

Information regarding antenna

FCC-License for RE6900



Document revision history

Revision	Date	Author	Reviewer	Description
1.0	28.07.2026	LA/ja	LA/cm	Initial version

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Information regarding antenna

FCC-License for RE6900



Document Overview

This addendum details the information regarding both the antennas, the 915MHz antenna and the 13.56MHz NFC antenna, of the RE6900. This document belongs to the dossier, generated for the purpose of FCC-licensing for RE6900.

This file is primarily divided into two sections. The first section deals with the 915MHz antenna, while the second section is regarding the NFC antenna.

Information regarding the connections/circuit-diagrams/bill-of-materials can be found in the schematics document^[1] and information regarding the operation of the device can be found in the operational description document^[2].

NOTE: Numbers, here, are written using the dot-decimal notation (instead of the comma-decimal format, which is commonly used in Europe). Therefore, as an example: ten is written as 10.00, and ten-thousand is written as 10,000.00

^[1]: Document **D – Schematics (Rev. 1.1)**

^[2]: Document **C - Operational Description (Rev. 1.2)**

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1. 915MHz antenna

The 915MHz frequency-band is used for RE6900 communication with the UH6900 device(s).

The antenna used for this purpose is a $\lambda/4$ 916MHz Splat antenna from Linx.

Alongwith its frequency-related parameters (like, wavelength, frequency range, gain, etc.), the choice for this particular antenna also lies in its packaging form and its operational conditions (for example, temperature range).

The following information is sourced directly from the manufacturer-datasheet^[3]:

Parameter	Value
Centre frequency (in MHz)	916 MHz
Recommended frequency range (in MHz)	900-930 MHz
Bandwidth (in MHz)	30 MHz
Voltage Standing Wave Ratio (VSWR)	Less than 1.9 (typically at the centre)
Peak Gain (in dBi)	1.4 dBi
Impedence (in Ohms)	50-Ohms
Temperature (in °C)	-40 °C to +130 °C

Table 1: Information regarding 915MHz-antenna

For more information, the reader must refer to the datasheet from the antenna manufacturer^[3].

The antenna is supplied with the equipment and is present inside the device, since the antenna is directly soldered onto the PCB and is, therefore, not visible to the end-user.

More information regarding the 915MHz communication, can be found in the operational description document^[2].

NOTE: Despite the centre frequency of 916MHz of the Linx antenna, throughout this document dossier, the term "915MHz antenna" is used. The reason being, the antenna is used for the 915MHz-variant of RE6900.

^[2]: Document **C - Operational Description (Rev. 1.2)**

^[3]: [Appendix A](#) of this document

2. 13.56MHz NFC antenna

The 13.56MHz NFC antenna is used for communication with the charger ZB6900/200 and for authentication purposes with the key-fob ZB6900/201. The ISO 14443A standard is used for the NFC communication^[2].

Unlike the 915MHz antenna, the 13.56MHz NFC antenna was developed internally at E. Dold & Söhne GmbH & Co. KG.

This antenna can be categorized as an inductive loop coil with 5 loops. More information regarding the construction of the coil can be found in the schematics document^[1].

This antenna is not soldered onto the PCB, but rather attached to the device body internally. The antenna is connected to the PCB via a 2-pole cable. Similar to the 915MHz antenna, this antenna is also supplied with the equipment and is present inside the device, therefore, not visible to the end-user.

More information regarding the NFC communication with the charger ZB6900/200 and the key-fob ZB6900/201, details regarding the NFC-interface, etc. can be found in the operational description document^[2].

^[1]: Document **D – Schematics (Rev. 1.1)**

^[2]: Document **C - Operational Description (Rev. 1.2)**

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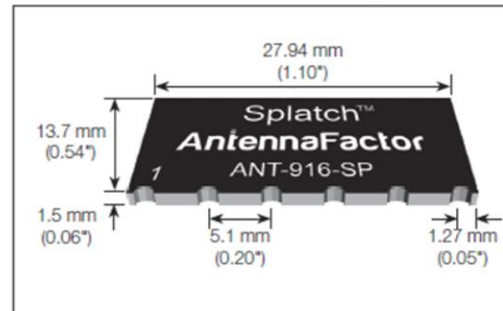
Appendix A : Datasheet for 915MHz antenna

ANT-916-SP Data Sheet

AntennaFactor
by Linx

Product Description

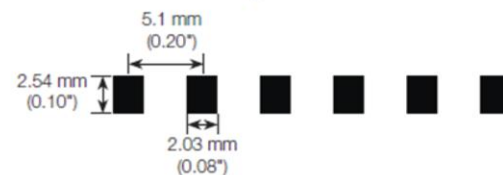
The Splatch uses a grounded-line technique to achieve outstanding performance from a tiny surface-mount element. This unique antenna is designed for hand or reflow-mounting directly to a product's circuit board. Its low cost makes it ideal for volume applications. Unlike many compact antennas, the Splatch exhibits good proximity performance, making it an appropriate choice for handheld applications such as remote controls, pagers and alert devices.



Features

- Very low cost
- Ultra-compact package
- Direct PCB attachment
- Ideal for concealed / internal mounting
- Perfect for compact portable devices
- Suitable for hand or reflow-assembly
- Resistant to proximity effects

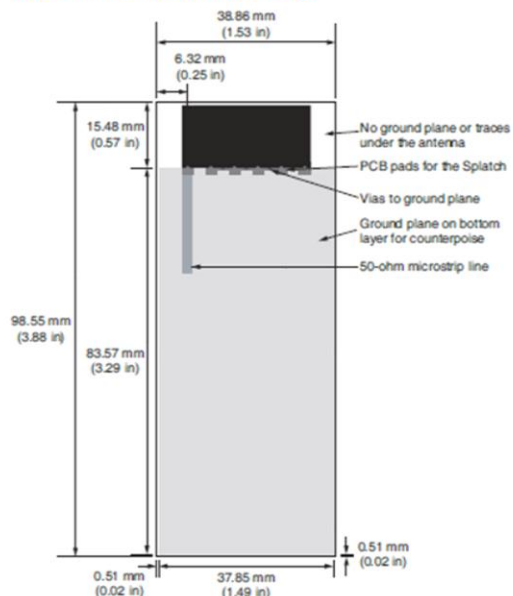
Recommended Footprint



Electrical Specifications

Center Frequency: 916MHz
 Recom. Freq. Range: 900–930MHz
 Bandwidth: 30MHz
 Wavelength: $\frac{1}{4}$ -wave
 VSWR: ≤ 1.9 typ. at center
 Peak Gain: 1.4dBi
 Impedance: 50-ohms
 Connection: Surface-mount
 Oper. Temp. Range: -40°C to $+130^{\circ}\text{C}$
 Electrical specifications and plots measured on 3.8 cm x 8.4 cm (1.50" x 3.30") reference ground plane.

Recommended Mounting

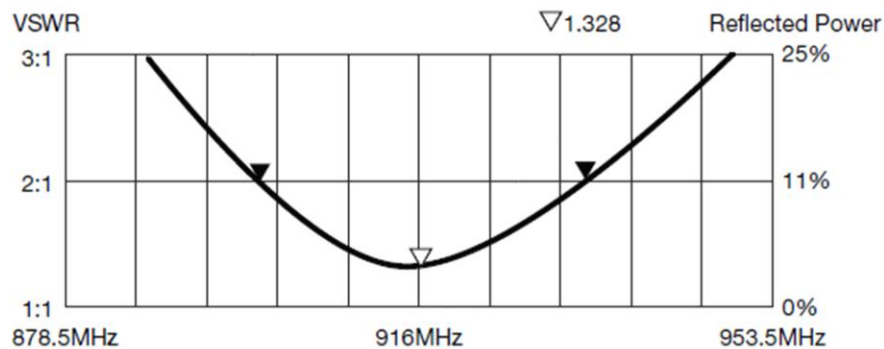


Please see AN-00502 for more details on PCB layout.

Counterpoise

Quarter-wave or monopole antennas require an associated ground plane counterpoise for proper operation. The size and location of the ground plane relative to the antenna will affect the overall performance of the antenna in the final design. When used in conjunction with a ground plane smaller than that used to tune the antenna, the center frequency typically will shift higher in frequency and the bandwidth will decrease. The proximity of other circuit elements and packaging near the antenna will also affect the final performance. For further discussion and guidance on the importance of the ground plane counterpoise, please refer to Linx Application Note AN-00501: Understanding Antenna Specifications and Operation.

VSWR Graph



What is VSWR?

The Voltage Standing Wave Ratio (VSWR) is a measurement of how well an antenna is matched to a source impedance, typically 50-ohms. It is calculated by measuring the voltage wave that is headed toward the load versus the voltage wave that is reflected back from the load. A perfect match has a VSWR of 1:1. The higher the first number, the worse the match, and the more inefficient the system. Since a perfect match cannot ever be obtained, some benchmark for performance needs to be set. In the case of antenna VSWR, this is usually 2:1. At this point, 88.9% of the energy sent to the antenna by the transmitter is radiated into free space and 11.1% is either reflected back into the source or lost as heat on the structure of the antenna. In the other direction, 88.9% of the energy recovered by the antenna is transferred into the receiver. As a side note, since the ":1" is always implied, many data sheets will remove it and just display the first number.

How to Read a VSWR Graph

VSWR is usually displayed graphically versus frequency. The lowest point on the graph is the antenna's operational center frequency. In most cases, this is different than the designed center frequency due to fabrication tolerances. The VSWR at that point denotes how close to 50-ohms the antenna gets. Linx specifies the recommended bandwidth as the range where the typical antenna VSWR is less than 2:1.

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ANT-916-SP Data Sheet **AntennaFactor**
by Linx

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