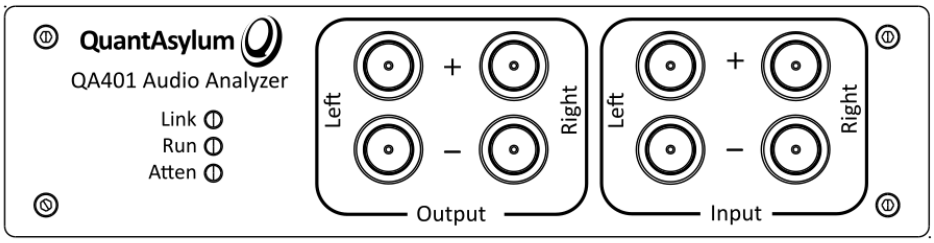
QA401

192 KSPS AUDIO ANALYZER



- ✓ 48 & 192 KSPS
- ✓ Fully isolated from PC
- ✓ USB Powered
- ✓ 20 dB Attenuator
- ✓ Differential I/O
- ✓ + 26 dBV Max Input

Introduction

The QA401 is our second-generation audio analyzer. The goal with the QA401 was to put a sophisticated analyzer on the desk of every engineer in the development lab while delivering performance that has ample margin to readily measure most every type of consumer audio equipment imaginable—from pre-amps and headphone amps to class D amplifiers.

No-Cal Design

Complex and finnicky calibration routines common with soundcard-based approaches are a thing of the past. The QA401 delivers stellar accuracy via a no-tune design thanks to 0.1% component specs in all critical gain stages.

Measurements

The included software makes measurements quickly: THD, SNR, THD+N, RMS and noise measurements are just a click away.

Complex measurements can be automated via free Microsoft DotNet development tools.

The differential input and output stages make driving and measuring modern amp topologies easy. For example, the QA401 can directly measure the output of Class D amplifiers up to several hundred watts.

The QA401 comes with a 15-day, no-questions-asked money back guarantee.

Driven by TRACTOR

Tractor is our open-source application for controlling our hardware. With it, you can quickly assemble a sequence of tests for your product. The data can be logged automatically to a database, and as you'd expect, there is lots of flexibility for setting product-specific options. It's fast, too: Knock out 10 tests in 30 seconds. From barcode scanning to THD, IM, efficiency, output impedance, amplitude, noise and more. It's almost turnkey.

Are You Ready?

Are you testing your products thoroughly before they leave your factory? If not, you should be. Contact: sales@QuantAsylum.com

Specifications

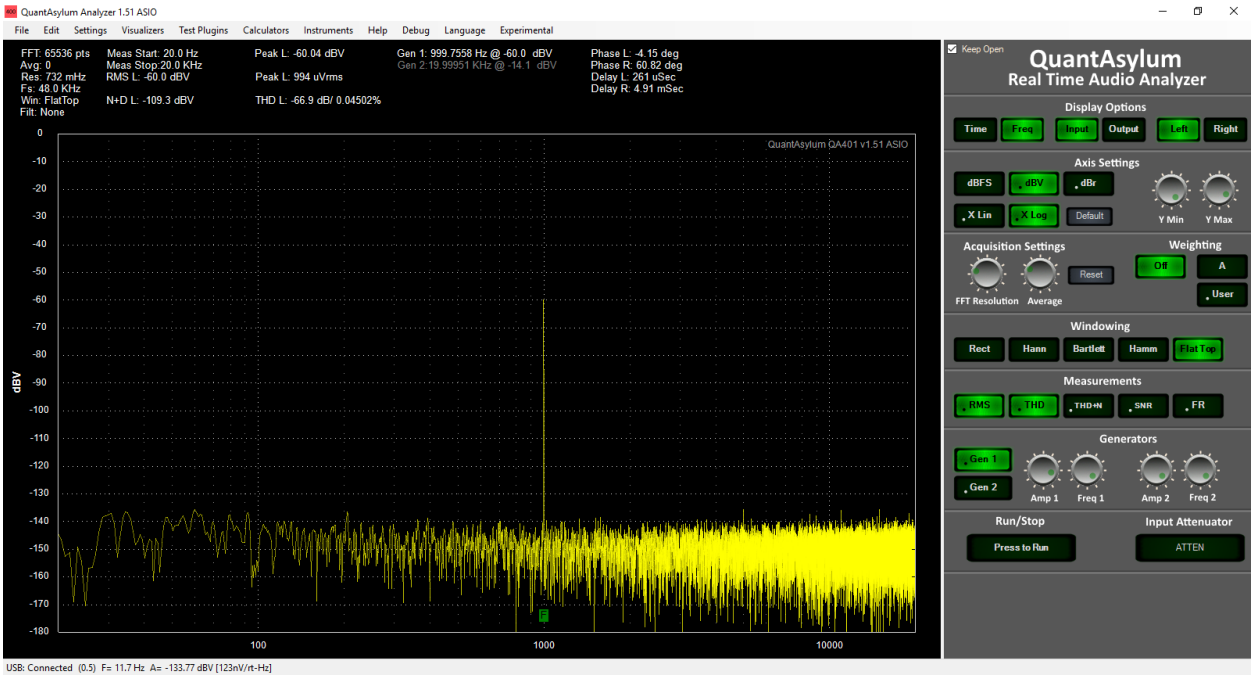
Mechanical

Dimensions	177w 44h 97d mm, 116mm deep with BNC
Weight	420 grams
Case Material	Powder coated aluminum

Electrical

Inputs	Differential, BNC x 2 for left and BNC x 2 for right
Input Z	100 K Ohm
Input Coupling	AC, F_C = 1.6 Hz
Input Full Scale (Atten OFF)	Single Ended: 6 dBV = 5.6 V_{PP} = 2 V_{RMS}
Input Full Scale (Atten ON)	Single Ended: 26 dBV = 56 V_{PP} = 20 V_{RMS}
Input Overload Protection	Yes, automatic up to 56.4 V_{PP}
Input Noise Floor	-113 dBV (inputs shorted, atten off, 20 to 20 KHz, 32K FFT, avg 5, Hann, 48 Ksps)
THD	-108.5 dB (loopback, single ended, L- shorted to ground, atten off, 32K FFT, avg 5, Hann, 48 Ksps, -10 dBV input)
CMRR	85 dB typical at 1 KHz, 0 dBV input
Input Crosstalk	< -130 dB (DAC output connected to ADC input +, input – shorted to ground)
DAC to ADC Crosstalk	< -130 dB (DAC outputs open and set to 0 dBV, ADC inputs shorted to ground)
IMD	-125 dB typ (19 KHz @ -6 dBV, 20 KHz @ -6 dBV, resulting 1 KHz product at -125 dBV)
ADC	AKM AK5397EQ
Outputs	Differential, BNC x 2 for left and BNC x 2 for right
Output Z	47 ohms. Output stage is OPA1612 with series 47 ohm for protection against capacitive loading and momentary accidental shorts
Output Coupling	DC coupled, with user adjustable offsets to reduce offset imbalance to ~300 uV
Output Full Scale	Single Ended: 5.5 dBV = 5.3 V_{PP} = 1.88 V_{RMS}
DAC	AKM AK4490
Audio Interface	Custom USB
Max FFT	256Kpts
Included Accessories	None. You will need a USB A to B cable to connect the QA401 to the PC and BNC cables to connect the QA401 to the DUT. Some BNC terminators (0, 50 or 75 ohm) will be helpful for some types of measurements.

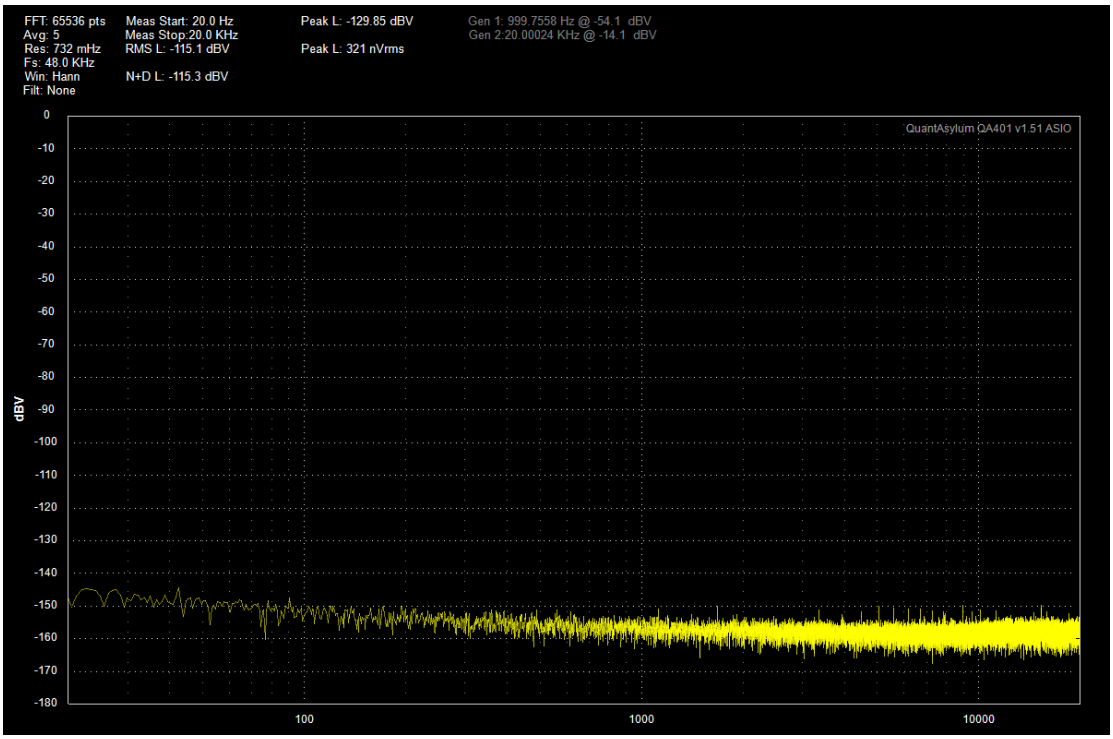
Application



Measurements

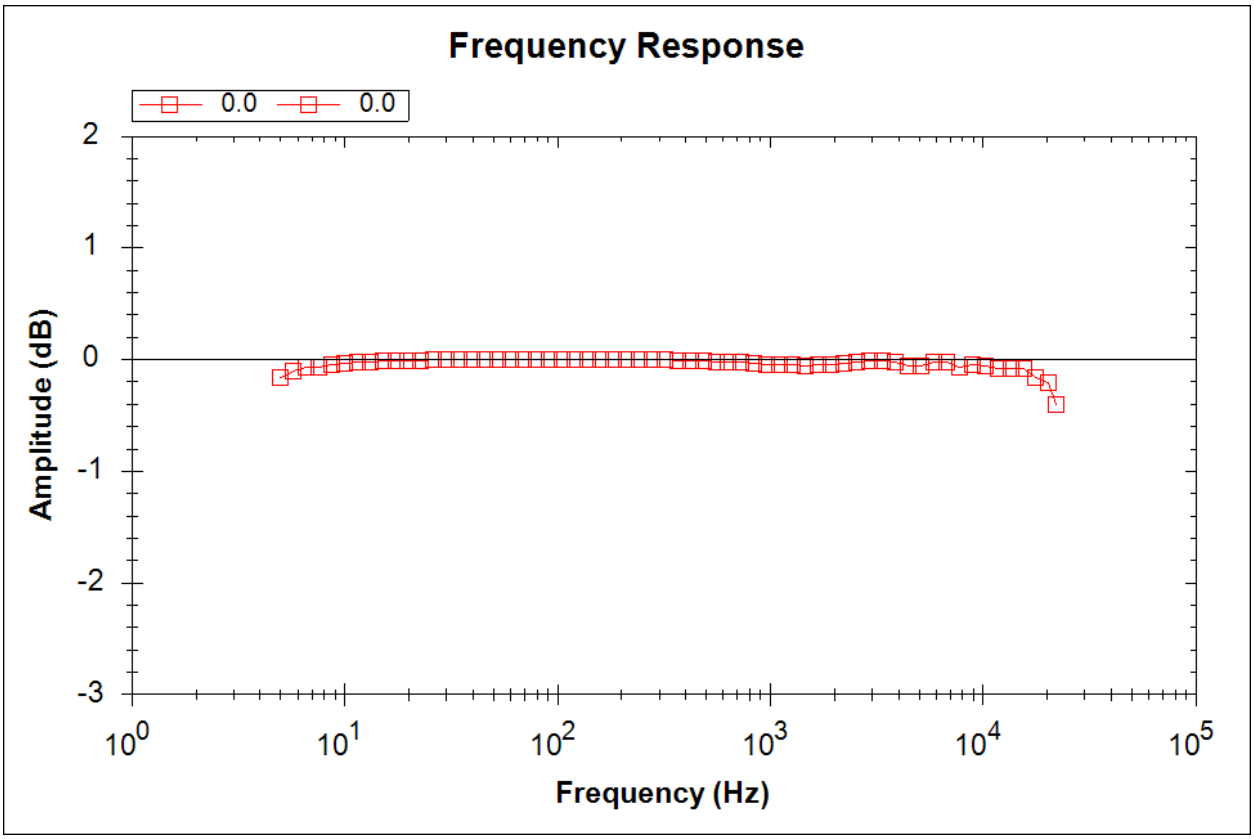
(Measurements below are made in loopback mode, with output routed directly to input. There are two types of measurements shown below: The first is the plot of the application screen for measurements that can be read directly off the display. This data is presented as light trace on dark background. The second is a graph of swept data. This data is presented as dark trace on light background. Both measurements are made using the QA401 application. Data shown is Left channel. Right channel data is similar, but omitted for clarity.)

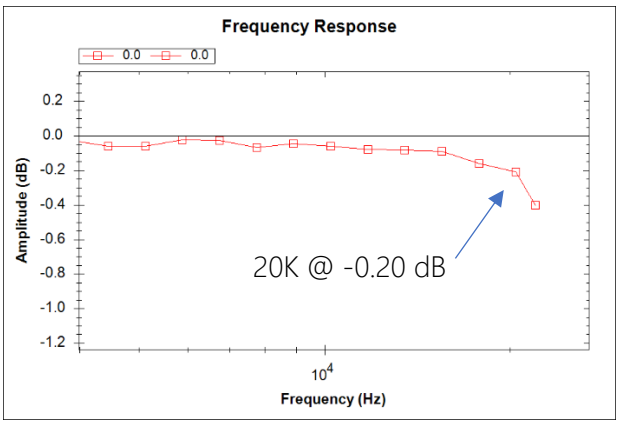
Noise Floor

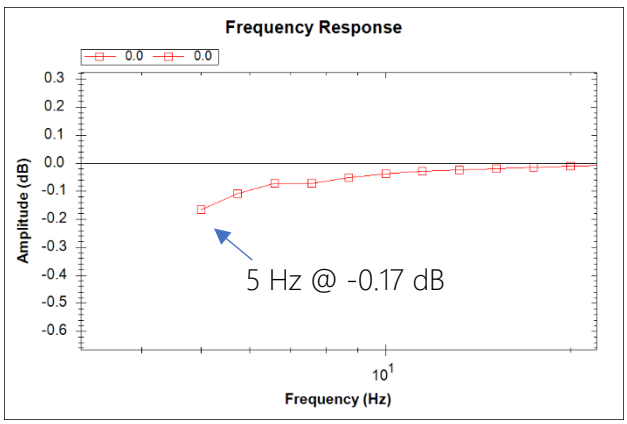


Frequency Response

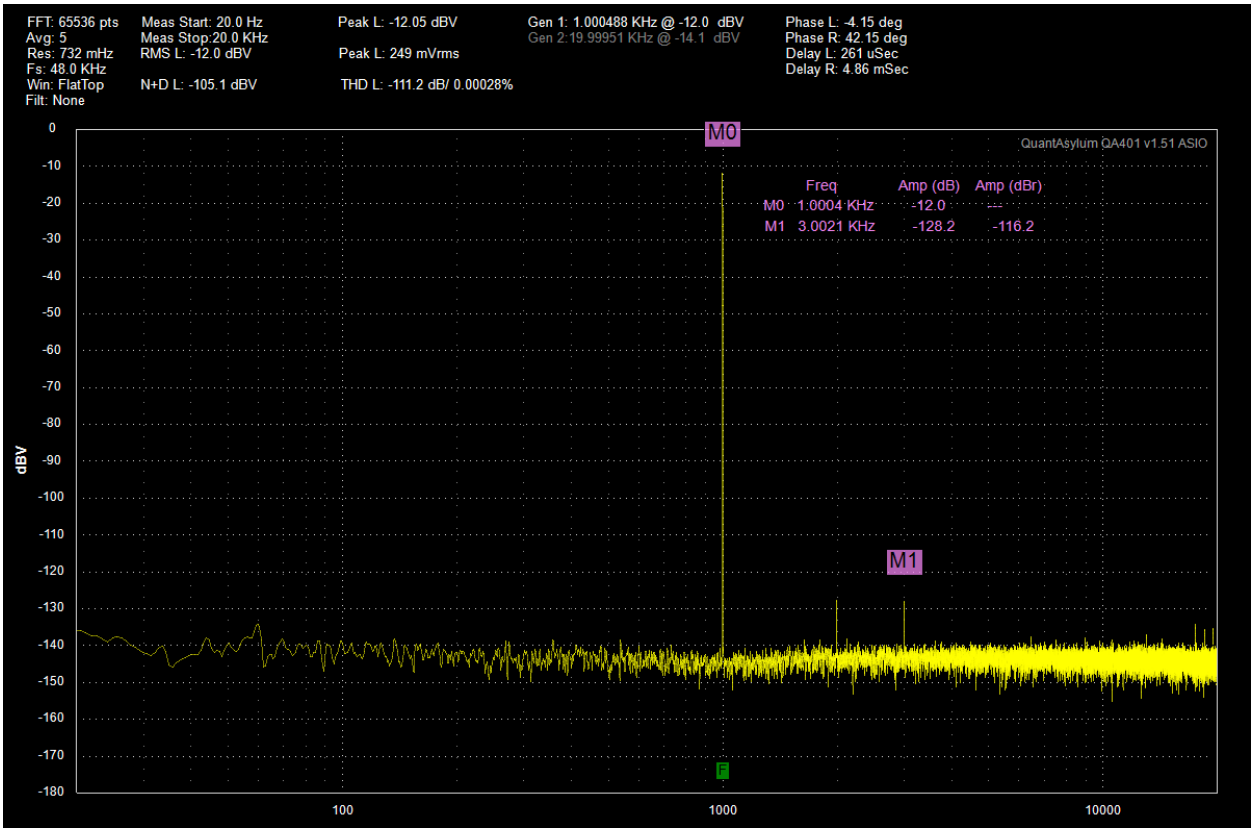
(48 Ksps, 0 dBV, Flat Top Windowing, 32K FFT)



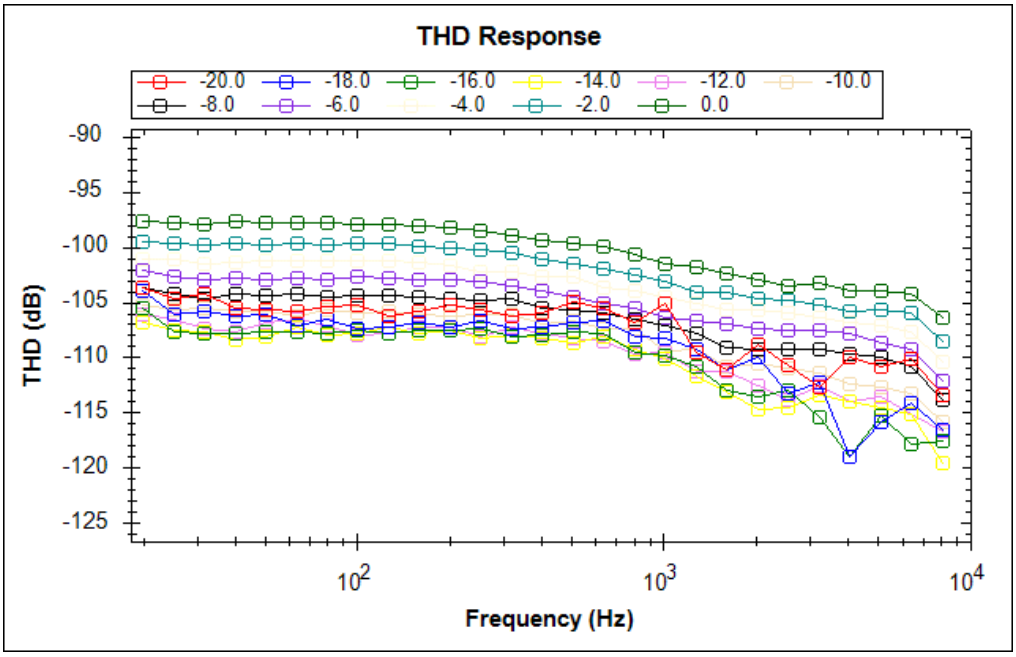




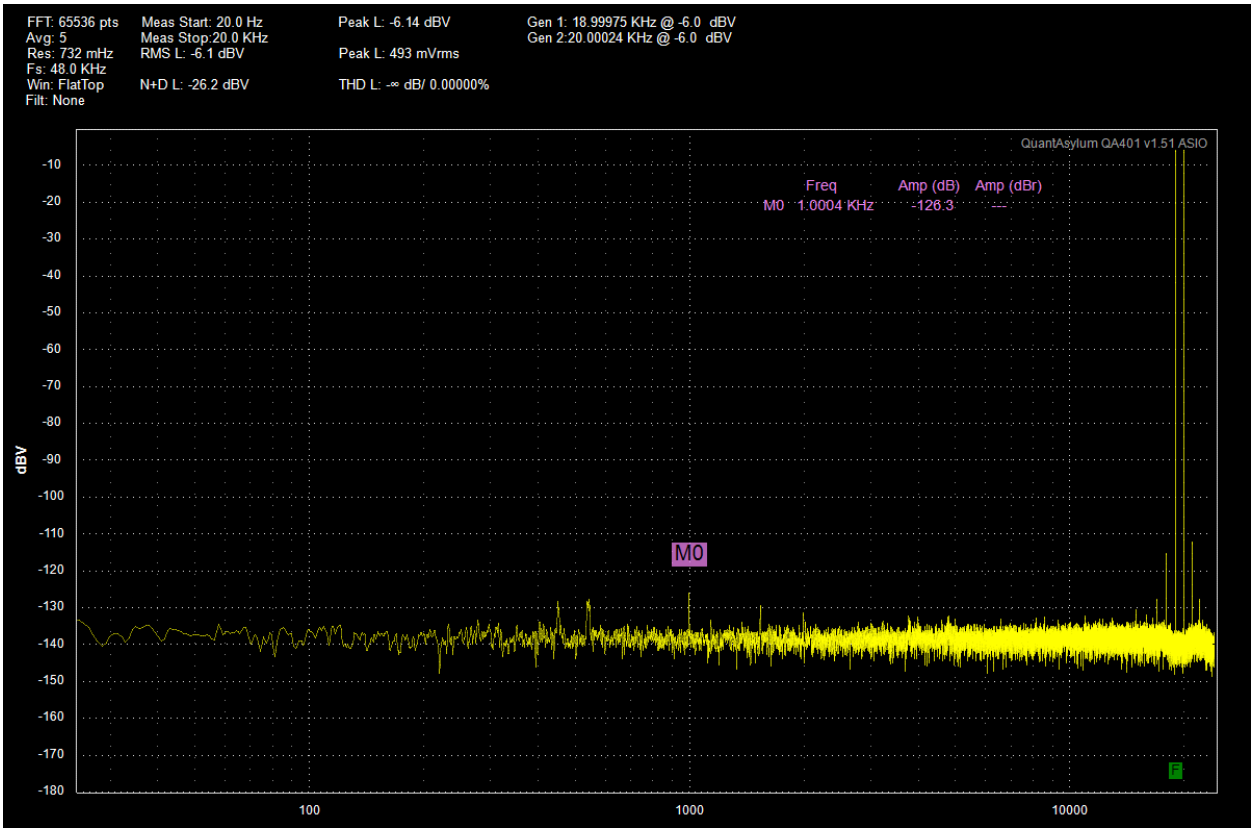
THD



THD Sweep (No avg)



IMD


FFT: 65536 pts
Avg: 5
Res: 732 mHz
Fs: 48.0 KHz
Win: FlatTop
Filt: None
Meas Start: 20.0 Hz
Meas Stop:20.0 KHz
RMS L: -6.1 dBV
N+D L: -26.2 dBV
Peak L: -6.14 dBV
Peak L: 493 mVrms
THD L: -∞ dB/ 0.00000%
Gen 1: 18.99975 KHz @ -6.0 dBV
Gen 2:20.00024 KHz @ -6.0 dBV
QuantAsylum QA401 v1.51 ASIO
Freq
Amp (dB)
Amp (dBr)
M0 1.0004 KHz
-126.3
dBV
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
-180
M0
F
100
1000
10000