POINT MOBILE CO.,LTD

APPROVAL SHEET

Z7					
NO MODEL FREQUENCY					
1	HWI-WiFi-Z7	WIFI Dual	2412 ~ 2484 MHz		
1	UMI-MILI-71	wiri Duai	5200 ~ 5800 MHz		

SUPPLIER			CUSTOMER		
Engineer	Review	Approved	Engineer	Review	Approved
Vw					

HANWOOL TECHNOLOGY CO., LTD
#1002 IT303-DONG, PUCHONTECHNOPARK III 36-1
SAMJUNG-DONG, OHJUNG-GU, KYOUNG GI-DO, KOREA

TEL: 032) 624-2555 FAX: 032) 624-2559

HISTORY SHEET

Item	WiFi F-PCB ANTENNA		Developed by	Taehyeon. Nam	Vw
Part Name	HWI-W	ViFi-Z7	Director		
Rev. No.	Date		Description		Etc.
0	2023-03-06	Initial Version			

ANTENNA SPECIFICATION

1. MODEL: HWI-WiFi-Z7

2. APPLICATION:

This specification is provided for WIFI Dual Band 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		484 MHz 800 MHz	
5. 2	IMPEDANCE	50 Ω N	OMINAL	
5. 3	V. S. W. R	2412~2484 MHz	Less than 3.5:1	#1. Attached
ა. ა	v. s. w. k	5200~5800 MHz	Less than 4.0:1	#1. Attached
5. 4	PEAK GAIN(Min)	2412~2484 MHz	2412~2484 MHz 0.3 dBi	
5. 4	FEAR GAIN(MIII)	5200~5800 MHz	-0.9 dBi	#2. Attached
5. 5	RADIATION PATTERN	OMNI - DIRECTIONAL		
5. 6	POLARIZATION	LIN		

6. Hardware specification and mechanical

No.	MECHANICAL	SPECIFICATIONS	REMARK
6. 1	FPCB	CCL	
6. 2	COVERLAY	Black	
6. 3	TAPE	TESA 4982	
6. 5	PET	0.188 T	
6. 6	Dimension	40.0 X 15.15 X 0.5T	

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 : -30° / $+70^{\circ}$

Demands : Set Antenna and Cable for 48 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 : $90\% \sim 95\% / +40\%$

Measuring method

Antenna is placed in climatic chamber for 48 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.

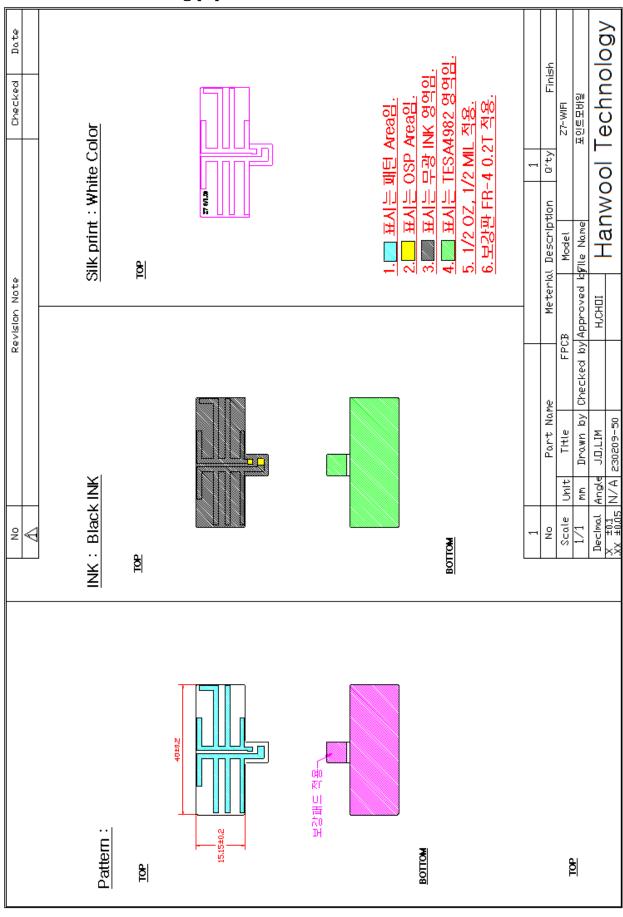
DQ No.	HW-230306-70	Modify No.		Write	Taehyeon. Nam
Supply to	POINT MOBILE CO., LTD	Date	2023-03-06	Approval	Chang-gi. Nam

- #1. Attached: VSWR 1:- 6.3861 dB 2.40000 GHz 2:-5.4836 dB 2.48400 GHz 4:- 4.5435 dB CH3 Markers 3:-4.9648 dB 5.20000 GHz 5.50000 GHz 5.50000 GHZ 2.48400 GHz 3: 3.5937 5.20000 GH: 1: 2.8566 2.40000 GH CH2 Marker 2: 3.2730 4: 3.9101 STOP 6000.000 MHz REF 0 dB 800.000000 MHz 800.000 000 MHz 12:59:12 SPAN 3 800.000 000 MHz Ņ 10 dB/ 2 dB 5 2023 2 LOG 10 dE 5:- 5.7182 dB START 2200.000 MHz Feb 2 СН3 S11 Cor 3: 14.229 Ω 7.2129 Ω 5.20000 GHz 1: 17.625 Ω 2.7773 Ω 2.40000 GHz 2: 15.381 Ω 3.7720 Ω 2.48400 GHz 4: 16.715 Ω 26.483 Ω 5.50000 GHz CH1 Markers STOP 6000.000 MHz CENTER 4 100.000 000 MHz REF 41.627 A 1.1423 nH U FS START 2200.000 MHz CH1 S11 1 U F8 5: 29.434 \to 41.627 5 800.000 000 \text{MHZ} Š CH2 Del 4

- #2. Attached: RADIATION PATTERN(GAIN)_ 2412~2484 MHz Screen captur User Info 3D Graph Print Report Delete Open Save 器 盈 Select Graph Summary Save as Delete Add P 8 8 8 8 ш 圝 0 /ൠ 38 STOP 8 Efficiency[%] WI-FI 42.487% 44.392% 45.905% 47.493% 44.122% 42.198% 38.096% 44.152% 45.479% 47.242% 53 E2 plan 240 8 Select Frequency 엃 88 2 2D Avg[dBi] START 8 8 000000000 8 3D Avg[dBi] 3.507 3.361 3.37 3.727 3.727 3.4171 3.402 3.237 H+V POL ▼ 圆 Measurement Pol 0 8 38 Theta[deg] Plan - Vertical 쯦 F 33 Measurement Setup 17.274 18.335 18.524 18.767 17.974 19.437 22.142 23.739 돵 8 Plan - Horizontal 엃 88 2 Ш Angle Step 8 图 8 E2 plan 8 8 8 8 8 8 8 8 8 8 8 Plan 20 E1 plan 3D Measuremen Σ Polar 8 2222222222 Hor+Ver | Horizontal | Vertical | H plan | V Line **多多多多多多** 圝 0 1,107 1,339 1,375 1,317 1,311 0,918 0,304 0,389 1,037 HV Sum Line H Line 2023-02-03 오전 8:24:27 8 345 Frequency[MHz] 8 2400,000 2412,000 2424,000 2448,000 2460,000 2472,000 2484,000 2484,000 ĸ 315 H plan 돥 8 Data 33 8 2

- RADIATION PATTERN(GAIN)_ 5200~5800 MHz Screen capture User Info 3D Graph Print Report Delete Save 怒 Select Graph Summary Save as Delete Add 8 8 8 8 LC. 圝 0 38 WI-FI 5GHZ STOP 8 Efficiency[%] 26.283% 42.663% 39.943% 38.176% 33.629% 25.126% 21.903% 18.279% 15.566% 53 315 E2 plan 뮰 誤 Select Frequency 엃 88 2 2D Avg[dBi] START 8 8 00000000 8 3D Avg[dBi] 5.783 3.680 3.966 4.4713 4.713 5.979 6.575 8.058 H+V POL ▼ 8/8/8/8/8 이 약 Wi-Fi 5GHz 货货货币的比约货货 圆 Measurement Pol 0 8 345 Plan - Vertical 8 8 8 8 8 8 8 8 8 8 8 F , 23 Measurement Setup -23.286 -19.400 -27.890 -20.322 -17.462 -21.101 -28.171 -26.329 돵 8 Plan - Horizontal 沒 8 2 Angle Step Ш 8 图 E2 plan Plan E1 plan 3D Measuremen ₹ Polar 8 888848855 Hor+Ver | Horizontal | Vertical | H plan | E 8 8 8 8 HV Sum Line | H Line | V Line 圝 0 2.801 2.801 2.558 2.558 2.285 0.611 0.002 -0.944 2023-02-03 오전 8:30:47 8 ₩ Frequency[MHz] 8 5150,000 5200,000 5300,000 5400,000 5500,000 5800,000 5800,000 ĸ 315 H plan 돥 8 Data 33 8 2

- #3. Attached : Drawing paper



POINT MOBILE CO.,LTD

APPROVAL SHEET

PM560				
NO	MODEL	FREQUENCY		
1	HWI-NFC-Z7	13.56 MHz		

SUPPLIER			CUSTOMER		
Engineer	Review	Approved	Engineer	Review	Approved
Vw					

HANWOOL TECHNOLOGY CO., LTD
#1002 IT303-DONG, PUCHONTECHNOPARK III 36-1
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TEL: 032) 624-2555 FAX: 032) 624-2559

HISTORY SHEET

NFC F-PCB ANTENNA		Developed by	Taehyeon. Nam	Vw
HWI-N	IFC-Z7	Director		
Date		Description		Etc.
2023-02-09	Initial Version			
	HWI-N	HWI-NFC-Z7 Date	HWI-NFC-Z7 Director Date Description	HWI-NFC-Z7 Director Date Description

ANTENNA SPECIFICATION

1. MODEL: HWI-NFC-Z7

2. APPLICATION:

This specification is provided 13.56MHz Band ANTENNA.

3 ANTENNA used condition

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

4. ANTENNA Drawing

#2. 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	13.56 MHz	
5. 2	IMPEDANCE	50 Ω NOMINAL	
5. 3	V. S. W. R	Less than 5.0:1	#1. Attached
5. 4	POLARIZATION	LINEAR	

6. Hardware specification and mechanical

No.	MECHANICAL	SPECIFICATIONS	REMARK
6. 1	FPCB	CCL	
6. 2	COVERLAY	Black	
6. 3	TAPE	TESA 4982	
6. 4	FERRITE	0.06T	
6. 5	STIFF	FR-4	
6. 6	Dimension	57.0 X 44.0 X 0.6T	

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.

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Temperature : -30° / $+70^{\circ}$

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Measuring method

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The antenna shall satisfy the electrical data.

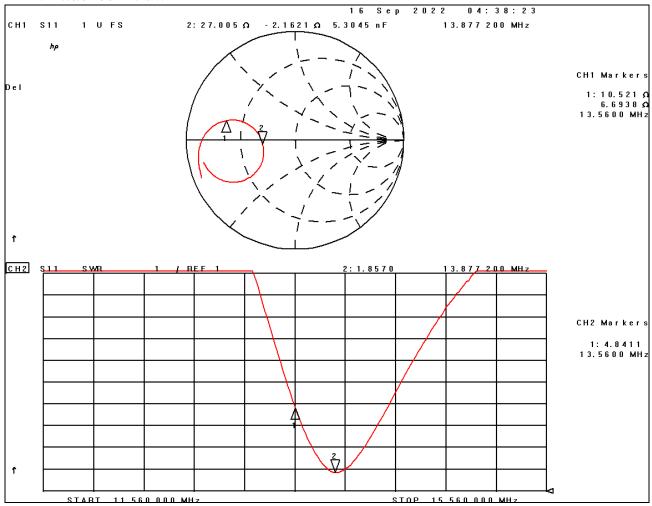
10. TEST and Q/C

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

DQ No.	HW-230209-70	Modify No.		Write	Taehyeon. Nam
Supply to	POINT MOBILE CO., LTD	Date	2023-02-09	Approval	Chang-gi. Nam

- #1. Attached: VSWR



Matching Value

C1308 & C1318	NC
C1309 & C1316	82pF
C1311 & C1314	8.2pF

