Firmware Release Note

Equipment: RWC5020A LoRa Tester

Revision History

Version	Date	Description
V1.13	19/JUL/2018	**[LoRaWAN]** 1. Certified by LoRa End Device Certification EU868 2. Certified by LoRa End Device Certification KR920 3. Support of LoRaWAN V1.0.3 4. Support of Russian regional parameters **[Pre-Certification]** 5. Implemented updated versions of LoRaWAN Certifications; US V1.3, KR V1.2, AS V1.1 and IN V1.0 (new) 6. Fixed a bug in case of PACKET_NUM less than 10 in US Pre-Certification 10.1 and 10.2 Receive Window Tests. 7. Fixed a bug of tester reset in case when the tester receives Join-request message again from DUT in OTAA test 8. Implemented additional test items for SKT 41 to 46 **[RF Performance]** 9. Improved TX Power measurement of DUT in RF Performance Test by adding CW mode, which is the same way as used in LoRaWAN RF Performance Test 10. Added MFG function for fast receiver sensitivity tests in NST mode, applicable to manufacturing lines **[NST]** 11. Fixed bugs of running status in Signal Analyzer of NST 12. Disabled automatic running of Signal Analyzer in NST mode due to inconvenience **[Link Analyzer]** 13. Added a function of Periodic Downlink in Class C mode of EDT 14. Added the stop function of MAC command transmission 15. Added calculation of dwell time in Link Analyzer 16. Implemented reply retransmission of RxParamSetupAns, RxTimingSetupAns, and DlChannelAns in case of absence of a downlink message

		17. Renamed a parameter SET_TM_AT_OTAA as SET_TEST_MODE and moved to sub-parameter of ACTIVATION 18. Renamed a parameter SET_CH_AT_OTAA as SET_CH_MASK and moved to sub-parameter of ACTIVATION, shown only in case of US915 region
V1.12	25/APR/2018	1. Added a standard test solution for manufacturing lines to test TX and RX of devices simultaneously 2. Verified and improved all test procedures of EU, US/CA, AS, and KR Certification Tests based on comparison of KR Certification with other test lab 3. Modified default channel frequencies of Europe to be matched with the local regulation 4. Changed the max number of channels supported in Europe and India to 7 due to limitation of hardware. 5. Added MAC commands related with certification test mode; COMFIRMED_TM, UNCONFIRMED_TM, ECHO_REQUEST_TM, TRIGGER_JOIN_REQ_TM, and ENABLE_CW_MODE_TM 6. Added a function of duty cycle measurement in EDT Link Analyzer 7. Added protocol parameters in Link Analyzer screen for users' convenience such as DR, RxDelay, ADRACKReq and FPending 8. Minor bug fixes and updates
V 1.11	20/MAR/2018	1. Improved Signal Generator and Signal Analyzer of NST; providing various configurable MAC parameters in order to send and receive LoRaWAN frames 2. Enabled modification of part of channel frequencies; the first frequency of the second channel group (4~7) can be modified 3. Added more commands in MAC command transmission: *ForceRejoinReq*, *RejoinParamSetupReq*, and *ADRParamSetupReq* for EDT; *ResetInd* for GWT. 4. Added display of Activation status at the bottom of the screen 5. Minor bug fixes and updates
V 1.10	22/DEC/2017	1. Support of LoRaWAN V1.1 2. Changed Class B operation to match with LoRaWAN V1.0.2classB-draft4

		3. Improved control of minimum TX power level for DUT's RX sensitivity test - the minimum TX power is -150dBm 4. Added a flag to determine whether to force DUT to enter Test Mode by sending *Activate Test Mode* command actions after activation 5. Added a flag to determine whether to configure channel masks by sending multiple *LinkADRReq* commands actions after activation 6. Added a flag to determine whether to display erroneous frames in Link Analyzer screen
V 1.06	08/NOV/2017	1. Release of implementation of Certification Tests - Final version of implementation for US/CA V1.2 2. Support of Class B in LoRaWAN V1.0.2 3. Included V1.051 patch - fixed bugs in implementation of Certification EU V1.5 in Firmware version of V1.05 4. Added display items in Link Analyzer - Measured power, ADR flag, and Class B flag 5. Changed position of contents in Link Analyzer - from right column to bottom 6. Enhanced functionality and stability of RF performance test (receiver sensitivity and TX power) 7. Added or modified remote control commands (refer to the version history in User Manual) 8. Minor bug fixes and updates
V 1.05	13/SEP/2017	1. Release of implementation of Certification Tests - Final version of implementation for EU V1.5, AS V1.0 and KR V1.1 - draft version of implementation for US/CA V1.2 2. In GWT, RF channels are fully are supported up to 64+8 channels for US/CA 915 and AU 921, and up to 96 channels for CN 490. 3. Improved a function of MAC commands transmission - Support for multiple MAC commands in a single frame - Added commands: DL_CHANNEL, ACTIVATE_TM,

		DEACTIVATE_TM 4. Added or modified remote control commands (refer to the version history in User Manual) 5. Improved RF Performance Test function - Test Scenario: Normal Uplink or CERTI_ECHO - Gateway testing available - TX Power measurement according to TXPower index - More reliable by using ACK flag instead of FCntUp 6. Added parameters to control timing offset in us and frequency offset in ppm. 7. Modified the concept of Channel Group from one group with 8 channels to two groups with 4 channels respectively, named as CH_GROUP_A and CH_GROUP_B, in cases of US/CA 915, AU 921 and CN 490.
V 1.04	01/AUG/2017	1. Class C support 2. Fixed bugs in implementation of LoRaWAN Certification EU V1.2 3. Improved Sensitivity Test function - adding Test mode method using Echo Request - selecting RX window and DR 4. Fixed a bug in measuring power of unconfirmed frames 5. Improved the minimum of TX power level down to -143dBm 6. Renamed remote commands for transmission of MAC commands according to hierarchy structure 7. Minor fixes and updates
V 1.03	04/JUL/2017	1. Fixed bugs in execution of EU Certification Tests 2. Added channel group function 3. Fixed a bug of mis-handling RX1DELAY value 4. Added 'M' field to indicate MTYPE in Link Analyzer and renamed MAC commands to follow the definition of LoRaWAN Spec. 5. Updated a remote command for reading of link messages 6. Added 'PREAMBLE_TYPE' parameter in NST mode 7. Added selection of downlink messages in EDT Sensitivity Test; ACK or user-defined data 8. Added and improved 'pre_alc_calibration' function in normal

		mode to guarantee the stability of TX power level
V 1.01	07/JUN/2017	1. Added an optional function of SKT Certification Profile (partly verified) 2. Modified the unit for input of path loss and TX power 3. Changed pictures of Main Menu 4. Re-arranged Signal Generator function in NST 5. Defined remote commands fully 6. Verified Save/Recall functions 7. Updated User Manual
V 1.00	31/MAY/2017	1st Official Firmware Release