豪 岑 電 子 金 屬 股 份 有 限 公 司

HOW TSEN INTL. ELECTRONICS METAL CO., LTD.

P.T HOWSANINDO INDUSTRY(INDONESIA)

桃園縣 327 新屋鄉中山東路 2 段 130 巷 12 號

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TEL : 886-3-4777517 hunting FAX : 886-3-4777520

INDONESIA : JL PANGKALAN 1-B BANTAR GEBANG, BEKASI 17310 INDONESIA

TEL : 62-21-8250470 hunting FAX :62-21-8250473

SPECIFICATION FOR APPROVAL

PARTS NAME : ANTENNA

TYPE NO : S-001-1

CUSTOMER P/N :

DATE : Dec.04,2008

CUSTOMER APPROVAL & COMMENT				
FULL NAME	POSITION	SIGNATURE	COMPANY STAMP	COMMENT
		DATE :		

RECOGNIZED	ENGINEERING	QC CHECK

HOW TSEN INTL. ELECTRONICS METAL CO., LTD.

ANTENNA SPECIFICATIONS FOR APPROVAL

1 GENERAL DESCRIPION

1.1 Type No. : S-001-1

1.2 Customer P/N :

2 DESCRIPTION & APPLICATION

This antenna assembly is designed for use in portable.

Communications equipment over a temperature range.

Of -20℃ to +70℃ in an indoor / outdoor environment.

3 ELECTRICAL CHARACTERISTICS

3.1 Frequency Range : 2.4~2.5 GHz

3.2 V.S.W.R : ≦2.0

3.3 Connector : SMA Male

3.4 Impedance : 50Ω

4 ENVIRONMENTAL CHARACTERISTICS

4.1 Operating temperature range -20℃ to +70℃

4.2 Humidity range : 10 % RH to 80 % RH

5 QUALIFICATION TESTING

5.1 Qualification testing, all product shall be able to withstand the following testing.

5.2 Physical dimensions identified within this specification.

5.3 Pull Test : Tube has the capability of load 3 kgf in a vertical position within 30 seconds.

5.4 Torque Test : 3 kgf-cm no damage happened.

6 INSPECTION STANDARD

6.1 Dimension to use the special inspection level of S-4 , AQL 1.0 .

6.2 Appearance to use MIL-STD-105DII AQL1.0 .

6.3 Mechanical Capability : Per lot Sampling, n=5 , Ac 0 , Re 1 .

6.4 Environmental test : Per lot Sampling, n=3 , Ac 0, Re 1 .

7 PACKING STYLE

If customer has no specific request by the customer, all according to our standard

8 OTHERS

Any changes in this specification should be agreed by both parties.

Antenna

For 2.4~2.5 GHz

Type No : S-001-1

Electrical Specification

Frequency range	2.4~2.5 GHz
V.S.W.R	≦2.0
Connector	SMA Male
Impedance	50Ω

Environmental & Mechanical Characters

Temperature	-20℃ to +70℃
Weight	7.5 g
Dimensions	10.6 x 88.0 mm

HOW TSEN intl. Electronics Metal Co., Ltd. http://www.howtsen.com

HOW SANE industries Co., Ltd E-mail:howtsen@ms9.hinet.net

HOW TSEN INTL. ELECTRONICS METAL CO.,LTD.

TEST REPORT

1.MODEL: S-001-1

2.QUANTITY: 5 Pcs

3.DATE OF TESTING: Dec.04,2008

4.TESTING ITEM: PULL TEST

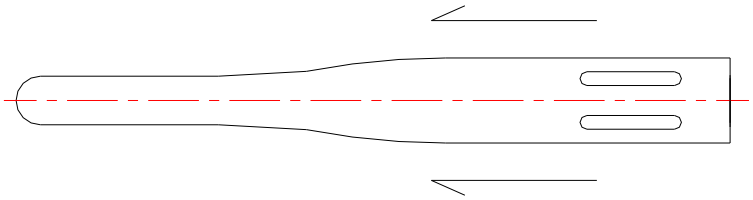
5.TESTING EQUIPMENT: B-016 (PUSH-PULL SCALE FB30K)

6.TESTING CONDITIONS: Antenna must withstand a 3 kgf tensile

Load applied to tube for 30 seconds.

No part of the antenna may be pulled out of

The assembly or from the housing.



7.TESTING RESULT:

SAMPLE	**1**	**2**	**3**	**4**	**5**
OK or NG	**OK**	**OK**	**OK**	**OK**	**OK**

APPROVED: TESTER:

HOW TSEN INTL. ELECTRONICS METAL CO.,LTD.

TEST REPORT

1.MODEL: S-001-1

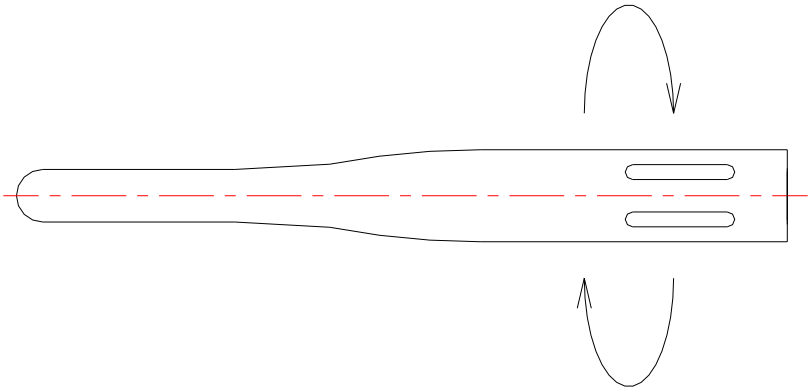
2.QUANTITY: 5 Pcs

3.DATE OF TESTING: Dec.04,2008

4.TESTING ITEM: TORQUE TEST

5.TESTING EQUIPMENT: B-001 (MECHANICAL TORQUE METER 2-TM30)

6.TESTING CONDITIONS: 3 kgf-cm no damage happened.



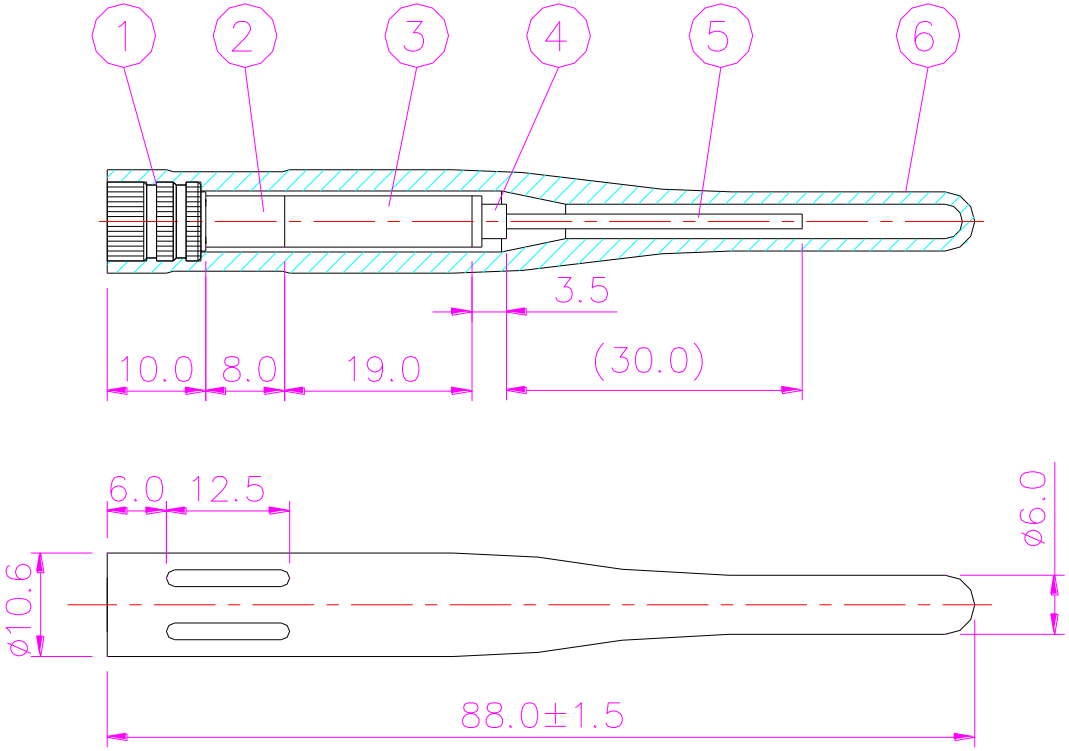
7.TESTING RESULT:

SAMPLE	**1**	**2**	**3**	**4**	**5**
OK or NG	**OK**	**OK**	**OK**	**OK**	**OK**

APPROVED: TESTER:

4 Dec 2008 08:57:40
CH1 RFL SWR 1 / REF 1
1: 1.0828 2 450.000 000 MHz
*
Cor
2.45 GHz
↑
CH1 Markers
2: 1.4525
2.40000 GHz
3: 1.5516
2.50000 GHz
1
2
3
CENTER 2 450.000 000 MHz
SPAN 500.000 000 MHz

Agilent
8753ET
TRANSMISSION/REFLECTION NETWORK ANALYZER
DISK EJECT
MARKER 1
2.45 GHz
ACTIVE CHANNEL
Chan 1
Chan 2
Chan 3
Chan 4
ENTRY
RESPONSE
Meas
Format
Scale Ref
Display
Avg
Cal
Marker
Marker Search
Marker Fctn
STIMULUS
Start
Stop
Power
Center
Span
Sweep Setup
Return
MENU
INSTRUMENT STATE
System
Local
Preset
Copy
Save/ Recall
Seq
HP-IB STATUS
PROBE POWER
OFF/ON
LINE
REFLECTION
TEST PORT
RF OUT
TRANSMISSION
TEST PORT
RF IN
TRANSMISSION
REFLECTION
R CHANNEL
IN
OUT



NO	PARTS NAME	MATERIAL	QTY	FINISH	NOTE
6	TUBE	Pu	1	Black	
5	CABLE	RG-316	1		
4	CONNECTOR	BSBM	1		
3	BRASS TUBE	BST	1		
2	INSULATOR	POM	1	White	
1	SMA Male	BSBM	1	Au	

TOLERANCES				
~ 6 ±0.20	5			
7 ~ 30 ±0.30	4			
31 ~ 80 ±0.40	3			
81 ~ 250 ±0.50	2			
251 ~ 500 ±0.60	1			
	SYMBOL	REVISION DESCRIPTION	ISSUED BY	DATE

SCALE 1:1	DESIGNED	CHECKED	APPROVED	MODEL NAME
UNIT : mm	ALEX			ANTENNA
	DATE Feb.11,2009			MODEL NO.
THIRD ANGLE	HOW TSEN ELECTRONICS METAL CO., LTD.			S-001-1

S-001-1 2D pattern

2008 12 04

Date/Time	2008.12.15
Measurement space	9mX4mX3.6m
Product No.	S-001-1
Temp. / Humidity	20°C / 55%
Network analyzer	Agilent 50MHz-20GHz 8720ET

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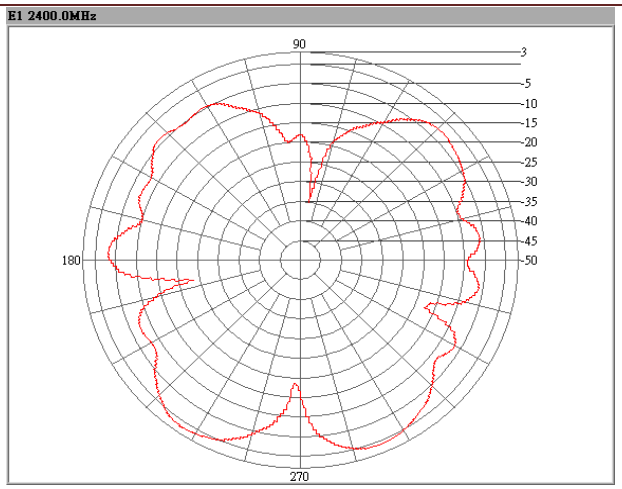
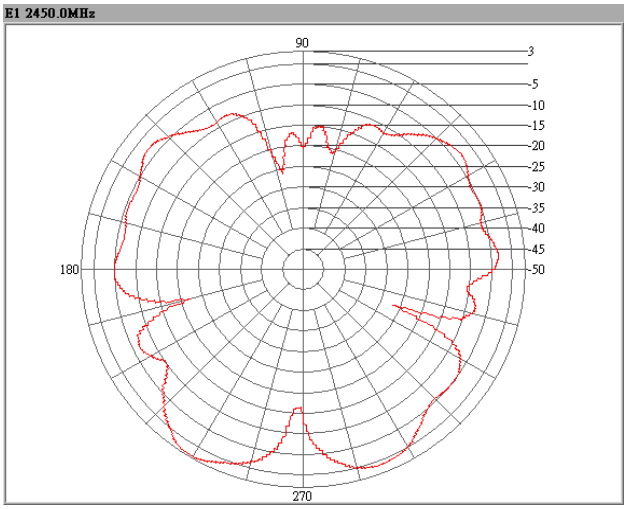
E Plane

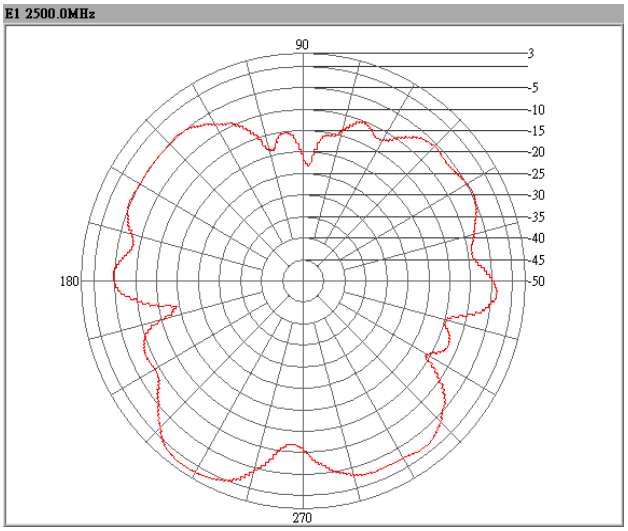
2400MHz	E1
Max Gain (dBi)	1.4
Max Gain@Angle (degree)	236
Min Gain (dBi)	-35.18
Min Gain@Angle (degree)	82
Average Gain (dBi)	-4.75
-3dB Angle L (degree)	250.1
-3db Angle R (degree)	224.5
HPB (degree)	25.6
FBR (dB)	4.62



2450MHz	E1
Max Gain (dBi)	2.62
Max Gain@Angle (degree)	238
Min Gain (dBi)	-26.99
Min Gain@Angle (degree)	338
Average Gain (dBi)	-4.52
-3dB Angle L (degree)	251.97
-3db Angle R (degree)	229.6
HPB (degree)	22.37
FBR (dB)	10.28



2500MHz	E1
Max Gain (dBi)	1.59
Max Gain@Angle (degree)	236
Min Gain (dBi)	-23.25
Min Gain@Angle (degree)	87
Average Gain (dBi)	-5.37
-3dB Angle L (degree)	251.53
-3db Angle R (degree)	225.6
HPB (degree)	25.93
FBR (dB)	7.8



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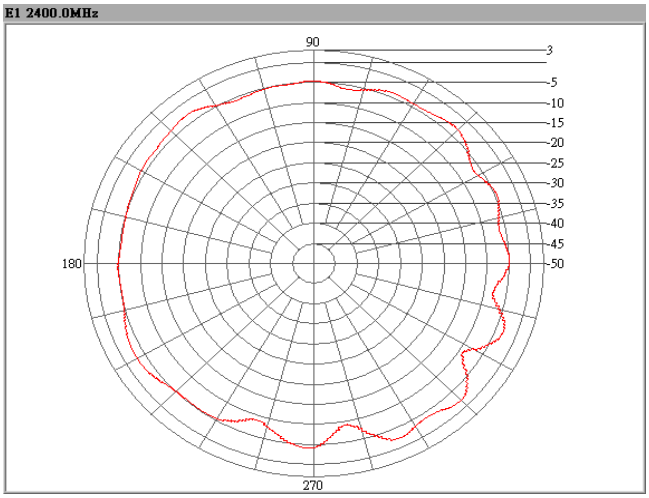
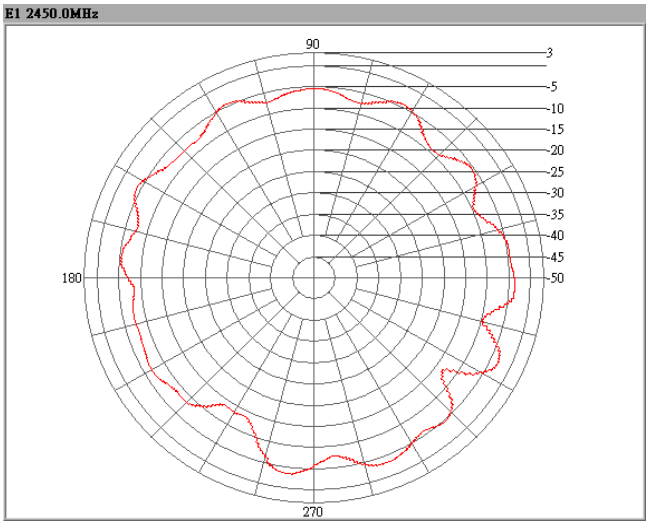
H Plane

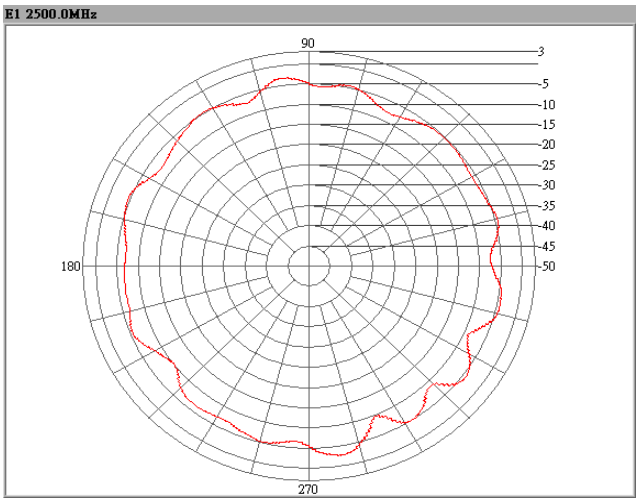
2400MHz	H
Max Gain (dBi)	-1.94
Max Gain@Angle (degree)	315
Min Gain (dBi)	-9.3
Min Gain@Angle (degree)	327
Average Gain (dBi)	-4.7
-3dB Angle L (degree)	321.7
-3db Angle R (degree)	288.38
HPB (degree)	33.32
FBR (dB)	1



2450MHz	H
Max Gain (dBi)	-3.01
Max Gain@Angle (degree)	335
Min Gain (dBi)	-13.7
Min Gain@Angle (degree)	245
Average Gain (dBi)	-6.28
-3dB Angle L (degree)	340.63
-3db Angle R (degree)	329.27
HPB (degree)	11.36
FBR (dB)	0.99



2500MHz	H
Max Gain (dBi)	-2.7
Max Gain@Angle (degree)	279
Min Gain (dBi)	-10.24
Min Gain@Angle (degree)	217
Average Gain (dBi)	-5.87
-3dB Angle L (degree)	286.97
-3db Angle R (degree)	269.52
HPB (degree)	17.44
FBR (dB)	0.5



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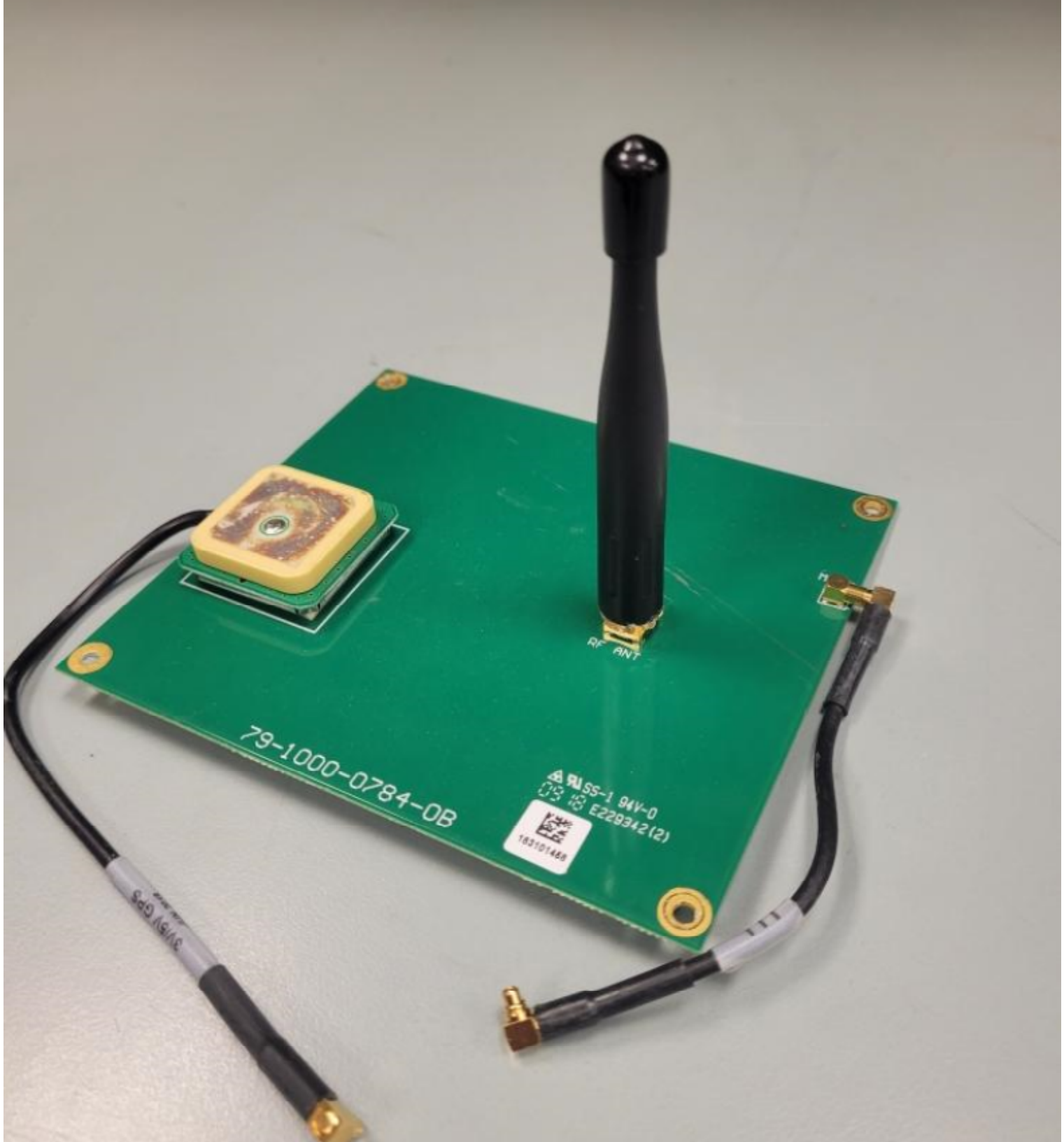
RF ANT
79-1000-0784-0B
SS-1 94V-0
E229342(2)
3V/5V GPS

Mark Schwartz

From: brianchen.howtsen@gmail.com on behalf of Brian Chen <yc.chen@howtsen.com>
Sent: Friday, March 02, 2012 9:58 PM
To: Mark Schwartz
Cc: jukie@howtsen.com
Subject: Re: S-011 Antenna Data sheet
Attachments: TB135450-01.jpg; S-011.pdf; S-001-1.pdf; S-222.pdf; tb135450-01_b-532.pdf

Hi, Mr. Schwartz
Sorry reply late, I just find your mail from spam. I'm really sorry about it.
As attached were the S-011 datasheet and S-001-1, S-222, the different of them were outwards and Max gains, S-011 under 0 dBi, S-001-1 has 2 dBi, and S-222 has 3dBi Max gains, also S-011 has new plastic jacket as
For you reference as followings
S-011 datasheet, max. gain > 0 dBi also has new plastic jacket TB135450-01
S-001 datasheet, max. gains > 2 dBi.
S-222 datasheet, max. gains > 3 dBi.
if have any questions or concerns please let me know, I will do my best for you, HOWTSEN has 30 years experience of Antennas manufacture. please feel free to contact us, thank you.

Best Regards
Brian Y.C. Chen
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Mobile: +886 910832600
mail: yc.chen@howtsen.com
website: http://www.howtsen.com

Mark Schwartz <Mark.Schwartz@gtt.com> 於 2012 年 3 月 2 日上午 12:36 寫道：

Could you please send me the technical data sheet for the S-011 2.4Ghz wireless LAN antenna

Thanks

Mark

Mark Schwartz

Hardware Engineering Manager

Global Traffic Technologies, LLC

7800 Third Street North; Bldg 100 **|** St. Paul **|** MN **|** 55128

651.789.7313 **|** 651.789.7334 fax

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CanogaÊ Traffic Sensing System

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