

# **Base Camp 446**

## **TECHNICAL DESCRIPTION**

### **A). GENERAL DESCRIPTION**

The BASE CAMP 446 is a self-contained transceiver unit with integral antenna intended for use as a general communication tool. It is designed to operate on all 75 channels allocated by the CE for the licensed PMR&LPD. This model also features a CTCSS system with 38 pre-defined, user selectable sub-audible tones for channel quieting. The useable range, while dependent upon terrain and other radio propagation principles, is typically ten miles. The BASE CAMP 446 uses the maximum transmit power allowed to help ensure the maximum communication range.

Features include : 57 Marine Channels, AM&FM Radio, Watch, and 75 PMR&LPD Channels with 38 CTCSS codes, Channel Monitor, Page and LCD Display. The unit is equipped with an external Headset option connector. Four AA alkaline batteries and Battery pack(NI-MH) that are readily available in retail outlets supply operating power. An automatic power savings feature allows the typical standby battery life to extend to more than 3 days.

### **B). FREQUENCY DETERMINING CIRCUITS**

The fundamental frequency for both the transmitter and the receiver local oscillators are controlled by a phase lock loop (PLL) circuit IC102 (GP214D, or equivalent). The frequency of operation of the GMRS voltage controlled oscillator (VCO), composed of Q142, 143 operating in cascade is phase locked to a voltage controlled crystal reference (VCXO) operating at 20.95MHz (X102).

The VCO is locked to the fundamental of the transmit signal in the transmit mode and is locked to the receive 1<sup>st</sup> LO (Fundamental channel frequency minus 21.4MHz) in the receive mode. The crystal reference frequency is shared with the 2<sup>nd</sup> LO of 20.95MHz.

### **C). TRANSMITTER CIRCUITS**

The transmitter amplifies the 0dBm signal from the VCO to approximately 35dBm that is fed to the antenna. The transmitter is a three stage amplifier composed of Q20,203,204 and Q205. The first two stages are operated class A and the final is operated class B in full saturation to help prevent unwanted amplitude modulation. The fundamental transmit signal is fed through an elliptical low pass filter (5-pole, 2 zero) in order to suppress the harmonics to below -50dBc. The desired frequency modulation of the carrier is accomplished by modulating the current in the VCO directly with the microphone audio signal. The microphone audio is conditioned with a three-pole high pass filter at 300Hz (IC201 A,B), a hard clipper circuit (IC4 C,D) to

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limit maximum deviation to +/- 2.5KHz and a three-pole low pass or splatter filter at 2.8KHz (IC103 A,D). The low pass filter insures that the occupied bandwidth of the FM modulated signal meets FCC requirements under all input conditions.

### **D). RECEIVER CIRCUITS**

The received signal from the antenna is band limited to 600MHz by the transmitter harmonic filter. The desired signal is fed to a low noise amplifier (LNA – Q401) centered from 430MHz to 450MHz that provides approximately 10 dB of gain. The output of the LNA is filtered with a Band Pass filter (SF1) with pass-band of 433MHz to 447MHz and stop band attenuation of 50 dB. The filtered receive signal is one input to the 1<sup>st</sup> mixer (Q402), the other mixer input (1<sup>st</sup> LO) is the output of the VCO at the desired channel frequency minus 21.4MHz. The output of the mixer is tuned to the 1<sup>st</sup> IF of 21.4MHz.

The 1<sup>st</sup> IF is transformer coupled for impedance matching to a X-tal filter centered at 21.4MHz with a bandwidth of +/-3.75Hz. The filtered 1<sup>st</sup> IF is fed to the 2<sup>nd</sup> mixer input of the multi-function receiver IC5. The 2<sup>nd</sup> LO (20.95 MHz) is generated by VCXO that is the reference frequency for the PLL. The 2<sup>nd</sup> mixer output of 450KHz is filtered through a 4 section ceramic filter that in combination with the 21.4MHz X-tal filter provides approximately 50 dB of adjacent channel attenuation. The 450KHz 2<sup>nd</sup> IF is then amplified, limited and fed to a quadrature detector for FM demodulation. The resulting audio output signal is band pass filtered from 300Hz to 3KHz (IC103 C,D,A) and amplified to provide 300mW of audio power (IC402, 404). A squelch circuit is provided to mute the receiver noise under low signal conditions. The squelch circuit amplifies and detects noise in a narrow bandwidth at approximately 5 KHz. When the detected noise exceeds a threshold set to trigger at approximately 9dB SINAD receive signal strength, the audio output is muted.

### **E). TRANSMIT/RECEIVE SWITCH**

When the radio is in the transmit mode, pin diode switches D3, 202 and D201 are both turned on (representing less than 0.7ohms). D3 and D202 allows the transmit signal to pass to the antenna and D201 shorts one leg of a T matching network (L03, L204 and C207) to ground in the receive path. This results in a parallel tuned circuit high impedance being presented to the transmit signal so that the receive path does not load the transmit signal. In the receive mode, both D3,202 and D201 are off, resulting in the antenna signal being coupled into the receive LNA through the 50 ohm T matching network and the unwanted load of the transmit final amplifier is reduced to less than 1pF by D201.

### **F). RADIO CONTROL CIRCUIT**

A microprocessor (CPU1,2) is used to control the transceiver. User stimuli is provided through a tack switch for PTT (push to talk), along with the keypad

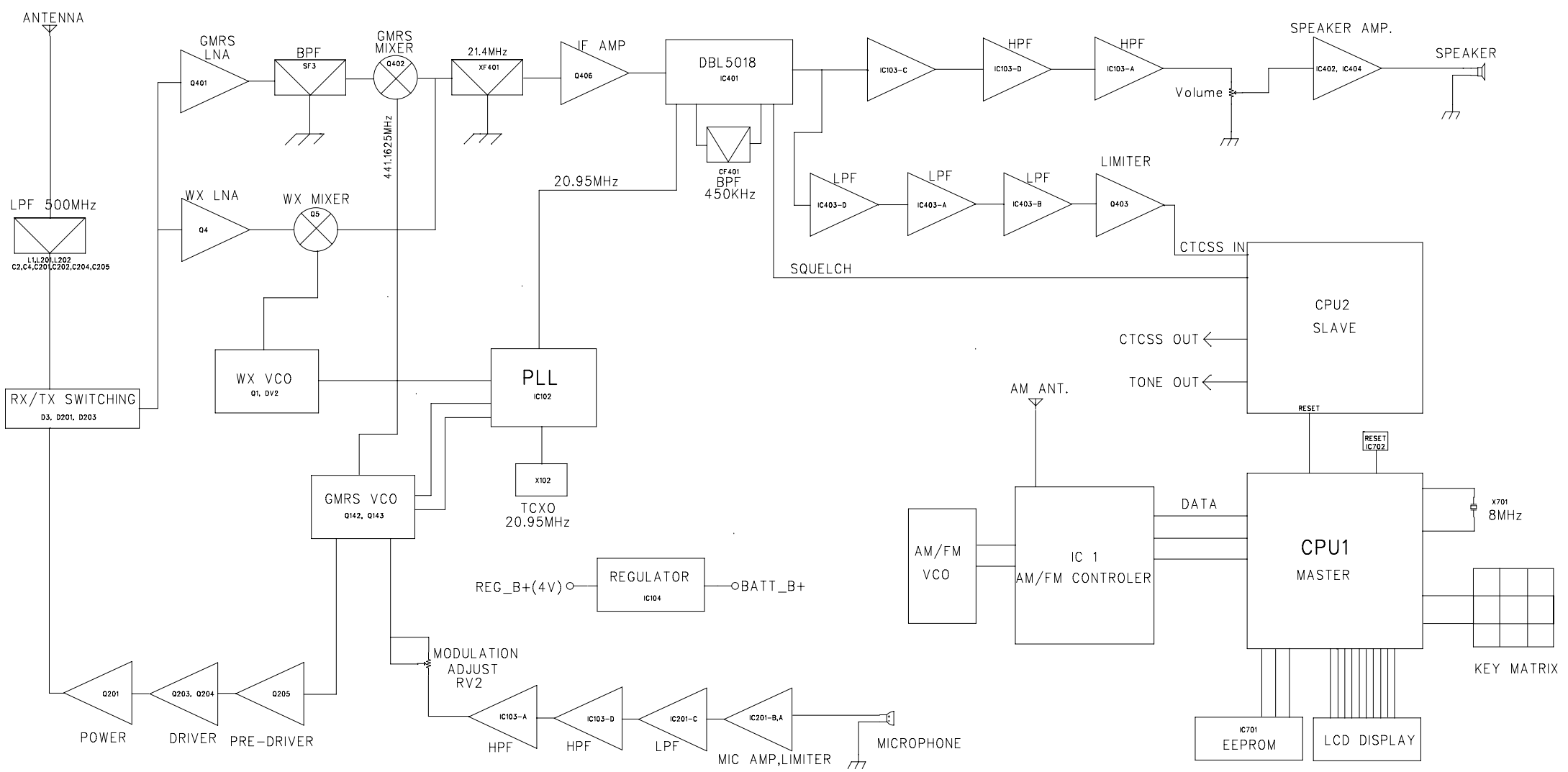
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### **TECHNICAL DESCRIPTION**

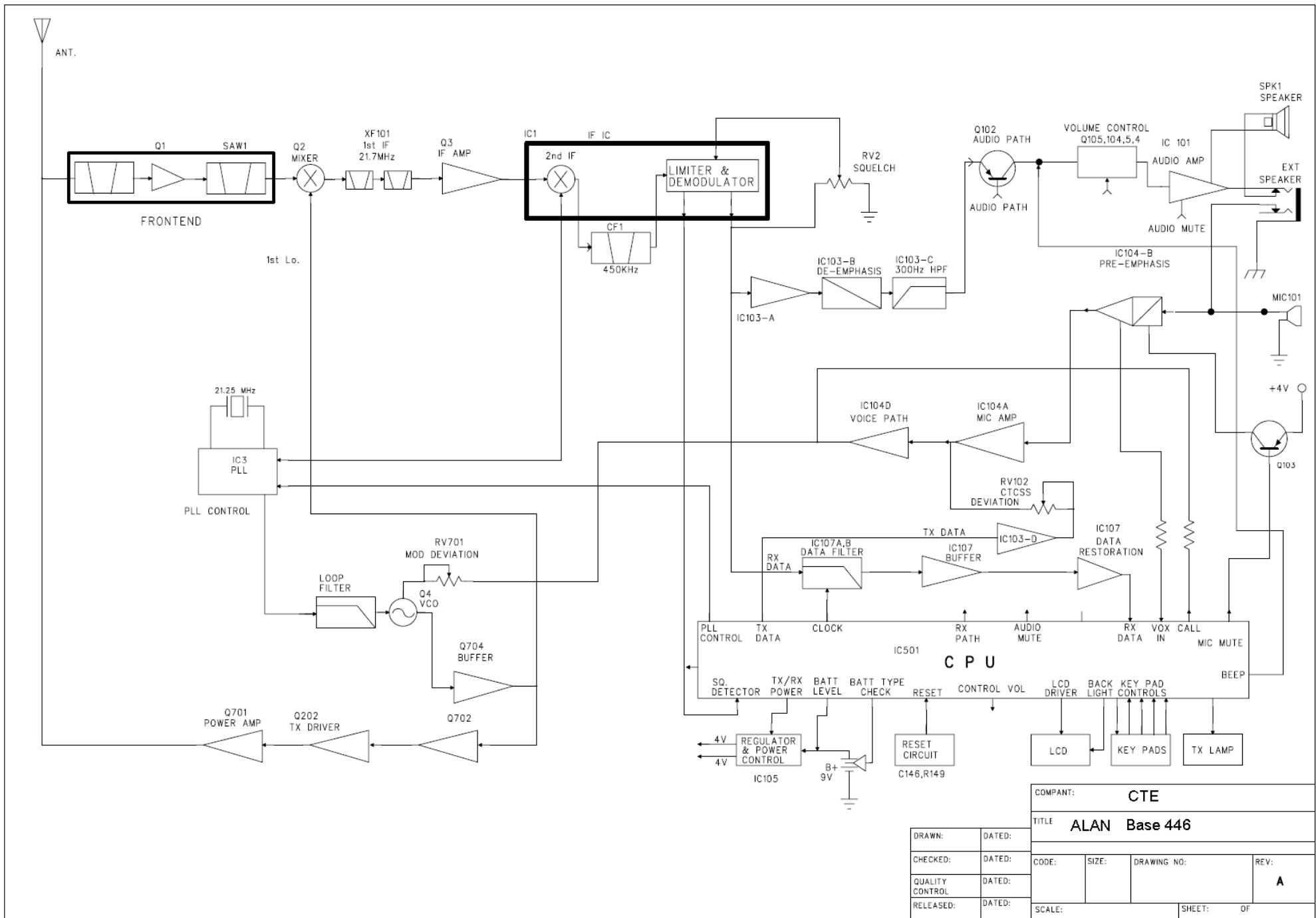
for channel selection, channel monitor, receive volume, and page. Pressing the PTT switch instructs CPU1,2 to switch to the transmit mode. This is accomplished by loading the proper channel counter information through a 3-wire serial link to the PLL IC (IC102), turning on power to the PLL and VCO, microphone and transmit audio circuits and the transmit RF amplifiers. Pressing the call switch causes the microcontroller to transmit a warbling tone for approximately 3 seconds on the current channel selected that is used to notify another person with GMRS radio that you wish to communicate. Pressing the channel Up/Down buttons (active in receive mode only) instructs U5 to increment or decrement respectively the channel frequency by one channel from the channel previously selected.

In receive mode the microcontroller periodically switches on the VCO and receiver power and checks for a valid received signal by monitoring the squelch circuit output. If a valid signal is present, the audio output is turned on and receive power is maintained for the duration of the valid signal. If the valid signal is removed or no valid signal was present, the microcontroller removes power from the VCO and receiver, waits for approximately 100 ms and then checks again. This periodic cycling of the power to the receiver circuits results in a much longer battery life vs. leaving power on continuously. The total period of the cycling is selected such that the worst case delay in 'seeing' a valid receive signal is not disruptive to normal two-way voice communications.

# BASE CAMP446 BLOCK DIAGRAM

BLOCK DIAGRAM				
Title	Base Camp446			
Drawn	Sheet	Drawing No	PCB No	REV
				X0



COMPANT:		<b>CTE</b>			
TITLE		<b>ALAN Base 446</b>			
DRAWN:	DATED:	CODE:	SIZE:	DRAWING NO:	REV:
CHECKED:	DATED:				<b>A</b>
QUALITY CONTROL	DATED:				
RELEASED:	DATED:	SCALE:		SHEET:	OF

6

5

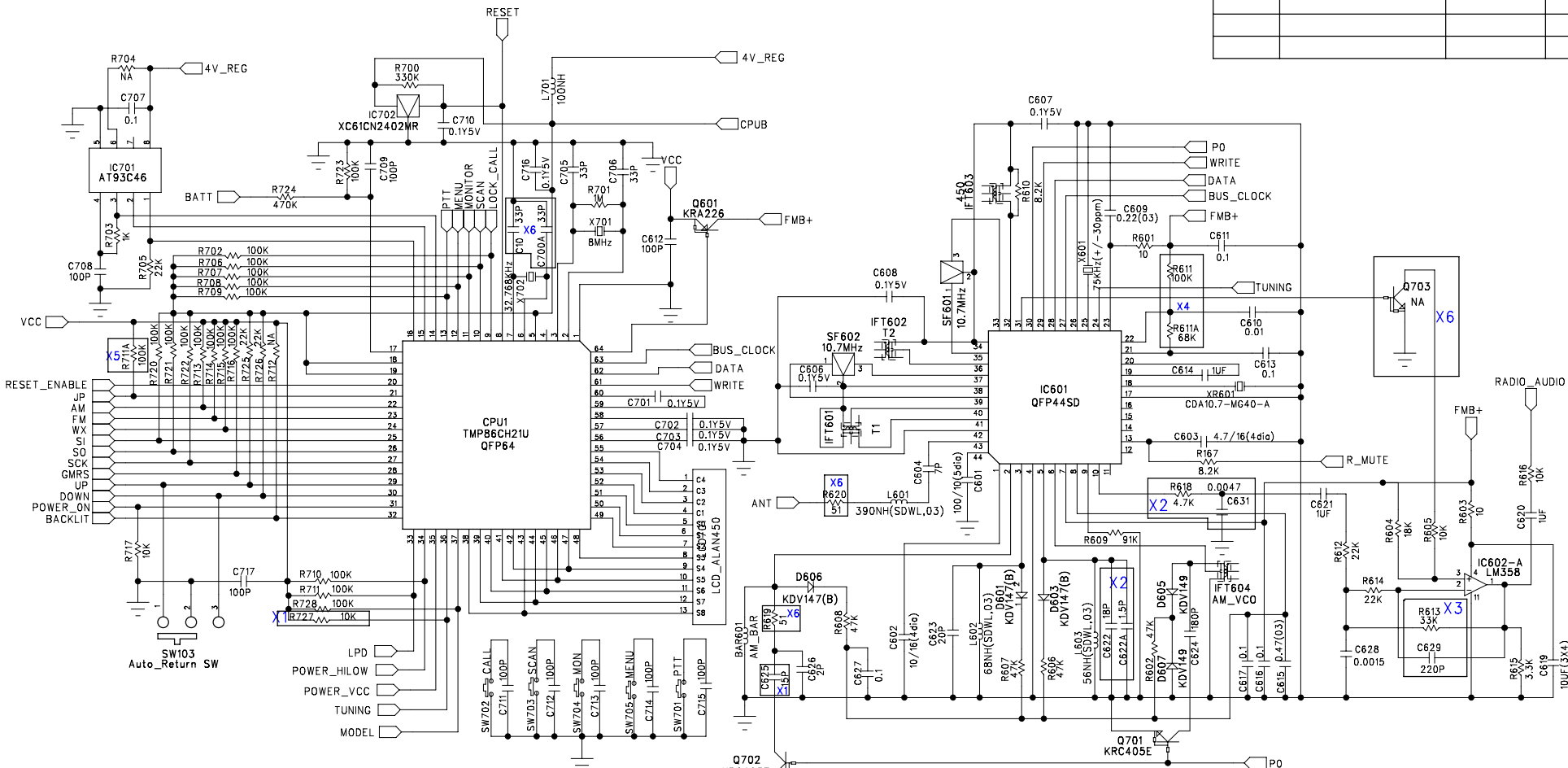
4

3

2

1

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



D

D

C

C

B

B

A

A

COMPANY:			
TITLE: Base Camp446 AM/FM			
CODE:	SIZE:	DRAWING NO:	REV: X6
SCALE:	SHEET: OF		

DRAWN:	DATED:
CHECKED:	DATED:
QUALITY CONTROL:	DATED:
RELEASED:	DATED: 2008/09/09



Ref.No	Items	Description	Q'ty
	Main PCB_X1 version	BS446_X1	1
	Sub PCB 1	for Function botton	1
	Sub PCB 3	for Light LEDs	1
	Sub PCB 2	for Power/Volume/Tone control switch	1
Q203	BFQ67W	Transistor Chip	1
Q204	BFQ67W	Transistor Chip	1
Q205	BFQ67W	Transistor Chip	1
C201	0.5P	Chip cap 0402 NP0	1
C2	1.5P	Chip cap 0402 NP0	1
C109	100P	Chip cap 0402 NP0	1
C11	100P	Chip cap 0402 NP0	1
C110	100P	Chip cap 0402 NP0	1
C111	100P	Chip cap 0402 NP0	1
C112	100P	Chip cap 0402 NP0	1
C114	100P	Chip cap 0402 NP0	1
C116	100P	Chip cap 0402 NP0	1
C117	100P	Chip cap 0402 NP0	1
C12	100P	Chip cap 0402 NP0	1
C121	100P	Chip cap 0402 NP0	1
C123	100P	Chip cap 0402 NP0	1
C124	100P	Chip cap 0402 NP0	1
C128	100P	Chip cap 0402 NP0	1
C130	100P	Chip cap 0402 NP0	1
C132	100P	Chip cap 0402 NP0	1
C134	100P	Chip cap 0402 NP0	1
C137	100P	Chip cap 0402 NP0	1
C138	100P	Chip cap 0402 NP0	1
C140	100P	Chip cap 0402 NP0	1
C141	100P	Chip cap 0402 NP0	1
C144	100P	Chip cap 0402 NP0	1
C149	100P	Chip cap 0402 NP0	1



C156	100P	Chip cap 0402 NP0	1
C157	100P	Chip cap 0402 NP0	1
C161	100P	Chip cap 0402 NP0	1
C162	100P	Chip cap 0402 NP0	1
C164	100P	Chip cap 0402 NP0	1
C166	100P	Chip cap 0402 NP0	1
C18	100P	Chip cap 0402 NP0	1
C182	100P	Chip cap 0402 NP0	1
C213	100P	Chip cap 0402 NP0	1
C216	100P	Chip cap 0402 NP0	1
C217	100P	Chip cap 0402 NP0	1
C221	100P	Chip cap 0402 NP0	1
C222	100P	Chip cap 0402 NP0	1
C223	100P	Chip cap 0402 NP0	1
C227	100P	Chip cap 0402 NP0	1
C231	100P	Chip cap 0402 NP0	1
C232	100P	Chip cap 0402 NP0	1
C234	100P	Chip cap 0402 NP0	1
C237	100P	Chip cap 0402 NP0	1
C241	100P	Chip cap 0402 NP0	1
C243	100P	Chip cap 0402 NP0	1
C247	100P	Chip cap 0402 NP0	1
C250	100P	Chip cap 0402 NP0	1
C252	100P	Chip cap 0402 NP0	1
C254	100P	Chip cap 0402 NP0	1
C255	100P	Chip cap 0402 NP0	1
C26	100P	Chip cap 0402 NP0	1
C29	100P	Chip cap 0402 NP0	1
C30	100P	Chip cap 0402 NP0	1
C33	100P	Chip cap 0402 NP0	1
C40	100P	Chip cap 0402 NP0	1
C401	100P	Chip cap 0402 NP0	1
C402	100P	Chip cap 0402 NP0	1

C403	100P	Chip cap 0402 NP0	1
C405	100P	Chip cap 0402 NP0	1
C407	100P	Chip cap 0402 NP0	1
C408	100P	Chip cap 0402 NP0	1
C41	100P	Chip cap 0402 NP0	1
C42	100P	Chip cap 0402 NP0	1
C422	100P	Chip cap 0402 NP0	1
C43	100P	Chip cap 0402 NP0	1
C44	100P	Chip cap 0402 NP0	1
C442	100P	Chip cap 0402 NP0	1
C448	100P	Chip cap 0402 NP0	1
C465	100P	Chip cap 0402 NP0	1
C472	100P	Chip cap 0402 NP0	1
C5	100P	Chip cap 0402 NP0	1
C51	100P	Chip cap 0402 NP0	1
C52	100P	Chip cap 0402 NP0	1
C6	100P	Chip cap 0402 NP0	1
C612	100P	Chip cap 0402 NP0	1
C7	100P	Chip cap 0402 NP0	1
C708	100P	Chip cap 0402 NP0	1
C709	100P	Chip cap 0402 NP0	1
C711	100P	Chip cap 0402 NP0	1
C712	100P	Chip cap 0402 NP0	1
C713	100P	Chip cap 0402 NP0	1
C714	100P	Chip cap 0402 NP0	1
C715	100P	Chip cap 0402 NP0	1
C717	100P	Chip cap 0402 NP0	1
C76	100P	Chip cap 0402 NP0	1
C8	100P	Chip cap 0402 NP0	1
C9	100P	Chip cap 0402 NP0	1
C99	100P	Chip cap 0402 NP0	1
C413	10P	Chip cap 0402 NP0	1
C461	120P	Chip cap 0402 NP0	1

C153	12P	Chip cap 0402 NP0	1
C457	150P	Chip cap 0402 NP0	1
C1	15P	Chip cap 0402 NP0	1
C214	15P	Chip cap 0402 NP0	1
C624	180P	Chip cap 0402 NP0	1
C72	18P	Chip cap 0402 NP0	1
C14	1P	Chip cap 0402 NP0	1
C220	1P	Chip cap 0402 NP0	1
C414	1P	Chip cap 0402 NP0	1
C152	220P	Chip cap 0402 NP0	1
C629	220P	Chip cap 0402 NP0	1
C125	22P	Chip cap 0402 NP0	1
C133	22P	Chip cap 0402 NP0	1
C15	22P	Chip cap 0402 NP0	1
C16	22P	Chip cap 0402 NP0	1
C39	22P	Chip cap 0402 NP0	1
C700A	22P	Chip cap 0402 NP0	1
C700B	22P	Chip cap 0402 NP0	1
C17	2P	Chip cap 0402 NP0	1
C622A	2P	Chip cap 0402 NP0	1
C120	33P	Chip cap 0402 NP0	1
C126	33P	Chip cap 0402 NP0	1
C19	33P	Chip cap 0402 NP0	1
C24	33P	Chip cap 0402 NP0	1
C705	33P	Chip cap 0402 NP0	1
C706	33P	Chip cap 0402 NP0	1
C719	39P	Chip cap 0402 NP0	1
C151	3P	Chip cap 0402 NP0	1
C245	3P	Chip cap 0402 NP0	1
C228	47P	Chip cap 0402 NP0	1
C625	47P	Chip cap 0402 NP0	1
C622	4P	Chip cap 0402 NP0	1
C74	4P	Chip cap 0402 NP0	1

C135	5P	Chip cap 0402 NP0	1
C159	5P	Chip cap 0402 NP0	1
C207	5P	Chip cap 0402 NP0	1
C215	5P	Chip cap 0402 NP0	1
C219	5P	Chip cap 0402 NP0	1
C224	5P	Chip cap 0402 NP0	1
C410	5P	Chip cap 0402 NP0	1
C718	68P	Chip cap 0402 NP0	1
C160	6P	Chip cap 0402 NP0	1
C415	6P	Chip cap 0402 NP0	1
C432	6P	Chip cap 0402 NP0	1
C38	7P	Chip cap 0402 NP0	1
C604	7P	Chip cap 0402 NP0	1
C246	82P	Chip cap 0402 NP0	1
C253	82P	Chip cap 0402 NP0	1
C154	8P	Chip cap 0402 NP0	1
C22	8P	Chip cap 0402 NP0	1
C148	9P	Chip cap 0402 NP0	1
C165	0,001	Chip cap 0402 X7R +/-10%	1
C187	0,001	Chip cap 0402 X7R +/-10%	1
C20	0,001	Chip cap 0402 X7R +/-10%	1
C225	0,001	Chip cap 0402 X7R +/-10%	1
C249	0,001	Chip cap 0402 X7R +/-10%	1
C31	0,001	Chip cap 0402 X7R +/-10%	1
C36	0,001	Chip cap 0402 X7R +/-10%	1
C408A	0,001	Chip cap 0402 X7R +/-10%	1
C411	0,001	Chip cap 0402 X7R +/-10%	1
C412	0,001	Chip cap 0402 X7R +/-10%	1
C417	0,001	Chip cap 0402 X7R +/-10%	1
C479	0,001	Chip cap 0402 X7R +/-10%	1
C48	0,001	Chip cap 0402 X7R +/-10%	1
C62	0,001	Chip cap 0402 X7R +/-10%	1
C71	0,001	Chip cap 0402 X7R +/-10%	1

C720	0,001	Chip cap 0402 X7R +/-10%	1
C75	0,001	Chip cap 0402 X7R +/-10%	1
C441	0,0012	Chip cap 0402 X7R +/-10%	1
C447	0,0012	Chip cap 0402 X7R +/-10%	1
C628	0,0015	Chip cap 0402 X7R +/-10%	1
C229	0,0018	Chip cap 0402 X7R +/-10%	1
C427	0,0022	Chip cap 0402 X7R +/-10%	1
C439	0,0022	Chip cap 0402 X7R +/-10%	1
C440	0,0022	Chip cap 0402 X7R +/-10%	1
C445	0,0022	Chip cap 0402 X7R +/-10%	1
C446	0,0022	Chip cap 0402 X7R +/-10%	1
C434	0,0033	Chip cap 0402 X7R +/-10%	1
C631	0,0047	Chip cap 0402 X7R +/-10%	1
C77	0,0047	Chip cap 0402 X7R +/-10%	1
C78	0,0047	Chip cap 0402 X7R +/-10%	1
C129	0,01	Chip cap 0402 X7R +/-10%	1
C131	0,01	Chip cap 0402 X7R +/-10%	1
C181	0,01	Chip cap 0402 X7R +/-10%	1
C212	0,01	Chip cap 0402 X7R +/-10%	1
C244	0,01	Chip cap 0402 X7R +/-10%	1
C25	0,01	Chip cap 0402 X7R +/-10%	1
C416	0,01	Chip cap 0402 X7R +/-10%	1
C420	0,01	Chip cap 0402 X7R +/-10%	1
C421	0,01	Chip cap 0402 X7R +/-10%	1
C45	0,01	Chip cap 0402 X7R +/-10%	1
C50	0,01	Chip cap 0402 X7R +/-10%	1
C610	0,01	Chip cap 0402 X7R +/-10%	1
C66	0,01	Chip cap 0402 X7R +/-10%	1
C458	0,015	Chip cap 0402 X7R +/-10%	1
C460	0,015	Chip cap 0402 X7R +/-10%	1
C65	0,022	Chip cap 0402 X7R +/-10%	1
C79	0,022	Chip cap 0402 X7R +/-10%	1
C47	0,047	Chip cap 0402 X7R +/-10%	1

C230	0.01(X7R)	Chip cap 0402 X7R +/-10%	1
C106	0.015(X7R)	Chip cap 0402 X7R +/-10%	1
C209	0.022(X7R)	Chip cap 0402 X7R +/-10%	1
C470	0.022(X7R)	Chip cap 0402 X7R +/-10%	1
C438	0.039(X7R)	Chip cap 0402 X7R +/-10%	1
C98	0.039(X7R)	Chip cap 0402 X7R +/-10%	1
C233	0.047(X7R)	Chip cap 0402 X7R +/-10%	1
C236	0.047(X7R)	Chip cap 0402 X7R +/-10%	1
C431	0.047(X7R)	Chip cap 0402 X7R +/-10%	1
C433	0.047(X7R)	Chip cap 0402 X7R +/-10%	1
C443	0.047(X7R)	Chip cap 0402 X7R +/-10%	1
C616	0.1 (X7R)	Chip cap 0402 X7R +/-10%	1
C142	0.1(X7R 02)	Chip cap 0402 X7R +/-10%	1
C34	0.1(X7R 02)	Chip cap 0402 X7R +/-10%	1
C452	0.1(X7R 02)	Chip cap 0402 X7R +/-10%	1
C235	330P	Chip cap 0402 X7R +/-10%	1
C435	390P	Chip cap 0402 X7R +/-10%	1
C150	470P(X7R)	Chip cap 0402 X7R +/-10%	1
C158	470P(X7R)	Chip cap 0402 X7R +/-10%	1
C208	470P(X7R)	Chip cap 0402 X7R +/-10%	1
C406	470P(X7R)	Chip cap 0402 X7R +/-10%	1
C429	470P(X7R)	Chip cap 0402 X7R +/-10%	1
C430	470P(X7R)	Chip cap 0402 X7R +/-10%	1
C118	0,1	Chip cap 0402 Y5V	1
C242	0,1	Chip cap 0402 Y5V	1
C248	0,1	Chip cap 0402 Y5V	1
C456	0,1	Chip cap 0402 Y5V	1
C474	0,1	Chip cap 0402 Y5V	1
C611	0,1	Chip cap 0402 Y5V	1
C613	0,1	Chip cap 0402 Y5V	1
C617	0,1	Chip cap 0402 Y5V	1
C707	0,1	Chip cap 0402 Y5V	1
C404	0.1Y5V	Chip cap 0402 Y5V	1

C425	0.1Y5V	Chip cap 0402 Y5V	1
C426	0.1Y5V	Chip cap 0402 Y5V	1
C436	0.1Y5V	Chip cap 0402 Y5V	1
C444	0.1Y5V	Chip cap 0402 Y5V	1
C455	0.1Y5V	Chip cap 0402 Y5V	1
C468	0.1Y5V	Chip cap 0402 Y5V	1
C469	0.1Y5V	Chip cap 0402 Y5V	1
C57	0.1Y5V	Chip cap 0402 Y5V	1
C606	0.1Y5V	Chip cap 0402 Y5V	1
C607	0.1Y5V	Chip cap 0402 Y5V	1
C608	0.1Y5V	Chip cap 0402 Y5V	1
C701	0.1Y5V	Chip cap 0402 Y5V	1
C702	0.1Y5V	Chip cap 0402 Y5V	1
C703	0.1Y5V	Chip cap 0402 Y5V	1
C704	0.1Y5V	Chip cap 0402 Y5V	1
C710	0.1Y5V	Chip cap 0402 Y5V	1
C716	0.1Y5V	Chip cap 0402 Y5V	1
C100	100P (03)	Chip cap 0603 NP0	1
C206	100P (03)	Chip cap 0603 NP0	1
C210A	10P(03)	Chip cap 0603 NP0	1
C210	15P(03)	Chip cap 0603 NP0	1
C202	3P(03)	Chip cap 0603 NP0	1
C4	3P(03)	Chip cap 0603 NP0	1
C204	7P(03)	Chip cap 0603 NP0	1
C205	8P(03)	Chip cap 0603 NP0	1
C409	0.056(03)	Chip cap 0603 X7R +/-10%	1
C459	0.056(03)	Chip cap 0603 X7R +/-10%	1
C239	0.056(X7R)	Chip cap 0603 X7R +/-10%	1
C127	0.1(X7R)	Chip cap 0603 X7R +/-10%	1
C145	0.1(X7R)	Chip cap 0603 X7R +/-10%	1
C146	0.1(X7R)	Chip cap 0603 X7R +/-10%	1
C449	0.1(X7R)	Chip cap 0603 X7R +/-10%	1
C467	0.15(X7R)	Chip cap 0603 X7R +/-10%	1

C609	0.22(03)	Chip cap 0603 X7R +/-10%	1
C615	0.47(03)	Chip cap 0603 X7R +/-10%	1
C471	0.47(X7R 03)	Chip cap 0603 X7R +/-10%	1
C226	1UF(X7R,03)	Chip cap 0603 X7R +/-10%	1
C119	1UF	Chip cap 0603 Y5V	1
C155	1UF	Chip cap 0603 Y5V	1
C211	1UF	Chip cap 0603 Y5V	1
C27	1UF	Chip cap 0603 Y5V	1
C28	1UF	Chip cap 0603 Y5V	1
C473	1UF	Chip cap 0603 Y5V	1
C477	1UF	Chip cap 0603 Y5V	1
C55	1UF	Chip cap 0603 Y5V	1
C58	1UF	Chip cap 0603 Y5V	1
C59	1UF	Chip cap 0603 Y5V	1
C614	1UF	Chip cap 0603 Y5V	1
C620	1UF	Chip cap 0603 Y5V	1
C621	1UF	Chip cap 0603 Y5V	1
C67	1UF	Chip cap 0603 Y5V	1
TH2	Thermistor 10K	NSM3103J375J3Z	1
TM100	Thermistor 10K	NSM3103J375J3Z	1
IC702	XC61CN2402MR	IC Detector 2.4v	1
IC104	XC6201P402MR	IC Regulator 4V	1
IC105	XC6203E502PR	IC Regulator 5V	1
IC701	AT93C46-10SU-2.7 8S1 JEDEC SOIC	IC EEPROM SOP-8 package	1
CON3	12505-A CON	8 Pin Female Connector	1
WIRE1	12505-A CABLE	8 pin Male Connector with Wire	1
BAR601	AM_BAR	AM Bar Antenna	1
IC102	GP214D	IC PLL	1
IC103	S324	IC OP	1
IC201	S324	IC OP	1
IC403	S324	IC OP	1
Q207	STJ828EF	MOS-FET	1
Q208	STJ828EF	MOS-FET	1



Q209	STJ828EF	MOS-FET	1
IC601	TEA5757H	Self Tuned Radio	1
IFT604	AM_VCO (V4)	450KHz IFT Coil 5mm	1
IFT601	T1	450KHz IFT Coil 5mm	1
IFT602	T2	450KHz IFT Coil 5mm	1
IFT603	CF450KHz	450KHz IFT Coil 5mm (5pin)	1
L407	CF450KHz	450KHz IFT Coil 5mm (5pin)	1
L207	0.3X0.9X3T(R)	Inductor Air	1
L141	0.3X1.2X4T(R)	Inductor Air	1
L203	0.3X1.4X6T(R)	Inductor Air	1
L204	0.3X1.4X6T(R)	Inductor Air	1
L205	0.4X1.0X2T(R)	Inductor Air	1
L1	0.4X1.5X5T(R)	Inductor Air	1
L201	0.4X1.5X5T(R)	Inductor Air	1
L202	0.4X1.5X5T(R)	Inductor Air	1
L206	0.4X2.0X6T(L)	Inductor Air	1
ZD101	10Vdc 5W Zener Diode	Axial Zener Diode 10V 5W	1
CPU1	<b>TMP86CH21AUG-xxxx</b>	<b>IC master CPU (masked package CPU)</b>	<b>1</b>
CPU2	<b>TMP86CH21AUG-xxxx</b>	<b>IC Slave CPU (masked package CPU)</b>	<b>1</b>
D605	1SV149-B(F)	Vari-cap Diode	1
D607	1SV149-B(F)	Vari-cap Diode	1
LED1	333UWC/M8	Super Bright	1
LED2	333UWC/M8	Super Bright	1
LED3	333UWC/M8	Super Bright	1
LED201	12-21UWC/TR8	White LED	1
LED202	12-21UWC/TR8	White LED	1
LED203	12-21UWC/TR8	White LED	1
LED204	12-21UWC/TR8	White LED	1
IC602	IL358DT	IC OP	1
IC402	IL386DT	IC SPK	1
IC404	IL386DT	IC SPK	1
JACK3	USB-A-01	USB socket (4pin)	1
D1	KDS114E	Diode Chip	1

D102	KDS114E	Diode Chip	1
D141	KDS114E	Diode Chip	1
D201	KDS114E	Diode Chip	1
D204	KDS114E	Diode Chip	1
D4	KDS114E	Diode Chip	1
D402	KDS114E	Diode Chip	1
D406	KDS114E	Diode Chip	1
D203	KDS115 (USM)	Diode Chip	1
D205	KDS115 (USM)	Diode Chip	1
D401	KDS115 (USM)	Diode Chip	1
D10	KDS120	Diode Chip	1
D11	KDS120	Diode Chip	1
D12	KDS120	Diode Chip	1
D13	KDS120	Diode Chip	1
D5	KDS120	Diode Chip	1
D6	KDS120	Diode Chip	1
D7	KDS120	Diode Chip	1
D9	KDS120	Diode Chip	1
D601	KDV147(B)	Diode Chip	1
D603	KDV147(B)	Diode Chip	1
D101	KDV1472(B)	Diode Chip	1
DV1	KDV1472(B)	Diode Chip	1
DV2	KDV1472(B)	Diode Chip	1
D202	KDS114	Diode Chip (USM)	1
D3	KDS114	Diode Chip (USM)	1
D6A	SMAB13	Schottky Barrier Diode	1
Q409	KRA226S	Transistor BRT	1
Q6	KRA226S	Transistor BRT	1
Q601	KRA226S	Transistor BRT	1
Q8	KRA226S	Transistor BRT	1
Q10	KRA305E	Transistor BRT	1
Q2	KRA305E	Transistor BRT	1
Q404	KRA305E	Transistor BRT	1

Q3	KRC246S	Transistor BRT	1
Q9	KRC246S	Transistor BRT	1
Q144	KRA304E	Transistor Chip	1
Q206	KRC404E	Transistor Chip	1
Q408	KRC404E	Transistor Chip	1
Q410	KRC404E	Transistor Chip	1
Q7	KRC404E	Transistor Chip	1
Q701	KRC404E	Transistor Chip	1
Q702	KRC404E	Transistor Chip	1
Q141	KRC405E	Transistor Chip	1
Q202	KRC405E	Transistor Chip	1
Q210	KRC405E	Transistor Chip	1
Q403	KRC405E	Transistor Chip	1
Q407	KRC405E	Transistor Chip	1
Q103	KTA2014E	Transistor Chip	1
DV141	<b>1SV214 (TH2,F,T) DIODE (LEAD FREE)</b>	Varicap Diode	1
<b>C601</b>	<b>100UF/10v (5x7)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C163</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C218</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C238</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C423</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C475</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C476</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C54</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C602</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C619</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C632</b>	<b>10UF/16 (3x5)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C101</b>	<b>2200uF/16V 10x20</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C603</b>	<b>4.7/16(3x7)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C451</b>	<b>470/16(8x13)</b>	<b>Capacitor Elect</b>	<b>1</b>
<b>C478</b>	<b>470/16(8x13)</b>	<b>Capacitor Elect</b>	<b>1</b>
JACK2	DC-04	DC power Jack (5.5/2.1)	1
JACK1	EXT MIC	EXT MIC JACK DUAL LT2510C	1

RV201	4.7K(B)	Semifixed Resistor 3dia	1
RV202	4.7K(B)	Semifixed Resistor 3dia	1
Q142	2SC4226 (R25)	Transistor Chip	1
Q143	2SC4226 (R25)	Transistor Chip	1
Q4	2SC4226 (R25)	Transistor Chip	1
Q401	2SC4226 (R25)	Transistor Chip	1
Q402	2SC4226 (R25)	Transistor Chip	1
Q201	NE5510279A	Transistor Chip	1
<b>R2A</b>	<b>4.7 1/2W</b>	<b>1/2W Axial metal film Resistor 5%</b>	<b>1</b>
R2	47 1/2W	1/2W Axial metal film Resistor 5%	1
MIC201	<b>PFO-9745-CL130</b>	<b>Condensor Mic (with capacitor and wire)</b>	<b>1</b>
R723	100K (+/-1%)	Resistor Chip 0402 +/-1%	1
R104	10K 1%	Resistor Chip 0402 +/-1%	1
R724	470K (+/-1%)	Resistor Chip 0402 +/-1%	1
R56	0	Resistor Chip 0402 +/-5%	1
R999	0	Resistor Chip 0402 +/-5%	1
R469	1	Resistor Chip 0402 +/-5%	1
R471	1	Resistor Chip 0402 +/-5%	1
R30	2,2	Resistor Chip 0402 +/-5%	1
R48	2,2	Resistor Chip 0402 +/-5%	1
R53	4,7	Resistor Chip 0402 +/-5%	1
R53A	4,7	Resistor Chip 0402 +/-5%	1
R151	10	Resistor Chip 0402 +/-5%	1
R412	10	Resistor Chip 0402 +/-5%	1
R601	10	Resistor Chip 0402 +/-5%	1
R603	10	Resistor Chip 0402 +/-5%	1
R611	10	Resistor Chip 0402 +/-5%	1
R235	33	Resistor Chip 0402 +/-5%	1
R207	47	Resistor Chip 0402 +/-5%	1
R403	47	Resistor Chip 0402 +/-5%	1
R466	47	Resistor Chip 0402 +/-5%	1
R467	47	Resistor Chip 0402 +/-5%	1
R619	47	Resistor Chip 0402 +/-5%	1

R12	100	Resistor Chip 0402 +/-5%	1
R141	100	Resistor Chip 0402 +/-5%	1
R19	100	Resistor Chip 0402 +/-5%	1
R402	100	Resistor Chip 0402 +/-5%	1
R52	100	Resistor Chip 0402 +/-5%	1
R68	100	Resistor Chip 0402 +/-5%	1
R69	100	Resistor Chip 0402 +/-5%	1
R70	100	Resistor Chip 0402 +/-5%	1
R71	100	Resistor Chip 0402 +/-5%	1
R470	150	Resistor Chip 0402 +/-5%	1
R472	150	Resistor Chip 0402 +/-5%	1
R209	180	Resistor Chip 0402 +/-5%	1
R147	220	Resistor Chip 0402 +/-5%	1
R405	220	Resistor Chip 0402 +/-5%	1
R463	220	Resistor Chip 0402 +/-5%	1
R468	220	Resistor Chip 0402 +/-5%	1
R57	220	Resistor Chip 0402 +/-5%	1
R60	220	Resistor Chip 0402 +/-5%	1
R64	220	Resistor Chip 0402 +/-5%	1
R65	220	Resistor Chip 0402 +/-5%	1
R66	220	Resistor Chip 0402 +/-5%	1
R67	220	Resistor Chip 0402 +/-5%	1
R11	330	Resistor Chip 0402 +/-5%	1
R408	330	Resistor Chip 0402 +/-5%	1
R6	330	Resistor Chip 0402 +/-5%	1
R61	330	Resistor Chip 0402 +/-5%	1
R201	560	Resistor Chip 0402 +/-5%	1
R206	680	Resistor Chip 0402 +/-5%	1
R149	1.5K	Resistor Chip 0402 +/-5%	1
R224	1.5K	Resistor Chip 0402 +/-5%	1
R203	1.8K	Resistor Chip 0402 +/-5%	1
R22	1.8M	Resistor Chip 0402 +/-5%	1
R433	1.8M	Resistor Chip 0402 +/-5%	1

R438	1.8M	Resistor Chip 0402 +/-5%	1
R109	100K	Resistor Chip 0402 +/-5%	1
R17	100K	Resistor Chip 0402 +/-5%	1
R18	100K	Resistor Chip 0402 +/-5%	1
R183	100K	Resistor Chip 0402 +/-5%	1
R212	100K	Resistor Chip 0402 +/-5%	1
R216	100K	Resistor Chip 0402 +/-5%	1
R228	100K	Resistor Chip 0402 +/-5%	1
R237	100K	Resistor Chip 0402 +/-5%	1
R238	100K	Resistor Chip 0402 +/-5%	1
R250	100K	Resistor Chip 0402 +/-5%	1
R26	100K	Resistor Chip 0402 +/-5%	1
R34	100K	Resistor Chip 0402 +/-5%	1
R435	100K	Resistor Chip 0402 +/-5%	1
R456	100K	Resistor Chip 0402 +/-5%	1
R457	100K	Resistor Chip 0402 +/-5%	1
R461	100K	Resistor Chip 0402 +/-5%	1
R601A	100K	Resistor Chip 0402 +/-5%	1
R702	100K	Resistor Chip 0402 +/-5%	1
R706	100K	Resistor Chip 0402 +/-5%	1
R707	100K	Resistor Chip 0402 +/-5%	1
R708	100K	Resistor Chip 0402 +/-5%	1
R709	100K	Resistor Chip 0402 +/-5%	1
R710	100K	Resistor Chip 0402 +/-5%	1
R711	100K	Resistor Chip 0402 +/-5%	1
R713	100K	Resistor Chip 0402 +/-5%	1
R714	100K	Resistor Chip 0402 +/-5%	1
R715	100K	Resistor Chip 0402 +/-5%	1
R716	100K	Resistor Chip 0402 +/-5%	1
R720	100K	Resistor Chip 0402 +/-5%	1
R721	100K	Resistor Chip 0402 +/-5%	1
R722	100K	Resistor Chip 0402 +/-5%	1
R728	100K	Resistor Chip 0402 +/-5%	1

R998	100K	Resistor Chip 0402 +/-5%	1
R1	10K	Resistor Chip 0402 +/-5%	1
R119	10K	Resistor Chip 0402 +/-5%	1
R123	10K	Resistor Chip 0402 +/-5%	1
R128	10K	Resistor Chip 0402 +/-5%	1
R182	10K	Resistor Chip 0402 +/-5%	1
R20	10K	Resistor Chip 0402 +/-5%	1
R213	10K	Resistor Chip 0402 +/-5%	1
R221	10K	Resistor Chip 0402 +/-5%	1
R227	10K	Resistor Chip 0402 +/-5%	1
R229	10K	Resistor Chip 0402 +/-5%	1
R240	10K	Resistor Chip 0402 +/-5%	1
R407	10K	Resistor Chip 0402 +/-5%	1
R422	10K	Resistor Chip 0402 +/-5%	1
R423	10K	Resistor Chip 0402 +/-5%	1
R434	10K	Resistor Chip 0402 +/-5%	1
R439	10K	Resistor Chip 0402 +/-5%	1
R440	10K	Resistor Chip 0402 +/-5%	1
R449	10K	Resistor Chip 0402 +/-5%	1
R50	10K	Resistor Chip 0402 +/-5%	1
R51	10K	Resistor Chip 0402 +/-5%	1
R605	10K	Resistor Chip 0402 +/-5%	1
R616	10K	Resistor Chip 0402 +/-5%	1
R717	10K	Resistor Chip 0402 +/-5%	1
R719	10K	Resistor Chip 0402 +/-5%	1
R727	10K	Resistor Chip 0402 +/-5%	1
R8	10K	Resistor Chip 0402 +/-5%	1
R446	10M	Resistor Chip 0402 +/-5%	1
R723A	10M	Resistor Chip 0402 +/-5%	1
R211	120K	Resistor Chip 0402 +/-5%	1
R58	120K	Resistor Chip 0402 +/-5%	1
R29	12K	Resistor Chip 0402 +/-5%	1
R15A	150K	Resistor Chip 0402 +/-5%	1

R144	15K	Resistor Chip 0402 +/-5%	1
R234	180K	Resistor Chip 0402 +/-5%	1
R604	18K	Resistor Chip 0402 +/-5%	1
R718	18K	Resistor Chip 0402 +/-5%	1
R223	1K	Resistor Chip 0402 +/-5%	1
R414	1K	Resistor Chip 0402 +/-5%	1
R425	1K	Resistor Chip 0402 +/-5%	1
R703	1K	Resistor Chip 0402 +/-5%	1
R218	1M	Resistor Chip 0402 +/-5%	1
R25	1M	Resistor Chip 0402 +/-5%	1
R25A	1M	Resistor Chip 0402 +/-5%	1
R417	1M	Resistor Chip 0402 +/-5%	1
R448	1M	Resistor Chip 0402 +/-5%	1
R454	1M	Resistor Chip 0402 +/-5%	1
R701	1M	Resistor Chip 0402 +/-5%	1
R729	1M	Resistor Chip 0402 +/-5%	1
R153	2.2K	Resistor Chip 0402 +/-5%	1
R202	2.2K	Resistor Chip 0402 +/-5%	1
R214	2.2K	Resistor Chip 0402 +/-5%	1
R230	2.2K	Resistor Chip 0402 +/-5%	1
R233	2.2K	Resistor Chip 0402 +/-5%	1
R236	2.2K	Resistor Chip 0402 +/-5%	1
R241	2.2K	Resistor Chip 0402 +/-5%	1
R244	2.2K	Resistor Chip 0402 +/-5%	1
R33	2.2K	Resistor Chip 0402 +/-5%	1
R404	2.2K	Resistor Chip 0402 +/-5%	1
R410	2.2K	Resistor Chip 0402 +/-5%	1
R730	2.2K	Resistor Chip 0402 +/-5%	1
R9	2.2K	Resistor Chip 0402 +/-5%	1
R458	2.2M	Resistor Chip 0402 +/-5%	1
R473	2.2M	Resistor Chip 0402 +/-5%	1
R14	2.7K	Resistor Chip 0402 +/-5%	1
R204	2.7K	Resistor Chip 0402 +/-5%	1



R217	2.7K	Resistor Chip 0402 +/-5%	1
R210	220K	Resistor Chip 0402 +/-5%	1
R239	220K	Resistor Chip 0402 +/-5%	1
R424	220K	Resistor Chip 0402 +/-5%	1
R447	220K	Resistor Chip 0402 +/-5%	1
R452	220K	Resistor Chip 0402 +/-5%	1
R453	220K	Resistor Chip 0402 +/-5%	1
R5	220P	Resistor Chip 0402 +/-5%	1
R101	22K	Resistor Chip 0402 +/-5%	1
R13	22K	Resistor Chip 0402 +/-5%	1
R139	22K	Resistor Chip 0402 +/-5%	1
R23	22K	Resistor Chip 0402 +/-5%	1
R4	22K	Resistor Chip 0402 +/-5%	1
R426	22K	Resistor Chip 0402 +/-5%	1
R442	22K	Resistor Chip 0402 +/-5%	1
R612	22K	Resistor Chip 0402 +/-5%	1
R614	22K	Resistor Chip 0402 +/-5%	1
R705	22K	Resistor Chip 0402 +/-5%	1
R725	22K	Resistor Chip 0402 +/-5%	1
R726	22K	Resistor Chip 0402 +/-5%	1
R21	270K	Resistor Chip 0402 +/-5%	1
R411	27K	Resistor Chip 0402 +/-5%	1
R419	27K	Resistor Chip 0402 +/-5%	1
R420	27K	Resistor Chip 0402 +/-5%	1
R430	27K	Resistor Chip 0402 +/-5%	1
R146	3.3K	Resistor Chip 0402 +/-5%	1
R31	3.3K	Resistor Chip 0402 +/-5%	1
R413	3.3K	Resistor Chip 0402 +/-5%	1
R429	3.3K	Resistor Chip 0402 +/-5%	1
R49	3.3K	Resistor Chip 0402 +/-5%	1
R615	3.3K	Resistor Chip 0402 +/-5%	1
R7	3.3K	Resistor Chip 0402 +/-5%	1
R148	3.9K	Resistor Chip 0402 +/-5%	1

R436	3.9K	Resistor Chip 0402 +/-5%	1
R232	330K	Resistor Chip 0402 +/-5%	1
R700	330K	Resistor Chip 0402 +/-5%	1
R451	33K	Resistor Chip 0402 +/-5%	1
R464	33K	Resistor Chip 0402 +/-5%	1
R613	33K	Resistor Chip 0402 +/-5%	1
R3	390K	Resistor Chip 0402 +/-5%	1
R54	39K	Resistor Chip 0402 +/-5%	1
R152	4.7K	Resistor Chip 0402 +/-5%	1
R154	4.7K	Resistor Chip 0402 +/-5%	1
R208	4.7K	Resistor Chip 0402 +/-5%	1
R215	4.7K	Resistor Chip 0402 +/-5%	1
R226	4.7K	Resistor Chip 0402 +/-5%	1
R450	4.7K	Resistor Chip 0402 +/-5%	1
R465	4.7K	Resistor Chip 0402 +/-5%	1
R618	4.7K	Resistor Chip 0402 +/-5%	1
R111	470K	Resistor Chip 0402 +/-5%	1
R231	470K	Resistor Chip 0402 +/-5%	1
R32	470K	Resistor Chip 0402 +/-5%	1
R406	470K	Resistor Chip 0402 +/-5%	1
R409	470K	Resistor Chip 0402 +/-5%	1
R441	470K	Resistor Chip 0402 +/-5%	1
R443	470K	Resistor Chip 0402 +/-5%	1
R45	470K	Resistor Chip 0402 +/-5%	1
R59	470K	Resistor Chip 0402 +/-5%	1
R10	47K	Resistor Chip 0402 +/-5%	1
R106	47K	Resistor Chip 0402 +/-5%	1
R110	47K	Resistor Chip 0402 +/-5%	1
R117	47K	Resistor Chip 0402 +/-5%	1
R15	47K	Resistor Chip 0402 +/-5%	1
R437	47K	Resistor Chip 0402 +/-5%	1
R602	47K	Resistor Chip 0402 +/-5%	1
R606	47K	Resistor Chip 0402 +/-5%	1

R607	47K	Resistor Chip 0402 +/-5%	1
R145	5.6K	Resistor Chip 0402 +/-5%	1
R428	5.6K	Resistor Chip 0402 +/-5%	1
R431	5.6K	Resistor Chip 0402 +/-5%	1
R219	56K	Resistor Chip 0402 +/-5%	1
R432	56K	Resistor Chip 0402 +/-5%	1
R140	6.8K	Resistor Chip 0402 +/-5%	1
R181	6.8K	Resistor Chip 0402 +/-5%	1
R242	6.8K	Resistor Chip 0402 +/-5%	1
R27	6.8K	Resistor Chip 0402 +/-5%	1
R418	6.8K	Resistor Chip 0402 +/-5%	1
R462	6.8K	Resistor Chip 0402 +/-5%	1
R416	680K	Resistor Chip 0402 +/-5%	1
R16	68K	Resistor Chip 0402 +/-5%	1
R401	68K	Resistor Chip 0402 +/-5%	1
R611A	68K	Resistor Chip 0402 +/-5%	1
R243A	75K	Resistor Chip 0402 +/-5%	1
R610	8.2K	Resistor Chip 0402 +/-5%	1
R415	820K	Resistor Chip 0402 +/-5%	1
R220	82K	Resistor Chip 0402 +/-5%	1
R421	82K	Resistor Chip 0402 +/-5%	1
R243	9.1K	Resistor Chip 0402 +/-5%	1
R609	91K	Resistor Chip 0402 +/-5%	1
SW103	Self Return Switch: E-C11ESRA01E	Tuning Switch	1
VR1	Dual Shaft Volume switch	F-09225S B10K/B50K L113x5 L21.8FCx6(D)	1
IC401	CHMC D5018	IC IF	1
Q1	2SC4083	Transistor Chip	1
Q406	2SC4083	Transistor Chip	1
Q5	2SC4083	Transistor Chip	1
LCD701	SDH-DA1564-HP-0	LCD_Base Camp 446	1
L102	100NH	Inductor Chip 0402	1
L701	100NH	Inductor Chip 0402	1
L144	27NH	Inductor Chip 0402	1

L3	180NH(03)	Inductor Chip 0603	1
L208	18NH(03)	Inductor Chip 0603	1
L209	18NH(03)	Inductor Chip 0603	1
L142	2.2UH(LK1608)	Inductor Chip 0603	1
L7	220NH(03)	Inductor Chip 0603	1
L402	22NH(03)	Inductor Chip 0603	1
L4	27NH(03)	Inductor Chip 0603	1
L401	27NH(03)	Inductor Chip 0603	1
L404	27NH(03)	Inductor Chip 0603	1
L5	2.7UH (05)	Inductor Chip 0805	1
L406	5.6UH(05)	Inductor Chip 0805	1
L601	390NH (SDWL 03)	Wirewound 0603 Chip Inductor	1
L603	39NH (SDWL 03)	Wirewound 0603 Chip Inductor	1
L602	56NH (SDWL 03)	Wirewound 0603 Chip Inductor	1
L2	68NH (SDWL 03)	Wirewound 0603 Chip Inductor	1
L19	82NH (SDWL 03)	Wirewound 0603 Chip Inductor	1
L403	10UH (SDWL2520F100JT)	Wirewound 2520 Chip Inductor	1
	Speaker	Diamater 57.0, 12ohm 2watt, YD57B-RB199F12	1
SW701	SS-24H01-G4 (ROHS)	Band Select Switch	1
SW101	SS-12F18-G4	Battery Source Switch	1
SW102	SS-12F18-G4	Light Switch	1
SF601	10.7MHz	Ceramic filter	1
SF602	10.7MHz	Ceramic filter	1
CF603	LTM450GU	Ceramic filter LTM450GU	1
CF401	LTM450GW	Ceramic filter LTM450GW	1
XR601	<b>JT10.7MC40-A</b>	<b>Discriminator</b>	<b>1</b>
SF3	439MHz (HDF-440DS)	SAW filter F-11SMD type	1
C139	<b>TAJA106K006RNJ</b>	<b>Tental 10UF/6.3V 3.2x1.6 T-A</b>	1
C143	<b>TAJA105K016RNJ</b>	<b>Tental 1UF/16V 3.2X1.6 T-A</b>	1
C251	<b>TAJA226K006RNJ</b>	<b>Tental 22UF/6.3V 3.2x1.6 T-A</b>	1
C63	<b>TAJA226K006RNJ</b>	<b>Tental 22UF/6.3V 3.2x1.6 T-A</b>	1
X102	R49SDA-020950-FA-16C	20.95MHZ X-tal 2.5ppm 49ATS	1
X702	32.768KHz	x-tal	1

X601	75KHz(30ppm)	x-tal	1
X701	R49SDA-008000-FA-16-30A	X-tal 8.00MHz	1
XF401	RUM5D3-021400-F1-F08AA	X-tal Filter 21.4MHz	1

**Common Mechanical parts for BC466**

Ref.No	Items	Description	Q'ty
XT511-00	Power Volume Knob	ABS	1
XT511-01	Slide Knob	ABS	3
XT511-00	Tone Control Knob	ABS	1
XT511-00	Tuning Knob	ABS	1
XT511-01	Dynamo Knob	ABS Black	1
XT511-01	Reflective Frame for light (XT511)	ABS with Cr- Plate	1
XT511-00	Back Light Lens (XT511)	Acryl	1
XT511-00	LCD Window (XT511)	Acryl	1
XT511-00	Window for Light (XT511)	Acryl	1
XT511-01	Dynamo ARM	PC Black	1
XT511-01	Dynamo Frame	PC Black	1
	Antenna Assay (XT511)		1
	HWG-29-038	Dynamo Assay (Dynamo+Gear Box)	1
XT511-02	Pin for Dynamo Handle	BSBM 2.5, Ni-plate	1
XT511-02	Hanger Pin (XT511)	BSBM Dia3.0, Ni-plate	2
<b>XT511-02</b>	Dynamo Shaft Holder	Galvanized steel	1
XT511-02	Speaker Bracket (XT511)	Galvanized Steel 1.2t	2
XT511-02	Terminal (-) (XT511)	PBSP (H) 0.2t, Ni-plate	2
7N-013	Terminal-B	PBSP (H) 0.2t, Ni-plate	2
XT511-02	LCD Bracket	SPTe 0.5t	1
450-039	VCO CAN	SPTe t0.2	1
7N-015	Terminal D (Dual)	SUS 304(H) 0.2t	1
XT511-02	Terminal DD (XT511)	SUS 304(H) 0.2t	2
Felt 29X11	Felt	Felt 29x11x0.2t Black	2
	Screw	BH T2.0 x 6.0 Ni-plate	2

XT511-054	Cushion for AM bar antenna	EVA Black, 20x12x8.7t with Double side tape	1
	Lead wire BLK 2-120mm-2AWG#22/1571	Lead wire BLK Alkaline -	1
	Lead wire BLK 2-210mm-2AWG#22/1571	Lead wire BLK Batt. Pack -	1
	Lead wire BLK 2-100mm-2AWG#30/1571	Lead wire BLK SPK-	1
	Lead wire RED 2-170mm-2AWG#22/1571	Lead wire RED Alkaline +	1
	Lead wire RED 2-100mm-2AWG#30/1571	Lead wire RED SPK+	1
	Lead wire YEL 2-210mm-2AWG#22/1571	Lead wire YEL Batt. Pack +	1
XT511-05	Refelctive Sheet (XT511)	PE 0.1t White	1
	Screw (PH T2.6x12)	PH T2.6x 12 Black	8
	Screw (PH T2.6x8)	PH T2.6x8 Black	7
XT511-05	Cover Plate (XT511)	PVC 0.3t Black	1
	PVC TUBE 2.6MMIDX3.4MMODX120MM	PVC TUBE	1
FELT-052	Speaker Felt	Speaker Fept 0.1t Black, Dia.52.0mm	1
	SHIELD PLATE for VCO can	SPTe t0.2	1
	Screw	WH T2.6 x 8.0 Black	1
XT511-06	Charging label		1
	Metal Dome tape		5
	Plastic Tie Wrap		1
	PLASTIC TIE WRAP		0
XT511-01	Rubber Cap for Microphone Jack	5235U Silicone rubber 65 (Black)	1
XT511-01	Rubber Cap for Power Jack	5235U Silicone rubber 65 (Black)	1
XT511-01	Rubber Cap for USB Jack	5235U Silicone rubber 65 (Black)	1
XT511-01	Function Button (XT511)	Silicone 60	1
	<b>Metal Dome (ME6261-00-1)</b>	<b>SUS301H 0.06t, Two leg with 4 points</b>	5
XT511-Ze	Zebra (XT511)		1
<b>BC446 Packing Items</b>			
BC446-080		New RTTE booklet(BC446)	1
XT511-04	Inner Box (XT511)	SW	0
G5-032-1	ITALY Warranty card	Wood free paper ( No need for UK/Germany shipment)	1
G5-032-2	Warranty card Spanish	Wood free paper ( No need for UK/Germany shipment)	1
Alan777-032-UK	Warranty card UK	Wood free paper (No need for Germany shipment)	1

BC446-03	POP Label (BC446)	3M, #4187 clear	1
BC446-03	Product Label (BC446)	Polyester, 0.1t	1
		Waste Disposal Instruction insert CARD (Consumer)	1
G5-031A	Serial No. Label (with Barcode type)	Wood Free Paper	2
BC446-M	Manual (BC446)		1
	LETTER W/MIDLAND	BOX TAPE	1
Polybag2	Polybag PE 220 x 300 x 0.05t	Ploy Bag (for Camp radio Unit)	0
G223-028	Poly Bag	PP, 200 x 150 x 0.05t	1

<b>BC446 Black/Gray Gun metal packing items</b>			
XT511-00	Back Cover (XT511)	ABS	1
XT511-00	Battery cover	ABS	1
BC446-001	Front Cover (BC446)	ABS	1
BC446-04	Out Carton Box (BC446)	DW	0,1666
BC446-04	Gift Box (BC446)	SW with White paper	0
BC446-09	Blister Box (BC446)	PVC 0.5t	1
BC446-09	Inner Clamshell (BC446)	PVC 0.8t	1
BC446-04	Inner Sleeve (B446)	Manila Paper 0.4t with printings	1
Polybag3	Polybag 380 x 380	Polybag 380(open) x 380 0.05t	1

<b>Consigned parts</b>			
XT511-CA	Car Adaptor (GLCA300400-000)	CF-DC3000-103 (5.5) with charging label	1

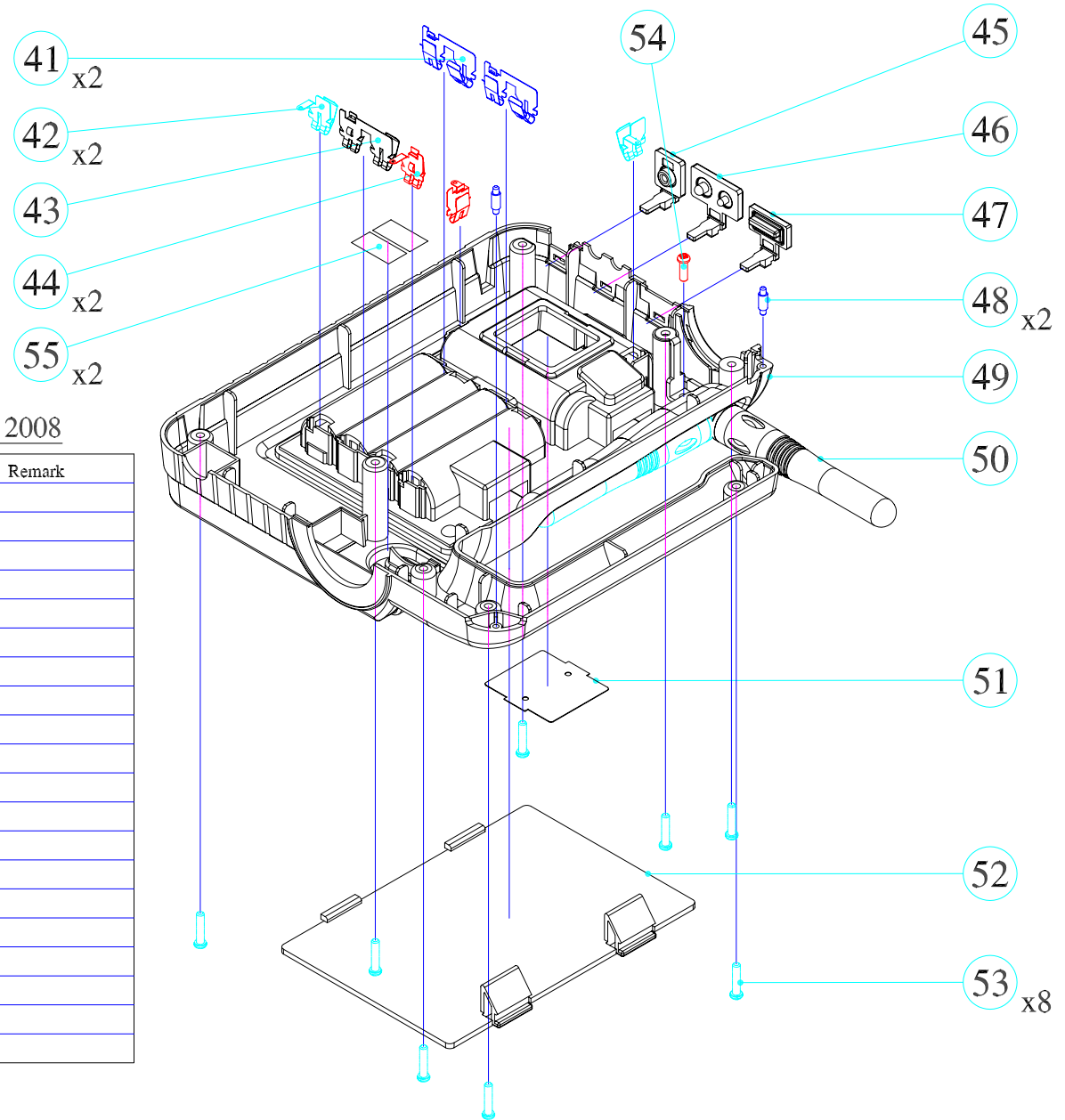
	<b>Microphone</b>		<b>1</b>
<b>BC446-A0</b>	<b>Adaptor 9V 300mA EU type</b>	<b>with charging label</b>	<b>1</b>
	<b>Battery pack (PB-ALT\G7)</b>	<b>Battery (NIHN AAA 800mAh 6.0v)</b>	<b>1</b>
	<b>Shoulder Starp</b>		<b>1</b>



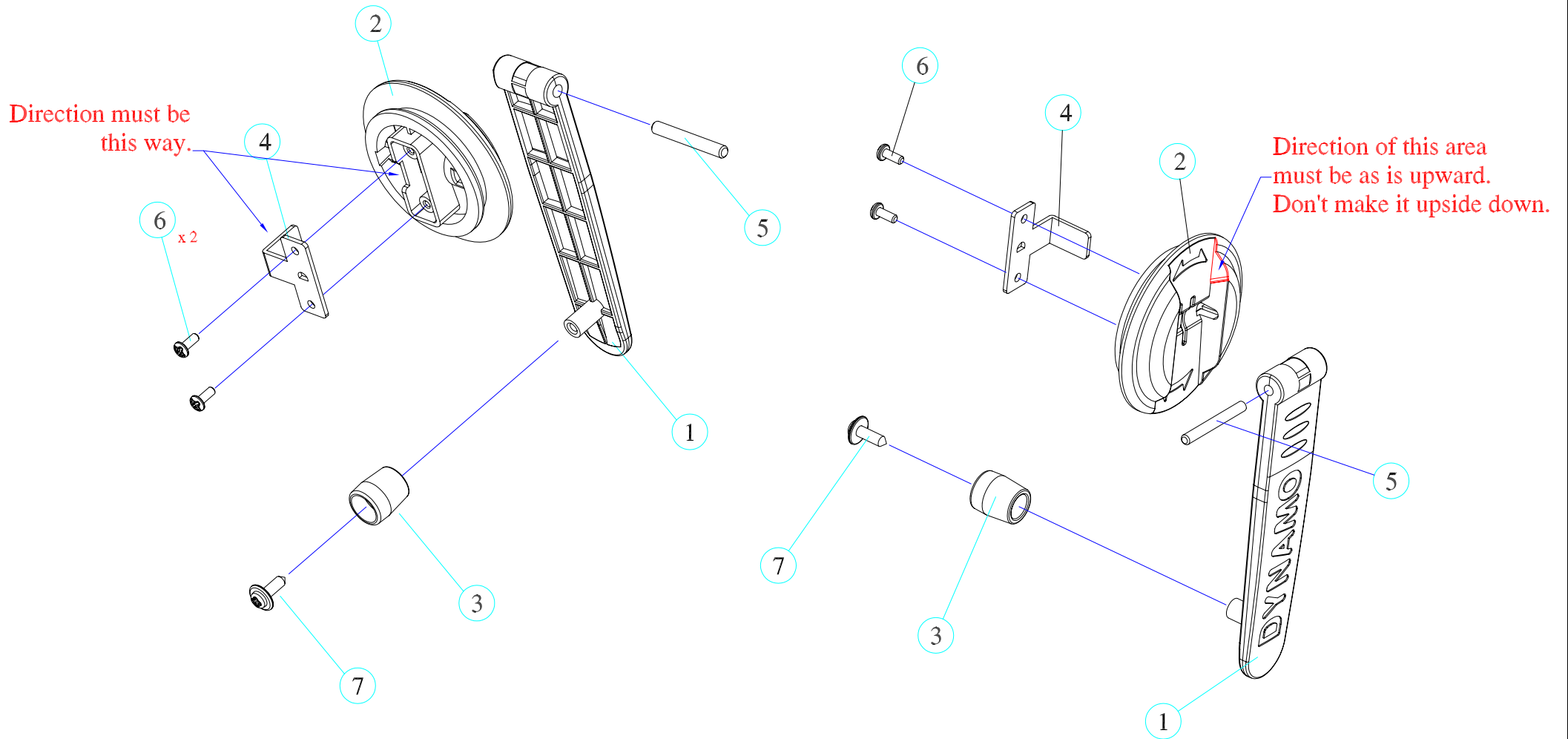


Exploded drawing for Base Camp 446 (Back cover assy portions) Dec 9, 2008

No.	Dwg. No.	Part Name	Descriptions	Q'ty	Remark
41	XT511-021	Terminal DD (XT511)	SUS 304 (H) 0.2t	2	
42	XT511-022	Terminal (-) (XT511)	PBSP (H) 0.2t/ Ni-plate	2	
43	7N-015	Terminal D (Dual)	SUS 304 (H) 0.2t	1	
44	7N-013	Terminal B	PBSP (H) 0.2t/ Ni-plate	2	
45	BC446-013	Rubber Cap for Power jack	5235U Silicone rubber 65° (Black)	1	
46	XR511-014	Rubber Cap for Microphone jack	5235U Silicone rubber 65° (Black)	1	
47	XT511-015	Rubber Cap for USB Jack	5235U Silicone rubber 65° (Black)	1	
48	XT511-024	Hanger Pin (XT511)	BSBM Ø3.0, Ni-plate	2	
49	XT511-002	Back Cover (XT511)	ABS	1	
50		Antenna (XT511)		1	
51	XT511-051	Cover Plate (XT511)	PVC 0.3t Black	1	
52	XT511-003	Battery Cover (XT511)	ABS	1	
53		Screw	PH T2.6 x 12 Black	8	
54		Screw	PH T2.6 x 8 Black	1	
55		Felt	Felt Black, 29 x 11 x 0.2t	2	
56					



Base Camp 446, Dynamo Handle assembly method  
July 25, 2008



No.	Dwg. No.	Part Name	Descriptions	Q'ty	Remark
1	XT511-017	Dynamo Arm	PC Black	1	
2	XT511-018	Dynamo Frame	PC Black	1	
3	XT511-016	Dynamo Knob	ABS Black	1	
4	XT511-026A	Dynamo Shaft Holder	Galvanized steel 1.6t	1	
5	XT511-027	Pin for Dynamo Handle	BSBM 2.5/Ni-plate	1	
6		Screw	BH T2.0x6 Ni-Plate	2	
7		Screw	WH T2.6x8 Black	1	

