TW Think Wireless, Inc.

Dual Band Mobile Phone Repeater

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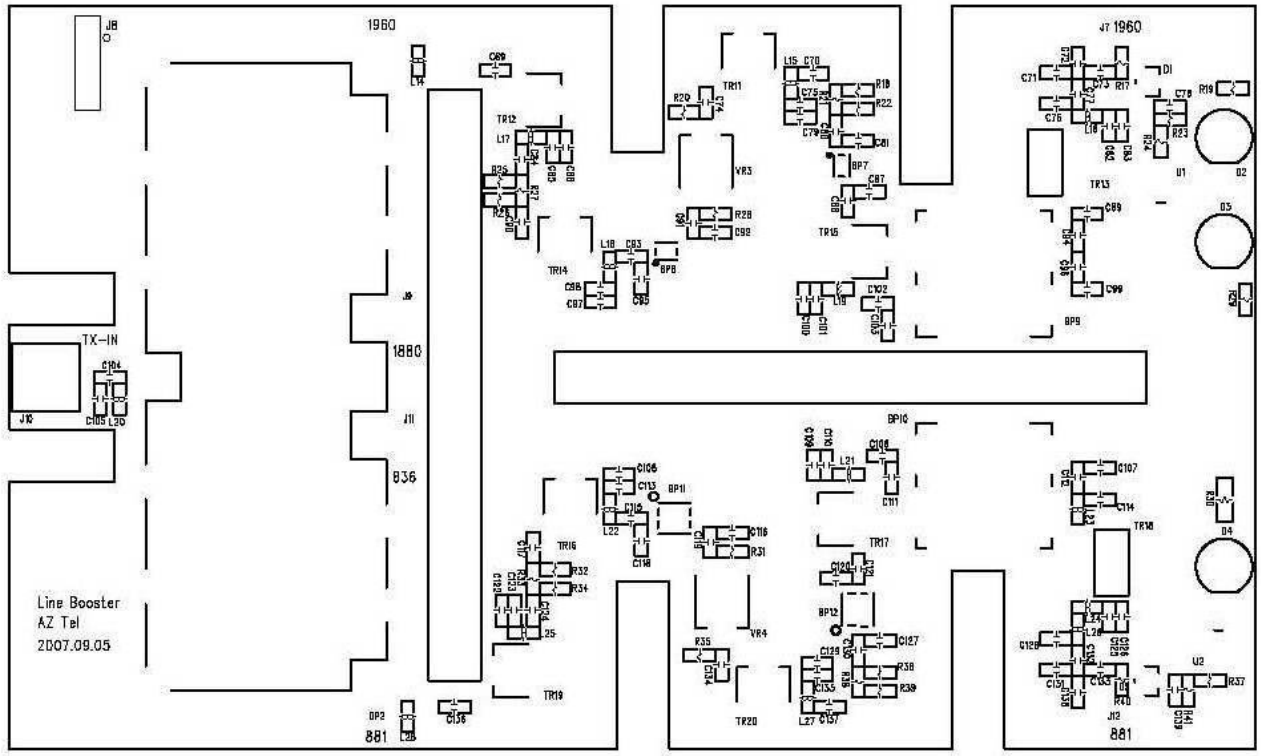
1. Specification

No.	Parameters		Specifications		Remarks
			Downlink	Uplink	
1	Frequency Range	US-1900	1930~1990 MHz	1850 ~ 1910 MHz	B.W :60MHz
		US-800	869 ~ 894 MHz	824 ~ 849 MHz	B.W :25MHz
2	Input Power Range		-65 ~ -55dBm	-102 ~ -60dBm	
3	Output Power	US-1900	+7dBm (Max.)		@+4dBm/ Tone
		US-800	+10dBm (Max.)		@-3dBm/ FA
4	Max. Gain	US-1900	60dB ±2dB		
		US-800	65dB ±2dB		
5	Gain Flatness	US-1900	≤ 10dB (peak to peak)		Customizable Upon Request
		US-800	≤ 5dB (peak to peak)		-
6	IMD Products (ETS300 6094 /GSM11.26)	US-1900	≤ -36dBm/3KHz		In Band
			9KHz~1GHz : ≤ -36dBm/3KHz		Out Band
			1GHz~12.75GHz : ≤ -30dBm/3KHz		
7	Spurious Emission	US-800	≥45 dB @ fo±750KHz (Δmarker : 29dB), RBW : 30KHz ≥60dB @ fo±1.98MHz (Δmarker: 44dB), RBW : 30KHz		
8	Noise Figure		≤ 9.0dB		
9	Tx/Rx Isolation		≥ 80dB		
10	Time Delay		< 3.0㎲		
11	Impedance		50Ω		
12	RF Connector		SMA-Type (Female)		
13	Power Supply		DC 5V/ 1.7A		External Adapter
14	Operating Temperature		-5℃ ~ +60℃		
15	Operating Humidity		5% ~ 85%		
16	Dimension (WxHxD)		125mm x 104mm x 43 mm		Without Connector
17	Application		Indoor		

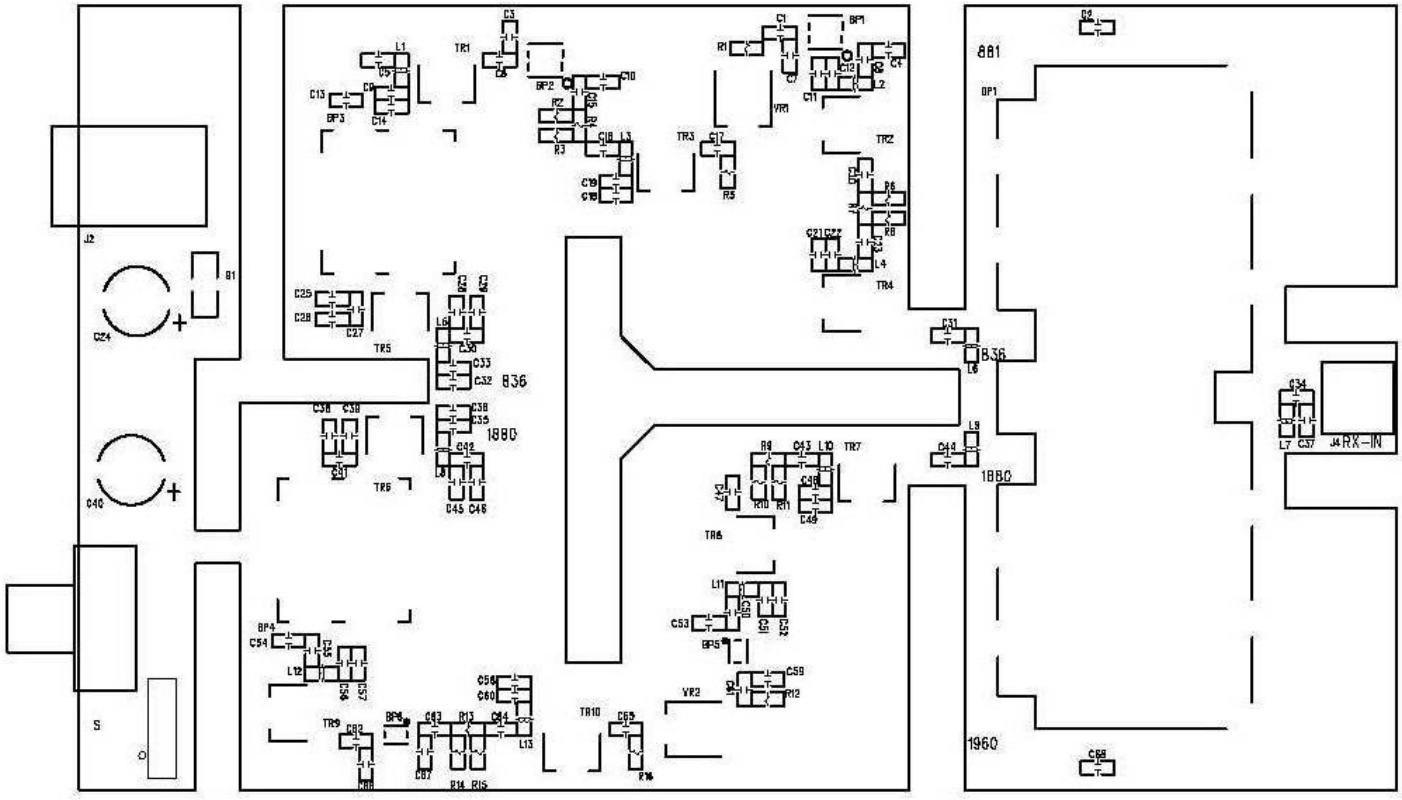
2 PCB Layout with part position

2.1 Down Link (US-800, US-1900)



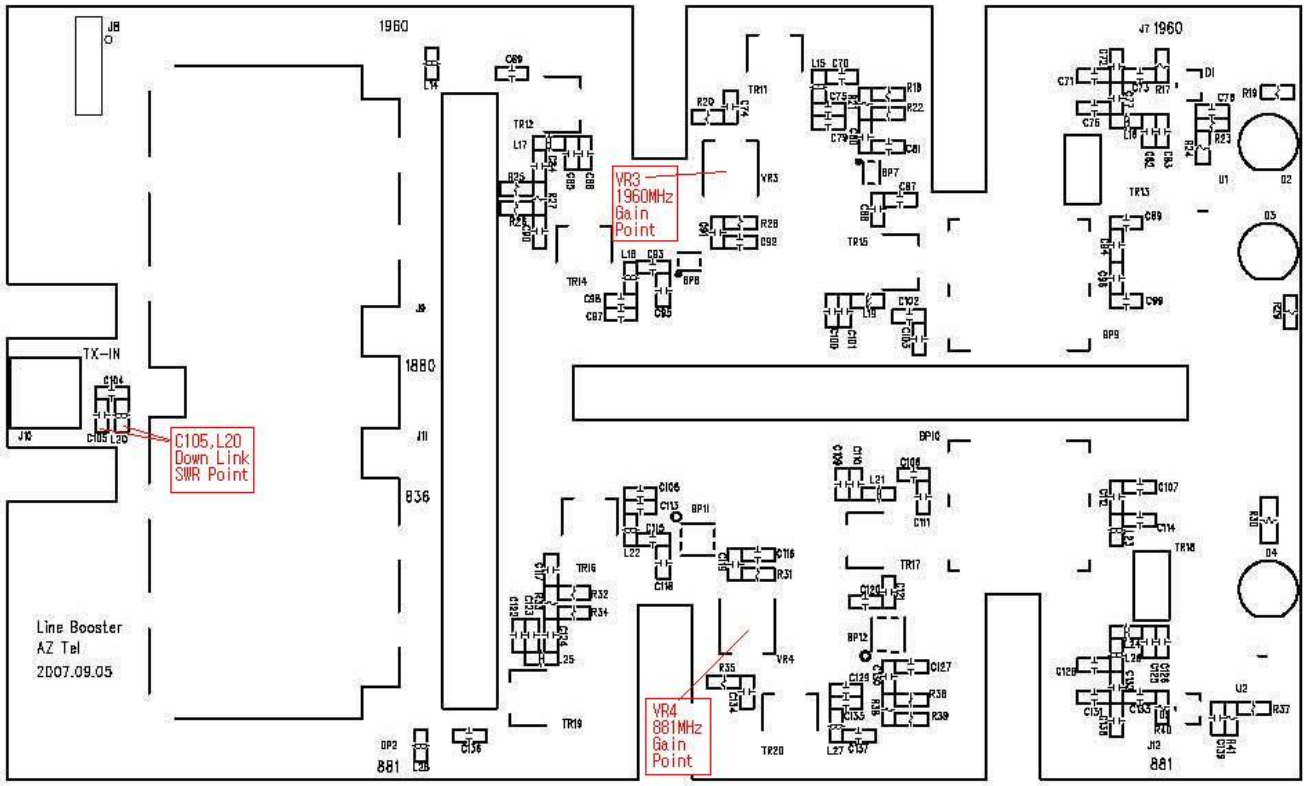
[Figure 1] PCB Layout: Down Link (US-800, US-1900**)**

2.2 UP Link (US-800, US-1900)



[Figure 2] PCB Layout: Up Link (US-800, US-1900)

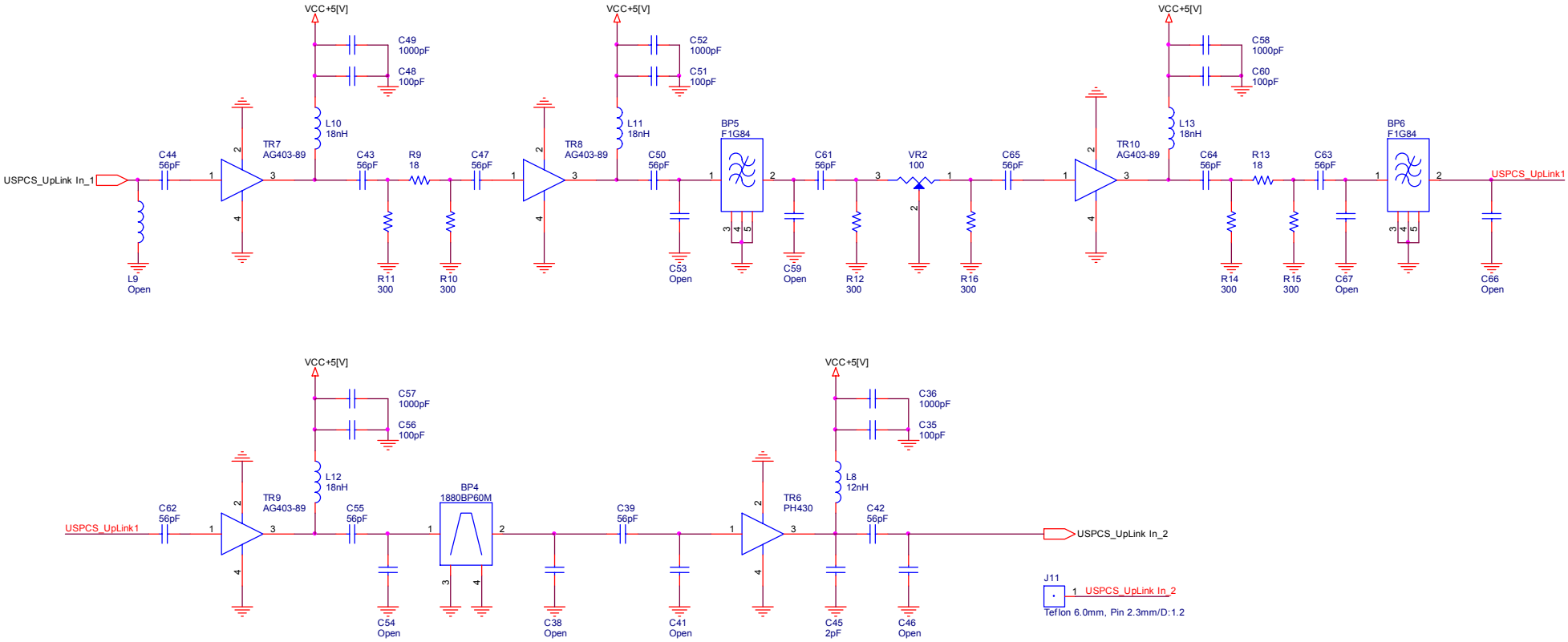
3 Tuning Point



[Figure 3] Tuning Point

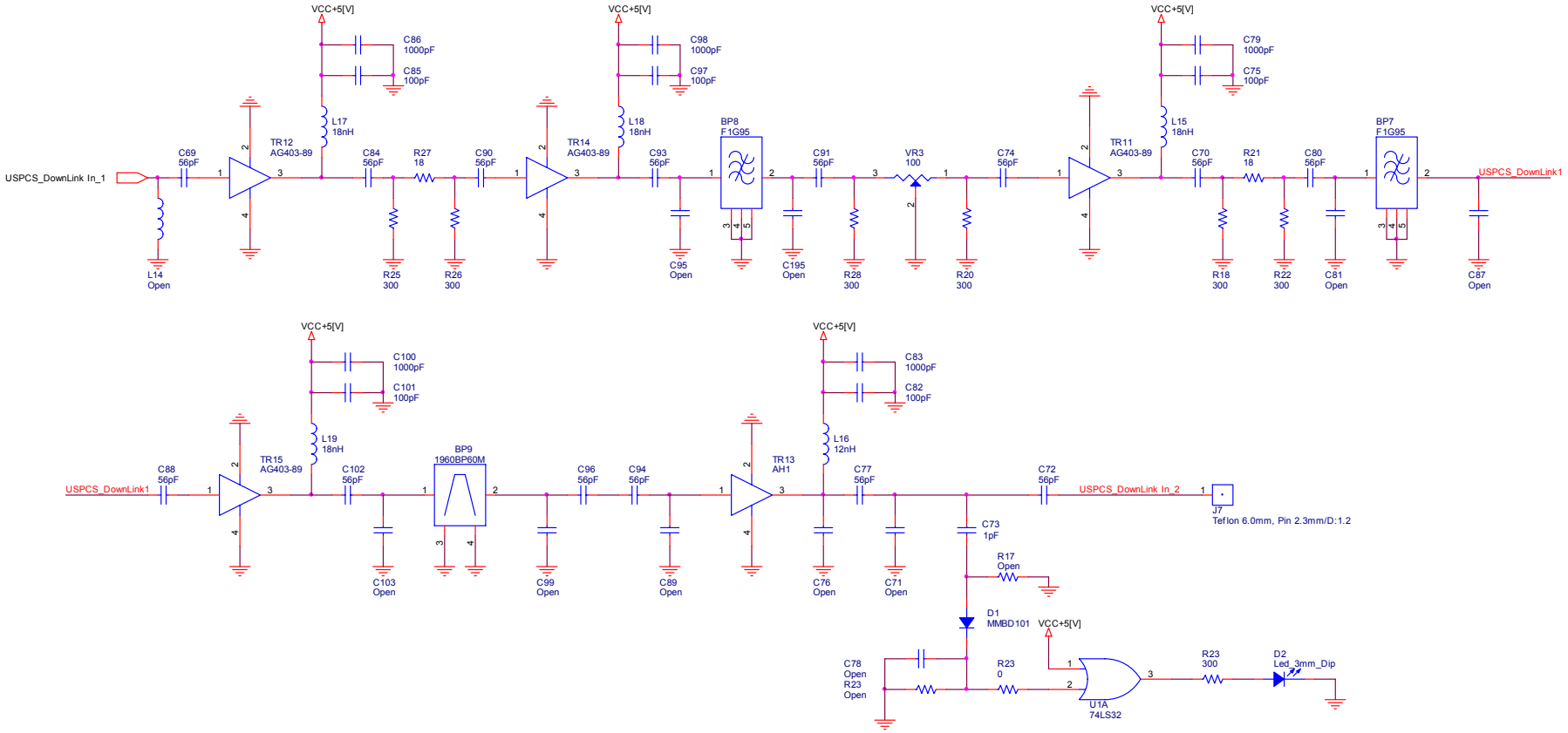
4. Circuit Diagram

4.1 US-1900 (Up Link)



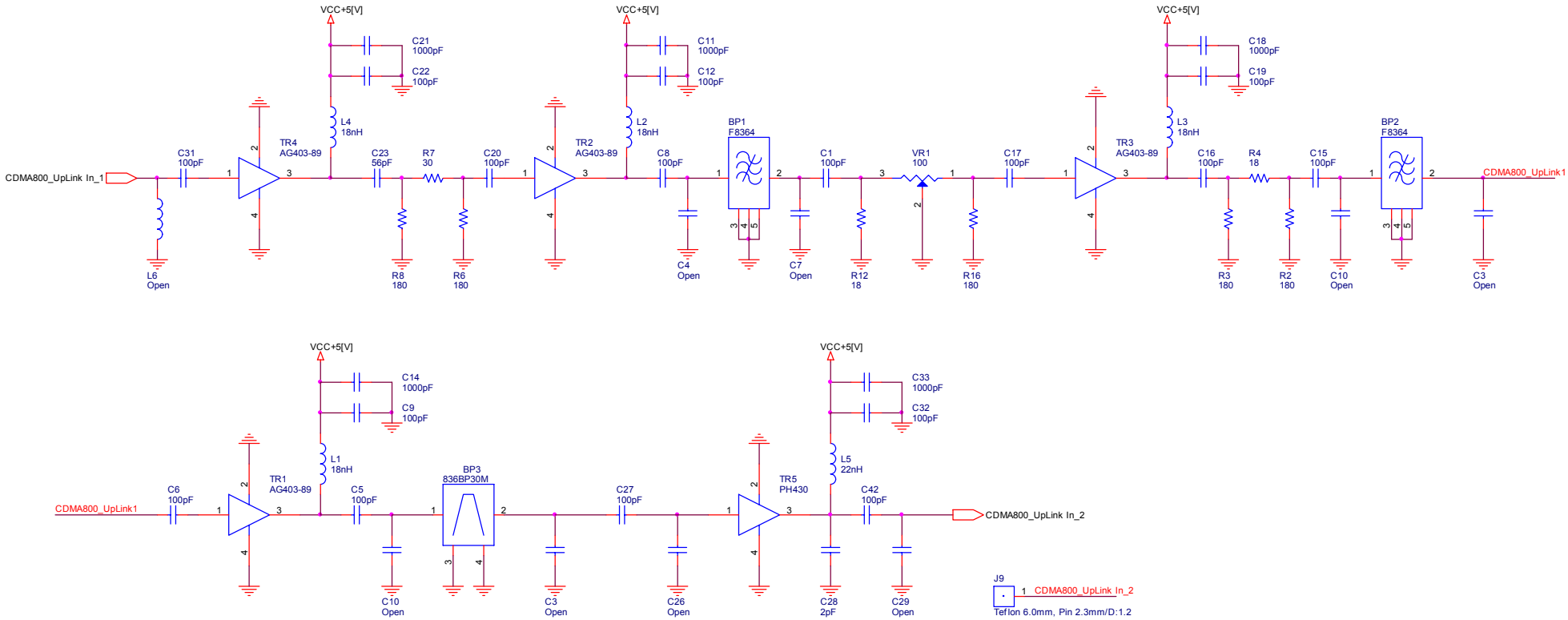
[Figure 4] Circuit US-PCS (Up Link)

4.2 US-1900 (Down Link)



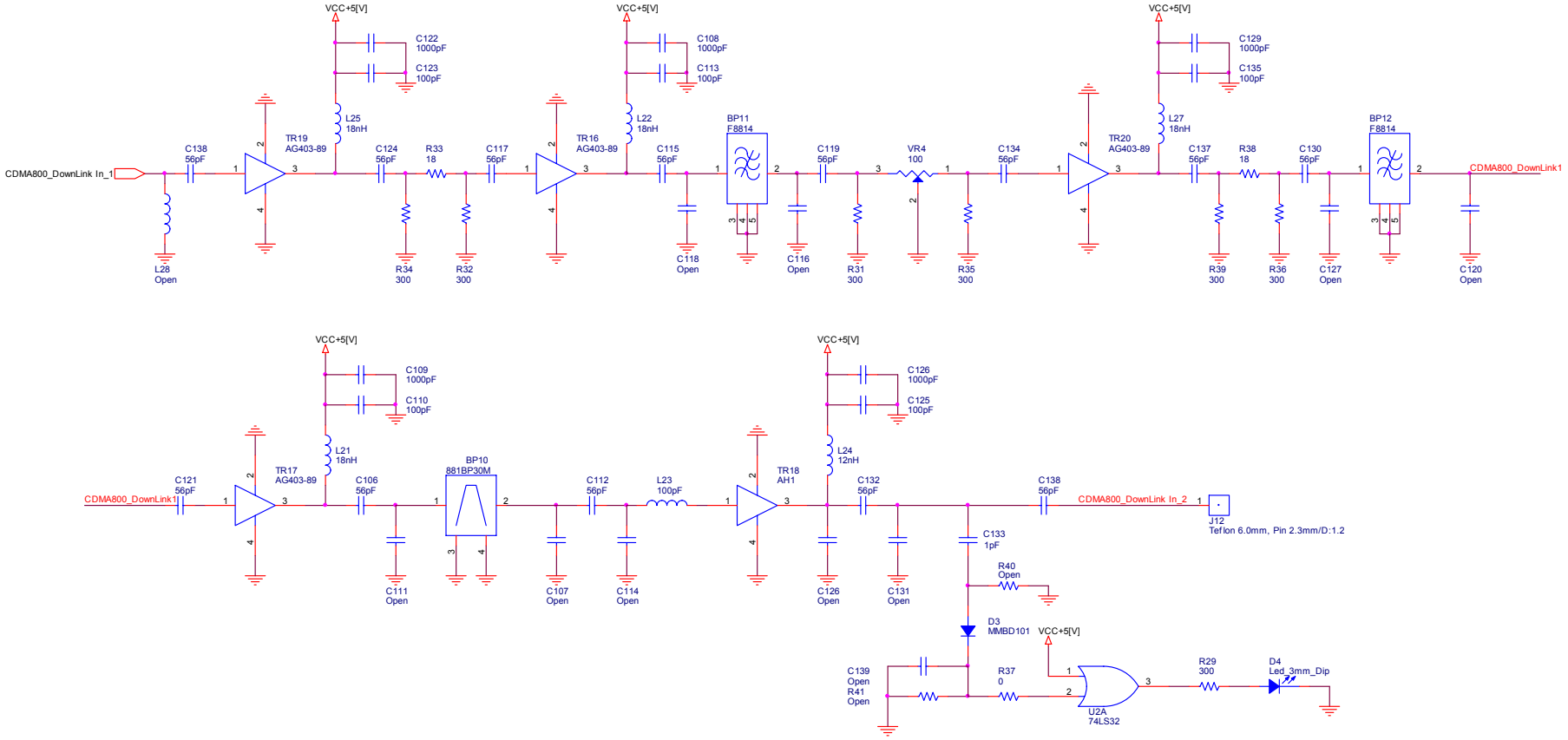
[Figure 5] Circuit US-1900 (Down Link)

4.3 US-800(Up Link)



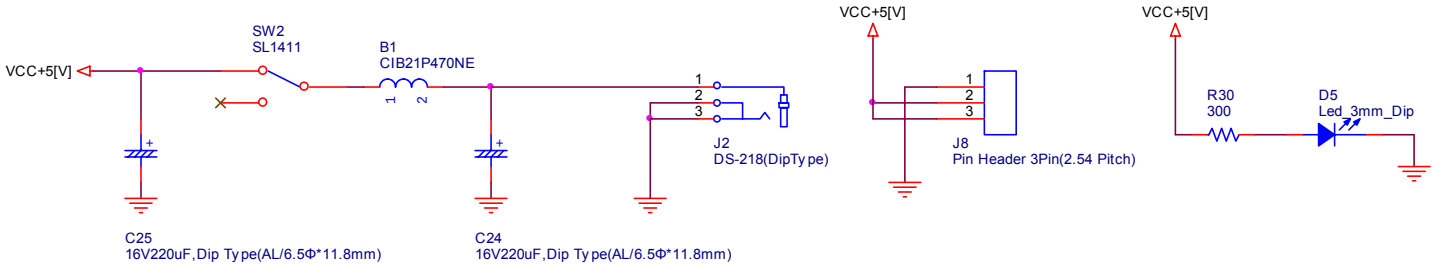
[Figure 6] Circuit US-800 (Up Link)

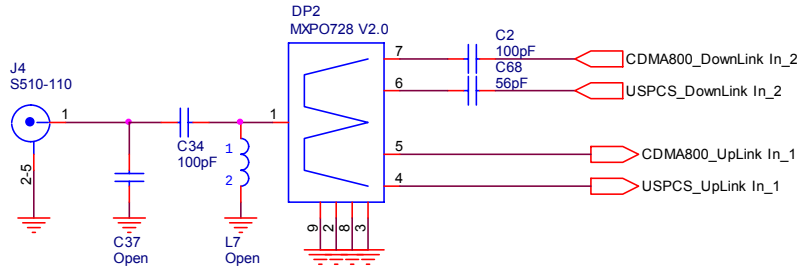
4.4 US-800 (Down Link)



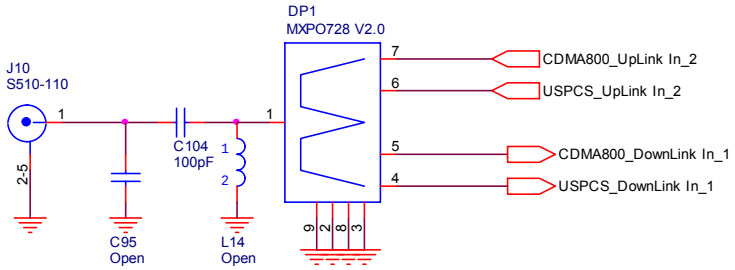
[Figure 7] Circuit US-800 (Down Link)

4.5 Multiplexer & Power





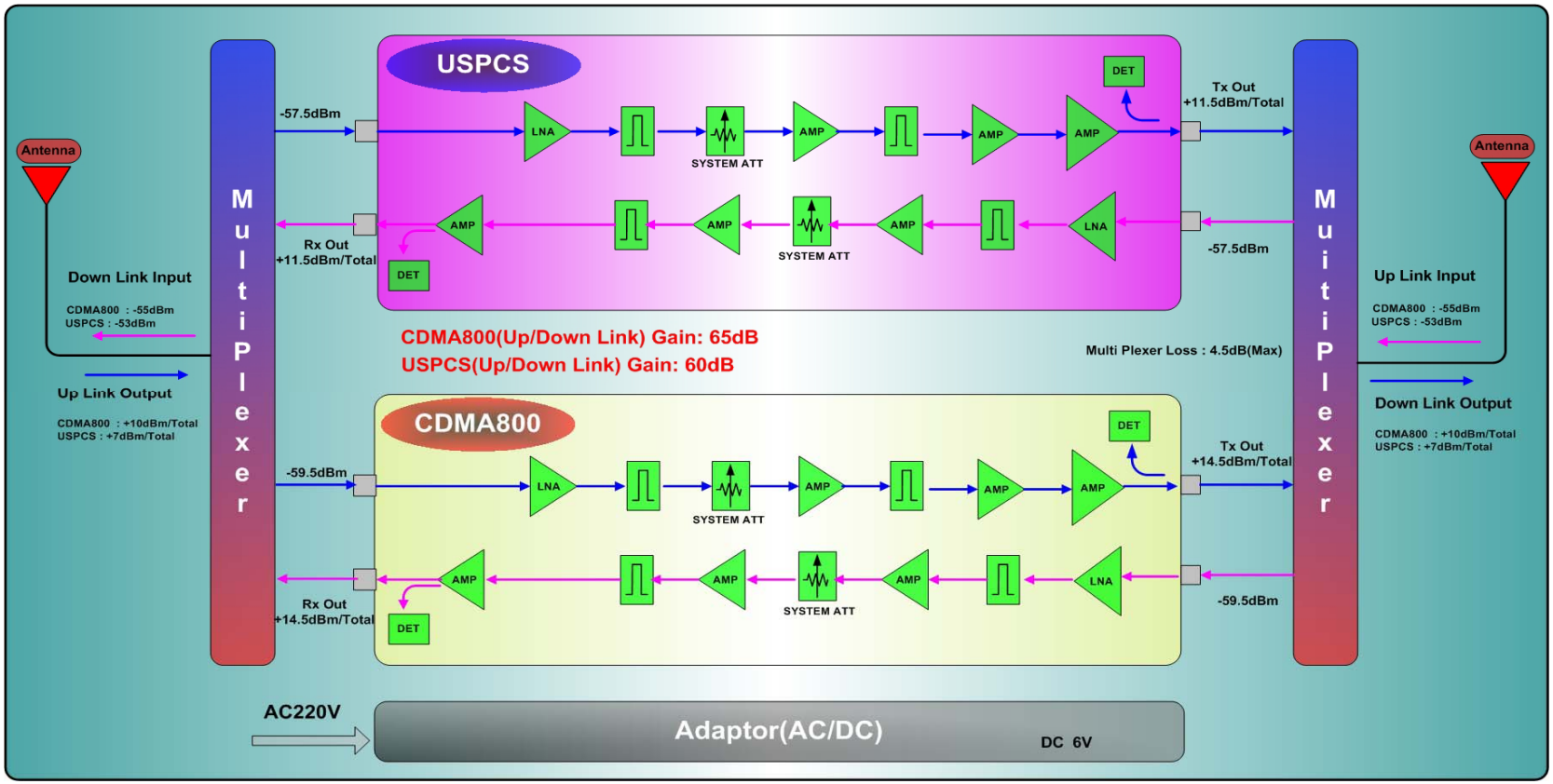
In Door Antenna (Down Link Output)



Out Door Antenna (Up Link Output)

[Figure 8] Circuit Multiplexer & Power

5. Block Diagram



[Figure 9] Block Diagram

6. Part List

NO	Description	Part	Q'TY	Reference No.
1	MMIC	AG403-89	16	TR1,TR2,TR3,TR4,TR7,TR8,TR9,TR10,TR11,TR12,TR14,TR15,TR16, TR17,TR19,TR20
2	MMIC	AH1	2	TR13,TR18
3	MMIC	PH430	2	TR5,TR6
4	AND GATE	7S32	2	U1,U2
5	LED	LED_3mm_Dip	3	D2,D4,D5
6	Schottky Diode	MMBD101	2	D1,D3
7	Multiplexer	MXPO728 V2.0(CWMD)	2	DP1,DP2
8	BPF	1960BP60M	1	BP9
9	BPF	1880BP60M	1	BP4
10	BPF	881BP30M	1	BP10
11	BPF	836BP30M	1	BP3
12	RF Saw	F1G95	2	BP7,BP8
13	RF Saw	F1G84	2	BP5,BP6
14	RF Saw	F8814	2	BP11,BP12
15	RF Saw	F8364	2	BP1,BP2
16	DC JACK	DS-218(Dip Type)	1	J2
17	SLIDE SWITCH	SL1411	1	SW2

18	CAP. CHIP 1 pF	0603N1R0C500LT	2	C73,C133
NO	**Description**	**Part**	**Q'TY**	**Reference No.**
19	CAP. CHIP 2 pF	0603N2R0C500LT	2	C28,C45
20	CAP. CHIP 56 pF	0603N560C500LT	40	C23,C39,C42,C43,C44,47,C50,C55,C61,C62,C63,C64,C65,C68,C69,C70,C72,C74,C77, C80,C84,C88,C90,C91,C93,C94,C96,C102,C106,C112,C115,C117,C119,C121,C124,C130, C132,C134,C137,C138
21	CAP. CHIP 100 pF	0603N101C500LT	35	C1,C2,C5,C6,C8,C9,C12,C15,C16,C17,C19,C20,C22,C27,C31,C32,C34,C35,C42,C48, C51,C56,C60,C75,C82,C85,C97,C101,C104, C110,C113,C123,C125,C135,L23
22	CAP. CHIP 1000 pF	0603N102C500LT	20	C11,C14,C18,C21,C33,C36,C49,C52,C57,C58,C79,C83,C86,C98,C100,C108,C109,C122, C126,C129
23	Capacitor	220uF/16V Dip Type (AL/6.5Φ *11.8mm)	2	C24,C25
24		Open	44	C3,C4,C7,C10,C26,C29,C37,C38,C41,C46,C53,C54,C59,C66,C67,C71,C76,C78,C81,C87, C89,C95,C99,C103,C107,C111,C114,C116,C118,C120,C126,C127,C131,C139,C195,R17, R23,R40,R41,L6,L7,L9,L14,L28
25	RES. CHIP 0Ω	RM06JTN0	2	R23,R37
26	RES. CHIP 18Ω	RM06JTN180	8	R4,R9,R12,R13,R21,R27,R33,R38
27	RES. CHIP 30Ω	RM06JTN300	1	R7
28	RES. CHIP 180Ω	RM06JTN181	5	R2,R3,R6,R8,R16
29	RES. CHIP 300Ω	RM06JTN301	21	R10,R11,R12,R14,R15,R16,R18,R20,R22,R23,R25,R26,R28,R29,R30,R31,R32,R34,R35,R

				36, R39
NO	**Description**	**Part**	**Q'TY**	**Reference No.**
29	RES. CHIP 300Ω	RM06JTN301	21	R10,R11,R12,R14,R15,R16,R18,R20,R22,R23,R25,R26,R28,R29,R30,R31,R32,R34,R35, R36, R39
30	Trimming Potentiometer 100Ω	3314J-1-101-E	4	VR1,VR2,VR3,VR4
31	Chip Bead	CIB21P470NE	1	B1
32	Chip Ind. 12nH	CI-B1608-120KJT	3	L8,L16,L24
33	Chip Ind. 18nH	CI-B1608-180KJT	16	L1,L2,L3,L4,L10,L11,L12,L13,L15,L17,L18, L19,L21,L22,L25,L27
34	Chip Ind. 22nH	CI-B1608-220KJT	1	L5
35	Connector	Pin Header 3Pin(2.54 Pitch)	1	J8
36	Connector	S510-110 RF SMA Female	2	J4,J10
37	Connector	Terfion 6.0mm, Pin 2.3mm/D:1.2	4	J7,J9,J11,J12
38	PCB	EPOXY MULTI	2	
39	CASE	AL	1	125mm x 104mm x 43 mm