



FCC Certification Report for the
LA4111 WLAN PC Card
Class II Permissive Change

EXHIBIT 4

RF EXPOSURE INFO



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

FCC ID: **H9PLA4111**

WLAN PC Card, 11 Mbps, Trilogy

Output Power: 60 mW

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



RF Exposure Antenna Summary

Network Systems Organization

Source Based

FCC ID: H9PLA4111

WLAN PC Card, 11 Mbps, Trilogy

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	

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	

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

Monday, May 22, 2000 10:56 AM

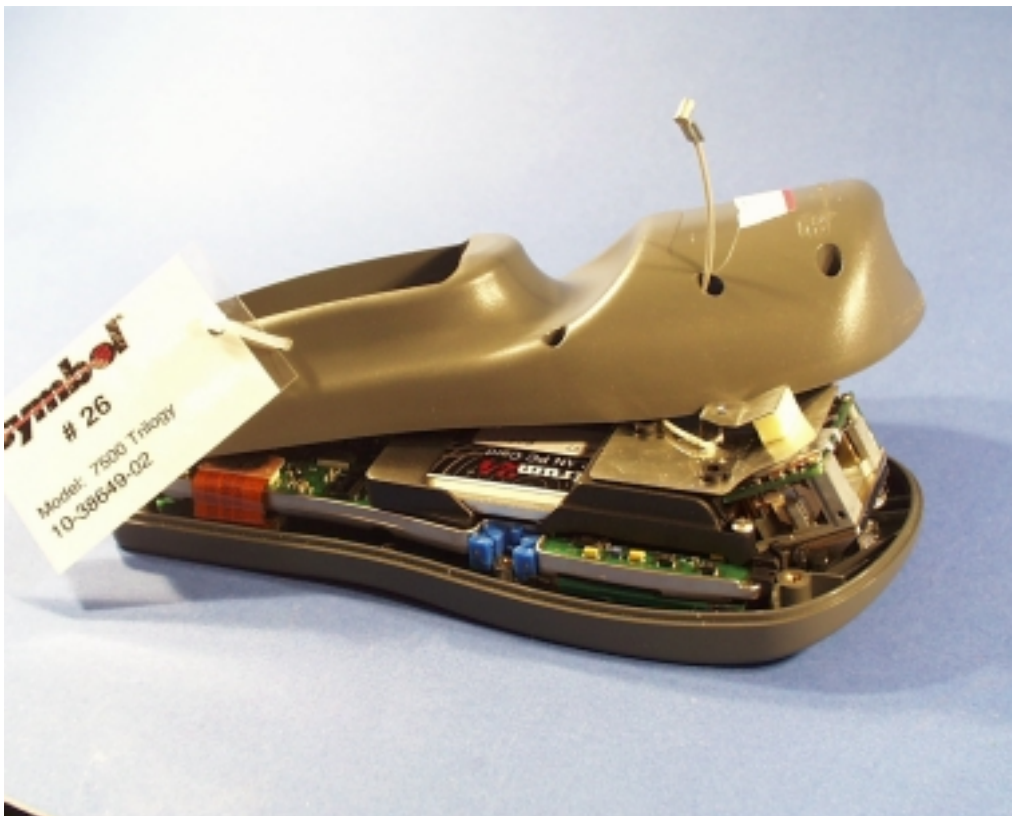
Page 1 of 1

7540 / 7546 Antenna

The **7540** antenna is 0 dBi omni-directional in azimuth plane. It is mounted internally on the top end of the terminal as shown in the attached photo. The **7540** uses the MuRatta BFA connector while the **7546** is identical to the **7540** but uses the 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>	MXYH75, RG-178
<i>Symbol P/N</i>	10-38649-01, -02

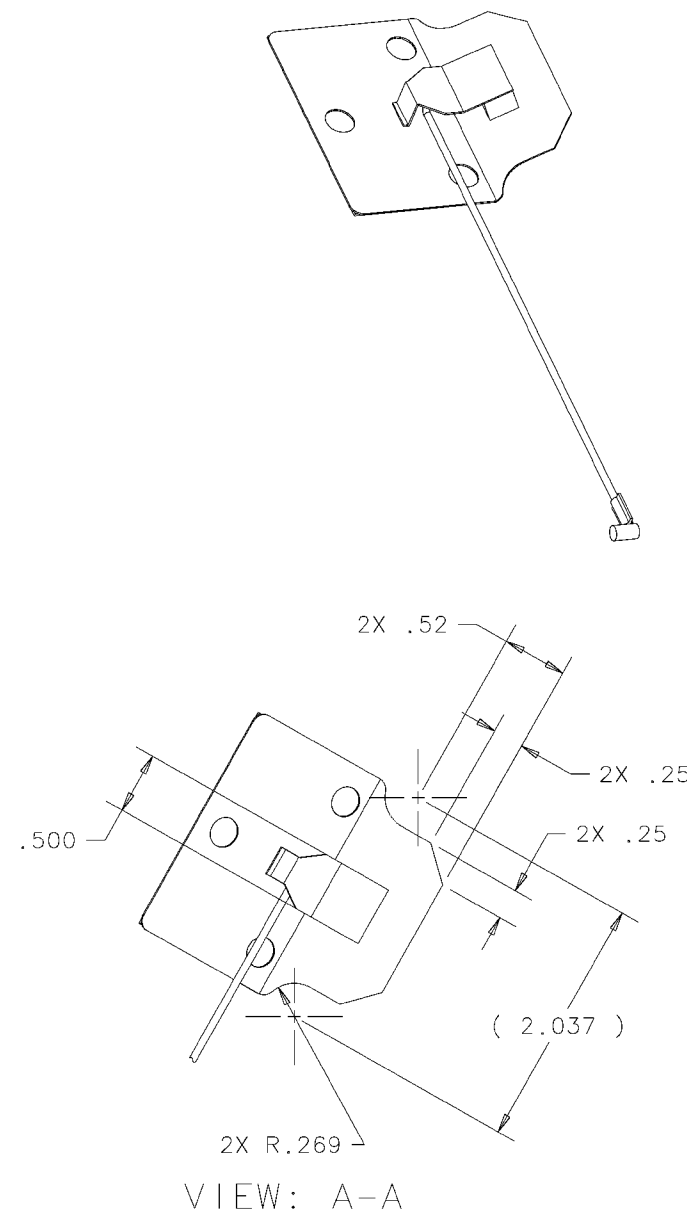
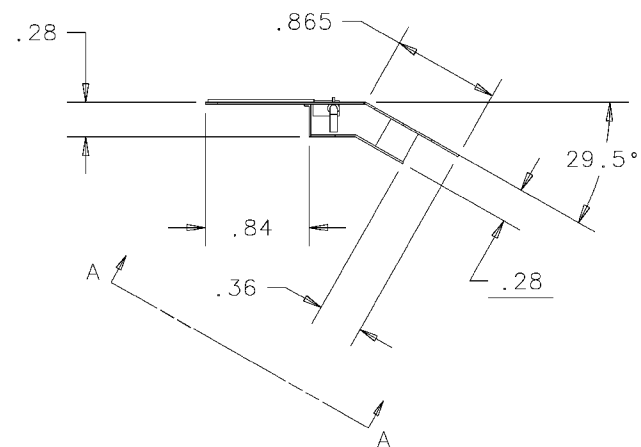
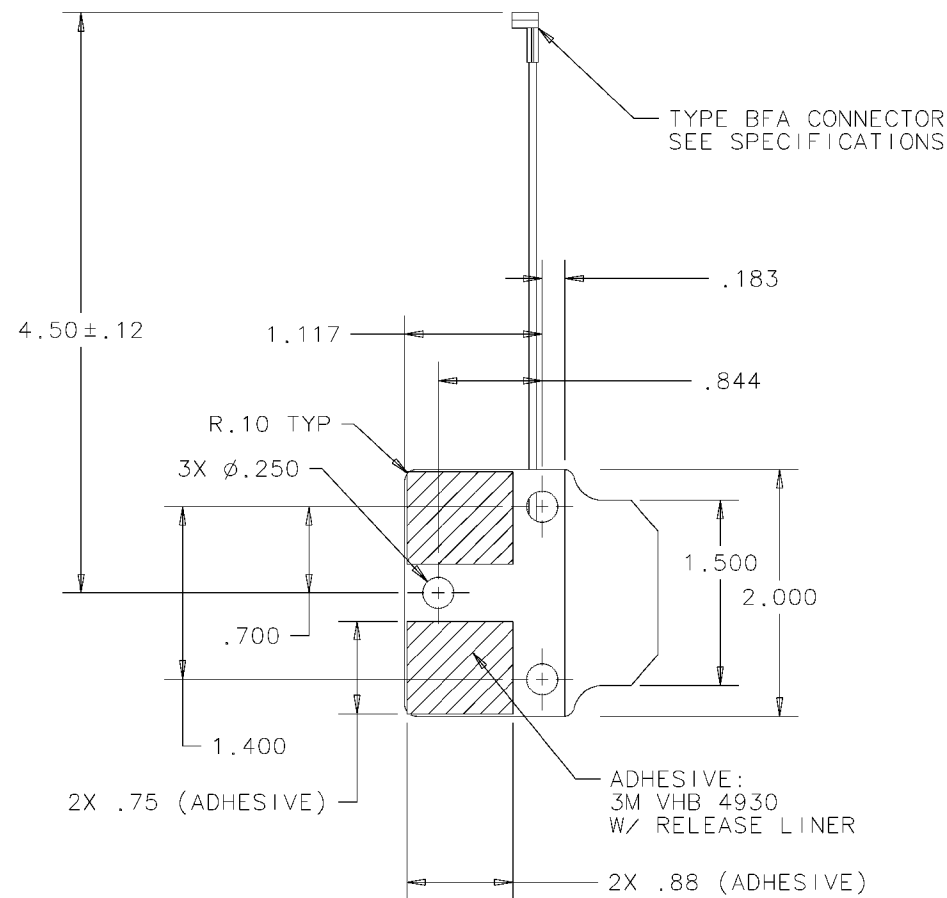
“Important Note: To comply with FCC RF exposure requirements, this hand-held device is approved for operation in a user’s hand when there is 20 cm or more between the antenna and everyone’s body.”



Antenna Installed in Device



Terminal Use Photo



REVISIONS						
REV.	ZONE	△ No.	DESCRIPTION	E.C.	BY	APVD. DATE
A			RELEASED PER EDR #50790		CT	10/5/99

SPECIFICATIONS

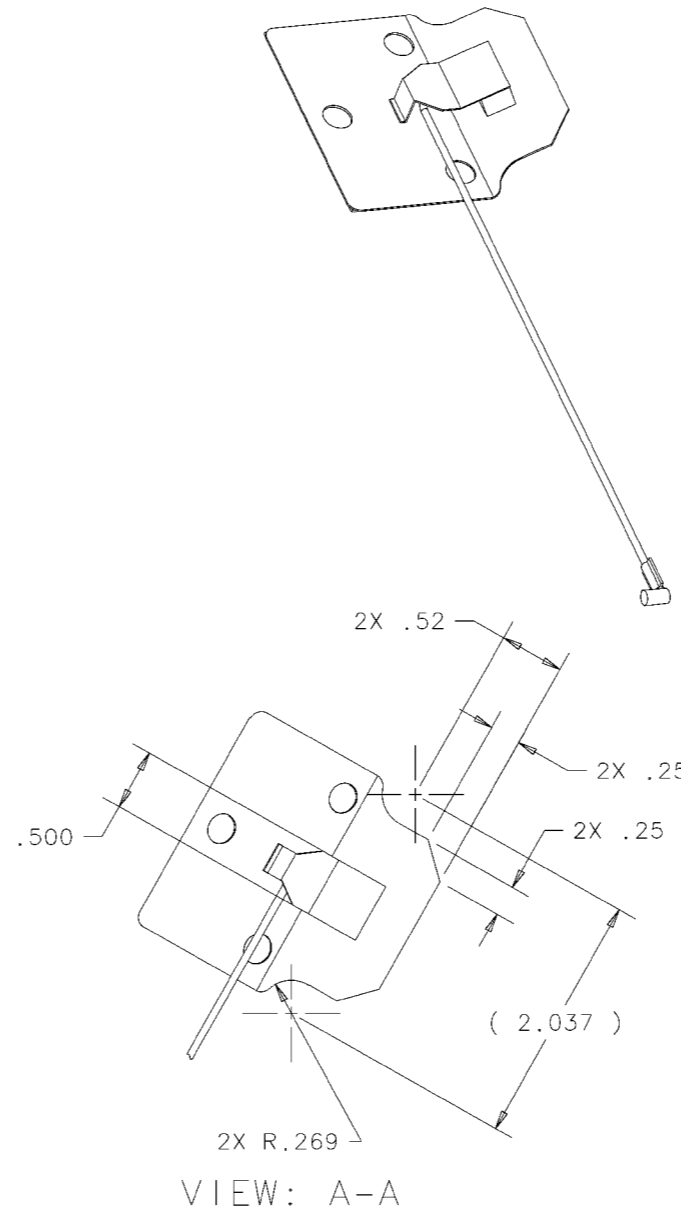
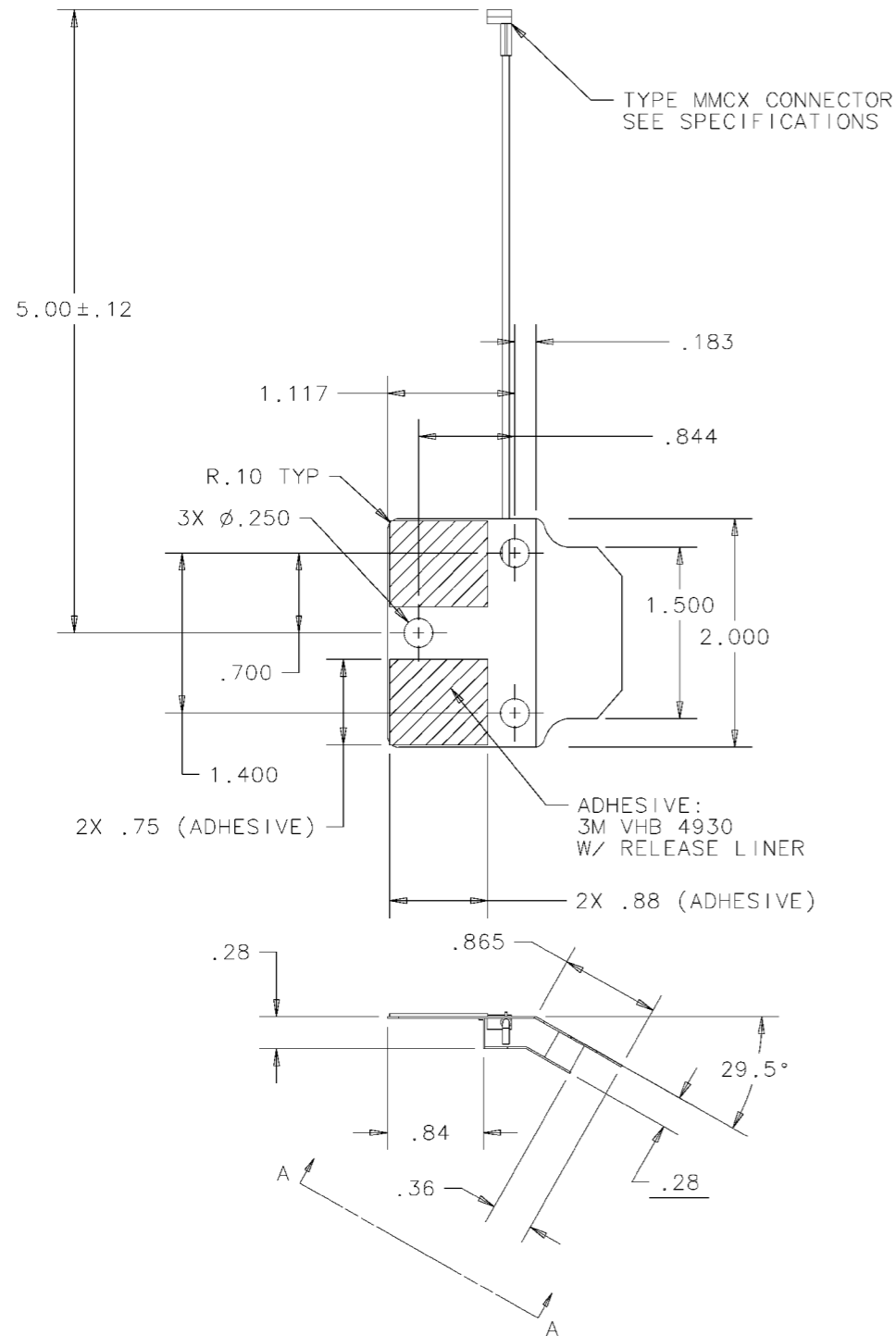
FREQUENCY: 2.4-2.485 GHZ
 VSWR: 2.0:1 MAX
 GAIN: 0dBi NOMINAL
 POLARIZATION: LINEAR
 CABLE: MURATA MXYH75
 CONNECTOR: TYPE BFA

NOTES: UNLESS OTHERWISE SPECIFIED

- MATERIAL: CRS 1008, .015 THK
- FINISH: BRIGHT TIN PLATE PER MIL-T-10727A, TYPE1, ELECTRO DEPOSITED .00010-.00025 INCHES. FINISH SHALL BE UNIFORM AND EXHIBIT NO EVIDENCE OF CORROSION OR OXIDATION WHEN VIEWED WITH THE UNAIDED EYE, EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.
- TOLERANCES: .XX ± .03
.XXX ± .010
ANGLES ± 1°
- PACKAGE IAW SYMBOL PACKAGING SPECIFICATION 40-04100-013
- BREAK AND DEBUR ALL SHARP EDGES .005 MAX PRIOR TO PLATING

ITEM	QTY.	PART NO.	DESCRIPTION	REMARKS/REF. SYMBOL
DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED .XX ± .03 .XXX ± .010 ANGLES ± 1° FRACTIONS ± 1/64				
THE DWG. & SPECIFICATION CONTAINED HEREON ARE PROPRIETARY AND MUST NOT BE USED, COPIED, REPRODUCED NOR ITS CONTENTS COMMUNICATED TO OTHERS EXCEPT IN ACCORDANCE WITH WRITTEN INSTRUCTIONS RECEIVED FROM SYMBOL TECHNOLOGIES INC.		APPROVALS DRAWN: C. THELEMANN CHECKED: M. SAVONA ENGINEER: C. THELEMANN MFG. ENG: M. LOSPINUSO PRODUCT: T. HOFBAUER QUALITY: B. WATSON		DATE 10/5/99 10/5/99 10/5/99 10/5/99 10/5/99
SYMBOL TECHNOLOGIES INC. Bohemia, New York			ANTENNA: 2.4 GHz TYPE F 7500	
MATERIAL: PTD 754X		FINISH: -----		SIZE: C DWG. NO.: 10-38649-01 SCALE: 1/1 SOLID MODEL: YES NO <input checked="" type="checkbox"/> <input type="checkbox"/>
NEXT ASSY:		USED ON:		SHEET 1 OF 1

REVISIONS							
REV.	ZONE	△	DESCRIPTION	E.C.	BY	APVD.	DATE
A			RELEASED PER EDR #53455		MB		01/10/00



SPECIFICATIONS

FREQUENCY: 2.4-2.485 GHZ
 VSWR: 2.0:1 MAX
 GAIN: 0dBi NOMINAL
 POLARIZATION: LINEAR
 CABLE: RG178
 CONNECTOR: TYPE MMCX, 50-22100-029

NOTES: UNLESS OTHERWISE SPECIFIED

- MATERIAL: CRS 1008, .015 ± .001THK
- FINISH: BRIGHT TIN PLATE PER MIL-T-10727A, TYPE1, ELECTRO DEPOSITED .00010-.00025 INCHES. FINISH SHALL BE UNIFORM AND EXHIBIT NO EVIDENCE OF CORROSION OR OXIDATION WHEN VIEWED WITH THE UNAIDED EYE, EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.
- TOLERANCES: .XX ± .03
.XXX ± .010
ANGLES ± 1°
- PACKAGE LAW SYMBOL PACKAGING SPECIFICATION 40-04100-013
- BREAK AND DEBUR ALL SHARP EDGES .005 MAX PRIOR TO PLATING

ITEM	QTY.	PART NO.	DESCRIPTION	REMARKS/REF. SYMBOL																																											
<table border="1"> <tr> <td rowspan="4" style="font-size: small;"> THE DWG. & SPECIFICATION CONTAINED HEREON ARE PROPRIETARY AND MUST NOT BE USED, COPIED, REPRODUCED NOR ITS CONTENTS COMMUNICATED TO OTHERS EXCEPT IN ACCORDANCE WITH WRITTEN INSTRUCTIONS RECEIVED FROM SYMBOL TECHNOLOGIES INC. </td> <td colspan="2">DIMENSIONS ARE IN INCHES</td> <td>APPROVALS</td> <td>DATE</td> <td rowspan="4" style="text-align: center;"> SYMBOL TECHNOLOGIES INC. Bohemia, New York ANTENNA: 2.4 GHz TYPE F </td> </tr> <tr> <td colspan="2">UNLESS OTHERWISE SPECIFIED</td> <td>DRAWN M. BUNYON</td> <td>01/10/00</td> </tr> <tr> <td>.XX</td> <td>+/-</td> <td>+/- .01</td> <td>CHECKED M. SAVONA</td> <td>01/10/00</td> </tr> <tr> <td>.XXX</td> <td>+/-</td> <td>+/- .005</td> <td>ENGINEER C. THELEMANN</td> <td>01/10/00</td> </tr> <tr> <td colspan="2">ANGLES ± 1° FRACTIONS ± 1/64</td> <td>MFG. ENG.</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">MATERIAL:</td> <td>PRODUCT</td> <td colspan="2">SIZE C</td> <td>DWG. NO. 10-38649-02</td> </tr> <tr> <td colspan="2">FINISH:</td> <td>QUALITY</td> <td colspan="2">SCALE: 1:1</td> <td>SOLID MODEL <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</td> </tr> <tr> <td colspan="2">NEXT ASSY</td> <td>USED ON</td> <td>ANALYST L. DOBKOWSKI</td> <td>01/10/00</td> <td>SHEET 1 OF 1</td> </tr> </table>					THE DWG. & SPECIFICATION CONTAINED HEREON ARE PROPRIETARY AND MUST NOT BE USED, COPIED, REPRODUCED NOR ITS CONTENTS COMMUNICATED TO OTHERS EXCEPT IN ACCORDANCE WITH WRITTEN INSTRUCTIONS RECEIVED FROM SYMBOL TECHNOLOGIES INC.	DIMENSIONS ARE IN INCHES		APPROVALS	DATE	SYMBOL TECHNOLOGIES INC. Bohemia, New York ANTENNA: 2.4 GHz TYPE F	UNLESS OTHERWISE SPECIFIED		DRAWN M. BUNYON	01/10/00	.XX	+/-	+/- .01	CHECKED M. SAVONA	01/10/00	.XXX	+/-	+/- .005	ENGINEER C. THELEMANN	01/10/00	ANGLES ± 1° FRACTIONS ± 1/64		MFG. ENG.			MATERIAL:		PRODUCT	SIZE C		DWG. NO. 10-38649-02	FINISH:		QUALITY	SCALE: 1:1		SOLID MODEL <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	NEXT ASSY		USED ON	ANALYST L. DOBKOWSKI	01/10/00	SHEET 1 OF 1
THE DWG. & SPECIFICATION CONTAINED HEREON ARE PROPRIETARY AND MUST NOT BE USED, COPIED, REPRODUCED NOR ITS CONTENTS COMMUNICATED TO OTHERS EXCEPT IN ACCORDANCE WITH WRITTEN INSTRUCTIONS RECEIVED FROM SYMBOL TECHNOLOGIES INC.	DIMENSIONS ARE IN INCHES		APPROVALS	DATE		SYMBOL TECHNOLOGIES INC. Bohemia, New York ANTENNA: 2.4 GHz TYPE F																																									
	UNLESS OTHERWISE SPECIFIED		DRAWN M. BUNYON	01/10/00																																											
	.XX	+/-	+/- .01	CHECKED M. SAVONA			01/10/00																																								
	.XXX	+/-	+/- .005	ENGINEER C. THELEMANN	01/10/00																																										
ANGLES ± 1° FRACTIONS ± 1/64		MFG. ENG.																																													
MATERIAL:		PRODUCT	SIZE C		DWG. NO. 10-38649-02																																										
FINISH:		QUALITY	SCALE: 1:1		SOLID MODEL <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO																																										
NEXT ASSY		USED ON	ANALYST L. DOBKOWSKI	01/10/00	SHEET 1 OF 1																																										

	PDT 754X	
		DO NOT SCALE DRAWING

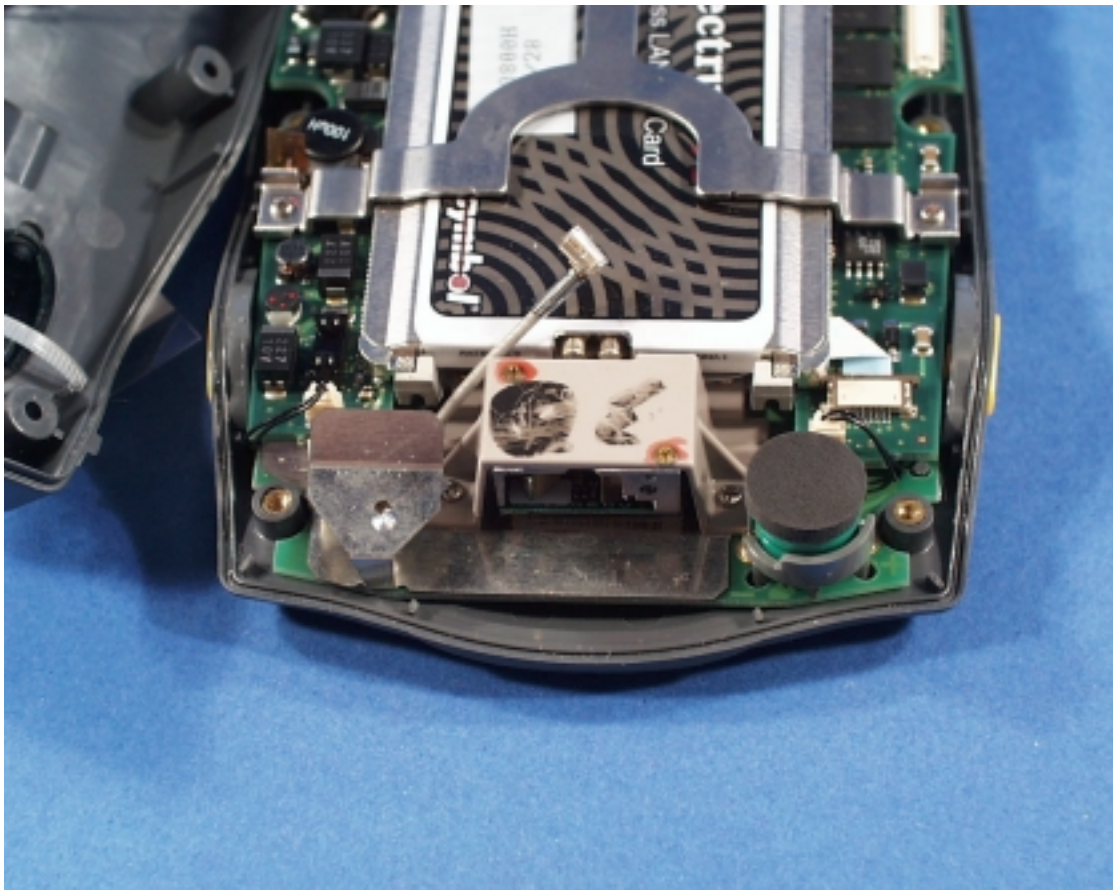
2740 / 2742 Antenna

The 2740 antenna is 0 dBi omni-directional in azimuth plane. It is mounted internally on the top end of the terminal as shown in the attached photo. The 2740 uses a Murata Erie BFA connector while the 2742 uses the MMCX. 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

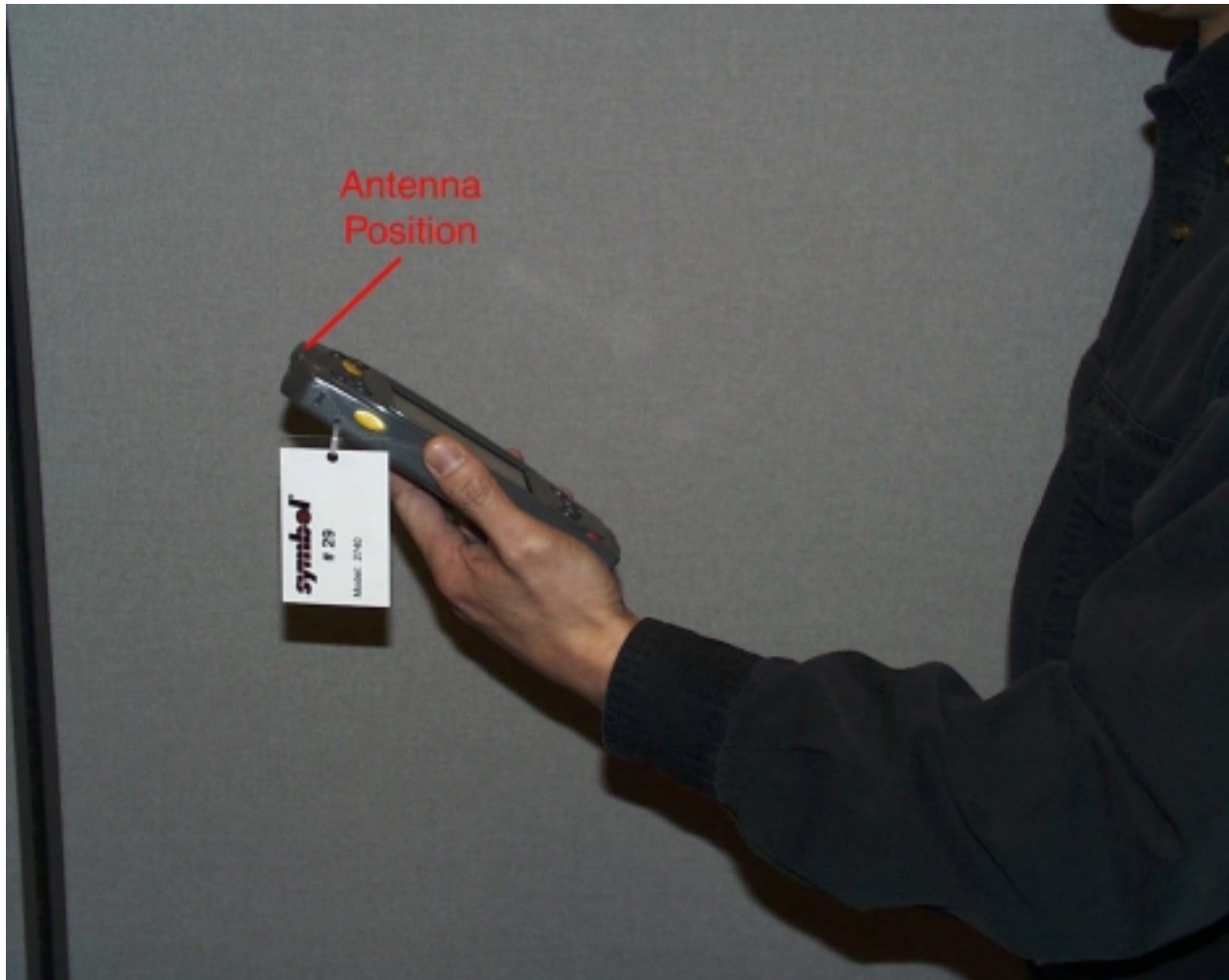
<i>Location</i>	Hand Held Device
<i>Pattern</i>	Omni
<i>Type</i>	F-Element
<i>Max Gain</i>	0 dBi
<i>Physical</i>	See attached dwg
<i>Cable</i>	MXYP75, RG-178
<i>Symbol P/N</i>	703624-1, 703624-2

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.

“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 everyone’s body.”



Antenna Installed in Device



Terminal Use Photo

Amity BFA / Amity MMCX Antenna

The Amity antenna is 0 dBi omni-directional in azimuth plane. It is available with either a MuRatta BFA or MMCX connector. It is mounted internally on the top end of the terminal as shown in the attached photo. 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 Bullitin 65, Supplement C for EIRP greater than 200 mW.

<i>Location</i>	Hand Held Device
<i>Pattern</i>	Omni
<i>Type</i>	Slot
<i>Max Gain</i>	0 dBi
<i>Physical</i>	See attached dwg
<i>Cable</i>	MXYP75, RG-178
<i>Symbol P/N</i>	703611-1, 2

“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 everyone’s body.”



Antenna Installed in Device

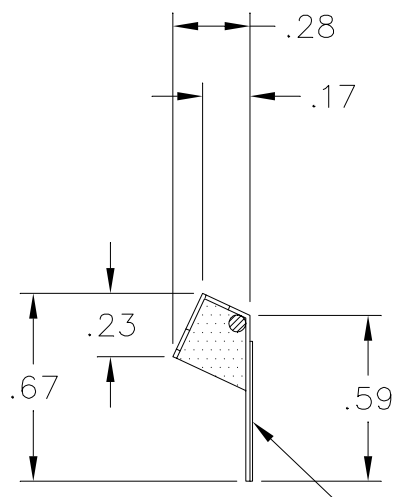
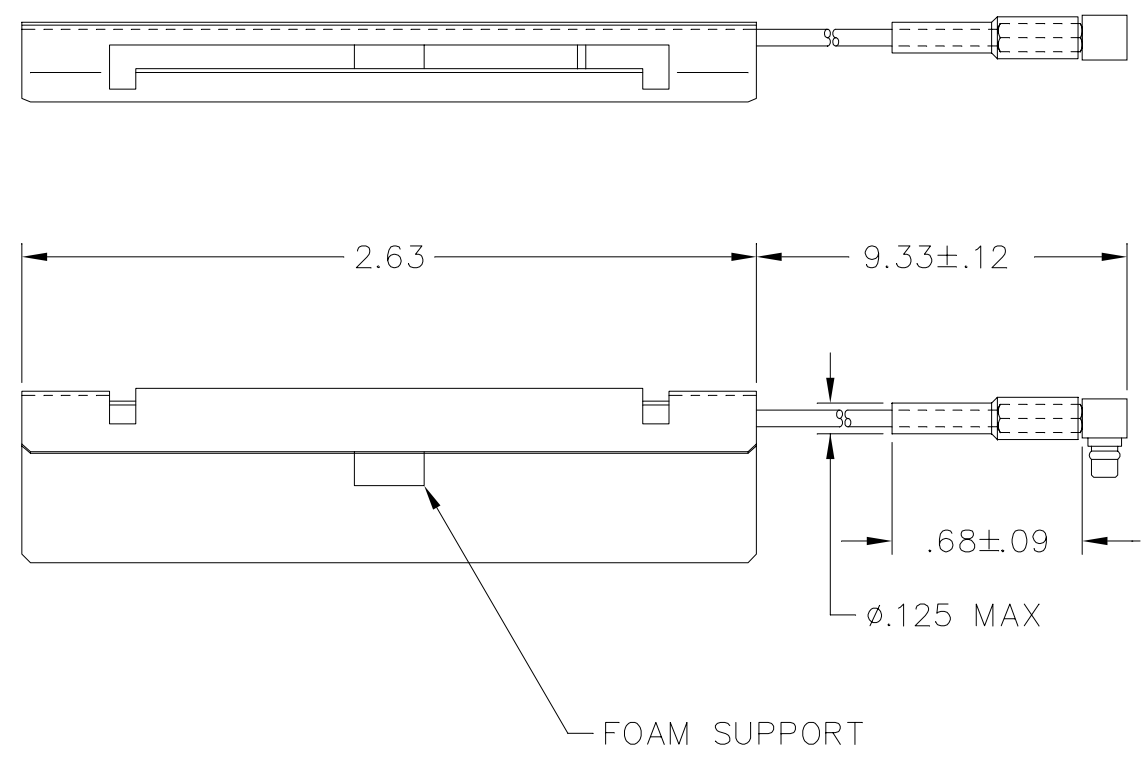


Terminal Use Photo

TECOM PROPRIETARY:
 INFORMATION CONTAINED HEREIN SHALL NOT BE DISCLOSED TO
 A THIRD PARTY WITHOUT WRITTEN PERMISSION FROM TECOM.

PROPOSAL DWG

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
.	A	9.33±.12 WAS TBD±.12 ADDED ϕ .125 MAX & .68±.09 ADDED STRAIN RELIEF SLEEVE (PICTURE CHG) ADDED FOAM SUPPORT (PICTURE & CALLOUT) REDRAWN WO 2654	11-5-99 JL	



SPECIFICATIONS

FREQUENCY: 2.4-2.485 GHZ
 VSWR: 2.0:1 MAX
 GAIN: 0dBi NOMINAL
 POLARIZATION: LINEAR
 CONNECTOR: MMCX MALE

- 4. SHARP CORNERS & EDGES .005 MAX.
- 3. FINISH SHALL BE UNIFORM AND EXHIBIT NO EVIDENCE OF CORROSION OR OXIDATION WHEN VIEWED WITH THE UNAIDED EYE. EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.

- 2. ALTERNATE:
 MATERIAL: CRS 1008, .015 THK.
 FINISH: BRIGHT TIN PLATE PER MIL-T-10727A, TYPE 1, ELECTRO DEPOSITED .00010-.00025 IN.
- 1. MATERIAL: ELECTROLYTIC TIN PLATED STEEL SHEET, .015 THK.

PMIC	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ± .03 .XXX ± .010 ANGLES ± 0°30' MACHINED SURFACE ROUGHNESS 125 ✓ REMOVE BURRS, SHARP EDGES R.005-.015 MACHINED FILLETS R.005-.015 DIMENSIONS ARE AFTER PLATING. MACHINED DIA'S ON COMMON CENTERLINE CONCENTRIC WITHIN .005 TIR. INTERPRET PER ANSI Y14.5M-1982.		CONTRACT NUMBER
			CONTRACTOR
			DRAWN BY J. LOWE
			DATE 10-11-99
			CHECKER MFG ENGR
			QA ENGR
			PRGM MGR ENGR
823283	CP90-065	HOLE TOLERANCES:	
NEXT ASSY	USED ON	.040 - .128 +.003 -.001	.515 - .750 +.008 -.001
		.136 - .228 +.004 -.001	.765 - 1.000 +.010 -.002
		.234 - .500 +.006 -.001	1.031 UP +.015 -.002
		MATL ENGR	APPROVAL
APPLICATION			

TECOM TECOM INDUSTRIES INC.
 9324 TOPANGA CYN BLVD CHATSWORTH, CA. 91311
 TECHNICAL EXCELLENCE COMMITTED TO QUALITY

TITLE: ANTENNA, SLOT, 2.4 GHZ

SIZE	CAGE CODE	DWG NO
C	52791	703611
SCALE	UNIT WT	SHEET
2/1	.	1 OF 1

NOTES : UNLESS OTHERWISE SPECIFIED

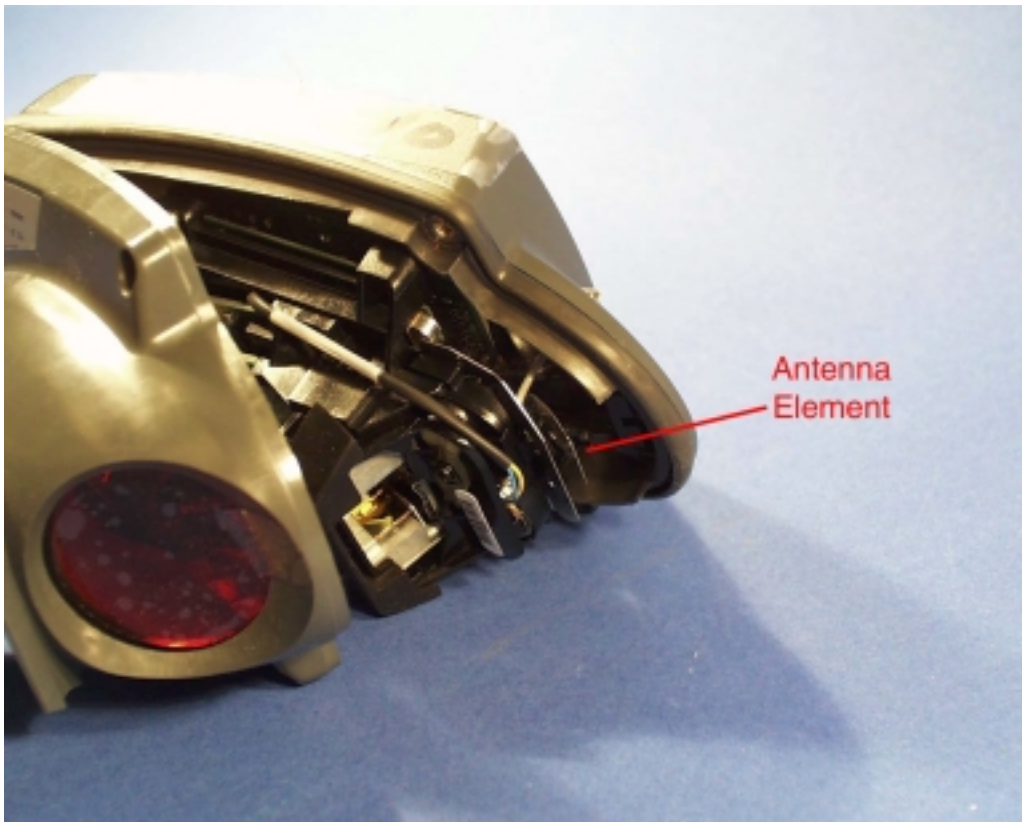
SCALE

7240 / 7242 Antenna

The **7240** antenna is 0 dBi omni-directional in azimuth plane. It is mounted internally on the top end of the terminal as shown in the attached photo. The **7240** uses the MuRatta BFA connector. The **7242** is identical to the **7240** but uses the 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.

<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>	MXZH75, RG-178
<i>Symbol P/N</i>	10-35475-01, 10-35477-01

“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 everyone’s body.”



Antenna Installed in Device



Terminal Use Photo

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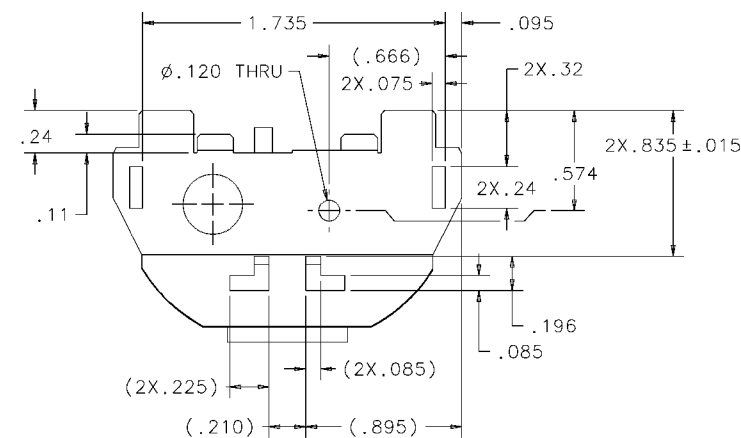
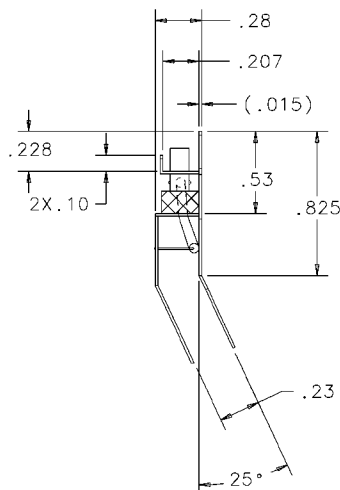
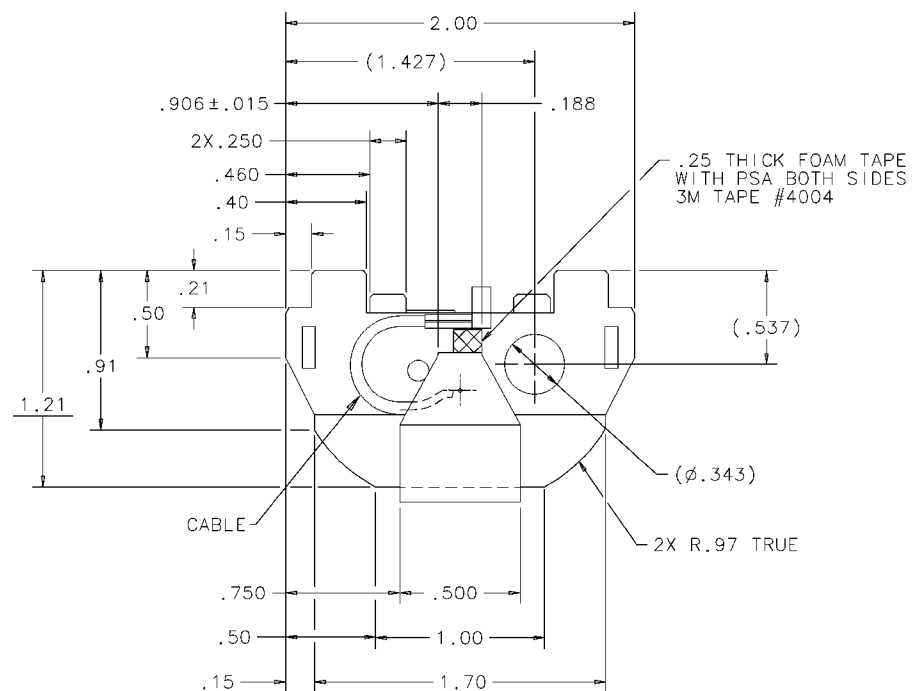
4

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REVISIONS						
REV	ZONE	DESCRIPTION	E.C.	BY	APVD.	DATE
A		RELEASED PER EDR #54642		MB		02/17/00



NOTES: UNLESS OTHERWISE SPECIFIED:

- 1) MATERIAL: CRS 1008, .015 ± .001 THK, SHARP CORNERS AND EDGES .005 MAX. ALTERNATE: ELECTROLYTIC TIN COATED COLD ROLLED STEEL .015 THICK. NON-PLATED EDGES ARE PERMISSIBLE.
- 2) FINISH: BRIGHT TIN PLATE PER MIL-T-10727A, TYPE 1. ELECTRO DEPOSITED .00010-.00025 IN. FINISH SHALL BE UNIFORM EXHIBIT NO EVIDENCE OF CORROSION OR OXIDATION WHEN VIEWED WITH THE UNAIDED EYE. EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.
- 3) PACKAGE ITEMS IN ACCORDANCE WITH STI GENERAL PACKAGING SPEC #50-04100-013.
- 4) PARTS SHALL MEET THE CRITERIA PER STI WORKMANSHIP STANDARD SS-03800-57.

SPECIFICATIONS

FREQUENCY: 2.4-2.485 GHz
 VSWR: 2.0:1
 GAIN: 0db i NOMINAL
 POLARIZATION: LINEAR
 CABLE: MURATA MXYH75
 CONNECTOR: TYPE BFA

* PROPRIETARY CONTENT *		
THE DRAWING CONTENT AND SPECIFICATION CONTAINED HEREIN ARE PROPRIETARY AND MUST NOT BE USED, COPIED, REPRODUCED OR OTHERWISE DEALT WITH OR COMMUNICATED TO OTHERS EXCEPT IN ACCORDANCE WITH WRITTEN INSTRUCTIONS RECEIVED FROM SYMBOL TECHNOLOGIES INC.		
COMPUTER GENERATED DRAWING DO NOT SCALE		

TOLERANCE CHART	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
INCH	MM
.XX	+/- .01
.XXX	+/- .005
ANGLES ± 1° FRACTIONS ± 1/64	

APPROVALS	DATE	SYMBOL TECHNOLOGIES INC.	
DRAWN JKW	05-05-99	One Symbol Plaza Holtsville, NY 11742	
CHECKED M.SAVONA	05-05-99	ANTENNA: 2.4GHZ	
ENGINEER J.CONNELLY	05-05-99		
ANALYST L.DOBKOWSKI	05-05-99		
MFG. ENG.		SIZE D	DWG. NO. 10-35475-01
PRODUCT		SCALE: 2/1	SHEET 1 OF 1
QUALITY		SOLID MODEL <input checked="" type="checkbox"/>	

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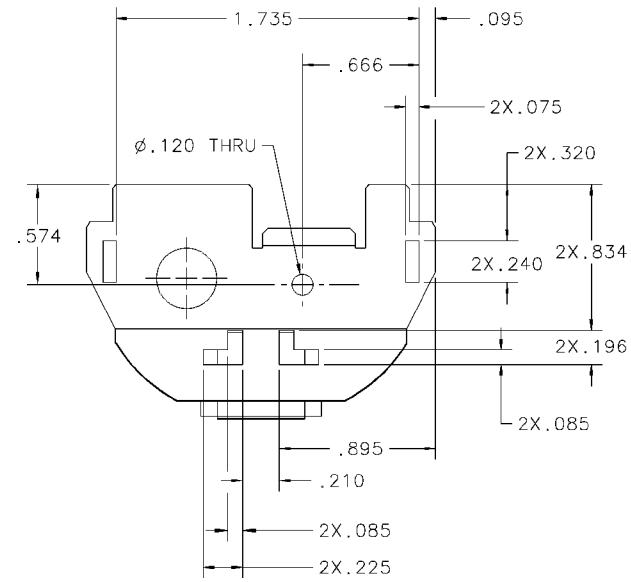
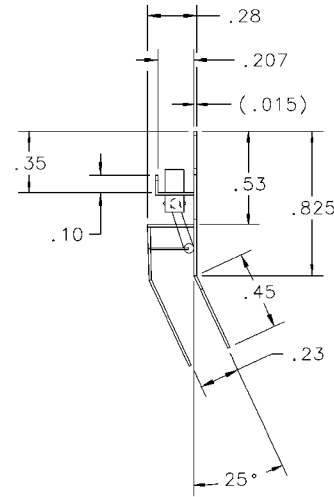
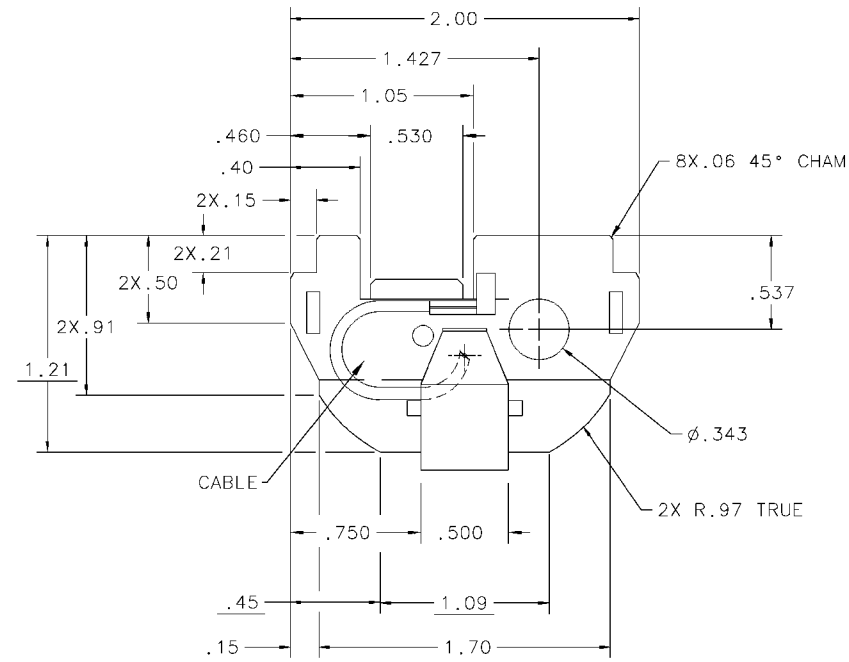
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REVISIONS						
REV	ZONE	DESCRIPTION	E.C.	BY	APVD.	DATE
1		INITIAL RELEASE PER PPD# 51859		JKW		11-03-99
2		REVISED PER PPD #52781 1) REVISED PER TECOM'S DWG		MB		12/8/99
3		REVISED PER PPD #53240 1) DIM .45 WAS .42 2) ADDED NOTE 5		MB		12/29/99



SPECIFICATIONS

FREQUENCY: 2.4-2.485 GHz
 VSWR: 2.0:1
 GAIN: 0dbi NOMINAL
 POLARIZATION: LINEAR
 CABLE: RG178
 CONNECTOR: 50-22100-029 (MMCX)

NOTES: UNLESS OTHERWISE SPECIFIED:

- MATERIAL: CRS 1008, .015 THK, SHARP CORNERS AND EDGES .005 MAX. ALTERNATE: ELECTROLYTIC TIN.
- FINISH: BRIGHT TIN PLATE PER MIL-T-10727A, TYPE 1, ELECTRO DEPOSITED .00010-.00025 IN. FINISH SHALL BE UNIFORM EXHIBIT NO EVIDENCE OF CORROSION OR OXIDATION WHEN VIEWED WITH THE UNAIDED EYE. EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.
- PACKAGE ITEMS IN ACCORDANCE WITH STI GENERAL PACKAGING SPEC #50-04100-013.
- WORKMANSHIP PER STI STANDARD SS-03800-57.
- ALL UNDERLINED DIMENSIONS ARE OUT OF SCALE AND ARE NOT REFLECTED IN THE 3-D DATA BASE

ITEM	QTY	PART NO.	DESCRIPTION	REMARKS/REF. SYMBOL
PARTS LIST				
			APPROVALS	DATE
			DRAWN JKW	11-03-99
			CHECKED W.SAVONA	11-03-99
			ENGINEER J.CONNELLY	11-03-99
			MFG. ENG.	
			PRODUCT	
			QUALITY	
			ANALYST L.DOBKOWSKI	12-29-99
		PDT 7200		
		USED ON		
		DO NOT SCALE DRAWING		

SYMBOL TECHNOLOGIES INC.
 Bohemia, New York
 ANTENNA: 2.4GHZ,
 11/2MBPS,PDT7200

SCALE: 2:1
 SOLID MODEL
 SHEET 1 of 1

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Toko Antenna

The Toko antenna is 0 dBi omni-directional in azimuth plane. It is mounted as a through hole device directly on the printed circuit board of a hand held device. 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 Bullitin 65, Supplement C for EIRP greater than 200 mW.

<i>Location</i>	Hand Held Device
<i>Pattern</i>	Omni
<i>Type</i>	Dielectric Puck
<i>Max Gain</i>	2.15 dBi
<i>Physical</i>	See Attached Dwg.
<i>Cable</i>	none
<i>Symbol P/N</i>	50-21900-022

“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 everyone’s body.”



Installed Antenna Photo



Terminal Use Photo



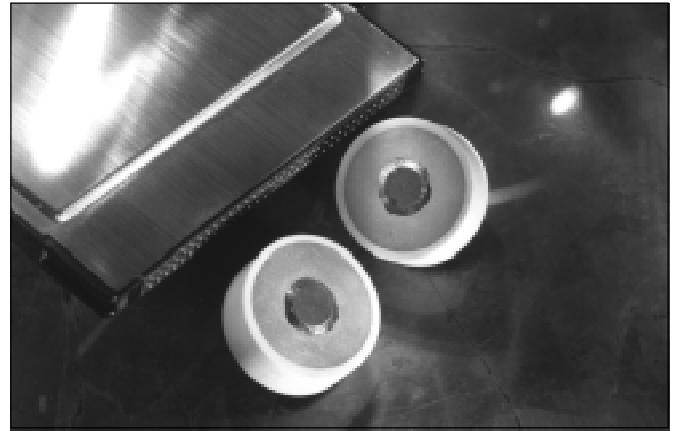
ANTENNA ELEMENT FOR 2.4 GHz

DESCRIPTION

The DAC Series is a miniature dielectric antenna element for 2.4 GHz wireless LAN systems. This antenna has vertical polarization characteristics. TOKO's proprietary ceramic dielectric material provides excellent stability and sensitivity. It is mountable in Type II extended PCMCIA cards.

FEATURES

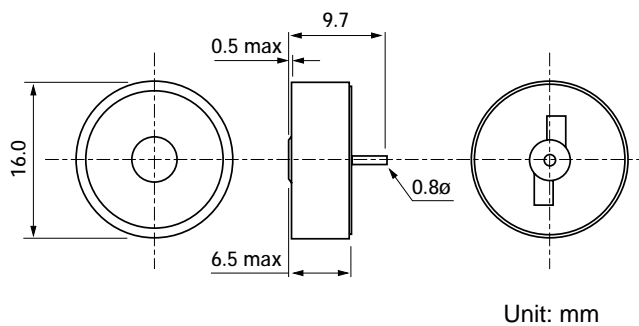
- Vertical Polarization reception
- Low profile (6.5mm max)
- Omni-directional in azimuth
- Low interference design
- Central feeding point terminal
- Wide bandwidth
- Light weight



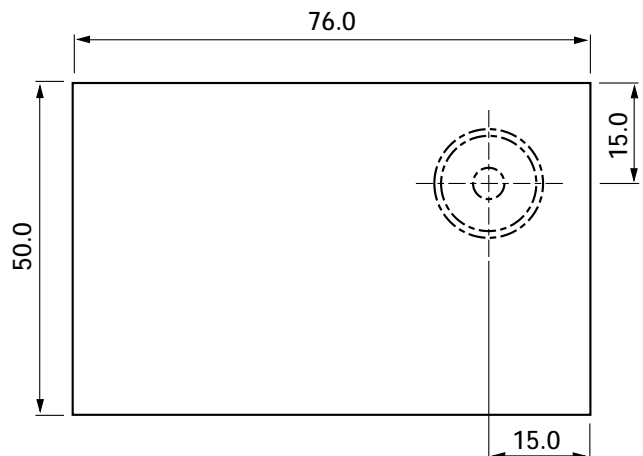
SPECIFICATIONS

Part Number	DAC2450CT1
Center Frequency	2450 MHz
Receiving Bandwidth	±50 MHz min.
Impedance	50Ω
Peak Gain	2.15 dBi (0dBi typ.) max.
Operating Temperature	-10 ~ +60° C
Storage Temperature	-20 ~ +85° C
Weight	4g

DIMENSIONS DAC SERIES

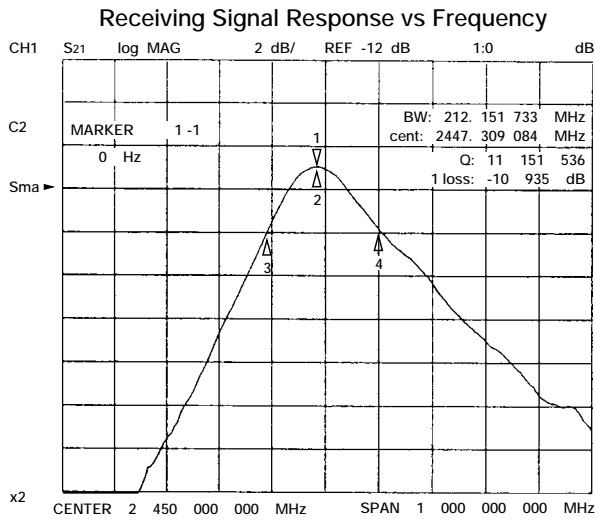


Mounted with Ground Plane

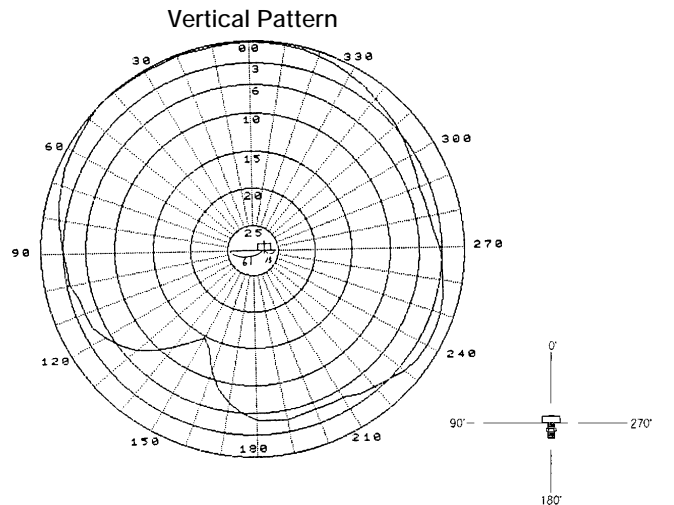
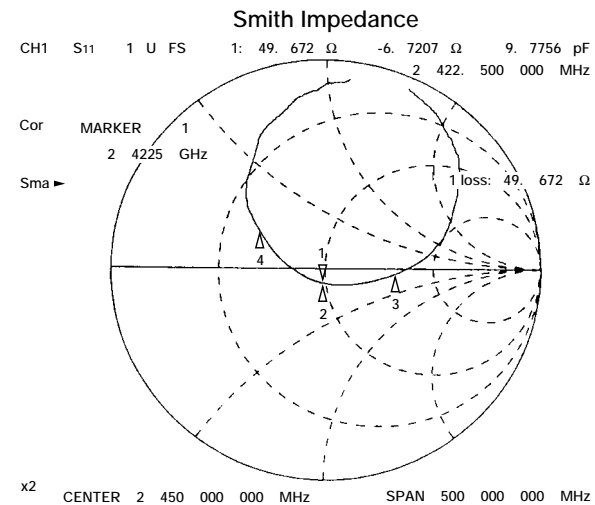
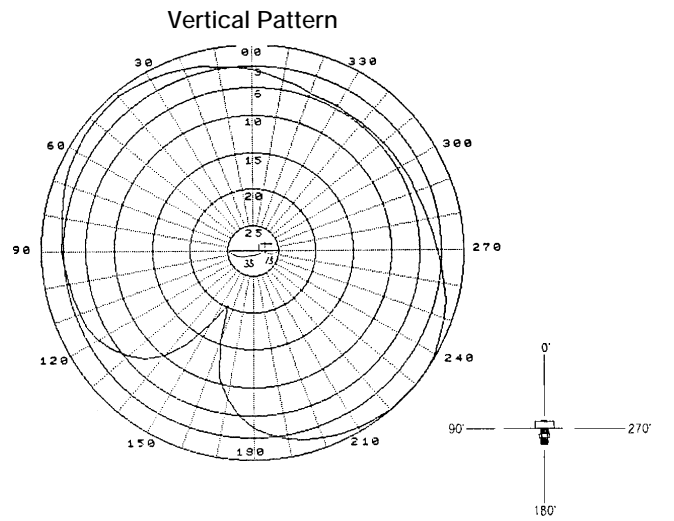
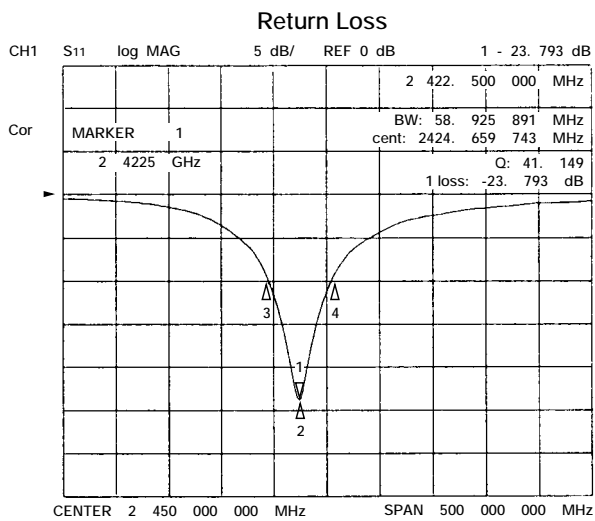
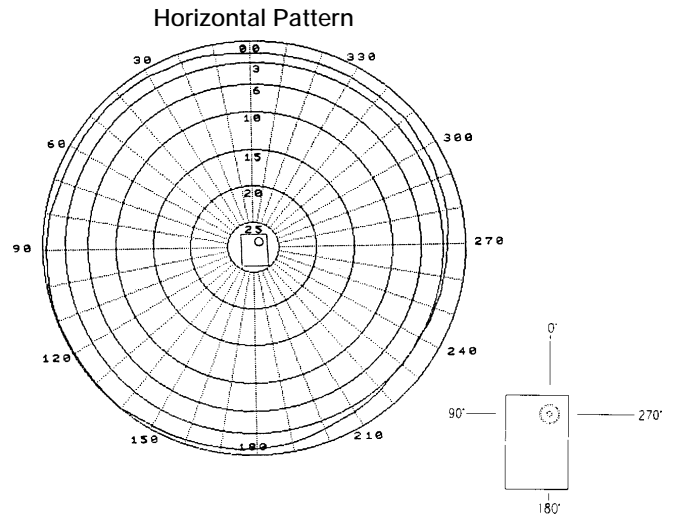


DAC Series

TYPICAL CHARACTERISTICS

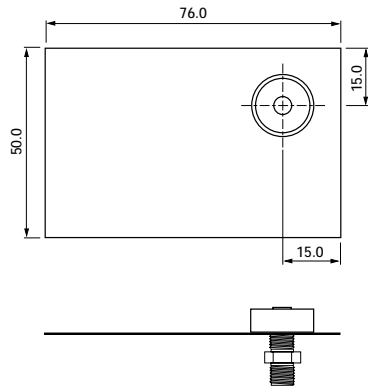


DIRECTIVITY CHART



INTERFERENCE COMPARISON OF DAC VS. PLANAR INVERTED F ANTENNA

DAC Set-up



Planar F Inverted Set-up

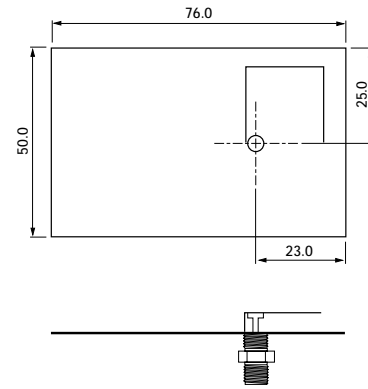


Fig.1

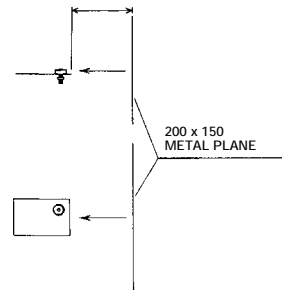
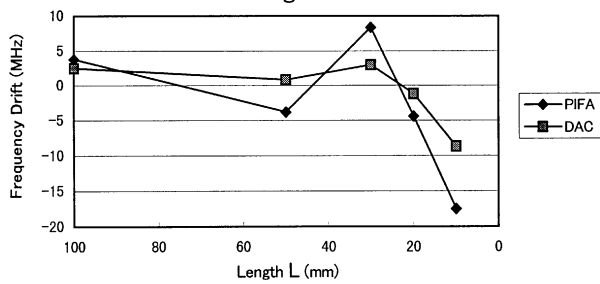


Fig.2

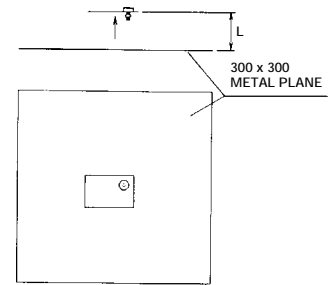
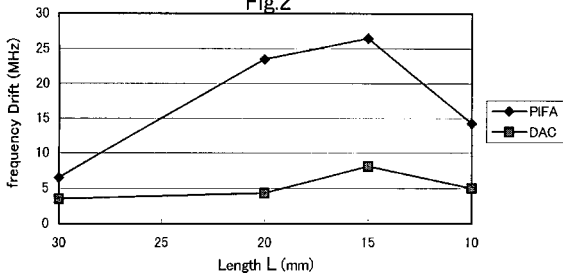


Fig.3

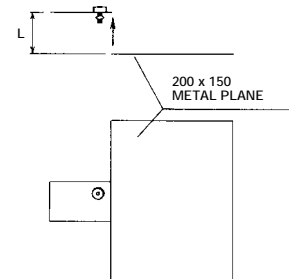
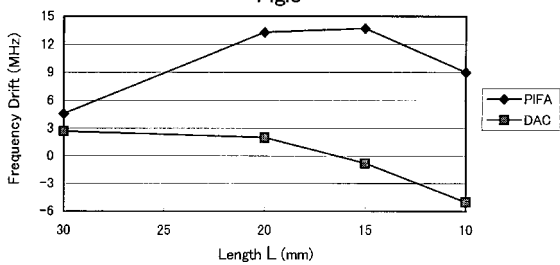
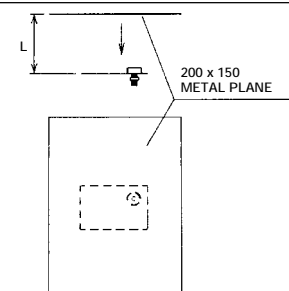
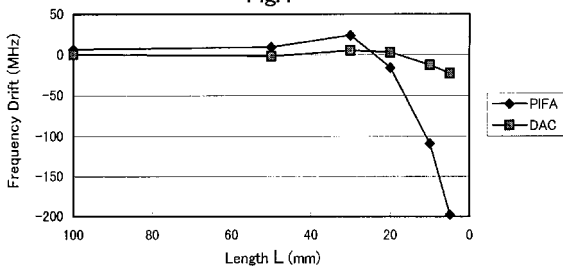


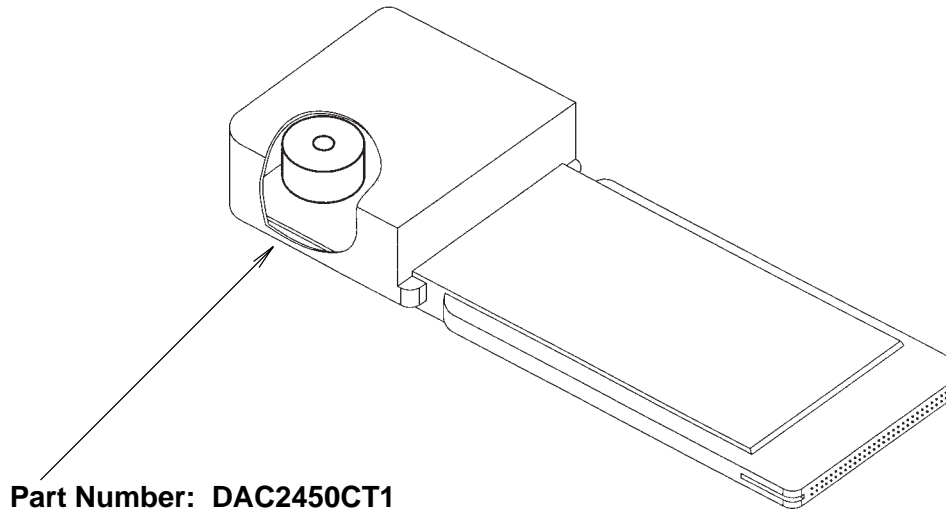
Fig.4



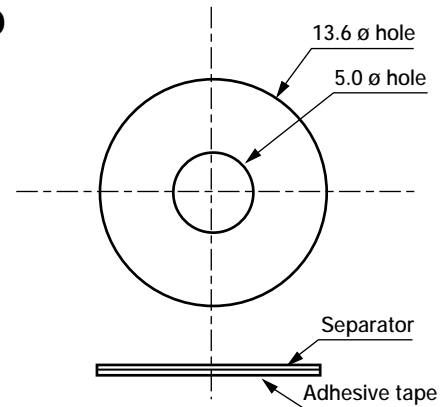
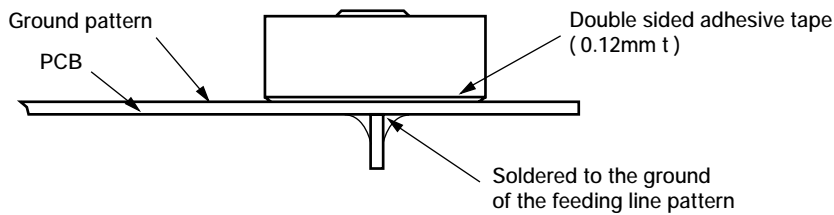
DAC Series

TYPICAL APPLICATION

MOUNTED IN PCMCIA TYPE II EXTENDED CARD



TYPICAL MOUNTING TO PRINTED CIRCUIT BOARD



Notes:

- Fix the antenna element on PCB using double sided adhesive tape of 0.12mm thickness. (Recommend No. 5015 : NITTO DENKO CORP.)
- Solder the antenna terminal pin on the bottom side of PCB to the ground of the feeding line pattern.
- The terminal pin should be separated from the ground pattern.

Unit: mm
Material: Nitto N5015

The information furnished by TOKO, Inc. is believed to be accurate and reliable. However, TOKO reserves the right to make changes or improvements in the design, specification or manufacture of its products without further notice. TOKO does not assume any liability arising from the application or use of any product or circuit described herein, nor for any infringements of patents or other rights of third parties which may result from the use of its products. No license is granted by implication or otherwise under any patent or patent rights of TOKO, Inc.



Toko America, Inc.
1250 Feehanville Drive, Mt. Prospect, IL 60056
Tel: (847) 297-0070 Fax: (847) 699-7864 Web: <http://www.tokoam.com>

TOKO SALES LOCATIONS

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1250 Feehanville Drive
Mount Prospect, IL 60056
Tel: (847) 297-0070
Fax: (847) 699-7864

Western Regional Office
Toko America, Inc.
2480 North First Street, Suite 260
San Jose, CA 95131
Tel: (408) 432-8281
Fax: (408) 943-9790

Eastern Regional
Office
Toko America, Inc.
107 Mill Plain Road
Danbury, CT 06811
Tel: (203) 748-6871
Fax: (203) 797-1223

Vocollect Antenna

The **Vocollect** antenna is 2 dBi omnidirectional in azimuth plane. It is mounted internally as shown in the attached photo. The **Vocollect** uses either a Murata Erie BFA or 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 H9PLA3020. The antenna was driven by 240 mW of transmitter power. This produces an EIRP limit of 380 mW.

<i>Location</i>	Body 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>	MXYP75, RG-178
<i>Symbol P/N</i>	50-21900-025, 50-21900-026

Note: This antenna / terminal configuration is only to be used with a transmitter that produces an EIRP of less than 380 mW. For an EIRP of more than 380 mW a SAR test must be performed.



Antenna Photo

Talkman Open – 2.4 GHz Symbol Radio Information

Vocollect Antenna Specifications

Type: Dipole
Gain: 2 dBi
Polarization: Circular
Physical description: Implemented on flat and rigid printed circuit board, internally mounted, parallel to the belt mounting loop.
Min distance from skin: 2.1 inches (1.70 inches to inside to belt loop plus 0.40 inches of padded belt)

Table 1: Bill of Materials- Talkman Open – Symbol Radio and Antenna

Item	Qty	Vocollect Part #	Vendor Part #	Supplier	Description
1	1	656022		Austin Antenna	ANTENNA PCB
2	1	606012	90174601	Huber-Suhner	CABLE ASSY, ANTENNA

Voccollect, Inc.

Image 1: 2.4 GHz Antenna PC Board

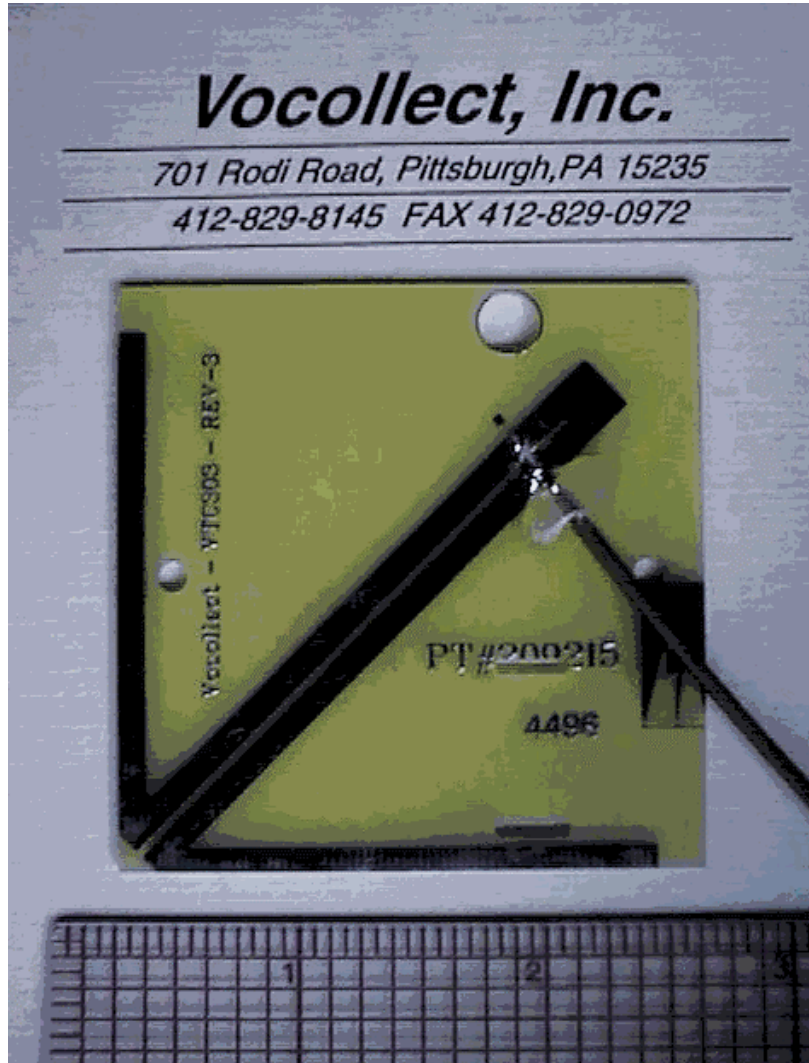


IMAGE 2: Beltworn Terminal - Drawing



IMAGE 3: Beltworn Terminal

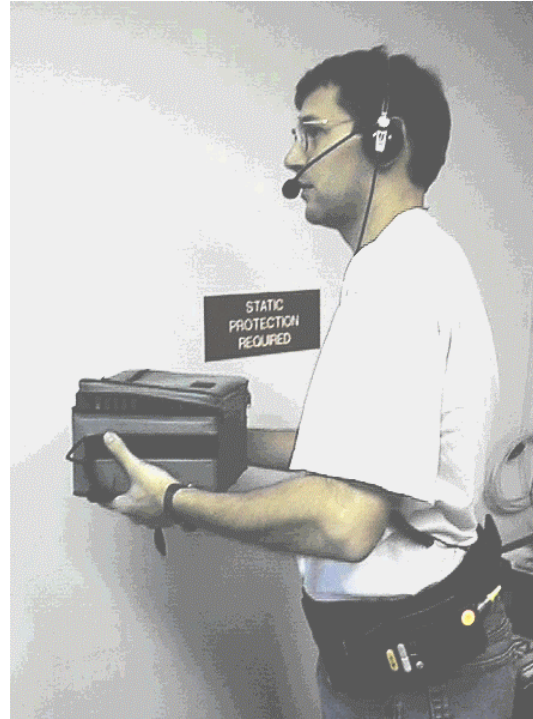


IMAGE 4: Drawing of Antenna Placement Inside Unit.

The antenna is mounted in the plane parallel to the belt loop and waist, 1.70 inches away from the belt loop used to connect the terminal to the padded mounting belt. Including the belt thickness, the radio is at least 2.1 inches distant from the skin.

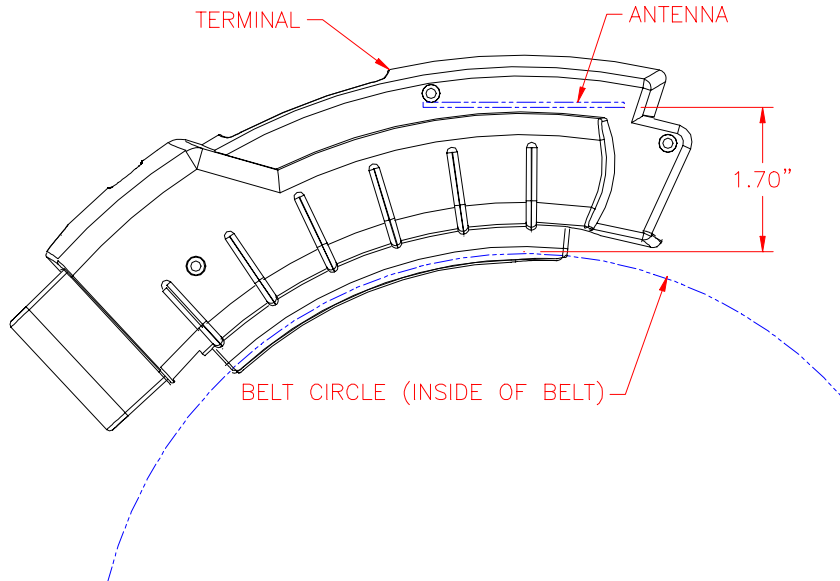


IMAGE 5: The unit mounts on a padded belt ½” thick.

The unit is connected to the belt by a secondary strap secured to the belt. The full width of the main padded belt remains between the terminal and user's body.



6840/ 6846 Antenna

The **6840** antenna is 0 dBi omni-directional in azimuth plane. It is mounted internally on the top end of the terminal as shown in the attached photo. The **6840** uses a Murata Erie BFA connector while the **6846** uses the MMCX. 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>	MXYH75, RG-178
<i>Symbol P/N</i>	10-32290-01, -02

“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 everyone’s body.”

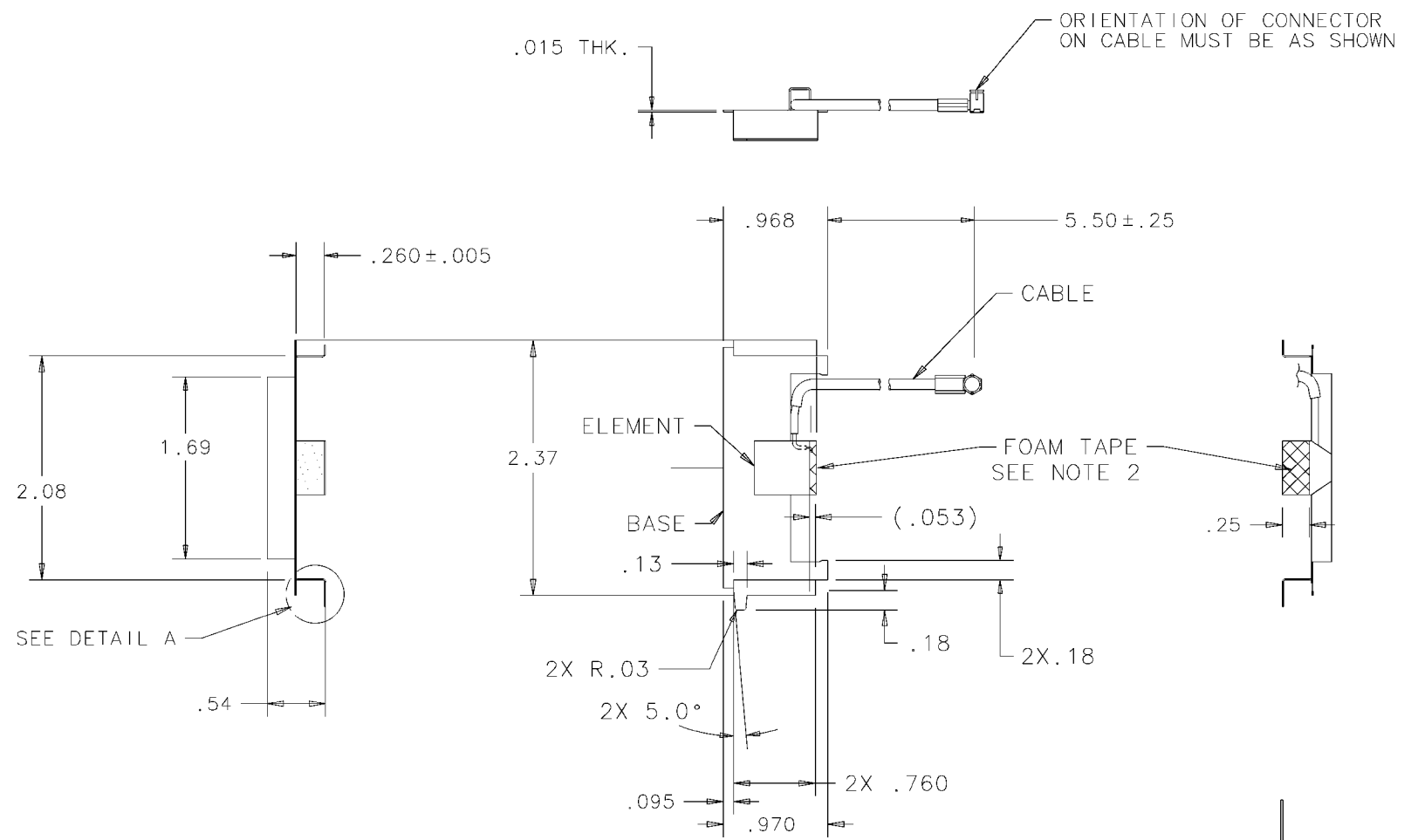


Antenna Installed in Device



Terminal Use Photo

REVISIONS							
REV.	ZONE	△	DESCRIPTION	E.C.	BY	APVD.	DATE
A	ALL	~	RELEASED PER EDR 39215	~	LM		
B	~	~	REVISED PER ECN	4418	RM		
C	~	~	DIM 2.37 WAS 2.30	E4874	LM		
D	~	~	ADDED DIM 2X.18 PER EC	E5856	MB		

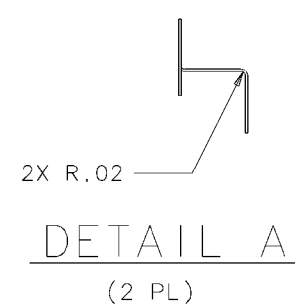


SPECIFICATIONS

FREQUENCY: _____ 2.4 TO 2.485 GHZ
 VSWR: _____ 2.0:1
 GAIN _____ 0 dBi NOM
 IMPEDANCE: _____ 50 OHMS
 CABLE/CONNECTOR: _____ TECOM 817283-X
 MURATA ERIE
 MXYH62-XX-XXXX

NOTE:

1. PACKAGE ITEMS IN ACCORDANCE WITH STI GENERAL PACKAGING SPEC 50-04100-013.
2. ADHESIVE TO BE 3M DOUBLE-SIDED SCOTCH 4026 URETHANE FOAM TAPE (.062 THICK) WITH POLY COATED LINER OR EQUIVALENT.



ITEM	QTY.	PART NO.	DESCRIPTION	REMARKS/REF. SYMBOL			
SYMBOL TECHNOLOGIES INC. Bohemia, New York ANTENNA: 2.4 GHZ							
<small>THE DWG. & SPECIFICATION CONTAINED HEREON ARE PROPRIETARY AND MUST NOT BE USED, COPIED, REPRODUCED NOR ITS CONTENTS COMMUNICATED TO OTHERS EXCEPT IN ACCORDANCE WITH WRITTEN INSTRUCTIONS RECEIVED FROM SYMBOL TECHNOLOGIES INC.</small>		DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED		APPROVALS DRAWN LJM 12/23/97 CHECKED J CHAN ENGINEER J CHAN MFG. ENG S SPITERI			
		<table border="1"> <tr> <th>MM</th> <th>INCH</th> </tr> <tr> <td>.XX +/-</td> <td>+/- .01</td> </tr> <tr> <td>.XXX +/-</td> <td>+/- .005</td> </tr> </table>	MM		INCH	.XX +/-	+/- .01
MM	INCH						
.XX +/-	+/- .01						
.XXX +/-	+/- .005						
MATERIAL: SEE NOTE		PRODUCT M SAVONA		SIZE C DWG. NO. 10-32290-01 REV. D			
FINISH: SEE NOTE		QUALITY		SCALE: FULL SOLID MODEL YES NO SHEET 1 OF 1			
NEXT ASSY USED ON		DO NOT SCALE DRAWING					

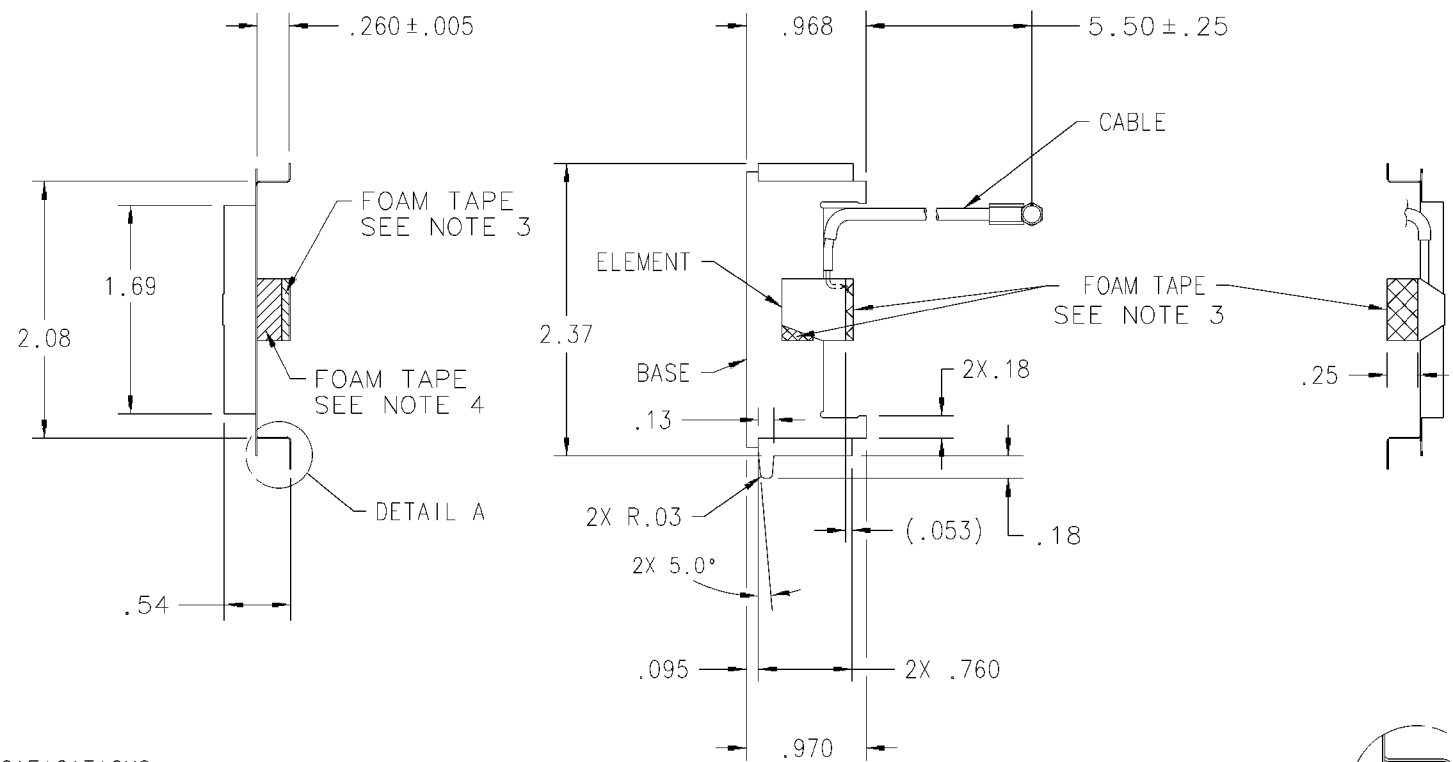
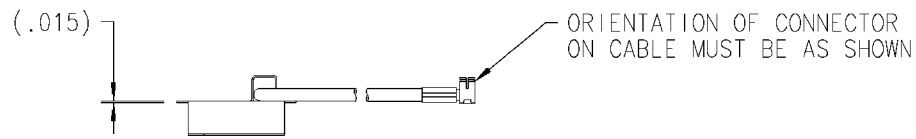
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REVISIONS							
REV.	ZONE	△	DESCRIPTION	E.C.	BY	APVD.	DATE
A			RELEASED PER EDR #53958		MB		01/27/00

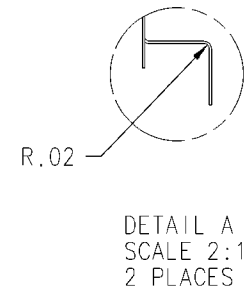


SPECIFICATIONS:

- FREQUENCY: _____ 2.4 TO 2.485 GHz
- VSWR: _____ 2.0:1
- GAIN: _____ 0 dBi NOM
- IMPEDANCE: _____ 50 OHMS
- CABLE/CONNECTOR: _____ RG178
50-22100-029 (MMCX)

NOTES: UNLESS OTHERWISE SPECIFIED.

- 1) MATERIAL: CRS 1008, .015 ± .001 THICK
- 2) 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 UNAIDED EYE. EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.
- 3) FOAM TAPE TO BE 3M DOUBLE-SIDED SCOTCH 4026 (.062 THICK) WITH POLY COATED LINER OR EQUIVALENT.
- 4) FOAM TAPE TO BE DOUBLE-SIDED SCOTCH 4008 (.125 THICK) WITH POLY COATED LINER OR EQUIVALENT.
- 5) PARTS SHALL MEET THE CRITERIA PER STI WORKMANSHIP STANDARD SS-03800-57.
- 6) PACKAGE ITEMS IN ACCORDANCE WITH STI GENERAL PACKAGING SPEC #50-04100-013.



APPROVALS		DATE	SYMBOL TECHNOLOGIES INC.	
DRAWN	J. SIMMONS	11/3/99	One Symbol Plaza Holtsville, NY 11742	
CHECKED	M. SAVONA	11/3/99		
ENGINEER	B. ROSENKRANTZ	11/3/99	ANTENNA: 2.4 GHZ, MMCX	
ANALYST	L. DOBKOWSKI	11/3/99		
MFG. ENG.			SIZE	DWG. NO.
PRODUCT			C	10-32290-02
QUALITY			SCALE: 1:1	SOLID MODEL <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			SHEET 1 OF 1	

* PROPRIETARY CONTENT * THE DRAWING CONTENT AND SPECIFICATION CONTAINED HEREIN ARE PROPRIETARY AND MUST NOT BE USED, COPIED, REPRODUCED OR OTHERWISE DEALT WITH OR COMMUNICATED TO OTHERS EXCEPT IN ACCORDANCE WITH WRITTEN INSTRUCTIONS RECEIVED FROM: SYMBOL TECHNOLOGIES INC. COMPUTER GENERATED DRAWING DO NOT SCALE				TOLERANCE CHART *UNLESS OTHERWISE SPECIFIED* DIMENSIONS ARE IN INCHES			
		INCH	MM				
.XX	+/-	.01	+/-	.25			
.XXX	+/-	.005	+/-	.125			
ANGLES ± 1°				FRACTIONS ± 1/64			

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7546D Antenna

The **7546D** antenna is 0 dBi omni-directional in azimuth plane. It is mounted internally at the far end of the terminal on the bottom side as shown in the attached photo. The **7546D** uses two F-elements for spatial diversity. The **7546D** 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>	10-40948-01

“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 everyone’s body.”

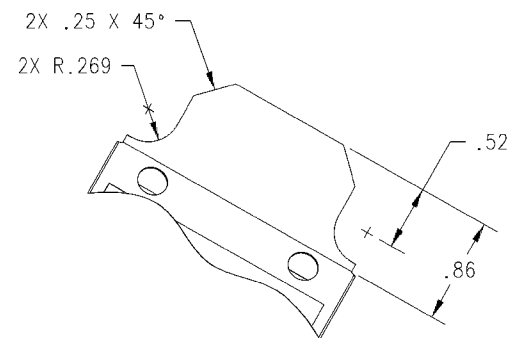
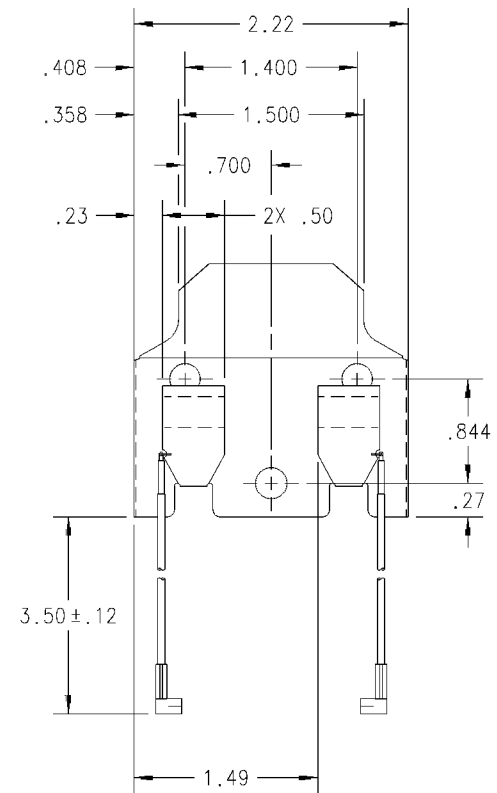
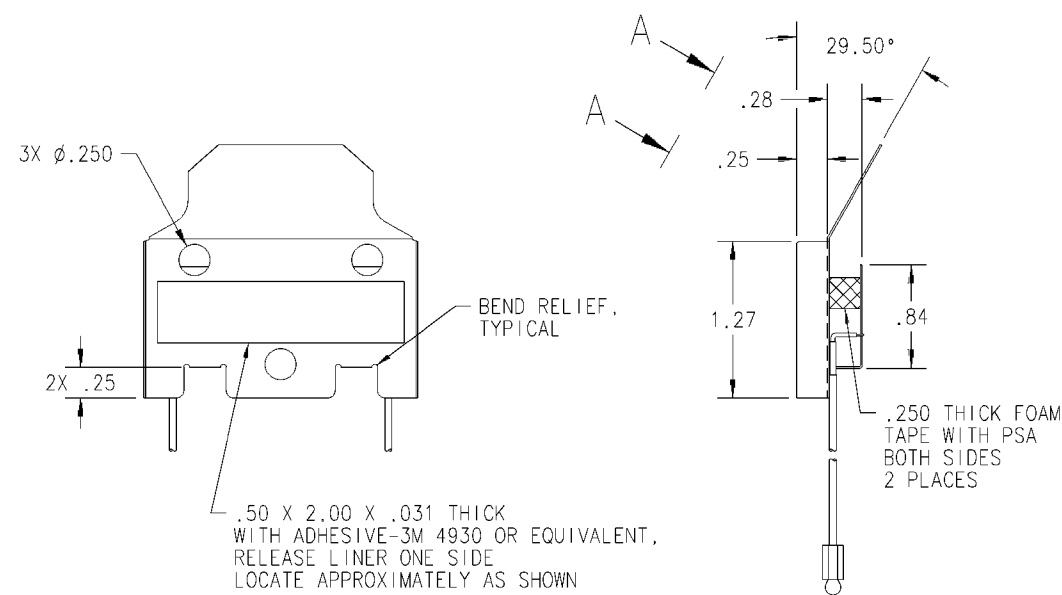


Antenna Installed in Device



Terminal Use Photo

REVISIONS							
REV.	ZONE	△ No.	DESCRIPTION	E.C.	BY	APVD.	DATE
1			INITIAL RELEASE PER PPD #54570		JS		2/15/00



AUX VIEW A-A
SCALE 1:1

SPECIFICATIONS:

FREQUENCY: 2.4-2.485 GHZ
 VSWR: 2.0:1 MAX
 GAIN: 0dB_i NOMINAL
 POLARIZATION: LINEAR
 CABLE: RG178
 CONNECTOR: TYPE MMCX, 50-22100-029

NOTES: UNLESS OTHERWISE SPECIFIED.

- MATERIAL: CRS 1008, .015±.001 THICK.
- ALTERNATE MATERIAL: ELECTROLYTIC TIN PLATED STEEL .015±.001 THICK. EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.
- 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.
- PACKAGE IAW STI GENERAL PACKAGING SPECIFICATION #50-04100-013.
- BREAK AND DEBUR ALL SHARP EDGES .005 MAX PRIOR TO PLATING.
- PART SHALL MEET THE CRITERIA PER STI WORKMANSHIP STANDARD #SS-03800-57.

PROPRIETARY CONTENT		TOLERANCE CHART	
THE DRAWING CONTENT AND SPECIFICATIONS CONTAINED HEREIN ARE PROPRIETARY AND MUST NOT BE USED, COPIED, REPRODUCED OR OTHERWISE DEALT WITH OR COMMUNICATED TO OTHERS EXCEPT IN ACCORDANCE WITH WRITTEN INSTRUCTIONS RECEIVED FROM SYMBOL TECHNOLOGIES, INC.		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES	
		INCH	MM
.XX	+/-	.03	
.XXX	+/-	.010	
COMPUTER GENERATED DRAWING DO NOT SCALE		ANGLES ± 1°	FRACTIONS ± 1/64

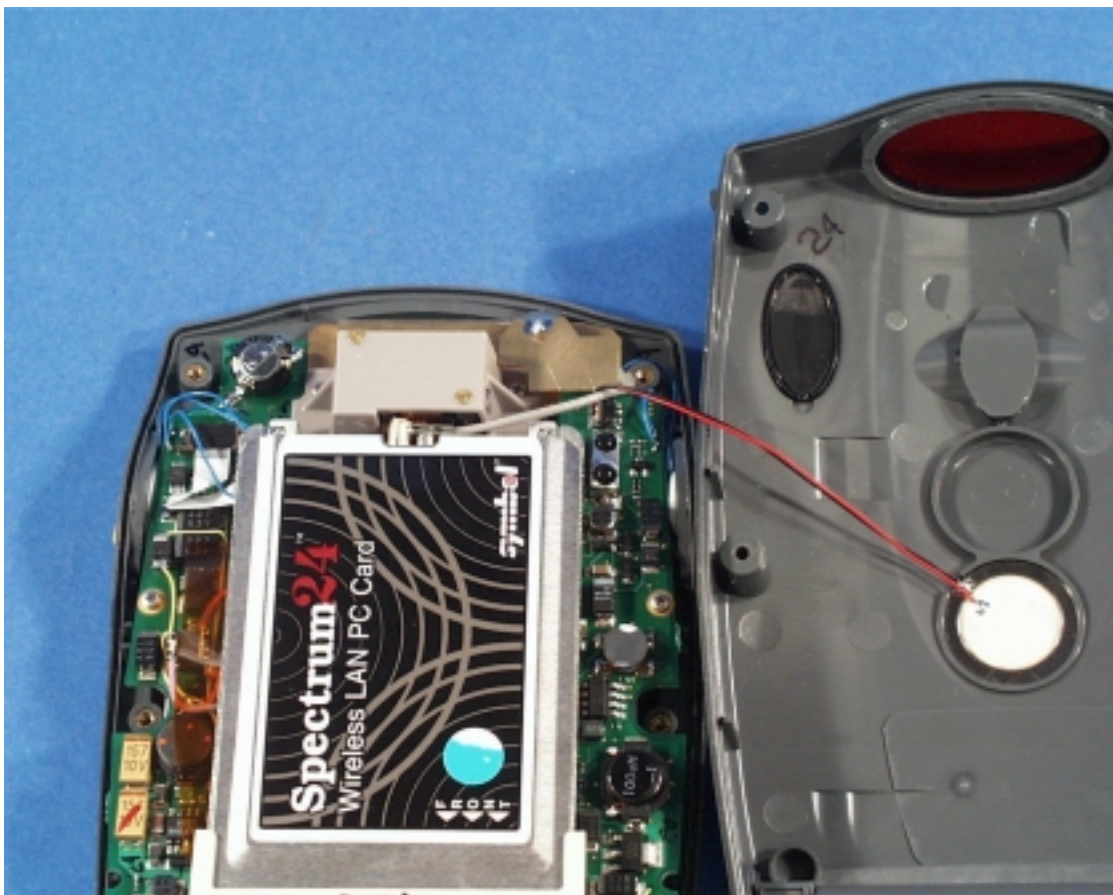
APPROVALS		DATE	SYMBOL TECHNOLOGIES, INC.	
DRAWN	J. SIMMONS	2/15/00	One Symbol Plaza Holtsville, NY 11742	
CHECKED	M. SAVONA	2/15/00	ANTENNA: 2.4 GHZ, TYPE F, DIVERSITY	
ENG.	B. ROSECRANT	2/15/00		
ANALYST	L. DOBKOWSKI	2/15/00		
MFG. ENG.			SIZE	DWG. NO.
PRODUCT			C	10-40948-01
QUALITY			SCALE: 1:1	SOLID MODEL <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			SHEET 1	OF 1

1740 / 1742 Antenna

The **1740** antenna is 0 dBi omni-directional in azimuth plane. It is mounted internally on the top end of the terminal as shown in the attached photo. 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 **1742** uses the MMCX connector instead of the MuRata BFA. 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>	MXYH75, RG-178
<i>Symbol P/N</i>	703549-1

“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 everyone’s body.”



Antenna Installed in Device



Terminal Use Photo

Oneil BFA / Oneil MMCX Antenna

The **Oneil** antenna is 0 dBi omnidirectional in azimuth plane. It is available with either a MuRatta BFA or MMCX connector. It is mounted as an internal antenna on the O'Neil MicroFlash series of portable belt worn printers. In its use it would be within 5 cm of a users body. It is used in portable devices.

<i>Location</i>	Body worn
<i>Pattern</i>	Omni
<i>Type</i>	Slot
<i>Max Gain</i>	0 dBi
<i>Physical</i>	See attached dwg
<i>Cable</i>	MXYH75 or RG-178
<i>Symbol P/N</i>	50-21900-023 50-21900-031
<i>EIRP</i>	See Summary Tbl

Note: This antenna 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.

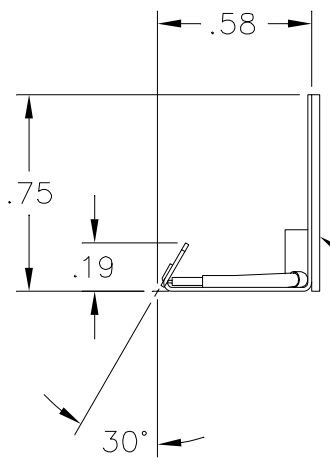
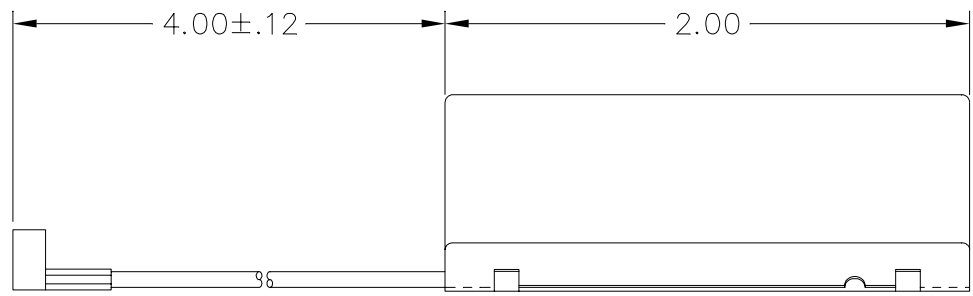


Antenna Installation Photo

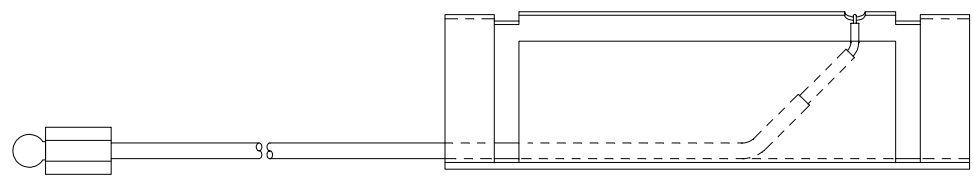


Device use Photograph.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
C2	A	.58 WAS .42 ADHESIVE CALLOUT WAS: ... X .025 THK (3M 4930 OR EQUIV) WD 2675 REDRAWN	1-4-00 JL	



ADHESIVE FILM,
.75 X 2.00 X .031 THK
(3M 4032 OR EQUIV)



SPECIFICATIONS

FREQUENCY:	2.4-2.485 GHZ
VSWR	2.0:1 MAX
GAIN	0dBi NOMINAL
POLARIZATION	LINEAR
CABLE:	MURATA MXYH75
CONNECTOR:	TYPE BFA

- 4. SHARP CORNERS & EDGES .005 MAX.
- 3. FINISH SHALL BE UNIFORM AND EXHIBIT NO EVIDENCE OF CORROSION OR OXIDATION WHEN VIEWED WITH THE UNAIDED EYE. EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.

- 2. ALTERNATE:
MATERIAL: CRS 1008, .015 THK.
FINISH: BRIGHT TIN PLATE PER MIL-T-10727A, TYPE 1, ELECTRO DEPOSITED .00010-.00025 IN.
- 1. MATERIAL: ELECTROLYTIC TIN PLATED STEEL SHEET, .015 THK.



NOTES : UNLESS OTHERWISE SPECIFIED

PMIC	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ± .03 .XXX ± .010 ANGLES ± 0°30' MACHINED SURFACE ROUGHNESS 125 ✓ REMOVE BURRS, SHARP EDGES R.005-.015 MACHINED FILLETS R.005-.015 DIMENSIONS ARE AFTER PLATING. MACHINED DIA'S ON COMMON CENTERLINE CONCENTRIC WITHIN .005 TIR. INTERPRET PER ANSI Y14.5M-1982.		CONTRACT NUMBER	
			CONTRACTOR	
			DRAWN BY J. LOWE	DATE 11-8-99
			CHECKER	MFG ENGR
			QA	ENGR BI
			PRGM MGR	ENGR
823362	C090-874	HOLE TOLERANCES:		
NEXT ASSY	USED ON	.040 - .128 +.003 -.001	.515 - .750 +.008 -.001	
		.136 - .228 +.004 -.001	.765 - 1.000 +.010 -.002	
		.234 - .500 +.006 -.001	1.031 UP +.015 -.002	
APPLICATION		MATL ENGR	APPROVAL	

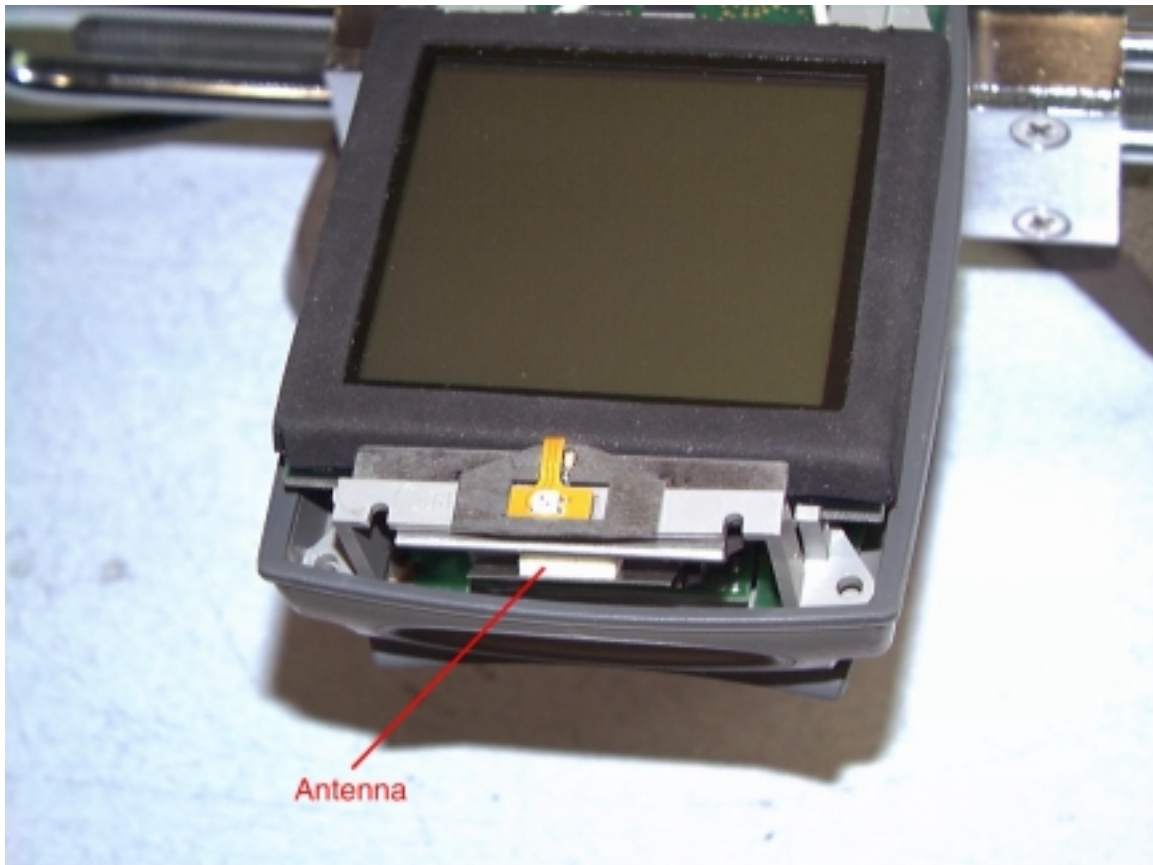
		TECOM INDUSTRIES INC. 9324 TOPANGA CYN BLVD CHATSWORTH, CA. 91311 <i>TECHNICAL EXCELLENCE COMMITTED TO QUALITY</i>	
		TITLE ANTENNA, 2.4 GHZ	
SIZE C	CAGE CODE 52791	DWG NO 703620	
SCALE 2/1	UNIT WT	SHEET 1 OF 1	

6846D Antenna

The **6846D** antenna is 0 dBi omni-directional in azimuth plane. It is mounted internally on the top end of the terminal as shown in the attached photo. The **6846D** 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>	MXYP75, RG-178
<i>Symbol P/N</i>	10-41003-01

“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 everyone’s body.”



Antenna Installed in Device

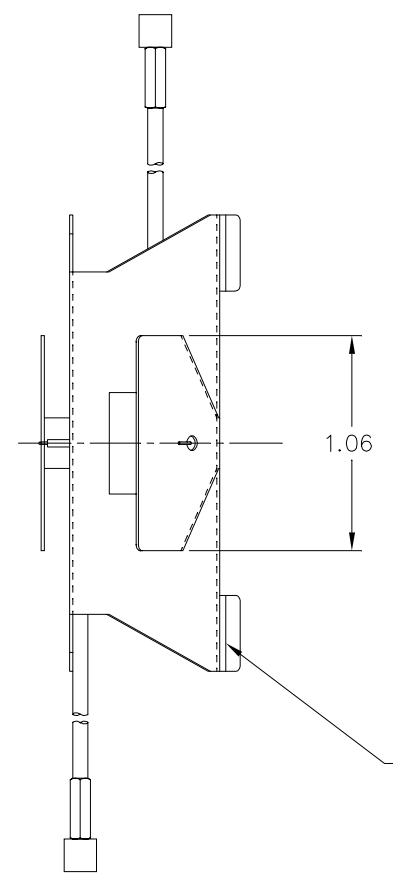
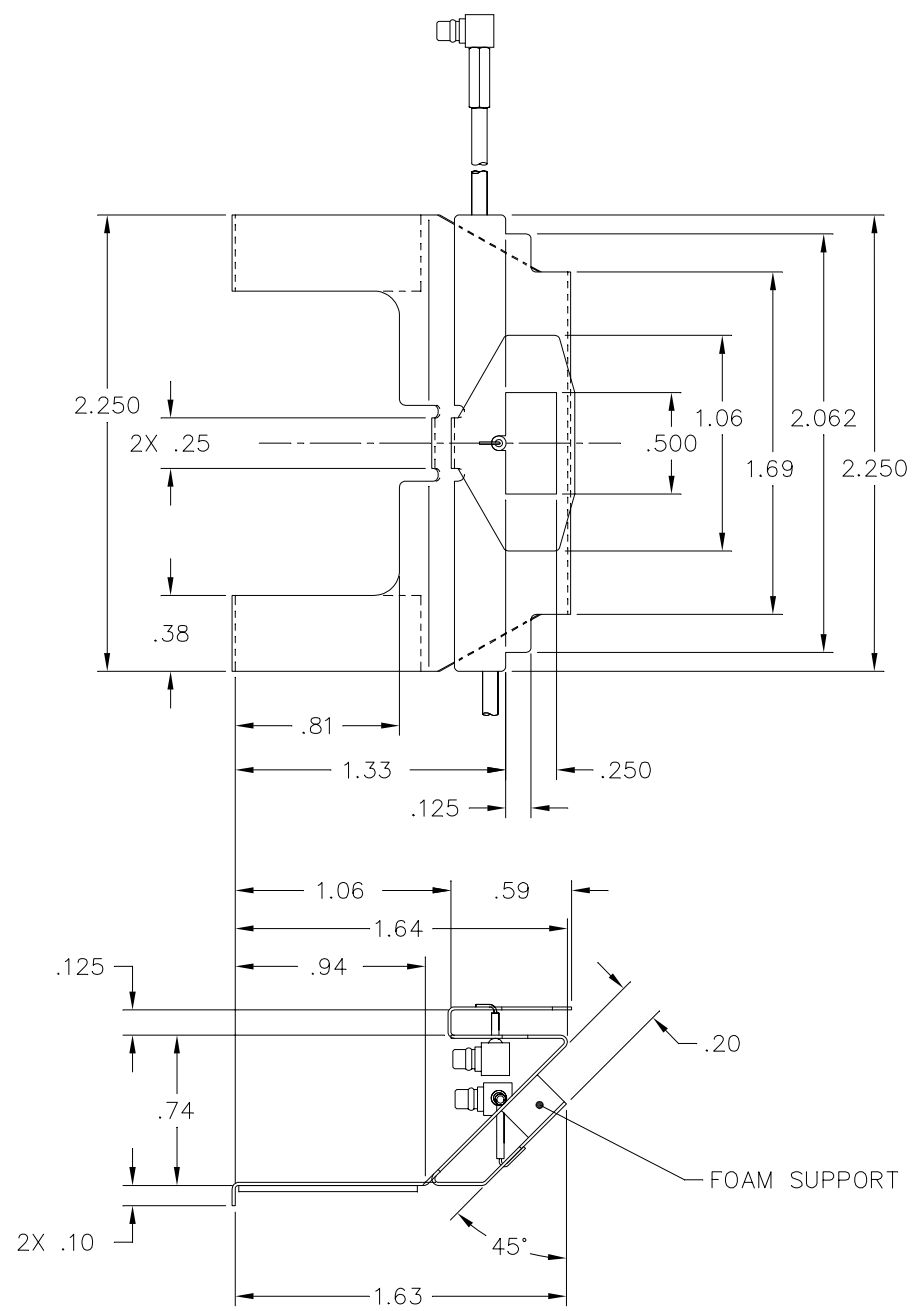
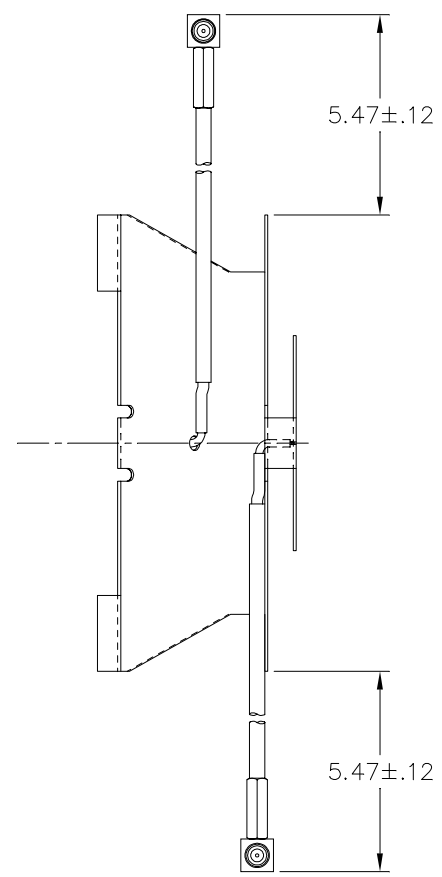


Terminal Use Photo

TECOM PROPRIETARY:
 INFORMATION CONTAINED HEREIN SHALL NOT BE DISCLOSED TO
 A THIRD PARTY WITHOUT WRITTEN PERMISSION FROM TECOM.

PROPOSAL DRAWING

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
.	A	REDESIGNED TO IMPROVE FIT & PERFORMANCE REDRAWN.	2-10-00 JL	
5B,6A	B	.74 WAS .740, .94 WAS .938 1.06 WAS 1.063, .59 WAS .594	2-18-00 JL	
5B	C	1.33 WAS 1.334	2-29-00 JL	



4. SHARP CORNERS & EDGES .005 MAX.
3. FINISH SHALL BE UNIFORM AND EXHIBIT NO EVIDENCE OF CORROSION OR OXIDATION WHEN VIEWED WITH THE UNAIDED EYE. EDGE PLATING ON CUT OR SHEARED SURFACES IS NOT REQUIRED.
2. ALTERNATE:
 MATERIAL: CRS 1008, .015 THK.
 FINISH: BRIGHT TIN PLATE PER MIL-T-10727A, TYPE 1,
 ELECTRO DEPOSITED .00010-.00025 IN.
1. MATERIAL: ELECTROLYTIC TIN PLATED STEEL SHEET, .015 THK.

SPECIFICATIONS

FREQUENCY: _____ 2.4-2.485 GHZ
 VSWR: _____ 2.0:1 MAX
 GAIN: _____ 0dBi NOMINAL
 POLARIZATION: _____ LINEAR
 CABLE: _____ RG178 OR EQUIV
 CONNECTOR: _____ MMCX MALE

NOTES : UNLESS OTHERWISE SPECIFIED



PMIC	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ± .03 .XXX ± .010 ANGLES ± 0°30' MACHINED SURFACE ROUGHNESS 125 ✓ REMOVE BURRS, SHARP EDGES R.005-.015 MACHINED FILLETS R.005-.015 DIMENSIONS ARE AFTER PLATING. MACHINED DIA'S ON COMMON CENTERLINE CONCENTRIC WITHIN .005 TIR. INTERPRET PER ANSI Y14.5M-1982.	CONTRACT NUMBER	TECOM INDUSTRIES INC. 9324 TOPANGA CYN BLVD CHATSWORTH, CA. 91311	
		CONTRACTOR	TECOM	
		DRAWN BY J. LOWE	DATE 1-25-00	TITLE ANTENNA, 2.4 GHZ
		CHECKER QA	MFG ENGR ENGR	SIZE D
823407	CP00-021	PRGM MGR	ENGR	CAGE CODE 52791
NEXT ASSY	USED ON			DWG NO 703645
APPLICATION				SCALE 2/1
				UNIT WT
				SHEET 1 OF 1