Equipment : RWC2010B, Digital Radio Tester

Revision History

Version	Date	Description
Version 1.703	15 July.2026	1. Changed the PID input range for FM RDS from 1~0xFFFF to 0~0xFFFF.
Version 1.702	04 June.2026	1. In the FM RDS EON test, the Target Channel's Program Type now automatically changes to match EON_PTY when EON_SWITCH is turned ON, and reverts to its original value when EON_SWITCH is turned OFF. 2. Previously, Group 14B was transmitted only 3 times when EON_SWITCH was turned ON, and not transmitted at all when turned OFF. In this version, Group 14B is now transmitted continuously while EON_SWITCH is ON, and when EON_SWITCH is turned OFF, it sets EON_TA to OFF and EON_PTY to 0 (default), then transmits Group 14B 5 times before stopping. 3. Added the ability to play back encrypted ETI/MDI files. 4. When MDI files contained private-use tags, the MDI frame length could exceed the maximum frame length defined in the DRM Spec. This has been resolved by increasing the RWC2010X frame length limit to accommodate MDI files that include private-use data.
Version 1.701	02 Apr.2026	1. Previously, it was possible to set the Primary component to OFF in DAB mode. However, since this is not permitted by the specification, the system has been modified to prevent the Primary component from being set to OFF.
Version 1.700	19 Mar.2026	1. Previously, when transmitting PAD data along with DAB MP2 audio, the X-PAD length was fixed to a user-specified value and written over the end of the audio frame. This could encroach on the audio region and cause audio dropouts. The system has been improved to automatically detect audio files newly encoded by RedwoodComm and set X-PAD to variable mode, enabling PAD transmission without invading the audio region.

		2. In DAB mode, FIG0/5, FIG0/9, FIG0/10, FIG0/18, FIG0/25, FIG1/0, FIG2/0, FIG1/1, FIG1/4, FIG1/5, FIG2/1, FIG2/4 and FIG2/5 were transmitted as fast as possible, but the transmission rate was improved to once per second on average.
Version 1.669	10 Mar.2026	1. Corrected a bug in the AF CRC calculation performed during MDI transmission. Previously, Unknown Tags were excluded from the CRC calculation, causing incorrect CRC values to be generated.
Version 1.668	19 Jan.2026	1. Improved DAB SPI logo transmission by adding the SPI_IMAGE_TYPE variable. While the previous version supported only four PNG files, users can now select between PNG and JPG formats as needed.
Version 1.667	06 Jan.2026	1. Resolved a bug in ETI playback where large sub-channel size changes during reconfiguration caused discontinuities in time interleaving.
Version 1.666	22 Sep.2025	1. Fixed an issue where a FIB buffer overflow would occur and prevent the CRC from being calculated when three secondary components were linked to a DAB Service.
Version 1.665	05 Sep.2025	1. Fixed the bug in FM RDS mode where enabling EON_SWITCH would cause uninitialized, random RDS Group information to be transmitted. 2. Fixed a bug in DAB mode where the Component Label was not being transmitted if the secondary component numbers were added not sequentially
Version 1.664	16 June.2025	1. Fixed an issue where the RWC2010B would occasionally freeze when being reset via a remote command.
Version 1.663	5 June.2025	1. In FM mode, updated the logic to force FM RDS Ch 1 & 2 OFF and keep only Ch 0 enabled when MOD is switched OFF.
Version 1.662	20 May.2025	1. Modified so that the AM INDEX value does not affect the output power when MOD is OFF.
Version 1.661	28 Apr.2025	1. The problem where the Continuity index of MOT_Header does not increase and remains fixed when transmitting SLS Data has been fixed. 2. Fixed an issue where the PNG file size was set incorrectly in MOT_Header when transmitting SLS data.

Version 1.660	11 Mar.2025	1. Fixed a bug where the transmission ID between the MOT directory and the MOT body did not match when transmitting EPG data in DAB mode.
Version 1.659	26 Aug.2024	1. It fixed the bug where MDI files saved as short interleaving were not transmitted.
Version 1.658	9 Aug.2024	1. Added parameter to determine whether to check AF CRC or not when transmitting MDI file 2. Added remote command for MDI CRC Check - CONF:ETI:CONFIG:AF_CRC_CHECK - READ:ETI:CONFIG:AF_CRC_CHECK? 3. When selecting DAB PAD as DLS, DRC was always turned on, but a parameter that can turn DRC ON/OFF was added. 4. The function to extract content files stored in RWC2010B to a PC has been added.
Version 1.657	30 Jan.2024	1. Only Stereo Wave was supported in FM and AM modes, but it has been improved to support mono and stereo Wave files.
Version 1.656	16 Oct.2023	1. The EON_PTY parameter is added to signal to the receiver the start of a programme item carrying a NEWS, WEATHER or ALARM announcement in FM RDS. 2. If an error occurs in a saved content file, an error message is displayed and the system has been improved so that it does not stop.
Version 1.655	2 Aug.2023	1. Fixed the problem that the DAB DLS variable could not be saved due to save/recall bug. 2. Changed the save/recall amount from 60 to 29 to increase the memory space for each save/recall **Caution: After upgrade, previous Save/Recall will be reset.**
Version 1.654	10 July.2023	1. Added Path_loss Parameter. 2. Fixed the problem that the DAB SID variable could not be saved due to save/recall bug.
Version 1.653	12 May.2023	1. Add parameters for the DLS Toggle Bit and Link Bit. Users can set these bits manually. 2. One normal label on/off and one extended label on/off parameters are applied to all services and service components. It is separated into all services and service components for independent control.

		3. Add remote command for announcement support parameter. [CONF:DAB:FUNCTION:AN_SUPPORT, READ:DAB:FUNCTION:AN_SUPPORT?] 4. Added the UTF_16 encoding parameter for the LABEL, DLS and TEXT.
Version 1.652	18 Apr.2023	1. Change the colour of the tag start and length if it exceeds DLS or text length.
Version 1.651	07 Mar.2023	1. In DRM, the program type of the audio service has been modified to be set to 30 during active warning announcements. 2. Added ILS Parameter to the DAB-FM DAB-DRM service linking. 3. When the char_set of the DLS is changed, it is improved to initialize the DLS data in the transmission.
Version 1.650	13 Jan.2023	1. A bug playing reconfiguration ETI files was fixed. 2. Improve booting speed even if DSP or FPGA configuration fails for the following upgrade.
Version 1.647	13 Dec.2022	1. In version 1.646, there was a bug in SLS packet mode for DAB not sending SLS files. 2. It is possible that the DSP codes do not match with the Protocol after the recall. It is improved to always reconfigure DSP after the recall.
Version 1.646	09 Nov.2022	1. Fixed bug in Alarm Announcement in DAB. The Alarm flag of FIG0/0 is not set correctly. 2. Added Text Control function for LABEL and TEXT in DRM. 3. dBuV power is missing from the Save/Recall function. This bug has been fixed. 4. Increase the maximum number of bytes in DRM text from 112 to 128.
Version 1.645	25 Aug.2022	1. Fixed an issue with switching between ETI and MDI file player. 2. Added Modulation On/Off Parameter.
Version 1.644	18 Mar.2022	1. Added EPG function to DAB data channel and PAD channel. Up to 10 program schedule times can be edited.
Version 1.643	18 Feb.2022	1. Added multi-DSP boot function to free up program memory and add more functions.

		2. Added SLS function to DAB data channel and PAD channel. Users can download their own PNG files to test the SLS functionality. 3. Added SPI function to DAB data channel and PAD channel. Four types of RedwoodComm LOG images can be transmitted over the SPI channel.
Version 1.642	26 Aug.2021	1. The concept of the DAB announcement function has been improved to support multiple cluster IDs for each service. 2. Fixed bug in CONTENTS_START function for content reset in ETI/MDI. Although the CONTENTS_START parameter displays at 0.1% resolution, there was a problem that it was applied at 4% resolution. 3. Added Service Component Information (SCI) testing function to functional testing. Many parameters (MODE, CHANGE_FLAG, SERVICE, PART_TIME_FLAG, SID_FLAG, SD, EID_FLAG, EID, YEAR, MONTH, DAY, HOUR, MINUTE, SECOND) have been added. 4. Added LA(Link Actuator) parameter for selecting active link or future link of Alternative Frequency function in DAB. 5. Added CONTINUITY parameter for setting continuity flag of Alternative Frequency function in DAB. 6. Added REGION_ID parameter for setting region id of Alternative Frequency function in DAB.
Version 1.641	08 Aug.2021	1. FM RDS has an RT/eRT flag in the 3A data group to select the destination for the tag information. This flag was always set to 0 even when eRT+ was selected. Instead of this setting, the application ID was set differently. This bug has been fixed to correctly set the RT/eRT flag and use the same application ID. 2. The concept of the DAB announcement function has been completely changed to support multiple cluster IDs, support flags, target channels, and more.
Version 1.640	29 Jun.2021	1. Added S/H parameter for selecting soft link or hard link of Alternative Frequency function in DAB. 2. Added a special remote command to control all 3 FM channels at once.

		3. The alternative frequency function for DAB and DRM has been improved. It has been improved to support multiple target systems simultaneously. 4. Added enable/disable function for Announcement and Service Linking in DAB. 5. On FM RDS, the TA (ON) of the 14A group should be set to the same value as the TA of the target channel, but it is always set to 1. This bug is fixed. 6. Fixed a bug in the OE flag in FIG0/6. It needs to be set to 0 (reserved), but set it to 1. 7. In case of DAB-DAB linking, FIG 0/6 was signalled without the details of the key service. It is fixed to add the key service information in the DAB-DAB link case. 8. It was reset immediately after the reconfiguration procedure in DAB mode. It should remain reconfigured status after the reconfiguration procedure to verify the results. Then the Reconfiguration Done state is added so it stays reconfigured until the user resets it. 9. Separated the CONTENTS parameter between FM and AM generators. 10. In FM RDS, UCS-2 encoding for eRT is added again. 11. Fixed a bug where FIG0/13 information was not transmitted when the data channel was set as a secondary component in DAB. 12. In FM RDS, UCS-2 encoding for eRT is removed. Only UTF-8 encoding is possible. 13. The FM audio level is too low for the DAB and DRM audio levels. It has been improved to close the difference between FM audio level and DAB/DRM audio level.
Version 1.630	11Sept.2020	1. Added TAG on/off function in DL+ of DAB. 2. There was an error in DAB sending FIG104 once with the previous configuration after reconfiguration was complete. Fixed in this version. 3. In FM RDS, an AUDIO_VOLUME parameter has been added to control the audio volume. 4. Improved stereo FM Left/Right separation rate. 5. In FM RDS, an MUSIC_SPEECH parameter has been added to set program type.

		6. In DAB, users can select and transmit either normal or extended labels, but it has been improved to transmit simultaneously. 7. In DAB, encoding flag, number of segments, character flag fields should be transmitted only when the segment index is 0, but it is always transmitted.. 8. Fixed a bug where the RT was transmitted even though eRT was selected in FM RDS. 9. Fixed a bug where the LANGUAGE parameter was not transmitted on FM RDS 10. The sampling frequency of the DRM_IQ file was fixed at 48KHz, which was not enough for DRM Plus. To improve this, 192KHz and 250KHz sampling frequencies have been added to the DRM IQ mode. 11. Sampling frequency was fixed at 22.05KHz for FM and AM wave files. A 44.1KHz sampling frequency wave file is also available in this version. 12. Added Text Control function for DAB Label. 13. File deletion function and file size calculation function bug fixed. 14. Improved FW upgrade function. FW data was immediately written to flash memory without checking the parity of the entire data. Changed to check the parity of entire data before writing to flash memory. 15. Fixed a bug where the DRM MDI player could not decode stream parameters correctly and transmit the stream properly.
Version 1.620	08Jan.2020	1. Applied TS103_176 specification for DAB Alternative Frequency Test function. 2. Reduce repeat number and time of EON switching information 3. Add SFN Off function to prohibit unexpected interrupt signal form data IO port 4. DL+ command in DAB mode set Link bit as 0. It should be the same as DL message toggle bit. 5. DL+ of DAB had a bug. Contents Indicator of F-PAD for DL+ command was not correct.

		6. In DAB announcement function test, the target channel value on GUI was not matched with the real transmitted one. 7. Other Ensemble test function mode for DAB announcement is added. 8. DAB EID and SID used the same Country code. So when one of them changed, the other was updated too. From this version EID and SID will be independent. 9. If the Label encoding mode is UCS_2, only HEX edit mode is allowed to modify 2-byte characters. 10. Headline edit function is added to DAB DLS and FM-RDS Radio Text.
Version 1.610	16Sept.2019	1. Add Extended Label function for DAB. It is applied to Ensemble Label, Service Label, and Service Component Label. 2. Improve Alternative Frequency test function for DAB. - FIG0/6 is added to inform related service lists. - Multiple EID lists can be used - Short term format is added 3. SDC Entity type 11 data becomes incorrect when region and schedule restriction is applied for AM, FM_RDS, DAB in DRM for testing Announcement 4. Add DRM Announcement On/Off function 5. Add DRM AF Method Parameter to support Method A and B. 6. Remote commands for seamless linking test are added 7. LCD On/Off function is added
Version 1.600	12Apri.2019	1. SDC Entity type 11 data becomes incorrect when region and schedule restriction is applied for AM,FM_RDS,DAB in DRM for testing AFS 2. Add DRM AFS On/Off function 3. It transmitted only SDC 0 when BW is 4.5 or 5 and SDC mode is QPSK. It is fixed to transmit other SDC information 4. Add FIG0/7(Configuration information) for DAB V2.01 5. Delete FIG0/16 for DAB V2.01 6. Add FIG0/13 for PAD
Version 1.590	10Oct.2018	1. Add UTC parameter for RDS Time information.
Version 1.580	20June.2018	1. FM-RDS improves TMS functionality to support up to 5 TMS groups.

		2. Bug fix for DRM UEP function. Problem with audio when maximum part A length is reached.
Version 1.570	25Jan.2018	1. Add FM Stereo mode parameter to make it easy of left and right separation testing. 2. Fix the bug of PS name information in FM RDS (change the repetition rate for data group 0)
Version 1.560	16Aug.2017	1. Reduce FM audio gain to avoid FM saturation problem. 2. In DRM, SDC type 10 was transmitted always. It is modified to transmit only during reconfiguration. 3. In DRM, there is a LTO parameter on GUI but SDC type 8 did not include this LTO information (optional). It is modified to include LTO information in SDC type 8.
Version 1.550	02June.2017	1. Add Pre-emphasis function with selectable three time-constant values (25, 50, 75us) for FM Mode. 2. When services are turned on non-sequentially, the information about services had problem in DRM mode. It is fixed in this version. 3. Fix the bug of DAB announcement function. **Caution: After upgrade, previous Save/Recall will be reset.**
Version 1.530	13Feb.2017	1. In HEX edition mode of string like DLS, LABEL, etc…, string length could be calculated not correctly when the special code is used. It is fixed in this version. 2. In DRM, the information of number of services had problem. It is fixed in this version. 3. In Stereo FM, 19KHz pilot signal level control parameter is added.
Version 1.520	01Nov.2016	1. Multi-channel FM function could transmit the same audio wave in previous version. From this version, each FM channel can transmit different audio files. **Caution: The sampling frequency of wave files should be 22.05 KHz. Please download new wave files from our web hard or generate your own wave files.**
Version 1.510	28Sep.2016	1. Add Headline message for text message in DRM 2. Add STREAM submenu and divide stream related parameters from service submenu in DRM mode. 3. Each service allowed only one stream so far. From this version, each service could have multiple streams.

		4. Change submenu name of ENSEMBLE as MULTIPLEX in DRM 5. Change submenu name of FM and RDS as FM_RDS_0 ~ FM_RDS_4. **Caution: After upgrade, previous Save/Recall will be reset.**
Version 1.500	24Aug.2016	1. Add xHE-AAC transfer function and contents for DRM 2. Add Data channel (SLS, BWS) for DRM 3. Add Multi channel FM transfer function. Up to 5 FM channels could be transmitted simultaneously. Each FM channel has independent RDS Data channel. 4. Improve DRM Announcement function. Announcement signal could be assigned to each service separately
Version 1.400	30Jun.2016	1. Add IQ file Play function for DRM30. 2. Increase the Maximum number of DAB Secondary Component from 1 to 3
Version 1.370	02.Jun.2016	1. Improve DAB/DRM Announcement Test function. Multiple announcement switching flags are possible from this version. For more detail information, please refer to manual (Ver1.30). 2. In DRM, Language code and Country code parameters are added. (SDC type 12)
Version 1.360	14.Apr.2016	1. ALC algorithm for AM power setting is improved. 2. Modify the way to go Remote Command Screen by key input. It was impossible to go Remote Command Screen by key input.
Version 1.350	25.Mar.2016	1. Improve Alternative Frequency test function for DAB. 2. When the seamless linking test is running, Alternative Frequency parameters are set automatically according to the slave unit setting. 3. ALC algorithm for DRM OFDM power setting is improved
Version 1.340	25.Feb.2016	1. Add RDS-TMC editing function. 2. Add RDS type-3A for TMC parameters. 3. Improve RDS EON function. For various EON Parameters, added RDS type-14A. 4. Add Alternative Frequency test function for DRM.
Version 1.330	25.Jan.2016	1. In DRM, SDC type-10 definition was not correct. It may cause that DUT could not receive SDC type-10 during Reconfiguration. Fixed it in this version.

		2. In DRM, during the reconfiguration with changing of MSC mode, 64QAM and 16QAM modulation should be multiplexed for a while. But it was changed immediately. Fixed it in this version. 3. In DRM, Announcement related SDC has wrong flag (Same Multiplex/Other Service flag). Fixed it in this version.
Version 1.320	24.Dec.2015	1. Increase frequency resolution from 1KHz to 1Hz. 2. Add Hz unit for frequency setting. 3. Add user configurable power extension mode. In this mode, maximum output power is increased by 10dB.
Version 1.310	04.Dec.2015	1. Add following DRM parameters as Reconfiguration related parameters. A. ROBUSTNESS, SPECTRUM, INTERLEAVING, MSC_MODE, SDC_MODE, TEXT_FLAG 2. Fix the bug of FAC repetition pattern in DRM. 3. In DAB Announcement test function, added SOURCE_SRV parameters to test the source services independently. 4. Added All 0 and 1 pattern data for DRM data stream.
Version 1.300	25.Sept.2015	1. Increase the number of Save/Recall from 10 to 60. Caution: After upgrade, previous Save/Recall will be reset. 2. Add Short Cut key (M1 ~ M4) editing parameters on 'SETUP/SYSTEM' screen. Refer to the clause 2.3.6 of the manual (version1.14) for detail information. 3. Step Parameters are added for Frequency and Power setting Refer to the clause 2.5 of the manual (version1.14) for detail information. 4. KHz unit is added for Frequency Parameter. 5. In DRM, the start value of reconfiguration index is changed from 6 to 7. 6. In DRM, after reconfiguration, AFS index value was fixed in RWC2010B. But according the specification, this value should be changed after Reconfiguration. In this version, this problem is fixed.
Version 1.270	10.July.2015	1. Added AF(Alternative Frequency) function in DRM service. For the detail test method, please refer to page 75 of the manual(version 1.13)
Version 1.260	28.July.2015	1. Added DRC(Dynamic Rage Control) for the PAD service in DAB. For the detail test method, please refer to page 53 of the manual(version 1.13)
Version 1.250	09.July.2015	1. Memory allocation problem could be happened during the switching Test Mode from FM to AM. Then AM function could not work correctly. This problem is fixed in this version.

Version 1.240	30.June.2015	1. AM was not allowed for Seamless Linking Test. In this version, AM also could be the slave part of seamless linking test. For the Seamless Lining test method, please refer to page 90 of the manual(version 1.11) 2. Added Audio tone sweep function for Analog AM and FM test. For the detail test method, please refer to page 83 of the manual(version 1.11) for FM Sweep test and page 86 for AM Sweep test. 3. Space character was not allowed for label or text editing remote commands. In this version, space character is also allowed for those remote commands. 4. When the RF_OUT is set as OFF, RWC2010B had some leakage output power. It is improved that RWC2010B does not make any leakage output power.
Version 1.230	15.June.2015	1. Improved DAB/DRM Announcement Function and Menu. Please refer to page 61 of the manual(version 1.11) for more detail information.