



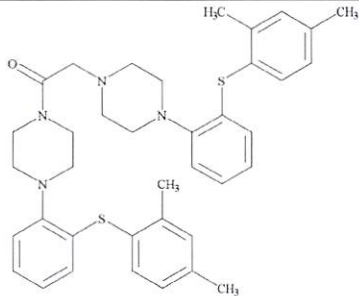
Certificate of Analysis

Certificate No.: 20240305013-2

Date: March 5, 2024

Retest date: February 28, 2027

Compound Name: Vortioxetine Impurity 52	
Synonyms:	1,2-bis(4-(2-((2,4-dimethylphenyl)thio)phenyl)piperazin-1-yl)ethan-1-one
TLC Catalogue Number:	V-043060
CAS Number:	2476761-84-7
Molecular Weight:	636.92
Molecular Formula:	C ₃₈ H ₄₄ N ₄ OS ₂
Source:	TLC Pharmaceutical Standards
Source Lot No.:	5808-089A7
Storage Conditions:	Store at 2-8 °C
Solubility:	THF



Test Description	Specifications	Results
Visual Description	White to off-white solid	Conforms
Identification		
IR	Conforms to structure	Conforms
MS	Conforms to structure	Conforms
¹ H NMR	Conforms to structure	Conforms
Purity (HPLC)	Not less than 95.0%	100.0%
Impurity (HPLC)	N/A	
Water Content (KF)	N/A	0.1%
Residual Solvents (NMR)	1.1% tetrahydrofuran and 0.1% 2,6-di- <i>tert</i> -butyl-4-methylphenol	
Assay (%)	Not less than 90.0%	98.7%
Recommendation:	Release.	

Name	Department	Signature	Date
Reviewed and approved by:	Quality Control	<i>Kelin Jiu</i>	03/22/2024
Approved by:	Quality Assurance	<i>Z. Jiu</i>	03/22/2024

Attachments: HPLC, IR, MS and NMR spectra.