

Tokyo Top Band Meeting 2017

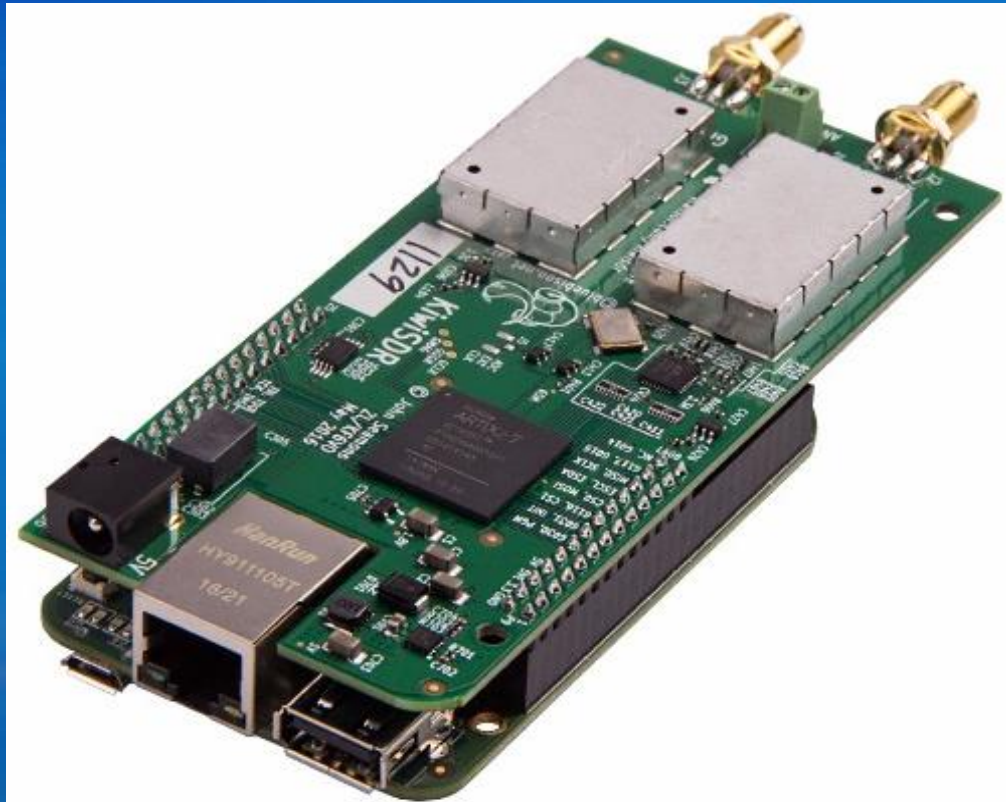
Introduce MB1, SunSDR2

S.Kinoshita (JA8CCL)

EDC

SEEED SDR Receiver KiwiSDR

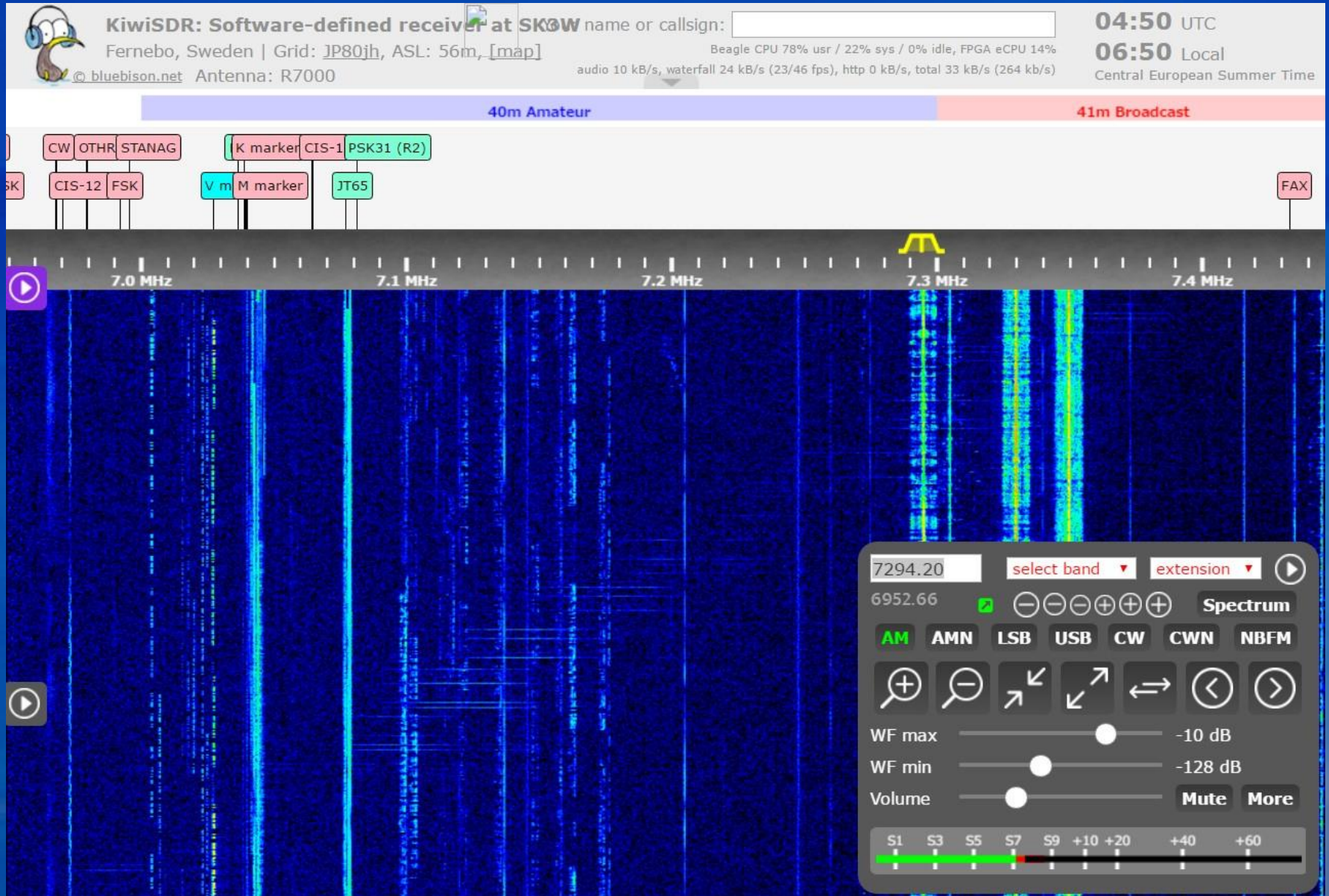
- Frequency range 10KHz-30MHz
- Open source project
- LAN Interface RX use Web browser



KiwiSDR specification

- Frequency 10KHz-30MHz VLF-LF-MF-HF
- Mode
AM,FMN,LSB,USB,CW,CWN,NBFM,FAX,JT65
- ANT Connector SMA
- Access From Web
- GPS receiver Built in, frequency synchronize
- GPS input SMA with 3.3V power for GPS
- Power supply +5V 2.1mm DC Jack
- Current 1.5A
- Dimension 117 × 55mm
- Number of RX Independent 4 RX

Web screen Access SDR.HU



EXPERT ELECTRONICS MB1

- Windows10 Hi performance SDR Radio



MB1Rear panel



4 PTT OUTPUT



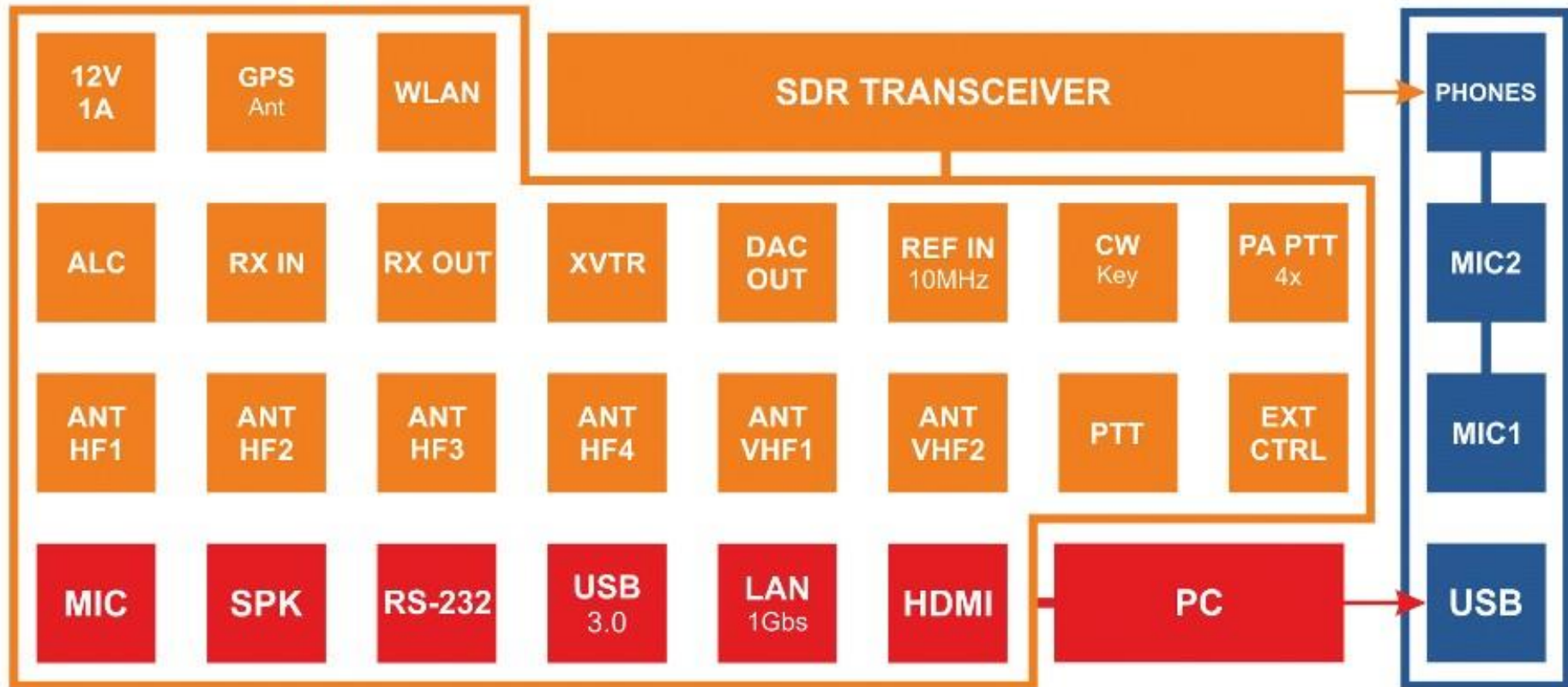
MB1の特徴

- 世界最高レベルの受信性能 2KHz BDR 129dB
- 7インチ高画質LCDによる高速、高分解能スペクトラム表示
- タッチパネルと豊富なボタン、マウスも使える快適な操作性
- 高性能Windows10搭載で、外付けPCで対応していた作業を全て1台のリグに統合
- HDMIなど外部ディスプレイを最大2台接続してマルチ画面で操作
- MB1、1台でコンテストでSO2R部門に参戦可能
SO2Rは シングルオペレータ 2レディオ
- CW Skimmerに直接広帯域I/Q信号を送れる
- RTTY,PSK31,JT65などのデジタルモードを統合環境で動作
- LAN経由でDXクラスタ、リバースビーコン、CW Skimmerサーバなどの情報収集も統合環境で実現
- I/Q信号を録音、再生可能

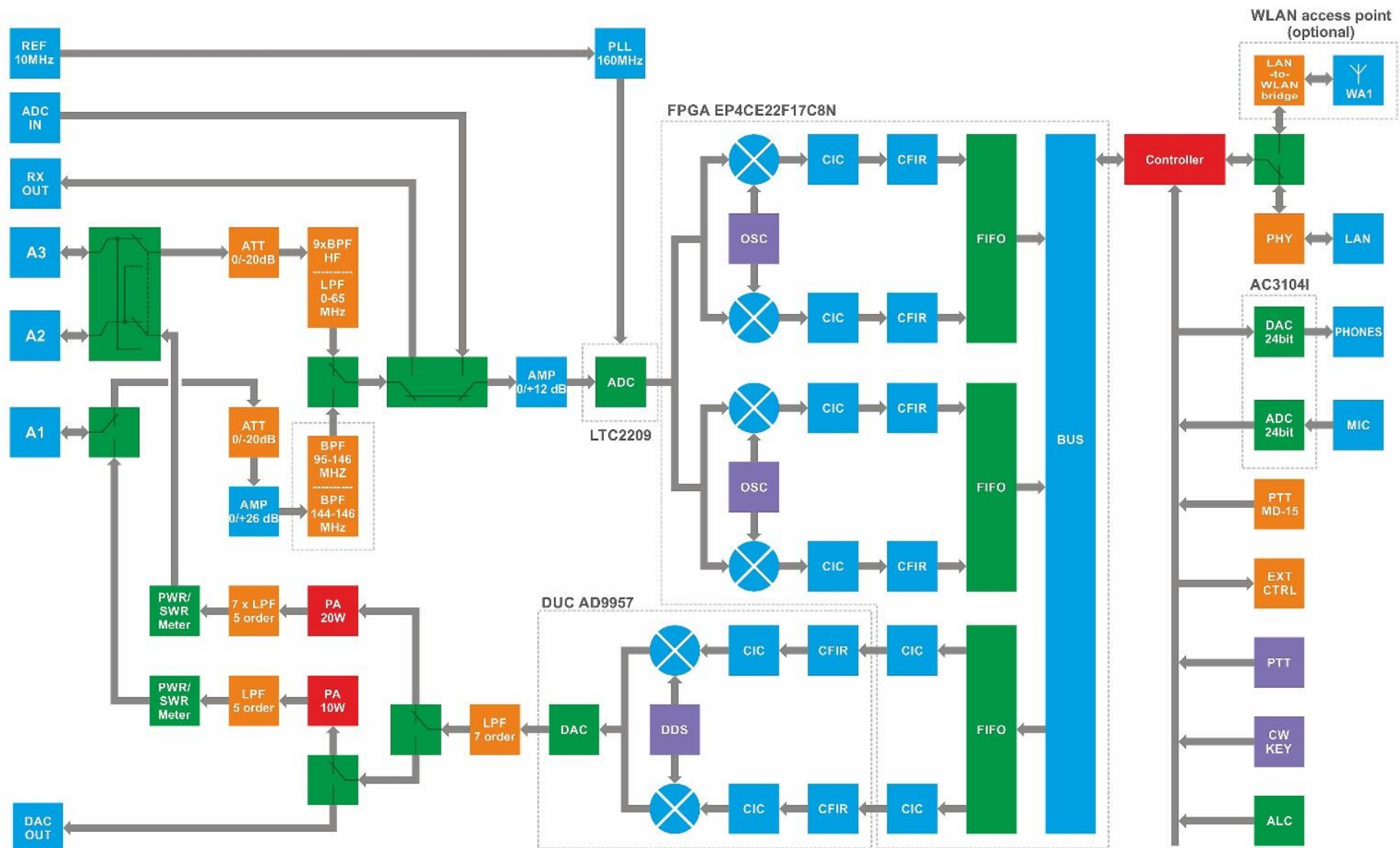
MB1 Block

Rear

Front



SunSDR PRO 2 Block



MB1specification

RX parameters	MB1
Frequency range, MHz	0.1...65; 95...148
Independent software receivers	2 (+2 SubRX)
	LPF: WideRX filter 0-65 MHz (Chebyshev I - 7 Order) 9 x HF BPF: 160M: 0-2.5 MHz (Chebyshev I - 7 Order) 80M: 2.5-4 MHz (Chebyshev I - 3 Order) 60M: 4-6 MHz (Chebyshev I - 3 Order) 40M: 6-7.3 MHz (Chebyshev I - 3 Order) 30M: 7.3-12 MHz (Chebyshev I - 3 Order) 20M: 12-14.5 MHz (Chebyshev I - 3 Order) 17-15M: 14.5-21.5 MHz (Chebyshev I - 3 Order) 12-10M: 21.5-30 MHz (Chebyshev I - 3 Order) 6M: 30-65 MHz (Chebyshev I - 3 Order) Narrow BPF for VHF 2M: 144-148 MHz (SAW Filter) VHF wideRX BPF: 95-155 MHz (Butterworth - 5 Order)
RX Filters	

MB1specification

Blocking Dynamic Range on HF, dB	129...130
Blocking Dynamic Range on VHF, dB	>114
Sensitivity, uV	0.07
RX IMD3, dB	98
MDS level, dBm	-124
Reciprocal mixing phase noise data	Phase noise @ 2.5 kHz offset -127 dBc/Hz Phase noise @ 5.0 kHz offset -142 dBc/Hz Phase noise @ 10 kHz offset -144 dBc/Hz Phase noise @ 20 kHz offset -146 dBc/Hz Radio overloads at -1 dBm
Image channel rejection, dB	>110
Bandscope, MHz	80

MB1specification

TX parameters	MB1
Frequency range, MHz	All amateur bands (160-6; 2 M)
Output power on HF, W	100
Output power on VHF, W	50
TX IMD3, dB	25-30 dB on HF/VHF bands
TX filters	LPF on DAC output: 202 MHz (Eleptic - 7 order) 7 x LPF: 160M: (Eleptic - 5 order) 80M: (Eleptic - 5 order) 60-40M: (Eleptic - 5 order) 30-20M: (Eleptic - 5 order) 17-15M: (Eleptic - 5 order) 12-10M: (Eleptic - 5 order) 6M: (Eleptic - 5 order)

MB1specification

Hardware specs	MB1
RF ADC	16-bit @ 160 MHz
ADC type	LTC2209
RF DAC	14-bit @ 640 MHz
Local oscillator (TCXO)	20 MHz +/- 0.5 ppm M572T33-20.000-0.5/-20+70
ATT/Preamp	-20 dB; -10 dB; 0 dB; +10 dB
Additional VHF preamplifier, dB	+22
Built-in audio DAC resolution, bit	24
ALC input voltage range, V	0...-4
VCXO	CVHD-037X-80.000
CLK GEN (PLL)	AD9523BCPZ
Micro Controller Unit	LPC1778FET180

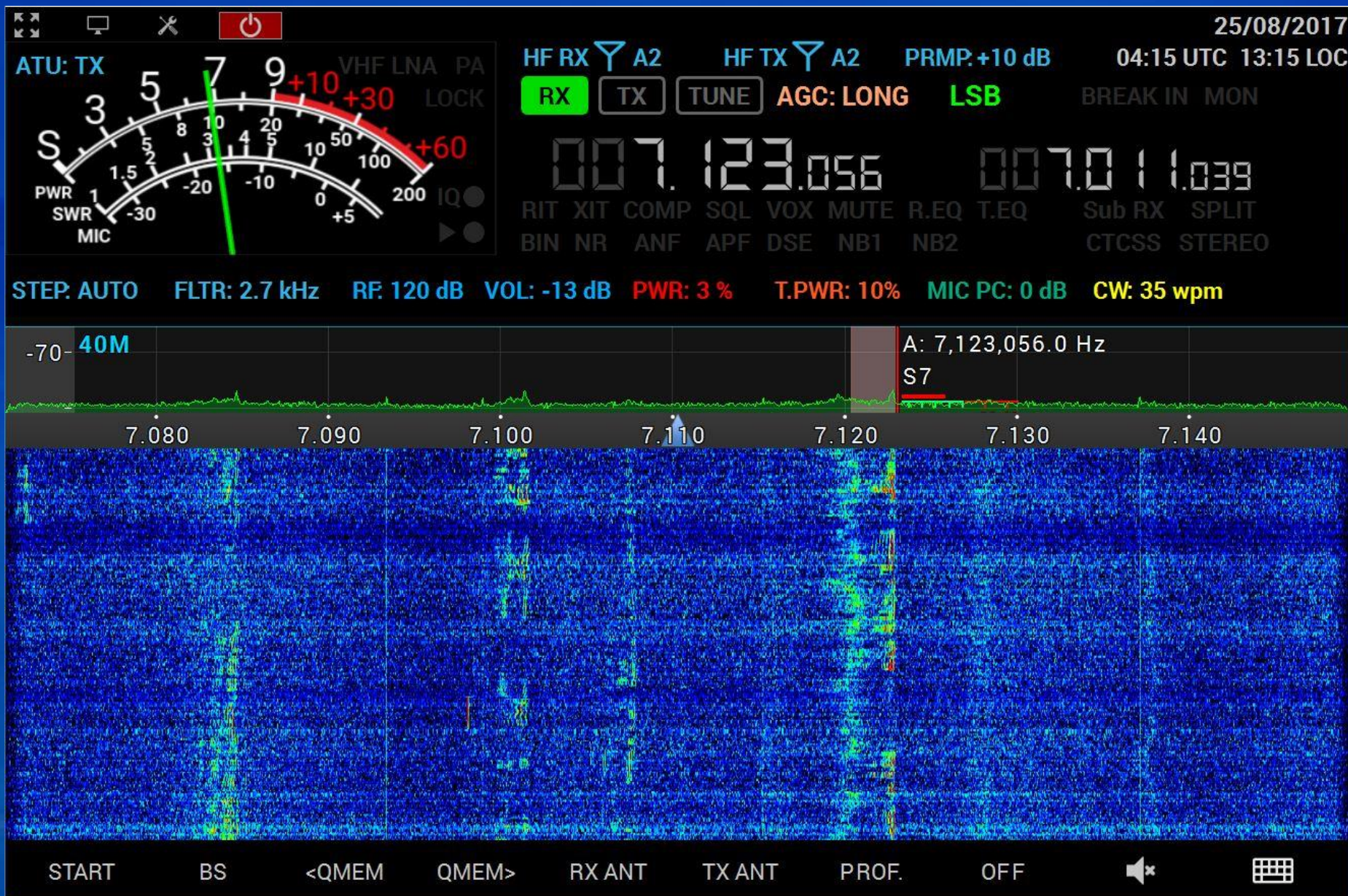
MB1specification

Other	MB1
	Headphones; Dynamic Mic; Electret Mic; USB 3.0: 4 ports on the rear panel; USB 2.0: 2 ports on the front panel; HDMI and DPORT for external monitors; LAN connector 1Gb; COM-port; EXT CRL: 8 keys with open collector; PA PTT: 4 separate programmable outputs; ALC; RX IN and RX OUT; XVTR; DAC OUT; REF IN; PTT / KEY
Interfaces	
Reference input 10 MHz	+
RF inputs	4 HF antenna connectors and 2 VHF

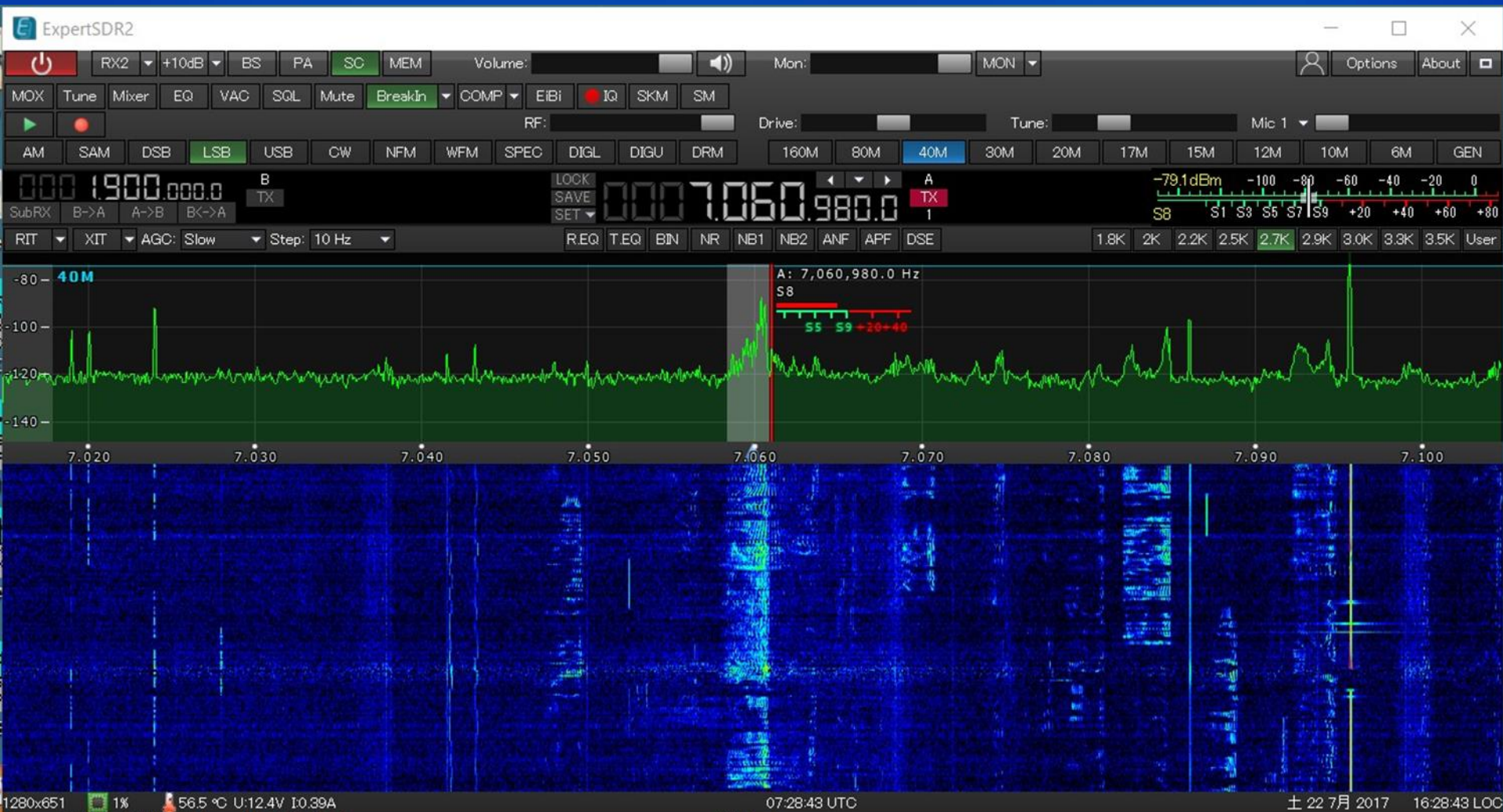
MB1specification

Input impedance, Ohm	50
Supported software	ExpertSDR2 + ExpertRemote system and WEB-client
AC voltage range, V, Hz	~100...240; 50...60
Maximum consumption power, W	320
Optional built-in ATU	+
Built-in display	IPS 7" touchscreen display with 1280x800 resolution
Built-in PC specs	CPU: Intel® Core™ i5-6400T Processor (6M Cache, up to 2.80 GHz) Intel® HD Graphics 530; Motherboard: Intel® H110 Express Chipset; RAM: 8 GB; SSD: 120 GB
Operating temperature, °C (°F)	0...+50 (+32...+122)
Dimensions L x W x H, cm (inches)	32.5 x 28.5 x 15.0 (12.6 x 9.84 x 5.51)
Weight, kg (lbs)	9.3 (22 lbs)

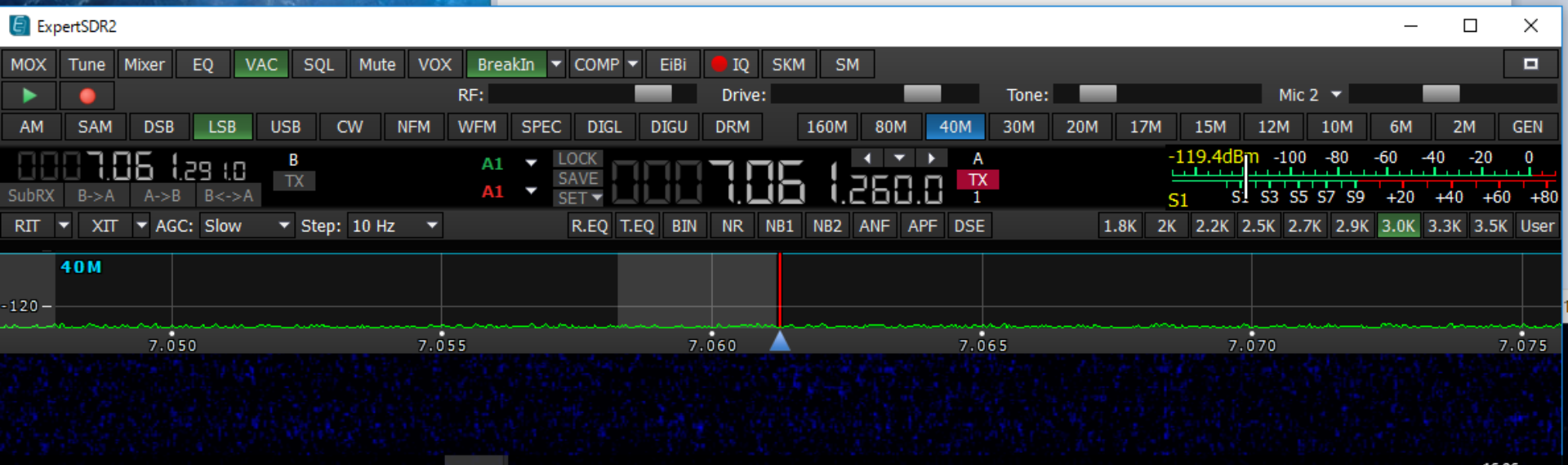
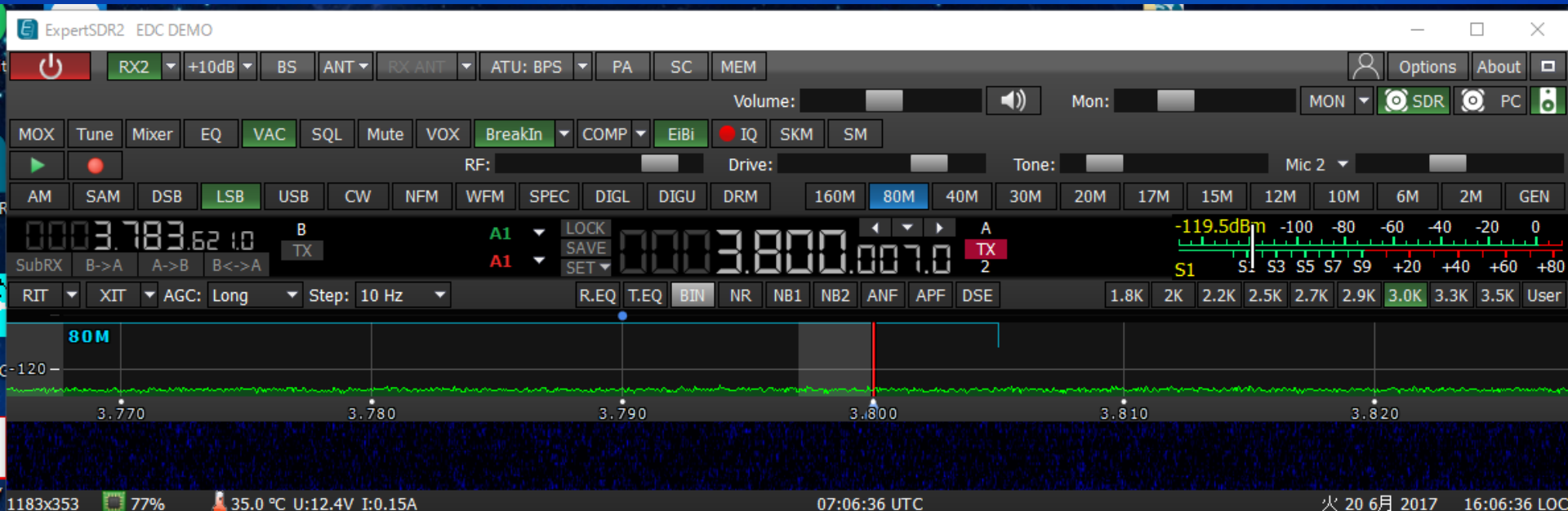
MB1 Screen



SunSDR screen



MB1 RX1 and RX2



MB1 Ananntenna setting

FRONT END SETTINGS



RX WF

39 kHz

RX ONLY A1

RX HF A1

TX HF A1

RX VHF A1

TX VHF A1

WF AUTO

78 kHz

RX ONLY A2

RX HF A2

TX HF A2

RX VHF A2

TX VHF A2

VHF LNA

156 kHz

RX ONLY A3

RX HF A3

TX HF A3

RX IN

DAC OUT

USE EXT REF

312 kHz

RX ONLY A4

RX HF A4

TX HF A4

RX IN

DAC OUT

START

BS

<QMEM

QMEM>

RX ANT

TX ANT

PROF.

OFF



MB1 Mic Setting

MIC/CW SETTINGS



MIC1

GAIN:  12 dB

BREAK IN

BREAK IN:  100 ms

MIC2

GAIN:  6 dB

IAMBIC

PITCH:  1000 Hz

MIC PC

GAIN:  0 dB

REV PADDLE

WIDTH:  35%

MIC AGC

RAMP:  5 ms

START

BS

<QMEM

QMEM>

RX ANT

TX ANT

PROF.

OFF



MB1 VOX Compressor seting

VOX/COMPRESSOR SETTINGS ✕

MIC1 THRESHOLD:

-30 dB

MIC2 THRESHOLD:

-40 dB

MIC P C THRESHOLD:

-55 dB

TIMEOUT TO RX:

100 ms

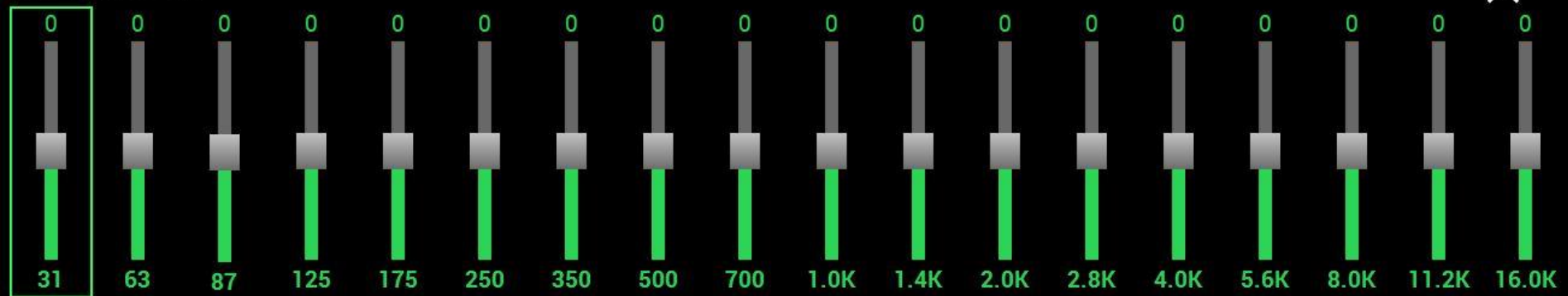
COMPRESSION:

3.0

STARTBS<QMEMQMEM>RX ANT TX ANT PROF.OFF

RX Equalizer setting

RX EQUALIZER



BM1 Function SW setting



MB1 CW Skimmer setting

Options

Device Sound card Display CAT Panel Features Manager CW Skimmer Shortcuts

RX 1 RX 2

Connect Address: localhost Callsign: Port: 7300 Password:

RX IQ Output

☒ Enable

Driver: Windows WDM-KS

Output: Line Out (Virtual Cable 5)

Channels: 2 Sample rate: 96000

Buffer size: 2048 Latency: 0

☒ Sync frequency

☒ Tune frequency from CW Skimmer

Telnet Log

Global Default Apply OK

MB1 CAT setting

Protocol: ECATv1

RX 1 RX 2

☒ Enable CAT ☒ Enable PTT ☐ View log

Port name: COM5 Port name: COM9

Parity: None DTR ☒

Data: 8 RTS ☒

Stop bit: 1 ☐ Enable Footswitch

Baud rate: 19200 Port name: COM1

PTT line: None DTR ☐

Key line: None RTS ☐

☒ Enable SubRX control (FR command)

☐ Antenna switch control

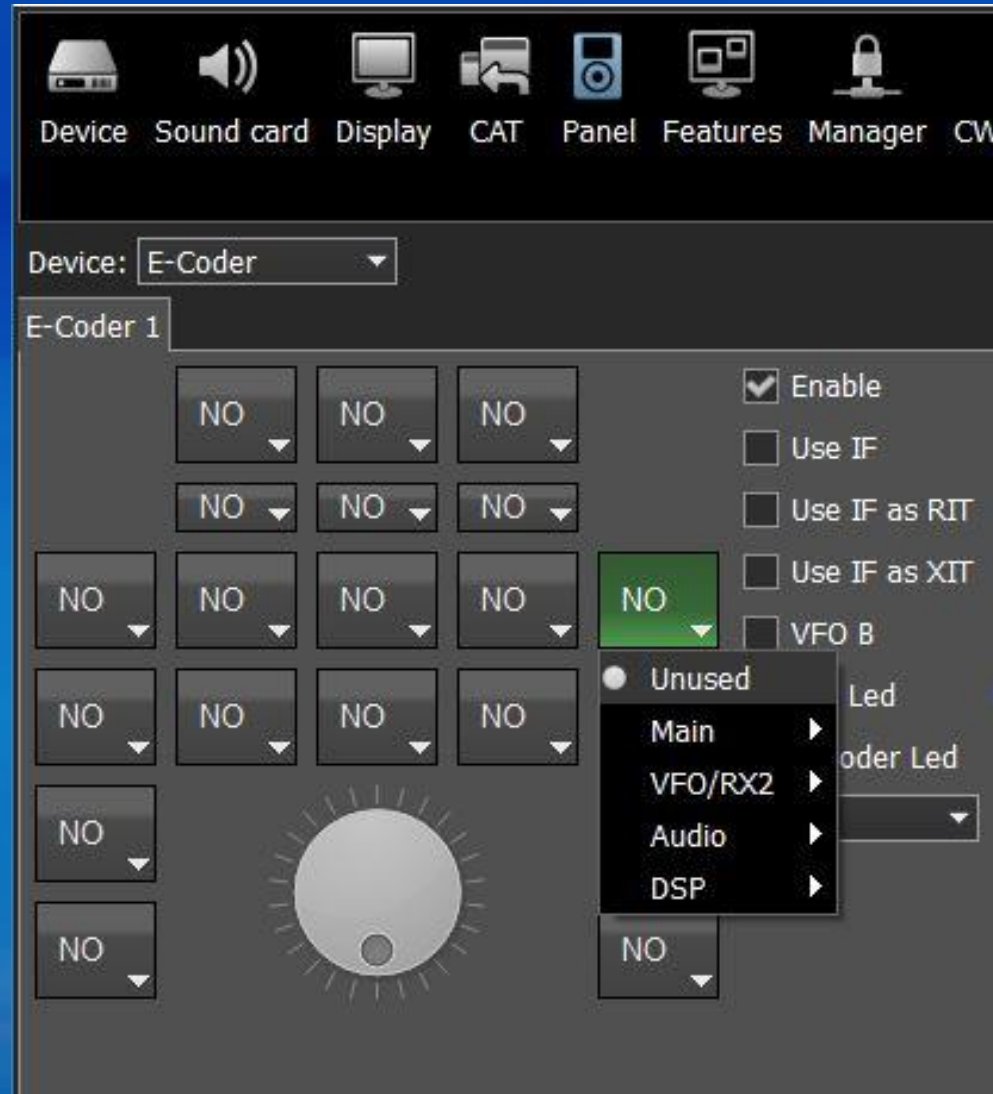
☐ Global volume control

Global Default Apply OK

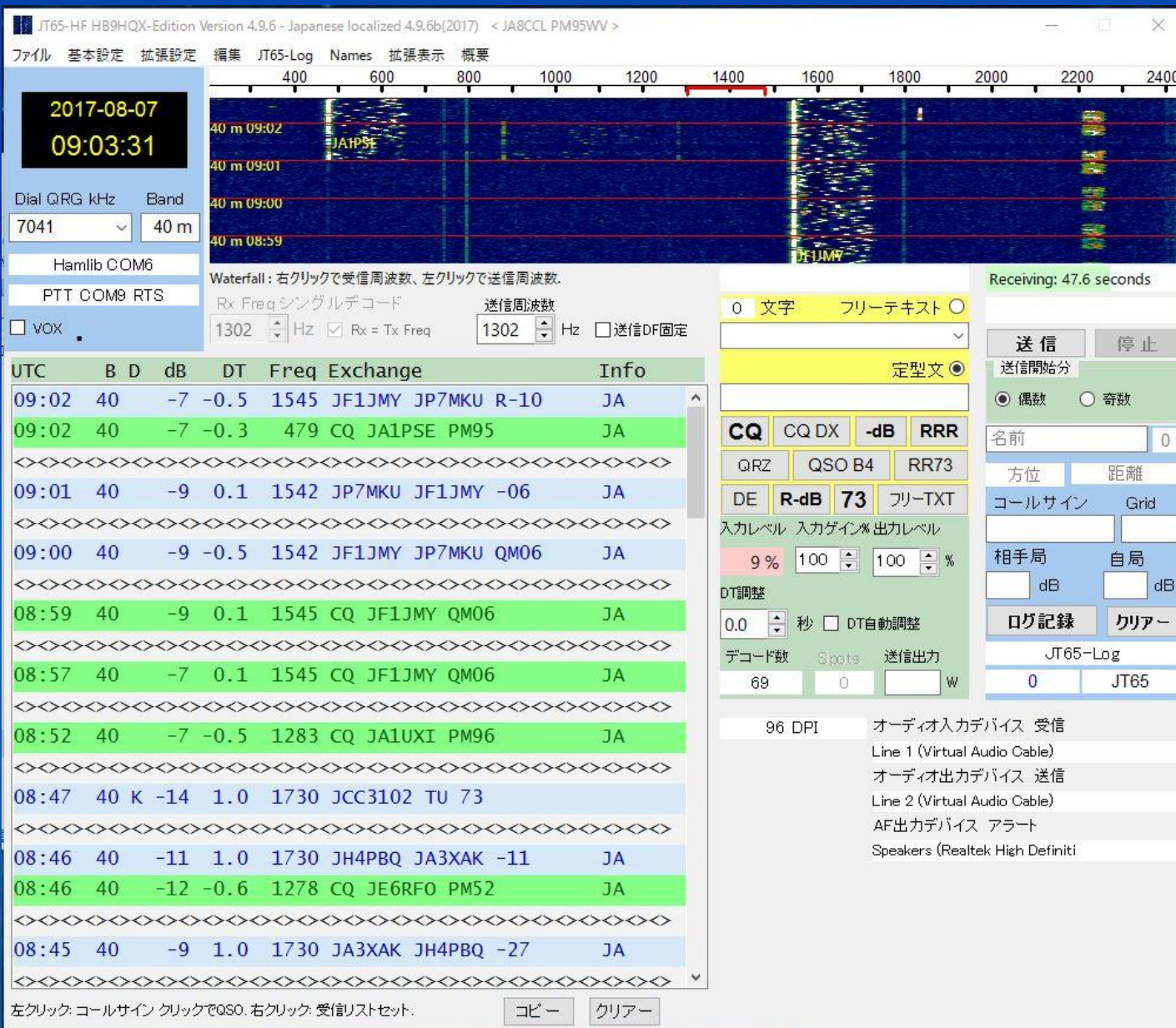
MB1 E-Coder



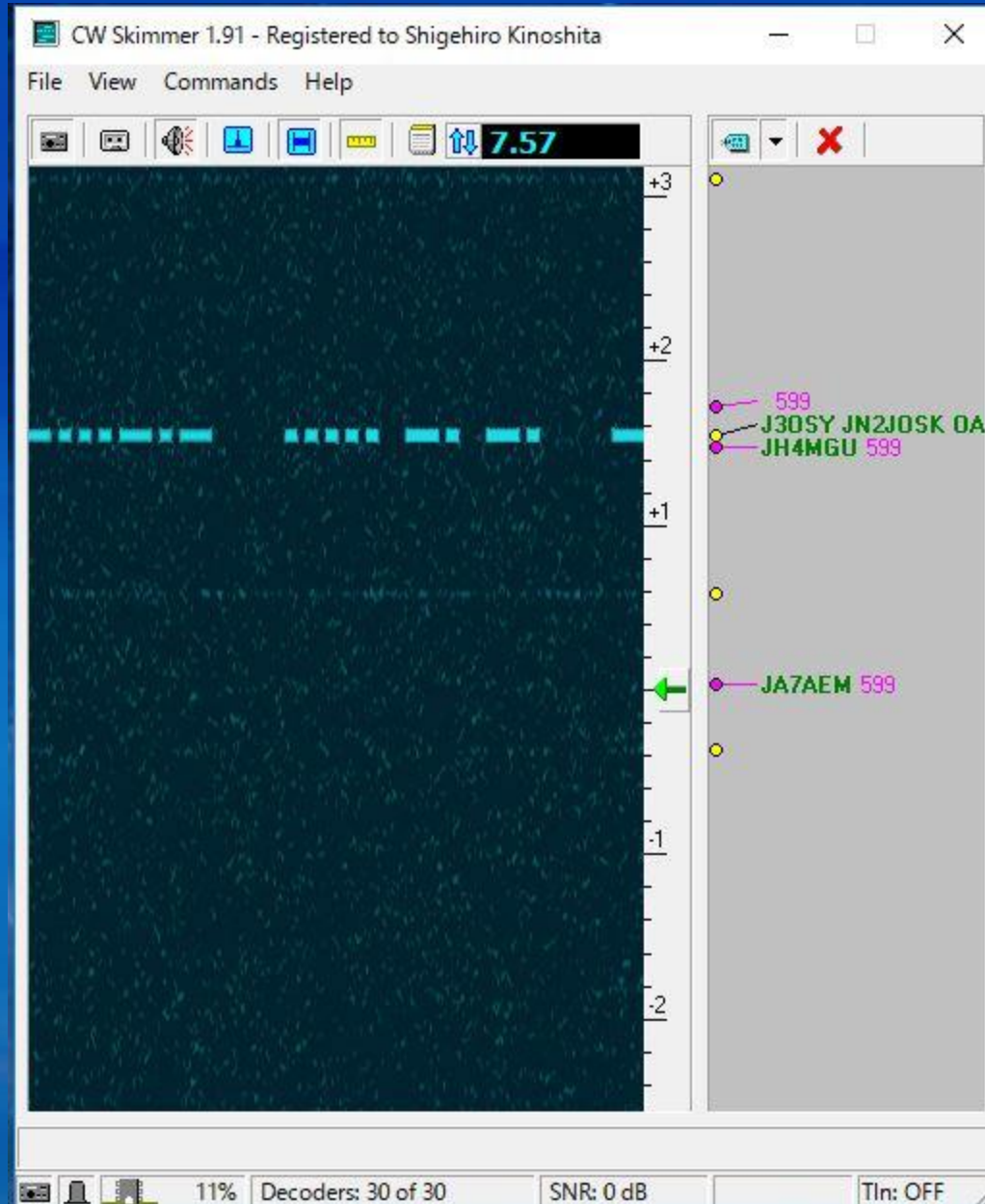
MB1 E-Coder setting



JT65 Screen



CW Skimmer screen



EXPERT ELECTRONICS SunSDR2 PRO

- DUC/DDC SDR Radio



SunSDR2 PRO

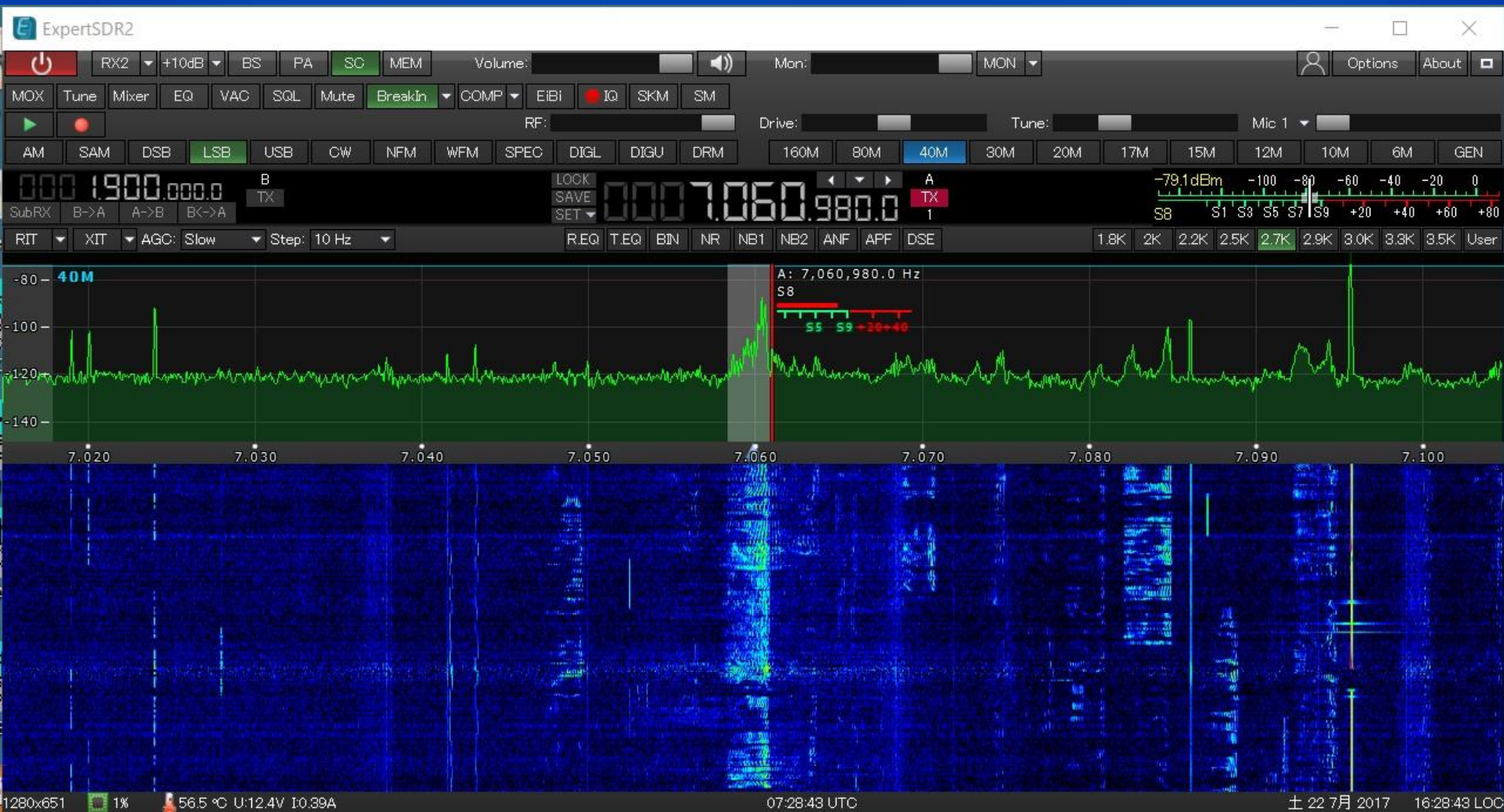
- Rear panel



SunSDR PRO PC requirement

- CPU Intel Core i3 1.6 GHz
- Video 1024x600, 128 MB, OpenGL 1.5
- LAN 100 Mbps or 1 Gbps
- OS Windows XP/7/8 x32 or x64, OS Linux Ubuntu x64

Screen



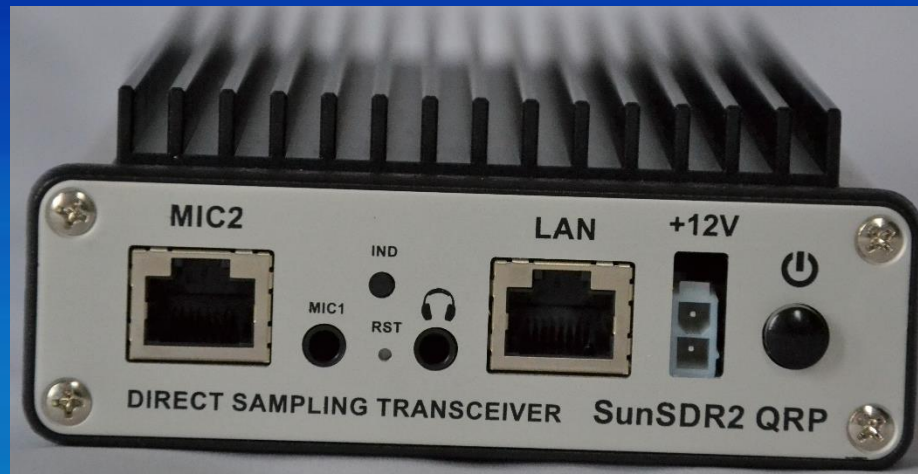
1280x651 1% 56.5 °C U:12.4V I:0.39A

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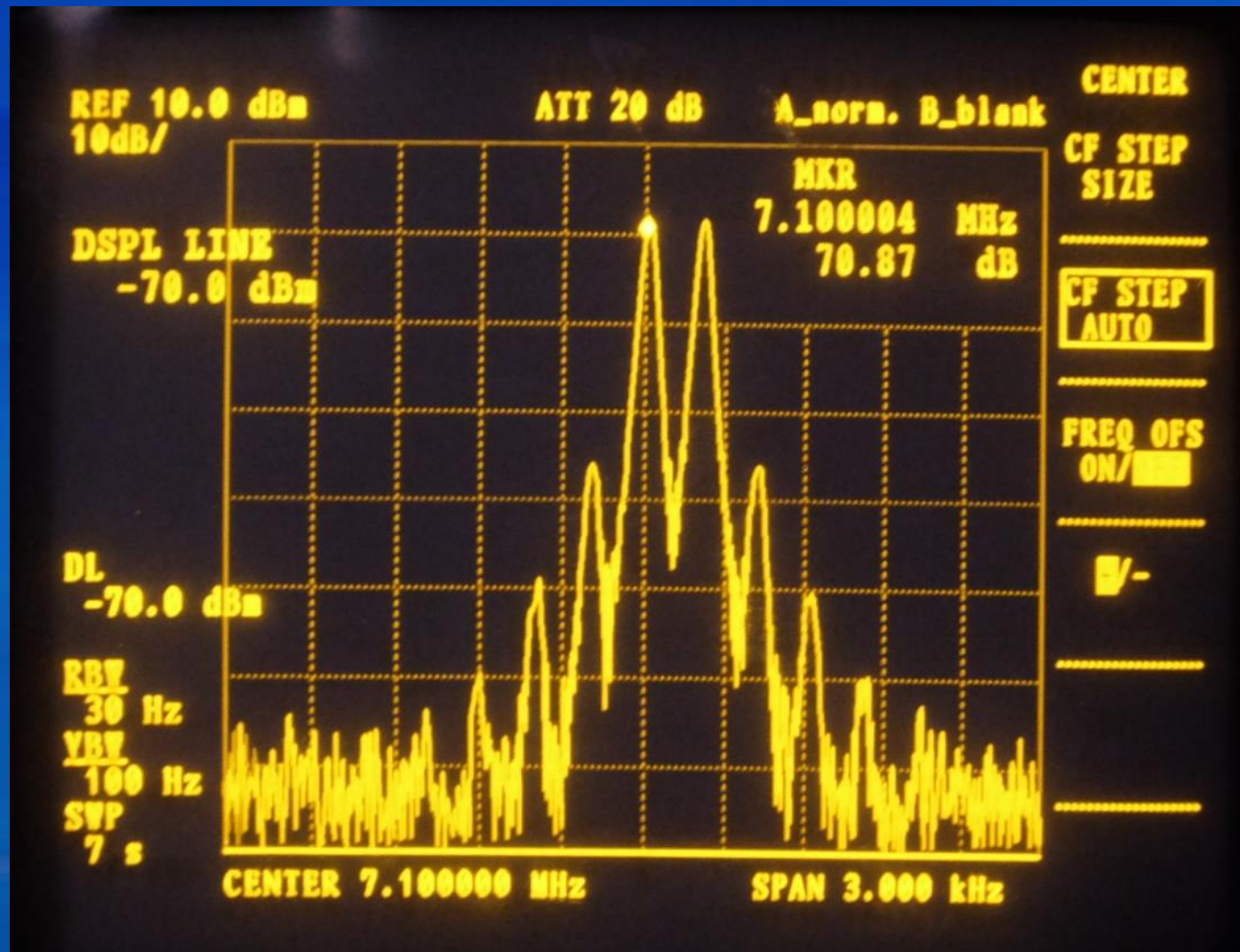
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Sun SDR QRP

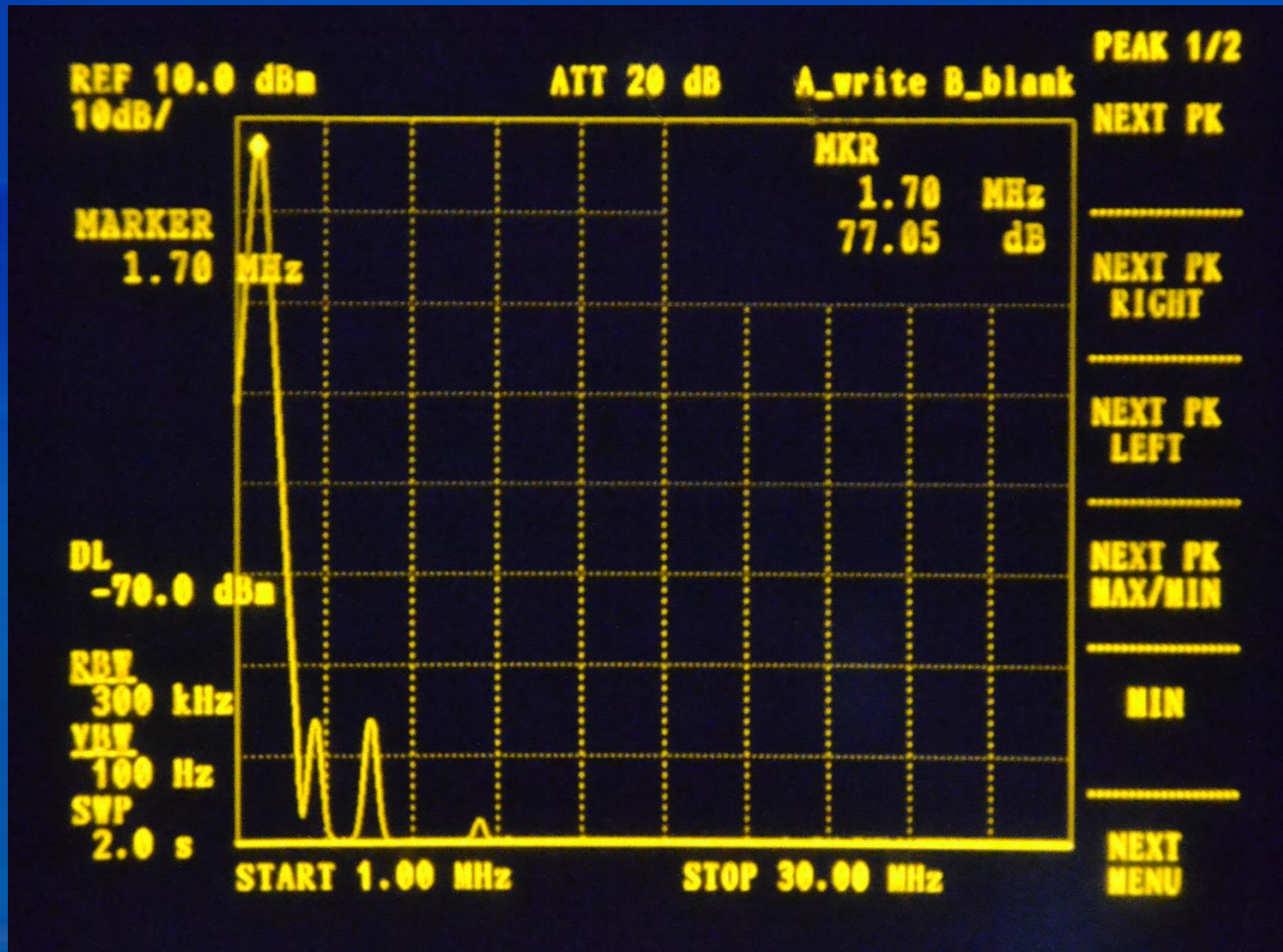
- 5W QRP SDR Radio
- 1.8MHz~50MHz Output 5W



Sun SDR2 QRP IMD

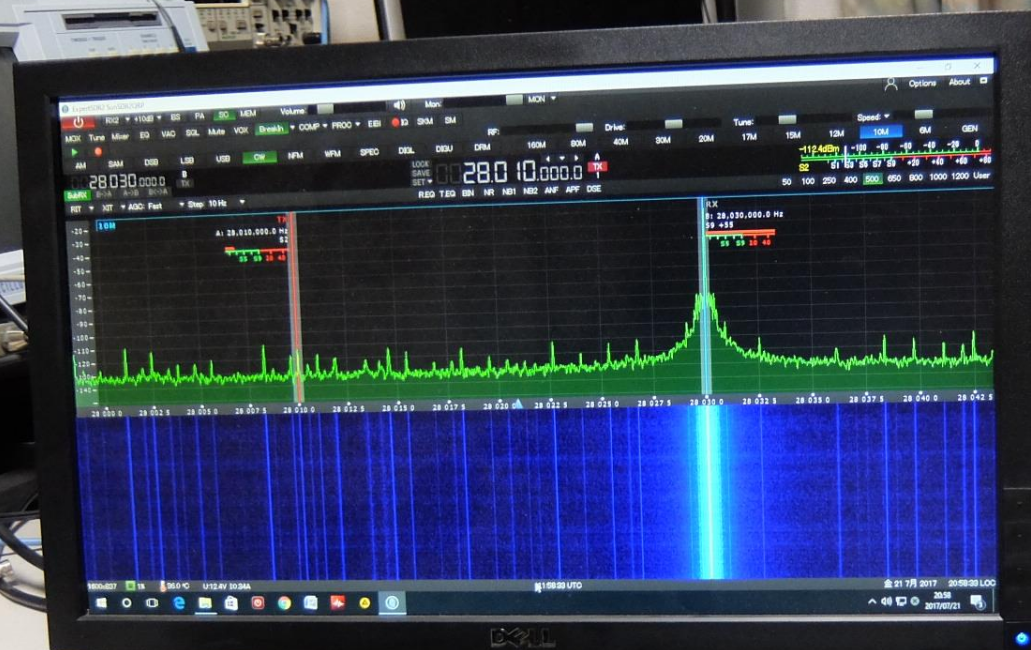


Spurious 1.8MHz



7MHz SMD SG output -183dBm





Breaking gain compression 28MHz 2KHz 106.5dB

