

# MiMo UHF/LTE 2x GNSS Sharkfin Antenna

GPSD2S4-7-38-[X]

PANORAMA ANTENNAS



## Low Profile Sharkfin Style Design

2x2 LTE MiMo 698-960/1710-3800MHz

2x2 UHF LTE 450-470MHz

Up to 4x4 MiMo Dual Band WiFi

Up to 2x GPS or GPS/GNSS Active Antennas

Mounting for Optional Whip

The low profile sharkfin style GPSD2S4-7-38-[X] provides 2x2 MiMo functionality across 698-960/1710-3800MHz and 2x2 MiMo functionality across 450-470MHz. The flexible platform allows the main elements to be combined with a number of other functions including 2x GPS or GPS/GNSS active antennas and up to 4x4 MiMo WiFi 2.4/5.0GHz. The whip position allows for additional functionality depending on the whip selected.

The antenna is designed to be panel mounted and can be fitted on a conductive or non-conductive panel\*. It is supplied with integrated flame retardant RG174 cables (Compliant to UN ECE 118 and EN45545-2)\*\* and a robust weatherproof radome the antenna is suitable for many environments and applications.

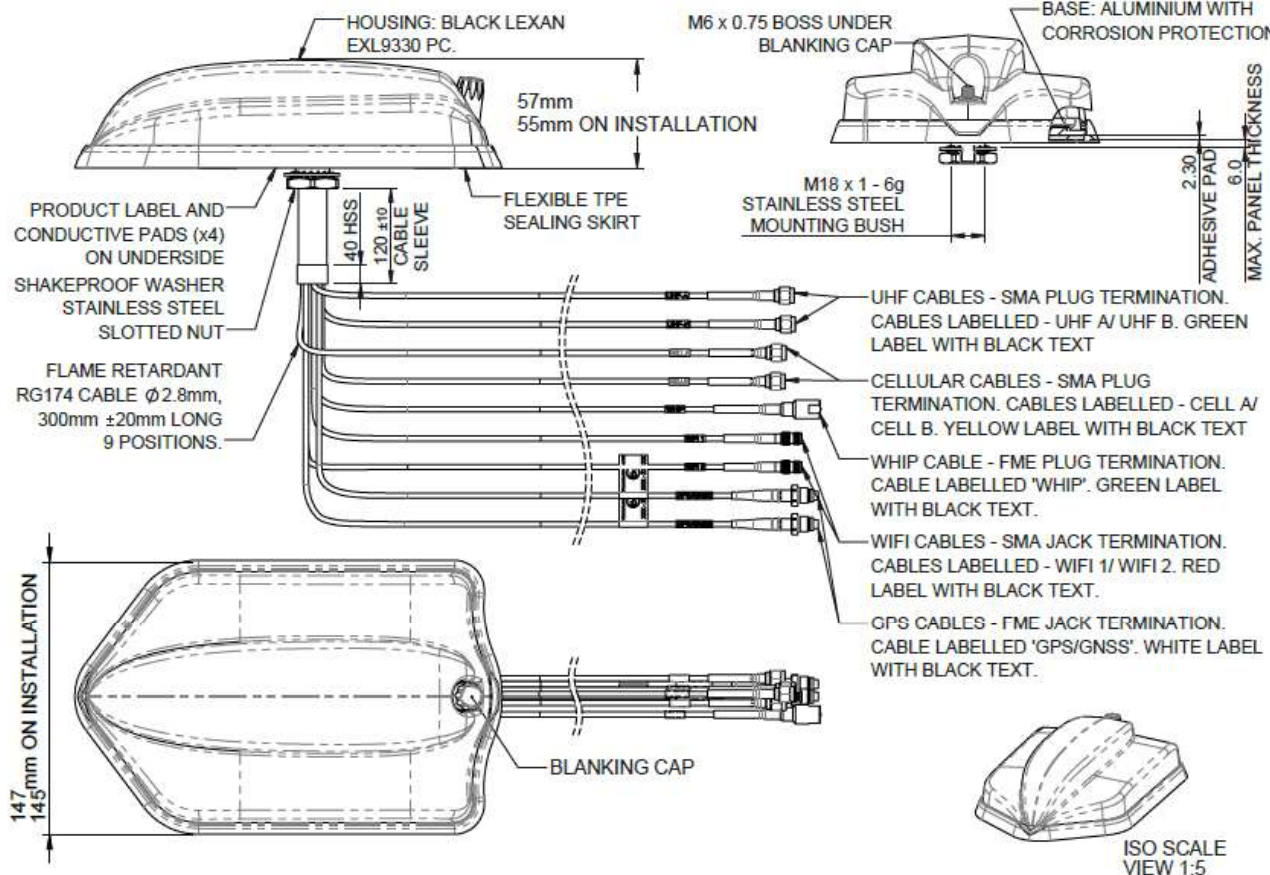
Variants have one or two integrated GPS/GNSS modules supporting GPS only with 22dB LNA gain or Glonass, Galileo and Compass with 26dB LNA gain. The antenna is available with a black or white radome.

\* Performance will vary depending on the mounting surface.- whip selected may require a ground plane.

\*\* Except for 2x GPS 3x & 4x WIFI versions where GPS uses PTFE cable.

## Technical Drawing

GPSD2S4-7-38-D Shown



# MiMo UHF/LTE 2x GNSS

## Sharkfin Antenna

### GPSD2S4-7-38-[X]

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#### Product Data

| Part No.                                    |                   |                                  |       | GPSD2S4W-7-38-Q | GPSD24-7-38-Q    | GPSD2S4W-7-38-T | GPSD2S4-7-38-T |
|---------------------------------------------|-------------------|----------------------------------|-------|-----------------|------------------|-----------------|----------------|
| Electrical Data                             |                   |                                  |       |                 |                  |                 |                |
| Frequency Range (MHz)                       | Low LTE Elements  | 2x 450-470                       |       |                 |                  |                 |                |
|                                             | High LTE Elements | 2x 698-960/1710-3800             |       |                 |                  |                 |                |
|                                             | WiFi Elements     | 4x 2.4/4.9-6GHz                  |       |                 | 3 x 2.4/4.9-6GHz |                 |                |
| Peak Gain: Isotropic : All Elements<br>Fed† | Low LTE Elements  | 450-470MHz                       | -2dBi |                 |                  |                 |                |
|                                             | High LTE Elements | 698-960MHz                       | 2     |                 |                  |                 |                |
|                                             |                   | 1710-3800MHz                     | 5     |                 |                  |                 |                |
|                                             |                   | 2.4GHz                           | 4     |                 |                  |                 |                |
|                                             | WiFi Elements     | 4.9-6.0GHz                       | 6     |                 |                  |                 |                |
| Typical Isolation *                         | Low LTE Elements  | >12dB                            |       |                 |                  |                 |                |
|                                             | High LTE Elements | >10dB                            |       |                 |                  |                 |                |
|                                             | Wifi Elements     | >20dB                            |       |                 |                  |                 |                |
| Correlation Co-efficient                    | Low LTE Elements  | <0.3                             |       |                 |                  |                 |                |
|                                             | High LTE Elements | <0.1                             |       |                 |                  |                 |                |
|                                             | WiFi Elements     | <0.1                             |       |                 |                  |                 |                |
| Nominal Impedance                           |                   | 50Ω                              |       |                 |                  |                 |                |
| GPS Data                                    |                   |                                  |       |                 |                  |                 |                |
| Frequency Range (MHz)                       |                   | 2 x 1575                         |       |                 |                  |                 |                |
| VSWR                                        |                   | <2.0:1 ± 4MHz                    |       |                 |                  |                 |                |
| Gain: LNA                                   |                   | 22dB                             |       |                 |                  |                 |                |
| Operating Voltage                           |                   | 3 - 5V DC                        |       |                 |                  |                 |                |
| Typcal Current (mA)                         |                   | 15                               |       |                 |                  |                 |                |
| Mechanical Data                             |                   |                                  |       |                 |                  |                 |                |
| Dimensions (mm)                             | Height            | 55 (2.1")                        |       |                 |                  |                 |                |
|                                             | Width             | 145 (5.7")                       |       |                 |                  |                 |                |
|                                             | Length            | 225 (8.85")                      |       |                 |                  |                 |                |
| Operating Temp                              |                   | -40° / +80°C (-40° / +176°F )    |       |                 |                  |                 |                |
| Colour                                      |                   | White                            | Black | White           | Black            |                 |                |
| Mounting Data                               |                   |                                  |       |                 |                  |                 |                |
| Mounting type                               |                   | Panel mount                      |       |                 |                  |                 |                |
| Max panel thickness (mm)                    |                   | 7 (0.27")                        |       |                 |                  |                 |                |
| Mounting hole (mm)                          |                   | 19 (3/4")                        |       |                 |                  |                 |                |
| Cable Data                                  |                   | All Comms Cables                 |       |                 | GPS Cables       |                 |                |
| Cables                                      | Type              | RG174 -FR (UN ECE 118 Compliant) |       |                 |                  | PTFE            |                |
|                                             | Diameter (mm)     | 2.8 (0.1")                       |       |                 |                  | 1.8 (0.07)      |                |
|                                             | Length (m)        | 0.3 (1')                         |       |                 |                  | 0.3 (1')        |                |
| Terminations                                |                   |                                  |       |                 |                  |                 |                |
| Low LTE Elements                            |                   | SMA (m)                          |       |                 |                  |                 |                |
| High LTE Elements                           |                   | SMA (m)                          |       |                 |                  |                 |                |
| WiFi Elements                               |                   | SMA (f)                          |       |                 |                  |                 |                |
| GPS Elements                                |                   | FME (f)                          |       |                 |                  |                 |                |

\* Measured on a 1x1m (3' x 3') groundplane with 5m (16') of cable.

† Peak Gain simulated in CST Microwave Studio on a 600x600mm (2'x2' without cable loss)

# MiMo UHF/LTE 2x GNSS

## Sharkfin Antenna

### GPSD2S4-7-38-[X]

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| Part No.                                 |                   | GPSD2S4W-7-38-D                  | GPSD2S4-7-38-D | GPSD2S4W-7-38-S | GPSD2S4-7-38-S |
|------------------------------------------|-------------------|----------------------------------|----------------|-----------------|----------------|
| Electrical Data                          |                   |                                  |                |                 |                |
| Frequency Range (MHz)                    | Low LTE Elements  | 2x 450-470                       |                |                 |                |
|                                          | High LTE Elements | 2x 698-960/1710-3800             |                |                 |                |
|                                          | WiFi Elements     | 2x 2.4/4.9-6GHz                  |                | 1x 2.4/4.9-6GHz |                |
| Peak Gain: Isotropic : All Elements Fedi | Low LTE Elements  | 450-470MHz                       | -2dBi          |                 |                |
|                                          | High LTE Elements | 698-960MHz                       | 2              |                 |                |
|                                          |                   | 1710-3800MHz                     | 5              |                 |                |
|                                          | WiFi Elements     | 2.4GHz                           | 4              |                 |                |
|                                          |                   | 4.9-6.0GHz                       | 6              |                 |                |
| Typical Isolation*                       | Low LTE Elements  | >12dB                            |                |                 |                |
|                                          | High LTE Elements | >10dB                            |                |                 |                |
|                                          | Wifi Elements     | >20dB                            |                | -               |                |
| Correlation Co-efficient                 | Low LTE Elements  | <0.3                             |                |                 |                |
|                                          | High LTE Elements | <0.1                             |                |                 |                |
|                                          | WiFi Elements     | <0.1                             |                | -               |                |
| Nominal Impedance                        |                   | 50Ω                              |                |                 |                |
| GPS/GNSS Data                            |                   |                                  |                |                 |                |
| Frequency Range (MHz)                    |                   | 2x 1562-1612                     |                |                 |                |
| VSWR                                     |                   | <2.0:1 ± 4MHz                    |                |                 |                |
| Gain: LNA                                |                   | 26dB                             |                |                 |                |
| Out of band rejection                    |                   | >40dB (@ > +/- 100MHz f)         |                |                 |                |
| Operating Voltage                        |                   | 3 - 5V DC                        |                |                 |                |
| Typcal Current (mA)                      |                   | <20                              |                |                 |                |
| Mechanical Data                          |                   |                                  |                |                 |                |
| Dimensions (mm)                          | Height            | 55 (2.1")                        |                |                 |                |
|                                          | Width             | 145 (5.7")                       |                |                 |                |
|                                          | Length            | 225 (8.85")                      |                |                 |                |
| Operating Temp                           |                   | -40° / +80°C (-40° / +176°F )    |                |                 |                |
| Colour                                   |                   | White                            | Black          | White           | Black          |
| Mounting Data                            |                   |                                  |                |                 |                |
| Mounting type                            |                   | Panel mount                      |                |                 |                |
| Max panel thickness (mm)                 |                   | 7 (0.27")                        |                |                 |                |
| Mounting hole (mm)                       |                   | 19 (3/4")                        |                |                 |                |
| Cable Data                               |                   |                                  |                |                 |                |
| All Cables                               | Type              | RG174 -FR (UN ECE 118 Compliant) |                |                 |                |
|                                          | Diameter (mm)     | 2.8 (0.1")                       |                |                 |                |
|                                          | Length (m)        | 0.3 (1')                         |                |                 |                |
| Terminations                             |                   |                                  |                |                 |                |
| Low LTE Elements                         |                   | SMA (m)                          |                |                 |                |
| High LTE Elements                        |                   | SMA (m)                          |                |                 |                |
| WiFi Elements                            |                   | SMA (f)                          |                |                 |                |
| GNSS Elements                            |                   | FME (f)                          |                |                 |                |

\* Measured on a 1x1m (3' x 3') groundplane with 5m (16') of cable.

† Peak Gain simulated in CST Microwave Studio on a 600x600mm (2'x2') without cable loss)

# MiMo UHF/LTE 2x GNSS

## Sharkfin Antenna

### GPSD2S4-7-38-[X]

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| Part No.                                               |                   |                                  |
|--------------------------------------------------------|-------------------|----------------------------------|
|                                                        |                   | GPSD2S4W-7-38                    |
|                                                        |                   | GPSD2S4-7-38                     |
| Electrical Data                                        |                   |                                  |
| Frequency Range (MHz)                                  | Low LTE Elements  | 2x 450-470                       |
|                                                        | High LTE Elements | 2x 698-960/1710-3800             |
| Peak Gain: Isotropic : All Elements<br>F <sub>ed</sub> | Low LTE Elements  | 450-470MHz -2dBi                 |
|                                                        | High LTE Elements | 698-960MHz 2                     |
|                                                        |                   | 1710-3800MHz 5                   |
| Typical Isolation *                                    | Low LTE Elements  | >12dB                            |
|                                                        | High LTE Elements | >10dB                            |
| Correlation Co-efficient                               | Low LTE Elements  | <0.3                             |
|                                                        | High LTE Elements | <0.1                             |
| Nominal Impedance                                      |                   | 50Ω                              |
| GPS/GNSS Data                                          |                   |                                  |
| Frequency Range (MHz)                                  |                   | 2x 1562-1612                     |
| VSWR                                                   |                   | <2.0:1 ± 4MHz                    |
| Gain: LNA                                              |                   | 26dB                             |
| Out of band rejection                                  |                   | >40dB (@ > +/- 100MHz f)         |
| Operating Voltage                                      |                   | 3 - 5V DC                        |
| Typical Current (mA)                                   |                   | < 20                             |
| Mechanical Data                                        |                   |                                  |
| Dimensions (mm)                                        | Height            | 55 (2.1")                        |
|                                                        | Width             | 145 (5.7")                       |
|                                                        | Length            | 225 (8.85")                      |
| Operating Temp                                         |                   | -40° / +80°C (-40° / +176°F)     |
| Colour                                                 |                   | White Black                      |
| Mounting Data                                          |                   |                                  |
| Mounting type                                          |                   | Panel mount                      |
| Max panel thickness (mm)                               |                   | 7 (0.27")                        |
| Mounting hole (mm)                                     |                   | 19 (3/4")                        |
| Cable Data                                             |                   |                                  |
| All Cables                                             | Type              | RG174 -FR (UN ECE 118 Compliant) |
|                                                        | Diameter (mm)     | 2.8 (0.1")                       |
|                                                        | Length (m)        | 0.3 (1')                         |
| Terminations                                           |                   |                                  |
| Low LTE Elements                                       |                   | SMA (m)                          |
| High LTE Elements                                      |                   | SMA (m)                          |
| GNSS Elements                                          |                   | FME (f)                          |

\* Measured on a 1x1m (3' x 3') groundplane with 5m (16') of cable.

† Peak Gain simulated in CST Microwave Studio on a 600x600mm (2'x2') without cable loss

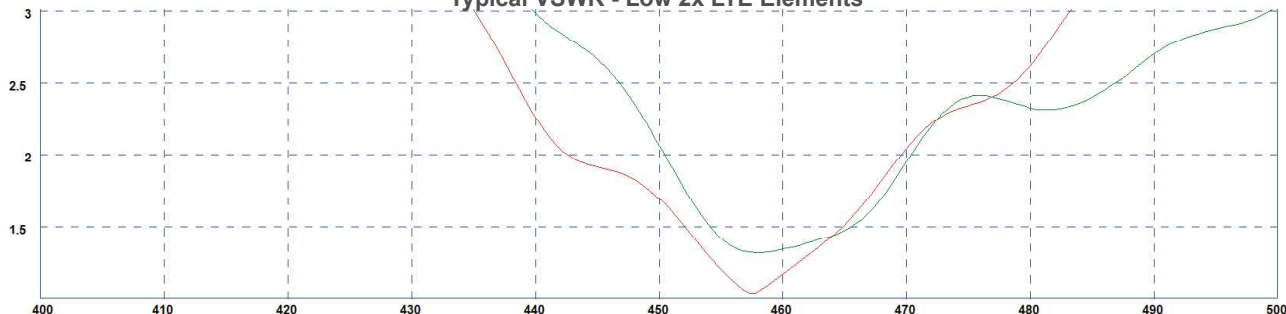
# MiMo UHF/LTE 2x GNSS Sharkfin Antenna

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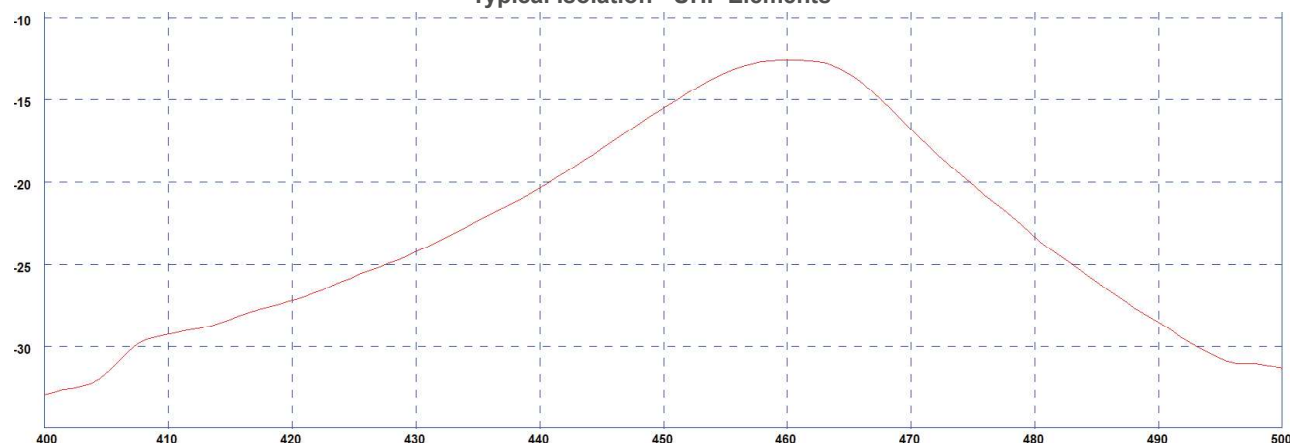
## Electrical Data

Typical VSWR - Low 2x LTE Elements\*



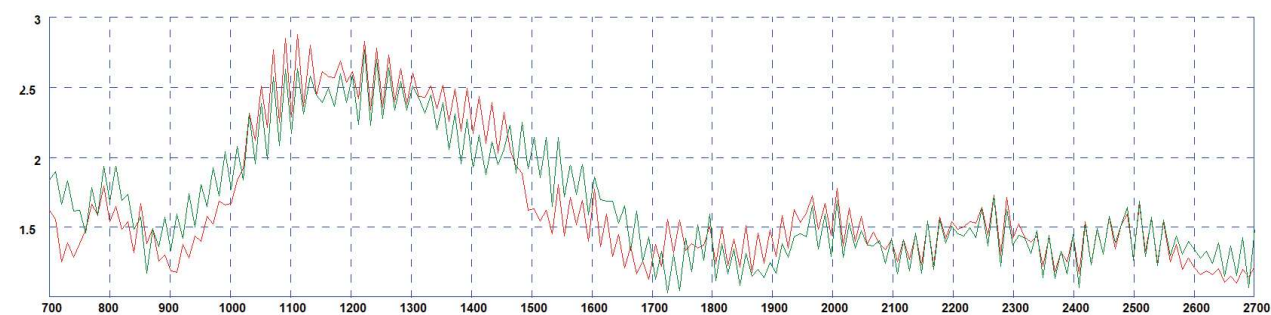
\* measured with 5m (17') of CS23 cable on a 600x600mm (2'x2') groundplane

Typical Isolation - UHF Elements \*



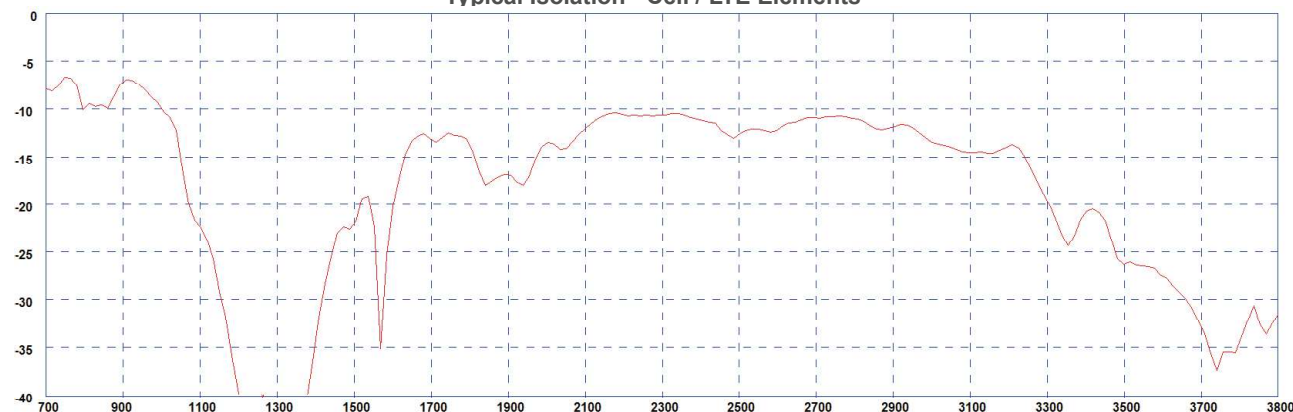
\* measured without cable on a 600x600mm (2'x2') groundplane

Typical VSWR - High 2x LTE Elements\*



\* measured on a 600x600mm (2'x2') groundplane with 5m (17') of CS29 Cable

Typical Isolation - Cell / LTE Elements \*



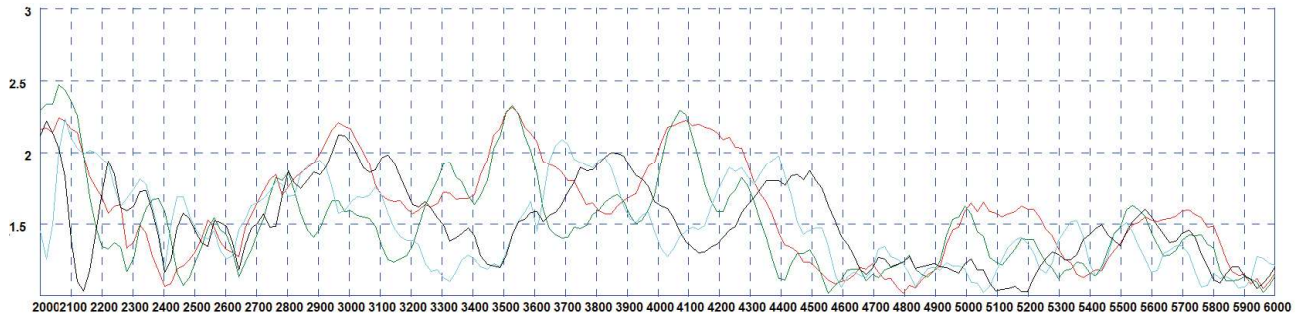
\* measured without cable on a 600x600mm (2'x2') groundplane

# MiMo UHF/LTE 2x GNSS Sharkfin Antenna

GPSPD2S4-7-38-[X]

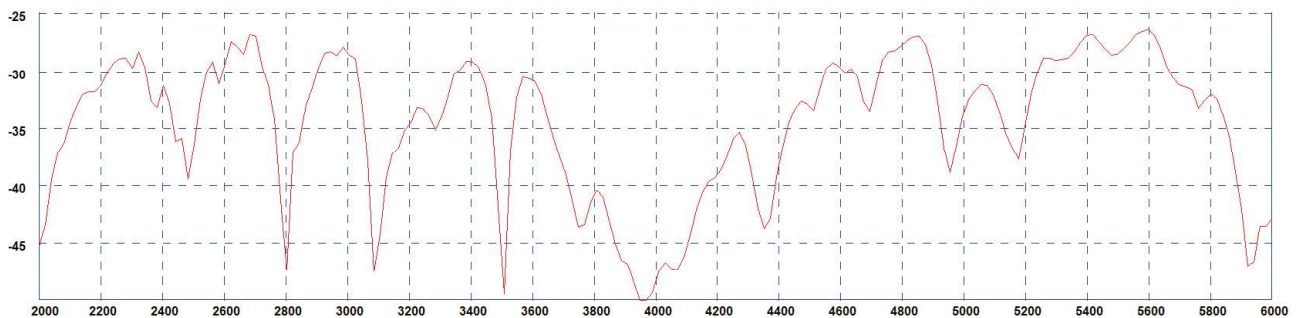
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Typical VSWR - 4x WiFi Elements \*



\* measured with 5m (17') of CS32 cable on a 600x600mm (2'x2') groundplane

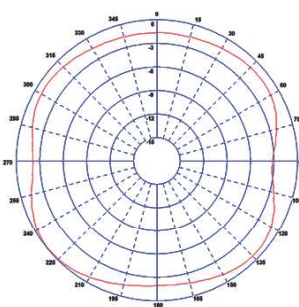
Typical Isolation -Adjacent WiFi Elements \*



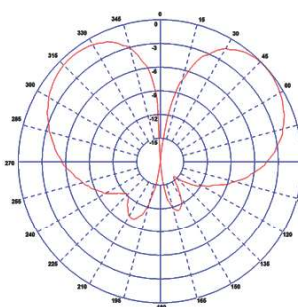
\* measured without cable on a 600x600mm (2'x2') groundplane

## Typical Cell Patterns

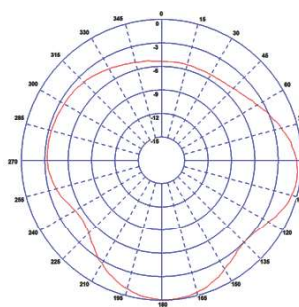
Cell Element Front 700 H Plane



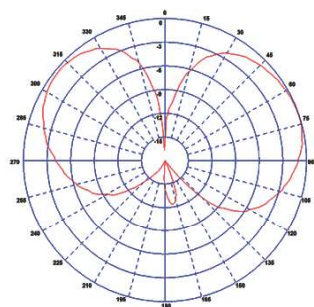
Cell Element Front 700 E Plane



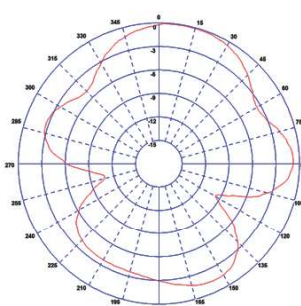
Cell Element Rear 700 H Plane



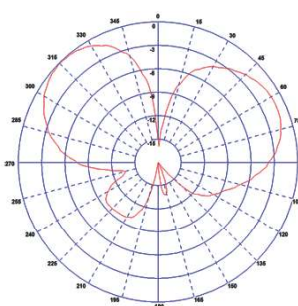
Cell Element Rear 700 E Plane



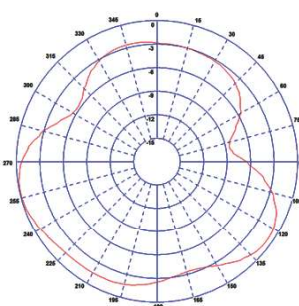
Cell Element Front 800 H Plane



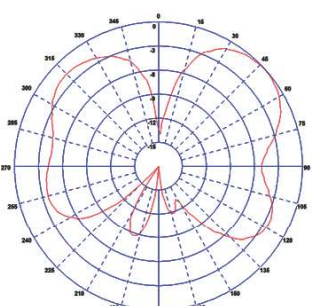
Cell Element Front 800 E Plane



Cell Element Rear 800 H Plane



Cell Element Rear 800 E Plane

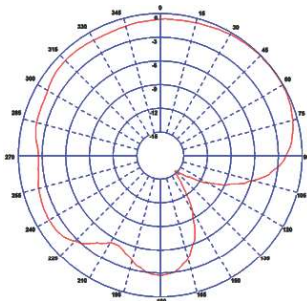


# MiMo UHF/LTE 2x GNSS Sharkfin Antenna

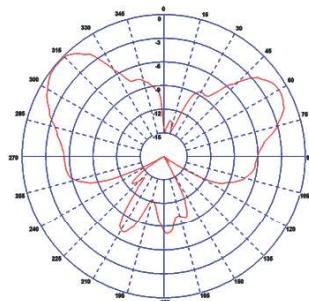
GPSD2S4-7-38-[X]

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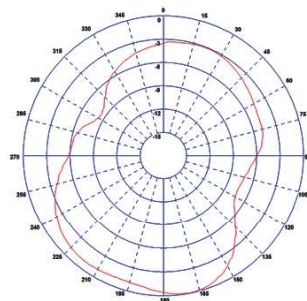
Cell Element Front 1800 H Plane



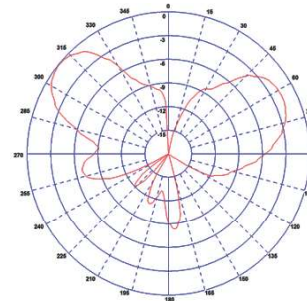
Cell Element Front 1800 E Plane



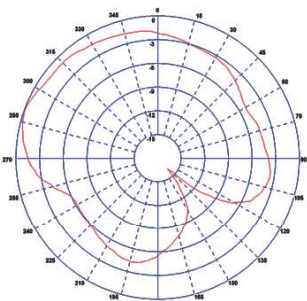
Cell Element Rear 1800 H Plane



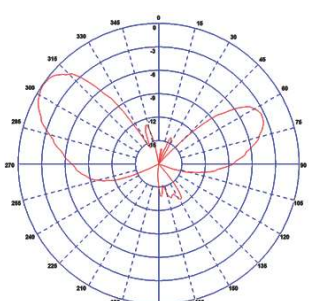
Cell Element Rear 1800 E Plane



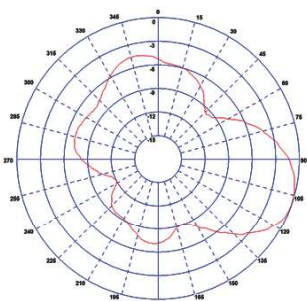
Cell Element Front 2170 H Plane



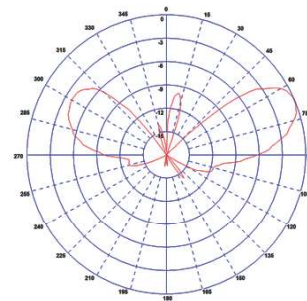
Cell Element Front 2170 E Plane



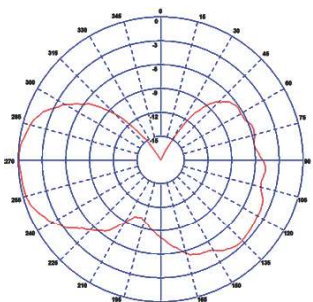
Cell Element Rear 2170 H Plane



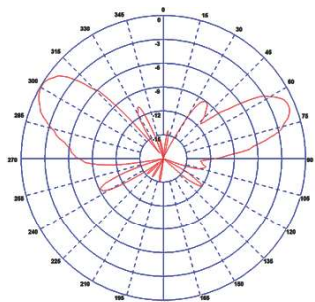
Cell Element Rear 2170 E Plane



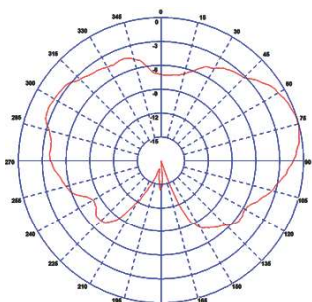
Cell Element Front 2600 H Plane



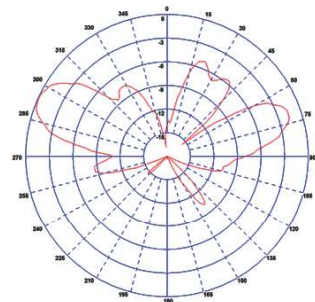
Cell Element Front 2600 E Plane



Cell Element Rear 2600 H Plane

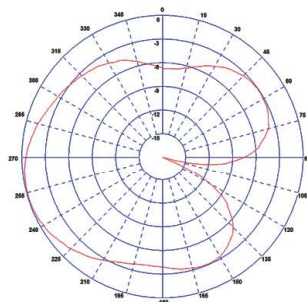


Cell Element Rear 2600 E Plane

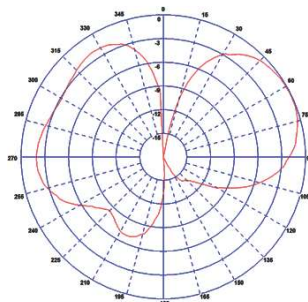


## Typical UHF Patterns

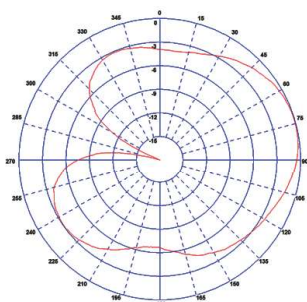
UHF Element Left 460 H Plane



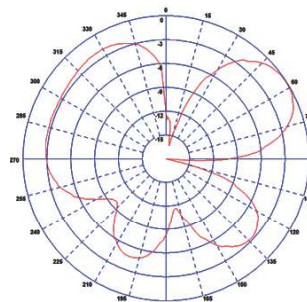
UHF Element Left 460 E Plane



UHF Element Right 460 H Plane



UHF Element Right 460 E Plane



# MiMo UHF/LTE 2x GNSS

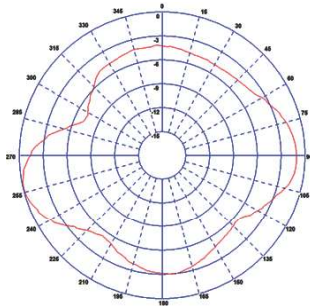
## Sharkfin Antenna

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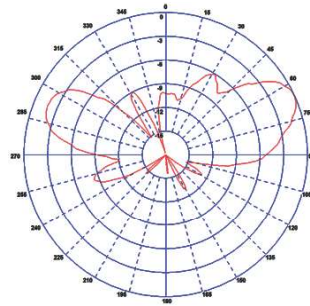
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### Typical WiFi Patterns

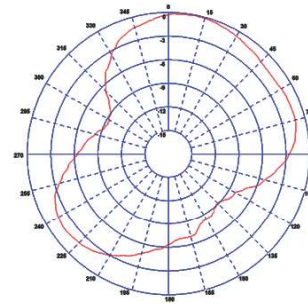
WiFi Element 1 2450 H Plane



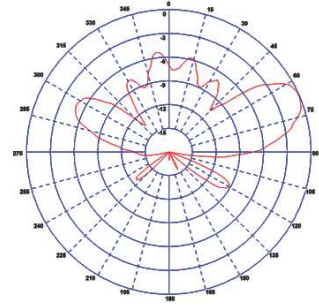
WiFi Element 1 2450 E Plane



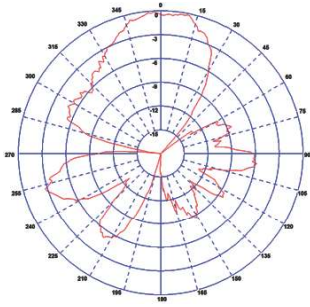
WiFi Element 2 2450 H Plane



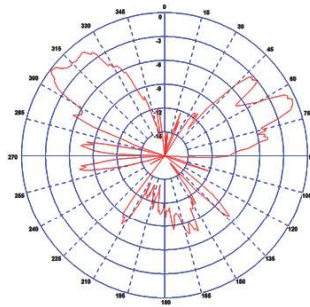
WiFi Element 2 2450 E Plane



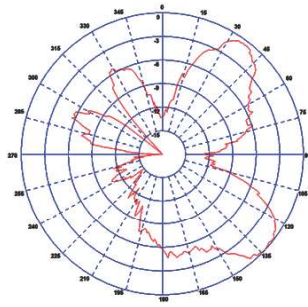
WiFi Element 1 5400 H Plane



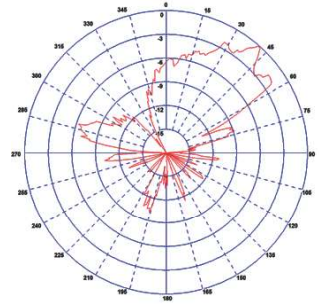
WiFi Element 1 5400 E Plane



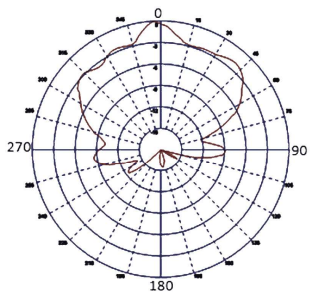
WiFi Element 2 5400 H Plane



WiFi Element 2 5400 E Plane



GPS/GNSS 1575 E Plane



### Typical GPS Pattern