DIN EN 16603-10-03:2014-12 (E)

Space engineering - Testing; English version EN 16603-10-03:2014

Contents

Page

Foreword **5**

Introduction **6**

1 Scope **8**

2 Normative references **10**

3 Terms, definitions and abbreviated terms **12**

3.1 Terms from other standards 12

3.2 Terms specific to the present standard 18

3.3 Abbreviated terms 24

4 General requirements **27**

4.1 Test programme 27

4.2 Development test prior qualification 27

4.3 Test management 28

4.3.1 General 28

4.3.2 Test reviews 28

4.3.3 Test documentation 32

4.3.4 Anomaly or failure during testing 33

4.3.5 Test data 33

4.4 Test conditions, tolerances, and accuracies 33

4.4.1 Test conditions 33

4.4.2 Test tolerances 34

4.4.3 Test accuracies 36

4.5 Test objectives 38

4.5.1 General requirements 38

4.5.2 Qualification testing 38

4.5.3 Acceptance testing 39

4.5.4 Protoflight testing 39

4.6 Retesting 40

4.6.1 Overview 40

4.6.2 Implementation of a design modification after completion of qualification 40
4.6.3 Storage after protoflight or acceptance testing 40
4.6.4 Space segment element or equipment to be re-flown....41
4.6.5 Flight use of qualification Space segment element or equipment 42

5 Space segment equipment test requirements 43
5.1 General requirements 43
5.2 Qualification tests requirements....45
5.3 Acceptance test requirements 53
5.4 Protoflight test requirements 59
5.5 Space segment equipment test programme implementation requirements 66
5.5.1 General tests....66
5.5.2 Mechanical tests 69
5.5.3 Structural integrity tests....72
5.5.4 Thermal tests 73
5.5.5 Electrical/RF tests 75
5.5.6 Mission specific test 76

6 Space segment element test requirements....78
6.1 General requirements 78
6.2 Qualification test requirements 79
6.3 Acceptance test requirements 86
6.4 Protoflight test requirements 91
6.5 Space segment elements test programme implementation requirements 98
6.5.1 General tests....98
6.5.2 Mechanical tests 102
6.5.3 Structural integrity tests....107
6.5.4 Thermal tests 108
6.5.5 Electromagnetic tests....110
6.5.6 Mission specific tests 111
6.5.7 Crewed mission specific tests 111

7 Pre-launch testing 113

Annex A (normative) Assembly, integration and test plan (AITP) - DRD....115

Annex B (normative) Test specification (TSPE) - DRD....118

Annex C (normative) Test procedure (TPRO) - DRD 121

Annex D (informative) Guidelines for tailoring and verification of this standard 124

Bibliography 128

Figures

Figure 3-1: Space system breakdown 13

Figure 3-2: Space segment examples 17

Figure 5-1: Space segment equipment test sequence 45

Figure D-1 : Logic for customer tailoring and supplier answer through compliance and verification matrix 126

Figure D-2 : Clauses selection in First step of the tailoring 126

Tables

Table 4-1: Allowable tolerances 35

Table 4-2: Test accuracies 37

Table 5-1: Space segment equipment - Qualification test baseline 46

Table 5-2: Space segment equipment - Qualification test levels and duration 48

Table 5-3: Space segment equipment - Acceptance test baseline 54

Table 5-4: Space segment equipment - Acceptance test levels and duration 56

Table 5-5: Space segment equipment - Protoflight test baseline 60

Table 5-6: Space segment equipment - Protoflight test levels and duration 62

Table 6-1: Space segment element - Qualification test baseline 80

Table 6-2: Space segment element - Qualification test levels and duration 82

Table 6-3: Space segment element - Acceptance test baseline 86

Table 6-4: Space segment element - Acceptance test levels and duration 88

Table 6-5: Space segment element - Protoflight test baseline 92

Table 6-6: Space segment element - Protoflight test levels and duration 94

Table D-1 : Guideline for verification close-out 127