

Antenna Regulatory Information

• Product type	• WLAN antenna
• Model number	• DELL Greenland (EAX20)
• Revision	•
• Manufacturer Part No. : Main /Mimo/ Aux	•
• Dell Part No. : Main/Mimo/ Aux	•

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)	FR4, Dipole Antenna
Antenna Model Number	DELL Greenland (EAX20)
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

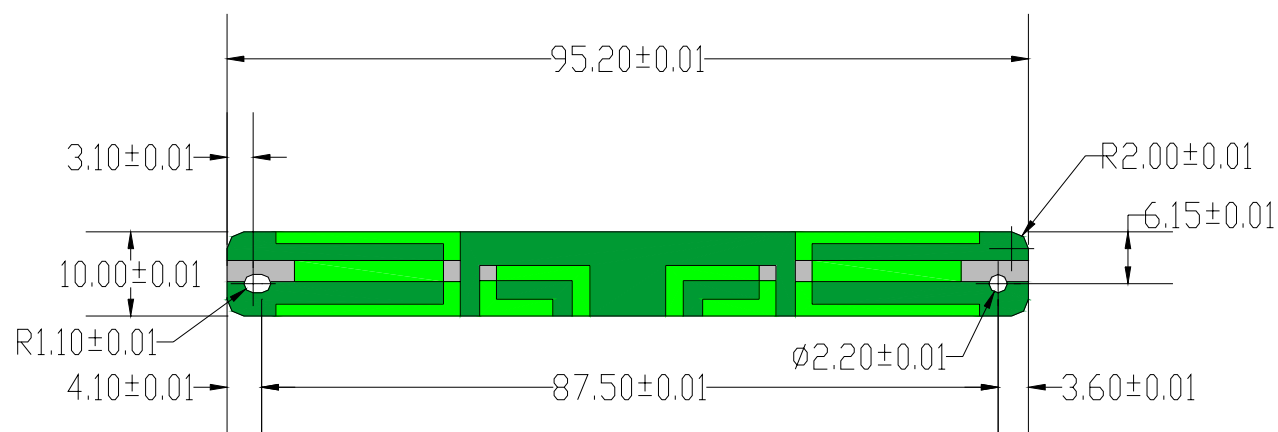
Remark: Peak Gains include all system losses (connector, cable, etc)

Cable Specifications

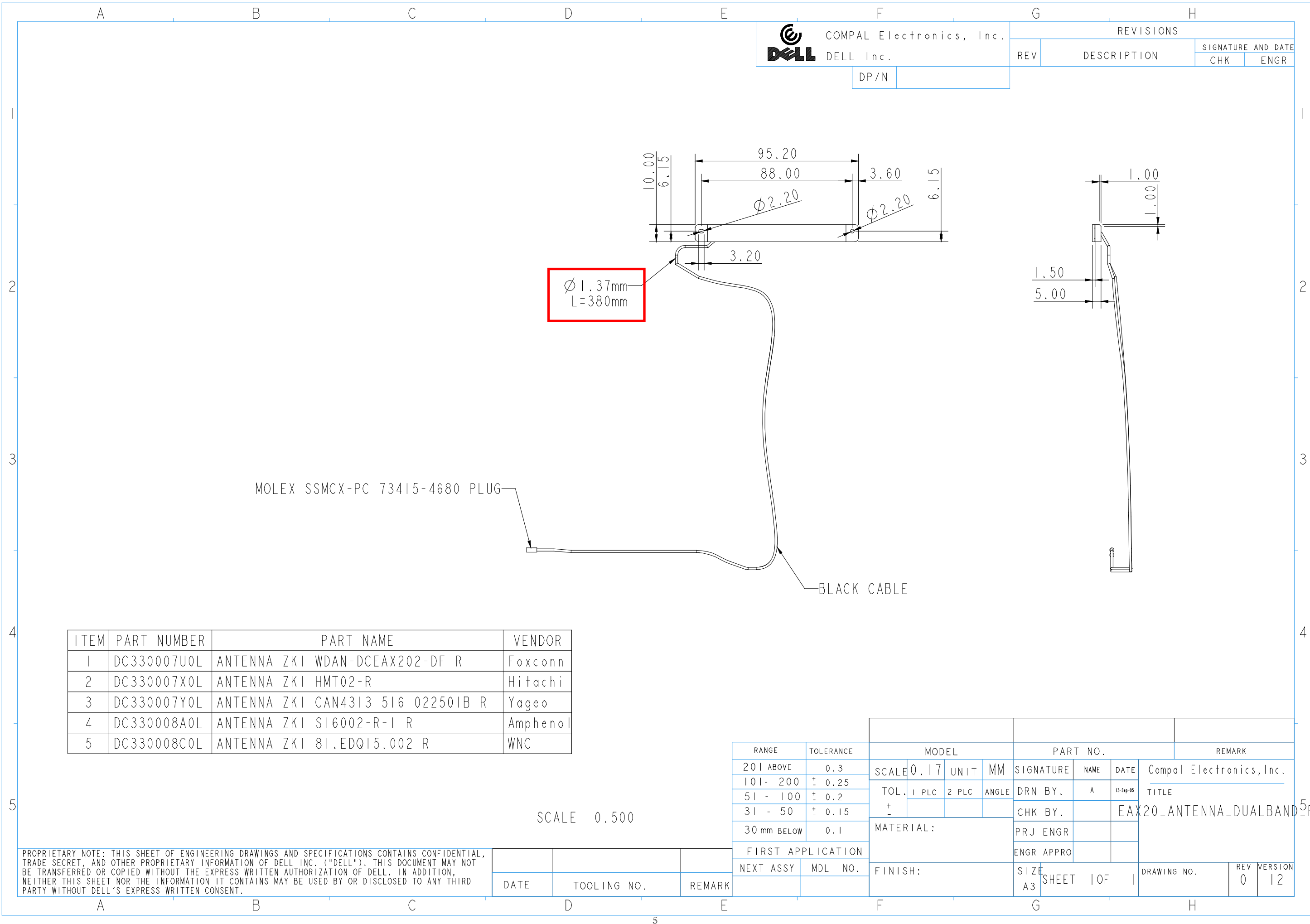
Cable Parameters	Main			Mimo		
	LCD Side	Base Side	Total	LCD Side	Base Side	Total
Length (mm)	270	629	899	270	629	899
Loss (Including Connectors) (dB, 2.4GHz / 5GHz)			2.1/3.7			2.1/3.7
Description (Color, Diameter, Manufacturer)	Color: White OD: 1.32~1.37 mm Vendor: GBE			Color: Black OD: 1.32~1.37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

2. Mechanical Drawing of Antennas



LEFT AND RIGHT



COMPAL Electronics, Inc.
DELL Inc.

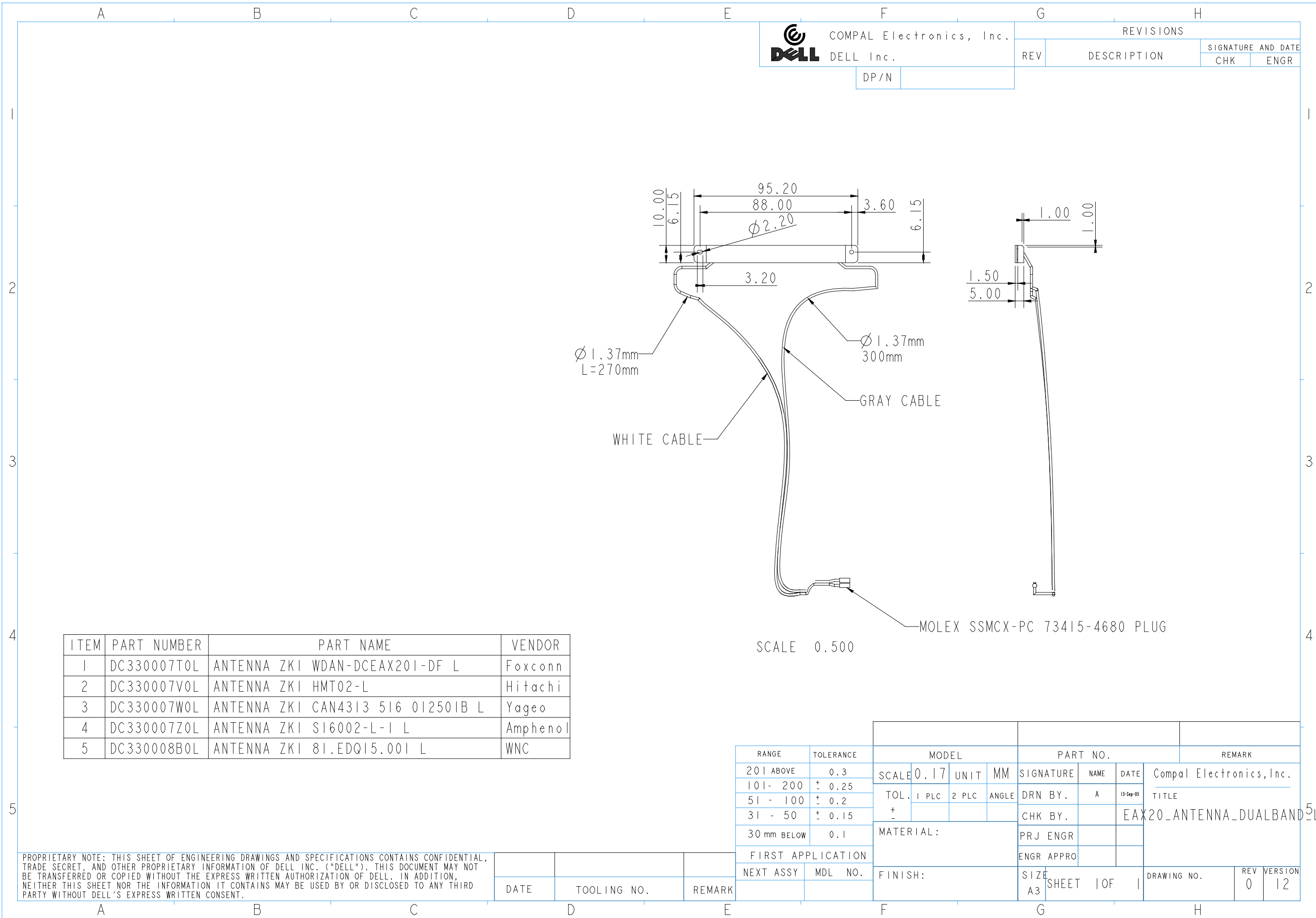
DP/N

REVISIONS

REV	DESCRIPTION	SIGNATURE AND DATE	
		CHK	ENGR

SCALE 0.500

5



COMPAL Electronics, Inc.
DELL Inc.
DP/N

REVISIONS			
REV	DESCRIPTION	SIGNATURE AND DATE	
		CHK	ENGR

ITEM	PART NUMBER	PART NAME	VENDOR
1	DC330007T0L	ANTENNA ZKI WDAN-DCEAX201-DF L	Foxconn
2	DC330007V0L	ANTENNA ZKI HMT02-L	Hitachi
3	DC330007W0L	ANTENNA ZKI CAN4313 516 012501B L	Yageo
4	DC330007Z0L	ANTENNA ZKI SI6002-L-1 L	Amphenol
5	DC330008B0L	ANTENNA ZKI 81.EDQ15.001 L	WNC

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

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWINGS AND SPECIFICATIONS CONTAINS CONFIDENTIAL, TRADE SECRET, AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL"). THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

1. INTERPRET DIMENSIONS PER ASME Y14.5M-1994.
2. THE MATERIALS AND MANUFACTURING METHODS USED IN THE FABRICATION OF THIS ASSEMBLY MUST COMPLY WITH DDL 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 TOLERANCE SHOWN IN TABLE 1. THIS TABLE SUPERSEDES THE TITLE BLOCK.

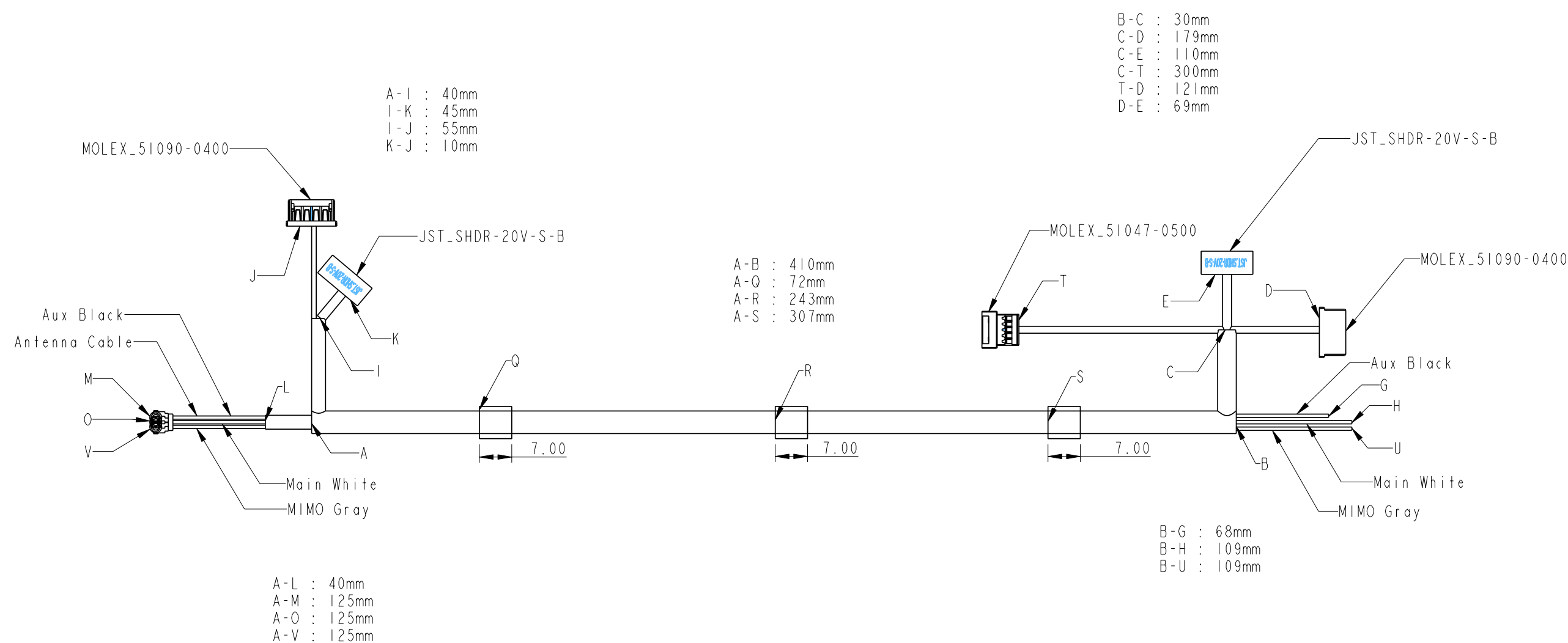
DIMENSION RANGE	TOLERANCE	
	DECIMAL X.X	DECIMAL X.XX
0 to 1270.00	+/- 6.4	+/- 3.18
1270.1 to 2540.00	+/- 12.7	+/- 6.35
2540.1 to 6350.00	+/- 25.4	+/- 12.70

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 SHOWING USING 3,0 .0,121 MIN. HEIGHT CHARACTERS. DATE CODE CONSISTS OF DAY
(EMERIC), MONTH (FIRST THREE LETTERS) AND YEAR (LAST TWO DIGITS). MARK SHALL
INCLUDE DELL PART NUMBER (P/N: XXXXX).
OR
9. BULK 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 ARE 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 I TO BE CONNECTED TO CONNECTOR PIN I 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.



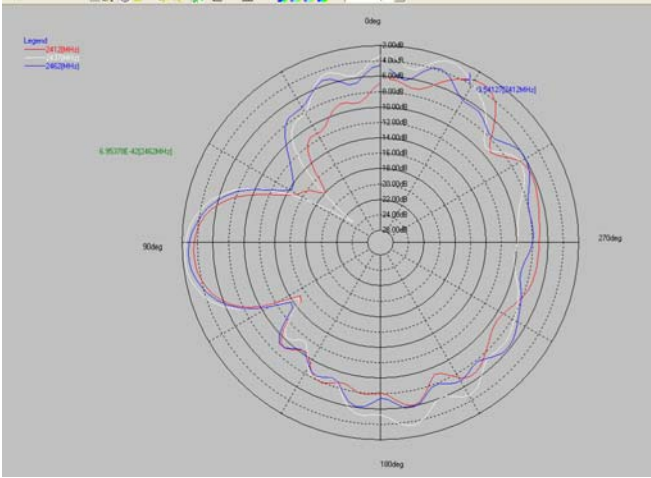
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			FIRST APPLICATION
			NEXT ASSY MDL NO.
DATE	TOOLING NO.	REMARK	

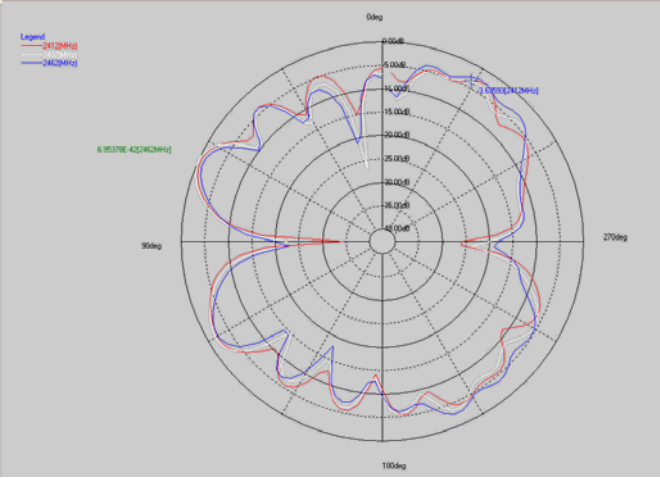
		EAX20				DC020003UOL						
		MODEL				PART NO.			REMARK			
RANGE		TOLERANCE	SCALE	1.000	UNIT	MM	SIGNATURE	NAME	DATE	Compal Electronics, Inc 05 THT5 EAX20_HINGE_CABLE_L_ANTIENNA		
201 ABOVE		0.3	TOL.	1 PLC	2 PLC	ANGLE	DRN BY.	A25-Oct				
101- 200		± 0.25	+				CHK BY.					
51 - 100		± 0.2	MATERIAL:				PRJ ENGR					
31 - 50		± 0.15	Wire				ENGR APPRO					
30mm BELOW		0.1	FINISH:				SIZE	SHEET OF		DRAWING NO.	REV	VERSION
							A2			0	8	

3. Gain Patterms

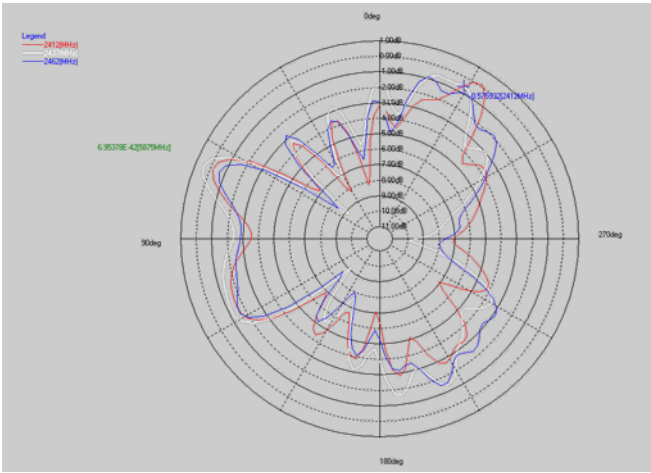
- Main Antenna



Vertical

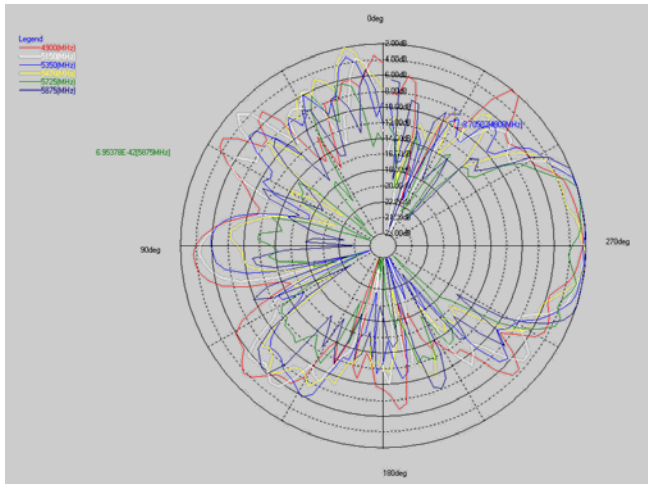


Horizontal

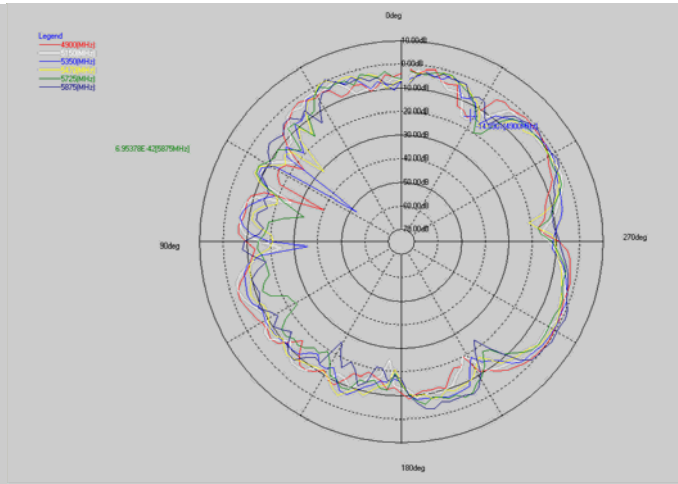


Hori + Vert

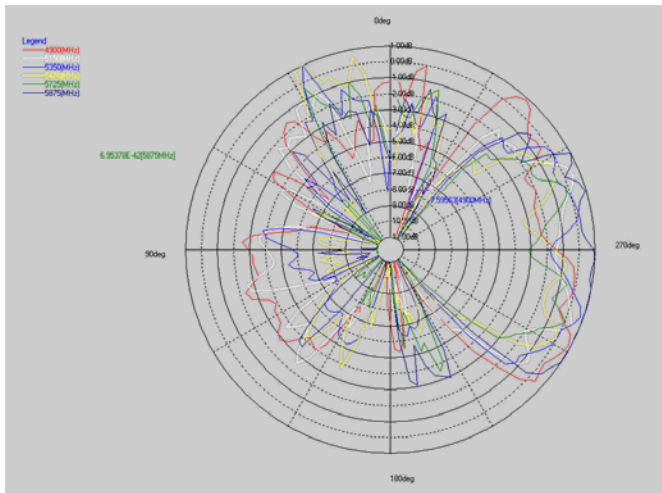
Frequency	2412MHz	2437MHz	2462MHz
Horizontal peak gain(dBi)	-0.52	-0.03	-1.18
Vertical peak gain(dBi)	-3.20	-2.26	-2.78
Hori + Vert peak gain(dBi)	0.09	0.45	-0.61
Hori + Vert avg gain	-3.95	-3.63	-3.78



Vertical



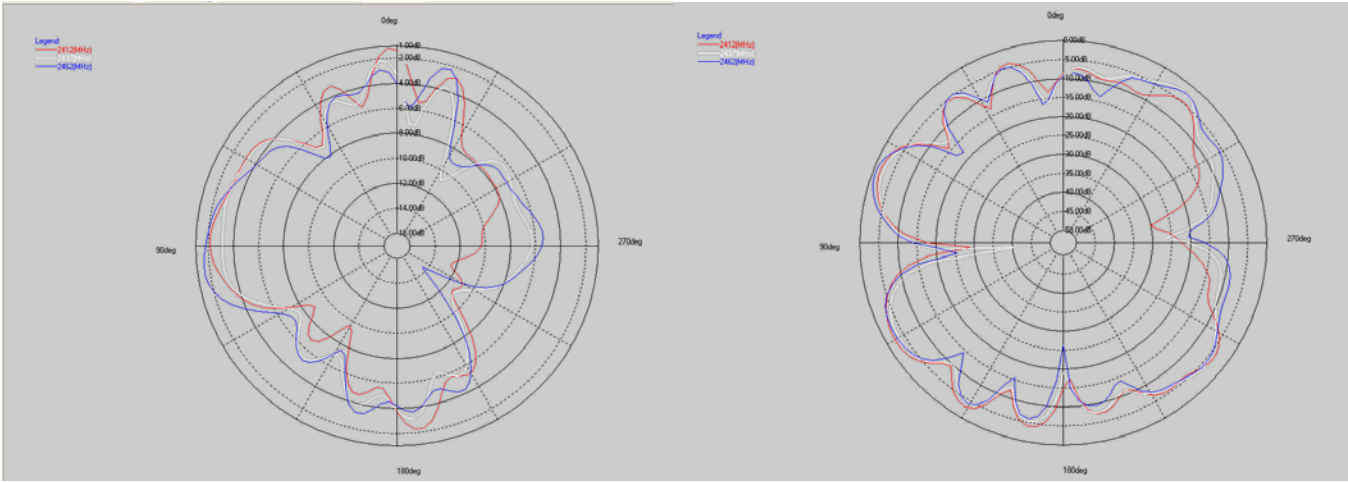
Horizontal



Hori + Vert

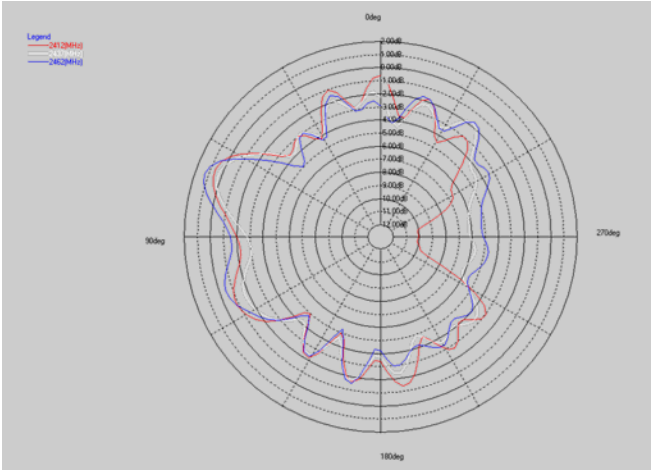
Frequency	4900MHz	5150MHz	5350MHz	5470MHz	5725MHz	5875MHz
Horizontal peak gain(dBi)	-0.27	-0.89	0.44	0.21	-1.03	1.38
Vertical peak gain(dBi)	-2.07	-1.34	-0.97	-1.56	-1.66	0.41
Hori + Vert peak gain(dBi)	0.86	0.55	1.06	1.03	0.03	2.36
Hori + Vert avg gain	-3.51	-4.22	-4.3	-4.85	-4.97	-4.37

- Mimo Antenna



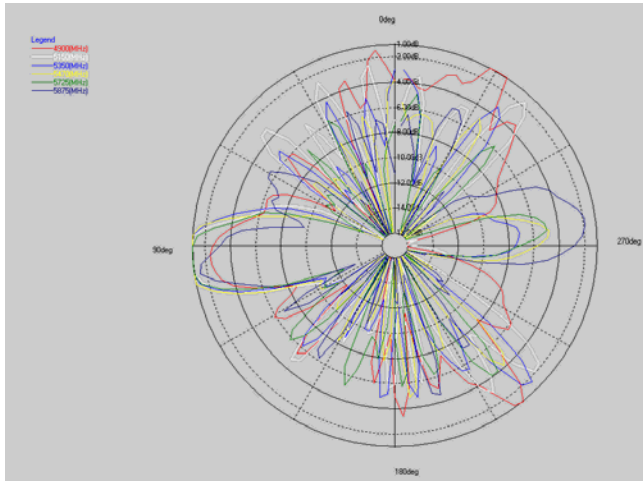
Vertical

Horizontal

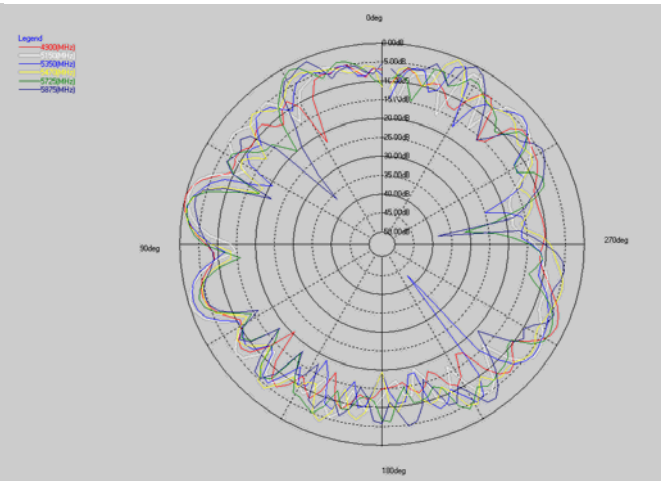


Hori + Vert

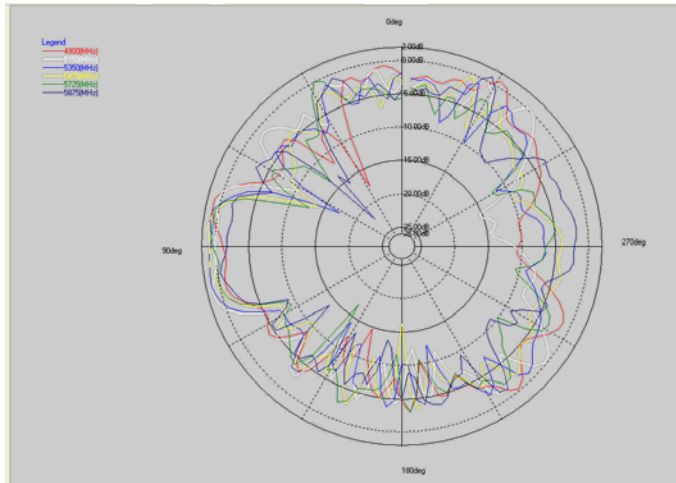
Frequency	2412MHz	2437MHz	2462MHz
Horizontal peak gain(dBi)	-1.76	-2.46	-0.72
Vertical peak gain(dBi)	-1.23	-2.23	-1.57
Hori + Vert peak gain(dBi)	0.62	0.28	1.27
Hori + Vert avg gain	-3.36	-3.25	-2.96



Vertical



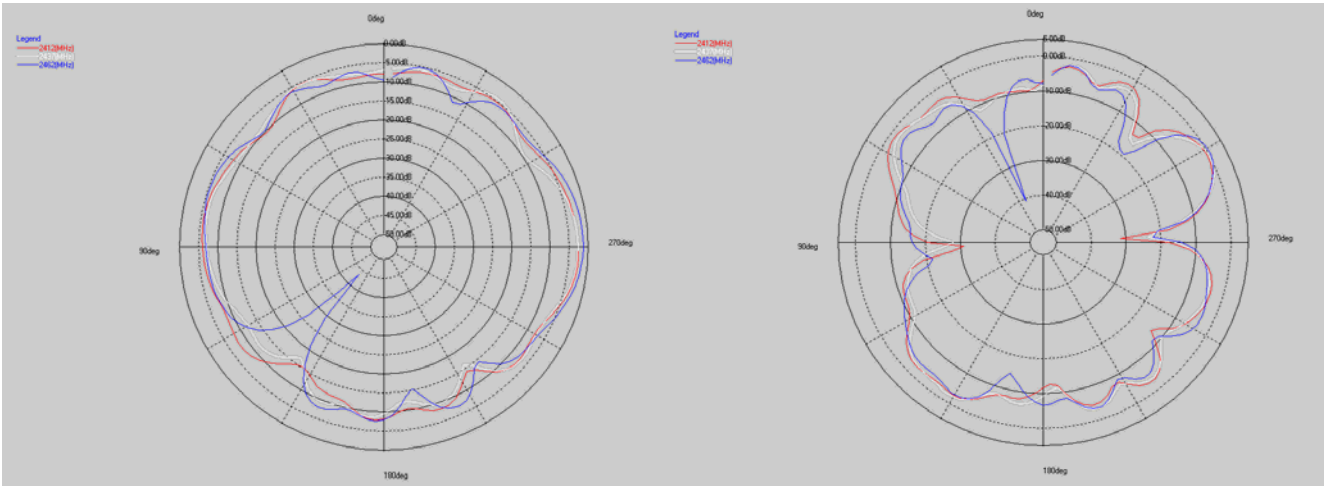
Horizontal



Hori + Vert

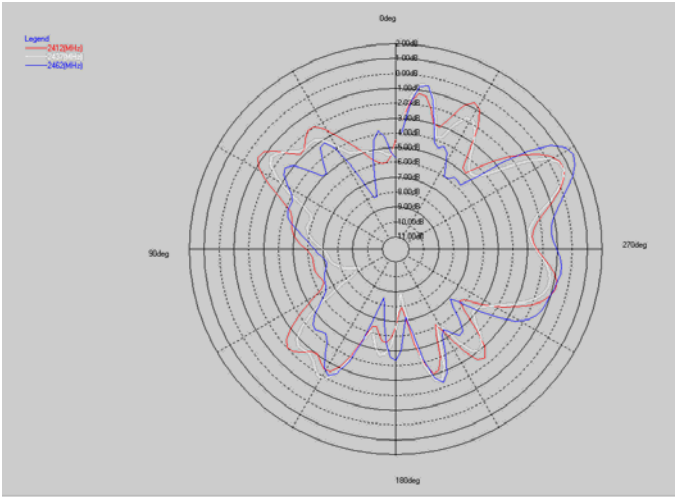
Frequency	4900MHz	5150MHz	5350MHz	5470MHz	5725MHz	5875MHz
Horizontal peak gain(dBi)	-0.04	-0.53	-0.98	-0.65	-0.93	-0.24
Vertical peak gain(dBi)	0.27	-0.26	0.59	0.69	-0.54	-1.48
Hori + Vert peak gain(dBi)	0.96	1.09	1.09	1.15	0.60	0.81
Hori + Vert avg gain	-4.13	-4.35	-4.63	-4.67	-4.89	-4.8

- Aux Antenna



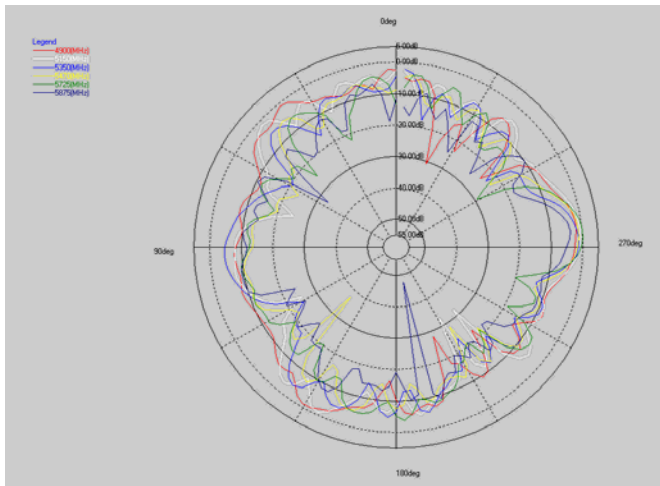
Vertical

Horizontal

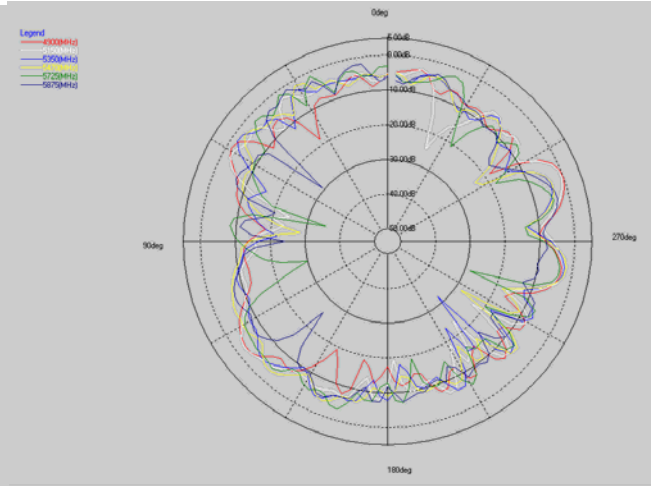


Hori + Vert

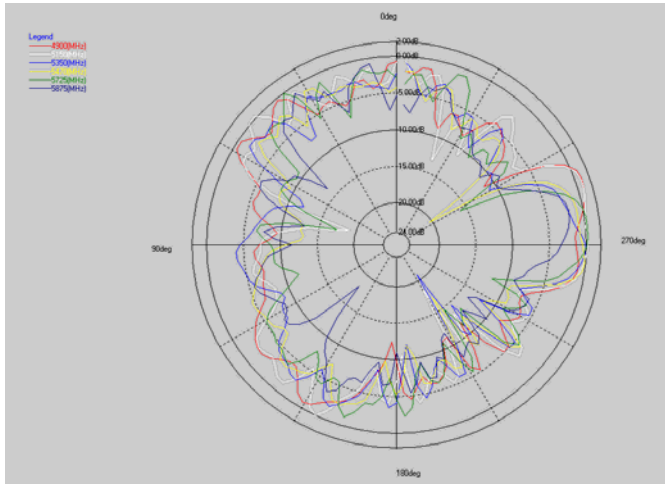
Frequency	2412MHz	2437MHz	2462MHz
Horizontal peak gain(dBi)	-0.48	-0.04	0.54
Vertical peak gain(dBi)	-2.47	-2.63	-1.26
Hori + Vert peak gain(dBi)	0.65	0.65	1.66
Hori + Vert avg gain	-3.35	-3.74	-3.77



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