

ÖSTERREICHISCHER VERSUCHSSENDERVERBAND www.oevsv.at

DIGITAL VOICE Workshop

D-STAR, C4FM, DMR & Co.





Youngsters On The Air



brief introduction DV MODES







modulations





modulations





Better Signal Quality

- No hiss, popping or static
- Better RF range because of SNR
- Forward Error Correction (FEC)
- Cyclic Redundancy Check (CRC) coders
- Better Audio Quality
 - Extremly reduced background noise on MIC
 - □ Audio reduced to voice band → poor music transmission









- GMSK
 - □ Narrowbanding 6.25 kHz
 - 3600 bps voice & 1200 bps data
 - Constant signal level
 - Posible class-C amplifier











System Fusion C4FM



V VIV		$/ \cup \cup$
FSK scheme:		
f	00	
2f	01	
3f	10	
4+	[]	
Dibit	Symbol	Frequency Deviation
01	+1	+900hz
01	+3	+2700hz
10	-1	-900hz

-3

00

01



-2700hz









DVSI AMBE+™ Vocoder

- I/O 16-bit linear @ 8 kHz samples, aLaw, uLaw
- Compession: 320 bytes of linear samples \rightarrow 9 byte including error correction
- Generation of forward error correction (FEC)
- DTMF encode/decode
- Voice activity detection





DV4mini

- RX/TX USB dongle including D-STAR. C4FM, DMR, APOCO P2, dPMR
- max. 12 mW power
- Running on Windows & Linux
 - Free Control-Center-Software
 - Open Interface-Documentation







DV4mini installation

- Power RaspBerry Pi (RASPI)
- Insert DV4mini Dongle to USB port
- Open PUTTY on PC/Laptop
 - □ Open SSH a connection to RASPI IP (e.g. 44.143.189.10)
 - login as: pi
 - password raspberry
 - pi@(....) mkdir dv4mini
 - cd dv4mini
 - wget

http://yota.ampr.at/wp-content/uploads/filebase/dv4/dv_serial

- chmod 755 dv_serial
- ./dv_serial





DV4mini Control Panel

- Download Control-Panel installation file from
- <u>http://yota.ampr.at</u> menu download DV4control Center 2016 08 07 Setup
- Follow installation instructions
- To run DV4mini we need a User ID
- You will get one from <u>http://register.ham-digital.net</u> (copy of your licence is needed)
- Workshop ID: 2328023 assigned to OE8KBC for testing
- Start DV4mini Control Panel
 - □ Set ID, Location (City), QTH Locator
 - Set "network mode" and "fixed IP" to your RASPI IP







DV4mini Workshop

D-STAR

DCS Server Dashboard <u>http://xreflector.net</u>

Connect to DCS Server and appropriate room

- System Fusion C4FM
 - FCS Server Dashboard <u>http://xreflector.net</u>
 - Connect to FCS Server and appropriate room





DMR

DMR Dashboard <u>http://ham-dmr.at:8877/</u>

Expert Settings

- Choose nearest DMR-Master server
- Check frequency correction
- Connect to YOTA-Camp-Repeater on room 4192
- Find rooms in other countries

We do some other tests ….







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have fun with DV!





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