## 8-Port Antenna Specifications

**Type No.:** 80010768

<table>
<thead>
<tr>
<th>Left side, lowbands</th>
<th>R1, connector 1–2</th>
<th>R2, connector 3–4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range MHz</td>
<td>698 – 803</td>
<td>824 – 984</td>
</tr>
<tr>
<td>Gain at mid Tilt dB</td>
<td>15.2</td>
<td>15.8</td>
</tr>
<tr>
<td>Gain over all Tilts dB</td>
<td>15.1 ± 0.4</td>
<td>15.7 ± 0.4</td>
</tr>
<tr>
<td>Horizontal Pattern:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Azimuth Beamwidth °</td>
<td>66 ± 1.6</td>
<td>63 ± 1.7</td>
</tr>
<tr>
<td>Front-to-Back Ratio, Total Power, ± 30° dB</td>
<td>&gt; 21</td>
<td>&gt; 26</td>
</tr>
<tr>
<td>Cross Polar Discrimination at Boresight dB</td>
<td>&gt; 24</td>
<td>&gt; 24</td>
</tr>
<tr>
<td>Cross Polar Discrimination over Sector dB</td>
<td>&gt; 7.0</td>
<td>&gt; 7.0</td>
</tr>
<tr>
<td>Azimuth Beam Port-to-Port Tracking dB</td>
<td>&lt; 1.5</td>
<td>&lt; 1.5</td>
</tr>
<tr>
<td>Vertical Pattern:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevation Beamwidth °</td>
<td>10.7 ± 0.6</td>
<td>9.6 ± 0.4</td>
</tr>
<tr>
<td>Electrical Downtilt continuously adjustable °</td>
<td>2.0 – 12.0</td>
<td>2.0 – 12.0</td>
</tr>
<tr>
<td>Tilt Accuracy °</td>
<td>&lt; 0.5</td>
<td>&lt; 0.5</td>
</tr>
<tr>
<td>First Upper Side Lobe Suppression dB</td>
<td>&gt; 16</td>
<td>&gt; 19</td>
</tr>
<tr>
<td>Upper Side Lobe Suppression, 20° Sector above Main Beam dB</td>
<td>&gt; 16</td>
<td>&gt; 19</td>
</tr>
<tr>
<td>Cross Polar Isolation dB</td>
<td>&gt; 30</td>
<td>&gt; 30</td>
</tr>
<tr>
<td>Port to Port Isolation dB</td>
<td>&gt; 28 (R1 // R2)</td>
<td>&gt; 28 (R2 // R1)</td>
</tr>
<tr>
<td>Max. Effective Power per Port W</td>
<td>400 (at 50 °C ambient temperature)</td>
<td></td>
</tr>
<tr>
<td>Max. Effective Power Port 1–4 W</td>
<td>800 (at 50 °C ambient temperature)</td>
<td></td>
</tr>
</tbody>
</table>

Values based on NGMN-P-BASTA (version 9.6) requirements.
# 8-Port Antenna

## Left side, highband

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain at mid Tilt</td>
<td>dBi</td>
<td>17.3</td>
<td>17.8</td>
<td>17.9</td>
<td>17.6</td>
<td>18.3</td>
</tr>
<tr>
<td>Gain over all Tilts</td>
<td>dBi</td>
<td>17.3 ± 0.6</td>
<td>17.8 ± 0.3</td>
<td>17.8 ± 0.4</td>
<td>17.5 ± 0.5</td>
<td>18.2 ± 0.7</td>
</tr>
</tbody>
</table>

### Horizontal Pattern:
- Azimuth Beamwidth (°)  
  - 64 ± 4.9  
  - 60 ± 2.6  
  - 60 ± 2.1  
  - 65 ± 6.8  
  - 61 ± 6.0  
- Front-to-Back Ratio, Total Power, ± 30° (dB)  
  - > 24  
  - > 27  
  - > 27  
  - > 24  
  - > 24  
- Cross Polar Discrimination at Boresight (dB)  
  - > 16  
  - > 21  
  - > 25  
  - > 18  
  - > 16  
- Cross Polar Discrimination over Sector (dB)  
  - > 7.5  
  - > 7.5  
  - > 10.0  
  - > 8.5  
  - > 9.5  
- Azimuth Beam Port-to-Port Tracking (dB)  
  - < 2.0  
  - < 2.0  
  - < 2.0  
  - < 1.5  
  - < 2.5  

### Vertical Pattern:
- Elevation Beamwidth (°)  
  - 6.3 ± 0.5  
  - 5.9 ± 0.2  
  - 5.6 ± 0.4  
  - 4.9 ± 0.2  
  - 4.5 ± 0.3  
- Electrical Downtilt continuously adjustable (°)  
  - 2.5 – 12.0  
- Tilt Accuracy (°)  
  - < 0.2  
  - < 0.2  
  - < 0.2  
  - < 0.2  
  - < 0.2  
- First Upper Side Lobe Suppression (dB)  
  - > 19  
  - > 18  
  - > 18  
  - > 17  
  - > 17  
- Upper Side Lobe Suppression, 20° Sector above Main Beam (dB)  
  - > 14  
  - > 15  
  - > 14  
  - > 14  
  - > 15  
- Cross Polar Isolation (dB)  
  - > 28  
- Port to Port Isolation (dB)  
  - > 30 (Y1 // R1, R2, Y2)  
- Max. Effective Power (W) per Port  
  - 200 (at 50 °C ambient temperature)  
- Max. Effective Power (W) Port 5–6  
  - 400 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

## Right side, highband

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain at mid Tilt</td>
<td>dBi</td>
<td>17.5</td>
<td>17.7</td>
<td>18.0</td>
<td>18.4</td>
<td>18.4</td>
</tr>
<tr>
<td>Gain over all Tilts</td>
<td>dBi</td>
<td>17.5 ± 0.3</td>
<td>17.7 ± 0.2</td>
<td>17.9 ± 0.5</td>
<td>18.3 ± 0.4</td>
<td>18.3 ± 0.4</td>
</tr>
</tbody>
</table>

### Horizontal Pattern:
- Azimuth Beamwidth (°)  
  - 61 ± 3.4  
  - 61 ± 1.4  
  - 61 ± 1.5  
  - 59 ± 2.6  
  - 58 ± 3.1  
- Front-to-Back Ratio, Total Power, ± 30° (dB)  
  - > 23  
  - > 23  
  - > 24  
  - > 24  
  - > 24  
- Cross Polar Discrimination at Boresight (dB)  
  - > 22  
  - > 22  
  - > 21  
  - > 18  
  - > 16  
- Cross Polar Discrimination over Sector (dB)  
  - > 15.5  
  - > 15.0  
  - > 13.0  
  - > 7.5  
  - > 8.5  
- Azimuth Beam Port-to-Port Tracking (dB)  
  - < 1.5  
  - < 1.0  
  - < 1.0  
  - < 2.0  
  - < 2.5  
- Cross Polar Isolation (dB)  
  - > 28  
- Port to Port Isolation (dB)  
  - > 30 (Y2 // R1, R2, Y1)  
- Max. Effective Power (W) per Port  
  - 200 (at 50 °C ambient temperature)  
- Max. Effective Power (W) Port 7–8  
  - 400 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.
8-Port Antenna

Electrical specifications, all systems

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impedance Ω</td>
<td>50</td>
</tr>
<tr>
<td>VSWR</td>
<td>&lt; 1.5</td>
</tr>
<tr>
<td>Return Loss dB</td>
<td>&gt; 14</td>
</tr>
<tr>
<td>Interband Isolation dB</td>
<td>&gt; 28</td>
</tr>
<tr>
<td>Passive Intermodulation dBc</td>
<td>&lt; −150 (2 x 43 dBm carrier)</td>
</tr>
<tr>
<td>Polarization °</td>
<td>+45, −45</td>
</tr>
<tr>
<td>Max. Effective Power for the Antenna W</td>
<td>900 (at 50 °C ambient temperature)</td>
</tr>
</tbody>
</table>

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>8 x 4.3–10</td>
</tr>
<tr>
<td>Connector Position</td>
<td>bottom</td>
</tr>
<tr>
<td>Adjustment Mechanism</td>
<td>FlexRET, continuously adjustable</td>
</tr>
<tr>
<td>Wind load (at Rated Wind Speed: 150 km/h)</td>
<td>N</td>
</tr>
<tr>
<td>Max. Wind Velocity km/h mph</td>
<td>241</td>
</tr>
<tr>
<td>Height / Width / Depth mm inches</td>
<td>1910 / 377 / 169</td>
</tr>
<tr>
<td>Max. Wind Velocity km/h mph</td>
<td>150</td>
</tr>
<tr>
<td>Max. Effective Power</td>
<td>900 (at 50 °C ambient temperature)</td>
</tr>
<tr>
<td>Weight kg</td>
<td>35.0 / 37.2 (clamps incl.)</td>
</tr>
<tr>
<td>Packing Size mm inches</td>
<td>212 / 397 / 212</td>
</tr>
<tr>
<td>Category of Mounting Hardware</td>
<td>H (Heavy)</td>
</tr>
<tr>
<td>Height / Width / Depth mm inches</td>
<td>75.2 / 14.8 / 6.7</td>
</tr>
<tr>
<td>Material</td>
<td>Reflector screen: Aluminum. Fiberglass housing: It covers totally the internal antenna components. The special design reduces the sealing areas to a minimum and guarantees the best weather protection. Fiberglass material guarantees optimum performance with regards to stability, stiffness, UV resistance and painting. The color of the radome is light grey. All nuts and bolts: Stainless steel or hot-dip galvanized steel. Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.</td>
</tr>
</tbody>
</table>

Accessories (order separately if required)

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Description</th>
<th>Remarks mm</th>
<th>inches</th>
<th>Weight approx. kg</th>
<th>lb</th>
<th>Units per antenna</th>
</tr>
</thead>
<tbody>
<tr>
<td>85010002</td>
<td>1 clamp</td>
<td>Mast diameter: 110 – 220</td>
<td>4.3 – 8.7</td>
<td>2.7</td>
<td>6.0</td>
<td>2</td>
</tr>
<tr>
<td>85010003</td>
<td>1 clamp</td>
<td>Mast diameter: 210 – 380</td>
<td>8.3 – 15.0</td>
<td>4.8</td>
<td>10.6</td>
<td>2</td>
</tr>
<tr>
<td>85010008</td>
<td>1 downtilt kit</td>
<td>Downtilt angle: 0° – 11°</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>86010154</td>
<td>Site Sharing Adapter 3-way</td>
<td>(see figure below)</td>
<td>0.65</td>
<td>1.4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>86010155</td>
<td>Site Sharing Adapter 6-way</td>
<td>(see figure below)</td>
<td>1.35</td>
<td>3.0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>86010162</td>
<td>Gender Adapter</td>
<td>Solely to be used in combination with the FlexRET module 86010153v01</td>
<td>0.045</td>
<td>0.099</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>86010163</td>
<td>Port Extender</td>
<td></td>
<td>0.16</td>
<td>0.35</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Accessories (included in the scope of supply)

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Description</th>
<th>Remarks mm</th>
<th>inches</th>
<th>Weight approx. kg</th>
<th>lb</th>
<th>Units per antenna</th>
</tr>
</thead>
<tbody>
<tr>
<td>738546</td>
<td>1 clamp</td>
<td>Mast diameter: 42 – 115</td>
<td>1.7 – 4.5</td>
<td>1.1</td>
<td>2.4</td>
<td>2</td>
</tr>
<tr>
<td>86010153v01</td>
<td>FlexRET</td>
<td></td>
<td>0.16</td>
<td>0.35</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

For downtilt mounting use the clamps for an appropriate mast diameter together with the downtilt kit. Wall mounting: No additional mounting kit needed.

Material: Reflector screen: Aluminum. Fiberglass housing: It covers totally the internal antenna components. The special design reduces the sealing areas to a minimum and guarantees the best weather protection. Fiberglass material guarantees optimum performance with regards to stability, stiffness, UV resistance and painting. The color of the radome is light grey. All nuts and bolts: Stainless steel or hot-dip galvanized steel. Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.

Configuration example with Site Sharing Adapter 86010154

- FlexRET
- Site Sharing Adapter 3-way
- BTS1
- BTS2
- BTS3

Configuration example with Site Sharing Adapter 86010155

- FlexRET
- Site Sharing Adapter 6-way
- BTS1
- BTS2
- BTS3
- BTS4
- BTS5
- BTS6

For more information please refer to the respective data sheets.
8-Port Antenna

Layout of interface:

![Layout Diagram]

Correlation Table

<table>
<thead>
<tr>
<th>Frequency range</th>
<th>Array</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>698 – 803 MHz</td>
<td>R1</td>
<td>1–2</td>
</tr>
<tr>
<td>824 – 960 MHz</td>
<td>R2</td>
<td>3–4</td>
</tr>
<tr>
<td>1695 – 2690 MHz</td>
<td>Y1</td>
<td>5–6</td>
</tr>
<tr>
<td>1695 – 2690 MHz</td>
<td>Y2</td>
<td>7–8</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>80010768</td>
<td>8-Port antenna with mounting bracket</td>
</tr>
<tr>
<td>80010768K</td>
<td>8-Port antenna with mounting bracket and mechanical tilt bracket</td>
</tr>
</tbody>
</table>

Any previous data sheet issues have now become invalid.

All specifications are subject to change without notice.
The latest specifications are available at www.kathreinusa.com

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800    Fax: 214.238.8801    Email: info@kathrein.com
FlexRET

A flexible, integrated solution for adjusting the electrical downtilt of Kathrein FlexRET antennas.

- Compliant to 3GPP/AISG 2.0
- Single RETs or Multi RET displayed
- Daisy Chain feasibility
- Two way antenna sharing feasibility
- Pre-configured

<table>
<thead>
<tr>
<th>Type No.</th>
<th>86010153V01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocols</td>
<td>compliant to 3GPP/AISG 2.0</td>
</tr>
<tr>
<td>Logical interface ex factory</td>
<td>3GPP/AISG 2.0</td>
</tr>
<tr>
<td>Operates as</td>
<td>Single RETs or Multi RET</td>
</tr>
<tr>
<td>Ex factory</td>
<td>Single RETs</td>
</tr>
<tr>
<td>Input voltage range V</td>
<td>10 ... 30 (pin 6)</td>
</tr>
<tr>
<td>Power consumption W</td>
<td>Typically &lt; 1; &lt; 10 (motor activated)</td>
</tr>
<tr>
<td>Connectors</td>
<td>2 x 8 pin connector according to IEC 60130-3; according to AISG-C 485 Daisy chain in: male; Daisy chain out: female</td>
</tr>
<tr>
<td>Hardware interfaces</td>
<td>RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP</td>
</tr>
<tr>
<td>Adjustment time</td>
<td>sec 40 (typically, depending on antenna type)</td>
</tr>
<tr>
<td>Adjustment cycles</td>
<td>&gt; 50,000</td>
</tr>
<tr>
<td>Temperature range</td>
<td>°C -40 ... +60</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 24 (installed)</td>
</tr>
<tr>
<td>Lightning protection</td>
<td>AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5</td>
</tr>
<tr>
<td>Weight</td>
<td>g 350</td>
</tr>
<tr>
<td>Packing size</td>
<td>mm 245 x 93 x 102</td>
</tr>
<tr>
<td>(H x W x D)</td>
<td>inches 9.6 x 3.6 x 4</td>
</tr>
<tr>
<td>Dimensions</td>
<td>mm 142 x 71 x 51</td>
</tr>
<tr>
<td>(H x W x D)</td>
<td>inches 5.6 x 2.8 x 2</td>
</tr>
</tbody>
</table>

Please note:

If the Primary which controls the FlexRET system does not support the default ex-factory interface setting, then the FlexRET must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

If the FlexRET of an antenna has to be replaced, the FlexRET gets the information stored in the antenna after power on automatically. It is not necessary to configure the FlexRET manually.

Standards:
- EN 60950-1 (Safety)
- EN 60950-22 (Safety – Equipment installed outdoor)
- EN 55022 (Emission)
- EN 55024 (Immunity)
- ETS 300019-1-4 (Environmental)
- UL 60950-1; 1st edition

Certification:
- CE, FCC

Scope of supply:
- FlexRET

Optional:
- Site Sharing Adapter (86010154 or 86010155) to create independent logical interfaces at one antenna or site. Makes it possible to operate with more than one independent Node B.
- Gender Adapter (86010162) to convert the AISG out (female) to an AISG in (male) port in order to operate one FlexRet with exactly 2 BTS. Detailed information is given in the data sheet of the Gender Adapter.
- Port Extender (86010163) to convert the existing AISG input and output in order to operate FlexRet with exactly 2 BTS while maintaining the daisy chain capability. Detailed information is given in the data sheet of the Port Extender.

Please note:

In general, the addressing of the FlexRET is automatically performed. Only in case the FlexRET is manually addressed, the serial number has to be extended by the corresponding colour coding extension (e.g. CSG351234-R1). The respective information can be found on the site documentation which is included in the scope of supply.
Startup of FlexRET

The FlexRET module included in the antenna is preconfigured with the following information:
Antenna model no., Antenna Serial no., Antenna configuration data. After connecting a control
cable and scanning the antenna line devices (ALD) the used primary (e.g. NodeB, ALC, etc.)
will find the FlexRET. You only need to insert your additional data.

Connecting the control cables:

Connect a control cable to the daisy chain input of the FlexRET. The tightening torque for fixing the
connector must be 0.5 – 1.0 Nm (‘hand-tightened’).
The connector should be tightened by hand or by a special torque screw driver (order no.
85010080).
See also data sheet for Kathrein AISG-cable (86010007, ...).
Please note: To ensure the tightness of the RET System, Kathrein recommend the use of
Kathrein components only.
Please note: If the daisy chain output is not used, do not remove the protection cap.

For daisy chain operation, remove the protection cap and attach a control cable to interconnect
with the daisy chain input of the subsequent FlexRET or external RCU.
Please note: Do not remove the protection cap on the daisy chain output of the last FlexRET
or RCU device.
FCC – Statements

FCC § 15.19

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC § 15.105

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

Canada CNR-Gen Section 7.1.3

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d’Industrie Canada applicables aux appareils radio exempts de licence. L’exploitation est autorisée aux deux conditions suivantes: (1) l’appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ICES-003

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

FCC § 15.21 (Warning Statement)

[Any] changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.
Compliance Information Statement
(Declaration of Conformity Procedure)

**Responsible Party:** Kathrein USA

**Address:** Greenway Plaza II, 2400 Lakeside Blvd. Suite 650, 75082 Richardson, Texas

**Telephone:** (+01)214 238 8800

**Type of Equipment:**

- **Model Name:** FlexRET
- **FCC ID:** SP3-86010153

**EU-RED**

Hereby, Kathrein Werke KG declares that the radio equipment type 86010153V01 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: http://www.kathrein.com
Mounting Hardware
Clamp Included in the Scope of Supply

<table>
<thead>
<tr>
<th>Suitable for mast diameter (mm)</th>
<th>42 – 115 [1.65 – 4.53]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenna – mast distance (mm)</td>
<td>20 – 25 [0.79 – 0.98]</td>
</tr>
<tr>
<td>Material of clamp and screws</td>
<td>Hot-dip galvanized steel / stainless steel</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>1.1 [2.43]</td>
</tr>
</tbody>
</table>

Suitable for mast diameter (inches) 42 – 115 [1.65 – 4.53]
Antenna – mast distance (inches) 20 – 25 [0.79 – 0.98]
Material of clamp and screws Hot-dip galvanized steel / stainless steel
Weight (lb) 1.1 [2.43]

Please note: Kathrein does not recommend to use counter nuts.
The additional nuts supplied are only meant as spares.

All specifications are subject to change without notice.
The latest specifications are available at www.kathreinusa.com

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General Instructions for Feeder Line Installation for Antennas with 4.3-10 Connectors

Please note: In order not to damage the interfaces, please make sure that only the right tools are used. Tighten the feederline connector interfaces solely by using a common torque-wrench with a suitable wrench width.

Installation of feeder line cables:
Tighten the 4.3-10 cable connectors within a torque range of max. 15 Nm depending on connector manufacturers’ specifications. The recommended tightening torque of 4.3-10 connectors is 5–8 Nm.
For the FlexRET installation, please follow the FlexRET installation instruction on the data sheet.

Installation of Smart Bias Tees:
If directly mounted on the antenna, the weight of one Smart Bias Tee must not exceed 440 g | 0.96 lb per antenna connector. It is recommended to only use Kathrein Smart Bias Tees with 4.3-10 connector (type no. 78211590, -597).
Hold the Smart Bias Tee housing securely while mounting and tightening the cables. No lateral pressure shall be applied on the Smart Bias Tee when mounting it directly on an antenna neither during the mounting process nor in operational mode.

Description of bottom end cap (exemplary picture):
Environmental conditions:
Kathrein cellular antennas are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E. The antennas exceed this standard with regard to the following items:
- Low temperature: -55 °C
- High temperature (dry): +60 °C
For antennas equipped with FlexRET: The electrical downtilt adjusting is designed to operate under the environmental conditions as described in the valid data sheet of the FlexRET.

Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

Environmental tests:
Kathrein antennas fulfil the stated specifications after completion of the environmental tests as defined in ETS 300 019-2-4. The homogenous design of Kathrein's antenna families uses identical modules and materials. Extensive tests have been performed on typical samples and modules. The vibration test has been adapted relating to frequency and acceleration to the conditions of mast mounted antennas.

Please note:
As a result of more stringent legal regulations and judgements regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions.

The mechanical design is based on the environmental conditions as stipulated in ETS 300 019-1-4. Wind loads are calculated according to DIN 1055-4. The antennas may be used at locations where the anticipated peak wind velocity or gust wind speed lies within the maximum wind speed listed in the data sheet. We warrant the mechanical safety and electrical functionality under such conditions. The wind speeds are defined in accordance with the DIN, EN or TIA standards. This warranty makes allowance for the partial safety factors specified in those standards. Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an antenna or even cause it to fall to the ground. These facts must be considered during the site planning process.

The details given in our data sheets have to be followed carefully when installing the antennas and accessories.
Site planning and installation must be carried out by qualified and experienced staff. All relevant national safety regulations must be upheld and respected. Incorrect site planning, faulty installation, as well as interfering surroundings on site, may lead to deviations in the electrical parameters compared to those specified in the respective data sheets.
The connectors on this product are only suitable for connecting to the compatible counterpart. Please ensure that the connected cable has been fitted with a connector of the same standard, otherwise damage may occur.

The tilt values will be set to any arbitrary value in the given tilt range. These values are independent from the frequency band or antenna type and can vary between antennas and bands.

Hereby, Kathrein Werke KG declares that the radio equipment is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: http://www.kathrein.com