# APPENDIX 1

## F5000 SERIES METERING/CHANNEL FACILITIES PANEL

3513 508 00121 (Metering only)
3513 508 00131 (Metering and Channel Change - Old style Backplane)
3513 508 00141 (Metering and Channel Change - New style Backplane)

The Metering/Channel Facilities Panel is available as an option for use as a servicing aid for the F5000 series of equipment.

### DESCRIPTION

The metering facility provides simple analogue metering of the functions available on the F5000 series of equipment (base stations and link). Except for the 600Ω signals, the functions are selected via the 'Metering' rotary switch. A test point function is available when the 'Metering' rotary switch is switched to the OFF/TP position.

*Note: The 600Ω function may ONLY be used if the equipment is NOT connected to British Telecom lines.*

The rotary 'Channel Change' switch enables local channel change on the FX5000 series of base stations. The selected channel is indicated by an LED. In the OFF/REMOTE position the Tx/Rx and RCM paths are connected via logic circuits and monitoring of the channel in use is displayed by the LEDs.

### SPECIFICATION

**Metering Functions**

| Switch Position | Meter Scale |
|---|---|
| OFF/TP | 20V |
| +24V (Nom) | 100V |
| +18V (1) | 20V |
| +18V (2) | 20V |
| Lock Volts (Used on FL5000 only) | 10V |
| RF Power | 10V |
| Deviation | 10V |
| Carrier Level | 10V |
| Injection (on FL5000, indicates C6 state on FX5000) | 10V |

*Note: Tolerance on meter reading better than ±5%*

**Front Panel Sockets**

| Socket | Function |
|---|---|
| 600 ohm LINE Rx | Connects to T1 on the equipment backplane. |
| 600 ohm LINE Tx | Connects to T2 on the equipment backplane. |

**Channel Change**

Six switchable channels as M80RCM (C0-C5)

| Switch position | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Binary channel | 126 | 125 | 123 | 119 | 111 | 95 |

## OPERATION

### Metering

1 Ensure the Interface Panel is connected to the metering socket (SKX) on the backplane of the F5000 series equipment under test.

2 Referring to Fig.1 connect the Patch Cable Assembly between the Interface Panel and the Metering/Channel Facilities Panel.

3 Using the rotary 'Metering' switch, select the functions to be monitored; the switch position functions are as follows:-

| Switch Position | Function |
|---|---|
| OFF/TP | Connects the Test Point on the front of the Metering/ Channel Facilities Panel to the meter (20V FSD) |
| +24V (Nom) | Measures the +24V unregulated supply from the PSU |
| +18V (1) | Measures the +18V No.1 supply from the PSU |
| +18V (2) | Measures the +18V No.2 supply from the PSU |
| Lock Volts | Used on the FL5000 only, measures the Lock Volts Monitor output from the Tx Module. |
| RF Power | Measures the RF Power Monitor output from the Tx (PA) Module |
| Deviation | Measures the Deviation Monitor output from the Tx |
| Carrier Level | Measures the Carrier Level Monitor output from the Receiver Module |
| Injection | (i) Used on the FL5000 to measure the Injection Monitor output from the Receiver Module<br>(ii) Used on the FX5000 to indicate Channel line 6 state (C6). |

4 The '600 ohm LINE' Rx and Tx sockets on the front of the Metering/Channel Facilities Panel provide direct access to the respective line transformers (T1 and T2) on the F5000 series equipment backplane.

### Channel Change

1 Referring to Fig.1 connect the appropriate Channel Change Lead Assembly between the FX5000 backplane CHAN SW plug (PLX) and the Metering/Channel Facilities Panel.

2 Using the rotary 'Channel Change' switch select the required channel, the associated LED will illuminate indicating that the channel has been selected. In the 'Off/Remote' position of the switch the Tx/Rx is connected to the Remote Control Unit via logic circuits, the LED of the selected channel will illuminate.

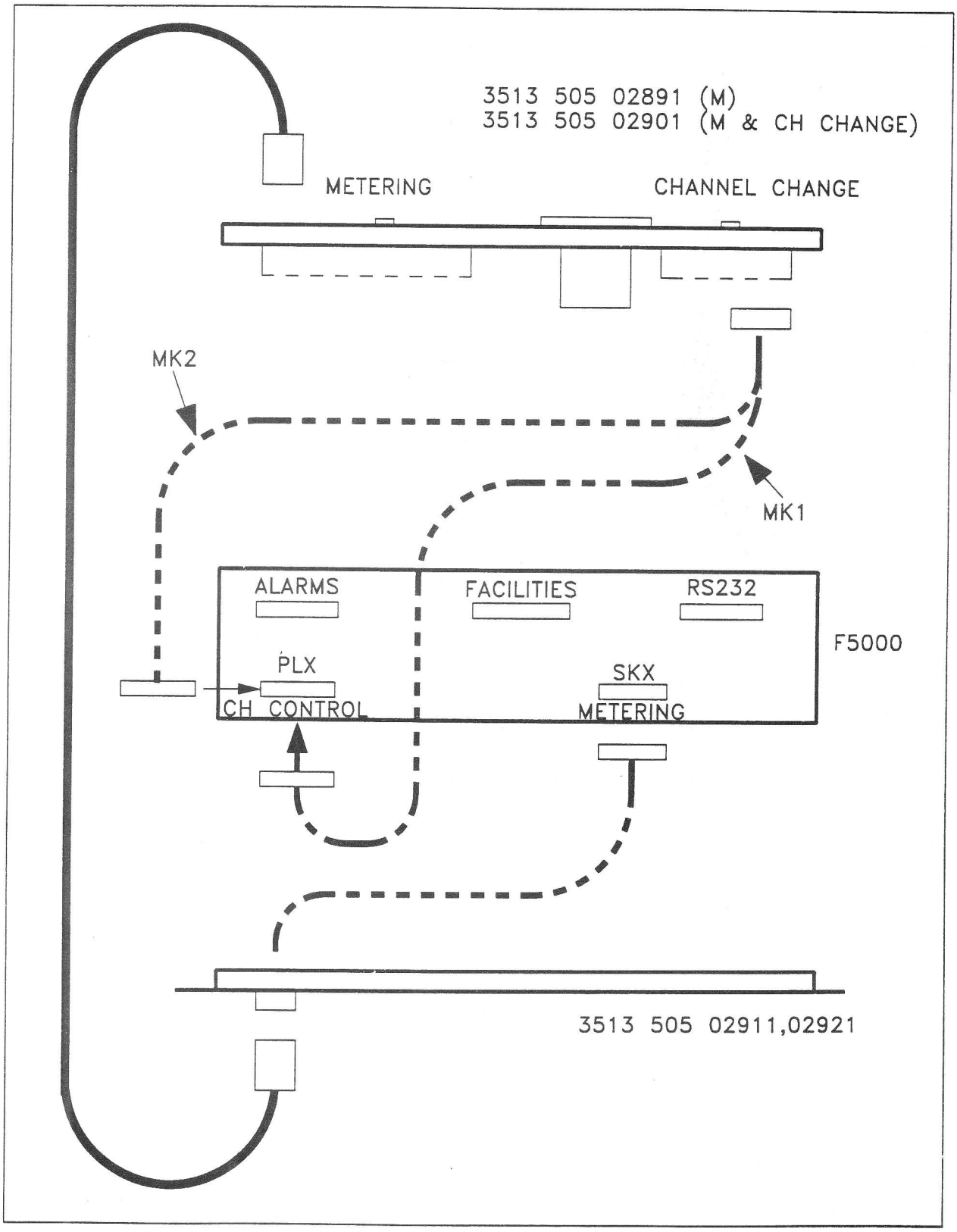


Fig.1 Interconnections

## TEST PROCEDURE

### Test Equipment Required

| | |
|---|---|
| PSU | : 20V/1A |
| Digital Voltmeter | : Philips 2517X |
| Metering Test Jig | : See Fig 2 |
| Channel Change Test Jig | : See Fig 3 |

### Metering

1 Connect the Metering Test Jig to [1]PLA and switch [1]SW1 and SWA (on the Test Jig) to position 1. Set the PSU output to 10V ±0,1V.

2 Connect PLE on the Test Jig to [1]SKA (Tx A) and check Digital Voltmeter for a reading of 10V ±0,1V.

3 Repeat step 2 with PLE to [1]SKB (Tx B)

4 Repeat step 2 with PLE to [1]SKC (Rx A)

5. Repeat step 2 with PLE to [1]SKD (Rx B)

6 Connect PLE to [1]SKE (EXT TP) and check [1]M1 for a reading of 10V ±0,5V (FSD 20V)

7 Switch [1]SW1 and SWA (on the Test Jig) to position 2 and check [1]M1 for a reading of 10V ±0,5V (FSD 100V)

8 Switch [1]SW1 and SWA (on the Test Jig) to position 3 and check [1]M1 for a reading of 10V ±0,5V (FSD 20V)

9 Switch [1]SW1 and SWA (on the Test Jig) to position 4 and check [1]M1 for a reading of 10V ±0,5V (FSD 20V)

10 Switch [1]SW1 and SWA (on the Test Jig) to position 5 and check [1]M1 for a reading of 10V ±0,5V (FSD 10V)

11 Repeat step 10 for positions 6 to 9 of [1]SW1 and SWA (on the Test Jig)

12 Remove the test equipment.

### Channel Change

1 Connect Channel Change Test Jig to [2]PLB and adjust the PSU for 18V. Check IC1 output is 5V ±0,25V.

2 Switch [2]SW1 and SWB (on the Channel Change Test Jig) to position 0; check all LED's are OFF. ([2]WLK1 not fitted*).

*Note:* ** If [2]WLK1 is fitted [2]LED1 will be illuminated when [2]SW1 is in position 0 and SWB (on the Channel Change Test Jig) will have no effect.*

3 Switch SWB on the Channel Change Test Jig through positions 1-7; check the Jig LEDs and [2]LED 1-6 are illuminated in sequence (only the Jig LED is illuminated on position 7.)

4 Switch [2]SW1 through positions 1-6; check [2]LEDs 1-6 and Jig LEDs 1-6 are illuminated in sequence and SWB on the Channel Change Test Jig has no effect.

5 Remove the test equipment.

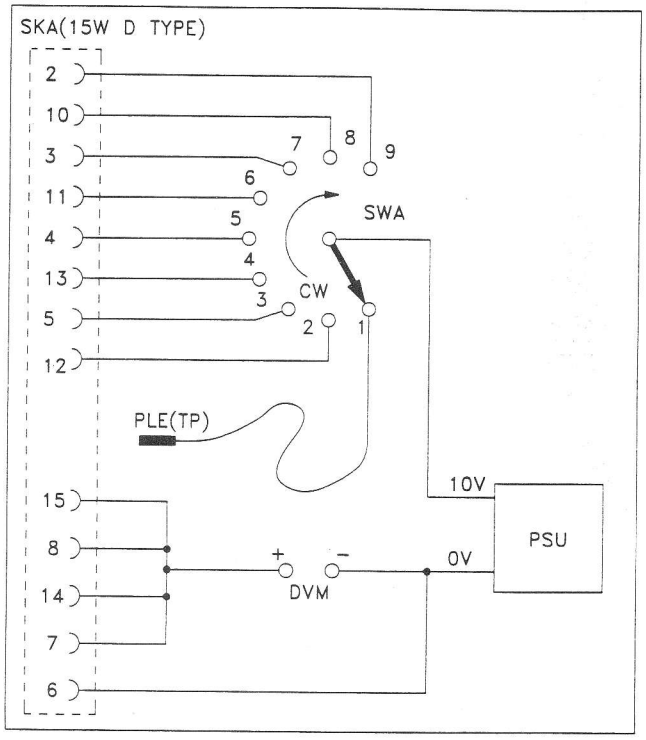


**Fig.2 Metering Test Jig**

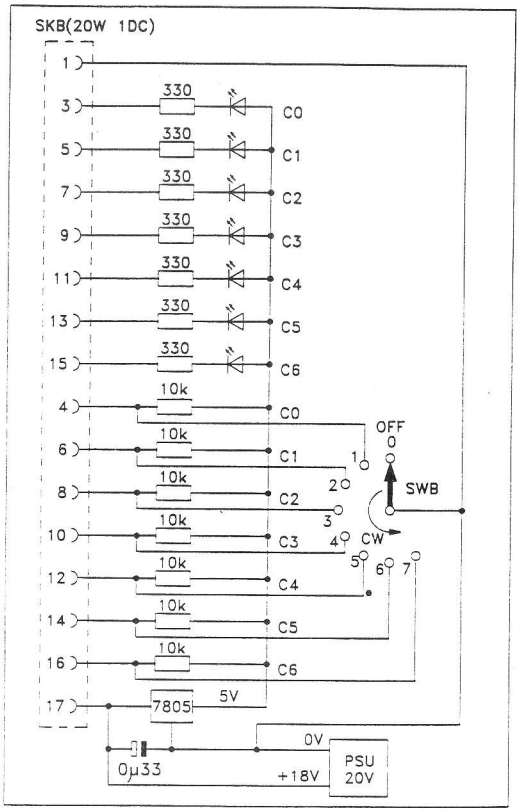


**Fig.3 Channel Change Test Jig**

## PARTS LIST

### METERING PANEL
### 9525 700 62004

| Cct Ref | Description | Part No | Remarks |
|---|---|---|---|
| | Metering Panel | 3513 508 00121 | |
| | Metering Panel Assembly | 3513 505 02891 | |
| | Patch Cable Assembly | CT61127 | |

### METERING/CHANNEL CHANGE PANEL (Old style Backplane)
### 9525 700 62005

| | | | |
|---|---|---|---|
| | Metering/Channel Change Panel | 3513 508 00131 | Old style Backplane |
| | Metering/Ch Change Pnl Assembly | 3513 505 02901 | |
| | Lead Assembly Ch Change 26-Way | 3513 509 50531 | |
| | Patch Cable Assembly | CT61127 | |

### METERING/CHANNEL CHANGE PANEL (New style Backplane)
### 9525 700 62006

| | | | |
|---|---|---|---|
| | Metering/Channel Change Panel | 3513 508 00141 | New style Backplane |
| | Metering/Ch Change Pnl Assembly | 3513 505 02901 | |
| | Lead Assembly Ch Change 20-Way | 3513 509 50521 | |
| | Patch Cable Assembly | CT61127 | |

### METERING PANEL ASSEMBLY
### 3513 505 02891

| | | | |
|---|---|---|---|
| | PCB Assembly Metering | 3513 500 01791 | |
| M1 | Meter | FM02192 | |
| SKA-E | Socket 4mm black | FS17040 | |
| | Circlip | QA01107 | 1/SW1 |
| | Knob (Printed) | BJ30904/04 | 1/SW1 |
| | Nut St Hex M3 | 2522 401 64008 | 2/PCB, 2/Blanking plate |
| | Panel Blank Ch Chg | 3513 904 71881 | 1/Ch Change blanking |
| | Panel Metering Printed | 4313 328 10141 | |
| | Pillar Round M3 | BT27210 | 2/Metering PCB |
| | Ring Compression | QA04145 | 1/SW1 |
| | Scr st pan pozi M3 x 6mm | QJ11901/K1 | 2/Blanking Plate |
| | Screw Lock Assembly | FC15763 | 1/15W Plug |
| | Spindle | BT07168 | 1/SW1 |
| | Wash st form A M3 | 2522 600 89017 | 2/Metering PCB |

### METERING/CHANNEL CHANGE PANEL ASSEMBLY
### 3513 500 02901

| | | | |
|---|---|---|---|
| | PCB Assembly Channel Change | 3513 500 01781 | |
| | PCB Assembly Metering | 3513 500 01791 | |
| M1 | Meter | FM02192 | |
| SKA-E | Socket 4mm black | FS17040 | |
| | Circlip | QA01107 | 1/SW1(M), 1/SW1 (Ch-Ch) |
| | Knob (Printed) | BJ30904/04 | 1/SW1(M), 1/SW1 (Ch-Ch) |
| | Nut st Hex M3 | 2522 401 64008 | 2/Metering PCB, 2/Ch Change PCB |
| | Panel Metering Printed | 4313 328 10141 | |
| | Pillar Round M3 | BT27210 | 2/Metering PCB, 2/Ch Change PCB |
| | Ring Compression | QA04145 | 1/SW1(M), 1/SW1 (Ch-Ch) |
| | Screw Lock Assembly | FC15763 | For 15W Plug |
| | Spindle | BT07168 | 1/SW1(M), 1/SW1 (Ch-Ch) |
| | Wash st form A M3 | QA15005/X | 2/Metering PCB 2/Ch Change PCB |

### PCB ASSEMBLY METERING
### 3513 500 01791

**Resistors**

| | | | | | |
|---|---|---|---|---|---|
| R1 | 180k | ±1% | 0,25W | m. film | 3513 992 07068 |
| R2 | 18k | ±1% | 0,25W | m. film | 3513 992 07049 |
| R3 | 1M | ±1% | 0,25W | m. film | 3513 992 07077 |
| R4 | 180k | ±1% | 0,25W | m. film | 3513 992 07068 |
| R5 | 18k | ±1% | 0,25W | m. film | 3513 992 07049 |
| R6 | 180k | ±1% | 0,25W | m. film | 3513 992 07068 |
| R7 | 18k | ±1% | 0,25W | m. film | 3513 992 07049 |
| R8 | 82k | ±1% | 0,25W | m. film | 3513 992 07065 |
| R9 | 16k | ±1% | 0,25W | m. film | 3513 992 07048 |
| R10 | 82k | ±1% | 0,25W | m. film | 3513 992 07065 |

| Cct Ref | Description | Part No. | Remarks |
|---|---|---|---|
| **Resistors (Cont'd)** | | | |
| R11 | 16k ±1% 0,25W m. film | 3513 992 07048 | |
| R12 | 82k ±1% 0,25W m. film | 3513 992 07065 | |
| R13 | 16k ±1% 0,25W m. film | 3513 992 07048 | |
| R14 | 82k ±1% 0,25W m. film | 3513 992 07065 | |
| R15 | 16k ±1% 0,25W m. film | 3513 992 07048 | |
| R16 | 82k ±1% 0,25W m. film | 3513 992 07065 | |
| R17 | 16k ±1% 0,25W m. film | 3513 992 07048 | |
| **Miscellaneous** | | | |
| C1 | Cap 1n ±5% | PN99900 | |
| D1,2 | Diode, 1N4148 | 9330 839 90113 | |
| PLA | Plug 15-way D type | FP99031 | |
| SW1 | Switch 12-way | 4313 324 50151 | |
| | Adjustable stop | 4313 324 50161 | 1/SW1 |
| | Nut st Hex M3 | 2522 401 64008 | 2/Post |
| | Post | 3513 904 91181 | 2/PLA - PCB |

**PCB ASSEMBLY CHANNEL CHANGE**
**3513 500 01781**

| | | | |
|---|---|---|---|
| IC1 | IC 7805 Volt reg and fix | 3513 993 34014 | |
| IC2 | IC 4050MOS | FU99090 | |
| IC3 | IC 74HCT541 | FU98035 | |
| LED1-6 | LED Yellow MV5374C | 3513 993 47001 | |
| R1-6 | Res 330Ω ±5% 0,25W c. film | PM01430 | |
| R7 | Res 10k ±5% 0,25W c. film | PM01448 | |
| C1 | Cap 330n ±5% pes submin | PQ99541 | |
| C2 | Cap 100n ±5% 63V min | 3513 991 08013 | |
| C3 | Cap 1n ±5% | PN99900 | |
| PLA | Header str less ears 26 pos'n | FP99223 | |
| PLB | Header str less ears 20 pos'n | FP99222 | |
| SW1 | Switch 12-way | 4313 324 50151 | |
| | Adjustable stop | 4313 324 50161 | 1/SW1 |
| | Nut st Hex M3 | 2522 401 64008 | 1/IC1 |
| | Scr st pan pozi M3 x 6mm | 2522 178 20058 | 1/IC1 |
| | Spacer LED 3,5mm x 4,76mm | QA05856 | 1/LED 1-6 |

**INTERFACE PANEL WITH 600Ω**
**9525 700 62007**

| | | |
|---|---|---|
| Interface Panel Assembly 600Ω | 3513 505 02911 | |

**INTERFACE PANEL LESS 600Ω**
**9525 700 62008**

| | | |
|---|---|---|
| Interface Panel Assembly | 3513 505 02921 | |

**INTERFACE PANEL ASSEMBLY 600Ω**
**No 3513 505 02911**

| | | |
|---|---|---|
| Clip P 3/16" diameter | QA00509 | 1/Cable Clamp |
| Cover Connector D type 15-way | FC15761 | |
| Extension Lead Assembly 600Ω | 3513 509 50511 | |
| Panel Modified | 4313 328 70091 | |
| Scr st pan 4/40 UNC x 1/4" Zn | 2513 084 03014 | 1/P clip |
| Screw Lock Assembly | FC15763 | |
| Spacer tapped 4,40 UNC | BT27241 | 1/P Clip |
| Wash st form A M3 | 2522 600 89017 | 1/P Clip |

**INTERFACE PANEL ASSEMBLY**
**3513 505 02921**

| | | |
|---|---|---|
| Clip P 3/16" diameter | QA00509 | 1/Cable Clamp |
| Cover Connector D type 15-way | FC15761 | |
| Extension Lead Assembly | 3513 509 50501 | |
| Panel Modified | 4313 328 70091 | |
| Scr st pan 4/40 UNC x 1/4" Zn | 2513 084 03014 | 1/P clip |
| Screw Lock Assembly | FC15763 | |
| Spacer tapped 4,40 UNC | BT27241 | 1/P Clip |
| Wash st form A M3 | 2522 600 89017 | 1/P Clip |