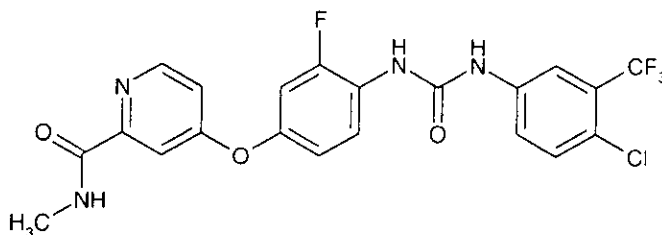


LC Laboratories®

CERTIFICATE OF ANALYSIS

Regorafenib, Free Base, >99%

LC LABS CAT. NO. **R-8024**
FORMULA $C_{21}H_{15}ClF_4N_4O_3$
M.W. 482.82
CAS NO. [755037-03-7]
STORAGE: Store at or below -20 °C
SOLUBILITY: Soluble in DMSO.



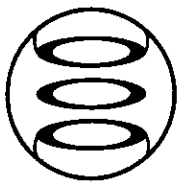
ANALYTICAL DATA

LOT NUMBER **RGR-103**
FORM Crystalline solid; granular or powder
COLOR White to off-white
HPLC PURITY >99% (see attached chromatogram)
TLC PURITY >99% (see attached chromatogram)
MELTING POINT 190-193 °C
PROTON NMR (see attached spectrum)
ELEMENTAL ANALYSIS For $C_{21}H_{15}ClF_4N_4O_3 \bullet 0.03C_2H_3N \bullet 0.1H_2O$:

	<u>Calculated</u>	<u>Found</u>
C	52.06%	52.25%
H	3.17%	3.14%
Cl	7.30%	7.19%
F	15.64%	15.62%
N	11.62%	11.56%

November 13, 2017

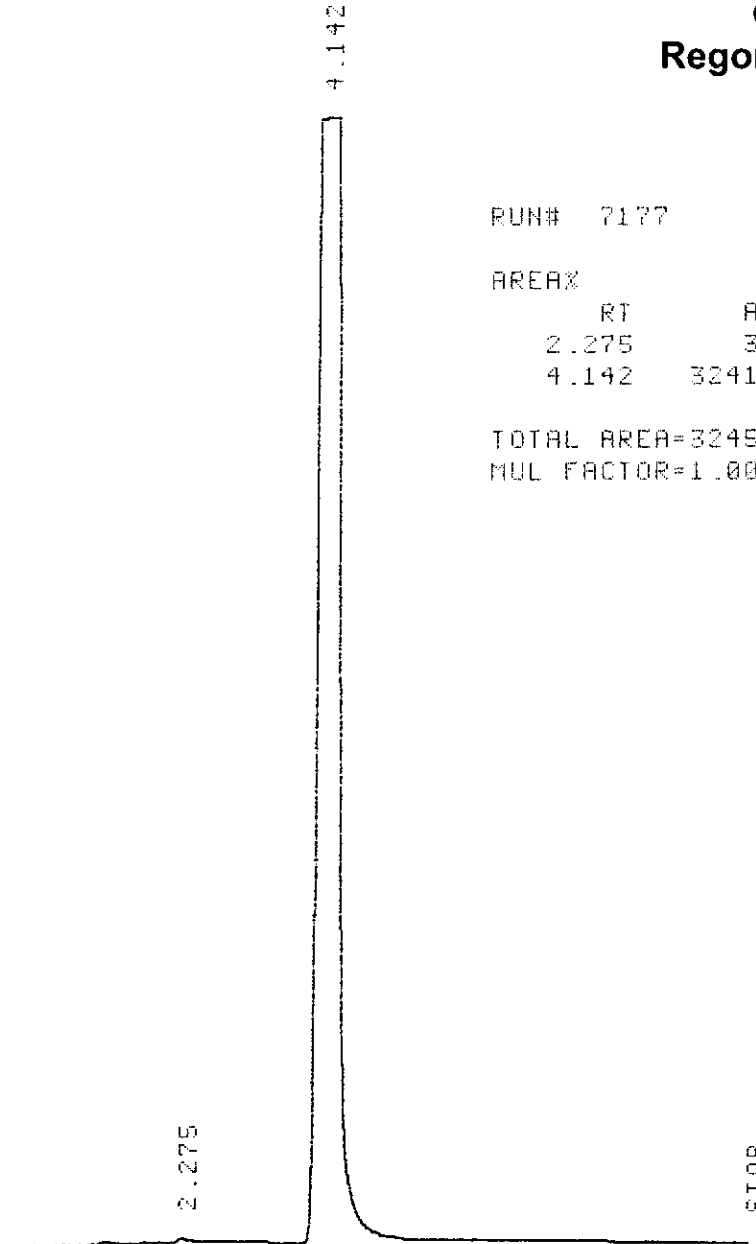
Tommy.D \COFA-BIZ\N-Z-COFA\RGR103FL.WPD



LC Laboratories®

Cat. No. R-8024
Regorafenib, Free Base
 Lot RGR-103
 >99%

*CAT. No. R-8024 REGORAFENIB, FREE BASE LOT No. RGR-103 BREAK
 * RUN # 7177 NOV 8, 2017 13:02:51
 START



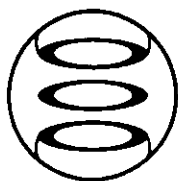
RUN# 7177 NOV 8, 2017 13:02:51

RT	AREA	TYPE	WIDTH	AREA%
2.275	3900	UV	.197	.12016
4.142	3241824	BB	.171	99.87984

TOTAL AREA=3245725
 MUL FACTOR=1.0000E+00

STOP

HPLC: C₁₈ Column, 4.6 mm x 30 cm
 Acetonitrile/Methanol/Water/Trifluoroacetic Acid 40/40/20/0.1
 2 mL/min
 UV₂₅₄ Detection



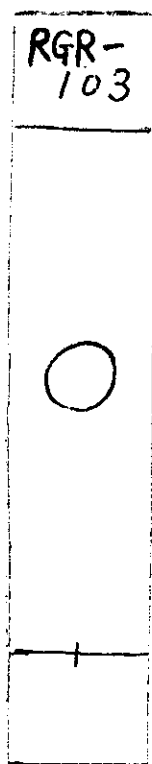
LC Laboratories®

Cat. No. R-8024

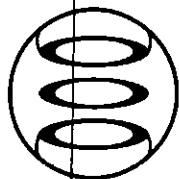
Regorafenib, Free Base

Lot RGR-103

>99%

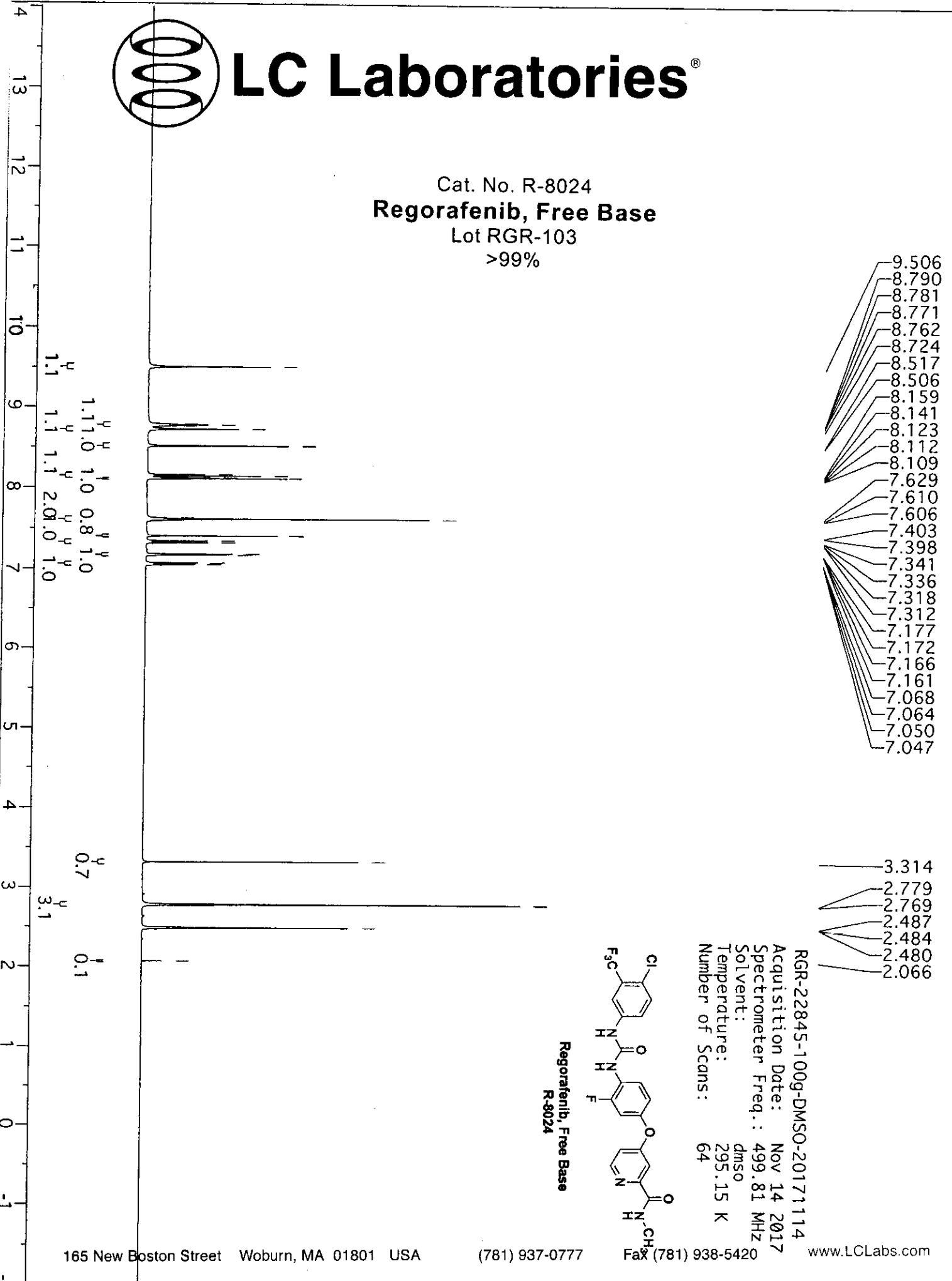


- TLC: 60 Å silica gel plates with fluorescent indicator
- Develop with Chloroform/Methanol/conc.NH₄OH 92/8/1
- Visualize via UV fluorescence quenching
- Also visualize by exposure to iodine vapor



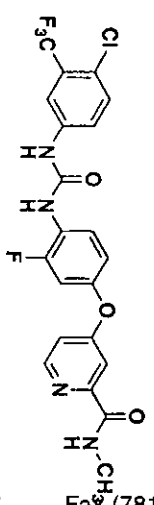
LC Laboratories®

Cat. No. R-8024
Regorafenib, Free Base
Lot RGR-103
>99%



- 9.506
- 8.790
- 8.781
- 8.771
- 8.762
- 8.724
- 8.517
- 8.506
- 8.159
- 8.141
- 8.123
- 8.112
- 8.109
- 7.629
- 7.610
- 7.606
- 7.403
- 7.398
- 7.341
- 7.336
- 7.318
- 7.312
- 7.177
- 7.172
- 7.166
- 7.161
- 7.068
- 7.064
- 7.050
- 7.047

- 3.314
- 2.779
- 2.769
- 2.487
- 2.484
- 2.480
- 2.066



Regorafenib, Free Base
R-8024

RGR-22845-100g-DMSO-20171114
Acquisition Date: Nov 14 2017
Spectrometer Freq.: 499.81 MHz
Solvent: dmso
Temperature: 295.15 K
Number of Scans: 64