

# CERTIFICATE of ANALYSIS



## Fentanyl Analog Screening Kit

For R&D purposes only. Not intended for human or animal use.

Item No.:	9003237
Batch No.:	0538860
Size:	200 µg/well
Expiry Date:	28JAN2022 (valid from date of certification)
Storage & Handling:	Store upright and unopened at -20°C. Warm to room temperature prior to opening.
Safety:	Danger. Review the Safety Data Sheets before use.

### Description

This product consists of 96-well Matrix plates containing individual fentanyl analog standards. The individual well locations for each unique standard are listed in the table below. The supplemental data package contains the batch-specific certificates of analysis for each compound used in the preparation of this plate.

### Traceability Statement

This kit was prepared from individual standards that have been verified through standard quality testing and are traceable via individual item and batch numbers. Individual certificates of analysis are available at [www.caymanchem.com/faskitdocuments](http://www.caymanchem.com/faskitdocuments). All compounds used to make this kit were used within their valid expiry dates. Stability testing of this kit is ongoing to ensure continuous quality and traceability of the materials.

### Quality Testing

A single kit was pulled randomly from the batch and high resolution accurate mass analysis was performed to verify the contents of each vial position. A summary of results is reported below as the average ppm mass error  $\pm$  standard deviation determined for all analytes.

Test	Result	Specification	Meets Specification
Average mass error	2.13 $\pm$ 0.24 ppm	$\pm$ 10 ppm	Yes

Individual results are reported in the table on pages 2-9.

Approval: 

Title: Director of Analytical Chemistry

Certification Date: 28JAN2019

Cayman Chemical certifies that this product meets the specifications stated in this certificate and warrants this product to meet the stated acceptance criteria through the expiry date when stored unopened as recommended.

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## Kit Contents Plate 1

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] <sup>+</sup> m/z	Measured [M+H] <sup>+</sup> m/z	Mass Accuracy (ppm)
A1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
A2	$\alpha$ -methyl Acetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>28</sub> N <sub>2</sub> O	337.2274	337.2267	2.14
A3	Acetyl norfentanyl (hydrochloride)	C <sub>13</sub> H <sub>18</sub> N <sub>2</sub> O	219.1492	219.1489	1.51
A4	<i>ortho</i> -methoxy Furanyl fentanyl	C <sub>25</sub> H <sub>28</sub> N <sub>2</sub> O <sub>3</sub>	405.2173	405.2164	2.15
A5	<i>ortho</i> -methyl Furanyl fentanyl	C <sub>25</sub> H <sub>28</sub> N <sub>2</sub> O <sub>2</sub>	389.2224	389.2215	2.11
A6	4'-methyl Acetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>28</sub> N <sub>2</sub> O	337.2274	337.2268	1.96
A7	Thiophene fentanyl (hydrochloride)	C <sub>24</sub> H <sub>26</sub> N <sub>2</sub> OS	391.1839	391.1831	2.02
A8	<i>para</i> -chloro Cyclobutyl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>29</sub> ClN <sub>2</sub> O	397.2041	397.2033	2.19
A9	N-methyl Cyclopropyl norfentanyl (hydrochloride)	C <sub>16</sub> H <sub>22</sub> N <sub>2</sub> O	259.1805	259.1800	2.04
A10	$\beta$ -methyl Acetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>28</sub> N <sub>2</sub> O	337.2274	337.2266	2.43
A11	4-ANPP	C <sub>19</sub> H <sub>24</sub> N <sub>2</sub>	281.2012	281.2007	2.06
A12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
B1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
B2	<i>para</i> -methyl Acrylfentanyl (hydrochloride)	C <sub>23</sub> H <sub>28</sub> N <sub>2</sub> O	349.2274	349.2267	2.26
B3	<i>ortho</i> -methyl Cyclopropyl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>30</sub> N <sub>2</sub> O	363.2431	363.2423	2.06
B4	Fentanyl	C <sub>22</sub> H <sub>28</sub> N <sub>2</sub> O	337.2274	337.2267	2.25
B5	Norfentanyl	C <sub>14</sub> H <sub>20</sub> N <sub>2</sub> O	233.1648	233.1645	1.37
B6	Cyclopropyl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>28</sub> N <sub>2</sub> O	349.2274	349.2267	2.26
B7	Butyryl norfentanyl (hydrochloride)	C <sub>15</sub> H <sub>22</sub> N <sub>2</sub> O	247.1805	247.1801	1.70
B8	<i>ortho</i> -methyl Acetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>28</sub> N <sub>2</sub> O	337.2274	337.2267	2.25
B9	$\alpha'$ -methyl Butyryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O	365.2587	365.2579	2.38
B10	Methacrylfentanyl	C <sub>23</sub> H <sub>28</sub> N <sub>2</sub> O	349.2274	349.2268	1.98
B11	$\alpha$ -methyl Butyryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O	365.2587	365.2580	2.11
B12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>

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# CERTIFICATE of ANALYSIS



## Kit Contents Plate 1 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] <sup>+</sup> m/z	Measured [M+H] <sup>+</sup> m/z	Mass Accuracy (ppm)
C1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
C2	<i>para</i> -fluoro Crotonyl fentanyl	C <sub>23</sub> H <sub>27</sub> FN <sub>2</sub> O	367.2180	367.2171	2.42
C3	$\alpha$ -methyl Fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2423	2.31
C4	Crotonyl fentanyl	C <sub>23</sub> H <sub>28</sub> N <sub>2</sub> O	349.2274	349.2266	2.52
C5	<i>para</i> -methyl Cyclopropyl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>30</sub> N <sub>2</sub> O	363.2431	363.2424	1.98
C6	<i>para</i> -Methoxyfentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	367.2380	367.2372	2.23
C7	Cyclobutyl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>30</sub> N <sub>2</sub> O	363.2431	363.2423	2.15
C8	<i>ortho</i> -methyl Acrylfentanyl (hydrochloride)	C <sub>23</sub> H <sub>28</sub> N <sub>2</sub> O	349.2274	349.2266	2.35
C9	( $\pm$ )- <i>cis</i> -3-methyl Fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2423	2.31
C10	Ocfentanil (hydrochloride)	C <sub>22</sub> H <sub>27</sub> FN <sub>2</sub> O <sub>2</sub>	371.2129	371.2121	2.32
C11	<i>meta</i> -Methylfentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2424	1.96
C12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
D1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
D2	<i>ortho</i> -fluoro Acrylfentanyl (hydrochloride)	C <sub>22</sub> H <sub>25</sub> FN <sub>2</sub> O	353.2024	353.2016	2.26
D3	<i>para</i> -Chlorofentanyl (hydrochloride)	C <sub>22</sub> H <sub>27</sub> ClN <sub>2</sub> O	371.1885	371.1877	1.97
D4	<i>para</i> -fluoro Cyclopropyl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>27</sub> FN <sub>2</sub> O	367.2180	367.2171	2.42
D5	Butyryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2423	2.14
D6	Fentanyl Carbamate	C <sub>22</sub> H <sub>28</sub> N <sub>2</sub> O <sub>2</sub>	353.2224	353.2215	2.32
D7	Isobutyryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2423	2.31
D8	<i>ortho</i> -methyl Methoxyacetyl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	367.2380	367.2373	1.80
D9	Benzyl Carfentanil (hydrochloride)	C <sub>23</sub> H <sub>28</sub> N <sub>2</sub> O <sub>3</sub>	381.2173	381.2164	2.20
D10	$\alpha$ -methyl Thiofentanyl (hydrochloride)	C <sub>21</sub> H <sub>28</sub> N <sub>2</sub> OS	357.1995	357.1987	2.27
D11	<i>para</i> -methoxy Butyryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O <sub>2</sub>	381.2537	381.2529	1.89
D12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>

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# CERTIFICATE of ANALYSIS



## Kit Contents Plate 1 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] <sup>+</sup> m/z	Measured [M+H] <sup>+</sup> m/z	Mass Accuracy (ppm)
E1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
E2	<i>para</i> -chloro Cyclopropyl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>27</sub> ClN <sub>2</sub> O	383.1885	383.1877	1.98
E3	<i>ortho</i> -Fluorobutryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>29</sub> FN <sub>2</sub> O	369.2337	369.2328	2.30
E4	<i>para</i> -fluoro Acrylfentanyl	C <sub>22</sub> H <sub>25</sub> FN <sub>2</sub> O	353.2024	353.2017	2.01
E5	Cyclopentyl fentanyl (hydrochloride)	C <sub>25</sub> H <sub>32</sub> N <sub>2</sub> O	377.2587	377.2580	2.04
E6	Phenyl fentanyl (hydrochloride)	C <sub>26</sub> H <sub>28</sub> N <sub>2</sub> O	385.2274	385.2267	1.87
E7	Tetrahydrofuran fentanyl (hydrochloride)	C <sub>24</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	379.2380	379.2373	1.74
E8	Methoxyacetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>28</sub> N <sub>2</sub> O <sub>2</sub>	353.2224	353.2217	1.98
E9	<i>ortho</i> -Fluoroisobutryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>29</sub> FN <sub>2</sub> O	369.2337	369.2329	2.06
E10	<i>para</i> -fluoro Furanyl fentanyl 3-furancarboxamide (hydrochloride)	C <sub>24</sub> H <sub>25</sub> FN <sub>2</sub> O <sub>2</sub>	393.1973	393.1966	1.75
E11	<i>para</i> -Fluorobutryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>29</sub> FN <sub>2</sub> O	369.2337	369.2329	2.06
E12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
F1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
F2	<i>para</i> -methyl Tetrahydrofuran fentanyl (hydrochloride)	C <sub>25</sub> H <sub>32</sub> N <sub>2</sub> O <sub>2</sub>	393.2537	393.2529	1.91
F3	Phenylacetyl fentanyl (hydrochloride)	C <sub>27</sub> H <sub>30</sub> N <sub>2</sub> O	399.2431	399.2422	2.18
F4	<i>para</i> -Chloroisobutryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>29</sub> ClN <sub>2</sub> O	385.2041	385.2033	2.10
F5	<i>meta</i> -Fluorobutryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>29</sub> FN <sub>2</sub> O	369.2337	369.2329	2.22
F6	<i>ortho</i> -fluoro Furanyl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>25</sub> FN <sub>2</sub> O <sub>2</sub>	393.1973	393.1965	1.98
F7	<i>meta</i> -Fluoroisobutryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>29</sub> FN <sub>2</sub> O	369.2337	369.2330	1.90
F8	<i>para</i> -chloro Methoxyacetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>27</sub> ClN <sub>2</sub> O <sub>2</sub>	387.1834	387.1827	1.73
F9	Alfentanil (hydrochloride)	C <sub>21</sub> H <sub>32</sub> N <sub>6</sub> O <sub>3</sub>	417.2609	417.2603	1.34
F10	β'-Phenyl fentanyl	C <sub>28</sub> H <sub>32</sub> N <sub>2</sub> O	413.2587	413.2581	1.65
F11	Benzodioxole fentanyl	C <sub>27</sub> H <sub>28</sub> N <sub>2</sub> O <sub>3</sub>	429.2173	429.2167	1.30
F12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>

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Kit Contents  
Plate 1 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] <sup>+</sup> m/z	Measured [M+H] <sup>+</sup> m/z	Mass Accuracy (ppm)
G1	Unused	Unused	Unused	Unused	Unused
G2	Unused	Unused	Unused	Unused	Unused
G3	Unused	Unused	Unused	Unused	Unused
G4	Unused	Unused	Unused	Unused	Unused
G5	Unused	Unused	Unused	Unused	Unused
G6	Unused	Unused	Unused	Unused	Unused
G7	Unused	Unused	Unused	Unused	Unused
G8	Unused	Unused	Unused	Unused	Unused
G9	Unused	Unused	Unused	Unused	Unused
G10	Unused	Unused	Unused	Unused	Unused
G11	Unused	Unused	Unused	Unused	Unused
G12	Unused	Unused	Unused	Unused	Unused
H1	Unused	Unused	Unused	Unused	Unused
H2	Unused	Unused	Unused	Unused	Unused
H3	Unused	Unused	Unused	Unused	Unused
H4	Unused	Unused	Unused	Unused	Unused
H5	Unused	Unused	Unused	Unused	Unused
H6	Unused	Unused	Unused	Unused	Unused
H7	Unused	Unused	Unused	Unused	Unused
H8	Unused	Unused	Unused	Unused	Unused
H9	Unused	Unused	Unused	Unused	Unused
H10	Unused	Unused	Unused	Unused	Unused
H11	Unused	Unused	Unused	Unused	Unused
H12	Unused	Unused	Unused	Unused	Unused

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# CERTIFICATE of ANALYSIS



## Kit Contents Plate 2

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] <sup>+</sup> m/z	Measured [M+H] <sup>+</sup> m/z	Mass Accuracy (ppm)
A1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
A2	<i>para</i> -methyl Acetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>28</sub> N <sub>2</sub> O	337.2274	337.2267	2.34
A3	<i>para</i> -methyl Isobutyryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O	365.2587	365.2580	2.03
A4	4'-methyl Fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2423	2.31
A5	<i>para</i> -Fluoroacetyl fentanyl (hydrochloride)	C <sub>21</sub> H <sub>25</sub> FN <sub>2</sub> O	341.2024	341.2016	2.34
A6	β-Hydroxythiofentanyl (hydrochloride)	C <sub>20</sub> H <sub>26</sub> N <sub>2</sub> O <sub>2</sub> S	359.1788	359.1780	2.31
A7	Pivaloyl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O	365.2587	365.2579	2.22
A8	<i>para</i> -Methylfentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2422	2.48
A9	Furanyl fentanyl 3-furancarboxamide isomer (hydrochloride)	C <sub>24</sub> H <sub>26</sub> N <sub>2</sub> O <sub>2</sub>	375.2067	375.2059	2.21
A10	<i>para</i> -chloro Acrylfentanyl (hydrochloride)	C <sub>22</sub> H <sub>25</sub> ClN <sub>2</sub> O	369.1728	369.1719	2.49
A11	Valeryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O	365.2587	365.2578	2.46
A12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
B1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
B2	(±)- <i>trans</i> -3-methyl Fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2422	2.48
B3	<i>meta</i> -Fluorofentanyl (hydrochloride)	C <sub>22</sub> H <sub>27</sub> FN <sub>2</sub> O	355.2180	355.2174	1.89
B4	<i>para</i> -fluoro Methoxyacetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>27</sub> FN <sub>2</sub> O <sub>2</sub>	371.2129	371.2123	1.75
B5	Isovaleryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O	365.2587	365.2580	2.11
B6	<i>ortho</i> -Methylfentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2423	2.39
B7	<i>para</i> -Fluorofentanyl (hydrochloride)	C <sub>22</sub> H <sub>27</sub> FN <sub>2</sub> O	355.2180	355.2174	1.80
B8	Tetrahydrofuran fentanyl 3-tetrahydrofurancarboxamide (hydrochloride)	C <sub>24</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	379.2380	379.2372	2.24
B9	(±)- <i>cis</i> -3-methyl Butyryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O	365.2587	365.2578	2.46
B10	β-methyl Fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O	351.2431	351.2424	1.96
B11	(±)- <i>cis</i> -3-methyl Thiofentanyl (hydrochloride)	C <sub>21</sub> H <sub>28</sub> N <sub>2</sub> OS	357.1995	357.1987	2.35
B12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>

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## Kit Contents Plate 2 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] <sup>+</sup> m/z	Measured [M+H] <sup>+</sup> m/z	Mass Accuracy (ppm)
C1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
C2	<i>para</i> -methoxy Acrylfentanyl (hydrochloride)	C <sub>23</sub> H <sub>28</sub> N <sub>2</sub> O <sub>2</sub>	365.2224	365.2215	2.33
C3	<i>ortho</i> -methoxy Butyryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>32</sub> N <sub>2</sub> O <sub>2</sub>	381.2537	381.2528	2.20
C4	<i>meta</i> -methyl Methoxyacetyl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	367.2380	367.2372	2.15
C5	<i>ortho</i> -Fluorofentanyl (hydrochloride)	C <sub>22</sub> H <sub>27</sub> FN <sub>2</sub> O	355.2180	355.2173	2.17
C6	Remifentanil (hydrochloride)	C <sub>20</sub> H <sub>28</sub> N <sub>2</sub> O <sub>5</sub>	377.2071	377.2062	2.28
C7	<i>para</i> -Chlorobutyryl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>29</sub> ClN <sub>2</sub> O	385.2041	385.2033	2.02
C8	Ethoxyacetyl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	367.2380	367.2373	1.91
C9	(±)- <i>trans</i> -3-methyl Thiofentanyl (hydrochloride)	C <sub>21</sub> H <sub>28</sub> N <sub>2</sub> OS	357.1995	357.1987	2.35
C10	<i>meta</i> -fluoro Methoxyacetyl fentanyl (hydrochloride)	C <sub>22</sub> H <sub>27</sub> FN <sub>2</sub> O <sub>2</sub>	371.2129	371.2120	2.40
C11	<i>para</i> -fluoro Furanyl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>25</sub> FN <sub>2</sub> O <sub>2</sub>	393.1973	393.1964	2.21
C12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
D1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
D2	FIBF (hydrochloride)	C <sub>23</sub> H <sub>29</sub> FN <sub>2</sub> O	369.2337	369.2329	1.98
D3	<i>para</i> -fluoro Cyclopentyl fentanyl (hydrochloride)	C <sub>25</sub> H <sub>31</sub> FN <sub>2</sub> O	395.2493	395.2484	2.38
D4	<i>ortho</i> -methyl Phenyl fentanyl (hydrochloride)	C <sub>27</sub> H <sub>30</sub> N <sub>2</sub> O	399.2431	399.2423	1.88
D5	<i>para</i> -fluoro Valeryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>31</sub> FN <sub>2</sub> O	383.2493	383.2484	2.30
D6	<i>para</i> -methyl Methoxyacetyl fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	367.2380	367.2372	2.31
D7	Cyclohexyl fentanyl (hydrochloride)	C <sub>26</sub> H <sub>34</sub> N <sub>2</sub> O	391.2744	391.2736	2.04
D8	<i>para</i> -methoxy Valeryl fentanyl (hydrochloride)	C <sub>25</sub> H <sub>34</sub> N <sub>2</sub> O <sub>2</sub>	395.2693	395.2684	2.20
D9	Sufentanil	C <sub>22</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub> S	387.2101	387.2093	1.96
D10	α'-methoxy Fentanyl (hydrochloride)	C <sub>23</sub> H <sub>30</sub> N <sub>2</sub> O <sub>2</sub>	367.2380	367.2371	2.40
D11	<i>para</i> -chloro Furanyl fentanyl	C <sub>24</sub> H <sub>25</sub> ClN <sub>2</sub> O <sub>2</sub>	409.1677	409.1669	2.10
D12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>

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# CERTIFICATE of ANALYSIS



## Kit Contents Plate 2 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] <sup>+</sup> m/z	Measured [M+H] <sup>+</sup> m/z	Mass Accuracy (ppm)
E1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
E2	<i>para</i> -methyl Furanyl fentanyl (hydrochloride)	C <sub>25</sub> H <sub>28</sub> N <sub>2</sub> O <sub>2</sub>	389.2224	389.2214	2.34
E3	4'-fluoro, <i>para</i> -fluoro (±)- <i>trans</i> -3-methyl Fentanyl (hydrochloride)	C <sub>23</sub> H <sub>28</sub> F <sub>2</sub> N <sub>2</sub> O	387.2243	387.2233	2.38
E4	<i>para</i> -methoxy Tetrahydrofuran fentanyl (hydrochloride)	C <sub>25</sub> H <sub>32</sub> N <sub>2</sub> O <sub>3</sub>	409.2486	409.2478	1.95
E5	<i>para</i> -methoxy Furanyl fentanyl (hydrochloride)	C <sub>25</sub> H <sub>28</sub> N <sub>2</sub> O <sub>3</sub>	405.2173	405.2163	2.37
E6	<i>meta</i> -methyl Furanyl fentanyl (hydrochloride)	C <sub>25</sub> H <sub>28</sub> N <sub>2</sub> O <sub>2</sub>	389.2224	389.2215	2.18
E7	<i>para</i> -chloro Cyclopentyl fentanyl (hydrochloride)	C <sub>25</sub> H <sub>31</sub> ClN <sub>2</sub> O	411.2198	411.2189	2.12
E8	Norcarfentanil (hydrochloride)	C <sub>16</sub> H <sub>22</sub> N <sub>2</sub> O <sub>3</sub>	291.1703	291.1697	1.99
E9	<i>para</i> -fluoro Tetrahydrofuran fentanyl (hydrochloride)	C <sub>24</sub> H <sub>29</sub> FN <sub>2</sub> O <sub>2</sub>	397.2286	397.2277	2.17
E10	2,2,3,3-tetramethyl-Cyclopropyl fentanyl (hydrochloride)	C <sub>27</sub> H <sub>36</sub> N <sub>2</sub> O	405.2900	405.2891	2.34
E11	Furanylethyl fentanyl (hydrochloride)	C <sub>20</sub> H <sub>26</sub> N <sub>2</sub> O <sub>2</sub>	327.2067	327.2059	2.35
E12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
F1	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>
F2	Benzyl fentanyl (hydrochloride)	C <sub>21</sub> H <sub>26</sub> N <sub>2</sub> O	323.2118	323.2112	1.98
F3	Thienyl fentanyl (hydrochloride)	C <sub>19</sub> H <sub>24</sub> N <sub>2</sub> OS	329.1682	329.1675	2.31
F4	Acrylfentanyl (hydrochloride)	C <sub>22</sub> H <sub>26</sub> N <sub>2</sub> O	335.2118	335.2111	2.00
F5	<i>ortho</i> -isopropyl Furanyl fentanyl	C <sub>27</sub> H <sub>32</sub> N <sub>2</sub> O <sub>2</sub>	417.2537	417.2527	2.23
F6	<i>para</i> -chloro Valeryl fentanyl (hydrochloride)	C <sub>24</sub> H <sub>31</sub> ClN <sub>2</sub> O	399.2198	399.2189	2.18
F7	Thiofentanyl (hydrochloride)	C <sub>20</sub> H <sub>26</sub> N <sub>2</sub> OS	343.1839	343.1830	2.39
F8	N-benzyl Furanyl norfentanyl (hydrochloride)	C <sub>23</sub> H <sub>24</sub> N <sub>2</sub> O <sub>2</sub>	361.1911	361.1903	2.21
F9	N-methyl Norcarfentanil (hydrochloride)	C <sub>17</sub> H <sub>24</sub> N <sub>2</sub> O <sub>3</sub>	305.1860	305.1853	2.10
F10	Benzyl Acrylfentanyl (hydrochloride)	C <sub>21</sub> H <sub>24</sub> N <sub>2</sub> O	321.1961	321.1954	2.21
F11	2'-fluoro <i>ortho</i> -Fluorofentanyl (hydrochloride)	C <sub>22</sub> H <sub>26</sub> F <sub>2</sub> N <sub>2</sub> O	373.2086	373.2080	1.66
F12	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>	<b>Unused</b>

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# CERTIFICATE of ANALYSIS



Kit Contents  
Plate 2 Continued

Well	Item Name	Molecular Formula (free analyte)	Calculated [M+H] <sup>+</sup> m/z	Measured [M+H] <sup>+</sup> m/z	Mass Accuracy (ppm)
G1	Unused	Unused	Unused	Unused	Unused
G2	Unused	Unused	Unused	Unused	Unused
G3	Unused	Unused	Unused	Unused	Unused
G4	Unused	Unused	Unused	Unused	Unused
G5	Unused	Unused	Unused	Unused	Unused
G6	Unused	Unused	Unused	Unused	Unused
G7	Unused	Unused	Unused	Unused	Unused
G8	Unused	Unused	Unused	Unused	Unused
G9	Unused	Unused	Unused	Unused	Unused
G10	Unused	Unused	Unused	Unused	Unused
G11	Unused	Unused	Unused	Unused	Unused
G12	Unused	Unused	Unused	Unused	Unused
H1	Unused	Unused	Unused	Unused	Unused
H2	Unused	Unused	Unused	Unused	Unused
H3	Unused	Unused	Unused	Unused	Unused
H4	Unused	Unused	Unused	Unused	Unused
H5	Unused	Unused	Unused	Unused	Unused
H6	Unused	Unused	Unused	Unused	Unused
H7	Unused	Unused	Unused	Unused	Unused
H8	Unused	Unused	Unused	Unused	Unused
H9	Unused	Unused	Unused	Unused	Unused
H10	Unused	Unused	Unused	Unused	Unused
H11	Unused	Unused	Unused	Unused	Unused
H12	Unused	Unused	Unused	Unused	Unused

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# CERTIFICATE of ANALYSIS



## Revision History

Revision No.	Date	Reason for Revision
01	28JAN2019	Initial version
02	31AUG2020	Expiry update

## Disclaimers

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