



# Antenna List by FCC ID

Network Systems Organization

FCC ID: **H9PLA4111**

WLAN PC Card, 11 Mbps, Trilogy

Output Power: 60 mW

Grant Date	Ant #:	Model	Symbol P/N	Mfg	Mfg P/N
2/18/00					
	01	Plane	50-21900-008	Tecom	505042C(48IN)
	02	Pipe Bomb 11"x4'	50-11901-048P	Cushcraft	S2403BHPS48RBN
	02.1	Pipe Bomb 11"x15'	50-11901-180P	Cushcraft	S2403BHPS180RB
	03	Rubber Duck	50-21900-007	Cushcraft	RBN2400SXR
	04	Yagi	ML-2499-YGA1-	Cushcraft	PC2415RBN240
	05	Patch	ML-2499-PTA1-	UK	S2406P72PRBN
	06	Panel	ML-2499-PNA1-	Tecom	ML-2499-PNA1-01
	09	4640 Toroid	21-17486-02	AIL Systems Suf	21-17486-02
	10	2040	10-17577-01	Tecom	703117
	11	6140	10-35305-01	UK	
	12	6840	10-32290-01	UK	
	15	Parapolic Grid	ML-2499-PGA1-	Conifer	26T-2400
	16	Pipe Bomb 25"x20'	50-11902-240S	Cushcraft	S2406BHS240RBN
	17	Criticare BFA	50-21900-021	Tecom	703443-1
	18	Corner Patch	ML-2499-DLA1-	Tecom	505126C
	19	Ceiling Panel	ML-2499-SD24-	UK	
	20	6140 OBS	10-17577-02	Tecom	
	X	Trilogy AP	21-20667-01	C&M Wauregan	
	Z	End Cap "C"	10-20511-01	Tecom	822319
Applied For					
	01	7546	10-38649-02	Tecom	
	02	2742	703624-2	Tecom	703624-2
	03	XP	50-21900-024	Tecom	703611
	04	7242	10-35477-01	Tecom	
	05	Toko	50-21900-022	Toko	DAC2450CT1
	06	Vocollect MMCX	50-21900-025	Austin Antenna	200215
	07	6846	10-32290-02	Tecom	
	08	7546D	10-40948-01	Tecom	703634

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Grant Date	Ant #:	Model	Symbol P/N	Mfg	Mfg P/N
09		1742	703549-2	Tecom	703549-2
10		Oniel MMCX	50-21900-031	Tecom	703620-2
11		6846D	10-41003-01	Tecom	703645
12		6146D	10-41361-01	Tecom	703652
13		3146BD	10-41359-01	Symbol	10-41359-01
14		1046	10-32447-02	Tecom	703385-2
15		1046DP	10-41370-01	AeroAntenna	AT2400-4A



# RF Exposure Antenna Summary

Network Systems Organization

FCC ID: H9PLA4111

WLAN PC Card, 11 Mbps, Trilogy

Source Based

Mobile DC Factor: 1.000

Output Power: 60 mW

Class II Permissive Change

Portable DC Factor: 1.000

## Portable Antennas

Ant No	Model	Symbol P/N	Type	Gain (dBi)	Cabel Loss (dB)	Pout (dBm)	EIRP (mW)	TR Status	Device Type	Tx Limited
01.	7546	10-38649-02	F-Element	0.0	0.31	17.47	55.9	Tested	Hand Held	
02.	2742	703624-2	F-Element	0.0	0.13	17.65	58.2	Tested	Hand Held	
03.	XP	50-21900-024	Slot	0.0	0.58	17.21	52.5	Tested	Hand Held	
04.	7242	10-35477-01	F-Element	0.0	0.13	17.65	58.2	Tested	Hand Held	
05.	Toko	50-21900-022	Puck	0.0	0.00	17.78	60.0	Tested	Hand Held	
07.	6846	10-32290-02	F-Element	0.0	0.34	17.44	55.5	See # 2	Hand Held	
08.	7546D	10-40948-01	F-Element	0.0	0.22	17.57	57.1	See # 2	Hand Held	
09.	1742	703549-2	F-Element	0.0	0.11	17.67	58.4	See # 2	Hand Held	
11.	6846D	10-41003-01	Slot	0.0	0.37	17.41	55.1	See # 2	Hand Held	
12.	6146D	10-41361-01	F-Element	0.0	0.23	17.55	56.9	See # 2	Hand Held	
13.	3146BD	10-41359-01	F-Element	0.0	0.09	17.69	58.7	See # 2	Hand Held	

## Body Worn Antennas

Ant No	Model	Symbol P/N	Type	Gain (dBi)	Cabel Loss (dB)	Pout (dBm)	EIRP (mW)	TR Status	Device Type	Tx Limited
06.	Vocollect MMCX	50-21900-025	Dipole	2.0	0.25	17.53	89.8	Tested + SAR	Body Worn	
10.	Oniel MMCX	50-21900-031	Slot	0.0	0.37	17.41	55.1	See # 3	Body Worn	
14.	1046	10-32447-02	F-Element	0.0	0.15	17.63	58.0	See # 2 + SAR	Wrist Worn	
15.	1046DP	10-41370-01	Dipole	2.0	0.20	17.58	90.9	See # 6	Wrist Worn	

Antenna Gain listed without cable  
TR Status refers to whether the antenna was tested. If not refer to the directed antenna test data

Duty Cycle Factors are applied to MPE and EIRP

Tx Limited configurations are for low power versions of the radio. See the specific antenna exhibit for detail

Tuesday, June 27, 2000 09:19 PM

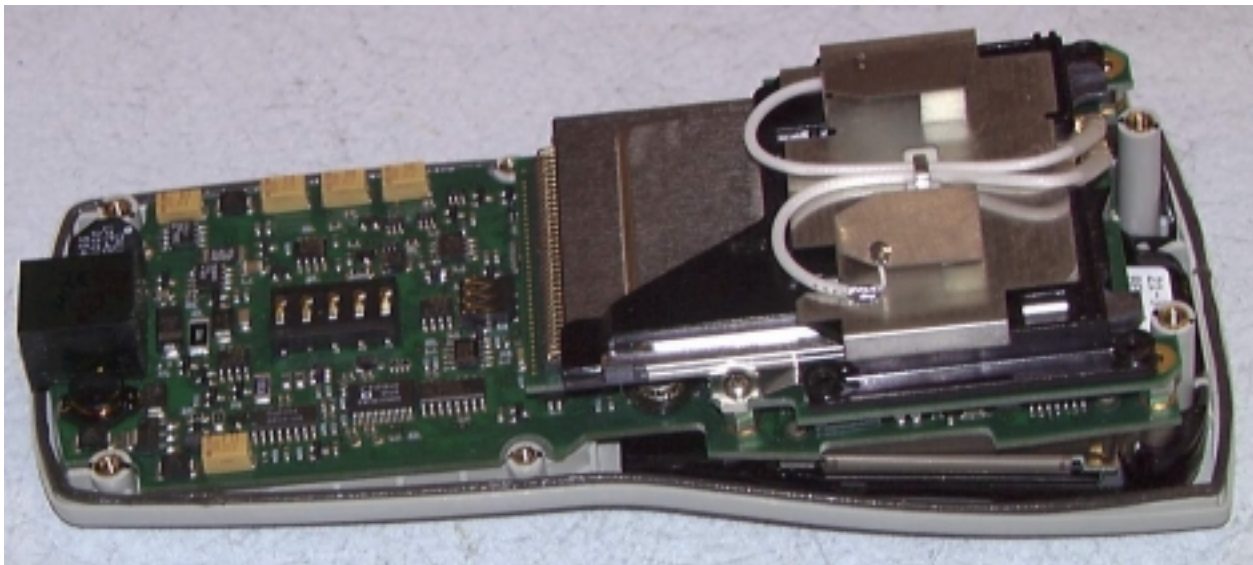
Page 1 of 1

**6146D Antenna**

The 6146D antenna is 0 dBi omnidirectional in azimuth plane. It is mounted internally on the top end of the terminal as shown in the attached photo. The 6146D uses a MMCX connector. In its use it would be within 20 cm of a persons hand but more than 20 cm from the users body. It is used in portable devices. The following RF exposure information is included in a prominent place in the device's user manual to inform the user of safety issues as required by OET Bulletin 65, Supplement C for EIRP greater than 200 mW.

<i>Location</i>	Hand Held Device
<i>Pattern</i>	Omni
<i>Type</i>	F-Element
<i>Max Gain</i>	0 dBi
<i>Physical</i>	See attached dwg
<i>Cable</i>	RG-178
<i>Symbol P/N</i>	10-41361-01
<i>EIRP</i>	See Summary Tbl

**“Important Note: To comply with FCC RF exposure requirements, this hand-held device is approved for operation in a user’s hand when there is 20 cm or more between the antenna and the user’s body.”**



Antenna Installed in Device



Terminal Use Photo



**3146D Antenna**

The 3146D antenna is 0 dBi omnidirectional in azimuth plane. It is mounted internally on the top end of the terminal as shown in the attached photo. The 3146D uses a MMCX connector. In its use it would be within 20 cm of a persons hand but more than 20 cm from the users body. It is used in portable devices. The following RF exposure information is included in a prominent place in the device's user manual to inform the user of safety issues as required by OET Bulletin 65, Supplement C for EIRP greater than 200 mW.

<i>Location</i>	Hand Held Device
<i>Pattern</i>	Omni
<i>Type</i>	F-Element
<i>Max Gain</i>	0 dBi
<i>Physical</i>	See attached dwg
<i>Cable</i>	RG-178
<i>Symbol P/N</i>	10-41359-01
<i>EIRP</i>	See Summary Tbl

**“Important Note: To comply with FCC RF exposure requirements, this hand-held device is approved for operation in a user’s hand when there is 20 cm or more between the antenna and the user’s body.”**



Antenna Installed in Device





Terminal Use Photo



**1040, 1046 Antenna**

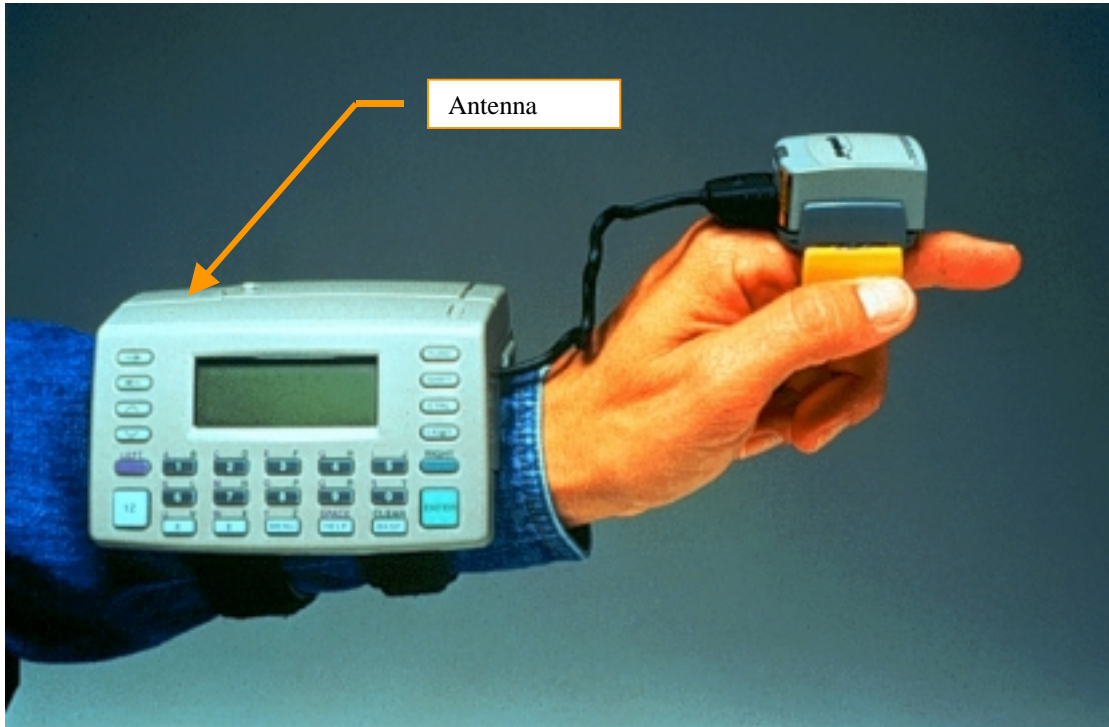
The **1040** antenna is 0 dBi omni-directional in azimuth plane. It is mounted internally as shown in the attached photo. The **1040** uses the Murata Erie BFA and the **1046** a MMCX connector. In its use it would be within 5 cm of a persons body. It is used in portable devices. This antenna / device combination was SAR tested and results filed with a Class II permissive change for the H9PLA2400. driven by 500 mW of transmitter power.

<i>Location</i>	Body worn device
<i>Pattern</i>	Omni
<i>Type</i>	F-Element
<i>Max Gain</i>	0 dBi
<i>Physical</i>	See attached dwg
<i>Cable</i>	MXYP75, RG-178
<i>Symbol P/N</i>	10-32447-01, 10-32447-02

**Note: This antenna / terminal configuration is only to be used with a transmitter that produces an EIRP of less than 500 mW. For an EIRP of more than 500 mW a SAR test must be performed.**



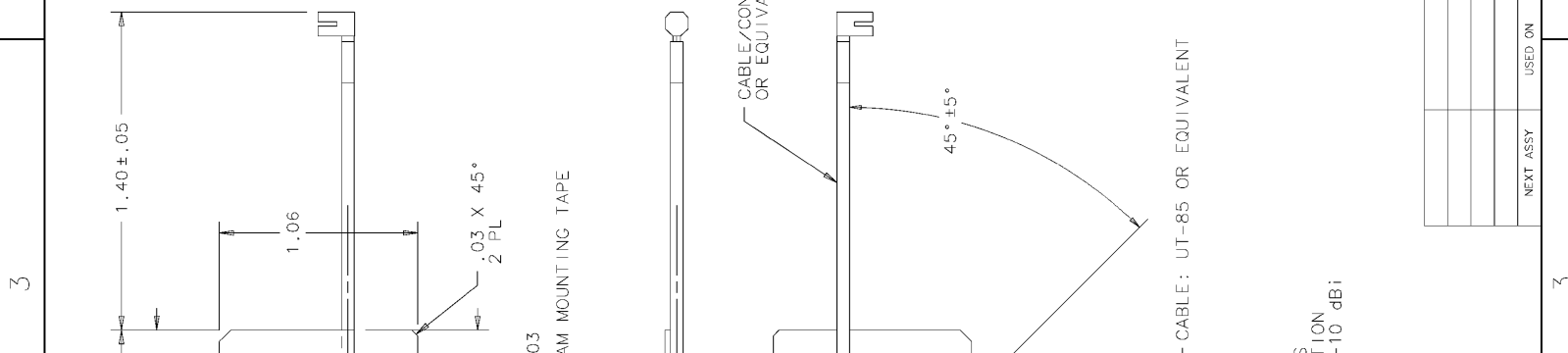
Antenna Photo



Terminal Use Photo

REV. ZONE	AWA	DESCRIPTION	E.C.	BY	APRD.	DATE
A		RELEASED PER EDR 36634		LM		

ITEM	QTY.	PART NO.	DESCRIPTION	APPROVALS	DATE	REMARKS/REF. SYMBOL
<p>THE DIM. &amp; SPECIFICATION CONTAINED HEREON ARE PROVIDED FOR INFORMATION AND USED AS COPIED, REPRODUCED OR OTHERWISE COMMUNICATED TO OTHERS WITHOUT ACCORDANCE WITH THE WRITTEN FROM SYMBOL TECHNOLOGIES INC.</p>						
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED			DRAWN	LJM	8/25/96	<b>SYMBOL TECHNOLOGIES INC.</b> Bohemia, New York
.XX ± .01 INCH .XXX ± .005 INCH ANGLES ± 1° FRACTIONS 1/164 MATERIAL: FINISH:			CHECKED	JC		
DO NOT SCALE DRAWING			PRODUCT			SIZE DWG. NO. 10-32447-01 SCALE: 2:1
NEXT ASSY			QUALITY			SHEET 1 OF 1



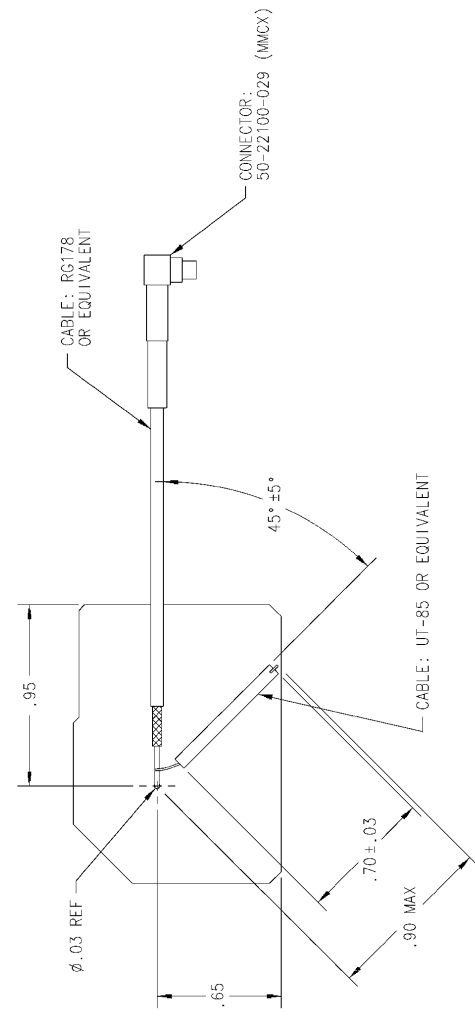
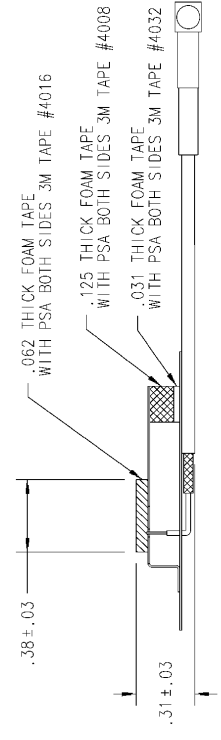
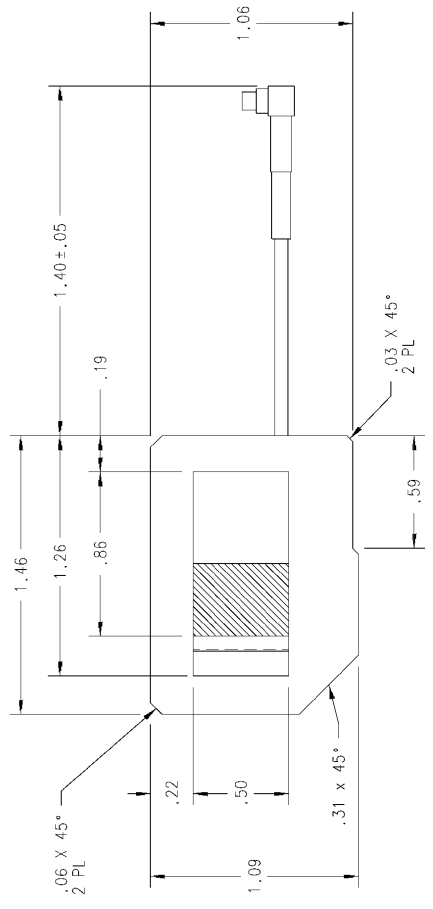
**SPECIFICATIONS:**

1. FREQUENCY: 2400-2485 MHZ
2. VSWR: <2.5:1
3. IMPEDENCE: 50 OHMS
4. GAIN: WHEN INSTALLED IN SYMBOL UNIT WWC1019 ORIENTED IN PREFERRED POSITION, THE VERTICALLY POLARIZED GAIN OVER 135 DEGREES OF AZIMUTH AND COVERING ±15 DEGREES ELEVATION SHALL BE GREATER THAN -2 dB NOMINAL AND -10 dB MINIMUM.

**NOTES:**

1. PACKAGE ITEMS IN ACCORDANCE WITH STI GENERAL PACKAGING SPEC # 50-04100-013

REV	ZONE	DESCRIPTION	E.C.	BY	APVD.	DATE
A		RELEASED PER EDR #55811		JS		3/28/00



**SPECIFICATIONS:**  
 FREQUENCY: 2400-2485 MHZ  
 VSWR: <2.5:1  
 IMPEDANCE: 50 OHMS  
 GAIN: WHEN INSTALLED IN SYMBOL UNIT WWC1019 ORIENTED IN PREFERRED POSITION, THE VERTICALLY POLARIZED GAIN OVER 135 DEGREES OF AZIMUTH AND COVERING ±15 DEGREES ELEVATION SHALL BE GREATER THAN -2 DBI NOMINAL AND -10 DBI MINIMUM.

- NOTES: UNLESS OTHERWISE SPECIFIED.**
- MATERIAL: CRS 1008, .010±.001 THICK.
  - FINISH: BRIGHT TIN PLATE PER MIL-T 10727A, TYPE 1 ELECTRO DEPOSITED .00010-.00025 INCHES. FINISH SHALL BE UNIFORM AND EXHIBIT NO EVIDENCE OF CORROSION OR OXIDATION WHEN VIEWED WITH THE UN-AIDED EYE. EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.
  - BREAK AND DE-BURR ALL SHARP CORNERS AND EDGES .005 MAX PRIOR TO PLATING.
  - PACKAGE ITEMS IAW STI GENERAL PACKAGING SPEC #50-01400-013.
  - PARTS TO MEET THE CRITERIA PER STI WORKMANSHIP STANDARDS #SS-03800-57.

APPROVALS	DATE	SYMBOL TECHNOLOGIES, INC.
DRAWN: J. SIMMONS	3/28/00	One Symbol Plaza Holtsville, NY 11742
CHECKED: M. SAVONA	3/28/00	ANTENNA: 2.4GHZ, S24 MMCX
ENG.: E. KOGAN	3/28/00	
ANALYST: L. DOROKOWSKI	3/28/00	
W.G. ENG.		
PRODUCT		
QUALITY		
SIZE	EMC. NO.	SCALE: 2 : 1
C	10-32447-02	SHEET 1 OF 1

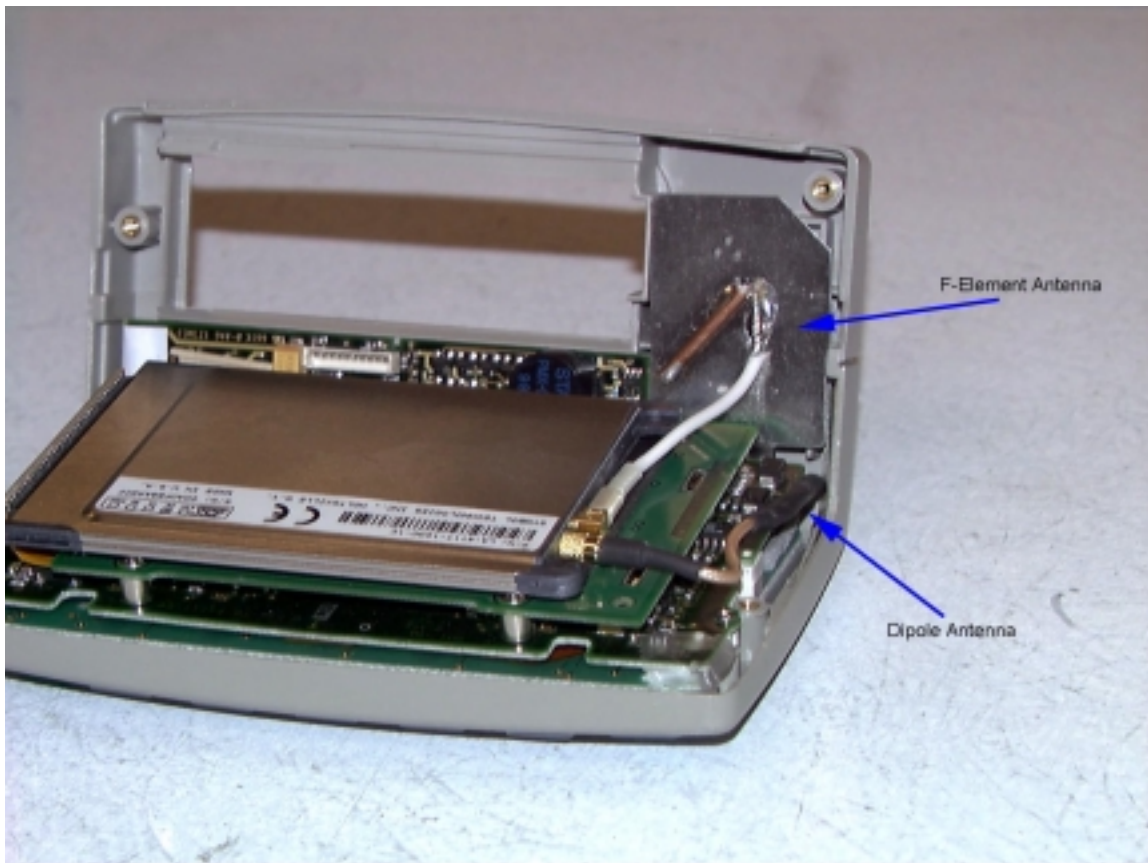
PROPRIETARY CONTENT	TOLERANCE CHART
THE DRAWING CONTENT AND SPECIFICATIONS ARE UNLESS OTHERWISE SPECIFIED. DIMENSIONS ARE IN INCHES.	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.
DO NOT SCALE DRAWING	XX 1/2 - .01
DO NOT SCALE	.XX 1/2 - .005
	1/2 - .125
	ANGLES ± 1°
	FRACTIONS ± 1/64

## 1046DP Antenna

The **1046DP** antenna is 2 dBi omni-directional in azimuth plane. It is mounted internally as shown in the attached photo. The **1046DP** uses a MMCX connector. In its use it would be within 5 cm of a persons body. It is used in portable devices. This antenna / device combination has not been SAR tested.

<i>Location</i>	Wrist worn device
<i>Pattern</i>	Omni
<i>Type</i>	Dipole
<i>Max Gain</i>	2 dBi
<i>Physical</i>	See attached dwg
<i>Cable</i>	RG-178
<i>Symbol P/N</i>	10-41370.01

**Note: This antenna / terminal configuration is only to be used with a transmitter that produces an EIRP of less than 200 mW. For an EIRP of more than 200 mW a SAR test must be performed.**



Antenna Photo



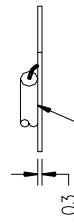
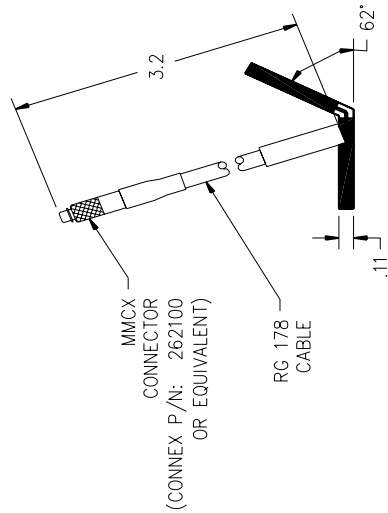
Antenna Use Photo



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NOTES: UNLESS OTHERWISE SPECIFIED.

1. LABEL SIZE, SHAPE AND CONTENTS SUBJECT TO CHANGE WITHOUT NOTICE.
2. TOLERANCES: .XX ± .03  
.XXX ± .010



COMPLETE CABLE ASSEMBLY NOT SHOWN FOR CLARITY

SPECIFICATION:

FREQUENCY: 2.4 TO 2.485 GHz  
POLARIZATION: LINEAR

RADIATION COVERAGE:

FRONT/BACK: ≥TBD dB  
GAIN: TBD dBi NOM @ ZENITH  
VSWR: <2.0:1  
WEIGHT: TBD OZ

PART NO. DESIGNATION

AT2400-4X-XXXX-XX-XX-XX

COLOR  
\* W = WHITE  
\* S = SMOKE GRAY  
\* O = OLIVE DRAB

CONNECTOR

- \* TNCM = TNC MALE
- \* TNCF = TNC FEMALE
- \* BNCM = BNC MALE
- \* BNCF = BNC FEMALE
- \* MCXM = MCX MALE
- \* MCXF = MCX FEMALE
- \* SMAM = SMA MALE
- \* SMAF = SMA FEMALE
- \* MMCXM = MMCX MALE
- \* MMCXF = MMCX FEMALE
- \* NTPM = NTP MALE
- \* NTPF = NTP FEMALE
- \* 0000 = NO TERMINATION

CABLE LENGTH

- \* 000 = IN INCHES

\* = OPTION NOT AVAILABLE WITH THIS MODEL

STANDARD MODEL = AT2400-4-MMCXM-3.20-00-00-L

POLARIZATION  
L = LINEAR  
RHCP = RIGHT HAND CIRCULAR  
POLARIZED

GAIN

- 00 = PASSIVE
- \* 12 = 12 dB (20 mA)
- \* 26 = 26 dB (35 mA)
- \* 40 = 40 dB (50 mA)
- \* XX = OTHER

VOLTAGE

- 00 = PASSIVE
- \* 05 = 05 VDC
- \* RG = 5 - 18 VDC
- \* XX = OTHER

SYM	DESCRIPTION	DATE	APPROVED
A	PRODUCTION RELEASE SEE ECO 4375	05/25/00	

<b>TITLE</b> WIRELESS ANTENNA, 2.4 GHz LINEAR	
<b>SIZE</b> B OUVG2	<b>CAGE CODE</b> A T2400-4
<b>DRAWING NO.</b> A T2400-4	<b>REV</b> A
SCALE NONE      A T2400-4-A      SHEET 1 OF 1	

DO NOT SCALE THIS DRAWING DRAWN S. VALDES CHECKED ENGR O.A. APPROVED	05/25/00
ALL DIMENSIONS ARE IN INCHES DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982 TOLERANCES: .XX = ±.01 .XXX = ±.005 FRACT = ±1/32 ANG. = ±1/2 SURFACE ROUGHNESS PER ANSI B46.1 REMOVE BURRS AND BREAK SHARP EDGES. PART TO BE CLEAN AND OIL FREE	UNLESS OTHERWISE SPECIFIED DRAWN IN ACAD
USED ON	USED ON