120.0 x 13.0 x 0.15 (mm) LTE Full-Band FPCB Antenna Engineering Specification (WC12H0)

1. Explanation of Product Number

H	2	B	4	M	H	1	F	2	F	0	1	0	0
				(1)	(2)		(3)	(4)		(5)			

Product Code

(1) Product Applications:

M : LTE Full Band/ 3G/ 2G

(2) Dimensions:

H1 : 120.0 x 13.0 x 0.5 (mm)

(3) Material:

F : FPCB

(4) Working Frequencies:

2F : 698~960 & 1710~2170 & 2300~2400 & 2490~2690 MHz

(5) Antenna Series:

01 : serial number

IPEX I Cable(ϕ 1.13 mm),L=100 mm)

Unictron Technologies Corp.
詠業科技股份有限公司
Unictron Technologies Corporation
Website:www.unictron.com

Prepared by : Xenia	Designed by : George	Checked by : Chinling	Approved by : Herbert

TITLE : 120.0 x 13.0 x 0.15 (mm) LTE Full-Band FPCB Substrate Antenna (WC12H0) Engineering Specification	DOCUMENT NO.	H2B4MH1F2F0100	REV. A

2. Features

*Stable and reliable in performances
*Compact size
*RoHS compliance

3. Applications

* LTE Full Band/ 3G/ 2G.
* LTE / GSM / CDMA /DCS /PCS / WCDMA / UMTS / HSDPA / GPRS / EDGE /IMT.

4. Description

Unictron's WC12H0 FPCB antenna is designed for cellular LTE Full bands applications, covering frequencies 698~960 MHz & 1710~2170 MHz & 2300~2400 MHz & 2490~2690 MHz. Fabricated with proprietary design and processes, WC12H0 shows excellent performance and is fully compatible.

5. Electrical Specifications

(Antenna is attached on a 2.0mm-thick ABS + PC material plate)

5-1. Electrical Table (698~960 MHz Band)

Characteristics		Specifications	Unit
Outline Dimensions		120.0 x 13.0 x 0.5	mm
Working Frequency		698~960	MHz
Characteristics Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@824 MHz)	2.8 (typical)	dBi
Efficiency		62.8 (typical)	%

5-2. Electrical Table (1710~2170 MHz Band)

Characteristics		Specifications	Unit
Working Frequency		1710~2170	MHz
Characteristics Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@1950 MHz)	3.0 (typical)	dBi
Efficiency		67.6 (typical)	%

5-3. Electrical Table (2300~2400 MHz Band)

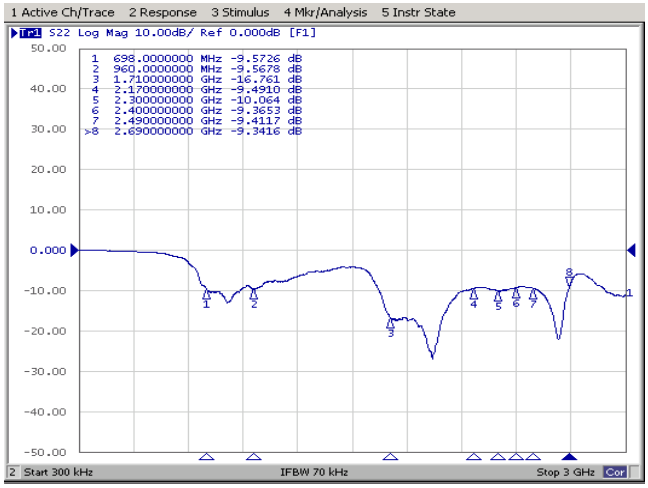
Characteristics		Specifications	Unit
Working Frequency		2300~2400	MHz
Characteristics Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@2350 MHz)	2.6 (typical)	dBi
Efficiency		65.3 (typical)	%

5-4. Electrical Table (2490~2690 MHz Band)

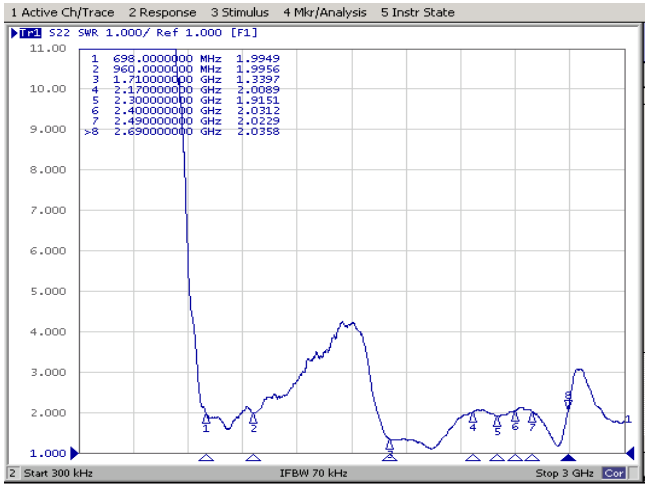
Characteristics		Specifications	Unit
Working Frequency		2490~2690	MHz
Characteristics Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@2590 MHz)	1.2 (typical)	dBi
Efficiency		51.0 (typical)	%

5-5. Return Loss & VSWR

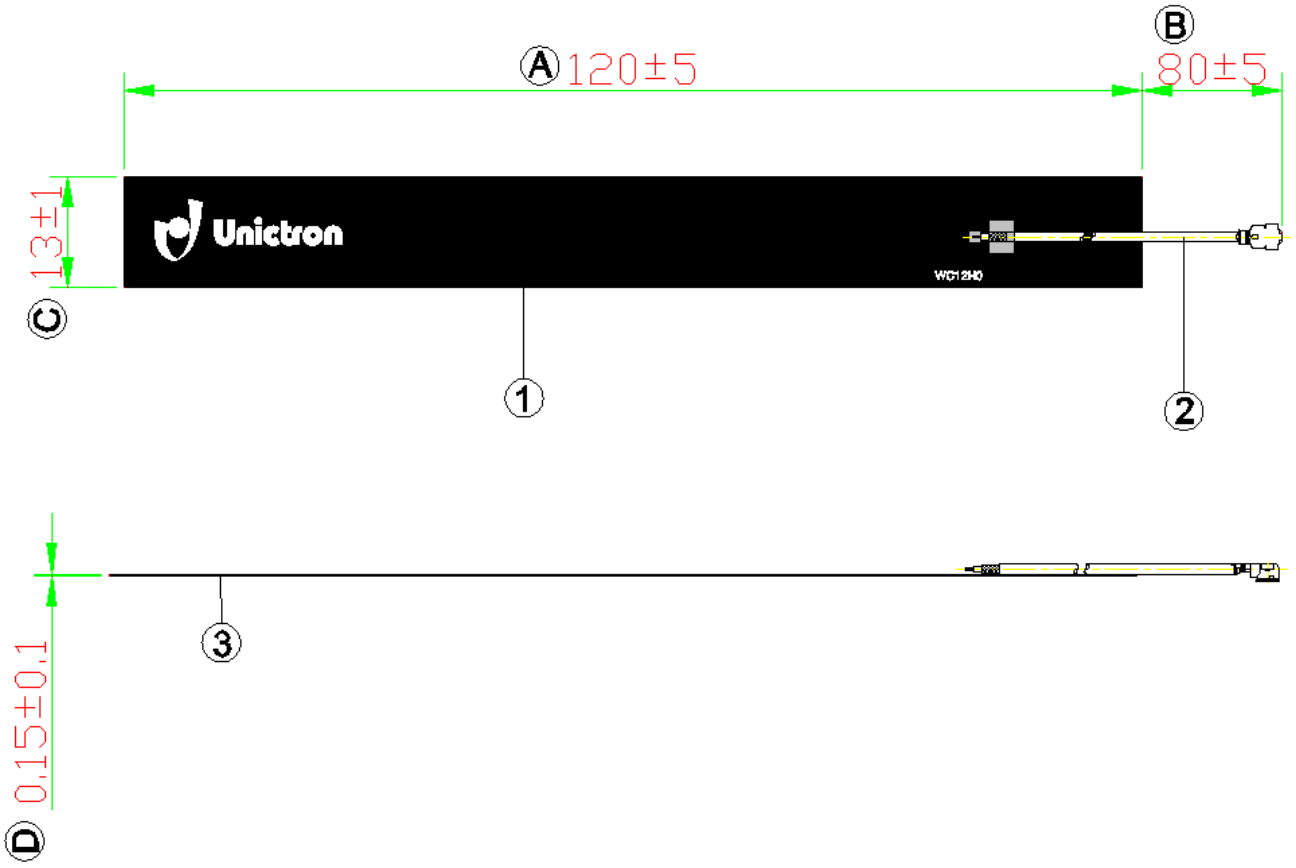
Return Loss



VSWR



6. Antenna Dimensions (unit: mm)



NOTE:
1.All materials are RoHS compliant.
2."Ⓐ~Ⓓ" Critical Dimensions.
3."( )" Reference Dimensions.

Item	Name	Material	Color	Q'ty
1	WC12H0_FPCB	FPC	Black	1
2	IPEX Connector(MHF I)_Cable1.13mm	FEP	Gray	1
3	Adhesive			1

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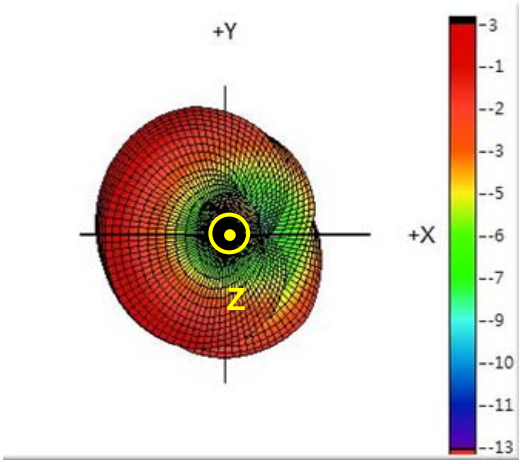
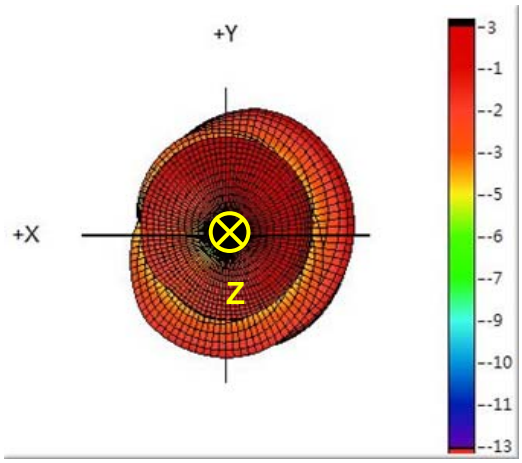
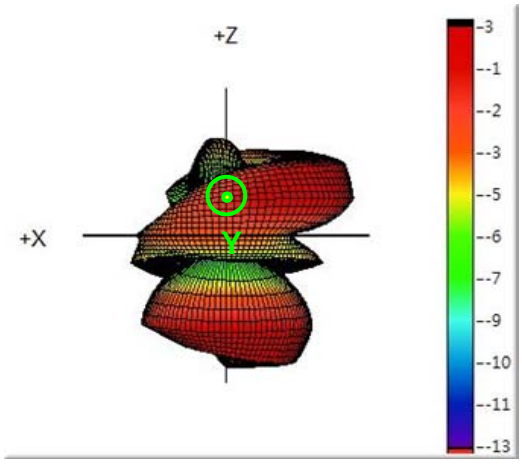
7. Radiation Pattern

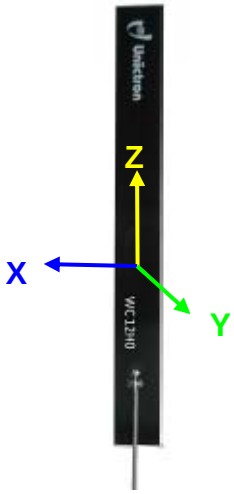
7-1. 698~960 MHz Band

7-1-1. 3D Gain Pattern @ 824 MHz (unit: dBi)





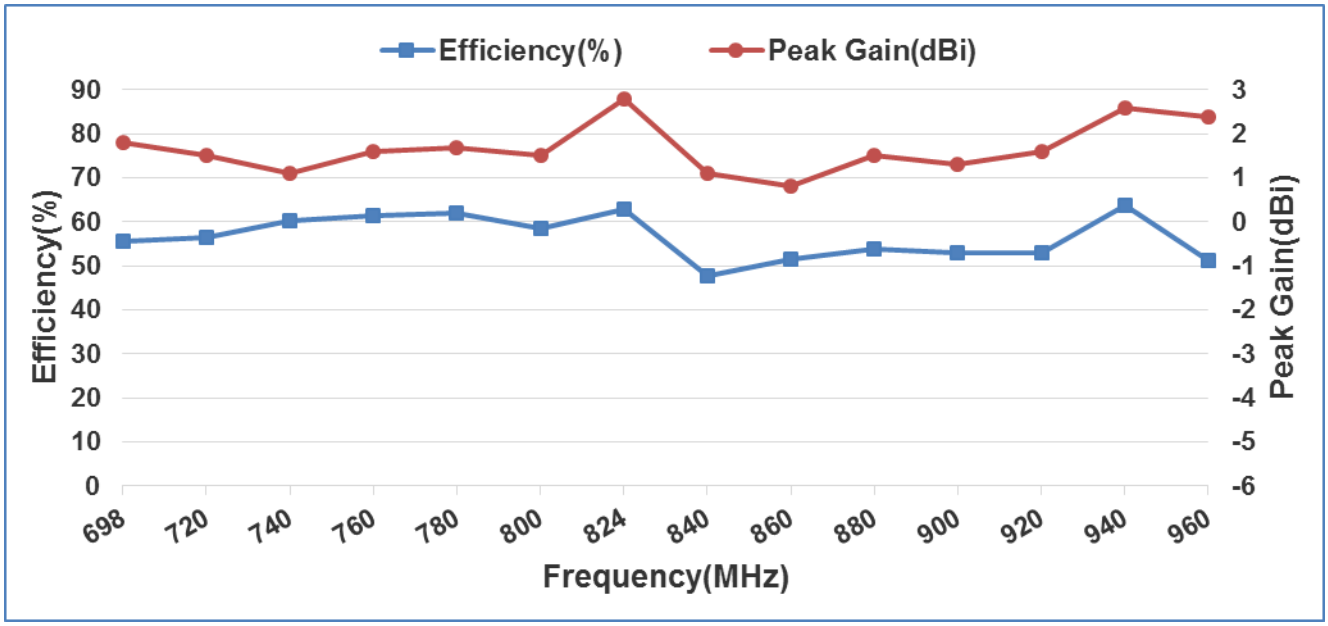




7-1-2. 3D Efficiency Table

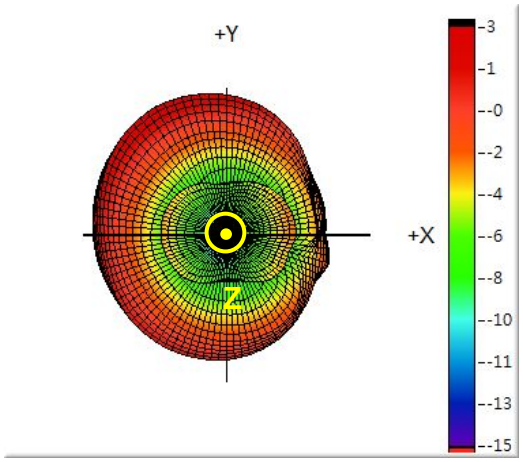
Frequency(MHz)	698	720	740	760	780	800	824	840	860	880	900	920	940	960
Efficiency Total (dB)	-2.5	-2.5	-2.2	-2.1	-2.1	-2.3	-2.0	-3.2	-2.9	-2.7	-2.8	-2.8	-1.9	-2.9
Efficiency Total (%)	55.6	56.6	60.2	61.5	62.1	58.6	62.8	47.8	51.5	53.8	52.9	53.0	63.9	51.1
Peak Gain (dBi)	1.8	1.5	1.1	1.6	1.7	1.5	2.8	1.1	0.8	1.5	1.3	1.6	2.6	2.4

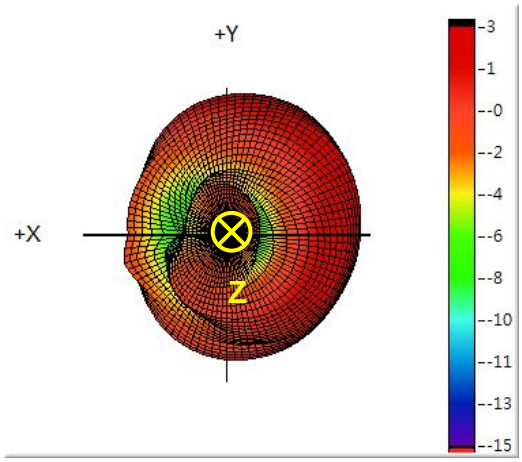
7-1-3. 3D Efficiency vs. Frequency

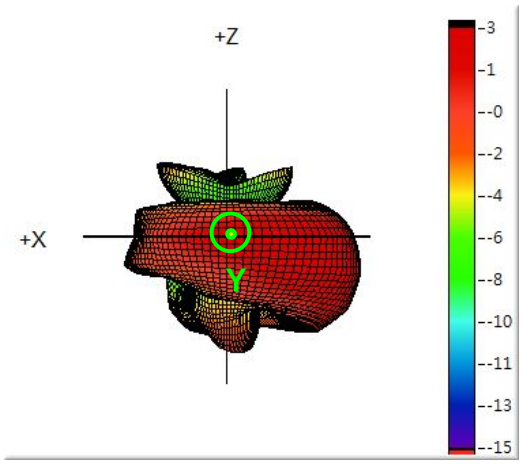


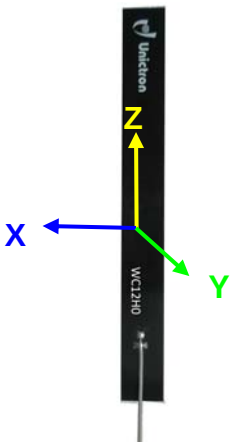
7-2. 1710~2170 MHz Band

7-2-1. 3D Gain Pattern @ 1950 MHz (unit: dBi)





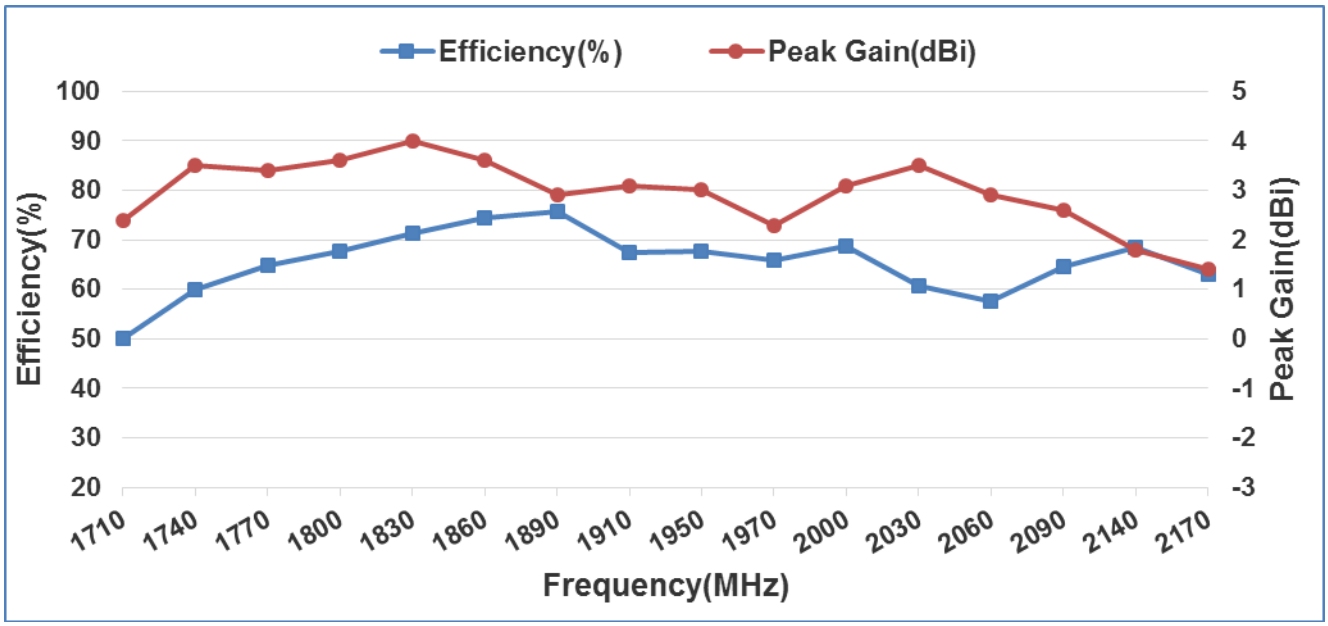




7-2-2. 3D Efficiency Table

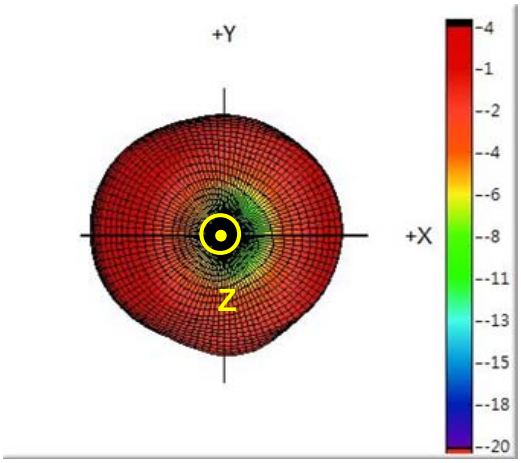
Frequency(MHz)	1710	1740	1770	1800	1830	1860	1890	1910	1950	1970	2000	2030	2060	2090	2140	2170
Efficiency Total (dB)	-3.0	-2.2	-1.9	-1.7	-1.5	-1.3	-1.2	-1.7	-1.7	-1.8	-1.6	-2.2	-2.4	-1.9	-1.6	-2.0
Efficiency Total (%)	50.0	60.0	64.8	67.6	71.3	74.5	75.7	67.5	67.6	66.0	68.7	60.8	57.6	64.5	68.5	62.9
Peak Gain (dBi)	2.4	3.5	3.4	3.6	4.0	3.6	2.9	3.1	3.0	2.3	3.1	3.5	2.9	2.6	1.8	1.4

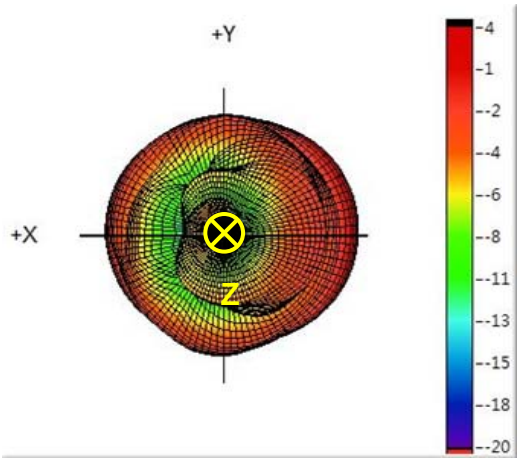
7-2-3. 3D Efficiency vs. Frequency

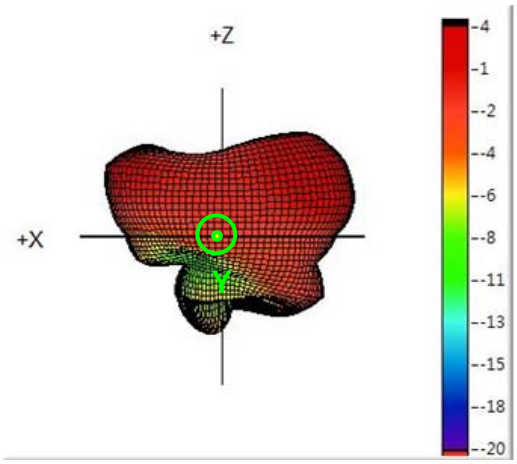


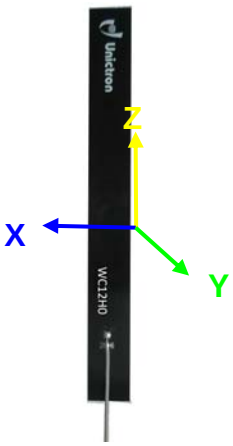
7-3. 2300~2400 MHz Band

7-3-1. 3D Gain Pattern @ 2350 MHz (unit: dBi)





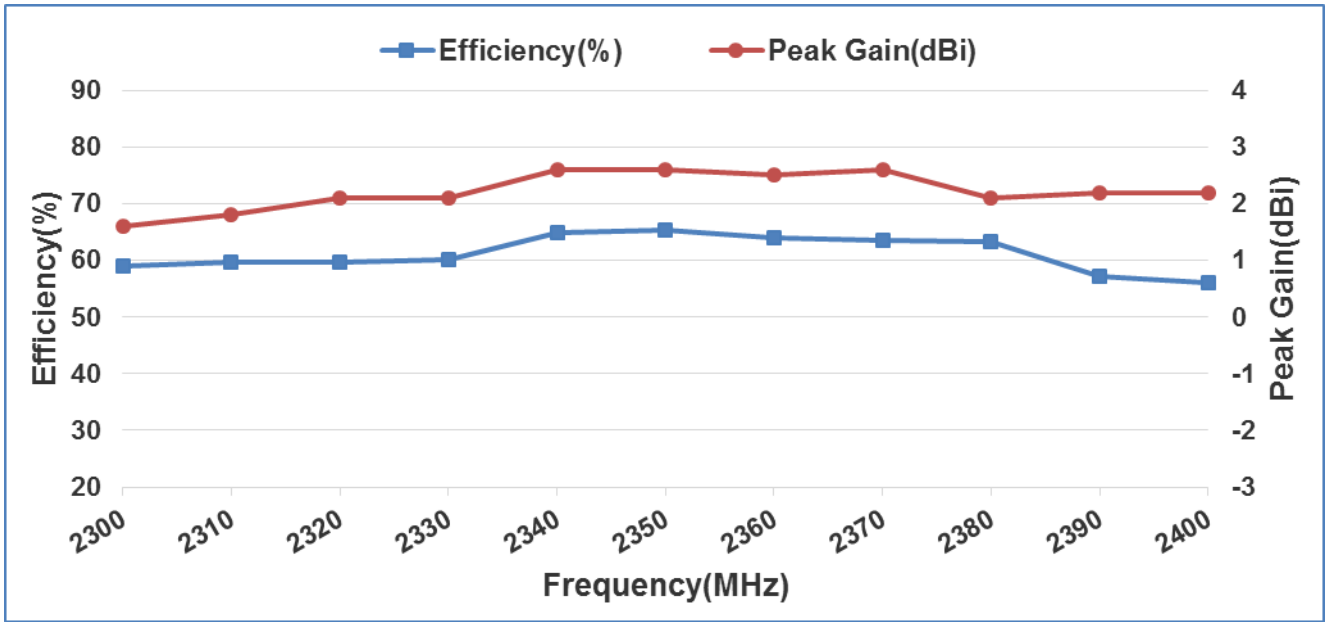




7-3-2. 3D Efficiency Table

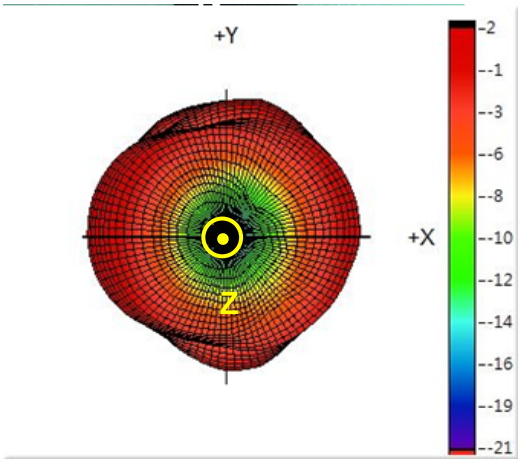
Frequency(MHz)	2300	2310	2320	2330	2340	2350	2360	2370	2380	2390	2400
Efficiency Total (dB)	-2.3	-2.2	-2.2	-2.2	-1.9	-1.9	-1.9	-2.0	-2.0	-2.4	-2.5
Efficiency Total (%)	59.0	59.7	59.7	60.2	65.0	65.3	64.1	63.6	63.3	57.3	56.1
Peak Gain (dBi)	1.6	1.8	2.1	2.1	2.6	2.6	2.5	2.6	2.1	2.2	2.2

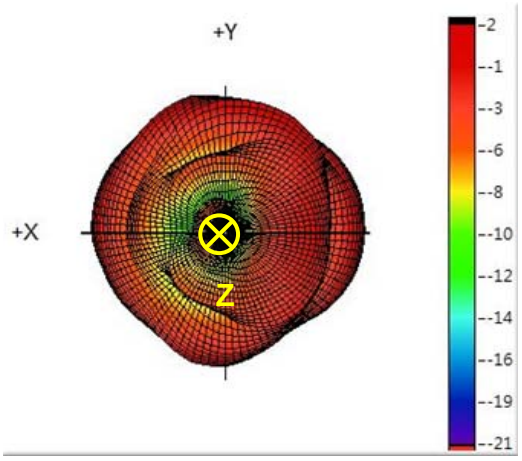
7-3-3. 3D Efficiency vs. Frequency

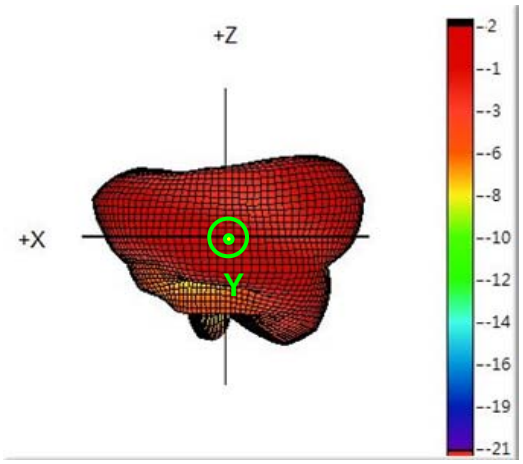


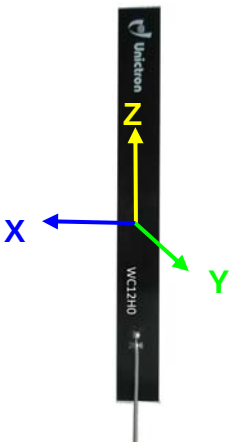
7-4. 2490~2690 MHz Band

7-4-1. 3D Gain Pattern @ 2590 MHz (unit: dBi)









7-4-2. 3D Efficiency Table

Frequency(MHz)	2490	2510	2530	2550	2570	2590	2610	2630	2650	2670	2690
Efficiency Total (dB)	-2.2	-2.2	-2.0	-2.2	-2.9	-2.9	-2.0	-2.4	-2.4	-2.7	-2.2
Efficiency Total (%)	60.9	59.8	62.5	59.8	51.2	51.0	62.7	57.9	56.9	53.4	59.8
Peak Gain (dBi)	2.0	2.2	1.7	1.2	1.3	1.2	2.0	1.9	1.6	1.3	0.8

7-4-3. 3D Efficiency vs. Frequency