Artemis MK5 power supply unit type A5PS

Increasing the +5 V output to +5.20 ± 0.05 V (5.15 .. 5.25 V)

To prevent the Antenna Unit Processing (AUP) board from resetting due to a low +5 VDC supply, all power supplies of before May 2005 have to be modified. This engineering note describes the procedure to increase the output voltage to 5.20 V ± 0.05 V. It is strongly advised to do this in an indoor environment.

Power supply units type A5PS delivered after May 2005 and power supply units type A5PS which have a printed label with the output voltages and/or which have a label "MOD A" have already been modified for the increased +5 V output. Power supply units type A5PS from of version 02 (third and fourth character of the serial number is 02 or higher) have the modification standard incorporated.

Tools and accessories needed

Qty	Description
1	Hexagon key 3 mm
1	Phillips screwdriver 100
1	Slot screwdriver blade 3 - 5 mm
1	Open ended and ring spanner no. 5 (metric) or a metric nutdriver no. 5
1	Open ended and ring spanner no. 5.5 (metric) or a metric nutdriver no. 5.5
1	Pair of small pliers
1	Test cable to connect the power supply to the Artemis MK 5 antenna unit
1	Digital voltmeter with test leads with sharp test points
1	Soldering station for SMD components

Parts required (per power supply unit)

Qty	Description
2	SMD resistor 1 kΩ
1	SMD resistor 10, 11, 12, 13, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36, 39 kΩ (one of each value)
4	Counter sunk slotted-head screw M3x20 mm
10	Counter sunk slotted-head screw M3x8 mm
2	Counter sunk slotted-head screw M3x6 mm

Modification instruction

1. Remove the bottom cover from the antenna unit (or beacon unit).

2. Connect 230 VAC to the antenna unit.

3. Measure the +5 V output of the power supply unit at its connector (see photo 1), using a digital volt meter.

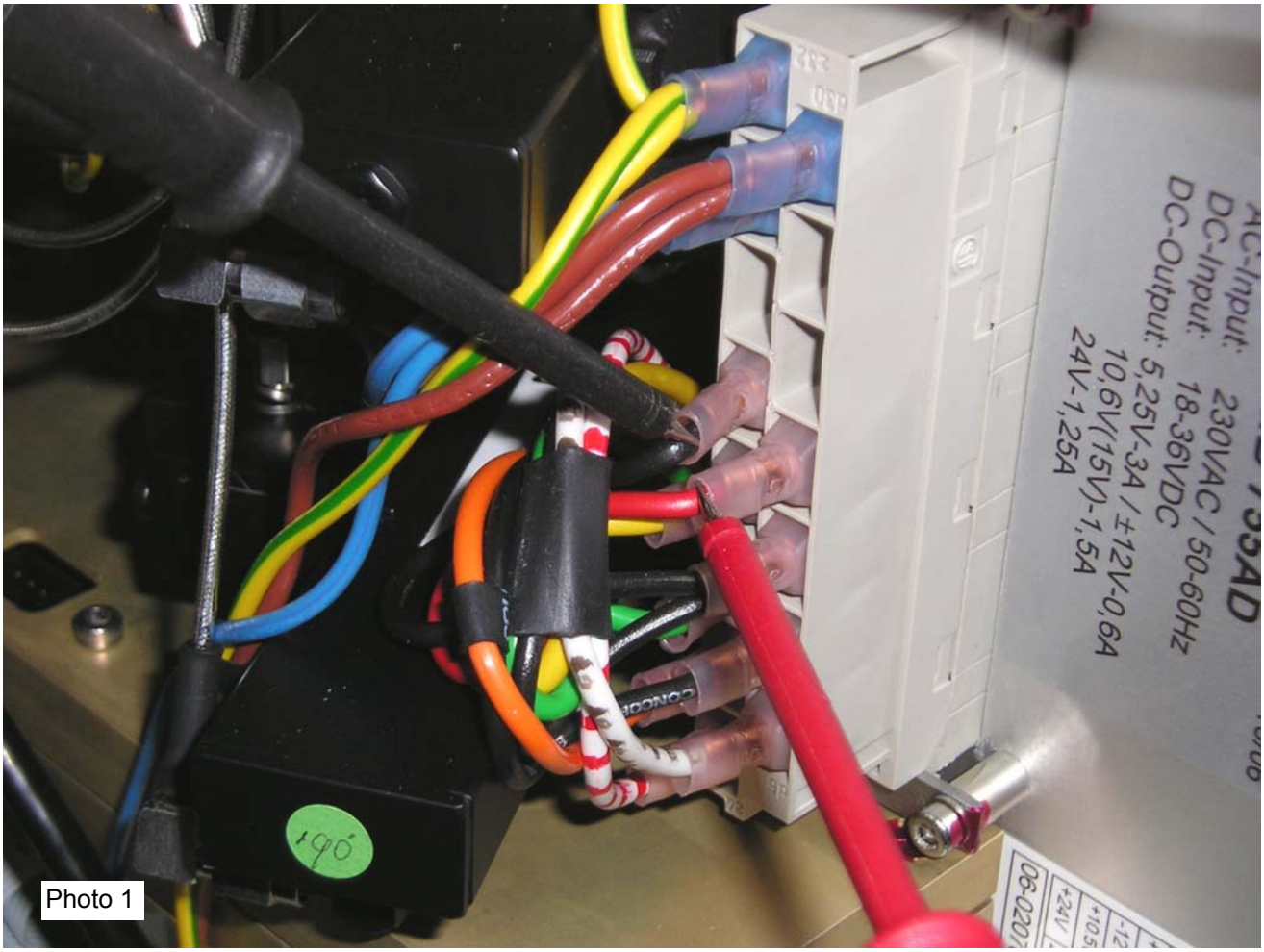

Photo 1

- ► If the voltage is +5.20 V ± 0.05 V, then no modification is necessary (the modification may already have been applied).
- ► If the voltage is < +5.15 V, follow the modification procedure described below.

4. Switch off the 230 VAC supply to the antenna unit.
5. Disconnect the cable connector from the power supply unit.
6. Remove the power supply unit from the antenna unit (depending on the length of a 3 mm hexagon key being available this may require removal of the Servo Control type A5SC board).
7. Open the power supply unit as described on the following pages.

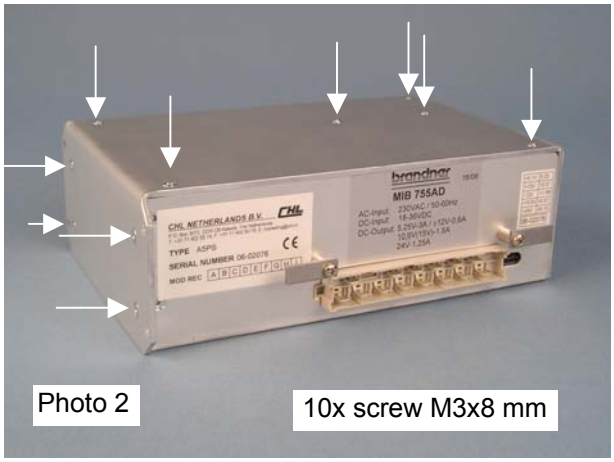

Photo 2

10x screw M3x8 mm

a) Remove the 10 M3x8 mm screws marked with a white arrow, using the size 100 Phillips screwdriver supplied.

[The screws fitted are rather soft; insert the screw driver well and unscrew firmly to avoid wearing the screws.
New stainless steel slotted-head screws have been supplied to put in when reassembling the power supply unit].

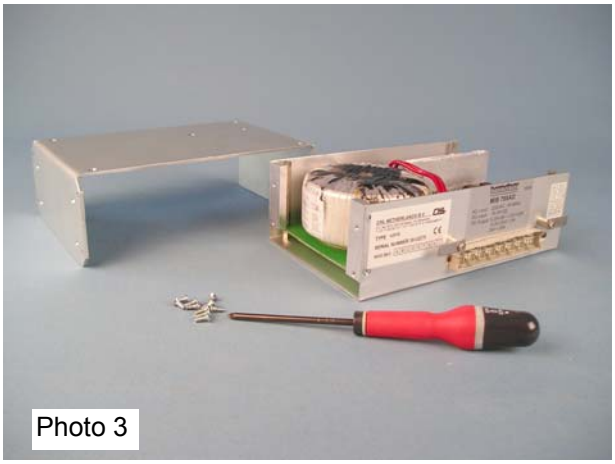

Photo 3

b) Carefully remove the lid.

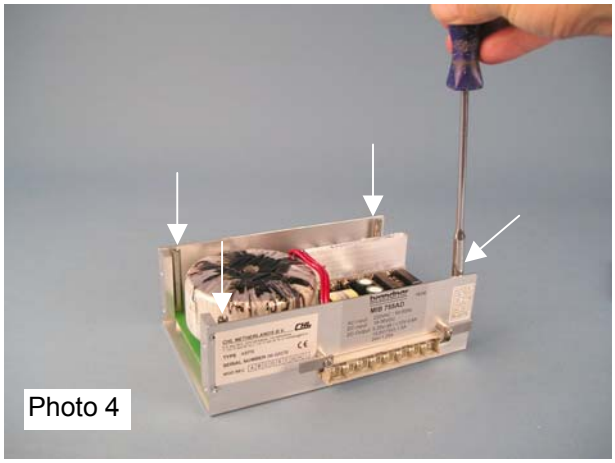

Photo 4

c) Remove the four spacers marked with a white arrow, using a nutdriver or an open ended and ring spanner no. 5 if metal spacers are fitted.

Note:
Use a nutdriver or an open ended and ring spanner no. 5.5 if plastic spacers are fitted.

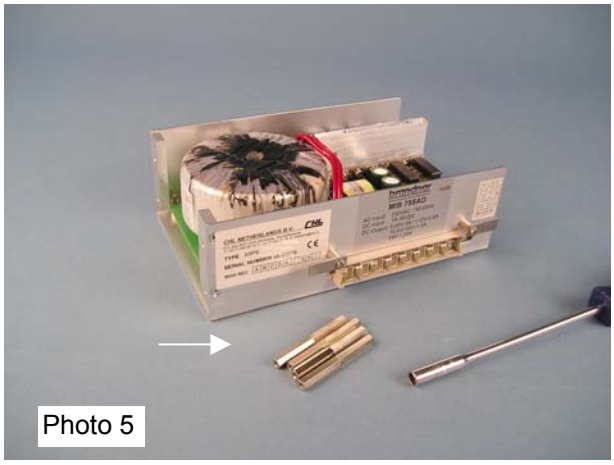

Photo 5

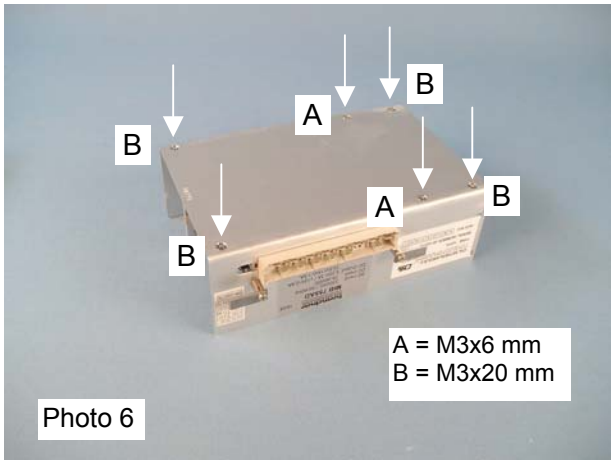

Photo 6

d) Remove the six screws in the bottom of the power supply housing (screws marked with a white arrow).

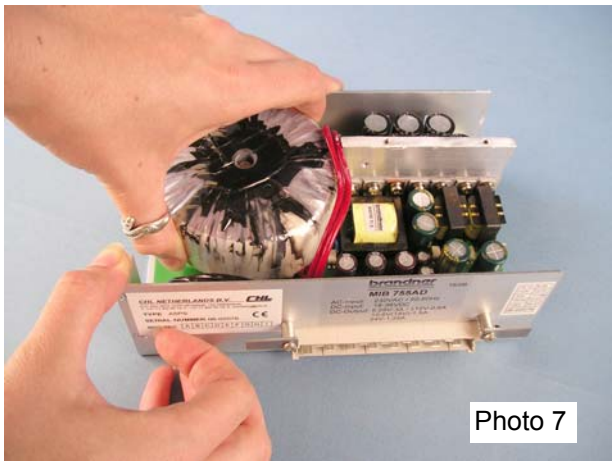
Photo 7

e) Remove the four short spacers between the chassis and the power supply board, using a pair of small pliers.

f) Carefully tilt the power supply board with its connector from the chassis, making sure that the connector is not damaged.

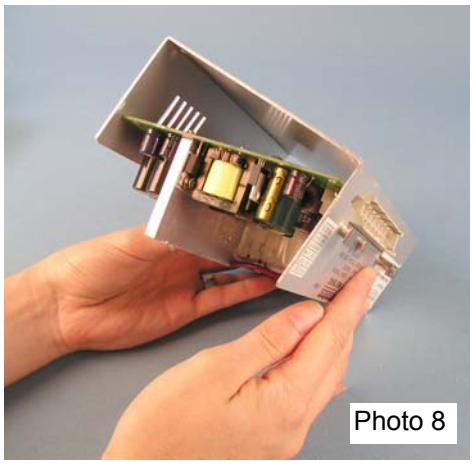
Photo 8

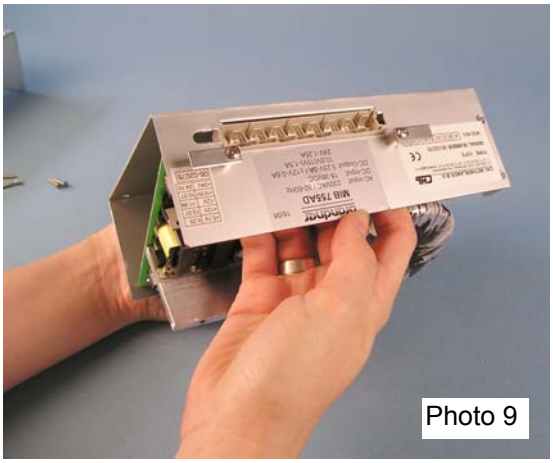
Photo 9

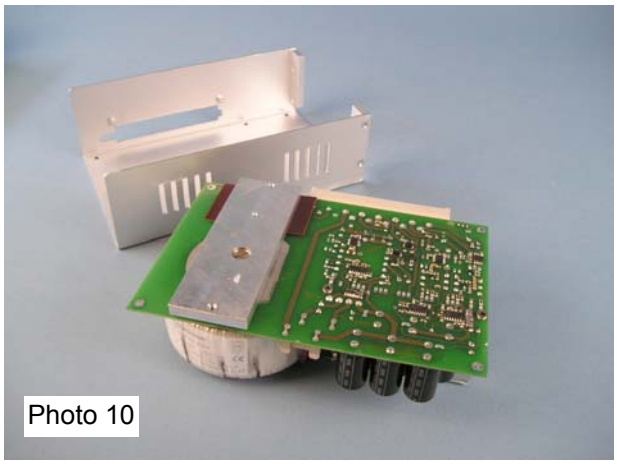
Photo 10


Photo 11

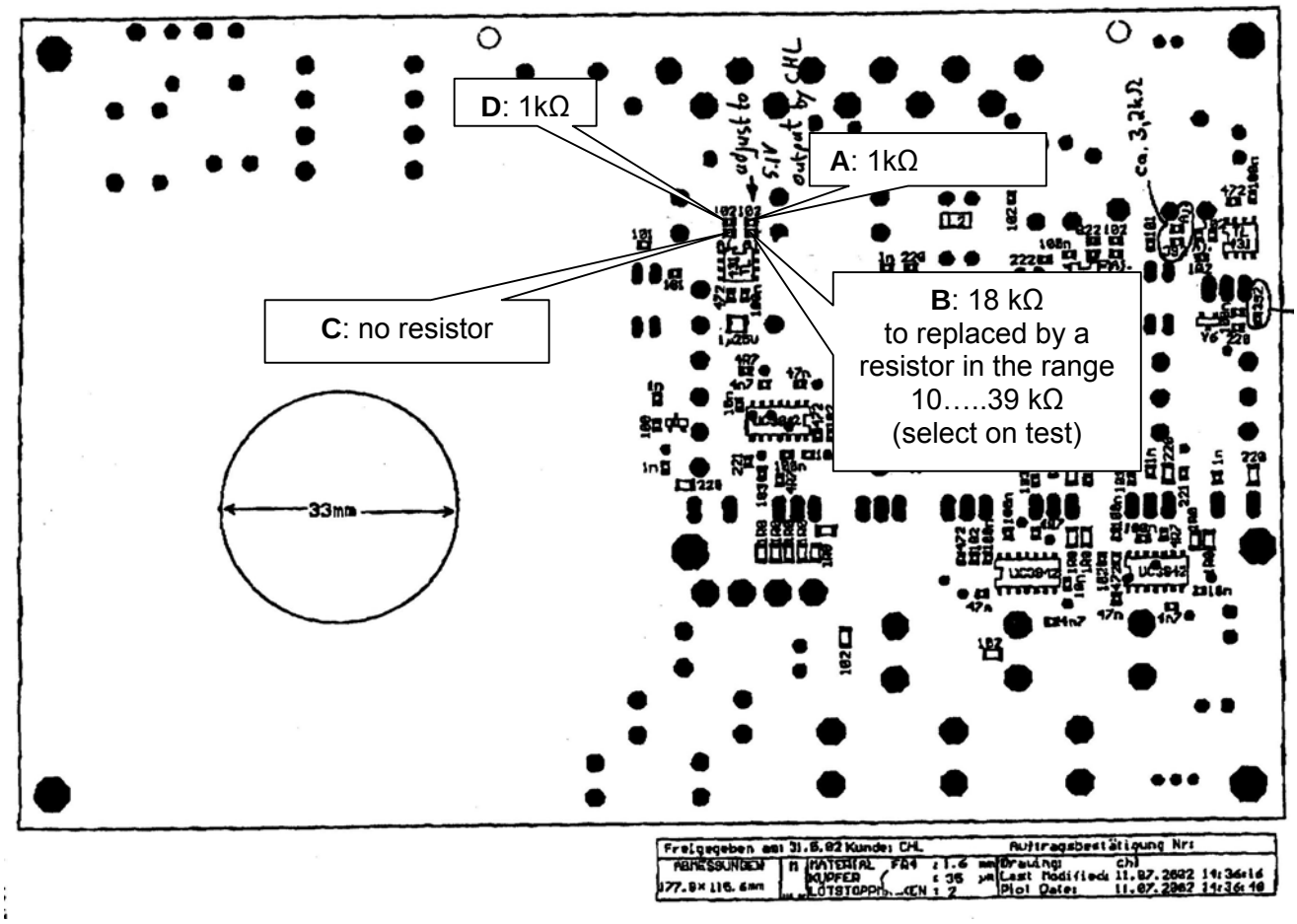

Fig. 1: Board layout of power supply type A5PS

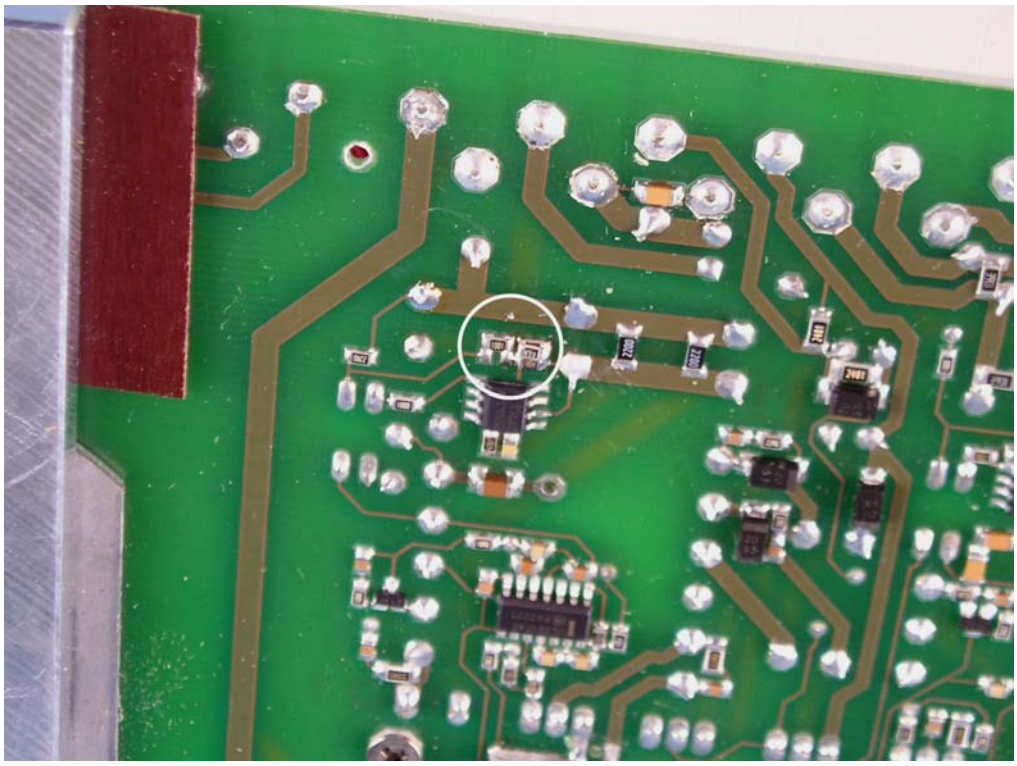

Photo 12: Detail printed circuit board; area with the four SMD resistors marked with a circle

8. Locate on the printed circuit board the area with the four SMD resistors (see fig. 1 and photo 12).

9. Verify the value of the resistor in position A, B, C and D.

A	1 kΩ
B	18 kΩ
C	no resistor
D	1 kΩ

10. Solder a 1 kΩ resistor in position A if the present resistor is not 1 kΩ.

11. Remove the resistor in position B if its value is 18 kΩ and solder a resistor of 24 kΩ in instead.

12. Verify that there is no resistor in position C. If a resistor is present, remove it.

13. Solder a 1 kΩ resistor in position D if the present resistor is not 1 kΩ.

14. Connect the board to the Artemis antenna unit, using the test cable supplied (connect all connectors!).

15. Connect 230 VAC mains to the antenna unit.

16. Measure the +5 V output voltage on the connector of the power supply unit (see photo 13), using a digital voltmeter.

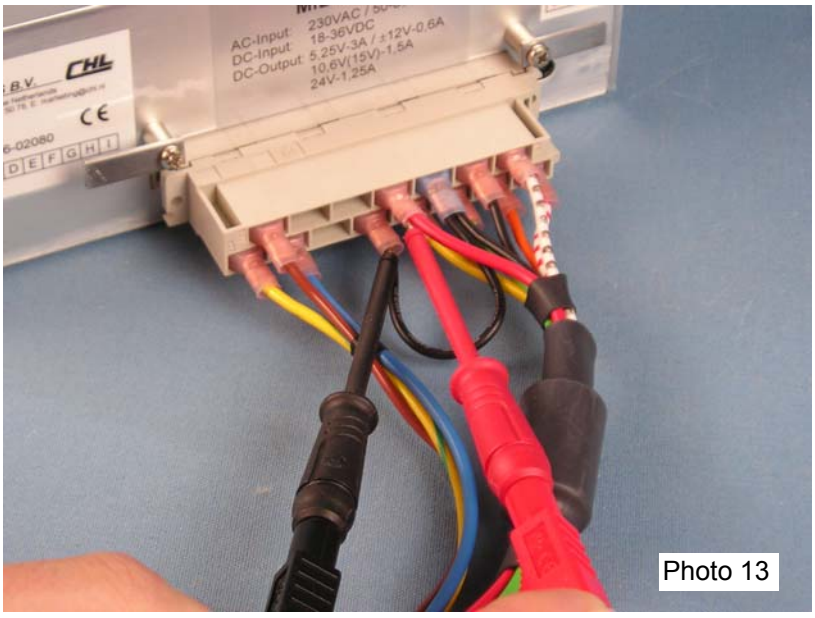

Photo 13

► If the voltage is between 5.15 V and 5.25 V, go to step 21.

Otherwise:

17. Switch the 230VAC to the antenna unit off.

18. Replace the resistor in position B by a lower value resistor if the voltage measured in step 16 was higher than it was but still too low, or replace the resistor by a higher value resistor if the voltage was lower than it was.

19. Switch the 230 VAC to antenna unit on and measure the +5 V output voltage again.

    ► If the output voltage is between 5.15 V and 5.25 V, go to step 21.

    Otherwise:

20. Repeat steps 17, 18 and 19.

21. Switch off the 230 VAC to the antenna unit.

22. Remove the test cable.

23. Mount the board back in its housing (see photos 4 - 10 in reverse order), using the stainless steel M3x6 mm and M3x20 mm screws supplied.

24. Mount the lid (see photo 2), using the new stainless steel screws M3x8 mm supplied.

25. Stick a label “MOD A” on the side of the housing with the type and serial number label.

THIS CONCLUDES THE MODIFICATION.