



Product Name: 3-in-1 5G NR/ 4G LTE/ GNSS Combination Antenna

Part Number: MT-4B-AS-B2L

Features:

- 2*LTE, 1*WiFi Antenna Combination
- Support GPS L1 / GLONASS L1 Bands
- Support 5G NR/ 4G LTE Full Frequency Bands, 698-960MHz, 1710-2690MHz, 3300-3800MHz
- Excellent Out of Band Suppression, Up to 55dB
- 27dB Active Peak Gain
- Customizable Cables and Connectors
- RoHS & REACH Compliant

Applications:

- Fleet Management & Telematics
- Vehicle Navigation

3-in-1 5G NR/ 4G LTE/GNSS Combination Antenna

MODEL: MT-4B-AS-B2L

Rev.A

I. Specifications:

Category	Specifications		
GNSS Electrical Characteristics			
Application Band	BeiDou	GPS	GLONASS
Frequency (MHz)	1561.00	1575.42	1602.00
Efficiency (%)	49.89	42.76	58.61
Average Gain (dBi)	-3.02	-3.69	-2.32
Peak Gain (dBi)	1.21	1.21	1.44
V.S.W.R	< 3		
Return loss (dB)	< -6		
Impedance (Ω)	50		
Polarization	R.H.C.P. (Right Handed Circular Polarization)		
Active Antenna Performance			
Application Band	BeiDou	GPS	GLONASS
Frequency (MHz)	1561 ± 2.046	1575.42 ± 1.023	1602 ± 5
Gain (dB)	27	27	27
Noise Figure (dB)	0.98	0.98	0.92
Operation Voltage (V)	3.3 ~ 5		
Current Consumption (mA) (typical)	0.9		
Output Impedance (Ω)	50		

© Unictron Technologies Corp.
All specifications subject to change without notice.

GNSS _Out Of Band Rejection			
Frequency (MHz)	600 ~ 1300	1300 ~ 1530	1650 ~ 3000
Gain (dB)	55	30	30
ESD Protection	±8 KV (direct discharge) ±15 KV (air discharge)		
Cable / Length	H100, 5 meters		
Connector	FAKRA (C)		

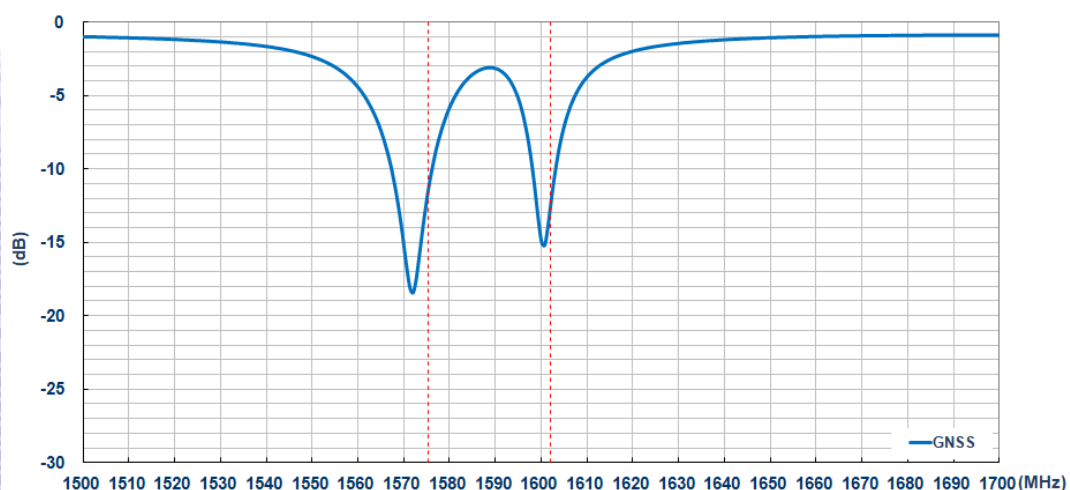
Category		LTE 1						
Application Band		LTE 700	GSM 850/900	DCS	PCS	UMTS1	LTE2600	5G NR Band
Frequency (MHz)		698 ~ 824	824 ~ 960	1710 ~ 1880	1850 ~ 1990	1920 ~ 2170	2300 ~ 2690	3300 ~ 3800
Efficiency (%)								
Free Space	30cm	52.82	57.71	72.54	71.12	62.90	57.59	57.54
	1m	46.43	50.73	59.67	57.68	50.53	45.22	43.05
	2m	38.62	42.19	45.15	42.76	36.96	32.01	28.44
	3m	32.12	35.10	34.16	31.70	27.03	22.66	18.79
	5m	22.22	24.28	19.56	17.42	14.46	11.36	8.20
Average Gain (dBi)								
Free Space	30cm	-2.77	-2.39	-1.39	-1.48	-2.01	-2.40	-2.40
	1m	-3.33	-2.95	-2.24	-2.39	-2.96	-3.45	-3.66
	2m	-4.13	-3.75	-3.45	-3.69	-4.32	-4.95	-5.46
	3m	-4.93	-4.55	-4.66	-4.99	-5.68	-6.45	-7.26
	5m	-6.53	-6.15	-7.09	-7.59	-8.40	-9.45	-10.86
Peak Gain (dBi)								
Free Space	30cm	2.51	3.22	3.83	4.16	4.16	3.57	2.30
	1m	3.07	3.78	4.67	5.07	5.07	4.62	3.56
	2m	2.27	2.98	3.47	3.77	3.77	3.12	1.76
	3m	1.47	2.18	2.27	2.47	2.47	1.62	-0.04
	5m	-0.13	0.58	-0.13	-0.13	-0.13	-1.38	-3.64

V.S.W.R		< 3						
Return Loss (dB)		< -6						
Impedance (Ω)		50						
Polarization		Linear						
Cable / Length		H-100, 5 meters						
Connector		FAKRA (D)						
Category		LTE 2						
Application Band		LTE 700	GSM 850/900	DCS	PCS	UMTS1	LTE2600	5G NR Band
Frequency (MHz)		698 ~ 824	824 ~ 960	1710 ~ 1880	1850 ~ 1990	1920 ~ 2170	2300 ~ 2690	3300 ~ 3800
Efficiency (%)								
Free Space	30cm	45.91	49.75	37.97	47.28	47.62	38.16	33.62
	1m	52.23	56.59	46.16	58.30	59.27	48.59	44.94
	2m	43.45	47.07	34.92	43.22	43.35	34.40	29.69
	3m	36.14	39.15	26.42	32.04	31.71	24.35	19.62
	5m	25.00	27.09	15.13	17.61	16.96	12.21	8.56
Average Gain (dBi)								
Free Space	30cm	-3.38	-3.03	-4.21	-3.25	-3.22	-4.18	-4.73
	1m	-2.82	-2.47	-3.36	-2.34	-2.27	-3.13	-3.47
	2m	-3.62	-3.27	-4.57	-3.64	-3.63	-4.63	-5.27
	3m	-4.42	-4.07	-5.78	-4.94	-4.99	-6.13	-7.07
	5m	-6.02	-5.67	-8.20	-7.54	-7.71	-9.13	-10.67
Peak Gain (dBi)								
Free Space	30cm	3.18	4.52	4.13	4.05	5.17	5.02	1.74
	1m	3.74	5.08	4.97	4.97	6.15	6.07	3.00
	2m	2.94	4.28	3.77	3.66	4.75	4.57	1.20
	3m	2.14	3.48	2.57	2.36	3.35	3.07	-0.60
	5m	0.54	1.88	0.17	-0.24	0.55	0.07	-4.20
V.S.W.R		< 3						
Return Loss (dB)		< -6						
Impedance (Ω)		50						

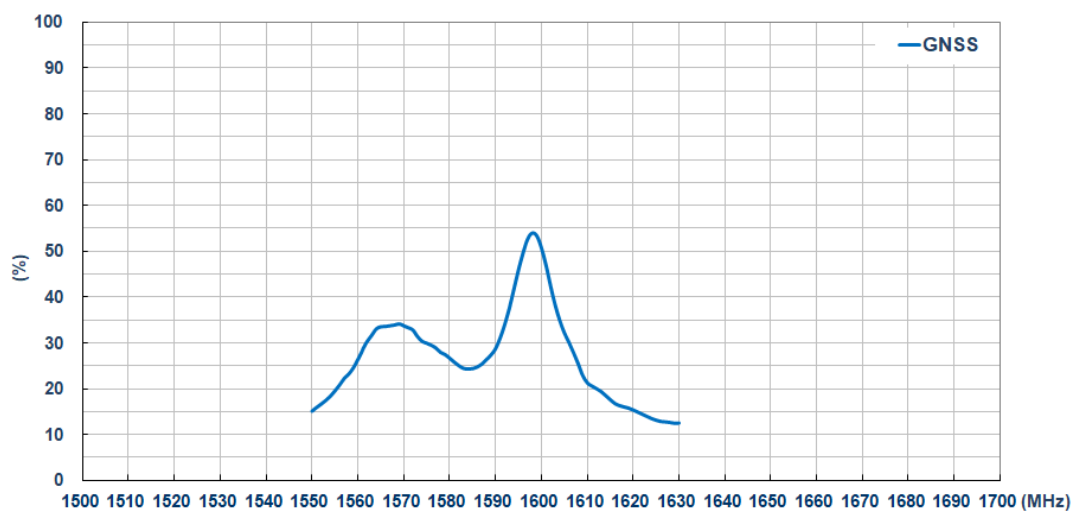
Polarization	Linear
Cable / Length	H-100, 5 meters
Connector	FAKRA (D)
Mechanical	
Dimension (mm)	Φ65.00(Dia.) x 20.35(H)
Casing	PC + TPE
Weigh (g) (including cable)	95.5
Waterproof Resistant	IP67
Maximum Assembly Torque	40 N-m
Environmental Conditions	
Operation Temperature (°C)	-40 ~ +85
Storage Temperature (°C)	-40 ~ +85
Humidity	Non-condensing 65 °C 95% RH

II. Antenna Technical Parameters:

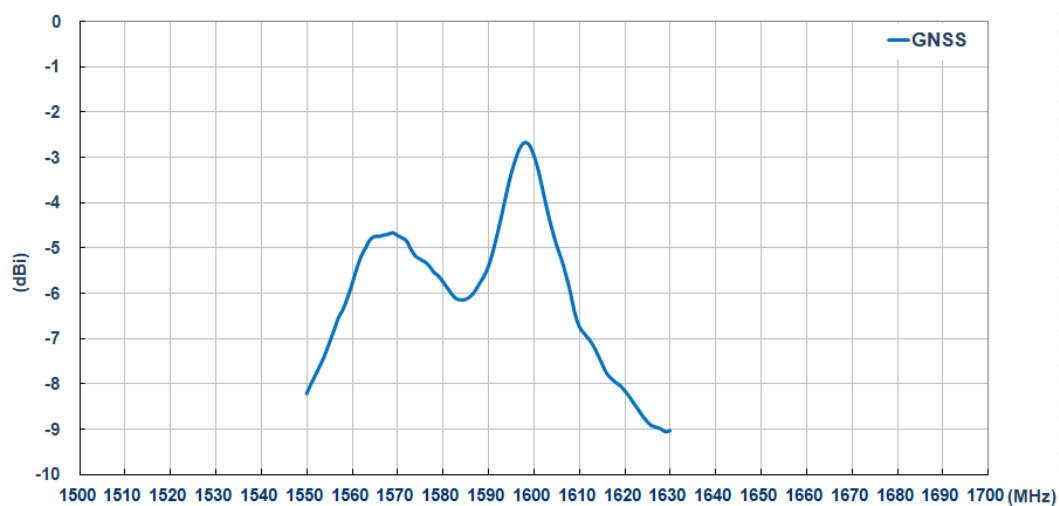
S11 (dB) – GNSS



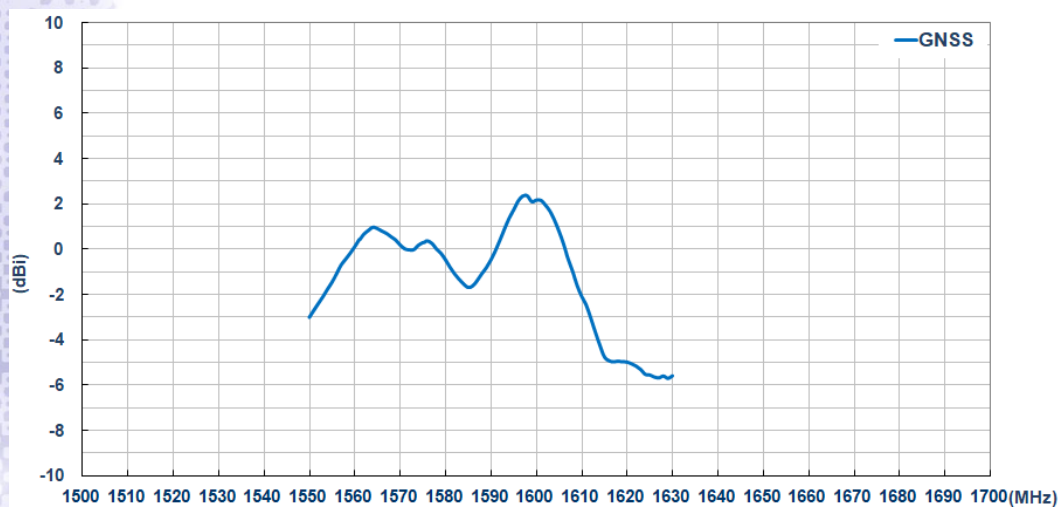
Efficiency (%) - GNSS



Average Gain (dBi) - GNSS

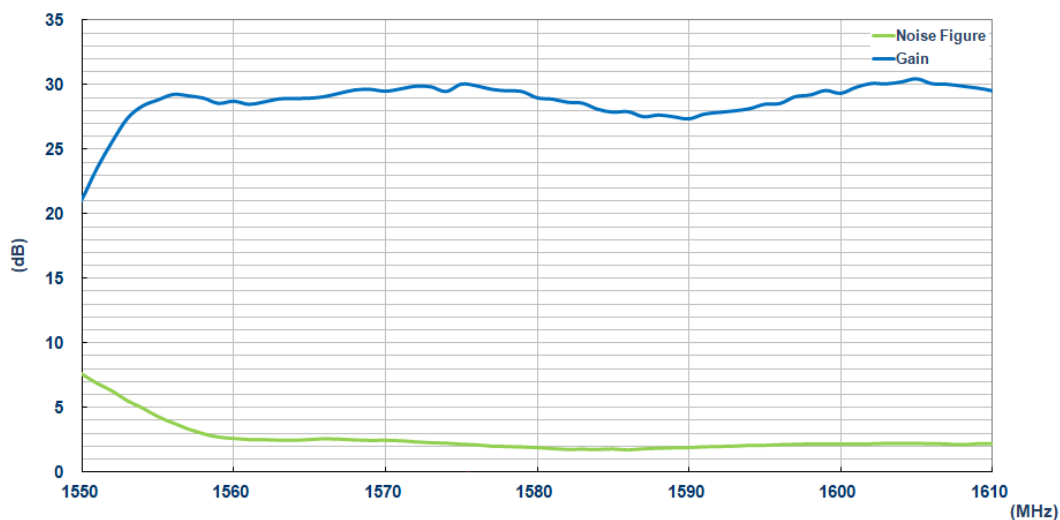


Peak Gain (dBi) - GNSS



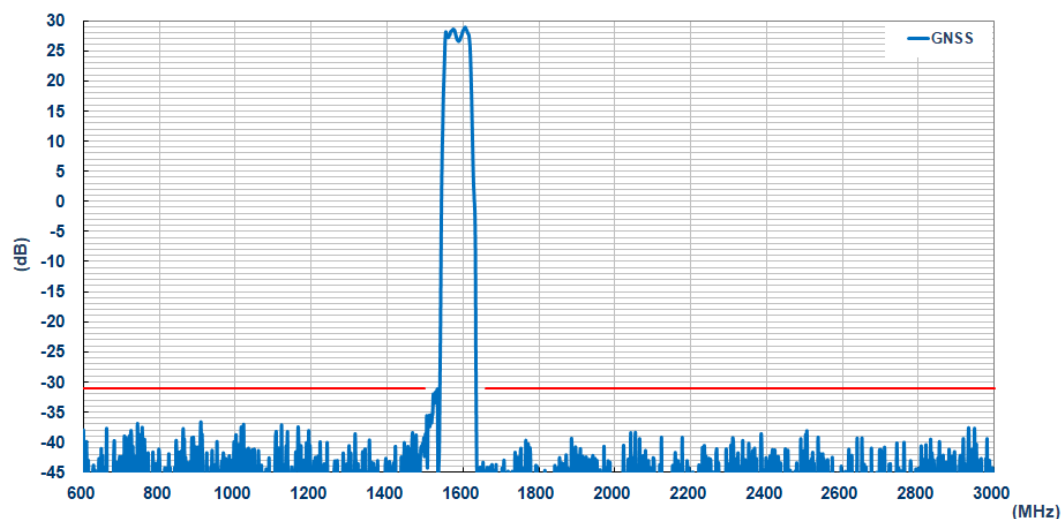
© Unictron Technologies Corp.
All specifications subject to change without notice.

Noise Figure & Gain (dB) - GNSS



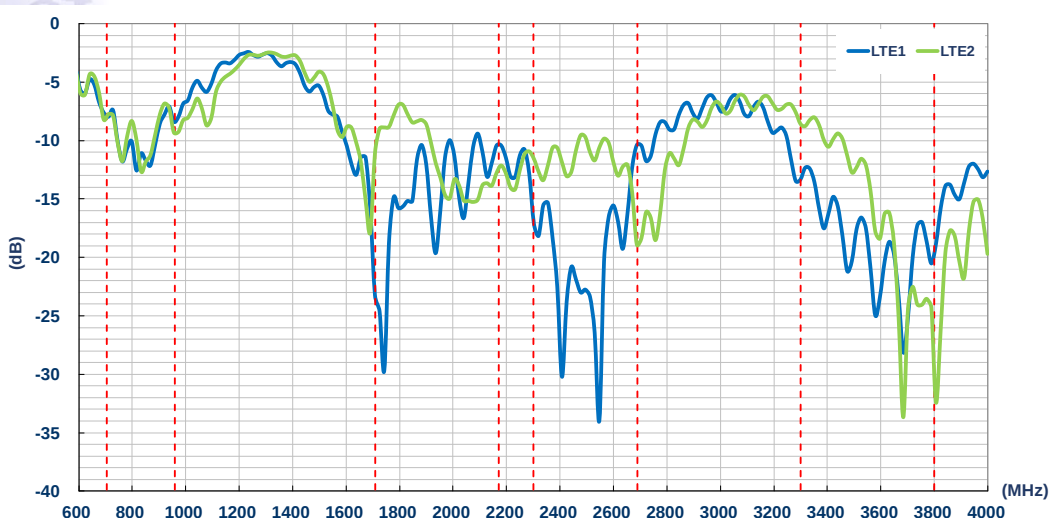
© Unictron Technologies Corp.
All specifications subject to change without notice.

Out of Band Rejection (dB) - GNSS

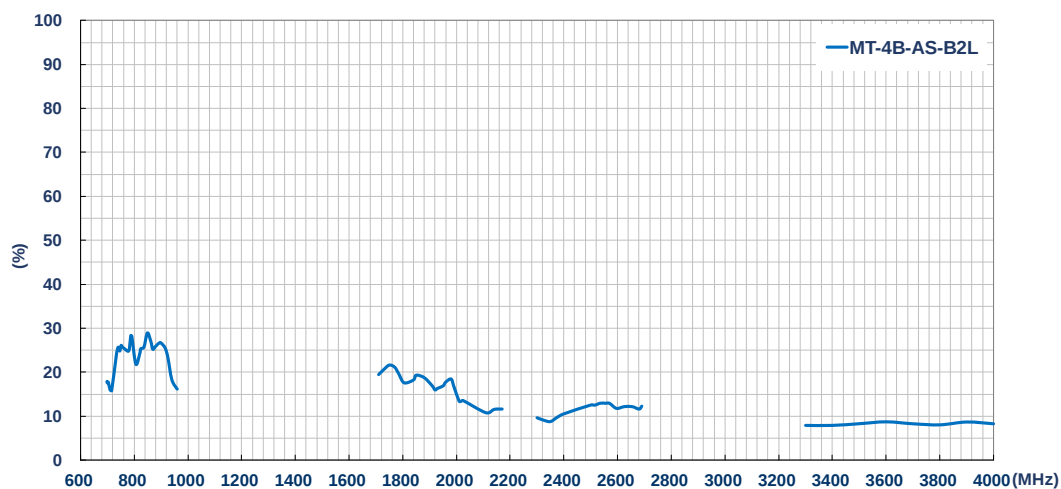


Free Space

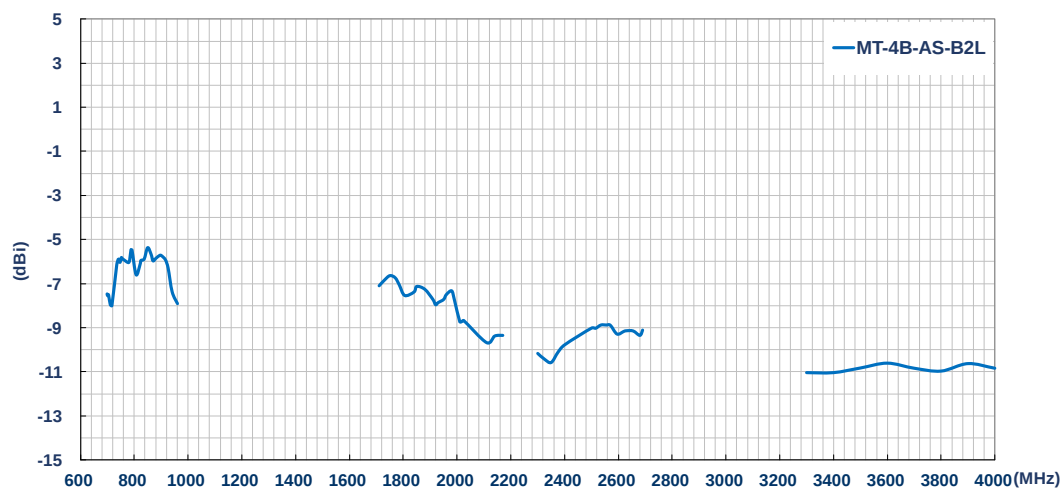
S11 (dB) - LTE 1 & LTE 2



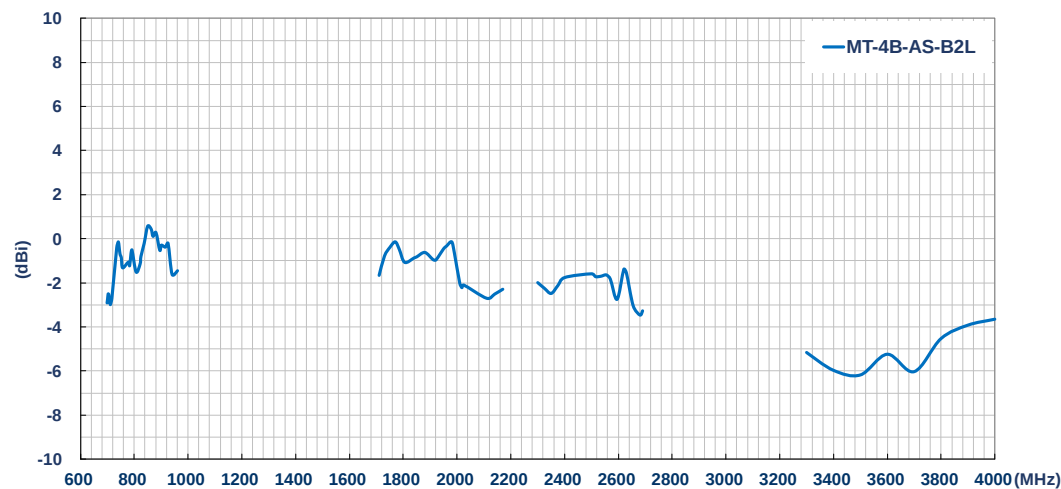
Efficiency (%) – LTE 1



Average Gain (dBi) – LTE 1

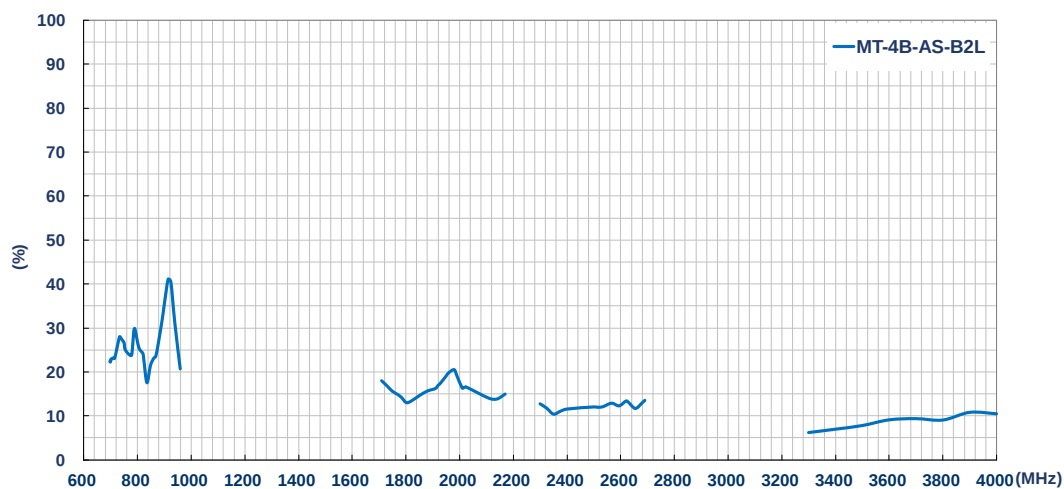


Peak Gain (dBi) – LTE 1



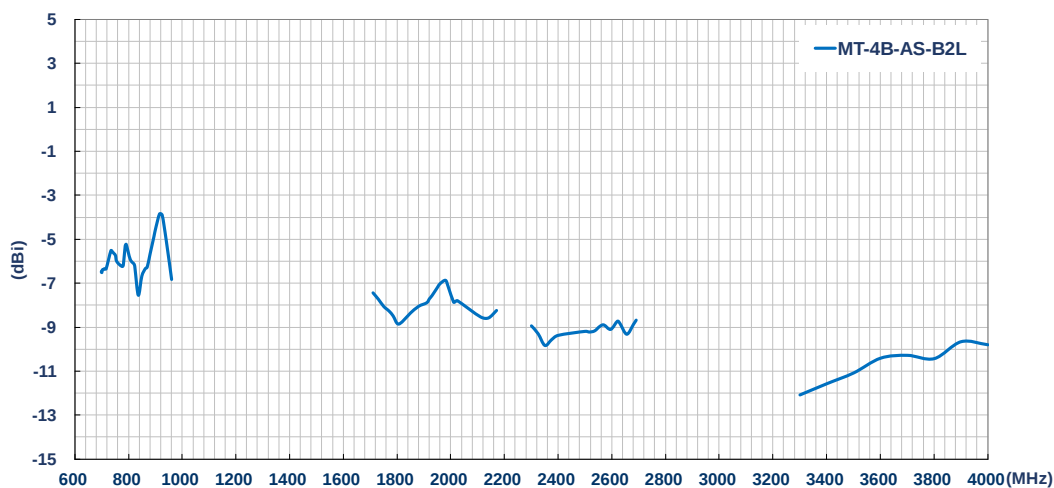
© Unictron Technologies Corp.
All specifications subject to change without notice.

Efficiency (%) – LTE 2

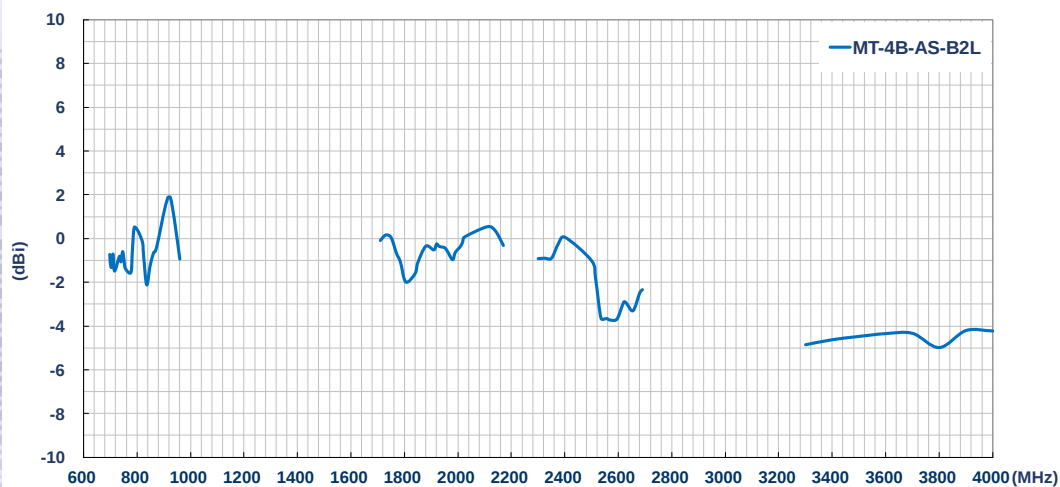


© Unictron Technologies Corp.
All specifications subject to change without notice.

Average Gain (dBi) – LTE 2



Peak Gain (dBi) – LTE 2

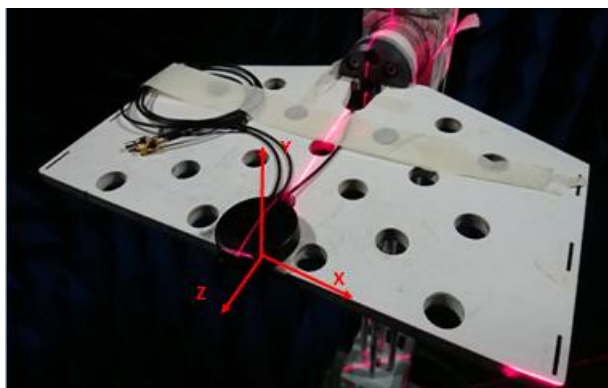


III. Antenna Radiation Pattern Measurement:

The antenna radiation patterns were measured in Anechoic Chamber.

The measurement setup as below,

Free Space

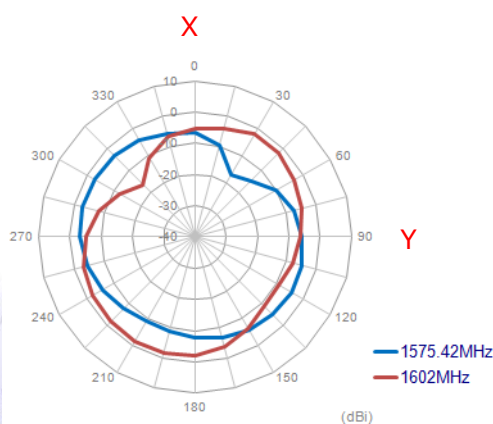


© Unictron Technologies Corp.
All specifications subject to change without notice.

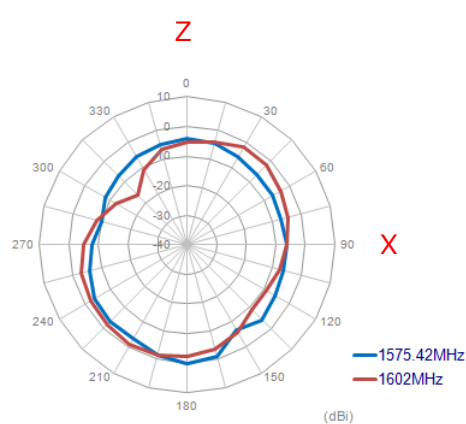
IV. 2D Radiation Pattern:

GNSS

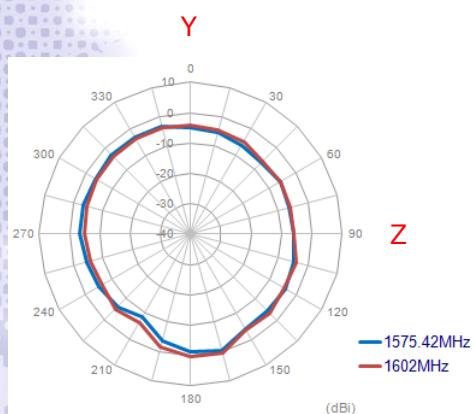
X-Y Plane



X-Z Plane

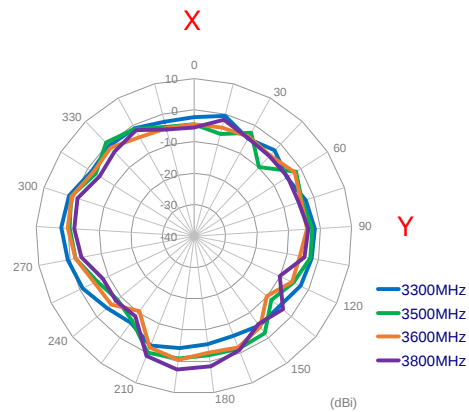
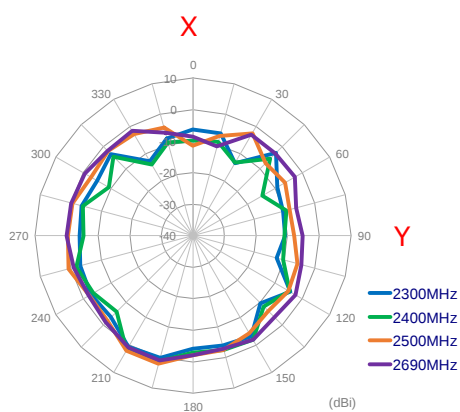
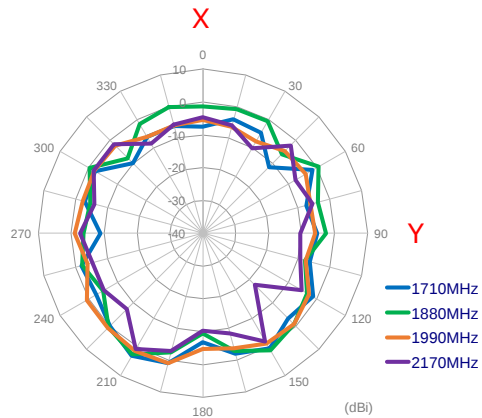
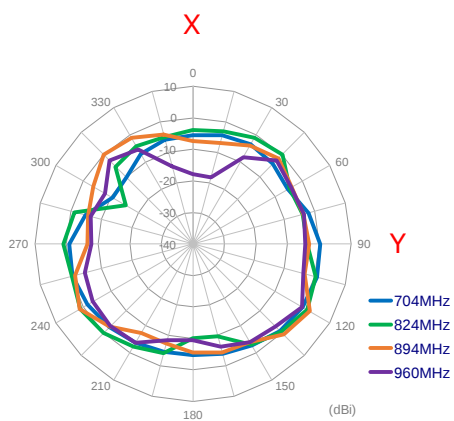


Y-Z Plane

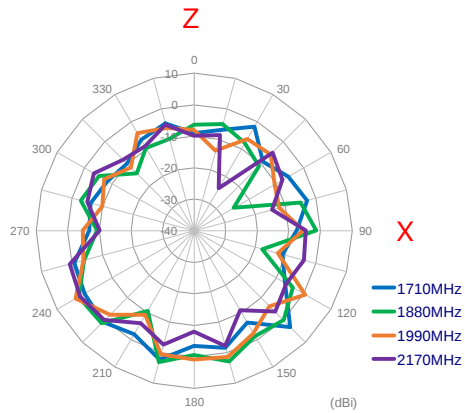
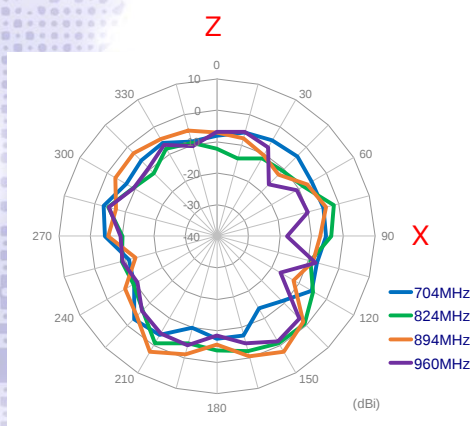


Free Space – LTE 1

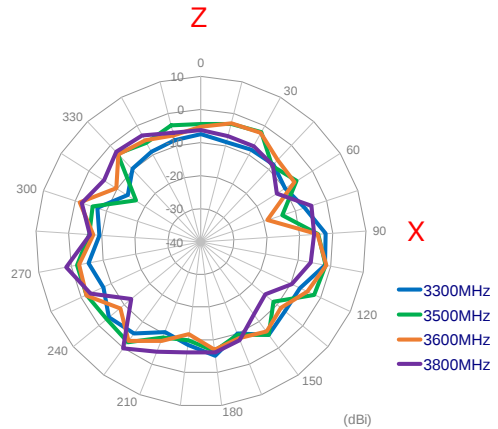
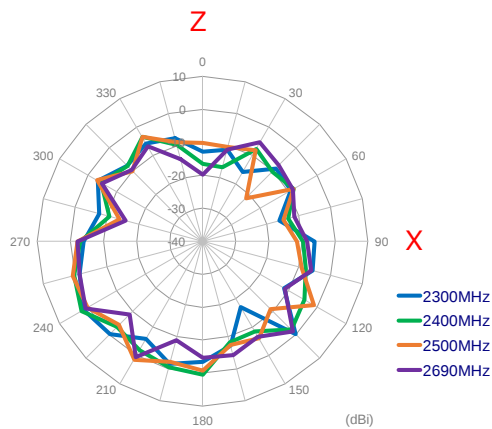
X-Y Plane



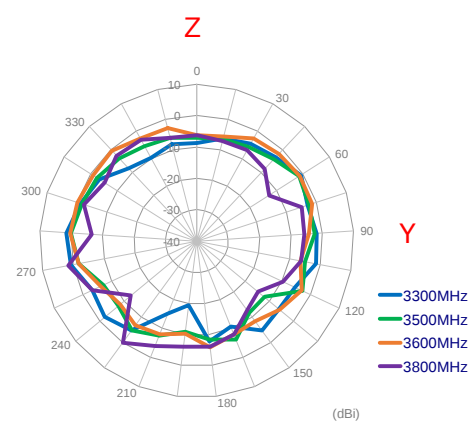
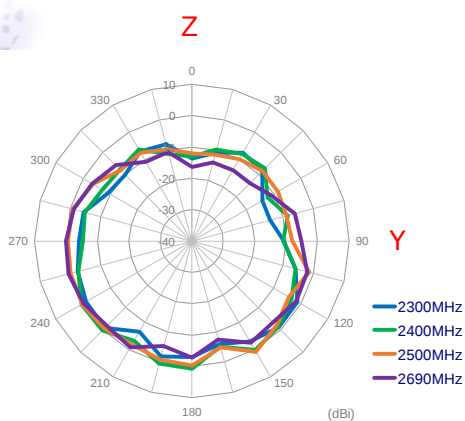
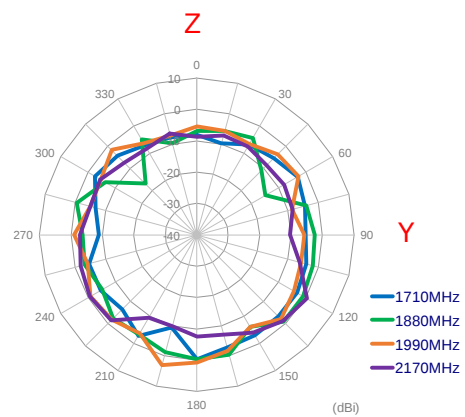
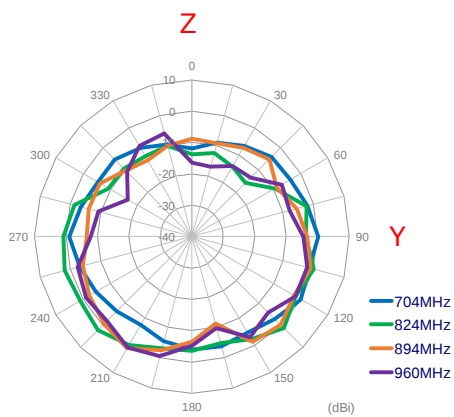
X-Z Plane



© Unictron Technologies Corp.
All specifications subject to change without notice.

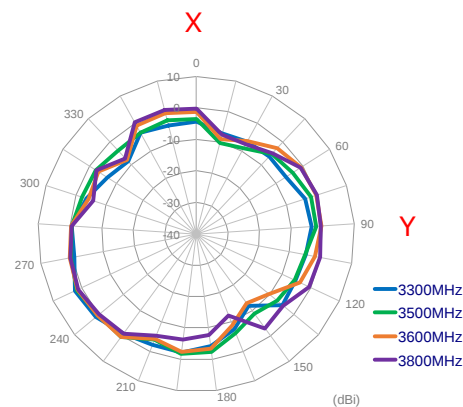
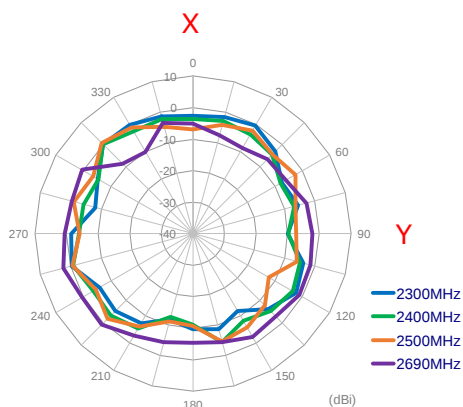
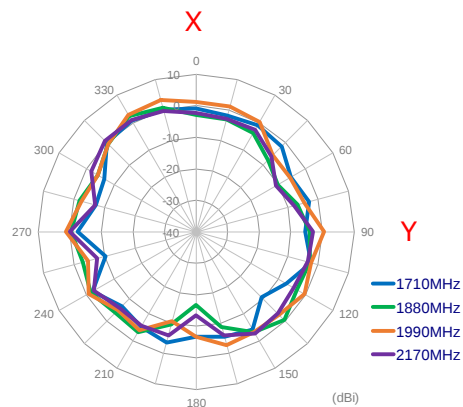
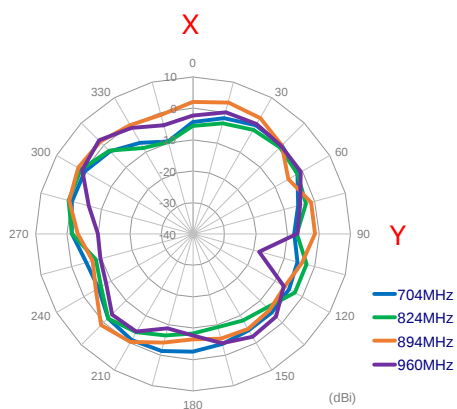


Y-Z Plane

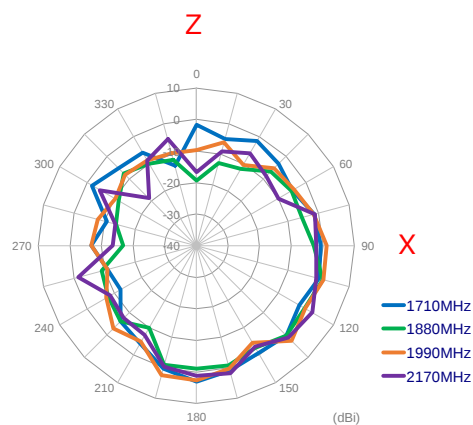
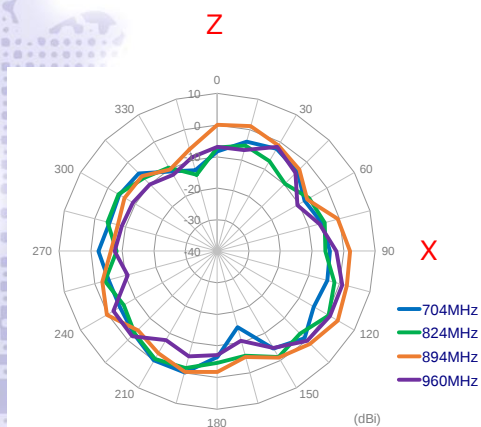


Free Space – LTE 2

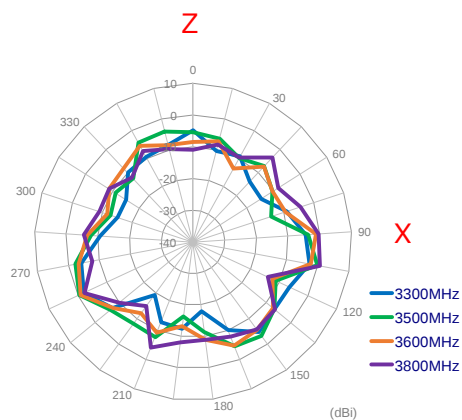
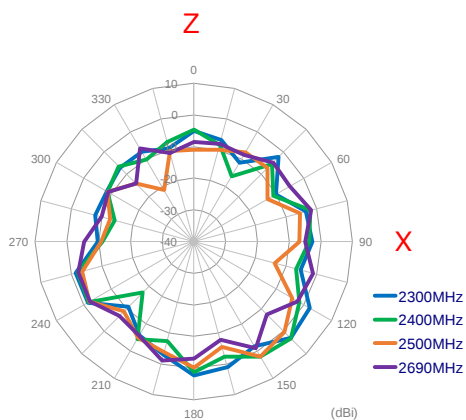
X-Y Plane



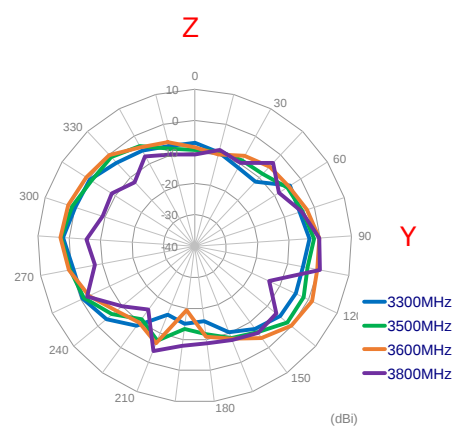
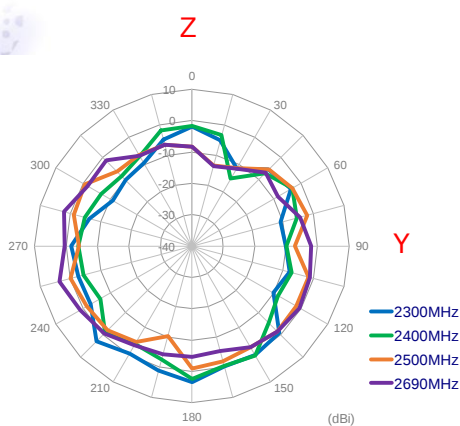
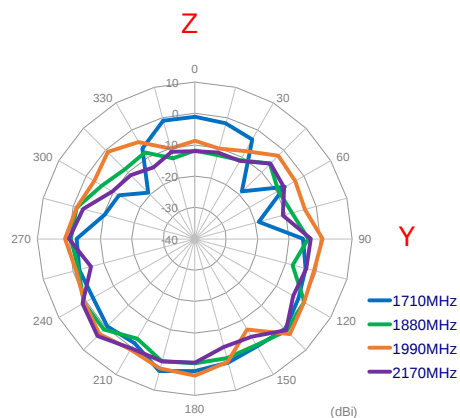
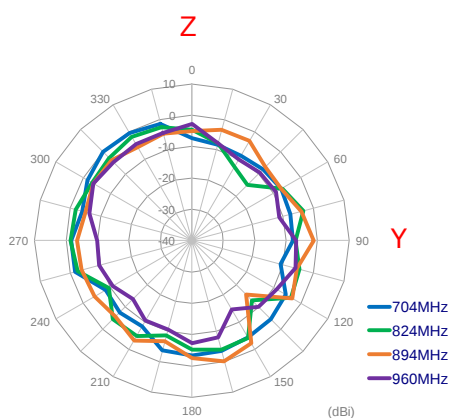
X-Z Plane



© Unictron Technologies Corp.
All specifications subject to change without notice.



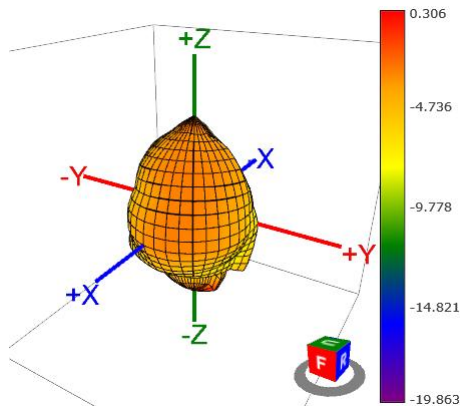
Y-Z Plane



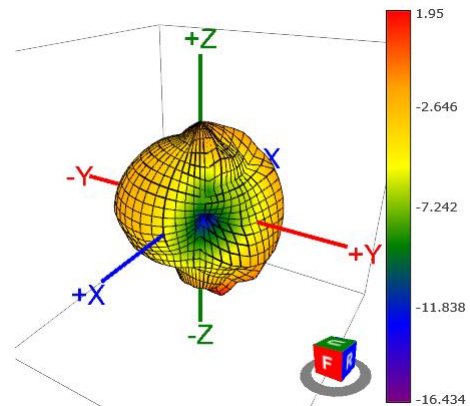
V. 3D Radiation Pattern:

GNSS

1575.42MHz

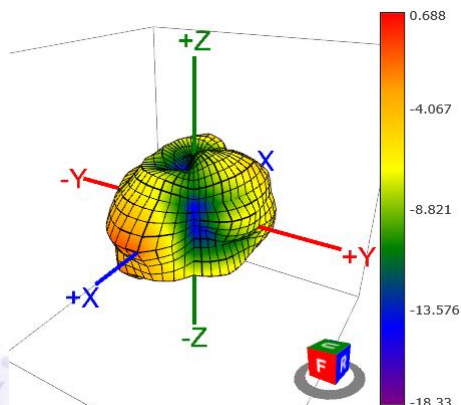


1602MHz

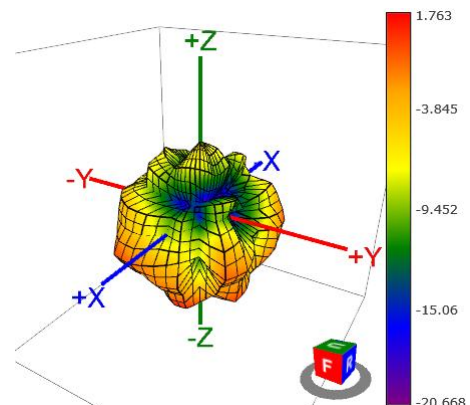


Free Space - LTE 1

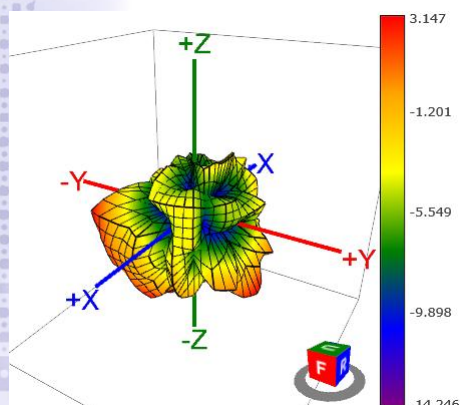
704MHz



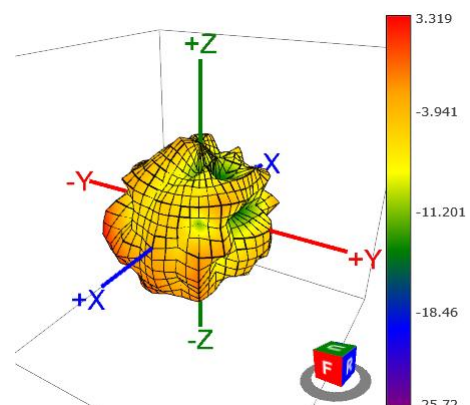
960MHz



1710MHz

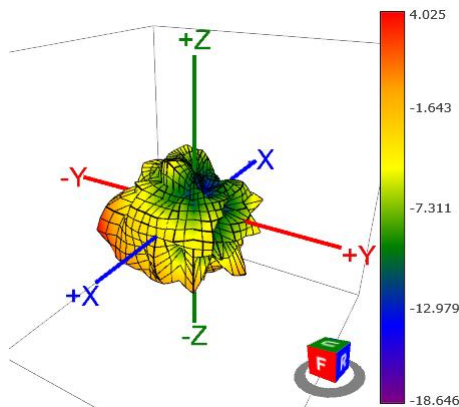


2170MHz

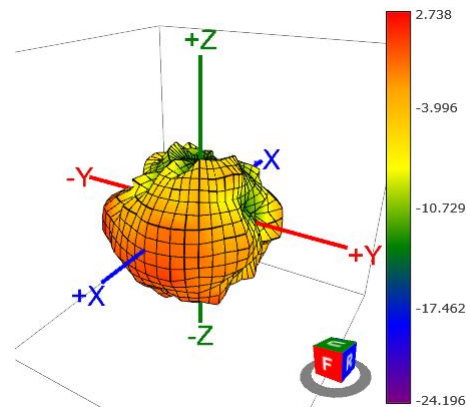


© Unictron Technologies Corp.
All specifications subject to change without notice.

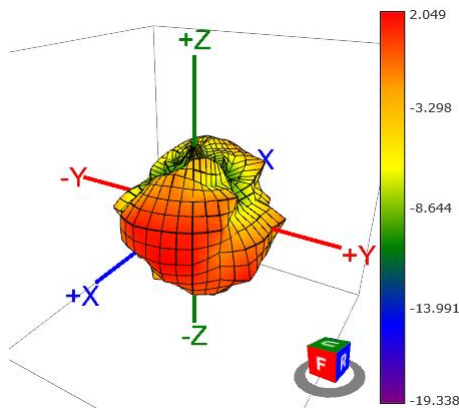
2300MHz



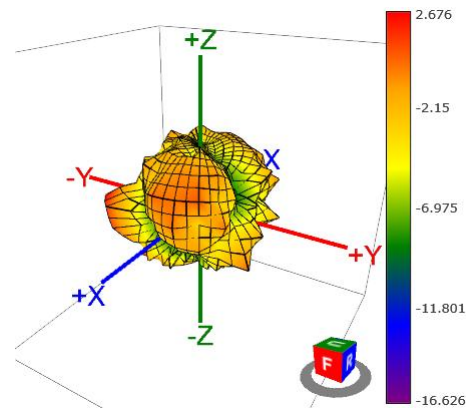
2690MHz



3300MHz

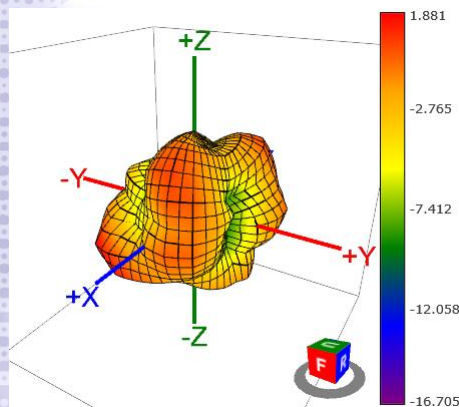


3600MHz

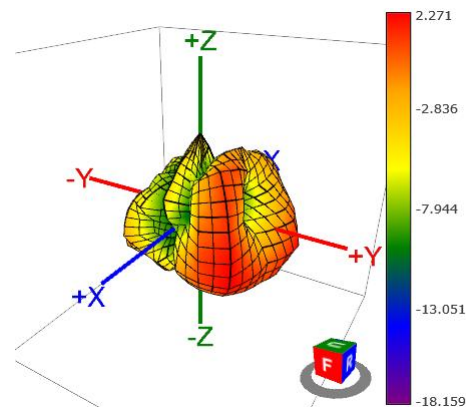


Free Space - LTE 2

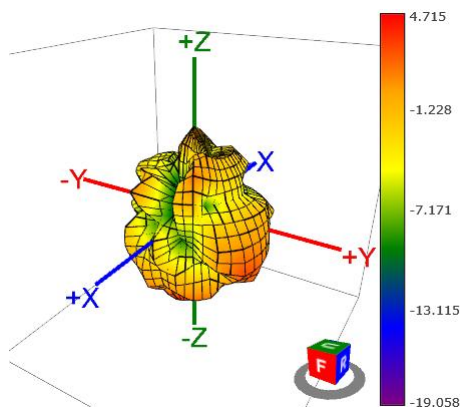
704MHz



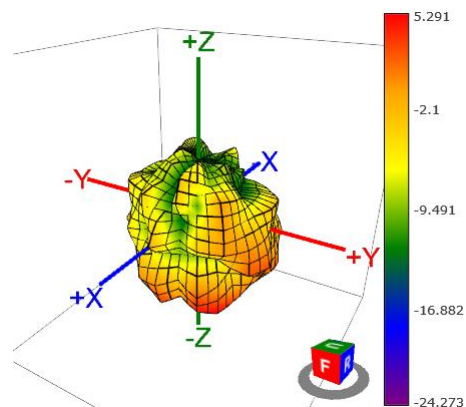
960MHz



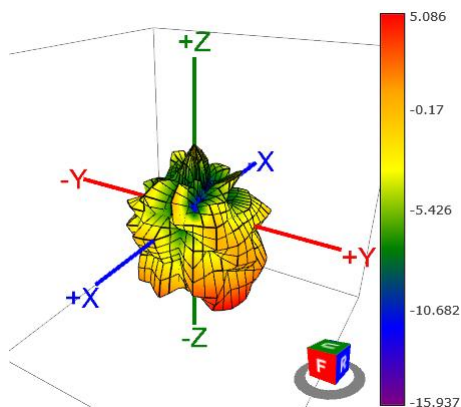
1710MHz



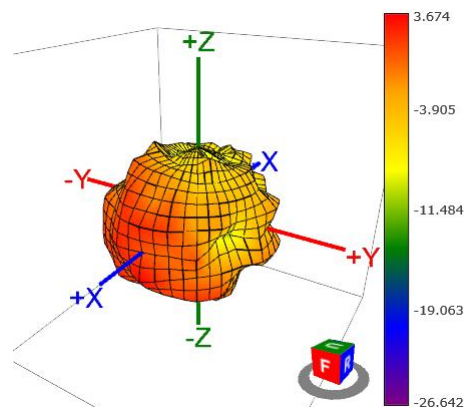
2170MHz



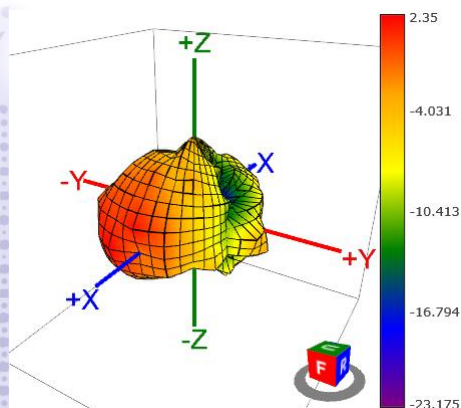
2300MHz



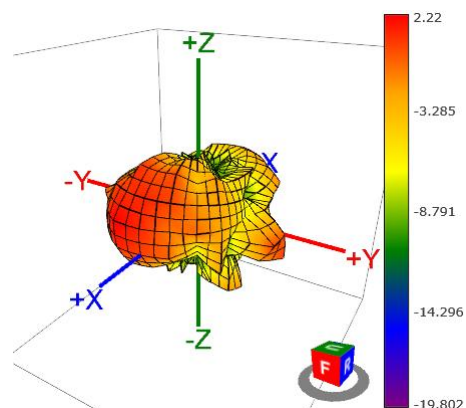
2690MHz



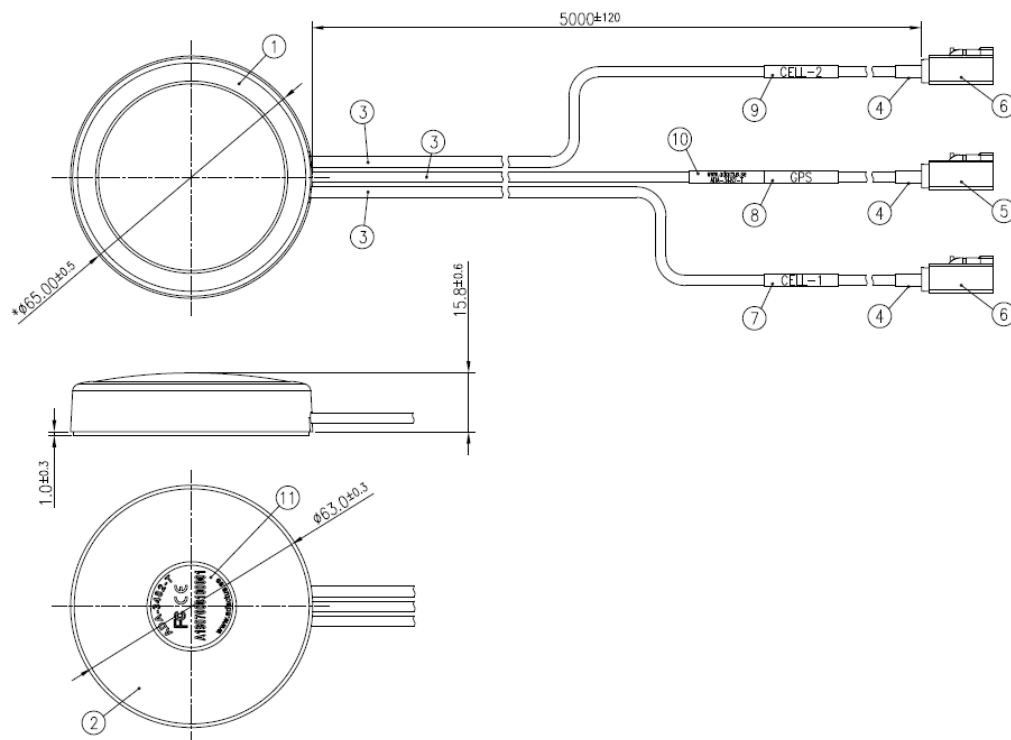
3300MHz



3600MHz



VI. Mechanical Drawing (Unit:mm):



11	Label	Clear Polyester	Transparent	1
10	ADA-3482-T Heat Shrink Tube	CTMS	White	1
9	CELL-2 Heat Shrink Tube	CTMS	White	1
8	GPS Heat Shrink Tube	CTMS	Blue	1
7	CELL-1 Heat Shrink Tube	CTMS	White	1
6	FAKRA(D) Connector for LTE	PTFE	Purple	2
5	FAKRA(C) Connector for GPS	PTFE	Blue	1
4	Heat Shrink Tube	EVA	Black	3
3	Cable H-100 (R118)	PVC	Black	3
2	Double-sided foam	3M 4218P	Red Liner	1
1	Housing	PC	Black	1
No	NAME	MATERIAL	FINISH	Q'TY

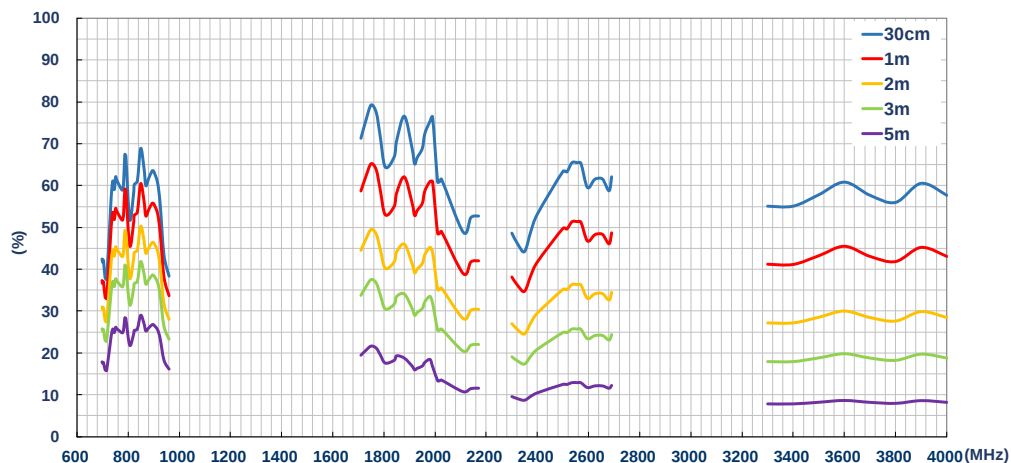
© Unictron Technologies Corp.
All specifications subject to change without notice.

VII. Applications Note:

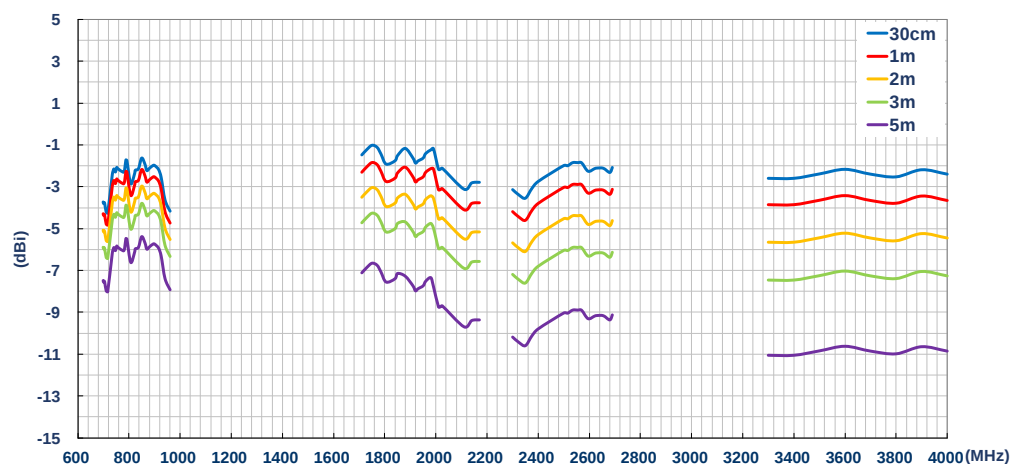
The antenna performance with different cable lengths is shown below.

Free Space – LTE 1

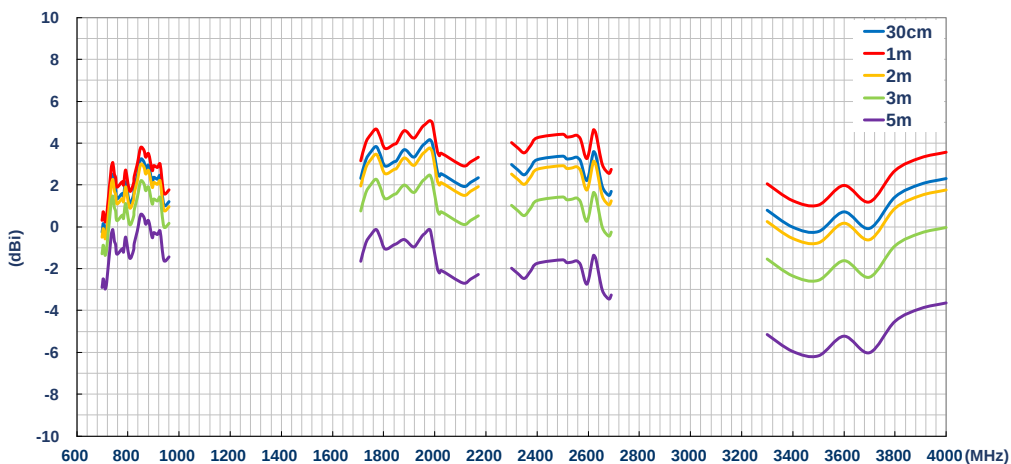
Efficiency (%)



Average Gain (dBi)



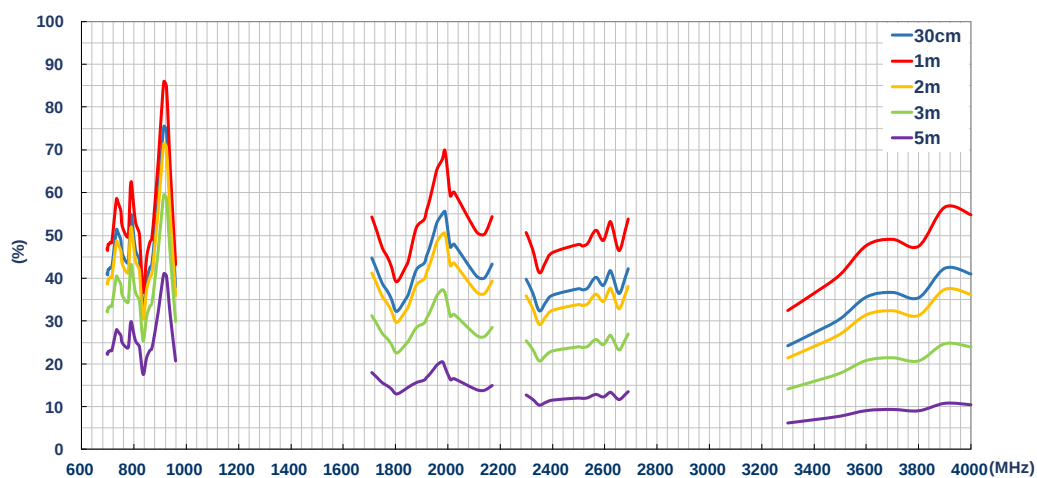
Peak Gain (dBi)



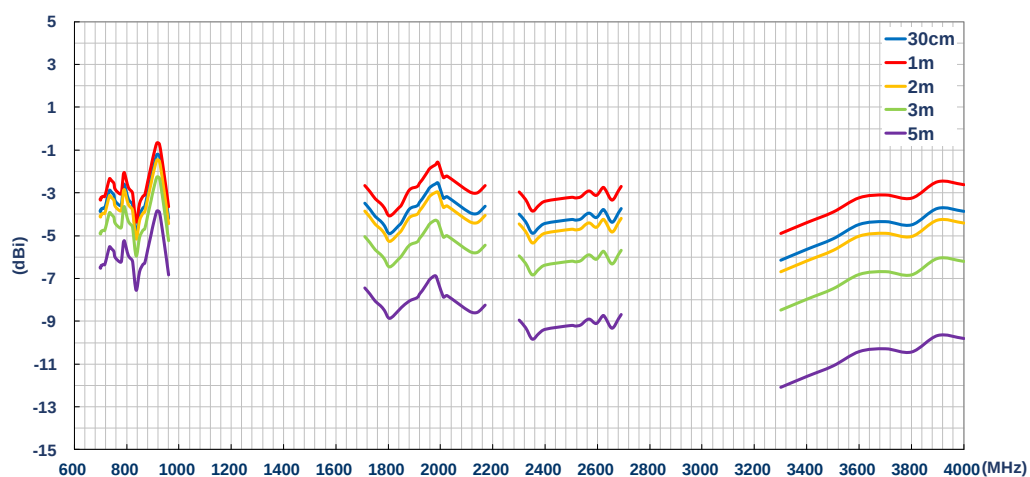
© Unictron Technologies Corp.
All specifications subject to change without notice.

Free Space – LTE 2

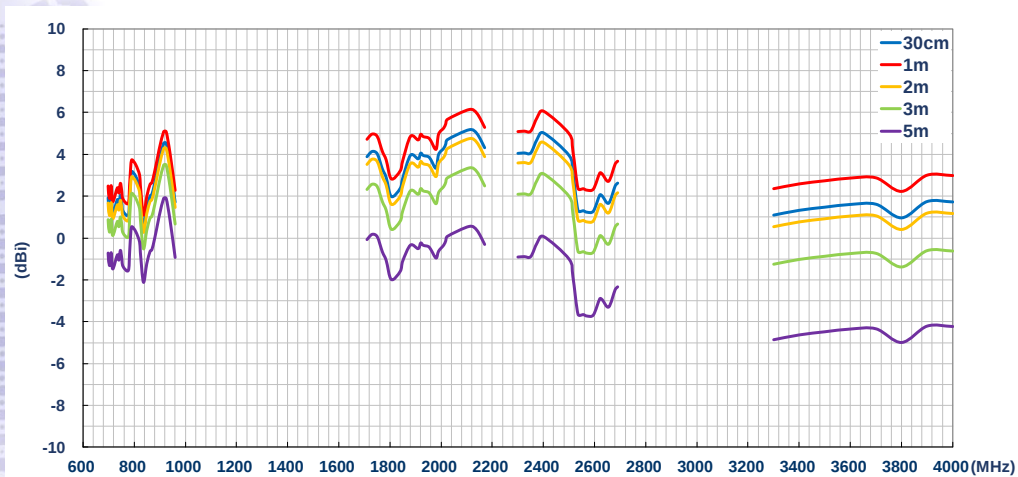
Efficiency (%)



Average Gain (dBi)



Peak Gain (dBi)



© Unictron Technologies Corp.
All specifications subject to change without notice.