

CBCI HOME

The following are links to our 1-page crystal charts in Adobe PDF format. These 36 charts show the mixing synthesis of almost every American mobile and base AM and AM/SSB CB radio ever made that used crystal synthesis. (Plus a few Canadian models.) This includes all the 23-channel solid-state and tube models, as well as most older 3-Ch. or 6-Ch. handhelds or tube type bases that used socketed plug-in crystals.

The charts show exactly which crystals are used in which channel positions. If you have a "dead channel" symptom or a group of dead channels, you'll quickly see the exact crystal associated with a particular function. One crystal usually controls a group of 4 or 6 channels, or even all 23 channels in the case of a TX or RX local oscillator or SSB carrier oscillator.

They're also useful for frequency modifications to 10 Meters or elsewhere. You could either replace specific crystals, or add new ones to expand the total number of channels.

These files are named according to the Ch.1 crystal frequencies and are grouped by AM or AM/SSB models. If you know which crystals your rig uses you can simply compare that information to this list, then open and print the correct chart. Under each filename we've also included every make and model known to have used that synthesis scheme. (Probably will be others!)

For more complete service information you can also try SAMS directly or the manufacturers that are still around. These are listed in detail in our SAMS Fotofacts™ and sources pages at: www.cbcintl.com/sams.htm or www.cbcintl.com/suppliers.htm

AM MODELS:**AM 14950-23290-11275-11730.pdf**

Cobra 19, 19M, 21, 29, CAM-89
 Courier Cadet 23, Caravelle, Caravelle II, Classic II, Conqueror, Conqueror II, Rebel 23+
 Fanon Fanfare 100, 880
 Gemtronics GTX-2300
 HyGain 670, 670A, 671, 671A, 671B, 672, 672B, 673 (HyRange IV), 3077 (VII)
 JC Penney 981-6213
 Kraco KCB2310
 Kris 23+
 Lafayette Comstat 25A, 25B, Comstat 35, HB525, HB525A, HB525B, HB525C, HB525D, HB525E, HB525F, HB625, Telsat 23
 Midland 13-852, 13-853, 13-857, 13-858, 13-861, 13-863, 13-866, 13-882, 13-882B, 13-883, 13-884, 13-886
 Pearce-Simpson Cougar 23 (early prod.), Tomcat 23
 Realistic TRC24B, TRC24C, TRC30, TRC30A, TRC52, TRC56
 Regency CR202, Formula/23
 Royce 1-605A
 Sharp CB-500UB, CB-700, CB-800
 Teaberry Mighty "T", Model "T", "T" Charlie One, "T" Control, "T" Scout, "T" (23 ch.), Tele "T"
 Truetone MCC4434A-67, MCC4635A-67, MCC4733A-67, MCC4760A-67, MCC4774, MIC4731A-67, MIC4739A-67

AM 37600-10180-10635.pdf

Alaron B-1100
 Allied 2569
 Audiovox MCB500
 Beltek Enduro 23
 Boman CB-755
 Claricon Activator, Intruder, Pirate, Privateer, Raider
 Commando 2310, 2340
 Courier Cruiser, Redball
 Craig 4103, 4104, 4201
 Fulcomm 2300, 2301, 2302
 Gemtronics GTX-23, GTX-3323, GTX-36, GT-230
 Granada CB-6, CB-7
 JC Penney 981-6051 (Golden Pinto), 981-6235, 981-6236 (981-0607), 985-6060 (Pinto 23B)
 J.I.L. 606CB, 852CB
 Kris Valiant, XL-23, XL-25
 Lafayette Com-Phone 23, Com-Phone Mark II, HB650, HB700, Telsat1023, Micro 723,

Publicom I, Telsat 925, Telsat 1000
 Mark Invader 23
 Midland 13-862, 13-862B, 13-864, 13-867, 13-869, 13-877, 13-879, 13-879B, 13-887
 Olson CB88, CB409
 Pace CB113, 123A (early & late prod.), C123A. 130, CB133, CB143, CB144, CB162
 Panasonic CR-B1717EU, RJ-3200
 Pearce-Simpson Bearcat 23, 23B, 23C, Bobcat 23, 23B, 23C, 23E, Cougar 23 (late prod.), Cougar 23B,
 Lynx 23, Puma 23, 23B, 23C, Pussycat 23, SuperLynx, Tiger 23B, 23C
 Ray Jefferson CB705, CB905
 Realistic TRC23B, TRC40, TRC49 (Pro-Niner), TRC50, TRC50B, TRC61, TRC68
 Regency CR142, CR185, CR186, CR230, Sprint/23, Sprint/23 II
 Robyn BB-123, DG-30, GT-VIIB, J-123, K-123, LB-23, LB-23A, SX101, SX102, T-123, TR123B,
 TR123C, WV-23, WV-23A, XL-1, XL-2
 Royce 1-600A, 1-600B, 1-602A, 1-620, 1-624, 1-650
 Rystl CBR-1700, CBR-1800
 SBE 9CB (Catalina), 11CB (Trinidad), 22CB (Catalina II), 34CB (Brute)
 Sears 934.367405
 Shakespeare GBS-1500, GBS-2000, GBS-2500
 Surveyor 2100, 2300, 2400, 2600
 Teaberry Big "T", 5x5
 Truetone DX4370, MCC4532A-57, MCC4434A-57, MCC4532A-47, MCC4724A-77
 Unimetrics Dolphone, Mako-I, Marlin-I, Porpoise-I, Sea Horse-I
 Vector VI, IX
 XTAL XCB-4, XCB-5, XCB-6, XCB-7, XCB-11, XCB-12, XCB-23A, XCB-28, XCB-88
 Zodiac M-5023, M-5026

AM 37600-11090-10635.pdf

Midland 13-870D, 13-872

AM 10850-8615-7500-7975.pdf

Allied 2567
 Cobra CAM-88, 98
 Regency Imperial II

AM 11705-7460-7800-7345.pdf

Browning Brownie
 Cobra 85
 Tram XL

AM 16200-4765-6000-5545.pdf

Sonar FS-23, FS-3023

AM 16965-9545-1000.pdf

Allied A-2561, A-2564, A-2568
 Browning SST
 Cobra 24, 25, 28A, 880
 Craig 4101, 4102
 Jet Sounds CB7000
 Kraco KCB1401
 Lafayette Comstat 23 Mark V, Mark VI, Dyna-Com 23, HB625A
 Midland 13-871, 13-881
 Pace CB145
 PAL Roadrunner 23
 Pearce-Simpson Bobcat 23D
 SBE 10CB (Coronado II), 21CB (Cortez), 29CB (Catalina III, Malibu), 30CB (Trinidad II)
 Siltronix Apache, Mohawk
 Tram D40
 Vector IV

AM 32700-6190-5735.pdf

Johnson Messenger 122, 123A, 123SJ, 130A, 132, 223, 250

AM 32845-10180-4300-4755.pdf

Johnson Messenger 124, 124M, 320, 323, 323A, 323M

AM 33000-6490-6035.pdf

Gemtronics GTX-3000
 Lafayette Micro 923
 Realistic TRC55, TRC101, TRC101B

AM 34971-8461-8006.pdf

Browning Eaglette, Eaglette 2
 Kris Victor (416-123), Victor II (416-124)
 Pace 223, 2300, 2300A (late production version), TA2300/B, 2376A, 2376B, CB76, DX2300B

AM 38275-11765-11310.pdf

Lafayette HB-23A, Micro 23, Telsat 150, Telsat 924
 Pearce-Simpson Tiger 23

AM 33165-10500-429875-475375.pdf

Allied 2533
 Cobra 27

AM 37600-4635-5545-6000.pdf

Robyn T-123

AM 19005-7505-7960.pdf

Regency GT-523

Tram Titan IIA, 27D, 27E Xtals.pdf**Walkie-Talkie Xtals.pdf**

This includes virtually all handhelds, and all early base or mobile models that used plug-in crystal sockets.

AM/SSB MODELS:**Browning Mark III.pdf****SSB 11000-81665-81635.pdf**

Courier Centurion SSB, Gladiator SSB

Pearce-Simpson Cheetah SSB, Simba SSB

SSB 110035-81590-78025.pdf

Cobra 134 ("Texas Blackface"), 138A, 139

Midland 13-893, 13-895

SSB 11700-74665-77985.pdf

SBE 18CB (Sidebender III)

SSB 11700-74625-78025.pdf

Johnson Messenger 351, Viking 352

Pace CR1023, CR1023B

SBE 12CB (Sidebender II), 16CB (Console II)

Tram XL-5

SSB 11705-74615-74585.pdf

Boman CB-770

Cobra 130, 132 (early), 135 (early)

Gemtronics GTX-2325

Kris XL-70

Midland 13-873, 13, 878, 13-880B, 13-885

Pace Side-Talk 23 (CBST-23)

Pal Coyote 23

Robyn SS-747B

SBE 6CB, 8CB (Console), 9CB (Catalina), 14CB (Super Console)

Siltronix Cherokee, SSB-23, SSB-23A (Albatross)

SSB 11740-74225-78025.pdf

Pace Side-Talk 1000B, 1000M

SSB 11805-73615-73585.pdf

Courier Spartan SSB

Pearce-Simpson Bengal SSB, Panther SSB

Regency CR-123, CR-123B

SSB 12800-15965-6000.pdf

Browning LTD

Cobra 132 (late), 132A, 135 (late)

Tram D60

SSB 15282-10635-77965-82485.pdf

Xtal XSSB-10

SSB 23330-14907-11275-1RX.pdf

JIL Citizen M5

HyGain 674B (HyRange V), 3078 (VIII)

Kraco KCB2340, KB2355

Lafayette Telsat SSB-75, Telsat SSB-100

Midland 13-892, 13-976

Sears 60003

Truetone MIC4737A-67

Unimetrics Stingray II

SSB 23330-14907-14904-2RX.pdf

Realistic TRC47, TRC48

SSB 23330-14910-14907-2RX.pdf

Lafayette Telsat SSB-25

SSB 37600-101815-110885.pdf

J.C. Penney 981-6075 (Pinto SSB)

SSB 7766-14907-14904-2RX.pdf

HyGain 674, 674A

J.C. Penney 981-6240, 981-6240A

Lafayette Telsat SSB-25A, SSB-50, SSB-50A

Midland 13-894, 13-896, 13-898, 13-898B

Realistic TRC46

Sears 934.36770, 934.36771, 934.36772

SSB 7779166-14907-14904-2RX.pdf

Royce 1-630, 1-631, 1-635, 1-640

SSB 8450-133165-133135-5-5.pdf

Teaberry Twin "T"

[Tram D201, D201A.pdf](#)
[Tram Titan III, Titan IV.pdf](#)

[CBCI HOME](#)

[CONTACT US](#)

Known Models: Allied 2567
Cobra CAM-88, 98
Regency Imperial II

	RX & TX	RX & TX	TX Only	RX Only		RX & TX	RX & TX	TX Only	RX Only
	"A"	"B"	"C"	"D"		"A"	"B"	"C"	"D"
Ch. 1 (26.965)	10.850	8.6150	7.500	7.975	Ch.13 (27.115)	11.000	8.6150	7.500	7.975
Ch. 2 (26.975)	"	8.6250	"	"	Ch.14 (27.125)	"	8.6250	"	"
Ch. 3 (26.985)	"	8.6350	"	"	Ch.15 (27.135)	"	8.6350	"	"
Ch. 4 (27.005)	"	8.6550	"	"	Ch.16 (27.155)	"	8.6550	"	"
Ch. 5 (27.015)	10.900	8.6150	7.500	7.975	Ch.17 (27.165)	11.050	8.6150	7.500	7.975
Ch. 6 (27.025)	"	8.6250	"	"	Ch.18 (27.175)	"	8.6250	"	"
Ch. 7 (27.035)	"	8.6350	"	"	Ch.19 (27.185)	"	8.6350	"	"
Ch. 8 (27.055)	"	8.6550	"	"	Ch.20 (27.205)	"	8.6550	"	"
Ch. 9 (27.065)	10.950	8.6150	7.500	7.975	Ch.21 (27.215)	11.100	8.6150	7.500	7.975
Ch.10 (27.075)	"	8.6250	"	"	Ch.22 (27.225)	"	8.6250	"	"
Ch.11 (27.085)	"	8.6350	"	"	Ch.23 (27.255)	"	8.6550	"	"
Ch.12 (27.105)	"	8.6550	"	"					

Synthesis: "A" + "B" + "C" = direct TX carrier frequency;
"A" + "B" + "D" = RX frequency (offset by 475 KHz)

Example: For Ch.1, [10.850 MHz + 8.615 MHz + 7.500 MHz] = 26.965 MHz. The TX Oscillator when present (like this type of chassis) is always equal to the first IF, in this case 7.500 MHz. Note the RX IF is 475 KHz, rather than the 455 KHz standard that's been adopted in all later models.

Compliments of:

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Known Models: Browning Brownie
Cobra 85
Tram XL

	RX & TX	RX & TX	TX Only	RX Only		RX & TX	RX & TX	TX Only	RX Only
	"A"	"B"	"C"	"D"		"A"	"B"	"C"	"D"
Ch. 1 (26.965)	11.705	7.4600	7.800	7.345	Ch.13 (27.115)	11.855	7.4600	7.800	7.345
Ch. 2 (26.975)	"	7.4700	"	"	Ch.14 (27.125)	"	7.4700	"	"
Ch. 3 (26.985)	"	7.4800	"	"	Ch.15 (27.135)	"	7.4800	"	"
Ch. 4 (27.005)	"	7.5000	"	"	Ch.16 (27.155)	"	7.5000	"	"
Ch. 5 (27.015)	11.755	7.4600	7.800	7.345	Ch.17 (27.165)	11.905	7.4600	7.800	7.345
Ch. 6 (27.025)	"	7.4700	"	"	Ch.18 (27.175)	"	7.4700	"	"
Ch. 7 (27.035)	"	7.4800	"	"	Ch.19 (27.185)	"	7.4800	"	"
Ch. 8 (27.055)	"	7.5000	"	"	Ch.20 (27.205)	"	7.5000	"	"
Ch. 9 (27.065)	11.805	7.4600	7.800	7.345	Ch.21 (27.215)	11.955	7.4600	7.800	7.345
Ch.10 (27.075)	"	7.4700	"	"	Ch.22 (27.225)	"	7.4700	"	"
Ch.11 (27.085)	"	7.4800	"	"	Ch.23 (27.255)	"	7.5000	"	"
Ch.12 (27.105)	"	7.5000	"	"					

Synthesis: "A" + "B" + "C" = direct TX carrier frequency;
"A" + "B" + "D" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1, [11.705 MHz + 7.460 MHz + 7.800 MHz] = 26.965 MHz. The TX Oscillator when present (like this type of chassis) is always equal to the first IF, in this case 7.800 MHz.

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Known Models: Cobra 19, 19M, 21, 29, CAM-89

Courier Cadet 23, Caravelle, Caravelle II, Classic II, Conqueror, Conqueror II, Rebel 23+

Fanon Fanfare 100, 880

Gemtronics GTX-2300

HyGain 670, 670A, 671, 671A, 671B, 672, 672B, 673 (HyRange IV), 3077 (VII)

JC Penney 981-6213

Kraco KCB2310

Kris 23+, T-23, 99'er

Lafayette Comstat 25A, 25B, Comstat 35, HB525, HB525A, HB525B, HB525C,
HB525D, HB525E, HB525F, HB625, Telsat 23Midland 13-852, 13-853, 13-857, 13-858, 13-861, 13-863, 13-866, 13-868, 13-882,
13-882B, 13-883, 13-884, 13-886

Pearce-Simpson Cougar 23, Tomcat 23

Realistic TRC24B, TRC24C, TRC30, TRC30A, TRC52, TRC56

Regency CR202, Formula/23

Royce 1-605A

Sharp CB-500UB, CB-700, CB-800

Teaberry Mighty "T", Model "T", "T" Charlie One, "T" Control, "T" Scout, "T" (23 ch.),
Tele "T"Truetone MCC4434A-67, MCC4635A-67, MCC4760A-67, MCC4774, MIC4726A-67,
MIC4731A-67, MIC4733A-67, MIC4739A-67

	RX & TX	RX & TX	TX Only	RX Only		RX & TX	RX & TX	TX Only	RX Only
	"A"	"B"	"C"	"D"		"A"	"B"	"C"	"D"
Ch. 1 (26.965)	23.290	14.950	11.275	11.730	Ch.13 (27.115)	23.440	14.950	11.275	11.730
Ch. 2 (26.975)	"	14.960	"	"	Ch.14 (27.125)	"	14.960	"	"
Ch. 3 (26.985)	"	14.970	"	"	Ch.15 (27.135)	"	14.970	"	"
Ch. 4 (27.005)	"	14.990	"	"	Ch.16 (27.155)	"	14.990	"	"
Ch. 5 (27.015)	23.340	14.950	11.275	11.730	Ch.17 (27.165)	23.490	14.950	11.275	11.730
Ch. 6 (27.025)	"	14.960	"	"	Ch.18 (27.175)	"	14.960	"	"
Ch. 7 (27.035)	"	14.970	"	"	Ch.19 (27.185)	"	14.970	"	"
Ch. 8 (27.055)	"	14.990	"	"	Ch.20 (27.205)	"	14.990	"	"
Ch. 9 (27.065)	23.390	14.950	11.275	11.730	Ch.21 (27.215)	23.540	14.950	11.275	11.730
Ch.10 (27.075)	"	14.960	"	"	Ch.22 (27.225)	"	14.960	"	"
Ch.11 (27.085)	"	14.970	"	"	Ch.23 (27.255)	"	14.990	"	"
Ch.12 (27.105)	"	14.990	"	"					

Synthesis: "A" + "B" – "C" = direct TX carrier frequency

"A" + "B" – "D" = RX frequency (TX freq. – 455 KHz)

Example: For Ch.1, [23.290 MHz + 14.950 MHz] = 38.240 MHz; subtracting the constant TX carrier oscillator, we get [38.240 MHz – 11.275 MHz] = 26.965 MHz. The TX Oscillator in this type of chassis is always equal to the first IF, in this case 11.275 MHz.*Compliments of:***CBC INTERNATIONAL • P.O. BOX 30655 • TUCSON AZ 85751 U.S.A.****TEL/FAX: 888-I-FIX-CBs (1-888-434-9227), (520) 298-7980 • Internet: www.cbcintl.com • Email: info@cbcintl.com**

Known Models: Sonar FS-23, FS-3023

	RX & TX	RX & TX	TX Only	RX Only		RX & TX	RX & TX	TX Only	RX Only
	"A"	"B"	"C"	"D"		"A"	"B"	"C"	"D"
Ch. 1 (26.965)	16.200	4.765	6.000	5.545	Ch.13 (27.115)	16.350	4.765	6.000	5.545
Ch. 2 (26.975)	"	4.775	"	"	Ch.14 (27.125)	"	4.775	"	"
Ch. 3 (26.985)	"	4.785	"	"	Ch.15 (27.135)	"	4.785	"	"
Ch. 4 (27.005)	"	4.805	"	"	Ch.16 (27.155)	"	4.805	"	"
Ch. 5 (27.015)	16.250	4.765	6.000	5.545	Ch.17 (27.165)	16.400	4.765	6.000	5.545
Ch. 6 (27.025)	"	4.775	"	"	Ch.18 (27.175)	"	4.775	"	"
Ch. 7 (27.035)	"	4.785	"	"	Ch.19 (27.185)	"	4.785	"	"
Ch. 8 (27.055)	"	4.805	"	"	Ch.20 (27.205)	"	4.805	"	"
Ch. 9 (27.065)	16.300	4.765	6.000	5.545	Ch.21 (27.215)	16.450	4.765	6.000	5.545
Ch.10 (27.075)	"	4.775	"	"	Ch.22 (27.225)	"	4.775	"	"
Ch.11 (27.085)	"	4.785	"	"	Ch.23 (27.255)	"	4.805	"	"
Ch.12 (27.105)	"	4.805	"	"					

Synthesis: "A" + "B" + "C" = direct TX carrier frequency;
 "A" + "B" + "D" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1 TX, [16.200 MHz + 4.765 MHz + 6.000 MHz] = 26.965 MHz.

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Known Models: Allied A-2561, A-2564, A-2568

Browning SST

Cobra 24, 25, 28A, 880

Commando 2320, 2325

Craig 4101, 4102

Jet Sounds CB7000

Kraco KCB1401

Lafayette Comstat 23 Mark V, Mark VI, Dyna-Com 23, HB625A

Mark Lancer 23

Midland 13-871, 13-881

Pace CB145

PAL Roadrunner 23

Pearce-Simpson Bobcat 23D

SBE 10CB (Coronado II), 21CB (Cortez), 29CB (Catalina III, Malibu), 30CB (Trinidad II)

Siltronix Apache, Mohawk

Tram D40

Vector IV

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch. 1 (26.965)	16.965	9.5450	10.000
Ch. 2 (26.975)	"	9.5550	10.010
Ch. 3 (26.985)	"	9.5650	10.020
Ch. 4 (27.005)	"	9.5850	10.040

Ch. 5 (27.015)	17.015	9.5450	10.000
Ch. 6 (27.025)	"	9.5550	10.010
Ch. 7 (27.035)	"	9.5650	10.020
Ch. 8 (27.055)	"	9.5850	10.040

Ch. 9 (27.065)	17.065	9.5450	10.000
Ch.10 (27.075)	"	9.5550	10.010
Ch.11 (27.085)	"	9.5650	10.020
Ch.12 (27.105)	"	9.5850	10.040

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch.13 (27.115)	17.115	9.5450	10.000
Ch.14 (27.125)	"	9.5550	10.010
Ch.15 (27.135)	"	9.5650	10.020
Ch.16 (27.155)	"	9.5850	10.040

Ch.17 (27.165)	17.165	9.5450	10.000
Ch.18 (27.175)	"	9.5550	10.010
Ch.19 (27.185)	"	9.5650	10.020
Ch.20 (27.205)	"	9.5850	10.040

Ch.21 (27.215)	17.215	9.5450	10.000
Ch.22 (27.225)	"	9.5550	10.010
Ch.23 (27.255)	"	9.5850	10.040

Synthesis: "A" + "C" = direct TX carrier frequency;

"A" + "B" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1, [16.965 MHz + 10.000 MHz] = 26.965 MHz, the on-channel TX frequency. During RX, the 9.5450 MHz crystal is used, which is exactly 455 KHz lower than 10.000 MHz. This produces the second IF for the receiver. This particular scheme has no fixed high IF, since it must pass a *band* of frequencies from 10.000 MHz to 10.040 MHz. Only the 455 KHz second IF is constant, which means poorer IF selectivity.

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Known Models: Regency GT-523

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch. 1 (26.965)	19.005	7.505	7.960
Ch. 2 (26.975)	"	7.515	7.970
Ch. 3 (26.985)	"	7.525	7.980
Ch. 4 (27.005)	"	7.545	8.000

Ch. 5 (27.015)	19.055	7.505	7.960
Ch. 6 (27.025)	"	7.515	7.970
Ch. 7 (27.035)	"	7.525	7.980
Ch. 8 (27.055)	"	7.545	8.000

Ch. 9 (27.065)	19.105	7.505	7.960
Ch.10 (27.075)	"	7.515	7.970
Ch.11 (27.085)	"	7.525	7.980
Ch.12 (27.105)	"	7.545	8.000

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch.13 (27.115)	19.155	7.505	7.960
Ch.14 (27.125)	"	7.515	7.970
Ch.15 (27.135)	"	7.525	7.980
Ch.16 (27.155)	"	7.545	8.000

Ch.17 (27.165)	19.205	7.505	7.960
Ch.18 (27.175)	"	7.515	7.970
Ch.19 (27.185)	"	7.525	7.980
Ch.20 (27.205)	"	7.545	8.000

Ch.21 (27.215)	19.255	7.505	7.960
Ch.22 (27.225)	"	7.515	7.970
Ch.23 (27.255)	"	7.545	8.000

Synthesis: "A" + "C" = direct TX carrier frequency;
"A" + "B" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1, $[19.005 \text{ MHz} + 7.960 \text{ MHz}] = 26.965 \text{ MHz}$, the on-channel TX frequency. During RX, the 7.505 MHz crystal is used, which is exactly 455 KHz lower than 7.960 MHz. This produces the second IF for the receiver. This particular scheme has no fixed high IF, since it must pass a 40 KHz *band* of frequencies. Therefore no sharp single-frequency I.F. filter is possible at the high I.F. and receiver selectivity is not as good as in other mixing methods that use fixed frequencies at both I.F. stages.

Compliments of:

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TEL/FAX: 888-I-FIX-CBs (1-888-434-9227), (520) 298-7980 • Internet: www.cbcintl.com • Email: info@cbcintl.com

Known Models: Johnson Messenger 122, 123A, 123SJ, 130A, 132, 223, 250

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch. 1 (26.965)	32.700	6.190	5.735
Ch. 2 (26.975)	"	6.180	5.725
Ch. 3 (26.985)	"	6.170	5.715
Ch. 4 (27.005)	"	6.150	5.695

Ch. 5 (27.015)	32.750	6.190	5.735
Ch. 6 (27.025)	"	6.180	5.725
Ch. 7 (27.035)	"	6.170	5.715
Ch. 8 (27.055)	"	6.150	5.695

Ch. 9 (27.065)	32.800	6.190	5.735
Ch.10 (27.075)	"	6.180	5.725
Ch.11 (27.085)	"	6.170	5.715
Ch.12 (27.105)	"	6.150	5.695

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch.13 (27.115)	32.850	6.190	5.735
Ch.14 (27.125)	"	6.180	5.725
Ch.15 (27.135)	"	6.170	5.715
Ch.16 (27.155)	"	6.150	5.695

Ch.17 (27.165)	32.900	6.190	5.735
Ch.18 (27.175)	"	6.180	5.725
Ch.19 (27.185)	"	6.170	5.715
Ch.20 (27.205)	"	6.150	5.695

Ch.21 (27.215)	32.950	6.190	5.735
Ch.22 (27.225)	"	6.180	5.725
Ch.23 (27.255)	"	6.150	5.695

Synthesis: "A" - "C" = direct TX carrier frequency;
 "A" - "B" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1, 32.700 MHz - 5.735 MHz = 26.965 MHz, the on-channel TX frequency. During RX, the 6.190 MHz crystal is used, which is exactly 455 KHz higher than 5.735 MHz. This produces the second IF for the receiver. This particular scheme has no fixed high IF since it must pass a *band* of frequencies from 5.735 MHz to 5.695 MHz; only the 455 KHz second IF is constant.

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Known Models: Johnson Messenger 124, 124M, 320, 323, 323A, 323M

	RX & TX	RX & TX	TX Only	RX Only		RX & TX	RX & TX	TX Only	RX Only
	"A"	"B"	"C"	"D"		"A"	"B"	"C"	"D"
Ch. 1 (26.965)	32.845	10.180	4.300	4.755	Ch.13 (27.115)	32.995	10.180	4.300	4.755
Ch. 2 (26.975)	"	10.170	"	"	Ch.14 (27.125)	"	10.170	"	"
Ch. 3 (26.985)	"	10.160	"	"	Ch.15 (27.135)	"	10.160	"	"
Ch. 4 (27.005)	"	10.140	"	"	Ch.16 (27.155)	"	10.140	"	"
Ch. 5 (27.015)	32.895	10.180	4.300	4.755	Ch.17 (27.165)	33.045	10.180	4.300	4.755
Ch. 6 (27.025)	"	10.170	"	"	Ch.18 (27.175)	"	10.170	"	"
Ch. 7 (27.035)	"	10.160	"	"	Ch.19 (27.185)	"	10.160	"	"
Ch. 8 (27.055)	"	10.140	"	"	Ch.20 (27.205)	"	10.140	"	"
Ch. 9 (27.065)	32.945	10.180	4.300	4.755	Ch.21 (27.215)	33.095	10.180	4.300	4.755
Ch.10 (27.075)	"	10.170	"	"	Ch.22 (27.225)	"	10.170	"	"
Ch.11 (27.085)	"	10.160	"	"	Ch.23 (27.255)	"	10.140	"	"
Ch.12 (27.105)	"	10.140	"	"					

Synthesis: "A" – "B" + "C" = direct TX carrier frequency
 "A" – "B" + "D" = RX frequency (TX freq. + 455 KHz)

Example: For Ch.1, [32.845 MHz – 10.180 MHz] = 22.665 MHz; adding the constant TX carrier oscillator, we get [22.665 MHz + 4.300 MHz] = 26.965 MHz. The TX Oscillator in this type of chassis is always equal to the first IF, in this case 4.300 MHz. There's no second RX IF in this circuit.

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Known Models: Gemtronics GTX-3000
 Lafayette Micro 923
 Realistic TRC55, TRC101, TRC101B

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch. 1 (26.965)	33.000	6.490	6.035
Ch. 2 (26.975)	"	6.480	6.025
Ch. 3 (26.985)	"	6.470	6.015
Ch. 4 (27.005)	"	6.450	5.995

Ch. 5 (27.015)	33.050	6.490	6.035
Ch. 6 (27.025)	"	6.480	6.025
Ch. 7 (27.035)	"	6.470	6.015
Ch. 8 (27.055)	"	6.450	5.995

Ch. 9 (27.065)	33.100	6.490	6.035
Ch.10 (27.075)	"	6.480	6.025
Ch.11 (27.085)	"	6.470	6.015
Ch.12 (27.105)	"	6.450	5.995

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch.13 (27.115)	33.150	6.490	6.035
Ch.14 (27.125)	"	6.480	6.025
Ch.15 (27.135)	"	6.470	6.015
Ch.16 (27.155)	"	6.450	5.995

Ch.17 (27.165)	33.200	6.490	6.035
Ch.18 (27.175)	"	6.480	6.025
Ch.19 (27.185)	"	6.470	6.015
Ch.20 (27.205)	"	6.450	5.995

Ch.21 (27.215)	33.250	6.490	6.035
Ch.22 (27.225)	"	6.480	6.025
Ch.23 (27.255)	"	6.450	5.995

Synthesis: "A" - "C" = direct TX carrier frequency;
 "A" - "B" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1, 33.000 MHz - 6.035 MHz = 26.965 MHz, the on-channel TX frequency. During RX, the 6.490 MHz crystal is used, which is exactly 455 KHz higher than 6.035 MHz. This produces the second IF for the receiver. This particular scheme has no fixed high IF, since it must pass a *band* of frequencies from 6.035 MHz to 5.995 MHz; only the 455 KHz second IF is constant.

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Known Models: Allied 2533
Cobra 27

	RX & TX "A"	RX & TX "B"	TX Only "C"	RX Only "D"
Ch. 1 (26.965)	33.165	10.500	4.29875	4.75375
Ch. 2 (26.975)	"	10.490	"	"
Ch. 3 (26.985)	"	10.480	"	"
Ch. 4 (27.005)	"	10.460	"	"

Ch. 5 (27.015)	33.215	10.500	4.29875	4.75375
Ch. 6 (27.025)	"	10.490	"	"
Ch. 7 (27.035)	"	10.480	"	"
Ch. 8 (27.055)	"	10.460	"	"

Ch. 9 (27.065)	33.265	10.500	4.29875	4.75375
Ch.10 (27.075)	"	10.490	"	"
Ch.11 (27.085)	"	10.480	"	"
Ch.12 (27.105)	"	10.460	"	"

	RX & TX "A"	RX & TX "B"	TX Only "C"	RX Only "D"
Ch.13 (27.115)	33.315	10.500	4.29875	4.75375
Ch.14 (27.125)	"	10.490	"	"
Ch.15 (27.135)	"	10.480	"	"
Ch.16 (27.155)	"	10.460	"	"

Ch.17 (27.165)	33.365	10.500	4.29875	4.75375
Ch.18 (27.175)	"	10.490	"	"
Ch.19 (27.185)	"	10.480	"	"
Ch.20 (27.205)	"	10.460	"	"

Ch.21 (27.215)	33.415	10.500	4.29875	4.75375
Ch.22 (27.225)	"	10.490	"	"
Ch.23 (27.255)	"	10.460	"	"

Synthesis: "A" – "B" + "C" = direct TX carrier frequency
 "A" – "B" + "D" = RX frequency (TX freq. + 455 KHz)

Example: For Ch.1, [33.165 MHz – 10.500 MHz + 4.29875 MHz] = 26.965 MHz, the correct on-channel TX carrier frequency. Substituting the "D" crystal (RX) instead results in 27.420 MHz, the high I.F. This is exactly 455 KHz higher and when mixed with the incoming 26.965 MHz RX signal, results in the low I.F. of 455 KHz.

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Known Models: Browning Eaglette, Eaglette 2
 Kris Victor (416-123), Victor II (416-124)
 Pace 223, 2300, 2300A (late production version), 2376A, 2376B, CB76,
 DX2300B, TA2300/B

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch. 1 (26.965)	34.971	8.461	8.006
Ch. 2 (26.975)	"	8.451	7.996
Ch. 3 (26.985)	"	8.441	7.986
Ch. 4 (27.005)	"	8.421	7.966

Ch. 5 (27.015)	35.021	8.461	8.006
Ch. 6 (27.025)	"	8.451	7.996
Ch. 7 (27.035)	"	8.441	7.986
Ch. 8 (27.055)	"	8.421	7.966

Ch. 9 (27.065)	35.071	8.461	8.006
Ch.10 (27.075)	"	8.451	7.996
Ch.11 (27.085)	"	8.441	7.986
Ch.12 (27.105)	"	8.421	7.966

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch.13 (27.115)	35.121	8.461	8.006
Ch.14 (27.125)	"	8.451	7.996
Ch.15 (27.135)	"	8.441	7.986
Ch.16 (27.155)	"	8.421	7.966

Ch.17 (27.165)	35.171	8.461	8.006
Ch.18 (27.175)	"	8.451	7.996
Ch.19 (27.185)	"	8.441	7.986
Ch.20 (27.205)	"	8.421	7.966

Ch.21 (27.215)	35.221	8.461	8.006
Ch.22 (27.225)	"	8.451	7.996
Ch.23 (27.255)	"	8.421	7.966

Synthesis: "A" - "C" = direct TX carrier frequency;
 "A" - "B" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1, 34.971 MHz - 8.006 MHz = 26.965 MHz, the on-channel TX frequency. During RX, the 8.461 MHz crystal is used, which is exactly 455 KHz higher than 8.066 MHz. This produces the second IF for the receiver. This particular scheme has no fixed high IF, since it must pass a *band* of frequencies from 8.421 to 8.461 MHz; only the 455 KHz second IF is constant.

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Known Models: Robyn T-123

	RX & TX "A"	RX & TX "B"	TX Only "C"	RX Only "D"
Ch. 1 (26.965)	37.600	4.635	6.000	5.545
Ch. 2 (26.975)	"	4.625	"	"
Ch. 3 (26.985)	"	4.615	"	"
Ch. 4 (27.005)	"	4.595	"	"

Ch. 5 (27.015)	37.650	4.635	6.000	5.545
Ch. 6 (27.025)	"	4.625	"	"
Ch. 7 (27.035)	"	4.615	"	"
Ch. 8 (27.055)	"	4.595	"	"

Ch. 9 (27.065)	37.700	4.635	6.000	5.545
Ch.10 (27.075)	"	4.625	"	"
Ch.11 (27.085)	"	4.615	"	"
Ch.12 (27.105)	"	4.595	"	"

	RX & TX "A"	RX & TX "B"	TX Only "C"	RX Only "D"
Ch.13 (27.115)	37.750	4.635	6.000	5.545
Ch.14 (27.125)	"	4.625	"	"
Ch.15 (27.135)	"	4.615	"	"
Ch.16 (27.155)	"	4.595	"	"

Ch.17 (27.165)	37.800	4.635	6.000	5.545
Ch.18 (27.175)	"	4.625	"	"
Ch.19 (27.185)	"	4.615	"	"
Ch.20 (27.205)	"	4.595	"	"

Ch.21 (27.215)	37.850	4.635	6.000	5.545
Ch.22 (27.225)	"	4.625	"	"
Ch.23 (27.255)	"	4.595	"	"

Synthesis: "A" – "B" – "C" = direct TX carrier frequency
 "A" – "B" – "D" = RX frequency (TX freq. + 455 KHz)

Example: For Ch.1, [37.600 MHz – 4.635 MHz – 6.000 MHz] = 26.965 MHz; the correct TX carrier frequency. For RX, [37.600 MHz – 4.635 MHz – 5.545 MHz] = 27.420 MHz, which is exactly 455 KHz difference from the TX signal. This generates the second or low I.F. of 455 KHz common to most CBs. Notice that while this scheme is dual-conversion, there's no fixed high I.F. since it must pass a 40 KHz *band* of frequencies. Therefore no sharp single-frequency I.F. filter is possible at the high I.F. and receiver selectivity is not as good as in other mixing methods.

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Known Models:

Alaron B-1100
 Allied 2569
 Audiovox MCB500
 Beltek Enduro 23
 Boman CB-755
 Claricon Activator, Intruder, Pirate, Privateer, Raider
 Commando 2310, 2340
 Courier Cruiser, Redball
 Craig 4103, 4104, 4201
 Fulcomm 2300, 2301, 2302
 Granada CB-6, CB-7
 Gemtronics GTX-23, GTX-3323, GTX-36, GT-230
 JC Penney 981-6051 (Golden Pinto), 981-6235, 981-6236 (981-0607), 985-6060 (Pinto 23B)
 J.I.L. 606CB, 852CB
 Kris Valiant, Ventura, XL-23, XL-25
 Lafayette Com-Phone 23, HB650, HB700, Micro 723, Publicom I, Telsat 925, Telsat 1000, Telsat 1023
 Mark Invader 23
 Midland 13-862, 13-862B, 13-864, 13-867, 13-869, 13-877, 13-879, 13-879B, 13-887
 Olson CB88, CB409
 Pace CB113, 123A (early & late prod.), 130, CB133, CB143, CB144, CB162
 Panasonic RJ-3200, CR-B1717EU

Pearce-Simpson Bearcat 23, 23B, 23C, Bobcat 23, 23B, 23C, 23E, Cougar 23 (late prod.), Cougar 23B, Lynx 23, Puma 23, 23B, 23C, Pussycat 23, SuperLynx, Tiger 23B, 23C
 Ray Jefferson CB705, CB905
 Realistic TRC23B, TRC40, TRC49 (Pro-Niner), TRC50, TRC50B, TRC61, TRC68
 Regency CR142, CR185, CR186, CR230, Sprint/23, Sprint/23 II
 Robyn BB-123, DG-30, GT-VIIB, J-123, K-123, LB-23, LB-23A, SX101, SX102, T-123, TR123B, TR123C, WV-23, WV-23A, XL-1, XL-2
 Royce 1-600A, 1-600B, 1-602A, 1-620, 1-624, 1-650
 Rystl CBR-1700, CBR-1800
 SBE 9CB (Catalina), 11CB (Trinidad), 22CB (Catalina II), 34CB (Brute)
 Sears 934.36710, 934.367405
 Shakespeare GBS-1500, GBS-2000, GBS-2500
 Stereosonic 2300, 2301, 2302, 2355, 2360
 Surveyor 2100, 2300, 2400, 2600
 Teaberry Big "T", 5x5
 Truetone DX4370, MCC4532A-57, MCC4434A-57, MCC4532-47, MCC4724A-77
 Unimetrics Dolphone, Mako-I, Marlin-I, Porpoise-I, Sea Horse-I
 Vector VI, IX
 XTAL XCB-4, XCB-5, XCB-6, XCB-7, XCB-11, XCB-12, XCB-23A, XCB-28, XCB-88
 Zodiac M-5023, M-5026

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch. 1 (26.965)	37.600	10.180	10.635
Ch. 2 (26.975)	"	10.170	10.625
Ch. 3 (26.985)	"	10.160	10.615
Ch. 4 (27.005)	"	10.140	10.595

Ch. 5 (27.015)	37.650	10.180	10.635
Ch. 6 (27.025)	"	10.170	10.625
Ch. 7 (27.035)	"	10.160	10.615
Ch. 8 (27.055)	"	10.140	10.595

Ch. 9 (27.065)	37.700	10.180	10.635
Ch.10 (27.075)	"	10.170	10.625
Ch.11 (27.085)	"	10.160	10.615
Ch.12 (27.105)	"	10.140	10.595

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch.13 (27.115)	37.750	10.180	10.635
Ch.14 (27.125)	"	10.170	10.625
Ch.15 (27.135)	"	10.160	10.615
Ch.16 (27.155)	"	10.140	10.595

Ch.17 (27.165)	37.800	10.180	10.635
Ch.18 (27.175)	"	10.170	10.625
Ch.19 (27.185)	"	10.160	10.615
Ch.20 (27.205)	"	10.140	10.595

Ch.21 (27.215)	37.850	10.180	10.635
Ch.22 (27.225)	"	10.170	10.625
Ch.23 (27.255)	"	10.140	10.595

Synthesis: "A" - "C" = direct TX carrier frequency;
 "A" - "B" = RX frequency (offset higher by 455 KHz)

Example: For Ch.1, [37.600 MHz - 10.635 MHz] = 26.965 MHz, the on-channel TX frequency. During RX, the 10.180 MHz crystal is used, which is exactly 455 KHz lower than the 10.635 MHz TX signal. This generates the second or low I.F. of 455 KHz common to most CBs. Notice that while this scheme is dual-conversion, there's no fixed high I.F. since it must pass a 40 KHz *band* of frequencies. Therefore no sharp single-frequency I.F. filter is possible at the high I.F. and receiver selectivity is not as good as in other mixing methods that use fixed frequencies at both I.F. stages.

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Known Models: Midland 13-870D, 13-872

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch. 1 (26.965)	37.600	11.090	10.635
Ch. 2 (26.975)	"	11.080	10.625
Ch. 3 (26.985)	"	11.070	10.615
Ch. 4 (27.005)	"	11.050	10.595

Ch. 5 (27.015)	37.650	11.090	10.635
Ch. 6 (27.025)	"	11.080	10.625
Ch. 7 (27.035)	"	11.070	10.615
Ch. 8 (27.055)	"	11.050	10.595

Ch. 9 (27.065)	37.700	11.090	10.635
Ch.10 (27.075)	"	11.080	10.625
Ch.11 (27.085)	"	11.070	10.615
Ch.12 (27.105)	"	11.050	10.595

	Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch.13 (27.115)	37.750	11.090	10.635
Ch.14 (27.125)	"	11.080	10.625
Ch.15 (27.135)	"	11.070	10.615
Ch.16 (27.155)	"	11.050	10.595

Ch.17 (27.165)	37.800	11.090	10.635
Ch.18 (27.175)	"	11.080	10.625
Ch.19 (27.185)	"	11.070	10.615
Ch.20 (27.205)	"	11.050	10.595

Ch.21 (27.215)	37.850	11.090	10.635
Ch.22 (27.225)	"	11.080	10.625
Ch.23 (27.255)	"	11.050	10.595

Synthesis: "A" - "C" = direct TX carrier frequency;
"A" - "B" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1, 37.600 MHz - 10.635 MHz = 26.965 MHz, the on-channel TX frequency. During RX, the 11.090 MHz crystal is used, which is exactly 455 KHz higher than 10.635 MHz. This generates the second or low I.F. of 455 KHz common to most CBs. Notice that while this scheme is dual-conversion, there's no fixed high I.F. since it must pass a 40 KHz *band* of frequencies. Therefore no sharp single-frequency I.F. filter is possible at the high I.F. and receiver selectivity is not as good as in other mixing methods that use fixed frequencies at both I.F. stages.

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Known Models: Lafayette HB-23A, Micro 23, Telsat 150, Telsat 924
Pearce-Simpson Tiger 23

	Both RX & TX "A"	RX Only "B"	TX Only "C"		Both RX & TX "A"	RX Only "B"	TX Only "C"
Ch. 1 (26.965)	38.275	11.765	11.310	Ch.13 (27.115)	38.375	11.715	11.260
Ch. 2 (26.975)	38.285	"	"	Ch.14 (27.125)	38.385	"	"
Ch. 3 (26.985)	38.295	"	"	Ch.15 (27.135)	38.395	"	"
Ch. 4 (27.005)	38.315	"	"	Ch.16 (27.155)	38.415	"	"
Ch. 5 (27.015)	38.275	11.715	11.260	Ch.17 (27.165)	38.475	11.765	11.310
Ch. 6 (27.025)	38.285	"	"	Ch.18 (27.175)	38.485	"	"
Ch. 7 (27.035)	38.295	"	"	Ch.19 (27.185)	38.495	"	"
Ch. 8 (27.055)	38.315	"	"	Ch.20 (27.205)	38.515	"	"
Ch. 9 (27.065)	38.375	11.765	11.310	Ch.21 (27.215)	38.475	11.715	11.260
Ch.10 (27.075)	38.385	"	"	Ch.22 (27.225)	38.485	"	"
Ch.11 (27.085)	38.395	"	"	Ch.23 (27.255)	38.515	"	"
Ch.12 (27.105)	38.415	"	"				

Synthesis: A" - "C" = direct on-channel TX frequency;
A" - "B" = RX frequency (offset lower by 455 KHz)

Example: For Ch.1, 38.275 MHz - 11.310 MHz = 26.965 MHz, the on-channel TX frequency. During RX, the 11.765 MHz crystal is used, which is exactly 455 KHz higher than 11.310 MHz. This produces the second IF for the receiver. This particular scheme has no fixed high IF, since it must pass a *band* of frequencies; only the 455 KHz second IF is constant.

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Make/Model: Browning Golden Eagle Mark III

	Both RX & TX	RX Only		Both RX & TX	RX Only
Ch. 1 (26.965)	16.270	31.400	Ch.13 (27.115)	16.420	31.400
Ch. 2 (26.975)	16.280	"	Ch.14 (27.125)	16.430	"
Ch. 3 (26.985)	16.290	"	Ch.15 (27.135)	16.440	"
Ch. 4 (27.005)	16.310	"	Ch.16 (27.155)	16.460	"
Ch. 5 (27.015)	16.320	31.400	Ch.17 (27.165)	16.470	31.400
Ch. 6 (27.025)	16.330	"	Ch.18 (27.175)	16.480	"
Ch. 7 (27.035)	16.340	"	Ch.19 (27.185)	16.490	"
Ch. 8 (27.055)	16.360	"	Ch.20 (27.205)	16.510	"
Ch. 9 (27.065)	16.370	31.400	Ch.21 (27.215)	16.520	31.400
Ch.10 (27.075)	16.380	"	Ch.22 (27.225)	16.530	"
Ch.11 (27.085)	16.390	"	Ch.23 (27.255)	16.560	"
Ch.12 (27.105)	16.410	"			

Additional Crystals:

5.6465 MHz AM Carrier Osc.

5.6480 MHz LSB Carrier Osc.

5.6450 MHz USB Carrier Osc.

5.0485 MHz AM Synth. Osc. all 23 channels

5.0470 MHz LSB Synth. Osc. all 23 channels

5.0500 MHz USB Synth. Osc. all 23 channels

Synthesis:

[16 MHz channel crystal + 5 MHz Carrier Osc. crystal + 5 MHz Synth. Osc. crystal] = on-channel frequency

Example: For Ch.1 AM, it is 16.270 MHz + 5.6465 MHz + 5.0485 MHz = 26.965 MHz. This radio is unique in that the Carrier Oscillator is not the same as the first IF. The first RX IF is produced by a separate 31.400 MHz local oscillator. The second IF is produced by the VFO, which mixes with the first IF in the 4 MHz range to produce a 455 KHz second IF.

Modifications are not practical; each new 16 MHz crystal you replace gives you only one new channel.

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Known Models: HyGain 674, 674A
 J.C. Penney 981-6240, 981-6240A
 Lafayette Telsat SSB-25A, SSB-50, SSB-50A
 Midland 13-894, 13-896, 13-898, 13-898B
 Realistic TRC46
 Sears 934.36770, 934.36771, 934.36772

	Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"		Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"
Ch. 1 (26.965)	7.7766	14.907	14.904	Ch.13 (27.115)	7.8266	14.907	14.904
Ch. 2 (26.975)	"	14.917	14.914	Ch.14 (27.125)	"	14.917	14.914
Ch. 3 (26.985)	"	14.927	14.924	Ch.15 (27.135)	"	14.927	14.924
Ch. 4 (27.005)	"	14.947	14.944	Ch.16 (27.155)	"	14.947	14.944
Ch. 5 (27.015)	7.7933	14.907	14.904	Ch.17 (27.165)	7.8433	14.907	14.904
Ch. 6 (27.025)	"	14.917	14.914	Ch.18 (27.175)	"	14.917	14.914
Ch. 7 (27.035)	"	14.927	14.924	Ch.19 (27.185)	"	14.927	14.924
Ch. 8 (27.055)	"	14.947	14.944	Ch.20 (27.205)	"	14.947	14.944
Ch. 9 (27.065)	7.8100	14.907	14.904	Ch.21 (27.215)	7.8600	14.907	14.904
Ch.10 (27.075)	"	14.917	14.914	Ch.22 (27.225)	"	14.917	14.914
Ch.11 (27.085)	"	14.927	14.924	Ch.23 (27.255)	"	14.947	14.944
Ch.12 (27.105)	"	14.947	14.944				

Additional Crystals: 11.275 MHz AM/USB Carrier Oscillator
 11.272 MHz LSB Carrier Oscillator
 11.730 MHz AM RX Oscillator

Synthesis: $[3 \times \text{"A"}] + \text{"B"} - 11.275 \text{ MHz} = \text{AM/USB carrier}$; $[3 \times \text{"A"}] + \text{"C"} - 11.272 \text{ MHz} = \text{LSB carrier}$

Example: For Ch.1 AM, it's $[3 \times 7.7766] + 14.907 - 11.275 \approx 26.965 \text{ MHz}$. Note all the 14 MHz crystals are actually being trimmed up by 3 KHz. Some later versions of this chassis used the higher crystals, so that Ch.1 AM/USB is 14.910 MHz, LSB is 14.907 MHz, etc. The SSB IF is 11.275 MHz. The 455 KHz second IF for AM is produced by mixing this with a separate 11.730 MHz RX oscillator.

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Known Models: Teaberry Twin “T”

	Both RX & TX “A”	AM/USB Only “B”	LSB Only “C”		Both RX & TX “A”	AM/USB Only “B”	LSB Only “C”
Ch. 1 (26.965)	8.450	13.3165	13.3135	Ch.13 (27.115)	8.600	13.3165	13.3135
Ch. 2 (26.975)	"	13.3265	13.3235	Ch.14 (27.125)	"	13.3265	13.3235
Ch. 3 (26.985)	"	13.3365	13.3335	Ch.15 (27.135)	"	13.3365	13.3335
Ch. 4 (27.005)	"	13.3565	13.3535	Ch.16 (27.155)	"	13.3565	13.3535
Ch. 5 (27.015)	8.500	13.3165	13.3135	Ch.17 (27.165)	8.650	13.3165	13.3135
Ch. 6 (27.025)	"	13.3265	13.3235	Ch.18 (27.175)	"	13.3265	13.3235
Ch. 7 (27.035)	"	13.3365	13.3335	Ch.19 (27.185)	"	13.3365	13.3335
Ch. 8 (27.055)	"	13.3565	13.3535	Ch.20 (27.205)	"	13.3565	13.3535
Ch. 9 (27.065)	8.550	13.3165	13.3135	Ch.21 (27.215)	8.700	13.3165	13.3135
Ch.10 (27.075)	"	13.3265	13.3235	Ch.22 (27.225)	"	13.3265	13.3235
Ch.11 (27.085)	"	13.3365	13.3335	Ch.23 (27.255)	"	13.3565	13.3535
Ch.12 (27.105)	"	13.3565	13.3535				

Additional Crystals: 5.1985 MHz AM/USB Carrier Osc.
5.2015 MHz LSB Carrier Osc.
4.7450 MHz AM-only RX Oscillator

Synthesis: [“A” + “B” + 5.1985 MHz] = AM/USB carrier; [“A” + “C” + 5.2015 MHz] = LSB carrier

Example: For Ch.1 AM, [8.450 MHz + 13.3165 MHz + 5.1985 MHz] = 26.965 MHz. The Carrier Oscillator and 13 MHz Synthesizer Oscillator are both offset 1.5 KHz on SSB, giving the required total offset of ± 3 KHz. The first I.F. is 5.200 MHz. The 455 KHz second I.F. for AM is produced by mixing the 5.200 MHz high I.F. with a separate 4.7450 MHz crystal RX Local Oscillator, [5.200 – 4.745] = 0.455 MHz or 455 KHz.

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Known Models: Courier Centurion SSB, Gladiator SSB
Pearce-Simpson Cheetah SSB, Simba SSB

	Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"		Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"
Ch. 1 (26.965)	11.000	8.1665	8.1635	Ch.13 (27.115)	11.150	8.1665	8.1635
Ch. 2 (26.975)	"	8.1765	8.1735	Ch.14 (27.125)	"	8.1765	8.1735
Ch. 3 (26.985)	"	8.1885	8.1835	Ch.15 (27.135)	"	8.1865	8.1835
Ch. 4 (27.005)	"	8.2065	8.2035	Ch.16 (27.155)	"	8.2065	8.2035
Ch. 5 (27.015)	11.050	8.1665	8.1635	Ch.17 (27.165)	11.200	8.1665	8.1635
Ch. 6 (27.025)	"	8.1765	8.1735	Ch.18 (27.175)	"	8.1765	8.1735
Ch. 7 (27.035)	"	8.1865	8.1835	Ch.19 (27.185)	"	8.1865	8.1835
Ch. 8 (27.055)	"	8.2065	8.2035	Ch.20 (27.205)	"	8.2065	8.2035
Ch. 9 (27.065)	11.100	8.1665	8.1635	Ch.21 (27.215)	11.250	8.1665	8.1635
Ch.10 (27.075)	"	8.1765	8.1735	Ch.22 (27.225)	"	8.1765	8.1735
Ch.11 (27.085)	"	8.1865	8.1835	Ch.23 (27.255)	"	8.2065	8.2035
Ch.12 (27.105)	"	8.2065	8.2035				

Additional Crystals: 7.7985 MHz AM/USB Carrier Osc.
7.8015 MHz LSB Carrier Osc.
7.3435 MHz AM-only RX Oscillator

Synthesis: ["A" + "B" + 7.7985 MHz] = AM/USB carrier; ["A" + "C" + 7.8015 MHz] = LSB carrier

Example: For Ch.1 AM, [11.000 MHz + 8.1665 MHz + 7.7985 MHz] = 26.965 MHz. The Carrier Oscillator and 7 MHz Synthesizer Oscillator are both offset 1.5 KHz on SSB, giving the required total offset of ± 3 KHz. The SSB IF is 7.800 MHz. The 455 KHz second IF for AM is produced by mixing the 7.800 MHz high IF with a separate 7.3435 MHz crystal RX Local Oscillator.

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Known Models: Johnson Messenger 351, Viking 352
Pace CR1023, CR1023B
SBE 12CB (Sidebander II), 16CB (Console II)
Tram XL-5

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"		Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch. 1 (26.965)	11.700	7.4625	7.8025	Ch.13 (27.115)	11.850	7.4625	7.8025
Ch. 2 (26.975)	"	7.4725	"	Ch.14 (27.125)	"	7.4725	"
Ch. 3 (26.985)	"	7.4825	"	Ch.15 (27.135)	"	7.4825	"
Ch. 4 (27.005)	"	7.5025	"	Ch.16 (27.155)	"	7.5025	"
Ch. 5 (27.015)	11.750	7.4625	7.8025	Ch.17 (27.165)	11.900	7.4625	7.8025
Ch. 6 (27.025)	"	7.4725	"	Ch.18 (27.175)	"	7.4725	"
Ch. 7 (27.035)	"	7.4825	"	Ch.19 (27.185)	"	7.4825	"
Ch. 8 (27.055)	"	7.5025	"	Ch.20 (27.205)	"	7.5025	"
Ch. 9 (27.065)	11.800	7.4625	7.8025	Ch.21 (27.215)	11.950	7.4625	7.8025
Ch.10 (27.075)	"	7.4725	"	Ch.22 (27.225)	"	7.4725	"
Ch.11 (27.085)	"	7.4825	"	Ch.23 (27.255)	"	7.5025	"
Ch.12 (27.105)	"	7.5025	"				

Synthesis: ["A" + "B" + 7.8025 MHz] = on-channel carrier frequency (plus USB and LSB offsets)

Example: For Ch.1, 7.4625 MHz + 11.700 MHz + 7.8025 MHz = 26.965 MHz. The offsets for LSB and USB are accomplished by totally separate mixing paths in this chassis. Separate synthesizer outputs of 19 MHz for AM/LSB and 34 MHz for USB are used. This is a great improvement in unwanted sideband suppression and image rejection over that of a single synthesizer output stage. Made in the good old days when the cost of a few extra parts wasn't so critical! The RX is single-conversion though, with a 7.8 MHz IF.

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Known Models: SBE 18CB (Sidebander III)

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch. 1 (26.965)	11.700	7.4665	7.7985
Ch. 2 (26.975)	"	7.4765	"
Ch. 3 (26.985)	"	7.4865	"
Ch. 4 (27.005)	"	7.5065	"

Ch. 5 (27.015)	11.750	7.4665	7.7985
Ch. 6 (27.025)	"	7.4765	"
Ch. 7 (27.035)	"	7.4865	"
Ch. 8 (27.055)	"	7.5065	"

Ch. 9 (27.065)	11.800	7.4665	7.7985
Ch.10 (27.075)	"	7.4765	"
Ch.11 (27.085)	"	7.4865	"
Ch.12 (27.105)	"	7.5065	"

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch.13 (27.115)	11.850	7.4665	7.7985
Ch.14 (27.125)	"	7.4765	"
Ch.15 (27.135)	"	7.4865	"
Ch.16 (27.155)	"	7.5065	"

Ch.17 (27.165)	11.900	7.4665	7.7985
Ch.18 (27.175)	"	7.4765	"
Ch.19 (27.185)	"	7.4865	"
Ch.20 (27.205)	"	7.5065	"

Ch.21 (27.215)	11.950	7.4665	7.7985
Ch.22 (27.225)	"	7.4765	"
Ch.23 (27.255)	"	7.5065	"

Synthesis: ["A" + "B" + 7.7985 MHz] = on-channel carrier frequency (plus USB and LSB offsets)

Example: For Ch.1, [7.4665 MHz + 11.700 MHz + 7.7895 MHz] = 26.965 MHz. The offsets for LSB and USB are accomplished by totally separate mixing paths in this chassis. Separate synthesizer outputs of 19 MHz for AM/LSB and 34 MHz for USB are used. This is a great improvement in unwanted sideband suppression and image rejection over that of a single synthesizer output stage. Made in the good old days when the cost of a few extra parts wasn't so critical! The RX is single-conversion though, with a 7.8 MHz IF.

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Known Models: Boman CB-770
 Cobra 130, 132 (early), 135 (early)
 Fulcom 2303
 Gemtronics GTX-2325
 Kris XL-70
 Midland 13-873, 13-878, 13-880B, 13-885
 Pace Side-Talk 23 (CBST-23)
 Pal Coyote 23
 Robyn SS-747B
 SBE 6CB, 8CB (Console), 14CB (Super Console)
 Siltronix Cherokee, SSB-23, SSB-23A (Albatross)

	Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"		Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"
Ch. 1 (26.965)	11.705	7.4615	7.4585	Ch.13 (27.115)	11.855	7.4615	7.4585
Ch. 2 (26.975)	"	7.4715	7.4685	Ch.14 (27.125)	"	7.4715	7.4685
Ch. 3 (26.985)	"	7.4815	7.4785	Ch.15 (27.135)	"	7.4815	7.4785
Ch. 4 (27.005)	"	7.5015	7.4985	Ch.16 (27.155)	"	7.5015	7.4985
Ch. 5 (27.015)	11.755	7.4615	7.4585	Ch.17 (27.165)	11.905	7.4615	7.4585
Ch. 6 (27.025)	"	7.4715	7.4685	Ch.18 (27.175)	"	7.4715	7.4685
Ch. 7 (27.035)	"	7.4815	7.4785	Ch.19 (27.185)	"	7.4815	7.4785
Ch. 8 (27.055)	"	7.5015	7.4985	Ch.20 (27.205)	"	7.5015	7.4985
Ch. 9 (27.065)	11.805	7.4615	7.4585	Ch.21 (27.215)	11.955	7.4615	7.4585
Ch.10 (27.075)	"	7.4715	7.4685	Ch.22 (27.225)	"	7.4715	7.4685
Ch.11 (27.085)	"	7.4815	7.4785	Ch.23 (27.255)	"	7.5015	7.4985
Ch.12 (27.105)	"	7.5015	7.4985				

Additional Crystals: 7.7985 MHz AM/USB Carrier Osc.
 7.8015 MHz LSB Carrier Osc.
 7.3435 MHz AM-only RX Oscillator

Synthesis: ["A" + "B" + 7.7985 MHz] = AM/USB carrier; ["A" + "C" + 7.8015 MHz] = LSB carrier

Example: For Ch.1 AM, [11.705 MHz + 7.4615 MHz + 7.7985 MHz] = 26.965 MHz. The Carrier Oscillator and 7 MHz Synthesizer Oscillator are both offset 1.5 KHz on SSB, giving the required total offset of ± 3 KHz. The SSB IF is 7.800 MHz. The 455 KHz second IF for AM is produced by mixing the 7.800 MHz high IF with a separate 7.3435 MHz crystal RX Local Oscillator.

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Known Models: Pace 1000B, 1000M

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch. 1 (26.965)	11.740	7.4225	7.8025
Ch. 2 (26.975)	"	7.4325	"
Ch. 3 (26.985)	"	7.4425	"
Ch. 4 (27.005)	"	7.4625	"

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch.13 (27.115)	11.890	7.4225	7.8025
Ch.14 (27.125)	"	7.4325	"
Ch.15 (27.135)	"	7.4425	"
Ch.16 (27.155)	"	7.4625	"

Ch. 5 (27.015)	11.790	7.4225	7.8025
Ch. 6 (27.025)	"	7.4325	"
Ch. 7 (27.035)	"	7.4425	"
Ch. 8 (27.055)	"	7.4625	"

Ch.17 (27.165)	11.940	7.4225	7.8025
Ch.18 (27.175)	"	7.4325	"
Ch.19 (27.185)	"	7.4425	"
Ch.20 (27.205)	"	7.4625	"

Ch. 9 (27.065)	11.840	7.4225	7.8025
Ch.10 (27.075)	"	7.4325	"
Ch.11 (27.085)	"	7.4425	"
Ch.12 (27.105)	"	7.4625	"

Ch.21 (27.215)	11.990	7.4225	7.8025
Ch.22 (27.225)	"	7.4325	"
Ch.23 (27.255)	"	7.4625	"

Synthesis: ["A" + "B" + 7.8025 MHz] = on-channel carrier frequency (plus USB and LSB offsets)

Example: For Ch.1, 7.4225 MHz + 11.740 MHz + 7.8025 MHz = 26.965 MHz. The offsets for LSB and USB are accomplished by totally separate mixing paths in this chassis. Separate synthesizer outputs of 19 MHz for AM/LSB and 34 MHz for USB are used. This is a great improvement in unwanted sideband suppression and image rejection over that of a single synthesizer output stage. Made in the good old days when the cost of a few extra parts wasn't so critical! The RX is single-conversion though, with a 7.8 MHz IF.

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Known Models: Courier Spartan SSB
 Pearce-Simpson Bengal SSB, Panther SSB
 Regency CR-123, CR-123B

	Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"		Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"
Ch. 1 (26.965)	11.805	7.3615	7.3585	Ch.13 (27.115)	11.955	7.3615	7.3585
Ch. 2 (26.975)	"	7.3715	7.3685	Ch.14 (27.125)	"	7.3715	7.3685
Ch. 3 (26.985)	"	7.3815	7.3785	Ch.15 (27.135)	"	7.3815	7.3785
Ch. 4 (27.005)	"	7.4015	7.3985	Ch.16 (27.155)	"	7.4015	7.3985
Ch. 5 (27.015)	11.855	7.3615	7.3585	Ch.17 (27.165)	12.005	7.3615	7.3585
Ch. 6 (27.025)	"	7.3715	7.3685	Ch.18 (27.175)	"	7.3715	7.3685
Ch. 7 (27.035)	"	7.3815	7.3785	Ch.19 (27.185)	"	7.3815	7.3785
Ch. 8 (27.055)	"	7.4015	7.3985	Ch.20 (27.205)	"	7.4015	7.3985
Ch. 9 (27.065)	11.905	7.3615	7.3585	Ch.21 (27.215)	12.055	7.3615	7.3585
Ch.10 (27.075)	"	7.3715	7.3685	Ch.22 (27.225)	"	7.3715	7.3685
Ch.11 (27.085)	"	7.3815	7.3785	Ch.23 (27.255)	"	7.4015	7.3985
Ch.12 (27.105)	"	7.4015	7.3985				

Additional Crystals: 7.7985 MHz AM/USB Carrier Osc.
 7.8015 MHz LSB Carrier Osc.
 7.3435 MHz AM-only RX Oscillator

Synthesis: ["A" + "B" + 7.7985 MHz] = AM/USB carrier; ["A" + "C" + 7.8015 MHz] = LSB carrier

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Known Models: Browning LTD
Cobra 132, 132A, 135
Tram D60

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch. 1 (26.965)	12.800	15.965	6.000
Ch. 2 (26.975)	"	"	6.010
Ch. 3 (26.985)	"	"	6.020
Ch. 4 (27.005)	"	"	6.040

Ch. 5 (27.015)	12.800	16.015	6.000
Ch. 6 (27.025)	"	"	6.010
Ch. 7 (27.035)	"	"	6.020
Ch. 8 (27.055)	"	"	6.040

Ch. 9 (27.065)	12.800	16.065	6.000
Ch.10 (27.075)	"	"	6.010
Ch.11 (27.085)	"	"	6.020
Ch.12 (27.105)	"	"	6.040

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch.13 (27.115)	12.800	16.115	6.000
Ch.14 (27.125)	"	"	6.010
Ch.15 (27.135)	"	"	6.020
Ch.16 (27.155)	"	"	6.040

Ch.17 (27.165)	12.800	16.165	6.000
Ch.18 (27.175)	"	"	6.010
Ch.19 (27.185)	"	"	6.020
Ch.20 (27.205)	"	"	6.040

Ch.21 (27.215)	12.800	16.215	6.000
Ch.22 (27.225)	"	"	6.010
Ch.23 (27.255)	"	"	6.040

Additional Crystals: 7.7985 MHz USB Carrier Oscillator
7.8015 MHz AM/LSB Carrier Oscillator

Synthesis: ["A" + "B" + "C" - 7.800 MHz] = direct channel frequency.

Example: For Ch.1, [12.800 MHz + 15.965 MHz + 6.000 MHz] = 34.765 MHz; [34.765 MHz - 7.8 MHz] = 26.965 MHz. The IF is 7.800 MHz, which is offset slightly up or down for USB and LSB.

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Known Models: Xtal XSSB-10

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"		Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch. 1 (26.965)	15.2820	10.635	8.2485	Ch.13 (27.115)	15.3320	10.635	8.2485
Ch. 2 (26.975)	"	10.625	"	Ch.14 (27.125)	"	10.625	"
Ch. 3 (26.985)	"	10.615	"	Ch.15 (27.135)	"	10.615	"
Ch. 4 (27.005)	"	10.595	"	Ch.16 (27.155)	"	10.595	"
Ch. 5 (27.015)	15.2980	10.635	8.2485	Ch.17 (27.165)	15.3487	10.635	8.2485
Ch. 6 (27.025)	"	10.625	"	Ch.18 (27.175)	"	10.625	"
Ch. 7 (27.035)	"	10.615	"	Ch.19 (27.185)	"	10.615	"
Ch. 8 (27.055)	"	10.595	"	Ch.20 (27.205)	"	10.595	"
Ch. 9 (27.065)	15.3154	10.635	8.2485	Ch.21 (27.215)	15.3654	10.635	8.2485
Ch.10 (27.075)	"	10.625	"	Ch.22 (27.225)	"	10.625	"
Ch.11 (27.085)	"	10.615	"	Ch.23 (27.255)	"	10.595	"
Ch.12 (27.105)	"	10.595	"				

Additional Crystals: 7.7965 MHz RX Local Oscillator**Synthesis:** $[3 \times \text{"A"}] - \text{"B"} - \text{"C"} = \text{direct channel frequency } (\pm \text{SSB offsets})$

Example: For Ch.1, $[3 \times 15.2820] - 10.635 - 8.2485 \approx 26.965$ MHz. The oscillators are offset a total of ± 3 KHz for the different modes, AM, LSB, or USB. The 455 KHz second IF for AM is produced by mixing the 8.2485 MHz high IF with a separate 7.7965 MHz crystal RX Local Oscillator.

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Known Models: JIL Citizen M5
 HyGain 674B (HyRange V), 3078 (VIII)
 Kraco KCB2340, KB2355
 Lafayette Telsat SSB-75, Telsat SSB-100
 Midland 13-892, 13-976
 Sears 60003
 Truetone MIC4737A-67
 Unimetrics Stingray II

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch. 1 (26.965)	23.330	14.907	11.275
Ch. 2 (26.975)	"	14.917	"
Ch. 3 (26.985)	"	14.927	"
Ch. 4 (27.005)	"	14.947	"

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch.13 (27.115)	23.480	14.907	11.275
Ch.14 (27.125)	"	14.917	"
Ch.15 (27.135)	"	14.927	"
Ch.16 (27.155)	"	14.947	"

Ch. 5 (27.015)	23.380	14.907	11.275
Ch. 6 (27.025)	"	14.917	"
Ch. 7 (27.035)	"	14.927	"
Ch. 8 (27.055)	"	14.947	"

Ch.17 (27.165)	23.530	14.907	11.275
Ch.18 (27.175)	"	14.917	"
Ch.19 (27.185)	"	14.927	"
Ch.20 (27.205)	"	14.947	"

Ch. 9 (27.065)	23.430	14.907	11.275
Ch.10 (27.075)	"	14.917	"
Ch.11 (27.085)	"	14.927	"
Ch.12 (27.105)	"	14.947	"

Ch.21 (27.215)	23.580	14.907	11.275
Ch.22 (27.225)	"	14.917	"
Ch.23 (27.255)	"	14.947	"

Synthesis: "A" + "B" - 11.275 = on-channel frequency (plus USB and LSB offsets)

Example: For Ch.1, [23.330 MHz + 14.907 MHz - 11.275 MHz] = 26.962 MHz. Note all the "B" crystals are adjusted 3 KHz *higher* than the marked values. Separate synthesizer outputs of 38 MHz for AM/USB and 16 MHz for LSB are used. This is a great improvement in unwanted sideband suppression and image rejection over that of a single synthesizer output stage. Made in the good old days when the cost of a few extra parts wasn't so critical! The RX is single-conversion though, with a 11.275 MHz IF.

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Known Models: Realistic TRC47, TRC48

	Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"		Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"
Ch. 1 (26.965)	23.330	14.907	14.904	Ch.13 (27.115)	23.480	14.907	14.904
Ch. 2 (26.975)	"	14.917	14.914	Ch.14 (27.125)	"	14.917	14.914
Ch. 3 (26.985)	"	14.927	14.924	Ch.15 (27.135)	"	14.927	14.924
Ch. 4 (27.005)	"	14.947	14.944	Ch.16 (27.155)	"	14.947	14.944
Ch. 5 (27.015)	23.380	14.907	14.904	Ch.17 (27.165)	23.530	14.907	14.904
Ch. 6 (27.025)	"	14.917	14.914	Ch.18 (27.175)	"	14.917	14.914
Ch. 7 (27.035)	"	14.927	14.924	Ch.19 (27.185)	"	14.927	14.924
Ch. 8 (27.055)	"	14.947	14.944	Ch.20 (27.205)	"	14.947	14.944
Ch. 9 (27.065)	23.430	14.907	14.904	Ch.21 (27.215)	23.580	14.907	14.904
Ch.10 (27.075)	"	14.917	14.914	Ch.22 (27.225)	"	14.917	14.914
Ch.11 (27.085)	"	14.927	14.924	Ch.23 (27.255)	"	14.947	14.944
Ch.12 (27.105)	"	14.947	14.944				

Additional Crystals: 11.730 MHz AM RX Oscillator
 11.275 MHz AM/USB Carrier Oscillator
 11.272 MHz LSB Carrier Oscillator

Synthesis: "A" + "B" - 11.275 MHz = AM/USB carrier; "A" + "C" - 11.272 MHz = LSB carrier

Example: For Ch.1 AM, it's $[23.330 + 14.907 - 11.275] \approx 26.965$ MHz. Note all the 14 MHz crystals are actually being trimmed *up* by 3 KHz. Some later versions of this chassis used the higher crystals, so that Ch.1 AM/USB is 14.910 MHz, LSB is 14.907 MHz, etc. The SSB IF is 11.275 MHz. The 455 KHz second IF for AM is produced by mixing this with a separate 11.730 MHz RX oscillator.

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Known Models: Lafayette Telsat SSB-25

	Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"		Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"
Ch. 1 (26.965)	23.330	14.910	14.907	Ch.13 (27.115)	23.480	14.910	14.907
Ch. 2 (26.975)	"	14.920	14.917	Ch.14 (27.125)	"	14.920	14.917
Ch. 3 (26.985)	"	14.930	14.927	Ch.15 (27.135)	"	14.930	14.927
Ch. 4 (27.005)	"	14.950	14.947	Ch.16 (27.155)	"	14.950	14.947
Ch. 5 (27.015)	23.380	14.910	14.907	Ch.17 (27.165)	23.530	14.910	14.907
Ch. 6 (27.025)	"	14.920	14.917	Ch.18 (27.175)	"	14.920	14.917
Ch. 7 (27.035)	"	14.930	14.927	Ch.19 (27.185)	"	14.930	14.927
Ch. 8 (27.055)	"	14.950	14.947	Ch.20 (27.205)	"	14.950	14.947
Ch. 9 (27.065)	23.430	14.910	14.907	Ch.21 (27.215)	23.580	14.91	14.907
Ch.10 (27.075)	"	14.920	14.917	Ch.22 (27.225)	"	14.92	14.917
Ch.11 (27.085)	"	14.930	14.927	Ch.23 (27.255)	"	14.950	14.947
Ch.12 (27.105)	"	14.950	14.947				

Additional Crystals: 11.730 MHz AM RX Oscillator
11.275 MHz AM/USB Carrier Oscillator
11.272 MHz LSB Carrier Oscillator

Synthesis: "A" + "B" - 11.275 MHz = AM/USB carrier; "A" + "C" - 11.272 MHz = LSB carrier

Example: For Ch.1 AM, it's $23.330 + 14.910 - 11.275 = 26.965$ MHz. Note some earlier versions of this chassis trimmed all the 14 MHz crystals *up* by 3 KHz., so the Ch.1 AM/USB crystal they used was 14.907 MHz, the LSB was 14.904 MHz, etc. The SSB IF is 11.275 MHz. The 455 KHz second IF for AM is produced by mixing this with a separate 11.730 MHz RX oscillator.

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Known Models: J.C. Penney 981-6075 (Pinto SSB)

	Both RX & TX "A"	AM/LSB Only "B"	USB Only "C"		Both RX & TX "A"	AM/LSB Only "B"	USB Only "C"
Ch. 1 (26.965)	37.600	10.1815	11.0885	Ch.13 (27.115)	37.750	10.1815	11.0885
Ch. 2 (26.975)	"	10.1715	11.0785	Ch.14 (27.125)	"	10.1715	11.0785
Ch. 3 (26.985)	"	10.1615	11.0685	Ch.15 (27.135)	"	10.1615	11.0685
Ch. 4 (27.005)	"	10.1415	11.0485	Ch.16 (27.155)	"	10.1415	11.0485
Ch. 5 (27.015)	37.650	10.1815	11.0885	Ch.17 (27.165)	37.800	10.1815	11.0885
Ch. 6 (27.025)	"	10.1715	11.0785	Ch.18 (27.175)	"	10.1715	11.0785
Ch. 7 (27.035)	"	10.1615	11.0685	Ch.19 (27.185)	"	10.1615	11.0685
Ch. 8 (27.055)	"	10.1415	11.0485	Ch.20 (27.205)	"	10.1415	11.0485
Ch. 9 (27.065)	37.700	10.1815	11.0885	Ch.21 (27.215)	37.850	10.1815	11.0885
Ch.10 (27.075)	"	10.1715	11.0785	Ch.22 (27.225)	"	10.1715	11.0785
Ch.11 (27.085)	"	10.1615	11.0685	Ch.23 (27.255)	"	10.1415	11.0485
Ch.12 (27.105)	"	10.1415	11.0485				

Additional Crystals: 453.3 KHz Carrier Osc..

Synthesis: "A" - "B" - 453.5 KHz = AM/LSB carrier frequency;
"A" - "C" + 453.5 KHz = USB carrier frequency.

Example: For Ch.1, 37.600 MHz - 10.1815 MHz - .4535 MHz = 26.965 MHz AM/LSB
37.600 MHz - 11.0885 MHz + .4535 MHz = 26.965 MHz USB

Modification Method: Changing the 37 MHz Master Oscillator crystals gives four consecutive channels per new crystal, in one of the six channel groups shown above. Add or subtract the desired up or down shift directly to the 37 MHz mixing crystals.

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Known Models: Cobra 134, 138A, 139, Midland 13-893, 13-895

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch. 1 (26.965)	8.1590	11.0035	7.8025
Ch. 2 (26.975)	"	11.0135	"
Ch. 3 (26.985)	"	11.0235	"
Ch. 4 (27.005)	"	11.0435	"

	Both RX & TX "A"	Both RX & TX "B"	Both RX & TX "C"
Ch.13 (27.115)	8.3090	11.0035	7.8025
Ch.14 (27.125)	"	11.0135	"
Ch.15 (27.135)	"	11.0235	"
Ch.16 (27.155)	"	11.0435	"

Ch. 5 (27.015)	8.2090	11.0035	7.8025
Ch. 6 (27.025)	"	11.0135	"
Ch. 7 (27.035)	"	11.0235	"
Ch. 8 (27.055)	"	11.0435	"

Ch.17 (27.165)	8.3590	11.0035	7.8025
Ch.18 (27.175)	"	11.0135	"
Ch.19 (27.185)	"	11.0235	"
Ch.20 (27.205)	"	11.0435	"

Ch. 9 (27.065)	8.2590	11.0035	7.8025
Ch.10 (27.075)	"	11.0135	"
Ch.11 (27.085)	"	11.0235	"
Ch.12 (27.105)	"	11.0435	"

Ch.21 (27.215)	8.4090	11.0035	7.8025
Ch.22 (27.225)	"	11.0135	"
Ch.23 (27.255)	"	11.0435	"

Synthesis: ["A" + "B" + 7.8025 MHz] = on-channel carrier frequency (plus USB and LSB offsets)

Example: For Ch.1, 8.1590 MHz + 11.0035 MHz + 7.8025 MHz = 26.965 MHz. The offsets for LSB and USB are accomplished by totally separate mixing paths in this chassis. Separate synthesizer outputs of 19 MHz for AM/LSB and 34 MHz for USB are used. This is a great improvement in unwanted sideband suppression and image rejection over that of a single synthesizer output stage. Made in the good old days when the cost of a few extra parts wasn't so critical! The RX is single-conversion though, with a 7.8 MHz IF.

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Known Models: Royce 1-630, 1-631, 1-635, 1-640

	Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"		Both RX & TX "A"	AM/USB Only "B"	LSB Only "C"
Ch. 1 (26.965)	7.779166	14.907	14.904	Ch.13 (27.115)	7.829166	14.907	14.904
Ch. 2 (26.975)	"	14.917	14.914	Ch.14 (27.125)	"	14.917	14.914
Ch. 3 (26.985)	"	14.927	14.924	Ch.15 (27.135)	"	14.927	14.924
Ch. 4 (27.005)	"	14.947	14.944	Ch.16 (27.155)	"	14.947	14.944
Ch. 5 (27.015)	7.795833	14.907	14.904	Ch.17 (27.165)	7.845833	14.907	14.904
Ch. 6 (27.025)	"	14.917	14.914	Ch.18 (27.175)	"	14.917	14.914
Ch. 7 (27.035)	"	14.927	14.924	Ch.19 (27.185)	"	14.927	14.924
Ch. 8 (27.055)	"	14.947	14.944	Ch.20 (27.205)	"	14.947	14.944
Ch. 9 (27.065)	7.812500	14.907	14.904	Ch.21 (27.215)	7.862500	14.907	14.904
Ch.10 (27.075)	"	14.917	14.914	Ch.22 (27.225)	"	14.917	14.914
Ch.11 (27.085)	"	14.927	14.924	Ch.23 (27.255)	"	14.947	14.944
Ch.12 (27.105)	"	14.947	14.944				

Additional Crystals: 11.730 MHz AM RX Oscillator
11.275 MHz AM/USB Carrier Oscillator
11.272 MHz LSB Carrier Oscillator

Synthesis: $[3 \times \text{"A"}] + \text{"B"} - 11.275 \text{ MHz} = \text{AM/USB carrier}$; $[3 \times \text{"A"}] + \text{"C"} - 11.272 \text{ MHz} = \text{LSB carrier}$

Example: For Ch.1 AM, we have $[3 \times 7.779166] + 14.907 - 11.275 \approx 26.965 \text{ MHz}$. Note all the 14 MHz crystals are actually being trimmed *down* by $\sim 4 \text{ KHz}$. Some later versions of this chassis raised all those crystals up while changing the 7 MHz to 23 MHz. The SSB IF is 11.275 MHz. The 455 KHz second IF for AM is produced by mixing this with a separate 11.730 MHz RX oscillator.

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Known Models: Tram D201 (23-channel), D201A (40-channel)

Note how Tram simply added more mixing crystals for the 40-Ch. "A" model, which is otherwise *exactly* the same as the 23-Ch. D201.

	Both RX & TX "A"	AM/LSB Only "B"	USB Only "C"
Ch. 1 (26.965)	4.400	16.3085	16.3115
Ch. 2 (26.975)	4.410	"	"
Ch. 3 (26.985)	4.420	"	"
Ch. 4 (27.005)	4.440	"	"

	Both RX & TX "A"	AM/LSB Only "B"	USB Only "C"
Ch.13 (27.115)	4.400	16.4585	16.4615
Ch.14 (27.125)	4.410	"	"
Ch.15 (27.135)	4.420	"	"
Ch.16 (27.155)	4.440	"	"

Ch. 5 (27.015)	4.400	16.3585	16.3615
Ch. 6 (27.025)	4.410	"	"
Ch. 7 (27.035)	4.420	"	"
Ch. 8 (27.055)	4.440	"	"

Ch.17 (27.165)	4.400	16.5085	16.5115
Ch.18 (27.175)	4.410	"	"
Ch.19 (27.185)	4.420	"	"
Ch.20 (27.205)	4.440	"	"

Ch. 9 (27.065)	4.400	16.4085	16.4115
Ch.10 (27.075)	4.410	"	"
Ch.11 (27.085)	4.420	"	"
Ch.12 (27.105)	4.440	"	"

Ch.21 (27.215)	4.400	16.5585	16.5615
Ch.22 (27.225)	4.410	"	"
Ch.23 (27.255)	4.440	"	"

Tram D201 ends here; for D201A, add crystals below

	Both RX & TX "A"	AM/LSB Only "B"	USB Only "C"
Ch.24 (27.235)	4.420	16.5585	16.5615
Ch.25 (27.245)	4.430	"	"
Ch.26 (27.265)	4.400	16.6085	16.6115
Ch.27 (27.275)	4.410	"	"
Ch.28 (27.285)	4.420	"	"

	Both RX & TX "A"	AM/LSB Only "B"	USB Only "C"
Ch.33 (27.335)	4.420	16.6585	16.6615
Ch.34 (27.345)	4.430	"	"
Ch.35 (27.355)	4.440	"	"
Ch.36 (27.365)	4.400	16.7085	16.7115

Ch.29 (27.295)	4.430	16.6085	16.6115
Ch.30 (27.305)	4.440	"	"
Ch.31 (27.315)	4.400	16.6585	16.6615
Ch.32 (27.325)	4.410	"	"

Ch.37 (27.375)	4.410	16.7085	16.7115
Ch.38 (27.385)	4.420	"	"
Ch.39 (27.395)	4.430	"	"
Ch.40 (27.405)	4.440	"	"

Synthesis: "A" + "B" + 6.2565 MHz = AM/LSB carrier frequency

"A" + "C" + 6.2535 MHz = USB carrier frequency

IF = 6.2565 MHz SSB & 1st AM; 455 KHz 2nd AM.

Additional Crystals: 5.8015 MHz AM-only RX Oscillator
6.2565 MHz AM/LSB Carrier Oscillator
6.2535 MHz USB Carrier Oscillator

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Known Models: Tram Titan IIA, TR27D (any 8 CB Ch.), TR27E (23 Ch.)

	Both RX & TX	RX Only		Both RX & TX	RX Only
Ch. 1 (26.965)	13.4825	31.500	Ch.13 (27.115)	13.5575	31.500
Ch. 2 (26.975)	13.4875	"	Ch.14 (27.125)	13.5625	"
Ch. 3 (26.985)	13.4925	"	Ch.15 (27.135)	13.5675	"
Ch. 4 (27.005)	13.5025	"	Ch.16 (27.155)	13.5775	"
Ch. 5 (27.015)	13.5075	31.500	Ch.17 (27.165)	13.5825	31.500
Ch. 6 (27.025)	13.5125	"	Ch.18 (27.175)	13.5875	"
Ch. 7 (27.035)	13.5175	"	Ch.19 (27.185)	13.5925	"
Ch. 8 (27.055)	13.5275	"	Ch.20 (27.205)	13.6025	"
Ch. 9 (27.065)	13.5325	31.500	Ch.21 (27.215)	13.6075	31.500
Ch.10 (27.075)	13.5375	"	Ch.22 (27.225)	13.6125	"
Ch.11 (27.085)	13.5425	"	Ch.23 (27.255)	13.6275	"
Ch.12 (27.105)	13.5525	"			

Synthesis: [13 MHz channel crystal x 2] = the on-channel frequency.

Example: For Ch.1 AM, it is [13.4825 x 2] = 26.965 MHz. This is unique, as the Carrier Oscillator is *not* the same as the first IF. The first RX IF is produced by a *separate* 31.500 MHz local oscillator. The second IF is produced by the VFO, which mixes with the first IF in the 4 MHz range to produce a 455 KHz second IF.

Compliments of:

CBC INTERNATIONAL • P.O. BOX 30655 • TUCSON AZ 85751 U.S.A.

TEL/FAX: 888-I-FIX-CBs (1-888-434-9227), (520) 298-7980 • Internet: www.cbcintl.com • Email: info@cbcintl.com

Known Models: Tram Titan III, Titan IV

	Both RX & TX "A"	RX Only "B"		Both RX & TX "A"	RX Only "B"
Ch. 1 (26.965)	20.710	31.500	Ch.13 (27.115)	20.860	31.500
Ch. 2 (26.975)	20.720	"	Ch.14 (27.125)	20.870	"
Ch. 3 (26.985)	20.730	"	Ch.15 (27.135)	20.880	"
Ch. 4 (27.005)	20.750	"	Ch.16 (27.155)	20.900	"
Ch. 5 (27.015)	20.760	31.500	Ch.17 (27.165)	20.910	31.500
Ch. 6 (27.025)	20.770	"	Ch.18 (27.175)	20.920	"
Ch. 7 (27.035)	20.780	"	Ch.19 (27.185)	20.930	"
Ch. 8 (27.055)	20.800	"	Ch.20 (27.205)	20.950	"
Ch. 9 (27.065)	20.810	31.500	Ch.21 (27.215)	20.960	31.500
Ch.10 (27.075)	20.820	"	Ch.22 (27.225)	20.970	"
Ch.11 (27.085)	20.830	"	Ch.23 (27.255)	21.000	"
Ch.12 (27.105)	20.850	"			

Additional Crystals: 6.2550 MHz AM Carrier Oscillator 6.2565 MHz LSB Carrier Oscillator
 6.2535 MHz USB Carrier Oscillator 31.500 MHz RX Oscillator

Synthesis: 20 MHz crystal + appropriate 6 MHz AM/LSB/USB crystals = the on-channel frequency

Example: For Ch.1 AM, it is $[20.710 \text{ MHz} + 6.255 \text{ MHz}] = 26.965 \text{ MHz}$. This radio is unique in that the Carrier Oscillator is *not* the same as the first IF. The first RX IF is produced by a *separate* 31.500 MHz local oscillator. The second IF is produced by the VFO, which mixes with the first IF in the 4 MHz range to produce a 455 KHz second IF.

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Known Models: All Walkie-Talkies w/plug-in crystals, old tube-type w/plug-in crystals.

Synthesis: None. These use direct conversion. The TX crystal is the direct on-channel frequency. The RX crystal is always 455 KHz lower, resulting in the only IF stage. You can replace these channels with any of the higher ones in the 40-channel CB band, or switch in extra crystals beyond the existing socket choices. This is exactly how all 3-Ch., 6-Ch., and 23-Ch. CB Walkie-Talkies and older tube CBs are set up.

Channel	TX Only	RX Only	Channel	TX Only	RX Only
Ch. 1 (26.965)	26.965	26.510	Ch.13 (27.115)	27.115	26.660
Ch. 2 (26.975)	26.975	26.520	Ch.14 (27.125)	27.125	26.670
Ch. 3 (26.985)	26.985	26.530	Ch.15 (27.135)	27.135	26.680
Ch. 4 (27.005)	27.005	26.550	Ch.16 (27.155)	27.155	26.700
Ch. 5 (27.015)	27.015	26.560	Ch.17 (27.165)	27.165	26.710
Ch. 6 (27.025)	27.025	26.570	Ch.18 (27.175)	27.175	26.720
Ch. 7 (27.035)	27.035	26.580	Ch.19 (27.185)	27.185	26.730
Ch. 8 (27.055)	27.055	26.600	Ch.20 (27.205)	27.205	26.850
Ch. 9 (27.065)	27.065	26.610	Ch.21 (27.215)	27.215	26.760
Ch.10 (27.075)	27.075	26.620	Ch.22 (27.225)	27.225	26.770
Ch.11 (27.085)	27.085	26.630	Ch.23 (27.255)	27.255	26.800
Ch.12 (27.105)	27.105	26.650			

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