

# Panduit Corporation

## LETTER REPORT

**SCOPE OF WORK**

CRC error and power delivery performance testing of cabling configurations with PoE extender to the requirements of IEEE 802.3 using 100BASE-T protocol up to a length of 2,000 ft

**REPORT NUMBER**

103805776CRT-001

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## LETTER REPORT

25-March-2019

Intertek Report No. 103805776CRT-001

Intertek Project No. G103805776

Ms. Kim Schmidt  
Panduit Corporation  
6200 175<sup>th</sup> Street  
Tinley Park IL 60477  
USA

**Subject:** CRC error and power delivery testing of cabling configurations with PoE extender per IEEE 802.3 using 100BASE-T protocol up to a length of 2,000 ft

Dear Ms. Schmidt:

This letter report represents the *results of our evaluation of the above referenced product(s) to the requirements contained in the following document(s):*

*IEEE Std 802.3<sup>TM</sup>-2018: IEEE Standard for Ethernet, dated 31-August-2018*

### SECTION 1 SUMMARY

Intertek wishes to inform you that the CRC error and power delivery tests have been performed on your channel configurations. This testing was performed under project G103850776 and quotation Qu-00934187 issued 13-November-2018. Compliant results were obtained for the relevant test contained in section 40.4.2.3 of IEEE 802.3 for bit error rate performance of 100BASE-T protocol.

### SECTION 2 NON-CONFORMANCES

None

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**SECTION 3**  
**TEST SETUP AND SAMPLES DESCRIPTION**

The following figures illustrate the test setups. The data path in blue and the power path is in black. The power and data are operating simultaneously during the test.

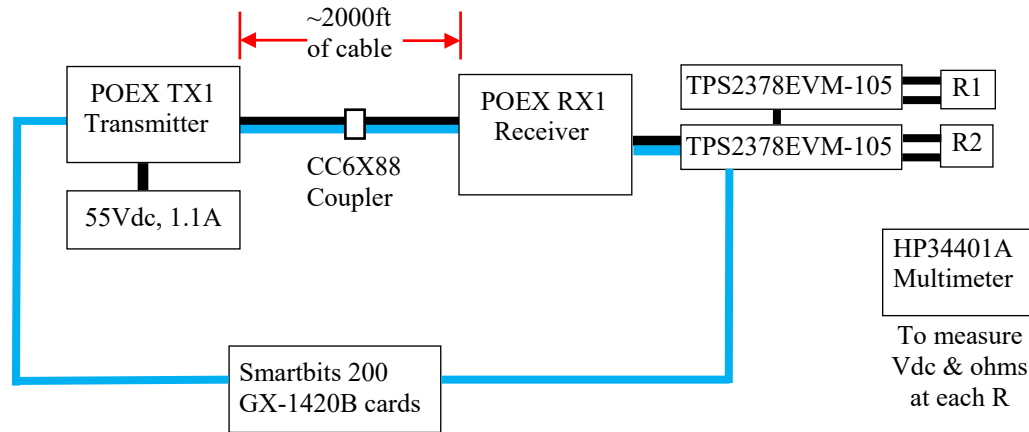


Figure 1: Test setup for the one-port receiver (dual signature PD).

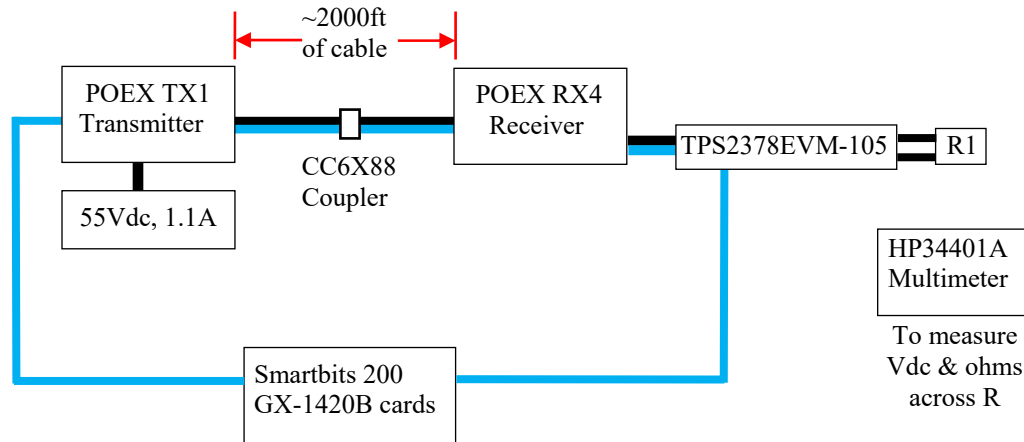


Figure 2: Test setup for the four-port receiver (single port tested).

A Smartbits 200 equipped with GX-1420B cards was used to generate 100BASE-T traffic (100Mbps). Then, power is added to the link under test using the PoE extender transmitter, part number POEX TX1. The data and power are carried over a length of approximately 2,000 ft of cable (2 reels of approximately 1,000 ft with a CC6X88 coupler in between). At the receiver end, test boards are used to separate the data and power. The multimeter is used to measure the received power and the Smartbits 200 to analyze for CRC errors. For each test, at least 2GB of data was transmitted in both directions with the Smartbits unit.

The test was repeated with these four (4) different cable types. The test specimens were supplied by the client and were production samples in undamaged condition.

Horizontal cable used	Manufacturer	Length of reel #1 (ft)	Length of reel #2 (ft)	Total length (ft)
PUO6C04BL	Panduit	1,000	1,000	2,000
PUR6004BU	Panduit	1,000	1,000	2,000
PUP6C04WH	Panduit	1,000	982	1,982
PUP6004BU	Panduit	1,000	998	1,982

Table 1: Cables under test during the testing.

**SECTION 4**  
**TEST RESULTS**

The following table summarizes the power delivery and CRC errors test results for the one-port receiver, p/n POEX RX1.

Horizontal cable used	Voltage at R1 (V)	Voltage at R2 (V)	R1 ( $\Omega$ )	R2 ( $\Omega$ )	Total power at PD (W)	CRC Errors count
PUO6C04BL	35.092	35.214	93.930	93.825	26.33	0
PUR6004BU	34.398	34.492	93.903	93.825	25.28	0
PUP6C04WH	34.640	34.530	93.847	93.819	25.49	0
PUP6004BU	35.092	35.214	93.930	93.825	25.21	0

Table 2: Test results for the one-port receiver (dual signature PD).

The following table summarizes the power delivery and CRC errors test results for the four-port receiver, p/n POEX RX4.

Horizontal cable used	Voltage at R1 (V)	R1 ( $\Omega$ )	Total power at PD (W)	CRC Errors count
PUO6C04BL	41.574	93.632	18.46	0
PUR6004BU	40.926	93.613	17.89	0
PUP6C04WH	41.051	93.615	18.00	0
PUP6004BU	40.891	93.611	17.86	0

Table 3: Test results for the four-port receiver (single port tested).

## SECTION 5 TEST EQUIPMENT USED

The following test equipment was used to conduct the testing.

Test equipment used	Model number	Serial number	Calibration due date
Spirent Portable Network Performance Analysis System	Smartbits 200	3646 Rev. B3	NCR <sup>1</sup>
Spirent Copper Gigabit Module	GX-1420B	N00490044	NCR <sup>1</sup>
Spirent Copper Gigabit Module	GX-1420B	N01370005	NCR <sup>1</sup>
Keysight multimeter	34401A	3146A02865	25-July-2019

Note 1: NCR means no calibration required

## SECTION 6 PROJECT STATUS & ACTION

Issuance of this letter report completes the CRC error and power delivery testing of these channel cabling configuration performance per IEEE 802.3 covered by Intertek Project No. G103806775 and quotation Qu-00934187. The test results are compliant with the standard and sections referred to on pages 2 and 3. The testing was witnessed at the client's facility located in Tinley Park, IL.

If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact your dedicated Intertek Project Manager.

Completed by:	David Ayers	Reviewed by:	Antoine Pelletier
Title:	Technician	Title:	Project Engineer
Signature:		Signature:	
Date:	25-March-2019	Date:	25-March-2019

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