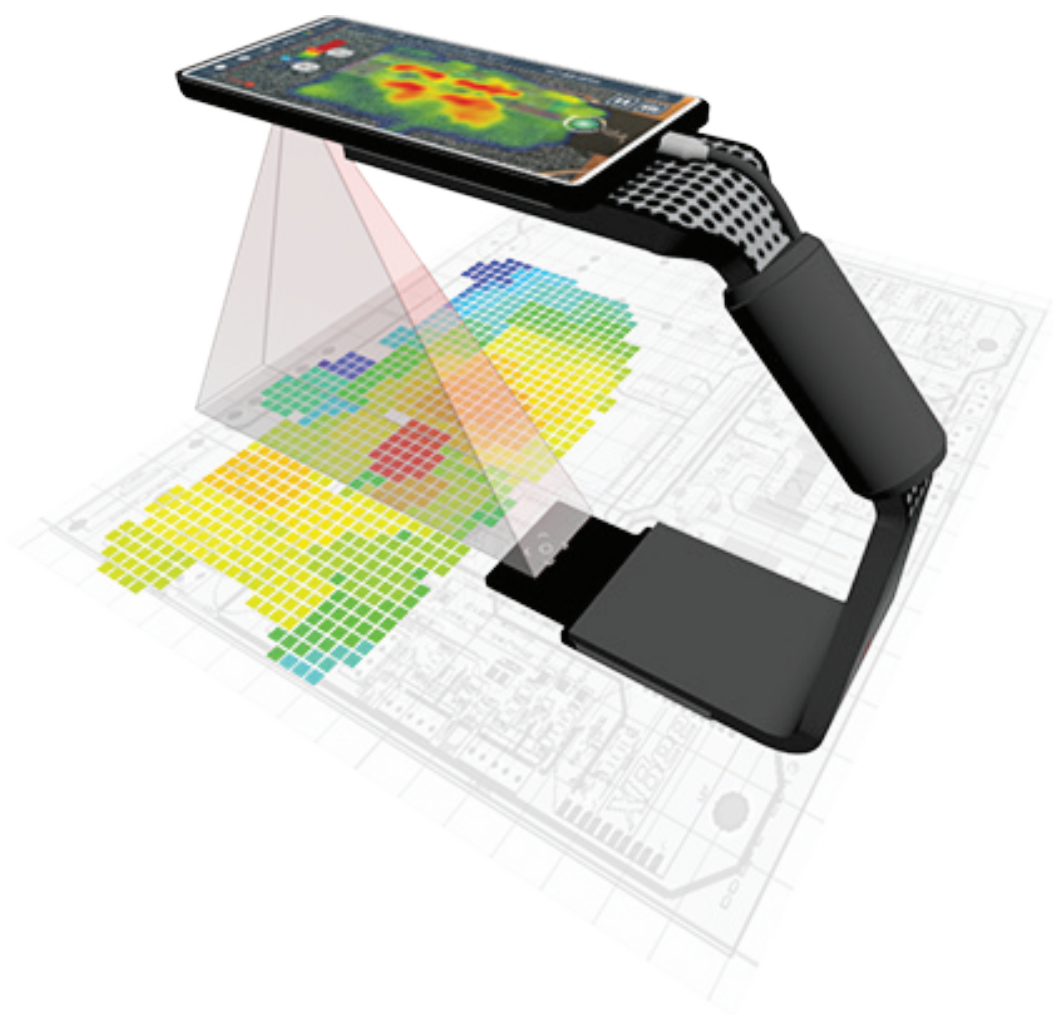


# LUXONDES

See the electromagnetic waves

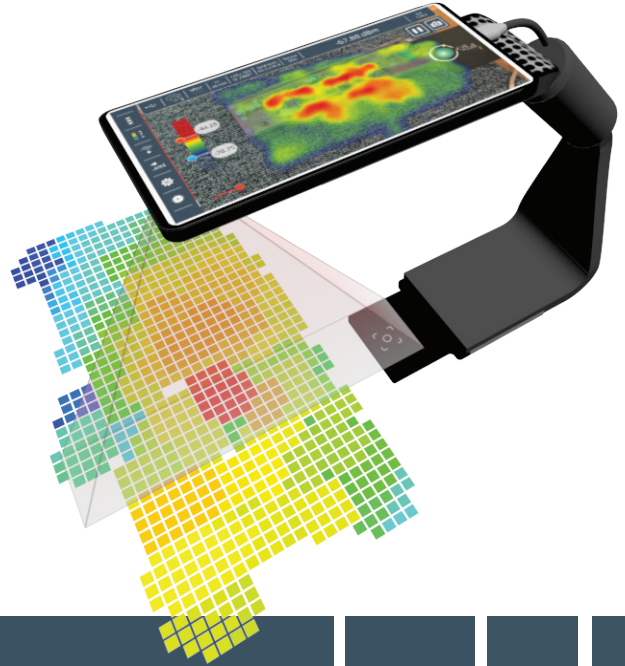


Product: 2020

# SCANPHONE

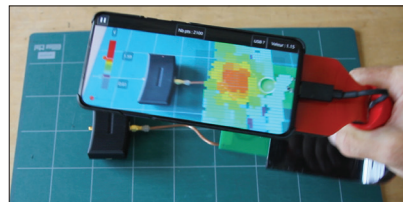
## Brief description

Mapping or scanning the electromagnetic emissions of electronic cards or any environment requires the use of relatively complex mechanical or electronic devices. Being autonomous, compact and fast, the scanphone aims to overcome these constraints. It makes it possible to map the electromagnetic environment directly on site or in locations difficult to access, such as inside a vehicle for example. This scanner, using augmented reality technology for part of its software, is composed of a smartphone coupled to removable EM field sensors to allow multiple measuring configurations.



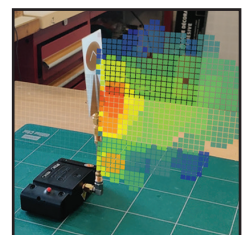
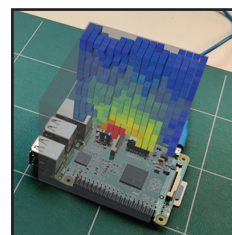
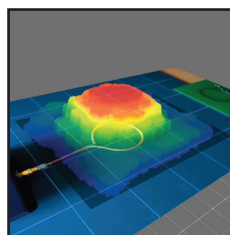
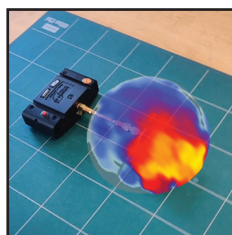
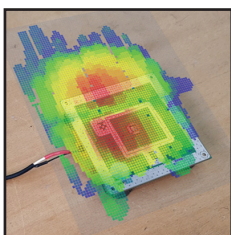
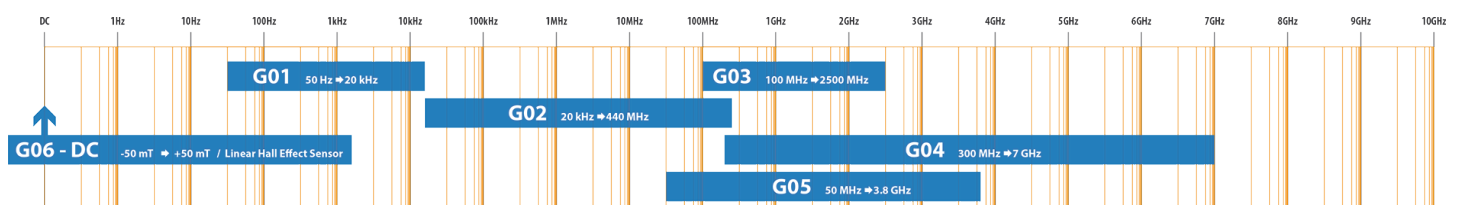
## Applications / Organization

- Direct mapping the radiation
- Antenna optimization
- Source localization
- Radiation pattern observations
- ...



- Industry
- Spatial
- Telecommunications
- Aeronautical
- Automotive
- Railway
- Education / Research
- ...

## Sensors



## Overview

Last generation  
smartphone



Communication and power  
through and USB-C Port

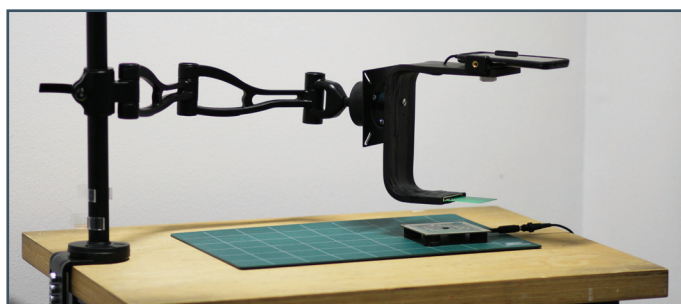
Removable sensor

Electronic interface  
Signal processing

## Technical Specifications

Smartphone	OnePlus7T Pro
Memory capacity	256 Go
Autonomy	> 20 h
Pixel size	2.5 mm - 4 mm - 10 mm - 25 mm
Grid size	Depending on the size of the pixels. ( centimeter to meter )
Grid type	Classic - Landforms - Standard 3D - Cloud 3D - Hemisphere
Autoscale	Analog module MDMV. dynamic threshold setting
Grid thickness	3 different grid thickness
Acquisition	60 Acq / Sec
Data Export	Screenshot with parameter - XML Format (Ascii)
Data analysis	Android Viewer - Pc Viewer (JAVA) - Scientific software (Matlab, Origin...)
Sensors	Removable sensors - See the list
DC Input	With external probe and spectrum analyzer output

## Articulated arm (Option)





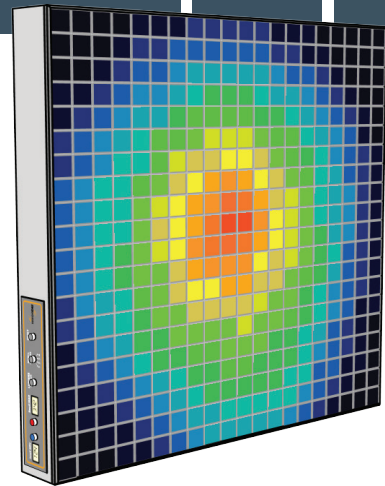
# RWD - 400

## Radio Waves Display

### PRESENTATION

The Luxondes radiofrequency to optical conversion panel directly displays the ambient EM-field or the radiation of a transmitting DUT that is placed in front of it. It comprises 400 (20x20) autonomous identical sensors working as elementary visualization pixels.

Elementary antennas are printed directly on each sensor's PCB. The representation of the electromagnetic field is provided through a gradient of colours. Successive photography can provide comparisons between different testing conditions. On the side of the panel you can change the sensitivity and dynamics of the system.

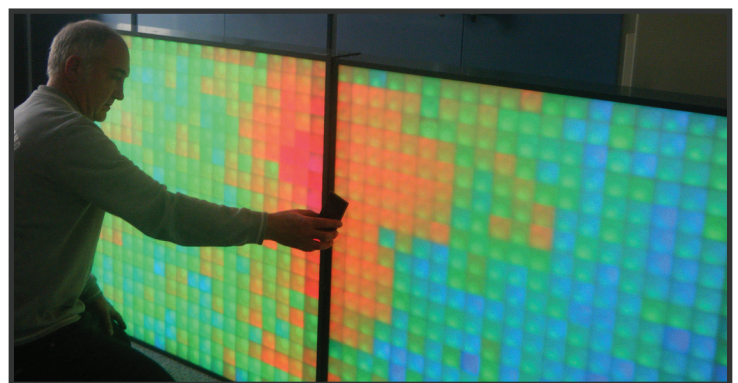
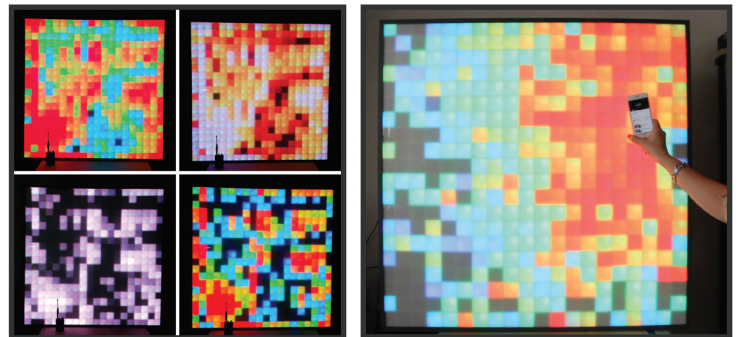
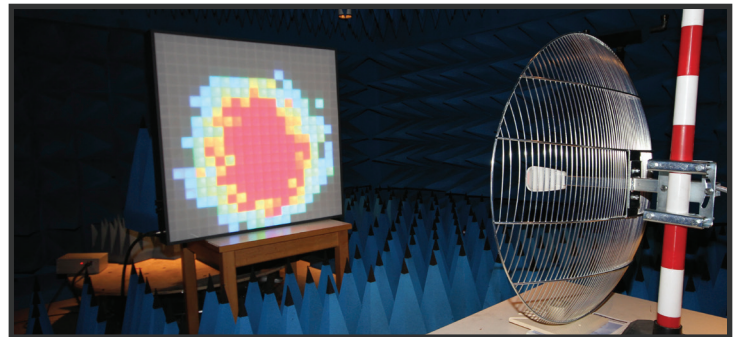


### APPLICATION

- Direct mapping of the received field
- Antenna MIMO optimization
- Time reversal evaluation
- Energy focusing evaluation
- Radiation pattern observations
- ...

### FEATURES

- Technology: Digital
- Panel area : 1m<sup>2</sup>
- Number of sensor : 400 (20x20)
- Sensitivity : -60 dBm to 0 dBm
- Minimal dynamic range : 3 dB
- Bandwidth : 50 MHz to 3 GHz
- Number of displayed colours : 1024
- Sensitivity adjustment: Min and max threshold
- Real time function or delay
- Delay / MaxHold
- Number of color bar : 4
- Viewing exceeded threshold
- Weight : 30 Kg



# RWD - 64PC

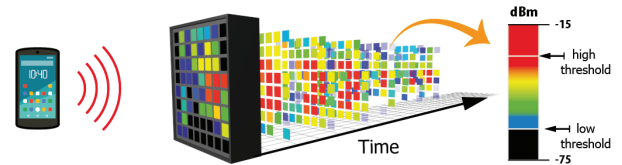
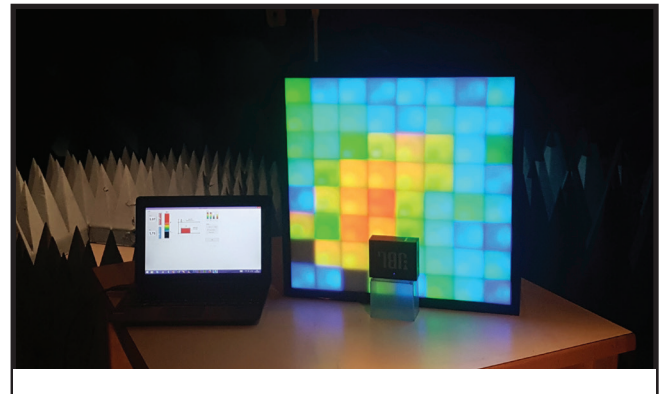
## Radio Waves Display 64 - PC

### PRESENTATION

This new system for measuring and visualizing electromagnetism radiation includes 64 sensors operating between 50 MHz and 3 GHz. Bidirectional communication (USB) is established between all sensors and a PC. This one allows to adjust in real time the sensitivity and the dynamics as well as the speed of acquisition. The software developed allows the recording and the reading of the data as well as an in-depth analysis of the results.

Fast and easy to adjust, the RWD saves time in antenna radiation pattern optimization, or quality control; for example in the analysis of communication signals of connected objects or in the study of the focusing of waves (time reversal, 5G communication).

It is an ideal didactic tool for teaching and a powerful communication tool for present scientific work based on electromagnetic radiation.



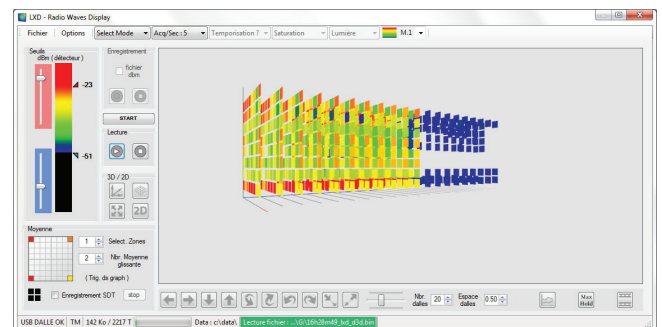
Direct visualization in 3D on PC acquisition of 64 sensors.  
Setting thresholds in real time.

### APPLICATION

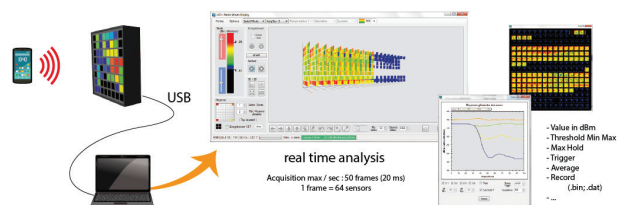
- Direct mapping of the received field
- Antenna MIMO optimization
- Time reversal evaluation
- Energy focusing evaluation (5G)
- Radiation pattern observations
- ...

### FEATURES

- Panel area : 45 cm x 45 cm
- Number of sensor : 64 (8x8)
- Sensitivity : -60 dBm to 0 dBm
- Minimal dynamic range : 3 dB
- Bandwidth : 50 MHz to 3 GHz
- Number of displayed colours : 1024
- Real-time adjustment of sensor sensitivity.
- Acquisition speed. ( max 50 frames / Sec )
- Recording of data. ( . bin & .dat )
- Replay the data.
- Max Hold function.
- Sequence function.
- Graph of the average of different areas.
- Selection of the number of sensors displayed



3D visualization software and data analysis.  
Recording format .dat .bin

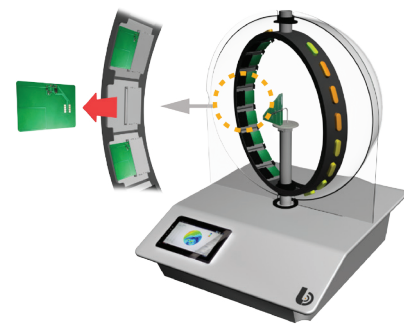


Selection of different sensors to visualize the variation over time.  
Image sequence function

# GYROSCANFIELD

## Presentation

The Gyroscanfield is a 3D, real-time measuring equipment whose function is to directly visualize the electromagnetic radiation of a Device Under Test (DUT) in a simple and fast way. 16 sensors with detachable antennas are spread over a 60 cm diameter ring. A set of different antennas is available corresponding to your requested frequency and sensitivity ranges. Each elementary sensor around the loop converts the electromagnetic received energy in a corresponding calibrated range of visible colours by using RGB LEDs. Each sensor has an A/D converter to backup and data mining. The operation of the measuring equipment and the acquisition of data is done using an Android tablet PC. DC powering of the DUT can be performed either from the top and / or the bottom of the instrumented loop.



## APPLICATIONS

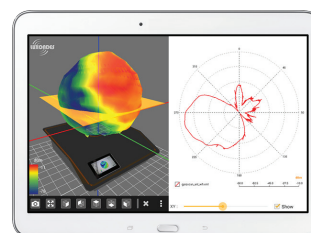
- Comparison between different radiating systems
- Quality control
- Product Development
- Shielding effectiveness

## ADVANTAGES

- Direct visualization of the electromagnetic field, either continuous wave or, modulated at frequencies up to several tens of  $\mu$ s
- Sensors compatible with detachable antennas and the range of products LUXONDES.
- Fast acquisition speed

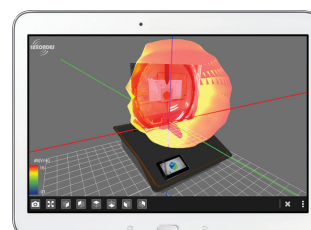
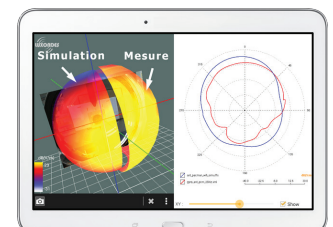
## FEATURES

- Size : (H) 100 x (L) 75 x (P) 85 cm
- Support roller : (H) 85 cm
- Rotation speed : 15 Turns /sec max.
- Acquisition : 720 Points / Turn / Sensor
- Power supply : 230 VAC 50 Hz



Radar curve of the object under test

Comparison measurement and simulation a WiFi antenna



3D diagram an antenna Wireless



# SENSORS

Antenna cards are built according to a standard format smart card.

They include the antenna and the RF detector.

For specific applications, we realize the HF portion (Amplifier, filters, ...)



Réf	Mes.	F.min (MHz)	F.max (MHz)	BP (-3dB) (Hz)	F.accord (MHz)	Type Antenne	Compatible	Switch	Doc.
C0	E				900 & 1800	GSM	G / S / K		
C1	H	2	300			boucle	G / S / K		
C2	H	300	3000			monopôle	G / S / K		
C3A	H			500	8	boucle	G / S / K		
C3B	H			300	16	boucle	G / S / K		
C3C	H			2800	24	boucle	G / S / K		
C3D	H			3000	32	boucle	G / S / K		
C3E	H			2300	40	boucle	G / S / K		
C3F	H			2200	48	boucle	G / S / K		
C3G	H			4000	64	boucle	G / S / K		
C4	H	0.02	100			boucle	G / S / K		
C5	E	300	3000			monopôle	G / S / K		
C6	E	300	3000			monopôle + R	G / S / K		
C7	E	300	3000		1500	monopôle imprimé	G / S / K		
C8	E	300	2500			dipôle imprimé	G / S / K		
C9	E	300	2500			bi-dipôle	G / S / K	2	<a href="#">info</a>
C10	E	300	3000		1500	bi-monopôle	G / S / K	2	<a href="#">info</a>
C11	E		300			double boucle	G / S / K		
C12	E	0.02				monopôle	S / K		<a href="#">info</a>
C13	H	0.02	200			boucle	G / S / K		
C14						infrarouge	S / K		<a href="#">info</a>
C15	E	300	2500			tri - axial	S / K	5	<a href="#">info</a>
C16	H					capteur Effet Hall	S		<a href="#">info</a>
C17	H	0.02	20			mandrin HF	S		
C18	H					capteur Effet Hall	S	3	<a href="#">info</a>
C19	E		2500			monopôle imprimé	G / S / K		<a href="#">info</a>
C20	H	0.02	15			mandrin HF	S		
C21	H	0.007	1			Antenne RFID	S / K		
C22	H				50 / 60 Hz	capteur Effet Hall	S		
C23	E	50	6000			monopôle	G / S / K		<a href="#">info</a>
C24	E	300	2500			monopôle en S	G / S / K		<a href="#">info</a>
C25	E	300	3000		1500	bi - monopôle	G / S / K	2	<a href="#">info</a>
C26	E	300	3000			Patch GSM	G / S / K		<a href="#">info</a>
S01	H	0.2	200			boucle			
S02	E	300	3000		1500	monopôle imprimé	G / S / K		
S03	E	300	3000			monopôle en S	G / S / K		
S26	E	300	3000			monopôle en S	G / S / K		
B01	E	300	2000		Amp / Phase	monopôle résistif	S / K		<a href="#">info</a>



**LUXONDES**  
See the electromagnetic waves

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www.luxondes.com  
contact@luxondes.com

# Android Application

## XML / NFS standard

The XML / NFS standard: TR 61967-1-1 © IEC: 2010 will define a universal interchange format for data from different Near Field Scan (Near Field Scan). Its format is suitable for different 2D or 3D coordinate systems for a frequency or temporary domain.

## SIMPLE VIEWER

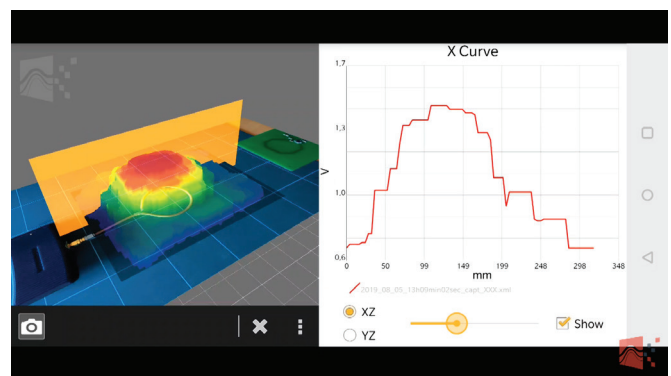
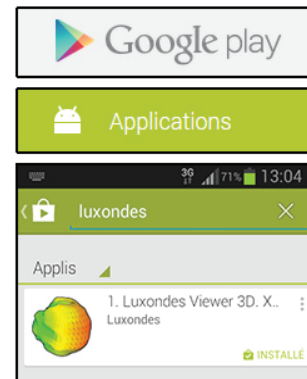
- Direct reading of data from:
  - ScanPhone, Gyroscanfield, CT Scanner
- XML format import, OBJ, FFS.
- Data comparison between DATA1 and 2.
- Multi-frequency analysis.
- Visualization of the object under test (image / obj 3D).
- 2D chart for planar data.
- Radar graph for spherical data.
- CUT function for spherical data.
- Compatible coordinates:
  - Cartesian, cylindrical and spherical.
- Compatible format:
  - Amplitude Phase, Real Imaginary.
- Specific Mir
- display values greater than zero.
- ...

## QRCODE FUNCTION

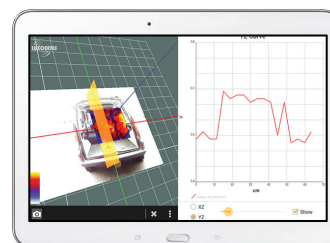
- Paste a QRCode on the object under test and download the measurements directly with the viewer.
- Insert a QRCode into your reports.
- Download examples on the luxondes website.

## AUGMENTED REALITY

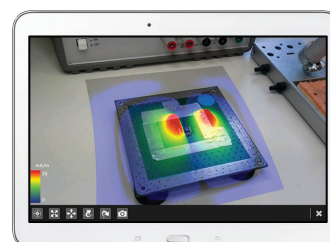
- Visualization of measurements in RA.
- Sectional view of 3D diagram.
- Real mapping of the EM environment.
- Compare the evolution of measurements over time.
- Compare measurement simulation on the object under test.



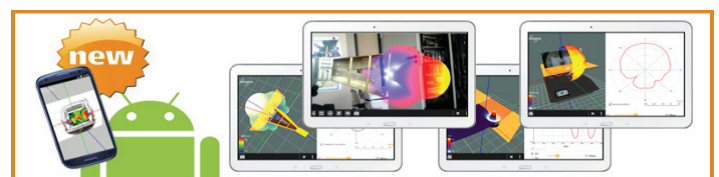
ScanPhone Data Analysis



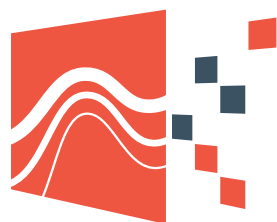
planar mapping  
inside a vehicle



Visualization of  
measurements in  
Augmented Reality







**LUXONDES**

See the electromagnetic waves

[www.luxondes.fr](http://www.luxondes.fr)