



USER MANUAL

X-Band Patch Antenna Type I

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X-BAND PATCH ANTENNA TYPE I

USER MANUAL

This user manual is specially designed to detail the EnduroSat X-Band Patch Antenna Type I description, functions and features.

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

1 CHANGE LOG

Date	Version	Note
10/05/2018	Rev 1	The provided parameters are based on electromagnetic simulations

2 ACRONYMS LIST

RF	Radio Frequency
RHCP	Right Hand Circular Polarization
SMA	SubMiniature version A

3 OVERVIEW

EnduroSat X-Band Patch Antenna Type I is designed to operate in the 8025-8400 MHz band. The antenna form-factor is small which makes it easily mounted on different kinds of satellite structures.

4 HIGHLIGHTED FEATURES

- Operating frequency ($S_{11} < -20\text{dB}$, Gain $> 11.5\text{dBi}$): 8025-8400 MHz;
- RF output power: up to 4 W;
- Maximal Gain 12.4 dBi;
- Circularly polarized: Right Hand Circular Polarization
- Half Power Beam Width (HPBW) 40 deg;

5 ANTENNA LAYOUT

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

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

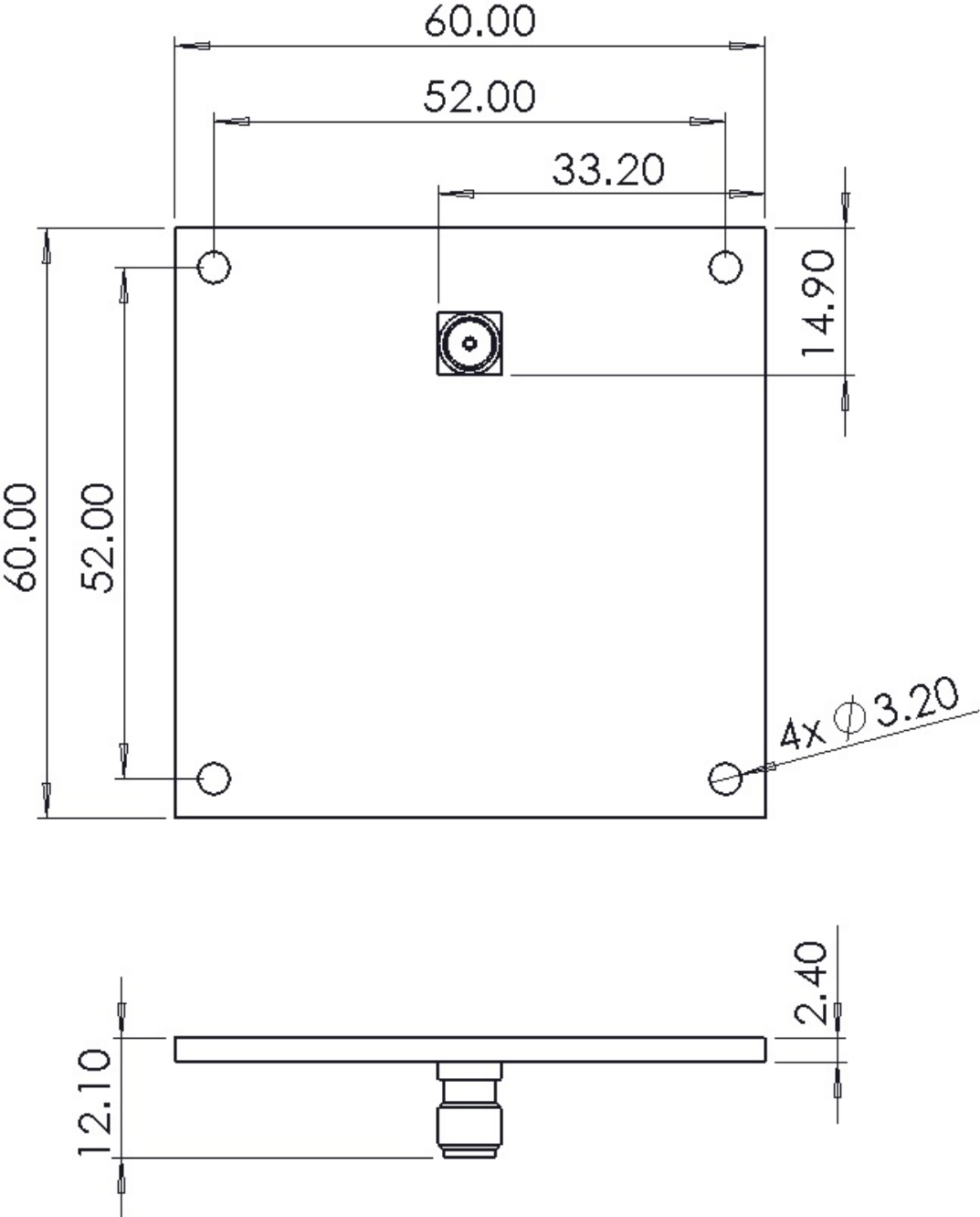


Figure 2 – X-band Antenna dimensions– all values are in mm

6 ANTENNA PARAMETERS

On figure 3 it is shown the simulated return loss of the antenna.

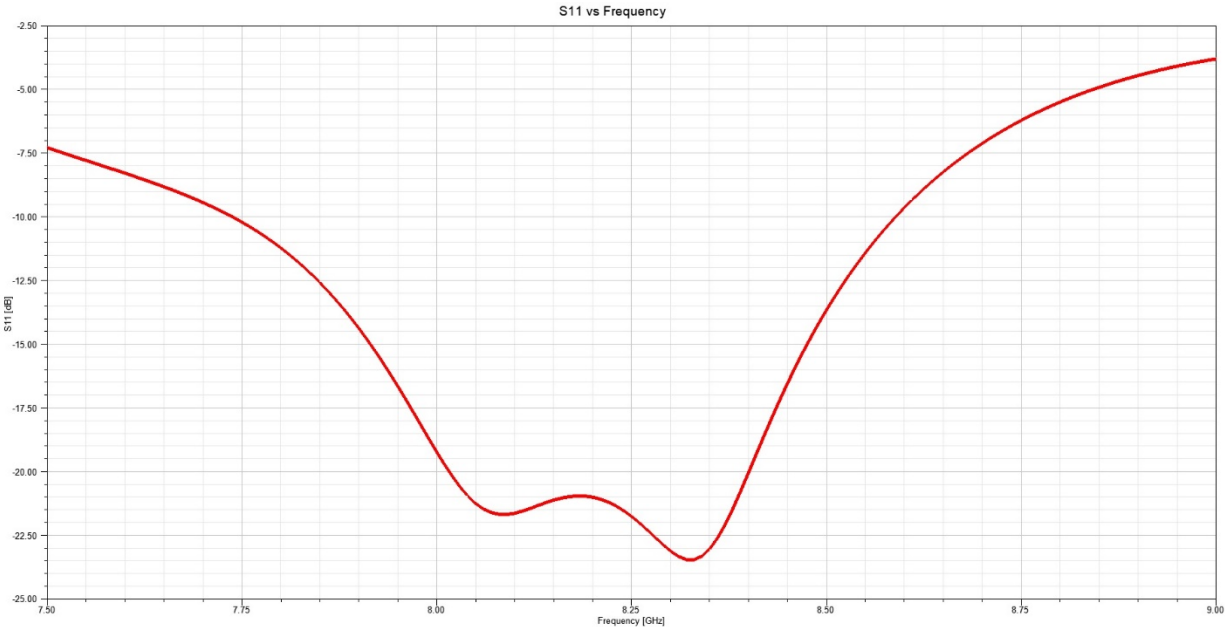


Figure 3 – Simulated return loss of the antenna

Figure 4 shows the simulated radiation pattern for RHCP gain with respect to frequency

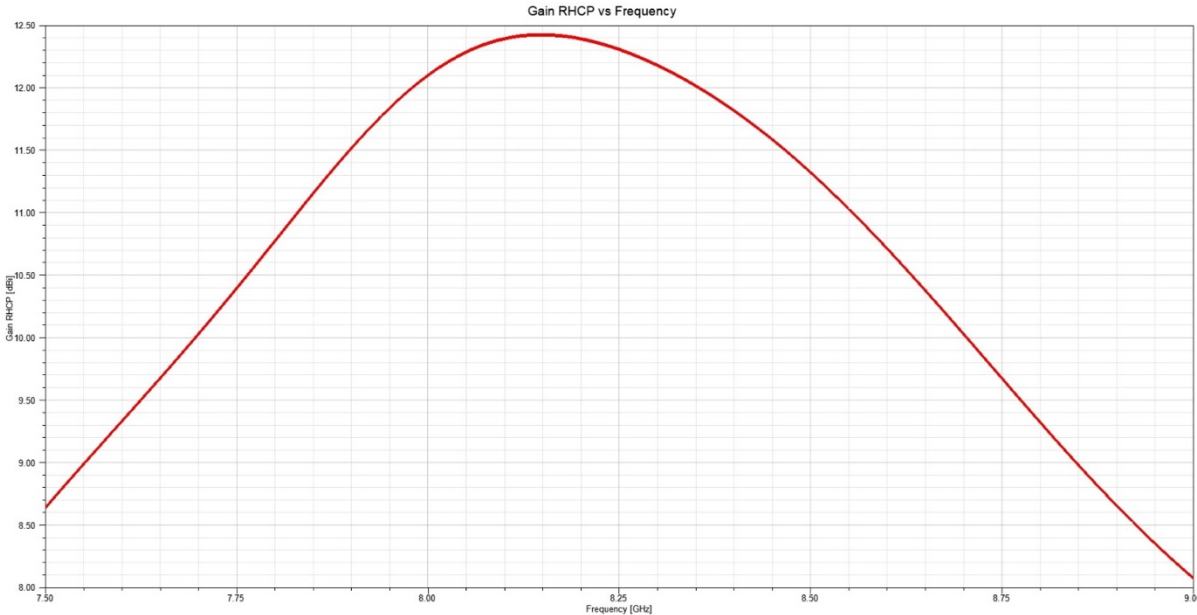


Figure 4 – Simulated RHCP gain

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

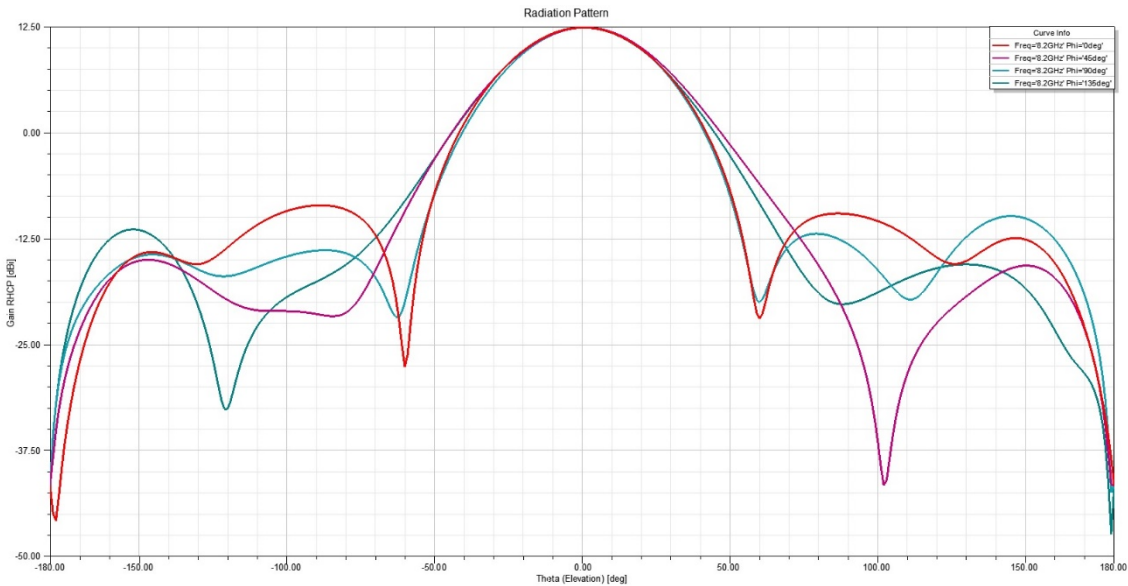


Figure 5 – Simulated radiation pattern

7 INCLUDED IN THE SHIPMENT

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

- Customized coaxial cables with typical RF connectors
- USB stick with user manual

8 HANDLING AND STORAGE

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

- Handle using PVC, latex, cotton (lint free) or nylon gloves.
- The environment where S-Band patch antenna module 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 the deterioration, the S-Band patch 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.