

Prima Ricerca & SviluppoSrl soggetta a direzione e coordinamento da parte della Giovanni Maspero & C. S.p.A. – C.I. 02634780130
Sede legale : 22100 Tavernola (CO) Via Conciliazione, 1 Cod. FISC. e N. R.I. CO 02635860139
Sede operativa : Laboratori Via Campagna, 92 22020 Faloppio fraz. Gaggino (CO) Tel. +39 03135000.11 Fax +39 031991309

EQUIPMENT UNDER TEST :
APPARECCHIO IN PROVA :

SENTRY GARAGE DOOR RECEIVER
030209

REFERENCE STANDARDS :
NORME DI RIFERIMENTO :

FCC 47 CFR Part 15

CUSTOMER:

RICHIEDENTE:

Dept. / Firm : ELPRO INNOTEK S.P.A.
Ente / Società':

Mr.: ING. DALLE CARBONARE
Sig.:

Address: VIA PIAVE, 23 – 31020 S.PIETRO FELETTO (TV)
Indirizzo:

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Telefono : **Fax :**

Site of test execution: Via Campagna, 92 - 22020 Gaggino Faloppio (CO) - Italy
Località esecuzione prove:

Date of test samples receipt: 26/05/2008 **Date of start test:** 26/05/2008
Data ricevimento campioni: **Data inizio prove:**
Date of end test: 26/05/2008
Data fine prove:

Witness to the test:
Presenti alle prove:

Tested by:
Testato da:

Approved by:
Approvato da:

Nobody/Nessuno

.....
Andrea Bortolotti

.....
Massimo Maltempi

The test results recorded in this Test Report are exclusively referred to the tested samples.
I risultati del presente rapporto di prova si riferiscono esclusivamente al campione sottoposto a prova.
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1. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 Identification

Brand name: SENTRY
Manufacturer: ELPRO INNOTEK S.P.A.
Equipment : GARAGE DOOR RECEIVER
Model name or No. : 030209
Country of manufacturer: ITALY

1.2 Technical data

FCC class: Unintentional radiators, Class B
Supply voltage: 9Vdc
Maximum internal frequency generated by EUT 6.6128MHz
Typical usage : GARAGE DOOR RECEIVER
EUT single or system: Single
EUT dimensions : 40 x 22 x 56 mm

1.3 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test :

- None

1.4 Ports identification

This section contains descriptions of all signal ports and AC/DC power input/output ports, the length and the type of the cable provided by manufacturer needed for the tests.
Moreover it is specified if the ports are ever or optionally connected.

Port		Description	Connection	Maximum length
1	Enclosure	Plastic	Pressure	-----
2	AC power input/output ports	Port not present	-----	-----
3	DC power input/output ports	9Vdc powered by external power source (see photographic documentation for details)	Connector	< 3mt
4	Signals / Control Ports	NO/C connector	Connector	< 3mt
5	Telecommunication port	Port not present	-----	-----
Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.				

1.5 Auxiliary equipment

Manufacturer : Elpro innotek SPA

Description : Transmitter 433.92MHz (see photographic documentation for details)

2. TEST CONDITIONS

2.1 Operating test modes and test conditions

The equipment has been tested according to the operative conditions described in the user/installation manual provided by the manufacturer and by following reference standards :
Reference Standard:

- FCC Part 15, Subpart B

In the following table there are the operating conditions adopted during tests identified by an indicator (#..) at which has been referred the item “Operating condition of the equipment under test” of all technical sheets of the tests (see Section 4)

Operating condition	Description
#1	<i>Linked with ancillary equipment</i>

2.2 Test overview

The appliance is classified as “*unintentional radiator*” in conformity to FCC Part 15 Sub. B §15.109, §15.107.

The application is mainly used as garage door open.

3. REFERENCE STANDARD FOR PERFORMED TESTS

<i>Reference standard :</i>	<i>Title :</i>
FCC Part 15 part A	Code of Regulations Part 15 (Radio Frequency Devices), Subpart A (General) of the Federal Communication Commission (FCC)
FCC Part 15 part B	Code of Regulations Part 15 (Radio Frequency Devices), Subpart B (Unintentional Radiators) of the Federal Communication Commission (FCC)
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

4. SUMMARY OF TEST RESULTS

4.1 Emission tests

Port		Phenomena	Basic standard	Operating condition ¹	Result
1	Enclosure	Radiated emission	FCC Part 15 § 15 109	#1	Within the limit
2	AC mains Input ports*	RF Disturbance voltage: • continuous	FCC Part 15 § 15 107	#1	Within the limit

*With reference to 15.107(d): Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits: the test has been executed with AC/DC adapter mod.HCD9-300 class 2 transformer

¹ Ref. Tab. of Section 2

5. TEST RESULTS

EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE (CONTINUOUS DISTURBANCE)	9
RADIATED EMISSION 30 - 2000 MHZ.....	13

**TEST
1.****EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE
(CONTINUOUS DISTURBANCE)****REFERENCE
DOCUMENT**

FCC47CFR Part 15

- **TEST SETUP:** According to reference standard
- **TEST LOCATION:** Semianechoic chamber
- **TEST EQUIPMENT USED FOR TEST:** EMI receiver Rohde & Schwarz Mod. ESMI
Artificial Network Rohde & Schwarz Mod. ESH3-Z5

- **TESTED PORT:** AC mains plus Lamps power supply
- **FREQUENCY RANGE:** 0.15 - 30 MHz
- **EMISSION LIMITS:** Section 15.107 of Standard
- **MEASUREMENT UNCERTAINTY:** Total uncertainty (k=2) ± 2.5 dB

TEST CONDITIONS:		MEASURED
Ambient temperature :	15 - 35 °C	24 $\pm$ 3 °C
Ambient humidity :	25 - 75 %rH	38 $\pm$ 5 %rH
Pressure :	85 - 106 kPa (860 mbar - 1060 mbar)	975 $\pm$ 50 mbar
Voltage :		9Vdc

OPERATING CONDITION (Rif. Section. 2) : #1**RESULT: WITHIN THE LIMIT**

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SCAN TABLE : Voltage Mains

Unit : dBμV

	<u>Detector :</u>	<u>Mode :</u>
Curve 1:	MaxPeak	ClearWrite
Curve 2:	Average	ClearWrite

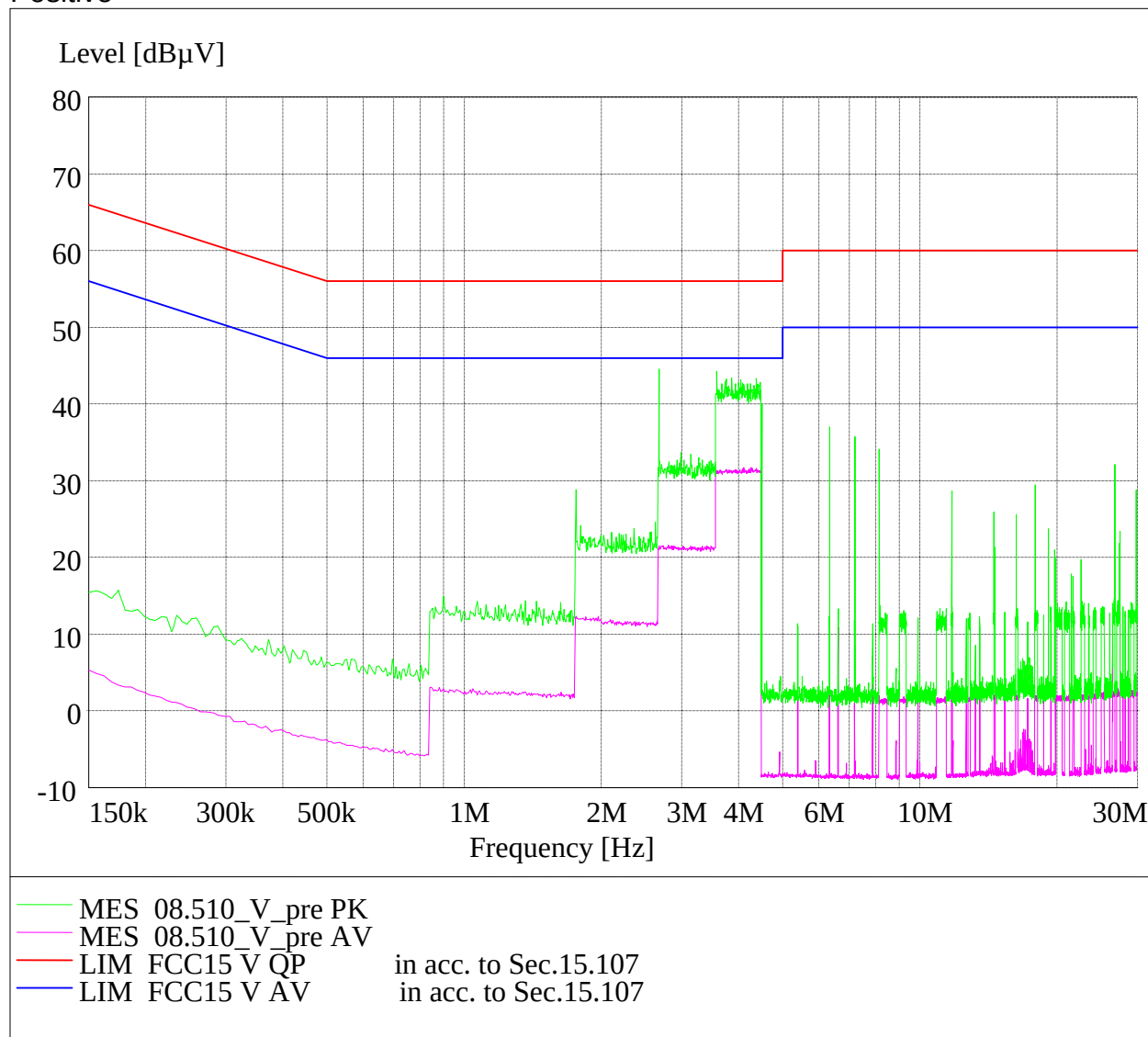
Subrange 1:			
Start Frequency :	150.0 kHz	IF Bandwidth :	9 kHz
Stop Frequency :	30.0 MHz	Step size :	6 kHz
Measure Time :	10.0 ms		

Receiver :	ESMI	Transducer :	ESH3-Z5_PRC
Signal Path :	Path 3	System Transducer :	Rfin1-CP2/X11
Meas. Mode :	Lin	Add. Transd. 1 :	W71.03
Tracking Generator :	Off	Add. Transd. 2 :	None
Input :	1AC	Add. Transd. 3 :	None

Preamplifier :	10 dB	Demodulation :	FM Broad
RF Att. :	Coupled	Volume :	0 %
Ref. Level :	-10 dBm	Squelch :	--
Min. RF Att. :	0 dB	Option :	None
IF Att. :	0 dB		
Autorange :	On		

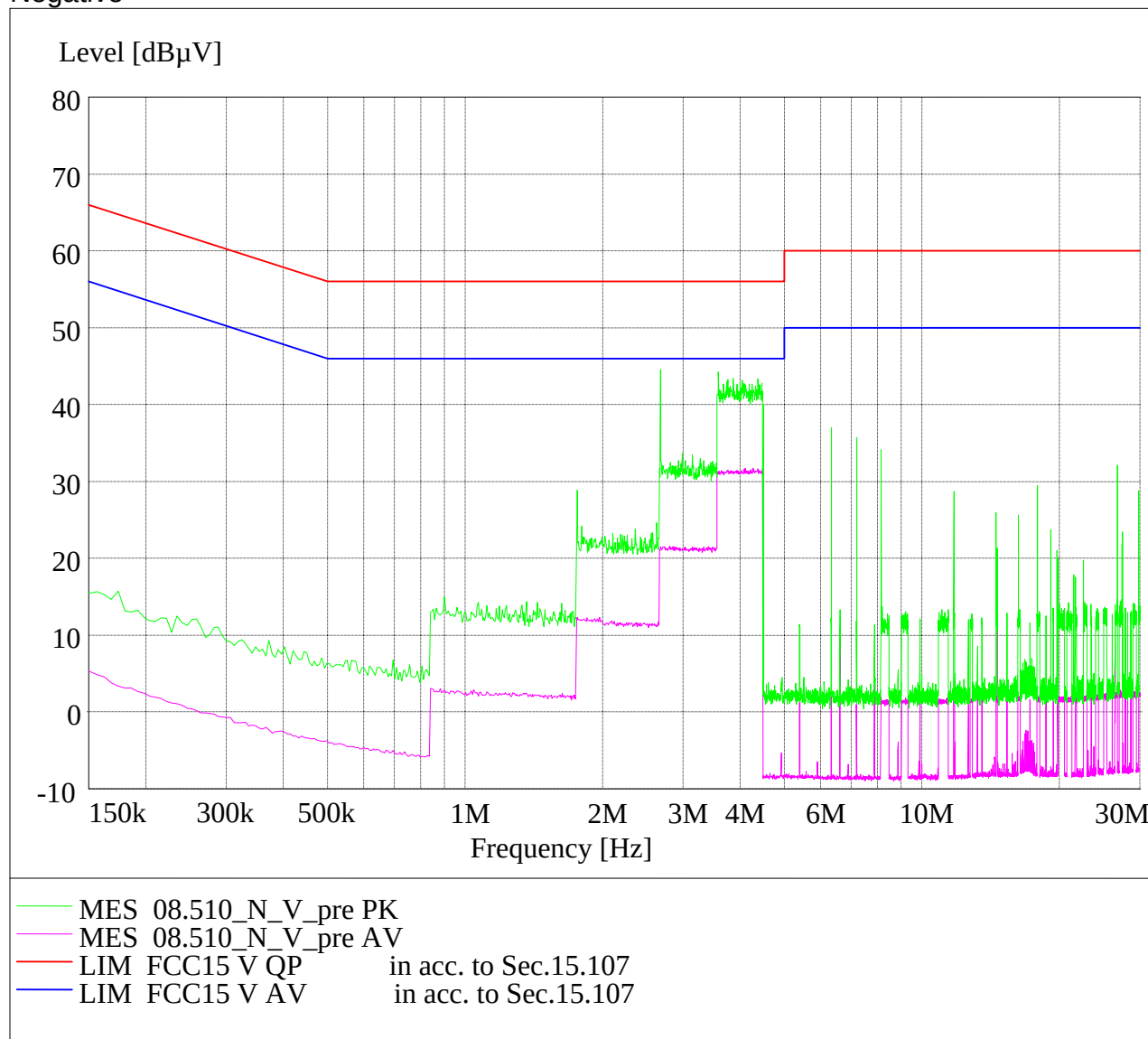
Curve 1 :	On	Repetition :	Single
Curve 2 :	On	Stop Mark :	On
		Stop Message :	On
		Stop Message :	Connect EUT

Positive



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Negative



**TEST
2.****RADIATED EMISSION 30 - 2000 MHZ****REFERENCE
DOCUMENT**

FCC PART 15 subpart B

- **TEST LOCATION:** Semi-anechoic chamber
- **TEST EQUIPMENT USED FOR TEST:** EMI receiver Rohde & Schwarz Mod. ESMI
Chase Antenna Mod. CBL 6111 A
- **TESTED PORT:** Enclosure
- **EMISSION LIMITS:** Acc. to Section 15.109 of reference document
- **UNCERTAINTY OF MEASURE:** Combined uncertainty = ± 1.75 dB
Total uncertainty = (k=2) ± 3.5 dB

TEST CONDITIONS:	MEASURED
Ambient temperature : 15 - 35 °C	23,5 $\pm$ 3 °C
Ambient humidity : 25 - 75 %rH	39 $\pm$ 5 %rH
Pressure : 85 - 106 kPa (860 mbar - 1060 mbar)	950 $\pm$ 50 mbar
Voltage :	9Vdc

OPERATING CONDITION (Rif. Section. 2) : #1**RESULT: WITHIN THE LIMIT**

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SCAN TABLE : “Radiated Emission”

Unit: dB μ V/m

Curve1: Detector : Mode:
MaxPeak ClearWrite
Curve2: -- ClearWrite

Subrange1:

Start Frequency: 30.0 MHz
Stop Frequency: 1000.0 MHz
Measure Time: 0.01 sec.

Step Size: 80 kHz
IF Bandwidth: 120 kHz

Receiver: ESXI
Signal Path: Path 4
Scan Mode: Lin
Tracking Gen.: Off
Input: 2 DC

Probe Transducer: CHASE_6111_PRC
System Transducer: RFin2-CP1/X11
Add. Transducer: W71.01

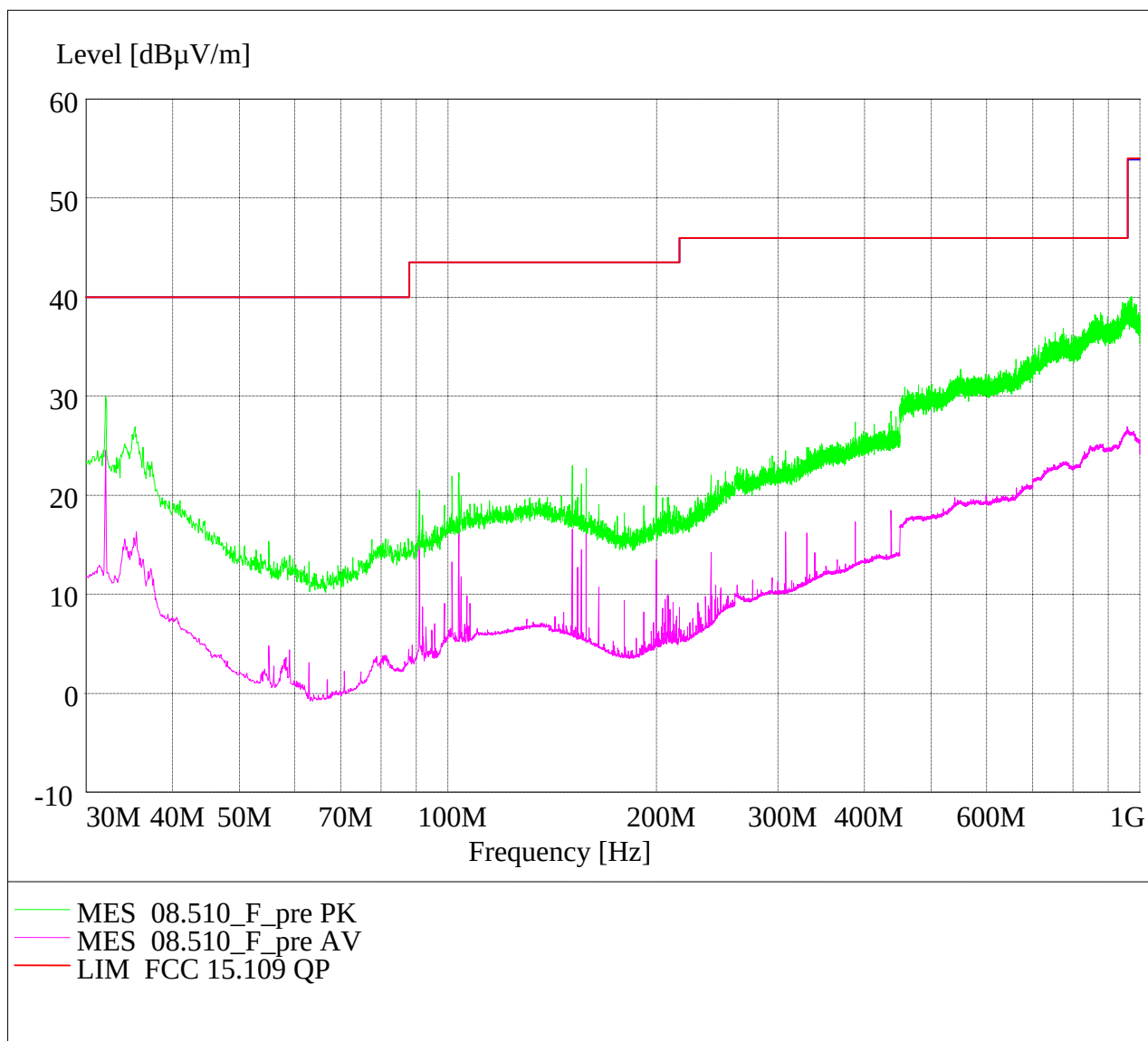
Preamplifier: 10 dB
RF att.: Coupled
Ref. Level: -50 dBm
Min. RF att.: 0 dBm
Autorange: On

Demodulation: FM Broad
Volume: 0.0%
Squelch: --
Option: None

Curve 1: On
Curve 2: Off

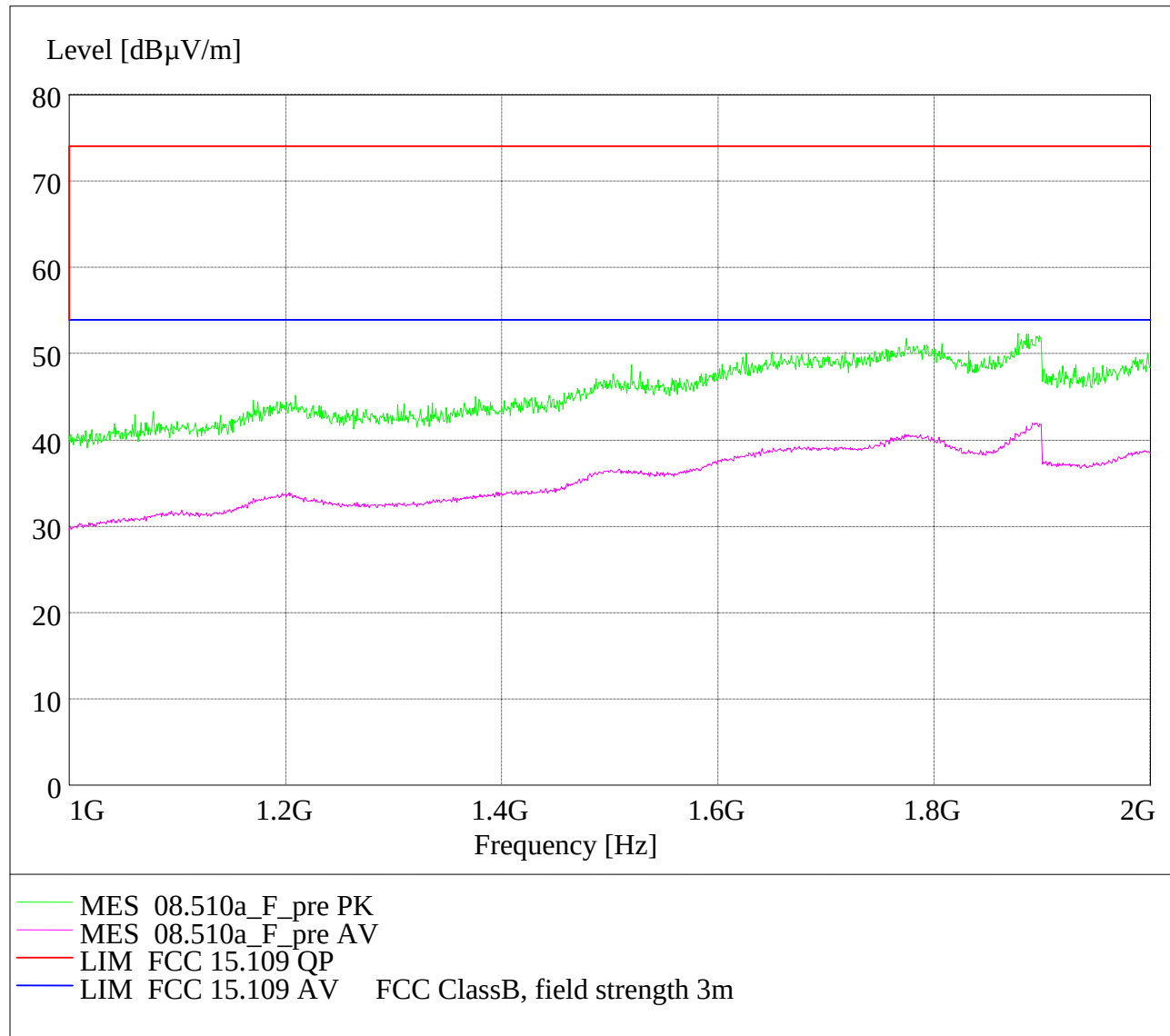
Repetition: Single
Stop Mark: On
Stop Message: On
Text: Connect antenna

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In acc. §15.35(a): On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified

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In acc §15.35(b): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.255, and 15.509-15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, e.g., the total peak power level. Note that the use of a pulse desensitization correction factor may be needed to determine the total peak emission level. The instruction manual or application note for the measurement instrument should be consulted for determining pulse desensitization factors, as necessary.

6. EUT TECHNICAL DOCUMENTATION

6.1 Wiring diagrams

	<i>Document reference (n., edition, date, ...)</i>
WIRING DIAGRAM	TFC118 rev.0 date 08/05/2008
PART LIST	TFC118 rev.0 date 08/05/2008

6.2 Technical manual

	<i>Document reference (n., edition, date, ...)</i>
Technical construction file	TFC118 rev.0 date 08/05/2008

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6.3 Photographic documentation

PHOTO N°1 – EUT identification

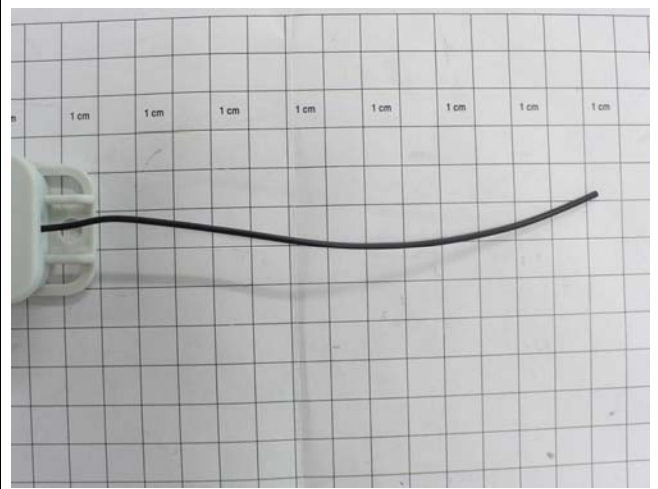


PHOTO N°2 – Emission radiated setup

