

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 KEY
CRYPTO COMBO CCID
(Model ITSEC-I)

DERIVED MODELS :

APPARECCHI DERIVATI:

Model ITSEC-P, Model FIPS

REFERENCE STANDARDS :

NORME DI RIFERIMENTO :

FCC 47 CFR Part 15

CUSTOMER:

RICHIEDENTE:

- **Dept. / Firm :** *EUTRON INFOSECURITY S.r.l.*
Ente / Società:
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Sig.:
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Telefono : *Fax :* *e-mail*

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

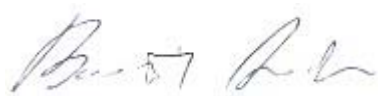
Date of test samples receipt: 18/09/06 **Date of start test:** 18/09/06
Data ricevimento campioni: *Data inizio prove:*

Date of end test: 18/09/06
Data fine prove:

Witness to the test:
Presenti alle prove:

Signature of the engineers:
Firma esecutore prove:

Signature of the Laboratory Director:
Firma Direttore Laboratori:



Mr. Gianluca Maffioli

Andrea Bortolotti

Roberto Furfari

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: EUTRON INFOSECURITY
Manufacturer: EUTRON INFOSECURITY
Equipment : USB KEY
Model name or No. : CRYPTO COMBO CCID mod. ITSEC-I
Derived models: CRYPTO COMBO mod. ITSEC-P and CRYPTO COMBO mod. FIPS
Serial number : Not present
FCC ID : TFC-AAD
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 : 250 mA max.
Maximum internal frequency generated by EUT Oscillator: 24 MHz; Data Exchange Rate:480Mbit/s
Typical usage : Document encrypting and storing
EUT single or system: Single
EUT dimensions : 7,5 x 1,9 x 1,2 cm

1.3 Modifications incorporated in E.U.T.

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

- None

1.4 Derived models

Crypto Combo Models

Models	Model ITSEC-I, ITSEC-P and FIPS
Schematics	1467-02-SCH-01R2
Printed Circuit	1467-02-PCB-01R2
Bill of Material	1467-02-BOM-01R2
Housing Box	Plastic

How declared by the client, Crypto Combo models differ each other only for crypto chip mounted. Different manufacturers realize this type of component: all the crypto chips used must be completely interchangeable to ensure the same product functionality.

On each product it is also possible to mount one memory chip having a minimum size of 128MB and a maximum size of 2GB.

Considerations:

- the worst-case model was determined as follow:

Every key differs in quantity of memory and the FCC said that the devices has to be "electrically identical" as required by Rule Part 2.924.

The different NAND Flash Memories It is possible to note that there is NOT a worst case, because:

1) the packages are the same

2) the transfer protocol are the same even if there is different memory sizes. It always transfers "eight byte" each time in "four cycle" transfer protocol (see memory specifications in TCF).

3) So, even if they have different memory sizes, the clock is the same, the data communication (between micro and memory) is always the same. This implies that disturbances are the same.

- the test data was taken on the model CRYPTO COMBO CCID mod. ITSEC-I with 2 GB memory chip;

- the reported test data is representative of all models of the device (see derived models table)

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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	Plastic 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.

1.5 Auxiliary equipment

- Personal Computer Compaq EV0 N1020V

2. TEST CONDITIONS

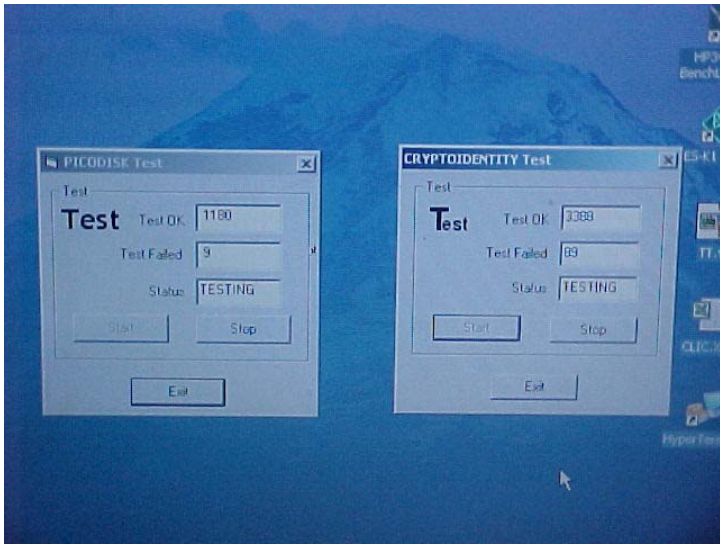
2.1 Operating test modes and test conditions

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 by USB port to PC.</i> <i>One test program is available, as stimulus, to verify the encrypting and data storing properties.</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 mainly used as document encrypting and data storing.

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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

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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
3	Antenna terminals	Antenna power conduction limits for receivers	FCC Part 15 §15 111	Not applicable ²	

¹ Ref. Tab. of Section 2

² Applicable only to equipments which have an external antenna connector

5. TEST RESULTS

RADIATED EMISSION 30 - 4000 MHZ	10
EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE	15

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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

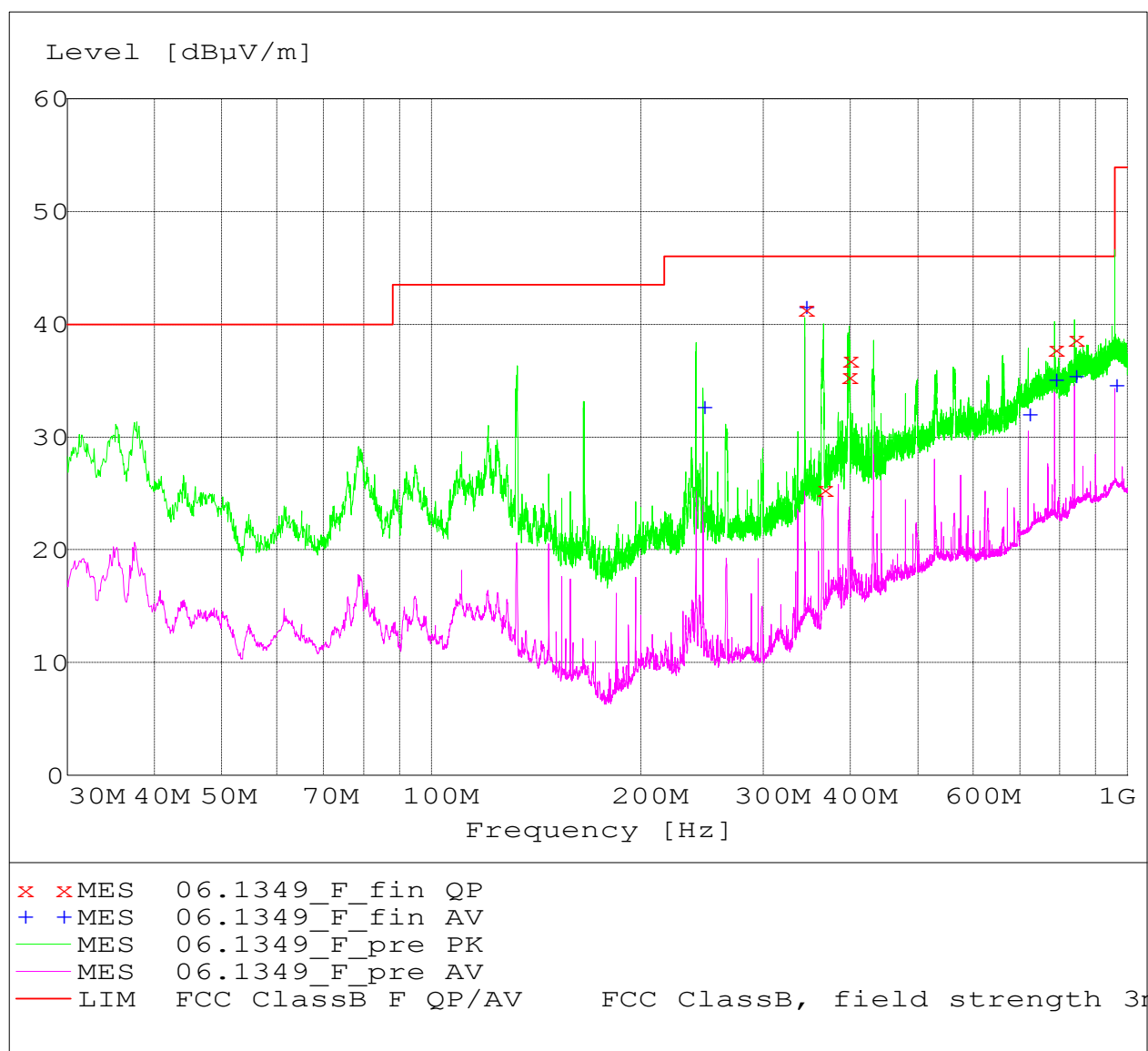
Curve 2: Off

Stop Mark: On

Stop Message: On

Text: Connect antenna

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Final measurement in QP detector

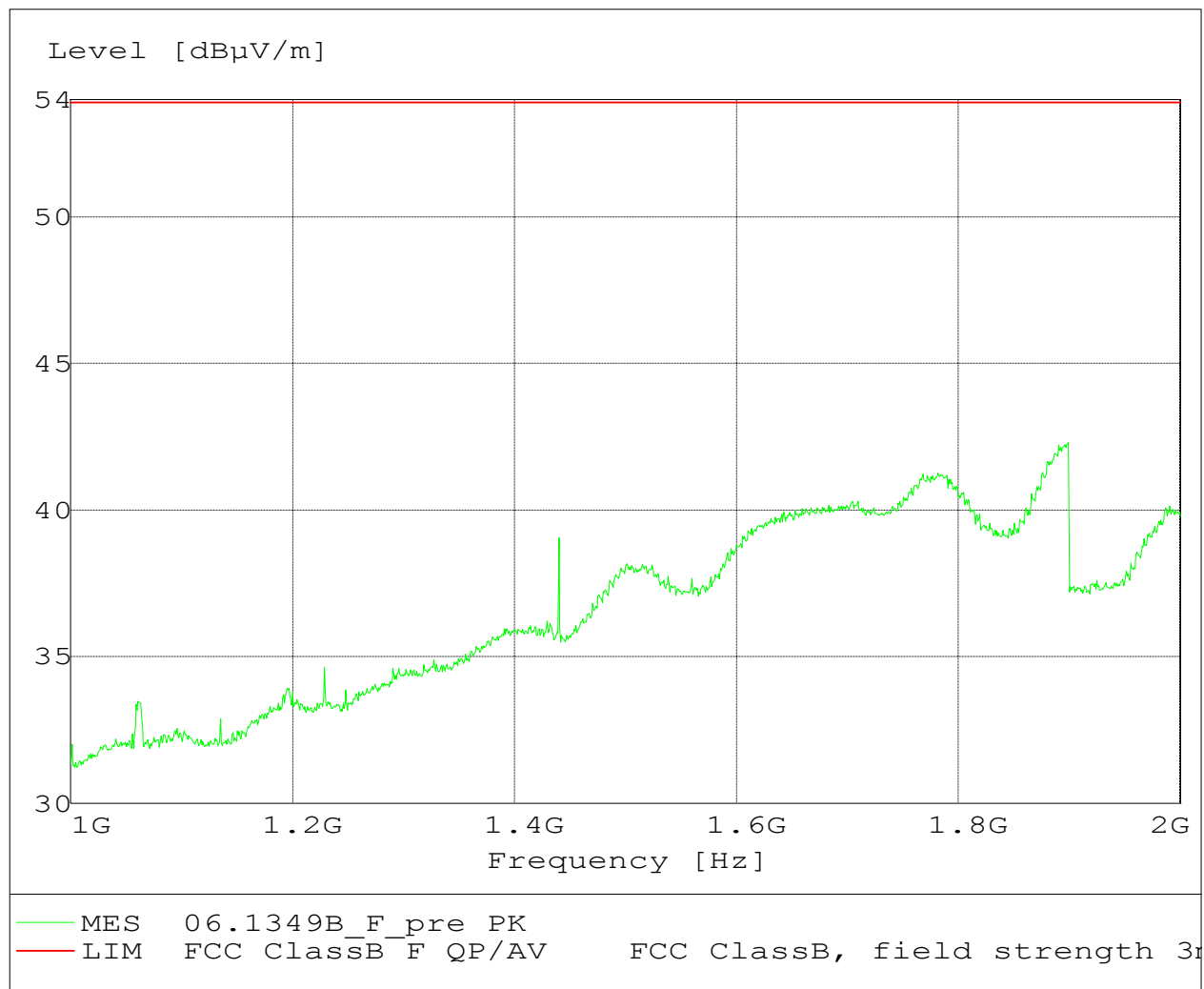
Frequency	Level	Transd	Limit	Margin	Height	Azimuth	Polarisation
MHz	dBµV/m	dB	dBµV/m	dB	cm	deg	
344.080000	41.40	18.20	46.00	4.60	101.0	123.00	HORIZONTAL
365.760000	25.40	18.60	46.00	20.60	185.0	86.00	HORIZONTAL
397.040000	35.40	19.70	46.00	10.60	100.0	222.00	HORIZONTAL
398.720000	36.80	19.70	46.00	9.20	100.0	204.00	HORIZONTAL

Final measurement in AV detector

Frequency	Level	Transd	Margin	Height	Azimuth	Polarisation
MHz	dBµV/m	dB	dB	cm	deg	
245.760000	32.70	15.30	967.30	100.0	132.00	HORIZONTAL
344.080000	41.50	18.20	958.50	100.0	128.00	HORIZONTAL
720.080000	32.00	25.60	968.00	115.0	77.00	HORIZONTAL
786.480000	35.10	26.90	964.90	109.0	185.00	HORIZONTAL
840.080000	35.40	27.50	964.60	100.0	78.00	HORIZONTAL
960.080000	34.60	30.20	965.40	134.0	105.00	HORIZONTAL

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Measurement result above 1GHz



no significant disturbance in the range 2-4 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 :	220Vac		98 Vac $\pm$ 3%

OPERATING CONDITION (Rif. Section. 2) : #1**RESULT: Within the limits**

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SCAN TABLE : Voltage Mains

Unit : dBμV

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

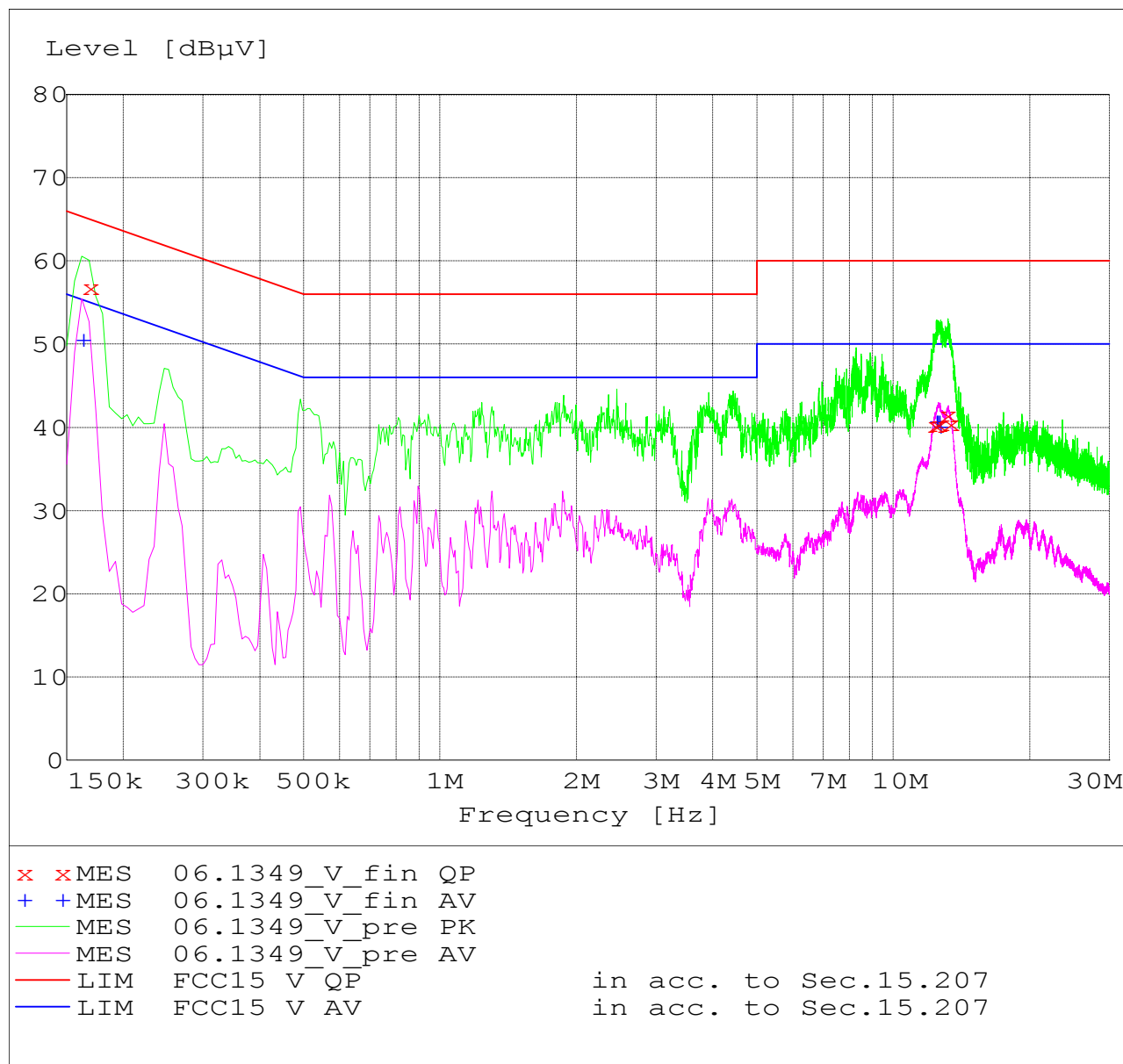
Stop Mark : On

Stop Message : On

Stop Message : Connect EUT

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- With EUT powered by a Personal Computer Compaq EV0 N1020V



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Final measurement in QP detector

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dB μ V	dB	dB μ V	dB		
0.168000	56.80	10.10	65.10	8.30	L1	GND
12.300000	40.30	10.60	60.00	19.70	N	GND
12.522000	40.40	10.60	60.00	19.60	N	GND
13.098000	41.50	10.60	60.00	18.50	N	GND
13.296000	40.50	10.60	60.00	19.50	N	GND

Final measurement in AV detector

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dB μ V	dB	dB μ V	dB		
0.162000	50.50	10.10	55.40	4.90	N	GND
12.378000	40.70	10.60	50.00	9.30	L1	GND
12.432000	40.70	10.60	50.00	9.30	L1	GND
12.558000	40.70	10.60	50.00	9.30	L1	GND
12.630000	40.10	10.60	50.00	9.90	L1	GND

6. EUT TECHNICAL DOCUMENTATION

6.1 Wiring diagrams

	<i>Document reference (n., edition, date, ...)</i>
WIRING DIAGRAM	Not applicable
PART LIST	1467-02-BOM-01R2

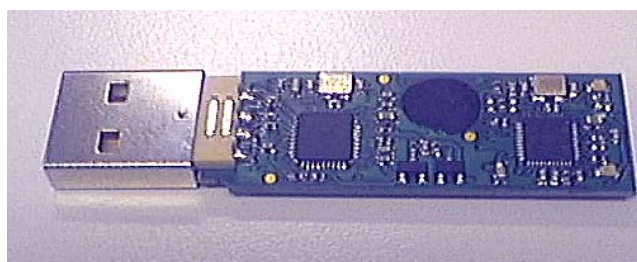
6.2 Technical manual

	<i>Document reference (n., edition, date, ...)</i>
USER MANUAL	CryptoCombo Overview 1.2
TEST PLAN	1467-00-SDT-08R1.0

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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

