

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 :

USB ELECTRONIC KEY
MODEL: SMARTKEY

REFERENCE STANDARDS :
NORME DI RIFERIMENTO :

FCC 47 CFR Part 15

CUSTOMER:

RICHIEDENTE:

- **Dept. / Firm :** EUTRONSEC S.P.A.
Ente / Società:
- **Mr.:** GIANLUCA MAFFIOLI, NICOLA ALBERGATI
Sig.:
- **Address:** VIA GANDHI, 12 – 24048 TREVIOLO (BG) - ITALY
Indirizzo:
- **Tel. :** ++39 035/697005 • **Telefax** ++39 035/697090 • **E-mail:** gianluca.maffioli@eutron.it
Telefono : *Fax :* *e-mail*

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

Date of test samples receipt: 06/08/2007
Data ricevimento campioni:

Date of start test: 06/08/2007
Data inizio prove:

Date of end test: 06/08/2007
Data fine prove:

Witness to the test:
Presenti alle prove:

Signature of the engineers:
Firma esecutore prove:

Approved by:
Approvato da:

Sig. Gianluca Maffioli
Sig. Nicola Albergati



Luca Casiraghi

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: EUTRONSEC S.P.A.
Manufacturer: EUTRONSEC S.P.A.
Equipment : USB KEY
Model name or No. : SMARTKEY
Serial number : Not present
FCC ID : TFC-AAI
Country of manufacturer: ITALY

1.2 Technical data

FCC class: Unintentional radiators, Class B
Supply voltage: +5 V dc supplied by USB PC connector
Input Power / Current : 30 mA max.
Maximum internal frequency generated by EUT Oscillator: 16 MHz
Typical usage : Software protection
EUT single or system: Single
EUT dimensions : 34 x 16 x 6 mm

1.3 Modifications incorporated in E.U.T.

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

- None

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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
1	Enclosure	Thermoplastic case	*****
2	AC power input/output ports	Line not present	*****
3	DC power input/output ports	+5 V dc supplied by USB PC connector	USB PC connector (Pin 1,4)
4	Signals ports	USB Communication	USB PC connector (Pin 2,3)

Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

1.4 Auxiliary equipment

- Personal Computer Compaq EV0 N1020V

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>Electronic key is connected directly to PC by USB port. The test program available is useful to verify the right code (signature) response.</i>

2.2 Test overview

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

The application is used for software protection.

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3. REFERENCE STANDARD FOR PERFORMED TESTS

Reference standard :	Title :
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

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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

¹ Ref. Tab. of Section 2

5. TEST RESULTS

RADIATED EMISSION 30 - 4000 MHZ	9
EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE	12

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**TEST
1.****RADIATED EMISSION 30 - 4000 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
Log-periodica Broadband Antenna mod. HL025
- **TESTED PORT:** Enclosure
- **EMISSION LIMITS:** Acc. to Section 15.109 of reference document
- **UNCERTAINTY OF MEASURE:** Combined uncertainty = ± 1.75 dB
Total uncertainty = $(k=2) \pm 3.5$ 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 :		+5 V dc USB

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

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SCAN TABLE : “Radiated Emission”

Unit: dB μ V/m

Detector : Mode:

Curve1: MaxPeak ClearWrite

Curve2: -- ClearWrite

Subrange1:

Start Frequency: 30.0 MHz

Step Size: 80 kHz

Stop Frequency: 4000.0 MHz

IF Bandwidth: 120 kHz

Measure Time: 0.01 sec.

Receiver: ESXI

Probe Transducer: CHASE_6111_PRC

Signal Path: Path 4

System Transducer: RFin2-CP1/X11

Scan Mode: Lin

Add. Transducer: W71.01

Tracking Gen.: Off

Input: 2 DC

Preamplifier: 10 dB

Demodulation: FM Broad

RF att.: Coupled

Volume: 0.0%

Ref. Level: -50 dBm

Squelch: --

Min. RF att.: 0 dBm

Option: None

Autorange: On

Curve 1: On

Repetition: Single

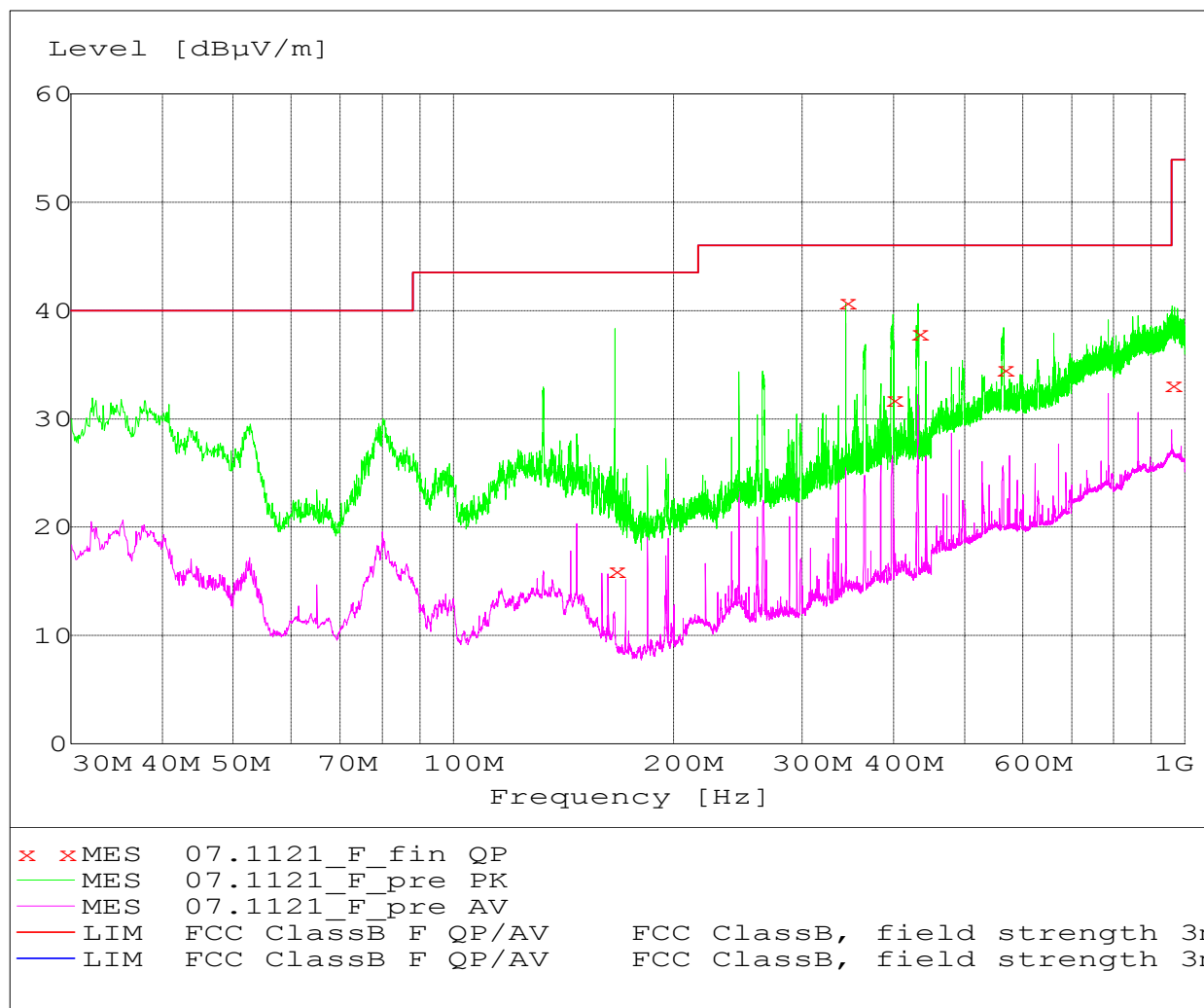
Curve 2: Off

Stop Mark: On

Stop Message: On

Text: Connect antenna

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Measurement Result “QP Detector”

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarisation
166.360000	16.00	12.40	43.50	27.50	106.0	31.00	VERTICAL
344.080000	40.80	18.20	46.00	5.20	100.0	135.00	HORIZONTAL
399.040000	31.80	19.70	46.00	14.20	100.0	45.00	HORIZONTAL
432.080000	37.90	20.40	46.00	8.10	245.0	166.00	HORIZONTAL
565.360000	34.60	23.60	46.00	11.40	115.0	96.00	VERTICAL
959.440000	33.20	30.20	46.00	12.80	175.0	102.00	HORIZONTAL

No significant disturbance in the range 1-4 GHz

**TEST
2.**

EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE

**REFERENCE
DOCUMENT**

FCC PART 15 subpart B

- **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
- **FREQUENCY RANGE:** 0.15 - 30 MHz
- **EMISSION LIMITS:** Acc. to reference document 15.107
- **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	40 $\pm$ 5 %rH
Pressure :	85 - 106 kPa (860 mbar - 1060 mbar)	950 $\pm$ 50 mbar
Voltage :	powered from host (Notebook)	98 Vac $\pm$ 3%

OPERATING CONDITION (Rif. Section. 2) : #1

RESULT: Within the limits

SCAN TABLE : Voltage Mains

Unit : dB μ V

Detector : Mode :

Curve 1: MaxPeak ClearWrite

Curve 2: Average ClearWrite

Start Frequency : 150.0 kHz

Stop Frequency : 30.0 MHz

Measure Time : 10.0 ms

IF Bandwidth : 9 kHz

Step size : 6 kHz

Receiver : ESMI

Signal Path : Path 3

Meas. Mode : Lin

Tracking Generator : Off

Input : 1AC

Transducer : ESH3-Z5_PRC

System Transducer : Rfin1-CP2/X11

Add. Transd. 1 : W71.03

Add. Transd. 2 : None

Add. Transd. 3 : None

Preamplifier : 10 dB

RF Att. : Coupled

Ref. Level : -10 dBm

Min. RF Att. : 0 dB

IF Att. : 0 dB

Autorange : On

Demodulation : FM Broad

Volume : 0 %

Squelch : --

Option : None

Curve 1 : On

Curve 2 : On

Repetition : Single

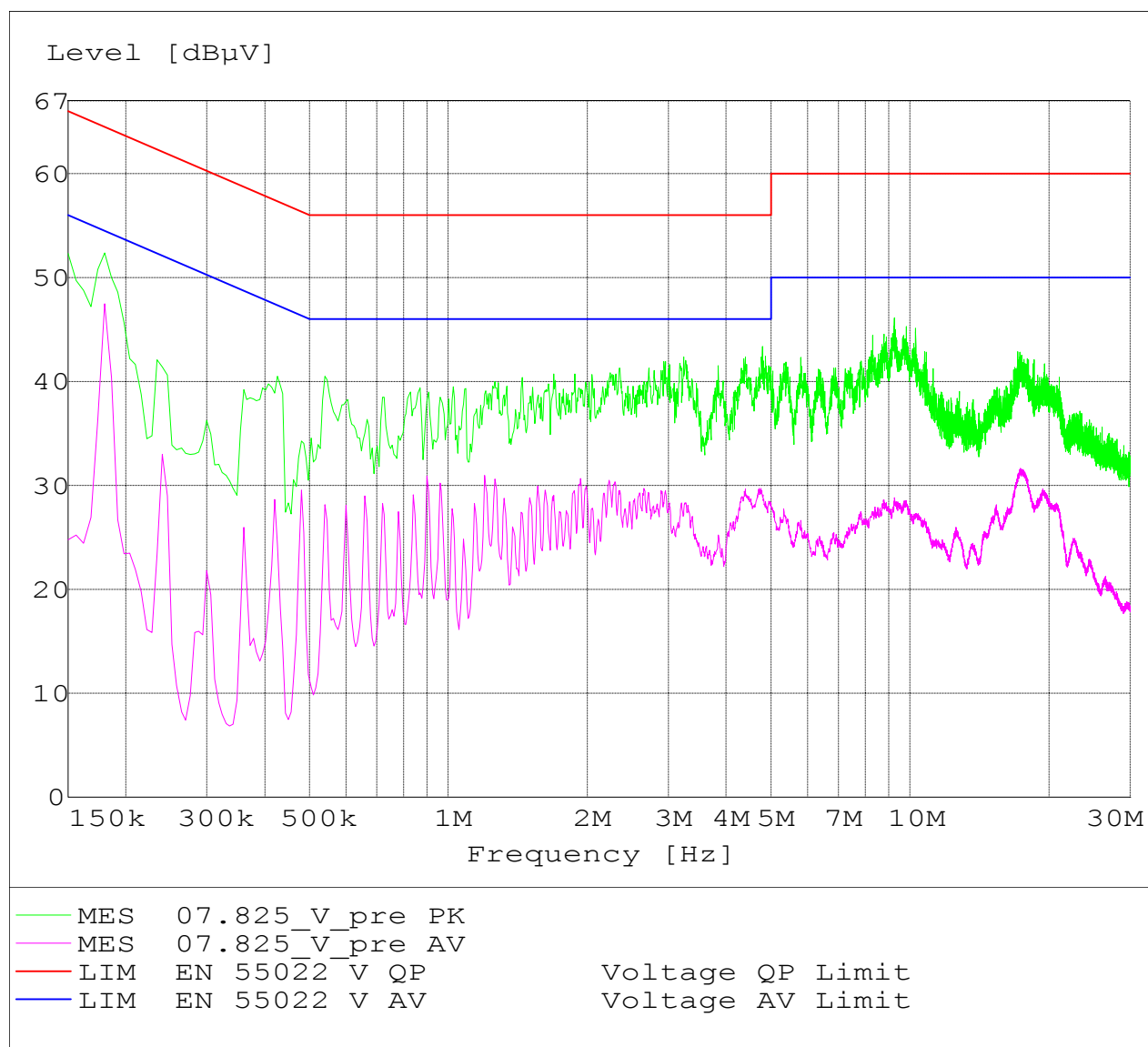
Stop Mark : On

Stop Message : On

Stop Message : Connect EUT

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- With EUT powered by a Personal Computer Compaq EV0 N1020V



6. EUT TECHNICAL DOCUMENTATION

6.1 Wiring diagrams

	<i>Document reference (n., edition, date, ...)</i>
WIRING DIAGRAM	<i>SmartKey-SCH-01-v1.4 - Elettrico</i>
PRINTED CIRCUIT	<i>SmartKey-PCB-01-v1.0 - Topografico PCB Rel.B</i>
PART LIST	<i>Smartkey-BOM-01-V1.0</i>

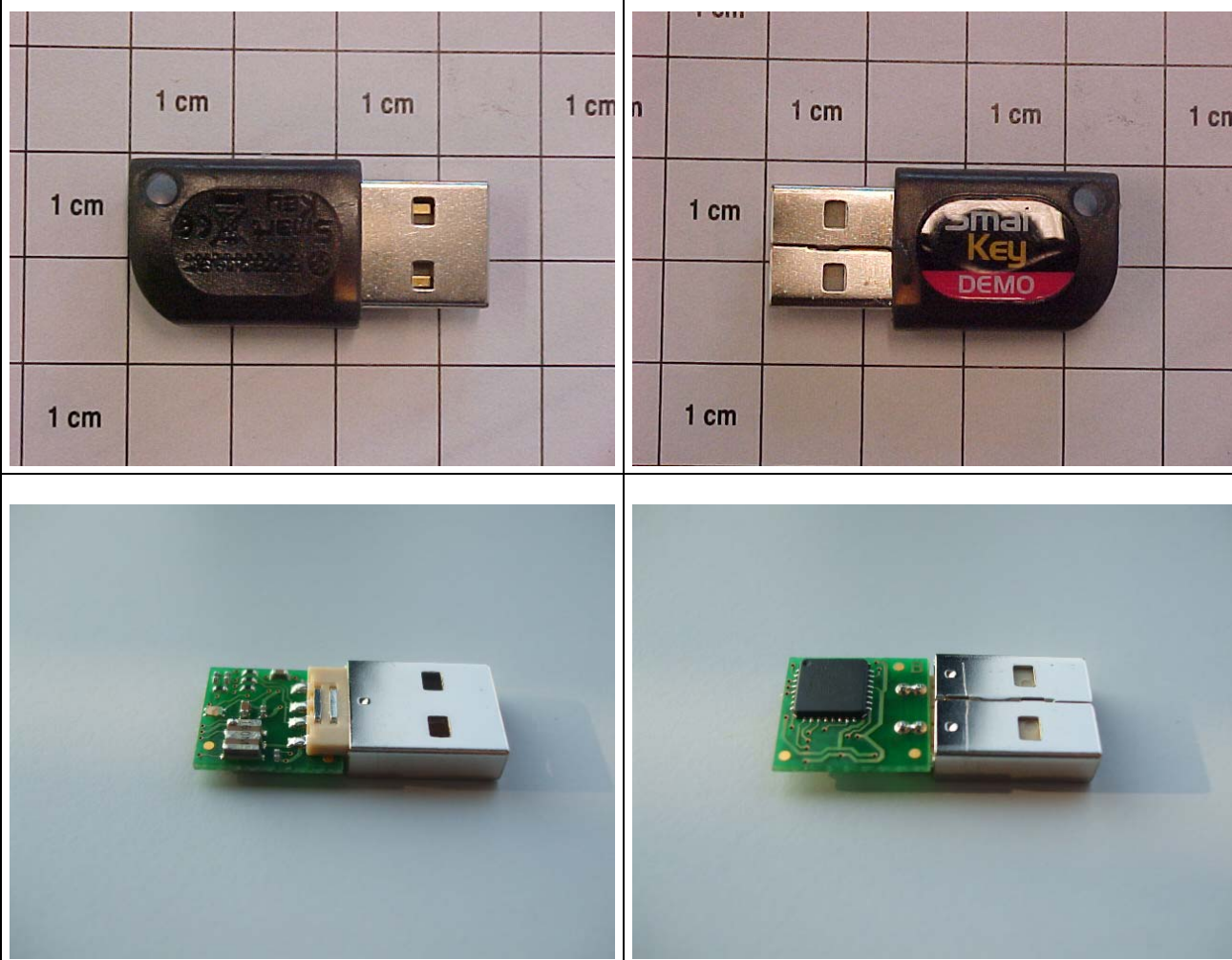
6.2 Technical manual

	<i>Document reference (n., edition, date, ...)</i>
USER MANUAL	<i>SmartKey User Manual v.11.7</i>
TEST PLAN	<i>1467-00-SDT-08 R2.2</i>

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6.3 Photographic documentation

PHOTO No. 1 – EQUIPMENT UNDER TEST



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PHOTO No. 2 – SET-UP FOR EMISSION RADIATED TEST

