Laboratories GSD srl

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ELECTROMAGNETIC COMPATIBILITY
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ISO 9001:2008

SINCERT

G.S.D. Srl **PISA - Italy**	***Test Report n. FCC-13200***	Rev. 01

Manufacturer	**CAEN RFID s.r.l.**
Address	Via Vetraia, 11 55049 Viareggio (LU) Italy
Test Family Name	**A528B**
Testing Laboratory Name	**G.S.D. S.r.l.**
Address	Via Marmiceto, 8 56121 Ospedaletto Pisa (PI) Italy
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	FCC Listed: Registration Number: 424037
Location and Date of Issue	Pisa, 2013 July 26

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SENIOR EMC TEST MANAGER
Dr. Gian Luca Genovesi

QUALITY MANAGER
Dr. David Pelliccia

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1. MANUFACTURER AND EUT IDENTIFICATION [1]

Manufacturer	**CAEN RFID s.r.l..**
Address	Via Vetraia, 11 55049 Viareggio (LU) Italy
Test Family Name	**A528B**
Date of reception	**2013 July 12**
Sampling	**Laboratory sample for certification**
Test Item Description	**RFID Device**
Nominal Input Voltage	**5 Vdc**
FCC ID	**-**

[1] A detailed documentation is preserved in the internal fascicle.

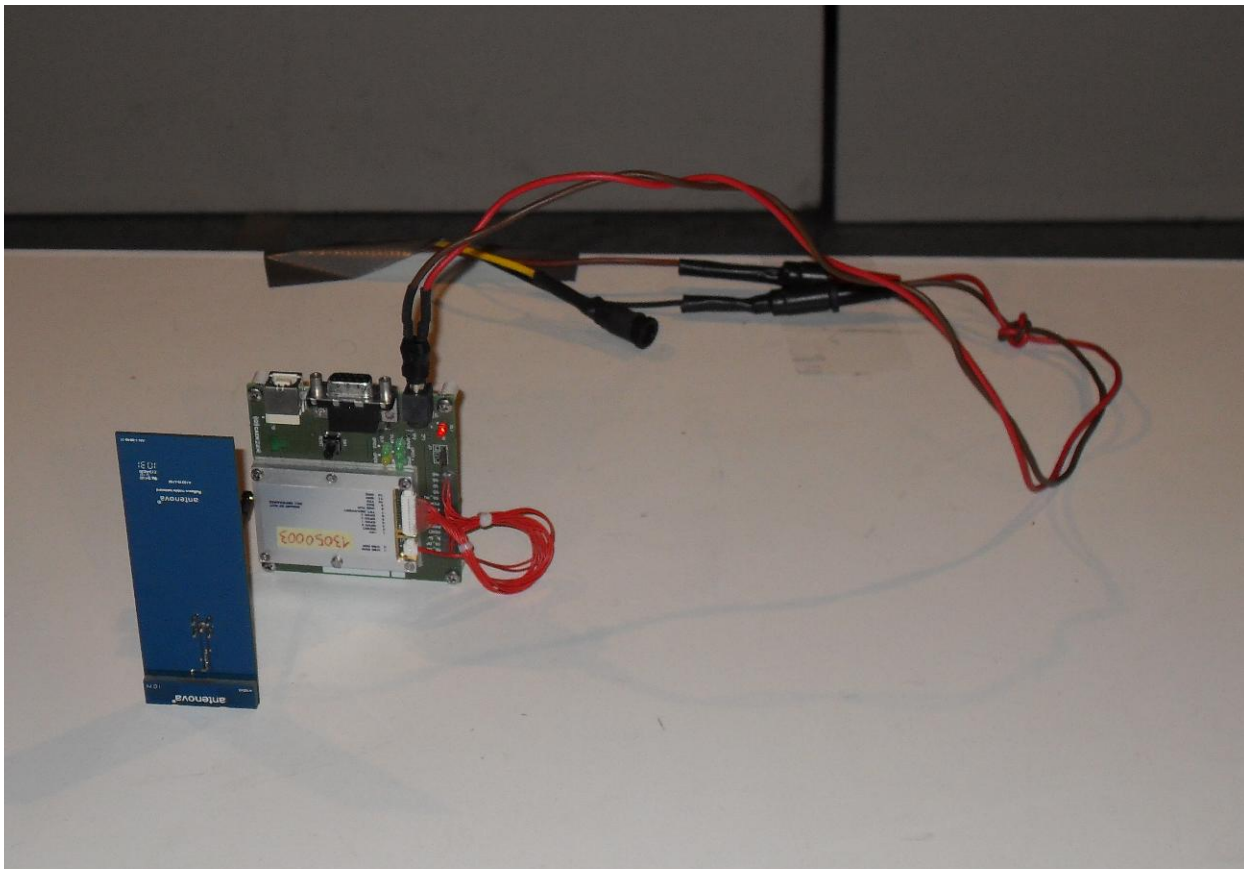


Fig. 1.1
Equipment Photo

2. REFERENCE STANDARDS

Tests and measurements are performed accordingly to the reference standards given in the table below:

TEST	***STANDARD***
Emissions: Radiated – Section15.209	FCC Rules ad Regulations, Title 47 (2008) Part 15 – Sub part B ANSI C63.4 2009 – American National Standard for Methods of Measuring of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz

3. RESULT, CONDITION, MEASUREMENT UNCERTAINTY

Summary of Test Results

TEST	*RESULT*
Emissions: radiated *Section 15.209*	*Pass*

Measurement uncertainty

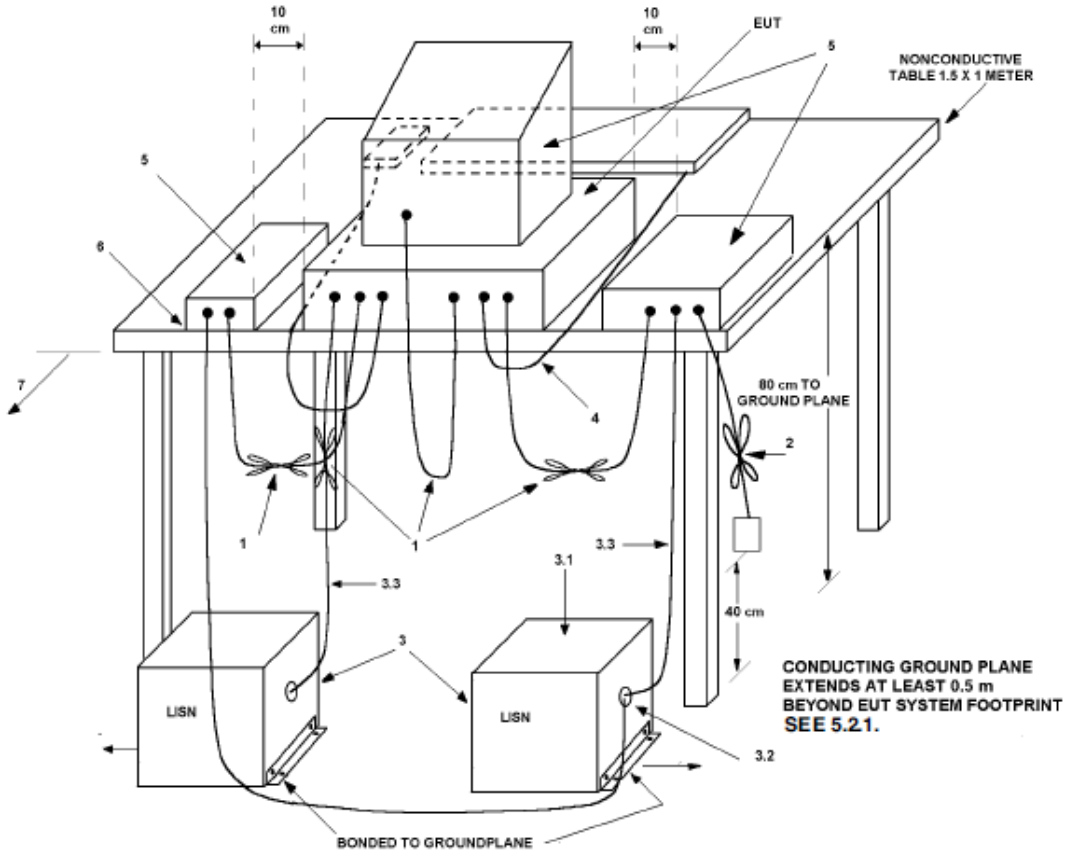
TEST	*EXPANDED UNCERTAINTY*
Conducted Emission – 50Ω/50μH (150 kHz - 30 MHz)	± 3.5 dB
Radiated Emission – (Semianechoic Room) (30 MHz - 18 GHz)	± 4.7 dB

Climatic Conditions

PARAMETER	*VALUE*
Temperature	(298 ± 3) K
Relative humidity	(50 ± 5) %

Extensions

The results refer only to the sampled EUT and under the specified conditions.



Conducted and Radiated EUT Test Set-up example (ANSI C63.4 2009)

4. RADIATED EMISSIONS

In the following table you can find the limits established by the reference standard:

FREQUENCY RANGE *(MHz)*	***Field Strenght*** *QUASI-PEAK LIMITS* *[dB (μV/m)]*
30 ÷ 88	40
88 ÷ 216	43,5
216 ÷ 960	46
Above 960	54

Test Equipment

EQUIPMENT	MANUFACTURER	MODEL	CAL. DUE
EMI Receiver	HP	HP8546A	01/2014
EMI Receiver Filter Section	HP	HP85460A	01/2014
Anechoic Chamber	Comtest	CSA01	01/2014
Bilog Antenna	Schaffner	CBL6112B	01/2014
Horn Antenna	EMCO	3115	01/2014
Loop Antenna	ETS	6512	01/2014
Controller	Deisel	HD100	01/2014
Turn Table	Deisel	MA240	01/2014
LISN	GSD	NTW06	01/2014

Test procedure: RE22R02

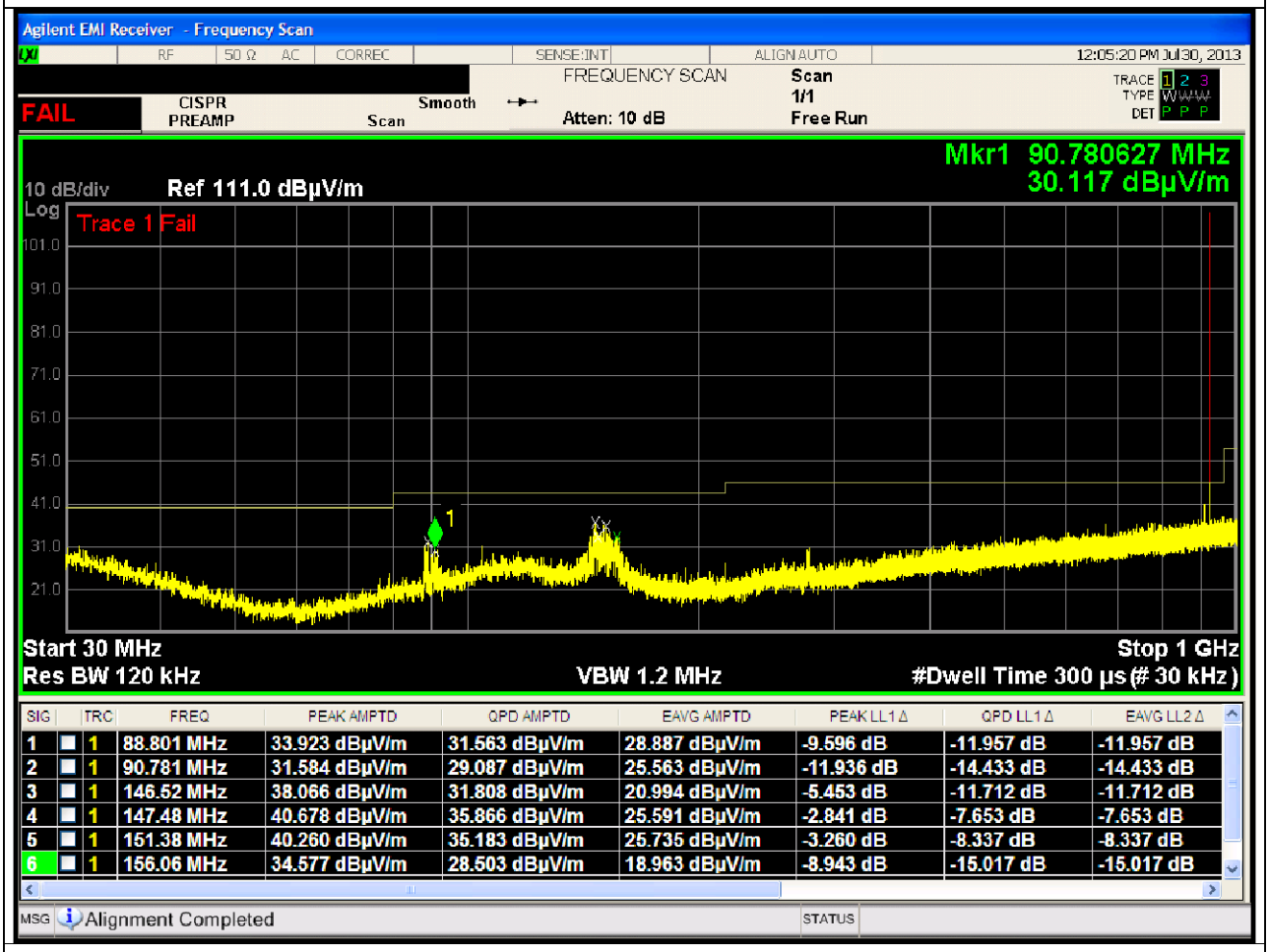
Notes

Azimuth position EUT-Antenna corresponding to 0° identifies the rotating table orientation (TT) in which the instrument to be tested shows the front part turned towards the antenna. Positive grades individuate clockwise rotations of TT when this one is observed from the top. For negative degrees, TT rotation is anticlockwise.
Antenna height respect to the mass plane is conventionally individuated with: MA=XXX where XXX indicates the height (always positive for e>100) expressed in cm.
Antenna horizontal polarisation is indicated by POL=H.
Antenna vertical polarisation is indicated by POL=V.
EUT was tested in the three ortogonal planes.

Results and conclusions

In all the operative conditions, equipment complied with the standard limits. Graphics in following figures show the most significant registrations of the performed measurements.

Job Number	FCC-13200
Test Name	Radiated Emissions
EUT Name	CAEN RFID s.r.l. - A528B

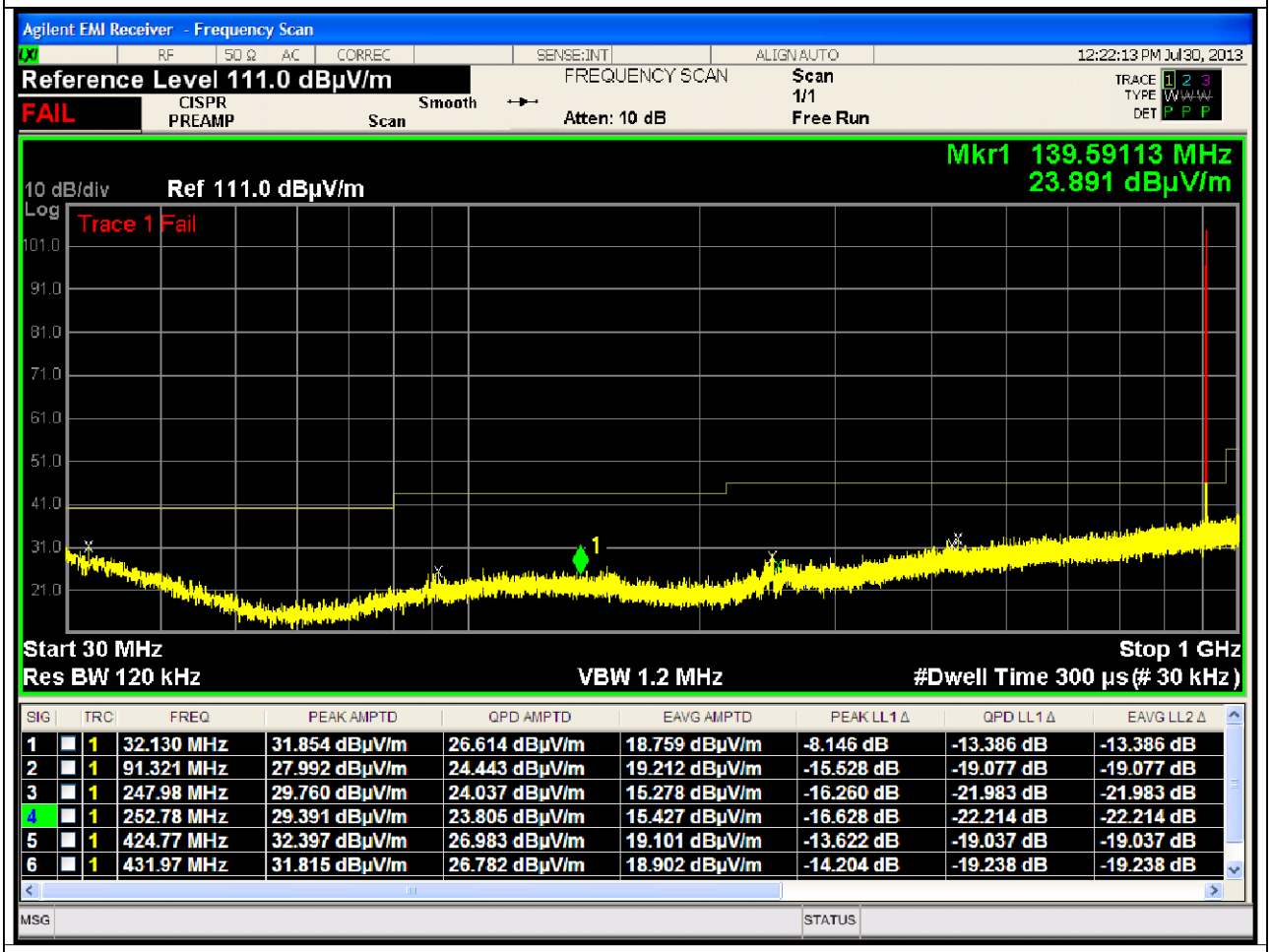


SIG	TRC	FREQ	PEAK AMPTD	QPD AMPTD	EAVG AMPTD	PEAK LL1 Δ	QPD LL1 Δ	EAVG LL2 Δ
1	1	88.801 MHz	33.923 dBµV/m	31.563 dBµV/m	28.887 dBµV/m	-9.596 dB	-11.957 dB	-11.957 dB
2	1	90.781 MHz	31.584 dBµV/m	29.087 dBµV/m	25.563 dBµV/m	-11.936 dB	-14.433 dB	-14.433 dB
3	1	146.52 MHz	38.066 dBµV/m	31.808 dBµV/m	20.994 dBµV/m	-5.453 dB	-11.712 dB	-11.712 dB
4	1	147.48 MHz	40.678 dBµV/m	35.866 dBµV/m	25.591 dBµV/m	-2.841 dB	-7.653 dB	-7.653 dB
5	1	151.38 MHz	40.260 dBµV/m	35.183 dBµV/m	25.735 dBµV/m	-3.260 dB	-8.337 dB	-8.337 dB
6	1	156.06 MHz	34.577 dBµV/m	28.503 dBµV/m	18.963 dBµV/m	-8.943 dB	-15.017 dB	-15.017 dB

Fig. 4.1

Record of the measurement of radiated emissions (PK)
Maximum disturbance determined in the frequency range 30 – 1000 MHz, Pol. V.

Job Number	FCC-13200
Test Name	Radiated Emissions
EUT Name	CAEN RFID s.r.l. - A528B



SIG	TRC	FREQ	PEAK AMPTD	QPD AMPTD	EAVG AMPTD	PEAK LL1 Δ	QPD LL1 Δ	EAVG LL2 Δ
1	1	32.130 MHz	31.854 dBµV/m	26.614 dBµV/m	18.759 dBµV/m	-8.146 dB	-13.386 dB	-13.386 dB
2	1	91.321 MHz	27.992 dBµV/m	24.443 dBµV/m	19.212 dBµV/m	-15.528 dB	-19.077 dB	-19.077 dB
3	1	247.98 MHz	29.760 dBµV/m	24.037 dBµV/m	15.278 dBµV/m	-16.260 dB	-21.983 dB	-21.983 dB
4	1	252.78 MHz	29.391 dBµV/m	23.805 dBµV/m	15.427 dBµV/m	-16.628 dB	-22.214 dB	-22.214 dB
5	1	424.77 MHz	32.397 dBµV/m	26.983 dBµV/m	19.101 dBµV/m	-13.622 dB	-19.037 dB	-19.037 dB
6	1	431.97 MHz	31.815 dBµV/m	26.782 dBµV/m	18.902 dBµV/m	-14.204 dB	-19.238 dB	-19.238 dB

Fig. 4.2

Record of the measurement of radiated emissions (PK)
Maximum disturbance determined in the frequency range 30 – 1000 MHz, Pol. H.

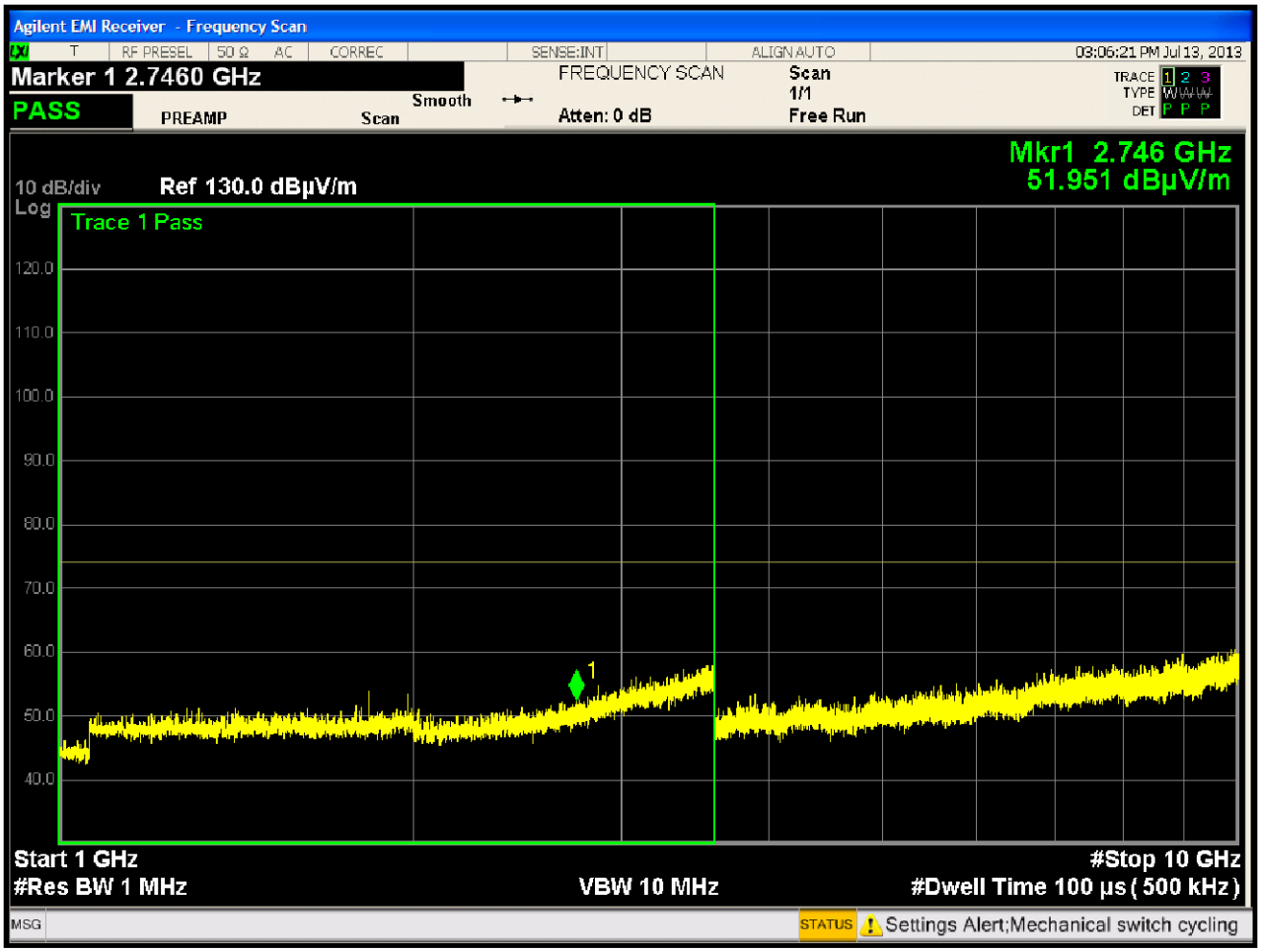


Fig. 4.3

Record of the measurement of radiated emissions (PK)
Maximum disturbance determined in the frequency range 1 – 10 GHz, Pol. H.

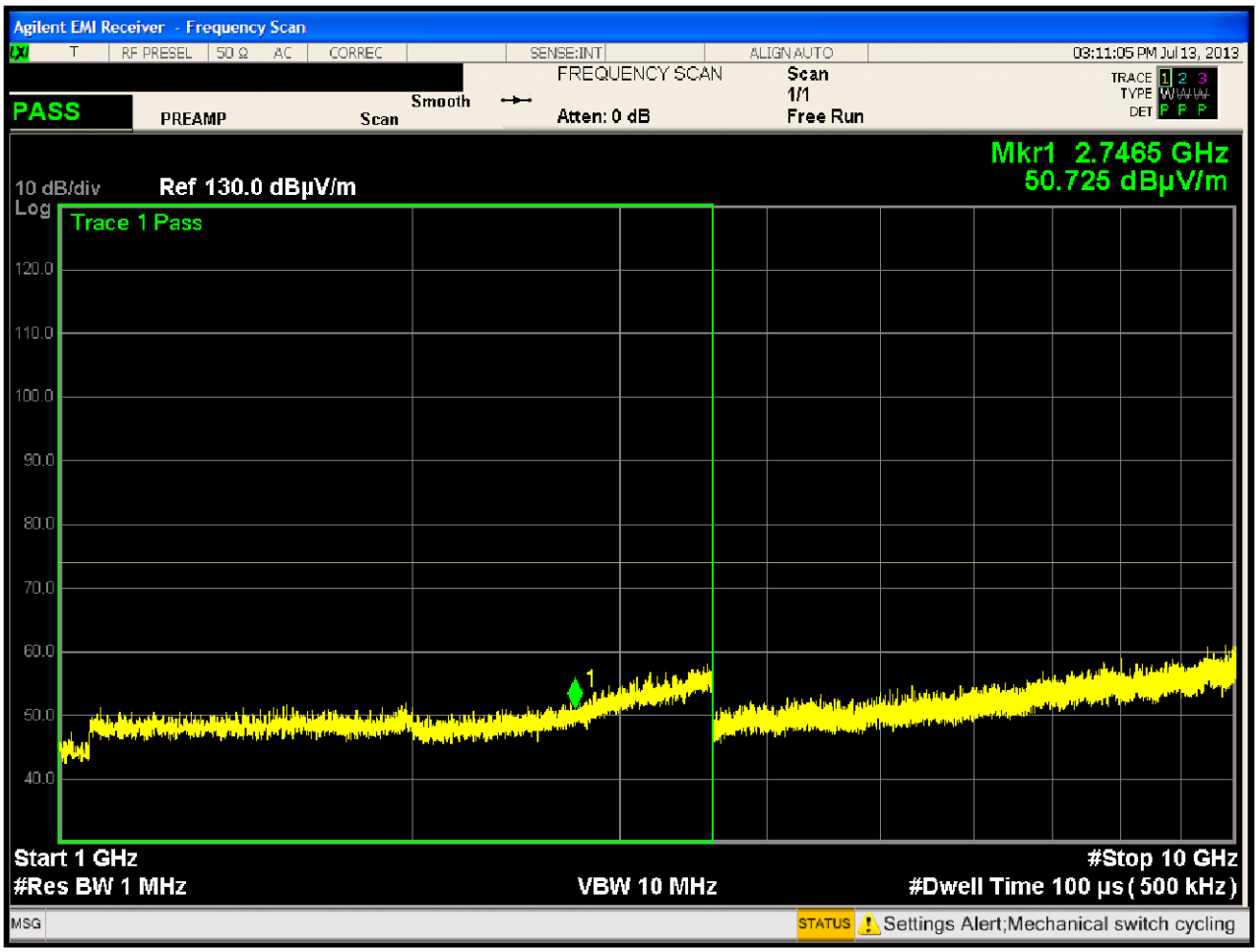


Fig. 4.4

Record of the measurement of radiated emissions (PK)
Maximum disturbance determined in the frequency range 1 – 10 GHz, Pol. V.

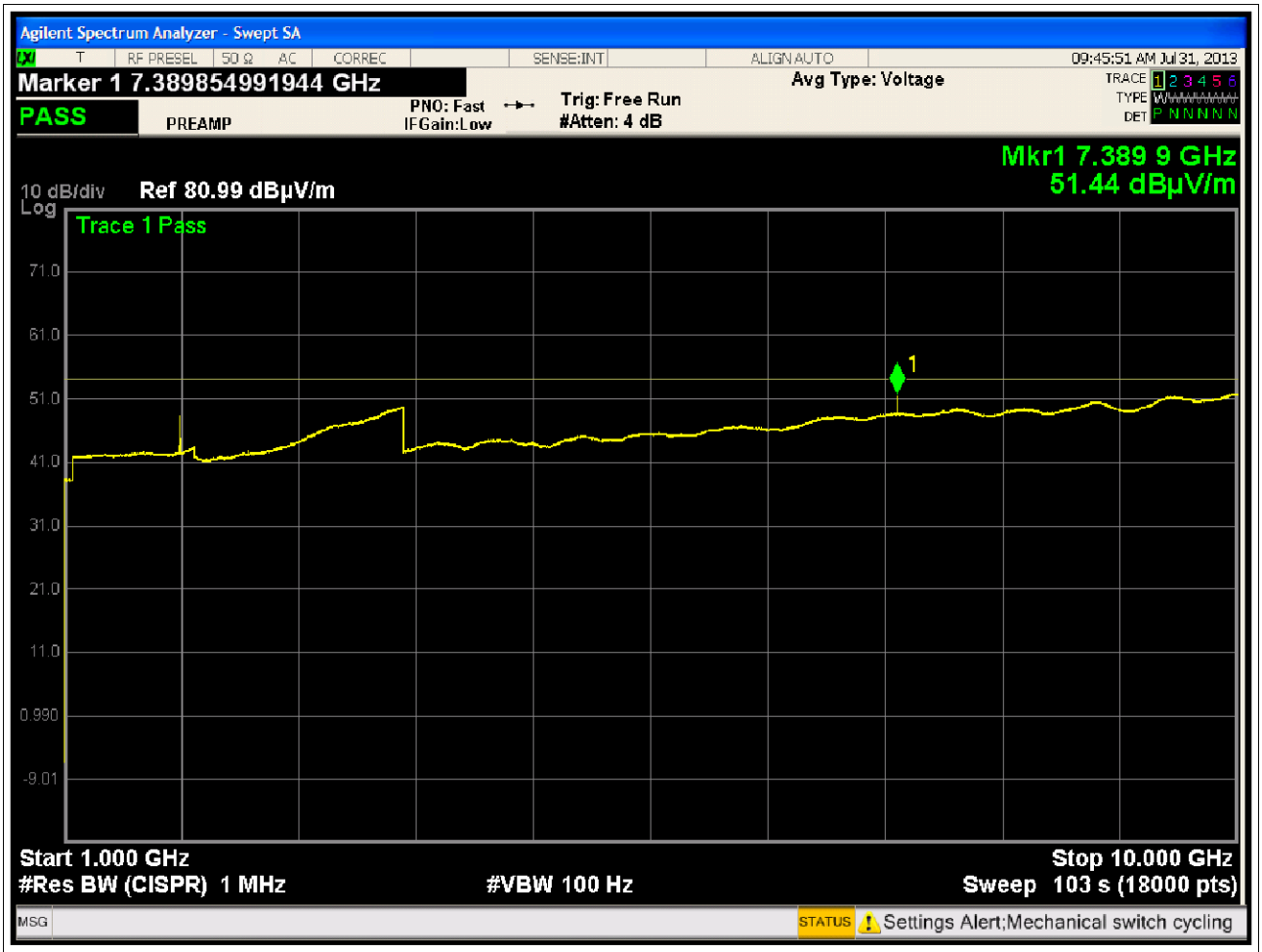


Fig. 4.5

Record of the measurement of radiated emissions (AVG)
Maximum disturbance determined in the frequency range 1 – 10 GHz, Pol. V.

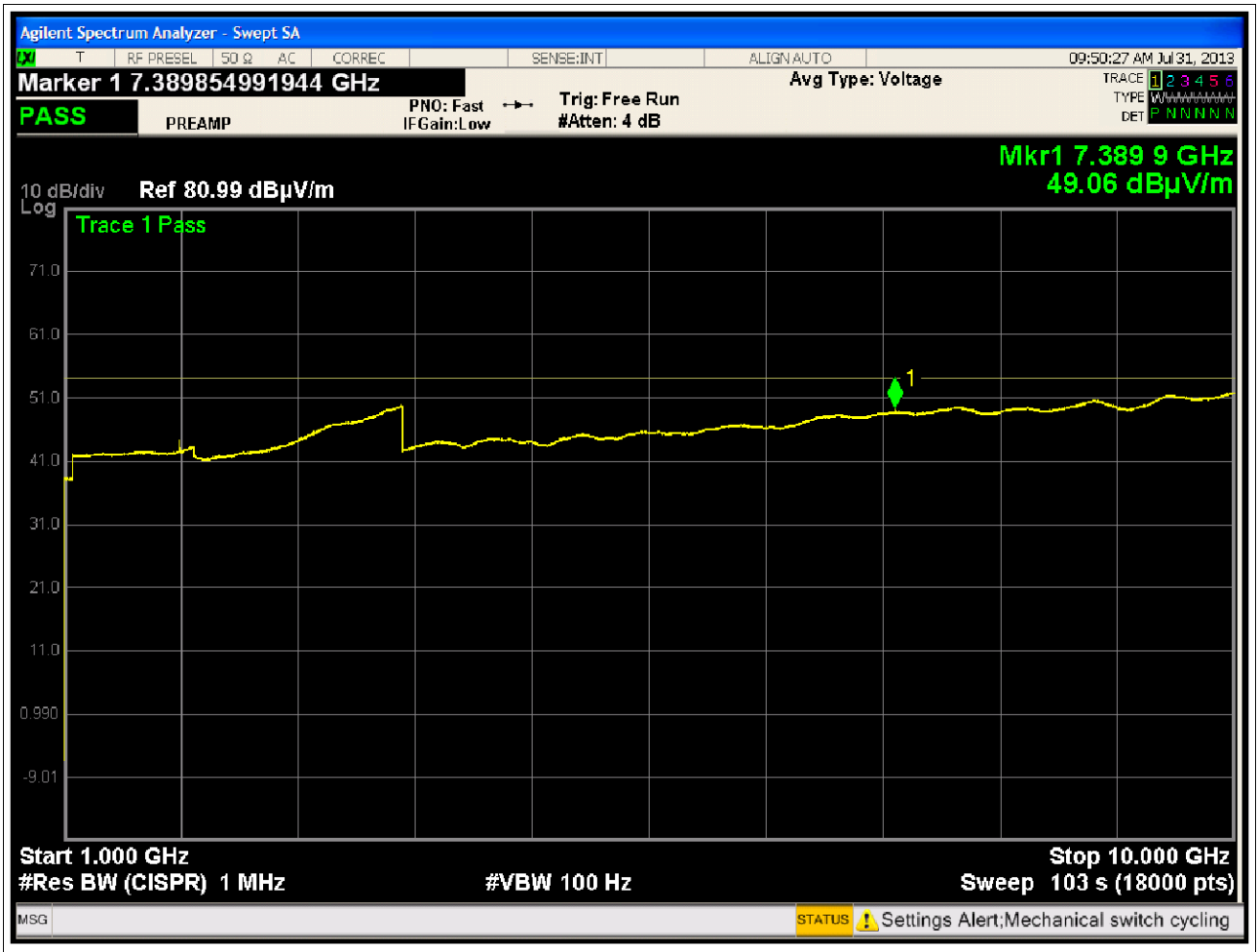


Fig. 4.6

Record of the measurement of radiated emissions (AVG)
Maximum disturbance determined in the frequency range 1 – 10 GHz, Pol. V.

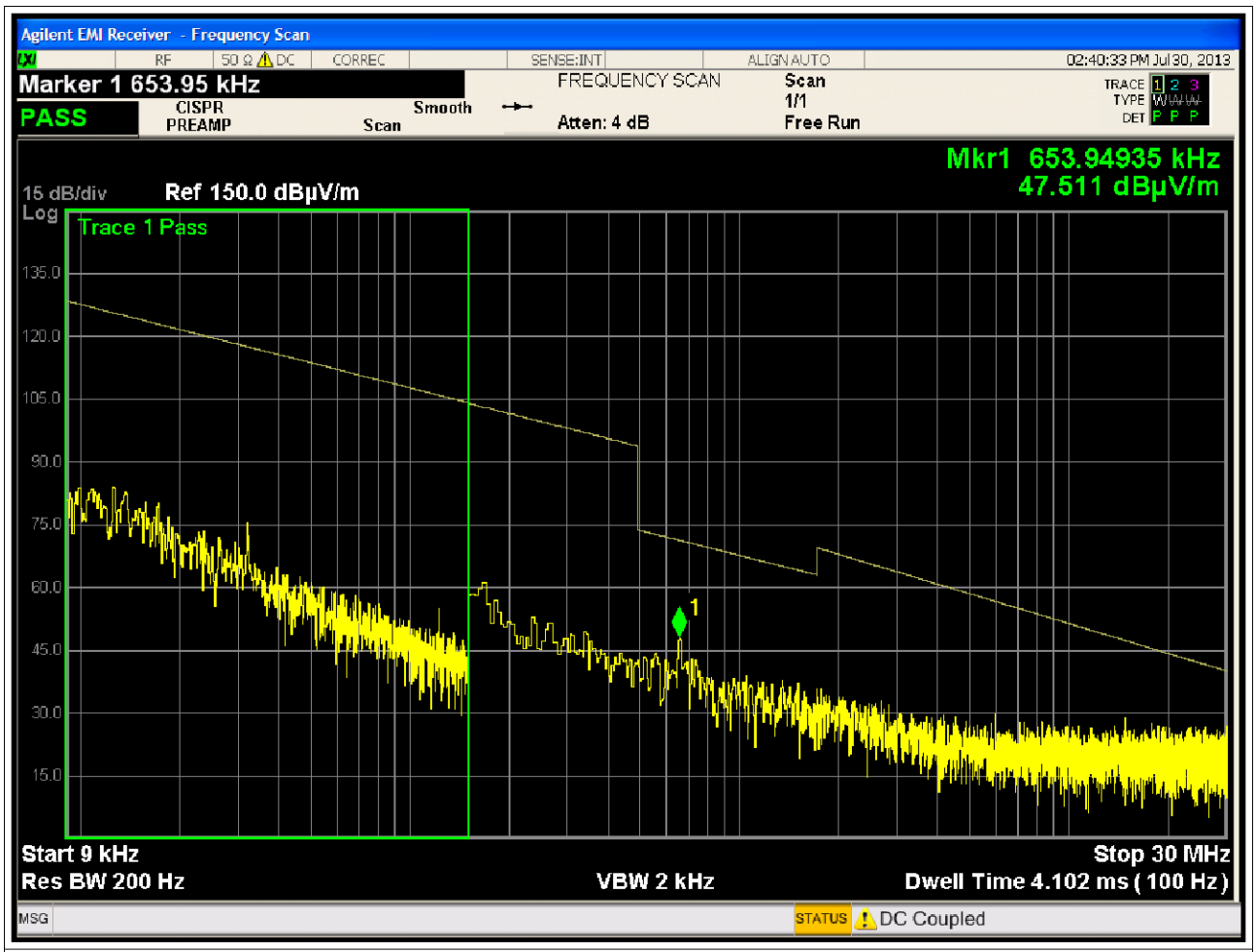


FIG. 4.7
LOOP ANTENNA PARALLEL

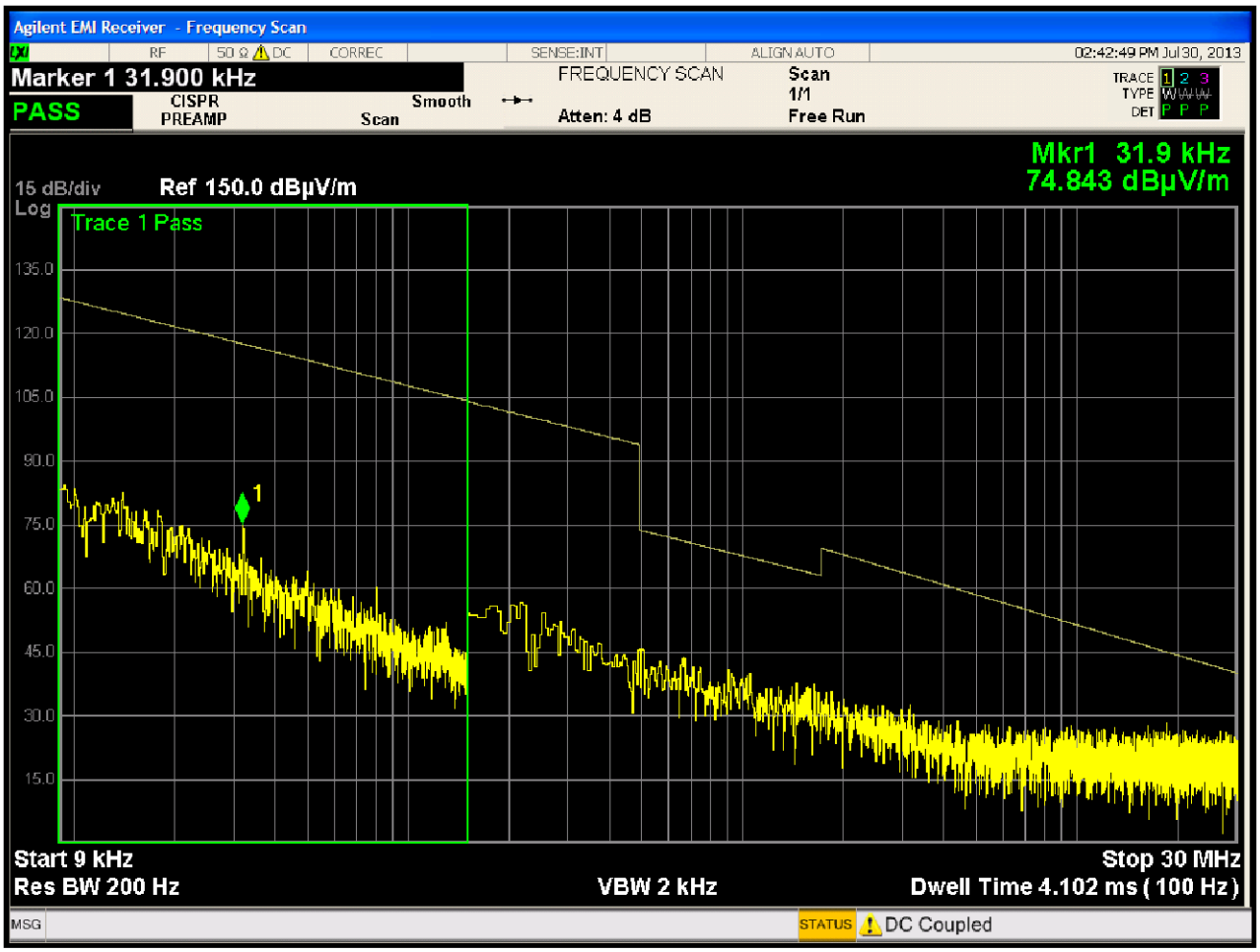


FIG. 4.8
LOOP ANTENNA ORTHOGONAL

5. PHOTO

Fig. 5.1

Radiated Emissions Test Set-up

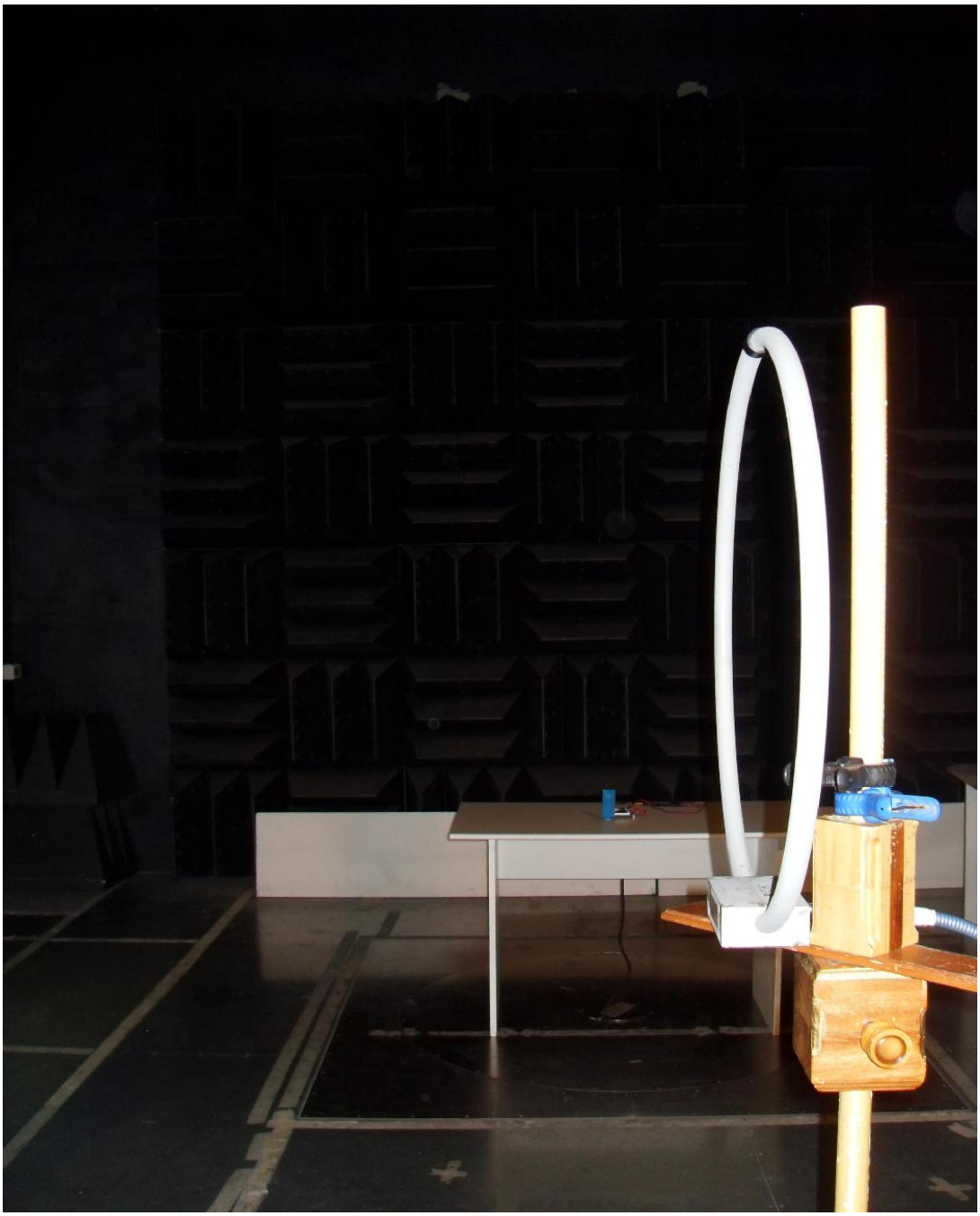


Fig. 5.2

Radiated Emissions Test Set-up

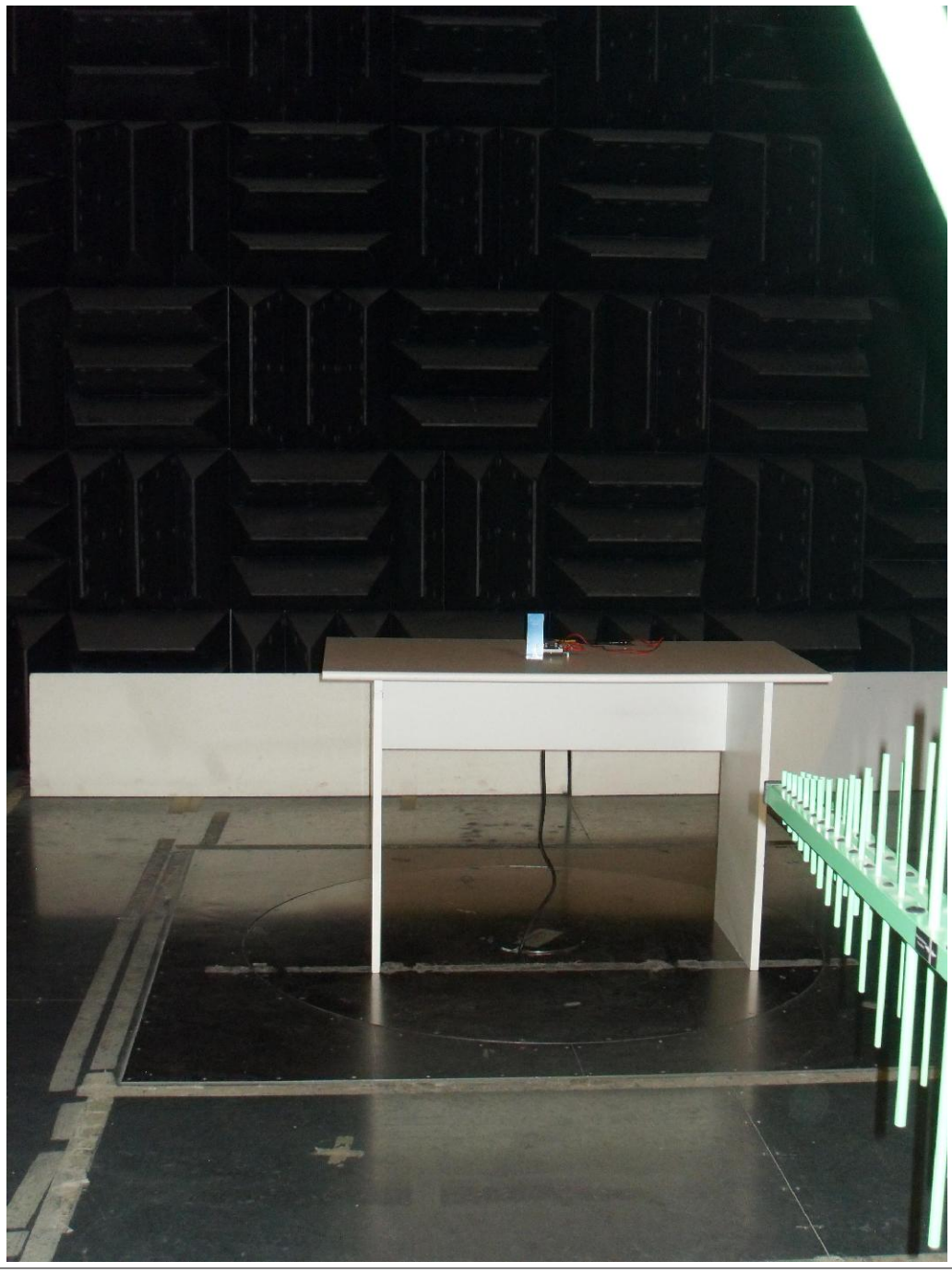


Fig. 5.3

Radiated Emissions Test Set-up