



(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)

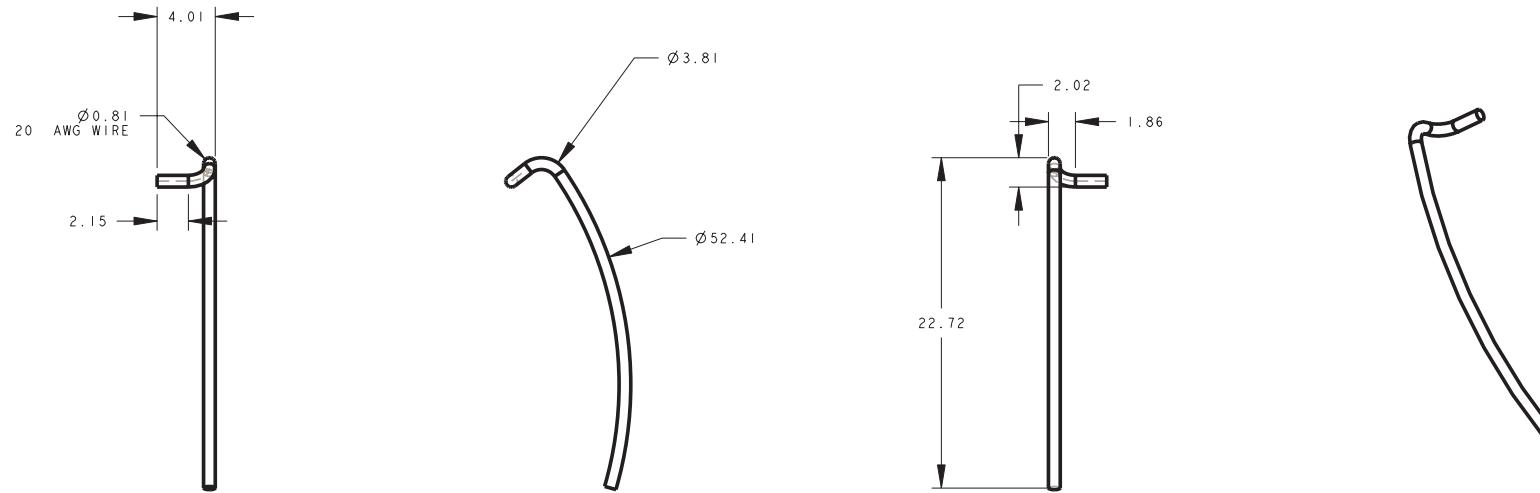
Horizontal Antenna

Manufacturer: Logitech, Inc.

Part Number: 340-000169

Gain (dBi): 1.57 dBi

Description: Monopole (quarter-wavelength)



Notes:

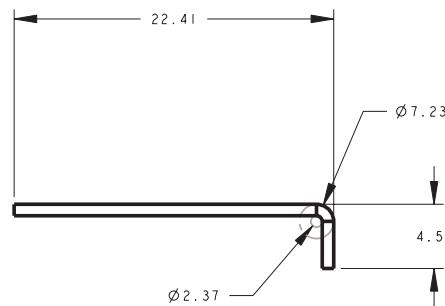
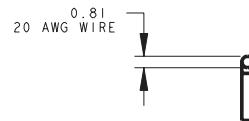
1. MATERIAL IS 20 AWG, TIN PLATED, REDDISH-BROWN COPPER WIRE.
2. ENDS TO BE TRIMMED WITH WIRE DIE.
3. FINAL DIMENSIONS OF ANTENNA TO INCLUDE PLATING.
4. PART TO BE FREE OF DIRT, OIL, BURRS AND SHARP EDGES.



ALL UNDIMENSIONED SURFACES SHOULD BE TAKEN DIRECTLY FROM THE PROVE MODEL

ALL CHANGES AND LATEST CONTROLS SHOULD BE MADE DIRECTLY FROM THE PRTN MODEL			
DRW: TBD	MATL: TBD	TITLE	
DATE: 30-Jan-04	TEXTURE:	DURAN ANT1-VERTICAL	
TOLERANCES: .X ± 0.5 .XX ± 0.2 .XXX ± 0.1	TBD		
			
		1499 SE Tech Center Pl. Suite 350 Portland, OR 97236 PH: (503) 896-2000 Fax: (503) 896-2020	
3rd ANGLE PROJECTION		DWG SZ	SCALE: 3:000:1
		B	PART NO
DO NOT SCALE DRAWING		340-000168	
		REV 001	

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APPARATUS OR DEVICES WITHOUT WRITTEN
PERMISSION FROM LOGITECH.



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.



REV	DESCRIPTION	ECO	BY	DATE
A0	—	—	—	DD-MON-YR

REVISION

ALL UNDIMENSIONED SURFACES SHOULD BE TAKEN DIRECTLY FROM THE PRO/E MODEL							
DRW: TBD	MAT'L: TBD	TITLE					
DATE: 30-Jan-04	TEXTURE: TBD						
TOLERANCES:							
X ± 0.5							
XX ± 0.2							
XXX ± 0.1							
3rd ANGLE PROJECTION							
1499 SE Tech Center Pl. Suite 350 Vancouver, WA, 98663 Ph: (360) 296-2020 Fax: (360) 296-2120							
Logitech							
DWG SZ B							
SCALE: 3.000:1							
SHEET: 1 OF 1							
PART NO: 340-000169							
REV: 001							

DURAN ANT2-HORZ

Antenna Gain

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.

Antenna Gain

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	Job Site: EV01

TEST PARAMETERS

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

RBW=3MHz, VBW=8MHz

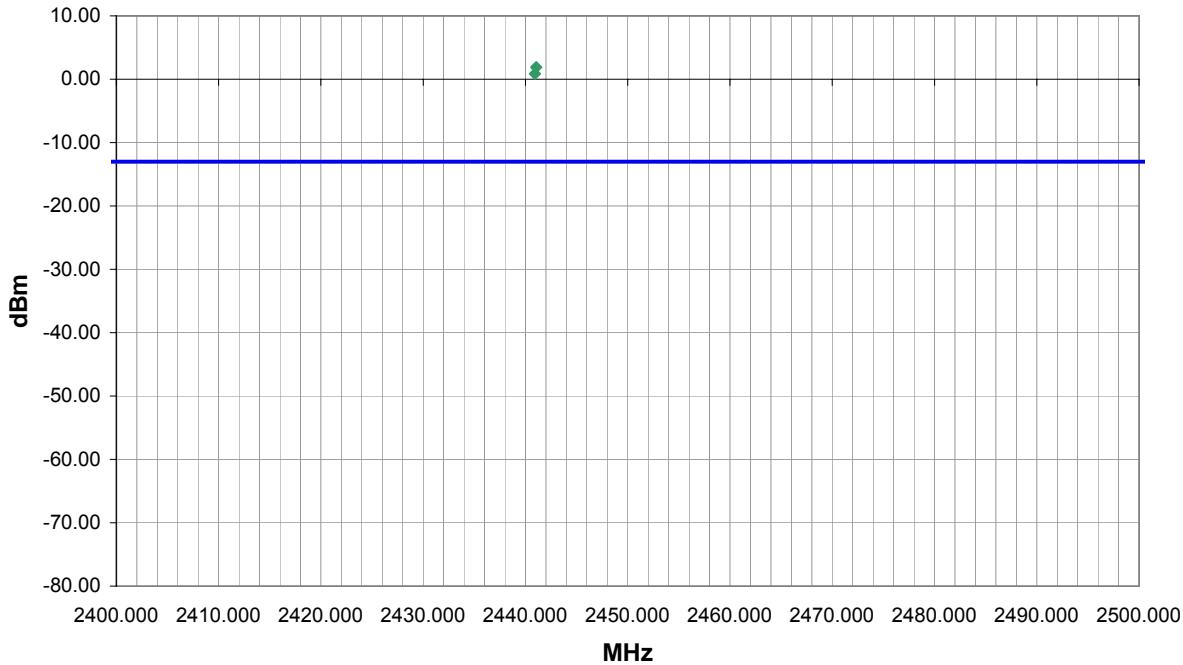
EUT OPERATING MODES

Transmitting mid channel, low diversity antenna

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1	Evaluation	Signature
Configuration #	1		
Results			



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	

NORTHWEST EMC		Antenna Gain								PSA 2007.05.07 EMI 2006.11.29		
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						
COMMENTS												
RBW=3MHz, VBW=8MHz												
EUT OPERATING MODES												
Transmitting mid channel, high diversity antenna												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #	2		Evaluation		<i>Holly Ashkannejhad</i>							
Configuration #	1											
Results												
<p>dBm</p> <p>2400.000 2410.000 2420.000 2430.000 2440.000 2450.000 2460.000 2470.000 2480.000 2490.000 2500.000</p> <p>MHz</p>												
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	