



Wistron NeWeb Corporation

APPROVAL SHEET

Customer Name	Wistron Corporation		
Date	3/21/2003		
OEM P/N	60.46Z06.001 (Including 25.90107.001 for main antenna and 25.90108.001 for aux antenna)		
Description	Dualband Antenna for A1 plus 802.11a+b system		
Version	0A	Doc. Version	1

Provided By Wistron NeWeb Corp	Reviewed By Wistron NeWeb Corp	Approved By Customer Company
Sophia Lin	Eric Fang	

wistron

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Wistron NeWeb Corporation

1. Introduction

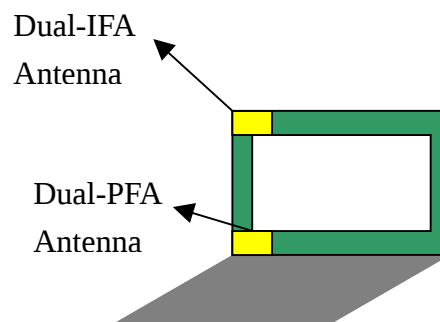
Antennas for 802.11a+b system

Dual-IFA antenna (Main antenna)

1. Application: LCD Left side (Top)
2. Cable: IPEX connector with Φ 1.13 x 435 mm RF cable

Dual-PIFA antenna (AUX antenna)

1. Application: LCD Left side (Bottom)
2. Cable: IPEX connector with Φ 1.13 x 195 mm RF cable



2. Revision History

Date	Version	Change Description
3/21/03	0A	New release

3. Product Specification

3.1 Antenna Design Specification @ 90 degree

@ GHz		2G4 ISM (2.400 GHz - 2.4835 GHz)			U-NII (5.150 GHz - 5.350 GHz)		
		2.40	2.45	2.50	5.15	5.25	5.35
VSWR		2			2.5		
Main Antenna	Peak Gain	3			6		
	Average Gain	-5			-5		
AUX Antenna	Peak Gain	3			6		
	Average Gain	NA			NA		

3.2 Antenna BOM structure

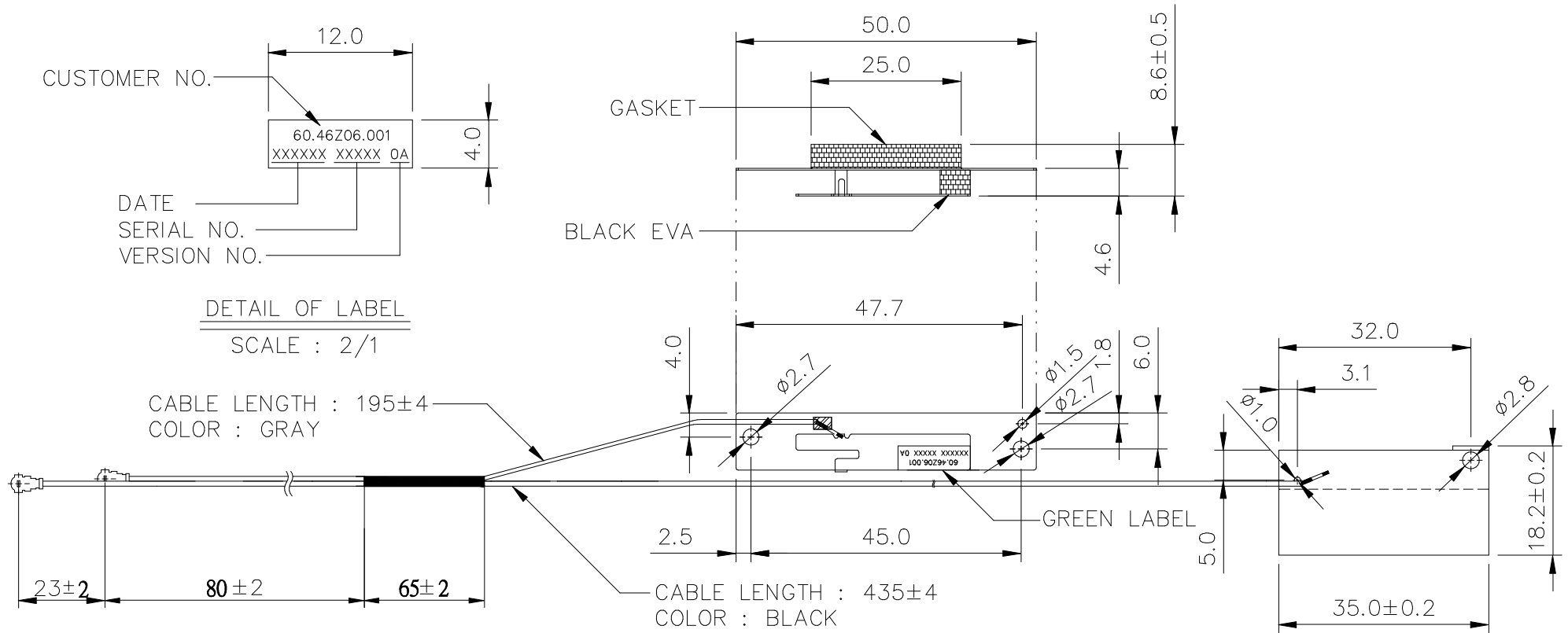
NO.	Part NO	Description	Q'ty
1	50.EO102.001	CABLE WN-S-1.13-435B(2-2-1) & 195G(2-2-1) (IPEX connector + Junkosha cable + Shrink tube)	1
2	3A.EB345.111	ANTENNA, EB3-A (Nickel Silver)	1
3	3B.WS880.111	BUFFER ANTENNA SUPPORT WS8-P (EVA buffer)	1
4	48.EO101.00B	EO1-A MAIN-TOP-ANT-FPC-00B (FPCB)	1
5	3G.EB380.111	GASKET, EB3-A (Gasket)	1

3.3 Mechanical Spec.

See the attached drawing.

PART NUMBER BLOCK	
PART NUMBER	REV
57.EB315.001	0A

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
0A	APPROVE SHEET	03/20/03	



		UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN mm AND TOLERANCES ARE:					Wistron Wistron NeWeb Corp. 啟碁科技股份有限公司 No. 10-1, Li-hsin Road I, Science-based Industrial Park, Hsinchu 300, Taiwan, R.O.C. Tel: 886-3-6667799 Fax: 886-3-6667711		
		INTEGRAL DIMENSIONS ± 1 PLACE DECIMAL ± 2 PLACE DECIMALS ± 0.2					ANGULAR DIMENSIONS ± 1° HOLES UNDER Ø5.00 ± 0.05		
		MATERIAL: NA					DWG TITLE		
		FINISH: NA					OUTLINE, EB3-A		
	EB3-A	THIRD ANGLE PROJECTION	DRAWN	ARSENE YU	03/20/03	SIZE	DWG NO.		REV
NEXT ASSY	USED ON		ENGR	ARSENE YU	03/20/03	A4	57.EB315.001		0A
APPLICATION			APVD			SCALE 1/1		SHEET 1 OF 1	



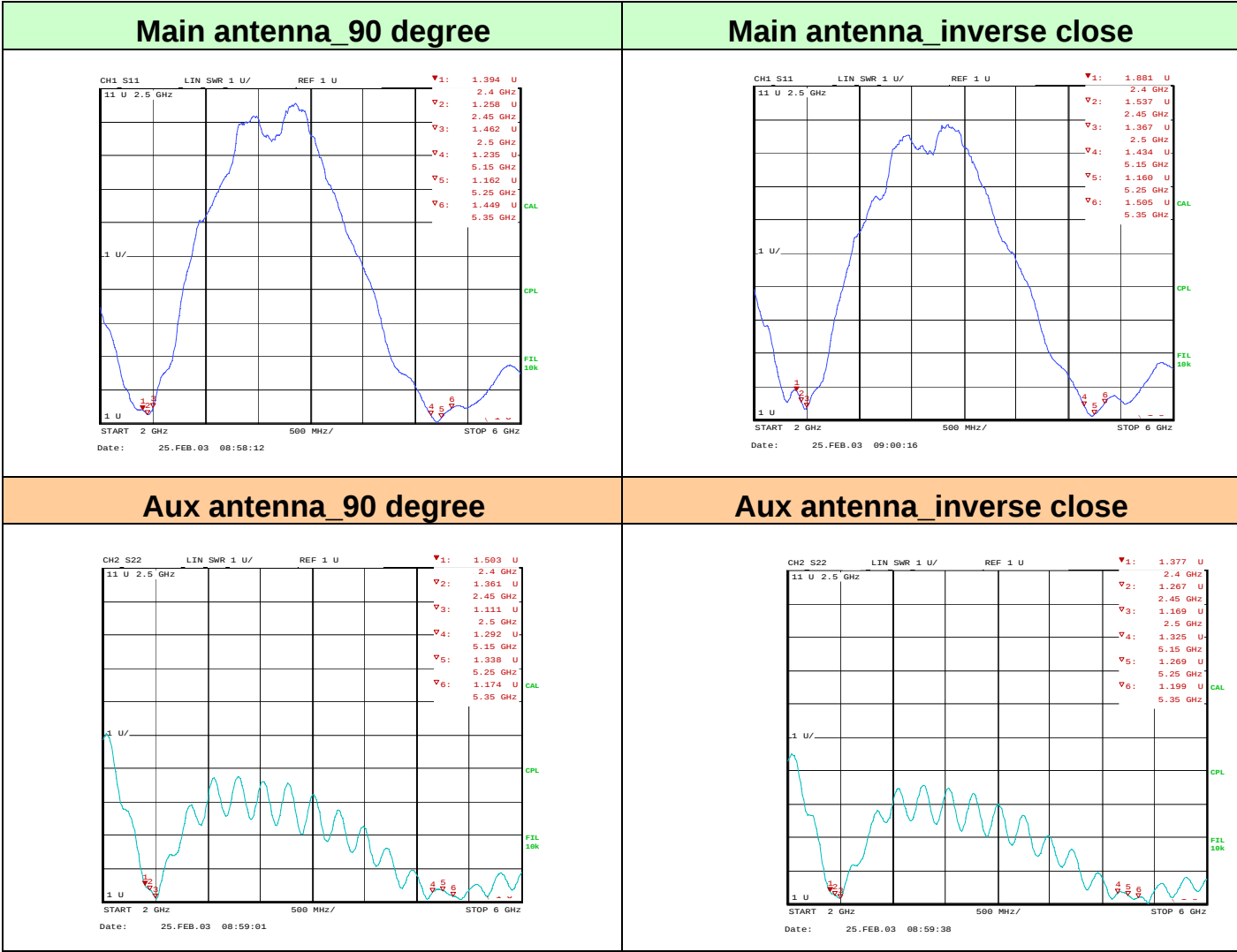
Wistron NeWeb Corporation

3.4 EQT Report

Test Item	Specification	Result	Tested By	Remark
Vibration (Need NB)	<i>Frequency range: 5Hz ~ 500 Hz Overall rms level: 0.6 G P-P ~ 2.0 G P-P Duration of test: 1 hour / cycle` Number of axes: X, Y, Z 1 cycle / axis</i>	Pass	WNC	
Thermal Shock	<i>Temperature range: -20 ~ 80 Hold Time: 30 min Total cycle: 20 cycles</i>	Pass	WNC.	
Salt Fog Test	<i>48 hours continuous exposure to 5% salt water</i>	Pass	WNC.	
High Temperature (Storage) Test	<i>Temperature range: +80 °C High Temperature Humidity: 90 % High temperature dwell time: 72 hours</i>	Pass	WNC.	
Low Temperature (Storage) Test	<i>Temperature range: -20 °C Low temperature dwell time: 72 hours</i>	Pass	WNC.	
Temperature Cycle	<i>5 cycles of +40C for 30min, +5C for 5min, +90C for 30min, + 5C for 5min</i>	Pass	WNC.	
Tensile Test for Cable Connector Assembly	<i>Connect joint: 1.0 kg -w</i>	Pass	WNC.	
Tensile Test for PCB Soldering Point	<i>Weld: 1.0kg-w</i>	Pass	WNC.	
Humidity	<i>Temperature of +40C Humidity of 95% Let stand for 96 hours</i>	Pass	WNC	
Connector Plug & unplug	<i>30 cycle</i>	Pass	WNC	

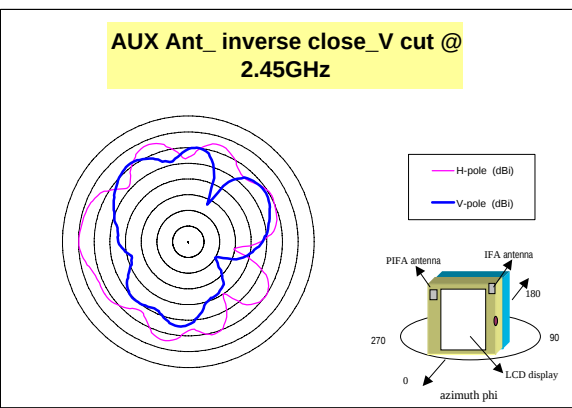
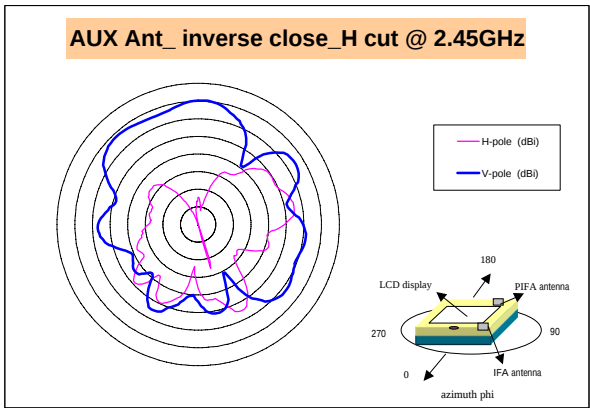
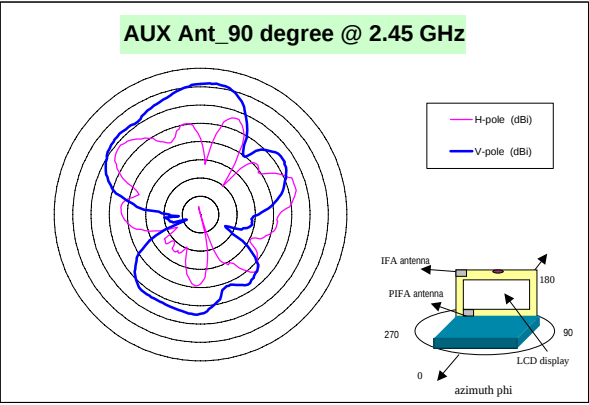
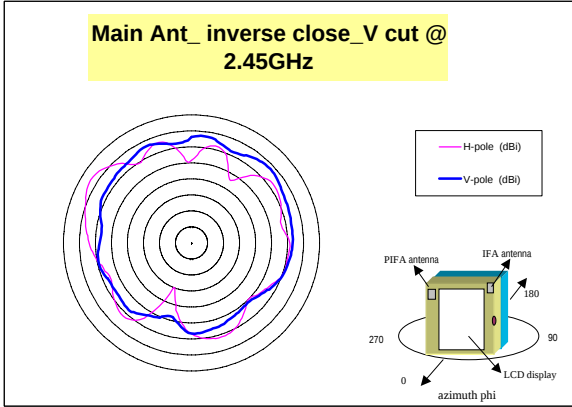
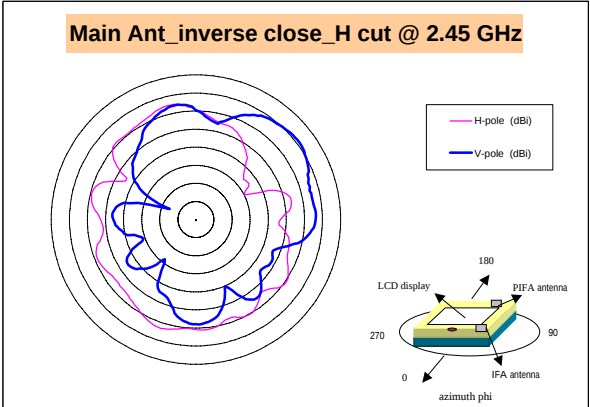
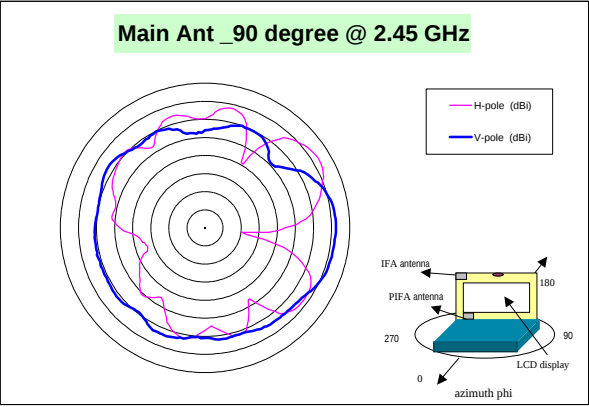
4. Antenna Performance Test

Configuration	Antenna for 802.11a+b system
	1. Test platform: A1 plus laptop PC / ENG stage mockup 2. Antenna type: dual-IFA type for main antenna with 1.13 (dia) x435(L) mm cable and IPEX connector dual-PIFA type for aux antenna with 1.13 (dia) x195(L) mm cable and IPEX connector



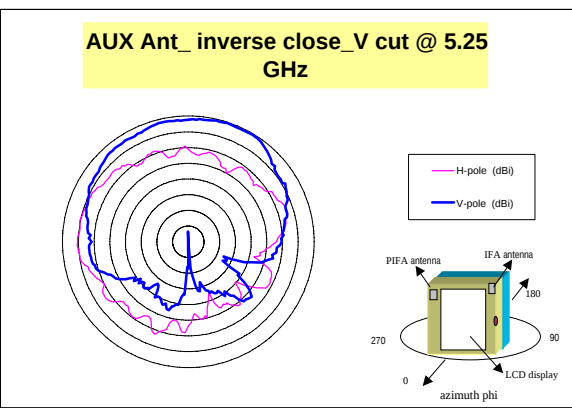
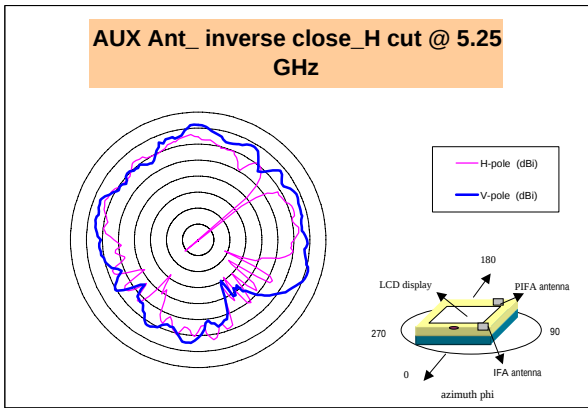
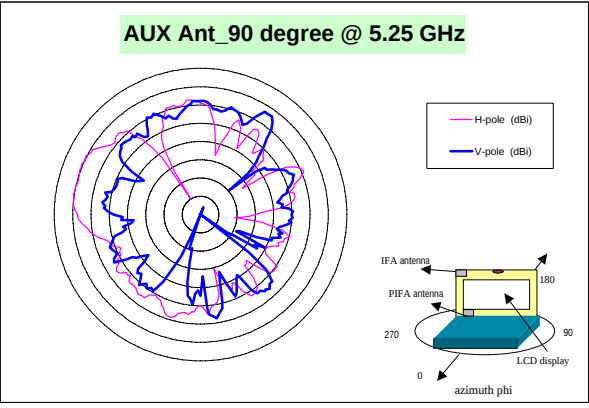
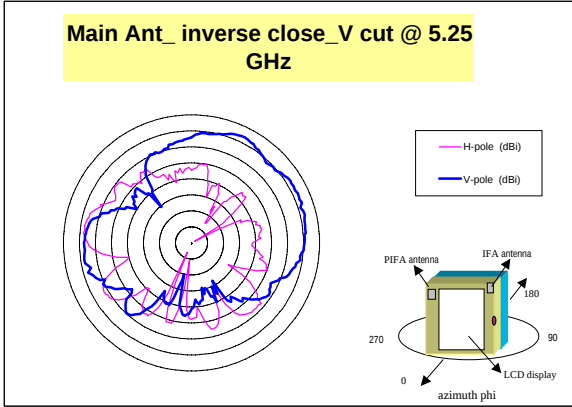
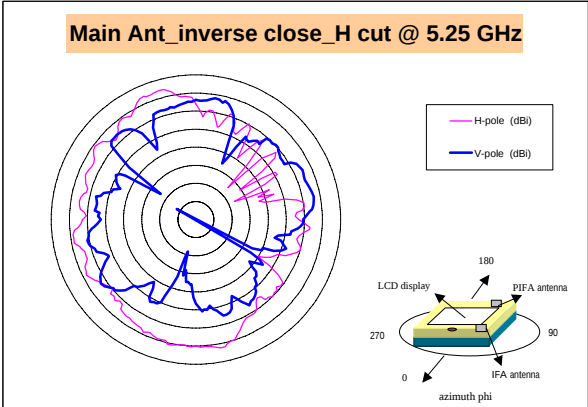
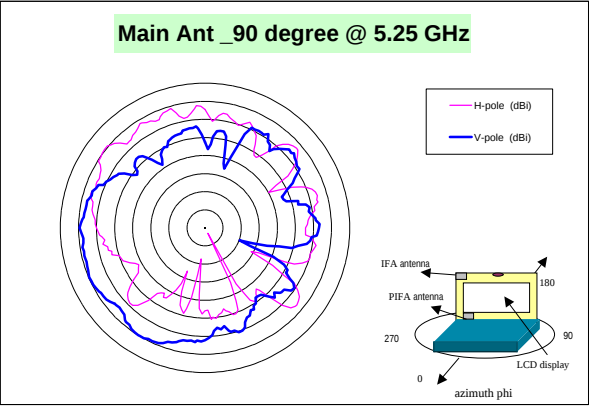
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Note	The outer circle approximately represents the 5 dBi gain circle. Each circle with 5 dBi difference (Max. = 5 dBi and Min. = -35 dBi)

with cable loss							
@GHz		MAIN antenna			AUX antenna		
		2.40	2.45	2.50	2.40	2.45	2.50
90 degree	Peak Gain	1.34	0.89	2.65	1.40	1.02	-1.22
	Average Gain	-2.26	-1.90	-1.47	-6.53	-6.27	-7.24
inverse close -H cut	Peak Gain	0.73	0.65	0.23	1.72	0.16	0.77
	Average Gain	-3.97	-3.78	-3.75	-3.56	-4.86	-4.43
inverse close -V cut	Peak Gain	1.63	2.26	1.62	2.02	-0.14	-0.56
	Average Gain	-3.34	-2.53	-2.17	-2.55	-4.16	-4.32

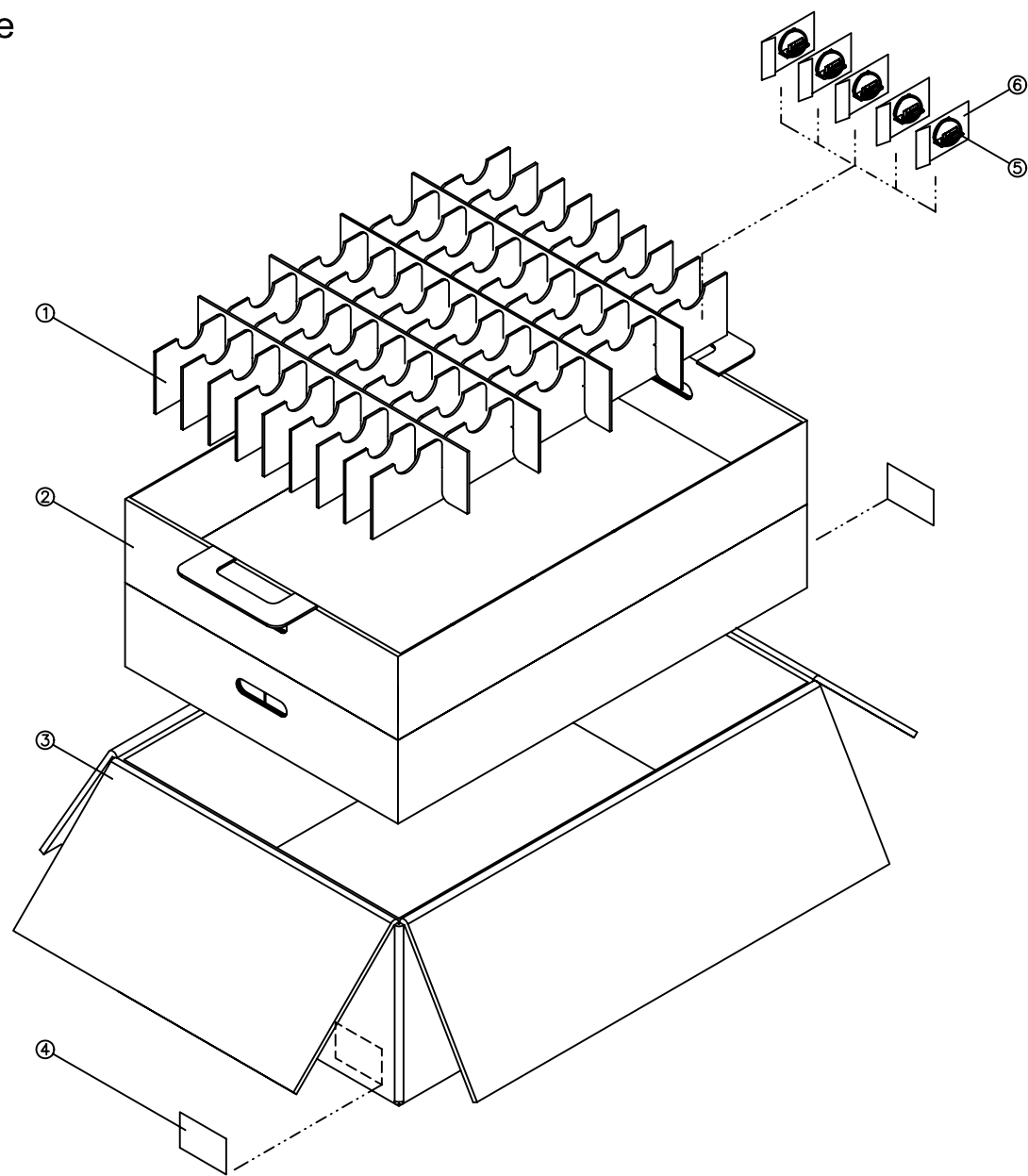


Configuration	Antenna for 802.11a+b system
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Note	The outer circle approximately represents the 5 dBm gain circle. Each circle with 5 dBm difference (Max. = 5 dBm and Min. = -35 dBm)

with cable loss							
@GHz		MAIN antenna			AUX antenna		
		5.15	5.25	5.35	5.15	5.25	5.35
90 degree	Peak Gain	-0.04	0.28	0.48	-0.15	0.29	-0.85
	Average Gain	-3.70	-2.51	-2.50	-5.27	-5.28	-5.98
inverse close -H cut	Peak Gain	2.43	2.28	2.61	1.42	1.49	1.27
	Average Gain	-1.62	-1.98	-1.75	-3.65	-2.77	-3.08
inverse close -V cut	Peak Gain	1.61	1.87	1.27	4.53	4.75	4.10
	Average Gain	-2.47	-2.53	-2.52	0.02	0.07	-0.89



5. Package



6	42.EM113.001	PE BAG, 100x130, EM1-A	EA	1
5	57.EB315.001	C ASSY, WLAN, A1plus, EB3-A	EA	1
4	45.CZ313.002	LABEL, 70x35MM, CZ3-1	EA	0.004
3	44.CA513.002	OUTER CATRON B 585*462*201MM	EA	0.002
2	44.CA513.001	INNER CARTON B 568*445*89MM CA	EA	0.004
1	47.CA513.001	PARTITION ASSY, CA5-Q	EA	0.004
ITEM	PART NO.	DESCRIPTION	UNIT	QTY

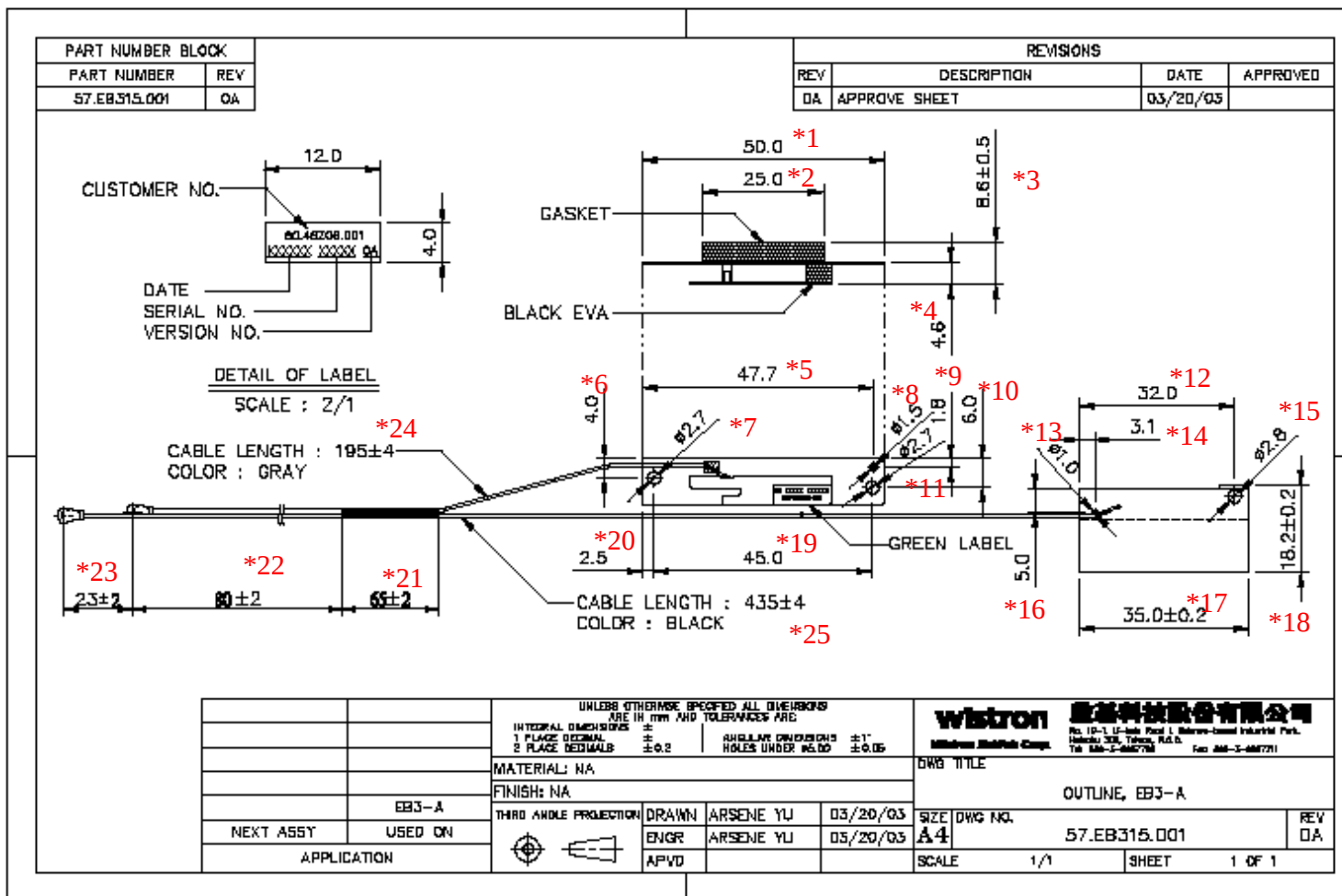
6. FAI Report

FAI DATA SHEET

Drawing Number: 60.46Z06.001				Supplier : WNC							Date: 2003/3/21				Wistron : SQM/Alex MH Lai	
Part Description: Embedded Antenna				Inspected by: Guo chang Manufacturing Site:WNC							Gauge#/Unit 游標卡尺 QC0043 (mm)					
Revision: 0A				Approved by: Sophia Production Line:							Gauge/Unit 尺 (mm)					
				INSPECTION RESULTS							INSPECTION ANALYSIS				Inspection Method	Precision of Gauge
				Sample Number			Deviation from Nominal			Mean	% Tolerance		Acc/Rej			
LOCATION	NOMINAL	+TOL	-TOL	1	2	3	1	2	3			UPPER	LOWER	HIGH	LOW	
1	50.00	0.20	0.20	49.96	49.98	50.05	-0.04	-0.02	0.05	50.00	25%	20%			游標卡尺	0.03mm
2	25.00	0.20	0.20	24.96	24.97	24.99	-0.04	-0.03	-0.01	24.97	0%	20%			游標卡尺	0.03mm
3	8.60	0.50	0.50	8.66	8.54	8.78	0.06	-0.06	0.18	8.66	36%	12%			游標卡尺	0.03mm
4	4.60	0.20	0.20	4.61	4.63	4.60	0.01	0.03	0.00	4.61	15%	0%			游標卡尺	0.03mm
5	47.70	0.20	0.20	47.67	47.73	47.77	-0.03	0.03	0.07	47.72	35%	15%			游標卡尺	0.03mm
6	4.00	0.20	0.20	4.07	4.05	4.03	0.07	0.05	0.03	4.05	35%	0%			游標卡尺	0.03mm
7	2.70	0.20	0.20	2.73	2.72	2.70	0.03	0.02	0.00	2.72	15%	0%			游標卡尺	0.03mm
8	1.50	0.20	0.20	1.51	1.53	1.48	0.01	0.03	-0.02	1.51	15%	10%			游標卡尺	0.03mm
9	1.80	0.20	0.20	1.82	1.85	1.81	0.02	0.05	0.01	1.83	25%	0%			游標卡尺	0.03mm
10	6.00	0.20	0.20	6.04	5.98	6.05	0.04	-0.02	0.05	6.02	25%	10%			游標卡尺	0.03mm
11	2.70	0.20	0.20	2.68	2.71	2.73	-0.02	0.01	0.03	2.71	15%	10%			游標卡尺	0.03mm
12	32.00	0.20	0.20	31.98	31.94	32.05	-0.02	-0.06	0.05	31.99	25%	30%			游標卡尺	0.03mm
13	1.00	0.20	0.20	1.03	1.00	1.03	0.03	0.00	0.03	1.02	15%	0%			游標卡尺	0.03mm
14	3.10	0.20	0.20	3.12	3.08	3.11	0.02	-0.02	0.01	3.10	10%	10%			游標卡尺	0.03mm
15	2.80	0.20	0.20	2.78	2.79	2.81	-0.02	-0.01	0.01	2.79	5%	10%			游標卡尺	0.03mm
16	5.00	0.20	0.20	5.01	4.98	4.97	0.01	-0.02	-0.03	4.99	5%	15%			游標卡尺	0.03mm
17	35.00	0.20	0.20	35.12	35.04	35.10	0.12	0.04	0.10	35.09	60%	0%			游標卡尺	0.03mm
18	18.20	0.20	0.20	18.26	18.29	18.27	0.06	0.09	0.07	18.27	45%	0%			游標卡尺	0.03mm
19	45.00	0.20	0.20	45.07	44.97	45.05	0.07	-0.03	0.05	45.03	35%	15%			游標卡尺	0.03mm
20	2.50	0.20	0.20	2.52	2.54	2.50	0.02	0.04	0.00	2.52	20%	0%			游標卡尺	0.03mm
21	65.00	2.00	2.00	64.00	65.00	65.00	-1.00	0.00	0.00	64.67	0%	50%			尺	1 mm
22	80.00	2.00	2.00	80.00	80.00	81.00	0.00	0.00	1.00	80.33	50%	0%			尺	1 mm
23	23.00	2.00	2.00	23.00	22.00	23.00	0.00	-1.00	0.00	22.67	0%	50%			尺	1 mm
24	195.00	4.00	4.00	195.00	194.00	195.00	0.00	-1.00	0.00	194.67	0%	25%			尺	1 mm
25	435.00	4.00	4.00	433.00	435.00	434.00	-2.00	0.00	-1.00	434.00	0%	50%			尺	1 mm

FAI DATA SHEET

Drawing Number: 60.46Z06.001	Supplier : WNC	Date: 2003/3/21	Wistron : SQM/Alex MH Lai
Part Description: Embedded Antenna	Inspected by: Guo chang Manufacturing Site:WNC	Gauge#/Unit 游標卡尺 QC0043 (mm)	
Revision: 0A	Approved by: Sophia Production Line:	Gauge/Unit 尺 (mm)	



Part Number: 25.90108.001 (aux antenna)

Manufacturing Site: WNC

Production Line: JM2113

Measuring Site: JM2113

Cpk of Antenna

DATE: 2003/3/20

Inspected by: Jerry Lin

Approved by: Eric Lin

Wistron : SQM/ Alex MH Lai

Measurement Value																													
Item	Spec.	Torance +	Torance -	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
VSWR (b)	2.00	0	1	1.87	1.77	1.79	1.69	1.78	1.72	1.78	1.81	1.69	1.62	1.68	1.48	1.57	1.62	1.85	1.61	1.56	1.63	1.57	1.72	1.65	1.57	1.72	1.60	1.68	
				26	27	28	29	30	31	32	33	34	35																
				1.51	1.43	1.69	1.76	1.77																					
組界			5	1.43	1.52	1.61	1.69	1.78	1.87	1.96																			
VSWR (a)	2.50	0.00	1.00	1.69	1.61	1.46	1.70	1.71	1.56	1.66	1.56	1.65	1.61	1.69	1.56	1.73	1.70	1.74	1.64	1.56	1.48	1.75	1.57	1.57	1.71	1.60	1.46	1.69	
				26	27	28	29	30	31	32	33	34	35																
				1.74	1.69	1.67	1.43	1.65																					
組界			5	1.43	1.49	1.56	1.62	1.69	1.75	1.81																			
C																													
				26	27	28	29	30	31	32	33	34	35																
組界																													
組界																													

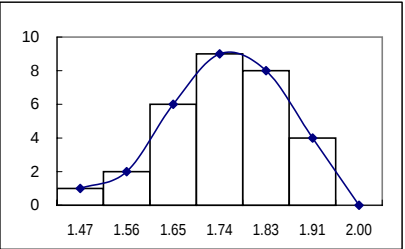
Engineering Specification					
工程尺寸		VSWR (b)	VSWR (a)	C	
工程規格	Product spec	1.5000	1.7500		
正公差	Tolerance	0.5000	0.7500		
負公差	Tolerance	0.5000	0.7500		
工程上限	USL	2	2.5		
工程下限	LSL	1	1		
Actual Data					
量測尺寸		VSWR (b)	VSWR (a)	C	
平均數	X bar	1.6730	1.6280		
標準差	Sigma	0.1089	0.0905		
中間值	Median	1.6850	1.6500		
眾數	Mode	1.6900	1.6900		
最大值	Max	1.8700	1.7500		
最小值	Min	1.4300	1.4300		
UCL	1 Sigma	1.7819	1.7185		
	2 Sigma	1.8909	1.8091		
	3 Sigma	1.9998	1.8996		
LCL	1 Sigma	1.5641	1.5375		
	2 Sigma	1.4551	1.4469		
	3 Sigma	1.3462	1.3564		
製程能力	雙邊CP	1.53	2.76		
	單邊CPL	2.06	2.31		
	單邊CPU	1.00	3.21		
	單邊CP	1.00	2.31		
	Ca	0.35	-0.16		
	Cpk	1.00	2.31		

VSWR (b)		VSWR (a)		C	
組別	次數	組別	次數	組別	次數
1.47	1	1.46	1	#####	0
1.56	2	1.53	3	#####	0
1.65	6	1.59	4	#####	0
1.74	9	1.65	5	#####	0
1.83	8	1.72	9	#####	0
1.91	4	1.78	8	#####	0
2.00	0	1.85	0	#####	0

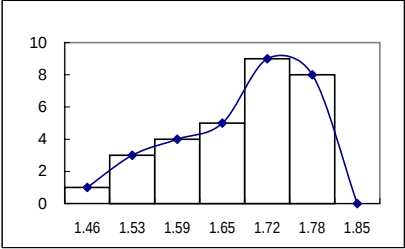
Remark:

Gauge:

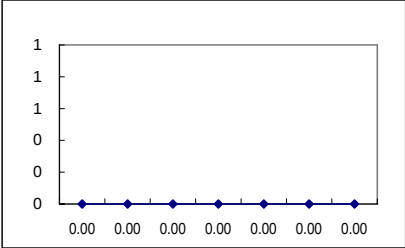
VSWR (b)



VSWR (a)



Dimension C



8. Cable/Connector Specification

東莞唯盛電子廠 樣品檢查表

2003 年 03 月 19 日

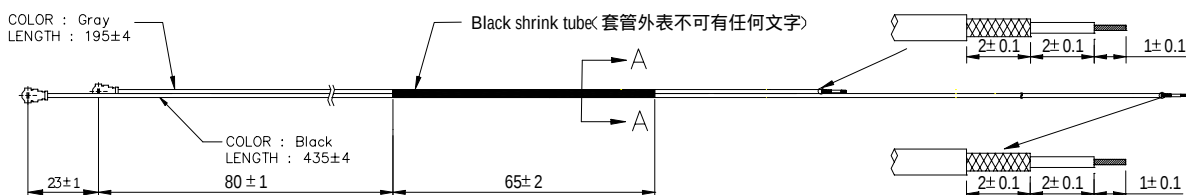
客戶:	Wistron NeWeb Corp.	品名	WN-S-1.13-435B(2-2-1) & 195G(2-2-1)	檢查日期:	2003.03.19	承認	確認	檢查
數量:	3 pcs	規格	435 & 195mm	顏色	BLACK & GRAY			

樣品:

1:

2:

3:



WN-S-1.13-435B(2-2-1) & 195G(2-2-1)

No	檢查項目	公差	1	2	3			判定
1	電纜線長度	435± 4 mm	435.5	436	435			OK
2	電纜線長度	195± 4 mm	195.5	195	196			OK
3	剝皮長度	2-2-1±0.1mm	2-1.9-1	1.9-2-1	2-2-1			OK
4	剝皮長度	2-2-1±0.1mm	2-2-1	2-1.9-1.1	2.1-2-1			OK
5	長度	23±1 mm	23.5	24	24			OK
6	長度	80±1mm	80	80	80.5			OK
7	長度	65±2mm	65	64	65			OK
8	電纜線外觀	無破損、無異物附著...等現象	OK	OK	OK			OK
9	編織網	網子無切斷偏出、錫翹起...等現象	OK	OK	OK			OK
10	鐵氟龍(透明膠管)	無傷痕、無變薄、無異物覆蓋..等現象	OK	OK	OK			OK
11	中心導體	無斷線、無錫尖、無線散亂、無損傷...等現象	OK	OK	OK			OK
12	外觀	無破損、變型、脫落...等	OK	OK	OK			OK
13	連接器內中心導體	是否按規定定位於連接器內	OK	OK	OK			OK
14	嵌入、拔取母座	嵌入拔取母座是否正常	OK	OK	OK			OK
15	與電纜線的拉力測試	↑ 10N	↑10N	↑10N	↑10N			OK
16	與母座嵌合的拉力	↑ 2N	↑2N	↑2N	↑2N			OK
17	導通	使用測試器	OK	OK	OK			OK
18	絕緣	使用測試器	OK	OK	OK			OK
19	瞬斷	使用測試器	OK	OK	OK			OK
20	耐壓	使用測試器	OK	OK	OK			OK
21	包裝	包裝方法和標籤內容填定是否正確	OK	OK	OK			OK
22	數量檢查	數量是否正確	OK	OK	OK			OK

1. 不良品發現時, 全數再檢查.

2. IPX 連接器的使用溫度範圍是: - 40 至90

3. 極細同軸電纜線的耐溫度為-200 ~250

注意:

1. 此記錄需保存3年.

2. 請遵照指示用適當的度量治具及工具去量度.

3. 檢查方法請遵照出貨檢查規格.

最終判斷

ok

NG

編號: WS-4-B-010-01

東莞唯盛電子廠

樣 品 檢 查 表

2003 年 03 月 19 日

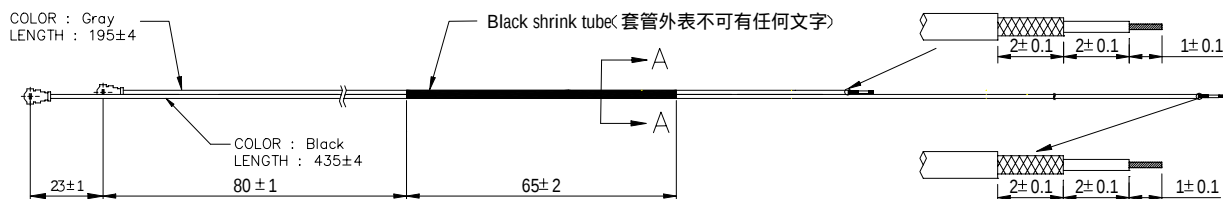
客戶:	Wistron NeWeb Corp.	品名	WN-S-1.13-435B(2-2-1) & 195G(2-2-1)	檢查日期:	2003.03.19	承認	確認	檢查
數量: 3 pcs		規格	435 & 195mm	顏色	BLACK & GRAY			

樣品:

1:

2:

3:



WN-S-1.13-435B(2-2-1) & 195G(2-2-1)

No	檢查項目		公 差	1	2	3		判定
1	寸 法 檢 查	電纜線長度	435± 4 mm	435.5	436	435		OK
2		電纜線長度	195± 4 mm	195	196	196		OK
3		剥皮長度	2-2-1±0.1mm	2-2-1	2-2-1	2-2-1		OK
4		剥皮長度	2-2-1±0.1mm	2.1-2-1	2.1-2-1	2-2.1-0.9		OK
5		長度	23±1 mm	24	23	24		OK
6		長度	80±1mm	81	80	80		OK
7		長度	65±2mm	65	65.5	65		OK
8	外 觀	電纜線外觀	無破損、無異物附著...等現象	OK	OK	OK		OK
9		編織網	網子無切斷偏出、錫翹起...等現象	OK	OK	OK		OK
10		鐵氟龍(透明膠管)	無傷痕、無變薄、無異物覆蓋...等現象	OK	OK	OK		OK
11		中心導體	無斷線、無錫尖、無線散亂、無損傷...等現象	OK	OK	OK		OK
12	連 接 器	外觀	無破損、變型、脫落...等	OK	OK	OK		OK
13		連接器內中心導體	是否按規定定位於連接器內	OK	OK	OK		OK
14		嵌入、拔取母座	嵌入拔取母座是否正常	OK	OK	OK		OK
15		與電纜線的拉力測試	↑ 10N	↑ 10N	↑ 10N	↑ 10N		OK
16	電 氣 檢 查	與母座嵌合的拉力	↑ 2N	↑ 2N	↑ 2N	↑ 2N		OK
17		導通	使用測試器	OK	OK	OK		OK
18		絕緣	使用測試器	OK	OK	OK		OK
19		瞬斷	使用測試器	OK	OK	OK		OK
20	其 它	耐壓	使用測試器	OK	OK	OK		OK
21		包裝	包裝方法和標籤內容填定是否正確	OK	OK	OK		OK
22		數量檢查	數量是否正確	OK	OK	OK		OK

1. 不良品發現時, 全數再檢查.

2. IPX 連接器的使用溫度範圍是: - 40 至90

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注意:

1. 此記錄需保存3年.

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3. 檢查方法請遵照出貨檢查規格.

最終判斷

ok

NG

編號: WS-4-B-010-01