

EQUIPMENT UNDER TEST :

APPARECCHIO IN PROVA :

RADIO KEYBOARD at 433.92 MHz

**Erone DIGIKEY
mod. SEDK2641A4**

REFERENCE STANDARDS :

NORME DI RIFERIMENTO :

FCC 47CFR Part 15

CUSTOMER:

RICHIEDENTE:

- **Dept. / Firm :** ELPRO INNOTEK SPA
Ente / Società':
 - **Mr.:** ING. G. MASSIMO DALLE CARBONARE
Sig.ra.:
 - **Address:** VIA PIAVE, 23 – 31020 S. PIETRO DI FELETTO (TV) - ITALY
Indirizzo:
- Tel. :** +39 0438.450860 **Telefax:** +39 0438.450091 • **E-mail:** d.carbonare@erone.com
Telefono : *Fax :*

Site of test execution: Via Campagna, 58 - 22020 Gaggino Faloppio (CO) - Italy
Località esecuzione prove:

Date of test samples receipt: 06/06/03 **Date of start test:** 23/06/03
Data ricevimento campioni: *Data inizio prove:*

Date of end test: 07/08/03
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:

Nobody / Nessuno

.....
F. Barbierato

.....
Ing. V. La Fragola

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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Abbreviations used in the test report :

E.U.T.	Equipment Under Test
EMC	Electromagnetic Compatibility
N.A.	Not Applicable
N.R.	Not requested by the client

1 TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 E.U.T. identification

Brand name: ERONE

Manufacturer : ELPRO INNOTEK

Model name or No. : SEDK2641A4

Part number / Serial No.: Not present

Country of manufacturer: ITALY

1.2 E.U.T. classification

R&TTE category : Transmitter 433,92 MHz in AM/ASK

Supply voltage: 3 Vdc by internal battery type Lithium CR123A

Input Power / Current : 20 mA

Single or Multiple Unit : single

EUT Dimensions : 145 x 78 x 32 mm

EUT standing: Floor (installed on wall)

Indoor / outdoor cables No cables

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 maximum 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	Maximum length	Connection	Ancillaries / Modules / Support Equipment
1	Enclosure	Plastic case	----	By screws	----
2	AC power input/output ports	not present	*****	*****	None
3	DC power input/output ports	3 Vdc by internal power supply	> 3 meter	Bipolar Connector	None
4	Signals Ports	not present	*****	*****	None
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 Operating test modes and test Conditions

EUT was tested under the Standard operating conditions and normal loads indicated in the reference standards applied and in directions for use supplied by the manufacturer. In particular, the equipment shall be tested under normal test conditions contained in the relevant product and basic standard or in the information accompanying the equipment.

Table 1: Each operating condition adopted for the execution of the test (setting of the controls and/or mode(s) of operation) has been identified by an indicator (#..):

<i>Operating condition (#)</i>	<i>Description of the mode of operation</i>
(#1)	Transmission mode

2 SUMMARY OF TEST RESULTS

2.1 EMISSION TESTS

Phenomenon	Application	Basic standard	Operating condition	Test result
Radiated disturbance	Enclosure	FCC 47CFR Part 15	#1	Within the limit
Conducted emission	AC mains input/output port	FCC 47CFR Part 15	Not applicable ¹	
	DC input/output port	FCC 47CFR Part 15	Not applicable ¹	

¹ Not applicable: port not present
Edit. 2.0
Issue date:

2.2 TEST RESULTS

ELECTROMAGNETIC RADIATED FIELD DISTURBANCE EMISSION TEST	8
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**TEST
1.****ELECTROMAGNETIC RADIATED FIELD DISTURBANCE
EMISSION TEST**REFERENCE
DOCUMENT

FCC47CFR Part 15

-
- | | |
|--|--|
| • TEST SETUP: | According to reference standard |
| • TEST LOCATION: | Semi-anechoic chamber |
| • TEST EQUIPMENT USED FOR TEST: | EMI receiver Rohde & Schwarz Mod. ESMI
Biconical Antenna Rohde & Schwarz Mod. HK116
Log-periodic Antenna Rohde & Schwarz Mod. HL223
Log-periodic Antenna Rohde & Schwarz Mod. HL025 |
-
- | | |
|----------------------------------|--|
| • TESTED PORT: | Enclosure |
| • FREQUENCY RANGE: | 30 - 5000 MHz |
| • EMISSION LIMITS: | Section 15.231 of Standard
(distance between antenna and E.U.T. = 3 meter) |
| • UNCERTAINTY OF MEASURE: | Combined uncertainty = ± 1.75 dB
Total uncertainty = (k=2) ± 3.5 dB |
-

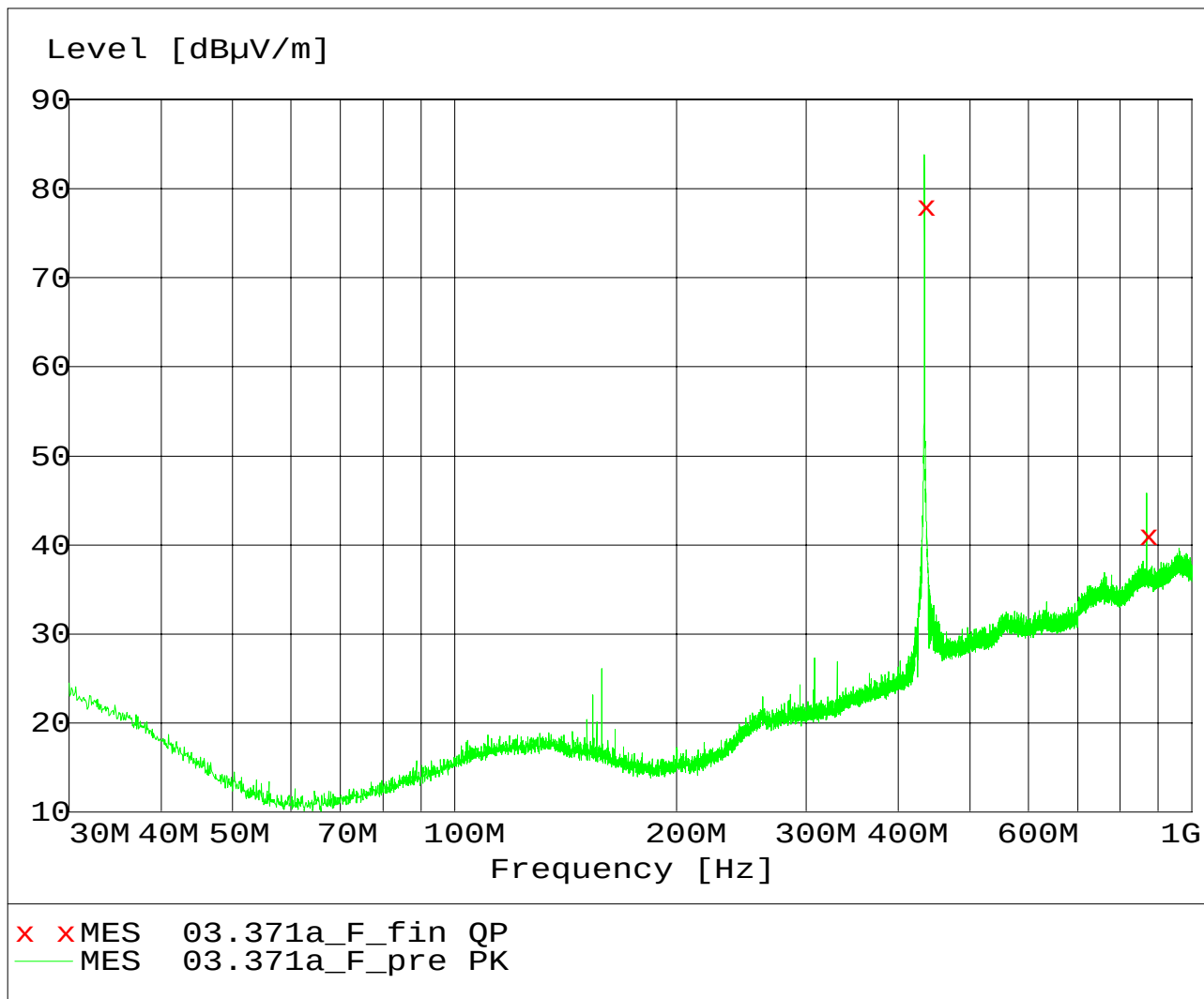
TEST CONDITIONS:	MEASURED
Ambient temperature : 15 - 35 °C	24 $\pm$ 3 °C
Ambient humidity : 25 - 75 %rH	40 $\pm$ 5 %rH
Pressure : 85 - 106 kPa (860 mbar - 1060 mbar)	950 $\pm$ 50 mbar
Voltage :	3 Vdc (internal battery)

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

RESULT: WITHIN THE LIMIT

SCAN TABLE

Unit:	dB μ V/m		
	Detector :	Mode:	
Curve1:	MaxPeak	ClearWrite	
Curve2:	--	ClearWrite	
<u>Subrange1:</u>			
Start Frequency:	30.0 MHz	Step Size:	80 kHz
Stop Frequency:	1000.0 MHz	IF Bandwidth:	120 kHz
Measure Time:	0.01 sec.	Probe Transducer:	CBL6111A_prs
Receiver:	ESXI	System Transducer:	RFin2-CP1/X11
Signal Path:	Path 4	Add. Transducer:	W71.01
Scan Mode:	Lin		
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



MEASUREMENT RESULT – QUASI PEAK detector

Frequency	Level	Limit	Height	Azimuth	Polarisation
MHz	dB μ V/m	dB μ V/m	cm	deg	
433.920000	78.00	80.79	174.0	316.00	VERTICAL
867.840000	41.00	61.94	105.0	288.00	HORIZONTAL

SCAN TABLE

Unit: dB μ V/m

Curve1: Detector : Mode:
MaxPeak ClearWrite
Curve2: Average ClearWrite

Subrange1:

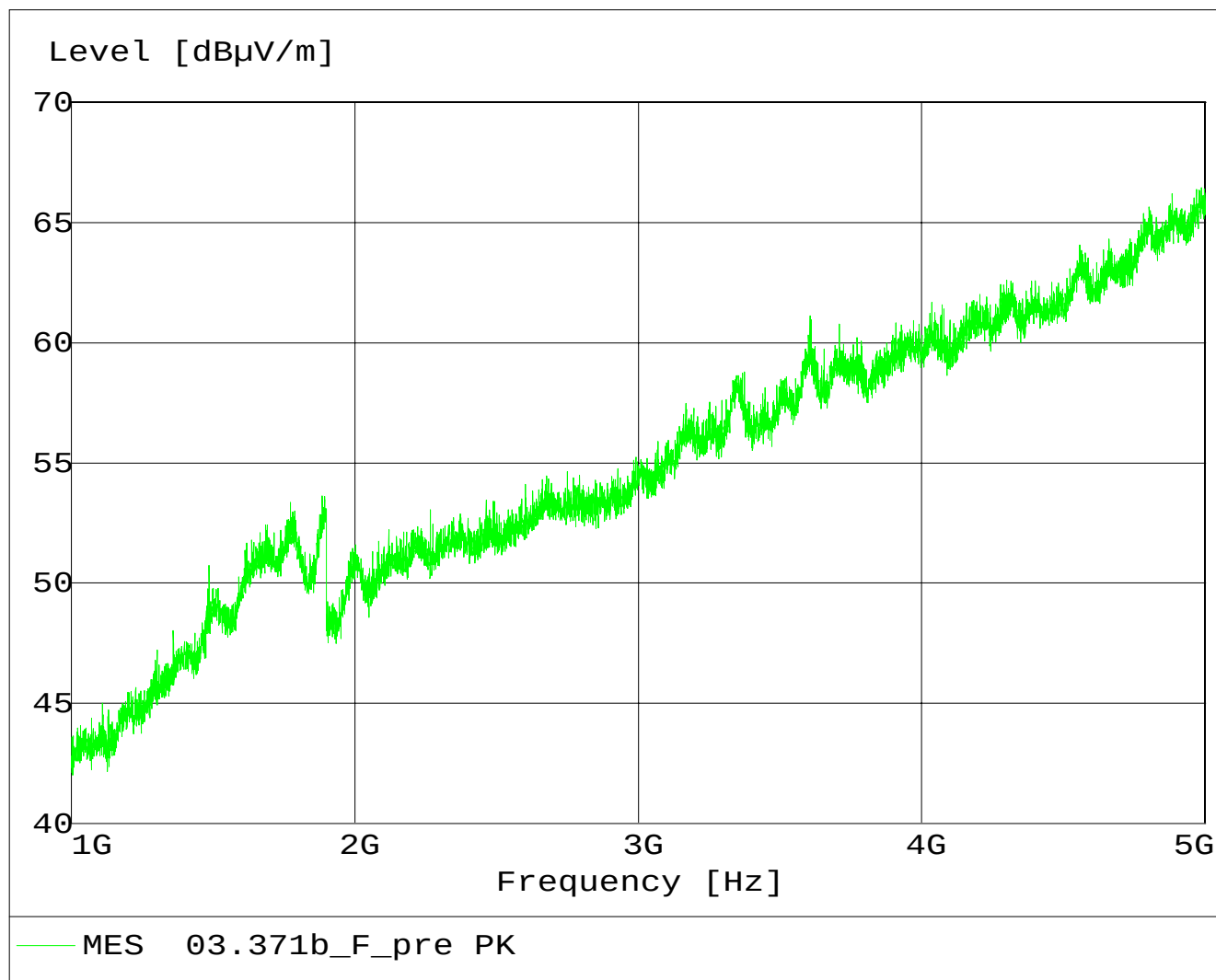
Start Frequency: 1 GHz Step Size: 600 kHz
Stop Frequency: 5 GHz IF Bandwidth: 1 MHz
Measure Time: 0.01 sec.

Receiver: ESXI
Signal Path: Path 4
Scan Mode: Lin
Tracking Gen.: Off
Input: 2 DC
Probe Transducer: HL025
System Transducer: RFin2-CP1/X11
Add. Transducer: W71.01

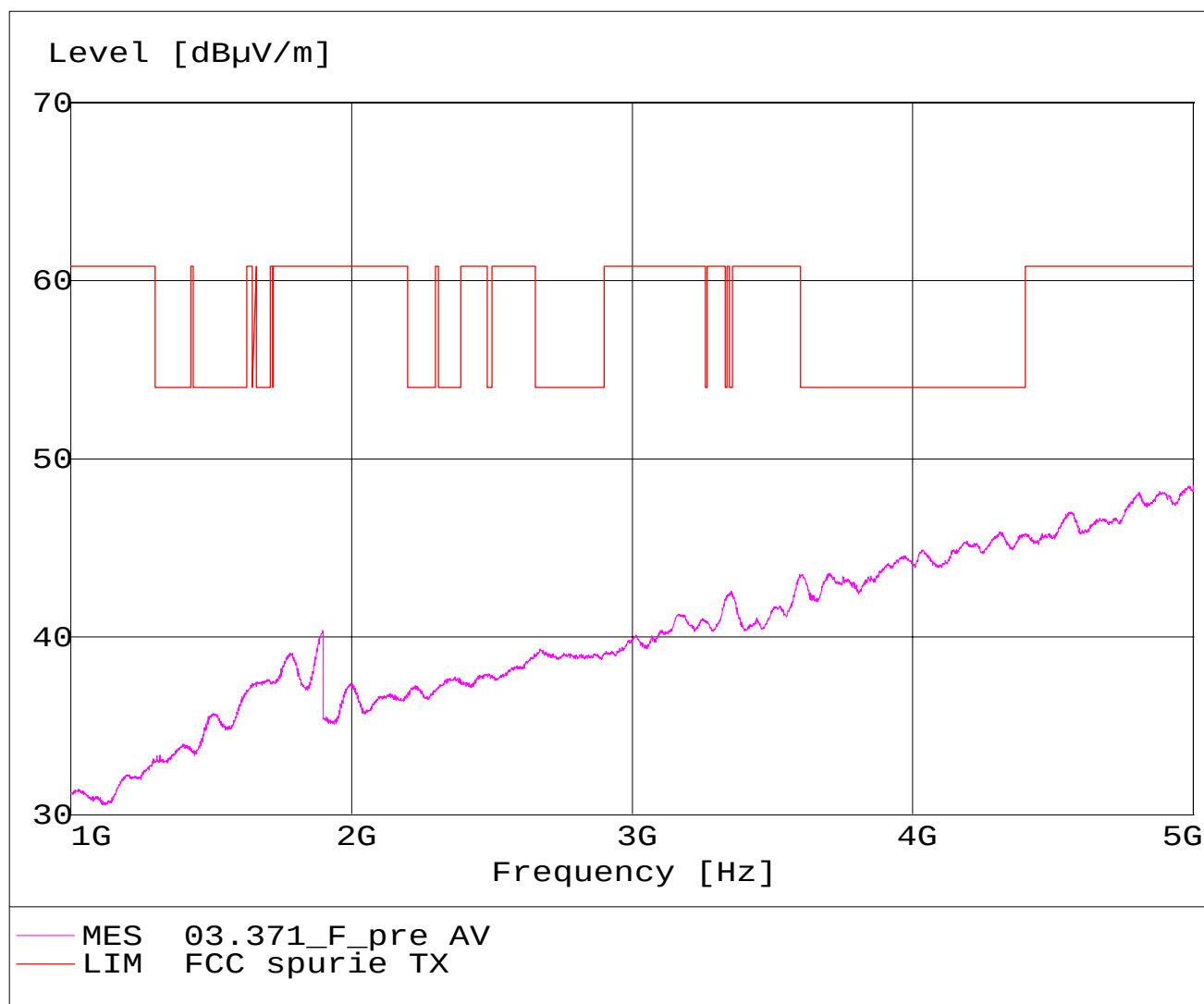
Preamplifier: 10 dB
RF att.: Coupled
Ref. Level: -50 dBm
Min. RF att.: 0 dBm
Autorange: On
Demodulation: FM Broad
Volume: 0.0%
Squelch: --
Option: None

Curve 1: On
Curve 2: On
Repetition: Single
Stop Mark: On
Stop Message: On
Text: Connect antenna

Limit in acc. to provisions of §15.231 for frequencies above 470 MHz related to field strength of spurious emissions.
With a peak detector used for measuring the spurious emissions level the limit is 80.80 dB μ V/m



Limit in acc. to provisions of §15.231 for frequencies above 470 MHz related to field strength of spurious emissions.
With a average detector used for measuring the spurious emissions level the limit is 60.80 dB μ V/m
In addition to the limits over mentioned, in according to Section 15.205 for restricted bands, the limit applied is 54 dB μ V/m



3 EUT TECHNICAL DOCUMENTATION

3.1 Wiring diagrams

	Document reference (n., edition, date, ...)
WIRING DIAGRAM	See TCF at the page 10 and 11
PART LIST	See TCF at the page 14 and 15
TECHNICAL CONSTRUCTION FILE	Doc. TCF-064 Serie : DIGIKEY Type : SEDK2641A4 Date : 28/8/2002-09-17 Sheet no. 22

3.2 Technical manual

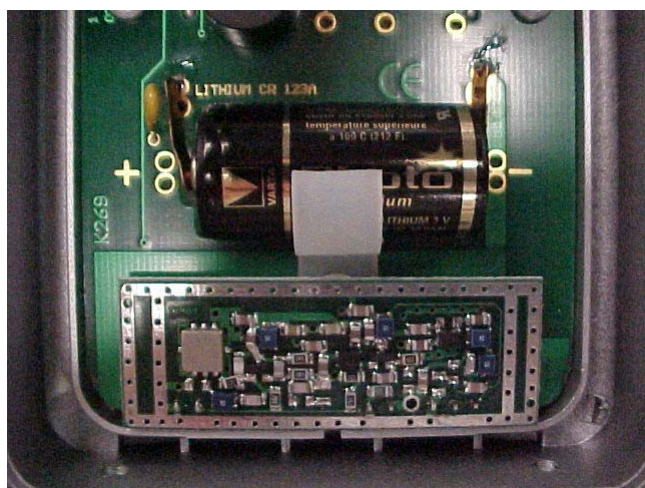
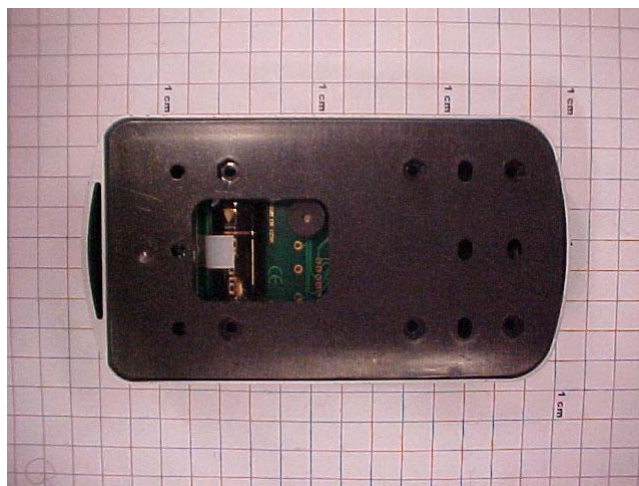
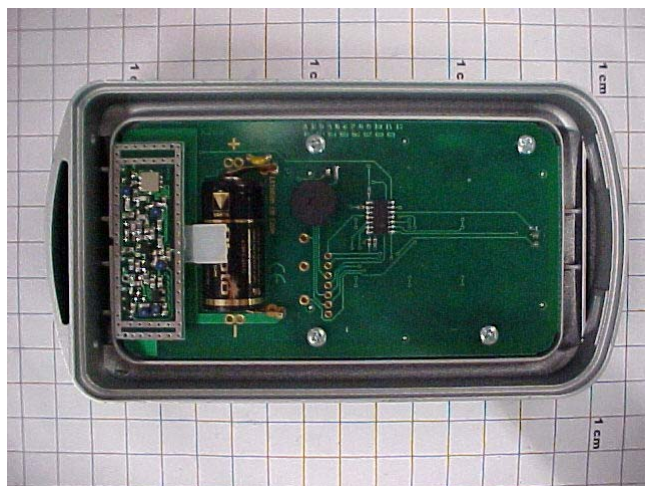
	Document reference (n., edition, date, ...)
ERONE – DIGIKEY	IS-TDKERML
SEDK2641A4	Rev.0 Date 2/8/2002

3.3 Photographic documentation

PHOTO N°1 – E.U.T. IDENTIFICATION



PHOTO N°2 – E.U.T. IDENTIFICATION



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