


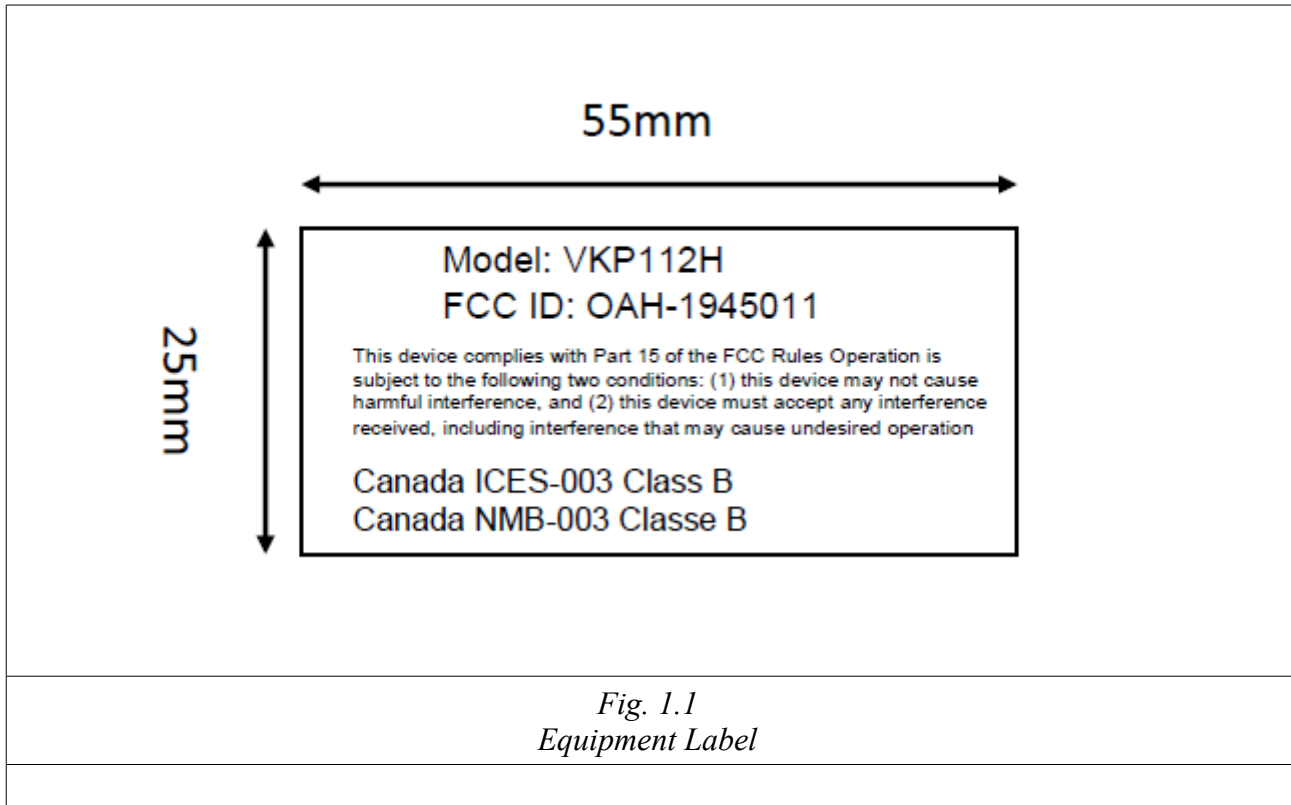
		Organizzazione con Sistema di Gestione certificato Company with Management System certified ISO 9001:2008 	
<b>G.S.D. Srl</b> <b>PISA - Italy</b>		<b>Test Report n. FCC-12992</b>		Rev. 01			
<b>Applicant / Mailing</b>		<b>CUSTOM ENGINEERING SPA</b> Via Berettine,2 43010 Fontevivo, Parma Italy					
<b>EUT - Test Item Name</b>		<b>VKP112H</b>					
<b>FCC Rules</b>		Rule Part 15, Subpart B - Unintentional Radiators Class B Limits					
<b>Testing Laboratory</b>		<b>G.S.D. S.r.l.</b> Via Marmiceto, 8 - 56121 Ospedaletto Pisa (PI) Italy					
<b>FCC listed</b>		<b>Id nr. 424037</b>					
<b>Location and Date of Issue</b>		Pisa, 2012 August 10					
<p><b>G.S.D. s.r.l.</b>          Via Marmiceto, 8          56121 OSPEDALETTO - PISA          Tel. 050.984254 - Fax 050.984262          P. IVA 01343950505</p>							
SENIOR EMC TEST MANAGER <i>Dr. Gian Luca Genovesi</i> 				QUALITY MANAGER <i>Dr. David Pelliccia</i> 			

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<b>1. MANUFACTURER AND EUT IDENTIFICATION<sup>1</sup></b>	
<b>Applicant</b>	<b>CUSTOM ENGINEERING SPA</b> Via Berettine,2 43010 Fontevivo, Parma Italy
<b>Mailing</b>	<b>CUSTOM ENGINEERING SPA</b> Via Berettine,2 43010 Fontevivo, Parma Italy
<b>EUT Category</b>	<b>Unintentional Radiator</b>
<b>EUT - Test Item Name</b>	<b>VKP112H</b>
<b>Date of reception</b>	<b>2012 April 16</b>
<b>Date of test</b>	<b>2012 April 16</b>
<b>Sampling</b>	<b>Laboratory sample for certification</b>
<b>Test Item Description</b>	<b>Laser Printer</b>
<b>Nominal Output Voltage</b>	<b>230 Vac</b>
<b>Clock Frequencies</b>	Quartz:12MHz RTCK:32.768KHz CPU:237MHz BUS:118.5MHz Peripheral: 59.25MHz Thermal head:14.8125MHz

<sup>1</sup>A detailed documentation is preserved in the internal fascicle.





*Fig. 1.2  
Equipment Label Location*



Fig. 1.3  
Equipment Power Supply

<b>2. REFERENCE STANDARDS</b>	
Tests and measurements are performed accordingly to the reference standards given in the table below:	
<i>TEST</i>	<i>STANDARD</i>
Emissions: Radiated – Section 15.109	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
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

<b>3. TEST GENERALITY</b>
<b>Sub-part 2.1033(b)</b>
<b>Test And Measurement Data</b>
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
<b>Standard Test Conditions and Engineering Practices</b>
Except as noted herein, the following conditions and procedures were observed during the testing: In accordance with ANSI C63.4-2004, 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.

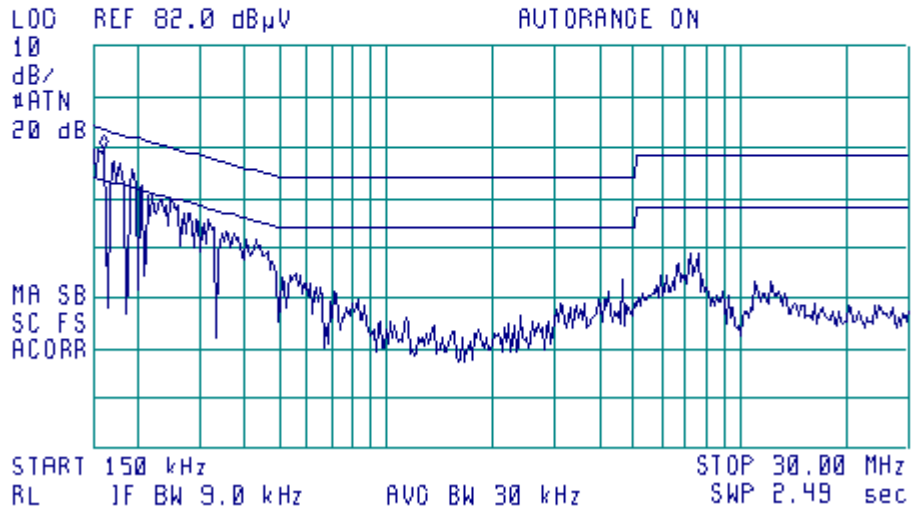


<u>Summary of Test Results</u>	
<i>TEST</i>	<i>RESULT</i>
<i>Emissions: radiated Section 15.109</i>	<i>Pass</i>
<i>Emissions: conducted Section 15.107</i>	<i>Pass</i>
<u>Measurement uncertainty</u>	
<i>TEST</i>	<i>EXPANDED UNCERTAINTY</i>
Conducted Emission – 50Ω/50μH AMN (150 kHz - 30 MHz)	± 3.5 dB
Radiated Emission – (OATS) (30 MHz - 6 GHz)	± 4.7 dB
<u>Climatic Conditions</u>	
<i>PARAMETER</i>	<i>VALUE</i>
Temperature	(293 ± 3) K
Relative humidity	(50 ± 5) %
<u>Extensions</u>	
The results refer only to the sampled EUT and under the specified conditions.	

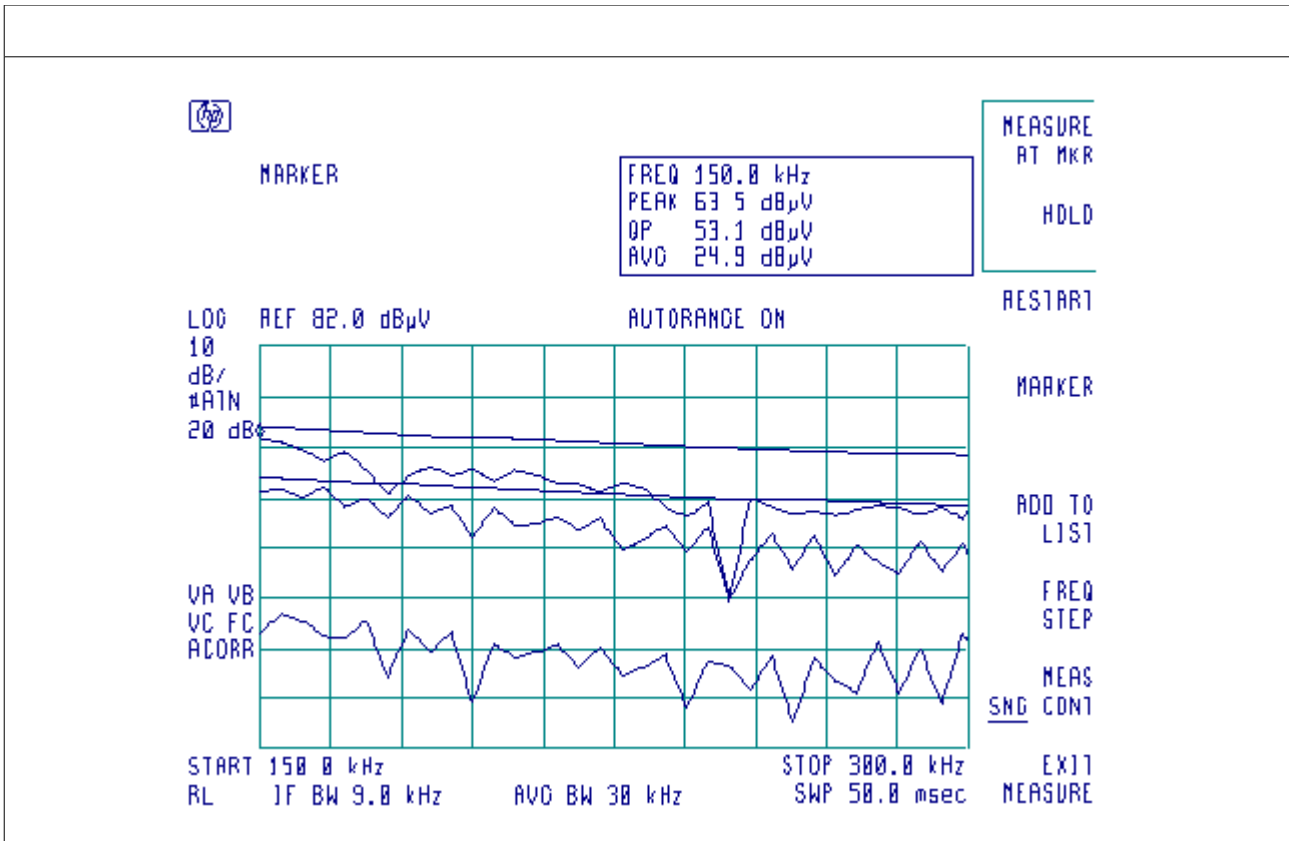
<b>4. CONDUCTED EMISSIONS.</b>			
Equipment shall meet the limits below when using a CISPR16 quasi-peak and average detector receivers.			
<b>FREQUENCY RANGE</b> (MHz)		<b>QUASI-PEAK LIMIT</b> [dB(µV)]	<b>AVERAGE LIMIT</b> [dB(µV)]
0.15 - 0.50		66÷56	56÷46
0.50 - 5		56	46
5 - 30		60	50
(*) Decreases with the logarithm of the frequency			
<u>Test Equipment</u>			
<b>EQUIPMENT</b>	<b>MANUFACTURER</b>	<b>MODEL</b>	<b>CAL. DUE</b>
EMI Receiver	HP	8546A	01/2013
Transient Limiter	HP	11947A	01/2013
LISN	GSD	LSN001	01/2013
<u>Test procedure: CE22R01</u>			
<u>Test method</u>			
Test method was in accordance with the reference standard.			
EUT modes of operations were tested in order to achieve the maximum level of emission.			
<u>Results</u>			
Graphics in following figures show some registrations of the frequency spectrum of the conducted emissions.			



ACTV DET: PEAK  
MEAS DET: PEAK OP AVG  
MKR 160 kHz  
61.75 dB $\mu$ V



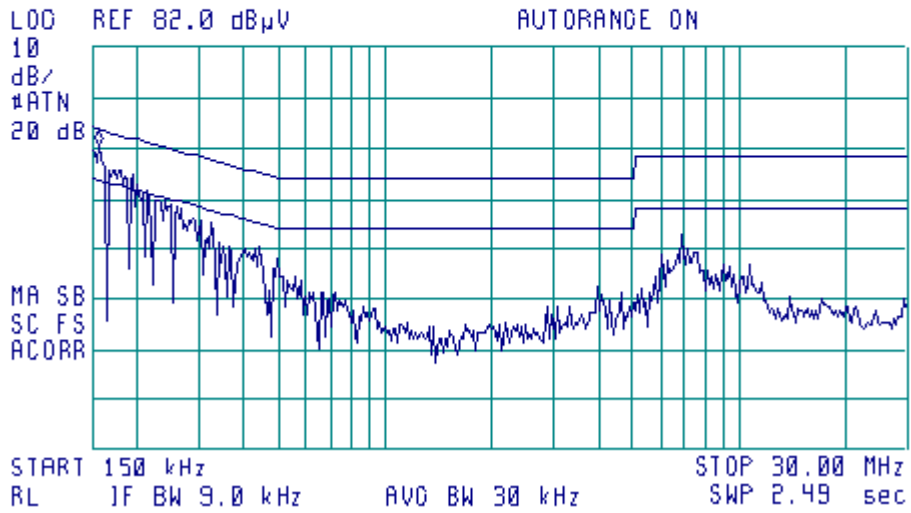
Notes:  
Phase 1  
Printing Mode



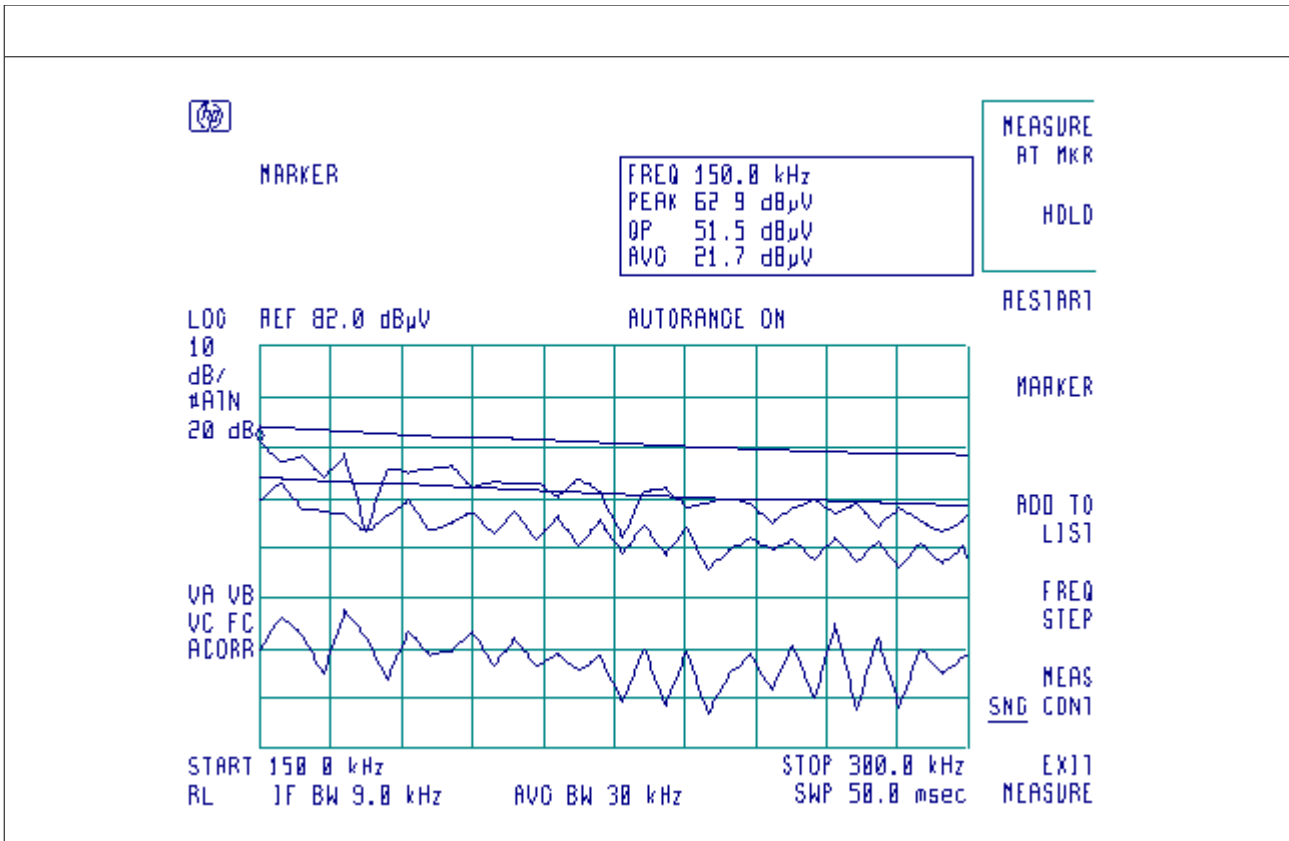
Notes:  
Phase 1  
Printing Mode  
Stepped Measurement 150kHz-300kHz



ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 160 kHz  
62.55 dB $\mu$ V



Notes:  
Phase 2  
Printing Mode

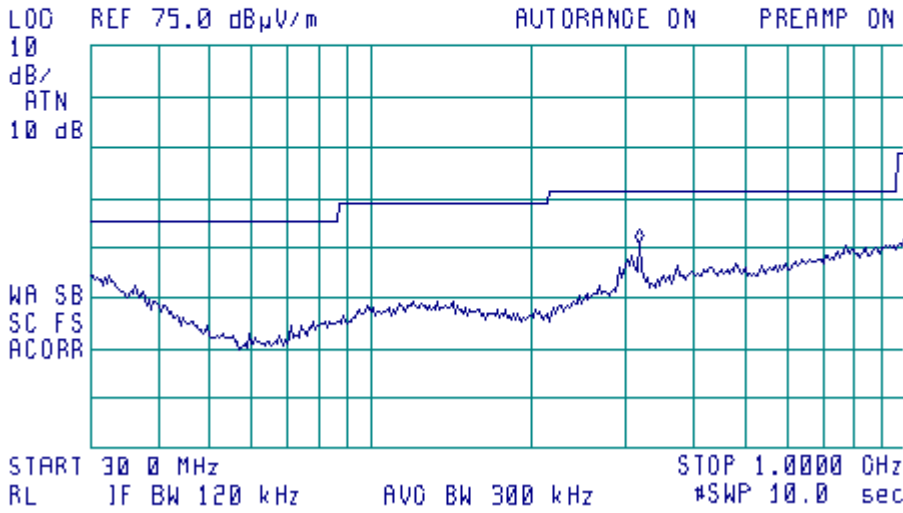


Notes:  
 Fase 2  
 Printing Mode  
 Stepped Measurement 150kHz-300kHz

<b>5. RADIATED EMISSIONS</b>			
In the following table you can find the limits established by the reference standard:			
<b>FREQUENCY RANGE (MHz)</b>	<b>Field Strenght QUASI-PEAK LIMITS [dB (<math>\mu</math>V/m)]</b>		
30 ÷ 88	40		
88 ÷ 216	43,5		
216 ÷ 960	46		
Above 960	54		
<u>Test Equipment</u>			
<b>EQUIPMENT</b>	<b>MANUFACTURER</b>	<b>MODEL</b>	<b>CAL. DUE</b>
EMI Receiver	HP	HP8546A	01/2013
Semianechoic Room	GSD	CSC01	01/2013
Bilog Antenna	Schaffner	CBL6112B	01/2013
LISN	GSD	LSN01	01/2013
<u>Test procedure: RE22R02</u>			
<u>Notes</u>			
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.			
<u>Results and conclusions</u>			
In all the operative conditions, equipment complied with the standard limits. Graphics in following figures show the most significant registrations of the performed measurements.			

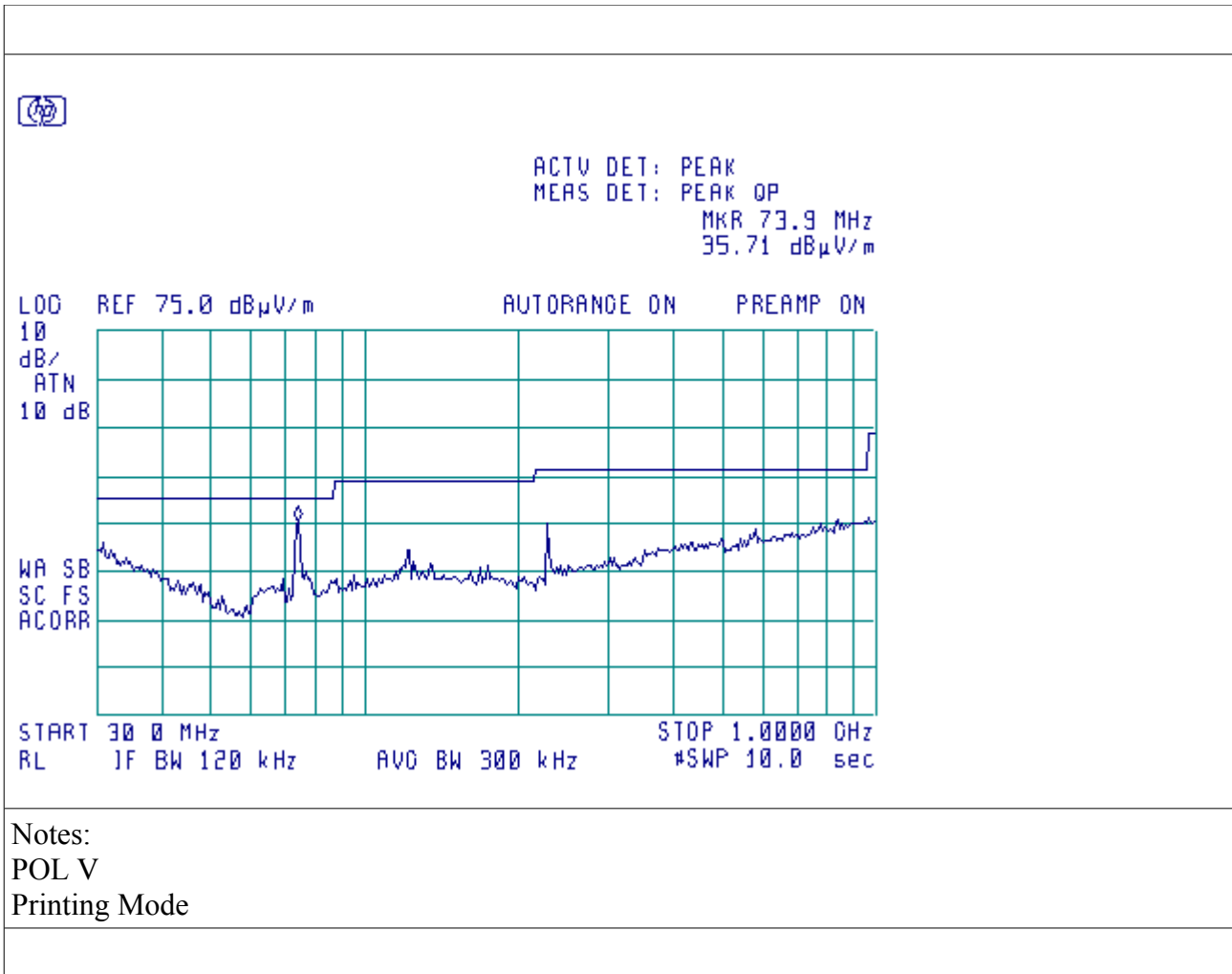


ACTV DET: PEAK  
MEAS DET: PEAK OP  
MKR 316.4 MHz  
35.73 dB $\mu$ V/m



Notes:  
POL H  
Printing Mode







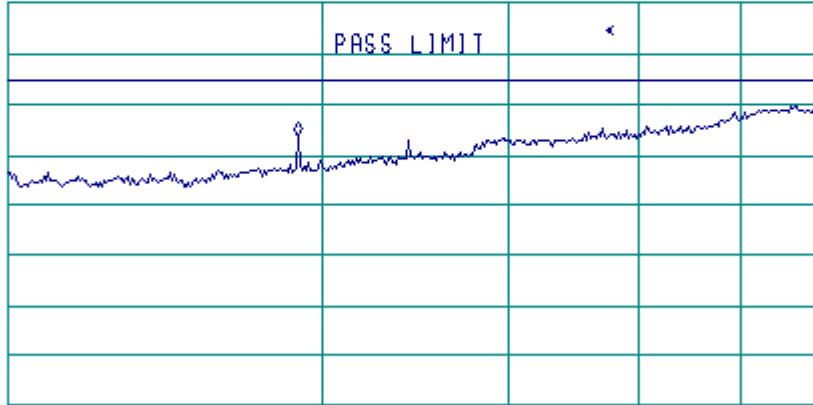
ACTV DET: PEAK  
 MEAS DET: PEAK OP  
 MKR 1.893 GHz  
 43.22 dB $\mu$ V/m  
 EXTAMP 37.5 dB

LOG REF 69.5 dB $\mu$ V/m

AUTORANGE ON

10  
 dB/  
 #ATTN  
 10 dB

WA SB  
 SC FS  
 ACORR



START 1.000 GHz STOP 6.000 GHz  
 RL #1F BW 1.0 MHz #AVG BW 3 MHz #SWP 30.0 sec

Notes:  
 POL V  
 Range 1-6GHz  
 Printing Mode



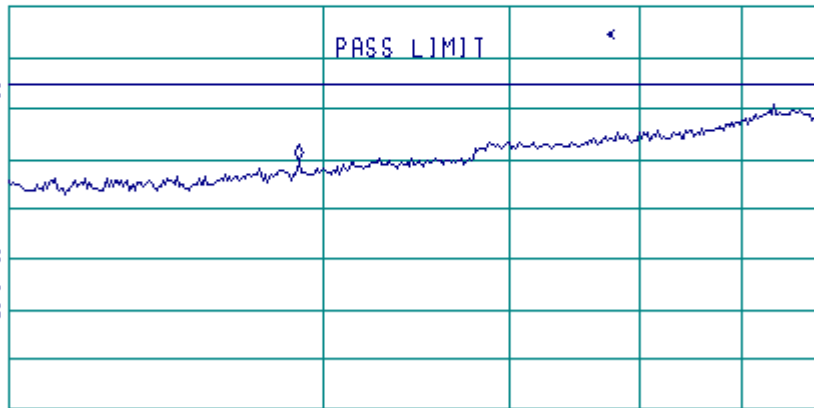
ACTV DET: PEAK  
 MEAS DET: PEAK OP  
 MKR 1.893 GHz  
 39.25 dB $\mu$ V/m  
 EXTAMP 37.5 dB

LOG REF 69.5 dB $\mu$ V/m

AUTORANGE ON

10  
 dB/  
 #RTN  
 10 dB

WA SB  
 SC FS  
 ACORR



START 1.000 GHz

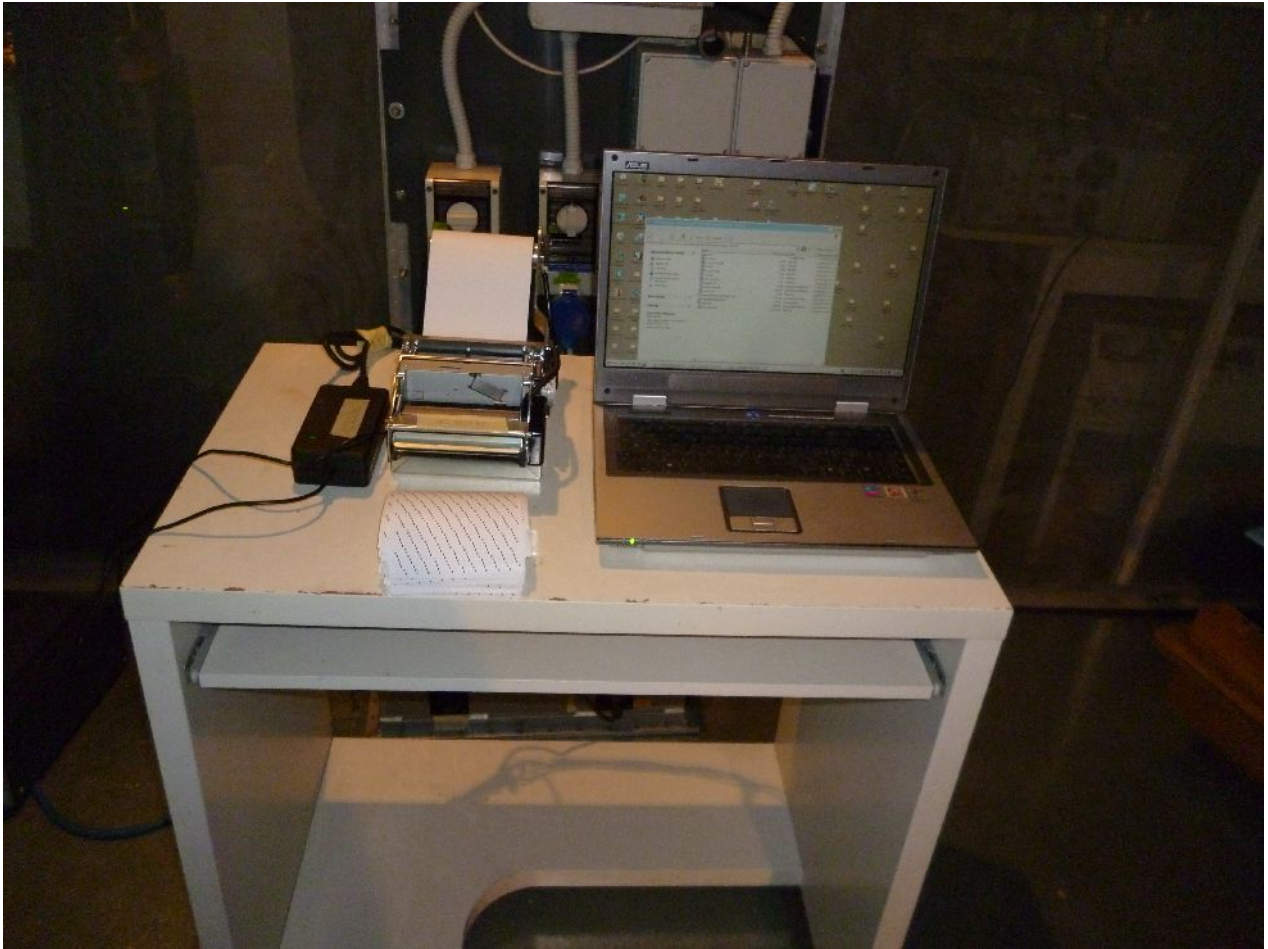
STOP 6.000 GHz

RL #1F BW 1.0 MHz #AVC BW 3 MHz

#SWP 30.0 sec

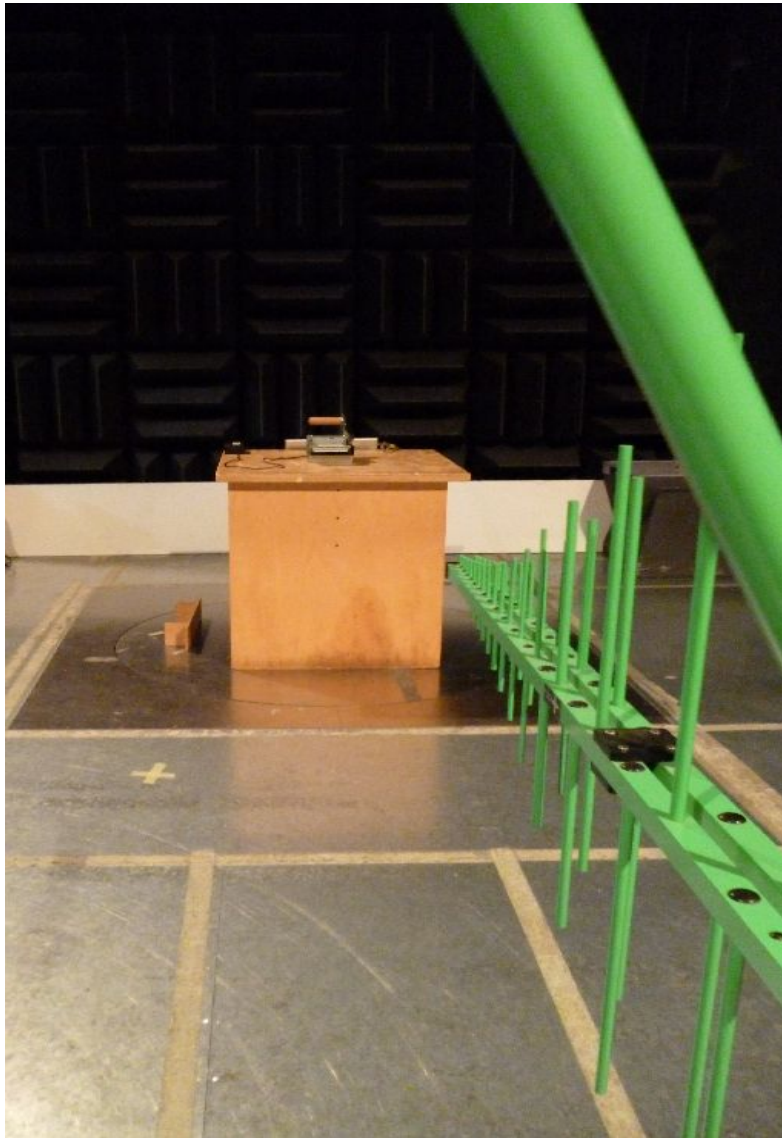
Notes:  
 POL H  
 Range 1-6GHz  
 Printing Mode

6. PHOTO



*Fig. 6.1*

*Equipment Under Test: Conducted Emissions Test Set-up*



*Fig. 6.1*

*Equipment Under Test: Radiated Emissions Test Set-up*