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 703 to 2690 MHz

TO BE APPLIED IN THE AREA OF THE CHANNEL ISLANDS AND FRANCE

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 ranges 703 MHz to 2690 MHz.

This MoU covers frequency coordination for **LTE and NR with non-Active Antenna System Base Station (non-AAS BS)** following the spectrum arrangements below:

Frequency Band	Base receive	Base transmit
FDD 700 MHz	703-733 MHz	758-788 MHz
FDD 800 MHz	832-862 MHz	791-821 MHz
FDD 900 MHz	880-915 MHz	925-960 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
FDD 2600 MHz	2500-2570 MHz	2620-2690 MHz
TDD 2100 MHz	1900-1920 MHz	1900-1920 MHz
TDD 2100 MHz	2010-2025 MHz	2010-2025 MHz
TDD 2600 MHz	2570-2620 MHz	2570-2620 MHz

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

- 703 – 2690 MHz (which came into force on 1st January 2018)

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.

This MoU applies in the area of the Channel Islands and France.

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

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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.

2 SPECTRUM COORDINATION FOR LTE AND NR SYSTEMS WITH NON-AAS BS IN THE 700 MHZ, 800 MHZ, 900 MHZ, 1 400 MHZ, 1800 MHZ, 2100 MHZ AND 2600 MHZ FREQUENCY BANDS

In order to ensure the optimum network performance for LTE/NR (with non-AAS BS) systems deployed in the border areas, the operators shall use Physical-layer Cell-Identity (PCI) codes for LTE/NR (with non-AAS BS) as given below and other radio parameters, in accordance with CEPT Recommendation (01)01, (08)02, (11)04, (11)05 and (15)01 for LTE/NR signals (with non-AAS BS) **using the same centre frequency in border areas or in case of alignment of synchronisation signals blocks.**

For LTE systems, 3GPP TS 36.211 defines 168 unique PCI groups in § 6.11, numbered 0...167. Within each PCI group there are three separate PCIs giving 504 PCIs codes in total.

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

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 (same as LTE). The number of different Physical Cell IDs codes has been increased from 504 in LTE to 1008 for NR.

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 the coastline of the neighbouring country.

Frequency Band	**Coordination threshold for the use of preferential PCI codes**	**Coordination threshold for the use of non-preferential PCI codes**
FDD 700 MHz	45 dBµV/m/5 MHz	41 dBµV/m/5 MHz
FDD 800 MHz	45 dBµV/m/5 MHz	41 dBµV/m/5 MHz
FDD 900 MHz	45 dBµV/m/5 MHz	41 dBµV/m/5 MHz
SDL 1400 MHz	59 dBµV/m/5 MHz	47 dBµV/m/5 MHz
FDD 1800 MHz	59 dBµV/m/5 MHz	47 dBµV/m/5 MHz
FDD 2100 MHz	59 dBµV/m/5 MHz	47 dBµV/m/5 MHz
TDD 2100 MHz	21 dBµV/m/5 MHz	
FDD 2600 MHz	59 dBµV/m/5 MHz	47 dBµV/m/5 MHz
TDD 2600 MHz	21 dBµV/m/5 MHz	
Propagation prediction assumptions: • 10% of the time		

- 50% of locations

For frequency block sizes other than 5 MHz, a factor of 10 x Log10 (freq. block size in MHz / 5 MHz) should be added to the field strength values summarized in the table above.

3 PREDICTION OF PROPAGATION

The field strength prediction method shall be according to the latest version of Recommendation ITU-R P.1546[3] with the parameters shown at the foot of each table in 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)
- Effective radiated field strength
- Antenna tilt and azimuth

Including model components:

- 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 1999[4]. 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.

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[3] Recommendation ITU-R P.1546, Method for point-to-area predictions for terrestrial services in the Frequency range 30 MHz to 4 000 MHz

[4] 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.

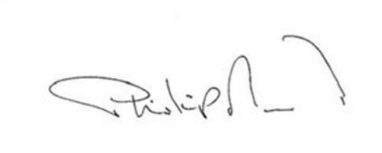
7 TERMINATION OF THE MOU

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

8 DATE OF ENTRY INTO FORCE

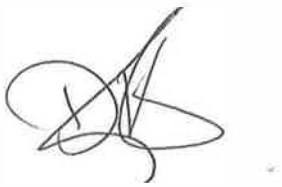
This MoU will enter into force on the 1st July 2020.

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



Philip Marnick

For the Administration of
France



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