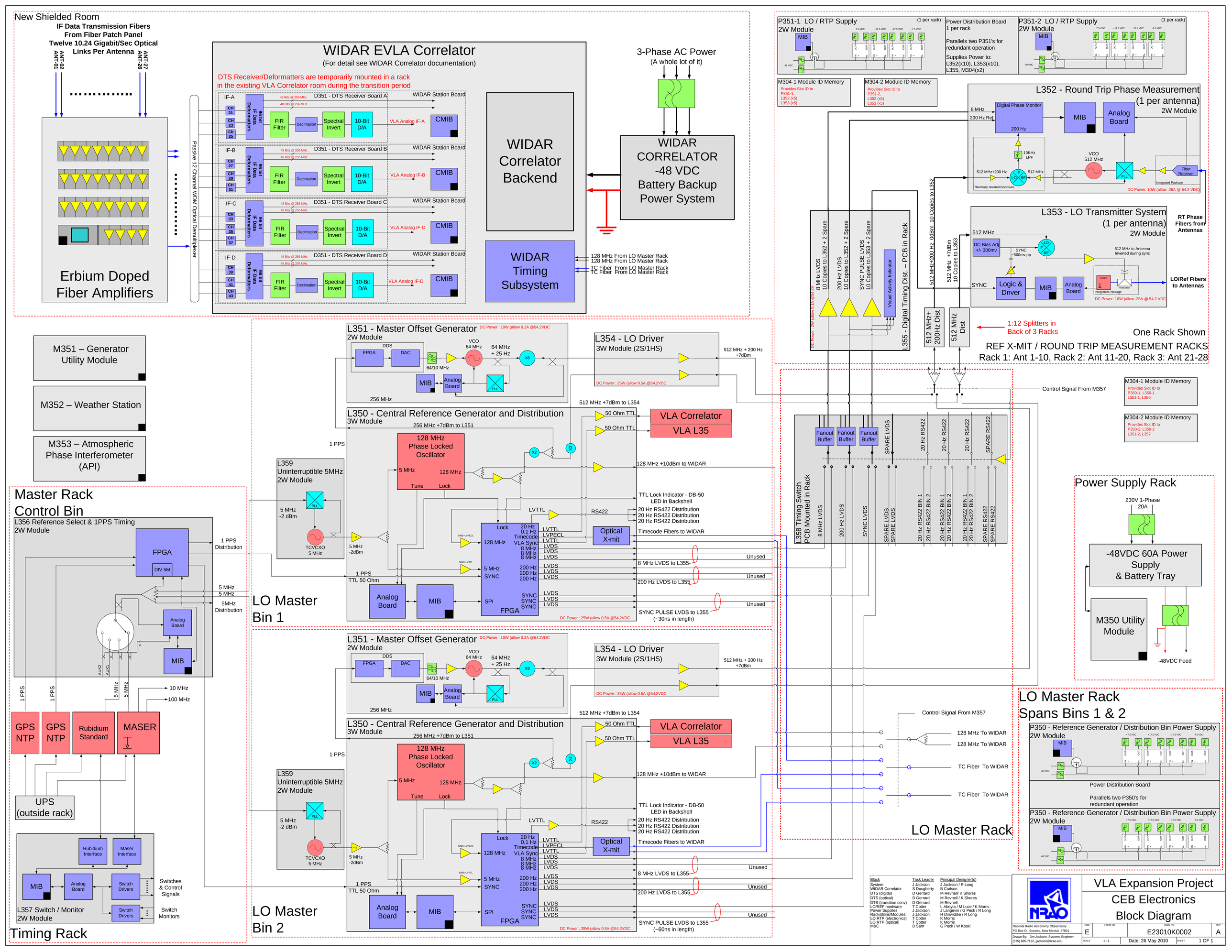
New Shielded Room
IF Data Transmission Fibers From Fiber Patch Panel
Twelve 10.24 Gigabit/Sec Optical Links Per Antenna
ANT-01
ANT-02
ANT-26
ANT-27
Erbium Doped Fiber Amplifiers
Passive 12 Channel WDM Optical Demultiplexer
WIDAR EVLA Correlator
(For detail see WIDAR Correlator documentation)
DTS Receiver/Deformatters are temporarily mounted in a rack in the existing VLA Correlator room during the transition period
D351 - DTS Receiver Board A
D351 - DTS Receiver Board B
D351 - DTS Receiver Board C
D351 - DTS Receiver Board D
WIDAR Station Board
96 bit iF Data Deformatters
FIR Filter
Decimation
Spectral Invert
10-Bit D/A
VLA Analog IF-A
VLA Analog IF-B
VLA Analog IF-C
VLA Analog IF-D
CMIB
WIDAR Correlator Backend
WIDAR Timing Subsystem
128 MHz From LO Master Rack
128 MHz From LO Master Rack
TC Fiber From LO Master Rack
TC Fiber From LO Master Rack
3-Phase AC Power
(A whole lot of it)
WIDAR CORRELATOR -48 VDC Battery Backup Power System
P351-1 LO / RTP Supply 2W Module
P351-2 LO / RTP Supply 2W Module
(1 per rack)
Power Distribution Board 1 per rack
Parallels two P351's for redundant operation
Supplies Power to: L352(x10), L353(x10), L355, M304(x2)
M304-1 Module ID Memory
Provides Slot ID to P351-1, L352 (x5) L353 (x5)
M304-2 Module ID Memory
Provides Slot ID to P351-2, L352 (x5) L353 (x5)
L352 - Round Trip Phase Measurement (1 per antenna)
2W Module
Digital Phase Monitor
MIB
Analog Board
8 MHz
200 Hz Ref
200 Hz
10KHz LPF
VCO 512 MHz
512 MHz+200 Hz
512 MHz
PLL
Fiber Receiver
Integrated Package
Thermally Isolated Enclosure
DC Power: 10W (allow .25A @ 54.2 VDC)
L353 - LO Transmitter System (1 per antenna)
2W Module
512 MHz
DC Bias Adj +/- 300mv
SYNC ~500mv pp
512 MHz to Antenna Inverted during sync
Logic & Driver
Modulator
LASER
RT Phase Fibers from Antennas
LO/Ref Fibers to Antennas
8 MHz LVDS 10 Copies to L352 + 2 Spare
200 Hz LVDS 10 Copies to L352 + 2 Spare
SYNC PULSE LVDS 10 Copies to L353 + 2 Spare
Visual Activity Indicator
L355 - Digital Timing Dist. – PCB in Rack
512 MHz+200 Hz, 0dBm 10 Copies to L352
512 MHz +7dBm 10 Copies to L353
512 MHz+ 200Hz Dist
512 MHz Dist
1:12 Splitters in Back of 3 Racks
One Rack Shown
REF X-MIT / ROUND TRIP MEASUREMENT RACKS
Rack 1: Ant 1-10, Rack 2: Ant 11-20, Rack 3: Ant 21-28
M351 – Generator Utility Module
M352 – Weather Station
M353 – Atmospheric Phase Interferometer (API)
L351 - Master Offset Generator
2W Module
DC Power : 10W (allow 0.2A @54.2VDC)
DDS
FPGA
DAC
64/10 MHz
VCO 64 MHz
64 MHz + 25 Hz
X8
256 MHz
L354 - LO Driver
3W Module (2S/1HS)
DC Power : 25W (allow 0.5A @54.2VDC)
512 MHz + 200 Hz +7dBm
512 MHz +7dBm to L354
L350 - Central Reference Generator and Distribution
3W Module
256 MHz +7dBm to L351
128 MHz Phase Locked Oscillator
5 MHz
128 MHz
Tune
Lock
1 PPS
L359 Uninterruptible 5MHz 2W Module
5 MHz -2 dBm
TCVCXO 5 MHz
5 MHz -2dBm
50 Ohm TTL
VLA Correlator
VLA L35
128 MHz +10dBm to WIDAR
TTL Lock Indicator - DB-50 LED in Backshell
20 Hz RS422 Distribution
Timecode Fibers to WIDAR
Optical X-mit
8 MHz LVDS to L355
200 Hz LVDS to L355
SYNC PULSE LVDS to L355 (~30ns in length)
1 PPS TTL 50 Ohm
Analog Board
MIB
FPGA
LO Master Bin 1
LO Master Bin 2
Control Signal From M357
128 MHz To WIDAR
TC Fiber To WIDAR
L358 Timing Switch PCB Mounted in Rack
Fanout Buffer
SPARE LVDS
20 Hz RS422
SPARE RS422
20 Hz RS422 BIN 1
20 Hz RS422 BIN 2
M304-1 Module ID Memory
Provides Slot ID to P350-1, L350-1 L351-1, L356
M304-2 Module ID Memory
Provides Slot ID to P350-2, L350-2 L351-2, L357
Power Supply Rack
230V 1-Phase 20A
-48VDC 60A Power Supply & Battery Tray
M350 Utility Module
-48VDC Feed
LO Master Rack Spans Bins 1 & 2
P350 - Reference Generator / Distribution Bin Power Supply
2W Module
Power Distribution Board
Parallels two P350's for redundant operation
LO Master Rack
Master Rack Control Bin
L356 Reference Select & 1PPS Timing
2W Module
FPGA
DIV 5M
1 PPS Distribution
5 MHz
5MHz Distribution
AUX2
AUX1
10 MHz
100 MHz
GPS NTP
GPS NTP
Rubidium Standard
MASER
UPS (outside rack)
Rubidium Interface
Maser Interface
Switch Drivers
Switches & Control Signals
Switch Monitors
L357 Switch / Monitor
2W Module
Timing Rack
Block
System
WIDAR Correlator
DTS (digital)
DTS (optical)
DTS (transition conv)
LO/REF hardware
Power Supplies
Racks/Bins/Modules
LO RTP (electronics)
LO RTP (optical)
M&C
Task Leader
J Jackson
S Dougherty
D Gerrard
D Gerrard
T Cotter
J Jackson
J Jackson
T Cotter
T Cotter
B Sahr
Principal Designer(s)
J Jackson / R Long
B Carlson
M Revnell/ K Shores
M Revnell / K Shores
M Revnell
L Abeyta / M Luce / K Morris
J Langevin / G Peck / R Long
H Dinwiddie / R Long
K Morris
K Morris
G Peck / W Koski
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VLA Expansion Project
CEB Electronics
Block Diagram
SIZE E
FSCM NO
DWG NO E23010K0002
REV A
SCALE 1 : 1
Date: 26 May 2010
SHEET 1 OF 1