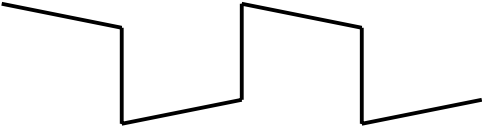


Adjustment for FX-2463 (IC-F11)

ADJUSTMENT											
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref.No.	CK.Point						
Preparation Check points		<p>Connect the transceiver by cloning cable (OPC-478) to a PC (IBM compatible) and boot up the cloning software.</p> <p>Be sure to use a tester with more than 50 ohm/V internal resistance when making each test.</p>									
Lock Voltage Adjustment		<p>Set the transceiver to the highest band frequency on the TX condition, and set the LV voltage as follows by means of spreadable coil L16.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Adj. Freq.</td> <td style="text-align: center;">Highest. Band Freq.</td> </tr> <tr> <td style="text-align: center;">TX Side</td> <td style="text-align: center;">4.0V</td> </tr> </table>	Adj. Freq.	Highest. Band Freq.	TX Side	4.0V	4.0V	L16			
Adj. Freq.	Highest. Band Freq.										
TX Side	4.0V										
Lock Voltage Check		<p>Set the transceiver to the lowest band frequency, and check that each of the LV voltage is within as follows.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Adj. Freq.</td> <td style="text-align: center;">Lowest Band Freq.</td> </tr> <tr> <td style="text-align: center;">RX Side</td> <td style="text-align: center;">0.8V~1.8V</td> </tr> <tr> <td style="text-align: center;">TX Side</td> <td style="text-align: center;">0.8V~1.8V</td> </tr> </table>	Adj. Freq.	Lowest Band Freq.	RX Side	0.8V~1.8V	TX Side	0.8V~1.8V	0.8V-1.8V 0.8V-1.8V		LV
Adj. Freq.	Lowest Band Freq.										
RX Side	0.8V~1.8V										
TX Side	0.8V~1.8V										
Frequency Adjustment		<p>Connect a power meter or attenuator to the antenna terminal. Loose coupling the ANT and frequency counter.</p> <p>Set the transceiver to near the TX greatest high band frequency and set the unit to TX.</p> <p>Use adjustment software to adjust the TX frequency to the values below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Set Frequency</td> <td style="text-align: center;">Center Freq. \pm 500 Hz</td> </tr> </table>	Set Frequency	Center Freq. \pm 500 Hz	\pm 500Hz	Adj.Soft	ANT Con				
Set Frequency	Center Freq. \pm 500 Hz										

ADJUSTMENT													
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point								
TX Output Adjustment		<p>Adjust so that the transceiver power voltage is stable with the voltage from the power terminal at 7.5V during TX.</p> <p>Use adjustment software to adjust the adjustment output to the values below.</p> <table border="1"> <thead> <tr> <th>Adj. Freq.</th> <th>Greatest Low Band Freq.</th> </tr> </thead> <tbody> <tr> <td>Hi Power</td> <td>5.0W</td> </tr> <tr> <td>L2 Power</td> <td>2.0W</td> </tr> <tr> <td>L1 Power</td> <td>1.0W</td> </tr> </tbody> </table>	Adj. Freq.	Greatest Low Band Freq.	Hi Power	5.0W	L2 Power	2.0W	L1 Power	1.0W	5.0W 2.0W 1.0W	Adj. Soft	ANT Con
Adj. Freq.	Greatest Low Band Freq.												
Hi Power	5.0W												
L2 Power	2.0W												
L1 Power	1.0W												
TX Output Check		<p>Check that the in-band TX output is within the specifications below.</p> <table border="1"> <tbody> <tr> <td>Hi Power</td> <td>4.0~6.0W</td> </tr> <tr> <td>L2 Power</td> <td>1.2~2.8W</td> </tr> <tr> <td>L1 Power</td> <td>0.5~2.0W</td> </tr> </tbody> </table>	Hi Power	4.0~6.0W	L2 Power	1.2~2.8W	L1 Power	0.5~2.0W	4.0-6.0W 1.2-2.8W 0.5-2.0W		ANT Con		
Hi Power	4.0~6.0W												
L2 Power	1.2~2.8W												
L1 Power	0.5~2.0W												
Current Check at TX		<p>Check that the in-band power consumption is within the specifications below.</p> <table border="1"> <tbody> <tr> <td>Hi Power</td> <td>Less than 2.0A</td> </tr> <tr> <td>L2 Power</td> <td>Less than 1.5A</td> </tr> <tr> <td>L1 Power</td> <td>Less than 1.2A</td> </tr> </tbody> </table>	Hi Power	Less than 2.0A	L2 Power	Less than 1.5A	L1 Power	Less than 1.2A	4.0-6.0W Less 2.0A Less 1.5A Less 1.2A		ANT Con PWR Con		
Hi Power	Less than 2.0A												
L2 Power	Less than 1.5A												
L1 Power	Less than 1.2A												
Checking Spurious		<p>Connect a spectrum analyzer to the ANT terminal through an attenuator. Set the attenuation so that the spectrum analyzer does not distort.</p> <p>Set the transceiver to TX and when at Hi power, check that spurious is less than the value below in the bandwidth.</p> <table border="1"> <tbody> <tr> <td>Spurious</td> <td>Less than -65dB of the fundamental wave</td> </tr> </tbody> </table>	Spurious	Less than -65dB of the fundamental wave	Less than -65 dB		ANT Con						
Spurious	Less than -65dB of the fundamental wave												

ADJUSTMENT

Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point								
<p>Preparation for Checking Modulation Adjustment</p>		<p>When there is no particular set limits, set the modulation analyzer for adjustment and checking as below.</p> <table border="1" data-bbox="475 434 1054 624"> <tr> <td>HPF</td> <td>OFF</td> </tr> <tr> <td>LPF</td> <td>20 kHz</td> </tr> <tr> <td>De-Emphasis</td> <td>OFF</td> </tr> <tr> <td>Detector</td> <td>(P ± P)/2</td> </tr> </table> <p>Connect the modulation analyzer set at the above conditions, through the attenuator to the antenna terminal. Connect an oscilloscope, distortion meter and a level meter to the modulation analyzer's detection output terminal.</p> <p>Connect a millivolt meter or a 600 ohm output impedance CR oscillator to the transceiver's mic terminal.</p>	HPF	OFF	LPF	20 kHz	De-Emphasis	OFF	Detector	(P ± P)/2			
HPF	OFF												
LPF	20 kHz												
De-Emphasis	OFF												
Detector	(P ± P)/2												
<p>Deviation Adjustment</p>		<p>Set the CR oscillator to a 1 kHz sine wave, 150mVrms, and input from the external mic terminal. Set the transceiver to TX and use the adjustment software to adjust to the following values.</p> <table border="1" data-bbox="475 1391 1054 1536"> <tr> <td>Adjust. Freq.</td> <td>Near Center Frequency</td> </tr> <tr> <td>WIDE</td> <td>± 4.10 ± 0.05 kHz</td> </tr> <tr> <td>NARROW</td> <td>± 2.10 ± 0.05 kHz</td> </tr> </table>	Adjust. Freq.	Near Center Frequency	WIDE	± 4.10 ± 0.05 kHz	NARROW	± 2.10 ± 0.05 kHz	<p>± 4.05 ~ ±4.15kHz ± 2.05 ~ ±2.15kHz</p>	<p>Adj. Soft</p>	<p>ANT Con</p>		
Adjust. Freq.	Near Center Frequency												
WIDE	± 4.10 ± 0.05 kHz												
NARROW	± 2.10 ± 0.05 kHz												
<p>Modulation Balance Adjustment</p>		<p>Use the adjustment software to adjust the modulation analyzer's detection output horizontal line so that it becomes a straight line as below</p> <table border="1" data-bbox="475 1774 1054 1823"> <tr> <td>Adjust. Freq.</td> <td>Near Center Frequency</td> </tr> </table> 	Adjust. Freq.	Near Center Frequency	<p>Detection Output</p>	<p>Adj. Soft</p>	<p>ANT Con</p>						
Adjust. Freq.	Near Center Frequency												

ADJUSTMENT

Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point								
Checking Deviation		<p>Check that the deviation in the bandwidth is as the values below.</p> <table border="1"> <tr> <td>WIDE</td> <td>± 3.60 ~ 4.50 kHz</td> </tr> <tr> <td>NARROW</td> <td>± 1.80 ~ 2.30 kHz</td> </tr> </table>	WIDE	± 3.60 ~ 4.50 kHz	NARROW	± 1.80 ~ 2.30 kHz	<p>± 3.6 ~ ±4.5kHz ± 1.8 ~ ±2.3kHz</p>	Adj. Soft	ANT Con				
WIDE	± 3.60 ~ 4.50 kHz												
NARROW	± 1.80 ~ 2.30 kHz												
Checking Modulation		<p>Check that the modulation in the bandwidth is as the value below</p> <table border="1"> <tr> <td>WIDE/NARROW</td> <td>7 ~ 20mV rms</td> </tr> </table>	WIDE/NARROW	7 ~ 20mV rms	<p>7~20mV rms</p>		ANT Con						
WIDE/NARROW	7 ~ 20mV rms												
Checking CTCSS/ DTCS/5 TONE/ DTMF DEVIATION		<p>Connect a linear detector via the attenuator to the antenna terminal, then reset so that each signaling type can be output.</p> <p>DTCS CODE 007 CTCSS 88.5 Hz 5 TONE CCIR 1111 DTMF # (Auto Dial Setting)</p> <p>Set the linear detector to the following.</p> <p>HPF OFF LPF 20 kHz De-emphasis OFF Level Meter (P/P)/2</p> <p>Transmit while making sure no input is applied to the mic (or mic terminal), and check that each version in its bandwidth is as the values below, respectively.</p> <table border="1"> <tr> <td>Wide CTCSS/DTCS</td> <td>± 0.50~± 0.90kHz</td> </tr> <tr> <td>Wide 2/5 TONE/ DTMF</td> <td>± 2.40~± 3.60kHz</td> </tr> <tr> <td>Narrow CTCSS/DTCS</td> <td>± 0.25~± 0.45kHz</td> </tr> <tr> <td>Narrow 2/5 TONE/ DTMF</td> <td>± 1.20~± 1.80kHz</td> </tr> </table>	Wide CTCSS/DTCS	± 0.50~± 0.90kHz	Wide 2/5 TONE/ DTMF	± 2.40~± 3.60kHz	Narrow CTCSS/DTCS	± 0.25~± 0.45kHz	Narrow 2/5 TONE/ DTMF	± 1.20~± 1.80kHz	<p>±0.5-0.9kHz ±2.4-3.6kHz ±.25-.45kHz ±1.2-1.8kHz</p>		ANT Con
Wide CTCSS/DTCS	± 0.50~± 0.90kHz												
Wide 2/5 TONE/ DTMF	± 2.40~± 3.60kHz												
Narrow CTCSS/DTCS	± 0.25~± 0.45kHz												
Narrow 2/5 TONE/ DTMF	± 1.20~± 1.80kHz												

ADJUSTMENT

Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point										
Checking TX S/N		<p>Connect a linear detector via the attenuator to the antenna terminal, and set to the conditions below.</p> <p>HPF 50 Hz</p> <p>LPF 20 kHz</p> <p>De-emphasis OFF</p> <p>Level Meter (P/P)/2</p> <p>Apply a 1 kHz signal from the low frequency oscillator to the antenna terminal, and transmit, then adjust the low frequency oscillator output level so that the maximum modulation is 70%.</p> <p>Check that the TX S/N in the bandwidth is as the values below.</p> <table border="1" data-bbox="475 958 1054 1055"> <tr> <td>WIDE</td> <td>More than 40 dB</td> </tr> <tr> <td>NARROW</td> <td>More than 34 dB</td> </tr> </table>	WIDE	More than 40 dB	NARROW	More than 34 dB	<p>Over 40dB</p> <p>Over 34dB</p>		<p>ANT Con</p>						
WIDE	More than 40 dB														
NARROW	More than 34 dB														
Adjusting RX Sensitivity		<p>When there is no particular set limits, set the RX adjustments and signal generator when checking to the settings below.</p> <table border="1" data-bbox="475 1294 1054 1440"> <tr> <td>Modulation Freq.</td> <td>1kHz</td> </tr> <tr> <td>WIDE</td> <td>± 3.5 kHz</td> </tr> <tr> <td>NARROW</td> <td>± 1.5 kHz</td> </tr> </table> <p>Set the signal generator in the following way for wide channels.</p> <table border="1" data-bbox="475 1630 1054 1727"> <tr> <td>Adjust Freq.</td> <td>Near Greatest Lo band F.</td> </tr> <tr> <td>SG Input level</td> <td>+20 dBu</td> </tr> </table> <p>Connect an 8 ohm non-inductive load and a distortion meter to the external speaker terminal. Adjust BPF (T1) ~ (T4) with the adjustment software, so that the sensitivity is at maximum.</p>	Modulation Freq.	1kHz	WIDE	± 3.5 kHz	NARROW	± 1.5 kHz	Adjust Freq.	Near Greatest Lo band F.	SG Input level	+20 dBu		<p>Adj. Soft</p>	<p>RSSI line</p>
Modulation Freq.	1kHz														
WIDE	± 3.5 kHz														
NARROW	± 1.5 kHz														
Adjust Freq.	Near Greatest Lo band F.														
SG Input level	+20 dBu														

ADJUSTMENT													
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point								
Checking RX Sensitivity		<p>Check that the signal generator level when the RX frequency bandwidth becomes 12 dB SINAD, is the value below.</p> <table border="1"> <tr> <td>RX Sensitivity</td> <td>Less than -10 dBu</td> </tr> </table> <p>Use the same check method for Narrow channels also.</p>	RX Sensitivity	Less than -10 dBu	Less -10dB		ANT Con						
RX Sensitivity	Less than -10 dBu												
Adjusting the Squelch		<p>Next, set the transceiver to the RX frequency bandwidth's wide band center frequency.</p> <p>Set the signal generator to the settings below.</p> <table border="1"> <tr> <td>Modulation Freq.</td> <td>1kHz</td> </tr> <tr> <td>WIDE</td> <td>± 3.5 kHz</td> </tr> <tr> <td>NARROW</td> <td>± 1.75 kHz</td> </tr> <tr> <td>SG Output Level</td> <td>-14 dBu</td> </tr> </table> <p>In this condition, using the adjustment software, raise the squelch D/A value until the squelch closes once, then lower the D/A value again, and adjust until the squelch opening point.</p>	Modulation Freq.	1kHz	WIDE	± 3.5 kHz	NARROW	± 1.75 kHz	SG Output Level	-14 dBu			
Modulation Freq.	1kHz												
WIDE	± 3.5 kHz												
NARROW	± 1.75 kHz												
SG Output Level	-14 dBu												
Checking Squelch Sensitivity		<p>Check that the squelch opening point value in the RX frequency bandwidth is as below.</p> <table border="1"> <tr> <td>Squelch Sensitivity</td> <td>Less than -10 dBu</td> </tr> </table> <p>Next, reduce the signal generator output and check that the squelch closes in the RX bandwidth.</p>	Squelch Sensitivity	Less than -10 dBu	Less-10dB	Adj. Soft	ANT Con						
Squelch Sensitivity	Less than -10 dBu												

ADJUSTMENT									
Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point				
Checking AF Output		<p>Set the signal generator output level to +60 dBu. The transceiver and SG connection is the same as the squelch adjustment above.</p> <p>Adjust the transceiver volume until the distortion meter reads 5%.</p> <p>Check that the AF output value at this point as below.</p> <table border="1" data-bbox="475 622 1054 674"> <tr> <td>AF Output</td> <td>More than 0.35W</td> </tr> </table>	AF Output	More than 0.35W	<p>Over 0.35W @ 8 ohm load</p>				
AF Output	More than 0.35W								
Checking RX S/N		<p>Set the signal generator output level to +60 dBu. Adjust the AF volume so that the AF output is 50% of the rated value.</p> <p>Check that the RX S/N in the bandwidth is as the values below.</p> <table border="1" data-bbox="475 1104 1054 1200"> <tr> <td>WIDE</td> <td>More than 40 dB</td> </tr> <tr> <td>NARROW</td> <td>More than 34 dB</td> </tr> </table>	WIDE	More than 40 dB	NARROW	More than 34 dB	<p>Over 40dB Over 34dB</p>		
WIDE	More than 40 dB								
NARROW	More than 34 dB								
Checking Howling		<p>Set the signal generator output to +60 dBu as in RX adjustment, and for non-modulation.</p> <p>Next, set the internal speaker for operation, and turn the AF volume up to maximum to check that howling does not occur.</p>							
Checking Maximum RX Current		<p>While still in the AF output check status, rotate the volume control clockwise to obtain the maximum AF output. Check that the current consumption at this time is as the value below.</p> <table border="1" data-bbox="475 1821 1054 1872"> <tr> <td>Max. RX Current</td> <td>Less than 300 mA</td> </tr> </table>	Max. RX Current	Less than 300 mA	<p>Less than 300mA</p>		PWR Con		
Max. RX Current	Less than 300 mA								

. ADJUSTMENT

Adjustment	No.	Adjustment Condition & Tuning	Value	Ref. No.	CK. Point		
Checking Standby Power Consumption		Without connecting anything to the ACC socket, check that the standby power con- sumption is as the value below. <table border="1" data-bbox="475 434 1054 483"><tr><td data-bbox="475 434 764 483">Standby Current</td><td data-bbox="764 434 1054 483">Less than 70 mA</td></tr></table>	Standby Current	Less than 70 mA	Less than 70mA		PWR Con
Standby Current	Less than 70 mA						