

Antenna Information

1. Antenna Specification

Transmission Antenna assembly overview

Designator	Manufacture	Antenna type	Cable type and length	Gain (dBi) Note 1)
3301BZ9078A 15 inch LCD model Main antenna	Hitachi Cable Ltd. (Japan)	Dual Band Inverted F type Antenna	coax 530mm	2400-2500MHz 0.46 dBi (peak)
				5150-5350MHz 2.98 dBi (peak)
				5470-5725MHz 2.48 dBi (peak)
				5725-5850MHz -0.49 dBi (peak)
3301BZ9079A 15 inch LCD model Auxiliary antenna	Hitachi Cable Ltd. (Japan)	Dual Band Inverted F type Antenna	coax 640mm	2400-2500MHz -1.06 dBi (peak)
				5150-5350MHz 1.96 dBi (peak)
				5470-5725MHz 2.23 dBi (peak)
				5725-5850MHz -0.12 dBi (peak)
3301BZ9076A 13/14 inch LCD model Main antenna	Hitachi Cable Ltd. (Japan)	Dual Band Inverted F type Antenna	coax 530mm	2400-2500MHz -0.37 dBi (peak)
				5150-5350MHz 1.87 dBi (peak)
				5470-5725MHz 2.85 dBi (peak)
				5725-5850MHz 0.85 dBi (peak)
3301BZ9077A 13/14 inch LCD model Auxiliary antenna	Hitachi Cable Ltd. (Japan)	Dual Band Inverted F type Antenna	coax 640mm	2400-2500MHz 0.83 dBi (peak)
				5150-5350MHz 2.91 dBi (peak)
				5470-5725MHz 1.44 dBi (peak)
				5725-5850MHz -0.94 dBi (peak)

Notes:

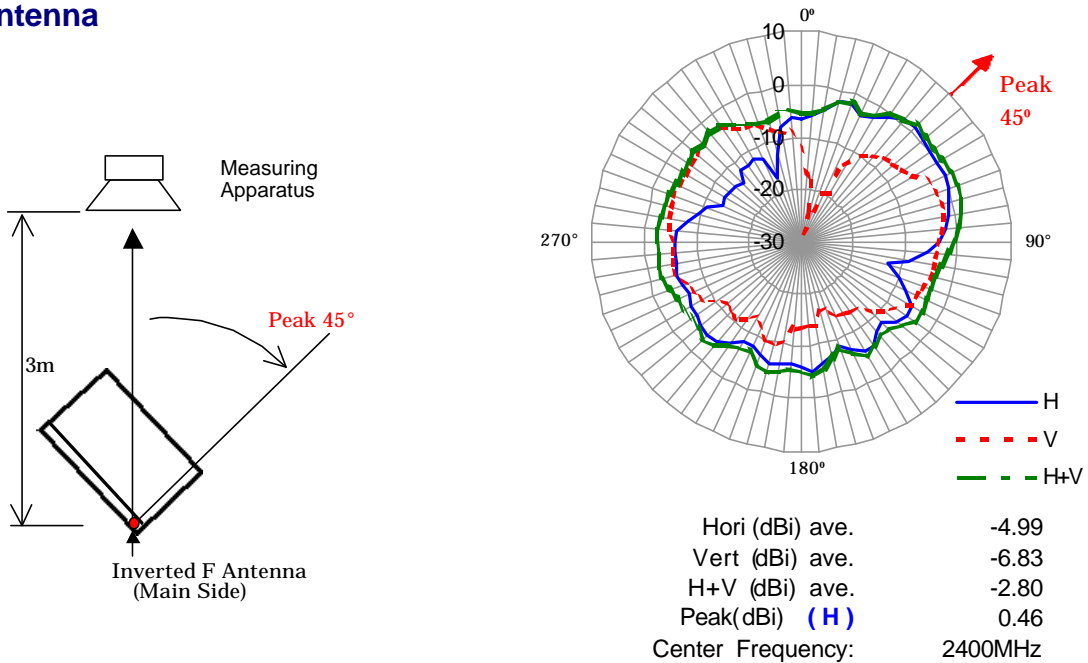
1a. Includes all cable losses.

1b. Antenna type should be Omni Directional and have gain of 3.0 dBi or less for IEEE802.11a(5GHz band) and have gain of 2.0 dBi or less for IEEE802.11b(2.4GHz band), regarding the IBM internal specification.

2. Radiation characteristic of antennas

2.1 2400-2500MHz radiation characteristic of antenna for LCD 15 inch model

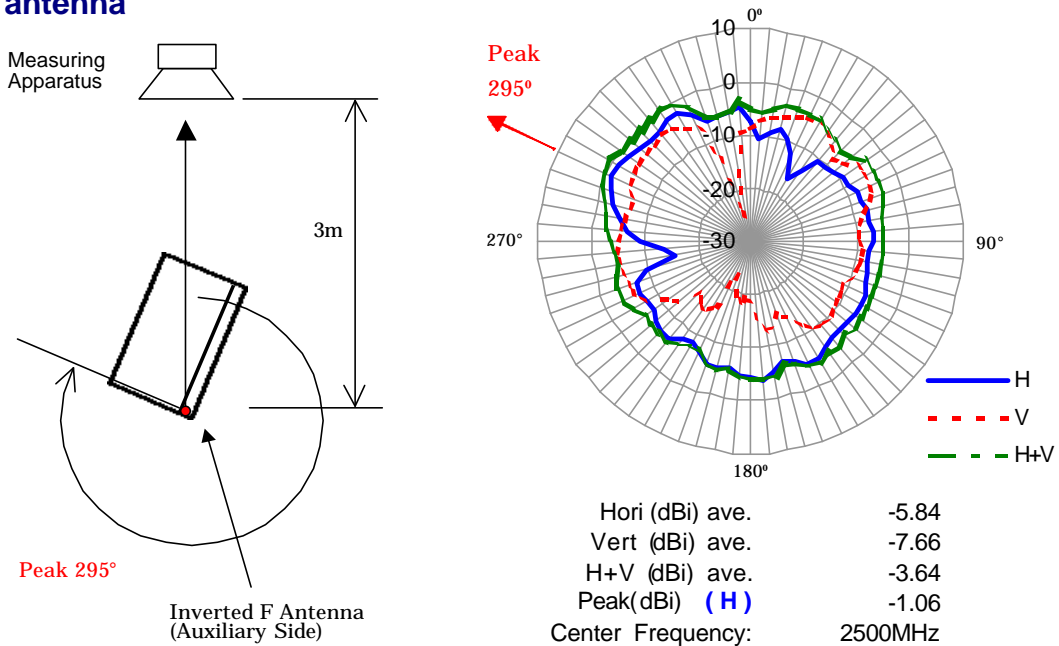
Main antenna



Note1) The measurement was performed at 3 frequencies (2400, 2450, 2500MHz).

Note2) The maximum antenna gain was found around **45 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (2400MHz).

Auxiliary antenna

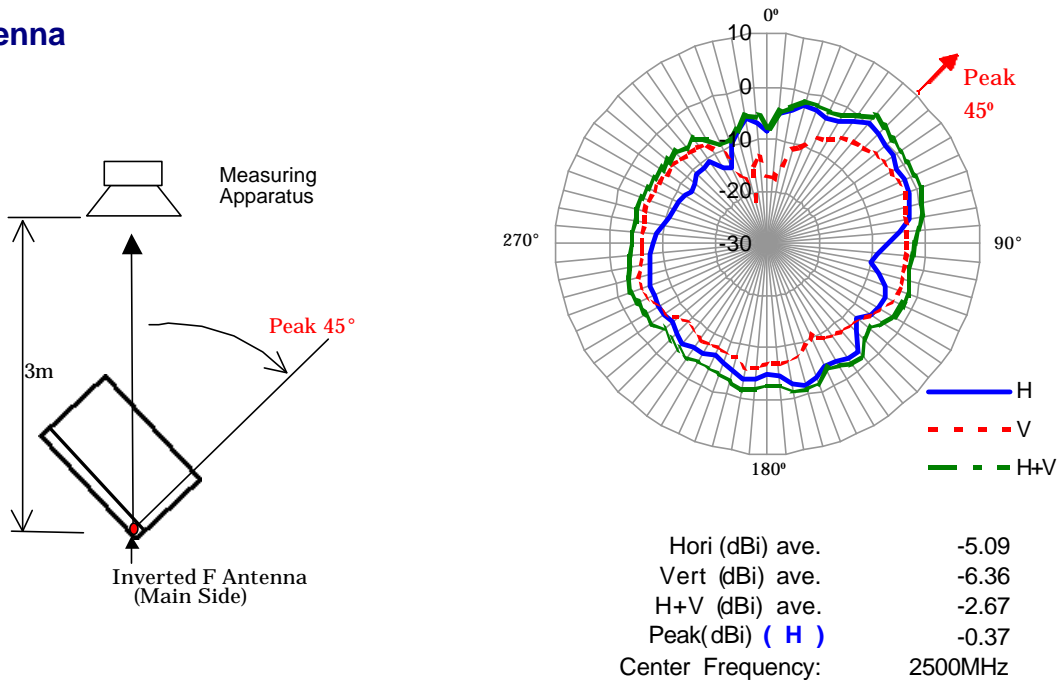


Note1) The measurement was performed at 3 frequencies (2400, 2450, 2500MHz).

Note2) The maximum antenna gain was found around **295 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (2500MHz).

2.2 2400-2500MHz radiation characteristic of antenna for LCD 13/14 inch model

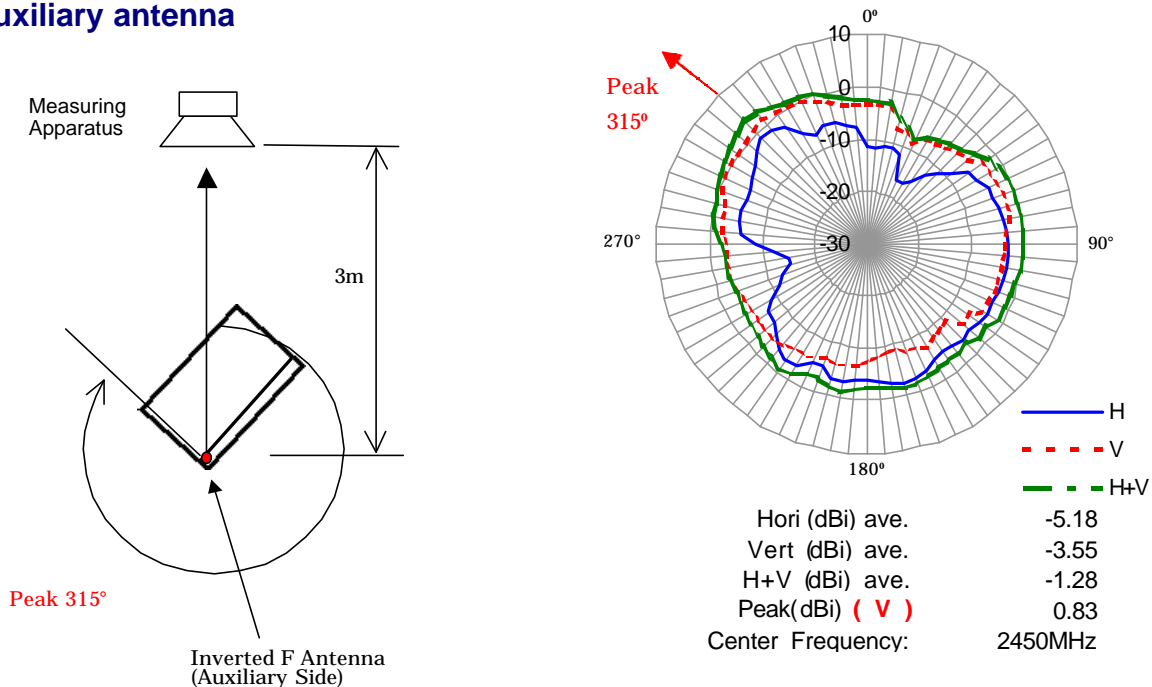
Main antenna



Note1) The measurement was performed at 3 frequencies (2400, 2450, 2500MHz).

Note2) The maximum antenna gain was found around **45 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (2500MHz).

Auxiliary antenna

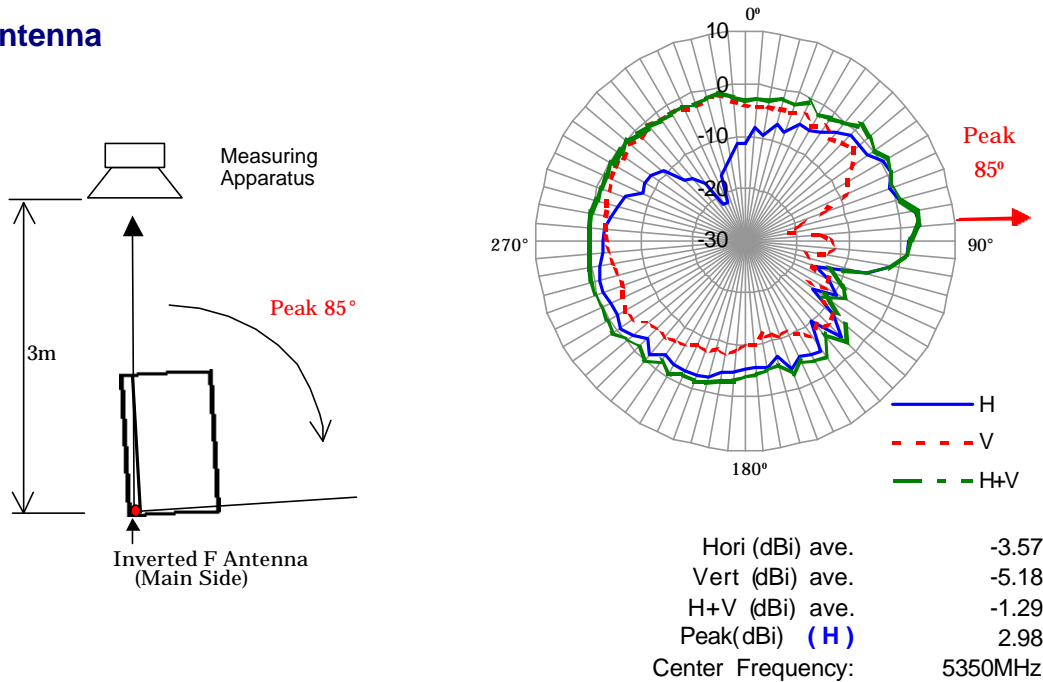


Note1) The measurement was performed at 3 frequencies (2400, 2450, 2500MHz).

Note2) The maximum antenna gain was found around **315 degree** angle from measuring apparatus in **vertical** polarization at the middle frequency (2450MHz).

2.3 5150-5350MHz radiation characteristic of antenna for LCD 15 inch model

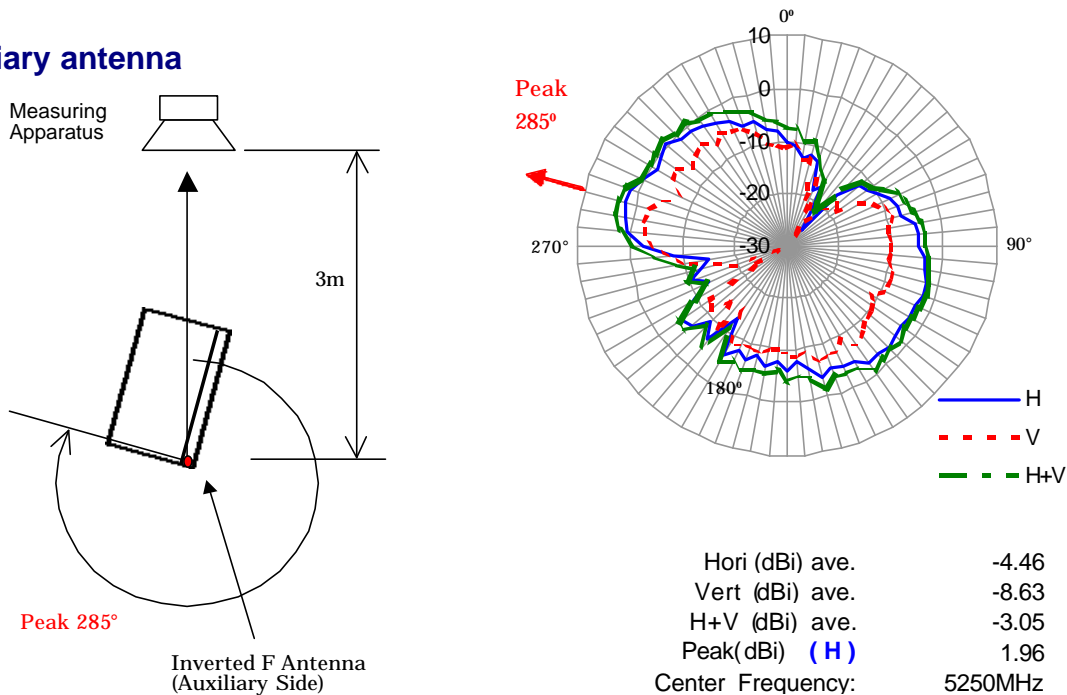
Main antenna



Note1) The measurement was performed at 3 frequencies (5150, 5250, 5350MHz).

Note2) The maximum antenna gain was found around **85 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5350MHz).

Auxiliary antenna

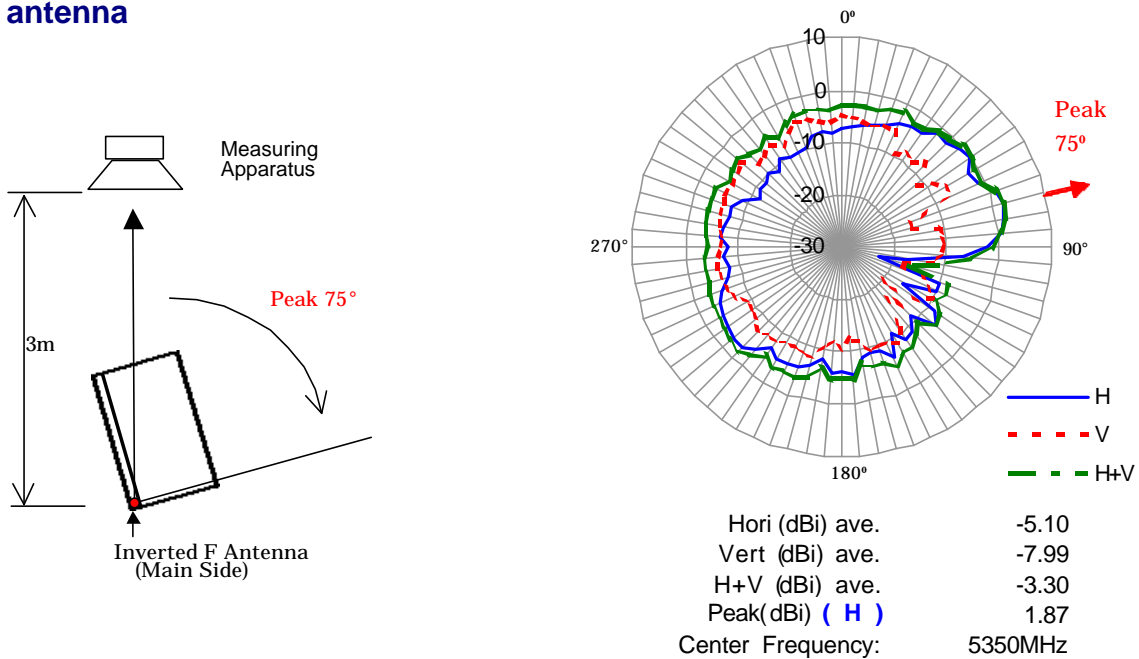


Note1) The measurement was performed at 3 frequencies (5150, 5250, 5350MHz).

Note2) The maximum antenna gain was found around **285 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5250MHz).

2.4 5150-5350MHz radiation characteristic of antenna for LCD 13/14 inch model

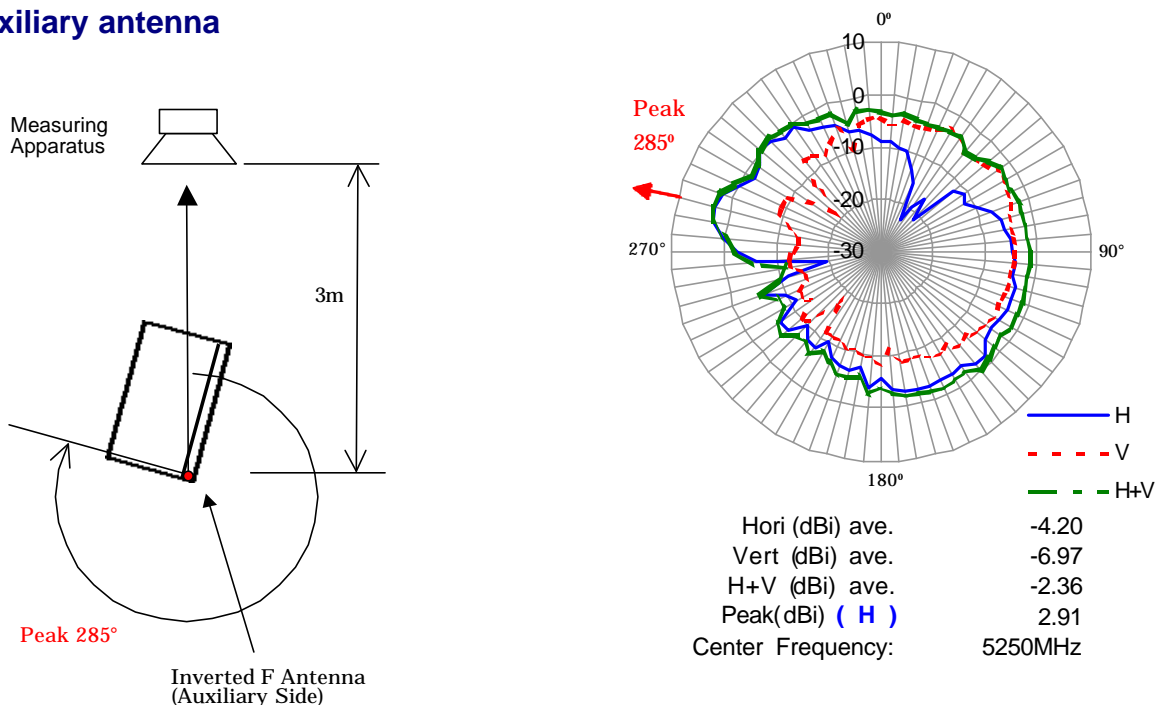
Main antenna



Note1) The measurement was performed at 3 frequencies (5150, 5250, 5350MHz).

Note2) The maximum antenna gain was found around **75 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5350MHz).

Auxiliary antenna

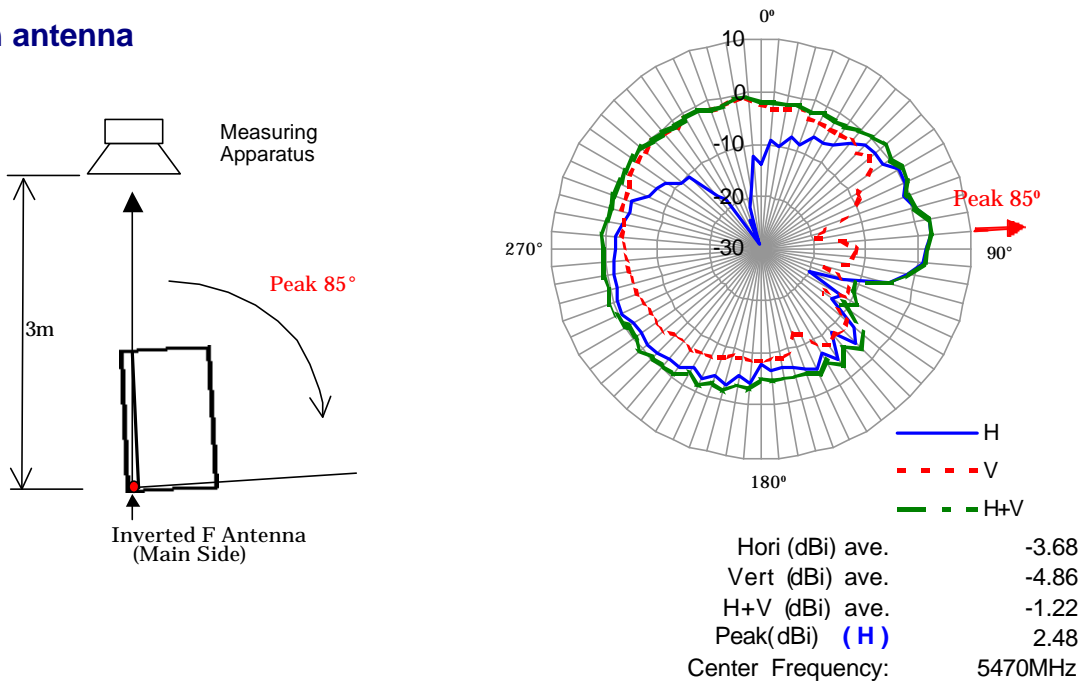


Note1) The measurement was performed at 3 frequencies (5150, 5250, 5350MHz).

Note2) The maximum antenna gain was found around **285 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5250MHz).

2.5 5470-5725MHz radiation characteristic of antenna for LCD 15 inch model

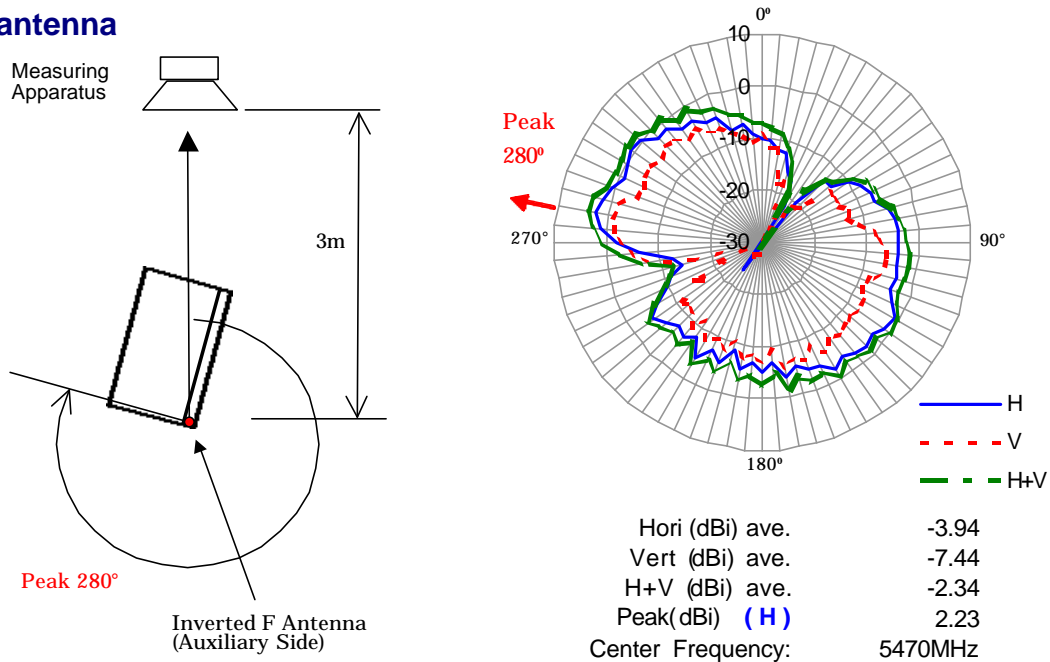
Main antenna



Note1) The measurement was performed at 3 frequencies (5470, 5600, 5725MHz).

Note2) The maximum antenna gain was found around **85 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5470MHz).

Auxiliary antenna

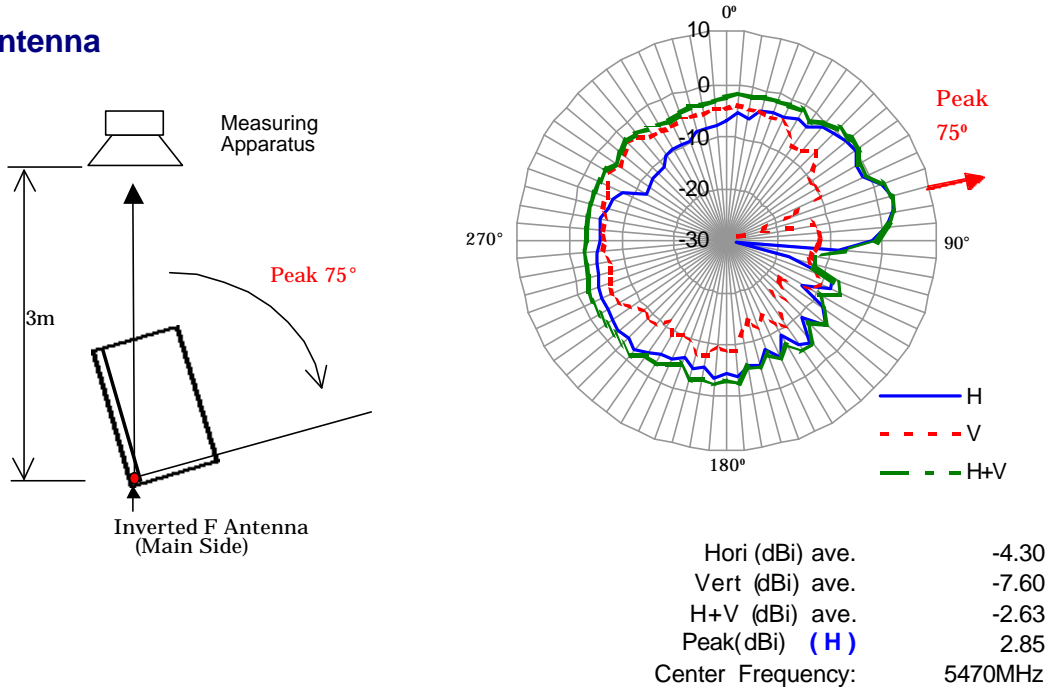


Note1) The measurement was performed at 3 frequencies (5470, 5600, 5725MHz).

Note2) The maximum antenna gain was found around **280 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5470MHz).

2.6 5470-5725MHz radiation characteristic of antenna for LCD 13/14 inch model

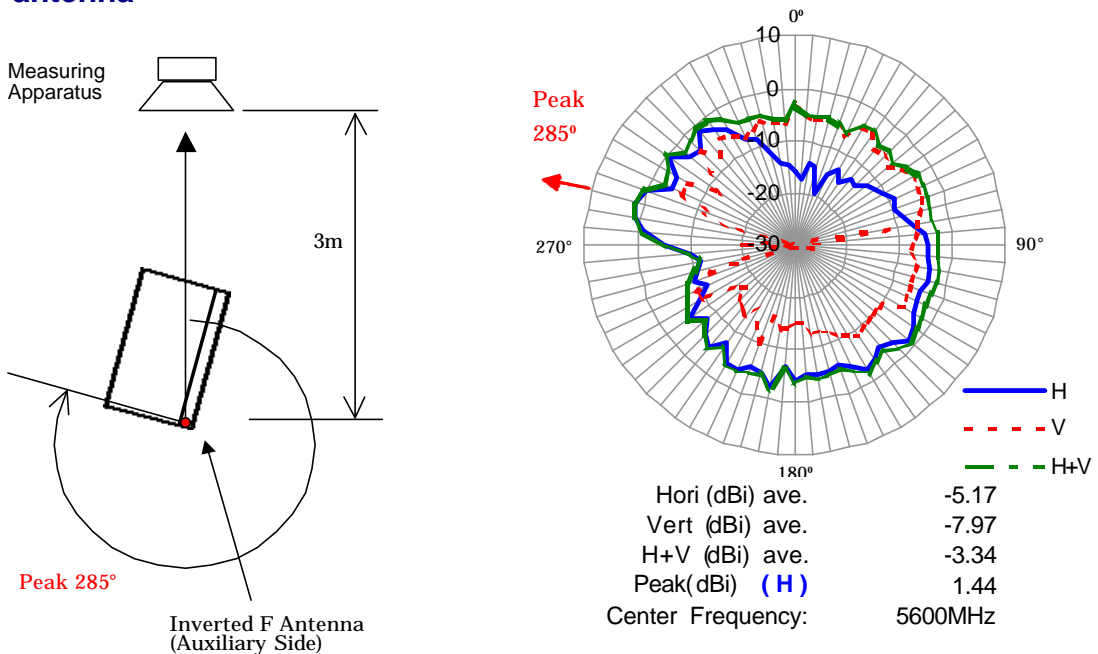
Main antenna



Note1) The measurement was performed at 3 frequencies (5470, 5600, 5725MHz).

Note2) The maximum antenna gain was found around **75 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5470MHz).

Auxiliary antenna

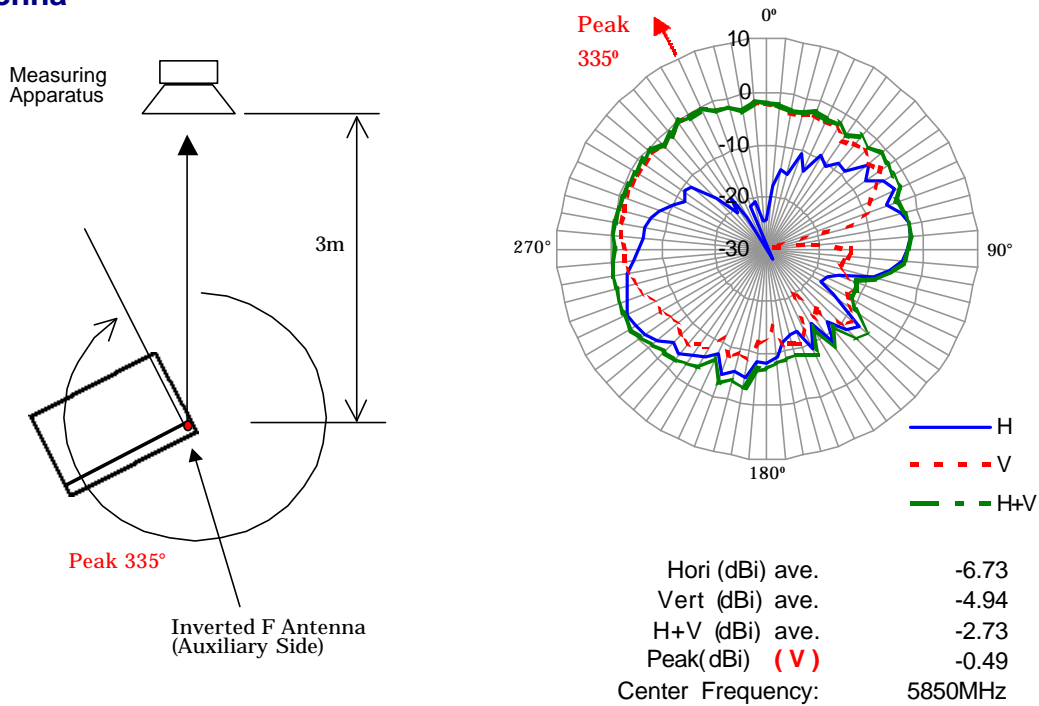


Note1) The measurement was performed at 3 frequencies (5470, 5600, 5725MHz).

Note2) The maximum antenna gain was found around **285 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5600MHz).

2.7 5725-5850MHz radiation characteristic of antenna for LCD 15 inch model

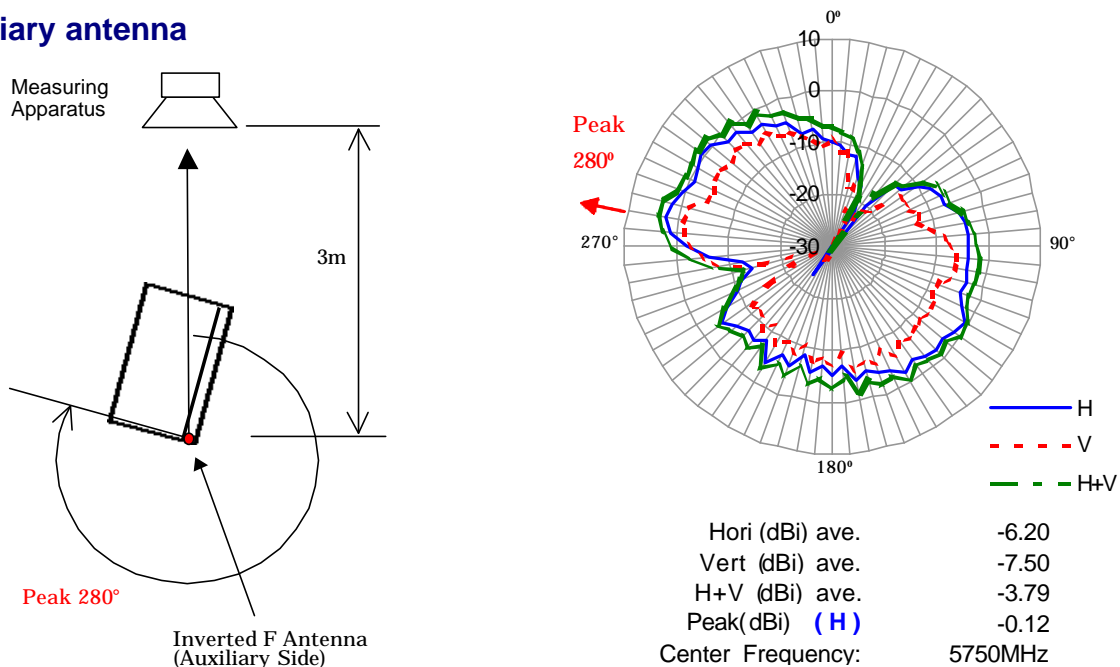
Main antenna



Note1) The measurement was performed at 4 frequencies (5725, 5750, 5800, 5850MHz).

Note2) The maximum antenna gain was found around **335 degree** angle from measuring apparatus in **vertical** polarization at the middle frequency (5850MHz).

Auxiliary antenna

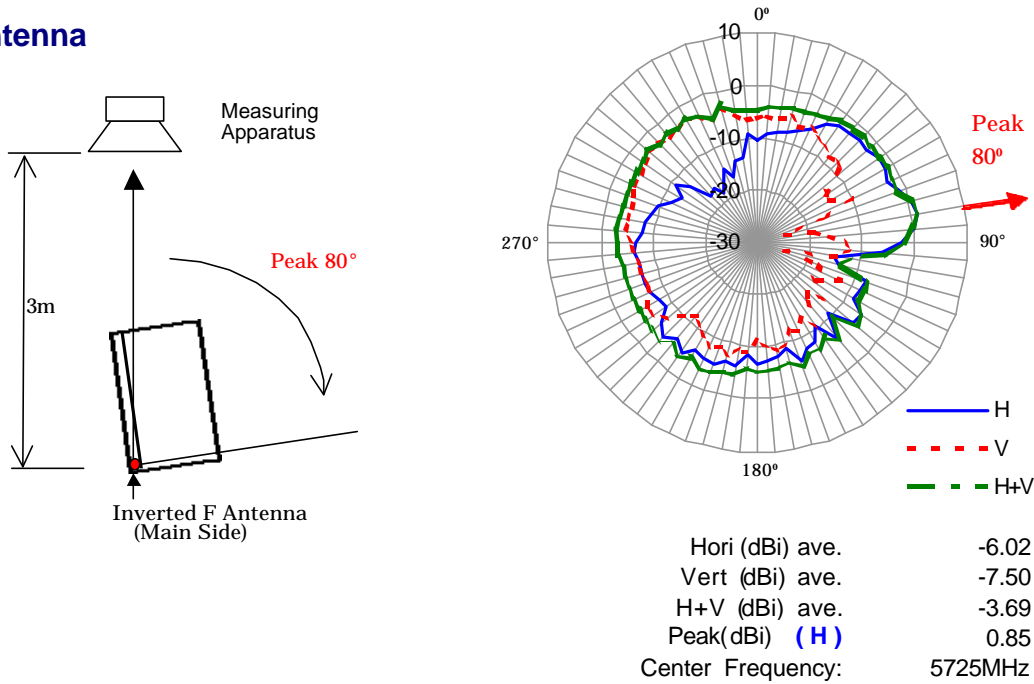


Note1) The measurement was performed at 4 frequencies (5725, 5750, 5800, 5850MHz).

Note2) The maximum antenna gain was found around **280 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5750MHz).

2.8 5725-5850MHz radiation characteristic of antenna for LCD 13/14 inch model

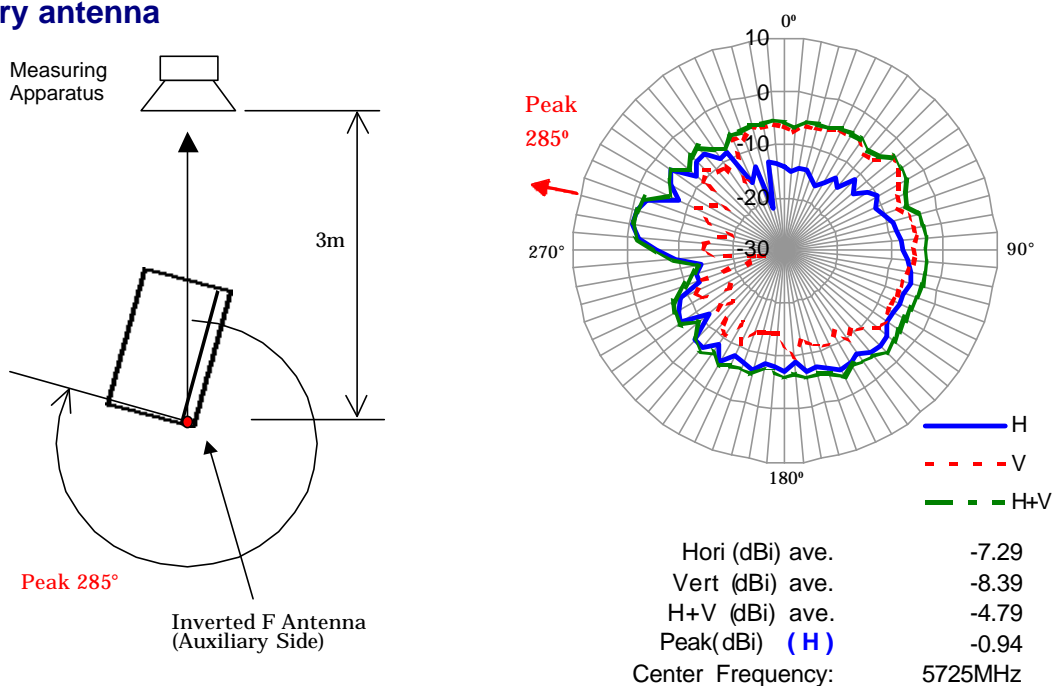
Main antenna



Note1) The measurement was performed at 4 frequencies (5725, 5750, 5800, 5850MHz).

Note2) The maximum antenna gain was found around **80 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5725MHz).

Auxiliary antenna

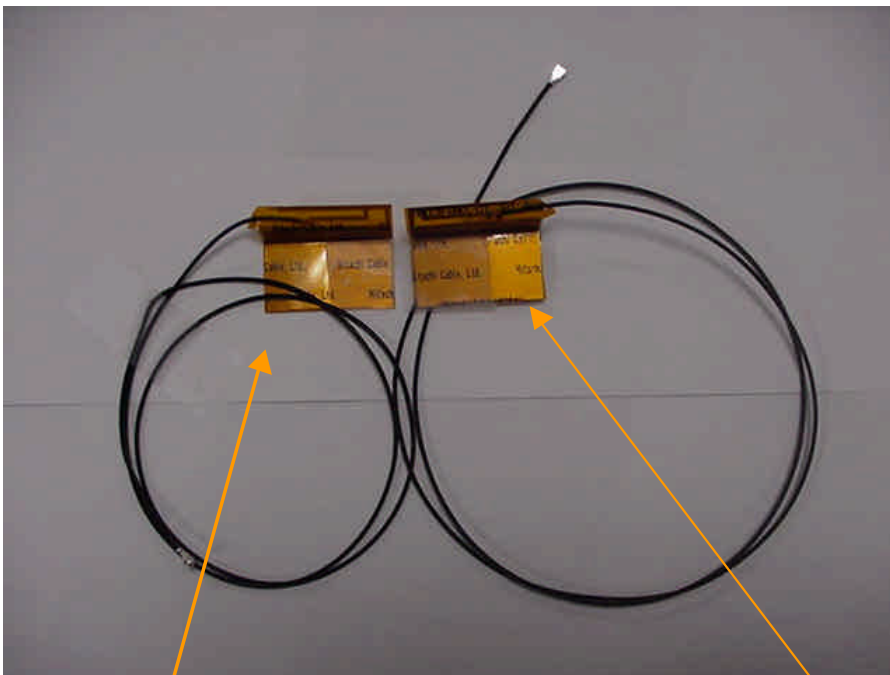
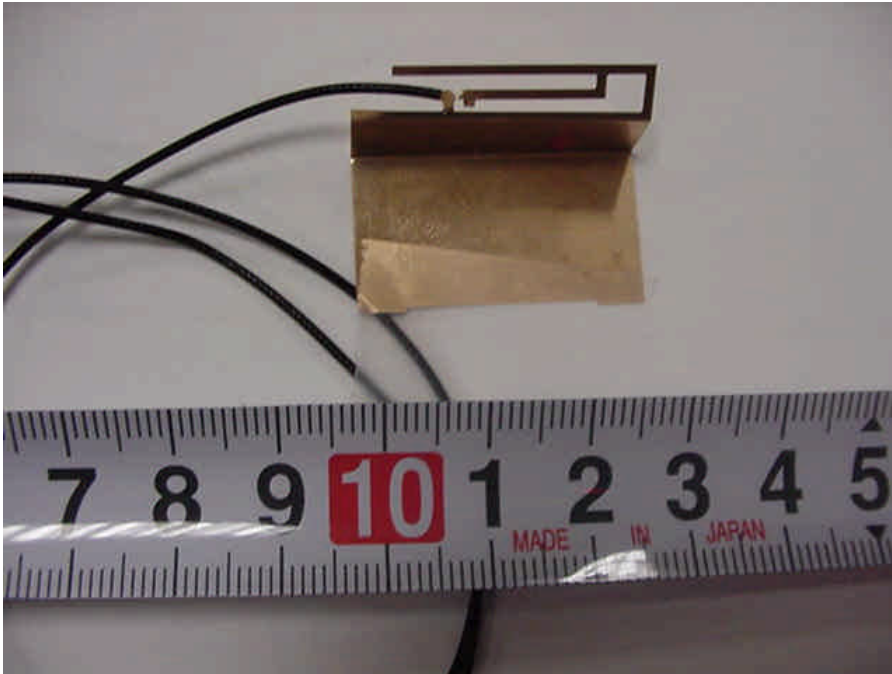


Note1) The measurement was performed at 4 frequencies (5725, 5750, 5800, 5850MHz).

Note2) The maximum antenna gain was found around **285 degree** angle from measuring apparatus in **horizontal** polarization at the middle frequency (5725MHz).

5. Exterior Photos of Antennas

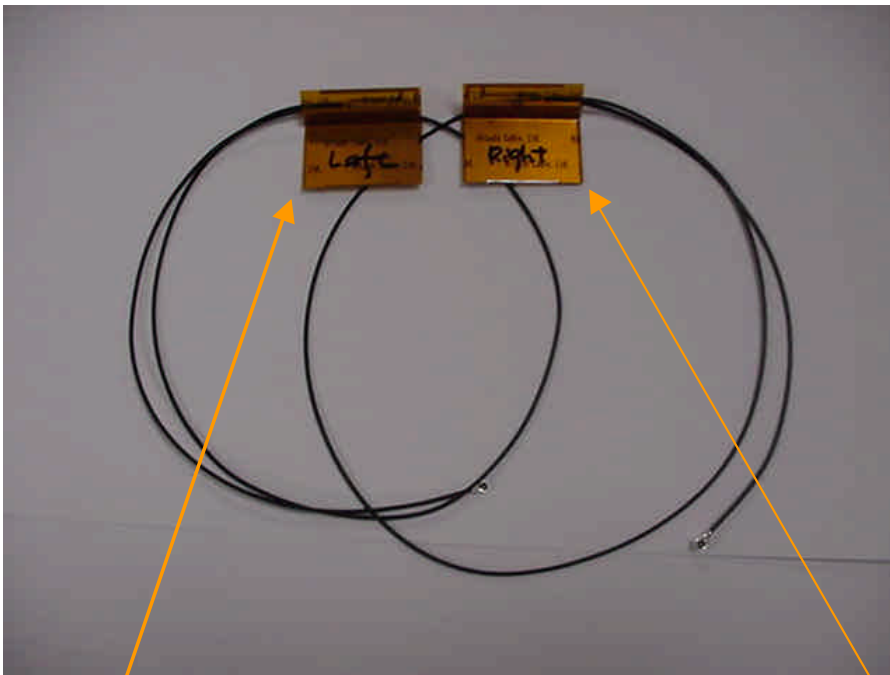
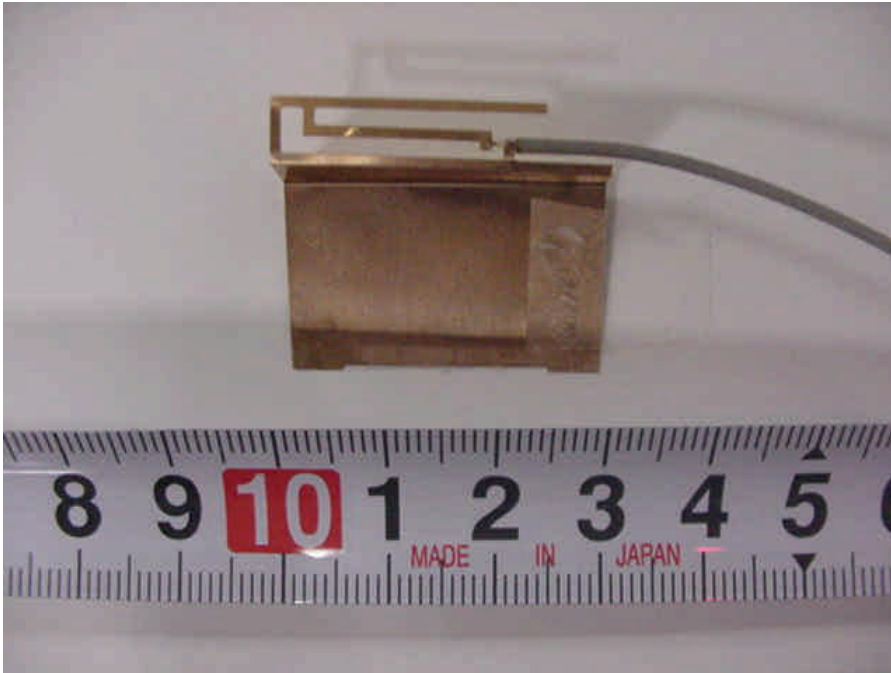
5.1 LCD 15 inch Model



Main Antenna (Left)
Manufacturer: Hitachi Cable Ltd.
Parts Number: 3301BZ9078A
Dual Band Inverted-F type antenna
Cable : coax 530 mm

Auxiliary Antenna (Right)
Manufacturer: Hitachi Cable Ltd.
Parts Number: 3301BZ9079A
Dual Band Inverted-F type antenna
Cable : coax 640 mm

5.2 LCD 13/14 inch Model Main Antenna



Main Antenna (Left)
Manufacturer: Hitachi Cable Ltd.
Parts Number: 3301BZ9076A
Dual Band Inverted-F type antenna
Cable : coax 530 mm

Auxiliary Antenna (Right)
Manufacturer: Hitachi Cable Ltd.
Parts Number: 3301BZ9077A
Dual Band Inverted-F type antenna
Cable : coax 640 mm