

Detail specification for radio frequency connectors (type SMB) — Unsealed, soldered, captive contact, 50 Ω , snap-on couplings — Full assessment level

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 26 and a back cover.

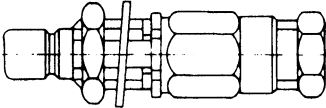
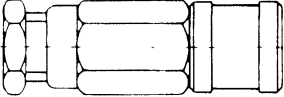
This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments

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ELECTRONIC COMPONENTS OF ASSESSED QUALITY: DETAIL SPECIFICATION	
Typical outlines, styles 06-03 and 07-02  Style 06-03 Style 07-02 For other styles and dimensions see Appendix A.	RADIO FREQUENCY CONNECTOR
	FULL ASSESSMENT LEVEL
	TYPE SMB UNSEALED, SOLDERED, CAPTIVE CONTACT 50 Ω (SNAP-ON COUPLING)

1 Physical characteristics

1.1

Connector style	Description	Mass (grams) max.	Connector variant	Cables BS 2316/(URM no.)
01-02	Connector coupler, free, straight	3.5	matched	
02-02	Connector fixed, straight, 4-hole fixing, solder bucket	3.0	AB AC AE	110 95 109, 116
05-02	Connector fixed, single hole mounting, solder bucket	1.5	Unmatched	
06-03	Connector free, straight	3.5	ZZ	Equipment wire
07-02	Connector fixed, straight, single hole mounting, cable outlet	3.1		
08-03	Connector free, right angle	5.0		
10-02	Connector fixed, right angle, 4-hole fixing solder bucket			
12-02	Connector fixed, right angle, single hole mounting, solder bucket	5.0		
13-02	Connector fixed, straight, printed circuit board mounting	4.0		
14-02	Connector fixed, right angle, printed circuit board mounting	5.5		
18-04	Adaptor connector fixed, straight, single hole mounting	3.0		
18-05	Adaptor connector fixed, straight, single hole mounting	5.0		
98-12	Cover, protective, for connector fixed and connector coupler, free	3.0		
99-12	Cover, protective, for connector free	3.0		

1.2 Body finish

Gold (Au), Cadmium (Cd), Bright Nickel alloy (Ni-).

NOTE Galvanic corrosion may occur when connectors with dissimilar finishes are mated.

1.3 Centre contact finish. Gold (Au).

2 Ratings (including limiting conditions of use) and characteristics

Nominal characteristic impedance	50 Ω	
	Matched variants	Unmatched variants
<u>Reflection coefficient (and v.s.w.r.) maximum</u>	Up to 4 GHz	
a) Straight cable outlet styles	0.19 (1.46)	Not measured
b) Right-angle styles and adaptors, straight	0.25 (1.69)	
c) Solder-bucket styles	Not measured	
Capacitance (maximum) (solder-bucket styles only)	5 pF	
R.F. shunt resistance (minimum) (solder-bucket styles only)	1 M Ω at 30 MHz	
Working voltage (d.c. or a.c. peak)	Inner conductor to shell	
a) At sea level	500 V	
b) At altitude of 20 km (44 mbar ^a)	100 V	
Proof voltage (d.c. or a.c. peak)		
a) At sea level	1 500 V	
b) At altitude of 20 km (44 mbar)	300 V	
Current rating (maximum)	0.25 A	
Power rating ^b	—	

^a 1 mbar = 10^2 N/m² = 100 Pa

^b As power is dependent on frequency and cable type, for information on power rating refer to the manufacturer.

	Before conditioning	After conditioning
Contact resistance, maximum	5 mΩ	10 mΩ
Outer conductor continuity, maximum	2 mΩ	5 mΩ
Insulation resistance, minimum	5 GΩ	500 MΩ
Vibration severity		
Frequency range	10 Hz to 500 Hz	
Displacement	0.75 mm	} Cross over at approximately 60 Hz
Acceleration	98 m/s ²	
Duration	30 min	
Shock severity	Not applicable	
Bump severity	4 000 at 390 m/s ²	
Climatic category	55/155/21	
Resistance to test prod damage	Not applicable	
Impact severity (free specimens only)	5 impacts at 1 m	
Engagement and separation forces	Engagement, 60 N maximum Separation, 60 N maximum – 8 N minimum	

3 Related documents

BS 2011, “Methods for the environmental testing of electronic components and electronic equipment”.

BS 2316, “Radio-frequency cables”.

BS 6000, “Guide to the use of BS 6001. Sampling procedures and tables for inspection by attributes”.

BS 6001, “Sampling procedures and tables for inspection by attributes”.

BS 9000, “General requirements for electronic components of assessed quality”.

BS 9210, “Radio frequency connectors of assessed quality: generic data and methods of test”.

4 Additional information (Not for inspection purposes)

For piercings for metal panels and overlap dimensions see Appendix B.

5 Marking of the connectors and packages

The marking of the component and package shall be in accordance with **1.1.6** of BS 9210. Assembly and cable mounting instructions shall be included in every individual package of connector piece parts.

6 Ordering information

In accordance with the requirements of **1.1.15** of BS 9210, orders for connectors and their accessories covered by this specification shall contain the following information.

- The number of this specification i.e. BS 9210 N007.
- Style as in 1.1, e.g. 01–02.
- Variant as in 1.1, e.g. AB
- Climatic category, i.e. 55/155/21.
- Body finish, e.g. gold (Au).
- Any additional information, e.g. fixing hole details, any special marking, or packaging requirements.

Example. BS 9210 N007/01 – 02/AB/55/155/21/Au.

7 Control drawings

Control drawings, reference BS 9210 N007-2, are available from BSI.

NOTE Normally required by manufacturers and inspectorates only.

8 Inspection requirements

8.1 Unless otherwise stated in the table of tests the provisions of **8.2**, **8.3** and **8.4** of this specification shall apply.

8.2 Contact resistance and outer conductor continuity for each mated pair shall be measured using the “light current” method specified in **1.2.4.3.3** 1) of BS 9210. When testing the outer conductor continuity of panel mounted styles, where the connector shell is electrically connected to a mounting plate (see **1.2.1.1** of BS 9210), the continuity test shall include a measurement between cable braid(s) and the mounting plate. The initial contact resistances for each mated pair of contacts and any outer conductor continuity shall not exceed 2 mΩ respectively. Resistances after conditioning shall not exceed 10 mΩ and 5 mΩ respectively.

8.3 Insulation resistance measurements between inner conductor and shell shall be made at 500 ± 50 V d.c.

8.4 Voltage proof measurements shall be made at $1\,500 \pm 100$ V d.c. or peak a.c. (40 Hz to 60 Hz). There shall be no breakdown or flashover.

8.5 For tests in subgroups C3, C5, D3 (iii), and D3 (v), involving exposure to the upper temperature category, it is essential that cable having a compatible temperature capability shall be used.

8.6 Due to the nature of the accessories referred to in note 1 of this specification at the end of this table, certain tests are not possible, e.g. contact resistance tests are not applicable to protective covers styles 98-12 and 99-12 either before or after conditioning.

8.7 Samples submitted to tests which are marked as “(D)” shall not be accepted for release under BS 9000 (see **2.6.5** of BS 9000-1).

8.8 The tests or measurements prescribed in BS 9210 after environmental conditioning are omitted between the environmental conditionings where these form part of a sequence in accordance with **1.2.6** of BS 9210. The appropriate tests are included at the end of each test sequence.

Inspection		BS 9210:1971 reference and conditions of test	Performance requirements
GROUP A		To be applied on a sampling basis lot-by-lot. Subgroups A2, A3 and A4 are not applicable	
<u>Subgroup A0</u>		100 % inspection (see note 1 of this specification)	
Visual examination	1.2.2 1)	Either on assembled components or on contents of packages	As in 1.2.2 1) of BS 9210
<u>Subgroup A1</u>		<u>Inspection level S-3, AQL 1.5 %</u> (see note 1 of this specification)	
Visual examination	1.2.2 2)	Either on assembled components or on contents of packages	As in 1.2.2 2) of BS 9210
<u>Subgroup A5</u>			
CTR information	1.1.11	Attributes information for subgroup A1	
GROUP B		To be applied on a sampling basis lot-by-lot. Subgroups B3, B5, B6 and B7 are not applicable. (The specimens used for subgroups B1 and B2 may also be used for subgroup B4). Connectors shall be assembled in accordance with the instructions supplied by the manufacturer	
NOTES See end of table.			

Inspection		BS 9210:1971 reference and conditions of test	Performance requirements
GROUP B (Cont'd)			
<u>Subgroup B1</u>		<u>Inspection level S-3, AQL 1 %</u>	
Compatibility-mechanical (assurance)	1.2.5.9 2)	See note 1 of this specification	As in 1.2.5.9 2) of BS 9210
<u>Subgroup B2</u> (D)		<u>Inspection level S-3, AQL 4 %</u>	
Soldering	1.2.6.1	Soldering iron method Bit size 3 mm Iron size (b) Inner contact for all styles; also mounting spills for styles 13-02 and 14-02	There shall be no damage or loosening of parts
Insulation resistance	1.2.4.6	As in 8.3 of this specification	≥ 5 GΩ
Voltage proof	1.2.4.7	As in 8.4 of this specification	As in 8.4 of this specification
<u>Subgroup B4</u> (D)		<u>Inspection level S-3, AQL 4 %</u>	
Engagement and separation	1.2.5.5	See note 1 of this specification	As in clause 2 of this specification
Gauge retention force	1.2.5.2	See control drawings BS 9210 N007-2, for details of gauges	As in 1.2.5.2 of BS 9210
<u>Subgroup B8</u>			
CTR information	1.1.11	Attributes information for subgroups B1, B2, and B4	
GROUP C		Applied at three-monthly intervals except when group D tests are due. In addition the issue number of the manufacturer's drawing list shall be checked against that in the qualification approval application or certificate. Specimens used for subgroup C1 may also be used for subgroups C3 and C5. Subgroups C2 and C4 are not applicable	
<u>Subgroup C1</u>		<u>Inspection level S-3, AQL 1 %</u>	
Outline dimensions and mass	1.2.3.1	See note 1 of this specification	As specified in 1.1 and Appendix A of this specification
<u>Subgroup C3</u> (D)		<u>Inspection level S-3, AQL 4 %</u> 8.5, 8.8, notes 1 and 2 of this specification apply to tests in this subgroup. Connectors shall be assembled as for group B.	
NOTES See end of table.			