# GWL-WXTND ANTENNAS DATASHEET

PUBLIC DOCUMENT

REV. 2 – 2024-05-27


## ABSTRACT

Datasheet for the antennas used in the GWL-WXTND product.

# SUPPORTED RF TECHNOLOGIES

*Below the supported radiating technologies are listed.*

### NON-CELLULAR

List of all radiating technologies in GWL-WXTND (Latin America):

| GWL-WXTND Latin America |
|---|
| **ISM 902–928 MHz** |
| **WiFi 802.11 a, b, g, n, ac** |

# ANTENNAS IN GWL-WXTND

All antennas in GWL-WXTND are, on behalf of Verisure, developed by:

**Sigma Connectivity AB**

**Mobilvägen 10 (visiting address)**

**SE-223 62**

**Lund**

**Sweden**

# ANTENNA MODEL NUMBERS

All the antennas are part of the PCB copper pattern.

| **Antenna** | **Model number** |
|---|---|
| ISM3 antenna | WRE-LATAM-ANT-ISM-3 |
| Wi-Fi chain 0 antenna | WRE-LATAM-ANT-WIFI-A |

| | |
|---|---|
| Wi-Fi chain 1 antenna | WRE-LATAM-ANT-WIFI-B |

*Table 1* List of antennas

# DESCRIPTION OF THE ANTENNAS

## ISM 3 ANTENNA

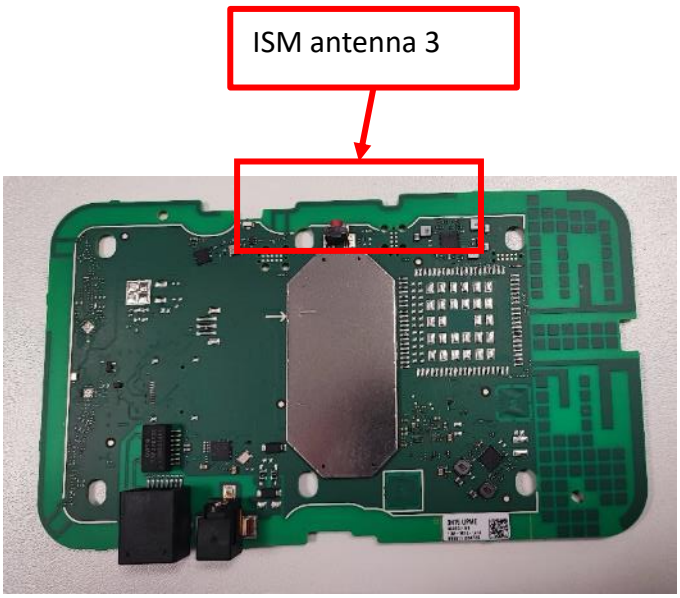



*Figure 1, Placement of ISM antenna*

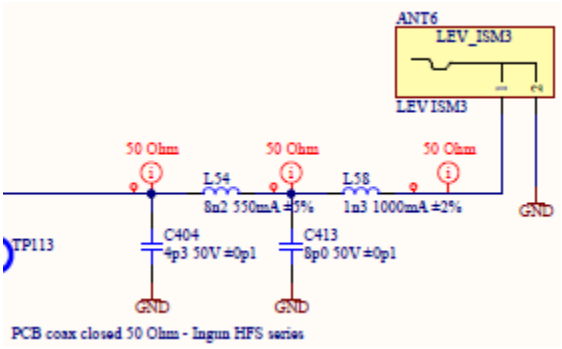



*Figure 2, ISM antenna matching*

GWL-WXTND has one ISM-antenna and it is IFA/PIFA type, i.e., it has one feed connection and one ground connection. The antenna is, as can be seen in the pictures above, part of the PCB Cu-pattern.

## WI-FI ANTENNAS

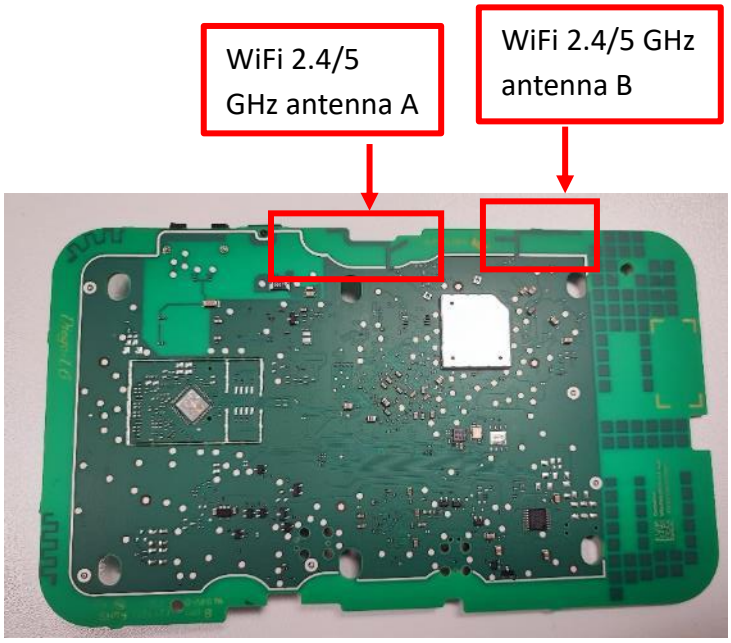



*Figure 3, Placement of WiFi antennas*

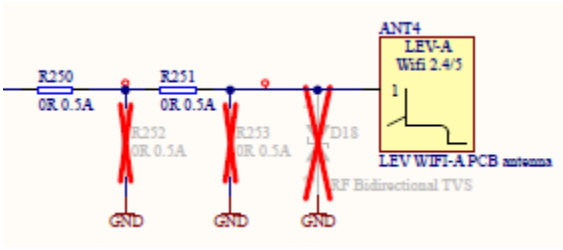



*Figure 4, WiFi antenna matching chain 0*

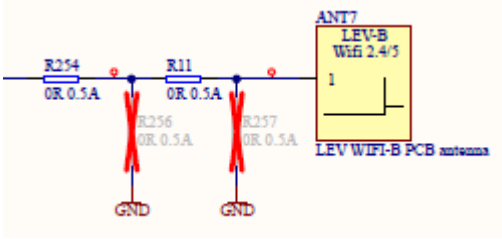



*Figure 5, WiFi antenna matching chain 1*

Both the WiFi-antenna A (chain 0) and the WiFi-antenna B (chain 1) are of monopole type, i.e., they have a feed connection but not a ground connection. The antennas are placed on the bottom layer. The antennas are, as can be seen in the pictures above, part of the PCB Cu-pattern.

## TEST SETUP

To verify the Efficiency, Directivity and Gain of the antennas a Multi-Probe Antenna Measurement system SG24L build by MVG (MicrowaveVision Group) has been used.

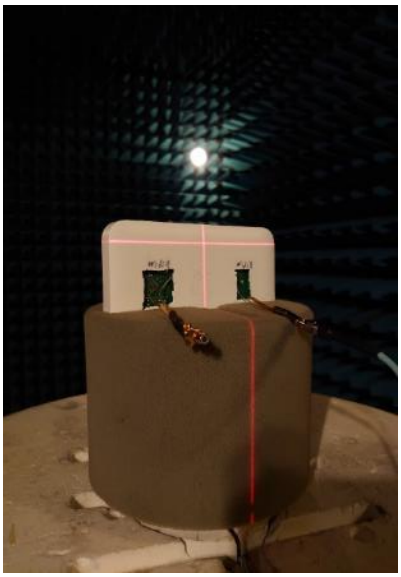
See attached PDF for MVG system information.

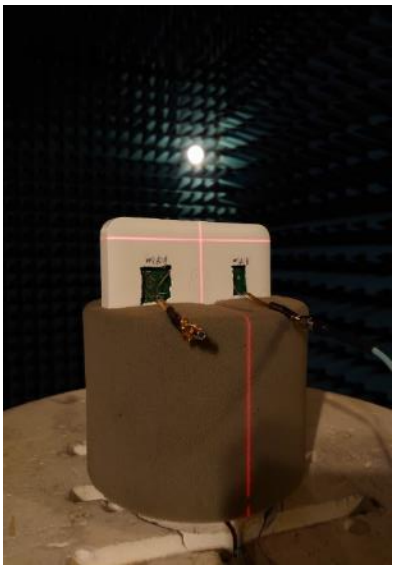
Datasheet_Antenna Measurement_SG_2

Please see attached calibration report for the calibration valid at testing time.

MART_2023_SG24L_ PAR2899S_AnnualCa

Pictures of device under test





## TEST INFORMATION

The tests were performed: 2023-08-16

The tests were performed by: André da Silva Frazao
Senior Antenna Engineer
Sigma Connectivity AB

# FREQUENCY RANGE, EFFICIENCY & GAIN

The following tables include relevant efficiency and gain data can for the antennas in this product.

| ISM3 antenna | | | | | |
|---|---|---|---|---|---|
| | **Frequency band [MHz]** | **Frequency [MHz]** | **Efficiency [dB]** | **Directivity [dBi]** | **Gain [dBi]** |
| ISM | 916 - 926 | 928 | -3.8 | 3.0 | -0.8 |

*Table 2 ISM3 Figures at maximum gain over the frequency band*

| Wi-Fi chain 0 antenna | | | | | |
|---|---|---|---|---|---|
| | **Frequency band [MHz]** | **Frequency [MHz]** | **Efficiency [dB]** | **Directivity [dBi]** | **Gain [dBi]** |
| 2.4 GHz band | 2401 - 2484 | 2472 | -2.6 | 4.7 | 2.1 |
| 5 GHz band | 5180 - 5825 | 5190 | -2.1 | 4.4 | 2.3 |

*Table 3 Wi-Fi chain 0 Figures at maximum gain over the frequency band*

| Wi-Fi chain 1 antenna | | | | | |
|---|---|---|---|---|---|
| | **Frequency band [MHz]** | **Frequency [MHz]** | **Efficiency [dB]** | **Directivity [dBi]** | **Gain [dBi]** |
| 2.4 GHz band | 2401 - 2484 | 2422 | -2.8 | 5.8 | 3.0 |

| | | | | | |
|---|---|---|---|---|---|
| 5 GHz band | 5180 - 5825 | 5190 | -1.7 | 4.7 | 3.1 |

*Table 4 Wi-Fi chain 1 Figures at maximum gain over the frequency band*

For more detailed results see attached file:

CU2_Wifi_Extender_
Latam_efficiency_gai

# RADIATION PATTERNS, 3D-CUTS & 2D-CUTS

## ISM3 ANTENNA

### At 928 MHz (ISM)

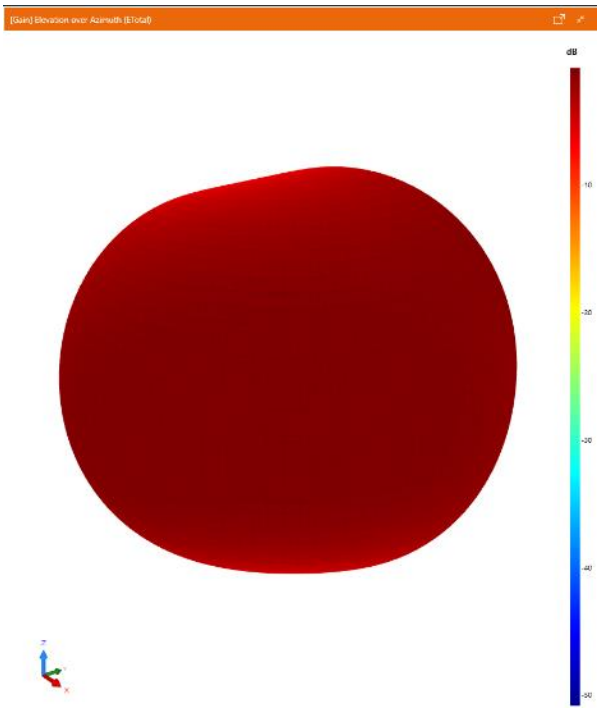



*Figure 6* [Gain] Elevation over Azimuth (ETotal)

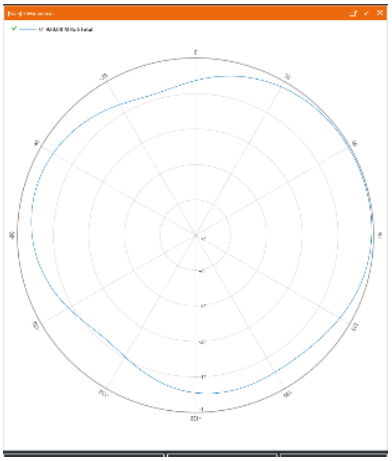


*Figure 7* Elevation, azimuth 0 deg

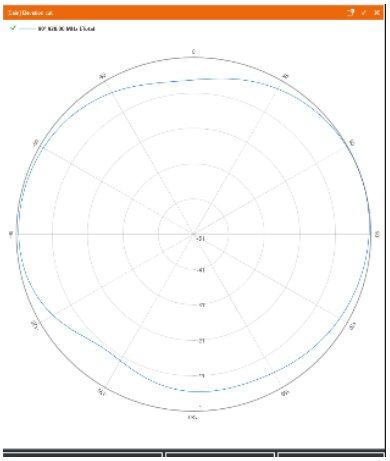


*Figure 8* Elevation, azimuth 90 deg

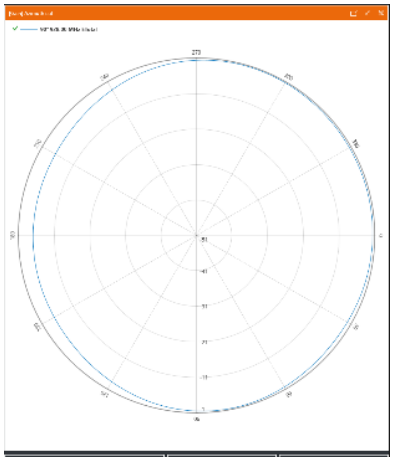


*Figure 9* Azimuth

# WI-FI CHAIN 0 ANTENNA

## At 2472 MHz

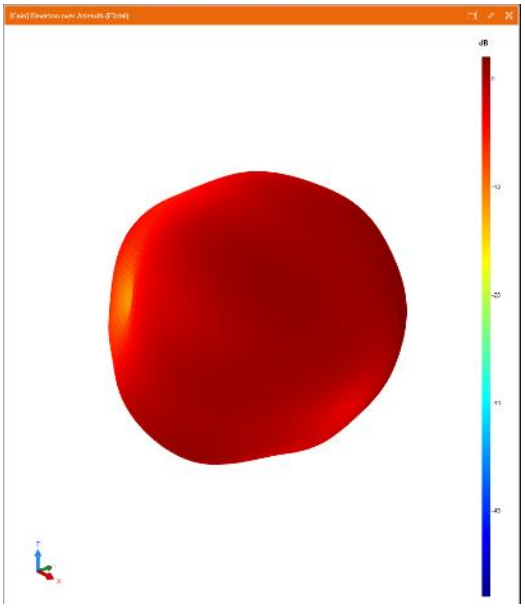


*Figure 10* [Gain] Elevation over Azimuth (ETotal)

Blue line below is for 2472 MHz

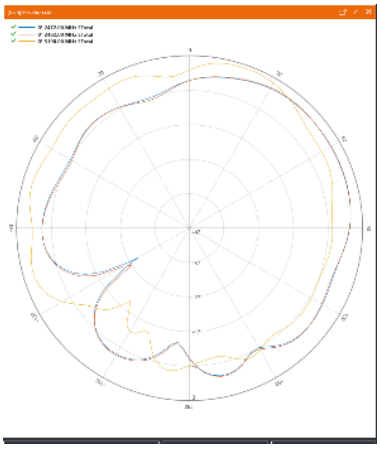


*Figure 11* Elevation, azimuth 0 deg

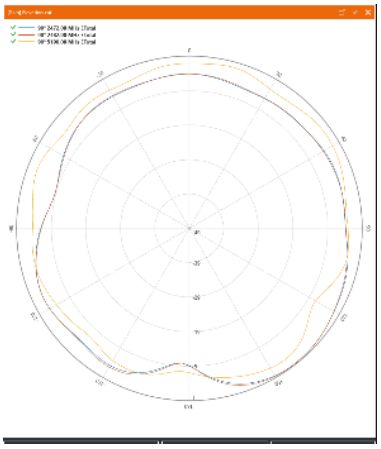


*Figure 12* Elevation, azimuth 90 deg

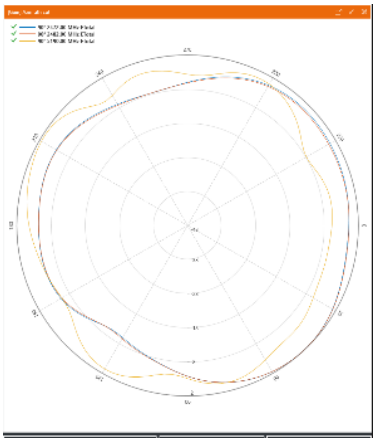


*Figure 13* Azimuth

## At 5190 MHz

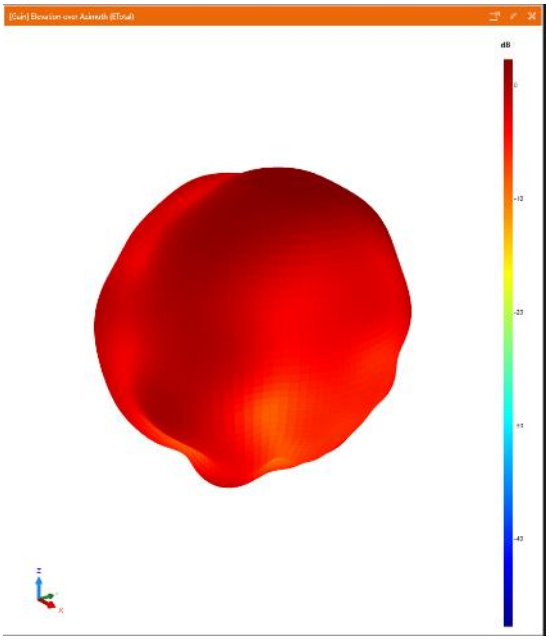


*Figure 14* [Gain] Elevation over Azimuth (ETotal)

Yellow line above is for 5190 MHz

| | | |
|---|---|---|
| Refer to image in previous section | Refer to image in previous section | Refer to image in previous section |
| *Figure 15* Elevation, azimuth 0 deg | *Figure 16* Elevation, azimuth 90 deg | *Figure 17* Azimuth |

# WI-FI CHAIN 1 ANTENNA

## At 2422 MHz

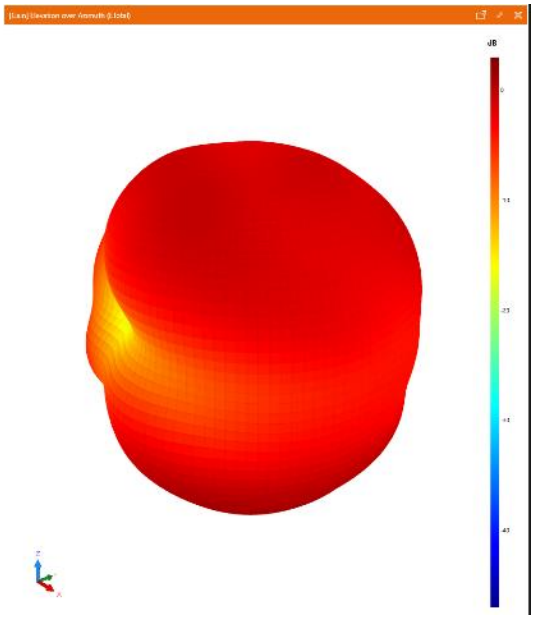


*Figure 18* [Gain] Elevation over Azimuth (ETotal)

Blue line below is for 2422 MHz

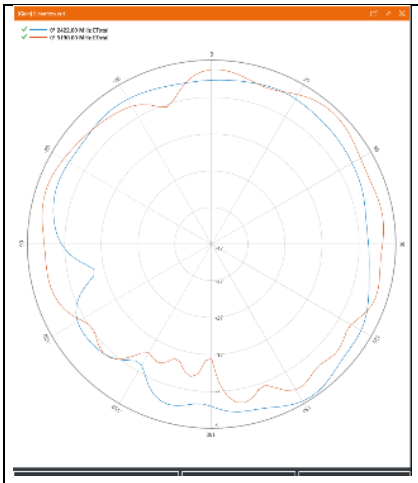


*Figure 19* Elevation, azimuth 0 deg

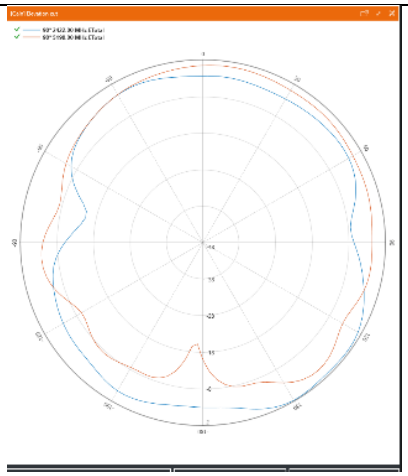


*Figure 20* Elevation, azimuth 90 deg

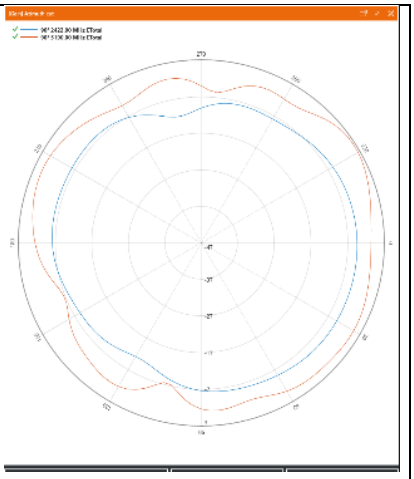


*Figure 21* Azimuth

## At 5190 MHz

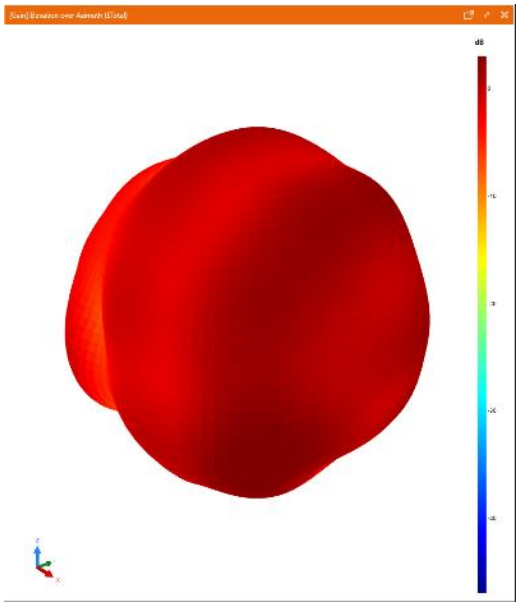


*Figure 22* [Gain] Elevation over Azimuth (ETotal)

Orange line above is for 5190 MHz

| | | |
|---|---|---|
| Refer to image in previous section | Refer to image in previous section | Refer to image in previous section |
| *Figure 23* Elevation, azimuth 0 deg | *Figure 24* Elevation, azimuth 90 deg | *Figure 25* Azimuth |