

RBC Capital Markets, LLC

Material Aspects of Relationships with Market Centers

RBC Correspondent Services, a division of RBC Capital Markets, LLC (RBC CS) has prepared this report pursuant to U.S. Securities and Exchange Commission's Regulation NMS, Rule 606 requiring broker-dealers make publicly available quarterly reports of their routing practices for equities and listed options.

This report provides information on the routing of Non-Directed, held orders for equities and not held and held orders for listed options. An order is deemed to be "Non-Directed" if the customer has not specifically instructed the order be routed to a particular venue for execution. RBC CS routes its equity orders to Citadel Execution Services, G1 Execution Services LLC, Virtu Americas LLC, and UBS Capital Markets. For exchange-listed equity and index options, RBC WM routes orders to Citigroup Global Markets, Inc., Citadel Execution Services, Chicago Board Options Exchange and Wolverine Execution Services LLC. RBC CS is assessed fees and receives credits from the equity and option market centers that may exceed the amount charged. RBC CS may receive the benefit of these credits and such payments constitute payment for order flow.

Information regarding material relationships

RBC CS contracts with third party vendor, S3 Matching Technologies, LP to provide execution metrics that RBC WM uses to evaluate its execution quality among various markets and firms. RBC CS has arranged for its market centers (exchange market maker, OTC market maker, alternative trading system, national securities exchange, or national securities association.) to remit payment for this service based on the previous year's routing.

Additional Information concerning arrangements with Market Centers and Technology Providers

Citigroup Global Markets, Inc. – RBC CS received order credits from Citigroup Global Markets, Inc., for directing listed option order flow to this venue. Payments received averaged \$0.30 per contract in the first quarter 2019.

Citadel Execution Services – RBC CS received order credits from Citadel Execution Services for directing listed option order flow to this venue. Payments received averaged \$0.17 per contract in the first quarter 2019.

Wolverine Execution Services LLC – RBC CS received order credits from Wolverine Execution Services for directing listed option order flow to this venue. Payments received averaged \$0.33 per contract in the first quarter 2019.

DASH Financial Technologies – RBC CS received order credits from DASH Financial Technologies for executing listed option order flow. Payments received averaged \$0.03 per contract in the first quarter 2019.

G1 Execution Services LLC – RBC CS received \$.00035 per share for equity orders executed after the opening in the first quarter 2019.