6.3 RF660A antenna

6.3.1 RF660A description

The RF660A is a stationary antenna, specially designed for RF600 systems.

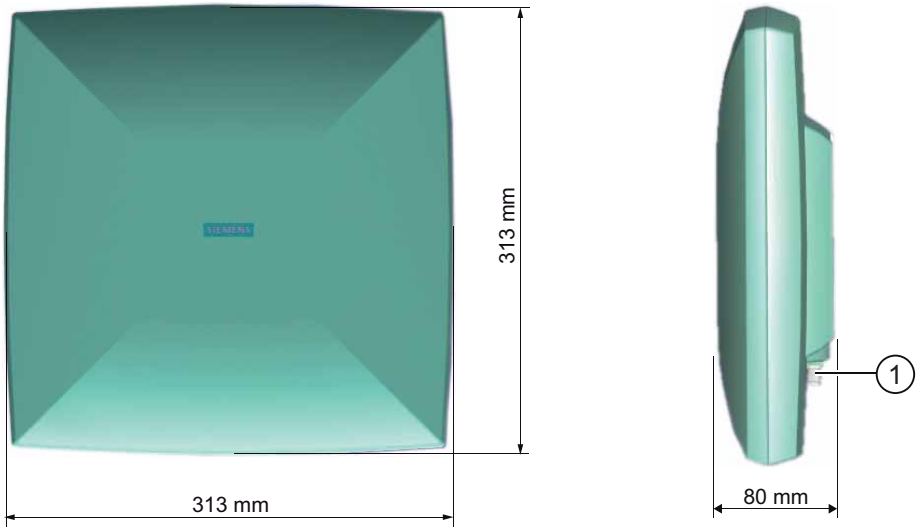
The antenna is available in two different frequency bands that have been specified for the regions of Europe, China and USA respectively.

Frequency band

- The antenna for Europe operates in the frequency band of 865 to 868 MHz.
- The antenna for China and the USA operates in the frequency band of 902 to 928 MHz.

Design of the RF660A

The antenna is installed in a rectangular plastic housing.



Front view

Side view

① RTNC connection

Ordering data

Description	Machine-Readable Product Code
RF660A antenna for Europe (865-868)	6GT2812-0AA00
RF660A antenna for China and the USA (902-928)	6GT2812-0AA01

Ordering data (accessories)

Description		Machine-Readable Product Code
Antenna mounting kit		6GT2890-0AA00
Connecting cable between reader and antenna	3 m (1 dB cable attenuation)	6GT2815-0BH30
	10 m (2 dB cable attenuation)	6GT2815-1BN10
	10 m (4 dB cable attenuation)	6GT2815-0AN10
	20 m (4 dB cable attenuation)	6GT2815-0AN20

6.3.2 Antenna pattern

Spatial directional radiation pattern

The following schematic diagram shows the main and auxiliary fields of the RF660A antenna in free space in the absence of reflecting/absorbing materials. Please note that the diagram is not to scale.

The recommended working range lies within the main field that is shown in green.

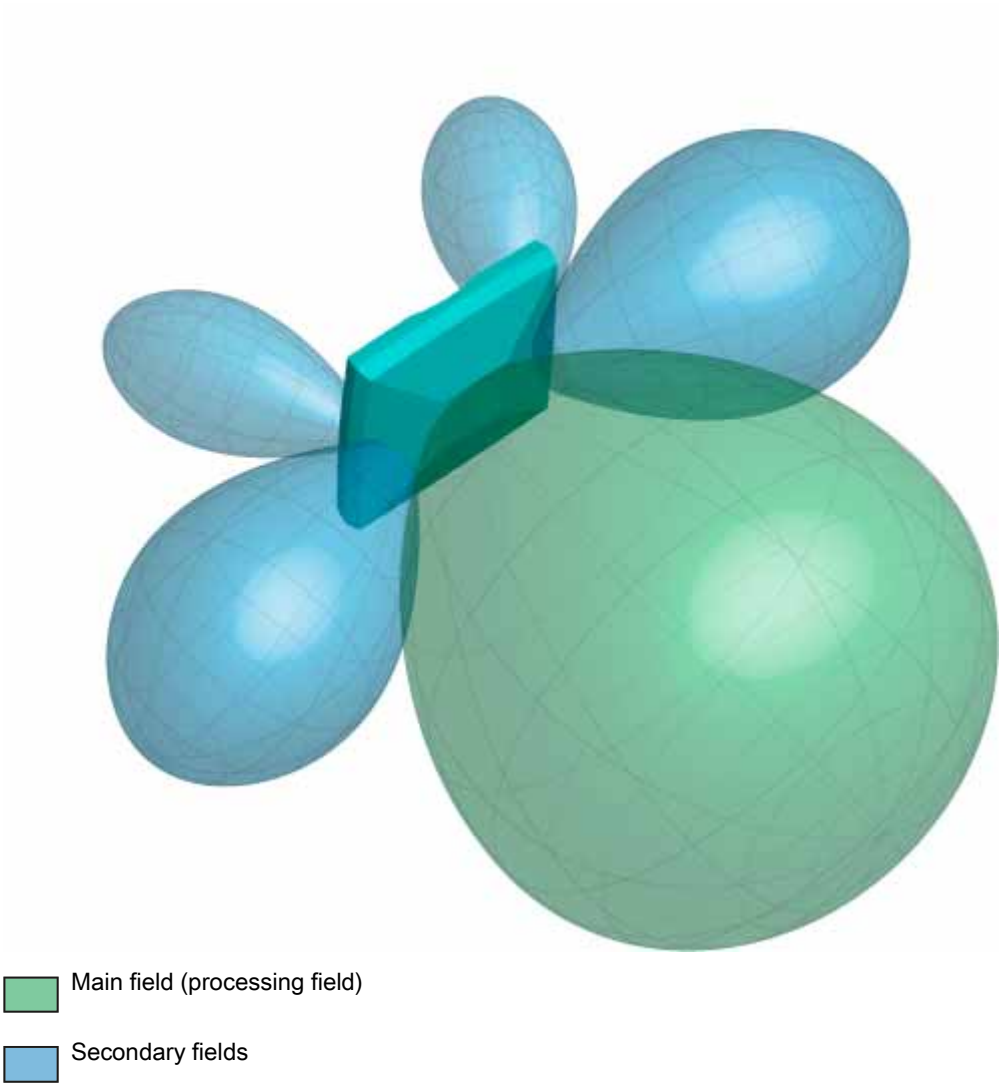


Figure 6-13 Main and auxiliary fields of the RF660A antenna

Radiation diagram (horizontal)

Europe (ETSI)

The radiation diagram is shown for horizontal alignment and for a center frequency of 865 MHz. Horizontal antenna alignment is provided when the TNC connection on the antenna points vertically up or down.

The radiating/receiving angle of the antenna is defined by the angle between the two -3 dB points (corresponding to half the power referred to the maximum performance at a 0° angle).

The optimum radiating/receiving angle is therefore approximately ±30 degrees.

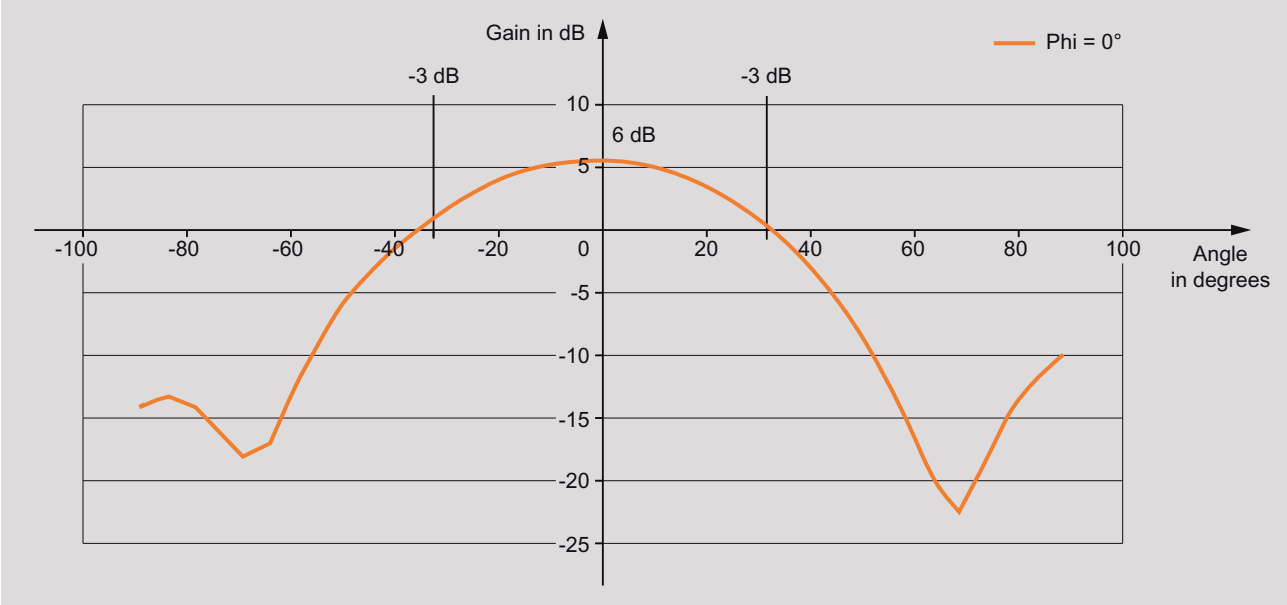


Figure 6-14 Directional radiation pattern of the antenna (at 865 MHz, horizontal alignment)

USA (FCC)

The radiation diagram is shown for horizontal alignment and for a center frequency of 915 MHz.

The radiating/receiving angle of the antenna is defined by the angle between the two -3 dB points (corresponding to half the power referred to the maximum performance at a 0° angle).

The optimum radiating/receiving angle is therefore approximately ±35 degrees.

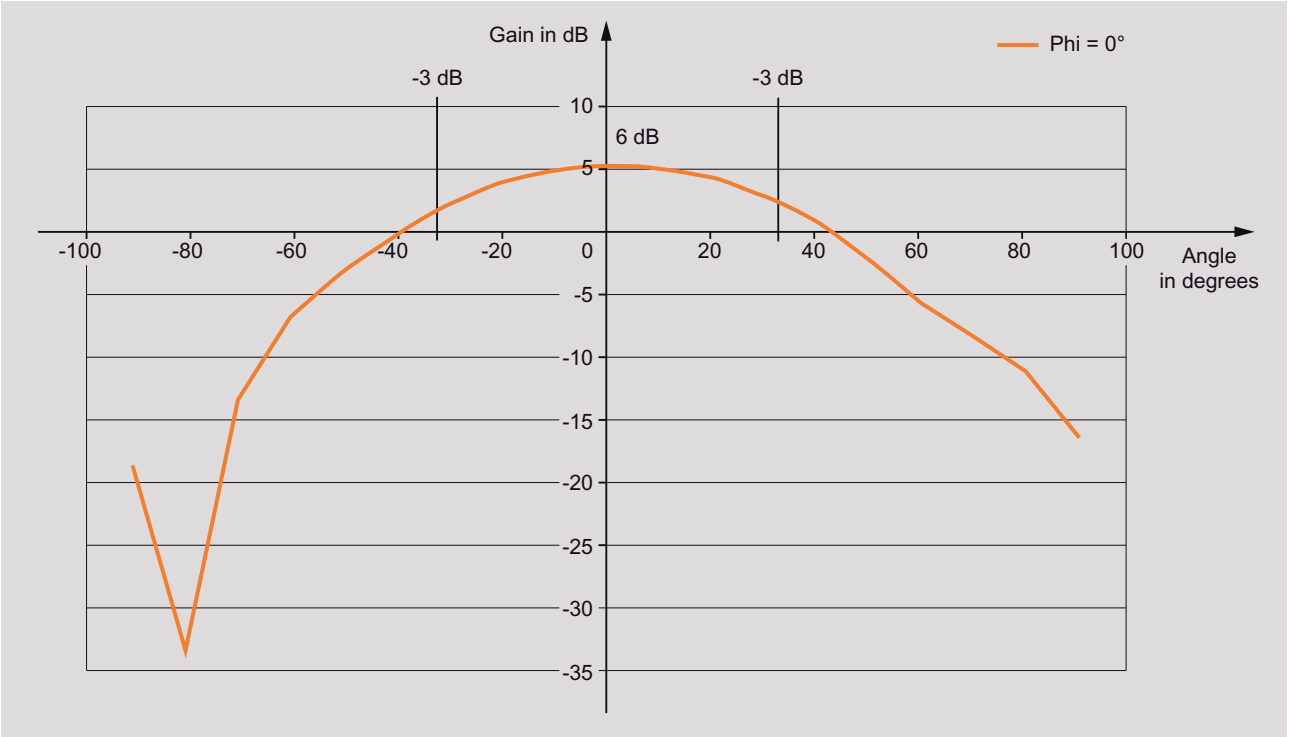


Figure 6-15 Directional radiation pattern of the antenna (at 915 MHz, horizontal alignment)

6.3.3 Interpretation of directional radiation patterns

The following overview table will help you with the interpretation of directional radiation patterns.

The table shows which dBi values correspond to which read/write ranges (in %): You can read the radiated power depending on the reference angle from the directional radiation patterns, and thus obtain information on the read/write range with this reference angle with regard to a transponder.

The dBr values correspond to the difference between the maximum dBi value and a second dBi value.

Deviation from maximum antenna gain [dBr]	Read/write range [%]
0	100
-3	70
-6	50
-9	35
-12	25
-15	18
-18	13

Example

As one can see from the section Antenna pattern (Page 212), the maximum antenna gain is 6 dBi. In the vertical plane, the antenna gain has dropped to approx. 3 dBi at +30°. Therefore the dBr value is -3. The antenna range is only 50% of the maximum range at ± 30° from the Z axis within the vertical plane.

6.3.4 Installation and assembly

The RF660A antenna can be fixed to any firm support.

More information on the types of antenna fixing can be found in section Mounting types (Page 242).

6.3.5 Connecting an antenna to a reader

NOTICE
Use of Siemens antenna cable To ensure optimum functioning of the antenna, it is urgently recommended that a Siemens antenna cable is used in accordance with the list of accessories.

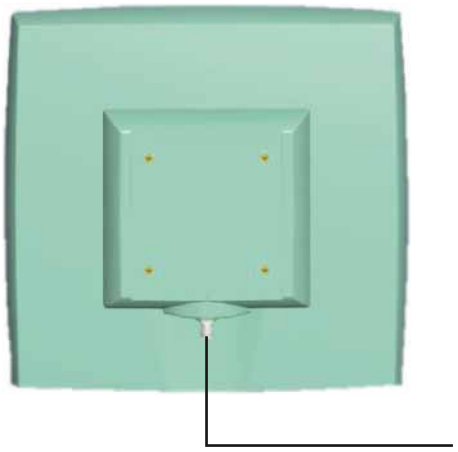


Figure 6-16 Rear of antenna with RTNC connection

Connecting RF660A to RF670R/RF660R

Preassembled standard cables in lengths of 3 m, 10 m and 20 m are available for connection.

The cable between antenna and reader can be up to 20 m in length.

When less than four antennas are used, we recommend that the antennas are connected to the reader as follows:

Number of antennas	Connections on the reader
2 antennas	ANT 1, ANT 2
3 antennas	ANT 1, ANT 2, ANT 3

Connecting RF660A to RF630R

Preassembled standard cables in lengths of 3 m, 10 m and 20 m are available for connection.

The cable between antenna and reader can be up to 20 m in length.

When one antenna is used, it is recommended that the remaining antenna connection is sealed using the supplied protective cap.

6.3.6 Technical specifications

	RF660A antenna 865-868	RF660A antenna 902-928
Material	Silicone-free	Silicone-free
Frequency band	865-868 MHz	902-928 MHz
Impedance	50 Ohm nominal	50 Ohm nominal
Antenna gain	5-7 dBil	> 6 dBic
VSWR (standing wave ratio)	2:1 max.	2:1 max.
Polarization	RH circular	RH circular
Radiating/receiving angle	55°- 60°	60° - 75°
Connector	RTNC	RTNC
Degree of protection	IP67	IP67
Permissible ambient temperature	-25° C to +75° C	-25° C to +75° C