

## A Quick Guide to programming MotoTRBO radios

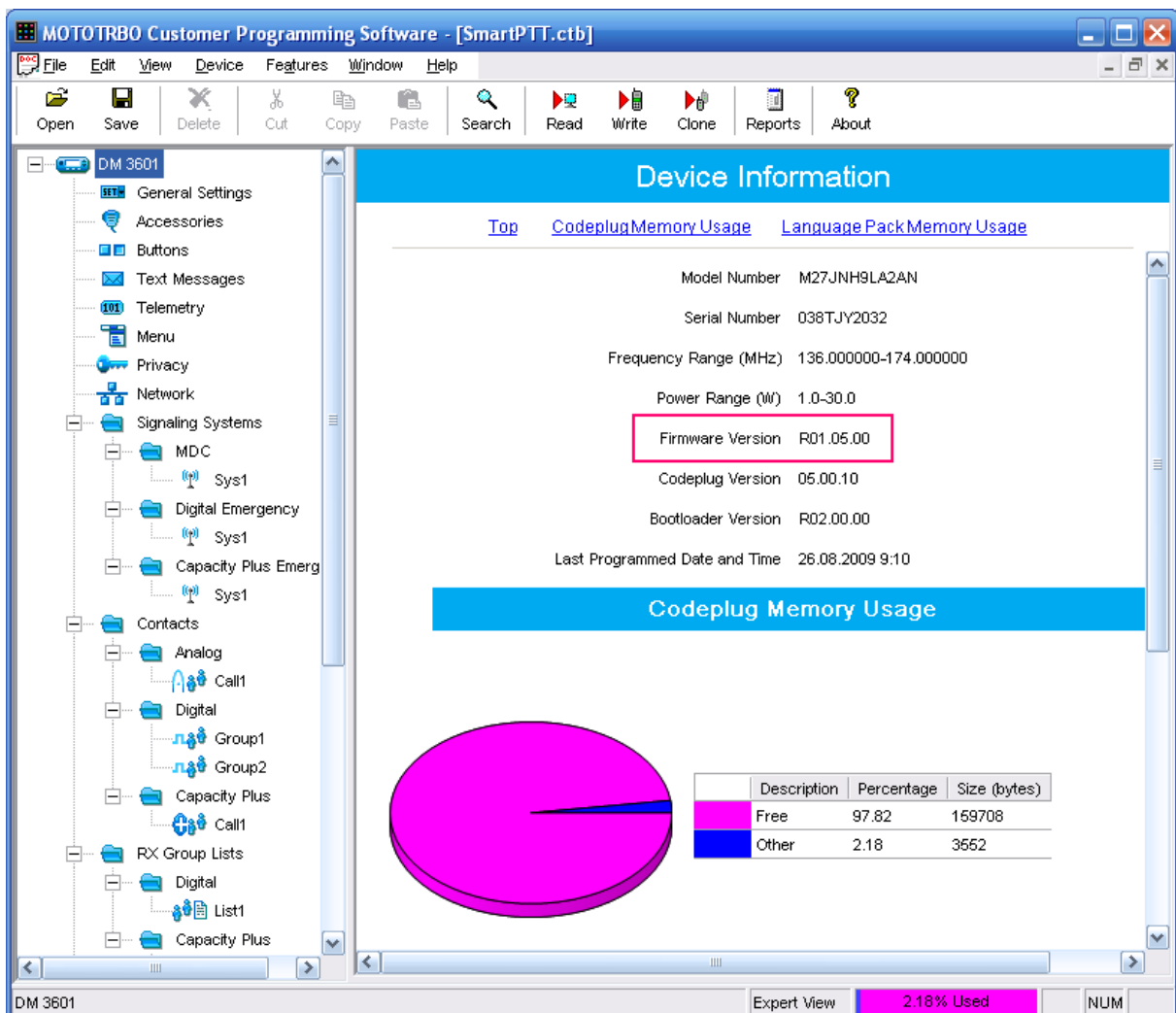
This document contains a quick guide to programming MotoTRBO base and subscriber radios that are used as part of SmartPTT-based dispatching system. This solution is designed for use of a base station that is connected to a radioserver and for communication without a repeater via a one-frequency half-duplex channel.

### Before Starting Work

Run CPS (utility for programming MotoTRBO radios). Read configuration from the programmed radio by choosing Device > Read or by opening the previously saved configuration file.

Open View > General to gain access to all possible configuration parameters.

**Attention!** Radio station parameters which must be edited or reviewed to ensure that they coincide with those specified in this document are marked with a red frame (for initial configuration). Other parameters should be left with their default settings or edited if applicable only after reading CPS help file.



The screenshot shows the MOTOTRBO Customer Programming Software interface. The left sidebar displays a tree view of configuration categories for device DM 3601, including General Settings, Accessories, Buttons, Text Messages, Telemetry, Menu, Privacy, Network, Signaling Systems, MDC, Digital Emergency, Capacity Plus Emerg, Contacts, Analog, Digital, Capacity Plus, RX Group Lists, and Capacity Plus. The main window displays the 'Device Information' section with the following details:

- Model Number: M27JNH9LA2AN
- Serial Number: 038TJY2032
- Frequency Range (MHz): 136.000000-174.000000
- Power Range (W): 1.0-30.0
- Firmware Version: R01.05.00** (highlighted with a red frame)
- Codeplug Version: 05.00.10
- Bootloader Version: R02.00.00
- Last Programmed Date and Time: 26.08.2009 9:10

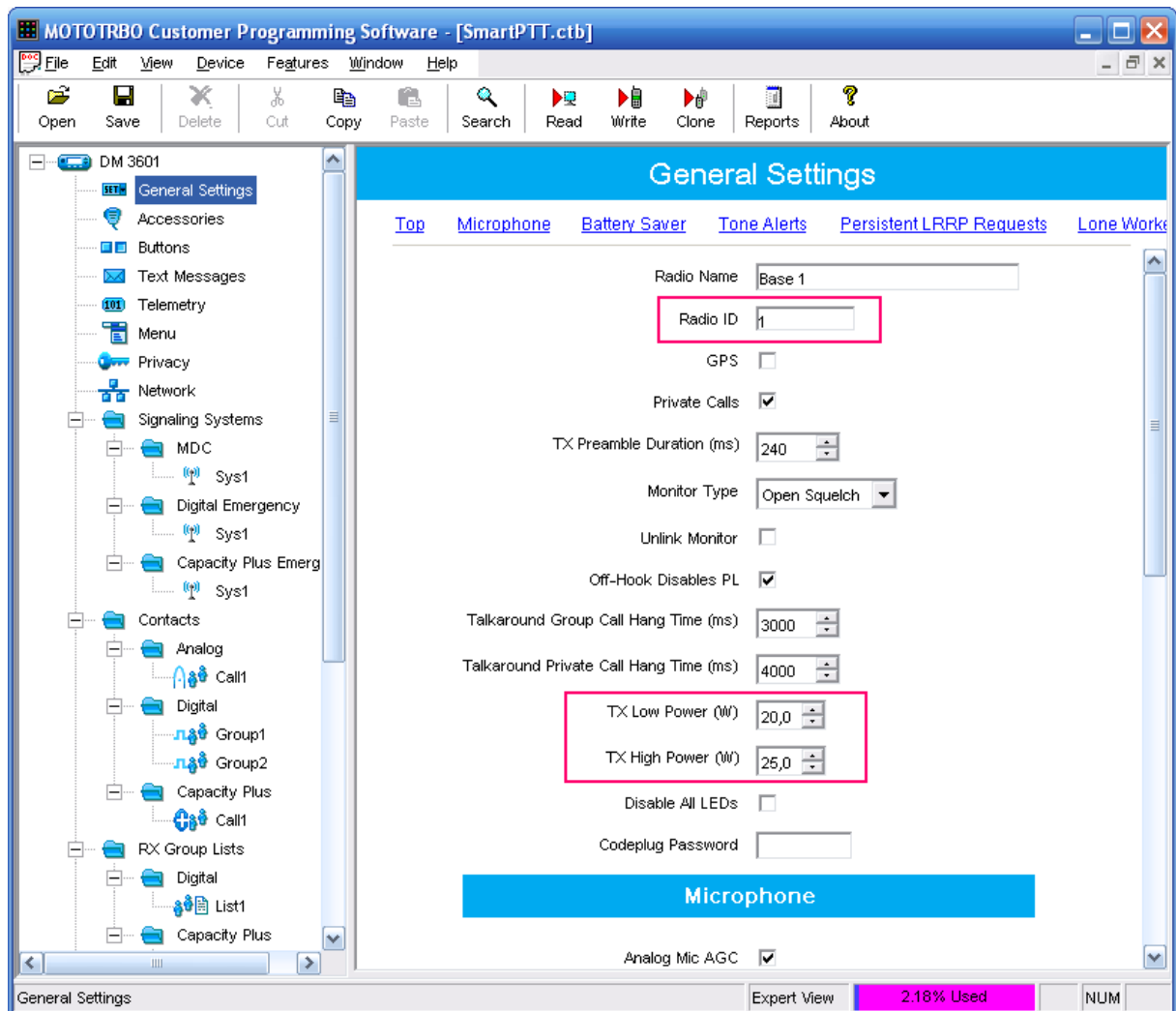
Below the device information is the 'Codeplug Memory Usage' section, which includes a pie chart and a table:

Description	Percentage	Size (bytes)
Free	97.82	159708
Other	2.18	3652

The status bar at the bottom indicates 'DM 3601', 'Expert View', '2.18% Used', and 'NUM'.

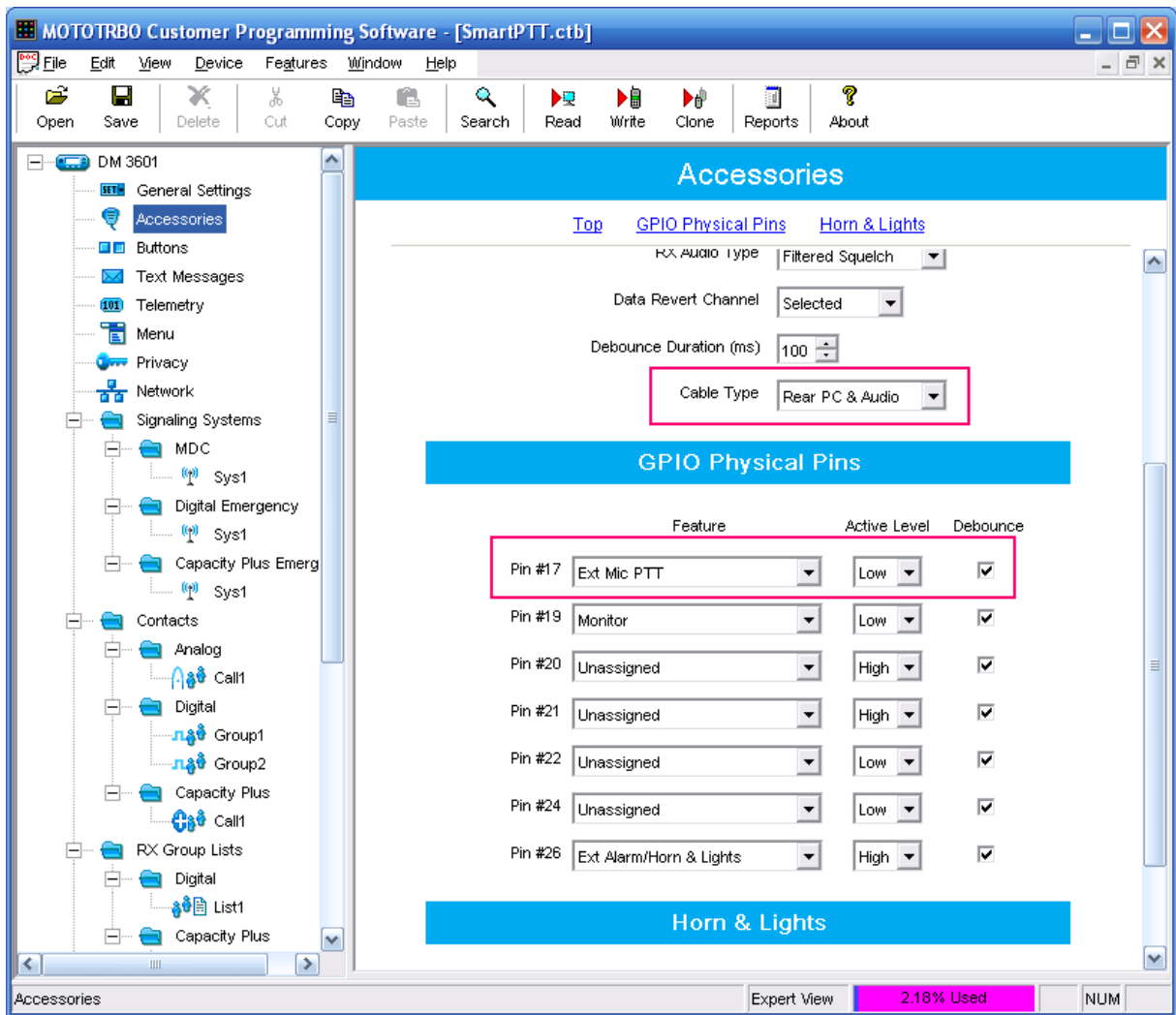
Review the tab Device Information to ensure that firmware version is no older than R01.04.00. Otherwise contact the supplier to request a firmware upgrade.

## Configuring the base station



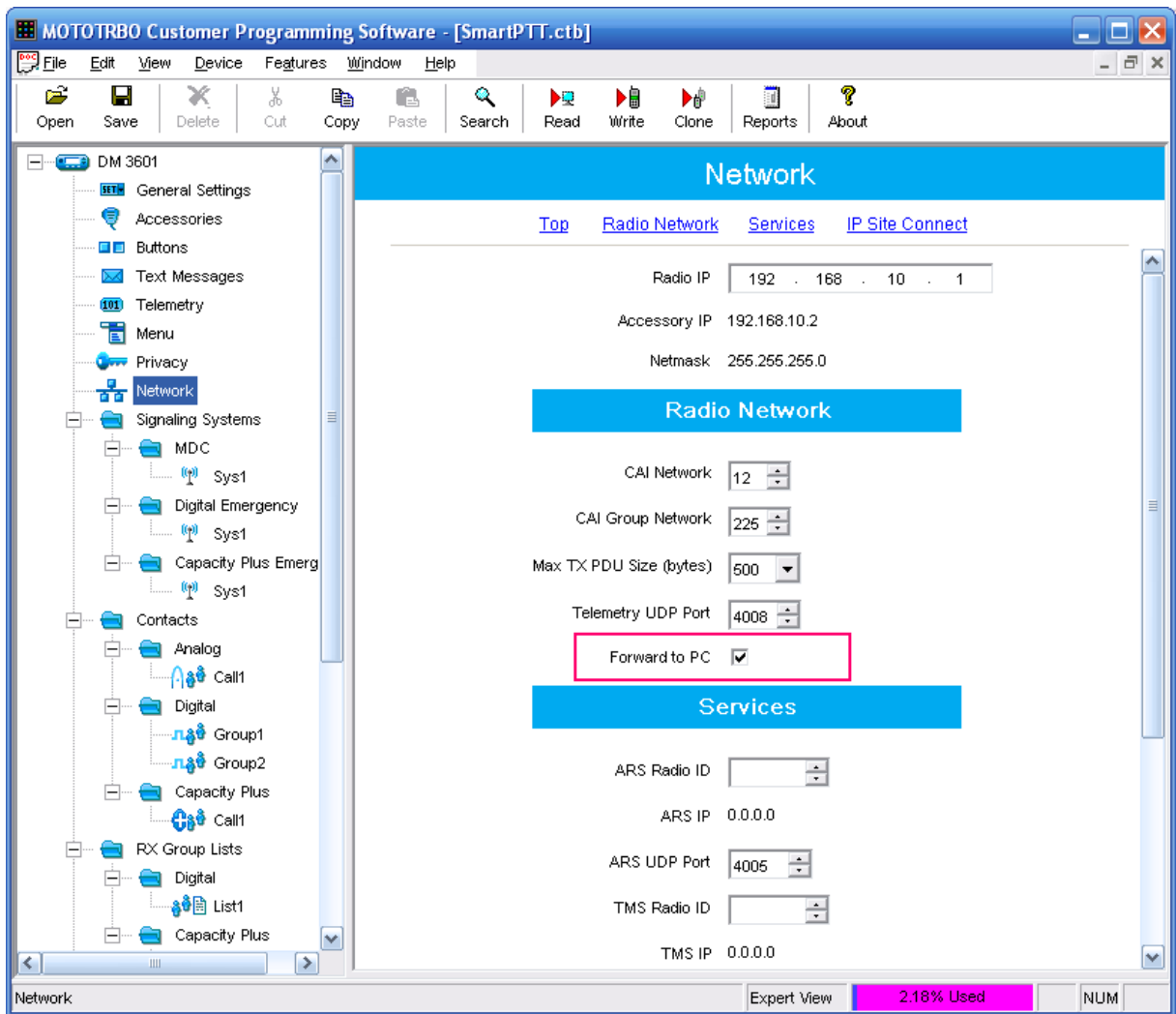
On the General Settings tab set the Radio ID. This ID number must be unique for each radio in the communication system.

Please set radio output power on the same tab. Set high and low output power settings.

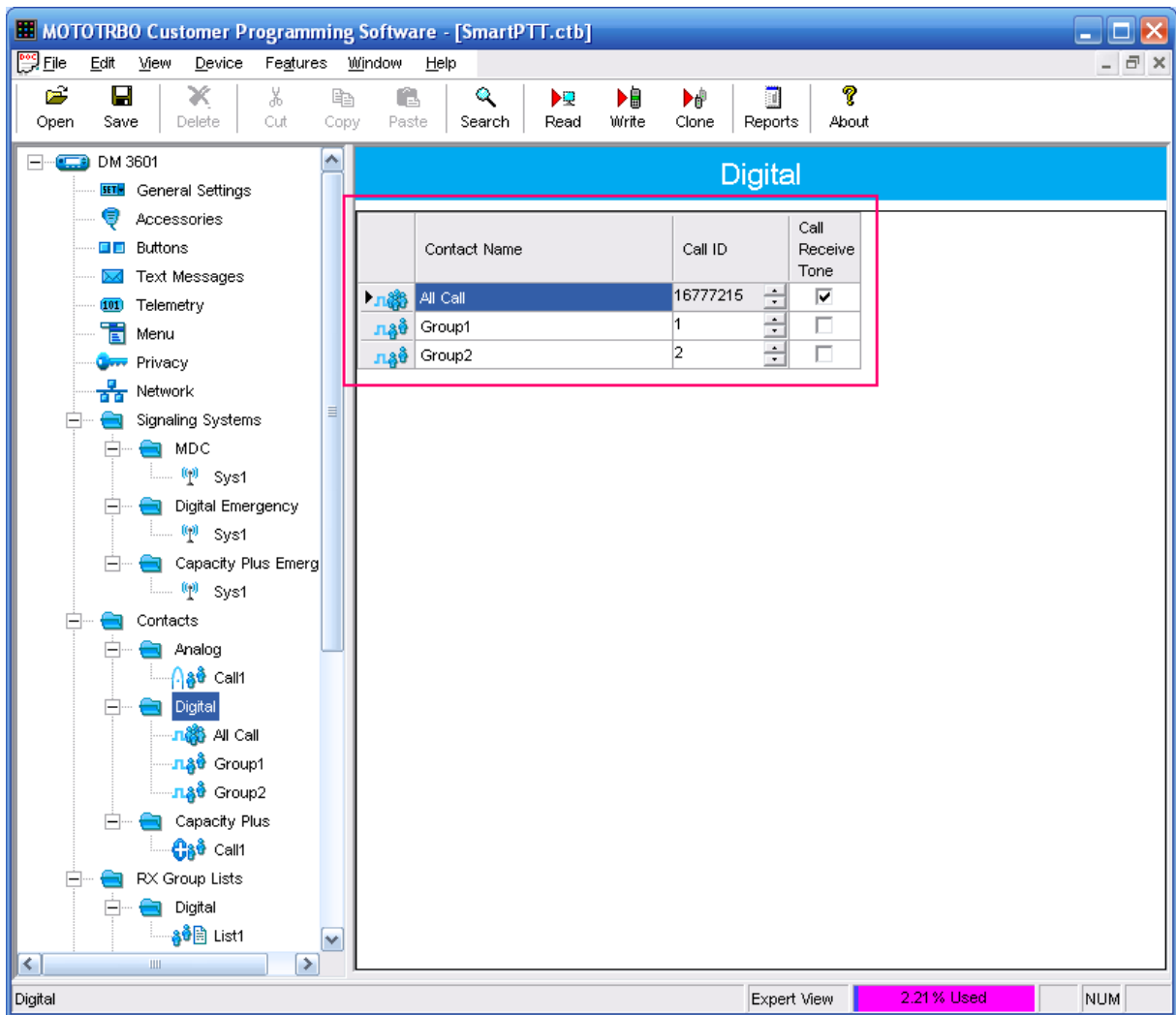


On the tab Accessories set Cable Type to “Rear PC & Audio”. Assign “Ext Mic PTT” option to pin 17. Ensure that Active Level for these parameters is set to Low.

All these settings ensure reliable interaction of the radioserver with the base station.

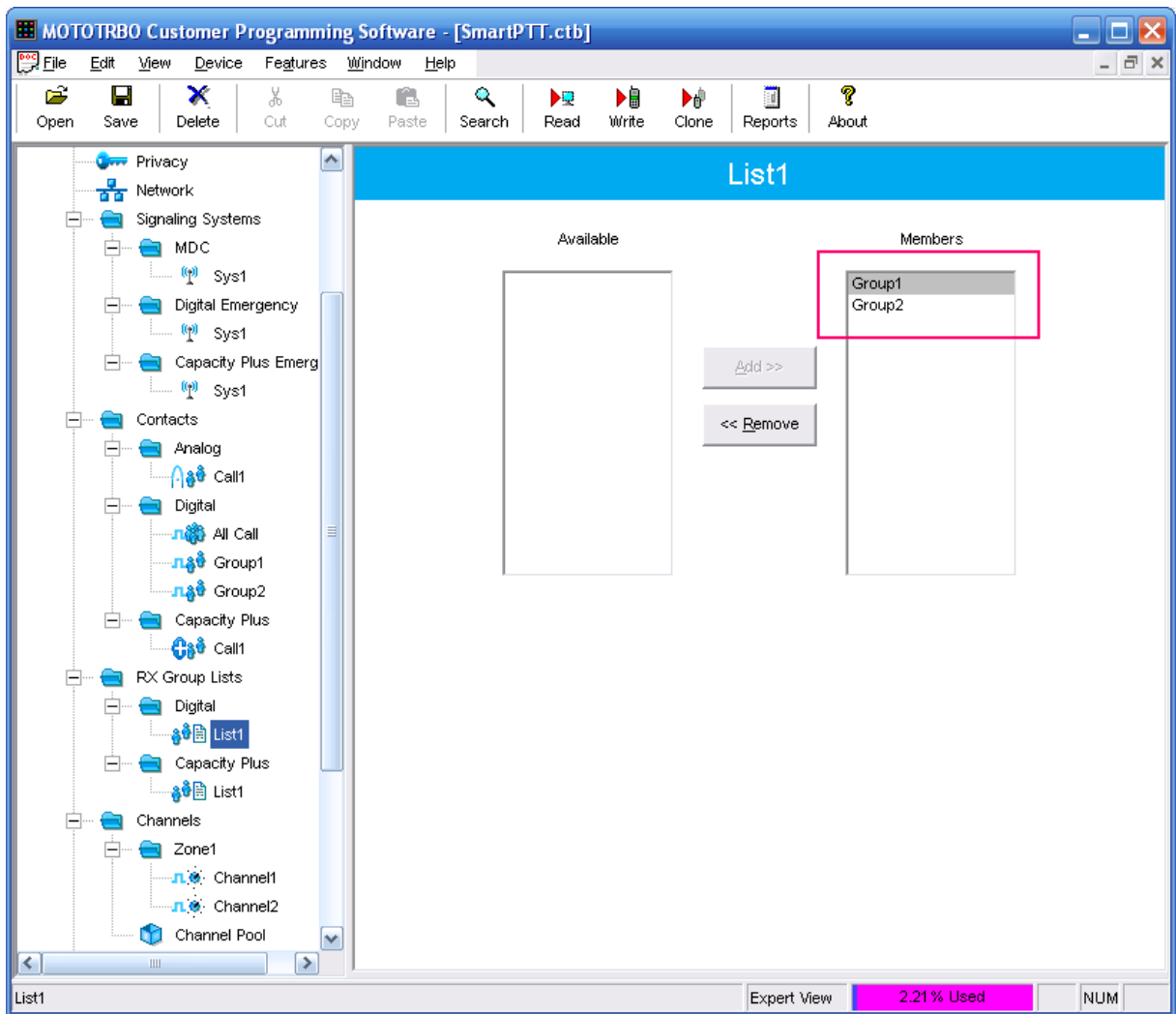


On the tab Network enable the "Forward to PC" option so that all messages received by the base station via radio communications are forwarded to the radioserver for processing.

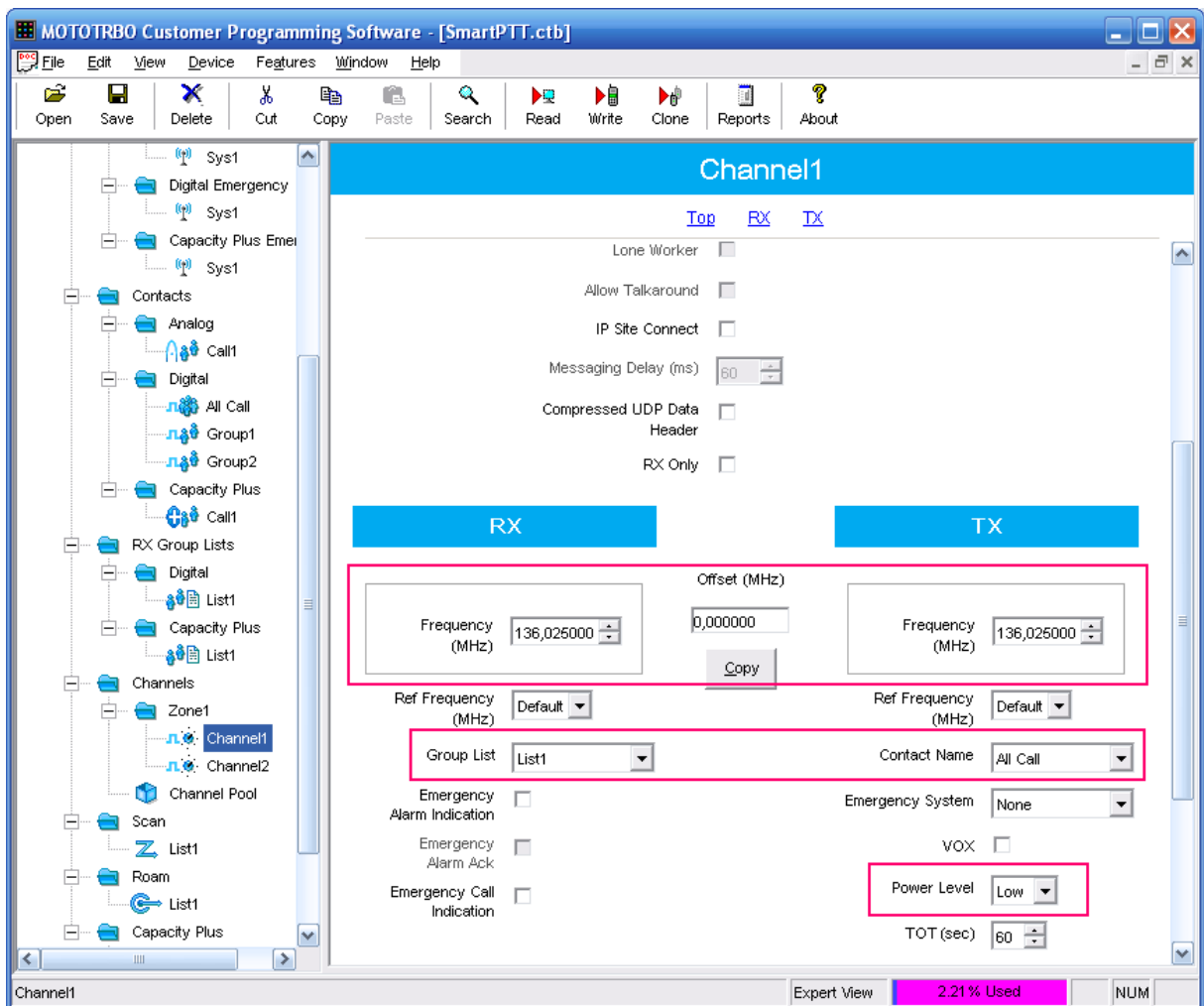


Open the tab Contacts, right-click on the tab Digital and open Add > All Call. This contact will be used by the dispatcher to call all subscribers covered by the network. Add to the contact list subscriber groups which are planned to be created in the system and which must be serviced by the dispatcher. Set a unique ID for each group.

**Attention!!!** Group ID is not related to radio IDs and can have the same values, such as 1 and 2 in our example. All call ID is 16777215 and cannot be changed.

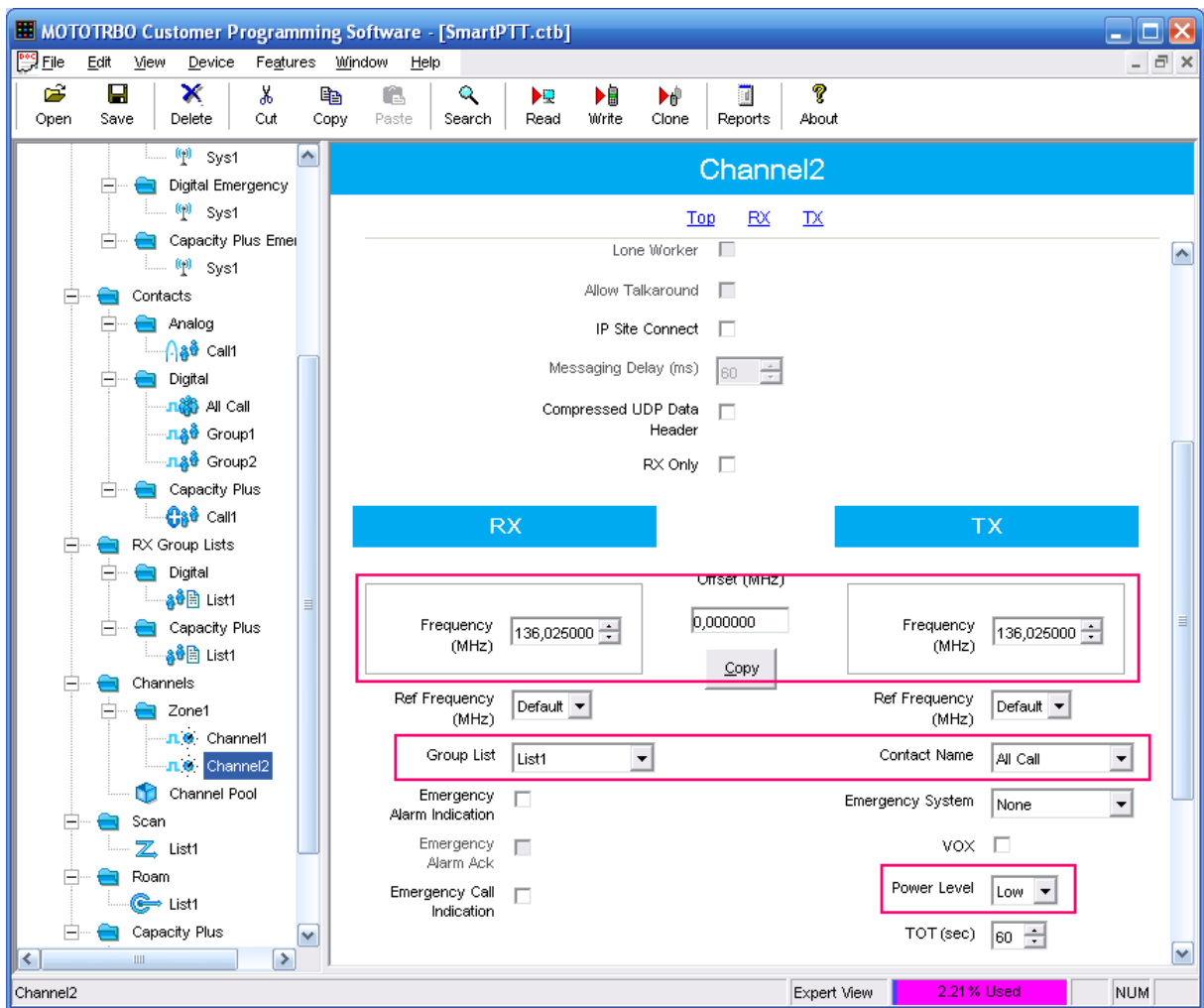


Choose an available list in the area "RX Group Lists" and move newly-created groups from the Available list to the Members list.



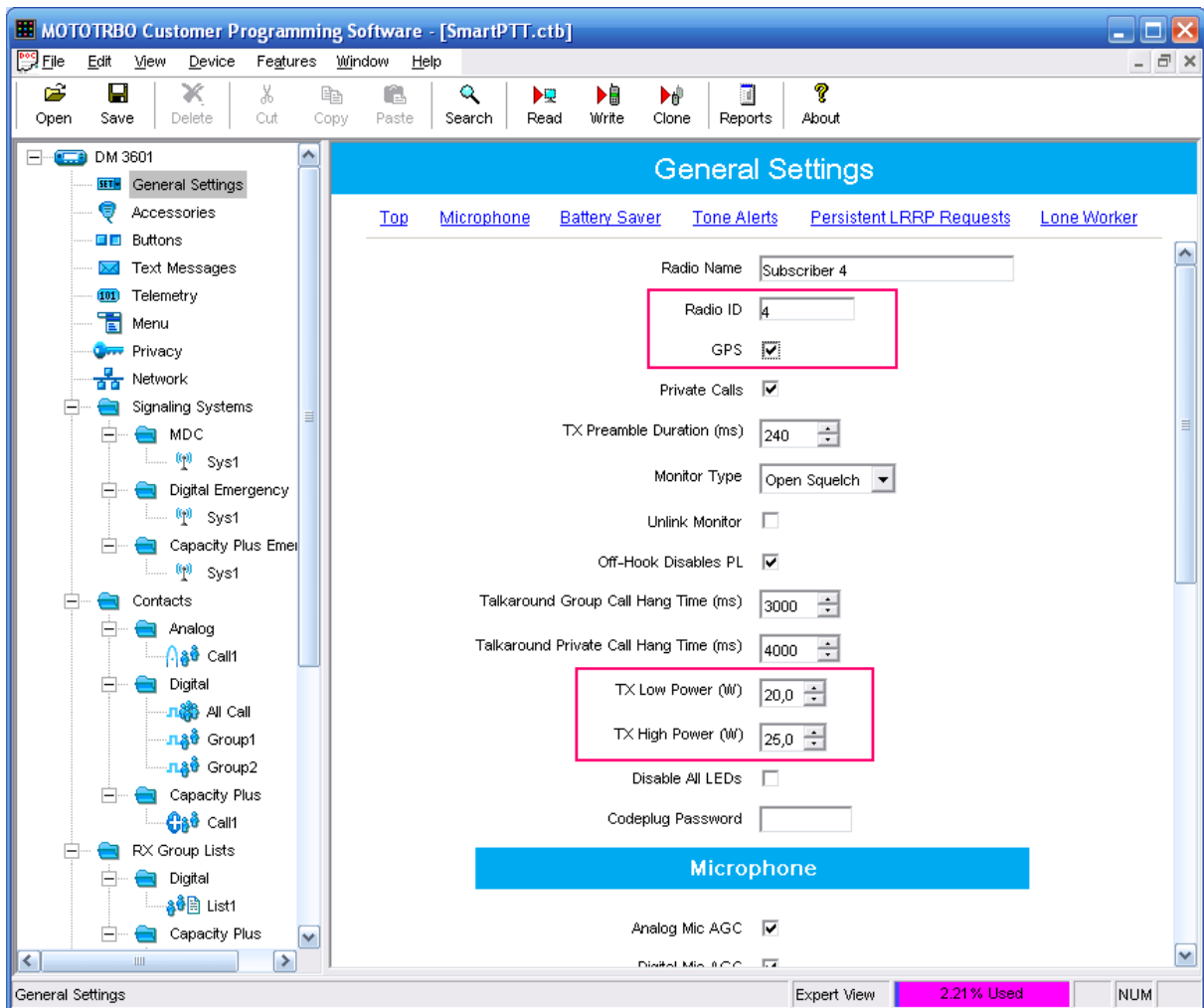
Create a necessary number of channels on the Channels tab. Clicking any of them, open the channel configuration page. Set required reception and transfer frequencies for this channel. Set Contact name to All call which was set on the tab Contacts. Set Group list option a list of groups where the dispatcher is included (in this example it is List1).

Choose output power high or low values for this channel in Power Level option.



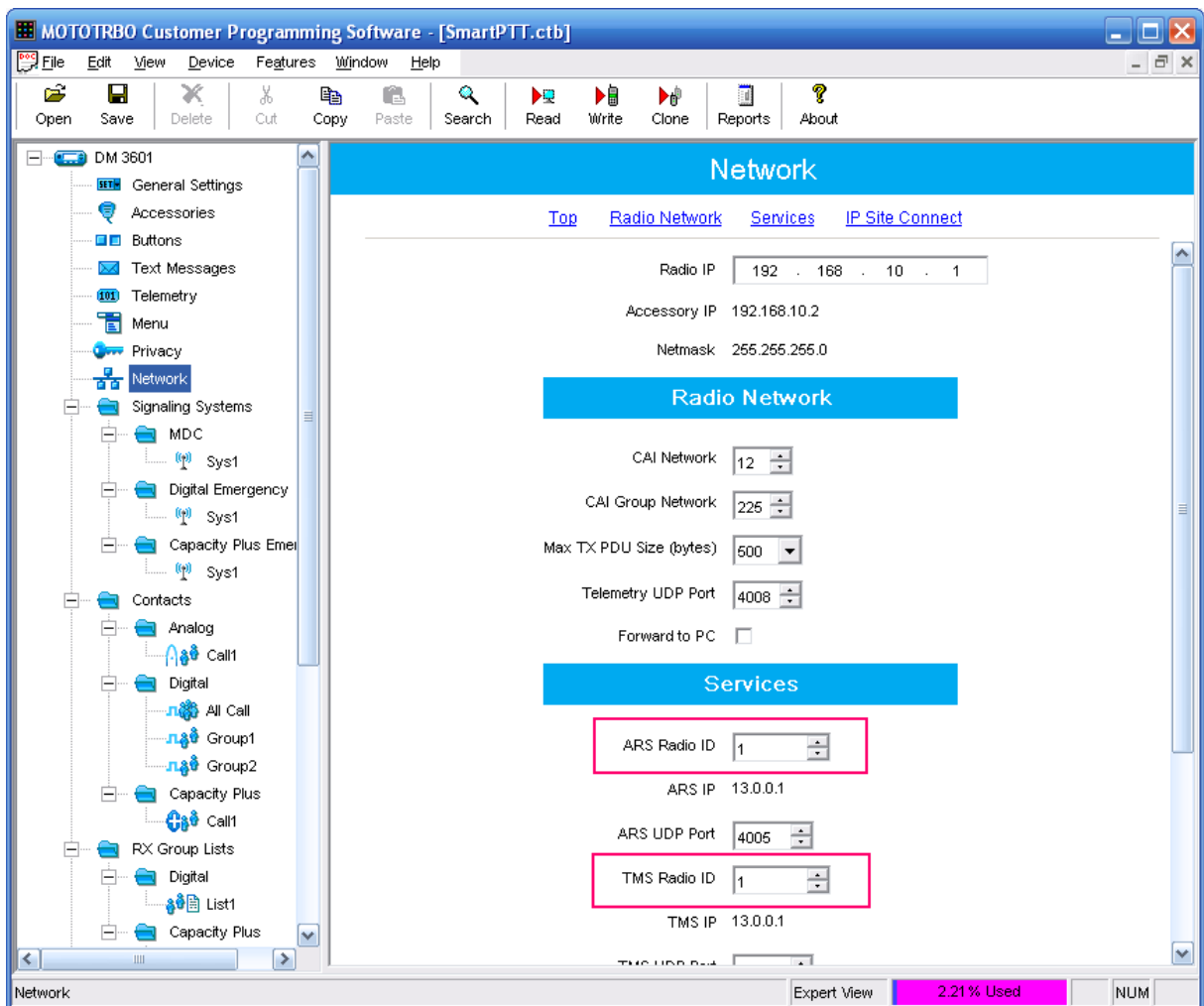
Repeat the procedure for each created channel.

## Configuring the subscriber station

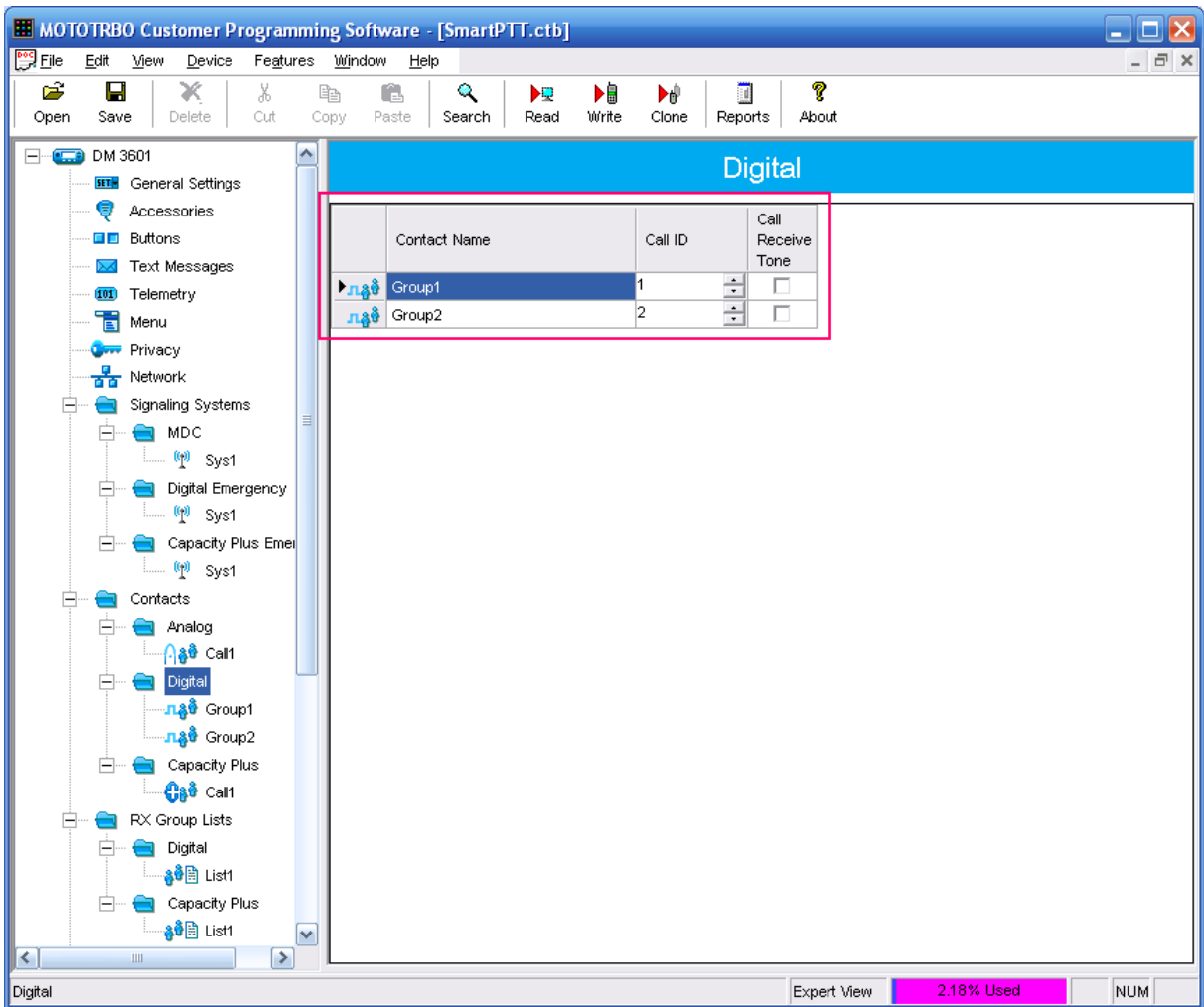


On the General Settings tab set the Radio ID. This ID number must be unique for each radio in the communication system. If it is planned to track the subscriber by means of GPS navigation, enable the GPS option.

Please set radio output power on the same tab. Set planned high and low output power settings.

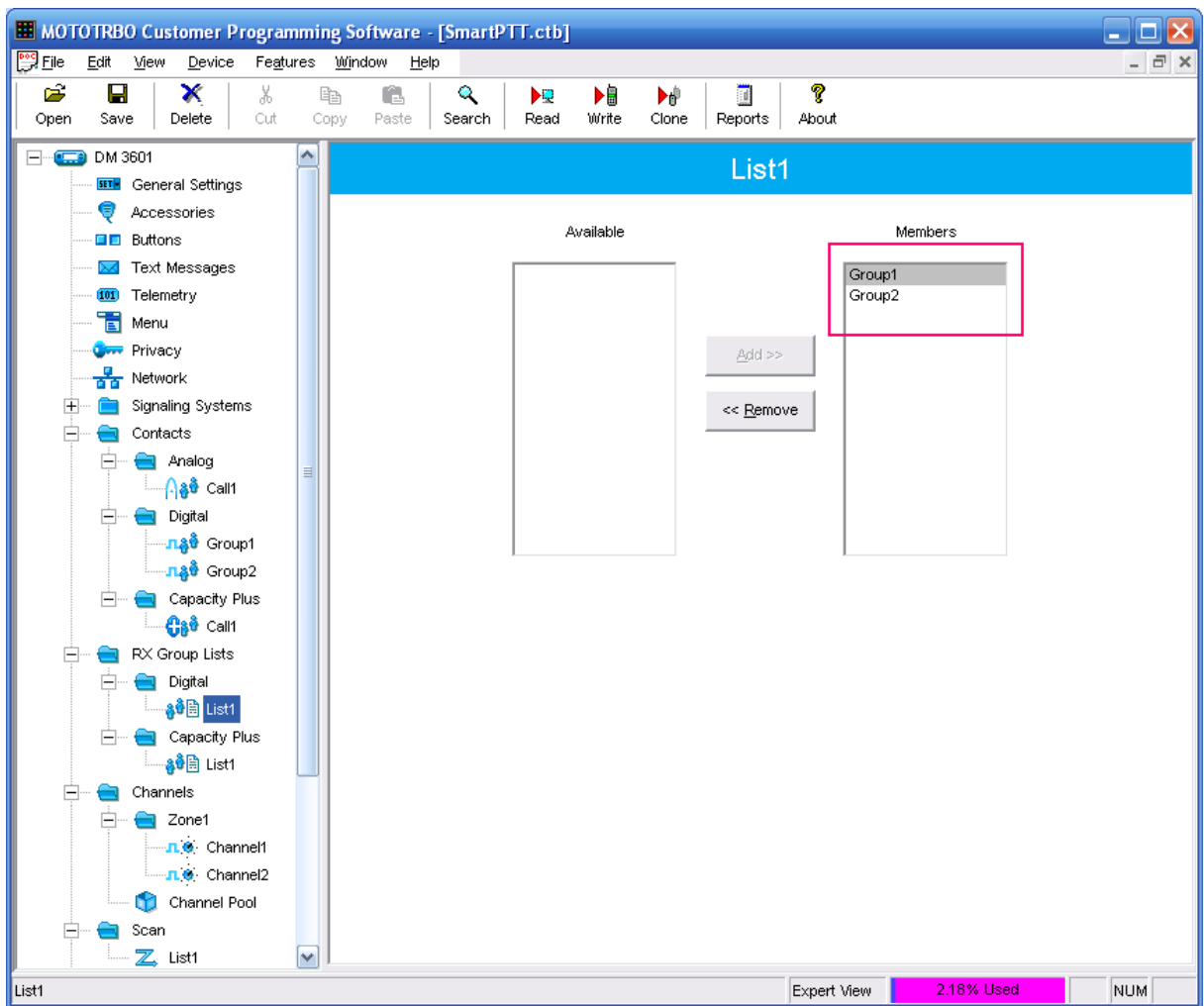


On the tab Network set the parameters "ARS Radio ID" and "TMS Radio ID" in accordance with the base station ID (in this example = 1). This is required so that the subscriber radio can forward login messages and text messages to the base station.

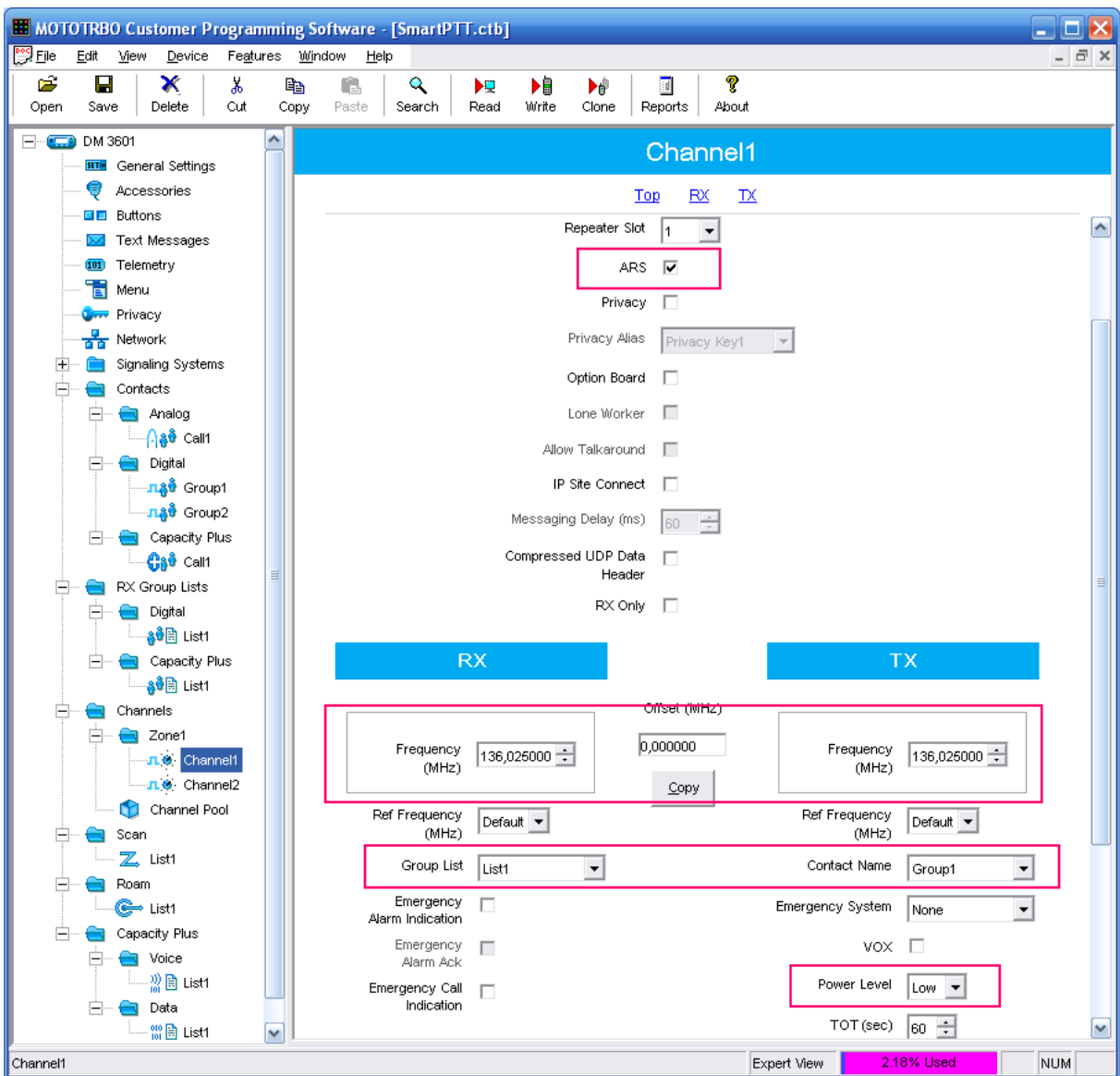


Open the tab Contacts, right-click on the tab Digital and open Add > Group call. Add to the contact list subscriber groups where the dispatcher will be included. Set a unique ID for each group.

**Attention!!!** Radio stations must be members of the group with the same IDs so that they can be included in the group and interact with each other. In this example both the base station and subscriber are members of 2 groups with IDs 1 and 2.

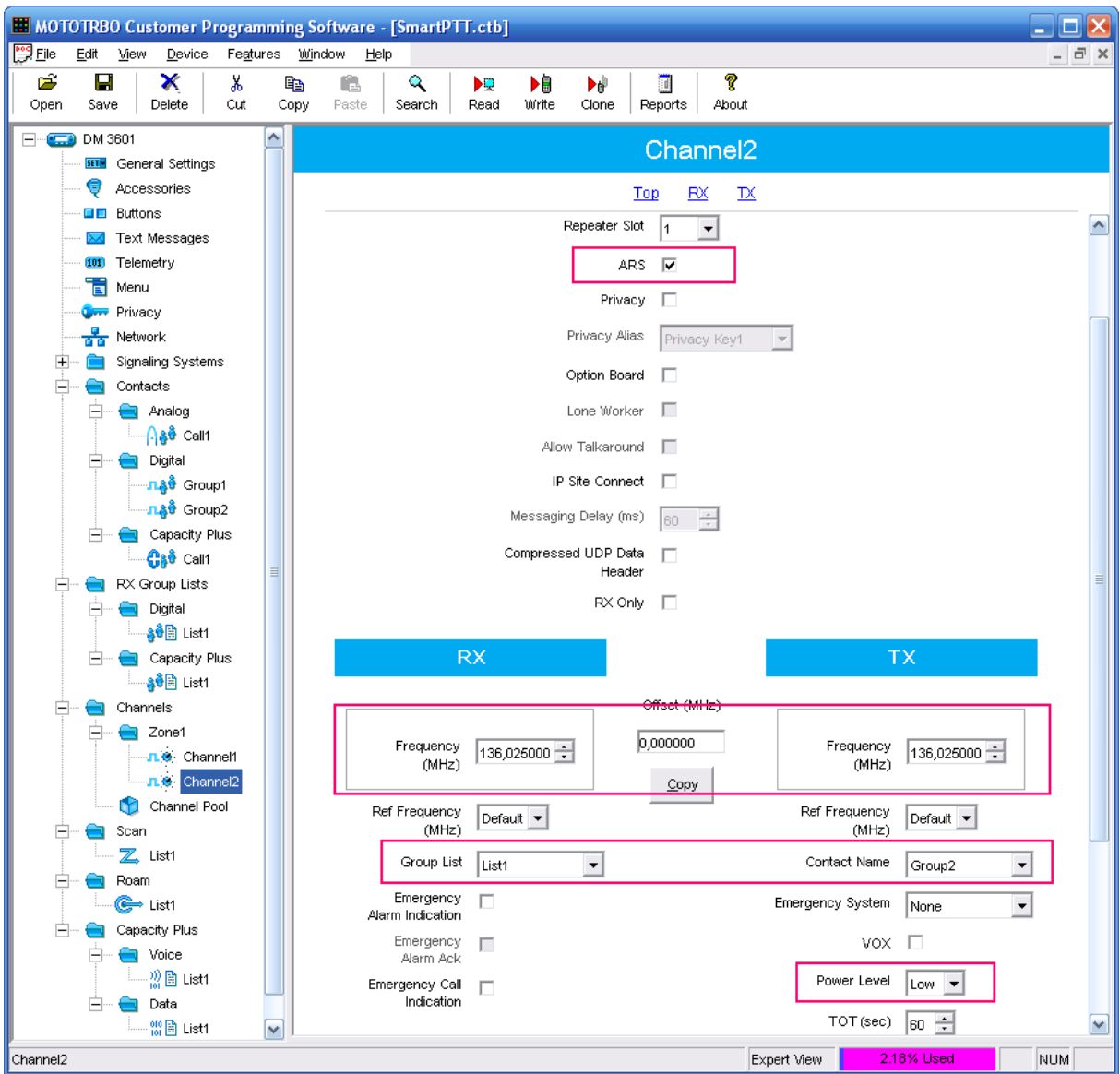


Choose an available list in the area "RX Group Lists" and move newly-created groups from the Available list to the Members list.



Create a necessary number of channels on the Channels tab. Clicking any of them, open the channel configuration page. Set required RX and TX frequencies for this channel. Set the parameter Contact Name to one of previously created digital contacts, e.g. Group1. Set Group list option a list of groups where the dispatcher is included (in this example it is List1).

Choose output power high or low values for this channel in Power Level option.



Repeat the procedure for each created subscriber channel.