



L C I E

Release July, 2017

TEST REPORT

N°: 165861-747886-A (FILE#1036390)

Version : 01

Subject Electromagnetic compatibility tests according to the standards:
FCC CFR 47 Part 15, Subpart B and C
RSS-210 Issue 9

Issued to **MARKEM-IMAJE**
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France

Apparatus under test

| | |
|--------------------|---|
| ↔ Product | Continuous Inkjet Marking and Coding equipment |
| ↔ Trade mark | MARKEM IMAJE |
| ↔ Manufacturer | MARKEM IMAJE INDUSTRIES |
| ↔ Model under test | 9330 |
| ↔ Serial number | 9330-BETA 1.9 |
| ↔ FCCID | 2AAW8-MI9330 |
| ↔ IC | 11372A-MI9330 |

Conclusion See Test Program chapter

Test date February 18, 2020 to February 20, 2020

Test location Fontenay-aux-roses

IC Test site 6230B-1

Composition of document 34 pages

Document issued on March 23, 2020

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SUMMARY

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1. TEST PROGRAM

- Standard:**
- FCC Part 15, Subpart C and B
 - FCC Part 15 §15.225
 - ANSI C63.10 (2013) and ANSI C63.4 (2014)
 - RSS-210 Issue 9
 - RSS-Gen Issue 5

| EMISSION TEST | LIMITS | | | RESULTS (Comments) |
|--|--|----------------------------|-------------------------|---|
| | Frequency | Quasi-peak value (dBµV) | Average value (dBµV) | |
| Limits for conducted disturbance at mains ports 150kHz-30MHz <i>CFR 47 §15.207</i> | 150-500kHz | 79 | 66 | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP |
| | 0.5-30MHz | 73 | 60 | |
| | | | | |
| Radiated emissions 9kHz-30MHz <i>CFR 47 §15.209 (a)</i> <i>CFR 47 §15.225</i> <i>RSS-Gen §4.9</i> | Measure at 300m 9kHz-490kHz : 67.6dBµV/m /F(kHz) | | | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP |
| | Measure at 30m 490kHz-1.705MHz : 87.6dBµV/m /F(kHz) 1.705MHz-30MHz : 29.5 dBµV/m | | | |
| Radiated emissions 30MHz-25GHz* <i>CFR 47 §15.209 (a)</i> <i>CFR 47 §15.225</i> <i>RSS-Gen §4.9</i> <i>Highest frequency :</i> <i>(Declaration of provider)</i> | Measure at 3m 30MHz-88MHz : 40 dBµV/m 88MHz-216MHz : 43.5 dBµV/m 216MHz-960MHz : 46.0 dBµV/m Above 960MHz : 54.0 dBµV/m | | | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP |
| | | | | |
| Fundamental field strength limit <i>CFR 47 §15.225</i> <i>RSS-210 §B.6</i> | Operation within the band 13.110-14.010 MHz | | | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP |
| Fundamental frequency tolerance <i>CFR 47 §15.225</i> <i>RSS-210 §B.6</i> | Operation within the band 13.110-14.010 MHz | | | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP |
| Band edge compliance <i>CFR 47 §15.225</i> <i>RSS-210 §B.6</i> | Operation within the band 13.110-14.010 MHz | | | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP |
| Occupied bandwidth <i>RSS-Gen Issue 5 §6.7</i> | No limit | | | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> NA <input type="checkbox"/> NP |
| Receiver Spurious Emission** <i>RSS-Gen Issue 5 §7.3</i> | See RSS-Gen §7.3 | | | <input type="checkbox"/> PASS <input type="checkbox"/> FAIL <input checked="" type="checkbox"/> NA <input type="checkbox"/> NP |

*§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.

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

2. SYSTEM TEST CONFIGURATION

2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

Equipment under test (EUT):

9330: Ink Jet Printer

Serial Number: 9330-BETA 1.9



Equipment Under Test

Power supply:

For measurement with different voltage, it will be presented in test method.

| Name | Type | Rating | Reference / Sn | Comments |
|---------|---|--------------------------|----------------|----------|
| Supply1 | <input checked="" type="checkbox"/> AC <input type="checkbox"/> DC <input type="checkbox"/> Battery | 100-240 VAC (50Hz -60Hz) | | |

Voltage table used in Conducted Emission:

| Type | Measurement performed: | |
|---|---|--|
| <input checked="" type="checkbox"/> AC | <input checked="" type="checkbox"/> 120VAC/60Hz | <input checked="" type="checkbox"/> 240VAC/50Hz |
| <input type="checkbox"/> DC | <input type="checkbox"/> +....VDC | <input type="checkbox"/> -....VDC |
| <input type="checkbox"/> USB (Laptop auxiliary) | <input type="checkbox"/> 120VAC/60Hz (Laptop auxiliary) | <input type="checkbox"/> 240VAC/50Hz(Laptop auxiliary) |



Inputs/outputs - Cable:

| Access | Type | Length used (m) | Declared <3m | Shielded | Under test | Comments |
|---------|------------------------|-----------------|-------------------------------------|-------------------------------------|-------------------------------------|----------|
| Supply1 | C13 (3 wires: L+N+PE) | 2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | - |
| Access1 | Umbilical cable | 3 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | - |
| Access2 | Beacon cable | 3 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | - |
| Access3 | Tachymeter cable | 5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | - |
| Access4 | Proximity Cell cable | 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | - |
| Access5 | RJ45 (Ethernet) | 10 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | - |
| Access6 | StopLine - Dry contact | 10 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | - |
| Access7 | RS232 | 15 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | - |

Auxiliary equipment used during test:

| Type | Reference | Sn | Comments |
|------------------|-------------------|--------------|-------------------------|
| Printing Head | IMAJE A46508 | CN20020214 | - |
| Proximity cell | IMAJE A16469/B | - | - |
| Pulse encoder | IMAJE A35356 | 200502111757 | - |
| Beacon | PATLITE | MP02C | - |
| Lenovo Laptop | L460 | - | - |
| AC source 2kW | KEYSIGHT(AC6802A) | - | LCIE refrence: A7042305 |
| Multimeter - CEM | FLUKE | - | LCIE refrence: A1240251 |

Equipment information:

| | | | | |
|---------------------------------|---|--|--|---|
| RF mode: | <input type="checkbox"/> Transmitter | <input checked="" type="checkbox"/> Transceiver | <input type="checkbox"/> Receiver | <input type="checkbox"/> Standby |
| Type: | <input checked="" type="checkbox"/> RFID | <input type="checkbox"/> EAS | <input type="checkbox"/> Other: | |
| Bandwidth: | <input type="checkbox"/> Narrowband | | <input checked="" type="checkbox"/> Wideband : 13.56MHz | |
| Equipment intended for use as a | <input checked="" type="checkbox"/> Fixed | <input type="checkbox"/> Mobile | <input type="checkbox"/> Portable | |
| Type of equipment: | <input checked="" type="checkbox"/> Stand-alone | <input type="checkbox"/> Plug-in | <input type="checkbox"/> Combined | |
| Antenna Type: | <input type="checkbox"/> External | | <input checked="" type="checkbox"/> Internal | |
| Antenna connector: | <input type="checkbox"/> Permanent external | <input checked="" type="checkbox"/> Permanent internal | <input type="checkbox"/> None | <input type="checkbox"/> Temporary (only for tests) |
| Antenna Gain: | Nc* dBi | | | |
| Duty cycle: | <input checked="" type="checkbox"/> Continuous duty | <input type="checkbox"/> Intermittent duty | <input type="checkbox"/> Continuous operation | |
| Equipment type: | <input type="checkbox"/> Production model | | <input checked="" type="checkbox"/> Prototype | |
| Temperature range: | Tmin: | <input type="checkbox"/> -20°C | <input type="checkbox"/> 0°C | <input checked="" type="checkbox"/> 5 °C |
| | Tnom: | 20°C | | |
| | Tmax: | <input type="checkbox"/> 35°C | <input type="checkbox"/> 55°C | <input checked="" type="checkbox"/> 40 °C |
| Type of power source: | <input checked="" type="checkbox"/> AC power supply | <input type="checkbox"/> DC power supply | <input type="checkbox"/> Battery (Select type) | |
| Test source voltage in §5: | Vmin: | <input checked="" type="checkbox"/> 90.0V/50Hz | <input type="checkbox"/> VDC | |
| | Vnom: | <input checked="" type="checkbox"/> 230V/50Hz | <input type="checkbox"/> VDC | |
| | Vmax: | <input checked="" type="checkbox"/> 264V/50Hz | <input type="checkbox"/> VDC | |

Nc*: Not communicated



2.2. EUT CONFIGURATION

| Hardware information | | |
|---------------------------|------|-----|
| Firmware (if applicable): | V. : | Nc* |
| Software (if applicable): | V. : | Nc* |

Nc*: Not communicated

Permanent emission with or without Tag (Worst case presented).

2.3. EQUIPMENT MODIFICATIONS

None Modification:

2.4. 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 52.5dB μ V 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 dB μ V/m.

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

The 32 dB μ V/m value can be mathematically converted to its corresponding level in μ V/m.

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32\text{dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m.}$$

2.5. CALIBRATION DATE

The calibration intervals are extended at 12+2 months. This extended interval is based on the fact that there is sufficient calibration data to statistically establish a trend or based on experience of use of the test equipment to assure good measurement results for a longer period

3. CONDUCTED EMISSION

3.1. ENVIRONMENTAL CONDITIONS

Date of test : February 11, 2020
Test performed by : Hamza GHAFILI
Atmospheric pressure (hPa) : 998
Relative humidity (%) : 44
Ambient temperature (°C) : 24

3.2. TEST SETUP

Mains terminals

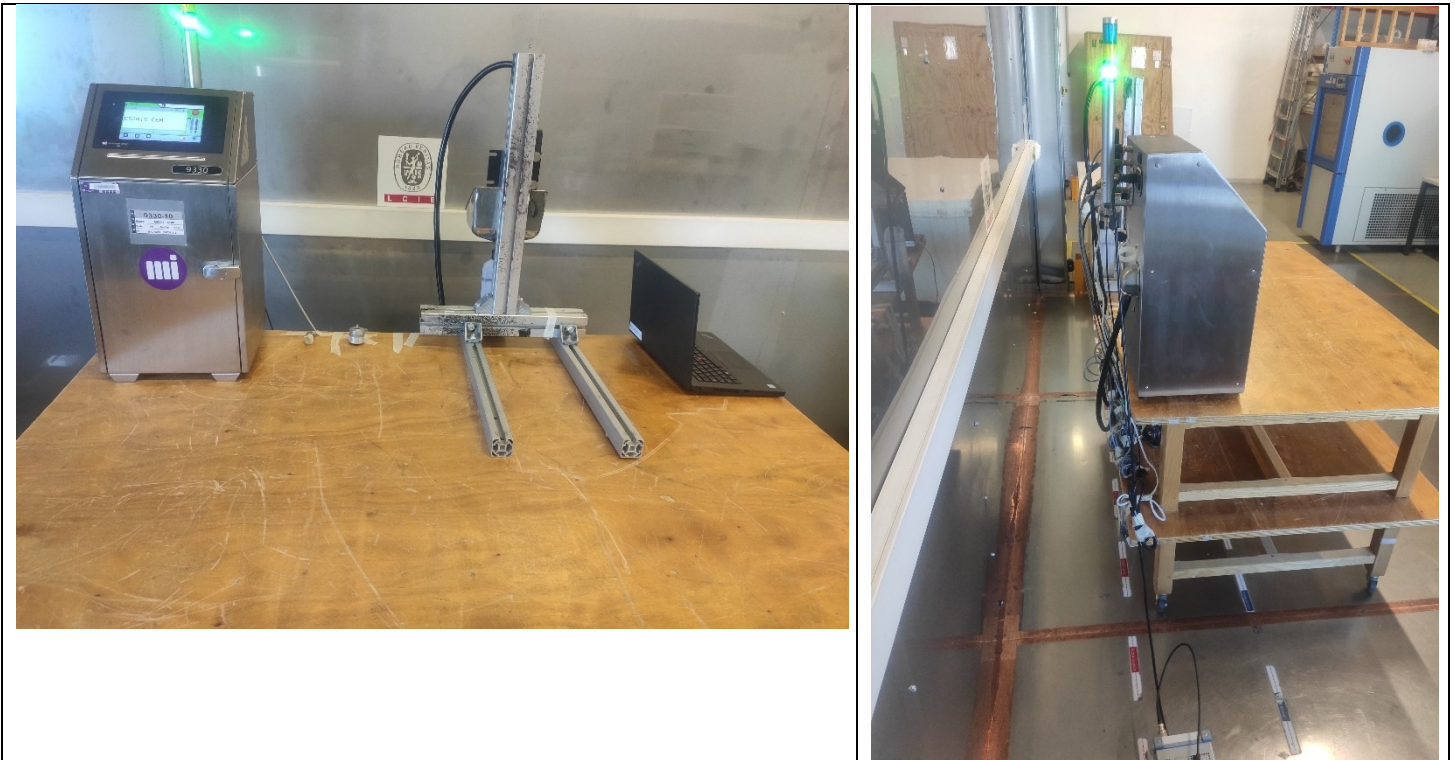
The EUT and auxiliaries are set:

- 80cm above the ground on the non-conducting table (Table-top equipment)
- up to 15cm above the ground on isolating support (Floor standing equipment)

The distance between the EUT and the LISN is 80cm. The EUT is 40cm away for the vertical ground plane.

The EUT is powered by 240 VAC-50Hz.

The EUT is powered through a LISN (measure). Auxiliaries are powered by another LISN.



Test setup



3.3. TEST EQUIPMENT LIST

| TEST EQUIPMENT USED | | | | | |
|-----------------------------|-----------------|------------|------------|----------|---------|
| Description | Manufacturer | Model | Identifier | Cal_Date | Cal_Due |
| BAT EMC | NEXIO | v3.19.1.18 | L1000115 | – | – |
| Cable + self | – | – | A5329585 | 12/18 | 02/20 |
| EMC comb generator | LCIE SUD EST | – | A3169098 | – | – |
| LISN | ROHDE & SCHWARZ | ENV216 | C2320291 | 02/19 | 02/20 |
| Receiver 20Hz – 8GHz | ROHDE & SCHWARZ | ESU8 | A2642019 | 12/17 | 02/20 |
| Thermo-hygrometer (PM1/2/3) | KIMO | HQ 210 | B4206022 | 08/18 | 08/20 |
| Transient limiter | ROHDE & SCHWARZ | ESH3-Z2 | A7122204 | 02/19 | 02/20 |
| ISN 8 wires | TESEQ | T800 | C2320170 | 02/19 | 02/21 |

3.4. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None Divergence:

3.5. TEST RESULTS

Mains terminals:

Supply1

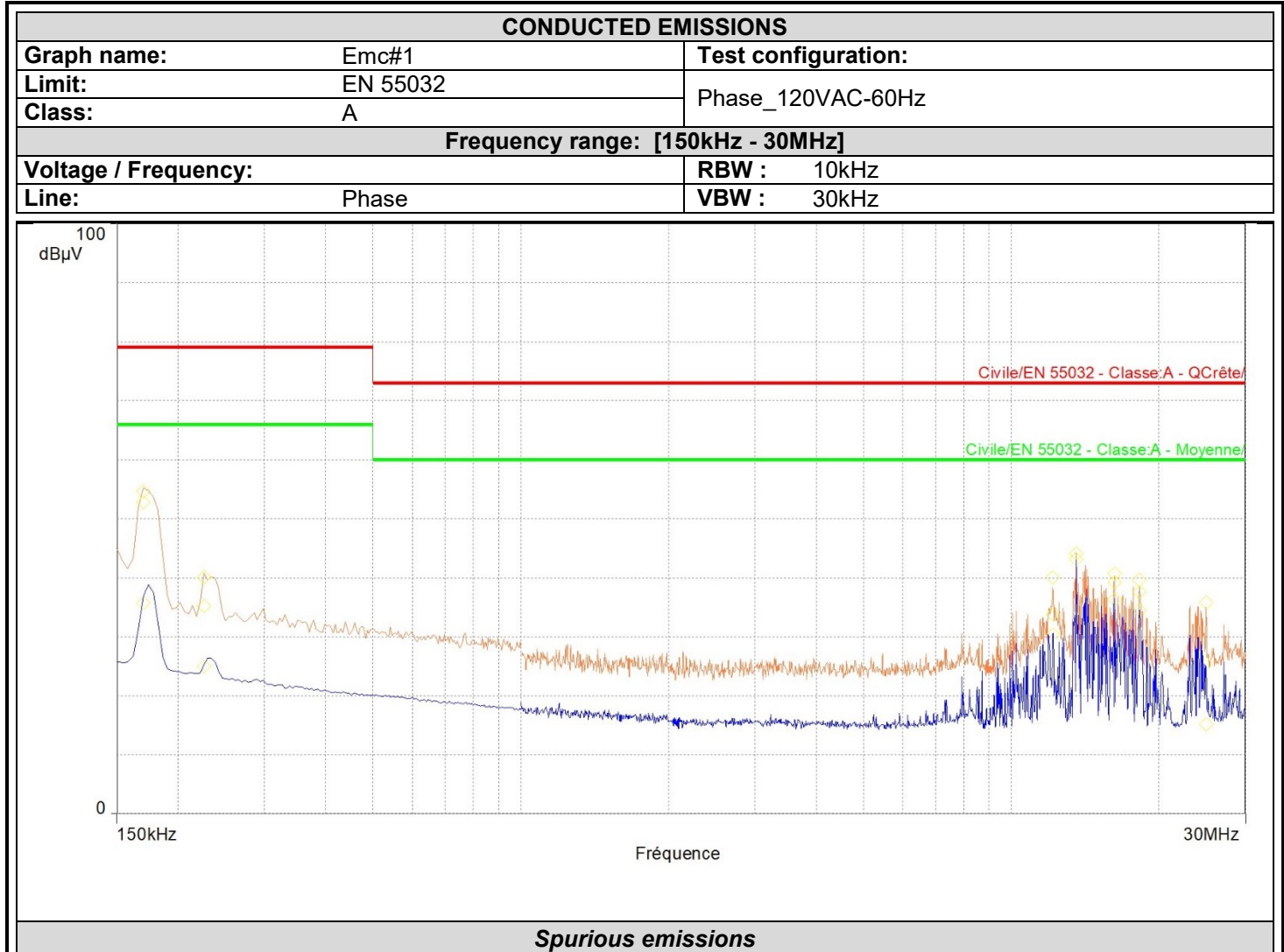
Measurements are performed on the phase (L1) and neutral (N) of the power line.

Results: (PEAK detection)

| Graph identifier | Line | Comments |
|------------------|---------|----------------------------|
| Emc# 1 | Phase | 120VAC / 60Hz See below |
| Emc# 2 | Neutral | 120VAC / 60Hz See below |
| Emc# 3 | Phase | 240VAC / 50Hz See below |
| Emc# 4 | Neutral | 240VAC / 50Hz See below |



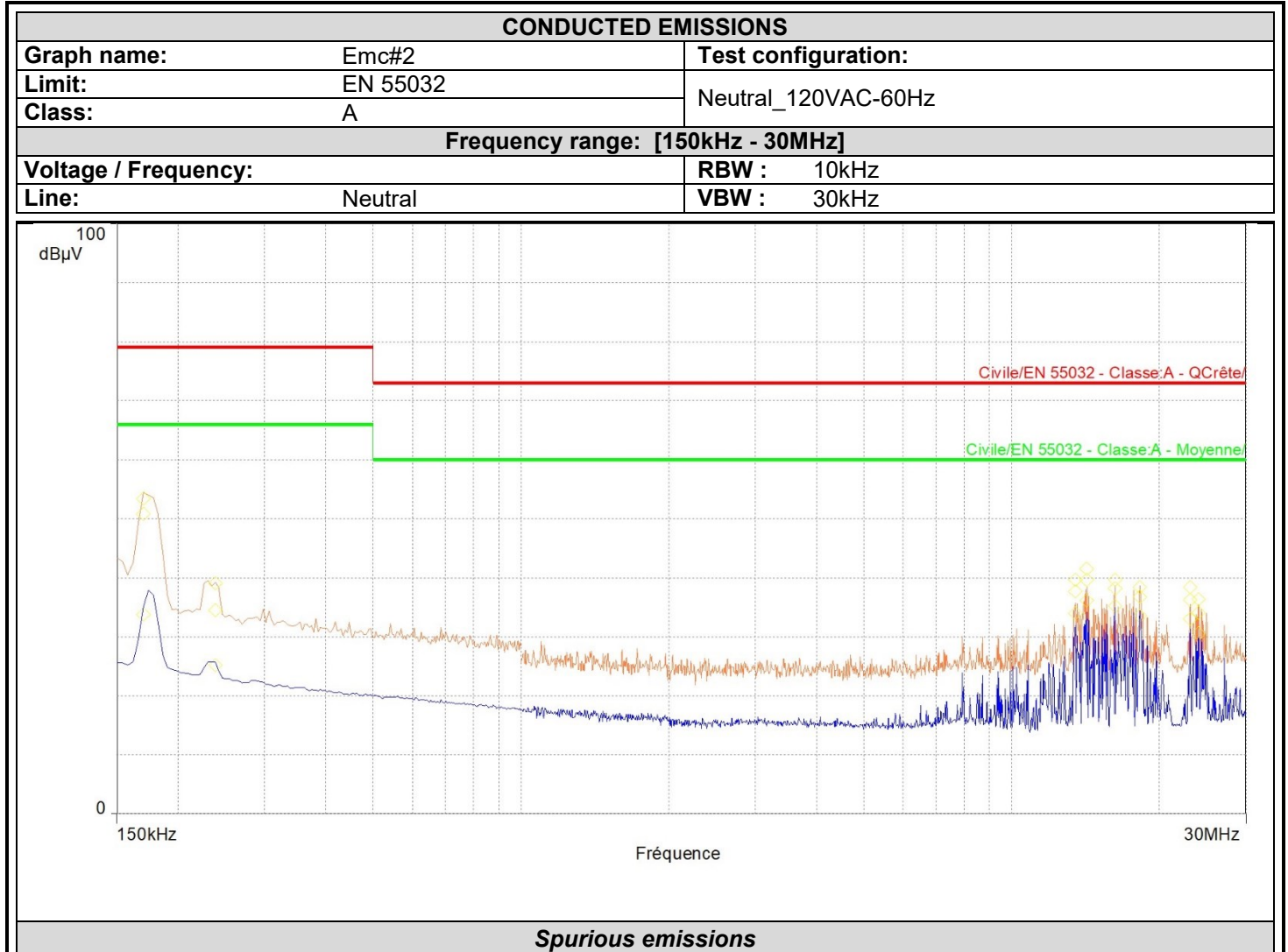
L C I E



| Frequency (MHz) | Mes.Peak (dBµV) | Mes.QPeak (dBµV) | LimQP (dBµV) | Mes.QPeak-LimQP (dB) | Mes.Avg (dBµV) | LimAvg (dBµV) | Mes.Avg-LimAvg (dB) | Line | Correction (dB) |
|-----------------|-----------------|------------------|--------------|----------------------|----------------|---------------|---------------------|---------|-----------------|
| 0.170 | 54.6 | 52.8 | 79.0 | -26.2 | 35.8 | 66.0 | -30.2 | Phase 1 | 19.5 |
| 0.226 | 40.1 | 35.2 | 79.0 | -43.8 | 25.0 | 66.0 | -41.0 | Phase 1 | 19.5 |
| 12.136 | 40.1 | 33.8 | 73.0 | -39.2 | 30.4 | 60.0 | -29.6 | Phase 1 | 20.4 |
| 13.560 | 44.1 | 43.2 | 73.0 | -29.8 | 22.8 | 60.0 | -37.2 | Phase 1 | 20.4 |
| 16.228 | 40.8 | 39.3 | 73.0 | -33.7 | 36.4 | 60.0 | -23.6 | Phase 1 | 20.6 |
| 18.244 | 39.7 | 37.6 | 73.0 | -35.4 | 34.6 | 60.0 | -25.4 | Phase 1 | 20.7 |
| 24.944 | 35.9 | 25.4 | 73.0 | -47.6 | 15.2 | 60.0 | -44.8 | Phase 1 | 21.1 |



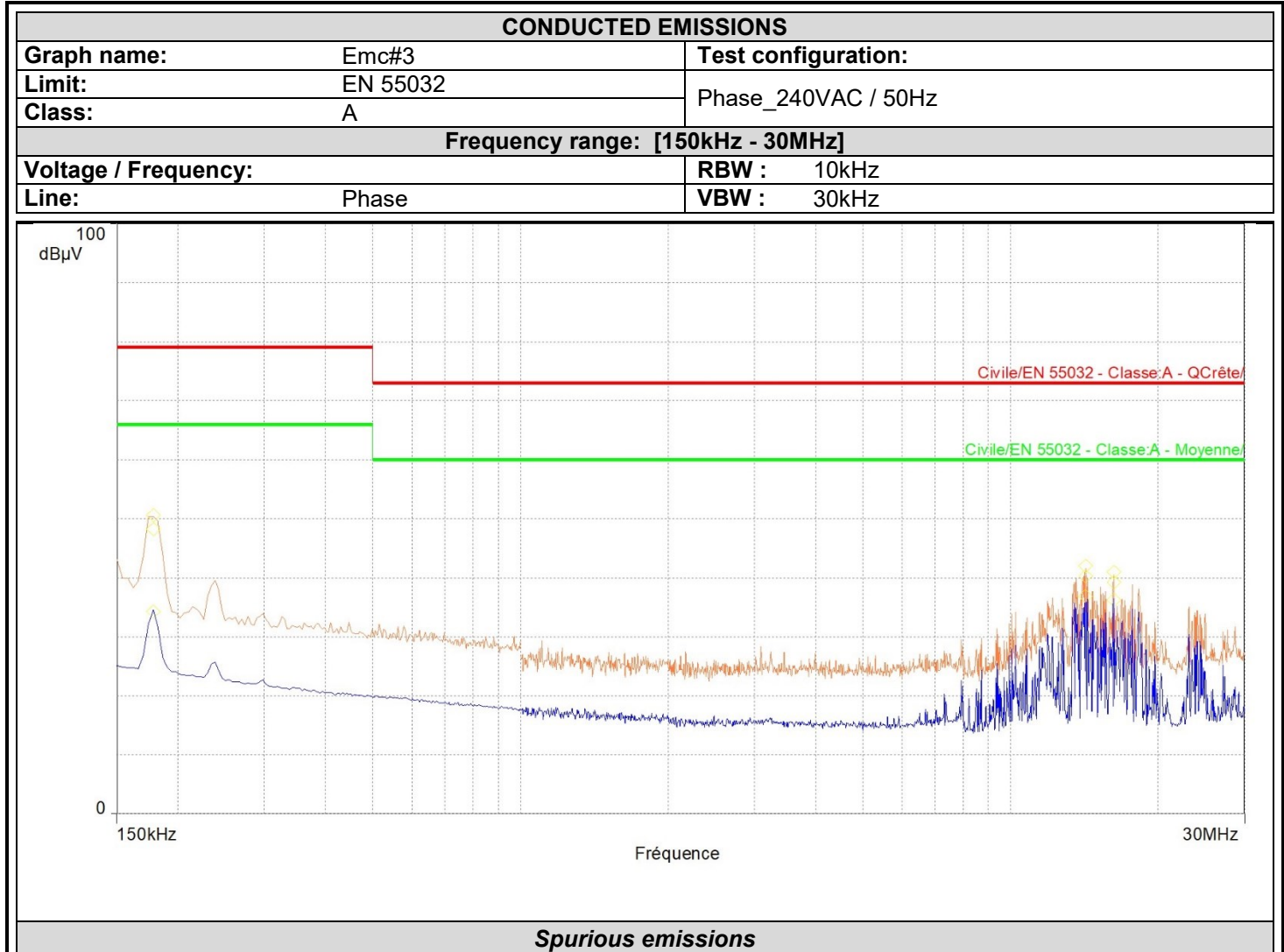
L C I E



| Frequency (MHz) | Mes.Peak (dBµV) | Mes.QPeak (dBµV) | LimQP (dBµV) | Mes.QPeak-LimQP (dB) | Mes.Avg (dBµV) | LimAvg (dBµV) | Mes.Avg-LimAvg (dB) | Line | Correction (dB) |
|-----------------|-----------------|------------------|--------------|----------------------|----------------|---------------|---------------------|--------|-----------------|
| 0.170 | 53.4 | 50.9 | 79.0 | -28.1 | 33.8 | 66.0 | -32.2 | Neutre | 19.5 |
| 0.238 | 39.0 | 34.5 | 79.0 | -44.5 | 25.2 | 66.0 | -40.8 | Neutre | 19.5 |
| 13.480 | 39.7 | 37.7 | 73.0 | -35.3 | 34.0 | 60.0 | -26.0 | Neutre | 20.4 |
| 14.212 | 41.5 | 39.7 | 73.0 | -33.3 | 36.1 | 60.0 | -23.9 | Neutre | 20.5 |
| 16.228 | 39.7 | 38.3 | 73.0 | -34.7 | 35.3 | 60.0 | -24.7 | Neutre | 20.6 |
| 18.244 | 38.4 | 36.7 | 73.0 | -36.3 | 33.6 | 60.0 | -26.4 | Neutre | 20.7 |
| 23.128 | 38.4 | 36.3 | 73.0 | -36.7 | 33.0 | 60.0 | -27.0 | Neutre | 21.0 |
| 24.044 | 36.3 | 34.1 | 73.0 | -38.9 | 30.6 | 60.0 | -29.4 | Neutre | 21.0 |



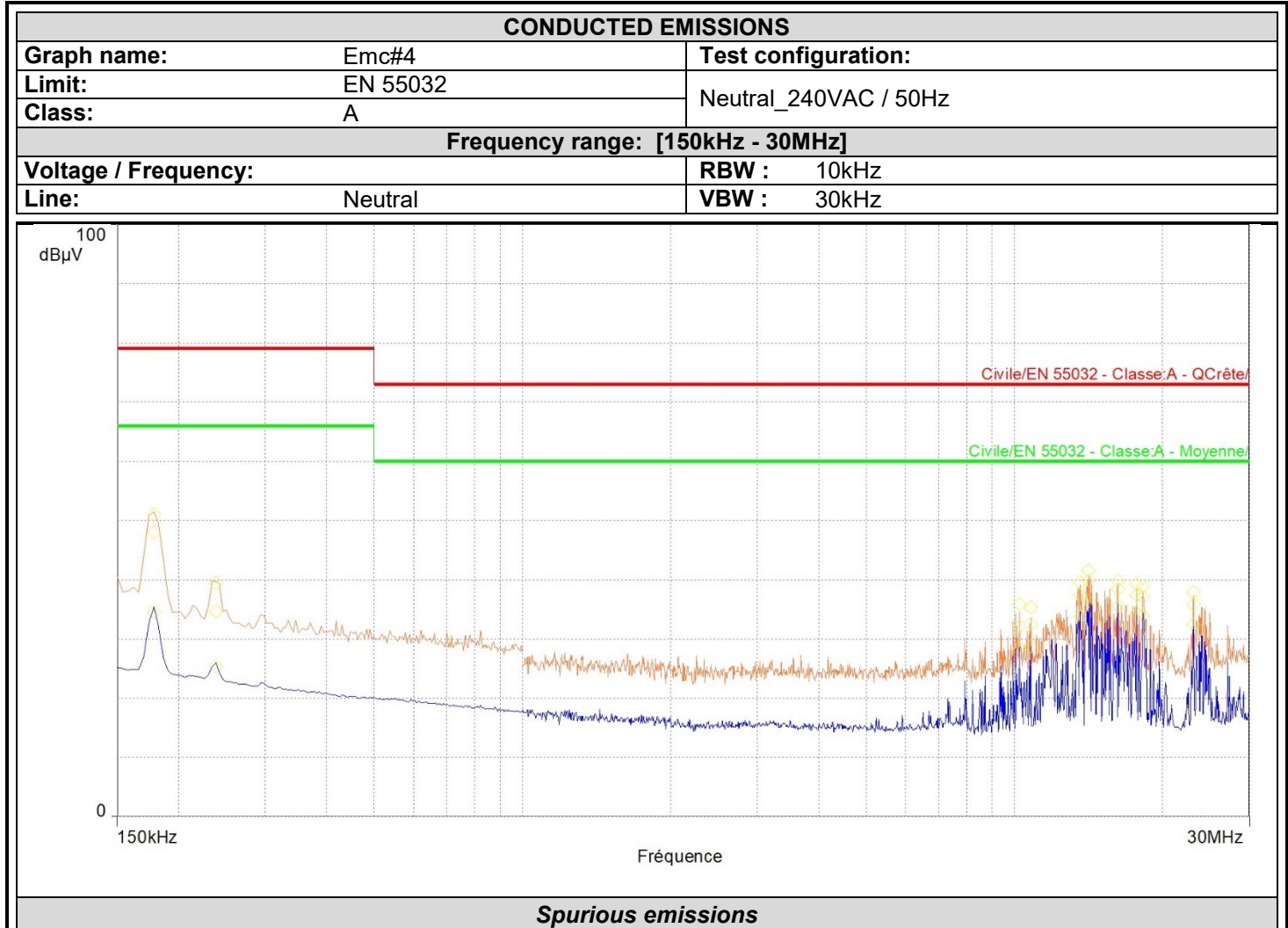
L C I E



| Frequency (MHz) | Mes.Peak (dBµV) | Mes.QPeak (dBµV) | LimQP (dBµV) | Mes.QPeak-LimQP (dB) | Mes.Avg (dBµV) | LimAvg (dBµV) | Mes.Avg-LimAvg (dB) | Line | Correction (dB) |
|-----------------|-----------------|------------------|--------------|----------------------|----------------|---------------|---------------------|---------|-----------------|
| 0.178 | 50.6 | 48.2 | 79.0 | -30.8 | 34.3 | 66.0 | -31.7 | Phase 1 | 19.5 |
| 14.212 | 42.1 | 40.3 | 73.0 | -32.7 | 36.9 | 60.0 | -23.1 | Phase 1 | 20.5 |
| 16.228 | 41.1 | 39.2 | 73.0 | -33.8 | 36.3 | 60.0 | -23.7 | Phase 1 | 20.6 |



L C I E



| Frequency (MHz) | Mes.Peak (dBµV) | Mes.QPeak (dBµV) | LimQP (dBµV) | Mes.QPeak-LimQP (dB) | Mes.Avg (dBµV) | LimAvg (dBµV) | Mes.Avg-LimAvg (dB) | Line | Correction (dB) |
|-----------------|-----------------|------------------|--------------|----------------------|----------------|---------------|---------------------|--------|-----------------|
| 0.178 | 51.0 | 48.1 | 79.0 | -30.9 | 34.5 | 66.0 | -31.5 | Neutre | 19.5 |
| 0.238 | 39.5 | 34.6 | 79.0 | -44.4 | 25.4 | 66.0 | -40.6 | Neutre | 19.5 |
| 10.244 | 35.9 | 32.2 | 73.0 | -40.8 | 28.6 | 60.0 | -31.4 | Neutre | 20.2 |
| 10.792 | 35.3 | 32.6 | 73.0 | -40.4 | 28.8 | 60.0 | -31.2 | Neutre | 20.3 |
| 13.604 | 39.5 | 37.4 | 73.0 | -35.6 | 33.8 | 60.0 | -26.2 | Neutre | 20.4 |
| 14.152 | 41.5 | 39.9 | 73.0 | -33.1 | 36.3 | 60.0 | -23.7 | Neutre | 20.5 |
| 16.228 | 39.9 | 38.5 | 73.0 | -34.5 | 35.6 | 60.0 | -24.4 | Neutre | 20.6 |
| 17.692 | 39.2 | 37.4 | 73.0 | -35.6 | 34.4 | 60.0 | -25.6 | Neutre | 20.7 |
| 18.244 | 39.0 | 37.1 | 73.0 | -35.9 | 34.0 | 60.0 | -26.0 | Neutre | 20.7 |
| 23.128 | 38.0 | 35.8 | 73.0 | -37.2 | 32.4 | 60.0 | -27.6 | Neutre | 21.0 |



3.6. CONCLUSION

The sample of the equipment **9330**, Sn: **9330-BETA 1.9**, tested in the configuration presented in this test report **satisfies** to requirements of class A limits of the standards FCC subpart15B and C and EN 55032, for conducted emissions.

4. RADIATED EMISSION DATA (15.209)

4.1. ENVIRONMENTAL CONDITIONS

Date of test : February 18, 2020
 Test performed by : Mounir BOUAMARA / Gaetan DESCHAMPS
 Atmospheric pressure (hPa) : 999
 Relative humidity (%) : 33
 Ambient temperature (°C) : 19

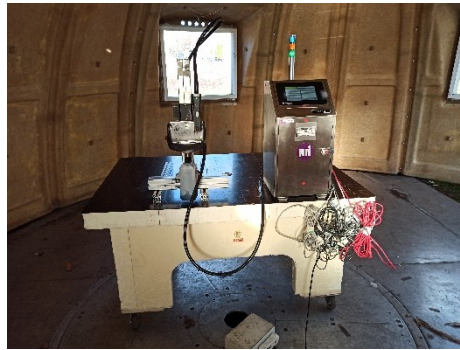
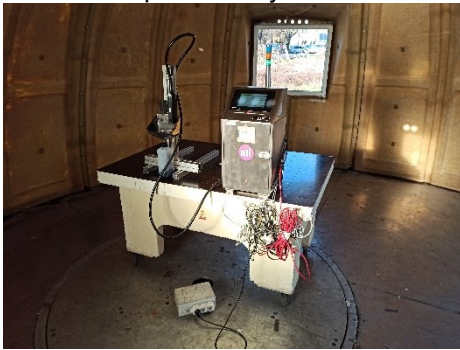
4.2. TEST SETUP

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

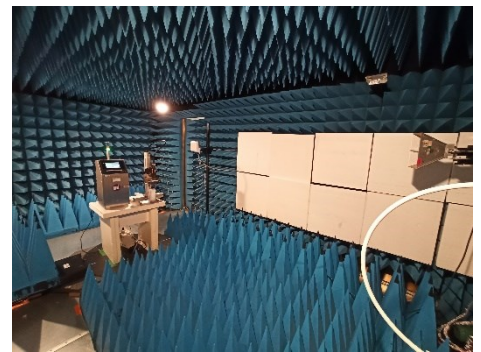
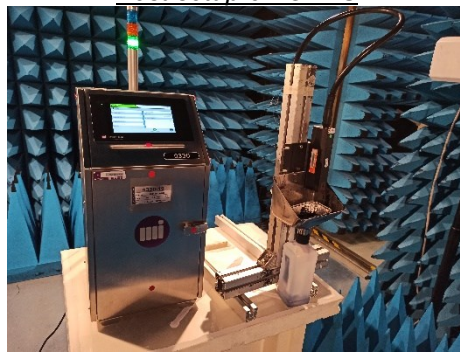
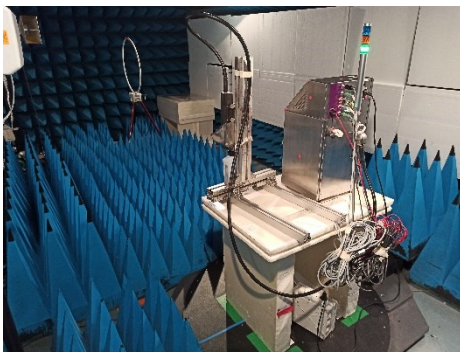
The EUT and auxiliaries are set:

- 80cm above the ground on the non-conducting table (Table-top equipment) - Below 1GHz
- 150cm above the ground on the non-conducting table (Table-top equipment) - Above 1GHz
- 10cm above the ground on isolating support (Floor standing equipment)

The EUT is powered by V_{nom} .



Test setup on OATS



Test setup in anechoic chamber

4.3. TEST METHOD

The product has been tested according to ANSI C63.10, FCC Part 15 Subpart B and C.

Pre-characterisation measurement: (9kHz – 1GHz)

A pre-scan of all the setup has been performed in a 3 meters semi-anechoic chamber for frequency from 9kHz to 1GHz. Test is performed in horizontal (H) and vertical (V) polarization, the loop antenna was rotated during the test for maximized the emission measurement. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration.



The pre-characterization graphs are obtained in PEAK detection and PEAK/AVERAGE from 1GHz to 2 GHz.

Characterization on 10 meters open site from 9kHz to 1GHz:

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 B and C limits. Measurement bandwidth was 9kHz below 30MHz and 120kHz from 30 MHz to 1GHz. Test is performed in horizontal (H) and vertical (V) polarization, the loop antenna was rotated during the test for maximized the emission measurement. The height antenna is varied from 1m to 4m. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration. A summary of the worst case emissions found in all test configurations and modes is shown.

Frequency list has been created with anechoic chamber pre-scan results.

Characterization on 3 meters full anechoic chamber from 1GHz to 2GHz:

The product has been tested at a distance of **3 meters** from the antenna and compared to the FCC Part 15 Subpart B and C limits. Measurement bandwidth was 1MHz from 1GHz to 2GHz. Test is performed in horizontal (H) and vertical (V) polarization. Continuous linear turntable azimuth search was performed with 360 degrees range. Measurement performed on all axis of EUT used in normal configuration. A summary of the worst case emissions found in all test configurations and modes is shown. The height antenna is

On mast, varied from 1m to 4m

Fixed and centered on the EUT (EUT smaller than the beamwidth of the measurement antenna, ANSI C63.10 §6.6.5)

Frequency list has been created with anechoic chamber pre-scan results.



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4.4. TEST EQUIPMENT LIST

| TEST EQUIPMENT USED | | | | | |
|--------------------------------------|-----------------|------------|---------------|----------|---------|
| Description | Manufacturer | Model | Identifier | Cal_Date | Cal_Due |
| Amplifier 9kHz - 40GHz | LCIE SUD EST | _ | A7102082 | 10/18 | 03/20 |
| Antenna Bi-Log | CHASE | UPA6192 | C2040221 | 01/18 | 01/20 |
| Antenna Loop | ELECTRO-METRICS | EM-6879 | C2040052 | 06/19 | 06/21 |
| Comb EMR HF | YORK | CGE01 | A3169114 | | |
| Emission Cable (SMA 30cm) | TELEDYNE | 26GHz | A5329873 | 01/19 | 01/20 |
| Emission Cable <1GHz (Ampl <-> Cage) | - | 18GHz | A5329562 | 08/19 | 08/20 |
| Emission Cable <1GHz (Ampl <-> Cage) | - | 18GHz | A5329907 | 08/19 | 08/20 |
| Receiver 20Hz – 8GHz | ROHDE & SCHWARZ | ESU8 | A2642019 | 12/17 | 02/20 |
| Semi-Anechoic chamber #3 (BF) | SIEPEL | _ | D3044017_BF | 03/17 | 03/20 |
| Semi-Anechoic chamber #3 (VSWR) | SIEPEL | _ | D3044017_VSWR | 03/17 | 03/20 |
| Spectrum analyzer | ROHDE & SCHWARZ | FSU 26 | A4060058 | 09/19 | 09/21 |
| Table C3 | LCIE | _ | F2000461 | | |
| Thermo-hygrometer (PM1/2/3) | KIMO | HQ 210 | B4206022 | 08/18 | 08/20 |
| Turntable chamber (Cage#3) | ETS Lingren | Model 2165 | F2000371 | | |
| Turntable controller (Cage#3) | ETS Lingren | Model 2090 | F2000444 | | |
| Multimeter - CEM | FLUKE | 87 | A1240251 | 11/18 | 11/20 |
| Antenna Bi-log | CHASE | CBL6111A | C2040051 | 06/19 | 06/20 |
| Antenna Loop | ELECTRO-METRICS | EM-6879 | C2040052 | 06/19 | 06/21 |
| Emission Cable | SUCOFLEX | 6GHz | A5329061 | 02/19 | 02/20 |
| Cable (OATS) | - | 1GHz | A5329623 | 03/19 | 03/20 |
| Radiated emission comb generator | BARDET | - | A3169050 | - | - |
| OATS | - | - | F2000409 | 02/19 | 02/20 |
| Receiver 20Hz – 8GHz | ROHDE & SCHWARZ | ESU8 | A2642019 | 12/17 | 12/19 |
| Turntable / Mast controller (OATS) | ETS Lindgren | Model 2066 | F2000372 | - | - |
| Antenna mast (OATS) | ETS Lindgren | 2071-2 | F2000392 | - | - |
| Turntable (OATS) | ETS Lindgren | Model 2187 | F2000403 | - | - |
| Table C1/OATS | MATURO GmbH | - | F2000437 | - | - |

4.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None Divergence:



4.6. TEST RESULTS

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

See graph for 9kHz-30MHz band:

| Graph identifier | Polarization | EUT position | Comments |
|------------------|--------------|--------------|-------------|
| Emr# 1 | 0°&90° | Axis XY | See annex 1 |
| Emr# 2 | 180° | Axis XY | See annex 1 |

4.6.2. Pre-characterization at 3 meters [30MHz-1GHz]

See graphs for 30MHz-1GHz:

| Graph identifier | Polarization | EUT position | Comments |
|------------------|-----------------------|--------------|-------------|
| Emr# 3 | Horizontal & Vertical | Axis XY | See annex 1 |

4.6.3. Pre-characterization at 3 meters [1GHz-2GHz]

See graphs for 1GHz-2GHz:

| Graph identifier | Polarization | EUT position | Comments |
|------------------|-----------------------|--------------|-------------|
| Emr# 4 | Horizontal & Vertical | Axis XY | See annex 1 |



4.6.4. Characterization on 10 meters open site below 30 MHz

Worst case final data result:

Frequency list has been created with semi-anechoic chamber pre-scan results.

Measurements are performed using a QUASI-PEAK detection.

Test performed:

OATS

Ambient temperature: 12 °C

Relative humidity: 50 %

Note: It is impracticable to carry out tests under normal condition as specified in standard.

| No | Frequency (MHz) | QPeak Limit (dBµV/m) @ 30m | Qpeak (dBµV/m) @ 30m | Margin (Mes-Lim) (dB) | Angle Table (deg) | Pol Ant. | Ht Ant. (cm) | Correc. Factor (dB) | Comments |
|----|-----------------|----------------------------|----------------------|-----------------------|-------------------|----------|--------------|---------------------|----------|
| 1 | 13,56 | 84 | 16 | -68 | 280° | 90° | 150 | 35,5 | - |

Note: 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 (µV/m) | Measurement distance (m) |
|--------------------------------|-----------------------|--------------------------|
| 13.553-13.567 | 15 848 84 dBµV/m | 30 |
| 13.410-13.553 13.567-13.710 | 334 50.5 dBµV/m | 30 |
| 13.110-13.410 13.710-14.010 | 106 40.5 dBµV/m | 30 |

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

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

Worst case final data result:

Frequency list has been created with semi-anechoic chamber pre-scan results.

Measurements are performed using a QUASI-PEAK detection.

| Test Frequency (MHz) | Meter Reading (dB(µV)) | Detector (Pk/QP/Av) | Polarit y (V/H) | Azimuth (Degrees) | Antenn a Height (cm) | Gain/Los s Factor (dB) | Transduce r Factor (dB) | Level (dBµV/m) | Limit (dBµV/m) | Margi n (dB) | Remar k |
|----------------------|------------------------|---------------------|-----------------|-------------------|----------------------|------------------------|-------------------------|----------------|----------------|--------------|---------|
| 30.900 | 14.2 | QP | V | 360 | 100 | - | 19.2 | 33.4 | 40.0 | -6.6 | |
| 41.170 | 24.5 | QP | V | 360 | 100 | - | 13.7 | 38.2 | 40.0 | -1.8 | |
| 41.550 | 25.7 | QP | V | 360 | 100 | - | 13.5 | 39.2 | 40.0 | -0.8 | |
| 41.550 | 22.6 | QP | H | 360 | 400 | - | 13.5 | 36.1 | 40.0 | -3.9 | |
| 37.440 | 23.9 | QP | H | 360 | 400 | - | 15.7 | 39.6 | 40.0 | -0.4 | |
| 120.350 | 25.5 | QP | V | 360 | 100 | - | 14.0 | 39.5 | 43.5 | -4.0 | |
| 120.490 | 25.9 | QP | V | 360 | 100 | - | 14.0 | 39.9 | 43.5 | -3.6 | |
| 120.350 | 22.9 | QP | H | 234 | 400 | - | 14.0 | 36.9 | 43.5 | -6.6 | |
| 130.990 | 16.8 | QP | V | 46 | 100 | - | 13.9 | 30.7 | 43.5 | -12.8 | |
| 666.690 | 19.3 | QP | H | 42 | 100 | - | 25.8 | 45.1 | 46.0 | -0.9 | |
| 145.740 | 17.5 | QP | V | 239 | 100 | - | 13.4 | 30.9 | 43.5 | -12.6 | |
| 130.980 | 18.5 | QP | V | 68 | 100 | - | 13.9 | 32.4 | 43.5 | -11.1 | |
| 112.190 | 29.5 | QP | V | 283 | 100 | - | 13.4 | 42.9 | 43.5 | -0.6 | |
| 71.080 | 28.3 | QP | V | 230 | 100 | - | 7.7 | 36.0 | 40.0 | -4.0 | |
| 112.340 | 20.0 | QP | H | 360 | 400 | - | 13.4 | 33.4 | 43.5 | -10.1 | |



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

4.6.6. Characterization on 3meters anechoic chamber from 1GHz to 2GHz

Worst case final data result:

The frequency list is created from the results obtained during the pre-characterization in anechoic chamber. Measurements are performed using a PEAK and AVERAGE detection.

| Test Frequency (MHz) | Meter Reading dB(μ V) | Detector (Av) | Polarity (V/H) | Azimuth (Degrees) | Antenna Height (cm) | Transducer Factor (dB) | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) |
|-----------------------------------|----------------------------|---------------|----------------|-------------------|---------------------|------------------------|----------------------|----------------------|-------------|
| No significant frequency observed | | | | | | | | | |

Note: Measures have been done at 3m distance.

4.7. CONCLUSION

The sample of the equipment **9330**. Sn: **9330-BETA 1.9**. tested in the configuration presented in this test report **satisfies** to requirements of class B limits of the standard FCC Part 15 Subpart B and C. for radiated emissions.

5. FUNDAMENTAL FREQUENCY TOLERANCE (15.225E)

5.1. ENVIRONMENTAL CONDITIONS

Date of test : February 19, 2020
Test performed by : Mounir BOUAMARA /Gaetan DESCHAMPS
Atmospheric pressure (hPa) : 999
Relative humidity (%) : 34
Ambient temperature (°C) : 23

5.2. TEST SETUP

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.



Test setup



5.3. TEST METHOD

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency when the temperature is varied from 5°C to +40°C at the nominal power voltage and the primary power voltage is varied from 90% to 110% of the rated supply voltage at 20°C.

5.4. TEST EQUIPMENT LIST

| TEST EQUIPMENT USED | | | | | |
|-------------------------------|-----------------|---------|------------|----------|---------|
| Description | Manufacturer | Model | Identifier | Cal_Date | Cal_Due |
| AC source 1kW | KEYSIGHT | AC6802A | A7042305 | | |
| Antenna Loop (near field) | ELECTRO-METRICS | EM-6993 | C2040215 | 06/19 | 06/21 |
| Climatic chamber | BIA CLIMATIC | CL 6-25 | D1022117 | 02/19 | 02/20 |
| Multimeter - CEM | FLUKE | 87 | A1240251 | 11/18 | 11/20 |
| SMA 1.5m | SUCOFLEX | 18GHz | A5329863 | 11/18 | 03/20 |
| Spectrum Analyzer 9kHz - 6GHz | ROHDE & SCHWARZ | FSL6 | A2642020 | 06/18 | 06/20 |
| Thermo-hygrometer (PM1/2/3) | KIMO | HQ 210 | B4206022 | 08/18 | 08/20 |
| Thermocouple K (radio) | FLUKE | Type K | B4045005 | 09/19 | 09/20 |
| Thermocouple K (radio) | FLUKE | Type K | B4045004 | 09/19 | 09/20 |
| Thermometer (radio) | FLUKE | 52 II | B4043150 | 09/19 | 09/20 |

5.5. DIVERGENCE. ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None Divergence:



5.6. TEST RESULTS

| Voltage \ Temperature | +5°C | +10°C | +20°C | +30°C | +40°C |
|--------------------------|------------|------------|------------------|------------|------------|
| Mains voltage: 230V/60Hz | | | | | |
| Frequency Drift (MHz) | + 0.000031 | + 0.000007 | 13.560107 | - 0.000048 | - 0.000048 |
| Carrier level (dBc) | - 0.46 | - 0.64 | 16.890000 | - 0.48 | - 0.48 |
| Mains voltage: 190V/60Hz | | | | | |
| Frequency Drift (MHz) | + 0.000031 | + 0.000007 | + 0.000001 | - 0.000048 | - 0.000048 |
| Carrier level (dBc) | - 0.48 | - 0.58 | -0.07 | - 0.52 | - 0.52 |
| Mains voltage: 264V/60Hz | | | | | |
| Frequency Drift (MHz) | + 0.000032 | + 0.000007 | + 0.000000 | - 0.000048 | - 0.000048 |
| Carrier level (dBc) | - 0.44 | - 0.57 | - 0.01 | - 0.58 | - 0.58 |

Frequency drift measured is 48Hz when the temperature is varied from +5°C to +40°C and voltage is varied.

5.7. CONCLUSION

The sample of the equipment **9330**. Sn: **9330-BETA 1.9**. tested in the configuration presented in this test report **satisfies** to requirements of the standard FCC Part 15 Subpart C. for fundamental frequency tolerance.

6. BAND-EDGE COMPLIANCE §15.209

6.1. ENVIRONMENTAL CONDITIONS

Date of test : February 19, 2020
Test performed by : Mounir BOUAMARA /Gaetan DESCHAMPS
Atmospheric pressure (hPa) : 999
Relative humidity (%) : 34
Ambient temperature (°C) : 23

6.2. TEST SETUP

For measurement, the power level calibration of the spectrum analyzer is related to the field strength measured in chapter radiated emission data.



Test setup



6.3. TEST METHOD

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.

Frequency band 13.553-13.567MHz

Following plots show radiated emission level in the frequency band 13.55.-13.567MHz with a RBW of 1kHz. The graphs are obtained with a measuring receiver.

6.4. TEST EQUIPMENT LIST

| TEST EQUIPMENT USED | | | | | |
|-------------------------------|-----------------|---------|------------|----------|---------|
| Description | Manufacturer | Model | Identifier | Cal_Date | Cal_Due |
| AC source 1kW | KEYSIGHT | AC6802A | A7042305 | | |
| Antenna Loop (near field) | ELECTRO-METRICS | EM-6993 | C2040215 | 06/19 | 06/21 |
| Climatic chamber | BIA CLIMATIC | CL 6-25 | D1022117 | 02/19 | 02/20 |
| Multimeter - CEM | FLUKE | 87 | A1240251 | 11/18 | 11/20 |
| SMA 1.5m | SUCOFLEX | 18GHz | A5329863 | 11/18 | 03/20 |
| Spectrum Analyzer 9kHz - 6GHz | ROHDE & SCHWARZ | FSL6 | A2642020 | 06/18 | 06/20 |
| Thermo-hygrometer (PM1/2/3) | KIMO | HQ 210 | B4206022 | 08/18 | 08/20 |
| Thermocouple K (radio) | FLUKE | Type K | B4045005 | 09/19 | 09/20 |
| Thermocouple K (radio) | FLUKE | Type K | B4045004 | 09/19 | 09/20 |
| Thermometer (radio) | FLUKE | 52 II | B4043150 | 09/19 | 09/20 |

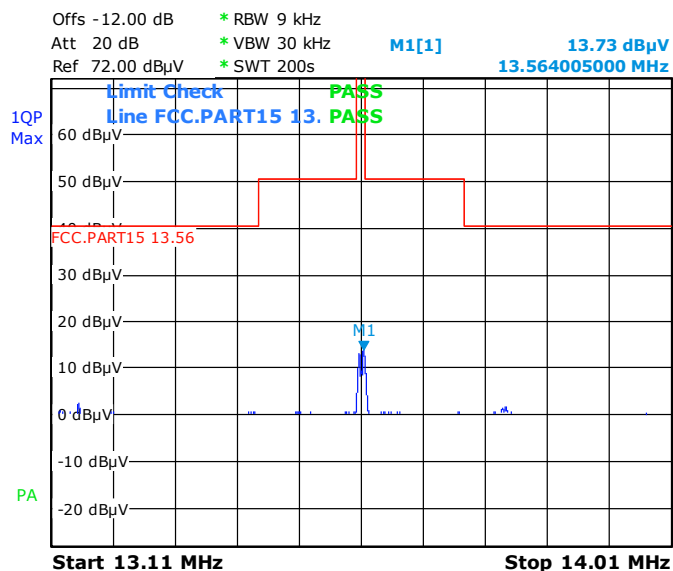
6.5. DIVERGENCE. ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None Divergence:

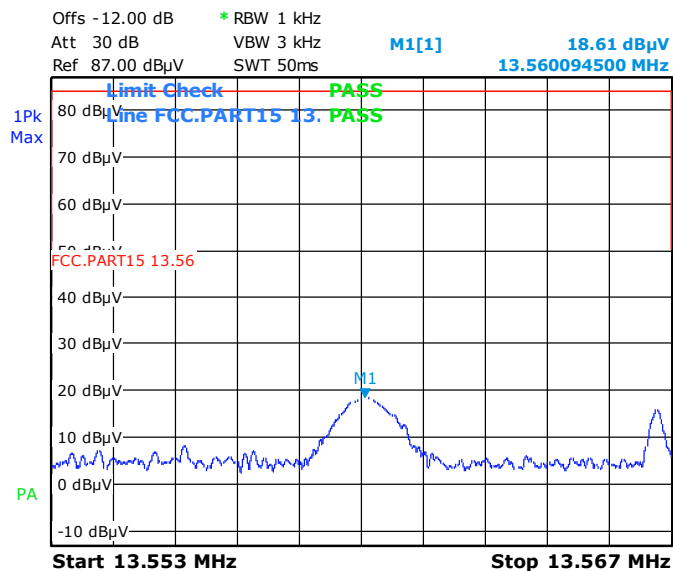


6.6. TEST RESULTS

Frequency band 13.110-14.010MHz



Frequency band 13.553-13.567MHz



6.7. CONCLUSION

The sample of the equipment **9330**. Sn: **9330-BETA 1.9** tested in the configuration presented in this test report **satisfies** to requirements of the standard FCC Part 15 Subpart C. for band-edge compliance.



7. OCCUPIED BANDWIDTH

7.1. ENVIRONMENTAL CONDITIONS

Date of test : February 19, 2020
 Test performed by : Mounir BOUAMARA /Gaetan DESCHAMPS
 Atmospheric pressure (hPa) : 999
 Relative humidity (%) : 34
 Ambient temperature (°C) : 23

7.2. TEST SETUP

Conducted measurement:

The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.

Offset: Attenuator+cable 10.3dB

Radiated measurement:

The EUT is turned ON and connected to measurement instrument; the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.

Measurement Procedure:

1. RBW used in the range of 1% to 5% of the anticipated emission bandwidth
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = Max Hold.
5. Sweep = Auto couple.
6. Allow the trace to stabilize.
7. OBW 99% function of spectrum analyzer used

7.3. TEST EQUIPMENT LIST

| TEST EQUIPMENT USED | | | | | |
|-------------------------------|-----------------|---------|------------|----------|---------|
| Description | Manufacturer | Model | Identifier | Cal_Date | Cal_Due |
| AC source 1kW | KEYSIGHT | AC6802A | A7042305 | | |
| Antenna Loop (near field) | ELECTRO-METRICS | EM-6993 | C2040215 | 06/19 | 06/21 |
| Climatic chamber | BIA CLIMATIC | CL 6-25 | D1022117 | 02/19 | 02/20 |
| Multimeter - CEM | FLUKE | 87 | A1240251 | 11/18 | 11/20 |
| SMA 1.5m | SUCOFLEX | 18GHz | A5329863 | 11/18 | 03/20 |
| Spectrum Analyzer 9kHz - 6GHz | ROHDE & SCHWARZ | FSL6 | A2642020 | 06/18 | 06/20 |
| Thermo-hygrometer (PM1/2/3) | KIMO | HQ 210 | B4206022 | 08/18 | 08/20 |
| Thermocouple K (radio) | FLUKE | Type K | B4045005 | 09/19 | 09/20 |
| Thermocouple K (radio) | FLUKE | Type K | B4045004 | 09/19 | 09/20 |
| Thermometer (radio) | FLUKE | 52 II | B4043150 | 09/19 | 09/20 |

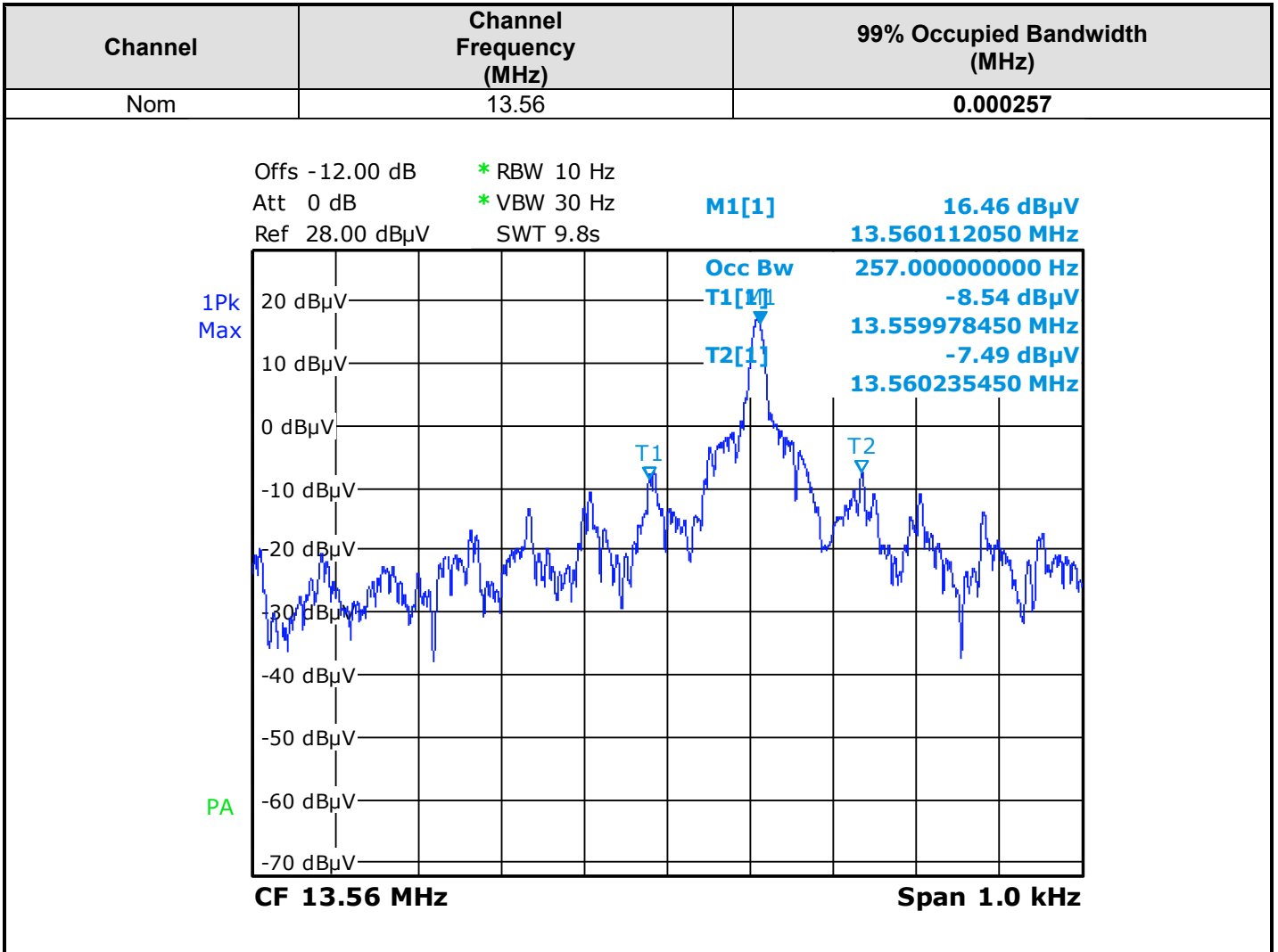


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7.4. DIVERGENCE. ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None Divergence:

7.5. TEST SEQUENCE AND RESULTS





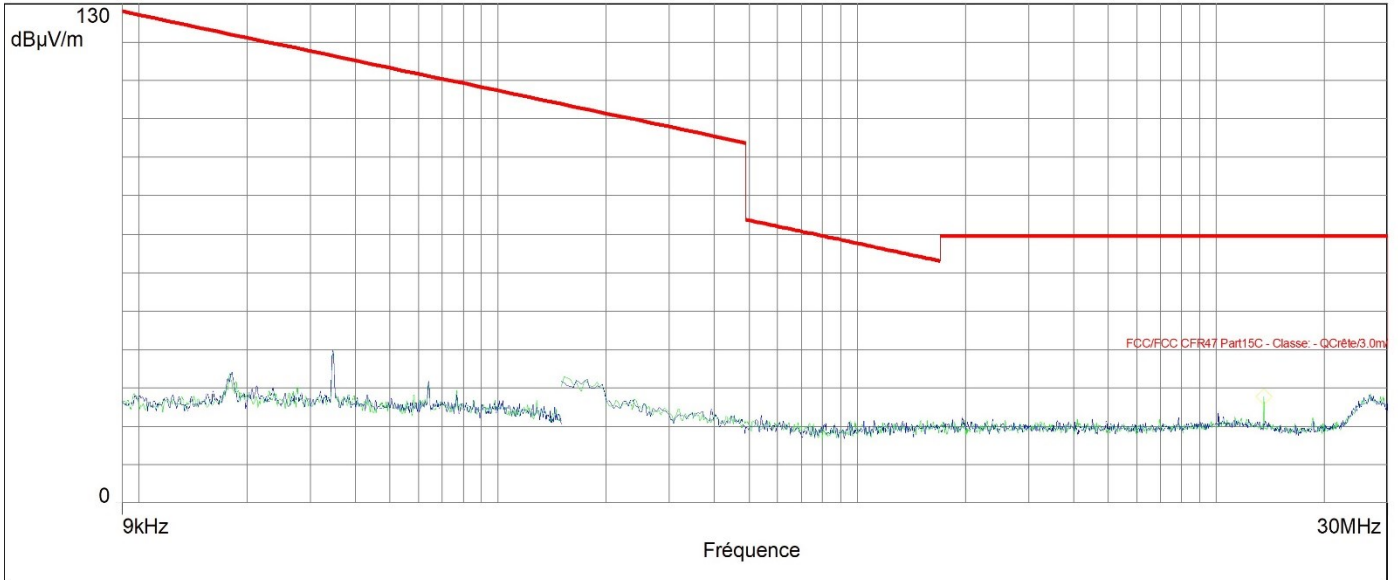
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8. ANNEX 1 (GRAPHS)

RADIATED EMISSIONS

| | | | |
|--|-------------------|----------------------------|--|
| Graph name: | Emr#1 | Test configuration: | |
| Limit: | FCC CFR47 Part15C | | 13.56 MHz (0°/90°) XY porte fermée FCC |
| Class: | | | |
| Frequency range: [9kHz - 30MHz] | | | |
| Antenna polarization: | Horizontal | RBW : | 100kHz |
| Azimuth: | 0° - 360° | VBW : | 300kHz |

- FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - QCrête/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
- ◆ Niveau (Suspect Manuel) (Verticale)
- Mes.Peak (Horizontale)
- Mes.Peak (Verticale)



Spurious emissions

| Frequency (MHz) | Peak Level (dBµV/m) | Polarization | Correction (dB) |
|-----------------|---------------------|--------------|-----------------|
| 13.562* | 27.6 | Vertical | 0.0 |

*Carrier frequency

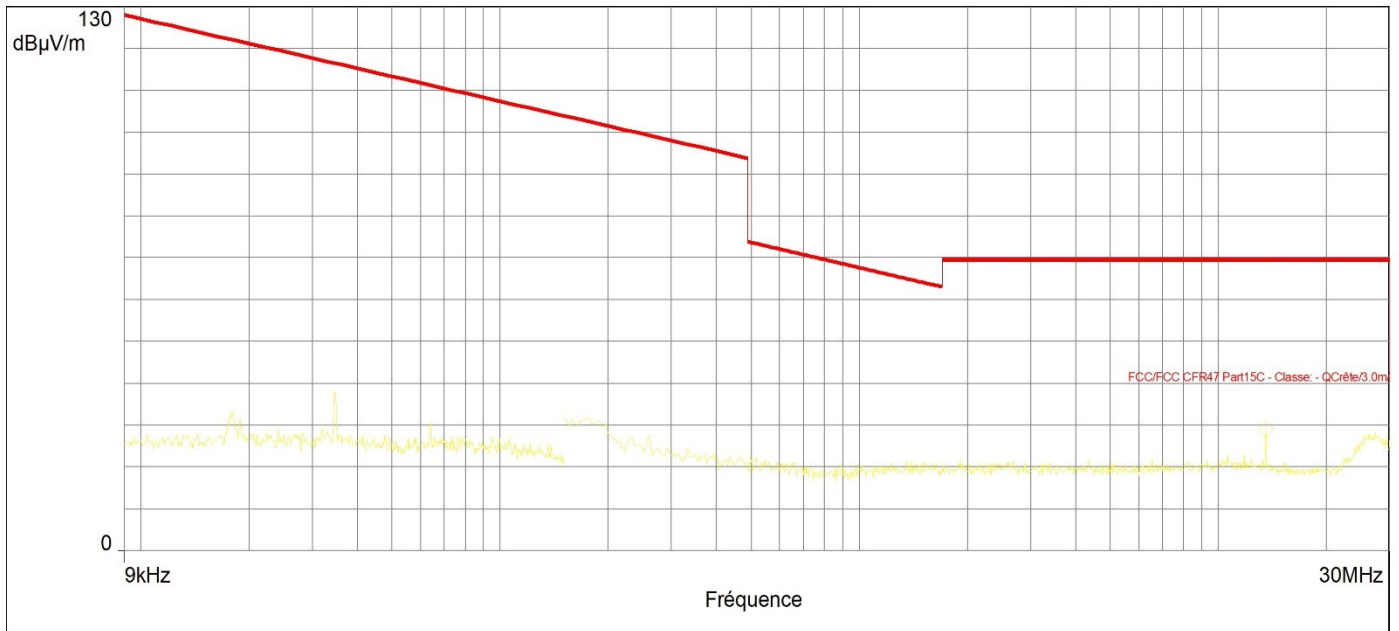


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ADIATED EMISSIONS

| | | |
|--|-------------------|--------------------------------------|
| Graph name: | Emr#2 | Test configuration: |
| Limit: | FCC CFR47 Part15C | 13.56 MHz (180°) XY porte fermée FCC |
| Class: | | |
| Frequency range: [9kHz - 30MHz] | | |
| Antenna polarization: | Horizontal | RBW : 100kHz |
| Azimuth: | 0° - 360° | VBW : 300kHz |

- FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - QCrête/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
- ◇ Niveau (Suspect Manuel) (Horizontale)
- Mes.Peak (Horizontale)



Spurious emissions

| Frequency (MHz) | Peak Level (dBµV/m) | Polarization | Correction (dB) |
|-----------------|---------------------|--------------|-----------------|
| 13.562* | 29.1 | 180° | 0.0 |

*Carrier frequency

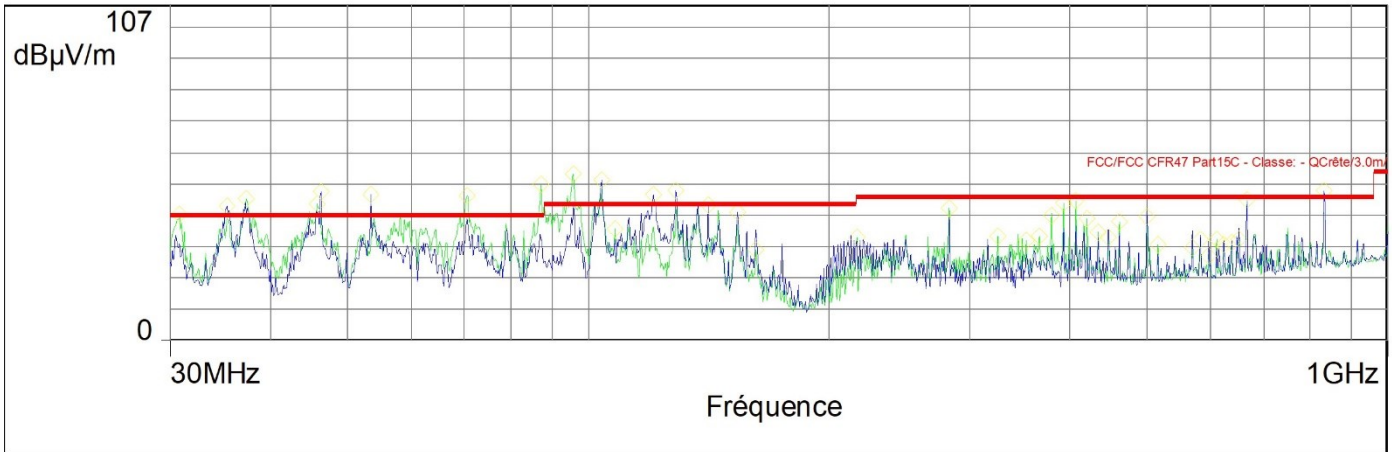


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RADIATED EMISSIONS

| | | |
|--|-----------------------|--|
| Graph name: | Emr#3 | Test configuration: |
| Limit: | FCC CFR47 Part15C | (H+V) - CNom - TX mode - Axis XY porte ouverte |
| Class: | | |
| Frequency range: [30MHz - 1GHz] | | |
| Antenna polarization: | Horizontal & Vertical | RBW : 100kHz |
| Azimuth: | 0° - 360° | VBW : 300kHz |

- FCC/FCC CFR47 Part15C - Classe: - Moyenne/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - QCrête/3.0m/
- FCC/FCC CFR47 Part15C - Classe: - Crête/3.0m/
- ◇ Niveau (Suspect Manuel) (Horizontale)
- ◇ Niveau (Suspect Manuel) (Verticale)
- Mes.Peak (Horizontale)
- Mes.Peak (Verticale)



Spurious emissions

| Frequency (MHz) | Peak Level (dBµV/m) | Polarization | Correction (dB) |
|-----------------|---------------------|--------------|-----------------|
| 35335.000 | 4275.0 | Horizontal | -1555.0 |
| 46296.000 | 4751.0 | Horizontal | -2007.0 |
| 534255.000 | 4655.0 | Horizontal | -2269.0 |
| 1038655.000 | 5116.0 | Horizontal | -2135.0 |
| 1205495.000 | 4665.0 | Horizontal | -1909.0 |
| 128746.000 | 4792.0 | Horizontal | -1850.0 |
| 141259.000 | 4308.0 | Horizontal | -1861.0 |
| 153675.000 | 4078.0 | Horizontal | -1874.0 |
| 308245.000 | 4033.0 | Vertical | -1479.0 |
| 37372.000 | 4531.0 | Vertical | -1671.0 |
| 458595.000 | 4348.0 | Vertical | -1991.0 |



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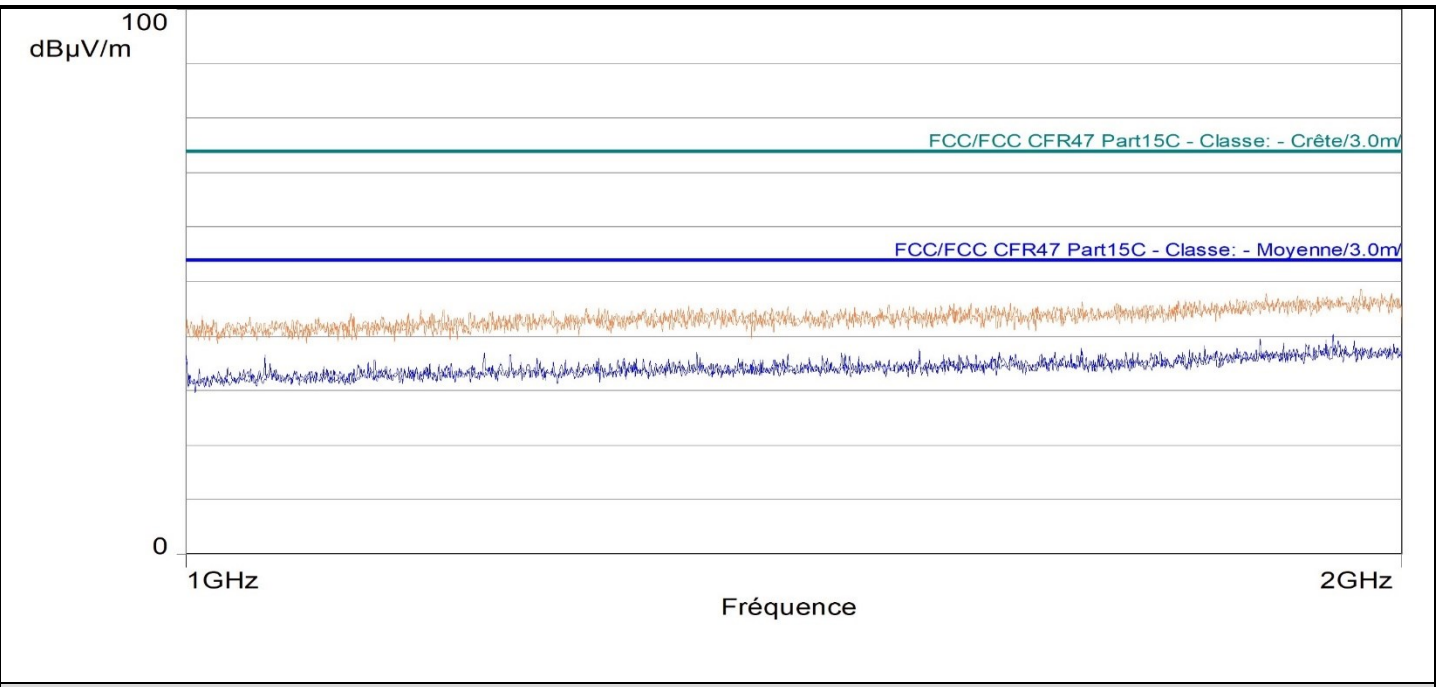
| Frequency (MHz) | Peak Level (dB μ V/m) | Polarization | Correction (dB) |
|-----------------|---------------------------|--------------|-----------------|
| 705945.000 | 4623.0 | Vertical | -2637.0 |
| 872785.000 | 4987.0 | Vertical | -2488.0 |
| 95863.000 | 5317.0 | Vertical | -2292.0 |
| 107988.000 | 3567.0 | Vertical | -2073.0 |
| 162017.000 | 2906.0 | Vertical | -1961.0 |
| 2169675.000 | 3294.0 | Vertical | -2146.0 |
| 282588.000 | 4230.0 | Vertical | -1997.0 |
| 3254135.000 | 3338.0 | Vertical | -1885.0 |
| 352525.000 | 3208.0 | Vertical | -1842.0 |
| 366105.000 | 3316.0 | Vertical | -1820.0 |
| 3796365.000 | 3987.0 | Vertical | -1799.0 |
| 3932165.000 | 4404.0 | Vertical | -1777.0 |
| 4067965.000 | 4461.0 | Vertical | -1751.0 |
| 4203765.000 | 3902.0 | Vertical | -1719.0 |
| 433908.000 | 3475.0 | Vertical | -1688.0 |
| 447488.000 | 3292.0 | Vertical | -1658.0 |
| 4610195.000 | 3776.0 | Vertical | -1630.0 |
| 5000135.000 | 3965.0 | Vertical | -1555.0 |
| 515291.000 | 3047.0 | Vertical | -1528.0 |
| 5695625.000 | 2973.0 | Vertical | -1432.0 |
| 5833365.000 | 3231.0 | Vertical | -1409.0 |
| 596674.000 | 2704.0 | Vertical | -1387.0 |
| 6102055.000 | 3238.0 | Vertical | -1369.0 |
| 6237855.000 | 3046.0 | Vertical | -1351.0 |
| 637317.000 | 3117.0 | Vertical | -1333.0 |
| 650897.000 | 3236.0 | Vertical | -1315.0 |
| 666708.000 | 4473.0 | Vertical | -1294.0 |
| 8334025.000 | 4785.0 | Vertical | -1069.0 |



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RADIATED EMISSIONS

| | | |
|---------------------------------------|--------------------|---|
| Graph name: | Emr#4 | Test configuration: |
| Limit: | CISPR32 / EN 55032 | EUT1-Beta1.9_TEST2-2GHZ_C2 - FSL(H+V)[1-5]GHz |
| Class: | A | |
| Frequency range: [1GHz - 2GHz] | | |
| Antenna polarization: | | RBW : 1MHz |
| Azimuth: | 0° - 360° | VBW : 3MHz |



Spurious emissions

No significant frequency observed



9. 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 |
|---|---|---|
| Measurement of conducted disturbances in voltage on the power port | 3.29dB | 3.4 dB |
| Measurement of conducted disturbances in voltage on the telecommunication port. | 3.26 dB | 5dB |
| Measurement of discontinuous conducted disturbances in voltage | 3.33 dB | 3.4 dB |
| Measurement of conducted disturbances in current | 2.67 dB | 2.9dB |
| Spurious emission. radiated (Semi anechoic chamber & open test site) | 5.60 dB | 6 dB |
| Spurious emission. radiated (Full anechoic chamber above 1GHz) | ±3.8 dB | ±6 dB |
| Occupied Channel Bandwidth | ±2.8 % | ±5 % |
| Temperature | ±0.75 °C | ±3 °C |
| Supply Voltages | ±1.7 % | ±3 % |

Les valeurs d'incertitudes calculées du laboratoire étant inférieures aux valeurs d'incertitudes limites établies par la norme. la conformité de l'échantillon est établie directement par les niveaux limites applicables. / The uncertainty values calculated by the laboratory are lower than limit uncertainty values defined by the standard. The conformity of the sample is directly established by the applicable limits values.