Title Qualification Plan for Wren Plus Indoor antenna

1. SCOPE

1.1. Content

This specification covers the performance, test and quality requirements for the Wren Plus Indoor antenna.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line has not been completed. The Qualification Test Report number will be issued upon successful qualification testing.

2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- Production Drawing of DBA6171C
- 501-160855: Qualification Test Report

2.2. Industry Documents

- IEC 68-2-14
- MIL-STD-810G
- IEC 60068-2-64
- IEC 60068-2-27

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing.

3.2. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

Para.	TEST DESCRIPTION	REQUIREMENT	PROCEDURE
3.2.1.	Initial examination of product	Meets requirements of product drawing.	Visual, dimensional and electrical function per applicable inspection plan.
3.2.2	Final examination of product	Meets visual requirements.	Visual, dimensional and functional per applicable inspection.
		ELECTRICAL	
3.2.3.	VSWR Data Collection	It should be in range of product drawing specification.	Measured VSWR with dedicated network analyzer.
		MECHANICAL	
3.2.4.	Examination of product	Meets requirements of product drawings admit of appearances and their section to be not occurred the antennas performance damages as a special case	No physical damage to cause antenna performance degradation.
		ENVIRONMENTAL	
3.2.5.	Temperature cycling	No physical damage allowed. (Meet 3.2.2) Meet VSWR (item 3.2.3)	IEC 68-2-14 -40°C to 85°C, 2hour soak, 2°/min ramp, 15 Cycles, ramp up from ambient at beginning of cycle.
3.2.6.	Humidity	No physical damage or corrosion allowed. (Meet 3.2.2) Meet VSWR (item 3.2.3)	MIL-STD-810G, 507.5, Procedure II, Aggravated Humidity 95%±4% relative humidity, 5 cycles. ***1 Cycle: Ramp up from ambient temperature (23°C) to 60°C in 2 hours period. Remain at 60°C for 6 hours. Ramp down to 30°C in 8 hours. Remain at 30°C for 8 hours. 24 hours total per cycle.
3.2.7.	Vibration	No physical damage allowed. (Meet 3.2.2) Meet VSWR (item 3.2.3) No shifted position allowed after test	IEC 60068-2-64, Stationary Installation, Category 3 10-500Hz, Breaks 10, 30, 200, 500Hz Acceleration Grms 7.0m/s^2, 1hr per axis, 3 axis total.
3.2.8.	Mechanical Shock	No physical damage allowed. (Meet 3.2.2) Meet VSWR (item 3.2.3) No shifted position allowed after test	IEC 60068-2-27, Structural Integrity of Mountings 30g, 18ms, 1/2 sine, 3 pulses in positive, 3 pulses in negative, 3 axis total, 18 pulses total.
3.2.9.	Unpackaged Drop	No physical damage allowed. (Meet 3.2.2)	Drop freely from a height of 1 meter to tile floor.

		Meet VSWR (item 3.2.3)	**Blade**: 1 drop on top, 1 drop on bottom, 4 drops on side, 6 drops total. Not including connector surface.
3.2.10.	Pull test	No physical damage allowed. (Meet 3.2.2) Meet VSWR (item 3.2.3)	Fix antenna and apply axial force (pull) of 20lbs on connector for a duration of 30 seconds.
3.2.11.	Articulating joint test	No physical damage allowed. (Meet 3.2.2) Meet VSWR (item 3.2.3)	Move the joint of each antenna from the 0-degree position to the 45-degree & 0-degree to 90-degree position 20 times. Antenna must be capable of returning to and holding both positions within +/-2 degrees.

NOTE
Must meet visual inspection requirements, show no physical damage, and meet any of additional test requirements per specified in the Product Qualification and Requalification Test Sequence order shown in Figure 2.

3.3. Product Qualification and Requalification Test Sequence order

TEST OR EXAMINATION	**TEST (a)**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
	SEQUENCE ORDER OF TEST PROCESS (b)						
Initial Examination of Product	1	1	1	1	1	1	1
VSWR Data Collection	2,4	2,4	2,4	2,4	2,4	2,4	2,4
Temperature cycling	3						
Humidity		3					
Vibration			3				
Mechanical Shock				3			
Unpackaged Drop					3		
Pull						3	
Articulating joint							3
Final Examination of Product	5	5	5	5	5	5	5
Test Sample Qty	3 pcs	3 pcs	3 pcs	3 pcs	3 pcs	3 pcs	3 pcs

NOTE
(b) Number in table indicates the sequence order of the test process.

4. HISTORY

LTR	REVISION RECORD	PREPARED BY	APPROVED BY	DATE
A	Initial release	Hang, Chit Yong	Ng, Wei Tat	Nov-30-2022