UNI450 ANTENNA AN450HE

Datasheet

Title	UNI450 Antenna AN450HE Datasheet
Doc ID	UTGREATHW2024080018
Status	Release

Revision History

Revision	Date	Description of Major Changes
1.0	2024/08/06	Initial Release

Disclaimers

This document is based on the information available made, its content is subject to change without prior notice. In preparing the document, the company has made efforts to make its content accurate and reliable, without omission, inaccuracy in this document or layout errors assumes no liability for loss and damage.

Content

1 General

1.1 The Product

Model Name	LTE450 Antenna	Part Number	AN450HE
Antenna Type	Dipole Antenna		
Applications	LTE 450MHz products		

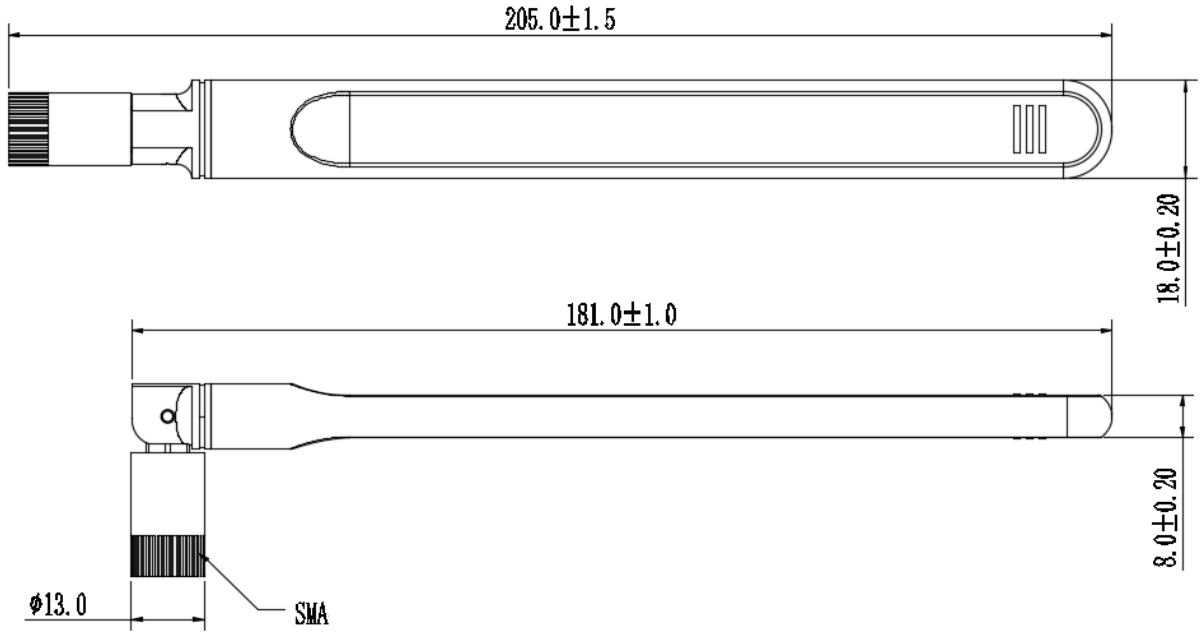
1.2 Electrical Properties

Frequency Band		LTE B3,B7,B20,B31,B40,B72
Impedance		50Ω ± Normal
VSWR	Band 3	<=2.0
	Band 7	<=2.0
	Band 20	<=3.5
	Band 31	<=3.0
	Band 40	<=2.0
	Band 72	<=3.0
Gain	Band 3	2.3dBi
	Band 7	3.4dBi
	Band 20	1.5dBi
	Band 31	2.1dBi
	Band 40	3.0dBi
	Band 72	2.1dBi
Radiation Pattern		Omni-Directional

Polarization	Vertical

1.3 Mechanical Properties

Dimension	See below figure
Operational Temperature	-40°C ~ +85°C
Connector Type	SMA(M), Ø 10 mm
Antenna Length	129 mm



2 Antenna Electrical Properties

2.1 Frequency Bands

Freq / Band	TX(MHz)	RX(MHz)
Band3	1710~1785	1805~1880

Band7	2500~2570	2620~2690
Band20	832~862	791~821
Band31	452.5~457.5	462.5~467.5
Band40	2300~2400	2300~2400
Band72	451.0~456.0	461.0~466.0

2.2 Impedance

2.2.1 Measuring Method

The impedance over the frequency bands shall be as close as possible to 50Ω after matching. Both free space and talk position are considered.

2.2.2 Normal Value

50Ω ± Normal.

2.3 VSWR

The impedance matching should be optimized in the more critical talk position.

2.3.1 Measuring Method

A 50Ω coaxial cable is connected (soldered) to the 50Ω point, at the duplex- filter on the main PCB. The connection of the coaxial cable shall be done to introduce a minimum of mismatch. As much as possible the coaxial cable arrangement shall prevent influences from induced currents on the cable.

In the other end, the coaxial cable is connected to a network analyzer.

The measurement is performed at room temperature. The handset, including the PCB, must not in any significant way differ from the mass production, i.e. the antenna feeding network has to be equivalent to the feeding network in mass production. The specification shall be met in the entire frequency band.

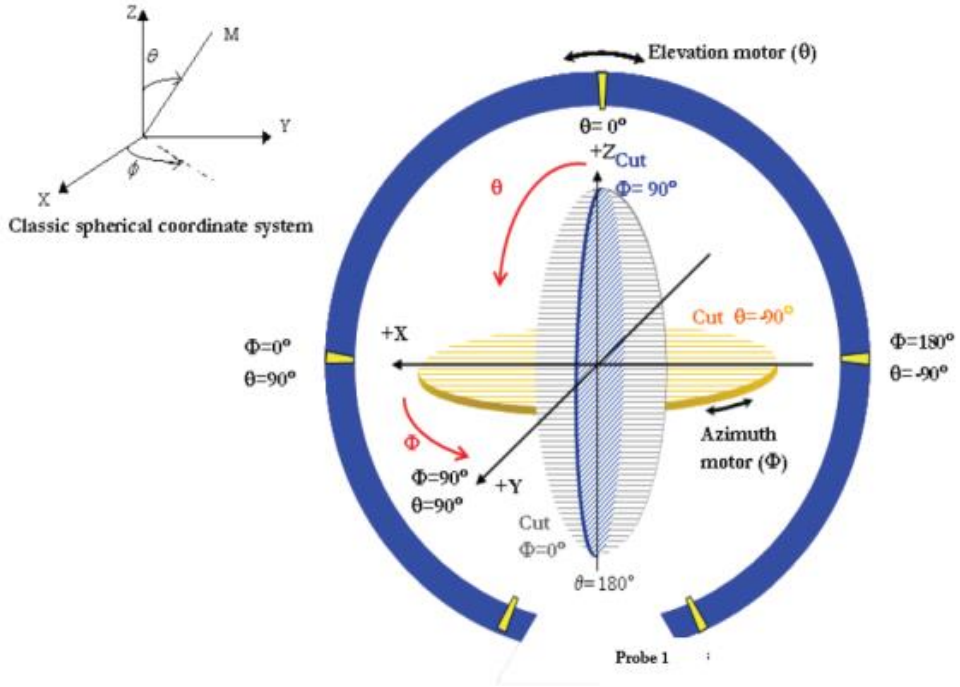
2.4 Antenna Gain(dBi)

2.4.1 Measuring Method

The connection is done according to 2.3.1.

Radiation patterns are measured at 3 different Plane

The antenna measured according to the Figure 1 below.



2.4.2 Typical Values in Maximum Direction

Frequency (MHz)		1710	1800	1880
B3	Efficiency	48.7%	56.3%	49.3%
	Gain(dBi)	2.6	2.8	1.6

Frequency (MHz)		2500	2600	2690
B7	Efficiency	57.2%	70.6%	58.6%
	Gain(dBi)	2.1	3.9	4.2

Frequency (MHz)		790	810	830
B20	Efficiency	42.3%	49.6%	53.2%
	Gain(dBi)	1.1	1.7	1.8

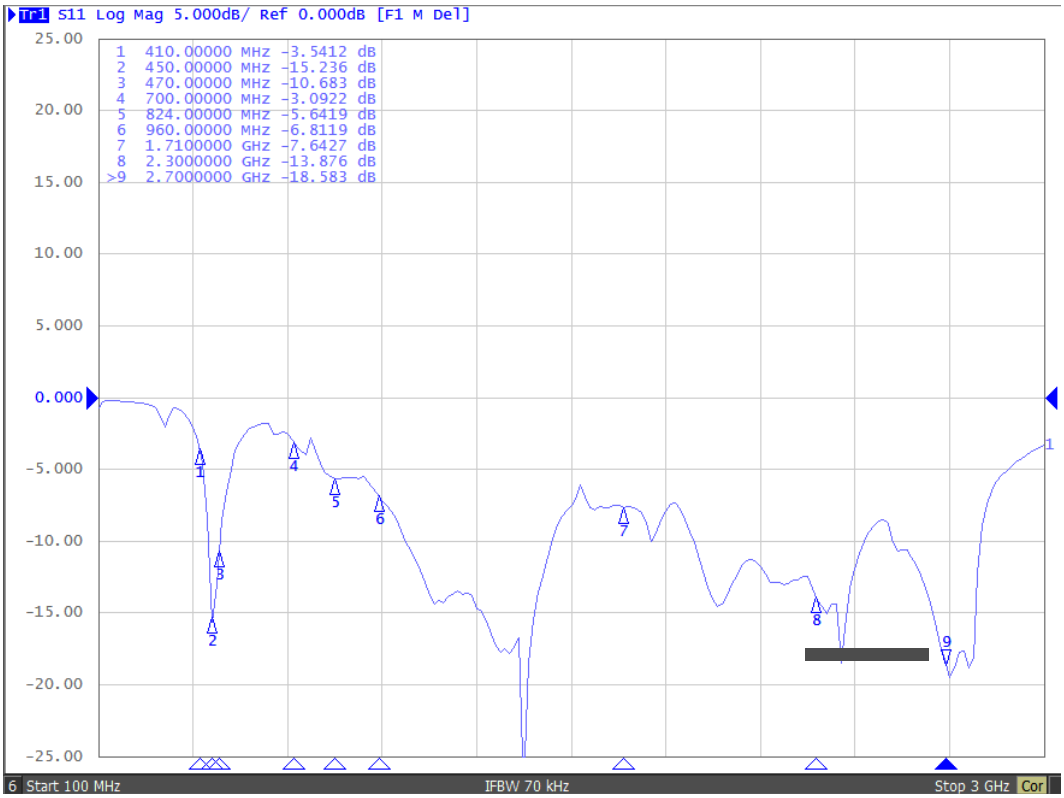
Frequency (MHz)		2300	2350	2400
B40	Efficiency	70.3%	62.2%	68.6%
	Gain(dBi)	2.8	2.8	3.4

Frequency (MHz)		450	460	470
B31&B72	Efficiency	81.3%	82.1%	80.2%
	Gain(dBi)	2.2	2.1	2.0

3 Antenna Test Data

3.1 Antenna Passive Test Data

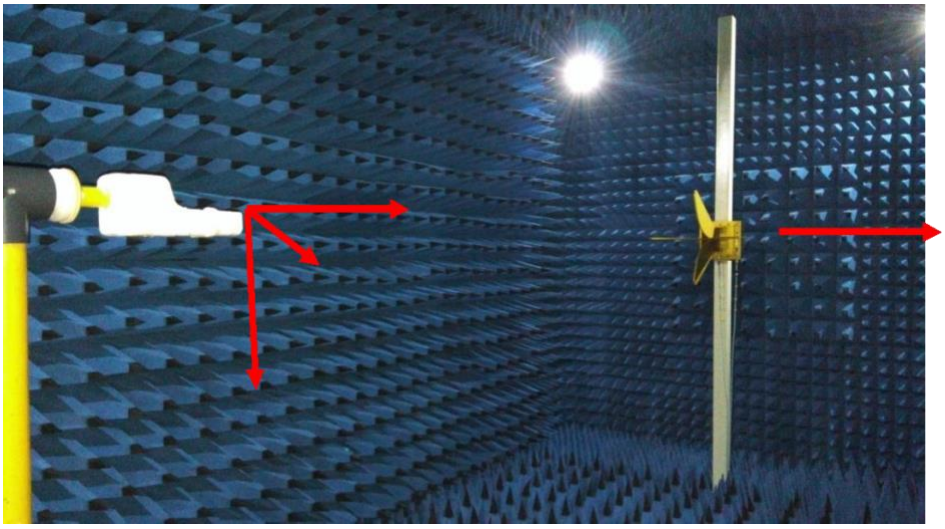
3.1.1 Antenna S11



3.2 Antenna Active Test Data

3.2.1 Anechoic Chamber Test Setup

The gain of the antenna was measured in the anechoic chamber. The chamber provides less than –30 dB reflectivity from 400 MHz through 6 GHz. The chamber size is:7m*4m*3m. The measurement results are calibrated using a leaky wave horn standard. We can measure the antenna gain and efficiency accurately.



3.2.2 TRP and TIS

Below result is based on Unitac model FX836(BW=5MHz),1T2R

Band	Channel	TRP	TIS
Band3	1575	20.4dBm	-95.6dBm
Band7	3100	19.6dBm	-97.8dBm
Band20	6300	20.2dBm	-94.7dBm
Band31	9895	21.6dBm	-96.3dBm
Band40	39550	22.2dBm	-96.8dBm

4 Environmental Resistance Properties

4.1 Operational Temperature Test

4.1.1 Test Environment

Low Operational Temperature :TLO = -40°C

High Operational Temperature: THO = +85°C

4.1.2 Inspection Standard

No visual deterioration shall occur, and the antenna shall satisfy the electrical demands according to 2.3.1 during the test.

4.1.3 Measuring Method

Put the antenna in a climatic chamber at temperature TLO, take it out after 1 hour, and immediately measure the VSWR. And then put the antenna in a climatic chamber at temperature THO, take it out after 1 hour, and immediately measure the VSWR.

4.2 Temperature Cycling Test

4.2.1 Test Environment

Low Cycling Temperature :TLC = -40°C

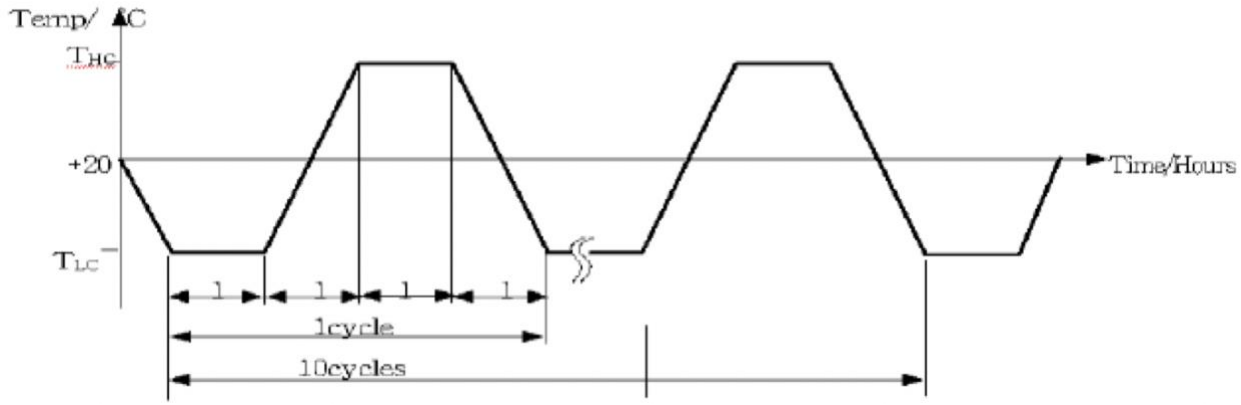
High Cycling Temperature: THC = +85°C

4.2.2 Inspection Standard

No visual deterioration shall occur, and the antenna shall satisfy the electrical demands according to 2.3.1 during the test.

4.2.3 Measuring Method

Put the antenna in a climatic chamber at temperature TLC, keep it for 1 hour, and then set the climatic chamber at temperature THC and keep it for 1 hour. This procedure is repeated 10 times, ending at room temperature according to below figure and immediately measure the VSWR.



4.3 Humidity Test

4.3.1 Test Environment

Humidity : 95%

Temperature: 55°C

4.3.2 Inspection Standard

No visual deterioration shall occur, and the antenna shall satisfy the electrical demands according to 2.3.1 during the test.

4.3.3 Measuring Method

Put the antenna in a climatic chamber , take it out after 24 hour, measure the VSWR after another 24 hour.

4.4 Vibration Test

4.4.1 Test Environment

Vibration Frequencies :10-55-10Hz(1cycle)

Sweep Rate :1 octave/min(logarithmic)

Maximum Amplitude :1.52mm

Maxim Acceleration :2g

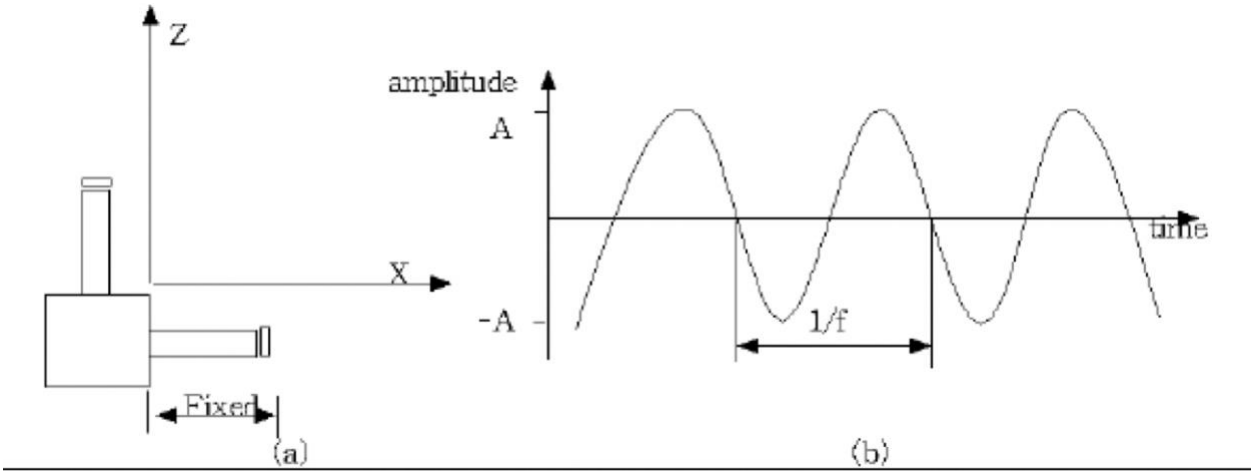
Crossover Frequency :18.2Hz

4.4.2 Inspection Standard

No visual deterioration shall occur, and the antenna shall satisfy the electrical demands, according to 2.3.1, during the test.

4.4.3 Measuring Method

Fixed the antenna in the test equipment. The vibration is done both in x-and z-directions, according to below figure with a duration of 1 hour in each direction,and then immediately measure the VSWR.



4.5 Drop Test

4.5.1 Test Environment

Drops Times :1 drop in retracted mode(3cycles)

Drop Height :1.5m

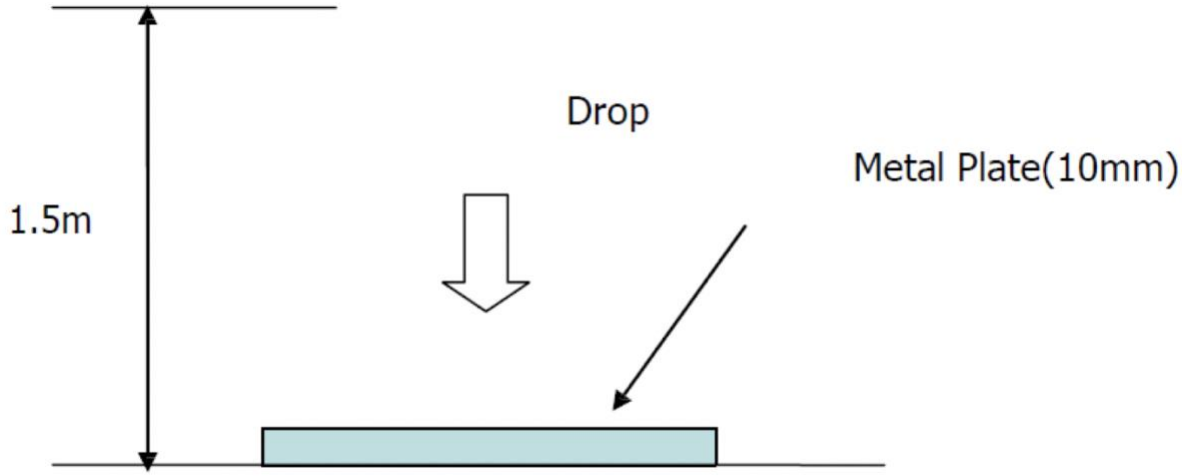
Drop Angle :180°

4.5.2 Inspection Standard

No visual deterioration shall occur, no cuts, abrasion or other mechanical damages, The appearance shall be according to the specification drawing on 1.3 .and the antenna shall satisfy the electrical demands according to 2.3.1 during the test.

4.5.3 Measuring Method

Fixed the antenna in the test equipment,dropped with the antenna downwards onto a metal plate, after the testing is completed, then immediately measure the VSWR.



5 Contact Us

Unitac Technology Limited

UNI450 Product Line Team

Website: www.uni450.com

Email : support@uni450.com

Address: 3rd Floor, No.1732, Gangzhong Road, Xiamen Pilot Free Trade Zone, China