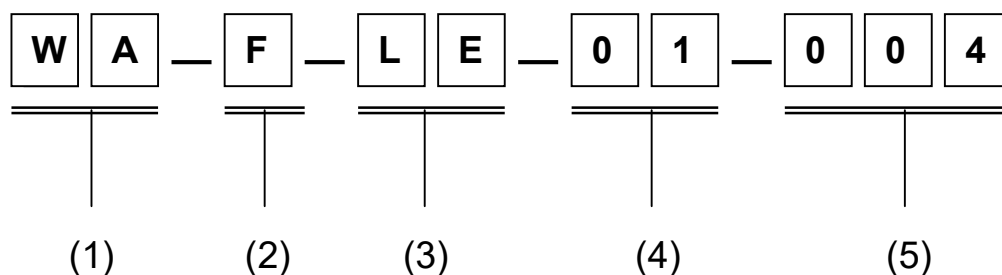


# Embedded Multi-Band Antenna for WA-F-LE-01-004

## 1. Explanation of part number :



1. Product Type : Wireless Antenna
2. Material : FPCB
3. Frequency/Band code : 2400~2500 & 5150~7125MHz
4. Coaxial Cable Type : White Coaxial Cable
5. Suffix : 004

## 2. Electrical Specification :

Ant. Part Number (main & aux parts)	Type	Highest Peak Gain with Cable Loss (dBi)		Cable loss (dB)		Connector Type	Cable length	Laptop/ Host Model
		2400~2500	5150~7125	2400~2500	5150~7125			
		MHz	MHz	MHz	MHz			
Aux: INPAQ P/N: WA-F-LE-01-004 ASUS P/N: 14008-05570100	PIFA	2.9	4.6	1.17	1.83	I-PEX MHF4-L	420mm	H7604

Antenna Type	PIFA Antenna For WIFI 802.11a/b/g/n/ac/ax	
Connector Type	I-PEX MHF4-L Connector 20565-001R-13	
Cable Type	OD 1.13 LLS RF Cable	
Impedance	50Ω	
Polarization	Linear	
Radiation Pattern	Omni-directional	
Frequency Range	WLAN 802.11a/b/g/n/ac/ax	2.4~2.5GHz & 5.15~7.125 GHz
VSWR	WLAN 802.11a/b/g/n/ac/ax	≤ 3.5
Operation Temperature	-10°C~+55°C	
Storage Temperature	-30°C~+75°C	
Return Loss	≤ -6 dB	
Max Power	1W	

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



INPAQ TECHNOLOGY CO., LTD.

SCALE : N/A

UNIT : mm

DRAWN BY:王聖元

CHECKED BY:鄭榮謀

DESIGNED BY:林易暄

APPROVED BY:張建焜

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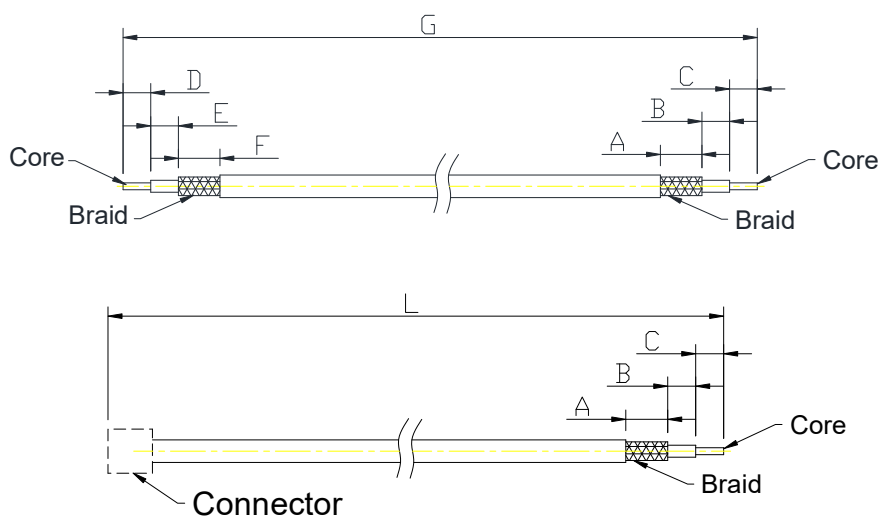
TITLE : Embedded Multi-Band Antenna for  
WA-F-LE-01-004

DOCUMENT  
NO.

SPEC REV.  
P0

### 4. RF Connector :

#### 4-1 Cable Dimension :



Connector : I-PEX MHF-4L ; Cable : RF Cable  $\phi$  1.13 Low Loss (White)

L : 438.5.0 $\pm$ 2.0

D : 1.2 $\pm$ 0.15

A : 3.0 $\pm$ 0.5(沾錫)

E : 0.72 $\pm$ 0.15

B : 1.0 $\pm$ 0.5

F : 1.00 $\pm$ 0.15

C : 1.0 $\pm$ 0.5(沾錫)

G : 437.5 $\pm$ 2.0

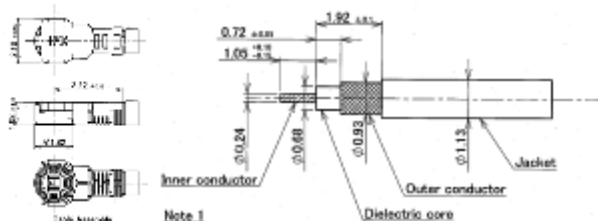
unit : mm

#### 4-1.1 Electric SPEC :

短路/斷路測試 : (使用三用電表量測)

- 心線與 Braid wires 間不可短路。
- Connector 之 Ground 與線路另一端之 Braid wires 間不可斷路。
- Connector 之心線與線路另一端之心線間不可斷路。

#### 4-1.2 Connector Appearance : I-PEX MHF-4L (此為示意圖)



UNLESS OTHER SPECIFIED TOLERANCES ON :

X= $\pm$   
ANGLES= $\pm$

X.X= $\pm$

X.XX= $\pm$

HOLEDIA= $\pm$



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### 5. Electrical Specification :

Those specifications were specially defined for H7604 model, and all characteristics were measured under the model's handset testing jig.

#### 5-1. Frequency Band :

Frequency Band	MHz	MHz
Wi-Fi 6e	2400~2500	5150~7125

#### 5-2. Impedance :

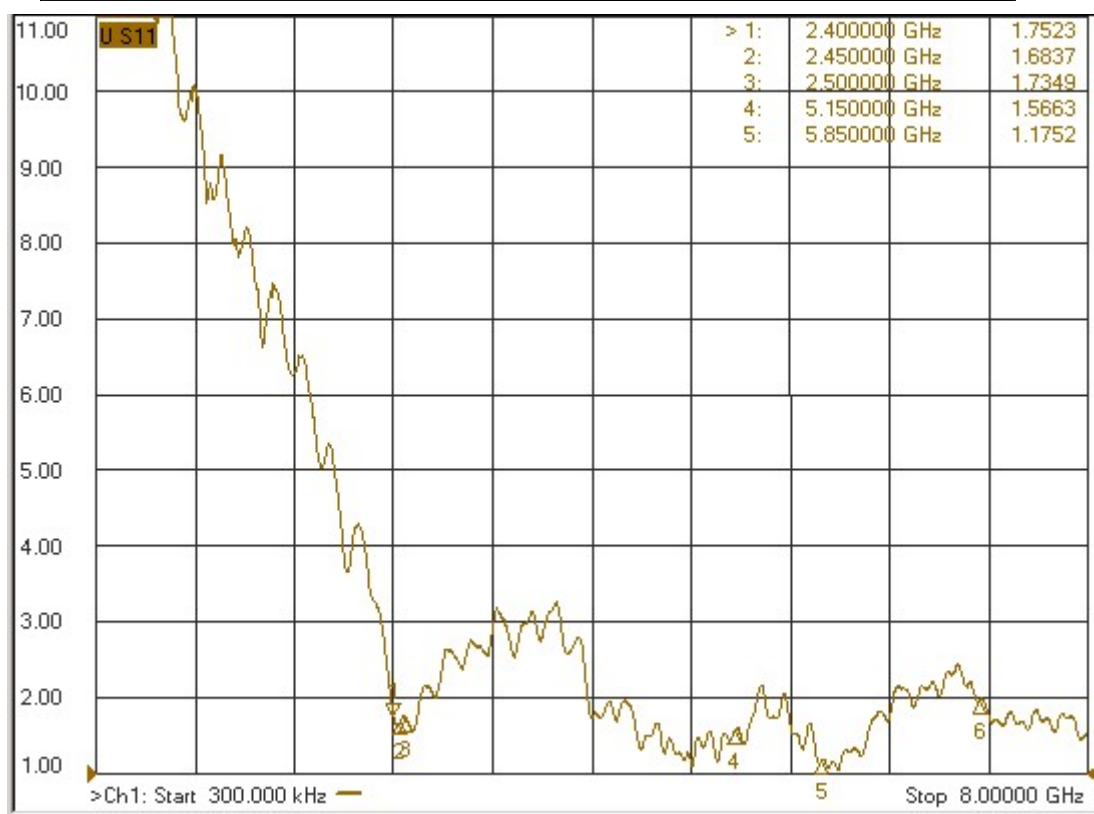
50 ohm nominal

#### 5-3. Matching circuit :

None

#### 5-4. Return loss/VSWR :

Frequency(MHz)	2400	2500	5150	5850	7125
Aux VSWR(dB)	1.75	1.73	1.56	1.17	1.88



UNLESS OTHER SPECIFIED TOLERANCES ON :

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 ANGLES=±      HOLEDIA=±



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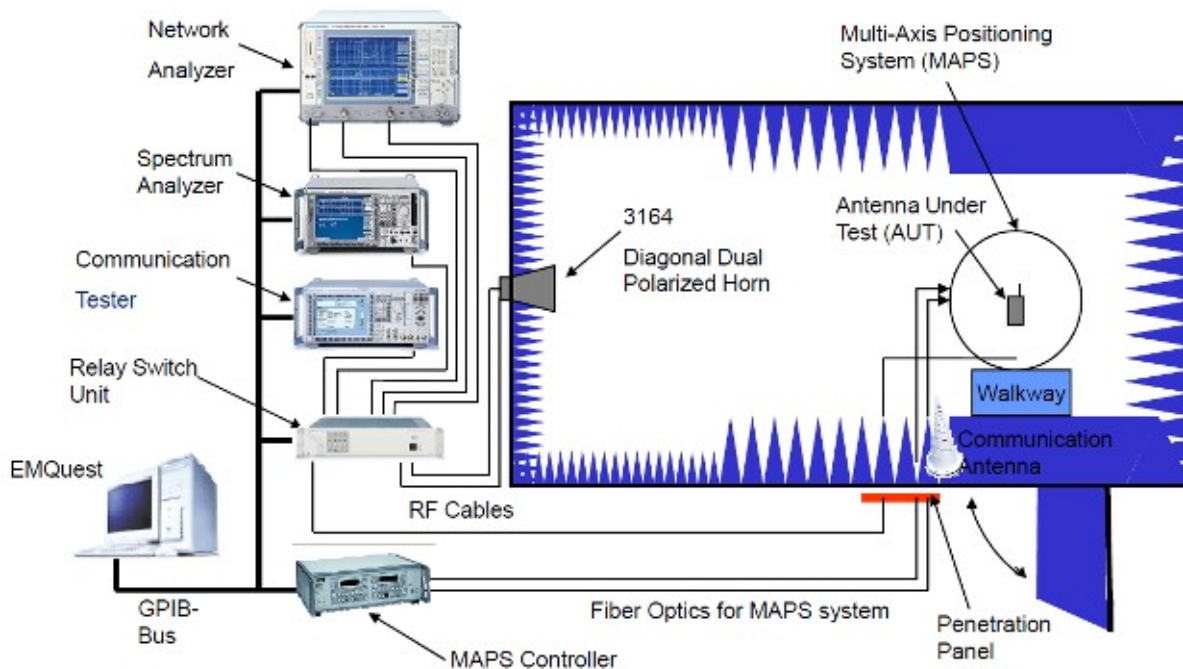
SPEC REV.  
 P0

### 5-5 Gain and Radiation Pattern

#### 5-5.1 Measure method

1. Using a low loss coaxial cable to link a standard handset jig
2. Fixed this handset jig on chamber's rotator plane
3. Linking jig into network analyzer port and using a probing horn antenna to collect data.
4. Using another standard gain horn antenna to calibrated those data

#### 5-5.2 Chamber definition



1. An anechoic chamber (10mx3mx3m) which satisfied far-field condition was applied to avoid multi-path effect
2. The quite room region is 50cmx50cmx50cm at the center of rotator
3. The distance between DUT and standard antenna is 9.14m
4. Two measurement antennas is 3164-06 (300MHz - 6GHz) and 3164-05 (2 - 18GHz)

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±      X.X=±      X.XX=±  
 ANGLES=±      HOLEDIA=±



INPAQ TECHNOLOGY CO., LTD.

SCALE : N/A

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### 5-5.3 Gain data and radiation pattern

Antenna gain is marked (dBi) and is based on **STANDARD HORN** antenna. The data shows Peak-Gain and Average-Gain.

Frequency (MHz)	Aux		
	Efficiency (dB)	Efficiency (%)	3D Peak gain (dBi)
2400	-5.1	31%	1.8
2412	-4.7	34%	2.2
2437	-4.6	35%	2.2
2462	-5.3	29%	2.0
2500	-4.6	35%	2.9
5150	-4.7	34%	3.2
5250	-5.0	32%	3.4
5350	-5.8	26%	2.8
5470	-5.1	31%	3.1
5600	-5.1	31%	2.9
5725	-4.5	36%	4.4
5780	-5.3	30%	4.3
5850	-5.0	31%	4.5
5895	-5.2	30%	4.4
5925	-5.3	30%	3.9
6125	-4.4	36%	4.6
6425	-4.7	34%	3.5
6525	-5.5	28%	3.6
6725	-5.4	29%	2.9
6875	-5.9	25%	3.4
6925	-6.1	25%	3.1
7125	-7.0	20%	2.2

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



INPAQ TECHNOLOGY CO., LTD.

SCALE : N/A

UNIT : mm

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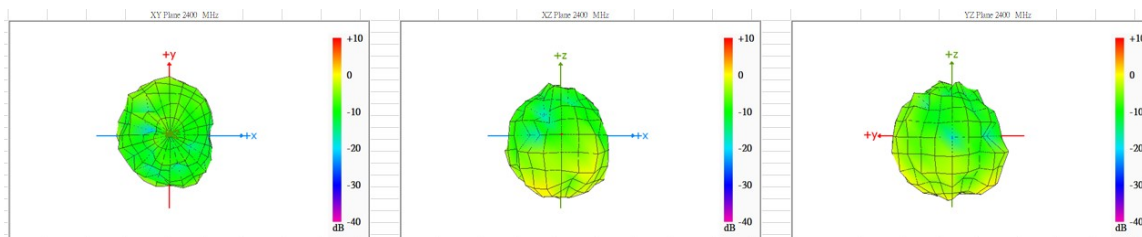
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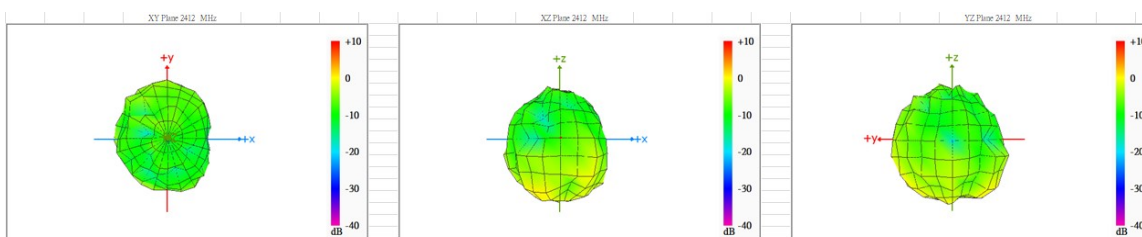
**2400-2500MHz radiation characteristic**

**Aux antenna: 2400 MHz**



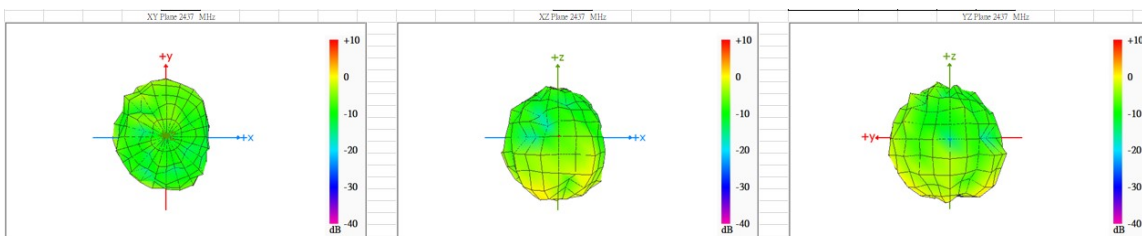
Center Frequency	<b>2400 MHz</b>
Three-dimensional (dBi) peak	<b>1.8</b>

**Aux antenna: 2412 MHz**



Center Frequency	<b>2412 MHz</b>
Three-dimensional (dBi) peak	<b>2.2</b>

**Aux antenna: 2437 MHz**



Center Frequency	<b>2437 MHz</b>
Three-dimensional (dBi) peak	<b>2.2</b>

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



**INPAQ TECHNOLOGY CO., LTD.**

SCALE : N/A

UNIT : mm

DRAWN BY:王聖元

CHECKED BY:鄭榮謀

DESIGNED BY:林易暄

APPROVED BY:張建焜

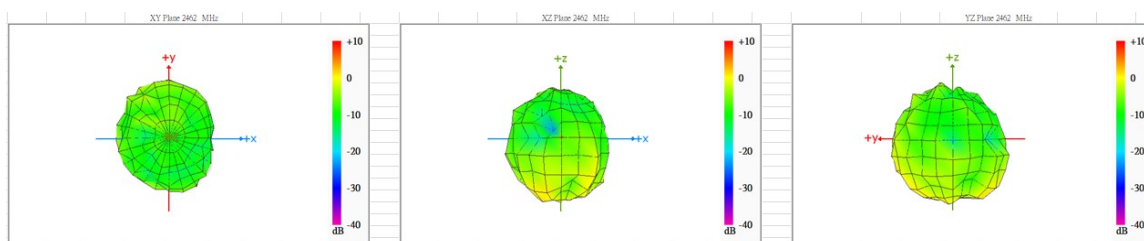
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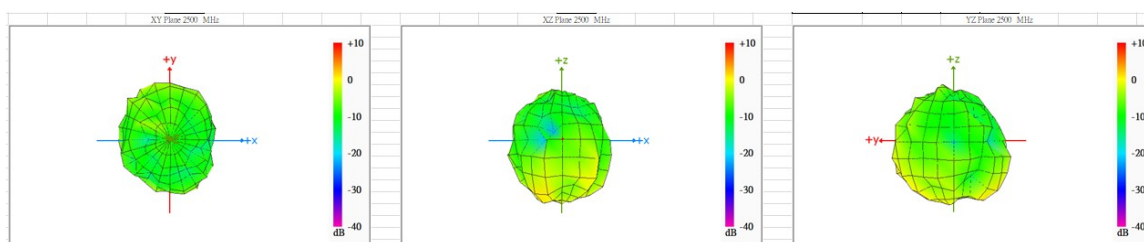
SPEC REV.  
**P0**

**Aux antenna: 2462 MHz**



Center Frequency	<b>2462 MHz</b>
Three-dimensional (dBi) peak	<b>2.0</b>

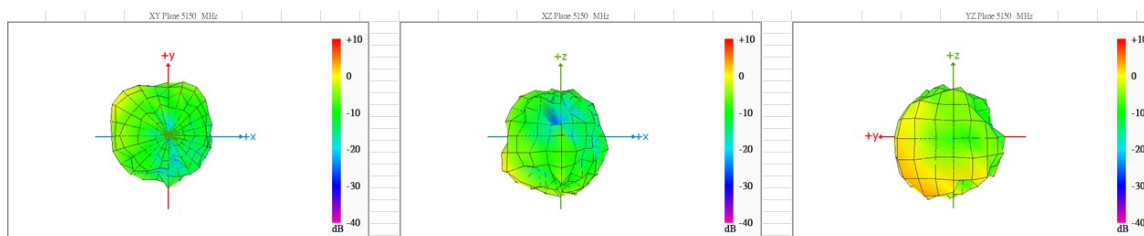
**Aux antenna: 2500 MHz**



Center Frequency	<b>2500 MHz</b>
Three-dimensional (dBi) peak	<b>2.9</b>

**5150-5350MHz radiation characteristic**

**Aux antenna: 5150 MHz**



Center Frequency	<b>5150 MHz</b>
Three-dimensional (dBi) peak	<b>3.2</b>

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



**INPAQ TECHNOLOGY CO., LTD.**

SCALE : N/A

UNIT : mm

DRAWN BY:王聖元

CHECKED BY:鄭榮謀

DESIGNED BY:林易暄

APPROVED BY:張建焜

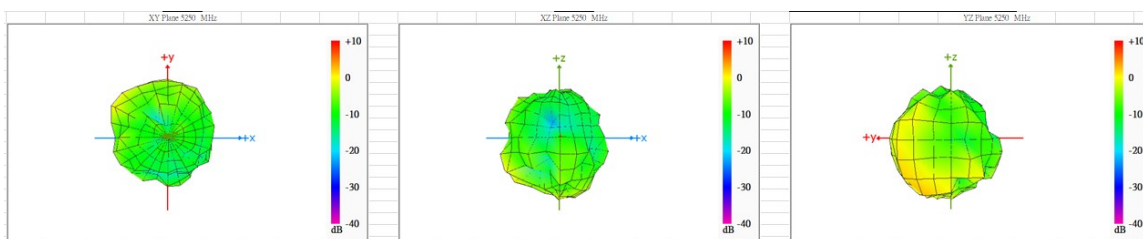
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**WA-F-LE-01-004**

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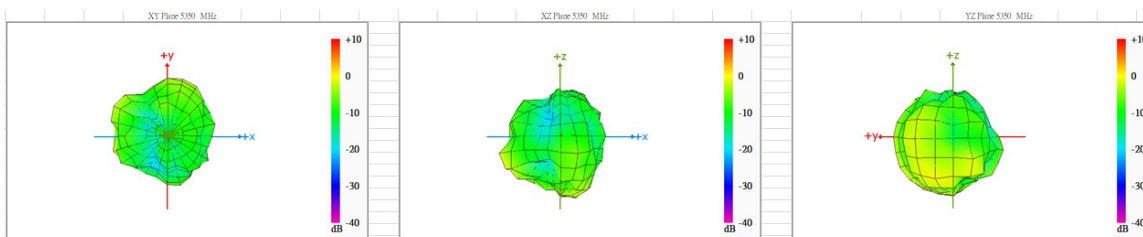
SPEC REV.  
**P0**

**Aux antenna: 5250 MHz**



Center Frequency	<b>5250 MHz</b>
Three-dimensional (dBi) peak	<b>3.4</b>

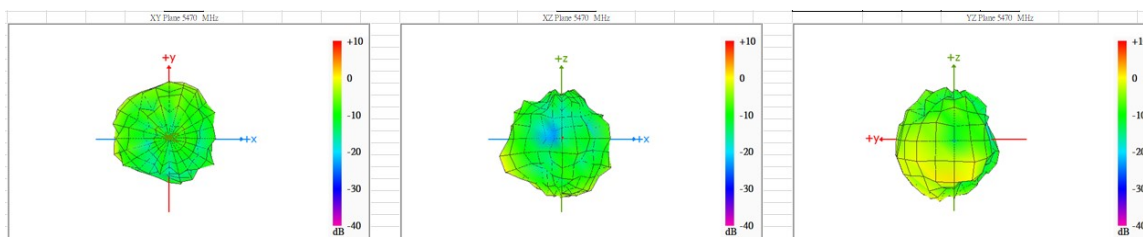
**Aux antenna: 5350 MHz**



Center Frequency	<b>5350 MHz</b>
Three-dimensional (dBi) peak	<b>2.8</b>

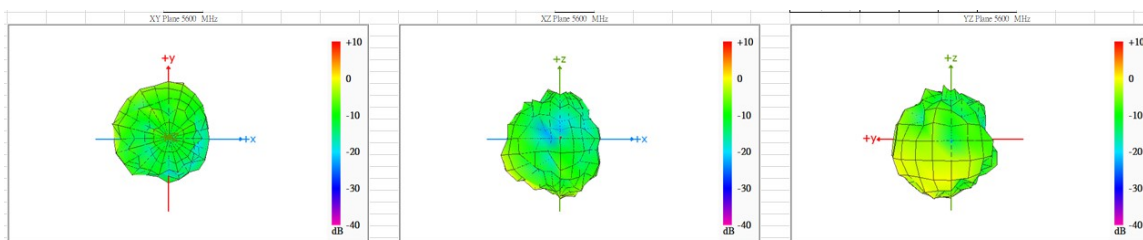
**5470-5725MHz radiation characteristic**

**Aux antenna: 5470 MHz**



Center Frequency	<b>5470 MHz</b>
Three-dimensional (dBi) peak	<b>3.1</b>

**Aux antenna: 5600 MHz**



Center Frequency	<b>5600 MHz</b>
Three-dimensional (dBi) peak	<b>2.9</b>

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



**INPAQ TECHNOLOGY CO., LTD.**

SCALE : N/A

UNIT : mm

DRAWN BY:王聖元

CHECKED BY:鄭榮謀

DESIGNED BY:林易暄

APPROVED BY:張建焜

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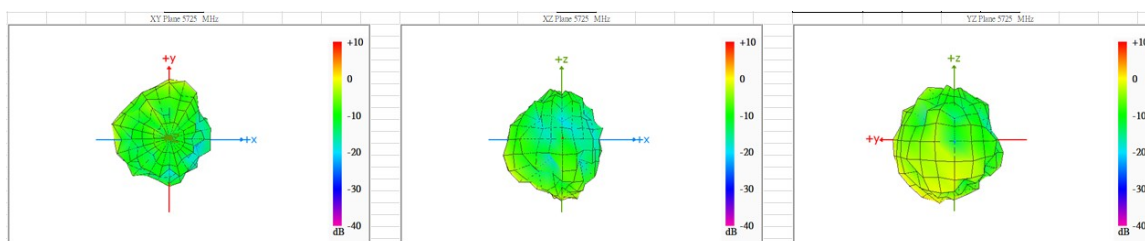
TITLE : Embedded Multi-Band Antenna for  
 WA-F-LE-01-004

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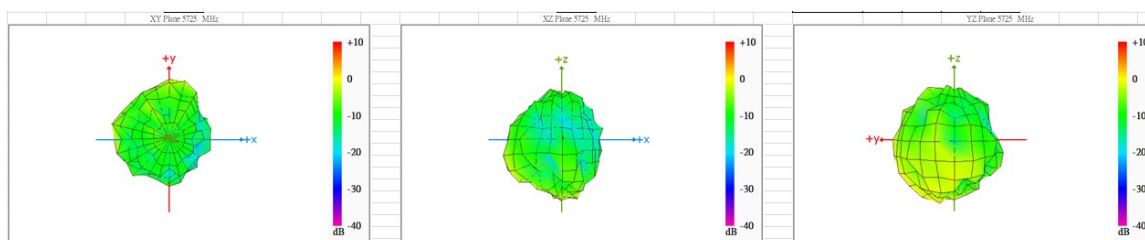
**Aux antenna: 5725 MHz**



Center Frequency	<b>5725 MHz</b>
Three-dimensional (dBi) peak	<b>4.4</b>

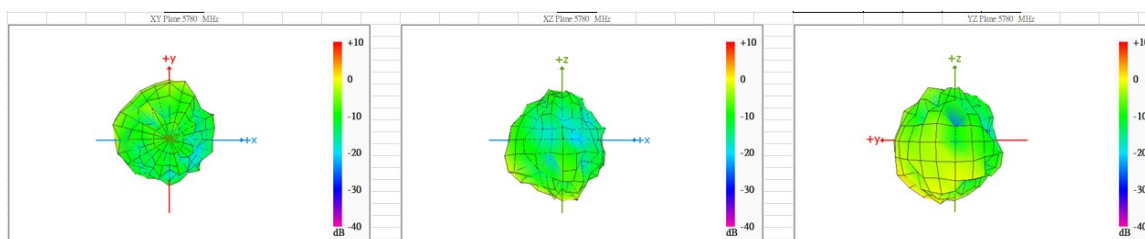
**5725-5895MHz radiation characteristic**

**Aux antenna: 5725 MHz**



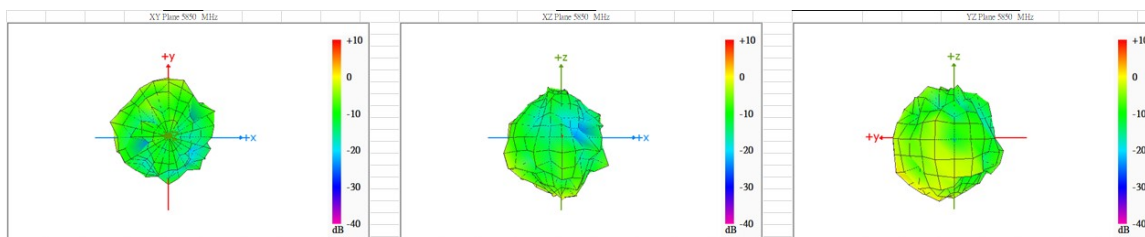
Center Frequency	<b>5725 MHz</b>
Three-dimensional (dBi) peak	<b>4.4</b>

**Aux antenna: 5780 MHz**



Center Frequency	<b>5780 MHz</b>
Three-dimensional (dBi) peak	<b>4.3</b>

**Aux antenna: 5850 MHz**



Center Frequency	<b>5850 MHz</b>
Three-dimensional (dBi) peak	<b>4.5</b>

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



**INPAQ TECHNOLOGY CO., LTD.**

SCALE : N/A

UNIT : mm

DRAWN BY:王聖元

CHECKED BY:鄭榮謀

DESIGNED BY:林易暄

APPROVED BY:張建焜

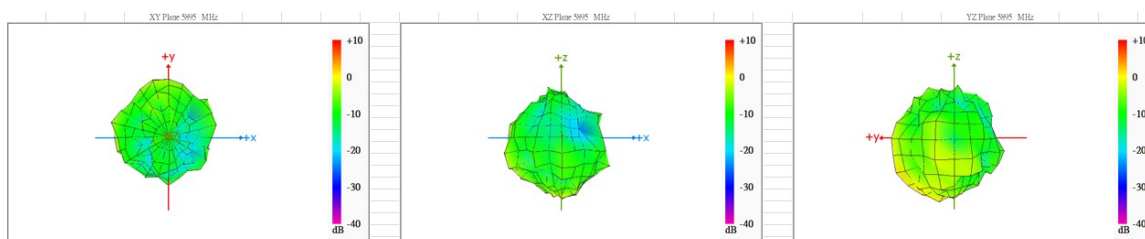
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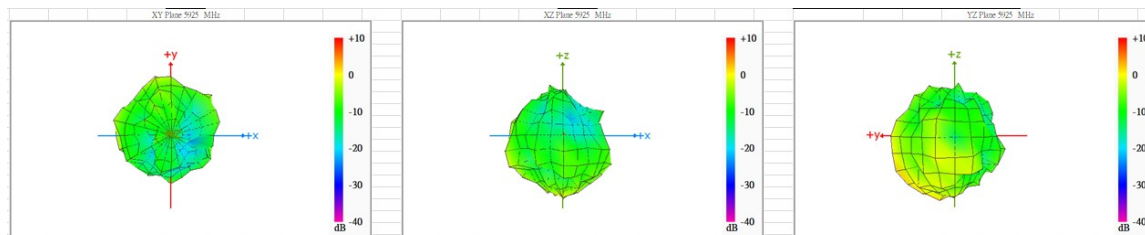
**Aux antenna: 5895 MHz**



Center Frequency	<b>5895 MHz</b>
Three-dimensional (dBi) peak	<b>4.4</b>

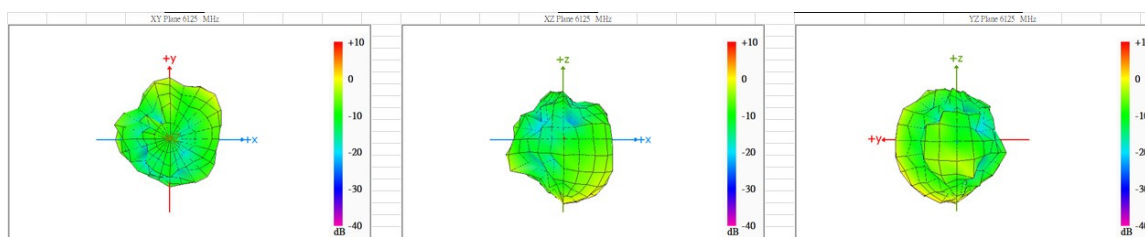
**5925-6425MHz radiation characteristic**

**Aux antenna: 5925 MHz**



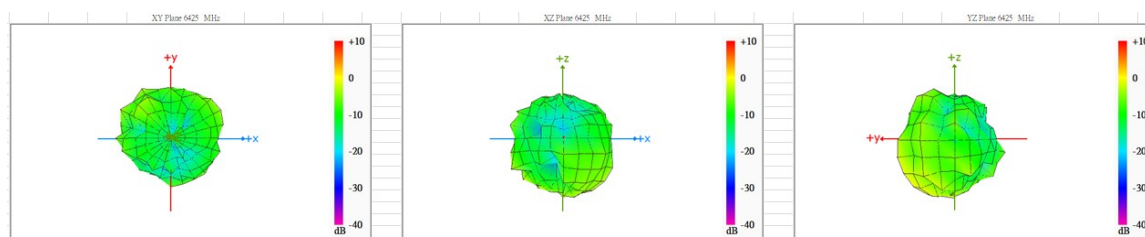
Center Frequency	<b>5925 MHz</b>
Three-dimensional (dBi) peak	<b>3.9</b>

**Aux antenna: 6125 MHz**



Center Frequency	<b>6125 MHz</b>
Three-dimensional (dBi) peak	<b>4.6</b>

**Aux antenna: 6425 MHz**



Center Frequency	<b>6425 MHz</b>
Three-dimensional (dBi) peak	<b>3.5</b>

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



**INPAQ TECHNOLOGY CO., LTD.**

SCALE : N/A

UNIT : mm

DRAWN BY:王聖元

CHECKED BY:鄭榮謀

DESIGNED BY:林易暄

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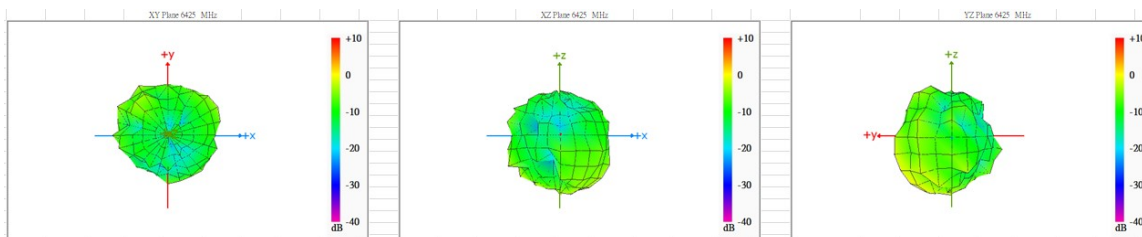
TITLE : Embedded Multi-Band Antenna for  
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SPEC REV.  
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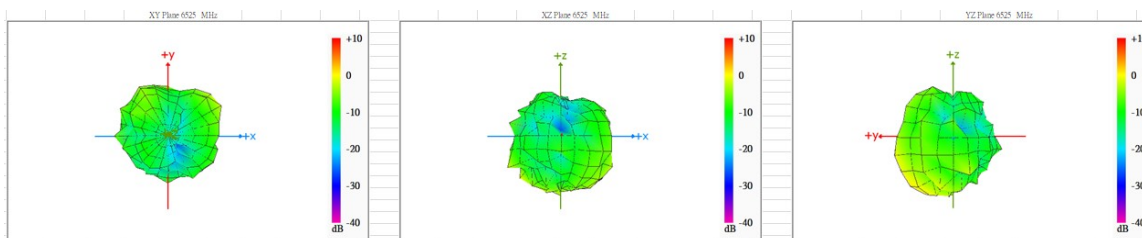
**6425-6525MHz radiation characteristic**

**Aux antenna: 6425 MHz**



Center Frequency	<b>6425 MHz</b>
Three-dimensional (dBi) peak	<b>3.5</b>

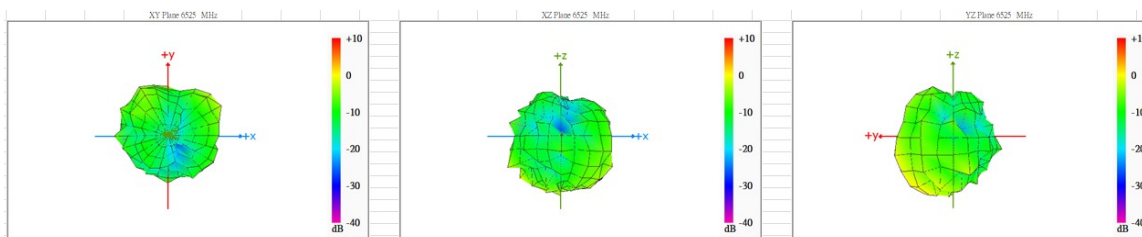
**Aux antenna: 6525 MHz**



Center Frequency	<b>6525 MHz</b>
Three-dimensional (dBi) peak	<b>3.6</b>

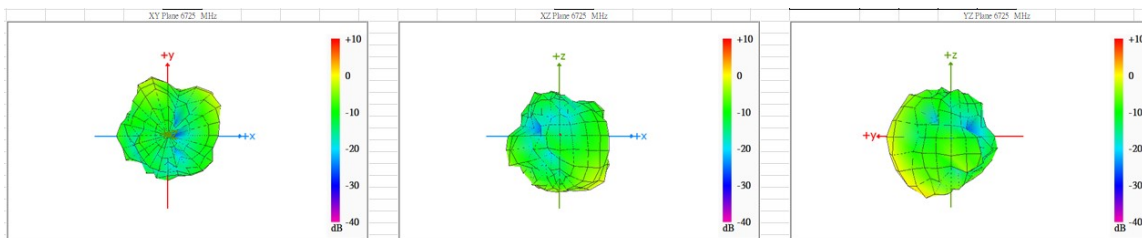
**6525-6875MHz radiation characteristic**

**Aux antenna: 6525 MHz**



Center Frequency	<b>6525 MHz</b>
Three-dimensional (dBi) peak	<b>3.6</b>

**Aux antenna: 6725 MHz**



Center Frequency	<b>6725 MHz</b>
Three-dimensional (dBi) peak	<b>2.9</b>

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



**INPAQ TECHNOLOGY CO., LTD.**

SCALE : N/A

UNIT : mm

DRAWN BY:王聖元

CHECKED BY:鄭榮謀

DESIGNED BY:林易暄

APPROVED BY:張建焜

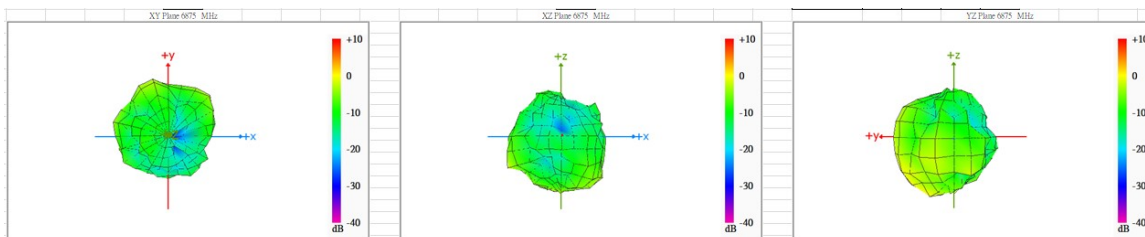
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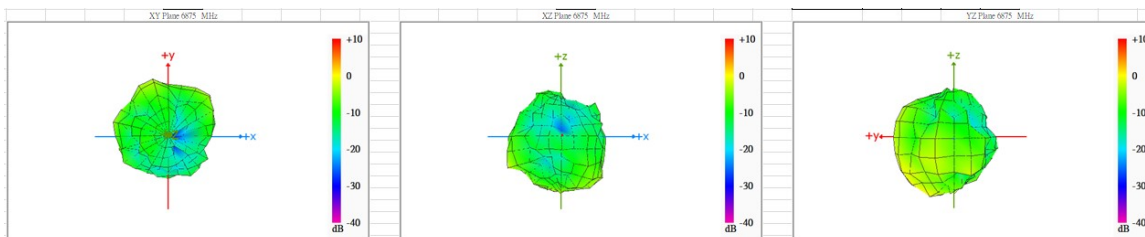
**Aux antenna: 6875 MHz**



Center Frequency	<b>6875 MHz</b>
Three-dimensional (dBi) peak	<b>3.4</b>

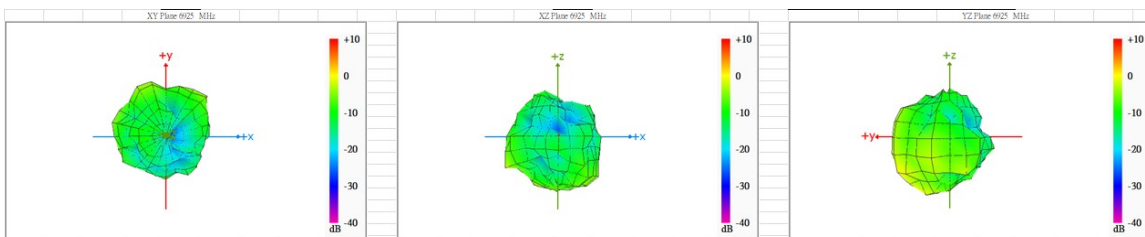
**6875-7125MHz radiation characteristic**

**Aux antenna: 6875 MHz**



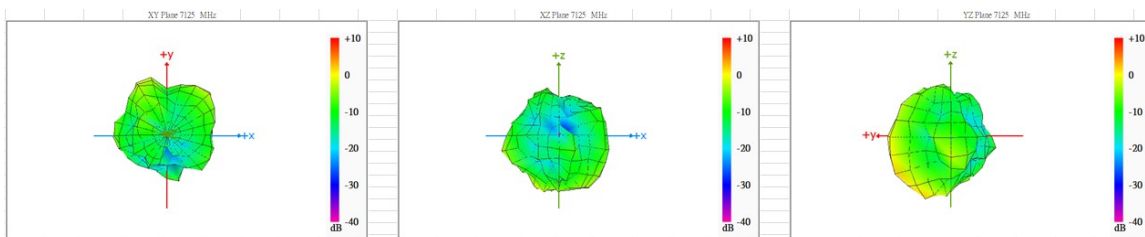
Center Frequency	<b>6875 MHz</b>
Three-dimensional (dBi) peak	<b>3.4</b>

**Aux antenna: 6925 MHz**



Center Frequency	<b>6925 MHz</b>
Three-dimensional (dBi) peak	<b>3.1</b>

**Aux antenna: 7125 MHz**



Center Frequency	<b>7125 MHz</b>
Three-dimensional (dBi) peak	<b>2.2</b>

UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±            X.X=±            X.XX=±  
 ANGLES=±            HOLEDIA=±



**INPAQ TECHNOLOGY CO., LTD.**

SCALE : N/A

UNIT : mm

DRAWN BY:王聖元

CHECKED BY:鄭榮謀

DESIGNED BY:林易暄

APPROVED BY:張建焜

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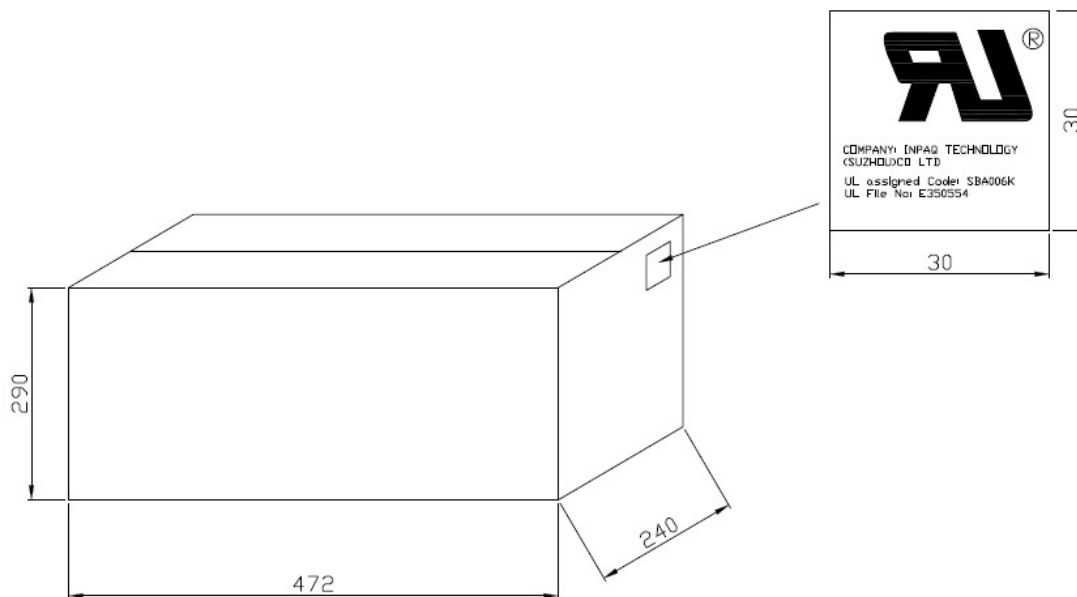
TITLE : Embedded Multi-Band Antenna for  
 WA-F-LE-01-004

DOCUMENT  
 NO.

SPEC REV.  
 P0

6. 外箱貼附 Cable 的 UL 標籤：

The appearance of cable UL label is according to drawing Figure 7-1-1



帶線材的產品出貨時皆需貼附此標籤

UNLESS OTHER SPECIFIED TOLERANCES ON : X=±            X.X=±            X.XX=± ANGLES=±            HOLEDIA=±		 <b>INPAQ TECHNOLOGY CO., LTD.</b>
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		SPEC REV. <b>P0</b>