REGULATORY AUTHORITY
OF BERMUDA

Wholesale Access:
FRAND and Margin Squeeze

Guidance Note

Version 1.0

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About this Guidance Note

This Guidance Note sets out guidance from the Regulatory Authority of Bermuda (the "RA") in relation to the obligation to provide access on fair, reasonable and non-discriminatory (FRAND) terms, including the obligation not to engage in a margin squeeze, imposed on SMP operators in the electronic communications sector, set forth in the Market Review of the Electronic Communications Sector General Determination on 1 September 2020.

This document constitutes Version 1.0 of the FRAND and Margin Squeeze guidance. The RA may supplement or amend this Guidance Note from time to time as experience is gained with implementation of the remedy.

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DEFINITIONS

Access Network: Relates to the part of the network that connects directly to customers, from a local aggregation/distribution point.

Accounting Separation: An obligation set forth in the Market Review of the Electronic Communications Sector General Determination to produce financial statements that report the performance of each Product Group of an SMP operator. Accounting Separation enables the RA to monitor whether an operator with SMP is compliant with certain price-based obligations, such as to ensure prices are cost orientated.

Adjusted equally efficient operator (“adjusted EEO”): One of three possible standards used to identify the retail costs to be recovered; in this case, the costs to be recovered are the retail costs of the SMP provider, adjusted to the scale of an entrant. See also “EEO” and “REO”.

Average avoidable cost (“AAC”): The average of the costs that could have been avoided if the operator had not produced a discrete amount of (extra) output

Average customer lifetime (“ACL”): The average revenue-generation duration for which a customer stays with a particular service provider.

Average revenue per user (“ARPU”): A measurement used to indicate the average monthly revenue earned from a customer who subscribes to a service.

Average variable cost (“AVC”): The average variable cost for a given unit of output.

Bandwidth: The amount of data that can be transmitted within a fixed amount of time, expressed in bits per second (bps) or bytes per second.

Broadband: An Internet service or connection generally defined as being “always on”, providing a bandwidth greater than narrowband.

Bundle: Communications services sold together in a package, in contrast to each service being sold on a stand-alone basis.

Capital expenditure (“CAPEX”): Funds used by a company to acquire, upgrade, and maintain assets such as property, industrial buildings, or equipment.

Common costs: Costs that are shared between multiple services supplied by an entity.

Consumer: Someone who purchases an electronic communications service (i.e. a retail product such as broadband). Consumer can also refer to a wholesale consumer, i.e. a supplier in the value chain who buys a service or product and then supplies it to the final consumer (or end-user).

Core Network: The backbone of a communications network, which carries different services such as voice or data.

Cost causality: The attribution of costs to components, services and business divisions strictly in accordance with the activities that cause those costs to be incurred.

Cost Orientation: An obligation set forth in [name the final GD] to ensure that prices charged for products or services are reflective of the underlying cost of provision.

Current cost accounting ("CCA"): A form of depreciation in which an operator's asset base is annualized based on the gross replacement cost of the assets.

Customer: Someone who purchases an electronic communications service. Customer and consumer are used interchangeably in this report, but customer usually refers to a customer of a specific service provider (i.e. a OneComm customer).

Customer premises equipment ("CPE"): Electronic equipment that is located in a customer's premises such as an Internet modem or PayTV set-top box.

Ducts: Existing trenches and pipes in which copper and fiber lines are, or could be, installed.

Discounted cash flow ("DCF"): Approach used to calculate profitability, where revenues and costs are aggregated over time and discounted using an appropriate discount rate.

EBIT: Earnings before interest and taxes; an indicator of a company's profitability.

ECA: Electronic Communications Act 2011.

Equivalence of inputs ("EOI"): Under the FRAND obligation, the SMP operator must treat all access seekers equally. Under EOI, the downstream access product retailed by the vertically integrated operator with SMP in the wholesale market uses exactly the same physical upstream inputs as the downstream product supplied by competitors. The product development process is therefore the exact equivalent in terms of functionality and price. See also "EOO".

Equally efficient operator ("EEO"): One of three possible standards used to identify the retail costs to be recovered; in this case, the costs to be recovered are the retail costs of the SMP provider. See also "adjusted EEO" and "REO".

Equivalence of outputs ("EOO"): Under the FRAND obligation, the SMP operator must treat all access seekers equally. Under EOO, the access products offered by the wholesale SMP operator to alternative operators are comparable to the products that the wholesale SMP operator provides to its retail division in terms of functionality and price, but the products may be provided by different systems and using different processes. See also "EOI".

Equi-Proportionate Mark-Up ("EPMU"): A means of recovering fixed and common costs through a mark-up in addition to the incremental costs. The costs to be recovered are allocated across a range of services so that each service is allocated the same mark-up as a percentage of its incremental costs.

***Ex ante* remedy:** A regulatory obligation imposed by the RA on one or more SMP operators in order to prevent anticompetitive conduct and promote competition.

Financial capital maintenance ("FCM"): An approach under which the financial capital of the company is maintained in current-price terms. Capital is assumed to be maintained if shareholders' funds at the end of the period are maintained in real terms at the same level as at the beginning of the period. This means that the depreciation charge to the profit and loss account includes holding gains or losses due to changes in asset prices.

Fully Allocated Costs ("FAC"): An accounting method for attributing all the costs of a company to defined activities such as products and services. Typically, this method will follow the principle of cost causality.

Generally accepted accounting principles ("GAAP"): A collection of commonly followed accounting rules and standards for financial reporting.

General Determination: A statutory instrument made pursuant to section 62 of the Regulatory Authority Act 2011 ("RAA"). The General Determination is applicable to all operators, or to such sub-category of operators as falls within the scope of the statutory instrument.

Gross book value: The original price paid for an asset, without depreciation deductions.

FRAND: Fair, reasonable and non-discriminatory.

Historical cost accounting ("HCA"): An approach to accounting whereby the costs that the operator actually incurs are used in the accounting statement.

Holding gains and losses: Annual changes in the value of an asset.

Individual Products: An individual service, product or tariff offered by an operator. Examples include a specific pre-pay mobile tariff, a 150 Mbps fiber broadband, or a specific PayTV package.

Individual Product Bundles: A specific bundled product made up of a two or more Individual Products. Examples include a bundle of 150 Mbps fiber broadband and a specific PayTV package; or a triple-play bundle of 150 Mbps fiber broadband, a specific PayTV package and a specific pre-pay mobile tariff.

International financial reporting standards ("IFRS"): A collection of commonly followed accounting rules and standards for financial reporting.

Integrated Communications Operating Licence ("ICOL"): A licence granting the licensee the right to establish, construct and operate one or more electronic communications networks and to provide electronic communications services, on an integrated basis, within the territorial limits of Bermuda, and between Bermuda and other countries.

Internal rate of return ("IRR"): The rate of return for an investment project that sets the net present value ("NPV") of all cash flows (both positive and negative) from the investment equal to zero.

Key performance indicator ("KPI"): A measurable value that demonstrates how effectively a company is achieving its key business objectives.

Leased line: A transmission facility that is leased by a customer from a public carrier and which is dedicated to that customer's traffic.

Long-run incremental costs ("LRIC"): The average of all the (variable and fixed) costs that an operator incurs to produce a particular product.

Margin squeeze test: An assessment of the margin that exists between the wholesale and retail prices set by an entity, in order to understand whether the prices are set such that an efficient entity purchasing the wholesale product would be unable to earn a reasonable return.

Mean capital employed: Total assets less current liabilities, excluding corporate taxes, dividends payable and long-term liabilities, with the mean computed from the start and end values for the financial year.

Mobile virtual network operator ("MVNO"): A provider of mobile telephony services, who does not have allocation of spectrum or its own wireless network.

Modern equivalent asset ("MEA"): An approach to deriving asset values based on assessing the most efficient available technology that performs the function of the asset in question.

Net present value ("NPV"): The value of all future cash flows (positive and negative) over the lifetime of an investment discounted to the present.

Non-SMP Product Groups: Products that are within a market that is not subject to *ex ante* regulation, i.e. the market is not covered by an SMP determination. Non-SMP Product Groups include subscription television, high speed leased lines (inside of Hamilton), low speed leased lines (inside and outside of Hamilton), and submarine capacity/off-island connectivity.

Office of Communications ("Ofcom"): UK regulator responsible for the regulation of the electronic communications sector.

Office of Fair Trading ("OFT"): (former) UK regulator responsible for ensuring fair trading, and now part of the UK competition authority.

Operating expenditure ("OPEX"): The costs of the day-to-day operation of a company, such as staff costs, repairs and maintenance expenditure, and overheads.

PayTV: Subscription-based television services.

Pure long-run incremental cost ("Pure LRIC"): A cost standard approach that assesses the variable cost to provide service for one additional customer.

Product Bundle Groups: Any combination of two or more Product Groups sold together in a package, i.e. as a bundle. Examples include broadband and PayTV bundles; and broadband and mobile bundles.

Product Groups: Major groups of products offered by an operator, and which include broadband, mobile, fixed voice, subscription television, business connectivity (i.e. leased lines) and off-island connectivity (i.e. submarine capacity). A further distinction is made between SMP Product Groups and non-SMP Product Groups.

Profit and loss statement ("P&L"): A financial statement showing a firm's financial performance in terms of revenues and expenses.

RAA: Regulatory Authority Act 2011.

Reasonably efficient operator ("REO"): One of three possible standards used to identify the retail costs to be recovered; in this case, the costs to be recovered are the retail costs of an entrant (with less scale than the SMP operator). See also "adjusted EEO" and "EEO".

Regulatory asset value ("RAV"): The value ascribed by the RA to the capital employed in the SMP operator's regulated business.

Return on capital employed ("ROCE"): A measure of how efficiently capital is being used. It is calculated as accounting profit divided by the capital employed.

Second Consultation: The document published by the RA in February 2019, named the "Market review of the electronic communications sector". The document set out the RA's provisional view, at that time, on relevant economic markets, significant market power and requisite remedies.

Service level agreements, or guarantees ("SLAs", "SLGs"): Commercial agreements under which the SMP operator is obliged to provide access to wholesale services with a specified level of quality.

Significant market power ("SMP"): A position of economic strength in the relevant market or markets that affords an entity, either individually or jointly with others, the power to behave to an appreciable extent independently of competitors and consumers, which may provide a basis for the imposition of *ex ante* remedies.

SMP Product Groups: Groups of products for which the operator has been found to have SMP. The SMP Product Groups have been found to be broadband and mobile services (OneComm and Digicel Group), and fixed voice and high speed leased lines (outside of Hamilton) (Digicel Group).

Sub-groups of Products: A group of Individual Products within a Product Group. Examples of Sub-groups of Products include all pre-pay mobile services; or all fiber broadband products above a certain speed.

The RA: The Regulatory Authority of Bermuda, or "RA".

Time preference of money: In economics, the principle that people place a greater valuation on receiving a good or service earlier rather than later.

Virtual unbundled local access ("VULA"): A broadband access remedy that requires a network operator to provide access to its superfast broadband network. VULA provides a connection from the nearest "local" aggregation point to a customer's premises.

Weighted Average Cost of Capital ("WACC"): The rate that a company is expected to pay on average to all its security holders to finance the company's assets.

1 INTRODUCTION

1. The Regulatory Authority Act 2011 (“RAA”), section 12, sets out the principal functions of the Regulatory Authority of Bermuda (the “RA”). These include promote competition, the interests of residents and consumers in Bermuda, the development of the Bermudian economy, Bermudian employment and Bermudian ownership.

2. Separately, the Electronic Communications Act 2011 (“ECA”) requires the RA to complete a market review process in order to determine what, if any, *ex ante* regulatory remedies are required to address significant market power (“SMP”) in the supply of electronic communications services.

3. In the most recent market review (completed in 2020), the RA identified SMP in a number of markets in the electronic communications sector. As a result of this finding of SMP, the RA imposed remedies to address the competition concerns.

4. A number of SMP remedies are new to the electronic communications sector in Bermuda and span several markets. Specifically, these remedies are the obligations to

   (i) comply with Accounting Separation;

   (ii) ensure Cost Orientation of prices;

   (iii) require SMP operators to provide wholesale access on fair, reasonable and non-discriminatory (FRAND) terms, including by not engaging in a margin squeeze; and

   (iv) provide key performance indicators and timely information on market data..

5. The RA has decided to provide instructions and explicit guidance on these four key remedies, in order to:

   - provide more clarity and certainty on how the RA will expect the SMP operators to act in order to ensure that the firms are compliant with the operators’ regulatory obligations;

   - provide greater clarity and certainty to the SMP operators on how the RA will investigate compliance with these obligations; and

   - assist interested stakeholders contemplating making a complaint to the RA in relation to non-compliance with these obligations in understanding the evidential threshold that needs to be met and the information that the RA will require.

6. This Guidance Note sets out the objectives, principles and approach to be applied to an assessment of compliance with wholesale access obligations imposed on the SMP operators in the following markets:

   - wholesale provision of fixed broadband (re-sale, bitstream, physical unbundling, VULA, infrastructure access);

- wholesale mobile access;

- wholesale high-speed leased lines outside the city of Hamilton.

7. Specifically, this Guidance Note sets out how the RA will assess the obligation on SMP operators in these markets to provide access on FRAND terms, notably with regard to the requirement that the SMP operators' pricing does not result in a margin squeeze.

8. This Guidance Note relates to the regulatory obligation put in place following an SMP designation pursuant to Part 4 of the ECA, and is without prejudice to the application of ex post competition rules, requirements or obligations established by the RA in accordance with sections 84(1)(a), 85 and 86 of the RAA. However, in the event that the RA were to investigate allegations of margin squeeze under competition rules, the RA expects to make use of the principles and concepts similar to those outlined in this Guidance Note.

9. In this Guidance Note, the RA provides information on what the SMP operators will need to do to ensure compliance with the ***FRAND*** obligation, including by not engaging in a margin squeeze. The note is structured as follows:

   - **section 2** explains the objectives and scope of the ***FRAND*** obligation, including the obligation not to engage in a margin squeeze; and

   - **section 3** provides guidance to SMP operators on the approach that the RA will take to assess compliance with the ***FRAND*** obligation, including the obligation not to engage in a margin squeeze.

2 OBJECTIVES AND SCOPE OF THE FRAND AND MARGIN SQUEEZE OBLIGATIONS

10. The RA requires SMP operators in certain markets to provide wholesale access to their networks, specifically in the following markets:

- wholesale provision of fixed broadband (re-sale, bitstream, physical unbundling, VULA, infrastructure access);
- wholesale mobile access; and
- wholesale high-speed leased lines outside the city of Hamilton.

11. As part of this obligation, SMP operators will be required to offer wholesale access services to access seekers on FRAND terms, including by not engaging in a margin squeeze.

12. The objectives and scope of these obligations are described below.

2.1 Fair, reasonable and non-discriminatory

13. Market players with SMP can have the ability and incentive to refuse or restrict access to their networks to other operators who would wish to use the SMP operator's network to provide services. This restriction can harm consumers by limiting the scope for competition. As a result, the RA requires SMP operators in certain markets (broadband, mobile and high speed leased lines outside of the City of Hamilton) to provide wholesale access to their networks and to do so on FRAND terms.

14. The ***FRAND*** obligation has the objective of promoting efficient and sustainable competition by ensuring that SMP operators (i) offer access on price and non-price terms that are fair and reasonable; (ii) and do not discriminate between different access seekers, or between the SMP operator's own downstream arm and other sectoral providers.

15. The RA will assess compliance with the non-price dimension of the ***FRAND*** obligation by monitoring key performance indicators ("KPIs") which the SMP operator will be required to track and publish on its website in line with its obligation to publish wholesale KPIs. More details on this requirement are provided in section 3 of this Note.

16. With regard to the pricing dimension of the ***FRAND*** obligation, this is a requirement not to engage in a margin squeeze, which is discussed below.

2.2 Requirement not to engage in a margin squeeze

17. A margin squeeze is said to take place when an operator with SMP in an upstream wholesale market leverages this market power in the downstream retail markets by setting the combination of retail and wholesale prices such that there is insufficient margin available for competing efficient operators (which rely on wholesale access inputs from the SMP operator) to compete profitably in the retail market.

18. If a margin squeeze is taking place, the implicit price that the SMP operator's downstream business is paying for access is lower than the wholesale access price that the SMP operator's downstream competitors are paying for an equivalent service (unless the downstream business of the SMP operator is incurring losses). This would therefore constitute a breach of the pricing dimension of the ***FRAND*** obligation.

19. In the simplest terms, the test to determine compliance with the obligation not to engage in a margin squeeze is to assess whether the condition specified below is satisfied:

$$Price - Cost_w \geq Cost_r + Profit$$

where:

- $Price$ = the retail price (or revenues) from the sale of the retail product or group of retail products being tested;
- $Cost_w$ = the wholesale access cost/price;
- $Cost_r$ = the downstream (retail) costs; and
- $Profit$ = a reasonable profit margin that would be expected in a competitive market.

20. The test described above illustrates the approach that the RA will follow when assessing compliance with the obligation not to engage in a margin squeeze, which involves assessing the difference between retail prices and the wholesale access costs ("Price - $Cost_w$"), which must be large enough to cover retail costs plus a reasonable profit margin.

21. However, this raises an important question of whose retail costs need to be recovered—those of the access seeker or the SMP operator?. In general, one of three approaches can be adopted;

i. use the retail costs of the SMP provider. This is often called the equally efficient operator ("EEO") standard;

ii. use the retail costs of an entrant. This is often called the reasonably efficient operator ("REO") standard; or

iii. use the SMP operator's costs but adjust them to the scale of an entrant, this is often called the adjusted EEO standard.

22. Each of these is discussed below.

EEO standard: Under this approach, if the margin between the retail price and wholesale price is less than the retail costs (plus a reasonable profit margin) of the SMP operator, the margin squeeze test would not be passed. A key issue with this test is that it would allow the SMP operator to set (wholesale and retail) prices such that the SMP operator could squeeze the margins of any other firm that is less efficient than the SMP operator is, including new entrants who have not yet achieved sufficient scale. This approach will promote static economic efficiency,[1] in that the approach will allow consumers to benefit from potentially low prices in the short run, which reflect the efficient costs of supply.

- **REO standard**: An alternative to the EEO standard is to use the retail costs of an entrant, which could be significantly higher than those of the SMP operator. Under this approach, the SMP operator is prohibited from setting prices that would squeeze a reasonably efficient entrant. This approach will promote dynamic efficiency, which relates to improvements that occur over time as investment and innovation, for example arising from increased competition. Such improvements result in the development of new goods and services, and technological advances that reduce the production costs of current and future goods and services.

- **Adjusted EEO standard**: Under this approach assumptions would be applied to the retail costs of the SMP operator to estimate what the costs would be if the SMP operator were of similar size to an alternative operator, such as a new entrant. This approach also seeks to promote dynamic efficiency.

23. The choice of which approach to use comes down to a judgement call on how to balance these considerations, especially with regard to the trade-off between static and dynamic economic efficiency, and the objective of promoting competitive entry. These considerations are set out in more detail in section 3.2.2.

24. In assessing margin squeeze, the RA will need to make certain methodological decisions on the parameters of the margin squeeze test, including the following.

- What costs should be included in the retail cost stack? In particular, should there be an allocation for common costs?

- What assumptions should be made about the scale of the efficient retail operator? For example, should the retail operator be assumed to have the same scale as the SMP operator? If not, what adjustments should be made?

- Should margin squeeze be assessed for each individual retail product, or for a group or portfolio of retail products?

- What is the appropriate timeframe over which a margin squeeze should be assessed?

25. Section 3 below sets out the methodology that the RA will apply when assessing compliance with the obligation not to engage in a margin squeeze.

[1] Static efficiency relates to the short-run efficiency of the production of goods and services, as well as the matching of the available goods and services to consumer preferences.

3 ASSESSING COMPLIANCE WITH THE FRAND OBLIGATION, INCLUDING THE OBLIGATION NOT TO ENGAGE IN A MARGIN SQUEEZE

26. This section outlines how the RA will assess compliance with the price and non-price dimensions of the ***FRAND*** obligation.

27. The section is structured as follows:

- **section 3.1** provides an overview of how the RA will monitor the ***FRAND*** obligation (including the obligation not to engage in a margin squeeze), as well as the process for assessing compliance;
- **section 3.2** sets out how the RA will assess compliance with the non-price dimensions of the ***FRAND*** obligation and the standards to be applied when conducting the assessment; and
- **section 3.3** sets out how the RA will assess compliance with the price dimension of the ***FRAND*** obligation, i.e. the obligation not to impose a margin squeeze.

3.1 Monitoring and process for assessing compliance

28. There are two ways in which the RA will monitor and assess compliance with the ***FRAND*** obligation (including the obligation not to engage in a margin squeeze):

    i. The ongoing review of the information collected through the Accounting Separation obligation (including specific wholesale KPIs and financial data) will allow the RA to determine whether there are any concerns warranting the RA to launch a detailed investigation; and

    ii. The RA will also act as an arbiter in the case of disputes over the provision of wholesale access. For example, the RA may receive formal complaints that SMP operators are not negotiating with access seekers in good faith; are failing to provide access upon reasonable request or are not meeting the obligations of offering wholesale access on FRAND terms.

29. The RA notes that in the interim period before the first set of Regulatory Accounts is published in accordance with the Accounting Separation obligation, the RA will intervene in the case of a dispute in line with the steps outlined below.

30. Where both the SMP operator and access seekers have made all reasonable efforts to reach a commercial agreement but have been unable to do so, the RA will have the power to intervene if requested to do so by one of the parties and to determine whether the terms offered by the SMP operator comply with the ***FRAND*** obligation. This includes price and non-price dimensions of the ***FRAND*** obligation.

31. If a single iteration of negotiations between the parties is insufficient to come to an agreement, there must be at least a second iteration during which the parties elaborate on why they consider their proposed terms need to be adjusted to meet the FRAND requirements.

32. If an agreement cannot be reached after the SMP operator and access seeker have made all reasonable efforts, either the SMP operator or the access seeker may request the RA to step in to determine whether the FRAND terms have been met.

33. Other cases may arise that lead to a formal complaint being made to the RA. For example, an agreement to provide access has been enacted but an access seeker becomes concerned that the terms of the agreement are no longer compliant with FRAND terms in practice or that the SMP operator is not honoring the terms of access outlined in the agreement. In such cases, where a formal, well-evidenced complaint is made to the RA, the RA may initiate a detailed investigation.

34. Indeed, the access seeker would need to support its complaint with detailed and robust evidence, and this Guidance Note is intended to assist with that process. Any subsequent investigation by the RA will use all the relevant information made available and may require parties on both sides of the complaint to provide further detailed information to support the investigation, in line with the approach outlined in this Guidance.

3.2 Assessing compliance with the non-price dimensions of the FRAND obligation

35. When assessing compliance with the non-price dimensions of FRAND, the RA will consider a number of factors, depending on the specifics of the complaint. The complaint may relate to a breach of the SMP operator's obligation to grant access on either "fair and reasonable" terms, or in a "non-discriminatory" manner, or both. The Guidance below outlines how the RA will interpret these concepts as part of its investigation.

3.2.1 Access on fair and reasonable terms

36. The ***FRAND*** obligation means that the SMP operators have to negotiate in good faith with access seekers and must therefore meet any reasonable request for access.

37. Requests for access may not be refused except for objectively justified reasons, backed up by evidence. Therefore, access requests will be presumed to be reasonable unless the SMP operator demonstrates that they are not reasonable. As such, in the case of a dispute, the SMP operator will need to demonstrate that the access request is not reasonable or does not conform to industry standards, rather than the access seeker being responsible for demonstrating that the access request is reasonable.

38. Where an access request has been refused and a formal complaint has been made to the RA, the RA will review the evidence that the SMP operator has put forward to demonstrate that the terms of the access request are not reasonable. The RA will assess whether the refusal to grant access is consistent with the ***FRAND*** obligation. In conducting its investigation, the RA will invite submissions and seek information, potentially from both the access seeker making the complaint and the SMP operator.

39. Whether or not a request is reasonable will be judged on the merits of the case. However, the RA considers that, as a general rule, a reasonable request will be one where the SMP operator, in providing the service in question, is not subject to an unreasonable disadvantage in terms of risk or cost. Therefore, any request that does not impose a risk,

for example to network integrity, security or quality of service provision,[2] and which does not require the deployment of an unreasonable and unrecoverable level of implementation costs, would be likely to be regarded as reasonable.

40. Where access is not technically possible, the SMP operator may provide objective and justifiable reasons for refusing access. For example, with regard to physical infrastructure, an objective justification for refusing access to the ducts could be that there is no available space to install the new cables. The SMP operator would need to provide clear evidence for any such justification for not providing access.

41. For the avoidance of doubt, in the case of wholesale broadband access, the RA considers that the primary form of access should be bitstream/VULA and resale, except where the access seeker can demonstrate that these forms of access are inadequate for their requirements and/or business model. Therefore, requests for access in the form of bitstream/VULA or resale will be assumed reasonable (with the burden on the SMP operator to demonstrate otherwise). However, where a functioning bitstream/VULA and resale access product has been made available by the SMP operator, it may be allowed to refuse deeper forms of access unless there is a compelling reason (presented by the access seeker) why bitstream/VULA is not sufficient for that particular access seeker. The RA will take this into account when assessing any dispute in relation to wholesale broadband access.

42. Furthermore, the RA wishes to make it clear that the obligation to provide access would be on a technology-neutral basis, and that the SMP operator could choose to decommission a legacy network. The SMP operator would need to ensure the continued provision of services to access seekers on the SMP operator's new/alternative network, and that consumers were no worse off. In other words, the service to consumers must be at least as good as before, for no greater price.

3.2.2 Non-discrimination

43. The SMP operator must not discriminate between the terms of access provided to its downstream division and other access seekers. In practice, this means that SMP operators will need to ensure that wholesale services provided to access seekers are equivalent to those that SMP operators supply to their own downstream divisions.

44. For non-price dimensions, the concept of "equivalence" is typically defined in one of two ways: equivalence of inputs ("EOI") or equivalence of outputs ("EOO").[3]

- Under **EOI** the downstream access product retailed by the vertically integrated operator with SMP in the wholesale market uses exactly the same physical upstream inputs as the downstream product supplied by competitors, e.g. the same tie cables, electronic equipment, space exchange, etc. The product

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[2] For example, where making access to infrastructure may jeopardise safety or public health, network integrity and security, including that of critical infrastructure, or may endanger the provision of services that are primarily provided over the same infrastructure.

[3] Based on the definitions used by the Body of European Regulators for Electronic Communications ("BEREC") in its Guidance on functional separation under Articles 13a and 13b of the revised Access Directive and national experiences, February 2011 (BoR (10) 44 Rev 1) [Link].

development process is therefore the exact equivalent in terms of functionality and price.

- Under **EOO**, the access products offered by the wholesale SMP operator to alternative operators are comparable to the products that the wholesale SMP operator provides to its retail division in terms of functionality and price, but the products may be provided by different systems and using different processes.

45. In assessing compliance with the non-discrimination obligation, the RA will apply the concept of **EOO** such that the access must be equivalent in terms of service output. The RA considers EOO to be a less onerous obligation than EOI, while still achieving the objective of ensuring that access seekers are not put at a disadvantage relative to the SMP operators that self-supply in relation to the quality of the service received. EOO represents a proportionate approach, minimizing the risk of discrimination, with a lower administrative burden for SMP operators.

46. Specifically, the RA will assess whether the terms of wholesale access offered by the SMP operator provide the same level of functionality and service as the SMP operator offers to its own downstream divisions. As such, the SMP operator must not offer a reduced service to access seekers relative to the service that the operator provides to itself. The external and internal services must be identical on all key service and quality dimensions.

47. **Where an agreement between parties is already in place** and a wholesale service is already being provided, the RA will assess compliance with non-price dimensions of the offer. In the first instance, the RA will refer to information published by the SMP operators regarding specific wholesale KPIs, as required under the obligation to publish wholesale KPIs.[4] This obligation requires that KPIs can be compared between services provided internally and those provided externally to third-party access seekers.

48. KPIs should be published for each and every wholesale service offered to access seekers, as well as the services that the operators provide to their own retail business divisions. The RA will assess whether the KPIs are equivalent for all parties. Any differences may indicate non-compliance with the ***FRAND*** obligation.

49. If a more detailed investigation is required, the RA reserves the right to request further information. For example, the RA might ask for more detail in relation to key activities in the provisioning cycle, covering all its stages including, but not limited to, the ordering process, the delivery or provision of the service, the quality of service including faults and fault repair times, and migration by access seekers between different regulated wholesale inputs.

50. Where an agreement between parties is not yet in place, and if, after all reasonable efforts have been made to come to an agreement, and a complaint is raised during initial contract negotiations, the RA will intervene to assess the terms of the agreement being offered by

[4] The key wholesale KPIs to be provided are outlined in the Information Provision and Key Performance Indicators Instructions [REF].

the SMP operator. This assessment will typically include a review of any service level agreements ("SLAs")[5] being proposed.

51. Specifically, this assessment would require a review of the terms of the proposed commercial agreement to ascertain whether the SMP operator has agreed to provide access to wholesale services with a specified level of quality, and whether the terms are equivalent to those being offered to their own downstream arm. The RA will also take into account whether the SMP operator has made any commitments to pay compensation if the wholesale services provided by the SMP operator are of a quality inferior to that specified in the SLA.[6]

3.3 Approach to assessing compliance with the price dimensions of the FRAND obligation—the margin squeeze test

52. The approach outlined in this section relates to the standard that will be applied by the RA when conducting a more detailed investigation in response to a properly evidenced dispute or as part of a detailed investigation that the RA decides to launch.

53. RABefore reaching a finding of non-compliance with respect to the requirement not to engage in a margin squeeze—or indeed when asked by an access seeker to resolve a dispute over whether the appropriate wholesale access price is compliant with the requirement not to engage in a margin squeeze—the RA will need to undertake a more detailed investigation. Such an investigation may require the RA to ask for further information from the SMP operator, including more detail than is provided in the separated accounts. As outlined above, the RA notes that in the interim period before the first set of Regulatory Accounts is published in accordance with the Accounting Separation obligation, the evidence used to assess compliance with the obligation not to engage in a margin squeeze will be based on the evidence provided by each of the parties to the dispute. The section is structured in accordance with the following specific issues:

- **relevant cost standard**—the costs that will be included in the retail cost stack;
- **benchmark operator**—the assumptions that will be made about the scale of the retail operator;
- **product aggregation**—whether the test will be conducted for Individual Products, Product Groups or Product Bundle Groups;
- **retail revenues**—the way in which any discounts, promotions and other special offers will be treated in the test; and
- **profitability analysis**—how profitability will be assessed and over what time frame.

[5] SLAs typically refer to commercial agreements under which the SMP operator is obliged to provide access to wholesale services with a specified level of quality.
[6] Such conditions may be referred to as service level guarantees ("SLGs") and form an integral part of a commitment to meeting SLAs.

3.3.1 Relevant cost standard for assessing retail costs

54. When computing the relevant retail costs for the margin squeeze assessment, a view needs to be taken about which cost standard to use. When choosing among the different standards available, the key consideration is what variable and fixed costs are included. This raises the critical question of what increment is relevant for the purposes of the assessment.[7] At one extreme, the increment could be very small, such as for a single product sold, i.e. the sale of single unit. An example of this could be the sale of a broadband service to a single customer. In this case, the incremental cost is likely to be very small, in that it relates simply to the cost involved in serving that specific customer, and therefore would not include any fixed and common costs. This approach is sometimes referred to as the "pure long-run incremental cost" ("pure LRIC").

55. An alternative approach is to use a slightly broader definition of the increment, such as for a sub-set of products. An example of this could be all broadband products of 50Mbps. In this case, the increment would relate to all costs necessary to supply these services to the existing customer base. This would include all of the product-specific fixed costs. This approach is sometimes referred to as the "long-run incremental cost" ("LRIC").

56. The increment could be expanded further, such as to cover an entire Product Group. An example of this could be all broadband products. This would still be an incremental cost approach, but the increment would be larger and would cover costs that are common across sub elements of that increment (i.e. costs that were not included in the incremental costs of any of the sub-elements but are incremental to the chosen increment as a whole).

57. As retail costs are often common across a range of services, rather than being incremental to individual services, the use of an incremental cost standard is likely to give considerable flexibility to the SMP operator about how the operator sets its margins to recover retail costs, especially if a small increment is used in the approach. Hence, an alternative approach is to include a share of common costs in addition to the incremental costs of supplying the increment in question. This approach is sometimes referred to as "fully allocated cost" ("FAC"), which creates room for the new competitor to become established.
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58. On the basis that the RA is keen to promote entry (given that it has a duty to promote competition and that greater competition can promote dynamic efficiency), the RA would wish to allow new entrants some headroom as the RA believes that such entrants could deliver significant customer benefits, provided that the entrants are given the opportunity and time to acquire customers and compete on the merits.

59. Given the objectives of the RA to promote competition, the RA intends to assess retail costs at the FAC level.

[7] An associated question is: 'Over what time horizon should costs conform to?' For instance, if one considered only very short-run costs then any cost that cannot be avoided in the short run would not be included. In general, when assessing the costs of electronic communications networks for the purposes of cost recovery, a longer-term view of costs is appropriate, given that such networks are characterised by long-term investments that are recovered over many years.

60. Separate from the consideration of promoting competition, the RA is also mindful of the practicalities (including information-gathering) of assessing compliance with this obligation. Specifically, the RA recognizes that the separated accounts will provide costing information on a FAC basis only.

61. RARAAs outlined above, the RA notes that in the interim period before the first set of Regulatory Accounts is published in accordance with the Accounting Separation obligation, the evidence used to assess compliance with the obligation not to engage in a margin squeeze will be based on the evidence provided by each of the parties to the dispute and it expects to be provided with costing information on a FAC basis.

62. The RA will keep open the option of using an alternative cost standard if the RA deems it appropriate. For instance, in response to market conditions and/or a changing balance of objectives by the RA, it may be necessary to shift away from using FAC as the cost standard, possibly replacing it with something based more on incremental costs. However, the RA would consult with the industry before making any such change to the cost standard used for the purposes of assessing compliance with the requirement not to engage in a margin squeeze.

3.3.2 Benchmark operator

63. In any assessment of compliance with a margin squeeze, a choice must be made about the efficiency level of the access seeker, and whether that level is comparable to the scale (and implicitly the efficiency level) of the SMP operator. The three approaches to make this assessment (REO, EEO and adjusted EEO) are described in paragraph [23] above.[8]

64. One issue with the EEO approach is that only downstream firms that are equally efficient to the SMP operator's own downstream arm may be able to compete. This raises an issue in regard to new entrants who could be less efficient than the SMP operator, especially in the short run, since entrants will take time to acquire customers and obtain sufficient scale to compete effectively.

65. The RA recognizes the benefits that can be delivered by raising the level of effective competition in a market. Furthermore, the RA recognizes that entry by firms who are less efficient than the SMP operator(s) can still improve consumer outcomes, owing to increases in dynamic efficiency, as the market entry leads to greater innovation and more fierce competition across the market, which should drive improvements in quality and/or reductions in prices.

66. Given this, the RA is minded not to adopt an EEO approach when assessing margin squeeze. While a departure from EEO would act to encourage entry from operators who are less efficient than the SMP operator(s), the RA considers that in the current market circumstances the dynamic efficiency benefits are likely to outweigh any static efficiency losses. This is also consistent with the RA's duty to promote competition where possible.

[8] The three standards have been defined in BEREC (2014). "BEREC Guidance on the regulatory accounting approach to the economic replicability test (i.e. ex-ante/sector specific margin squeeze tests)", BoR (14) 190, 5 December, section 3.1.2. See, also, Office of Communications ("Ofcom") (2014). "Fixed Access Market Reviews: Approach to the VULA margin", 19 June, paragraph 5.24.

67. Given the above, under an assessment of margin squeeze the RA would not use an EEO approach and would instead use adjusted EEO approach where the adjustment is made through scale (lower market share) as explained below. This would seek to account for efficiency differences between the SMP operator and rival downstream firms, which could include accounting for non-replicable advantages of the incumbent, as well as differences in economies of scope (e.g. between the upstream and downstream operations).

68. One specific adjustment that the RA would intend to make is to operational scale, for example to estimate the costs of a new entrant who had achieved a reasonable level of operating scale. The RA would make unit cost adjustments to reflect the likelihood that the access seeker's fixed and common costs would be shared over a smaller operating scale, i.e. smaller customer base. Hence, the fixed and common costs per unit sold (i.e. per customer) will be higher than those faced by the SMP operator.

69. The RA considers that a reasonable adjustment would be to spread fixed and common retail costs over fewer customers, which is consistent with an assumed market share of an efficient entrant. Determining the market share of an efficient entrant requires a trade-off: setting the share too high could mean that the margins of even an efficient operator would be squeezed and therefore would not facilitate entry; setting the share too low could encourage inefficient entry.

70. Hence, the assumed market share of an efficient entrant could be informed by:

- evidence demonstrating the market share at which scale advantages will be exhausted; and

- the expected share of an entrant in the market over a set period of time. Where possible, evidence on market structure and historical developments would be used to inform the likely achievable scale of an efficient entrant.

71. Ideally, adjustments would reflect the actual expected scale of an efficient access-seeking operator. However, his approach is not possible at present in Bermuda as there is no precedent for market entry via wholesale access. As such, a reasonable expected scale adjustment must be specified in advance of market entry in order to provide sufficient certainty to SMP operators of the standard to which they must comply. To this end, the RA has considered the approach taken by national regulatory authorities ("NRAs") elsewhere.

72. The international precedents outlined in Annex 2 show that the NRAs have based the adjustment level on best practice, academic studies and evidence on the level at which an operator will achieve minimum efficient scale. Using this comparison, the RA considers it appropriate to assume market shares in the range of **20–25%** when assessing margin squeeze.

73. Setting the adjustment at this level is consistent with the RA's desire to promote entry that is efficient enough to deliver good consumer outcomes, taking account of both static and dynamic efficiency considerations. However, this approach and the adjustments to apply will be kept under review and may be updated over time based on market developments in Bermuda and following an ongoing dialogue with SMP operators and access seekers.

74. For example, as part of future information requests to market operators, the RA will seek to gather from current and potential future access seekers more information on their costs. This information will allow the RA to understand what retail/wholesale margins are required for access seekers to be able to compete effectively. Any changes to the assumptions to be applied in the margin squeeze assessment will be clearly articulated to SMP operators.

3.3.3 Retail product aggregation

75. For any margin squeeze assessment, it is necessary to decide on the level of aggregation at which the margin squeeze test should take place. In the first instance the RA will assess compliance at the level of Product Groups. Information readily available from the separated accounts will be used to undertake an initial screening, given that the separated accounts are to be prepared (in accordance with the RA's instructions) such that the revenues and costs from each Product Group can be clearly identified.

76. The RA will assess compliance on the Product Groups for which the SMP operator has been found to have SMP at the wholesale level—i.e. broadband and mobile services for both OneComm and Digicel Group, and high speed leased lines (outside of Hamilton) for Digicel Group alone.

77. As some customers may utilize the SMP service as part of a bundle (and not on a standalone basis), the RA intends to assess also all the formats in which customers subscribe to the SMP service as part of a bundle.

78. The Instructions on Accounting Separation specifies that the SMP operator must provide cost and revenue information not just for each Product Group, but also for each permutation of bundle involving two or more Product Groups, i.e. for each Product Bundle Group. As such, in all Product Bundle Groups involving at least one product or service over which the SMP operator is deemed to have SMP in a wholesale market, the RA will undertake an initial screening for compliance.

79. For such Product Bundle Groups, the RA will assess margin squeeze by comparing the total price/revenue and overall costs of the entire Product Bundle Group, rather than attempting to evaluate separate margins for each Individual Product Bundle within the group.

80. Therefore, where Product Bundle Groups include Individual Products from non-SMP Product Groups (e.g. PayTV), the margin squeeze test will still incorporate the costs of these products into the analysis. Not including the costs of the unregulated services would mean that the retail margin calculated in the margin squeeze test would be less than what an access seeker would actually require in order to offer an equivalent bundle. This would mean that the bundle would not be economically replicable.

81. When an SMP operator fails a margin squeeze test conducted at the level of a Product Bundle Group, the RA will not necessarily reach a finding of non-compliance with the requirement not to engage in a margin squeeze. This will depend on whether the sales of such a Product Bundle Group are sufficiently material in comparison to the sales of

standalone SMP Product Groups, or are forecast to become the focus of competition in the future such that an efficient access operator could be affected by this practice.

82. Notwithstanding the approach outlined above, the RA reserves the right to examine a Sub-group of Products or an Individual Product (including Individual Product Bundles) if the circumstances warrant such an assessment. However, only in exceptional circumstances would the RA do so. For example, the RA may consider assessing margin squeeze for a Sub-group of Products or an Individual Product if it can be shown that there are technical reasons as to why the access seeker could not provide the full range of retail products included in the Product Group using the particular wholesale access service to which the access seeker subscribes, or where an Individual Product or Sub-group of Products is forecast to become the key focus of competition in the future.

83. In line with the principle of assessing margin squeeze for each Product Group in which an operator has been identified as having SMP in a wholesale market, guidance on the approach the RA will take in each regulated market is outlined below.

Wholesale provision of fixed broadband

84. A wholesale fixed broadband access service could be used to support a wide range of retail broadband services, for example different service offerings with various download speeds. Therefore, the RA will assess margin squeeze for the entire range of retail services in the broadband Product Group, as well as for relevant Product Bundle Groups containing broadband, each in their own separate portfolios.

85. However, the RA recognizes that, depending on the wholesale access product used as an input to retail service provision,[9] the extent to which elements of the end-to-end cost stack will be considered as wholesale or retail costs will vary. Therefore, when conducting the margin squeeze test in response to a specific dispute, the costs included in the wholesale and retail cost stacks will be identified depending on the specific wholesale access service that is being used by the access seeker involved in the dispute using information provided in the separated accounts and information and evidence submitted by the parties to the dispute..

Wholesale mobile access

86. The SMP operator will be required to provide access on reasonable terms to any party requesting wholesale mobile access that enables the requesting party to provide the full range of mobile voice and data services to its customers on a re-sale basis.

87. Mobile retail services will include a wide range of retail products, e.g. a range of service bundles with differing combinations of voice minutes, SMS and data allowance at different prices. Given this wide range, the RA will assess margin squeeze for a portfolio of retail products, including the full range of mobile retail products in the mobile Product Group in a single portfolio. In addition, and consistent with the approach adopted for broadband,

[9] In line with the General Determination, wholesale broadband access services could include re-sale, bitstream, physical unbundling, VULA, infrastructure access.

each Product Bundle Group containing mobile will be assessed as a separate, individual, portfolio.

Wholesale high speed leased lines outside the city of Hamilton

88. Leased lines will be provided over a range of bandwidths. However, as the regulated wholesale services relate only to high speed leased lines outside the city of Hamilton, the RA will assess margin squeeze for all retail products in the Product Group (including the full range of high speed leased line products outside the city of Hamilton) in a single portfolio. In addition, to the extent that high speed leased lines outside of Hamilton are sold in bundles with other products, the relevant Product Bundle Groups will be assessed as separate portfolios.

3.3.4 Retail revenues

89. The revenues included in the margin squeeze test will capture the revenues generated by the services sold. In effect, this means that headline prices will be adjusted for promotions and discounts as well as any revenue from excess usage charges including penalty charges associated with the product. Not taking into account these elements creates risks that would undermine the measurement of the required margin.

3.3.5 Profitability approach and timeframe

90. When conducting a detailed investigation, the RA will calculate profitability by following a discounted cash flow ("DCF") approach, assessing the size of the margin over a set period of time. As such, revenues and costs will be aggregated over time and discounted using an appropriate discount rate. This is different to a period-by-period approach, where the size of the margin is assessed in a number of separate periods (e.g. on a 6-month or 12-month basis).

91. DCF is a reasonable approach to apply where initial investments are likely to be recovered over a longer period rather than up front in the first year. This is likely to cover most situations where margin squeeze is being tested. For example, customer acquisition costs may be spread over the customer lifetime, rather than recovered in the first year.

92. Box 4.1 below outlines a simple formula for the margin squeeze test applied using the DCF approach.

<u>Box 4.1 - Margin squeeze test using DCF approach</u>

The formula for a margin squeeze test expressed in DCF terms is:

$$NPV = \sum_{t=0}^{N} \frac{Price - Cost_w - Cost_r}{(1+WACC)^t} \geq 0$$

where:

- $Price$ = the retail price (or revenues) from the sale of the retail product or group of retail products being tested;

- $Cost_w$ = the wholesale access cost/price;

- $Cost_r$ = the downstream (retail) costs; and

- N is the number of time periods t;

- the Weighted Average Cost of Capital ("WACC") includes an allowance for the economic profit margin.

If the net present value ("NPV") is negative, the margin squeeze test will not be passed (and vice versa).

The discount rate

93. For the DCF approach, it is necessary to calculate the NPV over the entire period. Given this, it is necessary to account for the time-value of money, through the use of a discount rate.

94. The discount rate will be set using the SMP operator's WACC, which includes an economic profit margin. The appropriate WACC may be the specific WACC for the retail operations of the SMP operator, if this WACC is available.[10]

The duration of the DCF

95. The duration of the DCF will be set in line with the average customer lifetime ("ACL"), as this is the period over which revenues from a customer are expected to cover the costs of the services provided to the customer. Consequently, the duration of the ACL is a key driver affecting the flexibility given to the SMP operator and should be based on market data.[11]

The data to be used

96. For a dynamic analysis, the DCF approach typically uses forecast data available at a point in time (e.g. at product launch) to forecast the overall profitability of a business/project over the entire life of the business/project on a forward-looking basis.

97. The exact data to be used will depend on the specifics of the case. For example, if an access seeker determines that the terms of an agreement (at the point of negotiation) will result in a margin squeeze, and therefore a dispute ensues, this would require a forward-looking assessment necessitating forecast data on prices and costs over the ACL for all Individual Products belonging to a Product Group that is subject to the margin squeeze

[10] The SMP operator's WACC may be lower than the WACC of the access seeker. A lower discount rate gives the SMP operator the flexibility to recover lower costs during the early years of the DCF.
[11] The ACL may differ from the contract duration. This is because operators invest in customer acquisition on the basis that the relationship will last longer than one contract duration.

test. Cost information from the separated accounts will provide a valuable starting point to conduct the assessment.

98. Alternatively, the access seeker may be midway or at the end of the contract period, and may consider that it has been a victim of a margin squeeze. In this case, historical data may be used, supplemented by forecast data for the remainder of the ACL. Again, cost information from the separated accounts will provide a valuable starting point to conduct the analysis.

4 SUMMARY

99. The standards that will apply to an assessment of compliance with FRAND and the requirement not to engage in a margin squeeze are summarised in the table below.

	Variable	**Standard to apply in initial screening test**
FRAND	Fair and reasonable terms	A reasonable request for access will be one in which the SMP operator, in providing that wholesale service, is not subject to an unreasonable disadvantage in terms of risk or cost. The SMP operator will be responsible for demonstrating that the access request is not reasonable, rather than the access seeker being responsible for demonstrating that the access request is reasonable. Access requests will be presumed reasonable unless otherwise demonstrated by the SMP operator.
	Non-discrimination	The RA will apply the concept of EOO such that the access must be equivalent in terms of service output. Compliance will be assessed against reported KPIs.
Margin squeeze	Relevant cost standard to be used for assessing retail costs	FAC in most cases. LRIC may be used in exceptional circumstances, e.g. when testing Individual Products (see level of product aggregation).
	The benchmark operator to be used for assessing retail costs	Adjusted EEO. Adjusting for efficiency, most critically in terms of the average downstream unit costs at a volume equivalent to an assumed 20–25% market share of an efficient market entrant.
	The level of product aggregation: standalone services	In the first instance the RA will assess margin squeeze for Product Groups for which an operator has been identified as holding SMP in a wholesale market. These are broadband, mobile and high-speed leased lines outside of the city of Hamilton.In exceptional circumstances, the RA may consider assessing margin squeeze for a Sub-group of Products or on an Individual Product if there are clear technical reasons why the access seeker could not provide the full range of retail products in the Product Group using the particular wholesale access service to which the access seeker subscribes, or where an Individual Product or Sub-group of Products is forecast to become the key focus of competition in the future.
	The level of product aggregation: bundles	A margin squeeze test will be applied against Product Bundle Groups containing at least one retail product or service over which the SMP operator is deemed to have SMP in the corresponding wholesale market.

	Variable	Standard to apply in initial screening test
		The RA will assess margin squeeze by comparing the total price/revenue of the Product Bundle Groups with the overall cost of all the inputs and therefore the overall margin. When a margin squeeze test conducted at the level of a Product Bundle Group fails, a finding of non-compliance will depend on whether the sales of such Product Bundle Group are either: (i) sufficiently material compared with the sales of stand-alone products (i.e. Product Groups) subject to a margin squeeze test; or (ii) forecast to become the focus of competition in future such that an efficient access operator could be affected by this practice.
	Effective retail revenue to be used	All discounts and promotions must be captured in the margin squeeze test in addition to headline prices and out-of-bundle revenues (charges in addition to the headline price).
	Profitability approach	DCF over ACL using a discount rate set equal to the SMP operator’s WACC.

ANNEX 1: EXAMPLES OF MARKET SHARE ADJUSTMENTS MARGIN SQUEEZE TESTS

A1 Mobile markets

100. The Norwegian Communications Authority **("NKOM")** adopted an adjusted EEO margin squeeze test in the market for access and call origination on public mobile networks. It chose to apply a market share assumption of 20%. This market share was based on the assumption that a new "national roaming" market entrant would be able to achieve this level of market share within three to four years. This refers to a European Free Trade Association (EFTA) Surveillance Authority finding that mobile operators' scale advantages are exhausted at a market share of around 20%.[12]

101. NKOM also considered that the efficiency requirement, measured by market share, cannot be as high for an MVNO as for an operator that uses national roaming. NKOM finds an efficient MVNO had a share of 5%.[13]

102. The **European Commission**, in its recommendation on fixed and mobile termination rates,[14] suggests that, for the purposes of calculating mobile termination rates, the minimum efficient scale should be set at 20%. This suggests that once a mobile network operator has captured 20–25% of the market volume, there remain only very limited economies of scale.

A2 Broadband markets

103. **The Commission for Communications Regulation ("ComReg") (Ireland)**[15] proposed adjustments to SMP operator costs for margin squeeze tests for wholesale bitstream services. The SMP operator costs are adjusted to reflect the lower level of economies of scale and scope available to a hypothetical entrant with a retail broadband market share of 25%. The 25% retail broadband market share does not correspond to any specific player in the market, but rather to the market share of an efficient operator in the medium term. ComReg recognized that if market shares are set too low, there could be a risk of not incentivizing operators to grow sufficiently. Given the desire to avoid inefficient entry, ComReg proposed that a 25% retail broadband market share should be applied when adopting the "similarly efficient operator" ("SEO") (another term for the adjusted EEO) cost base. ComReg also suggested applying a 25% market share assumption to a margin squeeze in the context of next generation access services.[16]

104. **The Instiutut Luxembourgeois de Régulation ("ILR")**[17] makes adjustments to the EEO approach, recognizing that NRAs often use a 20–25% market share. However, the ILR identifies the costs that are due to scale differences between an operator with a market

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[12] Norwegian Communications Authority. (2016) Principles for margin squeeze tests in Market 15, 1 July.
[13] Ibid.
[14] European Commission. (2009) Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC).
[15] Commission for Communications Regulation. (2012) 'Wholesale Broadband Access: Price control obligation in relation to current generation Bitstream D06/12.
[16] Oxera. (2012), eircom's next-generation access products – pricing principles and methodologies – prepared for Commission for Communications Regulation, April.
[17] Instiutut Luxembourgeois de Régulation. (2018) Principles and Methodology of the Margin Squeeze Testing Approach (Economic Replicability Test) In Luxembourg, National public consultation (CP/T18/1), 11 June.

share of 15% and an operator which operates at the scale of the incumbent and uses a market share of 15% for the modelled similarly efficient operator. ILR considered 'as the Luxembourgish broadband market is characterised by large differences in market share between the SMP operator and the alternative network operators, it is justified to consider a smaller marker share as commonly applies in other countries.'[18] ILR emphasizes that none of the alternative fixed line operators has a market share of more than 15%. ILR also notes that the most successful operators represent a market share of between 10% and 15%, and that it would be inappropriate to conduct a margin squeeze test for a market share that does not seem achievable for an alternative operator in the market. The European Commission accepted the ILR's approach of using a 15% market share to represent the modelled similarly efficient operator.

105. **The Channel Islands Competition and Regulatory Authorities ("CICRA")** [19] recognises that an entrant could not have the same market share as the incumbents or the same economies of scale and scope that accompany such shares. In considering the margin squeeze test for broadband, CICRA considers adjusting costs to reflect likely entrant market shares at 10% and 25%. This reflects the actual share of entrants and the level of the highest share typically adopted by other NRAs, and the maximum market share that an entrant might reasonably be expected to acquire.

106. **EETT (Greece)** imposes a margin squeeze obligation on its incumbent telecommunications operator, OTE. They use an EEO test with 'size and market share equal to 12.5% of the total market share (voice and broadband) so that inefficiencies due to economies of scale and scope of the reference operator are considered'.[20]

A3 Non-market specific

107. **The Belgian Institute for Postal Services and Telecommunication (Belgium),** in its 2007 Margin Squeeze Guidelines,[21] states that in circumstances where it would be appropriate to adapt the test to reflect economies of scale, an assumed market share of 20–25% should be used to avoid underestimation of the retail costs relative to the level of costs that an effective competitor can actually achieve. BIPT refers to the **European Regulators Group (2003)** Guidelines[22], which also adopt this approach.

108. The **Office of Electronic Communications and Postal Regulations** in Cyprus considers that, when conducting a margin squeeze test, a reasonable approach would be to use a scale of the adjusted EEO equal to 20% of the market.[23]

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[18] Ibid.

[19] Channel Islands Competition and Regulatory Authorities. (2016) Pan-Channel Island Consultation on Broadband Price Control Review CICRA 16/40, October.

[20] Hellenic Telecommunications and Post Commission (EETT). Informing the consumers about Margin Squeeze [LINK].

[21] Belgian Institute for Postal services and Telecommunications. (2017) Décision établissant des lignes directrices relatives à l'évaluation des effets de ciseaux tarifaires.

[22] European Regulators Group. (2003) ERG Common Position on the approach to Appropriate remedies in the new regulatory framework, ERG (03) 30rev1.

[23] Office of Electronic Communications and Postal Regulations. (2016) Public Consultation on the methodology for cost modelling in Cyprus – Methodological Document.