

BZ5DTR10SC
Application for FCC Certification
10 Watt Digital Television Translator

Schematics/ Tune-up Procedure/Active Devices:

Schematics:

Schematics for each of the assemblies may be found as figures in their respective PUBs.

Tuneup Procedure:

The transmitter amplifier, its metering and protection circuitry is completely broadband across the respective band of operation. A transmitter configured for VHF Band III will cover all channels within this band with no need for adjustments (except for replacement of the output mask filter). Similarly, a transmitter configured for VHF Band I will cover all channels within this band. The output devices are the same for both bands of operation.

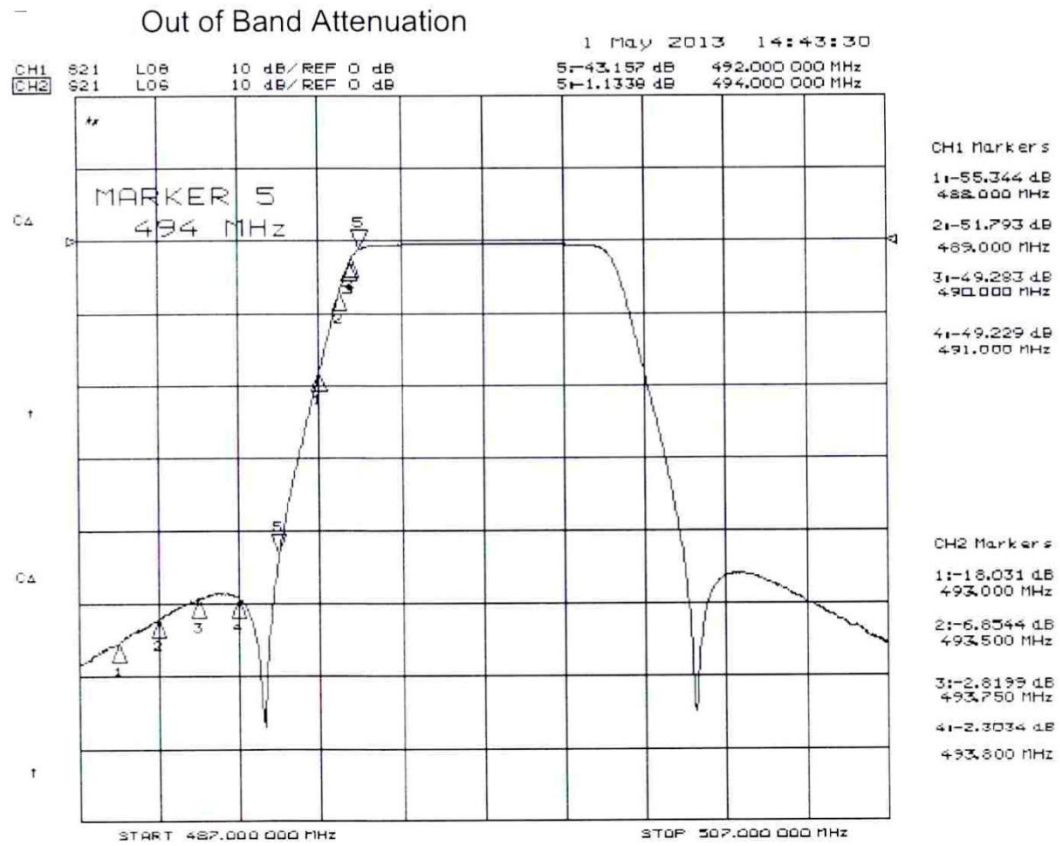
The output filter must be retuned or replaced with a new filter tuned as per the frequency response sweeps attached.

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Parts List and Tune-up Procedure

Mask Filter:

Bandpass Response (typical – shown for 497MHz f_c)



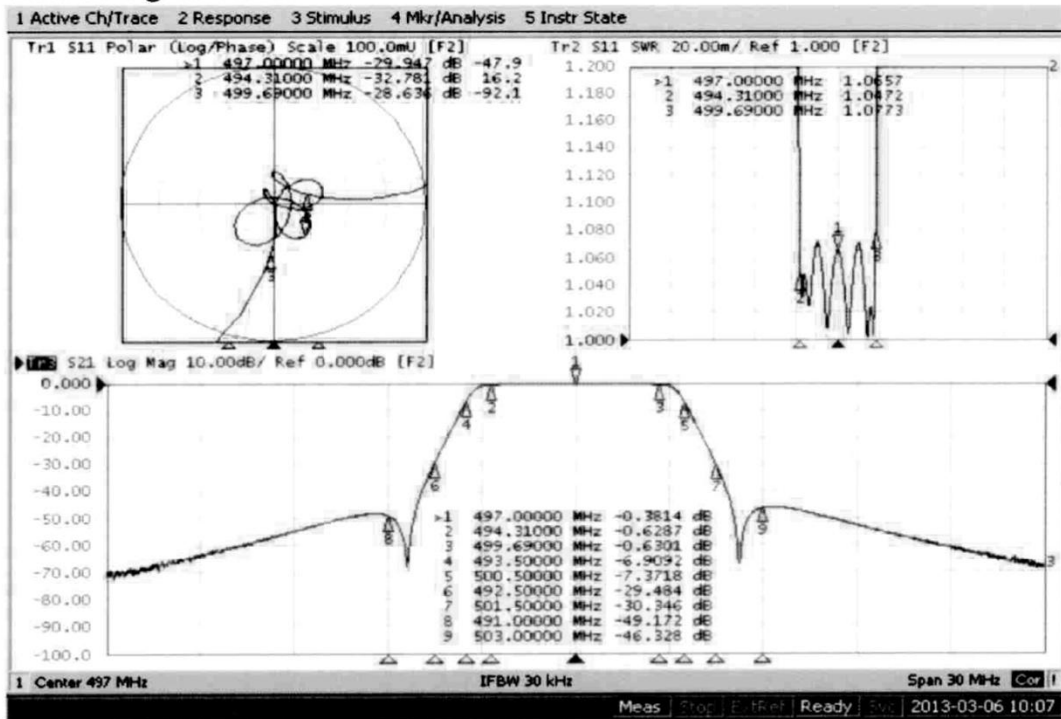
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Parts List and Tune-up Procedure

Mask Filter:

Return loss (typical – shown for 497MHz f_c)

atsc stringent mask



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Active Devices List:

ID	Component	Description	Rev	Qty	UM	Total
	11A2903G2	PCB IPA VHF ENCLOSED DUAL MRFE6VS25N				
C1	100B-102-JT50X	CAP 1nF 50V 5% SOLDER NICEL BARRIER		1	EA	1
C2	100B-102-JT50X	CAP 1nF 50V 5% SOLDER NICEL BARRIER		1	EA	1
C3	100B-2R7-BT500X	CAP 2.7pF 500V +/-0.1pF SOLDER NICEL BARRIER		1	EA	1
C4	100B-2R7-BT500X	CAP 2.7pF 500V +/-0.1pF SOLDER NICEL BARRIER		1	EA	1
C5	100B-102-JT50X	CAP 1nF 50V 5% SOLDER NICEL BARRIER		1	EA	1
C6	100B-102-JT50X	CAP 1nF 50V 5% SOLDER NICEL BARRIER		1	EA	1
C7	C3225C0G2A153J125AA	TDK 15nF (15000pF)100V 5%		1	EA	1
C8	C3225C0G2A153J125AA	TDK 15nF (15000pF)100V 5%		1	EA	1
C9	0805CG102K9B	CAP 1nF 50V 10% 0805 NPO		1	EA	1
C10	0805CG102K9B	CAP 1nF 50V 10% 0805 NPO		1	EA	1
C11	GRM2195C2A102JA01D	CAP 1nF 100V 5% 0805 NPO		1	EA	1
C12	12101C103KAT	CAP 10nF 100V AVX		1	EA	1
C13	C5750X7R2A475K	CAP 4.7uF 100V 10% 5X5.7mm X7R TDK		1	EA	1
C14	AFK107M63G24T-F	CAP 100u 63V 20% SM ELECTROLYTIC		1	EA	1
C15	08052R473K0B	CAP 47nF 100V 10% 0805		1	EA	1
C16	0805CG102K9B	CAP 1nF 50V 10% 0805 NPO		1	EA	1
C17	0805CG102K9B	CAP 1nF 50V 10% 0805 NPO		1	EA	1
C18	0805CG102K9B	CAP 1nF 50V 10% 0805 NPO		1	EA	1
C19	0805CG102K9B	CAP 1nF 50V 10% 0805 NPO		1	EA	1
C20	0805CG102K9B	CAP 1nF 50V 10% 0805 NPO		1	EA	1
L1	1008CS-470XJLB	IND 47nH 5% 2510		1	EA	1
L2	1008CS-470XJLB	IND 47nH 5% 2510		1	EA	1
L3	HA4035-AL	IND 330nH 2% 1812 850mA COILCRAFT		1	EA	1
L4	HA4035-AL	IND 330nH 2% 1812 850mA COILCRAFT		1	EA	1
L5	2743021447	BEAD SM VHF 9.6mm FAIR-RITE		1	EA	1
Q1	MRFE6VS25NR1	TRANSISTOR VHF 25W 50V N-CH MOSFET		1	EA	1
Q2	MRFE6VS25NR1	TRANSISTOR VHF 25W 50V N-CH MOSFET		1	EA	1
Q3	MMBT2484LT1G	TRANSISTOR NPN SWITCHING		1	EA	1
Q4	MMBT2484LT1G	TRANSISTOR NPN SWITCHING		1	EA	1
Q5	MMBT2907ALT1G	TRANSISTOR PNP		1	EA	1
Q6	BCP56	TRANSISTOR NPN 1AMP MKG"BH-10" Infineon		1	EA	1
U1	MC78L05ACD	VOLTAGE REGULATOR 5V 100mA SOIC-8		1	EA	1
R1	9C12063A15R0JL	RES 15R 1/4W 5% 1206		1	EA	1
R2	9C12063A15R0JL	RES 15R 1/4W 5% 1206		1	EA	1
R3	3224W-1-103E	RES 10K BOURNS		1	EA	1
R4	3224W-1-103E	RES 10K BOURNS		1	EA	1

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R5	9C08052A1000JL	RES 100R 1/10W 5% 0805		1	EA	1
R6	9C08052A1002JL	RES 10k 1/4 W 5% 0805		1	EA	1
R7	9C08052A1002JL	RES 10k 1/4 W 5% 0805		1	EA	1
R8	9C08052A2002JL	RES 20k 1/10W 5% 0805		1	EA	1
R9	9C08052A1002JL	RES 10k 1/4 W 5% 0805		1	EA	1
R10	9C08052A1002JL	RES 10k 1/4 W 5% 0805		1	EA	1
R11	9C08052A1001JL	RES 1k 1/10W 5% 0805		1	EA	1
R12	9C08052A2002JL	RES 20k 1/10W 5% 0805		1	EA	1
R13	9C12063A3301JL	RES 3.3k 1/4W 5% 1206		1	EA	1
R14	9C08052A1201JL	RES 1.2k 1/10W 5% 0805		1	EA	1
R15	9C08052A1301JL	RES 1.3k 1/10W 5% 0805		1	EA	1
R16	9C08052A2201JL	RES 2.2k 1/10W 5% 0805		1	EA	1
R17	NTHS-1206-N0147K	RES 47K NTC THERMISTOR		1	EA	1
R18	9C08052A2002JL	RES 20k 1/10W 5% 0805		1	EA	1
R19	9C08052A3301JL	RES 3.3k 1/10W 5% 0805		1	EA	1
R20	ERJ-12ZYJ510U	RES 51R 5% 1/2W		1	EA	1
R21	FT10517N0050JBK	TERMINATION		1	EA	1
R22	9C08052A1003JL	RES 100k 1/10W 5% 0805		1	EA	1
R23	9C08052A1003JL	RES 100k 1/10W 5% 0805		1	EA	1
HY1	PSCQ-2-250	HYBRID HIGH BAND		1	EA	1
HY2	IPP-7084	HYBRID 3DB CPLR 176-220MHz 200W		1	EA	1
T1-T4	2861001502	FERRITE BEAD 2HOLE 61MATL FAIR-RITE		6	EA	6
T1-T4	D260-4118-0000	COAX 25OHM FLEXIBLE 75MIL_OD MICRODOT		1	EA	1
CR1	MMBD7000LT1G	DIODE DUAL GENERAL PURPOSE		1	EA	1
CR2	MMBD7000LT1G	DIODE DUAL GENERAL PURPOSE		1	EA	1
	LS150-48	Power Supply				
ID	Component	Description	Rev	Qty	UM	Total
	20B1235G10	Metering Board				
C1	630-09472	CAP 4.7nF 100V CERAMIC		1	EA	1
C2	630-09472	CAP 4.7nF 100V CERAMIC		1	EA	1
C3	681-10689	CAP 68p 100V CERAMIC		1	EA	1
C4	681-10689	CAP 68p 100V CERAMIC		1	EA	1
C7	344-15474	CAP 470nF 63V FILM SEE 372-21474		1	EA	1
C8	344-21104	CAP 100nF 100V 10% FILM 344-25104		1	EA	1
C9	TAP2.2M16	CAP 2u2 16V TANT		1	EA	1
C10	630-09472	CAP 4.7nF 100V CERAMIC		1	EA	1
CR1	HP5082-2800	DIODE SEE IN5711		1	EA	1
CR2	HP5082-2800	DIODE SEE IN5711		1	EA	1

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CR3	HP5082-2800	DIODE SEE IN5711		1	EA	1
CR4	HP5082-2800	DIODE SEE IN5711		1	EA	1
U1	LM358N	IC OP AMP		1	EA	1
U2	LM358N	IC OP AMP		1	EA	1
U3	LM358N	IC OP AMP		1	EA	1
Q1	MPS8598	TRANSISTOR PNP GEN PURP		1	EA	1
Q2	MPS8598	TRANSISTOR PNP GEN PURP		1	EA	1
R1	3R152P911J	RES 910R 1/4W 5%		1	EA	1
R2	3R152P510J	RES 51R 1/4W 5%		1	EA	1
R3	3R152P911J	RES 910R 1/4W 5%		1	EA	1
R4	3R152P510J	RES 51R 1/4W 5%		1	EA	1
R5	3R152P472J	RES 4.7k 1/4W 5%		1	EA	1
R6	3R152P472J	RES 4.7k 1/4W 5%		1	EA	1
R7	3R152P472J	RES 4.7k 1/4W 5%		1	EA	1
R8	3R152P472J	RES 4.7k 1/4W 5%		1	EA	1
R11	3R152P275J	RES 2.7M 1/4W 5%		1	EA	1
R12	3R152P275J	RES 2.7M 1/4W 5%		1	EA	1
R13	3R152P101J	RES 100R 1/4W 5%		1	EA	1
R17	3R152P122J	RES 1.2k 1/4W 5%		1	EA	1
R18	3329H-1-102	POT 1K		1	EA	1
R19	3R152P122J	RES 1.2k 1/4W 5%		1	EA	1
R20	3329H-1-102	POT 1K		1	EA	1
R21	3R152P104J	RES 100k 1/4W 5%		1	EA	1
R23	3R152P104J	RES 100k 1/4W 5%		1	EA	1
R27	3R152P513J	RES 51k 1/4W 5%		1	EA	1
R28	3R152P513J	RES 51k 1/4W 5%		1	EA	1
R29	3R152P102J	RES 1k 1/4W 5%		1	EA	1
R30	3329H-1-104	POT 100K		1	EA	1
R31	3R152P513J	RES 51k 1/4W 5%		1	EA	1
R32	3329H-1-104	POT 100K		1	EA	1
R33	3R152P513J	RES 51k 1/4W 5%		1	EA	1
R34	3R152P472J	RES 4.7k 1/4W 5%		1	EA	1
R35	3R152P472J	RES 4.7k 1/4W 5%		1	EA	1
R36	3329H-1-103	POT 10K		1	EA	1
R37	3R152P101J	RES 100R 1/4W 5%		1	EA	1
R38	3R152P393J	RES 39k 1/4W 5%		1	EA	1
R39	3R152P102J	RES 1k 1/4W 5%		1	EA	1
R40	3R152P393J	RES 39k 1/4W 5%		1	EA	1
R41	3R152P103J	RES 10k 1/4W 5%		1	EA	1
R42	3329H-1-103	POT 10K		1	EA	1

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R43	3R152P101J	RES 100R 1/4W 5%		1	EA	1
R44	3R152P393J	RES 39k 1/4W 5%		1	EA	1
R45	3R152P100J	RES 10R 1/4W 5%		1	EA	1
VR1	MC78L12CP	VOLTAGE REGULATOR 12V 100mA		1	EA	1
C11	630-09472	CAP 4.7nF 100V CERAMIC		1	EA	1
C12	630-09472	CAP 4.7nF 100V CERAMIC		1	EA	1
C13	630-09472	CAP 4.7nF 100V CERAMIC		1	EA	1
R9	3R152P103J	RES 10k 1/4W 5%		1	EA	1
R10	3R152P103J	RES 10k 1/4W 5%		1	EA	1
ID	Component	Description	Rev	Qty	UM	Total
	10A2295G3	Directional Coupler				
R1	ERJ-1TYJ510U	RES 51R 1W 5%		1	EA	1
R2	ERJ-1TYJ510U	RES 51R 1W 5%		1	EA	1
C1	251R14S0R3AV4T	CAP 0.3+/-0.05pF 250V 0603 NPO		1	EA	1
C2	251R14S0R3AV4T	CAP 0.3+/-0.05pF 250V 0603 NPO		1	EA	1
ID	Component	Description	Rev	Qty	UM	Total
	10A1168G2	Display board				
CR1	1N4001	DIODE GEN PURP		1	EA	1
CR2	521-9165	LED RED DIALITE "PLL"		1	EA	1
CR3	521-9165	LED RED DIALITE "PLL"		1	EA	1
CR4	521-9173	LED GREEN (MNT CLIP 515-0005)		1	EA	1
R1	3R152P511J	RES 510R 1/4W 5%		1	EA	1
R2	3R152P511J	RES 510R 1/4W 5%		1	EA	1
R3	3R152P102J	RES 1k 1/4W 5%		1	EA	1
R4	3299W-1-103	POT 10K VERT BOURNS		1	EA	1
CR5	1N4148	DIODE SWITCHING		1	EA	1
ID	Component	Description	Rev	Qty	UM	Total
	21B2678G1	AMP RF WITH AGC AND SENSING				
CR1	HSMP-3816-BLKG	DIODE QUAD PIN SOT-25 AVAGO		1	EA	1
C1	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C2	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C3	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C4	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C5	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C6	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C7	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C8	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C9	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C10	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C11	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1

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C12	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C13	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C14	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C15	12062R105K9B	CAP 1uF 50V 10% 1206 X7R		1	EA	1
C16	12062R105K9B	CAP 1uF 50V 10% 1206 X7R		1	EA	1
C17	12062R105K9B	CAP 1uF 50V 10% 1206 X7R		1	EA	1
C18	08052R104K9B	CAP 100nF 50V 10% 0805 X7R		1	EA	1
C19	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C20	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
C21	NACZ102M6.3V8X10.5	CAP. 100uF 6.3V		1	EA	1
C22	08052R472K9B	CAP 4.7nF 50V 10% 0805 X7R		1	EA	1
DC1	DBTC-20-4	Coupler Dir. 50-2000MHz 17dB Mini-Circuits		1	EA	1
L1	ADCH-80A	RF CHOKE MINI-CIRCUIT		1	EA	1
L2	1008CS-751XJLB	Ind 750 nH 5% 2510		1	EA	1
L3	1008CS-751XJLB	Ind 750 nH 5% 2510		1	EA	1
L4	ADCH-80A	RF CHOKE MINI-CIRCUIT		1	EA	1
R1	9C12063A2000JL	RES 200R 1/4W 5% 1206		1	EA	1
R2	9C12063A2000JL	RES 200R 1/4W 5% 1206		1	EA	1
R3	9C08052A3300JL	RES 330R 1/10W 5% 0805		1	EA	1
R4	9C08052A12R0JL	RES 12R 1/10W 5% 0805		1	EA	1
R5	9C08052A4300JL	RES 430R 1/10W 5% 0805		1	EA	1
R6	9C08052A4300JL	RES 430R 1/10W 5% 0805		1	EA	1
R7	9C08052A12R0JL	RES 12R 1/10W 5% 0805		1	EA	1
R8	9C08052A5600JL	RES 560R 1/10W 5% 0805		1	EA	1
R9	9C08052A4300JL	RES 430R 1/10W 5% 0805		1	EA	1
R10	9C08052A4300JL	RES 430R 1/10W 5% 0805		1	EA	1
R11	9C08052A5600JL	RES 560R 1/10W 5% 0805		1	EA	1
R12	9C08052A1501JL	RES 1.5k 1/10W 5% 0805		1	EA	1
R13	9C08052A1501JL	RES 1.5k 1/10W 5% 0805		1	EA	1
R14	9C08052A10R0JL	RES 10R 1/10W 5% 0805		1	EA	1
R15	9C08052A6800JL	RES 680R 1/10W 5% 0805		1	EA	1
R16	9C12063A4300JL	RES 430R 1/4W 5% 1206		1	EA	1
R17	9C12063A4300JL	RES 430R 1/4W 5% 1206		1	EA	1
R18	9C08052A2402JL	RES 24k 1/10W 5% 0805		1	EA	1
R19	9C08052A1001JL	RES 1k 1/10W 5% 0805		1	EA	1
R20	9C08052A68R0JL	RES 68R 1/10W 5% 0805		1	EA	1
R21	9C08052A4702JL	RES 47k 1/10W 5% 0805		1	EA	1
R22	9C08052A9101JL	Res 9.1k 1/10W 5% 0805		1	EA	1
R23	9C08052A3001JL	RES 3k 1/10W 5% 0805		1	EA	1
T1	ADTL1-12+	RF TRANSFORMER 1:1 50R 20-1200MHz MINI-CIRCUIT		1	EA	1

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T2	ADTL1-12+	RF TRANSFORMER 1:1 50R 20-1200MHz MINI-CIRCUIT		1	EA	1
U1	HELA-10+	AMP RF 5-1000MHz HIGH IP3 ROHOS MINI- CIRCUIT		1	EA	1
U2	GALI-6	AMP RF 12dB MINI-CIRCUIT		1	EA	1
U3	MC78L05ACDG	VOLTAGE REGULATOR 5V 100mA		1	EA	1
U4	AD8361ARMZ	IC		1	EA	1
U5	GALI-1	AMP RF 12dB MINI-CIRCUIT		1	EA	1
U6	LM358D	IC DUAL OP AMP SOIC 8 MOT		1	EA	1
ID	Component	Description		Qty	UM	Total
	21B2895G11	Front End Assembly				
AT1	MVA-2000+	ATTENUATOR PIN 10-1000MHZ 50R MINI- CIRCUITS		1	EA	1
C3	C5750X7S2A106M	CAP 10uF 100V 20% 2220 X7S		1	EA	1
C7	12062R104K9B	CAP 100nF 50V 10% 1206 X7R		1	EA	1
C8	12062R103K9B	CAP 10nF 50V 10% 1206 X7R		1	EA	1
C9	12062R102K9B	CAP 1nF 50V 10% 1206 X7R		1	EA	1
C10	1206CG479C9B	CAP 4.7pF 50V +/-0.25pF 1206 NPO		1	EA	1
C11	1206CG479C9B	CAP 4.7pF 50V +/-0.25pF 1206 NPO		1	EA	1
C12	12062R102K9B	CAP 1nF 50V 10% 1206 X7R		1	EA	1
C13	12062R103K9B	CAP 10nF 50V 10% 1206 X7R		1	EA	1
C14	12062R104K9B	CAP 100nF 50V 10% 1206 X7R		1	EA	1
C15	12062R104K9B	CAP 100nF 50V 10% 1206 X7R		1	EA	1
C16	12062R103K9B	CAP 10nF 50V 10% 1206 X7R		1	EA	1
C17	12062R104K9B	CAP 100nF 50V 10% 1206 X7R		1	EA	1
C18	PCT22/35DK	CAP 22uF 35v 20% TANT		1	EA	1
C19	GRM32ER72A225KA35L	CAP 2.2uF 100V 10% 1210 X7R		1	EA	1
C21	1206CG220K9B	CAP 22pF 50V 5% 1206 NPO		1	EA	1
C22	12062R102K9B	CAP 1nF 50V 10% 1206 X7R		1	EA	1
C23	12062R103K9B	CAP 10nF 50V 10% 1206 X7R		1	EA	1
C24	12062R104K9B	CAP 100nF 50V 10% 1206 X7R		1	EA	1
C25	PCT10/35DK	CAP 10uF 35V 10% TANT		1	EA	1
C26	NACZ151M35V8X10.8	CAP 150U 35V 20%		1	EA	1
C27	1206CG221K9B	CAP 220pF 50V 5% 1206 NPO		1	EA	1
C28	PCT10/16CK	CAP 10uf 16V 10% TANT		1	EA	1
P3	MC1,5/3-ST-3,5	CONN PLUG 1840379 PHOENIX 3.5MM 3PIN		1	EA	1
J1	133-3701-321	CONN MCX RA PCB J 0.068" LEG GOLD PLATED		1	EA	1
J2	133-3701-321	CONN MCX RA PCB J 0.068" LEG GOLD PLATED		1	EA	1
J3	MC1,5/3-G-3,5	CONN HEADER 1844223 PHOENIX 3.5MM 3PIN		1	EA	1
L1	2761019447	BEAD SM CHF 9.6mm Fair-Rite		1	EA	1
L4	SRU1048-680Y	IND 68uH 1.25A SM		1	EA	1
Q1	MMBT2222ALT1	TRANSISTOR, MOTOROLA "1P"		1	EA	1
Q2	MMBT2222ALT1	TRANSISTOR, MOTOROLA "1P"		1	EA	1

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R1	9C12063A1002FK	RES 10k 1/8W 1% 1206		1	EA	1
R2	9C12063A3093FK	RES 309K 1%		1	EA	1
R3	9C12063A5100JL	RES 510R 1/4W 5% 1206		1	EA	1
R4	9C12063A1001JL	RES 1k 1/4W 5% 1206		1	EA	1
R5	9C12063A2001JL	RES 2k 1/4W 5% 1206		1	EA	1
R6	9C12063A2404JL	RES 2.4M 1/4W 5% 1206		1	EA	1
R15	9C12063A15R0JL	RES 15R 1/4W 5% 1206		1	EA	1
R16	9C12063A5100JL	RES 510R 1/4W 5% 1206		1	EA	1
R17	9C12063A4702JL	RES 47k 1/4W 5% 1206		1	EA	1
RV	06/01/2001	SPECTROL COVER		1	EA	1
RV2	3296W-1-202LF	POT 2K VERT SM BOURNS		1	EA	1
U1	MHW6185	AMP RF 19dB 50-550MHz 24V/0.4A REPL. CA2885		1	EA	1
U3	MC78M12CDT	VOLTAGE REGULATOR 12V 0.5A		1	EA	1
U4	MC78L05ACD	VOLTAGE REGULATOR 5V 100mA SOIC-8		1	EA	1
U5	LTC3630EMSE	CONVERTER STEP-DOWN 65V 0.5A LINEAR TECH.		1	EA	1
U6	LT3085EMS8E	VOLTAGE REGULATOR LDO ADJ 0.5A LINEAR TECH.		1	EA	1
C29	12062R102K9B	CAP 1nF 50V 10% 1206 X7R		1	EA	1
C30	12062R102K9B	CAP 1nF 50V 10% 1206 X7R		1	EA	1