

GALTRONICS (TIANJIN) CO. LTD

PRODUCT SPECIFICATION

TELIAN MTD 7500

STUBBY ANTENNA

C20122046-2419

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GALTRONICS (TJ) LTD.
ANTENNA SPECIFICATION

Spec No: CH29-2419-10

Revision: S-1

<u>REV NO.</u>	<u>DATE</u>	<u>DESCRIPTION</u>
S-1	Aug.28th, 03	RELEASE FOR CUSTOMER APPROVAL

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<u>APPROVED BY</u>	<u>SIGNATURE</u>	<u>DATE</u>
Zhou Hao Mechanical Engineer	Zhou Hao	Aug 29, 03
John Sun RF Engineer	John Sun	Aug 29, 03
Randy Graves Engineering Manager	Randy Graves	Aug 29, 03
<u>Approved By Customer:</u> Telian Corporation		

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**PRODUCT SPECIFICATION FOR
FIXED HELIX ANTENNA FOR
GALTRONICS PROJECT**

MTD 7500

PART NUMBER: C20122046-2419

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1.0 PURPOSE AND SCOPE

The purpose of this document is to establish a preliminary specification for the antenna product that Galtronics has developed for customer usage for hand portable cellular telephone units (henceforth called handset). Any requested changes by Customer shall be presented to Galtronics in written form with sufficient time to evaluate the cost impact and to react as necessary. The development of the product in Galtronics is conducted according to the Design, Development and Product Introduction Procedure.

2.0 ABBREVIATIONS AND DEFINITIONS

Ω	Ohm
$^{\circ}$	Degree
C	Celsius (degrees Centigrade)
Cm	Centimeter
g	Grams
GHz	Gigahertz
Hz	Hertz
Kg	Kilograms
MHz	Megahertz
m	Meter
mm	Millimeter
N	Newton
PCB	Printed Circuit Board
RH	Relative Humidity
W	Watt

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3.0 DESCRIPTIONS AND PART NUMBER

3.1 DESCRIPTION

This antenna is a fixed helical type antenna.

3.2 PART NUMBER

Galtronics Part Number	Frequency Band	Customer Part Number	Color
C20122046-2419	TDMA/AMPS	N/A	Cool Grey



4.0 ELECTRICAL SPECIFICATIONS

4.1 FREQUENCY BAND

TDMA/AMPS	
Tx	Rx
824-849 MHz	869-894 MHz

4.2 IMPEDANCE

Input impedance: 50Ω

4.3 MATCHING REQUIREMENTS.

In order to assure the best performance of the antenna, the matching shall be evaluated in free space with the antenna vertically positioned. Galtronics shall give design support to the Customer to obtain the optimum matching circuit for the antenna system.

The antenna shall comply with the Electrical Specification requirements, as set out below, while mounted on the customer-supplied handset containing the PCB with the matching circuit. The handset with PCB are to be supplied by the customer and should be representative of the production parts. Any modifications in the handset or PCB can affect the performance of the antenna and should be discussed with Galtronics to determine the affect of such changes on antenna performance and delivery requirements.

4.4 INPUT VSWR

4.4.1 Maximum values of VSWR in frequency Band (Flip open)

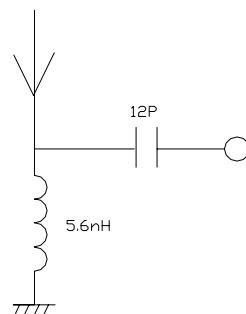
TDMA/AMPS	
Tx	Rx
3.5	1.7

4.4.2 Test Method (Engineering)

The antenna is tested while mounted on the handset with the matching circuit (Ref Fig 1).

The handset is positioned in free space.

(Free space means the handset is held in a non-conductive device and away from any conductive objects).



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FIGURE 1. MATCHING CIRCUIT*



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- Preliminary proposal, might change depending on final phone

4.4.3 Test Method (Production)

In mass production it is not practical to use the handset supplied by customer. Galtronics will design a production-testing fixture for use on processes requiring electrical testing. The results of the test fixture will be correlated to the results obtained on the customer handset.

4.5 GAIN

4.5.1 Minimum Values. (For Reference)

Peak is minimum value is evaluation cuts and Average is minimum value in azimuth plane.

	TDMA/AMPS	
	Tx	Rx
Peak	0 dBi**	1.0 dBi**
Average	-2.0dBi**	-0.5 dBi**

**Depending on final gain test result

4.5.2 Maximum Lobe Tilt

+/- 45°

4.5.3 Free Space Test Method

The antenna is tested while mounted on the handset with the matching circuit (Ref Fig 1) in free space in an anechoic chamber.

Radiation patterns are measured on at least 4 different frequencies:

824MHz, 849MHz, 869 MHz, 894 MHz

The specified values shall be found within ± 45 degrees from the horizontal plane.

The antenna is measured for 2 elevation cuts at two different azimuth positions ($\phi = 0$, $\phi = 90$).

4.6 POLARIZATION –Vertical in free space

5.0 MECHANICAL SPECIFICATIONS

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5.1 MECHANICAL CONFIGURATION

The appearance of the antenna is attached drawing CH0-2419-09, Rev S-2

5.2 CONNECTOR TYPE

The connector type is an M4*0.7 threaded stud.

5.3 ANTENNA MATERIALS

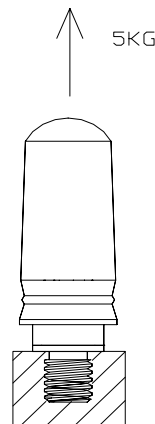
ITEM	Component	Material	Finish
1	Overmold	Santoprene +PP+(Color Resin)	Cool Grey
2	Coil	Copper Rolled Carbon Steel	
3	Stud	Free Cutting Brass	Nickel plated



5.4 TENSILE STRENGTH

The antenna is subjected to a 5 kg axial pull force 10 seconds as shown in Figure 2.

The antenna shall satisfy the electrical specification after the test.



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FIGURE2: Tensile Test

5.5. DROP TEST

The antenna attached to a dummy radio (weight 85g) is subjected to 1 Cycle (6 faces) drop onto a concrete surface. The drop height is 1.5m.

The antenna shall satisfy the electrical specification after the test. Some cosmetic damage is acceptable.

5.6. BEND TEST

A force is applied perpendicular to antenna axis. Force is applied at a point 5mm from the top of antenna, until the specified force $F_b=55N$ is reached.

The antenna shall satisfy the electrical performance after the test and some cosmetic damage is acceptable.

5.7. TORQUE TEST

The antenna is to withstand a rotational force of ± 25 NCm (1 time each clockwise and anticlockwise) between the stud and the sleeve as shown in Figure 3.



The antenna shall satisfy the electrical performance after the test and some cosmetic damage is acceptable. Parts must not separate or dislocate.

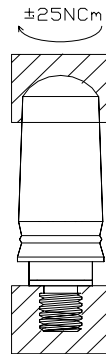


FIGURE3: Torque Test

6.0 ENVIRONMENTAL SPECIFICATIONS

6.1 TEMPERATURE

Operating Temperature: -40°C to +80°C
Storage Temperature: -40°C to +120°C

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6.2 TEMPERATURE SHOCK CYCLING TEST

The antenna shall withstand 10 repeated cycles of 30 minutes at +80°C and 30 minutes at -40°C, as shown in Figure 4.

The antenna shall be compliant with electrical performance and without visual degradation

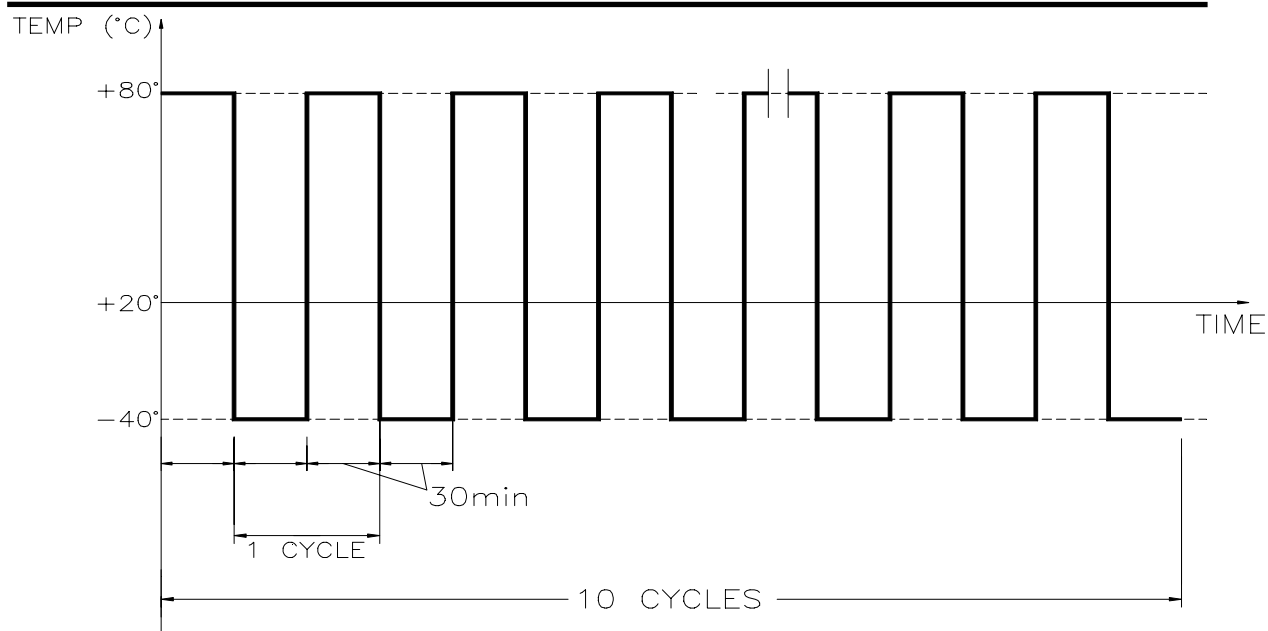


FIGURE 4. Temperature Cycling Test

6.3 SALT SPRAY TEST

The antenna is subject to the following test:

Specification Reference: IEC 68-2-11 (BS 2011:Part2.1 Ka)

Test Duration: 24 Hours

Antenna should be compliant with electrical performance and remain without visual degradation

6.4 HUMIDITY TEST

The antenna is subjected to the following test:

Temperatures: 80°C and 90%±5%RH

Test Duration: 24 Hours

The antenna should not undergo any structural or functional change and remain within the electrical/mechanical specification.

7.0 PACKAGING

The antennas will be packed in trays, 100 antenna to a tray, and 3200 pieces to a box.

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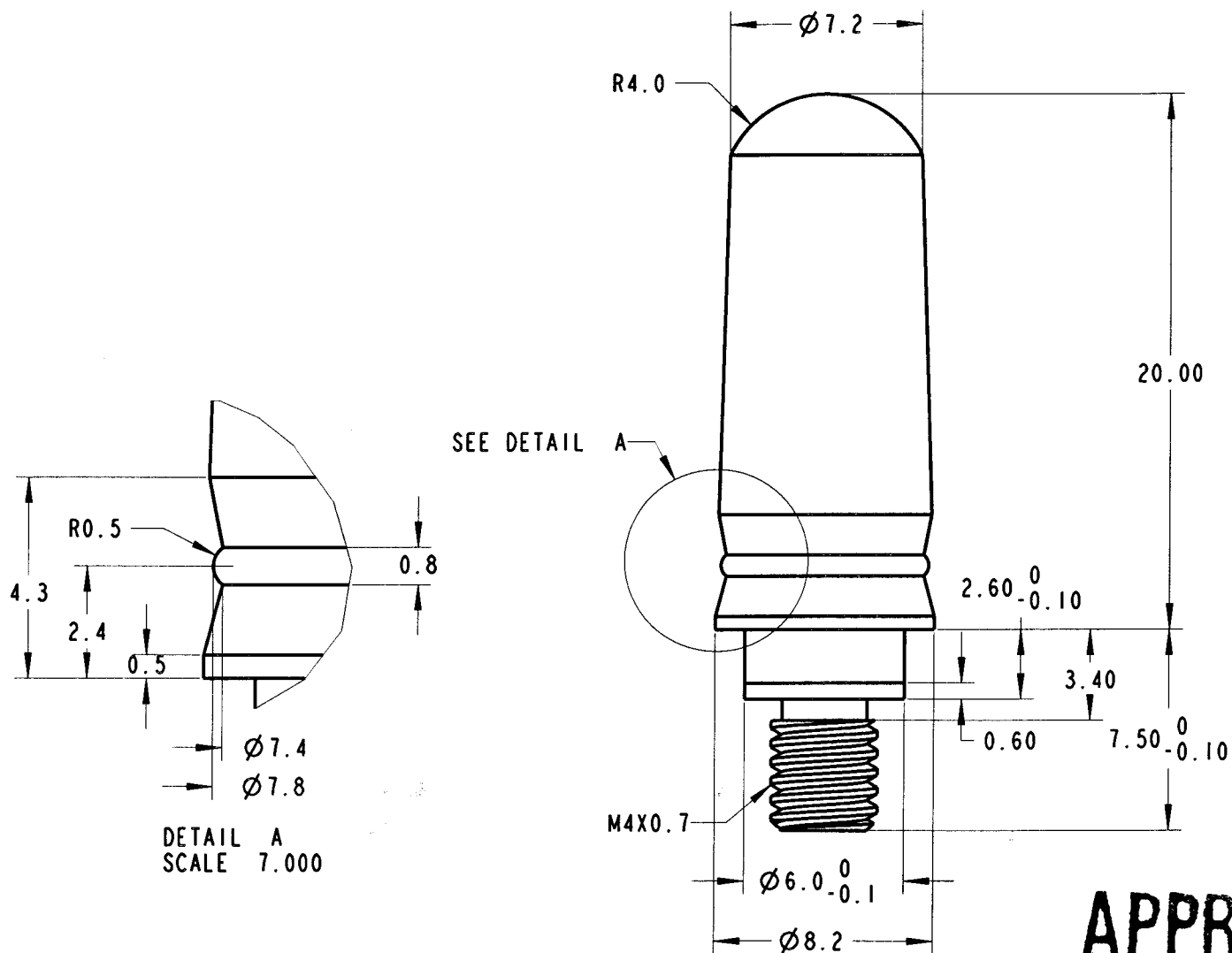
NOTES:

- General Tolerances (unless otherwise stated)
(X)=±1, (X.X)=±0.2, (X.XX)=±0.1
(X.XXX)=±0.05, Angles ±1/4°
- To be free from burrs & sharp edges
- All dimensions in mm, inclusive of plating where applicable, unless otherwise stated.

☒ **CONTROLLED DIMENSION**

DRAWING NO.
CH02-2419-09

PART NO.
C20122046-2419



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REV.	E.C.O.	DRN.BY	DATE	COMMENTS	APPROVALS	DATE	TITLE:	REV.
S-1		ZHOU	APR.04.03	RELEASE FOR CUSTOMER APPROVAL	DESIGN E. Zhou Hao	Jun 13. 03	PRODUCT DRAWING (For MTD7500)	S-2
S-2		ZHOU	JUN.13.03	REDESIGN	ELECTR. E. Shuyang	Jun 13. 03		
					MOULD. E. Donglei	Jun 13. 03		
					PROCESS. E. Zou	Jun 13. 03		
					DOC.C. Vanessa	Jun 13. 03		
					RELEASE E. Same	Jun 13. 03	MATERIAL	
					SCALE NONE	SIZE A4	FINISH	