

ROUMANIA TEST FACILITY

– Church of Satu Mare -

The target: To observe the early streamer emission facing to a simple rod both installed in the same conditions.



Church of SATU MARE in Romania

In June 2011, an in situ test is designed on the church of SATU MARE in order to compare the effectiveness of the Early Streamer Emission Air-Terminal (ESEAT) face to a Simple Rod (SR).

The main objective of this test is to observe the advance time of an Early Streamer Emission face to a Simple Rod installed under identical conditions.

Located near the Hungarian and Ukrainian borders, SATU MARE is an important economic and cultural center. This city is located in north-western Romania, at an average altitude of 129 m. The average keraunic of this zone is 2.5 lightning impacts / year / km².

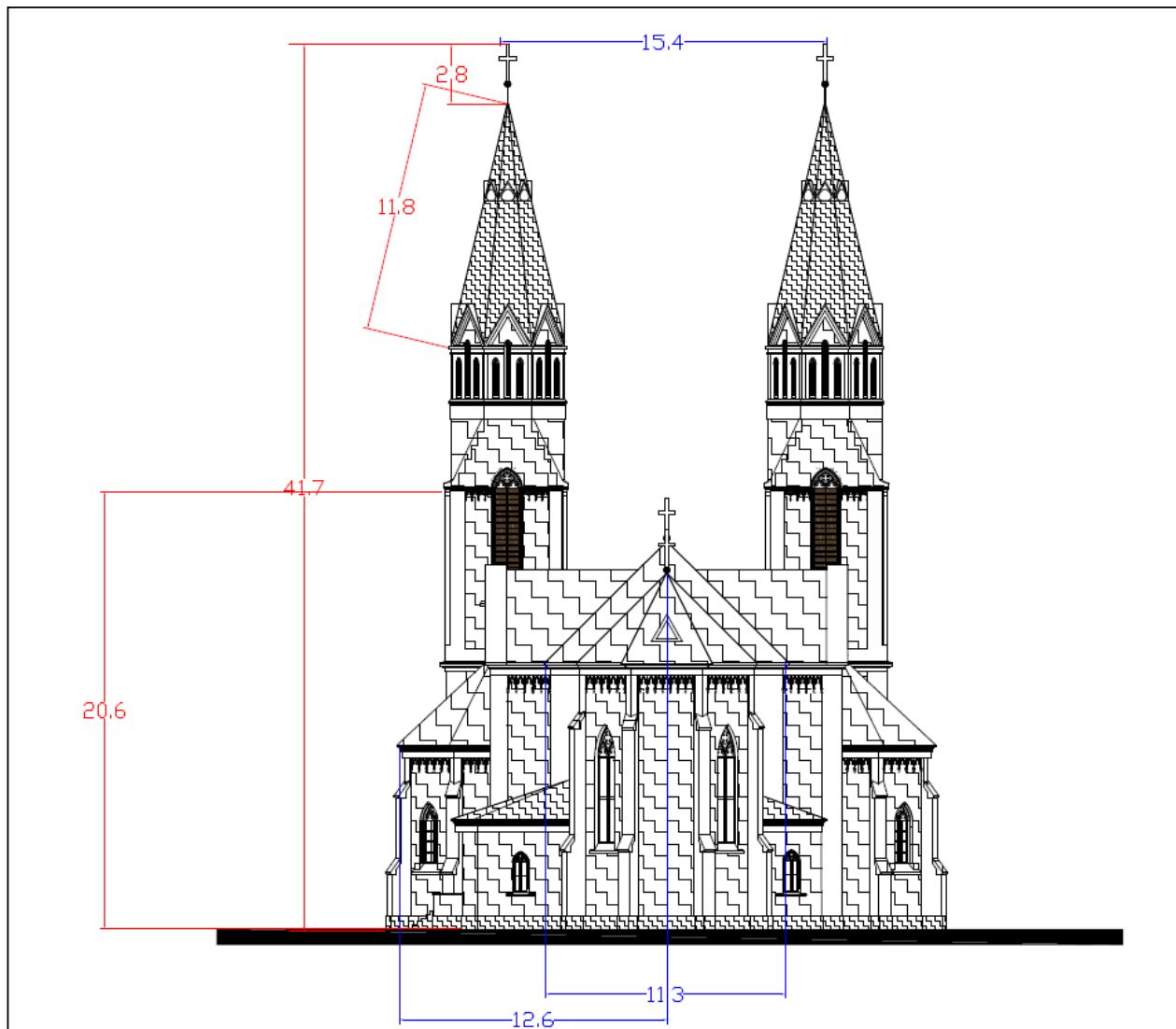


Location of SATU MARE in Romania

The Church of SATU MARE has a length of 38 meters and a width of 22 meters, this religious building consists of two bell towers.

Those two bell towers are 40 meters at its highest point.

Its GPS coordinates are: 47 ° 47 '38" North 22 ° 52' 39" East



Dimensions of the Church of SATU MARE

The lightning risk analysis according to the standard EN 62305-2 Protection against lightning - Part 2 "Risk Assessment" provides **a level of protection IV** for this church.

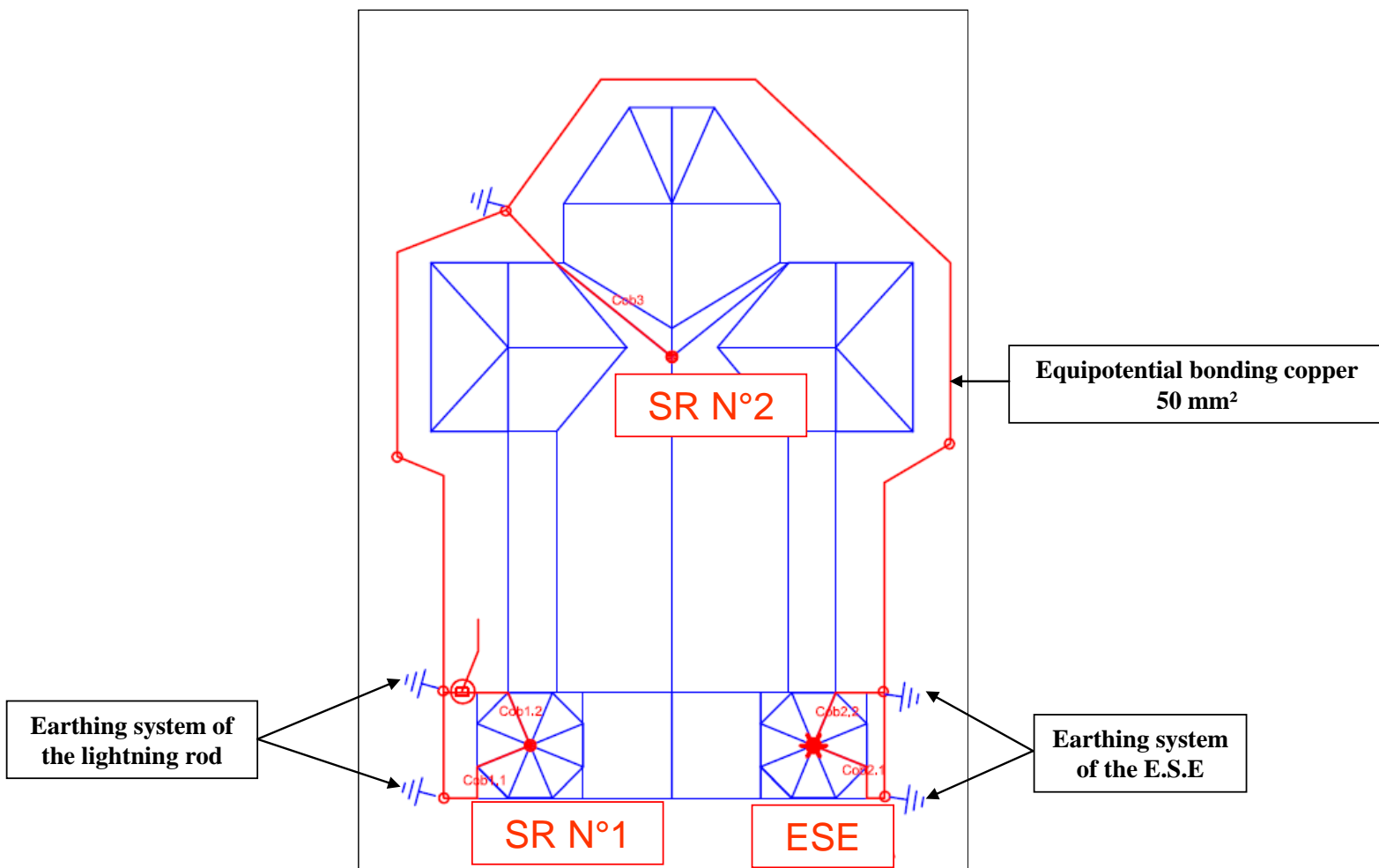
The two bell towers are protected against lightning with two equipments.

- One is equipped with an ESE with an advance time of 45 μ s
- The other is equipped with a lightning rod in 316 L stainless steel in accordance with EN 50164-2.
- A third PTS is located on the nave of the church.

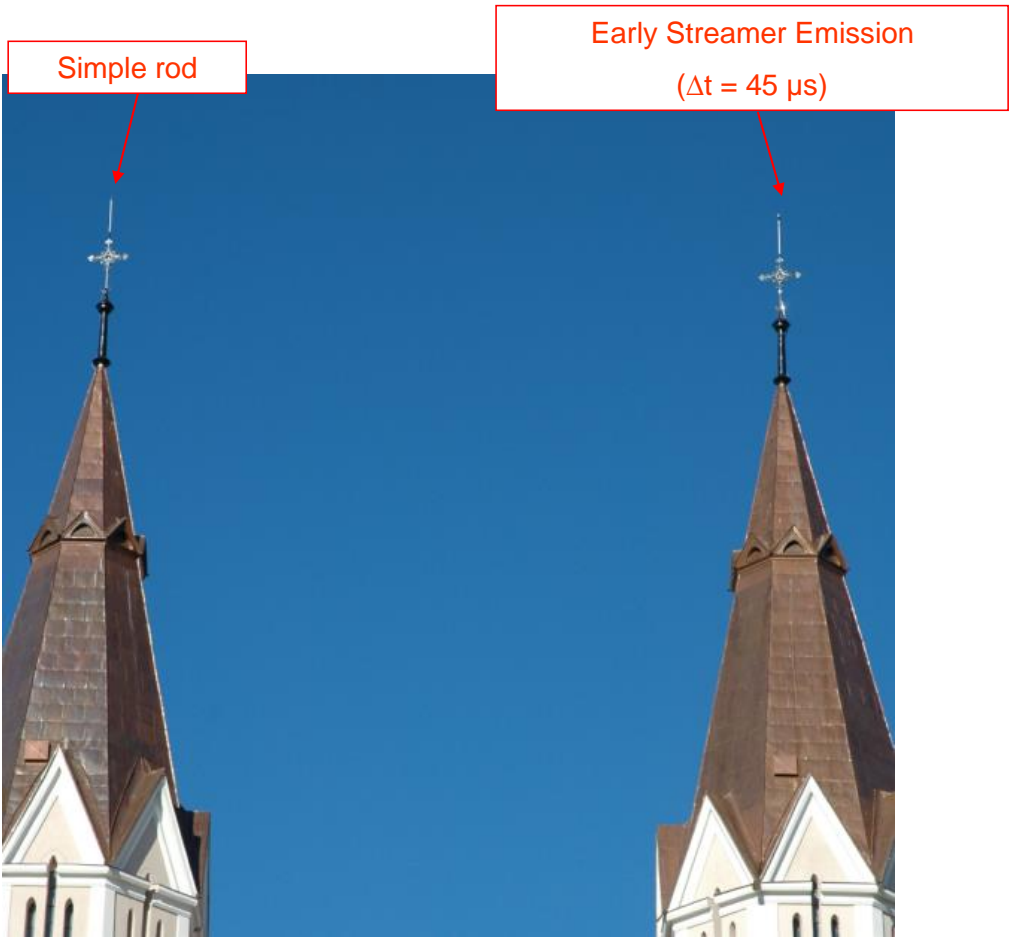
The ESE is installed symmetrically opposite with the PTS (as defined in the NFC 17-102 standard in September 2011). These two protections devices have two lightning down-conductors in tinned copper strip 30x2 mm.

These two protections against lightning are connected to two earth systems of type A «crow's feet».

The earth electrodes are interconnected by an equipotential bonding round of 50 mm². The electrical ground of the church is also connected to the lightning earthing system conductor in copper round 50 mm².



Schematic of the in situ test in Romania



In Situ Test – Church of Satu Mare (Romania)

For each Air-terminal installed:

The bottom part of the down conductor connected the most directly to the earthing system is equipped with a lightning strike counter witch records the lightning events. These lightning strike counters are in sealed boxes.

A monthly check is performed. During this audit, the impact of lightning meters are read and all ground connections are measured.