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G.S.D. Srl PISA - Italy	***Test Report n. FCC-13225***	Rev. 01

Applicant / Mailing	**CUSTOM ENGINEERING SPA** Via Berettine,2 43010 Fontevivo, Parma Italy
EUT - Test Item Name	**MY**
FCC Rules	Rule Part 15, Subpart B - Unintentional Radiators Class B Limits
Testing Laboratory	**G.S.D. S.r.l.** Via Marmiceto, 8 - 56121 Ospedaletto Pisa (PI) Italy
FCC listed	**Id nr. 424037**
Location and Date of Issue	Pisa, 2013 November 13

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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]	
Applicant	**CUSTOM ENGINEERING SPA** Via Berettine,2 43010 Fontevivo, Parma Italy
Mailing	**CUSTOM ENGINEERING SPA** Via Berettine,2 43010 Fontevivo, Parma Italy
EUT Category	**Unintentional Radiator**
EUT - Test Item Name	**MY**
Date of reception	**2013 June 08**
Date of test	**2013 June 08**
Sampling	**Laboratory sample for certification**
Test Item Description	**Laser Printer**
Nominal Output Voltage	**DC 5V**

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

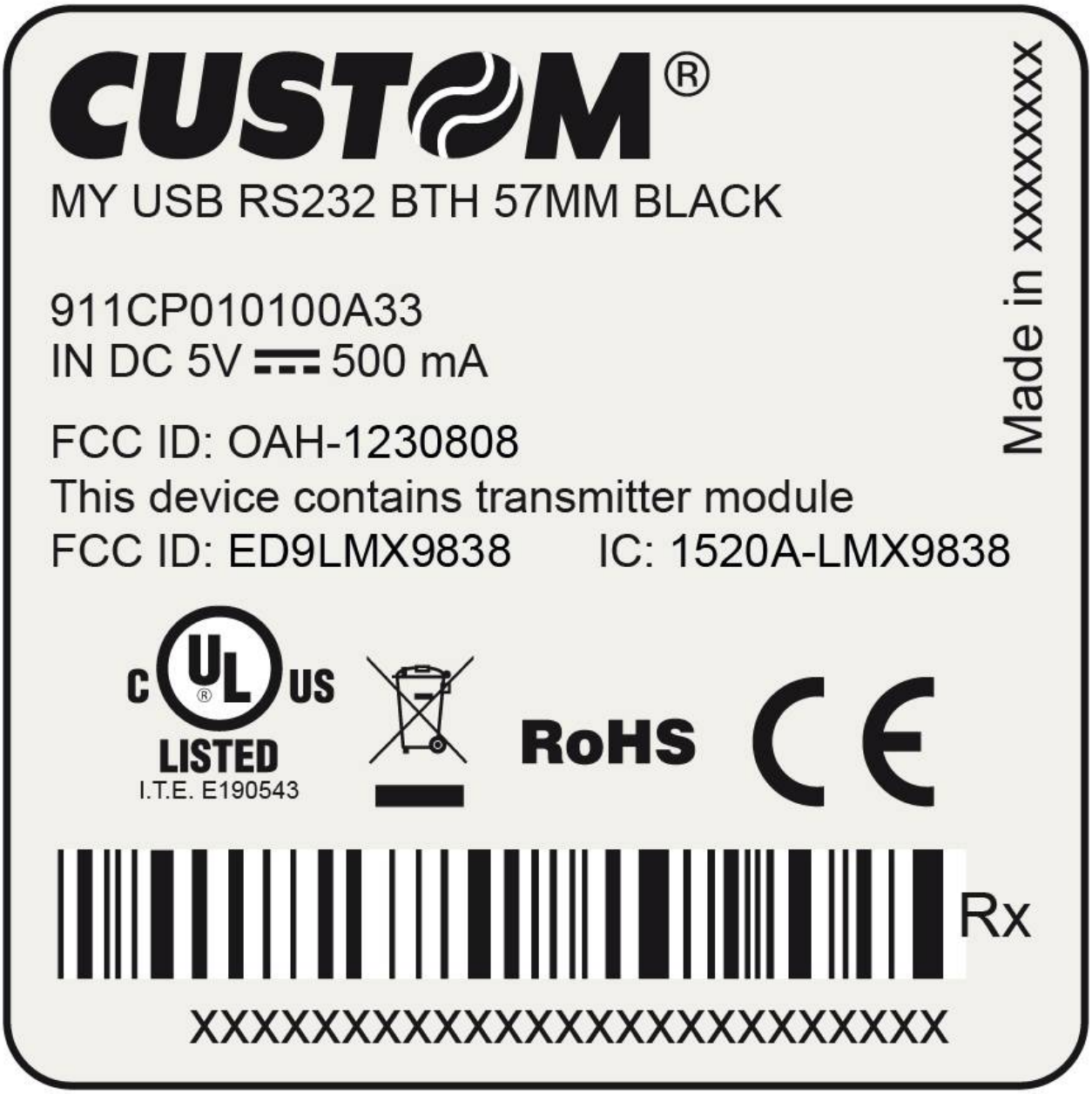


Fig. 1.1
Equipment Label

Fig. 1.2
Equipment under Test

2. REFERENCE STANDARDS

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

TEST	***STANDARD***
Emissions: Radiated – Section 15.109	FCC Rules ad Regulations, Title 47 Part 15 – Sub part B ANSI C63.4 – 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
Emissions: Conducted – Section 15.107	FCC Rules ad Regulations, Title 47 (2008) Part 15 – Sub part B ANSI C63.4 – 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. TEST GENERALITY

Sub-part 2.1033(b)

Test And Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2 and the following individual Parts: 15.109; Unintentional Radiators

Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:
In accordance with ANSI C63.4-2009, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.
Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures.
All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.
Measurement results, unless otherwise noted, are worst-case measurements.

Summary of Test Results

TEST	***RESULT***
Emissions: radiated *Section 15.109*	*Pass*
Emissions: conducted *Section 15.107*	*Pass*

Measurement uncertainty

TEST	***EXPANDED UNCERTAINTY***
Conducted Emission – 50Ω/50µH AMN (150 kHz - 30 MHz)	± 3.5 dB
Radiated Emission – (OATS) (30 MHz - 6 GHz)	± 4.7 dB

Climatic Conditions

PARAMETER	***VALUE***
Temperature	(293 ± 3) K
Relative humidity	(50 ± 5) %

Extensions

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

Clock Frequencies:

Max Frequency: 48 MHz
Min Frequency: 100 kHz

4. CONDUCTED EMISSIONS.

Equipment shall meet the limits below when using a CISPR16 quasi-peak and average detector receivers.

FREQUENCY RANGE (MHz)	*QUASI-PEAK LIMIT* [dB(μV)]	*AVERAGE LIMIT* [dB(μV)]
0.15 - 0.50	66÷56	56÷46
0.50 - 5	56	46
5 - 30	60	50

(*) Decreases with the logarithm of the frequency

Test Equipment

EQUIPMENT	MANUFACTURER	MODEL	CAL. DUE
EMI Receiver	HP	8546A	01/2014
Transient Limiter	HP	11947A	01/2014
LISN	GSD	LSN001	01/2014

Test procedure: CE22R01

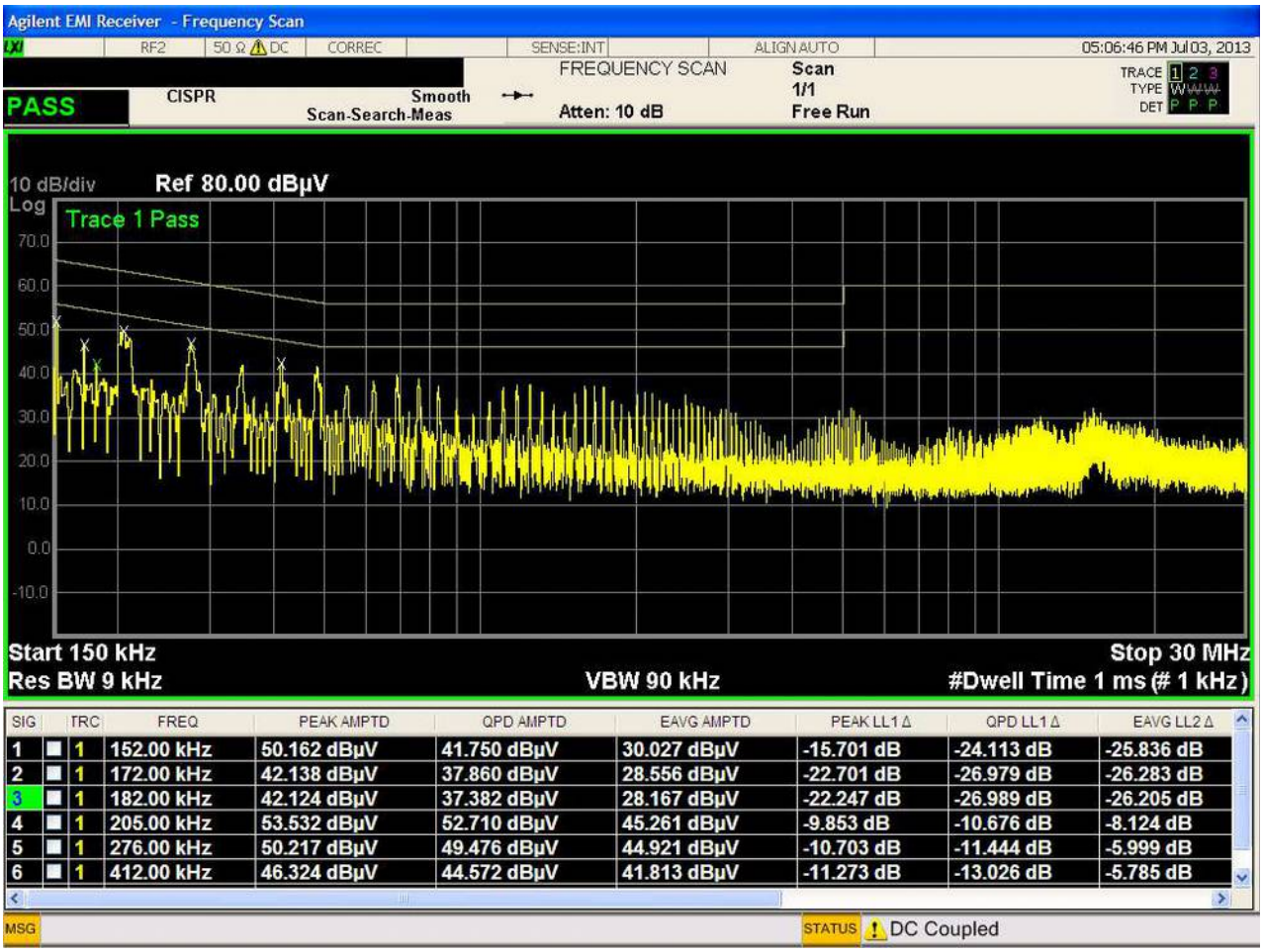
Test method

Test method was in accordance with the reference standard.

EUT modes of operations were tested in order to achieve the maximum level of emission.

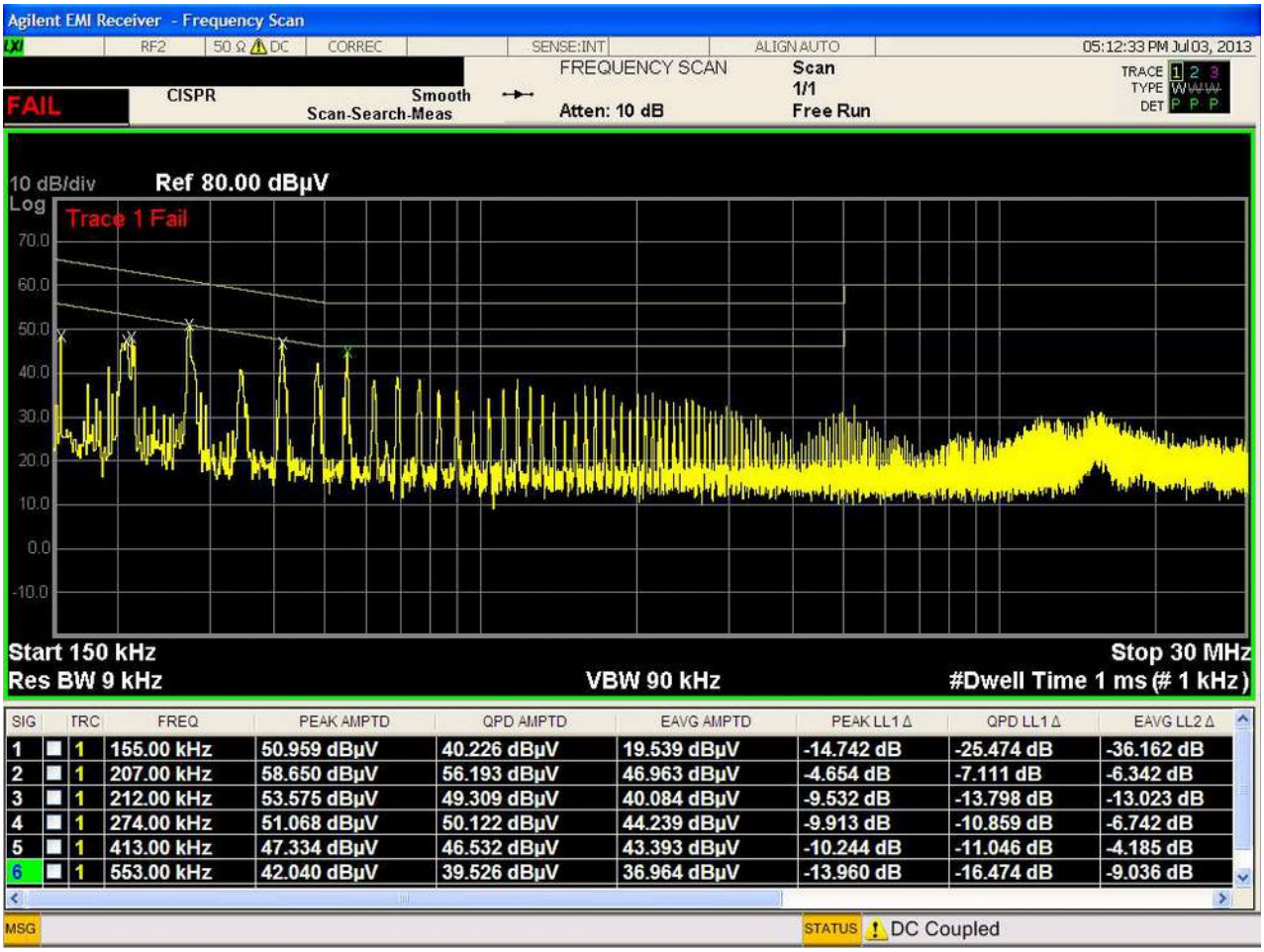
Results

Graphics in following figures show some registrations of the frequency spectrum of the conducted emissions.



SIG	TRC	FREQ	PEAK AMPTD	QPD AMPTD	EAVG AMPTD	PEAK LL1 Δ	QPD LL1 Δ	EAVG LL2 Δ
1	1	152.00 kHz	50.162 dBµV	41.750 dBµV	30.027 dBµV	-15.701 dB	-24.113 dB	-25.836 dB
2	1	172.00 kHz	42.138 dBµV	37.860 dBµV	28.556 dBµV	-22.701 dB	-26.979 dB	-26.283 dB
3	1	182.00 kHz	42.124 dBµV	37.382 dBµV	28.167 dBµV	-22.247 dB	-26.989 dB	-26.205 dB
4	1	205.00 kHz	53.532 dBµV	52.710 dBµV	45.261 dBµV	-9.853 dB	-10.676 dB	-8.124 dB
5	1	276.00 kHz	50.217 dBµV	49.476 dBµV	44.921 dBµV	-10.703 dB	-11.444 dB	-5.999 dB
6	1	412.00 kHz	46.324 dBµV	44.572 dBµV	41.813 dBµV	-11.273 dB	-13.026 dB	-5.785 dB

Phase 1



SIG	TRC	FREQ	PEAK AMPTD	QPD AMPTD	EAVG AMPTD	PEAK LL1 Δ	QPD LL1 Δ	EAVG LL2 Δ
1	1	155.00 kHz	50.959 dBµV	40.226 dBµV	19.539 dBµV	-14.742 dB	-25.474 dB	-36.162 dB
2	1	207.00 kHz	58.650 dBµV	56.193 dBµV	46.963 dBµV	-4.654 dB	-7.111 dB	-6.342 dB
3	1	212.00 kHz	53.575 dBµV	49.309 dBµV	40.084 dBµV	-9.532 dB	-13.798 dB	-13.023 dB
4	1	274.00 kHz	51.068 dBµV	50.122 dBµV	44.239 dBµV	-9.913 dB	-10.859 dB	-6.742 dB
5	1	413.00 kHz	47.334 dBµV	46.532 dBµV	43.393 dBµV	-10.244 dB	-11.046 dB	-4.185 dB
6	1	553.00 kHz	42.040 dBµV	39.526 dBµV	36.964 dBµV	-13.960 dB	-16.474 dB	-9.036 dB

Phase 2

5. 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
Semianechoic Room	GSD	CSC01	01/2014
Bilog Antenna	Schaffner	CBL6112B	01/2014
LISN	GSD	LSN01	01/2014

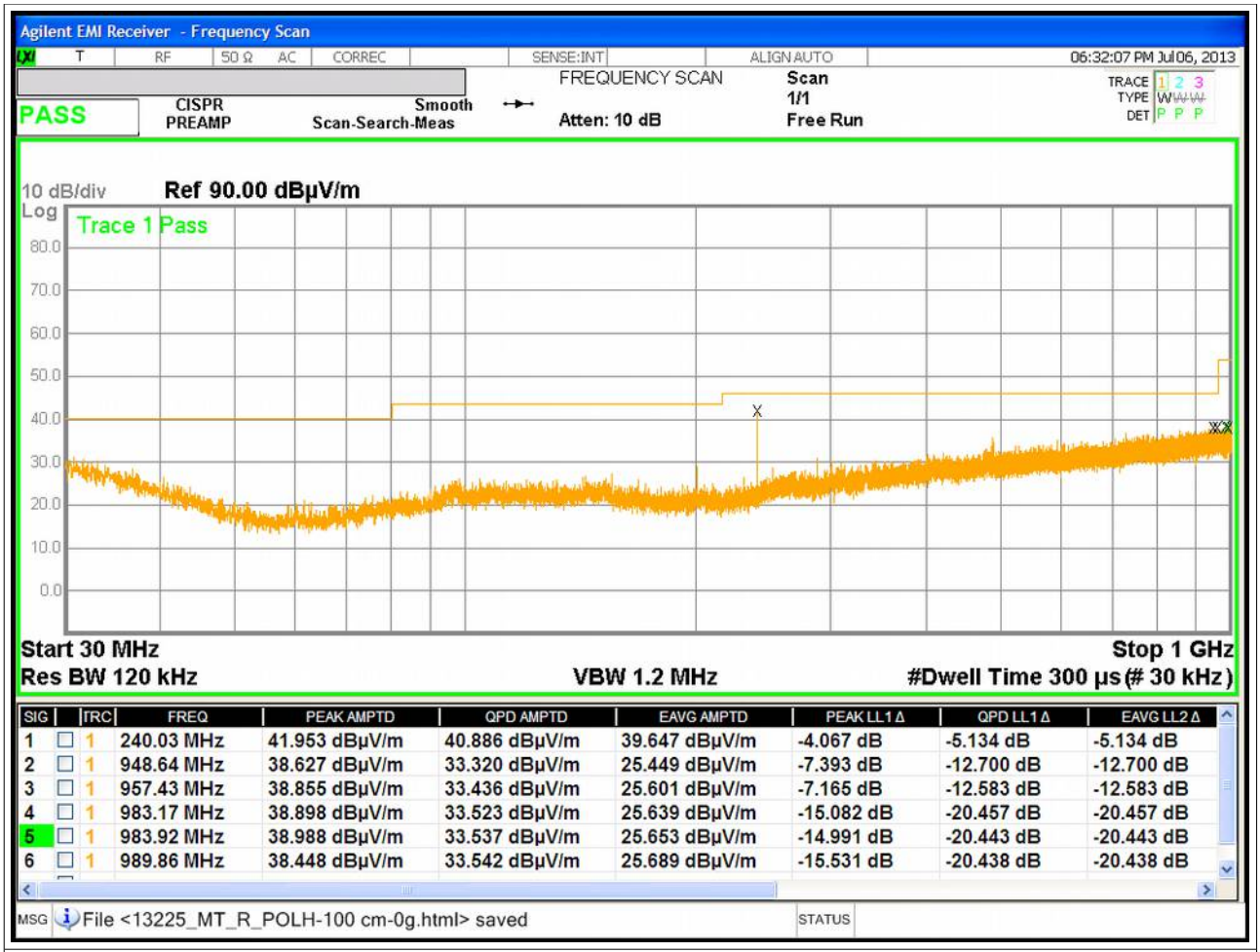
Test procedure: RE22R02

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 polarization is indicated by POL=H.
Antenna vertical polarization is indicated by POL=V.

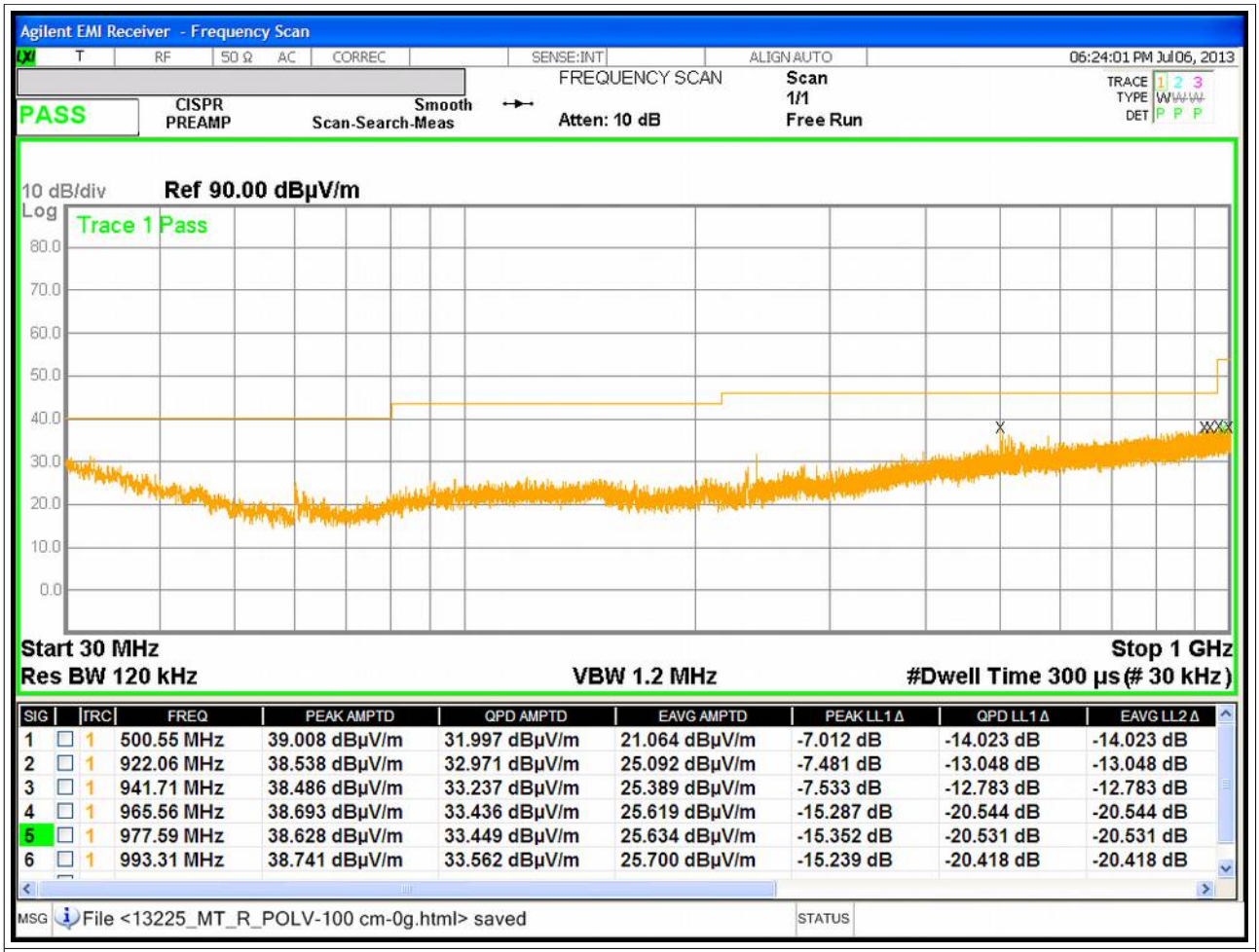
Results and conclusions

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



SIG	TRC	FREQ	PEAK AMPTD	QPD AMPTD	EAVG AMPTD	PEAK LL1 Δ	QPD LL1 Δ	EAVG LL2 Δ
1	1	240.03 MHz	41.953 dBµV/m	40.886 dBµV/m	39.647 dBµV/m	-4.067 dB	-5.134 dB	-5.134 dB
2	1	948.64 MHz	38.627 dBµV/m	33.320 dBµV/m	25.449 dBµV/m	-7.393 dB	-12.700 dB	-12.700 dB
3	1	957.43 MHz	38.855 dBµV/m	33.436 dBµV/m	25.601 dBµV/m	-7.165 dB	-12.583 dB	-12.583 dB
4	1	983.17 MHz	38.898 dBµV/m	33.523 dBµV/m	25.639 dBµV/m	-15.082 dB	-20.457 dB	-20.457 dB
5	1	983.92 MHz	38.988 dBµV/m	33.537 dBµV/m	25.653 dBµV/m	-14.991 dB	-20.443 dB	-20.443 dB
6	1	989.86 MHz	38.448 dBµV/m	33.542 dBµV/m	25.689 dBµV/m	-15.531 dB	-20.438 dB	-20.438 dB

Horizontal Polarization



Vertical Polarization

6. PHOTO

Fig. 6.1

Equipment Under Test: Conducted Emissions Test Set-up

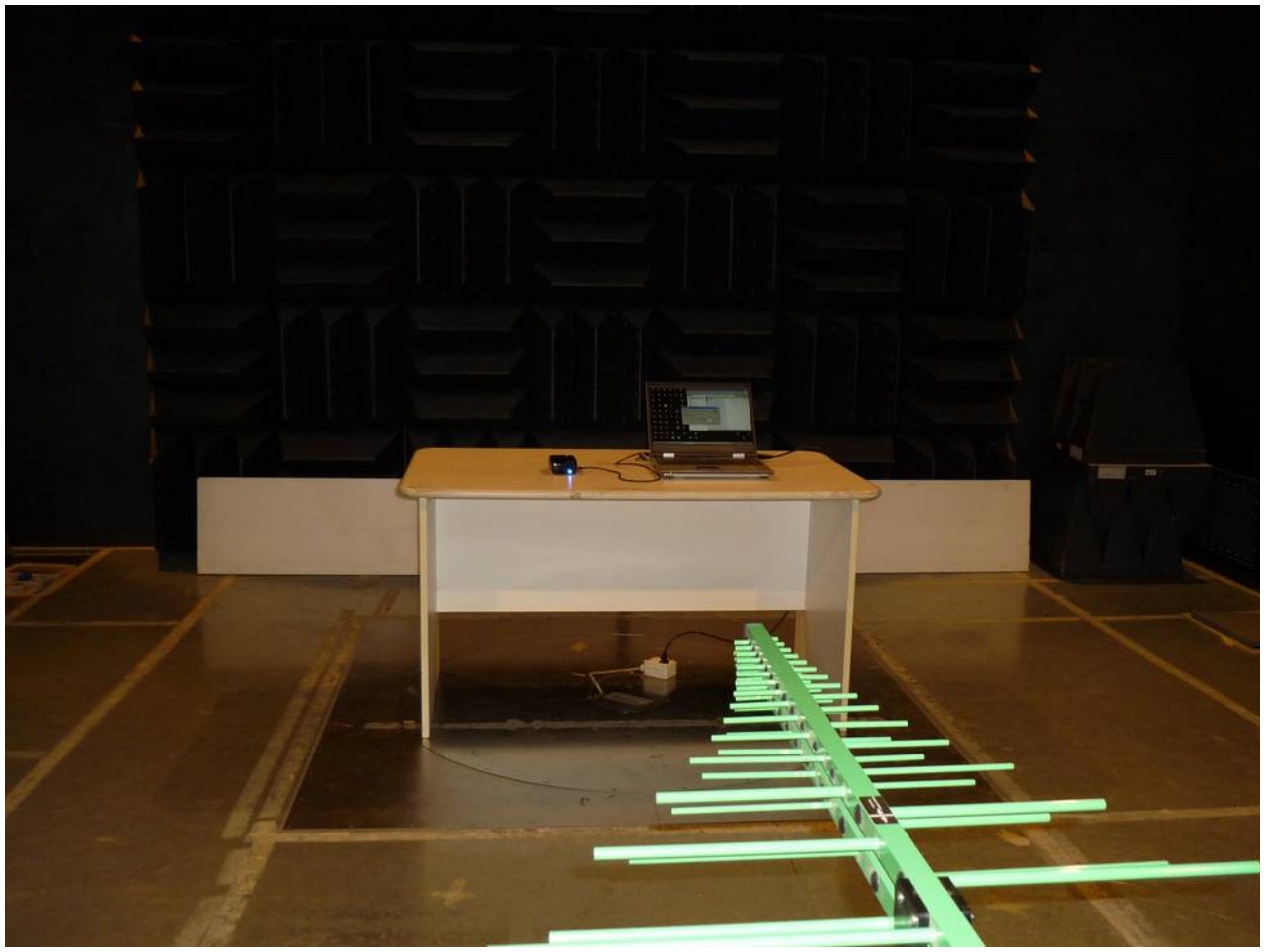


Fig. 6.1

Equipment Under Test: Radiated Emissions Test Set-up