



**The Tekcem series of measuring instruments for EMC**

**Electric field antenna EX2712A  
with Power feeding splitter EX2713A**

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**User's Guide**

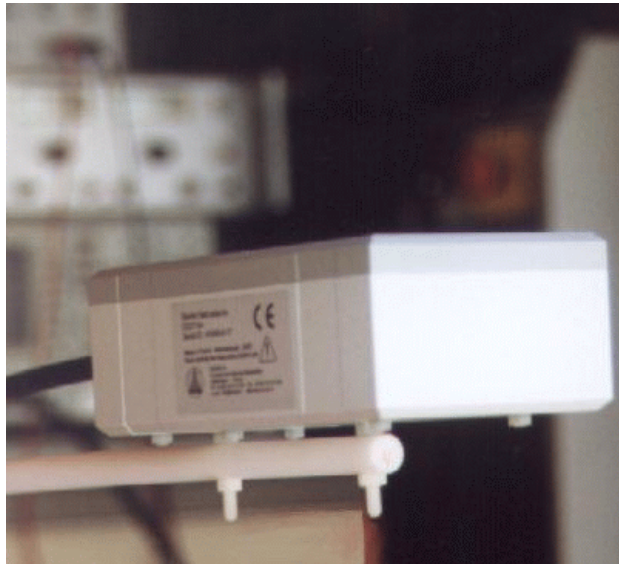
June 2000

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The EX2712A electric field antenna attached to a POMC rod

# 1. Foreword

## 1.1 Intended use

The EX2712A antenna is intended for low-level electric field measurements in the 50 kHz to 500 kHz frequency range.

The EX2712A is an active antenna. It is made of two symmetrical plates connected to a very high impedance differential amplifier providing a high common-mode rejection. The output of the antenna is a N receptacle. It is intended to be connected to an EX2713A power feeding splitter for connection to a source of DC power and a 50  $\Omega$  spectrum analyser.

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## 2. Specifications

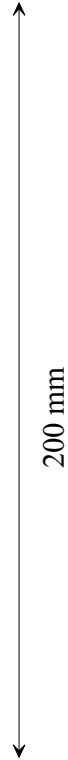
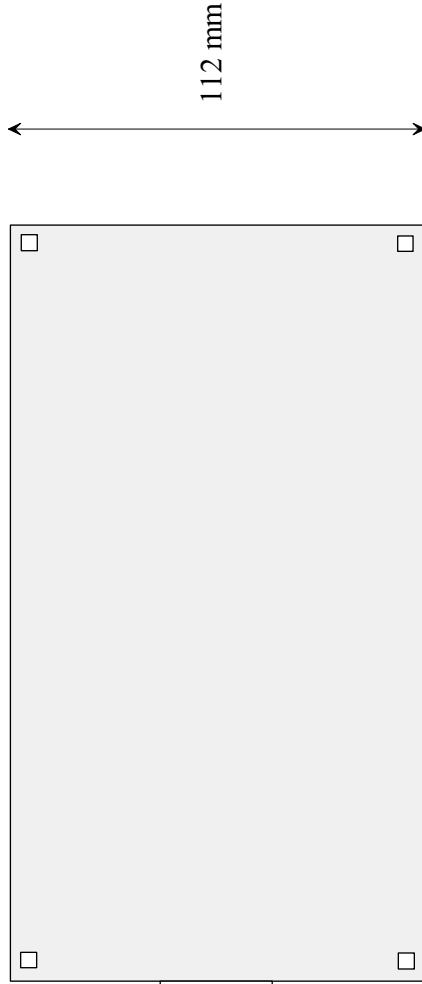
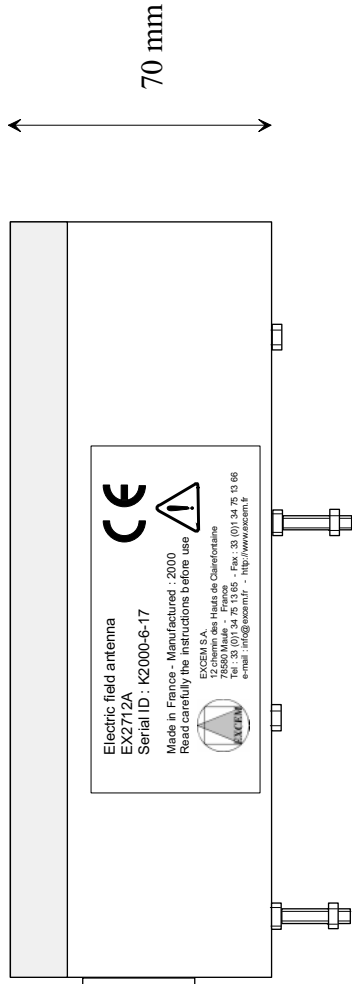
- The EX2712A antenna is an electric field antenna, therefore sensitive to electrostatic discharges.
- DC power: 14 V to 20 V DC to be connected to the banana receptacles of the EX2713A power feeding splitter (red for positive, black for negative).
- Power consumption: 18 mA.
- CE marked for EMC.
- The Intended DC source is two PP3 9 V batteries in series. THE DC SOURCE MUST BE FLOATING OR WITH THE NEGATIVE CONNECTION REFERENCED TO GROUND.
- VERY IMPORTANT: the N male receptacle of the EX2713A is intended to be connected to the spectrum analyser. THE N FEMALE RECEPTACLE OF THE EX2713A power feeding splitter IS INTENDED TO BE CONNECTED TO THE EX2713A antenna. If these connections are reversed, some spectrum analyser might be damaged by the DC voltage delivered by the power feeding splitter. The most convenient practice is to connect the EX2713A power feeding splitter N male receptacle directly to the input of the spectrum analyser.
- Nominal load at the output (N male receptacle) of the power feeding splitter: 50  $\Omega$ .
- This antenna has been calibrated in the middle of an asymmetrical (microstrip) TEM cell with 112,5  $\Omega$  nominal characteristic impedance, with a plate distance of 50 cm. The antenna axis was at a high of 24 cm above the ground plate of the TEM cell. The curves at the end of this document show the effective length in dB above 1 meter (this is the opposite of the antenna factor):
  - the top curve (curve 1) shows the effective length for the field orthogonal to the antenna plates,
  - the top curve (curve 2) shows the effective length for the field parallel to the antenna plates.The rejection of cross-polarization exceeds 35 dB in the 50 kHz to 500 kHz frequency range.
- Gain compression and clipping occur when either channel of the internal differential amplifier of the antenna receives a signal that would give rise to an output of about 107 dB( $\mu$ V), in the frequency range 50 kHz to 500 kHz. This corresponds to a field of about 130 dB( $\mu$ V/m).

## 3. Schematics and plots

The three following pages show:

- a drawing of the EX2712A antenna,
- a drawing of the EX2713A power feeding splitter,
- a calibration curve for a typical EX2712A and EX2713A set-up, showing the sensitivity to an electric field parallel to the plates, and the sensitivity to a field orthogonal to the plates.

embase N femelle  
vers EX2713A  
*N female receptacle  
to EX2713A*



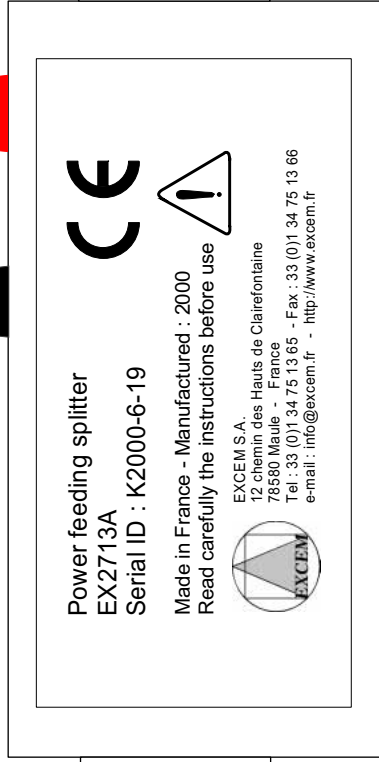
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<b>Antenne champ électrique (Electric field antenna)</b>							
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embase banane rouge  
*red banana receptacle*

embase banane noire  
*black banana receptacle*

embase N mâle  
vers analyseur de spectre  
*N male receptacle  
to spectrum analyzer*

embase N femelle  
vers EX2712A  
*N female receptacle  
to EX2712A*



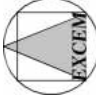


Power feeding splitter  
EX2713A  
Serial ID : K2000-6-19  
Made in France - Manufactured : 2000  
Read carefully the instructions before use



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100 mm

50 mm

O		27/06/2000	EDITION ORIGINALE																		
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