APPROVAL NUMBER

DATE : Mar. 28. 2024

SHEET NUMBER : Ant-01

SPECIFICATION FOR APPROVAL

LEETEK

DESIGNATION	450MHz Spring Antenna
Part Number	Leetek Spr-Ant-01
Model Number	LTC

R&D			
ISSUE	**CHECKED**	**PM**	**APPROVED**
			

47, Ojeong-ro, Ojeong-gu, Bucheon-si, Gyeonggi-do, Republic of Korea

TEL:82-32-324-9838, FAX:82-32-324-9840

Contents

1. General

1.1. Product Description

448MHz Internal antenna for use in a portable unit for wireless communication (referred to as a radio).

1.2. Product Number

LEETEK Product Name : Leetek Spr-Ant-01

1.3. Units, Definitions, and Abbreviations

Unless otherwise stated, SI units are used.

TX	Transmit Band
RX	Receiver Band
PCB	Printed Circuit Board
RH	Relative Humidity
dBi	Antenna gain in Db (isotropic)
CW	Continuous Wave

1.4. Interface

All properties are guaranteed under the conditions that antenna/radio interface is designed in accordance with instructions provided by Leetek. Functionality with other equipment (such as couplers etc.) is not guaranteed unless this has been agreed upon separately.

1.5. Conditions

Unless otherwise stated all temperature tolerances are ±3℃ and all RH tolerances are ±5 percentage units.

Unless otherwise stated all values are valid at 20℃ and 50% RH.

1.6. Coordinate System

The coordinate system for the radio is defined as follows;

. Origin 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.

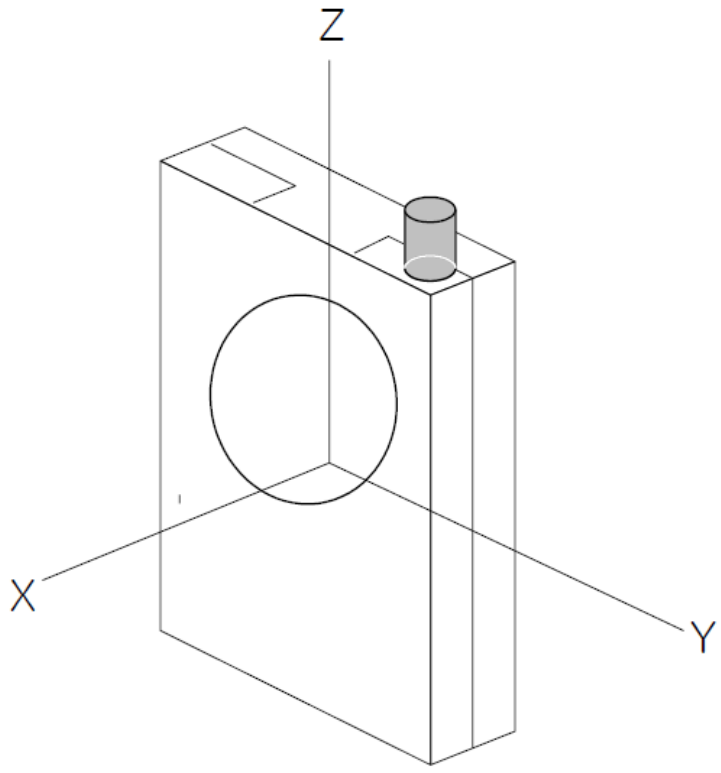


Figure 1.6.1 Coordinate system for the radio.

2. Electrical Properties

2.1. Frequency Band

2.1.1 Full Band : 450 ~ 470MHz

2.1.2 FCC & IC Band : 450.0250 / 457.5750 / 469.9750 MHz

2.2. Impedance

2.2.1 Nominal Value

50 Ohms

2.2.2 Method

Leetek will supply engineering assistance to ensure that the impedance Over the frequency bands is as close to 50 ohms as possible after matching. Both free space and talk position are considered, with priority given to talk position.

2.3. Gain

Below are average gain values of the frequency with the lowest peak gain within each band including production variation influences.

2.3.1 Values

Unit	**Leetek Spr-Ant-01**
	450.0000MHz
(dBi)	**-19.34**

2.3.2 Method of Measurement

The connection is done according to 2.3.2, Radiation patterns are measured at the TX and RX band edges for each band defined in 2.1.1 and 2.1.2.

The measurements are Performed so as to minimize the influence of the cables.

Only the coplanar polarization component is measured.

The antenna is measure in 2 orthogonal E-planes in free space, according to figure 2.31. The antenna is also measured in talk position. Calibration for absolute measurements is done with a reference antenna, which is in turn calibrated by a certified calibration company.

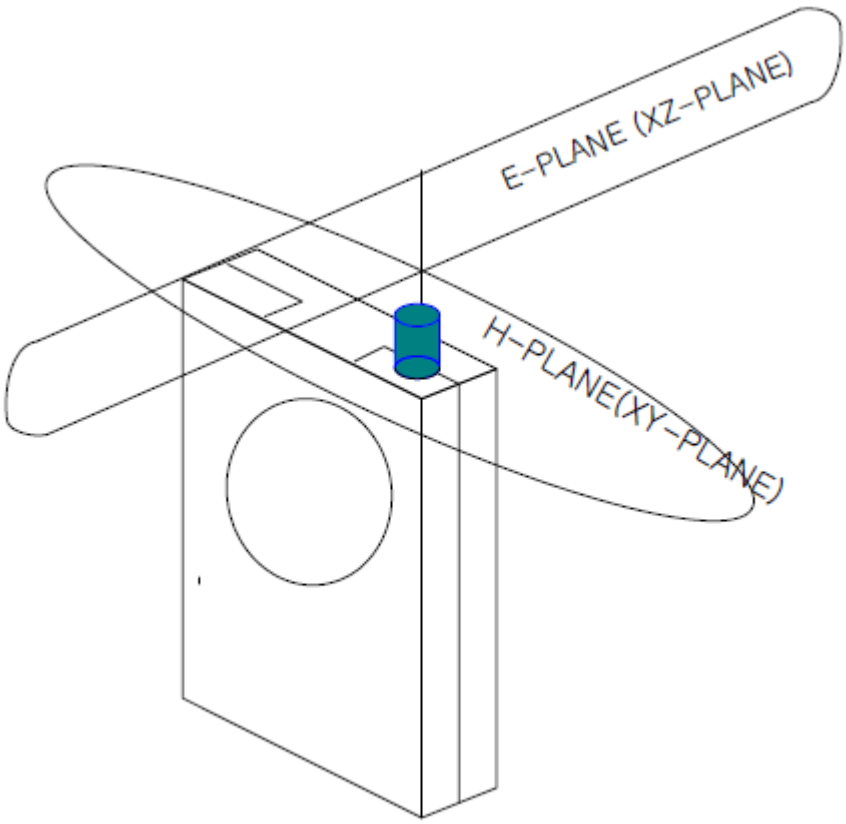


Figure 2.4.1

2.4 Power Rating

2.4.1 Maximum Value

P = 100mW (CW)

2.4.2 Post Test requirements

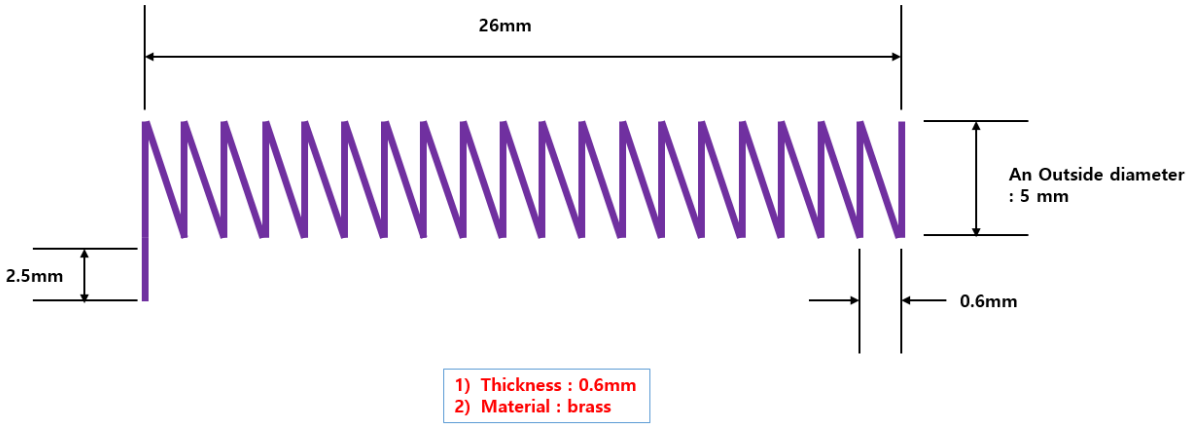
Without mechanical damage and electrical performance according

to 2.3.1 and 2.4.1, after the test.

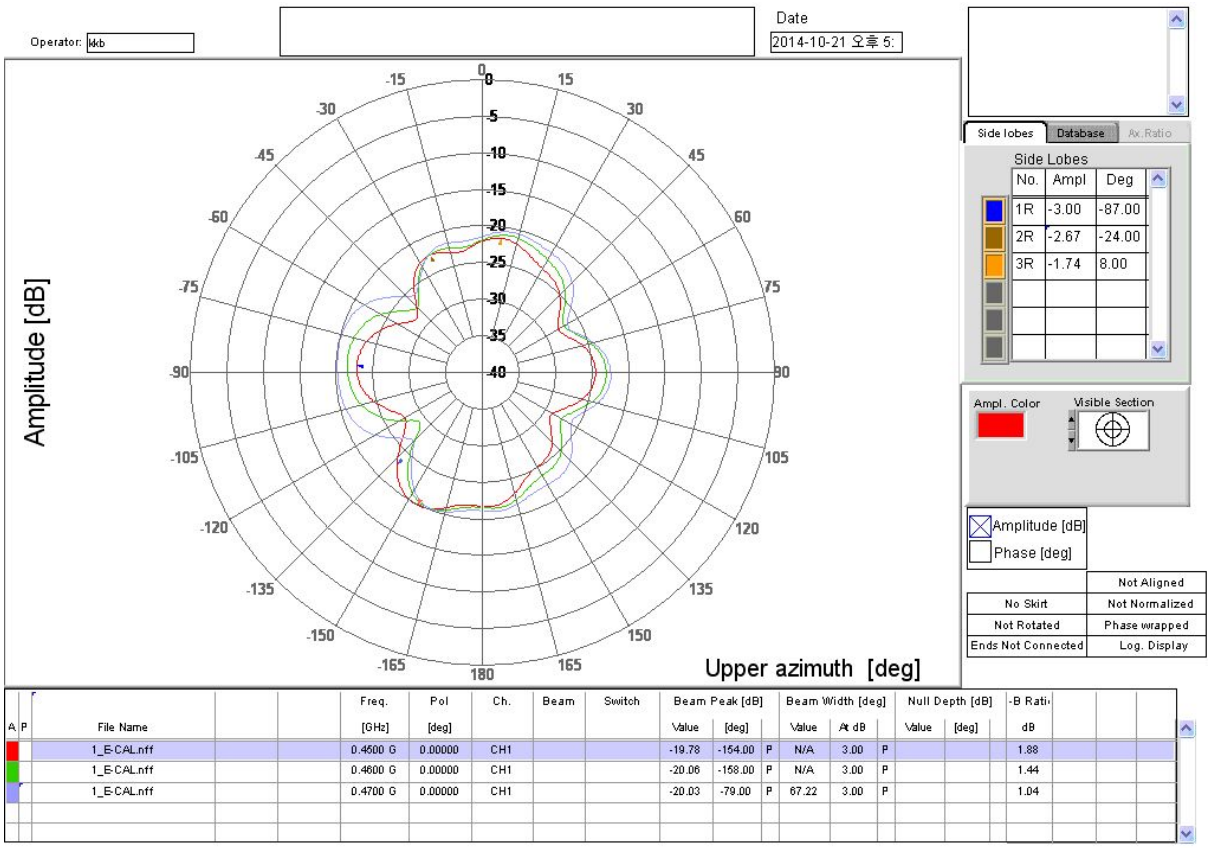
2.4.3 Method of Measurement

The connection is done according 2.31. The specified power, P, is applied for 10 minutes at the middle frequency of each TX band defined in 2.1.1..

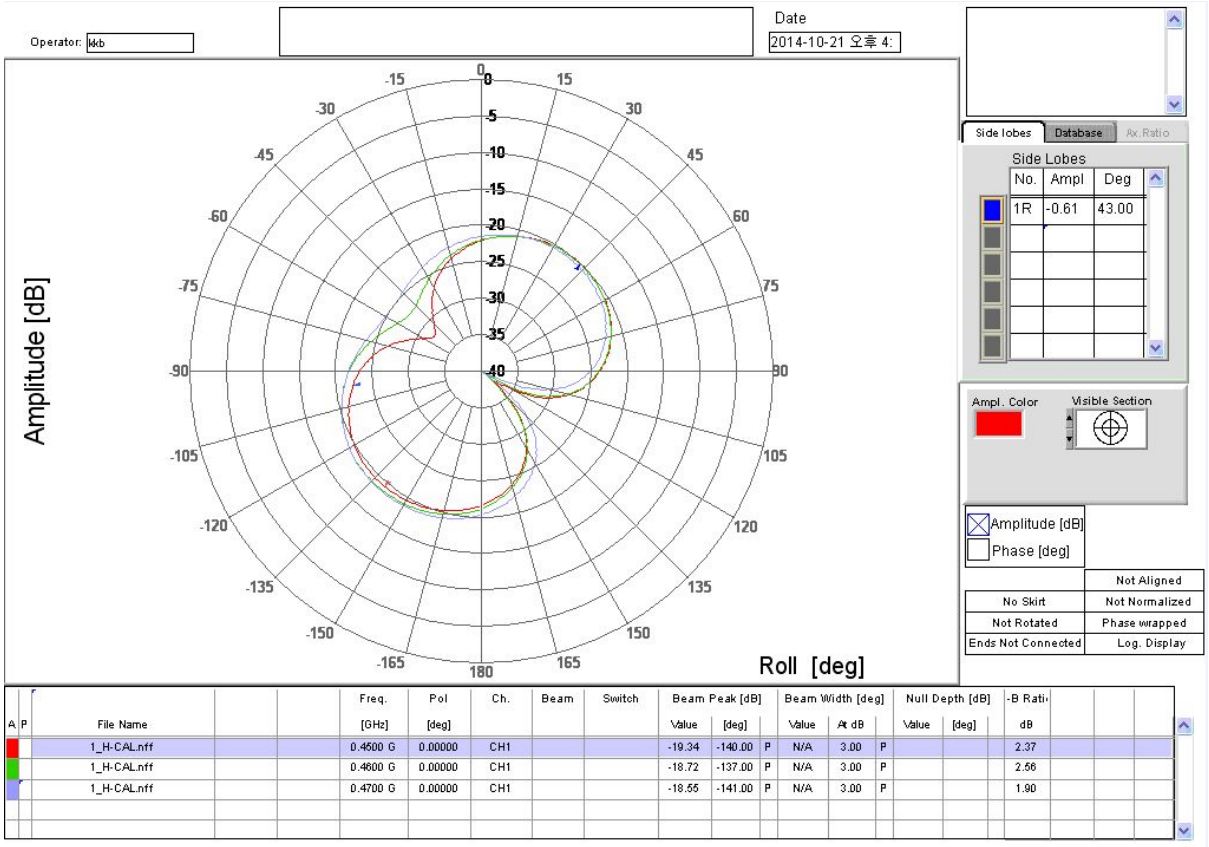
3. Antenna Drawing



4. Radiation Gain



A	P	File Name	Freq. [GHz]	Pol [deg]	Ch.	Beam	Switch	Beam Peak [dB] Value	[deg]		Beam Width [deg] Value	At dB		Null Depth [dB] Value	[deg]	-B Rati dB
		1_E-CAL.nff	0.4500 G	0.00000	CH1			-19.78	-154.00	P	N/A	3.00	P			1.88
		1_E-CAL.nff	0.4600 G	0.00000	CH1			-20.06	-158.00	P	N/A	3.00	P			1.44
		1_E-CAL.nff	0.4700 G	0.00000	CH1			-20.03	-79.00	P	67.22	3.00	P			1.04



A	P	File Name	Freq. [GHz]	Pol [deg]	Ch.	Beam	Switch	Beam Peak [dB] Value	[deg]		Beam Width [deg] Value	At dB		Null Depth [dB] Value	[deg]	-B Rati dB
		1_H-CAL.nff	0.4500 G	0.00000	CH1			-19.34	-140.00	P	N/A	3.00	P			2.37
		1_H-CAL.nff	0.4600 G	0.00000	CH1			-18.72	-137.00	P	N/A	3.00	P			2.56
		1_H-CAL.nff	0.4700 G	0.00000	CH1			-18.55	-141.00	P	N/A	3.00	P			1.90