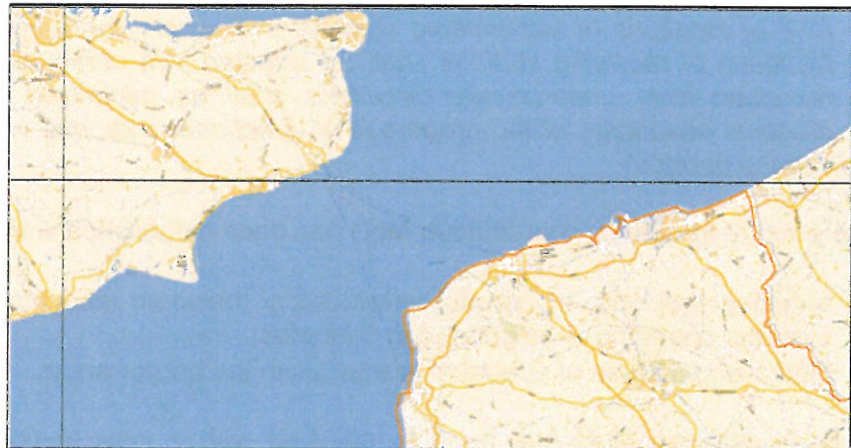


**MEMORANDUM OF UNDERSTANDING ON
FREQUENCY CO-ORDINATION BETWEEN
FRANCE AND THE UNITED KINGDOM
CONCERNING THE SPECTRUM COORDINATION
OF
LAND MOBILE RADIOCOMMUNICATION NETWORKS
IN THE FREQUENCY BANDS 2300-2400 MHz AND 3400 – 3800 MHz
TO BE APPLIED IN THE AREA INCLUDING FRANCE, THE UNITED
KINGDOM AND THE CHANNEL ISLANDS**



1 INTRODUCTION

The representatives of the Administrations of United Kingdom (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 2300-2400 MHz and 3400-3800 MHz frequency bands.

This MoU covers frequency coordination for **International Mobile Telecommunication (IMT)** systems following the spectrum arrangements below as provided in ECC Decisions (14)02 and (11)06:

Frequency Band	Base receive	Base transmit
TDD 2300 MHz	2300-2400 MHz	2300-2400 MHz
TDD 3500 MHz	3400-3600 MHz	3400-3600 MHz
TDD 3800 MHz	3600-3800 MHz	3600-3800 MHz
FDD 3500 MHz	3410-3490 MHz	3510-3590 MHz

This MoU abrogates the previous MoU concluded in the frequency bands above between France and United Kingdom, and listed hereafter:

- 3480-3500,3580-3600 incl CI (Paris, 24th September 2008)

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 interference¹ 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.

¹ Article°1.169 of the ITU Radio Regulations

- 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 Regulations²) and/or a certain level of coverage from neighbouring countries.

This MoU applies in the main land areas of France and the United Kingdom and the Channel Islands.

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

2 SPECTRUM COORDINATION FOR IMT SYSTEMS IN THE 2300-2400 MHz AND 3400-3800 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 the given height above ground at the coastline of the neighbouring country.

Frequency Band	Coordination threshold at 3 m above ground at the coastline of the neighbouring country	Prediction parameters
TDD 2300 MHz	30 dB μ V/m/5 MHz	Recommendation ITU-R P.1546-5 ³ <ul style="list-style-type: none"> • 10% of the time • 50% of locations
TDD 3500 MHz	32 dB μ V/m/5 MHz	ITU-R Recommendation P.452 ⁴ <ul style="list-style-type: none"> • 10% of the time
TDD 3800 MHz	32 dB μ V/m/5 MHz	
FDD 3500 MHz	32 dB μ V/m/5 MHz	

In order to ensure the optimum network performance for LTE systems deployed in the border areas, the administrations shall encourage operators to coordinate the use of physical-layer cell-identity groups for LTE and other radio parameters, in accordance with ECC Recommendations (14)04 and (15)(01) for LTE signals **using the same centre frequency in border areas.**

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.

³ Recommendation ITU-R P.1546 "Method for point-to-area predictions for terrestrial services in the frequency range 30 MHz to 3 000 MHz"

⁴ Recommendation ITU-R P.452 "Prediction procedure for the evaluation of interference between stations on the surface of the Earth at frequencies above about 0.1 GHz"

Both administrations recognize that assignments registered in the Master International Frequency Register (MIFR) of the ITU before the date of the entry in force of this agreement are coordinated.

LTE physical-layer cell-identity groups:

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. Each country can use all PCI groups away from the border areas.

PCI GROUPS	84-335	0-83 + 336-503
UK	PREFERENTIAL	NON PREFERENTIAL
FRANCE	NON PREFERENTIAL	PREFERENTIAL

3 PREDICTION OF PROPAGATION

The field strength prediction method shall be according to the latest version of ITU-R Recommendations with the parameters given in the table in Section 2 of this document, and taking account of:

- Terrain profile for the base station in all main directions
- Type of terrain (e.g. land, sea, mixed path)
- Equivalent isotropic radiated power.
- Height of the transmitting antenna, tilt and azimuth.

Including model components, where appropriate:

- Mixed land/sea paths
- Receiving/mobile antenna height
- Terrain clearance angle

And standard values:

- DeltaN = 40 (N0m-N1000m)

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 1999⁵. The administrations of France and the United Kingdom 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.

⁵ 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

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.

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 the date of signature.

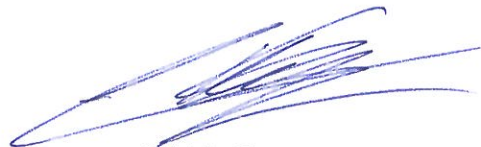
Done in London, 19/11/2014

For the Administration of United Kingdom



Robert Cooper

For the Administration of France



Cédric Perros

