

PRODUCT SPECIFICATION

(PCB TYPE)

Customer	TheUMS Co. Ltd.		
Supplier	JBLUE co.,		
Model Name	AIM24-SB		
Product Name	Sensor Array PCB antenna		
Frequency Band	24.05GHz~24.25GHz		
Maker Code	JB_UMS[AIM24-SB]		
Date	July 7 2021		
	PREPARED BY	CHECKED BY	Approved BY
Confirm			
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JBLUE co.,

Antenna Specification		VERSION	JB-A-001	REV.	JBLUE co.,	00
		DATE	2021-07-06		The UMS co.,	00
MODEL	AIM24-SB	TYPE	PCB ass'y ant.	PAGE		1

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1. Revision List

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2. Technical Items

2.1 Electrical Specification

2.1.1 Electrical Specification

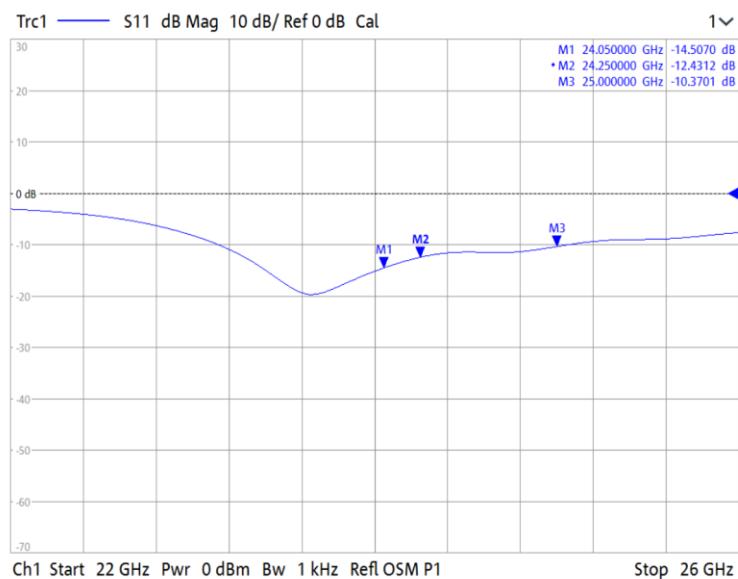
Electrical Specification		
Band	24GHz	
Frequency	24.05GHz	24.25GHz
S11	-12dB Under	
Peak GAIN (E2 Plane)	6.5dB	
Average GAIN (H Plane)	-4.0dB	
Impedance	50 ohms	
Polarization	Vertical	
Radiation Pattern	Omni-Directional	
Maximum Power	2 Watts	

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2.1.2 S11

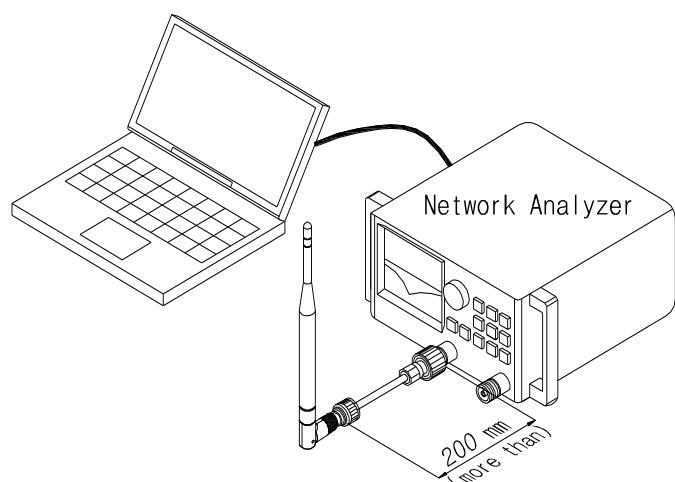
The S11 characteristics must satisfy the electrical demands.

Band	24GHz	
Frequency	24.05GHz	24.25GHz
S11	-12dB Under	



[24GHz Antenna]

⌘ TEST METHOD

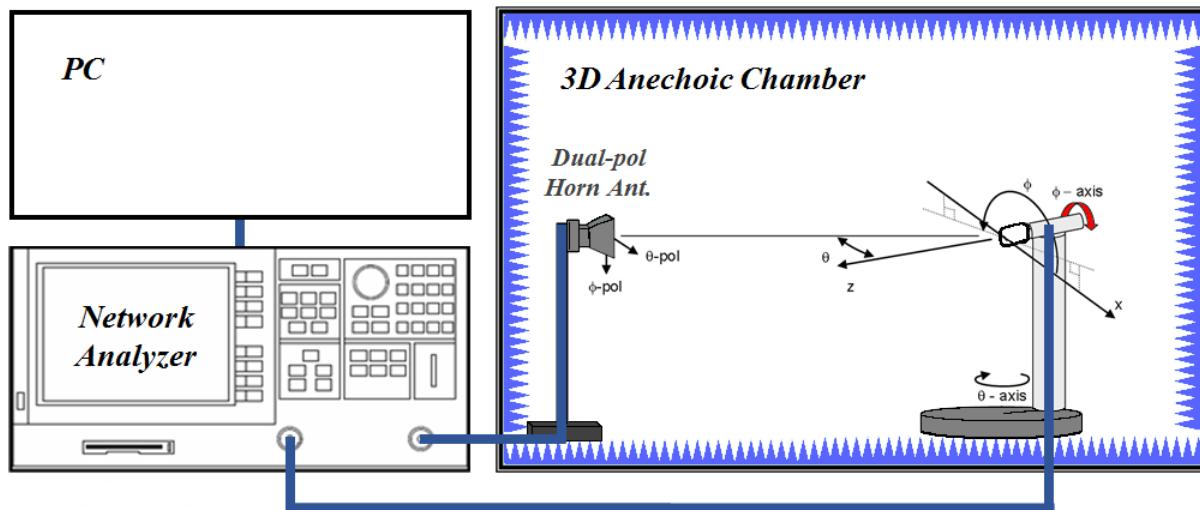


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2.1.3 Antenna Gain

The gain is expressed as dBi that standardizes the half-wave length dipole antenna.

Band	24GHz	
Frequency	24.05GHz	24.25GHz
Peak GAIN (E2 Plane)	6.5dB	
Average GAIN (H Plane)	-4.0dB	

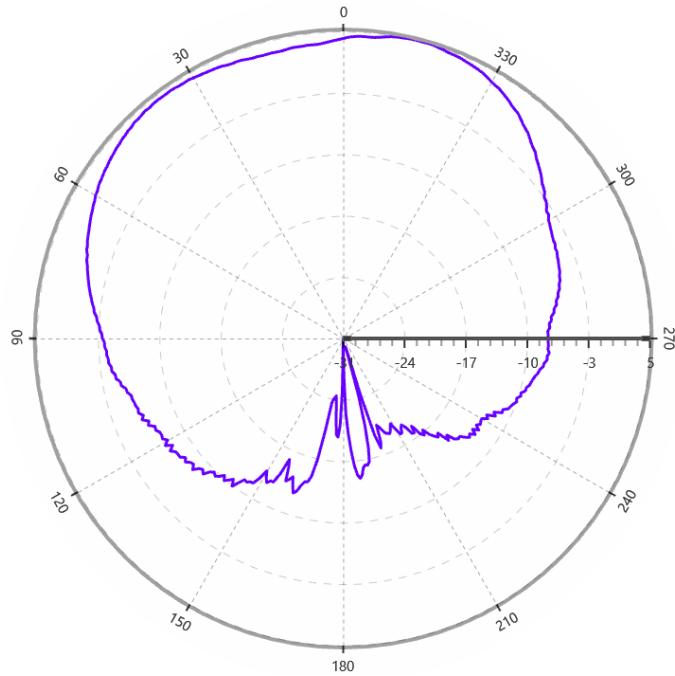


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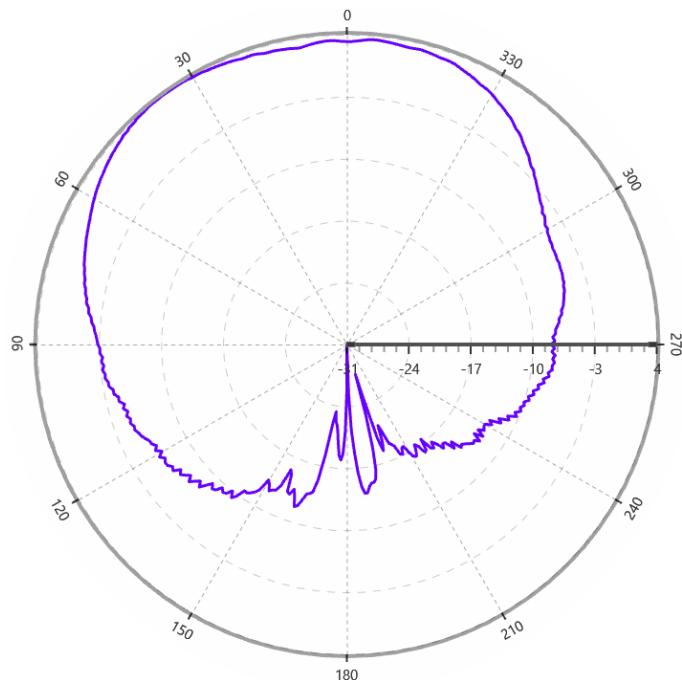
2.1.4 Radiation Pattern

⌘ The radiation pattern must have the Omni-directional characteristic in 24GHz band.

[24.05GHz]



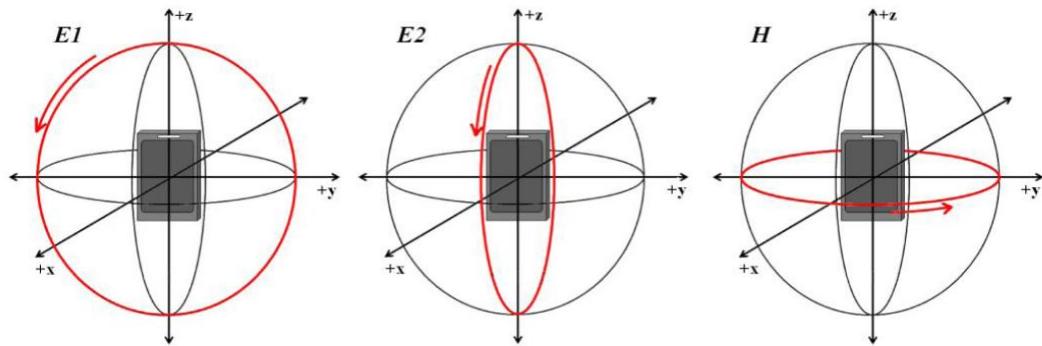
[24.25GHz]



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2.2 Test Equipment and Method

- ⊕ The antenna is tested while mounted on handset with the correct matching circuit in free space.
- ⊕ S11 is measure on Network Analyzer
- ⊕ Radiation pattern is measure on at 24GHz frequency.
- ⊕ The antenna is measure for three-dimensional.
- ⊕ Coordinate System of Anechoic chamber
 - Origin is in center of gravity.
 - Positive X axis is perpendicular to, and directed from, front plane.
 - Positive Y axis is perpendicular to, and directed from, right side plane (as seen from front).
 - Positive Z axis is perpendicular to, and directed from, top plane.



- ⊕ The results of the test will be correlated to the customer handset and the measurement environment.

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3. Mechanical Items

3.1 Mechanical Specification

Length	See drawing
Operation Temperature	-30°C ~ +80°C

3.1.1 Test Equipment and Method

- ⌘ Dogmatic Caliper to measure the dimensions.
- ⌘ Climatic Chamber for environmental test.

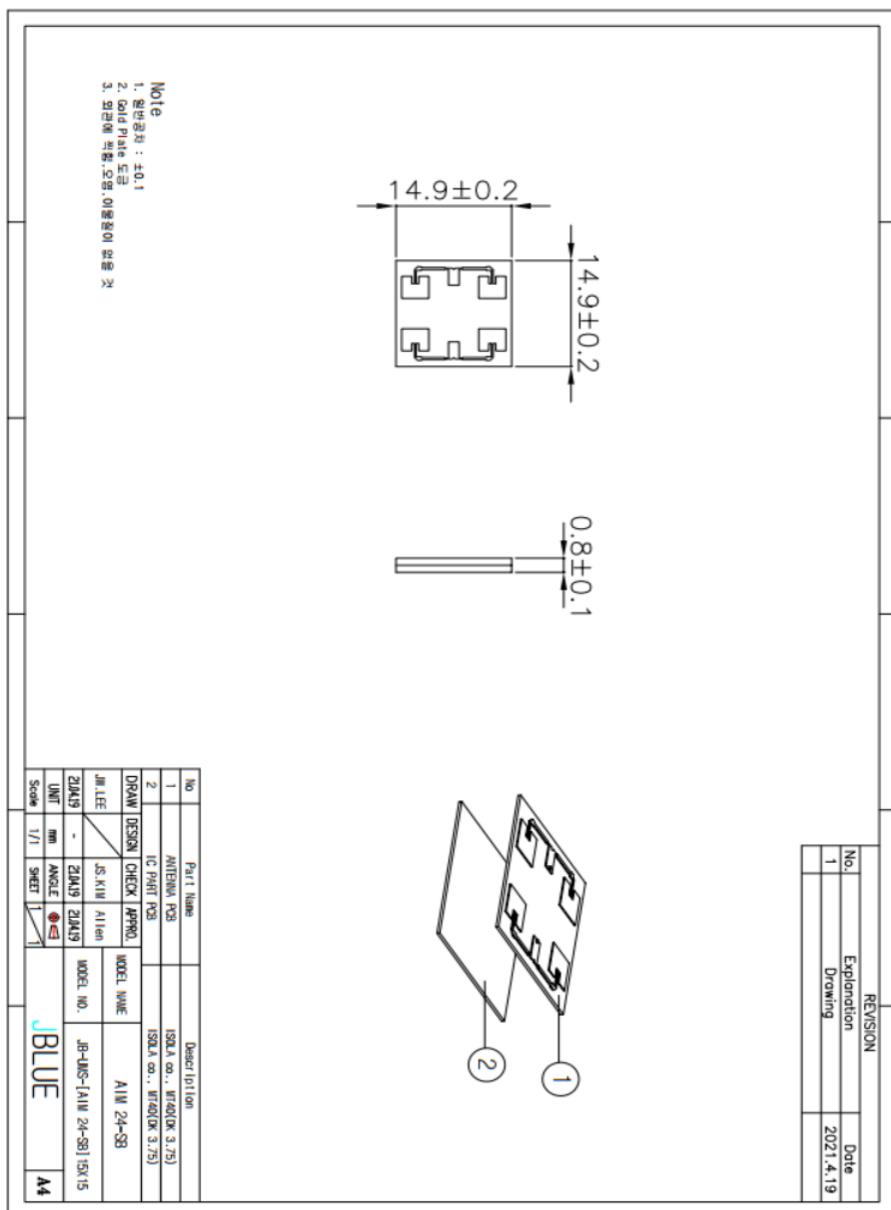
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3.2 Material Specification

3.2.1 Layer of FPCB

LAYER No.	Specification	Thickness
PCB 1	ISOLA	0.4
PCB 2	FR4	0.4

3.3 Drawing



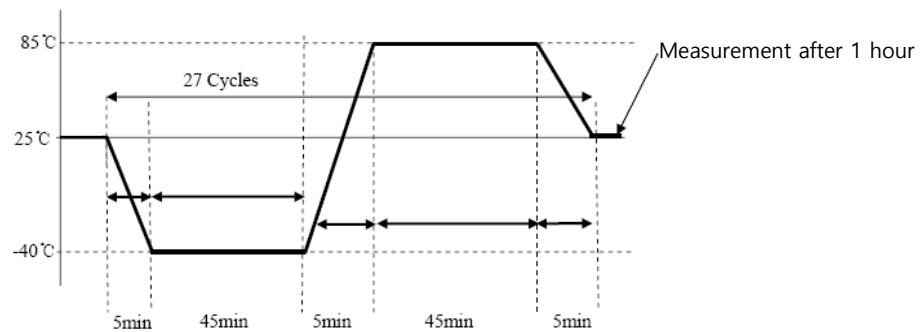
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4. Environmental Items

4.1 Environment Demands

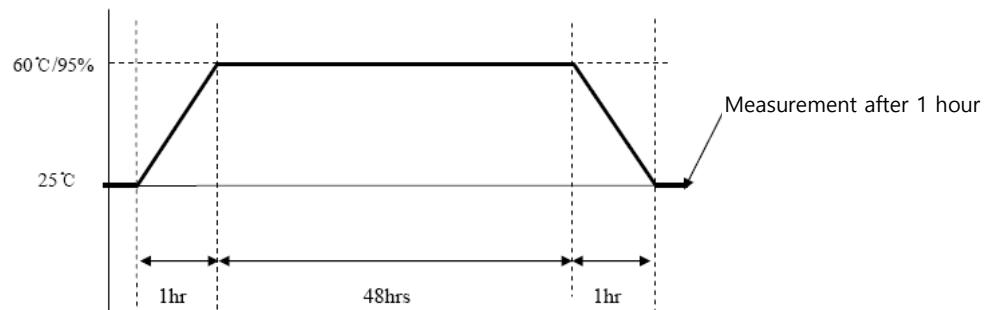
4.1.1 Thermal Shock Test

- ⊕ Place the antenna in an environmental chamber at +25°C.
- ⊕ Then expose antenna at temperature T1= -40°C during 45 minutes.
- ⊕ Then expose antenna at temperature T2=+85°C during 45 minutes.
- ⊕ Transfer time is 5 min. Repeat this cycle 27 times.
- ⊕ After test is complete, there shall be no visual deterioration or damage.
- ⊕ The antenna should function mechanically.
- ⊕ Electrical characteristics should be within the specified range



4.1.2 Static Humidity Test

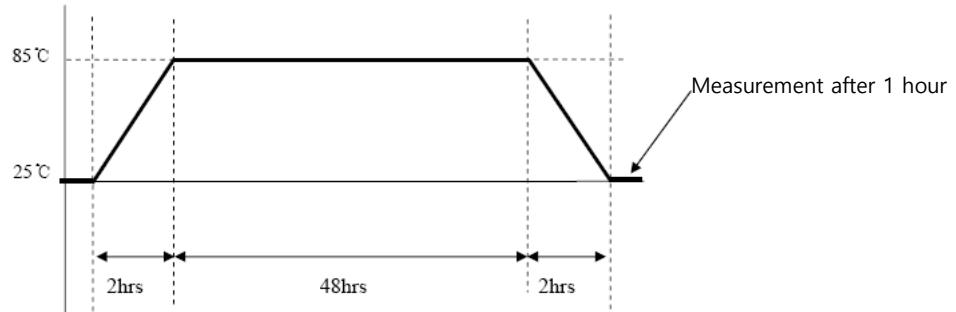
- ⊕ Place the complete in an environmental chamber at +25° C.
- ⊕ Then increase temperature during 1 hour to +60° C with humidity increasing to 95% RH during 1 hours.
- ⊕ Soak antenna with these parameters for 48 hours.
- ⊕ After the finish initial ambient parameters should be achieved during 1 hour.
- ⊕ After test is complete, there shall be no visual deterioration or damage.
- ⊕ The antenna should function mechanically.
- ⊕ Electrical characteristics should be within the specified range.



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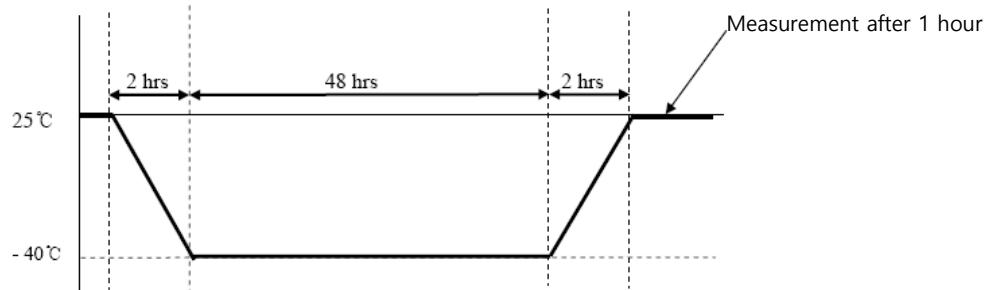
4.1.3 High Temperature Soaking

- ⌘ The antenna should be placed in an environmental chamber at +85°C for 48 hours.
- ⌘ Soak antenna at ambient temperature at least 1 hour after the test.
- ⌘ After test is complete, there shall be no visual deterioration or damage.
- ⌘ The antenna should function mechanically. Electrical characteristics should be within the specified range.



4.1.4 Low Temperature Soaking

- ⌘ The antenna should be placed in an environmental chamber at -40°C for 48 hours.
- ⌘ Soak antenna at ambient temperature at least 1 hour after the test.
- ⌘ After test is complete, there shall be no visual deterioration or damage.
- ⌘ The antenna should function mechanically. Electrical characteristics should be within the specified range.



4.1.5 Salt Spray (CORROSION) Test

- ⌘ Place antennas in Salt Spray Cabinet at temperature +35°C with the salt fog of NaCl solution (5%); and then soak antennas for 48 hours.
- ⌘ After test is complete, there shall be no visual degradation in esthetical and mechanical Performance.
- ⌘ Electrical characteristics should be within the specified range.

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4.1.6 Drop Test

- ⌘ The antenna attached to a dummy weighted radio or real Phone.
- ⌘ It should withstand 12 drops from 152Cm heights onto a steel plate 500x 500mm with thickness of 20mm.
- ⌘ Drop order is as follows;
 - Procedure: test from 152Cm,
 - 2 Times for each Basic side (front, rear, left, right, top, bottom) – Total 12drops.
 - Temperature of the environment: $+24^{\circ}\text{C} \pm 3^{\circ}\text{C}$.
- ⌘ After test is complete, there shall be no visual degradation in esthetical and mechanical performance.
- ⌘ Electrical characteristics should be within the specified range.

4.1.7 Quality Guaranteed

- ⌘ In case of antenna NG, replace 1:1