

Preliminary

Tranbal Measurements Transimpedance Balanced Input MC RIAA EQ Preamplifier

All measurements taken on 02 January 2022

Andrew C. Russell

www.hifisonix.com

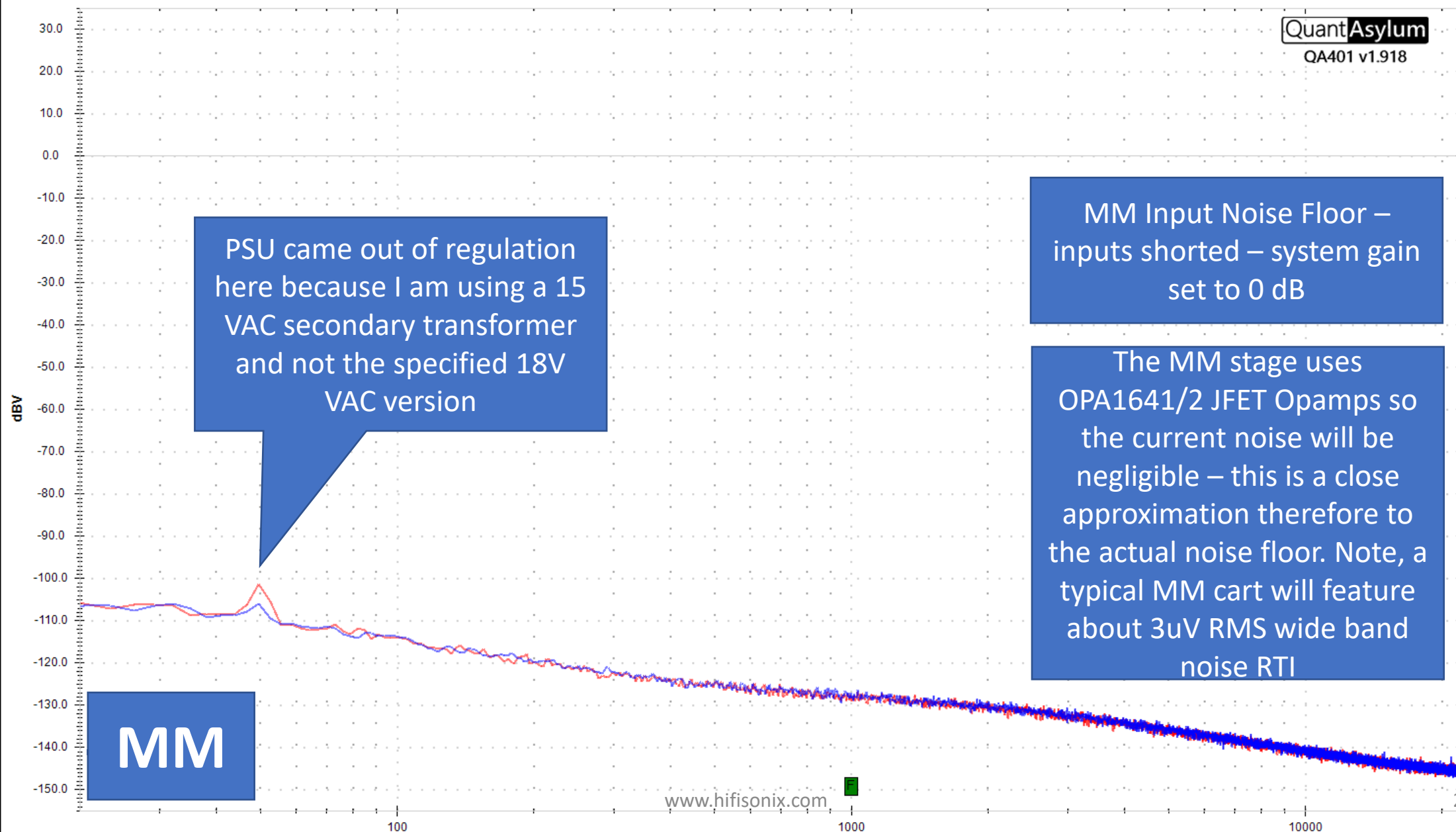
FFT: 64k
Avg: 50 of 50
Res: 2.92 Hz
Fs: 192 KHz
Win: Hann
Weight: None

Meas Start: 20.0 Hz
Meas Stop: 20.0 KHz

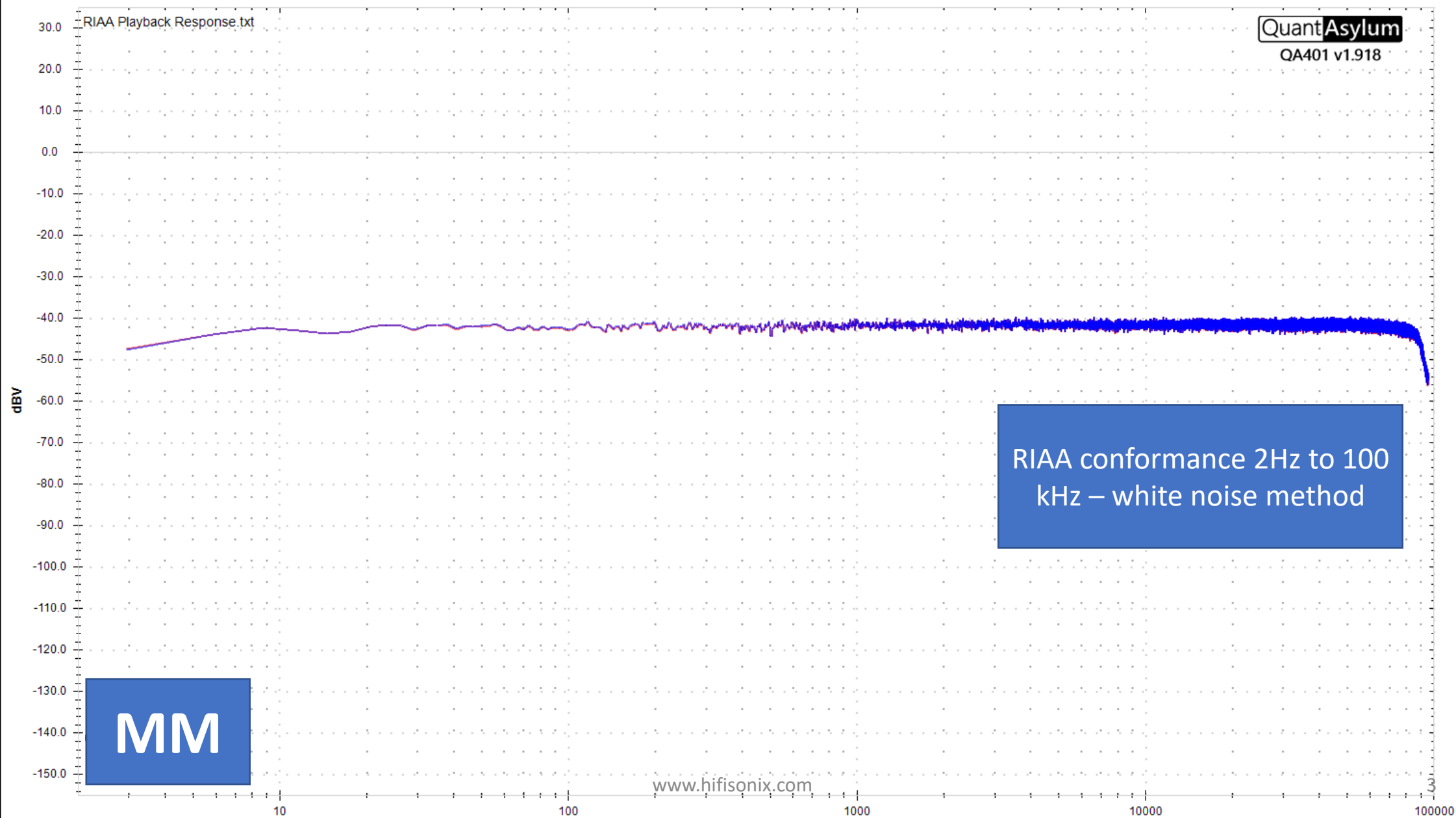
Peak L: -98.55 dBV
Peak R: -98.49 dBV
Peak L: 11.81 uVrms
Peak R: 11.89 uVrms
THD L: 3.5 dB/ 150.36811%
THD R: 3.7 dB/ 152.69593%

Gen 1: 999.0234 Hz @ -10.0 dBV
Gen 2: 18.99902 KHz @ -5.0 dBV

QuantAsylum
QA401 v1.918



FFT: 64k Meas Start: 20.0 Hz Peak L: -39.50 dBV FR Gen: -75.0 dBV
Avg: 50 of 50 Meas Stop: 20.0 KHz Peak R: -39.58 dBV
Res: 2.92 Hz Peak L: 10.59 mVrms
Fs: 192 KHz Peak R: 10.49 mVrms
Win: Hann
Weight: User



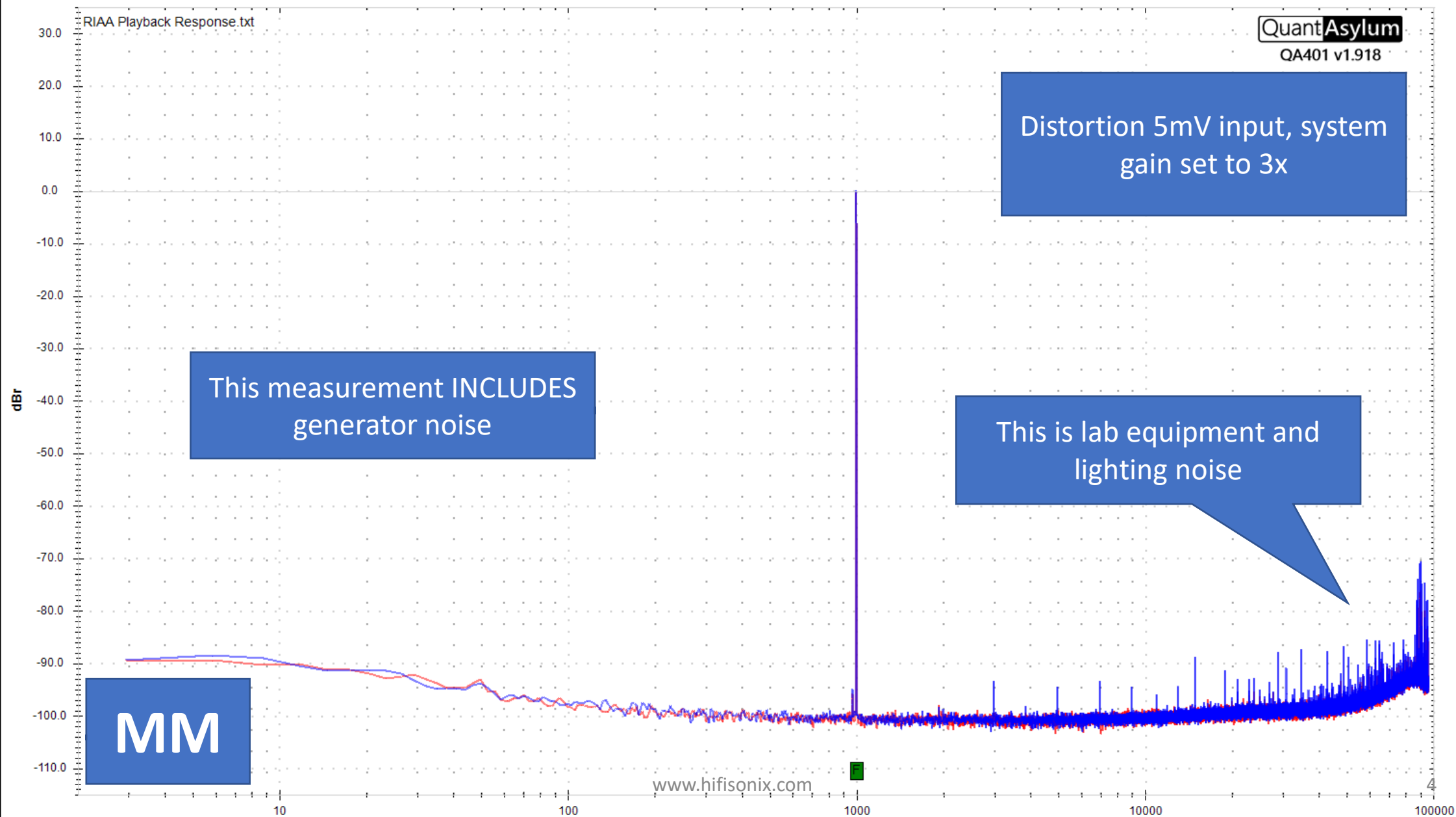
FFT: 64k
Avg: 50 of 50
Res: 2.92 Hz
Fs: 192 KHz
Win: Hann
Weight: User

Meas Start: 20.0 Hz
Meas Stop: 20.0 KHz

Peak L: 0.00 dBr
Peak R: -0.08 dBr
Peak L: 514.2 mVrms
Peak R: 509.8 mVrms
THD L: -82.3 dB/ 0.00768%
THD R: -86.1 dB/ 0.00497%

Gen 1: 999.0234 Hz @ -40.2 dBr
Gen 2: 18.99902 KHz @ 0.8 dBr

Phase L: -47.20 deg
Phase R: -46.75 deg
Delay L: 141 uSec
Delay R: 140 uSec
Gain L: 40.23 dB
Gain R: 40.16 dB



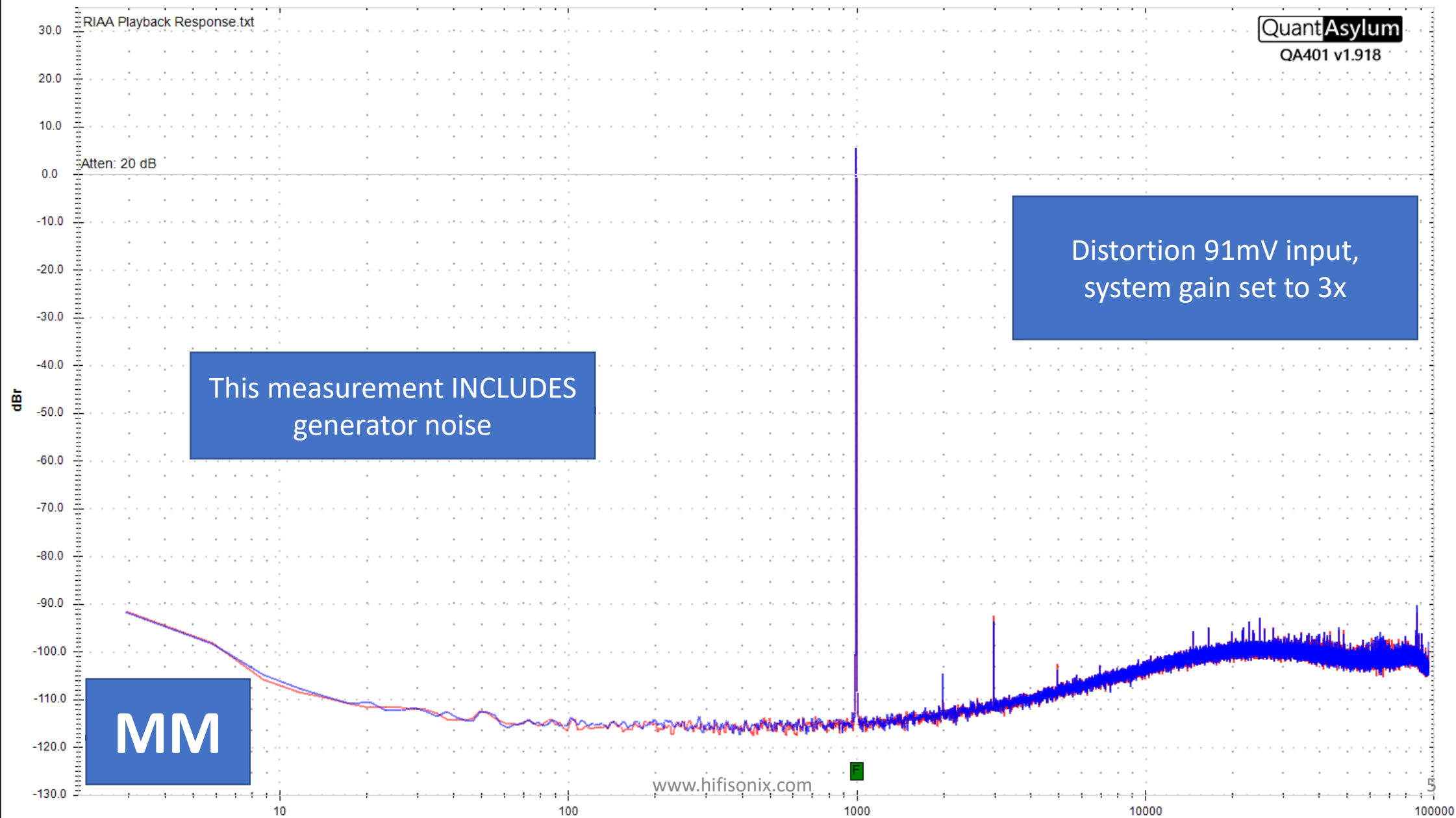
FFT: 64k
Avg: 36 of 50
Res: 2.92 Hz
Fs: 192 KHz
Win: Hann
Weight: User

Meas Start: 20.0 Hz
Meas Stop: 20.0 KHz

Peak L: 5.43 dBr
Peak R: 5.35 dBr
Peak L: 9.608 Vrms
Peak R: 9.523 Vrms
THD L: -92.4 dB/ 0.00241%
THD R: -92.2 dB/ 0.00247%

Gen 1: 999.0234 Hz @ -14.7 dBr
Gen 2: 18.99902 KHz @ 0.8 dBr

Phase L: -47.21 deg
Phase R: -46.79 deg
Delay L: 141 uSec
Delay R: 140 uSec
Gain L: 40.16 dB
Gain R: 40.08 dB



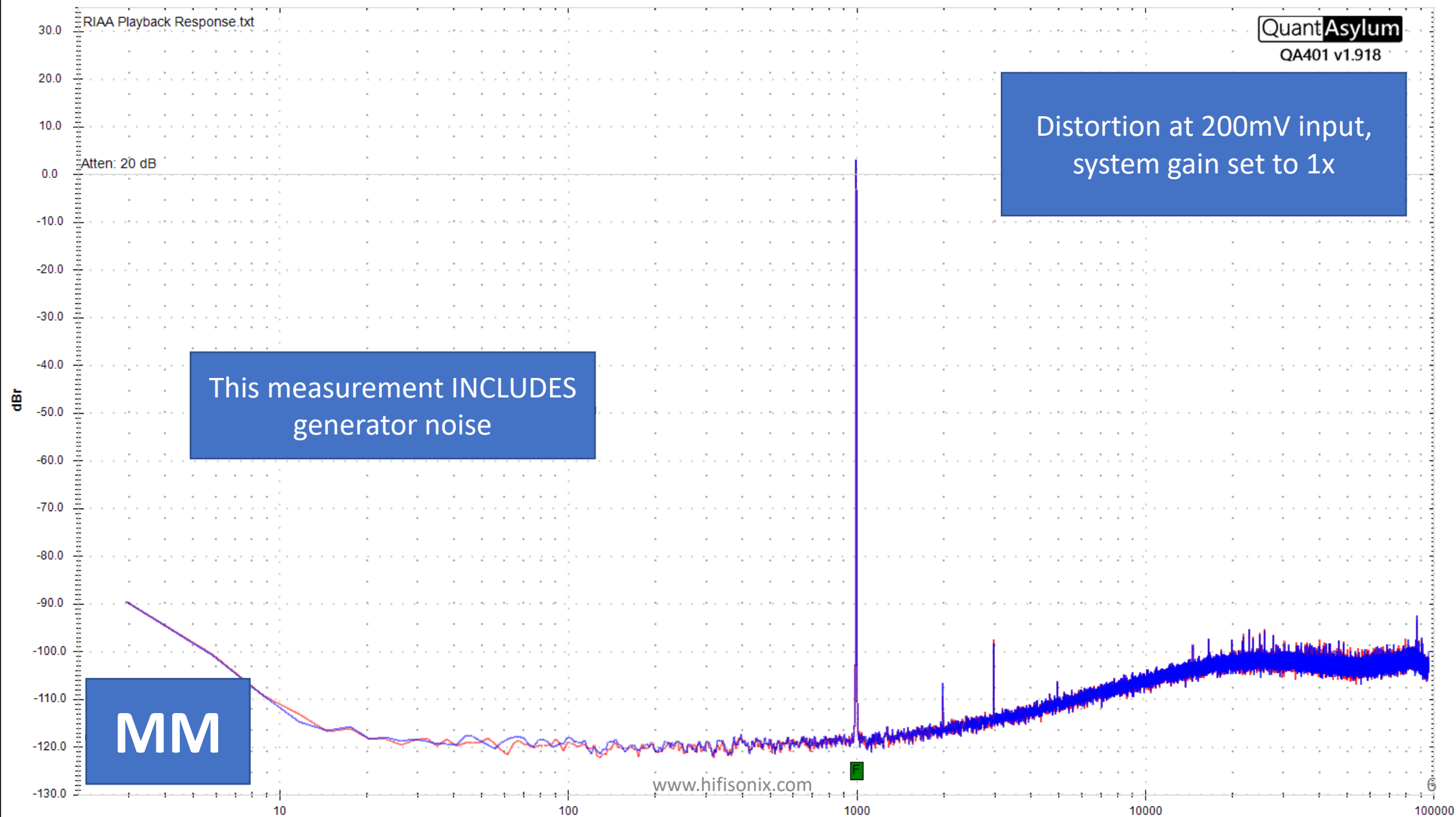
FFT: 64k
Avg: 28 of 50
Res: 2.92 Hz
Fs: 192 KHz
Win: Hann
Weight: User

Meas Start: 20.0 Hz
Meas Stop: 20.0 KHz

Peak L: 2.89 dBr
Peak R: 2.81 dBr
Peak L: 7.171 Vrms
Peak R: 7.107 Vrms
THD L: -92.5 dB/ 0.00236%
THD R: -92.5 dB/ 0.00238%

Gen 1: 999.0234 Hz @ -7.7 dBr
Gen 2: 18.99902 KHz @ 0.8 dBr

Phase L: -47.08 deg
Phase R: -46.65 deg
Delay L: 141 uSec
Delay R: 139 uSec
Gain L: 30.62 dB
Gain R: 30.54 dB



FFT: 64k
Avg: 50 of 50
Res: 2.92 Hz
Fs: 192 KHz
Win: Hann
Weight: User

Meas Start: 20.0 Hz
Meas Stop: 20.0 KHz

Peak L: 0.00 dBr
Peak R: -0.04 dBr
Peak L: 8.695 Vrms
Peak R: 8.653 Vrms
THD L: $-\infty$ dB/ 0.000000%
THD R: $-\infty$ dB/ 0.000000%

Gen 1: 18.79980 KHz @ -10.8 dBr
Gen 2: 20.00097 KHz @ -10.8 dBr

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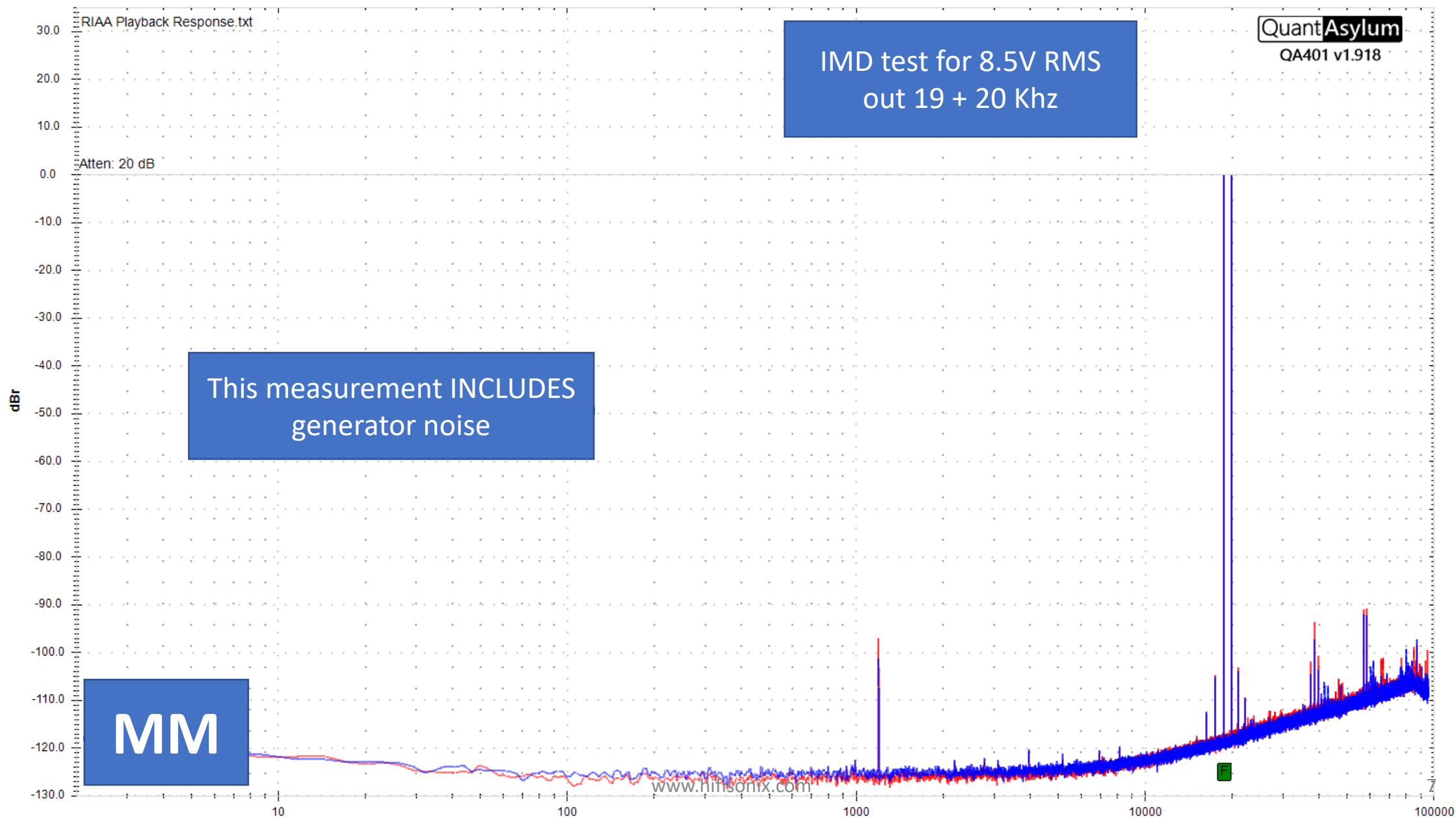
IMD test for 8.5V RMS
out 19 + 20 KHz

Atten: 20 dB

This measurement INCLUDES
generator noise

MM

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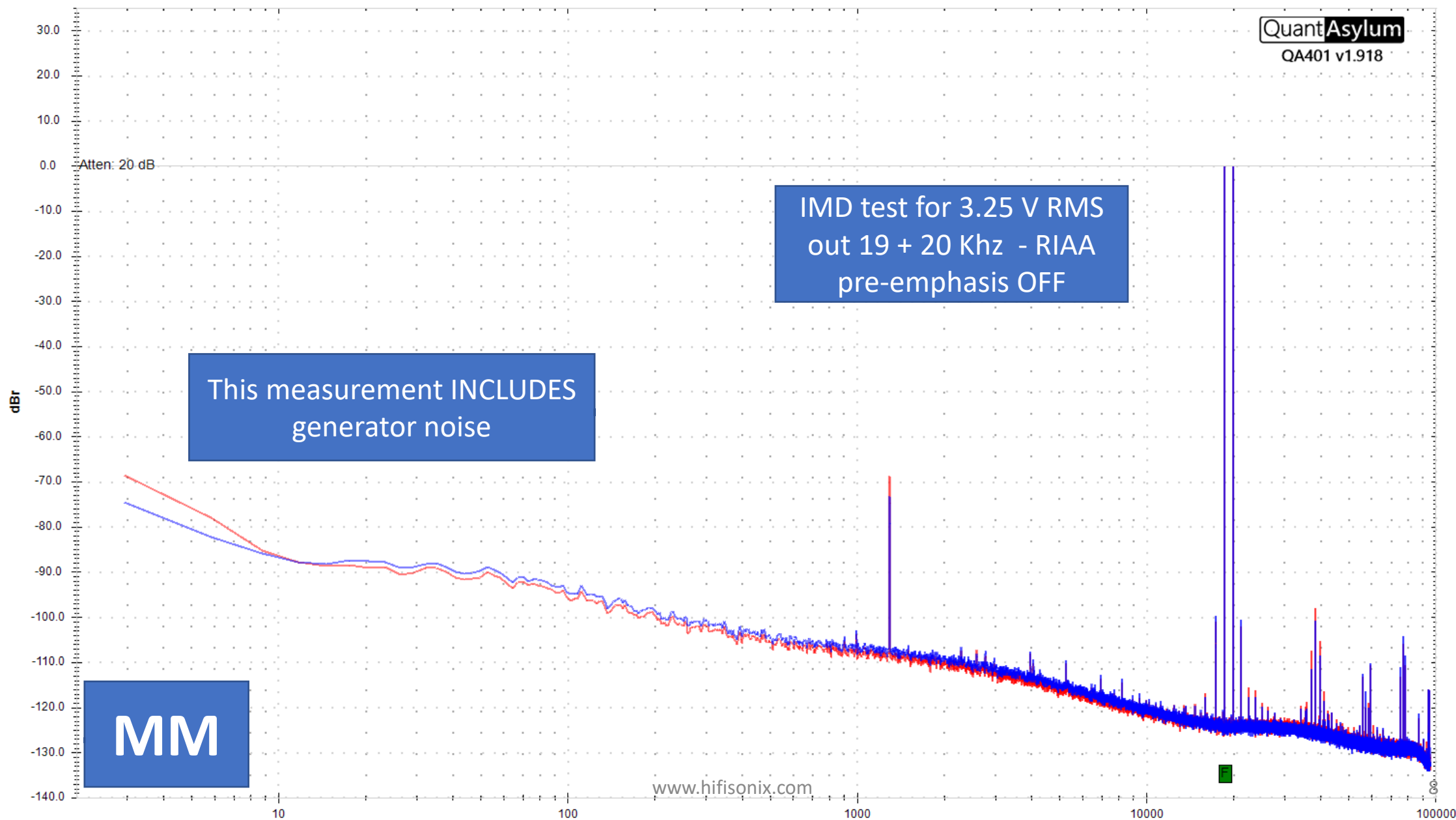
FFT: 64k
Avg: 50 of 50
Res: 2.92 Hz
Fs: 192 KHz
Win: Hann
Weight: None

Meas Start: 20.0 Hz
Meas Stop: 20.0 KHz

Peak L: 0.00 dBr
Peak R: -0.04 dBr
Peak L: 3.252 Vrms
Peak R: 3.236 Vrms
THD L: $-\infty$ dB/ 0.000000%
THD R: $-\infty$ dB/ 0.000000%

Gen 1: 18.70019 KHz @ 8.3 dBr
Gen 2: 20.00097 KHz @ 8.8 dBr

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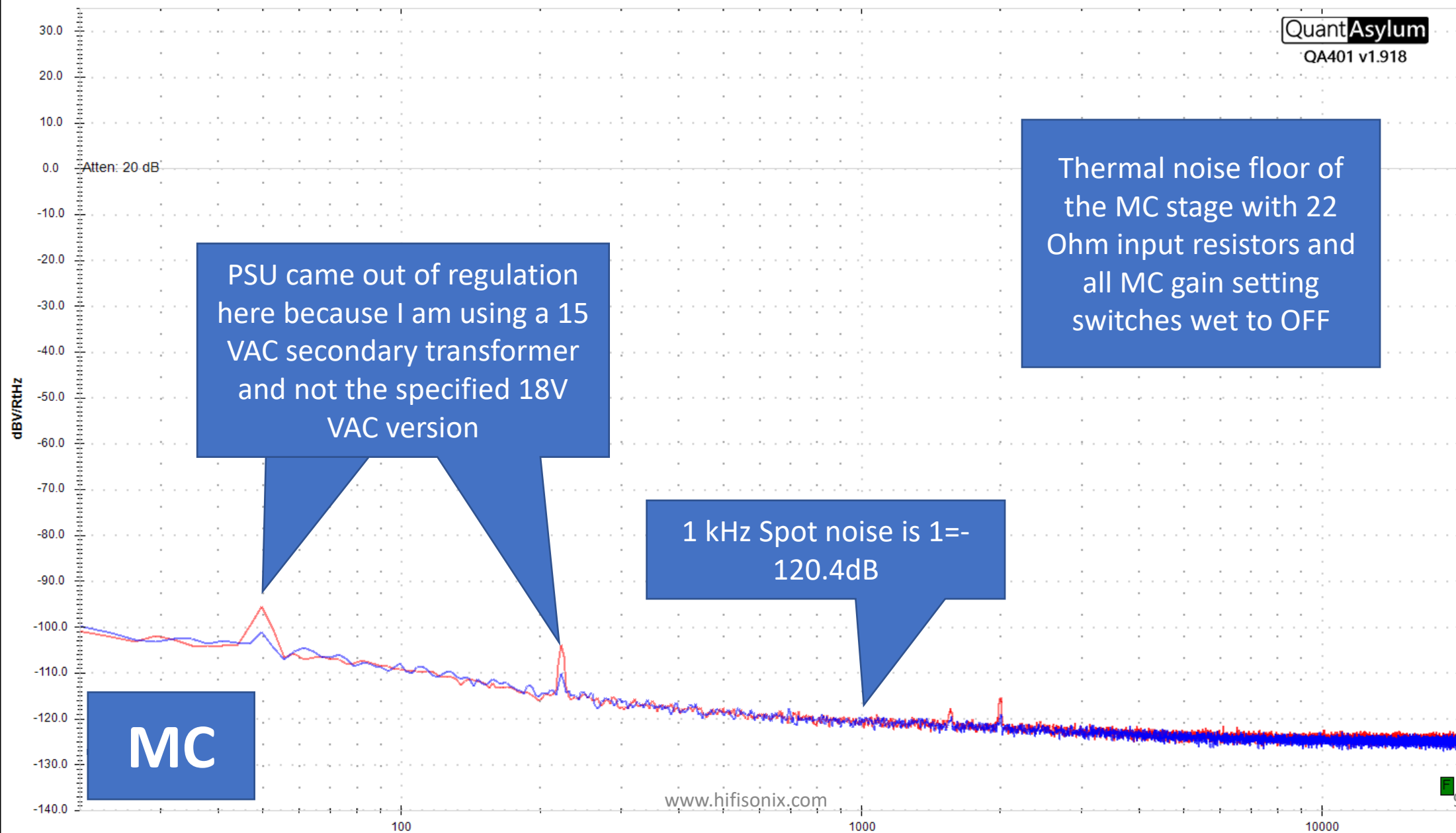
FFT: 64k
Avg: 50 of 50
Res: 2.92 Hz
Fs: 192 KHz
Win: Hann
Weight: None

Meas Start: 20.0 Hz
Meas Stop: 20.0 KHz

Peak L: -64.29 dBV
Peak R: -62.05 dBV
Peak L: 610.0 uVrms
Peak R: 789.6 uVrms
THD L: $-\infty$ dB/ 0.000000%
THD R: $-\infty$ dB/ 0.000000%

Gen 1: 18.70019 KHz @ -1.5 dBV
Gen 2: 20.00097 KHz @ -1.0 dBV

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FFT: 64k
Avg: 50 of 50
Res: 2.92 Hz
Fs: 192 KHz
Win: Hann
Weight: None

Meas Start: 20.0 Hz
Meas Stop: 20.0 KHz

Peak R: -90.66 dBV

Gen 1: 18.70019 KHz @ -1.5 dBV
Gen 2: 20.00097 KHz @ -1.0 dBV

Peak R: 29.31 uVrms

THD R: -∞ dB/ 0.00000%

QuantAsylum

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	Freq	Amp (dB)	Amp (dBr)
M0	1.0166 KHz	-121.96	---

This calculates to 798 pV spot noise which is 30 pV lower than the LTSpice model projection. This infers a RTI noise voltage for the TranBal of 194 pV/rt Hz. Note there is some difficulty in getting an accurate fix on the noise from the display due to the visual 'grass' and the fact that the the noise floor drifts around by about 2-3 dB – to be expected since we are looking at very small signal levels. However, this plot confirms that at a first cut, the TranBal noise performance is close to the theoretical prediction of 295 pV/rt Hz

Thermal noise floor of the MC stage with 22 Ohm input resistors and all MC gain setting switches set to OFF

Thermal noise of 22 Ohm resistor only is 604 pV

MC

M0