# Magnetic Modjack Supports POE

## 1. INTRODUCTION

### 1.1. Purpose

Testing was performed on the TE Connectivity (TE) RJ45 Connector with 1G/2.5G/5G/10G Base-T Transformer(Based on TE part#, see Table1) to determine its conformance to the requirements of Product Specification 108-161622 Revision .

### 1.2. Scope

This report covers the electrical, mechanical, and environmental performance of RJ45 Connector with 1G/2.5G/5G/10G Base-T Transformer(Based on TE part#, see Table1). Testing was performed at the TE, This documentation is on file at and available in TE.com .

### 1.3. Conclusion

All part numbers listed in Table1 conformed to the electrical, mechanical, and environmental performance requirements of Product Specification 108-161622 Revision

### 1.4. Product Description

The RJ45 Connector with 1G/2.5G/5G/10G Base-T Transformer(Based on TE part#, see Table1) are mainly used in Wi-Fi 6, network communication devices and servers, etc. The product complies with FCC and IEEE specifications.

### 1.5. Test Specimens

The test specimens were representative of normal production lots, and the following part numbers were used for testing (see Table1).

| Test Group | Quantity | TE Part# | Description | Data Rate | T. Rise Rated Current | POE / non POE |
|---|---|---|---|---|---|---|
| 1-11 | 55 | 2496556-X | RJ45 W/MAGNET 1X1 1G POE 60W LED | 1G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496721-X | RJ45 W/MAGNET 1X4 1G POE 60W LED | 1G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496686-X | RJ45 W/MAGNET 2X1 1G POE 60W LED | 1G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496687-X | RJ45 W/MAGNET 2X2 1G POE 60W LED | 1G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496688-X | RJ45 W/MAGNET 2X4 1G POE 60W LED | 1G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2497310-X | RJ45 W/MAGNET 2X6 1G POE 60W LED | 1G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496689-X | RJ45 W/MAGNET 2X8 1G POE 60W LED | 1G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496722-X | RJ45 W/MAGNET 1X4 2.5G POE 60W LED | 2.5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2497272-X | RJ45 W/MAGNET 2X1 2.5G POE 60W LED | 2.5G BASE-T | 0.72A | 60W |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1-11 | 55 | 2496691-X | RJ45 W/MAGNET 2X2 2.5G POE 60W LED | 2.5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2497273-X | RJ45 W/MAGNET 2X4 2.5G POE 60W LED | 2.5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2497271-X | RJ45 W/MAGNET 2X6 2.5G POE 60W LED | 2.5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2497274-X | RJ45 W/MAGNET 2X8 2.5G POE 60W LED | 2.5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496723-X | RJ45 W/MAGNET 1X4 5G POE 60W LED | 5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496733-X | RJ45 W/MAGNET 2X1 5G POE 60W LIGHT PIPE | 5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496734-X | RJ45 W/MAGNET 2X2 5G POE 60W LIGHT PIPE | 5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496735-X | RJ45 W/MAGNET 2X4 5G POE 60W LIGHT PIPE | 5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2497277-X | RJ45 W/MAGNET 2X6 5G POE 60W LIGHT PIPE | 5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496736-X | RJ45 W/MAGNET 2X8 5G POE 60W LIGHT PIPE | 5G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496558-X | RJ45 W/MAGNET 1X1 10G POE 90W LED | 10G BASE-T | 1.0A | 90W |
| 1-11 | 55 | 2496724-X | RJ45 W/MAGNET 1X4 10G POE 60W LED | 10G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496737-X | RJ45 W/MAGNET 2X1 10G POE 60W LIGHT PIPE | 10G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496738-X | RJ45 W/MAGNET 2X2 10G POE 60W LIGHT PIPE | 10G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496739-X | RJ45 W/MAGNET 2X4 10G POE 60W LIGHT PIPE | 10G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2497278-X | RJ45 W/MAGNET 2X6 10G POE 60W LIGHT PIPE | 10G BASE-T | 0.72A | 60W |
| 1-11 | 55 | 2496740-X | RJ45 W/MAGNET 2X8 10G POE 60W LIGHT PIPE | 10G BASE-T | 0.72A | 60W |

**Table 1:** TE Part# list and Description

**TRANSMISSION PERFORMANCE**

| Items | Performance Requirement |
|---|---|
| LCR | OCL: 220uH MIN@100KHz/100mV With 15mA DC Bias For(CHANNEL1,2)<br>350uH MIN@100KHz/100mV With 8mA DC Bias For(CHANNEL1,2)<br>TR: 1:1±2% @ 100kHZ/0.1V<br>C: 1000PF @ 1kHZ/1V<br>OPEN/SHORT<br>DCR:PHY:1.2 Ω max<br>CABLE: 1.0Ωmax |
| Insertion Loss | -1.2dB MAX from 0.3 MHz to 100 MHz |
| Return Loss | -18dB MIN from 1 MHz to 30 MHz<br>-16dB MIN from 30 MHz to 60 MHz<br>-12dB MIN from 60 MHz to 80 MHz<br>-10dB MIN from 80 MHz to 100 MHz |
| Near-End Cross-Talk (NEXT) | -30dB MIN from 1 MHz to 100 MHz |
| Common- to- Common Mode Attenuation | -30dB MIN from 1 MHz to 100 MHz |

Table 2: Part# 2496556-X / 2496721-X / 2496686-X / 2496687-X / 2496688-X / 2497310-X / 2496689-X (1X1/1X4/2X1/2X2/2X4/2X6/2X8 1G) TRANSMISSION PERFORMANCE

| Items | Performance Requirement |
|---|---|
| | OCL: 120uH MIN@100KHz/100mV With 19mA DC Bias For(CHANNEL1,2,3,4);<br>180uH MIN@100KHz/100mV With 8mA DC Bias For(CHANNEL1,2,3,4)<br>TR: 1:1±2% @ 100kHZ/0.1V<br>CP：1000PF @ 1kHZ/1V<br>OPEN/SHORT<br>DCR:PHY:1.0Ω max<br>CABLE: 0.8Ωmax |
| Insertion Loss | -1.0 dB Max from 1MHz to 100 MHz<br>-1.5 dB Max from 100MHz to 125 MHz |
| Return Loss | -18dB MIN from 1 MHz to 40 MHz<br>-18+15LOG(f/40MHz)dB MIN from 40 MHz to 200 MHz |
| Near-End Cross-Talk (NEXT) | -35dB MIN from 1 MHz to 40 MHz<br>-35+15LOG (f/40MHz)dB MIN from 40 MHz to 125 MHz |
| Common Mode Rejection Radio | -30dB MIN from 1 MHz to 200 MHz |

Table 3: Part# 2496722-X / 2497272-X / 2496691-X / 2497273-X / 2497271-X / 2497274-X (1X4/2X1/2X2/2X4/2X6/2X8 2.5G) TRANSMISSION PERFORMANCE

| Items | Performance Requirement |
|---|---|
| LCR | OCL:120uH MIN@100KHZ/0.1v 19mA DC bias<br>180uH MIN@100KHZ/0.1v 8mA DC bias<br>TR: 1:1±2% @ 100kHZ/0.1V<br>CP：1000PF @ 1kHZ/1V<br>OPEN/SHORT<br>DCR:PHY:1.0 Ω max<br>CABLE: 0.8Ωmax |
| Insertion Loss | -0.5dB MAX@1MHz-50MHz<br>-1.0dB MAX@50MHz-125MHz<br>-2.0dB MAX@125MHz-200MHz<br>-2.5dB MAX@200MHz-250MHz |
| Return Loss | -20dB MIN@1MHz-40MHz;<br>-20+15LOG (f/40MHz)dB MIN@40MHz-250MHz |
| Near-End Cross-Talk (NEXT) | -25dB MIN@1MHz-125MHz;<br>-20dB MIN@125MHz-250MHz |
| Common Mode Rejection Radio | -23dB MIN@1MHz-250MHz |

Table 4: Part# 2496723-X (1X4 5G) TRANSMISSION PERFORMANCE

| Items | Performance Requirement |
|---|---|
| LCR | OCL:120uH MIN@100KHZ/0.1v 19mA DC bias<br>TR: 1:1±2% @ 100kHZ/0.1V<br>CP：1000PF @ 1kHZ/1V<br>OPEN/SHORT<br>DCR:PHY:1.0 Ω max<br>CABLE: 0.8Ωmax |
| Insertion Loss | -0.5dB MAX@1MHz-50MHz<br>-1.0dB MAX@50MHz-125MHz<br>-2.0dB MAX@125MHz-200MHz<br>-2.5dB MAX@200MHz-250MHz |
| Return Loss | -20dB MIN@1MHz-50MHz;<br>-20+15LOG (f/40MHz)dB MIN@50MHz-250MHz |
| Near-End Cross-Talk (NEXT) | -25dB MIN@1MHz-125MHz;<br>-20dB MIN@125MHz-250MHz |
| Common Mode Rejection Radio | -20dB MIN@1 MHz-250 MHz |

Table 5: Part# 2496733-X / 2496734-X / 2496735-X / 2497277-X / 2496736-X (2x1/2x2/2x4/2x6/2x8 5G) TRANSMISSION PERFORMANCE

| Items | Performance Requirement |
|---|---|
| | OCL:120uH MIN@100KHZ/0.1v 15mA DC bias<br>TR: 1:1±2% @ 100kHZ/0.1V<br>CP: 1000PF @ 1kHZ/1V<br>OPEN/SHORT<br>DCR:PHY:0.8Ω max<br>CABLE: 0.6Ωmax |
| Insertion Loss | -3.0dB Max from 1MHz to 500 MHz |
| Return Loss | -22dB MIN@1MHz-100MHz;<br>-22+20.75LOG(f/100)dB MIN@100MHz-500MHz |
| Near-End Cross-Talk (NEXT) | -28 dB MIN from 1 MHz to 100 MHz<br>-19 dB MIN from 100 MHz to 500 MHz |
| Common- to- Common Mode Attenuation | -30dB MIN from 1 MHz to 100 MHz<br>-20dB MIN from 100 MHz to 500 MHz |

Table 6: Part# 2496558-X / 2496724-X / 2496737-X / 2496738-X / 2496739-X / 2497278-X / 2496740-X (1X1/1X4/2X1/2X2/2X4/2X6/2X8 10G) TRANSMISSION PERFORMANCE

1.6. Qualification Test Sequence

| **Test Items** | **Test Groups (a)** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K |
| | Test Sequence (b) | | | | | | | | | | |
| Examination of product | 1,5 | 1,5 | 1,5 | 1,6 | 1,7 | 1,6 | 1,4 | 1,5 | 1,4 | 1,3 | 1,10 |
| Dielectric withstanding Voltage | | | | | | | | | | | 2 |
| Insulation Resistance | | | | | | | | | | | 3 |
| Contact Resistance | | | | | | 2,5 | | 2,4 | | | |
| LCR | 2,4 | 2,4 | 2,4 | 2,5 | 2,6 | | | | | | 4 |
| IL | | | | | | | | | | | 5 |
| RL | | | | | | | | | | | 6 |
| NEXT | | | | | | | | | | | 7 |
| CMR | | | | | | | | | | | 8 |
| CM to DM | | | | | | | | | | | 9 |
| Temperature Rise | | | | | 5 | | | | | | |
| Mechanical Vibration | | | | 3 | | | | | | | |
| Mechanical shock | | | | 4 | | | | | | | |
| Ring test | | | | | 4 | | | | | | |
| Durability | | | | | | 4 | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ConnectorMating,Unmatig Force | | | | | | 3 | | | | | |
| Normal force | | | | | | | | | | 2 | |
| Plug Retention Force | | | | | | | 2 | | | | |
| Jack Retention to PCB | | | | | | | 3 | | | | |
| Plug Typs | | | | | 3 | | | | | | |
| Thermal shock | | | 3 | | | | | | | | |
| Salt Spray | | | | | | | | 3 | | | |
| Humidity/temperature cycling | 3 | | | | | | | | | | |
| Temperature life | | 3 | | | | | | | | | |
| Solderability | | | | | | | | | 2 | | |
| Resistance to soldering heat | | | | | | | | | 3 | | |
| Sample Quantity(pcs) | Single port Connector 5pcs/Test Group；Multi port connector 3pcs/Test Group | | | | | | | | | | |

Table 7: Test Items&Groups

***NOTE***
*(a) See Table 7.*
*(b) Numbers indicate sequence which tests were performed.*

1.7. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15°C to 35°C

Relative Humidity: 20% to 80%

## 2. SUMMARY OF TESTING

2.1. TEST RESULTS:

| Group A | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| A.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| A.03 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| A.04 | Humidity-Temperature Cycle | -- | No damage | OK | OK | OK | OK | OK | PASS |
| A.05 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| A.06 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

| Group B | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| B.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| B.03 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| B.04 | Temperature life | -- | No damage | OK | OK | OK | OK | OK | PASS |
| B.05 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| B.06 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

| Group C | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| A.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| A.03 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| A.04 | Thermal shock | -- | No damage | OK | OK | OK | OK | OK | PASS |
| A.05 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| A.06 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

| Group D | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| D.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| D.03 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| D.04 | Mechanical Vibration | -- | Discontinuity less than 1 μs;<br>No damage | OK | OK | OK | OK | OK | PASS |
| D.05 | Mechanical shock | | Discontinuity less than 1 μs;<br>No damage | OK | OK | OK | OK | OK | PASS |
| D.06 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| D.07 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

| Group E | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| E.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| E.03 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| E.04 | Plug Typs | | No damage | OK | OK | OK | OK | OK | PASS |
| E.05 | Ring test | -- | Discontinuity less than 1 μs; No damage | OK | OK | OK | OK | OK | PASS |
| E.06 | Temperature Rise | ℃ | 30℃ Max | NA | | | | | |
| E.07 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| E.08 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

| **Group F** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| F.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| F.03 | Contact Resistance | mΩ | 20 mΩ Max | 11.84 | 10.72 | 12.33 | 10.94 | 11.86 | PASS |
| F.04 | Mating force | N | 30N Max | 3.12 | 3.60 | 3.72 | 3.54 | 3.42 | PASS |
| | Unmating force | | | 1.14 | 1.20 | 1.28 | 1.16 | 1.21 | PASS |
| F.05 | Durability | -- | No damage | OK | OK | OK | OK | OK | PASS |
| F.06 | Contact Resistance | mΩ | 40 mΩ Max | 12.36 | 11.84 | 12.79 | 11.35 | 12.48 | PASS |
| F.07 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

| **Group G** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| G.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| G.03 | Plug Retention Force | -- | 5kgf Min | OK | OK | OK | OK | OK | PASS |
| G.04 | Jack Retention to PCB | -- | 5kgf Min | OK | OK | OK | OK | OK | PASS |
| G.05 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

| **Group H** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| H.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| H.03 | Contact Resistance | mΩ | 20 mΩ Max | 11.63 | 10.94 | 12.53 | 11.75 | 12.16 | PASS |
| H.04 | Salt spray | -- | No damage | OK | OK | OK | OK | OK | PASS |
| H.05 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| H.06 | Contact Resistance | mΩ | 40 mΩ Max | 12.84 | 13.55 | 12.97 | 13.26 | 12.94 | PASS |

| Group I | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| I.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| I.02 | Solderability | -- | 95% of immersed area must show no voids, pin holes | OK | OK | OK | OK | OK | PASS |
| I.03 | Resistance to Soldering heat | -- | No damage | OK | OK | OK | OK | OK | PASS |
| I.04 | Examination of Product | -- | Meet the drawing requirements | OK | OK | OK | OK | OK | PASS |

| Group J | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| J.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| J.03 | Normal force | g | 50gf/pin minimum | 58.42 | 62.08 | 61.43 | 56.82 | 63.79 | PASS |
| J.04 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

| Group K | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sep. | TEST ITEM | Unit | REQUIREMENTS | Sample#1 | Sample#2 | Sample#3 | Sample#4 | Sample#5 | RESULTS |
| J.01 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |
| J.03 | Dielectric withstanding Voltage | -- | No discharge or breakdown | OK | OK | OK | OK | OK | PASS |
| J.04 | Insulation Resistance | -- | 500MΩmin | OK | OK | OK | OK | OK | PASS |
| J.05 | LCR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| J.06 | IL | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| J.07 | RL | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| J.08 | NEXT | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| J.09 | CMR | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| J.10 | CM to DM | -- | Meet specification requirements | OK | OK | OK | OK | OK | PASS |
| J.11 | Examination of Product | -- | Meet the drawing requirements | Normal | | | | | PASS |

Table 8: Test Result

## 3. TEST METHODS

3.1 Examination of Product
Per EIA-364-18，Visual inspection of samples
Test condition: Meet requirements of product drawing.

3.2 Dielectric withstanding Voltage
Specimens were subjected to Dielectric withstanding Voltage test in accordance with EIA-364-20.
Test condition: Apply a voltage between transformer primary and secondary. Voltage: 2250 VDC, Duration: 1 minute; between shield and contacts. Voltage: 2250 VDC, Duration: 1 minute.
Requirement: No discharge or breakdown.

3.3 Insulation Resistance
Specimens were subjected to Insulation Resistance test in accordance with EIA-364-21.
Test condition: Apply a voltage between transformer primary and secondary. Voltage: 500 VDC, Duration: 2 minutes; between shield and contacts. Voltage: 500 VDC, Duration: 2 minutes.
Requirement: 500MΩmin

3.4 Contact Resistance
Specimens were subjected to Contact Resistance test in accordance with EIA-364-23.
Test condition: 20mV Maximum, 100mA apply to measure contact resistance by dry circuit.
Requirement: Initial is 20 milliohm Max. After test is 40 milliohm Max

3.5 LCR comprehensive performance test
Test condition: Test with the LCR tester TH2819XB
Performance Requirement: See Table 2 to Table 6

3.6 Insertion Loss
Specimens were subjected to Insertion Loss test in accordance with EIA-568-A
Test condition: Use a four port E5071C network analyzer to test the IL parameters of each channel
Performance Requirement: See Table 2 to Table 6

3.7 Return Loss
Specimens were subjected to Return Loss test in accordance with EIA-568-A
Test condition: Use a four port E5071C network analyzer to test the RL parameters of each channel
Performance Requirement: See Table 2 to Table 6

3.8 Cross Talk
Specimens were subjected to Cross Talk test in accordance with EIA-568-A
Test condition: Use a four port E5071C network analyzer to test the NEXT CTK between channels 1 and 2, 2 and 3, and 3 and 4, as well as the CTK of each adjacent 2 port channel
Performance Requirement: See Table 2 to Table 6

3.9 Common Mode Rejection Radio
Specimens were subjected to Common Mode Rejection Radio test in accordance with EIA-568-A
Test condition: Use a four port E5071C network analyzer to test the CMRR parameters of each channel
Performance Requirement: See Table 2 to Table 6

3.10 Commonmode to Differential Mode Attenuation
Specimens were subjected to Commonmode to Differential Mode Attenuation test in accordance with EIA-568-A
Test condition: Use a four port E5071C network analyzer to test the CM to DM parameters of each channel
Performance Requirement: See Table 2 to Table 6

3.11 Temperature Rise
Specimens were subjected to Temperature Rise test in accordance with EIA-364-70 Method Ⅰ
Test condition：Ambient Conditions Still air at 25℃.Stabilize at a single current level until 3readings at 5 minute intervals are within1℃；4pairs of differential lines connected in series with a rated current (current value refer to Table 1) for internal temperature rise testing

Requirement:：30℃ maximum temperature rise.

3.12 Mechanical Vibration
Specimens were subjected to Vibration test in accordance with EIA-364-28.
Test condition：Solder each of plug and receptacle connector to the P.C. Board, then mate them together. Place the mated connector firmly on the vibrator and apply the following condition shall be done，passing DC 100mA current during the test.
Frequency: Change 20Hz – 500Hz within one minute
Amplitude: 1.52mm
Acceleration:3.10G’S
Direction: along three perpendicular directions
Time: 15 minutes in each direction，45minutes in total
Requirement: Discontinuity less than 1 μs, No damage.

3.13 Mechanical Shock
Specimens were subjected to Mechanical Shock test in accordance with EIA-364-28.
Test condition：Accelerate Velocity：490m/s2 （50G）; Waveform：Half-sine shock plus
Pulse width: 11milli-second.
Number of impacts: 3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 drops
Requirement: Discontinuity less than 1 μs, No damage.

3.14 Ring Test
Rotating instantaneous breaking test on the sample according to the figure
Test condition：Mating connectors at weight: 2lbs.
cable and vertical centerline angle:45º
Plug height:6.02mm.
Rotate counterclockwise and clockwise 3 cycles/direction
Speed:4 RPM
Requirement: Discontinuity less than 1 μs, No damage.

3.15 Durability
Specimens were subjected to Durability test in accordance with EIA-364-9.
Test condition: cycle rate: 10-20cycles per minute, Testing cycles: 750cycles.
Requirement: No damage after testing,

3.16 Connector mating unmating Force
Specimens were subjected to Connector mating unmating Force test in accordance with EIA-364-13
Test condition: at a maximum rate of 25±3mm per minute, Mating & Unmating force
Requirement:30N Max

3.17 Normal force
Specimens were subjected to Normal force test in accordance with EIA-364-04
Test condition：Terminal at maximum rate 25±3mm Per minute and measure the normal force.
Requirement: 50gf/pin minimum

3.18 Plug Retention Force
Specimens were subjected to Plug Retention Force test in accordance with EIA-364-98.
Test condition: Put the connector and plug in a vertical position, hang a 5Kgf object at the bottom of the plug for 60s±5s
Requirement: The samples were not damaged after testing.

3.19 Jack Retention to PCB
Specimens were subjected to Jack Retention to PCB test in accordance with EIA-364-29
Test condition: Put the connector and plug in a vertical e position, hang a 5kgf object at the bottom of the plug for 60s ±5s

Requirement:5kg Min, Connector shall not Come apart from PCB

3.20 Plug Types
Specimens were subjected to Plug types test in accordance with product specification.
Test condition: use 1 types of plug
Requirement: Meet Standard RJ45 Jack Height:5.89-6.15mm

3.21 Thermal Shock
Specimens were subjected to Thermal Shock test in accordance with EIA-364-32
Test condition: Duration: 10 cycles. Temperature: -40℃(30 min.), +85℃(30 min.).
Test other items when placed at room temperature for 1-2h after the test.
Requirement: No physical damage.

3.22 Humidity-Temperature Cycle
Specimens were subjected to Humidity-Temperature Cycle test in accordance with EIA-364-31B, Method Ⅳ.
Test condition: Per EIA-364-31, Subject samples to 10 cycles (10 days) between 25 ℃ and 65 ℃ with 90% to 95% RH.
Test other items when placed at room temperature for 1-2h after the test.
Requirement: No physical damage.

3.23 Salt Spray
Specimens were subjected to Salt Spray test in accordance with EIA-364-26B
Test condition: Temperature 35±2℃, Salt‐solution（5±1）%, Humidity（95~98）%(R.H.), PH value: 6.5-7.2.
Duration: 48H.
Requirement: 24 hour salt spray test, no corrosion found on the welding feet
48 hour salt spray test, no corrosion found in the thick gold area of the gold needle terminal

3.24 Temperature life
Specimens were subjected to Temperature life test in accordance with EIA-364-17
Test condition：Subject mated samples to 85℃ for 250 hours.
Test other items when placed at room temperature for 1-2h after the test
Requirement: Meet visual requirements, No evidence physical damage;

3.25 Solderability
Specimens were subjected to Solderability test in accordance with EIA-364-52
Test condition: Test temperature: 245℃ ± 5℃.
Test time: 5±0.5 seconds.
Requirement: 95% of immersed area must show no voids or pin holes.

3.26 Resistance to Soldering heat
Specimens were subjected to Resistance to Soldering heat test in accordance with EIA-364-56
Test condition: PIP: 260℃ 30S number of time: 2 times

# 4. APPENDIX

## 4.1. Table List