

## Test report

N° : **SPEC26AA1345\_V3**

Cancels and replaces test report number SPEC26AA1345 V2

## RF Test Report

**Delivered to** : Eliwell Controls srl Via Dell'Industria, 15 Zona Industriale Paludi  
32016 Alpago (BL), Italy

**Device under test** : AIR EDGE WiFi Ethernet RS485 SD 100-240V

**Reference** : AEBWE0T0001100

**Trade mark** : Eliwell by SCHNEIDER ELECTRIC

**Manufacturer** : Eliwell Controls srl

**Type/Nature of test** : Antenna gain & pattern measurement Bluetooth Low Energy 2.4 GHz

**Standard** : Non standard test method

**Date(s) of the tests** : From 19/01/2026 to 20/01/2026

**Place of tests** : F-Lab Site Volta

## Results

Gain value :

| U EUT (V) | Channel |    | Frequency (MHz) | 2D peak Gain (dBi) | 3D peak Gain (dBi) |
|-----------|---------|----|-----------------|--------------------|--------------------|
| 230 Vac   | Low     | 37 | 2402            | 4.32               | 4.53               |
| 230 Vac   | Medium  | 17 | 2440            | 4.66               | 4.89               |
| 230 Vac   | High    | 39 | 2480            | 3.64               | 4.47               |

The results obtained during the tests consigned in this test report justify the above assigned characteristics stated by the manufacturer. To declare, or not, the compliance according the standard, it was not taken into account of uncertainty measurements in the test results. This document results from tests carried out on a sample. It does not prejudice the compliance of the whole manufactured products with the tested specimen.

In the case of an amendment to this test report, we draw your attention to the risks of keeping obsolete version.

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This report contains 50 pages

Dispatch date of report: 26/03/2026

**Writer**

MICHALLET-FERRIER Lylian



**Approver**

BOURET Loïc  
Technical leader



## SUMMARY

|          |                                             |           |
|----------|---------------------------------------------|-----------|
| <b>1</b> | <b>CONFIGURATION OF TEST INFORMATIONS ①</b> | <b>3</b>  |
| <b>2</b> | <b>MEASUREMENT SETUP AND TEST DETAILS</b>   | <b>5</b>  |
| <b>3</b> | <b>RESULTS</b>                              | <b>11</b> |
| <b>4</b> | <b>CURVES EIRP LOW CHANEL (2402 MHZ)</b>    | <b>12</b> |
| <b>5</b> | <b>CURVES EIRP MIDDLE CHANEL (2440 MHZ)</b> | <b>24</b> |
| <b>6</b> | <b>CURVES EIRP HIGH CHANEL (2480 MHZ)</b>   | <b>37</b> |
| <b>7</b> | <b>ANNEX 2 – VALIDITY OF TEST MEANS</b>     | <b>50</b> |

## History table

| Version | Dated      | Author                   | Description                                                                                                                  |
|---------|------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------|
| V1      | 12/02/2026 | MICHALLET-FERRIER Lylian | Initial version                                                                                                              |
| V2      | 09/03/2026 | Loïc Bouret              | Addition a comment for explain<br>screenshot P.8, P.9 & P.10<br>Adding the formula via software to the<br>results table P.11 |
| V3      | 26/03/2026 | Loïc Bouret              | Addition conducted power<br>measurement P.11                                                                                 |

## TEST ENGINEERS

| Person                   | Title / Function | Company            |
|--------------------------|------------------|--------------------|
| MICHALLET-FERRIER Lylian | Test engineer    | Schneider Electric |
|                          |                  |                    |

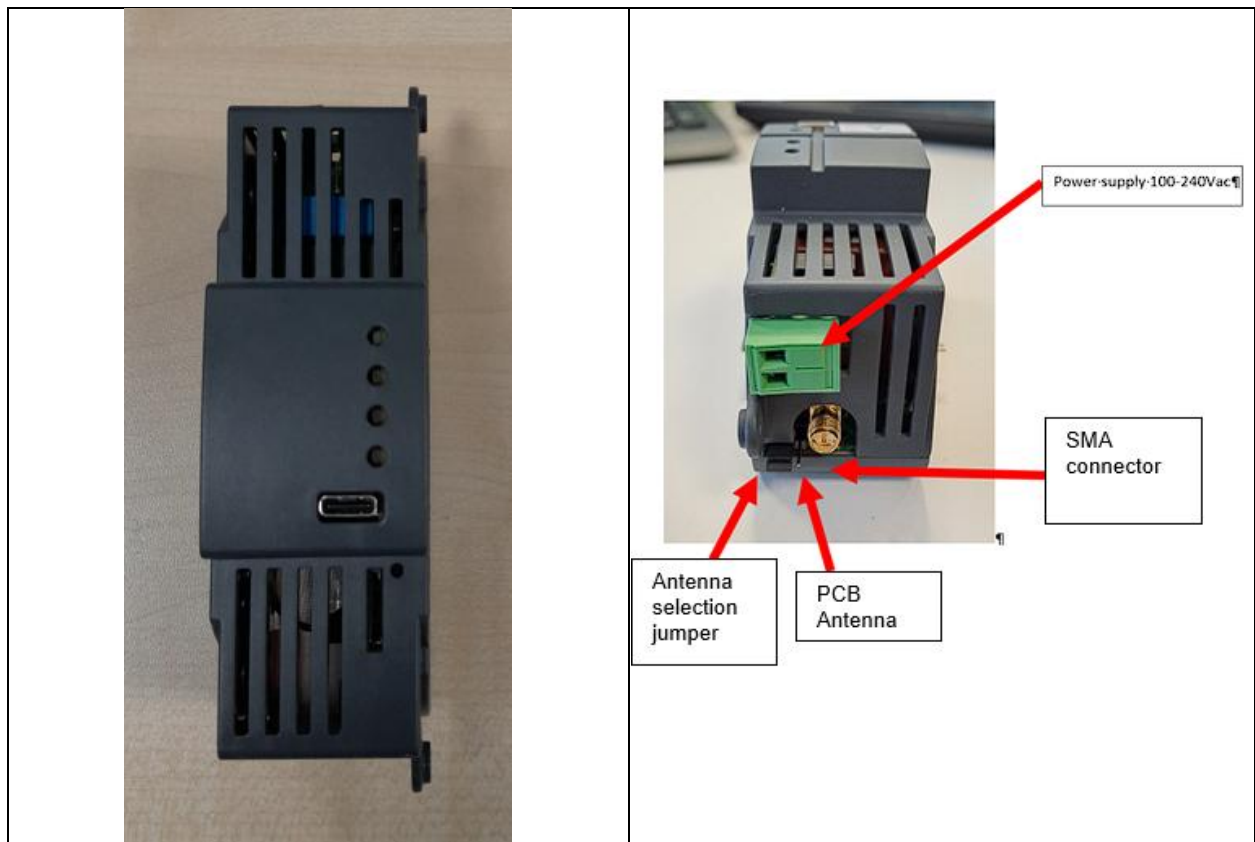
## 1 CONFIGURATION OF TEST INFORMATIONS ①

(①): All information contained in this clause and its sub-clauses is provided by the customer; the laboratory declines all responsibility for this information.

### 1.1 Equipment under test (EUT)

The equipment under test,

| Configuration 1     | Reference      | software | Power supply  | Wireless Com. | I/O      | Earth access |
|---------------------|----------------|----------|---------------|---------------|----------|--------------|
| EUT<br>SMPL25AI8176 | AEBWE0T0001100 | 0.1.21t  | 230 Vac 50 Hz | WIFI<br>BLE   | No wired | No wired     |



### 1.2 Equipment Power Supply

230 Vac 50Hz

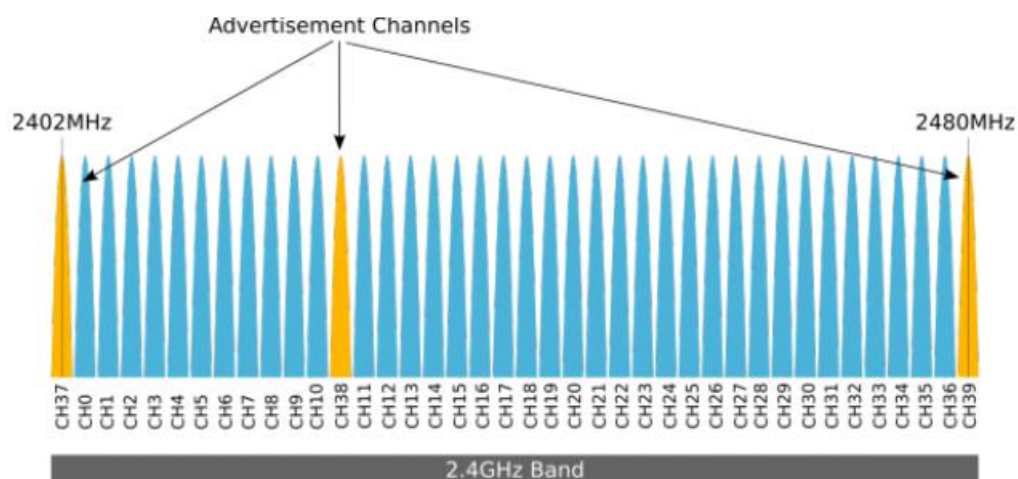
### 1.3 Equipment informations

Bluetooth Low Energy 2.4 GHz

|                    |                    |
|--------------------|--------------------|
| Frequency band     | 2402-2480 MHz      |
| Number of channels | 40                 |
| Spacing channel    | 2 MHz              |
| Channel bandwidth  | 2.25 MHz           |
| PCB antenna type   | Microstrip antenna |

### 1.4 Channel informations

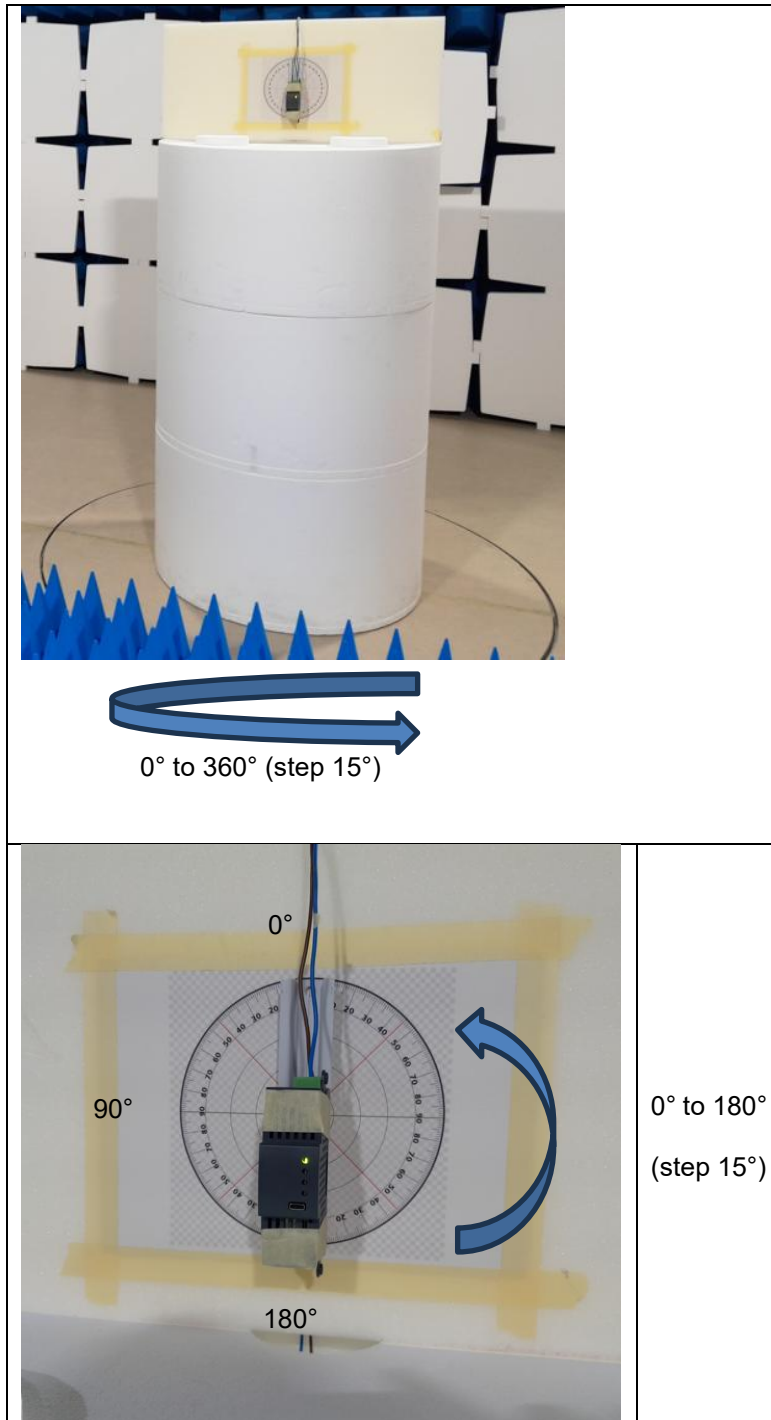
Bluetooth Low Energy 2.4 GHz



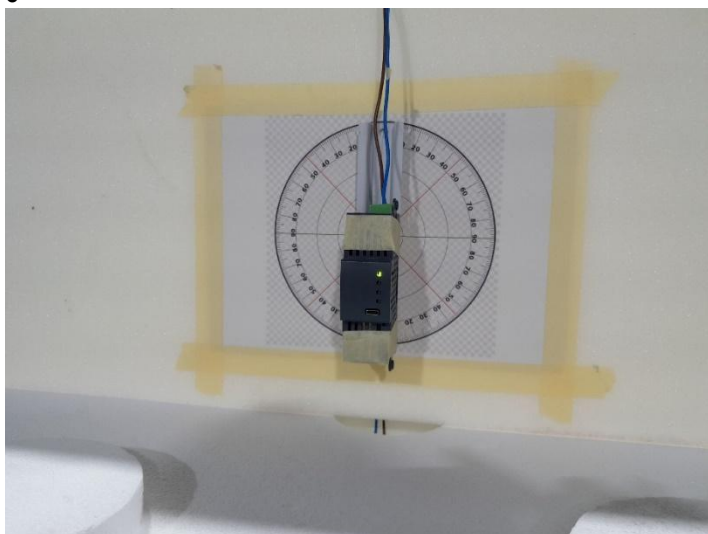
## 2 MEASUREMENT SETUP AND TEST DETAILS

### 2.1 Test arrangement and setup

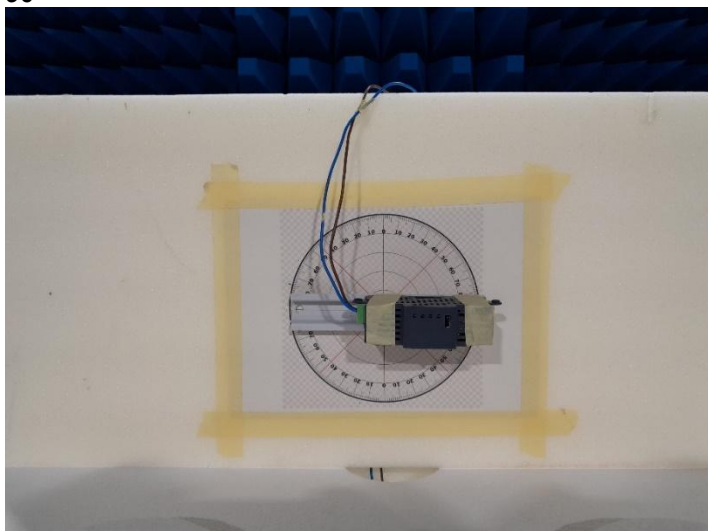
Measurements, in vertical and horizontal polarization, of the 3D radiation pattern of the EUT's internal PCB antenna along the X, Y, and Z axes, for 3 channels (low channel, middle channel, and high channel) in room FAR . Measurements were taken every 15° of rotation from 0° to 360° and for each position from 0° to 180° in 15° increments.



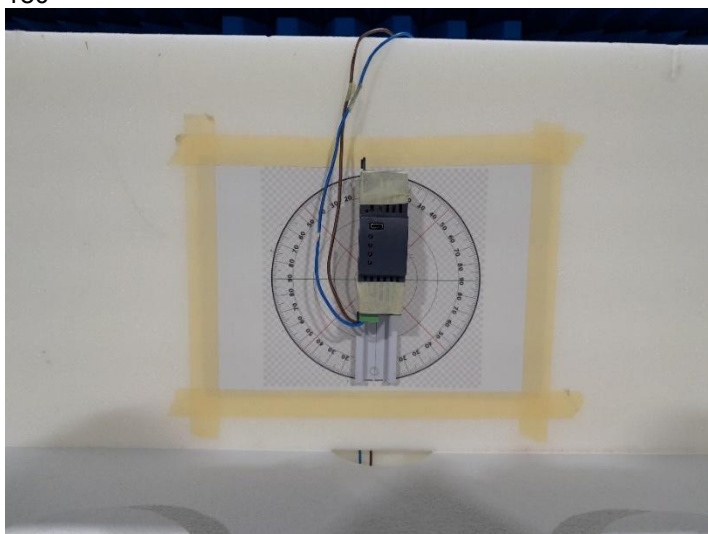
0°



90°

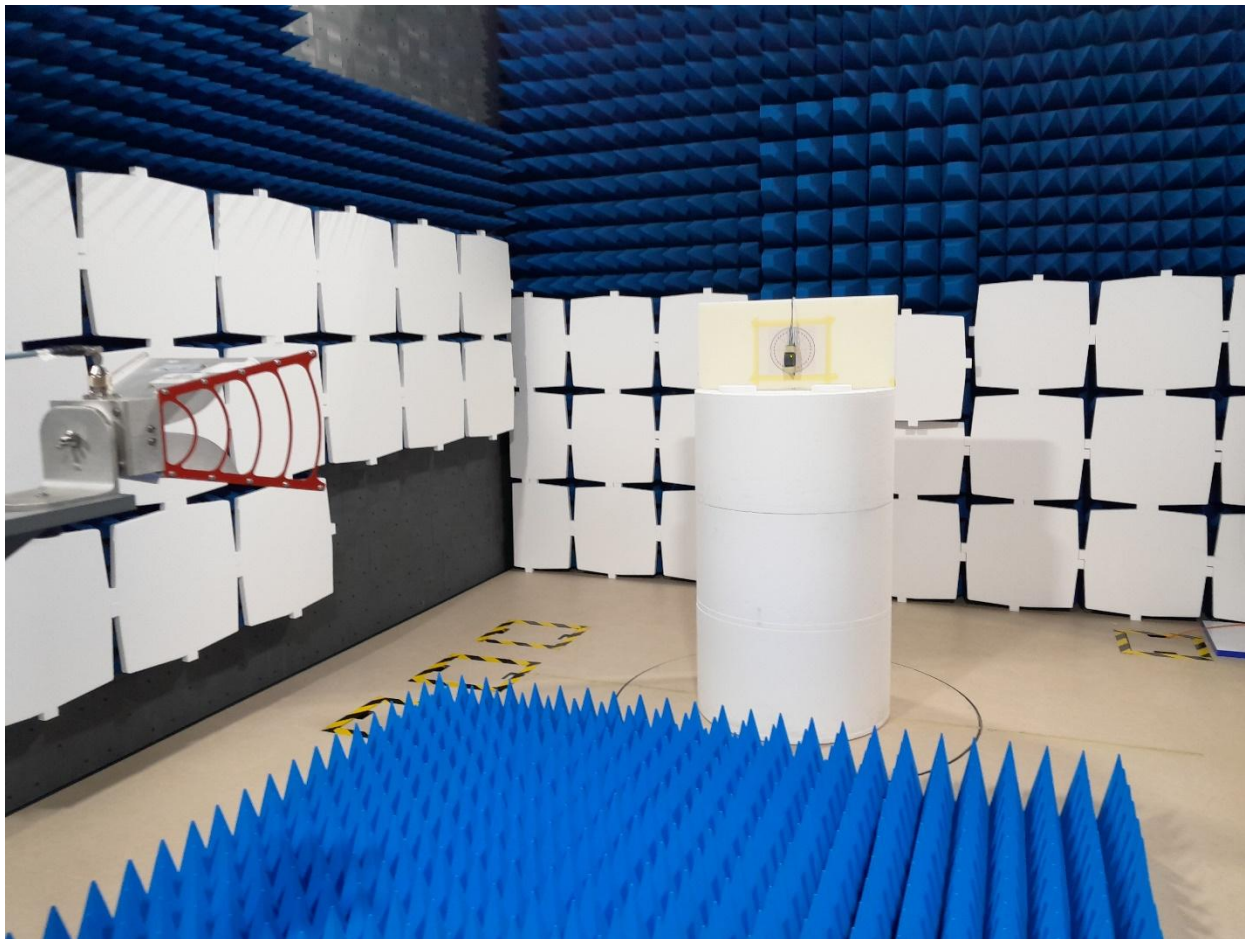


180 °



## 2.2 Photo

### FAR room 7



## 2.3 Test means

| Identification | Description                | Manufacturer  | Reference     | Characteristic |
|----------------|----------------------------|---------------|---------------|----------------|
| CEC771RF       | FAR room 7                 | SIEPEL        |               | 30MHz-26GHz    |
| RF657          | Software RF                | ACCSYS        | AcEMC 7.4.8.4 |                |
| CEC648         | Power Sensor               | DARE          | RPR3006W      | 10MHz-6GHz     |
| CEC412         | Horn antenna               | ETS LINDGREN  | 3115          | 750MHz-18GHz   |
| RF554          | PB 2.4GHz                  | MICRO-TRONICS | BPC17301      | 2380/2500 MHz  |
| RF757          | Cable 1.5 m ext FAR room 7 |               |               | SMA 1.5 m      |
| RF759          | Cable 5 m int FAR room 7   |               |               | SMA 5 m        |
| 48378          | Multimeter                 | FLUKE         | FLUKE 45      |                |

## 2.4 EUT Setup

EUT SMPL25AI8176 : Bluetooth Low Energy 2.4 GHz

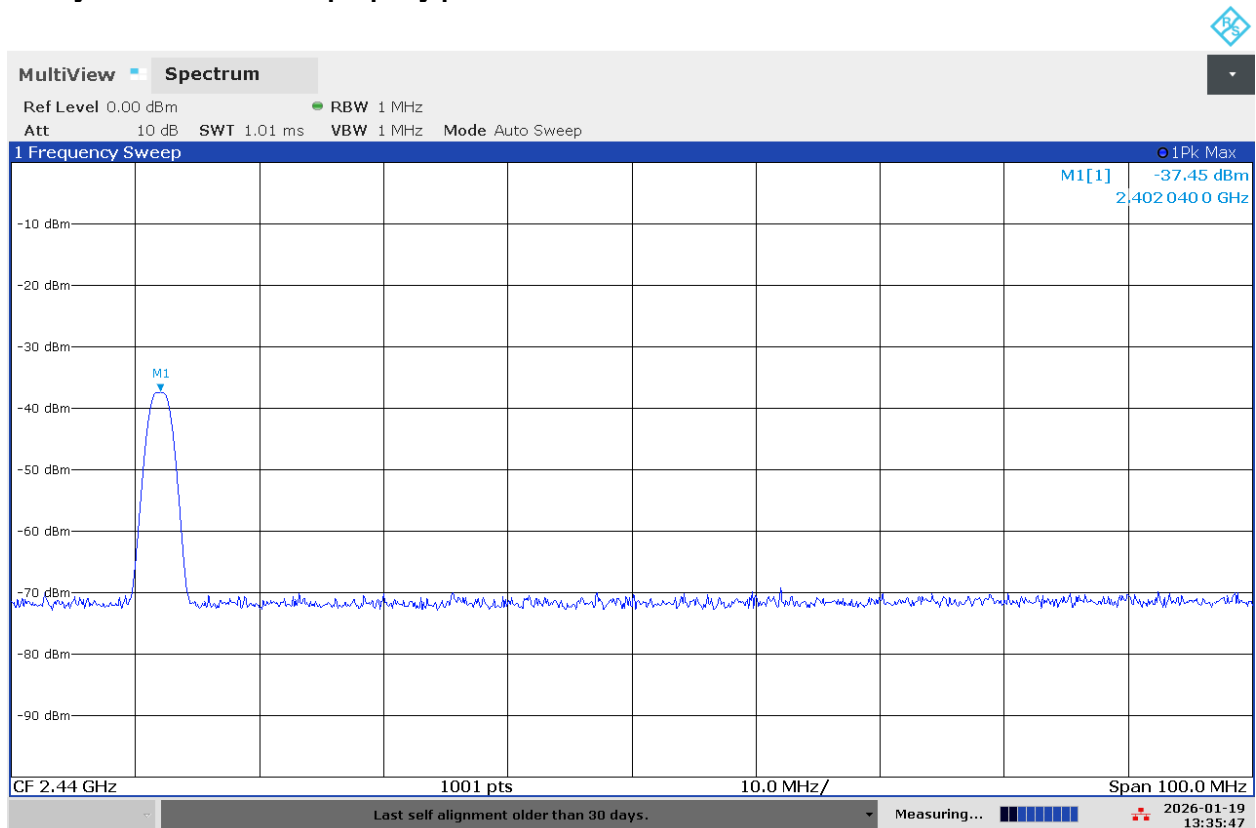
Power 230 Vac 50Hz / internal PCB antenna selected / Mode emission continuous

EUT configuration and command for low Channel (2402 Mhz) measurements

CMD low Channel (2402 Mhz):

```
systemctl stop NetworkManager
hciconfig hci0 up
hcidtool -i hci0 cmd 0x03 0x003
hcidtool -i hci0 cmd 0x3F 0x87 0x0A
hcidtool -i hci0 cmd 0x08 0x034 0x00 0xFF 0x00 0x01
```

Here you see that we are properly paired and on the correct channel :



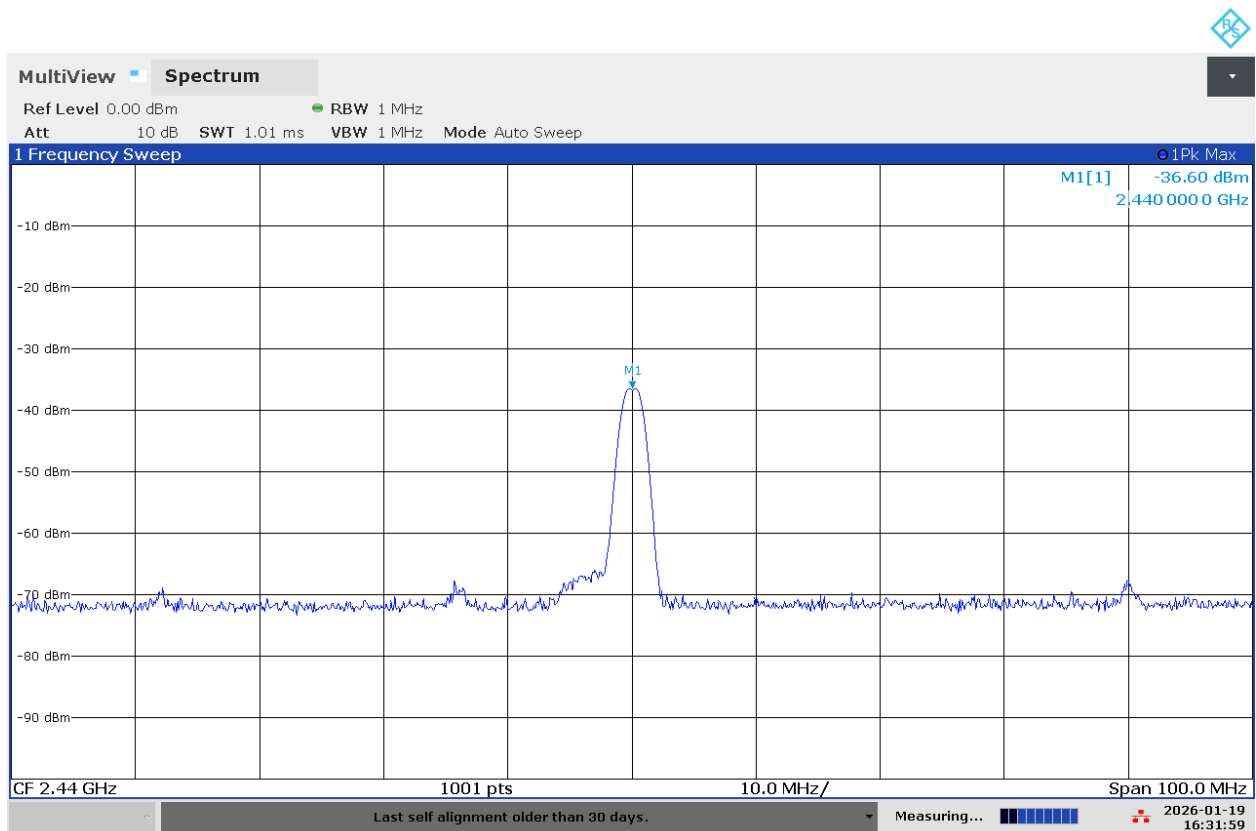
01:35:47 PM 01/19/2026

EUT configuration and command for midle Channel (2440 Mhz):measurements

CMD midle Channel (2440 Mhz):

```
systemctl stop NetworkManager
hciconfig hci0 up
hcidtool -i hci0 cmd 0x03 0x003
hcidtool -i hci0 cmd 0x3F 0x87 0x0A
hcidtool -i hci0 cmd 0x08 0x034 0x13 0xFF 0x00 0x01
```

Here you see that we are properly paired and on the correct channel :



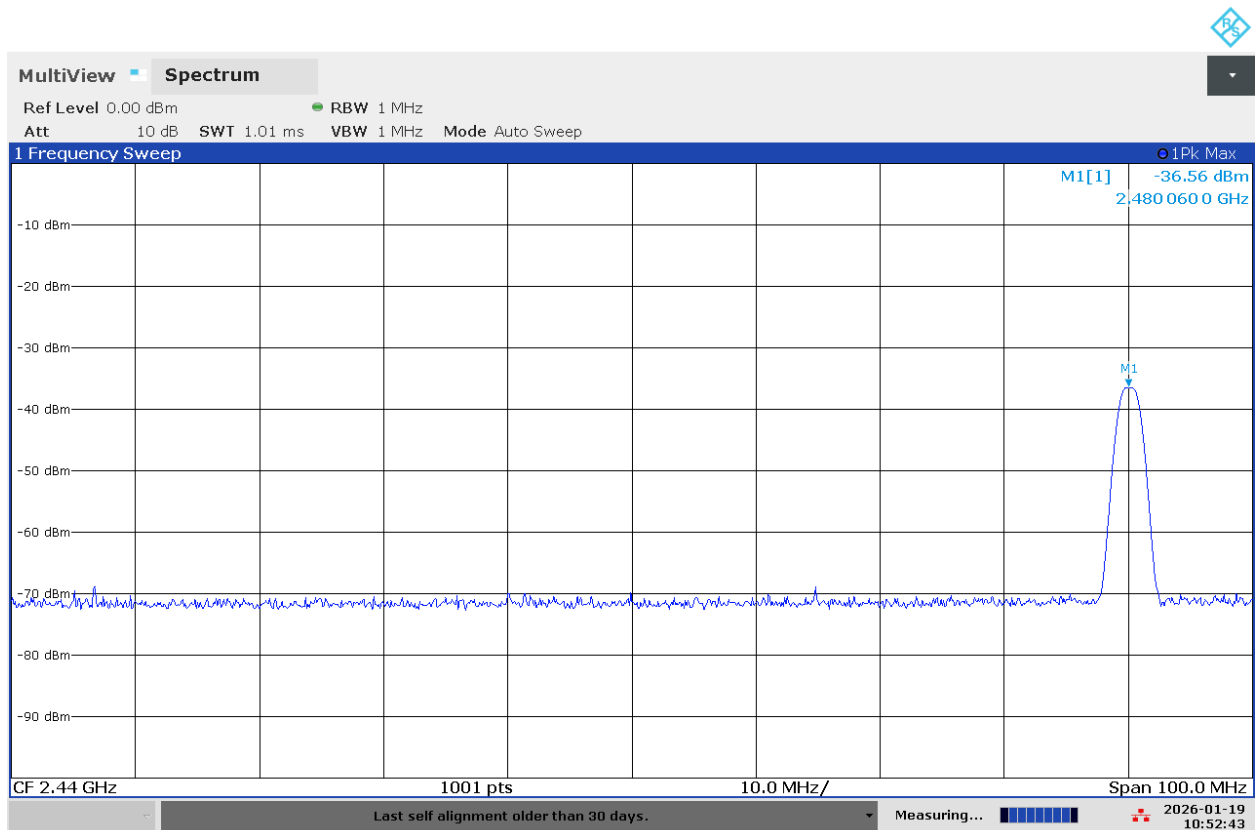
04:31:59 PM 01/19/2026

EUT configuration and command for Channel (2480 Mhz) measurements

CMD hight Channel (2480 Mhz):

```
systemctl stop NetworkManager
hciconfig hci0 up
hcidtool -i hci0 cmd 0x03 0x003
hcidtool -i hci0 cmd 0x3F 0x87 0x0A
hcidtool -i hci0 cmd 0x08 0x034 0x27 0xFF 0x00 0x01
```

Here you see that we are properly paired and on the correct channel :



10:52:43 AM 01/19/2026

## 2.5 Date of tests and environmental conditions

| Date (dd/mm/yyyy) : | 19/01/2026 | 20/01/2026 |
|---------------------|------------|------------|
| Temperature:        | 21 °C      | 21 °C      |
| Humidity:           | 28 %       | 30 %       |
| Pressure:           | 1012 hPa   | 1014 hPa   |

### 3 RESULTS

#### 3.1 Results

EUT SMPL25AI8176 : Bluetooth Low Energy 2.4 GHz

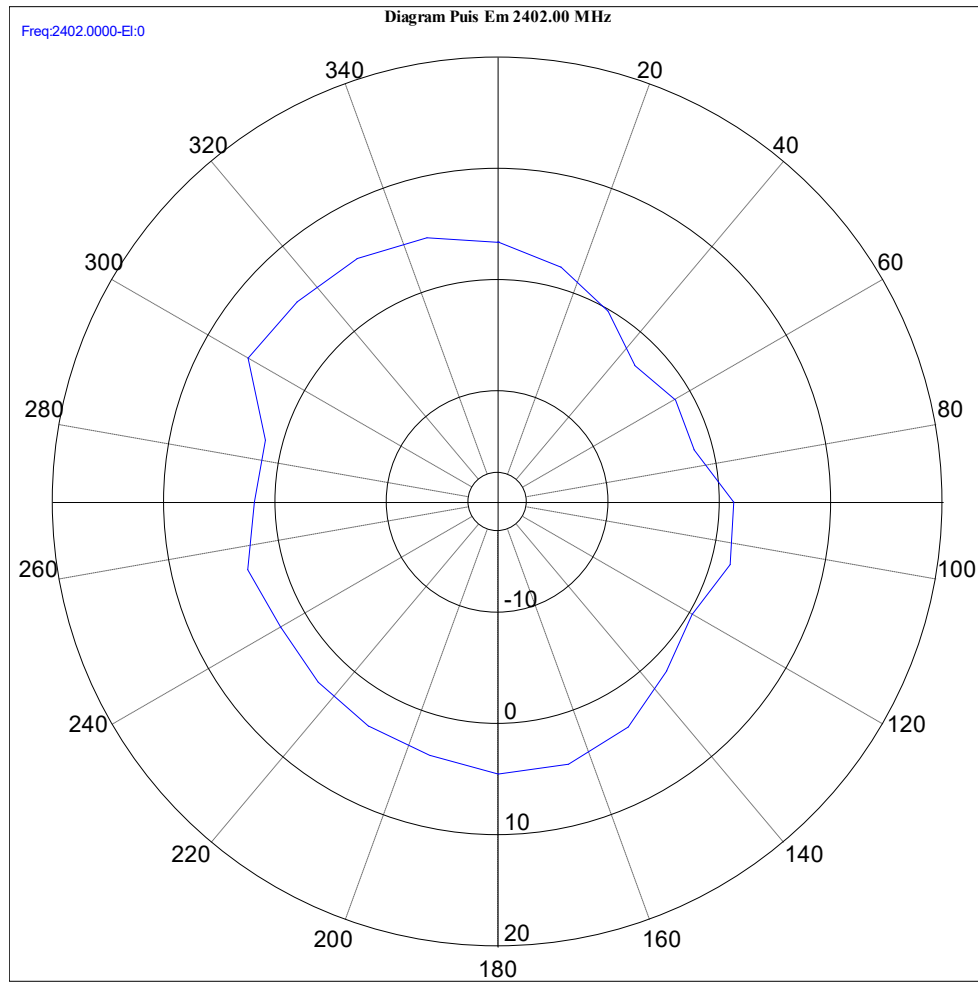
Power 230 Vac 50Hz / internal PCB antenna selected / Mode emission continuous

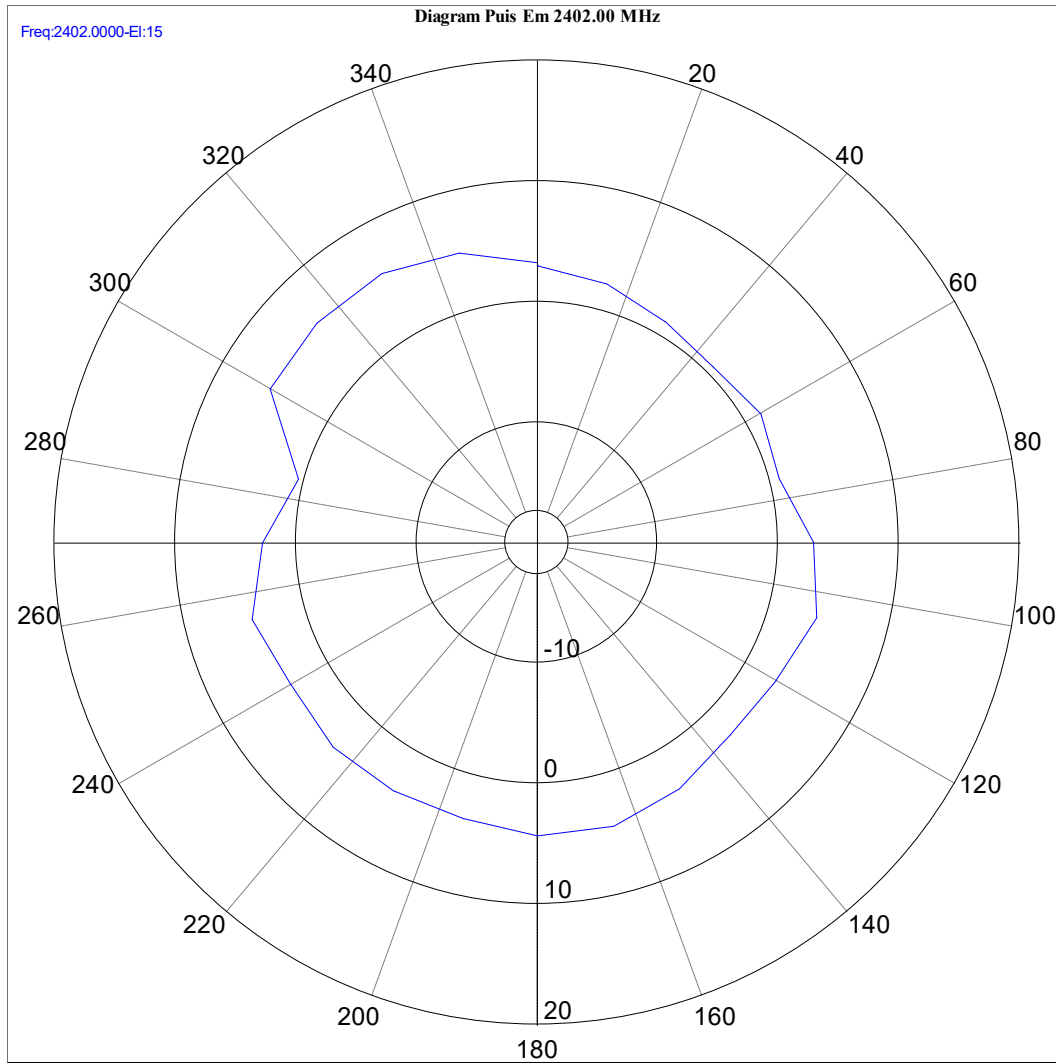
| U EUT (V)             | Channel |    | Frequency (MHz) | 2D EIRP (dBm) | Cond. Power (dBm) | 2D peak Gain (dBi) |
|-----------------------|---------|----|-----------------|---------------|-------------------|--------------------|
| 230 Vac               | Low     | 37 | 2402            | 8.92          | 4.60              | 4.32               |
| 230 Vac               | Medium  | 17 | 2440            | 9.19          | 4.53              | 4.66               |
| 230 Vac               | High    | 39 | 2480            | 7.76          | 4.12              | 3.64               |
| Gain=EIRP-Cond. power |         |    |                 |               |                   |                    |

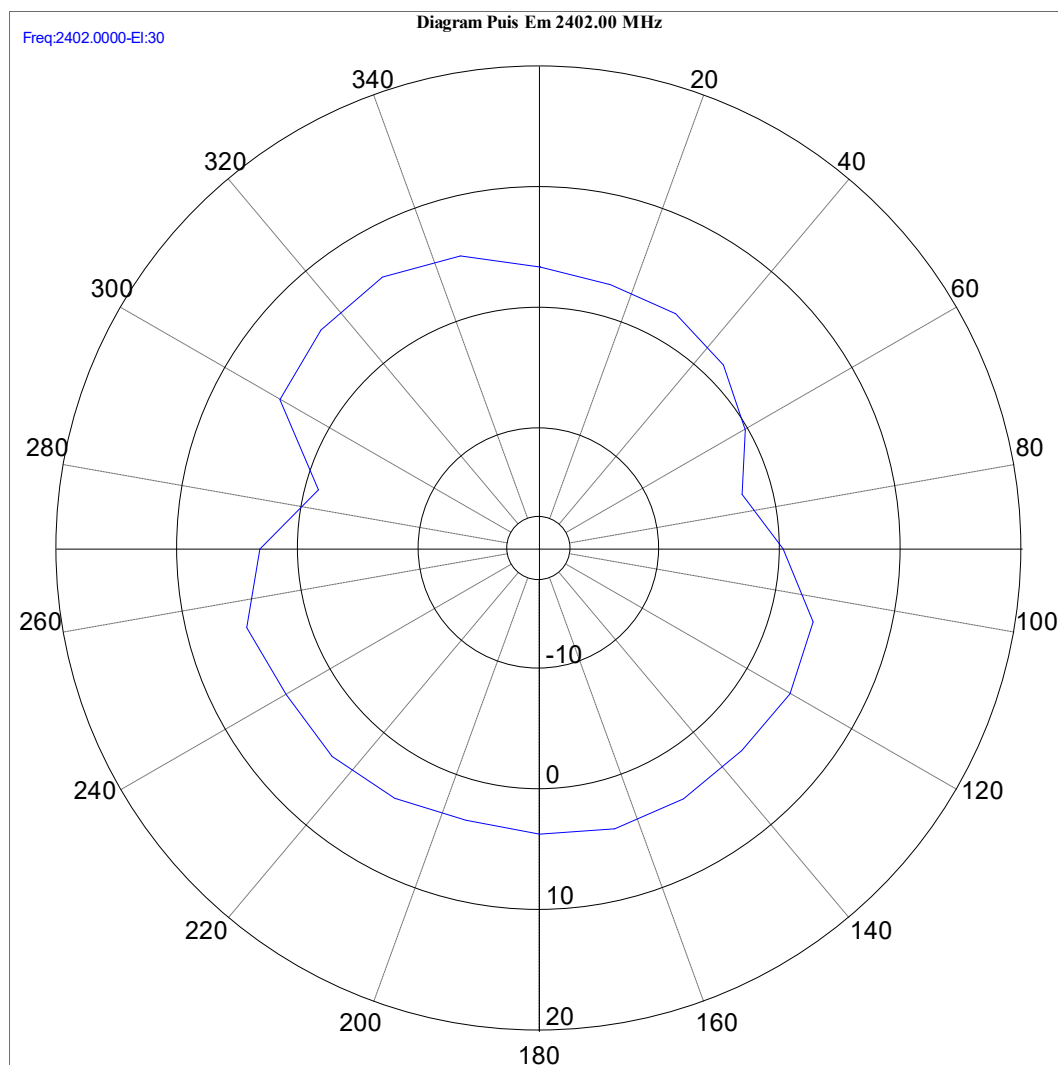
| U EUT (V)             | Channel |    | Frequency (MHz) | 3D EIRP (dBm) | Cond. Power (dBm) | 3D peak Gain (dBi) |
|-----------------------|---------|----|-----------------|---------------|-------------------|--------------------|
| 230 Vac               | Low     | 37 | 2402            | 9.13          | 4.60              | 4.53               |
| 230 Vac               | Medium  | 17 | 2440            | 9.42          | 4.53              | 4.89               |
| 230 Vac               | High    | 39 | 2480            | 8.59          | 4.12              | 4.47               |
| Gain=EIRP-Cond. power |         |    |                 |               |                   |                    |

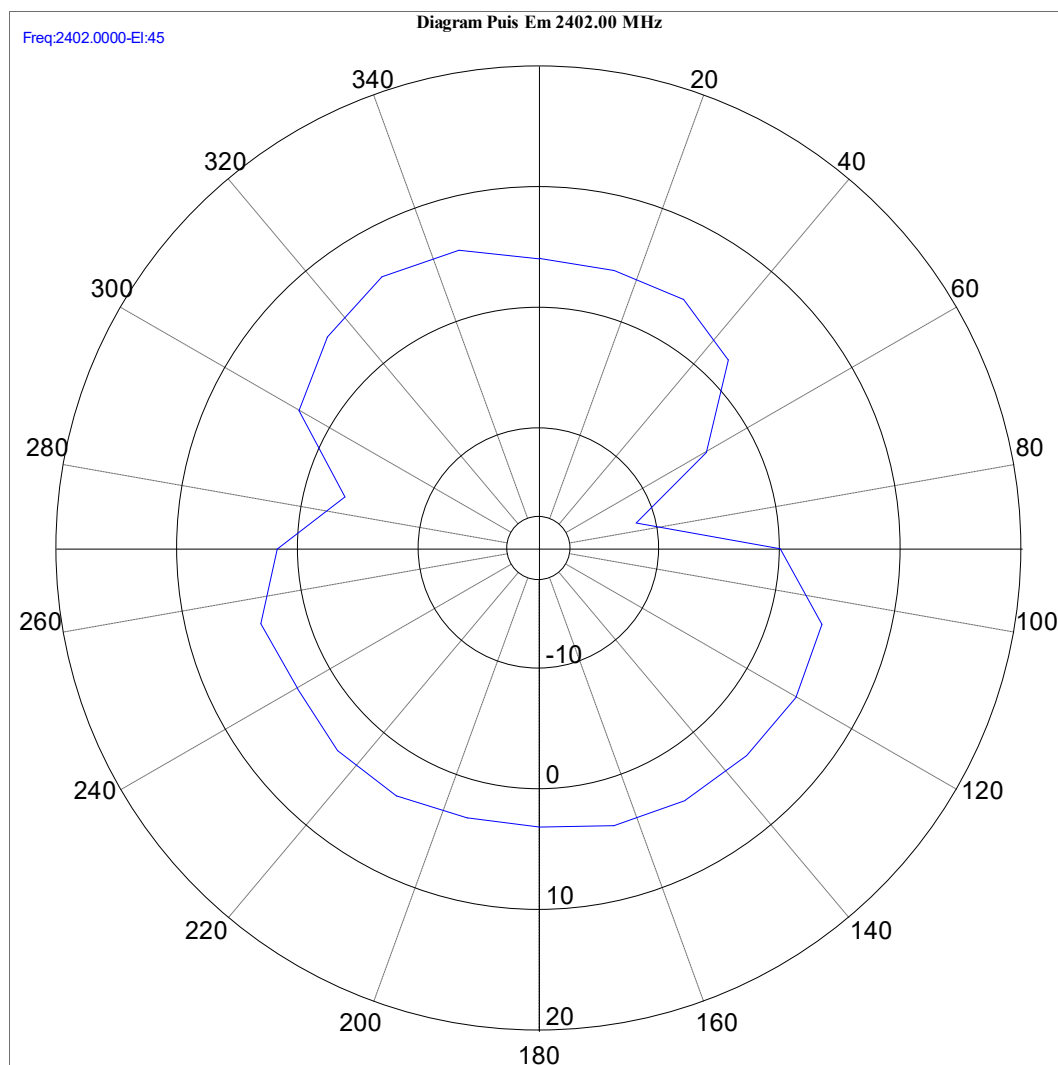
#### 4 CURVES EIRP LOW CHANNEL (2402 MHZ)

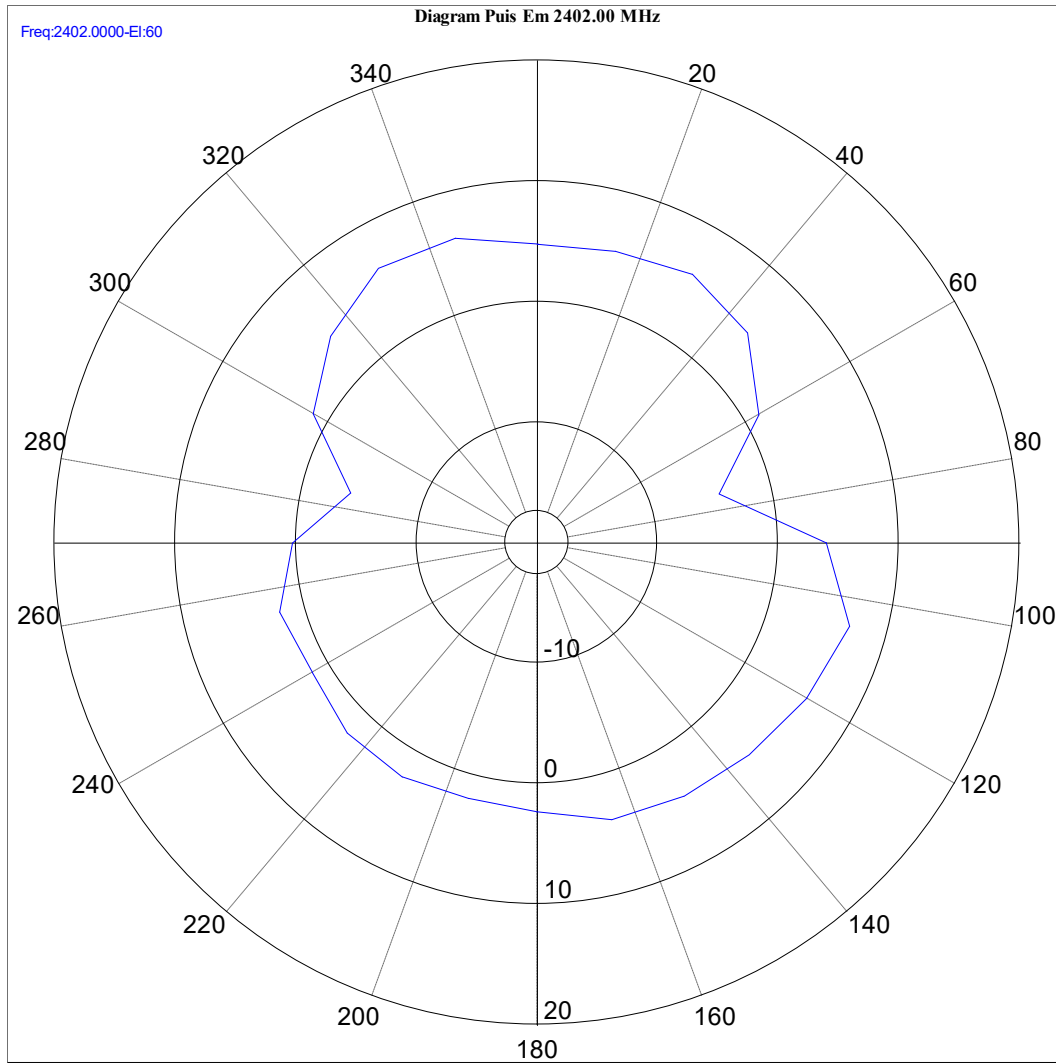
13 Curves : Curve at 0° to Curve at 180° (Step 15°)

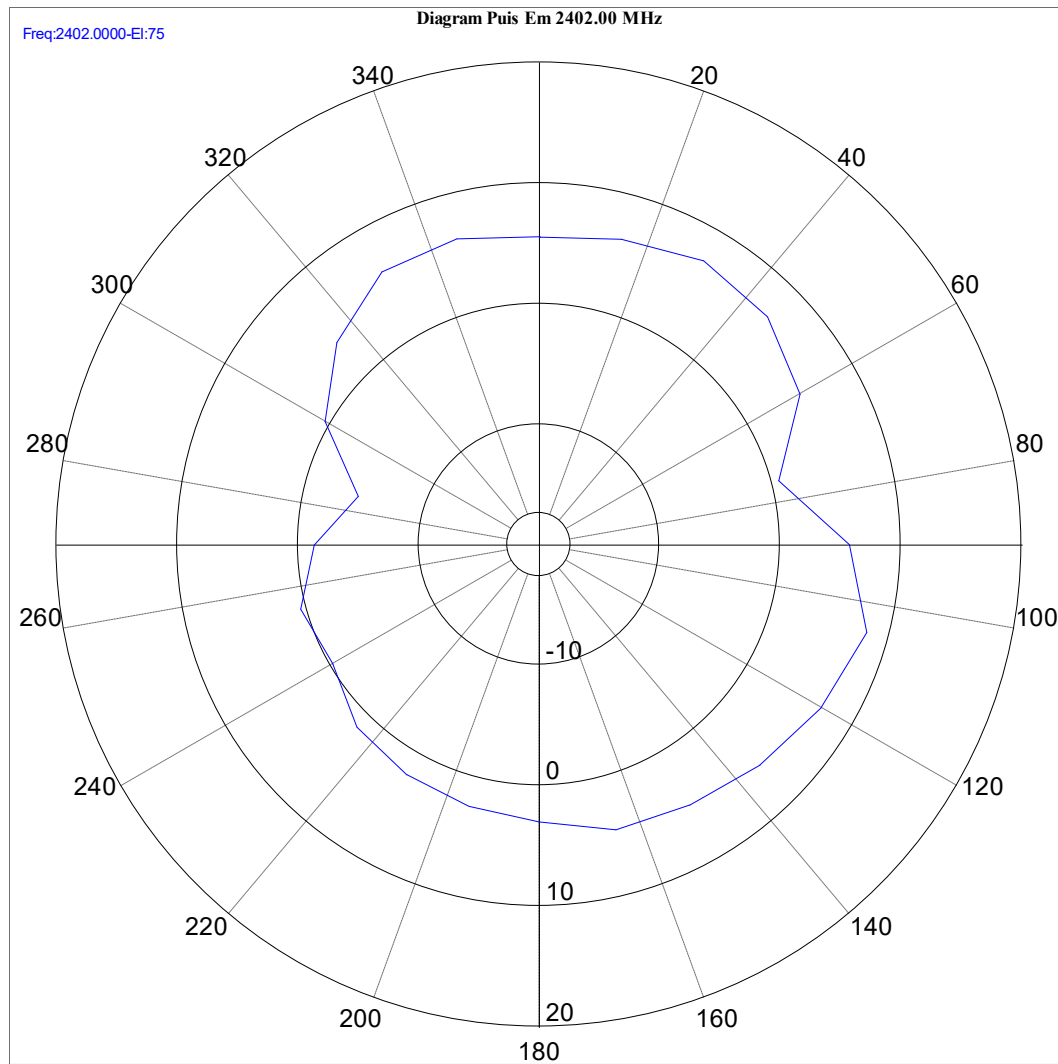


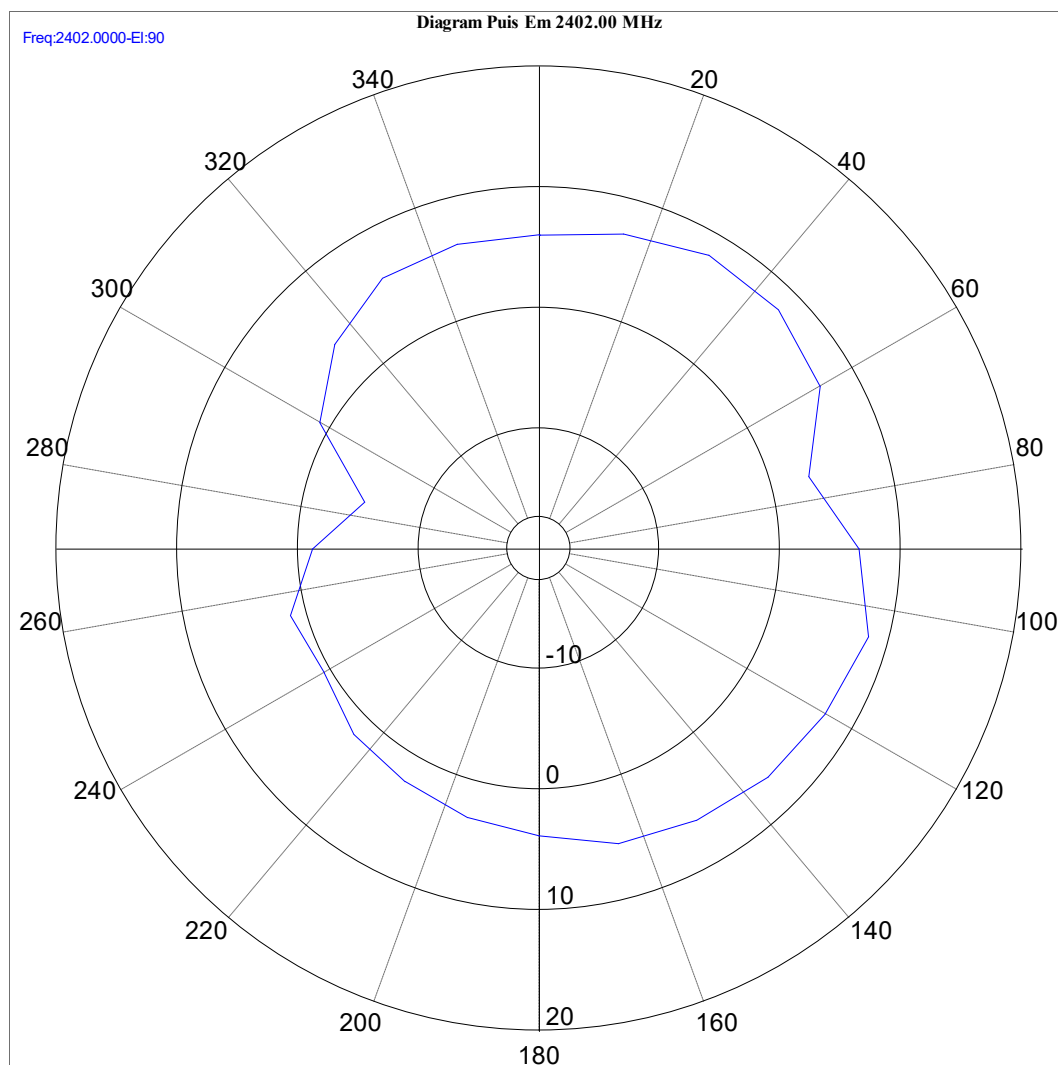


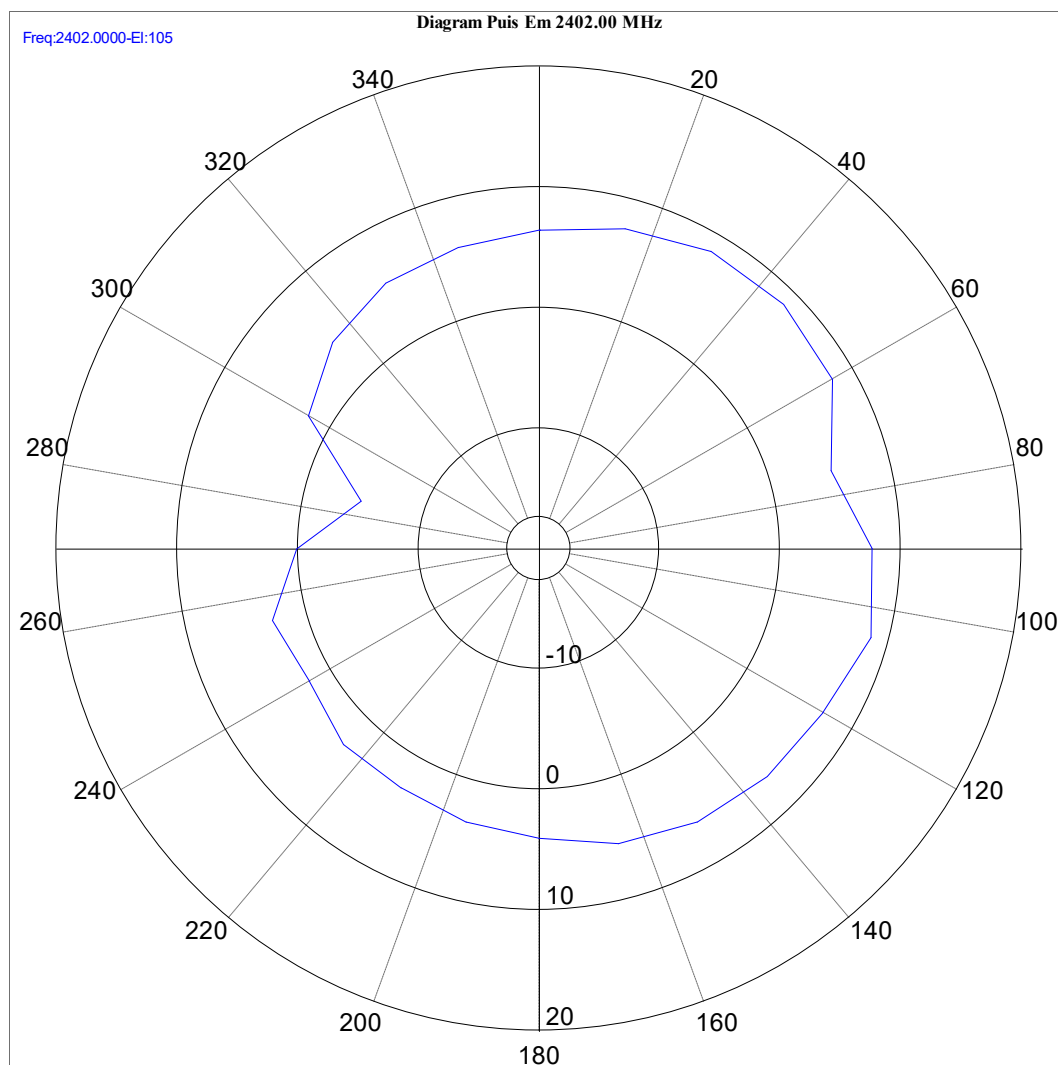


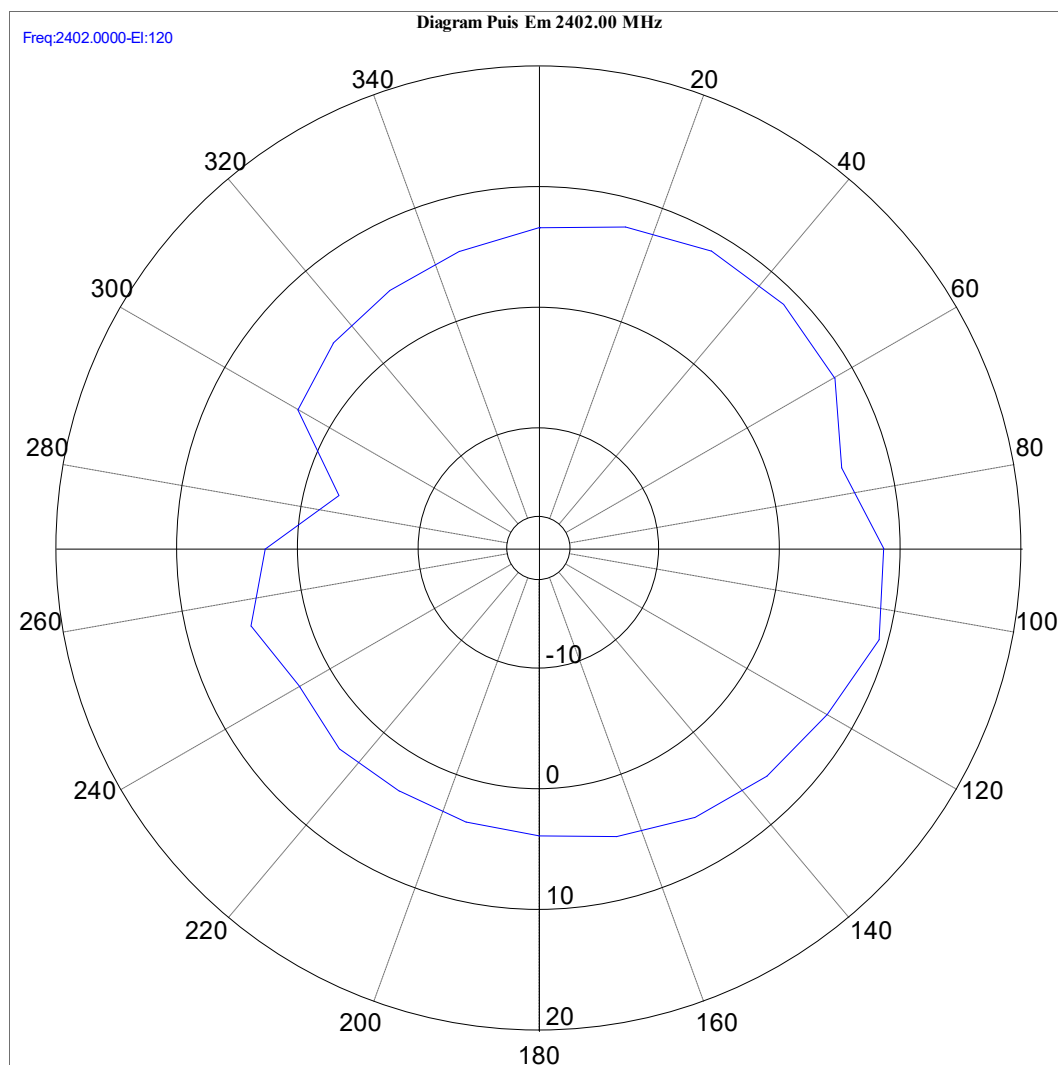


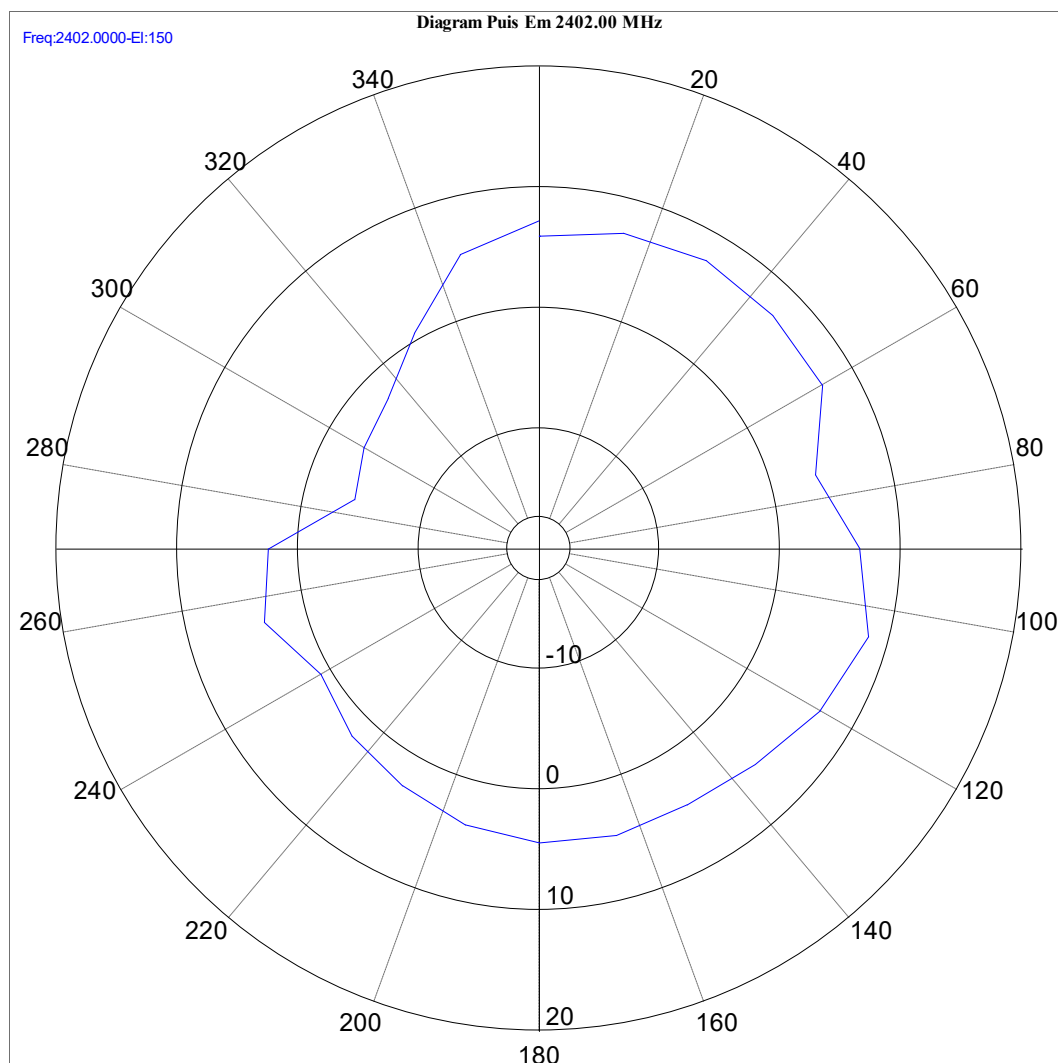


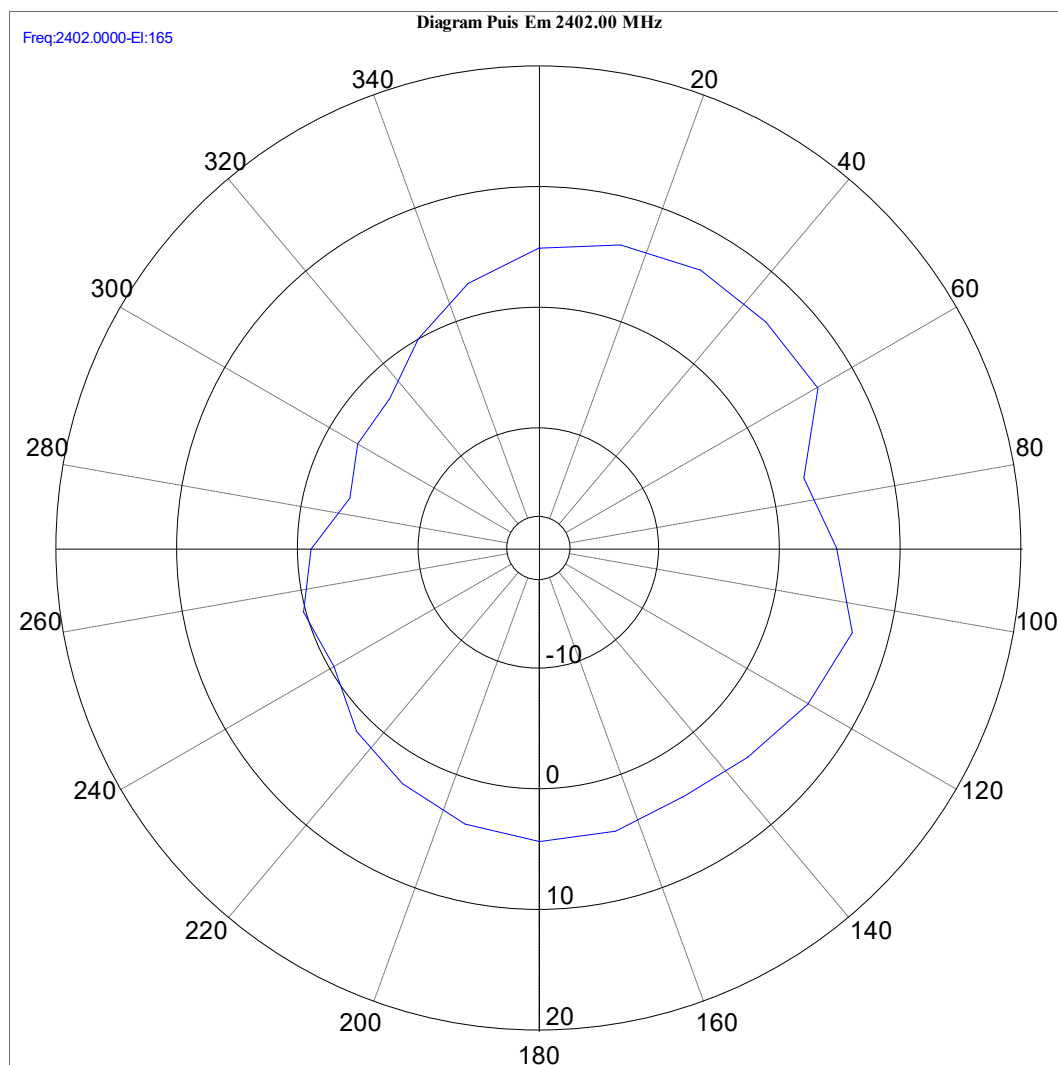


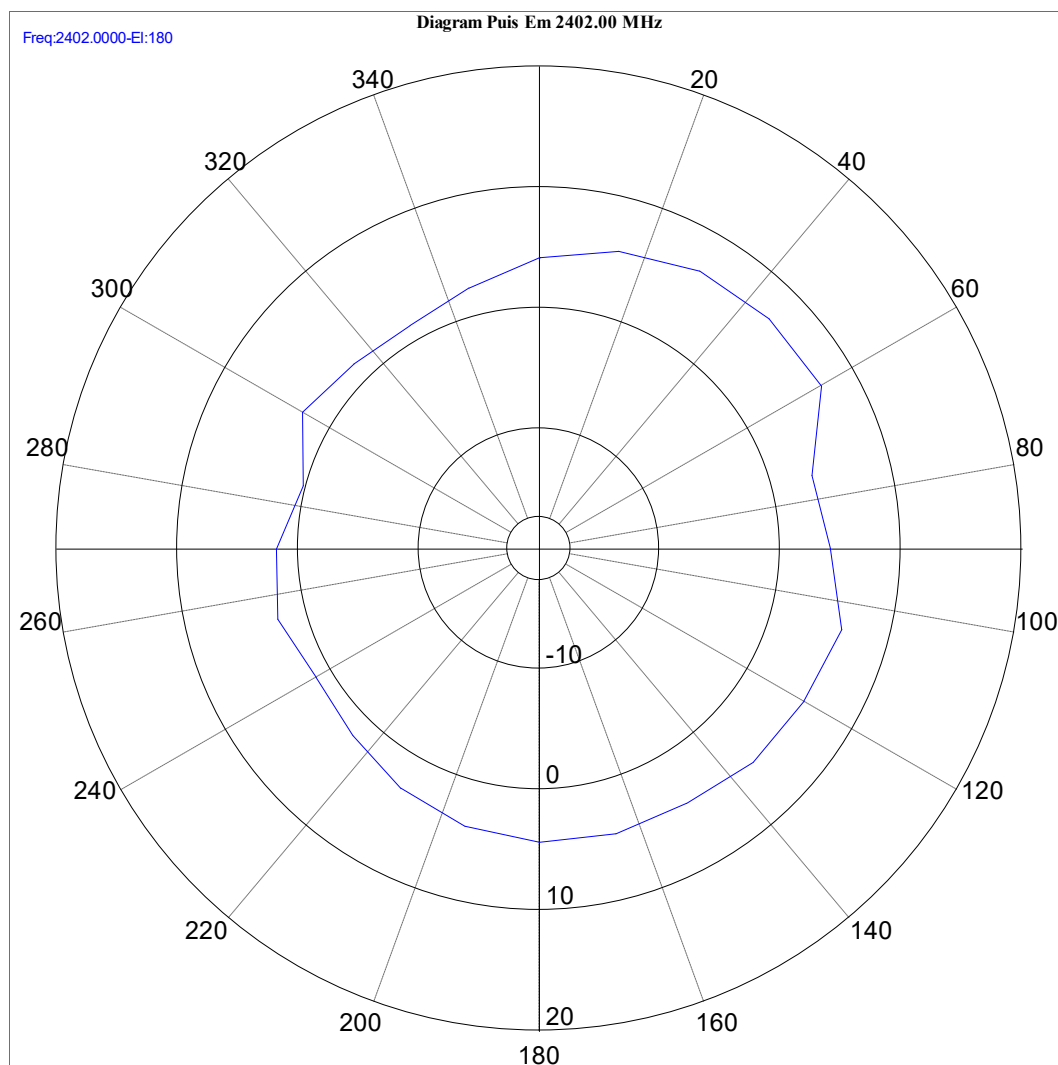






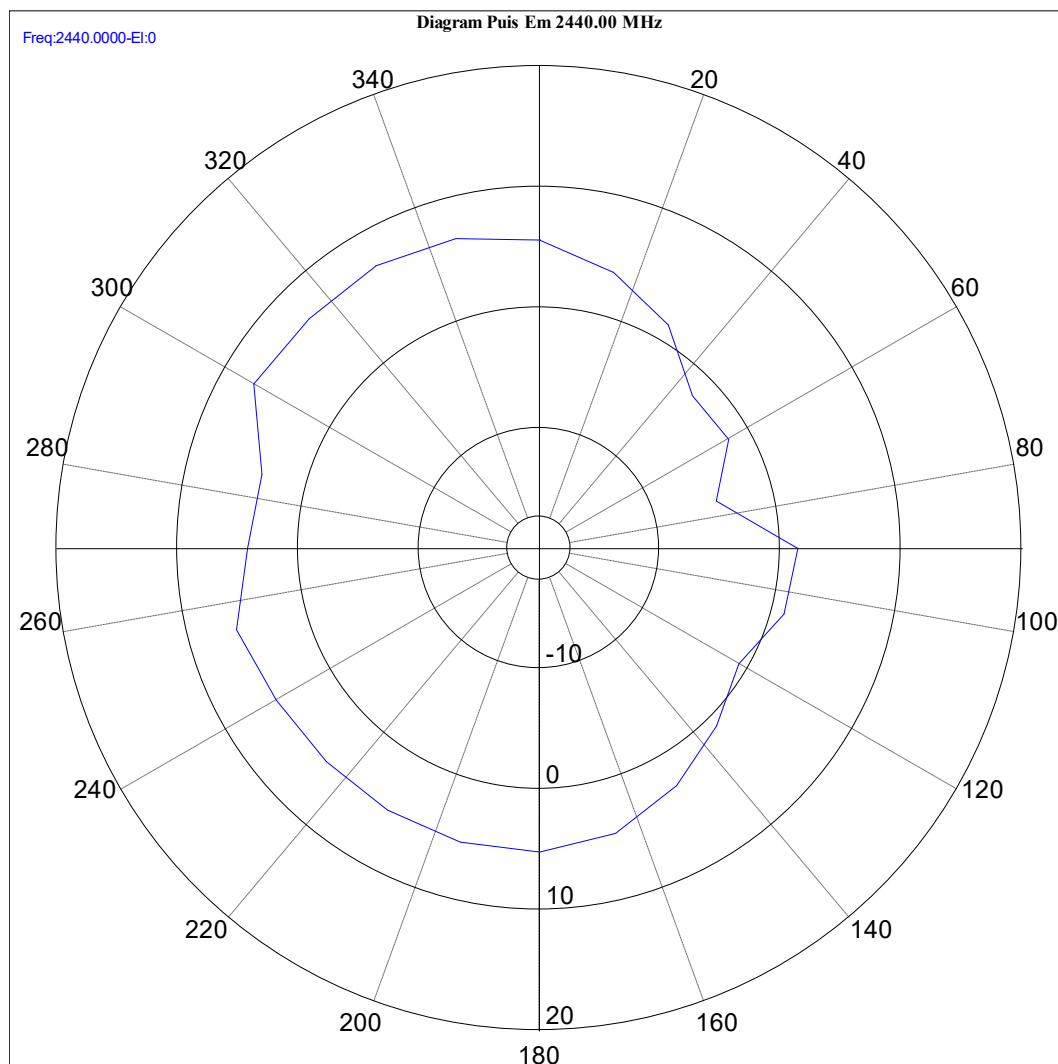


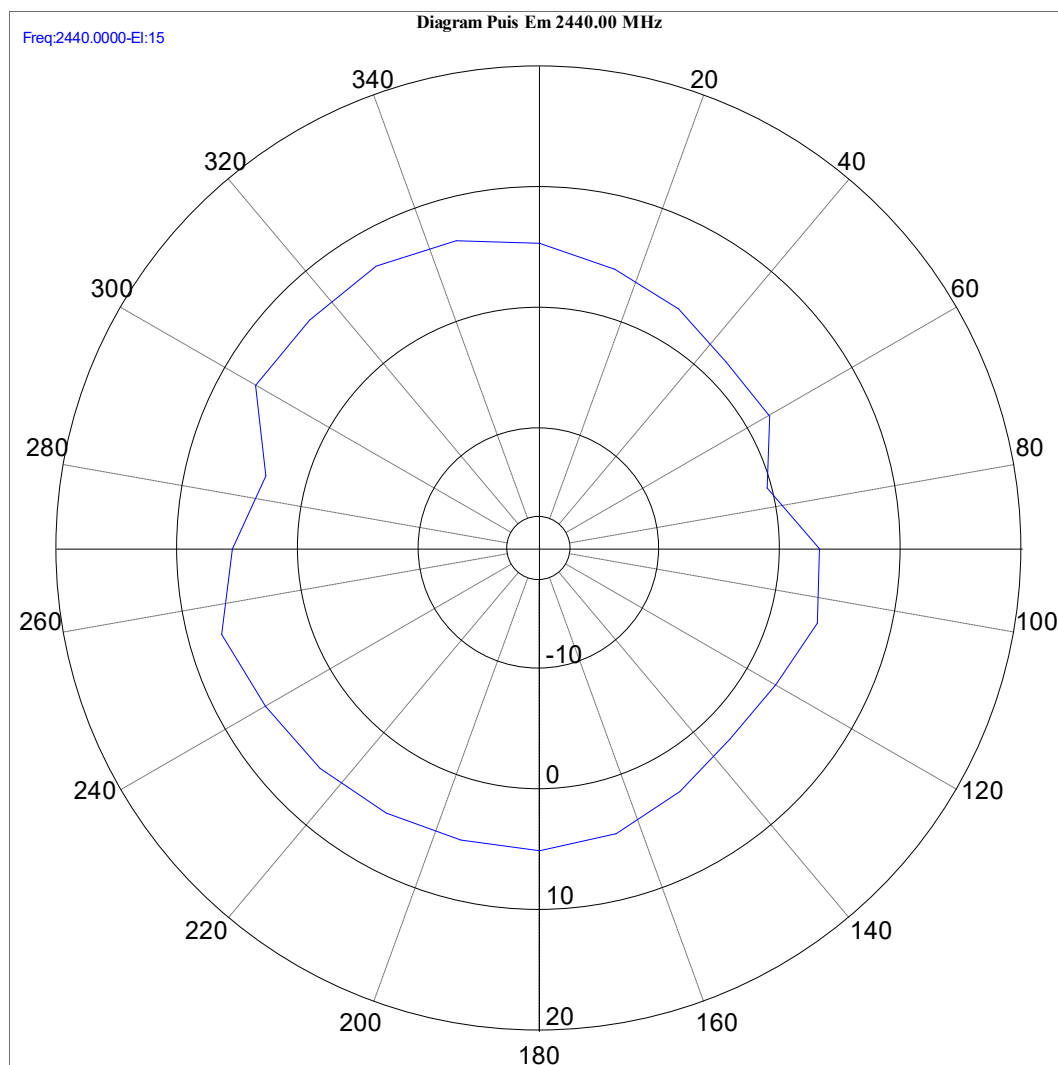


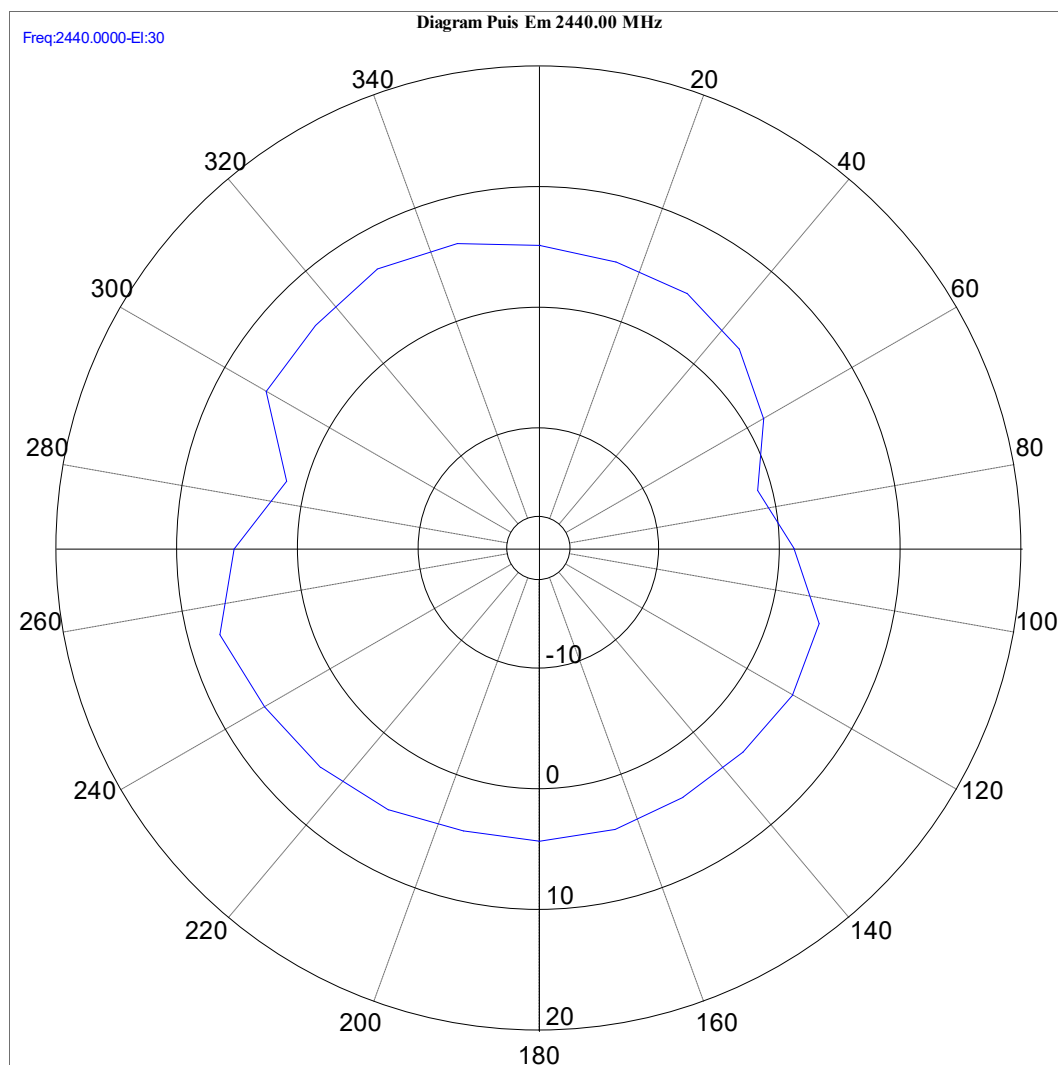


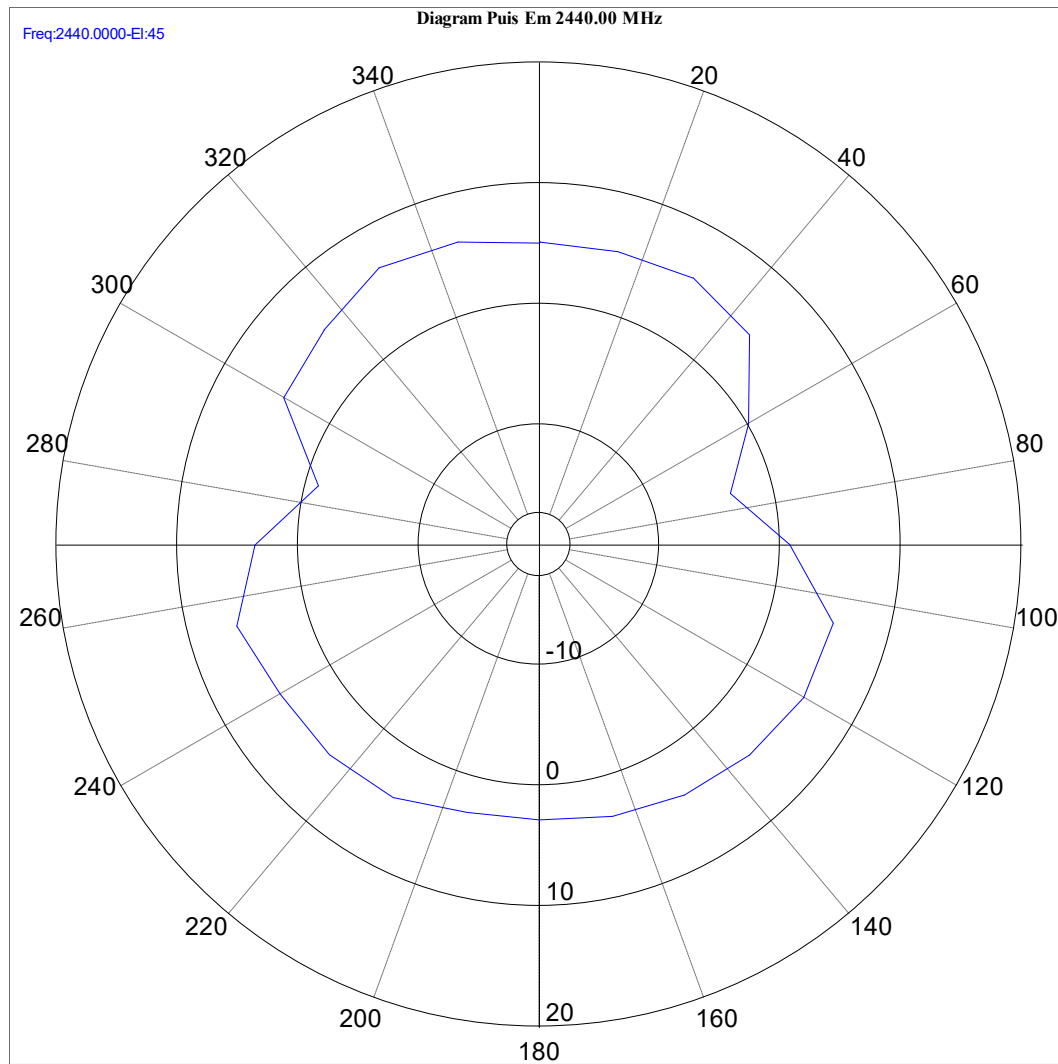
## 5 CURVES EIRP MIDLE CHANNEL (2440 MHZ)

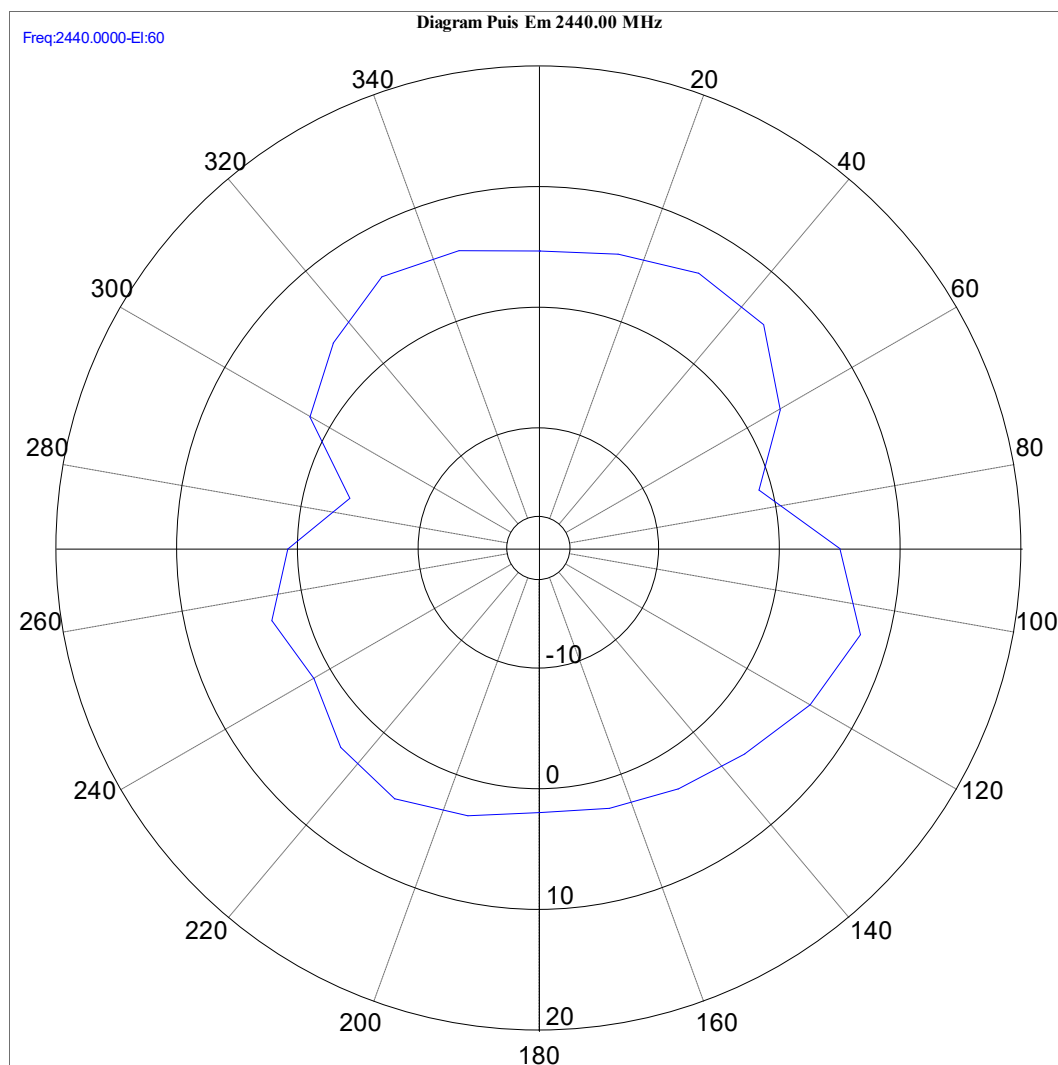
13 Curves : Curve at 0° to Curve at 180° (Step 15°)

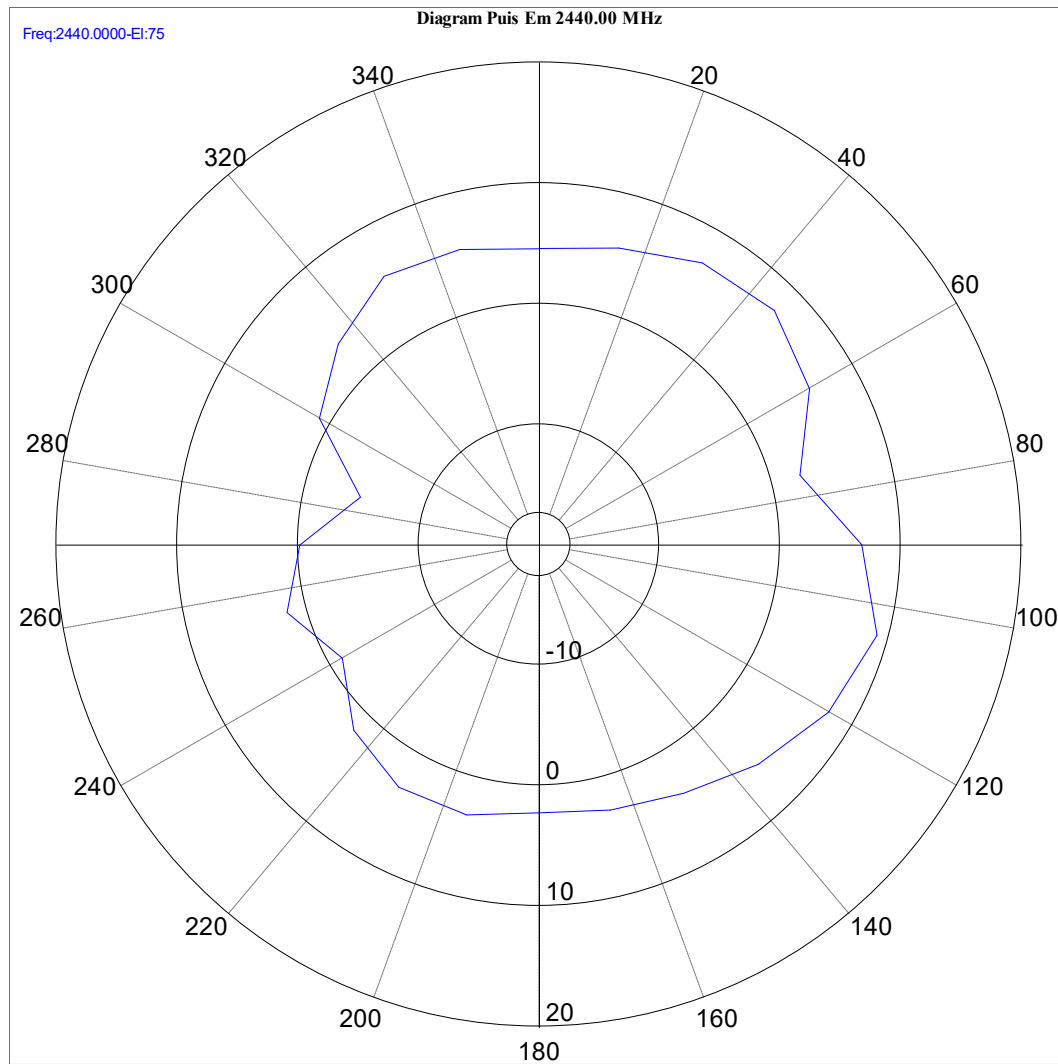


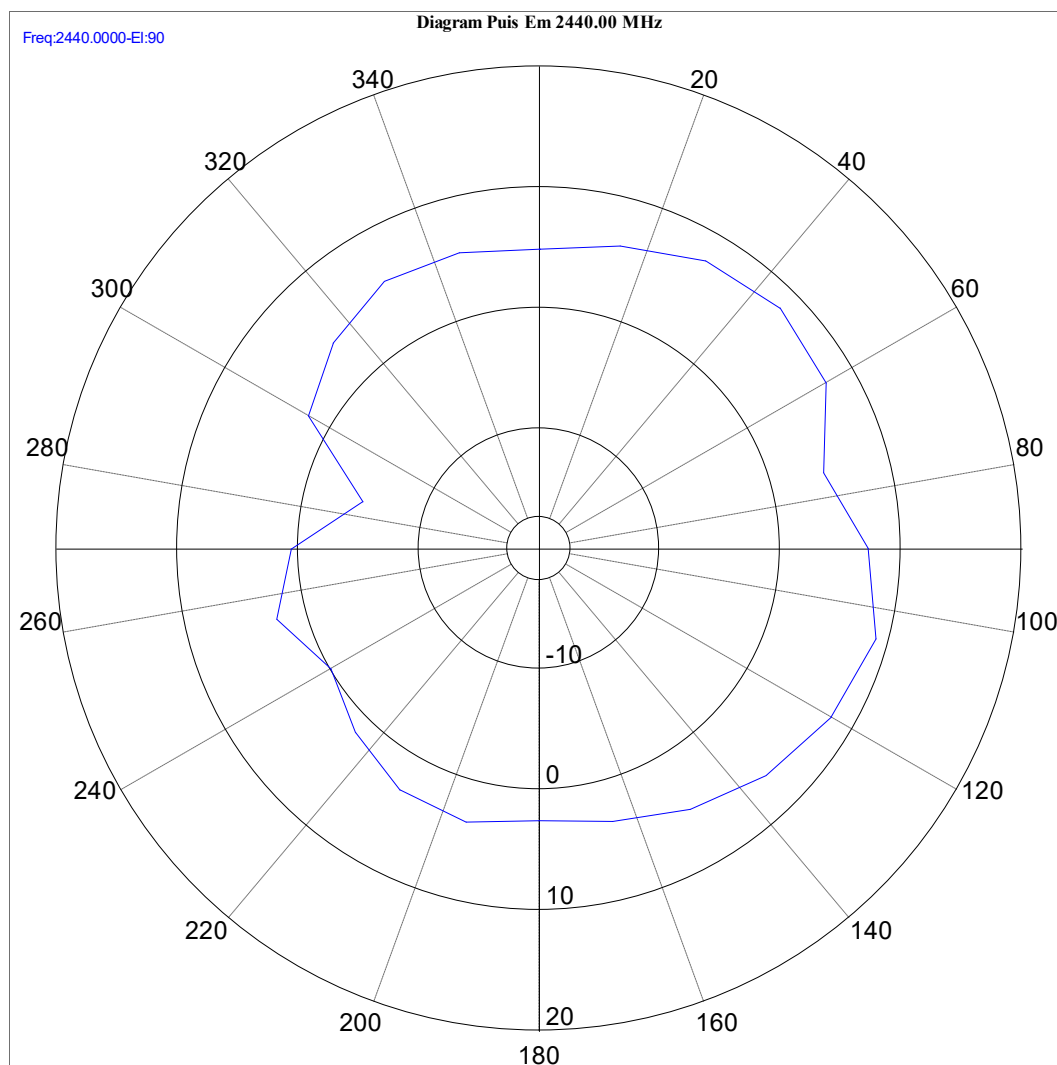


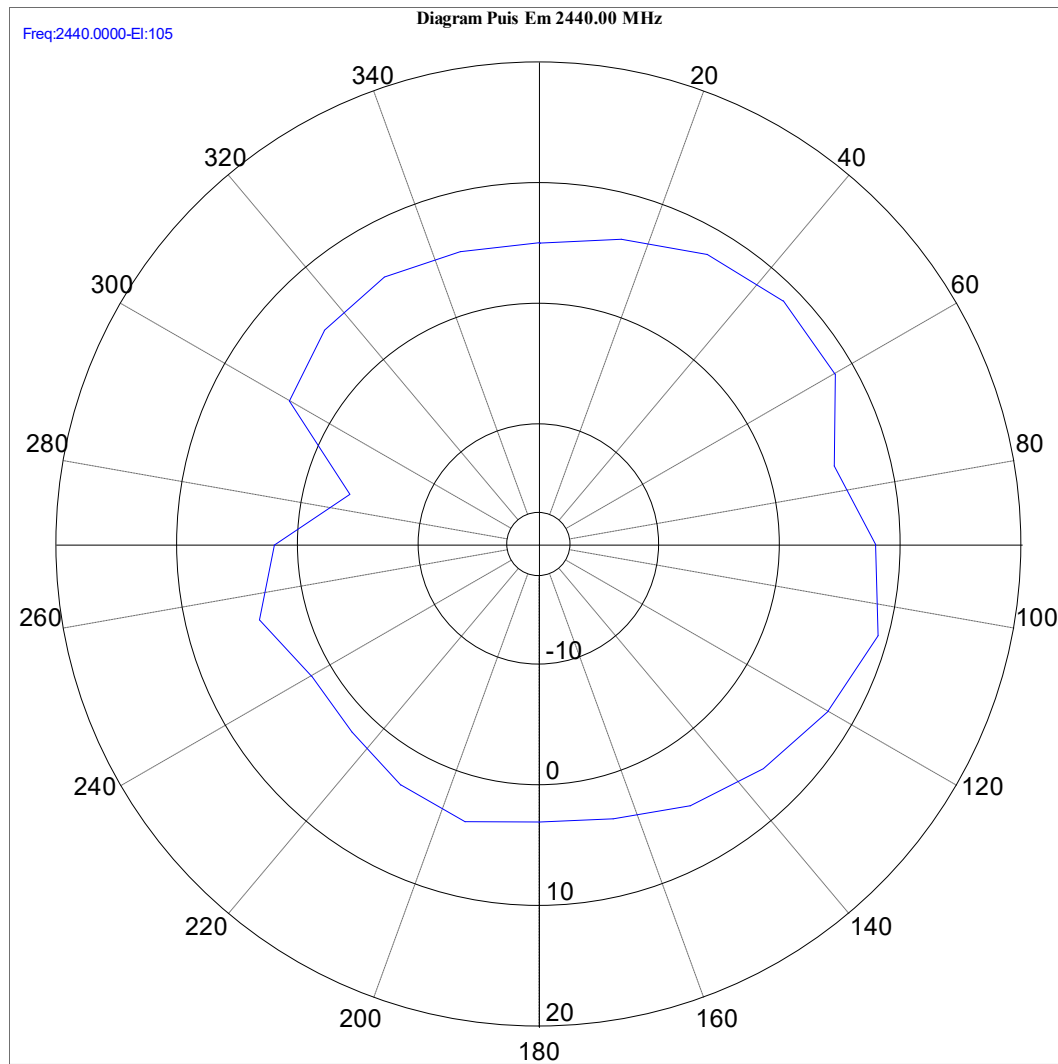


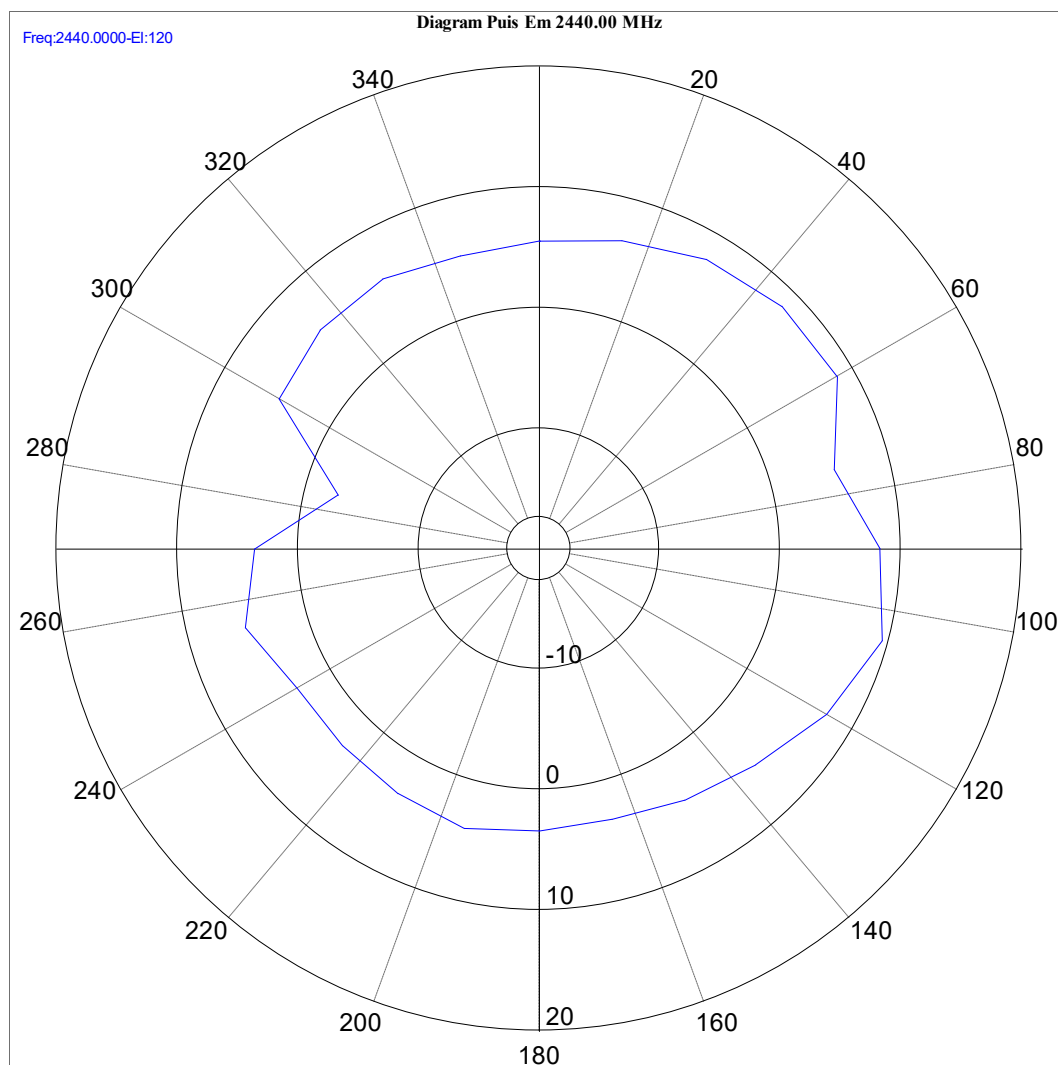


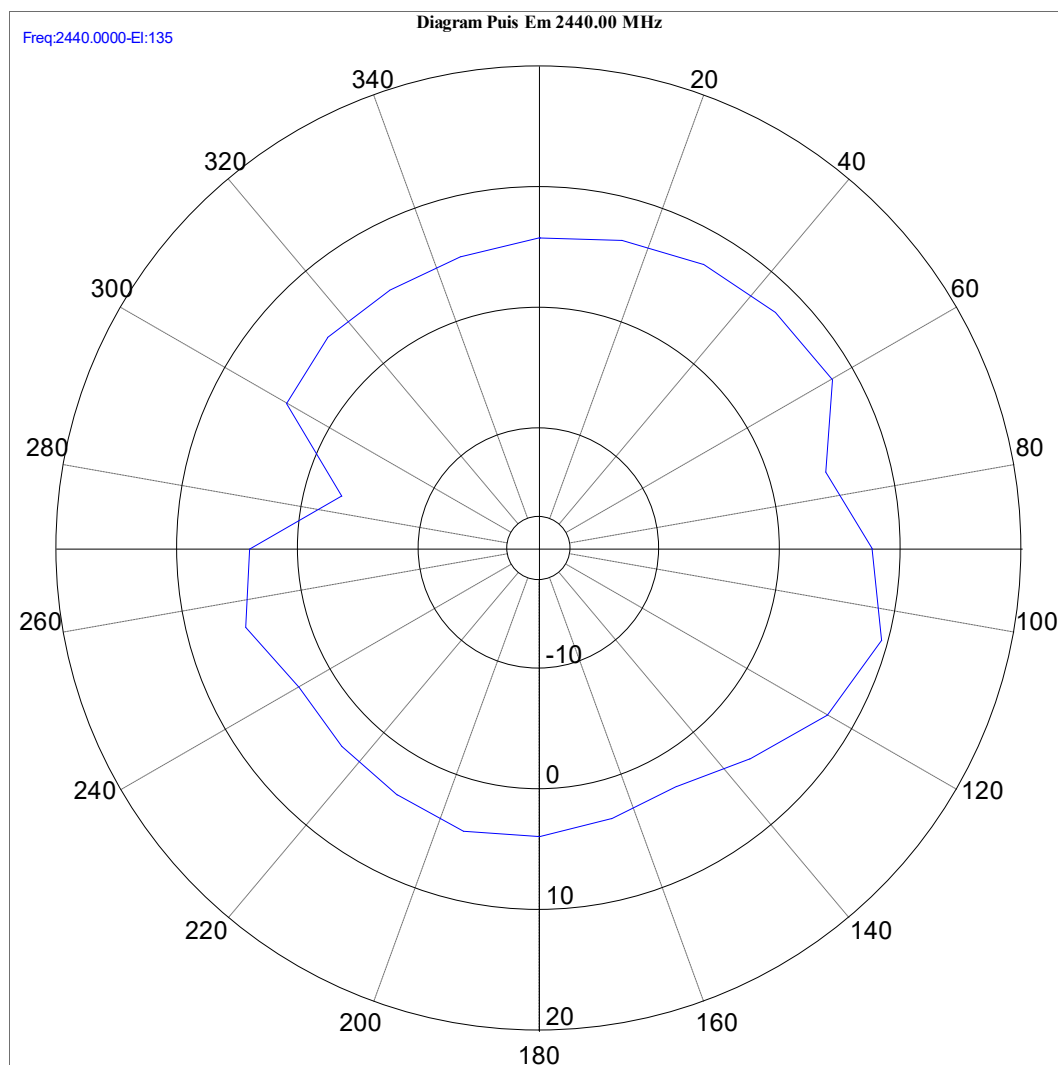


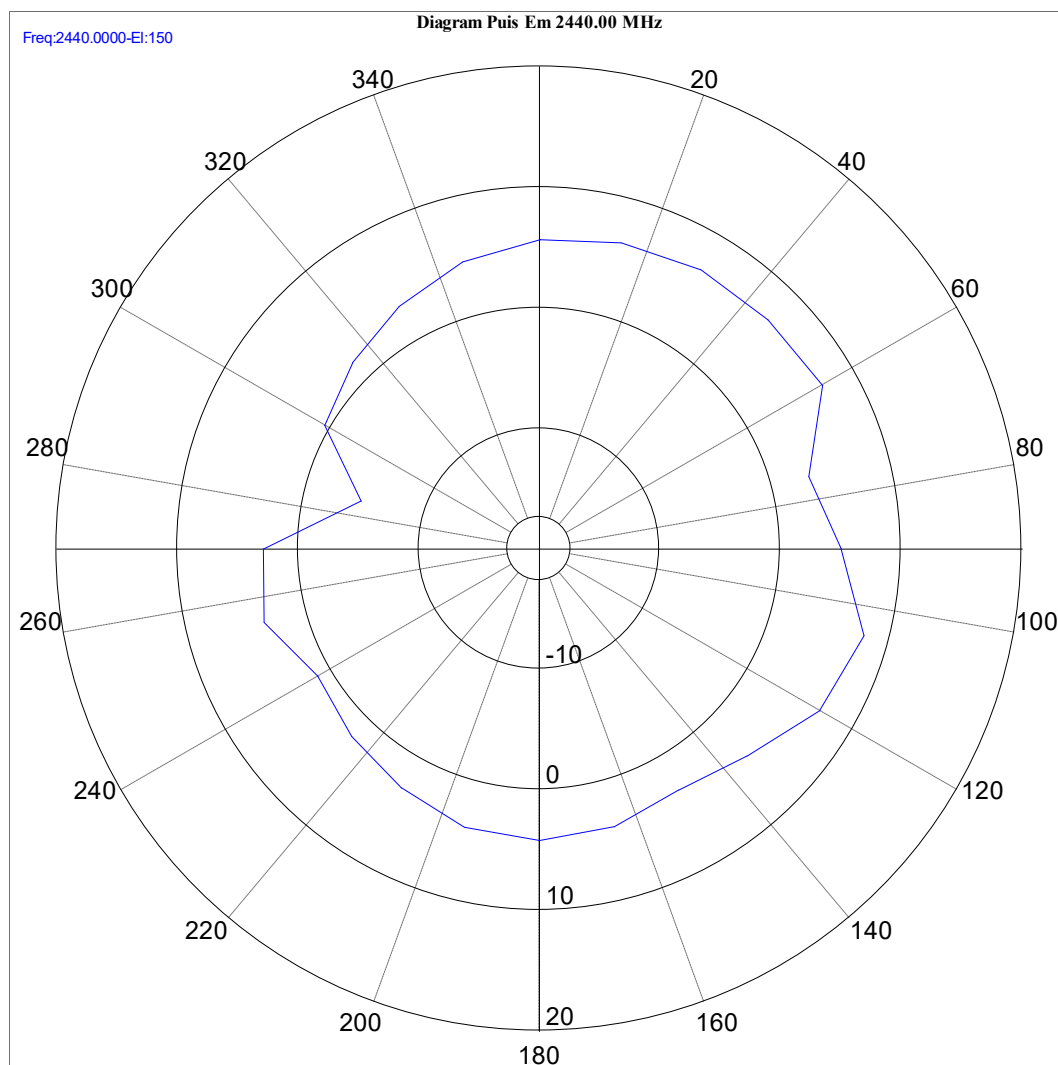


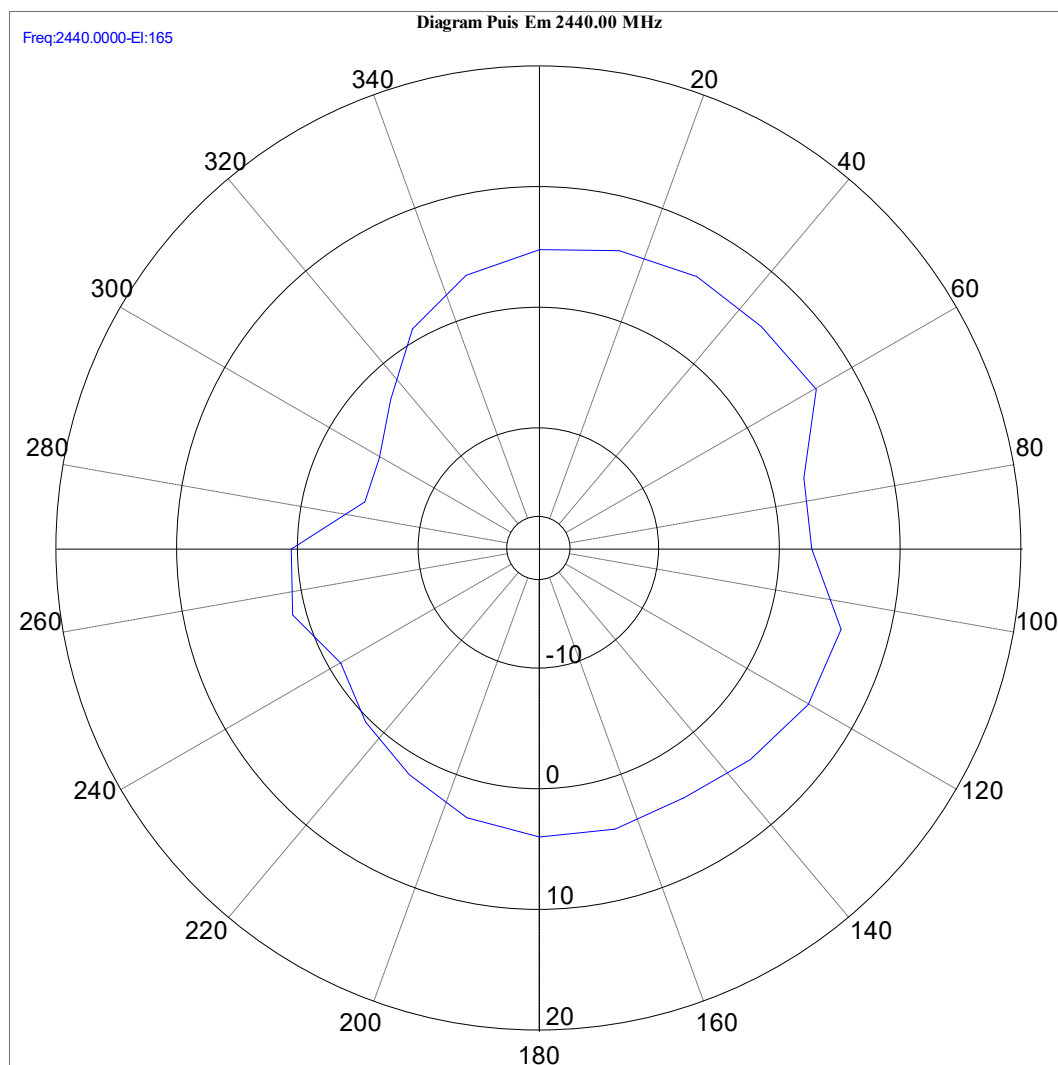


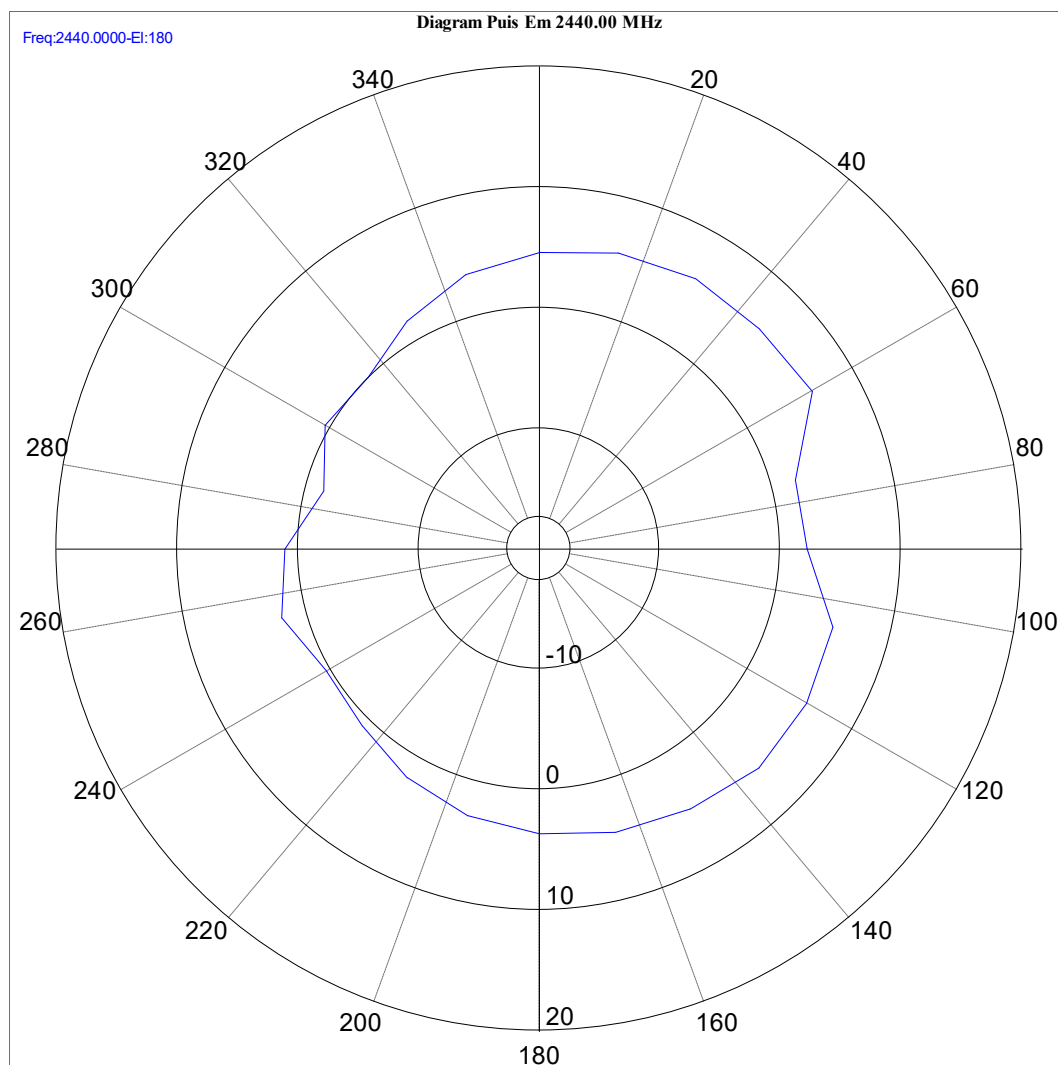






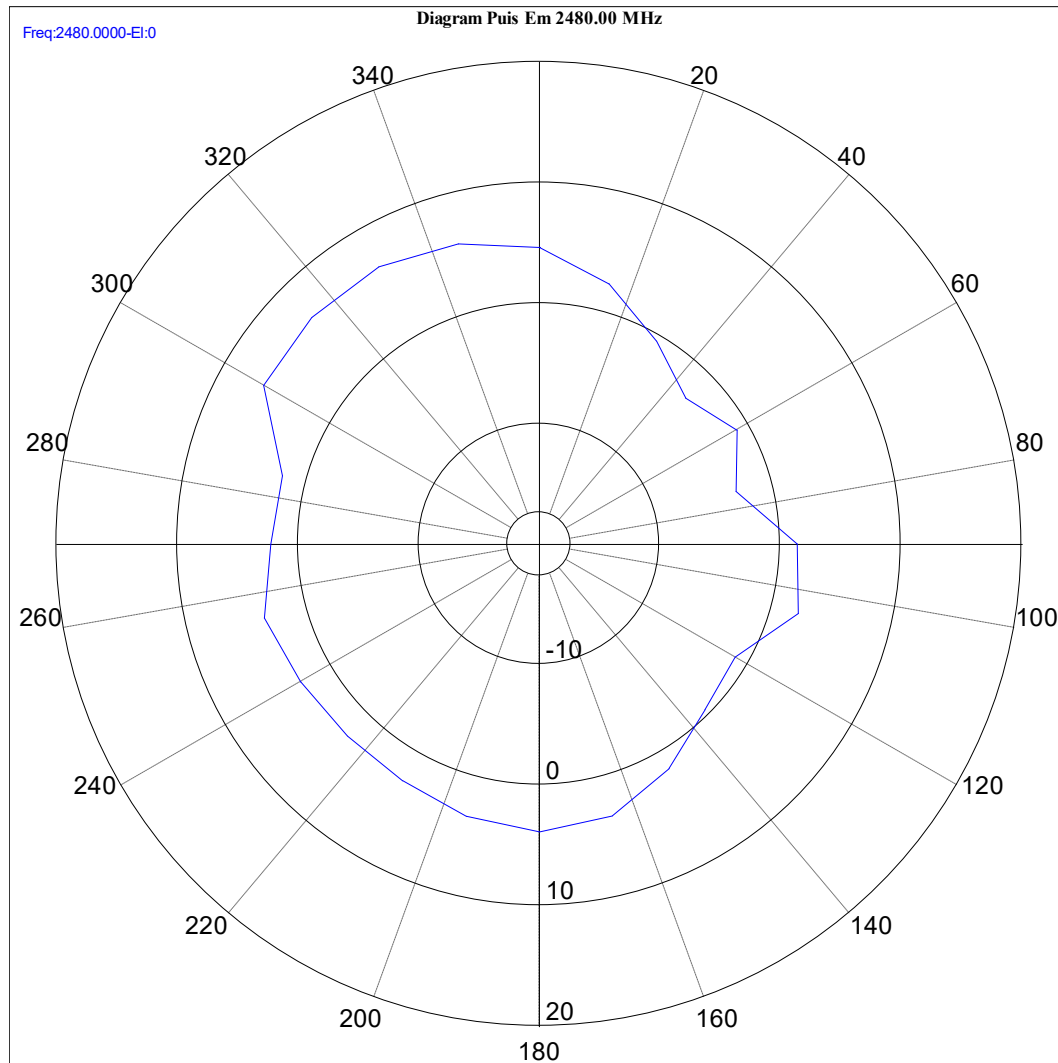


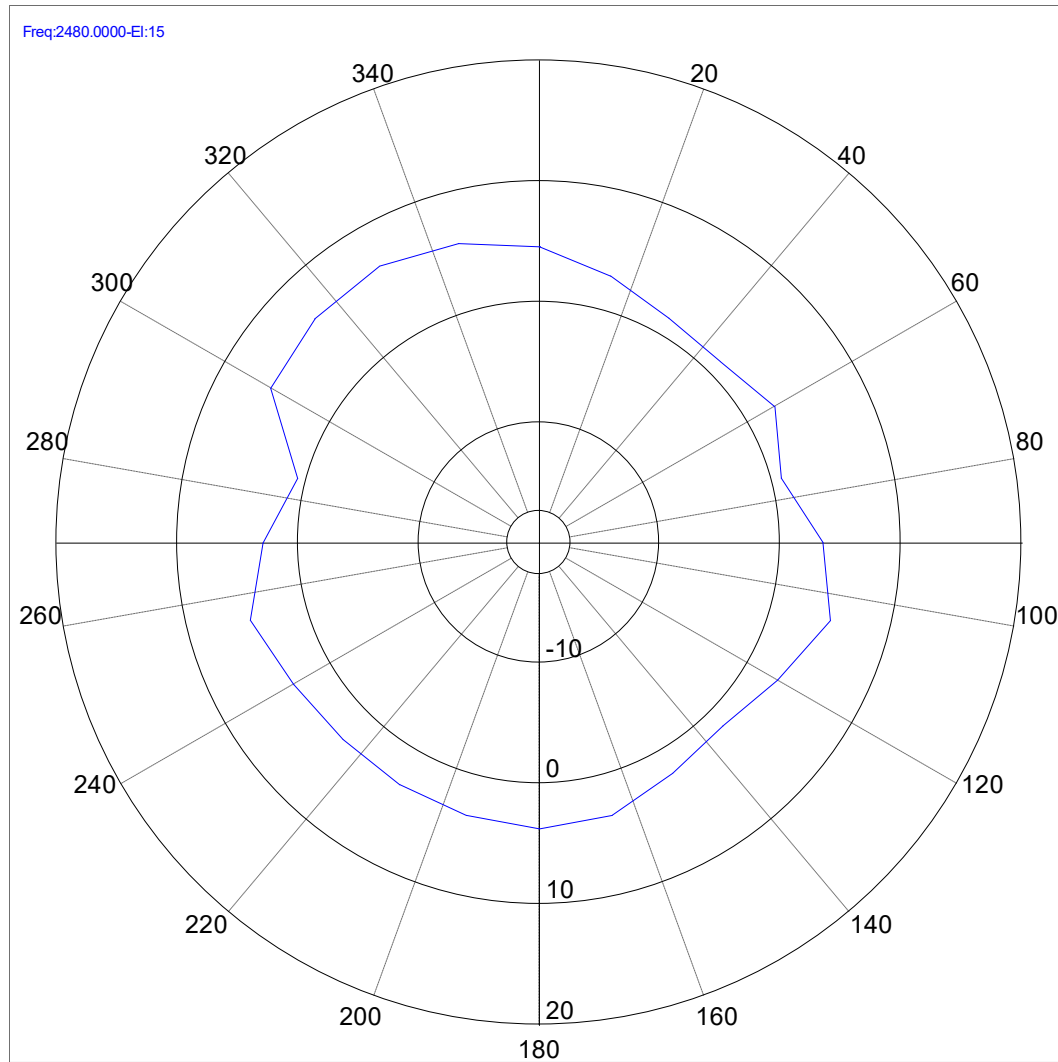


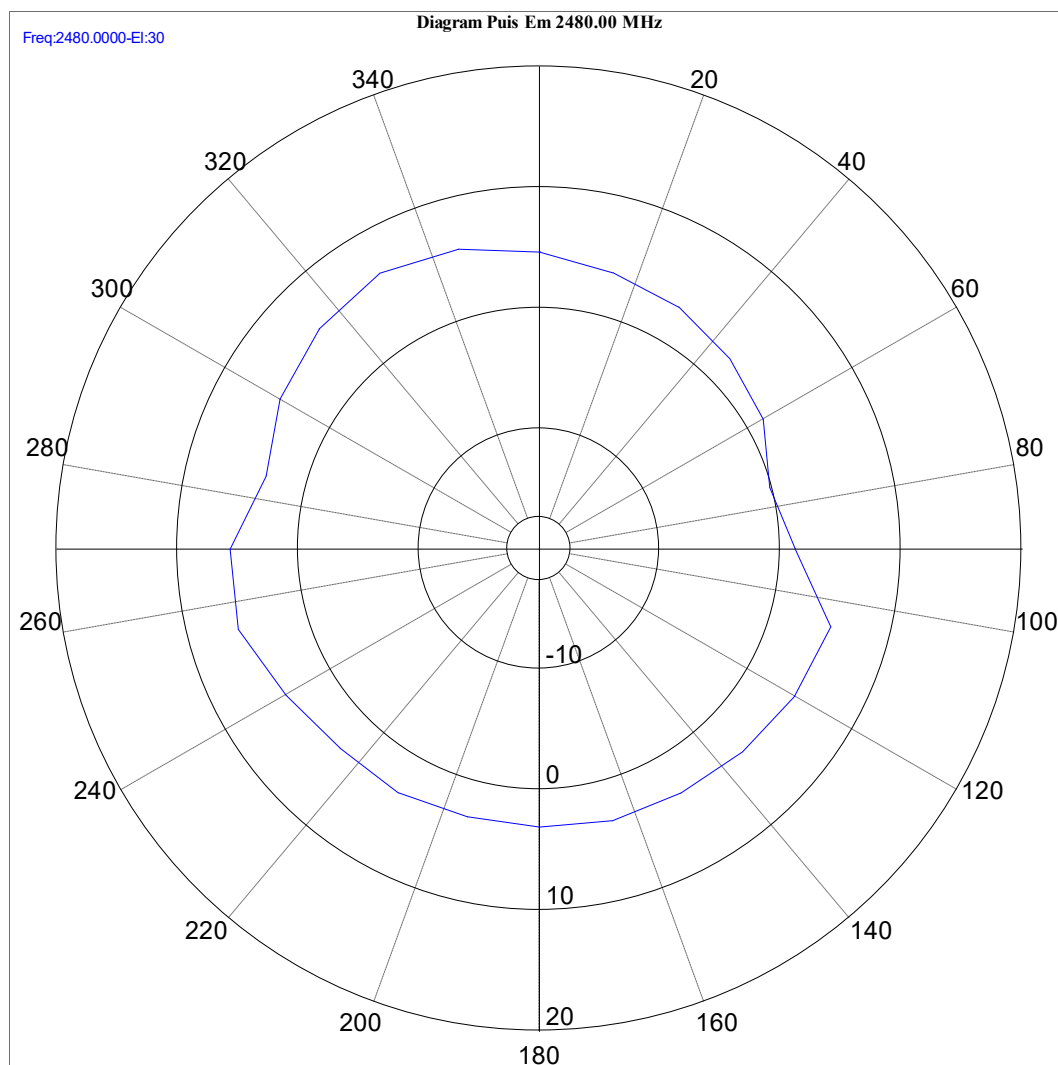


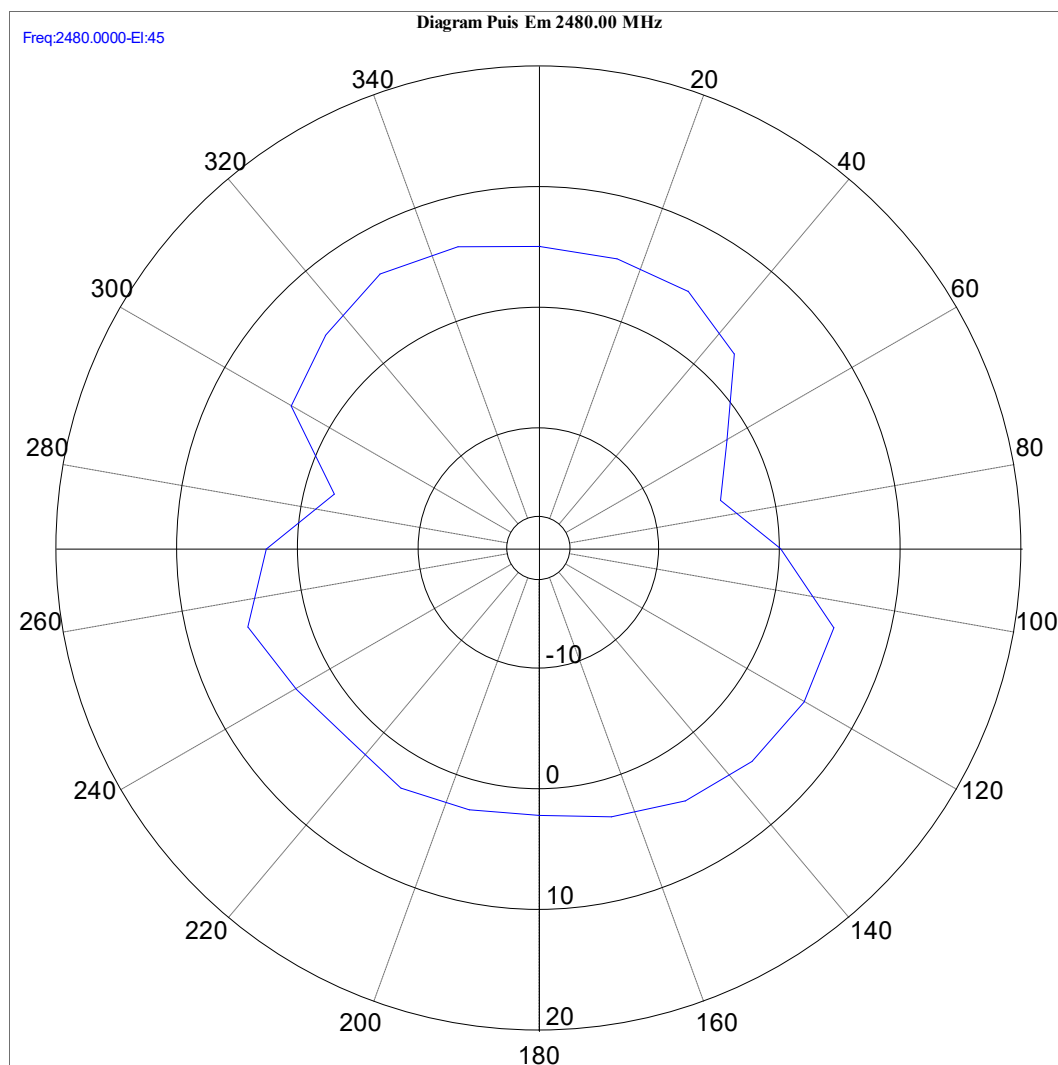
## 6 CURVES EIRP HIGHT CHANNEL (2480 MHZ)

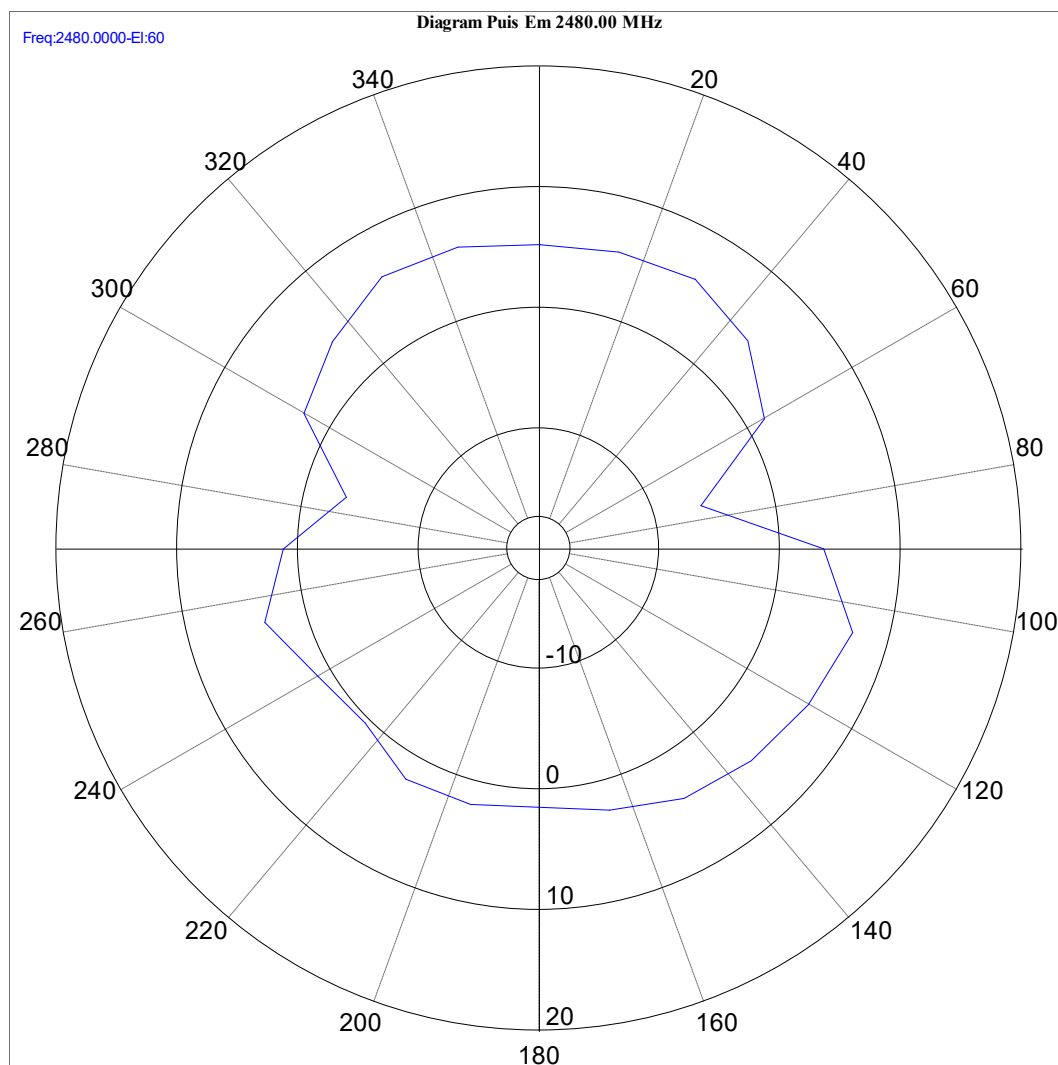
13 Curves : Curve at 0° to Curve at 180° (Step 15°)

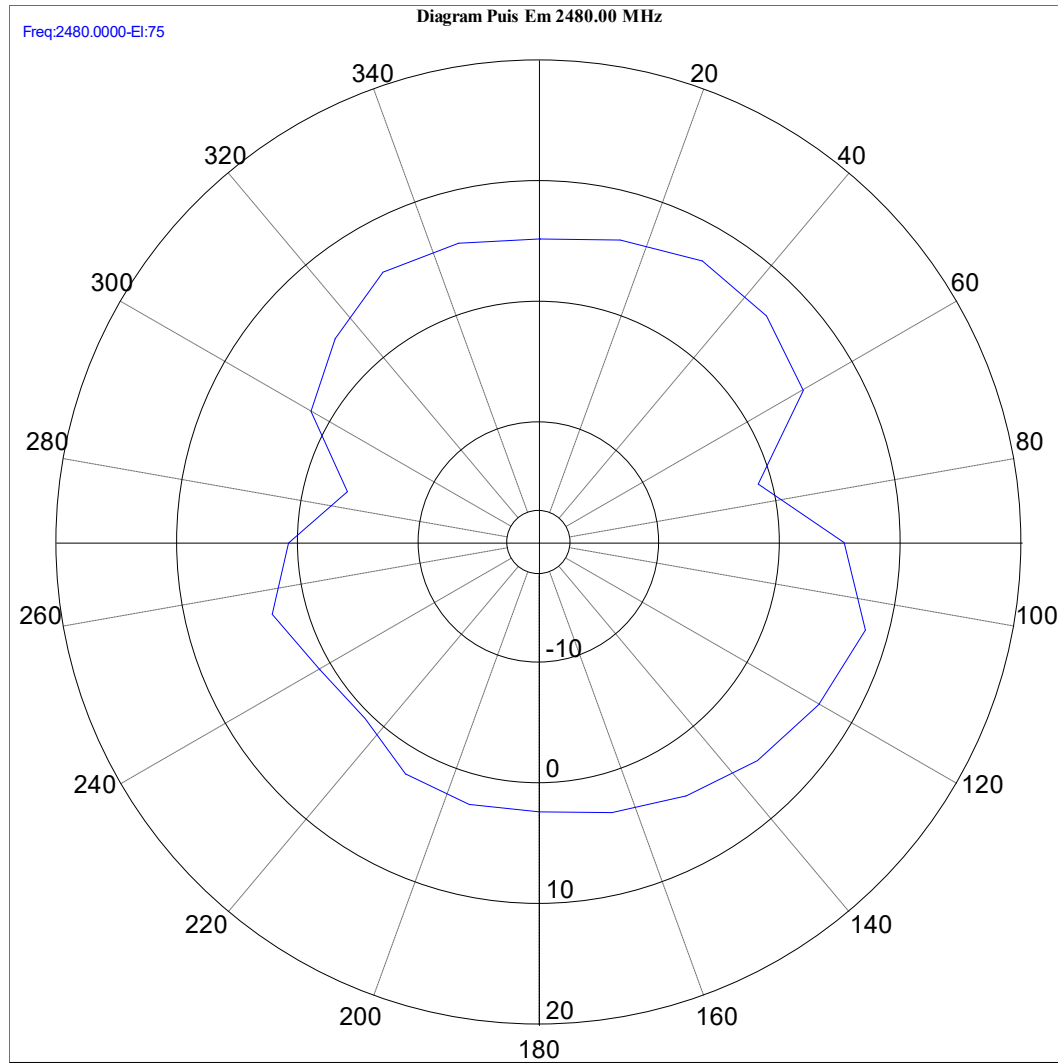


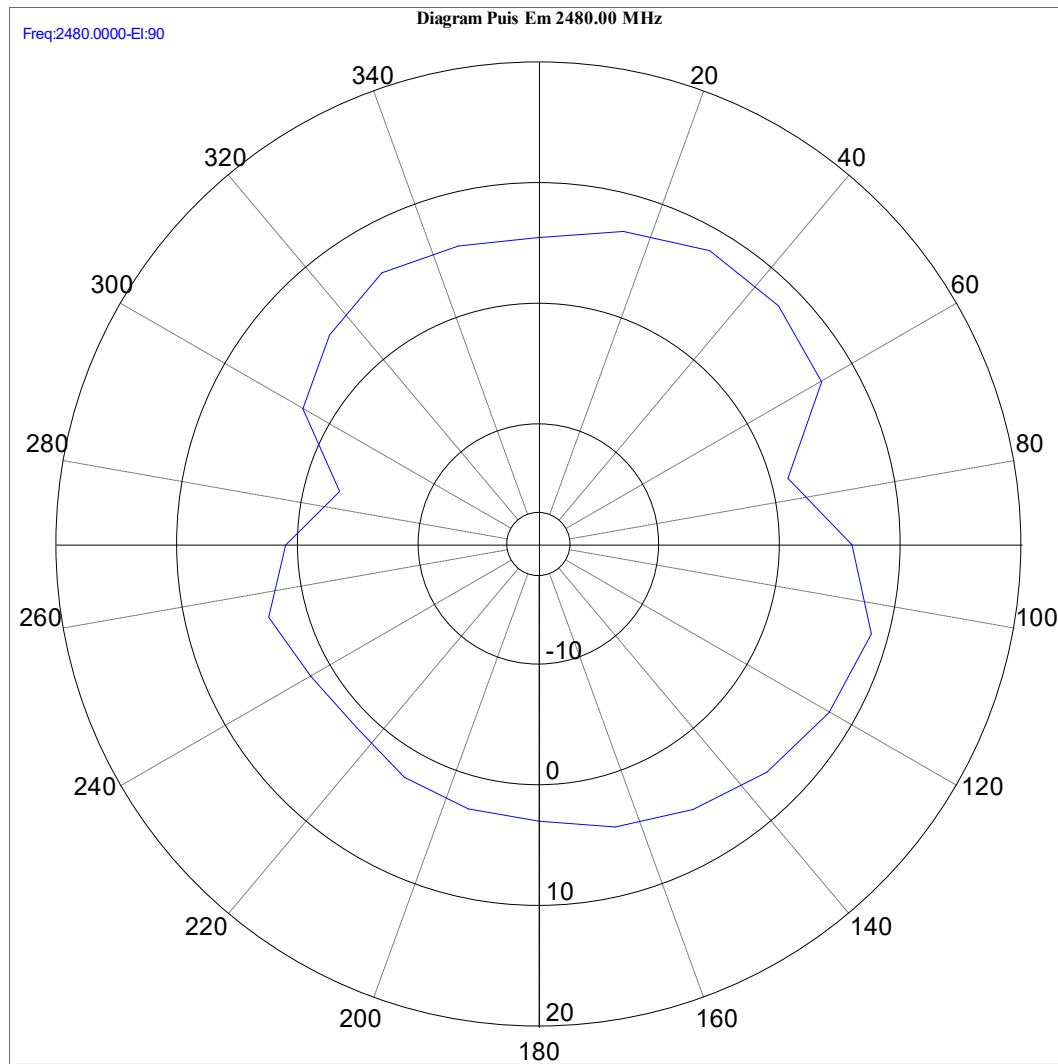


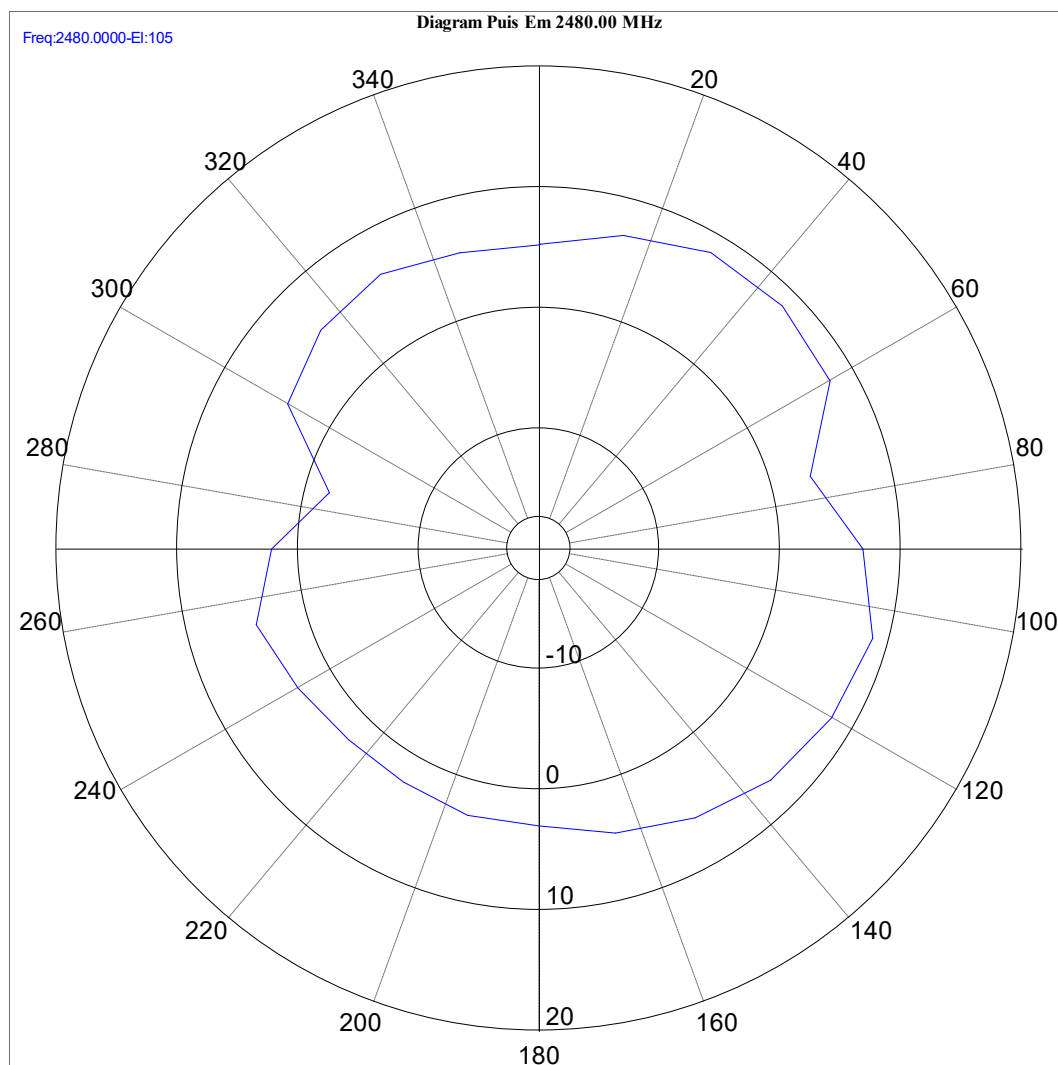


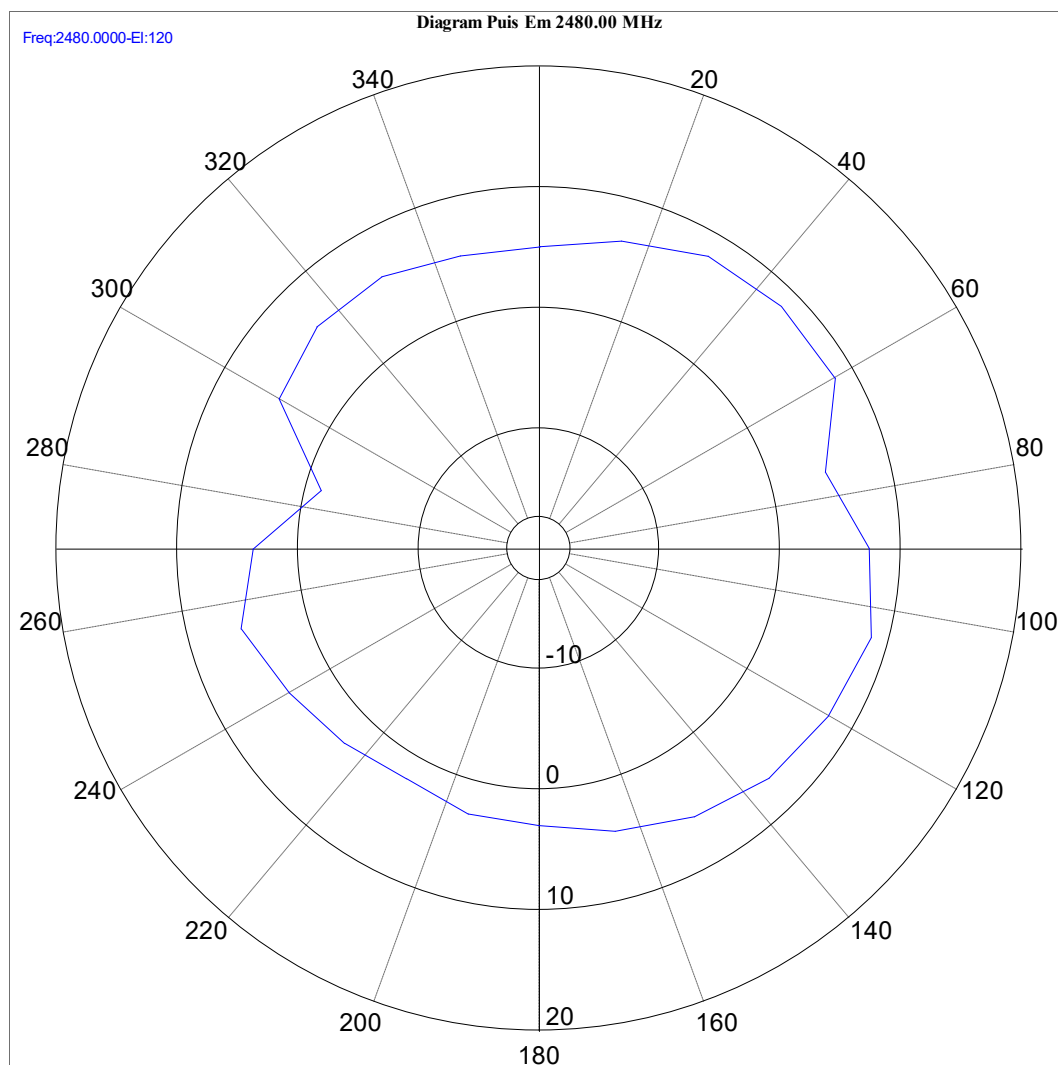


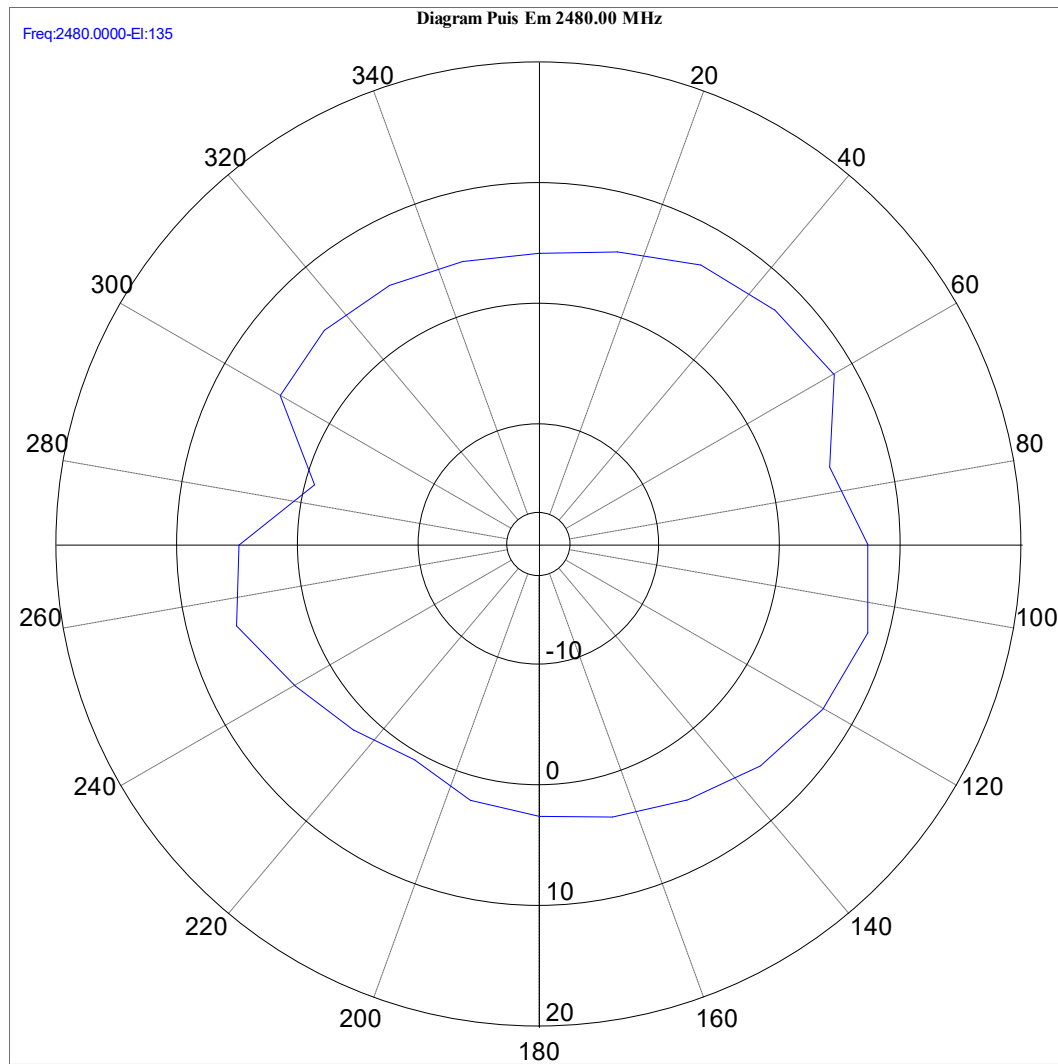


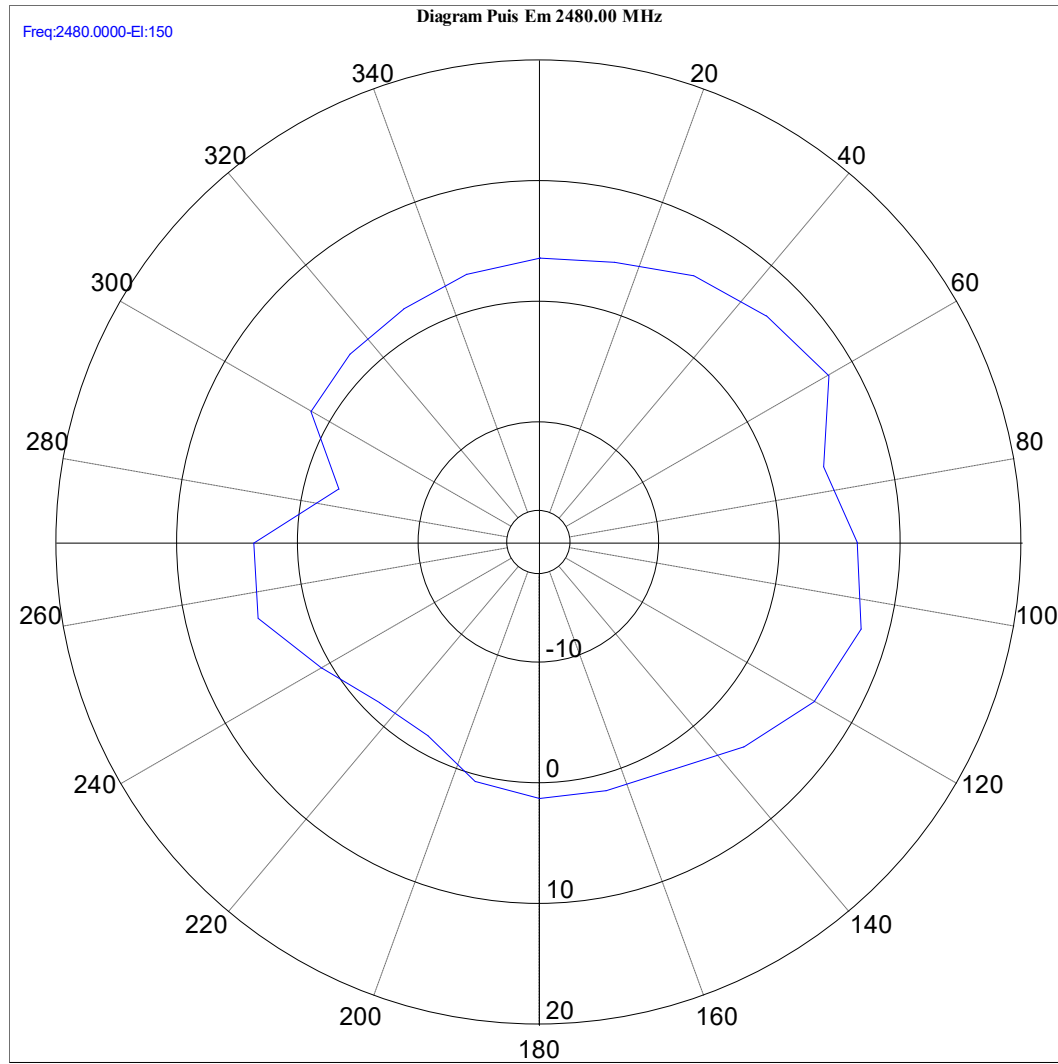


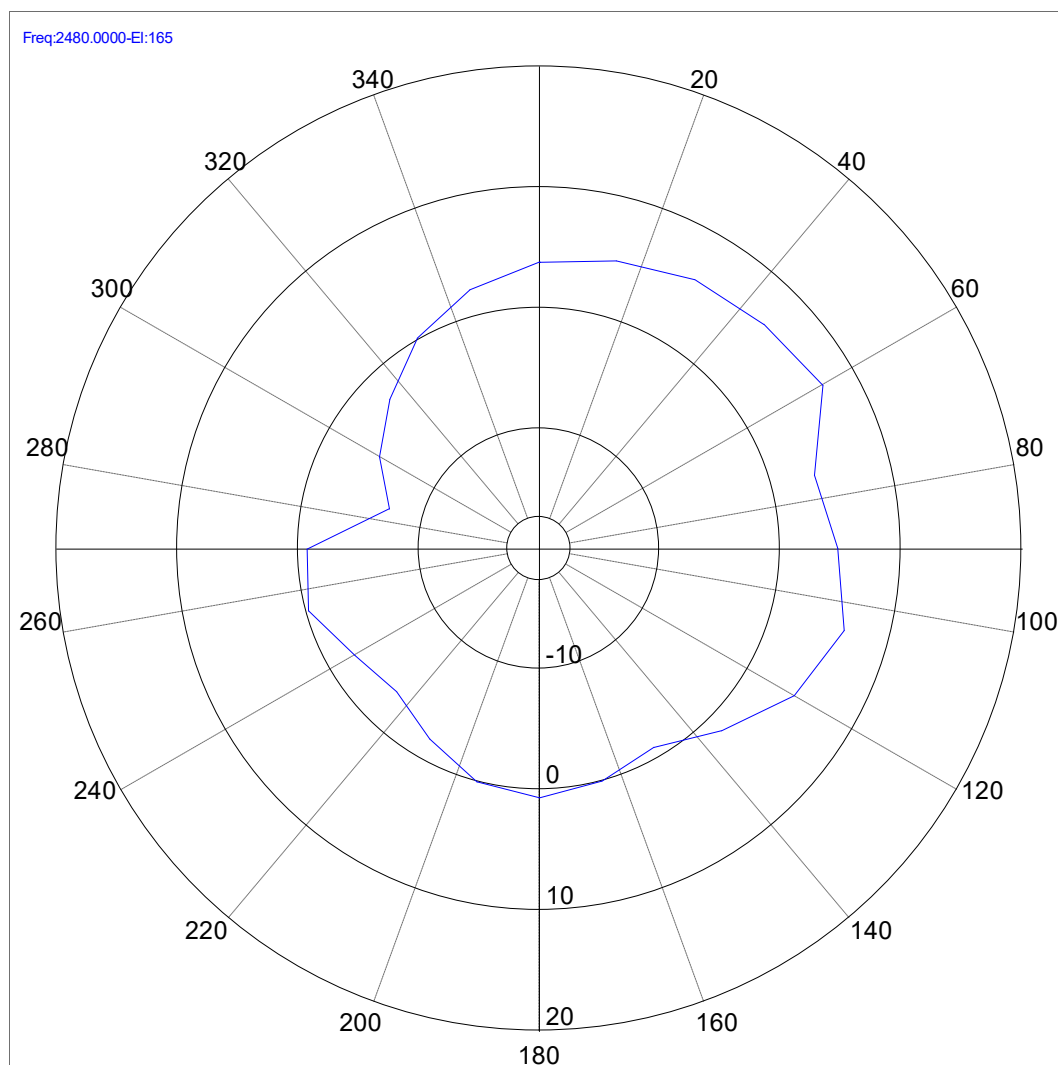


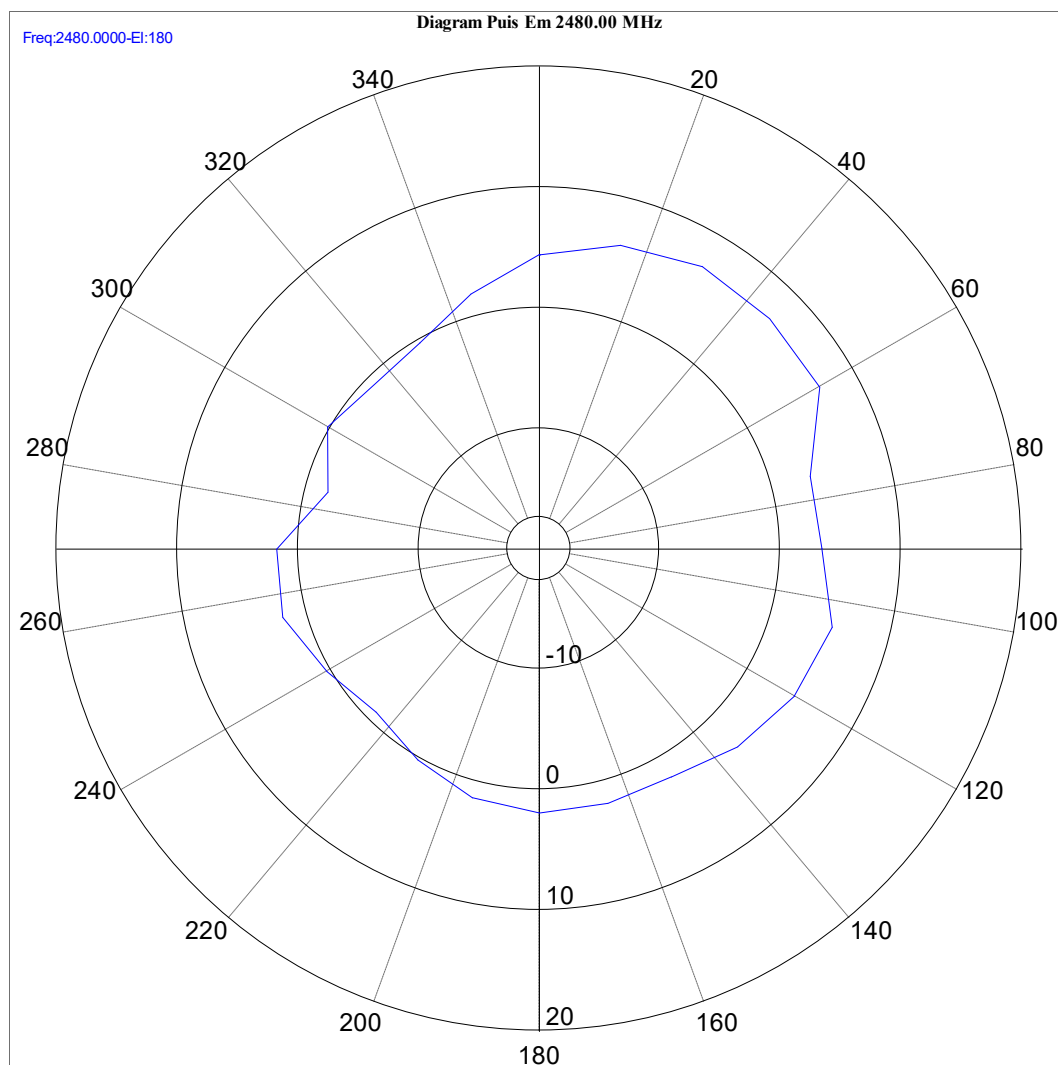












**7 ANNEX 2 – VALIDITY OF TEST MEANS**

| Identification | Description                | Manufacturer  | Reference     | Characteristic | Validity |
|----------------|----------------------------|---------------|---------------|----------------|----------|
| CEC771RF       | FAR room 7                 | SIEPEL        |               | 30MHz-26GHz    | 02/2029  |
| RF657          | Software RF                | ACCSYS        | AcEMC 7.4.8.4 |                | 07/2026  |
| CEC722         | Spectrum analyser          | R&S           | FSW43         |                | 02/2027  |
| CEC648         | Power Sensor               | DARE          | RPR3006W      | 10MHz-6GHz     | 11/2026  |
| CEC412         | Horn antenna               | ETS LINDGREN  | 3115          | 750MHz-18GHz   | 12/2027  |
| RF554          | PB 2.4GHz                  | MICRO-TRONICS | BPC17301      | 2380/2500 MHz  | 07/2026  |
| RF757          | Cable 1.5 m ext FAR room 7 |               |               | SMA 3 m        | 03/2030  |
| RF759          | Cable 5 m int FAR room 7   |               |               | SMA 5 m        | 03/2030  |
| 48378          | Multimeter                 | FLUKE         | FLUKE 45      |                | 10/2026  |

End of document