Shanghai Radiate Communication Electronics Co., Ltd

Antenna Approval Sheet

Customer	**BYD COMPANY LIMITED Co., Ltd.**		
Customer P/N			
Model	**MIFI**		
P/N			
Description	**Main 1（FPC）**		
Frequency	**GSM 850/GSM900/ GSM 1800/ GSM 1800, WCDMA B1/2/4/5/8 LTE FDD B1/2/3/4/5/7/8/12/17/18/19/20, LTE TDD B38/39/40/41**		
Initial Date	**2017-07-28**		
Revision	**A**		
Author	**RF Engineer**	**ME**	
	John Li	**Jiliang Zhou**	
Tel.	**15618549802**	**18721206524**	
Approval	**R&D**	**PM**	**QE**

Customer Signature

Catalog

1. Summary

This is the main antenna approval sheet
Working band is GSM 850/GSM900/ GSM 1800/ GSM 1800, WCDMA B1/2/4/5/8
LTE FDD B1/2/3/4/5/7/8/12/17/18/19/20, LTE TDD B38/39/40/41

2. Antenna Structure

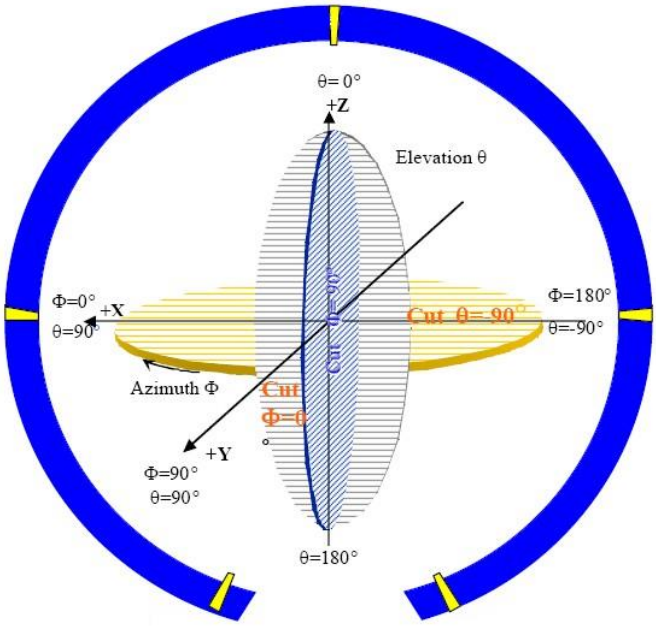
FPC

3. Device Conditions

Picture 1 MIFI photograph

4. Test Environment

Agilent E5071C VNA is used to test return loss.
SATIMO SG24 chamber is used to test antenna efficiency and radiation pattern.



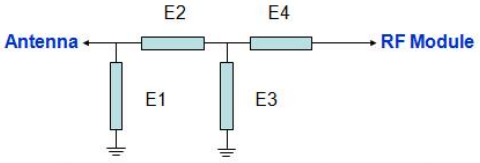
Picture 2 SATIMO SG24 chamber coordinate system

5. Antenna Test Results

5.1 *Antenna Photos*

Picture 3 Main antenna photograph

5.2 Matching Network

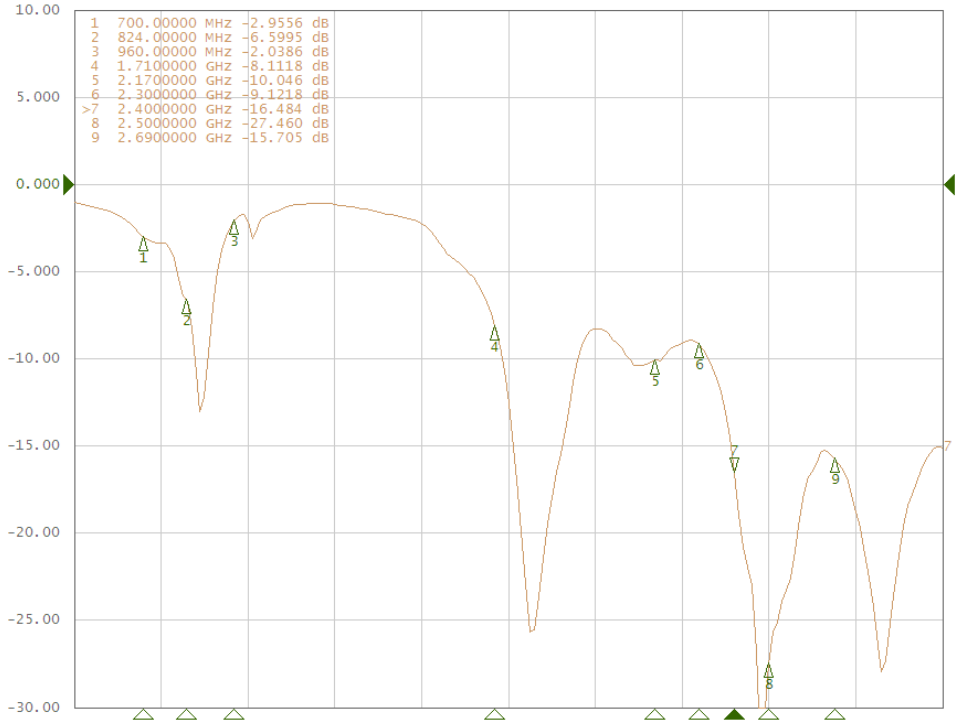


Element	Value
E1(0201)	7.5NH
E2(0201)	0Ω
E3(0201)	0.75PF
E4(0201)	0Ω

Picture 6 Matching network of main antenna

5.3 Return Loss(S11)

Frequency(MHz)	S11(dB)
700	-2.95
824	-6.59
960	-2.03
1710	-8.11
2170	-10.04
2300	-9.12
2500	-27.46
2690	-15.70



Picture 7 Main antenna reflection coefficients(S11)

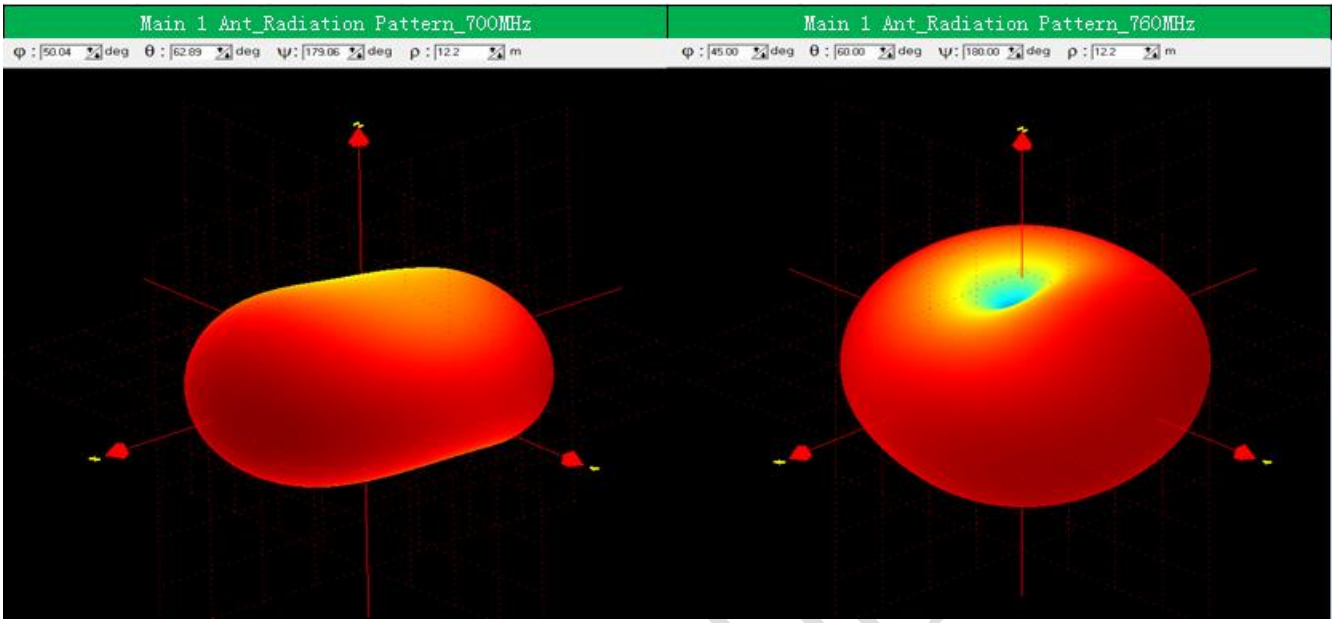
5.4 Efficiency

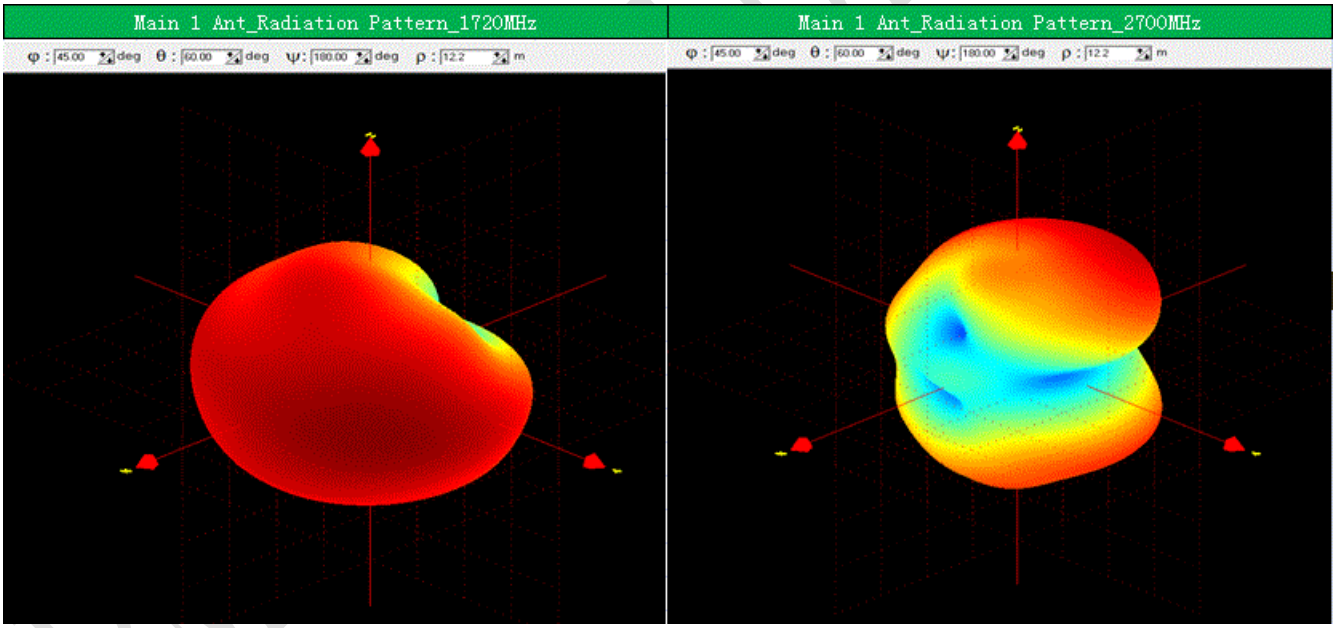
Freq (MHz)	Effi (dB)	Effi (%%)	Freq (MHz)	Effi (dB)	Effi (%%)	Freq (MHz)	Effi (dB)	Effi (%%)
700	-17.14	1.93	1840	-4.42	36.12	2280	-4.07	39.15
720	-16.21	2.39	1860	-4.77	33.35	2300	-4.24	37.65
740	-15.95	2.54	1880	-4.77	33.31	2320	-4.17	38.24
760	-16.09	2.46	1900	-4.81	33.01	2340	-4.37	36.58
780	-15.75	2.66	1920	-4.86	32.66	2360	-3.93	40.48
800	-14.67	3.41	1940	-4.93	32.10	2380	-4.03	39.51
820	-11.93	6.41	1960	-5.28	29.67	2400	-3.33	46.47
840	-9.86	10.33	1980	-5.12	30.75	2420	-3.55	44.19
860	-8.35	14.61	2000	-5.06	31.18	2440	-2.79	52.59
880	-8.19	15.16	2020	-4.79	33.16	2460	-3.70	42.62
900	-7.79	16.63	2040	-4.67	34.12	2480	-2.53	55.89
920	-8.43	14.35	2060	-4.02	39.59	2500	-2.93	50.95
940	-9.02	12.52	2080	-3.83	41.37	2520	-2.82	52.20
960	-9.71	10.68	2100	-3.31	46.66	2540	-3.07	49.28
1700	-4.01	39.75	2120	-3.36	46.10	2560	-2.79	52.64
1720	-3.55	44.11	2140	-2.98	50.35	2580	-3.02	49.88
1740	-3.57	43.95	2160	-3.43	45.34	2600	-2.65	54.28
1760	-3.41	45.55	2180	-3.15	48.42	2620	-2.61	54.79
1780	-3.80	41.73	2200	-3.31	46.61	2640	-2.60	54.89
1800	-3.75	42.19	2220	-3.51	44.58	2660	-2.43	57.16
1820	-4.18	38.20	2240	-3.80	41.69	2680	-2.52	56.00
			2260	-3.87	40.98	2700	-2.16	60.85

5.5 Gain

Freq (MHz)	Gain (dBi)	Freq (MHz)	Gain (dBi)	Freq (MHz)	Gain (dBi)
700	-14.54	1840	-0.33	2280	1.77
720	-13.69	1860	-1.26	2300	1.77
740	-13.85	1880	-1.58	2320	1.75
760	-13.67	1900	-2.15	2340	1.04
780	-13.53	1920	-2.27	2360	1.07
800	-11.48	1940	-2.42	2380	0.76
820	-8.20	1960	-2.50	2400	1.60
840	-6.91	1980	-1.73	2420	1.48
860	-5.42	2000	-1.21	2440	2.10
880	-5.12	2020	-0.57	2460	1.01
900	-4.65	2040	-0.23	2480	2.87
920	-5.51	2060	0.38	2500	2.55
940	-6.32	2080	0.33	2520	2.49
960	-7.06	2100	0.46	2540	2.39
1700	-0.60	2120	-0.27	2560	2.59
1720	0.19	2140	-0.10	2580	2.21
1740	-0.01	2160	-0.55	2600	2.53
1760	0.52	2180	0.47	2620	2.27
1780	0.35	2200	0.79	2640	2.00
1800	0.66	2220	1.23	2660	2.20
1820	0.28	2240	1.31	2680	2.11
		2260	1.66	2700	2.57

5.6 Radiation Pattern





5.7 Active data

Band	Channel	spec TRP	TIS	Band	Channel	spec TRP	TIS	Band	Channel	spec TRP	TIS
GSM 850	128	20.48		LTE 1	18050	17.22		LTE 39	38350	16.33	
	190	21.88			18300	17.21			38450	16.68	
	251	20.61	-89.87		18550	17.04	-91.49		38550	16.82	-89.37
GSM900	975	20.71		LTE 2	18650	16.85		LTE 40	38750	17.52	
	38	21.12			18900	16.97			39150	17.47	
	124	20.61	-90.45		19150	16.62	-94.13		39550	16.81	-73.28
GSM DCS	512	21.74		LTE 3	19250	16.58		LTE 41	40340	17.85	
	698	21.40			19575	17.14			40620	17.95	
	885	22.98	-104.61		19900	17.25	-90.66		41140	17.01	-88.74
GSM PCS	512	22.60		LTE 4	20000	16.81		LTE 17	23780	7.42	
	661	22.62			20175	17.45			23790	7.76	
	810	22.89	-104.50		20350	17.57	-91.89		23800	7.77	
WCDMA I	10562	18.17		LTE 5	20450	8.02		LTE 12	23060	7.63	
	10700	17.40			20525	11.45			23095	7.92	
	10838	17.29	-107.82		20600	11.69	-83. 53		23130	7.98	-80.95
WCDMA II	9662	17.35		LTE 7	20800	17.99		LTE 18	23900	7.42	
	9800	17.59			21100	17.46			23925	9.67	
	9938	18.32	-106.17		21400	17.08	-83.58		23950	10.44	-75.94
WCDMA B4	1537	17.80		LTE 8	21500	11.86		LTE 19	24050	9.28	
	1638	17.35			21625	12.82			24075	11.49	
	1738	17.08	-106.93		21750	12.81	-82.81		24100	9.83	-81.13
WCDMA B5	4357	11.72		LTE 20	24200	11.30					
	4408	13.27			24300	11.18					
	4458	13.64	-90.87		24400	11.67	-81.78				
WCDMA B8	2937	13.32		LTE 38	37850	16.10					
	3013	13.20			38000	17.87					
	3088	12.76	-96.12		38150	17.81	-89.15				