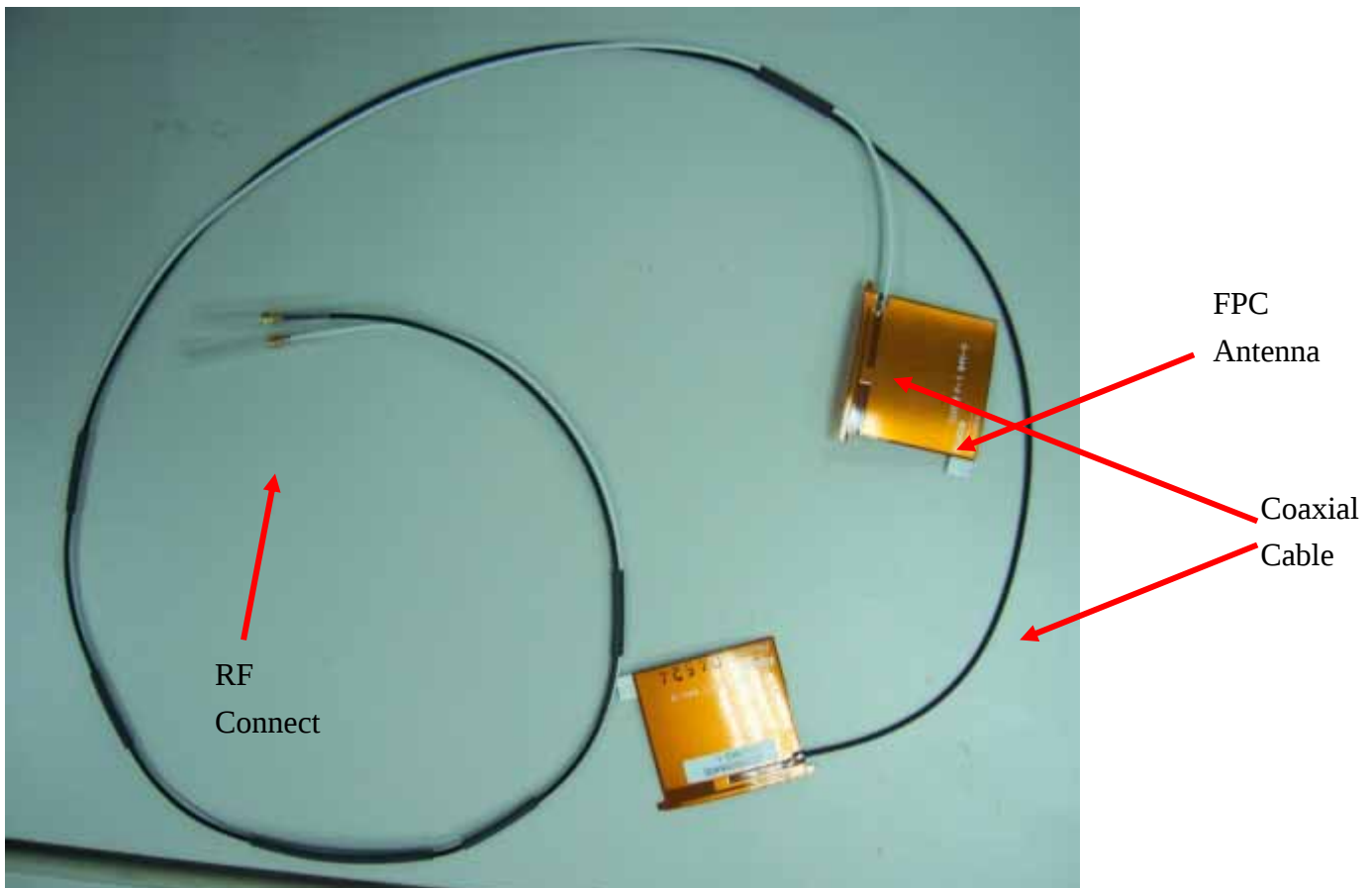


EAL20 Product Spec.

Customer Name	Compal Computer, Corp.		
Date	2005/02/04		
Customer P/N	DC330006400		
Tyco P/N	1747862-1		
Description	802.11 A+B+G WLAN Antenna		
Version	0A	Doc. Version	1

1. Antenna Description

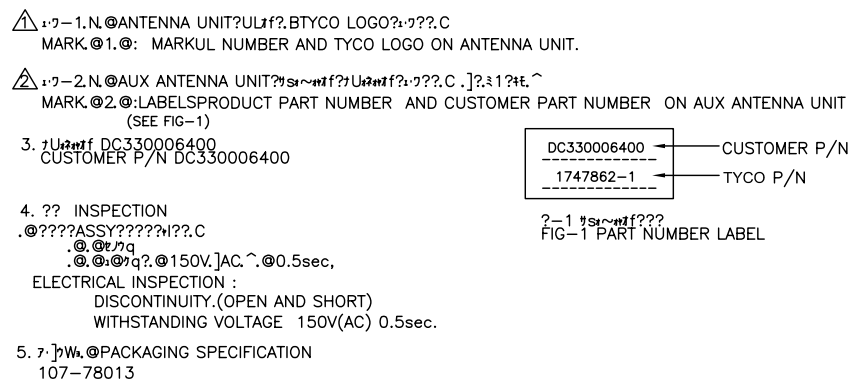


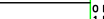
Antenna Weight

7 gw per pcs

2. Outline drawing of antenna

RESTRICTED TO COMPAL ELECTRONICS, INC.



THIS DRAWING IS A CONTROLLED DOCUMENT.		DWN Y. TAKADA 14SEP04		tyco Electronics		Tyco Electronics AMP K.K. Kawasaki, Japan	
DIMENSIONS: 7xL 6t mm		TOLERANCES UNLESS OTHERWISE SPECIFIED: 0.1t		CHK T. KIMURA 16SEP04		NAME 3/4/	
		0 PLC ± 3 2 PLC ± 3 2 PLC ± 1 3 PLC ± 3 4 PLC ± - ± 3		APVD K. IKEGAMI 16SEP04 PRODUCT SPEC TS-001 108-5996-1 APPLICATION SPEC r18A 87W		ANTENNA_LCD_ANT EAL20_LCD_ANT_ASSY -	
MATERIAL N.C.		FINISH K.W		SIZE A2		CAGE CODE 00779	
		WEIGHT 5.9g		DRAWING NO C1747862		RESTRICTED CPE	
RESTRICTED CUSTOMER				SCALE 1 OF 1		SHEET 1 OF 1	
				NTS		REV	

3. Relative Documents ← Material Spec. data & Drawing

5. 概略図
Sketch

梱包仕様書 Packing Specification Sheet						IIDA CO.,LTD.				
部番 Part No.		品名 Part Name		発行日 Issue Date		発行区 Issuing Dept		課長印 Section Mgr	係長印 Supervisor	作成者 Creator
Antenna ASSY 汎用		Wireless LAN Antenna ASSY		2003.12.26		品質技術課		酒巻	—	日比野
NO	品名 Part Name	部番 Part No.	数量 Qty	材質 Material						
①	製品		1000							
②	TRAY	1717980-26	20							
③	外箱	1717980-25	1	ダンボール						
④	天板	1717980-27	1	ダンボール						
⑤	包装カード		1	紙						
⑥	Plastic Bag	1717980-28	1000							
⑦										
⑧										
⑨										
⑩										
梱包数 Content		Tray	50	Crate Box	1000	Pallets	8000			
作業内容 Work Content				ポイント Caution Points						
1. ②のTRAYに①の製品を図の様に入れる。 *製品を指定のビニール袋に入れる。 *製品を入れたビニール袋をTray の一マスに2pcs入れる。 2. ③の外箱を組み立て、製品梱包されたTRAYを箱に入れる。 * 外箱の底面は、H型でテープ固定すること * TRAYを重ねる時は、180度方向を変えて重ねる事 * TRAYは20段入れる 3. 20段目のTRAYの上に④の天板をのせ 外箱のフタをテープ固定する。 * 外箱の上面は、I 型でテープ固定すること 4. 箱側面に⑤の包装カード貼る。				一段毎に180度反転させる						
管理番号 Control No.		PAC-197		PAGE	1/1		REV :	02		
QA承認 QA Approval	改訂日 Revised Date	改訂内容 Revision Details			改訂者 Per: in char	課長印 Section Mgr				
	03.12.26	新規作成			日比野	酒巻				
	03.04.14	Parts Number 変更			日比野	日比野				
	04.12.06	Antenna ASSY 汎用品適用			日比野	日比野				

④ ① ② ③ ⑤

180度方向を替えること

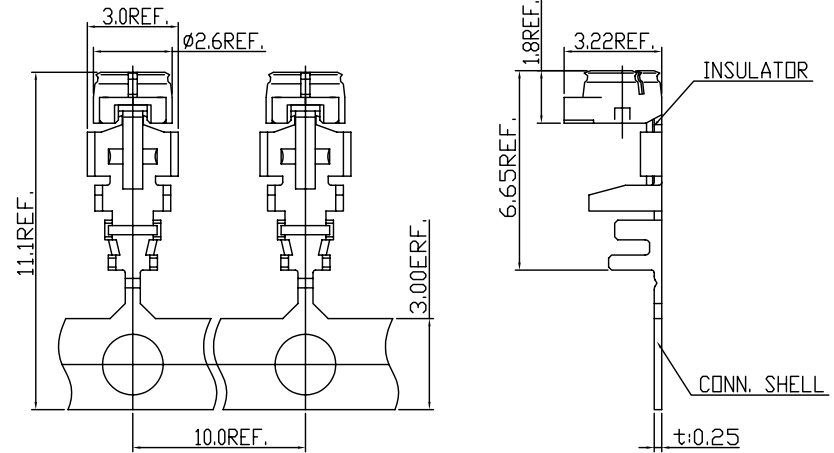
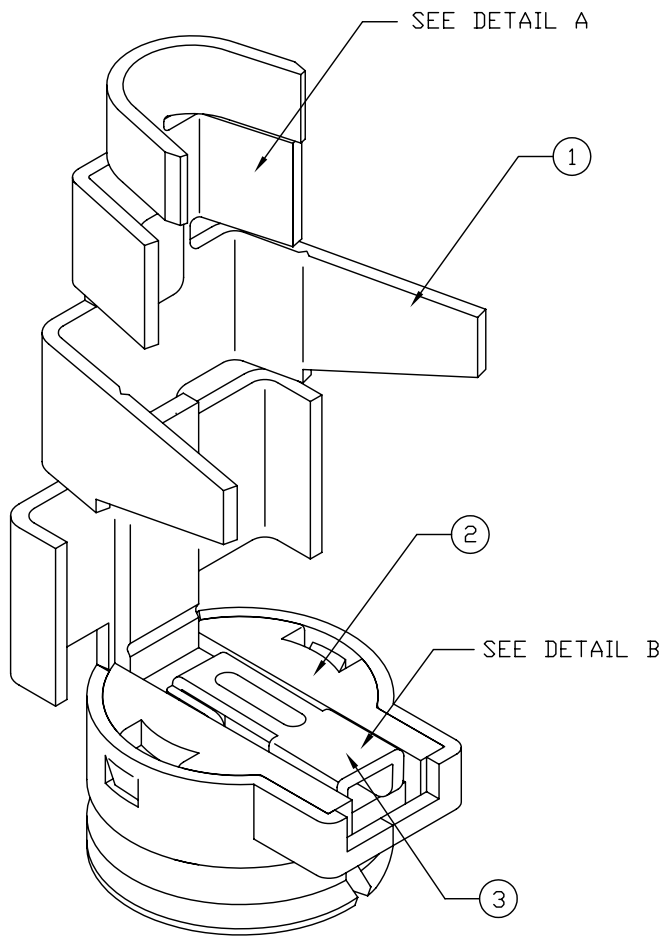
180度方向を替えること

梱包仕様書作成後、必ずQA承認をもらって下さい。管理番号はQA区にて発行いたします。

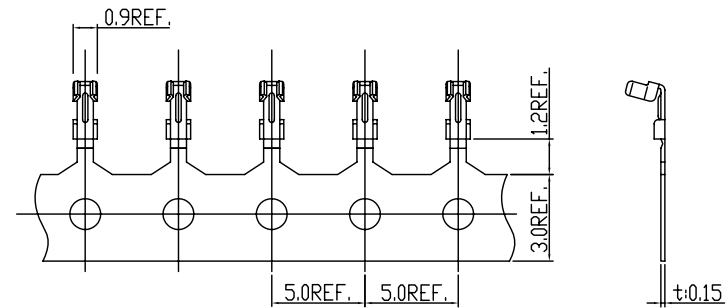
Obtain QA approval after filling in the above columns. The Control No. is issued by QA Dept.

Fig-1 PAC-197 Sketch , Rev, O2 date 06Dec04

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DETAIL A



DETAIL B

1566284-3	ø1.35MM~ø1.38MM
1566284-2	ø0.98MM ø0.80MM
1566284-1	ø1.32MM ø1.13MM
P/N	CABLE SPEC.

EA	1	1-1566284-3	INNER CONTACT	3
EA	1	1-1566284-2	INSULATOR	2
EA	1	1-1566284-1	PLUG SHELL	1
U/M	Q'TY	PART NO.	DESCRIPTION	ITEM NO.

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DIMENSIONS: MM	TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLC ±	1 PLC ±
2 PLC ±	3 PLC ±
ANGLES ±	SURFACE TEXTURE

SIZE A3	SCALE —	SHEET 1 OF 2	REV A
DWN M.TSAI	ENG. R.LEE	CHK J.PI	APVD J.CHEN

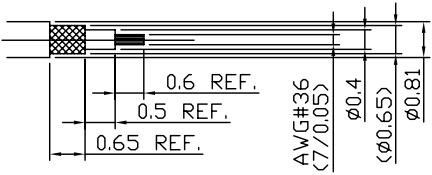
tyco Electronics	TYCO ELECTRONICS CABLE SYSTEMS ASIA PACIFIC
NAME VAO ITEM, MINI RF COAX PLUG CONN. (TYPE II)	
DRAWING NO. C-1566284	
CUSTOMER DRAWING	

LOC
HY
DIST

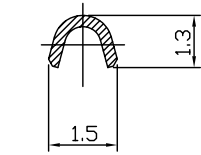
A	FZ10-0164-04	26.APR.04'	MT	JP
LTR	REVISION RECORD	DATE	DWN	APVE

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CABLE TYPE(Ø0.80mm)

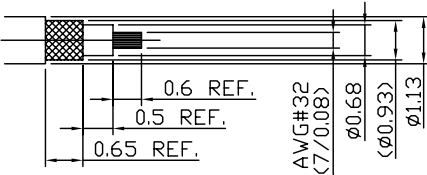


X"-X" SECTION

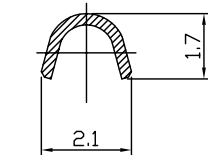


Y"-Y" SECTION

CABLE TYPE(Ø1.13mm)

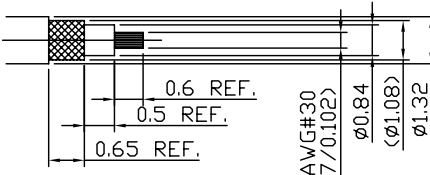


X"-X" SECTION

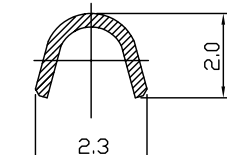


Y"-Y" SECTION

CABLE TYPE(Ø1.32mm)

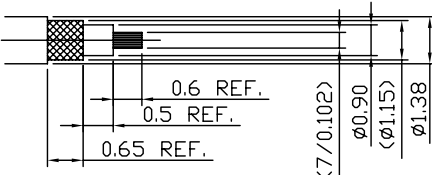


X"-X" SECTION

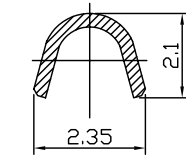


Y"-Y" SECTION

CABLE TYPE(Ø1.35mm~Ø1.38mm)



X"-X" SECTION



Y"-Y" SECTION

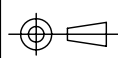
1566284-3	Ø1.35MM~Ø1.38MM
1566284-2	Ø0.98MM Ø0.80MM
1566284-1	Ø1.32MM Ø1.13MM
P/N	CABLE SPEC.

LOC
HY
DIST

A	FZ10-0164-04	26.APR.04	MT	JP
LTR	REVISION RECORD	DATE	DWN	APVE

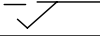
THIS DRAWING IS A CONTROLLING DOCUMENT FROM
TYCO ELECTRONICS IT IS SUBJECT TO CHANGE AND
THE CONTROLLING ENGINEERING ORGANIZATION
SHOULD BE CONTACTED FOR THE LATEST REVISION

DIMENSIONS:
MM



TOLERANCES UNLESS
OTHERWISE SPECIFIED:
0 PLC ±
1 PLC ±
2 PLC ±
3 PLC ±

ANGLES ±
SURFACE
TEXTURE



SIZE A3	SCALE —	SHEET 2 OF 2	REV A
DWN M.TSAI	ENG. R.LEE	CHK J.PI	APVD J.CHEN

tyco Electronics	TYCO ELECTRONICS CABLE SYSTEMS ASIA PACIFIC
NAME VAO ITEM, MINI RF COAX PLUG CONN. (TYPE II)	DRAWING NO. C-1566284
CUSTOMER DRAWING	

Issue: Oct. 21, 1999
Spec. No. : NSP-9-6973

NISSEI ELECTRIC CO., LTD.
205 Matsuyama-cho
Iwata-Gun, Shizuoka
Japan 438-0206

SPECIFICATION
for
HIFLON

FEP INSULATED-FEP JACKETED COAXIAL CABLE

Type : RF-MF5016
Design No. : 99673

REVIEWED BY:

NISSEI ELECTRIC CO., LTD.

NISSEI ELECTRIC CO., LTD.

K. Tsuruta
TECHNICAL DEPT. K. TSURUTA
ENGINEER

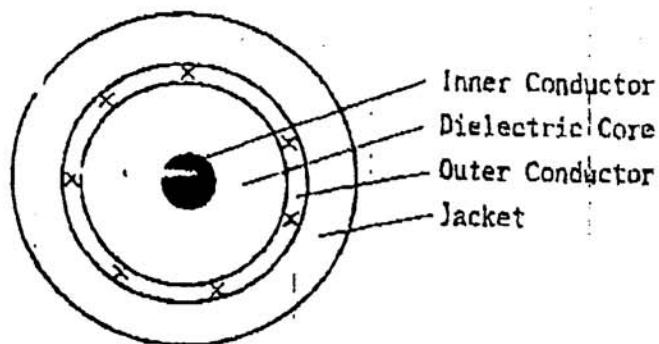
H. Ohtsuka
TECHNICAL DEPT. H. OHTSUKA
SENIOR STAFF ENGINEER

1. SCOPE

This specification covers Cable, Radio Frequency, RF-NF5016, which a product of NISSEI ELECTRIC CO., LTD.

2. CONSTRUCTION, MATERIALS AND DIMENSIONS

2.1 Construction



2.2 Materials and dimensions

Materials and dimensions of this cable is shown as Table-1.

3. PERFORMANCE OF THE CABLE

3.1 Testing of cable

Performance of the cable is examined and tested in accordance with the test method as listed in Table-2.

4. QUALITY ASSURANCE

4.1 Nissei Electric Company fully guarantee the quality of this cable.

Every lot produced are processed and inspected with best available technical skill.

4.2 Quality conformance inspection

Every lot produced shall be examined and tested for items 1 thru 13 of Table-2.

5. PACKAGING AND MARKING

5.1 Packaging

Unless otherwise indicated
commercial practices.

..... packaging shall be made per good

5.2 Marking

Each coil shall be marked with the following information.

1. Nomenclature
2. Length
3. Date of Manufacture
4. Lot Number
5. Name of Manufacturer

(Note)

1. The modification or addition of this specification is acceptable.



The Specified values of this specification is changed over different usage environments and method of use.

Table-1: Description

No.	Components	Material	Construction	Diameter
1	Inner Conductor	Silver-Coated Annealed Copper Wire	7/0.08	0.24mm (nominal)
2	Dielectric Core	FEP	Thickness 0.22mm(nominal)	0.68±0.04mm -0.02
3	Outer Conductor	Silver-Coated Annealed Copper Wire	16/4/0.05	0.93mm(nominal)
4	Jacket	FEP * Standard color is Gray	Thickness 0.10mm(nominal)	1.18±0.02mm -0.05

Table-2: Requirements

PART	No.	TEST ITEM	PERFORMANCE	TEST CONDITIONING
Inner Conductor	1	Stranding	See Table-1	Visual
	2	Material	See Table-1	Visual
	3	Diameter of Wire	See Table-1	
Dielectric Core	4	Conductor Resistance (at 20°C)	Less than 520Ω/km	Double Bridge
	5	Diameter of Core	See Table-1	
	6	Spark Test	No breakdown at AC 4000V for 0.15sec	Spark Tester
Outer Conductor	7	Material of Strands	See Table-1	Visual
	8	Construction	See Table-1	Visual
Finished cable	9	Overall Diameter	See Table-1	
	10	Dielectric Withstand Voltage	No breakdown at AC 500V for 1min.	Outer Conductor to Inner Conductor
	11	Insulation Resistance (at 20°C)	More than 1500MΩ·km	High Insulation Resistance Meters
	12	Characteristic Impedance	50±2 ohms	TDR Method
	13	Capacitance	97pF/m (nominal)	Capacitance Meter

Regulatory WLAN Antenna Information

(English Language Required for Intel Regulatory Review / Approval)

Platform: EAL20

Antenna Vendor: Tyco Electronics

Antenna Part Number: 1747862-1 (for main and aux)

Antenna Sample / Antenna Data Requirements for worldwide regulatory approval

Section	Description of Required OEM / ODM Antenna Information	US / IC	EU	Japan	Taiwan	S.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 and 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) and Drawings showing location of antennas in platform. (S. Korea requires photographs of antennas for approval submission). Taiwan requires pictures of each antenna type shown in the system.	Required	Required	Desired	Required (Photos)	Required (Photos)
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

Singapore: If product is shipping to Singapore the following is required:

- **Photograph of miniPCI card location in laptop to determine if it is easily accessible by the user. (See Section 4. Host Platform Information).**

Antenna Information

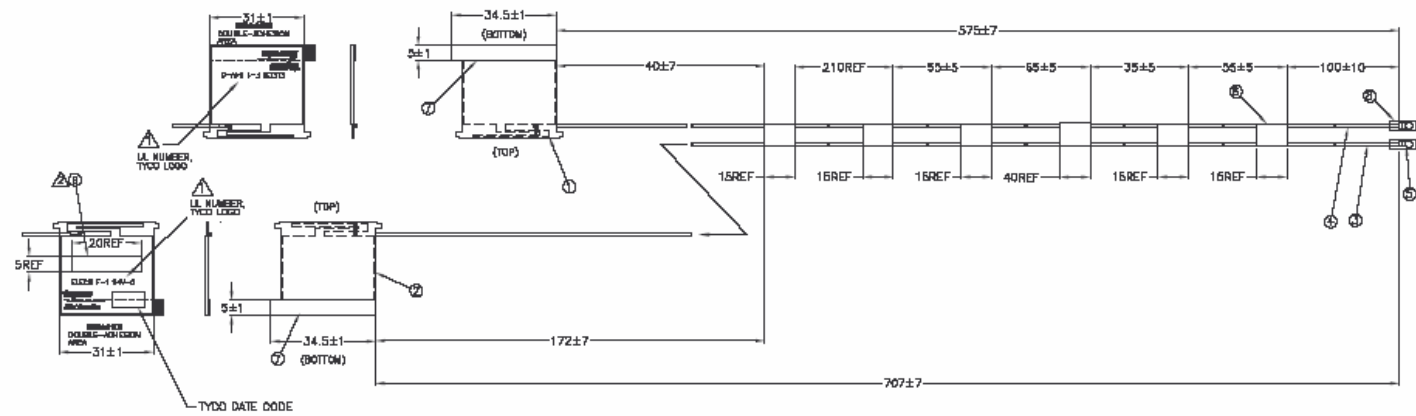
Section 1. Antenna Assembly Specifications

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)
(P/N: 1747862-1) Main antenna	Tyco Electronics	IFA	(P/N: 1-1747862-4) 50 ohm Coaxial. length: 575mm diameter: 1.13mm Connector: Tyco	2400-2500MHz 0.57dBi (peak)	2400-2500MHz 2.03 dBi (peak)	2400-2500MHz 2.0 max	2400-2500MHz -1.463dBi (peak)
				4.900-5350MHz 1.35 dBi (peak)	4.900-5350MHz 3.70 dBi (peak)	4.900-5350MHz 2.0 max	4.900-5350MHz -2.351 dBi (peak)
				5470-5875MHz -0.32 dBi (peak)	5470-5875MHz 2.16 dBi (peak)	5470-5875MHz 2.0 max	5470-5875MHz -2.489dBi (peak)
(P/N: 1747862-1) Auxiliary antenna	Tyco Electronics	IFA	(P/N: 1-1747862-3) 50 ohm Coaxial. length: 707mm diameter: 1.13mm Connector: Tyco	2400-2500MHz 0.87dBi (peak)	2400-2500MHz 2.73dBi (peak)	2400-2500MHz 2.0 max	2400-2500MHz -1.865dBi (peak)
				4.90-5350MHz -0.10dBi (peak)	4.900-5350MHz 2.68 dBi (peak)	4.900-5350MHz 2.0 max	4.900-5350MHz -2.779dBi (peak)
				5470-5875MHz -1.35 dBi (peak)	5470-5875MHz 1.52 bdBi (peak)	5470-5875MHz 2.0 max	5470-5875MHz -2.87 dBi (peak)

Section 2. Dimensioned Photos and Drawings of Antennas

Main Antenna Dimensioned Drawing:



Main Antenna Photo:



Auxiliary Antenna Dimensioned Drawing:

(Please refer to the drawing of Main Antenna.)

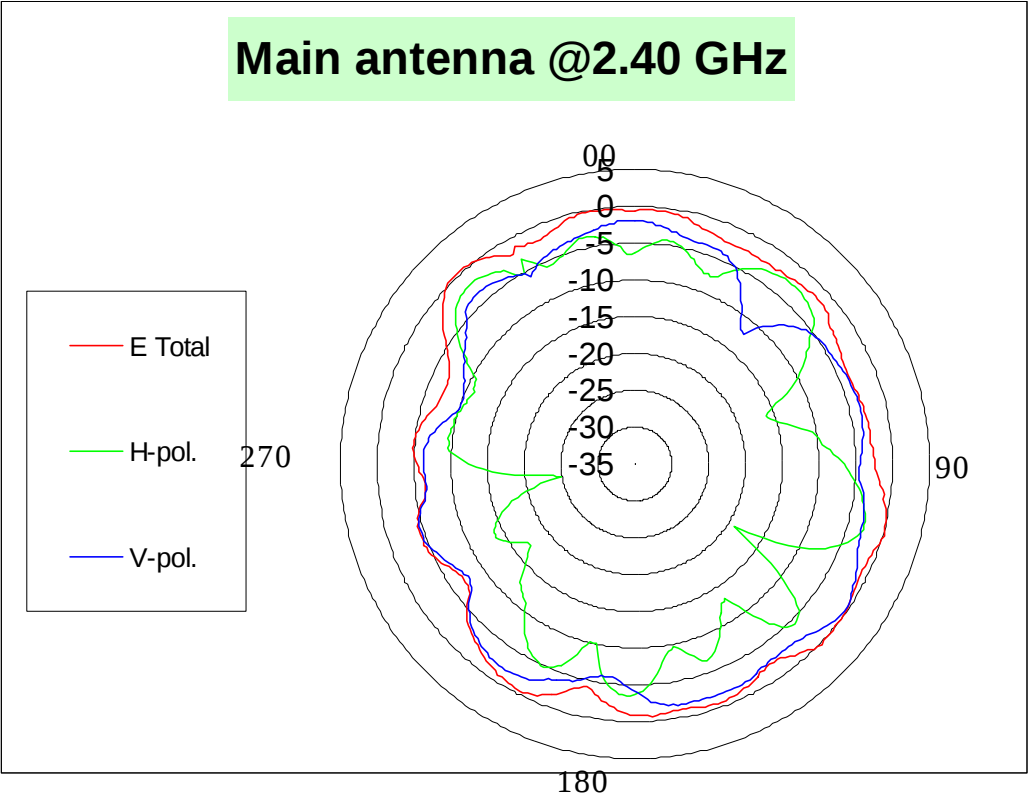
Auxiliary Antenna Photo:



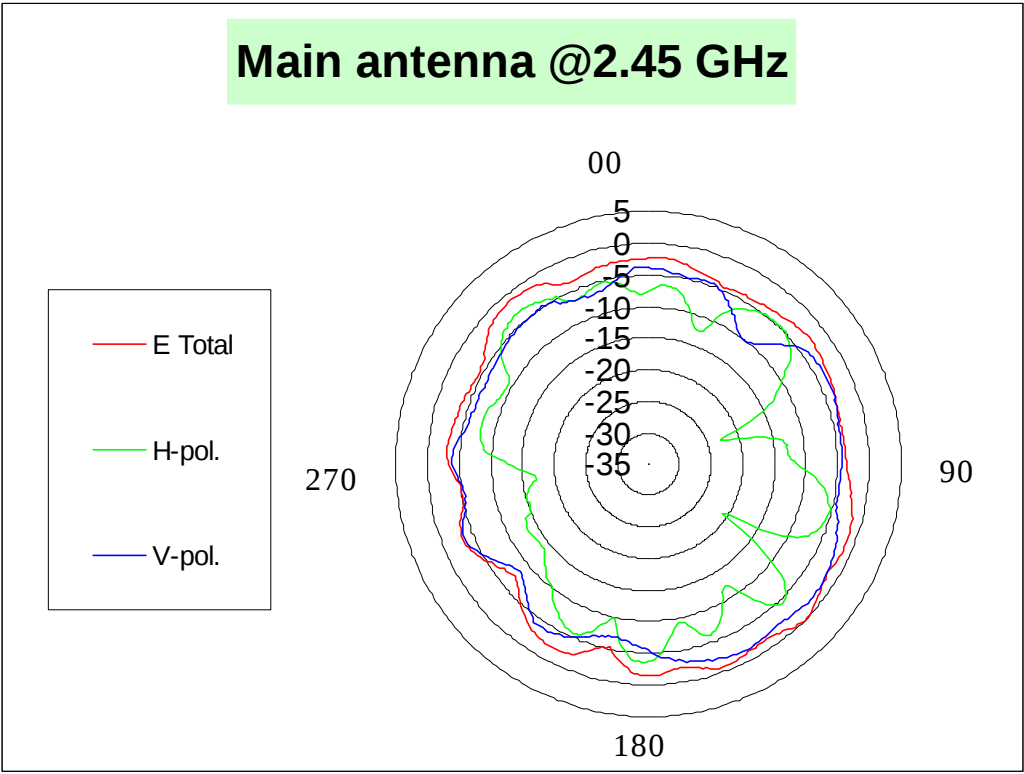
Section 3. Radiation characteristics of antenna Loaded in Host Platform

2400-2500MHz radiation characteristic

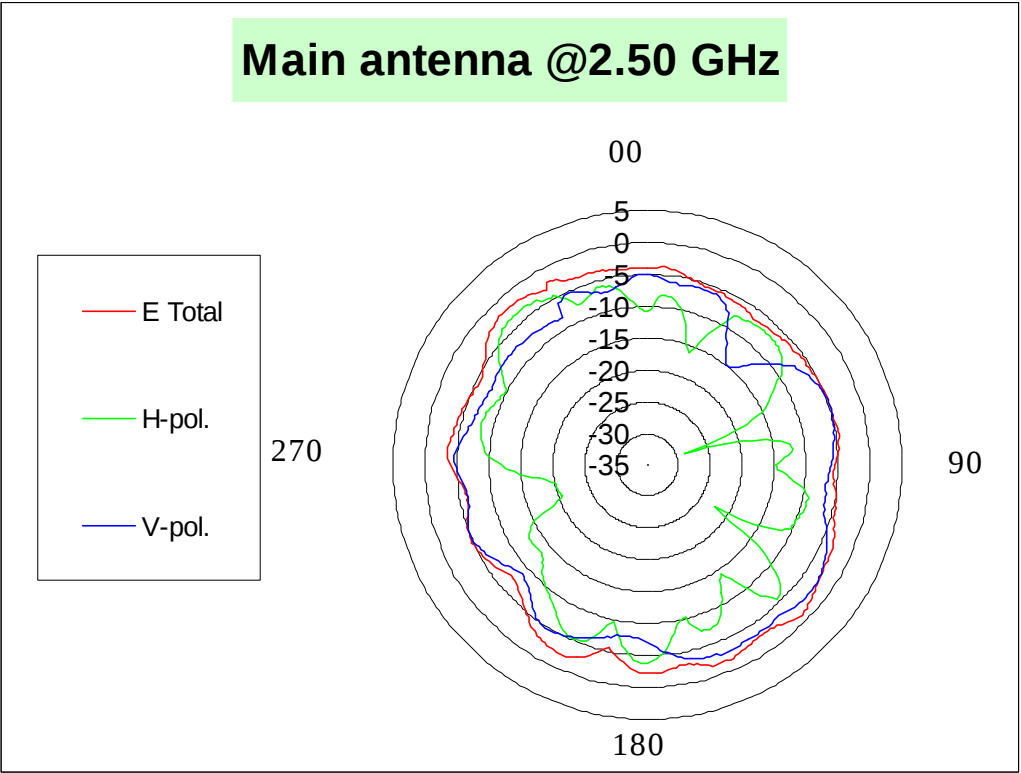
Main antenna: 2400 MHz



	Total	H-pol	V pol
Peak Gain	-1.88	0.25	0.57

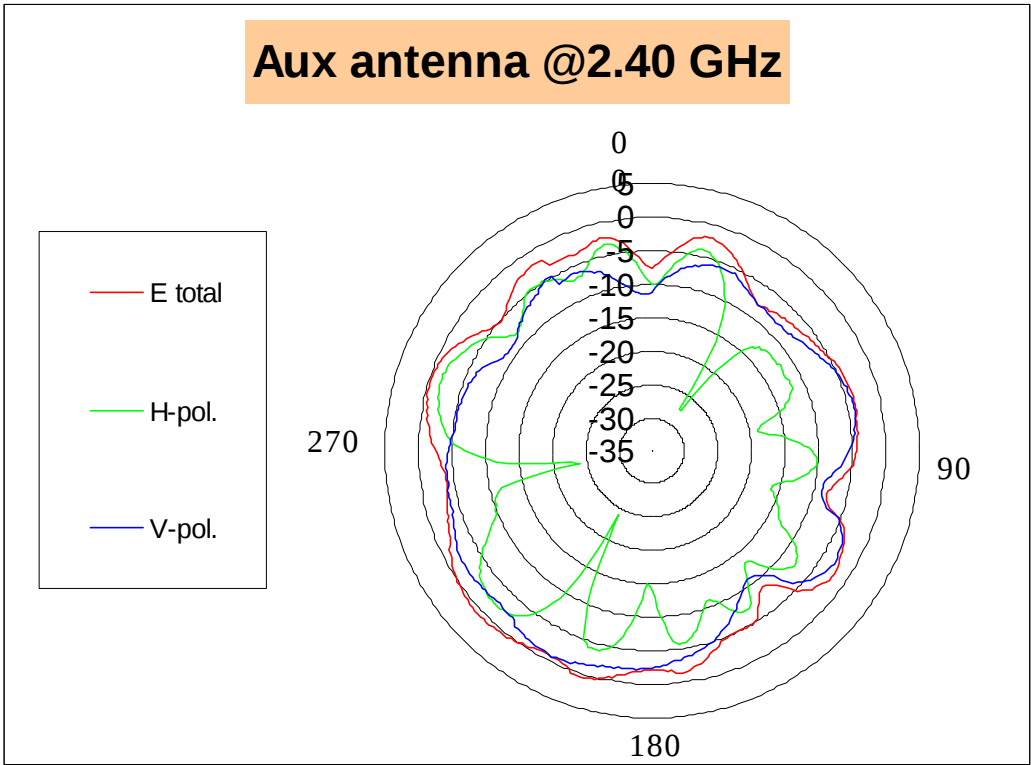


	Total	H-pol	V pol
Peak Gain	-2.44	-0.49	0.13



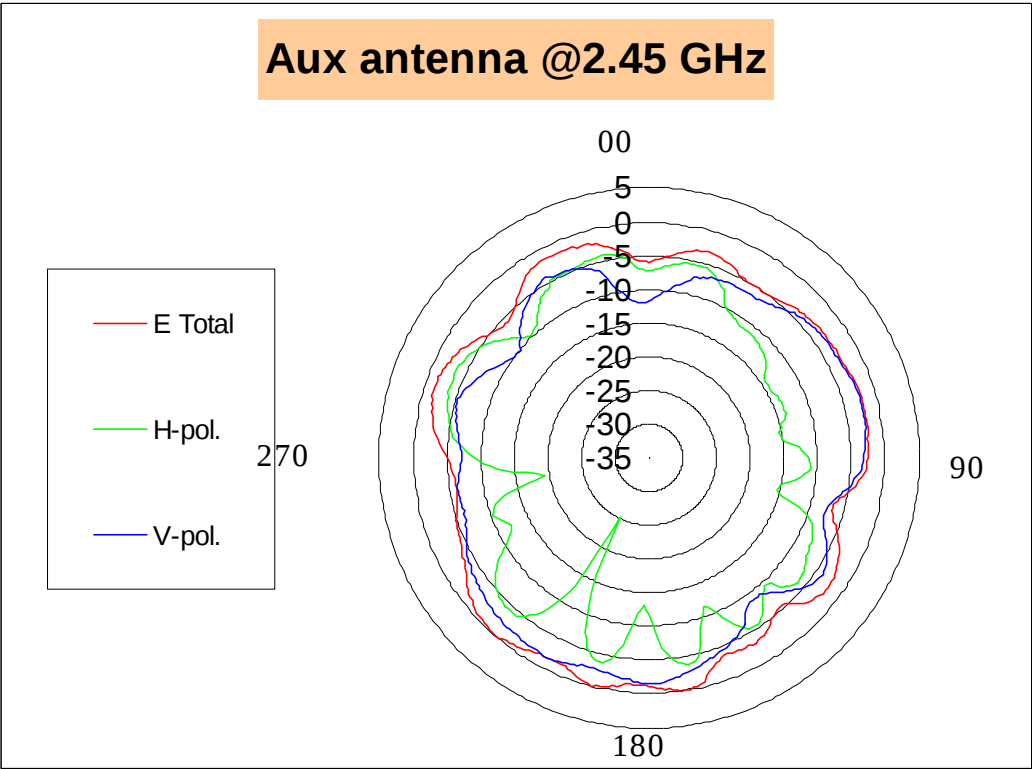
	Total	H-pol	V pol
Peak Gain	-3.15	-1.53	-0.14

Auxiliary antenna: 2400 MHz

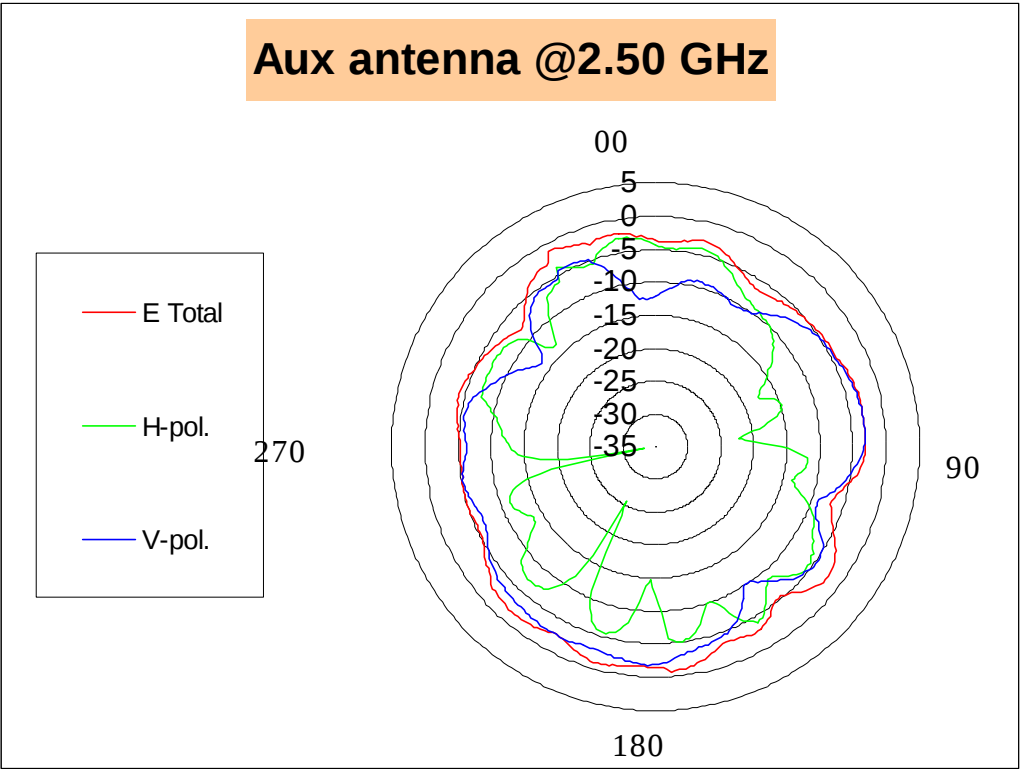


	Total	H-pol	V pol
Peak Gain	-1.13	0.46	0.87

Auxiliary antenna: 2450 MHz



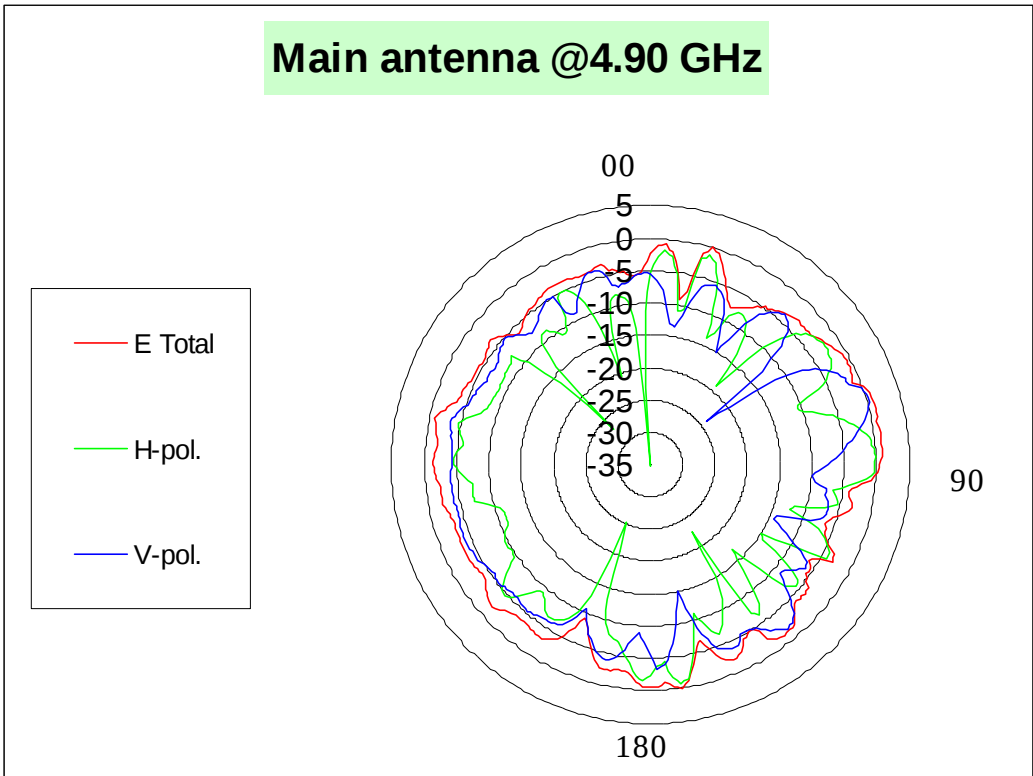
	Total	H-pol	V pol
Peak Gain	-3.26	-0.81	0.57



	Total	H-pol	V pol
Peak Gain	-2.67	-1.12	-0.21

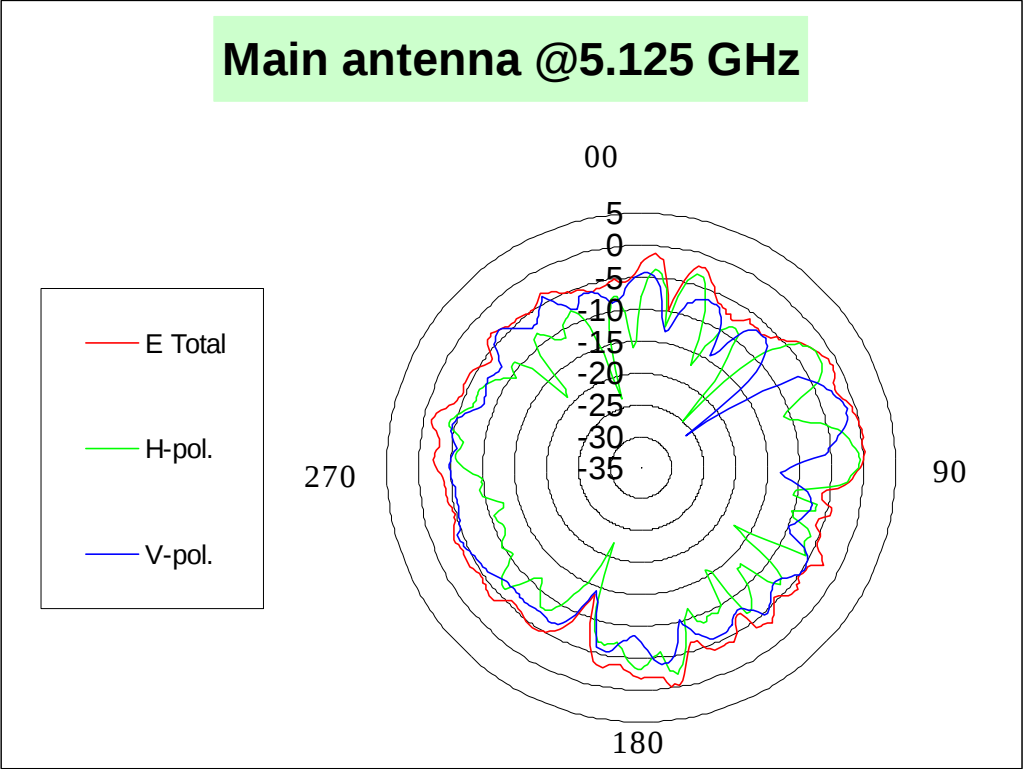
4900-5350 MHz radiation characteristic

Main antenna: 4900 MHz



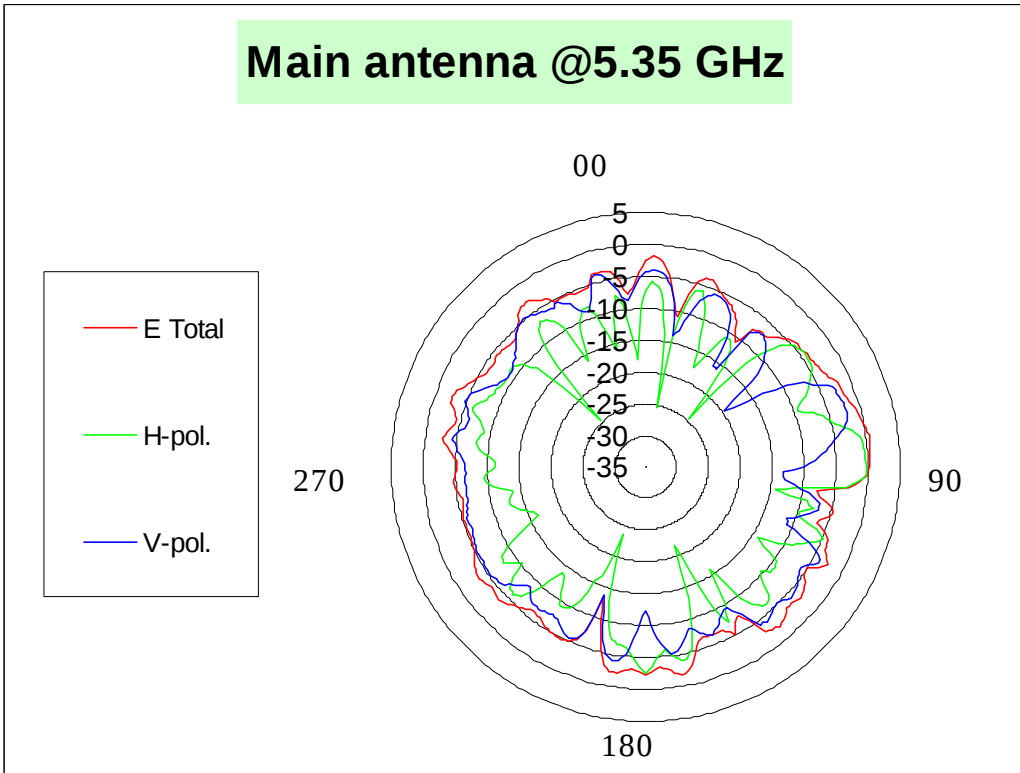
	Total	H-pol	V pol
Peak Gain	-0.22	0.78	1.35

Main antenna: 5125 MHz



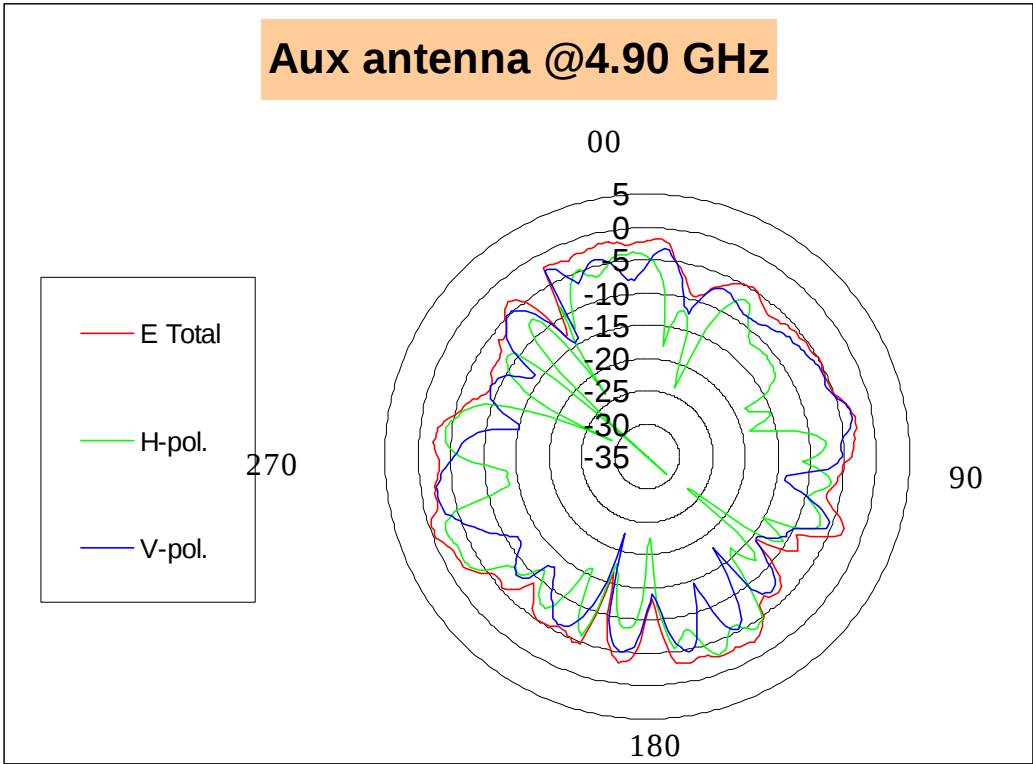
	Total	H-pol	V pol
Peak Gain	0.19	-0.68	0.34

Main antenna: 5350 MHz



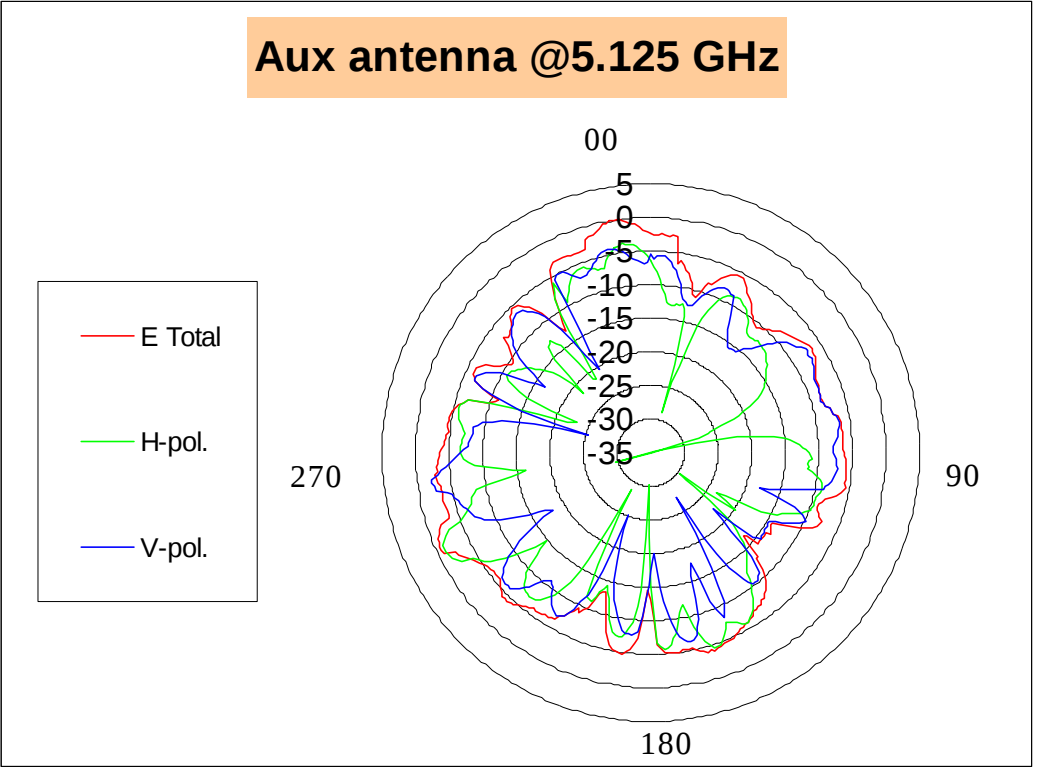
	Total	H-pol	V pol
Peak Gain	-0.26	-2.24	0.51

Auxiliary antenna: 4900 MHz

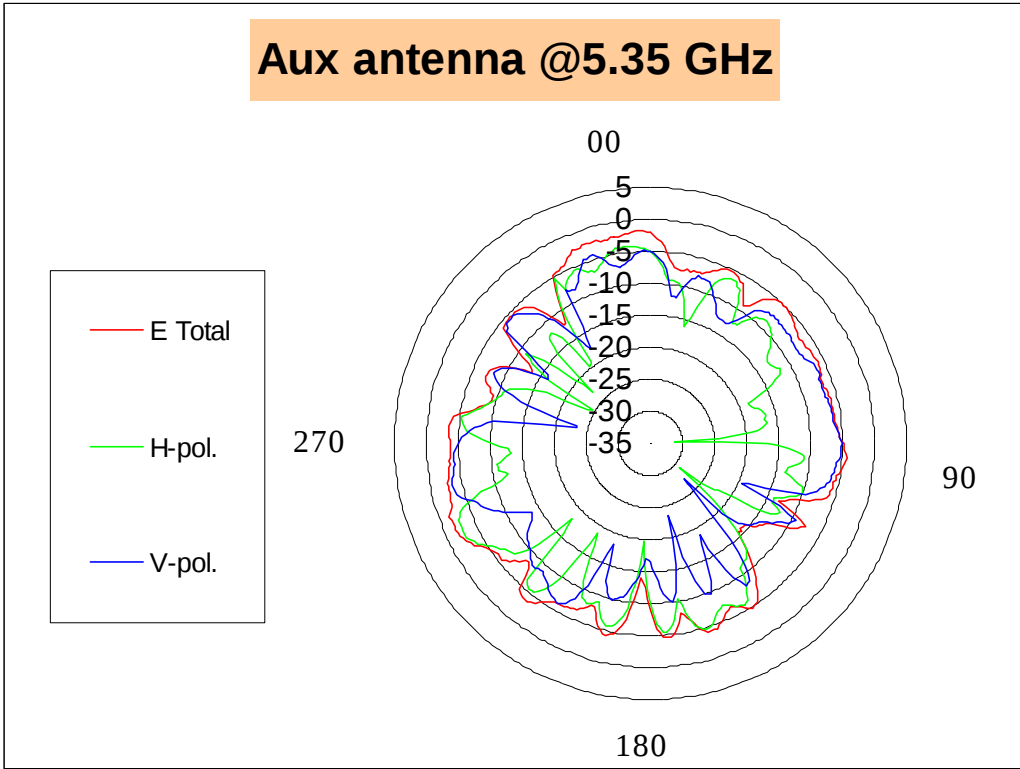


	Total	H-pol	V pol
Peak Gain	-1.79	-2.33	-0.66

Auxiliary antenna: 5125MHz



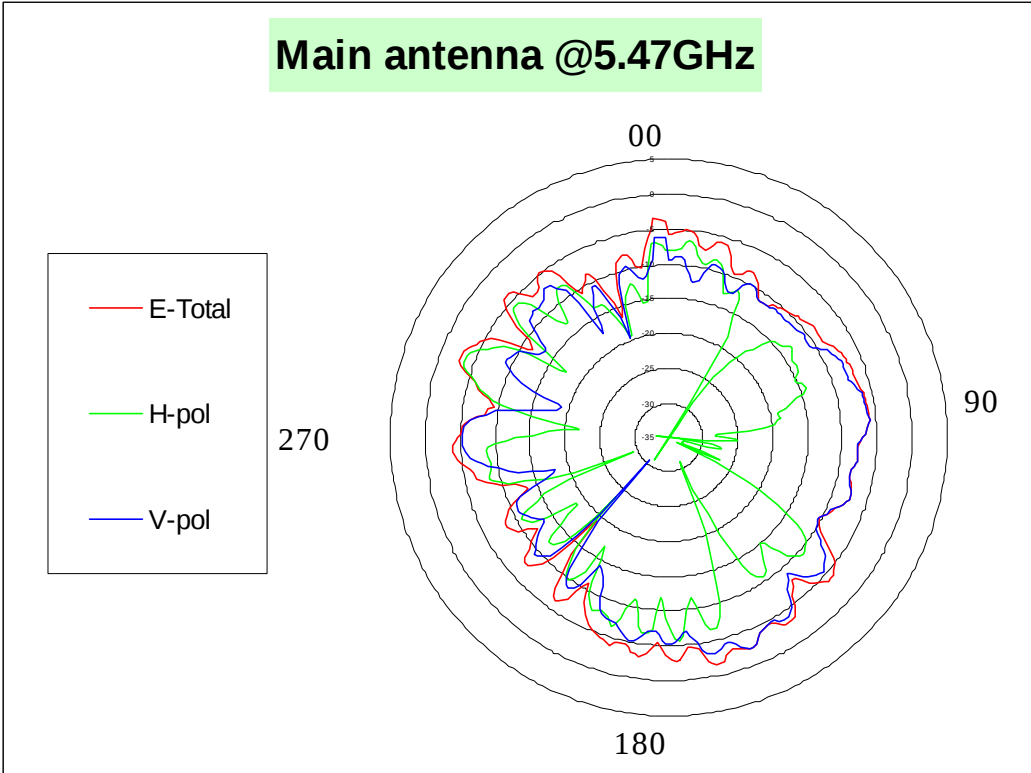
	Total	H-pol	V pol
Peak Gain	-1.16	-1.97	-0.10



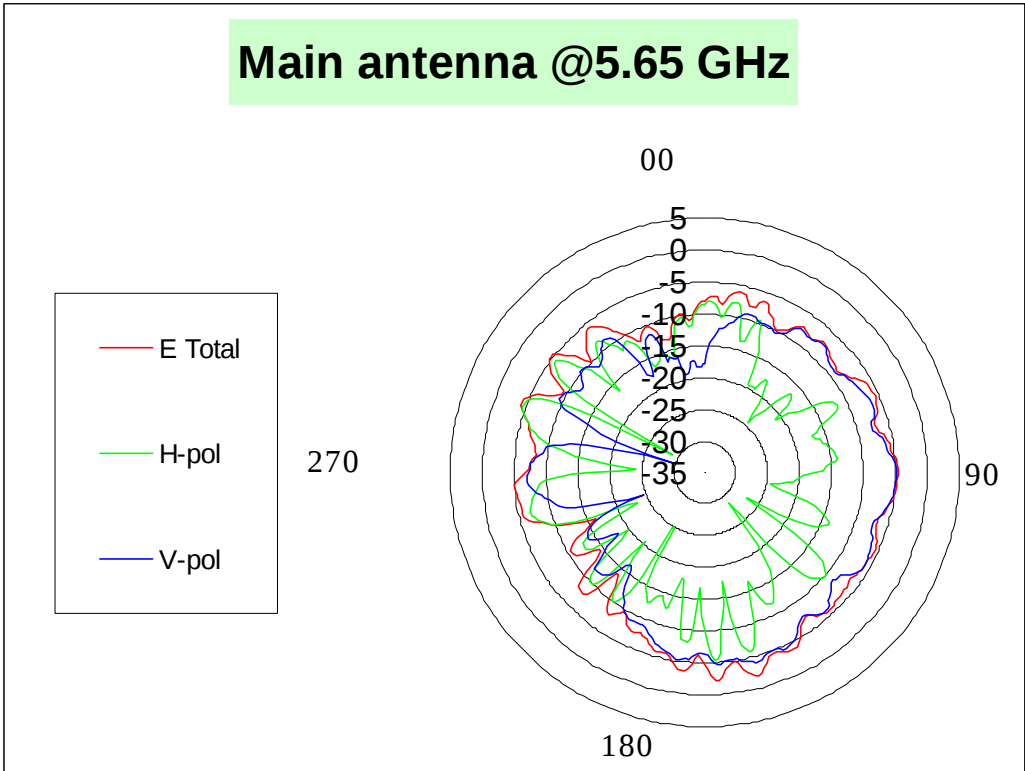
	Total	H-pol	V pol
Peak Gain	-1.87	-2.53	-0.79

5470-5M875Hz radiation characteristic

Main antenna: 5470 MHz

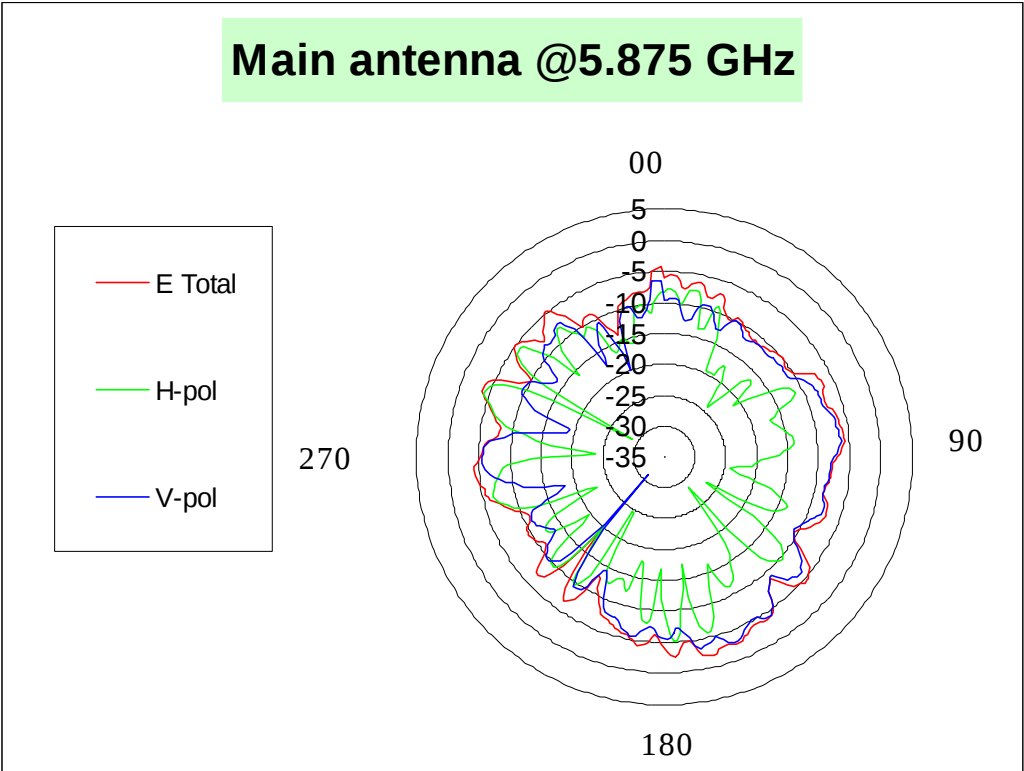


	H-pol	V-pol	Total
Peak Gain	-1.56	-1.99	-0.32



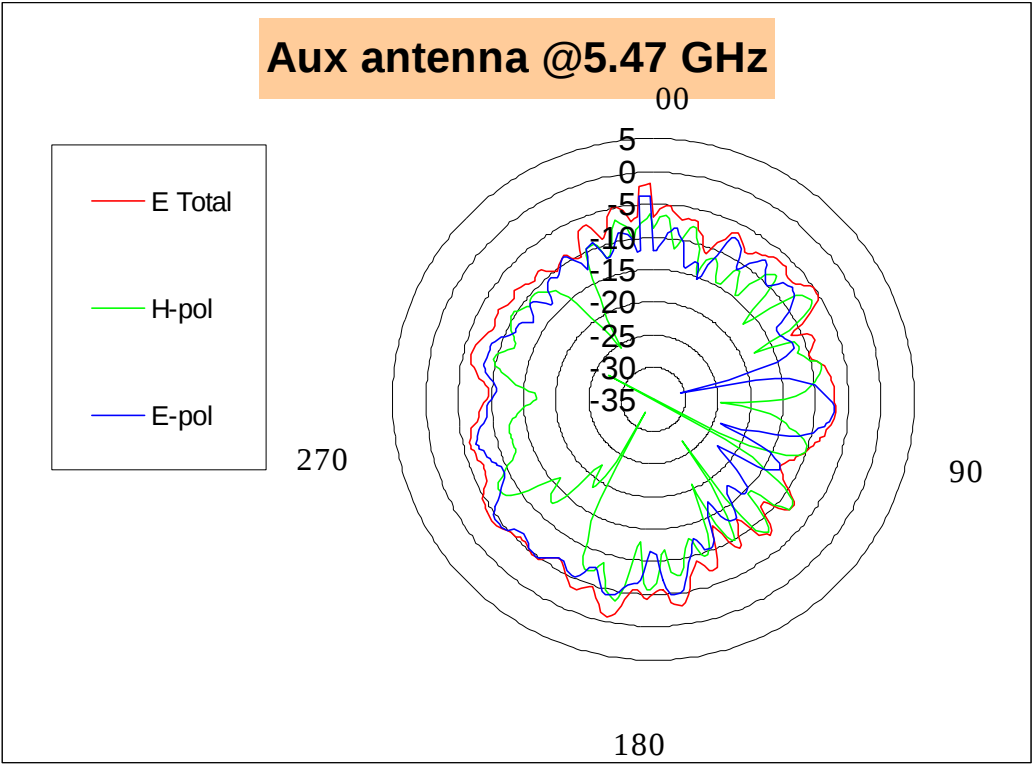
	H-pol	V-pol	Total
Peak Gain	-3.72	-3.35	-1.76

Main antenna: 5875 MHz

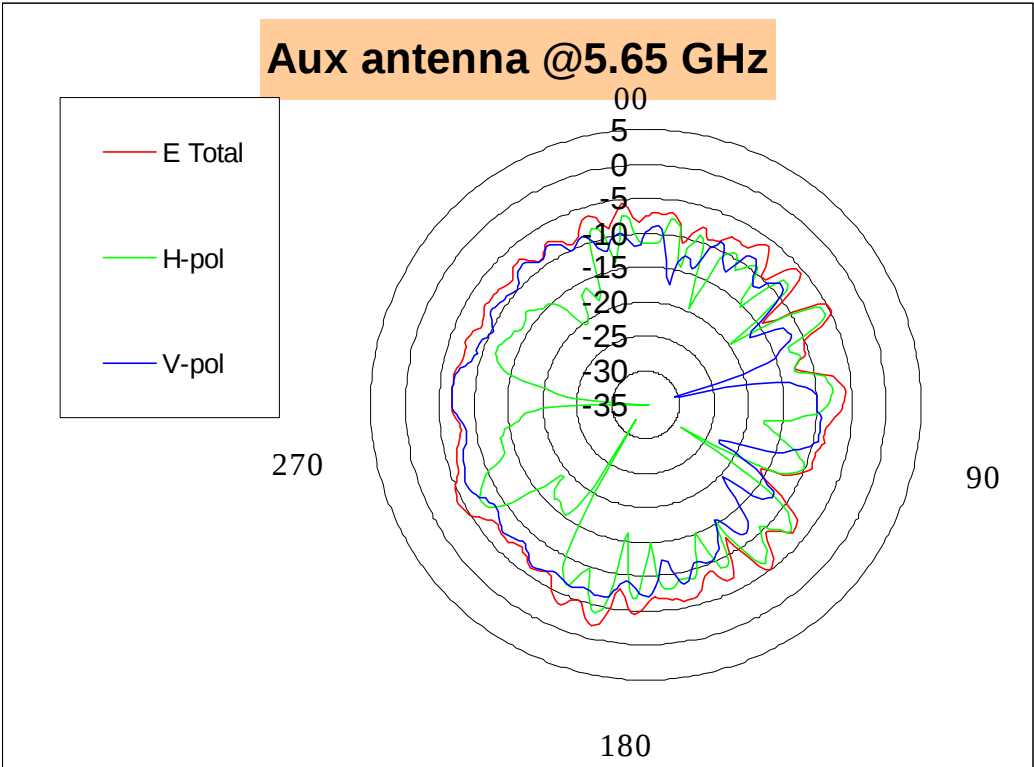


	H-pol	V-pol	Total
Peak Gain	-3.78	-2.86	-1.23

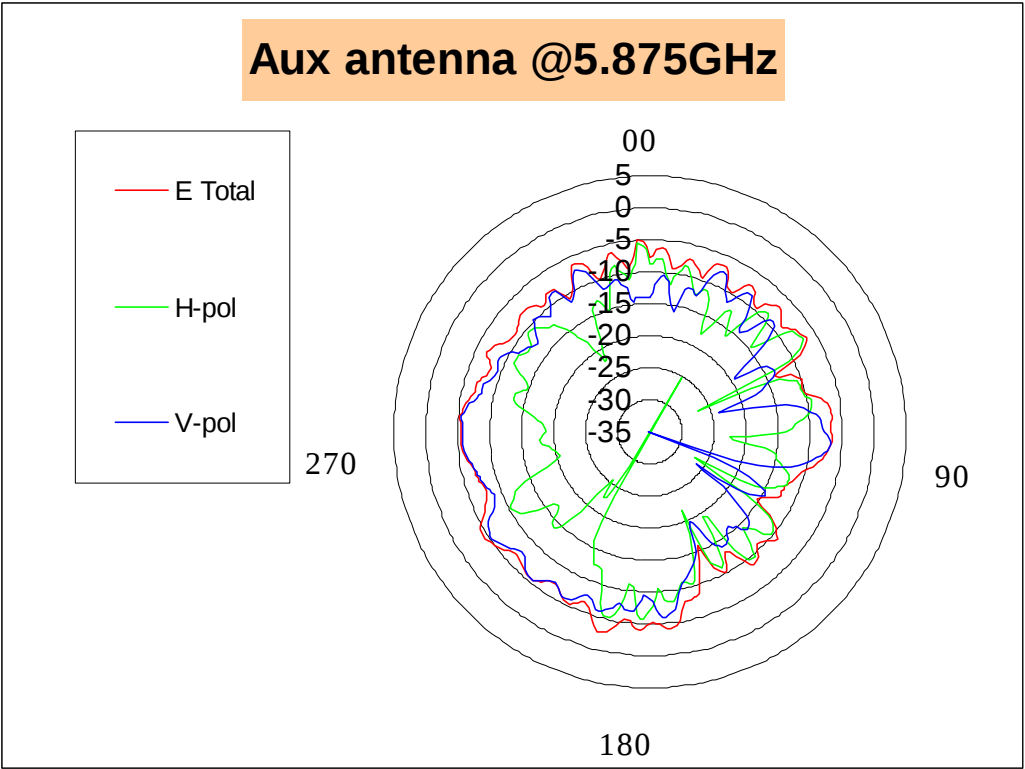
Auxiliary antenna: 5470 MHz



	H-pol	V-pol	Total
Peak Gain	-3.46	-3.27	-1.42



	H-pol	V-pol	Total
Peak Gain	-3.27	-4.02	-1.39



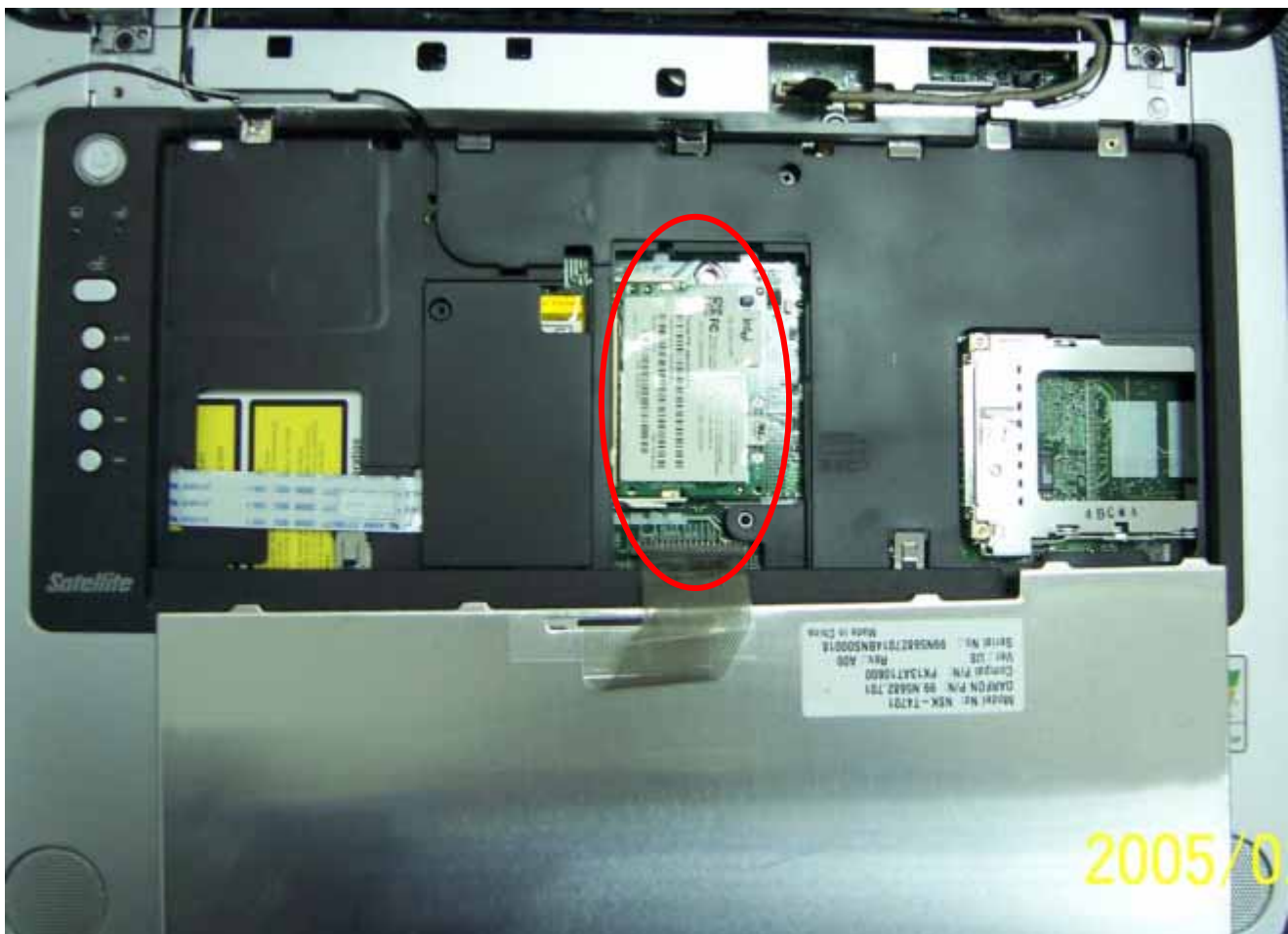
	H-pol	V-pol	Total
Peak Gain	-4.14	-3.95	-2.05

Section 4. Host Platform Information

OEM / ODM Host platform: (XXXXXXX) platform correlated to antenna data

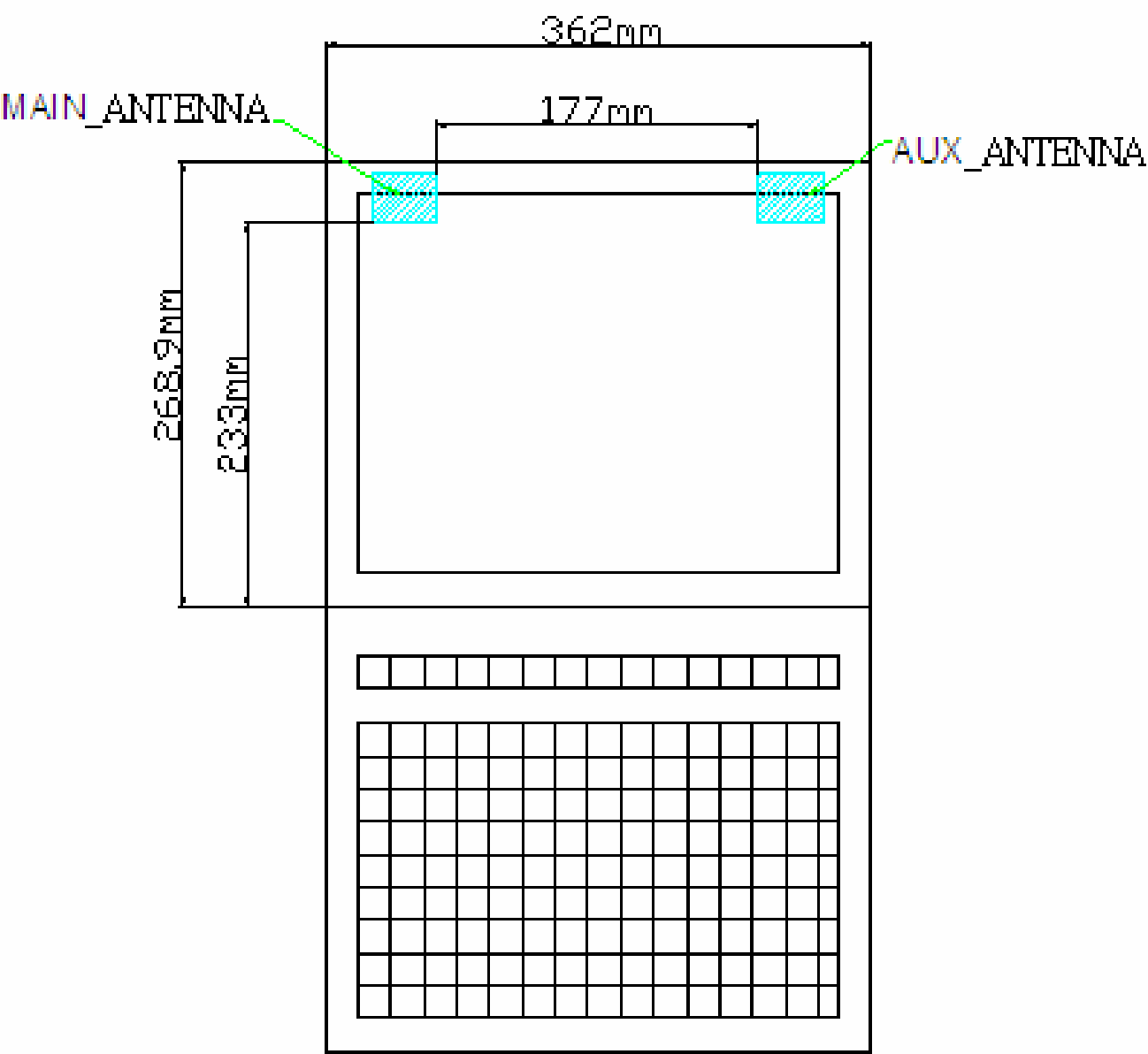
Rating Label Photo:

Module Location Photo: (if Singapore required)



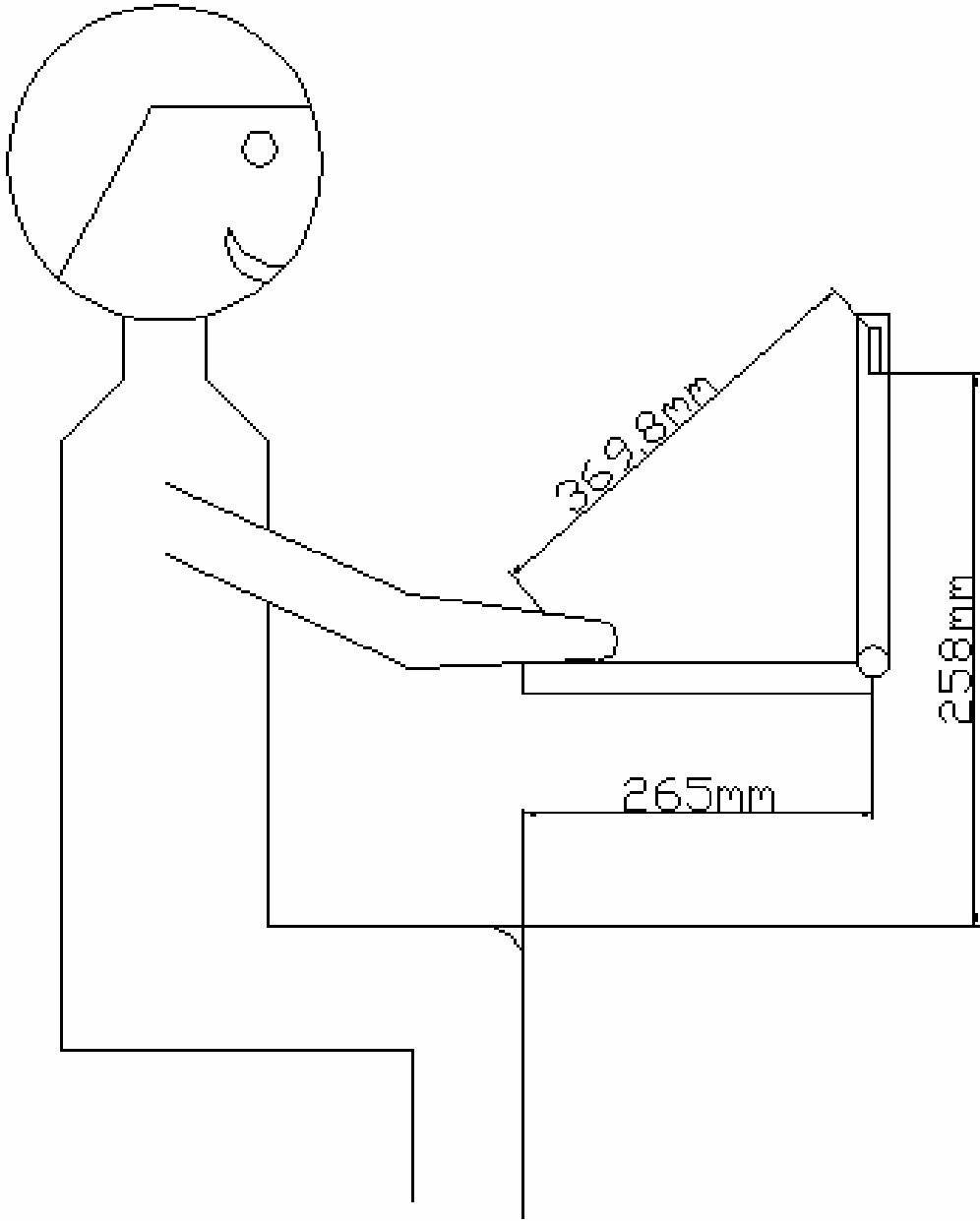
Section 5. Antenna Host Platform Location Information

Include a dimensioned photos or dimensioned drawings of main and auxiliary antenna placements.



Section 6. Antenna dimensional information for SAR evaluation

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



Section 7. Diagram Example of Co-Location Antenna Separation

Indicate distance between WLAN module antennas and Bluetooth/other radio antenna element.

(Note: Due to the evolving rules regarding co-location, each platform will need to be reviewed on a case by case basis)

