

APPROVAL SHEET

Customer	humannexsys		
Supplier	JBlue		
Model Name	ELT-E2100		
Product Name	DIV Antenna[FPCB type]		
Frequency band	LTE 26&31 / LoRa		
Maker code	JB_ML_ELT-E2100 D[26&31&L]		
Date	November 6 , 2025		
Confirm	PREPARED BY	CHECKED BY	Approved BY
			
	Oscar	Lucas	Allen

Reserch : Rm.403 24, Daeryung Techno Town 13, Gasan digital 1-ro, Geumcheon-gu, Seoul
 TEL: 02)6673-2700 / FAX: 02)6673-2704

JBLUE (주)제이블루

Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		1

REVISION LIST

REVISION	DATE	CHANGE CONTENTS	CHANGE CAUSE	REMARK
Revision	2025.11.06		FIRST APPROVAL SPECIFICATION	
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				
FROM ISSUE TO				

Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		2

- CONTENTS -

1. Technical Items	3
1.1 Electrical Spec.	3
1.1.1 VSWR	4
1.1.2 Radiation pattern	5
1.1.3 Gain	5
1.2 Test Equipments/method	6
2. Mechanical Items	10
2.1 Mechanical Spec.	10
2.2 Material spec.	10
2.3 Drop Test	10
2.4 Antenna Drawing.	11
3. Environmental Demands	12
3.1 Low Temperature Soaking	12
3.2 High Temperature Soaking	12
3.3 Thermal Shock Test	13
3.4 Static Humidity Test	13

Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		3

1. Technical Items

1.1 Electrical Spec.

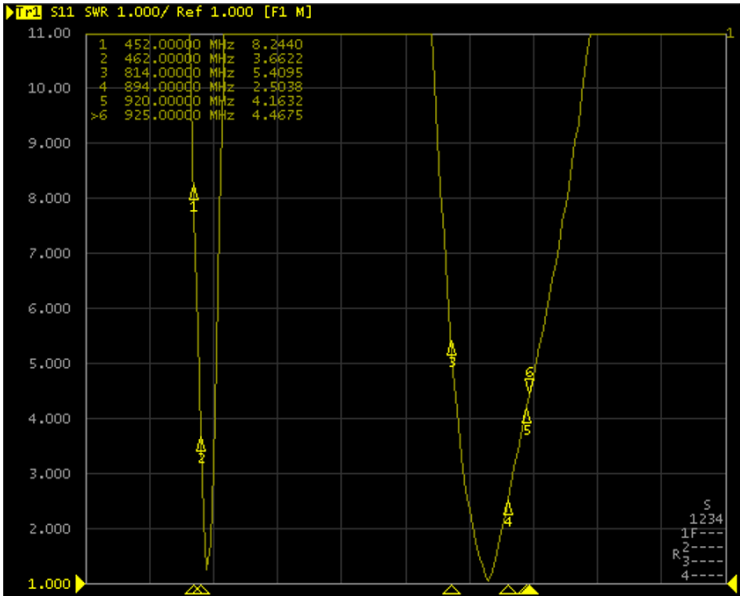
Electrical Spec.						
Frequency Range	LTE 31		LTE 26		LoRa	
	452MHz	462MHz	814MHz	894MHz	920MHz	925MHz
V.S.W.R	9.2	4.5	5.5	3.5	5.1	5.5
Peak GAIN (E2-Plane/ Min)	-14.0dBi	-12.0dBi	-11.5dBi	-7.5dBi	-8.5dBi	-9.0dBi
Average GAIN (H-Plane/ Min)	-19.0dBi	-16.5dBi	-17.0dBi	-12.5dBi	-14.0dBi	-14.5dBi
Impedance (Nominal)	50 ohms					
Polarization	Vertical					
Radiation Pattern	Omni-Directional					
Maximum Power	2 Watts					

Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		4

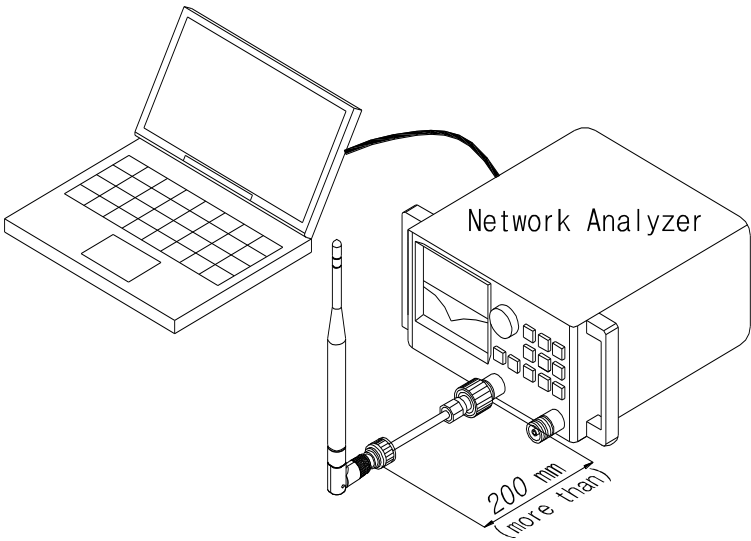
1.1.1 VSWR

The VSWR characteristics must satisfy the electrical demands.

Frequency [MHz]	LTE 31		LTE 26		LoRa	
	452MHz	462MHz	814MHz	894MHz	920MHz	925MHz
V.S.W.R	9.2	4.5	5.5	3.5	5.1	5.5



-Test method



Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		5

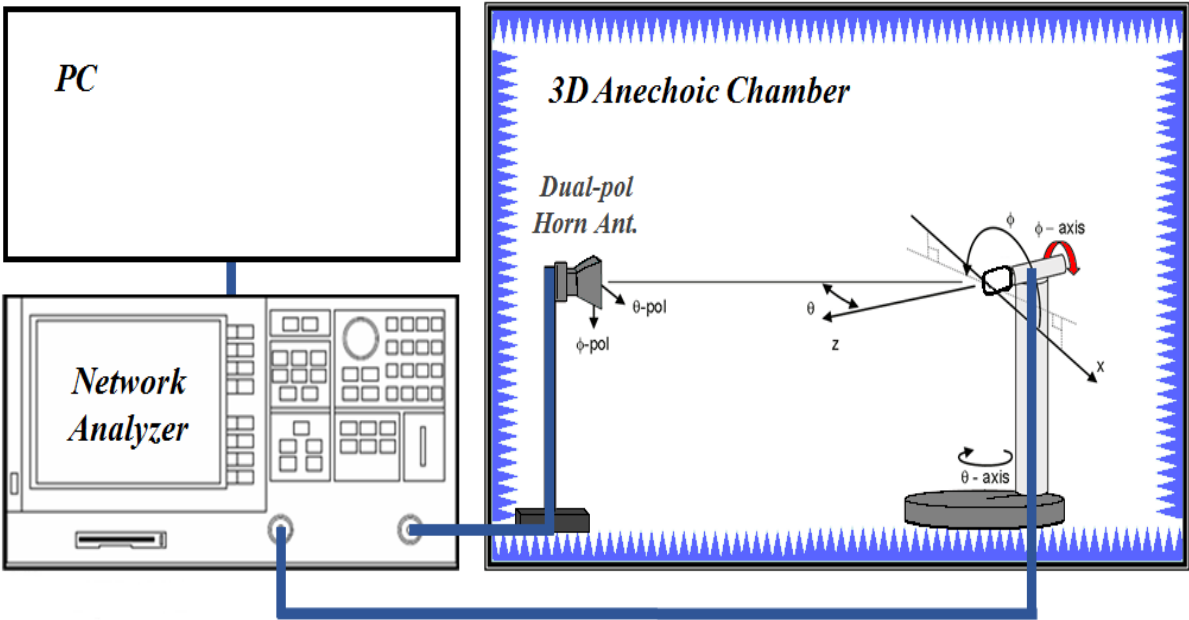
1.1.2 Radiation pattern

- The radiation pattern must have the Omni-directional characteristic in Band 26&31 , LoRa.

1.1.3 GAIN

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

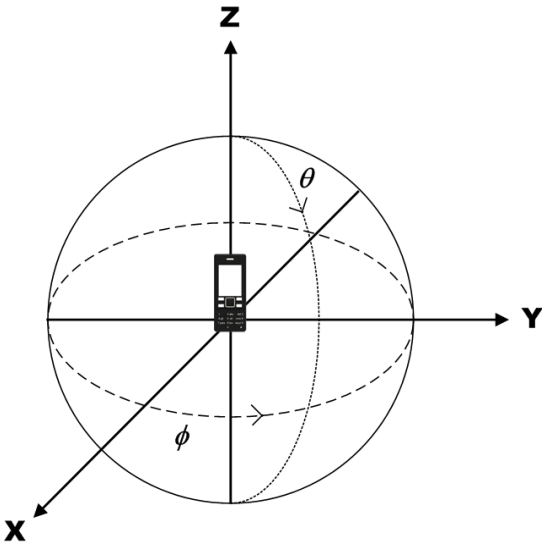
Frequency [MHz]	LTE 31		LTE 26		LoRa	
	452MHz	462MHz	814MHz	894MHz	920MHz	925MHz
Peak GAIN	-14.0dBi	-12.0dBi	-11.5dBi	-7.5dBi	-8.5dBi	-9.0dBi
Average GAIN	-19.0dBi	-16.5dBi	-17.0dBi	-12.5dBi	-14.0dBi	-14.5dBi



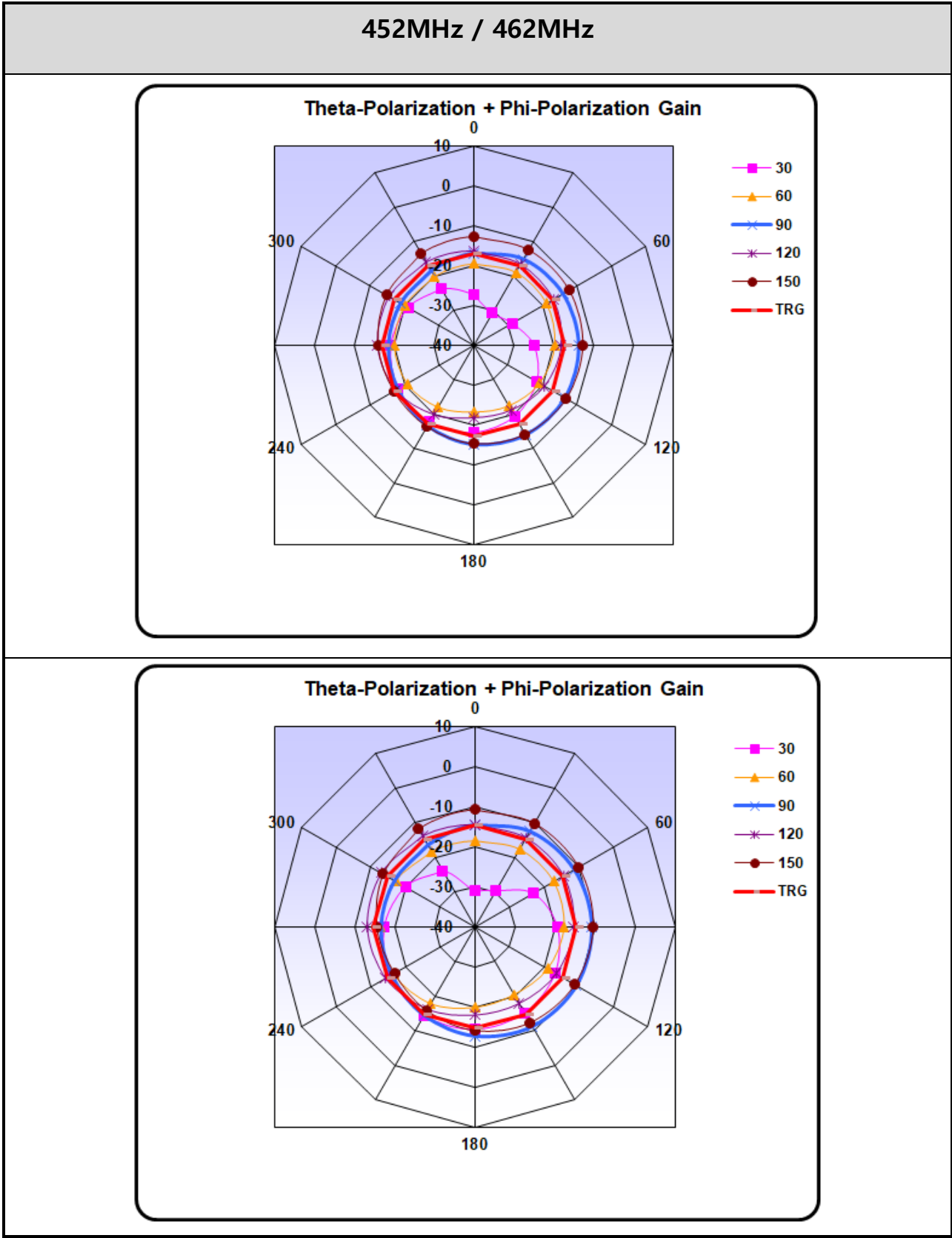
Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		6

1.2 Test Equipments/method

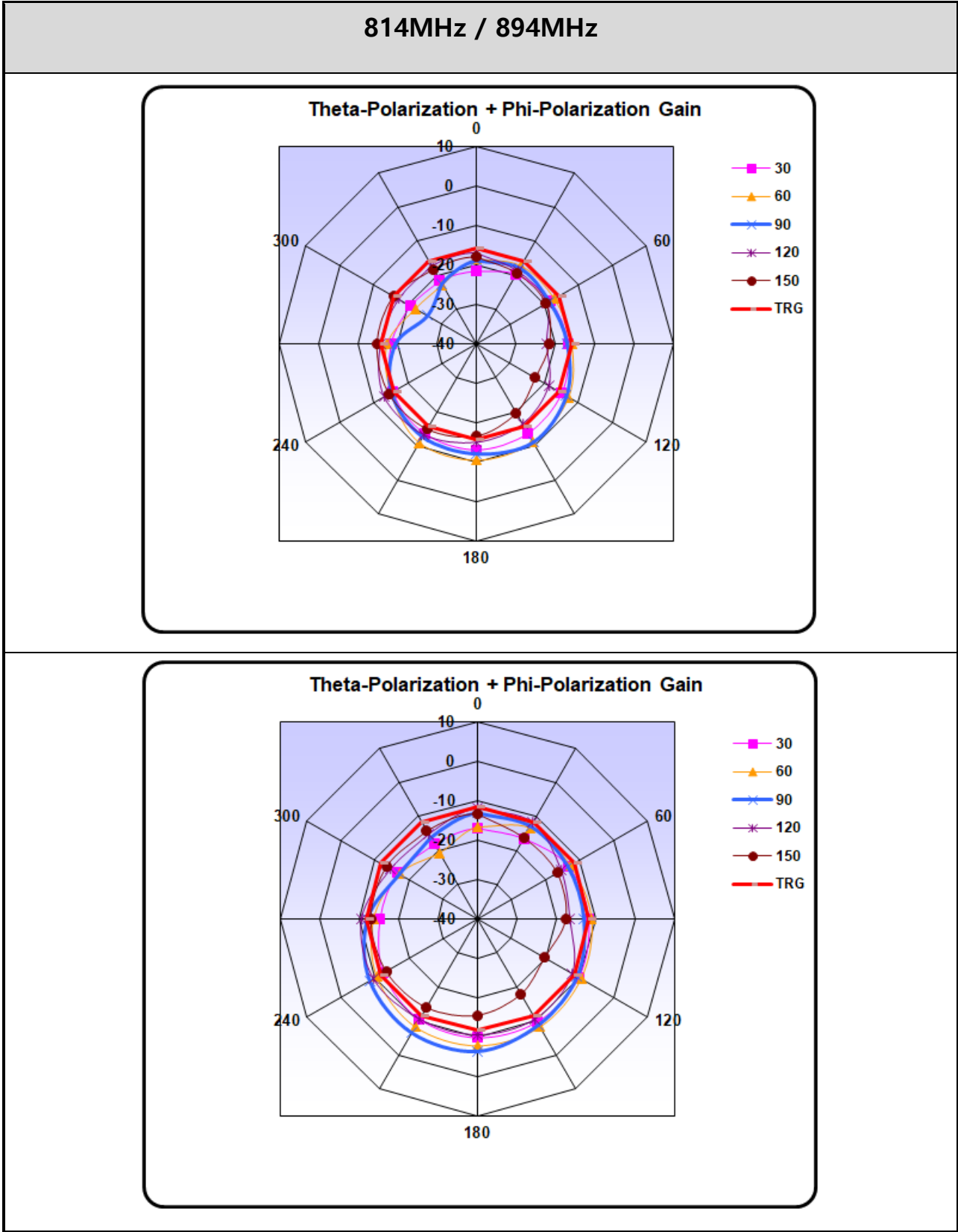
The antenna is tested while mounted on handset with the correct matching circuit in free space. Radiation patterns are measured on at least three different frequencies: Band 26, Band31, LoRa. The antenna is measured for three-dimensional. The results of the test will be correlated to the customer handset and the measurement environment.



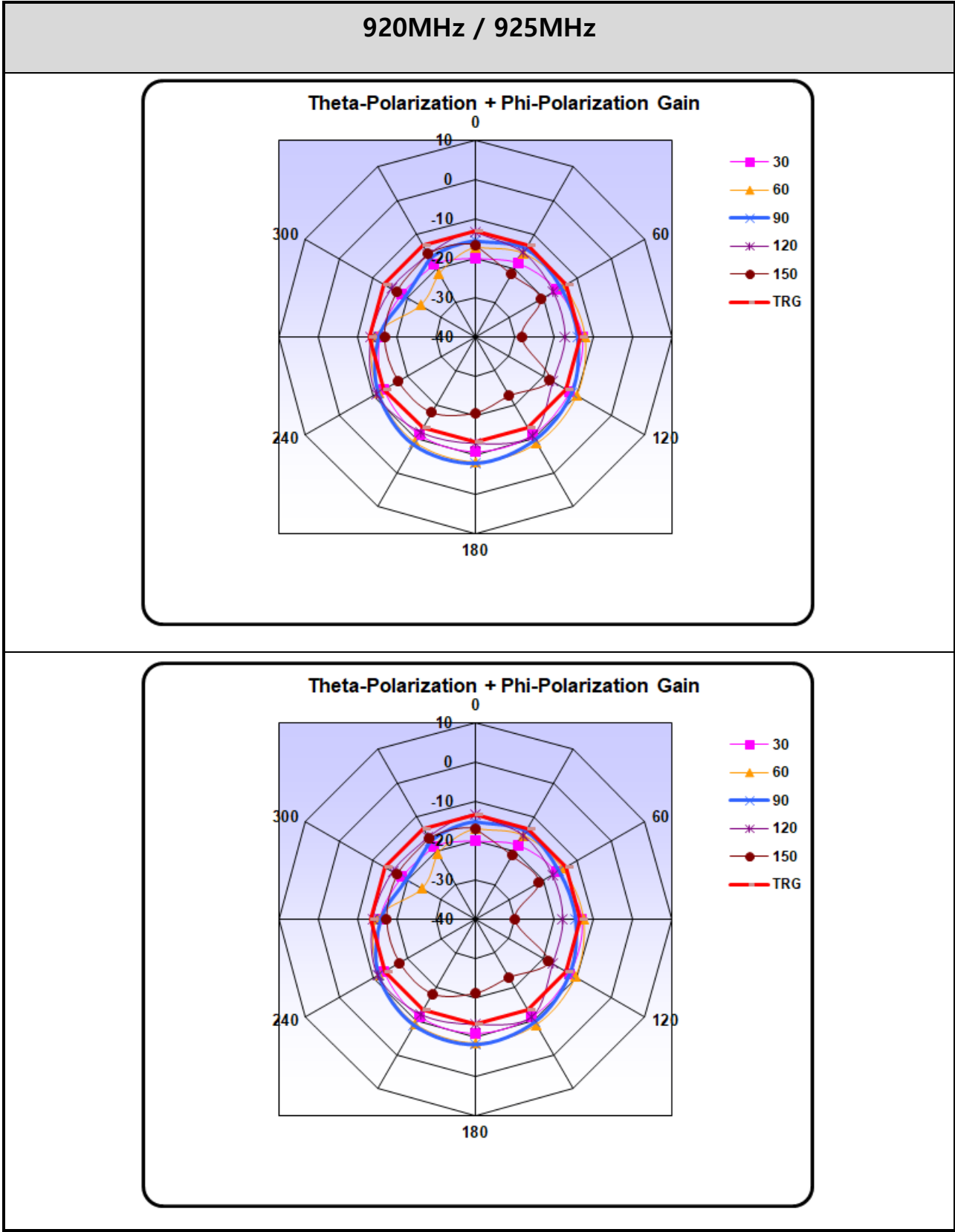
Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		7



Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		8



Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		9



Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		10

2. Mechanical Items

2.1 Mechanical Spec.

Mechanical Spec.	
Overall length	See drawing
Operation Temperature	-30℃ ~ +80℃
Weight	0.5g

The test equipments for antenna are as follows

- ◆ Network Analyzer (Agilent E5071B) to measure the VSWR of antenna
- ◆ Standard Horn antenna that is adjustable in the 26&31&LoRa band
- ◆ Anechoic Chamber installed the cables, connectors and equipments for measurement
- ◆ Dogmatic Caliper to measure the dimensions
- ◆ Climatic Chamber for environmental test

2.2 Material Spec

	Material	Material manufacturers
FPCB	Copper(IR)	JBLUE

2.3 DROP TEST

The antenna assembled to the mobile device provided by humannexsys, should withstand 2 drops(per each slide open & close=Total 40times x 5pcs) from 1.5m heights onto a steel plate 500×500mm with thickness of 20mm. The antenna should function mechanically after the test. Electrical characteristics should be within the specified range.

Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		12

3. Environmental Demands

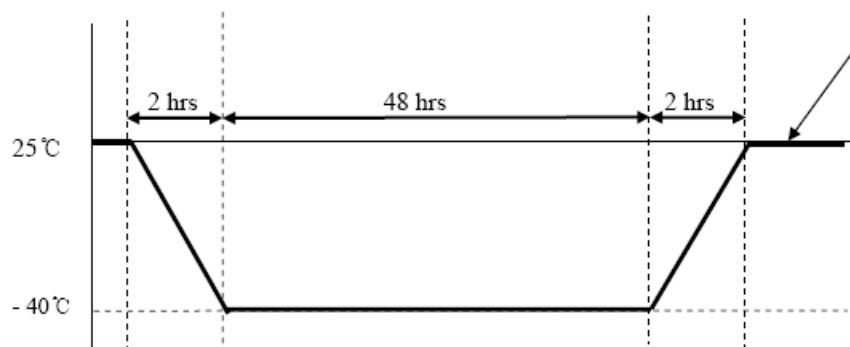
3.1 LOW TEMPERATURE SOAKING

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.



Low Temperature soaking

3.2 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.



High Temperature soaking

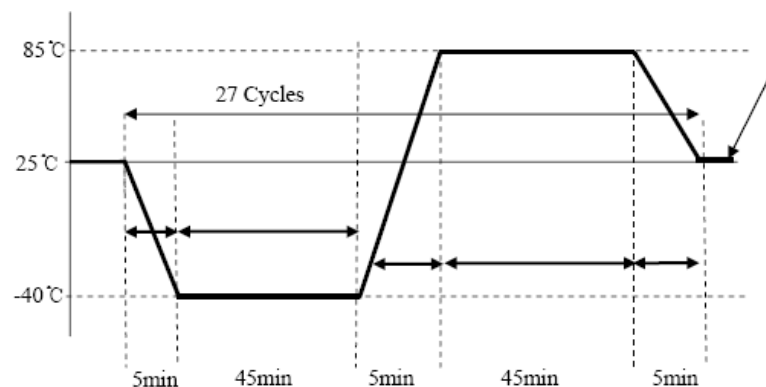
Antenna Specifications		Ver.	JB-A-001	REV.	JBLUE	01
		DATE	2025-11-6		humannexsys	00
MODEL	ELT-E2100	TYPE	DIV ANT.	PAGE		13

3.3 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



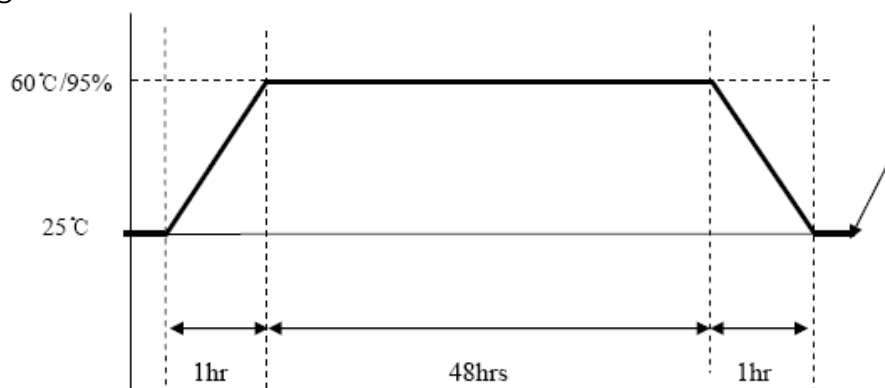
Thermal Shock Test

3.4 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



Static Humidity Test