MEMORANDUM OF UNDERSTANDING BETWEEN THE ADMINISTRATIONS OF THE UNITED KINGDOM AND THE NETHERLANDS CONCERNING THE USE OF THE BAND 174-225 MHz

1. The administrations of the United Kingdom and The Netherlands note:

(1) that the band 174-223 MHz is allocated to broadcasting on a primary basis and that both the United Kingdom and The Netherlands are listed in footnote RR621 of the Radio Regulations which additionally allocates the band to the land mobile service on a permitted basis in the countries listed therein;

(2) that the administration of The Netherlands utilises the band 174-223 MHz for both the broadcasting and land mobile services;

(3) that the administration of the United Kingdom will cease broadcasting in the band 174-223 MHz on 6 January 1985 and will introduce the land mobile service in Great Britain in that band from 7 January 1985;

(4) that the administration of the United Kingdom needs to plan its use of the land mobile service in Great Britain in advance of the date when, in accordance with RR 1228 of the Radio Regulations, it will become possible to notify the International Frequency Registration Board.

2. In order to facilitate the introduction of the land mobile service in Great Britain and the planning of the band 174-225 MHz for use by the broadcasting and land mobile services in The Netherlands, the administrations of the United Kingdom and The Netherlands agree the following:

(1) The United Kingdom broadcasting stations in the band 174-223 MHz, still operating under the Stockholm Agreement 1961, will continue to be protected by The Netherlands until 6 January 1985;

(2) The United Kingdom will introduce the land mobile service in Great Britain in the band 174-225 MHz from 7 January 1985 with the typical technical parameters as given in Annex A, and this use for the land mobile service will be protected by The Netherlands. Nothing in this sub-paragraph shall, however, imply any requirement for The Netherlands to amend, or change broadcasting assignments (given at Annex B(ii) and with the basic technical parameters listed at Annex B(i))which are already coordinated under the Stockholm Agreement 1961. (But see Notes 2 and 3 regarding the television station at Goes.)

(3) Broadcasting stations of The Netherlands operating in the band 174-223 MHz with technical parameters as given in Annex B(i) will be protected by the United Kingdom as detailed in Annex B(ii). These broadcasting stations will continue to be subject to coordination between the administrations of The Netherlands and the United Kingdom in accordance with the procedures of the Stockholm Agreement 1961;

(4) The protection of the land mobile radio use in Great Britain from broadcasting use in The Netherlands will be as detailed in Annex C;

(5) The protection of broadcasting in The Netherlands from land mobile use in Great Britain will be as detailed in Annex D;

(6) Land mobile use in The Netherlands and Great Britain will be mutually protected using the provisions of Annex E. Such use will be mutually coordinated within the appropriate geographical area, calculated in accordance with Annex E;

(7) Experience may indicate a requirement for changes to the protection criteria of Annexes C, D and E. Any such changes will be subject to the agreement of the administrations of The Netherlands and the United Kingdom.

3. The delegates of the United Kingdom and The Netherlands agree that the provisions of this Memorandum of Understanding shall enter into force 30 days after the date of signature of this document, unless within this period the administration of the United Kingdom or The Netherlands signifies that it is unable to approve the agreement.

Done at Geneva, 27 November 1984

For: The United Kingdom — A MARSHALL

The Netherlands — F R NEUBAUER
S H L HERMAN

The original of this Memorandum of Understanding will be laid down with the United Kingdom Radio Regulatory Division at London.

Notes:

1. Great Britain extends to England, Wales and Scotland.

2. The administration of The Netherlands will investigate an alternative channel for Goes (at present channel E7), a possibility being UHF television channel 35. The feasibility of using this channel at Goes prior to 31 December 1987 will be investigated by the United Kingdom. Subject to the satisfactory coordination of channel 35, or any other channel in Band IV or V, with all affected countries, the VHF channel E7 assignment for Goes in the Stockholm Agreement, will be relinquished by The Netherlands. If satisfactory coordination of channel 35 cannot be achieved, the United Kingdom administration will cooperate with the administration of The Netherlands to attempt to identify a suitable alternative UHF channel.

3. If the television station at Goes is required to become operational on channel E7 then, at the request of the United Kingdom administration, the administration of The Netherlands will study the feasibility of reducing the effected radiated power of this station in the direction of the London area and if possible will implement such a reduction.

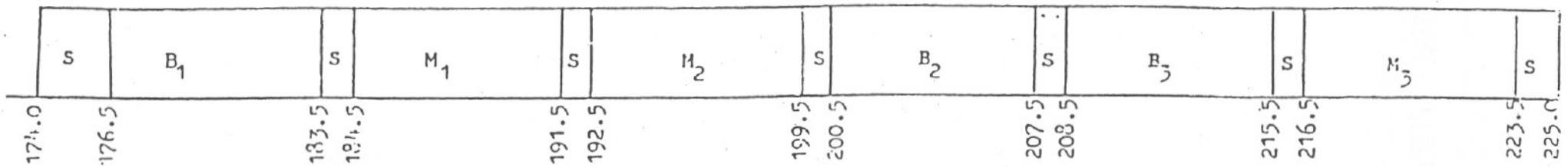
4. The United Kingdom administration will supply yearly to the administration of The Netherlands a list of all operational land mobile systems within 300km of the appropriate service area to be protected.

ANNEX A

TECHNICAL PARAMETERS OF THE LAND MOBILE SERVICES IN THE UNITED KINGDOM

POWER	25 WATTS ERP TYPICAL
BANDWIDTH	12.5 kHz
CHANNEL CENTRE FREQUENCY	174.0125 MHz + n 12.5 kHz (n = 0, 1, 2, 3 ..)
FREQUENCY TOLERANCE	± 1.0 kHz
MODULATION SYSTEM	FREQUENCY MODULATION
TRANSMIT/RECEIVE SPACING	8 MHz
BASE STATION TRANSMIT BANDS	176.5 - 183.5 MHz
	200.5 - 207.5 MHz
	208.5 - 215.5 MHz
CHANNELLING PLAN	As attached
POLARISATION	Vertical
RANGE OF EFFECTIVE ANTENNA HEIGHTS	- 100 to + 200 meters

CHANNELLING PLAN FOR THE LAND MOBILE SERVICES



Abbreviations

S - single frequency simplex sub-bands
B - base station transmit sub-bands
M - mobile station transmit sub-bands

Note

S sub bands will be used for low power systems, or services operating on a non-interference basis to land mobile or broadcasting services

ANNEX B(i)

TECHNICAL PARAMETERS OF THE BROADCASTING SERVICE IN THE NETHERLANDS

CHANNELS	E5, E6, E7 and E10			
CARRIER FREQUENCIES	E5 Vision	175.25 MHz	Sound	180.75 MHz
	E6	182.25		187.75
	E7	189.25		194.75
	E10	210.25		215.75
SYSTEM	B/PAL			
POLARISATION	Horizontal			

PROTECTION OF BROADCASTING USE IN THE NETHERLANDS

1 Protection of the television broadcasting service in The Netherlands shall be limited to the television channels and areas given in Annex B(ii).

2 The usable field strengths given in Annex B (ii) shall not be exceeded due to interference from the land mobile service in the United Kingdom.

3 The usable field strength shall be calculated in the following way:

a) The interference potential of a land mobile base station shall be determined by the concept of "nuisance field". The nuisance field is calculated from:

$$F = E_{(50,1)} + A + B$$

Where

$E_{(50,1)}$ is the field strength (dBμV/m) of the interfering transmitter, exceeded at 50% of the locations for 1% of the time with a receiving antenna height of 10m, determined from CCIR Rec 370-4 (Geneva 1982).

Effective transmitting antenna heights of less than 0 (zero) metres are to be disregarded. For effective antenna heights of less than 37.5 metres any corrections given in the Final Acts of the VHF/FM Conference 1984 shall be used.

A is the protection ratio (in dB) determined from Fig 3 of CCIR Report 306-4 and Rec 418-3 (Geneva 1982).

B is the antenna discrimination factor. This shall be 15dB.

b) The effect of multiple interference arising from base stations operating at the same site shall be calculated by means of the power sum method:

$$E_0 = \sqrt{\sum_i (F)_i^2}$$

where F is the nuisance field arising from the i-th interfering transmitter expressed in μV/m.

c) The nuisance field arising from base stations operating at different sites together with the multiple interference from base stations operating at the same site shall be multiplied by means of the simplified multiplication method (see CCIR Rep 945, Geneva 1982).

Calculations shall include all land mobile base stations within 300km of the appropriate service area to be protected.

d) The nuisance fields from mobile stations shall be assumed to be 20dB less than the nuisance field arising from the corresponding base station.

Explanatory Note

Within the bandwidth of a television channel there is the potential to use up to 500 mobile channels. These may produce an additive interfering effect to the television signal. The addition from a single site will be a power addition as detailed above. From different sites however an attempt should be made to use the statistical (in locations) nature of propagation and the simplified multiplication method is appropriate.

The protection ratio for the television channel is not constant over the television channel and thus an individual value is used for each mobile channel. Advantage is taken of horizontal polarisation when appropriate by including an antenna discrimination factor.

Mobile stations will produce a lesser interfering effect than base stations because their height above ground is less, leading to greater shielding by terrain and buildings, and their radiated power is typically less. A global reduction of 20dB is assumed to allow for these factors.

52.

17.26
31111A PTT NL
261969 DTIWBH G

ATTENTION MR H K DE ZWART

REFERENCE 26709/213.3 DRZ/OT

TESTPOINTS IN RELATION TO THE BAND 3 MOU

1. FURTHER TO YOUR TELEX OF 26 APRIL WE CAN OF COURSE ACCEPT THE AMENDED TEST POINT CO-ORDINATIONS FOR GOES. HOWEVER WE AWAIT TO HEAR WHETHER UHF CHANNEL 35 HAS BEEN SUCCESSFULLY CO-ORDINATED FOR THIS STATION, IN WHICH CASE WE WOULD HOPE THAT THE BAND III ASSIGNMENT WOULD NOT BE REQUIRED.

2. I LOOK FORWARD TO YOUR REPLY.

KINDEST REGARDS

D I COURT

12.7.85

31111A PTT NL
261969 DTIWBH G++++

85-04-29 07:41

08.46 +
8811074DTHQ A G
31111W PTT NL 85.05.01 08.46

ZCZC 16I110
RR AA TX05188110 74
++++

THE HAGUE, 26 APRIL 1985

OUR REF 20709/213.3 DRZ/OT TEL. +31 70 75 72 60

TO MR. D.I. COURT
DEPARTMENT OF TRADE AND INDUSTRY
LONDON
UNITED KINGDOM

SUBJECT: TESTPOINTS IN RELATION TO THE BAND III MOU

DEAR MR. COURT

I CAN AGREE TO THE TESTPOINTS MENTIONED IN THE NOTE YOU GAVE TO ME IN ROME, EXCEPT FOR GOES.
THE COORDINATE IS VERY CLOSE TO THE TRANSMITTER SITE.
AS WE AGREED AND AS IS THE CASE FOR THE OTHER TRANSMITTERS, THE TESTPOINT SHOULD BE LOCATED AT THE WESTERN EDGE OF THE COVERAGE AREA;, FOR GOES THIS MEANS AT THE COAST.
THEREFORE I PROPOSE TO CHANGE THE COORDINATES IN 51 N 31 03E25.

KIND REGARDS,

H.K. DE ZWART

NNNN

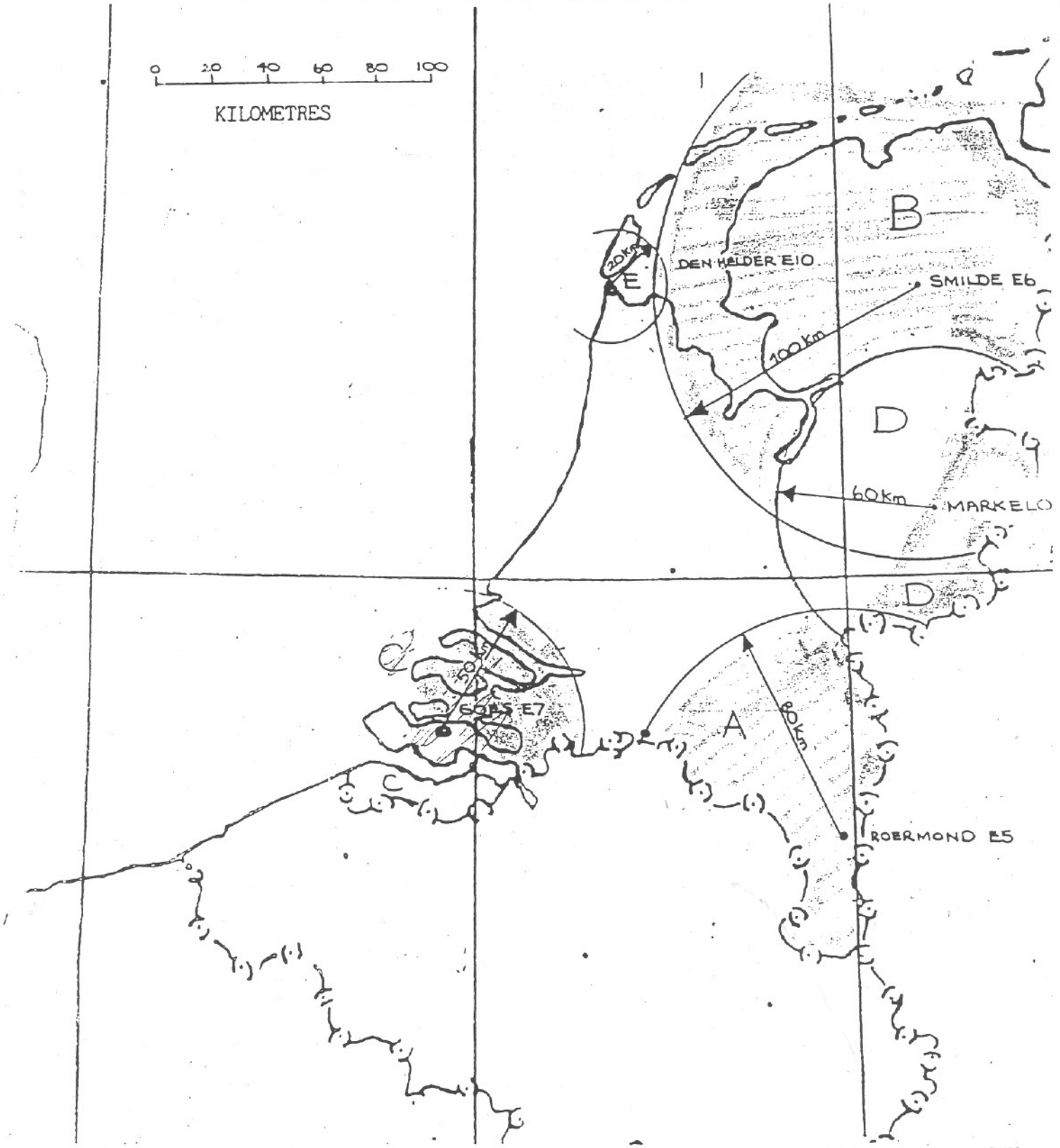
+
8811074DTHQ A G
31111W PTT NL+

DUTCH TEST POINTS

AREA	TXNAME	TEST POINT		CHAN	POL	FIELD STRENGTH TO BE PROTECTED 1% TIME
A	ROEMOND	51N26	04E55	E5	h	62
B	SMILDE	52N50	04E52	E6	h	60
C	GOES	51N31	03E53	E7	h	68
D	MARKELO	52N15	05E36	E7	h	55
E	DEN HELDER	52N57	04E44	E10	h	67

Sub Group 3.

BROADCASTING SERVICE IN THE NETHERLANDS



AREA	TRANSMITTER	CHANNEL		USABLE FIELD STRENGTH
			TEST POINT	
A	Roermond	E5	51N26 04E55	62 dBuV/m.
B	Smilde	E6	52N50 04E52	60 dBuV/m
C	Goes	E7	51N31 03E29	68 dBuV/m
D	Markelo	E7	52N15 06E36	52 dBuV/m
E	Den Helder	E10	52N57 04E44.	67 dBuV/m

ANNEX C

PROTECTION OF LAND MOBILE RADIO USE IN GREAT BRITAIN from Modifications to the Stockholm Agreement 1961

1. The maximum interfering field strength measured in a 7 kHz bandwidth for 50% locations and 10% of the time at a height of 10m above ground shall be:

24dB (uV/m) for horizontally polarised broadcasting emissions

7dB (uV/m) for vertically polarised broadcasting emissions

2. In the following frequency bands this field strength shall not be exceeded at the coastline of Great Britain:

MHz		
174.0	-	188.75
189.75	-	225.0

3. In the following frequency bands this field strength shall not be exceeded west of the line given on the attached map:

MHz		
188.75	-	189.75

4. For the purpose of calculation CCIR Recommendation 370-4 (Geneva 1982) shall be used for the case of 10% time, 50% locations and h_2 = 10m.

Explanatory Note

The minimum median value of the field strength to be protected in the land mobile service is given by CCIR Report 358-4 (Geneva 1982) as:
-41 + d + 20 log f + 10dB (uV/m)

f is in MHz
d is taken from curve C of Figures 4 and 6 of Report 358-4

Calculated values then are (in dBuV/m):

f(MHz)	Mobile Stations	Base Stations
174	20.3	21.3
200	21.5	23.0
223	22.0	24.5

Assuming the following parameters:

Protection Ratio (1m)	10dB
Polarisation discrimination for horizontally polarised broadcasting emissions	18dB base stations 8dB mobile stations
Reduction in field strength at mobile antenna (3m) compared with base antenna (10m)	4.5dB

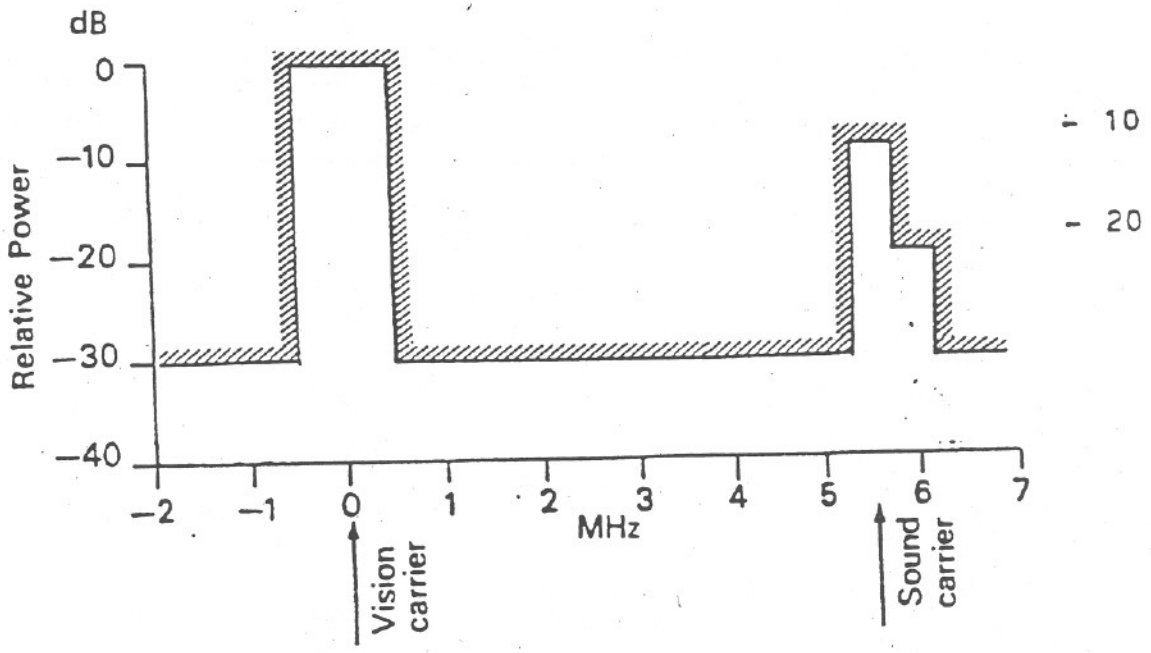
the maximum interfering field strength at a height of 10m may be calculated as (in dBuV/m):

f(MHz)	Mobile Stations		Base Stations	
	VP ++	HP++	VP++	HP++
174	14.8	22.8	11.3	29.3
200	16.0	24.0	13.0	31.0
223	16.5	24.5	14.5	32.5

A compromise value for use over the band is then 24dB(uV/m) for horizontally polarised broadcasting emissions and this gives an extra 5-7 dB protection to base stations which may have heights greater than 10m. The corresponding figure for vertically polarised broadcasting emissions is 7dB(uV/m).

++ POLARIZATION OF THE INTERFERING BROADCASTING STATION

The power of a B/PAL television signal measured in a 7 kHz band may be contained within the mask below:-



The distance from the broadcasting transmitter at which the field strength reduces to the maximum permitted by the land mobile use is thus less at frequencies between the carriers than at frequencies close to the carriers.


KILOMETRES
100 0 100 200 300 400 500
WICK
INVERNESS
ABERDEEN
GLASGOW
EDINBURGH
BELFAST
NEWCASTLE
LANCASTER
MANCHESTER
EIRE
DUBLIN
GALWAY
CORK
GREAT BRITAIN
BIRMINGHAM
OXFORD
BRISTOL
LONDON
250 km
PLYMOUTH
SOUTHAMPTON
DOVER
HOLLAND
BRUSSELS
BELGIUM
LIEGE
CHANNEL ISLES
BREST
ROUEN
PARIS
NANTES
FRANCE
LIMOGES
BORDEAUX
LYONS
LUXEMBOURG
STRASBOURG
SWITZERLAND

ANNEX E

PARAMETERS FOR COORDINATING LAND MOBILE RADIO USE IN BAND III IN THE UNITED KINGDOM AND THE NETHERLANDS

1 The minimum value of field strength to be protected shall be 22dB (μV/m) for 90% of time and 50% of locations.

2 Protection Ratio shall be 10dB.

3 Reduction in field strength when changing receiving antenna height from 10m to 3m above ground shall be 4.5dB.

4 Increase in field strength when changing receiving antenna height from 10m to 75m above ground shall be 12dB.

5 Coordination distances shall be calculated from CCIR Recommendation 370-4 (Geneva 1982) for the case of 50% locations and 10% of the time.

Example

The maximum interfering field strength at a height of 10m is for mobile stations (3m antenna height) = 22 - 10 + 4.5 = 16.5 dB(μV/m). The maximum interfering field strength at a height of 10m for base stations (75m antenna height) = 22 - 10 - 12 = 0dB (μV/m).

Taking the case of a transmitter power of 25W erp the coordination distances are:

Transmitter Antenna Effective Height	Mobile Stations	Base Stations
37.5 M	55 KM	150 KM
75	70	165
150	90	180