes.Peak Channel Low (Horizontale)
- Mes.Avg Channel Middle (Horizontale)
- Mes.Peak Channel Middle (Horizontale)
- Mes.Avg Channel High (Horizontale)
- Mes.Peak Channel High (Horizontale)



Above 1GHz Zoom 2310MHz-2500MHz



L C I E

Cmin/Cnom/Cmax

Vertical Polarization

Description Sous-bande 2

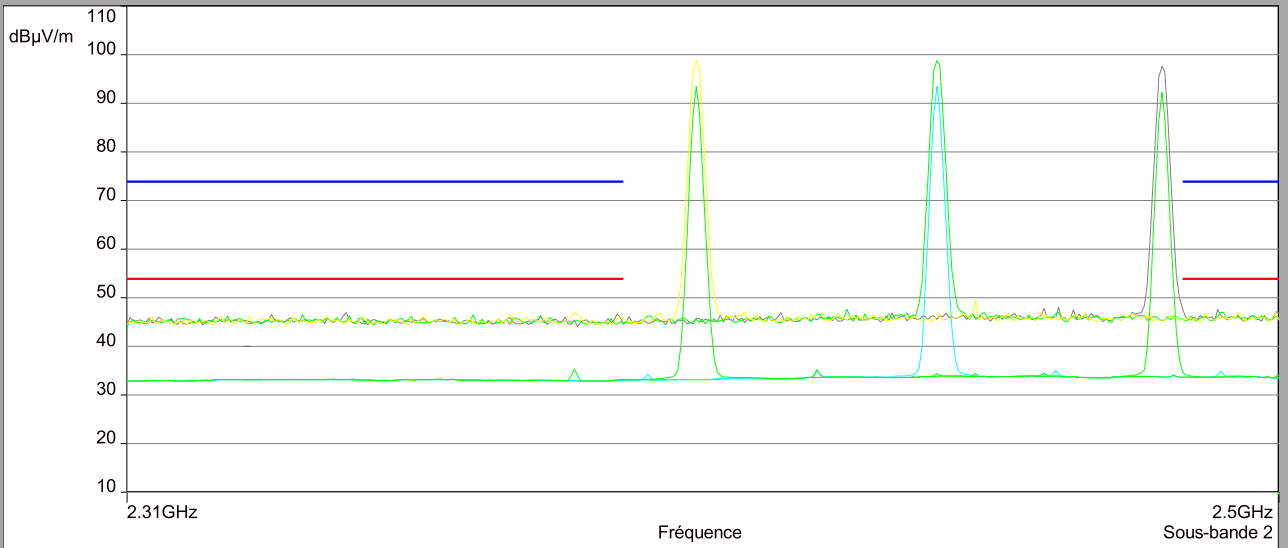
Fréquences: 2.31 GHz - 2.5 GHz (Mode: Lin, Pas: 500 kHz)

Réglages: RBW: 1 MHz, VBW: Auto, Durée balayage : 50 ms/Pts, Atténuation : 158096296, Nombre de Balayages : 1, Preamp : On: 20 dB, LN Preamp: Off, Reselect: Off

Polarisation: Verticale

Distance: 3 m

- FCC/FCC 15.209 2400MHz-2483MHz Band - Classe:1 - Moyenne/3.0m/
- FCC/FCC 15.209 2400MHz-2483MHz Band - Classe:1 - Crête/3.0m/
- Mes.Avg Channel Low (Verticale)
- Mes.Peak Channel Low (Verticale)
- Mes.Avg Channel Middle (Verticale)
- Mes.Peak Channel Middle (Verticale)
- Mes.Avg Channel High (Verticale)
- Mes.Peak Channel High (Verticale)



Horizontal polarization

Description Sous-bande 1

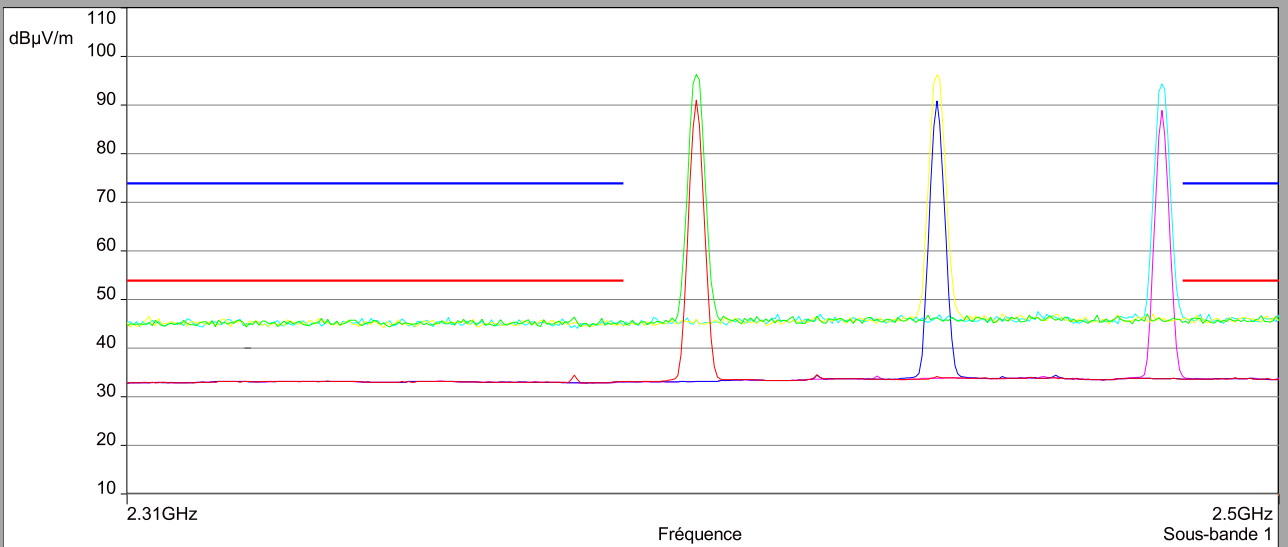
Fréquences: 2.31 GHz - 2.5 GHz (Mode: Lin, Pas: 500 kHz)

Réglages: RBW: 1 MHz, VBW: Auto, Durée balayage : 50 ms/Pts, Atténuation : 158096424, Nombre de Balayages : 1, Preamp : On: 20 dB, LN Preamp: Off, Reselect: Off

Polarisation: Horizontale

Distance: 3 m

- FCC/FCC 15.209 2400MHz-2483MHz Band - Classe:1 - Moyenne/3.0m/
- FCC/FCC 15.209 2400MHz-2483MHz Band - Classe:1 - Crête/3.0m/
- Mes.Avg Channel Low (Horizontale)
- Mes.Peak Channel Low (Horizontale)
- Mes.Avg Channel Middle (Horizontale)
- Mes.Peak Channel Middle (Horizontale)
- Mes.Avg Channel High (Horizontale)
- Mes.Peak Channel High (Horizontale)





L C I E

9kHz – 30 MHz					
Polarization	Frequency (MHz)	Peak Level (dB μ V/m)	QPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB μ V/m)
all emissions were greater than 20 dB below the limit					

Below 1GHz					
Polarization	Frequency (MHz)	Peak Level (dB μ V/m)	QPeak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB μ V/m)
Vertical	32.2	-	24.78	29.5	4.72
Vertical	216	-	24.55	33	8.45
Vertical	384	-	27.18	35.5	8.32
Vertical	560	-	29.8	35.5	5.7
Vertical	650	-	30.42	35.5	5.08
Vertical	750	-	29.5	35.5	6

Above 1GHz								
Cmin/Cnom/Cmax								
Polarization	Frequency (MHz)	Average Level (dB μ V/m)	Average Level + Duty Cycle Factor (dB μ V/m)	Average Limit (dB μ V/m)	Average Margin Level (dB μ V/m)	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Peak Margin Level (dB μ V/m)
Horizontale	2390	31.77	35.80	54	22.23	44.30	74	29.70
Verticale	2390	31.76	35.79	54	22.24	43.35	74	30.65
Horizontale	2483.5	32.26	36.29	54	21.74	44.40	74	29.60
Verticale	2483.5	32.29	36.32	54	21.71	44.41	74	29.59

11.7. CONCLUSION

Unwanted Emission in restricted frequency bands measurement performed on the sample of the product **SAGEMCOM DCIWA384 UHD Ait US V2**, SN: **253764997**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.247 limits.

12. 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