



Product Specification

PCB CABLE Antenna

TF –LTAI-464

Head Office R&D Center :

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	Description LORA ANT Product Specification			
	Specification No. TF -LTAI-464	Customer. Miratek	Rev. 1.0	Date DEC.22 . 2025

Antenna Approval sheet

	PCB CABLE Antenna
Product Name	LORA
Part No.	TF -LTAI-464
Customer code	
Customer	Miratek
Provider	TELLESTAR

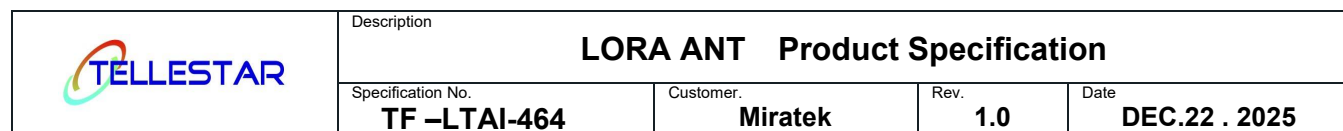
APPROVAL	Classification	DIRECTOR	EXAMINATION	APPROVAL
	RF			
	MECHANICAL			
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	RF			
	MECHANICAL			



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2.Revision List

No	Date	Before change	After change	Reason	Rev
1	2025.12.22			DATA	1.0
2					
3					
4					
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3.Specification – Set Test

3-1 General Standard

General Specification	
Model name	TF –LTAI-464
Antenna type	PCB CABLE Antenna

3-2 Electrical Standard

Electrical Specification	
Frequency range	902~928MHz
V.S.W.R	5.0:1
Gain(dBi) MAX	4.29dBi
Radiation pattern	Omni-Directional
Polarization	Vertical
Max Power(W)	2W Max.
Impedance	50ohms

3-3 Mechanical Standard

Mechanical Specification	
Connector type	IPEX MHF1
Material	CU –FR-4
Color	BALCK
RF CABLE	1.13mm GRAY 41mm
Temperature range	-30°C ~ 85°C
Weight	1.66 ± 0.1g

3-4 Operating Conditions

Specification	
Operating Environment	Temperature : -30~85°C Humidity : ~85% RH
Storage Environment	Temperature : -20~60°C Humidity : ~65% RH

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PHOTO



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4 Test Procedure & Measurement

4-1 External Test

To check the unity Antenna's exterior, size, connector and etc. with the exterior indicated

4-2Electrical Feature Inspection

4-2-1 Materials

Equipment	Model	Quantity	Standard
Network Analyzer	E5071C equipment with the equivalent	1EA	·Freq. Range : 9KHz ~ 8.5GHz · Accuracy : <5ppm ·Dynamic Range : 105dB · Trace at ± 200dB · Resolution : 1Hz · Impedance : 50Ω
Adaptor		1EA	· N(F)-SMA(M)
Calibration Kit	HP85033D	1Set	· DC ~ 8.5GHz (SMA-Type)

Inspection



Figure 1. (Network Analyzer) Electrical Characteristic Measurement

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4-2-2 Inspection

가. Equipment Setting and Calibration

㉠ Equipment Setting

㉡ Bandwidth: 902~928MHz

㉢ Source Power: 0dBm,

㉣ Calibration

Using N-Type CalKit Applying O.S.L. Method, Calibrate Port number 1.

㉤ S₁₁Calibration: Open Port #1, Calibrate after connecting the Load short.

㉥ Calibration Check

㉡ Connect Load to Port #1 to check S₁₁'s V.S.W.R is less than 1.02:1

㉢ Connect Load to Port #1 to check S₂₁ is less than -80.0dB.

If not Satisfied with the Result, Repeat Procedure ㉣ Calibration.

나. Inspection Method and Contents

Item	Inspection Method	Standard
V.S.W.R	Connect ANT to the Positioner and Measure the S ₁₁ within Operating Band, as Shown above on Figure 1.	2.0:1 Max.
Impedance	Connect ANT to the Positioner and Measure the S ₁₁ VALUE that's on Smith Chart within the Operating Band, as shown above on Figure w.	50Ω

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4-3 .Radiation Pattern

4-3-1 Chamber Materials (KTM Korea)

Name of the Equipment	Model	Quantity	Standard
Far Field Chamber	KTM	1EA	·Freq. Range:400MHz~6GHz · Measurement Speed : Radiation Pattern Cuts: Real Time Full sphere far-field : <600 sec · Measurement Accuracy : Dynamic Range: 70 dB Cross-polar isolation < -45 dB · Gain Accuracy : MTG 1 - 6GHz < $\pm 0.75\text{dB}$
Adaptor		1EA	· SMA(M)-SMA(F)
Computer		1EA	·Data for Measurement

4-3-2 Inspection

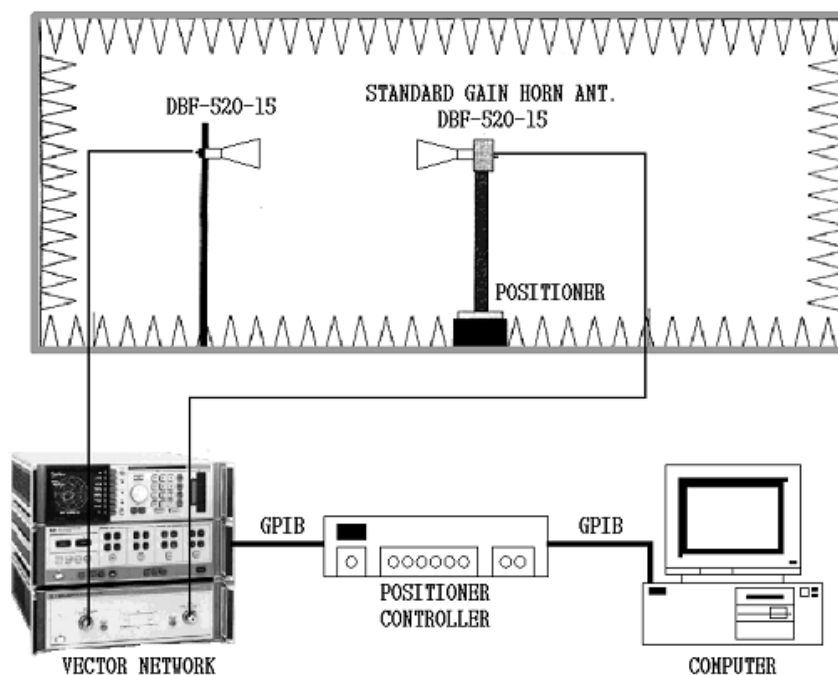
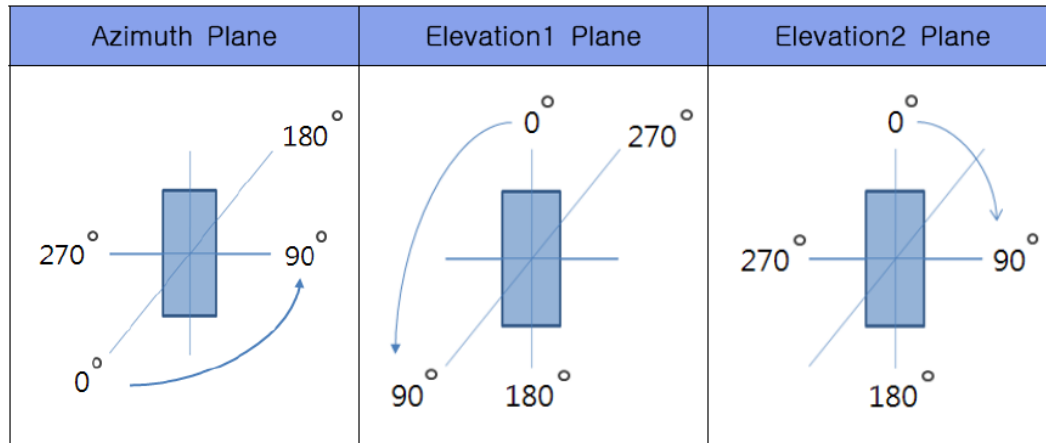


Figure2. Radiation Patten Test Construction

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A. Equipment Setting and Measurement

① Network Analyzer Setting

① Calibrate Chamber System for Gain Measurement using KTM. At the Same Time set up Software Program fir Chamber System Control.

– Test Frequency Setting : LTE Cat M1 Band

② Change Over from a TX to the RX on Target Positioner.

③ Start a Software Program for Chamber System Control & Measuring.

④ Measurement Data.

B. Inspection Method and Contents

Item	Inspection Method	Standard
Radiation Pattern	Connect ANT' to the Positioner and measure the Radiation Pattern within the Far Field Chamber, as shown above, on Figure 2.	Normal: dBi

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5 .Packing, Shipping, Handling

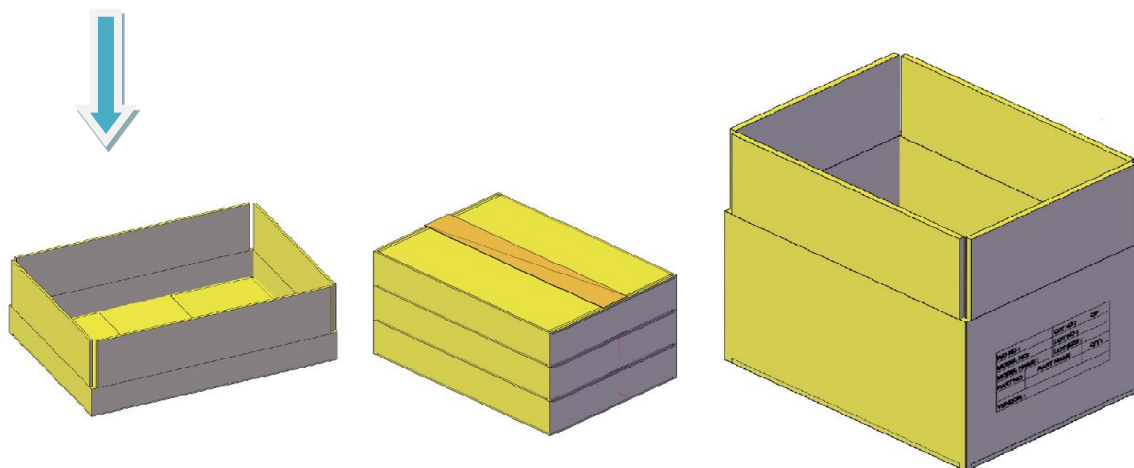
5-1.Exterior Option

- 1) Both ordering enterprise and producer's names should be indicated.
- 2) Name, Serial number and quantity of the Model should be indicated.

5-2 .Packing

manufacturer

PE 포장 (열융착) 50EA 포장



C-corrugated

BC- corrugated

	PART NAME	Q.TY
1	VINYL BAG	50EA
2	INNER BOX 330*250*80mm	1500EA
3	OUTBOX 365*260*250mm	4500EA

Warranty : 1:1 exchange if defective



1	2	3	4	5	6	7	8
					Rev. No.	Designed by	Checked by
					Δ		

FR-4 0.8T 1/2oz Double side
Double SIDE Black Masking
FONTE WHITE SILK

NO	Drawing Name	Drawing NO	Qty	Material	Finish	Remarks	Part NO
1	IPEX CONNECTOR	1ea		RF Cable		IPEX MHF1 #137	
2	Cable BLACK	1ea				BLACK	
3	PCB 0.8T	1ea					
4	Part Name	Qty	Material	Finish	Remark		

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TF-LTAI-464

NO	Drawing Name	Drawing NO	Qty	Material	Finish	Remarks	Part NO
1	IPEX CONNECTOR	1ea		RF Cable		IPEX MHF1 #137	
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3	PCB 0.8T	1ea					
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3	PCB 0.8T	1ea					
4	Part Name	Qty	Material	Finish	Remark		

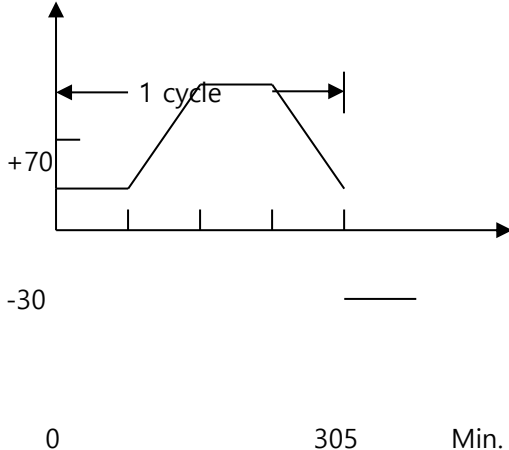
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NO	Drawing Name	Drawing NO	Qty</
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7. Quality Standard and test Method

Reliability Test

NO	Items	Specifications	
7-1	LOW TEMP EXPOSURE TEST	TEMPERATURE : -30°C TIME : 48 HOURS	AFTER 2HOURS EXPOSURE IN ORDINARY FROM TEST , ANTENNAS SHALL BE APPROVED AS SPECIFIED IN ITEM 5 AND 6
7-2	HIGHTEMP EXPOSURE TEST	TEMPERATURE : 70°C TIME : 48 HOURS	
7-3	HUMIDITY EXPOSURE TEST	TEMPERATURE : 60°C±2°C HUMIDITY : 85%RH TIME : 48 HOURS	
7-4	THERMAL SHOCK	Temperature(°C)  0 305 Min. Test cycle : 5cycles	
7-5	DROP TEST	SET THE MOTOR ON THE HEAVY BLOCK ABOUT 100g WEIGHT (INCLUDE THE NOTOR) AND DROP THE MOTOR ON THE CONCRETE FLOOR. HEIGHT : 1.5m DIRCCTION : ±X , ±Y , ±Z TIMES : THREE DROPS PER PLANE FOR A TOTAL OF 5 DROPS.	



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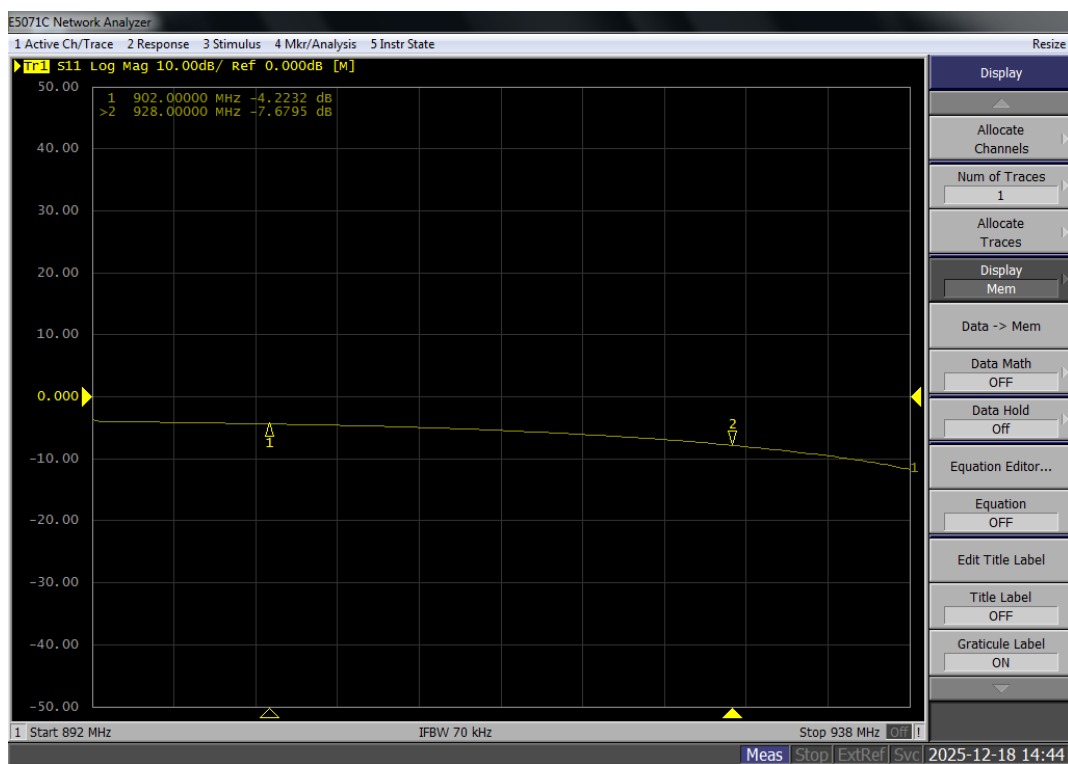
Customer.

Miratek

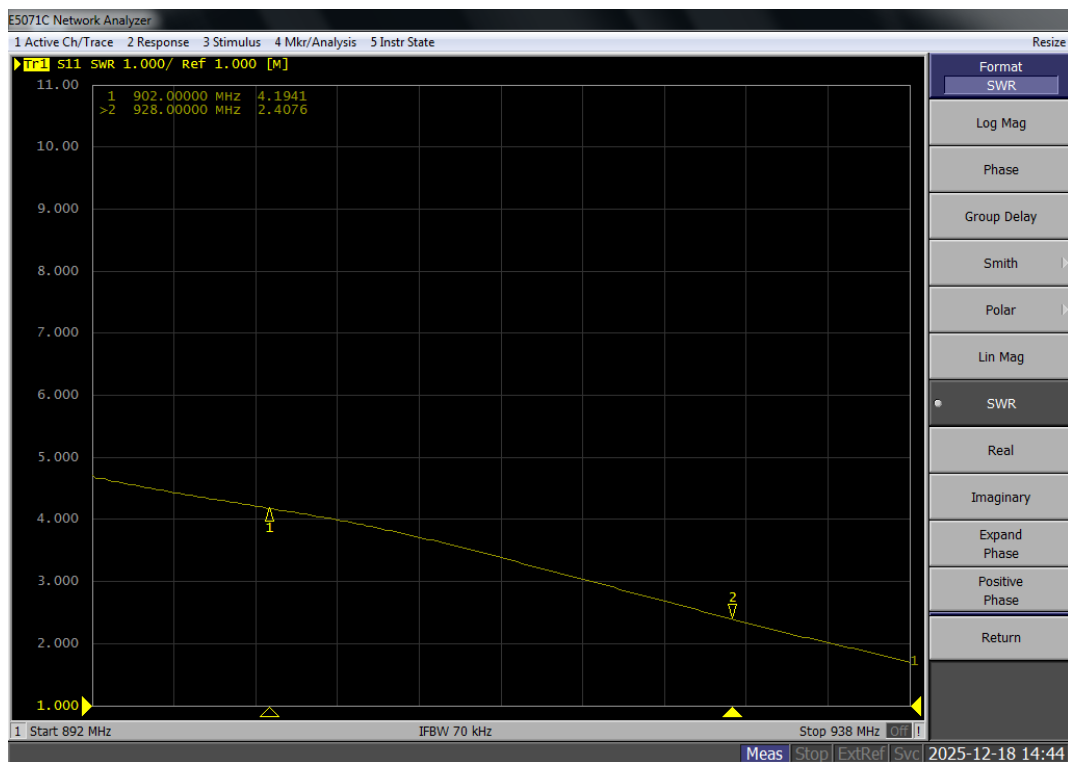
Rev.

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Date

DEC.22 . 2025**8Electrical data :**

Return Loss



V.S.W.R



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Customer.

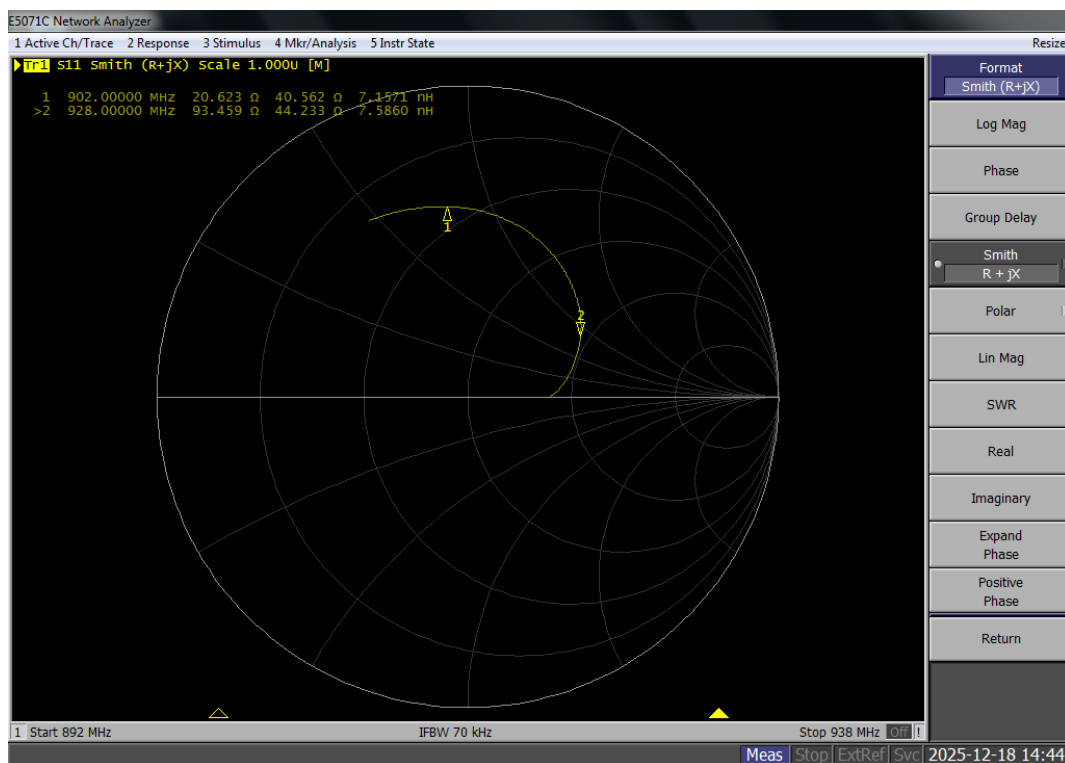
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SMITH CHART



Normal Veiw

Capture

