

Cocoaent

SPECIFICATIONS FOR APPROVAL

Model : TWICE OFFICIAL LIGHT STICK
PATTRN ANTENA

R&D		QA/QC		Customers
CHECK	APPROVAL	CHECK	APPROVAL	
2020 . .	2020 . .	2020 . .	2020 . .	2020 . .

Document Revision Management

[illegible]

1.Product Information

1.1 Feature

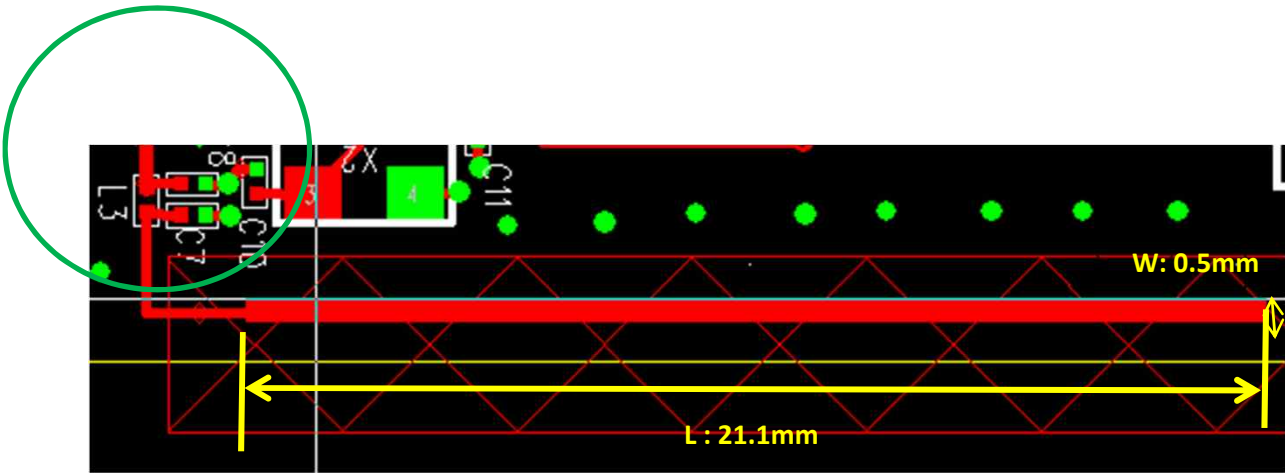
PART NUMBER	Pattern ANT
ANTENNA TYPE	PCB Pattern Antenna
APPLICATIONS	BLE

1.2 Electrical Specifications

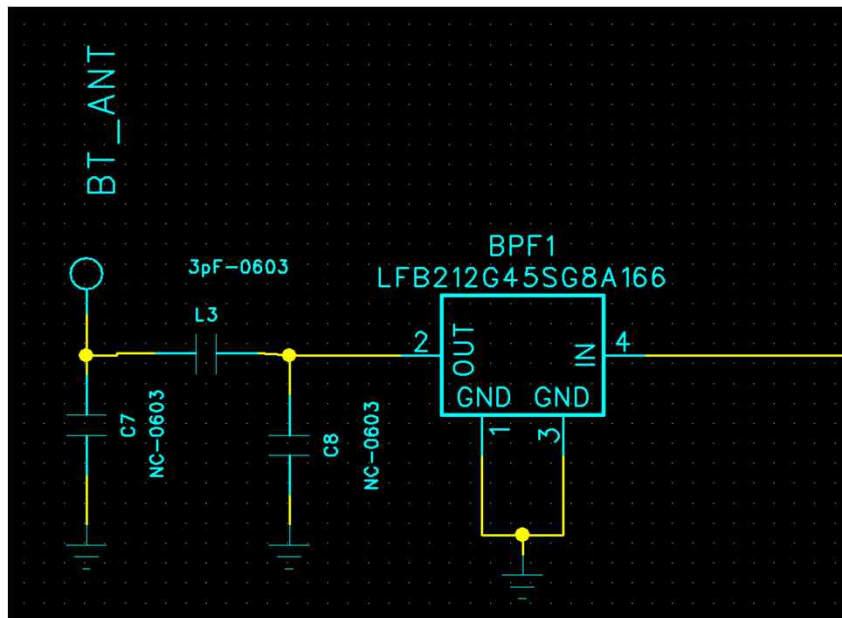
Frquency Rangel(TX)		2400MHz~2485MHz	
Frquency Rangel(RX)		2400MHz~2485MHz	
IMPEDANCE		50Ω	
V.S.W.R	TX	2400MHz	2485MHz
		2 ↓	2 ↓
	RX	2400MHz	2485MHz
		2 ↓	2 ↓
RADIATION PATTERN		Omni-directional	
POLARIZATION		Linear	

1.3 Pattern Specifications

matching point : L3 3pF

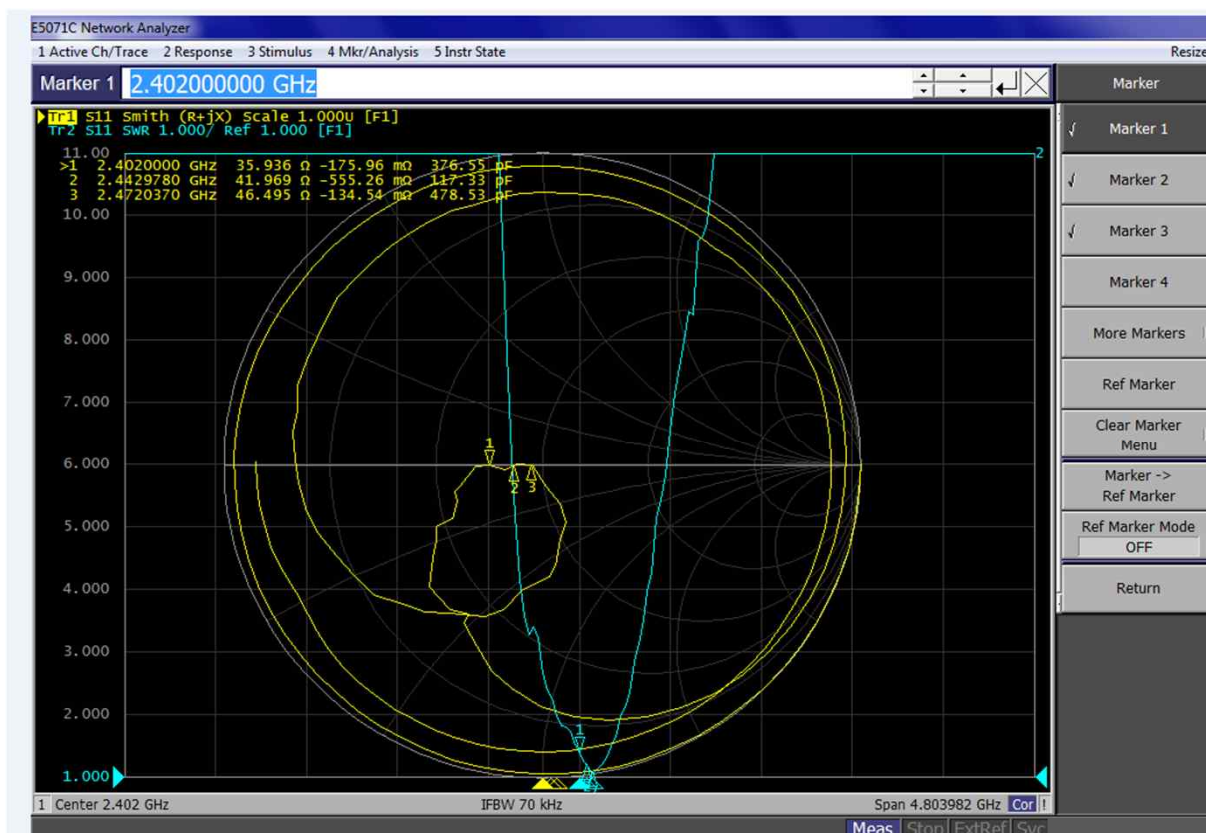


1.3 Matching Network



1.4 Electrical Characteristics

1.4.1 VSWR & SMITH CHART

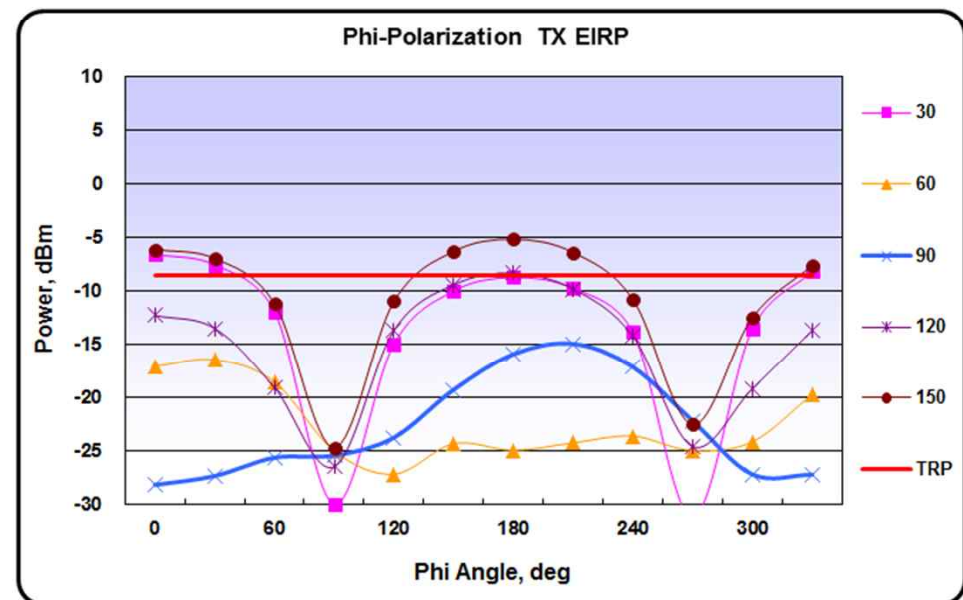
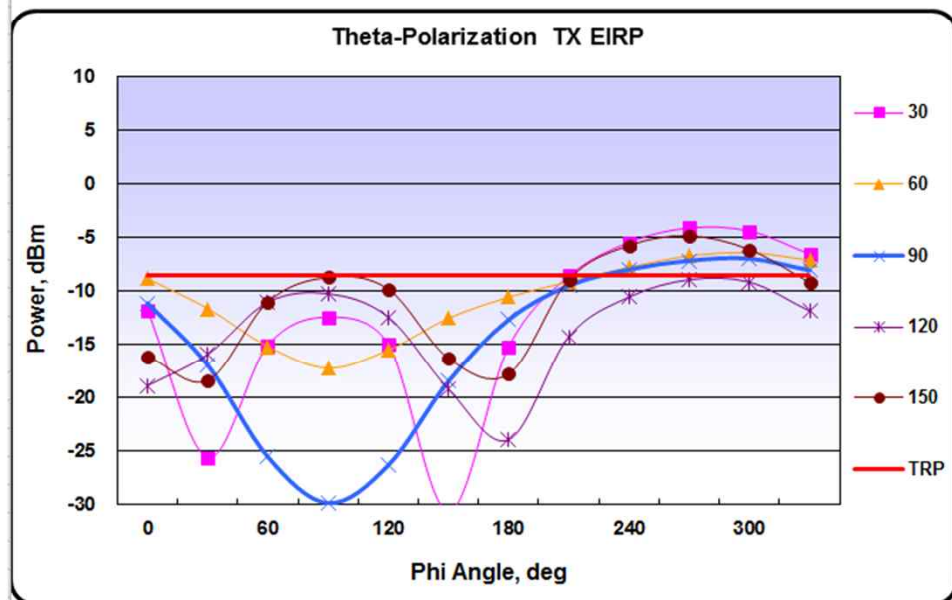


1.4.2 Performance

Model	
Test Date	
Event Status	
IMEI	
FCC ID Number	
Hardware Version	
Software Version	

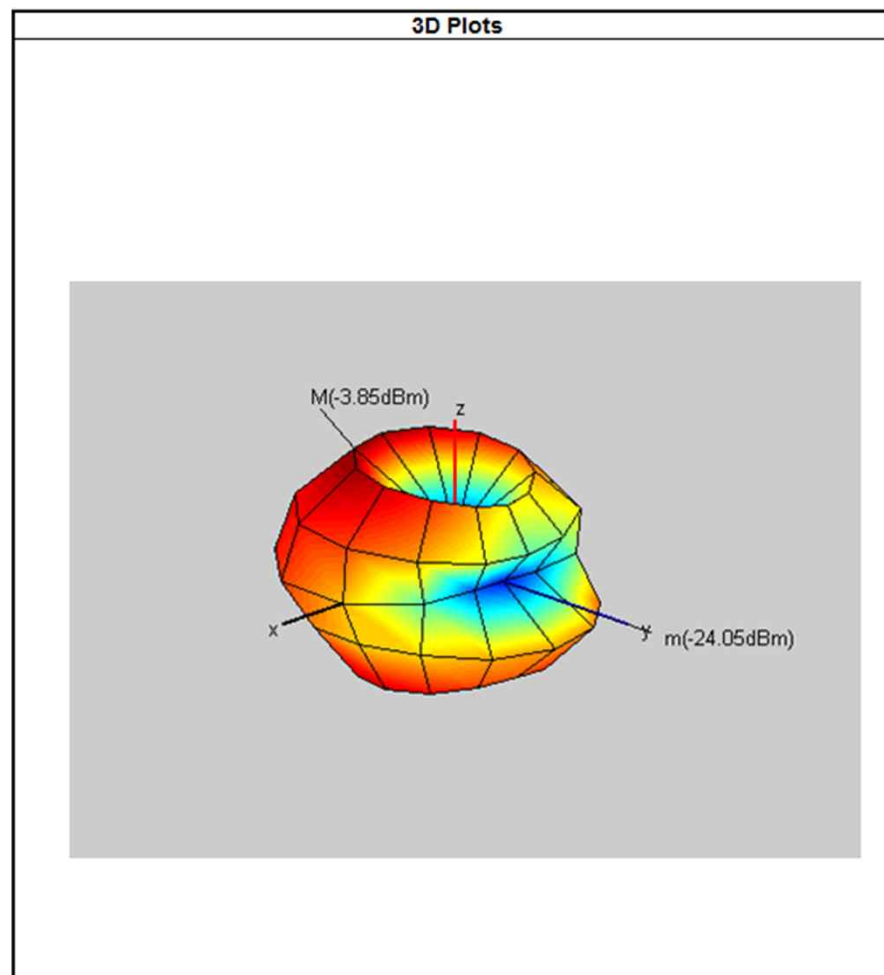
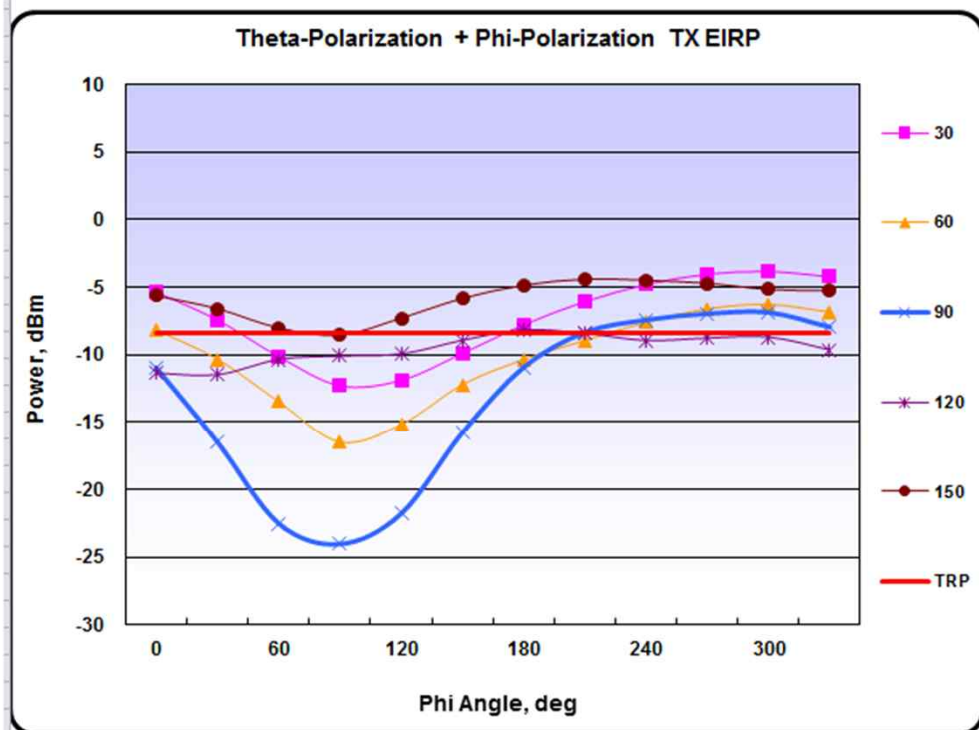
Total Radiated Power(TRP, 30degrees)								Total Isotropic Sensitivity(TIS)							
Band	BLE	BLE	BLE					Band							
Channel	0	12	39					Channel							
TX Frequency(MHz)				Average				RX Frequency(MHz)							
TRP(dBm), 30degree	-8.47	-7.41	-4.24	-6.32				TIS(dBm)							
TRP Limit(dBm)								TIS Limit(dBm)							
Pass/Fail								Pass/Fail							
TRP _{on} /TRP _{AVO} (dB)	-2.15	-1.09	2.08					TIS _{on} /TIS _{AVO} (dB)							
Limit(dB)								Limit(dB)							
Pass/Fail								Pass/Fail							
Conducted Power(dBm)								Conducted Sensitivity(dBm)							
TRP _{meta} (dBm)	-10.20	-9.07	-5.69	-7.88				TIS _{meta} (dBm)							
TRP _{pus} (dBm)	-13.31	-12.40	-9.72	-11.53				TIS _{pus} (dBm)							
UHRP(dBm)	-11.59	-10.55	-7.49	-9.52				UHS(dBm)							
Peak EIRP(dBm)	-3.85	-3.01	-0.39	-2.15				Peak EIS(dBm)							
Directivity(dBi)	4.62	4.41	3.86	4.31				Directivity(dBi)							
Efficiency(dB)								Efficiency(dB)							
Efficiency(%)								Efficiency(%)							
Gain(dBi)	-3.00	-2.50	-2.00	-2.50				Gain(dBi)							
NHRP±30(π/6)(dBm)	-12.93	-11.68	-7.86	-10.26				NHPI±30(π/6)(dBm)							
NHRP±45(π/4)(dBm)	-10.35	-9.21	-5.71	-7.95				NHPI±45(π/4)(dBm)							
Minimum Power(dBm)	-24.05	-23.70	-16.55	-19.95				Minimum Sensitivity(dBm)							
Test Condition	FS	FS	FS					Test Condition							
Antenna Type								Antenna Type							

Theta-Polarization EIRP(dBm)													Phi-Polarization EIRP(dBm)												
θ_N (deg)	φ_M (deg)												θ_N (deg)	φ_M (deg)											
	0	30	60	90	120	150	180	210	240	270	300	330		0	30	60	90	120	150	180	210	240	270	300	330
0													0												
30	-11.76	-25.55	-15.02	-12.39	-14.94	-30.59	-15.18	-8.55	-5.41	-4.06	-4.35	-6.50	30	-6.52	-7.51	-11.86	-29.92	-14.90	-9.95	-8.68	-9.71	-13.79	-31.14	-13.52	-8.15
60	-8.80	-11.58	-15.15	-17.19	-15.48	-12.50	-10.52	-9.08	-7.73	-6.68	-6.36	-7.08	60	-17.03	-16.39	-18.48	-24.95	-27.12	-24.27	-24.90	-24.20	-23.56	-24.93	-24.10	-19.68
90	-11.08	-16.91	-25.51	-29.82	-26.28	-18.42	-12.63	-9.45	-7.93	-7.11	-6.92	-8.02	90	-28.12	-27.29	-25.58	-25.38	-23.70	-19.22	-15.87	-14.89	-17.08	-22.13	-27.14	-27.16
120	-18.84	-15.89	-10.99	-10.20	-12.38	-19.15	-23.91	-14.22	-10.51	-8.89	-9.11	-11.82	120	-12.23	-13.44	-19.02	-26.43	-13.63	-9.37	-8.28	-9.75	-14.16	-24.54	-19.14	-13.67
150	-16.06	-18.35	-10.96	-8.67	-9.77	-16.26	-17.75	-8.87	-5.70	-4.80	-6.08	-9.16	150	-6.06	-6.91	-11.11	-24.64	-10.91	-6.25	-5.10	-6.34	-10.70	-22.48	-12.44	-7.56
180													180												



Total Radiated Power(TRP)	-8.469dBm	Theta -10.20 dBm	Phi -13.31 dBm	UHRP -11.59 dBm	NHRP±30 -12.93 dBm	NHRP±45 -10.35 dBm
---------------------------	-----------	------------------	----------------	-----------------	--------------------	--------------------

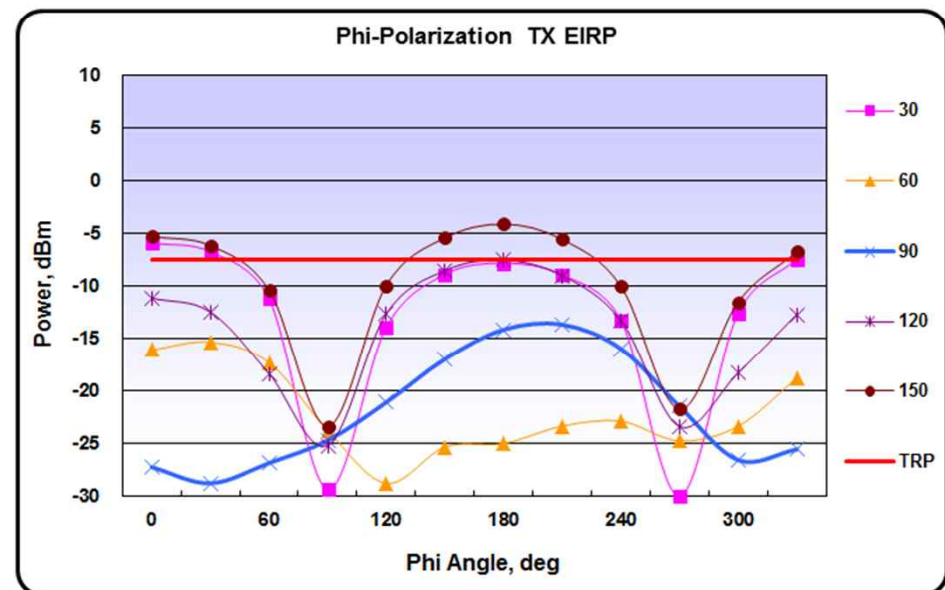
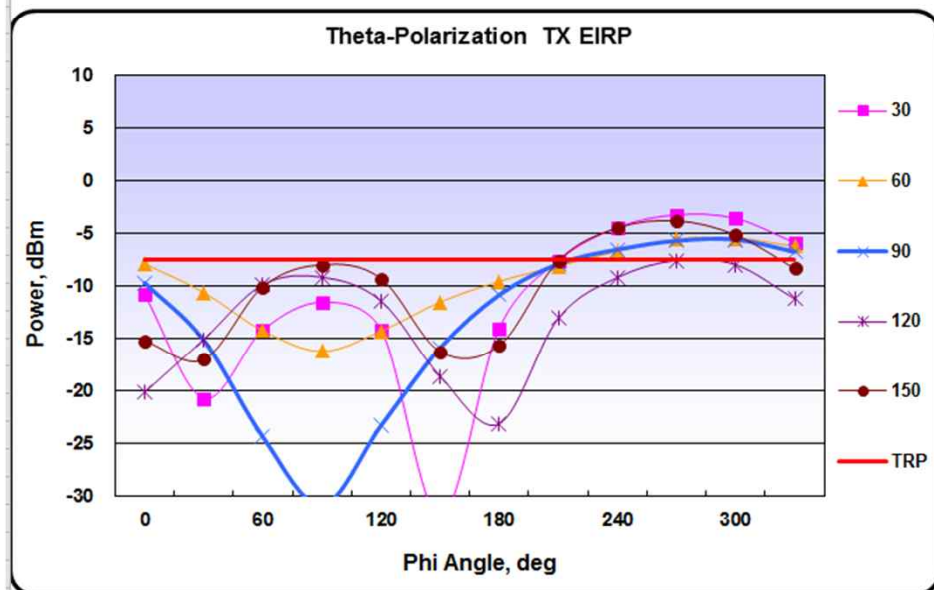
Theta-Polarization + Phi-Polarization(dBm)												
θ_N (deg)	ϕ_M (deg)											
	0	30	60	90	120	150	180	210	240	270	300	330
0												
30	-5.38	-7.44	-10.15	-12.31	-11.91	-9.91	-7.80	-6.08	-4.82	-4.05	-3.85	-4.24
60	-8.19	-10.34	-13.49	-16.52	-15.19	-12.22	-10.36	-8.95	-7.62	-6.62	-6.29	-6.85
90	-10.99	-16.53	-22.53	-24.05	-21.79	-15.79	-10.94	-8.36	-7.43	-6.98	-6.88	-7.97
120	-11.37	-11.48	-10.36	-10.10	-9.95	-8.94	-8.16	-8.42	-8.95	-8.77	-8.70	-9.64
150	-5.65	-6.61	-8.02	-8.56	-7.29	-5.84	-4.87	-4.41	-4.51	-4.73	-5.18	-5.28
180												



Peak EIRP	-3.85dBm	Theta	30 degrees	Phi	300 degrees
Minimum EIRP	-24.05dBm	Theta	90 degrees	Phi	90 degrees

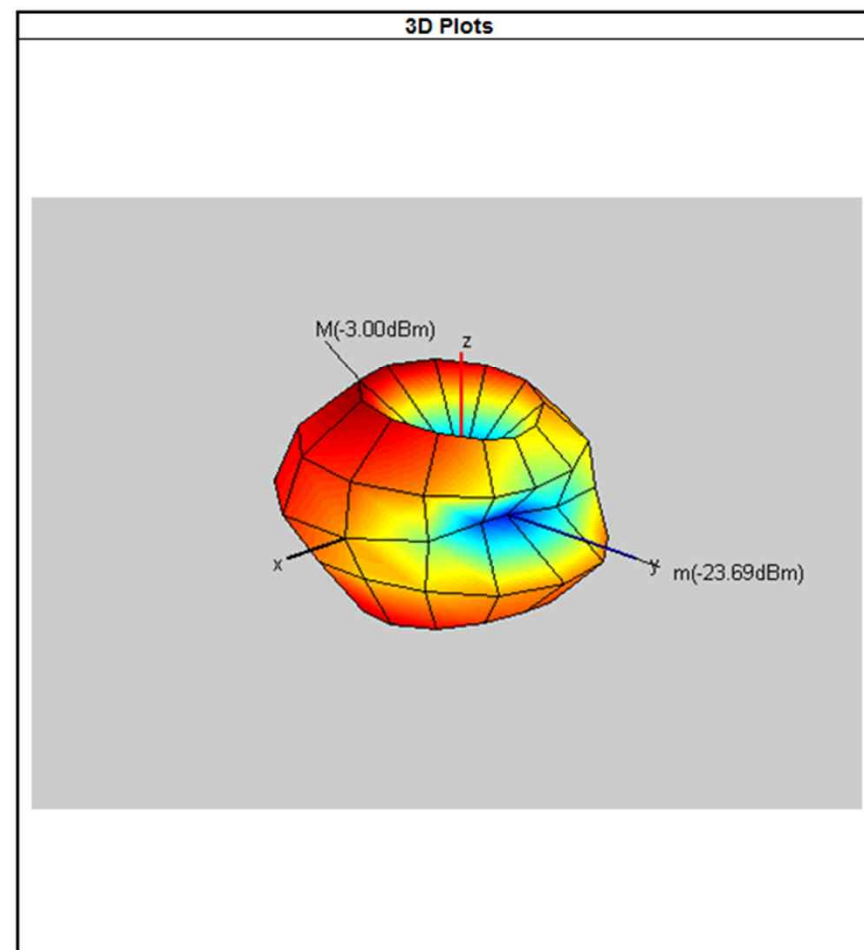
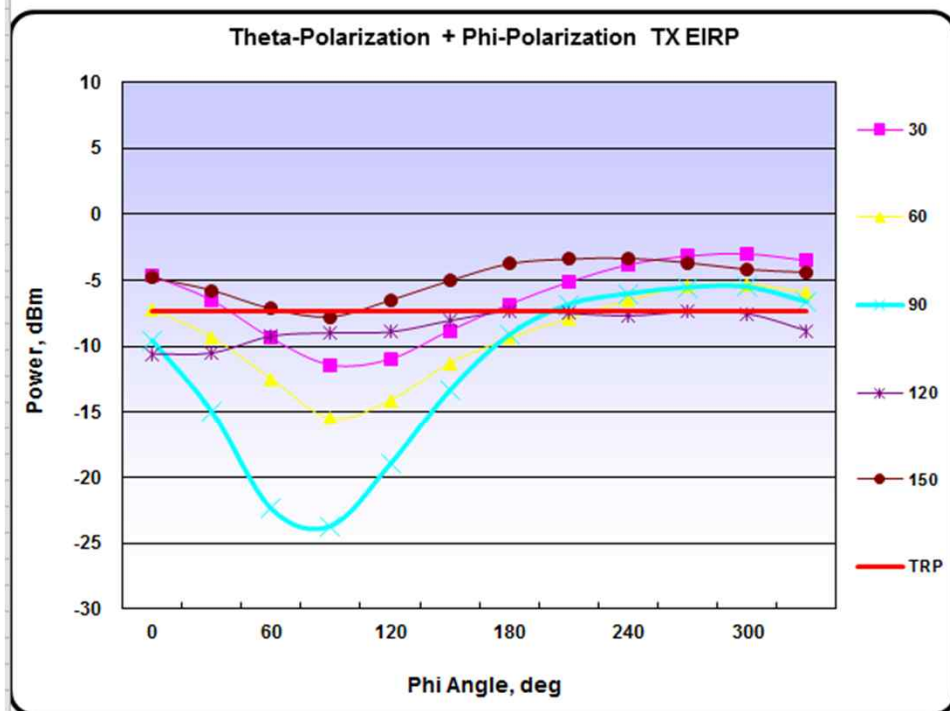
Total Radiated Power(TRP)	-8.469dBm	Theta	-10.20 dBm	Phi	-13.31 dBm	UHRP	-11.59 dBm	NHRP±30	-12.93 dBm	NHRP±45	-10.35 dBm
---------------------------	-----------	-------	------------	-----	------------	------	------------	---------	------------	---------	------------

Theta-Polarization EIRP(dBm)													Phi-Polarization EIRP(dBm)												
θ_N (deg)	φ_M (deg)												θ_N (deg)	φ_M (deg)											
0	0	30	60	90	120	150	180	210	240	270	300	330	0	0	30	60	90	120	150	180	210	240	270	300	330
0													0												
30	-10.78	-20.66	-14.15	-11.49	-14.12	-31.83	-13.96	-7.54	-4.38	-3.18	-3.52	-5.83	30	-5.86	-6.69	-11.16	-29.28	-13.86	-8.84	-7.77	-8.87	-13.18	-29.93	-12.53	-7.39
60	-7.83	-10.56	-14.21	-16.18	-14.24	-11.47	-9.50	-8.04	-6.66	-5.49	-5.40	-6.17	60	-16.04	-15.29	-17.26	-23.71	-28.73	-25.29	-24.96	-23.31	-22.84	-24.71	-23.32	-18.73
90	-9.64	-15.13	-24.33	-30.78	-23.25	-15.85	-10.79	-7.84	-6.47	-5.65	-5.53	-6.69	90	-27.20	-28.72	-26.80	-24.65	-21.04	-16.92	-14.10	-13.62	-15.93	-21.43	-26.52	-25.51
120	-20.09	-15.03	-9.81	-9.10	-11.37	-18.56	-23.08	-13.01	-9.13	-7.51	-7.92	-11.16	120	-11.09	-12.41	-18.33	-25.14	-12.58	-8.48	-7.48	-8.95	-13.21	-23.34	-18.26	-12.64
150	-15.19	-16.95	-10.01	-7.90	-9.23	-16.22	-15.62	-7.54	-4.42	-3.75	-5.09	-8.28	150	-5.24	-6.11	-10.34	-23.32	-9.87	-5.38	-4.06	-5.52	-9.94	-21.71	-11.46	-6.70
180													180												



Total Radiated Power(TRP)	-7.413dBm	Theta -9.07 dBm	Phi -12.40 dBm	UHRP -10.55 dBm	NHRP±30 -11.68 dBm	NHRP±45 -9.21 dBm
---------------------------	-----------	-----------------	----------------	-----------------	--------------------	-------------------

Theta-Polarization + Phi-Polarization(dBm)												
θ_N (deg)	ϕ_M (deg)											
	0	30	60	90	120	150	180	210	240	270	300	330
0												
30	-4.65	-6.52	-9.39	-11.42	-10.98	-8.82	-6.83	-5.14	-3.84	-3.17	-3.01	-3.53
60	-7.22	-9.30	-12.46	-15.47	-14.09	-11.29	-9.38	-7.91	-6.56	-5.44	-5.33	-5.94
90	-9.56	-14.94	-22.38	-23.70	-19.00	-13.34	-9.13	-6.82	-6.00	-5.54	-5.50	-6.63
120	-10.58	-10.52	-9.24	-8.99	-8.92	-8.07	-7.36	-7.51	-7.70	-7.40	-7.54	-8.83
150	-4.82	-5.77	-7.16	-7.78	-6.53	-5.04	-3.77	-3.40	-3.35	-3.68	-4.19	-4.41
180												



Peak EIRP	-3.01dBm	Theta	30 degrees	Phi	300 degrees
Minimum EIRP	-23.70dBm	Theta	90 degrees	Phi	90 degrees

Total Radiated Power(TRP)	-7.413dBm	Theta	-9.07 dBm	Phi	-12.40 dBm	UHRP	-10.55 dBm	NHRP±30	-11.68 dBm	NHRP±45	-9.21 dBm
---------------------------	-----------	-------	-----------	-----	------------	------	------------	---------	------------	---------	-----------