Fiber Optic Testing for the Arista switch 7250QX-64

running the sfp_test.py file without any additional attenuations results in a successful packet transmission and reception(packet reception stabilizes after about 28 seconds of bring up time for the switch).

Attenuation table:

Instrument	Attenuation	Optical Source	Power Meter reading
Optical Light Source	1.3dB	-6.5dBm	-7.78dBm
Attenuator MN924A	3.8dB	-6.5dBm	-10.3dBm
Attenuator Model 2016 -M001	21.4dB !!!	-6.5dBm	-27.9dBm

Attenuator Model 2016-M001 could not be used for further testing as it exceeds the available attenuation threshold of the fibers even at 0dB. I've added Attenuator MN924A to the COM fiber coming into the direction of the switch. I'm using two transceivers, pink and yellow at 1270nm and 1330nm, respectively. When the attenuator is added to the COM of the fiber heading toward the switch(see diagram) the switch light corresponding to the yellow transceiver goes out. The attenuation on the variable attenuator is marked at smf 1.3/1.5micrometers, which is well within the range of our transceivers. Setting attenuation on the COM signal has given me problems before so I replaced the attenuator to be at the return path of the yellow transceiver, right before the signal enters the rx of the 1330nm yellow transceiver. 1330nm Results:

Attenuation	Duration	Bytes Transmitted	Packet loss	Bad crcs
8.3dB	126s		0	0
8.8dB	anytime	0	catastrophic loss	0

Conclusion: The yellow transceiver signal can be attenuated up to 8.3dB(4.5dB on the dial plus the 3.8dB inherent attenuation) before the onset of the catastrophic packet loss.

Next, I placed the variable attenuator at the rx of the 1270nm pink transceiver. After the 28 seconds of initial startup, no packets were lost even as the attenuation was turned up to ‘infinity’ . 1270nm results:

Attenuation	Duration	Bytes Transmitted	Packet loss	Bad crcs
8.3dB	300s		0	0
inf	300s		0	0

Same results with the blue 1290nm transceiver, attenuation was turned up to inf and the packets were still received uncorrupted.

Blue Pink Transceiver test with 3.5dB attenuation(7.3dB attenuation total)

Attenuation	Duration(sec)	Bytes Transmitted	Packet loss	Bad arcs
7.3dB	70866		0	1
7.5dB	300		catastrophic packet loss	

PDF File

Attenuation	Duration(seconds)	Bytes transmitted	Packet loss	Bad crcs
none	118110	137Gbits	0	0

Some conclusions:

The pink and blue transceivers can handle up to about 23 kilometers of fiber(10 km + 13km (7.3dB/5.6dB of 10km fiber ~ 1.3)).

Yellow and Green transceivers weren't able to handle any attenuation on the COM but were able to handle up to 8.3dB on the individual lines. No attenuation to the existing 10km of fiber resulted in no packet loss when left running for 33 hours.

*****Testing to do********
Measure dB for each transceiver after it passes through the attenuator(it seems to vary for different colors but it would be nice to log that).
Test the attenuation of the 10km of fiber once again. The transceivers appear to transmit at different power levels.