Development of the BBC A.M. Transmitter Network

(compiled by Clive McCarthy)

Introduction

The British Broadcasting Company, under the chairmanship of Lord Gainford, was formed in October 1922 to set up a broadcasting system as outlined in a plan sanctioned by the Postmaster General in May 1922.
This allowed for eight areas of Britain to have a local transmitter, of power 1.5 kW. From this original scheme, the BBC developed the network of high power stations that became so familiar.

1922 to 1929

Eight stations established, having an aerial power of about 1 kW, in main cities. Each city provided programmes from its own studio. Music quality land lines didn't exist at first, but simultaneous broadcasting started in May 1923 over trunk telephone circuits, with regular London news bulletins to other stations from August 1923.

Main stations

Tues. November 14th 1922	2LO LONDON (Marconi House) on 369* metres.
Wed. November 15th 1922	5IT BIRMINGHAM (Witton) on 420* metres.
Wed. November 15th 1922	2ZY MANCHESTER (Trafford Park) on 385* metres.
Sun. December 24th 1922	5NO NEWCASTLE-upon-TYNE
Tues. February 13th 1923	5WA CARDIFF
Tues. March 6th 1923	5SC GLASGOW
Wed. October 10th 1923	2BD ABERDEEN
Wed. October 17th 1923	6BM BOURNEMOUTH (originally Plymouth)

The Radio Times wasn't published until September 1923, so the wavelengths of the initial services aren't known. The wavelengths shown thus * are as given in Wireless World November 1972, page 509. (Another source gives 2ZY initially on 375 metres.)
Several areas of large population were unable to receive a satisfactory signal on a crystal set, and additional stations were needed. However, it was considered uneconomic to also provide each with its own studio. Therefore eleven relay stations were constructed, having small studios but receiving programmes from the main city studio via telephone circuits. The power of each station was restricted to 200 W (aerial power 120 W).

Relay Stations

Fri. November 16th 1923	6FL SHEFFIELD
Fri. March 28th 1924	5PY PLYMOUTH
Thur. May 1st 1924	2EH EDINBURGH
Wed. June 11th 1924	6LV LIVERPOOL
Tues. July 8th 1924	2LS LEEDS / 2LS BRADFORD
Fri. August 15th 1924	6KH HULL
Tues. September 16th 1924	5NG NOTTINGHAM
Tue. October 21st 1924	6ST STOKE-on-TRENT *
Sun. November 9th 1924	2DE DUNDEE
Fri. December 12th 1924	5SX SWANSEA

Main Station

Sun. September 14th 1924	2BE BELFAST

* Radio Times date of Stoke opening. (BBC Handbook gives November 21st 1924.)
The wavelengths of the stations were chosen to minimise mutual interference. However, listeners complained and the wavelengths were changed from their initial values to improve the service. Listed below are a sample of the wavelengths given in the Radio Times in late 1923 of the established stations.

Station	Oct 1923	Oct 1923	Oct 1923	Dec 1923
2LO London	369 m	369 m	363 m	365 m
5IT Birmingham	420 m	420 m	420 m	475 m
2ZY Manchester	385 m	385 m	370 m	400 m
5NO Newcastle	400 m	400 m	400 m	350 m
5WA Cardiff	353 m	353 m	353 m	435 m
5SC Glasgow	415 m	415 m	415 m	420 m
2BD Aberdeen		360 m	495 m	495 m
6BM Bournemouth		410 m	385 m	385 m

The Relay stations (R) opened from November 1923.

Station	May 1924	Oct 1924	Dec 1924	Jan 1925
2LO London	365 m	365 m	365 m	365 m
5IT Birmingham	475 m	475 m	475 m	475 m
2ZY Manchester	375 m	375 m	375 m	375 m
5NO Newcastle	400 m	400 m	400 m	400 m
5WA Cardiff	351 m	351 m	351 m	351 m
5SC Glasgow	420 m	420 m	420 m	420 m
2BD Aberdeen	495 m	495 m	495 m	495 m
6BM Bournemouth	385 m	385 m	385 m	385 m
6FL Sheffield (R)	303 m	301 m	301 m	301 m
5PY Plymouth (R)	330 m	335 m	335 m	335 m
2EH Edinburgh (R)	325 m	325 m	328 m	328 m
6LV Liverpool (R)	318 m (June)	315 m	315 m	315 m
2LS Leeds (R)	346 m (July)	346 m	346 m	346 m
2LS Bradford (R)	310 m (July)	310 m	310 m	310 m
6KH Hull (R)		320 m (Aug)	335 m	335 m
2BE Belfast		435 m (Sept)	435 m	435 m
5NG Nottingham (R)		340 m (Sept)	322 m	322 m
2DE Dundee (R)			331 m (Nov)	331 m
6ST Stoke (R)		306 m (Oct)	306 m	306 m
5SX Swansea (R)			318 m (Dec)	485 m

Long Wave Station

With each medium wave BBC station on a separate frequency, it was obvious that with the multiplicity of transmitters in the rest of Europe, further expansion using low power stations would invite interference especially after dark. There was no overall European frequency plan at this time. The 300 m to 500 m band was used by many stations. As an experiment, the BBC decided to use a single high power transmitter in the long wave band. This would hopefully cover rural districts, not satisfactorily covered by the local stations of lower power. The Marconi company at Chelmsford established the first British station, 5XX with 15 kW aerial power.

Mon. July 21st 1924 : 5XX CHELMSFORD on 1600 m.
Initially the programming was experimental, but later became known as 5XX High Power Station Programme, and then High Power Programme.

Sun. December 28th 1924 : 5XX alternative programme offered.

Mon. April 6th 1925 : 2LO London Transmitter moved to Oxford Street (Selfridges) (Power 2 kW)
With 5XX giving promising results, the BBC constructed its own long wave station at Daventry in Northamptonshire, but with an aerial power of 25 kW. Opened in 1925.

Mon. July 27th 1925 : 5XX DAVENTRY on 1600 m (Chelmsford closed)

Station wavelengths at this time are now shown as :

July 27th 1925		
2LO London	365 m	
5IT Birmingham	479 m	
Manchester	378 m	
5NO Newcastle	403 m	404 m (Oct 4th 1925)
5WA Cardiff	353 m	
5SC Glasgow	422 m	
2BD Aberdeen	495 m	
6BM Bournemouth	386 m	
2BE Belfast	439 m	440 m (Oct 4th 1925)
6FL Sheffield	301 m	306 m (Jun 13th 1926)
5PY Plymouth	338 m	
2EH Edinburgh	328 m	
6LV Liverpool	315 m	331 m (Mar 14th 1926)
2LS Leeds	346 m	321 m (Dec 27th 1925)
2LS Bradford	310 m	
6KH Hull	335 m	
5NG Nottingham	326 m	
2DE Dundee	331 m	315 m (Mar 14th 1926)
6ST Stoke	306 m	301 m (Jun 13th 1926)
5SX Swansea	482 m	
5XX Daventry	1600 m	

In March 1925, a preliminary conference in London, was held to consider the formation of an International Union, with the task, among other things, of regulating the frequencies used by each European country. A Technical Committee under the Presidency of P.P. Eckersley, (BBC Chief Engineer 1923-29), studied this matter. The international meeting resulted in the first frequency plan for Europe. This was the Geneva Plan and accepted by most of Europe. Its success required each transmitter to have a carrier frequency held to close limits. The Plan was intended to come into force September 15th 1926, but the construction, calibration and distribution of wave-meters to each country postponed implementation, first to October, and then again, to

the later date of November 14th 1926. For insignificant heterodyning between stations it was considered that an accuracy in each station's frequency of 20 parts per million was an ideal. BBC stations having electrically maintained tuning fork references had an accuracy of about 30 parts per million, but some stations in Europe were not capable of this high standard and the wave-meters permitted monitoring to an accuracy of about 300 parts per million. The medium waveband from 600 m to 200 m was allocated as 99 separate wavelengths in increments of 10 kHz. The listing of the medium wave Plan is shown in the Appendix and shows almost 180 established or projected stations having to be accommodated. Great Britain and Northern Ireland received an allocation of nine exclusive medium wavelengths (only beaten by Germany's twelve exclusive allocation), and the use of International Common Waves (ICW) for its remaining stations using low power. The Company initially used two of these Common Waves for Leeds and Bradford and utilised one of its exclusive waves (288.5 m or 1040 kHz) as a National Common Wave (NCW) for the remaining Relay Stations which required the use of high stability drive units. Great Britain's Long Wave allocation remained as 1600 metres but there is no listing of any LW allocations under the Plan in Radio Times.
The BBC foreign relay station, set up in 1924 at Keston in Kent, was equipped to check frequencies of transmissions. Later this station was superseded by one at Tatsfield in Surrey around 1929 incorporating better thermal stability. Frequency checking utilised harmonic generators with an NPL calibrated tuning fork reference. For a listing of the medium wave Plan from Radio Times see the Appendix.

Geneva Plan effective Sunday November 14th 1926.

	Pre-Geneva	Post-Geneva	
2LO London	365 m	361.4 m	830 kHz
5IT Birmingham	479 m	491.8 m	610 kHz
2ZY Manchester	378 m	384.6 m	780 kHz
5NO Newcastle	404 m	312.5 m	960 kHz
5WA Cardiff	353 m	353.0 m	850 kHz
5SC Glasgow	422 m	405.4 m	740 kHz
2BD Aberdeen	495 m	491.8 m	610 kHz
6BM Bournemouth	386 m	306.1 m	980 kHz
2BE Belfast	440 m	326.1 m	920 kHz
6FL Sheffield	306 m	288.5 m	1040 kHz
5PY Plymouth	338 m	288.5 m	1040 kHz
2EH Edinburgh	328 m	288.5 m	1040 kHz
6LV Liverpool	331 m	288.5 m	1040 kHz
2LS Leeds	321 m	297.0 m	1010 kHz
2LS Bradford	310 m	294.1 m	1020 kHz
6KH Hull	335 m	288.5 m	1040 kHz
5NG Nottingham	326 m	288.5 m	1040 kHz
2DE Dundee	315 m	288.5 m	1040 kHz
6ST Stoke	301 m	288.5 m	1040 kHz
5SX Swansea	482 m	288.5 m	1040 kHz
5XX Daventry	1600 m	1600 m	

After the Plan became operational, it was found that mutual interference required

some amendments to the allocations, (Aberdeen and Birmingham shared 610 kHz), and the use of other International Common Frequencies (ICF) was found to improve reception. Contemporary literature refers to International Common Wavelengths (ICW) rather than International Common Frequencies (ICF).

	Dec 1926		
2BD Aberdeen	500.0 m	600 kHz	(ICW) Dec 5th
6BM Bournemouth	326.1 m	920 kHz	(Excl) Dec 12th
2BE Belfast	306.1 m	980 kHz	(Excl) Dec 12th
6FL Sheffield	272.7 m	1100 kHz	(ICW) Dec 12th
5PY Plymouth	400.0 m	750 kHz	(ICW) Dec 12th
6LV Liverpool	297.0 m	1010 kHz	(ICW) Dec 12th
2LS Leeds	277.8 m	1080 kHz	(ICW) Dec 12th
2LS Bradford	254.2 m	1180 kHz	(ICW) Dec 12th
5NG Nottingham	275.2 m	1090 kHz	(ICW) Dec 12th
2EH Edinburgh	294.1 m	1020 kHz	(ICW) Dec 12th

Further changes in the next month.

	Jan 1927		
5IT Birmingham	326.1 m	920 kHz	(Excl) Jan 30th
6BM Bournemouth	491.8 m	610 kHz	(Excl) Jan 30th
2LS Bradford	252.1 m	1190 kHz	(ICW) Jan 30th
6KH Hull	294.1 m	1020 kHz	(ICW) Jan 30th
6ST Stoke	294.1 m	1020 kHz	(ICW) Jan 30th
5SX Swansea	294.1 m	1020 kHz	(ICW) Jan 30th
2EH Edinburgh	288.5 m	1040 kHz	(NCW) Jan 30th
2DE Dundee	294.1 m	1020 kHz	(ICW) Jan 30th

It became clear to the British Broadcasting Company that with only 9 exclusive MW frequencies it would be difficult to construct more low power MW stations in order to serve the less populated areas of Britain and to provide an alternative programme. There were several schemes considered for going forward. One suggested using very few stations centrally placed, with hundreds of kilowatts of power each. This would have a very high field strength near to the transmitter, with possible wipe-out of other stations when unsophisticated receivers used. However, the use of one wavelength per programme meant that several alternative programmes could be possible. The so-called Regional Scheme finally adopted, was to have five regional stations of two wavelengths each, and power around 30 kW each. This uses the 9 MW and 1LW exclusive frequencies allocated to the United Kingdom. The use of synchronised working of several high power stations on the same frequency to provide an alternative national programme didn't come until later. Valve receivers with more selectivity and sensitivity, would become popular, and so the shortcomings of crystal set reception wouldn't determine future operation.

On Saturday January 1st 1927, the British Broadcasting Corporation, under the chairmanship of the 6th Earl of Clarendon, replaced the Company.
In order to provide experience of high power medium wave coverage, the Post Office approved the erection of an high power station 5GB at Daventry, on a frequency of

610 kHz (ex 6BM Bournemouth) and aerial power of 30 kW. The programmes were known as Daventry Experimental. The 5IT Birmingham Station (Summer Lane) was closed down, and the 6BM Bournemouth Station took over its frequency of 920 kHz.

The Radio Times up to now had only listed station wavelengths, but from Sunday July 3rd 1927, the frequencies were also shown, conforming to the practice already adopted by the Union Internationale de Radiodiffusion.
The 5XX Daventry station was now shown as a frequency of 187 kHz with a related wavelength of 1604.3 m. Previously the wavelength had been given as 1600 m. which implies that this had only been a rounded off figure before, although some sources suggest that sometime the frequency of 5XX was 187.5 kHz which corresponds to 1600 m exactly. Before1926 all the wavelengths were indicated in round numbers.

Sunday August 21st 1927 : DAVENTRY EXPERIMENTAL - 5GB 610 kHz 30 kW

Stations operating at this time are listed below.

	Pre 5GB	Post 5GB	
2LO London	830 kHz	830 kHz	3 kW
5GB Daventry (Exp)		610 kHz	30 kW
5IT Birmingham	920 kHz	closed	
2ZY Manchester	780 kHz	780 kHz	1.5 kW
5NO Newcastle	960 kHz	960 kHz	1.5 kW
5WA Cardiff	850 kHz	850 kHz	1.5 kW
5SC Glasgow	740 kHz	740 kHz	1.5 kW
2BD Aberdeen	600 kHz	600 kHz	1.5 kW
6BM Bournemouth	610 kHz	920 kHz	1.5 kW
2BE Belfast	980 kHz	980 kHz	1.5 kW
6FL Sheffield	1100 kHz	1100 kHz	0.2 kW
5PY Plymouth	750 kHz	750 kHz	0.2 kW
2EH Edinburgh	1040 kHz	1040 kHz	0.2 kW
6LV Liverpool	1010 kHz	1010 kHz	0.2 kW
2LS Leeds	1080 kHz	1080 kHz	0.2 kW
2LS Bradford	1190 kHz	1190 kHz	0.2 kW
6KH Hull	1020 kHz	1020 kHz	0.2 kW
5NG Nottingham	1090 kHz	1090 kHz	0.2 kW
2DE Dundee	1020 kHz	1020 kHz	0.2 kW
6ST Stoke	1020 kHz	1020 kHz	0.2 kW
5SX Swansea	1020 kHz	1020 kHz	0.2 kW
5XX Daventry	187 kHz	187 kHz	25 kW

Daventry 5GB radiated much material from the Birmingham studio, and some from London. It was designed to contrast the “High Power” programme (London) radiated from Daventry 5XX. In this respect, Daventry became the forerunner of the “Twin-Transmitters” radiating alternative programmes, but 5GB was still considered experimental with more chance of a breakdown than a permanent service station.
The Nottingham relay became redundant under the start of the Regional Scheme and last day of transmission was October 31st 1928.

The Radio Times Southern Edition no longer listed some Northern Relay Stations from Saturday June 16th 1928 and so their day to day frequencies were not always readily available.

In early 1925, the wavelengths of the continental stations varied greatly and very long waves were in use. e.g. Koenigwusterhausen (Germany) was on 4000 m; Eiffel Tower (France) was on 2600 m. In 1927, the International Radio Telegraphic Convention held in Washington, allotted the band 200 - 545 metres and 1340 - 1875 metres for broadcasting use, with conditional use of 545 - 1340 metres if no interference caused. With the reduction in wavelengths available to broadcasters after the Washington Convention in 1927, the Geneva Plan, based on transmissions in 1925, had to be updated to cope with less available wavelengths and yet fit in more countries wanting to broadcast in Europe. To get agreement, established broadcasters had to give up some wavelengths and accept others.
The Brussels Plan was the result and took effect in January 1929.
The separation between MF stations is now 9 kHz up to 1000 kHz (300 metres), and 10 kHz separation above, rather than the uniform 10 kHz as in the Geneva Plan. This 9 kHz channel spacing remains today. (USA and Canada use 10 kHz multiples).
Interestingly, the Radio Times article (Vol. 21 No.274 Dec 28, 1928) uses the term "kilohertz", whereas the programme pages gives the station frequencies in kc.
The Plan also allocated new wavelengths for the Long Wave stations. The powerful German LW station at Zeesen is recorded as changing from 240 kHz to 182.5 kHz in October 1928, but the Radio Times only advertises 5XX changing on Armistice Day 1928. The BBC medium wave stations changed in January 1929, with the exclusive frequency 1040 kHz chosen for the majority of the relay stations.

Sun. November 11th 1928 : 5XX Daventry from 187 kHz to 192 kHz (1562.5 m)

Brussels Plan effective Sunday January 13th 1929

	Pre-Brussels	Post-Brussels	
2LO London	830 kHz	838 kHz	
5GB Daventry (Exp)	610 kHz	622 kHz	
2ZY Manchester	780 kHz	793 kHz	
5NO Newcastle	960 kHz	1230 kHz	
5WA Cardiff	850 kHz	928 kHz	
5SC Glasgow	740 kHz	748 kHz	
2BD Aberdeen	600 kHz	964 kHz	
6BM Bournemouth	920 kHz	1040 kHz	(Nat. Common Wave)
2BE Belfast	980 kHz	991 kHz	
6FL Sheffield (R)		1040 kHz	*
5PY Plymouth (R)	750 kHz	757 kHz	* (1040 kHz June 2 1929)
2EH Edinburgh (R)	1040 kHz	1040 kHz	
6LV Liverpool (R)		1040 kHz	*
2LS Leeds (R)		1150 kHz	
2LS Bradford (R)		1020 kHz	
6KH Hull (R)		1040 kHz	*
2DE Dundee (R)		1040 kHz	*
6ST Stoke (R)		1040 kHz	*

5SX Swansea (R)	1020 kHz	1020 kHz * (1040 kHz May 19 1929)
5XX Daventry	187 kHz	192 kHz

Relay stations (R) with frequencies shown as 1040 kHz * didn't transfer immediately to the National Common Frequency of 1040 kHz, but remained on their existing frequencies until single working frequency equipment had been installed. This enabled the carrier frequency of each relay to be kept very close to each other to reduce the effects of the interference at the extremes of the service area.
The Bournemouth 6BM Station now used the National Common Wave, as per Relay Stations.

The Prague Plan

The Geneva and Brussels Plans, were a result of the Technical Committee of the Union Internationale de Radiodiffusion. The Union represented about 80% of European stations when the 1926 Geneva Plan was agreed to, and the Brussels Plan of 1928 evolved from this to admit more countries and stations.
However, there was no legal obligation on the part of governments to adhere to the plans as the Union was only formed by broadcasters interested in mutual cooperation. The Czecho-Slovakian Government suggested a conference to remedy this.
The Prague Conference opened in April 4th 1929 with a meeting of all interested governments who sent their delegations of P.T.T. or Post Office officials.
On April 13th 1929, representatives of twenty seven European administrations signed the Protocol, to agree to the partition of wavelengths as established. Thus the plan included most European broadcasting authorities and was required to be binding on the part of each station. The Plan provided for up to 200 stations with a total power of around 600 kW. The BBC stations had an advertised total power of about 70 kW in 1928, but in the next few years the high power Regional stations would greatly increase this figure.
Success of the Plan required constancy of frequencies and the Union's monitoring station in Brussels checked each country's wavelengths. The Plan became effective June 30th 1929. As in the Brussels Plan, there is 9 kHz separation on M.F. but now extended up to 1400 kHz with 10 kHz separation above this. At the longer wavelengths certain stations were permitted to use the range 545 metres to 1340 metres, (outside the Washington bands) provided no interference was caused. Some U.S.S.R. stations were offset by 4.5 kHz from Western European stations.
The BBC was again allocated 9 exclusive MW frequencies and 1 LW frequency, and utilised one of these for a National Common Wave.
For a listing of the Plan see the Appendix

Prague Plan effective Sunday June 30th 1929

	Pre Prague	Post Prague	
2LO London	838 kHz	842 kHz	(356.3 m)
5GB Daventry Exp	622 kHz	626 kHz	(479.2 m) *
2ZY Manchester	793 kHz	797 kHz	(376.4 m) *
5NO Newcastle	1230 kHz	1148 kHz	(261.3 m)
5WA Cardiff	928 kHz	968 kHz	(309.9 m)
5SC Glasgow	748 kHz	752 kHz	(398.9 m) *
2BD Aberdeen	964 kHz	995 kHz	(301.5 m)

6BM Bournemouth	1040 kHz	1040 kHz	(288.5 m)	(Nat. Com Wave)
2BE Belfast	991 kHz	1238 kHz	(242.3 m)	
6FL Sheffield (R)	1040 kHz	1040 kHz	(288.5 m)	
5PY Plymouth (R)	1040 kHz	1040 kHz	(288.5 m)	
2EH Edinburgh (R)	1040 kHz	1040 kHz	(288.5 m)	
6LV Liverpool (R)	1040 kHz	1040 kHz	(288.5 m)	
2LS Leeds (R)	1160 kHz	1500 kHz	(200.0 m)	(Not exclusive)
2LS Bradford (R)	1020 kHz	1040 kHz	(288.5 m)	
6KH Hull (R)	1040 kHz	1040 kHz	(288.5 m)	
2DE Dundee (R)	1040 kHz	1040 kHz	(288.5 m)	
6ST Stoke (R)	1040 kHz	1040 kHz	(288.5 m)	
5SX Swansea (R)	1040 kHz	1040 kHz	(288.5 m)	
5XX Daventry	192 kHz	193 kHz	(1554.4 m)	

The exclusive frequencies * in the plan are not necessarily required to be used by the allocated transmitter, as by definition, it doesn't interfere directly with another country. The frequencies allocated to Daventry 5GB, Manchester and Glasgow were originally intended by the BBC to be 752 kHz, 626 kHz and 797 kHz respectively, and as such printed in the Radio Times up to July 6th with these values. However, the BBC didn't make the change until April 12th 1931, and the actual frequencies used after June 30th for these stations, are close to their former Pre-Prague values as shown above. The German station at Langenberg working on 635 kHz was thought likely to give night time interference to 5GB on 626 kHz. The Leeds frequency of 1500 kHz is a free one and not used by others. The shorter wavelength is suited to a local low power service.
International Common Waves are shared among countries for low power stations.

London Regional Station - Brookmans Park
This was the first twin-wave station housed in one building.
The Brookmans Park estate in Hertfordshire, comprised a flat stretch of land beside the Great North Road, near to a high quality P.O. music circuit. It had to be close enough to central London, (where the Oxford Street transmitter was situated), so that insensitive receivers were still satisfactory. The aerials for the two programme services were each supported on a pair of 200 foot self-supporting lattice towers. Air Ministry regulations didn't permit higher towers. The longer wavelength service to be radiated with a power of 30 kW.

Mon. October 21st 1929 : 2LO - BROOKMANS PARK 842 kHz 30 kW
(Oxford Street Selfridges station closed)
After a few months of single programme working, with time for some readjustment to unselective receivers, the BBC introduced the alternative programme on the second transmitter working on 1148 kHz, (ex Newcastle). Simple crystal sets near to the transmitter, probably had difficulty separating the two stations easily.

1930 to 1939

NATIONAL PROGRAMME introduced and station call signs dropped from Radio Times billing from March 9th 1930 to be replaced by National and Regional labels.

Sun. March 9th 1930 : National Prog. BROOKMANS PARK 1148 kHz 45 kW
National Prog. Daventry Long Wave 193 kHz

Newcastle frequency change from 1148 kHz to 1040 kHz (National Common Wave)

Sun. March 9th 1930 : London Regional Brookmans Park 842 kHz (2LO)
Midland Regional Daventry 626 kHz (5GB).

Until other regions had their own alternative transmitter, for the National Programme, "National" items would also be broadcast on their local programme. Bournemouth was advertised as carrying the National programme at times, from March 31st 1930. The programmes for Cardiff were advertised as Cardiff Western Region, in the Radio Times from July 18th 1930.

Baird Television System

The 30 line experimental system in vision only, was inaugurated on Sept 30th 1929 from 2LO (Selfridges) on 842 kHz. Reception was reported as far as Bradford during October. After Brookmans Park opened with the second transmitter, vision and sound from Baird's London studio in Long Acre was radiated simultaneously on 1148 kHz and 842 kHz respectively on March 31st 1930. (The Radio Times first gives a regular billing for Vision and Speech on April 14th 1930). By 1934 with the studio at Broadcasting House, the Vision came from London on 1149 kHz (261.1 m) with the Sound on 767 kHz (391.1 m) from Midland Regional at Daventry.

Frequency Changes

Sun. April 12th 1931 : Midland Regional freq. from 626 kHz to 752 kHz
Manchester frequency from 797 kHz to 626 kHz
Glasgow frequency from 752 kHz to 797 kHz

North Regional Station - Moorside Edge

Sited five miles west of Huddersfield, and near to Slaithwaite at a height of 1100 feet above sea level, the North Regional Transmitting Station opened with the North Regional Programme in May 1931. Its design is similar to Brookmans Park, but having no Air Ministry restrictions, the aerials are supported on three 500 foot stayed masts, instead of towers. The second transmitter on 995 kHz (ex Aberdeen) opened July 1931, with the National Programme.

Sun. May 17th 1931 : North Regional MOORSIDE EDGE 626 kHz 30 kW

Sun. May 17th 1931 : Closure of Manchester (Main), and Sheffield,
Liverpool, Leeds, Bradford, Hull and Stoke Relays.

Sun. July 12th 1931 : National Prog. MOORSIDE EDGE 995 kHz

Sun. July 12th 1931 : Aberdeen frequency change from 995 kHz to
National Common Wave 1040 kHz

Scottish Regional Station - Westerglen

This is sited at Westerglen, south of Falkirk alongside the B803 road to Slamannan. Opened with the Scottish Regional Programme in June 1932, and the National Programme in September 1932.

Sun. June 12th 1932 : Scottish Regional WESTERGLEN 797 kHz
Sun. June 12th 1932 : Closure of Glasgow (Main), and Edinburgh and Dundee Relays.

Sun. September 25th 1932 : National Prog. WESTERGLEN 1040 kHz

The National Programme from Westerglen, was transmitted on a frequency of 1040 kHz, which had been used as a British Common Wavelength for most of the Relay stations and some of these had now closed; but Swansea and Plymouth, with Bournemouth, still used this value. Main stations Aberdeen and Newcastle were also on 1040 kHz at this time and so opening Westerglen National required more changes.
Sun. September 25th 1932 : Aberdeen frequency change : 1040 kHz to 1400 kHz
Newcastle frequency change : 1040 kHz to 1420 kHz
The Prague Plan had allocated 1400 kHz & 1420 kHz to Poland and Roumania respectively. Plymouth and Swansea followed as shown below on ICW's.
With four Regional high power stations now in use the frequencies became:

September 25th 1932

London Regional-Brookmans Park	842 kHz	50 kW	(843 kHz - Jan 8th 1933)
Midland Regional-Daventry	752 kHz	25 kW	
North Regional-Moorside Edge	626 kHz	50 kW	(625 kHz - Nov 27th 1932)
Scottish Regional-Westerglen	797 kHz	50 kW	
Cardiff	968 kHz	1 kW	
Newcastle	1420 kHz	1 kW	
Aberdeen	1400 kHz	1 kW	
Belfast	1238 kHz	1 kW	
Bournemouth	1040 kHz	1 kW	
Plymouth	1040 kHz	1 kW	(and 1373 kHz - Jan 8th 1933 then 1373 kHz - Feb 26th 1933)
Swansea	1040 kHz	1 kW	(1220 kHz - Nov 13th 1932)
London National-Brookmans Park	1148 kHz	50 kW	(1147 kHz - Nov 27th 1932)
North National-Moorside Edge	995 kHz	50 kW	
Scottish National-Westerglen	1040 kHz	50 kW	
Long Wave National-Daventry	193 kHz	30 kW	

Frequencies 1220 kHz and 1373 kHz are International Common Frequencies.
The BBC exclusive frequencies are: 626 kHz, 752 kHz, 797 kHz, 842 kHz, 968 kHz, 995 kHz, 1040 kHz, 1148 kHz, and 1238 kHz for MW; and 193 kHz for LW.
Later, 1 kHz adjustments were later made to the London National and Regional and North Regional frequencies to reduce the effects of foreign interference. London Regional, London National and North Regional on 843 kHz, 1147 kHz and 625 kHz respectively, now had 10 kHz separation from the German stations at Mühlacker, Stuttgart on 833 kHz, Leipzig on 1157 kHz, and Langenberg on 635 kHz.

The power rating of transmitters was decided by the C.C.I.R. at The Hague in 1929 based on the R.F. power to the aerial with the transmitter fully modulated. This Hague Power Rating was superseded by the Copenhagen Rating based on the supplied aerial power under carrier wave conditions together with a figure representing the maximum depth of modulation that the transmitter was capable of. The actual radiated power will depend on the efficiency of the aerial system.

West Regional Station - Washford

This is situated at Washford Cross on the A39 road, near to the Somerset coast.
It covers the West of England, and also South Wales over the Bristol Channel.
It opened in May 1933 on 968 kHz (the frequency used by Cardiff), and then in August 1933, it radiated the National Programme on the second transmitter.

Sun. May 28th 1933 : West Regional WASHFORD 968 kHz 50 kW
Sun. May 28th 1933 : Cardiff (Main)and Swansea Relay stations closed.
Sun. August 13th 1933 : National Prog. WASHFORD 1147 kHz 50 kW

The London National and West National were both on 1147 kHz, but carried the same programme. Synchronised working was necessary to prevent mush in the overlap areas; the frequencies were maintained to a common reference (< 0.2 Hz).
The power of both National transmitters was probably reduced from 50 kW as well.

Lucerne Plan

A conference was held in Madrid in September 1932, to reconsider the allocation of wavelengths among Aeronautical, Maritime, Telegraph & Telephone and Broadcast users. The detailed allocation for European broadcasters was later worked out at Lucerne in May/June 1933. Here thirty-five European countries sent representatives to allocate the 200 to 2000 metre band available to broadcasters. Unfortunately, with more stations catered for, sharing of wavelengths had to occur. There were some non-signatories as eight abstained, even though this Plan provided for 232 stations against the Prague Plan's 200 stations. The total power at entry had risen to 4000 kW.
The BBC only got four exclusive frequencies allocated, viz. 200 kHz, 767 kHz, 877 kHz (all for high power use) and 1474 kHz (British Common Wave limited to 5 kW). Non-exclusive frequencies were to be shared with established stations or ones to come into service or on International Common Frequencies with several low power stations. The BBC got an allocation of 10 MF and 1 LF apart from International Common Frequencies. The Long Wave 5XX power limit could now be up to 150 kW.
The Lucerne Plan became effective January 15th 1934. The Long Wave allocation of 200 kHz (Daventry) remained at this value for 54 years, until Droitwich changed to 198 kHz at the end of broadcasting on Sunday January 31st 1988.
Generally, the medium waveband frequencies were separated by 9 kHz, with minor exceptions of 10 kHz to reduce interference, e.g. Langenberg on 658 kHz and North Regional on 668 kHz; and Milan on 814 kHz with Scottish Regional on 804 kHz.
For exclusive wavelengths, the carrier frequency had to be within ± 50 Hz; and ± 10 Hz for shared frequencies.
For a listing of the Plan see the Appendix.

Lucerne Plan effective Monday January 15th 1934.

	Pre-Lucerne	Post-Lucerne		
London Regional-Brookmans Park	843 kHz	877 kHz	(342.1 m)	50 kW
Midland Regional-Daventry	752 kHz	767 kHz	(391.1 m)	25 kW
West Regional-Washford	968 kHz	977 kHz	(307.1 m)	50 kW
North Regional-Moorside Edge	625 kHz	668 kHz	(449.1 m)	50 kW
Scottish Regional-Westerglen	797 kHz	804 kHz	(373.1 m)	50 kW
Newcastle	1420 kHz	1429 kHz	(209.9 m)	1 kW
Aberdeen	1400 kHz	1285 kHz	(233.5 m)	1 kW
Belfast	1238 kHz	1122 kHz	(267.4 m)	1 kW
Bournemouth	1040 kHz	1474 kHz	(203.5 m)	1 kW
Plymouth	1373 kHz	1474 kHz	(203.5 m)	0.3 kW
London National-Brookmans Park	1147 kHz	1149 kHz	(261.1 m)	50 kW
West National-Washford	1147 kHz	1149 kHz	(261.1 m)	50 kW
North National-Moorside Edge	995 kHz	1013 kHz	(296.1 m)	50 kW
Scottish National-Westerglen	1040 kHz	1050 kHz	(285.7 m)	50 kW
LW National-Daventry	193 kHz	200 kHz	(1500 m)	30 kW

Aberdeen was allocated the International Common Frequency 1348 kHz, but the BBC was allowed temporary use of 1285 kHz, allocated to Belgium and Greece. Bournemouth was allocated 1050 kHz, but used the British Common Wave of 1474 kHz. Newcastle used an International Common Wave. The powers of the London and West Nationals may have been reduced to give each a service area with less mush.

Midland Regional Station - Droitwich

This was a replacement for both Daventry transmitters, known earlier as 5XX and 5GB. The Droitwich site is at Wychbold on the A38 road. It is closer to Birmingham than the Daventry site. The Long Wave service commenced in October 1934, taking the 200 kHz frequency from Daventry. The aerial power was 150 kW, and was designed to have a wider bandwidth than 5XX, giving higher audio quality.
The Medium Wave service, on 1013 kHz (ex North National Frequency), commenced in February 1935 with an aerial power of 50 kW. The Daventry station then ceased normal domestic transmissions until the Third programme in March 1950.

Sun. October 7th 1934 :	LW National Prog - DROITWICH 200 kHz 150 kW
Sun. October 7th 1934 :	Closure of Daventry LW (5XX) on 200 kHz.
Sun. February 17th 1935 :	Midland Regional - DROITWICH 1013 kHz 50 kW
Sun. February 17th 1935 :	Closure of Daventry MW (5GB) on 767 kHz

Sun. February 17th 1935 :

North National frequency change : 1013 kHz to 1149 kHz
Scottish Regional frequency change : 804 kHz to 767 kHz
West Regional frequency change : 977 kHz to 804 kHz
Belfast N. Ireland frequency change : 1122 kHz to 977 kHz
Newcastle frequency change : 1429 kHz to 1122 kHz.

After this swapping, Newcastle was now on the higher power frequency of 1122 kHz, instead of an International Common one.
The North National now shared 1149 kHz with Washford and Brookmans Park. This synchronised working of these three National stations required them to radiate with less power than 50 kW to ensure that at each service area's limit the wanted signal was no less than three times the strength of the other two combined. This

required a reduction to 20 kW. This of course reduces the service area of each transmitter from what it could be with a separate frequency and a higher power. The Westerglen Scottish National maintained 50 kW on its own 1050 kHz.. There was speculation that the 150 kW long wave National might now be of sufficient signal strength to close down the three medium wave National stations in England. From January 4th 1935, Radio Times billed the London Regional programme as Regional. From January 6th, the Belfast programme was known as Northern Ireland.

N. Ireland Regional Station - Lisnagarvey

The site would ideally be at the geographical centre of the region, but unfortunately would be too far from Belfast and Londonderry for a good service. A site near Lisburn was eventually chosen to cover Belfast and other towns, but Londonderry couldn't be well covered. The station opened in March 1936, with single service on 977 kHz. The power, advertised in 1937, was 100 kW. The aerial was a mast radiator with novel features, such as a "capacity hat" with inductance, and sliding topmast. The vertical polar radiation could be modified to give low angle radiation, and thus extending the non-fading service area.

Fri. March 20th 1936 :N. Ireland Regional - LISNAGARVEY 977 kHz 100 kW
Fri. March 20th 1936 : Closure of Belfast station (2BE).

Scottish Regional Station - Burghead

This station, situated at Burghead near Elgin, improved the Scottish Regional coverage for populated areas in the North of Scotland. It opened in October 1936, on the same frequency as Westerglen, 767 kHz with 60 kW. The two stations were locked by sending a sub-multiple of the Westerglen carrier frequency as a tone on a telephone link, and then using it to control the Burghead carrier.

Mon. October 12th 1936 : Scottish Regional - BURGHEAD 767 kHz 60 kW

The stations from October 12th 1936 now had frequencies:

Regional-Brookmans Park	877 kHz	(342.1 m)	
Midland Regional-Droitwich	1013 kHz	(296.1 m)	
West Regional-Washford	804 kHz	(373.1 m)	
North Regional-Moorside Edge	668 kHz	(449.1 m)	
Scottish Regional-Westerglen	767 kHz	(391.1 m)	
Scottish Regional-Burghead	767 kHz	(391.1 m)	
Newcastle	1122 kHz	(267.4 m)	
Aberdeen	1285 kHz	(233.5 m)	
N. Ireland-Lisnagarvey	977 kHz	(307.1 m)	
Bournemouth	1474 kHz	(203.5 m)	(Nat Common Wave)
Plymouth	1474 kHz	(203.5 m)	(Nat Common Wave)
London National-Brookmans Park	1149 kHz	(261.1 m)	
West National-Washford	1149 kHz	(261.1 m)	
North National-Moorside Edge	1149 kHz	(261.1 m)	
Scottish National-Westerglen	1050 kHz	(285.7 m)	
LW National-Droitwich	200 kHz	(1500 m)	

Up to now the West Regional transmitter had to serve both West of England and Wales. The West Region headquarters were in Cardiff and it was decided to have a separate programme for Wales. A new transmitter in North Wales was built at Penmon in Anglesey. This operated on 804 kHz in synchronism with Washford. When this opened in February 1937, the programme in this region became known as West and Wales, instead of West Regional.

Mon. February 1st 1937 : West and Wales - PENMON 804 kHz 5 kW

Stations from February 1st 1937

London-Brookmans Park	877 kHz	70 kW	
Midland-Droitwich	1013 kHz	70 kW	
West and Wales-Washford	804 kHz	70 kW	
West and Wales-Penmon	804 kHz	5 kW	
North-Moorside Edge	668 kHz	70 kW	
Scottish-Westerglen	767 kHz	70 kW	
Scottish-Burghead	767 kHz	60 kW	
Newcastle	1122 kHz	1 kW	
Aberdeen	1285 kHz	1 kW	(temporary use)
N. Ireland-Lisnagarvey	977 kHz	100 kW	
Bournemouth (Regional)	1474 kHz	1 kW	(Nat Common Wave)
Plymouth (Regional)	1474 kHz	0.3 kW	(Nat Common Wave)
National-Brookmans Park	1149 kHz	20 kW	
National-Washford	1149 kHz	20 kW	
National-Moorside Edge	1149 kHz	20 kW	
National-Westerglen	1050 kHz	50 kW	
National-Droitwich	200 kHz	150 kW	

In July 1937 it was decided to have a separate Welsh programme to be radiated by the Washford and Penmon transmitters. The Washford National transmitter was altered to radiate the West Regional programme on 1050 kHz, (used by Westerglen National). Westerglen National was now radiated with the other “Nationals” on 1149 kHz. The West Regional was now on the shorter wavelength of 285.7 m (previously 373.1 m).

Stations from Sunday July 4th 1937.

London-Brookmans Park	877 kHz	70 kW	
Midland-Droitwich	1013 kHz	70 kW	
West-Washford	1050 kHz	50 kW	
Wales-Washford	804 kHz	70 kW	
Wales-Penmon	804 kHz	5 kW	
North-Moorside Edge	668 kHz	70 kW	
Scottish-Westerglen	767 kHz	70 kW	
Scottish-Burghead	767 kHz	60 kW	
Newcastle	1122 kHz	1 kW	
Aberdeen	1285 kHz	1 kW	(temporary use)
N. Ireland-Lisnagarvey	977 kHz	100 kW	
Bournemouth (Regional)	1474 kHz	1 kW	(Nat Common Wave)
Plymouth (Regional)	1474 kHz	0.3 kW	(Nat Common Wave)
National-Brookmans Park	1149 kHz	20 kW	

National-Moorside Edge	1149 kHz	20 kW
National-Westerglen	1149 kHz	50 kW
National-Droitwich	200 kHz	150 kW

Although the West Region had lost its medium wave National programme on 1149 kHz, the West programme from Washford carried items of National programme up to 5 or 6 p.m. The Droitwich long wave station now provided the main National transmission for this region. With interference reduced by closure of Washford National, the other two Nationals stations in England at Brookmans Park and Moorside Edge later raised their power to 40 kW each.

In October 1937,the Newcastle transmitter of 1 kW was replaced by a higher power station, sited north of Hexham, a few miles to the west of Newcastle-upon-Tyne. This transmitter at Beukley was called Stagshaw, after a local area, and radiated the "Stagshaw" programme on 1122 kHz (the Newcastle frequency).

Tues. October 19th 1937 :	Stagshaw - STAGSHAW 1122 kHz 60 kW
Tues. October 19th 1937 :	Closure of Newcastle (5NO)

On September 9th 1938 Aberdeen was replaced by Redmoss on the same frequency.

The 50 kW West-Washford service on 1050 kHz was replaced in June 1939 by a more powerful station of 100 kW on the same wavelength at Start Point on the Devon coast, south of Dartmouth. A second transmitter was opened at Clevedon, west of Bristol, and radiated the West programme on 1474 kHz at 20 kW. This frequency was previously used by Bournemouth and Plymouth stations as a National Common Wave with a station limit of 5 kW, but now used for the one high power station of 20 kW. Bournemouth and Plymouth stations were closed.

Wed. June 14th 1939 :	West - START POINT 1050 kHz 100 kW
Wed. June 14th 1939 :	Closure of West - Washford on 1050 kHz
Wed. June 14th 1939 :	West - CLEVEDON 1474 kHz 20 kW
Wed. June 14th 1939 :	Closure of Bournemouth (6BM) on 1474 kHz
	Closure of Plymouth (5PY) on 1474 kHz

<u>June 14th 1939</u>

London-Brookmans Park	877 kHz	(342.1 m)	70 kW
Midland-Droitwich	1013 kHz	(296.1 m)	70 kW
West-Start Point	1050 kHz	(285.7 m)	100 kW
West-Clevedon	1474 kHz	(203.5 m)	20 kW
Wales-Washford	804 kHz	(373.1 m)	70 kW
Wales-Penmon	804 kHz	(373.1 m)	5 kW
North-Moorside Edge	668 kHz	(449.1 m)	70 kW
Scottish-Westerglen	767 kHz	(391.1 m)	70 kW
Scottish-Burghead	767 kHz	(391.1 m)	60 kW
Stagshaw-Stagshaw	1122 kHz	(267.4 m)	60 kW
Redmoss-Aberdeen	1285 kHz	(233.5 m)	5 kW
N. Ireland-Lisnagarvey	977 kHz	(307.1 m)	100 kW
National-Brookmans Park	1149 kHz	(261.1 m)	40 kW

National-Moorside Edge	1149 kHz	(261.1 m)	40 kW
National-Westerglen	1149 kHz	(261.1 m)	50 kW
National-Droitwich	200 kHz	(1500 m)	150 kW

The BBC had high power stations on all its ten MW allocations given under the Lucerne Plan. Redmoss (Aberdeen) still used a temporary non-allocated frequency.

1939 to 1945

On Friday September 1st 1939, Great Britain mobilised its armed forces for possible war with Germany. The Alexandra Palace VHF transmitter was closed down.
Later in the day transmitting stations opened sealed orders, prepared over several months, which required them to retune transmitters and aerial systems to operate on one of two wavelengths. Listeners were advised that a BBC programme would then only be heard on 449.1 metres (668 kHz), and 391.1 metres (767 kHz) after the changes. These were the two longest BBC wavelengths used on medium wave.
The Regional and National programmes were combined into one national programme which was called the HOME SERVICE. By 8.15 p.m. this Service was broadcast on the two wavelengths. If the BBC had maintained its operation as before, there would have been the nine separate frequencies used for the Regional programmes, which could have enabled enemy aircraft to use them as a navigational aid. By using a synchronised group of several stations on one or other frequency, then it was difficult to separate out a single station for navigation until the aircraft were close to it. Before this position was reached, the station was closed down. Thus only one programme was radiated to prevent interference. The long wave National transmitter at Droitwich was also closed. Later in the evening, the 1149 kHz frequency was used to radiate a European Service which continued on 1149 kHz up to July 28th 1945.
On Sunday September 3rd the general public heard the Prime Minister's broadcast that Britain was now at war with Germany as from 11 a.m.
The Home Service was radiated on 668 kHz and 767 kHz up to July 28th 1945, with additional programmes and frequencies as below. In December 1939 the 877 kHz frequency was used for experimental programmes for the armed forces in the B.E.F.

Late 1939:	Droitwich radiating European Service on 1149 kHz using modified long wave transmitter to boost existing service.
January 7th 1940 :	New programme "For The Forces" radiated on 877 kHz from 6 p.m. to 12.15 a.m. (Home Service up to 6 p.m.)
February 18th 1940 :	"For The Forces" also carried on 804 kHz from 11 a.m. to 7 p.m. Outside these hours, 804 kHz used to give additional transmission of the European Service. (877 kHz then used from 6 p.m. to 11 p.m. to carry Forces programme).
February 25th 1940 :	"For The Forces" 11 a.m. to 8 p.m. on 804 kHz, then 8 p.m. to 11 p.m. on 877 kHz. Home Service on 877 kHz 11 p.m. to 12.15 a.m.
March 17th 1940 :	"For The Forces" 11 a.m. to 10 p.m. on 804 kHz, then 10 p.m. to 11 p.m. on 877 kHz. The Home Service on

	877 kHz 11 p.m. to 12.15 a.m. This arrangement until September 15th 1940; then Forces programme on 804 kHz only 6.15 a.m. to 11 p.m. until March 2nd 1941.
June 9th 1940 :	Home Service additionally radiated on 1013 kHz, up to January 26th 1941.
October 1940 :	European Service additionally radiated on 1050 kHz from Start Point.
November 1st 1940 :	Introduction in phases, of low power, local stations in major towns, all on 1474 kHz (ex Clevedon frequency) Known as Group H stations, they provided continuity of service, when a high power station was closed during air raids. Radiated the Home Service. To be used by local authorities in event of a German military invasion.
March 2nd 1941 :	"For The Forces" programme back on 877 kHz only 6.30 a.m. to 11 p.m. with synchronised group of transmitters.
June 1941 :	New 400 kW Droitwich transmitter on 1149 kHz for European Service.
Autumn 1941 :	European Service additionally transmitted on 200 kHz using Droitwich Long Wave and, two other synchronised LW transmitters at Daventry (old 5XX), and a new one at Brookmans Park.
March 8th 1942 :	"For the Forces" additionally radiated on 1013 kHz, 6.30 a.m. to 11 p.m.
February 1943 :	New station at Ottringham, near Hull, opened with capacity of four 200 kW transmitters, operating on medium and long wave. Potential to radiate one programme on 800 kW, or more programmes each of less power.
February 27th 1944 :	"For The Forces" programme on 877 kHz and 1013 kHz, renamed as "General Forces Programme".

It should be mentioned that as well as the existing Short Wave station at Daventry, additional permanent sites were built at Rampisham, Skelton and Woofferton. These radiated the Overseas and European Services on short wave, but the Home Service was also broadcast on the short wave band at times. Start Point, Clevedon and Lisnagarvey also had shortwave facilities installed to give diversity.

When American armed forces came to Europe, the BBC loaned two of its allocated wavelengths, 307 metres or 977 kHz (ex Lisnagarvey) and 267 metres or 1122 kHz (ex Stagshaw), to be used for broadcasting U.S. programmes from BBC sites. This

project was known as American Broadcasting Station in Europe (or ABSIE). These stations came on air in about May/June 1944. After June 6th (D-Day) the AEF programme for the Allied Expeditionary Force started. Transmissions used 1050 kHz and 583 kHz (514.6 metres) from Start Point. The 583 kHz frequency was still allocated to Latvia and Tunisia under the Lucerne Plan, but with the Latvia station out of action, the French had permitted the BBC to make use of the Tunisian allocation for the AEF programme to northern France.
After the war in Europe ended ABSIE came to an end on July 4th 1945, and the AEF programme closed on July 28th 1945. The two BBC high power frequencies 977 kHz and 1122 kHz were now used for the BBC European Services.
The high power East coast station at Ottringham carried the European Service from July 6th 1945 using 977 kHz. The other frequency of 1122 kHz also carried the European Service using the Diplomatic Wireless Station at Crowborough (Aspidistra) which the BBC had used in the war.
The General Forces Programme carried on after the end of the war, up until December 31st 1946. On January 1st 1947, the General Overseas Service began.

1945 to 1967

On July 29th 1945, the BBC returned to peacetime operation by restoring regional programmes in the form of six regional Home Services, and introducing another national service, the LIGHT PROGRAMME, following the "FORCES" format. Unfortunately 977 kHz and 1122 kHz were not for domestic use, and 1285 kHz, used pre-war for Aberdeen, was also unavailable. This meant that there was now only eight of the pre-war medium wavelengths to use, plus the long wave allocation of 1500 metres or 200 kHz. However, the BBC continued to use 583 kHz (514.6 m.) from Start Point after the AEF closed. Ottringham now had to give up 200 kHz as Droitwich required this frequency for the new Light programme. The European Service wanted to continue in the long wave band and so the BBC was then given 167 kHz (1796 m.) for the Ottringham long wave transmitter.
At the Lucerne Conference, Radio Paris was allocated 167 kHz but France insisted on keeping its pre-Lucerne value of 182 kHz (174 kHz up to 1933). Lahti (Finland) was allocated 262 kHz but then later used 166 kHz. At the war's end Lahti was required to share 160 kHz with Brasov (Romania).

Sun. July 29th 1945: LIGHT PROGRAMME introduced

	June 14th 1939	July 29th 1945
583 kHz	Latvia (Madona) 1934	West Home Service-Start Point
668 kHz	North-Moorside Edge	North Home Service-Moorside Edge
767 kHz	Scottish-Westerglen	Scottish Home Service-Westerglen
767 kHz	Scottish-Burghead	Scottish Home Service-Burghead
767 kHz		Scottish Home Service-Redmoss
804 kHz	Wales-Washford	Welsh Home Service-Washford
804 kHz	Wales-Penmon	Welsh Home Service-Penmon
877 kHz	London-Brookmans Park	London Home Service-Brookmans Park
977 kHz	N. Ireland-Lisnagarvey	European Service-Ottringham
1013 kHz	Midland-Droitwich	Midland Home Service-Droitwich
1050 kHz	West-Start Point	North Home Service-Stagshaw
1050 kHz		N. Ireland Home Service-Lisnagarvey

1122 kHz	Stagshaw-Stagshaw	European Service-Crowborough
1285 kHz	Aberdeen-Redmoss	
1474 kHz	West-Clevedon	West Home Service-Clevedon
1149 kHz	National-Brookmans Park	Light Programme-Brookmans Park
1149 kHz	National-Moorside Edge	Light Programme-Moorside Edge
1149 kHz	National-Westerglen	Light Programme-Westerglen
1149 kHz		Light Programme-Burghead
1149 kHz		Light Programme-Lisnagarvey
200 kHz	National-Droitwich	Light Programme-Droitwich
167 kHz	(used after July 1945)	European Service-Ottringham

Thus there are nine of the pre-war frequencies used (including 200 kHz), plus the one of 583 kHz. Unfortunately, Stagshaw (Newcastle area) and Lisnagarvey both shared 1050 kHz, and therefore generally carried the same programme if interference could occur. Low power transmitters on 1149 kHz (261.1 m) gave improved Light Programme service to Redruth, Redmoss, Newcastle and Londonderry. New higher power transmitters on 1149 kHz at Burghead and Lisnagarvey gave an alternative Light Programme signal to the north of Scotland and Northern Ireland, where the long wave coverage could be unsatisfactory.

On September 29th 1946, the BBC introduced the THIRD PROGRAMME to complete it's pattern for post war broadcasting. The European Service was required to surrender 977 kHz for use by Start Point and thus release 583 kHz (514.6 metres) for the main transmission of the Third Programme from Droitwich. With 120 kW of power on the longest medium wavelength the BBC used, it hoped to adequately cover an area of 100 miles radius around Droitwich, with low power stations on 1474 kHz (203.5 m) for larger towns not covered by the main transmission. The wavelength of 514.6 metres had been allocated to Latvia and Tunisia in 1933 and was still being used for the West Home Service when, in September 1946, Radio Latvia (Riga) under the U.S.S.R. began once again operating on this frequency with high power. Droitwich respected their legality by reducing its power to only about 25 kW for the main transmission of the Third Programme. Additional low power filler stations were thus required to radiate the Third Programme in certain areas using more of the old Group H stations on a frequency of 1474 kHz. A few listeners in London also had the benefit of an experimental frequency modulated transmission of the Third.

The Clevedon station was given 1384 kHz, which had been allocated to Albania and Poland in the Lucerne Plan.

Sun. September 29th 1946 :	THIRD PROG.- DROITWICH 583 kHz 25 kW also low power stations on 1474 kHz.
Sun. September 29th 1946 :	West Home Service - Start Point 977 kHz West Home Service - Clevedon 1384 kHz

At sometime, the medium wave transmitter at Ottringham also gave routine relief for the Crowborough 1122 kHz transmissions.
For completeness, the BBC made use of continental stations for its European Service on medium wave after losing 977 kHz. These were Norden (Germany) on 658 kHz from September 28th 1946 and also Graz-Dobl (Austria) on 886 kHz, both

frequencies allocated to these countries in pre-war days.

On the domestic front improved coverage was given to East Anglia with a station at Postwick (near Norwich) carrying the Midland Home Service on 1013 kHz. Bartley (near Southampton) opened to fill a coverage gap created when Start Point reduced its wavelength from 514.6 m. to 307.1 m. and carried West Home Service synchronised with Clevdon on 1384 kHz, for south Hampshire and Wiltshire. Wrexham relayed the Welsh Home Service for north Wales on 804 kHz. In Autumn 1946 a 500 ft. mast radiator was brought into use at Brookmans Park for the 877 kHz London Home Service to improve reception in Kent, Sussex , Suffolk and Hampshire.

Copenhagen Plan

In 1938 a conference in Cairo slightly increased the number of medium waves available for broadcasters, and this was followed by a European Broadcasting Conference at Montreux in 1939. A revision of the Lucerne Plan was agreed and due to become effective as the Montreux Plan in 1940. The War prevented this adoption. The War also stopped the next planned International Telecommunications Conference planned for Rome in 1942 and it didn't take place until 1947 in Atlantic City. The broadcasters share of the wavelengths changed again and thus a revision of the Lucerne Plan was agreed for European broadcasters at a conference held in Copenhagen in 1948. Provision was made for up to 620 medium and long wave stations using powers up to 20,000 kW. The channel spacing was kept generally at 9 kHz (some low power stations were slotted in between). The Third Programme's 1546 kHz was part of an 8 kHz spacing used at frequencies above 1538 kHz. This plan became effective 2.00 a.m. March 15th 1950. The BBC allocation was 11 MF + 1 LF and use of International Common Waves 1484 kHz (202 m.) and 1594 kHz (188 m.) for domestic use; and 2 MF allocations of 1295 kHz (232 m.) and 1340 kHz (224 m.) for European broadcasts. The powerful French station at Allouis now had 164 kHz and the BBC lost the use of 167 kHz for its European Service. The 658 kHz service from Norden also ceased.

Droitwich now increased the power to 400 kW on 1500 metres and the Third Programme was given an high power allocation on 434 metres (647 kHz).

Copenhagen Plan effective Wednesday March 15th 1950.

	Pre Copenhagen	Post Copenhagen
London Home Service-Brookmans Park	877 kHz	908 kHz (330.4 m)
Midlands Home Service-Droitwich	1013 kHz	1088 kHz (275.7 m)
Midlands Home Service-Postwick	1013 kHz	1088 kHz (275.7 m)
North Home Service-Moorside Edge	668 kHz	692 kHz (433.5 m)
North/N. Ireland Home S'vce-Stagshaw	1050 kHz	1151 kHz (260.6 m)
Welsh Home Service-Washford	804 kHz	881 kHz (340.5 m)
Welsh Home Service-Penmon	804 kHz	881 kHz (340.5 m)
Welsh Home Service-Wrexham	804 kHz	881 kHz (340.5 m)
West Home Service-Start Point	977 kHz	1052 kHz (285.2 m)
West Home Service-Clevedon	1384 kHz	1457 kHz (205.9 m)
West Home Service-Bartley	1384 kHz	1457 kHz (205.9 m)
Scottish Home Service-Westerglen	767 kHz	809 kHz (370.8 m)
Scottish Home Service-Burghead	767 kHz	809 kHz (370.8 m)
Scottish Home Service-Redmoss	767 kHz	809 kHz (370.8 m)

N. Ireland/Nth Home S'vce-Lisnagarvey	1050 kHz	1151 kHz (260.6 m)	
N. Ireland/Nth Home S'vce-Londonderry	1050 kHz	1151 kHz (260.6 m)	
Light Programme-Droitwich	200 kHz	200 kHz (1500 m)	400 kW
Light Programme-Brookmans Park	1149 kHz	1214 kHz (247.1 m)	
Light Programme-Moorside Edge	1149 kHz	1214 kHz (247.1 m)	
Light Programme-Westerglen	1149 kHz	1214 kHz (247.1 m)	
Light Programme-Burghead	1149 kHz	1214 kHz (247.1 m)	
Light Programme-Lisnagarvey	1149 kHz	1214 kHz (247.1 m)	
Light Programme-low power stations	1149 kHz	1214 kHz (247.1 m)	
Third Programme-Droitwich	583 kHz		
Third Programme-Daventry		647 kHz (463.7 m)	
Third Programme-low power stations	1474 kHz	1546 kHz (194.0 m)	
		647 kHz (463.7 m)	
European Service-Ottringham	167 kHz	1295 kHz (231.7 m)	
European Service-Crowborough	1122 kHz	1340 kHz (223.9 m)	

The Third Programme on 647 kHz now came from a temporary higher power transmitter (60 kW Ampliphase) at Daventry until April 8th 1951, when a new high power station with a mast radiator 2.3 km distant (at Dodford) took over.
The Stagshaw and Lisnagarvey transmitters still shared the same frequency of 1151 kHz, which meant a common programme content if interference occurred.
The Ottringham station closed in February 1953 and the BBC European Service was continued on 1295 kHz from the German station at Norden. The Graz-Dobl station continued under the Plan with a new frequency of 1025 kHz, ending transmission of the BBC programmes in 1955.

Sun. April 8th 1951 : Third Programme - DAVENTRY 647 kHz 150 kW

June 1st 1951 : Postmaster-General announced plans for 12 low power stations, to improve Home Service coverage. Projected as :
Barnstaple 1052 kHz West Home Service
Scarborough 1151 kHz North/N. Ireland Home Service
Bexhill 1457 kHz West Home Service
Folkestone 1457 kHz West Home Service
Brighton 1457 kHz West Home Service
Whitehaven 692 kHz North Home Service
Barrow 1484 kHz (ICW) North Home Service
Ramsgate 1484 kHz (ICW) London Home Service
Pwllheli 881 kHz Welsh Home Service
Cromer 908 kHz London Home Service
Montrose 1484 kHz (ICW) Scottish Home Service
Dumfries 809 kHz Scottish Home Service

Later references show that Pwllheli station isn't listed, it appears to have been replaced by one at Towyn (Tywyn), which can reach Pwllheli across Cardigan Bay.
The Montrose station isn't listed later, so may have been covered by Redmoss.
The Cromer station is listed later as having the frequency 692 kHz, rather than 908 kHz, and carrying the North Home Service.

Home Service Medium and High Power Stations at 1955

London-Brookmans Park	908 kHz	(330.4 m)	140 kW
Midlands-Droitwich	1088 kHz	(275.7 m)	150 kW
Midlands-Postwick	1088 kHz	(275.7 m)	7.5 kW
North-Moorside Edge	692 kHz	(433.5 m)	150 kW
North/N. Ireland-Stagshaw	1151 kHz	(260.6 m)	100 kW
Welsh-Washford	881 kHz	(340.5 m)	100 kW
Welsh-Penmon	881 kHz	(340.5 m)	8 kW
Welsh-Towyn (Tywyn)	881 kHz	(340.5 m)	5 kW
West-Start Point	1052 kHz	(285.2 m)	120 kW
West-Clevedon	1457 kHz	(205.9 m)	20 kW
West-Bartley	1457 kHz	(205.9 m)	10 kW
Scottish-Westerglen	809 kHz	(370.8 m)	100 kW
Scottish-Burghead	809 kHz	(370.8 m)	100 kW
Scottish-Redmoss	809 kHz	(370.8 m)	5 kW
N. Ireland/North-Lisnagarvey	1151 kHz	(260.6 m)	100 kW

Additional low power stations used the above frequencies and also the International Common Frequency of 1484 kHz (202.1 m.).

Light Programme Medium and High Power Stations at 1955

Droitwich	200 kHz	(1500 m)	400 kW
Brookmans Park	1214 kHz	(247.1 m)	60 kW
Moorside Edge	1214 kHz	(247.1 m)	58 kW
Westerglen	1214 kHz	(247.1 m)	50 kW
Burghead	1214 kHz	(247.1 m)	20 kW
Lisnagarvey	1214 kHz	(247.1 m)	10 kW

Additional low power stations all on 1214 kHz.

Third Programme High Power Station 1955

Daventry	647 kHz	(463.7 m)	150 kW

Additional low power stations all on 647 kHz (463.7 m.), and 1546 kHz (194 m.).

In 1948, the BBC carried out field trials at frequencies around 90 MHz, to assess the merits of VHF transmission using A.M. and F.M. as a future system of higher quality broadcasting. An F.M. system required more expensive receivers but was found superior in performance. This was adopted and the first VHF / FM station opened at Wrotham on Monday May 2nd 1955. Other stations followed covering the U.K. to transmit higher quality regional Home Services, Light Programme and Third Programme / Network Three in Band II.

Since July 1945, the Northern Ireland station at Lisnagarvey had been sharing its wavelength with the Stagshaw station near Newcastle. In late 1962, BBC use of the Norden station on 1295 kHz (231.7 m) ceased, and the Crowborough station continued the BBC European Service on this frequency and surrendered its own 1340 kHz to the domestic service, which was then used by Lisnagarvey and low power Londonderry from January 1963. Stagshaw and the 2 kW Scarborough station remained on 1151 kHz.

Mon. January 7th 1963 :N. Ireland Home Service - Lisnagarvey 1340 kHz (223.9 m.)
(with Londonderry)
(Stagshaw and Scarborough then radiated North Home Service only)

The BBC were now using 12 MF+1 LF+1MF (ICW), and the use of another 1 MF (ICW) for domestic purposes, and 1 MF for the European Service.

1967 to 1978

In the 1960's, pirate radio stations began to operate with mainly a fare of "pop"music, devoting more time to this type of music than the BBC could as part of its Light Programme schedule. The government brought in legislation to outlaw pirate stations within its jurisdiction, but allowed the BBC to start another radio network to accommodate a new younger audience. To transmit this new programme, the Light Programme was now radiated only on long wave and VHF / FM, and its medium wave stations carried the new network known as RADIO 1. However additional high power medium wave stations were now opened at Washford and Droitwich with reduction in power at Brookmans Park, Moorside Edge and Westerglen. More low power stations also built.

The Light Programme, Third Programme / Network Three and the Home Services were renamed RADIO 2, 3 and 4 respectively.

Sat. September 30th 1967 : Introduction of RADIO 1 on 1214 kHz (247 m)
Sat. September 30th 1967 : Light Programme renamed RADIO 2
(Long Wave only, but has VHF / FM coverage)

Sat. September 30th 1967 : Third Programme renamed RADIO 3

Sat. September 30th 1967 : Home Service renamed RADIO 4

Medium and High Power Stations after September 30th 1967

	Radio 1		Radio 4		
Brookmans Park	1214 kHz	35 kW	908 kHz	140 kW	London
Droitwich	1214 kHz	30 kW	1088 kHz	150 kW	Midland
Postwick			1088 kHz	7.5 kW	Midland
Moorside Edge	1214 kHz	35 kW	692 kHz	150 kW	North
Stagshaw			1151 kHz	100 kW	North
Washford	1214 kHz	60 kW	881 kHz	100 kW	Welsh
Penmon			881 kHz	10 kW	Welsh
Tywyn			881 kHz	5 kW	Welsh
Start Point			1052 kHz	100 kW	West
Clevedon			1457 kHz	20 kW	West
Bartley			1457 kHz	10 kW	West
Westerglen	1214 kHz	25 kW	809 kHz	100 kW	Scottish
Burghead	1214 kHz	20 kW	809 kHz	100 kW	Scottish

Redmoss			809 kHz	5 kW	Scottish
Lisnagarvey	1214 kHz	10 kW	1340 kHz	100 kW	N.Ireland
Low power	1214 kHz		Use above frequencies and also on 1484 kHz (ICW)		

	Radio 2		Radio 3	
Droitwich	200 kHz	400 kW		
Daventry			647 kHz	150 kW
Low power			647 kHz	and 1546 kHz

The European Service did also make use of frequencies such as 200 kHz outside UK programme hours and 809 kHz when it didn't interfere with Scottish R4.

In November 1967, BBC started local radio with Radio Leicester.

By 1969, Radio 2 had acquired low power stations on 1484 kHz 202 m. (ICW), sharing this with Radio 4 (Barrow & Ramsgate). Radio 3 low power stations also used the other International Common Frequency of 1594 kHz 188 m. in addition to 647 kHz & 1546 kHz. The Bournemouth Radio 3 on 1546 kHz changed to 1594 kHz, and Bournemouth now also transmitted Radio 1 on 1484 kHz.
In the 1970's, the radio networks were re-organized and Local Radio then carried the local news for English regions. The regional Home Services in England were replaced by an England National service and so the high power stations could use the same frequency if synchronised, so releasing other frequencies. The Droitwich frequency 1088 kHz was given to the External Service, and 1457 kHz was used for Radio London, Radio Birmingham and Radio Manchester. Stagshaw's 1151 kHz was allocated to Independent Local Radio in 1973, with BBC & ILR sharing of 1546 kHz.

Sat. September 2nd 1972 :

Droitwich frequency change :	1088 kHz to 1052 kHz
Postwick frequency change :	1088 kHz to 1052 kHz
Clevedon frequency change :	1457 kHz to 908 kHz
Bartley frequency change **:**	1457 kHz to 692 kHz
Crowborough (Ext Service) :	1088 kHz

Low power R4 stations on 1457 kHz i.e. Brighton, Folkestone, Bexhill and Redruth may have changed at this date as well. They are listed later as being on 692 kHz, 1052 kHz, 1052 kHz and 908 kHz respectively. Low power R3 stations on 1546 kHz were discontinued; some stations disappeared and others converted to 647 kHz.
It was found later that reception in Swindon of R4 England National was poorer after the changes, as the Droitwich and Start Point transmissions, now both on 1052 kHz, resulted in Swindon being a mush area. This was overcome by installing a low power 0.5 kW transmitter on 1340 kHz although already used by the high power Lisnagarvey station for R4 Northern Ireland.

In 1973 the BBC had to surrender the high power frequency allocation of 1151 kHz to enable Independent Local Radio (ILR) to develop a separate network of stations. Thus Stagshaw and Scarborough (low power) had to change frequency.

Sat. September 29th 1973 :

Stagshaw frequency change : 1151 kHz to 908 kHz
(Scarborough low power TX same change)

Medium and High Power Stations at 1975

	Radio 1		Radio 4		
Brookmans Park	1214 kHz	50 kW	908 kHz	140 kW	England
Droitwich	1214 kHz	30 kW	1052 kHz	150 kW	England
Postwick			1052 kHz	7.5 kW	England
Moorside Edge	1214 kHz	50 kW	692 kHz	300 kW	England
Stagshaw			908 kHz	100 kW	England
Washford	1214 kHz	60 kW	881 kHz	100 kW	Wales
Penmon			881 kHz	10 kW	Wales
Tywyn			881 kHz	5 kW	Wales
Start Point			1052 kHz	100 kW	England
Clevedon			908 kHz	20 kW	England
Bartley			692 kHz	10 kW	England
Westerglen	1214 kHz	40 kW	809 kHz	100 kW	Scotland
Burghead	1214 kHz	20 kW	809 kHz	100 kW	Scotland
Redmoss			809 kHz	5 kW	Scotland
Lisnagarvey	1214 kHz	10 kW	1340 kHz	100 kW	N. Ireland
Low power	1214 kHz		Above frequencies and also on		
Low power	1484 kHz	(ICW)	1457 kHz		South-West
Low power			683 kHz	854kHz	South-West
	Radio 2		Radio 3		
Droitwich	200 kHz	400 kW			
Low power	1484 kHz	(ICW)			
Daventry			647 kHz	150 kW	
Low power			647 kHz	1594 kHz (ICW)	

Radio 4 additionally used 683 kHz and 854 kHz, on low power. 1546 kHz now used in BBC Local Radio and ILR. Later, Radio 4 in Wales, Scotland and Northern Ireland became known as Radio Wales, Radio Scotland and Radio Ulster.

Main Local Radio stations : Radio London-Brookmans Park 1457 kHz 50 kW
Radio Birmingham 1457 kHz 10 kW
Radio Manchester 1457 kHz 5 kW
Radio Bristol 1546 kHz 2 kW

By 1977 low power local and Radio 4 stations also used more new frequencies not originally allocated, viz. 854 kHz, 719 kHz, 755 kHz, 1115 kHz, 1106 kHz, 1034 kHz, 1520 kHz, 998 kHz and 1502 kHz.

Geneva Plan

Since the last European frequency conference held in Copenhagen in 1948, the

number of transmitters had more than doubled and the power more than quadrupled. With interference now worse, especially at night, a new plan was needed. The International Telecommunications Union held two sessions, and the second session in Geneva in 1975, prepared the frequency assignment plan. The delegates to the conference were formally from each country's governments (as per Prague Plan etc). The plan was to cover if possible, foreseen requirements for the period 1978 to 1989. The channel spacing for Europe were kept at 9 kHz (which dates back to the Brussels Plan), but additionally, the MW carrier frequency values were now made to be integral multiples of 9 kHz. The LW carrier frequencies were set as (9L +2) kHz where L= 17 to 31. Thus Droitwich retained 200 kHz. The WARC 1979 removed the 2 kHz offset. Two German long wave stations were permitted to operate outside this restriction. Saarlouis (Felsberg) and Zehlendorf (Oranienburg) were both allocated 182 kHz but mutual interference later required operation 6 kHz apart, with Saarlouis on 185 kHz and Zehlendorf on 179 kHz. The WARC 1979 amending this to 183 kHz and 177 kHz respectively.
The Geneva Plan became effective November 23rd 1978.
The UK retained its present 13 MF +1LF allocation as per 1948, including External Service use, and the right to another long wave or low frequency on 227 kHz at medium power. Additional frequencies for low power expansion of the local radio network were also obtained. These UK allocations now had to be shared with Independent Local Radio, and not for sole BBC use as in the 1948 Plan. The changes to the MW carrier frequencies were only required to be 1 or 2 kHz.

Instead of the BBC using the (slightly changed) frequencies as before, it reappraised the frequencies used by each network. Radio 4 in Wales, Scotland and Northern Ireland was carried nationally as Radio Wales, Radio Scotland and Radio Ulster with one frequency for each; although Belfast and Londonderry also had local stations on a separate frequency. The English regionals had been replaced by an England National with regional programmes carried by the English local radio.
If Radio 4 now became UK national, then Wales, Scotland and Northern Ireland could carry more local programmes on Radio Wales, Radio Scotland and Radio Ulster, and these nations would still have access to a national Radio 4 for mainstream news and information. It was decided therefore to put Radio 4 national service onto the long waveband. This would release the 3 high power medium frequencies used in England. The 647 kHz frequency used up to now for the high power Radio 3 transmission, was estimated to suffer from considerable night time interference. This frequency, now 648 kHz, was suitable for directional European broadcasts. The External Service swapped 1089 kHz for 648 kHz and kept 1296 kHz (Copenhagen 1295 kHz).
Radio 3 then used the 1215 (1214) kHz network of Radio 1. Radio 3 was well covered by FM anyway. The 1089 kHz together with the 3 frequencies vacated by the English Radio 4, thus gave four high power frequencies for Radio 1 and Radio 2; each network using a pair of frequencies to cover the UK. The coverage of the UK with several transmitters on one frequency leads to the overlap areas having phasing problems, but the use of two frequencies to cover the country, as per Radio 1 and 2, can be used to increase the separation of regions sharing the same frequency. Thus Radio 1 used a distribution of 1053 kHz and 1089 kHz. Radio 2 used a distribution of 693 kHz and 909 kHz.
It was originally intended to improve long wave coverage in Scotland by using Burghead on 200 kHz with Droitwich, but with Westerglen on the new 227 kHz.

However, 227 kHz was also used by a powerful Polish station and interference was found to be excessive at darkness. In the event, Westerglen also used 200 kHz.
A significant aspect of the Droitwich 200 kHz transmission was that it was used as a frequency standard, its carrier frequency stabilised by reference to a rubidium vapour gas cell. Both Scottish long wave stations were equipped with similar atomic standards so as not to compromise the quality of the received frequency standard.
With Westerglen emissions now overlapping those of Droitwich and Burghead it was also necessary to provide automatic means of phase locking the carriers to freeze the standing wave pattern in the two overlap areas, which would otherwise move gradually with the very slow mutual carrier frequency drift, and then reduce minima distortion by timing of the modulation.
The Belfast low power station on 719 kHz was superseded by a 10 kW station at Lisnagarvey on 720 kHz to give Radio 4 coverage to Northern Ireland; Lisnagarvey also carrying Radio Ulster on 1341 kHz at 100 kW.

Geneva Plan effective Thursday November 23rd 1978.

Stations over 2 kW	Pre-Geneva			Post-Geneva		
Brookmans Park	908 kHz	140 kW	R4	909 kHz	140 kW	R2
Brookmans Park	1214 kHz	50 kW	R1	1215 kHz	50 kW	R3
Brookmans Park				1089 kHz	150 kW	R1
Droitwich	1052 kHz	150 kW	R4	1053 kHz	150 kW	R1
Droitwich	1214 kHz	30 kW	R1	1215 kHz	30 kW	R3
Droitwich				693 kHz	150 kW	R2
Droitwich	200 kHz	400 kW	R2	200 kHz	400 kW	R4 UK
Moorside Edge	692 kHz	300 kW	R4	909 kHz	100 kW	R2
Moorside Edge	1214 kHz	50 kW	R1	1215 kHz	50 kW	R3
Moorside Edge				1089 kHz	150 kW	R1
Stagshaw	908 kHz	100 kW	R4	693 kHz	50 kW	R2
Stagshaw				1053 kHz	50 kW	R1
Start Point	1052 kHz	100 kW	R4	1053 kHz	100 kW	R1
Clevedon	908 kHz	20 kW	R4	909 kHz	20 kW	R2
Bartley	692 kHz	10 kW	R4			
Postwick	1052 kHz	7.5 kW	R4	1053 kHz	10 kW	R1
Postwick				693 kHz	10 kW	R2
Washford	881 kHz	70 kW	R.Wales	882 kHz	70 kW	R.Wales
Washford	1214 kHz	60 kW	R1	1215 kHz	60 kW	R3
Washford				1089 kHz	50 kW	R1
Penmon	881 kHz	10 kW	R.Wales	882 kHz	10 kW	R.Wales
Tywyn	881 kHz	5 kW	R.Wales	882 kHz	5 kW	R.Wales
Westerglen	809 kHz	100 kW	R.Scotland	810 kHz	100 kW	R.Scotland
Westerglen	1214 kHz	40 kW	R1	1215 kHz	40 kW	R3
Westerglen				909 kHz	50 kW	R2
Westerglen				1089 kHz	50 kW	R1
Westerglen				200 kHz	50 kW	R4 UK
Burghead	809 kHz	100 kW	R.Scotland	810 kHz	100 kW	R.Scotland
Burghead	1214 kHz	20 kW	R1	1215 kHz	20 kW	R3
Burghead				693 kHz	50 kW	R2
Burghead				1053 kHz	20 kW	R1

Burghead				200 kHz	50 kW	R4 UK
Redmoss	809 kHz	5 kW	R.Scotland	810 kHz	5 kW	R.Scotland
Lisnagarvey	1340 kHz	100 kW	R.Ulster	1341 kHz	100 kW	R.Ulster
Lisnagarvey	1214 kHz	10 kW	R1	1215 kHz	10 kW	R3
Lisnagarvey				909 kHz	10 kW	R2
Lisnagarvey				1089 kHz	10 kW	R1
Lisnagarvey				720 kHz	10 kW	R4 UK
Daventry	647 kHz	150 kW	R3			
Crowborough				648 kHz	500 kW	WS
Crowborough	1295 kHz	500 kW	WS	1296 kHz	500 kW	WS
Crowborough	1088 kHz	500 kW	WS			

Bartley and Daventry were casualties of this new plan.

	Pre-Geneva			Post-Geneva		
Low Power	Above frequencies and:			Above frequencies and:		
	683 kHz	989 kHz	R4 S'West	1485 kHz		R1& R4 UK
	1457 kHz	755 kHz	R4 S'West	603 kHz	720 kHz	R4 UK
	854 kHz		R4 S'West	1449 kHz		R4 UK
	719 kHz		R4 NI	756 kHz	855 kHz	R4 S'West
	1484 kHz	(ICW)	R1 & R2	801 kHz	990 kHz	R4 S'West
	1594 kHz	(ICW)	R3	1458 kHz		R4 S'West
				1197 kHz		R3

Main Local Radio stations : Radio London-Brookmans Pk. 1458 kHz 206 m. 50 kW
Radio Birmingham 1458 kHz 206 m. 10 kW
Radio Manchester 1458 kHz 206 m. 5 kW
Radio Bristol 1548 kHz 194 m. 5 kW

The BBC are now using 13 frequencies in the medium waveband for powers of 5 kW and above, including local radio and Europe. The 1151 kHz frequency was revised to 1152 kHz for high power use for Independent Local Radio with sharing of 1548 kHz.

1978 to ?

When the IBA commenced Independent Local Radio in London in October 1973, the medium wave transmissions for Capital Radio and LBC on 1546 kHz and 1151 kHz were intended to commence from a high power station at Saffron Green northwest of London. Due to incompletion, a temporary transmitter at the London Transport power station at Lots Road (Chelsea) was used to start the services.
This temporary station on 0.5 kW, radiated Capital Radio on 557 kHz and LBC on 719 kHz until the permanent station opened.
Sometime after 1978 the long wave aerial at Droitwich suffered storm damage. Thus Radio 4 UK in England and Wales was confined to VHF and low power local MW, and television sound was used at times to augment the coverage.
The BBC decided later to provide a low power local station in central London to carry the long wave programme in the medium waveband. The Lots Road station was now used again to radiate Radio 4 UK (long wave service) on 720 kHz (416.6 m) 0.5 kW for the London area; a useful alternative if the long wave signal suffered electrical

interference. (Later this 720 kHz station was moved to the Crystal Palace TV station.)

When 648 kHz was transferred to the BBC External Service, Daventry ceased to transmit domestic programmes and the medium wave station was dismantled. The station continued to radiate the External Service on the short waveband; but this came to an end on Sunday March 29th 1992.

By 1981/2 the 648 kHz and 1296 kHz frequencies used by the External Services from the Foreign and Commonwealth Office station near Crowborough, had been transferred to a new station on the coast at Orfordness in Suffolk with 500 kW transmitters. The Crowborough station was no longer used.

From Monday February 1st 1988, the long waveband carrier frequency of 200 kHz was changed to 198 kHz (a multiple of 9 kHz), as required by agreement at the World Administrative Radio Conference (WARC) held in 1979.
The 200 kHz allocation had been used by the BBC since Monday January 15th 1934. (The 227 kHz frequency allocation now changed to 225 kHz)

In 1990, the BBC decided to introduce a fifth national radio network called RADIO 5, using the Radio 2 medium wave distribution. Radio 2 then on VHF / FM.

Mon. August 27th 1990 :	Radio 2 on VHF / FM only
Mon. August 27th 1990 :	Radio 5 on 693 kHz and 909 kHz

In 1992, the BBC gave its Radio 3 medium wave network to commercial use.

Fri. February 28th 1992 :	BBC final use of 1215 kHz and 1197 kHz for Radio 3 (1215 kHz and 1197 kHz for use by Virgin Radio)

The Brookmans Park 1458 kHz 50 kW station for BBC Radio London (GLR) was transferred to commercial use and now used for Sunrise Radio.

By 1994 Radio 1 had adequate coverage on VHF / FM, and the BBC gave up its use of the medium waveband for this programme.

Thu. June 30th 1994 :	BBC final use of 1053 kHz and 1089 kHz for Radio 1 (1053 kHz and 1089 kHz for use by Talk Radio)

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C. L. McCarthy (rev 6 May 2007)

APPENDIX

GENEVA EUROPEAN WAVELENGTH PLAN

(medium waveband)

(effective November 14th 1926**)**

Allocations to Countries

Band 600 m. to 200 m.

Frequency kc/s	**Wavelength metres**	**Country**	**Station**	**present w'length metres**	**present power kW**
510	588.2	Austria	Vienna ll	530	0.75
		Sweden	Linkoeping	467	0.25
		France	Grenoble P.T.T.	475	0.5
		Lithuania	Vilna	-	-
520	576.9	Spain	Madrid ll	392	1
		Sweden	Joenkoeping	265	0.025
		Germany	Freiburg	-	-
		Czecho-Slovakia	Uzhovod	-	-
530	566	Germany	Berlin l	562	1.5
		Finland	Mikkeli	561	0.1
		Sweden	Orebroe	237	0.25
		Spain	Saragossa	-	-
		Jugo-Slavia	Sarajevo	-	-
		Norway	Vardoe	-	-
		Holland	Bloemendaal	-	-
540	555.5	Hungary	Budapest	546	2
550	545.5	Sweden	Sundsvall	545	1
560	535.7	Germany	Munich	485	0.75 - 4
570	526.3	Latvia	Riga	480	1.2
580	517.2	Austria	Vienna	590	5
590	508.5	Belgium	Antwerp	-	-
600	500	Switzerland	Zurich	515	0.5
		Great Britain	***Swansea**	482	0.2
		Finland	Helsingfors ll	522	0.5
		Great Britain	***Dundee**	330.5	0.2
		Italy	Palermo	-	-
		Norway	Tromsoe	-	-
		Sweden	Karlstad	-	-
		France	Bourges	-	-
610	491.8	**Great Britain**	**Aberdeen**	496	1.5
620	483.9	Germany	Berlin	505	4
630	476.2	France	Lyons P.T.T.	480	1
640	468.7	Germany	Elberfeld	259	0.75
650	461.5	Roumania	Jassy	?	?
		Norway	Bergen	350	1
660	454.5	Sweden	Boden	?	?
670	447.7	France	Paris P.T.T.	458	0.5
680	441.2	Czecho-Slovakia	Brno	527	3
690	434.8	Spain	Bilbao	415	0.5
700	428.6	Germany	Hamburg	392.5	4
710	422.5	Italy	Rome	425	3
720	416.7	Sweden	Stockholm	427	1.5
730	410.9	Switzerland	Berne	435	1.5
740	405.4	**Great Britain**	**Glasgow**	422	1.5

750	400	France	Mont de Marsan	390	0.3
		Finland	Tampere	373	0.25
		Spain	Cadiz	355	0.5
		Great Britain	***Liverpool**	313	0.2
		Sweden	Falun	370	0.4
		Poland	Warsaw	-	-
		Czecho-Slovakia	Koszice	-	-
		Ireland	Cork	-	-
		Norway	Aalesund	-	-
		Belgium	Charleroi	-	-
		Germany	Bremen	?	?
760	394.7	Germany	Frankfurt	470	0.75 - 4
770	389.6	France	Toulouse Radio	430	2
780	384.6	**Great Britain**	***Belfast**	440	1.5
790	379.7	Germany	Stuttgart	446	0.75 - 4
800	375	Spain	Madrid	373	1.5
810	370.4	Norway	Oslo	382	1.5
820	365.8	Austria	Graz	397	0.75
830	361.4	**Great Britain**	**London**	363.5	3
840	357.1	Germany	Breslau	416	0.75 - 4
850	352.9	**Great Britain**	***Newcastle**	404.5	1.5
860	348.8	Czecho-Slovakia	Prague	365.5	5
870	344.8	Spain	Seville	357	0.5
880	340.9	France	Paris Petit Parisien	358	0.5
890	337.1	Denmark	Copenhagen	340	0.7
900	333.3	Italy	Naples	350	1
		Iceland	Reykjavik	-	-
910	329.7	Germany	Nürnberg	340	0.75 - 4
920	326.1	**Great Britain**	***Manchester**	378	1.5
930	322.6	Germany	Leipzig	452	0.75 - 4
940	319.1	Ireland	Dublin	390	1.5
950	315.8	Italy	Milan	320	1
960	312.5	**Great Britain**	***Bournemouth**	387	1.5
970	309.3	France	Marseilles P.T.T.	351	0.5
980	306.1	**Great Britain**	***Cardiff**	353	1.5
990	303	Germany	Münster	410	1.5
1000	300	Czecho-Slovakia	Bratislava	300	?
1010	297	France	Agen	318	0.25
		Great Britain	***Edinburgh**	324.5	0.5
		Germany	hanover	297	0.75
		Spain	Carthagena	330	0.5
		Norway	Eidsvold	?	0.05
		Finland	Jyvalskala	301.5	0.1
1020	294.1	Germany	Dresden	294	0.75
		Great Britain	***Hull**	335.5	0.2
		Great Britain	***Plymouth**	338	0.2
		Sweden	Trollhattan	345	0.25
		Spain	Bilbao	418	0.5
		Spain	Valencia	400	0.5
		Belgium	Liege	280	0.1
		Austria	Innsbrück	-	-
1030	291.3	France	Lyons Radio	280	1.5
1040	288.5	**Great Britain**	***Birmingham**	477.5	1.5
1050	285.7	Esthonia	Reval (Tallin)	350	?
1060	283	Germany	Dortmund	387	1.5
1070	280.4	Spain	Barcelona	324	2
1080	277.8	France	Caen	332	?
		Spain	Barcelona	462	1
		Great Britain	***Nottingham**	323.5	0.2
		Spain	Seville ll	300	0.5

		Finland	Hango	259.5	0.1
		Norway	Stavanger	-	-
		Austria	Salzburg	-	-
1090	275.2	France	Angers	275	0.25
		Great Britain	***Sheffield**	301	0.2
		Spain	Madrid lll	340	1
		Sweden	Eskilstuna	243	0.25
		Jugo-Slavia	Zagreb	-	-
		Belgium	Ghent	-	-
1100	272.7	Germany	Cassel	273	0.75
		Spain	San Sebastian	343	1.5
		Great Britain	***Leeds**	343.5	0.2
		Sweden	Norrkoping	260	0.25
		Austria	Klagenfurt	-	-
		Italy	Genoa	-	-
		Danzig	Danzig	-	-
		Norway	Christiansand	-	-
1110	270.2	Poland	Lemberg	-	1.5
1120	267.8	Portugal	Lisbon	-	-
1130	265.5	Belgium	Brussels	263	1.5
1140	263.1	Greece	Athens	-	-
1150	260.9	Sweden	Gothenburg	290	1
1160	258.6	Italy	Turin	-	-
1170	256.4	Holland	?	-	-
1180	254.2	**Great Britain**	***Bradford**	308	0.2
		Finland	Pori	255.3	0.1
		Germany	Kiel	233	0.75
		Spain	Malaga	-	-
		Italy	Venice	-	-
		Austria	Linz	-	-
		France	Rennes	-	-
1190	252.1	France	Montpellier	238	0.2
		Germany	Stettin	241	0.75
		Great Britain	***Stoke-on-Trent**	306	0.2
		Norway	Skien	?	-
		Belgium	Ostend	-	-
		Sweden	Umea	-	-
1200	250	Germany	Gleiwitz	251	0.75
		Finland	Oulu	233	0.1
		Portugal	Oporto	-	-
		France	Lille	-	-
1210	247.9	Poland	Posen	-	-
1220	245.9	France	Toulouse P.T.T.	260	0.5
1230	243.9	Norway	Trondjhem	?	1
1240	241.9	Germany	Königsberg	462	0.75 - 4
1250	240	Finland	Helsingfors I	318	?
1260	238.1	France	Bordeaux	-	-
1270	236.2	Roumania	Bucarest	-	-
1280	234.4	Poland	Vilna	-	-
1290	232.6	Holland	?	-	-
1300	230.8	Italy	Trieste	-	-
1310	229	Sweden	Malmoe	270	1
1320	227.3	Spain	Vigo	270	1
1330	225.6	Jugo-Slavia	Belgrade	-	-
1340	223.9	Russia	Leningrad (2)	?	?
1350	222.2	France	Strasbourg	-	-
1360	220.6	Russia	Odessa	-	-
1370	219	Lithuania	Kovno (3)	-	-
1380	217.4	Luxemburg	Luxemburg	-	-
1390	215.8	Bulgaria	Sofia	-	-
1400	214.3	Finland	Viborg	-	-

1410	212.8	Poland	Cracow	-	-
1420	211.3	Russia	Kiev	281.9	?
1430	209.8	Russia	Smolensk	-	-
1440	208.3	Albania	Tirana	-	-
1450	206.9	Russia	Minsk	-	-
1460	205.5	Roumania	Jassy	-	-
1470	204.1	Sweden	Gäfle	208	0.025 - 1
		Spain	Salamanca	-	-
		Germany	Speyer	-	-
1480	202.7	Sweden	Christianhamn	202	?
		Spain	Asturias	-	-
1490	201.3	Spain	Oviedo	-	-
		Sweden	Kariskrona	-	-
		Germany	Aix-la-Chapelle (Aachen)	-	-

Notes :

1) Helsingfors can repeat 375 m wavelength of Madrid.
2) Leningrad can repeat 434.8 m wavelength of Bilbao
3) Kovno can repeat 344.8 m wavelength of Seville.

* These wavelengths were allotted in the Geneva Plan. For subsequent modifications see page 250. *(refers to page 250 of the Radio Times, but see below)*

The above Plan is from the Radio Times for week August 6th 1926

BBC Stations

The nine exclusive waves to the British Broadcasting Company are allotted to each of the nine Main Stations, the remaining eleven Relay Stations having to use International Common Waves. By allowing Birmingham to share with Aberdeen (both Main Stations) the exclusive frequency of 1040 kc/s was then utilised as a National Common Wave for the bulk of the Relay Stations.
Only London, Glasgow and Aberdeen took up their specified wavelengths as shown above. The remaining British stations (shown with an asterisk) were allotted frequencies from the Company's allocation as shown in the main text.
The pre-Plan "present" BBC wavelengths don't always correspond to the rounded Radio Times values given for August 1926, but may refer to an earlier value, or be in error.

Country Allocation

The 99 available wavelengths for the medium waveband are distributed as 81 Exclusive Waves each to one station, the remaining 18 wavelengths are treated as 16 International Common Waves for multiple low power stations, and the remaining 2 are for two stations each (650 kc/s for Norway and Roumania, and 900 kc/s for Italy and Iceland).
International Common Waves are the frequencies :- 510, 520, 530, 600, 750, 1010, 1020, 1080, 1090, 1100, 1180, 1190, 1200, 1470, 1480, and 1490 kc/s.
The breakdown of exclusive allocations to each country is shown to be :- Albania 1, Austria 2, Belgium 2, Bulgaria 1, Czecho-Slovakia 3, Denmark 1, Esthonia 1, Finland 2, France 9, Germany 12, Great Britain 9, Greece 1, Holland 2, Hungary 1, Ireland 1, Italy 4, Jugo-Slavia 1, Latvia 1, Lithuania 1, Luxemburg 1, Norway 2, Poland 4, Portugal 1, Roumania 2, Russia (west) 5, Spain 5, Sweden 5, Switzerland 1.

PRAGUE CONVENTION EUROPEAN WAVELENGTH PLAN

(effective June 30th 1929)

Allocations to Countries

Band No. 1: 1,875 m. to 1,340 m.

Frequency kc/s	Wavelength metres	Country	Station
160	1875	Holland	Huizen
167	1796.4	Finland	Lahti
174	1724.1	France	Radio-Paris
183.5	1634.8	Germany	Zeesen
193	1554.4	**Great Britain**	**Daventry 5XX**
202.5	1481.5	U.S.S.R.	Moscow
207.5	1445.8	France & Aviation	Eiffel Tower
212.5	1411.7	Poland	Warsaw
217.5	1379.3	Aviation	-
222.5	1348.3	Sweden	Motala

Band outside Washington Convention 1927 (1,340 m. to 545 m.)

Frequency kc/s	Wavelength metres	Country	Station
230	1304.3	U.S.S.R.	Kharkov
250	1200	Turkey	Stamboul
		Iceland	Reykjavik
260	1153.8	Denmark	Kalundborg
280	1071.4	Norway	-
297	1010.1	Switzerland	Basle
320	937.5	U.S.S.R.	Moscow (C.C.S.P.)
364	824.2	U.S.S.R.	Moscow
375	800	U.S.S.R.	Kieff
385	779.2	U.S.S.R.	Petrozavodsk
395	759.5	Switzerland	Geneva
442	678.7	Switzerland	Lausanne
527	569.3	Germany	Freiburg
		Yugoslavia	Ljubljana
531.5	564.4	U.S.S.R.	Smolensk
536	559.7	Germany	Augsburg
		Germany	Hanover
545	550.5	Hungary	Budapest

Band No. 2: 545 m. to 200 m.

Frequency kc/s	Wavelength metres	Country	Station
554	541.5	Sweden	Sundsvall
563	532.8	Germany	Munich
572	524.5	Latvia	Riga
581	516.3	Austria	Vienna
585.5	512.4	U.S.S.R.	Archangel
590	508.5	Belgium	Brussels I
599	500.8	Italy	Milan
603.5	497.1	U.S.S.R.	Moscow
608	493.4	Norway	Oslo
617	486.2	Czechoslovakia	Prague I
621.5	482.7	U.S.S.R.	Gomel
626	479.2	**Great Britain**	**Daventry 5GB**
630.5	475.8	U.S.S.R.	Simferopol
635	472.4	Germany	Langenberg
644	465.8	France	Lyon-la-Doua
653	459.4	Switzerland	Zurich
662	453.2	International Common No. 1	
		Germany	Aachen
		Germany	Danzig
		Austria	Klagenfurt
		Finland	Tampere
		Italy	Bolzano
		Sweden	Upsala
		Norway	Porsgrund
		Norway	Tromso
		Norway	Alesund
		Spain	Salamanca
666.5	450.1	U.S.S.R.	Moscow S.P.
671	447.1	France	Paris P.T.T.
680	441.2	Italy	Rome
689	435.4	Sweden	Stockholm
		Sweden	Malmberget
698	429.8	Yugoslavia	Belgrade
702.5	427	U.S.S.R.	Kharkov
707	424.3	Spain	Madrid
716	419	Germany	Berlin I
725	413.8	Ireland	Dublin
729.5	411.2	U.S.S.R.	Odessa
734	408.7	Poland	Kattowitz
743	403.8	Switzerland	Berne
747.5	401.3	U.S.S.R.	Koursk
752	398.9	**Great Britain**	**Glasgow**
761	394.2	Roumania	Bucarest
770	389.6	Germany	Frankfurt
779	385.1	Poland	Vilna
		Italy	Genoa
783.5	382.9	U.S.S.R.	Dnepropetrovsk
788	380.7	France	Radio Toulouse
792.5	378.5	U.S.S.R.	Artemovsk
797	376.4	**Great Britain**	**Manchester**
806	372.2	Germany	Hamburg
810.5	370.1	U.S.S.R.	Tver
815	368.1	Spain	Seville
819.5	366.1	U.S.S.R.	Nikolaiev
824	364.1	Norway	Bergen

833	360.1	Germany	Stuttgart
842	356.3	**Great Britain**	**London**
851	352.5	Austria	Graz
855.5	350.7	U.S.S.R.	Leningrad
860	348.8	Spain	Barcelona (EAJ I)
		Spain	San Sebastian
869	345.2	France	Strasbourg
878	341.7	Czechoslovakia	Brunn
887	338.2	Belgium	Brussels II (temporarily used by Bremen, Germany)
891.5	336.5	U.S.S.R.	Ivan-Voznesensk
896	334.8	Poland	Posen
905	331.5	Italy	Naples
914	328.2	France	Montpellier
923	325	Germany	Gleiwitz
932	321.9	Sweden	Göteborg
941	318.8	Bulgaria	Sofia (temporarily used by Dresden, Germany)
950	315.8	France	Marseilles
959	312.8	Poland	Crawcow
968	309.9	**Great Britain**	**Cardiff**
977	307.1	Yugoslavia	Zagreb
986	304.3	France	Bordeaux-Lafayette
995	301.5	**Great Britain**	**Aberdeen**
1004	298.8	Holland	Hilversum
1013	296.2	Estonia	Tallinn
1022	293.5	France	Limoges
		Czechoslovakia	Kosice
1031	291.0	Finland	Viborg (Vupuri)
1040	288.5	**Great Britain**	**Bradford**
		Great Britain	**Bournemouth**
		Great Britain	**Dundee**
		Great Britain	**Edinburgh**
		Great Britain	**Hull**
		Great Britain	**Liverpool**
		Great Britain	**Plymouth**
		Great Britain	**Sheffield**
		Great Britain	**Stoke-on-Trent**
		Great Britain	**Swansea**
1049	286	France	Rheims
1058	283.5	Portugal	Temporarily used by :- Berlin Relay, Stettin, & Magdeburg, Germany. Innsbruck, Austria. Uddevalla, Sweden. Notodden, Norway.
1067	281.2	Denmark	Copenhagen
1076	278.8	Czechoslovakia	Bratislava
1085	276.5	Germany	Konisberg
1094	274.2	Italy	Turin
1103	272	France	Rennes
1112	269.8	Greece	Temporarily used by :- Kaiserlautern, Germany. Nörrkoping, Sweden. Hudiksvall Sweden.

			Trollhättan, Sweden.
1121	267.6	Spain	Barcelona (Radio Catalana)
1130	265.5	France	Lille
1139	263.4	Czechoslovakia	Moravská-Ostrava
1148	261.3	**Gt. Britain**	**Newcastle**
1157	259.3	Germany	Leipzig
1166	257.3	Sweden	Horby
1175	255.3	France	Toulouse P.T.T.
1184	253.4	Germany	Breslau
1193	251.5	Spain	Almena
1202	249.6	Czechoslovakia	Prague II
1211	247.7	Italy	Trieste
1220	245.9	International Common No. 2	
		Germany	Kiel
		Germany	Cassel
		Austria	Linz .
		Finland	Pietassari
		Finland	Turku (Abo)
		Sweden	Elskilstuna
		Sweden	Kalmar
		Sweden	Kiruna
		Sweden	Säffle
		Spain	Carthagena
1229	244.1	Albania (provisionally Poland)	-
1238	242.3	**Great Britain**	**Belfast**
1247	240.6	Norway	-
1256	238.8	Germany	Nuremburg
1265	237.1	Monaco-Nice-Corsica (shared)	
			(temporarily used by Orebro, Sweden)
1274	235.5	(Norway)	-
1283	233.8	Poland	Lodz
1292	232.2	Yugoslavia	-
1301	230.6	Sweden	Boras
		Sweden	Halsingborg
		Sweden	Malmo
		Sweden	Umea
1310	229	Spain	-
1319	227.4	Germany	Cologne
1328	225.9	Roumania	-
1337	224.4	Ireland	Cork
1346	222.9	Luxembourg	-
1355	221.4	Finland	Helsingfors
1364	219.9	France	-
1373	218.5	International Common No. 3	
		Germany	Flensburg
		Finland	Pori (Bjorneborg)
		Sweden	Karlstad
		Sweden	Ornsköldsvik
1382	217.1	International Common No. 4	-
1391	215.7	International Common No. 5	
		Sweden	Halmstad
1400	214.3	Poland	Warsaw II
1410	212.8	Italy	Palermo
1420	211.3	Roumania	Jassy
1430	209.8	Hungary	-
1440	208.3	Belgium	-
1450	206.9	International Common No. 6	-

1460	205.5	International Common No. 7	-
1470	204.1	International Common No. 8	
		Sweden	Gävle
1480	202.7	International Common No. 9	
		Sweden	Kristinehamn
1490	201.3	International Common No. 10	
		Sweden	Jönkoping
1500	200	Free	
		Great Britain	**Leeds**

The Conference has taken note of the existence of the station at Kaunas in Lithuania, which has used different wave-lengths for broadcasting between 155 kc/s (1935 metres) and 151 kc/s (1987 metres). This station having interfered with the mobile services carried out by Portishead (Great Britain) using the wave of 149 kc/s (2013 metres) situated in the band reserved exclusively for mobile services, the Conference has requested the Administration of Great Britain to get into touch with that of Lithuania, with a view to finding a wave-length for the Kaunas station which will not interfere with these mobile services.

This plan is reproduced from the B.B.C. Yearbook 1930

Notes :-

a) The Plan allots wavelengths to countries and not to specific stations except in a few cases. The national administration in each country will allocate wavelengths to their respective stations. The plan shown gives positions of stations as they have been notified since the inauguration of the Plan on June 30th 1929.

b) If no trouble is caused to third parties then modifications can be made if experience shows this to be advantageous.

c) The Prague Protocol requires " Transmitting stations shall be held to maintain a stability of emitted wave with all accuracy which technical means permit",

d) The International Radio Telegraphic Convention signed at Washington in 1927 allocated the band 200 - 545 metres and 1340 - 1875 metres for broadcasting use. The U.S.S.R. did not participate.
The 1928 Brussels Plan introduced the 9 kc/s spacing in the medium wave band up to a frequency of 1000 kc/s (300 m.). The Prague Plan (200 m. - 545 m.) extends this 9 kc/s channel spacing up to 1400 kc/s (214.3 m). The spacing is then 10 kc/s up to 1500 kc/s. (The BBC later shifted the frequencies of the future London Regional, North Regional and London National working on 842 kc/s, 626 kc/s and 1148 kc/s respectively, by 1 kc/s to ensure 10 kc/s separation from the German stations.

e) Some U.S.S.R. stations are offset by 4½ kc/s from western Europe

f) To provide some relief in the longer wavelengths, specific stations have been allowed use of the band 545 metres to 1340 metres by the Washington Convention, provided no interference is caused to other services. In particular these stations must not interfere with the distress signals on 500 kc/s (600 m.) and 333 kc/s (900 m.)

LUCERNE CONVENTION EUROPEAN WAVELENGTH PLAN

(effective January 15th 1934)

A. *GENERAL PROVISIONS*

1. The figure giving the actual power indicates, for each station, the power at the date of signature of the present Convention.
2. The stations using an identical frequency are indicated in the alphabetical order of their official names.
3. In the case where the maximum power is not indicated in the Plan, the non-modulated power measured in the aerial must not exceed the following values :-

(a) For frequencies below 300 kc/s (waves above 1,000m.)	150 kW [1]
(b) For frequencies between 550 and 1,100 kc/s (waves between 545 and 272.7 m.)	100 kW [2]
(c) For frequencies between 1,100 and 1,250 kc/s (waves between 272.7 and 240 m.)	60 kW
(d) For frequencies between 1,250 and 1,500 kc/s (waves between 240 and 200 m.)	30 kW

[1] For the station Moscow I, the maximum power admitted is 500 kW.
[2] For the following stations : Budapest, Leipzig, Paris PTT, Prague I, Rennes PTT, Toulouse PTT, Vienna, the maximum power admitted is 120 kW.

However, the power of stations mentioned in the Plan must not exceed the value which is necessary to ensure economically an efficient national service of good quality within the limits of the country in question.

4. On the other hand, the power of stations using common waves is limited as follows :-

(a) For National Common Waves	5 kW
(b) For International Common Waves Type 1	2 kW
(c) For International Common Waves Type 2	0.2 kW

5. In the case where the maximum power is indicated in the list of stations on the Plan, this power will be modified after agreement of the interested Administrations, if experience, supported by measurements, shows that this modification is useful or necessary. The modifications must be limited to the value which will allow the avoidance of interferences if it is a case of dimunition of power, or to the value shown in section 3 if it is a case of an increase of power.
6. The admissible tolerances for the frequency of stations are fixed as follows :-

(a) Stations using an exclusive frequency	± 50 cycles/sec.
(b) Stations using a shared frequency	± 10 cycles/sec.
(c) Stations using a national common frequency	± 50 cycles/sec.
(d) Stations using an international common frequency Type 1	±10 cycles/sec.
(e) Stations using an international common	

frequency Type 2 ± 50 cycles/sec.

However, a tolerance of ± 10 cycles/sec. is recommended for the frequency of stations mentioned under (a) and (c).

7. (a) A "shared wave" is a wave used by two or more stations specially named in the Plan.

(b) A "National Common Wave" is an exclusive or shared wave attributed to a country which that country may use for an unlimited number of synchronised stations.

(c) An "International Common Wave", Type 1, and an "International Common Wave",Type 2, are waves used by stations belonging to different countries and fulfilling the conditions laid down in Sections 4 and 6.

8. Frequencies mentioned in the Plan must only be used for a telephonic broadcasting service. A visual broadcasting service may be admitted on a frequency alloted to a station when this service does not cause any interference to the working of neighbouring stations.

9. In addition to the frequencies provided for stations of the contracting countries, the Plan also provides attributions of frequencies for stations of countries which are not signatories of the Lucerne Convention.

10. In conformity with the dispositions of Article 1, sec. 2, of the European Broadcasting Convention, modifications can be made to the Plan only under the conditions fixed in Article 5 of this Convention.

11. The final Protocol of the European Radio-electric Conference of Prague (1929) ceases to have effect on the date of the entry into force of the present Plan.

B. *LIST OF STATIONS*

Band No. 1: 150 to 300 kc/s (2,000 to 1,000m.).

Frequency kc/s	Wavelength metres	Station	Aerial Power kW		
			Present	Maximum by day	Maximum by night[1]
160	1875	Brasov (Romania)	1		
167	1796	Radio-Paris (France)	75		
		Syria (Syria)	0	20	20
175	1714	Moscow I (U.S.S.R.)	500		
183	1639	Ankara (Turkey)	7		
		Kaunas (Lithuania)	7	7	7
		Madrid I (Spain)	0		
		Reykjavik (Iceland)	16	30	30
191	1571	Königs Wusterhausen (Germany)	60		
200	1500	**Daventry (Droitwich) (Gt. Britain)**	30		
208	1442	Minsk (U.S.S.R.)	100		
216	1389	Motala (Sweden)	30		
223	1345	Huizen (Holland)	7		
		Kharkov (U.S.S.R.)	20		
230	1304	Warsaw (Poland)	120		
238	1261	Kalundborg (Denmark)	75	60	60
		Portugal (North)[2] (Portugal)	0	20	20
245	1224	Leningrad (U.S.S.R.)	100	100	100
253	1186	Oslo[3] (Norway)	60	60	60

262	1145	Lahti [4] (Finland)	40	150	60
271	1107	Moscow II (U.S.S.R.)	100	100	100

Notes :

[1] Applicable one hour after sunset at the transmitter.

[2] Must use a directional aerial towards the south and reduce the power during the night in case of interference with services not open to public correspondence of Spain and of France.

[3] Norway will do all that she can to reduce the field towards the south-east without diminishing the national service of Oslo.

[4] May use a power at night up to 150 kW if an aerial directed towards the north is installed.

Band No. 2: 300 to 500 kc/s (1,000 to 600m.).

Frequency kc/s	Wavelength metres	Station	Aerial Power kW		
			Present	Maximum by day	by night[1]
355	845	Finmark (Norway)	1	10	5
		Rostov-on Don (U.S.S.R.)	20	20	20
364	824	Smolensk (U.S.S.R.)	10	10	10
392	765	Ostersund (Sweden)	0.6	10	5
		Slovakia [2] Czechoslovakia)	0	30	15
401	748	Geneva [3] (Switzerland)	1.3	1.3	0.5
		Moscow III (U.S.S.R.)	100	100	50
413.5	726	Boden (Sweden)	0.6	10	5
		Voroneje (U.S.S.R.)	10	10	10
431	696	Oulu [4] (Finland)	2	5	1.5

Notes :

[1] Applicable one hour after sunset at the transmitter.

[2] Must use a directional aerial towards the east.

[3] Under the condition not to interfere with the services not open to public correspondence.

[4] Must use a directional aerial towards the north. The power may be increased if experience shows that trouble does not result to the maritime service.

Band No. 3: 500 to 1,500 kc/s (600 to 200m.).

Frequency kc/s	Wavelength metres	Station	Aerial Power kW		
			Present	Maximum by day	by night[1]
519	578.0	Hamar (Norway)	0.7	2	0.5
		Innsbruck [4 or 5] (Austria)	0	2	1
527	569.3	Ljubljana [11] (Yugoslavia)	5	5	5
		Tampere [2] (Finland)	1.2	1	1
		Finnish Common Wave	0.5	1	1

		(Finland)			
536	559.7	Bolzano [3] (Italy)	1	1	1
		Wilno [2] (Poland)	16	16	8
546	549.5	Budapest (Hungary)	18.5	120	120
556	539.6	Beromünster (Switzerland)	60		
565	531.0	Athlone (Irish Free State)	60		
		Palermo [9] (Italy)	3	3	3
		Italian Common Wave (Sicily) [9] (Italy)	0	3	3
574	522.6	Mühlacker (Germany)	60		
583	514.6	Madona (Latvia)	15		
		Tunis (Tunisia)	0		
592	506.8	Vienna (Austria)	120		
601	499.2	Athens (Greece)	0		
		Radio-Maroc (Morocco)	6.5		
		Sundsvall (Sweden)	10		
610	491.8	Florence (Italy)	20		
		Murmansk (U.S.S.R.)	10		
620	483.9	Brussels I (Belgium)	15		
		Cairo (Egypt)	0	20	20
629	476.9	Lisbon (Portugal)	0		
		Skoplje (Yugoslavia)	0		
		Trondheim (Norway)	1.2		
638	470.2	Prague I (Czechoslovakia)	120		
648	463.0	Lyons P.T.T. (France)	15		
		Petrozavodsk (U.S.S.R.)	10		
658	455.9	Langenberg (Germany)	60		
668	449.1	Jerusalem (Palestine)	0	20	20
		North Regional (Gt. Britain)	50		
677	443.1	Sottens (Switzerland)	25		
686	437.3	Belgrade (Yugoslavia)	2.5		
695	431.7	Paris P.T.T. (France)	7		
704	426.1	Stockholm (Sweden)	55		
713	420.8	Rome (Italy)	50		
722	415.5	Kiev (U.S.S.R.)	100		
731	410.4	Seville (Spain)	3		
		Tallinn (Estonia)	20		
740	405.4	Munich (Germany)	60		
749	400.5	Marseilles P.T.T. (France)	5		
		Viipuri (Finland)	13		
758	395.8	Katowice (Poland)	12		
767	391.1	**Midland Regional (Gt. Britain)**	25		
776	386.6	Stalino (U.S.S.R.)	10		
		Toulouse P.T.T. (France)	2		
785	382.2	Leipzig (Germany)	120		
795	377.4	Coruña (Santiago) (Spain)	0.5		
		Lwów (Poland)	16		
804	373.1	Salonica (Greece)	0	20	20
		Scottish Regional (Gt. Britain)	50		
814	368.6	Milan (Italy)	50		
823	364.5	Romania (Romania)	0		
832	360.6	Moscow IV (U.S.S.R.)	100		
841	356.7	Berlin (Germany)	1.5		
850	352.9	Bergen (Norway)	1		
		Norwegian Common Wave (Norway)	0.7		
		Sofia [6] (Bulgaria)	0		

		Valencia (Spain)	1.5	20	20
859	349.2	Simferopol (U.S.S.R.)	10		
		Strasbourg (France)	12		
868	345.6	Marrakesh (Morocco)	0	20	20
		Poznan (Poland)	1.7		
877	342.1	**London Regional (Gt. Britain)**	50		
886	338.6	Graz (Austria)	7		
895	335.2	France (Sth. Pyrenees) (France)	-	10	10
		Helsinki (Finland)	10		
904	331.9	Hamburg (Germany)	1.5		
		Spanish Morocco [2] (Spanish Morocco)	0		
913	328.6	Limoges P.T.T. (France)	0.5		
		Dniepropetrovsk (U.S.S.R.)	10		
922	325.4	Brno (Czechoslovakia)	32		
932	321.9	Brussels II (Belgium)	15		
941	318.8	Algiers (Algeria)	12		
		Göteborg (Sweden)	10		
950	315.8	Breslau (Germany)	60		
959	312.8	France (Paris Region) (France)	-		
		Gomel (U.S.S.R.)	1.2		
968	309.9	Grenoble (France)	20	20	20
		Odessa (U.S.S.R.)	10		
		Oukhta (or Tiraspol) (U.S.S.R.)	2		
977	307.1	Haifa (Palestine)	0	5	5
		West Regional (Gt. Britain)	50		
986	304.3	Genoa (Italy)	10		
		Torun or Cracow (Poland)	2 or 1.7		
995	301.5	Hilversum (Holland)	20		
1004	298.8	Bratislava (Czechoslovakia)	13.5		
1013	296.2	**North National (Gt. Britain)**	50		
		Tchernigov (U.S.S.R.)	10		
1022	293.5	Madrid II (Spain)	3		
1031	291.0	Heilsberg (Germany)	60		
		Portugal (South) (Portugal)	0		
1040	288.5	Leningrad II (U.S.S.R.)	10		
		Rennes P.T.T. (France)	2.5		
		Syria (Syria)	0	20	20
1050	285.7	**Bournemouth (Gt. Britain)**	1		
		Krasnodar (U.S.S.R.)	10		
		Scottish National (Gt. Britain)	50		
1059	283.3	Bari (Italy)	20		
1068	280.9	Tiraspol (or Odessa) (U.S.S.R.)	10		
1077	278.6	Bordeaux P.T.T. (France)	12		
1086	276.2	Falun (Sweden)	2		
		Zagreb (Yugoslavia)	0.7		
1095	274.0	Barcelona (Spain)	7		
		Vinnitsa (U.S.S.R.)	10		
1104	271.7	Naples (Italy)	1.5		
		Kuldiga (Latvia)	0		
1113	269.5	Kosice (Uszhorod)	2.6		

		(Czechoslovakia)			
		Oran [10] (Algeria)	0		
1122	267.4	**Belfast (Gt. Britain)**	1		
		Alexandria (Egypt)	0	5	5
1131	265.3	Hörby [7] (Sweden)	10		
1140	263.2	Turin (Italy)	7		
1149	261.1	**London National (Gt. Britain)**	50		
		Turkey (Turkey)	5	10	10
		West National (Gt. Britain)	50		
1158	259.1	Moravská Ostrava (Czechoslovakia)	11.2		
1167	257.1	Monte Ceneri (Switzerland)	15		
1176	255.1	Copenhagen (Denmark)	0.8		
		Malta (Malta)	0	5	5
1185	253.2	Kharkov II (U.S.S.R.)	10		
		Nice-Corsica P.T.T. (France)	0		
1195	251.0	Frankfurt (Germany)	17		
		German Common Wave (Germany)	2		
1204	249.2	Prague II (Czechoslovakia)	5		
		Czechoslovak Common Wave (Czechoslovakia)	0		
1213	247.3	Lille P.T.T. (France)	5		
1222	245.5	Trieste (Italy)	10		
1231	243.7	Gleiwitz (Germany)	5		
		German Common Wave (Germany)	0.25		
1240	241.9	Yugoslavia (Yugoslavia)	0		
1249	240.2	Luxembourg (Luxembourg)	150		
1258	238.5	Riga (Latvia)	15	10	10
		Rome II [8] (Italy)	0.5	1	1
		San Sebastian (Spain)	3		
1267	236.8	German Common Wave (Germany)	2		
1276	235.1	Norwegian Common Wave (Norway)	0.7		
		Varna (Bulgaria)	0		
1285	233.5	Belgium (Belgium)	0		
		Southern Greece (Greece)	0		
1294	231.8	Linz (Austria)	0.5		
		Salzburg (Austria)	0.5		
1303	230.2	Danzig (Danzig Free City)	0.5	10	10
		Sombor (Yugoslavia)	0	10	10
1312	228.7	Swedish Common Wave (Sweden)	1.25		
1321	227.1	Budapest II (Hungary)	0.8		
1330	225.6	North German Common Wave (Germany)	0.5		
1339	224.0	Montpellier P.T.T. (France)	5	5	5
		Pinsk (Poland)	0	5	5
		East Polish Common Wave (Poland)	0		
1348	222.6	International Common Wave			
		Aberdeen (Gt. Britain)	1		
		Benghazi (Cyrenaica)	0		
		Cairo II (Egypt)	0		
		Dublin (Irish Free State)	1		

		Estonia (Estonia)	0		
		France (South-East) (France)	0		
		Königsberg (Germany)	0.5		
		Lithuania (Lithuania)	0		
		Lodz (Poland)	1.7		
		Milan II (Italy)	4		
		Monaco (Principality of Monaco)	0		
		Norway (Norway)	0		
		Vorarlberg (Austria)	0		
		Yugoslavia (Yugoslavia)	0		
1357	221.1	Italian Common Wave (Italy)	0		
		Norwegian Common Wave (Norway)	0.5		
1366	219.6	Cracow or Torun (Poland)	1.7 or 2		
1375	218.2	Swiss Common Wave (Switzerland)	0.5		
1384	216.8	Albania (Albania)	0		
		Warsaw II (Poland)	2		
1393	215.4	France (Central) (France)	0		
		French Common Wave (France)	0		
1402	214.0	Bulgaria (Bulgaria)	0	5	5
		Swedish Common Wave (Sweden)	0.4		
1411	212.6	Bucharest (Romania)	12	12	12
		Portuguese Common Wave (Portugal)	2		
		Romanian Common Wave (Romania)	0		
1420	211.3	Finland Common Wave (Finland)	1.5		
		Yugoslav Common Wave (Yugoslavia)	0		
1429	209.9	International Common Wave (Type 1)			
		Alexandria II (Egypt)	0		
		Cork (Irish Free State)	1		
		France (Ile de France) (France)	0		
		Klagenfurt (Austria)	0.5		
		Newcastle (Gt. Britain)	1		
		Norway (Norway)	0		
		Holland (Holland)	0		
		Tripoli (Tripolitania)	0		
		Yugoslavia (Yugoslavia)	0		
1438	208.6	Hungarian Common Wave (Hungary)	0		
		Magyarovar (Hungary)	1.25		
		Miskolc (Hungary)	1.25		
		Nyiregyhaza (Hungary)	6.25	6.2	6.2
		Pecs (Hungary)	1.25		
1447	207.3	Spanish Common Wave (Spain)	1		
		Lithuania (Lithuania)	0		
1456	206.0	French Common Wave (France)	0		
1465	204.8	German Common Wave (Germany)	0		

1474	203.5	**British Common Wave (Gt. Britain)**	0		
		Plymouth (Gt. Britain)	0.3	5	5
1483	202.3	Soviet Common Wave (U.S.S.R.)	0		
1492	201.1	International Common Wave (Type 2)			
1500	200	International Common Wave (Type 2)			

Notes :

[1] Applicable one hour after sunset at the transmitter.

[2] Must use an aerial directed towards the interior of the country.

[3] In case of interference to mobile services must use an aerial directed away from the sea.

[4] Must use an aerial directed towards the interior of the country and limit the radiation towards the sea to a value which is not likely to interfere with maritime traffic.

[5] To be synchronised with Luy and Salzburg on 1,294 kc/s (231.8 m.) if this station compromises the maritime service.

[6] Must use an aerial directed towards the east.

[7] Must use an aerial directed towards the north if the power exceeds 60 kW, the maximum authorised being up to 100 kW.

[8] In case of interference must use an aerial directed towards the east.

[9] The power of Palermo and that of the stations of the Italian common wave (Sicily) may be increased to 5 kW if the power of Athlone is increased to 100 kW. In this case the Italian stations will use directional aerials, limiting the radiation towards Ireland in order to avoid interference with the service of the Athlone station.

[10] In case of interference with the service of Naples must use an aerial directed towards the interior of the country.

[11] In case of interference with the mobile services or with the services not open to public correspondence, must use a directional aerial and reduce its power during the night.

The above information of the Lucerne Plan is reproduced from the Appendix of the BBC Year-Book 1934.

Later footnotes

Although the separation is largely 9 kc/s between frequency allocations there are exceptions. For the British stations we note:-

Band 1 (150 to 300 kc/s.). Some stations have only 7 or 8 kc/s separation in some instances. Daventry is only 8 kc/s from Minsk, the high powered Soviet station. The long wave station has less strength in its reflected sky wave than from a comparable powered medium wave station. Hence sky wave interference is less of a problem from distant stations than for the medium waves. Provided the geographic separation of the stations is large and the direct wave interference is small, then 7 or 8 kc/s. separation can be tolerated in this band.

Band 3 (500 to 1,500 kc/s.). The BBC benefit from 10 kc/s. separation in two instances to reduce foreign interference. i) North Regional on 668 kc/s. and Langenberg (Germany) on 658 kc/s. and ii) Scottish Regional on 804 kc/s. and Milan (Italy) on 814 kc/s.

Two other points of interest:-

i) The two British stations Aberdeen and Bournemouth, each took up a different allocation to that noted in the Plan in 1933. Aberdeen was allowed use of 1285 kc/s. and Bournemouth took the British Common Wave 1474 kc/s, as used by Plymouth. At this time the power limit was 5 kW per station on this national common wave. However in 1939, the BBC replaced both Bournemouth and Plymouth stations and Clevedon took the 1474 kc/s. frequency but was allowed 20 kW as a single station. During the coming War, this frequency was used for the emergency low power Group H stations.

ii) 1149 kc/s. was originally allocated to both the London National and West National stations, with a maximum power allowed of 60 kW each in this part of the band. Although not an exclusive frequency the BBC used up to three synchronised Nationals but not at full power. (In 1945 five high power stations carried the Light Programme on 1149 kc/s). In the coming War, higher powers than the Lucerne limits were used for some stations radiating the European Service to occupied Europe on 1149 kHz and from Start Point on 1050 kHz.

A brief mention of Radio Luxembourg (see source 11)

The Luxembourg government wasn't present at the Prague Convention (1929) but had been allocated 1346 kc/s or 222.9 metres in the medium waveband. Before the Lucerne Conference was convened in the summer of 1933, Luxembourg had ambitions to broadcast sponsored programmes on the long waveband to the British Isles, and began testing a 200 kW transmitter on 1191 metres, and then around 1200 metres when interference was caused. The Lucerne Conference didn't think the size of Luxembourg justified a long wave allocation and only permitted them a medium wave frequency of 1249 kc/s. The Luxembourg delegates were dismayed and became non-signatories. When the Lucerne Plan became effective, the private concern running the station began transmissions on 1304 metres or 230 kc/s (allocated to Warsaw) of English language commercial programmes to Britain; attracting opprobrium from the Post Office authorities and the BBC as they considered it piracy.

A phenomenon known as " The Luxembourg Effect " became apparent whereby listeners to Radio Luxembourg on 230 kc/s had a background programme noise from Radio Paris on 182 kc/s. Australian physicists later explained that a powerful LF sky wave (Radio Paris) could cause slight non linearity in the ionosphere, and impress its modulation on to other sky waves (Radio Luxembourg) being reflected.
(*from Admiralty Handbook of Wireless Telegraphy 1938 Vol. II H.M.S.O.*)