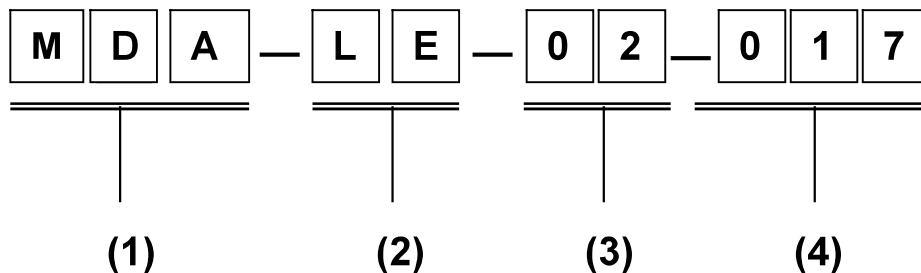


Embedded Multi-Band Wi-Fi Antenna for MDA-LE-02-017

1. Explanation of part number :



- (1) Product type/Material : Wireless Antenna/ Holder+LDS
 (2) Frequency/Band code : 2400~2500 ; 5150~5850MHz ; 5925~7125 MHz
 (3) Coaxial Cable Type : Black Cable
 (4) Suffix : 017

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 MHz	5150~7125 MHz	2400~2500 MHz	5150~7125 MHz			
INPAQ P/N: MDA-LE-02-017 ASUS P/N: 14008-05620200 (Main)	PIFA	-0.31	4.12	0.34	0.59	I-PEX MHF-4L	45 mm	UM3504

Antenna Type	PIFA Antenna For WIFI 802.11a/b/g/n/ax	
Connector Type	I-PEX MHF-4L Connector 20565-001R-13	
Cable Type	OD 1.13 Low Loss RF Cable	
Impedance	50Ω	
Polarization	Linear	
Radiation Pattern	Omni-directional	
Frequency Range	WLAN 802.11a/b/g/n	2.4~2.5GHz & 5.15~7.125 GHz
Operation Temperature	-10℃~+55℃	
Storage Temperature	-30℃~+75℃	
Return Loss	≤ -2 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:周敬晨

CHECKED BY:鄭榮謀

DESIGNED BY:吳承憲

APPROVED BY:張建焜

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TITLE : Embedded Multi-Band Antenna for
MDA-LE-02-017

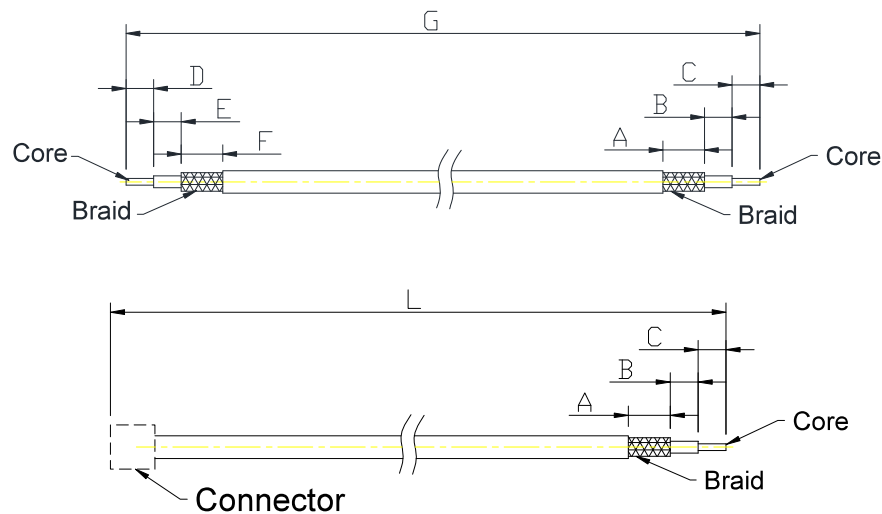
DOCUMENT
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P1

5. RF Connector :

5-1 Cable Dimension :



Connector : I-PEX MHF-4L ; Cable : RF Cable ϕ 1.13 Low Loss(Black)

L : 55.5 ± 2.0

D : 1.00 ± 0.1

A : 3.0 ± 0.5 (沾錫)

E : 0.72 ± 0.1

B : 1.0 ± 0.5

F : 1.15 ± 0.1

C : 0.5 ± 0.5 (沾錫)

G : 54.5 ± 2.0

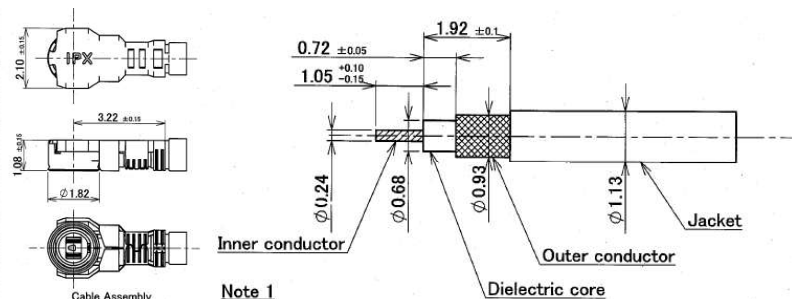
unit : mm

5-1.1 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。

5-1.2 Connector Appearance : I-PEX MHF-4L (此為示意圖)



UNLESS OTHER SPECIFIED TOLERANCES ON :

X=±

X.X=±

X.XX=±

ANGLES=±

HOLEDIA=±



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SPEC REV.
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6. Electrical Specification :

Those specifications were specially defined for UM3504 model, and all characteristics were measured under the model's handset testing jig.

6-1. Frequency Band :

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

6-2. Impedance :

50 ohm nominal

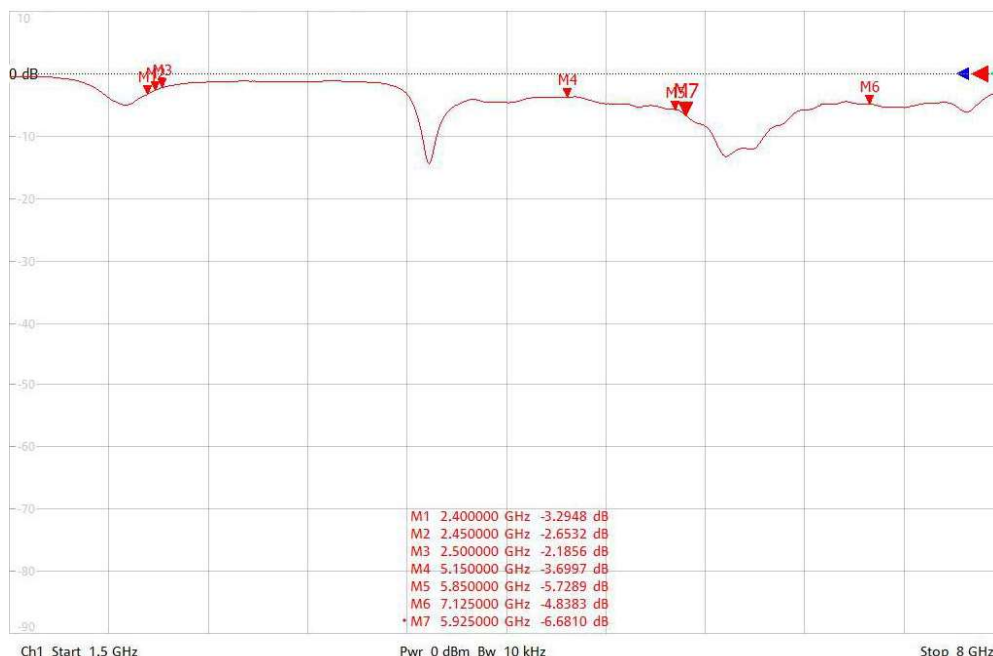
6-3. Matching circuit :

None

6-4. Return loss/VSWR :

Frequency(MHz)	2400	2500	5150	5850	7125
Aux S11	-3.29	-2.18	-3.69	-5.72	-6.68

Main



UNLESS OTHER SPECIFIED TOLERANCES ON :

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 ANGLES=± HOLEDIA=±



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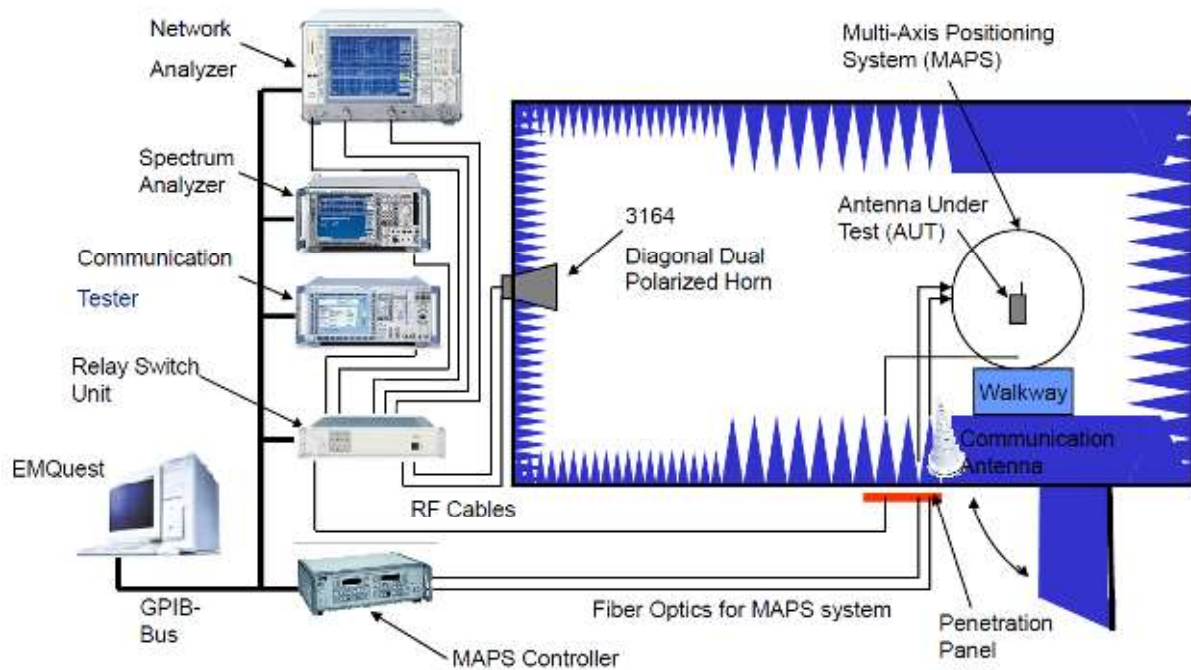
SPEC REV.
P1

6-5 Gain and Radiation Pattern

6-5.1 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

6-5.2 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

UNIT : mm

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6-5.3 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.

Main Gain Data				
Freq. [unit: MHz]	Three-dimensional peak [dBi]	Average [dBi]	Efficiency [%]	Cable loss [dB]
2400	-0.31	-5.69	26.98	0.34
2412	-0.35	-5.80	26.30	0.34
2437	-0.58	-5.97	25.29	0.34
2462	-0.46	-5.87	25.88	0.34
2500	-0.49	-5.82	26.18	0.34
5150	2.72	-5.02	31.48	0.58
5250	2.40	-4.94	32.06	0.58
5350	2.54	-4.45	35.89	0.58
5470	2.55	-4.82	32.96	0.58
5600	3.14	-3.94	40.36	0.59
5725	3.37	-4.37	36.56	0.59
5785	3.96	-3.56	44.06	0.59
5850	3.97	-3.73	42.36	0.59
5895	4.12	-3.59	43.75	0.59
5925	4.12	-3.43	45.39	0.59
6125	3.95	-3.49	44.77	0.60
6425	3.93	-3.05	49.55	0.60
6525	3.82	-2.92	51.05	0.60
6725	3.65	-3.21	47.75	0.60
6875	3.87	-3.80	41.69	0.60
6925	3.83	-4.20	38.02	0.60
7125	3.81	-4.80	33.11	0.60

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 ANGLES=± HOLEDIA=±



INPAQ TECHNOLOGY CO., LTD.

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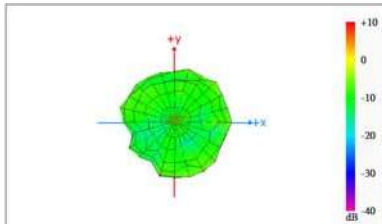
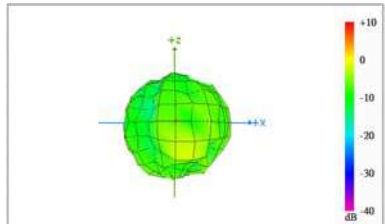
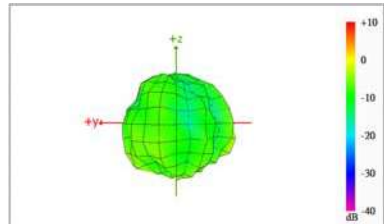
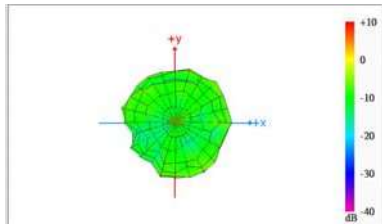
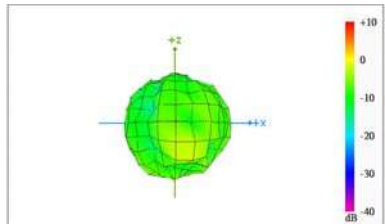
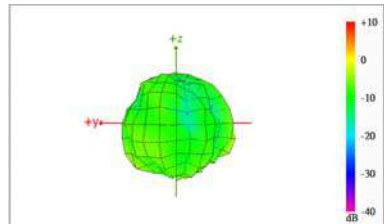
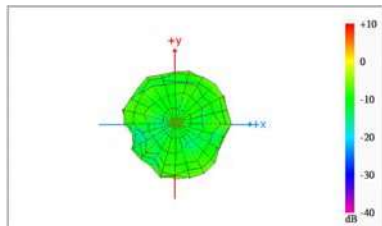
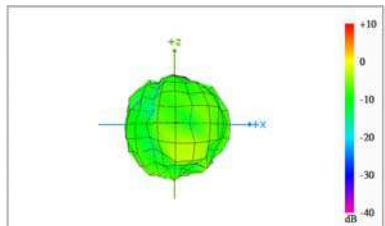
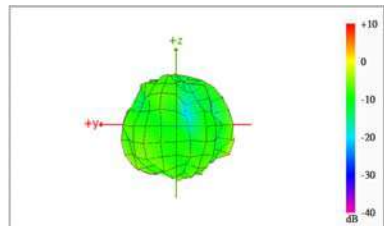
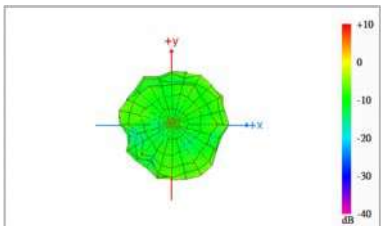
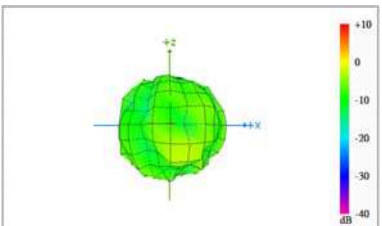
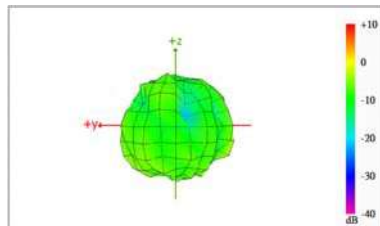
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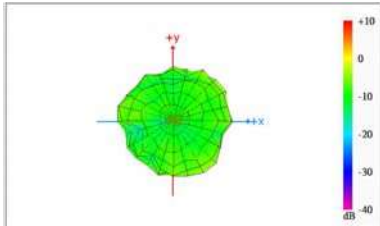
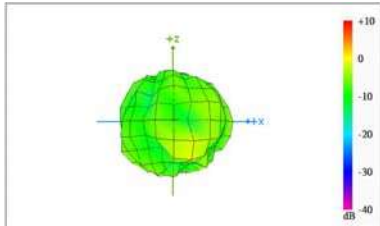
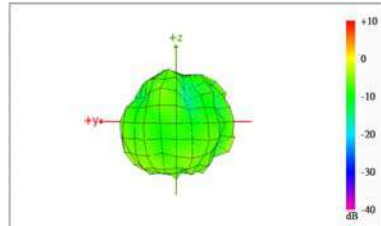
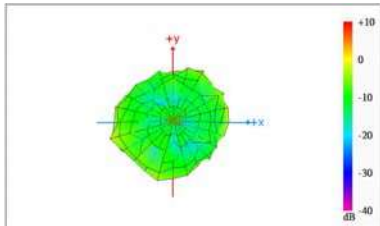
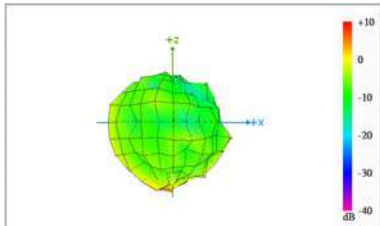
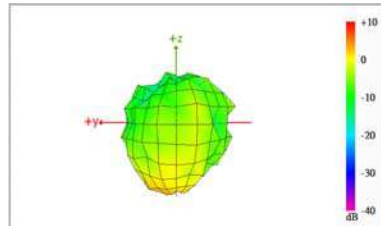
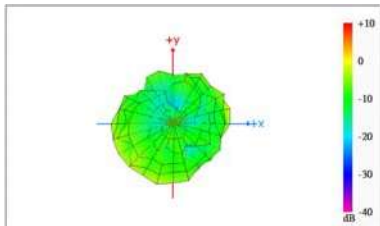
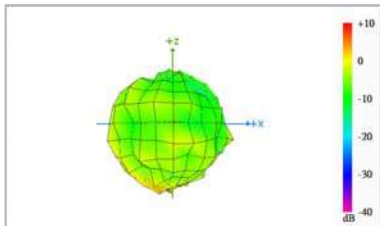
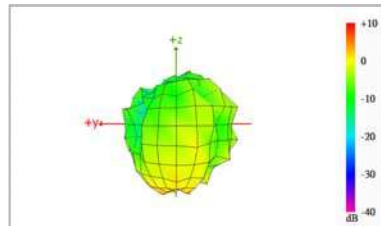
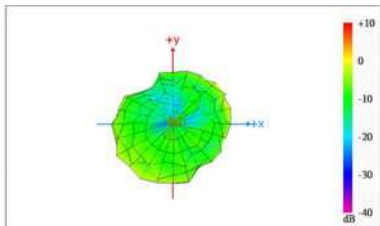
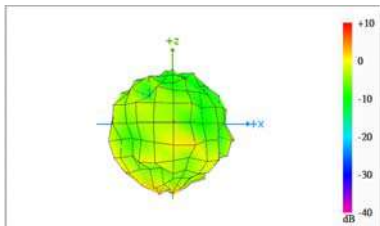
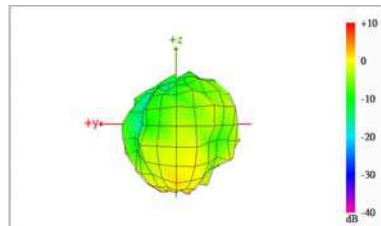
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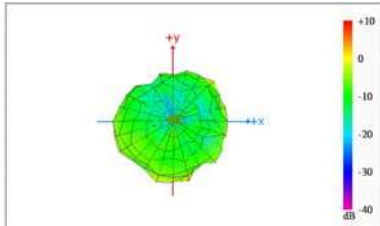
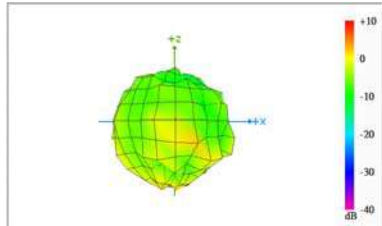
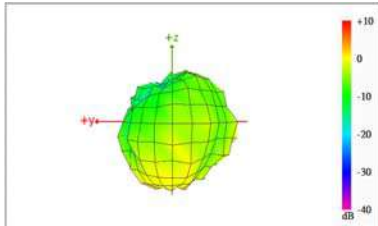
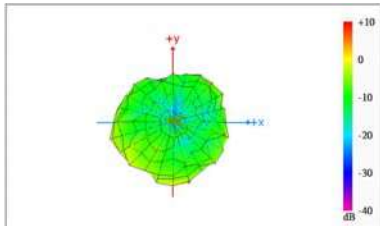
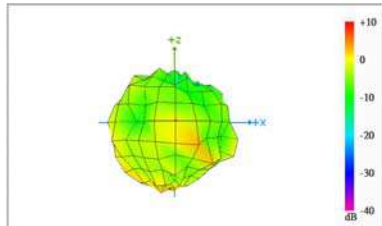
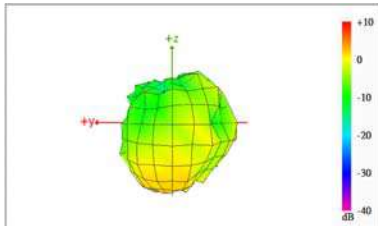
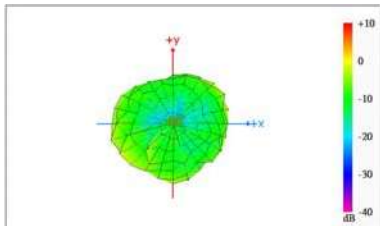
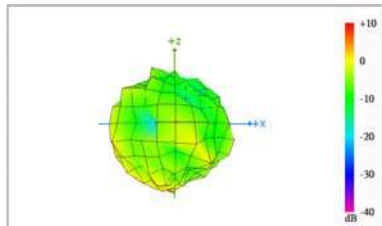
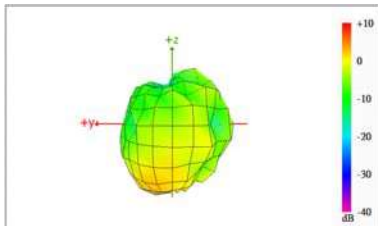
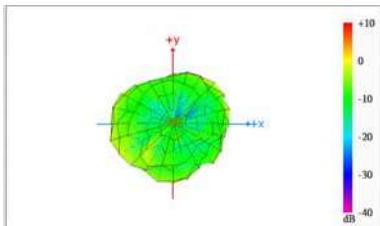
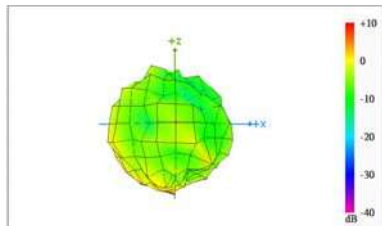
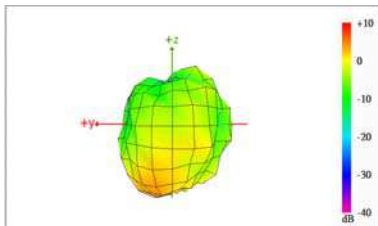
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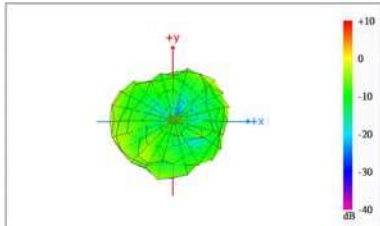
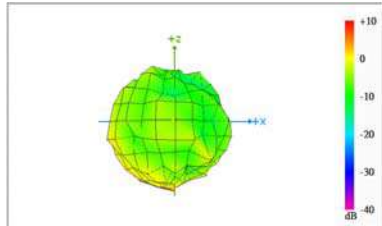
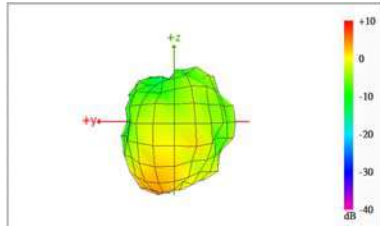
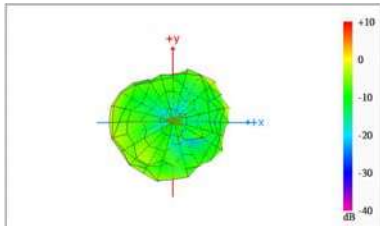
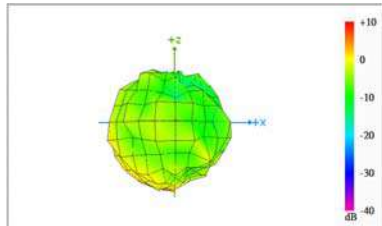
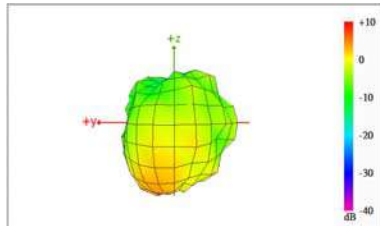
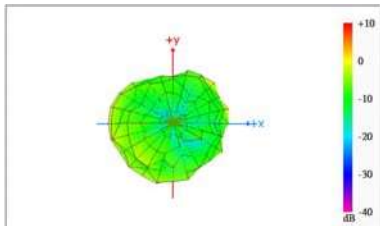
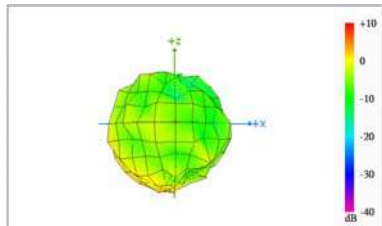
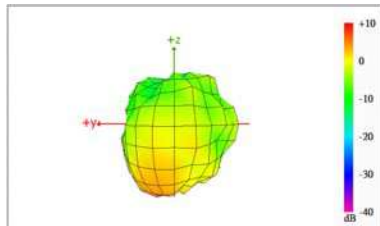
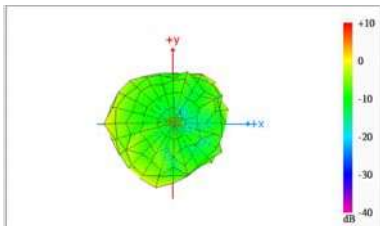
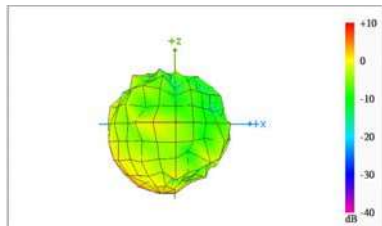
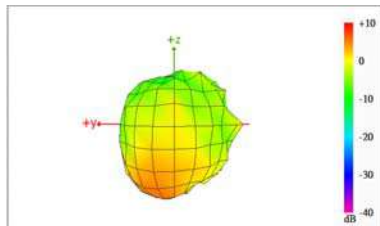
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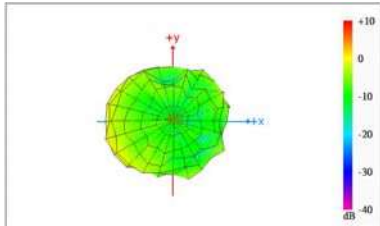
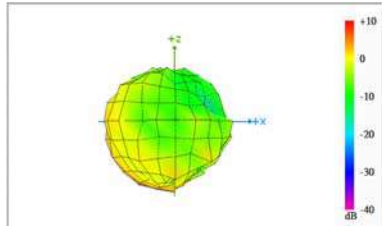
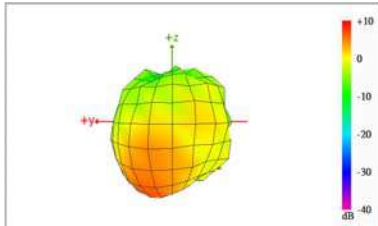
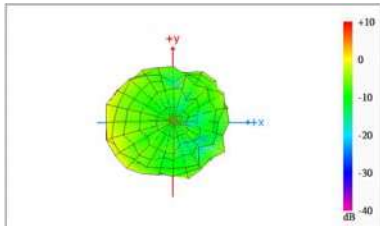
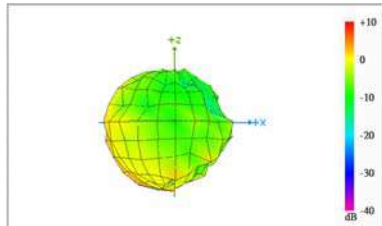
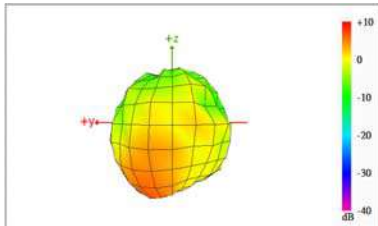
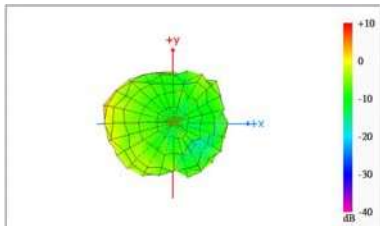
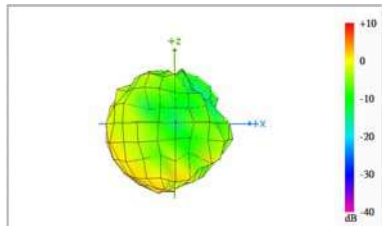
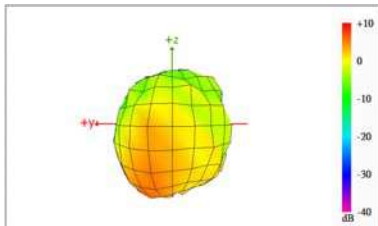
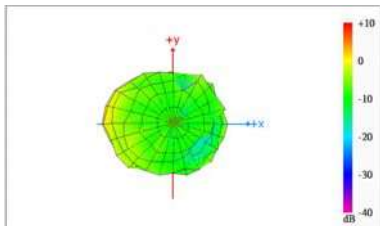
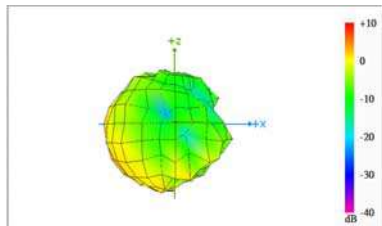
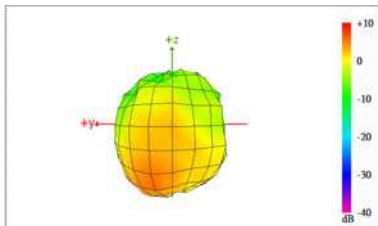
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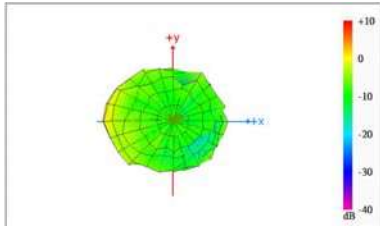
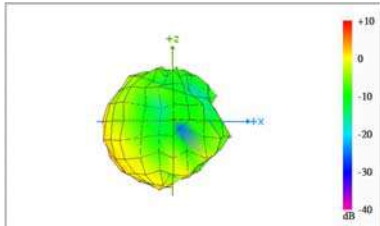
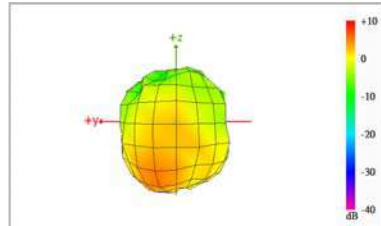
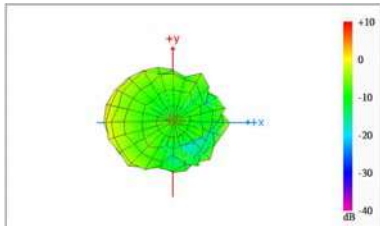
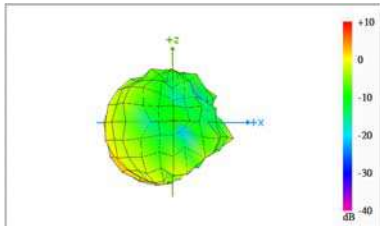
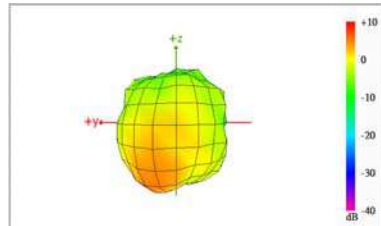
3D Radiation Pattern				
Main				
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			2400 MHz	
Three-dimensional (dBi) peak			-0.31	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			2412 MHz	
Three-dimensional (dBi) peak			-0.35	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			2437 MHz	
Three-dimensional (dBi) peak			-0.58	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			2462 MHz	
Three-dimensional (dBi) peak			-0.46	
UNLESS OTHER SPECIFIED TOLERANCES ON :				
X=±		X.X=±	X.XX=±	 INPAQ TECHNOLOGY CO., LTD.
ANGLES=±		HOLEDIA=±		
SCALE : N/A		UNIT : mm		
DRAWN BY:周敬晨		CHECKED BY:鄭榮謀		
DESIGNED BY:吳承憲		APPROVED BY:張建焜		
TITLE : Embedded Multi-Band Antenna for MDA-LE-02-017			DOCUMENT NO.	ENS000175700
				SPEC REV P1

3D Radiation Pattern			
XY-plane		XZ-plane	
			
		YZ-plane	
			
Center Frequency		2500 MHz	
Three-dimensional (dBi) peak		-0.49	
XY-plane		XZ-plane	
			
		YZ-plane	
			
Center Frequency		5150 MHz	
Three-dimensional (dBi) peak		2.72	
XY-plane		XZ-plane	
			
		YZ-plane	
			
Center Frequency		5250 MHz	
Three-dimensional (dBi) peak		2.40	
XY-plane		XZ-plane	
			
		YZ-plane	
			
Center Frequency		5350 MHz	
Three-dimensional (dBi) peak		2.54	
UNLESS OTHER SPECIFIED TOLERANCES ON :		 INPAQ TECHNOLOGY CO., LTD.	
X=± X.X=± X.XX=±			
ANGLES=± HOLEDIA=±		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
SCALE : N/A UNIT : mm			
DRAWN BY:周敬晨 CHECKED BY:鄭榮謀			
DESIGNED BY:吳承憲 APPROVED BY:張建焜			
TITLE : Embedded Multi-Band Antenna for MDA-LE-02-017		DOCUMENT NO.	ENS000175700
			SPEC REV. P1

3D Radiation Pattern				
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			5470 MHz	
Three-dimensional (dBi) peak			2.55	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			5600 MHz	
Three-dimensional (dBi) peak			3.14	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			5725 MHz	
Three-dimensional (dBi) peak			3.37	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			5785 MHz	
Three-dimensional (dBi) peak			3.96	
UNLESS OTHER SPECIFIED TOLERANCES ON :				INPAQ TECHNOLOGY CO., LTD.
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SCALE : N/A		UNIT : mm		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION
DRAWN BY:周敬晨		CHECKED BY:鄭榮謀		
DESIGNED BY:吳承憲		APPROVED BY:張建焜		
TITLE : Embedded Multi-Band Antenna for MDA-LE-02-017			DOCUMENT NO.	ENS000175700
				SPEC REV. P1

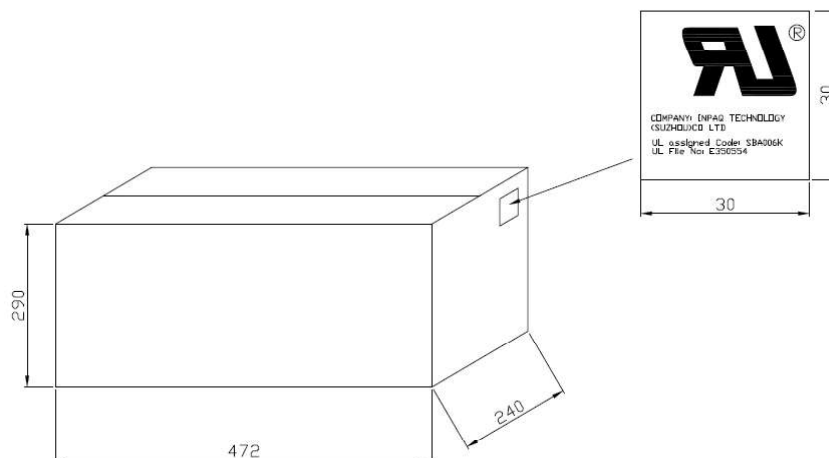
3D Radiation Pattern				
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			5850 MHz	
Three-dimensional (dBi) peak			3.97	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			5895 MHz	
Three-dimensional (dBi) peak			4.12	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			5925 MHz	
Three-dimensional (dBi) peak			4.12	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			6125 MHz	
Three-dimensional (dBi) peak			3.95	
UNLESS OTHER SPECIFIED TOLERANCES ON :				INPAQ TECHNOLOGY CO., LTD.
X=± X.X=± X.XX=±				
ANGLES=± HOLEDIA=±			THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
SCALE : N/A		UNIT : mm		
DRAWN BY:周敬晨		CHECKED BY:鄭榮謀		
DESIGNED BY:吳承憲		APPROVED BY:張建焜		
TITLE : Embedded Multi-Band Antenna for MDA-LE-02-017			DOCUMENT NO.	ENS000175700
				SPEC REV P1

3D Radiation Pattern				
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			6425 MHz	
Three-dimensional (dBi) peak			3.93	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			6525 MHz	
Three-dimensional (dBi) peak			3.82	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			6725 MHz	
Three-dimensional (dBi) peak			3.65	
XY-plane		XZ-plane		YZ-plane
				
Center Frequency			6875 MHz	
Three-dimensional (dBi) peak			3.87	
UNLESS OTHER SPECIFIED TOLERANCES ON :				INPAQ TECHNOLOGY CO., LTD.
X=± X.X=± X.XX=± ANGLES=± HOLEDIA=±				
SCALE : N/A		UNIT : mm		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION
DRAWN BY:周敬晨		CHECKED BY:鄭榮謀		
DESIGNED BY:吳承憲		APPROVED BY:張建焜		
TITLE : Embedded Multi-Band Antenna for MDA-LE-02-017			DOCUMENT NO.	ENS000175700
				SPEC REV. P1

3D Radiation Pattern			
XY-plane		XZ-plane	
			
YZ-plane			
Center Frequency		6925 MHz	
Three-dimensional (dBi) peak		3.83	
XY-plane		XZ-plane	
			
YZ-plane			
Center Frequency		7125 MHz	
Three-dimensional (dBi) peak		3.81	

7. 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=±



INPAQ TECHNOLOGY CO., LTD.

SCALE : N/A

UNIT : mm

DRAWN BY:周敬晨

CHECKED BY:鄭榮謀

DESIGNED BY:吳承憲

APPROVED BY:張建焜

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TITLE : Embedded Multi-Band Antenna for
 MDA-LE-02-017

DOCUMENT
 NO.

ENS000175700

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