

WELR-FM 102.3

Roanoke, AL (Stroud, AL transmitter location)
Station Owner: Eagles Nest Communications

Signal and Modulation Analysis / NRSC / Proof Testing Performed May 19, 2022

Performed by
Dan Gunter, CBT
Consulting/Contract Broadcast Engineer
Alabama Broadcast Services, LLC
LaFayette, AL:
Society of Broadcast Engineers Certified

Measurement location/point:
Sample port of WELR-FM transmission line with
normal station programming being transmitted

Test equipment utilized:
Siglent SSA3021X Spectrum Analyzer, Serial Number: SSA3XLBQ3R 1010, calibrated
Deva Broadcast FMF-ANT-M Antenna, calibrated
Deva Broadcast Band Scanner 2, Serial Number: BS2JA16D, calibrated
Kay Elemetrics Step Attenuator

On May 19, 2022 I performed NRSC Mask, Occupied Bandwidth (OBW), Adjacent Channel Power Ratio (ACPR), Frequency Accuracy, and Modulation/MPX signal analysis for WELR-FM 102.3. The tests were performed using the equipment indicated on the cover page of this report.

The RF signal source for testing was the sampling port on the transmission line between the station's Energy Onix MK-5-5 transmitter and antenna system.

The transmitter had just been checked and adjusted, and was producing a final power amplifier output of 4.4 kW with an indication of <50 Watts of reflected RF power.

TEST RESULTS

The emission performance measurements contained in this report indicate compliance with the FCC rules and regulations relating to occupied bandwidth, NRSC compliance, and emissions purity.

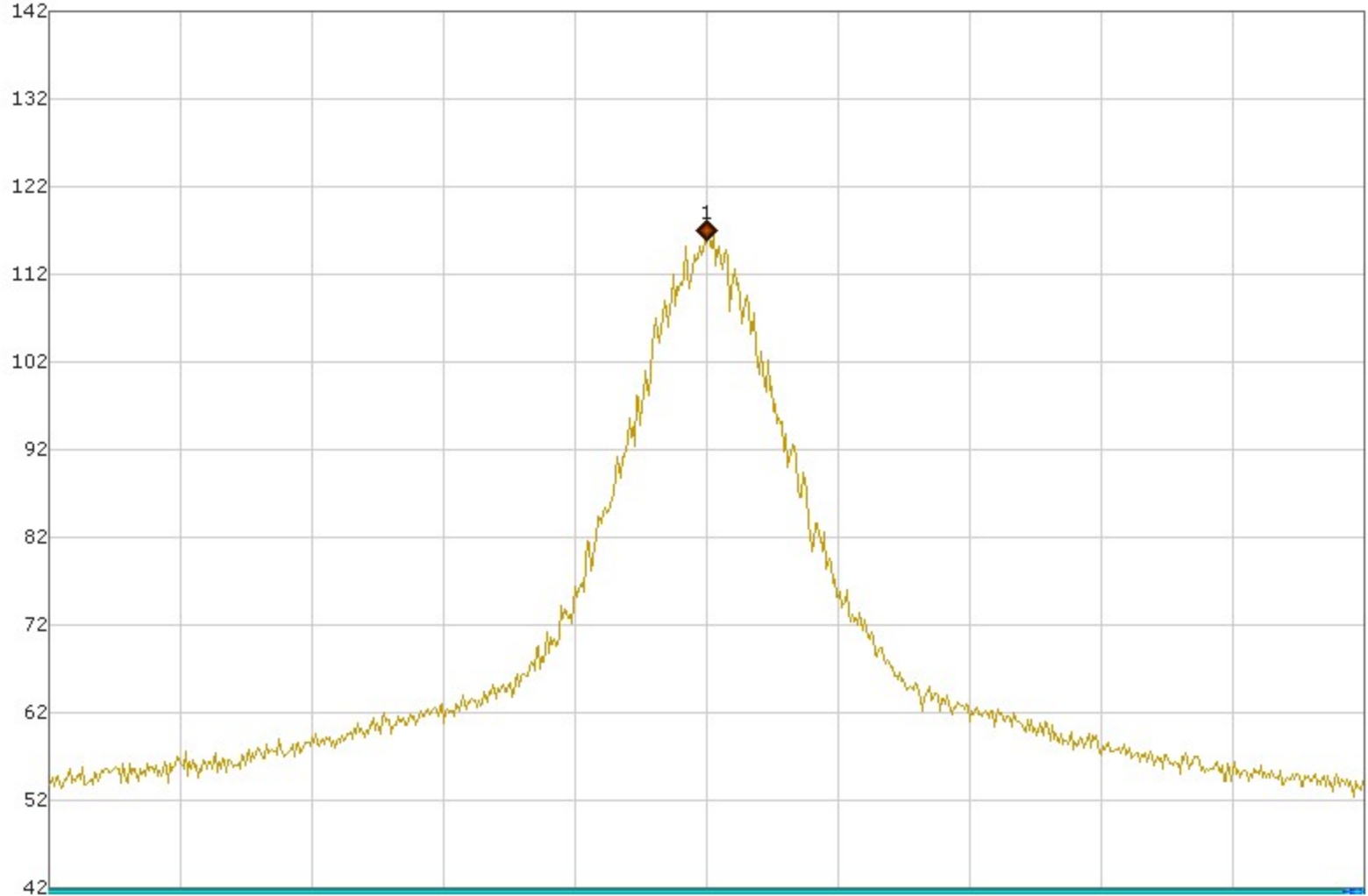
Dan Gunter, CBT
Alabama Broadcast Services, LLC
Society of Broadcast Engineers Certified Broadcast Technician

Date



Ref 141.69 dBuV ◆Att 20.00 dB Cntr1: 102300101 Hz 115.33 dBuV

LOG
10.0 dB
Offset
35 dB
Free
LgPwr
10



A AVG 10
Avg

Center 102.30000 MHz ◆RBW 3.000 kHz ◆VBW 1.000 kHz Span 1.00000 MHz SWT 1.90 s

Sweep

Sweep Time

1.90 s

Auto

Manual

Sweep Rule

Speed

Accuracy

Sweep

Single

Continue

Single

Numbers

10

Sweep Mode

Sweep

QPD Dwell Time

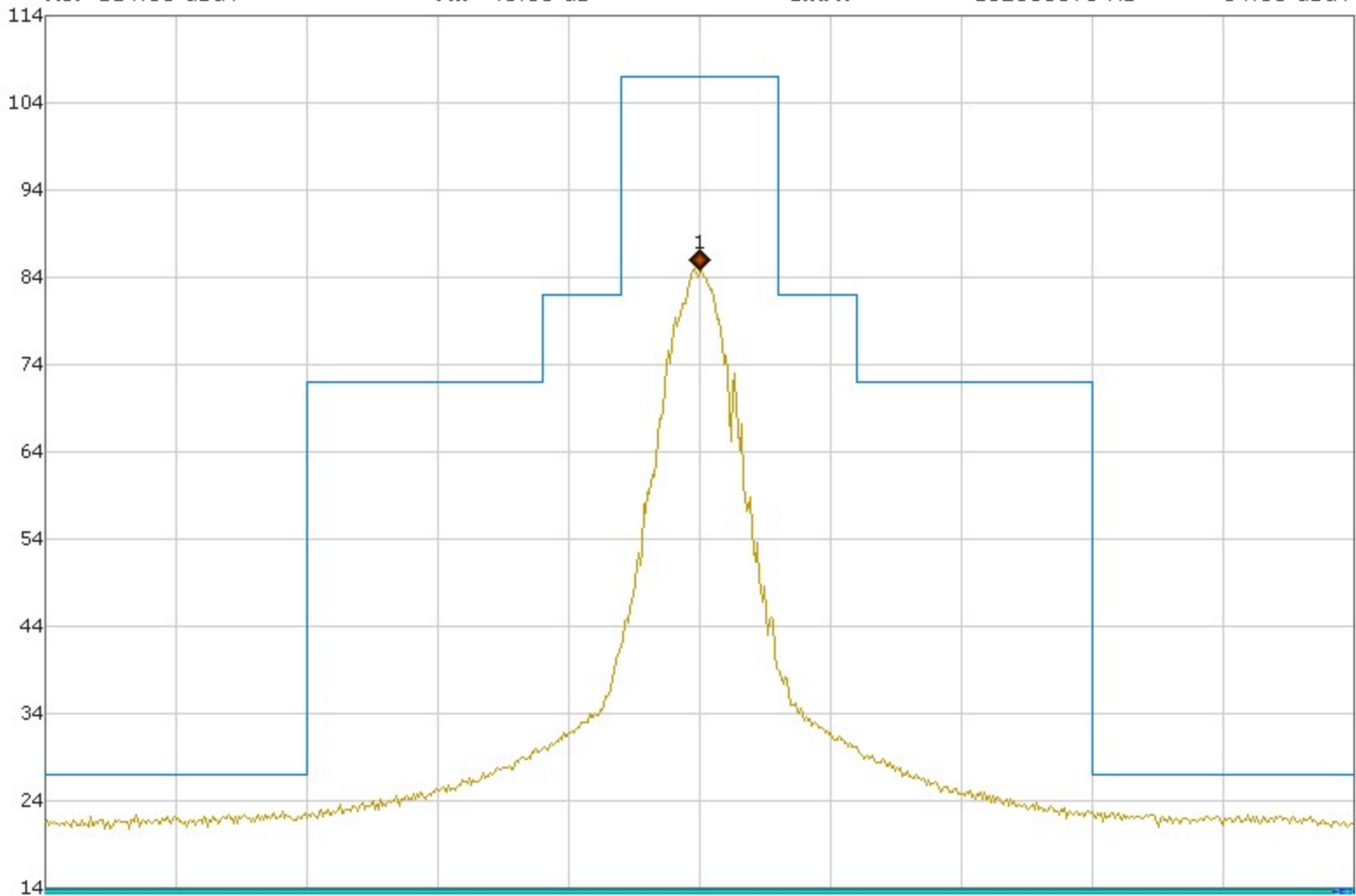
50.000 ms

Local



Ref 114.00 dBuV Att 40.00 dB Cntr1: 102300073 Hz 84.55 dBuV

- LOG
- 10.0 dB
- Offset
- 10 dB
- Free
- LgPwr
- Cont
- PA



AVG 9
Avg

Center 102.300000 MHz RBW 1.000 kHz VBW 100 Hz Span 2.000000 MHz SWT 41.89 s

BW
RBW 1.000 kHz Auto Manual
VBW 100 Hz Auto Manual
VBW/RBW 0.100000
Avg Type Log Pwr
Filter Gauss EMI
Local



A MaxH
Avg

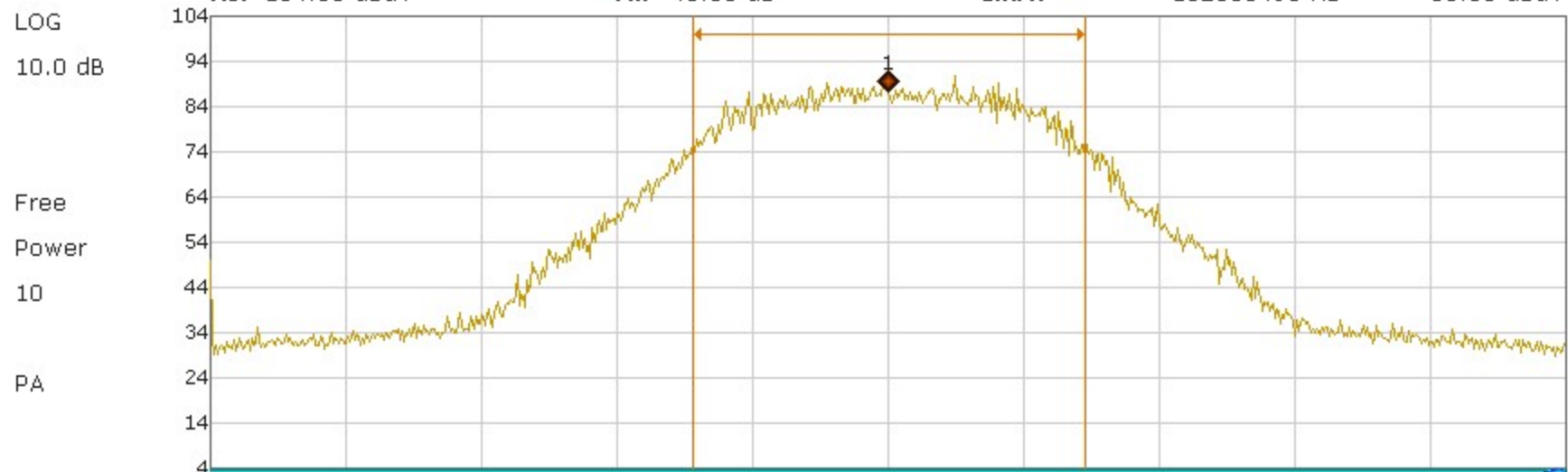
ACPR

Main Channel	101.76 dBuV	Main Chn BW	200.000 kHz
Left Channel	61.31 dBuV 40.44 dbc	Adj Chn BW	200.000 kHz
Right Channel	62.85 dBuV 38.91 dbc	Adj Chn Space	200.000 kHz

- Meas
- Channel Power
- ACPR
- Occupied BW
- T-Power
- TOI
- Spectrum Monitor
- Meas Off
- Local



Ref 104.00 dBuV ◆Att 40.00 dB Cntr1: 102300493 Hz 86.50 dBuV



Center 102.300000 MHz ◆RBW 3.000 kHz ◆VBW 300 Hz Span 500.000 kHz SWT 1.75 s

A MaxH
Avg

Occupied BW

Occupied BW	Transmit Freq Error	%
144.667 kHz	333 Hz	99.00 %

Meas

Channel Power

ACPR

Occupied BW

T-Power

TOI

Spectrum Monitor

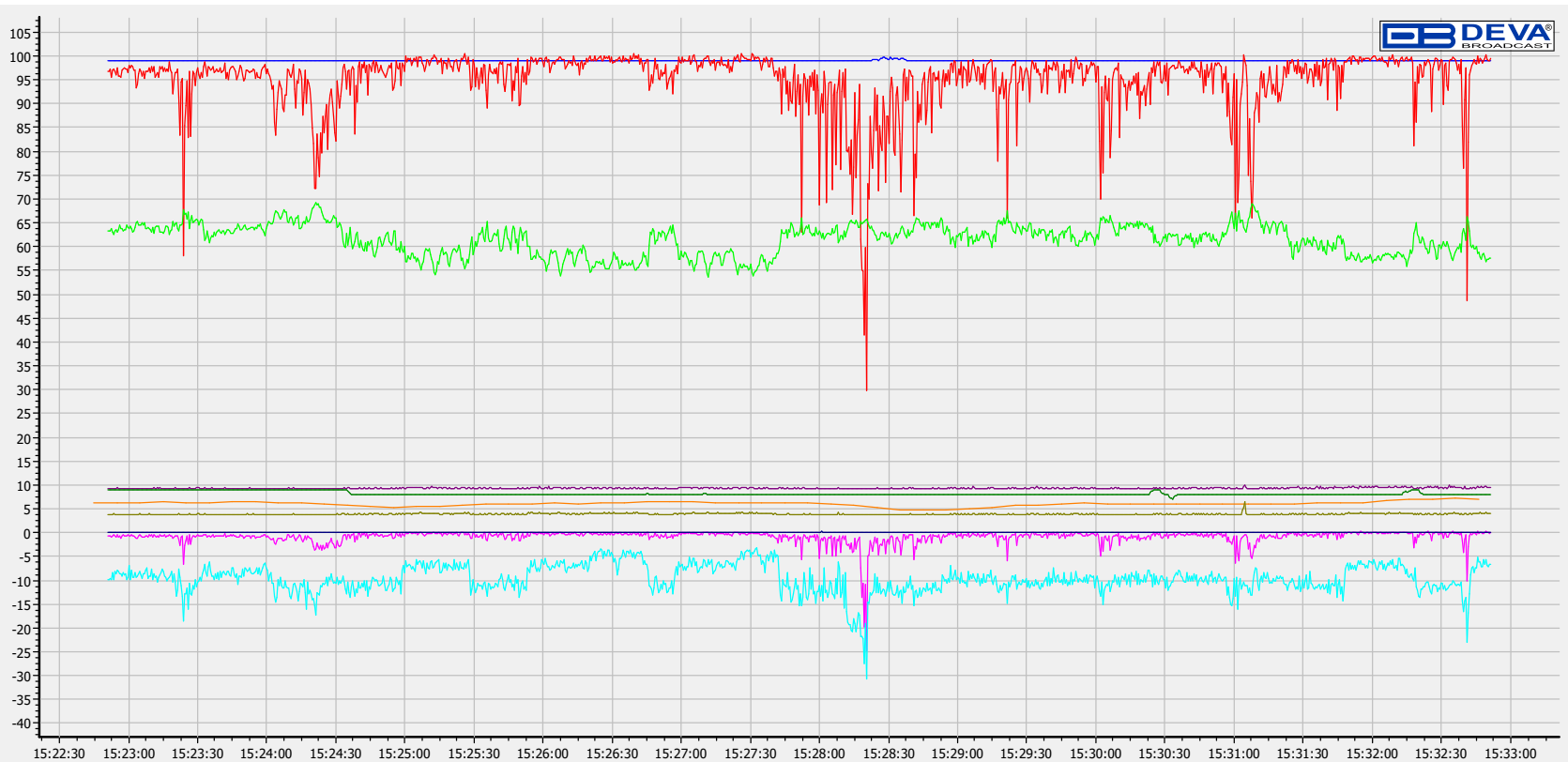
Meas Off

Local

Graphs

Date: 15:32:51, 2022-05-19 Input: Antenna Freq: 102.30 MHz IF Bandwidth: 100 kHz Deemphasis: 75 μ s

RF [dB μ V] MPX [%] MPX Power [dB] Pilot [%] RDS [%] L+R [dB] L-R [dB] Multipath [%] SNR [dB] Signal Quality

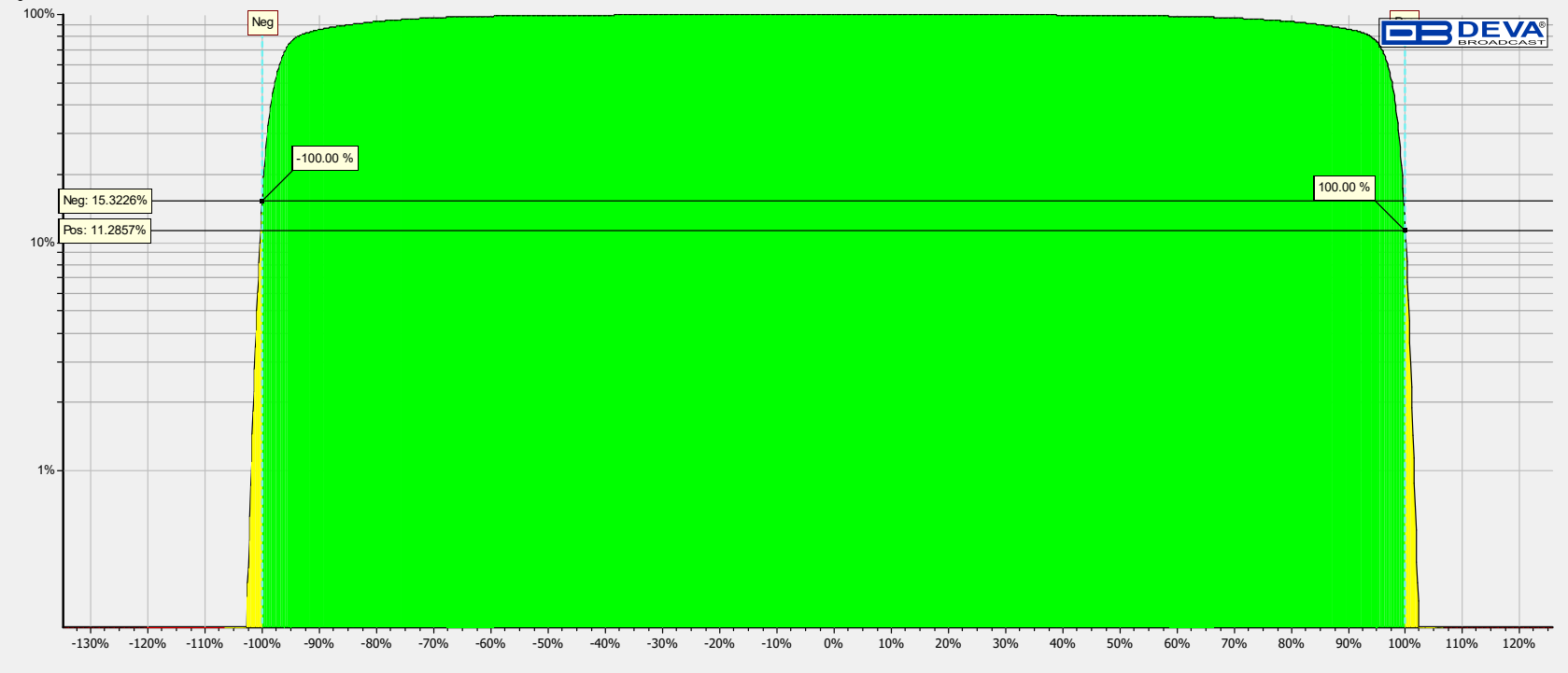


MPX Deviation

Date: 15:32:51, 2022-05-19 Input: Antenna Freq: 102.30 MHz IF Bandwidth: 100 kHz Deemphasis: 75 μ s

-100.00% = 15.3226% +100.00% = 11.2857% -106.67% = 0.0108% +106.67% = 0.0000%

Marker Pos: X=100.00%, Y=11.2857% Marker Neg: X=-100.00%, Y=15.3226% Measure Duration:00:12:25 (74.4 k samples) [under 15 minutes]
Neg: -100.00% = 15.3226%, -106.67% = 0.0108%, Pos: +100.00% = 11.2857%, +106.67% = 0.0000%



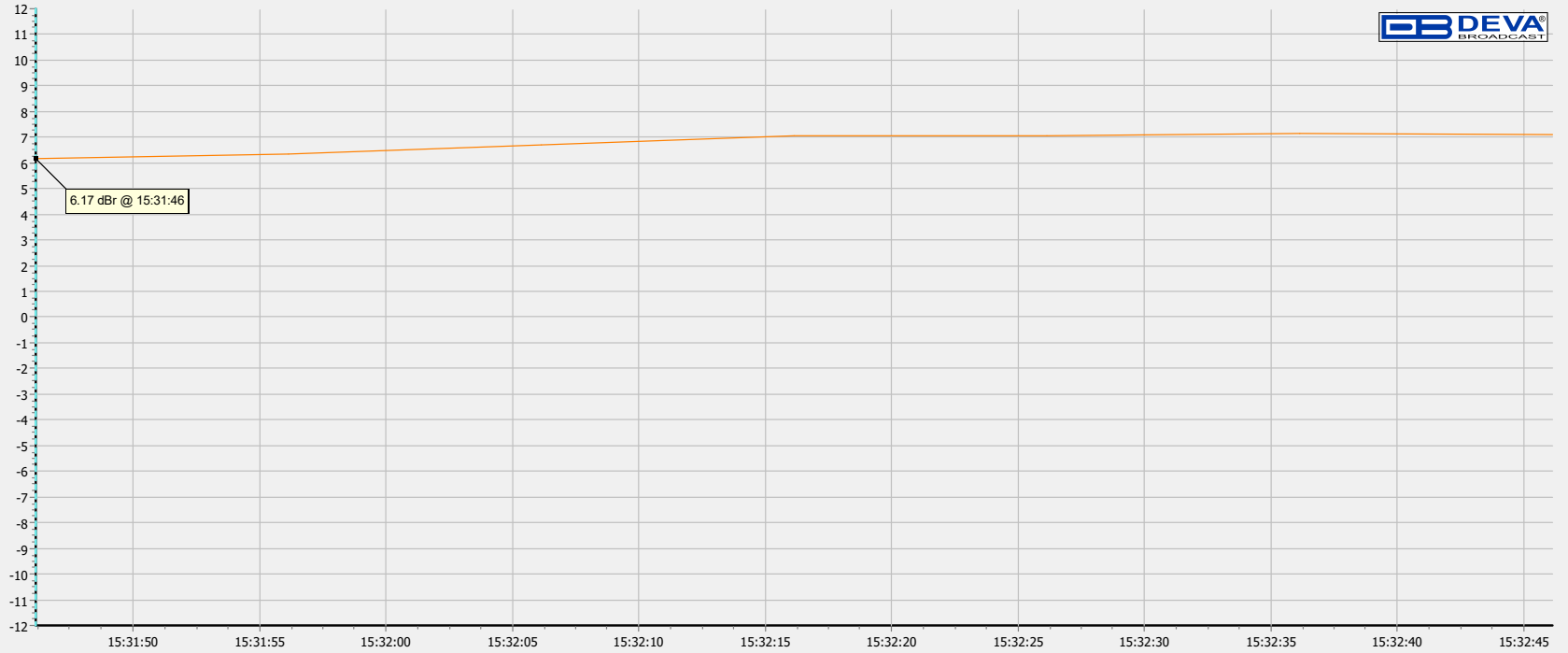
MPX Power

Date:	15:32:51, 2022-05-19	Input:	Antenna	Freq:	102.30 MHz	IF Bandwidth:	100 kHz	Deemphasis:	75 μ s
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Measure Duration:00:11:26 [under 15 minutes]

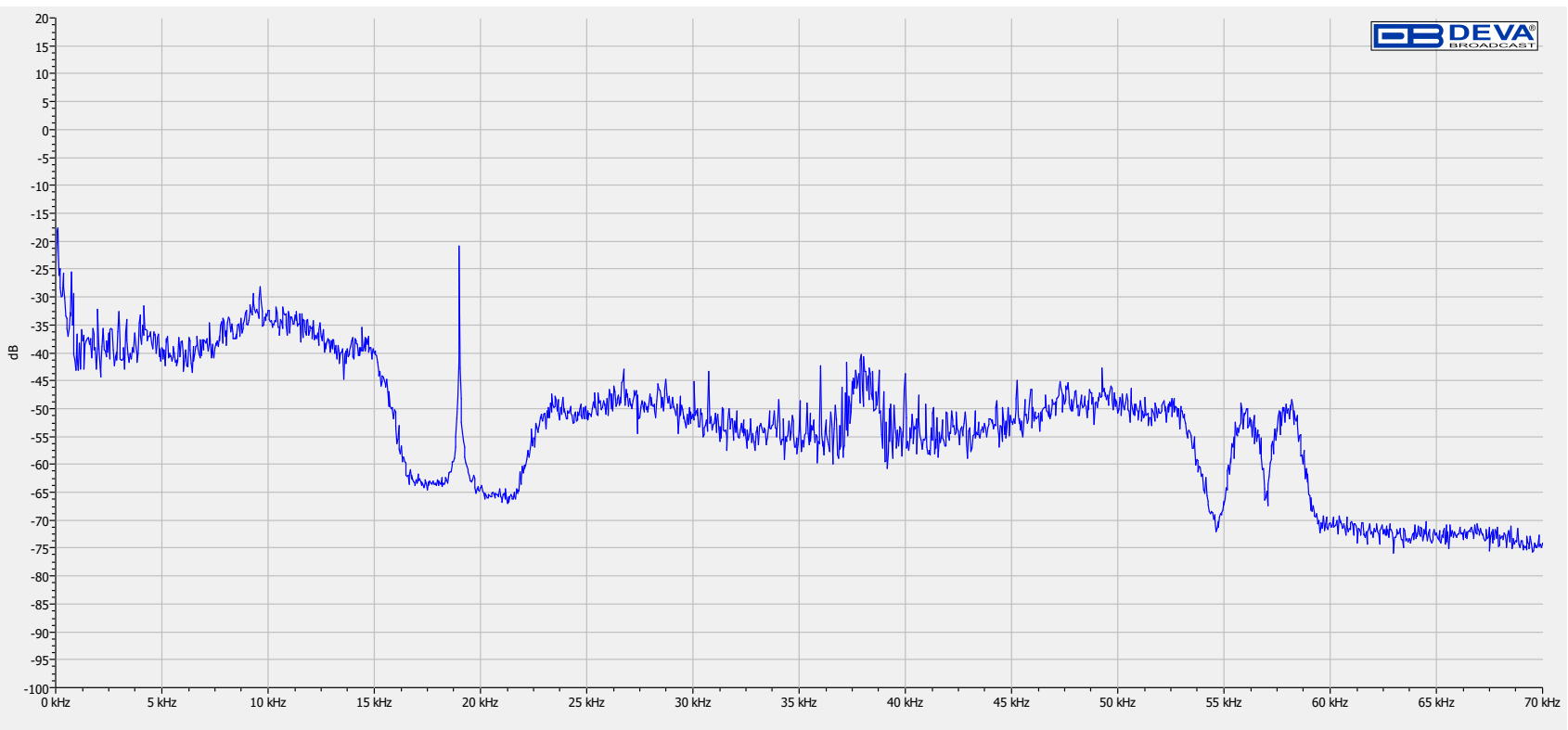
Marker: X=15:31:46, Y=6.17 dB

Instantaneous:6.2, Minimum:5.1, Maximum:6.2, Average:6.0dB



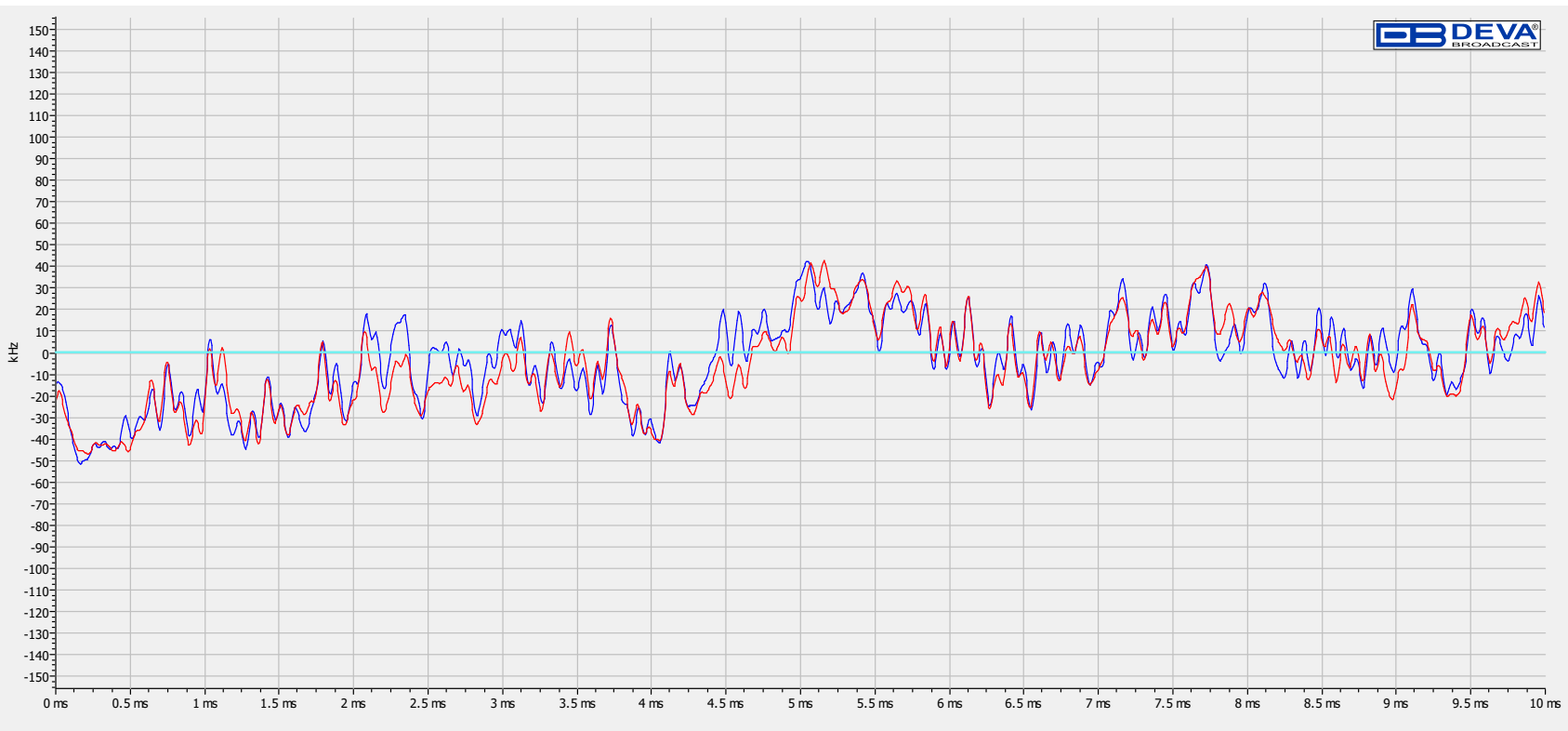
FFT

Date: 15:32:51, 2022-05-19 Input: Antenna Freq: 102.30 MHz IF Bandwidth: 100 kHz Deemphasis: 75 μ s FFT Source: MPX Window: Rectangle Average: 10



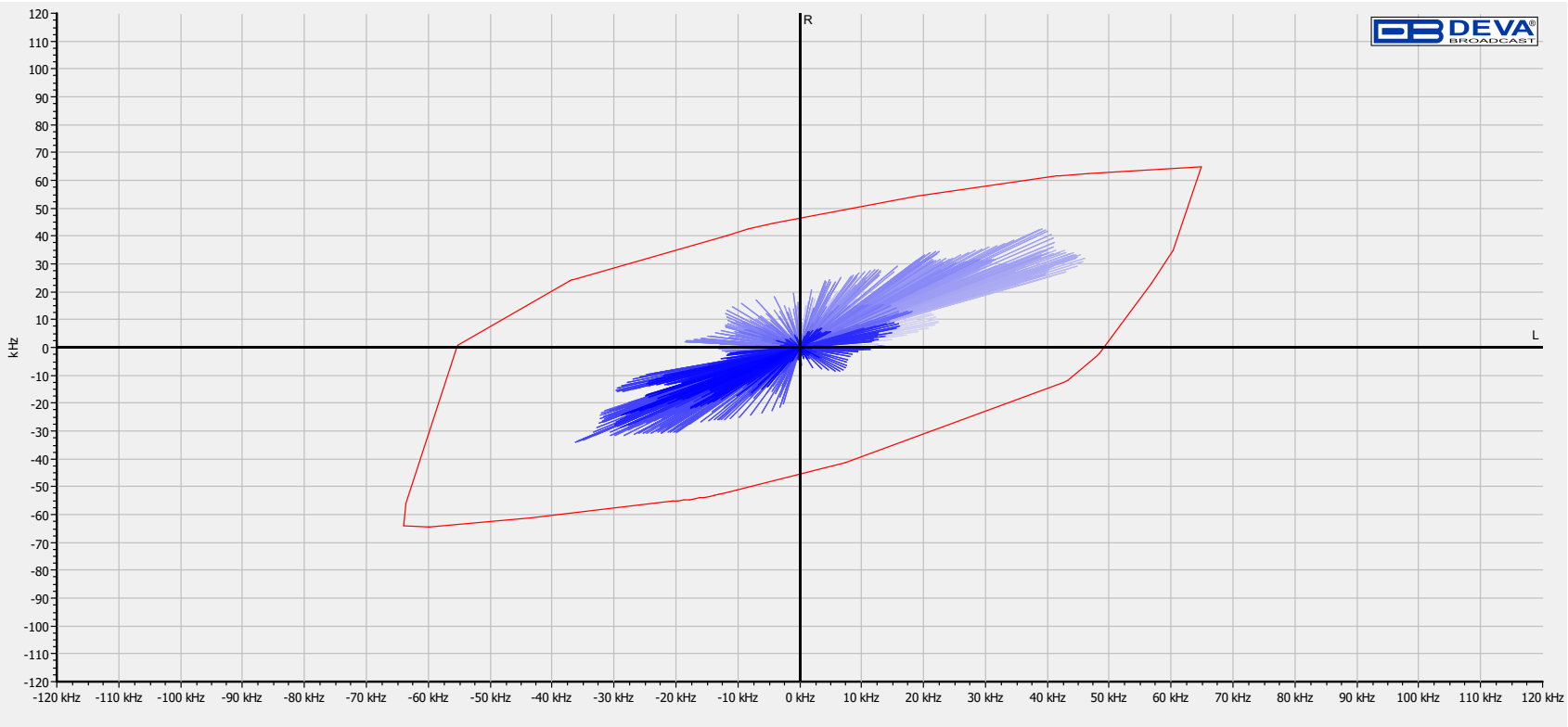
Oscilloscope

Date:	15:32:51, 2022-05-19	Input:	Antenna	Freq:	102.30 MHz	IF Bandwidth:	100 kHz	Deemphasis:	75 μ s	Scope Source:	Stereo
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Stereo Quality

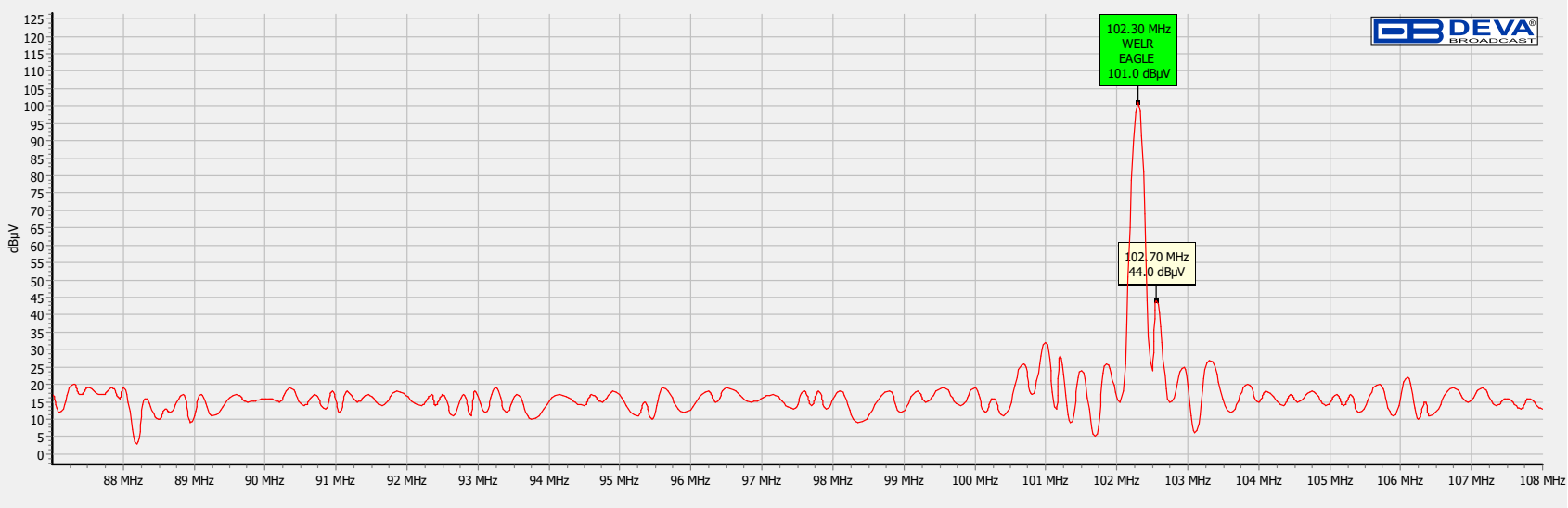
Date:	15:32:51, 2022-05-19	Input:	Antenna	Freq:	102.30 MHz	IF Bandwidth:	100 kHz	Deemphasis:	75 μ s
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BandScan

Date:	15:32:51, 2022-05-19	Input:	Antenna	Freq:	102.30 MHz	IF Bandwidth:	100 kHz	Deemphasis:	75 μ s
Scan at:	15:18:13, 2022-05-19	Range:	87.00 MHz - 108.00 MHz	Step:	50 kHz	Lat:	0.000000°	Lon:	0.000000°

Lat: 0.000000° , Lon: 0.000000°

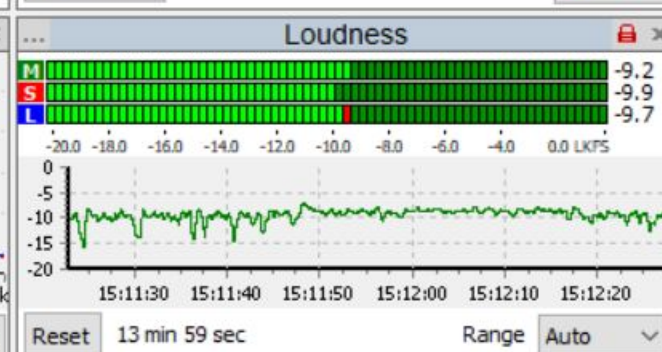
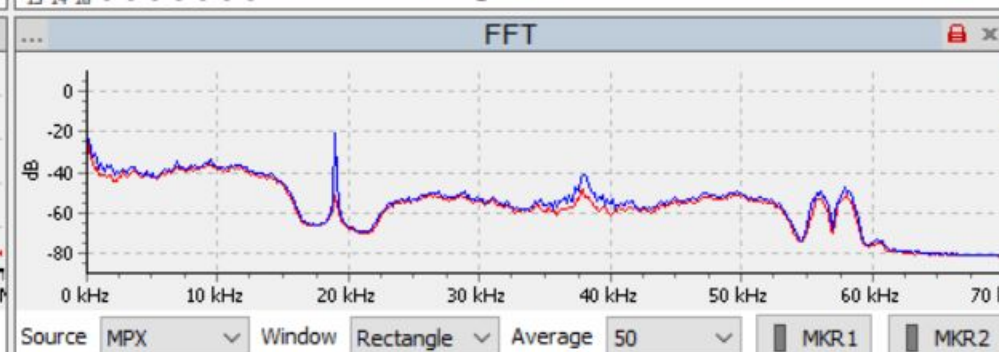
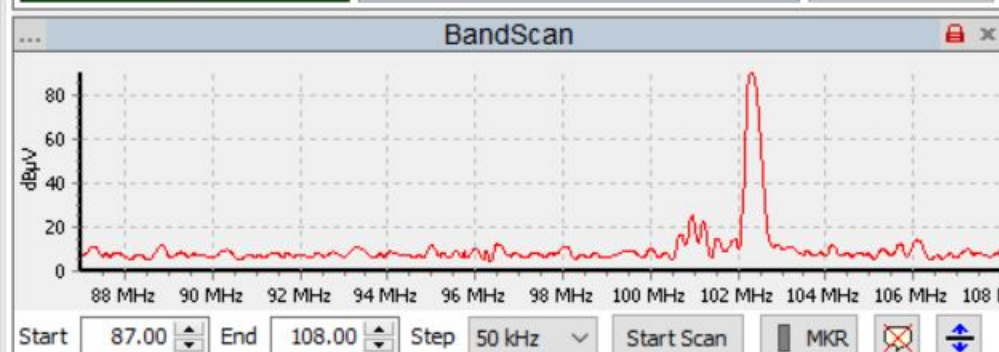
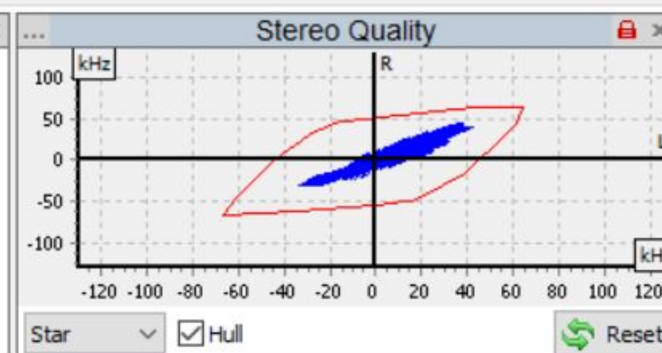


RDS

PS: RAY ON PTYN: CALL: WELR PTY: Country
 RTB: SLOW DOWN SUMMER by THOMAS RHETT on Eagle 102.3
 MS: MUSIC TP: ON TA: OFF DI: (1) Stereo, No Artificial Head, Not Compressed, Static
 Date/Time: AF: 0??
 OA: 6067 0548 E0CD Åž 2052 R
 OA: 6067 0549 E0CD Åž 4159 AY
 OA: 6067 054A E0CD Åž 204F O
 OA: 6067 054A E0CD Åž 204F O
 BER: 0.00000

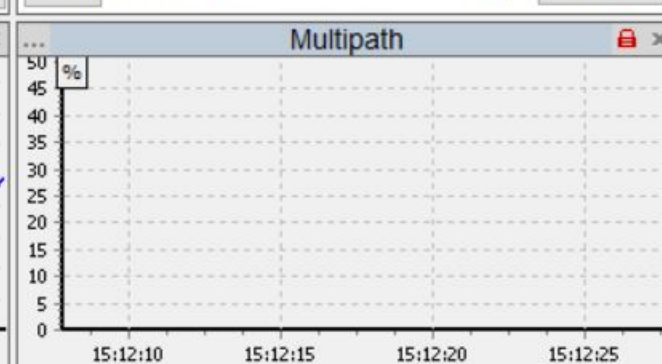
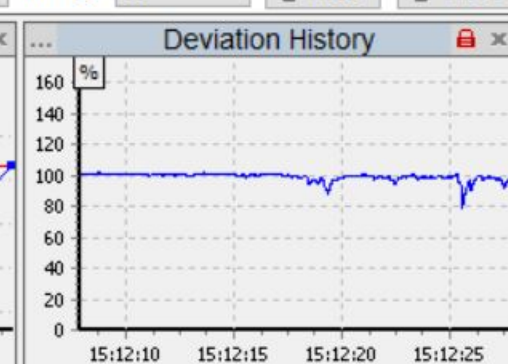
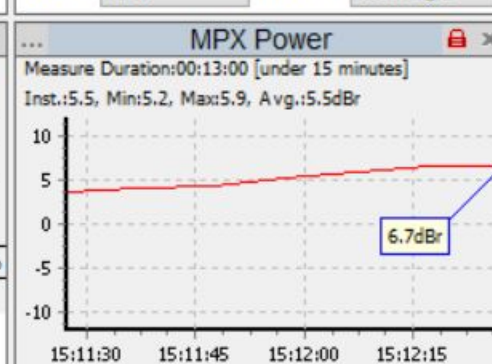
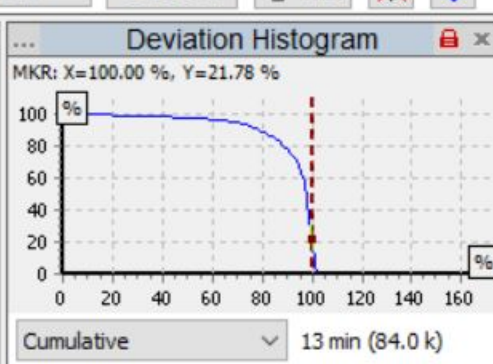
GPS

Fix: No Fix
 Mode: Automatic
 Lat: ??°??'??" ?
 Lon: ??°??'??" ?
 Date: ??:??:??
 Time: ??:??:??
 Altitude: ??
 Accuracy: ??
 Course: ??
 Speed: ??



Main Readings

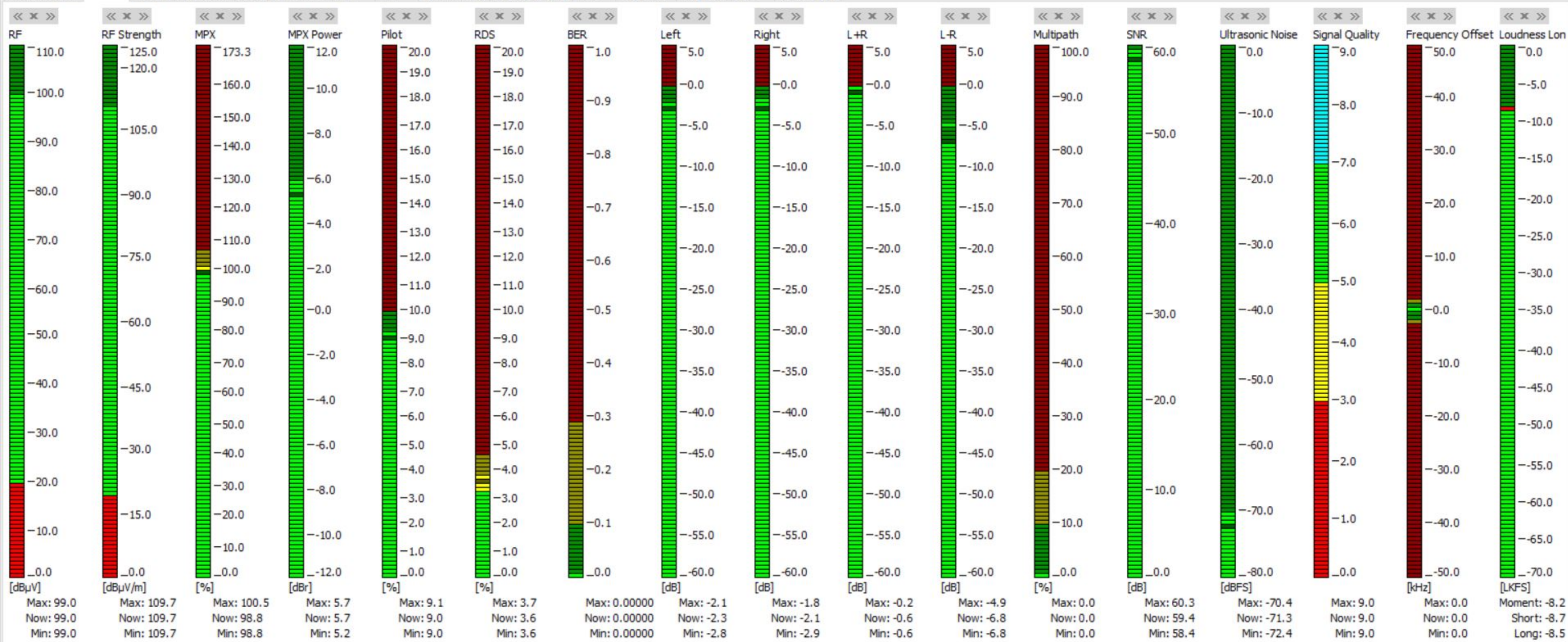
RF	MPX	Rlibt	RDS	Left	Right	Multith
110	173	20	20	5	5	100
80	130	16	16	-5	-5	80
60	110	13	13	-15	-15	70
40	90	11	11	-25	-25	60
20	70	8	8	-30	-30	50
0	50	6	6	-40	-40	40
	30	3	3	-50	-50	30
	0	0	0	-60	-60	20
99.0 [dBµV]	99.7 [%]	9.3 [%]	3.7 [%]	-3.4 [dB]	-3.3 [dB]	0.0 [%]



102.30 MHz Set 99.30 91.90 ---,-- ANT
 Region General 107.30 ---,-- More MPX



Stop 100% REC
 Primary Sound Driver Settings Replay



102.30 MHz Set 99.30 91.90 ANT

Region General 107.30 More MPX



Stop 100% REC

Primary Sound Driver Settings Replay