Modifications to 2-16 GHz Synthesizer Module (L104)

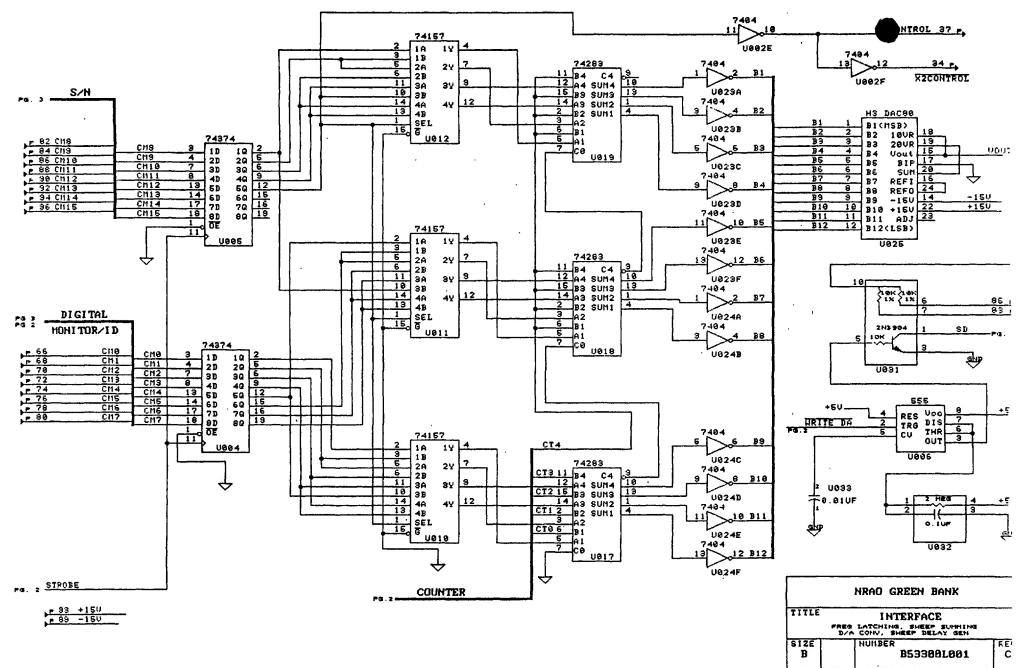L. Beale, R. Heald, A. R. Thompson

March 23, 1988

Two changes to the design of the 2-16 GHz Synthesizer Module, as given in the original issue of VLBA Report No. 4 dated April 15, 1987, are described here. Both changes involve drawing number B53300L001, of which revised copies of sheets 1, 2, and 3 are attached. (The updated drawing should be revision E. The attached copy of sheet 1 is incorrectly designated revision C: Lewis Beale is having the revision number corrected on the master drawing.) It is suggested that copies of Report No. 4 should have the modifications noted or a copy of this memo attached.

Modification 1: This change involves the connections between U004 and U010 on sheet 1. Connections to pins 3A, 3B, 4A, and 4B of U010 were incorrect in the earlier drawing. Note that this is only a drawing change: all modules that have been built were wired according to the corrected drawing.

Modification 2: On sheet 3 a monitor connection has been added (see upper right-hand corner), which goes to pins 1 and 19 of U030 on sheet 3. The connection of these pins to pins 1 and 19 of U009 has been removed. Modules with serial numbers 1 to 8 should be modified at the VLA site or the Socorro lab. Modules with serial numbers 9 and greater will be constructed with the revised circuitry.

The reason for this modification is as follows: A standard monitor and control bus (MCB) interface determines its ID byte by the output line ID Request true. Whenever this line is true, the device places the 7-bit ID plus an odd parity bit on data lines CON/MON-0 through CON/MON-7. In the case of the 2-16 GHz synthesizer, the module also places its 6-bit serial number on data lines CON/MON-8 through CON/MON-13. This convention of employing the unused upper-byte of the ID byte to pass the serial number was discussed at one time for use in all MCB devices. However, it has apparently only ever been implemented in the 2-16 GHz synthesizer. The change described above would, therefore, have the synthesizer conform with all other MCB devices which pass their serial number as a normal MCB monitor request.

Attachments

S/N

PG. 3

DIGITAL
MONITOR/ID
PG. 3
PG. 2

74374 U006
74374 U004
74157 U012
74157 U011
74157 U010
74283 U019
74283 U018
74283 U017

7404 U002E
7404 U002F
CONTROL 37
X2CONTROL 34

7404 U023A — B1
7404 U023B — B2
7404 U023C — B3
7404 U023D — B4
7404 U023E — B5
7404 U023F — B6
7404 U024A — B7
7404 U024B — B8
7404 U024C — B9
7404 U024D — B10
7404 U024E — B11
7404 U024F — B12

HS DAC80 U025
B1(MSB), B2 10VR, B3 20VR, B4 Vout, B5 BIP, B6 SUM, B7 REFI, B8 REFO, B9 -15V, B10 +15V, B11 ADJ, B12(LSB)

P 82 CM8, P 84 CM9, P 86 CM10, P 88 CM11, P 90 CM12, P 92 CM13, P 94 CM14, P 96 CM15

P 66 CM0, P 68 CM1, P 70 CM2, P 72 CM3, P 74 CM4, P 76 CM5, P 78 CM6, P 80 CM7

CT4, CT3, CT2, CT1, CT0

STROBE PG. 2
COUNTER PG. 2
WRITE DA PG. 2

P 83 +15V
P 89 -15V

2N3904 U031
10K, 1X 10K
SD
555 U006
RES, TRG, CV, Vcc, DIS, THR, OUT
+5V
U033 0.01UF
2 MEG, 0.1UF U032

P 26 RA7
P 24 RA6
P 22 RA5
P 20 RA4

7425
U001A
R1.1

7420
U013A
MONITOR PG 1
WRITE DA PG 1

WRITE DA
7400
U014A
DEV ACK 39 P

P 16 RA2
P 14 RA1
P 12 RA0

7425
U001B
R1.2

7420
U013B
7404
U002D
STROBE PG 1

P 36 DEV REQ

7404
U002C
ANENB 35 P

HI/LO SEL 39 P

P 18 RA3
7404
U002A
RA3
7420
U007A
ANALOG

READ

P 38 R/W*
7404
U002B
WRITE

DIGITAL
MONITOR PG 1

74244
2 1A1 1Y1 18 CM7
4 1A2 1Y2 16 CM6
6 1A3 1Y3 14 CM5
8 1A4 1Y4 12 CM4
11 2A1 2Y1 9   CM3
13 2A2 2Y2 7   CM2
15 2A3 2Y3 5   CM1
17 2A4 2Y4 3   CM0
1 1G
19 2G
U003

P 58 LM7
P 56 LM6
P 54 LM5
P 52 LM4
P 50 LM3
P 48 LM2
P 46 LM1

P 40 LOCK

COUNTER PG 1

7486
U028A CT0
7486
U028B CT1
7486
U028C CT2
7486
U028D CT3
7486
U029A R1.3 7486 U029B CT4

74197
4 A QA 5
10 B QB 9
3 C QC 2
11 D QD 12
1 CNT/LD
13 CLR
8 CKI
6 CK2
U026

PG 3 R2.2
PG 1 SD
PG 3 SW1
PG 3 R2.3

7400
U014B

+5V
U022
1UF 14
51K 13
47K 12
01UF 11

R899
2K
R1.1 1 R   13
R1.2 2 R R   12 R1.3
3 R R   11 LOCK
LM1 4 R R   10 LM7
LM2 5 R R   9   LM6
LM3 6 R R   8   LM5
LM4 7 R R
U008

+5V
555
4 RES Vcc 8
2 TRG DIS 7
5 CV   THR 6
OUT 3
U016

74197
4 A QA 5
10 B QB 9
3 C QC 2
11 D QD 12
1 CNT/LD
13 CLR
8 CKI
6 CK2
U027

PG 3 R2.1

NRAO GREEN BANK
TITLE INTERFACE
ADR DECODE, HANDSHAKING, DIG MON, SWEEP GE
SIZE B
NUMBER B53300L001 REV E
DATE SEPT 20.1985 SHEET 2 OF 3

P 6 ID0
P 8 ID1

DIP SW

1   14 SW1   PG 2
2   13
3   12 ID2
4   11 ID3
5   10 ID4
6   9   ID5
7   8   ID6

TYP 7 PLACES

U020

74280

8   A
9   B
10 C
11 D   EV 5
12 E   OD 6
13 F
1   G
2   H
4   I

U015

51 P

DIGITAL
ID   PG

R899
2K

1   R
2   R   R   19   65 P
3   R
4   R   R   12
5   R   R   11
6   R   R   10   R2.0   PG 2
7   R   R   9   R2.2   PG 2
            R   8   R2.1   PG 2

U021

P 31   ID REQ

74244

2   1A1 1Y1 18   CM0
4   1A2 1Y2 16   CM1
6   1A3 1Y3 14   CM2
8   1A4 1Y4 12   CM3
11 2A1 2Y1 9   CM4
13 2A2 2Y2 7   CM5
15 2A3 2Y3 5   CM6
17 2A4 2Y4 3   CM7
1   1G
19 2G   U009

74244

P 53   LSB   2   1A1 1Y1 18   CM8
P 55   4   1A2 1Y2 16   CM9
P 57   6   1A3 1Y3 14   CM10
P 59   8   1A4 1Y4 12   CM11
P 61   11 2A1 2Y1 9   CM12
P 63   MSB   13 2A2 2Y2 7   CM13
             15 2A3 2Y3 5   CM14
             17 2A4 2Y4 3   CM15
             1   1G
             19 2G   U030

HARD-WIRED
SERIAL NUMBER

S/N   PG

PG 2   MONITOR

NRAO GREEN BANK			
TITLE	INTERFACE		
ID AND SERIAL NUMBER IDENTIFICATION			
SIZE B	NUMBER B53300L001		REV E
DATE JANUARY 8, 1986	SHEET 3 OF 3		