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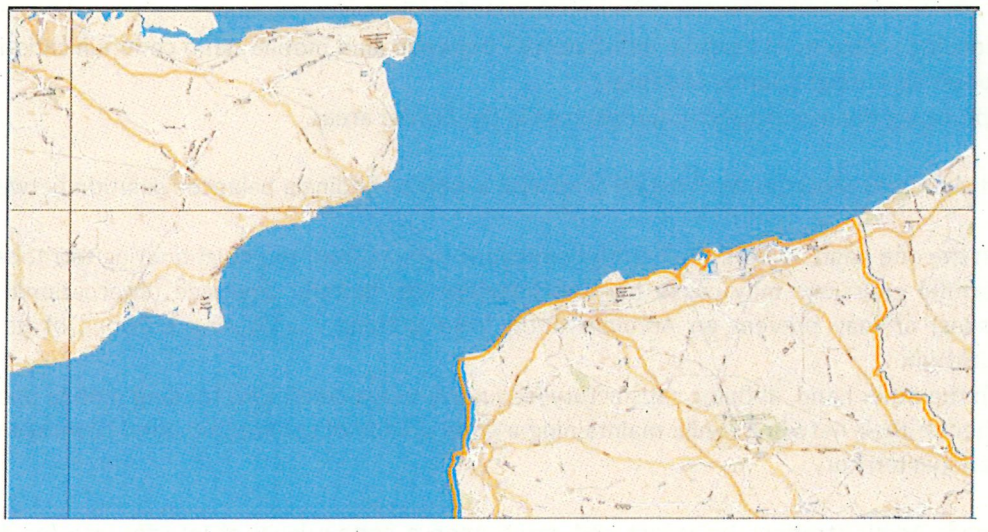
MEMORANDUM OF UNDERSTANDING ON FREQUENCY CO-ORDINATION BETWEEN FRANCE AND THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND CONCERNING THE SPECTRUM COORDINATION OF LAND MOBILE RADIOCOMMUNICATION NETWORKS IN THE FREQUENCY RANGE 24.25 GHz to 43.5 GHz TO BE APPLIED IN THE MAIN LAND AREA



1 INTRODUCTION

The representatives of the Administrations of the United Kingdom of Great Britain and Northern Ireland (UK) and France (F), taking into account the recommendations of the International Telecommunication Union, have concluded this present MoU, under Article 6 of the Radio Regulations, on the coordination of frequencies used by land mobile radio communication networks in the spectrum range 24.25 GHz to 43.5 GHz.

This MoU covers frequency coordination for **NR Base Station** following the spectrum arrangements below:

Table 1: Frequency Bands

Frequency Band	Base receive	Base transmit
TDD 26 GHz	24.25-27.5 GHz	24.25-27.5 GHz
TDD 40 GHz	40.5 GHz-43.5 GHz	40.5 GHz-43.5 GHz

The provisions of this MoU 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"*

The present frequency coordination MoU has been established with a view to:

- reducing problems of harmful interference[1] between land mobile radio communication systems operating in neighbouring countries;
- Optimising the use of spectrum resources in the border areas.

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

- On the one hand, minimising harmful emissions coming from the neighbouring territories. These harmful emissions may cause harmful interference, harmful coverage (international roaming issues) or may prevent an Administration from utilising / allocating portions of its national spectrum.
- On the other hand, defining satisfactory frequency-usage conditions for land mobile operators to operate their networks while maintaining a good quality of service and good coverage upon the national territory.

This leads Administrations to accept and agree upon a certain level of interference (as defined in Article°1.168 of the ITU Radio Regulations[2]) and/or a certain level of coverage from neighbouring countries.

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[1] Article°1.169 of the ITU Radio Regulations

[2] 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.

This MoU applies in the main land areas of France and the United Kingdom of Great Britain and Northern Ireland. This MoU does not apply to the Channel Tunnel.

The co-ordination procedure is based on the principle of equitable access to the spectrum resource.

2 SPECTRUM COORDINATION FOR NR SYSTEMS

In order to ensure the optimum network performance for NR systems deployed at the border areas, the operators shall use the Physical-layer Cell-Identity (PCI) codes for NR as given below and other radio parameters, in accordance with ECC Recommendation (23)02 for NR signals **using the same centre frequency in border areas or in case of alignment of synchronisation signals blocks.**

For NR systems, 3GPP TS 38 211 defines NR physical channels and modulation. In NR, a two steps identification is defined, using PSS/SSS detection of the Physical Cell ID . The number of different Physical Cell IDs codes 1008 for NR.

Table 3: NR PCI Groups

PCI Codes	84-335 + 588-839	0-83 + 336-503 + 504-587 + 840-1007
UK	PREFERENTIAL	NON PREFERENTIAL
FRANCE	NON PREFERENTIAL	PREFERENTIAL

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 coastline of the neighbouring country.

Table 4: Coordination thresholds

Frequency Band	Coordination threshold
TDD 26 GHz	62 dBµV/m/(200 MHz) @ 0 km
TDD 40 GHz	62 dBµV/m/(200 MHz) @ 0 km

The above values are based on a block size of 200 MHz. In cases of other frequency block sizes, 10 x Log10 (frequency block size/200 MHz) should be added to these field strength values.

3 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 Table 4.

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 ≤50 m resolution shall be used.

4 ARRANGEMENT FOR PLANNING AT AN OPERATIONAL LEVEL

A "Framework" MoU between the administrations of France and the United Kingdom, which enables planning arrangements between mobile operators, subject to agreement of the Administrations, was signed on 13 October 1999[3]. The administrations of France and the United Kingdom of Great Britain and Northern Ireland agree to extend the applicability of this MoU to all operators of systems in the frequency bands that are the subject of the present MoU.

To facilitate reasonable and timely development of their systems, licensees are encouraged to develop Arrangements in accordance with the Framework MoU of 13 October 1999.

Operators may only negotiate Arrangements concerning the common part of those frequency bands for which they have been licensed by the National Administration. The provisions in the Arrangements shall not result in an impairment of the authorised use of radio frequencies by third parties not involved in the Arrangements.

In order to facilitate Arrangements between operators, each Administration will provide names and point of contact information for the relevant licensees, subject to the agreement of the licensees.

[3] Agreement between the administrations of France and the United Kingdom concerning the approval of planning arrangements between mobile radio communications network operators (13 October 1999)

5 HARMFUL INTERFERENCE

If an operator suffers from harmful interference and/or notices a degradation of the quality of service on its network - due to the rise of the field strength coming from a neighbouring Administration for example - it should immediately inform its Administration, which will contact its counterparts. A list of contact points for each Administration, including the operators shall be exchanged regularly.

6 REVIEW AND FOLLOW UP OF THE MOU

Any signatory Administration may request a review of this MoU. Any part of this MoU 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 MoU.

7 TERMINATION OF THE MOU

Any signatory Administration may withdraw from this MoU subject to 6 months notice.

8 DATE OF ENTRY INTO FORCE

This MoU will enter into force on 1 February 2025.

For the Administration of the United Kingdom of Great Britain and Northern Ireland

David Willis

For the Administration of France

Keite Dyvrande