



DAB Receivers for Home

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DAB

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Culture, Industrial Production

Importance of Receivers for building up DAB industry

- †To be owned by many: Affordability, Variety
- †To be used by many: User friendly
- †To be satisfied by many: High Quality
- †To be manufactured easily: Highly integrated key component, Modularized

Understand Receivers

- †Receiver types (kitchen, living, clock radios)
- †Receiver capabilities (basic, visual, hybrid)
- †Example products and pricing
- †Support for local characters, e.g. Thai

Receiver Types- Kitchen Radio

†The key feature

- ♥ Portable
- ♥ Good Speaker
- ♥ High Sensitivity
- ♥ Easy to operate: tuning, volume up/down, find your favorite service quickly

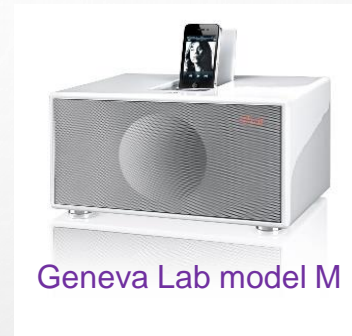
KITCHEN RADIO



Philips AE5020



Sangean DPR-16C



Geneva Lab model M



Philips BTB 2465



Geneva Lab model S



Geneva Lab World
Radio DAB+

KITCHEN RADIO (CON' T)



International Receiver Company (IRC) in Denmark



Dual in Switzerland



Digital Broadcasting Company (DBC) in HK



Wintal in Australia



Telefunken in Germany



TTMicro in Norway



Ennovia in Denmark

KITCHEN RADIO (CON' T)



Tevion (ALDI) in Germany



Soundmaster in Germany



Soundmaster MCB800D



GPO Retro



Thomson Australia

KITCHEN RADIO (CON' T)



AEG



ViewQuest in UK



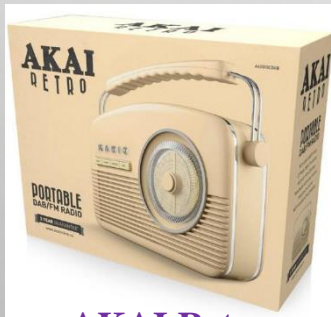
Albrecht DR881 in Germany



Dared in Europe



End customer: DBC in HK



AKAI Retro



TTMicro in Norway, IRC in Denmark, AGK in Denmark

Receiver Types- Living Radio

†The key feature

- ♥ Stylish, good as decorations in the living room
- ♥ Excellent Speakers
- ♥ High Fidelity
- ♥ High Sensitivity
- ♥ May have CD, Wi-Fi, Remote control

RECEIVER TYPES- LIVING RADIO



Pioneer CM31



Pioneer X-HM31DAB-K



Pioneer HM11



Pioneer X-HM51DAB-K



Pioneer HM21



Pioneer SMC00

RECEIVER TYPES- LIVING RADIO



Geneva Lab model S



SonoroCD



Sonoro HiFi Audio



Sonoro



Sonoro HiFi Audio

RECEIVER TYPES- LIVING RADIO



JVC UX-D750



JVC UX-D100



JVC UX-D150



NEON 1536D

Receiver Types- Clock Radio

†The key feature

- ♥ Compact, easy to carry
- ♥ Shows time prominently
- ♥ Alarm, with DAB or beeper
- ♥ Good Speakers
- ♥ Good Sensitivity

Receiver Types- Clock Radios



Geneva Lab model XS



Thomson Clock Radio

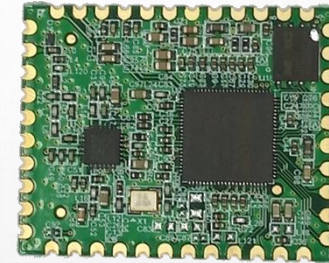


Roberts Clock Radio

Receiver capabilities- basic

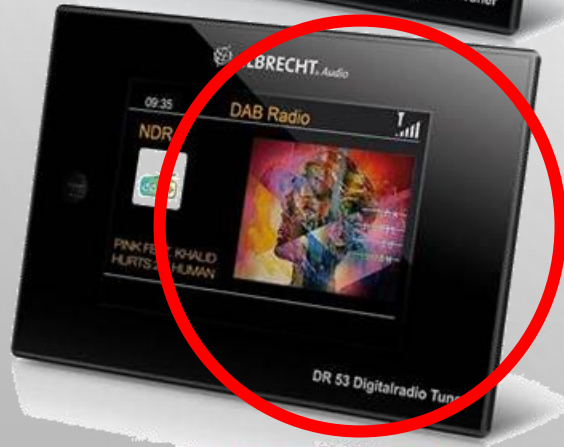
† Basic elements of a DAB receiver

- ♥ DAB RF tuner
- ♥ Baseband decoder: DAB/DAB+
- ♥ Audio decoders: MUSICAM or AAC
- ♥ Keypad or Knob
- ♥ Display: LCM
- ♥ Speaker
- ♥ Antenna



Receiver capabilities- visual

+Color Display



4" TFT - 480 x 320



2.4" TFT

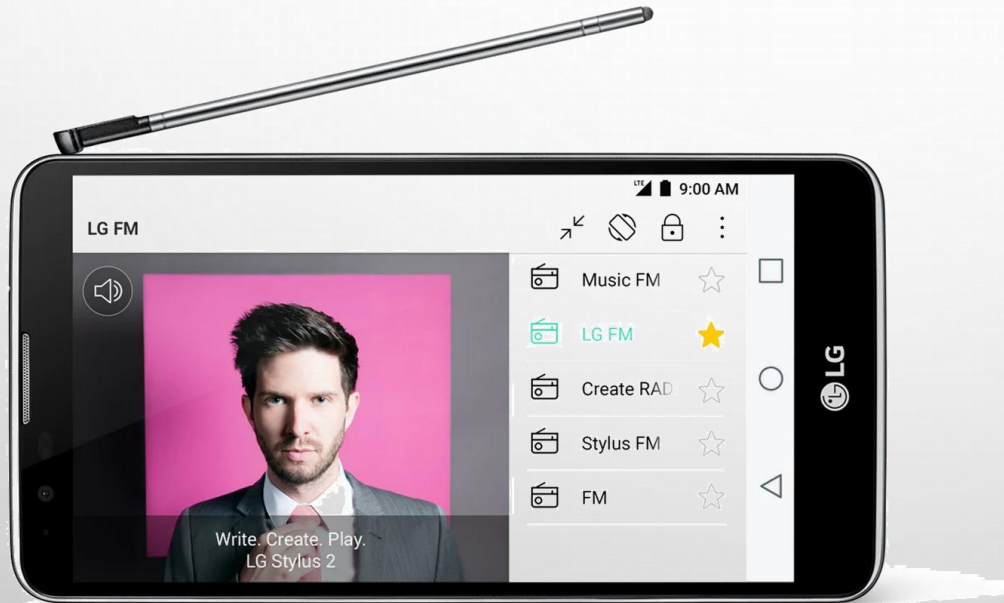
Receiver capabilities- hybrid

†Hybrid Radio:

- ♥ Combine DAB+ 、FM 、Internet Radio in the same unit
- ♥ If the reception of one of them is not available, it will automatically switch to the same service in other media
- ♥ Usually implemented on IR DAB (Internet Radio & DAB)

Receiver capabilities- hybrid

†Smartphone built-in



*The DAB+ network is currently available in 5 metropolitan capital cities (Sydney, Melbourne, Brisbane, Adelaide and Perth). Headphones (included) required to enable DAB+ feature.

LG Stylus 2

Receiver capabilities- hybrid

†Smartphone connected



Advantage of using Smartphone

†Larger Screen to show slide show and SPI



Advantage of using Smartphone

†Larger Screen to show RadioDNS

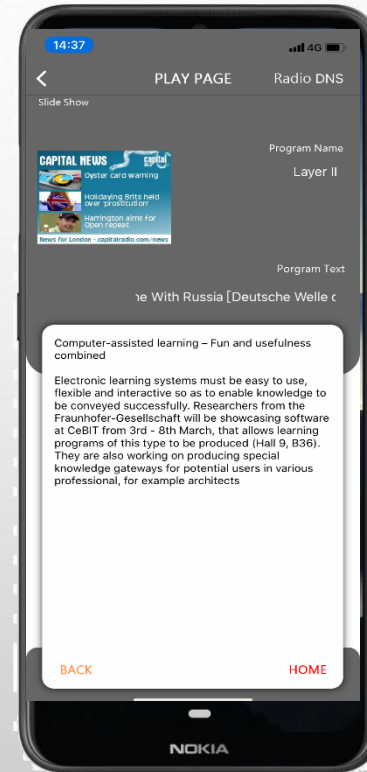
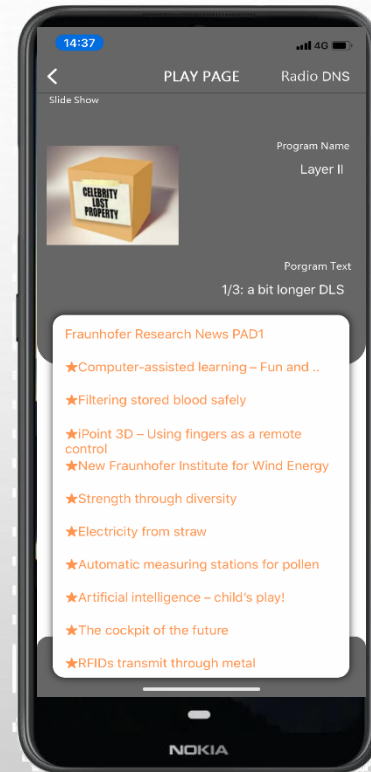
♥ RadioDNS: The core technology standard (ETSI TS 103 270) relies on the **Domain Name System** (DNS) to allow a connected radio receiver to look up IP resources based on their broadcast parameters, such as the **station identifier** received within the broadcast signal.



Advantage of using Smartphone

†Larger Screen to show
Journaline

♥ Fraunhofer, Germany



Local Characters

†DAB by Thailand Maker IFZ



Price Ranges

†Low:



47 USD

†Medium



158 USD

†High



278 USD

†Very High :



2,899 USD

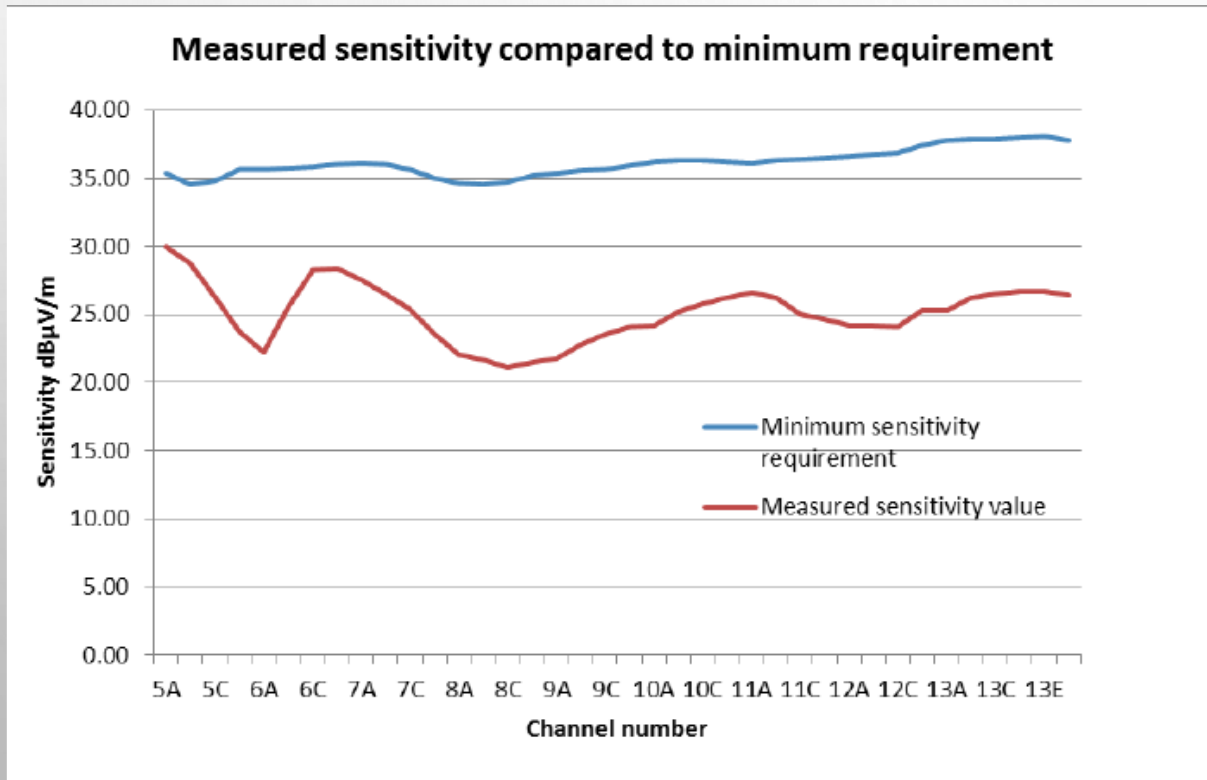
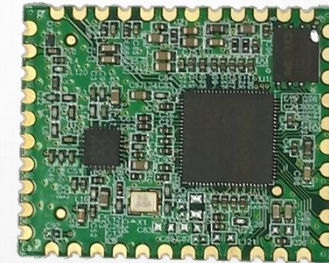
How to make good receivers?

† Once difficult but now simple

- ♥ Choose a highly integrated module
- ♥ Start with good reference designs
- ♥ Cooperate with a reliable partner
 - ◆ Training your engineers
 - ◆ Review circuit design and layout
 - ◆ Help you test it to assure quality

One thing in common for the models

†KeyStone inside



Graph of measured minimum sensitivity against tick mark requirements

Tick Mark
Report by
DTG, report
DAB-8315



Test is important



✦ Affordable Signal generator is important

✦ Recommendation: SABRE

✦ Stand alone mode

✦ Connection mode

✦ Network mode

✦ Auto-test mode

SABRE
KeyStone Semiconductor Corp.

Version Number: SABRE_000.100

Information: About Help

RF Out: DAB FM

Change Mode: DATES

Buffer Status: 99%

File Size: 156.240MB
Packet(File): 26665.000

File Open/Select: USB File SABRE File

Standalone Playlist: 01 Save Restore List

File List:

- 20110304_080413.eti
- 2012-06-18_Deutschland.eti
- CharacterSetTest-FraunhoferIS-2013-11-25.eti
- CRA001-081204-ETI-NI-32CH-DAB+DLS-SLS-STREAM.eti
- CRA012-100712-DAB+SYD-MUX1-ETI-STREAM.eti
- DAB-R01-2010-12-14.eti
- DIST10001_a.eti
- DRAP-TEG-TESTSTREAM-001_V0.4.eti
- DRAP-TEG-TESTSTREAM-002_V0.4.eti
- KeyStoneSingleToneTest.eti
- RSETI_1142011_13374.eti

File Analysis Information:

Program Name	Ensemble Name	Bit Rate(kbps)	Codec	Channels
90elf Fu2ball	DR Deutschland	64	AAC	Stereo
90elf Livespiel 1	DR Deutschland	64	AAC	Stereo
90elf Livespiel 2	DR Deutschland	64	AAC	Stereo
90elf Livespiel 3	DR Deutschland	64	AAC	Stereo
90elf Livespiel 4	DR Deutschland	64	AAC	Stereo
90elf Livespiel 5	DR Deutschland	64	AAC	Stereo
Absolut Radio	DR Deutschland	72	AAC	Stereo
RADIO BOB!	DR Deutschland	64	AAC	Stereo
DRadio DokDeb	DR Deutschland	40	AAC	Stereo

Frequency: 239200000 Hz
5A_174.928MHz

RF Power: OFF ON
-5 -0.5 0.5 5
-20.0 dBm

Player: 100%

Current/Total: 10:38 / 10:39
Play Stop Loop-play

Status: 您目前選擇2012-06-18_Deutschland.eti

Building local DAB Manufacturing Industry

†Local Supply Chain

†Produce cost effective solution

†Provide timely after service

†KeyStone is affiliate of Prime Group

- Partners with Salom(ISO14000)



Keystone



KeyStone
semiconductor

Your reliable partner in DAB solutions
Ask more with contact@keystonesemi.com
See more at www.keystonesemi.com

In God we trust

謝謝！

Thank you very much!
Dank Schön!

Win together!

