

# F3400/F5400 Series Programming

## BASIC 2-TONE SIGNALING

### Introduction

This tutorial describes how to program the F3400/F5400 series radio with 2-Tone signaling in a basic analog file.

### Prerequisites

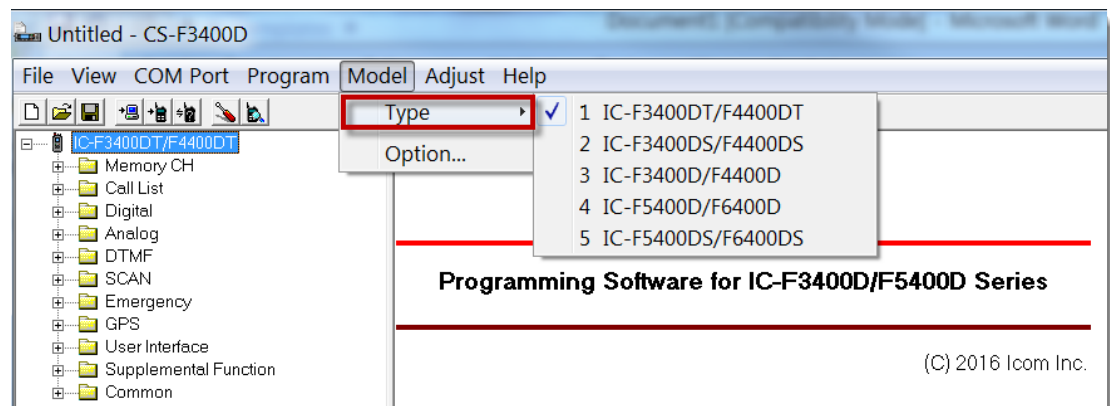
- Radio is connected to the computer with a cloning cable. USB 2.0 A male to micro USB B type, with matching driver or OPC-1862 (portables) or OPC-2363 (Mobiles) with matching drivers
- Firmware and Software are updated to the latest version
- Windows® 7, 8.1, or 10 (32/64bit) operating system

### Programming

Program the following settings:

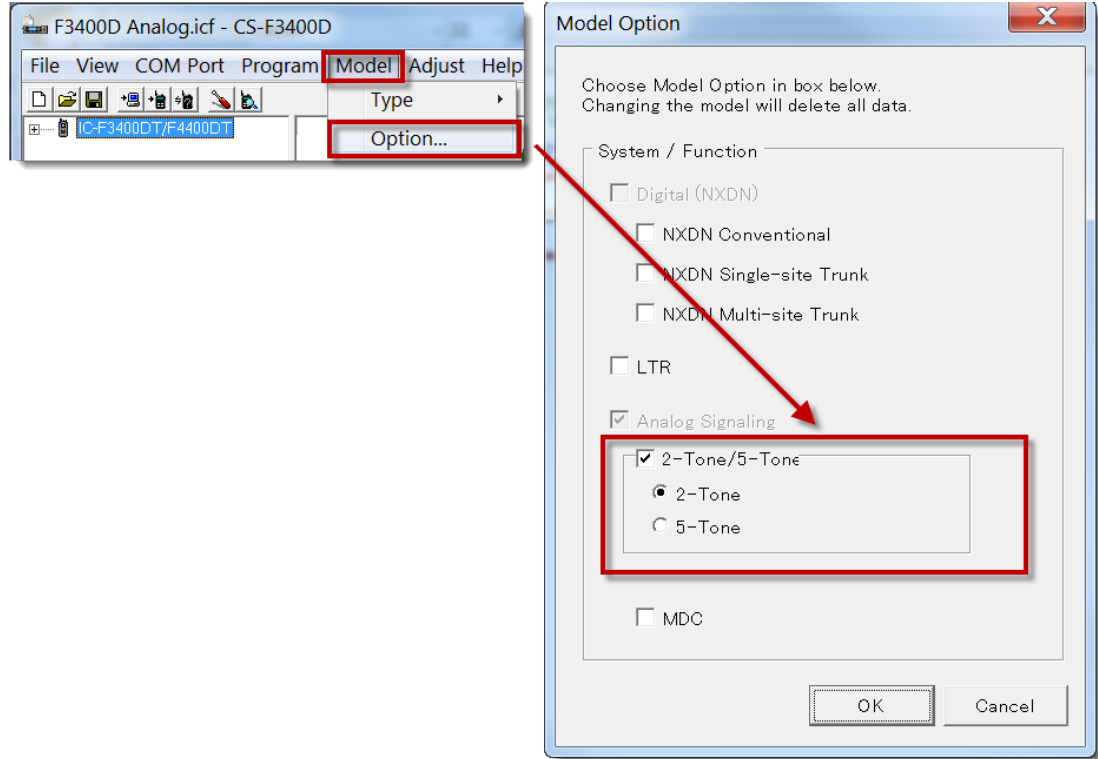
- 5 Identical frequencies
- 3 Individual 2-tone sets, 1 group call, and 1 non 2-tone channel

1. Open the CS-F3400D software.



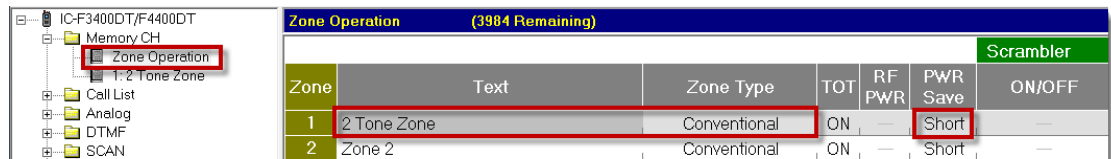
2. Click **Model** -> **Type** and select your model radio.

- Click **Model** -> **Option** and select **2-Tone/5-Tone** in the **Model Option** window. Disable any other Model options.



### Zone Operation Window

- Enter the following:
  - A descriptive name in the **Text** field.
  - Select **Conventional** in **Zone Type**.
  - Set **PWR Save** to **Short**.



- Go to the **Zone 1** window.

### Zone 1 Window

CH	Atr	Inh	Text	CH Type	Frequency (MHz)			C.Tone			SQL Tight	Lock-out	Auto Reset	Analog
					RX	TX	TX Inh	RX	TX	RF PWR				
1- 1	AB		Seattle FD	Analog	454.500000	<-		67.0	<-	H			Tim-B	N
1- 2			Tacoma FD	Analog	454.500000	<-		67.0	<-	H			Tim-B	N
1- 3			Edmonds FD	Analog	454.500000	<-		67.0	<-	H			Tim-B	N
1- 4			All Call	Analog	454.500000	<-		67.0	<-	H			Tim-B	N
1- 5			Open Calling	Analog	454.500000	<-		67.0	<-	H			Tim-B	N

6. Enter the following:

- A descriptive name in the **Text** field.
- Set the **CH Type** to **Analog**.
- Frequency and C-Tones
- Set **RF PWR** to **H** (High)
- Set **Bandwidth** to **N** (Narrow) Wideband is deactivated according to FCC regulations.

7. Go to the **Call List** window to enter the 2-tone sets that will be used by the customer.

### Call List Window

The Call List contains the transmit choices used for 2-Tone signalling.

No.	Name	Ringer Type	Vibration Type	Call Type	2-Tone			
					Freq 1st	2nd	Tone Period 1st	2nd
1	Fire	PIRo1	Null	IND	450.0	850.0	1.0	2.0
2	Police	PIRo1	Null	IND	500.0	850.0	1.0	2.0
3	Admin	PIRo1	Null	IND	650.0	850.0	1.0	2.0
4	Global Tone Se	PIPIPIPI	Null	GRP	850.0	250.0	8.0	1.0

Enter the following:

- Descriptive text in the **Name** field
- Enter ring and vibration sequences if desired in the **Ringer/Type** field. When the radio receives the tone sets for this line number, the radio will ring and vibrate as programmed in this field.
- **Call Type**
  - IND- The radio will *transmit* 1<sup>st</sup> and 2<sup>nd</sup> tones for the times programmed.
  - GRP- The radio will *transmit only* the 1<sup>st</sup> tone for the time period programmed.
- Enter the tone sets and time periods in **Freq/Tone Period**.

### Analog/2-Tone/Code CH Window

Settings in the Code CH window determines the RX characteristics of each channel programmed as 2 Tone.

CH	Tone	Text	Group Call	Bell	ANS	AUX	Ringer	Vibration
1	1	Fire	2nd	ON			PRo1	OFF
2	2	Police	2nd	ON			PRo1	OFF
3	3	Admin	2nd	ON			PRo1	OFF
4	4	All Call	2nd	ON			PPPPPP	OFF
5	1	CALL5	2nd	ON			PRo1	OFF
6	1	CALL6	2nd	ON			PRo1	OFF
7	1	CALL7	2nd	ON			PRo1	OFF
8	1	CALL8	2nd	ON			PRo1	OFF
9	1	CALL9	2nd	ON			PRo1	OFF
10	1	CALL10	2nd	ON			PRo1	OFF
G	—	GROUP	—	Blink			PPPPPP	OFF

Enter the following:

- In **Tone**, enter the the number that corresponds with the desired Call List tone set.
- Enter a descriptive alias in **Text** for the tone set specified by the choice of tone. This alias will appear on your radio when a matching tone is received.
- The **Group Call** field allows you to select either the 1<sup>st</sup> or 2<sup>nd</sup> tone to be used as the group code.

All other settings describe radio actions as it receives in programmed tone set.

Note: Some settings work for portable radios only.

### Analog/2-Tone/RX Code Setting Window

2-Tone RX Code Setting	
Timer	
No tone (Sec)	0.080
Group (Sec)	7.000
Tone Decode Comparison	ON

8. Enter the following:

- In **No tone**, set the maximum acceptable time period between the 1<sup>st</sup> and 2<sup>nd</sup> tones. If the interval of the received 2-Tone is longer than this set period of time, the transceiver cannot recognize the code.
- In **Group**, tones longer than this setting are decoded as a group call.
- If Set to **ON**, the **Tone Code Comparison** field enables 2-Tone sets to be decoded when received with a matching CTCSS or DTCS tone.

### Analog/2-Tone/Profile Window

List	Name	TX	RX C.No
1	Fire	1	1
2	Police	2	2
3	Admin	3	3
4	All Call	4	4
5	Open Call		

9. Enter the following:

- A **Name** for this profile
- **TX** is the selected transmit tone set from the Call List.
- **RX C.No** is the selected receive tone set from the Call List.

10. Go to the **Zone 1** window.

### Zone 1/System Profile/Analog Profile Window (Muting)

For 2-tone channels, this screen determines the muting properties for channels using this profile. Select the appropriate profile characteristics as programmed in the Analog Profile Tree menu.

CH	CH Type	Frequency (MHz)	C.Tone	Analog	System Profile	Signal	Analog Profile
1- 1	Analog	454.500000	<- 67.0, <-	H	2: Unmuted	2-Tone	1: Fire
1- 2	Analog	454.500000	<- 67.0, <-	H	1: Muted	2-Tone	2: Police
1- 3	Analog	454.500000	<- 67.0, <-	H	1: Muted	2-Tone	3: Admin
1- 4	Analog	454.500000	<- 67.0, <-	H	1: Muted	2-Tone	4: All Call
1- 5	Analog	454.500000	<- 67.0, <-	H	2: Unmuted	2-Tone	5: Open Call

List	Name	CH Mute	Log	Moni	Sel	Call	PTT
1	Muted	AND		Both			
2	Unmuted	OR		Both			
New							

11. Enter the following:

- Enter a **Name** for the muting characteristics
- For CH Mute:
  - Use **AND** for channels that will stay silent until the matching 2-tone signal AND C-tones are received.
  - Use **OR** for channels where you want the radio to unmute when receiving a matching 2-tone OR a matching C-tone signal.
- Ignore **Log** and **Switch Action**. **Log** is not functional and **Switch Action** is not used in 2-tone.
- Select **2-Tone** in the **Signal** field for each applicable channel.

The **Analog Profile** defines the 2-tone frequency set for this channel. The Analog Profile is also known as the 2-tone profile. Enter the numbers for the corresponding 2-tone sets as programmed in the Call List/2-Tone Profile.

The screenshot shows the 'Zone 1: 2 Tone Zone (3984 Remaining)' configuration window. It contains a table of channels and a '2-Tone Profile' table. Red boxes highlight the 'Analog Profile' column in the channel table and the '2-Tone' column in the profile table. Red arrows point from the 'Analog Profile' values in the channel table to the corresponding '2-Tone' values in the profile table.

CH	CH Type	Frequency (MHz)	C. Tone	Analog
1-1	Analog	454.500000	<- 67.0 <-	2: Unmuted
1-2	Analog	454.500000	<- 67.0 <-	1: Muted
1-3	Analog	454.500000	<- 67.0 <-	1: Muted
1-4	Analog	454.500000	<- 67.0 <-	1: Muted
1-5	Analog	454.500000	<- 67.0 <-	2: Unmuted
1-6	Analog			

List	Name	2-Tone
1	Fire	1 1
2	Police	2 2
3	Admin	3 3
4	All Call	4 4
5	Open Call	

### User Interface/Key Assign/Key Window

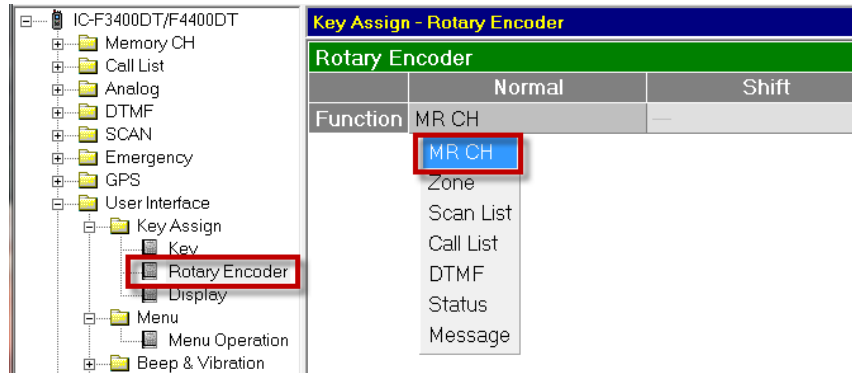
The screenshot shows the 'Key Assign - Key' window in the software. The 'Call' key is assigned to the 'Call' function. The 'Model Window - Key' window shows the key assignments for the radio, with the 'Call' key highlighted in blue. A photograph of the Icom radio is shown on the right side of the interface.

Key	Normal	St
P1	Call	Null
P2	High/Low	Null
Up	CH Up	Null
Down	CH Down	Null
Left	Zone Down	Null
Right	Zone Up	Null
OK	Menu	Null
Back	Home	Null
F1	Monitor	Null
F2	Null	Null
F3	Null	Null
Emer	Emergency	Null

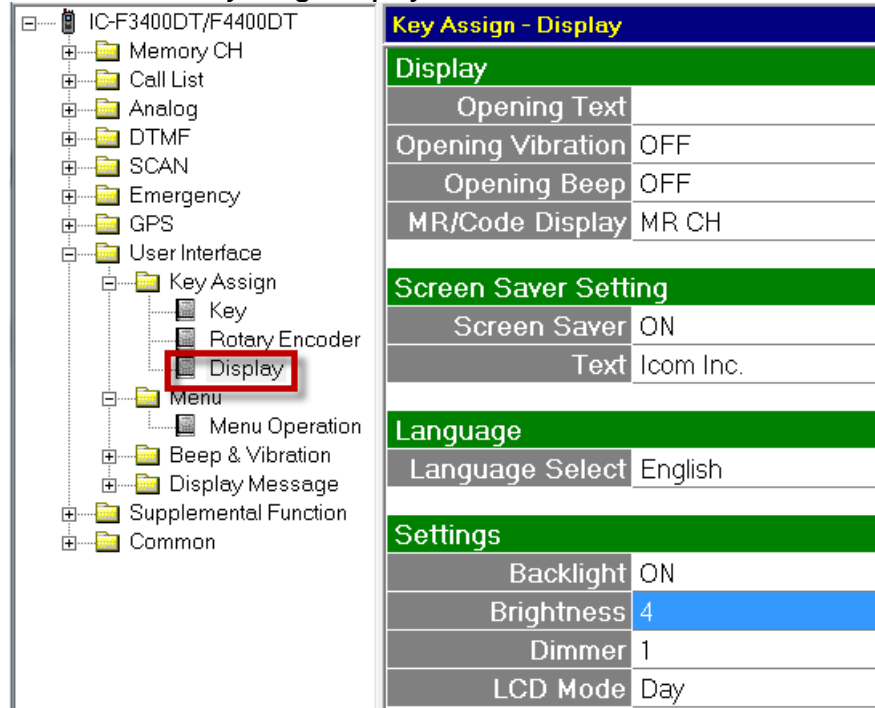
In this simple configuration, the only key needed is the **Call** key, which is used to send the 2-tone signal that the current channel has programmed in its Analog or 2-Tone Profile.

All other keys, except Channel Up/Down are set to **Null**.

**User Interface/Key Assign/Assign Rotary Encoder Window**  
Assign the rotary knob (portables) as **MR CH**.



**User Interface/Key Assign/Display Window**

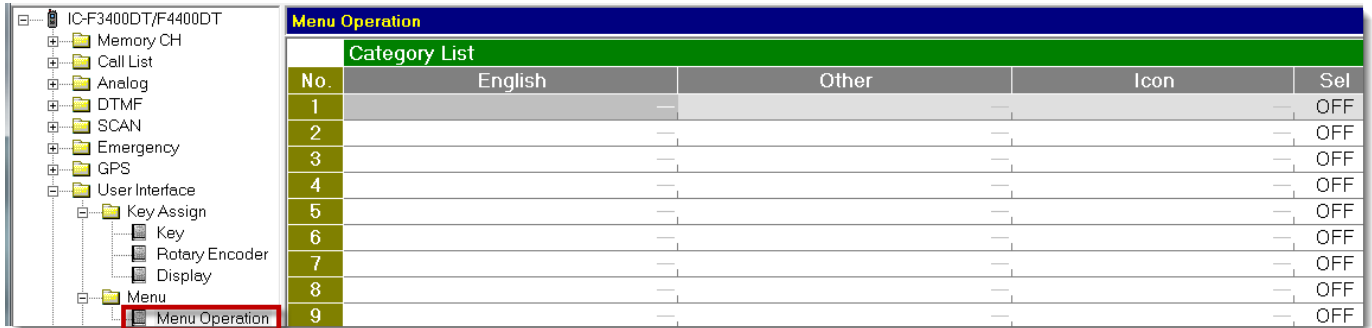


**Suggested Settings:**

- **Backlight**- Set to User preference.: When display light is lit up, battery life will be decreased. Auto- Display lights up after any button push, but then dims (to “Dimmer” level) after 3 seconds.
- **Brightness**- Suggested “4”.
- **Dimmer**- Suggested “0” for portables. Suggested “4” for mobiles.

### Menu Operation Window

Since functionality for this simple file requires no radio Display use, all menu views are turned off in this example.



Menu Operation				
Category List				
No.	English	Other	Icon	Sel
1	---	---	---	OFF
2	---	---	---	OFF
3	---	---	---	OFF
4	---	---	---	OFF
5	---	---	---	OFF
6	---	---	---	OFF
7	---	---	---	OFF
8	---	---	---	OFF
9	---	---	---	OFF