

PRODUCT SPECIFICATION

PS-R766

Rev. A

ORIGINAL

Title: RJ-MAG Connector Product Specification

Part Number: RJMG21202XXXXXX

Description: RJmag 1 x 2-Port W/ LED

Revisions Control

Rev.	ECN Number	Originator	Approval	Issue Date
A	Initial Release	Tony Lee	Nealson Wang	Oct. 15,2007



Product Specification Origination

Originator:	Date:	Checked By:	Date:	Approved By:	Date:
Tony Lee	10/15 '07	Jason Zhan	10/15 '07	Nealson Wang	10/15 '07

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PRODUCT SPECIFICATION**PS-R766****Rev. A****1.0 SCOPE**

This specification defines the detailed requirements for the Amphenol RJMG2012 series, single port with transfer module connectors.

2.0 APPLICABLE DOCUMENTS

The following document, of the latest issue in effect at the time of performance of the qualification tests, shall form a part of this specification to the extent specified herewith.

Federal

QQ-B-626	Brass; bar, plate, rod, strip, flat wire and special shaped sections
QQ-B-750	Bronze, phosphor; bar, plate, rod, sheet, strip, flat wire, and structural and special shaped sections.
QQ-N-290	Plating, Nickel (electrodeposited)
EIA-364	Test methods for electrical connectors
MIL-STD-1344A	Test methods for electrical connectors
IEC 603-7	Detail specification for connectors, 8 way, with accessed quality
FCC PART 68	Subpart F - connectors
MIL-STD-202	Test Methods Standard, Electronic and Electrical Component Parts
IEC-512	Test methods for electrical connectors
EIA/TIA 568	Commercial Building Cabling Standard
UL-STD-94	Tests for flammability of plastic materials for parts in devices and appliances.
IEEE 802.3	Local Area Networks: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specification.

3.0 REQUIREMENTS**3.1 Materials****3.1.1 Insulator**

- Glass-filled thermoplastic , PA6T, per UL94V-0 rated
- Color-black

3.1.2 RJ contacts

- Phosphor bronze per QQ-B-750 ,C5191
- Mating area: 30 microinches gold
- Termination area: 100 microinches minimum of tin
- Underplate: 50 microinches minimum of nickel

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3.1.3 Data pins

- Brass per QQ-C-268, C2680
- Finish :100 microinches minimum of tin
- Underplated:50 microinches minimum of nickel

3.1.4 PC board

- 2-layer and FR-4 Laminate, per UL 94V-0

3.1.5 Capacitor

- dip type 1000PF/2KV

3.1.6 Resistor

- 8 pins 4R 75 ohm 5%

3.1.7 Shielded

- Copper Alloy, C2680R-H
- Finish: 50 microinches nickel plated.
- Shield of Ground Leg: pre-soldering: Sn/0.7Cu

3.1.8 LED

Right: Green with 250ohm resistor

Left: Green with 250ohm resistor

3.2 Mechanical

3.2.1 Mating Force

- 2.1 Kgs maximum

3.2.2 Unmating Force

- 2.1 Kgs maximum without the latch.

3.2.3 Durability

- 750 cycles minimum at 30 microinches minimum of gold plated

3.3 Electrical

3.3.1 Contact Resistance

- Initial: 100 milliohms maximum
- ΔR : 50 milliohms maximum

3.3.2 Insulation Resistance: 1000M Ω minimum at 500VDC for 60 seconds

3.3.3 Hipot Vrms : 2250VDC/1500VAC

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3.3.4 Turn ratio: 1:1

Parameter	Performance Requirement
Turns ratio-transmit transformer	1:1 +/-5%
Turns ratio-receive transformer	1:1 +/-5%
Insertion loss (Rx/Tx)	-0.8dB Max. @ 0.1-100 MHz -1.2dB Max. @ 100-125 MHz
Return loss (Rx/Tx)	-16dB Min. @ 0.5-40 MHz -12+20log(f/80Mhz)dB Min. @ 40-100 MHz,
CM – CM rejection	-30dB Min. @ 100KHz-100MHz
CM – DM rejection	-35dB Min. @ 100KHz-100MHz
Cross talk isolation (Rx/Tx)	-30+20log(f/100Mhz)dB Min. @ 100KHz-100 MHz
Hipot (Isolation)	1.5 KVrms AC
OCL	350uH Min @ 100KHz, 8mA DC bias 100mV

3.4 Environmental

3.4.1 Operating Temperature: -0°C to +70°C

3.4.2 Humidity: per MIL-STD-1344A, method 1002.2, type II

3.4.3 Thermal Shock: per MIL-STD-1344A, method 1003.1, test condition A

3.4.4 Thermal Aging: per MIL-1344A, Method 1005.1

3.4.5 Vibration: per MIL-STD-1344A, method 2005.1, test condition I

3.4.6 Mechanical Shock: per MIL-STD-1344A, method 2004.1, test condition C

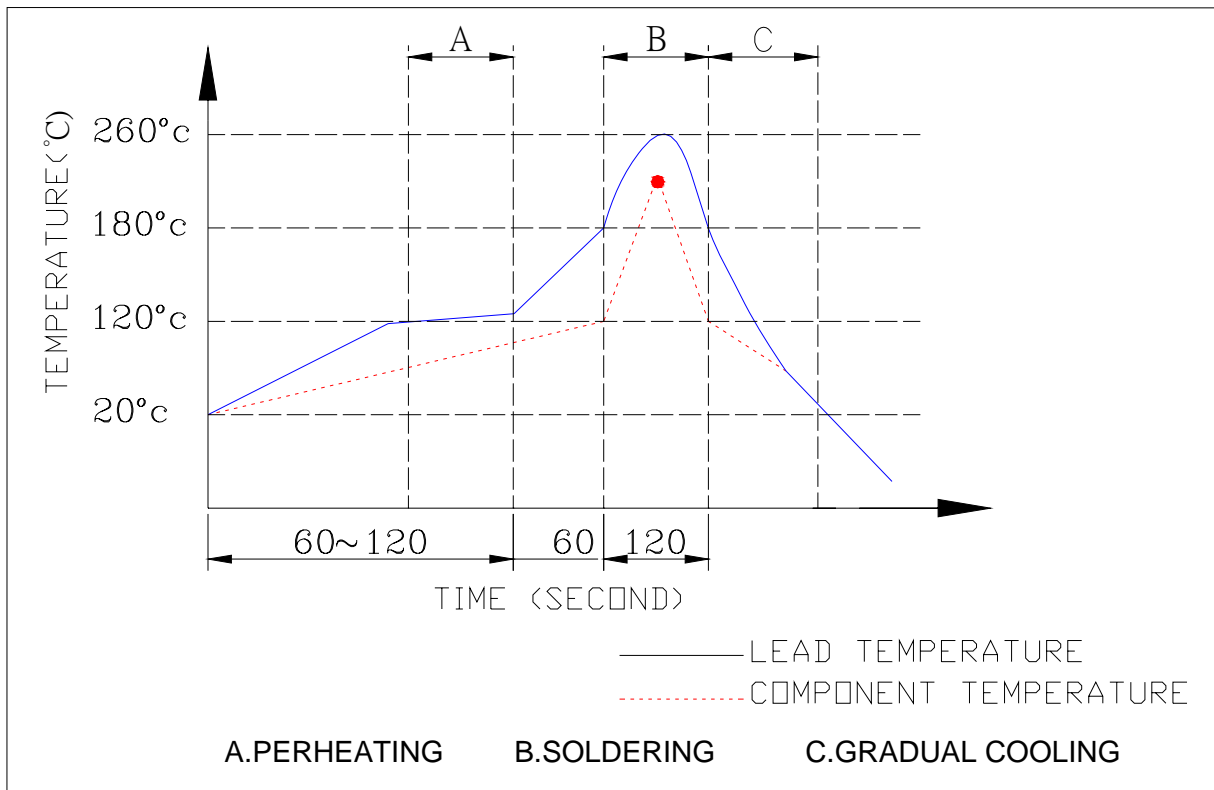
3.4.7 Salt Spray: 24 hours per MIL-STD-1344A, method 1001.1, test condition B

3.5 Packaging and Shipping

Per Amphenol Company Operation procedure # COP-15-1

4.0 Profile of Wave-Soldering

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SUGGEST IR-REFLOW CURVE

- (1) Tip Temperature: 260±5°C
- (2) Tip Temperature Time: 5 sec. Max.
- (3) The Melting Point of Sn96.5/Ag3/Cu0.5: 217 °C

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This test description shows the tests and the order in which they will be carried out and the requirements to be met in each test.

Unless otherwise specified, mated sets of connectors shall be tested. All the mated set of connector samples will be equally divided and assigned to each of five remaining TEST GROUPS. Care shall be taken to insure that the mated samples remain together during the completed test sequence, i.e. when unmating is necessary for a certain test; the same connectors shall be re-mated for the subsequent testing within that GROUP.

Before testing commences, the connectors shall be stored for at least 24 hours in the non-inserted state under normal climatic conditions for testing.

In the following test sequence tables, where an ANSI/EIA test is specified without a letter suffix, the latest approved version of that shall be used.

4.2 Test Samples Preparation

Samples are removed at random from Amphenol Final Inspection (current production) and are prepared according to the requirements and severity of the tests to be conducted as specified in ANSI/EIA 364 or other referenced documents.

4.3 Test Sequences & Performance**4.3.1 Test Group 1: Mechanical Mate/Unmate Forces**

Number of Samples: 2 pcs

Test Seq.	Test	Requirements
	Description	
1.1	Visual Inspection	No defects that would impair normal operations. No deviation from dimensional tolerances.
1.2	Mating Force	Per MIL-STD-1344A, Method 2013.1 Mating force: 2.1 kilograms maximum per connector
1.3	Unmating Force	Per MIL-STD-1344A, Method 2013.1 Unmating force: 2.1 kilograms minimum per connector without latch
1.4	Durability	Per EIA-364-09B Mated and unmated connectors for 750 cycles at a rate of 300 +/-50 cycles per hour. There shall be no physical damage and shall meet requirements of subsequent tests.

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1.5	Mating Force	Per MIL-STD-1344A, Method 2013.1 Mating force: 2.1 kilograms maximum per connector
1.6	Unmating Force	Per MIL-STD-1344A, Method 2013.1 Unmating force: 2.1 kilograms minimum per connector without latch
1.7	Temperature Life (Thermal Aging)	MIL-STD-1344A, Method 1005.1 There shall be no physical damage and shall meet requirements of subsequent tests
1.8	Mating Force	Per MIL-STD-1344A, Method 2013.1 Mating force: 2.1 kilograms maximum per connector
1.9	Unmating Force	Per MIL-STD-1344A, Method 2013.1 Unmating force: 2.1 kilograms minimum per connector without latch

4.3.2 Test Group 2: Mated Environmental
Number of Samples: 2 pcs

Test Seq.	Test	Requirements
	Description	
2.1	Contact Resistance	Per EIA-364-23 100mA maximum test current and 50mV maximum open circuit voltage <100 mΩ
2.2	Durability	Per EIA-364-09B Mated and unmated connectors for 750cycles at a rate of 300 +/-50 cycles per hour. There shall be no physical damage and shall meet requirements of subsequent tests.
2.3	Contact Resistance	Per EIA-364-23 100mA maximum test current and 50mV maximum open circuit voltage $\Delta R < 50 \text{ m}\Omega$
2.4	Thermal Shock	per MIL-STD-1344A, method 1003.1, test condition A 5 cycles between -55°C to 85°C , 30 minutes duration at both temperature extremes. There shall be no physical damage and shall meet requirements of subsequent tests

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2.5	Contact Resistance	Per EIA-364-23 100mA maximum test current and 50mV maximum open circuit voltage $\Delta R < 50 \text{ m}\Omega$
2.6	Temperature Life (Thermal Aging)	MIL-STD-1344A, Method 1005.1 There shall be no physical damage and shall meet requirements of subsequent tests
2.7	Contact Resistance	Per EIA-364-23 100mA maximum test current and 50mV maximum open circuit voltage $\Delta R < 50 \text{ m}\Omega$
2.8	Cyclic Humidity	Per MIL-STD-1344A, method 1002.2, type II There shall be no physical damage and shall meet requirements of subsequent tests
2.9	Contact Resistance	Per EIA-364-23 100mA maximum test current and 50mV maximum open circuit voltage $\Delta R < 50 \text{ m}\Omega$

4.3.3 Test Group 3: Mated Mechanical
Number of Samples: 2 pcs

Test Seq.	Test	Requirements
	Description	
3.1	Contact Resistance	Per EIA-364-23 100mA maximum test current and 50mV maximum open circuit voltage $< 100 \text{ m}\Omega$
3.2	Vibration	per MIL-STD-1344A, method 2005.1, test condition I No electrical discontinuity greater than $1 \mu\text{s}$. Shall meet visual requirements, no physical damage.
3.3	Contact Resistance	Per EIA-364-23 100mA maximum test current and 50mV maximum open circuit voltage $\Delta R < 50 \text{ m}\Omega$

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3.4	Mechanical Shock	Per MIL-STD-1344A, method 2004.1, test condition A Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks). The electrical load condition shall be 100mA maximum for all contacts.
3.5	Contact Resistance	Per EIA-364-23 100mA maximum test current and 50mV maximum open circuit voltage $\Delta R < 50 \text{ m}\Omega$

4.3.4 Test Group 4: Insulator Integrity Number of Samples: 2 pcs

Test Seq.	Test	Requirements
	Description	
4.1	Dielectric Withstanding Voltage	Per EIA-364-20 Test voltage 1000 VDC +/- 50V at sea level for 1 minute, , test between adjacent contacts of mated/ unmated connectors. There shall be no flashover, no sparkover, no excess leakage and no breakdown. Current leakage shall not be than 0.5 mA.
4.2	Thermal Shock	per MIL-STD-1344A, method 1003.1, test condition A 5 cycles between -55°C to 85°C , 30 minutes duration at both temperature extremes. There shall be no physical damage and shall meet requirements of subsequent tests
4.3	Dielectric Withstanding Voltage	Per EIA-364-20 Test voltage 1000 VDC +/- 50V at sea level for 1 minute, , test between adjacent contacts of mated/ unmated connectors. There shall be no flashover, no sparkover, no excess leakage and no breakdown. Current leakage shall not be than 0.5 mA.

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4.4	Insulation Resistance	Per EIA-364-21 Test voltage 100 VDC +/- 10V, between adjacent contacts of mated/ unmated connectors. 1000 MΩ minimum initial. 50 MΩ minimum final.
4.5	Cyclic Humidity	Per MIL-STD-1344A, method 1002.2, type II There shall be no physical damage and shall meet requirements of subsequent tests
4.6	Insulation Resistance	Per EIA-364-21 Test voltage 100 VDC +/- 10V, between adjacent contacts of mated/ unmated connectors. 1000 MΩ minimum initial. 50 MΩ minimum final.

4.3.5 Test Group 5: Electrical Performance

Number of Samples: 2 pcs

Test Seq.	Test	Requirements
	Parameter	
5.1	OCL	400uH Min. @ 100KHz, 8mA DC bias
5.2	HI – POT	AC 1500 Vrms at 60 Sec DC 2250 V
5.3	Insertion loss	Rx, Tx pair shall less: -1.0dB Max. @ 1-100 MHz
5.4	Return loss	Rx, Tx pair shall more: -18dB Min. @ 1-30 MHz -16dB Min. @ 30-60 MHz -10dB Min. @ 60-100 MHz
5.5	Common mode to common mode rejection	Rx, Tx pair shall more: -38dB Min. @ 1-100 MHz
5.6	Common mode to differential mode rejection	Rx, Tx pair shall more: -35dB Min. @ 1-100MHz
5.7	Crosstalk	Rx, Tx pair shall more: -35dB Min. @ 0-100 MHz

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- Product Drawing T263- RJMG21202XXXXXX, RJmag , 1x2Port W/LED