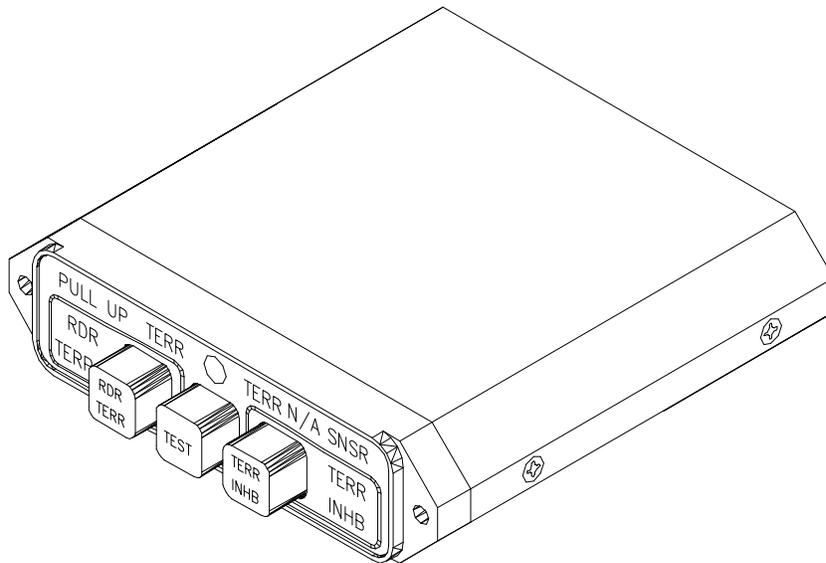




INSTALLATION MANUAL AND OPERATING INSTRUCTIONS

MD41-11XX SERIES TERRAIN AWARENESS ANNUNCIATION CONTROL UNIT for L-3 COMMUNICATIONS TAWS8000 and TAWS8100

MD41-1104	14vdc	Horizontal Mount
MD41-1114	14vdc	Vertical Mount (shown on page 9)
MD41-1108	28vdc	Horizontal Mount
MD41-1118	28vdc	Vertical Mount (shown on page 9)



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Revisions

Rev.	Date	Description of Change	Approved
A	5/10/02	Corrected schematic pins 18, 19 and 20	BB
B	8/31/02	Corrected typos, TDS196 was MPS 7015613, reformat.	ScH
C	12/10/02	Added fig. 4, changed text labels on fig. 5	BB
D	09/29/04	Changed manufacture to L-3 Communications, added TAWS8100	BB
E	03/30/05	Section 1.2.5. Changed description of TERR/INHB annunciation.	BB
F	07/02/12	Removed schematics, Figure 3.5	BAW

TABLE OF CONTENTS

SECTION 1 GENERAL DESCRIPTION

- 1.1 INTRODUCTION
- 1.2 SPECIFICATIONS, TECHNICAL
 - 1.2.1 PHYSICAL CHARACTERISTICS
 - 1.2.2 ENVIRONMENTAL CHARACTERISTICS
 - 1.2.3 SPECIFICATIONS, ELECTRICAL
 - 1.2.4 FRONT PANEL CONTROLS
 - 1.2.5 FRONT PANEL ANNUNCIATIONS

SECTION 2 INSTALLATION CONSIDERATIONS

- 2.1 COOLING
- 2.2 EQUIPMENT LOCATION
- 2.3 ROUTING OF CABLES

SECTION 3 INSTALLATION PROCEDURE

- 3.1 GENERAL INFORMATION
- 3.2 UNPACKING AND INSPECTING
- 3.3 MOUNTING THE MD41-()
- 3.4 INSTALLATION LIMITATIONS

SECTION 4 POST INSTALLATION CHECKOUT

- 4.1 PRE-INSTALLATION TEST
- 4.2 OPERATING INSTRUCTIONS
- 4.3 AIRWORTHINESS STATEMENT

FIGURES LIST OF ILLUSTRATIONS

- 3.1 SCHEMATIC PINOUT, 25 PIN DSUB
- 3.2 OUTLINE DRAWING
- 3.3 WIRING DIAGRAM, MD41-1104, -1114
- 3.4 WIRING DIAGRAM, MD41-1108, -1118, -1108(5V), -1118(5V)

APPENDIX

ENVIRONMENTAL QUALIFICATION FORM

SECTION 1 GENERAL DESCRIPTION

1.1 INTRODUCTION

The MD41-11XX series is a compact, self-contained Annunciation and Control unit. The fully integrated, control unit provides annunciation and mode selection for the Landmark Terrain Awareness Warning System (TAWS) manufactured by L-3 Communications. It combines all the necessary functions required to interface TAWS systems for FAA approval.

Other features include dual 20,000-hour lamps used for all annunciations, internally lighted selection switches and choice of manual or automatic photocell dimming. An external annunciation dimming adjustment is provided for balancing low-level light conditions.

1.2 SPECIFICATIONS, TECHNICAL

1.2.1 PHYSICAL CHARACTERISTICS

Mounting:	Panel
Width:	3.25 Inches
Height:	0.80 Inches
Depth:	3.20 Inches
Weight:	0.50 lbs.

1.2.2 ENVIRONMENTAL CHARACTERISTICS

PMA Compliance:	PQ3738CE
Applicable Documents:	RTCA DO-160C
Operating Temperature Range:	-55°C to +70°C
Humidity:	95% Non-Condensing
Altitude Range:	0 to 55,000 ft.
Vibration:	Cat. M and N
Operational Shock:	Rigid Mounting, 6 G Operational 15 G Crash Safety

1.2.3 SPECIFICATIONS, ELECTRICAL

Design	All Solid State
MD41-11XX(ALL)	0.30 Amps

1.2.4 FRONT PANEL CONTROLS

- RDR/TERR Momentary Switch, when pressed, will select TAWS info on the radar or MFD.
- TEST Momentary switch, when pressed, will activate the TAWS computer self-test.
- TERR/INHB Momentary switch, when pressed, will place the TAWS computer in standby mode.

1.2.5 FRONT PANEL ANNUNCIATIONS

- TERR/NA Terrain information is not available.
- TERR Terrain is very near or above the aircraft altitude.
- PULL UP Terrain is well above aircraft altitude.
- TERR/
INHB TAWS system has been placed in standby mode.
- RDR/
TERR Will annunciate only during a pop-up sequence.
- SENSOR Indicates failure of the remote TAWS unit.

SECTION 2 INSTALLATION CONSIDERATIONS

2.1 COOLING

No direct cooling is required. As with any electronic equipment, overall reliability may be increased if the MD41-11XX is not located near any high heat source or crowded next to other equipment. Means of providing a gentle airflow will be a plus.

2.2 EQUIPMENT LOCATION

The MD41-11XX must be mounted as close to the pilot's field of view as possible. Please reference the EGPWS installation manual for approved locations. The unit depth, with connector attached, must also be taken into consideration.

2.3 ROUTING OF CABLES

Care must be taken not to bundle the MD41-11XX logic and low-level signal lines with any high-energy sources. Examples of these sources include 400 HZ AC, Comm, DME, HF and transponder transmitter coax. Always use shielded wire when shown on the installation print. Avoid sharp bends in cabling and routing near aircraft control cables.

SECTION 3 INSTALLATION PROCEDURES

3.1 GENERAL INFORMATION

This section contains interconnect diagrams, mounting dimensions and other information pertaining to the installation of the MD41-11XX. After installation of cabling and before installation of the equipment, ensure that power is applied only to the pins specified in the interconnect diagram.

3.2 UNPACKING AND INSPECTING EQUIPMENT

When unpacking equipment, make a visual inspection for evidence of damage incurred during shipment. The following parts should be included:

1. MD41-1104 (14volt) 14 volt button lighting Horizontal Mount or MD41-1114 (14volt) 14 volt button lighting Vertical Mount or MD41-1108 (28volt) 28 volt button lighting Horizontal Mount or MD41-1118 (28volt) 28 volt button lighting Vertical Mount or MD41-1108(5V) (28volt) 5 volt button lighting Horizontal Mount or MD41-1118(5V) (28volt) 5 volt button lighting Vertical Mount
2. J1 Connector Kit (25 pin) MCI P/N 7014517
3. Installation Manual MCI P/N 9015033

3.3 MOUNTING THE MD41-()

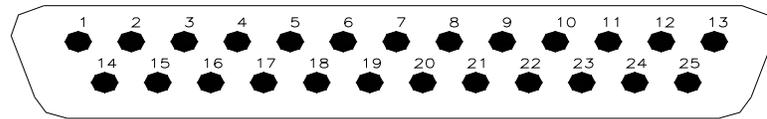
Avoid mounting close to heater vents or other high heat sources. Allow a clearance of at least 3 inches from back of unit for plug removal.

The indicator is secured in place behind the panel since it is designed for rear mount only. Make a panel cutout as shown in Figure 3-2. Secure the indicator in place with two 4-40 x 3/8 flat head Phillips screws.

3.4 INSTALLATION LIMITATIONS

Wire the aircraft harness according to figure 3-3 or 3-4. Use at least 24 AWG wire for all connections. Avoid sharp bends and routing cable near high-energy sources. Care must be taken to tie the harness away from aircraft controls and cables. Also see Installation Considerations, Section 2.

J1 CONNECTOR



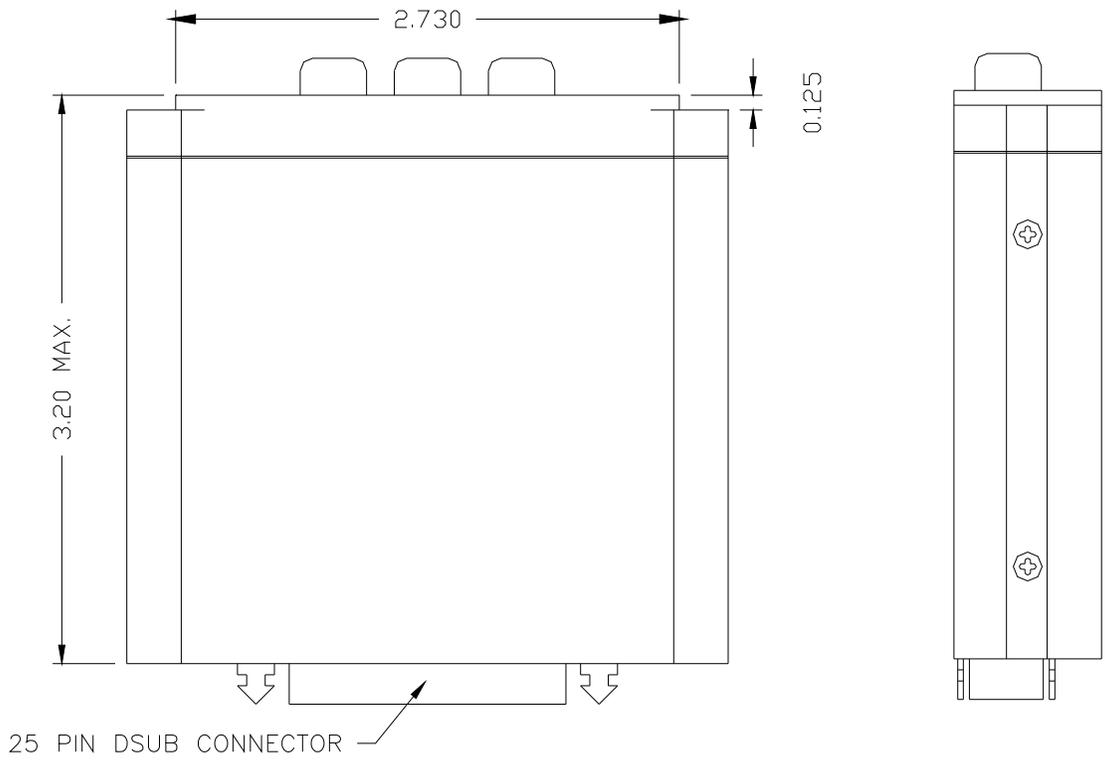
REAR VIEW OF J1 CONNECTOR

J1

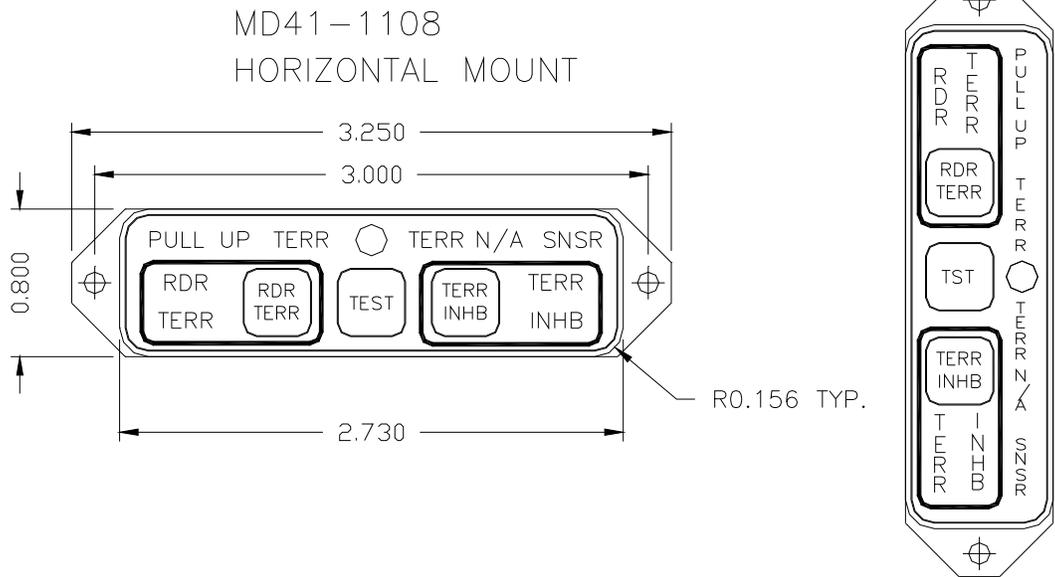
PIN NO.

1 -----	Spare
2 -----	Spare
3 -----	Terrain Inhibit annunciation input. Receives logic low to annunciate.
4 -----	Spare
5 -----	Terrain annunciate input. Receives logic low to annunciate.
6 -----	Lamp Test (receives ground from remote test switch)(optional connection).
7 -----	Bright/Dim annunciation lamp power.
8 -----	Push Button Lighting. To lighting bus.
9 -----	Ground for push-button lighting.
10 -----	Terrain N/A annunciate input. Receives logic low to annunciate.
11 -----	Pull-up annunciate input. Receives logic low to annunciate.
12 -----	Internal photocell dimming output. To use, jumper pin 12 to pin 7.
13 -----	14 / 28 VDC aircraft power. (Depends on part number)
14 -----	Sensor annunciate input. Receives logic low to annunciate.
15 -----	RDR Terrain annunciate input. Receives logic low to annunciate.
16 -----	Spare
17 -----	Spare
18 -----	Terrain Self-Test switch. Momentary switch, provides ground output to select.
19 -----	Terrain Inhibit select switch. Momentary switch, provides ground output to select.
20 -----	Terrain Display select output. Momentary switch, provides ground output to select.
21 -----	Power Ground
22 -----	Spare
23 -----	Spare
24 -----	Spare
25 -----	Spare

FIGURE 3-1 SCHEMATIC PINOUT, 25 PIN D-SUB



MD41-1118
VERTICAL MOUNT



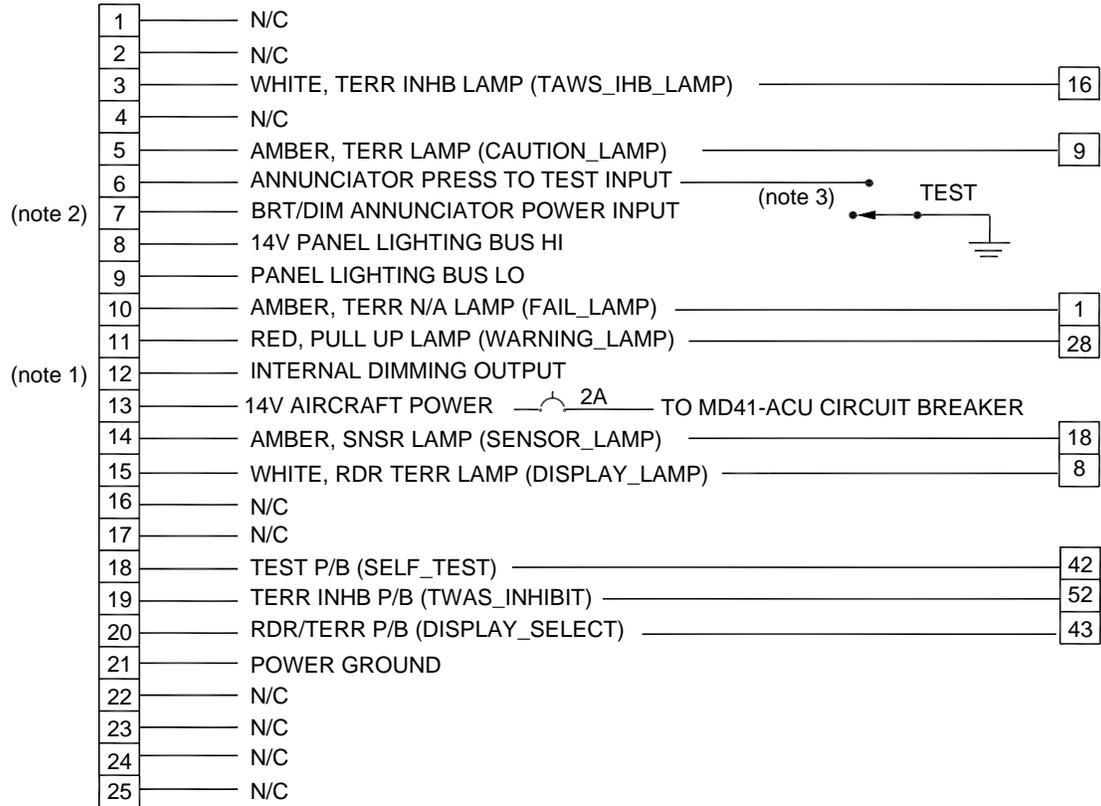
Note 1: Use two 4-40 X 3/8" Flat Head Phillips Screws for Mounting

FIGURE 3-2 OUTLINE DRAWING

MD41-1104 ANNUNCIATION-CONTROL

J1 14 VOLT

TAWS8000
TAWS8100
P1



NOTES:

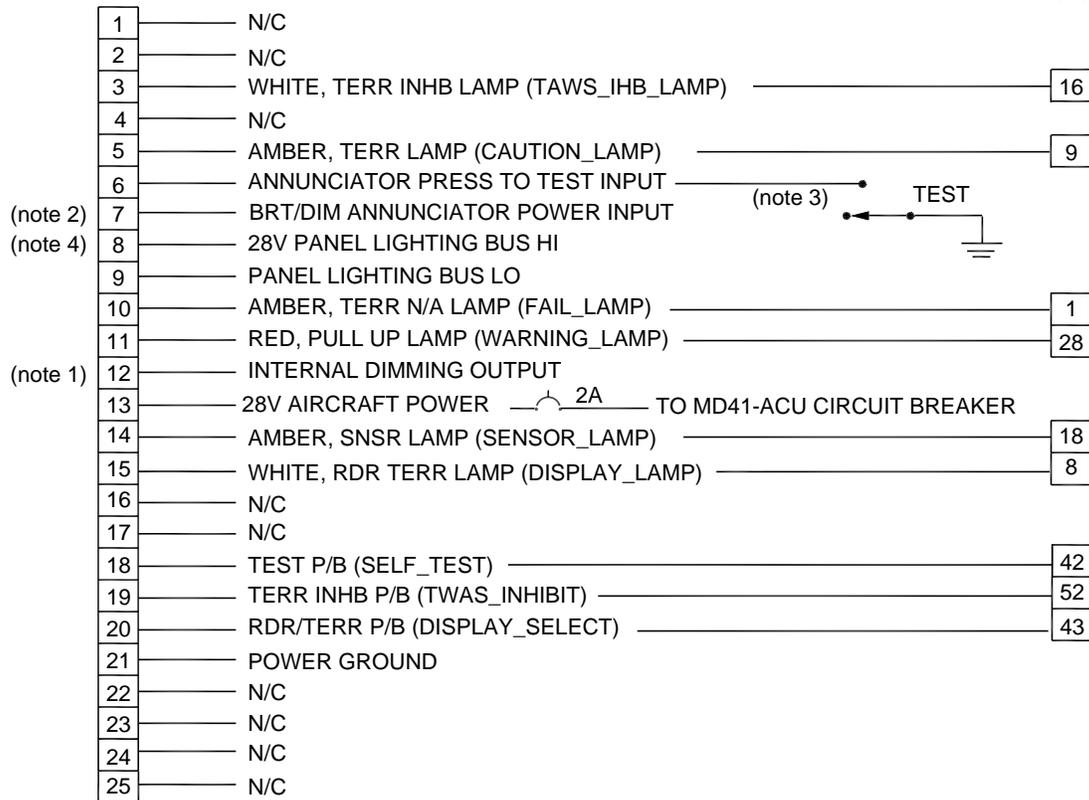
- 1) JUMPER 12 TO 7 FOR ANNUNCIATION BRIGHTNESS TO BE CONTROLLED BY INTERNAL PHOTOCELL.
- 2) IF NOT CONNECTED TO INTERNAL DIMMING, MAY BE CONNECTED TO DAY/NIGHT SWITCH.
NOT AIRCRAFT DIMMER
- 3) MOMENTARY SWITCH FOR LAMP TEST. (optional connection)
- 4) REFER TO L-3 COMMUNICATIONS TAWS8000 OR TAWS8100 INSTALLATION MANUAL FOR ACTUAL INSTALLATION.

FIGURE 3-3 WIRING DIAGRAM, MD41-1104, -1114

MD41-1108 ANNUNCIATION-CONTROL

J1 28 VOLT

TAWS8000
TAWS8100
P1



NOTES:

- 1) JUMPER 12 TO 7 FOR ANNUNCIATION BRIGHTNESS TO BE CONTROLLED BY INTERNAL PHOTOC
- 2) IF NOT CONNECTED TO INTERNAL DIMMING, MAY BE CONNECTED TO DAY/NIGHT SWITCH.
NOT AIRCRAFT DIMMER
- 3) MOMENTARY SWITCH FOR LAMP TEST. (optional connection)
- 4) 5 VOLT FOR MD41-1108(5V)/1118(5V)
- 5) REFER TO L-3 COMMUNICATIONS TAWS8000 OR TAWS8100 INSTALLATION MANUAL FOR ACTUAL INSTALLATION.

FIGURE 3-4 WIRING DIAGRAM, MD41-1108, -1118, -1108(5V), -1118(5V)

SECTION 4 POST INSTALLATION CHECKOUT

4.1 PRE INSTALLATION TESTS

With the MD41-11XX disconnected, turn on the avionics master switch and verify that aircraft power is on pin 13. Using an ohmmeter, verify pin 21 is aircraft ground.

4.2 OPERATING INSTRUCTIONS

Refer to the TAWS8000 or TAWS8100 pilots guide or installation manual for final testing of the MD41-11XX.

4.3 AIRWORTHINESS STATEMENT

No periodic scheduled maintenance or calibration is necessary for continued airworthiness of the MD41-11XX. If unit fails to perform to specifications, the unit must be removed and serviced by a qualified service facility.

**ENVIRONMENTAL QUALIFICATION FORM
RTCA/DO-160C**

NOMENCLATURE: MD41-11XX SERIES TERRAIN AWARENESS
ANNUNCIATION CONTROL UNIT

MODEL NO: MD41-()

PMA PQ3738CE

MANUFACTURER TEST SPECIFICATION:

TDS196

MANUFACTURER: Mid-Continent Instruments and Avionics
9400 E. 34th Street N.
Wichita, KS 67226
Phone (316) 630-0101

Conditions	Section	Description of Conducted Tests
Temperature and Altitude	4.0	Equipment tested to Categories A1 & F2 except as noted
Low Temperature	4.5.1	
High Temperature	4.5.2 & 4.5.3	
In-Flight Loss of Cooling	4.5.4	Cooling air not required
Altitude	4.6.1	
Decompression	4.6.2	
Overpressure	4.6.3	Not Tested
Temperature Variation	5.0	Equipment tested to Category B
Humidity	6.0	Equipment tested to Category A
Shock	7.0	Equipment tested per DO-160C
Operational & Crash Safety	7.2 & 7.3	Paragraph. 7.2.1
Vibration	8.0	Equipment tested without shockmounts to Categories M and N (Table 8-1)
Explosion	9.0	Equipment identified as Category X, no test required
Waterproofness	10.0	Equipment identified as Category X, no test required
Fluids Susceptibility	11.0	Equipment identified as Category X, no test required
Sand and Dust	12.0	Equipment identified as Category X, no test required
Fungus	13.0	Equipment identified as Category X, no test required
Salt Spray	14.0	Equipment identified as Category X, no test required
Magnetic Effect	15.0	Equipment tested to Class Z
Power Input	16.0	Equipment tested to Category B
Voltage Spike	17.0	Equipment tested to Category A
Audio Frequency Susceptibility	18.0	Equipment tested to Category B
Induced Signal Susceptibility	19.0	Equipment tested to Category A
Radio Frequency Susceptibility	20.0	Equipment tested to Category T
Radio Frequency Emissions	21.0	Equipment tested to Category Z
Lightning Induced Transient Susceptibility	22.0	Equipment identified as Category X, no test required
Lightning Direct Effects	23.0	Equipment identified as Category X, no test required
Icing	24.0	Equipment identified as Category X, no test required