Basic functioning

The system allows the measurement of the E-field VECTOR (amplitude and phase for each eigen axis). The E-field measurement is totally independent from the B-field.

The electro-optic probes technology allows the best possible measuring performances WITHOUT disturbing the E-field.

The eoSense converter provides per channel:

- A fully analogue signal (VOUT) proportional to the E-field component to be measured. This signal is recorded and stored either by any oscilloscope (for time domain analysis) or by a spectrum analyser or a VNA (for frequency domain analysis).
- The Normalisation Factor (analogue value delivered by the OE converter) or the Antenna Factor (digital value read on the PC) lead to the absolute value of the E-field signal in V/m.

eoSense opto-electronic converter with 3 probes

Selection of a system

The selection of a system is determined by:

- The frequency bandwidth with the selection of the eoSense OE converter and the related probes
- The type of medium (air, liquid, gas, vacuum…)
- The information on the E-field measurement application
- The performances[i] of the customer instrument (scope, spectrum analyser or VNA).

This collect of data is available in the following link.

Focus on 50 Ω output channel(s)

The eoSense OE converter ensures the transduction between the optical modulation and an analogue electrical signal (VOUT). This latter is accessible on the 50 Ω output connector.

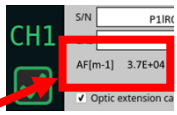
The type of connectors (BNC or SMA) depends on the max. frequency of the OE converter.

Focus on the absolute E-f field measurement

To get absolute E-fields in V/m with the best accuracy, you have 2 possibilities:

- Using the Antenna Factor

  $E\ (V/m) = AF\ (m^{-1}) \times V_{OUT}\ (V)$

  with AF = this value

  with VOUT =

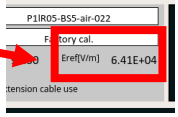
  

  The Antenna could be read directly in the eoSense software or recorded as a function of time for further temporal synchronisation (post treatment).

- Using the Normalisation Factor (analogue DC value read on a scope)

  $E\ (V/m) = E\ ref\ /\ Norm.\ Factor \times V_{OUT}\ (V)$

  with E ref = this value

  with Norm. Factor =

  with VOUT =

i The minimum detectable E-field is impacted by the noise floor of the customer instrument.