KENWOOD

NEXEDGE®
Release Notes

NX-5000 Series Firmware Version 1.71

KPG-D1/D1N Version 1.71

Last Updated: June 2, 2016
Language: English
Document No.: RN-16-0001

JVCKENWOOD

1 Copyrights

1.1 Software Copyrights

All copyrights and other intellectual property rights for this technical document as well as the software described in this technical document, help texts and manuals attached to the software are owned by JVCKENWOOD Corporation.
The right to use the software described in this technical document is granted to licensee(s) by JVCKENWOOD Corporation; however, the title to and ownership of the software shall be owned by JVCKENWOOD Corporation. Refer to the help texts attached to this software for details.
JVCKENWOOD Corporation does not warrant quality and performance of the software described in this technical document to conform to the applicability of any use and JVCKENWOOD Corporation shall be free from liability for any defects, damage or loss or from any warranty for anything other than what is expressly described in this technical document.
Any distribution, resale, lease, waiver, assignment to this technical documents and help texts attached to the software shall strictly be prohibited.

1.2 Firmware Copyrights

The title to and ownership of copyrights for firmware embedded in JVCKENWOOD product memories are reserved for JVCKENWOOD Corporation.
Any modification, reverse engineering, copying, reproduction or disclosure of the firmware on an Internet website or elsewhere is strictly prohibited without prior written consent from JVCKENWOOD Corporation.
Furthermore, any reselling, assigning or transferring of the firmware is also strictly prohibited without embedding the firmware in JVCKENWOOD product.

1.3 Document Copyrights

Copyright 2016 by JVCKENWOOD Corporation. All rights reserved.
No part of this manual shall be reproduced, translated, distributed or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, for any purpose without the prior written permission from JVCKENWOOD.

2 Disclaimer

This document is intended to provide basic and general information about the specification of the products listed above and the system configuration. The intended purpose of all technical descriptions herein shall be, to improve your understanding of the product specification and system configuration. The descriptions provided in this document are carefully examined and are believed to be entirely reliable. JVCKENWOOD shall be entirely free from any responsibility and liability for inapplicability, damage or loss arising from inaccuracies in this document and reserves the right to change the product specification herein in order to improve readability, function or product design. Applicability of the descriptions in this document may vary depending upon the product specification and configurations of relevant equipment.

Furthermore, you are neither licensed nor entitled to use and/or divert any descriptions in this document to your application.

Contact JVCKENWOOD Corporation for further details.

The AMBE+2™ voice coding Technology embodied in this product is protected by intellectual property rights including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc.

3 Release Information

This release note covers NX-5000 series products and related products.

3.1 NXDN and P25 Feature

This section covers updated features for NXDN mode and P25 mode of the NX-5000 series products.

[Updated Feature]

3.1.1 Digital 2-tone Paging (Trunking)

R1.6 provided the ability to send 2-tone paging in NXDN and P25 conventional modes. R1.71 further enhances this operation by allowing the same features in NXDN and P25 Phase 1 and Phase 2 trunking. The features are described as follows.

- Group Call is used on 2-tone Encoding/Decoding for Trunking.
- 2-tone1 to 2-tone4 can be assigned just like in Conventional mode with Optional Signaling setup for Group Call.
- AND and OR can be setup just like in Conventional mode with Audio Control for Group Call.
- Individual Call or Paging Call can be received even on a channel that is set with 2-tone as Group Call optional signaling.
- When Audio Control is set as AND, just like in Conventional mode Optional Signaling is cancelled by sending a transmission.
- Optional Signaling can be cancelled by pressing the Monitor key or Squelch Off key in Trunking mode.
- The Transpond function is not supported in Trunking mode.
- Also supports with Message Trunked (Enhanced) in NXDN Trunking.

3.1.2 2-tone Encode – PC Command Support

Encode for 2-tone via PC command is supported.
A new command has been added for this: refer to the 2-tone Encode List defined by the programming software and pick the appropriate list number to transmit the 2-tone signal.

3.2 NXDN Feature

This section covers updated feature for NXDN mode of the NX-5000 series products.

[Updated Feature]

3.2.1 Increased GPS Capacity / GPS Report Channel

GPS capacity of the NEXEDGE Gen2 System has been tremendously improved compared with the current NXDN Type-C Trunked System owing to improvements in GPS Report channel, GRCH, and transmission management by the system.
Re-setting of the radio is not needed when GPS location data transmission condition is changed.
Furthermore, the radio accesses to the GRCH without the use of the control channel when it transmits GPS location data thus preventing data collision.

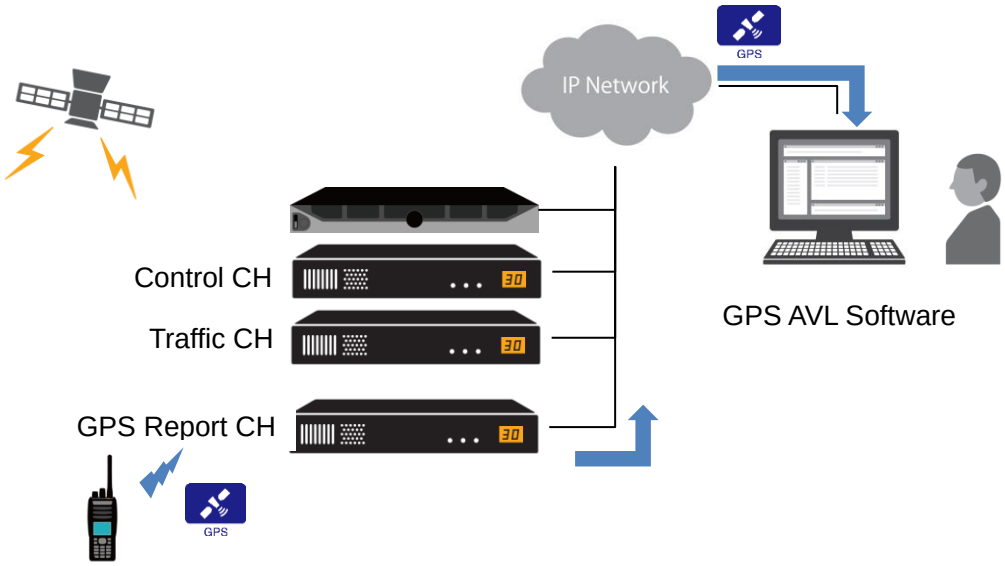

Figure 1: System Configuration

(1) Improving GPS capacity

Figure 2 are the theoretical values for transmitting GPS location data with 24.0 second intervals on a NXDN Type-C Trunk System with GPS time marks of 2.0 seconds.

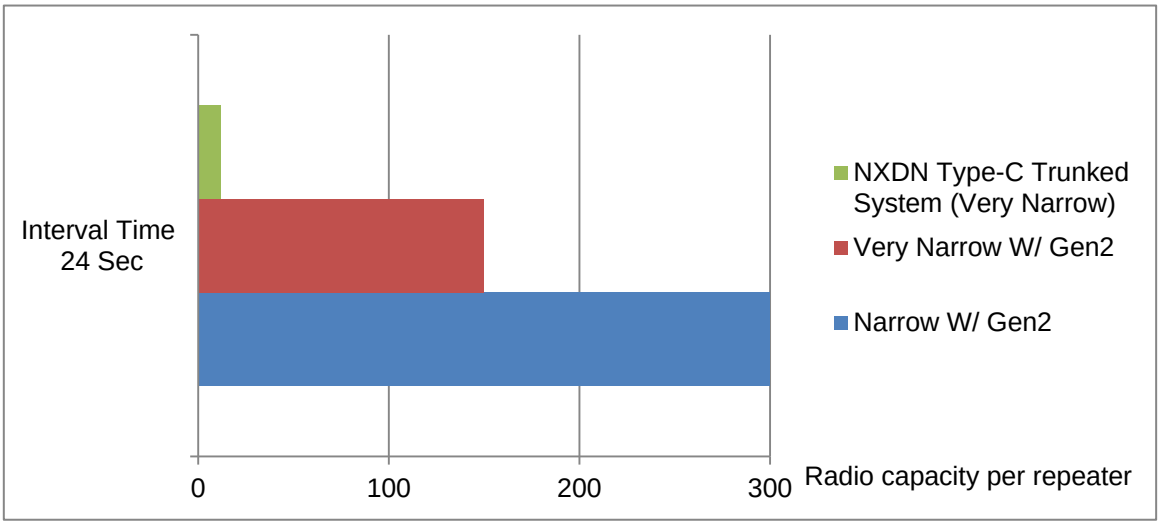

Figure 2: Radio capacity/repeater vs Transmission interval time/radio

(2) No need to establish GPS transmit time marks

For NXDN Type-C Trunked System, there is a possibility that different radios may make a GPS calls which will cause data collisions. To prevent this, each radio needs to transmit with unique Time Mark. For NEXEDGE Gen2 System, the system manages transmission timing for radio. No programming is required to set the unique time mark since it is handled by the system automatically. This creates lower maintenance demands on the system operator.

(3) Control channel traffic reduction

In normal operation, the radio needs to access the control channel for registration and call request. Current GPS methodology on a NXDN Type-C Trunking System is to transmit GPS data on the control channel. This increases the control channel traffic drastically. The Gen2 System does not load the control channel since the GPS data is off-loaded to the GRCH for transmission.

Note:

GPS location data using the Advanced GPS Reporting feature is forwarded to the console via system controller and IP gateway. A control station radio cannot be used since the GPS information is not passed through the repeater but directly to the network. GPS AVL Software KAS-10 doesn't support Advanced GPS Reporting feature, but KPT-110SDK* Ver. 2.40 or later has already incorporated it for development of GPS AVL software.

*KPT-110SDK is software development kit.

3.3 P25 Feature

This section covers new feature for P25 mode of the NX-5000 series products.

[New Feature]

3.3.1 Single Radio File (.srf)

The Single Radio File (extension is srf) is a special Programming Data File. The programming data file is saved as “Single Radio File (.srf)” using KPG-D1/D1N. With the Single Radio file neither a System Key File (SKF) nor USB Hardware Access Key is required to load programming data for the P25 trunking system into the radio.
The System administrator prepares the SRF using their SKF and the dealer’s appropriate access key with KPG-D1/D1N. The SRF is provided to the dealer or end-user to load into the targeted radio only. The SRF cannot be edited, copied, its contents deleted, or loaded into any other radio. It may be viewed and loaded in the targeted radio only.

This method provides security of the P25 Trunking system while still providing flexibility to the system owner and their customers.

3.4 Common Features

This section covers common features of the NX-5000 series products.

[Updated Features]

3.4.1 Multi RF Deck OTAP

Over-the-Air Programming (OTAP) is a function used to overwrite the programming data in a subscriber unit (SU) without the use of a programming cable. This contributes to reducing the workload, operating costs, and improves user-friendliness for those involved in system management.
OTAP may be used to configure multiple RF decks. In addition, a multi-deck radio configuration may be used as an OTAP base. When the multi-RF deck radio is targeted for OTAP, programming data may be overwritten to all the RF decks while the OTAP occurs on a single system.
It's possible to configure OTAP for Multi RF Deck using OTAP MANAGER (KPG-180AP) version 2.10.

3.4.2 New Compatible Bluetooth® Headset Devices

Compatibility testing has been completed for additional Bluetooth Headset Devices.
PTT control has been enabled via the Serial Port Profile (SPP) for these devices.
Please refer to below URL for compatible headset devices.
http://manual2.jvckenwood.com/com/help_ref/nx5000_series/compatible_model_list/CNMJSYnnzoitpv.html

Note:
The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by JVCKENWOOD Corporation is under license.

3.4.3 Battery Information Display

IS batteries* – KNB-LS5 and KNB-LS6 – now support power-on battery information and battery information display functions. The same information may be displayed on the existing KNB-L1/L2/L3.
*Release dates: Jan 2016 for the KNB-LS5 and Mar 2016 for the KNB-LS6.

3.4.4 Talk Around permission per Conventional Channel

For analog LTR trunking, it has been possible to control with the programming software whether Talk Around can be switched ON/OFF by key operation. The same operation is now available for each conventional channel. Once this is set for a channel, Talk Around is always set to OFF and cannot be turned ON via key operation.
This restriction is useful during repeater operation for preventing calls being made from an SU using the same frequency as the downlink frequency of a specific repeater.

3.4.5 Key Lock with Remote Speaker MIC

Up to R1.6, engaging the Key Lock function while Key Lock > Front Key or Key Lock > Head Key was checked in the programming software meant that the keys on the SU and the Mic Key on the speaker microphone were locked and could not be operated.
There were requests to restrict Key Lock to the SU, leaving the Mic Key on the speaker microphone operable. The R1.71 allows assigning of key locks separately for the SU and speaker microphone.

3.4.6 SD Card Memory Improvement

Improvements have been made to the microSD Card memory. The following five items details the new and improved features available.

(1) Enhanced Record Number
The full capacity of the microSD card may be used for saving audio files in firmware R1.71. The use of high capacity, microSDHC allows for longer recording time. Using a 32 GB microSDHC as a reference more than 500 hours may be recorded.

(2) First-In First-Out (FIFO)
FIFO operation allows for overwriting older audio files when capacity is reached. This happens automatically so the user does not have to manually remove or erase old files. Recording will continue without halting and overwrite the older files. FIFO operation is a new feature in R1.71.

(3) Low Memory Warning
R1.71 has added the ability to warn the user via the LCD display and alert tone of “Low Memory” when the micro SD card reaches 10% of its capacity. This will allow the user to remove or delete files no longer needed to increase available space.

(4) Voice Memo
The voice memo mode in the subscriber unit allows the user to conveniently make a voice recording with reminders or other pertinent information. The maximum recording time for the voice memo mode in R1.71 is 10 minutes.

(5) SAVED Folder
Audio files recorded by Auto Recording/Voice memo may be protected in the “SAVED Folder”. When FIFO is enabled, the recorded audio files are automatically deleted. Deletion may be prevented of the audio files by FIFO if the important audio files are copied to SAVED Folder. “SAVED Folder” is new feature since R1.71.

Note:

- For Radio Feature License “microSD (KWD-5002SD)”, this option has to be activated for each subscriber unit using the KPT-300LMC.
- microSD (Up to 2GB) and microSDHC (4GB - 32GB) card are supported.
- A microSD card manufactured by Toshiba, SanDisk or Panasonic is recommended.
- In order to use a microSD card on the transceiver, the microSD card needs to be formatted in advance in Format SD Card Mode.

3.5 Compatibility of programming software

This section describes the backward compatibility of previous versions of Firmware and programming software(KPG-D1/D1N).a

[Definition]
Open: Opening a Data File by programming software
Read: Reading programming data from subscriber unit
Write: Writing programming data to subscriber unit
New Data: A data file generated by programming software Version 1.71
Old Data: A data file generated by programming software version prior to 1.71

3.5.1 Compatibility of Opening a Data File

	Programiming Software Version	New Data	Old Data
Programming Software KPG-D1/D1N	1.71	✔	✔*[1]
	Prior to 1.71	Not available	✔

*[1]: The new features are configured by default setting.

3.5.2 Compatibility of Writing and Reading a Data File

	Programming Software Version	Write / Read	Firmware version	
			1.71	Prior to 1.71
Programming Software KPG-D1/D1N	1.71	Write	✔	✔*[2]
		Read	✔	✔*[1]
	Prior to 1.71	Write	✔	✔
		Read	Not available*[3]	✔

*[1]: The new features are configured by default setting, if the subscriber unit has yet to be configured using a programming software version 1.71.

*[2]: The writing process will be aborted if new feature(s) is included in data.

*[3]: The Read action is only available if the subscriber unit is programmed with Old Data.

3.6 Product Version

Product	Supported Version in Release
Subscriber Unit: NX-5200/5300/5400/5700/5800/5900	1.71
Programming Software: KPG-D1/D1N	1.71
OTAP Manager: KPG-180AP	2.10