POWER DOMAINS

EVM_12V0	12 VOLT INPUT FROM EXTERNAL POWER SUPPLY
EVM_5V0	5.0 VOLT OUTPUT FROM TPS65232
EVM_3V3	3.3 VOLT OUTPUT FROM TPS65232
EVM_1V8_A	1.8 VOLT ANALOG LDO OUTPUT FROM TPS65001
EVM_1V8_D	1.8 VOLT DIGITAL OUTPUT FROM TPS65001
EVM_1V5	1.5 VOLT OUTPUT FROM TPS54620
EVM_1V0_AVS	1.0 VOLT CORE FROM TPS40041
EVM_1V0_CONN	1.0 VOLT NON-CORE FROM TPS65232
EVM_0V9	0.9 VOLT OUTPUT FROM TPS65001
EVM_DDR_VTT	0.75 VOLT TERMINATOR DDR3

REV	DESCRIPTION	DATE	APPROVED
A	Initial schematic for layout	02/15/2010	RRP
B	Beta build	10/31/2010	RRP
B	Production build	5/15/2011	RRP

SCHEMATIC CONTENTS

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02) NETRA MCASP'S
03) NETRA SERIAL I/O
04) NETRA ETHERNET INTERFACE
05) NETRA USB INTERFACE
06) NETRA GPMC
07) NETRA DDR0 EMIF
08) NETRA DDR1 EMIF
09) NETRA ANALOG VIDEO
10) NETRA VIDEO PORT
11) NETRA HDMI INTERFACE
12) NETRA SATA/PCIe
13) SERDES CLOCKS
14) NETRA JTAG
15) NETRA CLOCKS
16) NETRA POWER 1
17) NETRA POWER 2
18) NETRA POWER 3
19) NETRA GROUND PINS
20) CAPS
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22) EMIF0 TESTPOINTS
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26) EMIF0 TESTPOINTS
27) DDR CAPS
28) PCIe INTERFACE CONNECTOR
29) PCIe 3V3 POWER
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31) I2C EEPROM
32) I2C EXPANDER
33) RS232 INTERFACE
34) IR RECIEVER
35) SD/MMC CONNECTOR
36) SPI EEPROM
37) NAND FLASH
38) ETHERNET PHY
39) ETHERNET POWER
40) ETHERNET CONNECTOR
41) AUDIO CODEC TLV320AIC3106
42) ANALOG VIDEO OUT
43) SCART ANALOG VIDEO OUT
44) VIDEO PORT EXPANSION
45) VIDEO PORT EXPANSION 2
46) GPMC EXPANSION CONNECTOR
47) SERIAL I/O EXPANSION CONNECTOR
48) MCASP EXPANSION CONNECTOR
49) POWER MONITORS
50) POWER MONITOR CPU
51) POWER 5V0,3V3,1V0_CONN
52) POWER 1V5
53) POWER VTT
54) POWER 1V0 CORE
55) POWER 0V9/1V8_A/1V8_D
56) POWER IN
57) POWER SEQUENCING
58) REVISION HISTORY

I2C0 ADDRESS MAP

BASE BINARY	HEX BASE (RJ)	DEVICE	SHEET
		PCF8575	27
		I2C EEPROM	31
		TLV320AIC3106	36

RJ - Right Justified

I2C1 ADDRESS MAP

BASE BINARY	HEX BASE (RJ)	DEVICE	SHEET
		PCF8575	27

RJ - Right Justified

REVISION STATUS OF SHEETS

REV	A	A	A	A	A	A	A	A		
SH	51	52	53	54	55	56	57	58		
REV	A	A	A	A	A	A	A	A	A	A
SH	41	42	43	44	45	46	47	48	49	50
REV	A	A	A	A	A	A	A	A	A	A
SH	31	32	33	34	35	36	37	38	39	40
REV	A	A	A	A	A	A	A	A	A	A
SH	21	22	23	24	25	26	27	28	29	30
REV	A	A	A	A	A	A	A	A	A	A
SH	11	12	13	14	15	16	17	18	19	20
REV	C	A	A	A	A	A	A	A	A	A
SH	1	2	3	4	5	6	7	8	9	10

NEXT ASSY | USED ON

APPLICATION

DWN	R.R.P.	DATE 02/15/2010
CHK	T.W.K.	DATE 02/15/2010
ENGR	R.R.P.	DATE 02/15/2010
ENGR-MGR	R.R.P.	DATE 02/15/2010
QA	C.M.D.	DATE 02/15/2010
MFG	R.R.P.	DATE 02/15/2010
RLSE	R.R.P.	DATE 02/15/2010

SPECTRUM DIGITAL INCORPORATED

Title: NETRA EVM

Page Contents: TITLE PAGE

Size:B | DWG NO 512872-0001 | Revision: C

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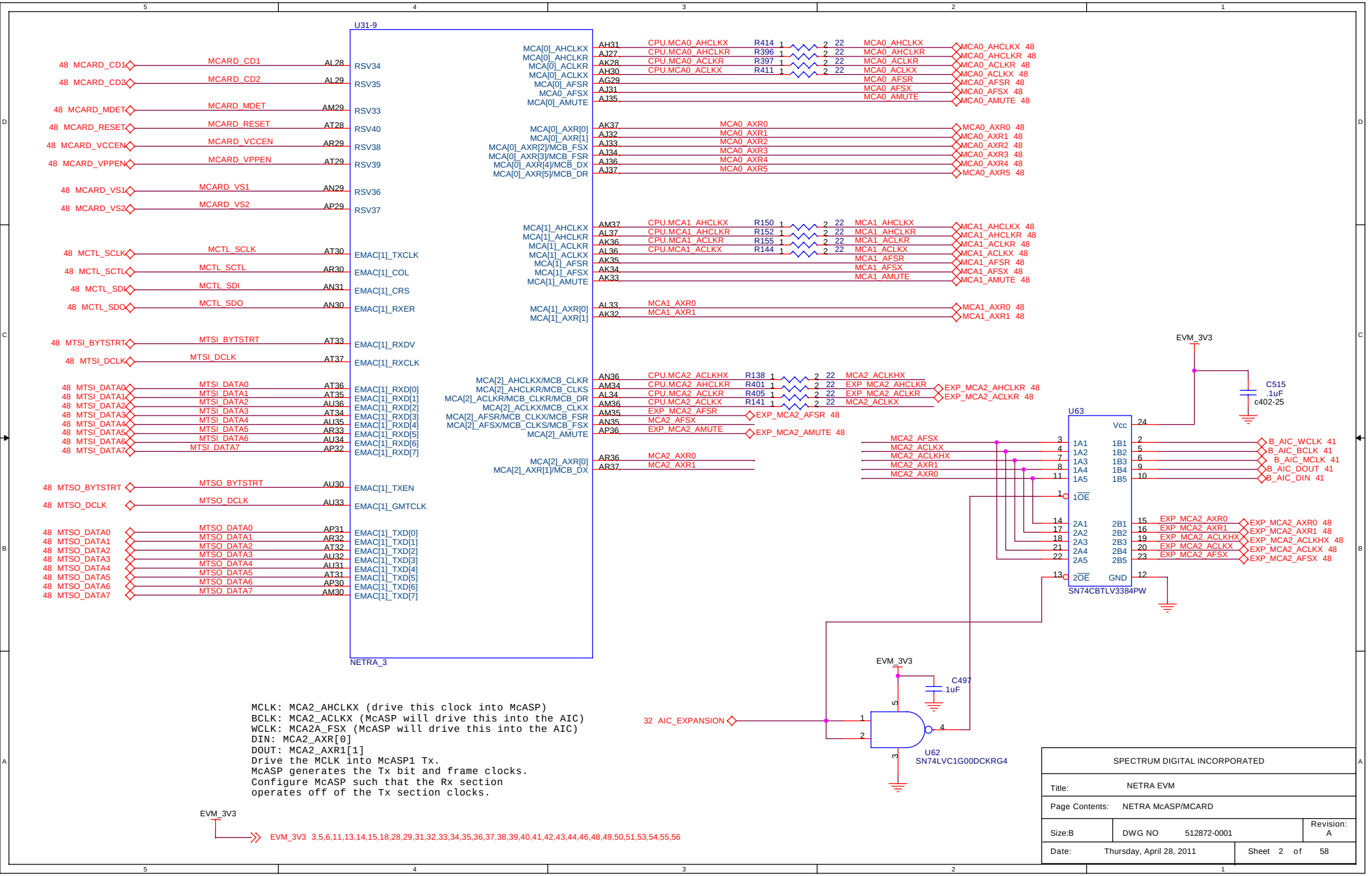
U31-9
NETRA_3
48 MCARD_CD1
48 MCARD_CD2
48 MCARD_MDET
48 MCARD_RESET
48 MCARD_VCCEN
48 MCARD_VPPEN
48 MCARD_VS1
48 MCARD_VS2
48 MCTL_SCLK
48 MCTL_SCTL
48 MCTL_SDI
48 MCTL_SDO
48 MTSI_BYTSTRT
48 MTSI_DCLK
48 MTSI_DATA0
48 MTSI_DATA1
48 MTSI_DATA2
48 MTSI_DATA3
48 MTSI_DATA4
48 MTSI_DATA5
48 MTSI_DATA6
48 MTSI_DATA7
48 MTSO_BYTSTRT
48 MTSO_DCLK
48 MTSO_DATA0
48 MTSO_DATA1
48 MTSO_DATA2
48 MTSO_DATA3
48 MTSO_DATA4
48 MTSO_DATA5
48 MTSO_DATA6
48 MTSO_DATA7
MCARD_CD1
MCARD_CD2
MCARD_MDET
MCARD_RESET
MCARD_VCCEN
MCARD_VPPEN
MCARD_VS1
MCARD_VS2
MCTL_SCLK
MCTL_SCTL
MCTL_SDI
MCTL_SDO
MTSI_BYTSTRT
MTSI_DCLK
MTSI_DATA0
MTSI_DATA1
MTSI_DATA2
MTSI_DATA3
MTSI_DATA4
MTSI_DATA5
MTSI_DATA6
MTSI_DATA7
MTSO_BYTSTRT
MTSO_DCLK
MTSO_DATA0
MTSO_DATA1
MTSO_DATA2
MTSO_DATA3
MTSO_DATA4
MTSO_DATA5
MTSO_DATA6
MTSO_DATA7
AL28
AL29
AM29
AT28
AR29
AT29
AN29
AP29
AT30
AR30
AN31
AN30
AT33
AT37
AT36
AT35
AU36
AT34
AU35
AR33
AU34
AP32
AU30
AU33
AP31
AR32
AT32
AU32
AU31
AT31
AP30
AM30
RSV34
RSV35
RSV33
RSV40
RSV38
RSV39
RSV36
RSV37
EMAC[1]_TXCLK
EMAC[1]_COL
EMAC[1]_CRS
EMAC[1]_RXER
EMAC[1]_RXDV
EMAC[1]_RXCLK
EMAC[1]_RXD[0]
EMAC[1]_RXD[1]
EMAC[1]_RXD[2]
EMAC[1]_RXD[3]
EMAC[1]_RXD[4]
EMAC[1]_RXD[5]
EMAC[1]_RXD[6]
EMAC[1]_RXD[7]
EMAC[1]_TXEN
EMAC[1]_GMTCLK
EMAC[1]_TXD[0]
EMAC[1]_TXD[1]
EMAC[1]_TXD[2]
EMAC[1]_TXD[3]
EMAC[1]_TXD[4]
EMAC[1]_TXD[5]
EMAC[1]_TXD[6]
EMAC[1]_TXD[7]
MCA[0]_AHCLKX
MCA[0]_AHCLKR
MCA[0]_ACLKR
MCA[0]_ACLKX
MCA[0]_AFSR
MCA0_AFSX
MCA[0]_AMUTE
MCA[0]_AXR[0]
MCA[0]_AXR[1]
MCA[0]_AXR[2]/MCB_FSX
MCA[0]_AXR[3]/MCB_FSR
MCA[0]_AXR[4]/MCB_DX
MCA[0]_AXR[5]/MCB_DR
AH31
AJ27
AK28
AH30
AG29
AJ31
AJ35
AK37
AJ32
AJ33
AJ34
AJ36
AJ37
CPU.MCA0_AHCLKX
CPU.MCA0_AHCLKR
CPU.MCA0_ACLKR
CPU.MCA0_ACLKX
R414
R396
R397
R411
22
MCA0_AHCLKX
MCA0_AHCLKR
MCA0_ACLKR
MCA0_ACLKX
MCA0_AFSR
MCA0_AFSX
MCA0_AMUTE
MCA0_AXR0
MCA0_AXR1
MCA0_AXR2
MCA0_AXR3
MCA0_AXR4
MCA0_AXR5
MCA0_AHCLKX 48
MCA0_AHCLKR 48
MCA0_ACLKR 48
MCA0_ACLKX 48
MCA0_AFSR 48
MCA0_AFSX 48
MCA0_AMUTE 48
MCA0_AXR0 48
MCA0_AXR1 48
MCA0_AXR2 48
MCA0_AXR3 48
MCA0_AXR4 48
MCA0_AXR5 48
MCA[1]_AHCLKX
MCA[1]_AHCLKR
MCA[1]_ACLKR
MCA[1]_ACLKX
MCA[1]_AFSR
MCA[1]_AFSX
MCA[1]_AMUTE
MCA[1]_AXR[0]
MCA[1]_AXR[1]
AM37
AL37
AK36
AL36
AK35
AK34
AK33
AL33
AK32
CPU.MCA1_AHCLKX
CPU.MCA1_AHCLKR
CPU.MCA1_ACLKR
CPU.MCA1_ACLKX
R150
R152
R155
R144
MCA1_AHCLKX
MCA1_AHCLKR
MCA1_ACLKR
MCA1_ACLKX
MCA1_AFSR
MCA1_AFSX
MCA1_AMUTE
MCA1_AXR0
MCA1_AXR1
MCA1_AHCLKX 48
MCA1_AHCLKR 48
MCA1_ACLKR 48
MCA1_ACLKX 48
MCA1_AFSR 48
MCA1_AFSX 48
MCA1_AMUTE 48
MCA1_AXR0 48
MCA1_AXR1 48
MCA[2]_AHCLKX/MCB_CLKR
MCA[2]_AHCLKR/MCB_CLKS
MCA[2]_ACLKR/MCB_CLKR/MCB_DR
MCA[2]_ACLKX/MCB_CLKX
MCA[2]_AFSR/MCB_CLKX/MCB_FSR
MCA[2]_AFSX/MCB_CLKS/MCB_FSX
MCA[2]_AMUTE
MCA[2]_AXR[0]
MCA[2]_AXR[1]/MCB_DX
AN36
AM34
AL34
AM36
AM35
AN35
AP36
AR36
AR37
CPU.MCA2_ACLKHX
CPU.MCA2_AHCLKR
CPU.MCA2_ACLKR
CPU.MCA2_ACLKX
EXP_MCA2_AFSR
MCA2_AFSX
EXP_MCA2_AMUTE
MCA2_AXR0
MCA2_AXR1
R138
R401
R405
R141
MCA2_ACLKHX
EXP_MCA2_AHCLKR
EXP_MCA2_ACLKR
MCA2_ACLKX
EXP_MCA2_AFSR 48
EXP_MCA2_AMUTE 48
EXP_MCA2_AHCLKR 48
EXP_MCA2_ACLKR 48
MCA2_AFSX
MCA2_ACLKX
MCA2_ACLKHX
MCA2_AXR1
MCA2_AXR0
U63
SN74CBTLV3384PW
Vcc
GND
1OE
2OE
1A1
1A2
1A3
1A4
1A5
2A1
2A2
2A3
2A4
2A5
1B1
1B2
1B3
1B4
1B5
2B1
2B2
2B3
2B4
2B5
B_AIC_WCLK 41
B_AIC_BCLK 41
B_AIC_MCLK 41
B_AIC_DOUT 41
B_AIC_DIN 41
EXP_MCA2_AXR0
EXP_MCA2_AXR1
EXP_MCA2_ACLKHX
EXP_MCA2_ACLKX
EXP_MCA2_AFSX
EXP_MCA2_AXR0 48
EXP_MCA2_AXR1 48
EXP_MCA2_ACLKHX 48
EXP_MCA2_ACLKX 48
EXP_MCA2_AFSX 48
EVM_3V3
C515
.1uF
c402-25
C497
1uF
32 AIC_EXPANSION
U62
SN74LVC1G00DCKRG4
MCLK: MCA2_AHCLKX (drive this clock into McASP)
BCLK: MCA2_ACLKX (McASP will drive this into the AIC)
WCLK: MCA2A_FSX (McASP will drive this into the AIC)
DIN: MCA2_AXR[0]
DOUT: MCA2_AXR1[1]
Drive the MCLK into McASP1 Tx.
McASP generates the Tx bit and frame clocks.
Configure McASP such that the Rx section
operates off of the Tx section clocks.
EVM_3V3
EVM_3V3 3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: NETRA McASP/MCARD
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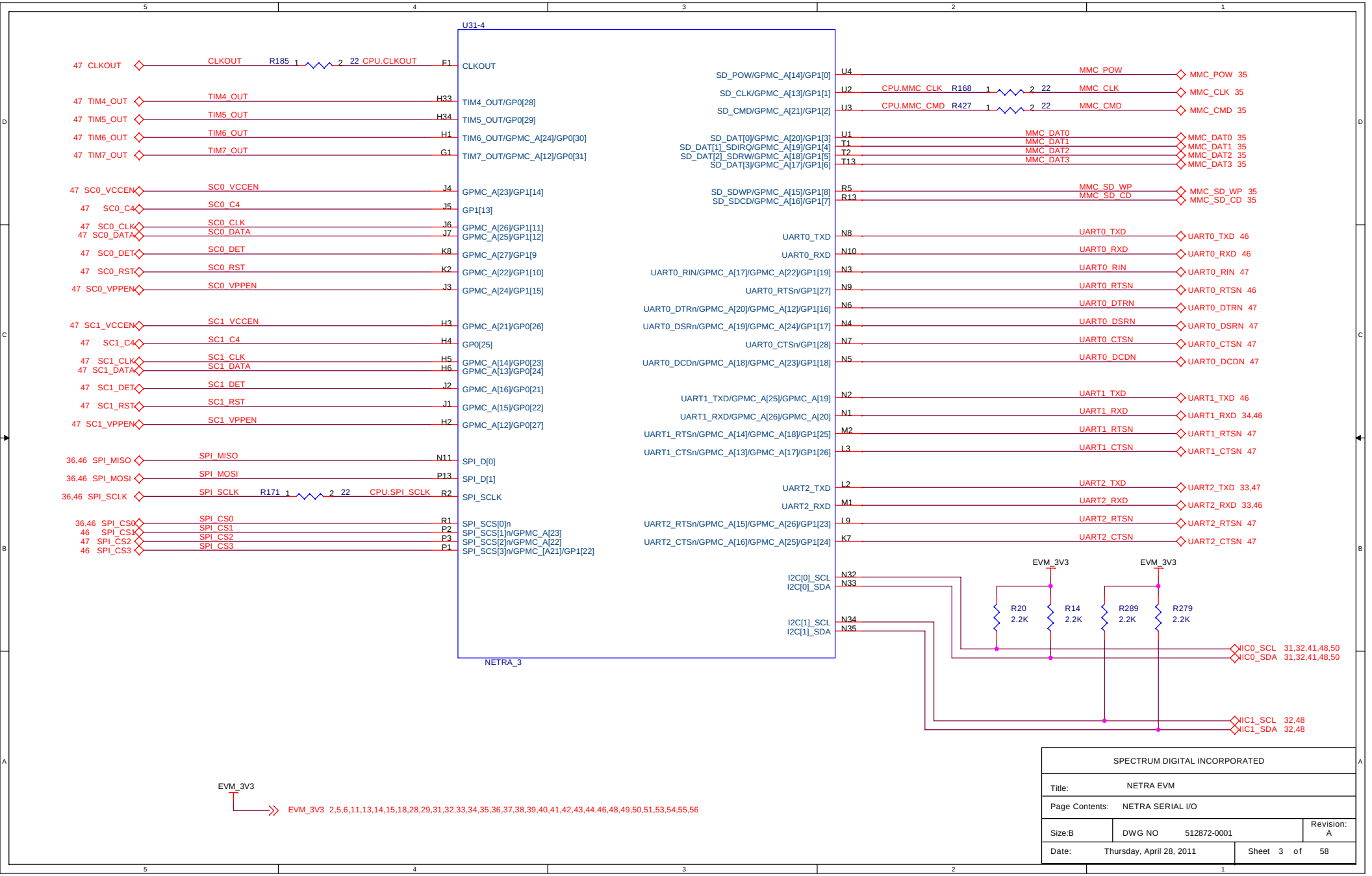
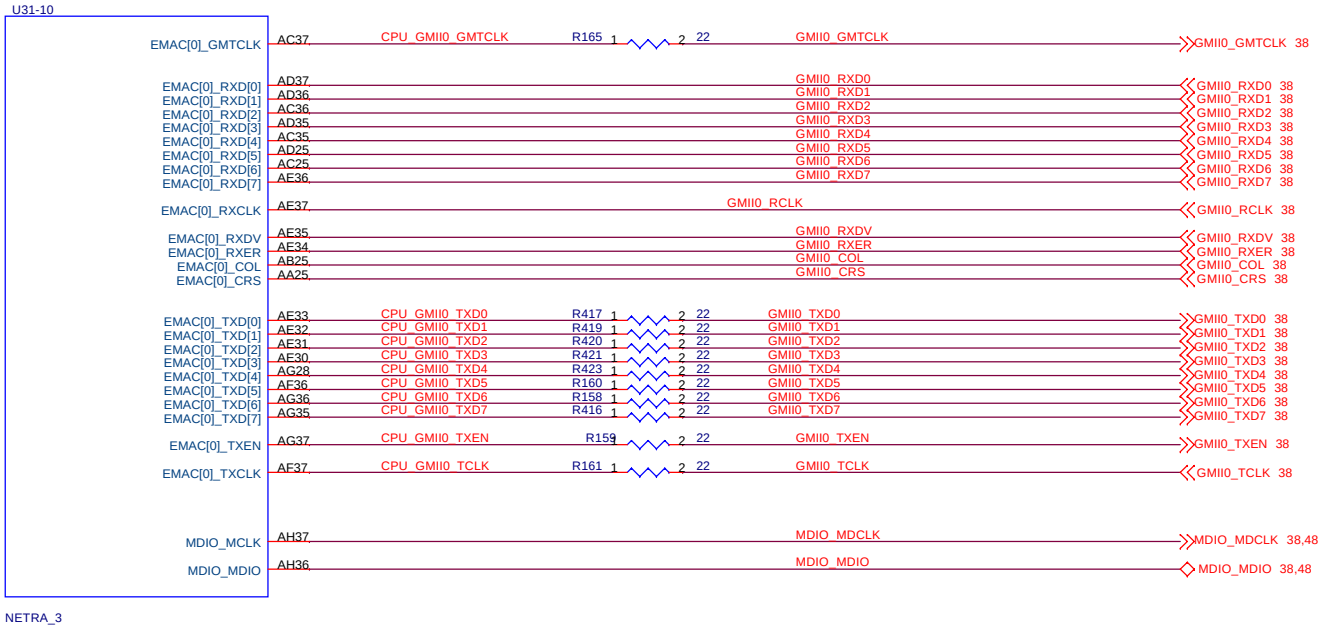


SPECTRUM DIGITAL INCORPORATED			
Title:	NETRA EVM		
Page Contents:	NETRA SERIAL I/O		
Size:B	DWG NO 512872-0001		Revision: A
Date: Thursday, April 28, 2011		Sheet 3 of 58	



SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA ETHERNET		
Size:B	DWG NO 512872-0001	Revision: A
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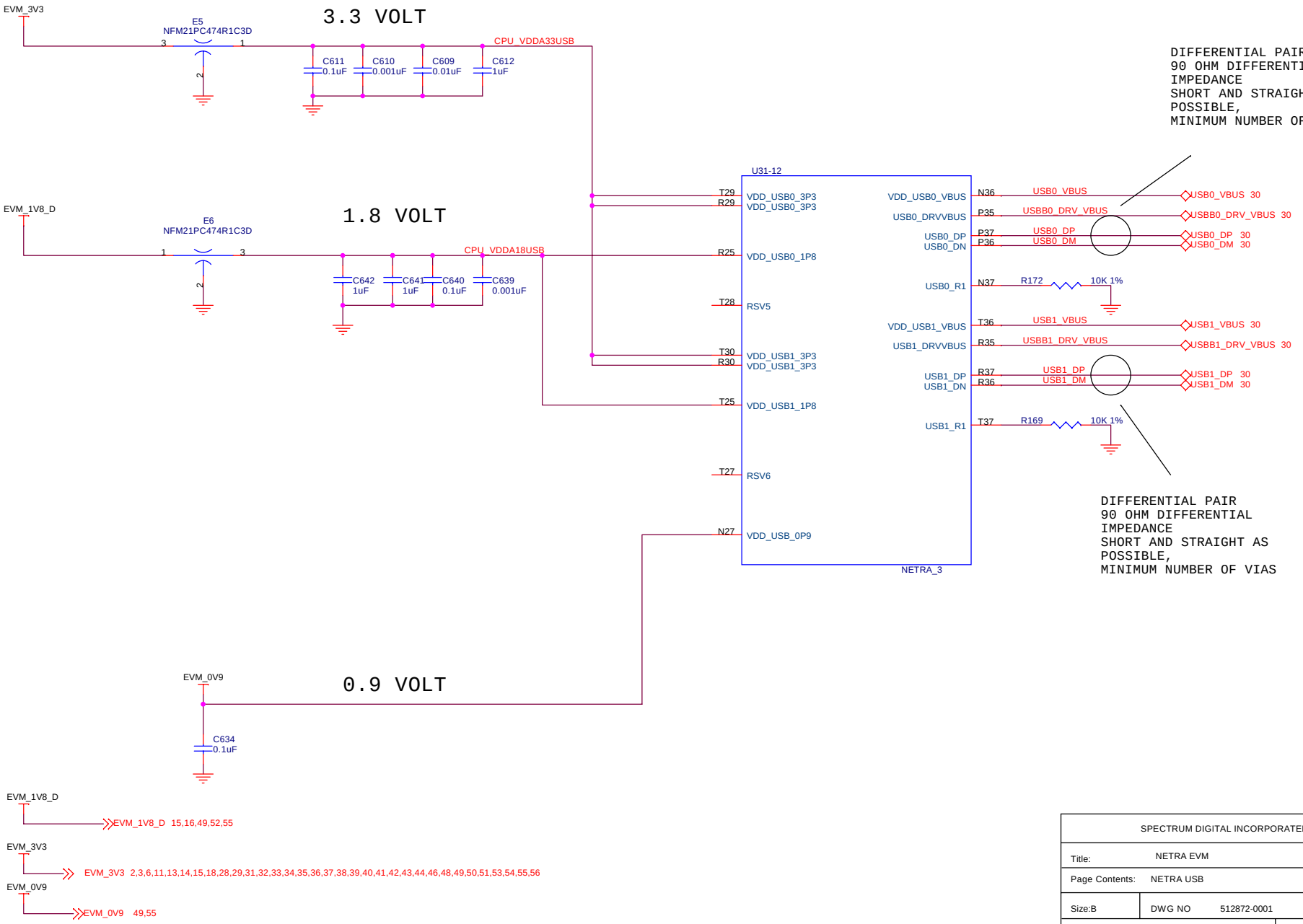

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA USB		
Size:B	DWG NO 512872-0001	Revision: A
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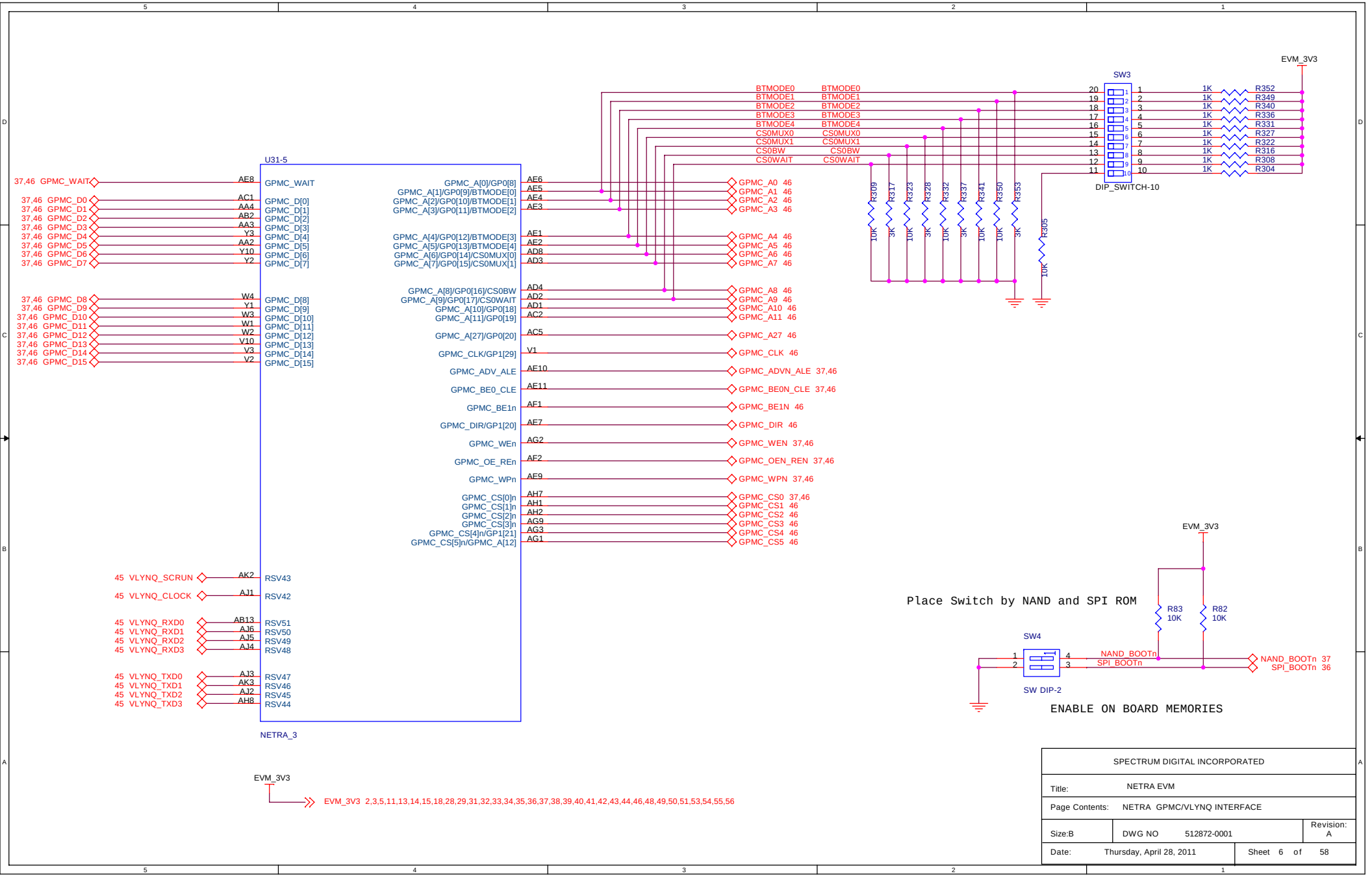

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA GPMC/VLYNQ INTERFACE		
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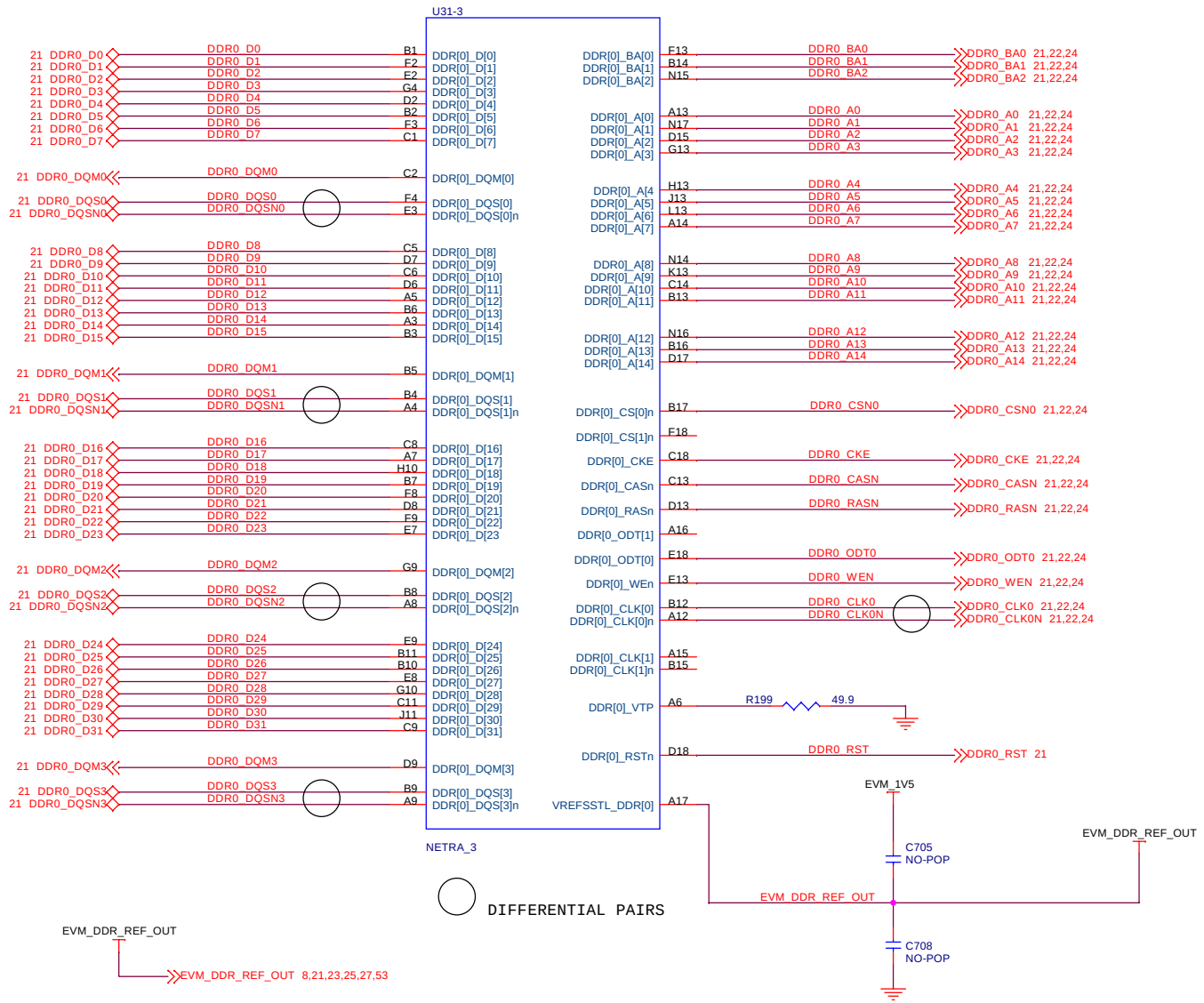

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA DDR0 INTERFACE		
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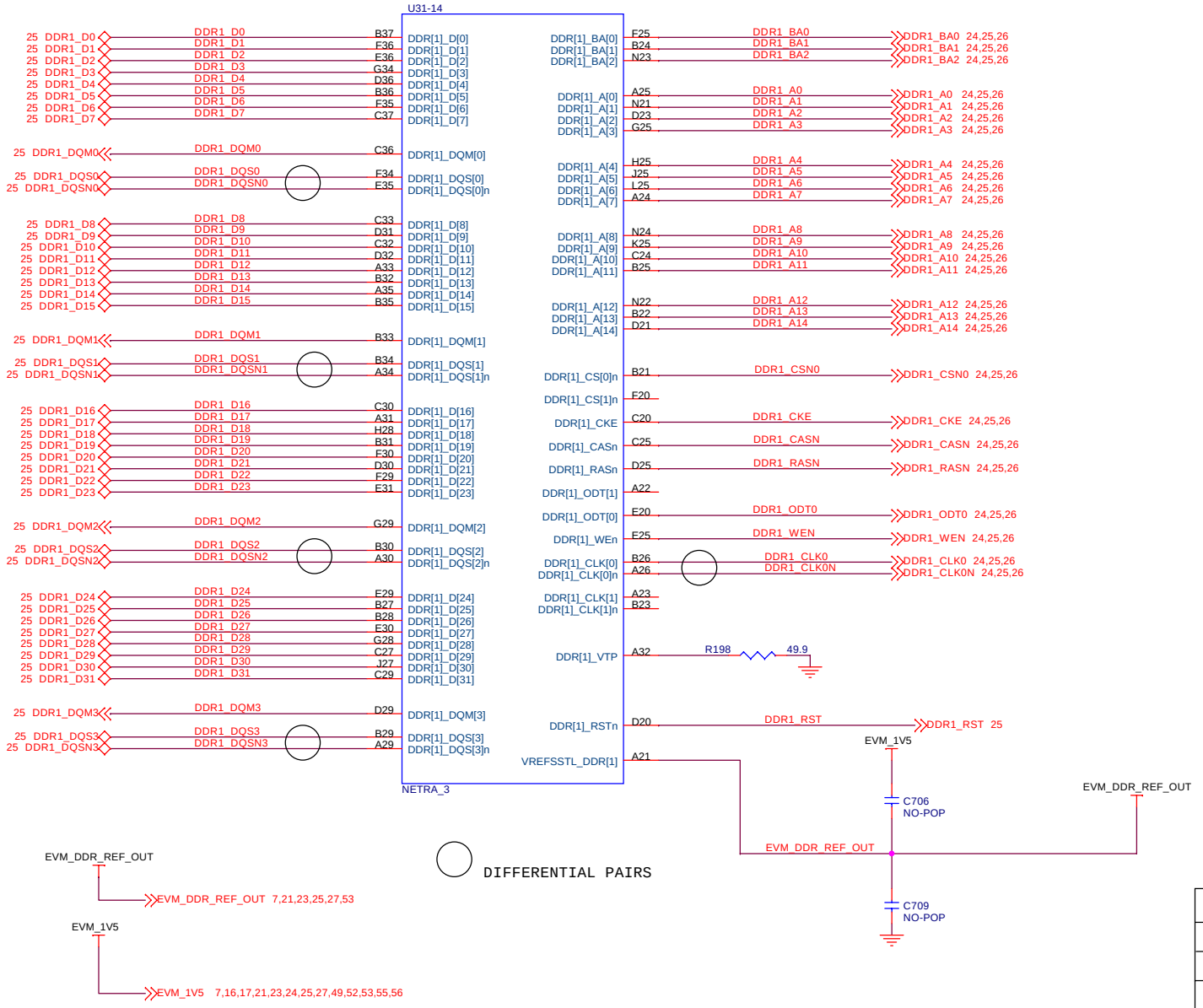

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA DDR1 INTERFACE		
Size:B	DWG NO 512872-0001	Revision: A
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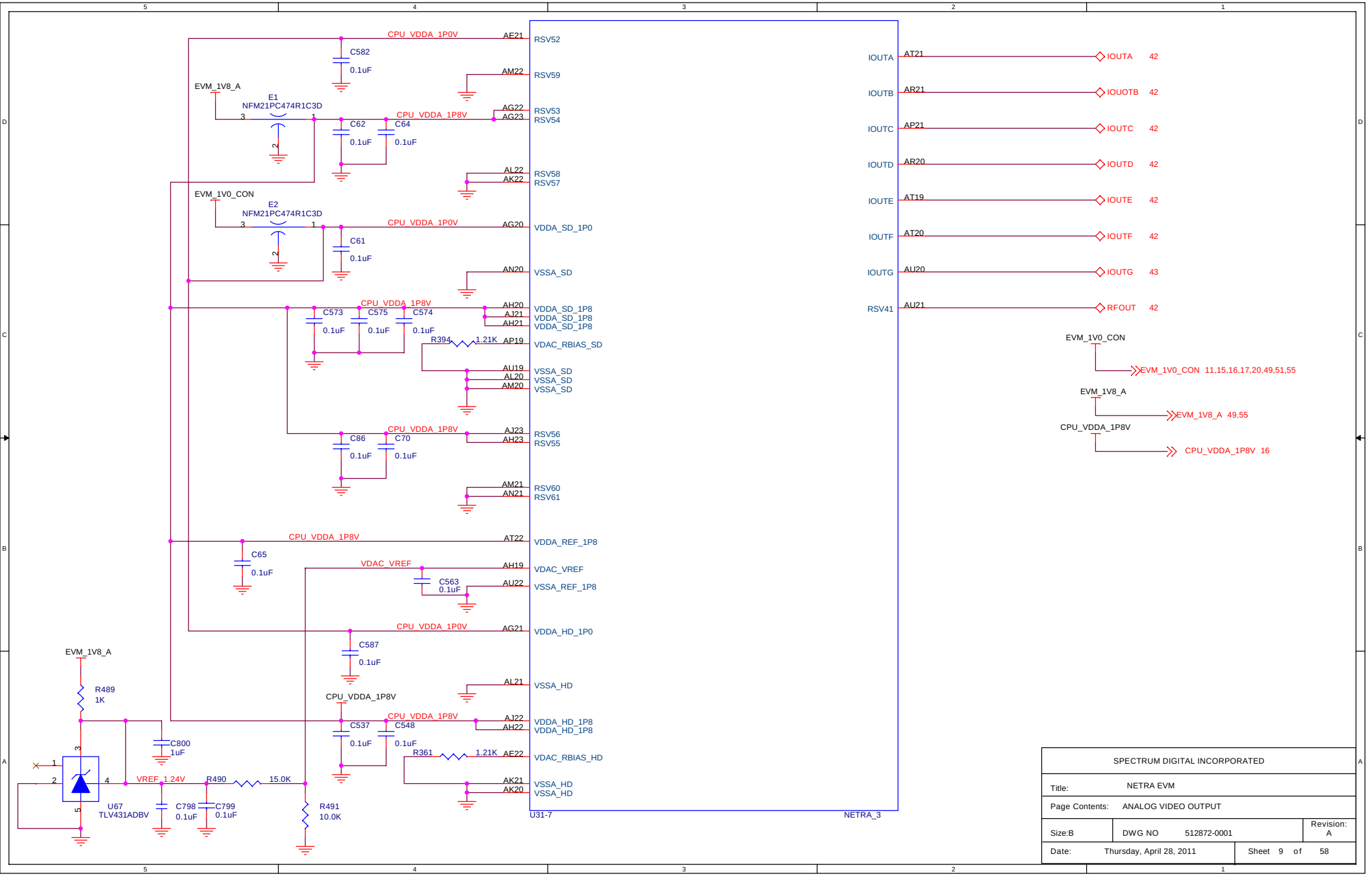

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: ANALOG VIDEO OUTPUT		
Size:B	DWG NO 512872-0001	Revision: A
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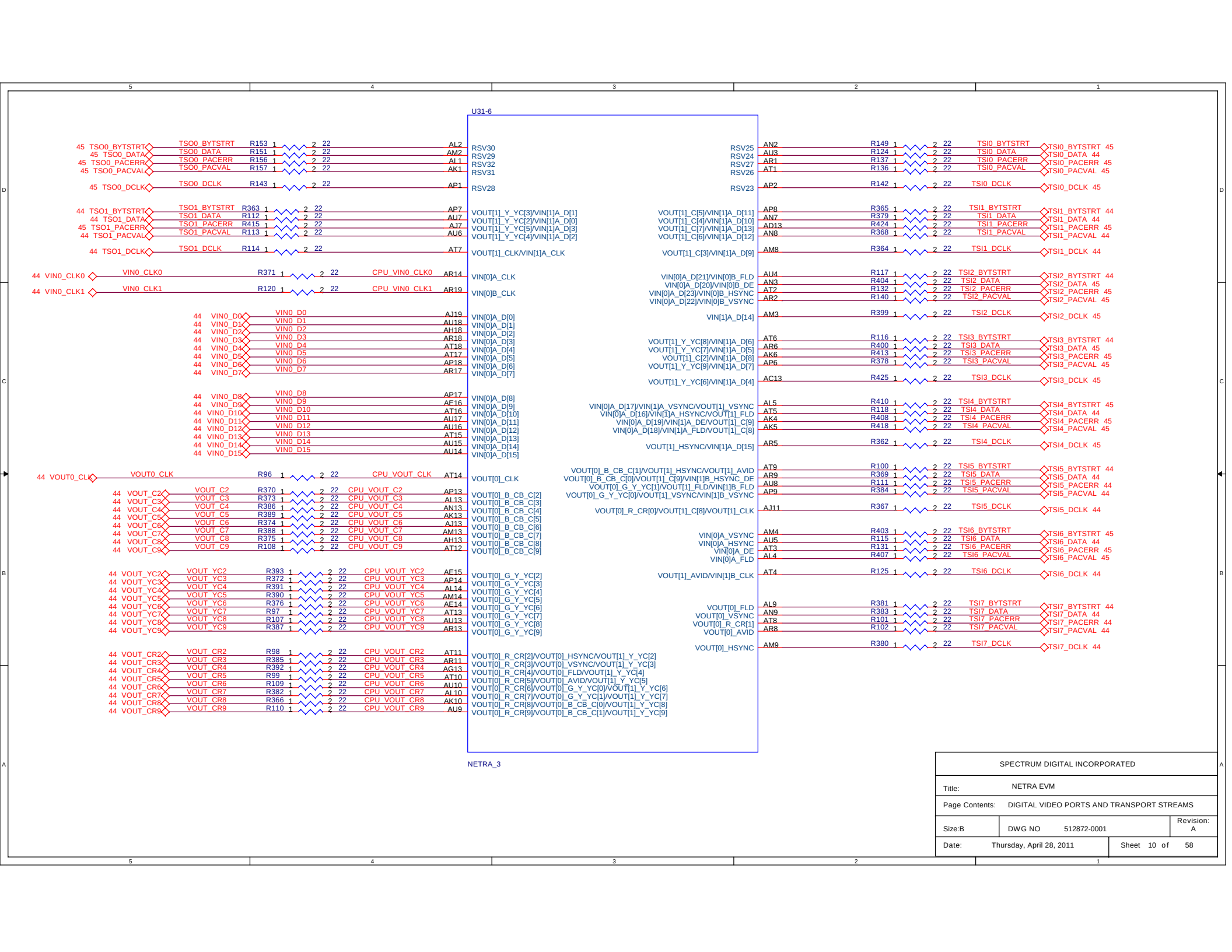
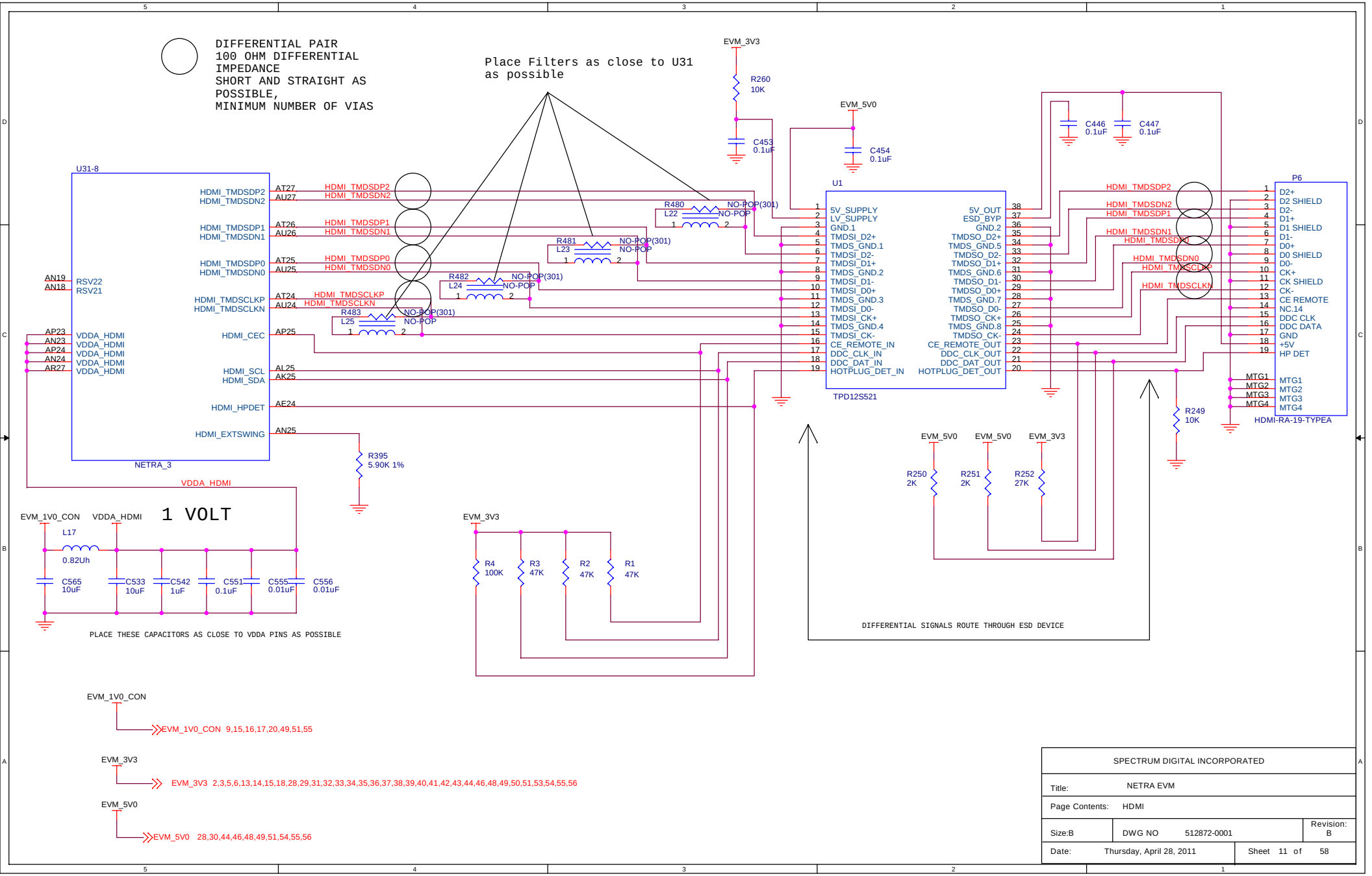
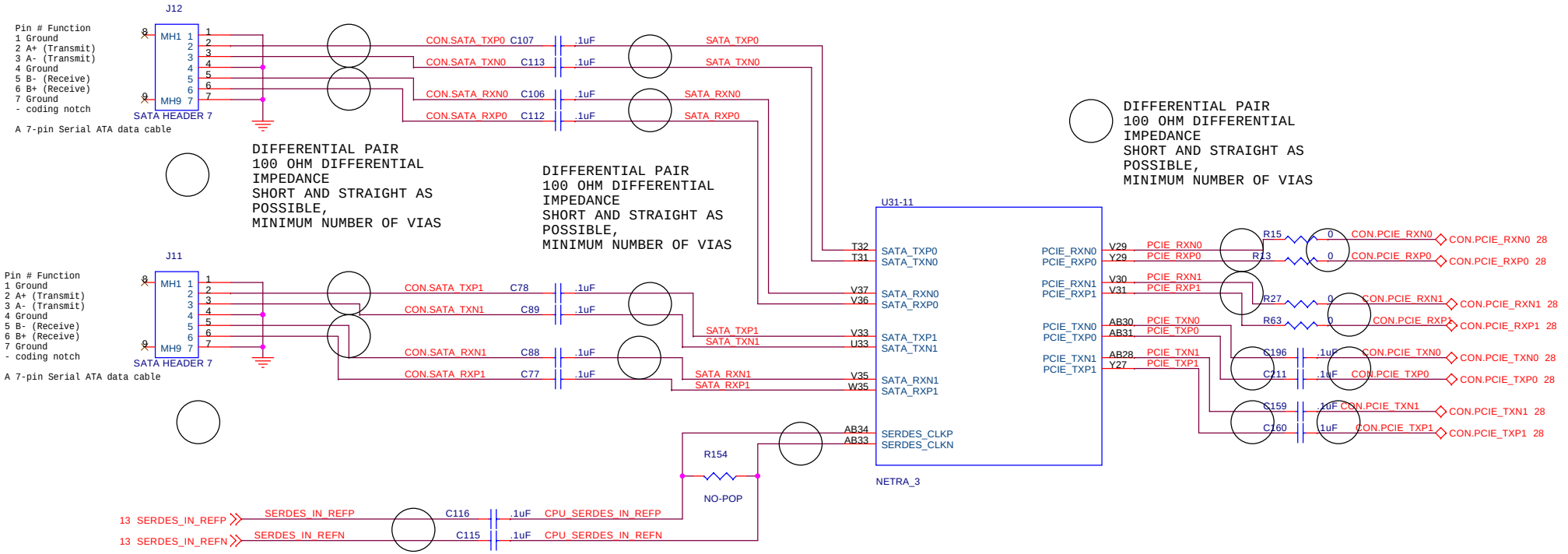
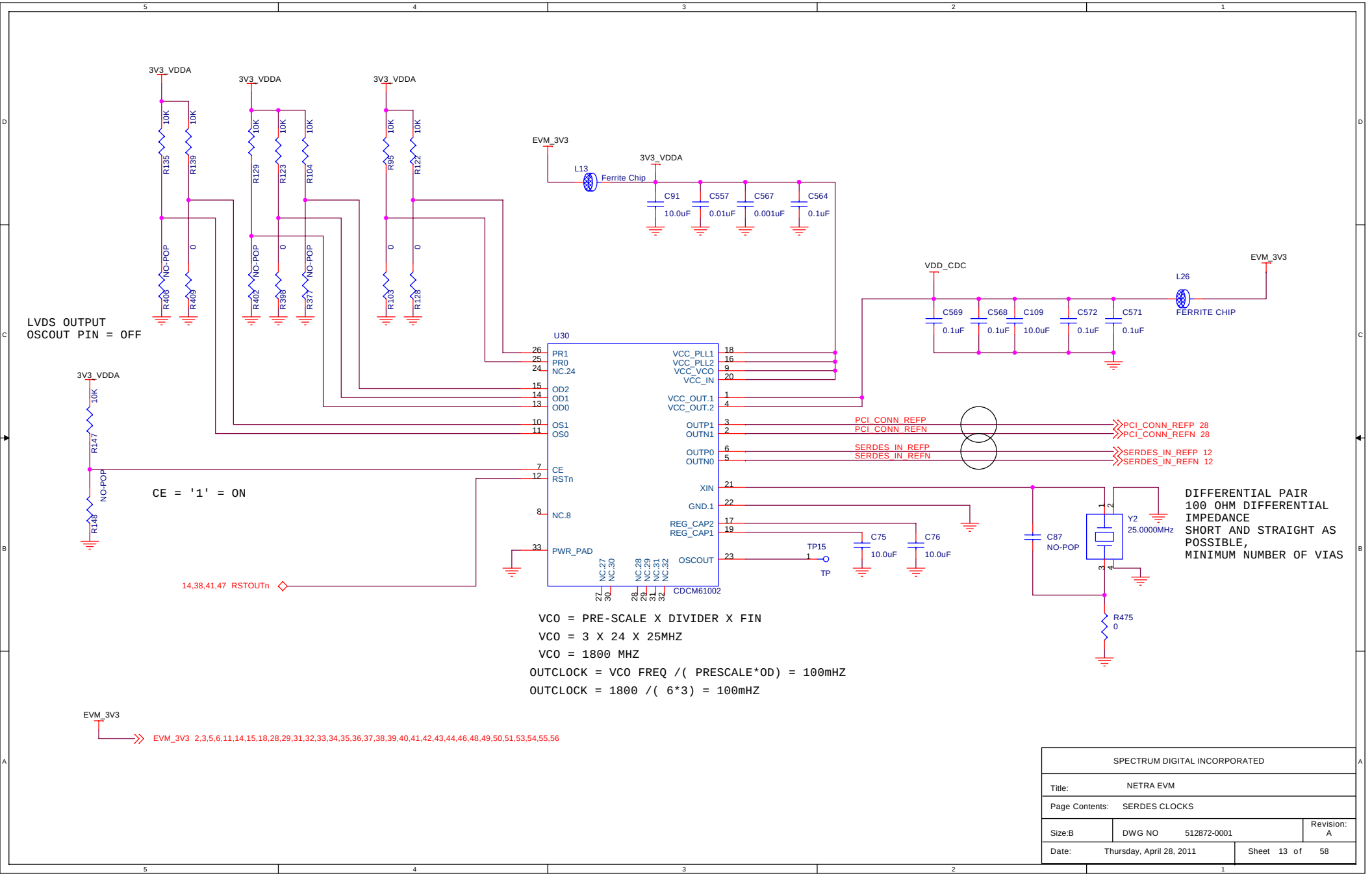

U31-6
NETRA_3
RSV30
RSV29
RSV32
RSV31
RSV28
VOUT[1]_Y_YC[3]/VIN[1]A_D[1]
VOUT[1]_Y_YC[2]/VIN[1]A_D[0]
VOUT[1]_Y_YC[5]/VIN[1]A_D[3]
VOUT[1]_Y_YC[4]/VIN[1]A_D[2]
VOUT[1]_CLK/VIN[1]A_CLK
VIN[0]A_CLK
VIN[0]B_CLK
VIN[0]A_D[0]
VIN[0]A_D[1]
VIN[0]A_D[2]
VIN[0]A_D[3]
VIN[0]A_D[4]
VIN[0]A_D[5]
VIN[0]A_D[6]
VIN[0]A_D[7]
VIN[0]A_D[8]
VIN[0]A_D[9]
VIN[0]A_D[10]
VIN[0]A_D[11]
VIN[0]A_D[12]
VIN[0]A_D[13]
VIN[0]A_D[14]
VIN[0]A_D[15]
VOUT[0]_CLK
VOUT[0]_B_CB_C[2]
VOUT[0]_B_CB_C[3]
VOUT[0]_B_CB_C[4]
VOUT[0]_B_CB_C[5]
VOUT[0]_B_CB_C[6]
VOUT[0]_B_CB_C[7]
VOUT[0]_B_CB_C[8]
VOUT[0]_B_CB_C[9]
VOUT[0]_G_Y_YC[2]
VOUT[0]_G_Y_YC[3]
VOUT[0]_G_Y_YC[4]
VOUT[0]_G_Y_YC[5]
VOUT[0]_G_Y_YC[6]
VOUT[0]_G_Y_YC[7]
VOUT[0]_G_Y_YC[8]
VOUT[0]_G_Y_YC[9]
VOUT[0]_R_CR[2]/VOUT[0]_HSYNC/VOUT[1]_Y_YC[2]
VOUT[0]_R_CR[3]/VOUT[0]_VSYNC/VOUT[1]_Y_YC[3]
VOUT[0]_R_CR[4]/VOUT[0]_FLD/VOUT[1]_Y_YC[4]
VOUT[0]_R_CR[5]/VOUT[0]_AVID/VOUT[1]_Y_YC[5]
VOUT[0]_R_CR[6]/VOUT[0]_G_Y_YC[0]/VOUT[1]_Y_YC[6]
VOUT[0]_R_CR[7]/VOUT[0]_G_Y_YC[1]/VOUT[1]_Y_YC[7]
VOUT[0]_R_CR[8]/VOUT[0]_B_CB_C[0]/VOUT[1]_Y_YC[8]
VOUT[0]_R_CR[9]/VOUT[0]_B_CB_C[1]/VOUT[1]_Y_YC[9]
RSV25
RSV24
RSV27
RSV26
RSV23
VOUT[1]_C[5]/VIN[1]A_D[11]
VOUT[1]_C[4]/VIN[1]A_D[10]
VOUT[1]_C[7]/VIN[1]A_D[13]
VOUT[1]_C[6]/VIN[1]A_D[12]
VOUT[1]_C[3]/VIN[1]A_D[9]
VIN[0]A_D[21]/VIN[0]B_FLD
VIN[0]A_D[20]/VIN[0]B_DE
VIN[0]A_D[23]/VIN[0]B_HSYNC
VIN[0]A_D[22]/VIN[0]B_VSYNC
VIN[1]A_D[14]
VOUT[1]_Y_YC[8]/VIN[1]A_D[6]
VOUT[1]_Y_YC[7]/VIN[1]A_D[5]
VOUT[1]_C[2]/VIN[1]A_D[8]
VOUT[1]_Y_YC[9]/VIN[1]A_D[7]
VOUT[1]_Y_YC[6]/VIN[1]A_D[4]
VIN[0]A_D[17]/VIN[1]A_VSYNC/VOUT[1]_VSYNC
VIN[0]A_D[16]/VIN[1]A_HSYNC/VOUT[1]_FLD
VIN[0]A_D[19]/VIN[1]A_DE/VOUT[1]_C[9]
VIN[0]A_D[18]/VIN[1]A_FLD/VOUT[1]_C[8]
VOUT[1]_HSYNC/VIN[1]A_D[15]
VOUT[0]_B_CB_C[1]/VOUT[1]_HSYNC/VOUT[1]_AVID
VOUT[0]_B_CB_C[0]/VOUT[1]_C[9]/VIN[1]B_HSYNC_DE
VOUT[0]_G_Y_YC[1]/VOUT[1]_FLD/VIN[1]B_FLD
VOUT[0]_G_Y_YC[0]/VOUT[1]_VSYNC/VIN[1]B_VSYNC
VOUT[0]_R_CR[0]/VOUT[1]_C[8]/VOUT[1]_CLK
VIN[0]A_VSYNC
VIN[0]A_HSYNC
VIN[0]A_DE
VIN[0]A_FLD
VOUT[1]_AVID/VIN[1]B_CLK
VOUT[0]_FLD
VOUT[0]_VSYNC
VOUT[0]_R_CR[1]
VOUT[0]_AVID
VOUT[0]_HSYNC
TSO0_BYTSTRT
TSO0_DATA
TSO0_PACERR
TSO0_PACVAL
TSO0_DCLK
TSO1_BYTSTRT
TSO1_DATA
TSO1_PACERR
TSO1_PACVAL
TSO1_DCLK
VIN0_CLK0
VIN0_CLK1
VIN0_D0
VIN0_D1
VIN0_D2
VIN0_D3
VIN0_D4
VIN0_D5
VIN0_D6
VIN0_D7
VIN0_D8
VIN0_D9
VIN0_D10
VIN0_D11
VIN0_D12
VIN0_D13
VIN0_D14
VIN0_D15
VOUT0_CLK
VOUT_C2
VOUT_C3
VOUT_C4
VOUT_C5
VOUT_C6
VOUT_C7
VOUT_C8
VOUT_C9
VOUT_YC2
VOUT_YC3
VOUT_YC4
VOUT_YC5
VOUT_YC6
VOUT_YC7
VOUT_YC8
VOUT_YC9
VOUT_CR2
VOUT_CR3
VOUT_CR4
VOUT_CR5
VOUT_CR6
VOUT_CR7
VOUT_CR8
VOUT_CR9
TSI0_BYTSTRT
TSI0_DATA
TSI0_PACERR
TSI0_PACVAL
TSI0_DCLK
TSI1_BYTSTRT
TSI1_DATA
TSI1_PACERR
TSI1_PACVAL
TSI1_DCLK
TSI2_BYTSTRT
TSI2_DATA
TSI2_PACERR
TSI2_PACVAL
TSI2_DCLK
TSI3_BYTSTRT
TSI3_DATA
TSI3_PACERR
TSI3_PACVAL
TSI3_DCLK
TSI4_BYTSTRT
TSI4_DATA
TSI4_PACERR
TSI4_PACVAL
TSI4_DCLK
TSI5_BYTSTRT
TSI5_DATA
TSI5_PACERR
TSI5_PACVAL
TSI5_DCLK
TSI6_BYTSTRT
TSI6_DATA
TSI6_PACERR
TSI6_PACVAL
TSI6_DCLK
TSI7_BYTSTRT
TSI7_DATA
TSI7_PACERR
TSI7_PACVAL
TSI7_DCLK
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: DIGITAL VIDEO PORTS AND TRANSPORT STREAMS
Size:B
DWG NO 512872-0001
Revision: A
Date: Thursday, April 28, 2011
Sheet 10 of 58

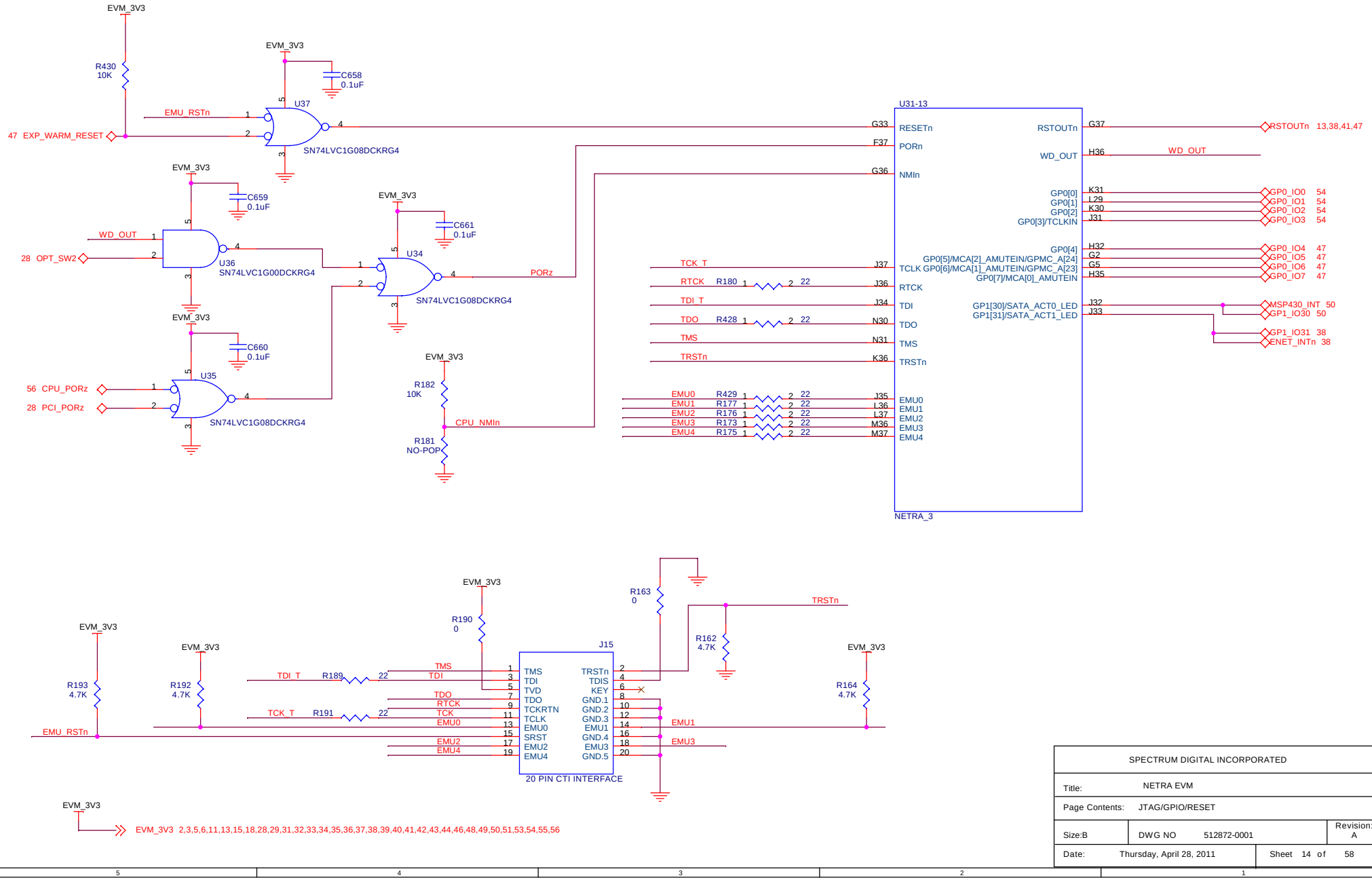

DIFFERENTIAL PAIR
100 OHM DIFFERENTIAL
IMPEDANCE
SHORT AND STRAIGHT AS
POSSIBLE,
MINIMUM NUMBER OF VIAS
Place Filters as close to U31
as possible
U31-8
NETRA_3
HDMI_TMDSDP2
HDMI_TMDSDN2
HDMI_TMDSDP1
HDMI_TMDSDN1
HDMI_TMDSDP0
HDMI_TMDSDN0
HDMI_TMDSCLKP
HDMI_TMDSCLKN
HDMI_CEC
HDMI_SCL
HDMI_SDA
HDMI_HPDET
HDMI_EXTSWING
AT27
AU27
AT26
AU26
AT25
AU25
AT24
AU24
AP25
AL25
AK25
AE24
AN25
AN19
AN18
RSV22
RSV21
AP23
AN23
AP24
AN24
AR27
VDDA_HDMI
R395
5.90K 1%
R480
L22
R481
L23
R482
L24
R483
L25
NO-POP(301)
NO-POP
EVM_3V3
R260
10K
C453
0.1uF
EVM_5V0
C454
0.1uF
U1
TPD12S521
5V_SUPPLY
LV_SUPPLY
GND.1
TMDSI_D2+
TMDS_GND.1
TMDSI_D2-
TMDSI_D1+
TMDS_GND.2
TMDSI_D1-
TMDSI_D0+
TMDS_GND.3
TMDSI_D0-
TMDSI_CK+
TMDS_GND.4
TMDSI_CK-
CE_REMOTE_IN
DDC_CLK_IN
DDC_DAT_IN
HOTPLUG_DET_IN
5V_OUT
ESD_BYP
GND.2
TMDSO_D2+
TMDS_GND.5
TMDSO_D2-
TMDSO_D1+
TMDS_GND.6
TMDSO_D1-
TMDSO_D0+
TMDS_GND.7
TMDSO_D0-
TMDSO_CK+
TMDS_GND.8
TMDSO_CK-
CE_REMOTE_OUT
DDC_CLK_OUT
DDC_DAT_OUT
HOTPLUG_DET_OUT
C446
0.1uF
C447
0.1uF
P6
HDMI-RA-19-TYPEA
D2+
D2 SHIELD
D2-
D1+
D1 SHIELD
D1-
D0+
D0 SHIELD
D0-
CK+
CK SHIELD
CK-
CE REMOTE
NC.14
DDC CLK
DDC DATA
GND
+5V
HP DET
MTG1
MTG2
MTG3
MTG4
R249
10K
EVM_5V0
EVM_5V0
EVM_3V3
R250
2K
R251
2K
R252
27K
DIFFERENTIAL SIGNALS ROUTE THROUGH ESD DEVICE
EVM_1V0_CON
VDDA_HDMI
1 VOLT
L17
0.82Uh
C565
10uF
C533
10uF
C542
1uF
C551
0.1uF
C555
0.01uF
C556
0.01uF
PLACE THESE CAPACITORS AS CLOSE TO VDDA PINS AS POSSIBLE
EVM_3V3
R4
100K
R3
47K
R2
47K
R1
47K
EVM_1V0_CON
EVM_1V0_CON 9,15,16,17,20,49,51,55
EVM_3V3
EVM_3V3 2,3,5,6,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56
EVM_5V0
EVM_5V0 28,30,44,46,48,49,51,54,55,56
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: HDMI
Size:B
DWG NO 512872-0001
Revision: B
Date: Thursday, April 28, 2011
Sheet 11 of 58



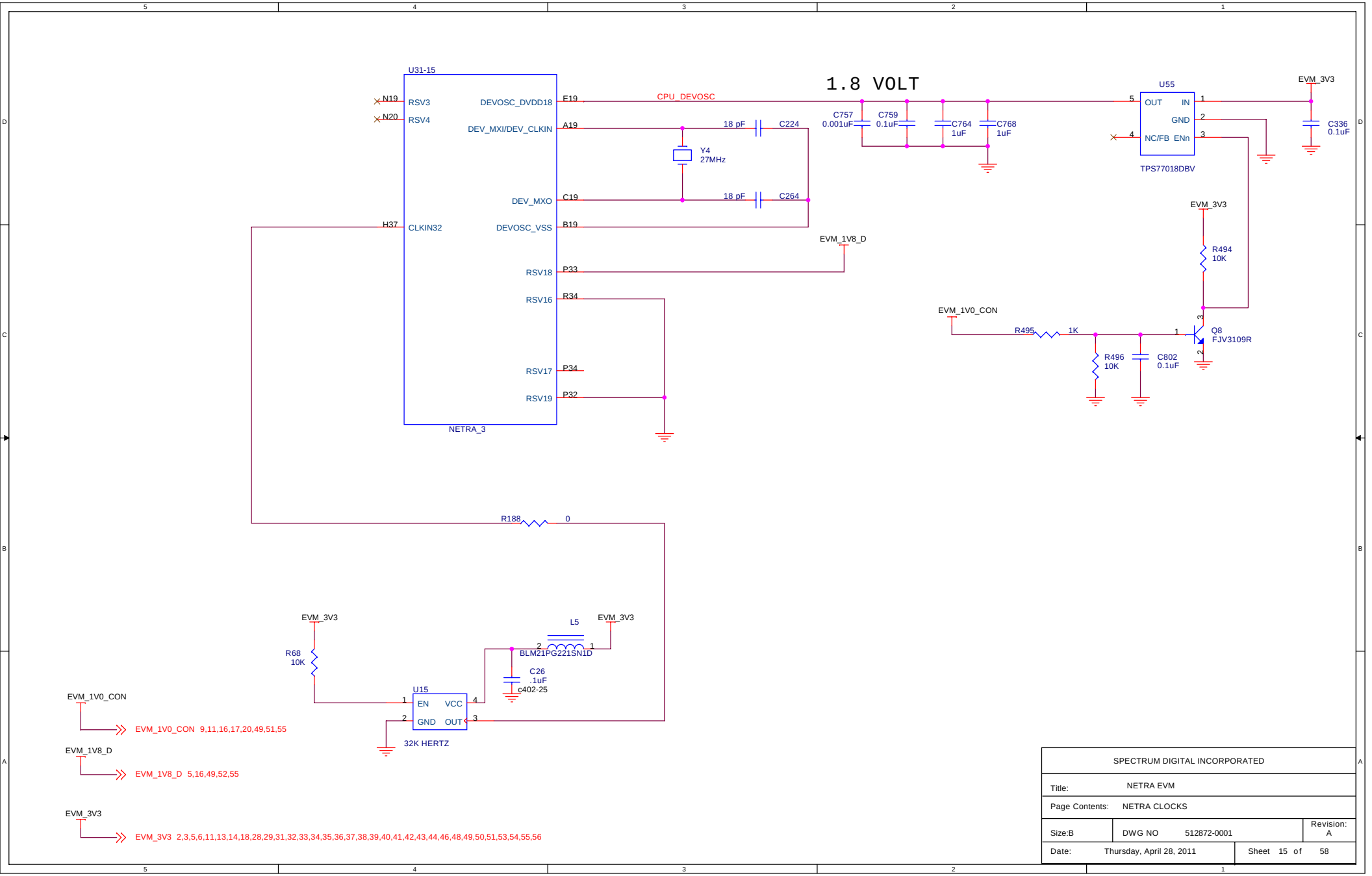
SPECTRUM DIGITAL INCORPORATED			
Title:	NETRA EVM		
Page Contents:	SATA INTERFACE		
Size:B	DWG NO 512872-0001		Revision: A
Date:	Thursday, April 28, 2011	Sheet 12 of 58	



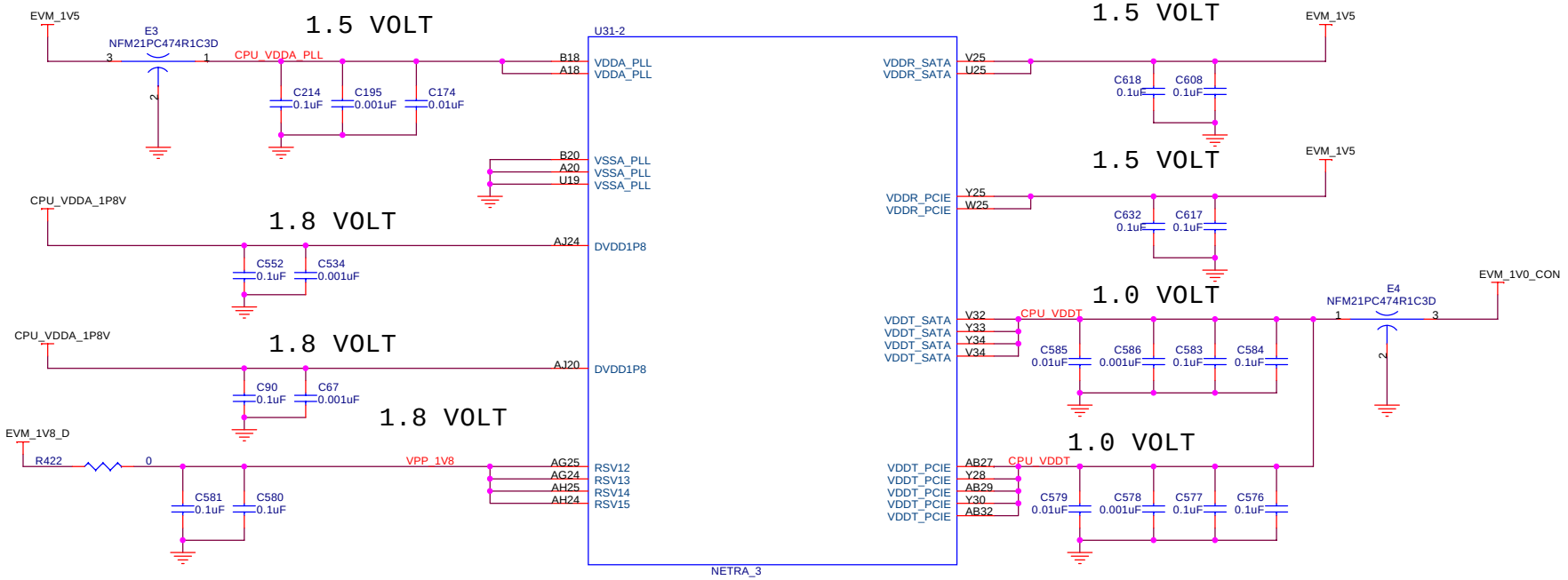
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: SERDES CLOCKS		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 13 of 58	

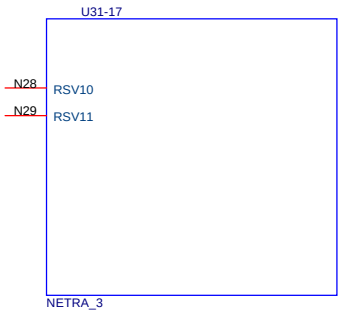


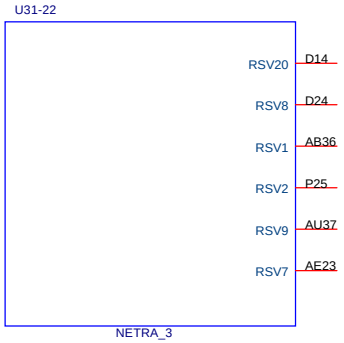
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: JTAG/GPIO/RESET		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 14 of 58	



SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA CLOCKS		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 15 of 58	







CPU_VDDA_1P8V → CPU_VDDA_1P8V 9

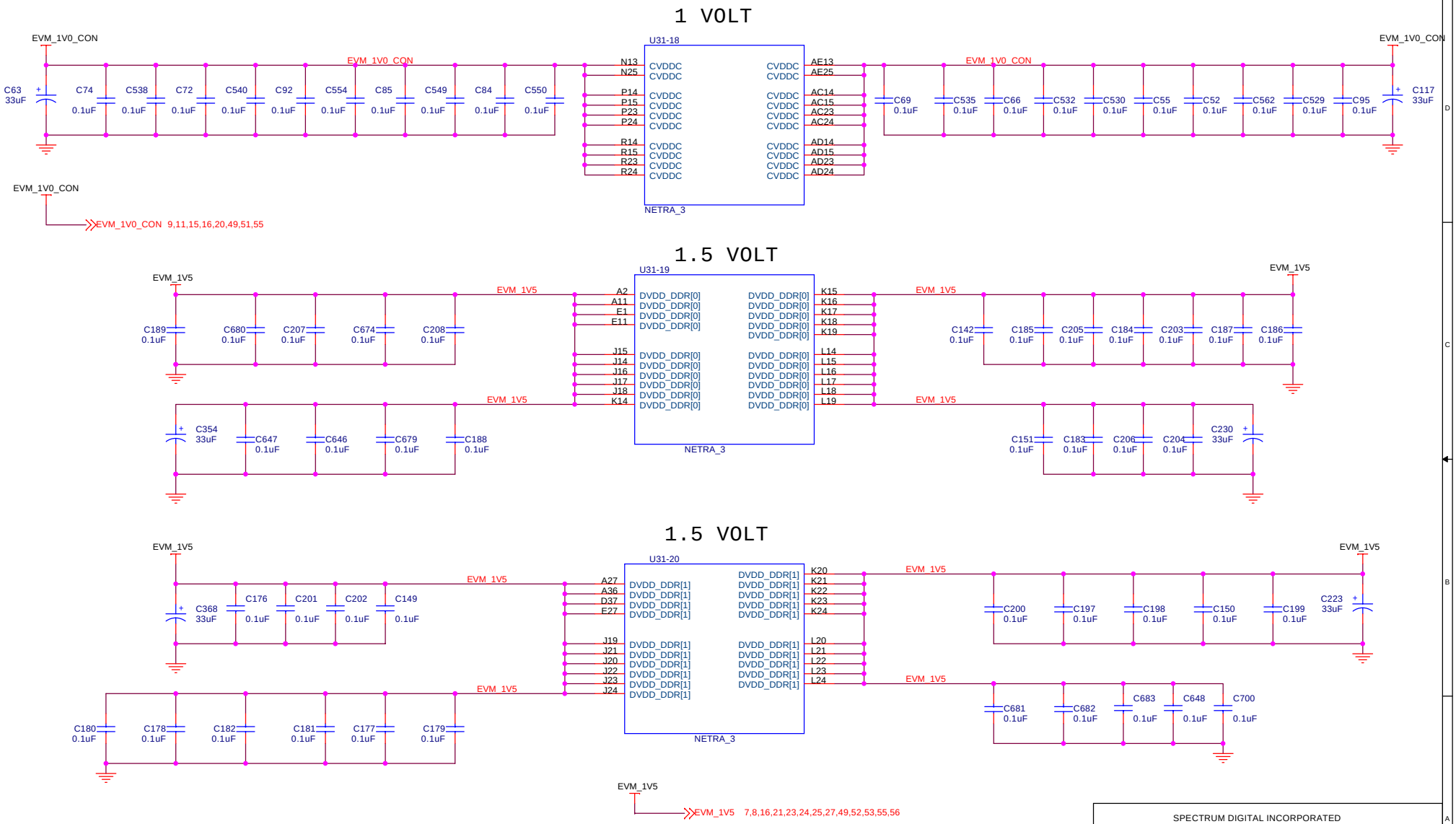
EVM_1V0_CON → EVM_1V0_CON 9,11,15,17,20,49,51,55

EVM_1V0_CON → EVM_1V0_CON 9,11,15,17,20,49,51,55

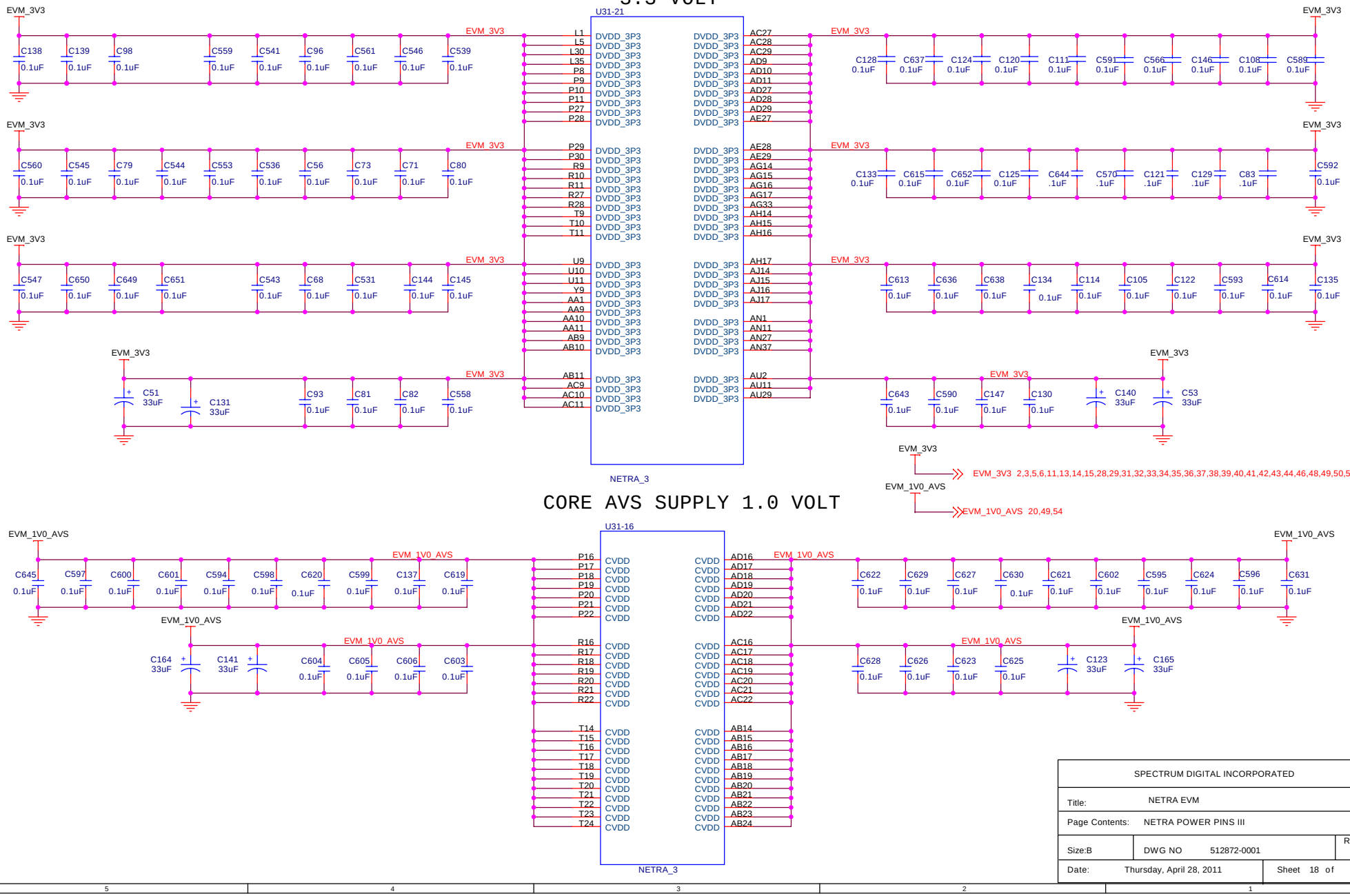
EVM_1V8_D → EVM_1V8_D 5,15,49,52,55

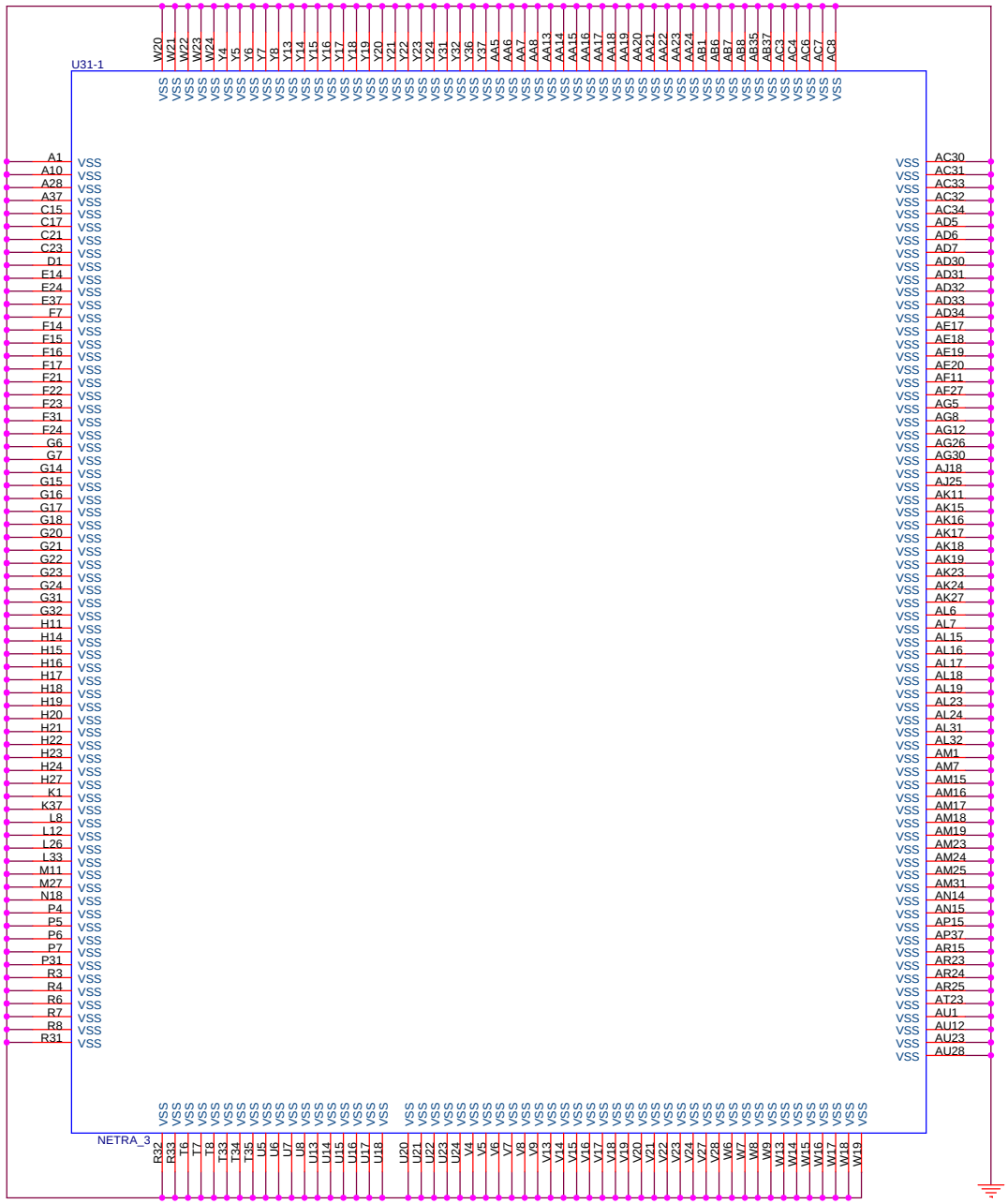
EVM_1V5 → EVM_1V5 7,8,17,21,23,24,25,27,49,52,53,55,56

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA POWER PINS		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 16 of 58	



SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA POWER PINS II		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 17 of 58	


3.3 VOLT
U31-21
NETRA_3
EVM_3V3
EVM_3V3 2,3,5,6,11,13,14,15,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56
CORE AVS SUPPLY 1.0 VOLT
U31-16
NETRA_3
EVM_1V0_AVS
EVM_1V0_AVS 20,49,54
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: NETRA POWER PINS III
Size:B
DWG NO 512872-0001
Revision: A
Date: Thursday, April 28, 2011
Sheet 18 of 58



SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NETRA GROUND PINS		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 19 of 58	

EVM_1V0_AVS

EVM_1V0_AVS 18,49,54

EVM_1V0_AVS

C440 0.1uF
C433 0.1uF
C392 0.1uF
C441 0.1uF
C434 0.1uF
C414 0.1uF
C407 0.1uF

EVM_1V0_AVS

C391 0.1uF
C398 0.1uF
C405 0.1uF
C412 0.1uF
C419 0.1uF
C399 0.1uF
C426 0.1uF
C442 0.1uF

EVM_1V0_AVS

C428 0.1uF
C435 0.1uF
C427 0.1uF
C406 0.1uF
C413 0.1uF
C420 0.1uF
C400 0.1uF
C393 0.1uF

EVM_1V0_CON

EVM_1V0_CON 9,11,15,16,17,49,51,55

EVM_1V0_CON

C390 0.1uF
C397 0.1uF
C389 0.1uF
C432 0.1uF

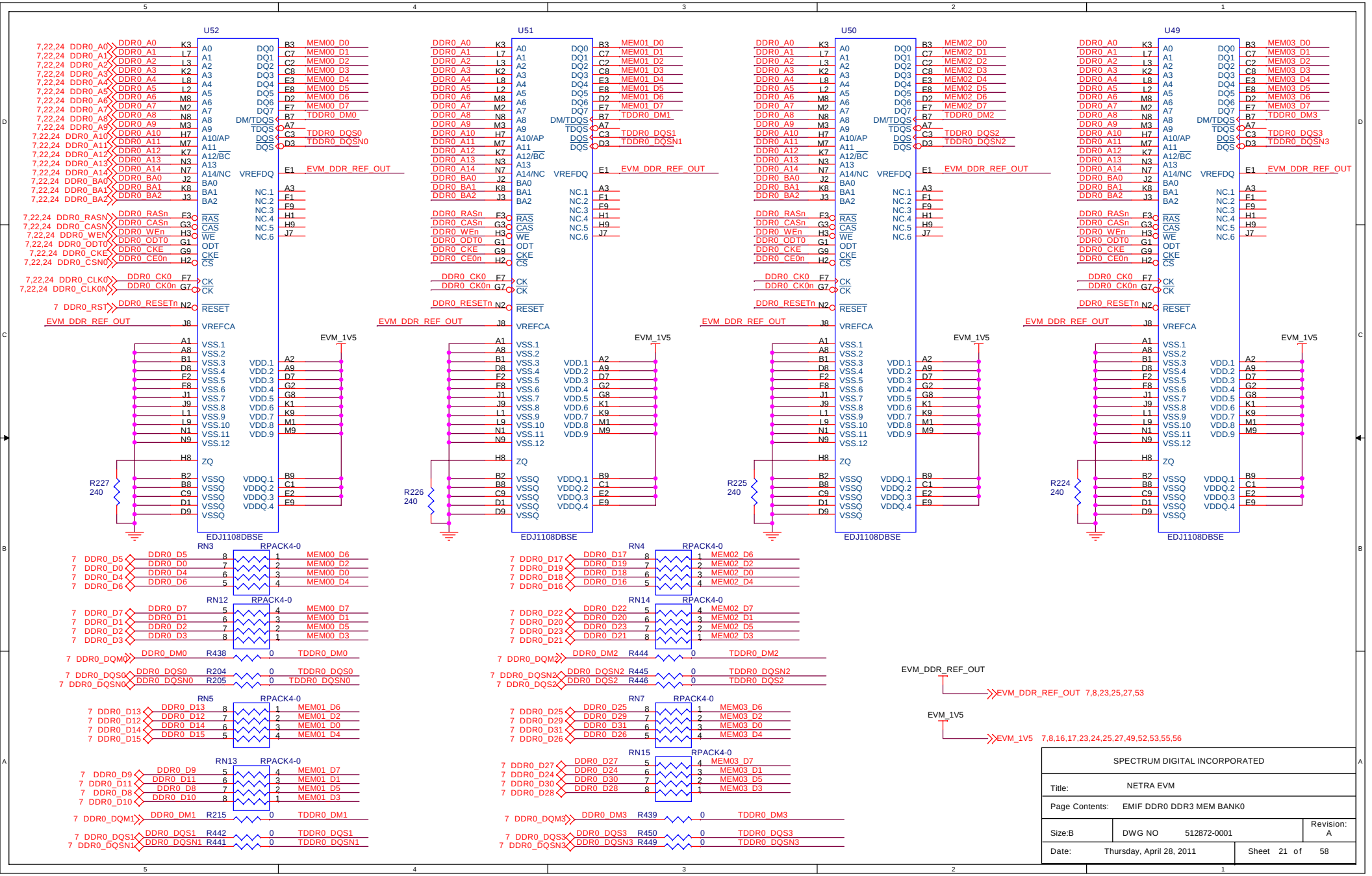
EVM_1V0_CON

C439 0.1uF
C431 0.1uF
C438 0.1uF
C396 0.1uF

EVM_3V3

EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: CAPS, 1V0_CON,1V0_AVS		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 20 of 58	


U52
U51
U50
U49
EDJ1108DBSE
DDR0_A0
DDR0_A1
DDR0_A2
DDR0_A3
DDR0_A4
DDR0_A5
DDR0_A6
DDR0_A7
DDR0_A8
DDR0_A9
DDR0_A10
DDR0_A11
DDR0_A12
DDR0_A13
DDR0_A14
DDR0_BA0
DDR0_BA1
DDR0_BA2
DDR0_RASn
DDR0_CASn
DDR0_WEn
DDR0_ODT0
DDR0_CKE
DDR0_CE0n
DDR0_CK0
DDR0_CK0n
DDR0_RESETn
EVM_DDR_REF_OUT
EVM_1V5
R227 240
R226 240
R225 240
R224 240
RN3 RPACK4-0
RN4 RPACK4-0
RN12 RPACK4-0
RN14 RPACK4-0
RN5 RPACK4-0
RN7 RPACK4-0
RN13 RPACK4-0
RN15 RPACK4-0
DDR0_DM0 R438 TDDR0_DM0
DDR0_DM2 R444 TDDR0_DM2
DDR0_DQS0 R204 TDDR0_DQS0
DDR0_DQSN0 R205 TDDR0_DQSN0
DDR0_DQSN2 R445 TDDR0_DQSN2
DDR0_DQS2 R446 TDDR0_DQS2
DDR0_DM1 R215 TDDR0_DM1
DDR0_DM3 R439 TDDR0_DM3
DDR0_DQS1 R442 TDDR0_DQS1
DDR0_DQSN1 R441 TDDR0_DQSN1
DDR0_DQS3 R450 TDDR0_DQS3
DDR0_DQSN3 R449 TDDR0_DQSN3
EVM_DDR_REF_OUT 7,8,23,25,27,53
EVM_1V5 7,8,16,17,23,24,25,27,49,52,53,55,56
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: EMIF DDR0 DDR3 MEM BANK0
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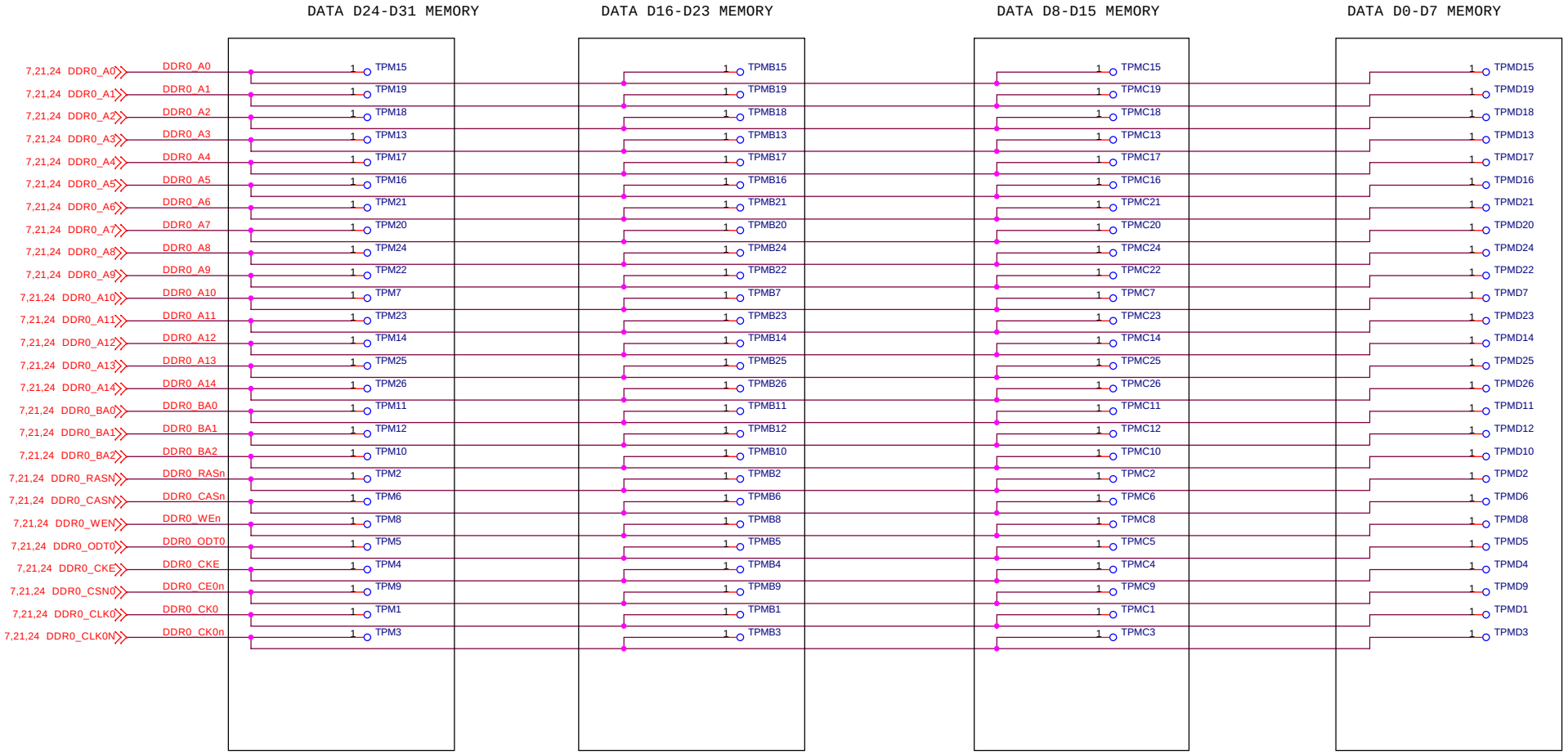
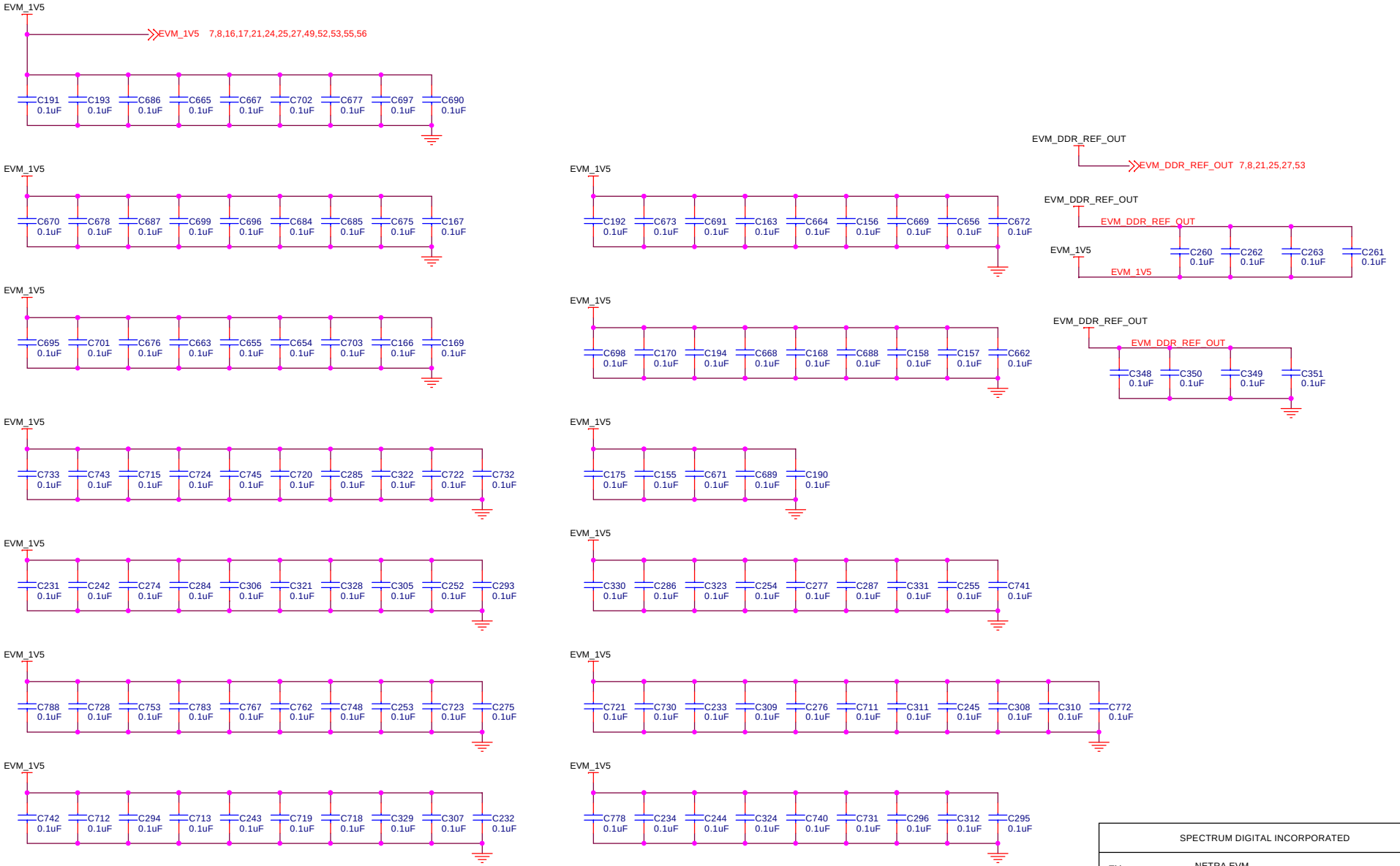
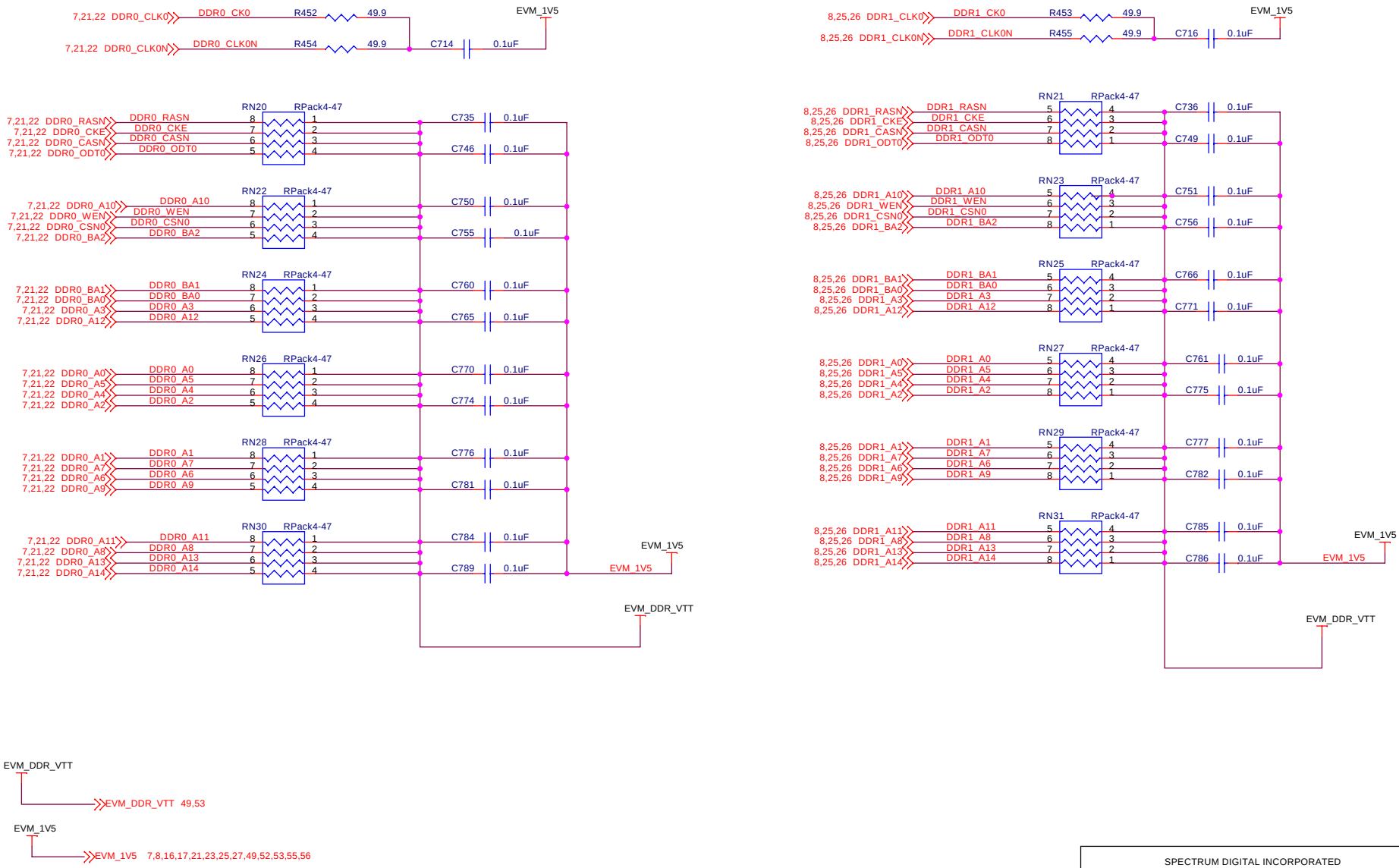
This section is an outline of vias labeled as Testpoints in the schematic. This allows us to determine pwb line lengths for memory to memory and CPU to memory it is purely a visibility tool no actual "component" is used the vias are just replaced with a via that is labeled a test point

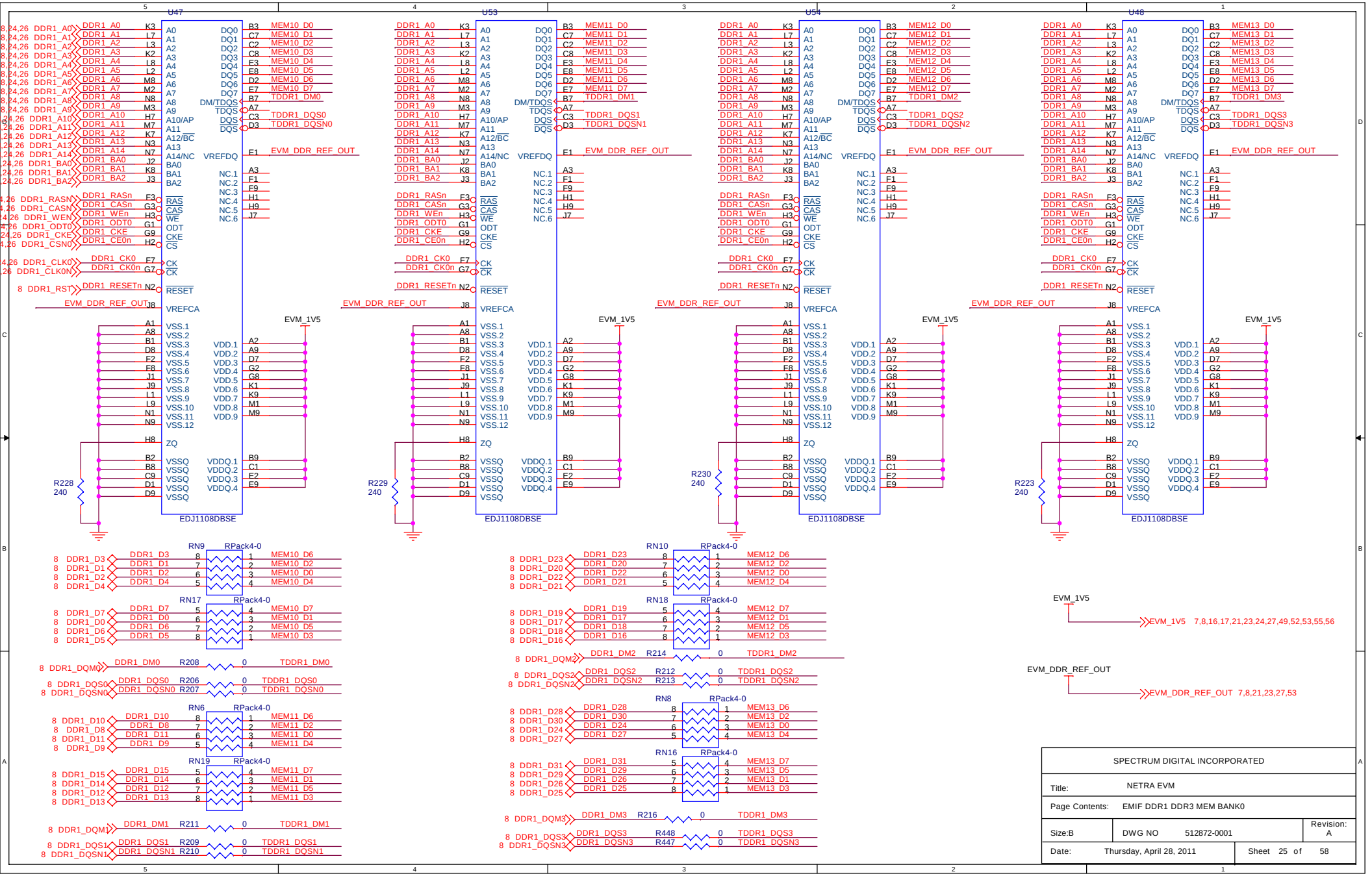


SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: DDR0 ADDRESS CONTROL TEST POINTS FOR ROUTING		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 22 of 58	


EVM_1V5
EVM_1V5 7,8,16,17,21,24,25,27,49,52,53,55,56
C191 0.1uF
C193 0.1uF
C686 0.1uF
C665 0.1uF
C667 0.1uF
C702 0.1uF
C677 0.1uF
C697 0.1uF
C690 0.1uF
EVM_1V5
C670 0.1uF
C678 0.1uF
C687 0.1uF
C699 0.1uF
C696 0.1uF
C684 0.1uF
C685 0.1uF
C675 0.1uF
C167 0.1uF
EVM_1V5
C695 0.1uF
C701 0.1uF
C676 0.1uF
C663 0.1uF
C655 0.1uF
C654 0.1uF
C703 0.1uF
C166 0.1uF
C169 0.1uF
EVM_1V5
C733 0.1uF
C743 0.1uF
C715 0.1uF
C724 0.1uF
C745 0.1uF
C720 0.1uF
C285 0.1uF
C322 0.1uF
C722 0.1uF
C732 0.1uF
EVM_1V5
C231 0.1uF
C242 0.1uF
C274 0.1uF
C284 0.1uF
C306 0.1uF
C321 0.1uF
C328 0.1uF
C305 0.1uF
C252 0.1uF
C293 0.1uF
EVM_1V5
C788 0.1uF
C728 0.1uF
C753 0.1uF
C783 0.1uF
C767 0.1uF
C762 0.1uF
C748 0.1uF
C253 0.1uF
C723 0.1uF
C275 0.1uF
EVM_1V5
C742 0.1uF
C712 0.1uF
C294 0.1uF
C713 0.1uF
C243 0.1uF
C719 0.1uF
C718 0.1uF
C329 0.1uF
C307 0.1uF
C232 0.1uF
EVM_1V5
C192 0.1uF
C673 0.1uF
C691 0.1uF
C163 0.1uF
C664 0.1uF
C156 0.1uF
C669 0.1uF
C656 0.1uF
C672 0.1uF
EVM_1V5
C698 0.1uF
C170 0.1uF
C194 0.1uF
C668 0.1uF
C168 0.1uF
C688 0.1uF
C158 0.1uF
C157 0.1uF
C662 0.1uF
EVM_1V5
C175 0.1uF
C155 0.1uF
C671 0.1uF
C689 0.1uF
C190 0.1uF
EVM_1V5
C330 0.1uF
C286 0.1uF
C323 0.1uF
C254 0.1uF
C277 0.1uF
C287 0.1uF
C331 0.1uF
C255 0.1uF
C741 0.1uF
EVM_1V5
C721 0.1uF
C730 0.1uF
C233 0.1uF
C309 0.1uF
C276 0.1uF
C711 0.1uF
C311 0.1uF
C245 0.1uF
C308 0.1uF
C310 0.1uF
C772 0.1uF
EVM_1V5
C778 0.1uF
C234 0.1uF
C244 0.1uF
C324 0.1uF
C740 0.1uF
C731 0.1uF
C296 0.1uF
C312 0.1uF
C295 0.1uF
EVM_DDR_REF_OUT
EVM_DDR_REF_OUT 7,8,21,25,27,53
EVM_DDR_REF_OUT
EVM_DDR_REF_OUT
EVM_1V5
C260 0.1uF
C262 0.1uF
C263 0.1uF
C261 0.1uF
EVM_1V5
EVM_DDR_REF_OUT
EVM_DDR_REF_OUT
C348 0.1uF
C350 0.1uF
C349 0.1uF
C351 0.1uF
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: DDR MEMORY CAPS DDR0 INTERFACE
Size:B
DWG NO 512872-0001
Revision: A
Date: Thursday, April 28, 2011
Sheet 23 of 58



SPECTRUM DIGITAL INCORPORATED			
Title:	NETRA EVM		
Page Contents:	EMIF DDR0 DDR3 MEM BANK1		
Size:B	DWG NO 512872-0001		Revision: A
Date:	Thursday, April 28, 2011	Sheet 24 of 58	


U47
U53
U54
U48
EDJ1108DBSE
EVM_1V5
EVM_DDR_REF_OUT
RN9 RPack4-0
RN17 RPack4-0
RN10 RPack4-0
RN18 RPack4-0
RN6 RPack4-0
RN19 RPack4-0
RN8 RPack4-0
RN16 RPack4-0
R228 240
R229 240
R230 240
R223 240
DDR1_DM0 R208 0 TDDR1_DM0
DDR1_DQS0 R206 0 TDDR1_DQS0
DDR1_DQSN0 R207 0 TDDR1_DQSN0
DDR1_DM1 R211 0 TDDR1_DM1
DDR1_DQS1 R209 0 TDDR1_DQS1
DDR1_DQSN1 R210 0 TDDR1_DQSN1
DDR1_DM2 R214 0 TDDR1_DM2
DDR1_DQS2 R212 0 TDDR1_DQS2
DDR1_DQSN2 R213 0 TDDR1_DQSN2
DDR1_DM3 R216 0 TDDR1_DM3
DDR1_DQS3 R448 0 TDDR1_DQS3
DDR1_DQSN3 R447 0 TDDR1_DQSN3
EVM_1V5 7,8,16,17,21,23,24,27,49,52,53,55,56
EVM_DDR_REF_OUT 7,8,21,23,27,53
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: EMIF DDR1 DDR3 MEM BANK0
Size:B
DWG NO 512872-0001
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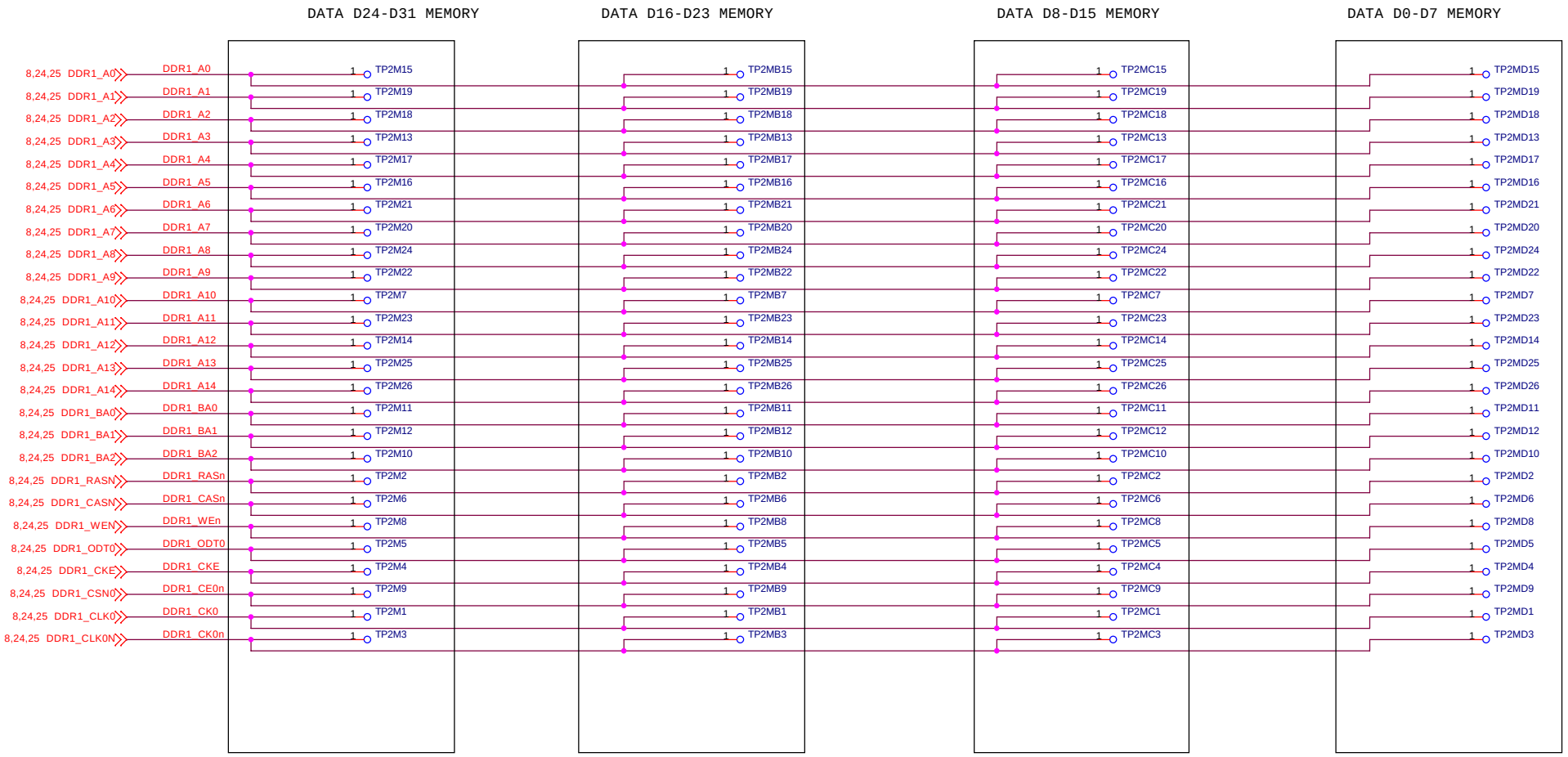
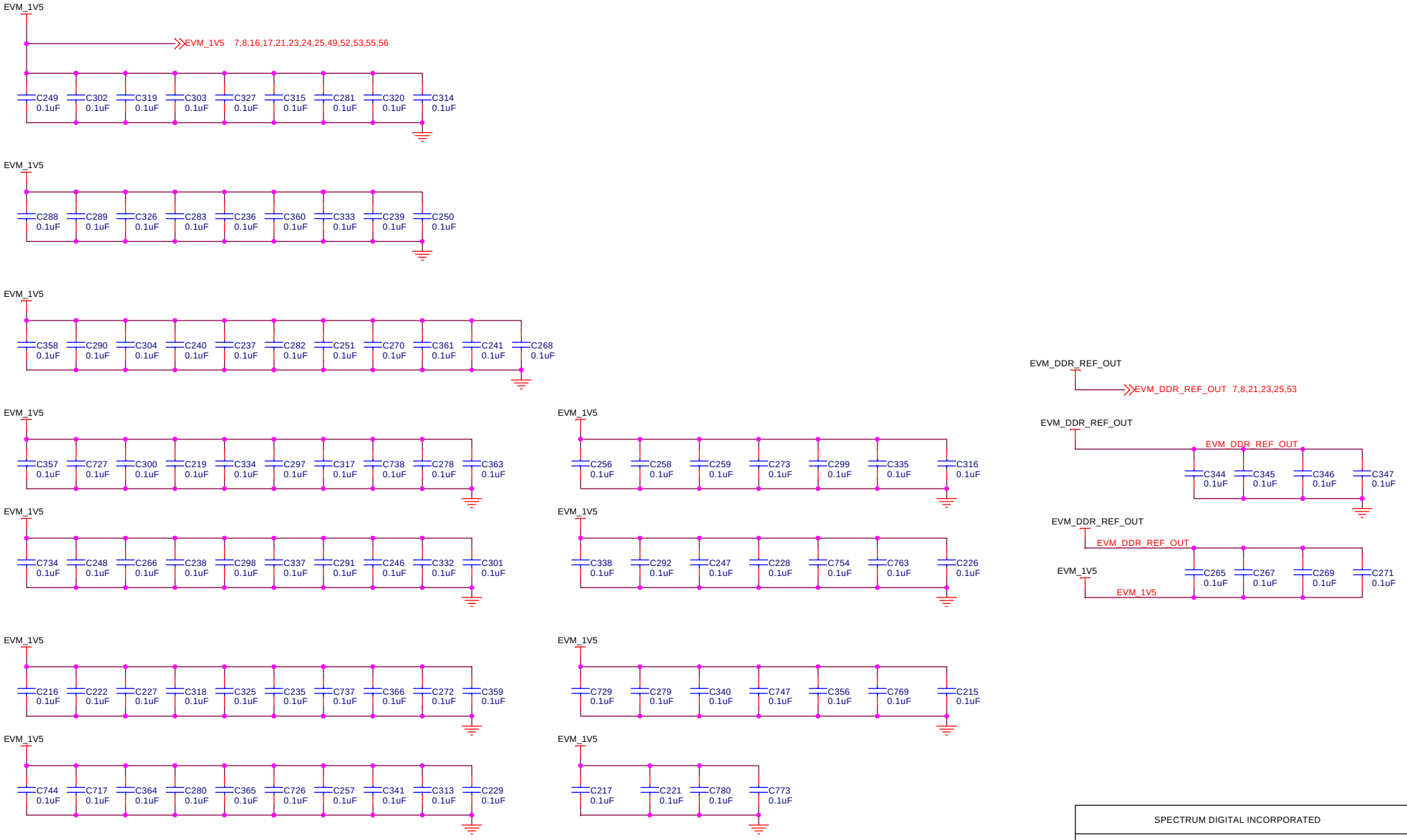
Date: Thursday, April 28, 2011
Sheet 25 of 58

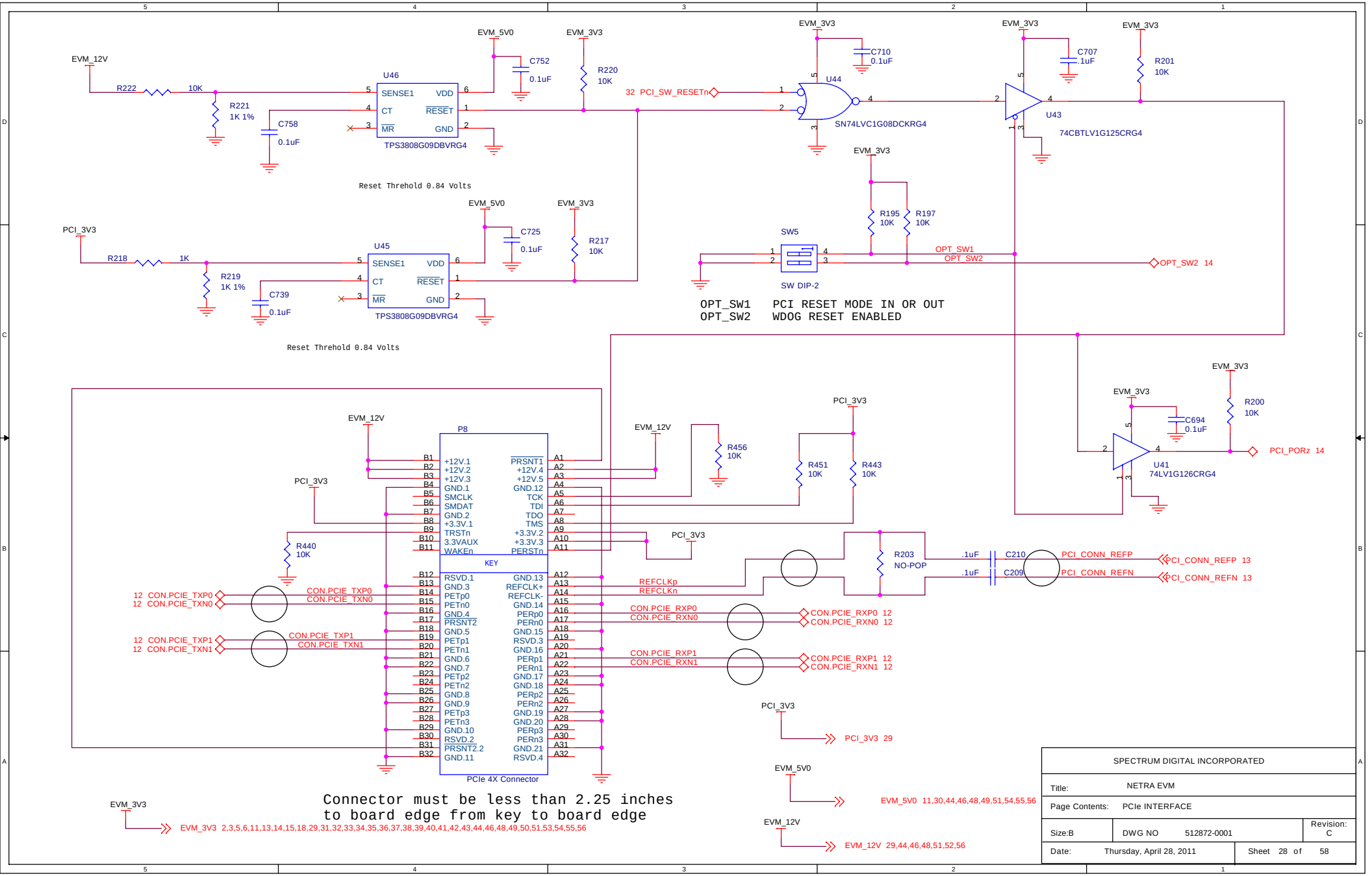
This section is an outline of vias labeled as Testpoints in the schematic. This allows us to determine pwb line lengths for memory to memory and CPU to memory it is purely a visibility tool no actual "component" is used the vias are just replaced with a via that is labeled a test point



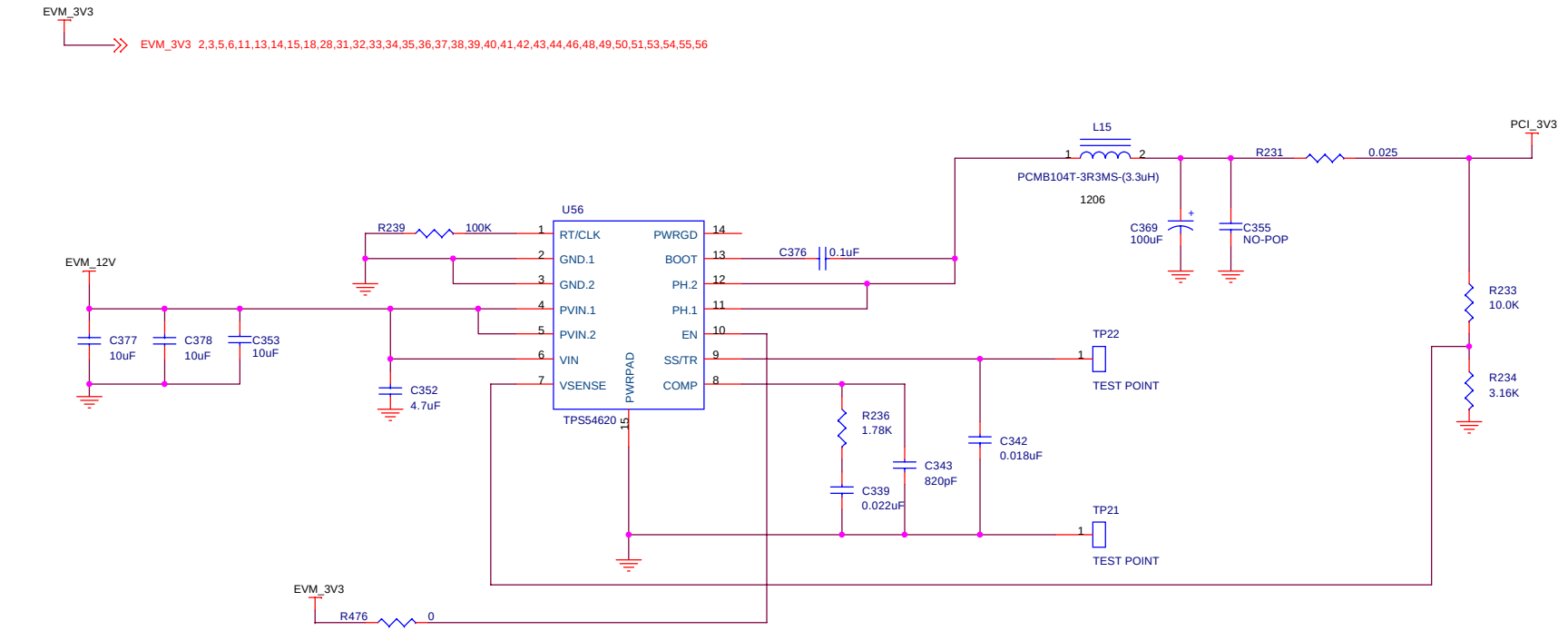
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: DDR1 ADDRESS CONTROL TEST POINTS FOR ROUTING		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 26 of 58	



SPECTRUM DIGITAL INCORPORATED			
Title:	NETRA EVM		
Page Contents:	DDR MEMORY CAPS DDR1 INTERFACE		
Size:B	DWG NO 512872-0001		Revision: A
Date:	Thursday, April 28, 2011	Sheet 27 of 58	


EVM_12V
R222
10K
R221
1K 1%
C758
0.1uF
U46
SENSE1
CT
MR
VDD
RESET
GND
TPS3808G09DBVRG4
EVM_5V0
C752
0.1uF
EVM_3V3
R220
10K
Reset Threhold 0.84 Volts
32 PCI_SW_RESETn
U44
SN74LVC1G08DCKRG4
C710
0.1uF
U43
74CBTLV1G125CRG4
C707
.1uF
R201
10K
PCI_3V3
R218
1K
R219
1K 1%
C739
0.1uF
U45
TPS3808G09DBVRG4
C725
0.1uF
R217
10K
Reset Threhold 0.84 Volts
SW5
SW DIP-2
R195
10K
R197
10K
OPT_SW1
OPT_SW2
OPT_SW2 14
OPT_SW1 PCI RESET MODE IN OR OUT
OPT_SW2 WDOG RESET ENABLED
P8
+12V.1
+12V.2
+12V.3
GND.1
SMCLK
SMDAT
GND.2
+3.3V.1
TRSTn
3.3VAUX
WAKEn
PRSNT1
+12V.4
+12V.5
GND.12
TCK
TDI
TDO
TMS
+3.3V.2
+3.3V.3
PERSTn
KEY
RSVD.1
GND.3
PETp0
PETn0
GND.4
PRSNT2
GND.5
PETp1
PETn1
GND.6
GND.7
PETp2
PETn2
GND.8
GND.9
PETp3
PETn3
GND.10
RSVD.2
PRSNT2.2
GND.11
GND.13
REFCLK+
REFCLK-
GND.14
PERp0
PERn0
GND.15
RSVD.3
GND.16
PERp1
PERn1
GND.17
GND.18
PERp2
PERn2
GND.19
GND.20
PERp3
PERn3
GND.21
RSVD.4
PCIe 4X Connector
R456
10K
R451
10K
R443
10K
R440
10K
R203
NO-POP
.1uF
C210
C209
PCI_CONN_REFP
PCI_CONN_REFN
PCI_CONN_REFP 13
PCI_CONN_REFN 13
REFCLKp
REFCLKn
CON.PCIE_TXP0
CON.PCIE_TXN0
CON.PCIE_TXP1
CON.PCIE_TXN1
CON.PCIE_RXP0
CON.PCIE_RXN0
CON.PCIE_RXP1
CON.PCIE_RXN1
12 CON.PCIE_TXP0
12 CON.PCIE_TXN0
12 CON.PCIE_TXP1
12 CON.PCIE_TXN1
CON.PCIE_RXP0 12
CON.PCIE_RXN0 12
CON.PCIE_RXP1 12
CON.PCIE_RXN1 12
U41
74LV1G126CRG4
C694
0.1uF
R200
10K
PCI_PORz 14
PCI_3V3 29
EVM_5V0 11,30,44,46,48,49,51,54,55,56
EVM_12V 29,44,46,48,51,52,56
EVM_3V3 2,3,5,6,11,13,14,15,18,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56
Connector must be less than 2.25 inches
to board edge from key to board edge
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: PCIe INTERFACE
Size:B
DWG NO 512872-0001
Revision: C
Date: Thursday, April 28, 2011
Sheet 28 of 58

CHECKED VALUES - COMPLETE



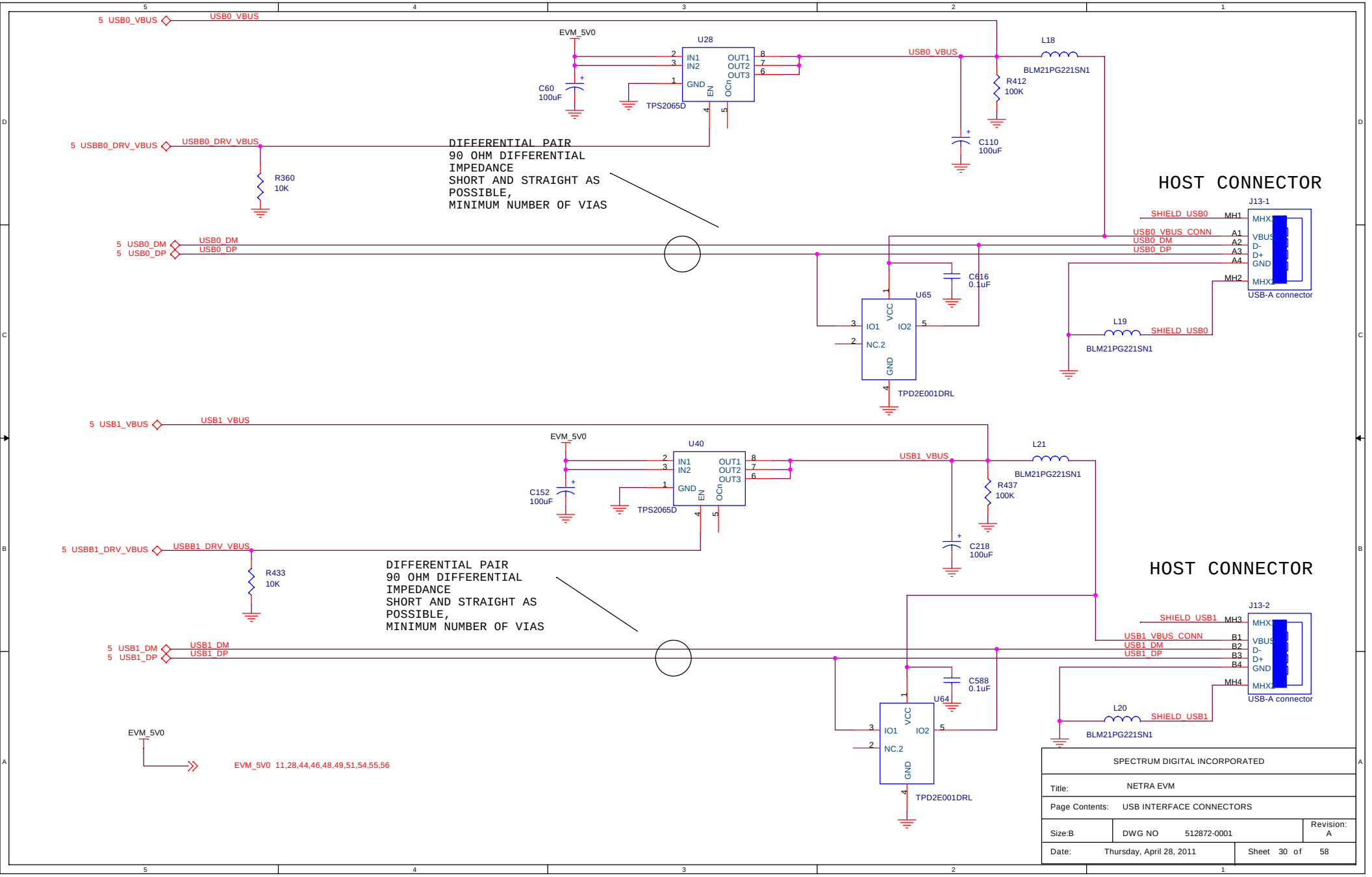
EVM_12V

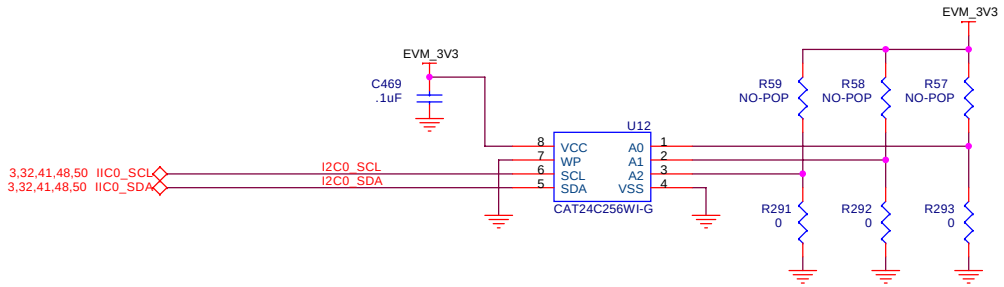
EVM_12V 28,44,46,48,51,52,56

PCI_3V3

PCI_3V3 28

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: POWER SUPPLY PCI3V3		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 29 of 58	

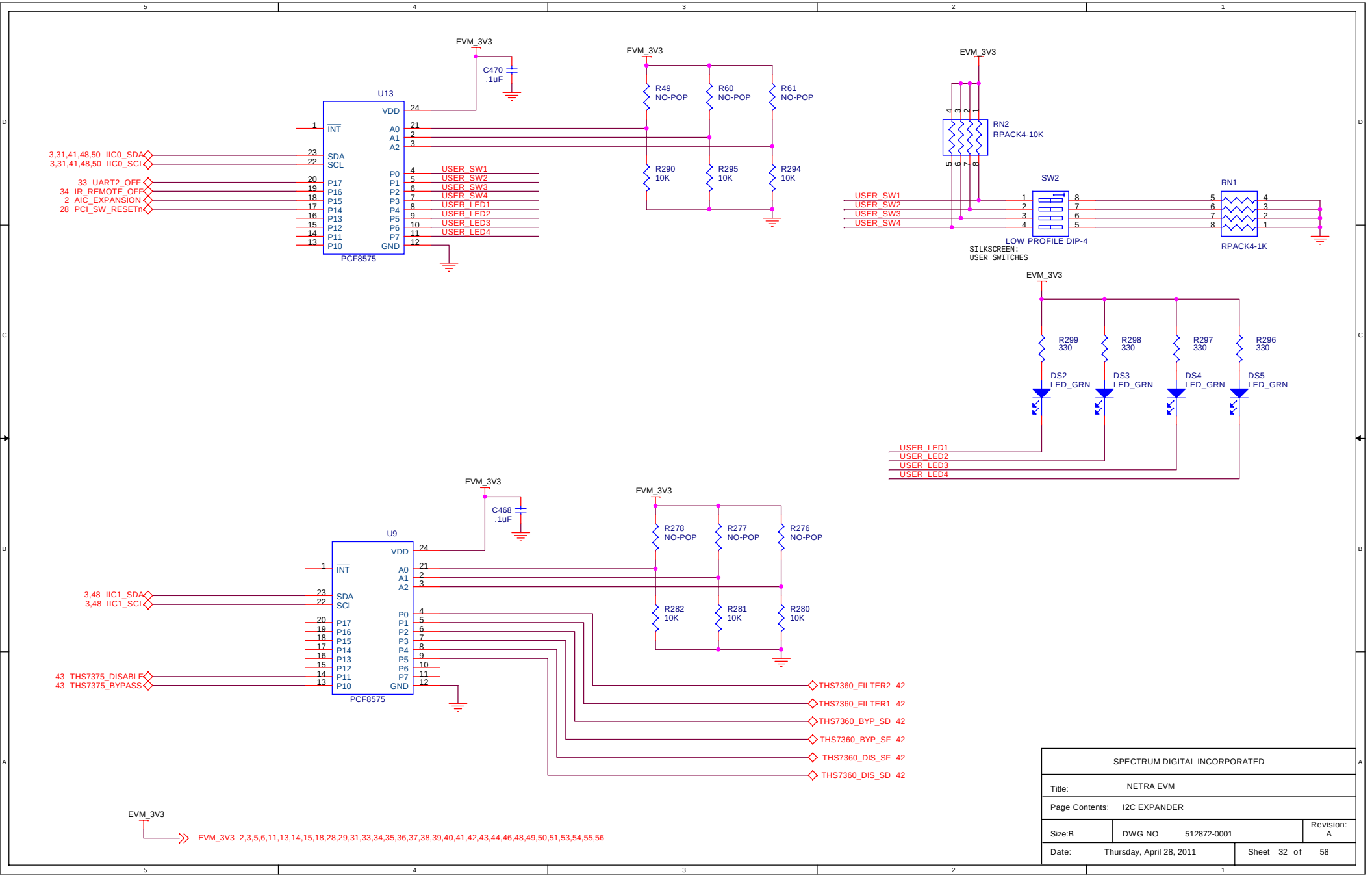

5 USB0_VBUS
USB0_VBUS
EVM_5V0
U28
IN1
IN2
OUT1
OUT2
OUT3
GND
EN
OCn
TPS2065D
C60
100uF
USB0_VBUS
L18
BLM21PG221SN1
R412
100K
C110
100uF
5 USBB0_DRV_VBUS
USBB0_DRV_VBUS
R360
10K
DIFFERENTIAL PAIR
90 OHM DIFFERENTIAL
IMPEDANCE
SHORT AND STRAIGHT AS
POSSIBLE,
MINIMUM NUMBER OF VIAS
HOST CONNECTOR
J13-1
SHIELD_USB0
MH1
USB0_VBUS_CONN
A1
USB0_DM
A2
USB0_DP
A3
GND
A4
MH2
USB-A connector
5 USB0_DM
5 USB0_DP
USB0_DM
USB0_DP
C616
0.1uF
U65
VCC
IO1
IO2
NC.2
GND
TPD2E001DRL
L19
BLM21PG221SN1
SHIELD_USB0
5 USB1_VBUS
USB1_VBUS
EVM_5V0
U40
C152
100uF
TPS2065D
USB1_VBUS
L21
BLM21PG221SN1
R437
100K
C218
100uF
5 USBB1_DRV_VBUS
USBB1_DRV_VBUS
R433
10K
DIFFERENTIAL PAIR
90 OHM DIFFERENTIAL
IMPEDANCE
SHORT AND STRAIGHT AS
POSSIBLE,
MINIMUM NUMBER OF VIAS
HOST CONNECTOR
J13-2
SHIELD_USB1
MH3
USB1_VBUS_CONN
B1
USB1_DM
B2
USB1_DP
B3
GND
B4
MH4
USB-A connector
5 USB1_DM
5 USB1_DP
USB1_DM
USB1_DP
C588
0.1uF
U64
TPD2E001DRL
L20
BLM21PG221SN1
SHIELD_USB1
EVM_5V0
EVM_5V0 11,28,44,46,48,49,51,54,55,56
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: USB INTERFACE CONNECTORS
Size:B
DWG NO 512872-0001
Revision: A
Date: Thursday, April 28, 2011
Sheet 30 of 58



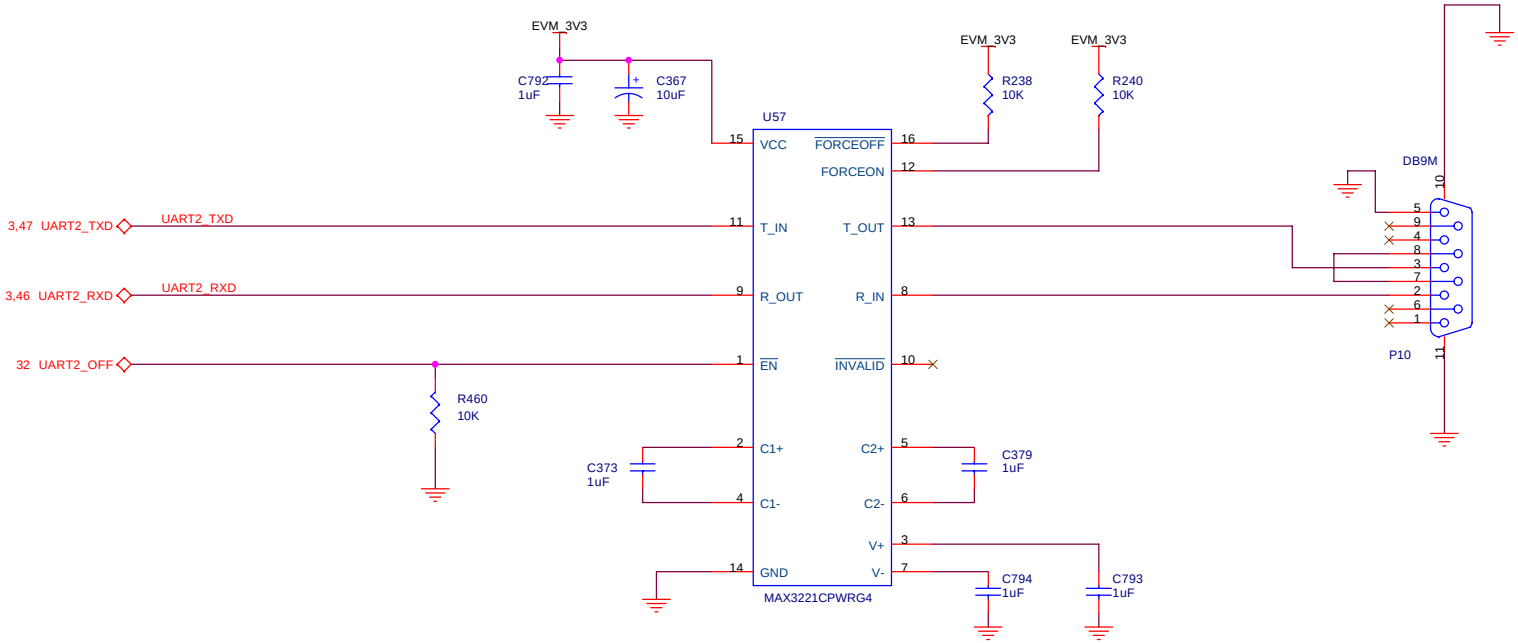
EVM_3V3

EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: I2C EEPROMS		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 31 of 58	



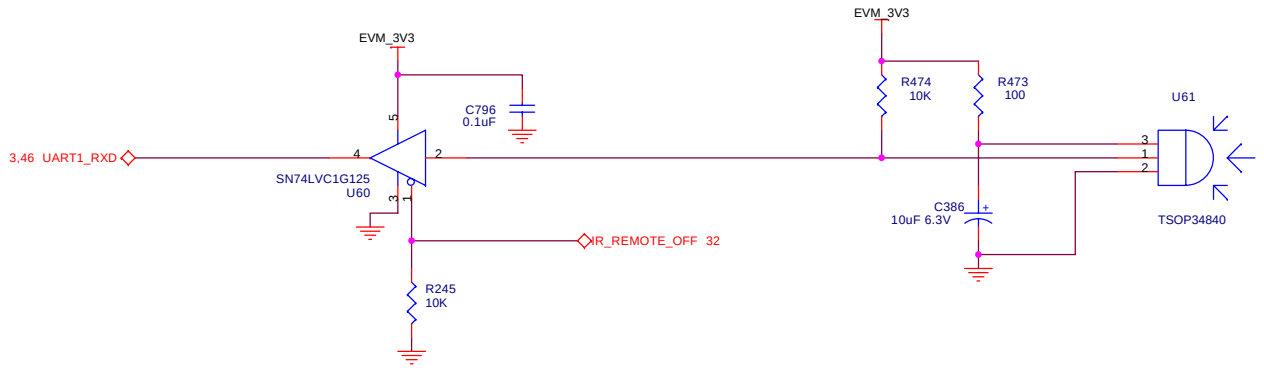
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: I2C EXPANDER		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 32 of 58	



EVM_3V3

EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56

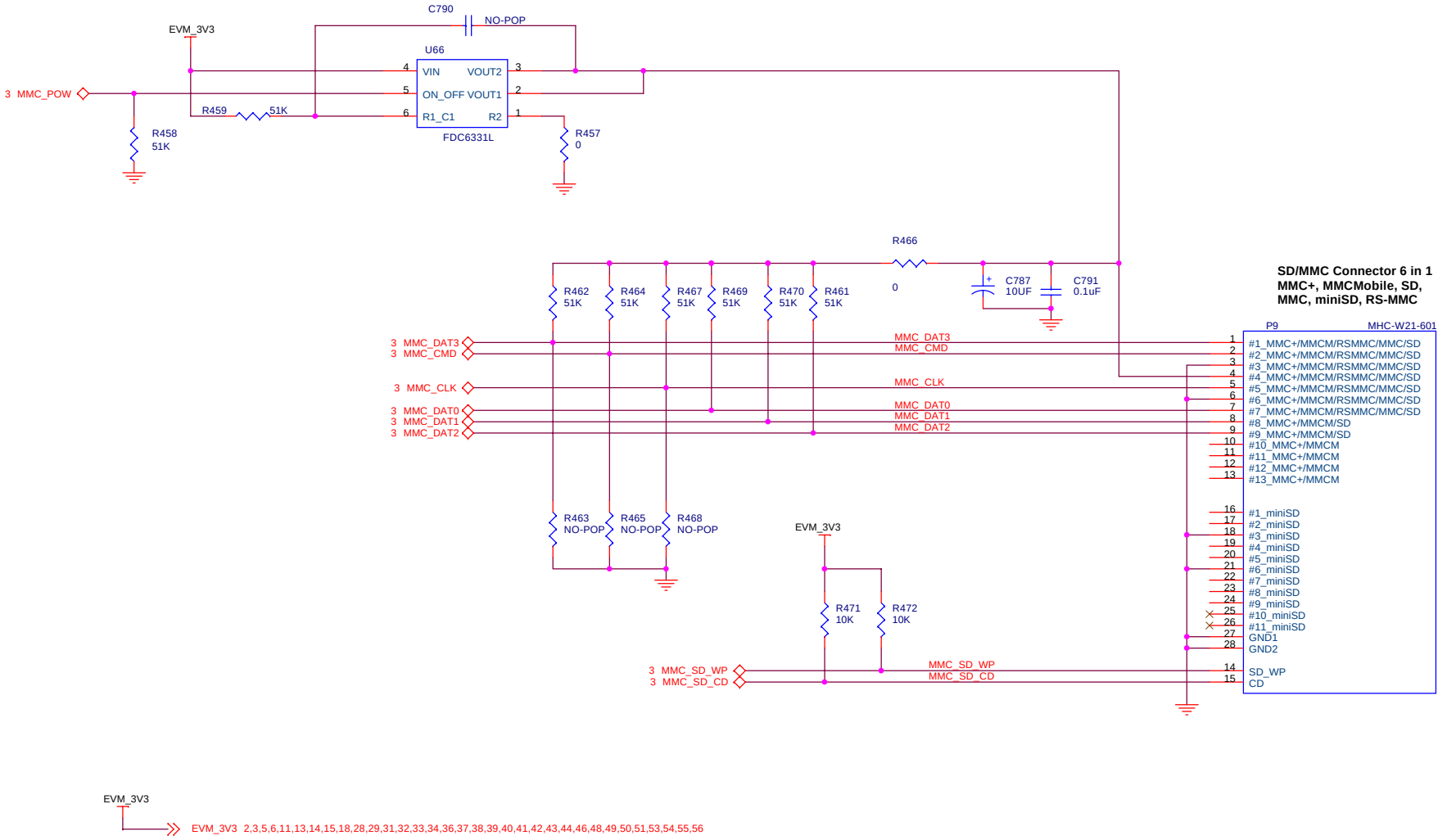
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: RS232 INTERFACE		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 33 of 58	



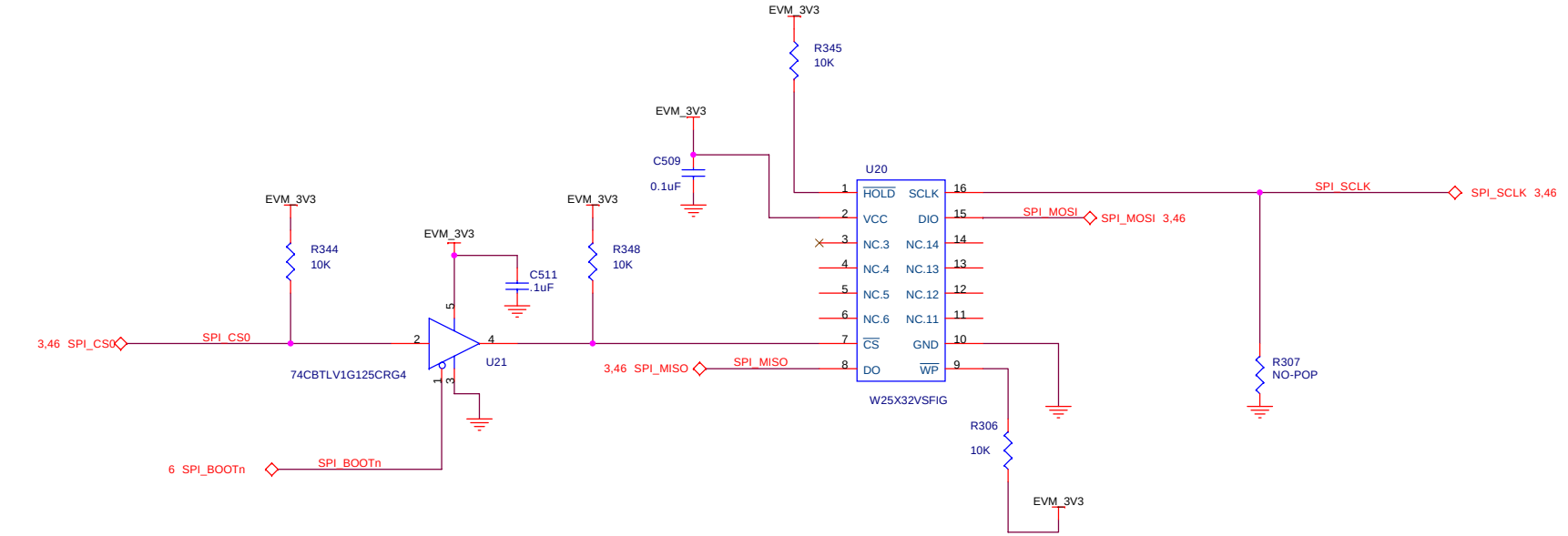
EVM_3V3

EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: INFRA-RED RECIEVER		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 34 of 58	



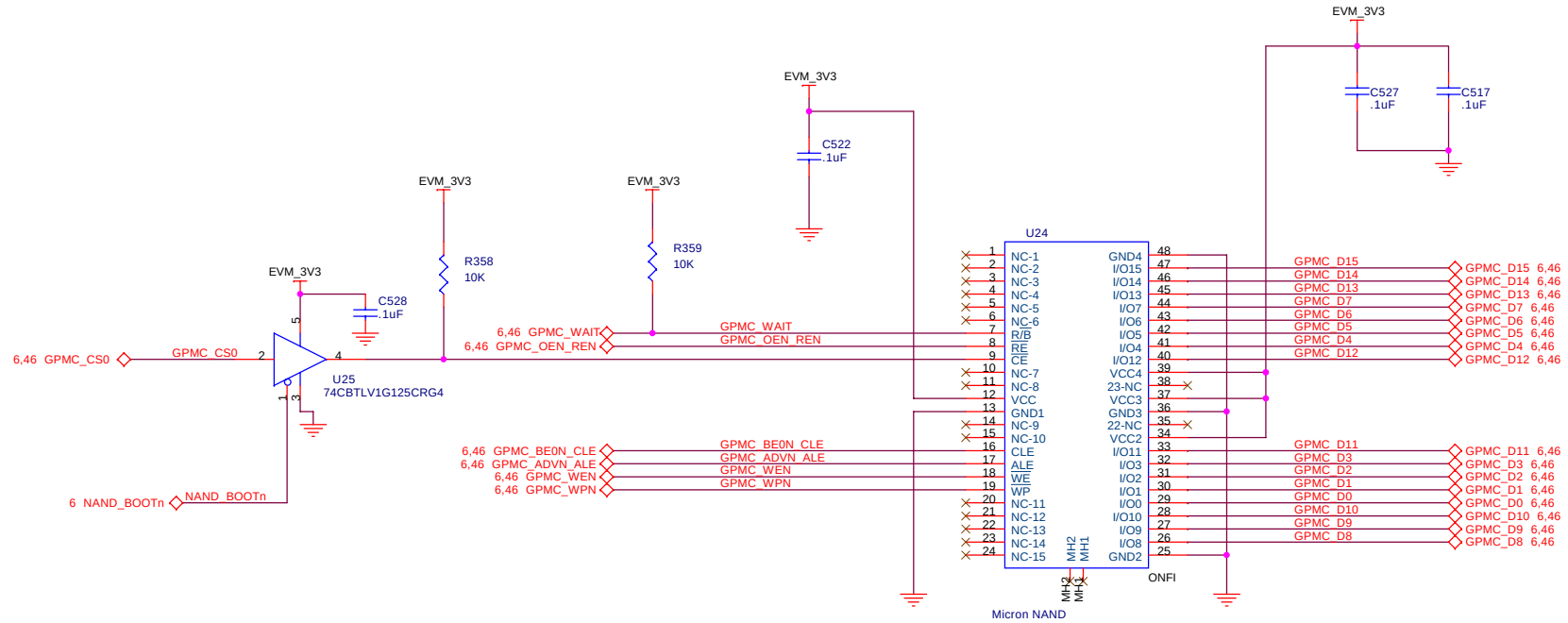
SPECTRUM DIGITAL INCORPORATED			
Title:	NETRA EVM		
Page Contents:	SD/MMC INTERFACE		
Size:B	DWG NO 512872-0001		Revision: A
Date:	Thursday, April 28, 2011	Sheet 35 of 58	



EVM_3V3

EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: SPI EEPROM		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 36 of 58	

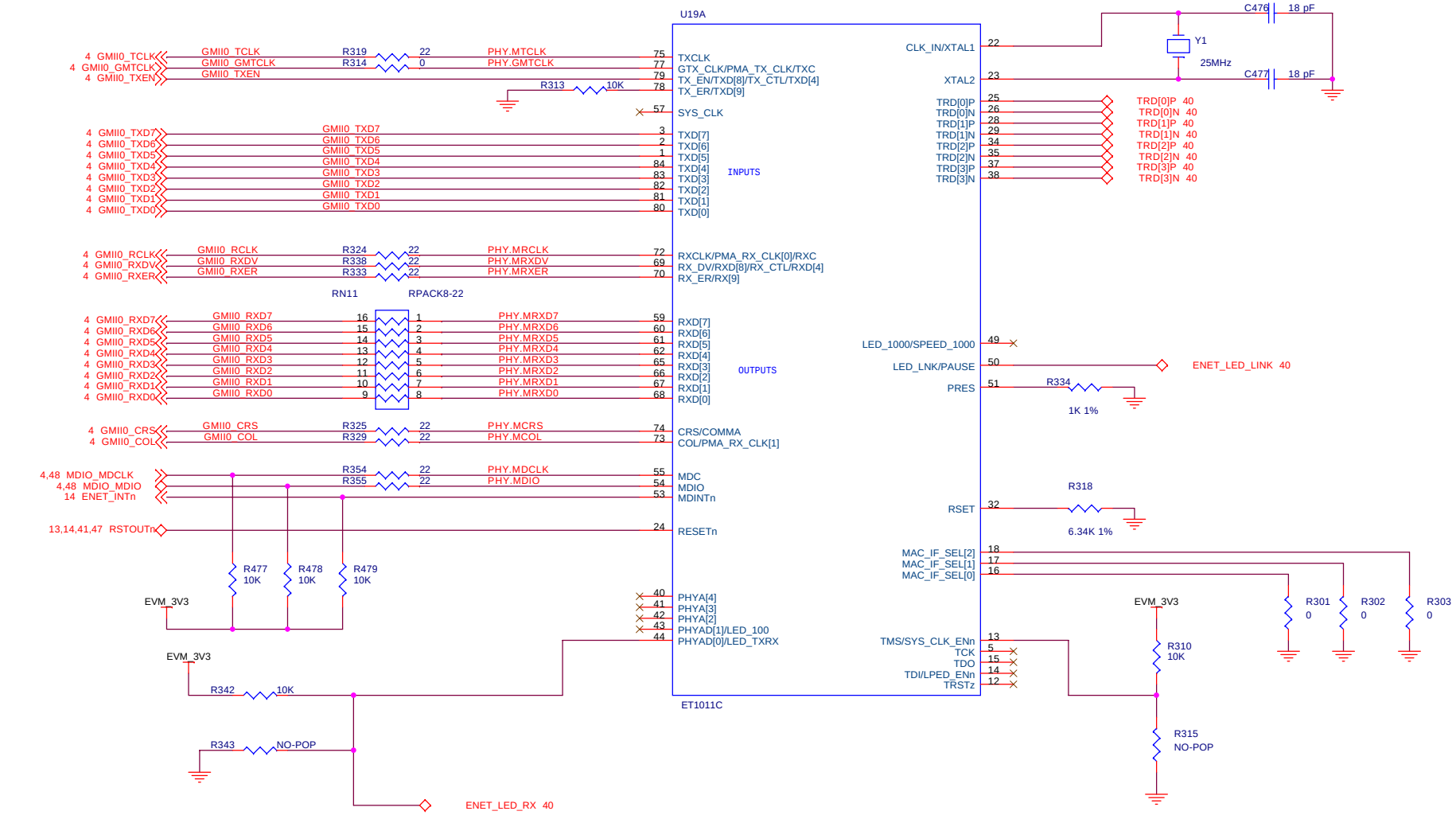


EVM IS SUPPORTED WITH MICRON MT29F2G16AADWP:D

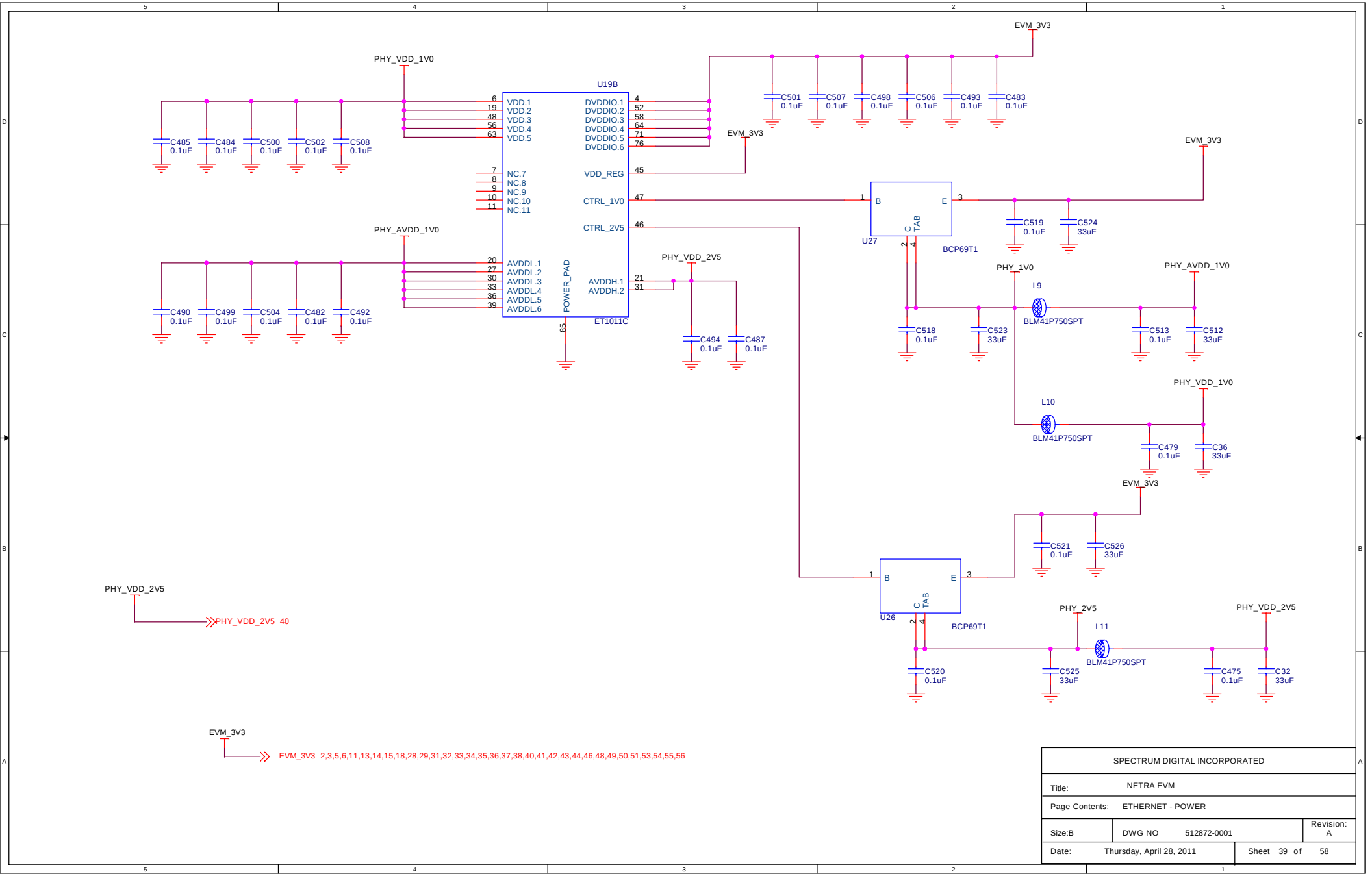
EVM_3V3

EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,38,39,40,41,42,43,44,46,48,49,50,51,53,54,55,56

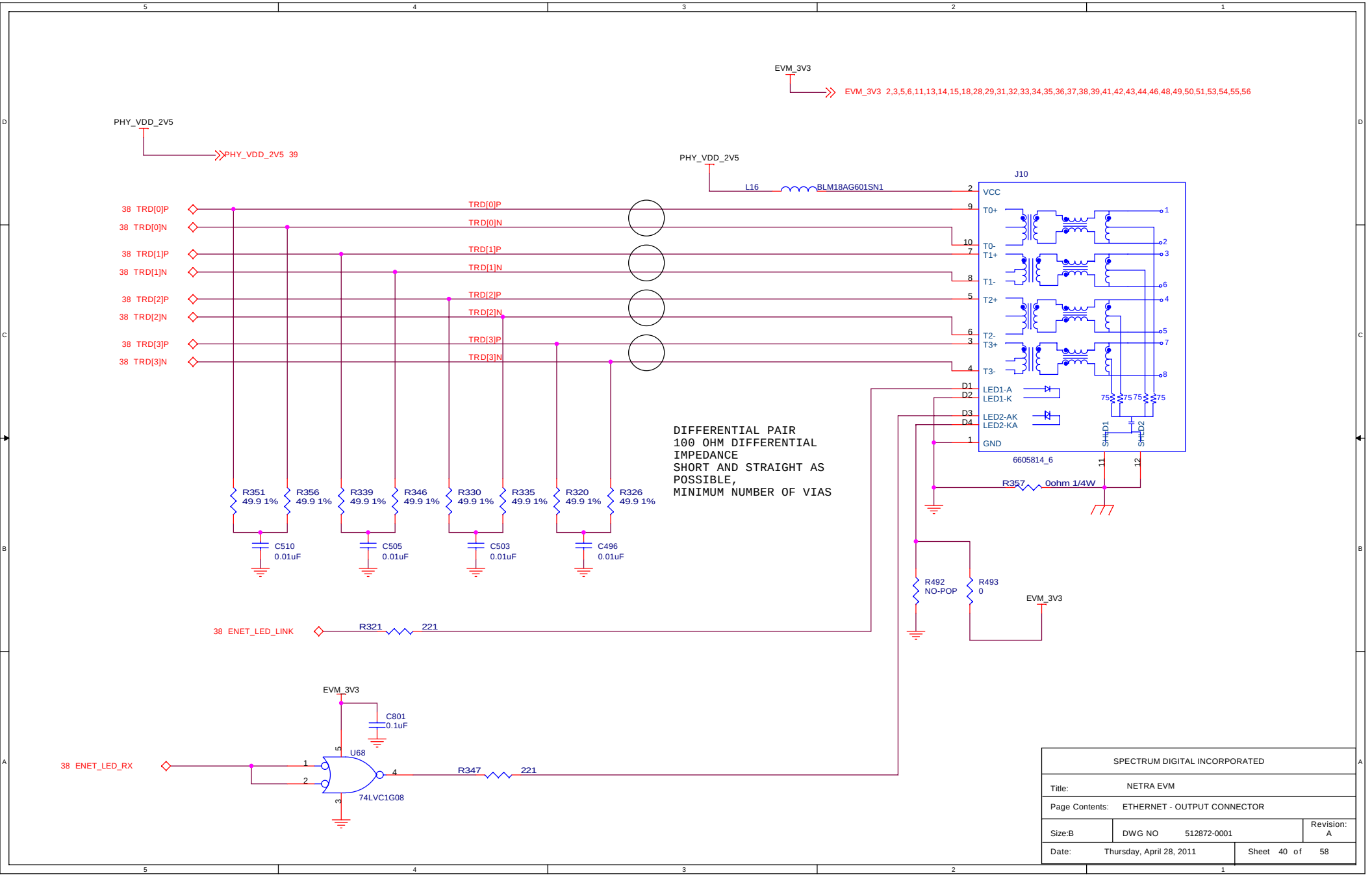
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: NAND FLASH		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 37 of 58	



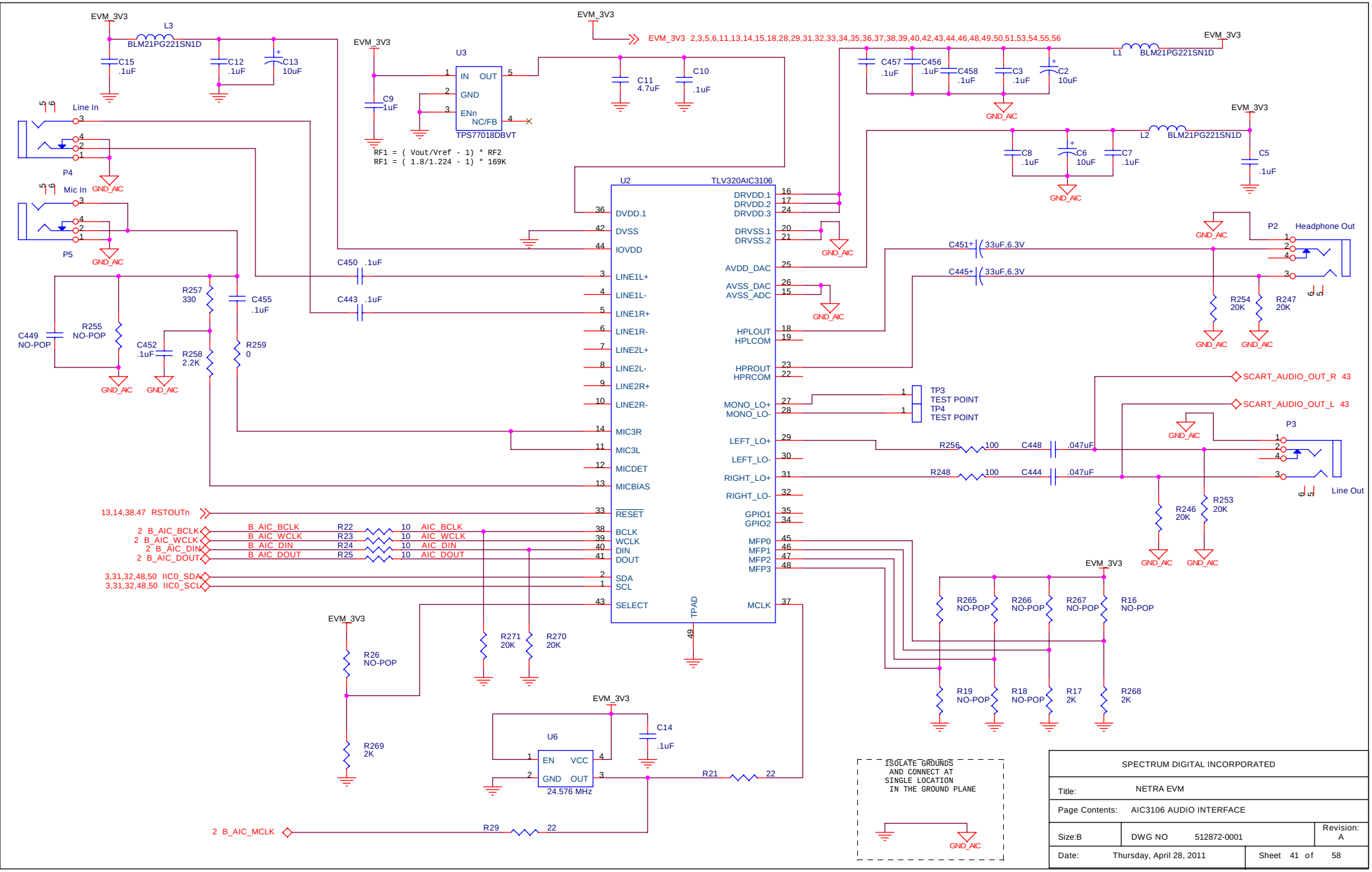
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: ETHERNET INTERFACE		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 38 of 58	

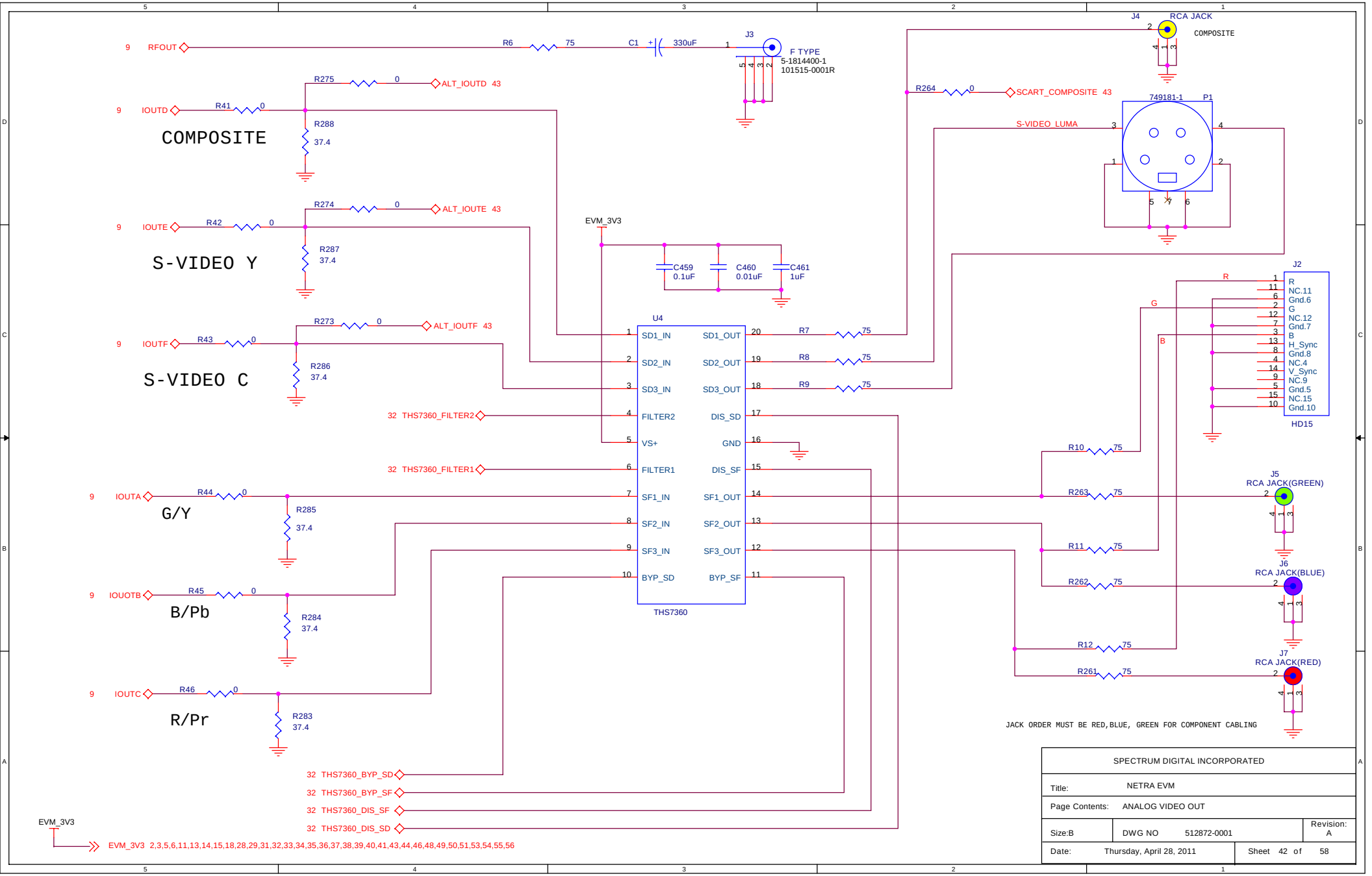


SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: ETHERNET - POWER		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 39 of 58	



SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: ETHERNET - OUTPUT CONNECTOR		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 40 of 58	


EVM_3V3
L3
BLM21PG221SN1D
C15 .1uF
C12 .1uF
C13 10uF
U3
IN OUT
GND
ENn NC/FB
TPS77018DBVT
C9 1uF
C11 4.7uF
C10 .1uF
RF1 = (Vout/Vref - 1) * RF2
RF1 = (1.8/1.224 - 1) * 169K
EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,42,43,44,46,48,49,50,51,53,54,55,56
C457 .1uF
C456 .1uF
C458 .1uF
C3 .1uF
C2 10uF
L1 BLM21PG221SN1D
GND_AIC
L2 BLM21PG221SN1D
C8 .1uF
C6 10uF
C7 .1uF
C5 .1uF
Line In
P4
Mic In
P5
U2
TLV320AIC3106
DVDD.1
DVSS
IOVDD
LINE1L+
LINE1L-
LINE1R+
LINE1R-
LINE2L+
LINE2L-
LINE2R+
LINE2R-
MIC3R
MIC3L
MICDET
MICBIAS
RESET
BCLK
WCLK
DIN
DOUT
SDA
SCL
SELECT
TPAD
DRVDD.1
DRVDD.2
DRVDD.3
DRVSS.1
DRVSS.2
AVDD_DAC
AVSS_DAC
AVSS_ADC
HPLOUT
HPLCOM
HPROUT
HPRCOM
MONO_LO+
MONO_LO-
LEFT_LO+
LEFT_LO-
RIGHT_LO+
RIGHT_LO-
GPIO1
GPIO2
MFP0
MFP1
MFP2
MFP3
MCLK
C450 .1uF
C443 .1uF
C455 .1uF
C449 NO-POP
R255 NO-POP
C452 .1uF
R257 330
R258 2.2K
R259 0
C451+ 33uF,6.3V
C445+ 33uF,6.3V
P2 Headphone Out
R254 20K
R247 20K
TP3 TEST POINT
TP4 TEST POINT
SCART_AUDIO_OUT_R 43
SCART_AUDIO_OUT_L 43
P3
Line Out
R256 100 C448 .047uF
R248 100 C444 .047uF
R246 20K
R253 20K
13,14,38,47 RSTOUTn
2 B_AIC_BCLK
2 B_AIC_WCLK
2 B_AIC_DIN
2 B_AIC_DOUT
B_AIC_BCLK R22 10 AIC_BCLK
B_AIC_WCLK R23 10 AIC_WCLK
B_AIC_DIN R24 10 AIC_DIN
B_AIC_DOUT R25 10 AIC_DOUT
3,31,32,48,50 IIC0_SDA
3,31,32,48,50 IIC0_SCL
R271 20K
R270 20K
R26 NO-POP
R269 2K
R265 NO-POP
R266 NO-POP
R267 NO-POP
R16 NO-POP
R19 NO-POP
R18 NO-POP
R17 2K
R268 2K
U6
EN VCC
GND OUT
24.576 MHz
C14 .1uF
R21 22
2 B_AIC_MCLK
R29 22
ISOLATE GROUNDS AND CONNECT AT SINGLE LOCATION IN THE GROUND PLANE
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: AIC3106 AUDIO INTERFACE
Size:B
DWG NO 512872-0001
Revision: A
Date: Thursday, April 28, 2011
Sheet 41 of 58


9 RFOUT
R6 75
C1 330uF
J3
F TYPE
5-1814400-1
101515-0001R
J4
RCA JACK
COMPOSITE
R264 0
SCART_COMPOSITE 43
749181-1
P1
S-VIDEO_LUMA
9 IOUTD
R41 0
R275 0
ALT_IOUTD 43
R288
37.4
COMPOSITE
9 IOUTE
R42 0
R274 0
ALT_IOUTE 43
R287
37.4
S-VIDEO Y
9 IOUTF
R43 0
R273 0
ALT_IOUTF 43
R286
37.4
S-VIDEO C
EVM_3V3
C459 0.1uF
C460 0.01uF
C461 1uF
U4
SD1_IN
SD2_IN
SD3_IN
FILTER2
VS+
FILTER1
SF1_IN
SF2_IN
SF3_IN
BYP_SD
SD1_OUT
SD2_OUT
SD3_OUT
DIS_SD
GND
DIS_SF
SF1_OUT
SF2_OUT
SF3_OUT
BYP_SF
THS7360
R7 75
R8 75
R9 75
32 THS7360_FILTER2
32 THS7360_FILTER1
J2
R
G
B
NC.11
Gnd.6
NC.12
Gnd.7
H_Sync
Gnd.8
NC.4
V_Sync
NC.9
Gnd.5
NC.15
Gnd.10
HD15
R10 75
R263 75
R11 75
R262 75
R12 75
R261 75
J5
RCA JACK(GREEN)
J6
RCA JACK(BLUE)
J7
RCA JACK(RED)
9 IOUTA
R44 0
R285
37.4
G/Y
9 IOUOTB
R45 0
R284
37.4
B/Pb
9 IOUTC
R46 0
R283
37.4
R/Pr
32 THS7360_BYP_SD
32 THS7360_BYP_SF
32 THS7360_DIS_SF
32 THS7360_DIS_SD
EVM_3V3
EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,43,44,46,48,49,50,51,53,54,55,56
JACK ORDER MUST BE RED,BLUE, GREEN FOR COMPONENT CABLING
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: ANALOG VIDEO OUT
Size:B
DWG NO 512872-0001
Revision: A
Date: Thursday, April 28, 2011
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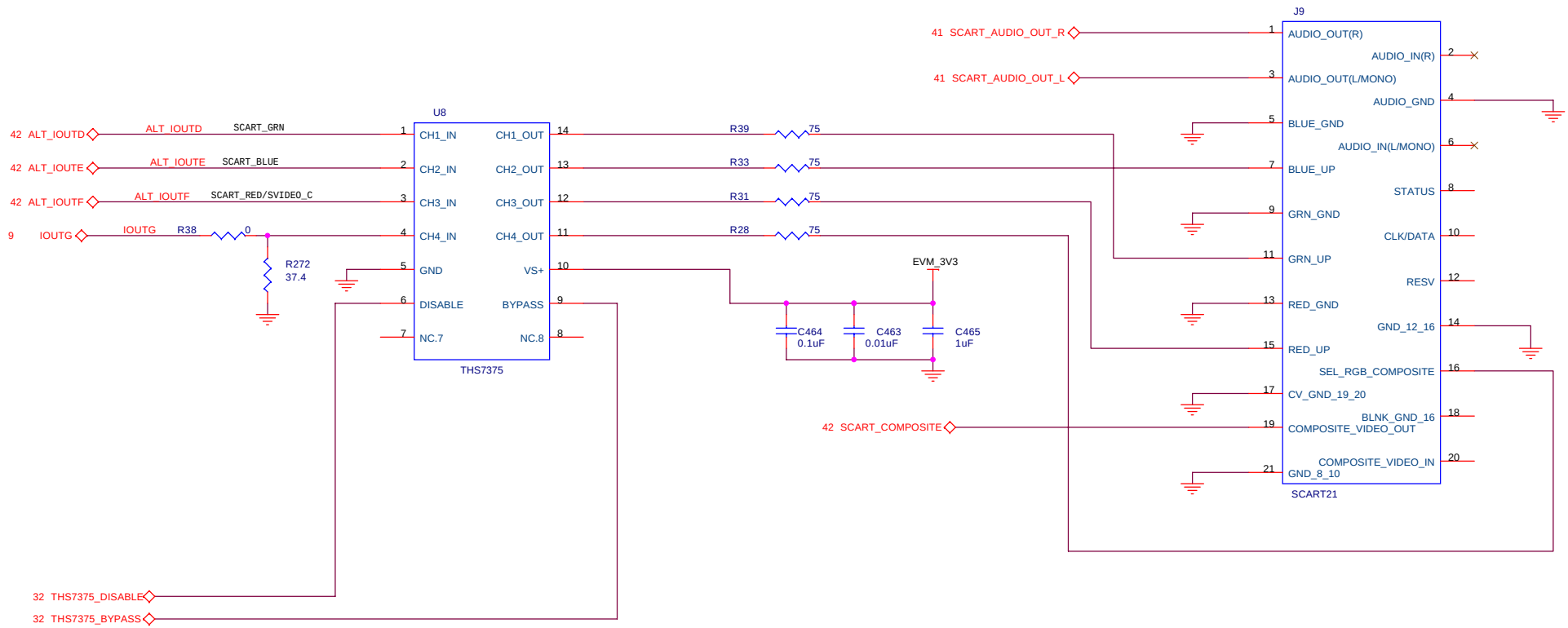
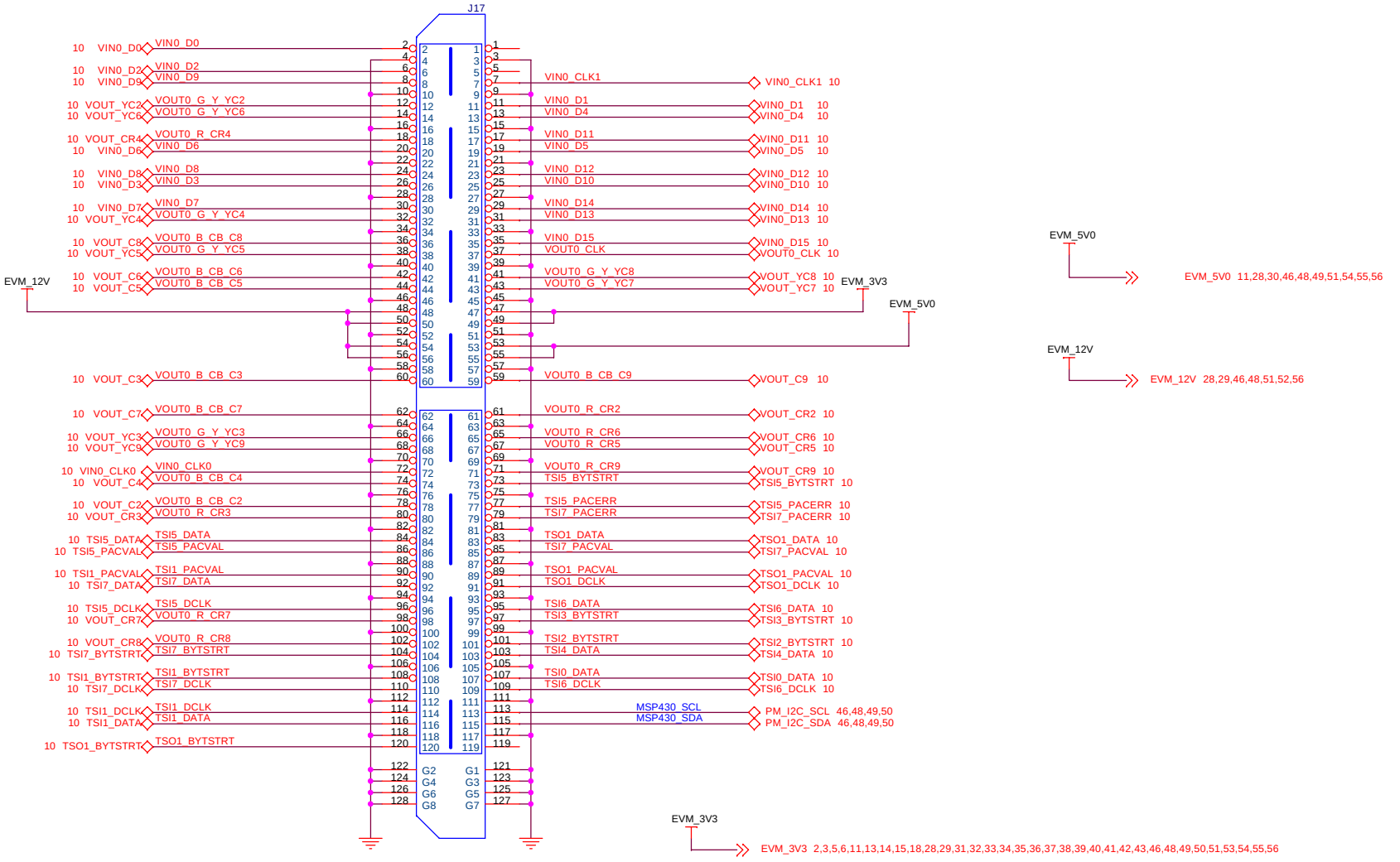
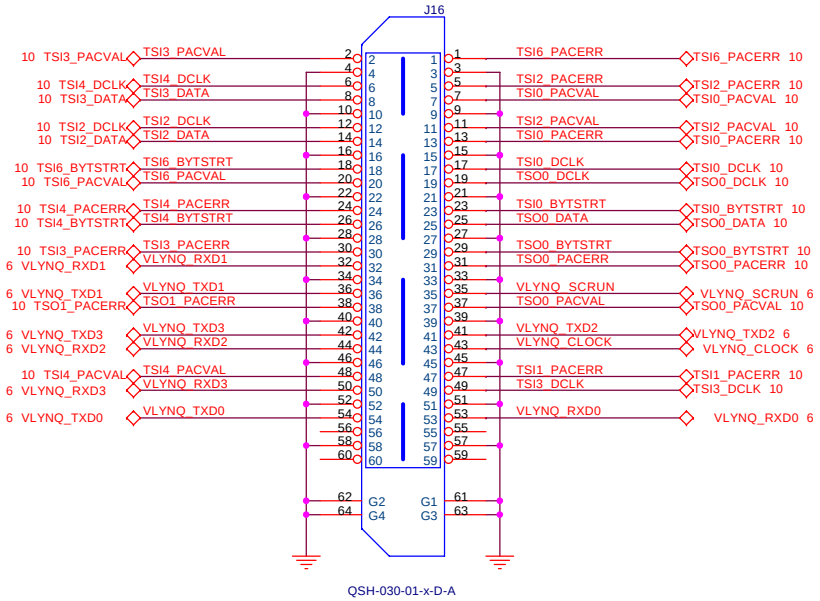


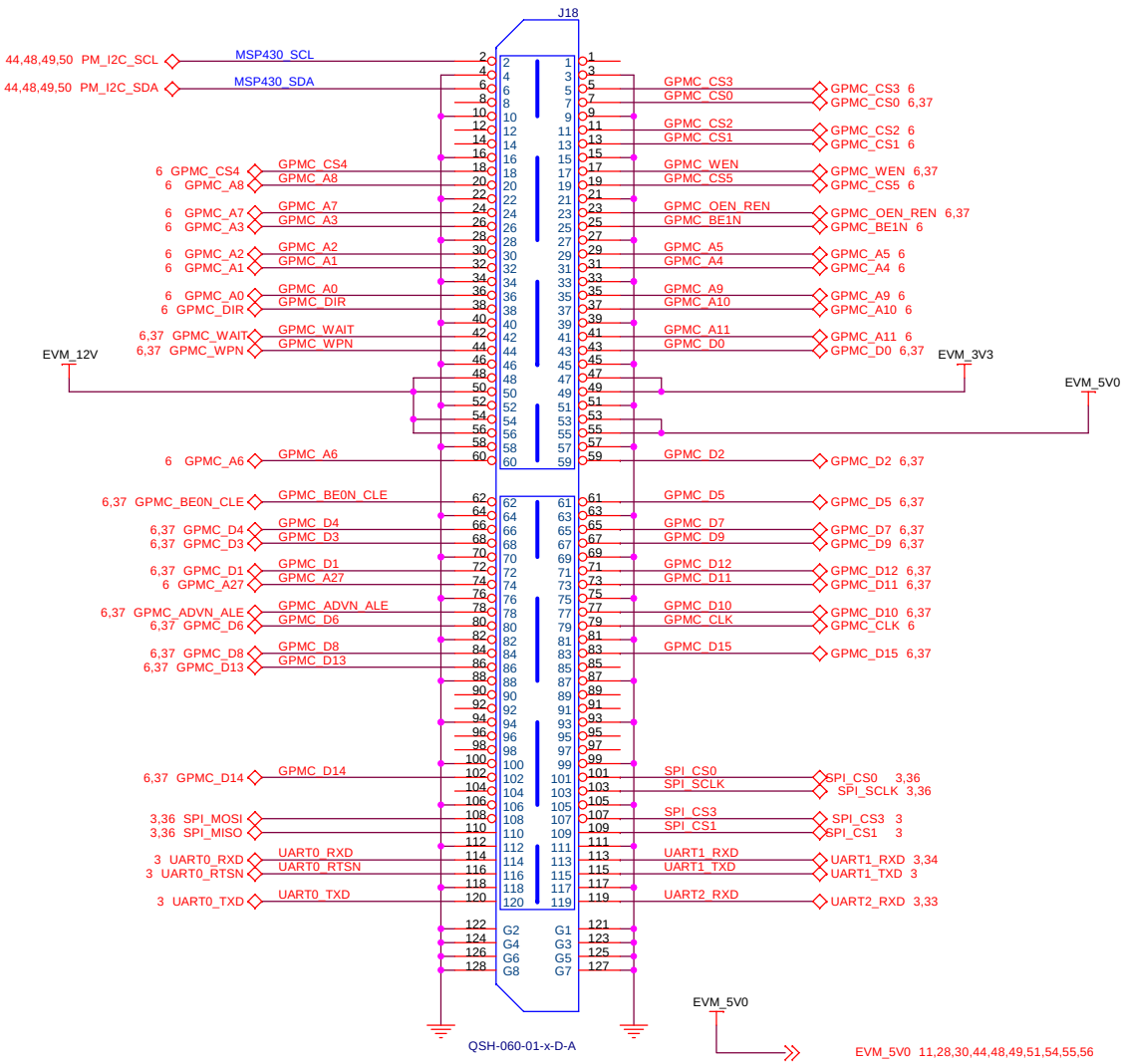
SPECTRUM DIGITAL INCORPORATED			
Title:	NETRA EVM		
Page Contents:	ANALOG VIDEO OUT SCART		
Size:B	DWG NO 512872-0001		Revision: A
Date: Thursday, April 28, 2011		Sheet 43 of 58	



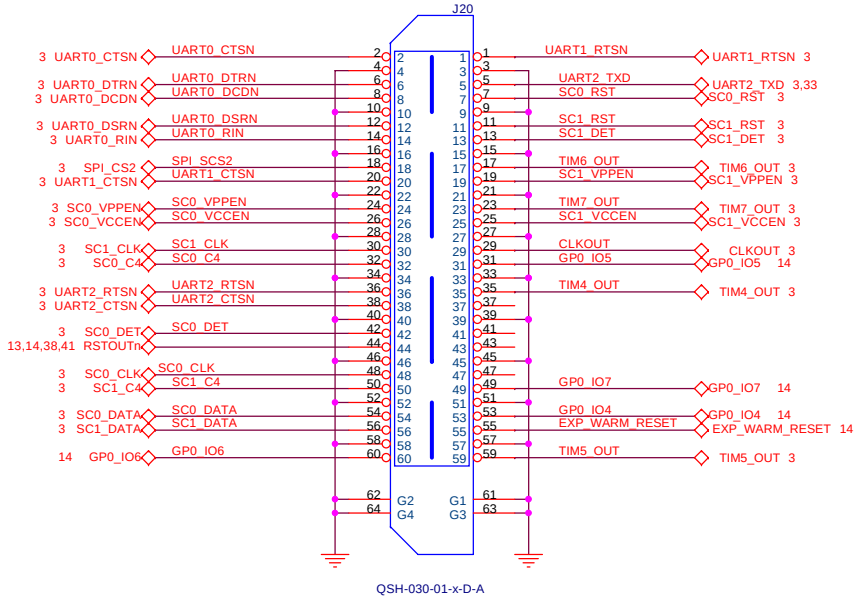
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: VIDEO/TRANSPORT STREAMS		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 44 of 58	



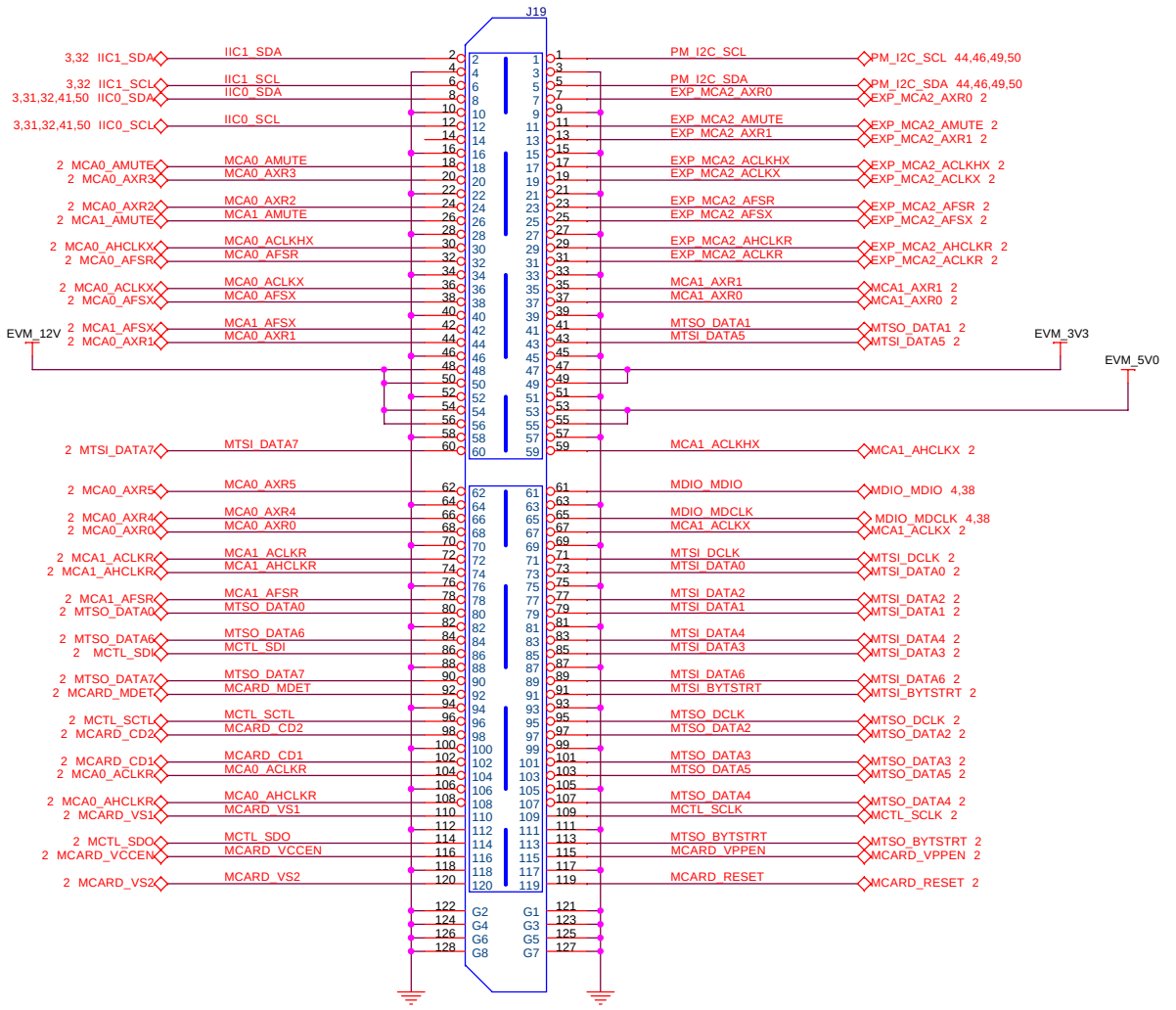
SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: VLYNQ/TRANSPORT STREAMS		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 45 of 58	



SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: GPMC EXPANSION CONNECTOR		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 46 of 58	



SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: SERIAL I/O EXPANSION CONNECTOR		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 47 of 58	



EVM_5V0

EVM_5V0 11,28,30,44,46,49,51,54,55,56

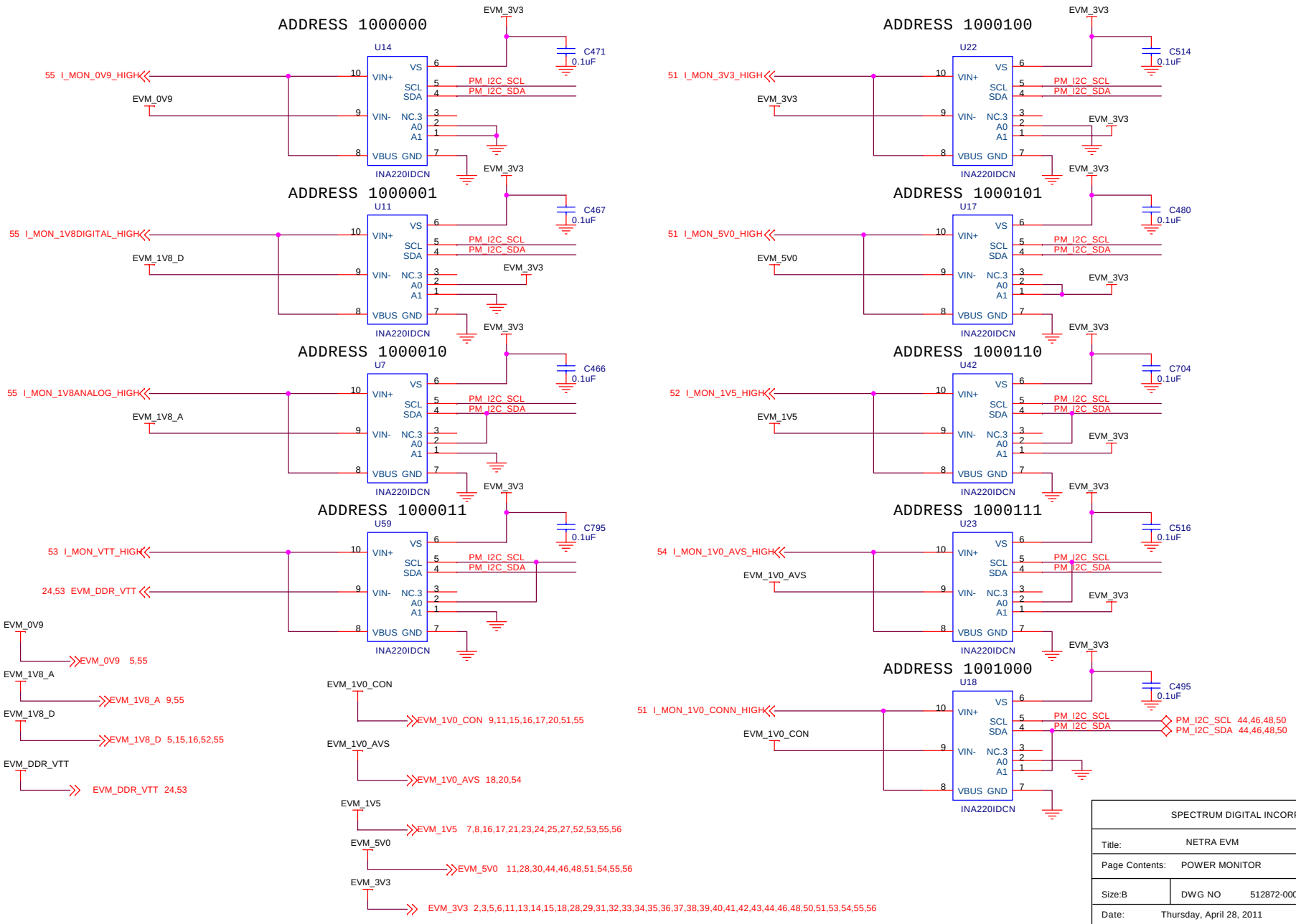
EVM_12V

EVM_12V 28,29,44,46,51,52,56

EVM_3V3

EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,49,50,51,53,54,55,56

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: MCASP/XXX EXPANSION		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 48 of 58	


ADDRESS 1000000
U14
55 I_MON_0V9_HIGH
EVM_0V9
EVM_3V3
C471
0.1uF
PM_I2C_SCL
PM_I2C_SDA
INA220IDCN
ADDRESS 1000001
U11
55 I_MON_1V8DIGITAL_HIGH
EVM_1V8_D
C467
ADDRESS 1000010
U7
55 I_MON_1V8ANALOG_HIGH
EVM_1V8_A
C466
ADDRESS 1000011
U59
53 I_MON_VTT_HIGH
24,53 EVM_DDR_VTT
C795
EVM_0V9
EVM_0V9 5,55
EVM_1V8_A
EVM_1V8_A 9,55
EVM_1V8_D
EVM_1V8_D 5,15,16,52,55
EVM_DDR_VTT
EVM_DDR_VTT 24,53
EVM_1V0_CON
EVM_1V0_CON 9,11,15,16,17,20,51,55
EVM_1V0_AVS
EVM_1V0_AVS 18,20,54
EVM_1V5
EVM_1V5 7,8,16,17,21,23,24,25,27,52,53,55,56
EVM_5V0
EVM_5V0 11,28,30,44,46,48,51,54,55,56
EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,50,51,53,54,55,56
ADDRESS 1000100
U22
51 I_MON_3V3_HIGH
C514
ADDRESS 1000101
U17
51 I_MON_5V0_HIGH
EVM_5V0
C480
ADDRESS 1000110
U42
52 I_MON_1V5_HIGH
EVM_1V5
C704
ADDRESS 1000111
U23
54 I_MON_1V0_AVS_HIGH
EVM_1V0_AVS
C516
ADDRESS 1001000
U18
51 I_MON_1V0_CONN_HIGH
EVM_1V0_CON
C495
PM_I2C_SCL 44,46,48,50
PM_I2C_SDA 44,46,48,50
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: POWER MONITOR
Size:B
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Revision: A
Date: Thursday, April 28, 2011
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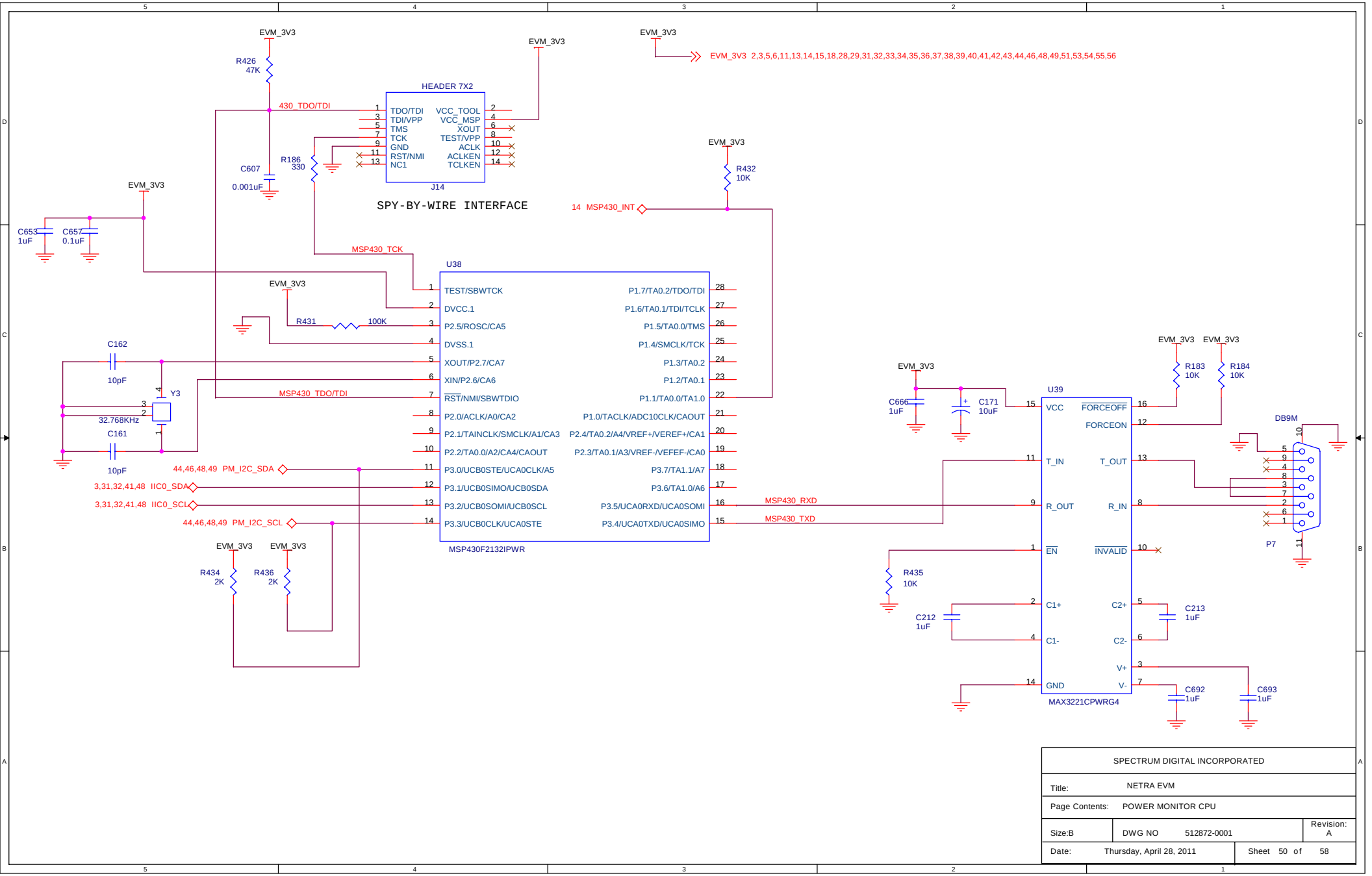
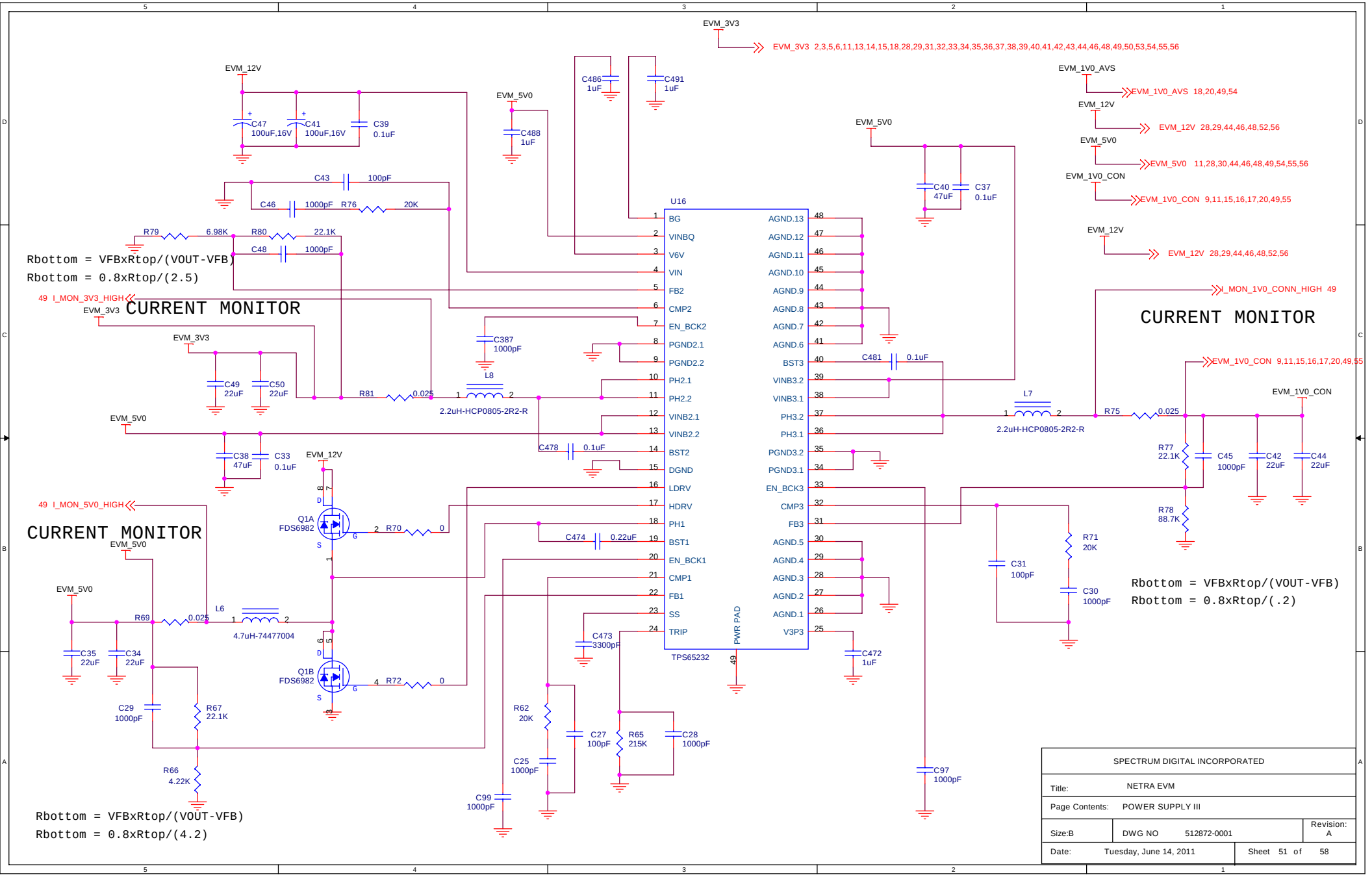


SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: POWER MONITOR CPU		
Size:B	DWG NO 512872-0001	Revision: A
Date: Thursday, April 28, 2011	Sheet 50 of 58	


EVM_3V3
EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,53,54,55,56
EVM_12V
EVM_5V0
EVM_1V0_AVS
EVM_1V0_AVS 18,20,49,54
EVM_12V 28,29,44,46,48,52,56
EVM_5V0 11,28,30,44,46,48,49,54,55,56
EVM_1V0_CON
EVM_1V0_CON 9,11,15,16,17,20,49,55
C47 100uF,16V
C41 100uF,16V
C39 0.1uF
C486 1uF
C491 1uF
C488 1uF
C40 47uF
C37 0.1uF
C43 100pF
C46 1000pF
R76 20K
R79 6.98K
R80 22.1K
C48 1000pF
Rbottom = VFBxRtop/(VOUT-VFB)
Rbottom = 0.8xRtop/(2.5)
49 I_MON_3V3_HIGH
CURRENT MONITOR
U16
BG
VINBQ
V6V
VIN
FB2
CMP2
EN_BCK2
PGND2.1
PGND2.2
PH2.1
PH2.2
VINB2.1
VINB2.2
BST2
DGND
LDRV
HDRV
PH1
BST1
EN_BCK1
CMP1
FB1
SS
TRIP
AGND.13
AGND.12
AGND.11
AGND.10
AGND.9
AGND.8
AGND.7
AGND.6
BST3
VINB3.2
VINB3.1
PH3.2
PH3.1
PGND3.2
PGND3.1
EN_BCK3
CMP3
FB3
AGND.5
AGND.4
AGND.3
AGND.2
AGND.1
V3P3
PWR PAD
TPS65232
C387 1000pF
L8
2.2uH-HCP0805-2R2-R
R81 0.025
C49 22uF
C50 22uF
C38 47uF
C33 0.1uF
C478 0.1uF
C481 0.1uF
L7
2.2uH-HCP0805-2R2-R
R75 0.025
I_MON_1V0_CONN_HIGH 49
CURRENT MONITOR
R77 22.1K
C45 1000pF
C42 22uF
C44 22uF
R78 88.7K
49 I_MON_5V0_HIGH
CURRENT MONITOR
Q1A FDS6982
Q1B FDS6982
R70 0
R72 0
C474 0.22uF
C473 3300pF
C472 1uF
R71 20K
C30 1000pF
C31 100pF
Rbottom = VFBxRtop/(VOUT-VFB)
Rbottom = 0.8xRtop/(.2)
R69 0.025
L6
4.7uH-74477004
C35 22uF
C34 22uF
C29 1000pF
R67 22.1K
R66 4.22K
R62 20K
C27 100pF
R65 215K
C28 1000pF
C25 1000pF
C99 1000pF
C97 1000pF
Rbottom = VFBxRtop/(VOUT-VFB)
Rbottom = 0.8xRtop/(4.2)
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: POWER SUPPLY III
Size:B
DWG NO 512872-0001
Revision: A
Date: Tuesday, June 14, 2011
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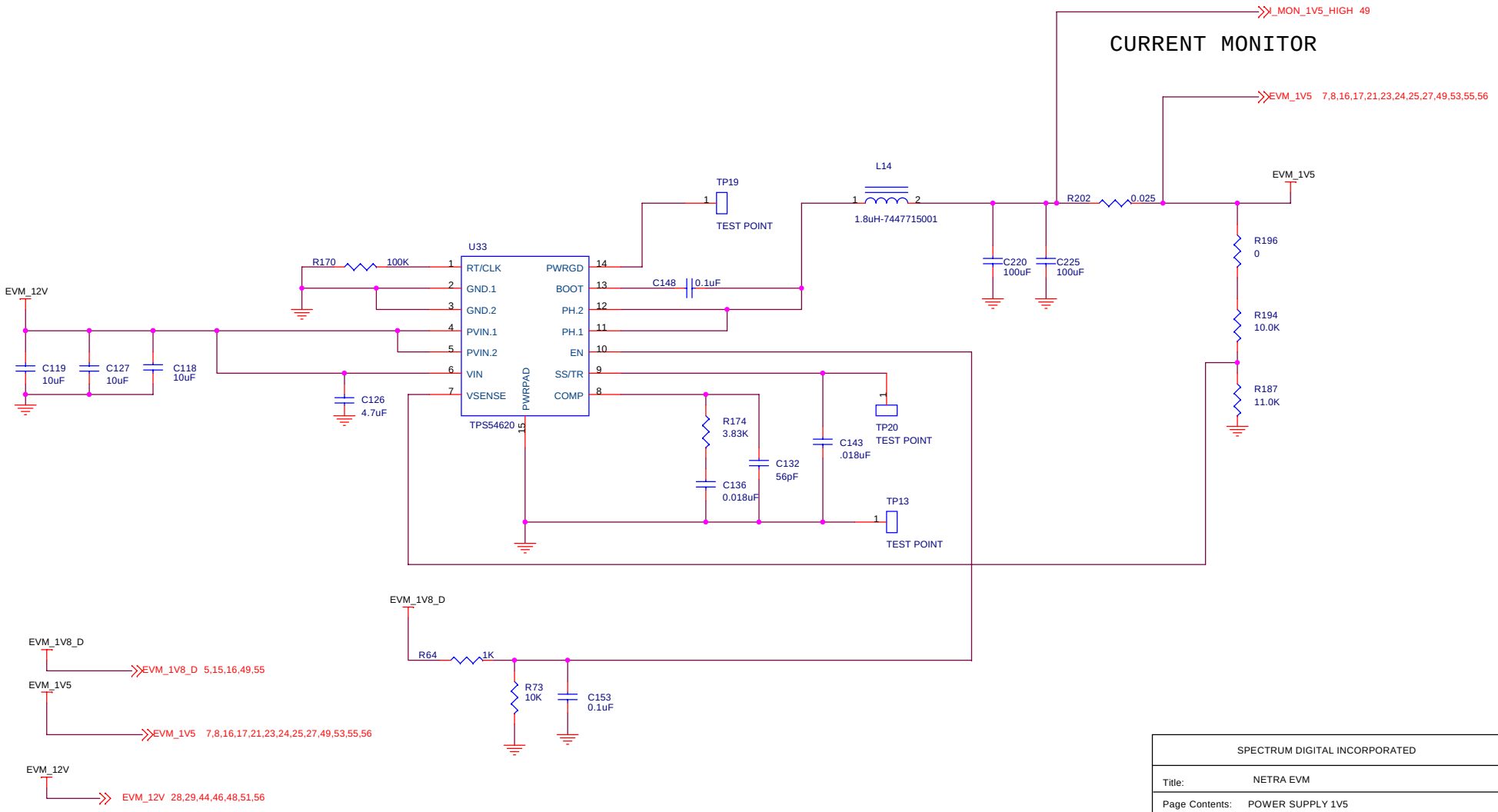
CHECKED VALUES - COMPLETE for feedback
maybe tweak 0402 and 0603



SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: POWER SUPPLY 1V5		
Size:B	DWG NO 512872-0001	Revision: A
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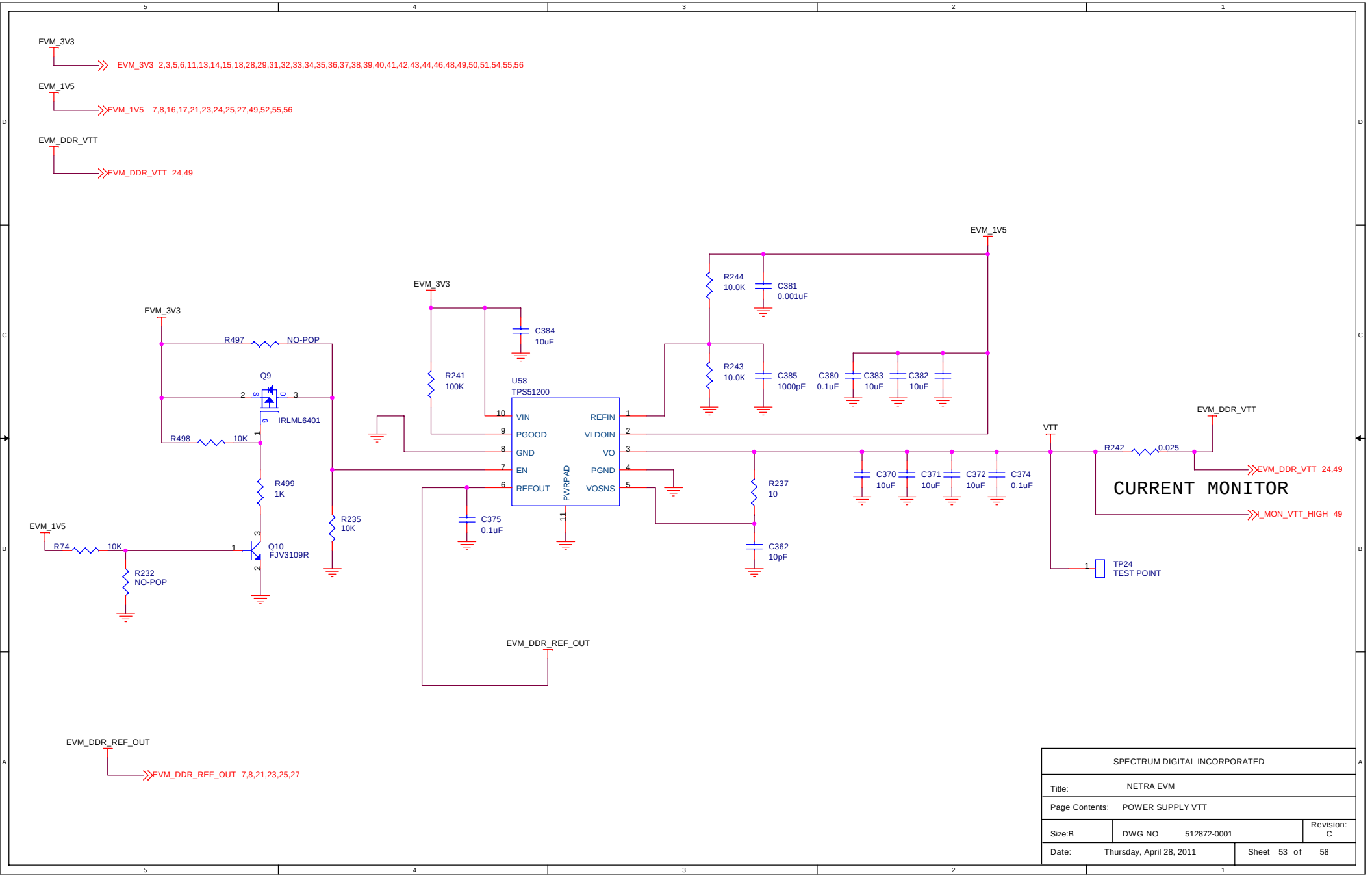
EVM_3V3
EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,54,55,56
EVM_1V5
EVM_1V5 7,8,16,17,21,23,24,25,27,49,52,55,56
EVM_DDR_VTT
EVM_DDR_VTT 24,49
EVM_3V3
R497
NO-POP
Q9
IRLML6401
R498
10K
R499
1K
R235
10K
EVM_1V5
R74
10K
Q10
FJV3109R
R232
NO-POP
EVM_3V3
C384
10uF
R241
100K
U58
TPS51200
VIN
PGOOD
GND
EN
REFOUT
REFIN
VLDOIN
VO
PGND
VOSNS
PWRPAD
C375
0.1uF
EVM_DDR_REF_OUT
EVM_1V5
R244
10.0K
C381
0.001uF
R243
10.0K
C385
1000pF
C380
0.1uF
C383
10uF
C382
10uF
R237
10
C362
10pF
C370
10uF
C371
10uF
C372
10uF
C374
0.1uF
VTT
R242
0.025
EVM_DDR_VTT
EVM_DDR_VTT 24,49
CURRENT MONITOR
I_MON_VTT_HIGH 49
TP24
TEST POINT
EVM_DDR_REF_OUT
EVM_DDR_REF_OUT 7,8,21,23,25,27
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: POWER SUPPLY VTT
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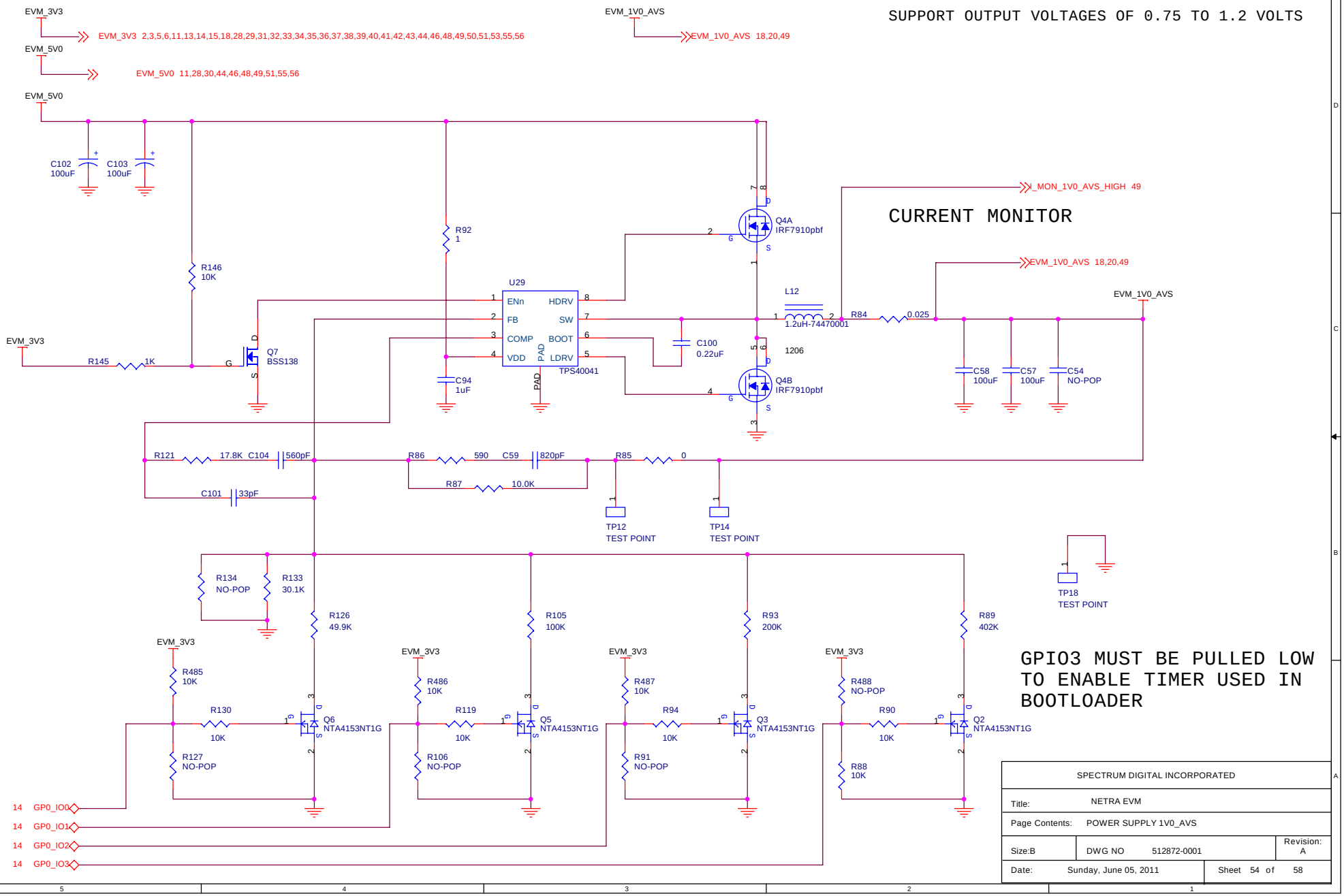
SUPPORT OUTPUT VOLTAGES OF 0.75 TO 1.2 VOLTS
EVM_3V3
EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,55,56
EVM_1V0_AVS
EVM_1V0_AVS 18,20,49
EVM_5V0
EVM_5V0 11,28,30,44,46,48,49,51,55,56
EVM_5V0
C102 100uF
C103 100uF
R146 10K
R92 1
U29
ENn
FB
COMP
VDD
HDRV
SW
BOOT
LDRV
PAD
TPS40041
C94 1uF
C100 0.22uF
Q4A IRF7910pbf
Q4B IRF7910pbf
L12
1.2uH-74470001
1206
R84
0.025
I_MON_1V0_AVS_HIGH 49
CURRENT MONITOR
EVM_1V0_AVS 18,20,49
EVM_1V0_AVS
C58 100uF
C57 100uF
C54 NO-POP
EVM_3V3
R145 1K
Q7 BSS138
R121 17.8K
C104 560pF
R86 590
C59 820pF
R85 0
R87 10.0K
C101 33pF
TP12 TEST POINT
TP14 TEST POINT
TP18 TEST POINT
R134 NO-POP
R133 30.1K
R126 49.9K
R105 100K
R93 200K
R89 402K
R485 10K
R130 10K
R127 NO-POP
Q6 NTA4153NT1G
R486 10K
R119 10K
R106 NO-POP
Q5 NTA4153NT1G
R487 10K
R94 10K
R91 NO-POP
Q3 NTA4153NT1G
R488 NO-POP
R90 10K
R88 10K
Q2 NTA4153NT1G
GPIO3 MUST BE PULLED LOW TO ENABLE TIMER USED IN BOOTLOADER
14 GP0_IO0
14 GP0_IO1
14 GP0_IO2
14 GP0_IO3
SPECTRUM DIGITAL INCORPORATED
Title: NETRA EVM
Page Contents: POWER SUPPLY 1V0_AVS
Size:B
DWG NO 512872-0001
Revision: A
Date: Sunday, June 05, 2011
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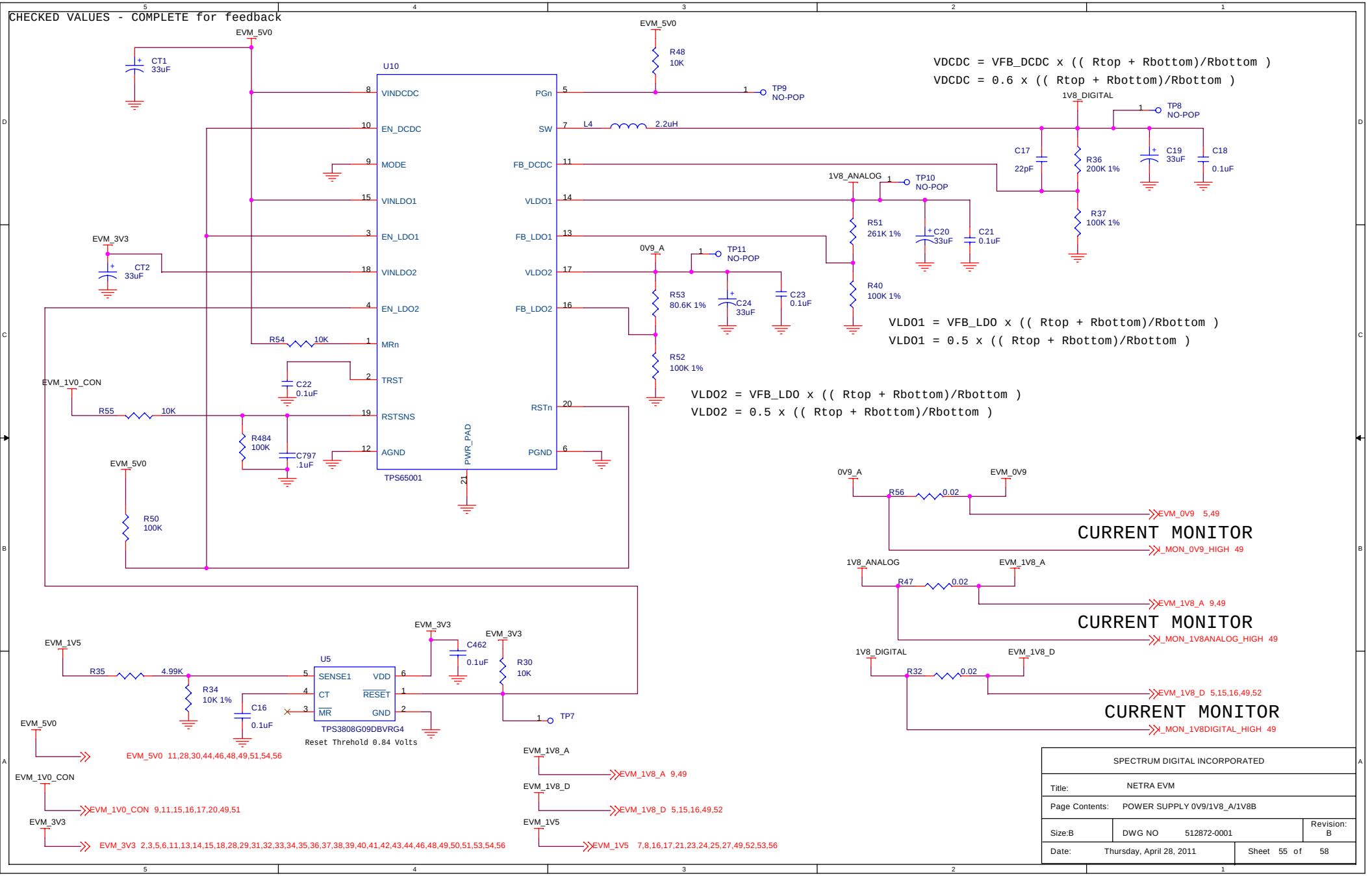
CHECKED VALUES - COMPLETE for feedback



EVM_5V0 11,28,30,44,46,48,49,51,54,56

EVM_1V0_CON 9,11,15,16,17,20,49,51

EVM_3V3 2,3,5,6,11,13,14,15,18,28,29,31,32,33,34,35,36,37,38,39,40,41,42,43,44,46,48,49,50,51,53,54,56

EVM_1V8_A 9,49

EVM_1V8_D 5,15,16,49,52

EVM_1V5 7,8,16,17,21,23,24,25,27,49,52,53,56

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: POWER SUPPLY 0V9/1V8_A/1V8B		
Size:B	DWG NO 512872-0001	Revision: B
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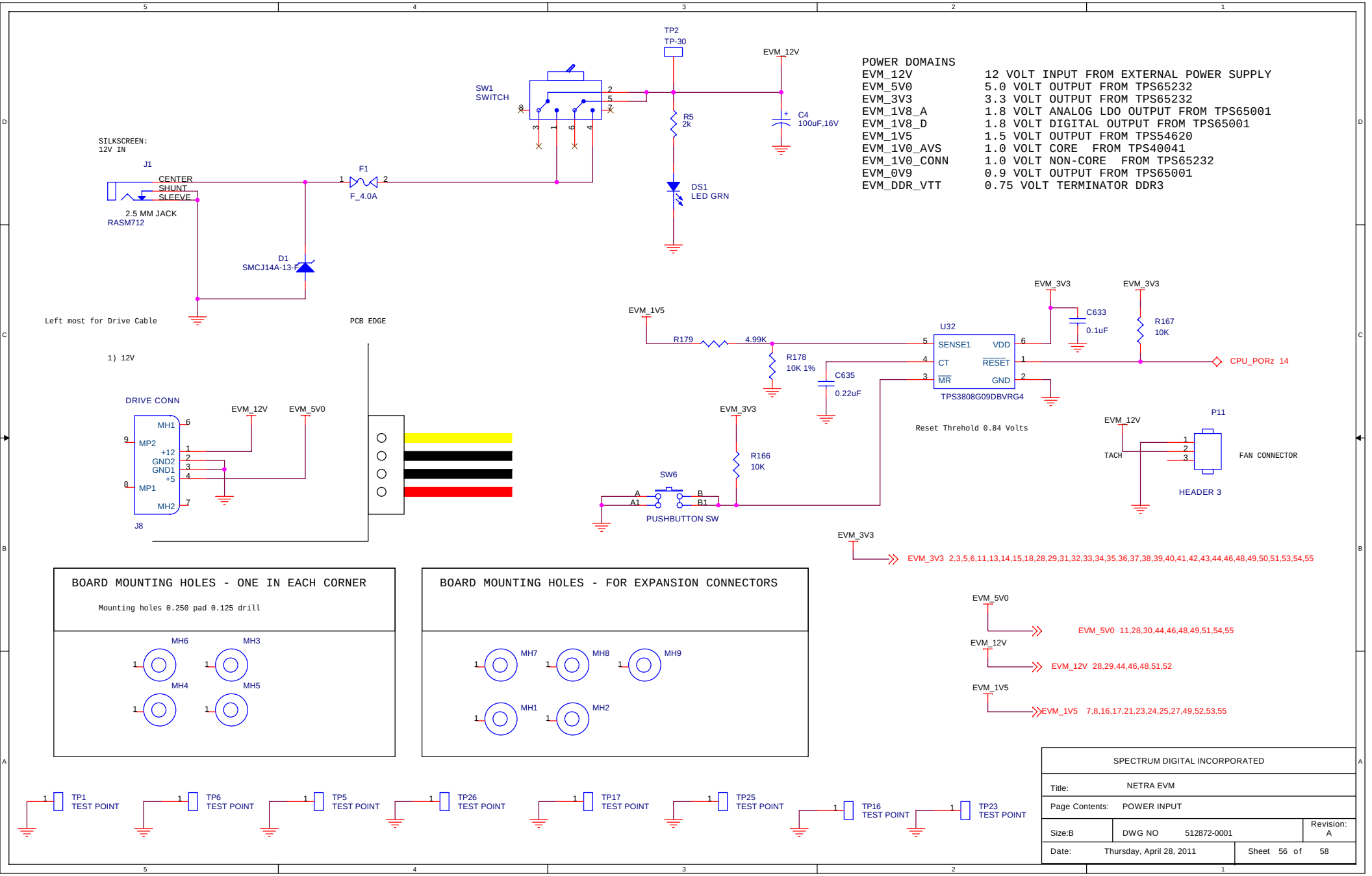

POWER DOMAINS

EVM_12V	12 VOLT INPUT FROM EXTERNAL POWER SUPPLY
EVM_5V0	5.0 VOLT OUTPUT FROM TPS65232
EVM_3V3	3.3 VOLT OUTPUT FROM TPS65232
EVM_1V8_A	1.8 VOLT ANALOG LDO OUTPUT FROM TPS65001
EVM_1V8_D	1.8 VOLT DIGITAL OUTPUT FROM TPS65001
EVM_1V5	1.5 VOLT OUTPUT FROM TPS54620
EVM_1V0_AVS	1.0 VOLT CORE FROM TPS40041
EVM_1V0_CONN	1.0 VOLT NON-CORE FROM TPS65232
EVM_0V9	0.9 VOLT OUTPUT FROM TPS65001
EVM_DDR_VTT	0.75 VOLT TERMINATOR DDR3

BOARD MOUNTING HOLES - ONE IN EACH CORNER

Mounting holes 0.250 pad 0.125 drill

BOARD MOUNTING HOLES - FOR EXPANSION CONNECTORS

TP1 TEST POINT
TP6 TEST POINT
TP5 TEST POINT
TP26 TEST POINT
TP17 TEST POINT
TP25 TEST POINT
TP16 TEST POINT
TP23 TEST POINT

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: POWER INPUT		
Size:B	DWG NO 512872-0001	Revision: A
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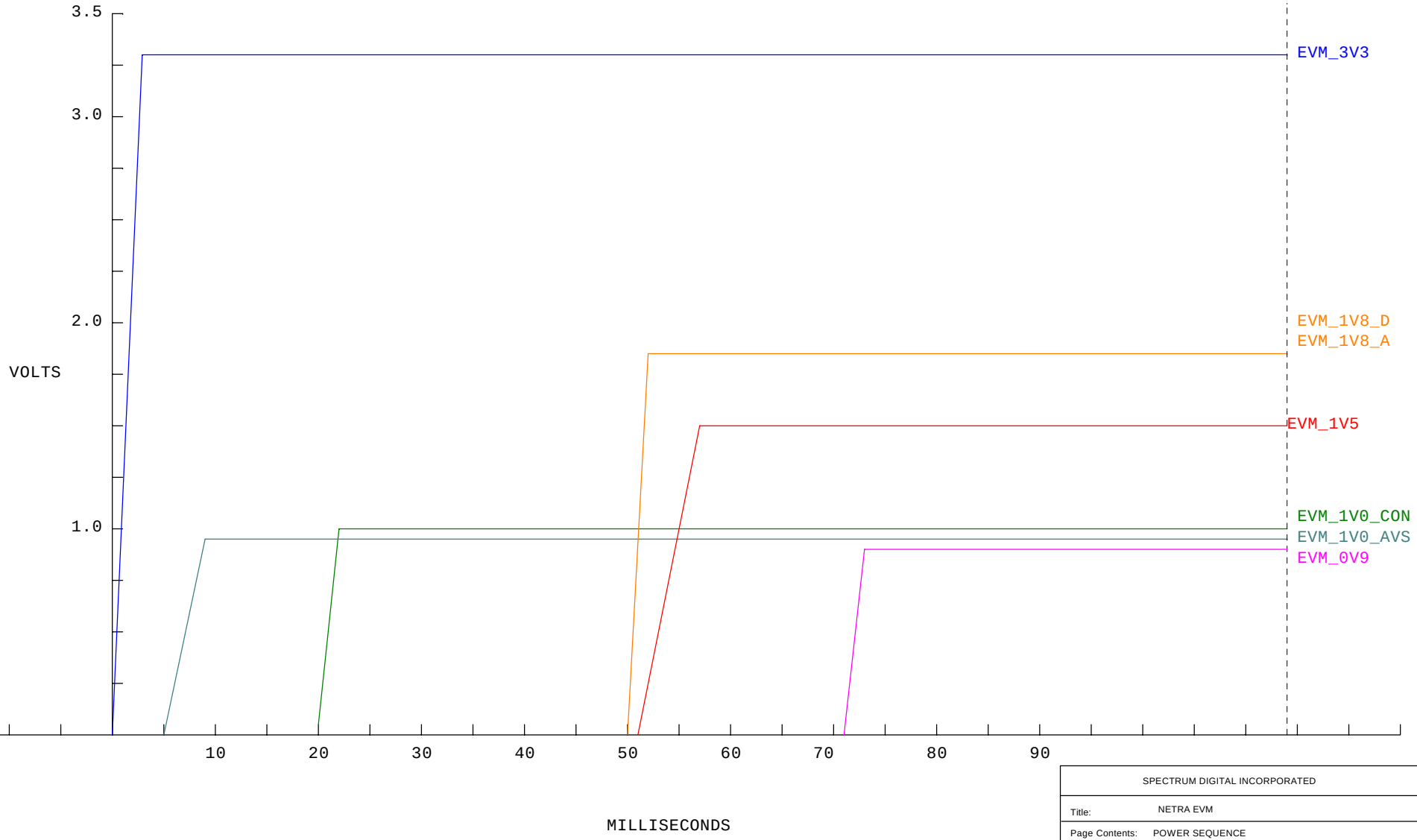

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: POWER SEQUENCE		
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REVISION A - ASSY 512870

BUILT ON PWB 512871 REVISION A
BUILT ON LOGIC 512872 REVISION A

ENGINEERING UNITS ONLY

REVISION B - ASSY 512870

BUILT ON PWB 512871 REVISION B
BUILT ON LOGIC 512872 REVISION B

UPDATED POWER SEQUENCING FROM REVISION A

REVISION C - ASSY 512870

BUILT ON PWB 512871 REVISION B
BUILT ON LOGIC 512872 REVISION B

INCREASED C635 TO .22uF FOR LONGER POWER ON RESET FIXED USB ISSUE

CHANGED R218 TO 1K TO FIX PCI RESET

REMOVED R232 AND CHANGED R74 TO 0 , TO HELP RAISE VT ENABLE VOLTAGE (STILL A BIT OUT OF SPEC, WILL FIX IN NEXT BOARD REVISION)

REVISION D - ASSY 512870

BUILT ON PWB 512871 REVISION B
BUILT ON LOGIC 512872 REVISION B

CHANGED AVS CIRCUITRY AND CPU HAS AVS ENABLED

REVISION E - ASSY 512870

BUILT ON PWB 512871 REVISION C
BUILT ON LOGIC 512872 REVISION C

UPDATED CAPS AROUND TPS65232 TO HELP WITH OVERVOLTAGE ON SWITCH OUTPUTS OF THE PART LAYOUT IMPROVEMENT
UPDATED VTT ENABLE TO RAISE ENABLE VOLTAGE PAST 1.7V MIN

SPECTRUM DIGITAL INCORPORATED		
Title: NETRA EVM		
Page Contents: REVISION HISTORY		
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