**Benchmark Documentation**

**Nordic markets stocks benchmark-family UC**

**Version 1.0**

*Date:* 10 April 2018

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## A.     General provisions

ICF BANK AG has applied to the German Federal Financial Supervisory Authority (BaFin) for registration as an administrator of non-significant benchmarks in accordance with Art. 34 of Regulation (EU) 2016/1011 (Benchmarks Regulation, BMR). This benchmark documentation also fulfils obligations with regard to the transparency of the methodology (Art. 12 and 13 BMR) and the benchmark statement (Art. 27 and 28 BMR). ICF BANK AG is solely responsible for the provision of the benchmarks. Customers (e. g. issuers of securities) and their employees are not involved in the provision of benchmarks.

ICF BANK AG has established a family of benchmark in accordance with Art. 3 (1) No. 4 BMR for publication purposes. This table groups several benchmarks from input data of the same type that represent a similar market or similar economic reality in accordance with regulatory requirements. For the purposes of this documentation, a family of benchmark was formed for stocks traded on Nasdaq Nordic Markets. The benchmarks differ in terms of the leverage factor and the direction, being short or long position.

## I.     Calculation and composition

The first publication of the Nordic Markets stocks benchmark-family UC (hereinafter referred to as "Benchmark") was made on 10 April 2018. The Benchmarks are calculated in points. One point corresponds to one unit of the Benchmark currency (see section G.II). The Benchmark starts with the „Benchmark Starting Value" at the time of first publication, „the Benchmark Starting Date" (see section G.III). The Benchmark is a performance benchmark whose calculation methodology takes into account dividends and other incomes (e.g. subscription rights). A factor Benchmark represents the daily percentage price change of an underlying asset (e. g. share, index, commodity, future) compared to its last chained price with a constant factor. The Number of the factor defines in which direction (same or inverse) and with which leverage the Benchmark reflects the daily price change of the underlying asset.

ICF BANK AG publishes the current calculation status and possible changes in the composition of the Benchmark on its website.

The Benchmark represents as economic reality only the performance of the parameters described in this Benchmark documentation. The Underlyings, which are represented with al leverage factor by the Benchmark, are shown in the Underlying table in section G.I.

## II. General market information

All Underlyings in this document are traded on the Nordic Markets System of Nasdaq, Inc.. All information concerning market size, liquidity, market access, market participants and currency can be accessed under:

http://www.nasdaqomxnordic.com/

http://www.nasdaqomxnordic.com/shares

## B. Input data

ICF BANK AG uses input data sources for calculating the Benchmark, which it obtains from the data providers Bloomberg, Reuters or Telekurs. These data are generally based on real transaction data. Estimated prices and quotations are not used. There is no discretion or scope for assessment with regard to the determination of input data. This Benchmark is not based on expert assessments. ICF BANK AG publishes general guidelines on input data on its website (www.icf-bank.de) which contain a description of the data sources and their regulatory classification.
The Benchmarks use regulated data only. The input data will be provided in full and directly by Nasdaqomx Nordic Markets. This exchange is a regulated market, according to Art. 4 para. 1 no. 24 MiFID II.

## C.  Methodology

This Benchmark methodology has been defined by the Customized Indices department's Benchmark Committee, which is responsible for the respective category of Benchmarks. In accordance with this methodology, ICF BANK AG has no room for assessment or discretion in determining the Benchmark.

Before providing the Benchmark, the integrity and accuracy of the data sources used are thoroughly checked. All input data is subject to price data control by ICF BANK AG's in-house „monitoring and validation system - Customized Indices", which monitors the reliability of input data. For this purpose, a control software checks the existence of the price data stream for each financial instrument on which the Benchmark is based (so-called „heartbeat"). If there is no change in the Benchmark over an appropriate period of time defined individually for each Benchmark, an additional manual check of the input data takes place. If the price data stream is interrupted for a considerable period of time despite liquid trading in the relevant financial instrument and ICF BANK AG is unable to obtain price data for the financial instrument promptly via other price data providers, it temporarily suspend the provision of the Benchmark.

Market developments over which ICF BANK AG has no influence may require a change in the methodology of the Benchmark. This is in particular the case if trading of a financial instrument on which the Benchmark is based is suspended due to a permanent delisting or if the market liquidity of this financial instrument is significantly reduced (essential change). Changes to the Benchmarks methodology may also be necessary in the case of corporate actions of a company.

Any significant change in the Benchmark shall be made only the basis of a decision of the Benchmark Committee. ICF BANK AG electronically records the cause and circumstances of a change. It informs the licensee(s) of the modification and updates this Benchmark documentation.

The Benchmark is provided if the quantity and quality of the input data is sufficient enough for a reliable determination of the Benchmark. This is the case if the input data relates on a liquid market in the underlying financial instruments (active market). For these purposes, a liquid market exists, taking into account the size and normal liquidity of the market, if the price formation in a financial instrument is not interrupted for a considerable period of time and the current trading volume is not significantly lower than the average trading volume in this particular financial instrument. If trading in a financial instrument does not meet these requirements and the financial instrument is of particular importance to the

Benchmark, ICF BANK AG may, at its reasonable discretion, suspend the provision of the Benchmark for the duration of the market disturbance. In this case, it informs affected customers of the circumstances and the underlying considerations.

If the input data of a financial instrument is not recurrently based on a liquid market or is otherwise inaccurate or unreliable (stress phase) during a considerable period of time, ICF BANK AG shall, with consent of the customers, make a change in the composition of the Benchmark on the basis of a decision to be taken by the respective Benchmark Committee at its reasonable discretion.

Should ICF BANK AG determine that, despite careful monitoring and verification of the input data and adherence to the principles within this methodology, errors have occurred, the responsible Benchmark Committee will, after careful examination of the facts and possible consequences of the error for customers, decide at its reasonable discretion whether a new determination of the Benchmark is necessary.

If ICF BANK AG is of the opinion that the input data does not reflect the market or economic reality to be measured with the Benchmark, ICF BANK AG will, within a reasonable period of time, modify the input data or the methods to ensure that the input data reflect such a market or economic reality, or it ceases to provide the Benchmark.

Factors, including external factors beyond ICF BANK AG's control, could require a change in the methodology of the Benchmark or its termination. ICF BANK AG advises users that changes in the Benchmark or its termination may affect financial contracts and financial instruments for which the Benchmark serves as a reference basis.

ICF BANK AG shall review this Benchmark documentation on the occasion of any change in the composition or calculation method of the Benchmark and at least every two years.

## D. Operating principles of the Benchmarks

## I. Daily chaining

The value of the Benchmark is calculated by the daily change in the Underlying, taking into account the corresponding factor. The calculation of the Benchmark is based on the change in the Underlying compared with the last Underlying Fixing Price. This price is referred to as the „chained price". Each time a new Underlying Fixing Price is determined, a new Benchmark price is determined, which in turn forms the basis for the percentage performance of the following day. This daily adjustment of the Benchmark is done automatically and is called chaining.

## II. Composition

To calculate the increase or decrease of the Benchmarks, a leverage and a financing component is used.

## III. Leverage component

The leverage component reflects the change in price of the Underlying between two Fixing Prices and transfers this movement (either positive or negative) onto the Benchmark by multiplying the percentage of change with the assigned leverage. Thereby, a disproportionate effect on the value of the Benchmark occurs. This leverage effect inherits the risk of a disproportionate capital loss ("downside risk").

For example: (excluding the financial component and events like dividends, corporate actions, etc.) If a factor short Benchmark has a factor of 3:
- a 5% increase in the price of the Underlying (as compared to the latest Fixing Price), will result in the value of the Benchmark decreasing by 3 x 5%.
- a 5% decrease in the price of the Underlying (as compared to the latest Fixing Price), will result in the value of the Benchmark increasing by 3 x 5%.

## IV. Financial component

The financial component contains the costs of borrowing money at a one-day rate (financing rate) increased by a per annum rate (calculation fee) that reflects the Benchmarks calculation fee. See section G.II.

## V.   Particularities

For periods longer than one day, the compounding effect shall be taken into account. Returns on the Underlying cannot simply be multiplied with the selected factor since the performance of the factor Benchmark depends on each individual daily performance of the Underlying. If the performance of a factor Benchmark is compared against that of the Underlying over a period longer than one day, the observed price trends will deviate not only for prices of the Underlying which constantly rise or fall, but also for those which fluctuate.

## VI.   Intraday Benchmark adjustment

Due to the calculation formula, in particular the leverage component, it is possible that a Benchmark can run to zero or even become negative during the day and thus the investor would suffer a total loss. In order to counteract a total loss, Benchmarks are equipped with a threshold value (P) at the touch of which an intraday Benchmark adjustment is made by the base value. For the adjustment, the system uses the price that last arrived at time t.

The threshold value (P) is defined as the percentage change in the Underlying on which the Benchmark is based relative to its last chained price. In the case of long Benchmarks, a partial adjustment of the Benchmark is made if the value falls below the threshold. In the case of short Benchmarks, a Benchmark adjustment is made during the day if this threshold is exceeded.

The threshold values are shown in the Benchmark table in section G.II.

A new day is simulated for an intraday adjustment. This has the advantage that if the price of the Underlying exceeds the threshold value, the negative daily return for the Benchmark is weakened. Nevertheless, a loss may occur during the course of the day, which is economically equivalent to a total loss.

In case of an intraday Benchmark adjustment, the financial component is set to zero, otherwise it would be included twice for that day.

## VII. Benchmark Split and Reverse Benchmark Split adjustments

If the Benchmark reaches a determined starting value of more than the defined Split Level (see section G.III), a Split is performed. If the Benchmark falls to a determined starting value of less the defined Reverse Split Level (see section G.III), a Reverse Split is performed.

Both Splits are carried out with a 10-day trading delay. This also happens if the Benchmark in the meantime again records less than the Split Level (Split) or more than the Reverse Split Level (Reverse Split).

Adjustment of the Benchmark Fixing Value for a Split:    $Index(T) = \frac{Index(T)}{10}$

$$Benchmark\ (T) = \frac{Benchmark\ (T)}{Split\ factor}$$

Adjustment of the Benchmark Fixing Value for a Reverse Split:

$$Benchmark\ (T) = Benchmark\ (T) * Split\ factor$$

## VIII. Prices and frequency of Benchmark calculation

ICF BANK AG calculates the Benchmark on each trading day of the relevant stock exchange (see section G.III), taking into account the most recent prices of the Underlying. If no current price of the Underlying is available during the calculation period, the calculation is performed using the last available price of the Underlying.

The Benchmark is calculated at least once per minute on each trading day from the „Benchmark Starting Time" until the „Benchmark Ending Time" (see section G.III), unless there are disruptions in the data or price supply of ICF BANK AG, on the basis of which, from the perspective of the ICF BANK AG, the Benchmarks cannot be calculated and / or published.

 ICF BANK AG shall promptly make the corrections to the Benchmark which are recognisable to it.

An intraday adjustment of the Benchmark in accordance with point D.VI. may be made at any time during the Benchmark calculation period.

The Benchmark is calculated in points. One point corresponds to one Unit of the Benchmark currency (see section G.II).

# E. Benchmark calculation

# I. Benchmark formula

For long Benchmarks:

**Leverage component$_t$:**

$$Index_T \times \left( Lev \times \frac{Stock_t}{\left(Stock_T - (Div_t \times (1-WT))\right) \times RFactorSS_t} - (Lev - 1) \right)$$

Financial component$_t$:

$$Index_T \times \left( \frac{(Lev-1) \times IR_T + ICF_T}{360} \right) \times D_{t,T}$$

Benchmark formula$_t$:

$$Index_t = Leverage\ Component_t - Financial\ Component_t$$

**For short Benchmarks:**

Leverage component$_t$:

$$Index_T \times \left( -Lev \times \frac{Stock_t}{(Stock_T - (Div_t)) \times RFactorSS_t} + (Lev + 1) \right)$$

**Financial component$_t$:**

$$Index_T \times \left( \frac{(Lev+1) \times IR_T - ICF_T}{360} \right) \times D_{t,T}$$

**Benchmark formula$_t$:**

$$Index_t = Leverage\ Component_t + Financial\ Component_t$$

**The calculation formula is using the following parameters:**

| Parameter | Description |
|---|---|
| $t$ | Represents the current calculation date |
| $T$ | Represents the last fixing date, which is the date of the last closing price, represented by the "official closing price", as calculated and published by the Reference Exchange |
| $Index_t$ | Current Benchmark level at calculation time t |
| $Index_T$ | Recent Benchmark fixing level as described in section E |
| $Stock_t$ | Last traded share price of the Underlying, traded on the Reference Exchange at calculation time t |
| $Stock_T$ | Last Underlying Fixing Price as described in section E |
| $D_{t,T}$ | Number of calendar days between T and t |
| $IR_T$ | describes the interest rate being used for calculation. The value of $IR_T$ always equates the interest rate of date T |
| $ICF_T$ | Benchmark calculation fee which is charged by the Benchmark Administrator |
| $Lev$ | Leverage |
| $Div_t$ | Dividend correction that equates the gross Dividend amount paid by the Underlying on Ex-Dividend date t. If date t is not an Ex-Dividend date, this parameter has a value of 0. See section E.III for more information |
| $RFactorSS_t$ | Represents the factor of a potential corporate action event of the Underlying on date t. If date t is not a corporate action date, this parameter has a value of 1 |
| $WT$ | Withholding Tax that is subtracted from the Dividend correction in case date t is an Ex-Dividend date. See section G.II for more information |

## II. Intraday rebalancing

If, for instance, the price of the Underlying suffers a 12,50% daily loss (gain), the value of a factor long (short) Benchmark with a factor of 8 would have to drop to zero (total loss). In order to counteract a total loss, factor Benchmarks feature a threshold (represented by the parameter P), which triggers an intraday Benchmark adjustment if the Underlying reaches or falls below it.

In the event of an intraday rebalancing, new Fixing Values for the Benchmark and the Underlying are calculated and therefore, a new day is simulated from which the ongoing calculation continues. The consequence is that the negative daily return for the factor Benchmark is attenuated. However, if the calculated price of the Benchmark is significantly low, this can result in an intraday loss which, in economic terms, closely approximates a total loss.

The condition for triggering an intraday adjustment is as follows:

For long Benchmarks:
$$\frac{Stock_t}{\left(\left(Stock_T - \left(Div_t \times (1-WT)\right)\right) \times RFactorSS_t\right)} - 1 \leq P$$

For short Benchmarks:
$$\frac{Stock_t}{\left(\left(Stock_T - (Div_t)\right) \times RFactorSS_t\right)} - 1 \geq P$$

Whereby the parameter P represents the threshold. In this case, the value of P is -10% (-0.10).

In case of an intraday adjustment, the calculation of the Benchmark is interrupted for a 30 minutes period, excluding the time of any Market Disruption Event. For this half an hour trading time calculation break, a volume weighted average price (VWAP) will be calculated. The determined VWAP will then be used as the new Fixing Value for the Underlying in the continued calculation. Given the case, a rebalancing event occurs less than 30 minutes before market close, the calculation period for the VWAP will be prolonged into the next trading day, until the 30 minutes trading time window from the past trading day is completed. Note that the half an hour trading time window refers to 30 minutes of trading on the Reference Exchange. If the Underlying is, for example, currently suspended, this does not add to the 30 minutes of trading time. Then the VWAP time will be prolonged until 30 minutes of trading time is reached.

For example, if an intraday adjustment is triggered at 03:28:15 p.m. CET (given that the Benchmark calculation continues until 05:35:00 p.m. CET), the ongoing calculation of the Benchmark immediately stops. The VWAP relevant calculation time then will include the timespan between 03:29:00 p.m. CET and 03:58:59 p.m. CET. At 03:59:00 p.m. CET the new Fixing Values for the Benchmark and the Underlying are calculated. Afterwards, the ongoing calculation will continue with the new Fixing Values.

For example, if an intraday adjustment is triggered at 05:21:15 p.m. CET (given that the Benchmark calculation continues until 05:35:00 p.m. CET), the ongoing calculation of the Benchmark immediately stops. The VWAP relevant calculation time then will include the timespan between 05:22:00 p.m. CET and 09:16:59 a.m. CET of the following trading day. At 09:17:00 a.m. CET the new Fixing Values for the Benchmark and the Underlying are calculated. Afterwards, the ongoing calculation will continue with the new Fixing Values. In case of an overnight rebalancing, there will not be the regular Fixing described in section E.

After the 30 minutes calculation break, new Fixing Values will be calculated as follows:

For long Benchmarks:

**Leverage Component<sup>new</sup>**:

$$Index_T \times \left( Lev \times \frac{VWAP}{\left(Stock_T - (Div_t \times (1-WT))\right) \times RFactorSS_t} - (Lev - 1) \right)$$

**Financial Component<sup>new</sup>**:

$$Index_T \times \left( \frac{(Lev-1) \times IR_T + ICF_T}{360} \right) \times D_{t,T}$$

**Benchmark Fixing Value<sup>new</sup>**:

$$Index_T^{new} = Leverage\ Component^{new} - Financial\ Component^{new}$$

For short Benchmarks:

**Leverage Component<sup>new</sup>**:

$$Index_T \times \left( -Lev \times \frac{VWAP}{\left(Stock_T - (Div_t)\right) \times RFactorSS_t} + (Lev + 1) \right)$$

**Financial Component<sup>new</sup>**:

$$Index_T \times \left( \frac{(Lev+1) \times IR_T - ICF_T}{360} \right) \times D_{t,T}$$

**Benchmark Fixing Value<sup>new</sup>**:

$$Index_T^{new} = Leverage\ Component^{new} + Financial\ Component^{new}$$

**New Underlying Fixing Value:** $\quad Stock_T^{new} = VWAP$

After the calculation of the new Fixing Values, the suffix "new" shall be dropped from all relevant quantities, and the ongoing calculation of the new Benchmark values continues as described in section E.

Note the following: While calculating the new Fixing Values, $D_{t,T}$ is still the difference in days between the actual calculation date t and the recent most fixing date T. After the ongoing fixing is completed, date T becomes the same date as the actual calculation date and therefore, when continuing the ongoing calculation, the value of $D_{t,T}$ is 0.

It should be noted that after an intraday adjustment, a potential correction of the Benchmarks level because of Dividend or corporate action (See section E.III and E.IV) will be set to 0 for Parameter $Div_t$ and 1 for Parameter $RFactorSS_t$ after calculation of the new Fixing Values, because the newly calculated fixing is, for example, already Ex-Dividend.

## III. Dividend Adjustments

In case date t is an Ex-Dividend day, a Dividend Benchmark Adjustment is triggered. Therefore, the Benchmark calculation described in section E will be influenced by the parameters $Div_t$ and WT. While the parameter $Div_t$ represents the correction of the Underlying price by the paid Dividend, the parameter WT represents the withholding-tax, being payed as a government requirement for the payer of an item of income to withhold or deduct tax from the payment, and pay that tax to the government.

If date t is not an Ex-Dividend day, the value of the Parameters $Div_t$ and WT is 0.

## IV. Extraordinary Adjustments

On date t, for any "unforeseeable cases" not described under the present Benchmark rule, an Extraordinary Adjustment is triggered. The Benchmark Calculation Committee will generally modify the Benchmark calculation by correcting at its due discretion the relevant Fixing Price for the Underlying on Benchmark Calculation Day t, taking into account all available information and client´s best interest, in order to factor into the Benchmark calculation, the adjustments made on the Reference Exchange to the Underlying traded there.

The Benchmark Calculation Committee may also adapt the Benchmark Calculation in some other manner if it deems this necessary in its due discretion in order to account for differences between this Benchmark and the Underlying. Such adjustments may in particular relate to the Underlying being replaced by a basket of shares, securities representing shares or other Dividend-bearing securities or in the event of a merger by an

appropriate number of shares, securities representing shares or other Dividend-bearing securities issued by the absorbing or newly formed company and where necessary stipulating a different Reference Exchange and Underlying Price.

In the event the company being the Underlying for the Factor Benchmark is liquidated or insolvency, winding-up or similar proceedings are instituted against the assets of the company or of the possibility that such proceedings will be opened becomes known, the price of the Underlying will continue to be used into the Benchmarks Calculation for as long as the price of the Underlying continues to be determined on the Reference Exchange. However, if pricing in such a case is temporarily or permanently suspended, the leverage component remains unchanged and the Benchmark Level will be determined solely on the basis of the other components of the Benchmark formula.

Therefore, the Benchmark calculation described in section E will be influenced by the parameter $RFactorSS_t$. For example, if a Split takes place with a stock Split rate of 0.5, the Underlying loses half of its value on date t. Therefore, to retain the Benchmark level uninfluenced by the loss of value caused by the Split, the parameter $RFactorSS_t$ has to hold a value of 2. In case date t holds an Extraordinary Adjustment and also a Corporate Action event, the Extraordinary Adjustment will always be performed before taking the Corporate Action event into calculation. Without any Corporate Action the R-Factor has a default value of 1.

The Benchmark Calculation Committee defines in its reasonable discretion the adjustment method to be applied and published it by the means of a notice on https://icf-markets.de/.

## V.      Benchmark Split and Reverse Split adjustments

On the 1st Friday of each month, the Benchmark is reviewed regarding qualification for a Benchmark Split or a Reverse Split. If the 1st Friday of the month is not a trading day, the following trading day after the 1st Friday of the month will be used for review.

If, on this trading day, the most recent Benchmark Fixing Value has reached a level above the Split level, the Benchmark qualifies for a Benchmark Split. If the Benchmark has reached a level below the Reverse Split level, the Benchmark qualifies for a Benchmark Reverse Split.

In case of a qualification for a Benchmark Split or a Benchmark Reverse Split, the Benchmark Fixing Value of the 3rd Friday that is used for the ongoing calculation of the Benchmark on the next trading day will be unscaled, but will then be divided by the Split value in case of Benchmark Split (or multiplied by the Split value for a Reverse Split) during the ongoing Benchmark calculation of the next trading day. Therefore, the Fixing Value of the Benchmark of the trading day after the 3rd Friday will be a scaled Fixing Value.

Modification of Benchmark Fixing Value during a Split: $$Index_T = \frac{Index_T}{Split\ Value}$$

Modification of Benchmark Fixing Value during a Reverse Split: $Index_T = Index_T \times Split\ Value$

In case the 3rd Friday of the month is not a trading day, the implementation will take place on the following trading day after the 3rd Friday of the month. Respectively, the Benchmark Fixing Value of the next trading day after the 3rd Friday that is used for the ongoing calculation of the Benchmark on the second trading day after the 3rd Friday, will be divided by the Split value in case of Benchmark Split (or multiplied by the Split value for a Reverse Split) during the ongoing calculation of the Benchmark. Therefore, the Fixing Value of the Benchmark of the second trading day after the 3rd Friday will be the newly scaled Fixing Value.

## VI.  Impossibility to complete intraday rebalancing

In case the Benchmark Fixing Value would become negative after an intraday rebalancing event, the Benchmark level will be fixed at 0.0001. This Benchmark level will continue to be broadcasted for 4 weeks after the reset occurred. Subsequently the Benchmark will be discontinued.

The Benchmark Fixing Value will become negative after an intraday rebalancing event, if the obtained VWAP (see section E.II) is significantly lower, so that the calculated Benchmark Fixing Value will be negative and therefore, cannot reach a positive value anytime in the future.

**Example:**

Given the most recent fixing of the Underlying $Stock_T$ has a value of 100. Date t is not an Ex-Dividend day neither a corporate action date. The most recent calculated Fixing Value of the Benchmark is 400 Points. During the 30 minutes observation period calculated VWAP is 91.25. The leverage Factor is 8.

Calculating the Benchmark Fixing Value (leaving aside the financial component):

For a long Benchmark:

$$Index_T = Index_T \times \left( Lev \times \frac{VWAP}{\left( Stock_T - (Div_t \times (1-WT)) \right) \times RFactorSS_t} - (Lev - 1) \right)$$

$$Index_T = 400 \times \left( 8 \times \frac{91.25}{(100-(0\times(1-0)))\times1} - (8-1) \right) = 120$$

The newly calculated Benchmark fixing is a positive value.

Now given the same values, except the value of the calculated VWAP, which is 86.875.

Calculating the Benchmark Fixing Value (leaving aside the financial component):

$$Index_T = Index_T \times \left( Lev \times \frac{VWAP}{\left( Stock_T - (Div_t \times (1-WT)) \right) \times RFactorSS_t} - (Lev-1) \right)$$

$$Index_T = 400 \times \left( 8 \times \frac{86.875}{(100-(0\times(1-0)))\times1} - (8-1) \right) = -20$$

The newly calculated Benchmark Fixing Value is negative and can therefore no longer become positive.


For a short Benchmark:

Given the most recent fixing of the Underlying Stock$_T$ has a value of 100. Date t is not an Ex-Dividend day neither a corporate action date. The most recent calculated Fixing Value of the Index is 400 Points. During the 30 minutes observation period calculated VWAP is 108.75. The leverage Factor is 8.

Calculating the Benchmark Fixing Value (leaving aside the financial component):

$$Index_T = Index_T \times \left( -Lev \times \frac{VWAP}{(Stock_T - (Div_t)) \times RFactorSS_t} + (Lev+1) \right)$$

$$Index_T = 400 \times \left( -8 \times \frac{108.75}{(100-(0))\times1} + (8+1) \right) = 120$$

The newly calculated Index fixing is a positive value.

Now given the same values, except the value of the calculated VWAP, which is 113.125.

Calculating the Benchmark Fixing Value (leaving aside the financial component):

$$Index_T = Index_T \times \left( -Lev \times \frac{VWAP}{(Stock_T - (Div_t)) \times RFactorSS_t} + (Lev + 1) \right)$$

$$Index_T = 400 \times \left( -8 \times \frac{113.125}{(100 - (0)) \times 1} + (8 + 1) \right) = -20$$

The newly calculated Benchmark Fixing Value is negative and can therefore no longer become positive.

## VII.   Rounding

If the Benchmark is below 10 Points, the Benchmark will be rounded to four decimal points.
If the Benchmark is above or equal 10 Points and below 100 Points, the Benchmark will be rounded to three decimal points. If the Benchmark is equal or above 100 Points, the Benchmark will be rounded to two decimal points.
The shown value on different distribution channels can deviate from this.

## VIII.   Chaining of prices of the underlying asset

The chained price of the Underlying of a Benchmark is the exchange-based closing price of the Underlying on the calculation date.

## IX.   Licences

The use of a Benchmark as an Underlying for derivative financial products must be authorised under an agreement with ICF BANK AG.

## F.    Final provisions

ICF BANK AG does not warrant or guarantee the accuracy of the Benchmarks and the parameters relevant to the composition and calculation of the Benchmarks, nor does it assume liability for damage resulting from the erroneous formation or calculation of the Benchmark or other key figures. ICF BANK AG has no obligation to notify third parties, including investors and/or financial intermediaries, of any errors or incompleteness of the Benchmarks.

ICF BANK AG is the sole owner of all rights relating to the calculation methodology of these Benchmarks. They are used on the basis of a license agreement between ICF BANK AG and its customers. This license agreement contains further details on the scope of the license by third parties (e. g. banks, stock exchanges, asset managers).

ICF BANK AG publishes the Benchmark on its website www.icf-markets.de. The publication does not constitute investment advice or a recommendation by ICF BANK AG to buy, sell or hold a financial product. In particular, the composition and calculation of the Benchmark does not constitute a recommendation by ICF BANK AG to buy or sell one, several or all of the Benchmark members. The information does not constitute investment strategy recommendations within the meaning of Article 3 (1) (34) of Regulation (EU) No 596/2014 or investment recommendations within the meaning of Article 3 (1) (35) of Regulation (EU) No 596/2014.


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# G.    Annex

## I.    Underlying table

| Underlying | ISIN | Underlying RIC | Exchange | Internet |
|---|---|---|---|---|
| Nokia OYJ | FI0009000681 | NOKIA.HE | NASDAQ OMX | www.nasdaqomxnordic.com |

## II.    Benchmark parameters

(1) Timestamp 01.01.2018

| Benchmark | ISIN | Benchmark | | | | Split-level | Reverse Splitlevel | Split-value | Referenz Exchange | Underlying Fixing Price | Ref.-Exchange for calculation days |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Start date | Starting Value | Starting Time | Ending time | | | | | | |
| Nokia OYJ Faktor 4 Long Daily Net Return EUR Index | DE000A2HACR9 | 22.01.2018 | 100 | 9:00 AM | 5:35 PM | 1000 | 10 | 10 | NASDAQ OMX | Official Closing Price | NASDAQ OMX |
| Nokia OYJ Faktor 4 Short Daily Gross Return EUR Index | DE000A2HACS7 | 22.01.2018 | 100 | 9:00 AM | 5:35 PM | 1000 | 10 | 10 | NASDAQ OMX | Official Closing Price | NASDAQ OMX |
| Nokia OYJ Faktor 5 Long Daily Net Return EUR Index | DE000A2HACT5 | 22.01.2018 | 100 | 9:00 AM | 5:35 PM | 1000 | 10 | 10 | NASDAQ OMX | Official Closing Price | NASDAQ OMX |
| Nokia OYJ Faktor 5 Short Daily Gross Return EUR Index | DE000A2HACU3 | 22.01.2018 | 100 | 9:00 AM | 5:35 PM | 1000 | 10 | 10 | NASDAQ OMX | Official Closing Price | NASDAQ OMX |
| Nokia OYJ Faktor 8 Long Daily Net Return Index | DE000A2HACV1 | 22.01.2018 | 100 | 9:00 AM | 5:35 PM | 1000 | 10 | 10 | NASDAQ OMX | Official Closing Price | NASDAQ OMX |
| Nokia OYJ N.V. Faktor 8 Short Daily Gross Return Index | DE000A2HACW9 | 22.01.2018 | 100 | 9:00 AM | 5:35 PM | 1000 | 10 | 10 | NASDAQ OMX | Official Closing Price | NASDAQ OMX |
| | | | | | | | | | | | |

## III. Benchmark trading parameters

| Benchmark | ISIN | Reuters | BM-currency | direction | leverage | threshold value (%) | financing rate | calculation fee (% p.a.) | withholding tax (%)[1] |
|---|---|---|---|---|---|---|---|---|---|
| Nokia OYJ Faktor 4 Long Daily Net Return EUR Index | DE000A2HACR9 | .ICFNOA3L4 | EUR | Long | 4 | 17,5 | EONIA | 0,7 | 30 |
| Nokia OYJ Faktor 4 Short Daily Gross Return EUR Index | DE000A2HACS7 | .ICFNOA3S4 | EUR | Short | 4 | 17,5 | EONIA | 0,7 | 30 |
| Nokia OYJ Faktor 5 Long Daily Net Return EUR Index | DE000A2HACT5 | .ICFNOA3L5 | EUR | Long | 5 | 15 | EONIA | 0,7 | 30 |
| Nokia OYJ Faktor 5 Short Daily Gross Return EUR Index | DE000A2HACU3 | .ICFNOA3S5 | EUR | Short | 5 | 15 | EONIA | 0,7 | 30 |
| Nokia OYJ Faktor 8 Long Daily Net Return Index | DE000A2HACV1 | .ICFNOA3L8 | EUR | Long | 8 | 10 | EONIA | 0,7 | 30 |
| Nokia OYJ N.V. Faktor 8 Short Daily Gross Return Index | DE000A2HACW9 | .ICFNOA3S8 | EUR | Short | 8 | 10 | EONIA | 0,7 | 30 |
|  |  |  |  |  |  |  |  |  |  |

## IV.     Benchmark Definitions

The following definitions shall apply for the purposes of this Benchmark documentation.

"**Benchmark Administrator**" means ICF BANK AG, Kaiserstrasse 1, 60311 Frankfurt, Germany.

"**Benchmark Calculation Day**" means every day from Monday to Friday except holidays on which the Reference Exchange is closed.

"**Benchmark Calculation Fee**" is a per annum fee. The Benchmark Calculation Fee is charged each calendar day, beginning as of the Benchmark Starting Date. It is calculated on the basis of a 360-day year and the most recently calculated Benchmark Closing Value. See Benchmark table in section G.II.

"**Benchmark Committee**" is the respective committee of ICF BANK AG that decides on the calculation, composition and possible changes to a Benchmark of the German stocks factor family of benchmarks UC.

"**Benchmark Currency**" means the Currency the Benchmark is calculated in. See Benchmark table in section G.II.

"**Benchmark Fixing Value**" is calculated for each Benchmark Calculation Day by the Benchmark Administrator in accordance with section E. of this Benchmark documentation on the basis of the reference price of the Underlying on this Benchmark Calculation Day.

"**Benchmark Starting Date**" Is the first day the Benchmark is being calculated. See Benchmark parameter table in section G.III.

"**Benchmark Starting Value**" represents the Benchmark Closing Value on Benchmark Calculation Day T=0 for the purposes of calculating the Benchmark in accordance with E. of this document. See Benchmark parameter table in section G.III.

"**Derivatives Exchange**" are the main exchanges where options or futures of the Underlying are traded.

"**Dividend**" shall mean the Dividend of the company, exclusive of which the Underlying is traded on the Reference Exchange on the Ex-Dividend day.

"**Ex-Dividend Date**" means the Trading Day on which the Underlying trades "Ex-Dividend" on the Reference Exchange.

"**Extraordinary Adjustment**" means any of the following events as they relate to the Underlying:

a.  capital increase by way of the issue of new shares in return for contributions in cash or in kind with the grant of a subscription right, capital increase from retained earnings, issue of securities with option or conversion rights into shares, distribution of special Dividends, share split, subdivision, consolidation or reclassification of the shares

b.  probable or definitive discontinuation of stock exchange trading in the shares as a result of a merger by absorption or new company formation or takeover of the company by another company

c.  spin-off of a division of the company in such a manner that a new independent company is created or the division is absorbed by a third company

d.  any other event, which the Benchmark Administrator may at its reasonable discretion deem to have a comparable or similar impact on the calculation of the Factor Benchmark in the event no adjustments were to be made

e.  any modification of the terms and conditions of the securities representing shares by their issuers

f.  discontinuation of the stock exchange quotation of the securities representing shares or of the shares underlying them

g.  insolvency of the issuer of the securities representing shares

h.  end of the term of the securities representing shares as a result of termination by the issuer of the securities representing shares

For ADRs and GDRs or any other securities representing shares and other Dividend-bearing securities (e.g. profit participation rights, participation certificates) as the Underlying the provisions specified under (a) to (c) shall apply mutatis mutandis with respect to the Underlying and the issuing company.

"**Fixing Price**" of the Underlying for a Benchmark Calculation Day is – subject to an Extraordinary Adjustment to the calculation of the Benchmark in accordance with section E. of this document – the official closing price of the Underlying, as determined and published for that day by the Reference Exchange. If a Benchmark Calculation Day falls on a day which is not a Trading Day, the Fixing Price of the immediately preceding Benchmark Calculation Day shall continue to apply. If no Fixing Price for the Underlying is determined or published on a Trading Day, the

Benchmark Administrator shall determine the Fixing Price of the Underlying for that day on the basis of the most recent prices set for the Underlying at its due discretion.

"**Information Page**" means [https://icf-markets.de/](https://icf-markets.de/) .

"**Interest Rate**" means the financing rate (see section G.II), e.g. EONIA (Euro Over Night Index Average - which is a weighted average interest rate for overnight interbank money calculated act/360 by the European Central Bank since 4 January 1999), on the basis of effective turnover. If the Interest Rate is not set or published on a Benchmark Calculation Day, the Interest Rate applied on the immediately preceding Benchmark Calculation Day is used to calculate the Benchmark in accordance with section G. of this document. If the Interest Rate has neither been set nor published for ten consecutive Benchmark Calculation Days, the Benchmark Administrator has the right and obligation to stipulate in its reasonable discretion an alternative relevant Interest Rate which has functions comparable to the previous Interest Rate.

"**Leverage**" describes the impact that a change in the price of the Underlying has on the relevant factor Benchmark.

"**Market Disruption Event**" means each of the following events:
a)      the failure of the Reference Exchange to open for trading during its regular trading sessions;
b)      the suspension or restriction of trading in the Underlying on the Reference Exchange; and
c)      in general the suspension or restriction of trading in a Derivative of the Underlying on the Derivatives Exchange.

"**Reference Exchange**" means the exchange on which the Underlying is traded.

"**Underlying**" means the stock, bond, index, future, etc. which is tracked by the Benchmark. See Underlying table in section G.I.

"**Underlying Price**" corresponds at any time during the trading period on the Reference Exchange to the price of the Underlying.

"**Split**" and "**Reverse Split"** has the meaning as set out under section D.VII. and section E.V. of this document.

"**Trading Day**" means every day on which the Underlying is traded on the Reference Exchange.

"**Threshold Value**" indicates the maximum permitted negative (in case of a long Benchmark) or positive (in case of a short Benchmark) change in price of the Underlying compared to its most recent Fixing Value before an intraday Benchmark adjustment takes place. See the Benchmark table in section G.II.

"**VWAP**" means volume weighted average price of the Underlying. See section E.II of this document.

"**Withholding Tax**" the corresponding tax level on the Benchmark Starting Date. The Benchmark Administrator may change the Withholding Tax factor at its due discretion on any Benchmark Calculation Day with prospective effect, if the relevant tax law applicable to the Benchmark changes, resulting in a change in the amount of the – after tax – Dividend virtually accruing to it. Check https://icf-markets.de/ for current Withholding Tax value.