

Product Name	Type	Rev.	Hutec	IR
CG890 WiFi(Ant6,7)	PCB+CABLE		Franklin Technology	IR

# APPROVAL SHEET

Customer Name : Franklin Technology


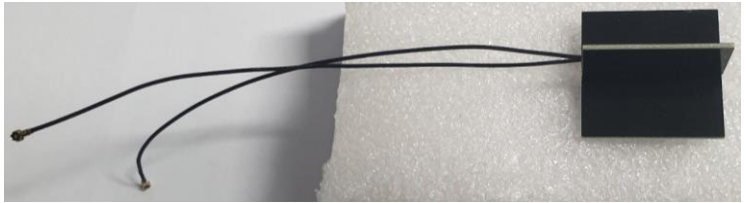
Company Name : Hutec

Product Name : CG890 WiFi(Ant6,7)

Description ITEM : WiFi(Ant 6,7)

Customer P/N :

Franklin Technology	구 분	작성자	검토자	합 의	승 인 자
	소속/성명				
	서 명				
Hutec	구 분	작성자	검토자	합 의	승 인 자
	소속/성명	기구/유정석	회로/방구현	품질/권순흥	김영상 수석
	서 명	유정석	방구현	권순흥	김영상

PRODUCT PHOTO	T O P	
	B O T T O M	
Weight(g)	3.1g	

DATE	2023.01.06.
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**1. Revision History of Product Specification**  
**1.1 History List of Approval Sheet**

History List of Approval Sheet							
No.	Rev.		Rev. Data (Submission Data)	Revision Detail & Revised Contents	Amount	Request Dept.	Process Stage
	Franklin Technology	Hutec					
1	IR	IR	2023.01.06.	Prior_Approval publication	-	-	-

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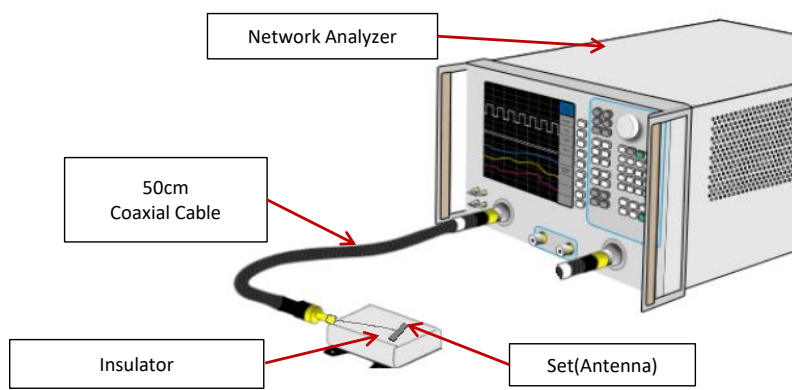
## 2. RF Specification

### 2.1 Test Condition

#### 2.1.1 Test Environment (Condition/Method)

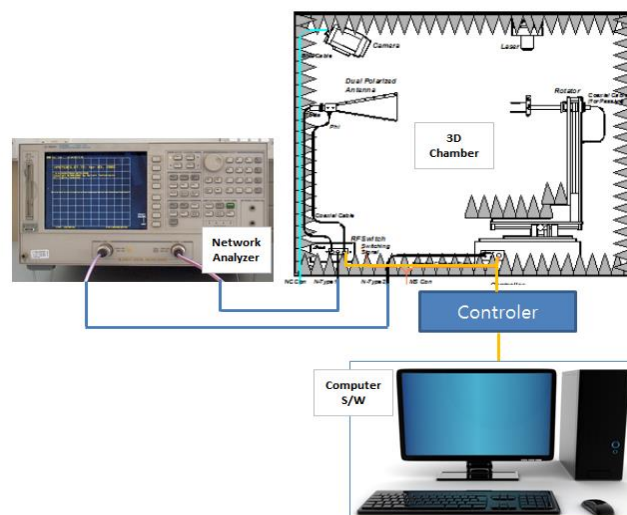
##### ① Voltage Standing Wave Ratio(VSWR)

- Step 1. Set the frequency range after connect 50cm cable to Network analyzer.
- Step 2. Connect Calibration Kit to Network analyzer and calibrate.
- Step 3. Fix the cable and keep separation distance over 30cm for reducing effect by Network analyzer.
- Step 4. Fix insulator over 5cm on the bottom of measuring antenna.
- Step 5. Measure VSWR with setting marker of desired frequency.



##### ② Radiation Pattern & Gain

- Step 1. Calibrate the Chamber system using Horn antenna, and set up the software to control the Chamber system at the same time.
- Step 2. Keep the measuring antenna to holder.
- Step 3. Measure Gain & efficiency.



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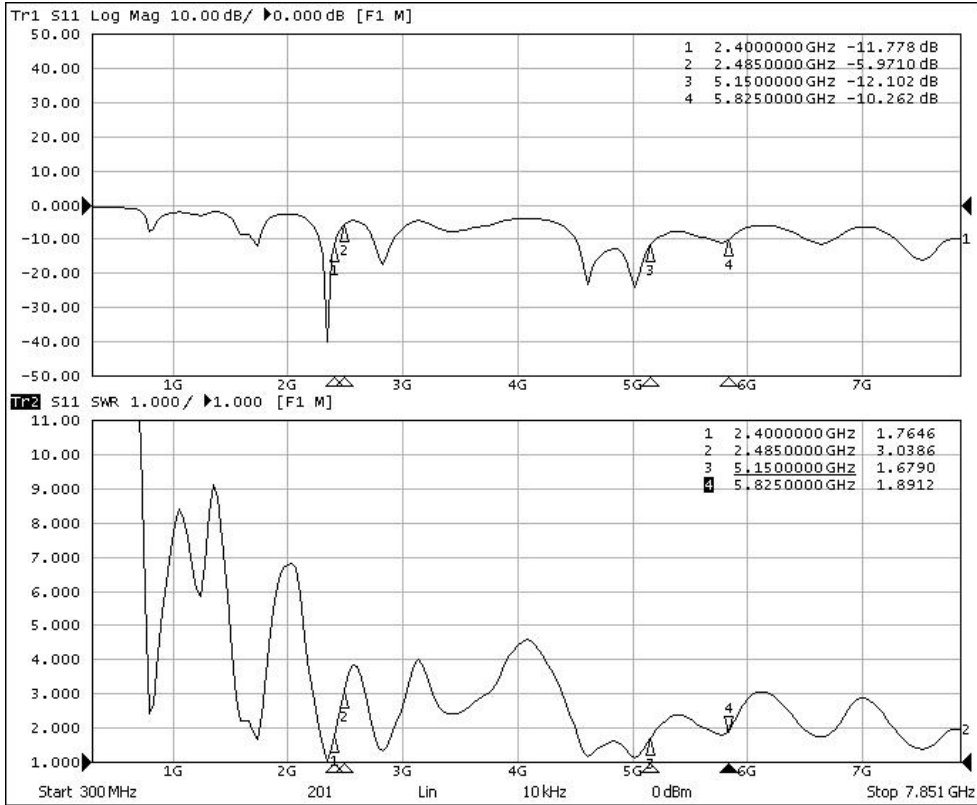
## 2.2 Electrical Specification

Frequency	WiFi(Ant6) Antenna		WiFi(Ant7) Antenna	
	2.4GHz 2400MHz ~ 2485MHz	5GHz 5150MHz ~ 5825MHz	2.4GHz 2400MHz ~ 2485MHz	5GHz 5150MHz ~ 5825MHz
VSWR	≤ 4.0	≤ 2.8	≤ 4.0	≤ 2.8
Peak Gain[dBi]	+3.1	+2.2	+1.3	+2.0
Avg Gain[dBi]	-3.2	-6.0	-4.2	-5.8
Matching Value				
Directivity	Omni-directional			
Polarization	Linear			
Feed Impedance	50 Ohms			
Power Handling	2Watt			

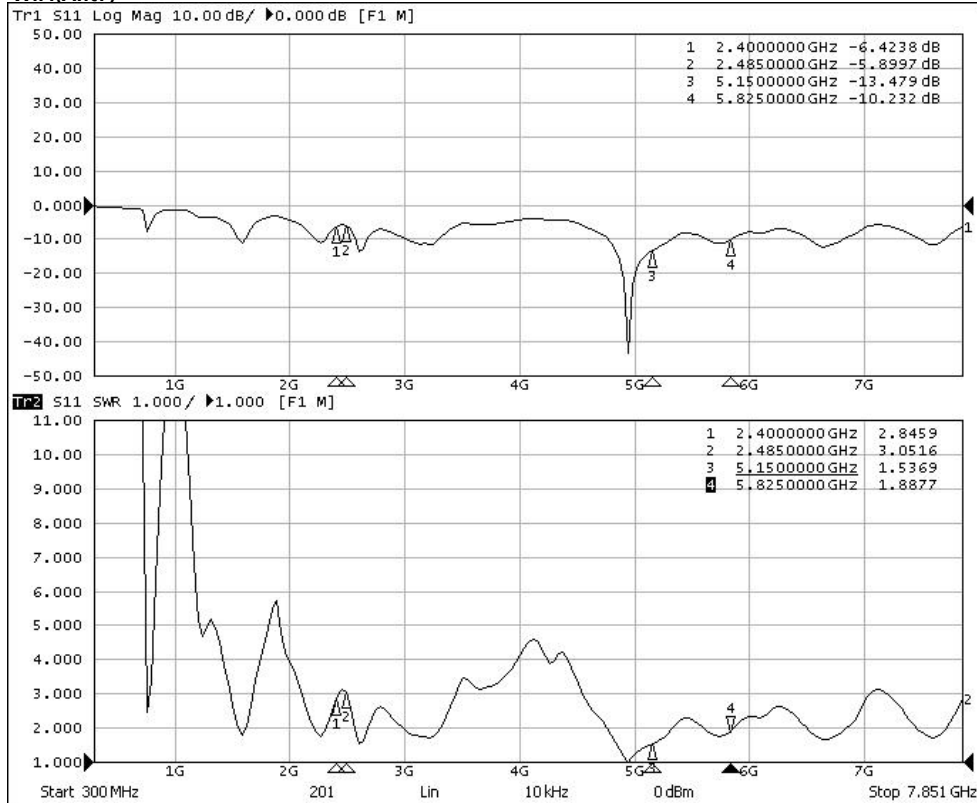
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## 2.2.1 V.S.W.R

### WiFi(Ant6)



### WiFi(Ant7)

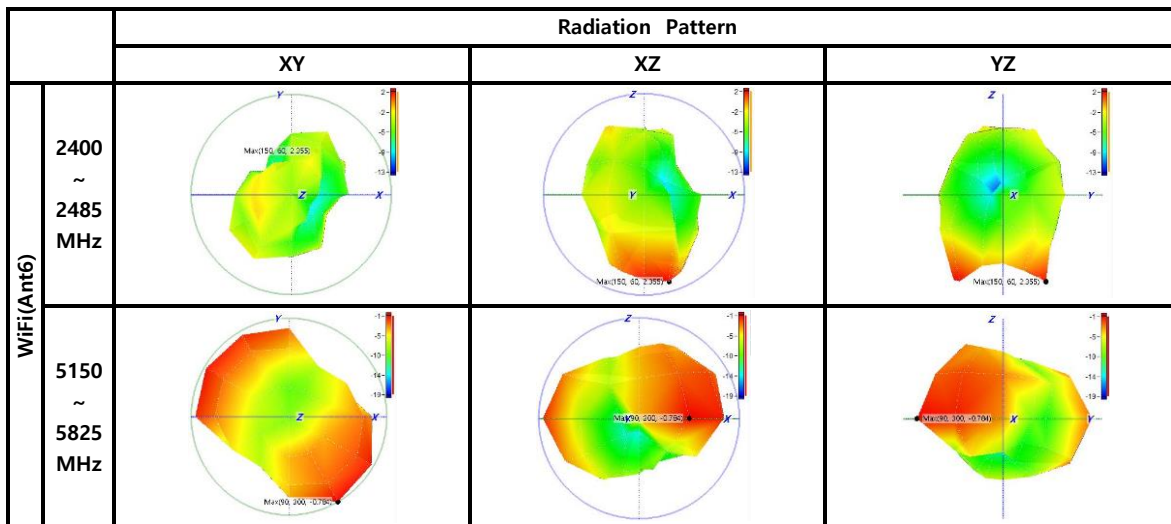


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## 2.2.2 3D Gain & Radiation Pattern

### WiFi(Ant6)

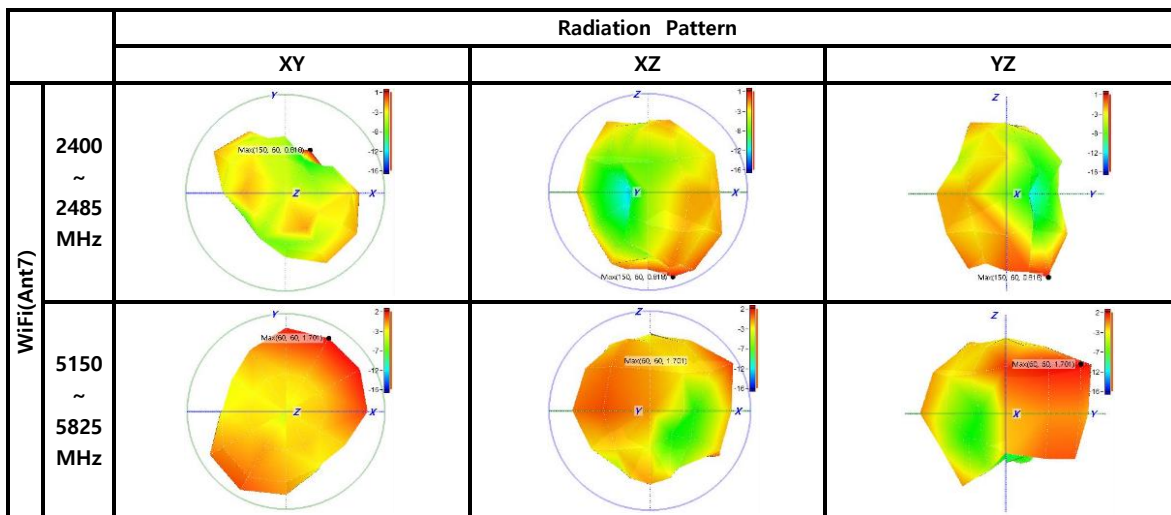
Frequency [MHz]	Peak Value		Minimum Value		Avg. Gain [dBi]	Efficiency [%]
	Value[dBi]	Degree	Value[dBi]	Degree		
2400	2.355	150 / 60	-13.304	60 / 330	-3.223	47.614
2425	2.922	150 / 60	-17.601	60 / 330	-2.337	58.385
2450	3.065	150 / 270	-20.89	60 / 330	-1.667	68.123
2485	2.413	150 / 270	-11.254	60 / 330	-1.716	67.365
5150	-0.784	90 / 300	-19.061	180 / 300	-4.731	33.643
5200	-0.696	90 / 300	-23.295	180 / 330	-4.938	32.077
5220	-1.386	90 / 300	-21.264	180 / 300	-5.284	29.622
5240	-0.224	90 / 300	-23.599	180 / 270	-4.41	36.221
5260	-0.058	90 / 330	-23.768	180 / 300	-4.287	37.268
5320	-0.274	90 / 330	-25.752	180 / 330	-4.541	35.147
5500	2.192	90 / 330	-24.627	180 / 330	-2.624	54.651
5540	0.987	90 / 330	-29.084	180 / 300	-3.873	40.989
5600	1.706	90 / 180	-24.28	180 / 330	-3.382	45.901
5660	-1.041	90 / 180	-24.441	180 / 330	-6.036	24.91
5700	1.395	90 / 180	-22.68	180 / 210	-3.333	46.422
5745	-1.347	90 / 180	-22.279	180 / 150	-6.001	25.11
5785	0.808	90 / 180	-21.339	180 / 330	-4.121	38.715
5825	-1.041	90 / 180	-22.352	180 / 330	-5.784	26.403



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**WiFi(Ant7)**

Frequency [MHz]	Peak Value		Minimum Value		Avg. Gain [dBi]	Efficiency [%]
	Value[dBi]	Degree	Value[dBi]	Degree		
2400	0.818	150 / 60	-16.264	90 / 60	-4.259	37.503
2425	1.253	150 / 60	-15.083	90 / 60	-3.722	42.438
2450	1.216	150 / 60	-13.873	90 / 60	-3.199	47.877
2485	1.07	150 / 60	-13.142	90 / 60	-2.738	53.236
5150	1.701	60 / 60	-16.434	120 / 150	-2.195	60.322
5200	1.963	60 / 60	-14.576	120 / 150	-1.598	69.218
5220	1.562	60 / 30	-14.63	120 / 150	-2.111	61.503
5240	1.018	60 / 30	-12.861	120 / 150	-2.599	54.972
5260	-0.229	60 / 60	-13.873	120 / 150	-3.599	43.661
5320	0.836	90 / 240	-14.814	180 / 330	-2.64	54.45
5500	1.676	90 / 240	-17.531	180 / 180	-1.908	64.444
5540	-1.176	90 / 240	-19.812	180 / 30	-4.69	33.962
5600	0.113	90 / 240	-19.99	180 / 120	-3.443	45.257
5660	-0.995	90 / 240	-21.381	180 / 210	-4.086	39.031
5700	-1.661	90 / 240	-20.873	180 / 30	-4.619	34.523
5745	-2.099	90 / 240	-22.236	180 / 0	-5.29	29.58
5785	-1.532	90 / 240	-22.95	180 / 150	-4.82	32.961
5825	-2.843	90 / 240	-25.428	180 / 210	-5.866	25.905





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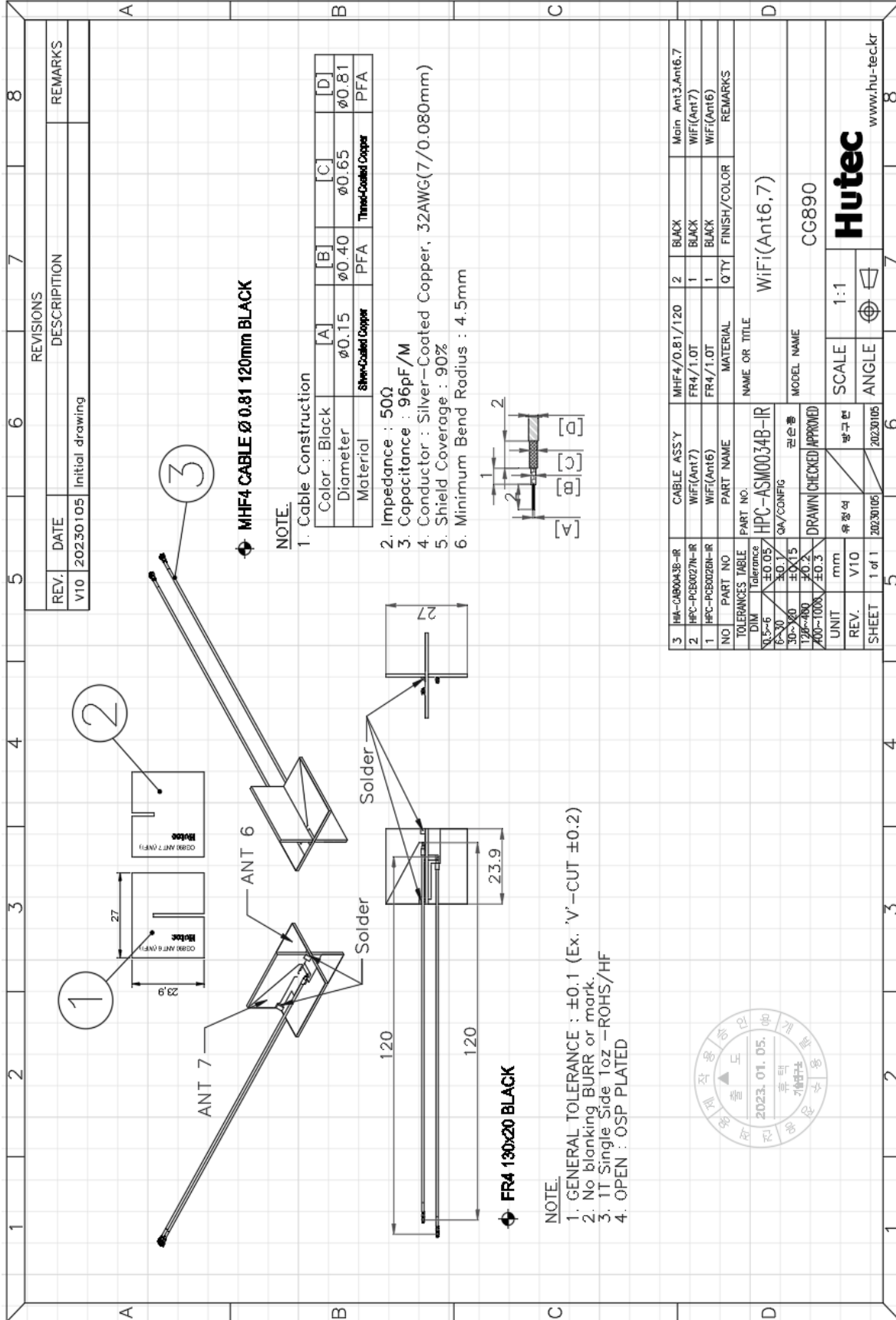
### 3. Mechanical Specification

#### 3.1 Part List

PART LIST											SIGN	DRAWN	CHECK	APPROVE	
PRODUCT NAME		CG890 WiFi(Ant6,7)										유정석			
PRODUCT SPECIFICATION		LTE&NR									ESTABLISH . DATE	2023.01.06.			
CUSTOMER		Franklin Technology									REVISION DATE	2023.01.06.	V10		
NO	LEVEL									PART NO.	PART NAME	Material & Description	Q'TY	VENDOR	REMARK
	1	2	3	4	5	6	7	8	9						
0	0									HPC-PCB0026N-IR	WiFi(Ant6)	FR4 / 1.0T	1	FMC	WiFi(Ant6)
1	0									HPC-PCB0027N-IR	WiFi(Ant7)	FR4 / 1.0T	1	FMC	WiFi(Ant7)
2	0									HPC-CAB0046B-IR	CABLE ASS'Y	MHF4 / Ø0.81	1	FMC	Main Ant3,Ant6,7
3	0														
4															
5															
6															-
7															-
8															-
9															-
10															-
11															-
12															-
13															-
14															-
15															-
[REVISION HISTORY]															
REV	DATE	DESCRIPTION				REMARKS	REV	DATE	DESCRIPTION				REMARKS		
[REMARKS]															

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### 3.2 Ass'y Drawing



REVISONS		REMARKS
REV.	DATE	
V10	20230105	Initial drawing

➔ **MHF4 CABLE Ø0.81 120mm BLACK**

**NOTE.**

1. Cable Construction

Color : Black	[A]	[B]	[C]	[D]
Diameter	ø0.15	ø0.40	ø0.65	ø0.81
Material	Silver-Coated Copper	PFA	Thin-Coated Copper	PFA

- Impedance : 50Ω
- Capacitance : 96pF/M
- Conductor : Silver-Coated Copper, 32AWG(7/0.080mm)
- Shield Coverage : 90%
- Minimum Bend Radius : 4.5mm

➔ **FR4 130x20 BLACK**

**NOTE.**

- GENERAL TOLERANCE : ±0.1 (Ex. 'V'-CUT ±0.2)
- No blanking BURR or mark.
- 1T Single Side 1oz -ROHS/HF
- OPEN : OSP PLATED

3	HPC-C89043B-IR	CABLE ASS'Y	MHF4/0.81/120	2	BLACK	Main Ant3,Ant6,7
2	HPC-PC8027R-IR	WiFi(Ant7)	FR4/1.0T	1	BLACK	WiFi(Ant7)
1	HPC-PC8026R-IR	WiFi(Ant6)	FR4/1.0T	1	BLACK	WiFi(Ant6)
NO.	PART NO.	PART NAME	MATERIAL	Q'TY	FINISH/COLOR	REMARKS
TOLERANCES TABLE		NAME OR TITLE				
DIM	Tolerance	MODEL NAME				
0.5-6	±0.05	CG890				
6-30	±0.1	WiFi(Ant6,7)				
30-100	±0.15	SCALE 1:1				
120-180	±0.2	ANGLE				
200-1000	±0.3	www.hu-tec.kr				
UNIT	mm	Hutec				
REV.	V10	SHEET 1 of 1				
SHEET	1 of 1	20230105				

