

RedwoodComm

RedwoodComm is a leading technology company specializing in wireless communication solutions, with a particular focus on test and measurement equipment for Broadcasting and IoT technologies such as DAB, DRM, RDS, NFC, BT, and LoRa technologies including a very precise performance Shielding technology.

With a strong emphasis on innovation, we continually develops solutions that meet the evolving demands of global wireless communication.

We serve a wide range of industries, ensuring seamless and efficient wireless connectivity.

RedwoodComm

RADIO TEST SOLUTION

DIGITAL RADIO
ANALOG RADIO

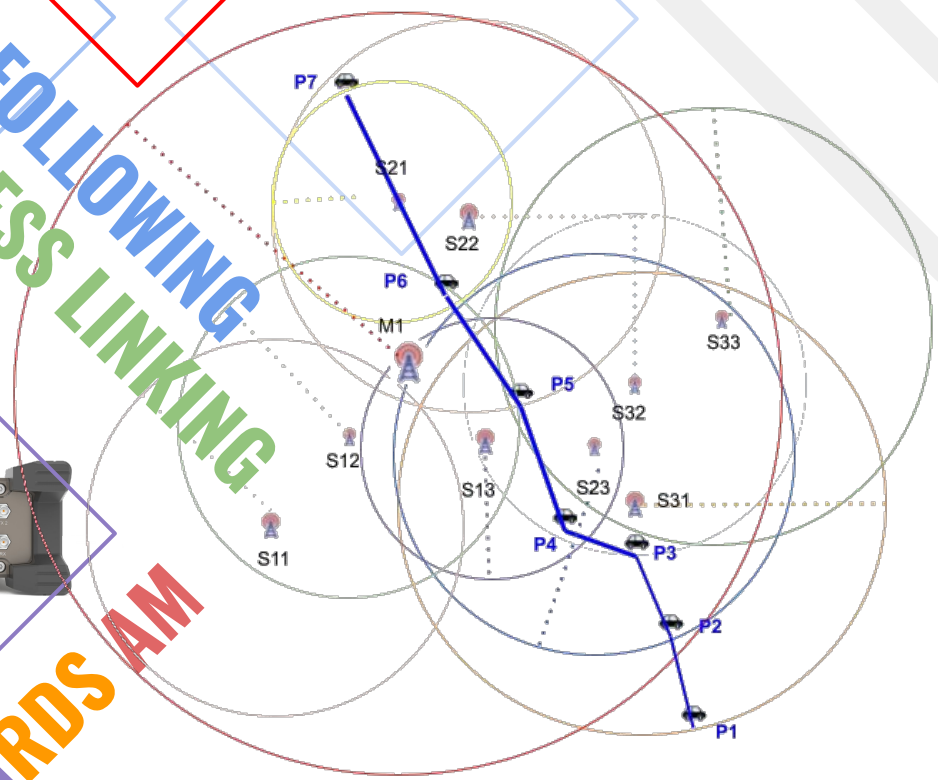
ETI MDI

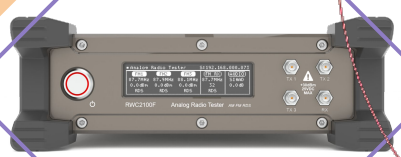
DAB+ DRM+





SERVICE FOLLOWING
SEAMLESS LINKING





FMRDS AM

RWC2010C All-in-One Digital Radio Tester

DIGITAL ANALOG
RADIO TEST
SOLUTION

OVERVIEW

The RWC2010C Digital Radio Tester provides convenient and efficient test environment to evaluate receivers for a wide range of broadcasting technologies – DAB, DAB+, DMB, DRM30, DRM+, AM, FM, and RDS, with full control over system parameters. It supports various kinds of data services such as BWS, TPEG, EWS, EPG, SPI, and SLS, and it has ETI and MDI file player function so that any users' files recorded in the field can be played back in labs. It also provides analog AM and FM radio test functions with editable RDS configuration. It transmits RF output power of -10 to -120dBm (0 to -110dBm for CW signal) with 0.1dB step, and supports Band LF, MF, HF, I, II, and III frequency ranges.



RWC2010C

The RWC2010C provides an audio analyzer function which can not only measure the audio signal quality (SINAD, THDN and SNR) and frequency, but also show audio waveform and spectrum.

KEY FEATURE

Supporting DAB, DAB+, DMB, DRM30, DRM+, AM, FM, and RDS functions

Built-in Ensemble Multiplexer

- Easy to edit Ensemble: 64 service components for DAB and 4 streams for DRM
- Various data services such as EPG, SPI, and SLS.
- Reconfiguration, Announcement, Alternative Frequency, TII, and Time functional tests

ETI, MDI and DRM IQ file player function with OFDM Modulation

Audio Analyzer Function

- SNR: > 85dB (@ 1Vrms), SINAD: > 75 dB (@ 1Vrms) ,THD: < 0.01% (@ 1Vrms)
- Shows audio waveform and spectrum

Service / Seamless Linking Test

- Use of two or more RWC2010B,C or combination of RWC2010B,C,M and RWC2100F
- DAB-DAB, DAB-DRM, DAB-FM, DRM-FM, FM-FM, etc

Single Frequency Network (SFN) Test

- Two RWC2010C(B) testers can transmit precisely synchronized DAB or DRM signal
- Adjustable delay between signals with 0.1us resolution

Multi-Channel FM & RDS Function

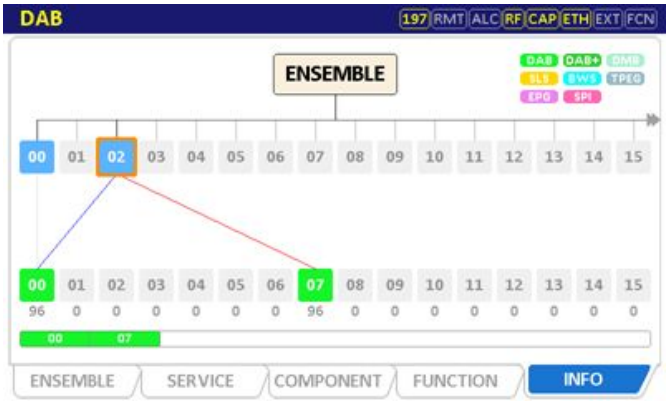
- Up to 3 FM / RDS radio signals can be generated simultaneously

Supported frequency bands

- BAND I/ II/ III (47 to 68MHz, 87 to 108 MHz, 174 to 250 MHz)
- LF/ MF/ HF BAND (0.15 to 30MHz)

ENSEMBLE MULTIPLEXER

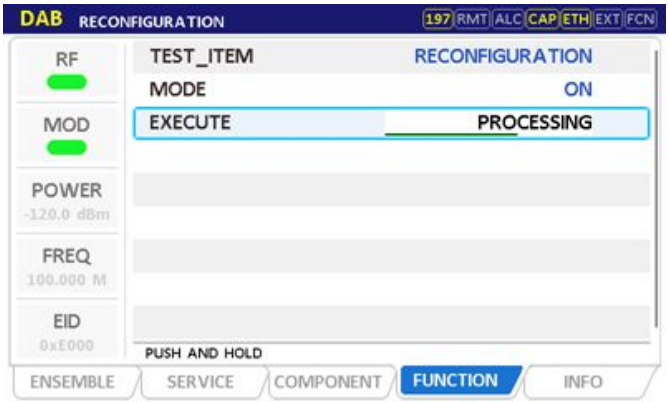
RWC2010C is equipped with Ensemble Multiplexer, which simply enables to simulate the functions of broadcast stations. Protocol parameters can be easily edited via friendly GUI, and applied immediately to the signal being broadcasted. The built-in Ensemble Multiplexer supports up to 64 Services and 64 Service Components for DAB/DMB and up to 4 Streams for DRM with easy on/off configuration, where the graphical structure helps users understand how to build.



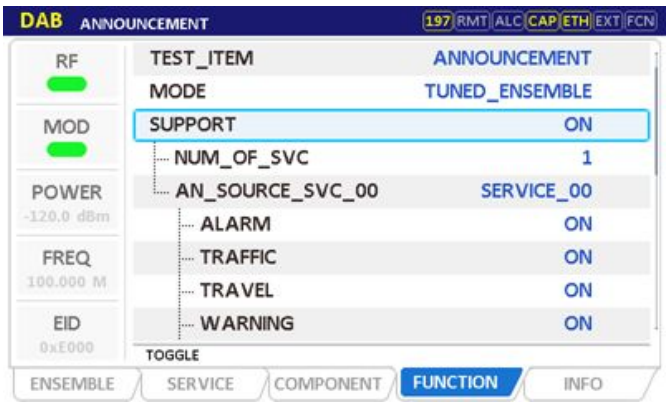
RECONFIGURATION, ANNOUNCEMENT, ALTERNATIVE FREQUENCY

RWC2010C supports high-tech protocol tests such as Reconfiguration, Announcement, and Alternative Frequency.

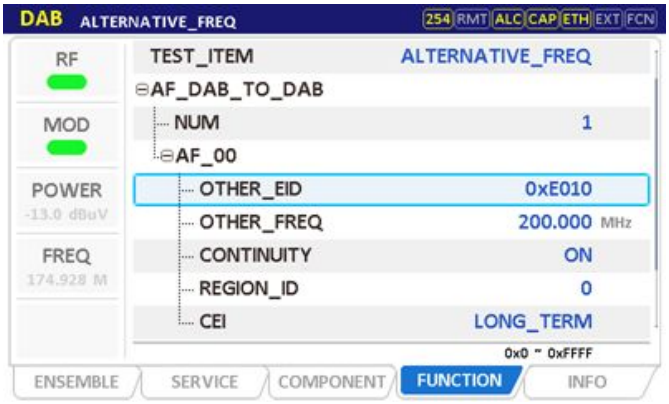
Reconfiguration is a function to provide the required mechanisms for changing the multiplex configuration whilst maintaining continuity of services. It is achieved by sending at least the relevant part of the information of the future multiplex configuration in advance as well as the information for the current configuration.



Announcement is a function for a compulsory situation or automation functions. For example, emergency situations may activate an announcement function. This function changes the channel for every listener so that they can hear the emergency message or announcement. Alternatively, it can also be used by listeners to set the channel to change to a specific program at a specific time. RWC2010C offers a screen that the user can use to change the announcement function, and it transmits announcement related FIG for DAB/DMB and SDC data for DRM for compulsive channel changing.



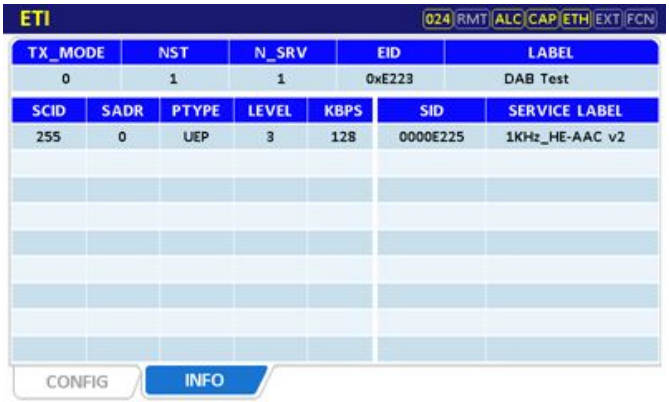
Alternative Frequency Test is a function that allows a receiver to re-tune to a different frequency that provides the same station or related, when the original signal becomes too weeks. The RWC2010C provides an easy AF test function by setting the AF frequency and target system through the GUI, and controlling the output power.



RWC2010C All-in-One Digital Radio Tester

DIGITAL ANALOG
RADIO TEST
SOLUTION

ETI, MDI, and IQ FILE PLAYER

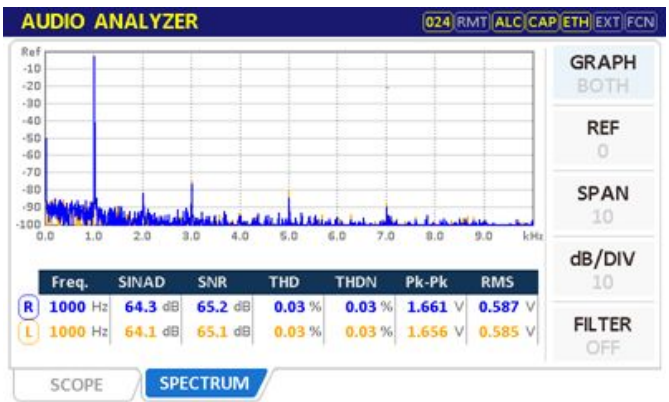


The ETI (or MDI) file describes the characteristics of a signal suitable for transporting a full DAB Ensemble (or DRM Multiplex), where the ETI comprises a number of subchannels and a formatted Fast Information Channel (FIC) between the DAB Ensemble provider and the Transmission network provider, and the MDI does a number of streams and a formatted Service Description Channel (SDC) between the DRM Multiplex provider and the Transmission network provider. It means that if a specific broadcasting station's T-DMB/DAB (or DRM) signal is recorded as an ETI (or MDI) file, the recorded file contains all the information about the station. Using these files with the RWC2010C/M's ETI/MDI function, specific broadcasting stations' T-DMB/DAB signals or DRM signals can be easily regenerated in labs.

ANALOG AM/FM AND RDS TEST

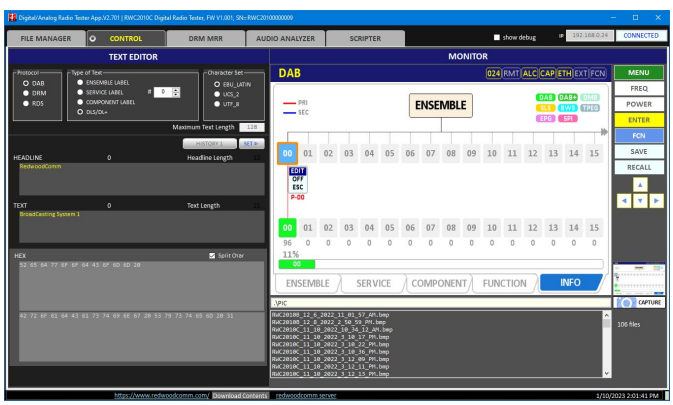
RWC2010C provides analog AM/3xFM and RDS test functions. Most DAB/DMB/DRM receivers also have analog AM/FM features, so it is meaningful to integrate the test system with both digital radio functions like DAB/DMB/DRM functions and analog radio functions into a single tester.

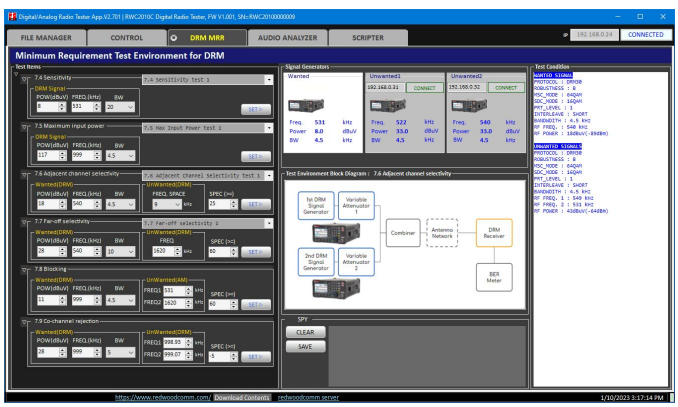
AUDIO ANALYZER



The audio analyzer measures the quality of the audio signal and displays it in various types of values such as SINAD, THDN, SNR and frequency. Measured values can be displayed more stably by increasing the number of measurements. It also displays audio waveforms and audio spectrum. Audio analyzer is very useful for automatic measuring of RX sensitivity by reducing the TX power of the RWC2010C TX signal and monitoring a radio receiver audio output with the audio analyzer.

PC SOFTWARE





SPECIFICATION

Frequency	• LF/MF/HF Band: 0.149MHz ~ 30MHz • BAND I/II/III: 47MHz~68MHz, 87MHz~108MHz, 174MHz~250MHz • Resolution: 1kHz • Accuracy: 1.5ppm/year @ operating temperature
Output Level	• 0 to -110dBm (OFDM: -10dBm ~ -120dBm) for BAND I/II/III • -10 to -110dBm (OFDM: -20dBm ~ -120dBm) for LF/MF/HF • Resolution: 0.1dB • Accuracy: ±1dB • 50 Ohm
VSWR	• Better than 1:1.5
Modulation	• OFDM • D-QPSK, 16QAM, 64QAM • FM/AM
Frequency Reference	• Internal Reference & Stability: 10MHz, 1.5ppm/year @ operating temperature • External Reference: 10MHz (0 to +20dBm MAX)
Output Level with RWC9500B(optional)	• +19 to -55dBm (CW/OFDM) • Resolution: 0.1dB • Accuracy: ±1dB
Data IO Ports	• Ethernet for Remote: RJ45 (UDP/TCP) • RS-232C for Remote: DSUB-9 • Data IO: RJ45
Miscellaneous	• Operating temperature: 5 to 40℃ • Line Voltage: 100 to 240 VAC, 50/60Hz • Dimension: 240(w) x 110(h) x 340(d) mm • Weight: 5.0kg • Display: 5", 800x480, 16M color, TFT LCD with touch sensor • Internal storage: 256GB
Audio Analyzer Characteristics	• Input Frequency: 0.1 to 20kHz • Input Range: Unbalanced 4.0Vrms • Bandwidth: 20kHz • Low Pass fIlter: Off, 1kHz to 30 kHz in 1kHz Step • Connection Type: 3.5pi Stereo • SNR: > 85dB (@ 1Vrms) • SINAD: > 75 dB (@ 1Vrms) • THD: < 0.01% (@ 1Vrms)



RWC2010C Front View

5" TFT-LCD, Touch Screen
Power On/Off Switch
Key board, Rotary
1 x RF Out Port



RWC2010C Rear View

LAN, RS232 , DATA IO
10MHz Reference in
3.5 pi Audio In
AC Power Input

RWC2010M Compact Digital Radio Tester

DIGITAL ANALOG
RADIO TEST
SOLUTION

ETI / MDI FILE PLAYER

The ETI (or MDI) file describes the characteristics of a signal suitable for transporting a full DAB Ensemble (or DRM Multiplex), where the ETI comprises a number of subchannels and a formatted Fast Information Channel (FIC) between the DAB Ensemble provider and the Transmission network provider, and the MDI does a number of streams and a formatted Service Description Channel (SDC) between the DRM Multiplex provider and the Transmission network provider. It means that if a specific broadcasting station's T-DMB/DAB (or DRM) signal is recorded as an ETI (or MDI) file, the recorded file contains all the information about the station. Using these files with the RWC2010C/M's ETI/MDI function, specific broadcasting stations' T-DMB/DAB signals or DRM signals can be easily regenerated in labs.



RWC2010M

ANALOG AM/FM AND RDS TEST

RWC2010M provides analog AM/3xFM and RDS emulation functions. Most DAB/DRM receivers also have analog AM/FM features, so it is meaningful to integrate the test system with both digital radio functions like DA/DRM functions and analog radio functions into a single tester.

AUDIO ANALYZER

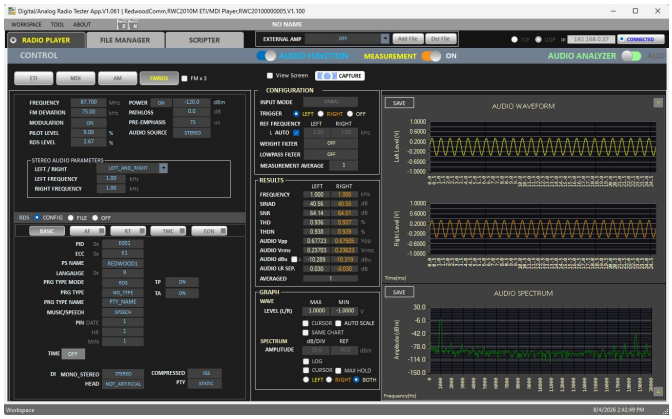
The RWC2010M provides an independent audio analyzer function that measures audio signals inputted through the balanced RCA port located on the rear panel. Because it operates independently from the transmitters, it can be activated via PC software to run concurrently with other active modes such as ETI, MDI, FM, or AM. It facilitates receiver sensitivity testing by evaluating critical parameters including frequency, SINAD, SNR, total harmonic distortion (THDN), audio waveforms, and spectrums.

PC SOFTWARE

The RWC2010M PC application software allows users to remotely control and operate the RWC2010M Digital Radio Tester. It provides comprehensive control over transmission modes, enabling users to manage ETI/MDI playback and configure 3 channels FM-RDS or AM transmissions. The software includes a file management system that lets users seamlessly download, delete, and transfer content files between their PC, the RWC file server, and the tester's internal storage.

Additionally, it enhances workflow efficiency by saving all protocol and control parameters into customizable workspace files for quick setup and standalone operation.





SPECIFICATION

Frequency	• LF/MF/HF Band: 0.149MHz ~ 30MHz • BAND I/II/III: 47MHz~68MHz, 87MHz~108MHz, 174MHz~250MHz • Resolution: 1kHz • Accuracy: 1.5ppm/year @ operating temperature
Output Level	• 0 to -110dBm (OFDM: -10dBm ~ -120dBm) for BAND I/II/III • -10 to -110dBm (OFDM: -20dBm ~ -120dBm) for LF/MF/HF • Resolution: 0.1dB • Accuracy: ±1dB • 50 Ohm
VSWR	• Better than 1:1.5
Modulation	• OFDM • D-QPSK, 16QAM, 64QAM • FM/AM
Frequency Reference	• Internal Reference & Stability: 10MHz, 1.5ppm/year @ operating temperature • External Reference: 10MHz (0 to +20dBm MAX)
Output Level with RWC9500B(optional)	• +19 to -55dBm (CW/OFDM) • Resolution: 0.1dB • Accuracy: ±1dB
Data IO Ports	• Ethernet for Remote: RJ45 (UDP/TCP) • RS-232C for Remote: DSUB-9 • Data IO: RJ45
Miscellaneous	• Operating temperature: 5 to 40℃ • DC Power: 12V3A VDC • Dimension: 200(w) x 70(h) x 220(d) mm • Weight: 2.2kg • Display: 2.8", 256x64, Gray OLED • Internal storage: 256GB • 5V/100mA Drive Output
Audio Analyzer Characteristics	• Input Frequency: 0.1 to 20 kHz • Max Input Level: 4 Vrms • Bandwidth: 20 kHz • Low Pass fIlter: Off, 1kHz to 30 kHz in 1kHz Step • Weighting Filter: Off, A, C, CCIR • Connection Type: RCA (L-/L+/R-/R+) input • SNR: > 85dB (@ 1Vrms) • SINAD: > 75 dB (@ 1Vrms) • THD: < 0.01% (@ 1Vrms)



RWC2010M Front Panel

2.81” OLED Display
Power On/Off Switch
RF Out Port



RWC2010M Rear Panel

LAN, RS-232
RCA Audio Input
5V Drive Output
10MHz Reference Input
DC12V Input

RWC2100F FM/AM Analog Radio Tester

DIGITAL ANALOG
RADIO TEST
SOLUTION

OVERVIEW

The RWC2100F, a multi-channel Analog Radio Tester, provides FM-RDS, AM, RDS receiver and audio analyzer. 3-TX channels can be transmitted simultaneously and each channel can be set to FM-RDS or AM. FM-RDS provides many editable protocol parameters such as PID, PS NAME, (e)RT(+), etc. It also provides many functional tests such as AF, EON, TMC, etc.



RWC2100F

The RDS receiver receives RDS signals over the air and displays RDS parameters. The received RDS signal can be recorded as a file, so that it can be played back with the FM-RDS TX function. The audio analyzer not only measures the audio signal quality (SINAD, THDN and SNR) and frequency, but also shows audio waveform and audio spectrum. All functions can be controlled by PC software and all parameters can be saved and loaded.

KEY FEATURE

FM-RDS Transmitter

- 3 independent transmission channels
- Various audio signals (MONO/STEREO/SWEEP/WAV File)
- Fully configurable RDS(RBDS) - AF, RT, TMC, EON
- Radio text (e)RT(+) with RDS code, UTF-8 and UCS-2
- Transmission a recorded RDS file

AM Transmitter

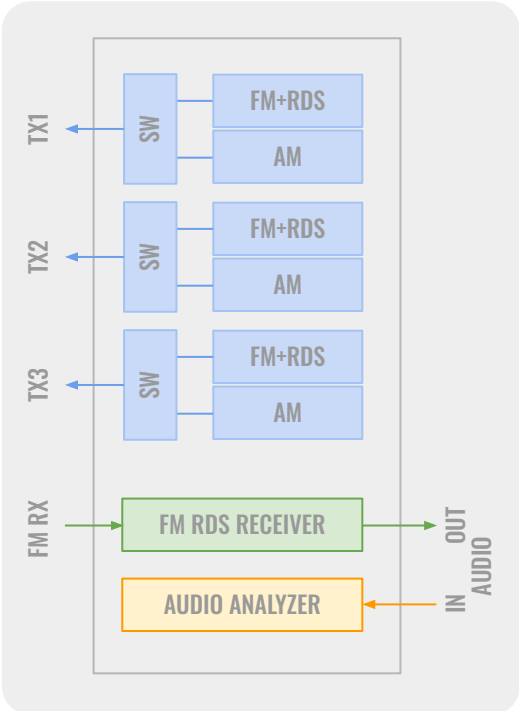
- 3 independent transmission channels
- Various audio signals (MONO / SWEEP / WAV File)
- EON, user configurable TMC function

RDS Receiver

- Receives and analyzes one FM-RDS radio signal
- Displays RDS information such as PS NAME, RT, AF list, etc.
- Records the RDS data as files

Audio Analyzer

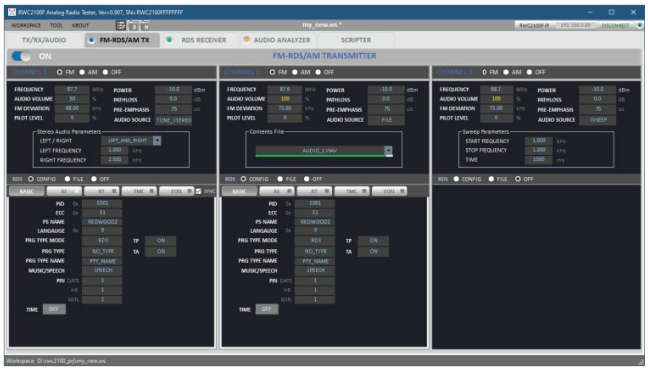
- SINAD, THDN, SNR and frequency measurement function
- Waveform and spectrum display of audio signal



PC Software

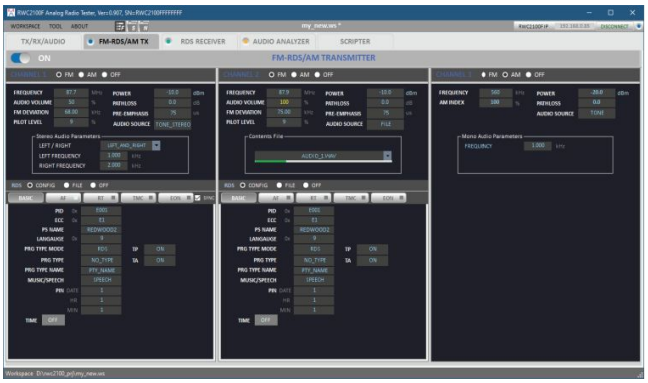
- Consists of 5 control panels such as Transmitter, RDS Receiver, Audio analyzer, scripter and COMBI panel
- All functions can be operated simultaneously from each control panel

FM-RDS TRANSMITTERS



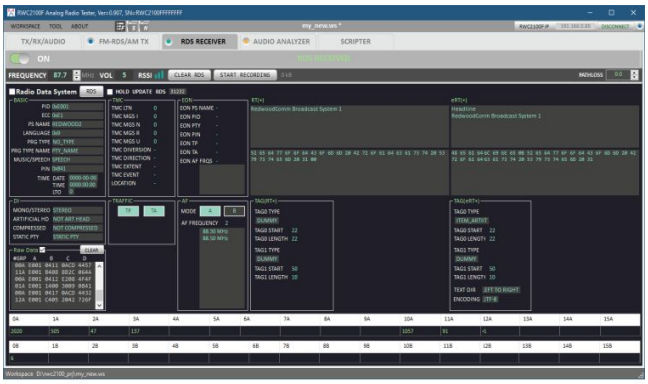
Three channels of independent transmitters can be transmit signals simultaneously, and each TX channel can be set to FM-RDS or AM. Each channel can transmit FM and RDS (Radio Data System) signals at the same time. It is possible to transmit files stored in RDS or edit protocol parameters such as PID, PS NAME, and PROGRAM TYPE, and all radio text editing functions such as RT/RT+/eRT/eRT+ defined in the RDS protocol are provided. It also provides very useful test functions such as AF (Alternative Frequency MODE A/B), EON-ON, EON-SWITCH, TMC, TIME, etc. As the FM modulated signal source, WAVE files can be saved and used, or MONO, STEREO, and SWEEP are supported, so it can be appropriately selected for measuring the receiver performance of DUTs.

AM TRANSMITTERS



The RWC2100F provides 3 independent AM transmitters. Users can select each channel from FM to AM or turn each transmitter on and off. Users can select mono-tone, sweep, or wave file as the audio source for each AM channel. Users can also create various test environments by independently setting the frequency, power, modulation index, and pathloss of each channel. 1kHz mone tone is very useful for SINAD and THD(N) measurement, and sweep audio is very useful for frequency characteristic measurement.

RDS RECEIVER



The RDS receiver demodulates the RDS signal from the received FM-RDS signal and displays the data. The RDS receiver displays all parameters defined in the protocol.

RDS RECORDING



RDS signals can be saved as files, and the saved files can be transmitted using the RDS file transmission function of the FM-RDS TX of the RWC2100F.

RWC2100F FM/AM Analog Radio Tester

DIGITAL ANALOG
RADIO TEST
SOLUTION

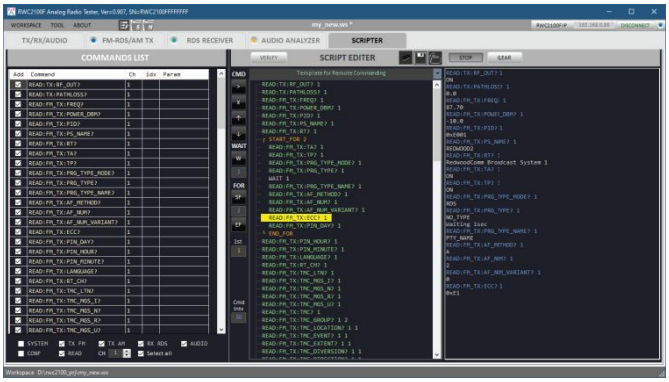
AUDIO ANALYZER

The audio analyzer measures the quality of the audio signal and displays it in various types of values such as SINAD, THDN, SNR and frequency. Measured values can be displayed more stably by increasing the number of measurements. It also displays audio waveforms and audio spectrum. Audio analyzer is very useful for automatic measuring of RX sensitivity by reducing the TX power of the 2100F TX signal and monitoring a radio receiver audio output with the audio analyzer.



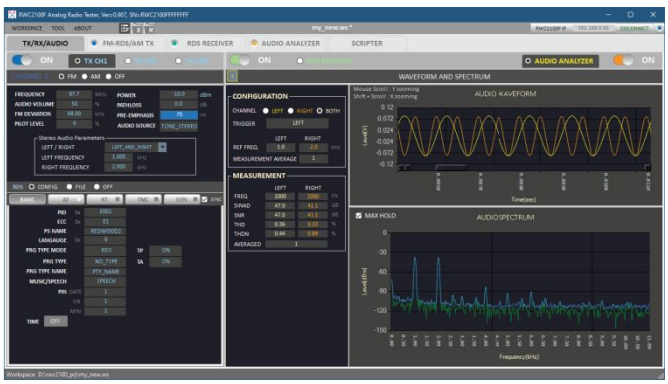
SCRIPTER

RWC2100F provides a scripter function that allows users to send and receive commands. Users can use syntax such as for and wait to more flexibly configure the instruction set for the user desired scenario. By using this function, users can control all functions of the RWC2100F, and the used instruction set can be saved and read as a text file.



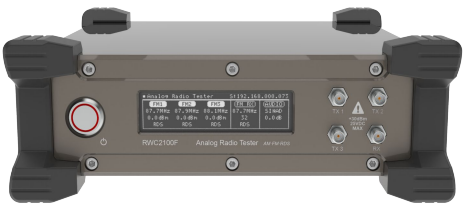
COMBINATION SCREEN

The RWC2100F's PC application combines FM-RDS/AM transmitter and RDS receiver or FM-RDS/AM transmitter and audio analyzer to provide a combination screen for convenient transmission control, RDS monitoring and audio analysis in one screen. By selecting the FM-RDS transmitter and audio analyzer combination screen, receiving the FM or AM signal transmitted from the RWC2100F to the user's DUT using the DUT, inputting the audio signal output from the DUT back to the RWC2100F audio analyzer, and measuring SINAD of the DUT, users can measure the performance and audio quality of the DUT very simply.



SPECIFICATION

Transmitter Characteristics	• Frequency range: 500kHz to 1,600kHz (AM), 76MHz to 108MHz (FM) • Frequency accuracy: ±2Hz (AM), ±3.5kHz (FM) • Output level: -10dBm to -90dBm (AM), +0dBm to -90dBm (FM) • Output level resolution: 0.25 dB • Output level accuracy: ±1 dB • VSWR: Better than 1:1.5
Receiver Characteristics	• Input frequency: 76MHz to 108MHz
Audio Analyzer Characteristics	• Input frequency: 0.1 kHz to 20 kHz • Input range: Single Ended 2.25 Vrms • Bandwidth: 11 kHz • Common-Mode rejection ratio (CMRR): 56 dB • Connection type:3.5 pi AUX Stereo
Remote Programming Ports	• Ethernet for Remote: RJ45 (UDP) • RS-232C for Remote: DSUB-9
Miscellaneous	• Operating temperature: 5 to 40℃ • Input power: DC 12V, 3A • Dimension: 166(w) x 50(h) x 194(d) mm • Weight: 2.0 kg



RWC2100F Front Panel
2.81” OLED Display
Power On/Off Switch
3 x TX , 1 x RX Port



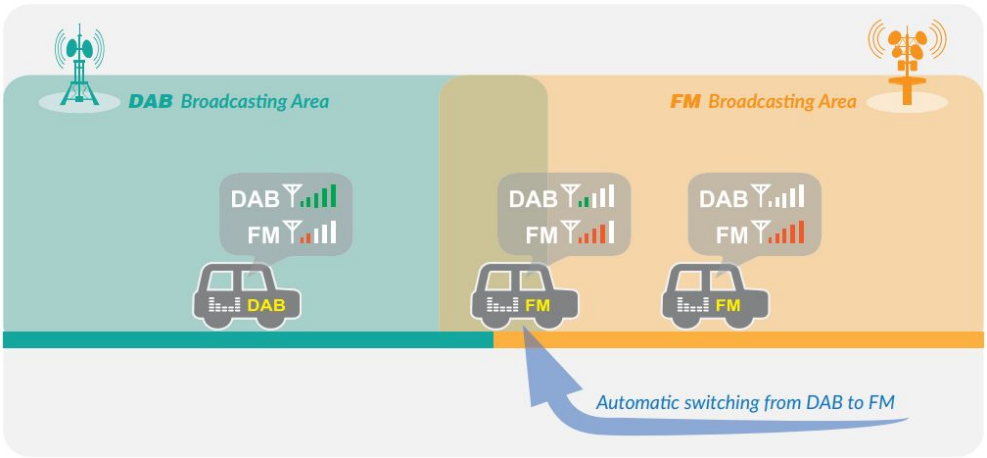
RWC2100F Rear Panel
LAN, RS-232
Audio Input, Output
DC12V Input

SERVICE FOLLOWING TEST

OVERVIEW

To test the service following function of receivers in labs, two or more broadcasting emulators are required. Especially, to test 'the seamless linking function', two or more broadcasting emulators should be synchronized with adjustable sync delay. Using RWC2010C(B) or RWC2100F, many combinations of service following tests (DAB ↔ DAB, DAB ↔ DRM, DAB ↔ FM, DRM ↔ DRM, DRM ↔ FM, FM ↔ FM) can be performed in labs quite easily. Users can assign one RWC2010C as Master and other RWC2010C or RWC2100F units as Slaves. You can emulate various broadcast system environments and test the functionality of your receivers perfectly with low cost.

If you use the Service Linking Test Tool provided with the RWC2010C, you can effectively test the service following function of the radio receiver while controlling multiple RWC2010Cs, RWC2010Ms, and RWC2100Fs.

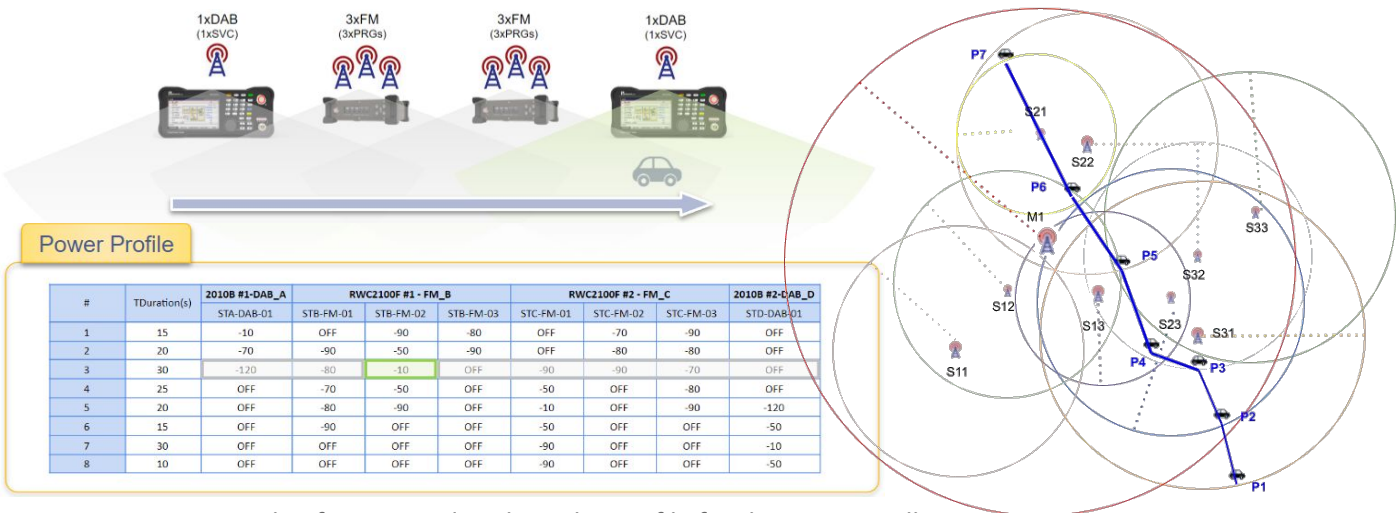


Advanced Automation & Configuration

With integrated Scripting Feature, users can effortlessly deploy configurations to all connected stations (RWC2010x series) simultaneously. This dramatically streamlines the setup process across multiple emulators, eliminating manual entry and minimizing user error. Furthermore, the built-in Repeat Function allows for automated, continuous iterations of complex switching scenarios. This ensures rigorous, unattended testing to guarantee the long-term stability and reliability of the receiver's linking performance.

EXAMPLE OF RADIO STATIONS AND POWER/AUDIO PROFILE

An example of two DAB transmitters and six FM transmitters environment with two RWC2010Cs and two RWC2100Fs.



#	TDuration(s)	2010B #1-DAB_A	RWC2100F #1 - FM_B			RWC2100F #2 - FM_C			2010B #2-DAB_D
		STA-DAB-01	STB-FM-01	STB-FM-02	STB-FM-03	STC-FM-01	STC-FM-02	STC-FM-03	STD-DAB-01
1	15	-10	OFF	-90	-80	OFF	-70	-90	OFF
2	20	-70	-90	-50	-90	OFF	-80	-80	OFF
3	30	-120	-80	-10	OFF	-90	-90	-70	OFF
4	25	OFF	-70	-50	OFF	-50	OFF	-80	OFF
5	20	OFF	-80	-90	OFF	-10	OFF	-90	-120
6	15	OFF	-90	OFF	OFF	-50	OFF	OFF	-50
7	30	OFF	OFF	OFF	OFF	-90	OFF	OFF	-10
8	10	OFF	OFF	OFF	OFF	-90	OFF	OFF	-50

An Example of Power and Audio Delay Profile for the Service Following Test

HOW TO TEST SERVICE LINKING USING RWC2010Cs, RWC2100Fs, and PC Application

Example Parameters of 2 DAB Stations and 6 FM Stations



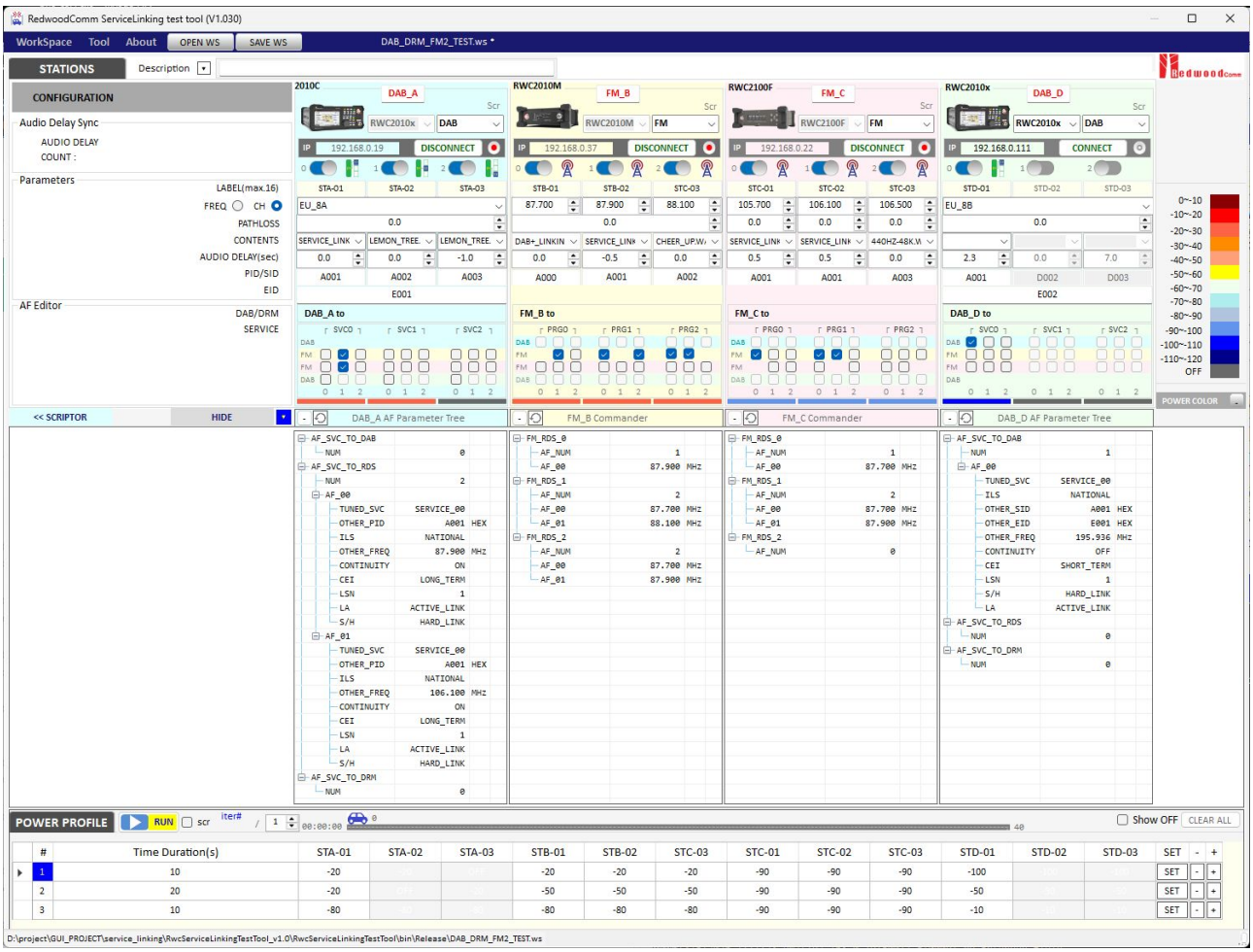
RWC2010B #1 - DAB_A	
EID	E001
FREQ (CH)	5A
	Service 0
SID	A001
LABEL	STA-DAB-01
CONTENTS	service_linking.mp2
AUDIO DELAY (s)	0

RWC2010B #2 - DAB_D	
EID	E002
FREQ (CH)	8B
	Service 0
SID	A001
LABEL	STD-DAB-01
CONTENTS	service_linking.mp2
AUDIO DELAY (s)	2.3

RWC2100F #1 - FM_B			
FREQ (CH)	87.7MHz	87.9MHz	88.1MHz
	Program 0	Program 1	Program 2
PID	A000	A001	A002
PS NAME	STB-FM-01	STB-FM-02	STB-FM-03
CONTENTS	other music	service_linking.wav	other music
AUDIO DELAY (s)	0	-0.5	0

RWC2100F #2 - FM_C			
FREQ (CH)	105.7MHz	106.1MHz	106.5MHz
	Program 0	Program 1	Program 2
PID	A001	A001	A003
PS NAME	STC-FM-01	STC-FM-02	STC-FM-03
CONTENTS	service_linking.wav	service_linking.wav	other music
AUDIO DELAY (s)	0.5	0.5	0

RwcServiceLinkingTestTool.exe Application Setup



RWC-HQ (CANADA)
980 W 1st St #209, North Vancouver, BC, V7P 3N4, Canada
+1-778-322-7601
sales@redwoodcomm.com
https://RedwoodComm.com

RWC-AP (SINGAPORE)
Asia Pacific Representative
36 Robinson Road #21-01 City House Singapore 068877
tony.tian@redwoodcomm.asia

RWC-KR (KOREA)
Suite 14008, OfficeSection Bldg, SK M-city, 195 Baengma-ro,
Ilsandong-gu, Goyang-si, Gyeonggi-do, South Korea [10403]
+82-70-7727-7011
sales@redwoodcomm.com
support@redwoodcomm.com

August. 2026