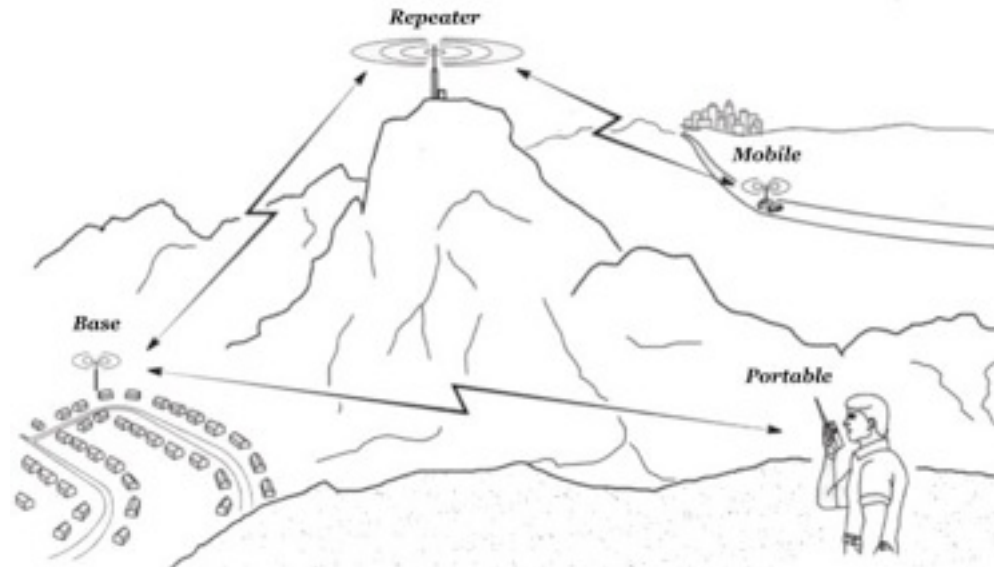


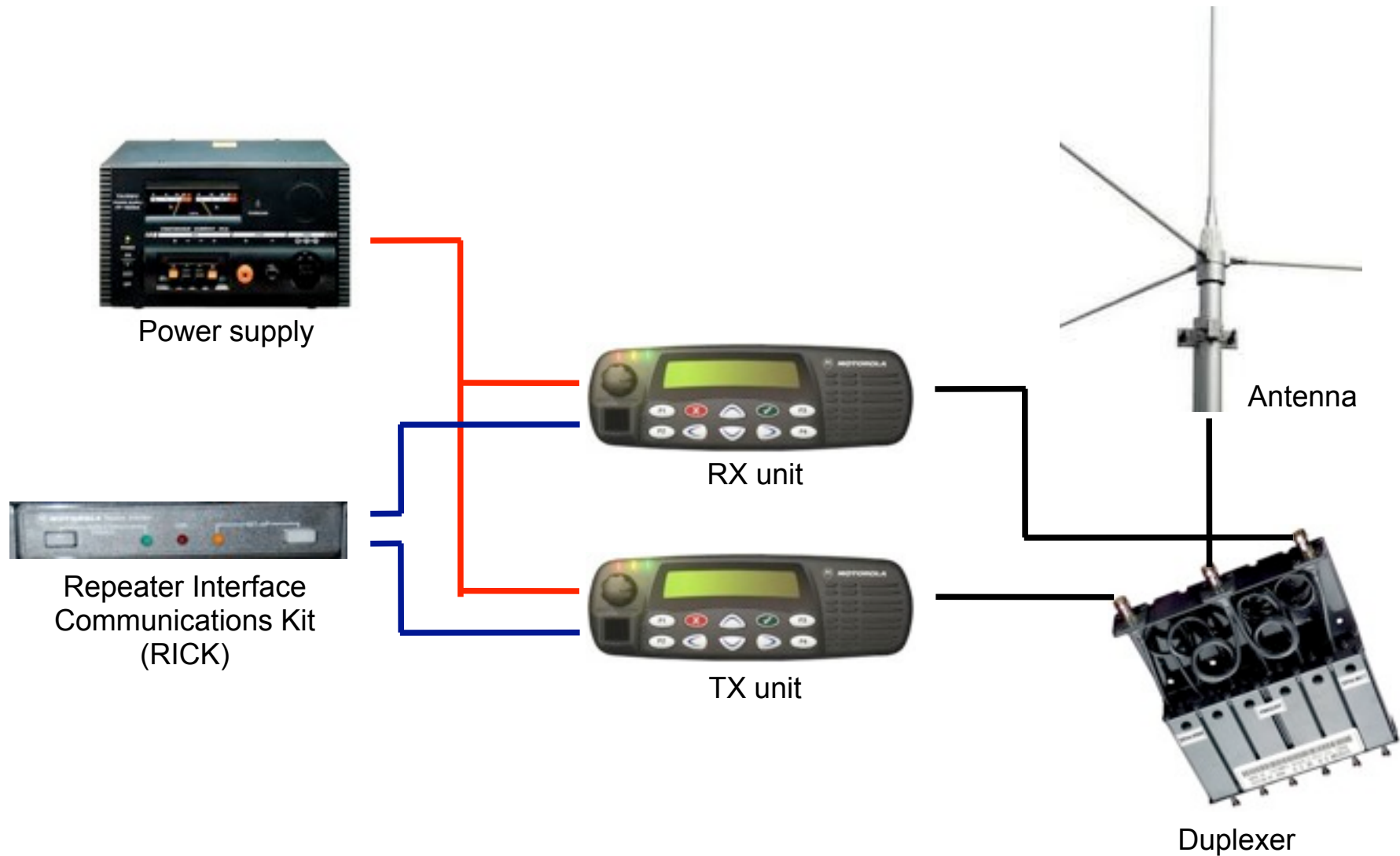
Building an Emergency Repeater



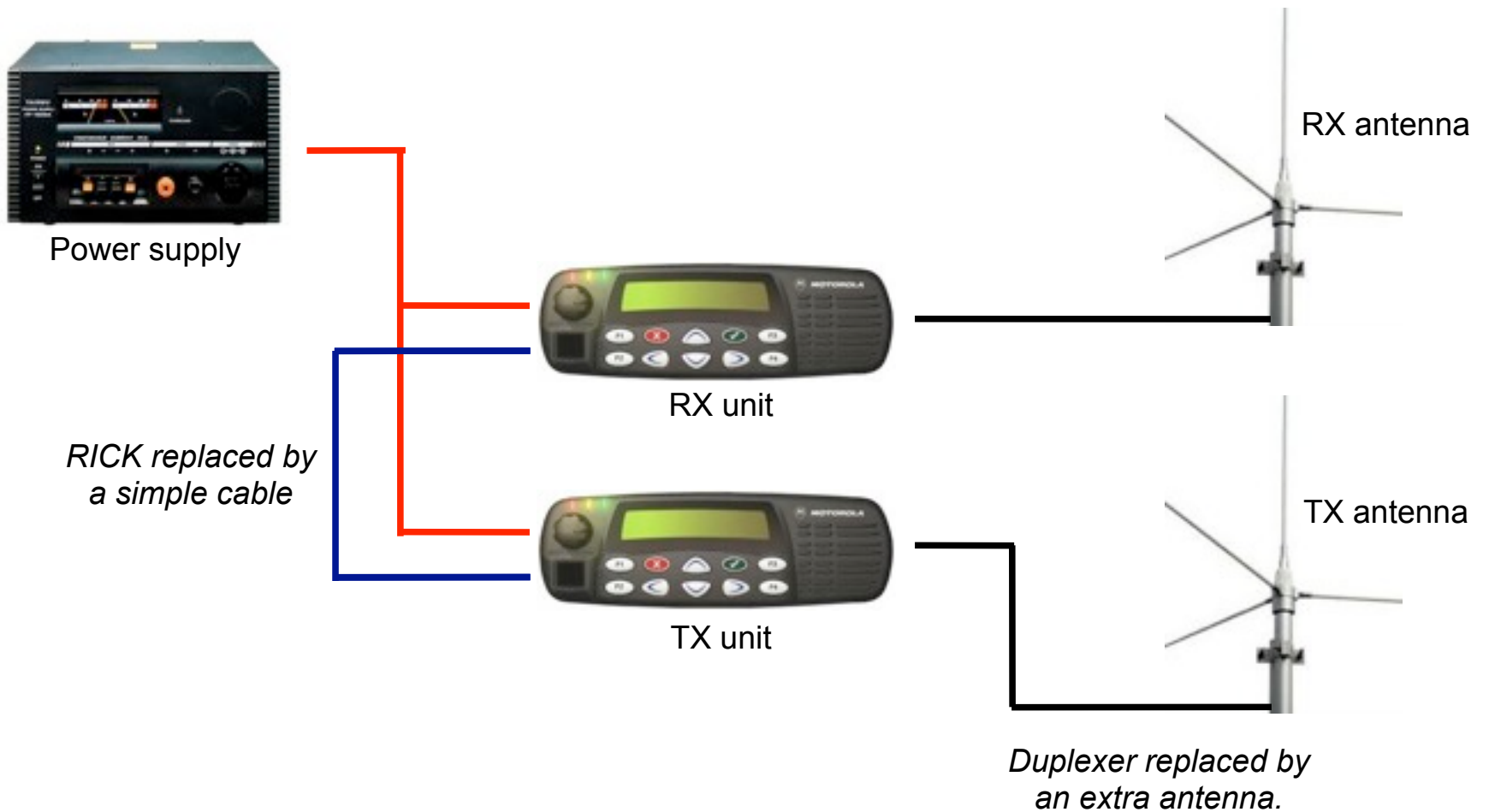
Using Motorola GM-360 radios

Red Cross IT & Telecom Emergency Response Unit Training, Washington 2010

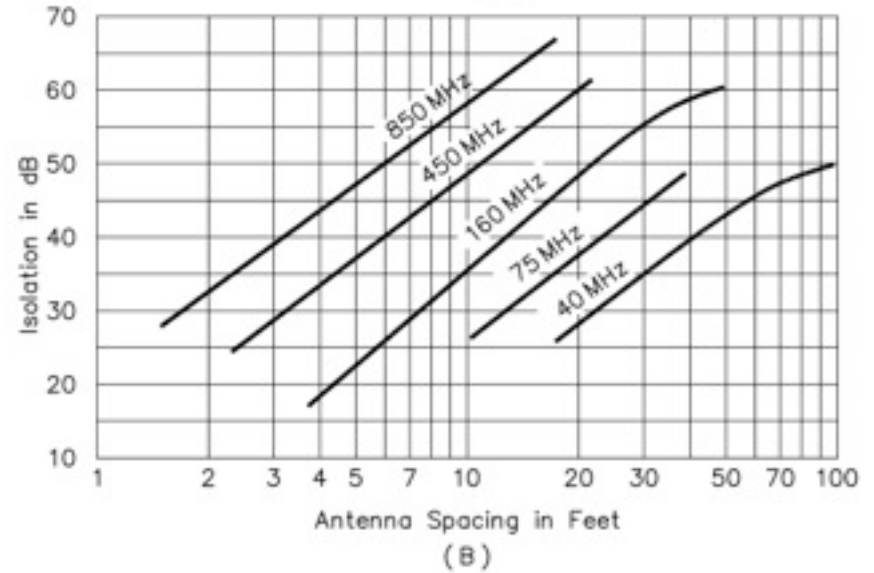
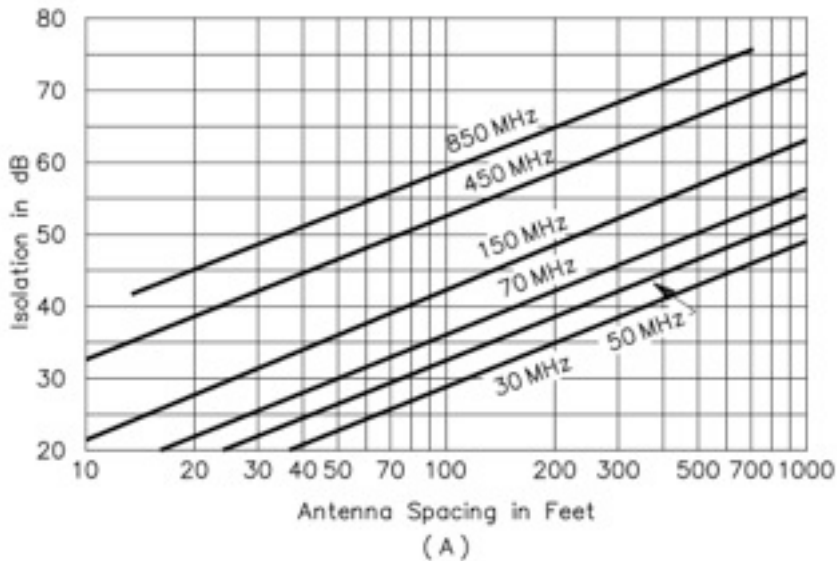
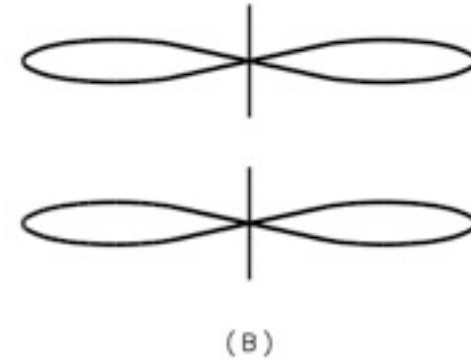
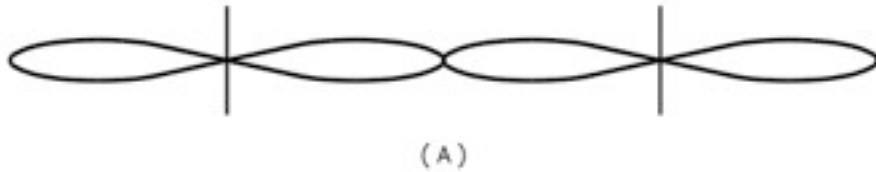
Typical repeater setup



Emergency repeater setup



Dual antenna separation

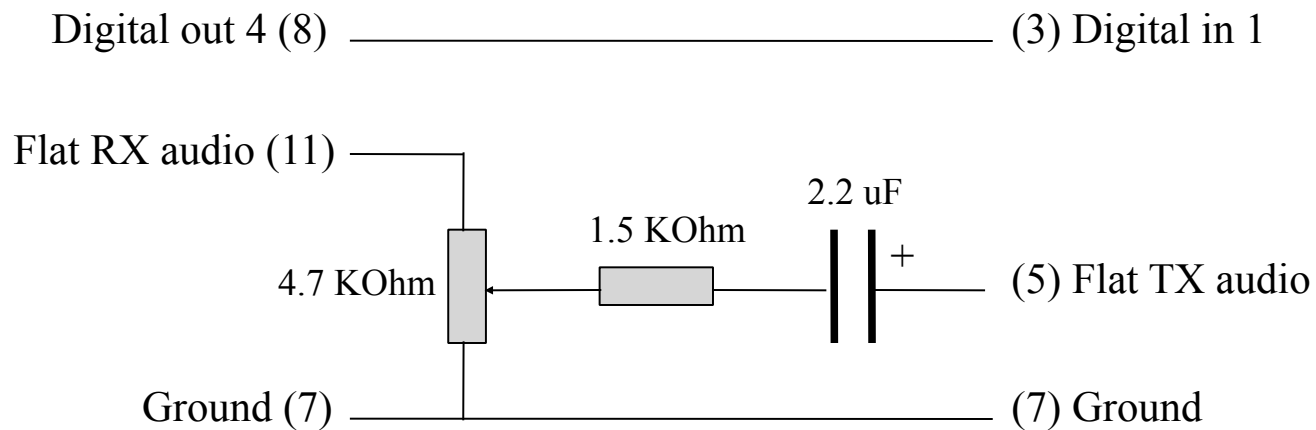


Give it a try even if you can only get about 10 to 20 meters of separation for practical reasons. Set the TX power to a few Watts and mount the RX antenna high to favor the reception. You will be surprised how well it works.

Emergency repeater cable

GM-360 RX Accessory Connector

GM-360 TX Accessory Connector



Use the information at your own risk!

GM-360 Accessory Connector

- 3) Digital in 1 (input)
- 5) Flat TX audio (input)
- 7) Ground
- 8) Digital out 4 (output)
- 11) Flat RX audio (output)

20	2	4	6	8	10	12	14	16	18
19	1	3	5	7	9	11	13	15	17

GM-360 Accessory connector as seen from behind the radio
Previous radio models had only 16 pins causing the special numbering.

Use the information at your own risk!

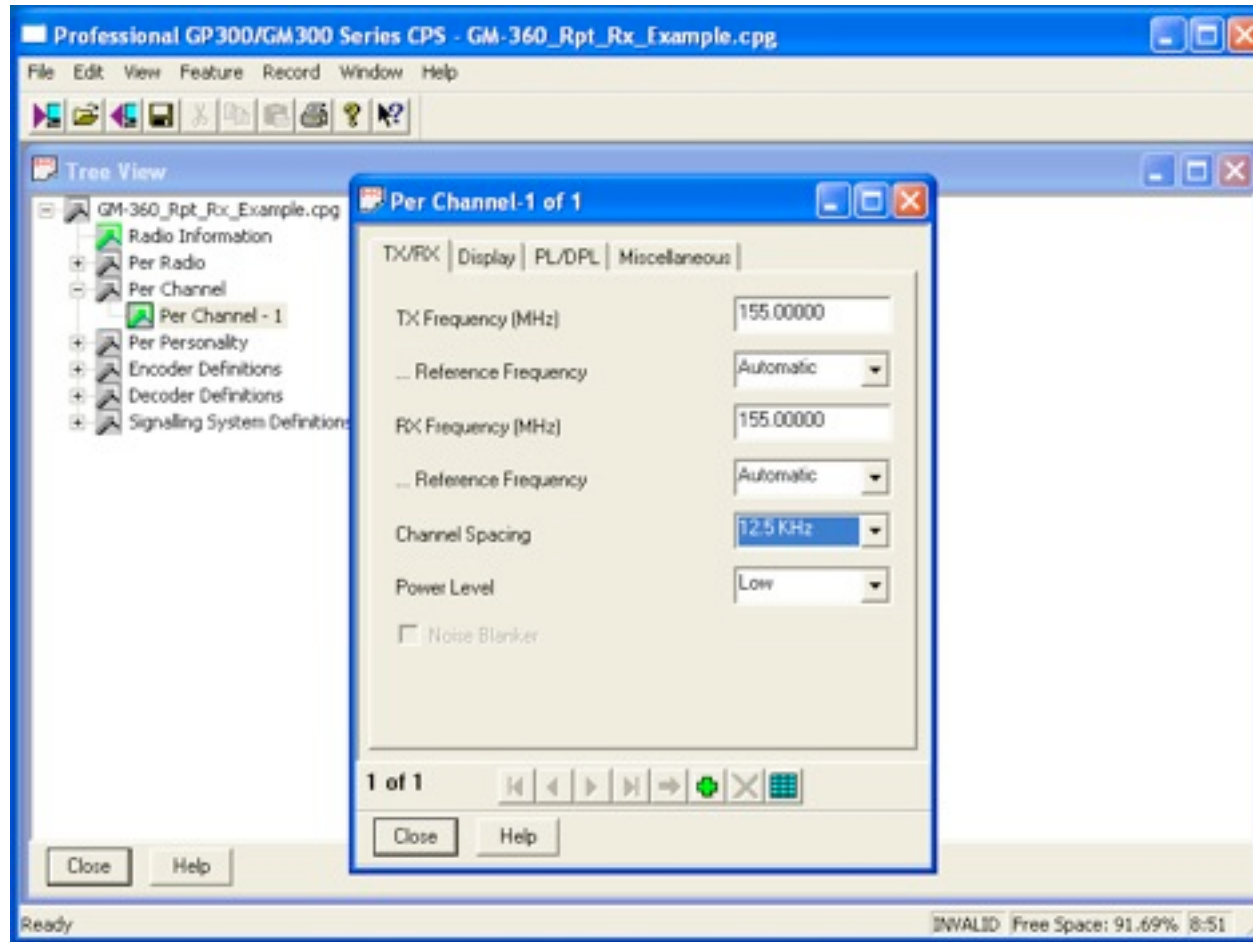
PL (CTCSS) Table

CTCSS TONE FREQUENCY (Hz)					
67.0	69.3	71.9	74.4	77.0	79.7
82.5	85.4	88.5	91.5	94.8	97.4
100.0	103.5	107.2	110.9	114.8	118.8
123.0	127.3	131.8	136.5	141.3	146.2
151.4	156.7	159.8	162.2	165.5	167.9
171.3	173.8	177.3	179.9	183.5	186.2
189.9	192.8	196.6	199.5	203.5	206.5
210.7	218.1	225.7	229.1	233.6	241.8
250.3	254.1	—	—	—	—

DPL (DCS) Table

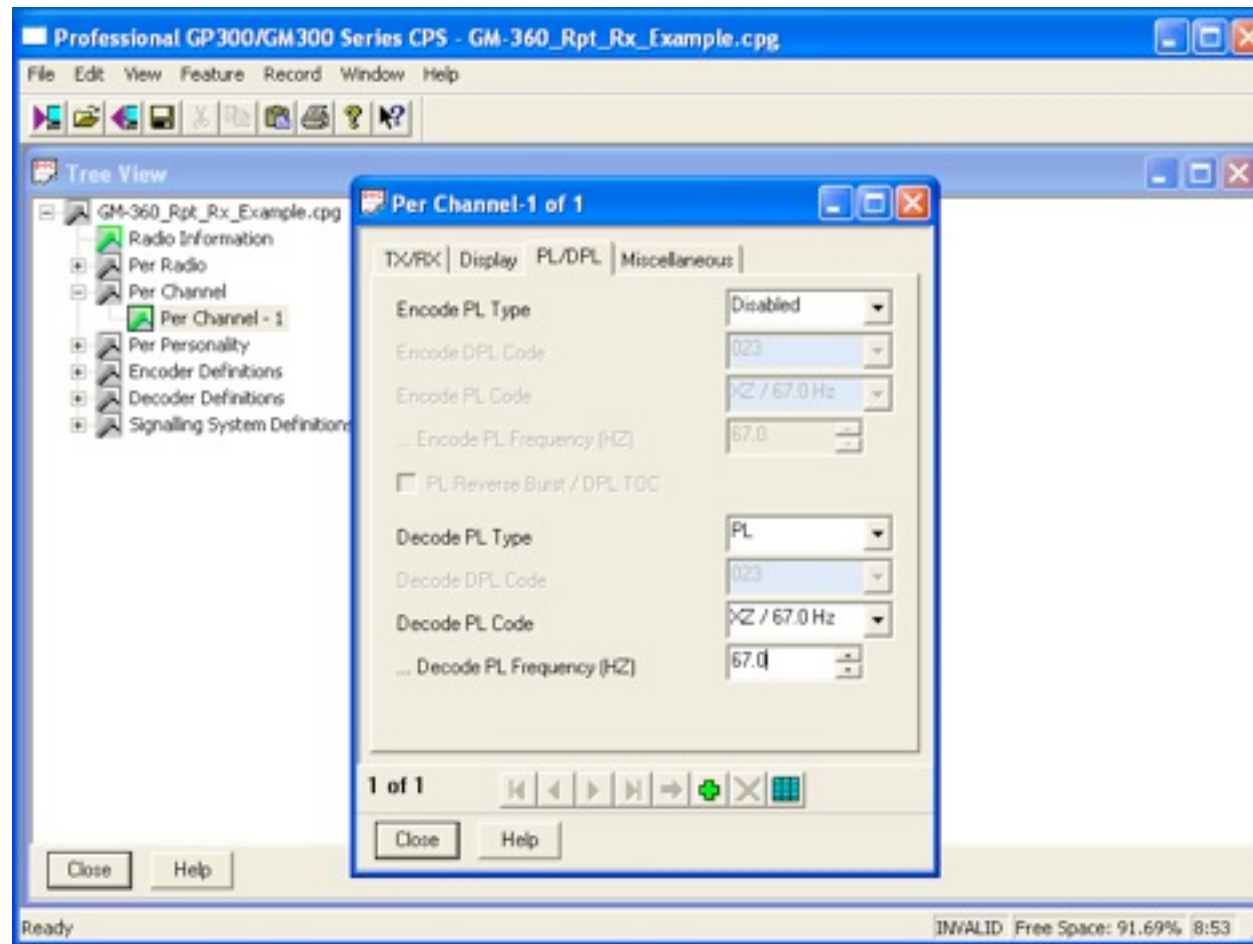
DCS CODE									
023	025	026	031	032	036	043	047	051	053
054	065	071	072	073	074	114	115	116	122
125	131	132	134	143	145	152	155	156	162
165	172	174	205	212	223	225	226	243	244
245	246	251	252	255	261	263	265	266	271
274	306	311	315	325	331	332	343	346	351
356	364	365	371	411	412	413	423	431	432
445	446	452	454	455	462	464	465	466	503
506	516	523	526	532	546	565	606	612	624
627	631	632	654	662	664	703	712	723	731
732	734	743	754	–	–	–	–	–	–

RX - Channel Settings



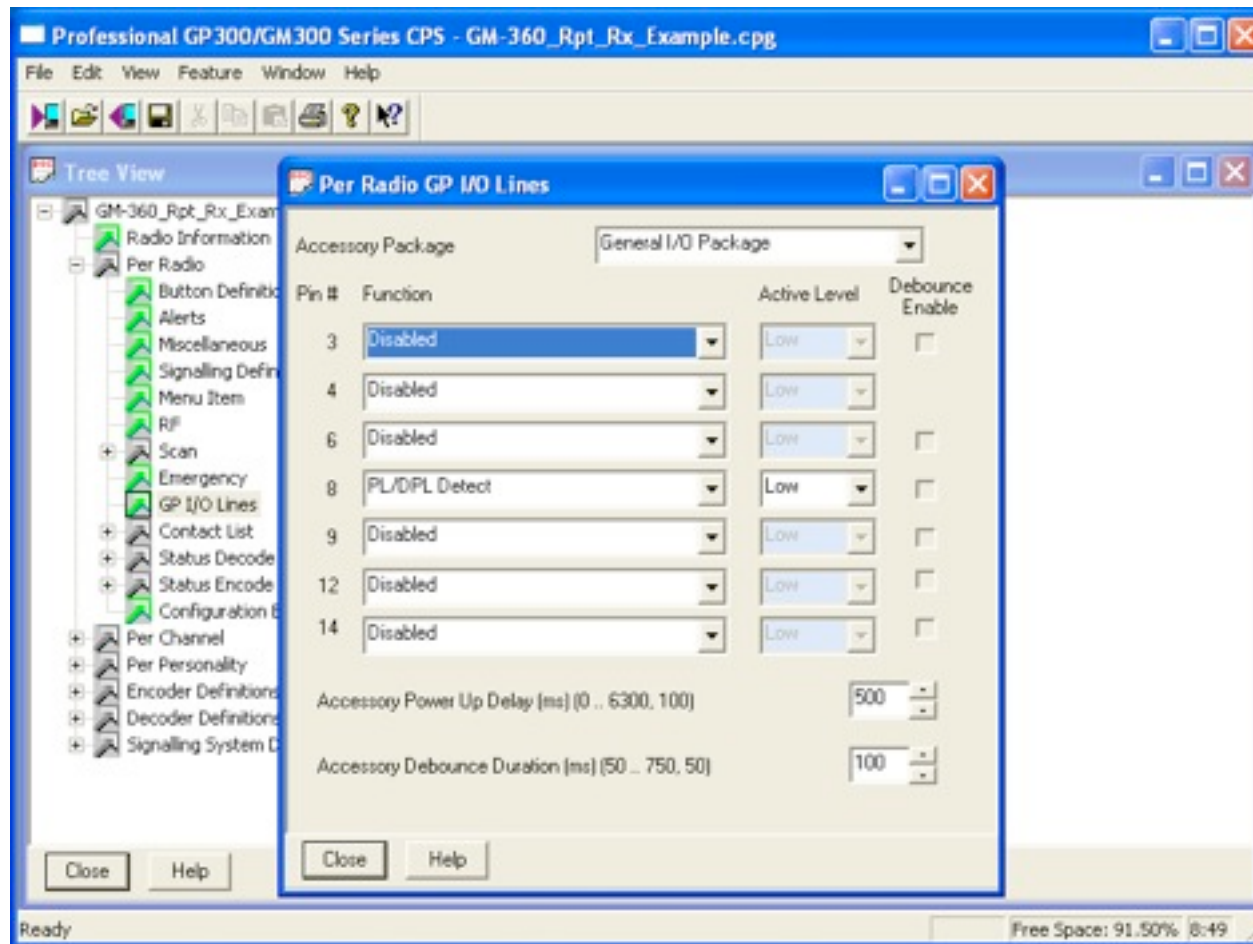
- 1) Delete all existing channels except one.
- 2) Set *RX Frequency* to the repeater RX frequency (user TX frequency).
- 3) Set *Channel Spacing* to 12.5 KHz or 25 KHz dependent on country standard (or existing network).

RX - Channel Encode



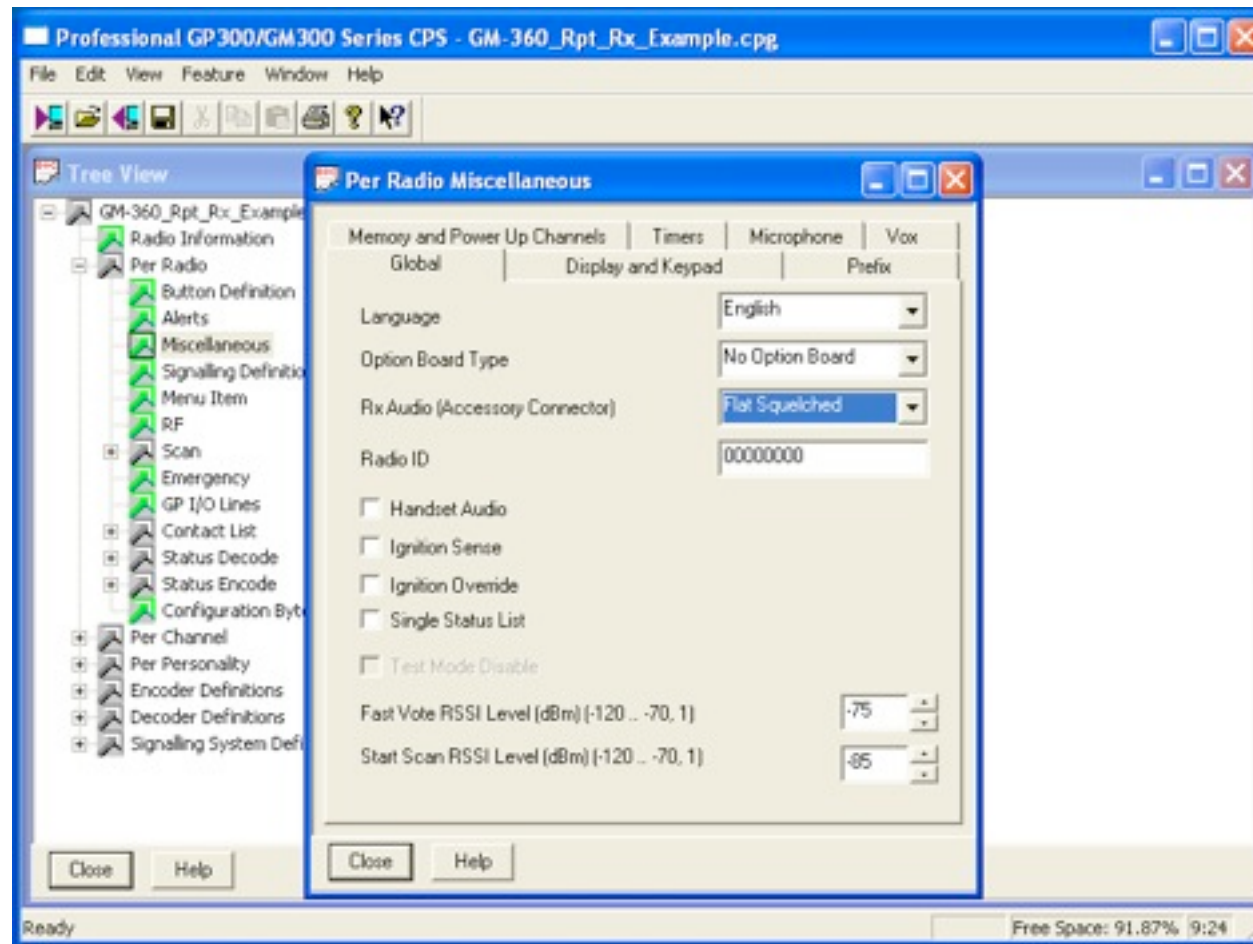
- 1) Set desired *Decode PL Type*.
- 2) Set desired *Decode PL Code*.

RX - Encode Signal I/O



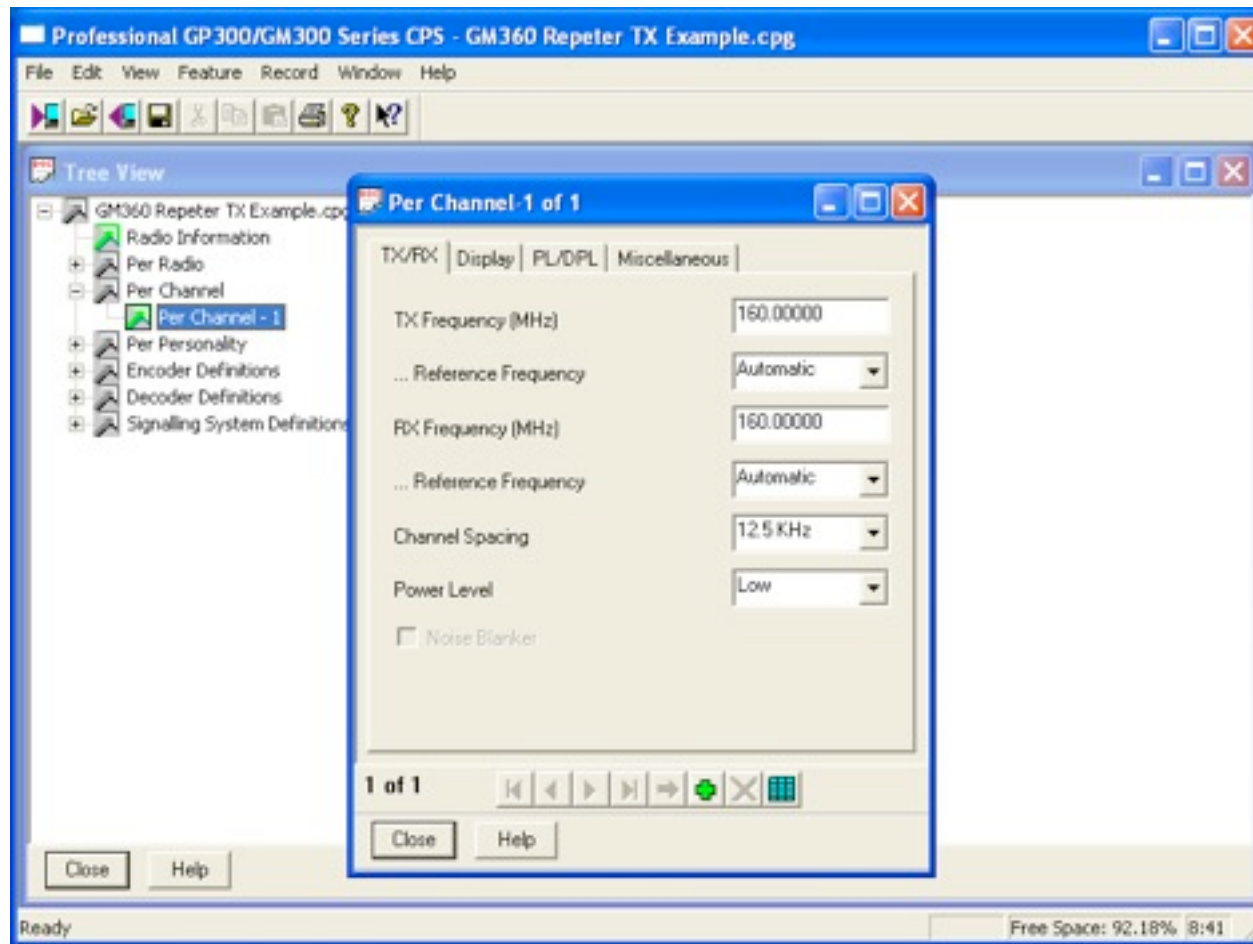
- 1) Set Pin 8 to *PL/DPL Detect* (do not use *Squelch Detect*).
- 2) Disable all other pin functions.

RX - Audio



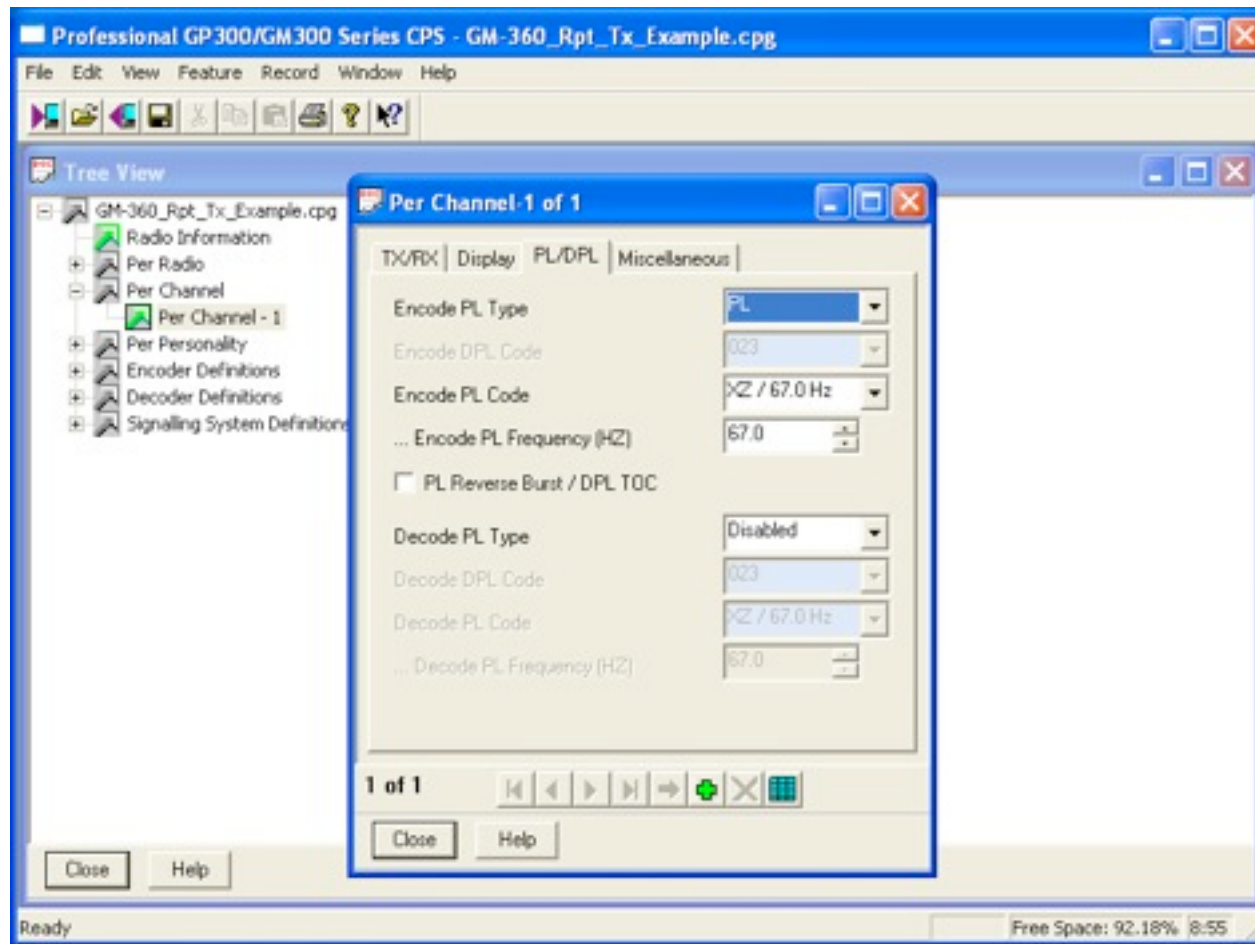
1) Set *Rx Audio* to *Flat Squelched*.

TX - Channel Settings



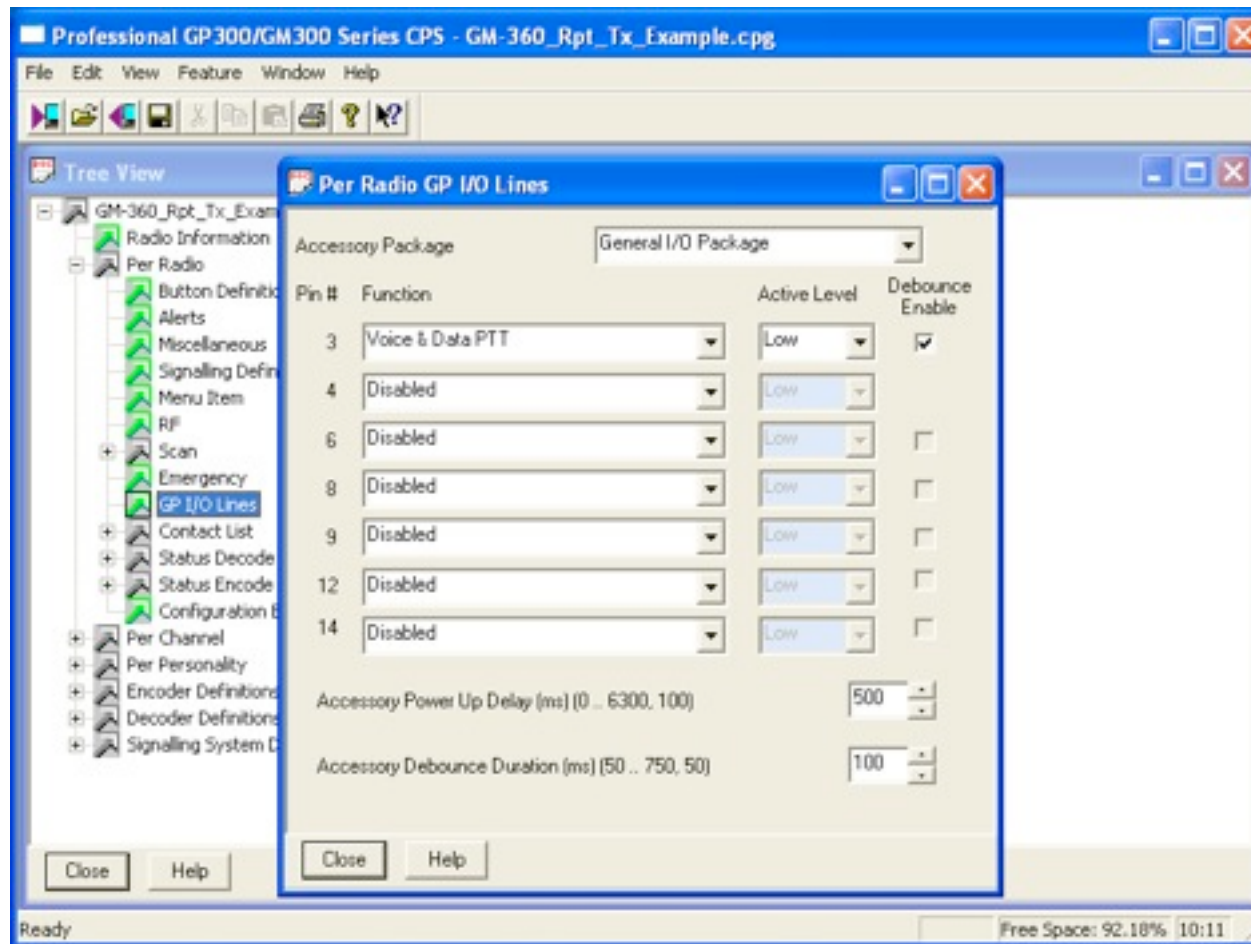
- 1) Delete all existing channels except one.
- 2) Set *TX Frequency* to the repeater TX frequency (user RX frequency).
- 3) Set *Channel Spacing* to *12.5 KHz* or *25 KHz* dependent on country standard (or existing network).
- 4) Set *Power Level* to *Low* or *High* dependent on desired output power.

TX - Channel Encode



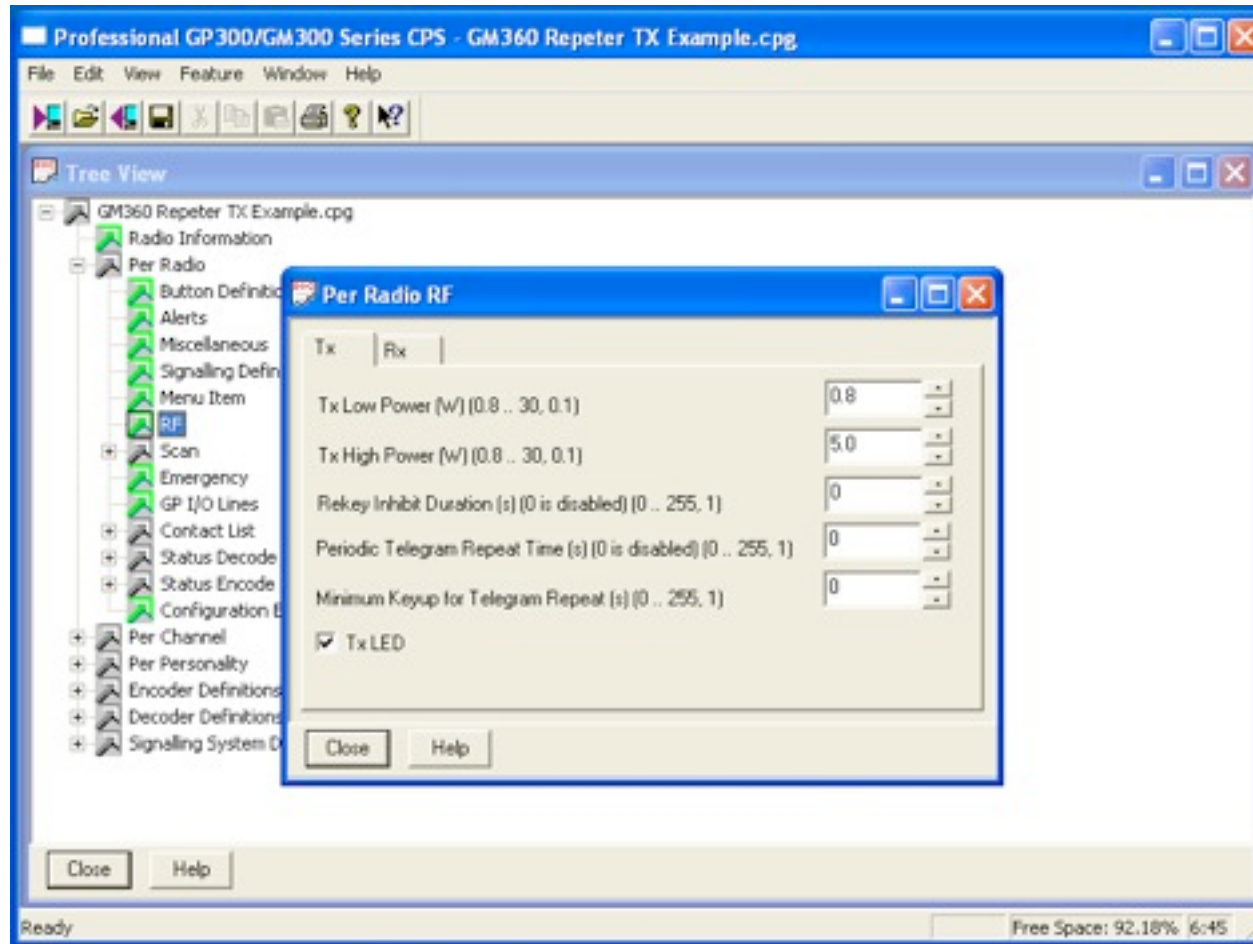
- 1) Set desired *Encode PL Type*.
- 2) Set desired *Encode PL Code*.

TX - PTT Signal I/O



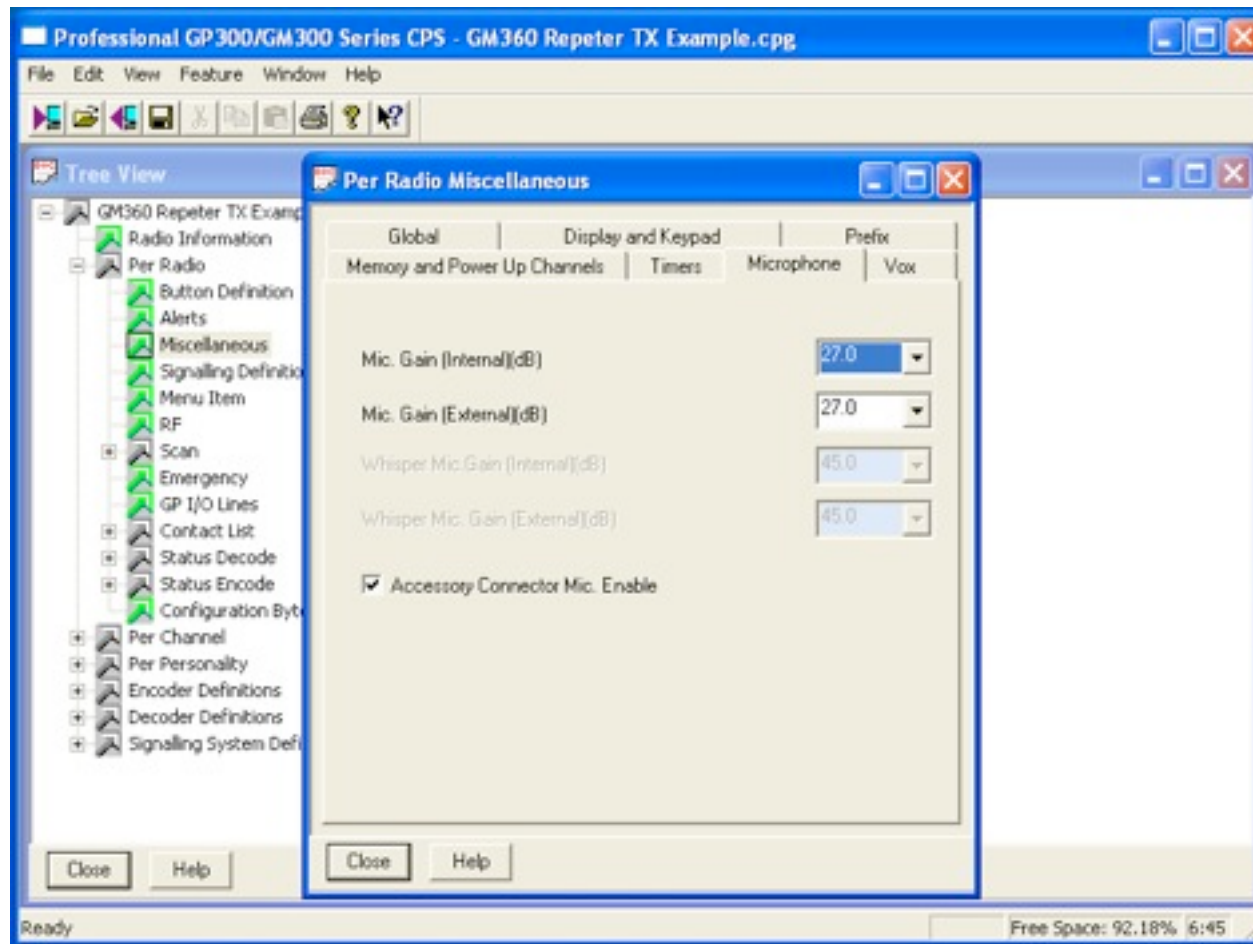
- 1) Set Pin 3 to *Data PTT* or *Voice or Data PTT* (do not use *Voice PTT*).
- 2) Disable all other pin functions.

TX - Output Power



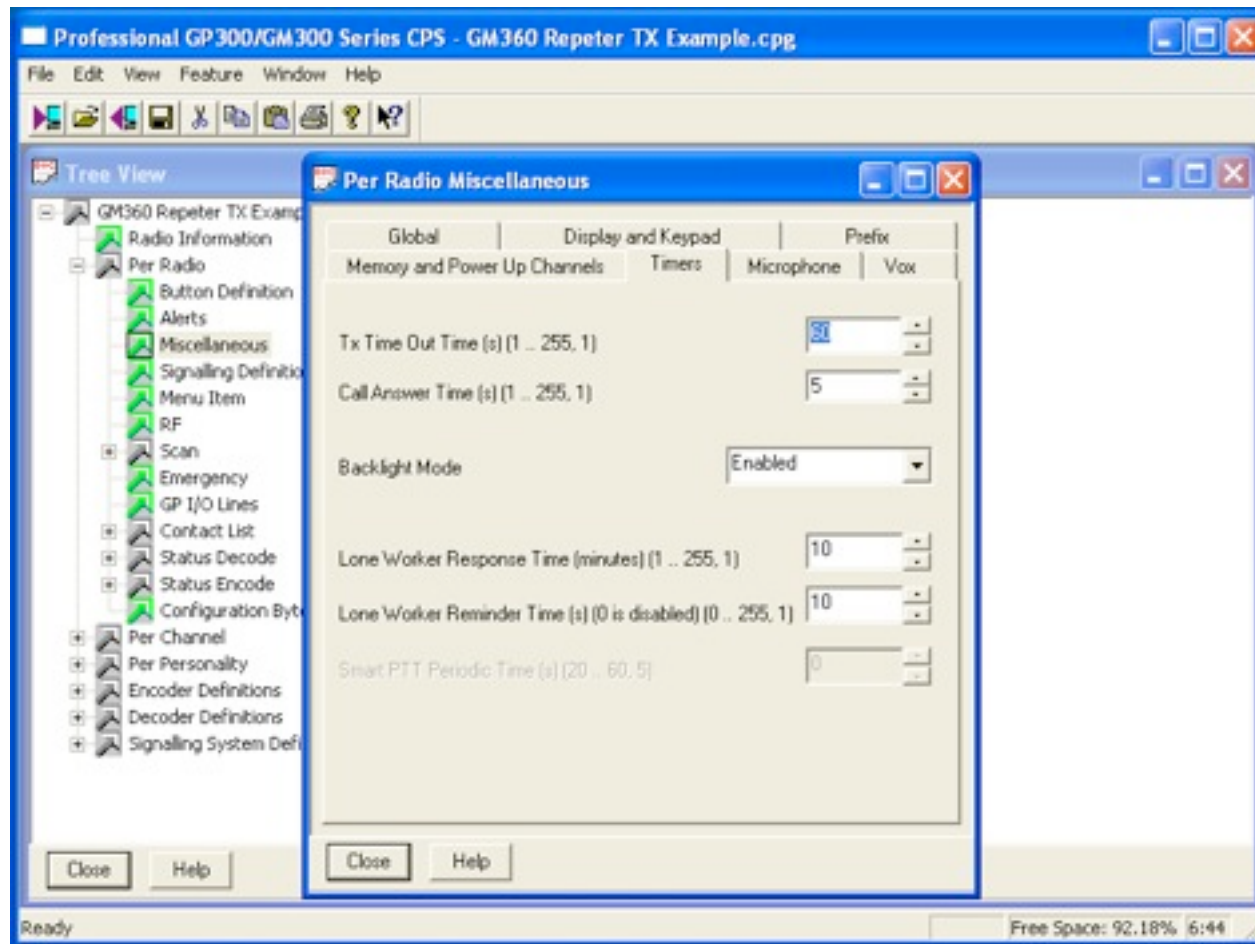
- 1) Set desired *Tx Low Power* value if *Low* is selected under Channel settings.
- 2) Set desired *Tx High Power* value if *High* is selected under Channel settings.

TX - Microphone Enable



1) Check *Accessory Connector Mic. Enable* to enable rear microphone input.

TX - Time Out



1) Set *TX Time Out Time* to e.g. 60 seconds (mandatory in some countries).