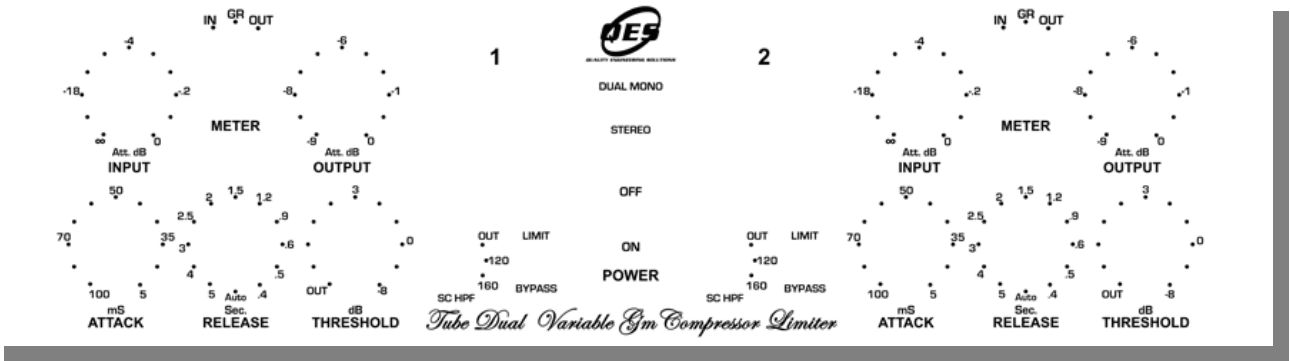


VARIABLE GM

Vacuum Tube Stereo Compressor



OWNER'S MANUAL

Thank you for purchasing our product.

We strive to provide you with a professional product, a toolbox you will use for several years with satisfaction.

This unit has been carefully handcrafted by Val in Italy, choosing the finest components available, aiming for your complete satisfaction.

It is of extreme importance that the unit be earthed !
You should use it with a FULLY functional earth well.
NEVER disconnect the earth from the receptacle.

Please make sure that your line mains voltage matches with the VariGm AC Inlet indication.

FUSE:

You should replace defective fuse with 1AT (slow blow) for 230Vac line, or 2AT for 115Vac line.

Please carefully read this manual throughout before operating the unit.

ANY real tube equipment is sensitive to a high SPL environment. This may cause microphonics in a recording situation. Make sure you are able to shock mount and or place the unit in isolation if need be.

Be sure to have at least one rack space between any tube products from above and below the unit. This will ensure your tube unit will not over heat. Overheating will cause damage to the tubes and shorten their life span.

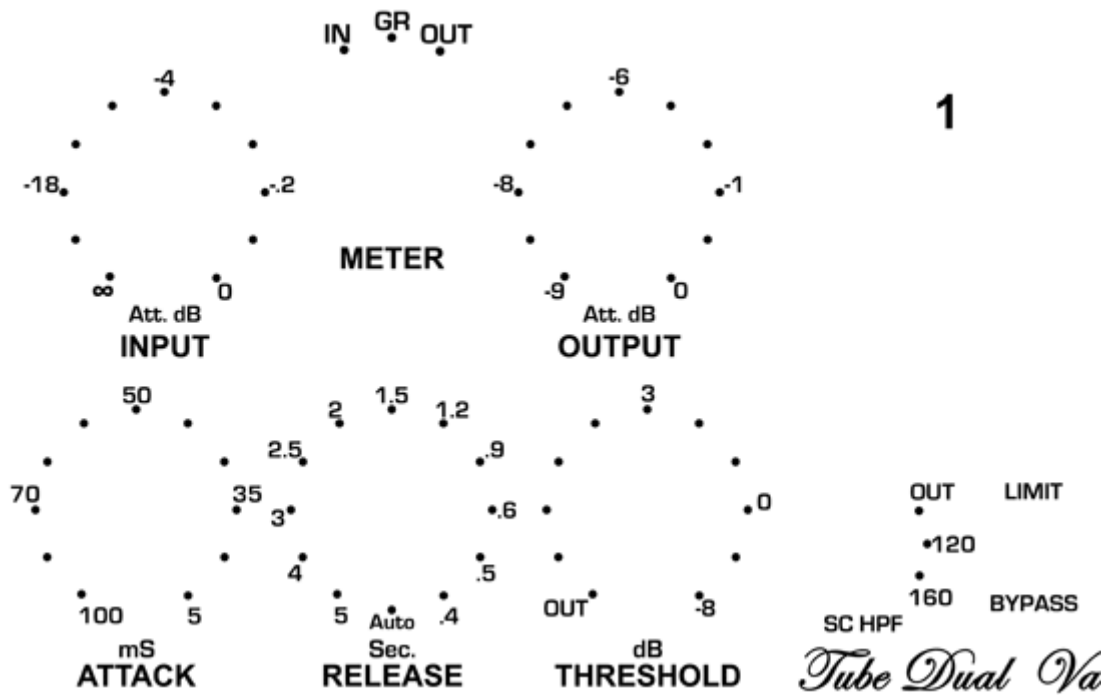
QES Labs reserves the right to make improvements or changes to it's products at any time, without notice.

Then have fun with your job.

1. OPERATION

Connect the unit before switching it on.

Make sure that all of the external connectors are plugged into the Variable Gm sockets, then switch the unit on.



2. FUNCTIONS

From left to right, the first stage of the Variable Gm is the Remote cut-off Preamplifier.

The available controls are:

- a) INPUT

It is a variable pad which levels the incoming audio signal from the Input XLR connector located at the back panel. In conjunction with the *OUTPUT* control, it imparts the colour of the compression. The more signal you feed to the remote cut-off stage (input stage), the more coloured and 'saturated' the processed audio will be. It's an attenuator from $-\infty$ To 0 dB.

OUTPUT

It is 9 dB variable attenuator (pad), it will serve you to trim the output signal if you need gain on the *INPUT* selector. It works in conjunction with it to determine the compression action.

METER FUNCTION SWITCH

Toggles between IN, GR, OUT. In the first position (In), the VU meter indicates the average (very similar to RMS) level of the signal present at the Input XLR connector for that channel. A 0VU indication lets you know that a +8 dBu (1.947Vrms) signal is present. Consequently, the +4dBu indication is found at the 50% on the percentage scale.

GR: Indicates the amount of gain reduction. The movement deals with the current variation of the remote cut-off tubes during the peak reduction action. The needle stands at the 0 with no compression. Even if the current variation has a relationship with the dB's of compression, the scale is not read in dB directly. You will have to learn the correct dB indication by ear. Usually when the needle is at -1, you're having about -2.5/-3dB of Peak Reduction.

OUT : Applies the same spec's as in the IN position, but the meter is actually monitoring the signal present at the Output XLR connector.

ATTACK

This controls the Attack time, the time when the compression action starts. The span is from 5 ms, fastest, in full cw position, and 100 ms, slowest, full ccw position. The time indication refers to the first time constant, i.e. when the reduction reaches 63% of it's final value.

RELEASE

It's a 12 position selector. Timing indications indicate the first time constant (63% of final value) of the time the compression action ceases. It is expressed in seconds. The last position (12) is program dependent (Auto).

THRESHOLD

This potentiometer (or 24-step rotary switch for the mastering version) indicates at which level the peak reduction action starts. In full ccw position the compression is out. At cw position the compression is the max. available.

It depends on the *INPUT* selector and the level of the incoming audio signal.

SIDE CHAIN HIGH PASS FILTER

It lets you cut the bass frequencies enter the side chain rectifier, so that the bass notes are not governing the compression action. It does not affect the actual audio signal path, just the Peak Reduction action.

BYPASS

Two independently operated switches for each channel, controlling an audio relay action. In bypass position the output connector is short circuited through the input connector (Hard-Wired Bypass).

STEREO LINK

It toggles between:

DUAL MONO: the unit acts as two independent channels.

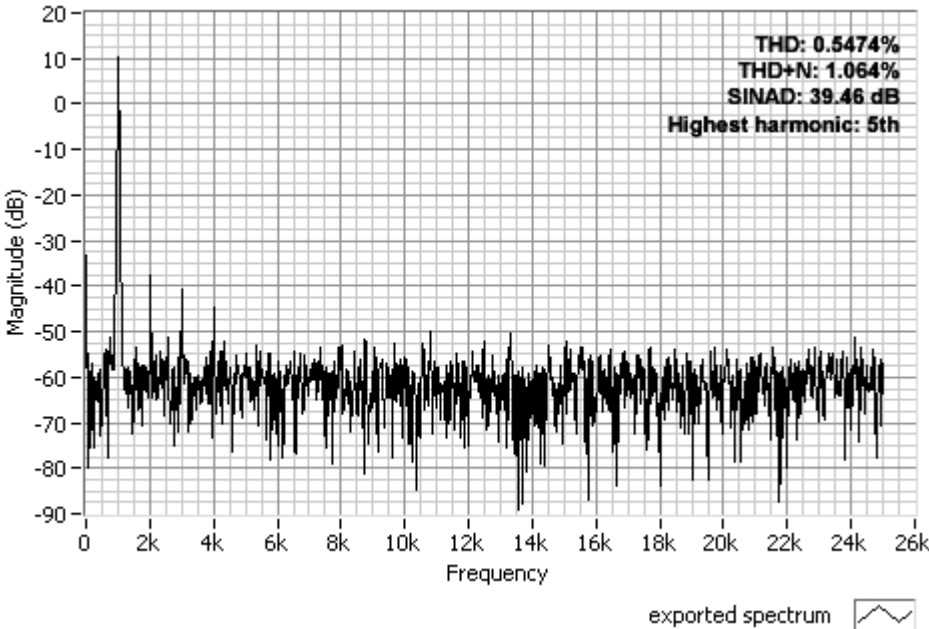
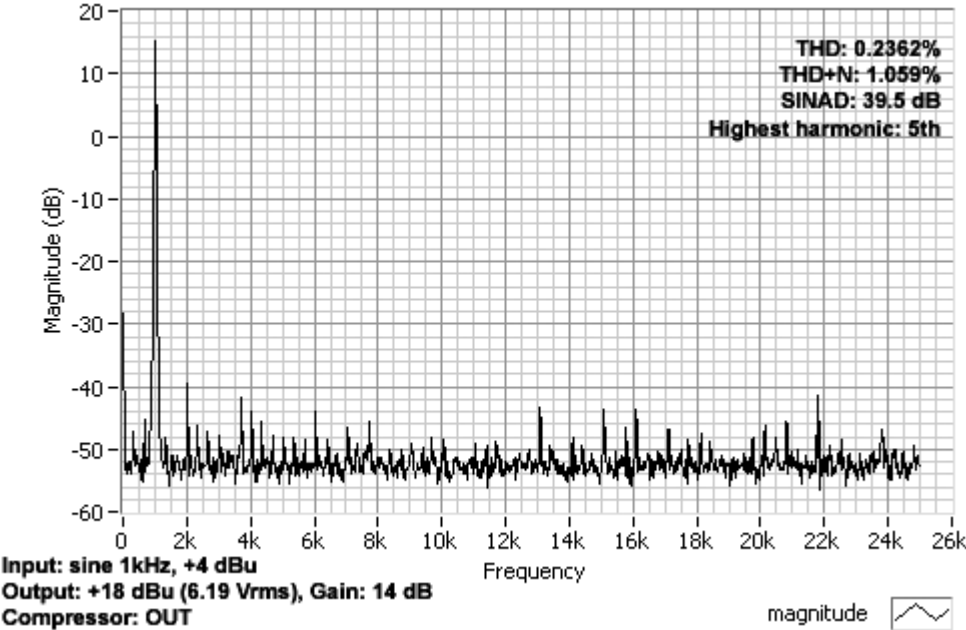
STEREO: the side chains are tied together, this way the stereo image is preserved.

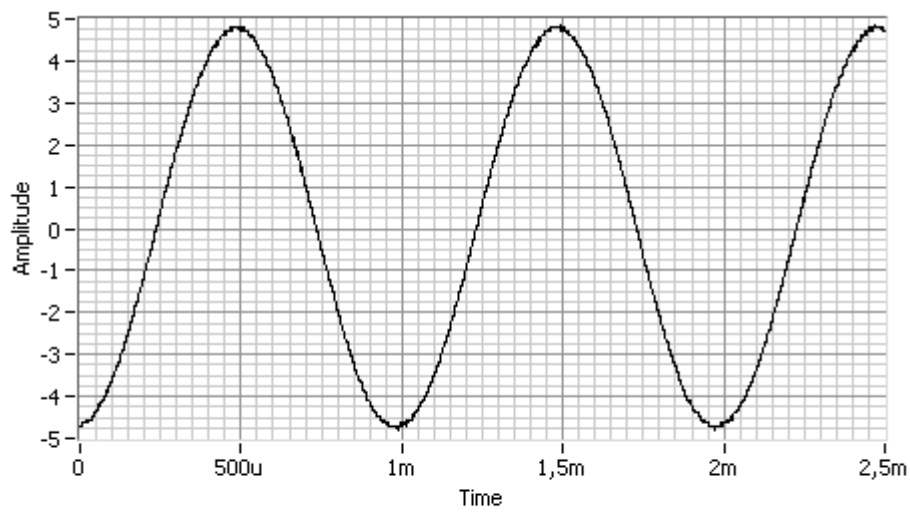
When the switch is on *STEREO* position, the controls *ATTACK* and *RELEASE* of the first channel are effective, the respective controls on CH 2 are out.

You still have to manually balance, and set equal, all the other selectors.


You can match them precisely by feeding the unit with a sine wave tone, and set the levels exactly equal through the meters.

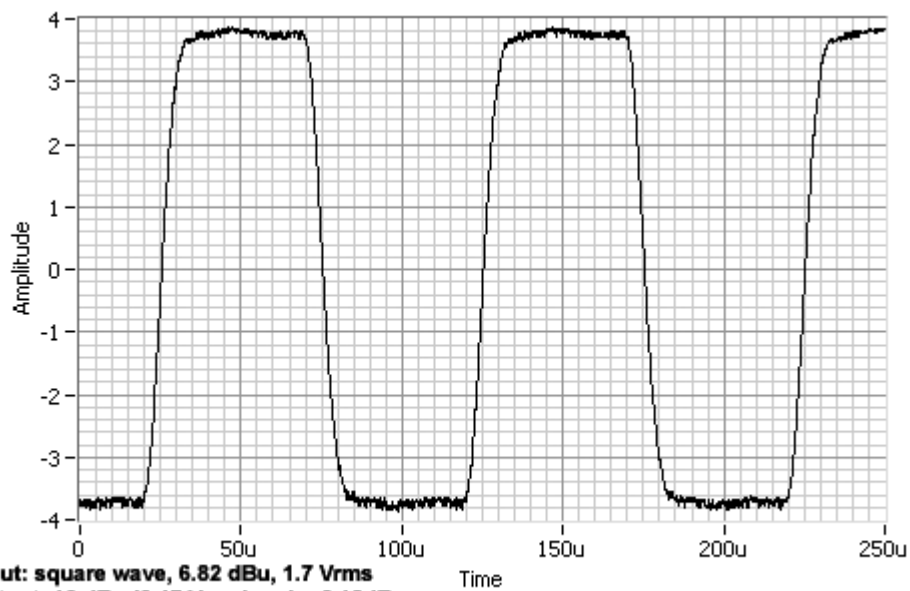
3. MEASUREMENTS





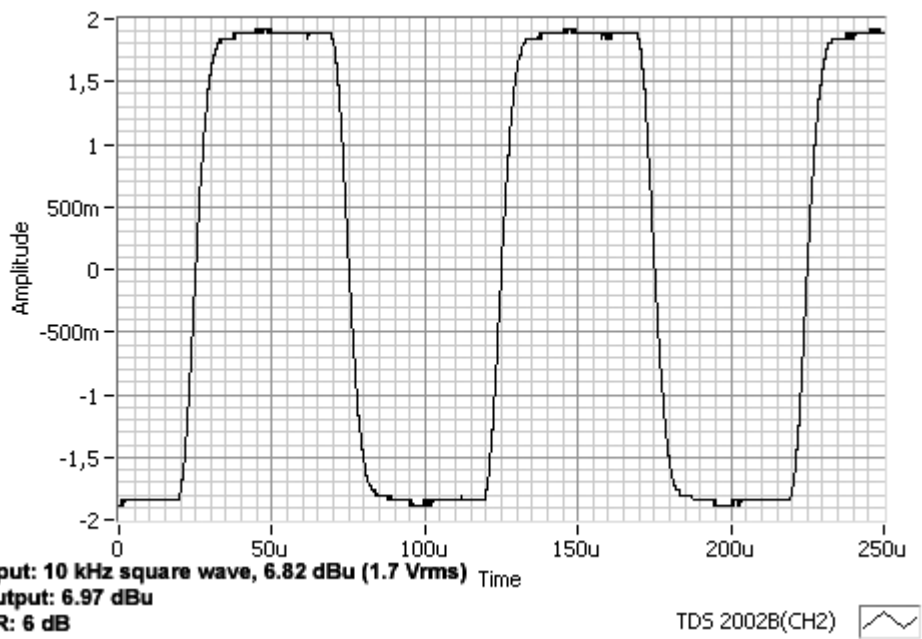
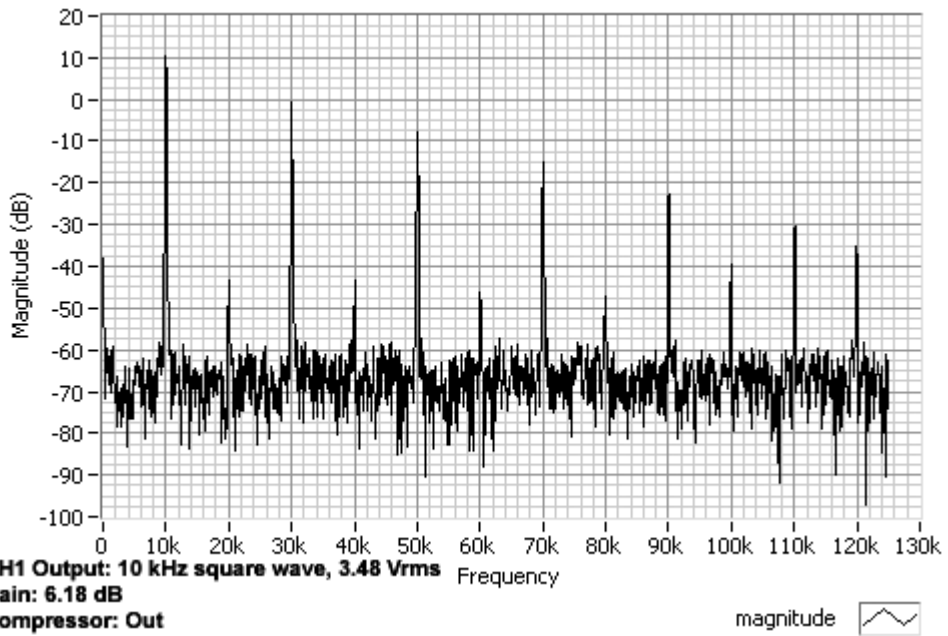
Input: +4 dBu. Sine, 1 kHz
Output: 12.77 dBu (3.38 Vrms)
Gain Reduction: 6 dB
Attack: 35 ms, Release: 0.5 s

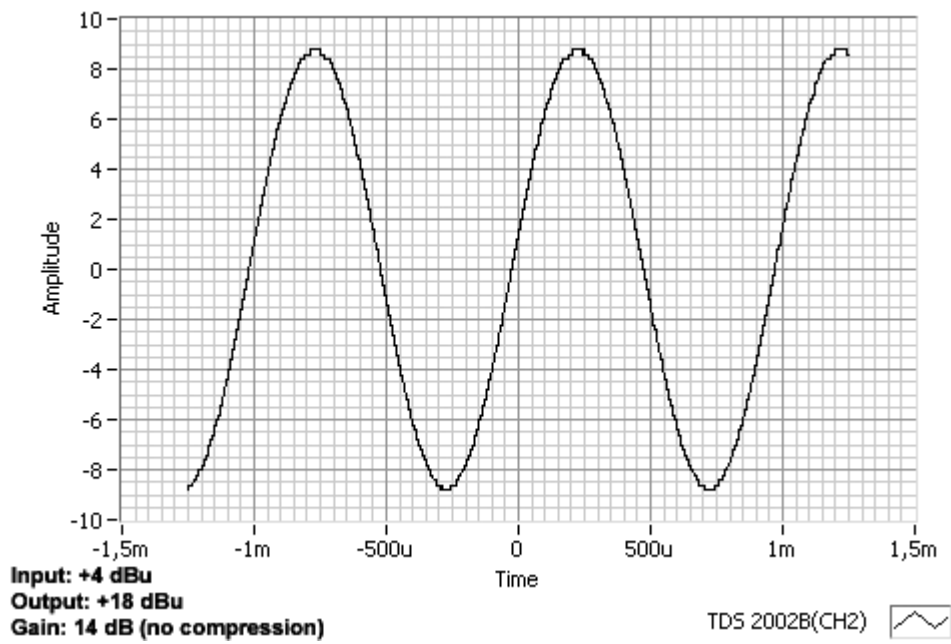
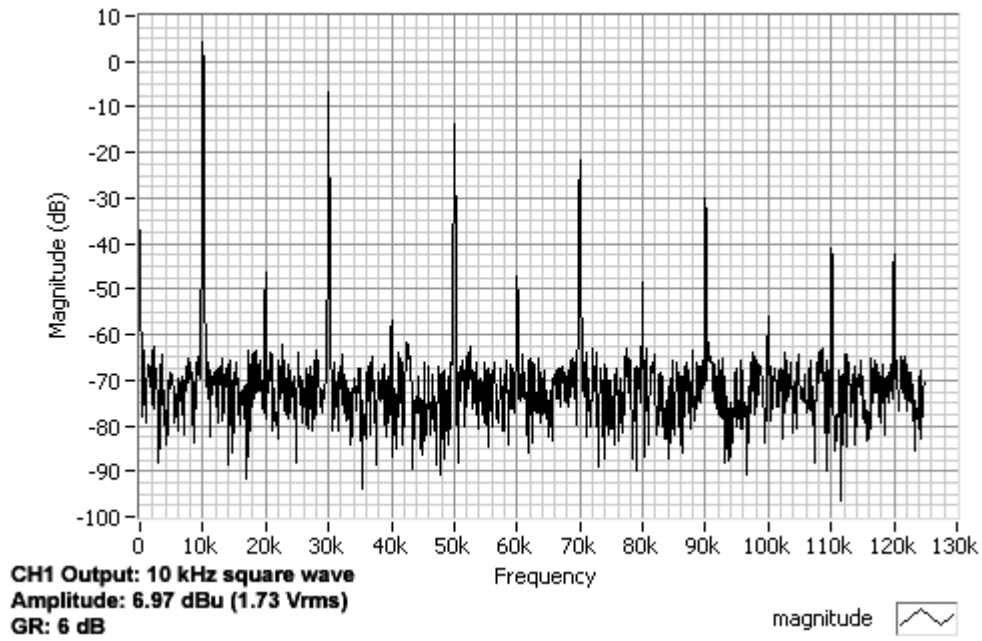
TDS 2002B(CH2) 



Input: square wave, 6.82 dBu, 1.7 Vrms
Output: 13 dBu (3.47 Vrms), gain: 6.18dB
Frequency: 10 kHz, Compression: Out

TDS 2002B(CH2) 





TECHNICAL SPECIFICATIONS:

Frequency response (+0/-0.5dB):

Channel Out (14 dB gain): 10 Hz – 20 KHz

5 Hz – 40 kHz (-3 dB)

Signal to noise ratio (unweighted, 50Ω source Z, 10Kohm load, ref. +20dBu):

Greater or equal to 80dB, 20Hz-40KHz

Common Mode Rejection Ratio (C.M.R.R.) ref. 1KHz, 14dB gain:

70dB.

Total Harmonic Distortion + Noise (THD+N), 1KHz, 5 harmonics count:

Gain 14dB, GR out, Output Level +18dBu = 1.06%

Intermodulation Distortion IMD (SMPTE), 60Hz/7kHz, 4:1, ref. +4dBu:

Line amp: less than 0.1%

Input and Output Impedance:

Input: 20 Kohm

Output: 200 ohms

Maximum Gain, source 50Ω, load 10kΩ :

26 dB (±2dB)

Maximum Output Level, balanced, 20Hz-20kHz, load 10kΩ, THD+N less than or equal to 1%:

+18dBu (±2dB)

DECLARATION OF CONFORMITY

I declare that the model “*Variable Gm*” conforms to the following standards adopted by the European Community:

EMC (electro magnetic compatibility) 89/336/CEE directive

LV (low voltage equipment) 73/23/CEE directive

on electrical safety (EN61010) and electromagnetic compatibility (EN61000).

RoHS (Restriction of Hazardous Substances) 2002/95/CEE directive.

QES Labs
di Valerio Riccelli
4 Via Ugo Niutta
Napoli, NA 80128
Italy.

Data / Date / Datum: 11/09/2007.

Firma / Signature / Signatur / Unterschrift

A handwritten signature in black ink that reads "Valerio Riccelli". The signature is written in a cursive style with a prominent underline.

Direttore tecnico / Technical manager / Directeur technique.

WARRANTY

All QES Labs equipment is covered by a limited warranty against manufacturing defects in materials and workmanship for a period of 2 (two) years since the date of purchase to the original purchaser only.

This warranty is provided by the dealer where the unit was purchased, and by QES Labs. In case of a valid warranty claim, buyer's sole and exclusive remedy and QES entire liability under any theory of liability will be, at its option, to repair or replace the product without charge, or, if not possible, to refund the purchase price.

The warranty is not transferable, and applies only to the original purchaser of the product.

This warranty is in lieu of all warranties whether oral or written, expressed or implied.

The warrantor assumes no liability for property damage or any other direct, indirect, special, incremental, incidental or consequential damage whatsoever which may result from failure of this product.

Any and all warranties of merchantability and fitness implied by law are limited to the duration of the expressed warranty.

