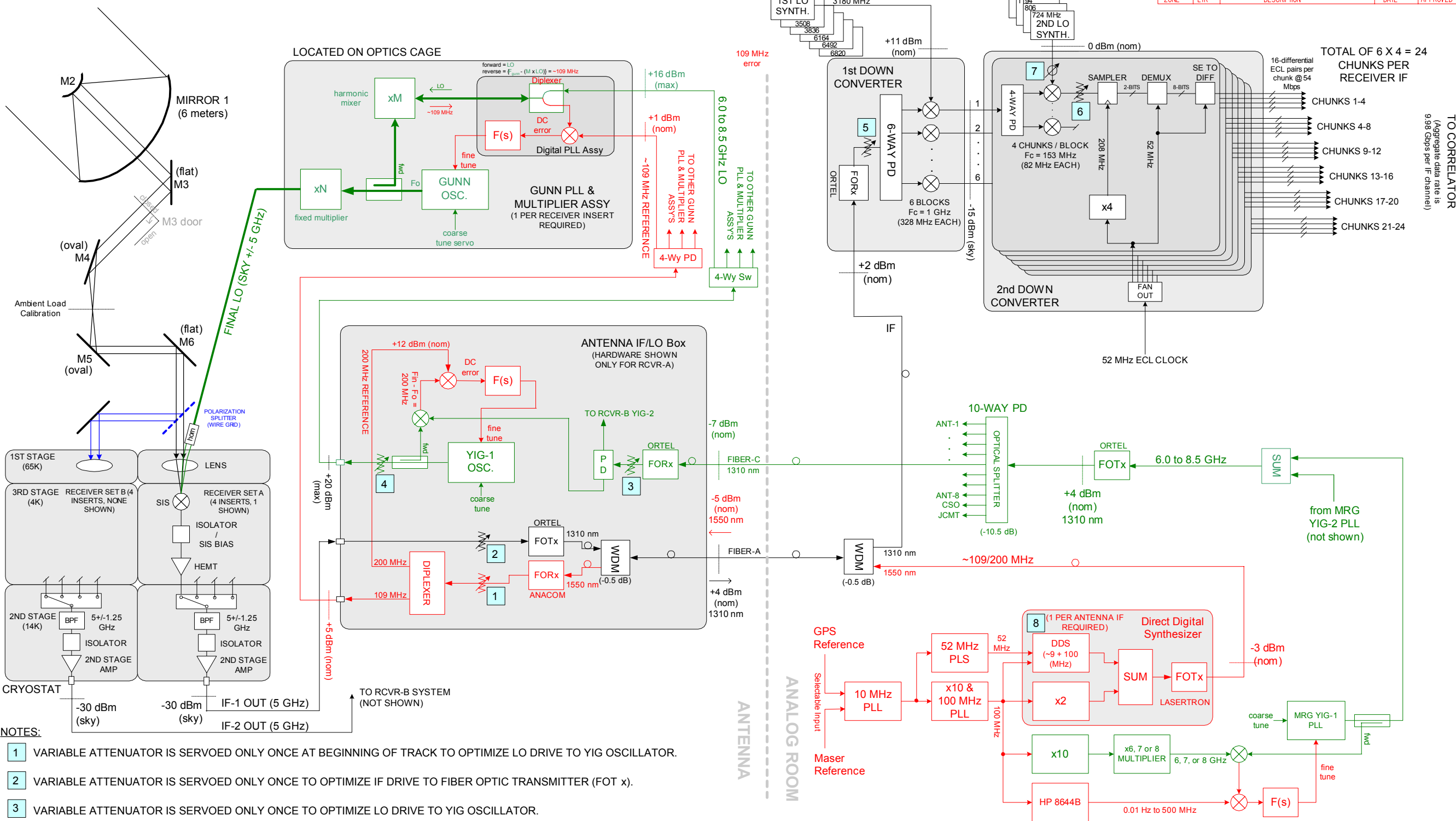
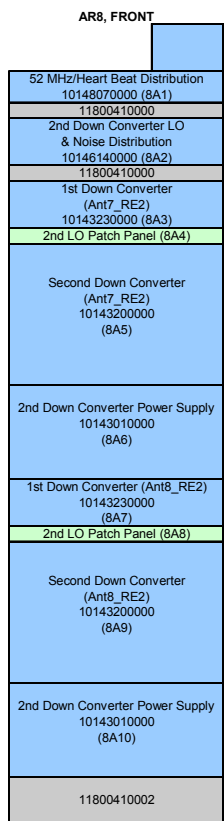
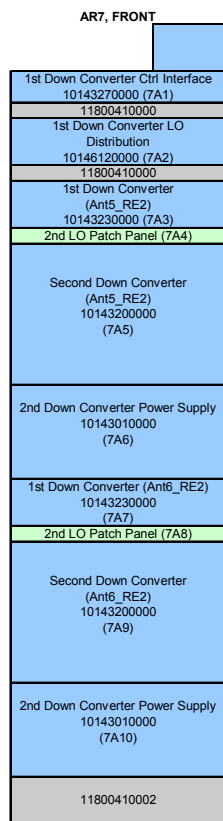
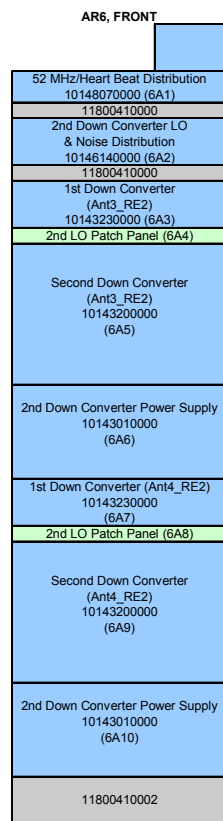
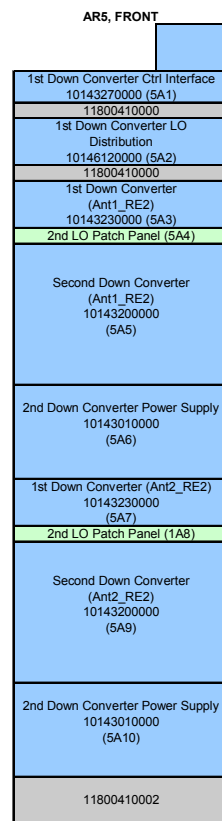
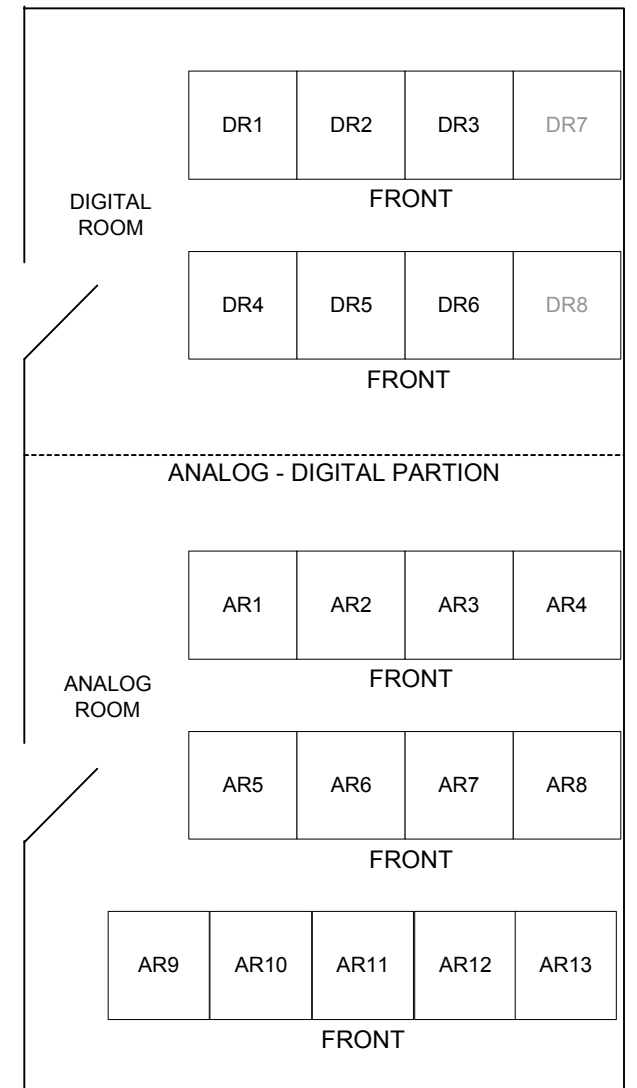
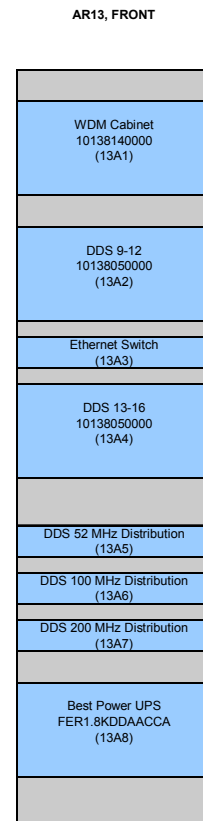
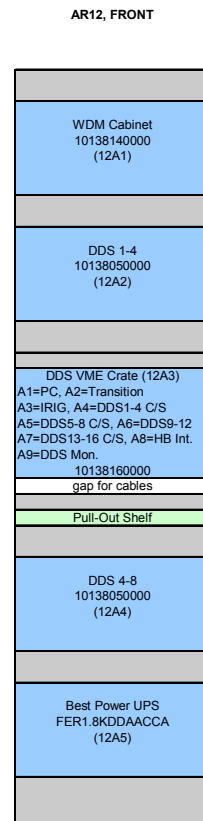
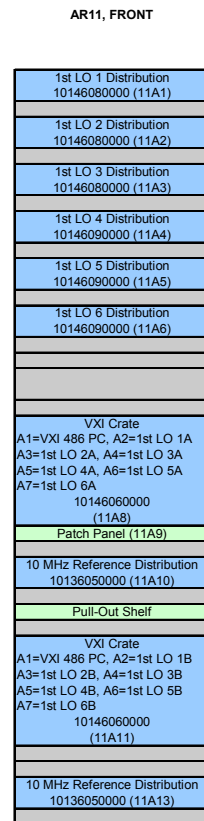
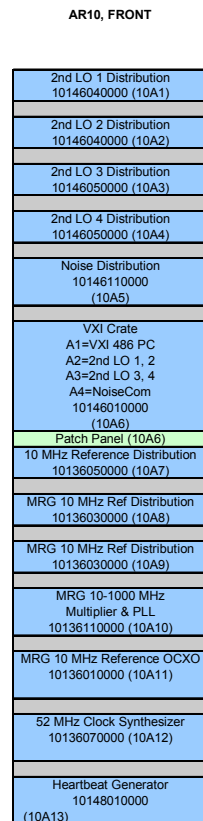
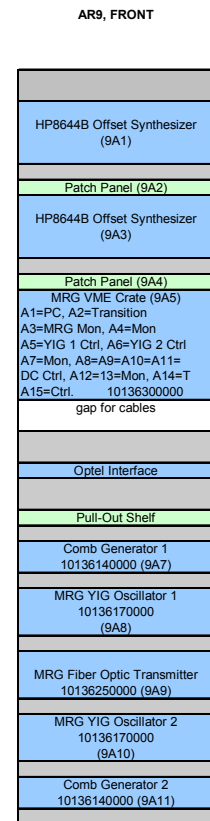
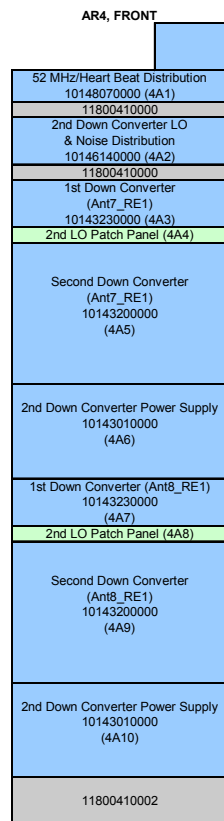
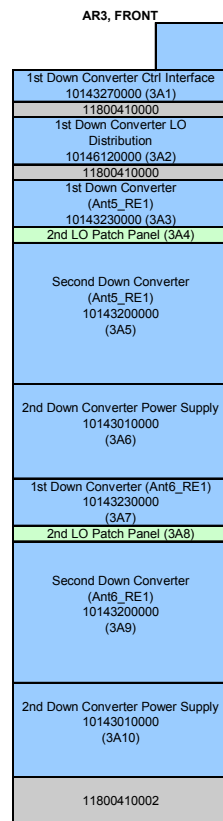
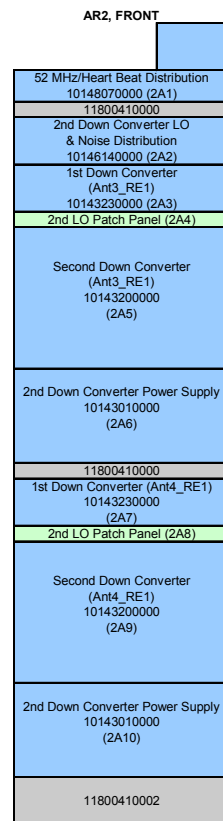
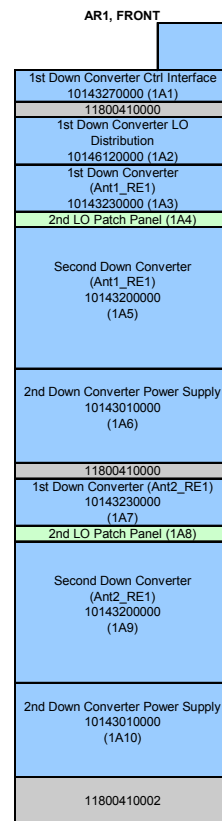


REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED


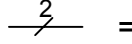

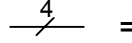



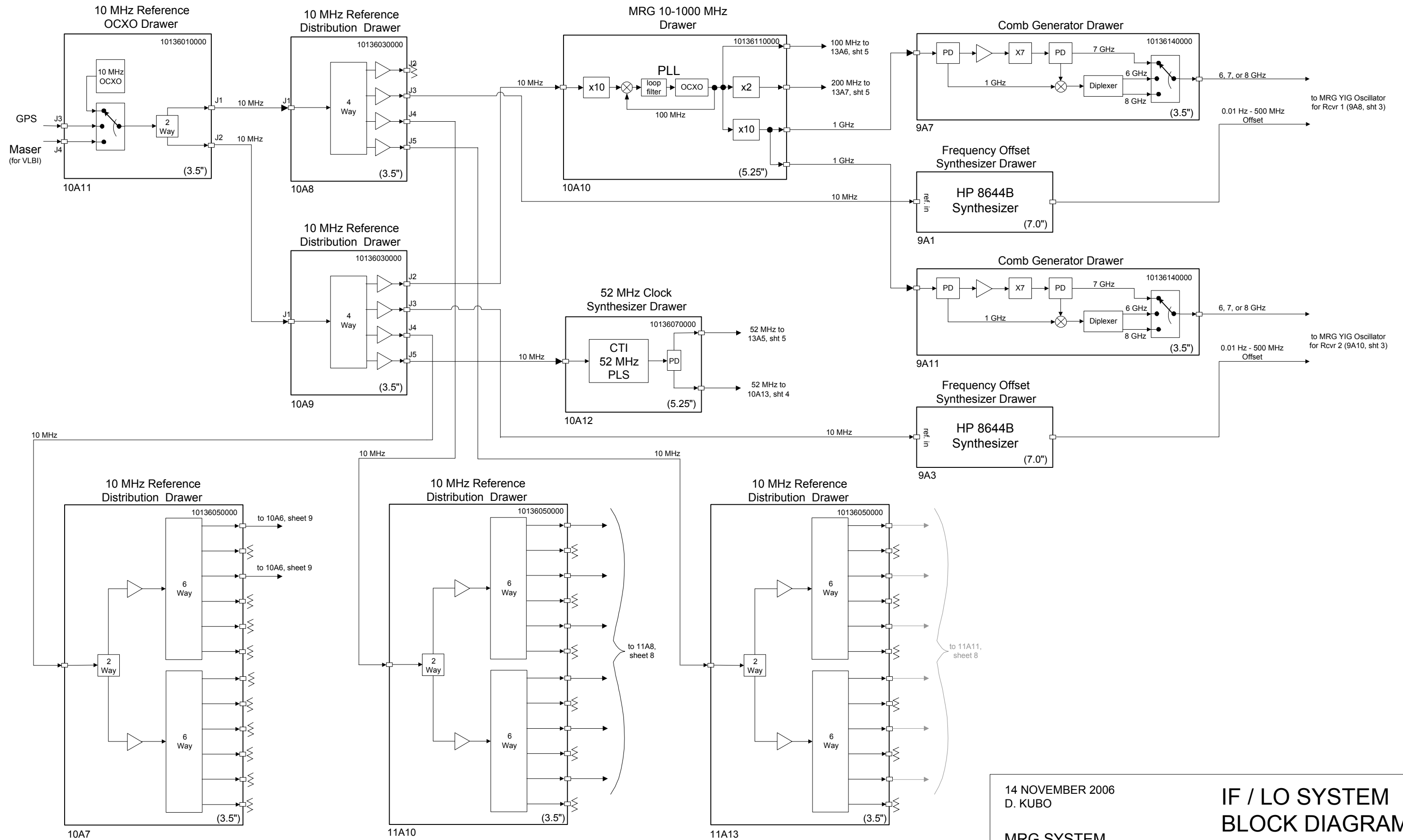
- NOTES:
- VARIABLE ATTENUATOR IS SERVOED ONLY ONCE AT BEGINNING OF TRACK TO OPTIMIZE LO DRIVE TO YIG OSCILLATOR.
  - VARIABLE ATTENUATOR IS SERVOED ONLY ONCE TO OPTIMIZE IF DRIVE TO FIBER OPTIC TRANSMITTER (FOT x).
  - VARIABLE ATTENUATOR IS SERVOED ONLY ONCE TO OPTIMIZE LO DRIVE TO YIG OSCILLATOR.
  - VARIABLE ATTENUATOR IS SERVOED ONLY ONCE TO OPTIMIZE YIG LO DRIVE TO GUNN PLL.
  - VARIABLE ATTENUATOR IS SERVOED PERIODICALLY TO ACCOMMODATE FOR SKY TEMPERATURE CHANGE S.
  - VARIABLE ATTENUATORS ARE SERVOED ONLY ONCE TO OPTIMIZE DRIVE TO SAMPLERS.
  - SECONDARY PHASE ROTATORS REMOVE RESIDUAL FREQUENCY OFFSETS FOR FRINGE STOPPIN G.
  - ~109 MHZ CARRIES WALSH FUNCTION AND PRIMARY PHASE ROTATORS.

		DR D. KUBO DATE 2006 NOV 14 CHK DATE	Smithsonian Astrophysical Observatory Submillimeter Array Project		
THIRD ANGLE PROJECTION 		DSGN APPD DATE ENGR APPD DATE PROJ APPD DATE CONTRACT	<b>IF/LO TOP LEVEL BLOCK DIAGRAM</b>		
REMOVE BURRS AND BREAK SHARP EDGES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS DECIMALS ANGLES .XXX *		SIZE D CODE IDENT NO. 50944 DWG NO.	REV. C		
DASH NO.	NEXT ASSEMBLY	USED ON	MATL:	FIN:	SCALE N.A.
			SHEET 1 OF 1		



**NOTES:**

- 1) ALL DRAWERS HAVE LOCATION DESIGNATORS (TYPICALLY LOCATED IN LOWER LEFT OF DRAWER DIAGRAM. EXAMPLE: 11A8 DESIGNATES RACK 11 (AR11) DRAWER 8 (8TH DRAWER DOWN FROM TOP OF RACK).
- 2) ALL INTERCONNECT CABLES ARE COAX UNLESS OTHERWISE SPECIFIED.
- 3)  INDICATES FIBER OPTIC CABLE.
- 4) ALL FIBER OPTIC CONNECTORS ARE FC/APC UNLESS OTHERWISE SPECIFIED.
- 5)  =  INDICATES SINGLE TWISTED PAIR CABLE.
- 6)  =  INDICATES DOUBLE TWISTED PAIR CABLE.
- 7) INTERNAL DRAWER DC POWER SUPPLIES NOT SHOWN.
- 8) CONTROL AND STATUS LINES NOT SHOWN.
- 9) DRAWER MONITOR AND TEST POINTS NOT SHOWN (REFER TO DRAWER BLOCK DIAGRAMS).

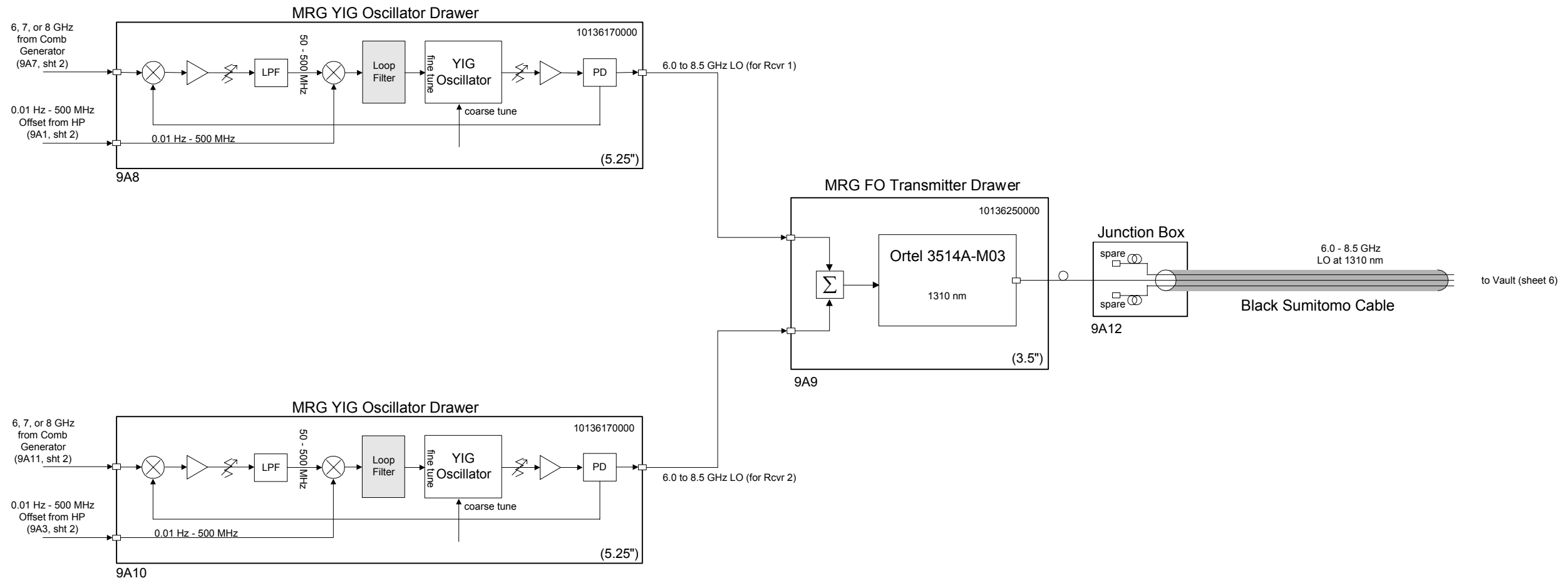


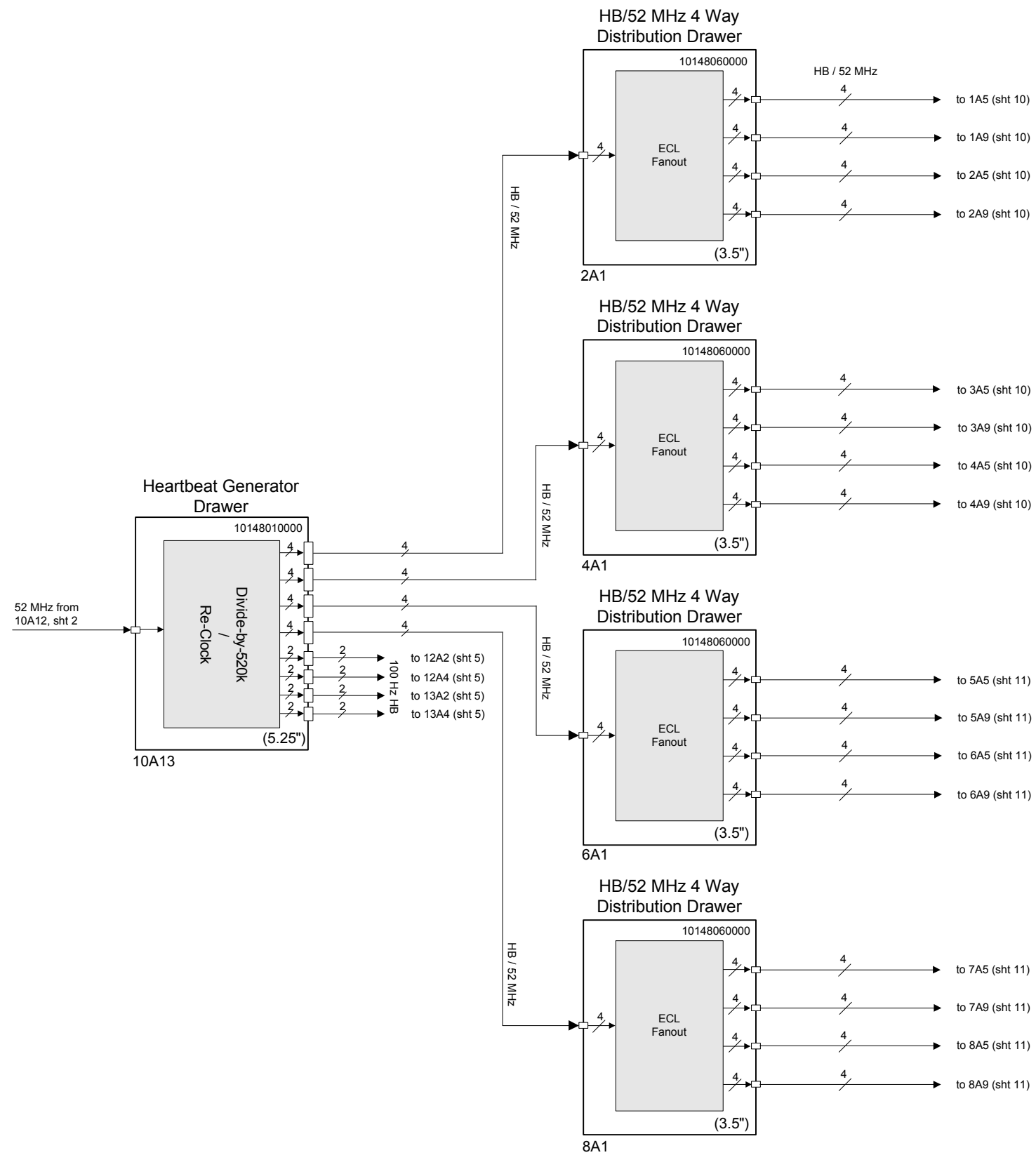
14 NOVEMBER 2006  
D. KUBO

**IF / LO SYSTEM  
BLOCK DIAGRAM**

MRG SYSTEM

SHEET 2 OF 13



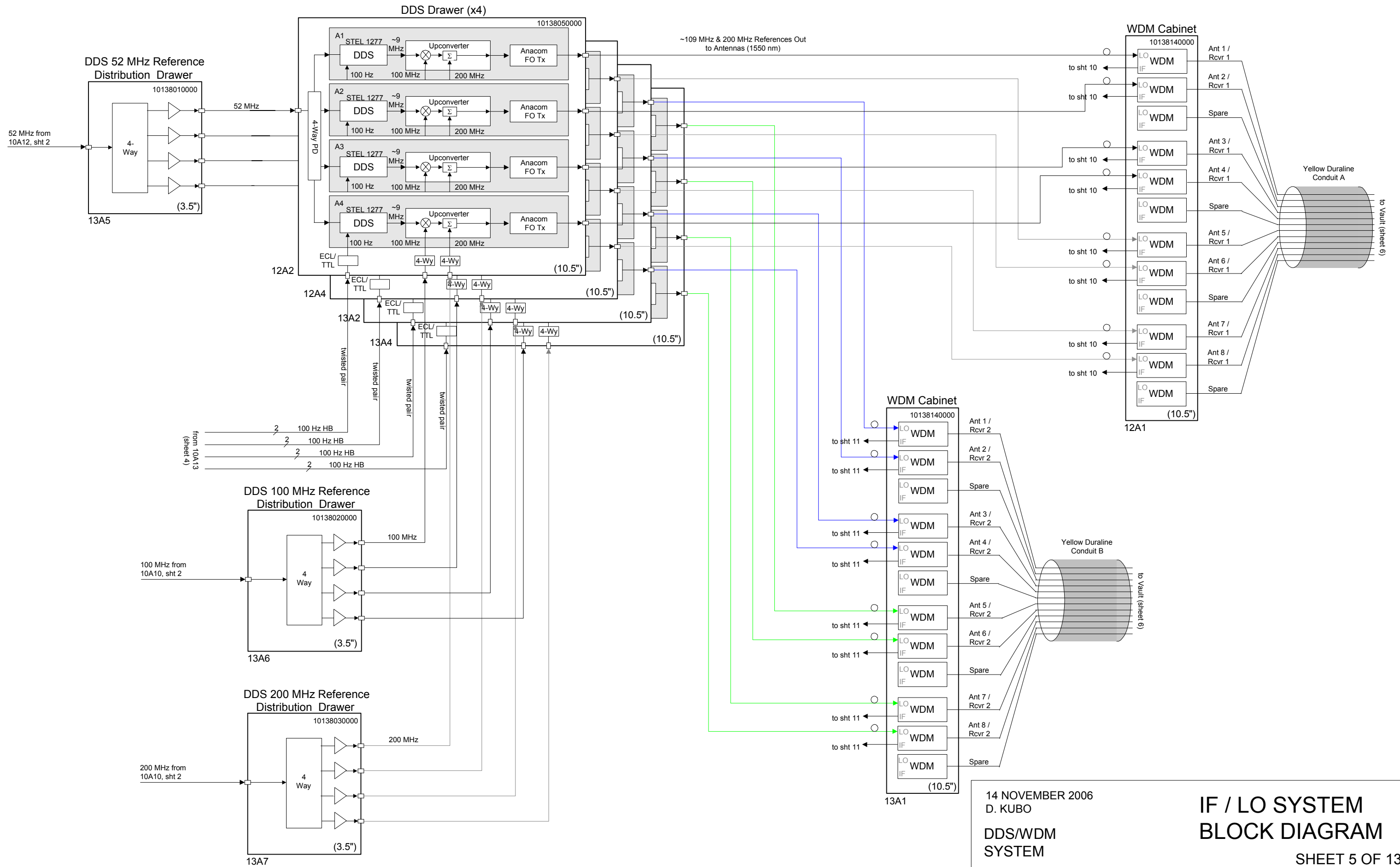


14 NOVEMBER 2006  
D. KUBO

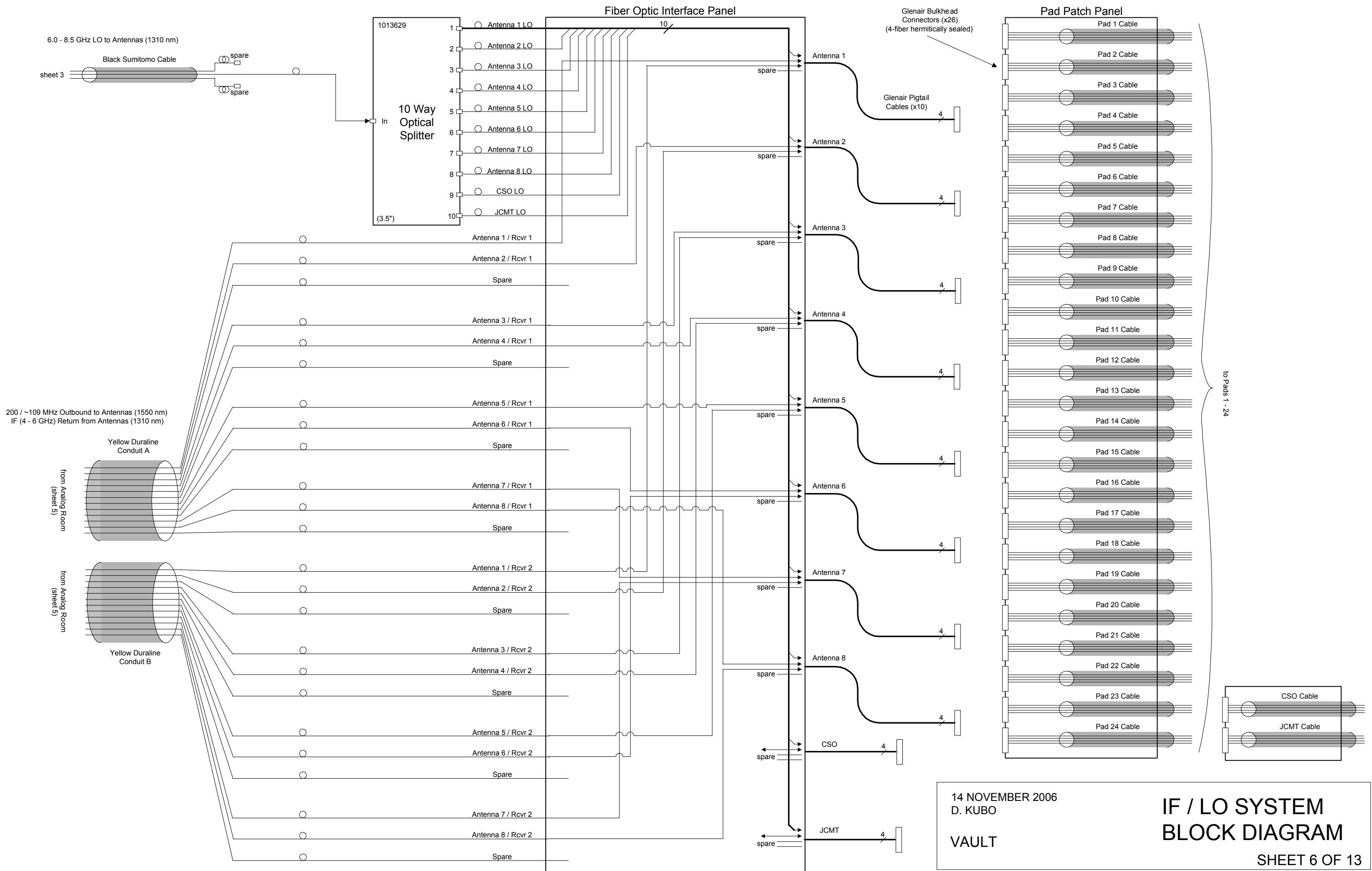
HEARTBEAT / 52 MHZ  
CLOCK SYSTEM

IF / LO SYSTEM  
BLOCK DIAGRAM

SHEET 4 OF 13



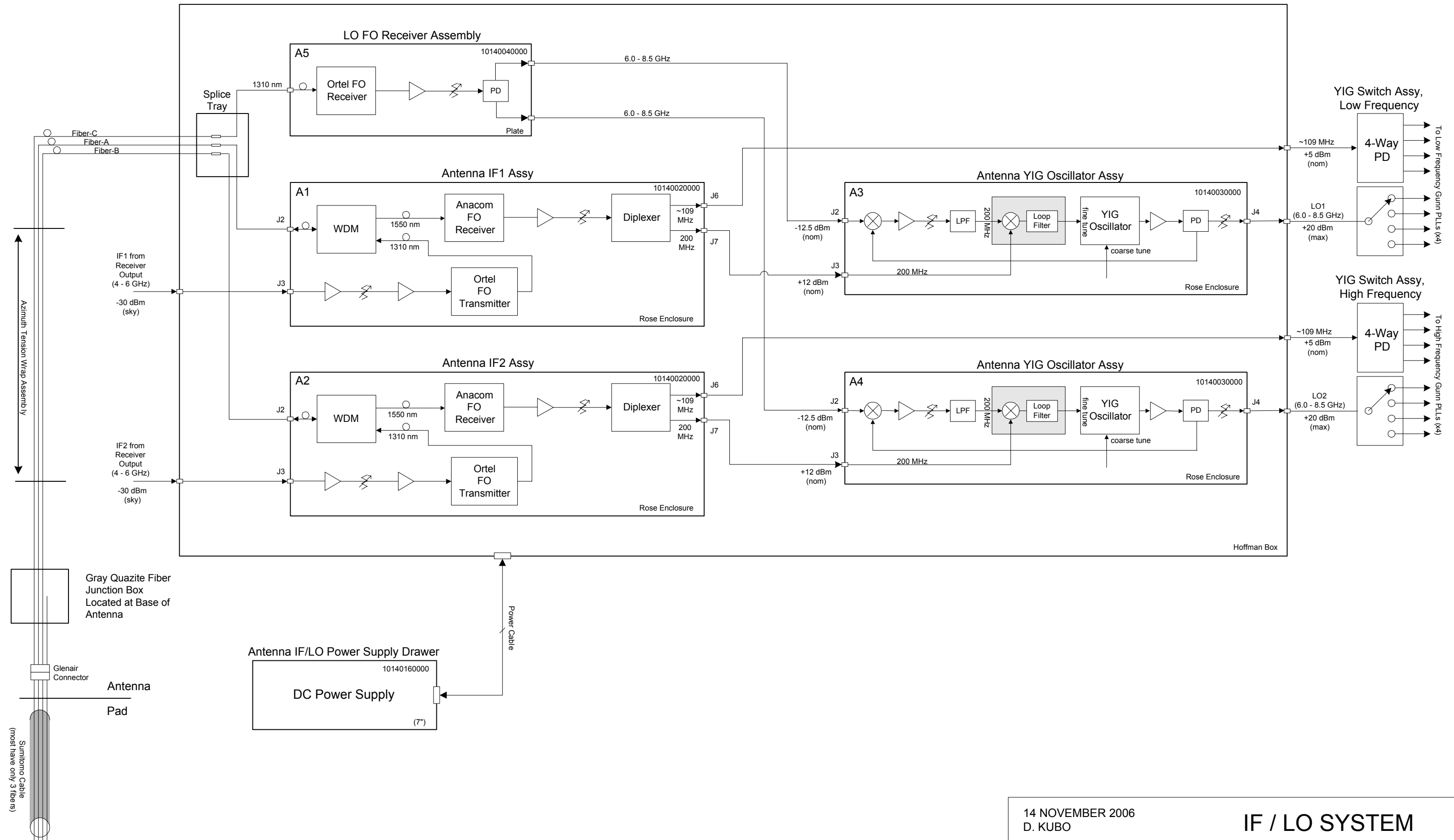
14 NOVEMBER 2006  
 D. KUBO  
**DDS/WDM SYSTEM**  
**IF / LO SYSTEM BLOCK DIAGRAM**  
 SHEET 5 OF 13



14 NOVEMBER 2006  
D. KUBO  
**VAULT**

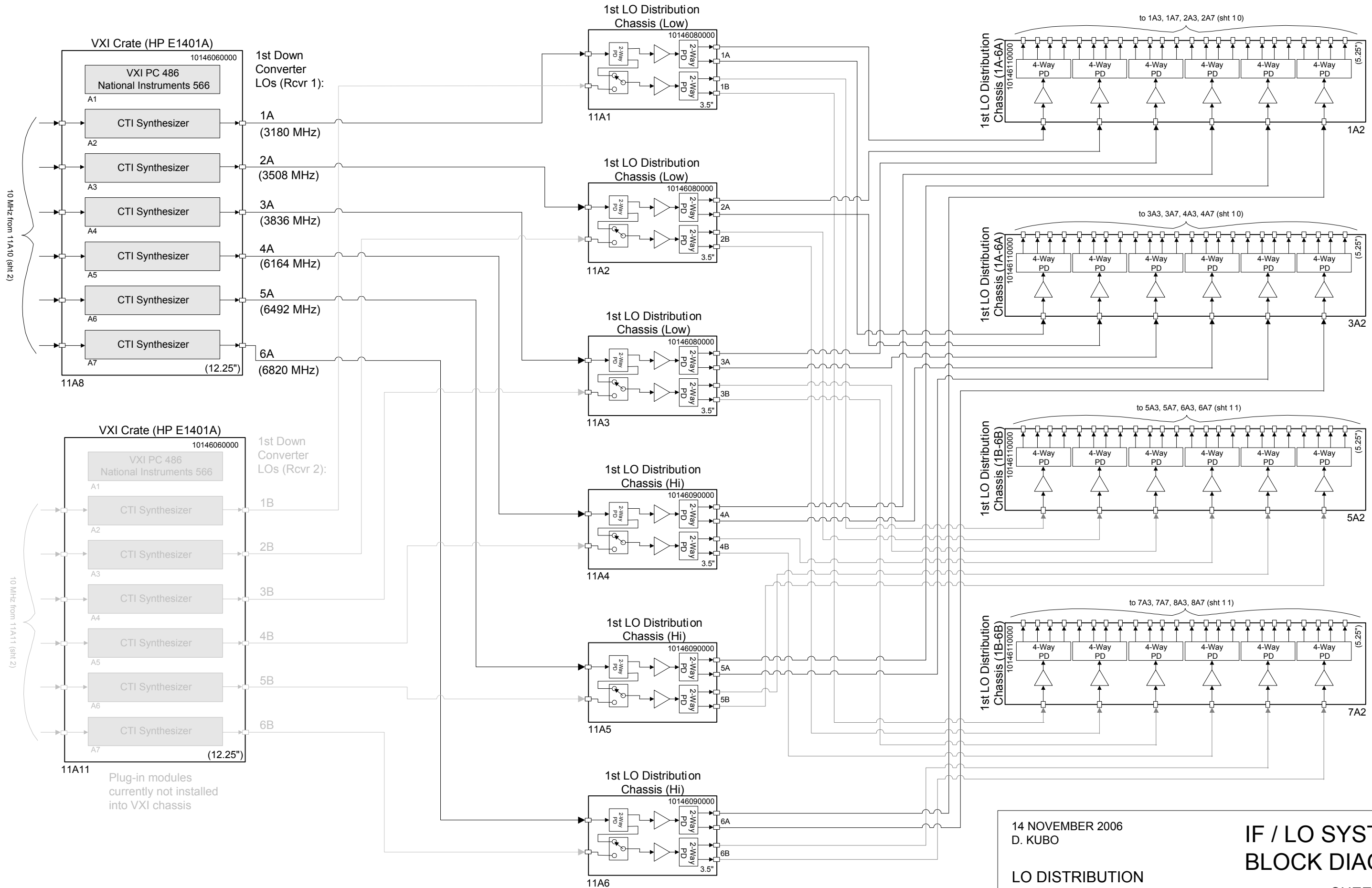
**IF / LO SYSTEM  
BLOCK DIAGRAM**

SHEET 6 OF 13

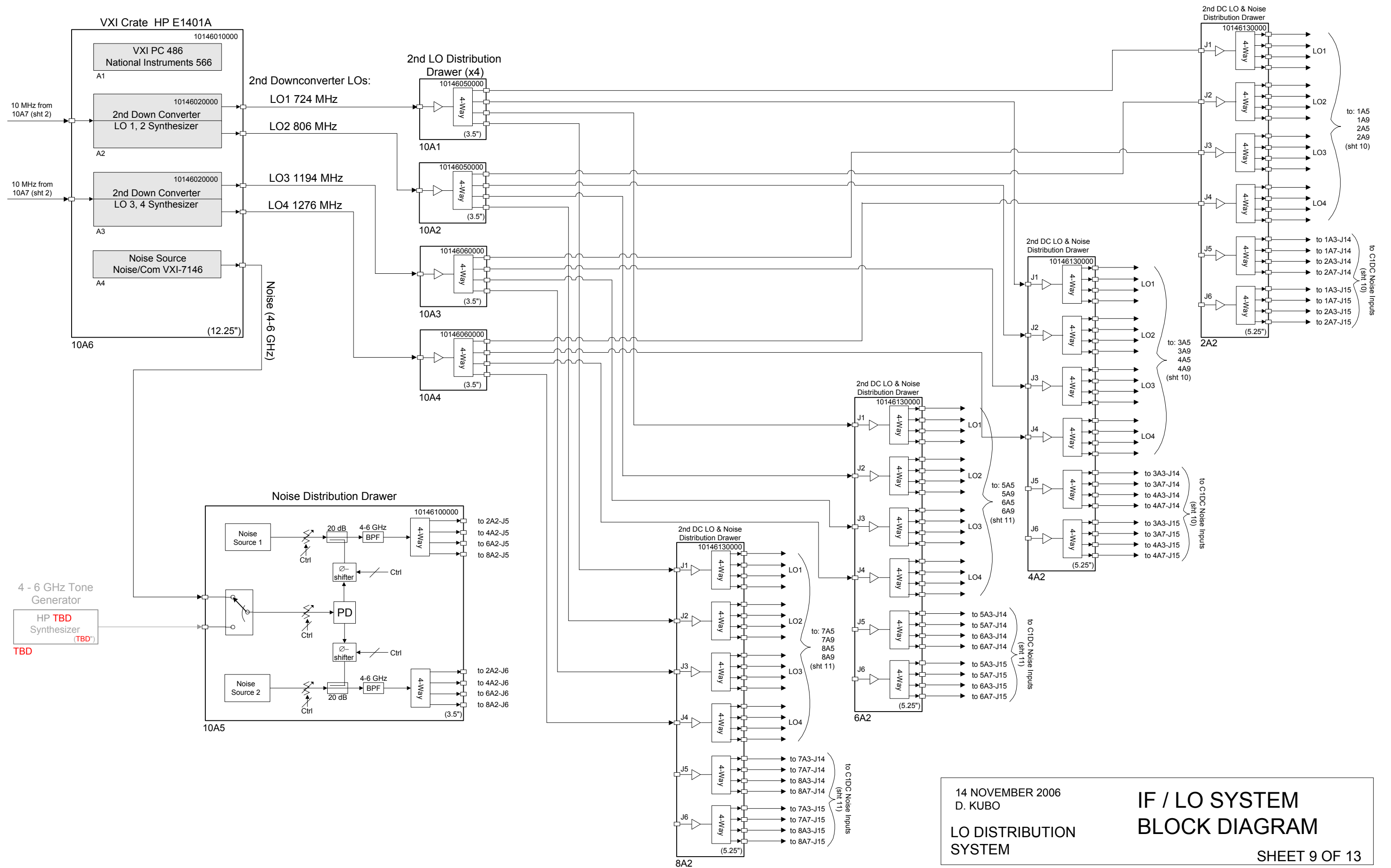


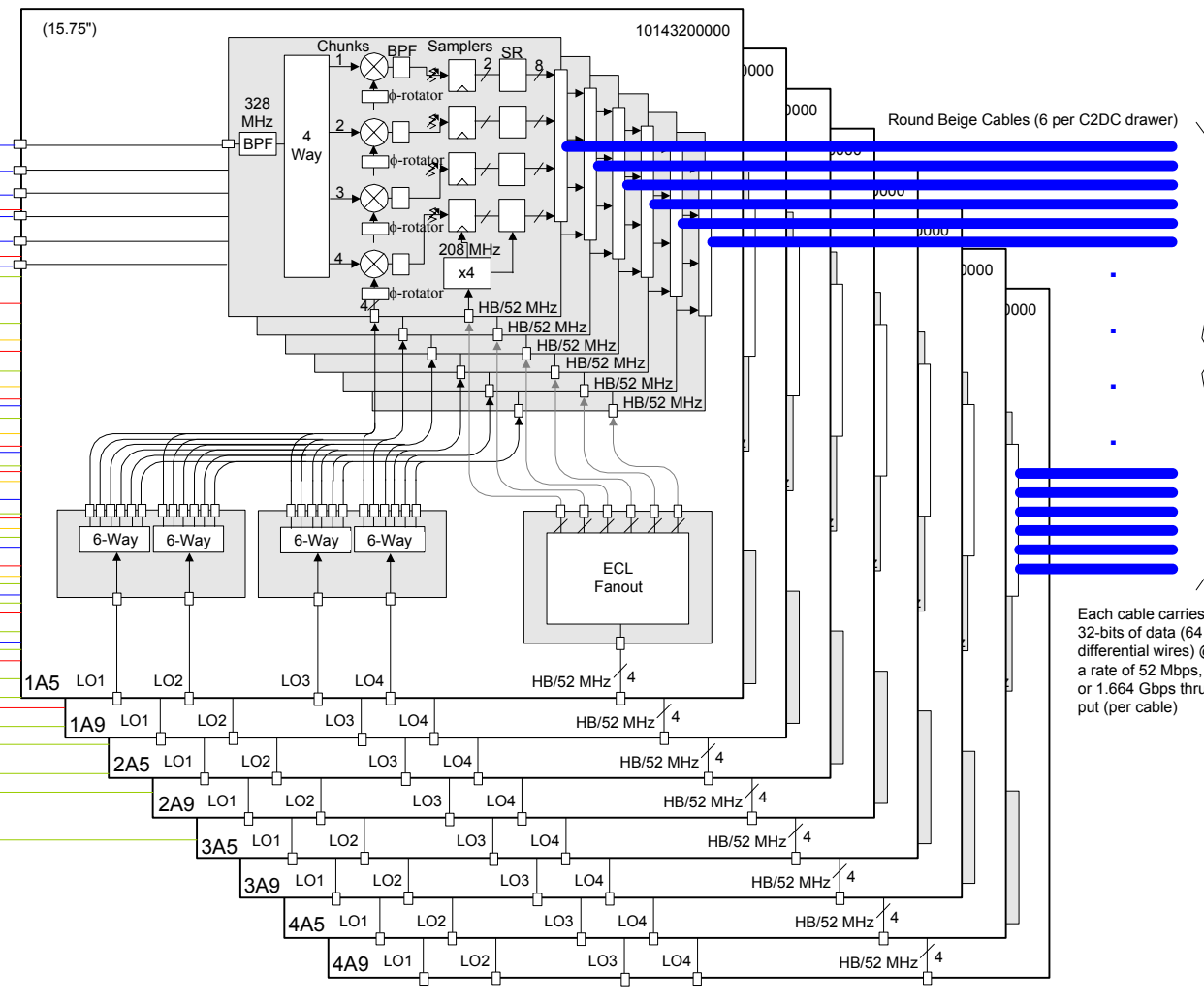
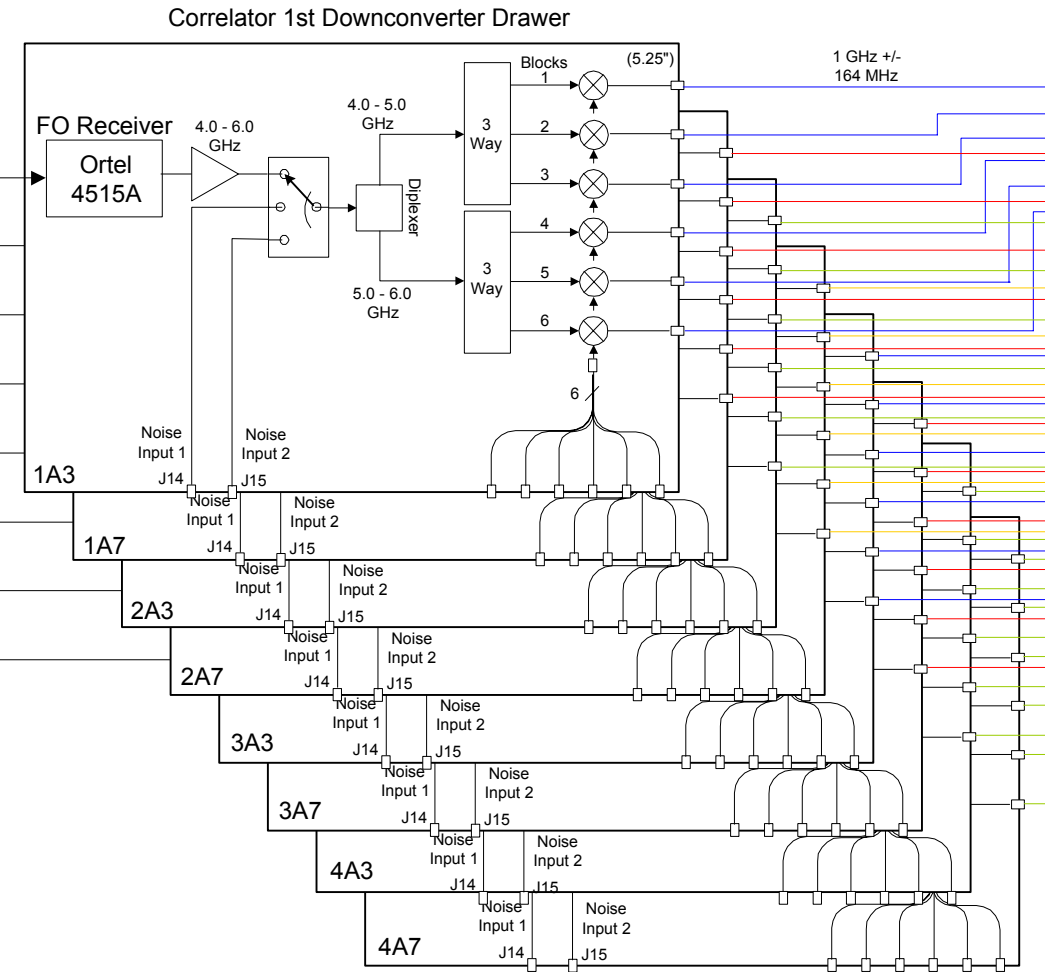
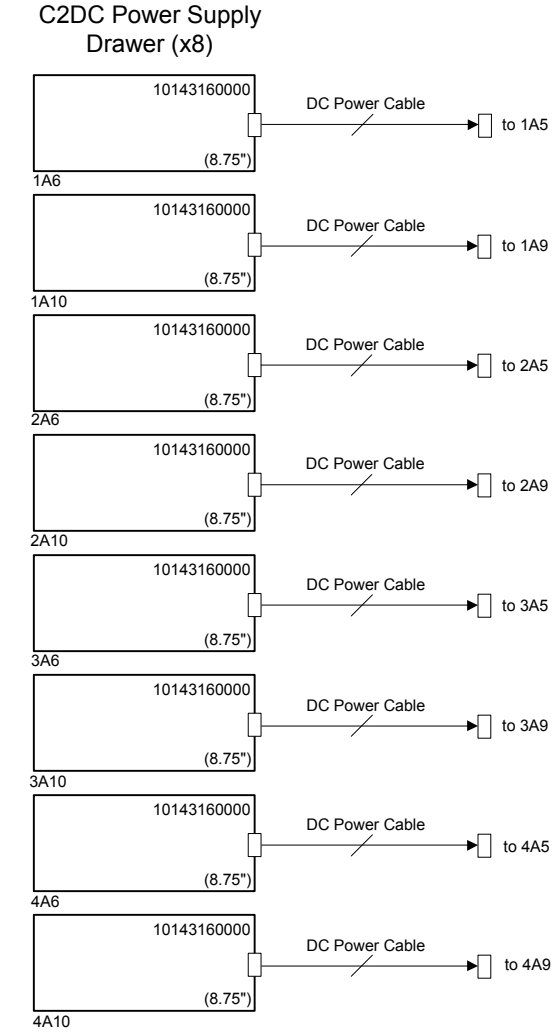
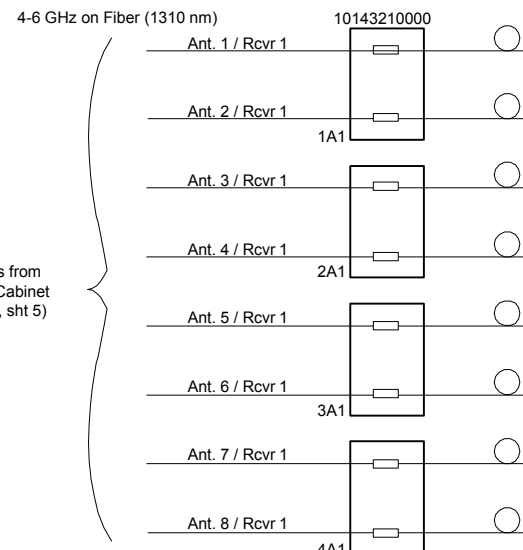
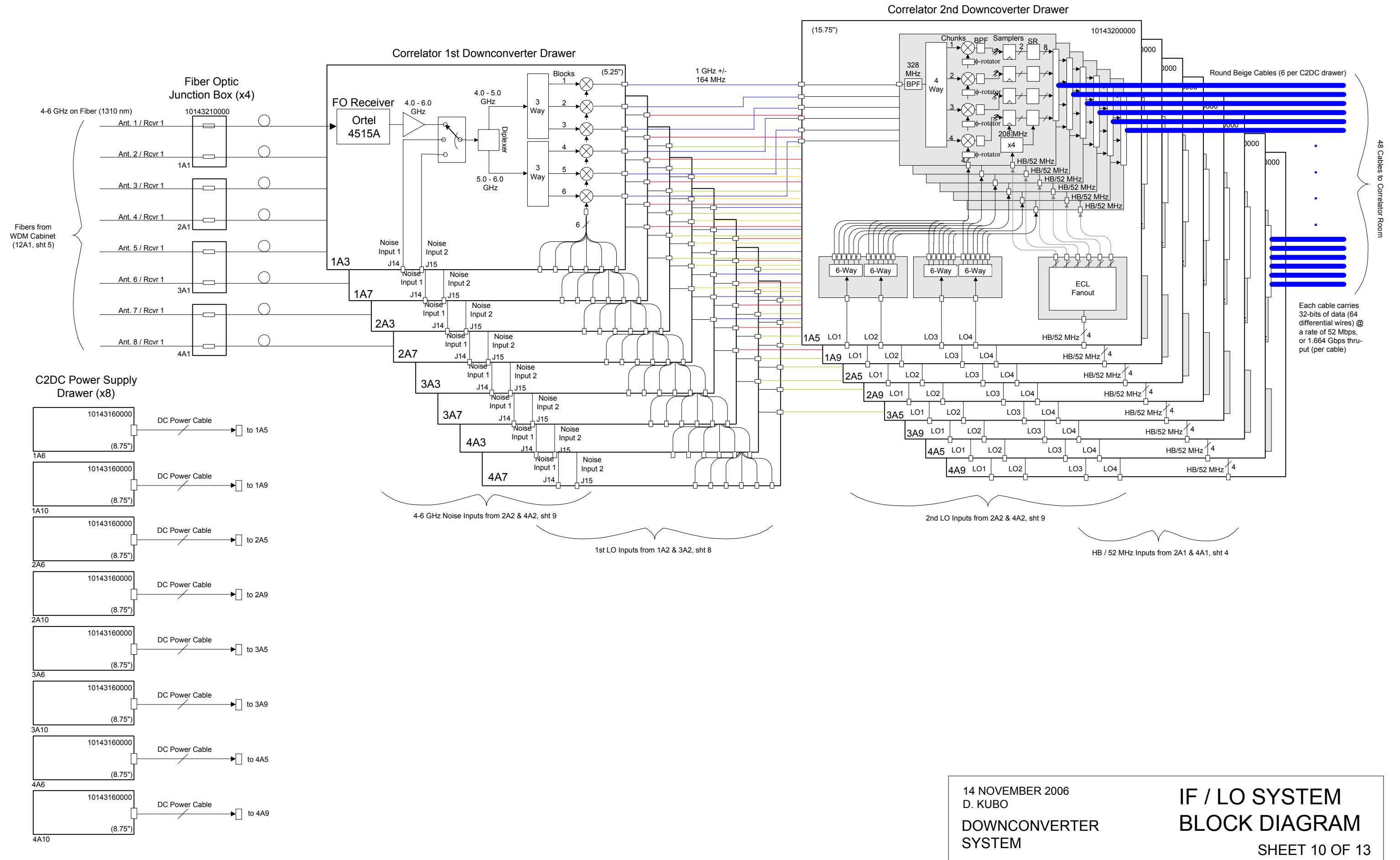
From Vault





Plug-in modules currently not installed into VXI chassis



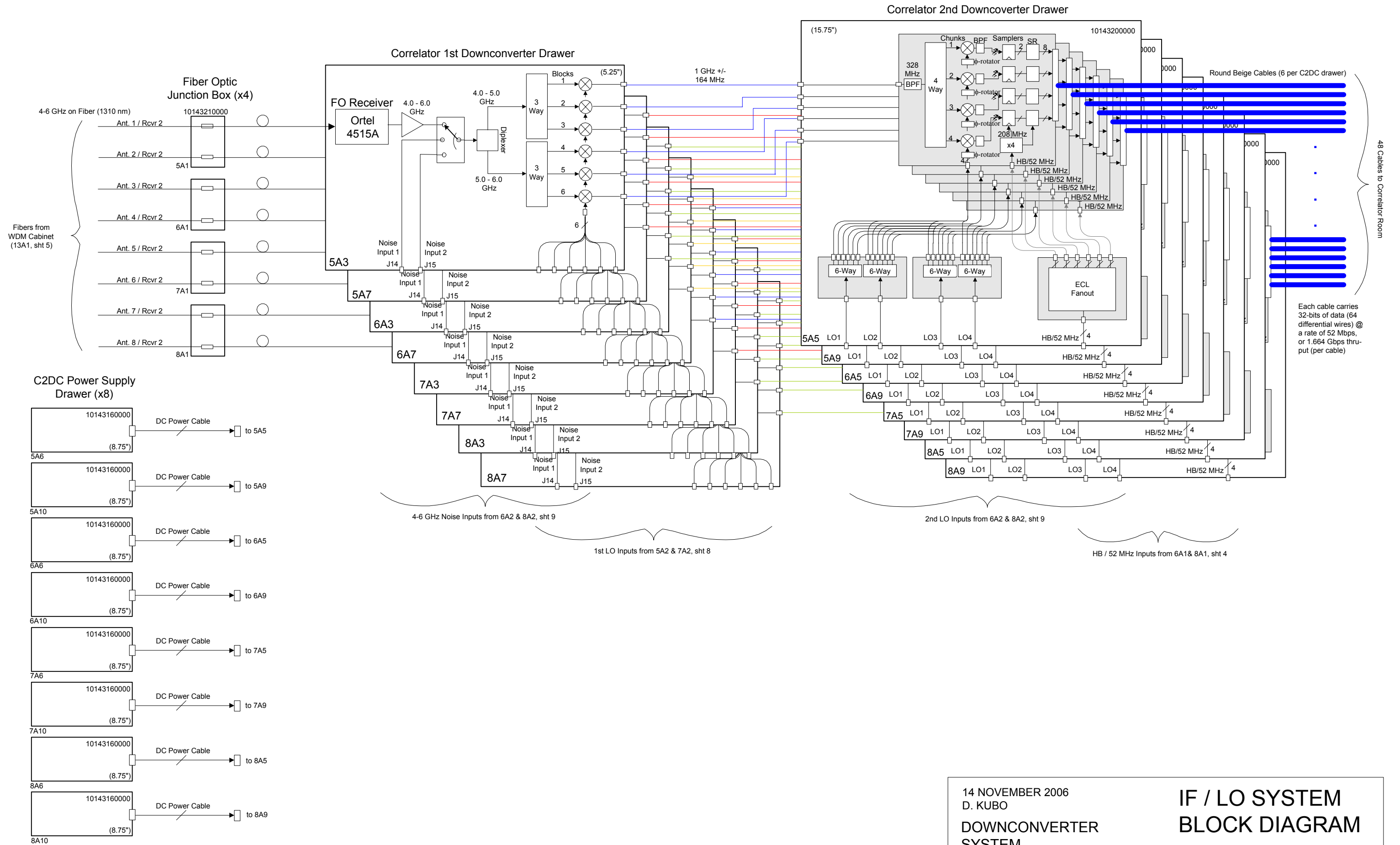


4-6 GHz Noise Inputs from 2A2 & 4A2, sht 9

1st LO Inputs from 1A2 & 3A2, sht 8

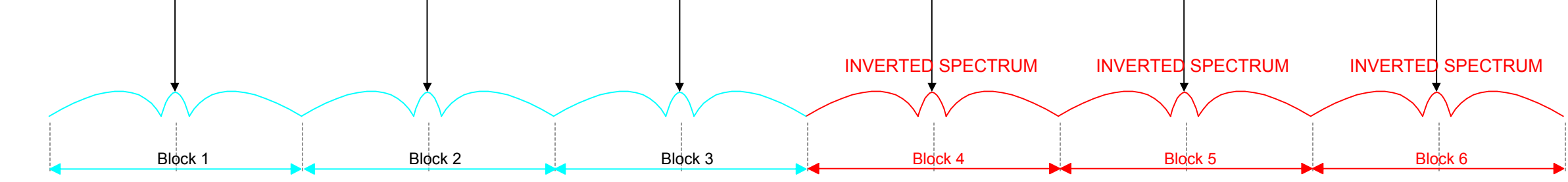
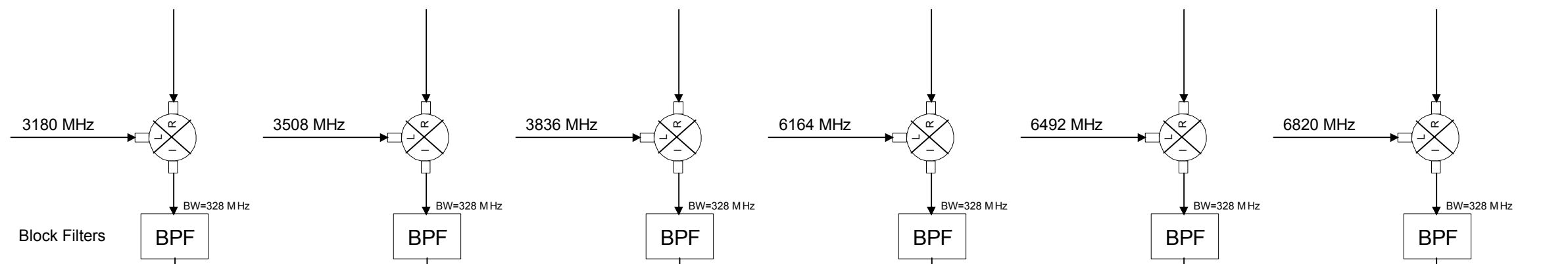
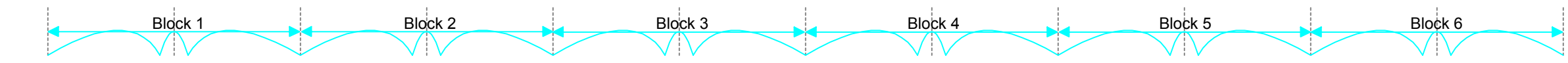
2nd LO Inputs from 2A2 & 4A2, sht 9

HB / 52 MHz Inputs from 2A1 & 4A1, sht 4

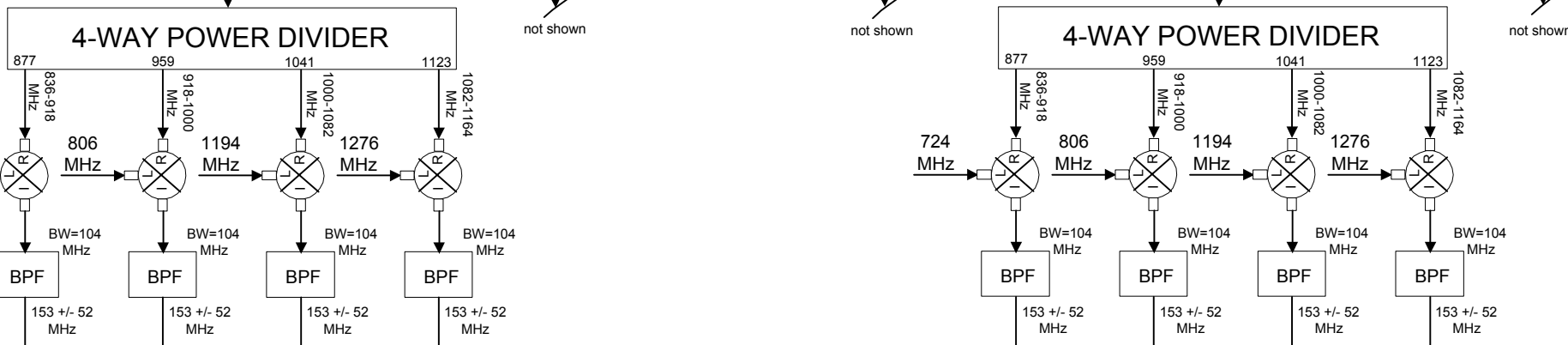
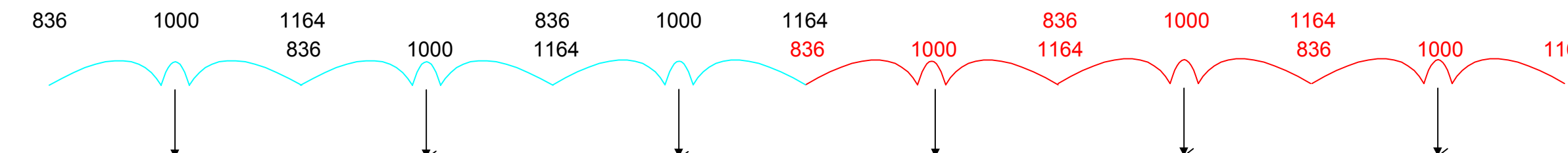


4016 4180 4344 4508 4672 4836 5000 5164 5328 5492 5656 5820 5984 MHz (Usable Limits)

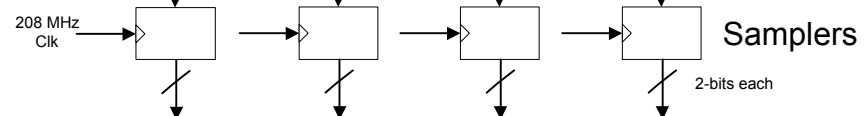
Antenna IF = 5000 +/- 984 MHz



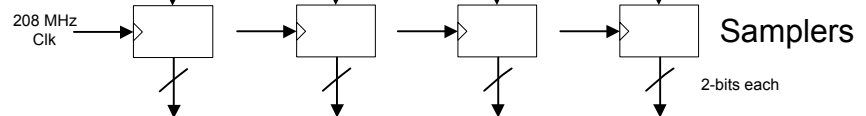
1st IF = 1000 +/- 164 MHz per block  
(6 blocks x 328 MHz/block = 1968 MHz)



2nd IF bandwidth for each chunk is 104 MHz (153 +/- 52 MHz) which provides 11 MHz overlap on each chunk edge. For the purpose of simplicity this figure does not attempt to show the overlaps.

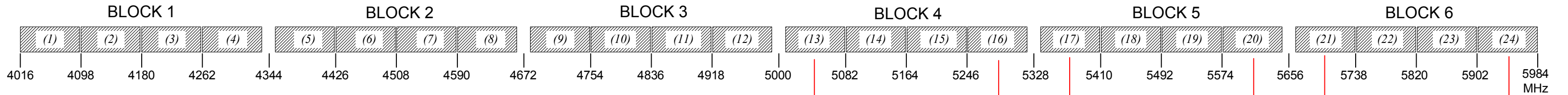


Digital Data/Clock to Correlators

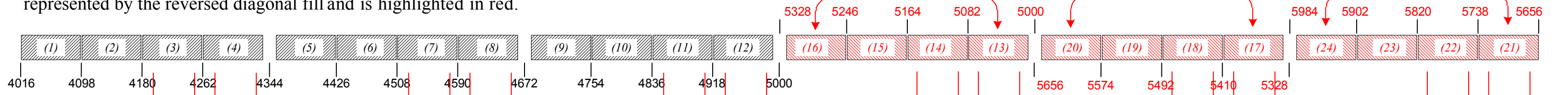


Digital Data/Clock to Correlators

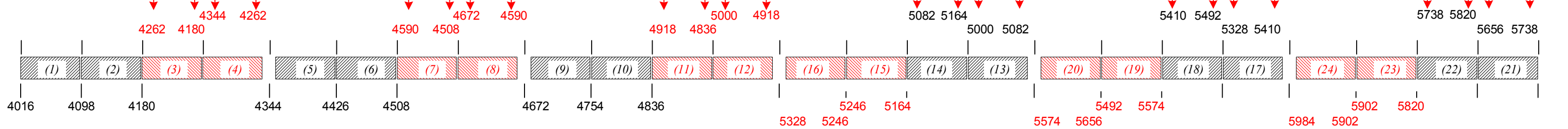
IF representation of output from receiver after SIS downconversion. Note that each frequency bin is numbered (1) through (24) in ascending order from low to high frequency. The diagonal red fill within each bin represents the "sense" of the frequency (normal or mirror image).



IF representation of output from C1DC after 1st downconversion. Note the inversion of blocks 4 through 6 are a result of "high side LO" in the 1st downconversion process. This inversion is represented by the reversed diagonal fill and is highlighted in red.



IF representation of output from C1DC after 2nd downconversion. Note the inversion of the 3rd and 4th bins of each block are a result of "high side LO" in the 2nd downconversion process. The 3rd and 4th bins of blocks 4 through 6 return to normal sense because of this second inversion.



IF representation of spectrum as displayed by corrPlotter using s# representation for chunks 1 through 24. Note that the software corrects for the inversions and reordering of the chunks such that the bin numbers correspond with the s#. Also note that the overlaps in frequency are shown with each chunk representing 104 MHz of bandwidth.

