



Commission for
Communications Regulation

Covid-19: Temporary Spectrum Management Measures

Non-confidential Submissions to Document 20/21

Reference: ComReg 20/23a

Date: 01/04/2020

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1 Eircom Limited and Meteor Mobile Communication Limited (trading as ‘eir’ and ‘open eir’), collectively referred to as ‘eir Group’ or ‘eir’

eir

Response to ComReg Consultation:

COVID-19: Temporary spectrum management measures

Temporary spectrum rights in the 700 MHz, 2.1 GHz and 2.6 GHz Bands

ComReg Document 20/21



31 March 2020

DOCUMENT CONTROL

Document name	eir response to ComReg 20/21
Document Owner	eir
Status	Non-Confidential

The comments submitted in response to this consultation document are those of Eircom Limited and Meteor Mobile Communications Limited (trading as 'eir' and 'open eir'), collectively referred to as 'eir Group' or 'eir'.

Response to consultation

eir acknowledges the efforts of ComReg officials to expedite consideration of request of 24^h March by the mobile Network Operators (MNOs) for temporary spectrum management measures. Implementation of the requested measures will provide additional flexibility for the MNOs to respond to changing voice and data consumption patterns on the networks. eir welcomes ComReg's ambition to issue a Decision on this matter by the end of this week and agrees with ComReg's view (para. 1.6): *"With physical distancing measures now in place, the use of electronic communication services ("ECS") is now assuming a more important role in day to day life and working arrangements for everyone. Both now and during the remaining period of the Temporary Situation, it is imperative that these networks continue to provide services."* eir acknowledges that the background to this consultation is exceptional and necessitates analysis and proposals which are unlikely to be necessary or appropriate for future ComReg spectrum-related consultations.

eir notes ComReg's views on other supporting actions in the context of the Temporary Situation (para. 1.17 to 1.19). Prior to the publication of this consultation eir completed a first review of additional measures and supports it can put in place for its customers. With regard to relaxing data caps, most of eir's fixed and mobile retail plans already have unlimited data. Following the review eir has increased the data allowance for eir Business customers on the Performance mobile plan from 20Gb to unlimited to facilitate working from home.

With regard to access to 3.6GHz spectrum we have suspended transition activities where requested by an existing FWALA operator. eir is also open to consider leasing unused 3.6GHz spectrum in rural areas.

eir generally agrees with the principles adopted by ComReg and the proposed framework for temporary spectrum management measures noting that a substantial number of households are reliant on mobile services for their voice and data communications needs. eir agrees:

- The framework is to facilitate operators that can readily utilise the 700MHz and 2.1GHz bands using existing infrastructure. However MNOs should have some flexibility in this regard, e.g. to install / redeploy equipment to existing sites or to temporary base stations to augment coverage in strategic locations.
- That in the 700MHz band an equal assignment of spectrum (2x10MHz each) be made to the three existing MNOs in the same order as the 800MHz band. eir notes ComReg proposes that if the aggregate demand of applications exceeds 2x30MHz, ComReg will decide the number of blocks to award each applicant. It should be a condition of the application process

that initial applications cannot exceed 2x10MHz per applicant. If the volume of spectrum applied for is less than supply then consideration could be given to allocating the available spectrum between the applicants with appropriate coordination to mitigate the risk of interference.

- That temporary liberalised use licences may be issued, upon request, to existing licensees in the 2.1GHz band.
- That licences may be issued in the 2.6GHz band provided their use will not interfere with IAA primary radars.
- MNOs will provide a list of sites that will avail of the temporary spectrum measures as part of the Application process. Additional sites may be added after a temporary licence is issued.
- The licences should be of limited duration and it is appropriate to issue them for a period of three months which may be extended for a further 3 months. We all hope that the crisis will have passed in such timeframes.
- The temporary licences will be subject only to a nominal fee of €100 per licence.
- The temporary licences will have a best efforts coverage obligation to provide capacity at critical locations. A list of critical locations will be published and maintained by ComReg with the guidance of DCCAIE.
- eir requests that as much advance notice as possible be given in respect of the location of temporary emergency facilities to facilitate the deployment of sufficient fixed and mobile network capacity.

eir has reviewed the proposed draft temporary electronic communications services licensing regulations in Annex 4 of the consultation.

- Regulation 4 should note that initial applications for the 700Mhz band are limited to a maximum of 2x10MHz per applicant.
- Regulation 4(2) sets out a number of matters to which ComReg will have regard when considering an application. These include information on the potential impacts on capacity arising from the Covid-19 situation. Covid-19 is an evolving situation and the effects may not be entirely predictable. Given that the consultation presents a robust justification for implementing the temporary spectrum management measures there should not be a requirement for applicants to present a detailed justification. At this time, Industry resources are focussed on maintaining network stability and reliability, it would not be effective or efficient to undertake analysis on potential capacity scenarios given the significant change from predictable patterns of behaviour and use of communications services. Evidence that an applicant will be able to utilise the measures expeditiously should be sufficient.

- It would be extremely helpful if ComReg could circulate the proposed application form as soon as possible. We assume ComReg will process applications rapidly.
- eir has no further comments on the proposed Regulations and Licence schedule.

2 Irish Aviation Authority

Irish Aviation Authority
The Times Building
11–12 D'Olier Street
Dublin 2, D02 T449,
Ireland

Údarás Eitlíochta na hÉireann
Foirgneamh na hAmanna
11–12 Sráid D'Olier
Baile Átha Cliath 2, D02 T449,
Éire

T: +353 1 671 8655
F: +353 1 679 2934
www.iaa.ie

**Technology and
Training Directorate**

**An Stiúrtóireacht
Teicneolaíochta & Oiliúna**

Gerald Caffrey
General Manager Technical Services,
Irish Aviation Authority,
Air Navigation Service Provider,
11-12 D'Olier Street,
Dublin 2.
31st March 2020.

Mr. Joseph Coughlan
Commission for Communications Regulation One Dockland Central
Guild Street
Dublin 1
D01 E4X0.
Ireland

Reference: Submission to Comreg 20/21

Dear Mr. Coughlan,

I am writing to you in relation to the ComReg publication of COVID 19 Temporary Spectrum management measures, Comreg Consultation 20/21 and having regard to the open letter from the Chief Executives of Ireland's Mobile Networks Operators (MNOs) of 24th March, in which they requested access to additional spectrum to provide extra capacity to their networks "to ensure network continuity in the context of Covid-19". The Irish Aviation Authority (IAA) recognises the benefits that access to additional spectrum will bring to Ireland's Mobile Networks Operators (MNOs) in these difficult times however we are concerned at their proposed use of the 2.6GHz band due to its proximity to, and its potential to cause interference to, the bands used by the surveillance radars operated by the IAA in the provision of Air Traffic Control (ATC) services.

Overview of IAA

The IAA's Air Navigation Service Provider (ANSP) provides ATC services in Irish controlled airspace and at Dublin, Cork and Shannon airports. These services facilitate the safe and efficient operation of passenger and cargo aircraft at these airports in addition to the transit of transatlantic flights between Europe and North America. Radar surveillance plays a critical role in the provision of these ATC services.

There has been a global response by the aviation industry to the COVID-19 pandemic. Despite the resultant difficulties for their businesses, airlines have continued to operate their aircraft, maintaining vital air links, repatriating citizens who were stranded abroad and moving medicines, essential supplies of protective equipment and COVID-19 testing kits to where they are needed. The continuation of this activity is vital to the people of Ireland, Europe and the wider world. The IAA ANSP's radars are essential to keeping these supply routes open.

Dublin Airport is the key point of entry for much of the medical supplies required by the HSE to deal with the COVID-19 pandemic in Ireland. It is also key to the export of many vital pharmaceutical products and medical devices to foreign markets. The IAA ANSP's radars are critical to the safe and efficient operation of this key airport. Anything that degrades the performance of these radars, increases the level of risk in Irish airspace. Radar failures would result in a significant reduction in capacity so that the safety of airspace users could be assured. Lower airspace capacity will lead to delays and possible cancellations of flights to / from Irish airports and through Irish controlled airspace, neither of which would be welcomed at this time.

IAA Position on Radio Bands

The IAA is not concerned at the MNOs' proposal that COMREG allows emergency access to 700 MHz and 2100MHz bands as they will not result in any degradation of our surveillance radars.

Bord Stiúrtóirí/Board of Directors

Michael McGrail (Cathaoirleach/Chairperson),
Peter Kearney (Príomhfheidhmeannach/Chief Executive)
Cian Blackwell, Marie Bradley, Ernie Donnelly,
Gerry Lumsden, Joan McGrath, Eimer O'Rourke

Oifig Chláraithe:

Foirgneamh na hAmanna, 11-12 Sráid D Olier
Baile Átha Cliath 2, D02 T449, Éire
Uimhir Chláraithe: 211082. Áit Chláraithe: Éire
Cuideachta Dlíteanais Theoranta

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Dublin 2, D02 T449, Ireland
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The IAA ANSP is however greatly concerned at the proposal to allow access to the 2.6GHz band as this would lead to a degradation in the performance of our airport surveillance radars and potentially lead to the closure of a state airport. Given that radar is the primary tool that provides air traffic controllers with the situational awareness necessary to maintain separation between aircraft and that radar derived aircraft positions informs many of the safety nets and monitoring aids built into our Air Traffic Control system, any risk to the effectiveness of radar has the potential to increase the level of risk in the operation to an unacceptable level. In this interim period before the IAA ANSP can safely mitigate for the risk of interference from services in the 2.6GHz band with our existing radars, MNO's should not be allowed access to the 2.6GHz band **in locations where there is a risk of radar interference**. These exclusion zones are identified in Figures 4.3, 4.5, 4.6 and 5.3 of the Plum Report (Document ComReg-19124c).

IAA Planned Future Mitigations to allow further access to 2.6GHz Band

Each primary radar operates on two frequencies in the range of 2.7GHz to 2.9GHz. This Internationally protected band is dedicated for aviation use. In practice radar frequencies must be separated by a minimum of 40MHz and must also be deconflicted from neighboring radar systems by a minimum of 30MHz hence the requirement for a wide operational bandwidth. In order to mitigate potential effects of MNO access to the 2.6GHz band on our primary radar systems, the IAA ANSP intends to:

1. Fit filters to our primary solid state STAR2000 radar systems at Dublin, Shannon and Cork airports.
2. Replace our TA10M radar system close to Dublin Airport. This radar is not compatible with the available filters. We have purchased and factory acceptance tested a replacement radar system and have purchased a new radar site. We are currently engaged in the planning process so that we can install the new radar and decommission the TA10M radar system that cannot be filtered.

In addition to these technical measures, a significant amount of safety assurance work will be required. The safety assurance process is outlined later in this response in section "IAA Safety Management Process for Filter Installation on Radars".

MNO Mitigations Required pending IAA Mitigations (Filters + Radar Decommissioning)

Given the short timeframe proposed by the consultation, it will not be possible for the IAA ANSP to put the necessary mitigations in place for fast access to the 2.6GHz band at all geographic locations. Therefore access to the 2.6GHz band should only be considered where the criteria as laid down in Comreg Consultation 20/21 are met in full by the mobile network providers and that no MFCN deployments should be made within the exclusion zones as identified in Figures 4.3, 4.5, 4.6 and 5.3 of the Plum Report applies.

Specifically, those mitigations are listed under Chapter 3 Consideration of industry views and Comregs proposals and within the Wireless Telegraphy Licence itself. They are also listed below.

Section 3.38

ComReg therefore is making provision for the licensing of the 2.6 GHz Band in this document and in the Draft Regulations in Annex 4. However, the issuing of licences for the band will be subject to further consultation with the IAA.

3.39 and Draft Form – Section 2 of Schedule 1 of the Draft Regulations Annex 4

At a minimum, ComReg envisages that the suite of compatibility measures as identified in Document 19/124 will be required to ensure compatibility between ECS and the 4 IAA primary radars (2 in Dublin, 1 in Shannon and 1 in Cork) which include out of band power flux density (pfd) levels to address interference due to intermodulation, spurious emissions and blocking in different circumstances will be needed. These compatibility measures are as set out in draft form in Section 2 of Schedule 1 of the Draft Regulations (Annex 4).

3.40 - In practice, these pfd levels result in areas around each of the radars where ECS base stations cannot be deployed. Plum has calculated these areas and they are illustrated in Figures 4.3, 4.5, 4.6 and 5.3 of the Plum Report.

3.41 - Appropriate Evidence being provided as part of the application process; that the compatibility measures as set out in Section 2 of Schedule 1 of the Draft Regulations (Annex 4) are met; and, that no MFCN deployments would be made within the exclusion zones as identified in Figures 4.3, 4.5, 4.6 and 5.3 of the Plum Report.

We agree and support 3.9, 3.18, 4.23 (c), 4.32, 5.3, 5.3.1, 5.3.2, 5.4 provided the conditions above can be met.

In the case of 3.19 If mitigations are met as outlined above, we seek to also include the following to assist in determining any interference issues: Antenna Height, Antenna Orientation, Predicted coverage plots.

An overview of interference detection capabilities on the mobile network operator side where active antennas are deployed. This may be sensitive company information so this can be discussed with appropriate non-disclosure arrangements in place.

Section 2 Technical Conditions of Wireless Telegraphy Licence - Condition 3 (g) (a) This condition may be applied at a point in the future where mitigations in the form of filters have been fitted and validated by IAA. In the interim, with no filters fitted at IAA primary radar sites then the condition that no MFCN deployments would be made within the exclusion zones as identified in Figures 4.3, 4.5, 4.6 and 5.3 of the Plum Report applies.

Section 2: Technical Conditions of Wireless Telegraphy Licence

3. For 2.6GHz Band Base Stations (b) the requirement is for an additional in-band radiation limit and not an out of band limit

IAA Safety Process for MNO Installations outside the Exclusion Zones

This section applies to the issue of the temporary licencing at 2.6GHz if all conditions as outlined in Comreg consultation 20/21 regarding the safeguarding of radars can be met by the MNO. The IAA is mandated to comply with EU regulations on safety management as overseen by our aviation safety regulator. In order to meet our regulatory requirements our surveillance domain will require evidence, that each MNO can satisfy the requirements to protect the radar service i.e. that no MFCN deployments would be made within the exclusion zones as identified in Figures 4.3, 4.5, 4.6 and 5.3 of the Plum Report, and comply with the mitigations as outlined in Comreg 20/21 then access to 2.6GHz band can be facilitated for the duration of the timescale as noted in the consultation. We will need to discuss each deployment with the relevant MNO in order to coordinate and carry out internal risk assessment and notification processes.

IAA Safety Management Process for Filter Installation on Radars

The IAA ANSP will also be required to demonstrate to our aviation safety regulator via our own hazard identification & risk assessment processes with supporting evidence that following the implementation of technical mitigations, the safe coexistence of mobile networks at 2.6GHz and primary surveillance radars at 2.7GHz will be assured and that the level of risk is tolerable to our Air Traffic Control operations .

We will gather a technical case file including inter alia the required separation minima (3 nautical miles in this case), technical and procedural safety nets, associated reports and critical human factors elements. The time this takes is dependent on the complexity of the project.

In this case, one such potential hazard would be that interference from 2.6GHz band sources cause an overload of the radar processing and result in radar failure. As radar is used to safely separate aircraft, this would potentially carry a high risk to Air Traffic Control operations. We will conduct our risk assessment and mitigation processes in conjunction with our Safety Management Unit and then submit the outcomes of this activity to our regulator for regulatory approval. In Accordance with EU regulation 2017/373 the safety regulatory notification process alone can take up to 35 working days and will require input from a broad range of internal IAA disciplines from the business, technical, safety and ATC domains. The process is required to validate that the ATC services will operate as expected with the identified mitigations implemented.

If during the risk assessment and mitigation process it is identified that this may become a complex change then a minimum notification period of 90 working days is required in advance of a proposed implementation.

Process used to access 2.6GHz Band in other EU States

We acknowledge that these are unforeseen circumstances and have sought the views of our counterparts in Europe on this matter. We contacted frequency managers, surveillance managers and surveillance specialists in order to find a way forward. In all known cases our counterparts fitted filters to their radar systems, whilst the pfd limits imposed vary by country, they are very similar, and the protection zones imposed without filters fitted are in line with the consultation proposal.

It should also be noted that the fitting of filters brought other challenges to our European counterparts and that the process is non-trivial to validate.

In the European jurisdictions where 2.6GHz has been deployed, the locations available for 2.6GHz deployment have been very limited prior to the installation of appropriate radar filters.

An example of this is illustrated by the restrictions implemented by OFCOM in the U.K see figure 1, prior to the installation of filters. Figure 2 illustrates the greatly reduced location restrictions following the installation of filters.



Figure 1 – Pre-Filter 2.6GHz Restrictions

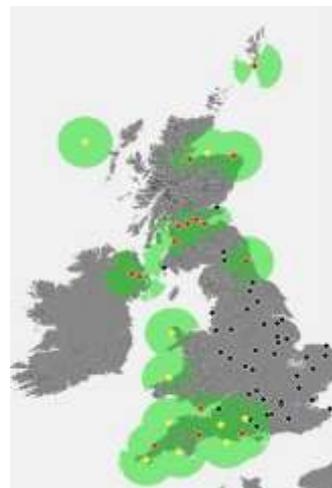


Figure 2 – Post Filter 2.6GHz restrictions

The green area on this map shows the area where base station deployment would be restricted.

Conclusion

The IAA agrees that the COVID-19 pandemic has resulted in exceptional circumstances and recognises the benefits to MNOs and their customers of the introduction of the 700MHz band and the liberalisation of 2100MHz for the duration of the related crisis. We note the open letter from the MNOs and welcome that their proposal recognises the requirement to mitigate interference to the radar systems.

We are aware that the proposal has a very short turnaround time and given the IAA's obligatory safety assurance process as set out above, note that any mitigations possible in the short term are available only on the part of the MNO's. In this interim period before the IAA can safely mitigate for the risk of interference with existing IAA radars, MNO's should not be allowed access to the 2.6GHz band in locations where there is a risk of radar interference

Yours sincerely,

Gerald Caffrey,
General Manager Technical Services

3 Irish Aviation Authority – Safety Regulatory Division

Irish Aviation Authority
The Times Building
11-12 D'Olier Street
Dublin 2, D02 T449,
Ireland

Údarás Eitlíochta na hÉireann
Foirgneamh na hAmanna
11-12 Sráid D'Olier
Baile Átha Cliath 2, D02 T449,
Éire

T: +353 1 671 8655
F: +353 1 679 2934
www.iaa.ie

Safety Regulation
Division

Rannán na Rialachán
Sábháilteachta

Aeronautical Services Department,
Safety Regulation Division
Irish Aviation Authority

31-March-2020

Mr. Joseph Coughlan,
Commission for Communications Regulation,
One Dockland Central,
Guild Street,
Dublin 1,
D01 E4X0

Dear Joseph,

The IAA Safety Regulatory Division (IAA/SRD) as the Competent Authority for the provision of Air Navigation Services in Ireland has reviewed the mobile network operators request for permission to use the 2600 MHz band for specified hotspots and the relevant ComReg publications.

IAA/SRD acknowledges the requirement to optimise the use of the radio spectrum to meet the increased mobile communication demand, however Dublin, Cork & Shannon Airports are key elements of our international transport infrastructure which need to be protected during this unprecedented crisis. IAA/SRD it is of the view that:

- It will not be possible to install filters on the Star 2000 primary radars at Dublin, Cork, Shannon airports and/or replace the TA10M primary radar at Dublin Airport during the Covid 19 crisis;
- The mobile network operator mitigations detailed in chapter 3 of the Covid-19 temporary spectrum management measures (Ref: ComReg 20/21), including the prohibition of MFCN deployments within the exclusion zones detailed in Figures 4.3, 4.5, 4.6 and 5.3 of the Plum Report (Ref: ComReg 19/124c), must be fully implemented to protect the aeronautical primary radars at Dublin, Cork & Shannon Airports and maintain safety standards.

Yours Sincerely,



Dominic McNamara
CNS Inspector

Bord Stiúrthóirí/Board of Directors

Michael McGrail (Cathaoirleach/Chairperson),
Peter Kearney (Príomhfhéidhmeannach/Chief Executive)
Cian Blackwell, Marie Bradley, Ernie Donnelly,
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Eimer O'Rourke

Oifig Chláraithe:

Foirgneamh na hAmanna, 11-12 Sráid D'Olier
Baile Átha Cliath 2, D02 T449, Éire
Uimhir Chláraithe: 211082. Áit Chláraithe: Éire
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Dublin 2, D02 T449, Ireland
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4 Imagine Communications Group

Mr. Joseph Coughlan
Commission for Communications Regulation One Dockland Central
Guild Street
Dublin 1
D01 E4X0.
Ireland
30th March, 2020

Re: Response to COVID-19: Temporary spectrum management measures (ComReg 20/21)

Dear Joseph,

Imagine applauds the ongoing work being carried out by ComReg in response to the rapidly changing situation as a result of the COVID-19 pandemic.

Imagine fully supports the proposed decisions contained in the consultation document¹ to address the unparalleled changes in internet traffic from normal levels and patterns.

As a provider of essential broadband services to rural communities Imagine has to date taken all possible steps to optimise its network to meet demand and maintain service levels however we also share the concerns raised by the MNO's with regard to how to prepare our network to cope with further increases in demand, and to also relieve any localised congestion wherever it arises.

In that regard the proposal to make additional spectrum available by ComReg is a welcome and positive initiative Imagine agrees with the view expressed by ComReg that the proposal should facilitate operators that can readily utilise additional spectrum to meet the demand of consumers during the temporary situation using existing infrastructure.

With that in mind Imagine's network and customer premises equipment, as deployed today, are immediately capable of making full use of any spectrum assignments in the 3.6GHz band that are unused by MNO's. Imagine is already working closely with MNO's and in line with the objectives of the proposed initiative in response to COVID 19 we will engage fully to ensure the best use of this valuable resource during the period of the crisis and welcome the support of ComReg to facilitate this.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Mike Stacey".

Mike Stacey
Chief Technology and Innovation Officer
Imagine Communications Group.

¹ ComReg 20/21 COVID-19 Temporary spectrum management measures

5 Raidió Teilifís Éireann

Dear Mr. Joseph Coughlan
Commission for Communications Regulation
One Dockland Central
Guild Street
Dublin 1
D01 E4X0.
Ireland

In response to "COVID-19: Temporary spectrum management measures Temporary spectrum rights in the 700 MHz, 2.1 GHz and 2.6 GHz Bands", " Submissions to ComReg 20/21", RTÉ as DTT Multiplex Licence holders would like to make the following comments:

Section 3.8 & 3.23

Request for notification to "RTÉ Multiplex Management" and "2RN" of transmitters brought to air where use will be made of the lowest 10MHz block (i.e. from handsets/terminals connected to that transmitter site).

This request is made for information purposes to assist "RTÉ Multiplex Management" and "2RN" in the identification of any Saorview reception installation problems during this critical time where there is:

- a) Increased reliability on public service broadcasting for important news updates, communications and entertainment.
- b) Very recent changes in frequency for Saorview viewers, some of whom will not yet have optimised their systems for the new frequencies.
- c) The introduction of new technology in new spectrum, under special circumstances
- d) A tendency for viewers suffering problems to be easily – and usually incorrectly - convinced that work on a nearby structure is the cause of their reception issues

A similar notification system was used well, without issue, and with good cooperation between mobile operators and 2RN, during the initial 800MHz roll-out. We suggest that the proposals in Section 3.23 be extended to include notification of 2RN for information purposes as operators of a vital service in a directly adjacent band.

If there any issues, please contact me at your convenience.

Best Regards

Eamonn Reid

RTÉ DTT Mux Management
Donnybrook, Dublin 4

T: +353 1 208 2276 M: +353 87 8517638 E: eamonn.reid@rte.ie | www.rte.ie

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bheith faoi phribhléid dhlíthiúil. Is ar an seolaí amháin atá sé dírithe. Níl cead ag aon duine eile rochtain a fháil ar an ríomhphost seo. Mura tú an faighteoir beartaithe, tá cosc ar aon nochtadh, cóipéail, dáileadh, nó aon ghníomh a dhéanamh nó a fhágáil ar lár i dtaca leis an ríomhphost agus d'fhéadfadh sin a bheith mídhleathach. Tabhair ar aird le do thoil, d'fhéadfadh ríomhphost chuig, ó agus laistigh de RTÉ a bheith faoi réir an Achta um Shaoráil Faisnéise 2014, agus d'fhéadfadh go ndéanfaí é a nochtadh.

6 Three Ireland (Hutchison) Limited

Covid-19 Temporary Spectrum Measures

**Response to Document 20/21 from
Three**

31 March 2020



Three.ie

1. Introduction

It is not necessary to dwell on the context in which this consultation is being held - it goes without saying. It is, however, worth briefly stating that in this time of crisis with all schools closed, with hundreds of thousands of people confined to home and working remotely, it is essential that we keep our electronic communications networks functioning and that we do whatever we can to maintain or maximise the throughput achieved from those networks. The measures proposed for adoption by ComReg are some of the few options available to temporarily support and improve the throughput available from existing networks, and Three fully supports these proposals.

We would like to acknowledge that under the circumstances ComReg has produced a very detailed and comprehensive consultation document in a very short time period, and we recognise the effort that has made this possible. We would urge ComReg to move quickly to deliver a decision on this matter. Over the past fortnight, on several occasions Three's network has seen new records set for daily demand and data throughput. As we enter the first full working week under the "Stay at Home" guidelines, we expect that those records for demand will be again surpassed, and unless we can increase capacity in high demand areas this will reduce the quality of service delivered to many customers. The effect will be most noticeable to those who are totally dependent on mobile broadband services. We must move quickly now to provide additional capacity on the networks to support people who are trying to work from home; children connecting to school from home; people to stay connected with friends and family, and also to use online entertainment. It has never been so important before.

Three has taken many steps itself to assist its customers at these difficult times. The vast majority of our customers have Three's 'All You Can Eat' data offering, where previously we reserved the right to apply a 60GB per month limit after which we could exercise traffic management. This has been removed for all customers during the current crisis.

For customers who are not on a price plan with All You Can Eat data, they will not use any of their data allowance when visiting HSE.ie or Gov.ie. In addition, there is no charge for calls our customers are making to the HSE Covid-19 helpline.

2. Response to Consultation

We agree with and support the proposals. They are necessary, and not alone does ComReg have the ability to make these changes, but the imperative is to do so in the national interest. Further, it must happen as a matter of urgency. The process must be straightforward with a simple application and grant for 700MHz and 2100MHz. We accept that the 2.6GHz temporary licences are less straightforward, so may need to be applied for on a case by case basis. Operators will put in place a protocol to avoid interference from intermodulation products in the 700MHz band and this protocol can also be used to address any other similar issues that might arise.

Electronic Communications has been designated as an essential service in the guidance issued by Government on 28th March 2020. Networks have a requirement for additional spectrum or to use spectrum with the most efficient technology available at this time. The Temporary ECS Licences will allow operators to utilise spectrum that would otherwise go unused during the current crisis or to make better use of spectrum already in use at a time when customers need additional connectivity. It makes eminent sense to proceed with the Temporary ECS Licences as proposed, and without delay. We have the following specific comments on the proposal.

Process

As outlined in the Joint Request we want a straightforward application and assignment process for 700MHz and 2100MHz liberalisation. We accept that 2.6GHz might require some further engagement.

Duration of licences

The requirement is for temporary measures to provide additional network capacity during the current crisis. While we agree that ComReg's proposal is reasonable (three months with a possible second period of three months) ComReg should make the process to obtain the second period simple and straightforward so as to avoid any unnecessary administration.

Licence Fee

Three agrees that a once-off nominal fee of €100 would be appropriate for the grant of the Temporary ECS Licence(s). Any other approach would present a barrier to the deployment of additional network capacity at a time when it is needed to support the "Stay at Home" policy.

Coverage Obligations

We note ComReg intends to include coverage obligations in the Temporary ECS Licences, and we would caution that this might become an unnecessary restriction. Three will do all that is feasible to ensure that priority locations receive the maximum capacity that we can deliver. We are, however, limited to some extent to hardware that is already built and in the networks. We will have some ability to provide temporary sites; to finish construction of sites that are near completion; or to add additional hardware to existing sites, however, this is limited under the current circumstances. Further information on Three's ability to use the spectrum is provided in Annex 2. We would prefer to work with Government on an iterative basis to provide capacity to priority locations as this gives more flexibility. We note that the draft licence includes the requirement to cover priority areas on a "best effort" basis, and this text should carry through to any final licence.

Since the beginning of March, we have seen changing patterns of use on our networks. While overall traffic has grown, the time of day pattern and the geographic location have both

changed. We will need to target improved coverage to the areas where it can bring the most benefit, and that might be dynamic.

Immediate Benefit

There are two confidential annexes to this response. Annex 1 outlines the measures that Three has already taken to help its customers through this current crisis. Annex 2 provides information on the current traffic load on Three's networks, and the recent changes. It also explains how Three will be able to use the Temporary ECS Licences in the short term to increase network capacity.

Specific Proposal for the 700MHz Band

Three agrees with the proposal as outlined in section 3.23 of the consultation document.

Specific Proposal for the 2100MHz Band

Three agrees with the proposal as outlined in section 3.2.4 of the consultation document.

Specific Proposal for the 2600MHz Band

Three agrees with the proposal as outlined in section 3.2.5 of the consultation document.

Other Assistance

For the duration of the current crisis or "Temporary Situation" we will pause the roll-out of spectrum in the 3.6GHz band in areas where that would require the cessation of existing services to customers. Three is also open to the possibility of sub-leasing some of its spectrum to existing fixed wireless access providers on a temporary basis if that can be achieved without impact to Three's network.

Assessment of ComReg's Approach

Under the circumstances, we agree that it would be inappropriate to delay the licensing in order to carry out a Regulatory Impact Assessment. ComReg has correctly assessed that consumers would favour the measures – they are proposed simply to ensure maximum connectivity and throughput at a time when it is critical to support the Stay at Home policy. As will be apparent from Annex 1, these proposals were not brought forward for any commercial or strategic gain to mobile network operators. The measures proposed are temporary and Three does not believe that any commercial market distortion will arise as a result of them. In

any case, there is an overriding public interest imperative that requires us all to take whatever steps we can at this time to support the Stay at Home policy.

Draft Decision, Regulations and Licence

In the definitions of the Regulations, an addition might be required for “the State”, e.g. as referred to in paragraph 4(2)(a).

Subject to our comments above regarding coverage, we note that the coverage obligation in the draft licence is proposed to be on a “best effort” basis, which is appropriate.

Otherwise the Draft Decision, Regulations, and Licence are appropriate for the proposals outlined and we support them.

Confidential – Annex 1

The following is a non-exhaustive list of some of the measures Three has taken to help its customers in the current crisis:

Network

- [REDACTED].
- A full network-freeze is in place except for essential works and we have adjusted network configuration to optimise capacity.

Customer Care

- [REDACTED].
- [REDACTED].

Our Customers

- [REDACTED].

Confidential – Annex 2

Demand Growth

[Redacted]

Congested Cells

[Redacted]

Ability to Use Immediately

[Redacted]

Handset penetration

[Redacted]

7 Virgin Media Ireland Limited



Virgin Media response to:

Consultation: COVID-19 Temporary spectrum management measures – Temporary spectrum rights in the 700 MHz, 2.1 GHz and 2.6 GHz bands

ComReg 20/21

NON-CONFIDENTIAL VERSION

31st March 2020

Introduction

Virgin Media Ireland Limited ('Virgin Media') welcomes the opportunity to respond to ComReg's Consultation ('the Consultation') on *COVID-19: Temporary spectrum management measures* ('ComReg 20/21'). Virgin Media's views on the Consultation (our "Response" are set out below)

The whole of Ireland is operating under unprecedented conditions. The novel coronavirus (COVID-19) pandemic has required businesses across Ireland, the Government and its agencies to change how they operate and has led to important restrictive measures being introduced with little or no notice. Telecommunication operators that provide essential services including Virgin Media have had to react quickly to ensure that the resultant significant changes in traffic levels and patterns do not negatively impact the quality of service provided to consumers by both fixed and mobile networks. As the public are now more reliant than ever on electronic communication networks, Virgin Media together with all other operators and the Regulator alike must work together to ensure consumer welfare such that any disruption to service is avoided where possible.

Virgin Media provides service to over 950,000 premises including consumers and other end-users, including a wide range of government sites. This includes a range of HSE sites. The continuation of our service to all end-users, include these critical sites, is of paramount importance.

Virgin Media understands that under the current situation extraordinary measures must be considered and where feasible introduced quickly to ensure consumer welfare and limit disruption. However such measures need to be legally valid and carefully designed to ensure that they maximise customer welfare and do not adversely impact on the ability of existing operators in the spectrum bands to continue to provide services to their customers.

Virgin Media's business in Ireland and the COVID-19 impact

Every day, people, businesses and public services all over Ireland rely on Virgin Media to stay connected. Our customers are doing more online than ever before, from streaming to gaming, with our peak traffic increasing by 30% over the last year across an average of 10 connected devices and data usage currently averaging nearly 300Gb per month.

Virgin Media Ireland is the most powerful network in Ireland. According to ComReg's Quarterly Report Q3 2019, Virgin Media had 26.2% of fixed broadband subscriptions in Ireland and 24% of fixed voice subscriptions. We are Ireland's fastest broadband network and provide Ireland's fastest In-Home Wi-Fi (certified by Ookla), having invested over €1Bn in our network infrastructure.

We continue to invest in our network to connect more people and keep pace with rising demand for data intensive services like video streaming, music downloads and online gaming. Our network investment programme is also delivering a network that is future proofed to ring a host of new services to homes and businesses in the years ahead including high quality gigabit internet speeds.

Virgin Media operates a highly modern, high capacity fibre-rich broadband network passing over 950,000 premises in cities and towns across Ireland, delivering speeds of up to 500Mbps +.

Today, we are facing a new challenge: the global COVID 19 pandemic. Almost overnight, thousands of our customers are working from home, accessing and sharing files on corporate networks, joining video conferences or accessing online entertainment during periods of self-isolation.

Virgin Media Business (VMB) has increased capacity for ALL government workers (working remotely) to connect and serve the public with vital services needed now more than ever. Social welfare, health etc. This has placed and continues to place enormous pressures on our employees and infrastructure.

Other projects VMB COVID-19 Response Team have been working on:

- Building a superfast Wi-Fi network for a new overflow hospital in Dublin. We got contacted about it in Monday and will have to all done by Friday, this usually takes 4-6 weeks.
- Mercy Hospital in Cork are also doubling their bandwidth to deal with COVID-19 testing requests and results for that region.
- Building new connectivity for 4 army barracks. These barracks will act as overflow for regional hospitals around the country.

The focus of this Response is on ComReg's proposal for the temporary release of spectrum in the 700 MHz band to three MNOs ("Proposal"). Virgin Media has no objections to the temporary release of spectrum in the 2.1GHz and 2.6 GHz bands in the current temporary situation. Virgin Media notes that such measures could cater for the increase in voice and data traffic over the MNOs networks.

Virgin Media believes that the current Proposal does not, as currently framed, meet ComReg's statutory functions and objectives. The 700MHz Band coexists with Virgin Media's HFC infrastructure. As currently framed, the Proposal is likely to result in interference so as to have a significant adverse impact on the ability of Virgin Media to provide services to consumers.

Virgin Media sets out below a Modified Proposal which would not cause interference with the Virgin Media network. As such, it is a reasonable and legally justifiable measure and ought to be implemented with the necessary protocol safeguards identified in this Response.

Virgin Media's comments

General comments on the Consultation

In this crisis emergency plans need to be put in place by all fixed and mobile network operators to ensure the public and businesses across the country remain connected. This Consultation comes in response to potential challenges faced by MNOs. While appreciating the difficult situation that all telecommunications companies are in at this time and acknowledging ComReg's desire to respond quickly to the call by MNOs, the consultation period is extremely short. Such a short period for the Consultation negatively impacts on the ability of all parties to participate, in particular, those such as Virgin Media who had not been closely involved in the discussions between ComReg and the MNOs on the MNOs requests and does not provide adequate time to compile a comprehensive response. It is of particular concern that ComReg did not reach out to us on a bilateral basis in advance of the publication of the Consultation.

Virgin Media had raised its concerns around the possibility of interference associated with the 700MHz band with ComReg in a response to a consultation in 2019 and in a meeting with ComReg in early 2020 on this issue. It would appear that ComReg has failed to take account of our previously communicated concerns around the possibility of interference associated with the 700MHz band and the adverse impact of interference on our customers. Those concerns remain at this time. Indeed, those concerns are exacerbated in this temporary situation.

We note that the MNOs in their letters to ComReg and attached to the Consultation, refer to a recognition of the possibility that such use by the MNOs could give rise to interference between those

MNOs. None of the MNOs seem to have envisaged that their use of spectrum could have an adverse impact on any other operator and they fail to suggest any mechanism by which such interference might be avoided.

Virgin Media completely understands that certain measures might be required where there are evidence based issues with capacity in the current environment. However, in the absence of any evidence of issues with mobile capacity in Ireland and noting that there does not appear to be information from other jurisdictions that suggests that there have been any capacity issues at all from a mobile perspective, the basis for ComReg intervention is unclear. It would appear that the ComReg intervention is wholly driven by the requests made by the MNOs in the letters attached to the Consultation where they mention a “growth in traffic”. In fact, Virgin Media has seen a reduction in mobile capacity in light of the recommendation by the Government for people to work from home. Customers have opted use in home Wi-Fi while using data instead of LTE services¹. [X [REDACTED]

Therefore, it seems to us that the legal basis for the Proposal is based on statements about growth having occurred on mobile networks and non-evidence based projections of possible further increases in demand and concerns about possible localised congestion. In order to ensure that there is an evidence-based approach, Virgin Media believes that MNOs should be obliged to inform ComReg of where capacity issues are arising and should be required to justify how and why the use of 700MHz spectrum in specific locations would assist in alleviating those issues.

Possible Interference on Virgin Media’s network

If the 700MHz band is activated in locations that overlap with Virgin Media’s network there will be interference which will have a catastrophic impact on the delivery of our service to end-users.

ComReg’s Proposal involves a Temporary ECS Licence would be issued for up to 3 calendar months, extendable by a further 3 calendar months if necessary. While we understand that the Proposal is of a temporary nature it is critical to ensure that any assignment of spectrum would not cause disruption to existing services already using the 700MHz band. Virgin Media has genuine concerns that the Proposal, if adopted as framed, will interfere with our network and adversely impact on our capacity. This is evidenced by experience in other countries where our partner companies operate when the 800MHz LTE band was introduced. Accordingly, we do not believe that the Proposal as currently framed is in accordance with ComReg’s statutory functions and objectives.

Virgin Media uses the 700MHz frequencies to provide broadband services. The Proposal if adopted as framed has the potential to interfere with our broadband service. In addition, leakage from our network has the potential to interfere with MNOs services. Such interference could negatively impact on the television and broadband services for end users including the capacity of those services and the quality of the services. We believe that such impacts on our customers in the current environment where access to broadband is of such critical importance to our consumers cannot be justified by ComReg. In this crisis we are working to ensure we have the necessary capacity in place to meet demands and are developing potential solutions to meet that demand on an ongoing basis. However the potential interference associated with the Proposal cannot be managed by Virgin Media at this very difficult time as this is not something we can anticipate or plan for in such a short space of time.

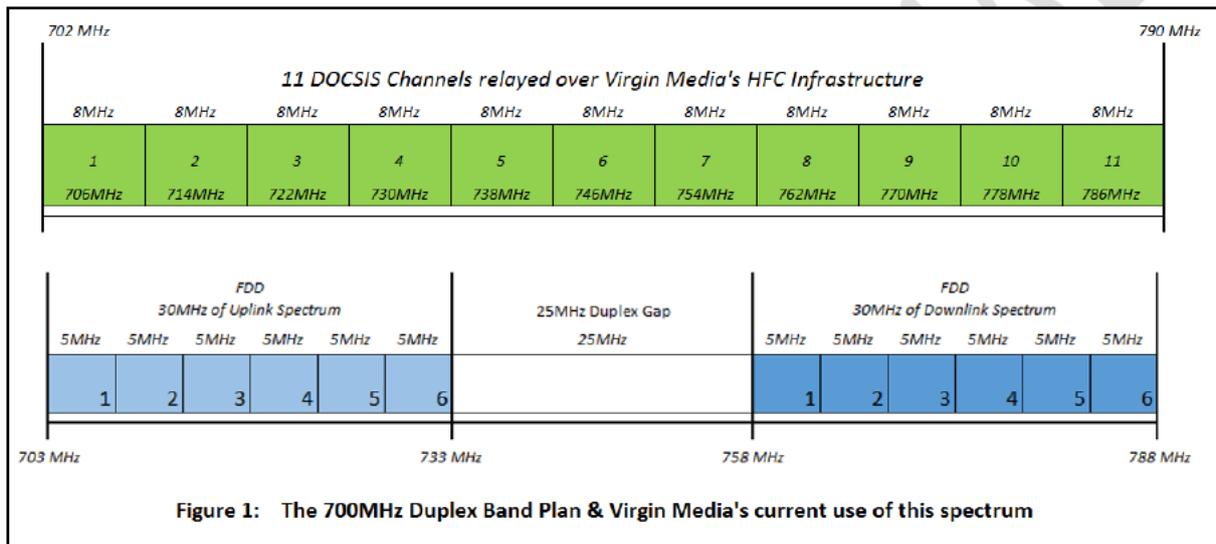
Virgin Media’s preparations for the end of 2020

Virgin Media has been working hard to identify methods that will help us limit interference when the 700MHz band is released and we have been working to the original timeline of the end of 2020. Our

¹ Some analysis by Comcast can be seen here: <https://corporate.comcast.com/covid-19/network>

plans involve the implementation of Firmware improvements to ensure that impaired channels are not used for individual modems once they become service impacting. This approach combined with our existing preventative maintenance programme to minimise ingress and egress will deliver the necessary levels of immunity from all sources of potential interference. Notwithstanding the necessary action that must be taken now to ensure MNOs can address demands on their networks, the imminent release of the 700MHz band, albeit temporary, creates very significant issues for Virgin Media with a risk of interference that will ultimately affect capacity and the service we provide to end-users. As our resources are fully engaged in ensuring continued service, we would have no ability to address any interference issues in a timely manner.

The following describes how the 700MHz Band coexists with Virgin Media’s HFC Infrastructure. All proposed FDD UL & FDD DL frequencies in the 700MHz band are currently used by Virgin Media to relay broadband services over our HFC infrastructure (see Figure 1 below).



Ingress into Virgin Media’s network from high powered downlink transmissions from MNO’s base stations in the spectral area 758 -788MHz and/or lower powered uplink transmissions from MNOs’ customers’ handsets and fixed networks, in close proximity to HFC infrastructure, in the spectral area 703-733MHz, have the real potential to reduce SNR and adversely impact on the quality of service Virgin Media provides.

Please see Annex 2 for information on the location of our HFC network.

Remedial Action by Virgin Media to avoid interference is not possible at this time

If the Proposal is adopted now as framed in a location that overlaps with Virgin Media’s network, there are no steps that can reasonably be taken to prevent an adverse impact on our service.

[Redacted text block]

[REDACTED]

For obvious reasons Virgin Media cannot be put in a position where these consequences could arise. It is simply unreasonable and disproportionate to create such risks to Virgin Media and its consumers at this time given the risk to capacity and customer services during this “capacity crunch”. Additionally it would not be possible to complete this exercise in a short space of time. Such works can only commence after the current crisis is over.

[REDACTED]

ComReg’s Proposal is inconsistent with its statutory obligations and objectives

ComReg’s objectives are laid down in primary legislation, and regulations. At a broad level, they include, promoting effective competition, promoting the interests of users, and ensuring the efficient use of the radio spectrum in Ireland. There are also more specific obligations on ComReg that must be taken into account when licensing access to the radio spectrum; these include a requirement that the licensing process and associated decisions are objective, non-discriminatory, proportionate, and transparent. Further, as an agent of the State, controlling access to an essential input necessary to provide services, ComReg is required to act in a lawful, proportionate and fair manner and has a duty to consult interested stakeholders (taking into account the views of interested parties), to be consistent in its decision-making and to provide an unbiased process.

It is Virgin Media’s view that ComReg is obliged to ensure that the Proposal, as with any spectrum award, does not interfere with existing rights of use of any operator where this would be likely to have a severe adverse impact on consumers. In this case, we cannot identify an objectively justifiable or reasoned basis for doing so under the proposal as currently framed. Were ComReg to proceed as proposed it would be in breach of its statutory objectives and obligations, in particular the following:

- Section 12(1) and (2) of the Communications Regulation Act 2002 (as amended) in particular as regards promotion of competition and the promotion of the interests of all users (noting the particular effect on Virgin Media);
- Regulation 16(1) and (2) and 17(1) of the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 in particular to ensure the effective management of radio frequencies and avoid any distortion or restriction of competition or discrimination and to enable end users to use services of their choice;
- Regulations 9, 10 and 11 of the European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2011 in particular to avoid harmful interference and ensure the efficient use of spectrum when granting licences and to take into account the views of interested parties and use objective, transparent and proportionate criteria when awarding licences.

Virgin Media believes that the current Proposal would be wholly inconsistent with the obligations identified above and would discriminate in favour of the MNOs and to the detriment of Virgin Media and its customers.

Rural only release of 700 MHz spectrum to MNOs

Virgin Media has sought to be solution-driven in this Response, taking into account the very difficult circumstances that prevail.

Earlier in this Response we described the interference issue of concern to Virgin Media and the urban locations that would likely be impacted were the proposal to release 700MHz to go ahead.

We believe that a modified proposal which would result in Virgin Media continuing to provide services to its customer base in urban areas of Ireland without the risk of interference while enabling MNOs to have access to 700 MHz spectrum in rural areas would be a legally valid measure consistent with ComReg's functions and objectives ("Modified Proposal"). The 700MHz band has some benefits especially for end-users in rural areas as it has the longest reach and the best indoor penetration of all available bands. Its primary function is to provide coverage, not capacity due to the limited RF Spectrum available. Virgin Media believes that the Modified Proposal would be a proportionate measure which would be consistent with the efficient use of spectrum and would have a real advantage for MNOs servicing customers in rural areas noting that 700MHz band has some benefits especially for end-users in rural areas as it has the longest reach and the best indoor penetration of all available bands.

Virgin Media believes that the Modified Proposal along with the temporary award of 2.1GHz and 2.6GHz is the optimal solution in the circumstances. The 2.1GHz and 2.6GHz Bands are better options from a capacity perspective, due to the greater spectrum allocation. In addition to this, only 56% of handset types available in Ireland are compatible with the 700MHz band meaning that the activation of this band by MNOs may not have the desired impact as end-users may not be able to use it. In the case of the 2.1GHz and 2.6GHz bands 92% of all handset types can use these spectral areas. Virgin Media also understands that the 700MHz band may not be compatible with existing equipment which suggests it may not be possible to use it in many cases. This solution would see MNOs activating the 700MHz band in rural areas where in-home Wi-Fi is not possible and using all the other bands elsewhere. Virgin Media's network primarily serves end-users in urban areas. If the 700MHz band was only released in rural areas then Virgin Media customers would not experience any adverse knock-on impacts and out concerns would be alleviated. We have provided information in Annex 2 on the locations that will be particularly impacted by interference. The Modified Proposal has the important benefit of being the only legally compliant solution and is also straightforward in terms of execution.

To the extent that ComReg is still inclined to progress the Proposal and ignore our Modified Proposal, notwithstanding the serious concerns expressed in this Response, we submit that as an absolute minimum, ComReg should oblige the adoption of a protocol which would guarantee that if an MNO intends to use the 700MHz band at a mobile base station, MNOs could inform Virgin Media in advance giving it adequate notice. In circumstances where Virgin Media indicates that the base station is within 2km of our footprint then the MNO would not be authorised to use the 700MHz band at that location. Virgin Media would be willing to provide maps to MNOs that show the extent of the HFC footprint and the 2km buffer zone to assist in this exercise. We have reached out to MNOs on a potential protocol and believe that a protocol would need to be built into the ComReg Decision and Regulations so that any failure by the MNOs to comply would give rise to a breach of the temporary licences and could lead to their withdrawal.

Conclusion

The Proposal as currently framed would cause serious and significant interference with the Virgin Media network. It would be discriminatory and disproportionate. As such, it is totally unacceptable to Virgin Media and can have no lawful basis given the statutory functions and obligations of ComReg.

The Modified Proposal identified in this Response would not cause interference with the Virgin Media network. As such, it is a reasonable and legally justifiable measure and ought to be implemented with the necessary protocol safeguards identified above to avoid urban/rural interference.

Noting the Temporary Situation, Virgin Media confirms that it is happy to engage with ComReg to avoid harmful interference to its customers.

NON-CONFIDENTIAL

8 Vodafone Ireland Limited



27th March 2020

Mr George Merrigan
Commission for Communications Regulation
One Dockland Central
Guild Street
Dublin 1

Dear George,

We hope you are keeping well during this current crisis.

On the 23rd March, our CEO wrote to Jeremy Godfrey about the use of spectrum to ensure network continuity in the context of Covid-19. The text of that letter had been agreed with the other mobile operators and reflects a shared wish to do everything possible to support the national effort to deal with the current crisis.

We are now writing to you about the specific needs of Vodafone Ireland for additional temporary use of spectrum for the duration of the Covid-19 crises.

Our request is for permission to use designated blocks of 700 Spectrum, permission for liberalised use of Vodafone's current 2100MHz licence 3G, and permission to use 2600MHz in designated hot-spots. In addition, we emphasise the importance of preventing any interruption to current services when additional spectrum is used by Vodafone or by other operators.

Lastly, we restate that our request is for temporary measures during the national crisis. Once the crisis has passed as determined by the Minister, the use of 700MHz, and 2600MHz will stop and the 2100MHz licences revert to 3G use only. The longer-term questions of access to 700MHz, 2600MHz, and liberalisation of 2.1GHz spectrum will be determined through other policy initiatives in line with ComReg's recent consultations.

700MHz band

For the 700MHz band, we have discussed with other operators the appropriate assignment of blocks in the 700MHz band that will minimise intermodulation effects to existing services in the 800 and 900MHz bands.

It is intended that we follow the 700 MHz EC Decision and the band-plan as consulted on in ComReg's document 19/124.

That band plan sets the channelling arrangements of 2x30 MHz in the paired frequency range of 703-733 MHz and 758-788 MHz, in block sizes of multiples of 5 MHz

Vodafone Ireland Limited

MountainView, Leopardstown, Dublin, D18 XN97, Ireland
T - +353 (0)1 203 7777 W - www.vodafone.ie

Registered Office: MountainView, Leopardstown, Dublin, D18 XN97. Registered in Ireland No. 326967.
Directors: Anne O'Leary (CEO), Sinead Bryan and Liam O'Brien

Uplink located in the lower frequency band 703-733 MHz; and downlink located in the upper frequency band 758-788 MHz

In the proposed temporary plan agreed with the other operators Vodafone wish to use the top two blocks, ie 723 to 733MHz paired with 779 to 788 MHz. By using these specific blocks we will minimise the potential for interference in the 800MHz and 900MHz bands.

2100MHz

For the duration of the crises, we wish to liberalise use of our 2100MHz licence, which is currently limited to 3G use.

2600MHz

Vodafone have previously used ComReg's 'Test and Trial' application process to demonstrate LTE2600 capability at a number of temporary events at locations such as Phoenix Park and Marley Park without recording any interference.

This use was for duplex use aligned with the proposal in Comreg 19/124 and the ECC Decision (05)05 quoted therein:

Two×70 MHz paired arrangement in the frequency ranges of 2,500-2,570 MHz (Uplink) and 2620-2690 MHz (downlink) ("2.6 GHz FDD Duplex");

We believe that during this crises period use of this band could be very useful in quickly providing high capacity to cover any requirements that arise such as temporary medical or testing facilities. We will revert to ComReg with any specific requirements that arise.

It is of the utmost importance that use of this addition spectrum by Vodafone or other operators does not interfere with existing service in the 800 and 900MHz band. To this end Vodafone, 3, and eir have discussed a protocol for dealing with communication of build and dealing with any interference events that occur.

We have produced a simple email version of this protocol including an agreement that if any new use of 700MHz that interferes with existing services it will be switched off at the request of the existing service provider. Operators have agreed to continue to develop this protocol so that we have speedy and effective ways of managing change without disruption to existing services.

We understand that Comreg may wish to consult on a proposal to make this temporary assignment of spectrum and we will respond quickly to any such consultation. We are keen to discuss further with ComReg any additional process you wish to follow or can supply any additional information as required.

Regards

Eamon Farrell
Strategic Network Programmes Manager
Vodafone.



COVID-19: Temporary spectrum management measures
Temporary spectrum rights in the 700 MHz, 2.1 GHz and 2.6 GHz Bands

Response to Consultation

ComReg Document 20/21
Response to Consultation

Introduction

Vodafone are grateful for the opportunity to respond to **ComReg consultation 2021. COVID-19: Temporary spectrum management measures. Temporary spectrum rights in the 700 MHz, 2.1 GHz and 2.6 GHz Bands**

In the introduction to this consultation ComReg recognise the challenges facing the Irish state in dealing with the effect of a global pandemic.

The Irish government have now asked all citizens, with some exceptions, to stay at home to minimise the risk of Covid-19. This means a large proportion of the Irish workforce are now remote working and social activity is restricted. The telecommunications networks, as noted by ComReg, are critical to help Irish citizens to maintain some semblance of normality whether that's through maintaining access to loved ones, by enabling continued education and study or by supporting business in terms of their ability to enable their staff to work remotely.

This change in the patterns of how we work and live bring significant changes in the traffic offered to all networks in Ireland. The pattern of use has changed and Vodafone have seen a very significant increase in voice and data traffic carried by our mobile network. For example 2G Speech Traffic in weekdays has increased approx. 60% on Pre Covid Base line, and 2G Weekend traffic has increased by almost 100%.

Vodafone have taken every measure open to it to support this traffic on our network by rebalancing traffic between sites and technologies. This pattern of use may alter further over the coming weeks and months leading to further demand as more businesses begin adapt to remote working practices and as online and voice call socialising increases.

In these circumstance Vodafone agree with ComReg's proposal that Temporary Spectrum Management measures are fully justified for this period that ComReg refer to as the Temporary Situation.

Following discussion with ComReg and with other operators, Vodafone wrote to ComReg about the use of spectrum to ensure network continuity in the context of Covid -19. The text of that letter had been agreed with the other mobile operators and reflects a shared wish to do everything possible to support the national effort to deal with the current crisis.

We congratulate ComReg on producing this consultation document in a short time and in addition agree that the short response time is justified in the circumstances.

ComReg propose the temporary use of 700MHz, and 2600MHz spectrum and the temporary liberalisation of 2100MHz spectrum.

Vodafone agree in principle that this temporary assignment is justified and we will apply for permission to use spectrum on this basis. We have responded to the questions raised in ComReg's document below, but would highlight our main concerns:

1. Interference

A key concern is to ensure that the rapid introduction of new spectrum does not cause interference to existing services, particularly that 700MHz usage does not degrade current services in the 800MHz and 900MHz bands. The industry protocol must be that any use of 700MHz identified as causing interference shall mean the site causing interference shall be switched off at the request of the operator reporting interference.

2. Temporary Measures

Vodafone restate that our request is for temporary measures during the national crisis. Once the crisis has passed as determined by the Minister, the use of these measure will stop and the 2100MHz licences revert to 3G use only. The longer-term questions of access to 700MHz, 2600MHz, and liberalisation of 2.1GHz spectrum will be determined through other policy initiatives in line with ComReg's recent consultations.

Response to sections of Comreg 2021

ComReg Document Introduction

- 1.1 Noting the importance of progressing matters in an expedient timeframe due to the nature of the Temporary Situation, ComReg is employing a greatly accelerated consultation process and requesting submissions no later than close of business on 31 March 2020.
- 1.2 It is important to note that the background to this consultation is exceptional and necessitates analysis and proposals which are unlikely to be necessary or appropriate for future ComReg spectrum-related consultations.

Vodafone Response

We agree that this consultation is justified. Later consultation should revert to normal process.

ComReg Document Chapter 3

3.1 Background on the 700 MHz Duplex, 2.1 GHz Band and 2.6 GHz Band in the context of the Temporary Situation

- 3.1.1 Availability of the requested bands and ComReg's Proposed Multi Band Spectrum Award
- 3.4 The bands being considered for any potential temporary licences are also being considered as part of ComReg Proposed Multi Band Spectrum Award (Proposed MBSA), a draft decision on which was recently published in Document 19/124. ComReg stresses that the present proposals are entirely without prejudice to those in the Proposed MBSA.

Vodafone Response

We agree strongly that this solution is temporary in nature and that that long term assignment of spectrum must be assessed in the Award process described in ComReg document 19/124.

3.1.1 Availability of the requested bands and ComReg's Proposed Multi Band Spectrum Award

Paragraph 3.9

- The **2.6 GHz Band** is not currently used however there are critical compatibility considerations between any use of the 2.6 GHz Band and the Irish Aviation Authorities use of the upper adjacent band (i.e. 2.7 GHz Band) for aeronautical primary radars (see Annex 5 for IAA initial views). While in principle the use of the band is possible, the issuing of any temporary licences would be subject to confirmation from the IAA that this is acceptable in the circumstances. Noting in particular that IAA Primary radars are a safety of life system and acute caution needs to be taken in this regard.

Vodafone Response.

Vodafone believe that the 2.6GHz band can be particularly useful in quickly supplying capacity to locations of high demand. As a very high percentage of existing phones (92%) already used by consumers can use this band it may be the most efficient way of bringing capacity to any emergency medical or testing locations establish in the Temporary Situation. As per Plum's analysis we believe that this spectrum can be used in Dublin City centre without causing interference.

3.2.1 Eligibility for a "Temporary ECS Licence" for spectrum rights in the 700 MHz Duplex, 2.1 GHz and/or 2.6 GHz Bands and information required in support of same

- -
- 3.15 ComReg would reiterate that the underlying intention of its proposal is to facilitate operators that can readily utilise the 700 MHz Duplex, 2.1 GHz and/or 2.6 GHz Bands to meet the demand of consumers during the Temporary Situation using existing infrastructure.

We note the reference to existing infrastructure and agree that describes the general situation. We would add that we regularly use a small number of temporary base-stations to cover special events. We may wish to use these during the TS and specifically use the additional licenced spectrum at these sites.

3.22 Specific matters relating to the 700 MHz Duplex raised by Eir, Three and Vodafone in summary are:

Consideration of industry views and ComReg's proposals

3.24 ComReg understands that there may be technical challenges when commissioning 700 MHz Duplex sites within a short timescale and negating cross network interference with sites deployed in the 800 and 900 MHz Bands.

3.25 In this regard, ComReg considers the proposals reasonable and a prudent approach to mitigation. It is ComReg's proposal that any assignments should follow the same ordering of spectrum assignment as currently assigned in the 800 MHz Band and the risk of interference between the 700 MHz Band and the 800 MHz and 900 MHz Band should be managed between the operators. ComReg is supportive of the operators establishing a joint protocol to manage same.

3.26 Therefore, subject to the Appropriate Evidence being provided (see below) as part of the application process for each operator. In the event that each operator satisfactorily justifies the Appropriate Evidence for 2×10 MHz, ComReg proposes the following spectrum assignments for the period of the Temporary Situation:

- **Eir:** 703 to 713 MHz paired with 758 to 768 MHz;
- **Three:** 713 to 723 paired with 768 to 778 MHz; and
- **Vodafone:** 723 to 733 paired with 778 to 788 MHz.

Vodafone agrees with the proposed band structure and the proposed assignment of 700MHz channels per operator. This is the channel arrangement that will cause least interference to existing services.

The joint protocol mentioned above had been discussed among the operators and basic principles agreed.

At a minimum this protocol must protect current user of the 800 and 900MHz bands and therefore the protocol must include a clear statement that any new use of 700MHz site causing interference to existing 800MHz or 900 MHz service will be switched off.

Operators have agreed to further work on this protocol.

3.2.5 2.6 GHz Band

Views received from industry

- 3.34 In summary, Eir Three and Vodafone propose that rights of use are issued for the 2.6 GHz Band, but that operators who are assigned spectrum make application to ComReg for individual sites where they have a need so as to ensure coordination with the neighbouring band which is used by the Irish Aviation Authority (IAA). Operators expect that this band could be particularly useful to serve any temporary medical facilities established during the Temporary Situation.
- 3.35 ComReg therefore is making provision for the licensing of the 2.6 GHz Band in this document and in the Draft Regulations in Annex 4. However, the issuing of licences for the band will be subject to further consultation with the IAA.
- 3.36 At a minimum, ComReg envisages that the suite of compatibility measures as identified in Document 19/124 will be required to ensure compatibility between ECS and the 4 IAA primary radars (2 in Dublin, 1 in Shannon and 1 in Cork) which include out of band power flux density (*pdf*) levels to address interference due to intermodulation, spurious emissions and blocking in different circumstances will be needed. These compatibility measures are as set out in draft form in Section 2 of Schedule 1 of the Draft Regulations (Annex 4).

We have considered the compatibility measures identified in Document 19/124c and would seek to use this spectrum only in areas which would not cause interference. This appears to allow for the use of this spectrum in city centre area of Dublin and Cork, these are likely to be the required areas. We have previous trialled sites using this spectrum successfully using Test and Trial with no issues.

3.3 Licence Duration

- 3.47 ComReg is of the view that any licences issued for the present circumstances should be temporary and only for the duration of the Temporary Situation.
- 3.48 Considering this, ComReg proposes a licence duration of a maximum of 3 calendar months.
- 3.49 ComReg notes that should the Temporary Situation continue for longer than 3 months, the holders of a Temporary ECS Licence may apply for one further Temporary ECS Licence for up to 3 calendar months.
- 3.50 To ensure a clear end date for all Temporary ECS Licences the draft Regulations are being developed to account for this and licences issued under the regulations will be valid for a maximum period of 6 months from the Regulations coming into force.

We agree with the proposed time period of 3 months, with a possible extension of 3 months.

3.4 Fees

- 3.64 In light of the above, ComReg is of the view that the optimal use of the radio spectrum could be ensured without needing to rely on spectrum usage fees and that a nominal fee of €100 would be appropriate for Temporary ECS Licence(s).

Vodafone believe that it appropriate in the circumstances to apply a nominal fee as proposed.

3.5 Coverage / Capacity at specific locations

3.5.2 ComReg consideration of industry views and proposals

- 3.69 ComReg proposes to attach coverage obligations to licences due to the evolving nature of this Temporary Situation and will maintain a running list of areas where sufficient capacity / coverage is to be provided to support the medical and broader emergency services response to the Temporary Situation.

We will seek to co-operate to the maximum extent possible, equipment may not be available to cover all nominated sites.

We suggest that the identity of required locations is covered by on-going discussion with Government and ComReg, but that adding this to the licences may not be useful. We expect the list of emergency locations to be changed on an on-going basis.

We may seek the support of ComReg and Government departments in gaining access to sites where this coverage is required.

3.6.1 Leasing of existing rights of use that are not used to facilitate other operators during the present circumstances

- 3.73 ComReg notes that existing operators may have existing rights of use that are not being used and that this spectrum could be utilised by other operators that have equipment readily available. For example, in the 3.6 GHz Band there are licensees that currently have none or very limited deployments using their spectrum rights of use at this time (e.g. Three). This spectrum could be used by operators during the Temporary Situation for the greater benefit of consumers.

- 3.74 ComReg would encourage and look very favourably on any lease arrangement that would be put in place during this period and ComReg notes that the key elements of the Temporary ECS Licence set out in this document, for example, 6 month licences for a nominal fee could be used as a reasonable proxy for any such lease.

We are happy to co-operate with this proposal. We have been approached by Imagine with a request to lease some spectrum in areas where we are not yet using it and we have indicated to them that we work positively to identify suitable areas for leasing.

3.6.2 Potential to assign rights in the 2.3 GHz Band

- 3.75 ComReg notes that no request was made for temporary access to rights of use in the 2.3 GHz Band and, as such, the band is outside the scope of this consultation. However, should operators have the ability and requirement to make use of the spectrum rights of use on a temporary basis for the purposes of addressing network congestion issues that may arise due to the Temporary Situation, they are invited to submit their views in that regard (see Chapter 6 below) and to provide appropriate supporting evidence (see e.g. paragraph 2.4 and Section 3.2).
- 3.76 Should ComReg receive any such submission, ComReg would consider proposals in this regard in a similar way to that identified above

We note that we do not have suitable equipment to utilise this band in the short term. In addition, there are not enough phones in use for this band to make use of 2300Mhz an effective short term solution. .

Chapter 4

4.3 Impact on competition

We note ComReg's discussion on impact on competition. We agree that temporary assignment of spectrum will not have a material impact in the short term. To ensure that damage is not done to the competitive mobile market in the longer-term these temporary assignments and temporary liberalisation will have to be undone after the three month or six month period covered by this proposal. Spectrum should then be assigned using the Award process described in ComReg 19/124.