

## **RTCA Special Committee 186 Working Group 3**

### **ADS-B 1090ES MOPS Corrigenda**

### **Environmental Test Conditions**

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#### **Summary**

This working paper presents an inconsistency found in DO-260B/ED-102A with DO-181E. In general for avionic equipment it is not required to perform all environmental test conditions e.g., Explosion, Waterproofness, Fluids Susceptibility, Sand and Dust, Fungus Resistance, Salt Spray testing is considered optional. DO-260B/ED-102A section 2.3 provides the provision to mark environmental tests as optional by adding the note “When Required” but in Table 2-112 no test is marked as such, making all tests as required. It is suggested to align DO-260B Table 2-112 in that respect with DO-181E Table 2-11.

**Issue**

In general for avionic equipment it is not required to perform all environmental test conditions e.g., Explosion, Waterproofness, Fluids Susceptibility, Sand and Dust, Fungus Resistance, Salt Spray testing is considered optional. DO-260B/ED-102A section 2.3 provides the provision to mark environmental tests as optional by adding the note “When Required,” but in Table 2-112 no test is marked as such, making all tests as required. It is suggested to align DO-260B/ED-102A Table 2-112 in that respect with DO-181E Table 2-11. For convenience I show Table 2-112 from DO-260B/ED-102A and Table 2-11 from DO-181E:

**(DO-260B) Table 2-112: Environmental Test Groups**

TEST #	ENVIRONMENTAL CONDITION	RTCA DO-160F Paragraph	EUROCAE ED-14F Paragraph	GROUPS	REMARKS
4a	Temperature	4.5	4.4 – 4.5	1	
4b	Altitude	4.6.1	4.6.1	3	
4c	Decompression & Overpressure	4.6.2 - 4.6.3	4.6.2 - 4.6.3	3	
5	Temperature Variation	5.0	5.0	3	
6	Humidity	6.0	6.0	2	
7a	Operational Shock	7.2	7.1	2	
7b	Crash Safety	7.3	7.2	5	NO TESTS
8	Vibration	8.0	8.0	3 & 1	3 during: 1 after
9	Explosion	9.0	9.0	5	NO TESTS
10	Waterproofness	10.0	10.0	2	
11	Fluids Susceptibility	11.0	11.0	2	
12	Sand and Dust	12.0	12.0	2	
13	Fungus Resistance	13.0	13.0	2	
14	Salt Spray	14.0	14.0	2	
15	Magnetic Effect	15.0	15.0	5	NO TESTS
16	Power Input Momentary Interruptions All Others	16.0	16.0	4 3 & 2	3 during: 2 after
17	Voltage Spike	17.0	17.0	2	
18	Audio Frequency Conducted Susceptibility	18.0	18.0	1	
19	Induced Signal Susceptibility	19.0	19.0	1	
20	RF Susceptibility	20.0	20.0	1	
21	Emission of RF Energy	21.1	21.1	5	NO TESTS
22	Lightning Induced Transient Susceptibility	22.0	22.0	3	
23	Lightning Direct Effects	23.0	23.0	3	
24	Icing	24.0	24.0	2	
25	Electrostatic Discharge	25.0	25.0		NO TESTS

**(DO-181E) Table 2-11: Environmental Test Groups**

	<b>ENVIRONMENTAL CONDITION</b>	<b>DO-160G Paragraph</b>	<b>GROUPS</b>	<b>REMARKS</b>
4a	Temperature	§4.5	1	
4b	Altitude	§4.6.1	4	
4c	Decompression & Overpressure	§4.6.2- §4.6.3	4	When required
5	Temperature Variation	§5.0	3	
6	Humidity	§6.0	2	
7a	Operational Shock	§7.2	2	When required
7b	Crash Safety	§7.3	6	See Note below
8	Vibration	§8.0	3 & 1	3 during, 1 after
9	Explosion	§9.0	6	See Note below
10	Waterproofness	§10.0	2	When required
11	Fluids Susceptibility	§11.0	2	When required
12	Sand and Dust	§12.0	2	When required
13	Fungus Resistance	§13.0	2	When required
14	Salt Spray	§14.0	2	When required
15	Magnetic Effect	§15.0	6	See Note below
16	Power Input	§16.0	5	
	Momentary Interruptions All Others		3 & 2	3 during, 2 after
17	Voltage Spike	§17.0	2	
18	Audio Freq. Conducted Susceptibility	§18.0	1	
19	Induced Signal Susceptibility	§19.0	1	
20	RF Susceptibility	§20.0	1	
21	Emission of RF Energy	§21.1	6	See Note below
22	Lightning Induced Transient Susceptibility	§22.0	3	
23	Lightning Direct Effects	§23	3	When required
24	Icing	§24	3	When required
25	Electrostatic Discharge	§25	2	2 after
26	Fire / Flammability	§26	2	When required, 2 after

DO-260B/ED-102A, Table 2-112, should likewise be modified and identify DO-160G section

4.6.2-4.6.3 Decompression and overpressure.

- 7a Operational Shock
- 10 Waterproofness
- 11 Fluids susceptibility
- 12 Sand and Dust
- 13 Fungus Resistance
- 14 Salt Spray
- 23 Lightning Direct Effects
- 24 Icing
- 26 Fire/Flammability

as a “When Required” optional test, which needs not to be performed to grant the TSO/ETSO. Otherwise a deviation would be needed to allow not performing such test.

### **Summary**

The Working Group is asked to consider the above issue for inclusion in the DO-260B/ED-102A Corrigenda.