



FCC Certification Report for the **LA2400** WLAN PC Card Class II Permissive Change

EXHIBIT 4

RF EXPOSURE INFO

Note: All effort has been made to correlate the Antenna Summary tables with the Antenna descriptions and data sheets. Where there is a conflict the Antenna Summary table takes precedence. The Antenna Summary table breaks out the gain of the antenna and the cable loss associated with the entire antenna/cable assembly. Some of the data sheets have gains listed that do not take cable loss into account. The Antenna Summary table does.



RF Exposure Antenna Summary

Network Systems Organization

FCC ID: **H9PLA2400**

WLAN PC Card, 1 Mbps, CR-1, Hi Power

Source Based

Mobile DC Factor: 0.600

Output Power: 500 mW

Class II Permissive Change

Portable DC Factor: 0.320

Mobile Antennas (R>20cm)

Ant No	Model	Symbol P/N	Type	Gain (dBi)	Cabel Loss (dB)	Pout (dBm)	MPE (cm)	TR Status	Device Type
01.	Moto Monopole	50-21900-041	Monopole	1.2	0.08	26.91	4.3	Tested	Hand Held Ocp

Portable Antennas (R < 5cm)

Ant No	Model	Symbol P/N	Type	Gain (dBi)	Cabel Loss (dB)	Pout (dBm)	EIRP (mW)	TR Status	Device Type	Tx Limited
02.	Zebra Dipole	50-21900-038	Dipole	2.2	0.30	26.68	247.5	Tested	Belt Worn 5-	

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

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RF Exposure Configuration Summary

Network Systems Organization

FCC ID: **H9PLA2400**

WLAN PC Card, 1 Mbps, CR-1, Hi Power

Output Power: 500 mW

Class II Permissive Change

Ant #	Antenna Model	Terminal Mfgr.	Terminal Model	Use
01	Moto Mononole	Motorola	F5024A	Hand Held Ocp
02	Zebra Dipole	Zebra Technologies	E3NE3N-1U10000-00	Belt Worn 5-

5- R < 5 cm

5+ 5 cm < R < 20 cm

Ocp Occupational



Antenna List by FCC ID

Network Systems Organization

FCC ID: **H9PLA2400**

WLAN PC Card, 1 Mbps, CR-1, Hi Power

Output Power: 500 mW

Grant Date	Ant #:	Model	Symbol P/N	Mfg	Mfg P/N
10/22/96					
	1	Plane	50-21900-008	Tecom	505042C(48IN)
	2	Pipe Bomb 11"x4'	50-11901-048P	Cushcraft	S2403BHPS48RBN
	2.1	Pipe Bomb 11"x15'	50-11901-180P	Cushcraft	S2403BHPS180RB
	3	Rubber Duck	50-21900-007	Cushcraft	RBN2400SXR
	4	End Cap, 6 Pin	50-21900-009	Tecom	505068E
	5	IBM		IBM	25H3851
	6	IBM Port Computer		IBM	25H3851
5/26/00					
	1	7540	10-38649-01	Tecom	
	2	2740	703624-1	Tecom	703624-1
	3	Vocollect BFA	50-21900-026	Austin Antenna	200215
	4	7240	10-35475-01	Tecom	
	5	Toko	50-21900-022	Toko	DAC2450CT1
	6	Oniel BFA	50-21900-023	Tecom	703620
	7	1740	703549-1	Tecom	703549-1
	8	XP	50-21900-024	Tecom	703611
	9	3140F	10-38653-01	Tecom	703134
Applied For					
	01	Moto Monopole	50-21900-041	Motorola	8586289T01
	02	Zebra Dipole	50-21900-038	Zebra Technolog	CQ15469-1

Moto Monopole Antenna

The **Moto Monopole** antenna is 1.2 dBi omni-directional in azimuth plane. The **Moto Monopole** uses a MuRata BFA connector. It is mounted on the bottom side of the hand held terminal as shown in the install and use photos. In its use it would be closer than 20 cm to the users wrist and hands but would be more than 20 cm from the users body. It is used with a mobile device.

<i>Location</i>	Hand Held
<i>Pattern</i>	Omni
<i>Type</i>	Monopole
<i>Gain</i>	1.2 dBi
<i>Physical</i>	See attached dwg
<i>Cable</i>	3 cm, MXYH75
<i>Symbol P/N</i>	50-21900-041
<i>MPE Distance</i>	See summary table

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.

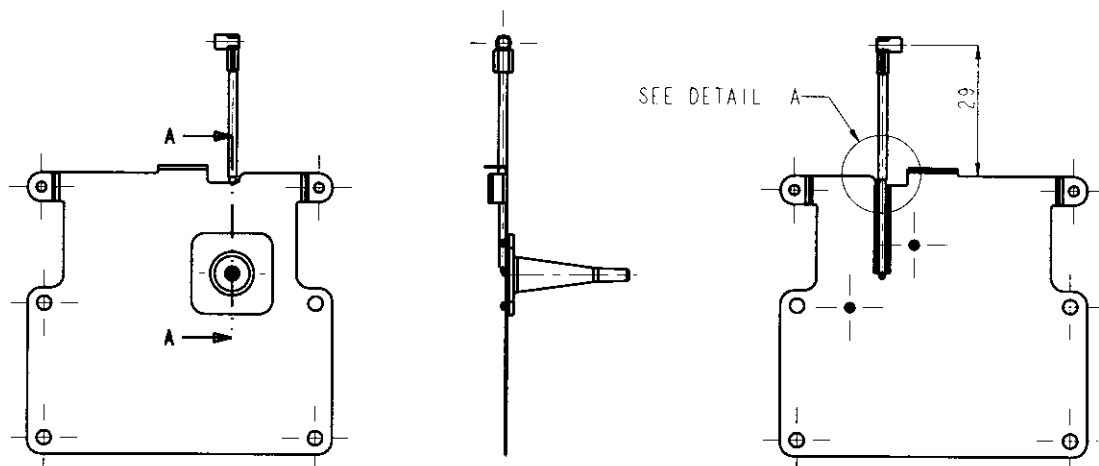
"CAUTION: Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this hand held device is only approved for use in the user's hand when there is 20 cm or more between the antenna and any persons body during normal operating conditions."



Antenna Photograph
Installed

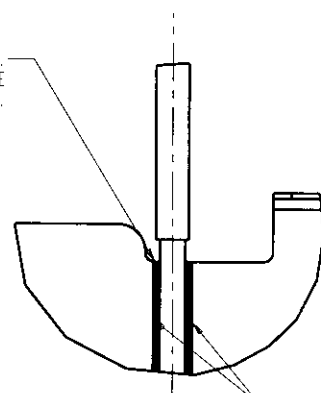


Terminal Use Photo

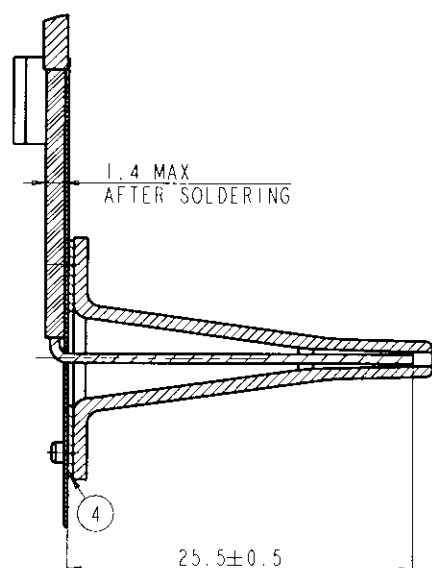


SEE DETAIL A

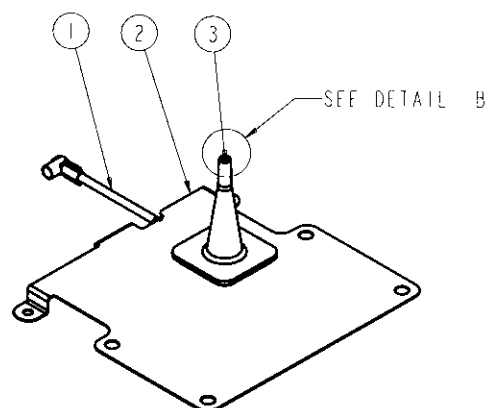
SOLDER TO REACH THE EDGE OF THE BASE.
SOLDERING NOT TO FLOW ON THE WIRE OUTSIDE
THE BASE.



DETAIL A
SCALE 4.000
SEE NOTE 9.4



SECTION A-A
SCALE 3.000



DETAIL B
SCALE 5.000

- NOTES:
- DESCRIPTION AND APPLICATION: INTERNAL ANTENNA FOR USE IN PORTABLE COMMUNICATION EQUIPMENT.
 - APPLICABLE DOCUMENTS: MECHANICAL SPECIFICATION.
12M80967A78.....MOTOROLA VENDOR MATERIAL QUALITY CONTROL.
12S10334A.....MOTOROLA APPEARANCE STANDARD.
12S10601A.....MOTOROLA PACKAGING RULES FOR VENDORS.
12M05002A71.....PROCEDURE FOR TUNING, CAPPING, MARKING AND TESTING
12M05022A85.....QUALIFICATION PROCEDURE FOR ANTENNAS.

- REQUIREMENTS:
3.1 PART SHALL BE CLEAN AND FREE OF ALL FOREIGN MATTER.
3.2 PACKAGING PER SHIPMENT PER 12S10601A.
- WEIGHT: 12 ± 1.5Gr
- ENVIRONMENTAL CONDITIONS:
TEMPERATURE: -40° TO +85°C DEG. FUNCTIONALLY OPERATING OF BOTH ELECTRICAL & MECHANICAL.
HUMIDITY: 50C DEG. 90-95% R.H. NON CONDENSING.

T2

- ELECTRICAL REQUIREMENTS:
6.1 MONOPOLE ANTENNA TYPE: ANTENNA SHALL BE TUNED TO : 2370-2570MHz FREQUENCY RANGE.
6.2 RETURN LOSS (WITH COAXIAL CABLE) : -8dB MIN AT THE FREQUENCY BAND.
6.3 AVERAGE GAIN: 4 dBi.
- VENDOR QUALITY ASSURANCE PROVISIONS: PER 12M80967A78.
PRODUCTION LOTS: VENDOR SHALL MEASURE DIMENSIONS OR PARAMETERS ON A MINIMUM OF (5) RANDOMLY SELECTED PARTS FROM THE LOT FOR DIMENSIONS OR PARAMETERS MARKED AS A CRITICAL CHARACTERISTICS. DATA MUST BE INCLUDED AND PARTS MEASURED IDENTIFIED WITH THE LOT SHIP TO MOTOROLA.
- EXCEPTIONS: NO CHANGE SHALL BE ALLOWED ON PRODUCTION MATERIAL, REGARDLESS OF WHETHER SUCH CHANGE AFFECTS REQUIREMENTS SPECIFIED, WITHOUT PRIOR EXPLICIT WRITTEN APPROVAL BY MOTOROLA PHYSICAL DESIGN ENGINEERING AND PURCHASING DEPARTMENT.
- ASSEMBLY INSTRUCTIONS:
9.1. SOLDER THE SHIELD COAX TO THE ANTENNA ALONG ENTIRE LENGTH (BOTH SIDES).
9.2. USE ONLY SOLDER WITH NO CLEAN FLUX.
9.3. USE IPA (ISOPROPANOL) TO CLEAN SURFACE BEFORE ADHESION OF CAP TO BASE.
9.4. APPLY 5.0 ± 0.5 KGF TO STICK THE SUPPORT TO BASE ANTENNA FOR TWO MINUTES MIN.

10. PACKAGING MUST PROTECT THE ANTENNA WIRE FROM ANY KIND OF DAMAGE

No.	P/N	DESCRIPTION	QTY	NOTES
1	3086544T01	CABLE COAX	1	SEE NOTE 9
2	0786249T01	BASE, ANTENNA	1	
3	0786524T02	CAP, ANTENNA	1	SEE NOTE 9
4	7586588T01	ADHESIVE	1	

SEE NOTE 10



DATA BASE:			DESCRIPTION		CAT. NO.	
TOLERANCES: GENERAL: HOLES: ANGLES: THREADS:			PLATING:	MATERIAL:	MOTOROLA ANTENNA - ASSY	
GRAPHICS:			PAINTING:	FINISH:		
DESIGNED: DAVID B-S JAN 12, 00			CHECKED: OFEK D. FEB 2, 00		DRAWN: DAVID B-S JAN 12, 00	
SCALE: 1:1			SHEET: 1/1		8586289T01	
					T3	

COMPUTER GENERATED DRAWING - DO NOT REVISE MANUALLY.

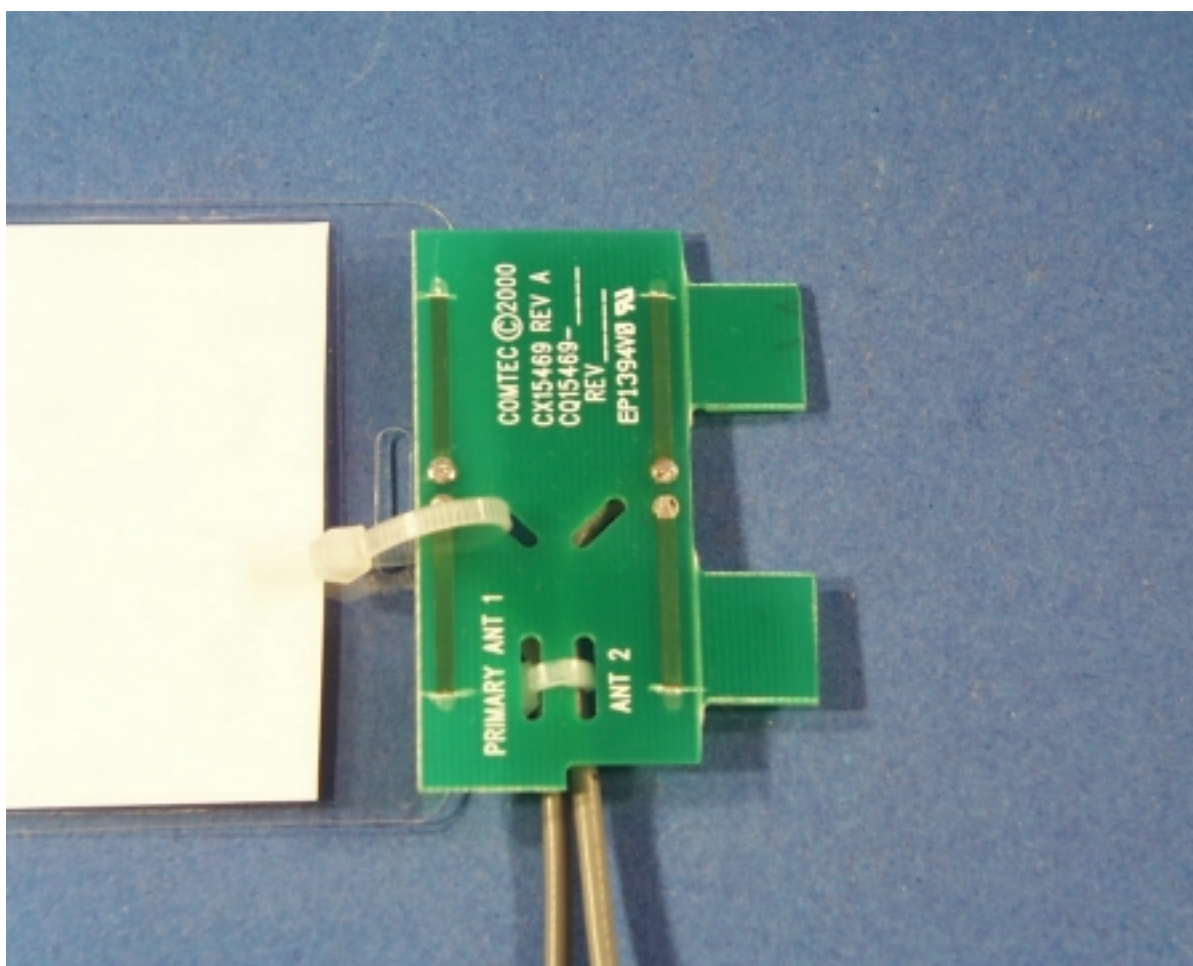
REV	DESCRIPTION	MEMO
T1	RELEASED FOR QUOTATION DAVID B-S JAN 31, 00	
T2	CHANGE NOTE 6.2 (WAS -9.5DB) DAVID B-S FEB 2, 00	
T3	CHANGE NOTE 6.1 CHANGE FREQ. RANGE DAVID B-S MAR 8, 00	

FAC 6000A

Zebra Antenna

The **Zebra** antenna is a pair of 2 dBi omnidirectional dipole antennas. They are etched into a PCB and mounted and mounted near the top outside edge of a belt or strap worn printer. The **Zebra** uses either a Murata Erie BFA or a MMCX connector. In its use it could be as close as 8 cm of a persons body. It is used in portable devices. Attached is the user information on RF safety.

<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>	



Antenna Photo



Antenna Install photo



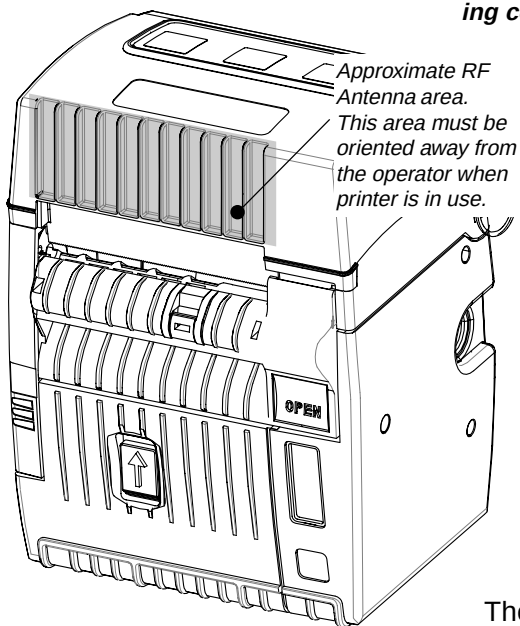
Printer Use Photo

Encore 3N Important Information



WARNING: *Exposure to Radio Frequency radiation. To conform to FCC RF exposure requirements this device shall be used in accordance with the operating conditions and*

instructions listed in the user's manual and this sheet.



Encore 3N Safety Considerations

Use of the Encore 3N will result in exposure to Radio Frequency radiation. This printer must be used only in the intended orientation and in the intended manner.

The Encore 3N is designed to be used with either a belt clip or a shoulder

strap. The printer should be oriented on the operator's hip so that printed material is transported away from the operator. Avoid prolonged exposure closer than 5 cm. (2") to the radiating area around this unit's antenna denoted by the shaded area in the diagram above.

When used as designed, the printer's depth (4.00" or 102 mm) will keep the antenna at twice the required safe distance from the operator.



Zebra Technologies Corporation

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