

DRM Advanced Radio for ALL

9th September 2020



DRM Receivers

Standalone DRM only or DRM Multi-standard receivers



GOSPELL[®]
— Technology Serves People —


STAR WAVES



inntot

avion



RF2DIGITAL

(주)알에프투디지털



Cambridge
Consultants



China



Video



A Brief Introduction to Gospell's DRM Products

by HC Liu





GR-224BP



GR-226BP



GR-228BP

Portable DRM/AM/FM Radio

- Portable DRM radio operates on AC or battery
- DRM designed for AM band, ready for FM band
- AM/FM radio
- xHE-AAC audio
- Journaline[®] support
- Bluetooth stream music and handsfree calling
- USB/SD music player
- DRM scrolling text
- DRM emergency warning reception
- FM RDS
- 60 presets
- Auto scan

Journaline licensed by Fraunhofer IIS, check www.journaline.info for more information.





GR-501BCW



GR-502BCW

DRM Car Stereo

- Double DIN in-dash car stereo
- 2GB RAM + 32GB ROM
- Quad core
- DRM designed for AM band, ready for FM band
- Journaline[®] support
- DRM Slideshow support
- AM/FM radio
- Bluetooth music / Handsfree calling / Wi-Fi
- Navigation / backup camera
- USB/SD player
- Internal 4x25w amplifier

Germany



STAR WAVES

Johannes von Weyssenhoff
CEO

The StarWaves logo features a crown icon above the brand name 'STAR WAVES' in a serif font.

Receivers shown at BES in Delhi earlier this year

- Smart LCD Display
- AM/FM/DRM Receiver:
 - AM/FM reception with digital IF processing
 - **DRM: Both AM and FM Bands**
 - Including latest xHE-AAC Audio Codec
 - **Journaline**
 - All Receivers include **Emergency Warning Functionality (EWF)**



Is it really true? Do we finally have
affordable DRM radios??



STAR WAVES

The most popular receiver at BES in India was STARWAVES' – "Tuktuk" Radio!

- Ready to use existing car radio & antenna
- DRM in the AM, SW and FM Band
- Also plays analogue AM, FM and SW
- High quality automotive tuner
- Journaline
- Emergency Warning Functionality
- It also works as a standalone version with integrated audio and amplifier available
- Frequency and station name can be scrolled on the LED display
- It comes with IR remote control



**We made it ready for the market!
So please enjoy the video!**

Video



STARWAVES
"TUKTUK
Radio"



DIGITAL radio mondiale

digital radio for all

STARWAVES W293BT WORLD PREMIERE





DIGITAL radio mondiale

digital radio for all

STARWAVES W293BT WORLD PREMIERE

STAR WAVES



RADIO Music player



Radio reception is not possible

Top of cabinet network connection



When all other networks fail

Product application area: Emergency Warning



Radio reception is not possible

Product application area: Weather information



Radio reception is not possible

Product application area: Mobile schooling

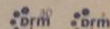


LED lighting Lamp



Super bass

FM-AM-SW



Digital Radio



Large capacity Battery



Emergency Warning



Bluetooth



High Fidelity Speaker



WARNING

Before using read the user manual carefully!
This equipment is sensitive to interference caused by electric and electronic devices such as mobile phone chargers, LED light sources, dimmers, powerline communications (PLC) networks, notebooks etc.
If digital reception is not successful, check equivalent analogue radio frequency for interferers and eliminate.

Size: 232 x 177.5 x 64.2mm
Output: 8W RMS
Frequency: 100Hz - 18kHz
DC Input: 9V / 500mA
Net weight: 700g
Speaker Impedance: 4Ω
Speaker size: 1" x 1.5"
S/N: > 80dB
Power Supply: 100V-240 VAC
Built-in 7.4V Lithium battery 1800 mAh

DRM Audio Decoding: AAC, HE-AAC, xHE, AAC
DRM Mode: A, B, C, D, E
SBC Decoding: 4 & 16 QAM MSC Decoding, 16 & 64 QAM
Protection Levels: 0 to 3
Interleaving: Long (3s) & Short (400ms)
Spectral Bandwidth Modes: 4.5kHz, 5kHz, 9kHz, 10kHz, 18kHz, 20kHz, 96kHz, Steepest Support

FEATURES

DRM in all Bands (AM 530-1700 & SW 2300-30000 kHz, FM 64-108 MHz)
Analogue AM/SW/FM - DRM/FM Service Blending (FM Fall-back)
Recording and Playback of DRM Digital Radio Content, File Management
Bright LED Torch, 18-Button Keypad, 4-Digit Multi-Function LED Display
Bluetooth SD-Card and USB Media Playback with High Fidelity Speaker
Emergency Warning Functionality - Wakeup from Standby on Emergency
Optional: Streaming and Data Service (Journaline) WiFi Host Function



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digital radio for all



Video

STARWAVES
W293BT
World
Premiere



STAR WAVES

Thank you for your attention!

Questions? Please don't hesitate to
contact me:

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India



inntot

Rajith Nair
CEO



Automotive



Consumer



Smartphone

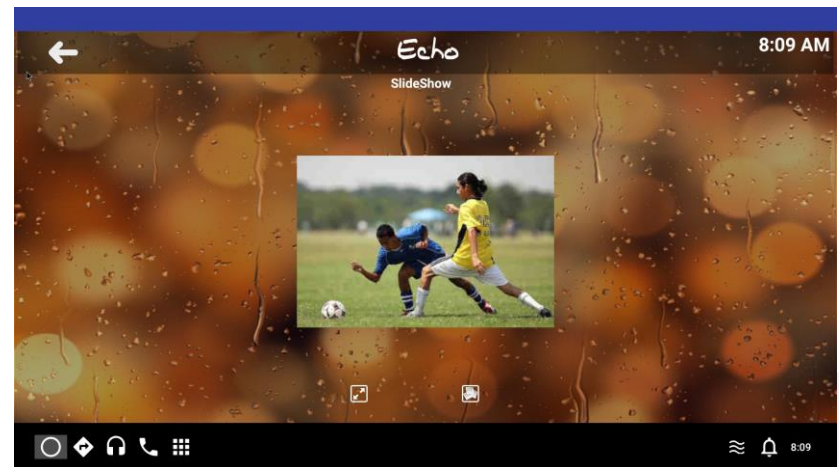
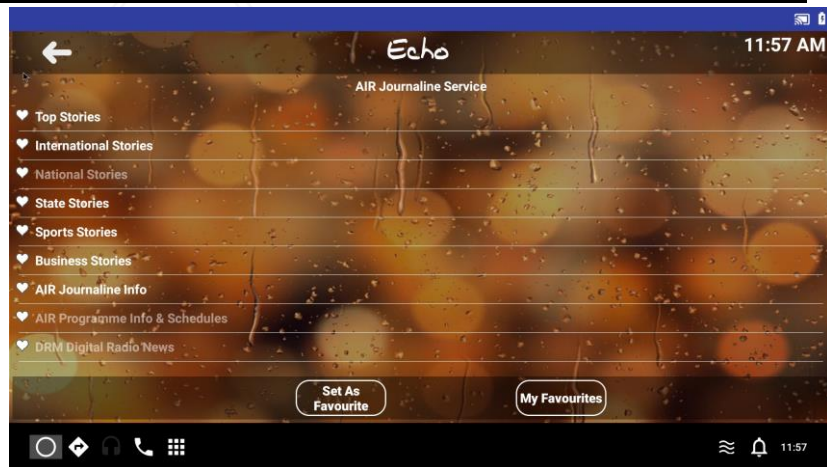
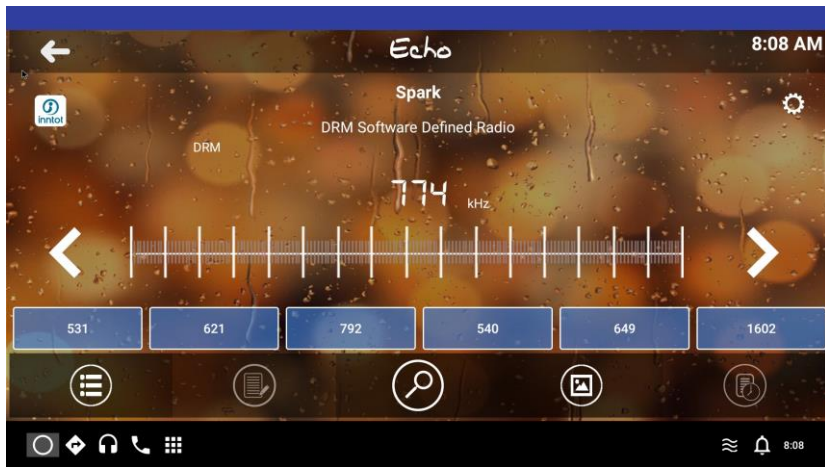
DRM in AM and FM bands
Supports All Data Services
Superior RF Performance
Superior Timing Performance
Meets All Minimum Receiver Requirements
Granted Patents providing Competitiveness
Field Tested in cities and rural areas

SDR based
Cost Effective

Multiple Productizations

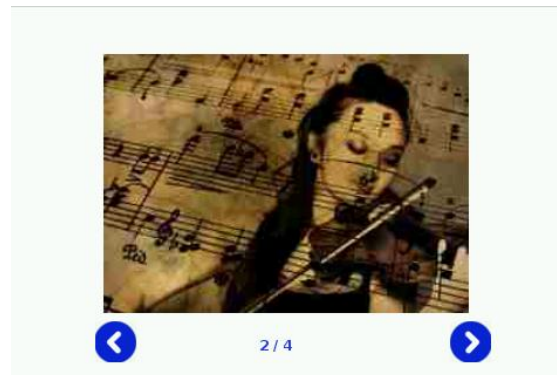
DRM SDR Receiver Solution for Automotive

- Licensed to Multiple Auto Customers
- Integrated with Multiple Auto grade Tuners
- Superior RF Performance
- Optimized for ARM
- Meets all MRR Requirements
- Ported to Multiple Operating Systems such as Linux, Android, Nucleus etc.



DRM Reference Radio Receiver Design for Consumer Market

- Supports DRM-AM DRM-FM
- Journaline, Slideshow, SPI
- AM, FM Reception
- MP3 Playback
- Telescopic and Internal AM Antenna
- External antenna support
- 3.5 inch TFT Color display - 320x240 Pixels





Video

INDIA

AVION

Communications Systems Inc. were present as usual at this year's BES Conference and Exhibition with an updated version of their **AVION** desktop receiver.



**Ready for mass market production
based on substantial orders**



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Video

avion



United Kingdom



DEVELOPING A CHEAP DRM RECEIVER SOLUTION

TIM WHITTAKER
SENIOR CONSULTANT

Report on Cambridge Consultants' low-power, low-cost receiver design



Hardware:

- CML Microcircuits tuner ASIC – in development
- ARM / Tensilica baseband
- <100mW power consumption (excl. audio stages)

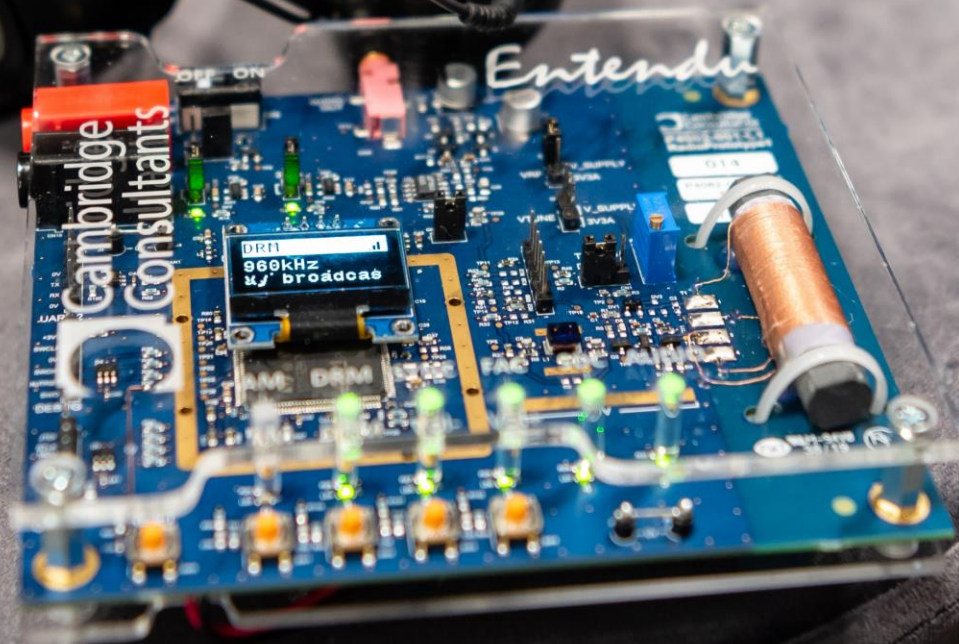
Software:

- Modem code complete and unit tested for Modes A-D
- Example user interface code built
- Operational with externally-received I,Q samples

Hardware demonstrated Dec. 2019



- Discrete component 'tuned RF' front-end
- ARM M7 processor – medium-wave band digitized directly
- Cambridge Consultants' modem and simple UI
- Demonstrated with local Dream transmitter



Next steps, during 3-4Q2020, are

- Build hardware with CML tuner ASIC
 - Build tuner drivers, ACG function etc.
 - Integrate code
- Complete all software functions
 - Emergency Warning function
 - Mode E (VHF) operation
 - 18/20kHz bandwidth option
- Port to final microcontroller platform
- Supply evaluation units to potential licensees



RF2DIGITAL

(주)알에프투디지털

South Korea

William Kim
Director

RF2Digital – South Korea / Germany

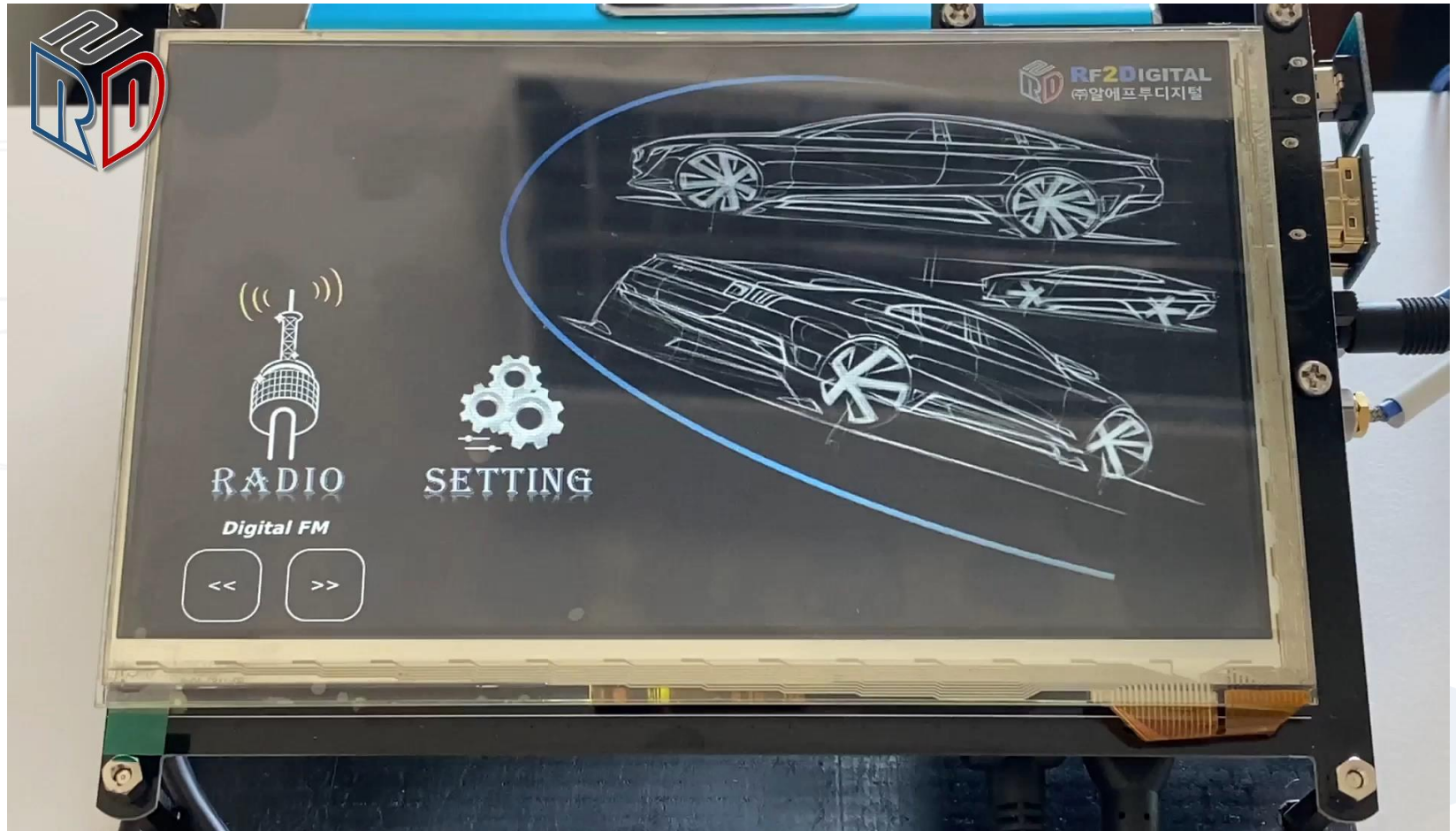
- Developed Software Defined Radio (SDR)
- Works in all broadcast bands – SW, MW and FM
- RF2Digital has produced a Demo Board with a touchable 7-inch display

The screenshots show the user interface of the RF2Digital SDR software. The top screenshot displays a radio station named 'Raagam' at 729 kHz, with a news article snippet from AIR News. The middle screenshot shows a 'Service List' menu with the following data:

Label	Freq.	Service ID
Raagam	729	0xF25001
VIVIDH BHARTI	783	0x000000
RAINBOW	783	0x000001

The bottom screenshot shows a radio station named 'AIR Rainbow FM' at 92.0 MHz, with a news article snippet about 25 envoys from EU and Gulf countries. The interface includes various control buttons such as 'Band Change', 'Preset On/Off', 'Service List', 'Vol+', 'Vol-', 'Freq Up', and 'Freq Dn'.

Video





DRM Advanced Radio for ALL

List of **Videos** from **DRM Virtual IBC Event**

Also available on DRM YouTube channel: [youtube.drm.radio](https://www.youtube.com/channel/UCv8RfT33oFms)



Mobile Phone Solutions



<https://www.youtube.com/watch?v=pwBY1h5CRYk>

<https://www.youtube.com/watch?v=58RfT33oFms>

<https://youtu.be/p3ovO2A7ibE>



<https://youtu.be/fj2KWlp51XY>

<https://www.youtube.com/watch?v=V711F2m1DhY>

<https://www.youtube.com/watch?v=mn-MHZFvzPw>

<https://youtu.be/9xlboT3gVW0>