



(8) Antenna Info A-00006

- (a) Per FCC 15.203, the antenna is internal and permanently attached. It is not intended to be serviced by the customer and is, therefore only serviceable by Logitech, Inc. authorized personnel.
- (b) The device is an FCC 15.247 device.
 - The Vertical Antenna, Part Number 340-000168
 - The Horizontal Antenna, Part Number 340-000169
- (c) The antenna is a quarter-wavelength monopole wire. See next page.

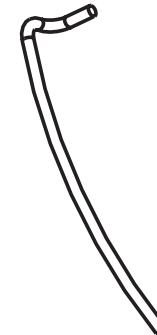
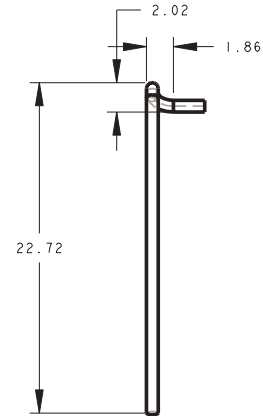
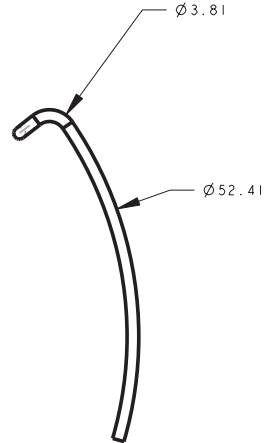
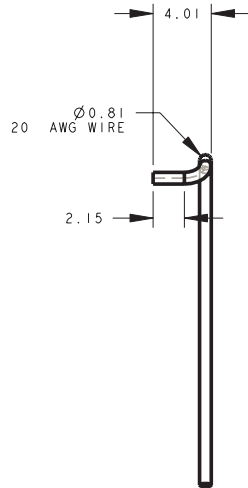
Vertical Antenna

Manufacturer: Logitech, Inc.
Part Number: 340-000168
Gain (dBi): 0.63 dBi
Description: Monopole (quarter-wavelength)

Horizontal Antenna

Manufacturer: Logitech, Inc.
Part Number: 340-000169
Gain (dBi): 1.57 dBi
Description: Monopole (quarter-wavelength)

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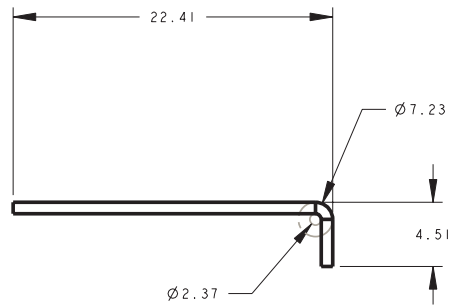
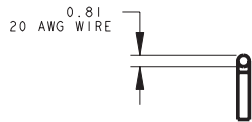
Notes:

1. MATERIAL IS 20 AWG, TIN PLATED, REDDISH-BROWN COPPER WIRE.
2. ENDS TO BE TRIMMED WITH WIRE DIE.
3. FINAL DIMENSIONS OF ANTENNA TO INCLUDE PLATING.
4. PART TO BE FREE OF DIRT, OIL, BURRS AND SHARP EDGES.



				ALL UNDIMENSIONED SURFACES SHOULD BE TAKEN DIRECTLY FROM THE PRO/E MODEL.			
DRW: TBD		DATE: 30-Jan-04		MAT'L: TBD		TITLE: DURAN ANT1-VERTICAL	
TOLERANCES:				TEXTURE: TBD			
.X ± 0.5							
.XX ± 0.2							
.XXX ± 0.1							
A0							
REV	DESCRIPTION	ECO	BY	DATE	3rd ANGLE PROJECTION	Logitech	1499 SE Tech Center Pl. Suite 350 Vancouver, WA, 98683 Pkt: (360) 896-2000 Fax: (360) 896-2020
REVISION				DWG 5Z		SCALE: 3.000:1	SHEET: 1 OF 1
				DO NOT SCALE DRAWING		PART NO: 340-000168	REV: 001

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						ALL UNDIMENSIONED SURFACES SHOULD BE TAKEN DIRECTLY FROM THE PRO/E MODEL								
			DRW: TBD			MAT'L: TBD			TITLE					
			DATE: 30-Jan-04			TEXTURE: TBD			DURAN ANT2-HORZ					
			TOLERANCES: .X ± 0.5 .XX ± 0.2 .XXX ± 0.1			1499 SE Tech Center Pl. Suite 330 Vancouver, WA, 98603 PH: (360) 896-0900 Fax: (360) 896-3020			DWG SZ					
AD	-		-		DD	MM		YY		SCALE: 3.000:1		SHEET: 1 OF 1		
REV	DESCRIPTION		ECO	BY	DATE	3rd ANGLE PROJECTION			PART NO		REV			
REVISION											B		340-000169 001	
												DO NOT SCALE DRAWING		

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting mid channel, 2441MHz, pi/4-DQPSK modulation

POWER SETTINGS INVESTIGATED

120VAC/60Hz to laptop. USB to dongle.

FREQUENCY RANGE INVESTIGATED

Start Frequency	2400 MHz	Stop Frequency	2483.5MHz
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SAMPLE CALCULATIONS

Antenna Gain (dBi): EIRP(dBm) - Conducted Output Power (dBm)

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAY	12/18/2007	12
Antenna, Horn	EMCO	3115	AHC	8/24/2006	24
EV01 Cables		Double Ridge Horn Cables	EVB	1/3/2008	13
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2007	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The EUT antenna gain was derived from taking the radiated EIRP measurement and subtracting out the direct connect output power measurement:

The peak output power was determined by measuring using a direct connection between the RF output of the EUT and a spectrum analyzer. The test cable and attenuator were calibrated and an offset entered into the analyzer to compensate for the loss. The EUT was set to the mid channel. The EUT was made to transmit mode at the any available modulation types. For this product, the mid channel with pi/4-DQPSK modulation was used to determine the peak output power.

The radiated fundamental emission from the EUT was maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization. The EUT was then replaced with a reference horn antenna. A signal generator was connected to the horn, and its output was adjusted to match the level previously noted. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the horn antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined.

EUT:	ClearChat PC Wireless headset, M/N: A-00006	Work Order:	LABT0296
Serial Number:	Unknown	Date:	02/21/08
Customer:	Logitech, Inc.	Temperature:	22
Attendees:	none	Humidity:	26%
Project:		Barometric Pres.:	1016.9
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz
		Job Site:	EV01

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	3
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COMMENTS

RBW=3MHz, VBW=8MHz

EUT OPERATING MODES

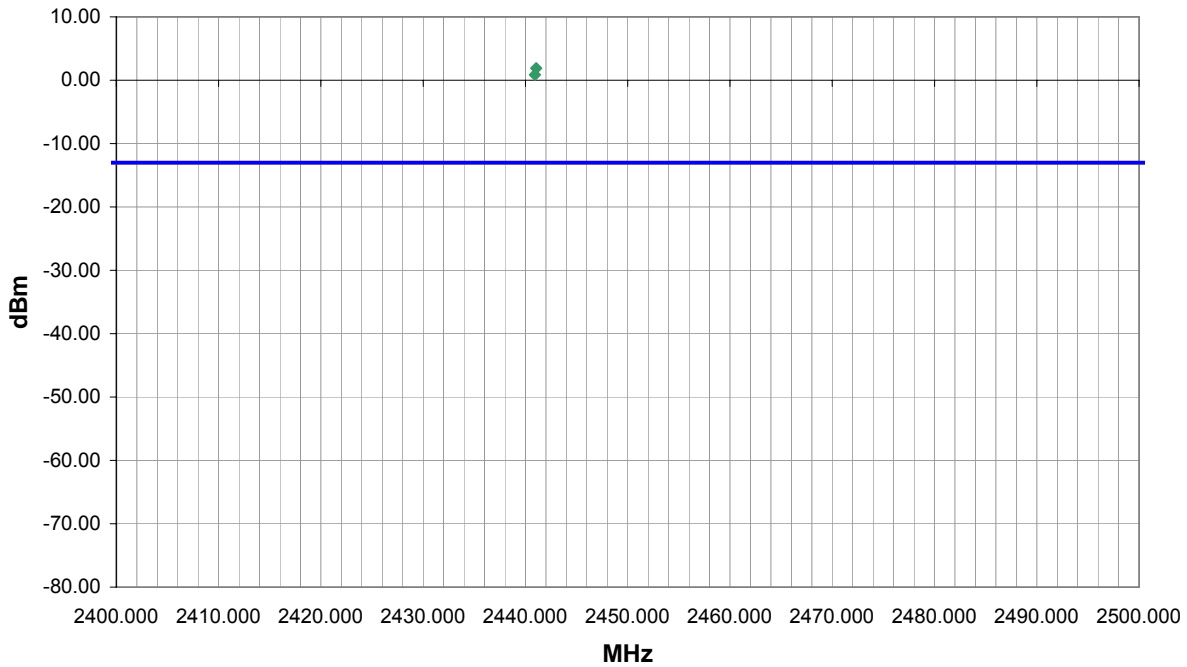
Transmitting mid channel, low diversity antenna

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1
Configuration #	1
Results	Evaluation

Signature *Holly Ashkannejhad*



Freq (MHz)	Azimuth (degrees)	Height (meters)	Conducted Output Power (mW)	Conducted Output Power (dBm)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Antenna Gain (dBi)
2441.050	190.0	1.1	1.08	0.33	V-Horn	PK	1.55E-03	1.90	1.6
2440.933	360.0	1.2	1.08	0.33	H-Horn	PK	1.22E-03	0.85	0.5

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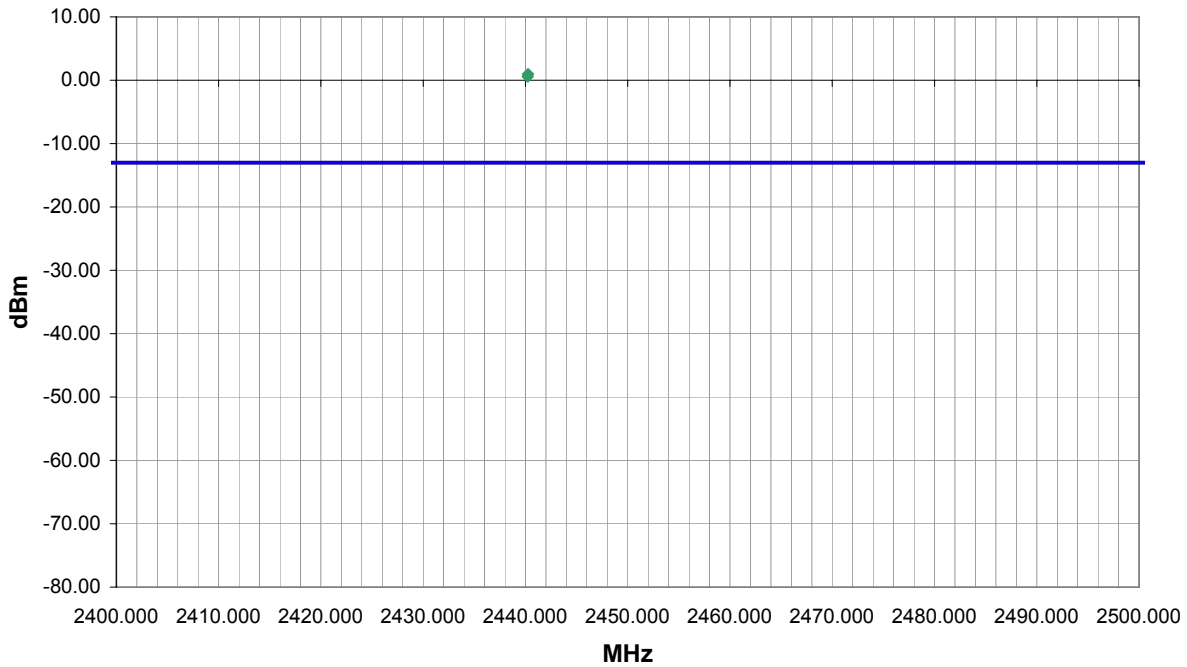
Transmitting mid channel, high diversity antenna

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	1
Results	Evaluation

Signature *Holly Ashkannejhad*



Freq (MHz)		Azimuth (degrees)	Height (meters)	Conducted Output Power (mW)	Conducted Output Power (dBm)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Antenna Gain (dBi)
2440.250		186.0	1.0	1.08	0.33	V-Horn	PK	1.25E-03	0.96	0.6
2440.225		293.0	1.5	1.08	0.33	H-Horn	PK	1.15E-03	0.59	0.3