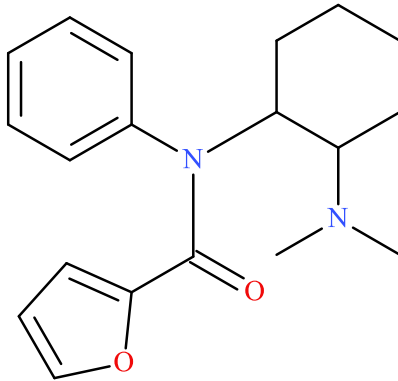


Furanyl UF-17

Sample Type: **Seized Material**



Latest Revision: **July 22, 2019**

Date Received: **May 7, 2019**

Date of Report: **June 18, 2019**

1. GENERAL INFORMATION

IUPAC Name:	N-[2-(dimethylamino)cyclohexyl]-N-phenyl-furan-2-carboxamide
InChI String:	InChI=1S/C19H24N2O2/c1-20(2)16-11-6-7-12-17(16)21(15-9-4-3-5-10-15)19(22)18-13-8-14-23-18/h3-5,8-10,13-14,16-17H,6-7,11-12H2,1-2H3
CFR:	Not Scheduled (06/2019)
CAS#	Not Available
Synonyms:	Furanyl U-17
Source:	Department of Homeland Security
Appearance:	White Solid Material

Important Note: All identifications were made based on evaluation of analytical data (GC-MS and LC-QTOF) in comparison to analysis of acquired reference material.

Prepared By: Alex J. Krotulski, MSFS, Melissa F. Fogarty, MSFS, D-ABFT-FT, and Barry K. Logan, PhD, F-ABFT

2. CHEMICAL AND PHYSICAL DATA

2.1 CHEMICAL DATA

Form	Chemical Formula	Molecular Weight	Molecular Ion [M ⁺]	Exact Mass [M+H] ⁺
Base	C ₁₉ H ₂₄ N ₂ O ₂	312.4	312	313.1910

3. BRIEF DESCRIPTION

Furanyl UF-17 is structurally similar to UF-17, a drug synthesized during pharmaceutical discovery by the Upjohn Company as an antidepressant agent.¹ The “UF-17” name was created by Cayman Chemical due to structural resemblance with U-47700 and fentanyl, two synthetic opioids, as well as the number scheme from its original patent. No information is available regarding the activities or receptor binding profiles of UF-17 and Furanyl UF-17, specifically relating to the opioid receptor system; therefore, these substances have not been assigned a subclassification under the novel psychoactive substance (NPS) class of emerging drugs. UF-17 and Furanyl UF-17 are not scheduled substances in the United States.

4. ADDITIONAL RESOURCES

1. Szmuszkovicz, J; VonVoigtlander, PF; Kane, MP. A New Nontricyclic Antidepressant Agent. Synthesis and Activity of N-[trans-2-(Dimethylamino)cyclopentyl]-N-(3,4-dichlorophenyl)propanamide and Related Compounds. *J Med Chem.* **1981**, 23, 1230-1236. <https://www.ncbi.nlm.nih.gov/pubmed/7328583>

<https://www.caymanchem.com/product/27924>

5. QUALITATIVE DATA

5.1 GAS CHROMATOGRAPHY MASS SPECTROMETRY (GC-MS)

Testing Performed At: NMS Labs (Willow Grove, PA)

Sample Preparation: Acid/Base extraction

Instrument: Agilent 5975 Series GC/MSD System

Column: Zebron™ Inferno™ ZB-35HT (15 m x 250 μm x 0.25 μm)

Carrier Gas: Helium (Flow: 1 mL/min)

Temperatures: Injection Port: 265 °C
Transfer Line: 300 °C
MS Source: 230 °C
MS Quad: 150 °C
Oven Program: 60 °C for 0.5 min, 35 °C/min to 340 °C for 6.5 min

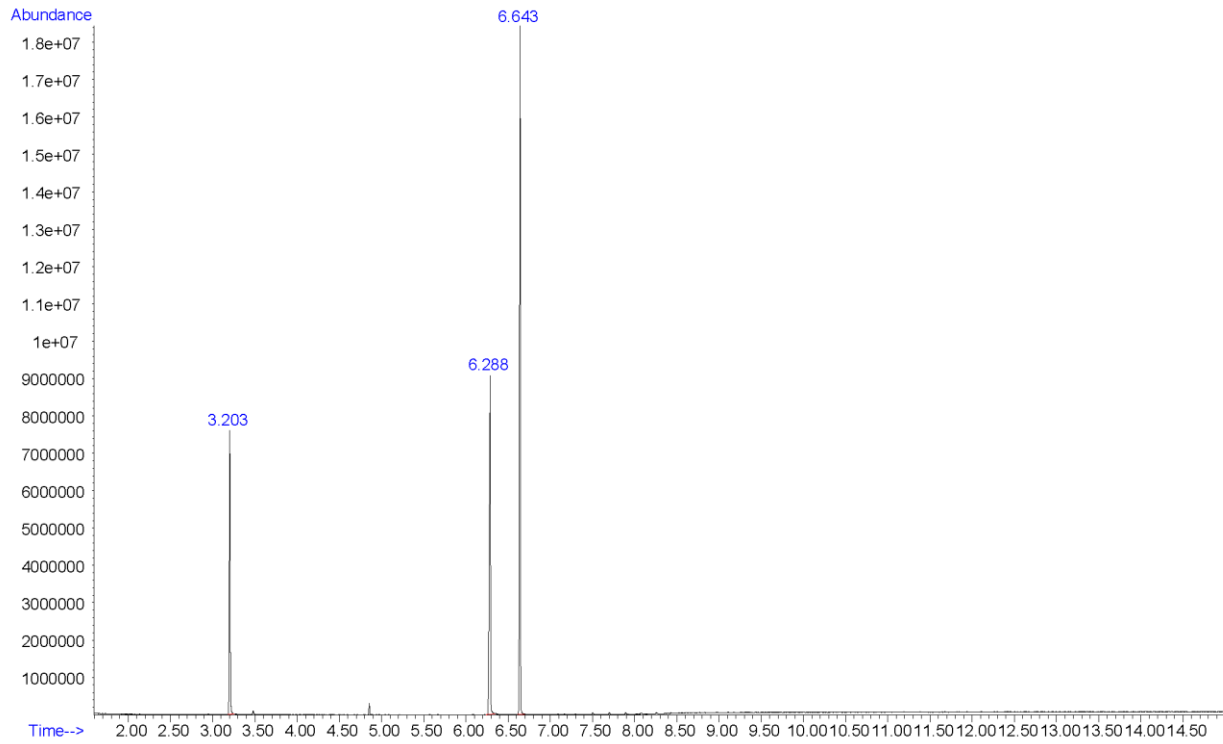
Injection Parameters: Injection Type: Splitless
Injection Volume: 1 µL

MS Parameters: Mass Scan Range: 40-550 m/z
Threshold: 250

Retention Time: 6.643 min

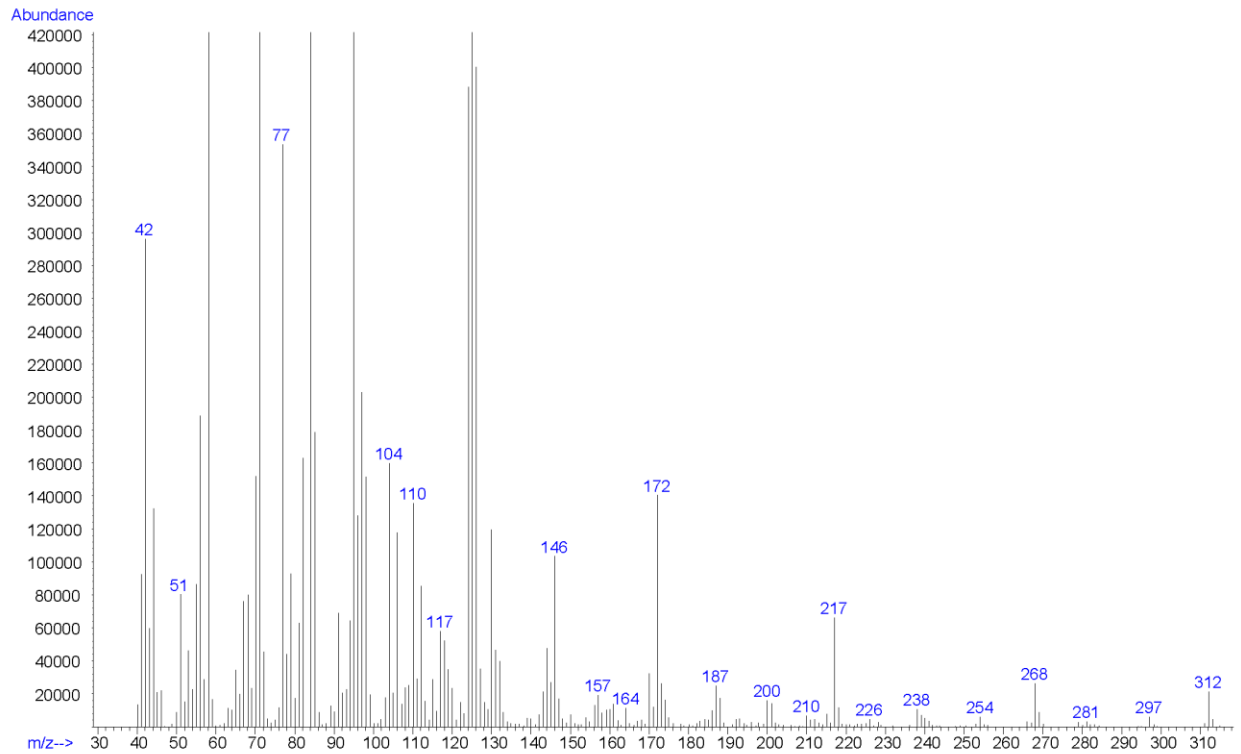
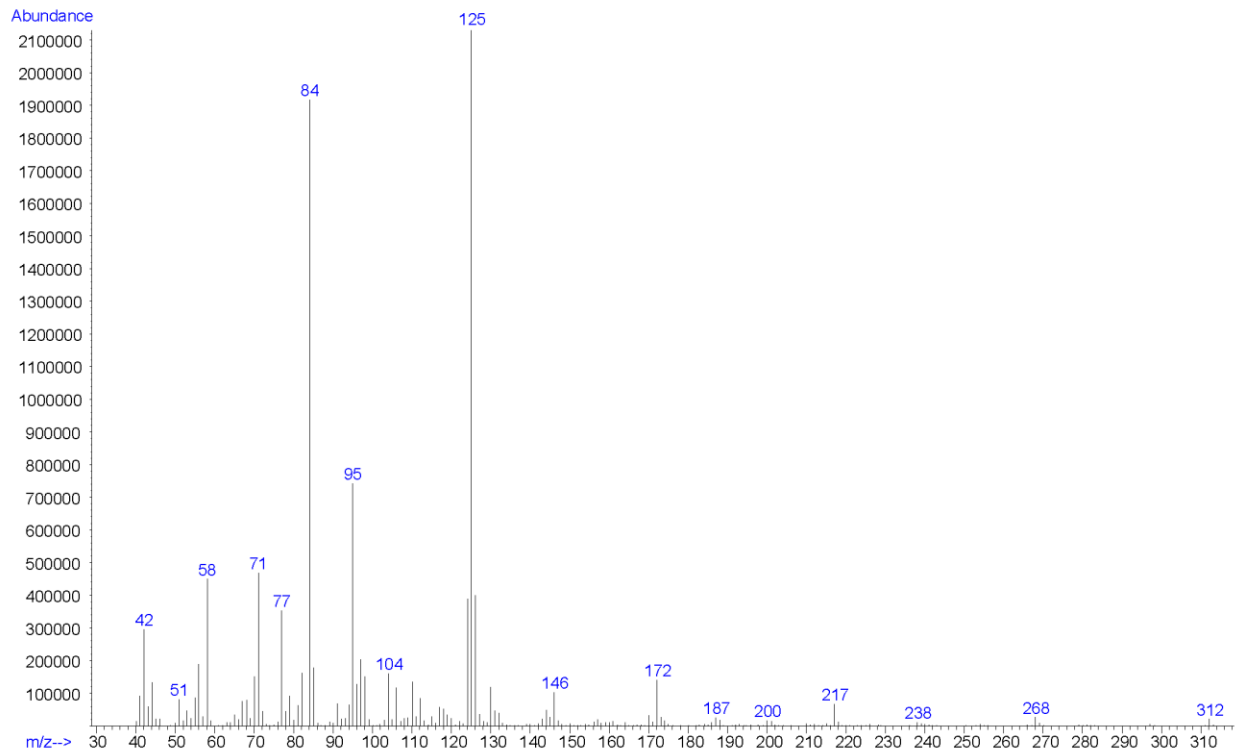
Standard Comparison: Reference material for Furanyl UF-17 (Batch: 0558709-7) was purchased from Cayman Chemical (Ann Arbor, MI, USA). Analysis of this standard resulted in positive identification of the analyte in the exhibit as Furanyl UF-17, based on retention time (6.643 min) and mass spectral data.
(<https://www.caymanchem.com/product/27924>)

Chromatogram: Furanyl UF-17



Additional peaks present in chromatogram: internal standards (3.203 min and 6.288 min)

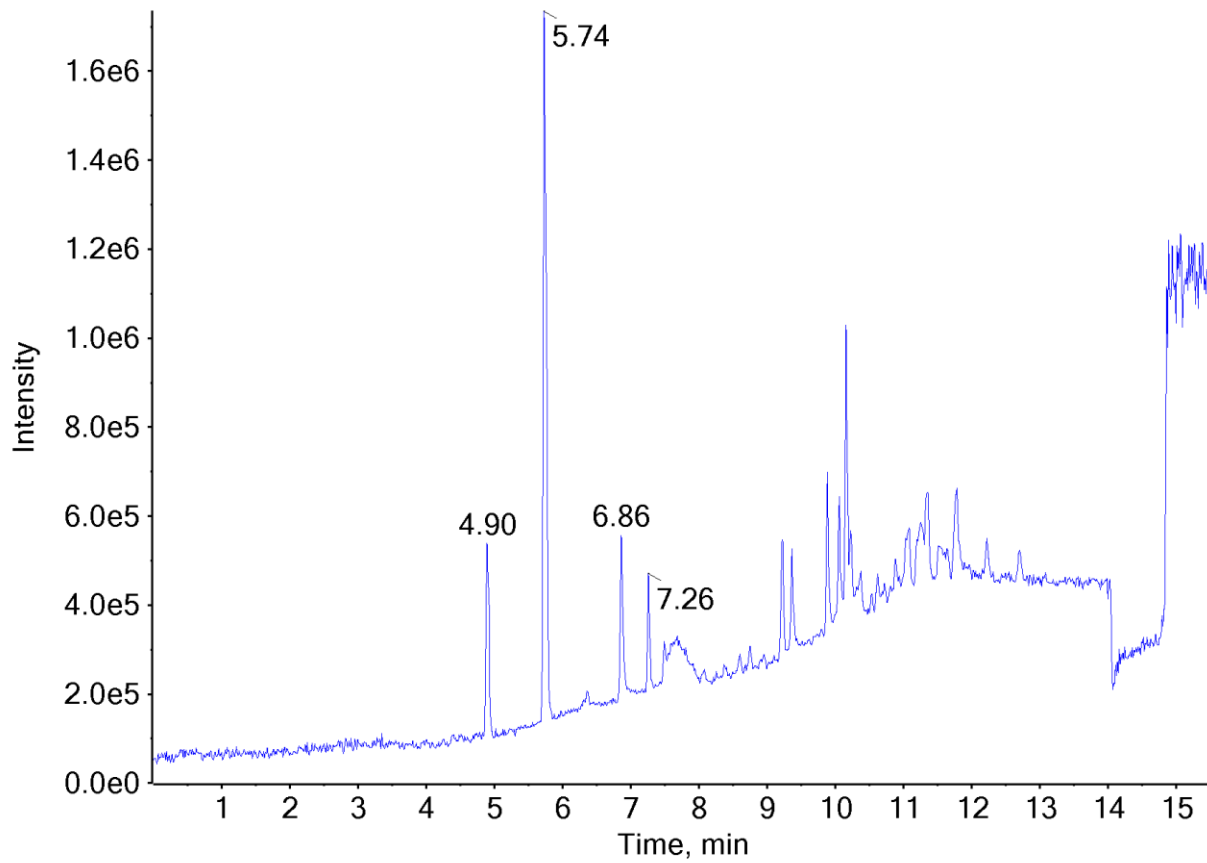
EI (70 eV) Mass Spectrum (Top) and 10x (Bottom): Furanyl UF-17



5.2 LIQUID CHROMATOGRAPHY QUADRUPOLE TIME OF FLIGHT MASS SPECTROMETRY (LC-QTOF)

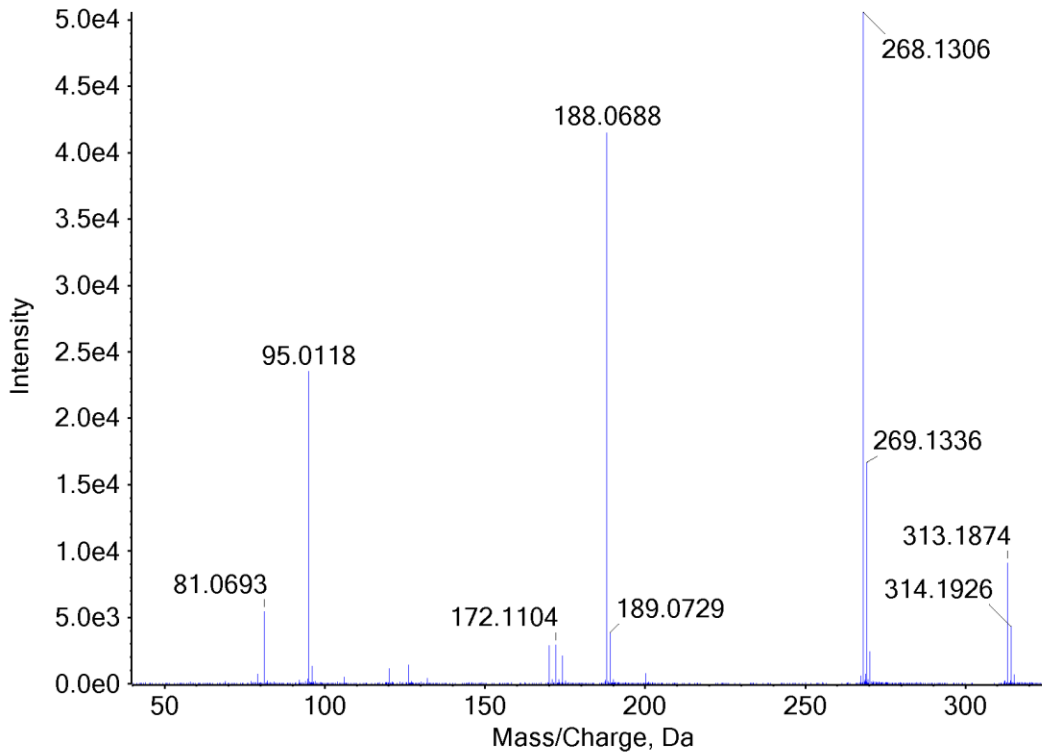
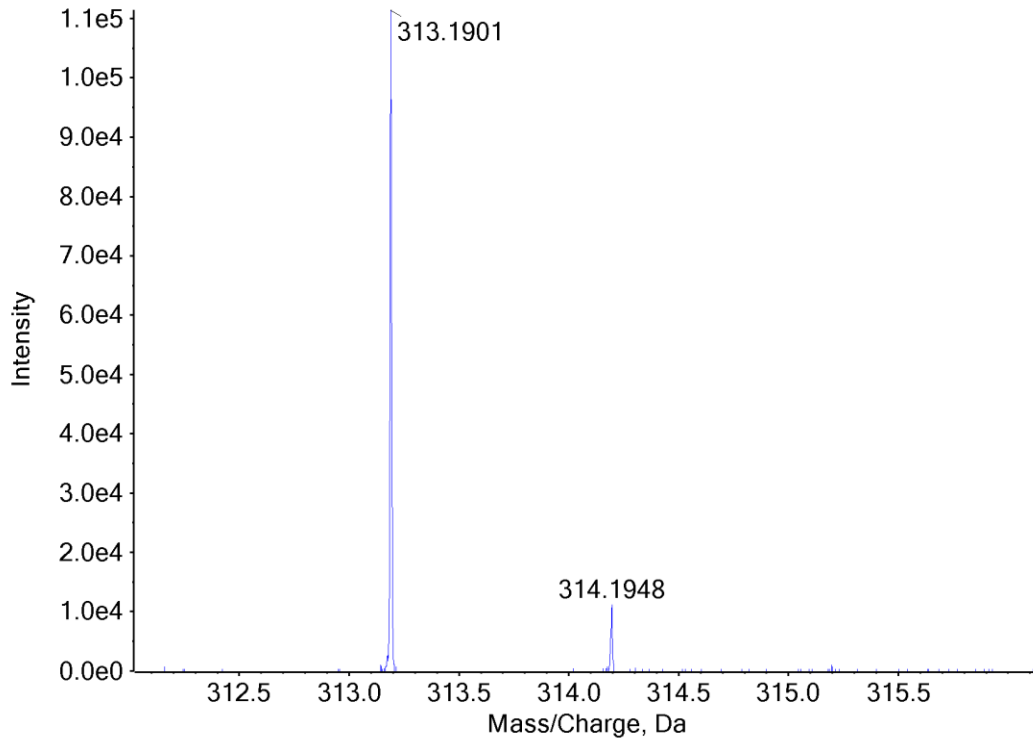
Testing Performed At:	The Center for Forensic Science Research and Education at the Fredric Rieders Family Foundation (Willow Grove, PA)
Sample Preparation:	1:100 dilution of acid/base extract in mobile phase
Instrument:	Sciex TripleTOF® 5600+, Shimadzu Nexera XR UHPLC
Column:	Phenomenex® Kinetex C18 (50 mm x 3.0 mm, 2.6 µm)
Mobile Phase:	A: Ammonium formate (10 mM, pH 3.0) B: Methanol/acetonitrile (50:50) Flow rate: 0.4 mL/min
Gradient:	Initial: 95A:5B; 5A:95B over 13 min; 95A:5B at 15.5 min
Temperatures:	Autosampler: 15 °C Column Oven: 30 °C Source Heater: 600 °C
Injection Parameters:	Injection Volume: 10 µL
QTOF Parameters:	TOF MS Scan Range: 100-510 Da Precursor Isolation: SWATH® acquisition (27 windows) Fragmentation: Collision Energy Spread (35±15 eV) MS/MS Scan Range: 50-510 Da
Retention Time:	5.74 min
Standard Comparison:	Reference material for Furanyl UF-17 (Batch: 0558709-7) was purchased from Cayman Chemical (Ann Arbor, MI, USA). Analysis of this standard resulted in positive identification of the analyte in the exhibit as Furanyl UF-17, based on retention time (5.73 min) and mass spectral data. (https://www.caymanchem.com/product/27924)

Chromatogram: Furanyl UF-17



Additional peaks present in chromatogram: internal standard (4.90 min), not a controlled substance (6.86 min), and internal standard (7.26 min)

TOF MS (Top) and MS/MS (Bottom) Spectra: Furanyl UF-17



6. REVISION HISTORY

Date

Revision

07/22/2019

Important Note (Page 1) Revised: “All identifications were made based on evaluation of analytical data (GC-MS and LC-QTOF) in comparison to analysis of acquired reference material.”