

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 :

TELEMETRY UNIT
K4b²
Code C001599-02-04

REFERENCE STANDARDS :
NORME DI RIFERIMENTO :

FCC 47 CFR Part 15

CUSTOMER:

RICHIEDENTE:

- **Dept. / Firm :** *COSMED S.r.l.*
Ente / Società:
- **Mr.:** *Eng. PAGLIEI*
Sig.:
- **Address:** *VIA DEI PIANI DI MONTE SAVELLO, 37 – 00040 PAVONA DI ALBANO (RM) - ITALY*
Indirizzo:
- **Tel. :** ++39 06-9315492 • **Telefax** ++39 06-9314580 • **E-mail:** info@cosmed.it
Telefono : *Fax :* *e-mail*

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

Date of test samples receipt: 01/09/04 **Date of start test:** 01/09/04
Data ricevimento campioni: *Data inizio prove:*

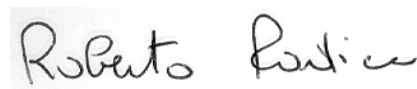
Date of end test: 01/09/04
Data fine prove:

Witness to the test:
Presenti alle prove:

Signature of the engineers:
Firma esecutore prove:

Signature of the Laboratory Director:
Firma Direttore Laboratori:

Eng. Pagliei



R. Radice



R. 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: COSMED
Equipment : TELEMETRY UNIT
Model name or No. : K4b² Code C001599-02-04
Serial number : 200407620
FCC ID : SN7-K4B2R-USA
Country of manufacturer: ITALY

1.2 Technical data

FCC class: Unintentional radiators, Class B
Supply voltage: 6 V dc Internal battery LR6 SIZE AA x 4
or external power supply 115Vac/6Vdc K4 Code C00260-01-04
Input Power / Current : *****
Type of receiver Superetherodyne
Maximum internal frequency generated by EUT 10.245 MHz
Typical usage : Telemetry unit for medical equipment
EUT single or system: Single
EUT dimensions : 16,5 x 11,8 x 15,7 cm (with antenna)

1.3 Receiver technical data

- Reception frequency: 913,3 ÷ 914,7 MHz
- Frequency Range of Operation: 913 ÷ 915 MHz

1.4 Modifications incorporated in E.U.T.

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

- None

1.5 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 surface	By 4 screws
2	AC power input/output ports	Line not present	*****
3	DC power input/output ports	Internal 6 V dc battery or external power supply 115Vac/6Vdc from device K4 Code C00260-01-04	Battery connector
4	Signals ports	RS232 Line for connection with Personal Computer	RJ Connector
<i>Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.</i>			

1.6 Auxiliary equipment

No auxiliary equipment

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>Unit in reception mode</i>

2.2 Test overview

Sample tested is the main model of a complete set of 915 MHz RF receiver

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 Telemetry unit for medical equipment

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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 - 1000 MHZ9

EMISSION OF MAINS TERMINAL DISTURBANCE VOLTAGE (CONTINUOUS
DISTURBANCE)..... 12

**TEST
1.****RADIATED EMISSION 30 - 1000 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 = $(k=2) \pm 3.5$ 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 :		6 V dc internal battery

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: 1000.0 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

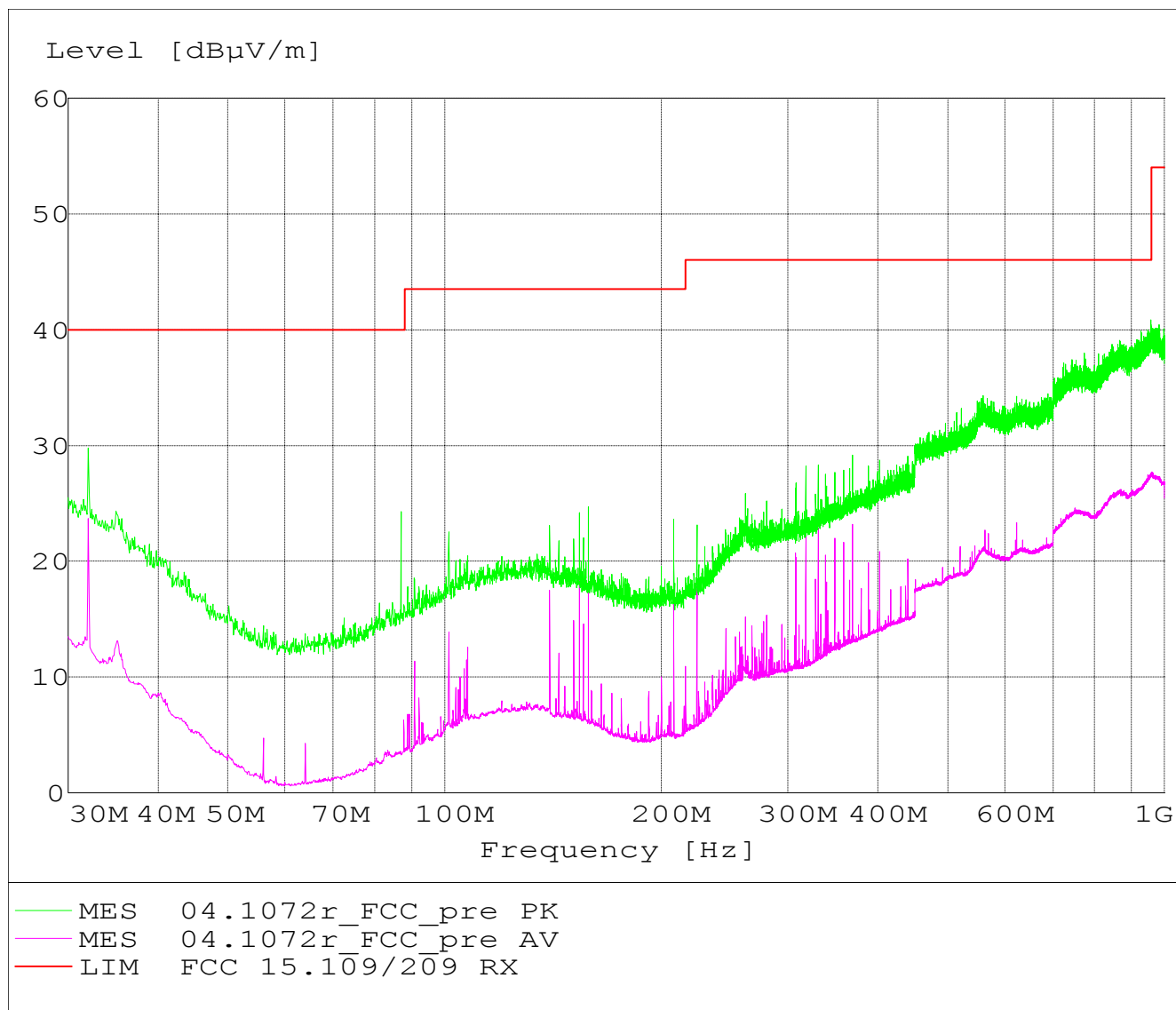
Curve 2: Off

Stop Mark: On

Stop Message: On

Text: Connect antenna

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

FCC47CFR Part 15

- **TEST SETUP:** According to reference standard
- **TEST LOCATION:** Shielded chamber
- **TEST EQUIPMENT USED FOR TEST:** EMI receiver Rohde & Schwarz Mod. ESHS-10
Artificial Network Rohde & Schwarz Mod. ESH3-Z5

- **TESTED PORT:** AC mains
- **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	25 $\pm$ 3 °C
Ambient humidity :	25 - 75 %rH	43 $\pm$ 5 %rH
Pressure :	85 - 106 kPa (860 mbar - 1060 mbar)	975 $\pm$ 50 mbar
Voltage :		Input 115 Vac / 60 Hz Output 6 Vdc

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

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SCAN TABLE : Voltage MainsUnit : dB μ VDetector : Mode :

Curve 1: MaxPeak ClearWrite

Curve 2: Average ClearWrite

Start Frequency : 150.0 kHz

Stop Frequency : 30.0 MHz

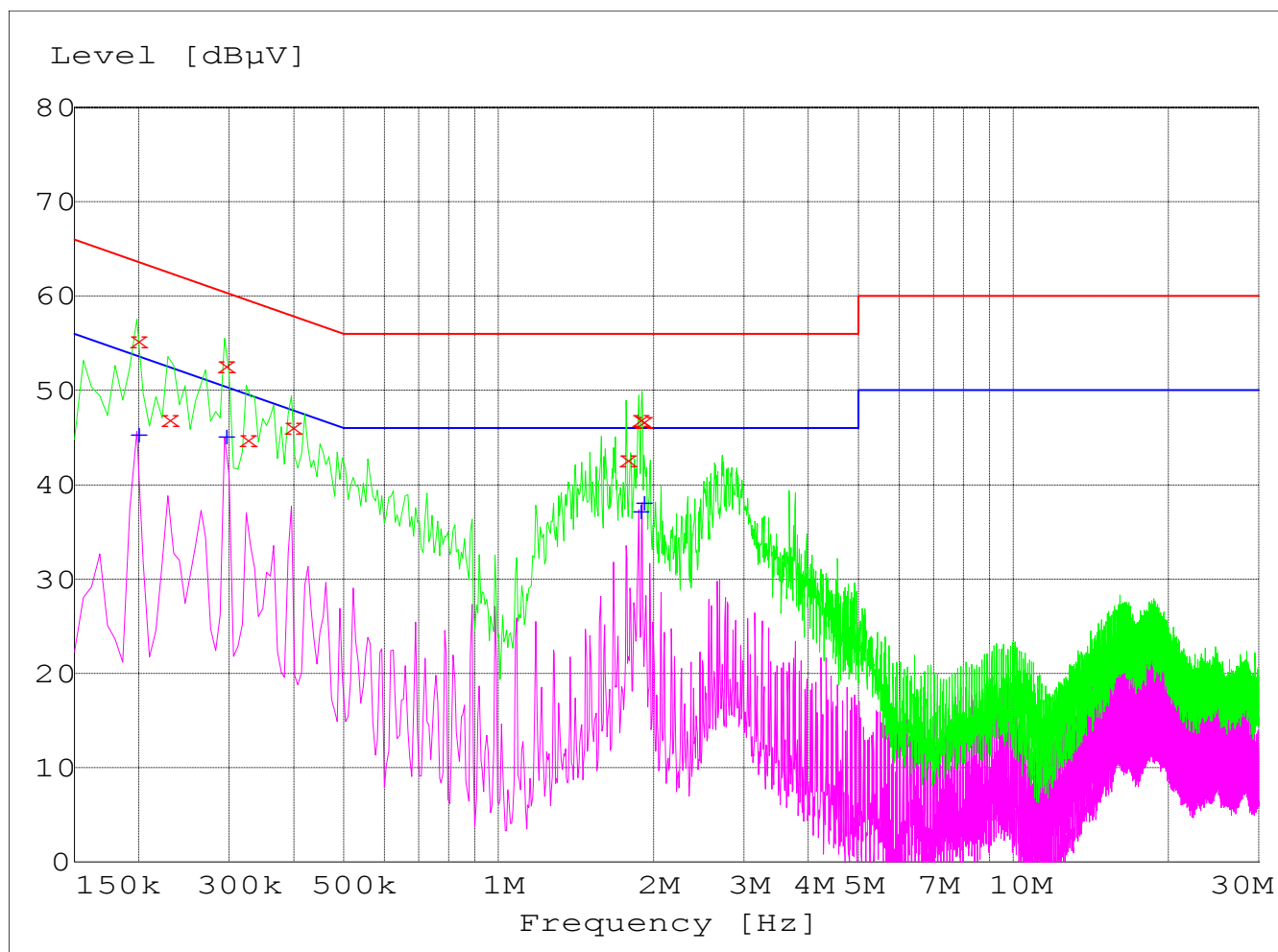
Measure Time : 10.0 ms

IF Bandwidth : 9 kHz

Step size : 6 kHz

Receiver : ESHS-10**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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FINAL TEST (QUASI-PEAK)

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.198000	55.40	0.20	63.70	8.30	L1	GND
0.228000	47.10	0.20	62.50	15.40	L1	GND
0.294000	52.70	0.10	60.40	7.70	L1	GND
0.324000	44.90	0.10	59.60	14.70	L1	GND
0.396000	46.20	0.10	57.90	11.80	L1	GND
1.770000	42.80	0.30	56.00	13.20	L1	GND
1.872000	47.10	0.30	56.00	8.90	L1	GND
1.902000	46.90	0.30	56.00	9.10	N	GND

FINAL TEST (AVERAGE)

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.198000	45.30	0.20	53.70	8.40	N	GND
0.294000	45.10	0.10	50.40	5.40	N	GND
1.872000	37.20	0.30	46.00	8.80	N	GND
1.902000	38.10	0.30	46.00	7.90	L1	GND

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6. EUT TECHNICAL DOCUMENTATION

6.1 Wiring diagrams

	<i>Document reference (n., edition, date, ...)</i>
WIRING DIAGRAM	*****
PART LIST	Unità RX K4 B ² USA – Code C01599-02-04 Date: 04/06/2004 Rev. /

6.2 Technical manual

	<i>Document reference (n., edition, date, ...)</i>
K4 b ² USER MANUAL	XII Edition – January 2005

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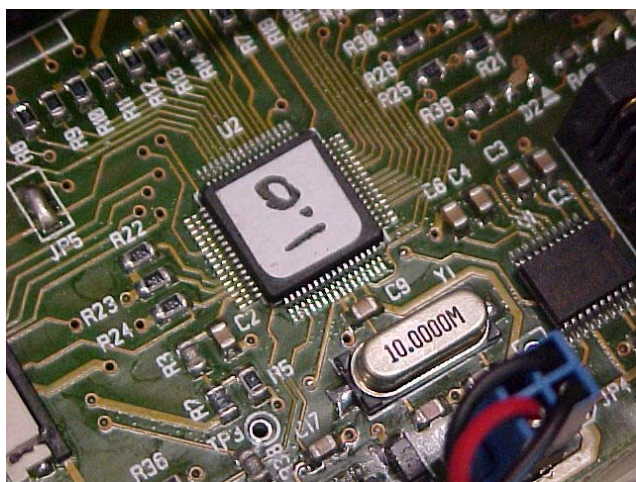
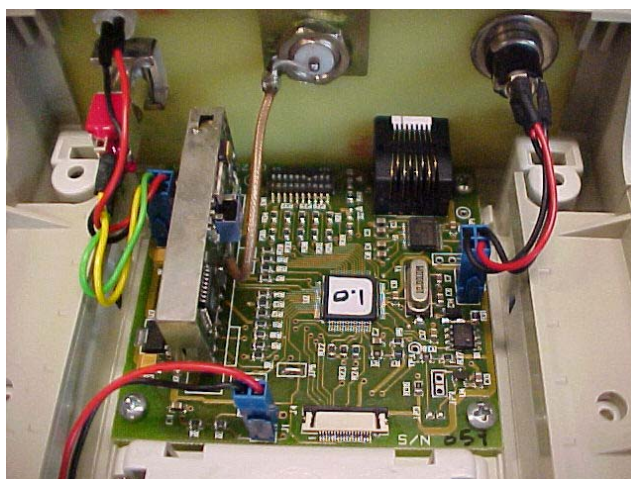
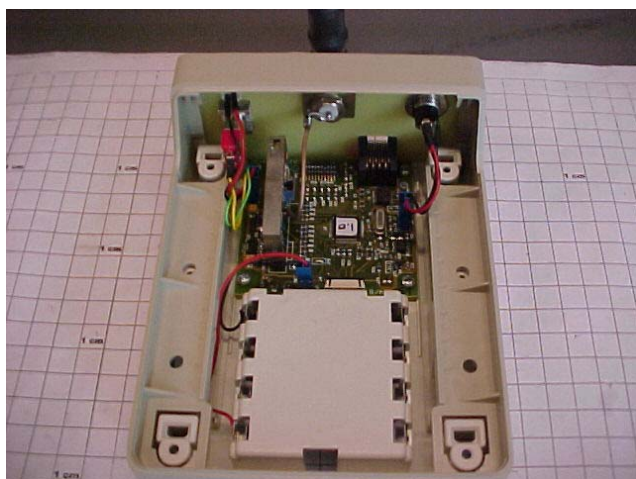
6.3 Photographic documentation

PHOTO No. 1 – EQUIPMENT UNDER TEST IDENTIFICATION AND LABEL



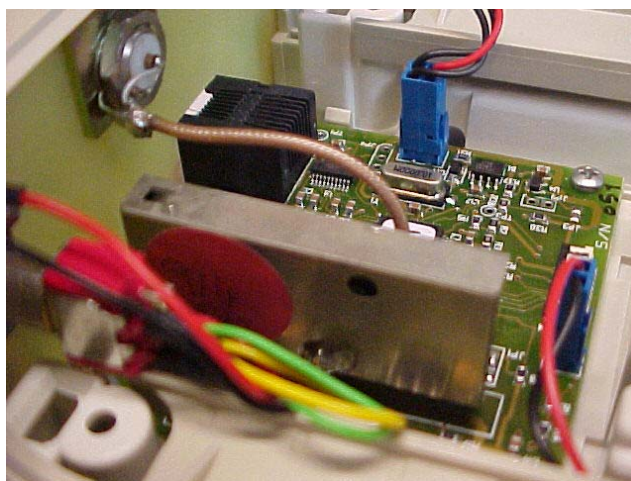
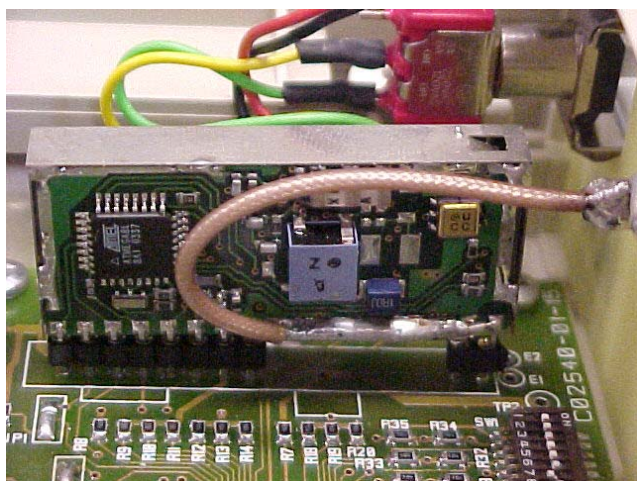
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PHOTO No. 2 – EQUIPMENT UNDER TEST IDENTIFICATION: INTERNAL VIEW



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PHOTO No. 3 – RECEIVER UNIT INSIDE OF EQUIPMENT AND ANTENNA



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PHOTO No. 4 – SET-UP FOR EMISSION RADIATED TEST

