

AIR 1641

B1 B3 1.4m

AIR 1641, an Advanced Antenna System (AAS) radio unit with 16 transmitters and 16 receivers, improves LTE FDD spectral efficiency.

Enhanced cell capacity is achieved by applying beamforming capabilities in the downlink and the uplink such as cell splitting through digital sectorization and higher order transmission modes in LTE.

In addition, the unit is fully HW prepared for NR operation further adding to the spectral efficiency gains

The dual band radio configuration using the full antenna array for both bands together with remote adjustable electrical tilt (RET) capability allows for easy optimization and adaptation to legacy coverage.



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PRODUCT NUMBER: KR D 901 801/1

ADVANCED ANTENNA SYSTEM

Operating frequency band: 3GPP Band 3, Uplink 1710 - 1785 MHz, Downlink 1805 - 1880 MHz
3GPP Band 1, Uplink 1920 – 1980 MHz, Downlink 2110 – 2200 MHz

Instantaneous bandwidth: Up to 75 MHz (full bandwidth within each band)

Architecture: 16T16R connected to an 8-column array of dual polarized antenna elements.

Carrier capacity per sector: Up to 3x20 MHz LTE (FDD) per band, Carrier support for NR according to RAN SW support.

Modulation: Downlink Up to 256 QAM.
Uplink Up to 64 QAM.

Multi-antenna beamforming functionality*:
Cell splitting By digital sectorization
Cell shaping Pre-defined cell or broadcast beam shapes
DL SU-MIMO Up to 4 Layers
DL MU-MIMO Up to 8 Layers
UL SU-MIMO Up to 4 Layers
UL MU-MIMO Up to 8 Layers

Spatial characteristics TM4 broadcast beams Band 3	TM4 Normal			
Sector shape	Macro	Macro Narrow	Macro wide	Macro2Lobe
Beam shape**:	Dual polarized ⁶⁵	Narrow beam	Broad beam	Sectorized MB6
EIRP _{ref} :	65 dBm	64 dBm	61 dBm	62 dBm
Horizontal Pattern				
Azimuth Beamwidth:	65°	56° ± 2°	105° ± 5°	76° ± 3°
Side Lobe Suppression:	≥ 25 dB			
Beam Pointing Error:	≤ 5°			
Vertical Pattern				
Elevation Beamwidth:	7,5° ± 1°			
Side Lobe Suppression:	≥ 15 dB			
Beam Pointing Error:	≤ 1°			
RET Downtilt:	Continuously adjustable 2° to 12°			

Spatial characteristics broadcast beams Band 3	TM4 Digitally Sectorized			TM9 Normal	Spatial characteristics Uniform traffic beams ⁽¹⁾ Band 3	
	2 Digital sectors	3 Digital sectors		Macro wide	TM 4	TM 9
Sector shape	Left/Right	Left/Right	Middle	Broad beam		
EIRP _{ref} :	60,5 dBm	61,5 dBm	61,5 dBm	61 dBm	73,5 dBm peak	73,5 dBm peak
Horizontal Pattern						
Azimuth Beamwidth:	34° ± 2°	28° ± 2°	31° ± 2°	56° ± 2°		
Side Lobe Suppression:				≥ 25 dB		
Beam Pointing Error:	≤ 3°	≤ 3°		≤ 5°		
Vertical Pattern						
Elevation Beamwidth:	7,5° ± 1°				7° ± 1°	
Side Lobe Suppression:	≥ 15 dB					
Beam Pointing Error:	≤ 1°					
RET Downtilt:	Continuously adjustable 2° to 12°				Continuously adjustable 2° to 12°	

(1) The traffic beamforming of this product is not limited to the uniform beamshapes and directions given in the table. The beams are Precoder Matrix Indicator controlled.

(2) Average over the four different scenarios (sector shapes)

(3) 2 DS = Split into 2 Digital Sectors / AIR 1641

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Spatial characteristics TM4 broadcast beams Band 1	TM4 Normal			
Sector shape	Macro	Macro Narrow	Macro wide	Macro2Lobe
Beam shape**:	Dual polarized ⁶⁵	Narrow beam	Broad beam	Sectorized MB6
EIRP _{ref.} :	63,5 dBm	65 dBm	62 dBm	63 dBm
Horizontal Pattern				
Azimuth Beamwidth:	65°	50° ± 3°	92° ± 2°	65° ± 2°
Side Lobe Suppression:	≥ 25 dB			
Beam Pointing Error:	≤ 5°			
Vertical Pattern				
Elevation Beamwidth:	7° ± 1°			
Side Lobe Suppression:	≥ 15 dB			
Beam Pointing Error:	≤ 1°			
RET Downtilt:	Continuously adjustable 2° to 12°			

Spatial characteristics broadcast beams Band 1	TM4 Digitally Sectorized			TM9 Normal	Spatial characteristics Uniform traffic beams ⁽¹⁾ Band 1	
	2 Digital sectors	3 Digital sectors		Macro wide	TM 4	TM 9
Sector shape	Left/Right	Left/Right	Middle	Broad beam		
Beam shape**:	Left/Right	Left/Right	Middle	Broad beam		
EIRP _{ref.} :	61 dBm	61 dBm	62,5 dBm	62 dBm	74,5 dBm peak	74,5 dBm peak
Horizontal Pattern						
Azimuth Beamwidth:	38° ± 2°	28° ± 2°	29° ± 2°	48° ± 2°		
Side Lobe Suppression:				≥ 25 dB		
Beam Pointing Error:	≤ 3°	≤ 3°		≤ 5°		
Vertical Pattern						
Elevation Beamwidth:	7° ± 1°				7° ± 1°	
Side Lobe Suppression:	≥ 15 dB					
Beam Pointing Error:	≤ 1°					
RET Downtilt:	Continuously adjustable 2° to 12°				Continuously adjustable 2° to 12°	

(1) The traffic beamforming of this product is not limited to the uniform beamshapes and directions given in the table. The beams are Precode Matrix Indicator controlled.

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Main Interfaces

Baseband, Data 1 - 4:

4 CPRI interfaces using 10G SFP+ ports with link capacity up to 10.1 Gb/s.

Power Supply:

- 48 V DC nominal. 2-wire (DC-CI) or 3-wire (DC-I) connection selectable through choice of power connectors. Recommended fuse rating is 50 A.

Mounting:

Installation accessories are available from the Ericsson Radio Site System portfolio.
Mounting kits for wall and pole (diameter 76 -120 mm) mounting
SXA 109 2036/1 for mechanical azimuth panning (± 30°).
SXA 109 2037/1 for mechanical azimuth panning (± 30°) and elevation tilt (± 20°).

Handling:

Handles for carrying and lifting eyes for hoisting.

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Connection interfaces

Grounding Point:	2 x M6 bolt to support an M6 dual cable lug.
- 48 V DC Power Supply:	Connectors RNT 447 36/01 (3-wire (DC-I)) or RNT 447 37/01(2-wire (DC-C))
Data 1 – 4 Optical CPRI:	LC (on SFP) with support for FullAXS.
EC Light Interface:	DIN 14 female connector
Optical Indicators:	LEDs

Mechanical specifications

Weight:	101,4 kg excluding mounting kit. 109,4 kg including SXX 109 2036/1 mechanical azimuth panning mounting kit. 113,9 kg including SXX 109 2037/1 mechanical azimuth panning and elevation tilt mounting kit.
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Dimensions (H x W x D):	1465 mm x 630 mm x 290 mm excluding smaller protrusions.
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Operational specifications

Wind Load (Frontal/ Lateral):	1434 N / 477 N @ 42 m/s wind speed excluding mounting kit.
Survival Wind Speed****:	67 m/s
Operating Temperature Range:	- 40° to + 55° C
IP Classification:	IP65

BASEBAND CONFIGURATION	Number of baseband units depending on configuration.
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ACCESSORIES

Installation accessories are available from the Ericsson Radio Site System portfolio.

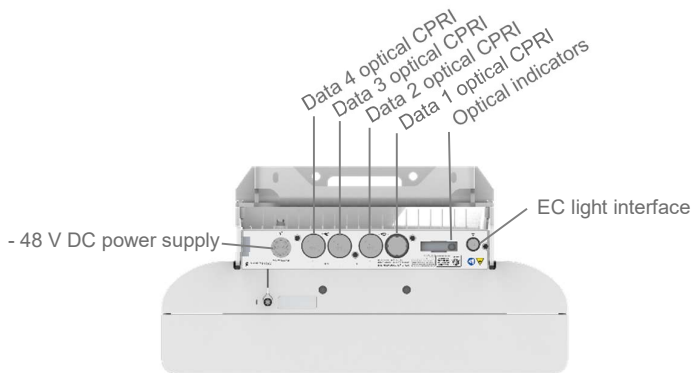
* Actual software support aligned with the user equipment (UE) echo system. Please refer to the Ericsson radio access network (RAN) software roadmap and feature descriptions.

** Additional scenarios, cells or broadcast beam shapes possible with future software releases.

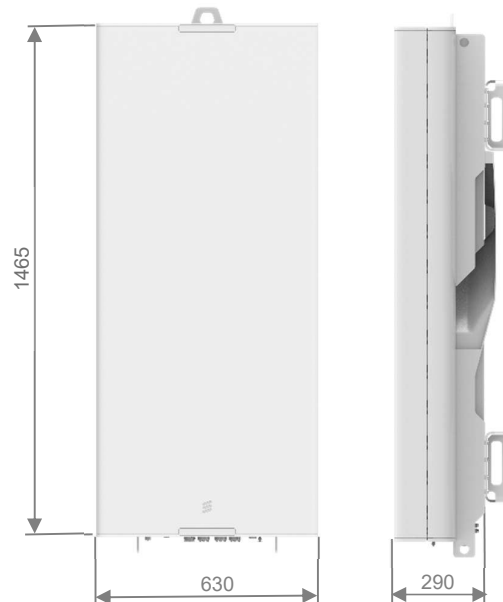
*** Two simultaneous orthogonal beams.

**** The mechanical design of AIR Unit 1641 (below the "AIR Unit") is based on environmental conditions which are equal to or exceeding class 4.1 as specified in EN 300 019-1-4 and GR-487-CORE and thereby respects the static mechanical load imposed on an AIR Unit by wind at maximum velocity. Wind loads in this document are calculated with reference to wind pressure. For more accurate results, the specific terrain information for relevant sites and geographical area where the AIR Unit will be installed needs to be carefully analyzed, considered and calculated according to EN 1991-1-4. Pole clamps, brackets, mounting accessories and other installation material or equipment specified by Ericsson in the AIR Unit product information documentation must be used and Ericsson's installation instructions be complied with. In addition, it must be observed that specific environmental conditions that the AIR Unit becomes exposed for, such as icing, heat, dust, dynamic stress (e.g. strain caused by oscillating support structures) or other environmental conditions that exceed or otherwise deviate from the by Ericsson defined AIR Unit operating environmental characteristics, may result in the breakage of an AIR Unit or its mounting accessories and even cause the AIR Unit to fall to the ground. The above-mentioned facts, information and circumstances must be considered and property taken into account during the site planning process and adhered to for installation and operation of the AIR Unit. Ericsson expressly disclaims any responsibility or liability arising out of failures in this regard.

Interfaces



Dimensions (mm)



Subject to change without notice