Tuning Procedure (NX-3820HG-K)

Common Section

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) DC voltage:13.6V 2) SSG standard modulation [Wide] MOD:1kHz,DEV:3kHz [Narrow] MOD:1kHz,DEV:1.5kHz								
2. VCO Assist	1) Adj item: [RAST] Adjust:[***] 2) Adj item: [Low1 AST]→ [Low2 AST]→ [Low3 AST]→ [Low4 AST]→ [Low5 AST]→ [Low6 AST]→ [Center1 AST]→ [Center2 AST]→ [Center3 AST]→ [Center4 AST]→ [Center5 AST]→ [High1 AST]→ [High2 AST]→ [High3 AST]→ [High4 AST]→ [High5 AST]→ [High6 AST]→ Adjust:[***] Press[Function] key to store the adjustment value.	1) Adj item: [VCO Assist] 2) Adj item: [Low1],[Low2], [Low3],[Low4], [Low5], [Low6] [Center1], [Center2], [Center3], [Center4], [Center5], [High1],[High2] [High3],[High4], [High5][High6] Press [Apply All] button to store the adjustment value.				Panel	Selector [Function] [Home]	**[PC test mode]** **[Automatic Adjustment]** 1) Press [Tune Assist Voltage] button. 2) Press [Apply All] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** [V] Indicator on the PC window shows VCO lock voltage. Change the adjustment value to get VCO lock voltage within the limit of the specified voltage. **Note:** Confirm the VCO lock voltage approximately 3 seconds after the adjustment value is changed.	2.5V±0.1V **[Automatic Adjustment]** After the automatic adjustment is performed, verify that the VCO lock voltage is within the voltage range which is specified by the manual adjustment. **[Manual Adjustment]** Press [Apply All] button to store the adjustment value after all adjustment points have been adjusted. **Note:**

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Frequency adjust *1	* The Frequency adjustment can be performed only in PC test mode.	1) Adj item: [Frequency] SSG output :–20dBm (22.4mV)(CW (without modulation)) **Caution:** Perform the frequency adjustment under the following conditions. • Temperature range of +20°C to +26°C (+68.0°F to +78.8°F). (The temperature is displayed on the Frequency adjustment screen of the KPG-D1 and the LCD of the transceiver.) • Use an accuracy of 0.003ppm for the SSG. (Use a standard oscillator if necessary.)	SSG	Panel	ANT	Panel	Selector [Function] [Home]	**[PC test mode]** Press [Start] button of “Auto Tuning”. Press [Apply] button to store the adjustment value after the automatic adjustment has finished.	**[PC test mode]** “IF20” value = Within 0±12 digits. The value of “IF20” will become around “0” after the adjustment has finished. **Remark:** “Frequency” is adjusted under receiving condition with SSG.
4. RTC Correction	1) Adj item: [RTC] Adjust: [***] Press [Function] key to store the adjustment value.	1) Adj item: [RTC Correction] Data: [***] Press [Apply] key to store the adjustment value.	Frequency Counter	Panel	TEST POINT (CN715)				Remarks: The adjustment value should input the display of a Frequency Counter.

Transmitter Section

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. High Transmit power adjust	1) Adj item: [H_PWR] Adjust:[****] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [High Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	Selector [Function] [Home]	45W± 1W ≦10A (K type)	±1W [TBD] Current **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
2. Low Transmit power adjust	3) Adj item: [L_PWR] Adjust:[****] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [Low Transmit Power] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Power meter Ammeter	Panel	ANT	Panel	Selector [Function] [Home]	5W ± 0.5W≦7A	±0.5W [TBD] Current **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. Balance adjust	1) Adj item: [BAL] Adjust: [***] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [***] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [Balance] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	The Deviation of 20Hz frequency is fixed. Change the 2kHz adjustment value to become the same deviation of 20Hz within the specified range.	2kHz Tone deviation is within ±1.0% of 20Hz tone deviation. **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
4. Maximum Deviation adjust [Analog Wide]	1) Adj item: [ADEV] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6]	1) Adj item: [Maximum Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6]	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 4150Hz and 4250Hz. Deviation meter LPF: 15kHz HPF: OFF 500 **[Panel tuning mode]** PTT: ON	4150~4250Hz **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	[Transmit] button. Press [OK] button to store the adjustment value.						**[PC test mode]** PTT: Press [Transmit] button	
[Analog Narrow]	1) Adj item: [ADEV] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [Maximum Deviation (Analog Narrow] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the deviation is between 2050Hz and 2150Hz. Deviation meter LPF: 15kHz HPF: OFF 500 **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2050~2150Hz **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. NXDN High Deviation adjust [NXDN Narrow]	1) Adj item: [NDEV] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [NXDN High Deviation (NXDN Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 2995Hz and 3117Hz. Deviation meter LPF: 3kHz HPF: OFF 500 **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	2995~3117Hz **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
[NXDN Very Narrow]	1) Adj item: [NDEV] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6]	1) Adj item: [NXDN High Deviation (NXDN Very Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6]	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 1331Hz and 1363Hz. Deviation meter LPF: 3kHz HPF: OFF 500 **[Panel tuning mode]** PTT: ON	1311~1363Hz **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	[Transmit] button. Press [OK] button to store the adjustment value.						**[PC test mode]** PTT: Press [Transmit] button	
6. DMR High Deviation adjust [DMR Narrow]	1) Adj item: [DDEV] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [DMR High Deviation (DMR Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [[Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel Panel	ANT ANT	Panel Panel	Selector [Function] [Home] Selector [Function] [Home]	Write fixed value for each adjustment point. (The value is written below.) Transmit at each adjustment point and check that the Analog deviation is between 1331Hz and 1363Hz. Deviation meter LPF: 3kHz HPF: OFF 500 **[Panel tuning mode]** PTT: ON **[PC test mode]** PTT: Press [Transmit] button	1311~1363Hz **[PC test mode]** Press [Apply All] button to store the adjustment value after all adjustment point was adjusted.
7. QT Deviation adjust [Analog Wide]	1) Adj item: [QT] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→	1) Adj item: [QT Deviation (Analog Wide)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→	Deviation meter Oscilloscope					Write the value as followings. 512	0.75kHz±0.05kHz

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	[High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	[High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.							
[Analog Narrow]	1) Adj item: [QT] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [QT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 512	0.35kHz±0.05kHz
8. DQT Deviation adjust [Analog	1) Adj item: [DQT] Adjust: [****]	1) Adj item: [DQT Deviation (Analog Wide)] Deviation meter	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 430	0.75kHz±0.05kHz

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
Wide]	2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.							
[Analog Narrow]	1) Adj item: [DQT] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [DQT Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 430	0.35kHz±0.05kHz

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. LTR Deviation adjust [Analog Wide]	1) Adj item: [LTR] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [LTR Deviation (Analog Wide)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 512	1.00kHz±0.05kHz
[Analog Narrow]	1) Adj item: [LTR] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function]	1) Adj item: [LTR Deviation (Analog Narrow)] Deviation meter LPF: 3kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 512	0.75kHz±0.05kHz

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	key to store the adjustment value.	the adjustment value.							
10. DTMF Deviation adjust [Analog Wide]	1) Adj item: [DTMF] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [DTMF Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 555	2.50kHz±0.05kHz
[Analog Narrow]	1) Adj item: [DTMF] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6]	1) Adj item: [DTMF Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 555	1.25kHz±0.05kHz

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	Press [OK] button to store the adjustment value.							
11. Single TONE Deviation adjust [Analog Wide]	1) Adj item: [TONE] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [Single TONE Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 512	3.00kHz±0.05kHz
[Analog Narrow]	1) Adj item: [TONE] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→	1) Adj item: [Single TONE Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 512	1.50kHz±0.05kHz

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	[Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	[Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.							
12. MSK Deviation adjust [Analog Wide]	1) Adj item: [MSK] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [MSK Deviation (Analog Wide)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 512	3.00kHz±0.05kHz
[Analog Narrow]	1) Adj item: [MSK] Adjust: [****] 2) Adj item:	1) Adj item: [MSK Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item:	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 512	1.50kHz±0.05kHz

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	[Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	[Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.							
13. CWID Deviation adjust [Analog Narrow]	1) Adj item: [CWID] Adjust: [****] 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] Adjust: [****] PTT: ON Press [Function] key to store the adjustment value.	1) Adj item: [CWID Deviation (Analog Narrow)] Deviation meter LPF: 15kHz HPF: OFF 2) Adj item: [Low1]→ [Low3]→ [Low5]→ [Center1]→ [Center3]→ [Center5]→ [High2]→ [High4]→ [High6] [Transmit] button. Press [OK] button to store the adjustment value.	Deviation meter Oscilloscope	Panel	ANT	Panel	Selector [Function] [Home]	Write the value as followings. 470	1.10kHz±0.10kHz

*3 **Necessary Deviation adjustment item for each signaling and mode**

The following shows the necessary adjustment items for each signaling deviation. Please read the following table like the following example. In the case of the signaling “QT (Wide 5k)”, this signaling is composed of three elements [Balance, Maximum Deviation (Analog Wide 5k) and QT Deviation (Wide 5k)]. Please adjust Balance and Maximum Deviation (Analog Wide 5k) before adjusting QT Deviation (Wide 5k).

Mode	Signaling	Necessary adjustment and order			
		Wide	Narrow	Very Narrow	
Analog	Audio	1. Balance adjust 2. Maximum Deviation adjust [Wide]	1. Balance adjust 2. Maximum Deviation adjust [Narrow]	---	
	QT	1. Balance adjust 2. Maximum Deviation adjust [Wide] 3. QT Deviation adjust [Wide]	1. Balance adjust 2. Maximum Deviation adjust [Narrow] 3. QT Deviation adjust [Narrow]	---	
	DQT	1. Balance adjust 2. Maximum Deviation adjust [Wide] 3. DQT Deviation adjust [Wide]	1. Balance adjust 2. Maximum Deviation adjust [Narrow] 3. DQT Deviation adjust [Narrow]	---	
	LTR	1. Balance adjust 2. Maximum Deviation adjust [Wide] 3. LTR Deviation adjust [Wide]	1. Balance adjust 2. Maximum Deviation adjust [Narrow] 3. LTR Deviation adjust [Narrow]	---	
	DTMF	1. Balance adjust 2. Maximum Deviation adjust [Wide] 3. DTMF Deviation adjust [Wide]	1. Balance adjust 2. Maximum Deviation adjust [Narrow] 3. DTMF Deviation adjust [Narrow]	---	
	2TONE	1. Balance adjust 2. Maximum Deviation adjust [Wide] 3. Single TONE Deviation adjust [Wide]	1. Balance adjust 2. Maximum Deviation adjust [Narrow] 3. Single TONE Deviation adjust [Narrow]	---	
	MSK(Fleet sync)	1. Balance adjust 2. Maximum Deviation adjust [Wide] 3. MSK Deviation adjust [Wide]	1. Balance adjust 2. Maximum Deviation adjust [Narrow] 3. MSK Deviation adjust [Narrow]	---	
NXDN	Audio	---	1. Balance adjust 2. Maximum Deviation [NXDN Narrow]	1. Balance adjust 2. Maximum Deviation adjust [NXDN Very Narrow]	
	CWID	---	---	1. Balance adjust 2. Maximum Deviation [Analog Narrow] 3. CWID Deviation adjust [Very Narrow]	

・Balance is common with all the above deviation adjustments. If Balance (Transmitter Section 3) has already adjusted, please skip Step1 and adjust from Step2.

・Maximum Deviation (Analog Wide/Narrow) is common with all the analog signaling deviations and CWID Deviation (NXDN Very Narrow).
If Balance and Maximum Deviation (Analog Wide /Narrow) (Transmitter Section 5) have already adjusted, please skip Step2 and adjust from Step3.

Receiver Section

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AF level setting	[Panel test mode] 1) CH-Sig: 1-1 SSG output: –47dBm (1mV) (MOD: 1kHz/±1.5kHz)	1) Test Channel Channel: 1 Test Signaling Mode: Analog Signaling: 1 SSG output: –47dBm (1mV) (MOD: 1kHz/±1.5kHz)	SSG DVM AF VTVM Dummy load	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [+], [-] [PC test mode] [+], [-]	Volume Up/Down knob to obtain 1.41V AF output. (0.5W @ 4Ω load)	1.41V±0.1V
2. IQ Phase Adjust	1) Adj item: [IQ] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: Freq: Tune Freq +8kHz level: -53dBm (MOD:OFF)	1) Adj item: [IQ Phase] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: Freq: Tune Freq +8kHz level: -53dBm (MOD:OFF)	SSG	Panel	ANT Ext. SP connector	Panel	[Panel tuning mode] [▲], [▼] [PC test mode] [+], [-]	**[PC test mode]** **[Automatic Adjustment]** After input signal from SSG, 1) Press [Autotune] button. 2) Press [Apply] button to store the adjustment value after the automatic adjustment has finished. **[Manual Adjustment]** Adjust RSSI Level(DSP Normal Power Mode) Value to the minimum.	
3. RSSI reference adjust	1) Adj item: [RRSSI] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [RSSI Reference (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dBSINAD level –3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
4.Open Squelch adjust [Analog Wide]	1) Adj item: [SQL] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±3kHz)	1) Adj item: [Open Squelch (Analog Wide)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±3kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[Analog Narrow]	1) Adj item: [SQL] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [Open Squelch (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level –3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	
[NXDN Narrow]	1) Adj item: [SQL] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6]	1) Adj item: [Open Squelch (NXDN Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6]	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, press [Apply] button to store the adjustment value.	

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
	SSG output: 12dB SINAD level at Analog Narrow –3dB (MOD: 1kHz/±1.5kHz)	SSG output: 12dB SINAD level at Analog Narrow –3dB (MOD: 1kHz/±1.5kHz)							
[NXDN Very Narrow]	1) Adj item: [SQL] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level at Analog Narrow –4dB (MOD: 400Hz/±1.1kHz)	1) Adj item: [Open Squelch (NXDN Very Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level at Analog Narrow –4dB (MOD: 400Hz/±1.1kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, press [Apply] button to store the adjustment value.	
[DMR]	1) Adj item: [SQL] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level at Analog Narrow –3dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [Open Squelch (NXDN Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level at Analog Narrow –3dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, 1) Press [Acquire Monitored Value] button. 2) Press [Apply] button to store the adjustment value.	

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
5. Low RSSI adjust	1) Adj item: [LRSSI] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: –118dBm (0.28µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [Low RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: –118dBm(0.28uV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, press [Apply] button to store the adjustment value.	
6. High RSSI adjust	1) Adj item: [HRSSI] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: –80dBm(22.4µV) (MOD: 1kHz/±1.5kHz)	1) Adj item: [High RSSI (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: –80dBm(22.4uV) (MOD: 1kHz/±1.5kHz)	SSG	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, press [Apply] button to store the adjustment value.	
7.Tight Squelch adjust [Analog Wide]	1) Adj item: [SQL] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/±3kHz)	1) Adj item: [Tight Squelch (Analog Wide)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/±3kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, press [Apply] button to store the adjustment value.	

Item	Panel tuning mode	PC tuning mode	Measurement			Adjustment			Specifications/Remarks
			Test-equipment	Unit	Terminal	Unit	Parts	Method	
[Analog Narrow]	1) Adj item: [SQL] Adjust: [***] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/±1.5kHz)	1) Adj item: [Tight Squelch (Analog Narrow)] 2) Adj item: [Low1]→ [Low5]→ [Center3]→ [High2]→ [High6] SSG output: 12dB SINAD level +6dB (MOD: 1kHz/±1.5kHz)	SSG Distortion meter Oscilloscope	Panel	ANT Ext. SP connector	Panel		**[Panel tuning mode]** After input signal from SSG, press [Triangle] key to store the adjustment value. **[PC test mode]** After input signal from SSG, press [Apply] button to store the adjustment value.	