

## Certification Radio test report

According to the standard:  
CFR 47 FCC PART 15

Equipment under test:  
WATCH

FCC ID: 2AUYIMNS1W

Company:  
MOVE'N SEE

Distribution: Mr CARPENTIER

(Company: MOVE'N SEE)

Number of pages: 32 with 1 appendix

| Ed. | Date     | Modified<br>Page(s) | Technical Verification and<br>Quality Approval |                                                                                       |
|-----|----------|---------------------|------------------------------------------------|---------------------------------------------------------------------------------------|
|     |          |                     | Name and Function                              | Visa                                                                                  |
| 0   | 6-Sep-19 | Creation            | M. DUMESNIL, Radio Technical Manager           |  |

Duplication of this document is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above.  
This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.



**DESIGNATION OF PRODUCT:** WATCH

**Serial number (S/N):** 21910201

**Reference / model (P/N):** PIXIO

**Software version:** RF Software

**MANUFACTURER:** MOVE'N SEE

**COMPANY SUBMITTING THE PRODUCT:**

**Company:** MOVE'N SEE

**Address:** 38 RUE JIM SEVELLEC  
29200 BREST  
FRANCE

**Responsible:** Mr CARPENTIER

**Person(s) present during the tests:** Mr CARPENTIER ( first day)

**DATES OF TEST:** From 31-Jul-19 to 9-Aug-19

**TESTING LOCATION:** EMITECH ANGERS laboratory at JUIGNE SUR LOIRE (49) FRANCE  
FCC Accredited under US-EU MRA Designation Number: FR0009  
Test Firm Registration Number: 873677

**TESTED BY:** T. LEDRESSEUR

**VISA:**



**WRITTEN BY:** T. LEDRESSEUR

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## 1. INTRODUCTION

This report presents the results of radio test carried out on the following radio equipment: **WATCH**, in accordance with normative reference.

The device under test integrates a Wide band function.

This test report concern only the measure realized on wide band for certification procedure

See test report N°RR051-19-100273-6-A Ed. 0 for verification measure.

## 2. PRODUCT DESCRIPTION

|                                           |                                                      |
|-------------------------------------------|------------------------------------------------------|
| Class:                                    | B                                                    |
| Utilization:                              | Residential use                                      |
| Antenna type and gain:                    | 3 dBi / Internal and "omni-directional" PCB antennas |
| Operating frequency band:                 | From 5925 MHz to 7250MHz                             |
| Number of channels:                       | 1                                                    |
| Channel spacing:                          | Not concerned                                        |
| Center frequency:                         | 6489.6 MHz                                           |
| Modulation:                               | BPM-BPSK                                             |
| Power source:                             | Internal battery, 3.6 Vdc                            |
| Operational temperature range: 0 to 40 °C |                                                      |

Power level, frequency range and channels characteristics are not user adjustable.

The details pictures of the product and the circuit boards are joined with this file.

The product is declared not functional in charge.

### 3. **NORMATIVE REFERENCE**

The standards and testing methods related throughout this report are those listed below.

They are applied on the whole test report even though the extensions (version, date and amendment) are not repeated.

|                                             |                                                                                                       |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------|
| CFR 47 (2019)                               | Radio Frequency Devices                                                                               |
| ANSI C63.10                                 | 2013<br>Procedures for Compliance Testing of Unlicensed Wireless Devices.                             |
| 447498 D01 General RF Exposure Guidance v06 | RF Exposure procedures and equipment authorization policies for mobile and portable equipment         |
| OET BULLETIN 65                             | Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields |

### 4. **TEST METHODOLOGY**

Radio performance tests procedures given in CFR 47 part 15:

Subpart C – Intentional Radiators

- Paragraph 203: Antenna requirement
- Paragraph 205: Restricted bands of operation
- Paragraph 207: Conducted limits
- Paragraph 209: Radiated emission limits; general requirements
- Paragraph 215: Additional provisions to the general radiated emission limitations
- Paragraph 250: Operation of wideband systems within the band 5925-7250 MHz

## 5. TEST EQUIPMENT CALIBRATION DATES

| Emitech Number | Model                          | Type                                      | Last calibration | Calibration interval (years) | Next calibration due |
|----------------|--------------------------------|-------------------------------------------|------------------|------------------------------|----------------------|
| 0              | BAT-EMC V3.17.0.25             | Software                                  | /                | /                            | /                    |
| 1406           | EMCO 6502                      | Loop antenna                              | 17/04/2019       | 1                            | 16/04/2020           |
| 4353           | ATM WR28                       | Antenna                                   | 24/07/2019       | 3                            | 23/07/2022           |
| 4354           | ALC ALS2640-30-10              | Low-noise amplifier                       | 21/03/2019       | 1                            | 20/03/2020           |
| 6606           | Microtronics LPM 15601         | Low Pass Filter                           | 09/08/2017       | 2                            | 09/08/2019           |
| 6607           | Microtronics HPM 15600         | High Pass Filter                          | 09/08/2017       | 2                            | 09/08/2019           |
| 6609           | Hewlett Packard HPM11630       | High Pass Filter                          | 09/08/2018       | 2                            | 08/08/2020           |
| 6884           | Suhner 1.5m                    | Cable                                     | 29/03/2018       | 2                            | 28/03/2020           |
| 8511           | HP 8447D                       | Low-noise amplifier                       | 14/03/2019       | 1                            | 13/03/2020           |
| 8526           | Schwarzbeck VHBB 9124          | Biconical antenna                         | 16/08/2018       | 3                            | 15/08/2021           |
| 8534           | EMCO 3115                      | Antenna                                   | 15/07/2019       | 3                            | 14/07/2022           |
| 8535           | EMCO 3115                      | Antenna                                   | 10/02/2017       | 3                            | 10/02/2020           |
| 8543           | Schwarzbeck UHALP 9108A        | Log periodic antenna                      | 16/08/2018       | 3                            | 15/08/2021           |
| 8548           | Midwest Microwave 10dB         | Attenuator                                | 05/04/2018       | 2                            | 04/04/2020           |
| 8593           | SIDT Cage 2                    | Anechoic chamber                          | /                | /                            | /                    |
| 8704           | LUCIX Corp<br>S180265L3201 LNA | Low-noise amplifier                       | 09/08/2018       | 1                            | 09/08/2019           |
| 8750           | La Crosse Technology WS-9232   | Meteo station                             | 24/09/2018       | 2                            | 23/09/2020           |
| 8775           | Fontaine FTN 2515B             | Power source                              | /                | /                            | /                    |
| 8786           | ETS Lindgren 3160-09           | Antenna                                   | 24/07/2019       | 3                            | 23/07/2022           |
| 8896           | ACQUISYS GPS8                  | Satellite synchronized frequency standard | /                | /                            | /                    |
| 8974           | STORM MICROWAVE k-20cm         | cable                                     | 19/11/2017       | 2                            | 19/11/2019           |
| 8975           | STORM MICROWAVE k-20cm         | cable                                     | 19/11/2017       | 2                            | 19/11/2019           |
| 10751          | CLIMATS EXCAL 7714-HA          | Climatic chamber                          | 06/11/2018       | 1                            | 06/11/2019           |
| 12911          | Huber + Suhner N-2m            | cable                                     | 29/03/2018       | 2                            | 28/03/2020           |
| 14716          | GMH 3710                       | Precision Termometer                      | 20/11/2018       | 1                            | 20/11/2019           |
| 14736          | MATURO                         | Turntable and mat controller MCU          | /                | /                            | /                    |
| 14830          | R&S FSW43                      | Spectrum Analyzer                         | 28/12/2018       | 1                            | 28/12/2019           |
| 14831          | Fluke 177                      | Multimeter                                | 12/01/2018       | 2                            | 12/01/2020           |
| 15666          | R&S FSV40                      | Spectrum Analyzer                         | 19/07/2018       | 2                            | 18/07/2020           |
| 15812          | COMP-POWER PAM-118A            | Low-noise amplifier 18GHz                 | 12/11/2018       | 1                            | 12/11/2019           |
| 15882          | SUCOFLEX                       | cable N 5m                                | 27/11/2018       | 2                            | 26/11/2020           |
| 16109          | C&C HPF180400                  | High pass filter                          | 25/03/2019       | 2                            | 24/03/2021           |

## 6. TESTS RESULTS SUMMARY

| Test procedure                          | Description of test                                                  | Respected criteria? |    |     |     | Comment |
|-----------------------------------------|----------------------------------------------------------------------|---------------------|----|-----|-----|---------|
|                                         |                                                                      | Yes                 | No | NAP | NAs |         |
| FCC Part 15.203                         | ANTENNA REQUIREMENT                                                  | X                   |    |     |     | Note 1  |
| FCC Part 15.205                         | RESTRICTED BANDS OF OPERATION                                        | X                   |    |     |     |         |
| FCC Part 15.207                         | CONDUCTED LIMITS                                                     |                     |    | X   |     |         |
| FCC Part 15.209                         | RADIATED EMISSION LIMITS; general requirements                       | X                   |    |     |     |         |
| FCC part 15.215                         | ADDITIONAL PROVISIONS TO THE GENERAL RADIATED EMISSION LIMITATIONS   |                     |    |     |     |         |
|                                         | (a) Alternative to general radiated emission limits                  | X                   |    |     |     |         |
|                                         | (b) Unwanted emissions outside of §15.250 frequency band             | X                   |    |     |     | Note 2  |
|                                         | (c) 20 dB bandwidth and band-edge compliance                         | X                   |    |     |     |         |
| FCC Part 15.250                         | OPERATION OF WIDEBANDSYSTEMS WITHIN THE BAND 5925-7250 MHz           |                     |    |     |     |         |
|                                         | (a) (b) -10 dB bandwidth                                             | X                   |    |     |     |         |
|                                         | (c) Technical requirements for WB systems                            | X                   |    |     |     | Note 3  |
|                                         | (d) Emissions from a transmitter                                     |                     |    |     |     |         |
|                                         | (1) Radiated emissions above 960 MHz                                 | X                   |    |     |     |         |
|                                         | (2) GPS emissions                                                    | X                   |    |     |     |         |
|                                         | (3) Peak radiated emissions requirements                             | X                   |    |     |     |         |
|                                         | (4) Radiated emissions at or below 960 MHz                           | X                   |    |     |     | Note 4  |
|                                         | (5) Emissions from digital circuitry                                 | X                   |    |     |     |         |
|                                         | (e) Measurement procedures                                           |                     |    |     |     |         |
|                                         | (1) Emissions at and below 960 MHz                                   | X                   |    |     |     |         |
|                                         | (2) Peak emission                                                    | X                   |    |     |     |         |
|                                         | (3) Frequency hopping, stepped frequency or similar modulation types | X                   |    |     |     |         |
|                                         | (4) -10 dB bandwidth                                                 | X                   |    |     |     |         |
|                                         | (5) Alternative measurement procedures                               | X                   |    |     |     |         |
| FCC OET Bulletin 65 and FCC part 1.1307 | RF EXPOSURE                                                          | X                   |    |     |     |         |

NAP: Not Applicable

NAs: Not Asked

Note 1: Integral antenna.

Note 2: See FCC part 15.209. Unwanted emissions levels are all below the fundamental emission field strength level.

Note 3: Operation on board an aircraft or a satellite is prohibited. Devices operating under this section may not be employed for the operation of toys. Except for operation onboard a ship or a terrestrial transportation vehicle, the use of a fixed outdoor infrastructure is prohibited. A fixed infrastructure includes antennas mounted on outdoor structures, e.g., antennas mounted on the outside of a building or on a telephone pole..

Note 4: See 15.209.

**7. RF EXPOSURE****RF Exposure for devices that operate above 6 GHz**

Maximum measured EIRP = -4.03 dBm = 0.3954 mW

In accordance with Bulletin 65 and CF 47 part 2.1093:

$$PSD = EIRP / (4 * \pi * R^2)$$

$$\Rightarrow 0.3954 / (4 * \pi * (5 \text{ cm})^2) = 0.00126 \text{ mW/cm}^2 \text{ (limit = 1 mW/cm}^2\text{)}$$

**The equipment fulfils the requirements on power density for general population/uncontrolled exposure and therefore fulfils the requirements of 47 CFR §1.1310.**

**8. MEASUREMENT UNCERTAINTY**

To declare, or not, the compliance with the specifications, it was not explicitly taken into account of uncertainty associated with the result(s)

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for normal distribution corresponds to a coverage probability of approximately 95%.

| Parameter                          | Emitech<br>Uncertainty          |
|------------------------------------|---------------------------------|
| RF power, conducted                | $\pm 0.75\text{dB}$             |
| Radiated emission valid to 40 GHz  |                                 |
| F < 62.5 MHz:                      | $\pm 5.14\text{ dB}$            |
| 62.5 MHz < F < 1 GHz:              | $\pm 5.13\text{ dB}$            |
| 1 GHz < F < 40 GHz:                | $\pm 5.16\text{ dB}$            |
| AC Power Lines conducted emissions | $\pm 3.38\text{ dB}$            |
| Temperature                        | $\pm 1\text{ }^{\circ}\text{C}$ |
| Humidity                           | $\pm 5\text{ \%}$               |

**9. -10 DB BANDWIDTH****Temperature (°C) :** 26**Humidity (%HR):** 43**Date :** August 6, 2019 and  
August 7, 2019**Technician :** T. LEDRESSEUR**Standard:** FCC Part 15**Test procedure:** paragraph 15.250 (a) (b)**Test set up:**

The measure is realized in near field with the system in a climatic chamber

First a measure of the frequency stability is realized following method describe in paragraph 6.8 of ANSI C63.10 for the variation of the temperature.

In addition a measure of the 10 dB bandwidth is realized at each temperature and for variation of power supply.

The 10 dB bandwidth measure is realized with an analyser and peak detector. The resolution bandwidth is adjusted at 1 MHz and video bandwidth at 3 MHz.

**Equipment under test operating condition:**

The equipment under test is blocked in continuous unmodulated or modulated transmission mode.

The measure is realized between 0 to 40°C.

We used for power source an external power supply

## Results:

Sample N° 1

### Frequency stability

| Temperature (°C) | Measure at startup<br>Frequency measured (GHz) | Measure at 2 min<br>Frequency measured (GHz) | Measure at 5 min<br>Frequency measured (GHz) | Measure at 10 min<br>Frequency measured (GHz) |
|------------------|------------------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------------------------|
| 40               | 6.4897215                                      | 6.4897215                                    | 6.489724                                     | 6.489726                                      |
| 30               | 6.489726                                       | 6.48972225                                   | 6.489721                                     | 6.489721                                      |
| 25               | 6.4897285                                      | 6.4897235                                    | 6.489722                                     | 6.4897215                                     |
| 20               | 6.4897355                                      | 6.489728                                     | 6.48972475                                   | 6.48972325                                    |
| 10               | 6.4897425                                      | 6.48973625                                   | 6.4897325                                    | 6.4897305                                     |
| 0                | 6.48974375                                     | 6.4897425                                    | 6.48974                                      | 6.489738                                      |

### 10 dB bandwidth

Results for temperature variation

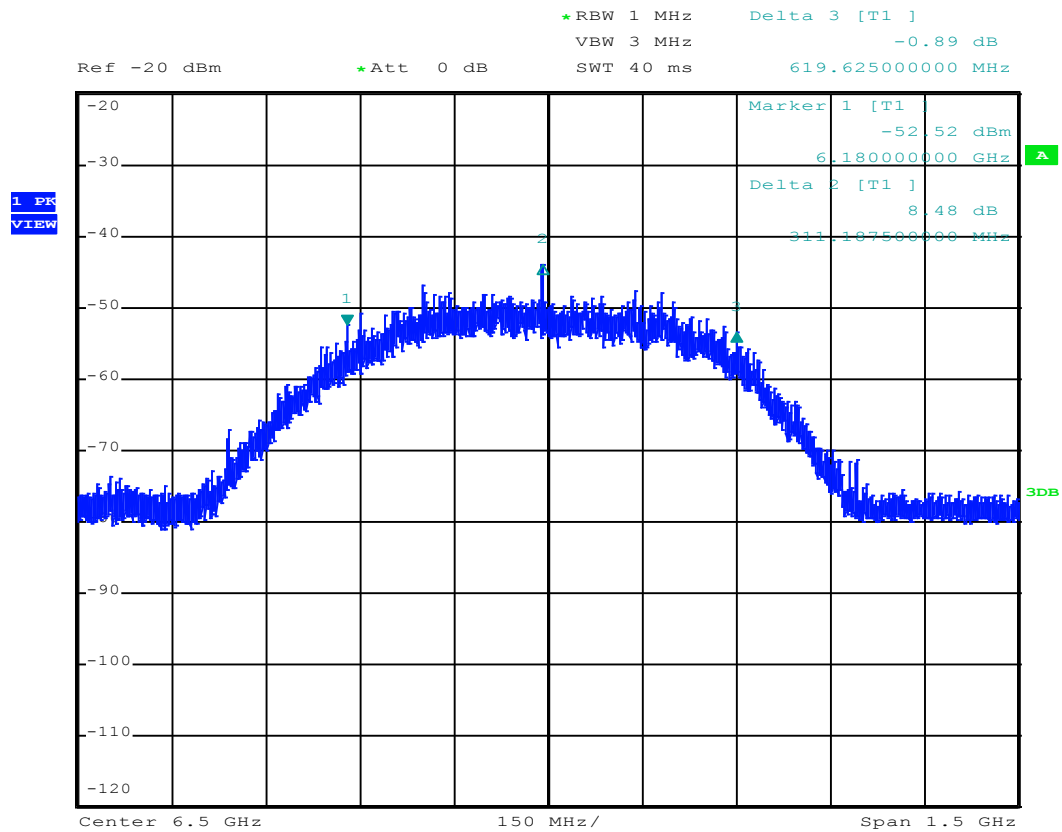
| Temperature (°C) | Low frequency measured (GHz) | High frequency measured (GHz) |
|------------------|------------------------------|-------------------------------|
| 40               | 6.199625                     | 6.7514375                     |
| 30               | 6.1998125                    | 6.77975                       |
| 25               | 6.180                        | 6.7795625                     |
| 20               | 6.180                        | 6.799625                      |
| 10               | 6.180                        | 6.7994375                     |
| 0                | 6.180                        | 6.80375                       |
| Limit (MHz)      | 5.925                        | 7.250                         |

Results for power supply variation

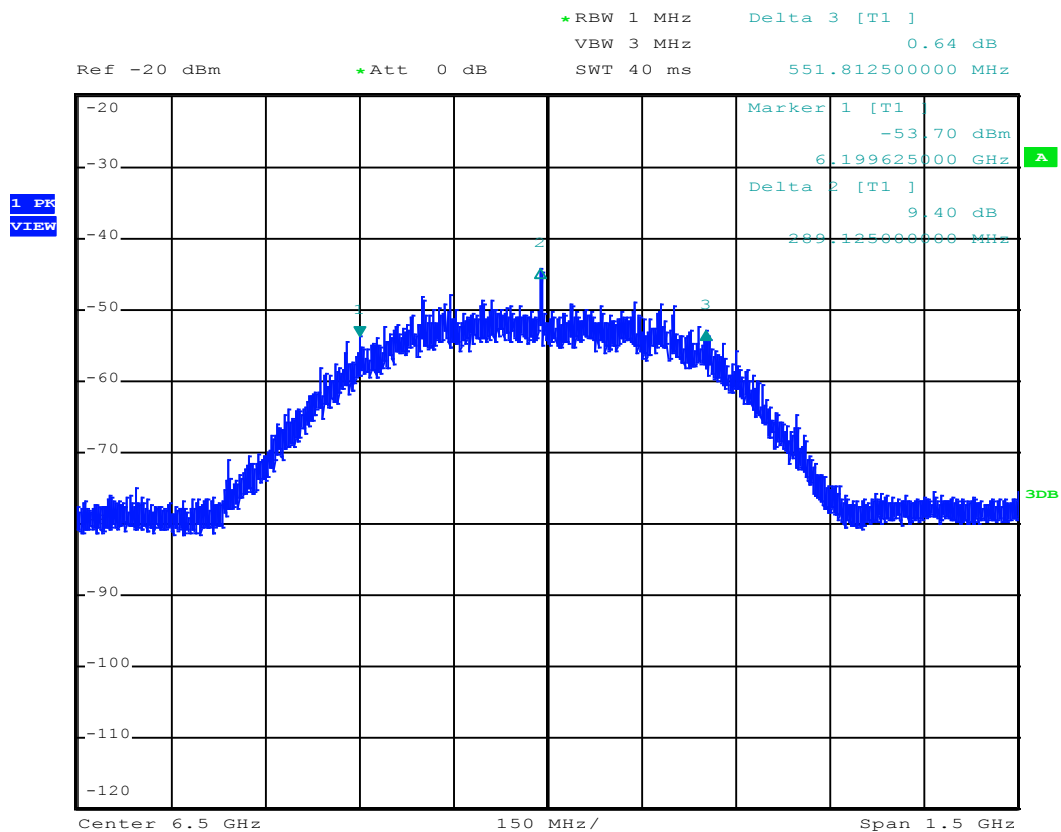
Realized at +20 °C

| Power supply (Vdc) | Low frequency measured (GHz) | High frequency measured (GHz) |
|--------------------|------------------------------|-------------------------------|
| 3.45               | 6.1793                       | 6.7506125                     |
| 4.255              | 6.1793                       | 6.7506125                     |
| Limit (MHz)        | 5.925                        | 7.250                         |

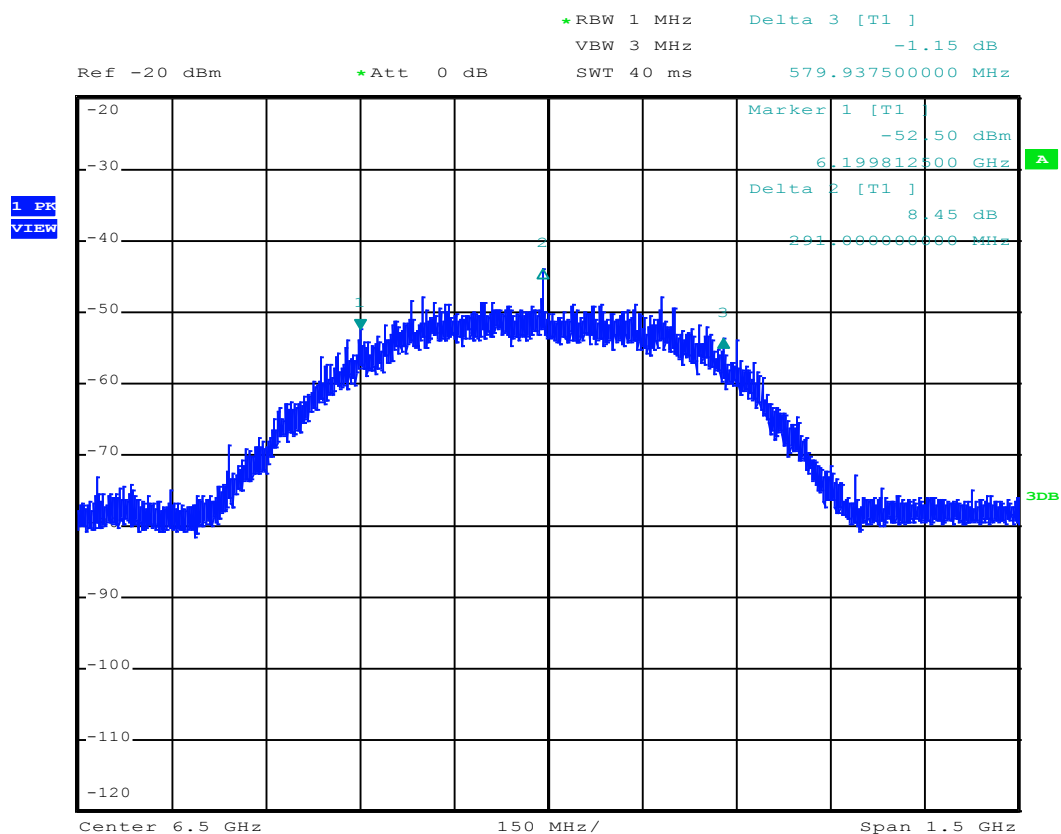
Normal condition: curve at 20°C / 3.6Vdc



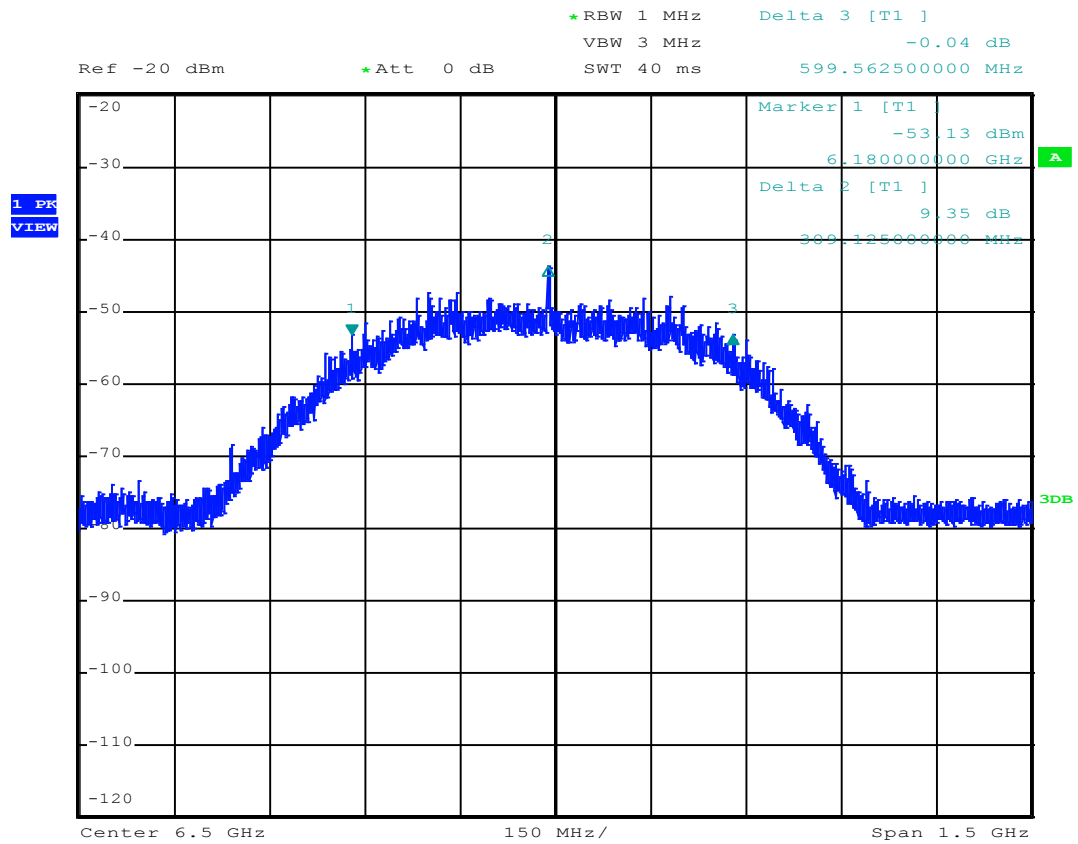
### Curve at 40°C / 3.6Vdc



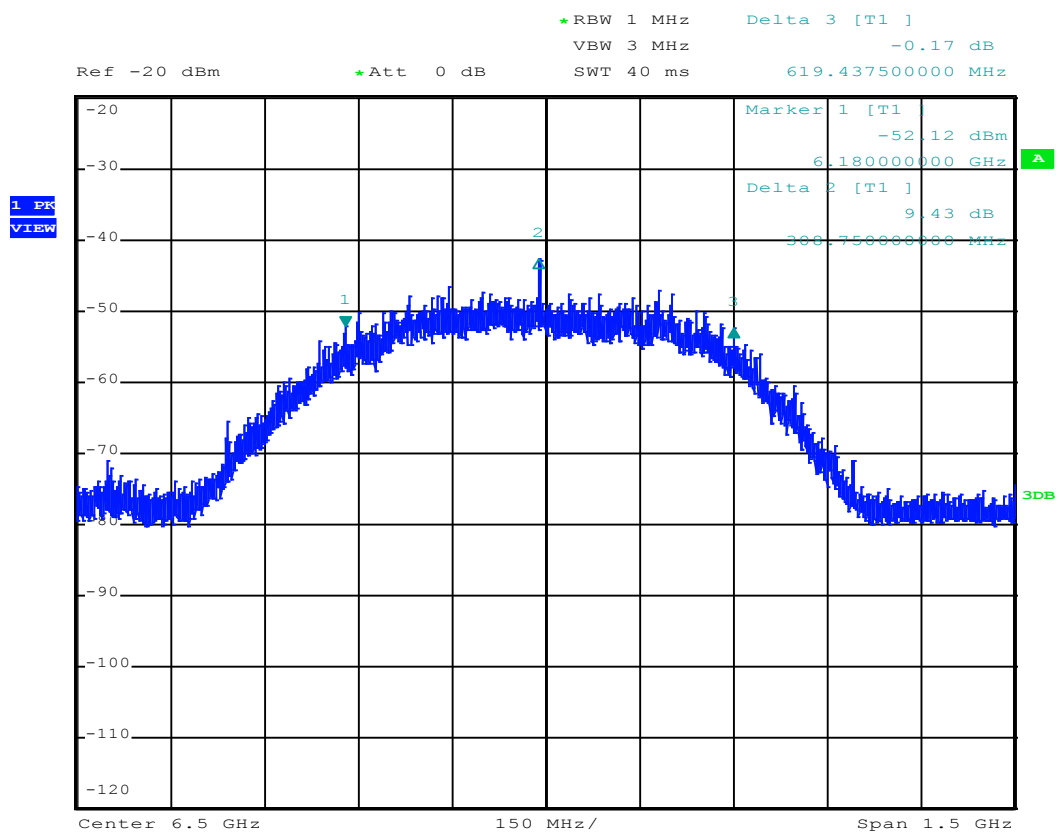
### Curve at 30°C / 3.6Vdc



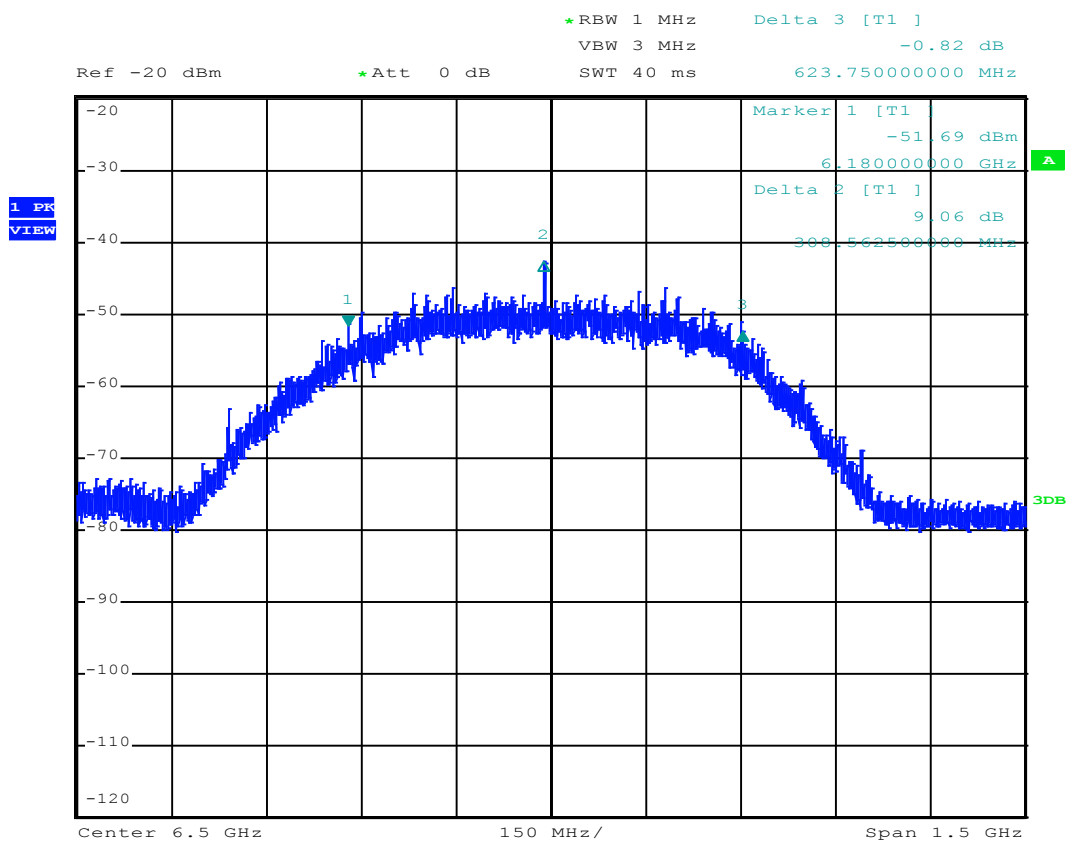
### Curve at 25°C / 3.6Vdc



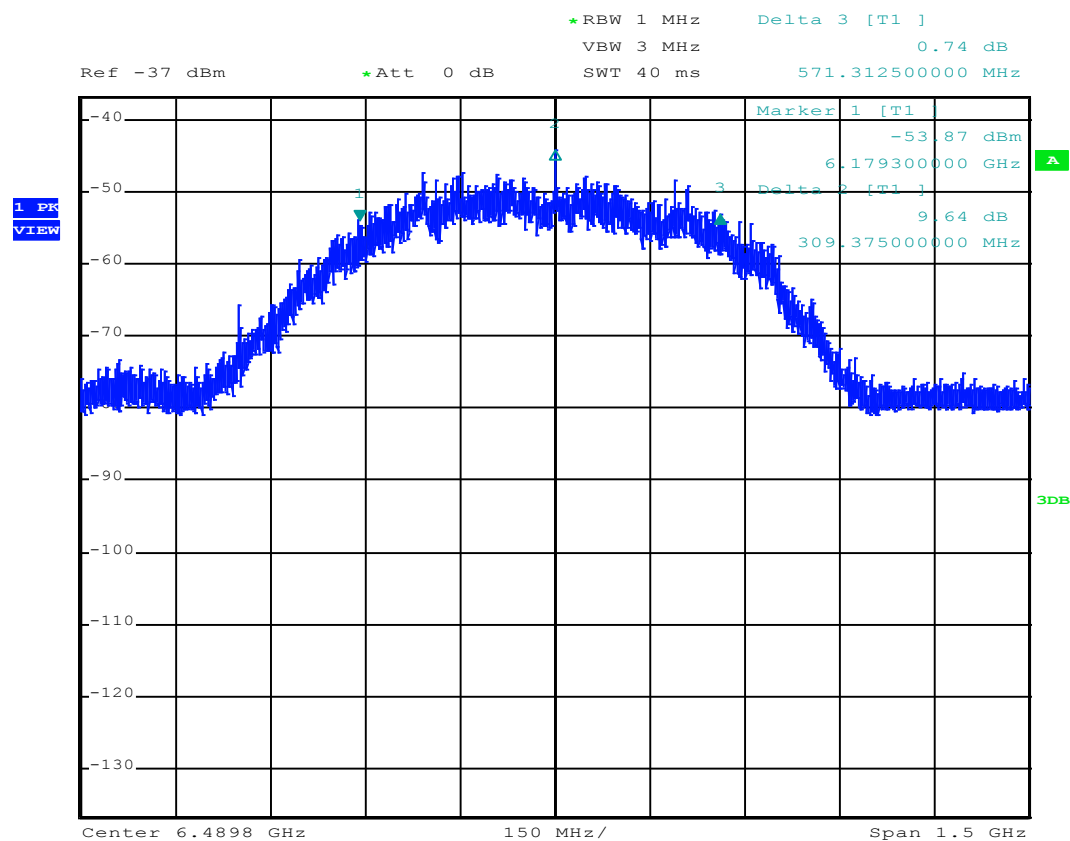
### Curve at 10°C / 3.6Vdc



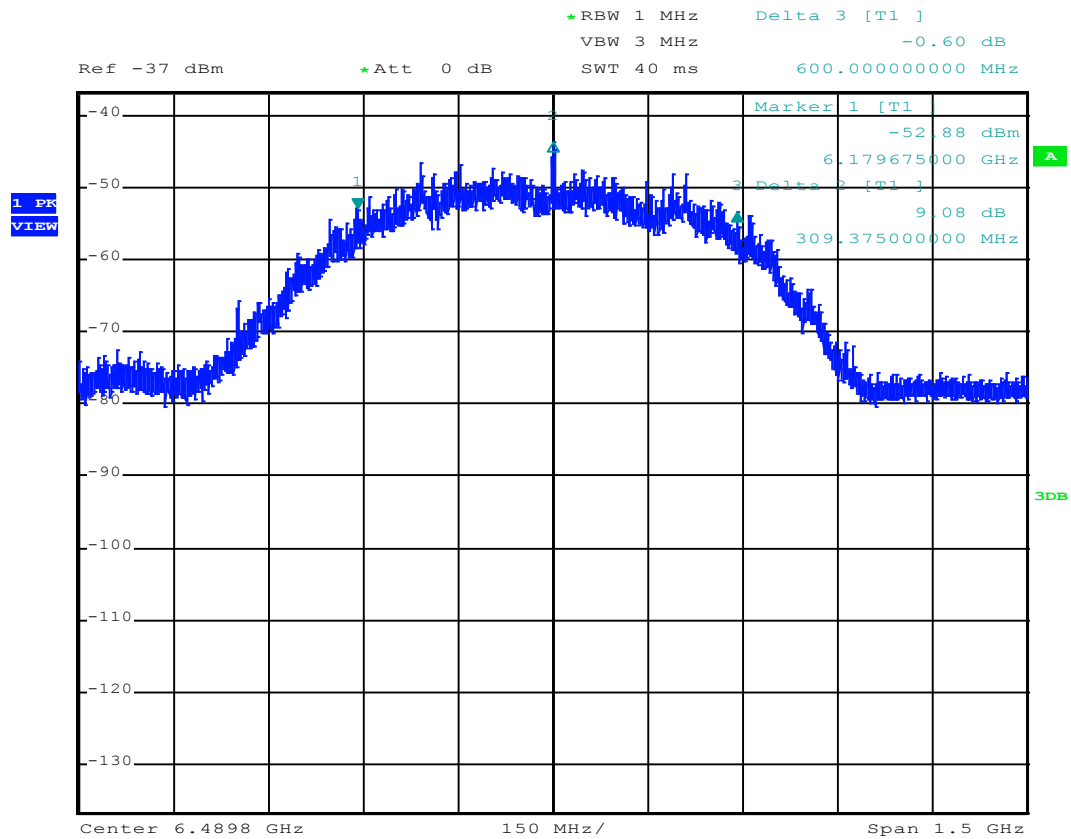
### Curve at 0°C / 3.6Vdc



### Curve at 20°C / 4.25 Vdc



# Curve at 20°C / 3.45 Vdc



**Test conclusion:**

RESPECTED STANDARD

**10. RADIATED EMISSIONS ABOVE 960 MHZ****Temperature (°C) :** 24 to 28**Humidity (%HR):** 40 to 46**Date :** August 5, 2019 to  
August 8, 2019**Technician :** T. LEDRESSEUR**Standard:** FCC Part 15**Test procedure:** paragraph 15.250 (d) (1)**Test set up:**

First an exploratory radiated measurement was performed. During this phase the product is oriented in normal positions

Then the final measurement is realized with the product on the most critical orientation.

The measure is realized on open area test site under 1 GHz and in anechoic chamber above 1 GHz.

When the system is tested in an open area test site (OATS), the EUT is placed on a rotating table, 0.8m from a ground plane.

When the system is tested in anechoic chamber, the EUT is placed on a rotating table, 1.5 m from a ground plane.

Zero degree azimuths correspond to the front of the device under test.

**Frequency range:** From 960 MHz to 40 GHz**Detection mode:** RMS**Bandwidth:** 1 MHz

**Distance of antenna:** 3 meter for RMS power  
1 meter below 10 GHz  
60 cm between 10 GHz to 18 GHz  
40 cm between 18 GHz to 26 GHz  
20 cm between 26 GHz to 40 GHz

**Antenna height:** 1 to 4 meters (in open area test site) / 1.5 meter (in anechoic room)**Antenna polarization:** vertical and horizontal (only the highest level is recorded)**Equipment under test operating condition:**

The equipment under test is blocked in continuous modulated transmission mode.

We used for power source the fully charged internal battery

According to paragraphs 9.4 and 9.5 of ANSI C63.10 all the results are reported to field strength at 3 meter.  
The following formulas are used.

$$E_{\text{SpecLimit}} = E_{\text{Meas}} + 20 \log \left( \frac{d_{\text{Meas}}}{d_{\text{SpecLimit}}} \right)$$

$$\text{EIRP} = E_{\text{Meas}} + 20 \log (d_{\text{Meas}}) - 104.7$$

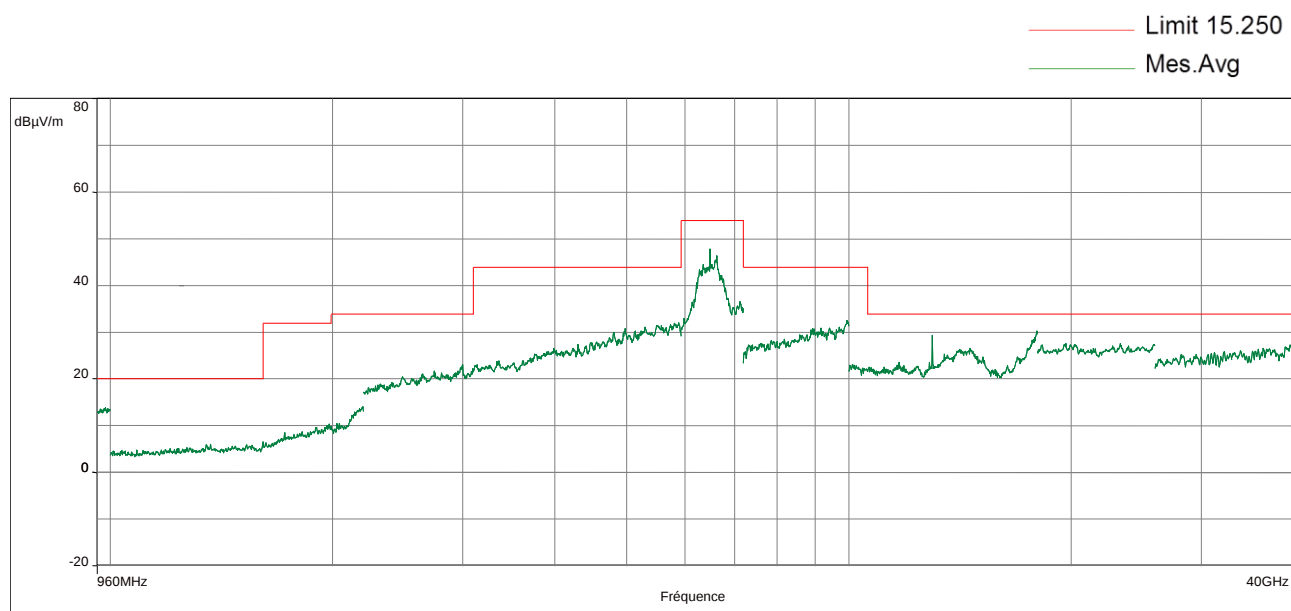
## Results:

### Sample N° 1

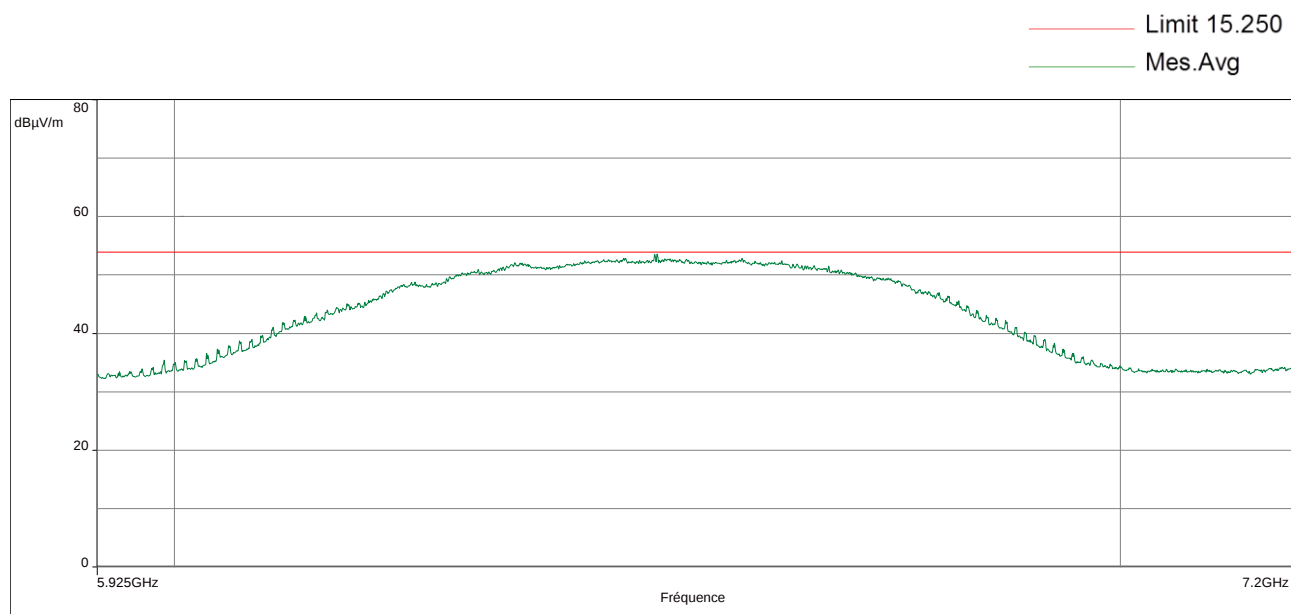
| Frequencies<br>(MHz) | Antenna<br>height<br>(cm) | RBW<br>(kHz) | Polarization<br>H: Horizontal<br>V: Vertical | Field<br>strength<br>Computed<br>at 3 m<br>(dB $\mu$ V/m) | Limits<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|----------------------|---------------------------|--------------|----------------------------------------------|-----------------------------------------------------------|--------------------------|----------------|
| 6490.7               | 150                       | 1000         | V                                            | 53.55                                                     | 53.86                    | 0.31           |
| 12980.8              | 150                       | 1000         | H                                            | 29.33                                                     | 33.86                    | 4.53           |

P= Peak, QP=Quasi-peak, Av=Average

### Worst critical results



## RMS POWER IN 1 MHz



### Applicable limits:

According to

| Frequency in MHz | EIRP in dBm | Field strength in dBμV/m at 3 meters |
|------------------|-------------|--------------------------------------|
| 960-1610         | -75.3       | 19.86                                |
| 1610-1990        | -63.3       | 31.86                                |
| 1990-3100        | -61.3       | 33.86                                |
| 3100-5925        | -51.3       | 43.86                                |
| 5925-7250        | -41.3       | 53.86                                |
| 7250-10600       | -51.3       | 43.86                                |
| Above 10600      | -61.3       | 33.86                                |

### Test conclusion:

RESPECTED STANDARD

**11. GPS EMISSIONS****Temperature (°C) :** 24 to 28**Humidity (%HR):** 40 to 46**Date :** August 5, 2019 to  
August 8, 2019**Technician :** T. LEDRESSEUR**Standard:** FCC Part 15**Test procedure:** paragraph 15.250 (d) (2)**Test set up:**

First an exploratory radiated measurement was performed. During this phase the product is oriented in normal positions

Then the final measurement is realized with the product on the most critical orientation.

The measure is realized on open area test site under 1 GHz and in anechoic chamber above 1 GHz.

When the system is tested in an open area test site (OATS), the EUT is placed on a rotating table, 0.8m from a ground plane.

When the system is tested in anechoic chamber, the EUT is placed on a rotating table, 1.5 m from a ground plane.

Zero degree azimuths correspond to the front of the device under test.

**Frequency range:** From 1164 MHz to 1240 MHz and 1559 MHz to 1610 MHz**Detection mode:** RMS**Bandwidth:** 1 kHz.**Distance of antenna:** 1 meter**Antenna height:** 1.5 meter (in anechoic room)**Antenna polarization:** vertical and horizontal (only the highest level is recorded)**Equipment under test operating condition:**

The equipment under test is blocked in continuous modulated transmission mode.

We used for power source the fully charged internal battery

According to paragraphs 9.4 and 9.5 of ANSI C63.10 all the results are reported to field strength at 3 meter.  
The following formulas are used.

$$E_{\text{SpecLimit}} = E_{\text{Meas}} + 20 \log \left( \frac{d_{\text{Meas}}}{d_{\text{SpecLimit}}} \right)$$

$$\text{EIRP} = E_{\text{Meas}} + 20 \log (d_{\text{Meas}}) - 104.7$$

## Results:

### Sample N° 1

Not any spurious has been detected.

### Worst critical results



### Applicable limits:

| Frequency in MHz | EIRP in dBm | Field strength in dBμV/m at 3 meters |
|------------------|-------------|--------------------------------------|
| 1164-1240        | -85.3       | 9.86                                 |
| 1559-1610        | -85.3       | 9.86                                 |

### Test conclusion:

RESPECTED STANDARD

**12. PEAK RADIATED EMISSIONS REQUIREMENTS****Temperature (°C) :** 25**Humidity (%HR):** 43**Date :** August 5, 2019**Technician :** T. LEDRESSEUR**Standard:** FCC Part 15**Test procedure:** paragraph 15.250 (d) (3)**Test set up:**

First an exploratory radiated measurement was performed. During this phase the product is oriented in two positions.

Then the final measurement is realized with the product on the most critical orientation.

The measure is realized in anechoic chamber above 1 GHz.

When the system is tested in anechoic chamber, the EUT is placed on a rotating table, 1.5 m from a ground plane.

Zero degree azimuths correspond to the front of the device under test.

**Detection mode:** Peak**Resolution bandwidth:** 50 MHz.**Video bandwidth:** 50 MHz.**Distance of antenna:** 3 meters**Antenna height:** 1.5 meter (in anechoic room)**Antenna polarization:** vertical and horizontal (only the highest level is recorded)

The measure of the electromagnetic field is realized with an analyser.

Finally the radiated electro-magnetic field is converted in dBm with the following formula:

$$EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7$$

**Equipment under test operating condition:**

The equipment under test is blocked in continuous modulated transmission mode

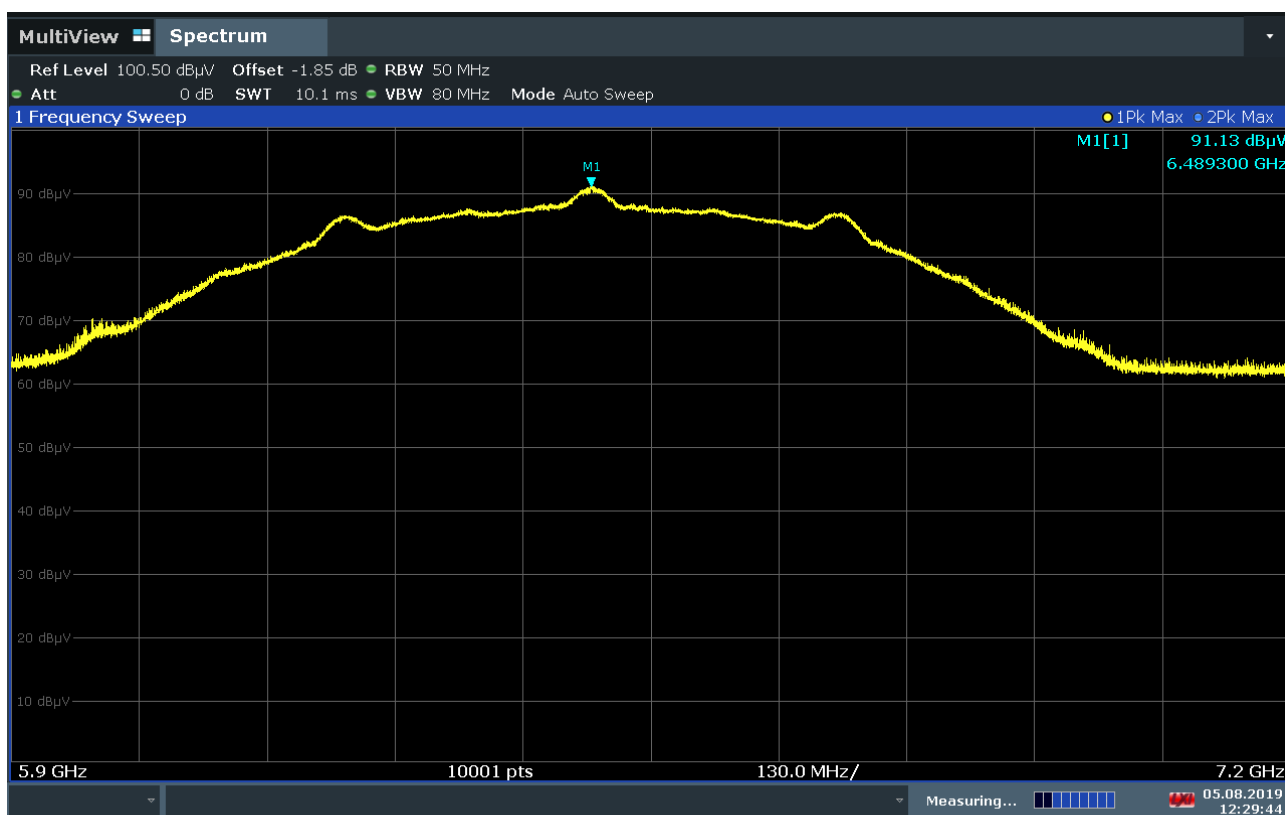
We used for power source the fully charged internal battery

## Results:

Sample N° 1

|                            | Peak e.i.r.p. level<br>(dBm / 50 MHz) | Limit<br>(dBm / 50 MHz) |
|----------------------------|---------------------------------------|-------------------------|
| Nominal supply<br>voltage: | -4.03                                 | 0 (1)                   |

- (1) The limit is  $20 \log (RBW/50)$  where RBW is the resolution bandwidth in megahertz that is employed by the measurement instrument



12:29:45 05.08.2019

## Test conclusion:

RESPECTED STANDARD

**13. RADIATED EMISSIONS AT OR BELOW 960 MHZ****Temperature (°C) :** 24 to 28**Humidity (%HR):** 40 to 46**Date :** August 5, 2019 to  
August 8, 2019**Technician :** T. LEDRESSEUR**Standard:** FCC Part 15**Test procedure:** paragraph 15.250 (d) (4)**Test set up:**

First an exploratory radiated measurement was performed. this phase the product is oriented in two position.

Then the final measurement is realized with the product on the most critical orientation.

A pre measure is first realized in anechoic chamber and then is realized on open area test site.

When the system is tested in an open area test site (OATS), the EUT is placed on a rotating table, 0.8m from a ground plane.

Zero degree azimuths correspond to the front of the device under test.

**Frequency range:** From 9 kHz to 960 MHz.**Detection mode:** Quasi-peak ( $F < 1$  GHz)

Except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these three bands are based on measurements employing an average detector

**Bandwidth:** 200Hz ( $9 \text{ kHz} < F < 150\text{kHz}$ )  
9 kHz ( $150 \text{ kHz} < F < 30\text{MHz}$ )  
120 kHz ( $30 \text{ MHz} < F < 960 \text{ MHz}$ )**Distance of antenna:** 10 meters (in open area test site)**Antenna height:** 1 to 4 meters (in open area test site)**Antenna polarization:** vertical and horizontal (only the highest level is recorded)**Equipment under test operating condition:**

The equipment under test is blocked in continuous modulated transmission mode.

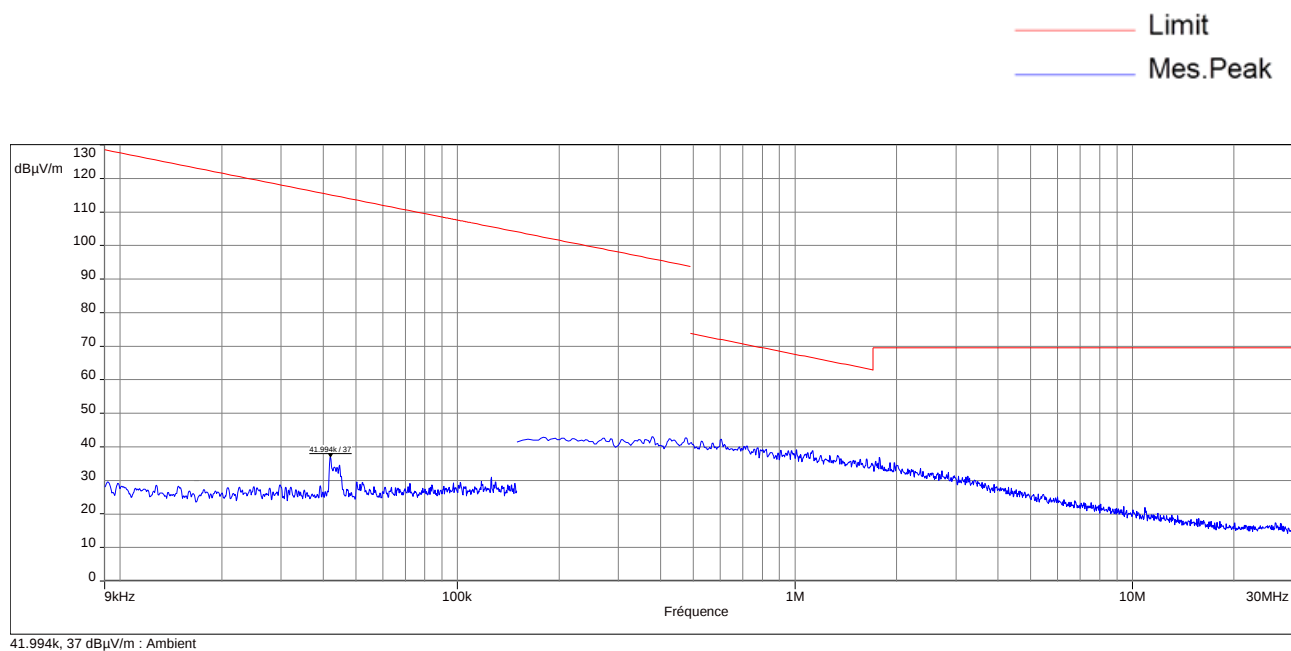
We used for power source the fully charged internal battery

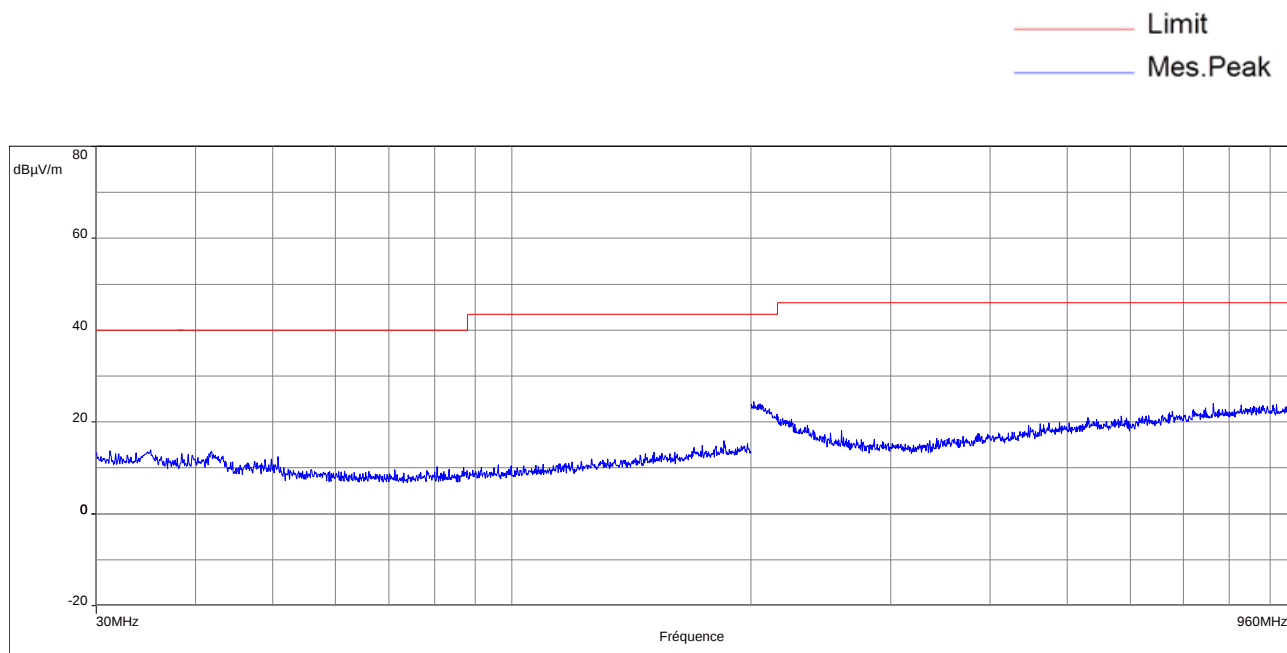
## Results:

### Sample N° 1

Not any spurious has been detected.

### Worst critical results





**Applicable limits:** for  $9 \text{ kHz} \leq F \leq 490 \text{ kHz}$  :  $2400/F(\text{kHz})$  at 300 meters  
for  $490 \text{ kHz} < F \leq 1.705 \text{ MHz}$  :  $24000/F(\text{kHz})$  at 30 meters  
for  $1.705 \text{ MHz} < F \leq 30 \text{ MHz}$  :  $29.5 \text{ dB}\mu\text{V/m}$  at 30 meters  
for  $30 \text{ MHz} < F \leq 88 \text{ MHz}$  :  $40 \text{ dB}\mu\text{V/m}$  at 3 meters  
for  $88 \text{ MHz} < F \leq 216 \text{ MHz}$  :  $43.5 \text{ dB}\mu\text{V/m}$  at 3 meters  
for  $216 \text{ MHz} < F \leq 960 \text{ MHz}$  :  $46 \text{ dB}\mu\text{V/m}$  at 3 meters

**Test conclusion:**

RESPECTED STANDARD

□□□ End of report, 1 appendix to be forwarded □□□

## APPENDIX 1: Test equipment list

### -10 dB bandwidth

| TYPE                                           | MANUFACTURER         | EMITECH NUMBER |
|------------------------------------------------|----------------------|----------------|
| Climatic chamber EXCAL 7714-HA                 | CLIMATS              | 10751          |
| Precision thermometer GMH 3710                 | GHM Greisinger       | 14716          |
| Satellite synchronized frequency standard GPS8 | ACQUISYS             | 8896           |
| Spectrum Analyzer FSV40                        | Rohde & Schwarz      | 15666          |
| Antenna 3115                                   | EMCO                 | 8534           |
| N-1.5M Cable                                   | Huber + Suhner       | 6884           |
| Power source FTN 2515B                         | Fontaine             | 8775           |
| Multimeter 177                                 | Fluke                | 14831          |
| Meteo station WS-9232                          | La Crosse Technology | 8750           |
| Software                                       | BAT-EMC V3.6.0.32    | 0000           |

### Radiated emissions above 960 MHz

| TYPE                                           | MANUFACTURER         | EMITECH NUMBER |
|------------------------------------------------|----------------------|----------------|
| Anechoic Chamber                               | EMITECH              | 8593           |
| Turntable controller MCU                       | MATURO               | 14736          |
| Satellite synchronized frequency standard GPS8 | ACQUISYS             | 8896           |
| Spectrum Analyzer FSV40                        | Rohde & Schwarz      | 15666          |
| Log periodic antenna UHALP 9108A               | Schwarzbeck          | 8543           |
| Antenna 3115                                   | EMCO                 | 8535           |
| Antenna 3160-09                                | ETS Lindgren         | 8786           |
| Antenna WR28                                   | ATM                  | 4353           |
| Low-noise amplifier 8447D                      | Hewlett Packard      | 8511           |
| Low-noise amplifier PAM-118A                   | COM-POWER            | 15812          |
| Low-noise amplifier S180265L3201               | LUCIX Corp.          | 8704           |
| Low-noise amplifier ALS2640-30-10              | ALC                  | 4354           |
| N-1.5M Cable                                   | Huber + Suhner       | 6884           |
| N-2M Cable                                     | Huber + Suhner       | 12911          |
| N-5M Cable                                     | SUCOFLEX             | 15882          |
| Cable k-20cm                                   | STORM MICROWAE       | 8974           |
| Cable k-20cm                                   | STORM MICROWAE       | 8975           |
| High pass filter HPF180400                     | C&C                  | 16109          |
| High Pass Filter LPM15600                      | Microtronics         | 6607           |
| Low Pass Filter LPM15601                       | Microtronics         | 6606           |
| Multimeter 177                                 | Fluke                | 14831          |
| Meteo station WS-9232                          | La Crosse Technology | 8750           |
| Software                                       | BAT-EMC V3.6.0.32    | 0000           |

### GPS emissions

| TYPE                                           | MANUFACTURER         | EMITECH NUMBER |
|------------------------------------------------|----------------------|----------------|
| Anechoic Chamber                               | EMITECH              | 8593           |
| Turntable controller MCU                       | MATURO               | 14736          |
| Satellite synchronized frequency standard GPS8 | ACQUISYS             | 8896           |
| Spectrum Analyzer FSV40                        | Rohde & Schwarz      | 15666          |
| Antenna 3115                                   | EMCO                 | 8535           |
| Low-noise amplifier PAM-118A                   | COM-POWER            | 15812          |
| N-1.5M Cable                                   | Huber + Suhner       | 6884           |
| N-2M Cable                                     | Huber + Suhner       | 12911          |
| N-5M Cable                                     | SUCOFLEX             | 15882          |
| Low Pass Filter LPM15601                       | Microtronics         | 6606           |
| Multimeter 177                                 | Fluke                | 14831          |
| Meteo station WS-9232                          | La Crosse Technology | 8750           |
| Software                                       | BAT-EMC V3.6.0.32    | 0000           |

### Peak radiated emissions requirements

| TYPE                                           | MANUFACTURER         | EMITECH NUMBER |
|------------------------------------------------|----------------------|----------------|
| Anechoic Chamber                               | EMITECH              | 8593           |
| Turntable controller MCU                       | MATURO               | 14736          |
| Satellite synchronized frequency standard GPS8 | ACQUISYS             | 8896           |
| Spectrum Analyzer FSW43                        | Rohde & Schwarz      | 14830          |
| Antenna 3115                                   | EMCO                 | 8535           |
| Low-noise amplifier PAM-118A                   | COM-POWER            | 15812          |
| Attenuator 10dB                                | Midwest Microwave    | 8548           |
| N-1.5M Cable                                   | Huber + Suhner       | 6884           |
| N-2M Cable                                     | Huber + Suhner       | 12911          |
| N-5M Cable                                     | SUCOFLEX             | 15882          |
| Multimeter 177                                 | Fluke                | 14831          |
| Meteo station WS-9232                          | La Crosse Technology | 8750           |
| Software                                       | BAT-EMC V3.6.0.32    | 0000           |

## Radiated emissions at or below 960 MHz

| TYPE                                           | MANUFACTURER         | EMITECH NUMBER |
|------------------------------------------------|----------------------|----------------|
| Anechoic Chamber                               | EMITECH              | 8593           |
| Turntable controller MCU                       | MATURO               | 14736          |
| Satellite synchronized frequency standard GPS8 | ACQUISYS             | 8896           |
| Spectrum Analyzer FSV40                        | Rohde & Schwarz      | 15666          |
| Loop antenna 6502                              | EMCO                 | 1406           |
| Biconical antenna VHBB 9124                    | Schwarzbeck          | 8526           |
| Log periodic antenna UHALP 9108A               | Schwarzbeck          | 8543           |
| Low-noise amplifier 8447D                      | Hewlett Packard      | 8511           |
| N-1.5M Cable                                   | Huber + Suhner       | 6884           |
| N-2M Cable                                     | Huber + Suhner       | 12911          |
| N-5M Cable                                     | SUCOFLEX             | 15882          |
| High pass filter HPM11630                      | Hewlett Packard      | 6609           |
| Multimeter 177                                 | Fluke                | 14831          |
| Meteo station WS-9232                          | La Crosse Technology | 8750           |
| Software                                       | BAT-EMC V3.6.0.32    | 0000           |