

**COORDINATION PROCEDURE BETWEEN  
THE ISLE of MAN AND THE UNITED KINGDOM  
CONCERNING THE SPECTRUM COORDINATION  
OF  
MOBILE/FIXED COMMUNICATIONS NETWORKS  
IN THE FREQUENCY RANGE 703 MHz to 3800 MHz**

# 1 INTRODUCTION

This document sets out the coordination procedure for frequencies used by mobile/fixed communications networks in the spectrum range 703 MHz to 2690 MHz between the Isle of Man and United Kingdom operators. Ofcom is responsible for spectrum management, including the coordination of use both within the British Isles and internationally with neighbouring administrations.

This document covers frequency coordination for mobile/fixed communications systems only including **GSM, UMTS, LTE and NR** systems following the spectrum arrangements below:

**Table 1: Frequency Bands**

Frequency Band	Base receive	Base transmit
FDD 700 MHz	703 – 733 MHz	758 – 788 MHz
SDL 700 MHz	-	738 – 758 MHz
FDD 800 MHz	832 – 862 MHz	791 – 821 MHz
FDD 900 MHz	890.0 – 915 MHz	935 – 960 MHz
SDL 1400 MHz	-	1452 – 1492 MHz
FDD 1800 MHz	1710 – 1785 MHz	1805 – 1880 MHz
FDD 2100 MHz	1920 – 1980 MHz	2110 – 2170 MHz
TDD 2100 MHz	1899.9 – 1920.0 MHz	
FDD 2600 MHz	2500 – 2570 MHz	2620 – 2690 MHz
TDD 2600 MHz	2570 – 2620 MHz	
TDD 3600 MHz	3400 – 3800 MHz	

This document supersedes and abrogates the previously agreed coordination documents<sup>1</sup>.

The provisions of this document add to the mandatory requirements of the ITU Constitution and the ITU Radio Regulations, which have both the status of an International Treaty, and in particular:

- Article°15.2 of the ITU Radio Regulations: “*Transmitting stations shall radiate only as much power as is necessary to ensure a satisfactory service*”
- Articles°15.3, 15.4 & 15.5 of the ITU Radio Regulations: “*In order to avoid interference [...], a) locations of transmitting stations and, where the nature of the service permits, locations of receiving stations shall be selected with particular care; b) radiation in and reception from unnecessary directions shall be minimized by taking the maximum practical advantage of the properties of directional antennae whenever the nature of the service permits*”

---

<sup>1</sup> Concerning the spectrum coordination of land mobile radiocommunication networks in the frequency range 703 – 2690 MHz (2021) and Concerning the spectrum coordination of land mobile radiocommunication networks in the frequency range 2300 - 2400 MHz and 3400-3800 MHz (2015)

This document has been established with a view to:

- minimising the likelihood of harmful interference<sup>2</sup> between land mobile radio communication systems operating in neighbouring territories; and
- optimising the use of spectrum resources in the border areas.

In particular, this document has been established with a view to finding a balanced solution between:

- minimising harmful emissions coming from the neighbouring territories. These harmful emissions may cause harmful interference, harmful coverage (international roaming issues) or may prevent Ofcom from utilising / allocating portions of the spectrum efficiently; and
- defining satisfactory frequency-usage conditions for land mobile operators to operate their networks while maintaining a good quality of service and good coverage in their licensed territory.

Pragmatically this means having to accept and agree upon a certain level of interference (as defined in Article°1.168 of the ITU Radio Regulations<sup>3</sup>) and / or a certain level of coverage from neighbouring territories.

The co-ordination procedure is based on the principle of equitable access to the spectrum resource. Ofcom therefore requires that the radio-communications stations, operating in the bands listed above, respect the limits for the establishment of base stations without co-ordination as outlined in this document, unless the stations are specifically planned for outside the co-ordination procedure in accordance with section 5 of this document.

---

<sup>2</sup> Article°1.169 of the ITU Radio Regulations

<sup>3</sup> Accepted interference: Interference at a higher level than that defined as permissible interference and which has been agreed upon between two or more administrations without prejudice to other administrations.

## 2 SPECTRUM COORDINATION FOR NARROWBAND (GSM 900 AND GSM 1800) SYSTEMS

The coordination procedure is based on the concept of preferential frequencies in line with ECC Recommendation (05)08. The GSM 900 and GSM 1800 frequency bands shall be split into groups of frequencies between the Isle of Man and United Kingdom operators in an equitable manner as “preferential frequencies” (Table 2).

### 2.1 Preferential / Non-preferential division

The preferential frequencies for GSM900 and GSM1800 are:

**Table 2: GSM900 / GSM1800**

GSM Channel Numbers		Frequency range mobile to base (MHz)		Frequency range base to mobile (MHz)		Preferential Region	Non-Preferential Region
From	To	From	To	From	To		
1	7	890.1	891.5	935.1	936.5	UK	Isle of Man
8	18	891.5	893.7	936.5	938.7	Isle of Man	UK
19	28	893.7	895.7	938.7	940.7	UK	Isle of Man
29	43	895.7	898.7	940.7	943.7	Isle of Man	UK
44	68	898.7	903.7	943.7	948.7	UK	Isle of Man
69	80	903.7	906.1	948.7	951.1	Isle of Man	UK
81	92	906.1	908.5	951.1	953.5	UK	Isle of Man
93	107	908.5	911.5	953.5	956.5	Isle of Man	UK
108	115	911.5	913.1	956.5	958.1	UK	Isle of Man
116	124	913.1	914.9	958.1	959.9	Isle of Man	UK
515	519	1710.7	1711.7	1805.7	1806.7	UK	Isle of Man
520	532	1711.7	1714.3	1806.7	1809.3	Isle of Man	UK
533	541	1714.3	1716.1	1809.3	1811.1	UK	Isle of Man
542	553	1716.1	1718.5	1811.1	1813.5	Isle of Man	UK
554	564	1718.5	1720.7	1813.5	1815.7	UK	Isle of Man
582	586	1724.1	1725.1	1819.1	1820.1	UK	Isle of Man
587	599	1725.1	1727.7	1820.1	1822.7	Isle of Man	UK
600	606	1727.7	1729.1	1822.7	1824.1	UK	Isle of Man

## 2.2 [Technical and operational requirements applicable to the use of preferential / non-preferential frequencies](#)

A base station may be established without prior coordination if the predicted field strength does not exceed the trigger values at the specified points in the following table:

**Table 3: Narrowband (GSM) Trigger Values**

<b>Frequency Band</b>	<b>Coordination threshold at 3m above ground at the specified distance inside the neighbouring territory</b>
GSM 900 preferential frequencies	32 dB $\mu$ V/m at all points on the neighbouring territory
GSM 900 non-preferential frequencies	19 dB $\mu$ V/m at all points on the neighbouring coastline
GSM 1800 preferential frequencies	38 dB $\mu$ V/m at all points on the neighbouring coastline
GSM 1800 non-preferential frequencies	25 dB $\mu$ V/m at all points on the neighbouring coastline
Propagation prediction assumptions: <ul style="list-style-type: none"><li>• 50% of the time</li></ul>	

To establish the predicted field strength produced by a station, the methodology as set out in section 4 shall be employed.

Radio-communication stations for which the predicted field strength exceeds the values given in the table above must be co-ordinated in accordance with the co-ordination procedure as outlined in Section 7, except where an arrangement exists between operators as outlined in Section 5.

### 3 SPECTRUM COORDINATION FOR WIDEBAND (UMTS, LTE, NR) SYSTEMS IN THE 700 MHz, 800 MHz, 900 MHz, 1400 MHz, 1800 MHz, 2100 MHz, 2600 MHz and 3600 MHz frequency bands

Base stations may be operated without coordination if the predicted mean field strength of each carrier produced by the base station does not exceed the following values at a height of 3 m above ground at a specified distance (x km) from the border or coastline of the neighbouring territory.

Table 4: Wideband (UMTS/LTE/NR) Trigger Values

Frequency Band	Coordination threshold for the use of preferential codes	Coordination threshold for the use of non-preferential codes	ECC Recommendation for reference
FDD 700 MHz	59 dB $\mu$ V/m/5 MHz at 0 km 41 dB $\mu$ V/m/5 MHz at 6 km	41 dB $\mu$ V/m/5 MHz at 0 km	ECC Rec (15)01
SDL 700 MHz	59 dB $\mu$ V/m/5 MHz at 0 km 41 dB $\mu$ V/m/5 MHz at 6 km	41 dB $\mu$ V/m/5 MHz at 0 km	ECC Rec (15)01
FDD 800 MHz	59 dB $\mu$ V/m/5 MHz at 0 km 41 dB $\mu$ V/m/5 MHz at 6 km	41 dB $\mu$ V/m/5 MHz at 0km	ECC Rec (11)04
FDD 900 MHz	59 dB $\mu$ V/m/5 MHz at 0 km 41 dB $\mu$ V/m/5 MHz at 6 km	41 dB $\mu$ V/m/5 MHz at 0km	ECC Rec (08)02 is expected to be updated with these values
SDL 1400	65 dB $\mu$ V/m/5 MHz at 0 km 47 dB $\mu$ V/m/5 MHz at 6 km	47 dB $\mu$ V/m/5 MHz at 0 km	ECC Rec (15)01
FDD 1800 MHz	65 dB $\mu$ V/m/5 MHz at 0 km 47 dB $\mu$ V/m/5 MHz at 6 km	47 dB $\mu$ V/m/5 MHz at 0km	ECC Rec (08)02
FDD 2100 MHz	65 dB $\mu$ V/m/5 MHz at 0 km 37 dB $\mu$ V/m/5 MHz at 6 km	37 dB $\mu$ V/m/5 MHz at 0 km	ECC Rec (01)01
TDD 2100 MHz	37 dB $\mu$ V/m/5 MHz at 0 km	21 dB $\mu$ V/m/5 MHz at 0 km	No ECC Recommendation for TDD 2100
FDD 2600 MHz	65 dB $\mu$ V/m/5 MHz at 0 km 49 dB $\mu$ V/m/5 MHz at 6 km	49 dB $\mu$ V/m/5 MHz at 0km	ECC Rec (11)05
TDD 2600 MHz (Synchronised, as defined below)	65 dB $\mu$ V/m/5 MHz at 0 km 49 dB $\mu$ V/m/5 MHz at 6 km	49 dB $\mu$ V/m/5 MHz at 0km	ECC Rec (11)05
TDD 2600 MHz (Unsynchronised)	30 dB $\mu$ V/m/5 MHz at 0 km		ECC Rec (11)05
TDD 3600 MHz (Synchronised, as defined below)	79 dB $\mu$ V/m/5 MHz at 0 km 61 dB $\mu$ V/m/5 MHz at 6 km	61 dB $\mu$ V/m/5 MHz at 0 km	ECC Rec (15)01
TDD 3600 MHz (Unsynchronised)	31 dB $\mu$ V/m/5 MHz at 0 km		ECC Rec (15)01
Propagation prediction assumptions:			
<ul style="list-style-type: none"> <li>10% of the time</li> </ul>			

The above values are based on a block size of 5 MHz. In cases of other frequency block sizes,  $10 \times \log_{10}(\text{frequency block size}/5 \text{ MHz})$  should be added to these field strength values.

To establish the predicted field strength produced by a station, the methodology as set out in section 4 shall be employed.

Radio-communication stations for which the predicted field strength exceeds the values given in the table above, must be co-ordinated in accordance with the co-ordination procedure as outlined in Section 7, except where an arrangement exists between operators as outlined in section 5.

It is recognised that base stations already installed before the date of entry into force of this document, and have adhered with previously agreed versions of this document at the time of their deployment, are considered as already coordinated.

### TDD Synchronisation in the 2600 MHz and 3600 MHz frequency bands

TDD 2600 and TDD 3600 NR/LTE base stations on both sides of the border should conform to the following parameters to be deemed as being Synchronised with one another:

- 1) The time reference ( $t_0$ ) of base stations deployed in the frequency bands 2570 – 2620 MHz and 3400-3800 MHz, is defined according to Coordinated Universal Time (UTC)  $\pm 1.5 \mu\text{s}$ .
- 2) The frame structure reference is the LTE frame n° 2 DSUDD (periodicity 5ms, with a sub-carrier spacing (SCS) of 15 kHz).

The special subframe is: SS n° 6, 9:3:2 (number of symbols, DL: GP: UL)

- 3) NR should be only used if the corresponding NR frame structure is compatible with the LTE frame structure defined above.

### Coordination of scrambling code groups for UMTS, physical-layer cell-identity groups for LTE/NR and other radio parameters

In order to ensure the optimum network performance for UMTS, LTE/NR systems deployed in the border areas, Ofcom shall encourage operators to coordinate the use of scrambling code groups for UMTS, physical-layer cell-identity groups for LTE/NR and other radio parameters, in accordance with ECC Recommendations (01)01, (08)02, 11(04) and (11)05 for UMTS and LTE/NR signals using the same centre frequency in border areas or in case of alignment of synchronisation signal blocks.

#### UMTS:

For the FDD mode; 3GPP TS 25.213 defines 64 “scrambling code groups” in § 5.2.2, numbered {0 to 63}

**Table 5: UMTS-FDD Scrambling Code Groups**

SCRAMBLING CODE GROUPS	0 - 31	32 - 63
UK	PREFERENTIAL	NON PREFERENTIAL
ISLE OF MAN	NON PREFERENTIAL	PREFERENTIAL

For the TDD mode (at 1900 – 1920 MHz), 3GPP TS 25.223 defines 32 “scrambling code groups” in § 7.2, numbered {0 to 31}.

**Table 6: UMTS-TDD Scrambling Code Groups**

<b>SCRAMBLING CODE GROUPS</b>	<b>0 - 15</b>	<b>16 - 31</b>
<b>UK</b>	<b>PREFERENTIAL</b>	<b>NON PREFERENTIAL</b>
<b>ISLE OF MAN</b>	<b>NON PREFERENTIAL</b>	<b>PREFERENTIAL</b>

LTE:

3GPP TS 36.211 defines 168 “unique physical-layer cell-identity groups” in § 6.11, numbered 0...167, hereafter called “PCI groups”. Within each PCI group there are three separate PCIs giving 504 PCIs in total.

**Table 7: LTE PCI Groups**

<b>PCI GROUPS</b>	<b>168 – 343</b>	<b>344 – 419</b>
<b>UK</b>	<b>PREFERENTIAL</b>	<b>NON PREFERENTIAL</b>
<b>ISLE OF MAN</b>	<b>NON PREFERENTIAL</b>	<b>PREFERENTIAL</b>

NR:

3GPP TS 38 211 defines NR Physical channels and modulation, in NR 2-step identification using PSS/SSS detection of the Physical Cell ID (same as LTE), the number of different cell IDs has been increased from 504 in LTE to 1008 for NR.

**Table 8: NR PCI Groups**

<b>PCI GROUPS</b>	<b>168 – 343 and 672 - 847</b>	<b>344 – 419 and 848 - 923</b>
<b>UK</b>	<b>PREFERENTIAL</b>	<b>NON PREFERENTIAL</b>
<b>ISLE OF MAN</b>	<b>NON PREFERENTIAL</b>	<b>PREFERENTIAL</b>



## 4 PREDICTION OF PROPAGATION

---

The field strength prediction method shall be according to the latest version of ITU-R Recommendation P. 452 and taking account of:

- Terrain height profile between base station and receive point
- Clutter category profile between base station and receive point
- Type of terrain (e.g. inland, coastal, sea)
- Effective radiated field strength in the direction of the receive point
- Antenna location and height

The 'receive point' is any point where the assessment is undertaken based on the requirements in Tables 5 and 6.

Predictions are based on the terrain profile with the addition of clutter along the radio path using the representative clutter height assigned to each clutter category defined in the recommendation. Digital terrain map and digital land classification ("clutter") datasets with  $\leq 50$  m resolution shall be used.

## 5 ARRANGEMENT FOR PLANNING AT AN OPERATIONAL LEVEL

---

Planning arrangements may be made directly between operators for deviations from this document including, but not limited to, changes from preferential frequency allocations referred to in this document, approval of base stations from which interference field levels may exceed the limits prescribed in this document.

All planning arrangements between mobile radiocommunications operators falling outside the scope of this document shall be subject to approval by Ofcom.

Operators may only negotiate arrangements only in respect of the part of the frequency band for which they are licensed from Ofcom to use radio frequencies, without affecting the rights of third parties which are not involved.

Arrangements between operators shall be null and void where:

- One of the operators no longer holds its licence to set up and operate a network;
- The channels allocated to one of the operators, covered by the Bilateral Agreements, are changed;
- One of the operators ceases to operate a network covered by the arrangement;
- The Bilateral Agreements are terminated or revised. In such cases, a transitional period must be negotiated;
- Interference persists and cannot be eliminated by mutual agreement between the operators. In such cases, the arrangement shall be null and void only in respect of the base station or stations concerned.

## 6 HARMFUL INTERFERENCE

---

If an operator suffers from harmful interference and/or notices a degradation of the quality of service on its network - for example due to the rise of the field strength coming from a neighbouring territory - it should immediately inform Ofcom.

## 7 CO-ORDINATION PROCEDURE

---

Exchanges of information for co-ordination/notification purposes shall be in the format set out in the HCM agreement Annex 2A (revised at Vilnius 2005)<sup>4</sup>

A co-ordination request must be sent by the licensee via Ofcom.

The co-ordination procedure shall follow the one described in the HCM Agreement.

In the event of interference between authorised users of the bands listed, the affected users shall exchange information between themselves with a view to resolving the interference by mutual agreement. A report of the interference and the details of the information exchanged shall be sent to Ofcom who can, if requested, advise on resolution. Ofcom can facilitate the exchange of information between authorised users of the band.

## 8 Review of this document

---

Any part of this document may be revised in the light of future developments, i.e. introduction of new technologies and experience in the operation of the networks covered by the document.

## 9 Date of entry into force

---

This document will enter into force on the 1<sup>st</sup> December 2024.

---

<sup>4</sup> Agreement between the administrations of ... on the Coordination of frequencies between 29.7 MHz and 43.5 GHz for the fixed service and land mobile service (HCM Agreement), Berlin, 2022.