Vodacom's written submission in response to the Discussion Document regarding "the use and licensing of the band 57-66 GHz (V band) and the band 71-76 GHz paired with the band 81-86 GHz (E band)".

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1. Introduction

Vodacom PTY Ltd ("**Vodacom**") wishes to thank the Authority for the opportunity to respond to the Discussion Document regarding "the use and licensing of the band 57-66 GHz (V band) and the band 71-76 GHz paired with the band 81-86 GHz (E band)" ("Discussion Document").

Vodacom's response is structured as follows:

Section 2: Summary

Section 3: Specific Questions which captures Vodacom's response to the questions posed in the Discussion Document.

Vodacom would like to highlight that its views and recommendations reflected in its responses to the questions in the Discussion Document are limited to the parameters and related deployment and operation of equipment in the E and V bands only.

Where applicable, text in ***"Italics"*** denotes quotations as per the Authority's Discussion Document.

2. Summary

- Several countries globally have recognized two aspects of such high frequency radio systems, namely the unique propagation characteristics and the high data rates that can be supported. Consequently, the applicable Regulatory Authorities have chosen to adopt the V band (57-66 GHz) and E band (71-76 GHz paired with the band 81-86 GHz) for ultra-high capacity point-to-point communications.

- The higher frequency spectrum bands like the V and E Bands, are generally inferior in propagation characteristics compared to lower frequency spectrum bands, however these spectrum bands (mm-waves) do offer some benefit due to their unique transmission characteristics which enable much simpler frequency coordination, mitigation of interference and path planning than lower frequency bands.

- Several Regulatory Authorities have adopted a license exempt model for the V Band and a light licensing model for the E band. The light licensing model aims at recovering administrative costs only and avoids penalizing innovation that would further support the deployment of broadband services. Vodacom supports the adoption of similar models in respect of the V and E Bands as noted above.

3. Specific Questions

Question 1:

Do you think light licensing would be an appropriate approach for the E band in South Africa?

Vodacom Response:

Yes. Vodacom supports the adoption of a light licensing model to determine the licensing fees for the use of E Band spectrum.

Question 2:

Are there any other licensing approaches that should be considered by the Authority for the E band?

Vodacom Response:

No. Vodacom's view is that only a light licensing model should be considered by the Authority.

Question 3:

What other applications for E-band spectrum should the Authority consider as part of this process, and should such applications impact either the licensing approach?

Vodacom Response:

Vodacom's view is that the application scenarios described by the Authority in the Discussion Document is sufficient to address the immediate market needs and therefore do not recommend any other licensing approaches to be considered at this stage.

Question 4:

Do you think a self-coordinated approach is appropriate under certain circumstances in the E band?

Vodacom Response:

Yes. Vodacom supports a self–coordinated approach as we do not foresee any challenges attributed to interference.

Question 5:

Are there any other potential approaches apart from band segmentation to accommodate the different spectrum demands in the E band?

Vodacom Response:

Vodacom is not aware of any other approaches apart from band segmentation.

Question 6:

What other applications for V-band spectrum should the Authority consider as part of this process?

Vodacom Response:

Vodacom believes that all scenarios noted in the Discussion Document are sufficiently comprehensive at this time.

Question 7:

What technical sharing criteria should apply in a license-exempt environment?

Vodacom Response:

Vodacom supports the applicable technical considerations as noted in the Discussion Document which should be taken into account when determining the technical criteria for sharing.

Question 8:

What principles should guide the allocation of spectrum for V band services?

Vodacom Response:

Vodacom recommends that the assignment of spectrum in the V Band should be guided by self-co-ordination of Radio Frequency channels as most V-Band equipment is capable of scanning radio frequencies to establish whether interference is prevalent.

Question 9:

As a general principle with, should the Authority relax the transmit power restrictions on case by case basis e.g. rural areas where interference risk is lower than in urban/densely populated areas.

Vodacom Response:

Vodacom supports the relaxation of transmit power restrictions where there is minimal risk to interference as well as sufficient protection of public health.

Question 10:

Is there another approach that should be considered by the Authority?

Vodacom Response:

No.

Question 11:

Should the Authority consider conventional licensing? If so, please provide reasons.

Vodacom Response:

Vodacom does not support the adoption of the conventional AIP licensing model for any of these bands (including the proposed co-ordinated segment of the E Band) as it will not account for the inferior propagation characteristics of these bands, low demand as well as the currently immature supporting ecosystems. Licensing fees based on AIP will lead to undesired discouraging of both adoption and investment in such systems and will ultimately deter the potential efficient use of such spectrum. The conventional AIP model will therefore be inappropriate to determine the licensing fees for these spectrum bands..

The light licensing model aims at recovering administrative costs only and avoids the undesired penalizing of innovation that is required to support the deployment of broadband services.

Notwithstanding, Vodacom supports the adoption of the conventional regulator-coordinated approach for the applicable segment of the E Band as proposed but based on a light licensing model.

Question 12:

Do you agree with the concept of segmentation for the purposes of providing both a light-licensing and a full -licensing approach? Please provide reasons for your position.

Vodacom Response:

Yes. Vodacom agrees with the concept of segmentation to allow for multiple licensing models which can be supported due to the availability of ample channels within the relevant channelling arrangement.

Question 13:

Do you agree with the segmentation as proposed?

Vodacom Response:

Yes.

Question 14:

Will online registration be feasible?

Vodacom Response:

Yes.

Question 15:

Will a 14 day registration requirement be effective and practical?

Vodacom Response:

Yes.

Question 16:

Is there another approach that should be considered by the Authority?

Vodacom Response:

No.

Question 17:

Are there any other factors that the Authority should consider?

Vodacom Response:

No.

Question 18:

Is this type of regulation (for at least a portion of the E band) really necessary in view of light-licensing looking fairly attractive?

Vodacom Response:

Yes this will be necessary to support the required multiple licensing models.

Question 19:

Do you have any views as to whether the self-coordination approach or the regulator-coordinated approach is preferable?

Vodacom Response:

Vodacom's view is that the self-coordination approach maybe most appropriate and is likely to meet the objectives of all industry stakeholders.

Question 20:

Do you think an annual license fee per point-to-point link is an appropriate approach whereby the licensee has exclusive, protected spectrum?

Vodacom Response:

Yes, provided that it is based on a light licensing model.

Question 21:

Do you think this is a sensible approach? Please provide alternative suggestions if you disagree.

Vodacom Response:

Yes. Vodacom agrees that this is both a sensible and appropriate approach.

Question 22:

Do you think it is a reasonable approach to do away with the exclusivity of a frequency channel to a specific user if there is a need for spectrum by other users who

cannot be accommodated in alternative channels, because of congestion? Please provide alternative suggestions if you disagree?

Vodacom Response:

Yes, in the case of the E and V Bands, Vodacom believes that the abandoning of licencing users on an exclusive basis may be reasonable (excluding the co-ordinated segment of the E Band) due to the low probability of interference however cautions the Authority to ensure that it applies due consideration when adopting a model to still ensure the protection of related investments of applicable licensees'.

Question 23:

Whether the Authority should specify channels;

Vodacom Response:

No. Vodacom does not believe that the Authority should specify channels in a self-co-ordinated model.

Question 24:

If the Authority should specify channels, whether they should be for FDD or TDD or both;

Vodacom Response:

Should the Authority adopt an approach of specifying channels, Vodacom recommends that the Authority adopt a Frequency Division Duplexing (FDD) only scheme.

Question 25:

How the channels should be specified, also considering RF bandwidth.

Answer 25:

Should the Authority adopt an approach of specifying channels, Vodacom recommends that the Authority adopt channel bandwidths in increments of 2x250MHz (FDD).

Question 26:

Please indicate if you agree with the Authority's view

Vodacom Response:

Yes. Vodacom agrees with the Authority's view, namely that the licensing framework for V-Band should be based on a license exempt basis.

Question 27:

What other considerations should guide the Authority's decision in this regard?

Vodacom Response:

Vodacom does not have any recommendations in this regard.

Question 28:

Do you think there are any risks or other factors that the Authority should consider before making the decision that a license-exempt approach is appropriate for the V band?

Vodacom Response:

No, however, Vodacom recommends that the Authority ensure that all applicable equipment conform to the required Type Approval specifications as maybe applicable.

Question 29:

Do you think there may be benefits to requiring link registration in this band and that this should be considered?

Vodacom Response:

No.

Question 29:

If you think that links should be registered, would you consider that to be compatible with MWGS to be licence-exempt?

Vodacom Response:

Not applicable. Please refer to Vodacom's response to Question: 29.

Question 31:

Do you agree with the parameters set out above? Please substantiate your response.

Vodacom Response:

Yes. Vodacom agrees with the parameters set out in the Discussion Document considering that most of the applicable equipment conforms to the criteria as noted.

END