



安勤科技股份有限公司

APPROVAL SHEET

NO.APP-170192

QD4-015 Rev.B4

申請種類:正式承認

料號	BCC-SID-PIFA-01R
品名	PIFA Antenna for WLAN 802.11a/b/g Length:400mm

製造商	仁寶(Compal)
廠商型號	DC33001SC1H



Update 原因說明	
庫存說明	
其它	

安勤科技 測試報告

測試日期	2017-01-25 07:18:02	測試樣品數	1 PCS
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測試項目	項目	測試條件	結果
	外觀	核對實物與照片是否相符	Pass
	材質	依承認圖面所標示的接線圖實際量測	Pass
	電氣特性	連接WiFi Module 測試功能	Pass
	機械強度		
	實裝動作	實際安裝以確認是否與承認書相符	Pass
	破壞實驗		
	顏色	依照片或圖面標示之顏色為檢驗準	Pass
	尺寸	依照片或承認圖面所標示之尺寸為檢驗標準	Pass
	沾錫性		
	壽命實驗		
	安規		
	其它測試		
	使用儀器	尺	

備註	
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測試結果	符合測試條件及規格
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備註:

1. 申請人需先至GPM/管理/物料MCD設定/料號-審核狀態為通過, 查詢此料已完成GREEN的承認, 再

辦理規格等承認。

2. 本單不能代替採購單及其它用途。

3. 如涉及專利及法律之問題, 應由送樣廠商負全責。

4. 以下內容所註記, 已經檢驗過並給予承認。

5. 申請承認需依料階符合「承認應備文件和檔案」

Workflow

Workflow Status	Action	Signoff User	Local Client Time	Signoff Comments
Initial (填表人)		ARM Jeff Huang (黃啟禎)	2017-02-20 11:20:25	
Manager Review	Approved	ARM Dennis Hsieh (謝政遠)	2017-02-20 11:25:37	
PDC & QC	Approved	PDC Joy Lu (盧昶卉)	2017-02-20 13:12:31	
PDC & QC	Approved	QC Chunta Yeh (葉俊達)	2017-02-20 13:47:44	
PDC Head	Approved	PDC Mandy Huang (黃意婷)	2017-02-20 14:13:46	





ECBCX WLAN
SA



E359219
MLL-PCB

94V-0

ECBCX
DC33001SC1H
2016/07/13
Smart-Approach Rev:1.0



ECBCX WLAN
SA



E359219
94V-0 ML-PCB

ECBCX
DC33001SC1H
2016/07/13
Smart-Approach Rev.1.0

Smart Approach Co., Ltd.

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TEL: 886-3-560-1363 Fax: 886-3-560-1361

APPROVAL SHEET

Customer Name: 仁寶電腦工業股份有限公司

產品機種：ECBCX

Date:2015/11/09

Doc. Version: 1

Customer P/N	DC33001SC1H	REV. :1.0
Smart Approach P/N	SE-ECBCX-001	REV. : 2
Product Description	ECBCX WLAN ASSY	

Provided By Smart Approach	Reviewed By Smart Approach	Approved By Customer
RD	RD 主管	
業務	QA 主管	

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1. Introduction

1.1 Antennas for 802.11a + b + g + n system

1.1.1 WLAN Antenna

WLAN cable length:400.0 mm, White Φ 1.13 mm

1.1.2 Connector type: NGFF & Compatible connector

1.1.3 Cable type: ϕ 1.13 Coaxial cable

2. Revision History

Date	Version	Revision History
2015/10/30	1	New Release
2015/11/04	2	MODIFIED Tolerance unless otherwise specfied

3. Product Specifications

3.1 Specifications of Antenna Design

3.1.1 VSWR

VSWR	802.11b/g/n	802.11a/n
	2.4-2.5 GHz	5.15-5.850 GHz
MAIN	<2	<2
Aux	<2	<2

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3.1.2 Average gain and peak gain

WLAN MAIN+AUX Average gain:

WLAN Main (Gray) WLAN Aux (Black)	802.11g	2400	-4
		2450	-4
		2500	-4
	802.11a	5150	-5
		5250	-5
		5350	-5
		5470	-5
		5600	-5
		5725	-5
		5785	-5
		5850	-5

WLAN MAIN+AUX peak gain:

WLAN Main (Gray) WLAN Aux (Black)	802.11g	2400	3.0
		2450	3.0
		2500	3.0
	802.11a	5150	3.0
		5250	3.0
		5350	3.0
		5470	3.0
		5600	3.0
		5725	3.0
		5785	3.0
		5850	3.0

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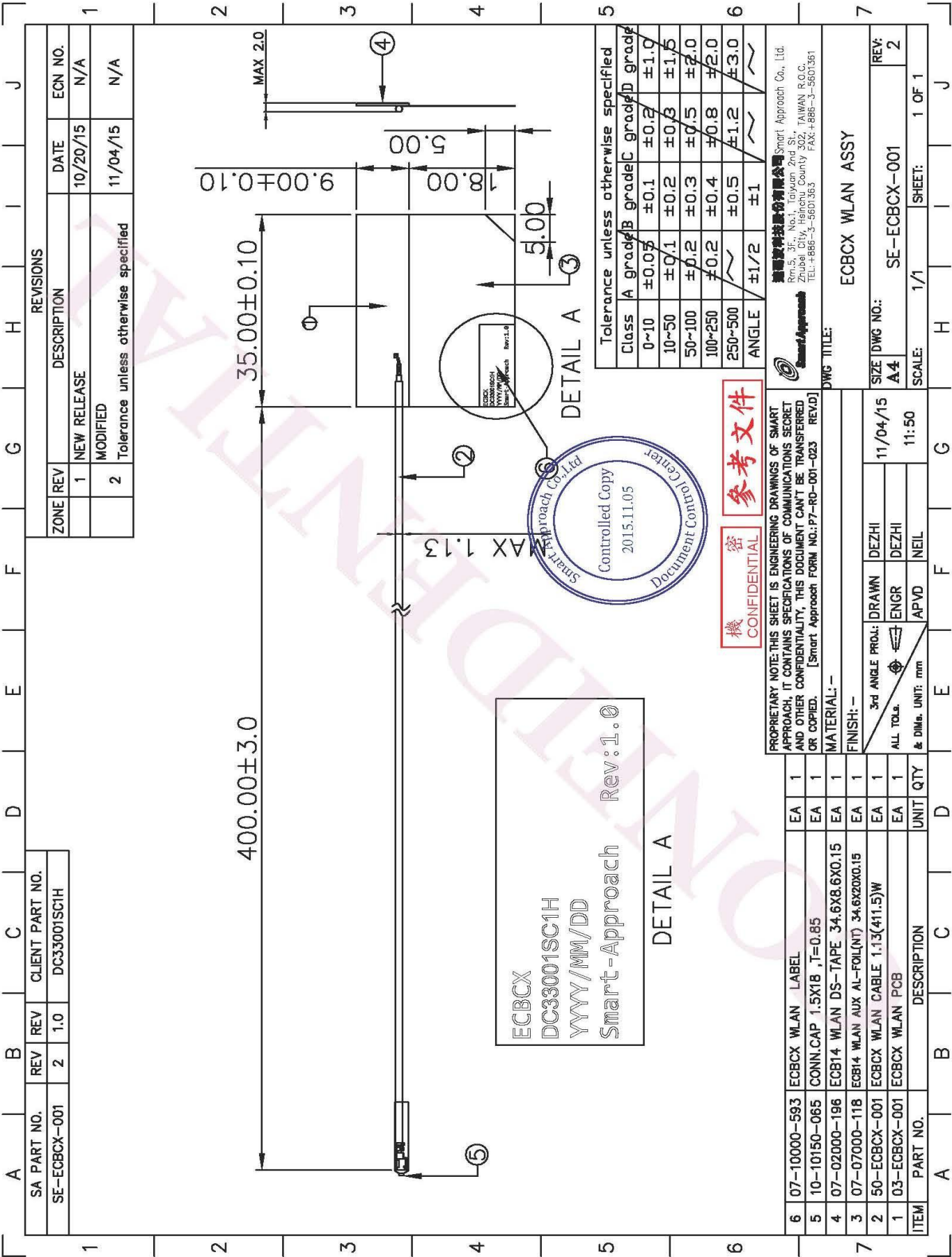
3.2 Mechanical Specifications

See attached.

3.3 Antenna Material List

1. PCB
2. Coaxial cable and NGFF & Compatible connector
3. AL-FOIL
4. DS-TAPE
5. Weight: 2.2

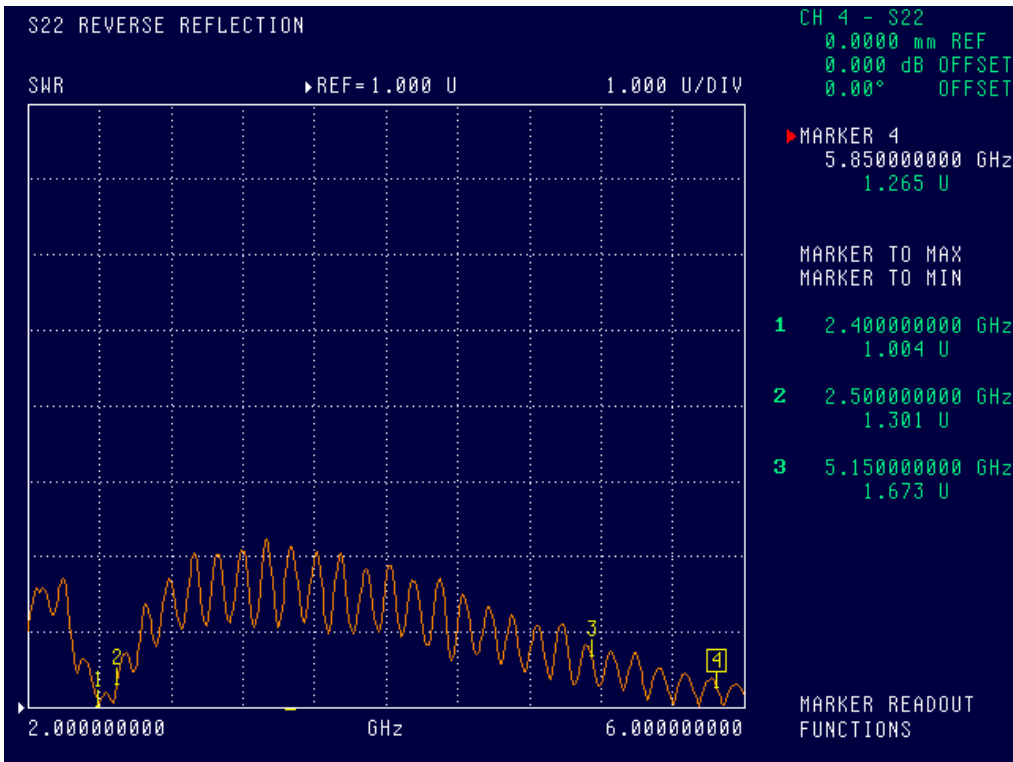
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4. Antenna Performance

4.1 VSWR

WLAN



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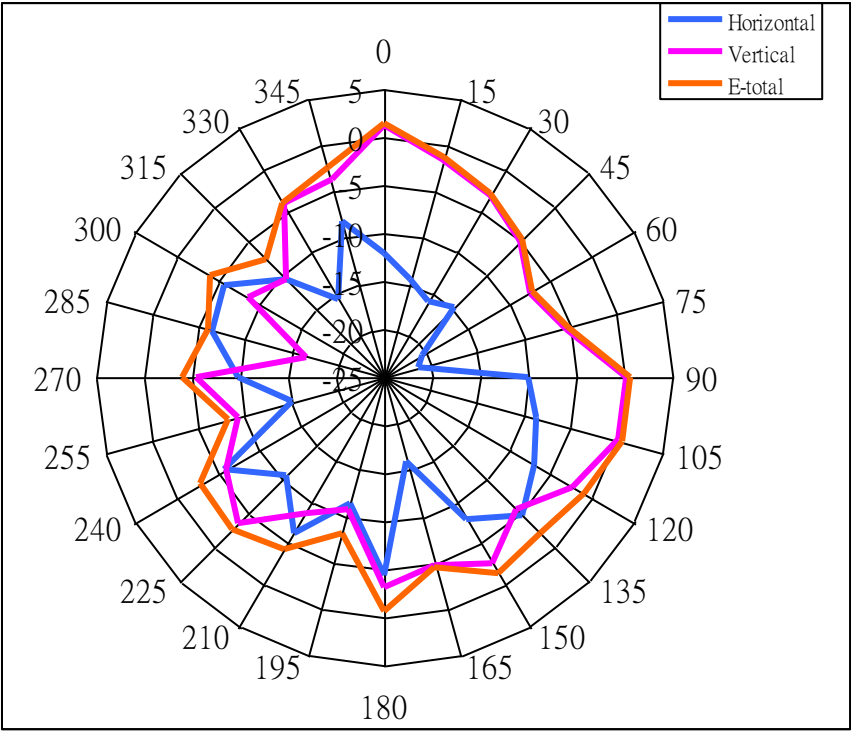
4.2 Peak Gain and Antenna Pattern

	WLAN antenna	
Frequency (MHz)	Horizontal (dBi)	Vertical (dBi)
2400	-4.56	1.13
2450	-5.78	-0.15
2500	-5.80	-0.74
5150	-3.41	1.09
5250	-4.77	-0.49
5350	-4.30	0.26
5470	-6.97	-1.90
5600	-3.83	0.02
5725	-5.62	2.11
5785	-4.07	1.80
5850	-4.35	0.84

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2400-2500MHz radiation characteristic

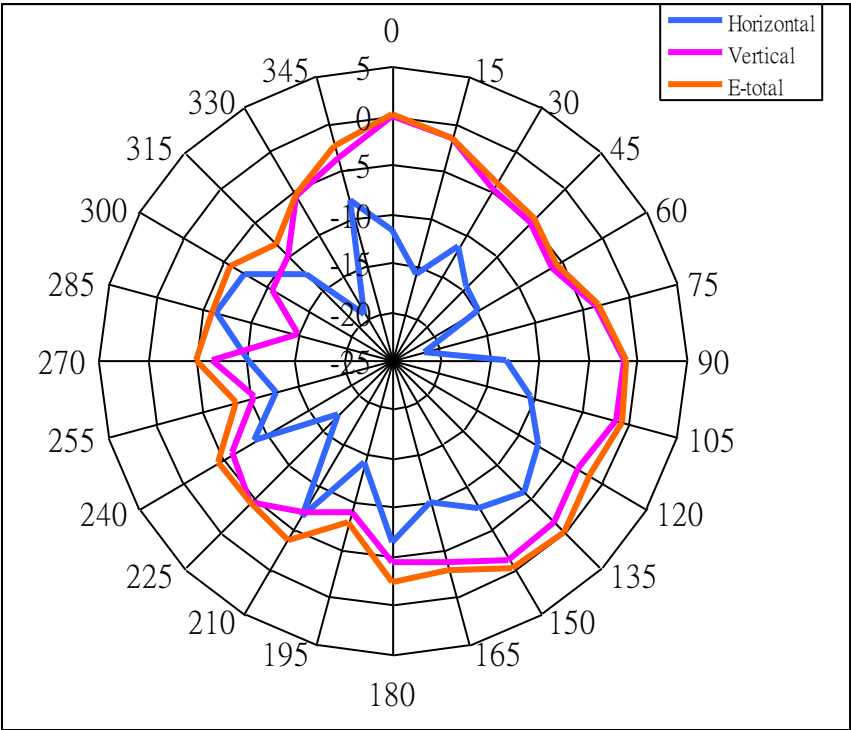
Main Antenna: 2400 MHz



Center Frequency	2400 MHz
Horizontal (dBi) peak	-4.56
Vertical (dBi) peak	1.13

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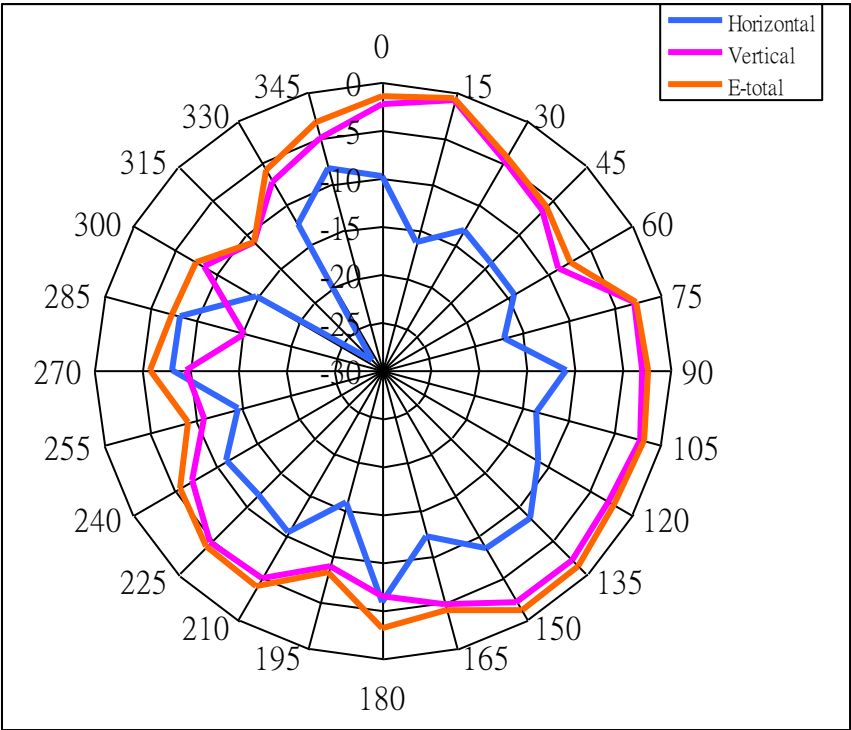
Main Antenna: 2450 MHz



Center Frequency	2450 MHz
Horizontal (dBi) peak	-5.78
Vertical (dBi) peak	-0.15

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Main Antenna: 2500 MHz

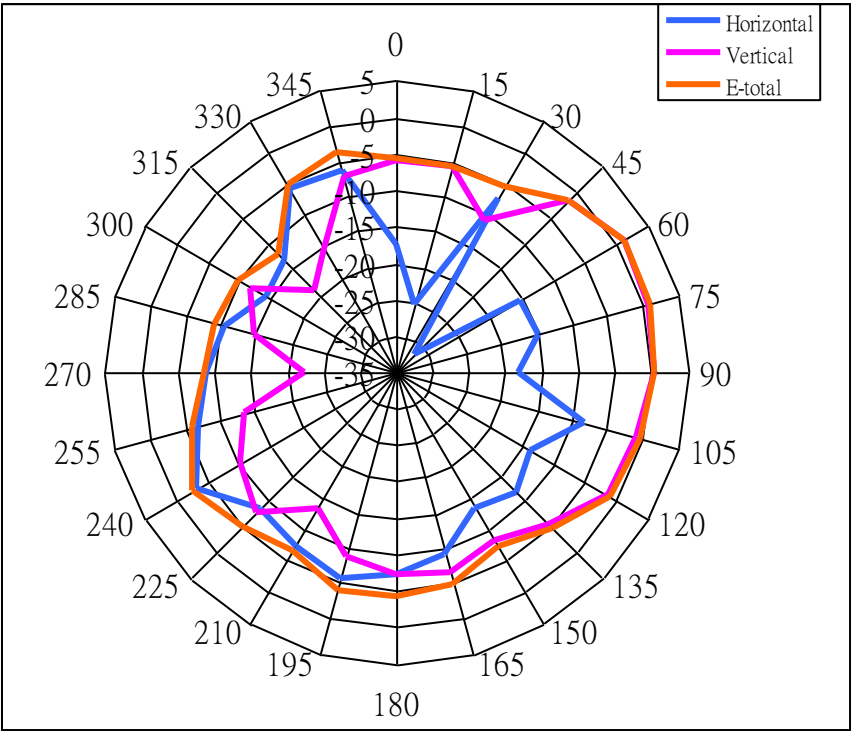


Center Frequency	2500 MHz
Horizontal (dBi) peak	-5.80
Vertical (dBi) peak	-0.74

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5150-5350 MHz radiation characteristic

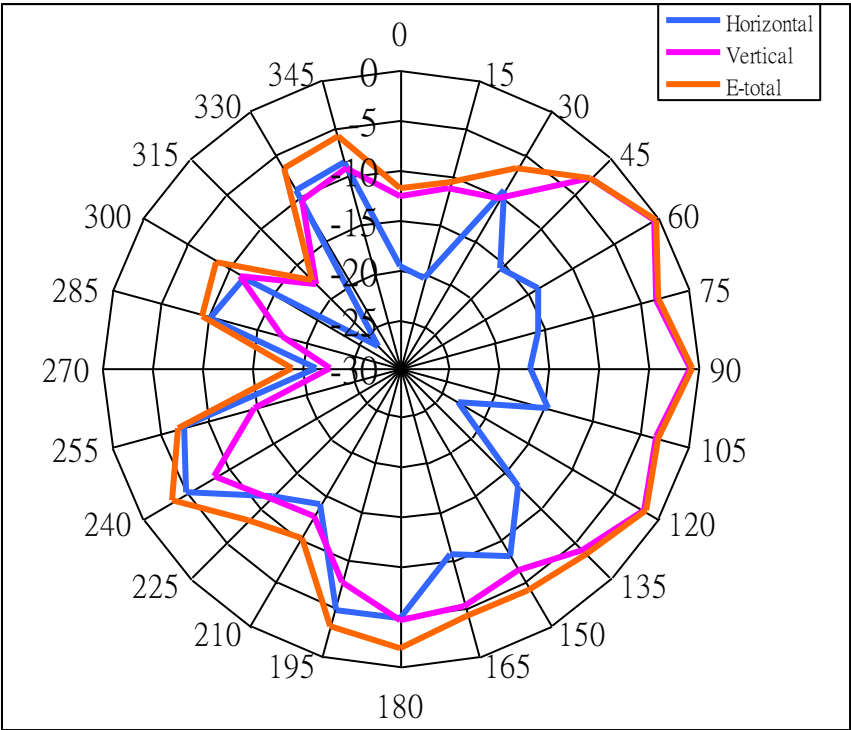
Main Antenna: 5150 MHz



Center Frequency	5150
Horizontal (dBi) peak	-3.41
Vertical (dBi) peak	1.09

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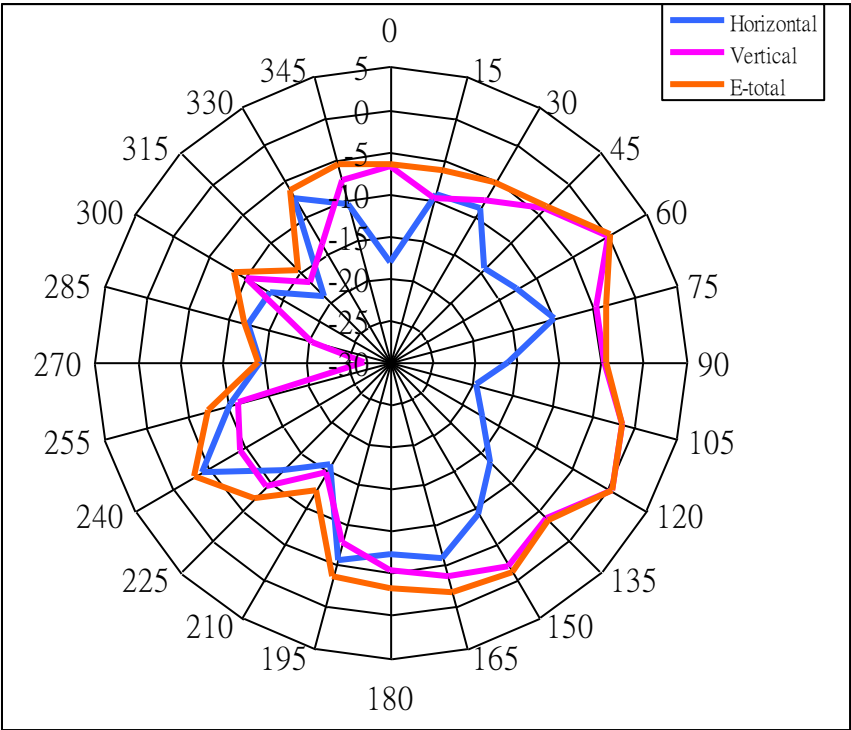
Main Antenna: 5250 MHz



Center Frequency	5250 MHz
Horizontal (dBi) peak	-4.77
Vertical (dBi) peak	-0.49

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Main Antenna: 5350 MHz

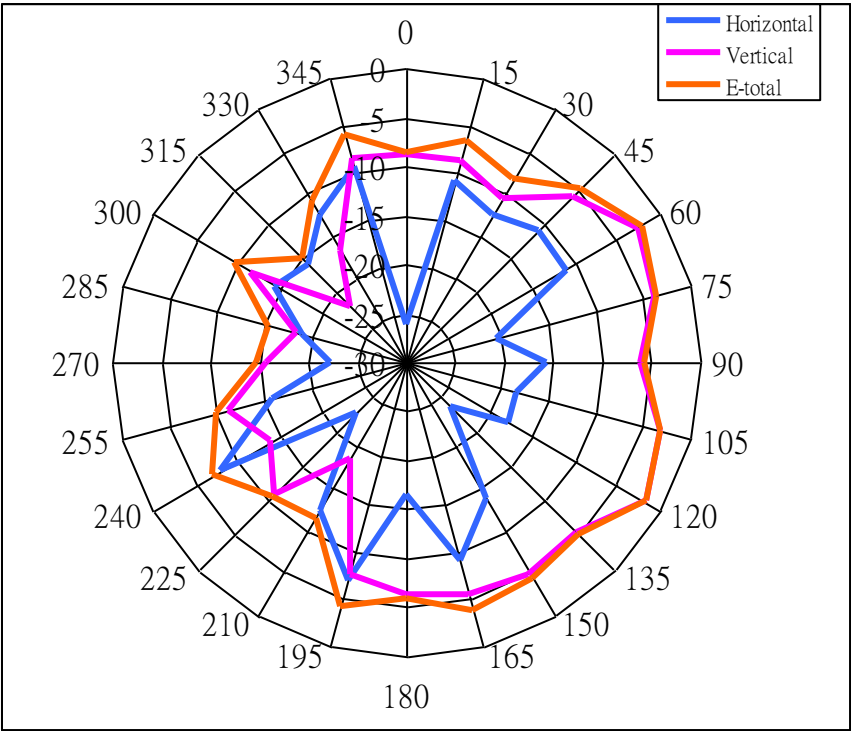


Center Frequency	5350 MHz
Horizontal (dBi) peak	-4.30
Vertical (dBi) peak	-0.26

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5470-5725MHz radiation characteristic

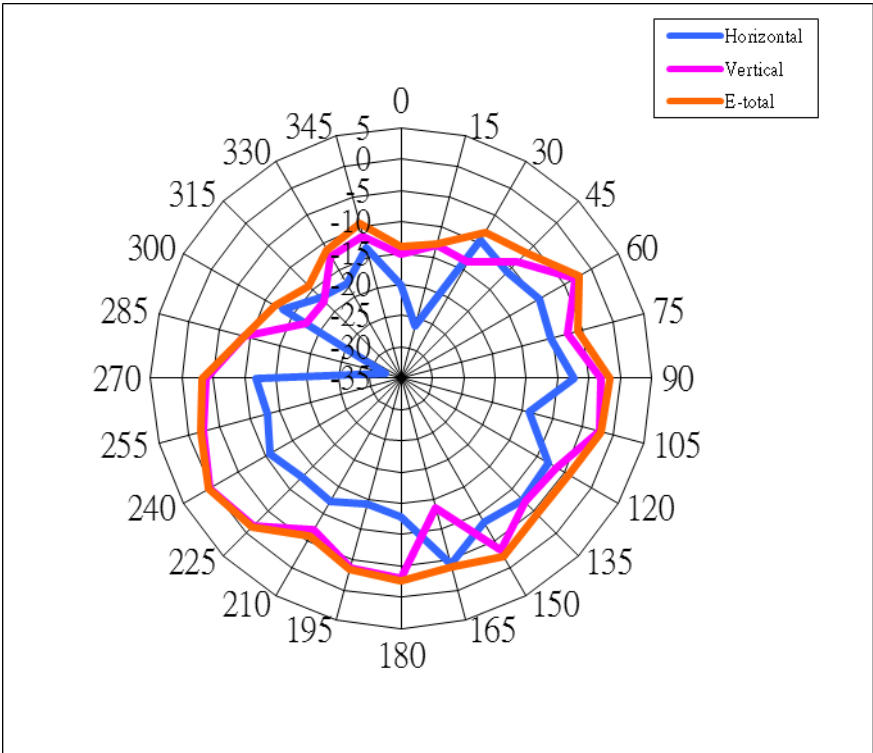
Main Antenna: 5470 MHz



Center Frequency	5470 MHz
Horizontal (dBi) peak	-6.97
Vertical (dBi) peak	-1.90

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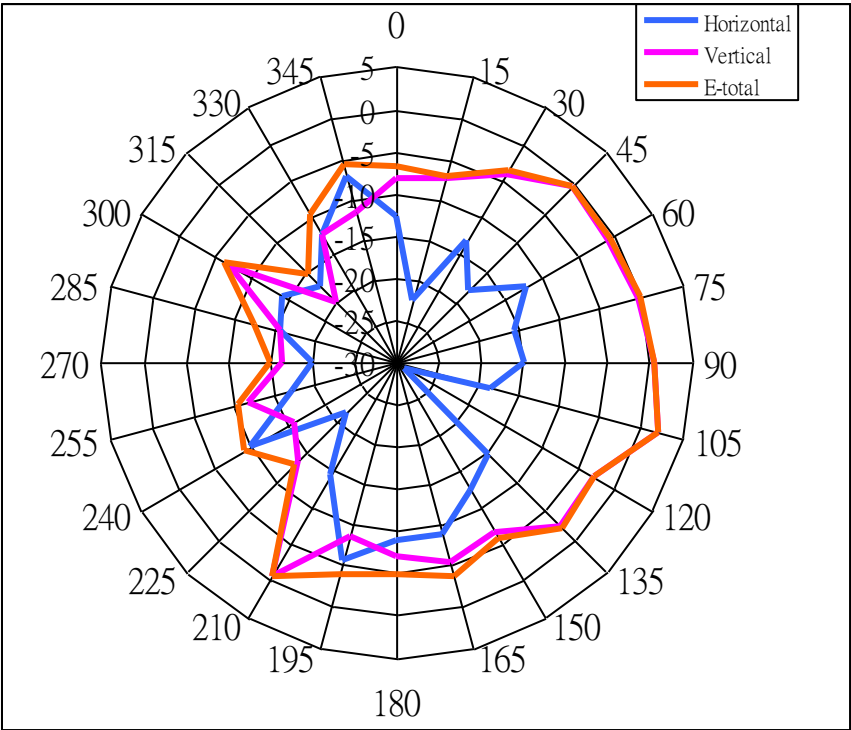
Main Antenna: 5600 MHz



Center Frequency	5600 MHz
Horizontal (dBi) peak	-3.83
Vertical (dBi) peak	0.02

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Main Antenna: 5725 MHz

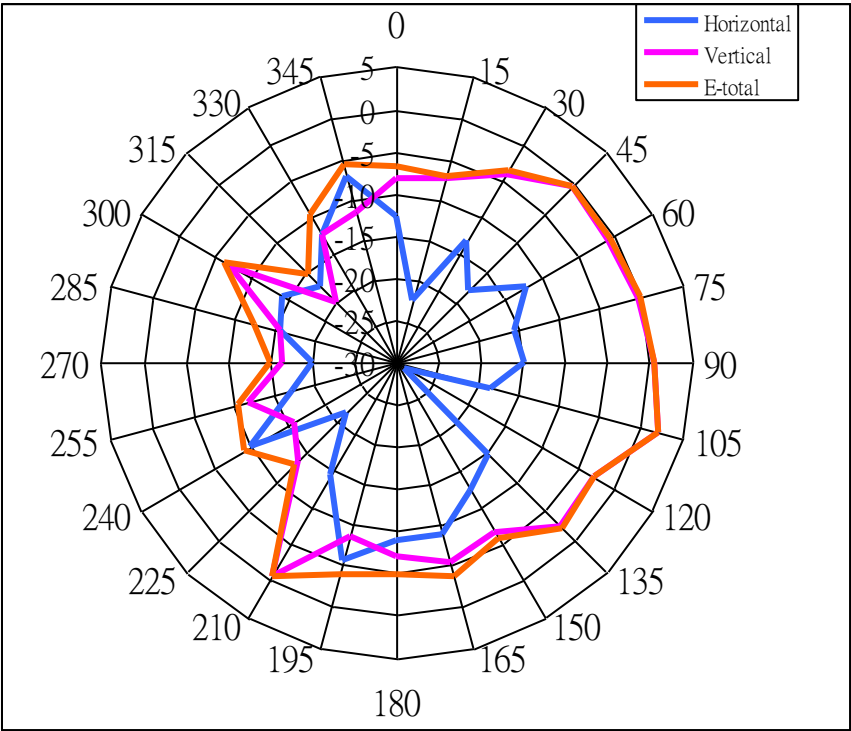


Center Frequency	5725 MHz
Horizontal (dBi) peak	-5.62
Vertical (dBi) peak	2.11

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5725-5850 MHz radiation characteristic

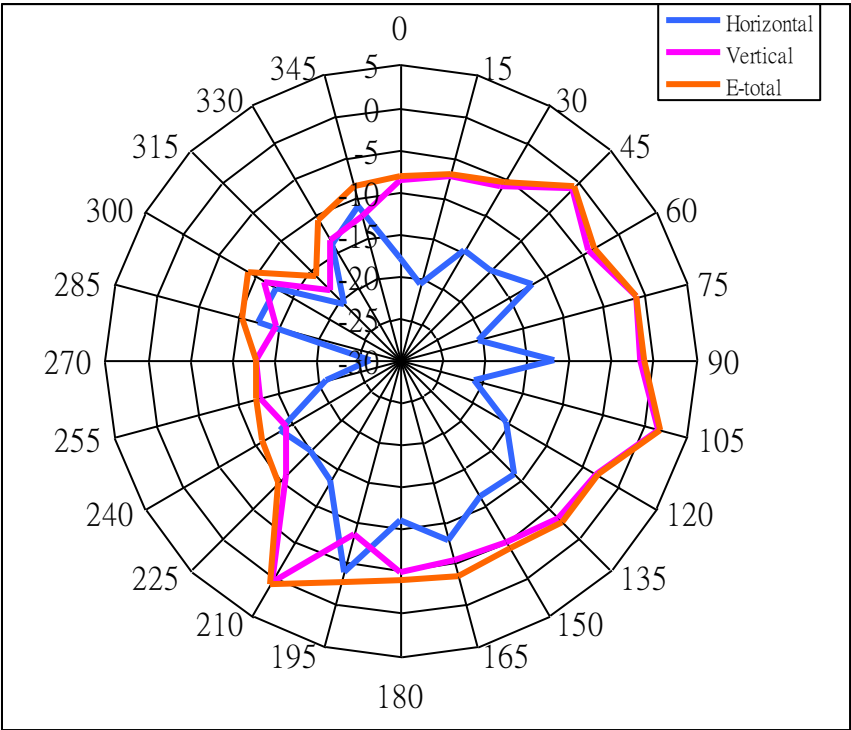
Main Antenna: 5725 MHz



Center Frequency	5725
Horizontal (dBi) peak	-5.62
Vertical (dBi) peak	2.11

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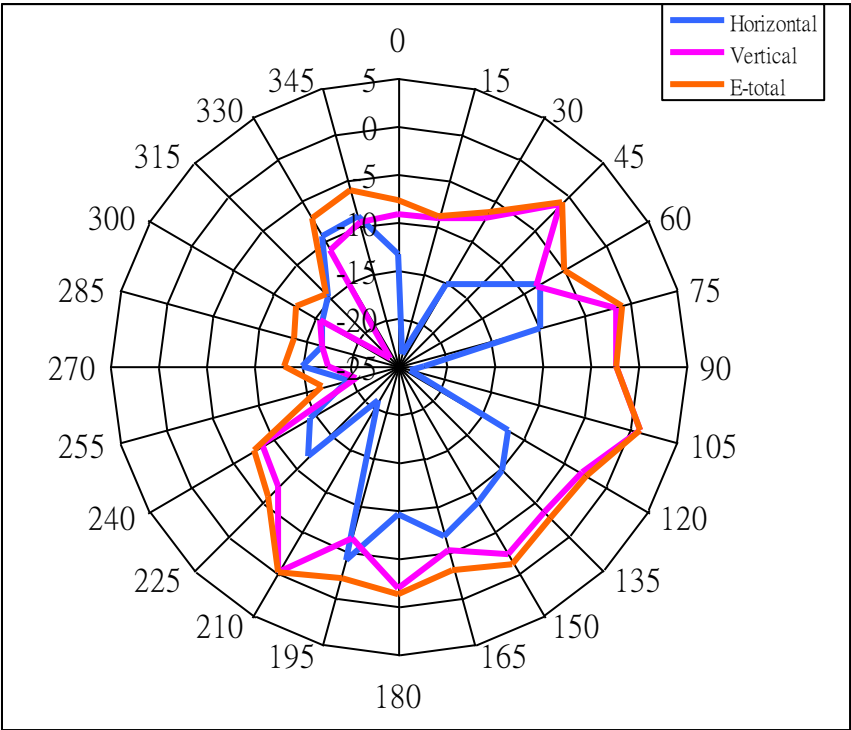
Main Antenna: 5785 MHz



Center Frequency	5785 MHz
Horizontal (dBi) peak	-4.07
Vertical (dBi) peak	1.80

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Main Antenna: 5850 MHz



Center Frequency	5850 MHz
Horizontal (dBi) peak	-4.35
Vertical (dBi) peak	0.84

5. Related Reliability Test

5.1 Environmental Specification

5.1.1 Storage

Condition : Non operating during test.

Cold : - 40°C during 72h (IEC 68-2-1 standard Ab/Ad test)

Dry heat : +60°C during 96h (IEC 68-2-2 standard Bb/Bd test)

Humidity : +40°C at 95%R.H. during 4 days (IEC 68-2-56 standard Cb test)

Mandatory : No mechanical or visible damage tolerated.

Guaranty of functionalities after test.

5.1.2 Operation

Condition : Operating during test.

Cold : - 10°C during 48h (IEC 68-2-1 standard Ab/Ad test)

Dry heat : + 55°C during 48h (IEC 68-2-2 standard Bb/Bd test)

Composite : - 10°C to + 55°C 95%R.H. 4 cycles (IEC 68-2-30 standard Nb test)

Mandatory : No mechanical or visible damage tolerated.

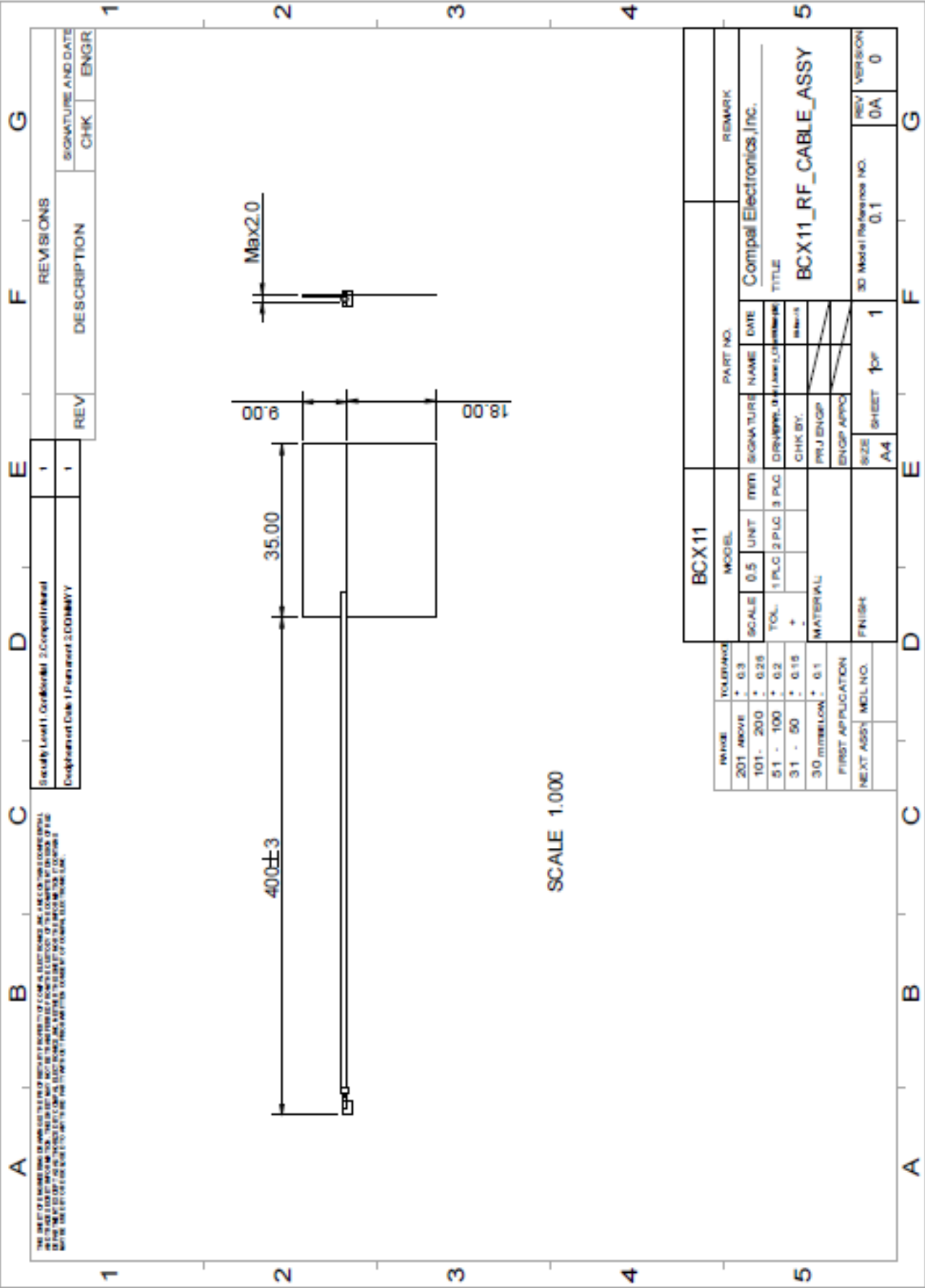
Guaranty of functionalities during and after test.

Traction:

Tractions force applied 3 times on plugs during 15 second : 2 kg

Mandatory : No mechanical damage tolerated.

Guaranty of functionalities after test.



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速碼波科技股份有限公司

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First Article Inspection Report(FAI)

Rev. 1.0

Part Number:	SE-ECBCX-001
Part Description:	ECBCX WLAN ASSY
Part Revision:	1.0

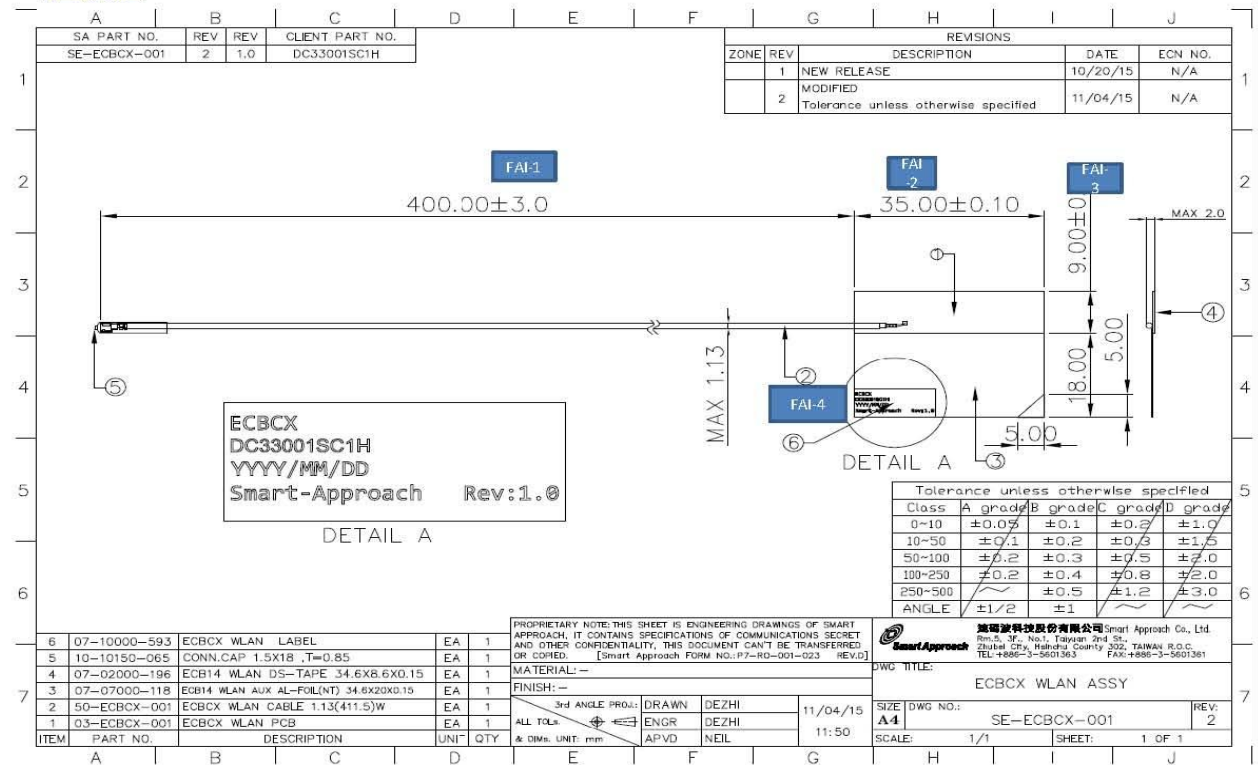
Supplier:	Smart Approach Co., Ltd.
Submission No.:	
Material Spec.:	

Submission Date:	2015-10-29
Inspection Method / Tool #:	
Inspector:	TOM

Submission Reason:

DRAWING SPECIFICATIONS						INSPECTION RESULTS						INSPECTION ANALYSIS						COMMENTS		
ITEM	DRAWING LOCATION	CTF?	NOMINAL	+TOL	-TOL	Sample Number			Deviation from Nominal			Mean	% Tolerance		Accept/Reject		Inspection Method	Supplier Remarks	Defect Engineering Disposition	
						1	2	3	1	2	3		UPPER	LOWER	HIGH	LOW				
1.00	FAI-1		400.00	3.00	3.00	401.00	401.00	400.00	1.00	1.00	0.00	400.67	0.33	0.00	Accept	Accept	ruler			
2.00	FAI-2		35.00	0.10	0.10	35.05	35.02	35.04	0.05	0.02	0.04	35.04	0.50	0.00	Accept	Accept	ruler			
3.00	FAI-3		2.00	0.10	0.10	2.01	2.02	2.02	0.01	0.02	0.02	2.02	0.20	0.00	Accept	Accept	ruler			
4.00	FAI-4		18.00	0.20	0.20	18.02	18.05	18.06	0.02	0.05	0.06	18.04	0.30	0.00	Accept	Accept	ruler			
5.00																				
6.00																				

組合圖面



P7-MO-003-022

REV.:B

保存期限：2年

核准: liuxinyuan

製表: tom

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Process Capability Calculation Worksheet

CPK

Part Number:	SE ECBCK-001
Part Description:	ECBCK WLAN ASSY
Part Revision:	1.0

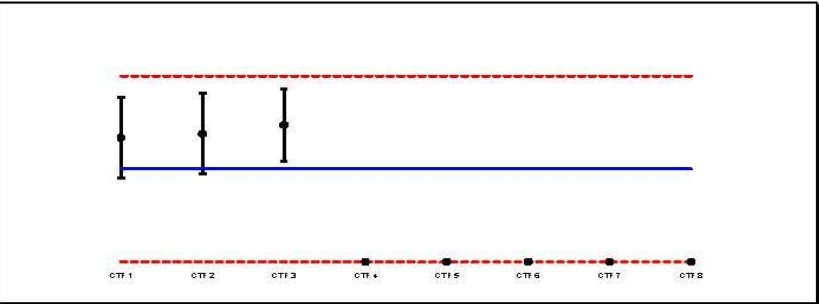
Submission No:	Smart Approach Co., Ltd.
Material Spec:	

Submission Date:	2015-10-29
Cavity / Tool #:	
Inspector:	Tom

Submission Reason:

If the limit cells are red, the default values have been changed.			
Cp Limit:	2.00	Cpk Limit:	1.50

DRAWING SPECIFICATIONS										
	CTF 1	CTF 2	CTF 3	CTF 4	CTF 5	CTF 6	CTF 7	CTF 8	CTF 7	CTF 8
Nominal	400.0	35.0	2.0	18.0						
Upper Tol.	3.0	0.1	0.1	0.2						
Lower Tol.	3.0	0.1	0.1	0.2						
USL	403.000	35.100	2.100	18.200						
LSL	397.000	34.900	1.900	17.800						
Total Tol	6.000	0.200	0.200	0.400						
Xbar	35.025	2.026	18.042							
Stdv	0.016	0.015	0.022							
Zu	7769.358	746.419	-243.322	#VALUE!						
Zl	-7642.675	-741.906	246.375	#VALUE!						
Cp	63.941	2.257	1.526	#VALUE!						
Cpk	-7642.675	-741.906	-243.322	#VALUE!						
Max	35.050	2.050	18.080	0.000						
Min	35.000	2.000	18.010	0.000						



Form NO: P7-MQ-003-025

Rev: B

保存期限:2年

DIMENSIONAL DATA										
Sample	CTF 1	CTF 2	CTF 3	CTF 4	CTF 5	CTF 6	CTF 7	CTF 8	CTF 7	CTF 8
1	400.5	35	2.04	18.06						
2	400.6	35.05	2	18.02						
3	400.8	35	2.04	18.05						
4	400.1	35.02	2.03	18.02						
5	401.4	35.04	2.03	18.02						
6	400.2	35.02	2.03	18.04						
7	400.2	35.04	2.02	18.03						
8	401.4	35.04	2.03	18.02						
9	400	35.03	2.04	18.03						
10	401.4	35.04	2.02	18.01						
11	400.2	35.01	2.04	18.06						
12	401	35.01	2.01	18.06						
13	401	35.04	2.04	18.03						
14	400.1	35.05	2.02	18.07						
15	401.1	35.04	2.01	18.05						
16	401.1	35	2.03	18.01						
17	401.1	35.04	2.04	18.05						
18	400.9	35.02	2.01	18.06						
19	401.1	35.05	2.01	18.01						
20	400.6	35.02	2.04	18.08						
21	400.8	35.02	2.05	18.07						
22	400.6	35.01	2.05	18.06						
23	400.4	35.01	2.01	18.07						
24	401.3	35.02	2.03	18.04						
25	401.1	35.03	2.02	18.05						
26	400.9	35.03	2	18.01						
27	401.5	35.04	2.04	18.07						
28	400.6	35.01	2.03	18.01						
29	401.4	35.01	2.02	18.04						
30	401.1	35.04	2.01	18.07						
31	400.7	35	2.02	18.02						
32	400.1	35.01	2.02	18.03						
33	401.2	35.04	2.04	18.04						
34	400.6	35.02	2.05	18.05						
35	400	35.02	2	18.07						