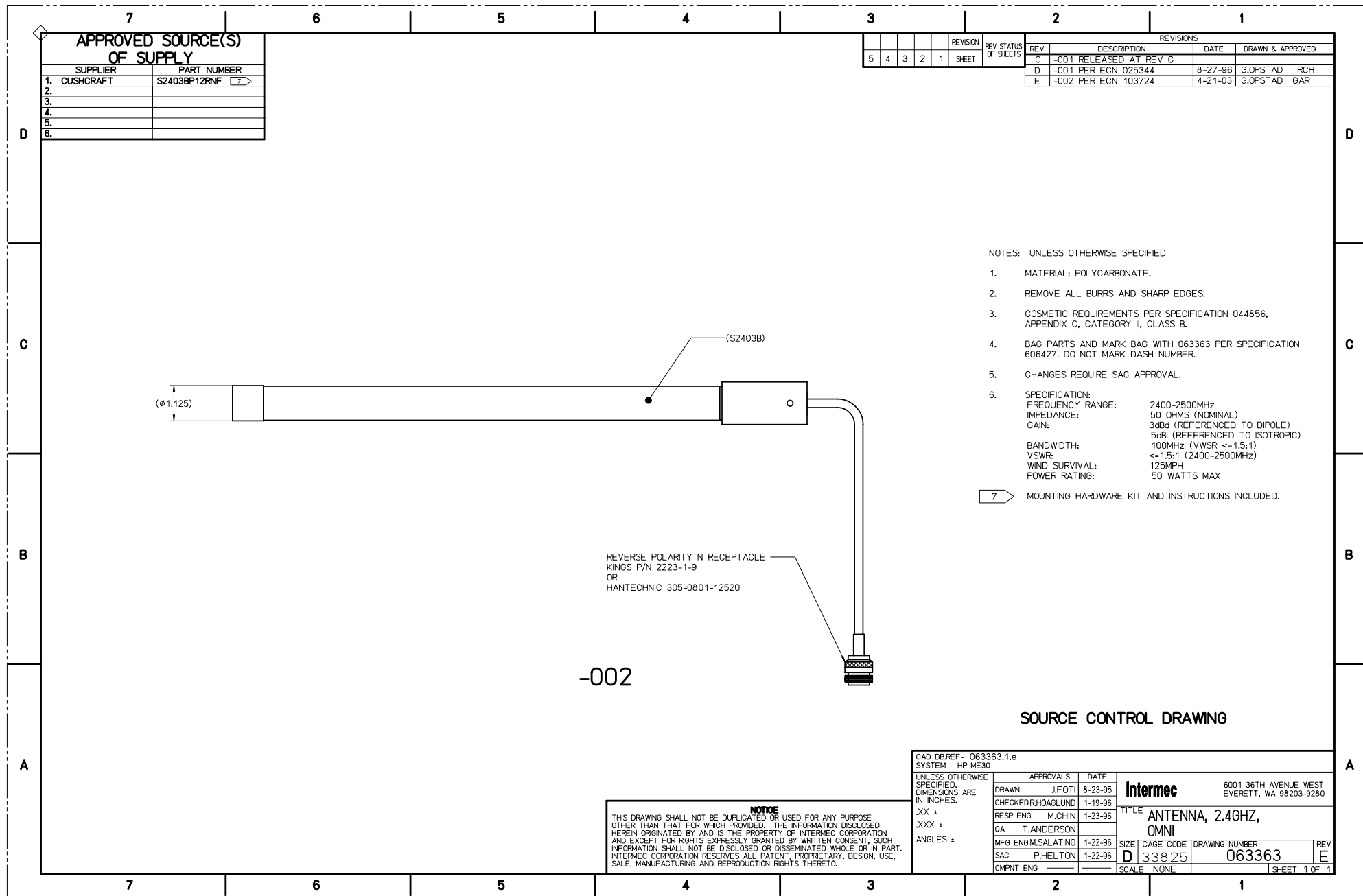


Intermec certifies that all antennas described in this exhibit will be sold with a unique antenna connector that meets the requirements of 47 CFR 15.203. Specifically, either reverse polarity TNC or reverse polarity N type connectors.

Types of antenna to be used with model 802MIG2

<u>Type Name</u>	<u>Intermec PN</u>	<u>Gain</u>	<u>Type</u>
NCC Reverse SMA Whip	805-544-002	+2.1 dBi	Omni
Micropatch Antenna	805-545-0xx	+4.5 dBi	Flat Panel
Corner Reflector	071122-001	+9.0 dBi	Corner Reflector
Flat Panel	067263-001	+9.0 dBi	Flat Panel
Omni Antenna	065349-001	+9.0 dBi	Omni
Intermec Custom Internal	073360-001	+3.5 dBi	Flat Panel
Yagi Antenna	063365-001	+13.0 dBi	Yagi
Omni Antenna	063363-001	+3.0 dBi	Omni
Centurion Custom SMB	063825-005	+1.5 dBi	Omni
Terminal Custom Dipole	070143-001	+1.5 dBi	Omni
Reverse TNC Dipole	066147-001	+1.0 dBi	Omni
Radiall Micropatch	590993-001	+4.5 dBi	Flat Panel
Cushcraft S2403BP12RNF Omni	063366-001	+5.0 dBi	Omni
Centurion	071121-001	+2.0 dBi	Diversity
Centurion CAF94120 Patch	067261-001	+3.0 dBi	Flat Panel
Centurion CAF95989 Panel	067262-001	+5.0 dBi	Flat Panel
Intermec Custom Internal	071478-001	+3.0 dBi	Flat Panel
Intermec Custom External	067325-002	+1.5 dBi	Omni
Custom Swivel Dipole	069903-001	+1.5 dBi	Omni
Xertex 2450D3W-RS60	805-552-001	+3.0 dBi	Flat Panel
PA3-2460-DS45/588	071176-001	+4.0 dBi	Flat Panel
ASK pLANet 13	805-543-001	+3.0 dBi Tx	Flat Panel
MAXC24505 with Mirror Mount	805-580-103	+5.0 dBi	Omni
MAXC24505 with Magnet Mount	805-580-102	+5.0 dBi	Omni
MAXC24505 with Hole Mount	805-580-101	+5.0 dBi	Omni





APPROVED SUPPLIERS

Manufacturer	Address/Telephone	805-552	Manufacturer's Part No.
XERTEX	452 Burbank Street Broomfield, CO 80020 (303) 635-2000	-001	2450D3W-RS60

- 1.0 Scope:** This specification describes the requirements for an omni-directional 2.4GHz antenna with a 60 inch RG-142 cable terminated in a reverse polarity SM connector.
- 001: 2450D3W-RS60; 50Ω, 50W, 1.5:1 VSWR, -40°C to +70°C
- 2.0 Quality Assurance:** Norand Quality Control reserves the right to use AQL sampling techniques when inspecting a lot.
- 3.0 Packaging:** All antennas will be packaged in containers capable of protecting them from damage in common carrier shipping and handling.
- 4.0 Markings:** Each container will be labeled or otherwise marked with the manufacturer's name or trademark, and the part number designation. Major shipping cartons will be marked with the Norand part number.

REVISION HISTORY

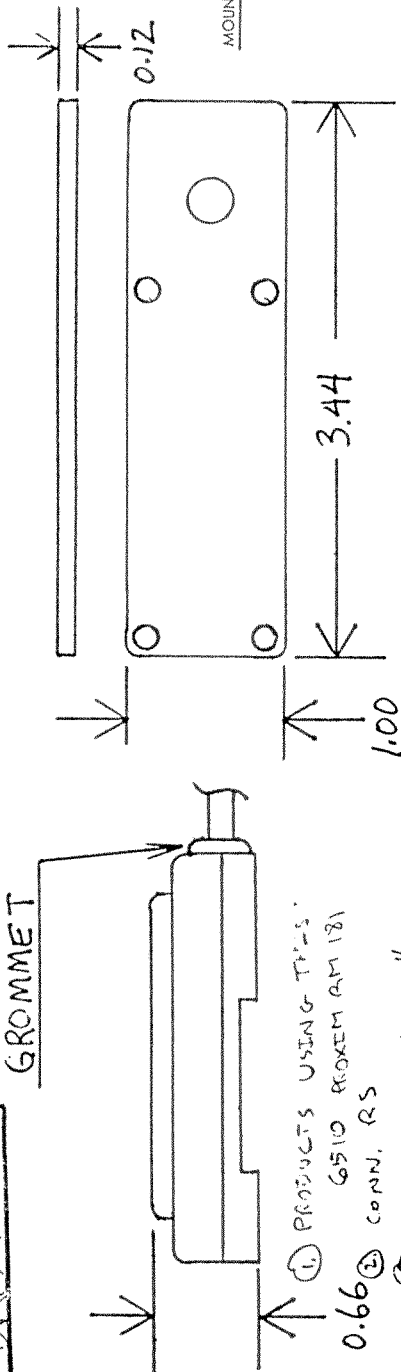
Rev.	File #	Description of Change	Date	Approved
A	C1316	Release	2/5/98	[Signature]

[illegible]

5.0 OUTLINE/DIMENSIONS:

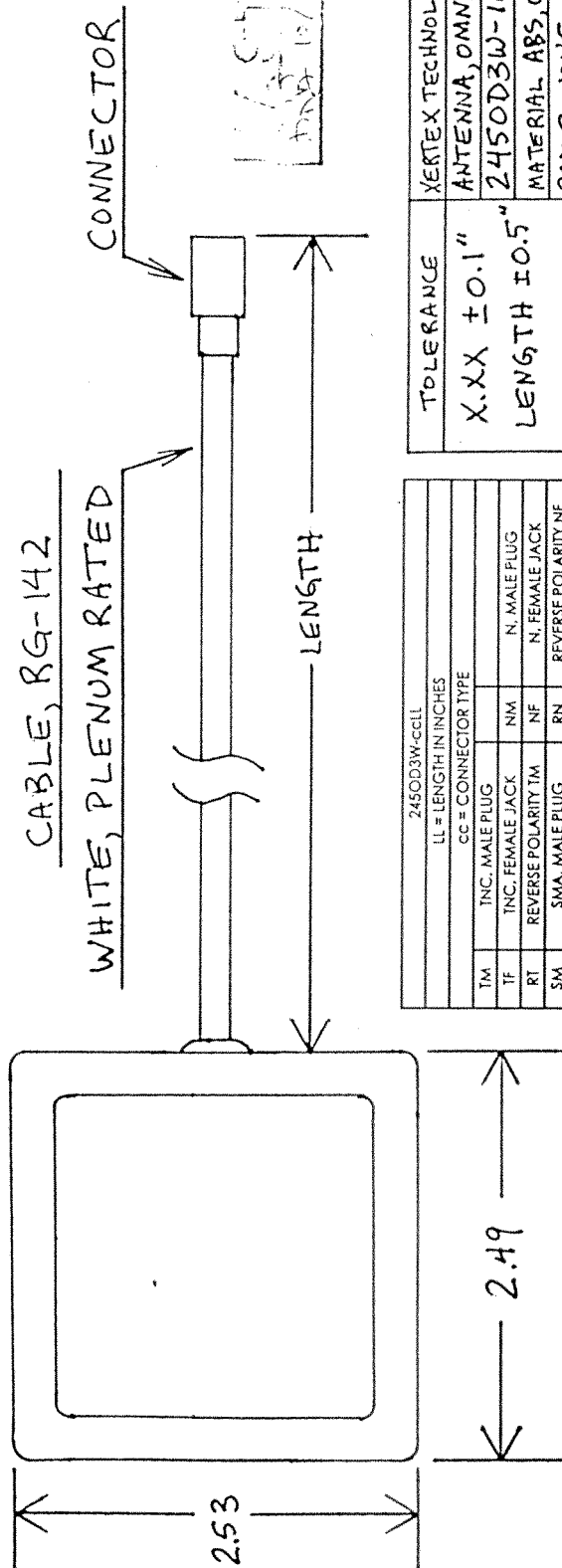
COPY
BRB 12/18/98

GROMMET



- ① PRODUCTS USING THIS 6510 FROM AM 181
- ② CONN. RS 0.66
- ③ CABLE LENGTH 60"
- ④ BRACKET INCLUDED,

BRACKET



2450D3W-CELL				
LL = LENGTH IN INCHES				
CC = CONNECTOR TYPE				
TM	TNC, MALE PLUG			
TF	TNC, FEMALE JACK	NM	N, MALE PLUG	
RT	REVERSE POLARITY TM	NF	N, FEMALE JACK	
SM	SMA, MALE PLUG	RN	REVERSE POLARITY NF	
SF	SMA, FEMALE JACK	MX	MMCX	
RS	REVERSE POLARITY SM	TR	7-16 DIN	

TOLERANCE	VERTEX TECHNOLOGIES INC.
X.XX ±0.1"	ANTENNA, OMNI, 2.45GHz
LENGTH ±0.5"	2450D3W-INSP n.v.A
	MATERIAL ABS, OFF WHITE
	SCALE NONE
	BRB 10/8/98

6.0 SPECIFICATIONS:

Element type:	Air-loaded patch
Frequency range:	2400 – 2500 MHz
Peak gain:	3.0 dBi
Polarization:	Mixed
Pattern (total power):	Omni-Directional
Impedance:	50Ω
Maximum input power:	50W
VSWR (min. performance):	1.5:1
Size:	2.53"x2.49"x0.66"
Radome material:	ABS
Operating temperature:	-40°C to +70°C
Storage temperature:	-40°C to +70°C

COMPONENT SPECIFICATION

APPROVED SUPPLIERS

Manufacturer	Address/Telephone	805-545	Manufacturer's Part No.
Radiall, Incorporated	260 Hathaway Drive Stratford, CT 06497 (203) 380-9800	-001	R380.500.006
		-002	R380.500.007
		-003	R380.500.005
		-004	R296.601.632
		-005	Not Assigned

- 1.0 Scope:** This specification describes the requirements for a family of micropatch antennas as follows:

<u>Intermec P/N</u>	<u>Frequency</u>	<u>Polarization</u>	<u>Connector Type</u>
-001	2480 MHz	dual polarized	R/A MMCX plug
-002	2480 MHz	linear polarized	R/A MMCX plug
-003	2480 MHz	dual polarized	R/A Lucent plug
-004	2480 MHz	dual polarized	R/A MMCX plug
-005	2480 MHz	dual polarized	R/A MMCX plug

- 2.0 Quality Assurance:** Intermec Receiving Inspection reserves the right to use AQL sampling techniques when inspecting a lot.

- 3.0 Packaging:** All antennas will be packaged in containers capable of protecting them from damage in common carrier shipping and handling.

- 4.0 Markings:** The -004 antenna must be marked with the Intermec part number (due to the similarity to the -001 part). Each smallest shipping container will be labeled or otherwise marked with the manufacturer's name or trademark, and the part number designation. Major shipping cartons will be marked with the Intermec part number.

REVISION HISTORY

Rev.	File #	Description of Change	Date	Approved
A	C1077	Release	10/29/98	J M
B	C1383	Revised ant cable lengths, -001 was 3.25", -002 was 3.25", -003 was 3.25"	3/03/99	J M
C	C3262	Add -004 part, Reformat, Revise ¶1.0, ¶2.0 & ¶4.0, Insert ¶7.0 thru ¶7.5, Add ¶11.0	5/08/02	J S
D	C3355	Change mfr P/N, ¶4.0 Insert The -004 antenna must be marked ..., Redraw ¶11.0	6/28/02	J S
E	C3879	Add -005 part, Revise ¶1.0, ¶5.8 & ¶7.5, Add ¶12.0	8/06/03	J S

REVISION LEVEL	E	E	B	B	B	D	E																						
SHEET NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				
COMPONENT ENGR. BILL SCHMID	DATE 10/08/98				Intermec Technologies Corp.									TITLE MICROPATCH ANTENNA SERIES, 2.4GHz															
COGNIZANT ENGR. R. LIBONATI	DATE - - - -				550 Second Street S.E. Cedar Rapids, IA 52401									DRAWING NO. 805-545-0XX															
APPROVED J. McROBERTS	DATE 10/29/98				Telephone No. (319) 369-3100 Facsimile No. (319) 369-3453																								

5.0 Antenna Specifications:

- 5.1 Center Frequency: 2480 MHz
- 5.2 Frequency Bandwidth: 100 MHz
- 5.3 Nominal Impedance: 50 Ohms
- 5.4 VSWR: 2:1 max.
- 5.5 Antenna Gain: 4.5dB min. @zenith
- 5.6 3 dB Beamwidth: 85°
- 5.7 Front to Back Ratio: 14 dB min.
- 5.8 Polarization Diversity: -001 Part, horizontal/vertical
-002 Part, vertical
-003 Part, horizontal/vertical
-004 Part, horizontal/vertical
-005 Part, horizontal/vertical

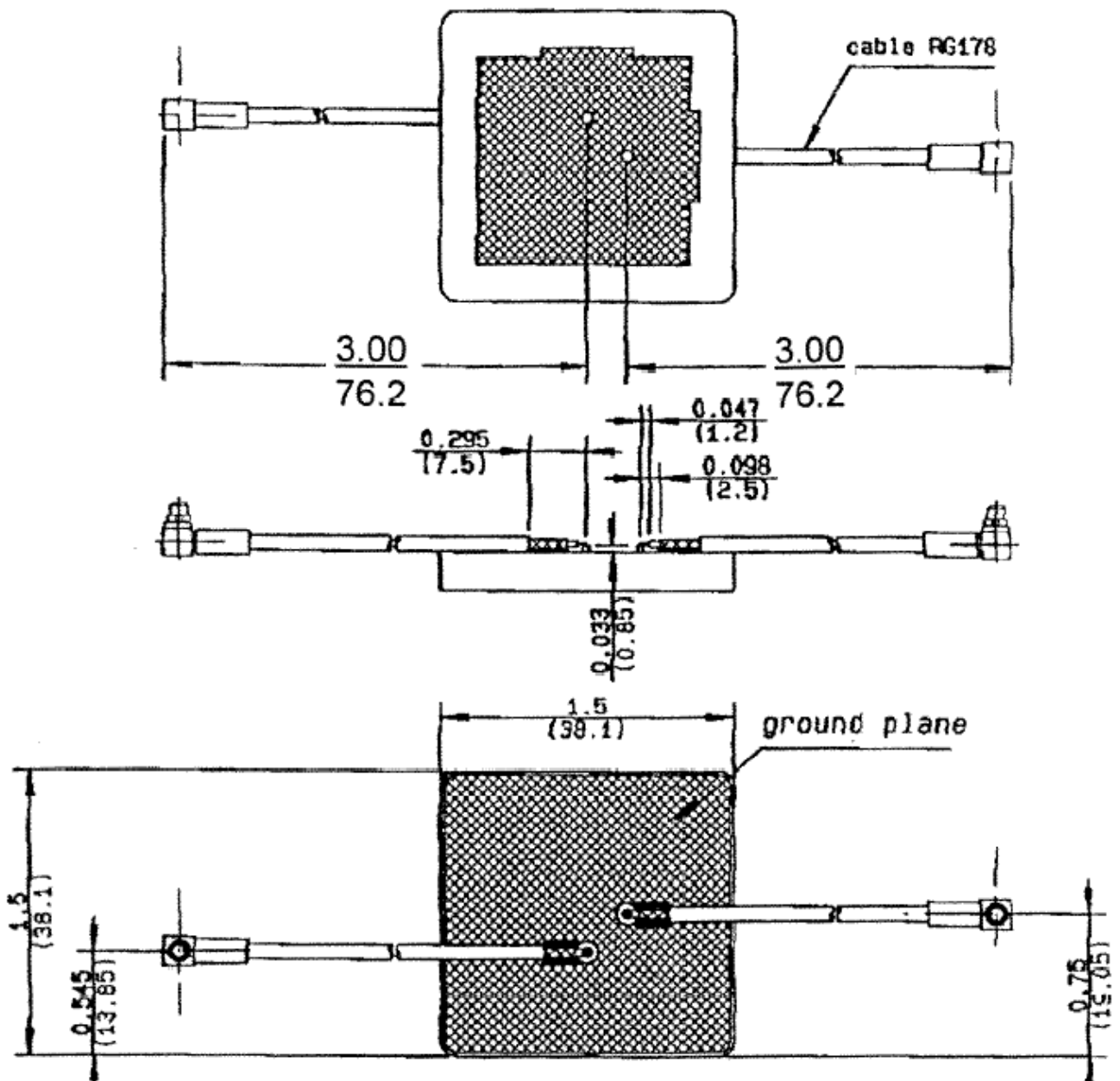
6.0 Ceramic Characteristics:

- 6.1 Porosity: 0
- 6.2 Permittivity: 6
- 6.3 Loss Factor: 0.002 max.

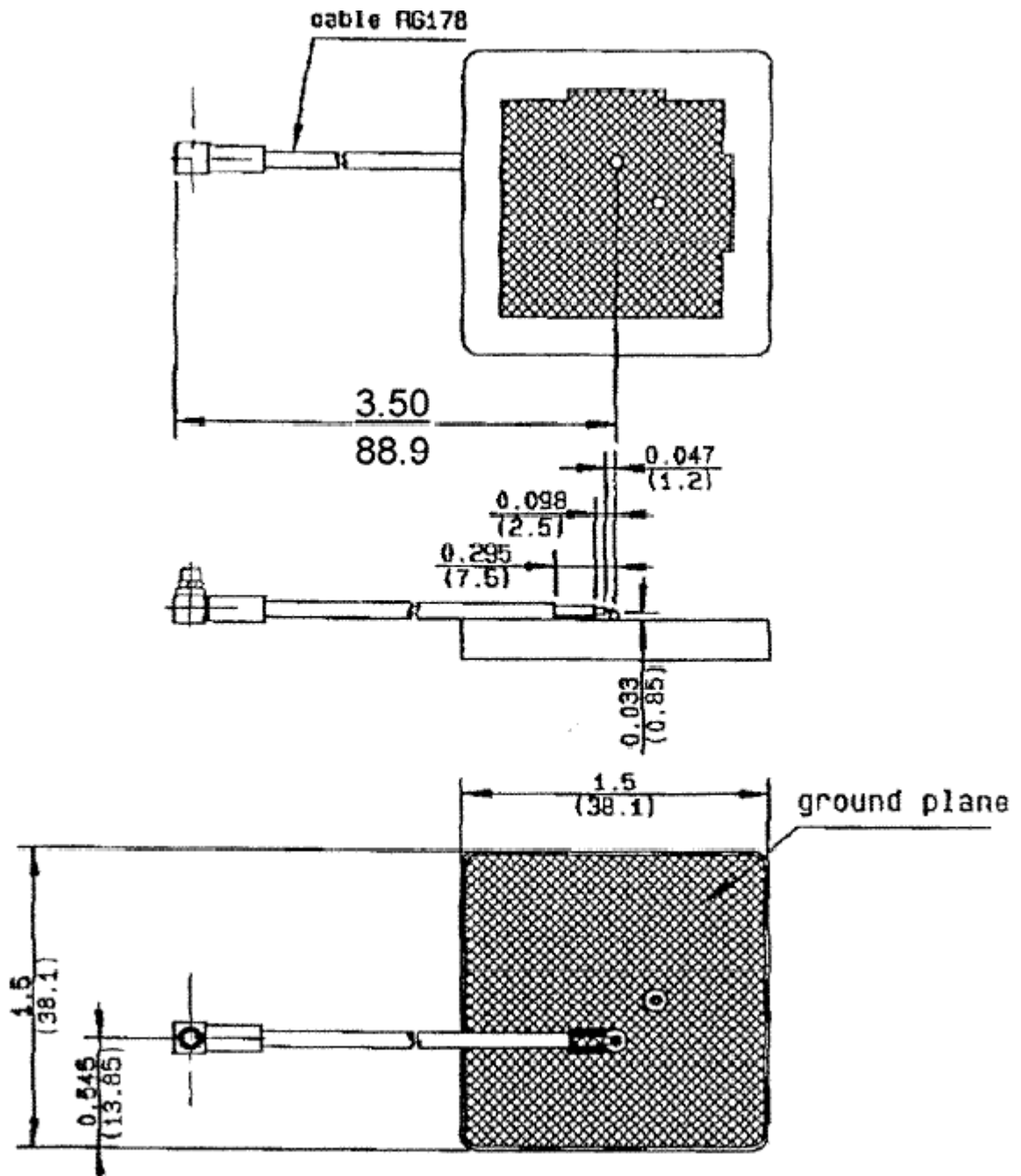
7.0 Mechanical Specifications:

- 7.1 Substrate: Ceramic
- 7.2 Antenna Element and Ground Plane: Screened metallization
- 7.3 Coaxial Cable: RG-178 style (ref.)
- 7.4 Cable Connection Means: Solder
- 7.5 Cable I/O Connector(s): -001 Part, R/A MMCX plugs (2 each)
-002 Part, R/A MMCX plug (1 each)
-003 Part, R/A proprietary Lucent plugs (2 each)
-004 Part, R/A MMCX plugs (2 each)
-005 Part, R/A MMCX plugs (2 each)

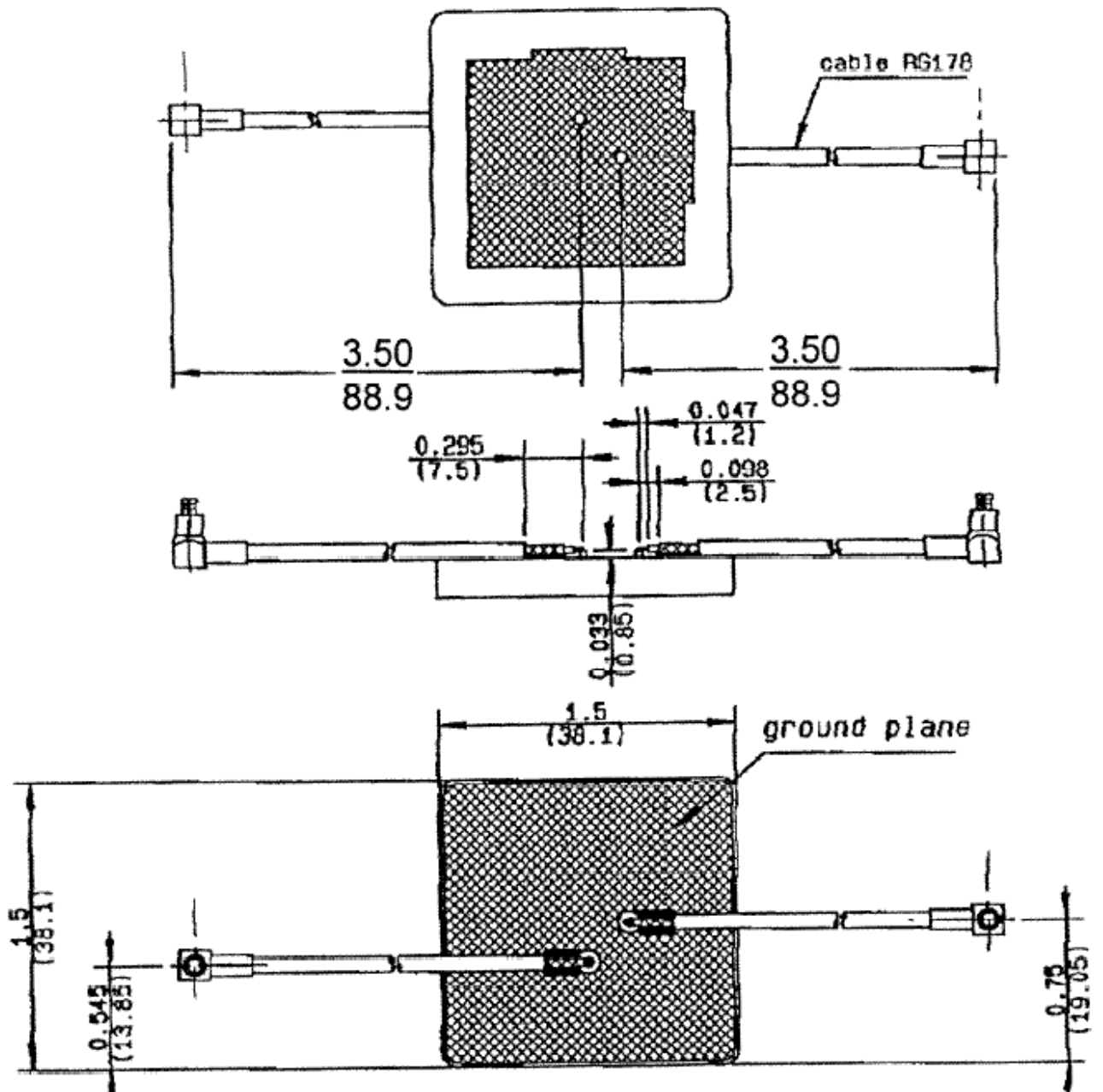
8.0 Outline Drawing: -001 Part



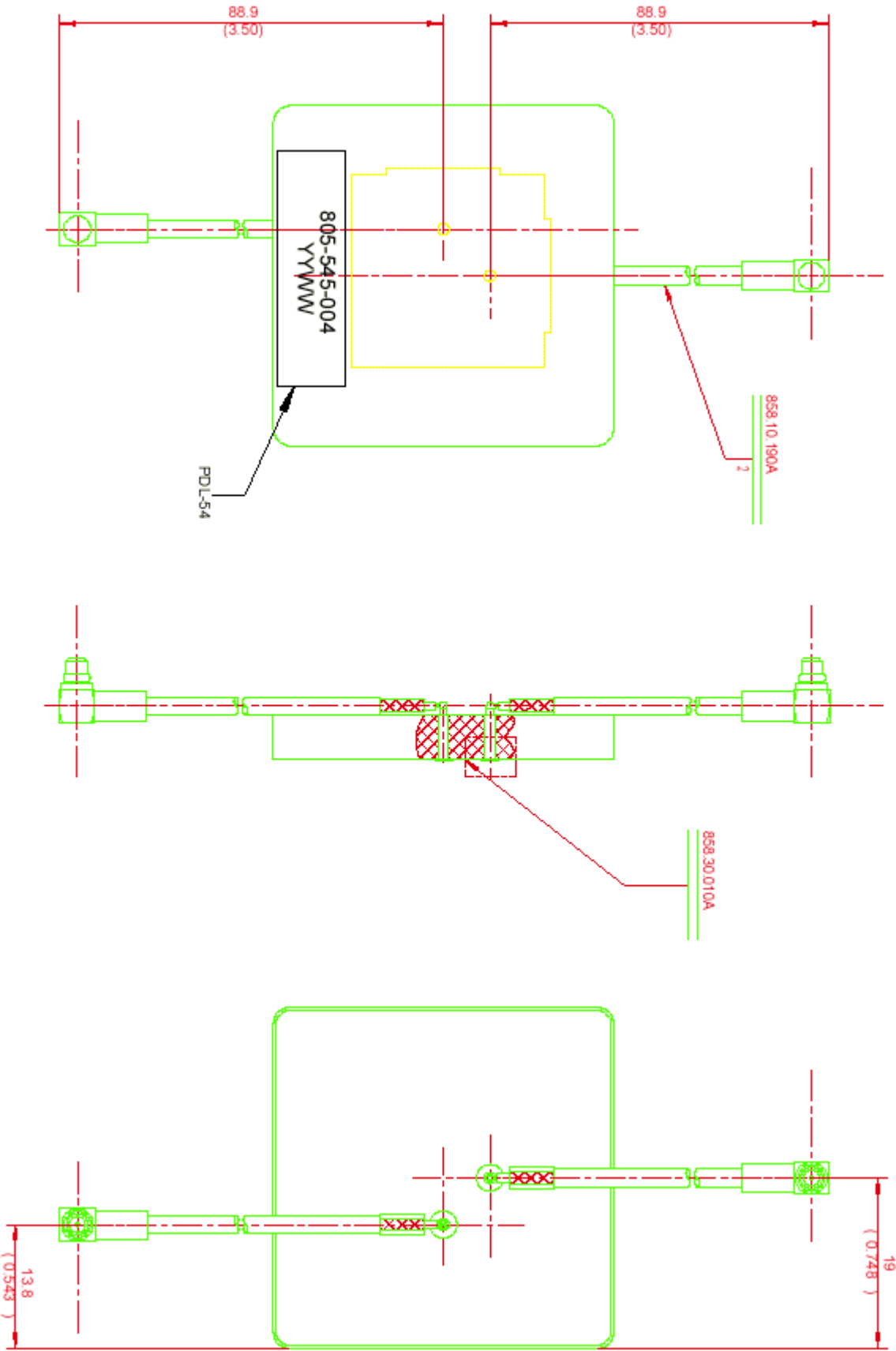
9.0 Outline Drawing: -002 Part



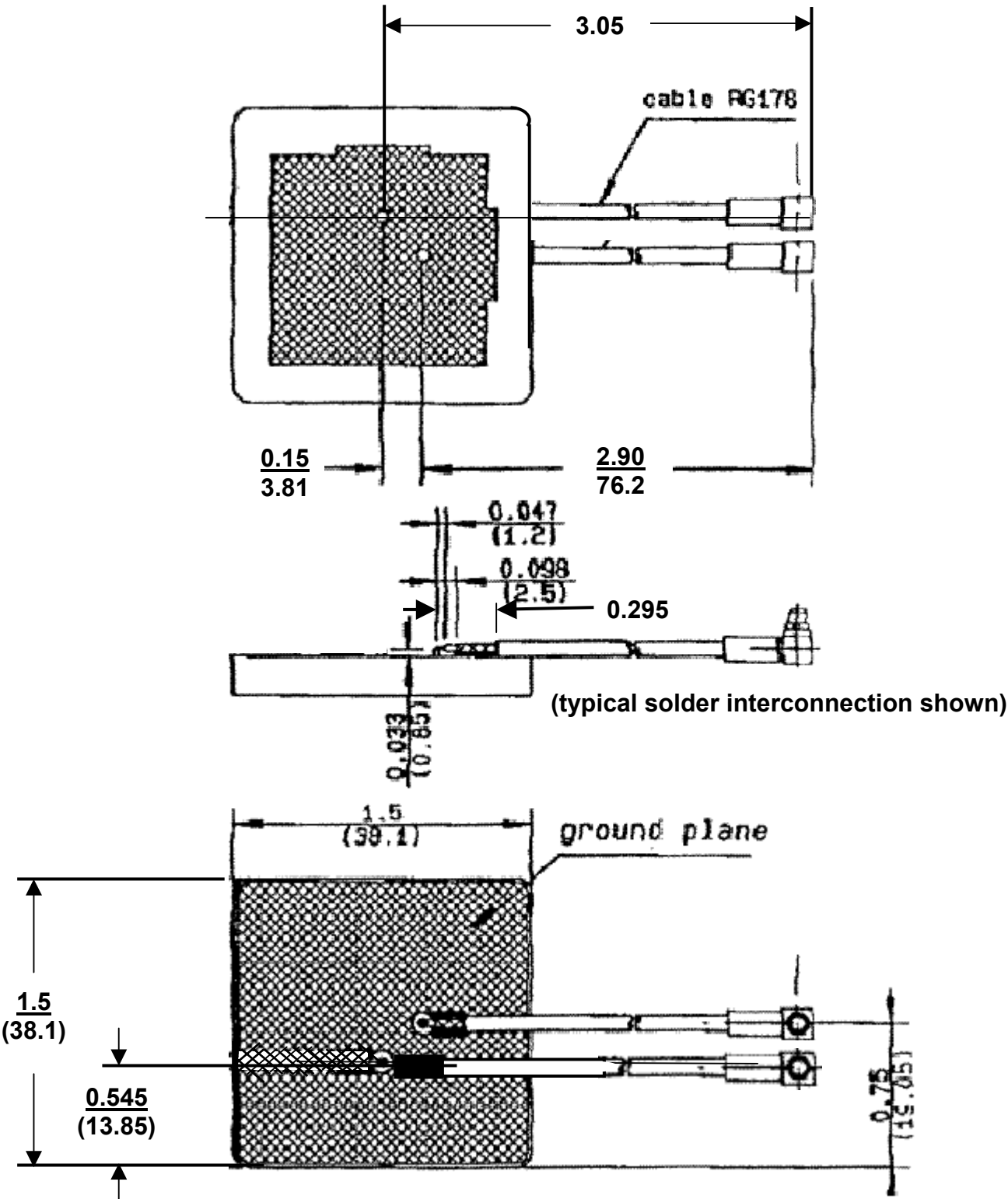
10.0 Outline Drawing: -003 Part



11.0 Outline Drawing: -004 Part



12.0 Outline Drawing (Inch/mm): -005 Part



Intermec
COMPONENT SPECIFICATION

APPROVED SUPPLIERS

Manufacturer	Address/Telephone	805-544	Manufacturer's Part No.
NCC, Inc.	18385 Parkman-Nelson Rd.	-001	N2400ESMA1B
	P. O. Box 736 Parkman, OH 44080 (440) 548-5384	-002	N2400ESMA1C

- 1.0 **Scope:** This specification describes the requirements for a ruggedized, elevated 2.4GHz, 1/2 wave portable antenna with reverse SMA style connector. Flexible black vinyl molded body and cap, tuned and tested.

-001: N2400ESMA1B
-002: N2400ESMA1C
- 2.0 **Quality Assurance:** Norand Quality Control reserves the right to use AQL sampling techniques when inspecting a lot.
- 3.0 **Packaging:** All antennas will be packaged in containers capable of protecting them from damage in common carrier shipping and handling.
- 4.0 **Markings:** Each container will be labeled or otherwise marked with the manufacturer's name or trademark, and the part number designation. Major shipping cartons will be marked with the Norand part number.

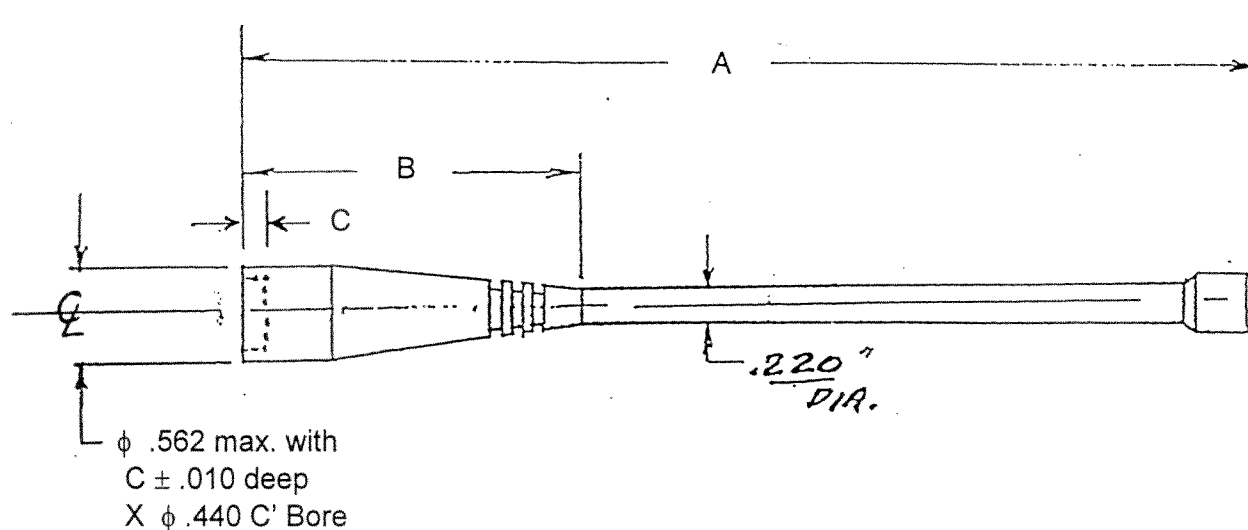
REVISION HISTORY

Rev.	File #	Description of Change	Date	Approved
A	C0878	Release	9/2/98	JM
B	C1382	Add -002	3/3/99	JM
C	-----	Corrected dimensions for 002; 3.685" was 3.8", 1.885" was 2.0", not released	-----	---
D	C1459	Corrected dimensions for 001; 3.69" was 3.8", 2.19" was 2.0", & for 002; 3.57 was 3.665", 2.08" was 1.885" and .135" was .115"	4/6/99	JM

[illegible]

5.0 Antenna Specifications:**Antenna Type:** Flexible Whip**Frequency Range:** 2.4 – 2.5GHz**Gain:** 2.0 dbi**Component Specifications:**

- a) **Mount:** Reverse polarity SMA connector, with white dielectric.
 b) **Radiator:** RG – 178 / U 50 Ohm Coaxial Cable
 c) **Overmold:** Black 80A durometer flexible vinly body,
 molded over radiator and mount, cap adhesive bonded to body.

-001: $A = 3.69 \pm .100$ $B = 2.19 \pm .010$ $C = 0.25 \pm .010$ **-002:** $A = 3.57 \pm .100$ $B = 2.08 \pm .010$ $C = 0.135 \pm .010$ 

All Dimensions in Inches, Not to Scale.



APPROVED SUPPLIERS

Manufacturer	Address/Telephone	805-543	Manufacturer's Part No.
European Antennas Ltd. (A Chelton Group company)	Lambda House Chevely, Newmarket Suffolk CB8 9RG, United Kingdom Phone +44 (0) 1638 732177 Or +44 (0) 1638 731888	-001	pLANet 13-ETS/265
European Antennas Ltd.	c/o Disman Bakner Sales 883 N. Shoreline Blvd., Suite 100 Mountain View, CA 94043 (650) 969-3010	-001	European Antennas part no. pLANet 13-ETS/265

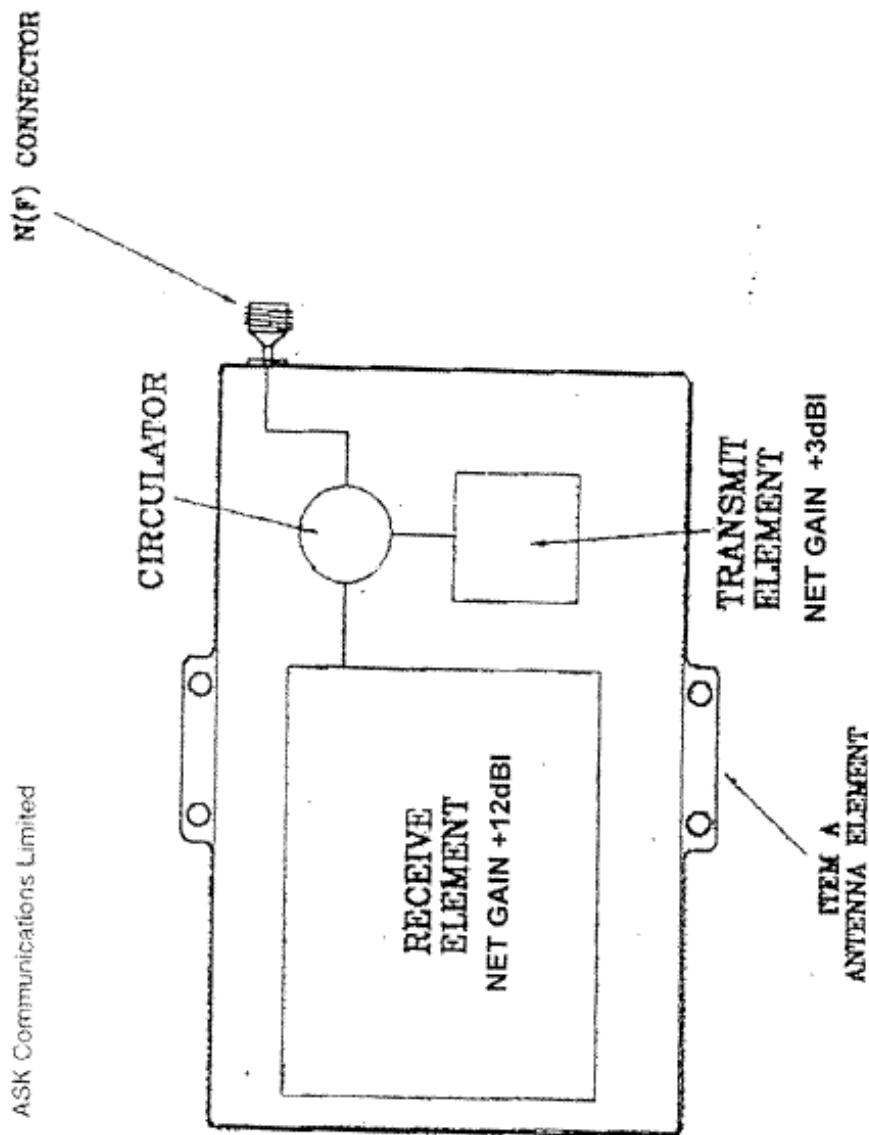
- 1.0 Scope:** This specification describes the requirements for a dual antenna system for extended distance wireless LANs (ETS 300 - 328)
- 001: MODEL pLANet 13 - ETS/265; 2.4 - 2.5GHz; R. H. Circular; 100mW; -20°C to +50°C
- 2.0 Quality Assurance:** Intermec Receiving Inspection reserves the right to use AQL sampling techniques when inspecting a lot.
- 3.0 Packaging:** All antennas will be packaged in containers capable of protecting them from damage in common carrier shipping and handling.
- 4.0 Markings:** Each assembly container will be labeled or otherwise marked with the manufacturer's name or trademark, and the part number designation. Major shipping cartons will be marked with the Intermec part number.

REVISION HISTORY

Rev.	File #	Description of Change	Date	Approved
A	C0877	Release	9/02/98	J M
B	C0982	Remove Items B & C from ¶5.0, Rcv net gain was 9DBiL, Xmt net gain was 3DbiL	9/29/98	J M
C	C3727	Remove vendor. Add vendors. Revise ¶2.0 & ¶4.0	4/26/03	J S

[illegible]

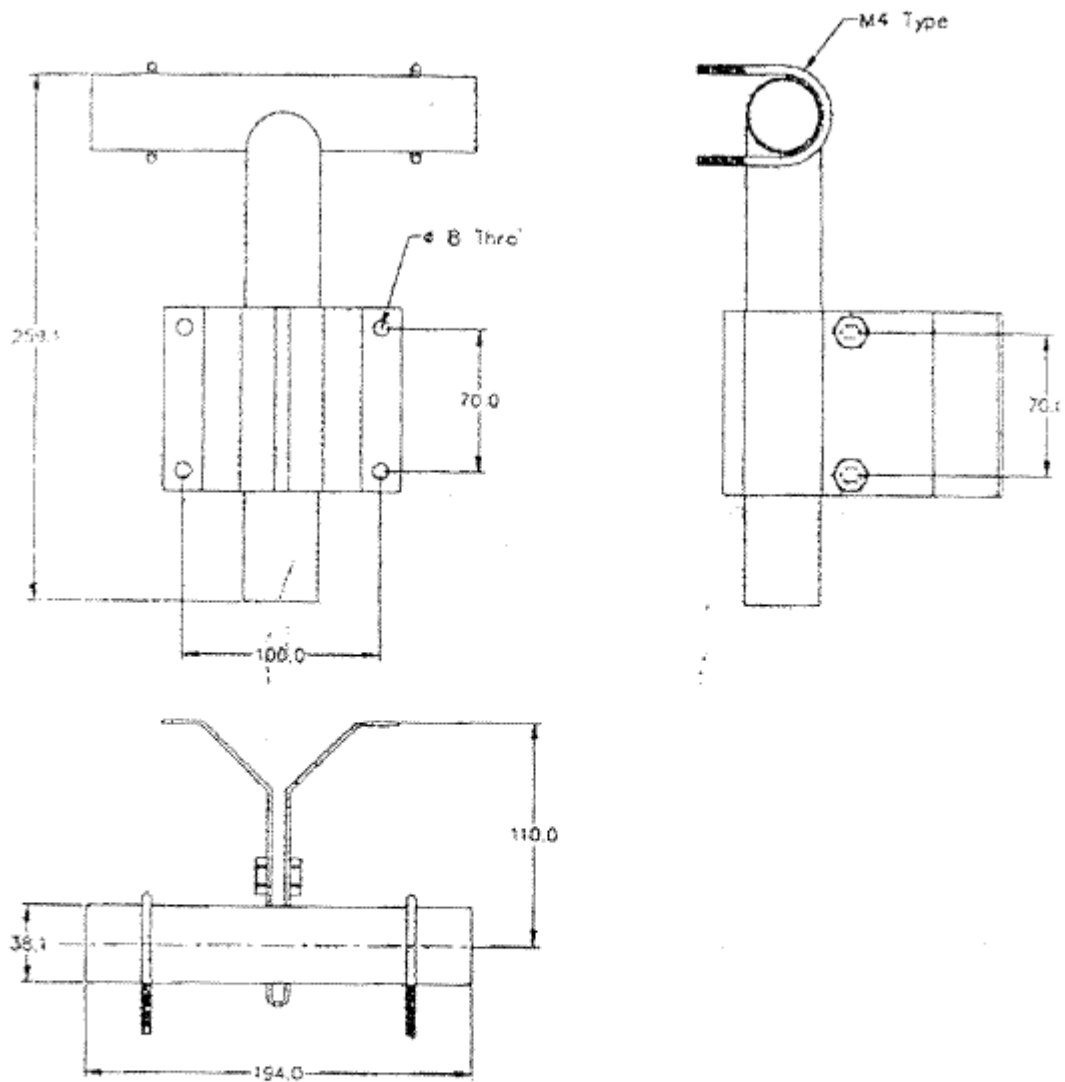
5.0 pLANet 13 ETS/265 Antenna Assembly:



pLANet 13 ETS/265 Antenna Assembly			
HOUSING: Machined Aluminium, Alcrom 1200 Plated.	DATE: 28/05/97		
RADOME: Glass Reinforced Polymer Porcelain Blue	SCALE: N.T.S.		
FILE REF: DS0265	DRG NO. SK 0265		

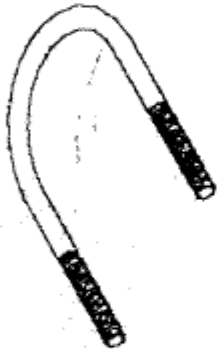
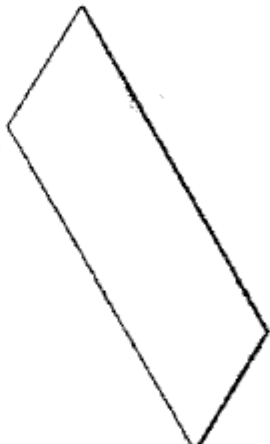
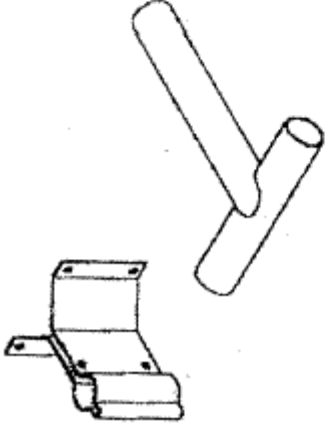
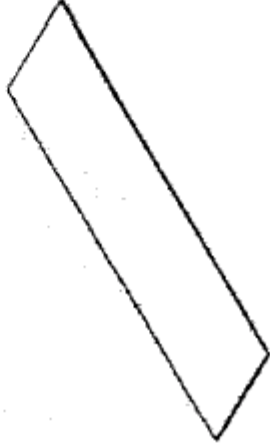
NOTE: ASSEMBLY INCLUDES
MOUNTING KIT

5.1 pLANet 13 Mounting Kit/173



SK001711
pLANet 13 Mounting kit/173
Panel Mounted

5.1 pLANet 13 Mounting Kit: Continued

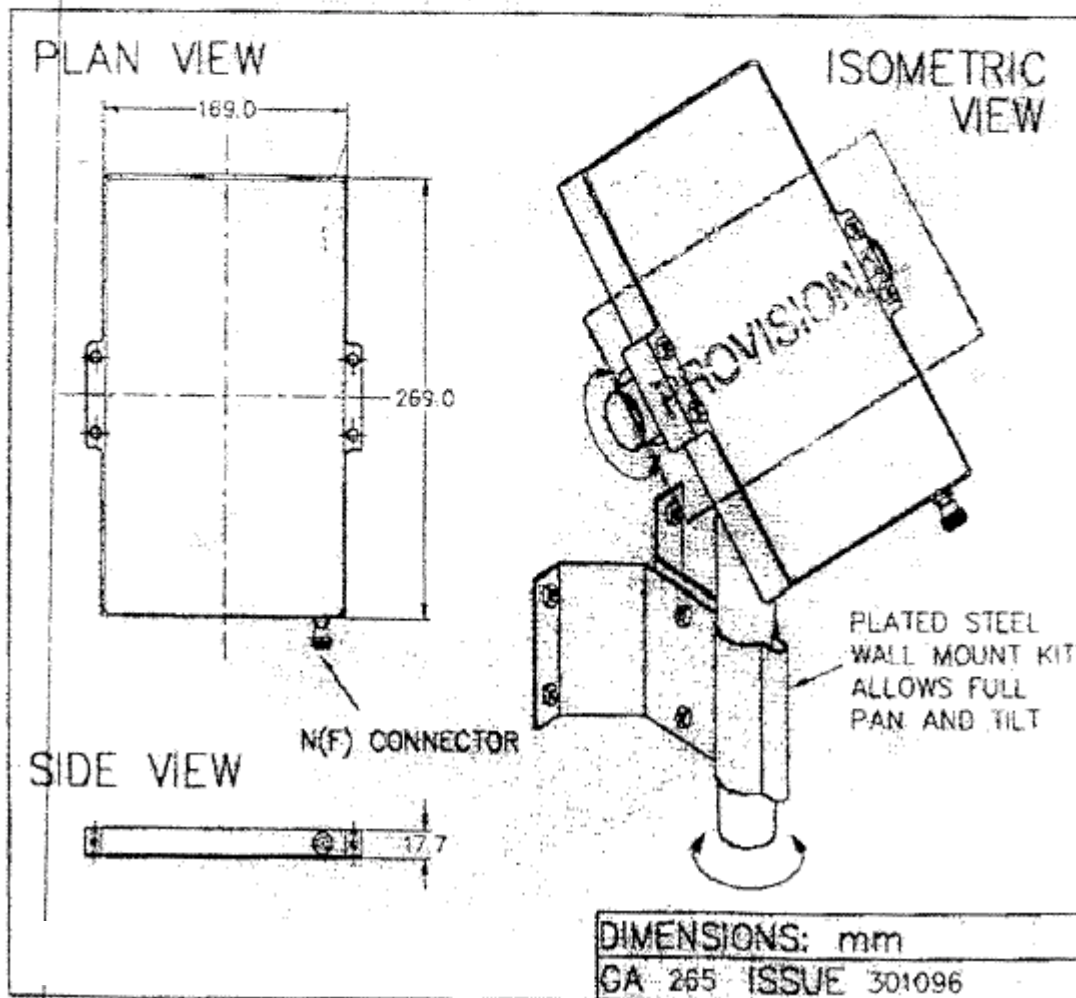
 EA 0444 EA 0404 EA 0443 NO. NUTS, 2 OFF NO. WASHERS, 2 OFF NO. BOLTS, 2 OFF	 EA 0003 ZIP STRAPS, 2 OFF
 EA 1005-1 ZIP-ROD, 4 OFF	 EA 0356 DENSE TAPE 475 x 200
 EA 0044-3 MOUNTING KIT CT-POLE & BRACKET	 EA 0304 POLY ISOBUTYLENE TAPE 125 x 100

5.2 Specification and Drawings: Model: pLANet 13 - ETS/265

Dual Antenna System for Extended Distance Wireless LANs (ETS 300 - 328)

MODEL: pLANet 13-ETS/265

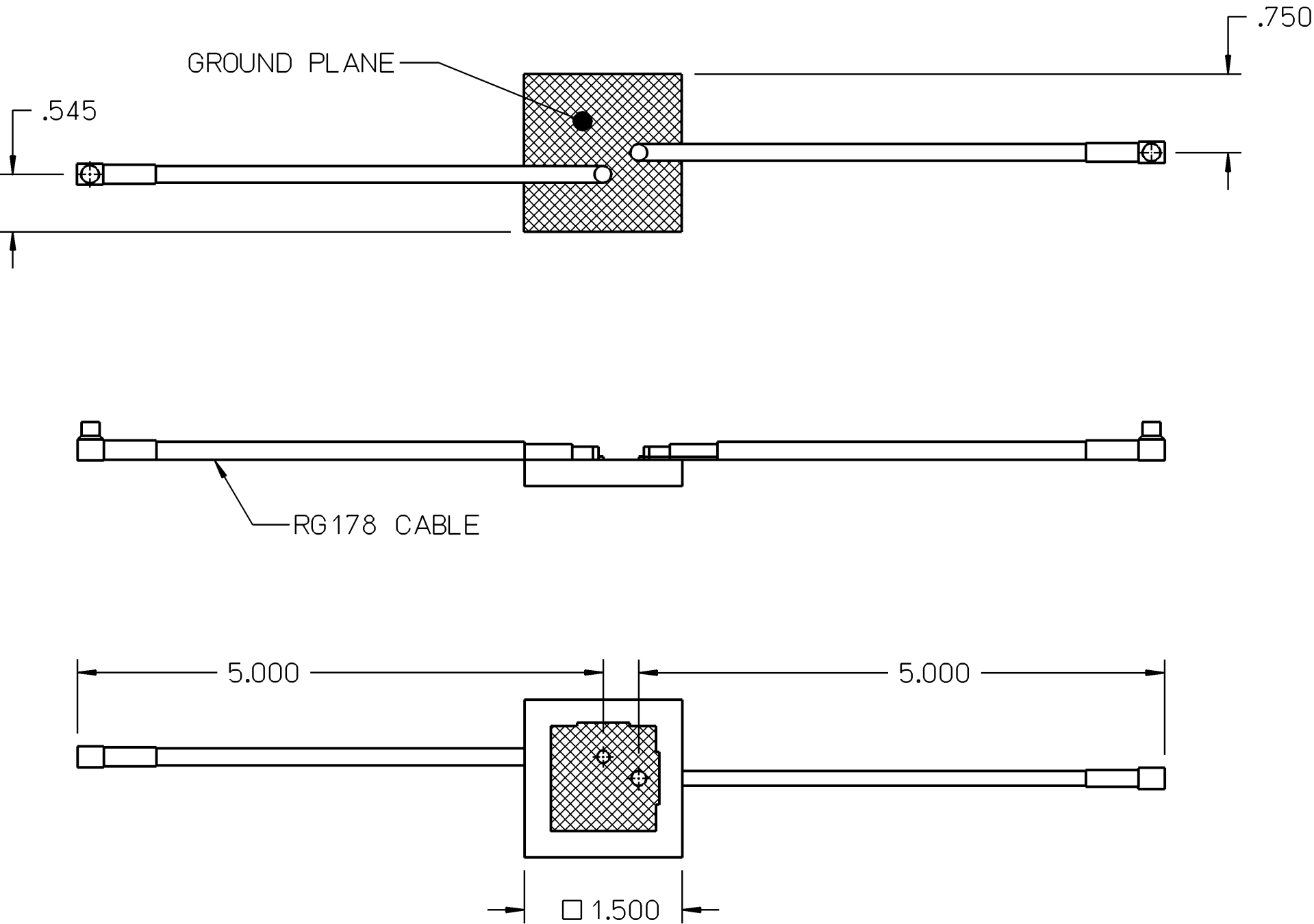
FREQUENCY: 2.4 - 2.5 GHz	GAIN: Tx 2.5 dBIC/Rx 13.0 dBIC
POLARISATION: R.H. Circular	BEAMWIDTH: Tx 80°x80°/Rx 40°x40°
AXIAL RATIO: 3 dB	VSWR: 1.5 : 1
INPUT POWER: 100 mW	FRONT TO BACK: 25 dB
TEMPERATURE: -20°C to +50°C	MASS: 2.5 Kg
FINISH: Alocrom 1200 & White Radome	WIND LOADING: X



APPROVED SOURCE(S) OF SUPPLY	
SUPPLIER	PART NUMBER
1. RADIALL	R380.500.008
2.	
3.	
4.	
5.	
6.	

REVISIONS			
REV	DESCRIPTION	DATE	DRAWN & APPROVED
B	-001 RELEASED AT REV B		

- NOTES: UNLESS OTHERWISE SPECIFIED
- REFER TO THE MANUFACTURER'S SPECIFICATIONS FOR COMPLETE DESIGN PARAMETERS.
 - MINIMUM MARKING REQUIREMENTS SHALL CONSIST OF THE MANUFACTURER'S PART NUMBER AND ID.
 - CHANGES REQUIRE SAC APPROVAL.
 - SPECIFICATIONS:
CENTER FREQUENCY: 2480 MHz
FREQ BANDWIDTH: 100 MHz
NOM IMPEDANCE: 50 OHM
VSWR: 2:1 MAX
GAIN: 4.5 dB MIN @ ZENITH
3 dB BEAMWIDTH: 85°
FRONT TO BACK RATIO: 14 dB MIN
POLARISATION DIVERSITY: HORIZONTAL
VERTICAL
CERAMIC CHARACTERISTICS: POROSITY: 0
PERMITTIVITY: 6
LOSS FACTOR: 0.002 MAX
CONNECTOR TYPE: SPECIAL LUCENT RIGHT ANGLE PLUG



SOURCE CONTROL DRAWING

CAD DB,REF- 590993.1.b SYSTEM - HP			
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. .XX ± .XXX ± .010 ANGLES ±	APPROVALS	DATE	Intermec Technologies Corporation 6001 36TH AVENUE WEST EVERETT, WA 98203-9280
	DRAWN R.HOAGLUND	03-15-99	
	CHECKED G.OPSTAD	03-25-99	
	RESP ENG T.BENSON	03-29-99	TITLE ANTENNA, MICROPATCH, DUAL LUCENT
	QA		
	MFG ENG V.LORD	03-26-99	SIZE C
SAC K.EROGLU		03-29-99	CAGE CODE 33825
CE/ID R.KELLY		04-02-99	DRAWING NUMBER 590993
		SCALE NONE	REV B
		SHEET 1 OF 1	

NOTICE

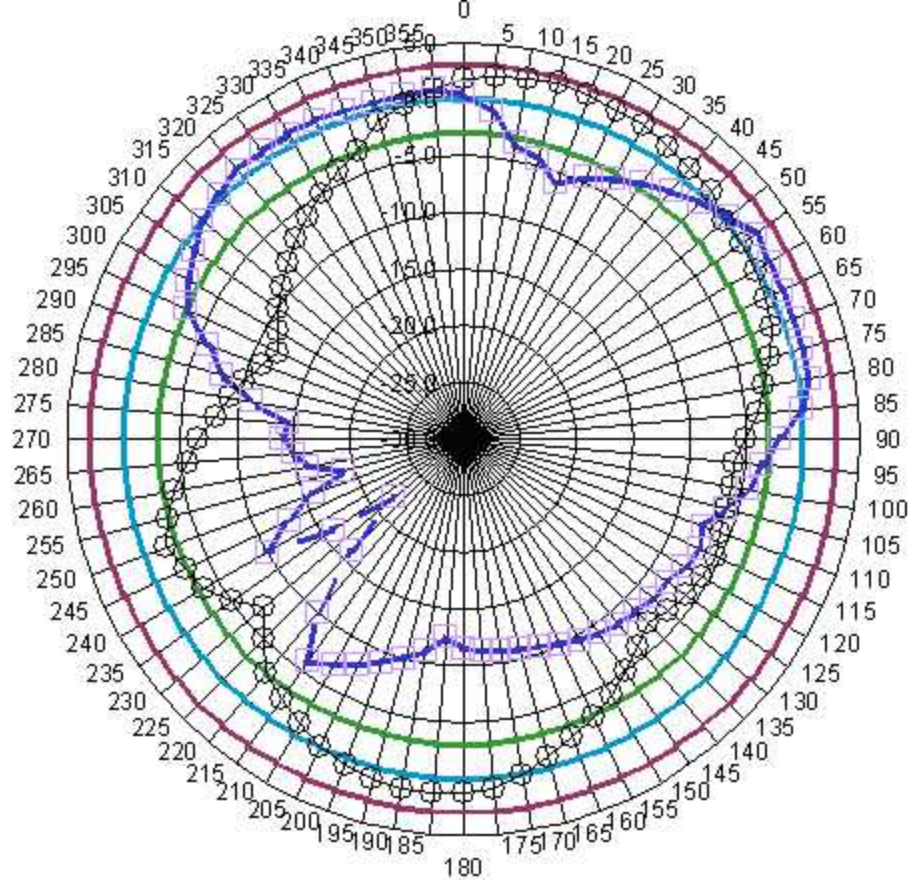
THIS DRAWING SHALL NOT BE DUPLICATED OR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH PROVIDED. THE INFORMATION DISCLOSED HEREIN ORIGINATED BY AND IS THE PROPERTY OF INTERMEC TECHNOLOGIES CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED BY WRITTEN CONSENT, SUCH INFORMATION SHALL NOT BE DISCLOSED OR DISSEMINATED WHOLE OR IN PART. INTERMEC TECHNOLOGIES CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO.

1.1 Electrical specification of the 073360 Antenna.

Frequency Range:	2.4 to 2.5 Ghz
Gain range:	3.5 dBi peak gain
Impedance:	50 ohm
VSWR (nominal):	< 2.0 : 1
Efficient (Radiated Power/Input power) :	0.8 min.
BW for VSWR 2.0:1	> 100 Mhz
Power rating (min.):	2.0 Watt
Operating Temperature	-40 to 85° C
Humidity:	Up to 100% at 38 degree C
Connection type:	1 soldering pigtail compatible with Hirose P/N: U.FL-LP-066 (or 05G-085)
Polarization:	E-Vertical (linear)
Radiation pattern:	directional see plots
Antenna type:	PIFA (Planar Inverter F Antenna.)

Note:

Antenna assembly	Intermec P/N: 073360
Manufacturer/assembler:	Centurion Wireless Technologies Inc.



D

C

B

A

D

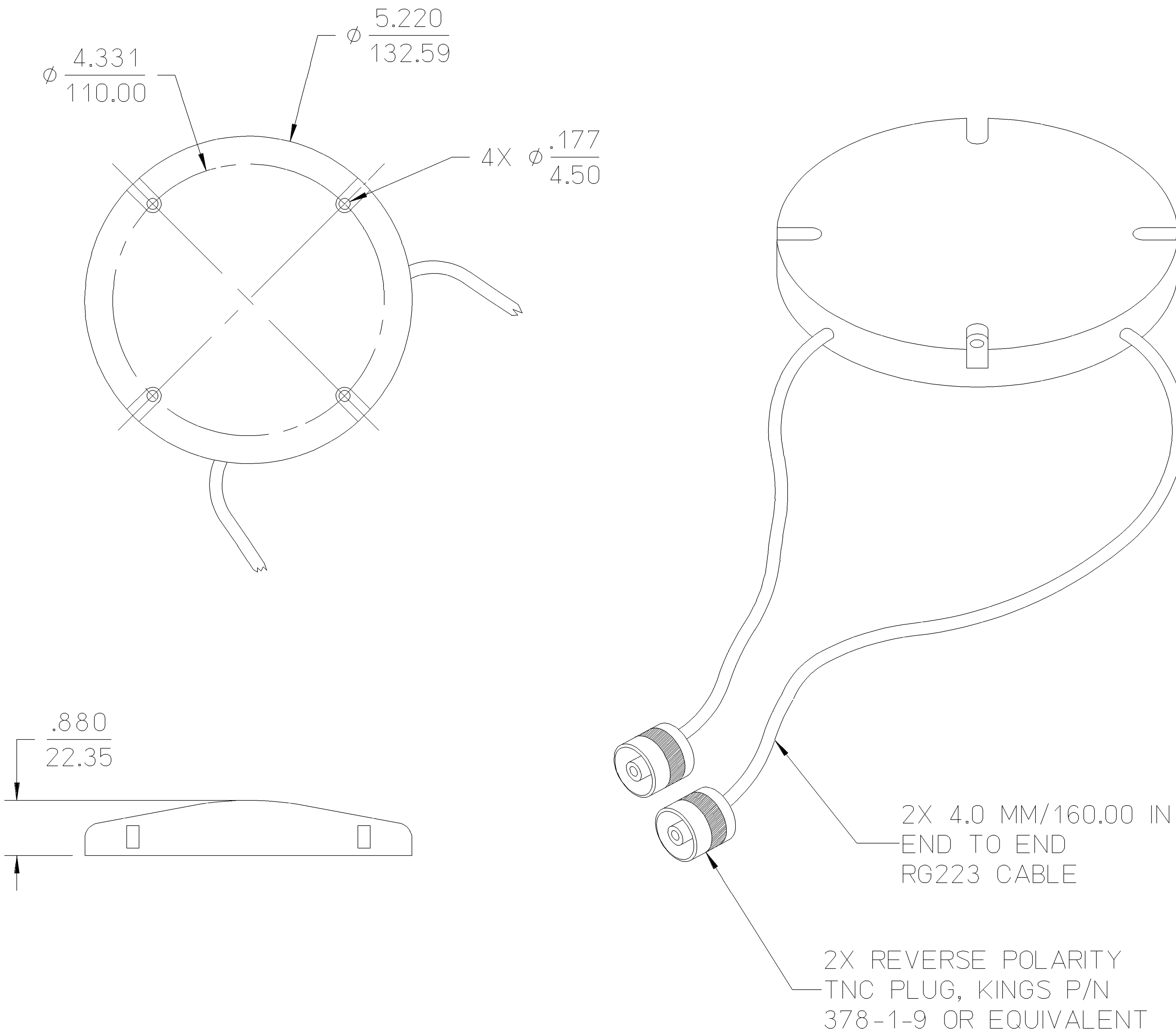
C

B

A

APPROVED SOURCE(S) OF SUPPLY	
SUPPLIER	PART NUMBER
1. EUROPEAN ANTENNAS	PA3-2460-DS45/588
2.	
3.	
4.	
5.	
6.	

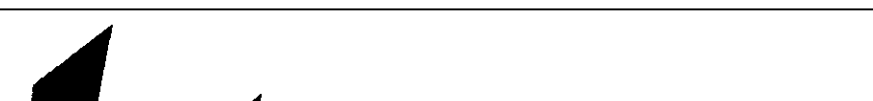
REVISIONS					
REV	ECN	ZONE	DESCRIPTION	DATE	DRAWN & APPROVED
A			-001 RELEASED AT REV A		



NOTES: UNLESS OTHERWISE SPECIFIED

- SPECIFICATIONS:
FREQUENCY: 2.42 - 2.48 GHZ
POLARIZATION: LINEAR ±45°
INTER-PORT ISOLATION: 20 dB
TEMPERATURE: -20°C TO +50°C
RADOME: WHITE INJECTION MOLDED POLYMER
GAIN: 4.0dBi
BEAMWIDTH: 80° X 80°
VSWR: 1.5 : 1
MASS: 610g/21.5oz
WIND LOADING: 2.24Kg/4.92lb @100MPH
POWER RATING: 10W
FRONT TO BACK: 20dB TYPICAL
- BAG PARTS AND MARK BAG WITH 071176 AND DASH NUMBER TO WHICH MANUFACTURED PER SPECIFICATION 606427.
- CHANGES REQUIRE SAC APPROVAL.
- DIMENSIONS: INCHES
MM

RELEASED
SOURCE CONTROL DRAWING

-001					REVISION	REV STATUS OF SHEETS	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.	APPROVALS		DATE	 6001 36TH AVENUE WEST EVERETT, WA 98203-9280 TITLE ANTENNA, 2.4 GHZ, DIRECT, TNC P		
	5	4	3	2	1			SHEET	DRAWN G.RAVEN	9-1-00			
NOTICE THIS DRAWING SHALL NOT BE DUPLICATED OR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH PROVIDED. THE INFORMATION DISCLOSED HEREIN ORIGINATED BY AND IS THE PROPERTY OF INTERMEC TECHNOLOGIES CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED BY WRITTEN CONSENT, SUCH INFORMATION SHALL NOT BE DISCLOSED OR DISSEMINATED WHOLE OR IN PART. INTERMEC TECHNOLOGIES CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO.	.X ± .XX ± .XXX ± .010/0.25 ANGLES ±							RESP ENG R.ZIGLER	9-14-00	SIZE C 33825 DRAWING NUMBER 071176			
								QA					
								MFG ENG V.LORD	9-20-00				
								SAC P.HELTON	9-14-00				
								CE/ID R.KELLY	9-18-00	SCALE NONE	USED ON 21XX	SHEET 1 OF 1	

D

C

B

A

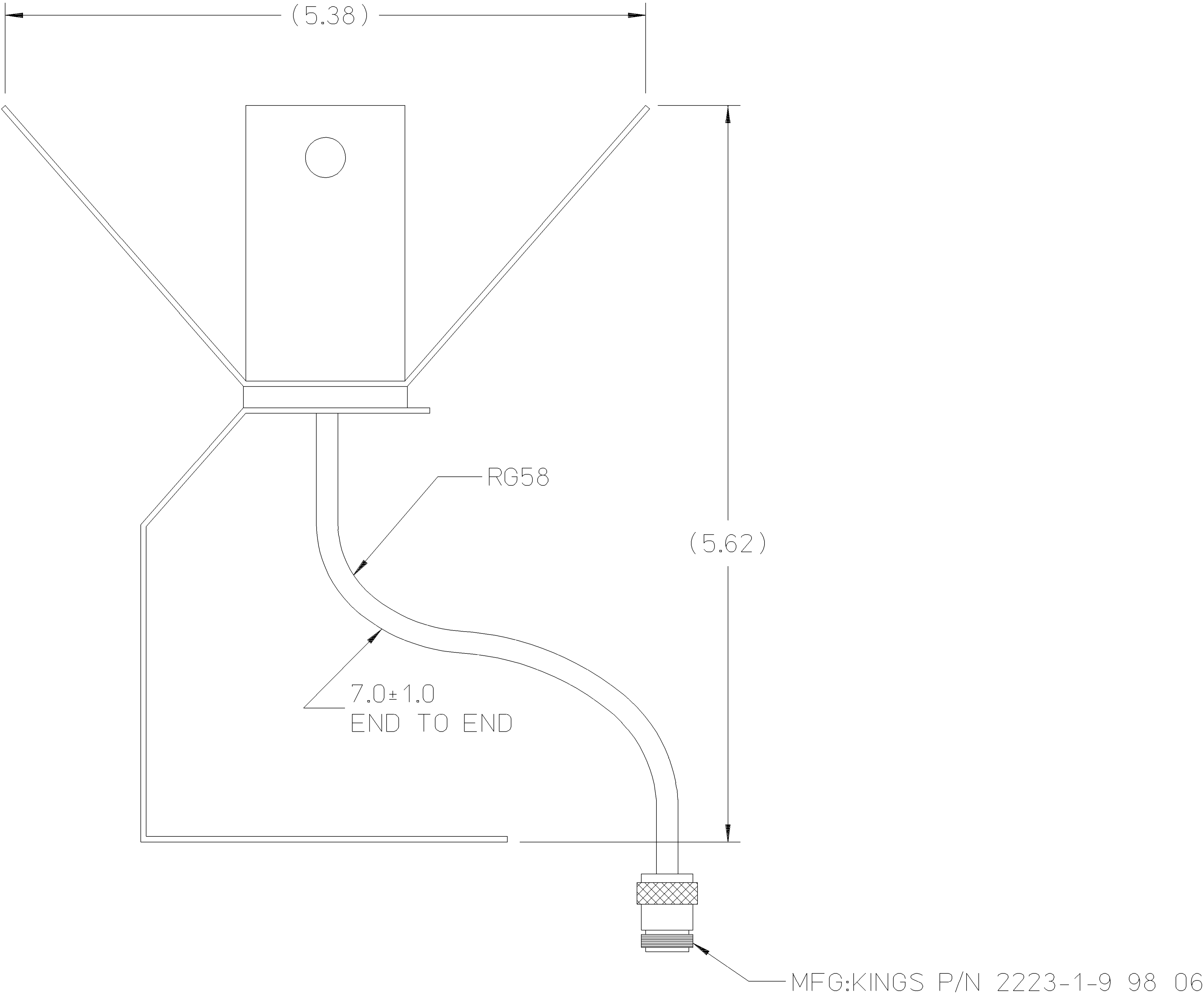
D

C

B

A

APPROVED SOURCE(S) OF SUPPLY	
SUPPLIER	PART NUMBER
1. MOBILE MARK	SCR9-2400I
2.	
3.	
4.	
5.	
6.	



REVISIONS					
REV	ECN	ZONE	DESCRIPTION	DATE	DRAWN & APPROVED
A			-001 RELEASED AT REV A		

- NOTES: UNLESS OTHERWISE SPECIFIED
- REFER TO THE MANUFACTURER'S SPECIFICATIONS FOR COMPLETE DESIGN PARAMETERS.
 - BAG PARTS AND MARK BAG WITH 071122 TO WHICH MANUFACTURED PER SPECIFICATION 606427. DO NOT MARK DASH NUMBER.
 - CHANGES REQUIRE SAC APPROVAL.
 - SPECIFICATIONS:
 - * FREQUENCY RANGE: 2300-2600MHz
 - * GAIN: 9dBi
 - * VSWR: 2:1
 - * IMPEDANCE: 50 ohms
 - * BEAMWIDTH 75° VERTICAL, 65° HORIZONTAL
 - * INPUT POWER (MAX): 100 WATTS
 - ANTENNA IS SUPPLIED WITH MOUNTING KIT AND INSTRUCTION SHEET.

RELEASED

SOURCE CONTROL DRAWING

-001											REVISION	REV STATUS OF SHEETS	CAD DB.REF- 071122.1.a SYSTEM - HP-ME10 UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. .X ± .XX ± .XXX ± ANGLES ±			
						5	4	3	2	1	SHEET					
NOTICE THIS DRAWING SHALL NOT BE DUPLICATED OR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH PROVIDED. THE INFORMATION DISCLOSED HEREIN ORIGINATED BY AND IS THE PROPERTY OF INTERMEC TECHNOLOGIES CORPORATION AND EXCEPT FOR RIGHTS EXPRESSLY GRANTED BY WRITTEN CONSENT, SUCH INFORMATION SHALL NOT BE DISCLOSED OR DISSEMINATED WHOLE OR IN PART. INTERMEC TECHNOLOGIES CORPORATION RESERVES ALL PATENT, PROPRIETARY, DESIGN, USE, SALE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO.																
Intermec Technologies Corporation 6001 36TH AVENUE WEST EVERETT, WA 98203-9280 TITLE ANTENNA, 2.4GHZ, CORNER REFLECT SIZEC CAGE CODE33825 DRAWING NUMBER071122 SCALENONE USED ON2100 SHEET1 OF 1																
												APPROVALS		DATE		
												DRAWN G.RAVEN		8-8-00		
												CHECKED G.OPSTAD		8-29-00		
												RESP ENG R.ZIGLER		9-5-00		
QA -----		-----														
MFG ENG V.LORD		9-20-00														
SAC O.DREW		8-31-00														
CE/ID R.KELLY		9-12-00														

					REVISION	REV STATUS OF SHEETS	REVISIONS		
5	4	3	2	1	SHEET		REV	DESCRIPTION	DATE
							D	-001 RELEASED AT REV D	
							E	-001 PER ECN 102394	4-26-01
								G.OPSTAD	GAR

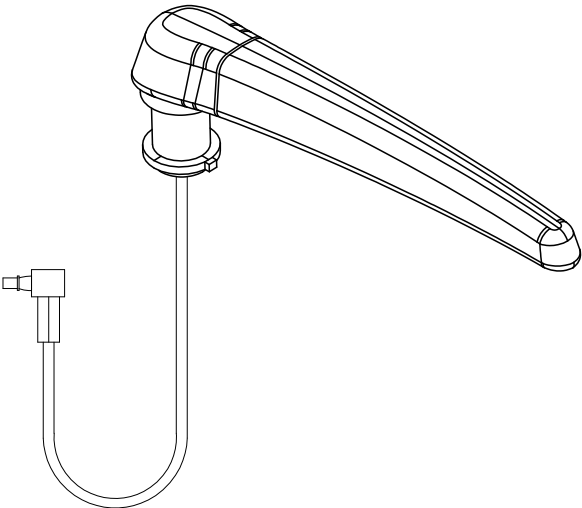
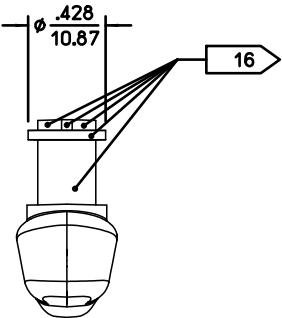
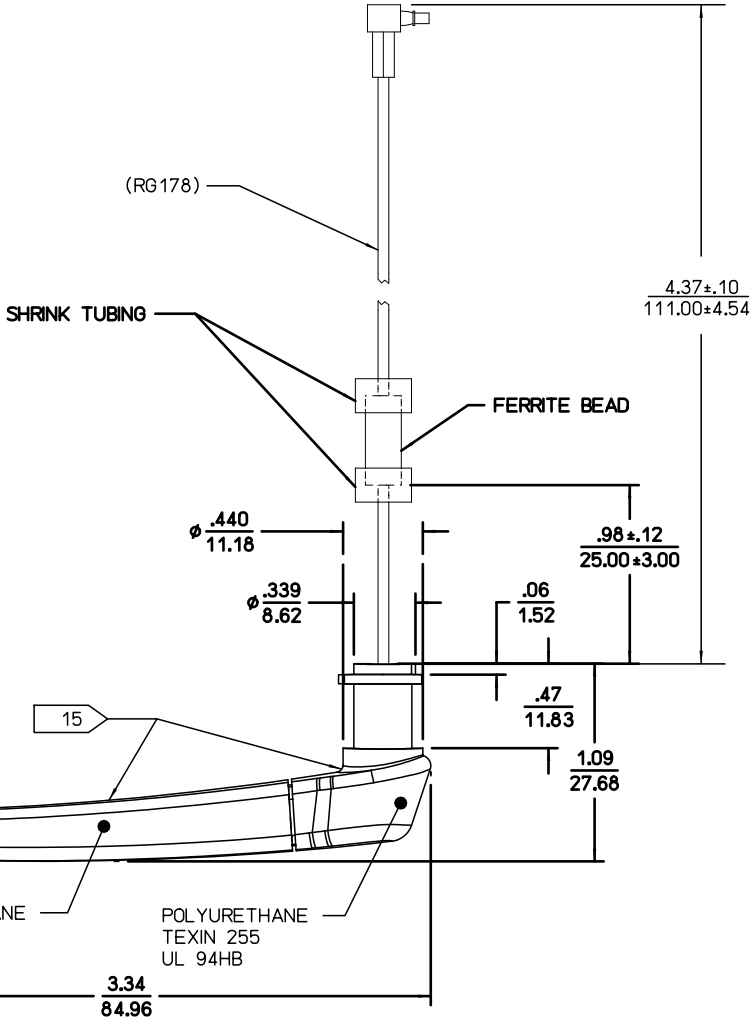
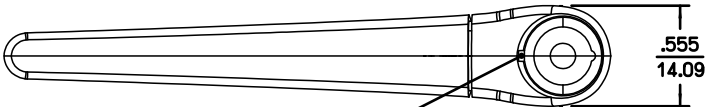
NOTES CONTINUED:

13. SEE CAD GENERATED WIRE FRAME AND/OR SOLID MODEL PART NUMBER 070143-001 FOR ADDITIONAL FEATURE DETAILS. ALL FEATURES NOT OTHERWISE DEFINED ARE TO BE $\pm .005/0.13$ TO THE NOMINAL FEATURE POSITION AS DEFINED BY THE MODEL. THIS PART REQUIRES AN IGES FILE. DIMENSIONS SHOWN WILL BE USED FOR FIRST ARTICLE VERIFICATION.
14. CONNECTOR TO BE RADIAL P/N R299.792.107 RIGHT ANGLE.
15. COLOR TO MATCH INTERMEC BLACK COLOR CHIP, ITEM 1.
16. NO TEXTURE ON THESE SURFACES.
17. BAG PARTS AND MARK BAG WOTH 070143 AND DASH NUMBER TO WHICH MANUFACTURED PER SPECIFICATION 606427.
18. FLAME RATING: UL 94HB MINIMUM.
19. DIMENSIONS: INCHES
MM

NOTES: UNLESS OTHERWISE SPECIFIED

1. FILLETS AND EDGE RADII TO BE R .015/0.38 MAXIMUM.
2. DIMENSIONS APPLY AT MAXIMUM DRAFT.
3. EJECTOR PIN FLASH .010/0.25 MAXIMUM.
4. 25% REGRIND PERMISSIBLE PROVIDED SUCH MATERIAL IS GRADED CLEAN, FINES REMOVED AND FREE OF BURNED, DISCOLORED OR FOREIGN MATERIAL.
5. COSMETIC REQUIREMENTS PER SPECIFICATION 044856, APPENDIX 'A', CATEGORY II, CLASS A (EXTERNAL SURFACES ONLY).
6. EXTERIOR SURFACE PER MOLD-TECH MT-11020 OR EQUIVALENT.
7. SPECIFICATIONS:
FREQUENCY RANGE: 2.4 - 2.5 GHz.
GAIN: +1.5 DBI PEAK.
IMPEDANCE: 50 OHMS.
VSWR: ACROSS THE BAND <1.50:1 NOMINAL.
POWER RATING: 1 WATT MAXIMUM.
OPERATING TEMPERATURE: -40°C TO 65°C @ 95% RH.
8. MECHANICAL REQUIREMENTS:
FLEX PERFORMANCE (SHEATH): 500 CYCLES AT 45° IN TWO DIRECTIONS PERPENDICULAR TO THE CENTERLINE AXIS OF THE SHAFT.
SHEATH PULL TEST: 30 LB.
CORROSION TEST: 24 HOURS WITH 5% NaCl @ 85°C.
SINUSOIDAL VIRBRATION WITH THE FOLLOWING CHARACTERISTICS:
SWEEP RATE: CONSTANT, 1 OCTAVE PER MINUTE.
1 Hz TO 3 Hz: CONSTANT DISPLACEMENT OF ONE INCH PEAK TO PEAK.
3 Hz TO 1000 KHz: CONSTANT ACCELERATION OF 1.5 G'S.
9. PARTING LINE FLASH .005/0.13 MAXIMUM. PARTING LINE LOCATION TO BE APPROVED BY INTERMEC ENGINEERING.
10. GATE REMNANT .020/0.51 MAXIMUM. GATING LOCATION TO BE APPROVED BY INTERMEC ENGINEERING.
11. PART TO BE FREE OF MOLD RELEASE.
12. CHANGES REQUIRE SAC APPROVAL.

NOTES CONTINUED TO THE LEFT



POLYURETHANE
TEXIN 285
UL 94HB

POLYURETHANE
TEXIN 255
UL 94HB

CABLE NOT SHOWN IN ALL VIEWS

SEE SEPARATE PARTS LIST FOR 070143-001

NOTICE

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CAD DB:REF- 070143.1.e SYSTEM - HP									
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. .XX ± .02/0.51 .XXX ± .010/.025 ANGLES ± 1°		APPROVALS		DATE		 6001 36TH AVENUE WEST EVERETT, WA 98203-9280			
		DRAWN	JFOTI	04-10-00					
		CHECKED	G.OPSTAD	6-2-00		TITLE ANTENNA, ROTATION, RADIAL			
		RESP ENG	B.STEFFEN	6-6-00					
		QA							
		MFG ENG	M.SALATINO	6-9-00					
		SAC	P.HELTON	6-6-00					
		CE/ID							
		SIZE	CAGE CODE	DRAWING NUMBER			REV		
		D	33825	070143			E		
		SCALE	2/1				SHEET 1 OF 1		

D

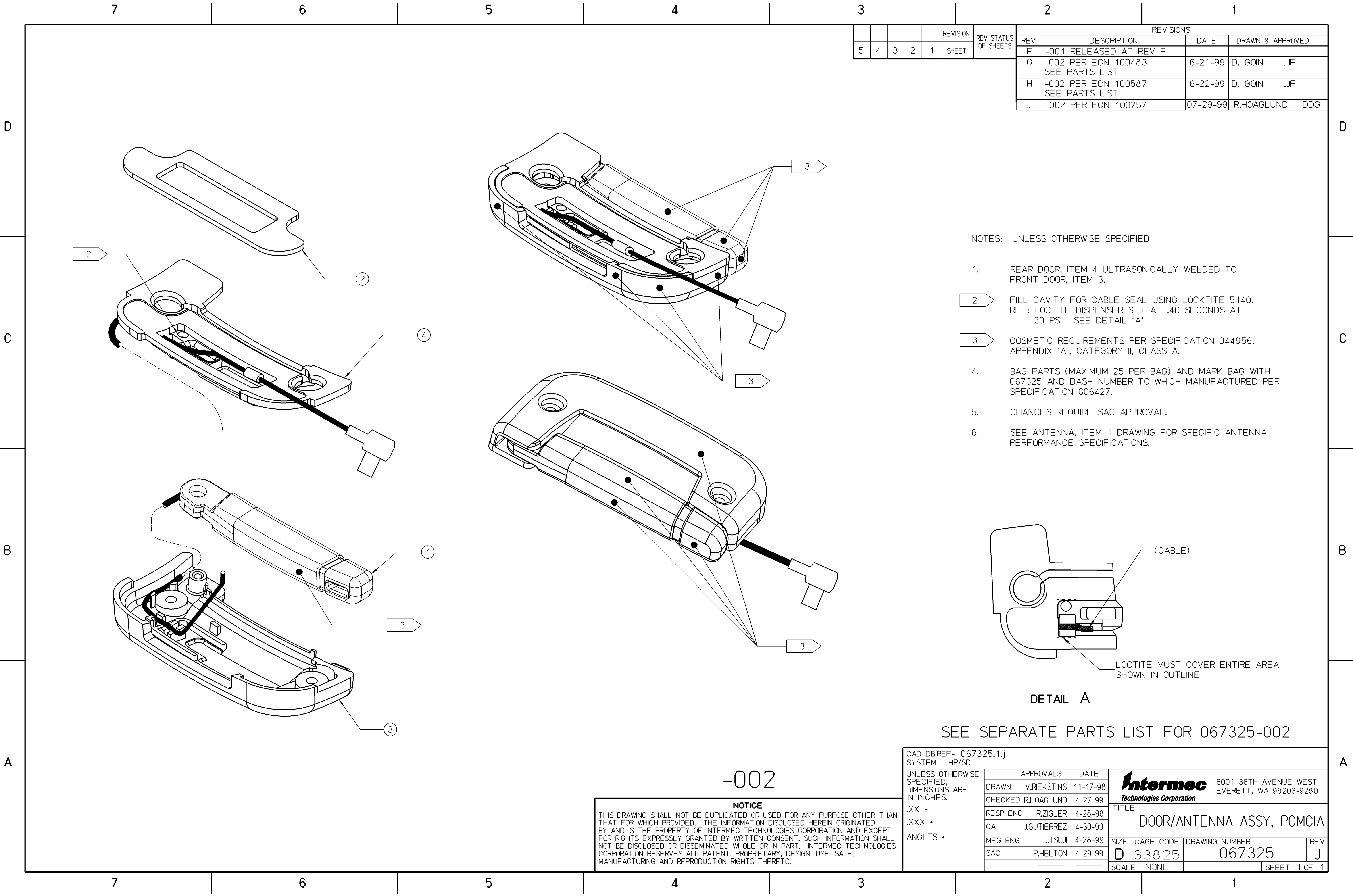
c

- B



A

SIZE C	CAGE CODE 33825	DRAWING NUMBER 069903		REV F
SCALE 2/1			SHEET 1 OF 1	



REVISIONS							REV	STATUS OF SHEETS	DESCRIPTION	DATE	DRAWN & APPROVED
5	4	3	2	1	REVISION	SHEET					
					F				-001 RELEASED AT REV F		
					G				-002 PER ECN 100483 SEE PARTS LIST	6-21-99	D. GOIN JJF
					H				-002 PER ECN 100587 SEE PARTS LIST	6-22-99	D. GOIN JJF
					J				-002 PER ECN 100757	07-29-99	R.HOAGLUND DDG

NOTES: UNLESS OTHERWISE SPECIFIED

1. REAR DOOR, ITEM 4 ULTRASONICALLY WELDED TO FRONT DOOR, ITEM 3.
2. FILL CAVITY FOR CABLE SEAL USING LOCKTITE 5140. REF: LOCKTITE DISPENSER SET AT .40 SECONDS AT 20 PSI. SEE DETAIL "A".
3. COSMETIC REQUIREMENTS PER SPECIFICATION 044856, APPENDIX "A", CATEGORY II, CLASS A.
4. BAG PARTS (MAXIMUM 25 PER BAG) AND MARK BAG WITH 067325 AND DASH NUMBER TO WHICH MANUFACTURED PER SPECIFICATION 606427.
5. CHANGES REQUIRE SAC APPROVAL.
6. SEE ANTENNA, ITEM 1 DRAWING FOR SPECIFIC ANTENNA PERFORMANCE SPECIFICATIONS.

DETAIL A

SEE SEPARATE PARTS LIST FOR 067325-002

NOTICE
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CAD DB:REF- 067325.1.j SYSTEM - HP/SD											
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.						APPROVALS		DATE		 6001 36TH AVENUE WEST EVERETT, WA 98203-9280	
.XX ± .XXX ± ANGLES ±						DRAWN	V.RIEKSTINS	11-17-98			
						CHECKED	R.HOAGLUND	4-27-99		TITLE DOOR/ANTENNA ASSY, PCMCIA	
						RESP ENG	R.ZIGLER	4-28-98			
						QA	J.GUTIERREZ	4-30-99		SIZE D	
						MFG ENG	J.TSUJI	4-28-99			
						SAC	P.HELTON	4-29-99		CAGE CODE 33825	
										DRAWING NUMBER 067325	
										REV J	
										SHEET 1 OF 1	

A

4

3

2

1

APPROVED SOURCE(S) OF SUPPLY	
SUPPLIER	PART NUMBER
1. CENTURION INTL	CAF94120
2.	
3.	
4.	
5.	
6.	

Technical drawing of an antenna assembly. The drawing includes two views: a side view and a top view. The side view shows a rectangular antenna body with a cable attached. Dimensions include a width of 2.30, a height of 2.12, and a cable length of 12.00 ± 1.00. Labels include 'RADOME MEDIUM TEXTURE ABS WHITE', 'GROMMET', and 'CABLE RG142 WHITE JACKET'. The top view shows a square base with a central circular feature. Dimensions include a side length of 1.00, a central circle diameter of 0.260 ± 0.015, and various offsets like 0.65, 0.75, and 1.65. A note indicates 'UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES'.

NOTES: UNLESS OTHERWISE SPECIFIED

- REFER TO THE MANUFACTURER'S SPECIFICATIONS FOR COMPLETE DESIGN PARAMETERS.
- BAG PARTS AND MARK BAG WITH 067261 TO WHICH MANUFACTURED PER SPECIFICATION 606427. DO NOT MARK DASH NUMBER.
- CHANGES REQUIRE SAC APPROVAL.
- SPECIFICATIONS:
 - * VSWR: 1.5:1
 - * FREQUENCY: 2400-2500 MHz
 - * GAIN: 3 dBi
 - * BEAMWIDTH 3dB
 - H-PLANE 360°
 - E-PLANE 180°
 - * PATTERN: OMNI-DIRECTIONAL
 - * OPERATION TEMPERATURE: -40°C TO +100°C
 - * MAXIMUM INPUT POWER: 50 WATTS
- MOUNTING KIT SUPPLIED.

SOURCE CONTROL DRAWING
SEE SEPARATE PARTS LIST FOR 067261-001

CAD DB.REF- 067261.1.c
SYSTEM - HP/ME30

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.

APPROVALS

APPROVALS	DATE
DRAWN J.FOTI	5-11-98
CHECKED R.HOAGLUND	5-21-98
RESP ENGM.SHAVER	6-2-98
QA T.ANDERSON	6-2-98
MFG ENGM.SALATINO	5-26-98
SAC P.HELTON	5-26-98
CMPNT ENG T.KEY	5-27-98

6001 36TH AVENUE WEST
EVERETT, WA 98203-9280

Intermec Technologies Corporation

TITLE

ANTENNA, 2.4GHZ, 3dBI MINI OMNI

SIZE	CAGE CODE	DRAWING NUMBER	REV
C	33825	067261	C

SCALE NONE

SHEET 1 OF 1

4

3

2

1

4

3

2

1

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-001

APPROVED SOURCE(S) OF SUPPLY	
SUPPLIER	PART NUMBER
1. CENTURION	066147-001
2.	
3.	
4.	
5.	
6.	

REVISIONS			
REV	DESCRIPTION	DATE	DRAWN & APPROVED
B	-001 RELEASED AT REV B		
C	-001 PER ECN 027276	03-07-98	J.LEE RCH
D	-001 PER ECN 100361	04-09-99	J.LEE JMB

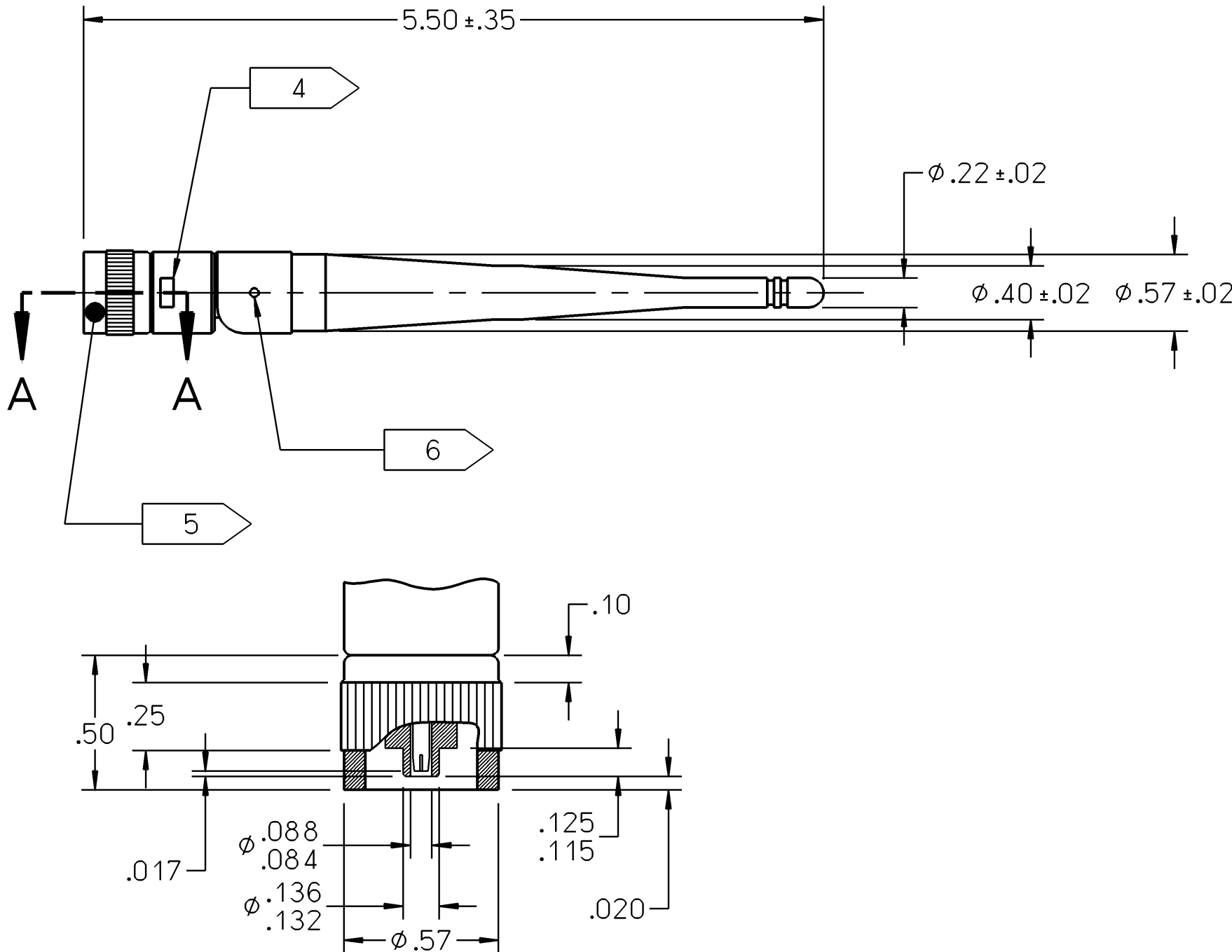
NOTES: UNLESS OTHERWISE SPECIFIED

- BAG PARTS (25 MAX PER BAG) AND MARK BAG WITH 066147 AND DASH NUMBER TO WHICH MANUFACTURED PER SPECIFICATION 606427.
 - SPECIFICATIONS: FREQUENCY RANGE 2.4-2.5 GHZ
GAIN: 1.0 dBI
OPERATING TEMPERATURE: -40°C TO +85°C
FLEX TEST: PER QEA0014
PULL TEST: 20 LB LINEAR PULL
TORQUE TEST: 20 IN-LB
POWER RATING: 50 WATTS
VSWR 1.5:1 MAX AT RESONANCE
 - CHANGES REQUIRE SAC APPROVAL.
- 4

PART MARKED WITH AØ1.
- 5

THIS PIECE IS FREE TO ROTATE 360°.
- 6

FREE TO ROTATE 90° (DOWNWARD) ABOUT THIS PIVOT.
LOCKS IN 0° AND 90° POSITION.
- ALL PARTS OF ASSEMBLY ARE TO BE MOLDED BLACK OR BLACK CHROME.



SECTION A-A
SCALE 2/1

SOURCE CONTROL DRAWING

CAD DB.REF- 066147.1.d
SYSTEM - HP/ME30

UNLESS OTHERWISE
SPECIFIED,
DIMENSIONS ARE
IN INCHES.

.XX ± .03

.XXX ± .010

ANGLES ±

APPROVALS		DATE
DRAWN	G.RAVEN	7-11-97
CHECKED	R.HOAGLUND	10-29-97
RESP ENG	T.BENSON	10-30-97
QA	T.ANDERSON	11-10-97
MFG ENG	V.LORD	11-6-97
SAC	O.DREW	10-30-97
CMPNT ENG	R.KELLY	11-4-97

Intermec

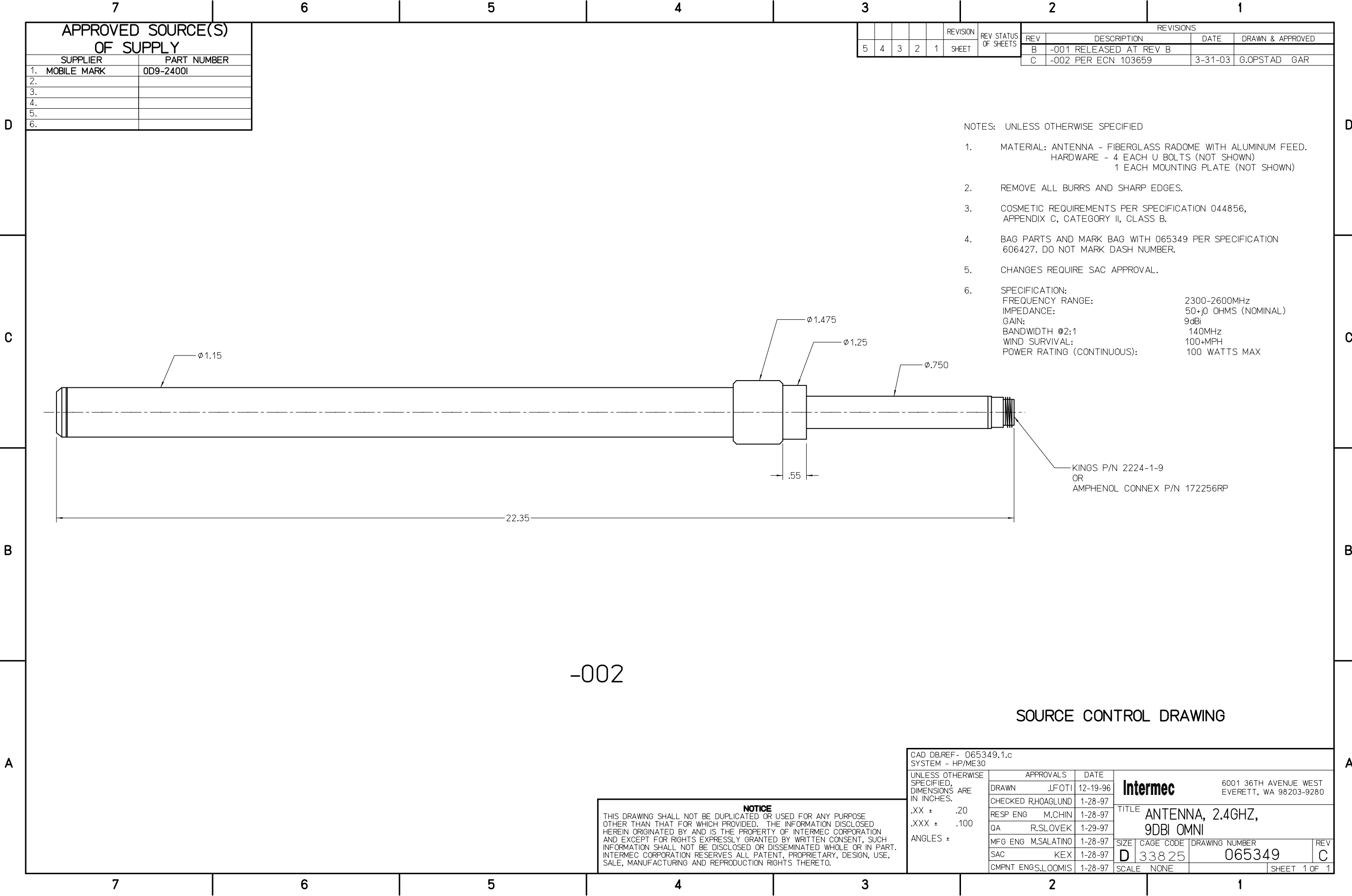
6001 36TH AVENUE WEST
EVERETT, WA 98203-9280

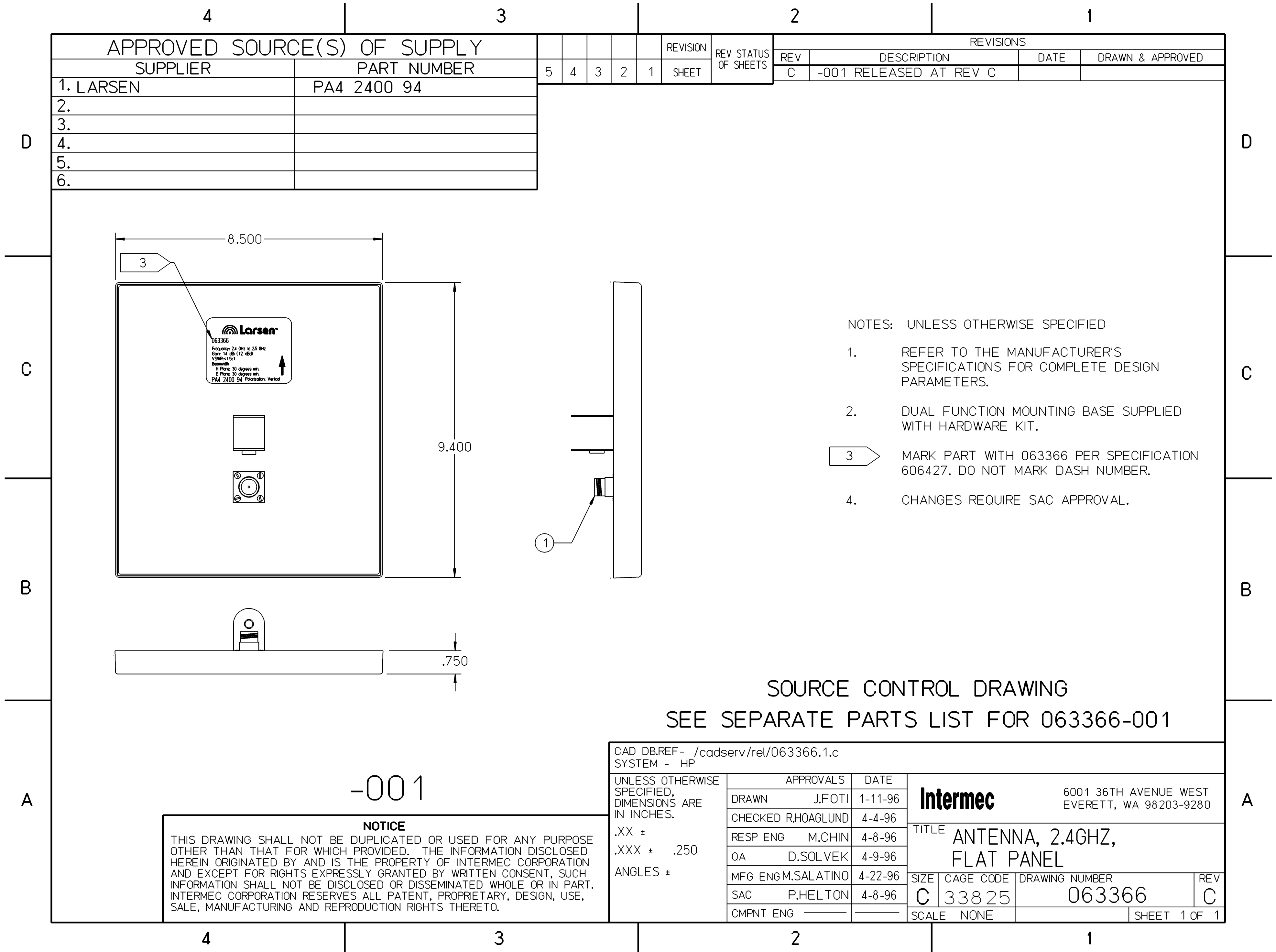
TITLE
ANTENNA, TNC, 2.4 GHZ,
DIPOLE, 248X

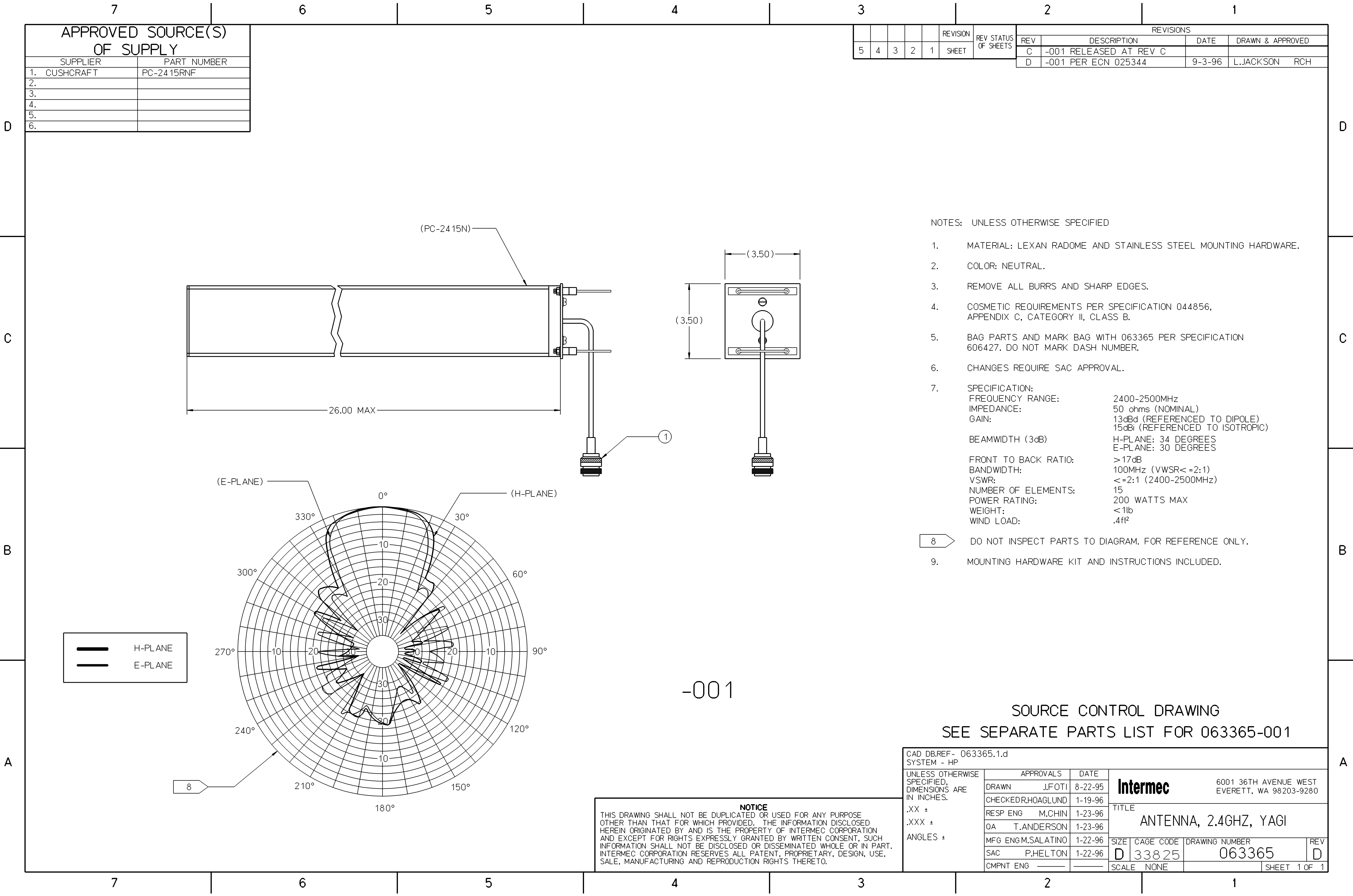
SIZE	CAGE CODE	DRAWING NUMBER	REV
C	33825	066147	D
SCALE 1/1		SHEET 1 OF 1	

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-001







APPROVED SOURCE(S)
OF SUPPLY

SUPPLIER	PART NUMBER
1. CUSHCRAFT	PC-2415RNF
2.	
3.	
4.	
5.	
6.	

					REVISION	REV STATUS OF SHEETS	REVISIONS			
5	4	3	2	1	SHEET		REV	DESCRIPTION	DATE	DRAWN & APPROVED
							C	-001 RELEASED AT REV C		
							D	-001 PER ECN 025344	9-3-96	L.JACKSON RCH

- NOTES: UNLESS OTHERWISE SPECIFIED
- MATERIAL: LEXAN RADOME AND STAINLESS STEEL MOUNTING HARDWARE.
 - COLOR: NEUTRAL.
 - REMOVE ALL BURRS AND SHARP EDGES.
 - COSMETIC REQUIREMENTS PER SPECIFICATION 044856, APPENDIX C, CATEGORY II, CLASS B.
 - BAG PARTS AND MARK BAG WITH 063365 PER SPECIFICATION 606427. DO NOT MARK DASH NUMBER.
 - CHANGES REQUIRE SAC APPROVAL.
 - SPECIFICATION:
FREQUENCY RANGE: 2400-2500MHz
IMPEDANCE: 50 ohms (NOMINAL)
GAIN: 13dBd (REFERENCED TO DIPOLE)
15dBi (REFERENCED TO ISOTROPIC)
BEAMWIDTH (3dB) H-PLANE: 34 DEGREES
E-PLANE: 30 DEGREES
FRONT TO BACK RATIO: > 17dB
BANDWIDTH: 100MHz (VWSR<=2:1)
VSWR: <=2:1 (2400-2500MHz)
NUMBER OF ELEMENTS: 15
POWER RATING: 200 WATTS MAX
WEIGHT: < 1lb
WIND LOAD: .4ft²
 - DO NOT INSPECT PARTS TO DIAGRAM. FOR REFERENCE ONLY.
 - MOUNTING HARDWARE KIT AND INSTRUCTIONS INCLUDED.

-001

SOURCE CONTROL DRAWING
SEE SEPARATE PARTS LIST FOR 063365-001

NOTICE
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CAD DB:REF- 063365.1.d SYSTEM - HP			
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.		APPROVALS	DATE
.XX ±		DRAWN J.FOTI	8-22-95
.XXX ±		CHECKED R.HOAGLUND	1-19-96
ANGLES ±		RESP ENG M.CHIN	1-23-96
		QA T.ANDERSON	1-23-96
		MFG ENG M.SALATINO	1-22-96
		SAC P.HELTON	1-22-96
		COMPNT ENG	
		6001 36TH AVENUE WEST EVERETT, WA 98203-9280	
		TITLE ANTENNA, 2.4GHZ, YAGI	
SIZE	CAGE CODE	DRAWING NUMBER	REV
D	33825	063365	D
SCALE	NONE	SHEET 1 OF 1	

Intermec
COMPONENT SPECIFICATION

APPROVED SUPPLIERS

Manufacturer	Address/Telephone	805-580	Manufacturer's Part No.
Maxrad, Incorporated	4350 Chandler Drive Hanover Park, IL 60103 (630) 372-8077	-001	MLPV1700
		-002	MLPVDB800/1900
		-101	MML195C
		-102	GC
		-103	MBMML195C
		-201	Z1244
		-202	Z1243
		-203	Z1242

- 1.0 **Scope:** This specification describes the requirements for a family of low profile, wide area network antennas and associated antenna mounting bases as follows:

<u>Intermec P/N</u>	<u>Description</u>	<u>Nominal Frequency</u>	<u>Connector</u>
-001	Wideband antenna	1700 MHz - 2500 MHz	None
-002	Dual-band antenna	800 MHz & 1900 MHz	None
-101	Thru hole mount base	Suitable for all	TNC Plug
-102	Magnet mount base	Suitable for all	TNC Plug
-103	Mirror mount base	Suitable for all	TNC Plug
-201	Thru hole mount base	Suitable for all	Reverse TNC
-202	Magnet mount base	Suitable for all	Reverse TNC
-203	Mirror mount base	Suitable for all	Reverse TNC

- 2.0 **Quality Assurance:** Intermec Receiving Inspection reserves the right to use AQL sampling techniques when inspecting a lot.
- 3.0 **Packaging:** All antennas and mounting bases will be packaged in containers capable of protecting them from damage in common carrier shipping and handling.
- 4.0 **Markings:** Each container will be labeled or otherwise marked with the manufacturer's name or trademark, and the catalog designation. Major shipping cartons will be marked with the Intermec part number.

REVISION HISTORY

Rev.	File No.	Description of Change	Date	Approved
A	C2504	Release	11/27/00	L A
B	C2879	Add -201, -202 & -203 parts, Revise ¶1.0 & ¶8.0	8/16/01	90

[illegible]

5.0 Antenna Specifications: -0XX Parts

5.1 Frequency: See parts tabulation below

5.2 Antenna Gain: See parts tabulation below

5.3 VSWR: See parts tabulation below (over frequency range)

5.4 Power: 150 Watts max.

5.5 Radiation: Omnidirectional

5.6 Polarization: Vertical

5.7 Nominal Impedance: 50 Ohms

6.0 Mechanical Ratings: -0XX Parts

6.1 Radiator Element: Solid brass

6.2 Radome Material: UV-stable thermoplastic and metal base, black over chrome color

6.3 Antenna Mounting Means: 1-1/8 - 18 UNEF 2B thread

6.4 Ground Plane: Required for optimum performance

6.5 Antenna Height: See parts tabulation below

6.6 Ambient Operating Temperature: Not specified

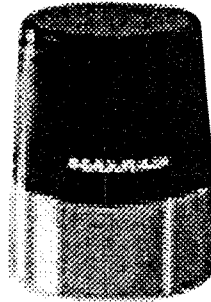
7.0 Antenna Parts Tabulation: -0XX Parts

Part Number	Antenna Type	Radio Frequency (MHz)	Gain	VSWR	Antenna Height
-001	wideband	1700 to 2500	4 dBi	<1.5:1	1.88 inch
-002	dual-band	806 to 906 1710 to 1990	2 dBi 2 dBi	<1.5:1 <2:1	2.50 inch

8.0 Mounting Base Tabulation: -1XX & -2XX Parts

Part Number	Mounting Style	Installation	Coax Type	Cable Length	Connector
-101	thru hole	3/4 inch hole mount	ML 195	17 feet	TNC plug
-102	magnetic	3-1/4" dia. base	ML 195	12 feet	TNC plug
-103	mirror mnt	bracket assembly	ML 195	17 feet	TNC plug
-201	thru hole	3/4 inch hole mount	ML 195	17 feet	Reverse TNC
-202	magnetic	3-1/4" dia. base	ML 195	12 feet	Reverse TNC
-203	mirror mnt	bracket assembly	ML 195	17 feet	Reverse TNC

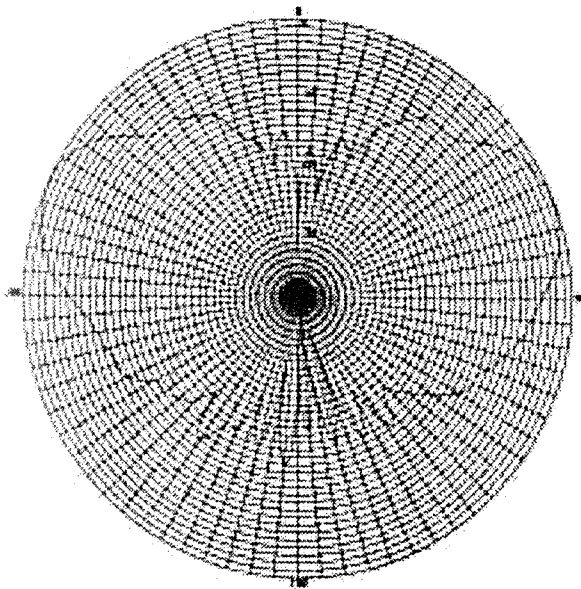
9.0 Outline Drawing (Inch): Wideband Antenna, -001 Part



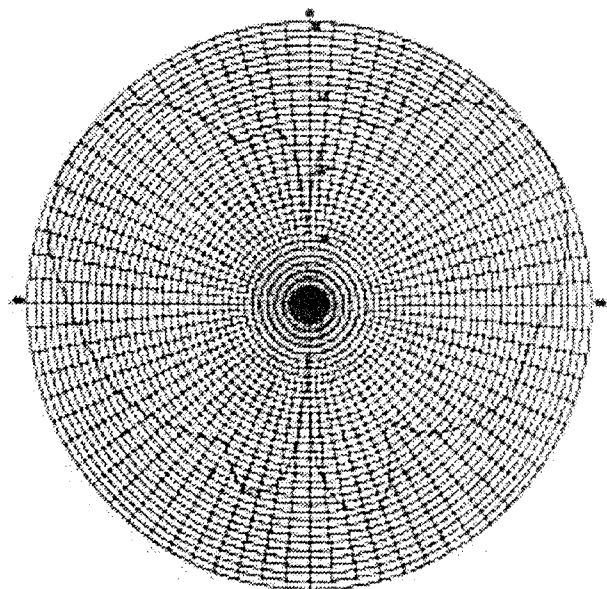
10.0 Outline Drawing (Inch): Dual-band Antenna, -002 Part



MLPVDB800/1900

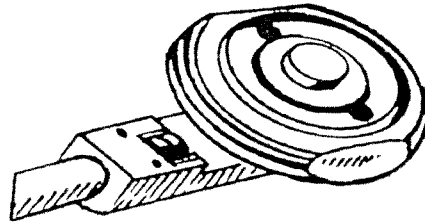


Elevation Pattern at 1900 MHz

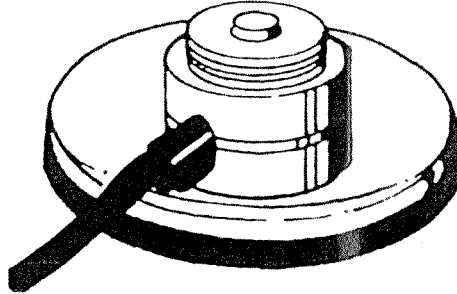


Elevation Pattern at 800 MHz

11.0 Outline Drawing (Inch): Thru Hole Mounting Base, -101/201 Parts



12.0 Outline Drawing (Inch): Magnetic Mounting Base, -102/202 Parts



13.0 Outline Drawing (Inch): Mirror Mounting Base, -103/203 Parts

