**Licence issued by**

# THE COMMISSION FOR COMMUNICATIONS REGULATION

**To**

# Radio Telefís Éireann

**Licence issued by the The Commission For Communications Regulation**

**to**

**Radio Telefís Éireann**

WHEREAS Section 3 of the Broadcasting Authority Act, 1960, provided for the establishment of an authority to be known as Radio Éireann ("the Authority");

WHEREAS by Order of the Minister, pursuant to Section 2 of that Act, the Authority was so established on the first day of June, 1960, with the general functions set out in Section 16 of that Act;

WHEREAS by virtue of Section 3 of the Broadcasting Authority (Amendment) Act, 1966, the corporate name of the Authority was changed from Radio Éireann to Radio Telefís Éireann.

AND WHEREAS the Authority is empowered in particular to establish, maintain and operate broadcasting stations and to acquire, install and operate apparatus for wireless telegraphy, which powers may not, however, be exercised save under Licence issued by the Commission and in accordance with any conditions attached by the Commission to such Licence.

The Commission, in exercise of the powers conferred on it by section 4 of the Telecommunications (Miscellaneous Provisions) Act, 1996 (No. 34 of 1996) and Section 9 of the Communications Regulation Act, 2002 (No. 20 of 2002) and in accordance with Section 16(3) of the Broadcasting Authority Act, 1960 hereby grants to the Authority a Licence as follows, subject to the conditions set out hereunder*:*

**Licensed**

1. (1) For the purpose of carrying out the functions authorised by the Broadcasting Authority Acts, 1960 to 2001, the Licensee is licensed to:

(a) maintain and operate the broadcasting stations recorded in the Schedule in Part II of this Licence and in accordance with the provisions set out therein and not otherwise, except with the written consent of the Commission,

(b) establish, maintain and operate additional broadcasting stations at such places, and in accordance with such provisions, as the Commission may from time to time approve in writing, and any such approved additional broadcasting stations shall thereupon be deemed to be added to the Schedule in Part II of this Licence,

(c) acquire, install and operate such apparatus for wireless telegraphy as is incidental to the operation of the broadcasting stations mentioned at (a) and (b) as the Commission may approve in writing.

(2) Nothing in this Licence shall serve to preclude the Licensee from entering into any contracts, agreements and arrangements incidental or conducive to carrying out the activities listed in (1) above.

2. The Licensee shall not operate any broadcasting station without the Commission's specific approval in writing in respect of: -

(i) characteristic frequency,
(ii) name and geographical co-ordinates of broadcasting stations,
(iii) effective radiated power,
(iv) antenna characteristics, and
(v) antenna height.

3. The Licensee shall comply with the directions given by the Commission in writing in relation to tolerance on characteristic frequency and radiation of spurious emissions or in relation, in any other respect, to the technical operation of the broadcasting stations and apparatus for wireless telegraphy mentioned in the preceding paragraphs.

4. The establishment and operation of radio and television broadcasting stations shall be in accordance with the conditions relating to the establishment and operation of analogue radio and television broadcasting stations set out in Part I of this Licence.

5. If any harmful interference (whether avoidable or not) is caused to any radionavigation service or other safety services or a radiocommunications service operating in accordance with the applicable European Community or national regulations which was in existence prior to the broadcasting station or apparatus for wireless telegraphy causing the harmful interference, the Licensee shall, if the Commission considers it reasonable so to request, pay to the relevant party the amount of the expenses incurred in providing protection for such a service against the harmful interference, or in substituting for such a service a service of the same or a different description in another place and providing for the substituted service such protection against the harmful interference as the Commission considers necessary or expedient.

6. The Licensee shall comply with any radiation emission standards adopted and published by the International Commission for Non-Ionising Radiation Protection (ICNIRP) or its successors from time to time; any radiation emission standards of the European Committee for Electrotechnical Standards and any other radiation emission standards specified by national and EC law. The Licensee shall ensure that non-ionising radiation emissions from apparatus operated by the Licensee are within the limits specified by the guidelines published by ICNIRP. The Licensee shall ensure that apparatus operated by the Licensee is not installed or operated at a location in such a manner as to cause the aggregate of non-ionising radiation emissions to exceed the limits specified by the guidelines published by ICNIRP.

7. The broadcasting stations which are the subject of this Licence shall, at all times, be operated by persons properly authorised by the Licensee and all reasonable steps shall be taken to ensure that access to the broadcasting stations cannot be obtained by unauthorised persons at any time.

8. The Commission shall not be liable for any costs incurred by the Licensee in averting any harmful interference whatsoever.

**Sanctions for Breach of Licence**

9. (1) Where the Commission finds that the Licensee does not comply with one or more of the conditions of the Licence conferred on it, the Commission shall notify the Licensee of those findings and give the Licensee a reasonable opportunity to state its views or remedy any breaches within:

(a) one month after notification,

(b) a shorter period agreed by the Licensee or stipulated by the Commission in the case of repeated breaches, or

(c) a longer period decided by the Commission.

(2) The Commission may publish, in such manner as it thinks fit, any notification given by it under this Condition subject to the protection of the confidentiality of any information which the Commission considers confidential.

10. Where, at the end of the period referred to in Condition 9 (1), the Commission is of the opinion that the Licensee has not complied with the condition, it shall take appropriate and proportionate measures aimed at ensuring compliance.

**Licence revocation**

11. (1) The Commission may, in cases of serious and repeated breaches of the conditions of the licence revoke, suspend or withdraw the licence, where measures aimed at ensuring compliance as referred to in Condition 10 have failed.

(2) Prior to any such revocation, suspension or withdrawal, the Commission shall serve notice on the Licensee specifying the reason therefor and shall give the Licensee a reasonable opportunity to make representations about the proposed revocation, suspension or withdrawal.

**Prevention of Interference**

12. (1) If the Commission –

(a) is satisfied that the use of the system or any part thereof is causing or represents an immediate and serious threat to public safety, public security or public health, or will create serious economic or operational problems for other providers or users of electronic communications networks or services, and

(b) serves on the Licensee an interim notice requiring that the use of such system or part as may be specified in such notice cease forthwith, or on or before such date and time as may be so specified;

The Licensee shall cease to use the system or part, unless and until such notice has been withdrawn by the Commission.

(2) Following the issuing of an interim notice, the Commission shall give the Licensee a reasonable opportunity to make representations about the interim notice and to propose any remedies.

(3) The Commission, having taken into account any representations or proposed remedies made under paragraph (2) may confirm, amend or withdraw the measure.

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**Restrictions on the Licensee**

13. The Licensee shall not, without the prior consent in writing of the Commission (such consent not to be unreasonably withheld), assign the Licence (or lease, or let the Licence). Any consent to transfer granted by the Commission under this paragraph, may be subject to such further conditions as the Commission considers appropriate in the circumstances.

14. The provisions of the International Telecommunication Convention, and of any international convention or international agreement relating to the use of frequencies to which the State may be, or may become, a party during the continuance of this Licence, shall be complied with.

**Licence Duration**

15. This Licence shall operate from 1 March 2005 and, without prejudice to the right of the Commission to terminate or suspend the Licence in the case of non-compliance with the provisions of the Licence by the Licensee, shall be valid and continue in force until 28 February 2012, and shall then expire.

**Definitions**

16. In this Licence:

(a) a reference to a Schedule is to a Schedule to this Licence, unless it is indicated that reference to some enactment is intended;

(b) a reference to a paragraph or subparagraph is to the paragraph or subparagraph of the provision in which the reference occurs, unless it is indicated that reference to some other provision is intended;

(c) a reference to an enactment shall be construed as a reference to the enactment as amended or extended by or under any subsequent enactment.

17. (1) In this Licence, except where the subject or context requires otherwise, the following expressions have the meanings hereby assigned to them, that is to say: -

"broadcasting station" has the same meaning as in the Wireless Telegraphy Acts, 1926-1988;

"Commission" means the Commission for Communications Regulation established by Part 2 of the Communications Regulation Act, 2002;

"harmful interference" means interference which endangers the functioning of a radionavigation service or of other safety services or which otherwise seriously degrades, obstructs or repeatedly interrupts a radiocommunications service operating in accordance with the applicable European Community or national regulations;

"International Telecommunication Convention" means the International Telecommunication Convention signed at Nairobi on the 6th day of November 1982 and the Radio Regulations and additional Radio Regulations in force thereunder, and includes any Convention and Regulations which may from time to time be in force in substitution therefor, or in amendment thereof;

"Licensee" means the holder of the Licence, in this case Radio Telefís Éireann;

"wireless telegraphy" and "apparatus for wireless telegraphy" have the same meaning as in the Wireless Telegraphy Acts, 1926 to 1988.

(2) A word or expression which is used in this Licence and which is also used in the European Communities (Electronic Communications Networks and Services)(Framework) Regulations 2003 has, unless the context otherwise requires, the same meaning in this Licence that it has in the European Communities (Electronic Communications Networks and Services)(Framework) Regulations 2003.

(3) A word or expression which is used in this Licence and which is also used in the European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations 2003 has, unless the context otherwise requires, the same meaning in this Licence that it has in the European Communities (Electronic Communications Networks and Services)(Authorisation) Regulations 2003.

GIVEN under the official seal of the Commission for Communications Regulation this day of February 2005

Isolde Goggin
Chairperson

# PART I

## CONDITIONS RELATING TO THE ESTABLISHMENT AND OPERATION OF ANALOGUE RADIO AND TELEVISION BROADCASTING STATIONS

### 1. PURPOSE

This document specifies the general conditions attached to a licence for the establishment maintenance and operation of broadcasting stations. These conditions are set out in accordance with Section 16 (3) of the Broadcasting Authority Act, 1960.

### 2. GENERAL

**2.1** These conditions detail the characteristics of the equipment required for the purposes of frequency spectrum management and safety and do not include detailed equipment specifications.

**2.2** Evidence of type approval of equipment is not required by the Commission[1]. Instead a procedure of station certification by a suitably qualified person, will apply.

**2.3** Procedures for the modification of or addition of a station assignment are also specified in this document.

**2.4** The technical parameters specified in this document are in accordance with values specified in the Radio Regulations (2004), by ITU-R Study Group 11 (Television), in the Final Acts of the European Broadcasting Conference Stockholm 1961, in the Multilateral Co-ordination Agreement of 1997, in the Final Acts of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), Geneva 1975, and in the Final Acts of the Regional Administrative Conference for the planning of VHF Sound Broadcasting, Geneva 1984.

**2.5** The conditions specified in this document may be varied or added to from time to time by the Commission as required.

**2.6** In cases of doubt regarding the interpretation of these conditions, the decision of the Commission will be final.

### 3. DEFINITIONS AND GLOSSARY OF TERMS

**3.1 Radio Regulations**

Radio Regulations, Edition of 2004, as published by the International Telecommunications Union (ITU).

**3.2 Assignments**

A radio frequency or radio frequency channel for which authorisation by the Commission for Communications Regulation has been granted for its use at a specified station with specified characteristics.

**3.3 Station**

One or more transmitters or receivers or a combination of transmitters and receivers, including the associated equipment necessary, at one location for the purpose of carrying on a broadcasting service.

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[1] It is recommended that broadcasting transmitters comply with any appropriate European Telecommunications Standard.

**3.4 Geneva 1975 Agreement**

The Final Acts of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3), Geneva 1975. An updated plan of assignments constitutes part of this Agreement.

**3.5 Geneva 1984 Agreement**

The Final Acts of the Regional Administrative Conference for the planning of VHF Sound Broadcasting, Geneva 1984. An updated plan of assignments constitutes part of this Agreement.

**3.6 Chester Agreement**

The Chester Multilateral Co-ordination Agreement for DVB-T of 1997.

**3.7 Stockholm 1961 Agreement**

The Final Acts of the European VHF/UHF Broadcasting Conference, Stockholm 1961. An updated plan of assignments constitutes part of this Agreement.

**3.8 Effective Radiated Power (ERP) in a given direction.**

The product of the power supplied to the antenna and its gain relative to a halfwave dipole in a given direction. This is usually expressed in decibels relative to one watt (dBW). In the case of analogue television broadcasting the ERP of the vision transmissions is the peak envelope power and for sound transmissions it is the unmodulated carrier power.

**3.9 Effective Monopole Radiated Power (EMRP) in a given direction.**

The product of the power supplied to the antenna and its gain in the horizontal plane relative to a short vertical antenna.

**3.10 Maximum Effective Radiated Power.**

The maximum value of the effective radiated power in any direction.

**3.11 Effective Antenna Height (Eff.Ht.)**

The height in meters above the average level of the ground between distances of 3 and 15km from the transmitter. This is calculated for each of 36 evenly spaced radials (10 degree separation) starting from true North[2].

**3.12 Maximum Effective Antenna Height**

The maximum value in meters for the effective antenna height in any one of the 36 directions referred to in 3.10.

**3.13 Omnidirectional Antenna**

An antenna having a horizontal radiation pattern with variations of 2 dB or less over 360 degrees.

**3.14 Service Area**

Locations where the field strength available (in the case of VHF and UHF services at the reference receiver height of 10 meters above ground) exceeds both the minimum wanted field strength and the protected field strength (PFS) values as derived from the assignments in the appropriate plans.

**3.15 Vertical Aperture**

In relation to a VHF or UHF antenna system, the distance in wavelengths between the centres of the outermost radiating elements, plus one half wavelength, in the vertical plane.

**3.16 Commission**

Commission for Communications Regulation

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[2] This can be calculated by the Commission using the National Grid Reference, consisting of one letter and six digits, for the transmitting station, provided the site height above sea level and the antenna height above ground level are supplied

## 4. TRANSMITTER CONSTRUCTION

### 4.1. General

The mechanical and electrical construction shall meet such requirements as can be reasonably set, taking the state of the art into account (see also section 6 'Safety and Weather Protection').

All controls, meters, indicators and terminals shall be clearly labelled. Details of the power supply from which the equipment is intended to operate shall be clearly indicated. The equipment should normally consist of one complete unit.

### 4.2 Controls

Controls which, when wrongly adjusted, increase the risk of causing interference or of improper functioning of the transmitter shall be immediately accessible to qualified personnel only.

### 4.3 Manufacturer's Identification

The transmitter shall be provided with an indication showing the manufacturer's trademark, type designation and serial number. The indication shall be fitted on the outside of the transmitter, shall be clearly readable, non-removable and indelible.

## 5. FACILITIES FOR TESTING TRANSMISSION INSTALLATION

Adequate and accurately calibrated test equipment shall be made available for non-radiative measurement of transmitter power, modulation characteristics and spurious emissions while the station is undergoing initial alignment and regular maintenance.

## 6. SAFETY AND WEATHER PROTECTION

### 6.1 General Safety

The station and its premises must comply with all relevant statutory safety regulations.

### 6.2 Safety Controls

There shall be a single control to isolate power for the entire installation. If a form of auxiliary power (such as diesel generators or an uninterruptable power supply) is provided, then the same control should isolate these. The "on" position of such a devise must be clearly indicated.

### 6.3 Safety Standards

The system must comply with the following requirements:

I.S./EN 60215 : 1990 Safety Requirements for Radio Transmitting Equipment

ENV 50166-2 – Human Exposure to Electromagnetic Fields

High Frequency (10 kHz to 300 GHz)

These standards are available from the National Standards Authority of Ireland[3].

### 6.4 Weather Protection

All apparatus and cables exposed to weather, corrosive atmosphere or other adverse conditions shall be so constructed or protected as may be necessary to prevent danger or interference to other services arising from such exposure.

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[3] Please note that the standard ENV 50166-2 is a European Pre-standard and shall be replaced by the respective European Standard when it becomes available.

## 7. SITE ENGINEERING

### 7.1 General

The practice of good site engineering is a necessary requirement to ensure good coverage, safety of personnel and minimum interference to other services. This is particularly relevant when considering other services, especially aeronautical systems and private mobile radio networks used by the emergency services, operating in frequency bands adjacent to the VHF-FM radio broadcasting bands. In addition, careful consideration is required for other services when operating from the same site or in close proximity to them.

### 7.2 Spurious Emissions

Careful consideration should be given to the levels of spurious emissions set out in the relevant subsection of section 8.

### 7.3 Standard

The European Telecommunications Report ETR132 outlines site engineering practises for VHF-FM systems and is available from the National Standards Authority of Ireland. The Licensee shall ensure that all necessary precautions are undertaken to ensure good site engineering practise.

## TRANSMISSION CHARACTERISTICS

## 8.1 Transmission characteristics for LF and MF AM broadcasting stations

### 8.1.1 Frequency Aspects:

The equipment shall be designed to operate on the assigned frequency in the frequency Band 150 – 285 kHz or 525 – 1605 kHz only.

The frequency tolerance of the main carrier shall be ±10 Hz.

The transmit-frequency shall be derived from a crystal-oscillator. If use is made of a synthesiser and/or a phase locked loop system, the transmitter shall be inhibited when synchronisation is absent. The transmitter frequency adjustment control shall be accessible to qualified personnel only.

### 8.1.2 Maximum Permitted Levels of Spurious Emissions:

The maximum permitted level of spurious emission shall be at least 40dB below the mean power level of the transmitter and at no time may exceed an absolute power level of 50mW.

### 8.1.3 Class of Emission, Bandwidth and Modulation Standards:

In accordance with the Geneva 1975 Agreement, the transmission system used shall be double sideband amplitude modulation with full carrier. This is normally specified as 9K00A3EGN.

### 8.1.4 AF input and RF output Impedance

The nominal A.F. input impedance shall be 600 Ohm balanced to earth within the modulation frequency range 40Hz – 4.5 kHz . The R.F. output impedance of the equipment shall be in the range of 50 - 160 Ohm.

### 8.15 Transmit Power and Radiated Power:

The transmitter power, stated in the licence, is the carrier power in the absence of modulation.

The radiated power is the sum of the nominal power of the transmitter (in dBW) and the gain of the antenna in dB (relative to a short vertical antenna) without taking any losses into account. It is expressed as the effective monopole radiated power (emrp in kW or in dB relative to 1 kW).

As the radiated power is the sum of the transmitter output power (in dBW) and the gain of the antenna (in dB) the output carrier power of transmitter shall be adjustable so that the value of the radiated power permitted for each station is not exceeded.

If the equipment is designed to operate with different levels of carrier power, the rated output for each power level must be declared by the manufacturer.

## 8.2. Transmission Characteristics for VHF-FM broadcasting stations[4].

### 8.2.1 Frequency Aspects.

The equipment shall be adjusted to operate on the assigned frequency in the frequency band 87.5 to 108 MHz only.

The frequency tolerance of the main carrier shall be:

- 2 kHz, for transmitters of mean power greater than 17 dBW.

- 3 kHz, for transmitters of mean power less than or equal to 17 dBW.

The transmit-frequency shall be derived from a crystal-oscillator. If use is made of a synthesiser and/or a phase locked loop system, the transmitter shall be inhibited when synchronisation is absent. The transmitter frequency adjustment control shall be accessible to qualified personnel only.

### 8.2.2 Maximum Permitted Levels of Radiated Spurious Emissions.

The maximum permitted level of spurious emission for a transmitting station shall be:

- 40 dB below the licensed e.r.p. for a transmitting station e.r.p. equal to or less than 4 dBW,

- 250 μW e.r.p. for a transmitting station e.r.p. greater than 4 dBW and less than 49 dBW,

- 85 dB below the licensed e.r.p. for a transmitting station e.r.p. equal to or greater than 49 dBW.

These limits must be adhered to for the frequency range 87.5 to 137 MHz.

A band pass filter, which provides a minimum attenuation of 60 dB at frequencies outside the VHF-FM broadcasting band, shall be fitted.

[4] ETS 300 384 is the applicable VHF-FM transmitter standard.from the European Telecommunications Standard Institute.

### 8.2.3 Class of Emission, Bandwidth, and Modulation Standards.

#### 8.2.3.1 Designation of Emission and Maximum Permitted Bandwidth.

The bandwidth of the radiated signal shall not exceed 270 kHz. The emission shall comply with the following designation :- 270KF9EHW

where:

| | | | | |
|---|---|---|---|---|
| 270K | = | Necessary bandwidth | = | 270 kHz |
| F | = | Type of modulation | = | Frequency modulation |
| 9 | = | Modulating signal | = | Composite analogue/digital signal |
| E | = | Information type | = | Sound broadcasting |
| H | = | Broadcast quality sound (stereo) | | |
| W | = | Combination of frequency and time division multiplex | | |

#### 8.2.3.2 Modulation Standards

In accordance with the Geneva 1984 Agreement, the transmission system used shall be either Monophonic or Stereophonic pilot tone system.

**i) a Monophonic Transmission**

The radio-frequency signal consists of a carrier, frequency modulated by the sound signal, after pre-emphasis, with a maximum frequency deviation of ±75 kHz.

**i) b Stereophonic Transmission**

The radio-frequency signal consists of a carrier, frequency modulated by a baseband signal according to the specifications of the pilot-tone system. The maximum frequency deviation is ±75kHz.

**ii) Pre emphasis and low pass filter**

The transmitter must be provided with a pre-emphasis filter with a time-constant of 50 microseconds, combined with a low-pass filter with an attenuation of at least 30 dB at an input modulation frequency of 20 kHz, relative to the level at 1 kHz.

It is possible, even while operating within the specified maximum deviation limit of ±75 kHz, to infringe on the internationally agreed protection ratios used in planning. This is caused by a degree of audio processing resulting in

an increase, beyond a reference level[5], of the average power contained within the multiplexed signal envelope integrated over 60 seconds. Where this occurs, the audio signal level must be adjusted, at the responsible station, so as to eliminate any such infringement. Alternatively, an e.r.p. restriction may be imposed by the Commission.

#### 8.2.3.3 Permitted subcarriers for the transmission of supplementary information.

The addition of a sub-carrier on 57 kHz for the transmission of supplementary information using the Radio Data System (RDS), as specified in Irish Standard/EN 50067 : 1993, is considered as being included in the above Designation of Emission and Permitted Bandwidth. The standard is available from the National Standards Authority of Ireland. Only certain features of this system are licensed[6]. The Licensee shall provide a completed Certificate of Compliance[7] to the Commission within one month of the commencement of transmission of RDS features.

### 8.2.4 RF Output Impedance

The RF output ports of the transmitter and associated equipment shall be capable of interfacing with equipment whose input impedance is 50 ohms.

### 8.2.5 Vertically Radiated Power

Due to the proximity of the VHF-FM radio broadcasting band to frequency bands used by aeronautical services, it is important, in the interests of safety, that the power radiated in the vertical direction is restricted. This applies to the entire country due to the nature of the aeronautical services involved. Therefore, the minimum limits, contained in the following table, for the vertical aperture of the transmitting antenna shall be complied with. For an effective radiated power of less than 30 dBW, a correction factor may apply, which allows the use of a single dipole. This will be applied by the Commission, and specified on the licence, when appropriate .

[5]The reference level is the power of the multiplex signal containing a single sinusoidal tone which causes a peak deviation of $\pm$ 19 kHz.
[6]An updated list of approved features shall be provided to the licensee by the Commission on request.
[7]The Certificate of Compliance form is contained at Annex 4. In some cases only the sections of a certificate relevant to RDS operation may be necessary.

| **Maximum Total e.r.p.** | **Vertical aperture in Wave-lengths** |
|---|---|
| 44 dBW <= erp | 8 |
| 37 dBW <= erp < 44 dBW | 4 |
| 30 dBW <= erp < 37 dBW | 2 |
| erp < 30 dBW | 1 |

## 8.3 Transmission Characteristics for Television broadcasting stations

### 8.3.1 Frequency Aspects

The equipment shall be designed to operate on the assigned frequency in the frequency Bands 174.0 to 222.0 MHz or 470.0 to 862.0 MHz only.

The frequency tolerance shall be:

- ± 500 Hz, for transmitters for which the licence characteristics do not require the use of precision offset.

- ± 1 Hz, for transmitters for which the licence characteristics require the use of precision offset.

- ± 10 kHz, for stations of 0 dBW (vision peak envelope power) used to serve small isolated communities.

The transmit frequency shall be derived from a crystal oscillator. If use is made of a synthesiser and/or a phase locked loop system, the transmitter shall be inhibited when synchronisation is absent. The transmitter frequency adjustment control shall be accessible to qualified personnel only.

### 8.3.2 Maximum Permitted Levels of Spurious Emissions

The maximum permitted level of spurious emission for a transmitting station shall be:

- at least 40 dB below the transmitter e.r.p. and shall not in any case exceed -46 dBW for a transmitter e.r.p. less than or equal 14dBW.

- at least 60dB below the transmitter e.r.p. and
  1) in the case of VHF transmitters shall not in any case exceed -30 dBW for transmitter e.r.p. above 14 dBW or
  2) in the case of UHF transmitters shall not in any case exceed -17 dBW for transmitter e.r.p. above 14 dBW.

### 8.3.3 Class of Emission, Bandwidth, and Modulation Standards.

#### 8.3.3.1 Designation of Emission and Maximum permitted Bandwidth.

The total bandwidth of the radiated signal shall not exceed 8 MHz. The emissions shall comply with the following designations:

**A)** 7M25C9FNW where;

| | | | | |
|---|---|---|---|---|
| 7M25 | = | necessary bandwidth | = | 7.25 MHz |
| C | = | type of modulation | = | Vestigial sideband |
| 9 | = | Modulating signal | = | Composite analogue/digital signal |
| F | = | Information type | = | Television (video) |
| N | = | Colour | | |
| W | = | Combination of frequency-division and time-division multiplex | | |

**B)** 750KF3EGN where;

| | | | | |
|---|---|---|---|---|
| 750K | = | necessary bandwidth | = | 750 kHz |
| F | = | type of modulation | = | Frequency modulation |
| 3 | = | modulating signal | = | a single channel containing analogue information |
| E | = | information type | = | Sound broadcasting |
| G | = | Sound of broadcasting quality (monophonic) | | |
| N | = | Nature of multiplex | = | None |

#### 8.3.3.2 Television Standard

The television standard used shall be PAL system I or the PALPlus system.

*Summary list of parameters (for PAL I only)*:-

Frequency spacing

| | |
|---|---|
| Nominal radio-frequency channel bandwidth | 8 MHz |
| Vision/Sound Carrier separation | 5.9996MHz(±0.0005 MHz) |
| Nearest edge of channel relative to vision carrier | -1.25MHz |
| Nominal width of vestigial sideband | 1.25 MHz |
| Nominal width of main sideband | 5.5 MHz |

Modulation

| | |
|---|---|
| Type and polarisation of vision modulation | C9F negative |

| | |
|---|---|
| Type of sound modulation | F3E |
| Maximum frequency deviation | ±50 kHz |
| Pre-Emphasis for modulation | 50 μS |

Levels in the radiated signal ( % of peak vision carrier)

| | |
|---|---|
| Synchronising level | 100 |
| Blanking level | 76 ±2 |
| Difference between black level and blanking level (nominal) | 0 |
| Peak white level | 20 ±2 |
| Ratio of vision to sound effective radiated powers | 10/1 [8] |

#### 8.3.3.3 Permitted second sound carrier for the transmission of stereo or bilingual sound

An additional carrier at 6.552 MHz above the vision carrier for the NICAM 728 multi channel sound system as specified in ITU-R Rec. 707 is permitted.

### 8.3.4. Additional Broadcasting Services

#### 8.3.4.1. Permitted Additional Broadcasting Services

The transmission of a teletext service during the field blanking interval is permitted. The system used must conform to Teletext System B parameters described in ITU-R Rec. 653-1. Insertion reference signals may be transmitted on lines 17 and 330 as outlined in ITU-R Rep. 628-4. Insertion test signals for automatic monitoring of the television system may also be transmitted on other blank lines. The transmission of PALPlus signals in lines at the start and end of each frame is permitted.

A widescreen television service may broadcast in the 16:9 aspect ratio using the PALPlus system as described in ITU-R BT 1197-1 ensuring compatibility with the current PAL I system.

#### 8.3.4.2 Additional Broadcasting Services Requiring Approval from the Commission

Prior approval must be obtained from the Commission for any additional broadcasting services other than those indicated in 8.3.4.1.

[8] In certain cases an alternative vision to sound carrier ratio may be specified by the Commission

### 8.3.5 Power and Polarisation

For a given assignment the radio frequency power and polarisation are specified in the licensed station characteristics. The power is given in terms of the maximum effective radiated power for the vision carrier (peak envelope power) and the sound carrier (unmodulated carrier power). The effective radiated power in a given azimuth is the maximum effective radiated power (in dBW) less the radiation restriction (in dB) at the azimuth due to the antenna radiation pattern.

As the effective radiated power is the sum of the transmitter output power (in dBW) and the gain of the antenna (in dB) in a given direction, the output carrier power of transmitter shall be adjustable so that the value of the effective radiated power in a given direction permitted for each station is not exceeded.

If the equipment is designed to operate with different levels of carrier power, the rated output power for each power level must be declared by the manufacturer.

## 9.0 MINIMUM FIELD STRENGTH

The minimum field strengths used in planning are:

1) +73dB(μV/m) for LF (150 kHz to 285 kHz)

2) +60dB(μV/m) for MF (525 kHz to 1605 kHz)

3) +54dB(μV/m) for band II (87.5 MHz to 108 MHz)

4) +55dB(μV/m) for band III (174 MHz to 223 MHz)

5) +65dB(μV/m) for band IV (470 MHz to 582 MHz)

6) +70dB(μV/m) for band V (582 MHz to 862 MHz)

The VHF/UHF values are for 10 metres above ground level.

Protection cannot be sought for locations with a field strength below the above mentioned values.

## 10 OVERVIEW OF NATIONAL BAND PLAN (Television).

### 10.1 Frequency Channels and Standard Groups

The VHF frequency band for television broadcasting is 174 to 222 MHz The UHF frequency band for broadcasting is 470 to 862 MHz. The designated television channels for the VHF and UHF bands and the UHF channel grouping adopted by the Commission are detailed in Annex 1.

As a general principle and in order to minimise interference between different users the allocation of channels in a group will as far as it is practical to do so, be on the principle of co-programming i.e. the same user will be allocated the same channel in a given channel group wherever it is allocated.

Due to the phased development of UHF television broadcasting a station may initially have coverage in excess of the planned service area. With the introduction of additional stations it is to be expected that this extended service area will be reduced.

### 10.2 Assignment List

A list of the Assignments, which constitute the national plan, will be maintained by the Commission.

### 10.3 Planning Parameters

The planning parameters used by the Commission correspond to those recommended by the ITU-R. A summary of these parameters is given below.

| Parameter | **Description** | **Value used** |
|---|---|---|
| Propagation using terrain data | Wanted Signal:<br><br>Unwanted Signal, Domestic:<br><br>Unwanted Signal, RBL[9]: | 50% location, 50% time<br><br>50% location, 5% time<br><br>50% location, 1% time |
| Quality of service | Continuous Interference:<br><br>Tropospheric Interference: | Grade 4 [10]<br><br>Grade 3 [11] |
| Polarisation Discrimination | Domestic:<br><br>RBL: | 15 dB<br><br>20 dB |
| Maximum Receive<br><br>antenna directivity | Domestic:<br><br>RBL: | 16 dB<br><br>20 dB |

[9]Re-Broadcast Link
[10]Grade 4: Perceptible, but not annoying
[11]Grade 3: Slightly annoying

| **Protection Ratio** | | |
|---|---|---|
| Co-channel, continuous: | | 52 dB, no offset<br>40 dB, 4/12 line offset |
| Co-channel, continuous: (PAL I interfered with by DVB-T 8 MHz) | | 41 dB |
| Co-channel, tropospheric: | | 45 dB, no offset<br>30 dB, 4/12 line offset |
| Co-channel, tropospheric: (PAL I interfered with by DVB-T 8 MHz) | | 37 dB |
| Lower adjacent channel | | -9 dB, tropospheric |
| Analogue vision signal interfered with by lower adjacent channel DVB-T 8MHz | | -8 dB, tropospheric<br>-4 dB, continuous |
| Upper adjacent channel | | -12 dB, tropospheric |
| Analogue vision signal interfered with by upper adjacent channel DVB-T 8MHz | | -10 dB, tropospheric<br>-6 dB, Continuous |
| Image channel | | -10 dB, tropospheric |
| Local oscillator channel | | -10 dB, tropospheric |
| Co-Channel Precision offset | continuous, no offset<br>tropospheric, no offset<br><br>continuous, 4/12 line offset<br>tropospheric, 4/12 line offset | 36 dB<br>32 dB<br><br>27 dB<br>22 dB |

Protection ratios for analogue television broadcasting interfered with by digital sound broadcasting (T-DAB) in VHF III are as given in the Wiesbaden, 1995, Special Arrangement, as revised at Maastricht 2002.

Protection ratios for analogue sound broadcasting services are as indicated in the Geneva Agreements 1975 and Geneva Agreements 1984.

## 11. STATION CERTIFICATION AND MAINTENANCE

### 11.1 Access and Personnel

Only authorised personnel shall have access to the Transmission Equipment for the purpose of adjustment or maintenance of that equipment.

The Licensee shall ensure that all authorised personnel are adequately trained for the functions they are to undertake.

### 11.2 Examination and Testing

When the installation of equipment is complete the Licensee shall inform the Commission and seek permission for on-air testing. The Licensee shall then examine the station and when ready to commence operations shall provide the Commission with certification indicating that the station is operating in accordance with the specified conditions and characteristics and shall inform the Commission of the date of commencement of operations.

### 11.3 Maintenance

The transmission installation shall be so maintained as to always comply with these conditions. The Licensee shall ensure that a suitably qualified person has the necessary technical training, knowledge and practical experience so as to be able to certify that the installation and maintenance of the station complies with these conditions. The Licensee shall examine each station annually to ensure compliance and shall keep a log indicating dates and results of these examinations.

### 11.4 Time Limit

A Maximum period of one year will be allowed from the date of amendment of a licence for an amended station to come on air and the procedures outlined in this section to be completed. If a certificate of compliance has not been forwarded to the Commission within this period the approval for the station in question may be revoked by the Commission.

## 12. ADDITIONAL AND MODIFIED ASSIGNMENTS

### 12.1 Requisite Information

The Licensee shall provide the Commission with all the necessary details in support of an application for an additional assignment or a modification of an existing assignment. The standard information required is contained in Annex 2.

### 12.2 Examination

The Licensee shall have regard, in preparation of an application for an additional or modified assignment, to other Licensees having assignments in the same frequency segment and make an examination of the compatibility of the assignments. A report of this examination shall be provided to the Commission at the time of making an application.

### 12.3 Field Strength Measurements

It may be necessary to supply field strength measurements in support of an application or an interference complaint. In relation to VHF and UHF, these measurements shall be supplied in accordance with the procedures outlined in Annex 3.

## 12.4 International Agreements

The Commission is bound by the provisions of the Radio Regulations and various Regional Radiocommunications Agreements, including but not limited to the Stockholm 1961 Agreement, the Chester Agreement 1997, the Wiesbaden, 1995, Special Arrangement, as revised at Maastricht 2002, the Geneva 1975 Agreement, the Geneva 1984 Agreement and the LEGBAC Memorandum of Understanding [12]. These agreements require the Commission to undertake certain co-ordination and registration procedures when considering additions or modifications of the assignment plan.

A minimum of three months is allowed for co-ordination. However, co-ordination of additional or modified assignments cannot be guaranteed. The Licensee shall allow adequate time in planning and provide the Commission with the relevant information to ensure compliance with these agreements.

[12] Limited Exploratory Group on Broadcasting to Aeronautical Compatibility. Memorandum of Understanding signed at the World Administrative Radio Conference, 1992.

**ANNEX 1**

# TABLE OF CHANNEL FREQUENCIES and CHANNEL GROUPS

## NOTE

The carrier frequencies do not include offsets.
The offsets to be used will be specified in the licence.

**TABLE 1**

**BAND III CHANNELS**

**Frequency Band 174.00 to 222.00 MHz**

| Channel Number | Channel Frequencies (MHz) | Vision Carrier (MHz) | Sound Carrier (MHz) |
|---|---|---|---|
| ID | 174 - 182 | 175.25 | 181.25 |
| IE | 182 - 190 | 183.25 | 189.25 |
| IF | 190 - 198 | 191.25 | 197.25 |
| IG | 198 - 206 | 199.25 | 205.25 |
| IH | 206 - 214 | 207.25 | 213.25 |
| II | 214 - 222 | 215.25 | 221.25 |

**TABLE 2**

**BAND IV CHANNELS**

**Frequency Band 470.00 to 582.00 MHz**

| Channel Number | Channel Frequencies (MHz) | Vision Carrier (MHz) | Sound Carrier (MHz) |
|---|---|---|---|
| 21 | 470 - 478 | 471.25 | 477.25 |
| 22 | 478 - 486 | 479.25 | 485.25 |
| 23 | 486 - 494 | 487.25 | 493.25 |
| 24 | 494 - 502 | 495.25 | 501.25 |
| 25 | 502 - 510 | 503.25 | 509.25 |
| 26 | 510 - 518 | 511.25 | 517.25 |
| 27 | 518 - 526 | 519.25 | 525.25 |
| 28 | 526 - 534 | 527.25 | 533.25 |
| 28 | 534 - 542 | 535.25 | 541.25 |
| 30 | 542 - 550 | 543.25 | 549.25 |
| 31 | 550 - 558 | 551.25 | 557.25 |
| 32 | 558 - 566 | 559.25 | 565.25 |
| 33 | 566 - 574 | 567.25 | 573.25 |
| 34 | 574 - 582 | 575.25 | 581.25 |

**TABLE 3**

**BAND V CHANNELS**

**Frequency Band 582.00 to 862.00**

| Channel Number | Channel Frequencies (MHz) | Vision Carrier (MHz) | Sound Carrier (MHz) |
|---|---|---|---|
| 35 | 582 - 590 | 583.25 | 589.25 |
| 36 | 590 - 598 | 591.25 | 597.25 |
| 37 | 598 - 606 | 599.25 | 605.25 |
| 38 | 606 - 614 | 607.25 | 613.25 |
| 39 | 614 - 622 | 615.25 | 621.25 |
| 40 | 622 - 630 | 623.25 | 629.25 |
| 41 | 630 - 638 | 631.25 | 637.25 |
| 42 | 638 - 646 | 639.25 | 645.25 |
| 43 | 646 - 654 | 647.25 | 653.25 |
| 44 | 654 - 662 | 655.25 | 661.25 |
| 45 | 662 - 670 | 663.25 | 669.25 |
| 46 | 670 - 678 | 671.25 | 677.25 |
| 47 | 678 - 686 | 679.25 | 685.25 |
| 48 | 686 - 694 | 687.25 | 693.25 |
| 49 | 694 - 702 | 695.25 | 701.25 |
| 50 | 702 - 710 | 703.25 | 709.25 |
| 51 | 710 - 718 | 711.25 | 717.25 |
| 52 | 718 - 726 | 719.25 | 725.25 |
| 53 | 726 - 734 | 727.25 | 733.25 |
| 54 | 734 - 742 | 735.25 | 741.25 |

**TABLE 3 (continued)**

**BAND V CHANNELS**

| Channel Number | Channel Frequencies (MHz) | Vision Carrier (MHz) | Sound Carrier (MHz) |
|---|---|---|---|
| 55 | 742 - 750 | 743.25 | 749.25 |
| 56 | 750 - 758 | 751.25 | 757.25 |
| 57 | 758 - 766 | 759.25 | 765.25 |
| 58 | 766 - 774 | 767.25 | 773.25 |
| 59 | 774 - 782 | 775.25 | 781.25 |
| 60 | 782 - 790 | 783.25 | 789.25 |
| 61 | 790 - 798 | 791.25 | 797.25 |
| 62 | 798 - 806 | 799.25 | 805.25 |
| 63 | 806 - 814 | 807.25 | 813.25 |
| 64 | 814 - 822 | 815.25 | 821.25 |
| 65 | 822 - 830 | 823.25 | 829.25 |
| 66 | 830 - 838 | 831.25 | 837.25 |
| 67 | 838 - 846 | 839.25 | 845.25 |
| 68 | 846 - 854 | 847.25 | 853.25 |
| 69 | 854 - 862 | 855.25 | 861.25 |

**TABLE 4**

**TABLE OF STANDARD UHF CHANNEL GROUPS**

| **Group Number** | **Channels** | | | |
|---|---|---|---|---|
| 1 | 21 | 24 | 27 | 31 |
| 2 | 22 | 25 | 28 | 32 |
| 3 | 23 | 26 | 29 | 33 |
| 4 | 39 | 42 | 45 | 49 |
| 5 | 40 | 43 | 46 | 50 |
| 6 | 41 | 44 | 47 | 51 |
| 7 | 53 | 57 | 60 | 63 |
| 8 | 54 | 58 | 61 | 64 |
| 9 | 55 | 59 | 62 | 65 |
| 10 | 52 | 56 | 66 | 68 |
| Some of the channels in the above groups together with others not appearing in any group may be formed into alternative groups, for example: | | | | |
| 3A | 23 | 26 | 30 | 34 |

Note : The use of other non-standard groups is considered where necessary.

**Annex2a**

## Information for the Addition / Modification of a sound broadcasting assignment

1 Frequency (MHz/kHz) :

2 Name of Transmitting Station:

3 Geographic Co-ordinates:

4 National Grid Reference:

5 Altitude of Site above Sea Level (m):

6 Height of Antenna above Ground Level (m):

7 Polarisation:

8 Total Effective Radiated Power (dBW):

9 Maximum Horizontal ERP (dBW):

10 Maximum Vertical ERP (dBW):

11 Directivity of Antenna (D or ND):

12 Map, Ordnance Survey Maps such as the “Discovery Series" or equivalent are acceptable, outlining the intended service area. The map shall outline the complete area to be served by the programme service requiring the additional or modified assignment, where appropriate.

**ANNEX 2b**

## Information for the Addition / Modification of a Television Assignment

| | | | | |
|---|---|---|---|---|
| 1 | Name of Transmitter Site: | _____ | | |
| 2 | Geographic Coordinates: | Lat: _____ | Long: _____ | |
| 3 | National Grid Reference: | _____ | | |
| 4 | Channel(s): | _____ | | |
| 5 | Offset(s)(twelfth line): | _____ | | |
| 6 | Frequency (MHz) | Programme Services | **Vision** | **Sound** |
| | | _____ | _____ | _____ |
| | | _____ | _____ | _____ |
| | | _____ | _____ | _____ |
| | | _____ | _____ | _____ |
| 7 | Altitude of Site above sea level(m): | _____ | | |
| 8 | Height of Antenna above ground level (m): | _____ | | |
| 9 | Polarisation: | _____ | | |
| 10 | Maximum Effective Radiated Power (dBW): | _____ | | |
| 11 | Directivity of Antenna (D or ND): | _____ | | |

12 Map, Ordnance Survey Maps such as the “Discovery Series" or equivalent are acceptable, outlining the intended service area.

13 Radiation Restrictions (dB) if Directional

| AZIMUTH | 0° | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal Polarisation | | | | | | | | | |
| Vertical Polarisation | | | | | | | | | |

| AZIMUTH | 90° | 100° | 110° | 120° | 130° | 140° | 150° | 160° | 170° |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal Polarisation | | | | | | | | | |
| Vertical Polarisation | | | | | | | | | |

| AZIMUTH | 180° | 190° | 200° | 210° | 220° | 230° | 240° | 250° | 260° |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal Polarisation | | | | | | | | | |
| Vertical Polarisation | | | | | | | | | |

| AZIMUTH | 270° | 280° | 290° | 300° | 310° | 320° | 330° | 340° | 350° |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal Polarisation | | | | | | | | | |
| Vertical Polarisation | | | | | | | | | |

# Standardised Procedure for Making Field Measurements of Signals Radiated from VHF and UHF Broadcasting Transmitters

## Location of Tests

1. The precise location of the selected test point should be noted on a map. The scale of the map should be large enough to allow a national grid reference, accurate to 100m, to be easily read.

2. A general description of the test point vicinity should be noted (i.e. urban, suburban, rural, mountains, flat etc).

3. Particular note should be made of obstructions, if any, in the vicinity that may obscure the line of sight from the selected test point to a particular transmitter.

4. The test point should be selected as far as possible, so as to minimize electrical interference from ESB power lines, heavy traffic or high-power industrial electrical apparatus.

## Taking Measurements

1. **Height of Antenna above ground level (agl)**
   The internationally accepted reference height, used in VHF and UHF broadcast planning, for field strength values is 10 metres agl.

2. **Horizontal separation distance of the antenna from the mast**
   The antenna should be separated a suitable distance from the mast. This minimises any distortive effects on the specified antenna gain pattern which may be caused by the proximity of the mast. A separation distance of at least one quarter wavelength between the antenna and the mast is recommended.

3. **Cable Loss**
   Cable loss should be taken into account

4. **Voltage Standing Wave Ratio (VSWR)**
   The VSWR of the antenna should be measured, for the frequency range in question, using a VSWR meter. This is done to verify the antenna impedance is matched to that of the cable. The VSWR should be between 1.0 and 1.5.

   A form to plan and record measurements has been drawn up and is contained below.

5. **Conversion Formulae**

Equations for the conversion of voltage values to electric field strength values are contained in below.

Equations for conversion of voltage values to electric field strength values :

$$E = 4 * (\Pi / \lambda) * \sqrt{((30 * V^2) / (R * G))}$$

where

E = Electric Field Strength (volts/metre)
Π = 3.14159
λ = Wavelength of transmitted signal (metres)
V = Measured Voltage Reading (volts)
R = Input Impedance (50 ohms)
G = Receiving Antenna Gain (Linear Ratio)

$$E_{dB\mu V/n} = 20 * Mp\varsigma_{10} E_{\mu V/n}$$

Alternatively,

$$E_{dB\mu V/n} = V_{dB\mu V} + 20 * Mp\varsigma_{10}(F_{NH}) - G_{rx} + M_{dB} - 29.78$$

where

F = Frequency
L = Feeder losses

**Date:** **Sheet No.**

**MEASUREMENTS**

**Downlead (Uncorrected) Values**

| | | |
|---|---|---|
| Antenna Details: | | |
| Type: | Height (m): | Gain (dB): |
| | Polarisation: | VSWR: |
| Cable Loss at 100 Mhz (dB): | Cable Loss at 200 Mhz (dB): | |
| Cable Loss at 600 Mhz (dB): | Cable Loss at 800 Mhz (dB): | |
| Measuring Instrument Used: | | |

Test Point

| | | |
|---|---|---|
| NGR:<br>Description: | NGR:<br>Description: | NGR:<br>Description: |

| Transmitter Site | Description of Terrain in Transmitter Direction | | | |
|---|---|---|---|---|
| Station | Freq (MHz) | Signal Level (dBuV) | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Transmitter Site | Description of Terrain in Transmitter Direction | | | |
|---|---|---|---|---|
| Station | Freq (MHz) | Signal Level (dBuV) | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Date:** **Sheet No.**

Test Point

| NGR:<br>Description: | NGR:<br>Description: | NGR:<br>Description: |
|---|---|---|

| Transmitter Site | Description of Terrain in Transmitter Direction | | | |
|---|---|---|---|---|
| Station | Freq (MHz) | Signal Level (dBuV) | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Transmitter Site | Description of Terrain in Transmitter Direction | | | |
|---|---|---|---|---|
| Station | Freq (MHz) | Signal Level (dBuV) | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Transmitter Site | Description of Terrain in Transmitter Direction | | | |
|---|---|---|---|---|
| Station | Freq (MHz) | Signal Level (dBuV) | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Annex 4**

## Certificate of Compliance

Programme Service Name _____

Name of Transmitter site _____

Transmitter Site National Grid Reference _____

Frequency (MHz/kHz) _____

On-Air date _____

**Transmitter:**

Operating Output RF Power of transmitter
FM sound carrier unmodulated carrier _____
AM sound carrier unmodulated carrier _____
Vision Carrier peak envelope power _____

Measured Frequency of transmitter
AM or FM Sound Carrier _____
Vision Carrier _____

Measured Frequency Deviation at 100 % Modulation _____
(FM sound carrier only)

Measured Maximum Bandwidth of Transmission _____

Measured Maximum Spurious Emission Level _____

Height of Antenna (above ground level) _____

Polarization _____

Aperture of Antenna in Wavelengths _____

Maximum Gain of Antenna _____

Azimuth of preferred Orientation (if N.D.) _____

Azimuth of Maximum Gain (if D) _____

Feeder , Transformer / Harness Loss (dB) _____

Describe any filtering or isolation equipment fitted between the Transmitter output and the Antenna system

_____
_____
_____
_____

I hereby certify that this station complies with the licence characteristics and conditions as issued by the Commission for Communications Regulation.

Signed _____ Date _____
on behalf of _____

**RDS Features**

| Programme Identification (PI) Code (Hexadecimal) |
|---|
| |

| Programme Service Name |
|---|
| |

**Basic Features** ☐ Group Types OA/OB, 15B, 14A/14B, 1A/1B and 4A including

| | | |
|---|---|---|
| Traffic Programme | Traffic Announcement, | Clock Time |
| Program Type | Music/Speech, | Decoder Information |
| Alternative Frequencies | Programme Item Number | Enhanced Other Networks |

| Alternative Frequencies | |
|---|---|
| Transmitter Site | Frequency |
| | |
| | |
| | |
| | |
| | |
| | |

| Enhanced Other Networks |
|---|
| by Pl Hexadecimal Code |
| |
| |
| |
| |
| |
| |

**Additional Features**

| | | |
|---|---|---|
| Radio Text | * | Group Type 2A/2B |
| Transparent Data Channel | * | Group Type 5A//5B |
| In-House | * | Group Type 6A/6B |
| Radio Paging | * | Group Type 7A |
| Traffic Message Channel | * | Group Type 8A |

* = authorised / not authorised

I hereby certify that this station complies with the licence characteristics and conditions as issued by the Commission for Communications Regulation.

Signed _____ Date _____

on behalf of _____