

Antenna Regulatory Information

• Product type	• WLAN antenna
• Model number	• DELL Greenland (EAX20)
• Revision	•
• Manufacturer Part No. : Main /Mimo/ Aux	• Description
• S16002-L-1	• LCD Left Side
• S16002-R-1	• LCD Right Side
• S03014-561-W-SS-IP	• Hinge white cable
• S03014-636-B-SS-IP	• Hinge Black cable
• S03014-633-S-SS-IP	• Hinge Gray cable
• Dell Part No. : Main/Mimo/ Aux	• Description
• DS330007Z0L	• LCD Left Side
• DC330008A0L	• LCD Right Side
• DC330008H4L	• Hinge white cable
• DC330008I4L	• Hinge Black cable
• DC33000A02L	• Hinge Gray cable

Amphenol

Shanghai Amphenol Airwave Communication Electronics Co., LTD

No. 88 Lai Ting S. Rd, Jiu Ting, Song Jiang,

Shanghai, China (201615)

1. Specifications

Antenna Specifications

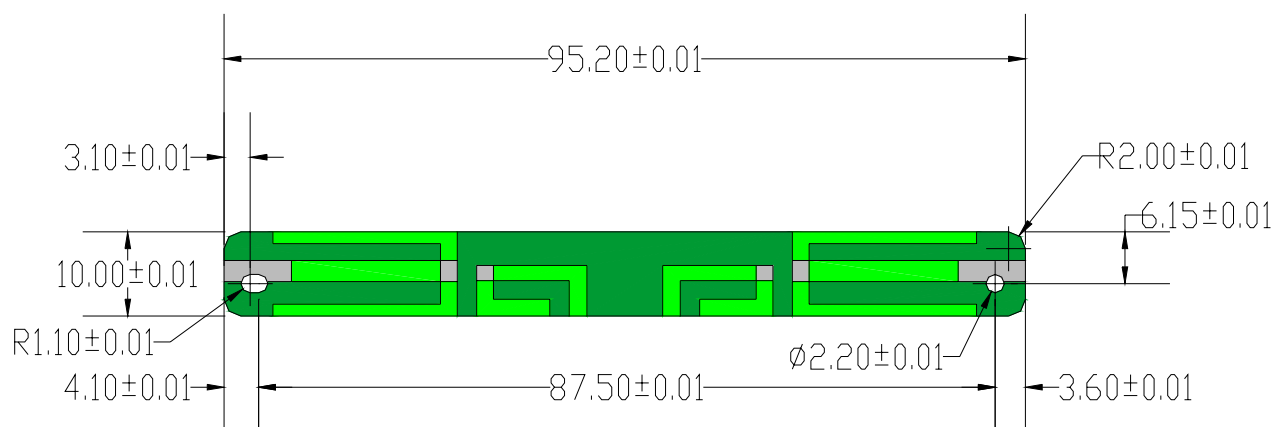
Antenna Type (Material, Technology)	PCB Antenna
Antenna Model Number	EAX20 (DELL Greenland)
Operating Frequency Range(s)	2.4GHz ~ 2.5GHz and 4.9GHz ~ 5.9GHz
Peak Gain (802.11b/g / 2.4GHz Band) (dBi)	1.66 dBi
Peak Gain (802.11a / 5GHz Band) (dBi)	2.36 dBi
Radio Connector Type	IPEX
Mid-Line Connector Type (If Applicable)	SSMCX

Remark: Peak Gains include all system losses (connector, cable, etc)

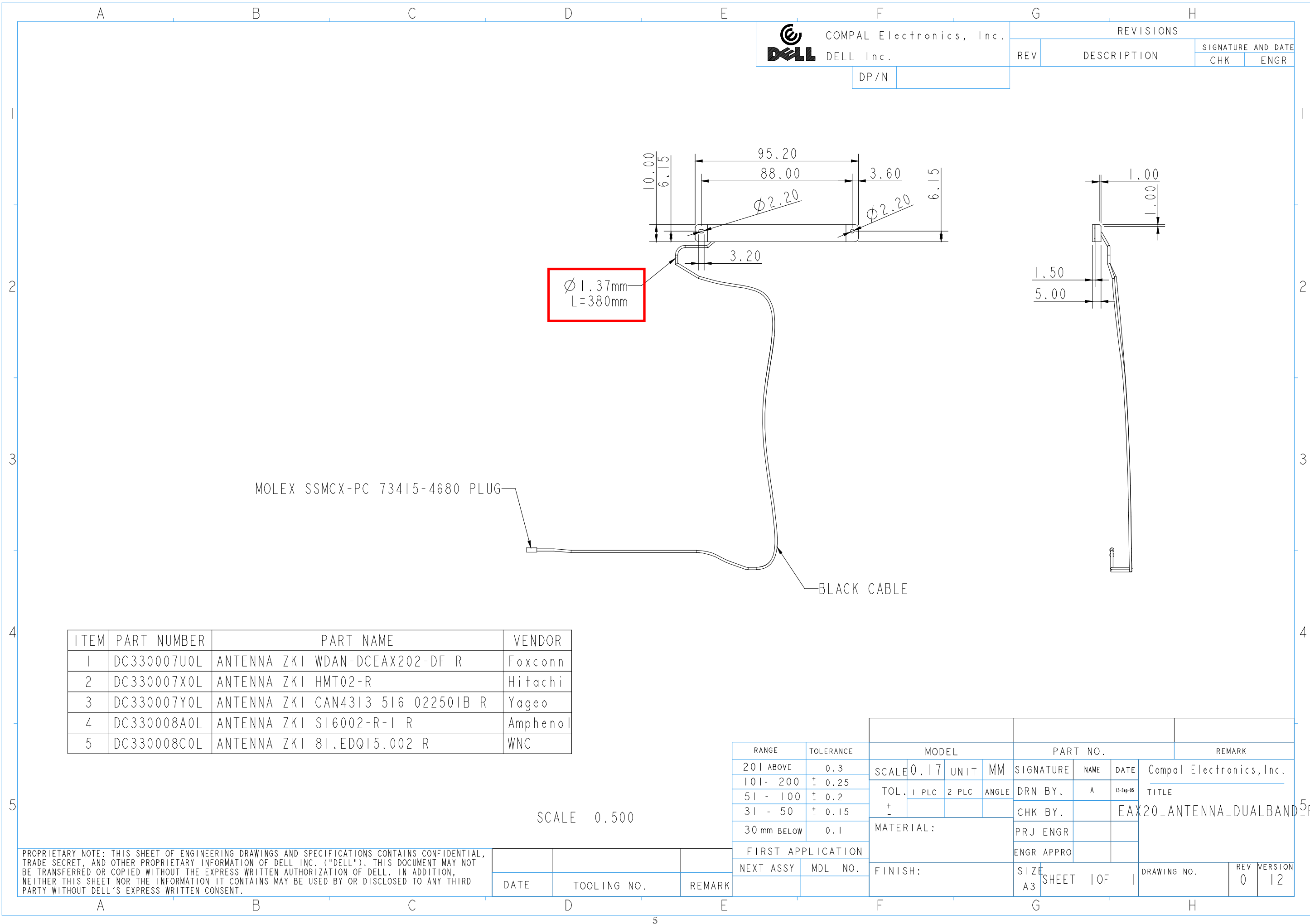
Cable Specifications

Cable Parameters	Main			Mimo		
	LCD Side	Base Side	Total	LCD Side	Base Side	Total
Length (mm)	270	629	899	270	629	899
Loss (Including Connectors) (dB, 2.4GHz / 5GHz)			2.1/3.7			2.1/3.7
Description (Color, Diameter, Manufacturer)	Color: White OD: 1.32~1.37 mm Vendor: GBE			Color: Black OD: 1.32~1.37 mm Vendor: GBE		

Cable Parameters	Aux		
	LCD Side	Base Side	Total
Length (mm)	380	608	988
Loss (Including Connectors) (dB, 2.4GHz / 5GHz)			2.1/3.7
Description (Color, Diameter, Manufacturer)	Color: White OD: 1.32~1.37 mm Vendor: GBE		



LEFT AND RIGHT



ITEM	PART NUMBER	PART NAME	VENDOR
1	DC330007U0L	ANTENNA ZKI WDAN-DCEAX202-DF R	Foxconn
2	DC330007X0L	ANTENNA ZKI HMT02-R	Hitachi
3	DC330007Y0L	ANTENNA ZKI CAN4313 516 022501B R	Yageo
4	DC330008A0L	ANTENNA ZKI SI6002-R-1 R	Amphenol
5	DC330008C0L	ANTENNA ZKI 81.EDQ15.002 R	WNC

RANGE	TOLERANCE	MODEL	PART NO.	REMARK
201 ABOVE	0.3	SCALE 0.17 UNIT MM	SIGNATURE NAME DATE	Compal Electronics, Inc.
101- 200	± 0.25	TOL. 1 PLC 2 PLC ANGLE	DRN BY. A 13-Sep-05	TITLE
51 - 100	± 0.2		CHK BY.	EAX20_ANTENNA_DUALBAND
31 - 50	± 0.15		PRJ ENGR	
30 mm BELOW	0.1		ENGR APPRO	
FIRST APPLICATION		MATERIAL:		
NEXT ASSY		FINISH:		
DATE	TOOLING NO.	REMARK	SIZE A3 SHEET 1 OF 1	DRAWING NO. REV 0 VERSION 12

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REV	DESCRIPTION	SIGNATURE AND DATE	
		CHK	ENGR

1. INTERPRET DIMENSIONS PER ASME Y14.5M-1994.
2. THE MATERIALS AND MANUFACTURING METHODS USED IN THE FABRICATION OF THIS ASSEMBLY MUST COMPLY WITH DEL SPECIFICATION 61198.
3. ALL WIRING MUST BE CSA CERTIFIED AND UL RECOGNIZED COMPONENTS IN CATEGORY AVLV2, AWM RATED MINIMUM 80°C, MINIMUM FLAMMABILITY RATING OF VW-1.
4. THE CONNECTORS USED MUST BE CSA CERTIFIED AND UL RECOGNIZED COMPONENTS IN CATEGORY RT12, EC812, OR DUX12. COMPONENTS MUST MEET A MINIMUM FLAMMABILITY RATING OF 94V-0.
OR
4. THE CONNECTORS USED MUST BE CSA CERTIFIED AND UL RECOGNIZED COMPONENTS IN CATEGORY RT12, EC812, OR DUX12. COMPONENTS MUST MEET A MINIMUM FLAMMABILITY RATING OF 94V-1.
5. ALL OTHER PLASTICS USED MUST MEET A MINIMUM FLAMMABILITY RATING OF 94V-1.
6. THE VENDOR SHALL BE A UL RECOGNIZED AND CSA CERTIFIED SUPPLIER OF WIRING HARNESSSES. THE VENDORS UL RECOGNITION MARK AND CSA CERTIFICATION MARK SHALL BE APPLIED TO THE SHIELDING BUNDLE OR UNIT CONTAINER IN WHICH THE PRODUCT IS PACKAGED.
7. DRAWING IS FOR INSPECTION PURPOSES ONLY. ACTUAL PART SHALL CONFORM TO ELECTRONIC DATABASE. ALL SHOWN DIMENSIONS SHALL CONFORM TO TABLE 1. DIMENSIONS NOT SHOWN SHALL CONFORM TO THE PLACE DECIMAL TOLERANCES IN TABLE 1. THIS TABLE SUPERSEDES THE TITLE BLOCK.

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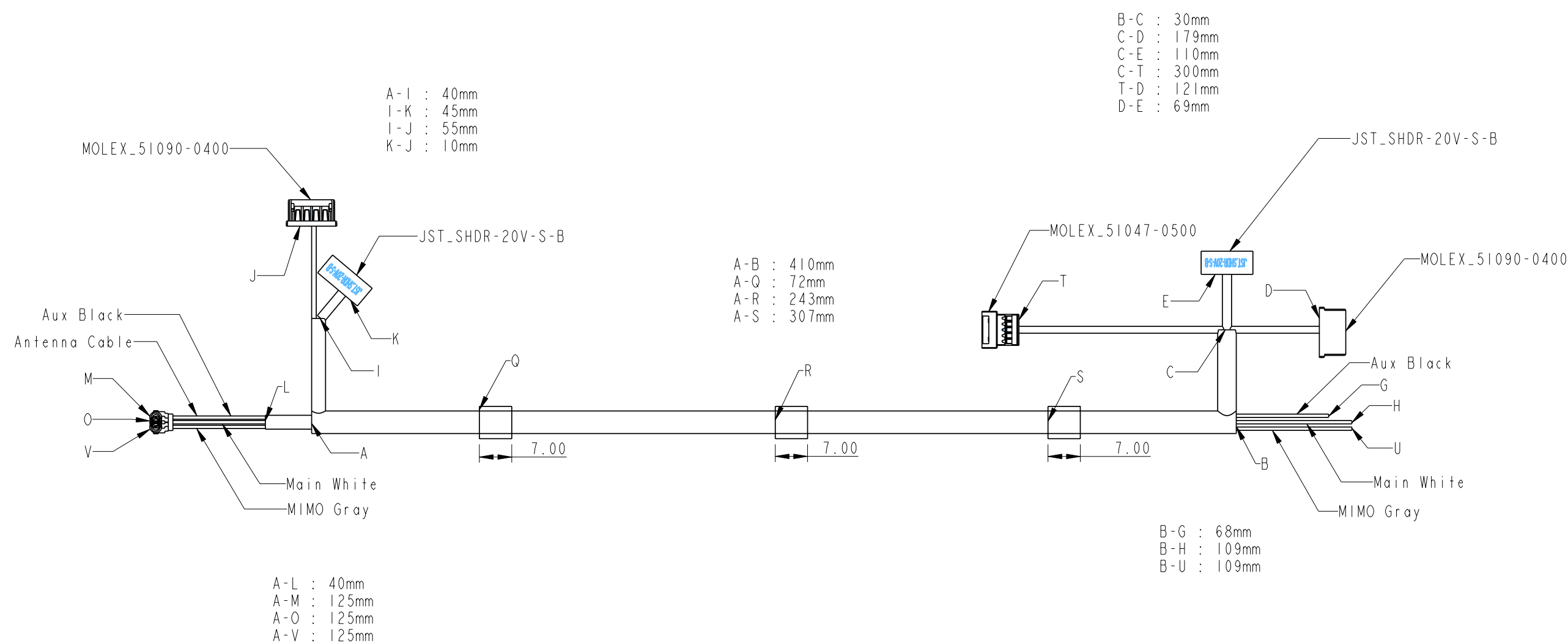
DIMENSION RANGE	TOLERANCE	
	DECIMAL X.X	DECIMAL X.XX
0 to 1270.00	+/- 6.4	+/- 3.18
1270.1 to 2540.00	+/- 12.7	+/- 6.35
2540.1 to 6350.00	+/- 25.4	+/- 12.70

CRITICAL TO FUNCTION DIMENSION: THESE DIMENSIONS SHALL BE USED FOR DETERMINATION AND REQUALIFICATION OF PROCESS CAPABILITY (C_p , C_{pk}) PER THE DELL PPAP PROCESS.

(THERE ARE 3 TOLERANCE TABLES TO SELECT FROM, SEE ENG0000137.)

8. CABLE SHALL BE TESTED FOR INTERMITTENT FAILURES: WIRE CONTINUITY, CONTACT TO CONTACT MATING AND CONTACT TO WIRE BOND. ANY INTERMITTENT DETECTION SHALL BE DEEMED A FAILURE

9. ATTACH PPID LABEL APPROXIMATELY WHERE SHOWN
AND ALWAYS IN THE SAME ORIENTATION. LABEL
SHALL CONFORM TO DELL SPEC 13190
OR
9. CABLES SHALL BE MARKED WITH DATE CODE, MANUFACTURER ID, APPROXIMATELY
WHERE SHOWN USING 3.0 (.012) MIN. HEIGHT CHARACTERS. DATE CODE CONSISTS OF DAY
(NUMERIC), MONTH (FIRST THREE LETTERS) AND YEAR (LAST TWO DIGITS). MARK SHALL
INCLUDE DELL PART NUMBER (P/N: XXXXX).
OR
9. BLACK ITEM CONTAINER SHALL HAVE A PPID LABEL AND A DELL P/N LABEL.
PPID LABEL SHALL CONFORM TO DELL SPEC 13190. MORE THAN ONE ITEM MAY BE
SHIPPED PER CONTAINER.
10. ASSEMBLY SHALL BE CLEAN AND FREE FROM FOREIGN MATERIAL,
DIRT, OIL, GREASE, OR OTHER CONTAMINANTS NOT ALLOWED.
11. CABLES SHALL MEET REQUIREMENTS LISTED IN DELL P/N
ENG0000117 AND MECHANICAL REQUIREMENTS LISTED IN
DELL P/N ENG0000120.
12. ASSEMBLY SHALL BE PACKAGED IN ACCORDANCE
WITH DELL PACKAGING STANDARD 11500.
OR
12. PARTS SHALL BE PACKAGED FOR SUPPLIER INTERNAL DISTRIBUTION.
13. APPLY HEAT SHRINK TUBE FOR SPECIFIED LENGTH. COLOR SHALL
BE XXXX, AND MUST MEET UL REQUIREMENTS PER NOTE 5.
OR
13. APPLY HEAT SHRINK TUBE WITHOUT HEATING TO SPECIFIED LENGTH. COLOR
SHALL BE BLACK AND MUST MEET UL REQUIREMENTS PER NOTE 5.
14. CABLE CONDUCTOR 1 TO BE CONNECTED TO CONNECTOR PIN 1 ON BOTH SIDES.
OR
14. CABLE MUST COMPLY WITH PINOUT TABLE AS SHOWN.
15. CABLE SHALL BE MARKED IN PERMANENT AND LEGIBLE MANNER WITH MINIMUM TEXT
HEIGHT OF .120 (3.0mm) WITH THE FOLLOWING XXX INFORMATION APPROXIMATELY
WHERE SHOWN.
OR
15. CABLE SHALL BE MARKED IN PERMANENT AND LEGIBLE MANNER
WITH ICONS APPROXIMATELY WHERE SHOWN.
16. ALL WIRES SHALL BE (XX) AWG WITH MINIMUM STRANDING OF XX/.XXX.
(# OF STRANDS/DIAMETER) WIRE MUST MEET REQUIREMENTS IN NOTE 4.



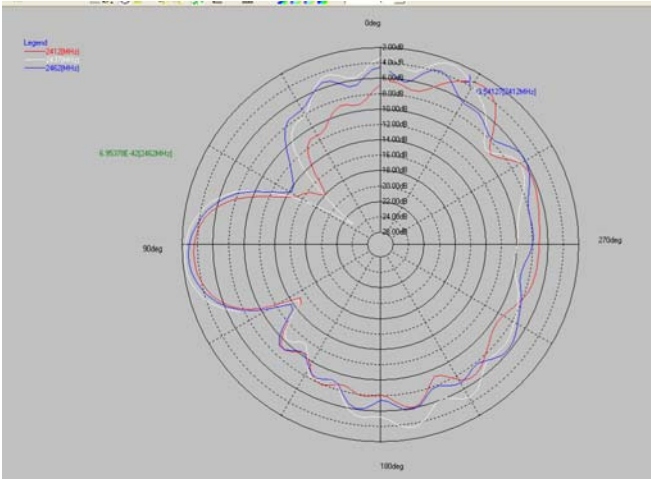
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			FIRST APPLICATION
			NEXT ASSY MDL NO.
DATE	TOOLING NO.	REMARK	

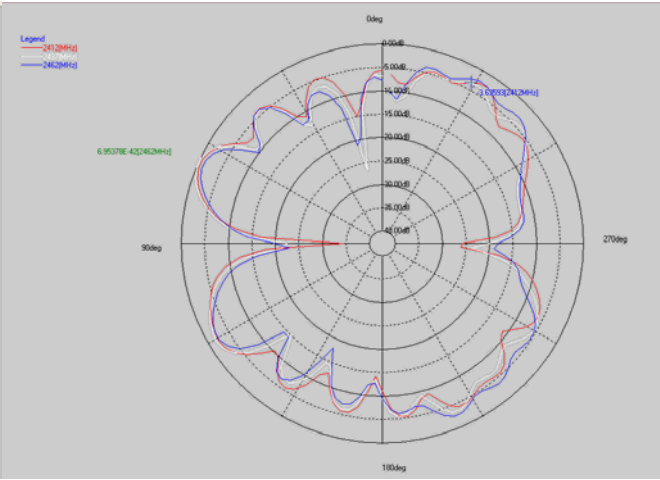
		EAX20			DC020003U0L					
		MODEL			PART NO.			REMARK		
RANGE TOLERANCE		SCALE: 1:1	UNIT: MM	SIGNATURE		NAME	DATE	Compal Electronics, Inc. 115 EAX20_HINGE_CABLE_L_ANTENNA		
201 ABOVE		TOL: 1 PLC	2 PLC	ANGLE	DRN BY.	A25	Oct 05			
101 - 200		MATERIAL:			CHK BY.					
51 - 100		Wire			PRJ ENGR					
31 - 50					ENGR APPRO					
30mm BELOW		FINISH:			SIZE: A2	SHEET 1 OF 1		DRAWING NO.	REV 0	VERSION 8

3. Gain Patterns

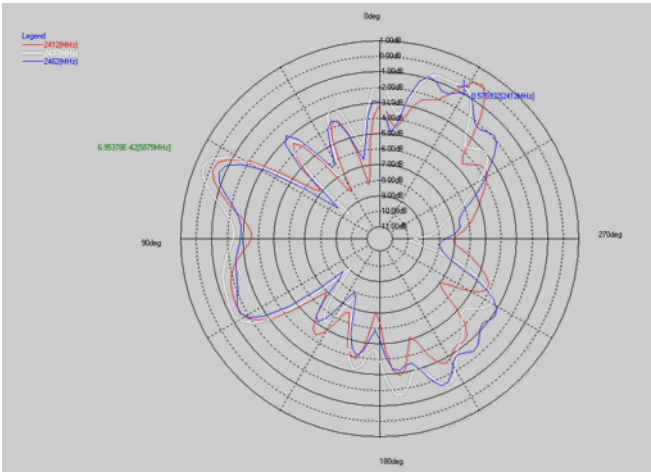
- Main Antenna



Vertical

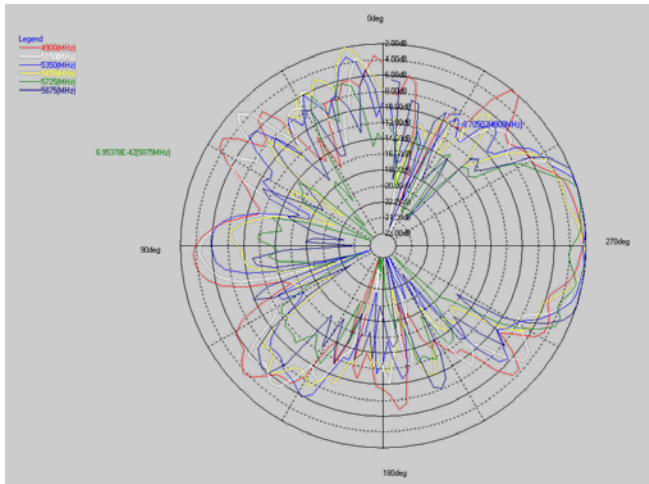


Horizontal

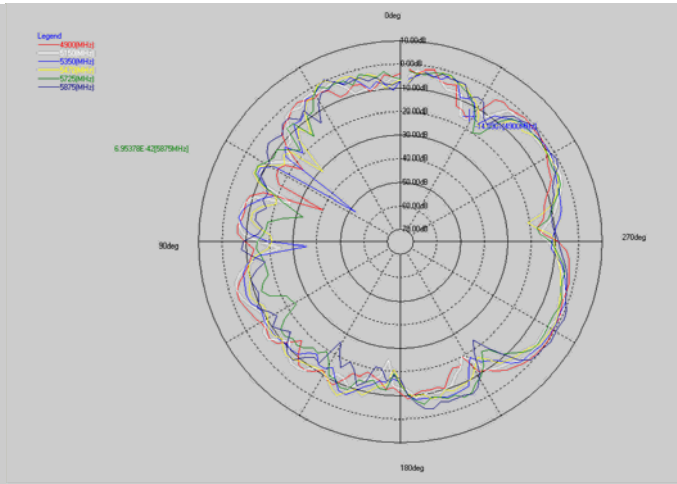


Hori + Vert

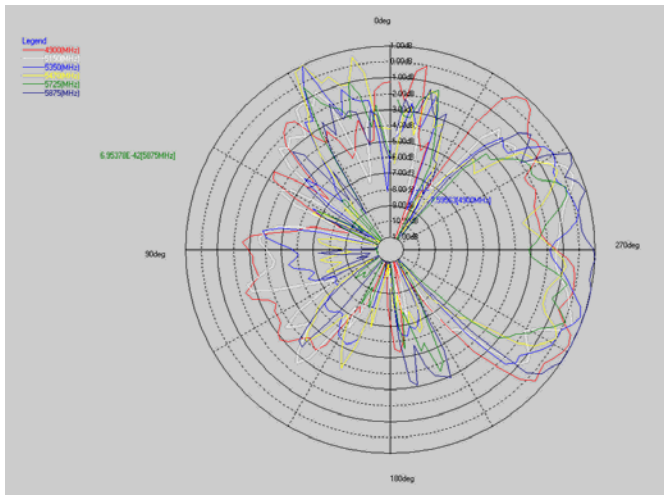
Frequency	2412MHz	2437MHz	2462MHz
Horizontal peak gain(dBi)	-0.52	-0.03	-1.18
Vertical peak gain(dBi)	-3.20	-2.26	-2.78
Hori + Vert peak gain(dBi)	0.09	0.45	-0.61
Hori + Vert avg gain	-3.95	-3.63	-3.78



Vertical



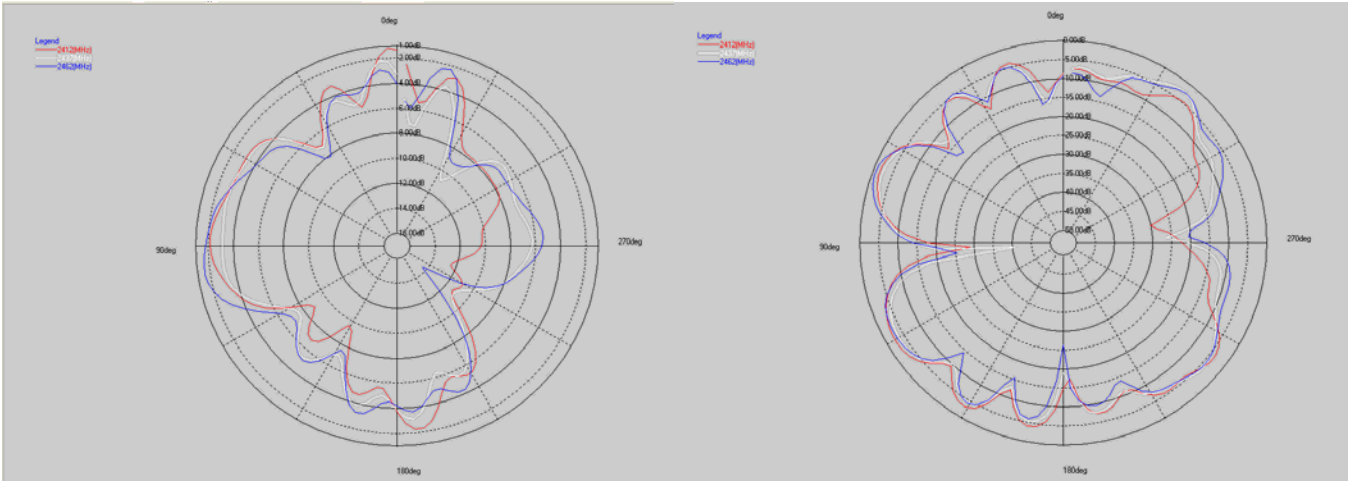
Horizontal



Hori + Vert

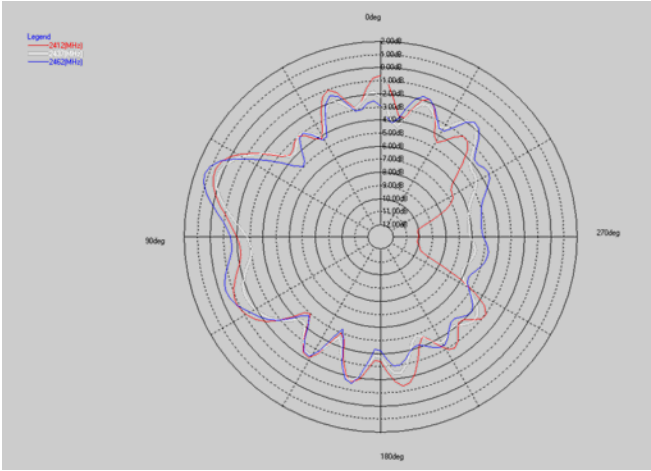
Frequency	4900MHz	5150MHz	5350MHz	5470MHz	5725MHz	5875MHz
Horizontal peak gain(dBi)	-0.27	-0.89	0.44	0.21	-1.03	1.38
Vertical peak gain(dBi)	-2.07	-1.34	-0.97	-1.56	-1.66	0.41
Hori + Vert peak gain(dBi)	0.86	0.55	1.06	1.03	0.03	2.36
Hori + Vert avg gain	-3.51	-4.22	-4.3	-4.85	-4.97	-4.37

- Mimo Antenna



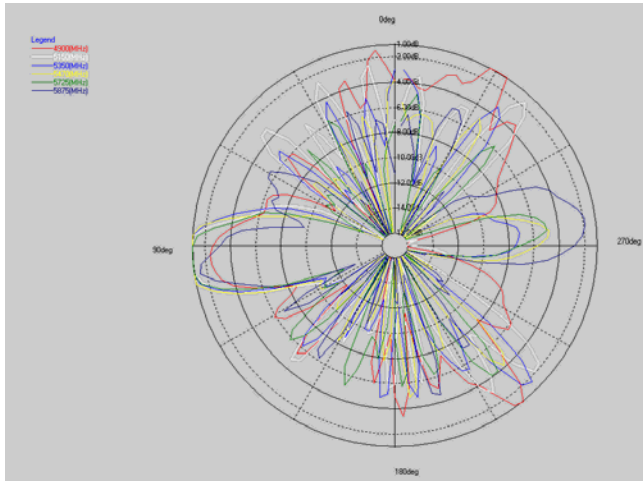
Vertical

Horizontal

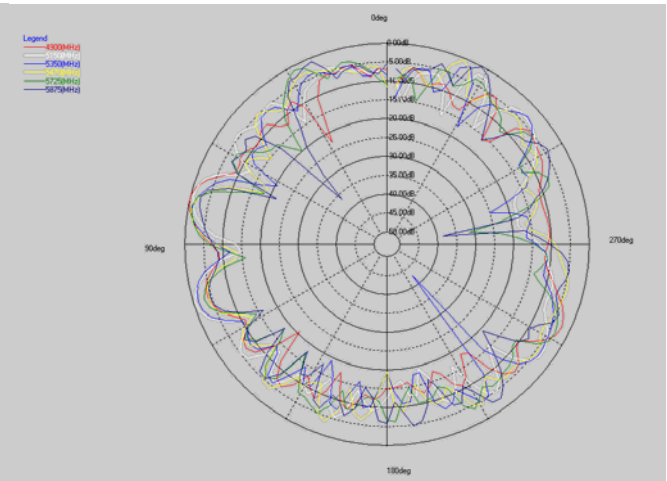


Hori + Vert

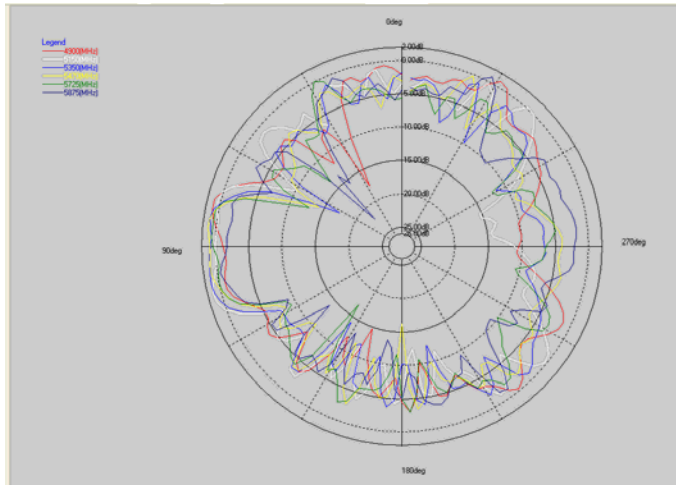
Frequency	2412MHz	2437MHz	2462MHz
Horizontal peak gain(dBi)	-1.76	-2.46	-0.72
Vertical peak gain(dBi)	-1.23	-2.23	-1.57
Hori + Vert peak gain(dBi)	0.62	0.28	1.27
Hori + Vert avg gain	-3.36	-3.25	-2.96



Vertical



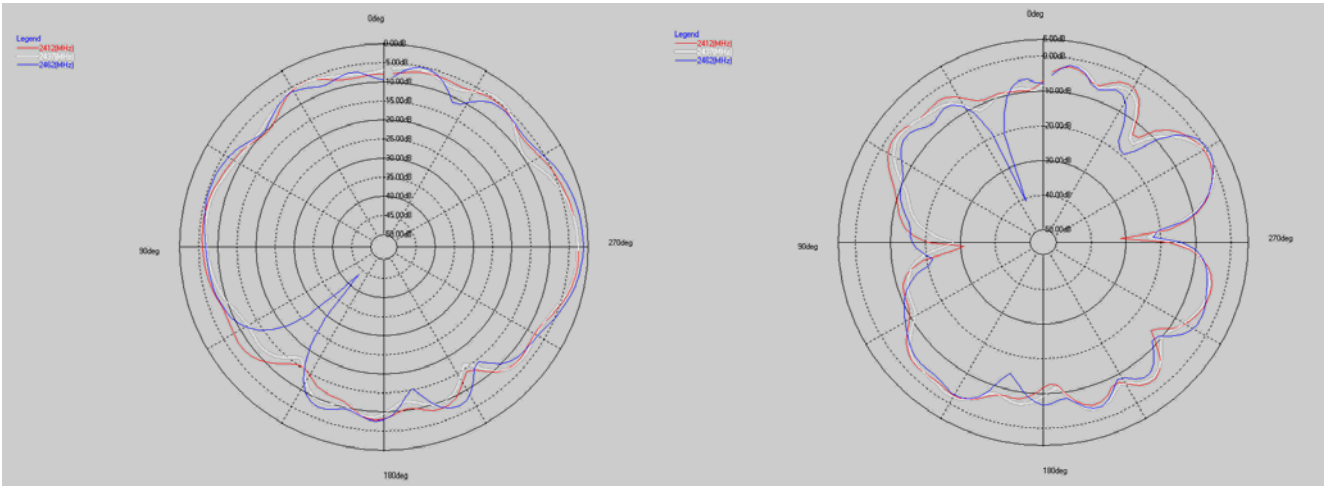
Horizontal



Hori + Vert

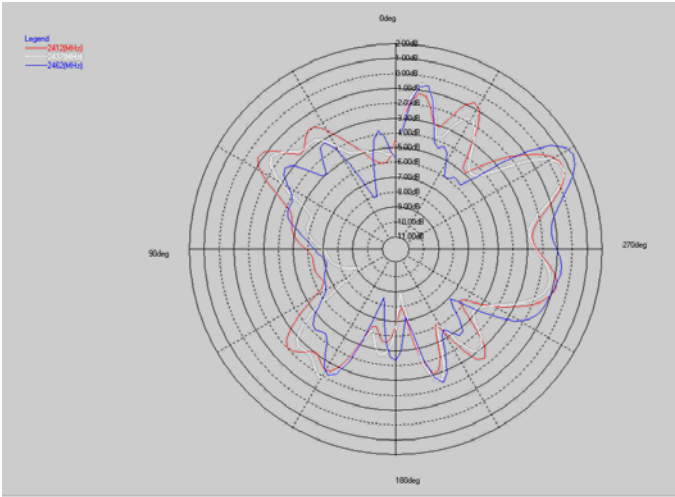
Frequency	4900MHz	5150MHz	5350MHz	5470MHz	5725MHz	5875MHz
Horizontal peak gain(dBi)	-0.04	-0.53	-0.98	-0.65	-0.93	-0.24
Vertical peak gain(dBi)	0.27	-0.26	0.59	0.69	-0.54	-1.48
Hori + Vert peak gain(dBi)	0.96	1.09	1.09	1.15	0.60	0.81
Hori + Vert avg gain	-4.13	-4.35	-4.63	-4.67	-4.89	-4.8

- Aux Antenna



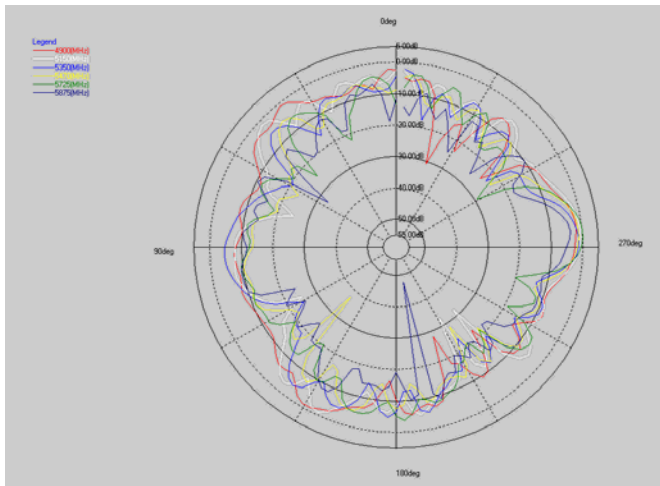
Vertical

Horizontal

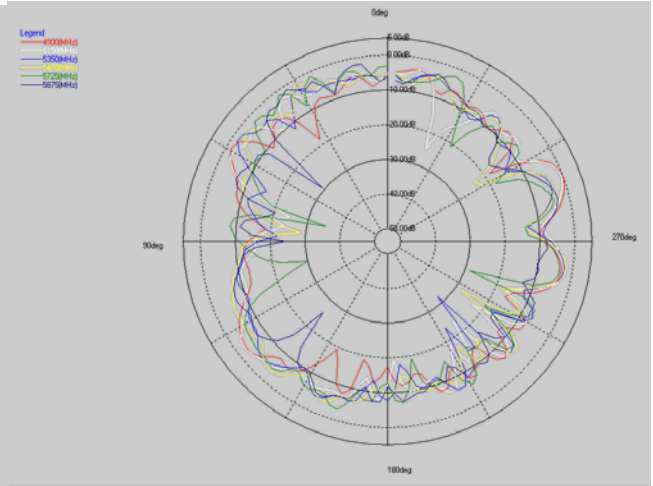


Hori + Vert

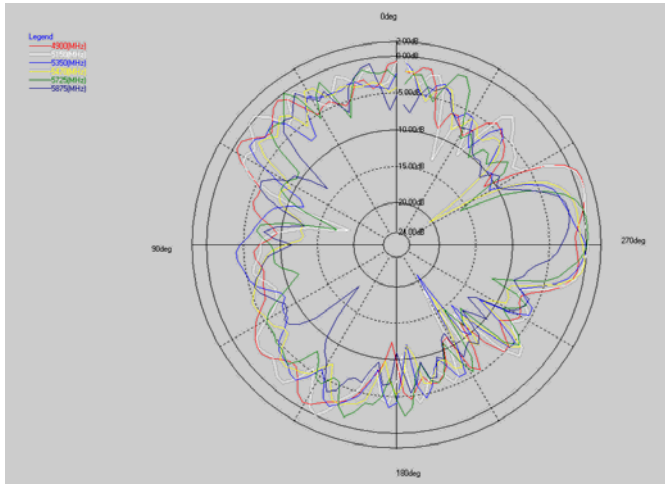
Frequency	2412MHz	2437MHz	2462MHz
Horizontal peak gain(dBi)	-0.48	-0.04	0.54
Vertical peak gain(dBi)	-2.47	-2.63	-1.26
Hori + Vert peak gain(dBi)	0.65	0.65	1.66
Hori + Vert avg gain	-3.35	-3.74	-3.77



Vertical



Horizontal



Hori + Vert

Frequency	4900MHz	5150MHz	5350MHz	5470MHz	5725MHz	5875MHz
Horizontal peak gain(dBi)	-0.02	-0.47	-1.82	-1.62	-1.31	-1.24
Vertical peak gain(dBi)	-1.11	-0.51	-1.09	-1.13	0.06	-3.62
Hori + Vert peak gain(dBi)	0.95	0.90	0.10	0.15	0.25	-0.26
Hori + Vert avg gain	-4.26	-4.14	-4.62	-4.49	-4.76	-4.79