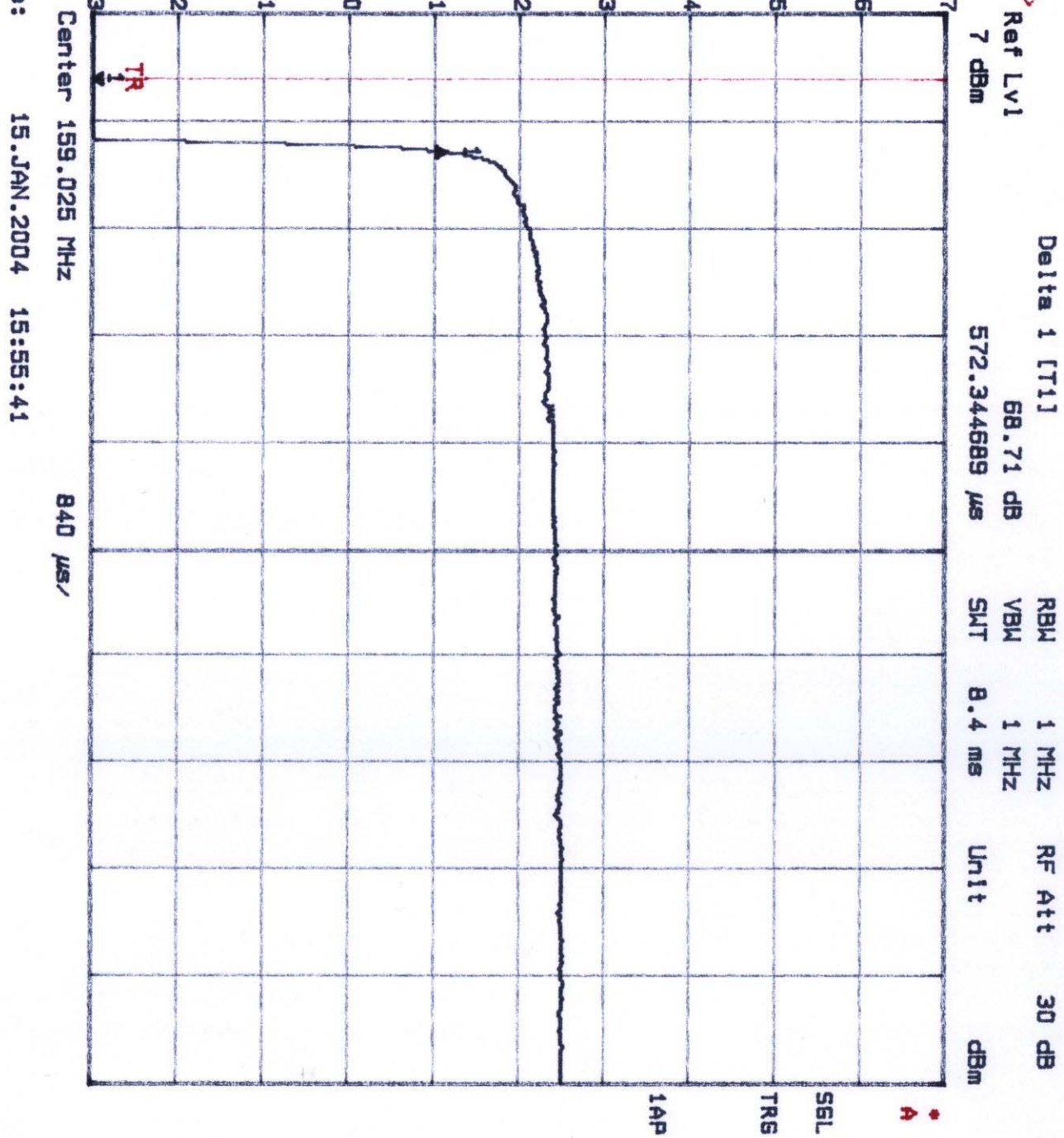
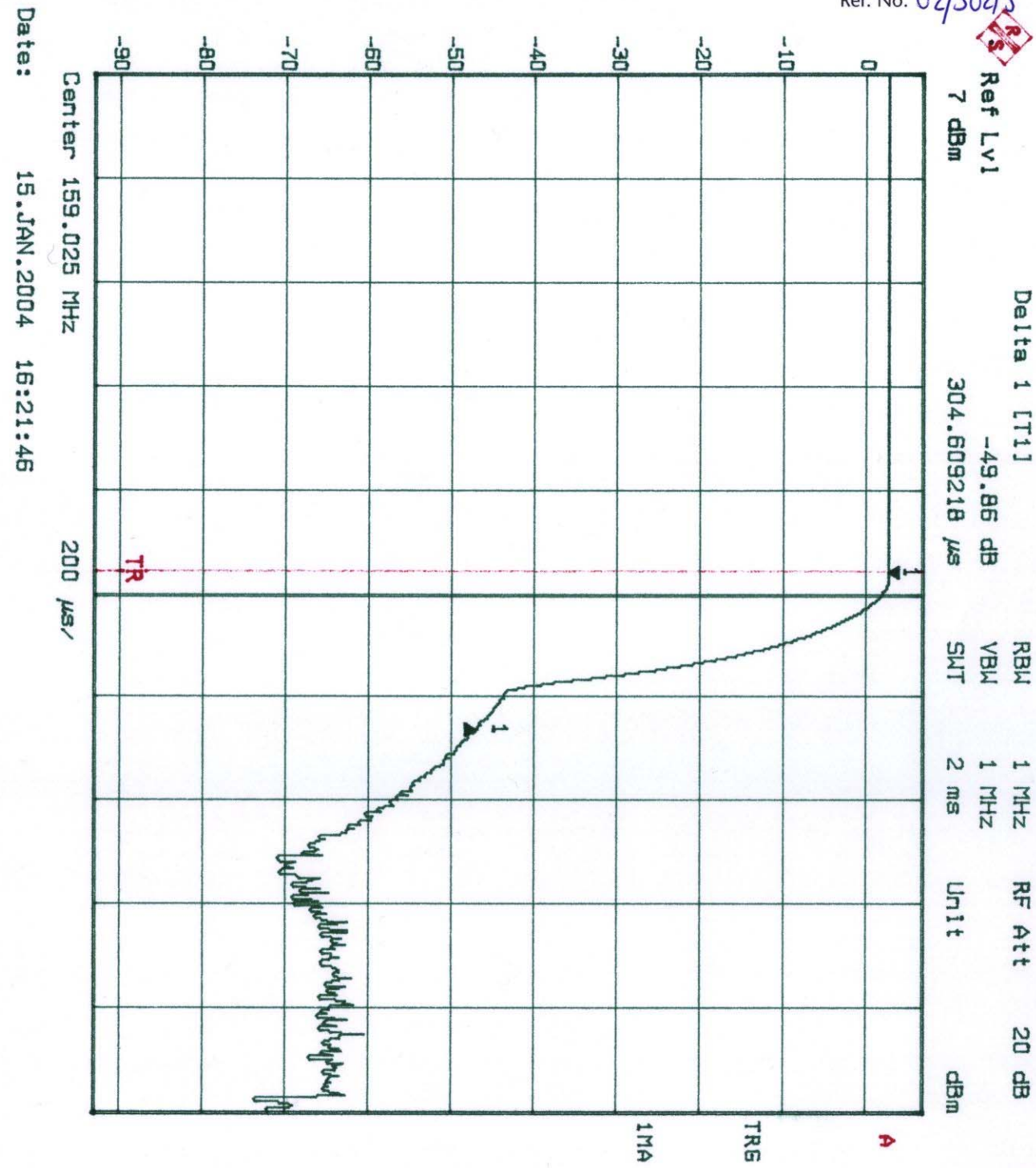
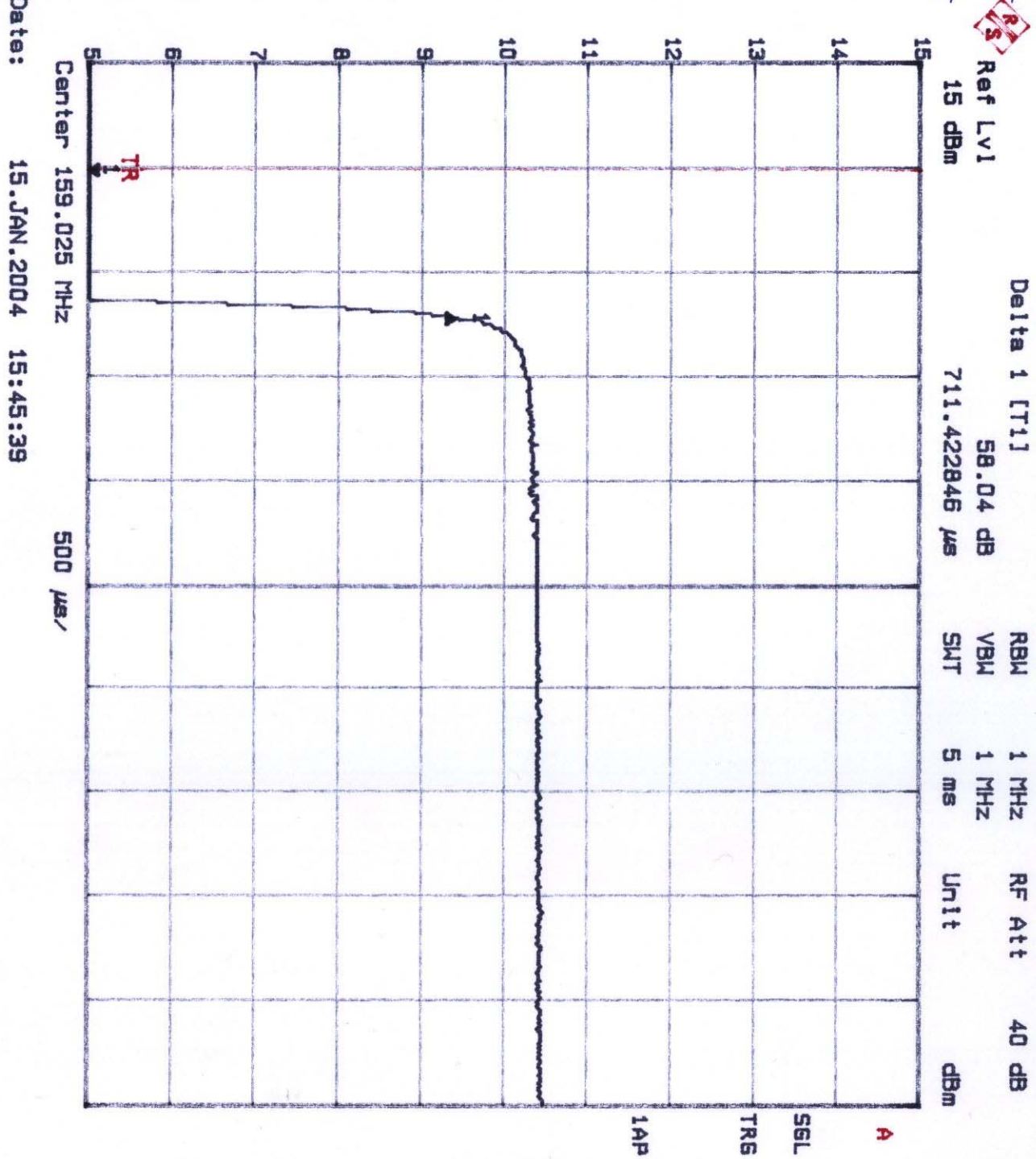
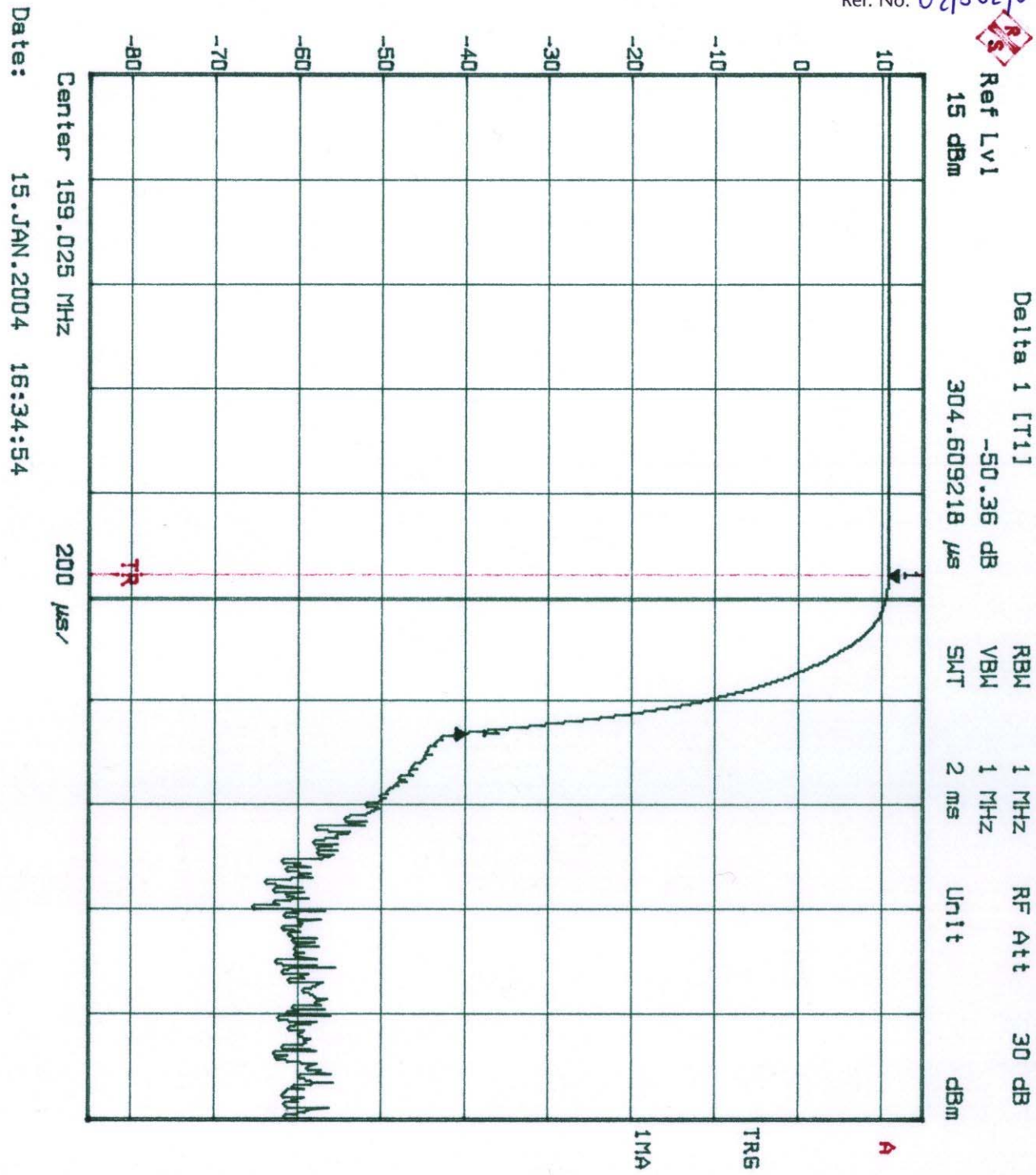
COMLAB

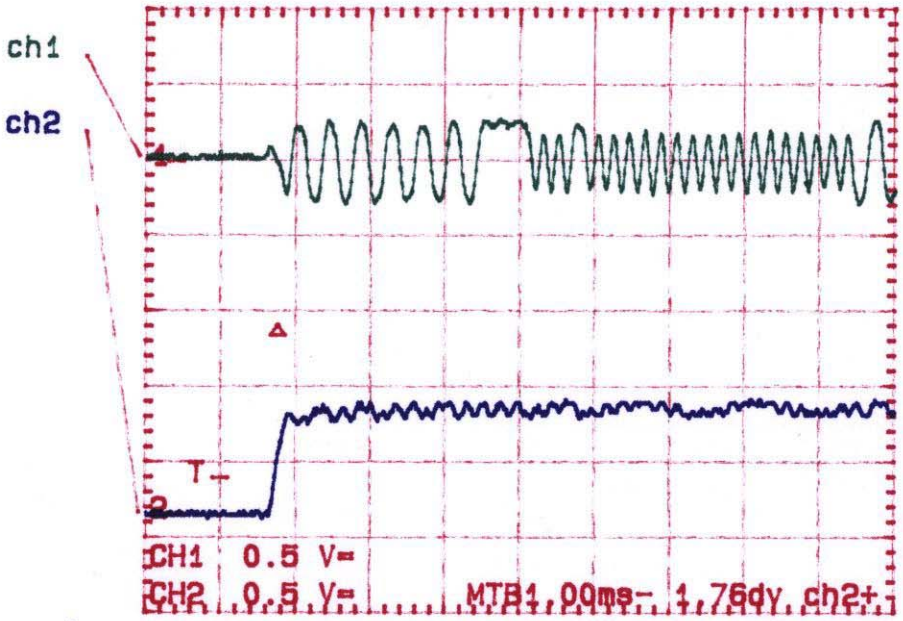

Ref Lvl
7 dBm
Delta 1 [T1]
68.71 dB
572.344689 µs
RBW 1 MHz
VBW 1 MHz
SWT 8.4 ms
RF Att 30 dB
Unit dBm
SGL
TRG
1AP
A
7
6
5
4
3
2
1
0
-1
-2
-3
T1
Center 159.025 MHz
840 µs/
Date: 15.JAN.2004 15:55:41


Ref Lvl
7 dBm
Delta 1 [T1]
-49.86 dB
304.609218 µs
RBW 1 MHz
VBW 1 MHz
SWT 2 ms
RF Att 20 dB
Unit dBm
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
TR
1
1
A
TRG
1MA
Center 159.025 MHz
200 µs/
Date: 15.JAN.2004 16:21:46


Ref Lvl
15 dBm
Delta 1 [T1]
58.04 dB
711.422846 µs
RBW 1 MHz
VBW 1 MHz
SWT 5 ms
RF Att 40 dB
Unit dBm
A
SGL
TRG
1AP
15
14
13
12
11
10
9
8
7
6
5
TR
Center 159.025 MHz
500 µs/
Date: 15.JAN.2004 15:45:39


Ref Lvl
15 dBm
Delta 1 [T1]
-50.36 dB
304.609218 µs
RBW 1 MHz
VBW 1 MHz
SWT 2 ms
RF Att 30 dB
Unit dBm
10
0
-10
-20
-30
-40
-50
-60
-70
-80
TR
TRG
1MA
A
Center 159.025 MHz
200 µs/
Date: 15.JAN.2004 16:34:54

PM3392A, FLUKE incorporating PHILIPS T&M



ch1 Frequency behaviour as a function of time
Same behaviour with H/L power.
The upper graph shows the demodulated data-signal. No measurable frequency deviation of the carrier.

AIS

Environmental test overview

Combination of tests according to IEC 61993-2 Chapter 15 and environmental test according to IEC 60945 chapter 8.1 table 2 performance tests PT performance check PC				Frequency Error (IEC61993-2 Chapter 15.1.1)	Carrier Power (IEC61993-2 Chapter 15.1.2)	TX attack & release time (IEC61993-2 Chapter 15.1.5/6)	Frequency error of the DSC signal (IEC61993-2 Chapter 15.2.1)	Sencitivity 25KHz/12.5KHz (IEC61993-2 Chapter 15.3.1/2)	DSC receiver Maximum sensitivity (IEC61993-2 Chapter 15.4.1)	channel switching 14.7
Dry Heat 8.2.2	P.S Volt	60945 requ.	**accepted:**	61993-1 15 :						
	+	PC	**radio tests**	X	X		X	X	X	
	0	PT	--							
	-	PC	**PC**							
low Temp. 8.4.2	P.S Volt	60945 requ.								
	+	PC	**PC**							
	0	PT	--							
	-	PC	**radio tests**	X	X		X	X	X	
Damp Heat 8.3	P.S Volt	60945 requ.								
	+									
	0	PC	**PC**							
	-									
normal temperature 7.2	P.S Volt	60945 requ.								
	+	PT	**PC**							
	0	PT	**radio tests**	X	X	X	X	X	X	X *1)
	-	PT	**PC**							

*1) functional test; BSH

legend:

PT	PT as required by 60945 7.1 table 2
radio tests	radio-tests required by 61993-2 15 accepted as PT
PC	PC done as required by 60945 7.1 table 2 or replacing PT

referrring to:

61993-2 10.2.2	specification of extreme test conditions
61993-2 12	PT and PC specification
61993-2 15	requirements for test under extreme conditions
60945 7.1 table 2	PT and PC requirements

result:

- dry heat: radio-tests are replacing PT for high PS voltage (provided that test procedure as in 60945 is fulfilled and confirmed), PC shall be done for low PS voltage
- low temp.: radio-tests are replacing PT for low PS voltage (provided that test procedure as in 60945 is fulfilled and confirmed), PC shall be done for high PS voltage
- damp heat: PC shall be done
- nom temp.: radio-tests are accepted as PT for nom. PS voltage; PC shall be done for high and low PS voltage

Eirik
see comments below:

1.We have problems measuring the BER for DSC. Can we measure PER instead? Will 80% be accepted as result of PER measurement?

acceptable, depending on packet size. Result should include some positive "buffer" because below formula is based on statistically independent bits.

BER = 1 - [(1-PER)^(1/n)]

n = total # of bits in the packet
PER = packet error ratio expressed as a decimal (i.e. 20% = 0.2)

2. In 61993-2 chap.15.3.6 section a, last column it is referred to a modulated signal. Modulated with what? Is it 400Hz +/- 3KHz dev.?

yes

3. In 61993-2 chap.15.3.10 "Method of measurement" we are a bit confused how to measure this according to figure 11. Do you have any suggestions?

The test as described can be done by assigning fixed tx slots to the EUT and transmitting test messages in the slots immediately following those where the EUT transmits itself. This requires the possibility to transmit msg16 by the test environment (and thus a simulator or base station software).
Levels and method are similar to the sensitivity test chekking for 20% PER.

You could alternatively consider to verify the tx/rx behaviour hardwarewise using a storage scope and a sinus modulated test signal with correct level connecting e.g. channel 1 to tx trigger or RF and channel 2 to demodulator output showing that the demodulated sinus is correctly output by the demodulator immediately after end of tx time (not cutting more than 0.83ms from next slot which is the beginning of training sequence).
This alternative method would also be accepted.

Ralf

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Federal Maritime and Hydrographic Agency
Ralf-Dieter Preuss (S3)
Bernhard-Nocht-Str. 78 Tel: +40-3190-7300
20359 Hamburg Fax: +40-3190-5000

```
Hei Knut Risting,
Håper du kan bruke dette

mvh,
Stig Erik

Software versjoner:

SW version DSP 02.00.04
SW version RF   02.00.00

Testsignal type 1:

10.4.1 Standard test signal number 1
A DSC call with an individual station address and with command sets 103
(report your position) and 111 (report ship name)

DSC PACKET FORMAT.

DOT PATTERN = [1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0,1,0]  = 20 bits.

50 Symbols as follows :

DX,RX7,
DX,RX6,
DX,RX5,
DX,RX4,
DX,RX3,
DX,RX2,
A0,RX1,
A0,RX0,
B1,A0,
B2,A0,
B3,B1,
B4,B2,
B5,B3,
C0,B4,
D1,B5,
D2,C0,
D3,D1,
D4,D2,
D5,D3,
E1,D4,
E2,D5,
F0,E1,
G0,E2,
F0,F0,
F0,G0

encoded as 50 symbols X 10 bit error detecting code = 500 bits.
Total = 500 + 20  = 520 bits
_____________________________________________________________

This e-mail, including attachments if any, have been scanned
for viruses using Guinevere 2 and Norman Virus Control 5.7

  => Visit Jotron Electronics at www.jotron.com/ !
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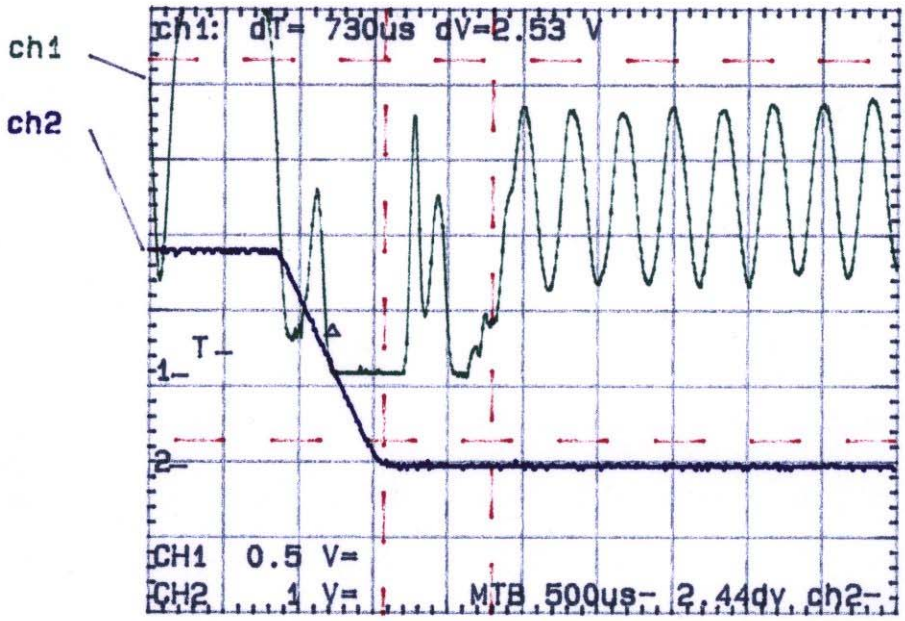
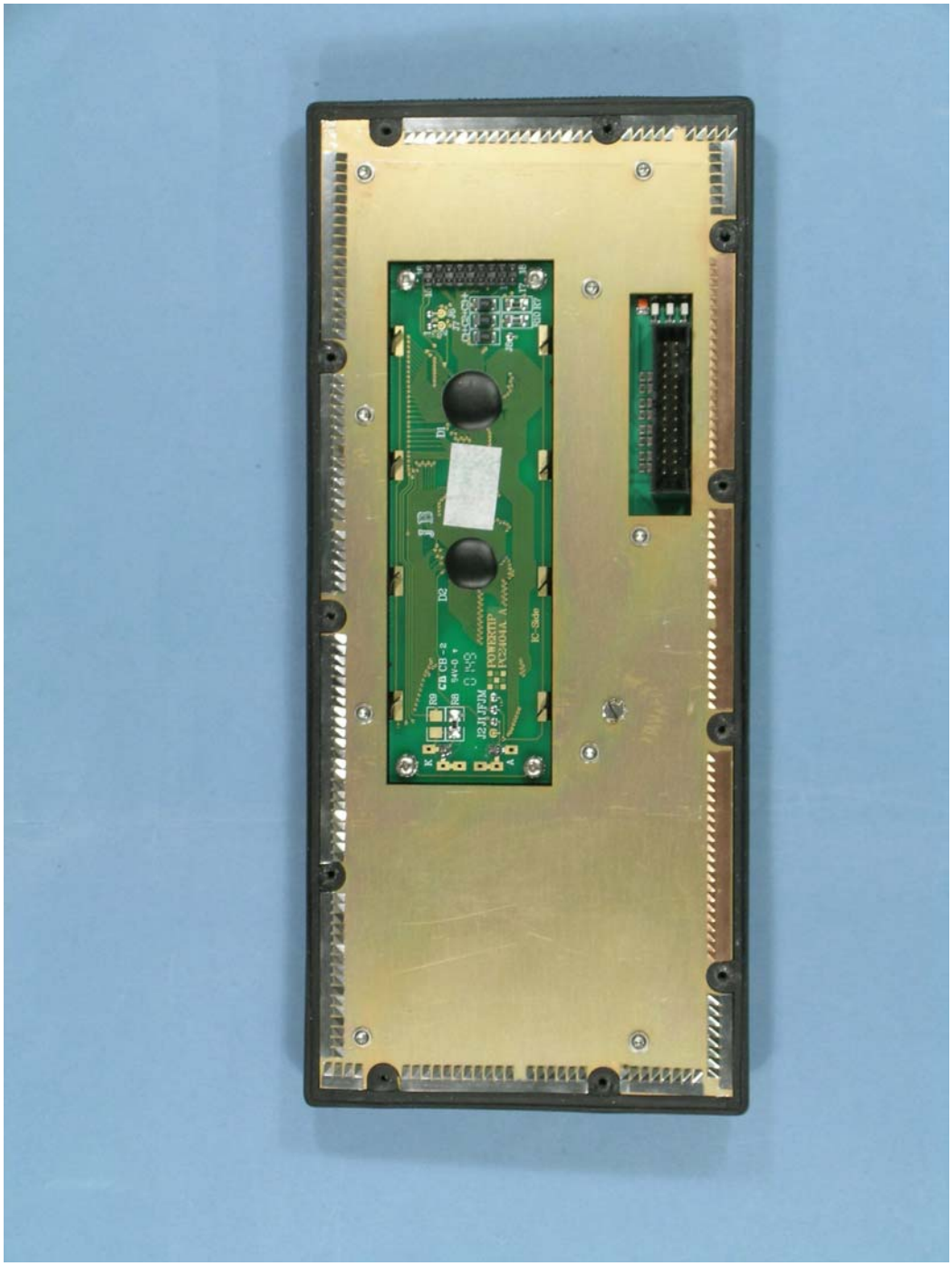
PM3392A, FLUKE incorporating PHILIPS T&M



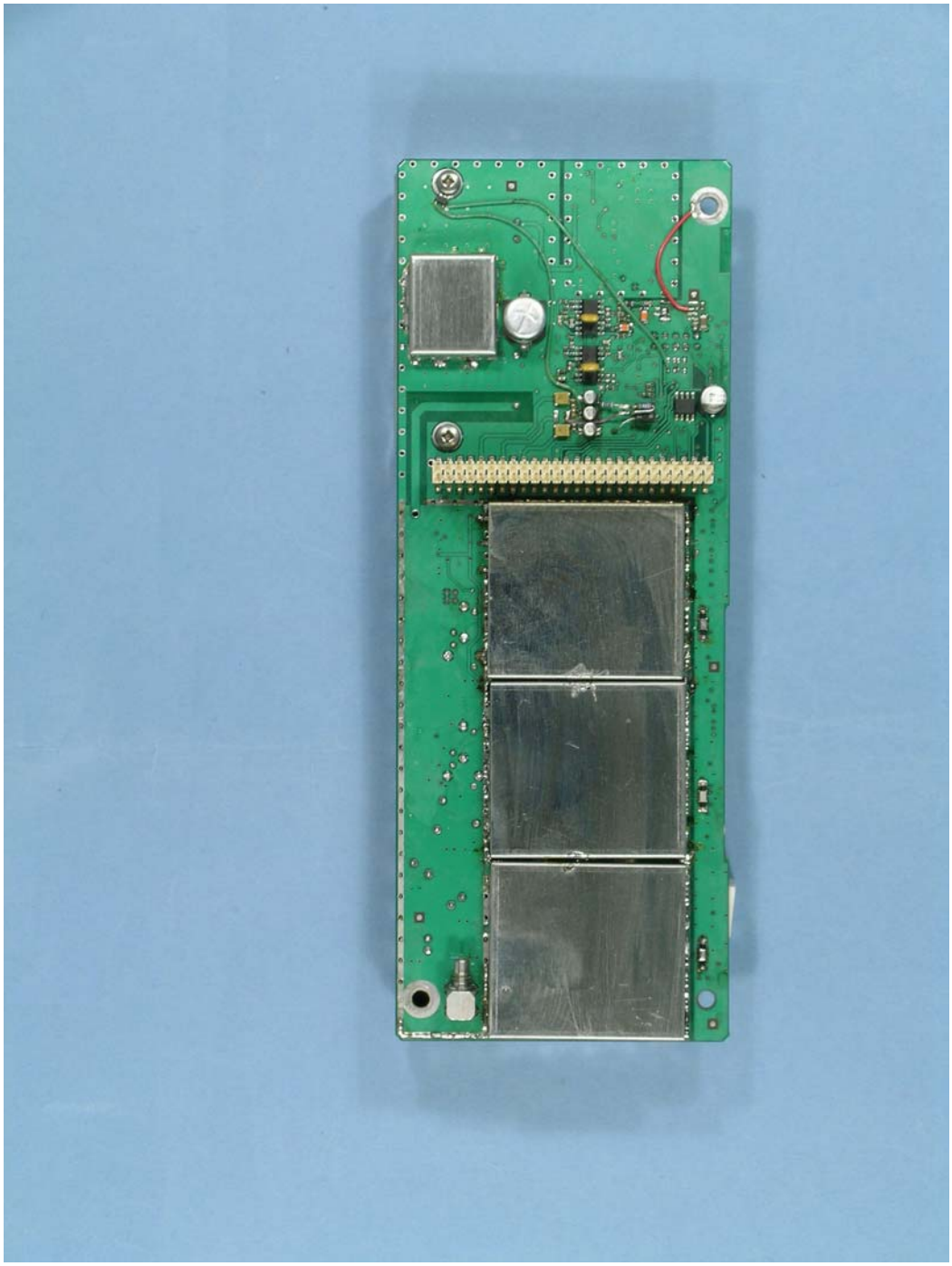
JOTRON
Alarm
OK
RX
TX
Menu
Enter
Esc
Del
Tron UAIS TR-2500
0
5
10
15
Cm

Front

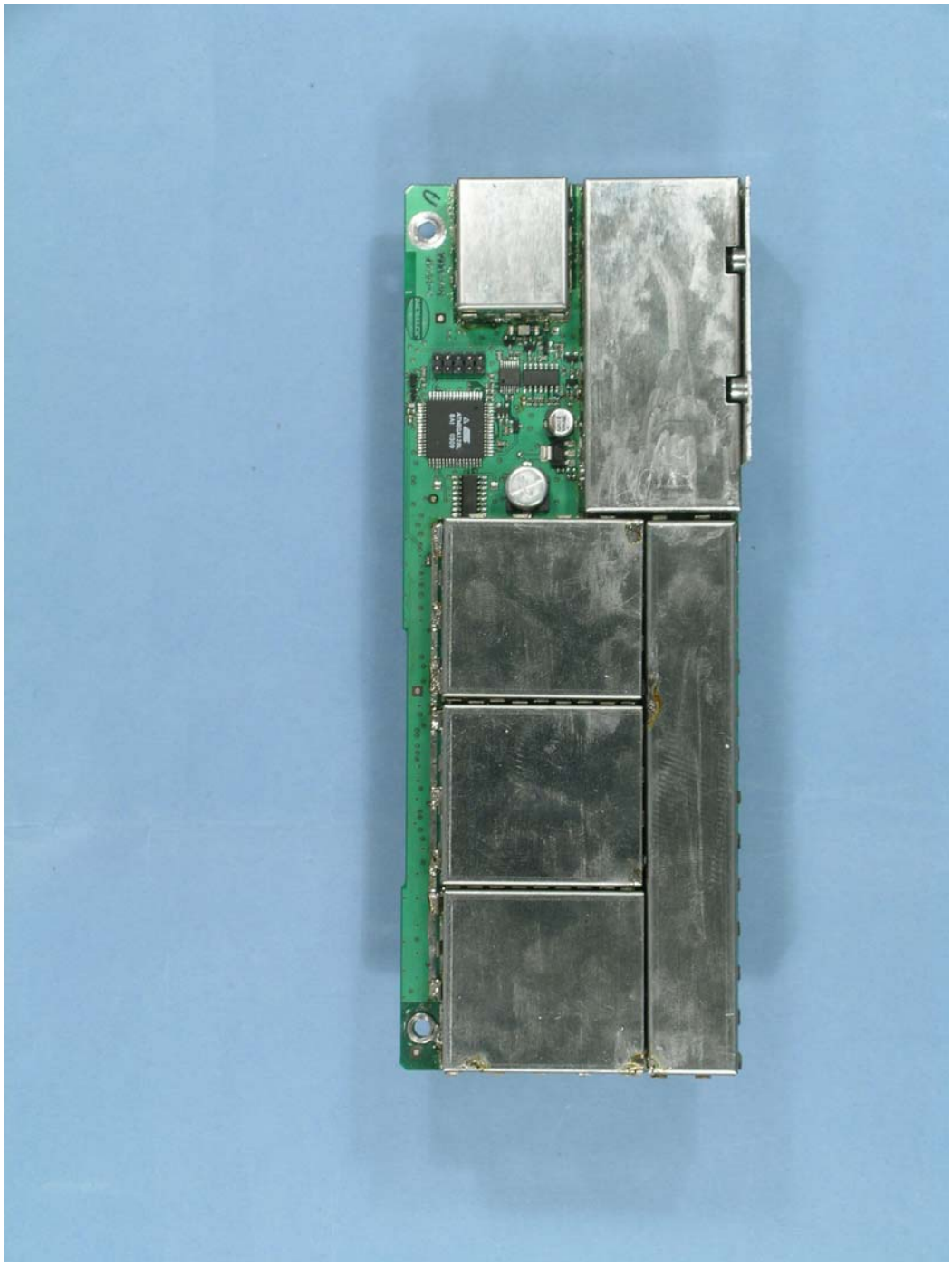
Reverse side



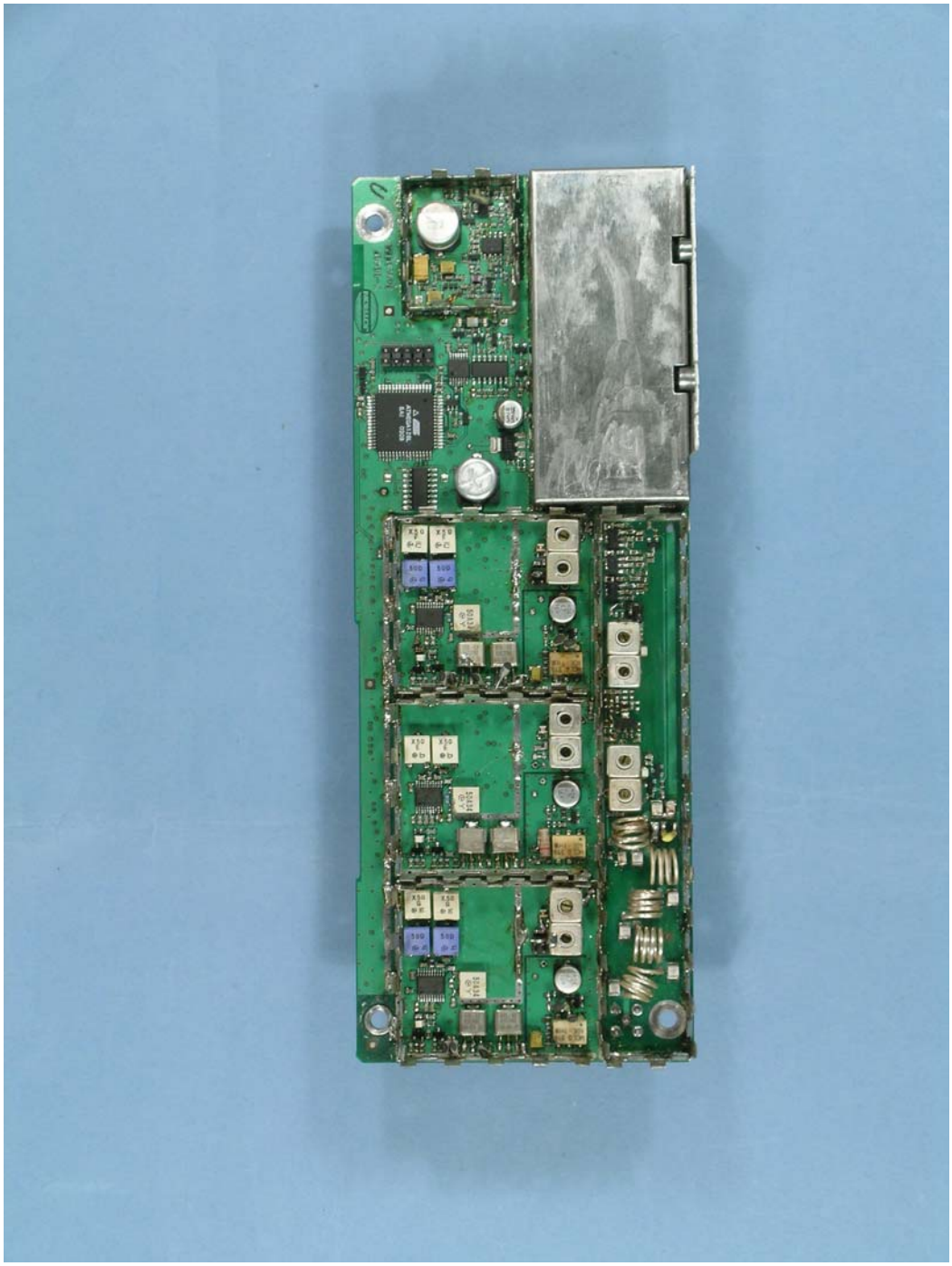
Front inside



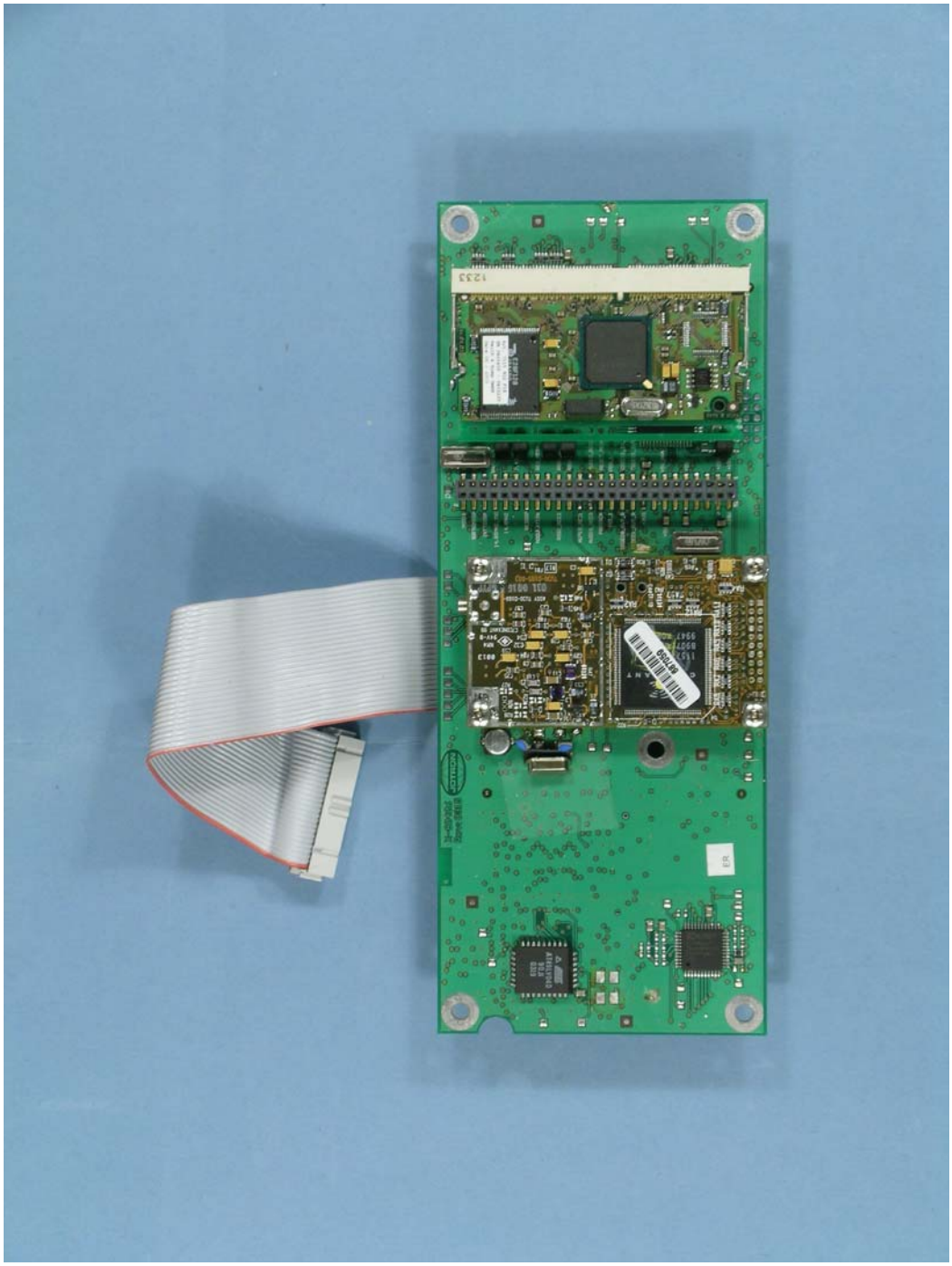
Radio printed board assembly



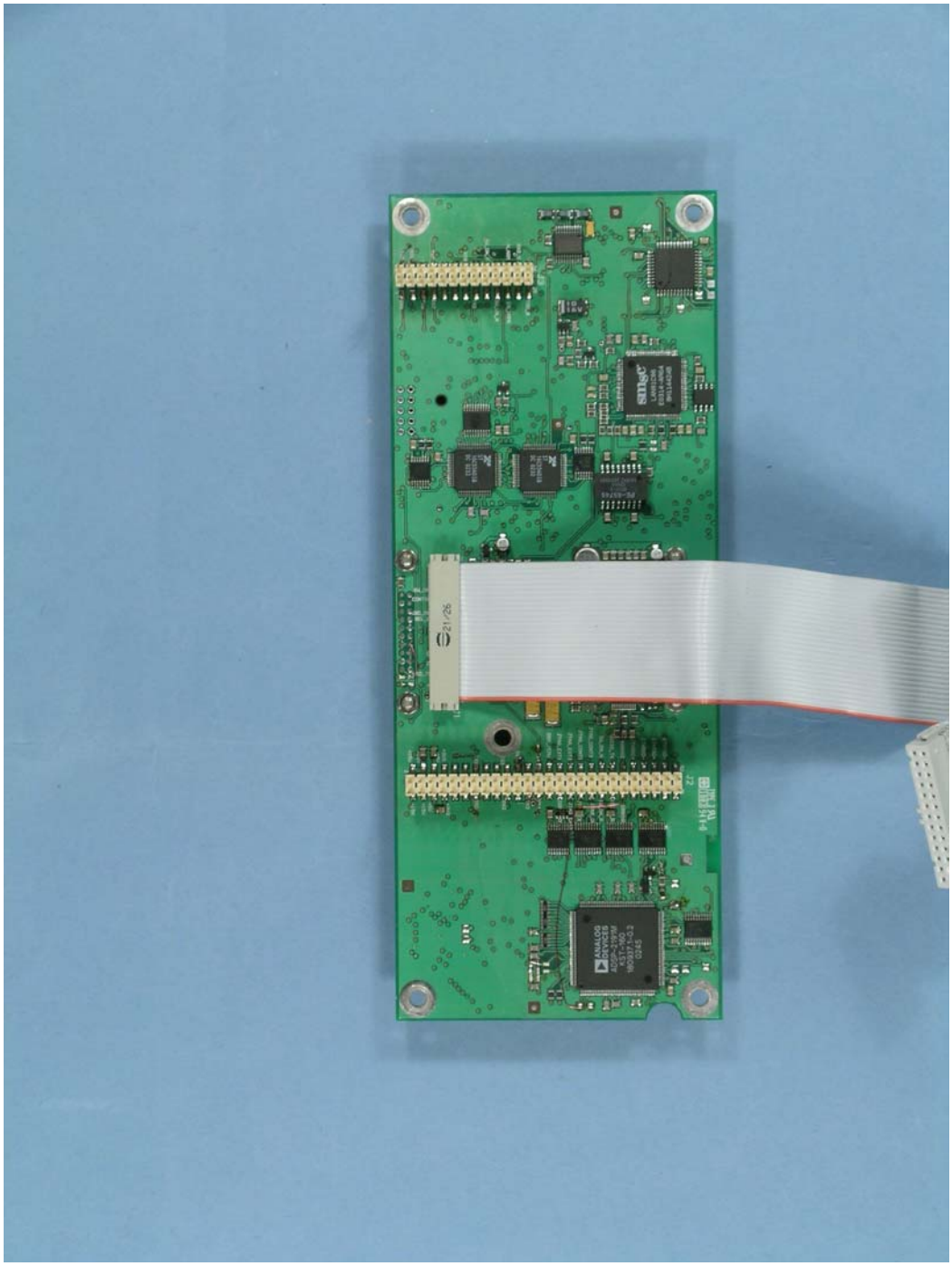
Radio printed board assembly



Radio printed board assembly



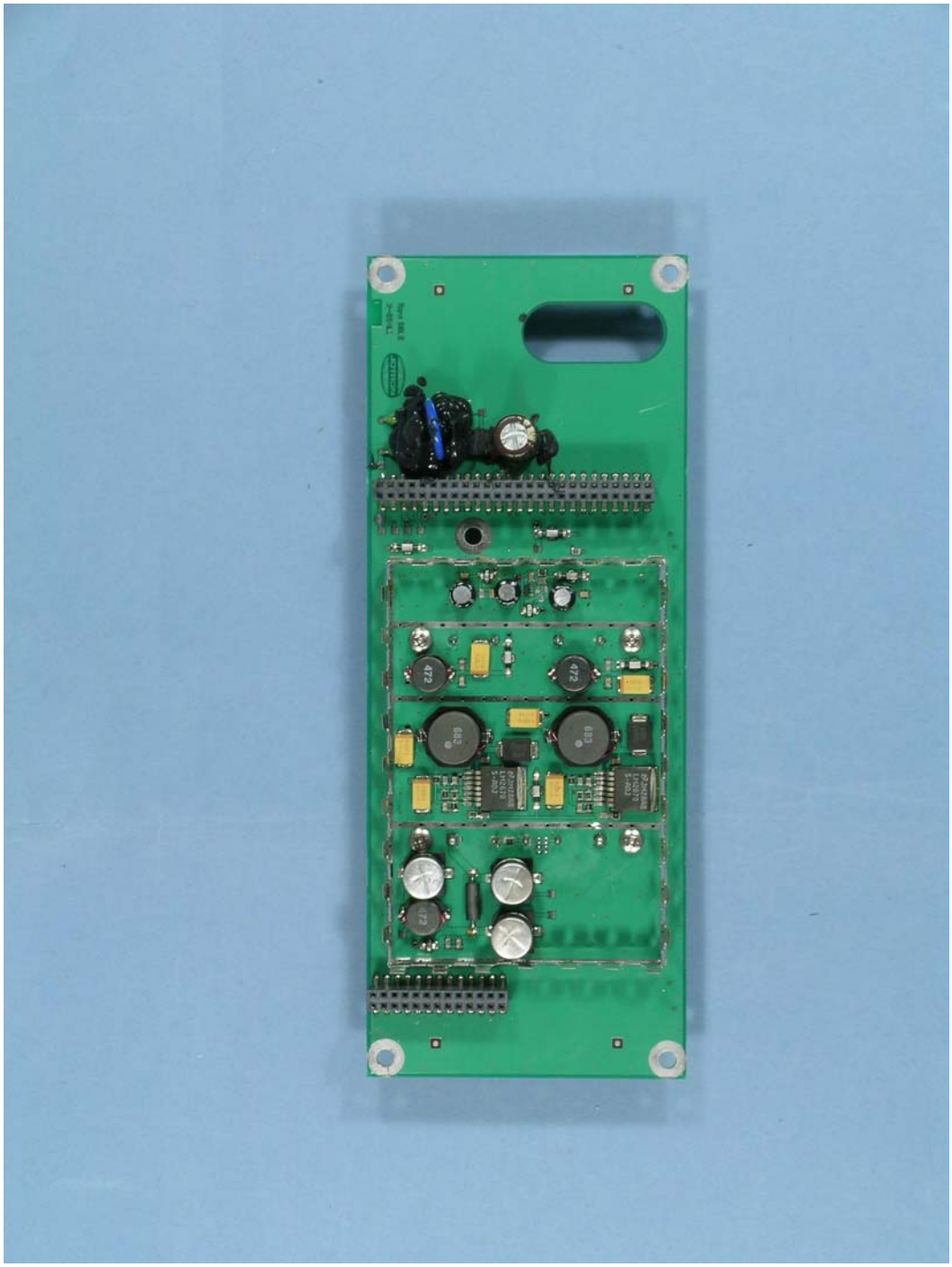
Digital printed board assembly



Digital printed board assembly

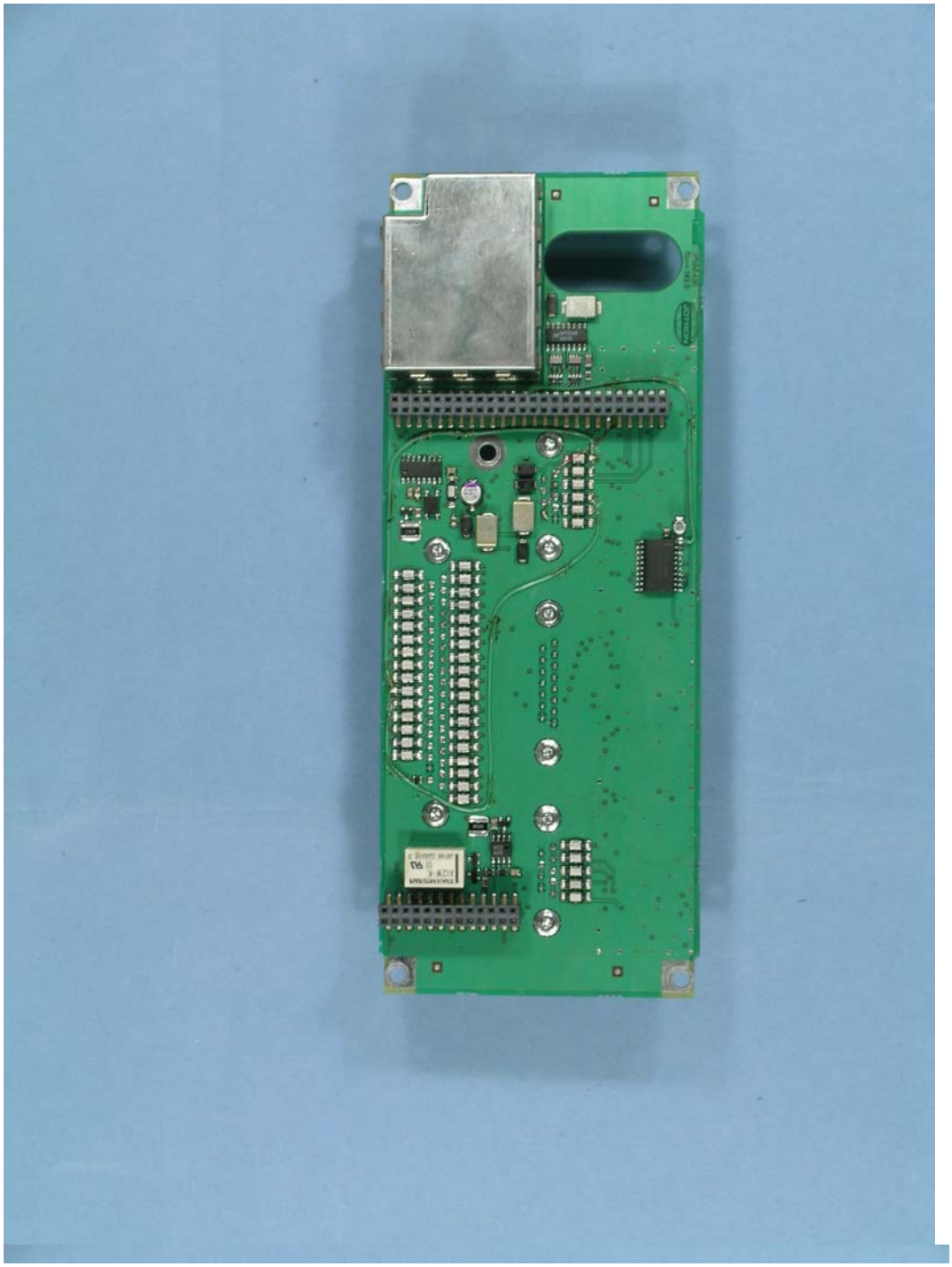
Power printed board assembly

Power printed board assembly



Power printed board assembly

Connection printed board assembly



Connection printed board assembly