Methodology for establishing and modifying risk parameters
INTERNATIONAL TRADING SYSTEM LIMITED

1. GENERAL PROVISIONS

1.1. This Methodology for Establishing and Modifying Risk Parameters of International Trading System Limited (the "Methodology"), developed in accordance with the Rules for Clearing Activities of International Trading System Limited (the "Clearing Rules"), establishes the list of risk parameters, the procedure for their determination and modification, as well as the rules for determining the value of the property accepted as individual clearing collateral and/or collective clearing collateral.

1.2. Disclosure of information on amendments to the Methodology, including adoption of the Methodology in a new version, is made by posting the new version of the Methodology on the website of International Trading System Limited (the "CCP" or "Central Counterparty") on the Internet. The Methodology and amendments thereto shall become effective upon disclosure thereof in accordance with this clause on a date to be determined by the CCP.

1.3. The terms and definitions used in the Methodology shall be applied in the meanings established by the Clearing Rules, Business Rules.

1.4. The procedure for setting the values and calculating the collateral is determined by CCP in accordance with the CCP Collateral Calculation Methodology.

1.5. The Methodology uses the following indicator:

Indicator	Name
t	Trade day designation (subscript).
day0	Denomination of the first Trading Day of the security circulation, or Denomination of the day of inclusion of the security in the List of Securities Included in the Collateral Assets (subscript).

2. LIST OF RISK PARAMETERS

2.1. The list of risk parameters set by the CCP based on expert judgement includes:

Indicator	Name
MBIM	Minimum basic collateral
MR_stress %,	Value of minimum change in securities prices / foreign currency exchange rates in stress scenarios for the purposes of calculation of the Additional Collateral
b	Price deviation threshold (in per cent)
fine_debt	Penalty Rate charged from the Clearing Member in case of cash register debt in accordance with the Clearing Rules
cHor	Coefficient reflecting the size of the risk calculation horizon
cExp	Coefficient of increase of risk assessment radius
cShr	Risk assessment radius reduction factor
DaysExp	Number of Trading or Operating Days before increasing the risk assessment radius
DaysShr	Number of Trading or Operating Days before the risk assessment radius is reduced
CondExp	Condition factor to increase the risk assessment radius
CondShr	Condition factor to reduce the risk assessment radius
TimeExp	Time in minutes required for intraday increase in risk assessment radius
sUp	Penalty rate set for each security in respect of which Repurchase Agreements /Internal OTC Contract and/or Donor Agreements are concluded
sDown	Penalty rate set for each security in respect of which Repurchase Agreements /Internal OTC Contract and/or Donor Agreements are concluded
IMCoeff	Coefficient determined for the security to calculate the estimated amount of the Guarantee Collateral
fine_donor	Penalty Rate charged from the TCA Donor in case of non-closure of the Donor Agreement due to the Clearing Member's fault
fine_long %,	Penalty Rate charged in accordance with the Clearing Rules from the Defaulting Clearing Member in case of settlement of the non-performed Total Net Cash Obligation of such Clearing Member by trades other than currency swap transactions
fine_short%,	Penalty Rate charged in accordance with the Clearing Rules from the Defaulting Clearing Member if such Clearing Member has any outstanding Total Net Obligation in securities
ch_fine_long%,	Penalty Rate payable to a bona fide Clearing Member in case of settlement of the outstanding Total Net Cash Obligation of CCP by trades other than Currency Swap transactions

ch_fine_short %,	Penalty Rate payable to a Bona Fide Clearing Member in case of CCP's outstanding Total Net Securities Obligation
ch_fine_borrow money %,	Penalty Rate payable to the Clearing Member in case of conclusion of the CCP Repurchase Agreement / Internal OTC Repurchase Agreement / Pair of Contracts in case of CCP's insufficiency of cash to fulfil its obligations
ch_fine_borrow sercurity	Penalty Rate payable to the Clearing Member in case of conclusion of the CCP Repurchase Agreement / Internal OTC Contract Repurchase Agreement / Pair of Contracts in case of insufficiency of CCP's securities to fulfil its obligations
Forfeit_rate (cur_pair)	Penalty Rate charged in accordance with the Clearing Rules from the Defaulting Clearing Member in case of settlement of the outstanding Total Net Cash Obligation of such Clearing Member by the Currency Swap Transactions in the relevant currency pair
ch_forfeit_rate (cur_pair)	Penalty Rate payable to the Bona Fide Clearing Member in case of settlement of the outstanding Total Net Cash Obligation of CCP by the transactions, Currency Swaps for the relevant currency pair
ch_forfeit_rate_ borrow money (cur_pair)	Penalty Rate payable to the Clearing Member in case of execution of the Currency Swap Transaction in the relevant currency pair in case of CCP's insufficiency of cash to fulfil its obligations
RiskLimit	Value of the risk limit for the Clearing Member
ConcntrLimit	Assets concentration limit in the Collateral provided by the Clearing Members by issuer (group of related issuers)
Forfeit rate prepayment (cur)	Penalty Rate in relevant currency set for cases of non-performance or improper performance by the Clearing Member of the obligations stipulated in the Clearing Rules
REPO_1leg_coeff	Coefficient for determining the range of admissible price of the first part of the Repurchase Agreement.
Up_coeff	Coefficient for determining the upper absolute limit
Down_coeff	Coefficient for determining the lower absolute limit
r_(cur)	Value of risk-free interest rate in the respective currency
т_min	Volatility reduction parameter
т_max	Volatility growth parameter
т_min_stress	Parameter of volatility reduction in stress scenarios for the purposes of calculation of Additional Collateral
т_max_stress	Parameter of volatility growth in stress scenarios for the purposes of calculation of Additional Collateral
Group_name	Group to which the instrument belongs

2.1.1.   The following parameters are set for each instrument group:

Indicator	Name
RM_start	The start time of the period during which the CCP may increase the Radius during the Trading Day
RM_end	The end time of the period during which the CCP may increase the Radius during the Trading Day
SP_source	Source of information for determination of the Settlement Price

2.1.2.   The parameters described in clause 2.1 of the Methodology are set by CCP decision and disclosed on the CCP Website. Unless otherwise determined by CCP decision, the new parameter values are effective as of the Trading Day following the date of disclosure.

2.2.   Using the parameters specified in clause 2.1 of the Methodology, the following risk parameters are calculated:

Indicator	Name
SP	Estimated price
FXRate	Foreign exchange rate
RR	Securities / foreign currency risk assessment radius (the "Radius")
UR	Upper limit of Radius recalculation
LR	Lower limit of Radius recalculation
L	Limit of security price fluctuation (the "Limit"). Not used for currency

UPC	Lower forced closing price of a security / currency
LPC	Lower forced closing price of a security / currency
UPC^{Stress}	Upper price of the stressed range of risk calculation
LPC^{Stress}	Lower price of the stressed risk calculation range
UAL	Upper absolute limit for a security (the "Upper Absolute Limit").
DAL	Lower absolute limit for a security (the "Lower Absolute Limit").
ColatValue	Value of the property (before the discounting) accepted as individual clearing collateral and/or collective clearing collateral

2.3.   The time of calculation of risk parameters corresponds to the time of the clearing session.

3.   SETTLEMENT PRICE DETERMINATION PROCEDURE

3.1.   On the first day of circulation of a Security / foreign currency or on the day of inclusion of a Security / foreign currency in the List of Securities to be included in the Collateral Assets, the Settlement Price for each of these securities (SP_{day0}) shall be set by CCP decision.

3.2.   For calculation of the Settlement Price the following prices shall be used:

• the prices specified in the Orders to buy and Orders to sell, announced in the Main Trading Mode, except for certain periods of the Main Trading Mode, as well as the prices of the Contracts concluded on the basis of at least one of these announced Orders, except for the Agreements concluded on the basis of the Bids submitted during the auction period of the Main Trading Mode closing;

• the prices specified in the OTC Offers sent but not accepted by CCP, provided that they contain a price per security, as well as the prices of Internal OTC Contracts concluded on the basis of at least one of these OTC Offers.

3.3.   For the purposes of this Article of the Methodology, the following terms shall be used:

Indicator	Name
$P_{lastdeal}$	price of the last Agreement / Internal OTC Contract concluded from the time of the last calculation of risk parameters until the Risk Parameters Calculation Time on the current Day t
$P_{bestbuy}$	price of the best Announced Buy Order / sent but not accepted best OTC Offer for purchase at the time of occurrence of the Risk Parameters Calculation Time on the current Day t
$P_{bestsell}$	price of the best announced Sell Order / sent but not accepted best OTC Offer for sale at the time of the Risk Parameters Calculation Time on the current Day t

The best OTC Offer to Purchase means the OTC Offer with the highest price;
The best OTC Offer for sale shall mean the OTC Offer with the lowest price.

3.4.   The settlement price is calculated as follows:

3.4.1.   If since the previous Risk Parameters Calculation Time, at the time of the Risk Parameters Calculation Time, there have been concluded Agreements / Internal OTC Contracts, the Settlement Price shall be calculated according to the following principle:

3.4.1.1. if at the time of occurrence of the Risk Parameters Calculation Time there are both the Announced Buy Orders / directed but not accepted by CCP OTC Offers to buy, and the Announced Sell Orders / directed but not accepted by CCP OTC Offers to sell, then:

$$SP = \min\left[\max\left(P_{lastdeal}, P_{bestbuy}\right), P_{bestsell}\right];$$

3.4.1.2. if at the time of occurrence of the Risk Parameters Calculation Time there are only Announced Buy Orders / accepted, but not accepted by CCP, OTC Offers for purchase, then:

$$SP = \max\left(P_{lastdeal}, P_{bestbuy}\right);$$

3.4.1.3. if at the time of occurrence of the Risk Parameters Calculation Time there are only Announced Sell Orders / OTC Offers for sale accepted but not accepted by CCP, then:

$$SP = \min\left(P_{lastdeal}, P_{bestsell}\right).$$

3.4.2.   If no Agreements / Internal OTC Contracts have been concluded since the previous Risk Parameters Calculation Time, the prices specified in the Announced Buy Orders accepted but not accepted CCP OTC Offers to buy and Announced Sell Orders accepted but not accepted CCP OTC Offers to sell shall be used to determine the Settlement Price in the following order:

3.4.2.1. if at the time of occurrence of the Risk Parameters Calculation Time there are Announced Buy Orders / accepted but not accepted CCP OTC Offers to buy, and Announced Sell Orders / accepted but not accepted CCP OTC Offers to sell, then:

$$SP = \min\left[\max\left(SP_{t-1}, P_{bestbuy}\right), P_{bestsell}\right];$$

3.4.2.2. if at the time of occurrence of the Risk Parameters Calculation Time there are only Announced Buy Orders / accepted but not accepted OTC Offers for purchase by CCP, then:

$$SP = \max\left(SP_{t-1}, P_{bestbuy}\right);$$

3.4.2.3. if at the time of occurrence of the Risk Parameters Calculation Time there are only Announced Sell Orders / OTC Offers for sale accepted but not accepted by CCP, then:

$$SP = \min\left(SP_{t-1}, P_{bestsell}\right).$$

3.4.3.   Except for the cases specified in sub-clauses 3.4.1. and 3.4.2. of the Methodology, the Settlement Price shall be taken equal to the Settlement Price determined at the time of the previous calculation of risk parameters at the time of occurrence of the Risk Parameters Calculation Time.

3.5.   The CCP has the right to decide to set the Settlement Price different from the value calculated in accordance with this Article on the basis of expert judgement.

3.6.   The CCP is entitled to make a decision to change the Settlement Price of a security set at the time of the Risk Parameters Calculation Time on the Day preceding Day t if actions have been taken in respect of the security in connection with corporate events, including, inter alia, reorganisation of the issuer of securities, conversion and/or split of securities conducted without reorganisation of the issuer of securities.

4.   PROCEDURE FOR DETERMINATION OF ADDITIONALLY USED VALUES

4.1.   In determining the exchange rate of a foreign currency, the exchange rate of the foreign currency determined by the third party specified in respect of that currency as the source of information in CCP's internal regulations defining the list of foreign currencies accepted as Collateral Assets is used.

4.2.   The settlement price of the performance may be set equal to one of the following values:

4.2.1.   The last value of LP value determined by the trading operator in accordance with the document "Methodology of Setting and Changing the Limits of Securities Prices, for which an order may be placed by a trading member or an Agreement may be concluded", for the previous trading day.

4.2.2.   Calculated price of the instrument determined at the time of occurrence of the time of calculation of risk parameters of the current trading day.

4.3.   If the current market price calculated by the trading operator in accordance with the document "Methodology for Calculation of the "Current Market Price" indicator" differs from the settlement price determined in accordance with clause 4.2 of the Methodology by more than 10%, the CCP shall have the right to set the value of the settlement price on the basis of expert evaluation.

5.   PROCEDURE FOR SETTING AND CHANGING THE RADIUS, LIMITS AND RANGE OF THE ADMISSIBLE PRICE OF THE FIRST PART OF THE REPURCHASE AGREEMENT / INTERNAL OTC CONTRACT

5.1.   The following ratios are used to calculate the Upper / Lower Radius Recalculation Limit:

$$(1)\ UR = SP + \frac{RR}{cHor};$$
$$(2)\ LR = SP - \frac{RR}{cHor}.$$

5.2.   The radius on the first Trading Day of circulation of a security / foreign currency or on the day of inclusion of a security in the List of securities to be included in the Collateral Assets or on the day of inclusion of a foreign currency in the list of foreign currencies, the deposit of which as Collateral Assets is possible, shall be set as follows:

$$RR_{day0} = SP_{day0} * MBIM,$$

where:

SP_{day0} means settlement price of a security or foreign currency exchange rate.

5.3. The Radius may be changed by the CCP at the time of the Risk Parameters Calculation Time or during the day in accordance with the procedure established by the Methodology.

5.3.1. If the Radius is changed, the amount of the Collateral shall be recalculated.

5.3.2. The changed values of the Radius and the amount of the Collateral shall be effective from the time they are set by CCP.

5.4. When calculating the Risk Parameters, at the time of the Risk Parameters Calculation Time, the Radius is calculated in the following order:

5.4.1. The auxiliary value RR' is calculated using the following algorithm:

if since the previous calculation of risk parameters, at the time of occurrence of the Time of calculation of risk parameters, there have been no increases RR, described in clause 5.7 of the Methodology, or if they have occurred, but the condition $|SP_t - SP_{t-1}| \leq \frac{RR_{t-1}}{cHor}$, or in respect of foreign currency the condition $|SP_t - SP_{t-1}| \leq \frac{RR_{t-1}}{cHor}$, is fulfilled, then:

$$RR' = RR_{t-1};$$

5.4.1.1. if since the previous calculation of risk-parameters, at the time of occurrence of the Time of calculation of risk-parameters, there were increases RR, described in clause 5.7 of the Methodology, and the condition $|SP_t - SP_{t-1}| > \frac{RR_{t-1}}{cHor}$ is fulfilled or the condition $|SP_t - SP_{t-1}| > \frac{RR_{t-1}}{cHor}$ is fulfilled in respect of foreign currency, then:

$$RR' = cExp * RR_{t-1}.$$

5.4.2. The value RR' is used in the formula to calculate the Radius:

$$RR_t = \begin{cases} \max\left(SP_t * \text{MBIM}, cExp * RR'\right), if \ \min_k |SP_{t-k+1} - SP_{t-k}| \geq CondExp * \frac{RR'}{cHor}, k = 1:days\_exp \\ \max\left(SP_t * \text{MBIM}, cShr * RR'\right), if \ \max_k |SP_{t-k+1} - SP_{t-k}| \leq CondShr * \frac{RR'}{cHor}, k = 1:days\_shr \\ \max\left(SP_t * \text{MBIM}, RR'\right), in \ all \ other \ cases \end{cases}$$

5.5. The CCP may also increase the Radius in a Risk Parameter Calculation carried out at the Risk Parameter Calculation Time by increasing the Minimum Base Collateral in the following cases:

• if the Trading does not take place for three (3) or more consecutive Trading Days, and/or CCP does not accept the OTC Offers for three (3) or more consecutive Operating Days, and/or the value of the foreign currency exchange rate is not determined for three (3) or more consecutive days by the third party specified in clause 4.1 of the Methodology;

• if on at least one such day there is no Trading and/or CCP does not accept the OTC Offers, but trading in similar securities / foreign currencies is expected to take place at a trading organised by another person (exchange, trading platform, including foreign ones).

The CCP may reduce the minimum Base Collateral to the value established prior to the increase after the expiration of the time period specified in this clause.

5.6. From time RM_start to time RM_end, CCP will increase the Radius if one of the following conditions is met (not applicable for foreign currencies):

5.6.1. upon registration in the Order Register of a submitted Purchase Order / upon CCP's submission of an OTC Offer to Purchase with a price greater than or equal to UR, and upon the subsequent existence continuously for $TimeExp$ of at least one such Buy Order / OTC Offer to Purchase with a price greater than or equal to the expression $UR - b * \frac{RR}{cHor}$;

5.6.2. upon registration in the Order Register of a submitted Sell Order / upon CCP's submission of an OTC Offer for Sale meeting the terms and conditions with a price less than or equal to LR and the subsequent existence continuously for $TimeExp$ of at least one such Sell Order / OTC Offer for Sale with a price less than or equal to the expression $LR + b * \frac{RR}{cHor}$.

For the purposes of this clause of the Methodology, Hidden Orders and hidden Orders with dynamic price shall not be taken into account to increase the Radius.

5.7. Upon occurrence of the conditions stipulated in clause 5.6 of the Methodology, the Radius is changed as follows (not applicable to foreign currencies):

5.7.1. in case of primary occurrence of any of the events specified in sub-clauses 5.6.1.-5.6.2. of the Methodology:

$$RR^* = RR * cExp.$$

5.7.2. in case of secondary occurrence of the events specified in sub-clauses 5.6.1.-5.6.2. of the Methodology, the values of the Radius and/or Settlement Price shall be determined by CCP on the basis of expert judgement.

5.7.3. in case of secondary occurrence of the events specified in sub-clauses 5.6.1.-5.6.2. of the Methodology, the values of the Radius and/or Settlement Price shall be determined by CCP on the basis of expert judgement.

5.8. The CCP may decide to set a value for the Minimum Base Collateral Amount and Radius different from the values calculated as part of the Risk Parameter Calculation conducted at the Risk Parameter Calculation Time on the Day preceding the current Day t, based on expert judgement.

5.9. The CCP may decide to change the value of the Minimum Underlying Collateral Amount and the Radius in the event of a change in the Settlement Price of a security established as part of the Risk Parameters Calculation conducted during the Risk Parameters Calculation Time on the Day preceding the current Day t, if actions were taken in relation to this security in connection with corporate events, including, inter alia, reorganisation of the securities issuer, conversion and/or split of securities conducted without reorganisation of the securities issuer.

5.10. The following ratios are used to calculate the Limit and the Upper / Lower Forced Closing Price of a security / foreign currency:

$$L = RR;$$
$$UPC = SP + RR;$$
$$LPC = \max \ (SP - RR \ ; 0).$$

5.11. The following ratios are used to calculate the Upper / Lower Price of the stressed risk calculation range:

$$UPC^{Stress} = \max \ (\ SP * (1 + \text{MR}_{stress}) \ ; \ UPC \ );$$
$$LPC^{Stress} = \min \ (SP * (1 - \text{MR}_{stress}) \ ; \ LPC \ ).$$

5.12. To calculate the Upper/Lower Absolute Limit, the following ratios are used:

$$UAL = SP * UP\_coeff$$
$$DAL = max \ (SP * Down\_coeff \ ; \ minstep),$$

where:

$minstep$ means the minimum price step set by the ITS for a given security / foreign currency.

5.13. If the conditions stipulated in clause 5.6 of the Methodology occur, the Upper / Lower Absolute Limit is changed.

5.14. The range of the admissible price of the first part of the Repurchase Agreement is determined as follows:

$$[(1 - REPO\_1leg\_coeff) * SP; (1 + REPO\_1leg\_coeff) * SP]$$

6. PROCEDURE FOR DETERMINING THE VALUE OF THE PROPERTY ACCEPTED AS INDIVIDUAL CLEARING COLLATERAL AND/OR COLLECTIVE CLEARING COLLATERAL

6.1. The value of securities (before the discounting) accepted as individual clearing collateral shall be determined according to the following formula:

$$ColatValue = \sum Q * SP * FXRate,$$

where:

SP means the estimated price of this security. If the security accepted as the individual clearing collateral is admitted to the ITS trades or included in the List of Obligations, the settlement price of this security is determined in accordance with Article 3 of the Methodology.

If a security accepted as individual clearing collateral is not admitted to ITS trading and is not included in the List of Obligations, the Settlement Price of such security shall be taken equal to the settlement price determined by a third party specified by CCP in respect of such securities as a source of information in CCP's internal regulations determining the list of securities and foreign currencies accepted as the Collateral Assets;

Q means the number of securities accepted as individual clearing collateral;

FXRate means the foreign currency exchange rate of the security price quotation determined in accordance with Article 4 of the Methodology (for securities whose price is expressed in the USD, it is taken equal to 1).

The number of securities accepted as individual clearing collateral shall be included in calculation of the Collateral Assets as a long position in securities in the amount equal to the volume of securities accepted as individual clearing collateral.

6.2.   The value of the foreign currency (before the discounting) accepted as individual and/or collective clearing collateral shall be determined according to the following formula:

$$ColatValue = FXRate * Q,$$

where:
$FXRate$ means foreign currency exchange rate determined in accordance with Article 4 of the Methodology;
Q means volume of foreign currency accepted as individual and/or collective clearing collateral.
6.2.1.   The volume of foreign currency accepted as individual clearing collateral and/or collective clearing collateral shall be included in calculation of the Collateral Assets as a long position of the similar volume.