



Dreamus Corp.

# APPROVAL SHEET

HB1			
NO	MODEL	FREQUENCY	
1	HWI-BT-HB1	BLUETOOTH	2400 ~ 2483.5 MHz

SUPPLIER			CUSTOMER		
Engineer	Review	Approved	Engineer	Review	Approved
					
23/04/05		23/04/05			



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# ANTENNA SPECIFICATION

1. MODEL: HWI-BT-HB1

2. APPLICATION:

This specification is provided for BLUETOOTH ANTENNA.

3 ANTENNA used condition

Portable
  Fixing
  Movement
  Out-door
  In-door
  Etc( )

4. ANTENNA Drawing

#3. Attached : Drawing paper

5. Electrical specification and performance

Satisfied next data with real used or similar environment conditions.

No.	ELECTRICAL DATA	SPECIFICATIONS		REMARK
5. 1	FREQUENCY RANGE	BLUETOOTH	2400 ~ 2483.5 MHz	
5. 2	IMPEDANCE	50 Ω NOMINAL		
5. 3	V. S. W. R	BLUETOOTH	Less than 1 : 2.15	#1. Attached
5. 4	PEAK GAIN	BLUETOOTH	-2.40 dBi	#2. Attached
5. 5	RADIATION PATTERN	OMNI - DIRECTIONAL		
5. 6	POLARIZATION	LINEAR		

6. Hardware specification and mechanical

No.	MECHANICAL	SPECIFICATIONS	REMARK
2. 6. 1	FPCB Size [W X H X T]	14.00 X 17.26 X 0.15 (mm)	

## 7. SINUSOIDAL VIBRATION

Vibration Frequencies : 5- 55 Hz (1 cycle)

Sweep Rate : 1 cycle/min

Maximum Amplitude : A - 1 mm

Maximum Acceleration: 2 g

Measuring method

Antenna is combined in the test equipment.

The vibration is done X and Y direction (left, right, up and down) according to below image.

It continued for 2 hours each direction.

## 8. OPERATING TEMPERATURE

Temperature : - 40℃ / +70℃

Demands : Set Antenna and Cable for 72 hours each temperature.

No visual and mechanical changes.

The fitting and mold will be unchanged mechanically during the test.

The antenna shall satisfy the electrical data

## 9. HUMIDITY

Condition : 95% / +70℃

Measuring method

Antenna is placed in climatic chamber for 72 hours.

Antenna is taken out from the chamber and measured

after another 24 hours in room temperature

Demands : No visual and mechanical changes.

The fitting and mold will be unchanged mechanically during the test.

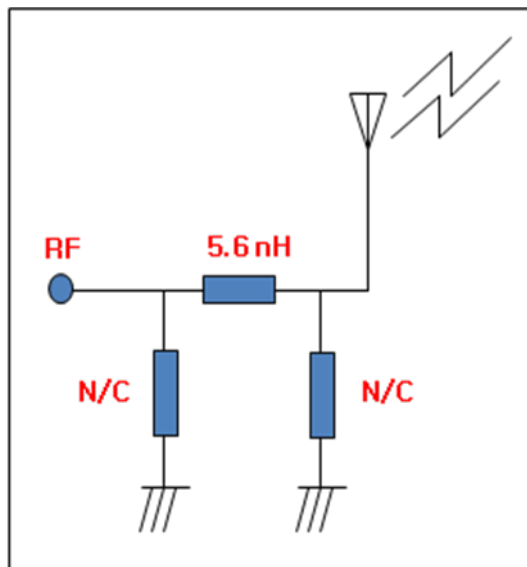
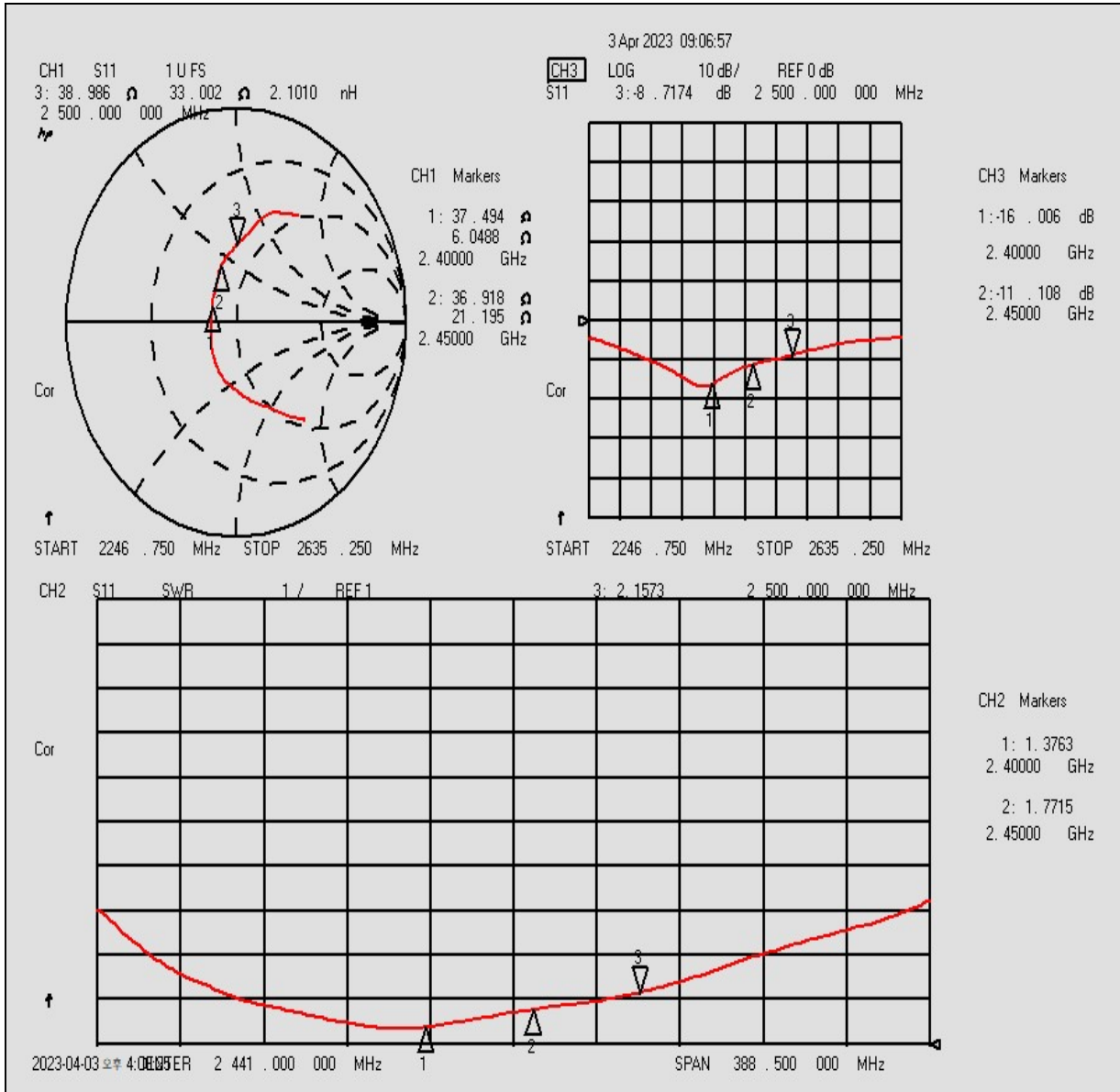
The antenna shall satisfy the electrical data.

## 10. TEST and Q/C

This specification is according to fixed demands and suitable Hanwool technology Q/C provision.

But it is possible to skip No. 7~9 demands, after consultation with buyer.

- #1. Attached : VSWR + Matching Value



2023-04-03 오후 4:11:30
KTM
Calibration
Wi-Fi
Select Frequency
Wi-Fi
Motor

3D Measurement

Measurement Setup

Angle Step 15

Measurement Pol H+V POL

START

STOP

EXIT

User Info

Data
HV Sum Line
H Line
V Line
Polar
Plan
Plan - Horizontal
Plan - Vertical
Print

H plan

E1 plan

E2 plan

Hor+Ver

Horizontal Vertical H plan E1 plan E2 plan

	Frequency[MHz]	PeakValue	Theta[deg]	Phi[deg]	MinValue	Theta[deg]	Phi[deg]	3D Avg[dBi]	2D Avg[dBi]	Efficiency[%]
■	2400.000	-2.809	150	30	-13.159	165	60	-6.205	0	23.853%
■	2412.000	-2.833	150	255	-13.163	45	330	-6.419	0	22.703%
■	2424.000	-2.962	150	255	-13.700	45	330	-6.688	0	21.339%
■	2436.000	-3.024	150	255	-14.232	45	330	-6.872	0	20.456%
■	2448.000	-2.409	150	255	-14.232	45	330	-6.368	0	22.970%
■	2460.000	-2.564	150	255	-14.664	45	330	-6.597	0	21.791%
■	2472.000	-2.619	150	240	-14.651	45	330	-6.783	0	20.877%
■	2480.000	-2.600	150	255	-14.539	45	330	-6.765	0	20.964%
■	2484.000	-2.521	150	240	-14.461	45	315	-6.735	0	21.111%
■	2500.000	-2.899	150	240	-14.484	45	330	-7.069	0	19.546%

Frequency

Add Delete

Sort Save

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File

Save as Open

Delete Screen capture

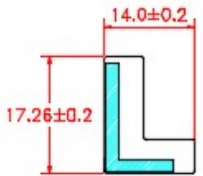
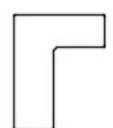
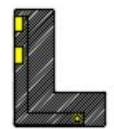

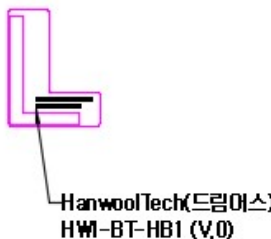
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Result

Summary Report

Select Graph 3D Graph

- #2. Attached : RADIATION PATTERN(GAIN)\_BLUETOOTH

	No	Revision Note	Checked	Date																																					
	△																																								
<p><u>Pattern :</u></p> <p><b>TOP</b></p> <div style="text-align: center;">  </div> <div style="text-align: center; margin-top: 20px;">  </div> <p><b>BOTTOM</b></p>	<p><u>INK : Black INK</u></p> <p><b>TOP</b></p> <div style="text-align: center;">  </div> <div style="text-align: center; margin-top: 20px;">  </div> <p><b>BOTTOM</b></p>		<p><u>Silk print : White Color</u></p> <p><b>TOP</b></p> <div style="text-align: center;">  </div> <div style="margin-top: 20px;"> <p>1. <span style="background-color: cyan; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> 표시는 패턴 Area임.</p> <p>2. <span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> 표시는 금도금 Area임.</p> <p>3. <span style="background-color: black; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> 표시는 무광 INK 영역임.</p> <p>4. <span style="background-color: green; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> 표시는 3M 467 영역임.</p> <p>5. <u>1/2 OZ, 1/2 MIL, 단면F-PCB 적용.</u></p> <p>* Contact Type 필히 금도금 적용 바람.</p> </div>																																						
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">1</td> <td style="width: 50%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;">1</td> <td style="width: 10%;"></td> </tr> <tr> <td>No</td> <td>Part Name</td> <td>Material Description</td> <td>Q'ty</td> <td>Finish</td> </tr> <tr> <td>1/1</td> <td>mm</td> <td>F-PCB</td> <td></td> <td>HWI-BT-HB1</td> </tr> <tr> <td>Scale</td> <td>Unit</td> <td>Title</td> <td>Model</td> <td>드림어스</td> </tr> <tr> <td>Decimal</td> <td>Angle</td> <td>J.O,LIM</td> <td>File Name</td> <td></td> </tr> <tr> <td>.X ±0.1</td> <td>N/A</td> <td>230404-52</td> <td></td> <td></td> </tr> <tr> <td>.XX ±0.05</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		1			1		No	Part Name	Material Description	Q'ty	Finish	1/1	mm	F-PCB		HWI-BT-HB1	Scale	Unit	Title	Model	드림어스	Decimal	Angle	J.O,LIM	File Name		.X ±0.1	N/A	230404-52			.XX ±0.05					<h2 style="margin: 0;">Hanwool Technology</h2>		
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