SLOVENSKI STANDARD

SIST EN 2591-221:2008

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Aeronavtika - Elementi elektriļ nih in optiļ nih povezav - Preskusne metode - 221. del: Koeficient stojnega vala (VSWR)

Aerospace series - Elements of electrical and optical connection - Test methods - Part 221: Voltage Standing Wave Ratio (VSWR)

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 221: Stehwellenverhältnis

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 221 : Ratio d'Ondes Stationnaires

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Aerospace series - Elements of electrical and optical connection - Test methods - Part 221: Voltage Standing Wave Ratio (VSWR)

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 221 : Ratio d'Ondes Stationnaires

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 221: Stehwellenverhältnis

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 2591-221:2007) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2008, and conflicting national standards shall be withdrawn at the latest by June 2008.

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1 Scope

This standard specifies a measurement method of VSWR, in the required frequency bandwidth of coax contacts or connectors with characteristic impedance.

It shall be used together with EN 2591-100.

The measurement is carried out according to vectorial method using *"S"* parameters (see definition in Annex A).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2591-100, *Aerospace series — Elements of electrical and optical connection — Test methods — Part 100: General.*

3 Preparation of specimens

Method "A"

This method is applicable, when a calibrated adapter, for the series of connectors or contacts to be tested, exists.

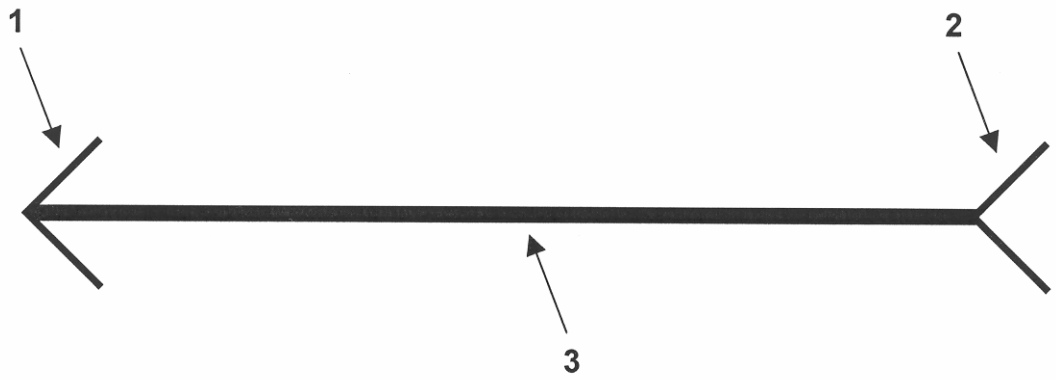
The sampling shall include, for each specified cable, one section of coaxial cable with device under test at both ends.

The section is constituted/described only as follows (see Figure 1):

— (600 ± 2,5) mm of coaxial cable

— 1 male coaxial device

— 1 female coaxial device



Key

1 Male coaxial device
2 Female coaxial device
3 Coaxial cable; Lg. = (600 ± 2,5) mm

Figure 1

Method "B"

This method is applicable, when a calibrated adapter, for the series of connectors or contacts to be tested, exists.

The sampling shall include for each specified cable, one section of coaxial cable with standard connectors at both end, and the device under test in the middle of the section of the cable.

The section is constituted/described only as follows (see Figure 2):

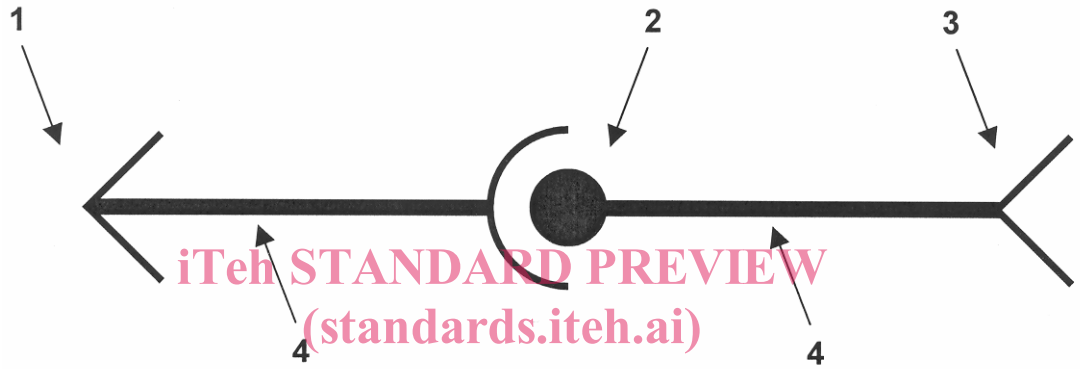
— (600 ± 5) mm of coaxial cable divided in 2 (2 × 300 mm)

— 1 male coaxial standard connector (SMA, Nor TNC type …)

— 1 female coaxial standard connector (SMA, Nor TNC type …)

— 1 male coaxial device

— 1 female coaxial device



Key

1 Coaxial (Std) male connector
2 Device under test
3 Coaxial (Std) female connector
4 Coaxial cable; Lg. = 2 × (300 ± 2,5) mm

Figure 2

4 Apparatus

The apparatus shall comprise measuring equipment which includes (see Figure 3):

— vector network analyser

— calibration kit

— standard precision adapters

— a 75 Ω kit of transformation, to perform measurement from 50 Ω network analyser, when it is necessary.

5 Procedure

5.1 Calibration

Select frequency range to be measured and number of sampling points.

Carry out the complete calibration of network analyser, Part 1 and Part 2 (*"S"* Parameters, S_{11}, S_{12}, S_{21} and S_{22}) using the calibration kit according to instructions specified by network analyser manufacturer.

5.2 Measurement

Method A

Connect the section in measure on network analyser, using if necessary, standards accurate adapters, and perform the measurement. The VSWR of one coaxial device is determined by using the temporal response (time domain) and a function called "GATE" to isolate the coaxial device, which must be connected to the standard precision adapter.

Method B

Connect the section in measure on network analyser, using if necessary, standards accurate adapters, and perform measurement. The VSWR of the two mated coaxial devices is determined by using the temporal response (time domain) and a function called "GATE" to isolate the two mated coaxial devices, from the coaxial cable.

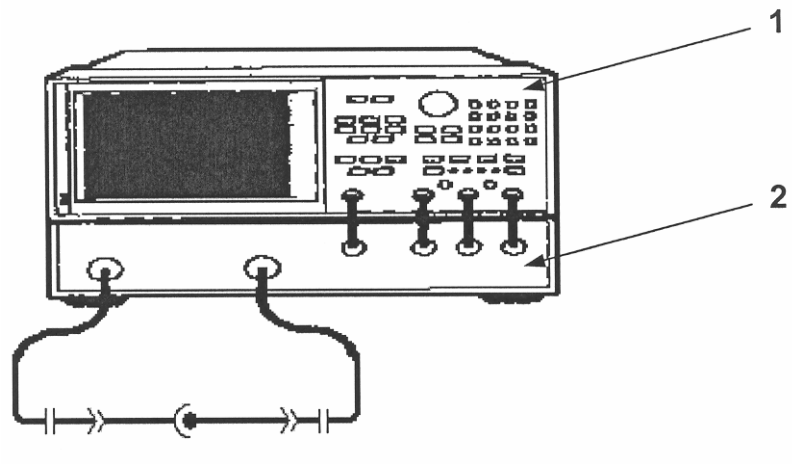
6 Requirement

The Voltage Standing Wave Ratio (VSWR) does not exceed specified values in the product standard.

7 Detail to be specified

The following items shall be specified:

— coaxial devices (contact or connector) part numbers
— coaxial cables part number
— standard coaxial connectors part number
— network analyser, manufacturer, type and serial number
— frequency range
— sampling point number
— standard precision adapter part number
— measurement impedance (50 Ω or 75 Ω)
— for coaxial contact, connection length
— wiring instruction and tooling
— for thread coupling connectors, the coupling torque of the coupling ring.



Key

1 Vector network analyser

2 RF generator and *"S"* parameter test set

Legend

Precision hermaphroditic connectors

Standard Precision Adapters

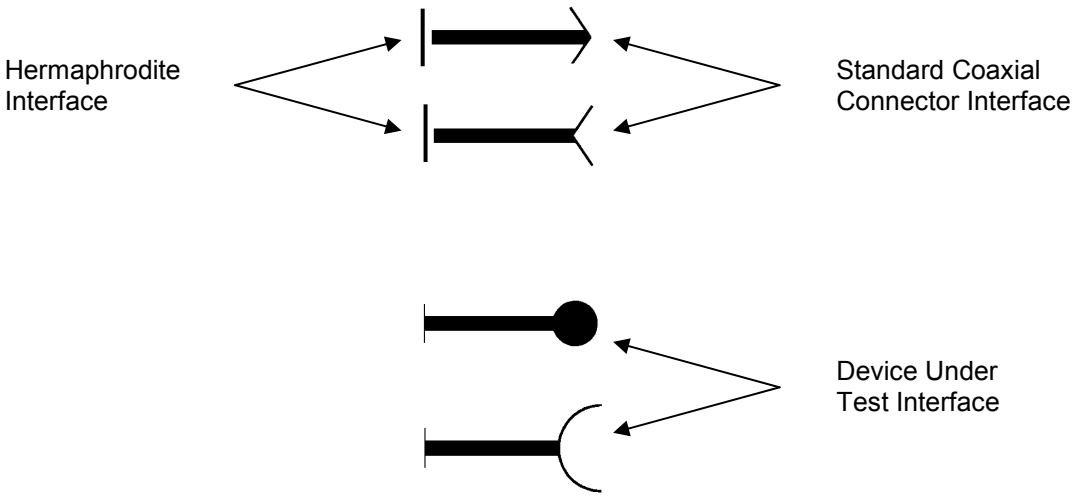


Figure 3