

# **USER MANUAL**

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X-Band Single Element Patch Antenna

## X-BAND SINGLE ELEMENT PATCH ANTENNA – USER MANUAL

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# X-BAND SINGLE ELEMENT PATCH ANTENNA

## USER MANUAL

This user manual details the applications, features and operation of EnduroSat's X-Band Single Element Patch Antenna.

Please read carefully the manual before unpacking the antenna in order to ensure safe and proper use.

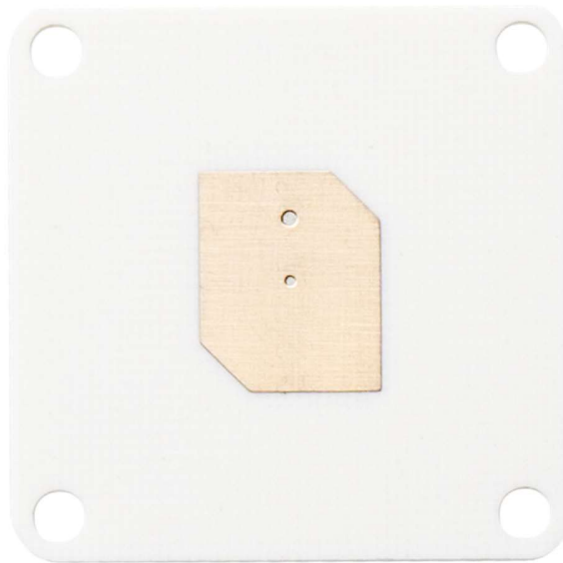


Figure 1: EnduroSat's X-band Single Element Patch Antenna

## 1 CHANGE LOG

Date	Version	Note
04/12/2018	Rev 1	Initial

## 2 ACRONYMS LIST

RF	Radio Frequency
RHCP	Right Hand Circular Polarization
SMA	Sub-Miniature version A
SMP	Sub-Miniature Push-On

### 3 OVERVIEW

EnduroSat’s X-Band Single Element Patch Antenna is designed to operate in the 8025-8400 MHz band. The antenna’s form-factor is very small which makes it easily mountable on different kinds of satellite structures and it can be integrated with other devices on the surface of the satellite.

### 4 HIGHLIGHTED FEATURES

- Operating frequency: 8025-8400 MHz
- RF output power: up to 4 W
- Circularly Polarized (Right Hand)
- Half Power Beam Width (HPBW): 74 degrees
- Gain > 6dBi

### 5 ANTENNA LAYOUT

The antenna is an array of four nearly-square-slanted patches operating with right hand circular polarization.

Figure 2 shows the dimensions of the antenna array with a mounted SMP connector.

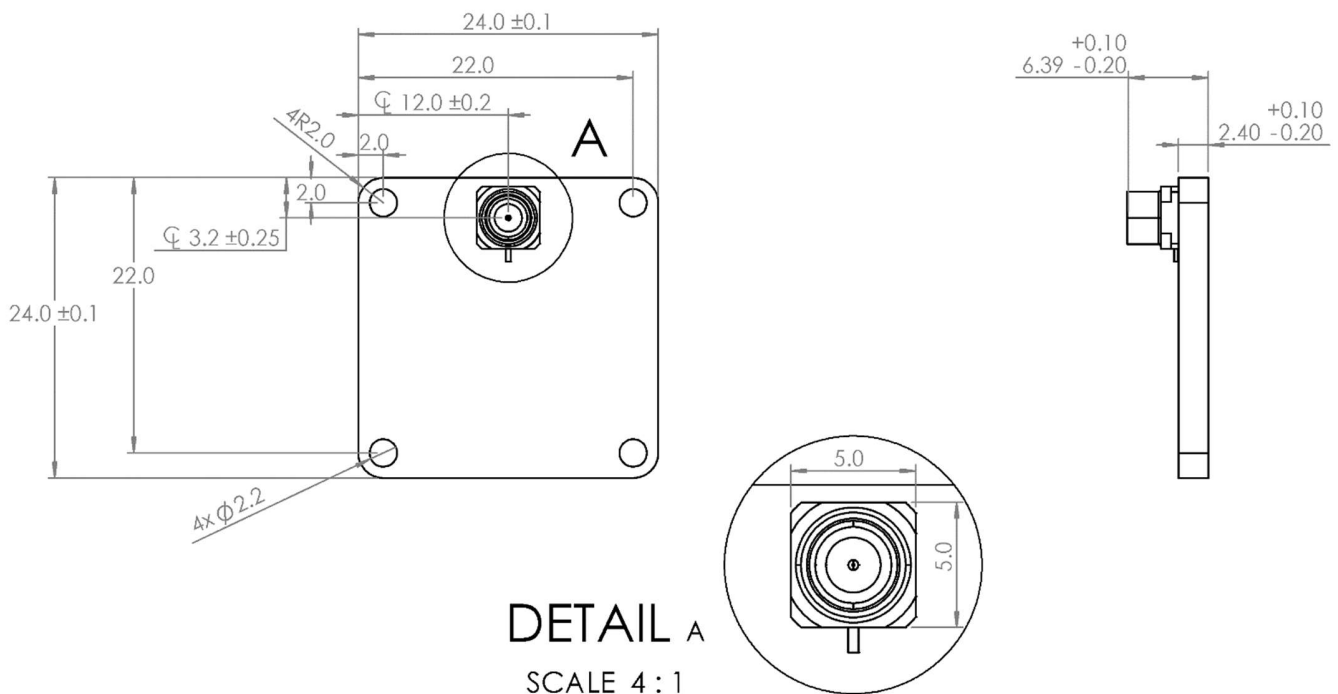


Figure 2: Antenna Dimensions (all values are in mm)

## 6 ANTENNA PARAMETERS

Figure 3 shows the simulated return loss of the antenna.

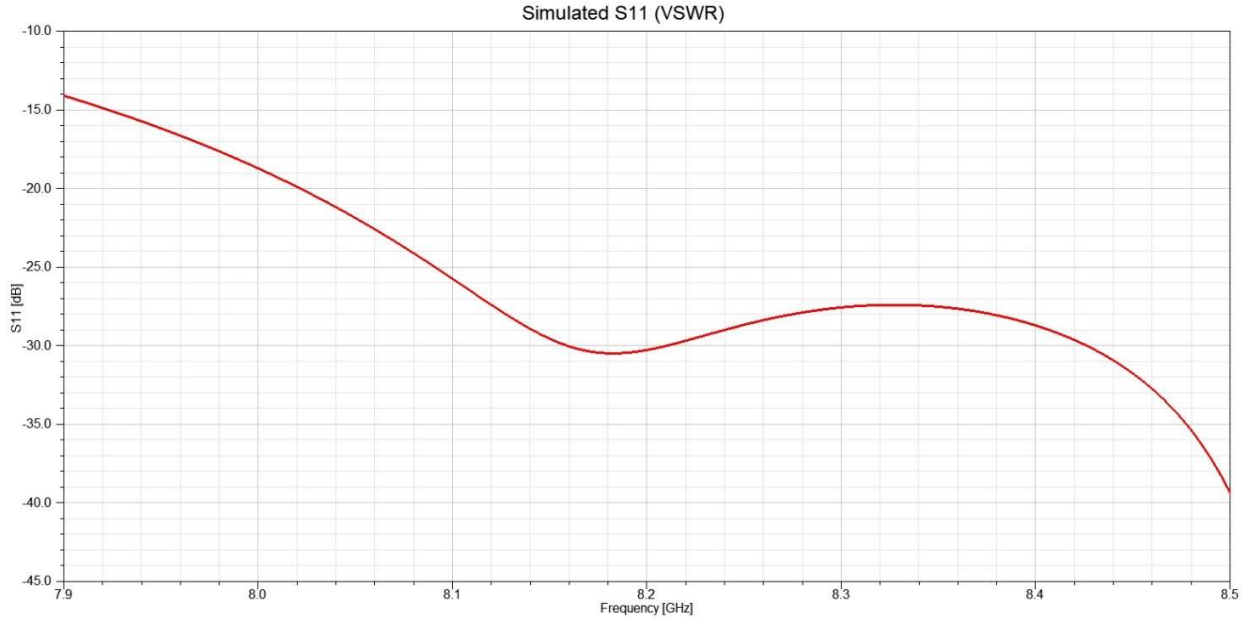


Figure 3: Simulated Return Loss

Figure 4 shows the simulated RHCP gain with respect to frequency.

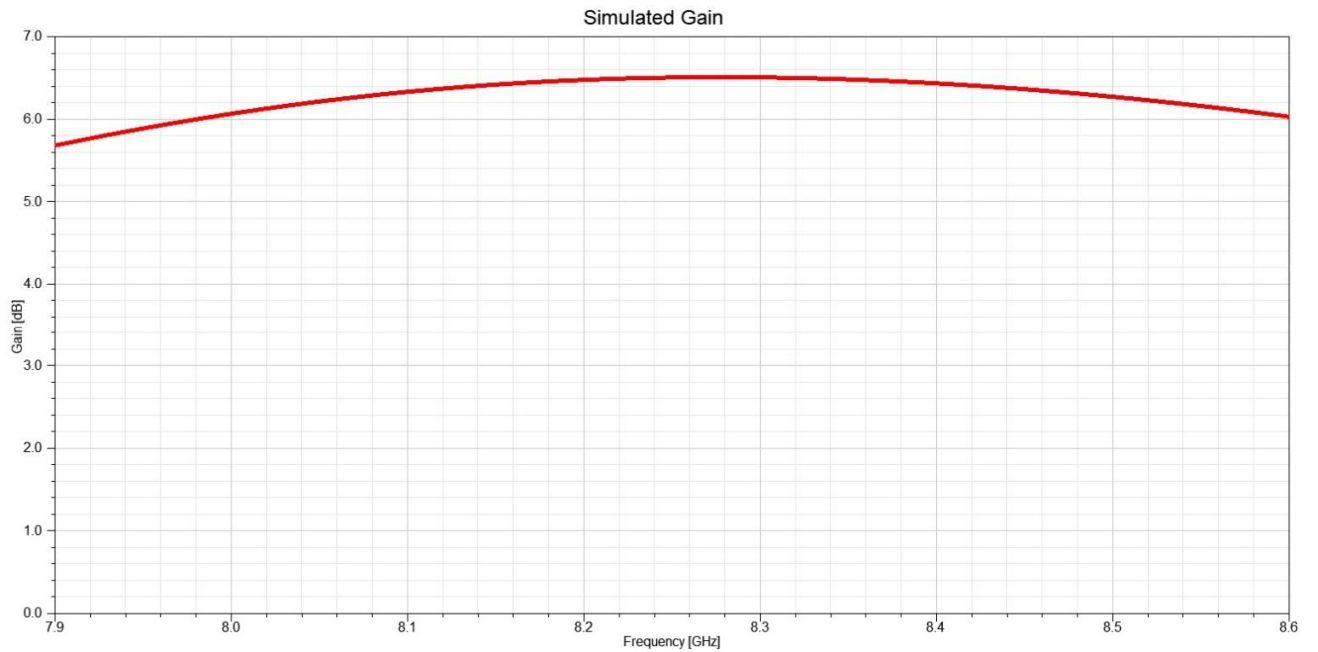


Figure 4: Simulated Gain

Figure 5 shows the simulated radiation pattern of the antenna at 8.2 GHz for phi (azimuth) angles: 0°, 45°, 90°, 135° and 180°.

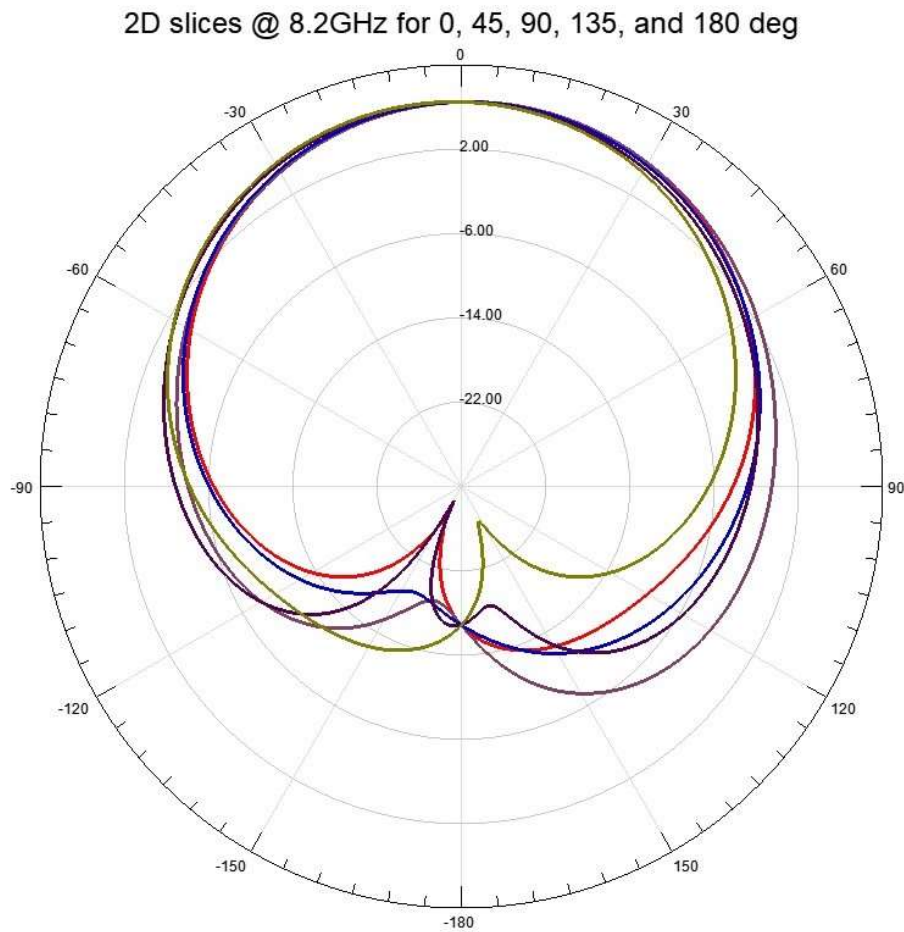


Figure 5: Simulated Radiation Pattern

## 7 INCLUDED IN THE SHIPMENT

EnduroSat provides additional items with the X-Band Patch Antenna:

- USB stick with user manual

### 8 HANDLING AND STORAGE

Particular attention shall be paid to the avoidance of damage to the antenna during handling, storage and preservation. The handling of the antenna should be performed in compliance with the following instructions:

- Handle using PVC, latex, cotton (lint free) or nylon gloves.
- The environment where the antenna will be handled shall meet the requirements for a class environment 100,000, free of contaminants such as dust, oil, grease, fumes and smoke from any source.
- Store in such a manner as to preclude stress and prevent damage.
- To prevent deterioration, the antenna must be stored in a controlled environment, i.e. the temperature and humidity levels shall be maintained in the proper ranges:
  - Ideal storage temperature range: 15°C to 27°C
  - Ideal storage humidity range: 30% to 60% relative humidity (RH)

### 9 WARNINGS



This product uses very fragile components. Observe precautions for Handling.