

Tested By: Jay Copti**Date: 08/30/2013****ASC (WFS) Style Detector Measured Parameters**

All transimpedance measurements are referred to plane of the physical output connector and include the effect of the voltage divider created by the 50 Ω termination. All notch rejection ratios are relative to the magnitude of the transimpedance at the respective RF detection center frequency of the given RF output port. The notation, Q1 to Q4 refers to the specific quadrant of a four section (Quad) diode.

Unit identification	Value
Photodetector serial number	S1301242
Detector schematic D# and revision	D1101614-v4
Diode element manufacturer and serial number	N/A

DC Parameters	Value
Quiescent DC current (amps at +18 VDC)	170.7 mA
Quiescent DC current (amps at -18 VDC)	239.7 mA
PD bias regulator output voltage (VDC)	5.04 VDC
RF opamp positive voltage regulator (VDC)	5.86 VDC
RF opamp negative voltage regulator (VDC)	-6.05 VDC
Audio opamp positive voltage regulator (VDC)	14.76 VDC
Audio opamp negative voltage regulator (VDC)	-15.42 VDC

DC readout transimpedance (Ω at differential output)	Value
Q1	998 Ω
Q2	997 Ω
Q3	997 Ω
Q4	997 Ω

Global RF parameters	Value
RF detection center frequency (MHz), f low	9 MHz
RF detection center frequency (MHz), f hi	45 MHz
Notch frequencies (MHz) used in design	18, 36, 54, 90 MHz

Q1 RF notch parameters	Value
Measured DC photocurrent (mA)	0.765 mA
f low, Rejection (dB) at notch1	-32.3 dB
f low, Rejection (dB) at notch2	-39.1 dB
f low, Rejection (dB) at notch3	-39.4 dB
f low, Rejection (dB) at notch4	-46.6 dB
f low, to f hi rejection	-33.8 dB
f hi, Rejection (dB) at notch1	-49.3 dB
f hi, Rejection (dB) at notch2	-35.2 dB
f hi, Rejection (dB) at notch3	-29.2 dB
f hi, Rejection (dB) at notch4	-44.4 dB
f hi, to f low rejection	-52.8 dB

Q2 RF notch parameters	Value
Measured DC photocurrent (mA)	0.342 mA
f low, Rejection (dB) at notch1	-32.1 dB
f low, Rejection (dB) at notch2	-38.2 dB
f low, Rejection (dB) at notch3	-37.2 dB
f low, Rejection (dB) at notch4	-40.0 dB
f low, to f hi rejection	-27.3 dB
f hi, Rejection (dB) at notch1	-51.0 dB
f hi, Rejection (dB) at notch2	-36.5 dB
f hi, Rejection (dB) at notch3	-28.5 dB
f hi, Rejection (dB) at notch4	-39.5 dB

f hi, to f low rejection	-54.2 dB
Q3 RF notch parameters	
Measured DC photocurrent (mA)	0.558 mA
f low, Rejection (dB) at notch1	-33.9 dB
f low, Rejection (dB) at notch2	-40.7 dB
f low, Rejection (dB) at notch3	-41.1 dB
f low, Rejection (dB) at notch4	-48.0 dB
f low, to f hi rejection	-34.1 dB
f hi, Rejection (dB) at notch1	-50.0 dB
f hi, Rejection (dB) at notch2	-35.5 dB
f hi, Rejection (dB) at notch3	-29.2 dB
f hi, Rejection (dB) at notch4	-44.2 dB
f hi, to f low rejection	-48.2 dB

Q4 RF notch parameters	
Measured DC photocurrent (mA)	0.174 mA
f low, Rejection (dB) at notch1	-27.8 dB
f low, Rejection (dB) at notch2	-32.7 dB
f low, Rejection (dB) at notch3	-30.1 dB
f low, Rejection (dB) at notch4	-31.0 dB
f low, to f hi rejection	-22.0 dB
f hi, Rejection (dB) at notch1	-53.1 dB
f hi, Rejection (dB) at notch2	-37.7 dB
f hi, Rejection (dB) at notch3	-28.1 dB
f hi, Rejection (dB) at notch4	-37.2 dB
f hi, to f low rejection	-62.0 dB

Q1 RF transimpedance	
Photocurrent from Calibrator (mA)	10.32 mA (LO) / 10.20 mA (HI)
Transimpedance (Ω) at f low	894 Ω

Transimpedance (Ω) at f hi	642 Ω	
Q2 RF transimpedance		
Photocurrent from Calibrator (mA)	10.30 mA (LO) / 10.20 mA (HI)	
Transimpedance (Ω) at f low	894 Ω	
Transimpedance (Ω) at f hi	662 Ω	
Q3 RF transimpedance		
Photocurrent from Calibrator (mA)	10.92 mA (LO) / 10.20 mA (HI)	
Transimpedance (Ω) at f low	1069 Ω	
Transimpedance (Ω) at f hi	657 Ω	
Q4 RF transimpedance		
Photocurrent from Calibrator (mA)	10.13 mA (LO) / 10.15 mA (HI)	
Transimpedance (Ω) at f low	974 Ω	
Transimpedance (Ω) at f hi	634 Ω	
Q1 Shot-noise limited input sensitivity		
f low (mA)	0.93 mA	
Dark Noise / Preamp Gain. For actual PD output noise, subtract RF preamplifier gain.	-122.8 dBm/Hz	20.4 dB
f hi (mA)	2.93 mA	
Dark Noise / Preamp Gain. For actual PD output noise, subtract RF preamplifier gain.	-120.7 dBm/Hz	20.4 dB
Q2 Shot-noise limited input sensitivity		
f low (mA)	0.95 mA	
Dark Noise / Preamp Gain. For actual PD output noise, subtract RF preamplifier gain.	-122.7 dBm/Hz	20.4 dB
f hi (mA)	3.23 mA	
Dark Noise / Preamp Gain. For actual PD output noise, subtract RF preamplifier gain.	-120.0 dBm/Hz	20.4 dB

Q3 Shot-noise limited input sensitivity	Value	
f low (mA)	0.98 mA	
Dark Noise / Preamp Gain. For actual PD output noise, subtract RF preamplifier gain.	-121.0 dBm/Hz	20.4 dB
f hi (mA)	2.93 mA	
Dark Noise / Preamp Gain. For actual PD output noise, subtract RF preamplifier gain.	-120.5 dBm/Hz	20.4 dB

Q4 Shot-noise limited input sensitivity	Value	
f low (mA)	1.01 mA	
Dark Noise / Preamp Gain. For actual PD output noise, subtract RF preamplifier gain.	-121.7 dBm/Hz	20.4 dB
f hi (mA)	3.00 mA	
Dark Noise / Preamp Gain. For actual PD output noise, subtract RF preamplifier gain.	-120.7 dBm/Hz	20.4 dB

Q1 test input transconductance	Value	
f low (mA/V)	2.65 mA/V	
f hi (mA/V)	4.30 mA/V	

Q2 test input transconductance	Value	
f low (mA/V)	2.65 mA/V	
f hi (mA/V)	4.30 mA/V	

Q3 test input transconductance	Value	
f low (mA/V)	2.66 mA/V	
f hi (mA/V)	4.20 mA/V	

Q4 test input transconductance	Value	
f low (mA/V)	2.70 mA/V	
f hi (mA/V)	4.30 mA/V	