6-Port Antenna

Frequency Range
698–960 MHz
1695–2690 MHz
1695–2690 MHz

Dual Polarization
X
X
X

HPBW
65°
65°
65°

Adjust. Electr. DT

set by FlexRET

---

6-Port Antenna 698–960/1695–2690/1695–2690 65°/65°/65° 14.5/17.5/18dBi

<table>
<thead>
<tr>
<th>Type No.</th>
<th>80010864</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left side, lowband</td>
<td>R1, connector 1–2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency Range MHz</th>
<th>698 – 806</th>
<th>790 – 862</th>
<th>824 – 894</th>
<th>880 – 960</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain at mid Tilt dBi</td>
<td>13.5</td>
<td>14.0</td>
<td>14.2</td>
<td>14.5</td>
</tr>
<tr>
<td>Gain over all Tilts dBi</td>
<td>13.5 ± 0.3</td>
<td>14.0 ± 0.4</td>
<td>14.2 ± 0.3</td>
<td>14.4 ± 0.3</td>
</tr>
</tbody>
</table>

**Horizontal Pattern:**

Azimuth Beamwidth °
72 ± 3.2
70 ± 2.7
68 ± 2.4
67 ± 2.2

Front-to-Back Ratio, Total Power, ± 30° dB
> 22
> 24
> 24
> 25

Cross Polar Discrimination at Boresight dB
> 23
> 23
> 24
> 22

Cross Polar Discrimination over Sector dB
> 7.0
> 7.0
> 7.0
> 7.5

Azimuth Beam Port-to-Port Tracking dB
< 2.0
< 1.5
< 2.0
< 2.5

**Vertical Pattern:**

Elevation Beamwidth °
17.4 ± 1.1
16.2 ± 1.1
15.7 ± 0.7
14.9 ± 0.8

Electrical Downtilt continuously adjustable °
2.0 – 16.0

Tilt Accuracy °
< 0.6
< 0.8
< 0.6
< 0.5

First Upper Side Lobe Suppression dB
> 15
> 16
> 16
> 19

Upper Side Lobe Suppression, 20° Sector above Main Beam dB
> 22
> 20
> 20
> 20

Cross Polar Isolation dB
> 30

Port to Port Isolation dB
> 30 (R1 // Y1, Y2)

Max. Effective Power per Port W
300 (at 50 °C ambient temperature)

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

#### Left side, highband

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain at mid Tilt dBi</td>
<td>17.3</td>
<td>17.5</td>
<td>17.6</td>
<td>17.2</td>
<td>17.6</td>
</tr>
<tr>
<td>Gain over all Tilts dBi</td>
<td>17.2 ± 0.6</td>
<td>17.5 ± 0.3</td>
<td>17.5 ± 0.3</td>
<td>17.1 ± 0.4</td>
<td>17.5 ± 0.6</td>
</tr>
</tbody>
</table>

**Horizontal Pattern:**

- **Azimuth Beamwidth °**
  - Left side: 62 ± 3.9
  - Right side: 65 ± 2.4
- **Front-to-Back Ratio, Total Power, ± 30° dB**
  - Left side: > 24
  - Right side: > 24
- **Cross Polar Discrimination at Boresight dB**
  - Left side: > 16
  - Right side: > 22
- **Cross Polar Discrimination over Sector dB**
  - Left side: > 7.0
  - Right side: > 15.5
- **Azimuth Beam Port-to-Port Tracking dB**
  - Left side: < 1.5
  - Right side: < 1.0

**Vertical Pattern:**

- **Elevation Beamwidth °**
  - 6.7 ± 0.4
  - 7.1 ± 0.4
- **Electrical Downtilt continuously adjustable °**
  - 2.5 – 12.0
- **Tilt Accuracy °**
  - < 0.3
  - < 0.2
- **First Upper Side Lobe Suppression dB**
  - > 17
  - > 21
- **Upper Side Lobe Suppression, 20° Sector above Main Beam dB**
  - > 14
  - > 15

#### Right side, highband

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain at mid Tilt dBi</td>
<td>17.2</td>
<td>17.5</td>
<td>17.8</td>
<td>18.2</td>
<td>18.5</td>
</tr>
<tr>
<td>Gain over all Tilts dBi</td>
<td>17.2 ± 0.4</td>
<td>17.4 ± 0.3</td>
<td>17.7 ± 0.4</td>
<td>18.1 ± 0.3</td>
<td>18.1 ± 0.4</td>
</tr>
</tbody>
</table>

**Horizontal Pattern:**

- **Azimuth Beamwidth °**
  - 62 ± 3.9
  - 65 ± 2.4
- **Front-to-Back Ratio, Total Power, ± 30° dB**
  - > 24
  - > 24
- **Cross Polar Discrimination at Boresight dB**
  - > 22
  - > 24
- **Cross Polar Discrimination over Sector dB**
  - > 15.5
  - > 15.0
- **Azimuth Beam Port-to-Port Tracking dB**
  - < 1.0
  - < 1.0

**Vertical Pattern:**

- **Elevation Beamwidth °**
  - 6.3 ± 0.3
  - 6.7 ± 0.4
- **Electrical Downtilt continuously adjustable °**
  - 2.5 – 12.0
- **Tilt Accuracy °**
  - < 0.2
  - < 0.2
- **First Upper Side Lobe Suppression dB**
  - > 17
  - > 21
- **Upper Side Lobe Suppression, 20° Sector above Main Beam dB**
  - > 14
  - > 15

Values based on NGMN-P-BASTA (version 9.6) requirements.
6-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; 30</td>
</tr>
<tr>
<td>Passive Intermodulation (dBc)</td>
<td>&lt; -150</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>6 x 7-16 female</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) (N</td>
<td>lbf)</td>
</tr>
<tr>
<td></td>
<td>Maximal: 520</td>
</tr>
<tr>
<td></td>
<td>Lateral: 135</td>
</tr>
<tr>
<td>EPA m²</td>
<td>ft²</td>
</tr>
<tr>
<td></td>
<td>Lateral: 0.121</td>
</tr>
<tr>
<td>Max. Wind Velocity km/h</td>
<td>241</td>
</tr>
<tr>
<td>Height / Width / Depth (mm</td>
<td>inches)</td>
</tr>
<tr>
<td></td>
<td>55.2 / 14.8 / 6.7</td>
</tr>
<tr>
<td>Category of Mounting Hardware</td>
<td>H (Heavy)</td>
</tr>
<tr>
<td>Weight kg</td>
<td>lb</td>
</tr>
<tr>
<td></td>
<td>55.1 / 59.9 (clamps incl.)</td>
</tr>
<tr>
<td>Packing Size (mm</td>
<td>inches)</td>
</tr>
<tr>
<td></td>
<td>63.1 / 15.6 / 8.3</td>
</tr>
<tr>
<td>Scope of Supply</td>
<td>Panel, FlexRET and 2 units of clamps for 42–115 mm</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° – 15°</td>
<td>0.65</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>86010154</td>
<td>Site Sharing Adapter 3-way (see figure below)</td>
<td>4.3</td>
<td>9.5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>86010155</td>
<td>Site Sharing Adapter 6-way (see figure below)</td>
<td></td>
<td></td>
<td></td>
<td></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>0.16</td>
<td>0.35</td>
<td>1</td>
<td></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</th>
<th>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>
<td></td>
</tr>
<tr>
<td>86010153v01</td>
<td>FlexRET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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**

[Diagram of configuration example with Site Sharing Adapter 86010154]

**Configuration example with Site Sharing Adapter 86010155**

[Diagram of configuration example with Site Sharing Adapter 86010155]

For more information please refer to the respective data sheets.

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

Layout of interface:

Bottom view
* Dimensions refer to radome
All dimensions in mm | inches

Correlation Table

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

Order Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>80010864</td>
<td>6-Port antenna with mounting bracket</td>
</tr>
<tr>
<td>80010864K</td>
<td>6-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
### Mounting Hardware
**Clamp Included in the Scope of Supply**

<table>
<thead>
<tr>
<th>Suitable for mast diameter</th>
<th>42 – 115 [1.65 – 4.53]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenna – mast distance</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</td>
<td>1.1 [2.43]</td>
</tr>
</tbody>
</table>

---

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

All dimensions in mm and [inches]
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
- Two way antenna sharing feasibility
- Daisy Chain 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 60130-9; according to AISG-C 485</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 (full range)</td>
<td>sec 40</td>
</tr>
<tr>
<td>Adjustment cycles</td>
<td>&gt; 50,000</td>
</tr>
<tr>
<td>Temperature range °C</td>
<td>−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)</td>
</tr>
<tr>
<td></td>
<td>2.5 kA (10/350 µs); 8 kA (8/20 µs) according to IEC 61000-4-5</td>
</tr>
<tr>
<td>Housing material</td>
<td>Profile: Aluminum anodized; cover: Aluminum die cast coated</td>
</tr>
<tr>
<td>Weight g</td>
<td>350</td>
</tr>
<tr>
<td>Weight lb</td>
<td>0.77</td>
</tr>
<tr>
<td>Packing size (H x W x D)</td>
<td>245 x 93 x 102</td>
</tr>
<tr>
<td></td>
<td>9.6 x 3.6 x 4</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>142 x 71 x 51</td>
</tr>
<tr>
<td></td>
<td>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.
- 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.

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. 86010153R1). 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
Richardson, Texas 75082

Telephone:  (01+) 214.238.8800

Type of equipment:

Model Name: FlexRET
FCC ID SP3-86010153