The EMI Receiver with built-in LISN

Model	Frequency Range
7010/00	150 kHz to 1 GHz
7010/01	9 kHz to 1 GHz
7010/02	9 kHz to 30 MHz
7010/03	9 kHz to 3 GHz

Built-in 16 A single phase LISN
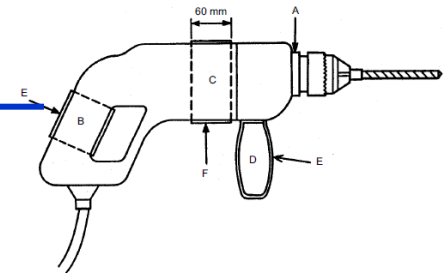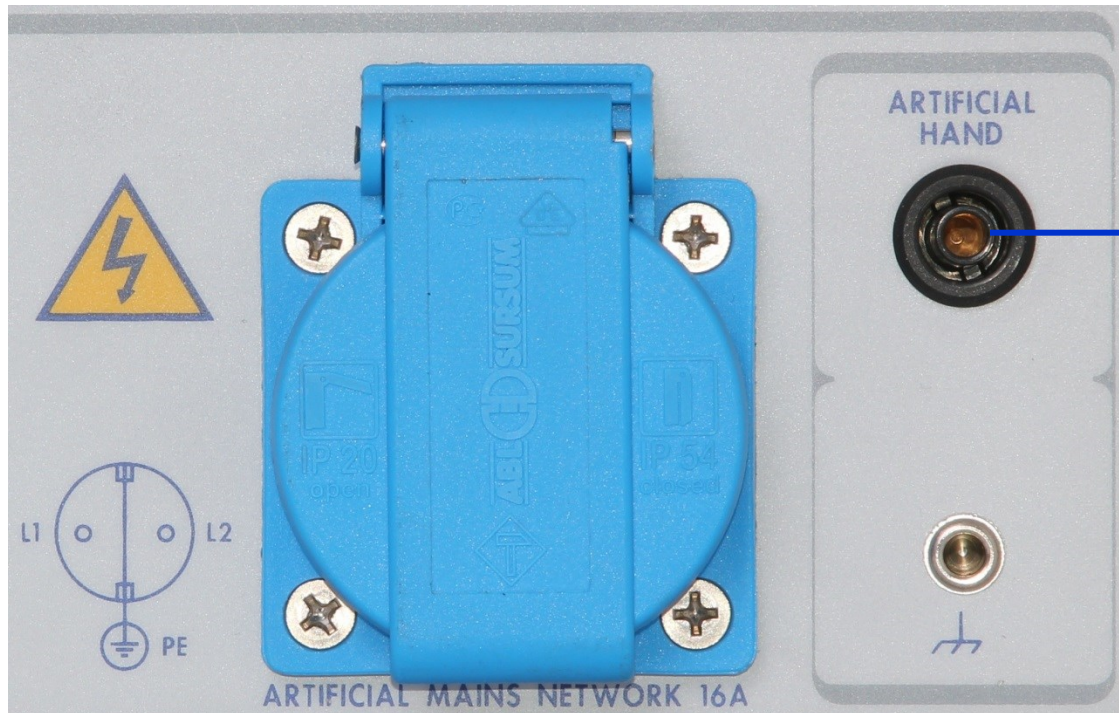
Artificial hand for electric tools testing (CISPR 14)

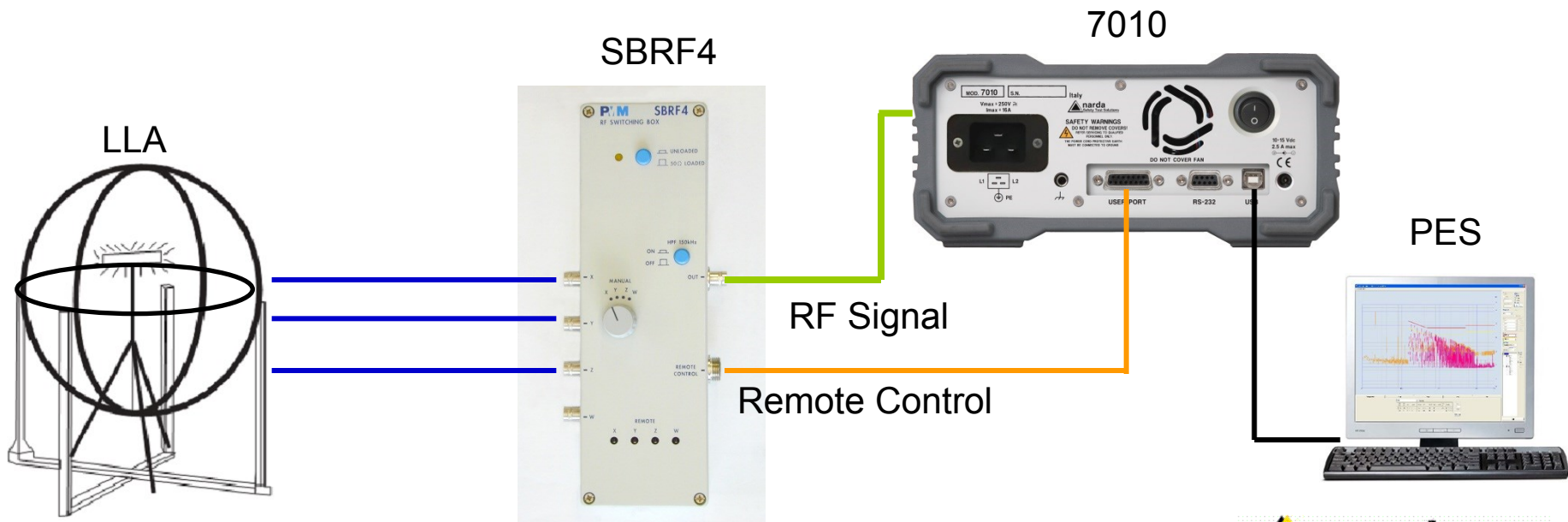**User Port for controlling all PMM LISN**
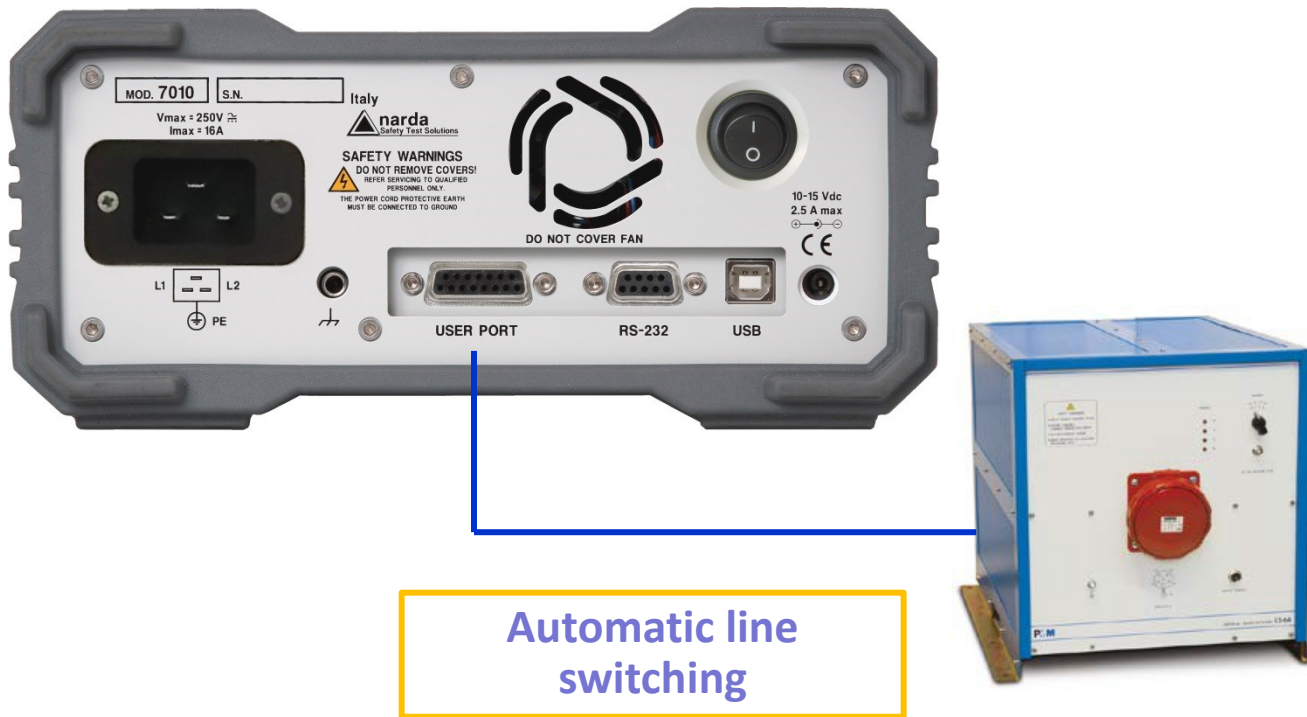
Automatic line switching

User Port controls SBRF4 (RF switch)

- Example of automatic test of lighting devices with Large Loop Antenna (CISPR 15).

LLA

SBRF4

7010

PES

RF Signal

Remote Control

User Port controls SBRF4 (RF switch)

■ Example of automatic test with multiple single-line LISNs

7010

RF Signal

Remote Control
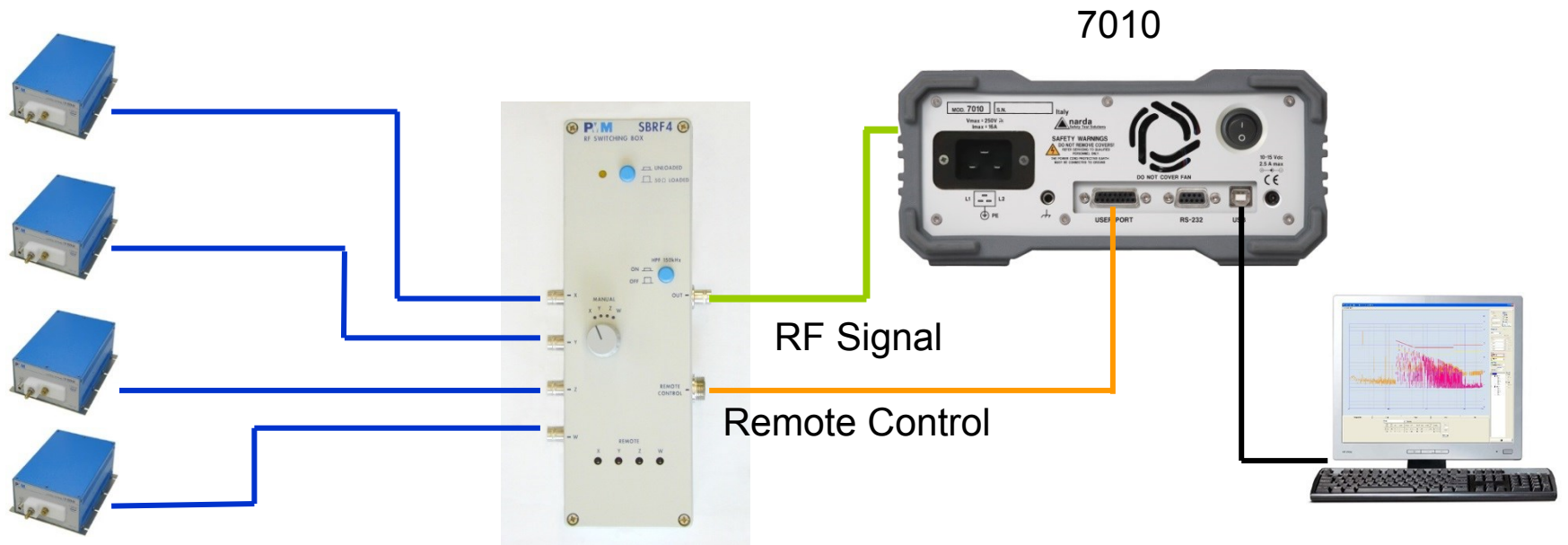
Robust front-end with built-in pulse limiter

- 140 dBµV (+33dBm, 2W) maximum input range

RF INPUT 50Ω
140dBµV max

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Frequency Preselection

Limits the RF energy to maximize the true dynamic range
Bands: 9 kHz – 30 MHz; 30 – 1000 MHz; 1 – 3 GHz

IF bandwidth, 6dB RBW digital filters

CISPR 16-1-1:   200 Hz – 9 kHz – 120 kHz – 1 MHz
6 dB BW: 1, 3, 10, 30, 100, 300 kHz; 1 MHz

Simultaneous Detectors

CISPR 16-1-1:   Peak, Quasi-Peak, C-Avg, Avg, RMS, RMS-Avg

Considerations about detectors:

- It is true that the Peak detector always provide the highest result

- It is not true that, for pre-test and debug, you can always rely on the Peak detector reading

- Main reason for buying an EMI receiver is: **saving money**

- The goal is reaching the best compromise by passing the final test while investing minimum effort in product debug and optimization, as well as minimum cost for external lab testing.

- Spending time to reduce the Peak readings while the C-Avg or Quasi-Peak could be within the limits already is: **loosing time and money**.
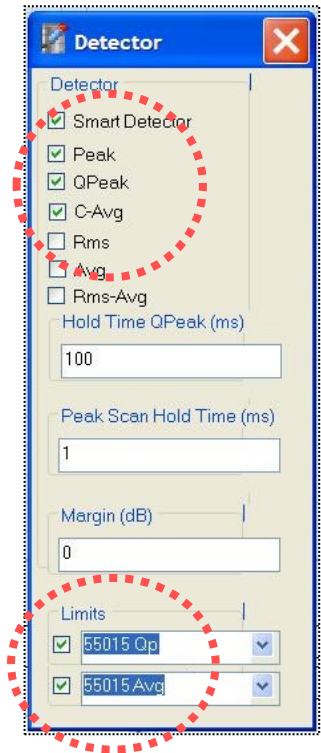
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Smart Detector Function

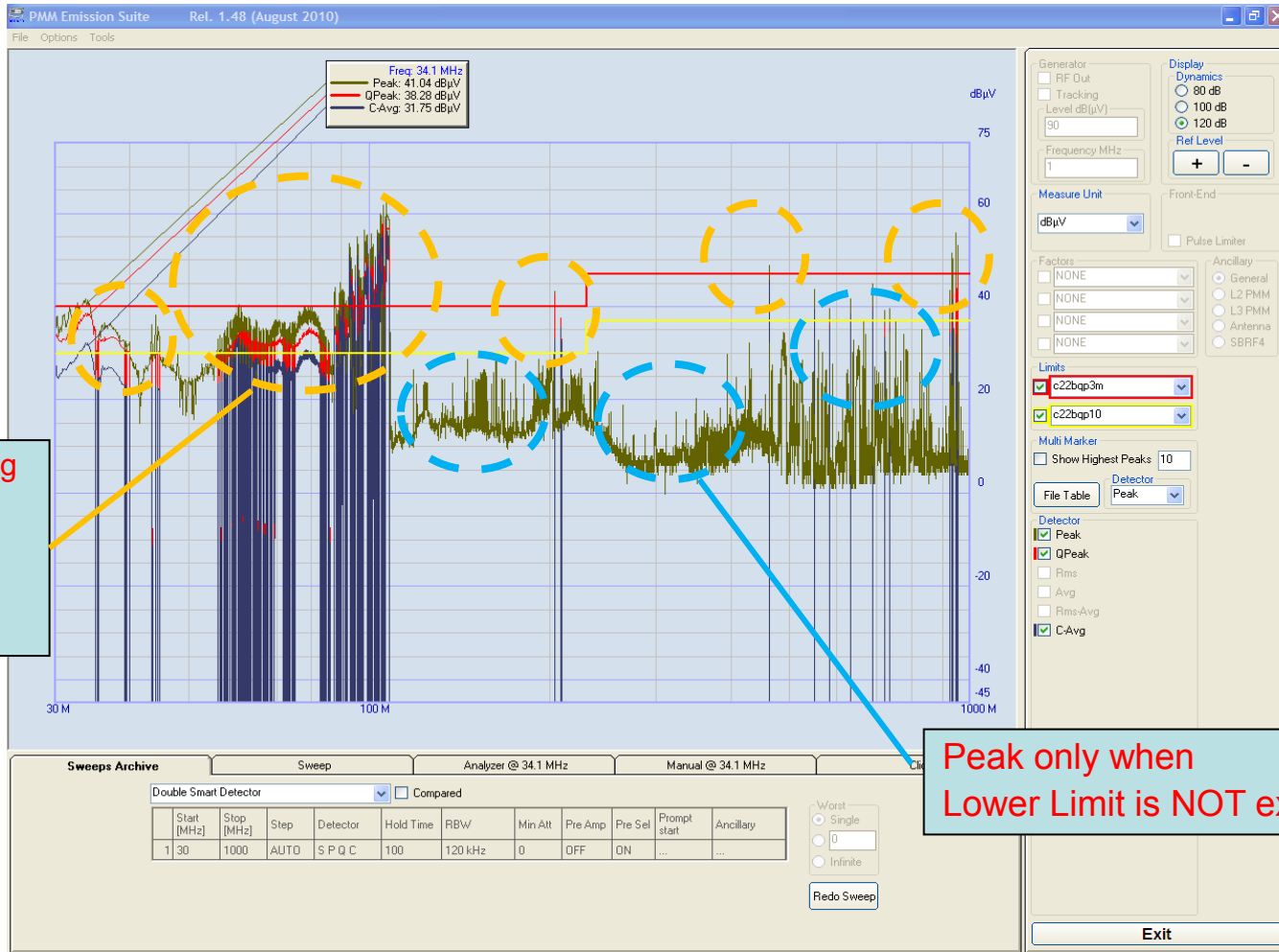**Testing time is money, Smart Detector Function saves time**

Several EMC standards require two detectors and two limits.

The Smart Detector function gets in a single run all Peak values and Quasi-Peak, Avg. values only for those peaks exceeding a preset threshold below the limits.

Smart Detector mode skips long lasting measurements of irrelevant frequencies, thus saving a great deal of time.


Detector

Detector
- ☑ Smart Detector
- ☑ Peak
- ☑ QPeak
- ☑ C-Avg
- ☐ Rms
- ☐ Avg
- ☐ Rms-Avg

Hold Time QPeak (ms)
100

Peak Scan Hold Time (ms)
1

Margin (dB)
0

Limits
- ☑ 55015 Qp
- ☑ 55015 Avg

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Smart Detector example

Q-Peak & C-Avg simultaneously active when Lower Limit is trespassed

Peak only when Lower Limit is NOT exceeded

Step scanning with precisely settable Hold Time

- PMM receivers set the Hold Time (dwell time) to fit automatically the longest time constant of enabled detectors.

- Shorter hold time underestimate the measurement

- Depending on the disturbance characteristics, the hold time must be set even longer

- Due to their continuous sweep, spectrum analyzers do not allow to set an hold time but the sweep time only, that could be not slow enough for a correct measurement

CISPR RMS & Average Detectors settling time
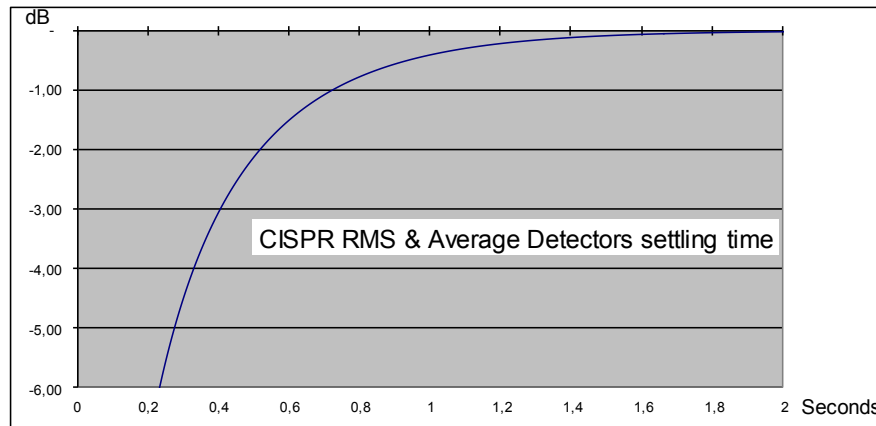
Other characteristics:

- **AM-FM demodulators with internal speaker**
  Helpful in recognizing the disturbance sources

- **DC power supply (through AC/DC adapter)**
  Prevents ground loops

- **Compact size: 235W x 105H x 335D mm**

- **Robust aluminium case with rubber protectors**

- **Individual CISPR calibration certificate**

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PMM 7010 receiver saves the investment

UPGRADEABILITY			
Option code	From version	To version	Purpose
7010/00/UP/01	**7010/00** 150 kHz- 1 GHz	**7010/01** 9 kHz – 1 GHz	Frequency range extension down to 9 kHz of 7010/00
7010/02/UP/01	**7010/02** 9 kHz – 30 MHz	**7010/01** 9 kHz – 1 GHz	Addition of radiated frequency range up to 1 GHz
7010/00/UP/03	**7010/00** 150 kHz- 1 GHz	**7010/03** 9 kHz – 3 GHz	Frequency range extension down to 9 kHz and up to 3 GHz of new 7010/00
7010/01/UP/03	**7010/01** 9 kHz – 1 GHz	**7010/03** 9 kHz – 3 GHz	Frequency range extension up to 3 GHz
7010/02/UP/03	**7010/02** 9 kHz – 30 MHz	**7010/03** 9 kHz – 3 GHz	Addition of radiated frequency range up to 3 GHz

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PES (PMM Emissions Suite) control software is included.

- PES software drives all PMM receivers
- Latest release (as well as receivers firmware), is free from http://www.pmm.it/narda/software_it.asp
- Options available for Table/mast control (PES/TM) and Waterfall/Spectrogram (PES/WF).
- Powerful and user friendly

PMM Emission Suite (PES)
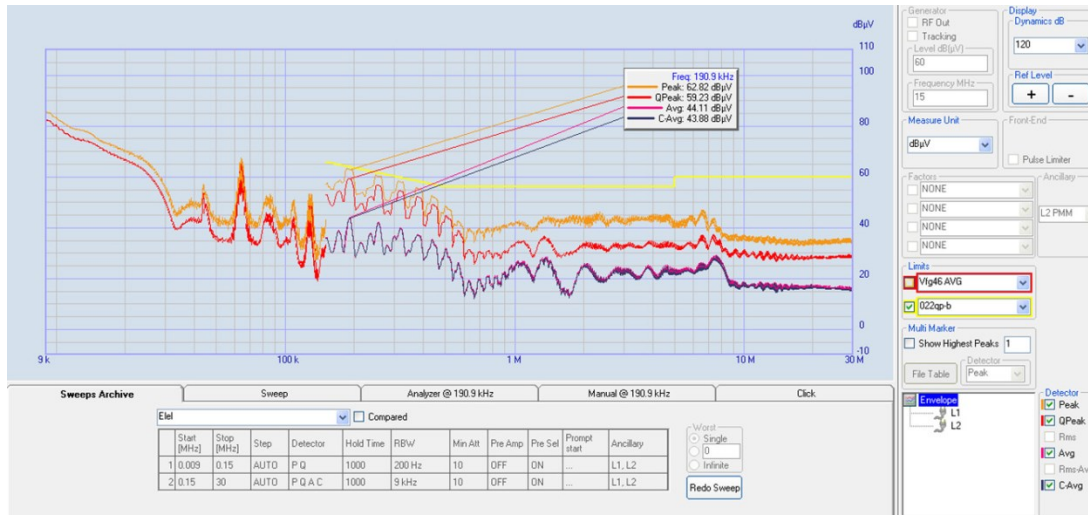
Powerful and user friendly

Preliminary operations:

- Add your product standard limits (if not already included)
- Add your antenna factors (PMM antenna typical factors already included)
- Add your cable factors

Limits and factors will be stored in your PC to be readily available when using the PES

PMM Emission Suite (PES)

Powerful and user friendly

Taking measurements:

- In sweep mode, assign a name to your test
- Select ancillary (e.g. L2 7010) or factors if using antenna
- Select frequency bands from list (e.g. B or A+B for conducted)
- Select any desired additional detector (RBW and HT automatically set)
- «Execute» to take the measurement
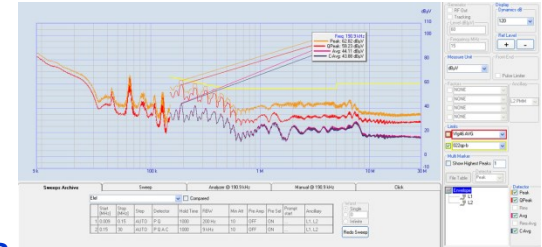
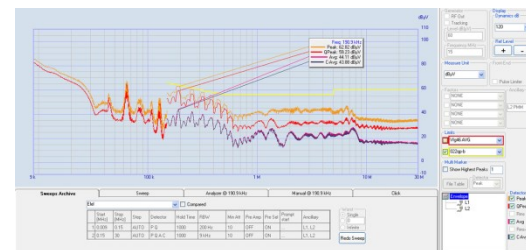Every measurement is automatically stored for later reference and reporting

PMM Emission Suite (PES)
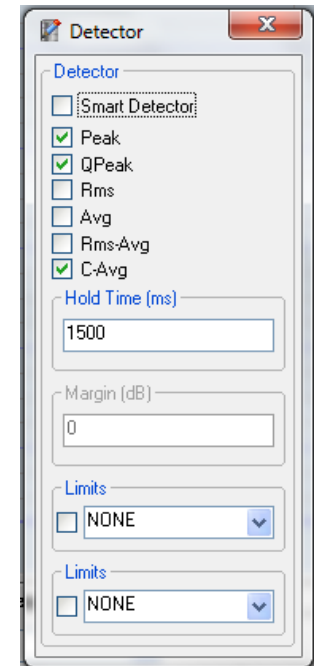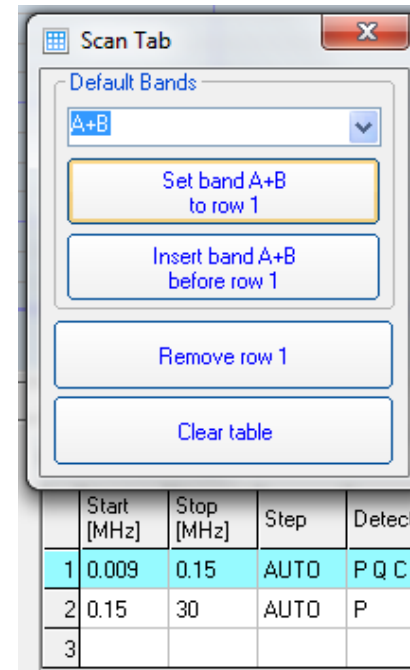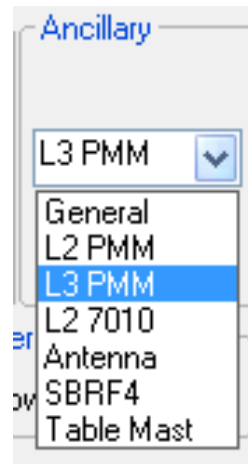
Powerful and user friendly

Making a report:

- Select measurement
- Select relevant limits
- Select a report style
- Set margin to include frequencies exceeding a user threshold below limit
- Save as txt, pdf or rtf

Or…

Select «auto report» function for prompt reporting after taking each measurement
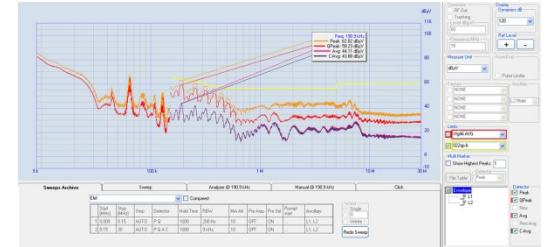
# PMM Emission Suite (PES)

Powerful and user friendly

debugging:

- Select a measurement or take a new one
- Put the marker on some relevant frequency
- Jump to analyzer or manual mode for immediate analysis
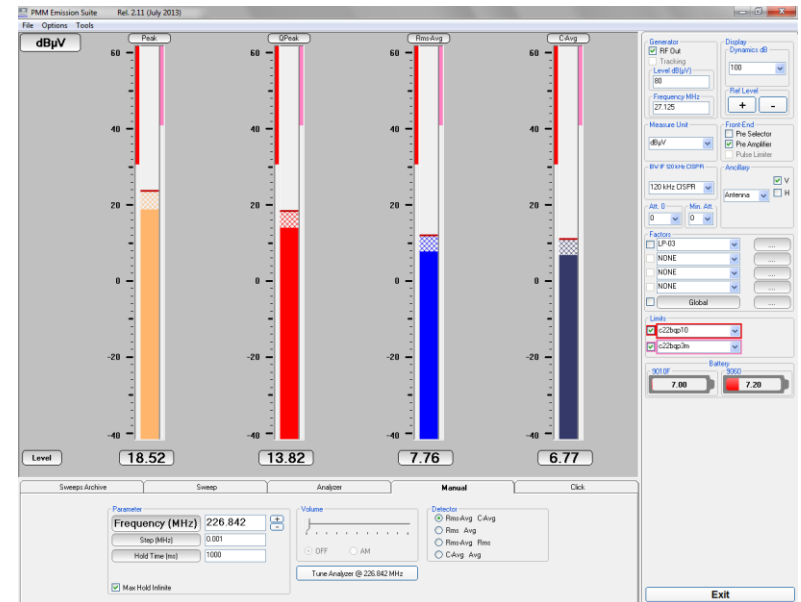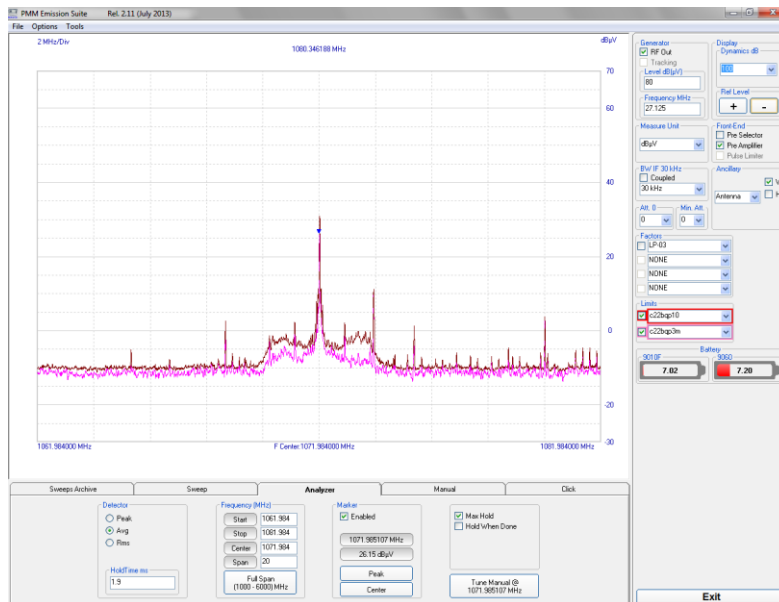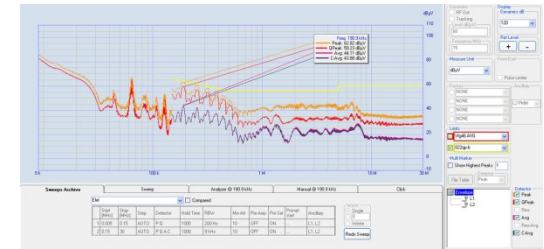
Sub-Range function

- Max. nr of sub-bands: 10
- Max. nr. of peaks: 99, distributed on all sub-bands
- Manual entering of further peaks in sub-bands (cursor value)
- Automatic generation of a new scan table with sub-band peaks
- Manual editing of the same
- Report generation with the measurements of the sub-band peaks & enabled detectors

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PMM Emission Suite (PES)
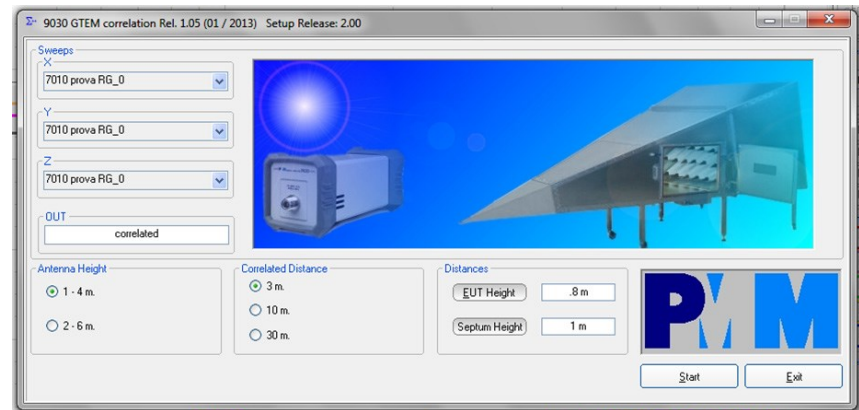
G-TEM correlation

According to EMC Standard EN 61000-4-20, measurements obtained from TEM / G-TEM cells by an EUT rotated along its x-y-z axis can be correlated to those obtained in an OATS (Open Area Test Site) by specific algorithms.

The G-TEM correlation function correlates in few clicks the x-y-z measurements into a final measurement spectrum that can be compared with the limits. A standard feature of PMM Emission Suite!

**IEC 62493:
Safety test for
Luminaries**

$$F = \sum_{f=20kHz}^{10MHz} \frac{J_{Cap}(f_n)}{J_{Lim}(f_n)} = 0,123$$

IEC 62493 Annex E

F <= 0.85

Pass

OK
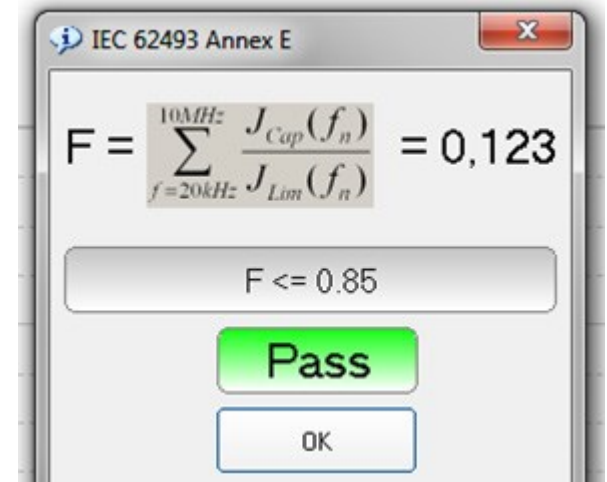
**Automatic pass – fail
test of emissions**

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3 GHz Antenna Set for emissions

Multi-standard LISN

CISPR Voltage Probes

3-phase LISN to 500 A