Replacing a version 01 IPA with a version 02 IPA in an AU with a Synthesizer type A5OSC

Replacement instruction

This engineering note describes the procedure to replace a version 01 IF Preamplifier (IPA) with a new (version 02) IPA in Antenna Units (or Beacon Units) fitted with a Synthesizer type A5OSC. It is strongly advised to do the replacement in an indoor environment.

Tools required
For the replacement the following tools are required (photo 1):

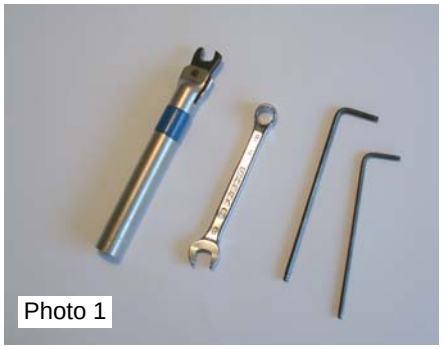


Photo 1

1. Metric open ended spanner no. 8.
2. Torque wrench for SMA connectors.
3. Hexagon key 2.5 mm.
4. Hexagon key 3 mm.

Parts required
The following parts are required (photo 2):

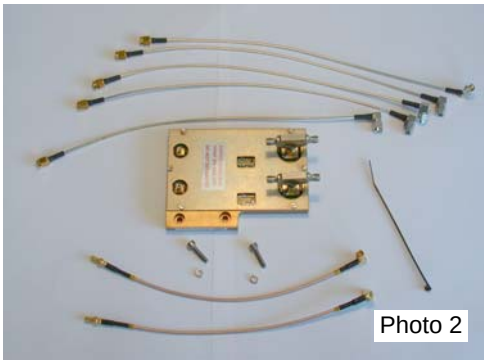


Photo 2

1. IPA type A5IPA version 02 (serial number YY-02XXX) c/w mixers.
2. Five semi-flex coaxial cables with angled and straight SMA connector.
3. Two coaxial extension cables with angled and straight SMB connector (marked S and D).
4. Two stainless steel socket-head screws M4x16 mm with spring washer.
5. Four cable ties approx. 10 cm long.

Replacement procedure

1. Switch off the 230 VAC supply to the Antenna Unit (AU).

2. Remove the antenna from the AU, put a protective cover on the antenna flange of the AU and place the unit upside down on a workbench.

3. Undo the three snap locks with which the Bottom Cover (BC) is fixed to the AU or BU and lift the Bottom Cover from the AU or BU for about 40 cm.

4. Disconnect the power supply cable and the ribbon cable connecting the bottom cover with the top of the unit, unhook the two straps and remove the bottom cover.

5. Unscrew – use a metric open ended spanner no. 8 - and remove the semi-rigid coaxial cables connecting the mixers of the IPA with the synthesizer and the synthesizer with the coax-to-waveguide transition (A in photo 3).

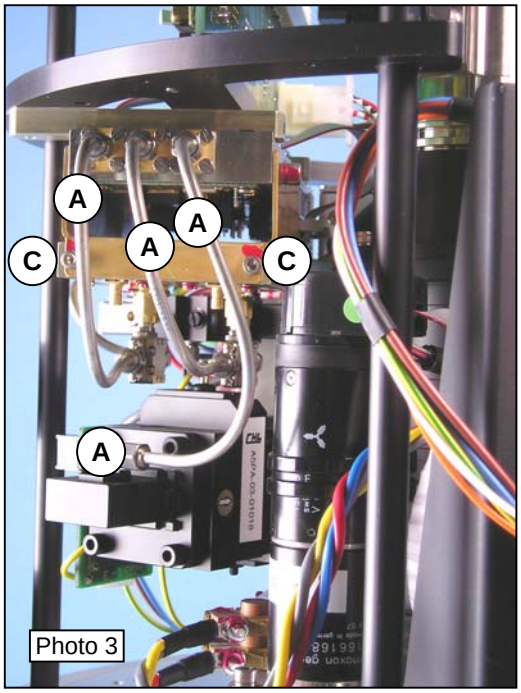


Photo 3

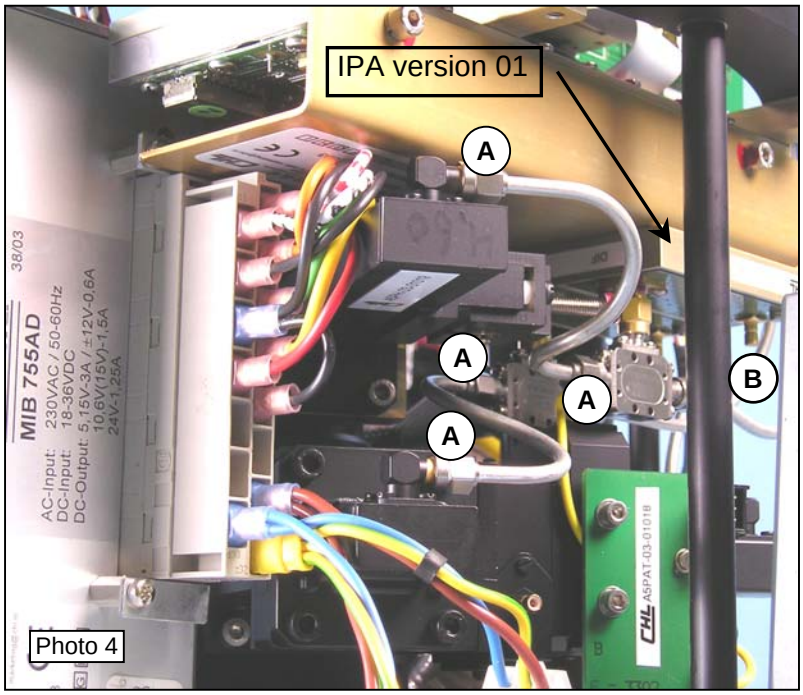


Photo 4

6. Unscrew and remove the semi-rigid coaxial cables connecting the mixers of the IPA with the phase shifter and the coax-to-waveguide transition (A in photo 4).

   Note: the semi-rigid coaxial cables are not used again.

7. Pull the two coaxial cables with SMB connectors from the IPA (B in photo 4).

8. Remove the version 01 IPA by removing the two M3 socket-head screws (C in photo 3), using a 2.5 mm hexagon key.

9. Mount the version 02 IPA (A) on the base plate of the antenna unit as shown in photo 5, using two stainless steel socket-head screws M4x16 mm (B) with spring washer. Tighten the screws with a 3 mm hexagon key.

10. Take a semi-flex coaxial cable and connect the RF output of the synthesizer to the RF input of the waveguide-to-coax transition (photo 6, cable A). Tighten the SMA connectors with a torque wrench for SMA connectors.

    Notes on the use of the semi-flex coaxial cables:
    Coil excess length of the cables, but make sure to maintain a minimum bending radius of 4 cm. Use cable ties to keep the cable coils together.

11. Take a semi-flex coaxial cable and connect the local oscillator output 1 (LO-1) of the synthesizer to the local oscillator input of the DIF Mixer (photo 6, cable B). Tighten the connectors with an SMA torque wrench.

12. Take a semi-flex coaxial cable and connect the local oscillator output 2 (LO-2) of the synthesizer to the local oscillator input of the SUM Mixer (photo 6, cable C). Tighten the connectors with an SMA torque wrench.

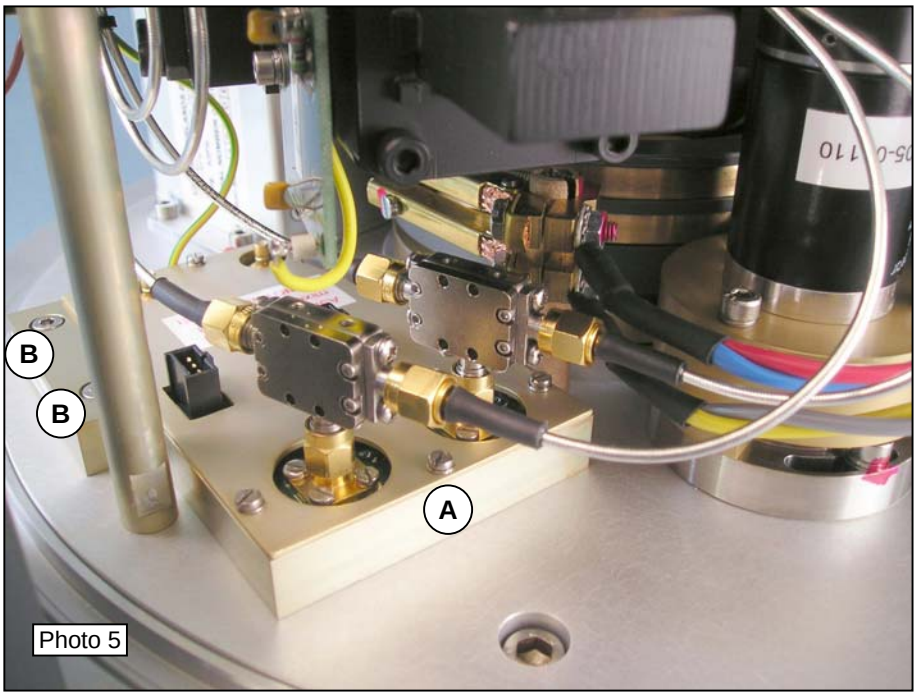


Photo 5

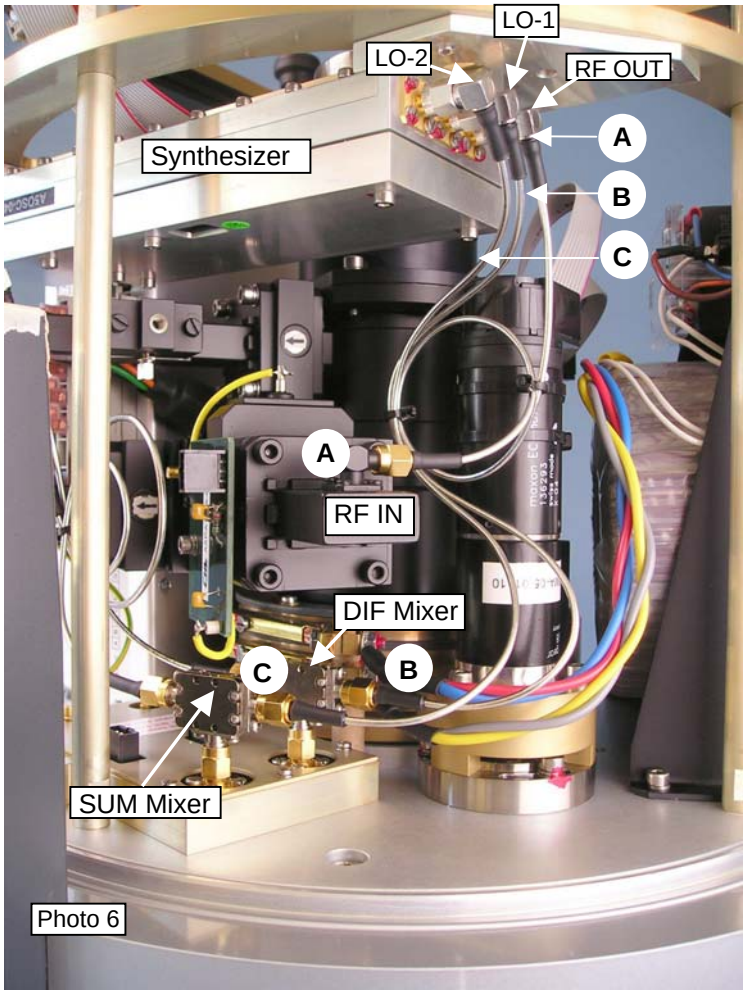
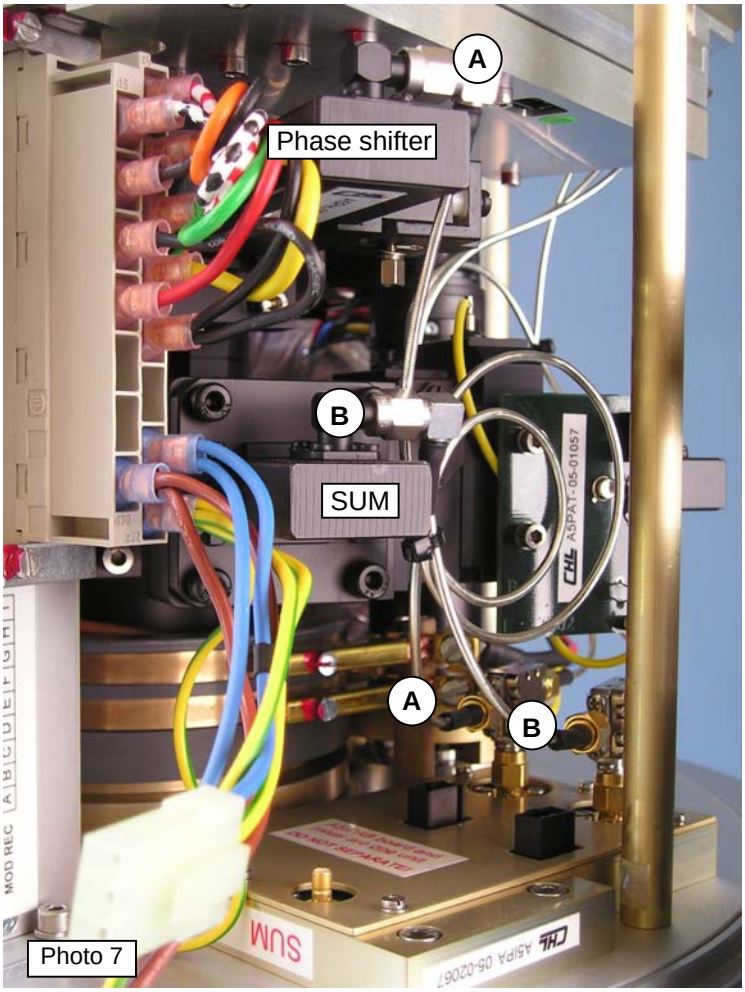


Photo 6



13. Take a semi-flex coaxial cable and connect the RF input of the DIF Mixer to the output of the phase shifter (photo 7, cable A). Tighten the connectors with an SMA torque wrench.

14. Take a semi-flex coaxial cable and connect the RF input of the SUM Mixer to the RF output of the waveguide-to-coax transition in the SUM channel (photo 7, cable B). Tighten the connectors with an SMA torque wrench.

15. Take the coaxial extension cable marked S, connect the angled SMB connector to the SUM IF output of the IPA and connect the straight SMB connector to the angled connector of the coaxial cable coming from the SUM IF input on the Interconnection Board A5ICB. See photo 8, cable S.

16. Take the coaxial extension cable marked D, connect the angled SMB connector to the DIF IF output of the IPA and connect the straight SMB connector to the angled connector of the coaxial cable coming from the DIF IF input on the Interconnection Board A5ICB. See photo 8, cable D.

17. Use a cable tie to keep the two coaxial extension cables together.

18. Position the bottom cover (BC) above the unit, connect the two bottom cover straps, connect the mains cable and the ribbon cable and carefully slide the bottom cover over the unit and lock it by closing the three snap locks.

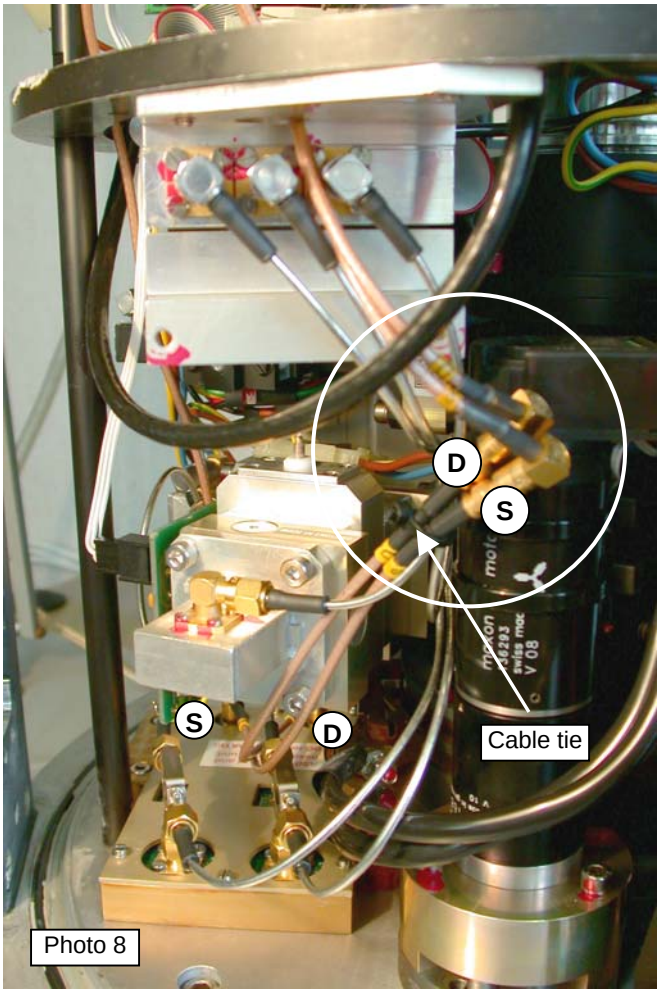


Photo 8

19. Turn the Antenna Unit over, install it, mount the antenna and connect 230 VAC, an operating panel and/or the work station running the Artemis control software.

20. Check correct operation of the station against a counter station.

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