Introduction to Digital/Analog Radio Test Solution



DAB/DAB+/DMB

DRM30/DRM+

RDS/RBDS

Analog FM/AM

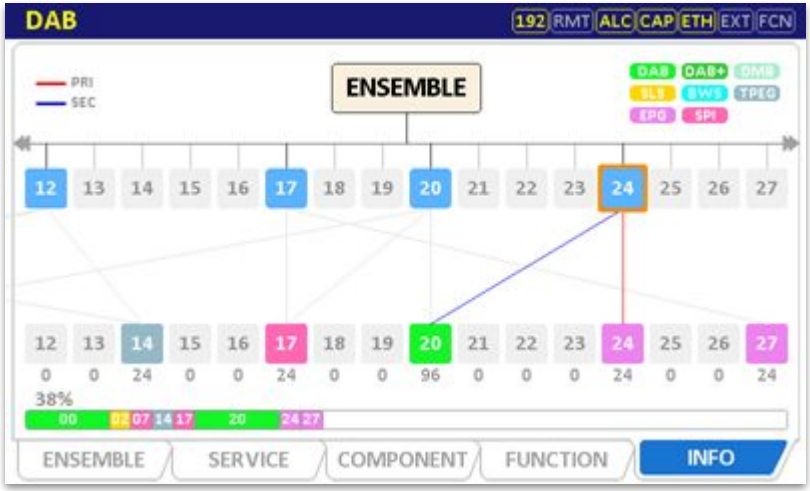
RWC2010C 1/6

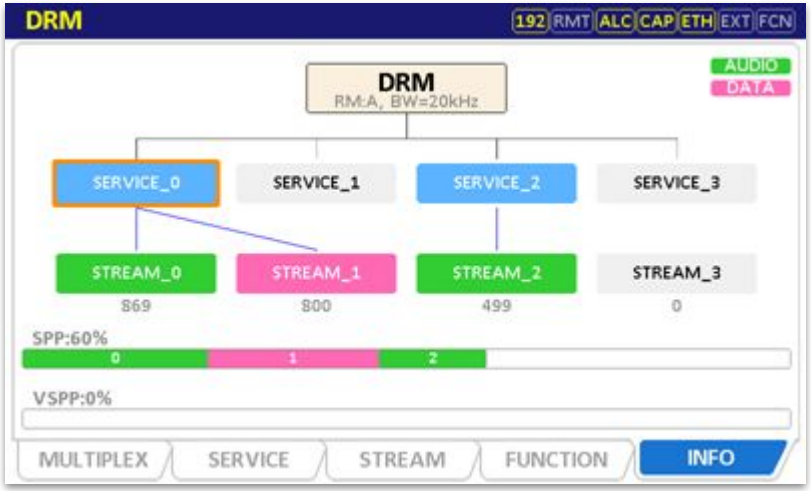


✤ Digital Radio Tests - Part I

DAB Ensemble Multiplexer
64 Service Components
Easy-to-edit Ensemble structures and parameters
Component Types: DAB/DAB+/DMB/BWS/TPEG/EPG/ SLS/SPI
PAD Channels: DLS/DL+/DRC/SLS/SPI
Functional Tests: Reconfiguration, Announcement, AF, TII, Time, etc.

DRM Multiplexer
4 Streams
Easy-to-edit Multiplexer structures and parameters
Robustness: DRM30 (A/B/C/D), DRM+ (E) Spectrum BW (kHz): 4.5, 5, 9, 10, 18, 20, 100
Stream Types: audio/data
Functional Tests: Reconfiguration, Announcement, AF, Time, etc.



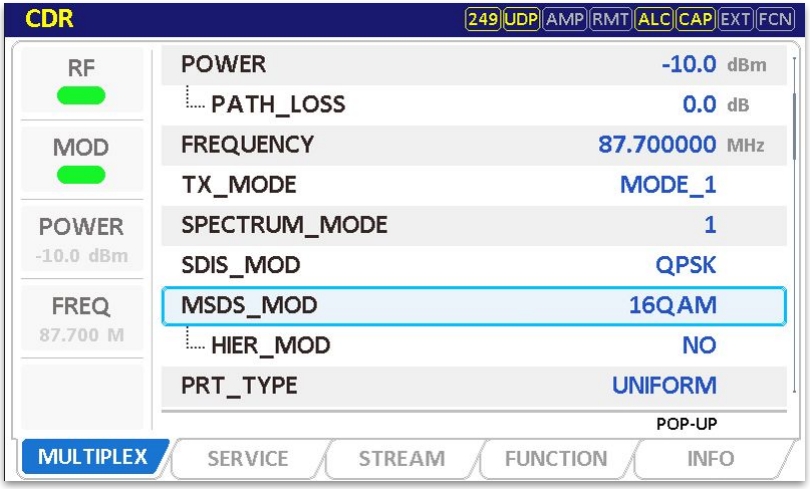


RWC2010C 1/6



✤ Digital Radio Tests - Part II

DRM Multiplexer
4 Streams
Easy-to-edit Multiplexer structures and parameters
Transmission Mode: 1 / 2 / 3 Spectrum Mode: 1 / 2 / 9 / 10 / 22 / 23
Stream Types: audio/data
Functional Tests:



RWC2010C 2/6

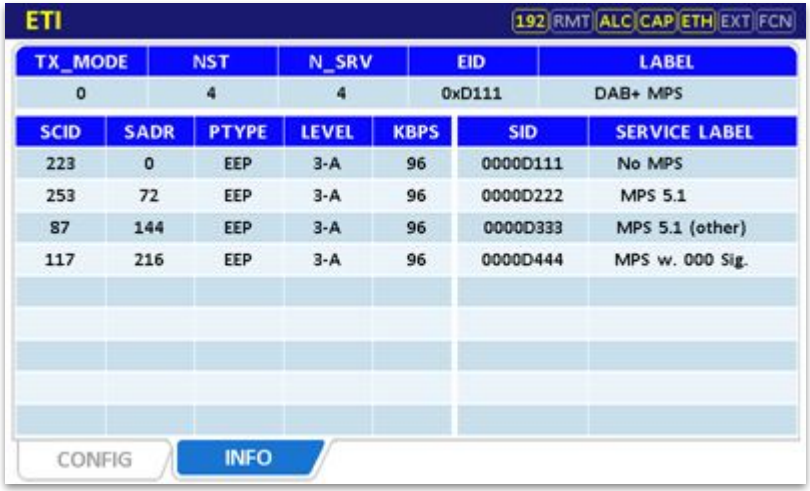


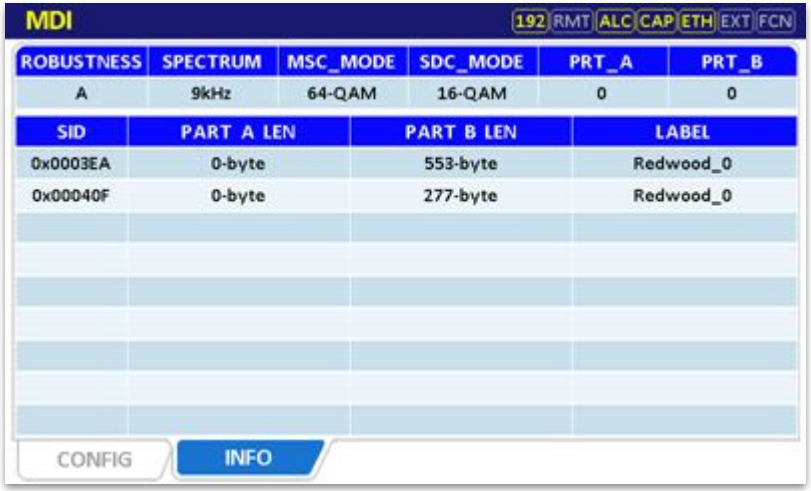
✤ Digital Radio Tests - Part III

ETI Player
Playback of the pre-downloaded ETI files
File information screen
Various tone signal files provided

MDI Player
Playback of the pre-downloaded MDI files
File information screen
Various tone signal files provided

DRM30 IQ Player
Playback of the pre-downloaded DRM30 IQ files





RWC2010C 3/6

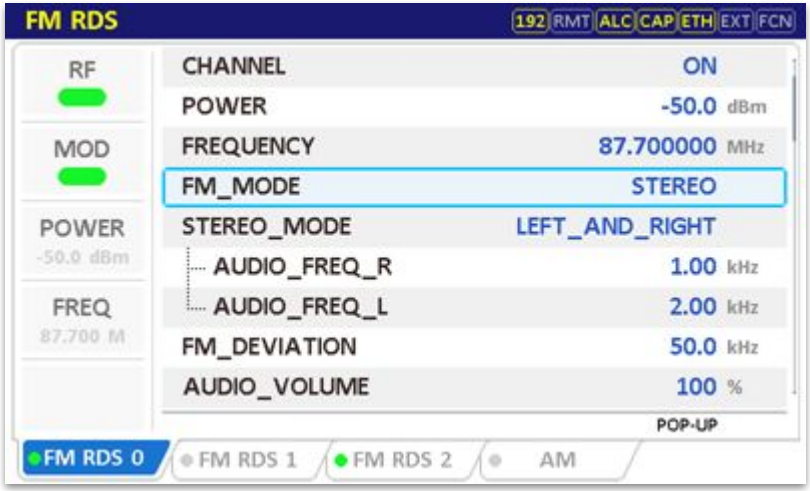


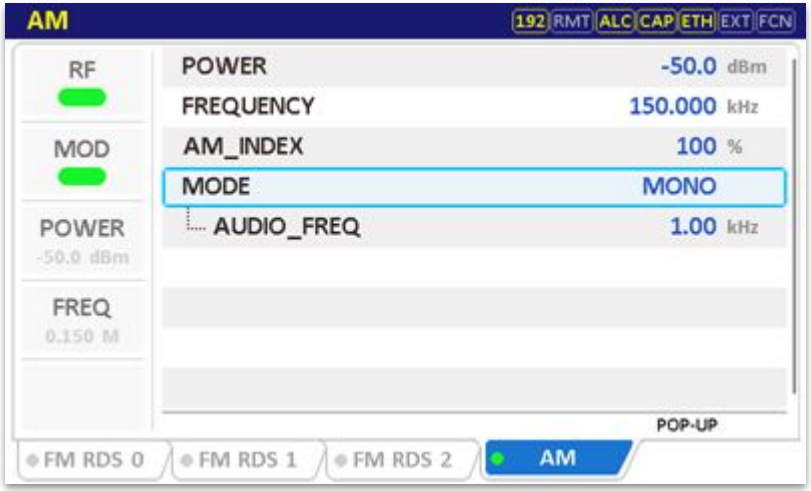
✤ Analog Radio Tests

3-channel* FM RDS Transmitter
Mono/Stereo/Sweep/Wave
TMC/TP/TA
AF/EON
RT/RT+/eRT/eRT+
Playback of the pre-stored RDS files

Single-channel AM Transmitter
Mono/Sweep/Wave

** Max ±3 MHz spacing from FM0 frequency*



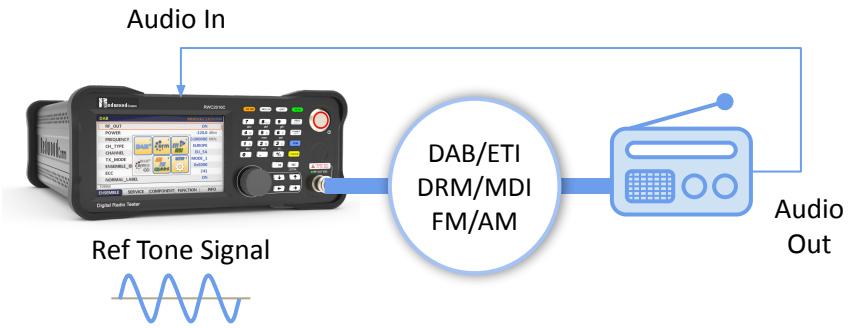


RWC2010C 4/6



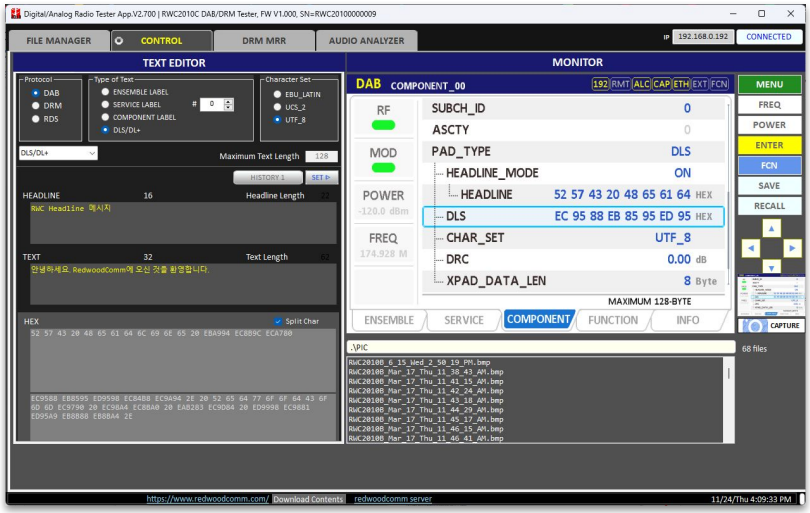
✤ Audio Analyzer

Receiver Sensitivity Test
Audio Measurement - SINAD/THDN/SNR

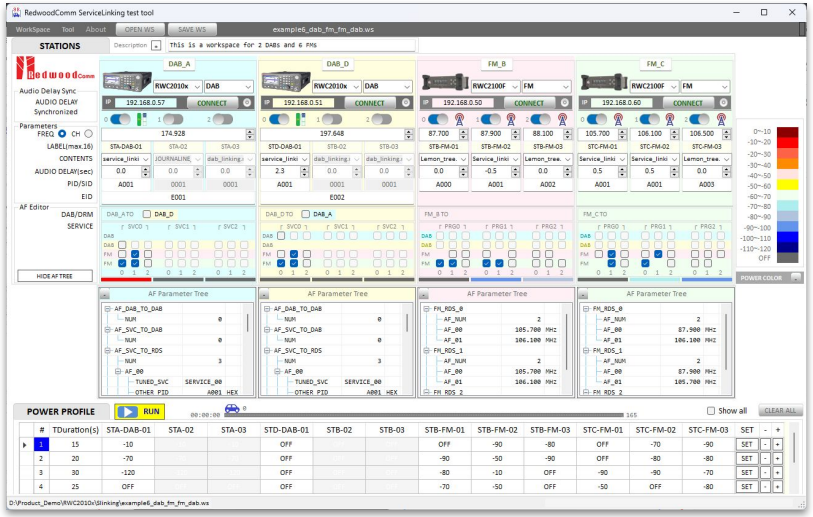


✤ PC Application Software

2010x App - File Downloader / Text Editor / Scripter



Service Linking Test Tool for 2010C(B) and 2100F



RWC2010C 5/6



✤ Frequency Range

Band	Frequency Range
LF/MF/HF BAND	0.149 to 30 MHz
BAND I/II/III	47 to 68 MHz, 76 to 108 MHz, 174 to 250 MHz

✤ Output Level

Band	CW Power	OFDM Power	Power with RWC9500B*
LF/MF/HF BAND	-10 to -110 dBm	-20 to -120 dBm	+15 to -55 dBm (CW/OFDM)
BAND I/II/III	0 to -110 dBm	-10 to -120 dBm	

** RWC9500B : Power Amplifier Module*



RWC2010C 6/6

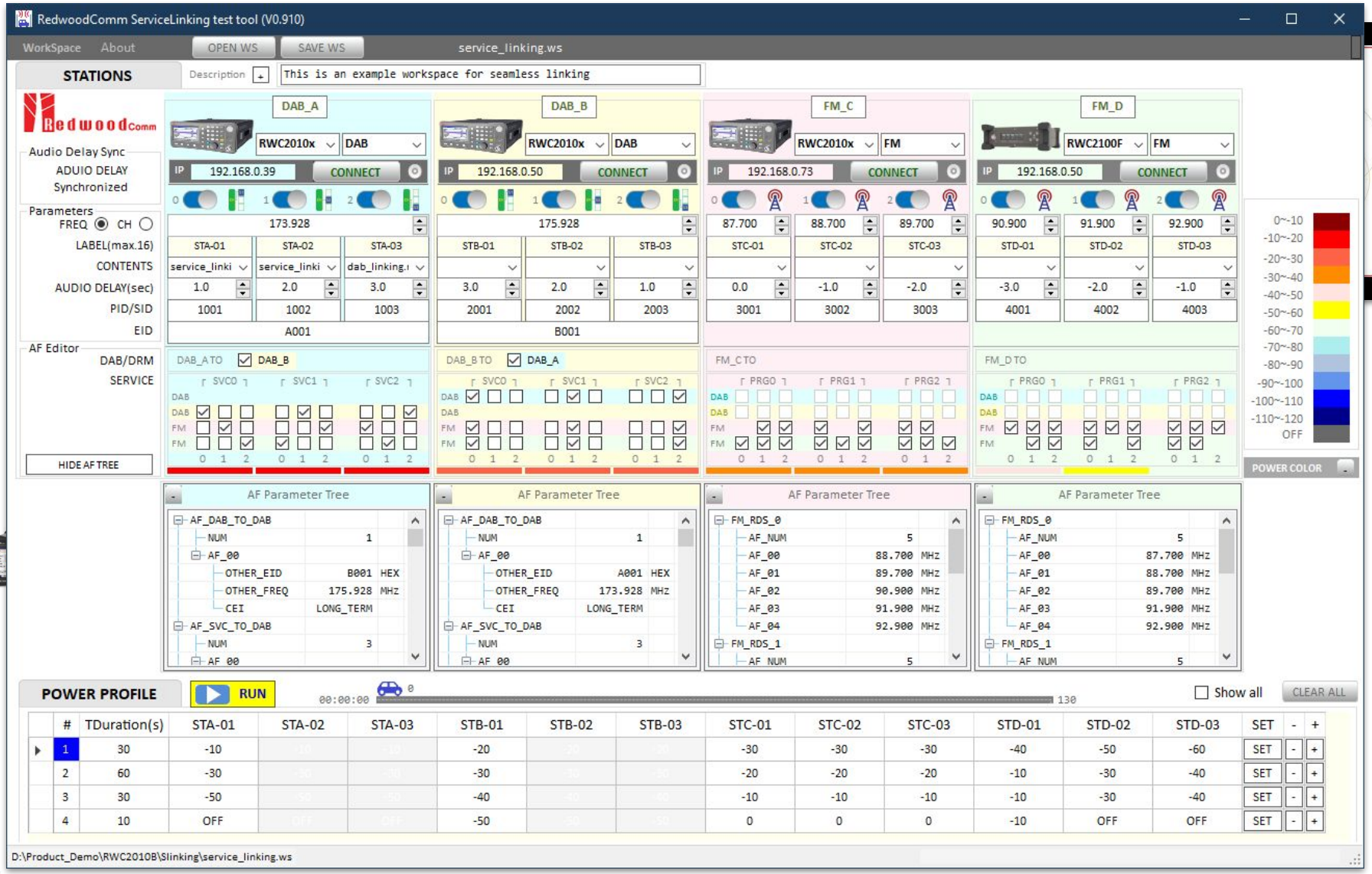


✤ Ordering Information

Order Code	Options	Description
C2010C-00	Full Option	DAB/DAB+/ETI, DRM30/DRM+/MDI, RDS/FM/AM
C2010C-01	DAB+DRM	DAB/DAB+/ETI, DRM30/DRM+/MDI
C2010C-02	DAB+Analog	DAB/DAB+/ETI, RDS/FM/AM
C2010C-03	DRM+Analog	DRM30/DRM+/MDI, RDS/FM/AM
C2010C-04	DAB Only	DAB/DAB+/ETI
C2010C-05	DRM Only	DRM30/DRM+/MDI
C2010C-06	Analog Only	RDS/FM/AM
O2010C-01	Add-on	Adding DRM option later
O2010C-02	Add-on	Adding DAB option later
O2010C-03	Add-on	Adding Analog option later
O2010C-04	Add-on	Adding Audio Analyzer option

Order Code	Options	Description
C9500B-00	-	Power Amplifier Module (MF/HF/UHF)

Functional Tests 1/3

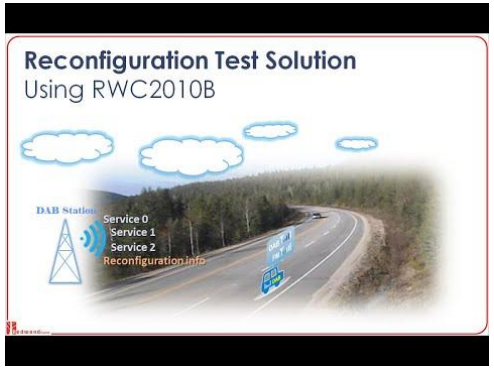


#	TDuration(s)	STA-01	STA-02	STA-03	STB-01	STB-02	STB-03	STC-01	STC-02	STC-03	STD-01	STD-02	STD-03	SET
1	30	-10	-10	-10	-20	-20	-20	-30	-30	-30	-40	-50	-60	SET
2	60	-30	-30	-30	-30	-30	-30	-20	-20	-20	-10	-30	-40	SET
3	30	-50	-50	-50	-40	-40	-40	-10	-10	-10	-10	-30	-40	SET
4	10	OFF	OFF	OFF	-50	-50	-50	0	0	0	-10	OFF	OFF	SET

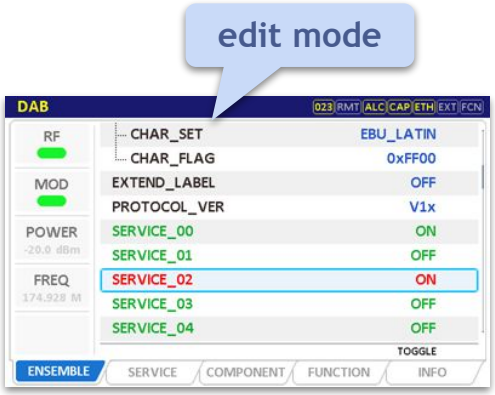
Functional Tests 2/3

✤ Reconfiguration Test

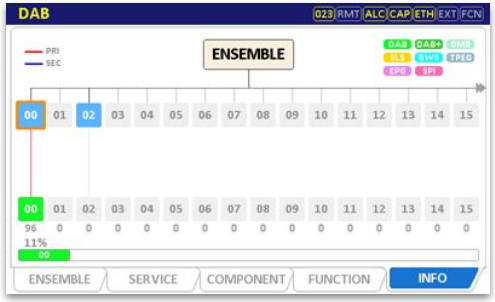
Without Reconfiguration
Modified parameters apply immediately - may cause discontinuity
With Reconfiguration
Modified parameters do not apply immediately. Execute reconfiguration to apply them - changing the multiplexer configuration whilst maintaining continuity of services

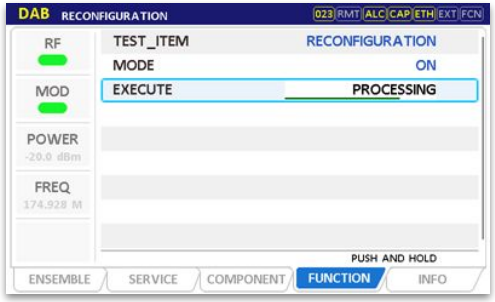






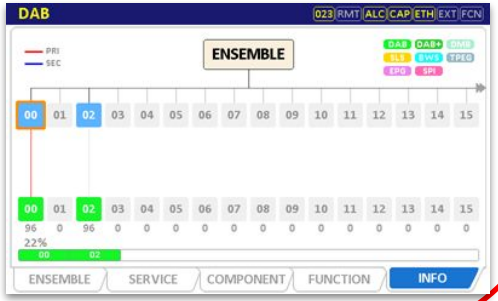
Before Reconfiguration







After Reconfiguration



Functional Tests 3/3

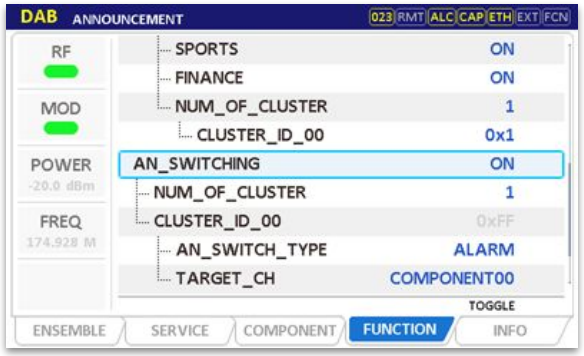
✤ Announcement Test

Configurable Announcement Support Parameters
Announcement Support Flag Announcement Support Clusters (up to 5)
Easy Switching Control
Just set the 'AN_SWITCHING' parameter as ON





Listening different services





Listening the same radio

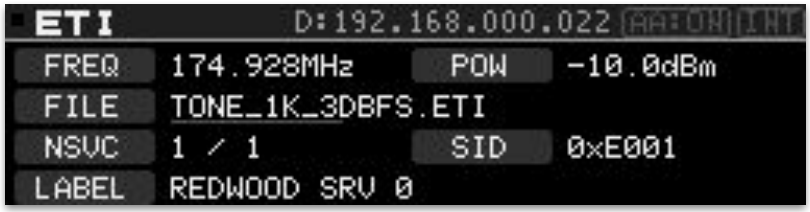
RWC2010M 1/5

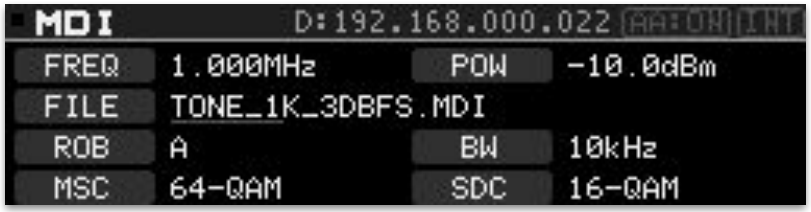


✤ Digital Radio Tests

ETI Player
Playback of the pre-downloaded ETI files
Various tone signal files provided

MDI Player
Playback of the pre-downloaded MDI files
Various tone signal files provided





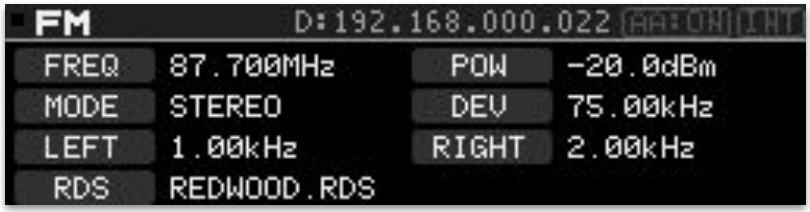
RWC2010M 2/5

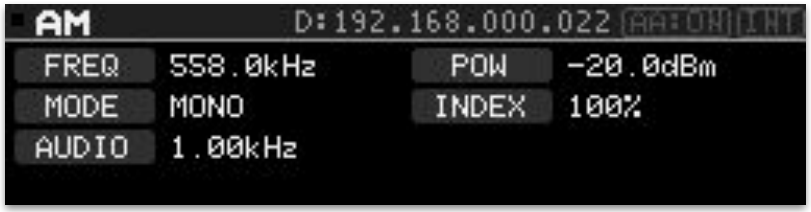


✤ Analog Radio Tests

Single-channel FM RDS Transmitter
Mono/Stereo/Sweep/Wave
TMC/TP/TA
AF/EON
RT/RT+/eRT/eRT+
Playback of the pre-stored RDS files

Single-channel AM Transmitter
Mono/Sweep/Wave



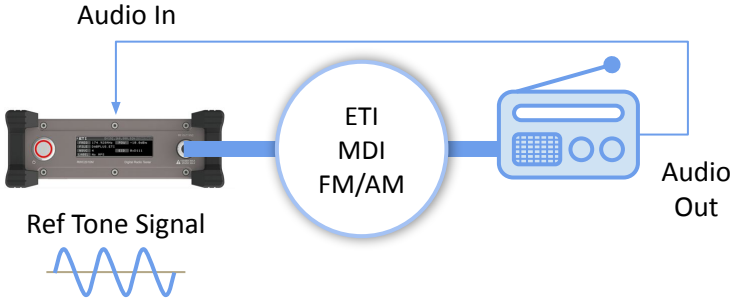


RWC2010M 3/5



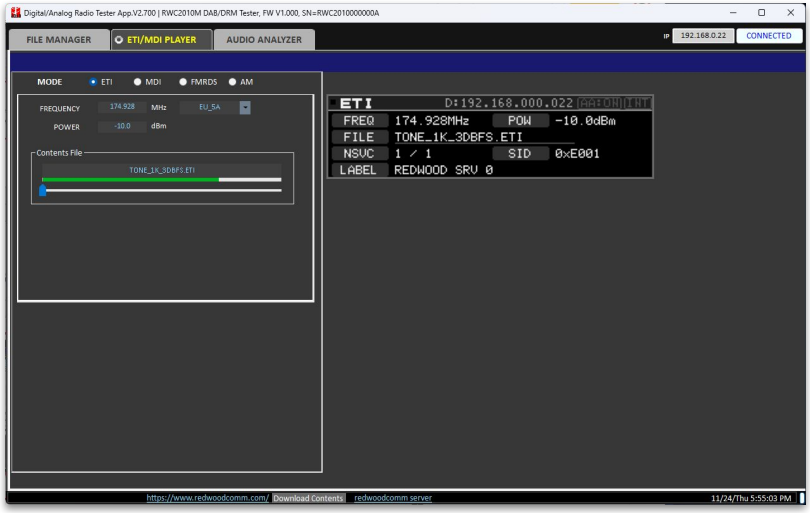
✤ Audio Analyzer

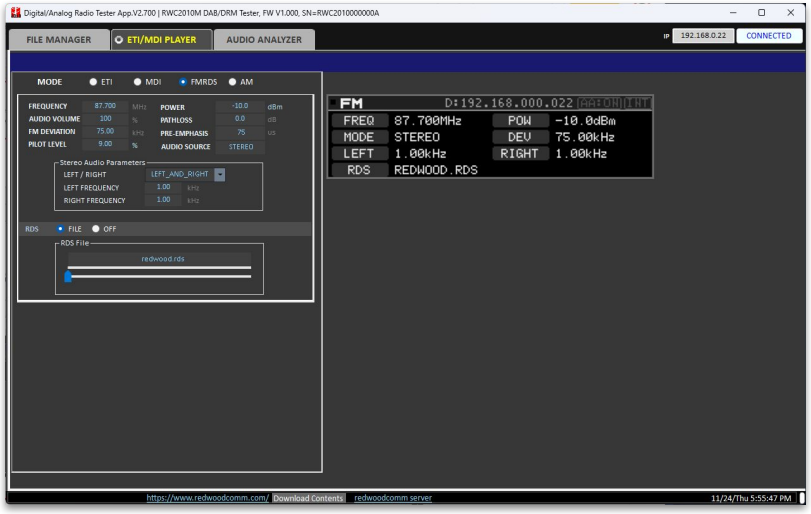
Receiver Sensitivity Test
Audio Measurement - SINAD/THDN/SNR



✤ PC Application Software

2010x App - File Downloader / ETI/MDI Player





RWC2010M 4/5



✤ Frequency Range

Band	Frequency Range
LF/MF/HF BAND	0.149 to 30 MHz
BAND I/II/III	47 to 68 MHz, 76 to 108 MHz, 174 to 250 MHz

✤ Output Level

Band	CW Power	OFDM Power	Power with RWC9500B*
LF/MF/HF BAND	-10 to -110 dBm	-20 to -120 dBm	+15 to -55 dBm (CW/OFDM)
BAND I/II/III	0 to -110 dBm	-10 to -120 dBm	

** RWC9500B : Power Amplifier Module*



RWC2010M 5/5



✤ Ordering Information

Order Code	Options	Description
C2010M-00	Full Option	ETI/MDI File Player, RDS/FM/AM Transmitter
C2010M-01	ETI+MDI	ETI/MDI File Player
C2010M-02	ETI+Analog	ETI File Player, RDS/FM/AM Transmitter
C2010M-03	MDI+Analog	MDI File Player, RDS/FM/AM Transmitter
C2010M-04	ETI Only	ETI File Player
C2010M-05	MDI Only	MDI File Player
C2010M-06	Analog Only	RDS/FM/AM
O2010M-01	Add-on	Adding MDI option later
O2010M-02	Add-on	Adding ETI option later
O2010M-03	Add-on	Adding Analog option later
O2010M-04	Add-on	Adding Audio Analyzer option

Order Code	Options	Description
C9500B-00	-	Power Amplifier Module (MF/HF/UHF)

RWC2010M/C/B Comparison 1/2

MODEL		RWC2010M	RWC2010C	RWC2010B (discontinued)
				
EXTERIOR				
	Dimensions	200(W) x 70(H) x 220(D) mm	250(W) x 110(H) x 348(D) mm	240(W) x 110(H) x 340(D) mm
	Weight	2.2 kg	5 kg	5.5 kg
	Rackmount Installation	Optional		NO
OPERATION				
	Stand-alone Mode	Boot by Pre-stored Configuration	YES	
	PC Software Application	RWC2010x App		
	Remote Control Interface	LAN, RS232		
	Control Commands	YES		
DISPLAY				
	Type	2.8", 256x64, 16 gray, OLED	5", 800x480, 16M color, TFT LCD	4.3", 480x272, 256 color, TFT LCD
	Touch Screen	NO	YES	NO
	Status Indication	RF/MOD/Streaming status shown on instrument screen	all parameters shown and editable on instrument screen	
RF OUTPUT				
	Port	N-type		
	RF On/Off, Modulation On/Off	via PC App only	via PC App or instrument GUI	
	Frequency, LF/MF/HF BAND	0.149 to 30 MHz		
	Frequency, BAND I/II/III	47 to 68 MHz, 76 to 108 MHz, 174 to 250 MHz		
	CW Power @ LF/MF/HF BAND	-10 to -110 dBm		-20 to -110 dBm
	OFDM Power @ LF/MF/HF BAND	-20 to -120 dBm		
	CW Power @ BAND I/II/III	0 to -110 dBm		-10 to -110 dBm
	OFDM Power @ BAND I/II/III	-10 to -120 dBm		
	Power with 9500B Power Amp @ all supported bands	+15 to -55 dBm for CW/OFDM		N/A
	Power with 9500A Power Amp @ LF/MF/HF BAND	N/A		+0 to -70 dBm for CW/OFDM

RWC2010M/C/B Comparison 2/2

MODEL		RWC2010M	RWC2010C	RWC2010B (discontinued)
				
DAB/DAB+/ETI				
	Real-time DAB Multiplexer	NO	YES	
	Max # of Service Components	N/A	64	16
	ETI File Player	YES		
	ETI Files	provided according to customers' requests		
DRM30/DRM+/MDI				
	Real-time DRM Multiplexer	NO	YES	
	Max # of Streams	4		
	MDI File Player	YES		
	MDI Files	provided according to customers' requests		
	DRM30 I/Q File Player	NO	YES	
RDS/FM/AM				
	# of FM/RDS Channels	1	3	
	# of AM Channels	1		
	RDS Editor	NO	YES	
	RDS Transmission	Playback of pre-stored RDS files	as configured in RDS Editor	
EXTERNAL AUDIO IN				
	Used as Audio Source in FM	YES		N/A
	Audio Analyzer - SINAD/SNR/THDN	YES		N/A
MISCELLANEOUS				
	Power Supply	12V/3A DC Adapter provided	100 to 240 VAC	
	Internal Storage	256 GB		32 GB
	Service Linking Test Support	NO	YES	

** The specifications are subject to change without notice.*

V1.12 / Apr 1, 2023

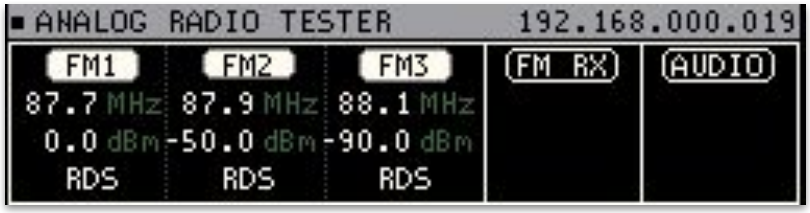
RWC2100F 1/5



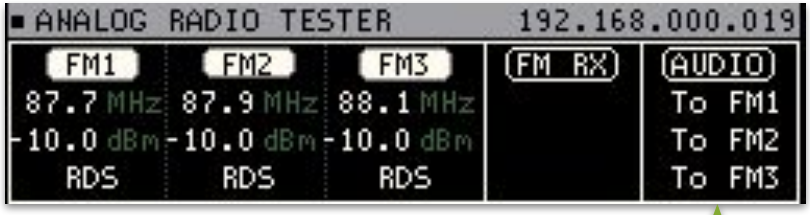
✤ Analog Radio Tests - Part I

3-channel FM RDS Transmitter
Independent power control per channel
Mono/Stereo/Sweep/Wave
External Audio In
TMC/TP/TA
AF/EON
RT/RT+/eRT/eRT+
Playback of the pre-stored RDS files (*.rds)

3-channel AM Transmitter
Independent power control per channel
Mono/Sweep/Wave
External Audio In









External “Audio In” to FM transmitter

RWC2100F 2/5



✤ Analog Radio Tests - Part II

Single-channel FM RDS Receiver
RDS information display
RDS data recording



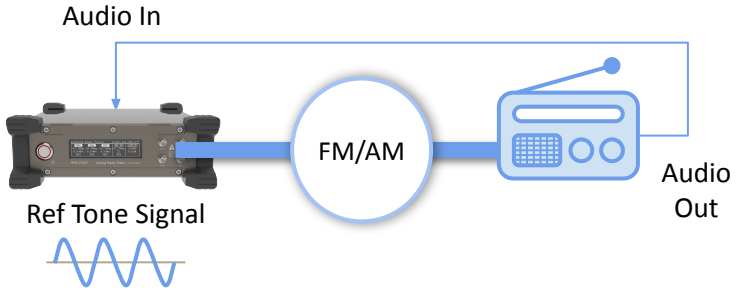


RWC2100F 3/5



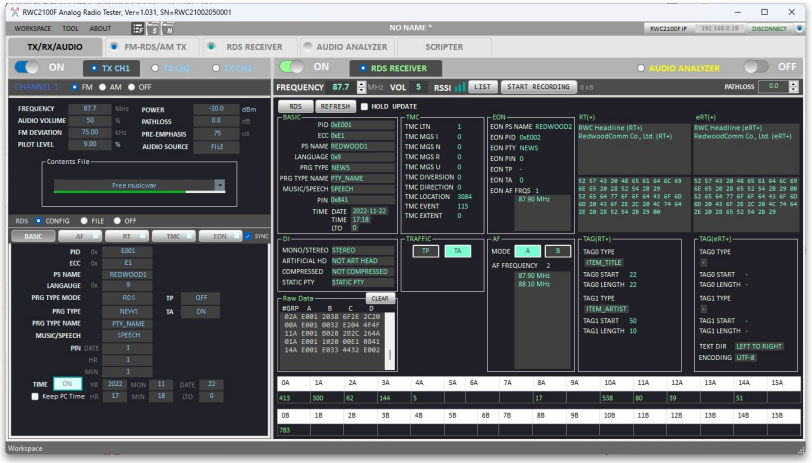
✤ Audio Analyzer

Receiver Sensitivity Test
Audio Measurement - SINAD/THDN/SNR
Audio Spectrum & Waveform

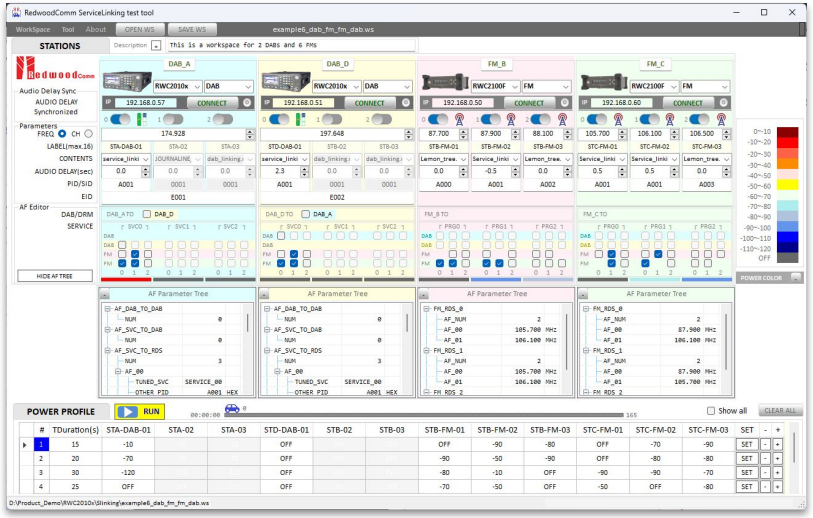


✤ PC Application Software

2100F App - FM/AM TX / RDS RX / Audio / Scripter



Service Linking Test Tool for 2010C(B) and 2100F

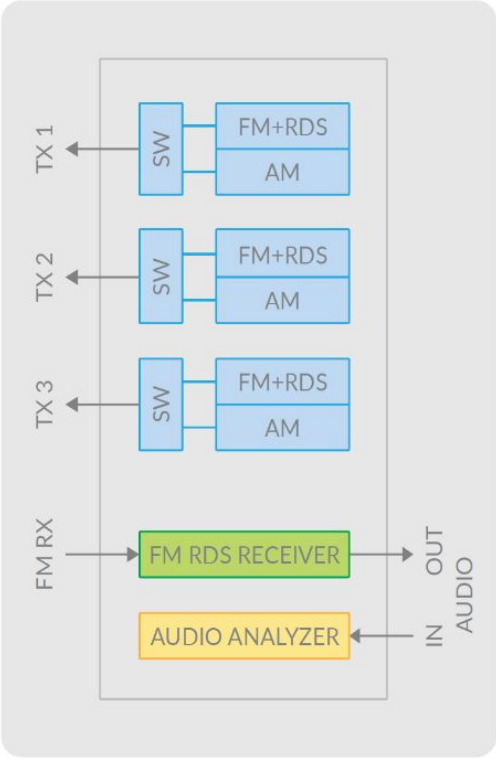


RWC2100F 4/5



✤ Frequency Range

Band	TX Frequency Range	RX Frequency Range
AM BAND	500 to 1,800 kHz	N/A
FM BAND	76 to 108 MHz	76 to 108 MHz



✤ Output Level

Band	Power
AM BAND	-10 to -90 dBm
FM BAND	0 to -90 dBm

✤ 3:1 RF Combiner Module

Band	Path Loss
AM BAND	5.5 dB Typ / 5.8 dB Max
FM BAND	5.2 dB Typ / 5.8 dB Max



RWC2100F 5/5



✤ Ordering Information

Order Code	Options	Description
C2100F-00	Full Option	3 FM RDS or 3 AM Transmitters, RDS Receiver, Audio Analyzer
O2100F-01	RF Combiner	3:1 Combiner for TX Ports

Worldwide Customers



Feedback



If you have any questions,

contact us at sales@redwoodcomm.com or visit www.redwoodcomm.com.