

APULSETECH Co., Ltd

APPROVAL SHEET

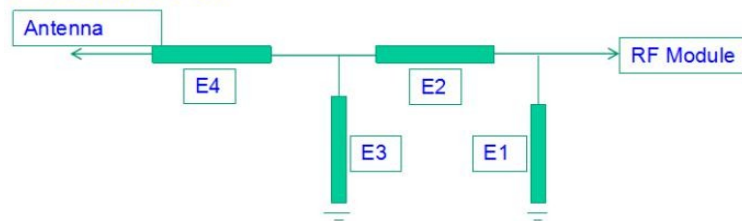
WLAN Antenna	
MODEL	FREQUENCY
a811-WIFI/BT	2400MHz ~ 2484MHz
a811-WIFI	5100MHz ~ 5845MHz

ANTENNA SPECIFICATION

1. Model Name : a811-WIFI/BT
2. Antenna Type : PIFA Antenna
3. Features
 - For WLAN Application

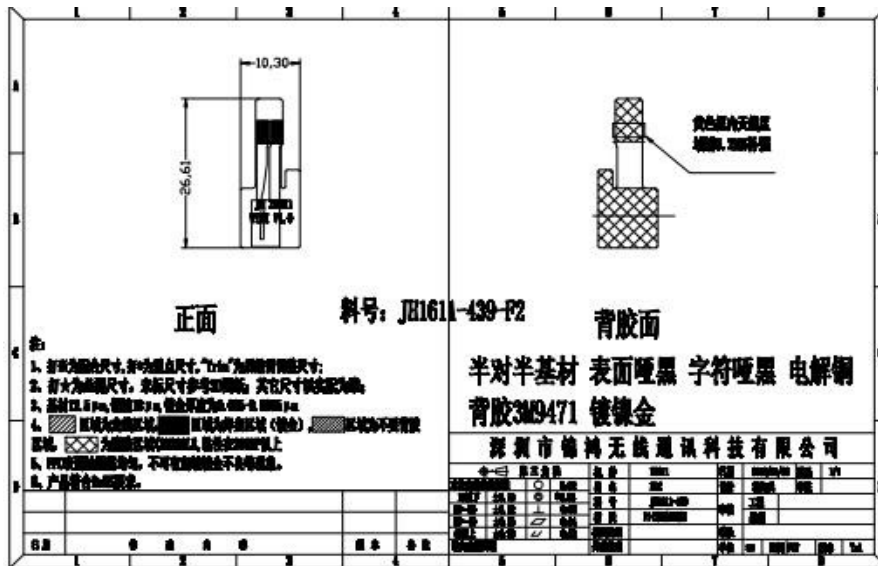


匹配电路: 否



主天线		分集天线		GPS三合一天线	
Element	Value	Element	Value	Element	Value
E1 (0402)		E1 (0402)		E1 (0402)	
E2 (0402)		E2 (0402)		E2 (0402)	
E3 (0402)		E3 (0402)		E3 (0402)	
E4 (0402)		E4 (0402)		E4 (0402)	

4. Antenna Drawing



5. Electrical Properties

5-1. 2400MHz ~ 2484MHz

No.	ELECTRICAL DATA	SPECIFICATION	REMARK
1	Frequency Range	2400MHz ~ 2484MHz	
2	Impedance	50Ω	
3	V.S.W.R	Less Than 1:2.0	
4	Gain	2.2dBi	
5	Radiation Pattern	OMNI-Directional	
6	Polarization	VERTICAL	

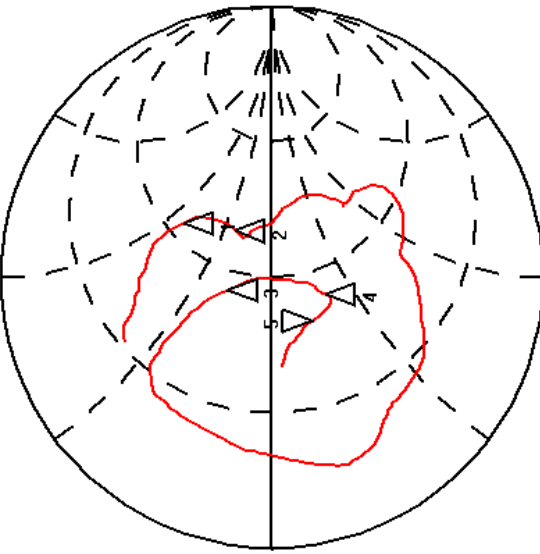
5-2. 5100MHz ~ 5845MHz

No.	ELECTRICAL DATA	SPECIFICATION	REMARK
1	Frequency Range	5100MHz ~ 5845MHz	
2	Impedance	50Ω	
3	V.S.W.R	Less Than 1:2.0	
4	Gain	2.2dBi	
5	Radiation Pattern	OMNI-Directional	
6	Polarization	VERTICAL	

6. VSWR

CH1 S11 1 U FS 23 Jan 2014 10:09:06
 5: 34.855 Ω -10.885 Ω 2.5210 pF 5 800.000 000 MHz

hp

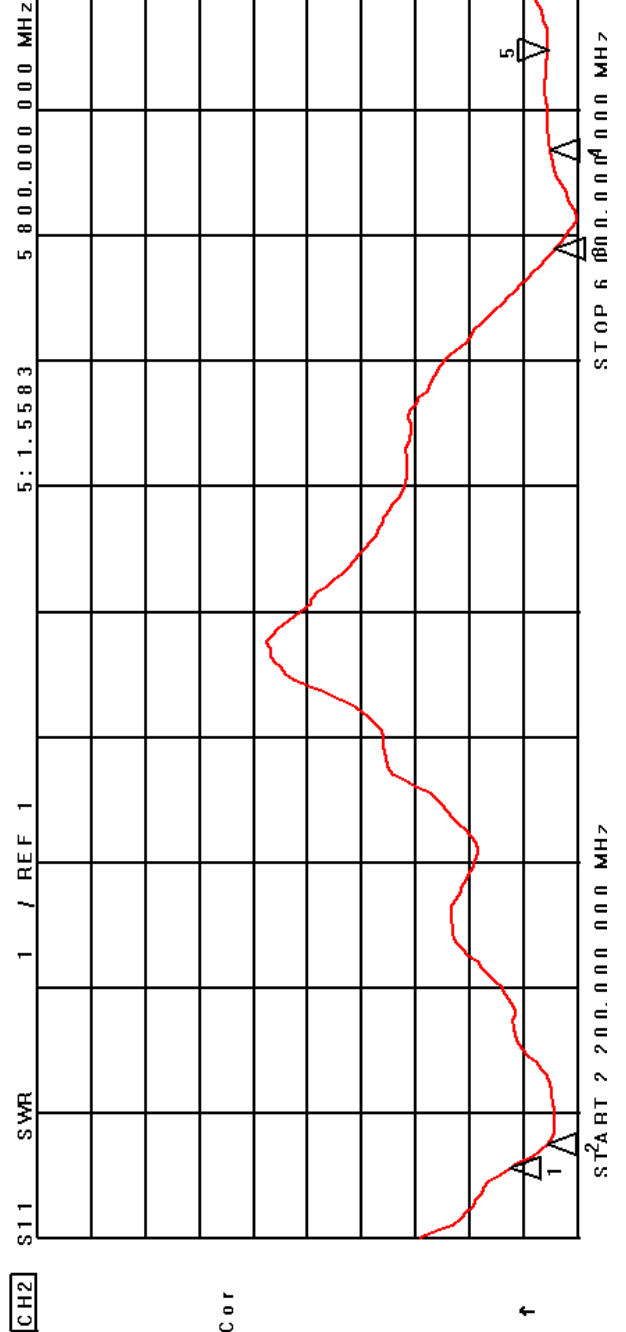


CH1 Markers
 1: 57.350 Ω
 43.859 Ω
 2.41200 GHz
 2: 67.539 Ω
 19.797 Ω
 2.48400 GHz
 3: 43.197 Ω
 14.801 Ω
 5.20000 GHz
 4: 41.098 Ω
 -16.932 Ω
 5.50000 GHz

Del

Cor

f



CH2 Markers
 1: 2.2486
 2.41200 GHz
 2: 1.5707
 2.48400 GHz
 3: 1.4176
 5.20000 GHz
 4: 1.5204
 5.50000 GHz

Cor

f

7. Radiation Pattern

7-1. 2400MHz ~ 2484MHz

Antenna Test Report (Passive-BW)

Date: **2018-02-22**

Comments:

This antenna is good. Yeah!

Test Point ID	Freq. (MHz)	TRP (dBm)	Gain (dBi)	Directivity (dBi)	Efficiency (%)	Efficiency (dB)	Max (dBm)	Theta of Max	Phi of Max	Min (dBm)	Theta of Min	Phi of Min	AVG (dBm)	Max/Min (dB)	Max/AVG (dB)	Min/AVG (dB)
1	2400.0	2400.00	-1.05	3.88	32.2%	-4.93	-1.05	150	0	-95.99	0	0	-5.65	94.94	4.60	-90.34
2	2410.0	2410.00	-1.09	3.96	31.3%	-5.05	-1.09	150	0	-95.99	0	0	-5.73	94.90	4.64	-90.26
3	2420.0	2420.00	-0.65	4.18	32.9%	-4.83	-0.65	150	0	-95.99	0	0	-5.33	95.34	4.68	-90.66
4	2430.0	2430.00	-0.33	4.57	32.4%	-4.90	-0.33	150	0	-95.99	0	0	-4.94	95.66	4.61	-91.05
5	2440.0	2440.00	-0.49	4.64	30.7%	-5.13	-0.49	150	0	-95.99	0	0	-5.13	95.50	4.63	-90.86
6	2450.0	2450.00	0.07	4.51	36.0%	-4.44	0.07	150	0	-95.99	0	0	-4.42	96.06	4.49	-91.57
7	2460.0	2460.00	-0.50	4.42	32.2%	-4.92	-0.50	150	0	-95.99	0	0	-4.83	95.49	4.33	-91.16
8	2470.0	2470.00	-0.48	4.28	33.4%	-4.76	-0.48	150	0	-95.99	0	0	-4.74	95.51	4.26	-91.25
9	2480.0	2480.00	-0.27	4.13	36.3%	-4.40	-0.27	150	210	-95.99	0	0	-4.29	95.72	4.02	-91.70
10	2490.0	2490.00	0.02	4.46	36.0%	-4.44	0.02	150	210	-95.99	0	0	-4.40	96.01	4.42	-91.59
11	2500.0	2500.00	-0.32	4.07	36.4%	-4.39	-0.32	150	210	-95.99	0	0	-4.69	95.67	4.37	-91.30

7-2. 5100MHz ~ 5845MHz

Antenna Test Report (Passive-BW)

Date: **2018-02-22**

Comments:
This antenna is good. Yeah!

Test Point ID	Freq. (MHz)	TRP (dBm)	Gain (dBi)	Directivity (dBi)	Efficiency (%)	Efficiency (dB)	Max (dBm)	Theta of Max	Phi of Max	Min (dBm)	Theta of Min	Phi of Min	AVG (dBm)	Max/Min (dB)	Max/AVG (dB)	Min/AVG (dB)
12	5150.0	5150.00	2.35	4.76	57.4%	-2.41	2.35	90	210	-95.99	0	0	-2.56	98.34	4.91	-93.43
13	5170.0	5170.00	2.08	4.72	54.5%	-2.64	2.08	90	210	-95.99	0	0	-2.64	98.07	4.72	-93.35
14	5190.0	5190.00	1.68	4.68	50.1%	-3.00	1.68	90	210	-95.99	0	0	-2.90	97.67	4.58	-93.09
15	5210.0	5210.00	0.83	4.12	46.8%	-3.29	0.83	90	210	-95.99	0	0	-3.44	96.82	4.27	-92.55
16	5230.0	5230.00	0.73	3.96	47.5%	-3.24	0.73	90	210	-95.99	0	0	-3.51	96.71	4.24	-92.48
17	5250.0	5250.00	0.69	3.80	48.9%	-3.10	0.69	30	30	-95.99	0	0	-3.59	96.68	4.29	-92.40
18	5270.0	5270.00	2.00	4.57	55.3%	-2.57	2.00	90	210	-95.99	0	0	-2.56	97.99	4.55	-93.43
19	5290.0	5290.00	2.03	4.31	59.3%	-2.27	2.03	90	210	-95.99	0	0	-2.33	98.02	4.37	-93.65
20	5310.0	5310.00	2.51	4.33	65.8%	-1.82	2.51	90	210	-95.99	0	0	-2.01	98.50	4.52	-93.98
21	5330.0	5330.00	3.21	4.56	73.3%	-1.35	3.21	90	210	-95.99	0	0	-1.23	99.20	4.44	-94.76
22	5350.0	5350.00	3.59	4.83	75.3%	-1.23	3.59	90	210	-95.99	0	0	-1.30	99.58	4.90	-94.69
23	5370.0	5370.00	2.38	3.79	72.2%	-1.41	2.38	90	210	-95.99	0	0	-1.54	98.37	3.92	-94.45
24	5390.0	5390.00	2.46	4.28	65.7%	-1.83	2.46	120	210	-95.99	0	0	-1.92	98.45	4.38	-94.07
25	5410.0	5410.00	0.87	3.21	58.3%	-2.34	0.87	60	210	-95.99	0	0	-3.11	96.86	3.98	-92.88
26	5430.0	5430.00	0.94	3.76	52.3%	-2.81	0.94	120	210	-95.99	0	0	-3.51	96.93	4.46	-92.48
27	5450.0	5450.00	2.08	4.85	52.8%	-2.77	2.08	120	210	-95.99	0	0	-2.93	98.07	5.01	-93.06
28	5470.0	5470.00	1.96	4.70	53.2%	-2.74	1.96	120	210	-95.99	0	0	-2.97	97.95	4.93	-93.02
29	5490.0	5490.00	1.70	4.51	52.3%	-2.81	1.70	120	210	-95.99	0	0	-3.02	97.69	4.72	-92.97
30	5510.0	5510.00	1.37	4.44	49.3%	-3.07	1.37	60	0	-95.99	0	0	-3.49	97.36	4.86	-92.50
31	5530.0	5530.00	1.86	4.90	49.7%	-3.03	1.86	120	210	-95.99	0	0	-3.44	97.85	5.30	-92.55
32	5550.0	5550.00	1.92	4.70	52.8%	-2.77	1.92	120	210	-95.99	0	0	-3.04	97.91	4.96	-92.95
33	5570.0	5570.00	2.47	5.08	54.8%	-2.61	2.47	120	210	-95.99	0	0	-2.89	98.46	5.36	-93.10
34	5590.0	5590.00	3.97	5.85	64.8%	-1.88	3.97	120	210	-95.99	0	0	-2.19	99.96	6.16	-93.80
35	5610.0	5610.00	4.15	5.83	67.8%	-1.68	4.15	120	210	-95.99	0	0	-2.27	100.14	6.41	-93.72
36	5630.0	5630.00	4.13	5.99	65.2%	-1.86	4.13	120	210	-95.99	0	0	-2.03	100.12	6.16	-93.96
37	5650.0	5650.00	2.89	5.07	60.5%	-2.18	2.89	120	210	-95.99	0	0	-2.65	98.88	5.54	-93.34
38	5670.0	5670.00	3.32	5.71	57.7%	-2.39	3.32	120	210	-95.99	0	0	-2.56	99.31	5.88	-93.43
39	5690.0	5690.00	2.72	5.17	56.8%	-2.46	2.72	60	0	-95.99	0	0	-3.13	98.71	5.84	-92.86
40	5710.0	5710.00	3.45	5.61	60.9%	-2.16	3.45	60	0	-95.99	0	0	-2.57	99.44	6.02	-93.42
41	5730.0	5730.00	3.44	5.50	62.2%	-2.06	3.44	120	210	-95.99	0	0	-2.87	99.43	6.31	-93.12
42	5750.0	5750.00	4.17	5.87	67.7%	-1.70	4.17	90	210	-95.99	0	0	-2.45	100.16	6.63	-93.54
43	5770.0	5770.00	4.41	6.12	67.4%	-1.71	4.41	120	210	-95.99	0	0	-2.08	100.40	6.49	-93.91
44	5790.0	5790.00	4.13	6.18	62.3%	-2.06	4.13	120	210	-95.99	0	0	-2.60	100.12	6.73	-93.39
45	5810.0	5810.00	3.09	5.36	59.4%	-2.26	3.09	120	210	-95.99	0	0	-3.18	99.08	6.27	-92.81
46	5830.0	5830.00	2.67	5.10	57.2%	-2.43	2.67	90	210	-95.99	0	0	-3.21	98.66	5.88	-92.78
47	5850.0	5850.00	3.28	5.67	57.6%	-2.39	3.28	60	0	-95.99	0	0	-2.99	99.27	6.28	-93.00

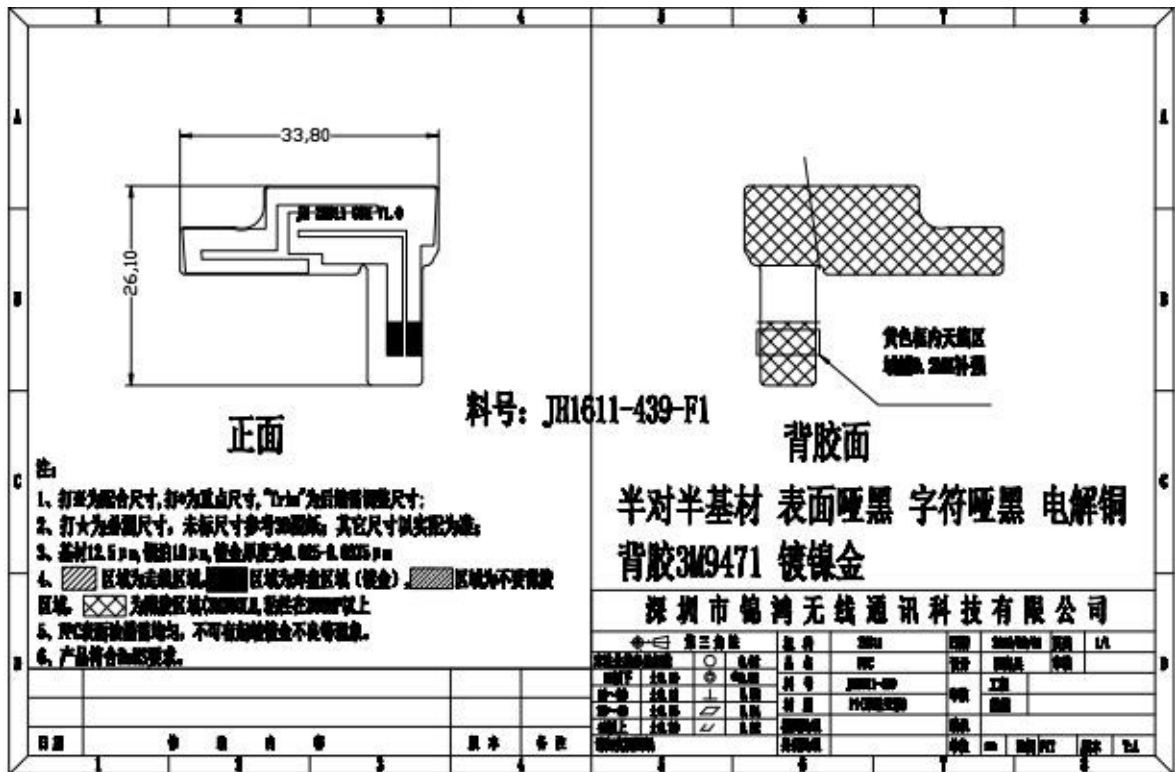
APULSETECH Co., Ltd

APPROVAL SHEET

a811			
NO	MODEL	FREQUENCY	
1	A811-PHONE	GSM	824 ~ 960 MHz
		DCS/PCS	1710 ~ 1990 MHz
		WCDMA	1920 ~ 2170 MHz

ANTENNA SPECIFICATION

1. Model Name : a811-PHONE
2. Antenna Type : PIFA Antenna
3. Features
 - For GSM/WCDMA ANTENNA
4. Antenna Drawing



5. Electrical Properties

No.	ELECTRICAL DATA	SPECIFICATIONS		REMARK
5.1	FREQUENCY RANGE	GSM	824 ~ 960 MHz	
		DCS/PCS	1710 ~ 1990 MHz	
		WCDMA	1920 ~ 2170 MHz	
5.2	IMPEDANCE	50 Ω NOMINAL		6.VSWR
		GSM	Less than 1:4.0	

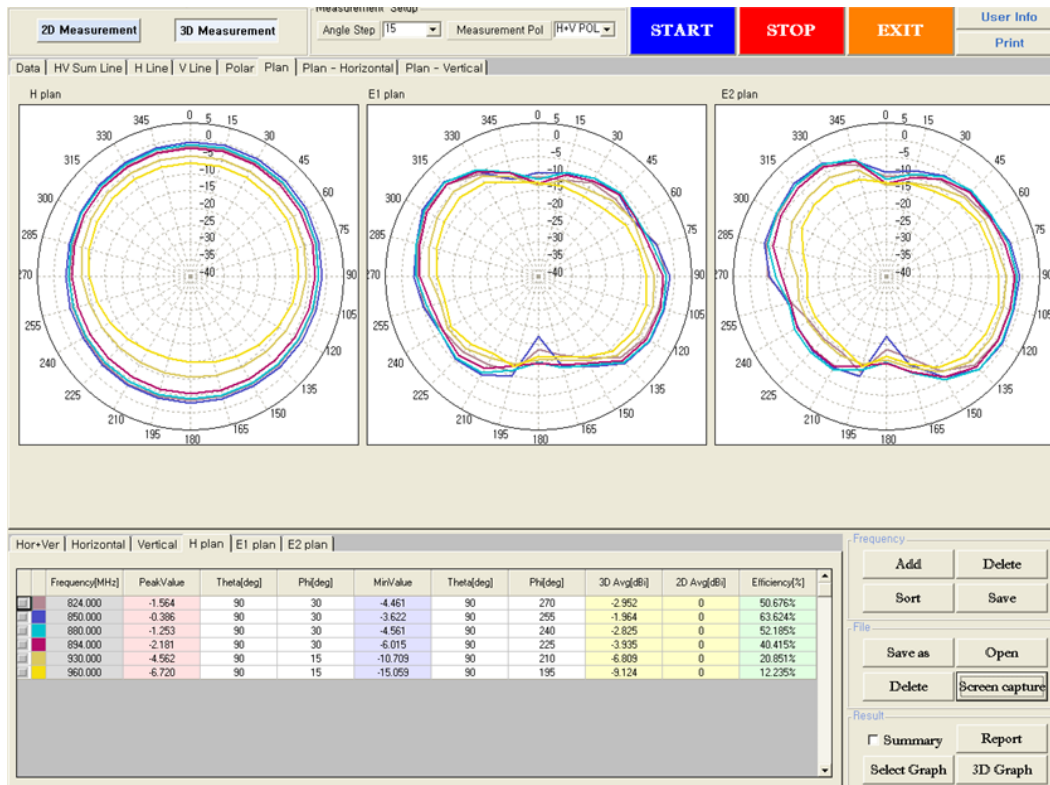
5. 3	V. S. W. R	DCS/PCS	Less than 1:4.4	참조
		WCDMA	Less than 1:4.9	
5. 4	PEAK(Min)	GSM	-6.7dBi	7.Radiation Pattern
		DCS/PCS	0.2dBi	
		WCDMA	0.2dBi	
5. 5	RADIATION PATTERN	OMNI – DIRECTIONAL		
5. 6	POLARIZATION	LINEAR		

6. VSWR

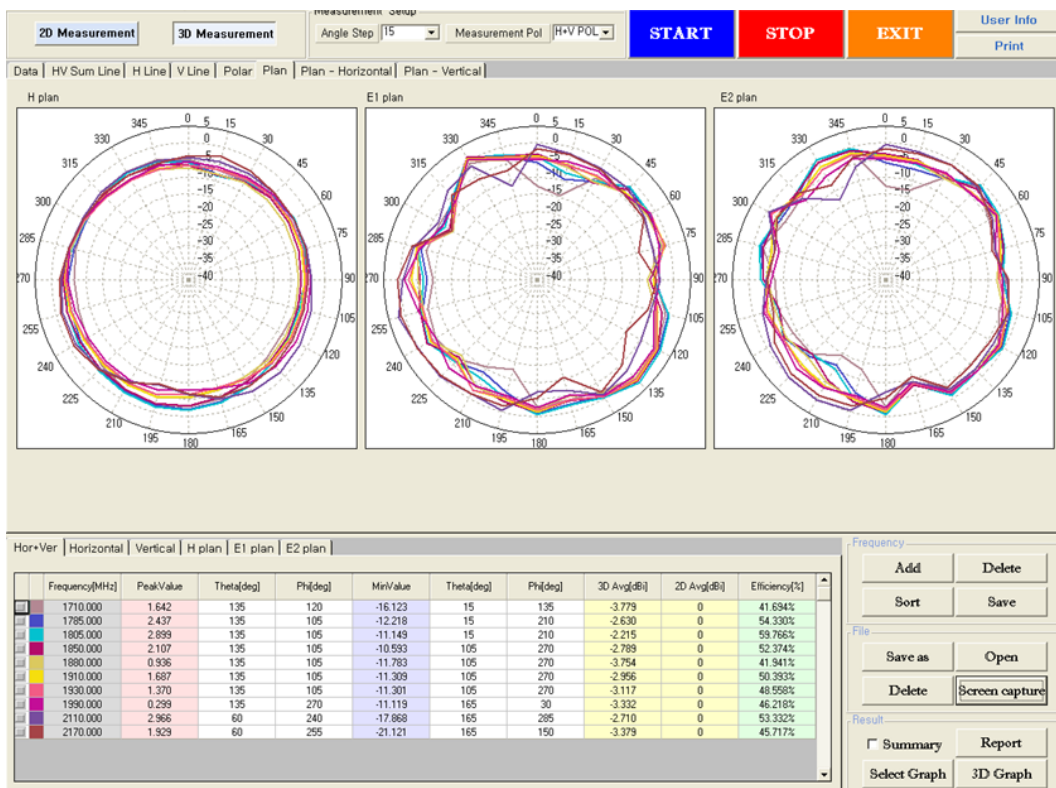


7. Radiation Pattern

1. RADIATION PATTERN(GAIN)_GSM



2. RADIATION PATTERN(GAIN)_DCS/PCS/WCDMA



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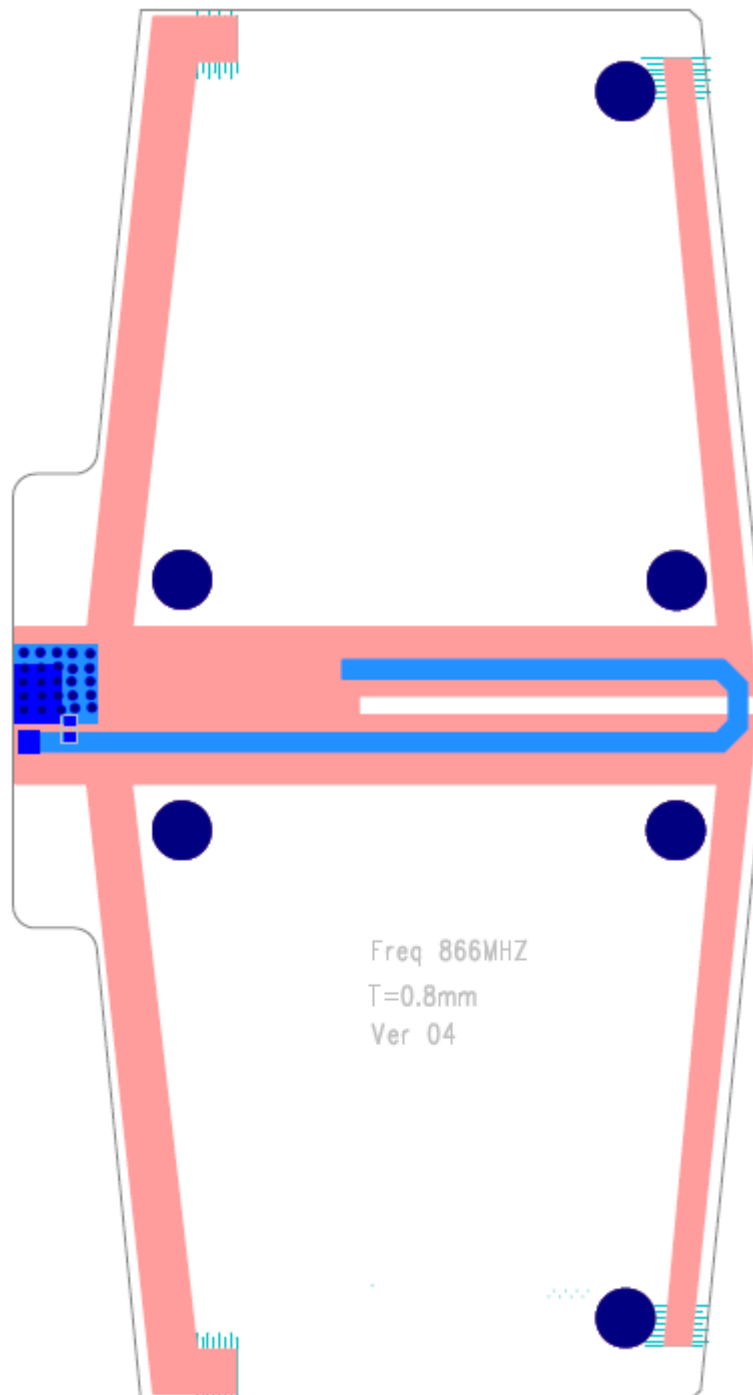
APPROVAL SHEET

Linear Polarized Antenna	
MODEL	FREQUENCY
Alpha-RFID-UHF	902MHz ~ 928MHz



ANTENNA SPECIFICATION

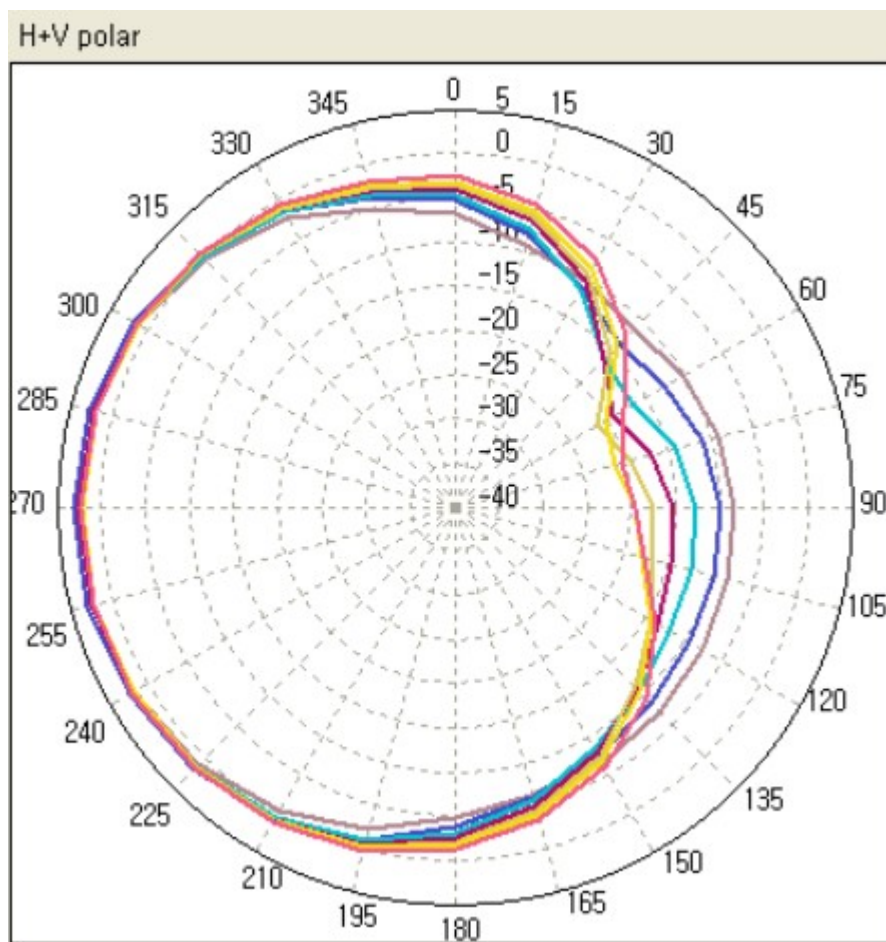
1. Model Name : Alpha-RFID-UHF
2. Antenna Type : Linear Polarized Antenna
3. Features
 - For UHF Band RFID Application
 - Wide Bandwidth
4. Antenna Drawing



5. Electrical Properties

No.	ELECTRICAL DATA	SPECIFICATION	REMARK
1	Frequency Range	902MHz ~ 928MHz	
2	Impedance	50Ω	
3	V.S.W.R	Less Than 1:2.0	
4	Gain	MAX 3.0dBi	
5	Radiation Pattern	Directional	
6	Polarization	Linear	

6. Radiation Pattern



Hor+Ver | Horizontal | Vertical

	Frequency[MHz]	PeakValue	Theta[deg]	Phi[deg]	MinValue	Theta[deg]	Phi[deg]	3D Avg[dBi]	2D Avg[dBi]	Efficiency[%]
	900.000	2.582	90	270	-11.415	90	45	0	-1.205	75.772%
	905.000	3.056	90	255	-13.758	90	45	0	-0.639	86.311%
	910.000	2.512	90	270	-16.597	90	60	0	-1.034	78.810%
	915.000	2.504	90	255	-19.480	90	60	0	-0.784	83.491%
	920.000	2.362	90	255	-21.316	90	60	0	-0.670	85.701%
	925.000	2.205	90	255	-21.210	90	75	0	-0.680	85.515%
	930.000	2.348	90	255	-20.307	90	75	0	-0.316	92.975%