Regulatory WLAN Antenna Information
HTL017

Intel Corporation

Antenna Sample / Antenna Data
Requirements for worldwide regulatory approval

Section	Description of Required OEM / ODM Antenna Information	US / IC	EU	Japan	Taiwan	Korea
1A	Part Number for Antenna only	Required	Required	Required	Required	Required
1B	Antenna Manufacturer Name	Required	Required	Required	Required	Required
1C	Description of Antenna Type	Required	N/A	N/A	N/A	N/A
1D	Part number of Antenna Assembly / cable impedance, length & diameter.	Required	Desired	Desired	Desired	Desired
1E	Main & Aux antenna (Peak Gain W/ cable loss)	Required	Required	Required	Required	Required
	1E OR 1F, 1G, 1H					
1F	Main & Aux antenna (Peak Gain only)	Required	Required	Required	Required	Required
1G	VSWR of cable including connector	Required	Required	Required	Required	Required
1H	Main & Aux antenna (Cable loss W/ connector)	Required	Required	Required	Required	Required
2	Dimensioned Photographs or Drawings of main & auxiliary antennas	Required	Required	Required	Required	Required
3	Radiation patterns of antennas loaded in the host platform.	Required	Desired	Required	N/A	Required
4	Platform model name / number - correlated to antenna manufacturer and antenna part number	Required	Required	Desired	Required	Desired
5	Photograph(s) or Drawings showing location of antennas in platform.	Required	Required	Desired	Required	Desired
6	Mech. drawings / photos with dimensions of antenna locations and distance from end-user (For evaluation of SAR testing requirement).	Required	N/A	N/A	N/A	N/A
7	Photograph(s) or Drawings showing the location of all antennas (WLAN, BT, other) and distance between those transmitting antennas. Information will be used to evaluate whether co-location testing is required.	Required	N/A	N/A	N/A	N/A

Antenna Information

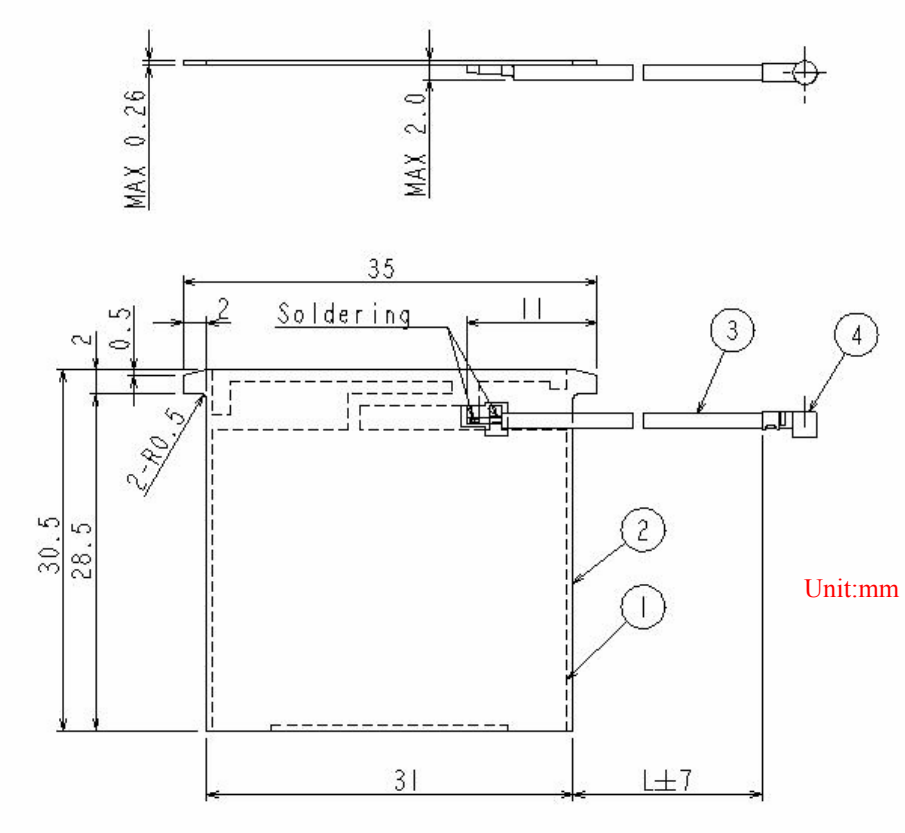
Section 1. Antenna Assembly Specifications

Antenna Assembly Summary:

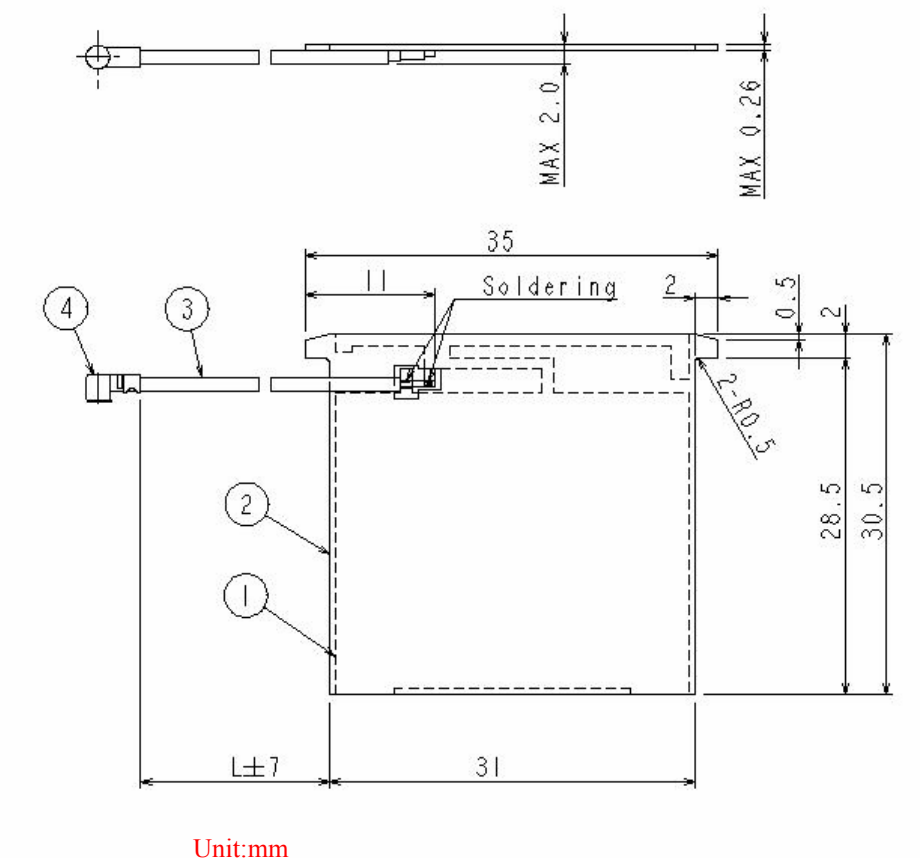
1A Antenna Part Number	1B Manufacture	1C Antenna Type	1D Cable Assembly Part Number and Information	1E Peak Gain W/ Cable loss (dBi)	1F Peak Gain w/o Cable Loss (dBi)	1G VSWR	1H Cable Loss (dBi)
HTL017	Hitachi Cable, Ltd.	2.4GHzPIFA 5GHz:PIFA	P/N: HTL017 50 ohm Coaxial. length: 306mm diameter: 1.0mm Connector: IPEX	2400-2500MHz -1.36 dBi (peak)	2400-2500MHz -0.50 dBi (peak)	2400-2500MHz 1.30 max	2400-2500MHz 0.86 dBi (peak)
				5150-5350MHz 1.00 dBi (peak)	5150-5350MHz 2.26 dBi (peak)	5150-5350MHz 1.30 max	5150-5350MHz 1.26 dBi (peak)
				5470-5725MHz 2.92 dBi (peak)	5470-5725MHz 4.18 dBi (peak)	5470-5725MHz 1.30 max	5470-5725MHz 1.26 dBi (peak)
				5725-5850MHz 1.97 dBi (peak)	5725-5850MHz 3.23 dBi (peak)	5725-5850MHz 1.30 max	5725-5850MHz 1.26 dBi (peak)
HTL017	Hitachi Cable, Ltd.	2.4GHz:PIFA 5GHzPIFA	P/N: HTL017 50 ohm Coaxial. length: 306mm diameter: 1.0mm Connector: IPEX	2400-2500MHz -1.27 dBi (peak)	2400-2500MHz -0.41 dBi (peak)	2400-2500MHz 1.30 max	2400-2500MHz 0.86 dBi (peak)
				5150-5350MHz -0.74 dBi (peak)	5150-5350MHz 0.52 dBi (peak)	5150-5350MHz 1.30 max	5150-5350MHz 1.26 dBi (peak)
				5470-5725MHz -0.36 dBi (peak)	5470-5725MHz 0.90 dBi (peak)	5470-5725MHz 1.30 max	5470-5725MHz 1.26 dBi (peak)
				5725-5850MHz -0.21 dBi (peak)	5725-5850MHz 1.05 dBi (peak)	5725-5850MHz 1.30 max	5725-5850MHz 1.26 dBi (peak)

Section 2. Dimensioned Photos or Drawings of Antennas

Include a dimensioned photo or dimensioned drawing of main antenna here.



Include a dimensioned photo or dimensioned drawing of aux antenna here.



Unit:mm

Section 3. Radiation characteristics of antennae Loaded in Host Platform

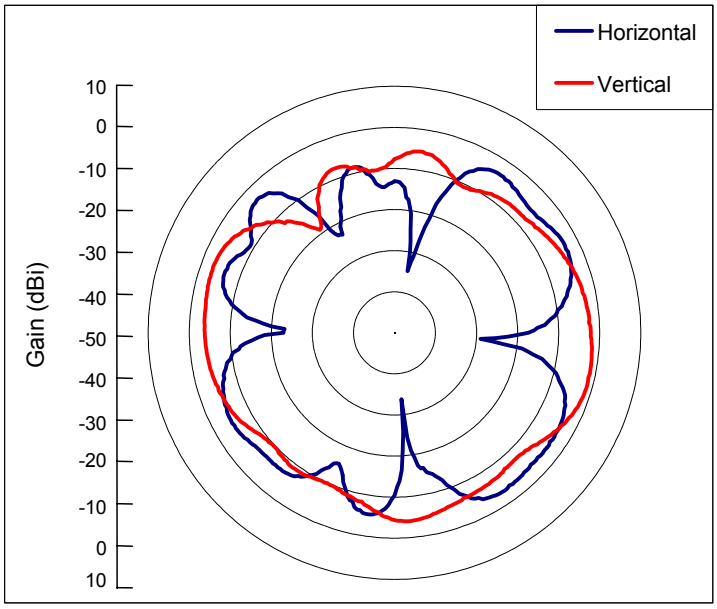
2400-2500MHz radiation characteristic

Main antenna: 2400 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−9.50	−6.58
MAX	−3.19	−1.36

(dBi)



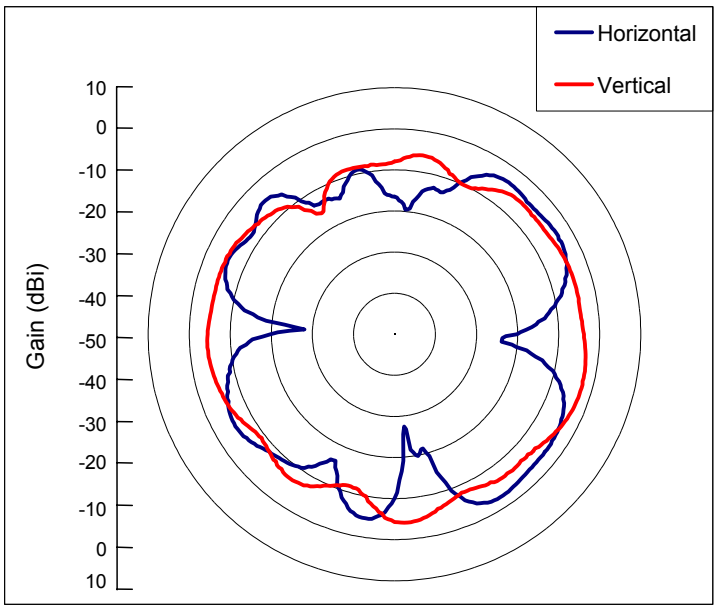
Center Frequency	2400 MHz
Horizontal (dBi) peak	-3.19
Vertical (dBi) peak	-1.36
Horz+Vert (dBi) peak	-1.36

Main antenna: 2450 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−9.45	−6.59
MAX	−2.66	−2.56

(dBi)



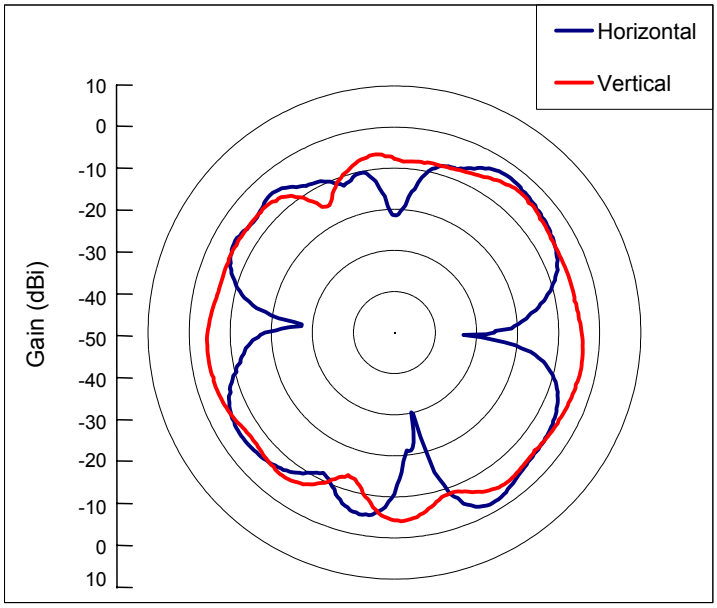
Center Frequency	2450 MHz
Horizontal (dBi) peak	-2.66
Vertical (dBi) peak	-2.56
Horz+Vert (dBi) peak	-2.56

Main antenna: 2500 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−9.51	−6.38
MAX	−2.12	−3.72

(dBi)



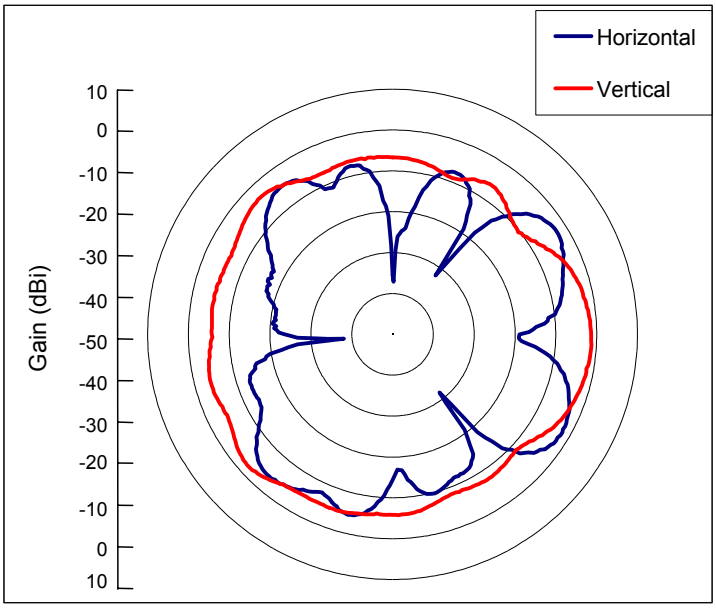
Center Frequency	**2500 MHz**
Horizontal (dBi) peak	**-2.12**
Vertical (dBi) peak	**-3.72**
Horz+Vert (dBi) peak	**-2.12**

Auxiliary antenna: 2400 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-11.37	-5.53
MAX	-2.03	-1.27

(dBi)



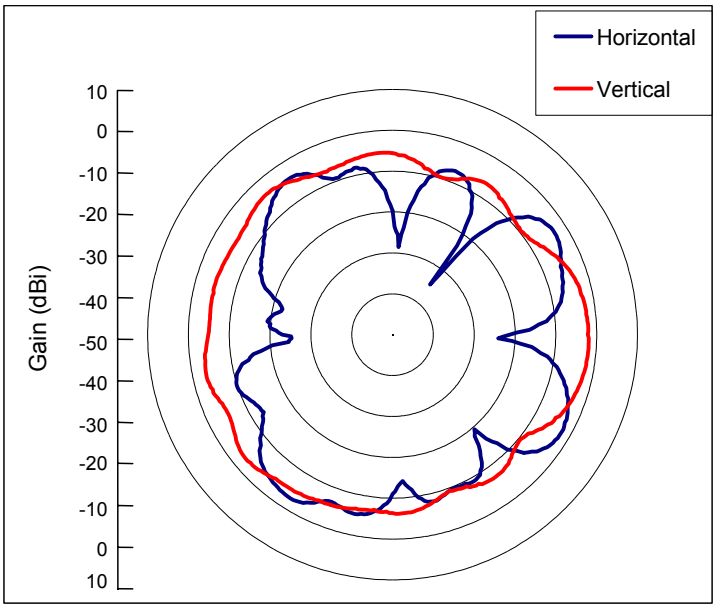
Center Frequency	2400 MHz
Horizontal (dBi) peak	-2.03
Vertical (dBi) peak	-1.27
Horz+Vert (dBi) peak	-1.27

Auxiliary antenna: 2450 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−10.36	−5.73
MAX	−2.22	−1.93

(dBi)



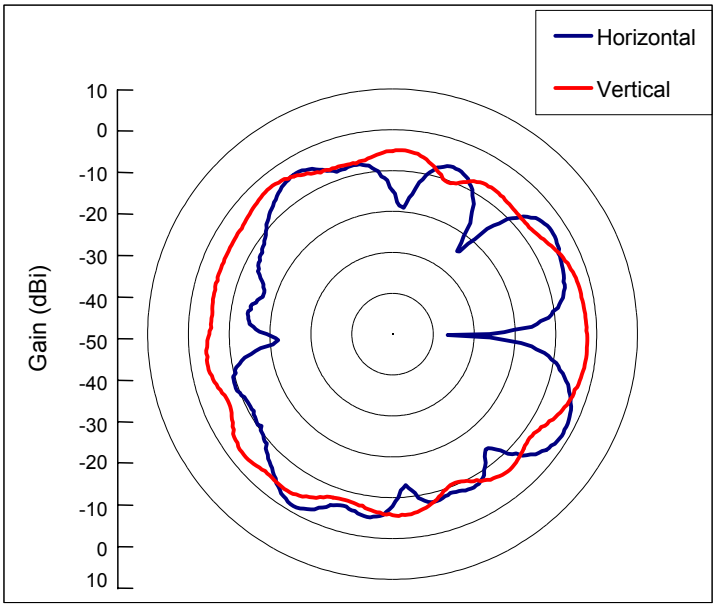
Center Frequency	2450 MHz
Horizontal (dBi) peak	-2.22
Vertical (dBi) peak	-1.93
Horz+Vert (dBi) peak	-1.93

Auxiliary antenna: 2500 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−9.34	−5.66
MAX	−1.50	−2.26

(dBi)



Center Frequency	2500 MHz
Horizontal (dBi) peak	-1.50
Vertical (dBi) peak	-2.26
Horz+Vert (dBi) peak	-1.50

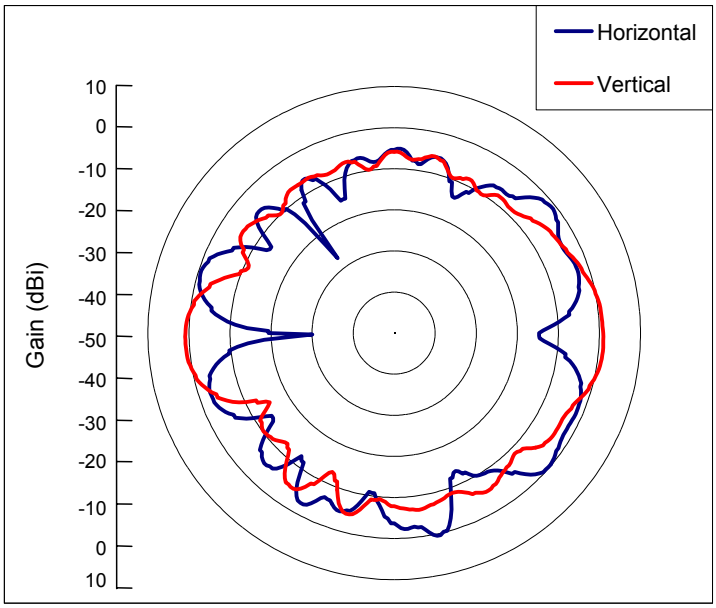
5150-5350 MHz radiation characteristic

Main antenna: 5150 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-6.64	-6.01
MAX	0.43	1.00

(dBi)



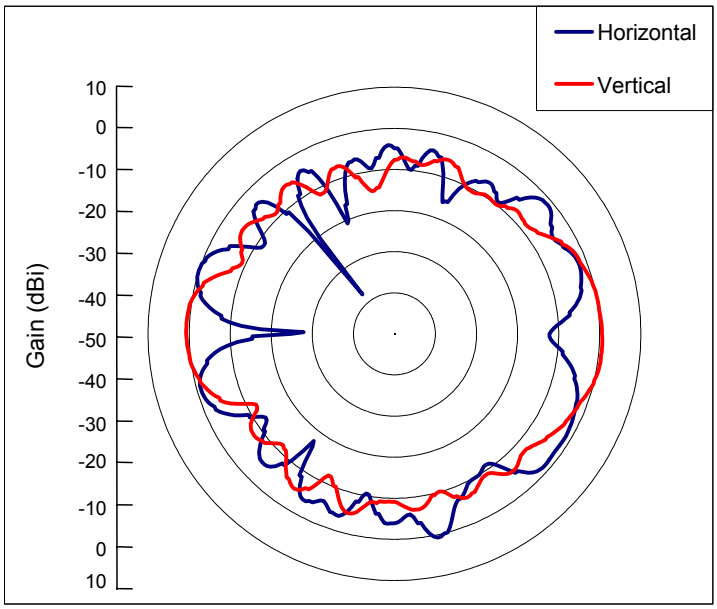
Center Frequency	5150 MHz
Horizontal (dBi) peak	0.43
Vertical (dBi) peak	1.00
Horz+Vert (dBi) peak	1.00

Main antenna: 5250 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-6.42	-6.11
MAX	0.67	0.73

(dBi)

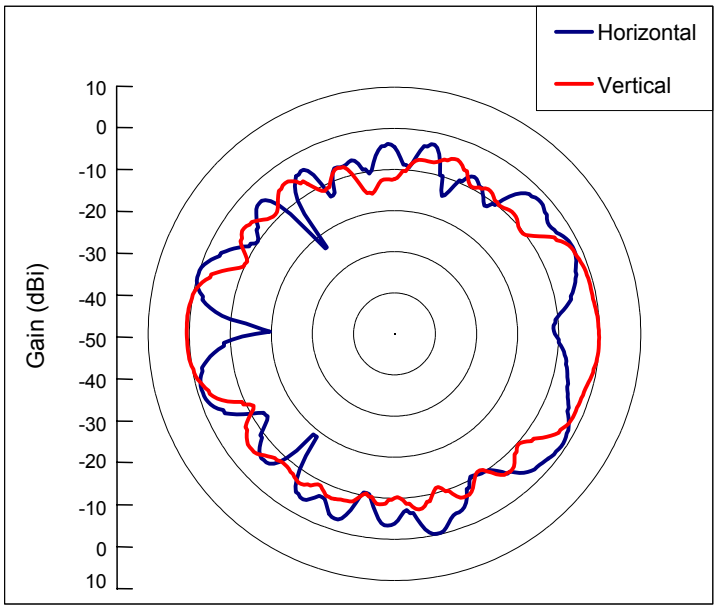


Center Frequency	5250 MHz
Horizontal (dBi) peak	0.67
Vertical (dBi) peak	0.73
Horz+Vert (dBi) peak	0.73

Main antenna: 5350 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−6.31	−6.27
MAX	−0.02	0.62 (dBi)



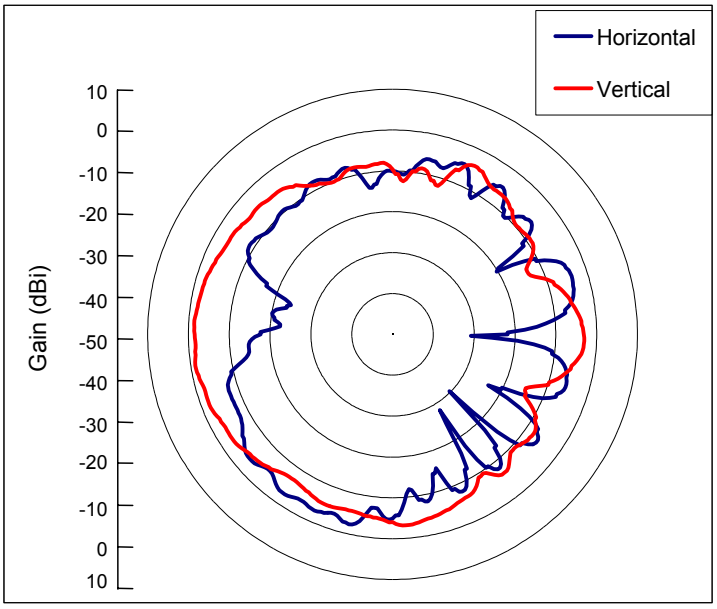
Center Frequency	5350 MHz
Horizontal (dBi) peak	-0.02
Vertical (dBi) peak	0.62
Horz+Vert (dBi) peak	0.62

Auxiliary antenna: 5150 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-9.74	-6.26
MAX	-2.35	-1.12

(dBi)



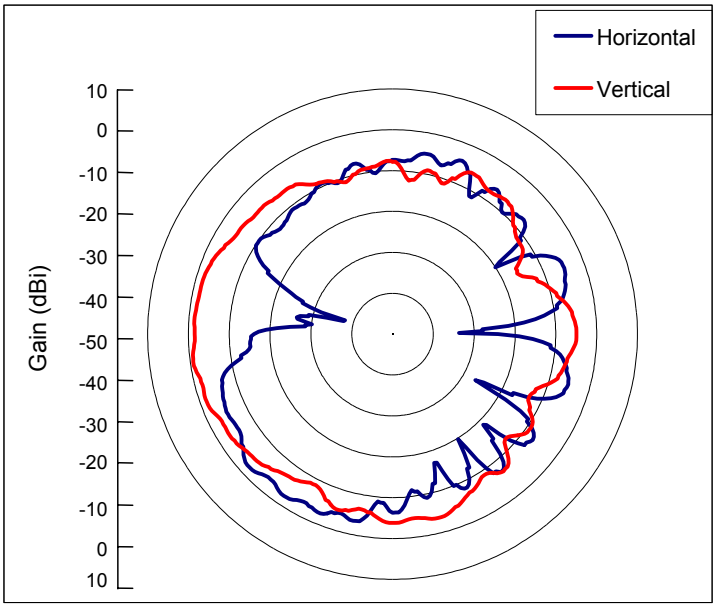
Center Frequency	5150 MHz
Horizontal (dBi) peak	-2.35
Vertical (dBi) peak	-1.12
Horz+Vert (dBi) peak	-1.12

Auxiliary antenna: 5250 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−10.18	−6.81
MAX	−2.18	−0.74

(dBi)



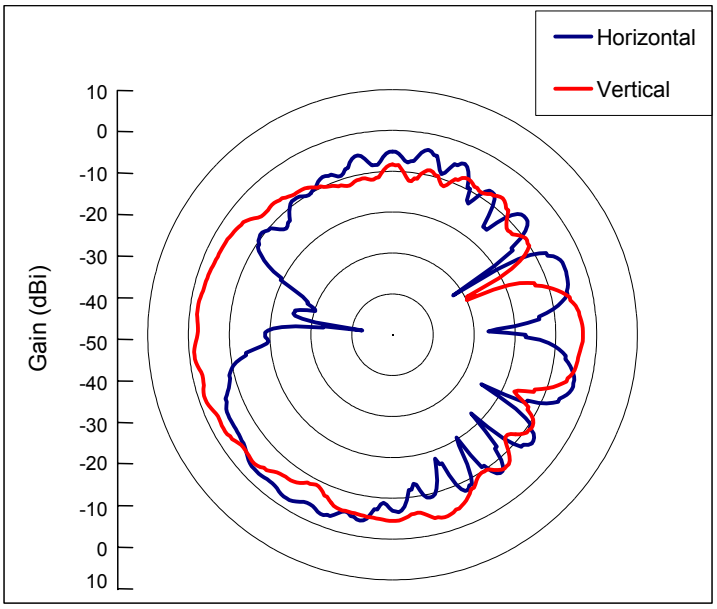
Center Frequency	5250 MHz
Horizontal (dBi) peak	-2.18
Vertical (dBi) peak	-0.74
Horz+Vert (dBi) peak	-0.74

Auxiliary antenna: 5350 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−10.14	−7.18
MAX	−2.32	−1.23

(dBi)



Center Frequency	5350 MHz
Horizontal (dBi) peak	-2.32
Vertical (dBi) peak	-1.23
Horz+Vert (dBi) peak	-1.23

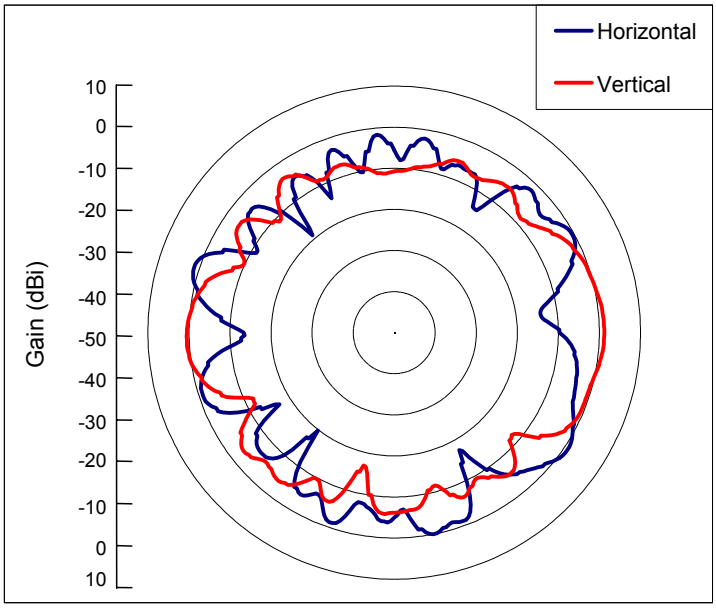
5470-5725MHz radiation characteristic

Main antenna: 5470 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-5.82	-5.66
MAX	1.25	1.20

(dBi)



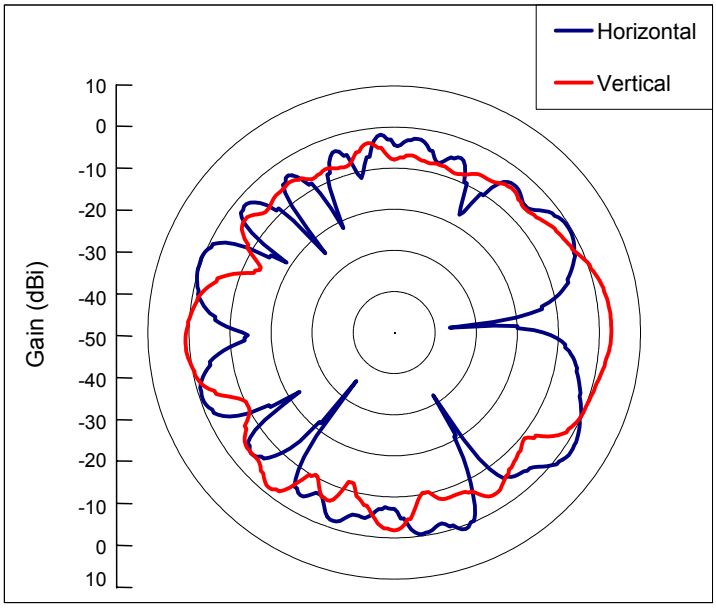
Center Frequency	5470 MHz
Horizontal (dBi) peak	1.25
Vertical (dBi) peak	1.20
Horz+Vert (dBi) peak	1.20

Main antenna: 5597.5 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-5.97	-4.76
MAX	1.93	2.92

(dBi)



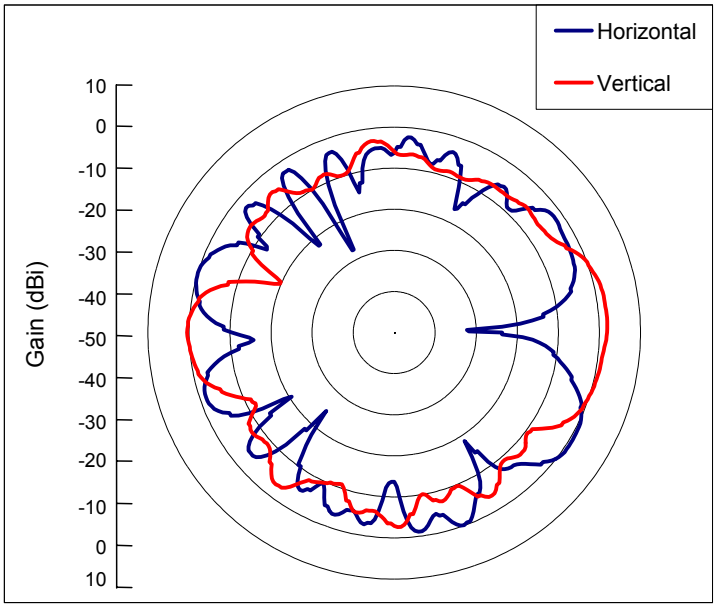
Center Frequency	5597.5 MHz
Horizontal (dBi) peak	1.93
Vertical (dBi) peak	2.92
Horz+Vert (dBi) peak	2.92

Main antenna: 5725 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-6.79	-5.72
MAX	0.70	1.97

(dBi)



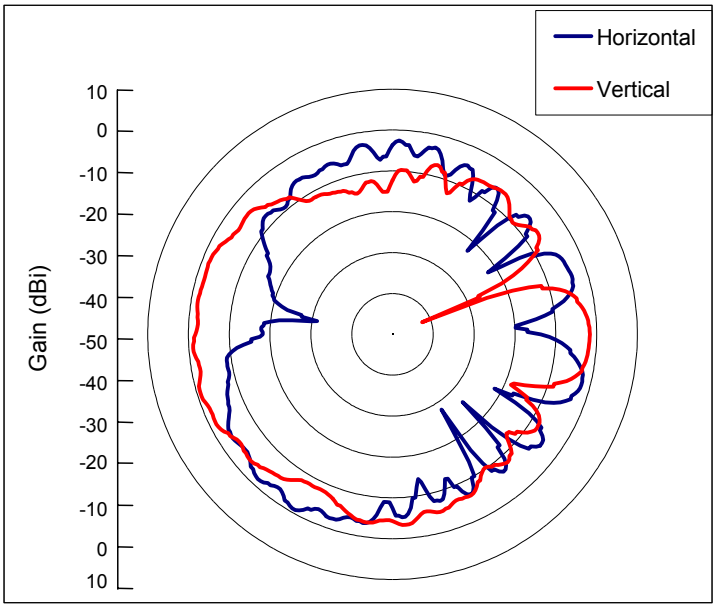
Center Frequency	5725 MHz
Horizontal (dBi) peak	0.70
Vertical (dBi) peak	1.97
Horz+Vert (dBi) peak	1.97

Auxiliary antenna: 5470 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-8.52	-7.00
MAX	-0.86	-0.82

(dBi)



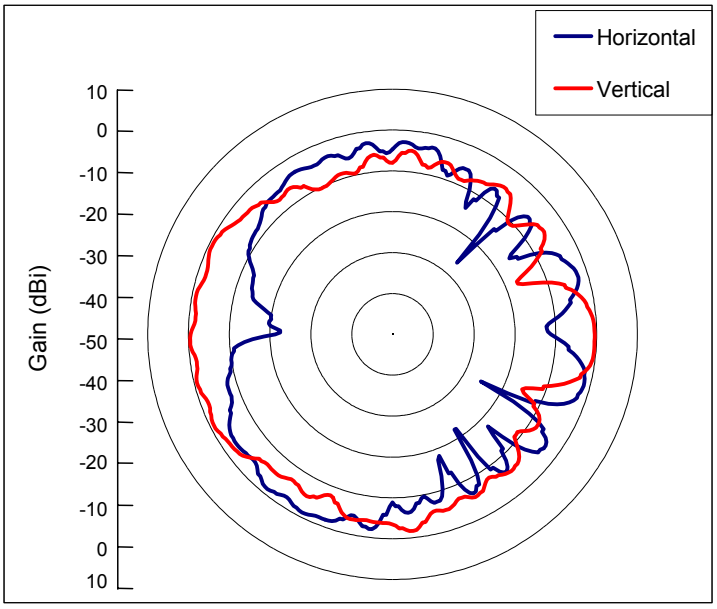
Center Frequency	5470 MHz
Horizontal (dBi) peak	-0.86
Vertical (dBi) peak	-0.82
Horz+Vert (dBi) peak	-0.82

Auxiliary antenna: 5597.5 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-7.47	-5.40
MAX	-1.16	-0.42

(dBi)



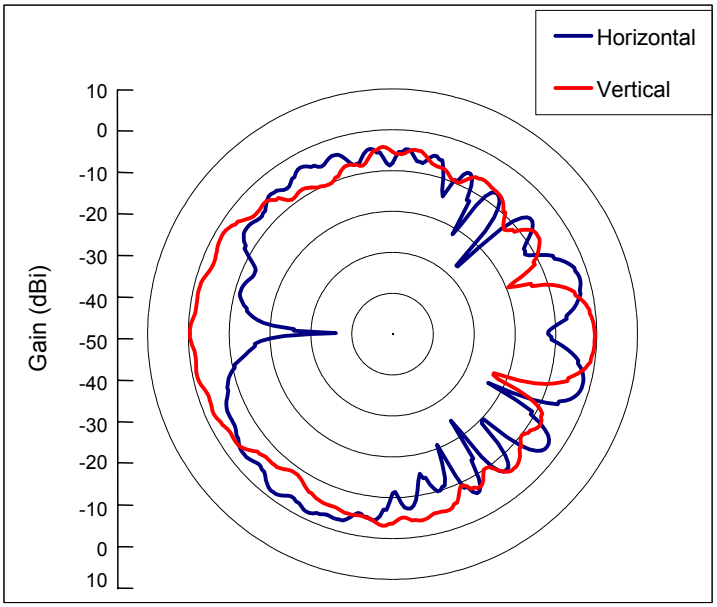
Center Frequency	5597.5 MHz
Horizontal (dBi) peak	-1.16
Vertical (dBi) peak	-0.42
Horz+Vert (dBi) peak	-0.42

Auxiliary antenna: 5725 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−8.06	−6.01
MAX	−1.56	−0.36

(dBi)



Center Frequency	5725 MHz
Horizontal (dBi) peak	-1.56
Vertical (dBi) peak	-0.36
Horz+Vert (dBi) peak	-0.36

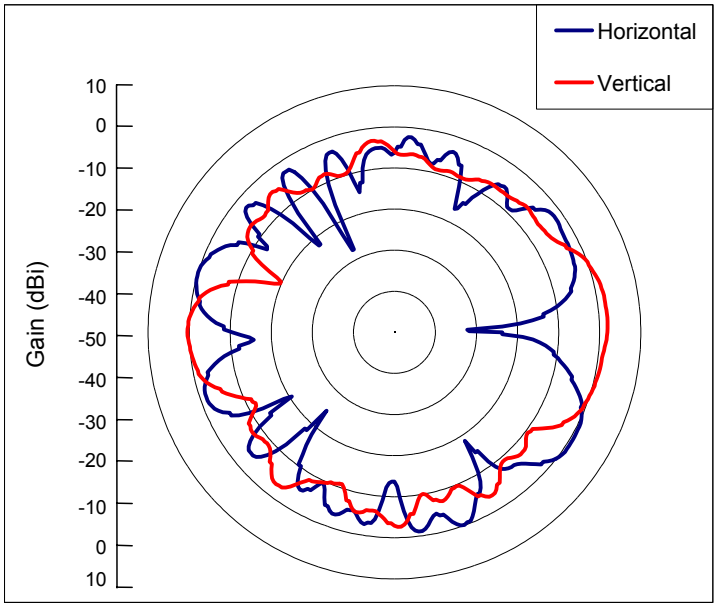
5725-5850 MHz radiation characteristic

Main antenna: 5725 MHz

<Average Gain>

	Horizontal	Vertical
AVG	-6.79	-5.72
MAX	0.70	1.97

(dBi)



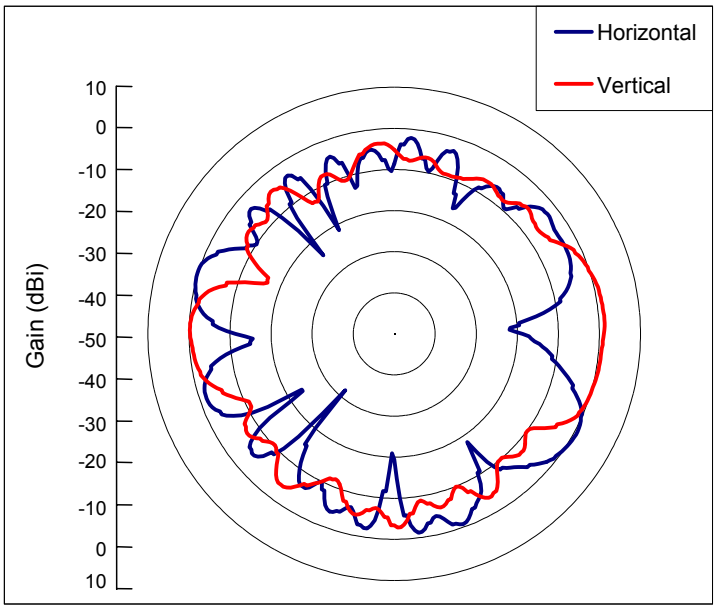
Center Frequency	5725 MHz
Horizontal (dBi) peak	0.70
Vertical (dBi) peak	1.97
Horz+Vert (dBi) peak	1.97

Main antenna: 5785 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−6.95	−5.91
MAX	0.61	1.33

(dBi)



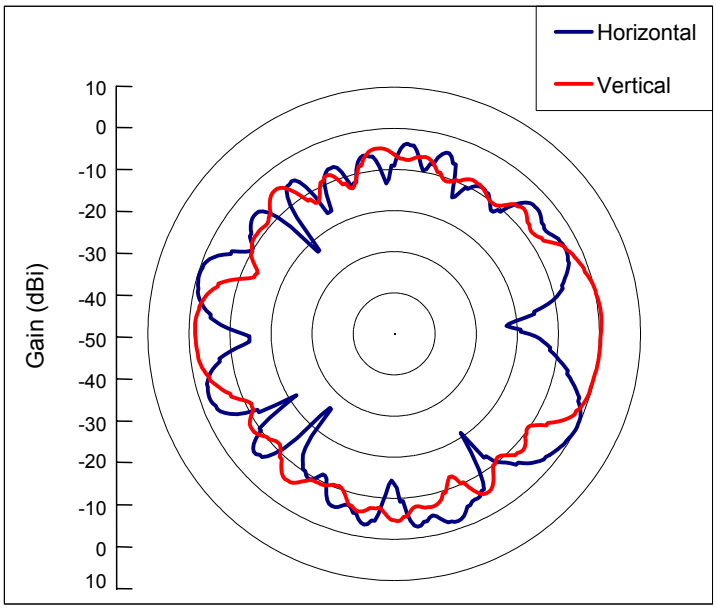
Center Frequency	5785 MHz
Horizontal (dBi) peak	0.61
Vertical (dBi) peak	1.33
Horz+Vert (dBi) peak	1.33

Main antenna: 5850 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−7.58	−6.67
MAX	−0.05	0.60

(dBi)



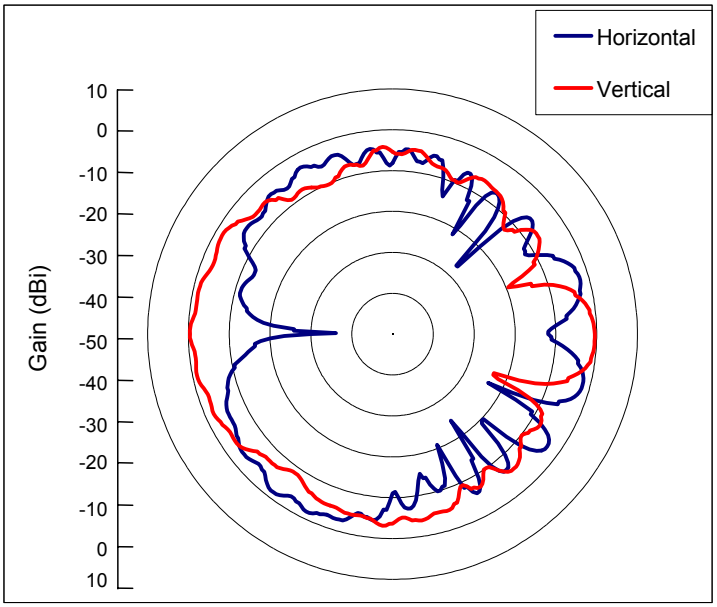
Center Frequency	5850 MHz
Horizontal (dBi) peak	-0.05
Vertical (dBi) peak	0.60
Horz+Vert (dBi) peak	0.60

Auxiliary antenna: 5725 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−8.06	−6.01
MAX	−1.56	−0.36

(dBi)



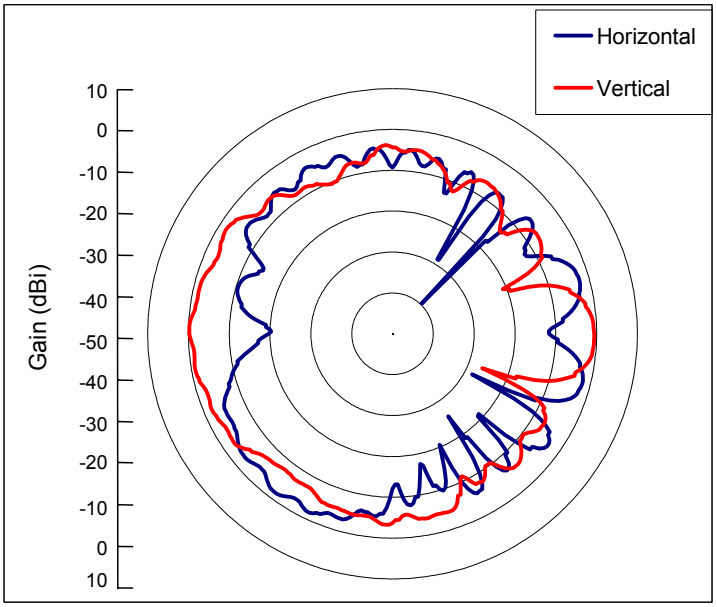
Center Frequency	5725 MHz
Horizontal (dBi) peak	-1.56
Vertical (dBi) peak	-0.36
Horz+Vert (dBi) peak	-0.36

Auxiliary antenna: 5785 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−8.18	−6.05
MAX	−1.64	−0.21

(dBi)



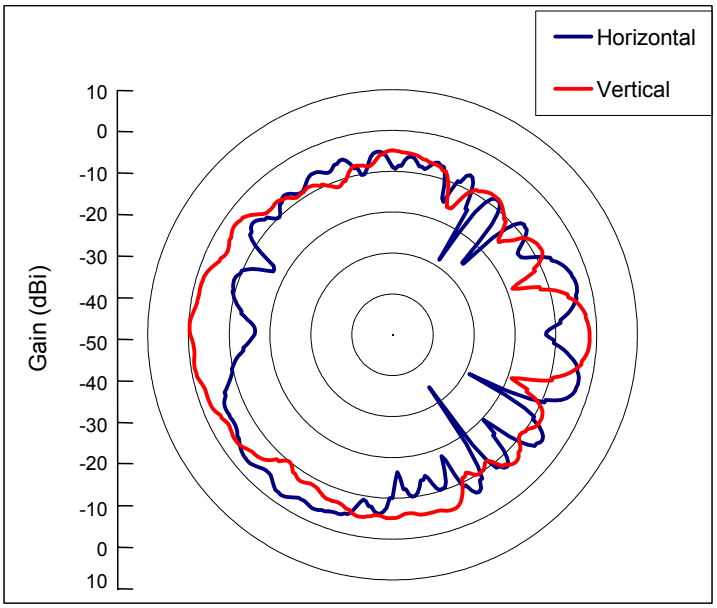
Center Frequency	5785 MHz
Horizontal (dBi) peak	-1.64
Vertical (dBi) peak	-0.21
Horz+Vert (dBi) peak	-0.21

Auxiliary antenna: 5850 MHz

<Average Gain>

	Horizontal	Vertical
AVG	−8.77	−6.85
MAX	−2.27	−0.25

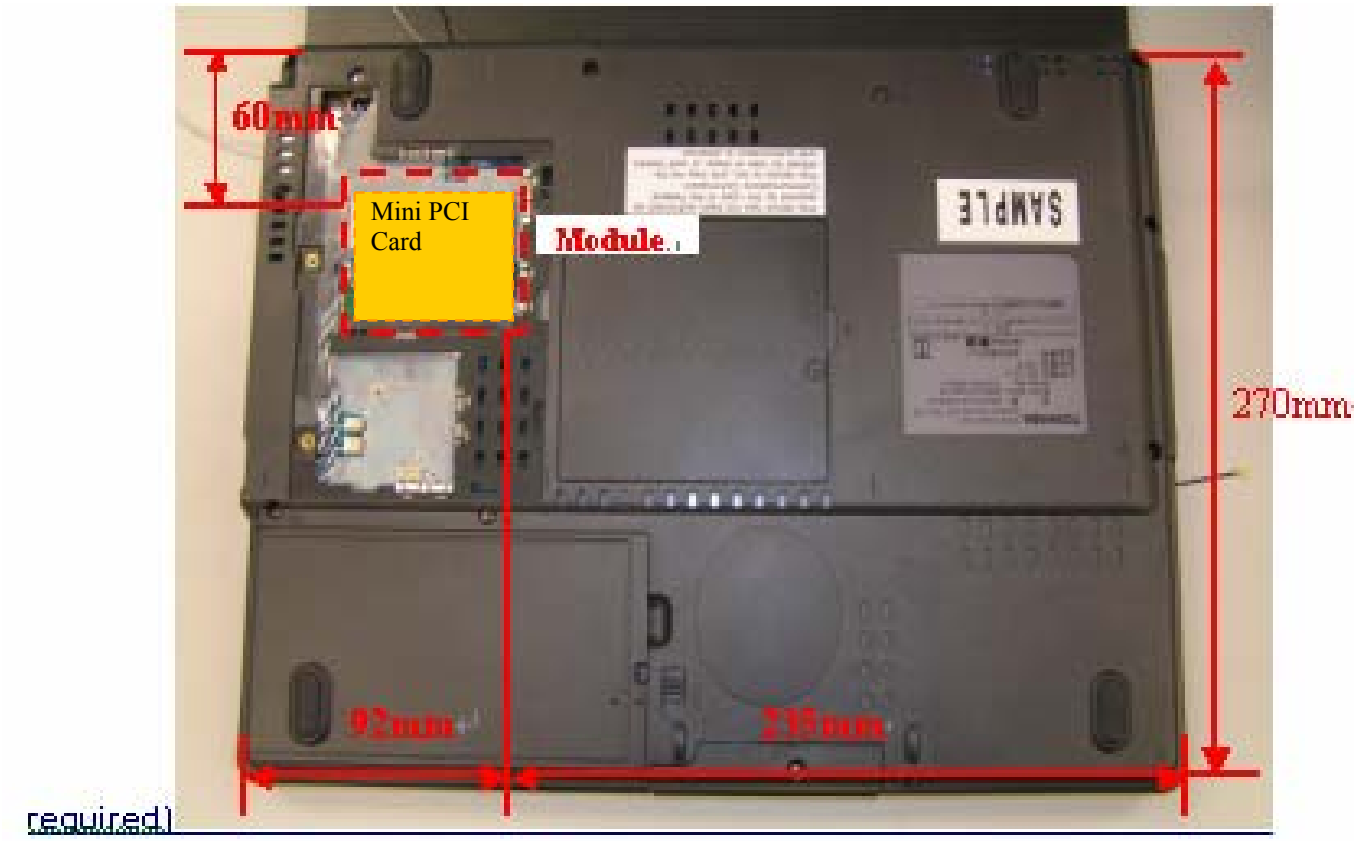
(dBi)



Center Frequency	5850 MHz
Horizontal (dBi) peak	-2.27
Vertical (dBi) peak	-0.25
Horz+Vert (dBi) peak	-0.25

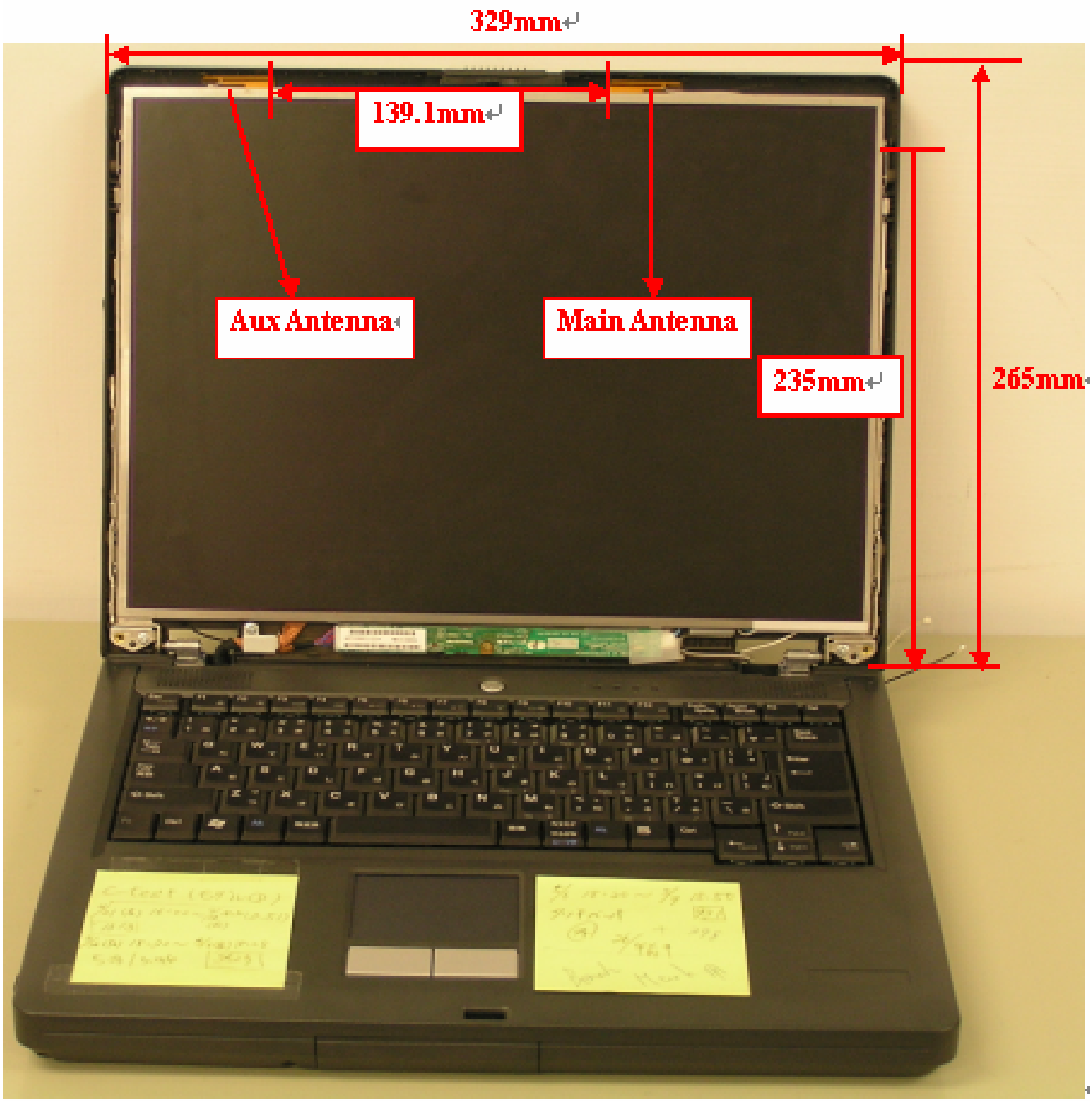
Section 4. Host Platform Information

Module Location Photo:



Section 5. Antenna Host Platform Location Information

Include a **dimensioned photo or dimensioned drawing** of main and auxiliary antenna placements.



Section 6. Antenna dimensional information for SAR evaluation

Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between the transmit (main) antenna and the user (excluding hands, wrist, feet, and ankle)