

Consultation Paper:

Review of the Radio Links Licensing Regime

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1 Introduction

The National Frequency Plan, in line with International Telecommunications Union (ITU) Regulations, establishes a number of frequency bands that can be used for the provision of radio links.

This review focuses solely on terrestrial services and excludes services that make use of one or more satellites. Radio links can be divided into the following groups:

- point-to-point links;
- point-to-multipoint systems;
- multipoint-to-multipoint;

These links can form part of electronic communications networks, broadcasting networks (now also classified as electronic communication networks) as well as private networks.

This policy is applicable to the radio links in the spectrum bands above 1 GHz listed in Appendix 1.

The need to revise the existing fees was felt for a number of years. The objective is to establish a new fee structure that incentivises efficient use of spectrum and acts as an enabler of further investment.

This consultation paper outlines the proposals underpinning the new fee structure and elicits feedback from interested parties that should serve as valuable input in the establishment of the new licensing regime.

2 Local Scenario

2.1 National Legislation

Fixed radio relay links are currently licensed under the Radiocommunications Act (RCA) (Cap. 49 of the Laws of Malta) and the applicable fees are established through subsidiary legislation under the Fees Ordinance (Cap. 35 of the Laws of Malta).

The RCA establishes a generic requirement for a licence to possess and use radio communications apparatus unless the apparatus in question is licence-exempt. Each licence therefore authorises the use of specific apparatus which is listed as part of the licence. It also authorises the licensee to use the apparatus for transmissions on frequencies that are listed in the licence.

2.2 Current Licence Categories

Current licences fall under the following two classifications:

- 1) Radio relay links¹ providing backbone services to both public electronic communication networks (mobile telephony, fixed telephony networks etc) and private networks.
 - A few links are established in the UHF band (440 – 455 MHz).
 - The majority of the links are established above 1 GHz.
 - A Malta - Gozo link is established as part of the cable operator's electronic communications network.
 - A link is also established between Malta and Italy as part of a public telephone system.
 - A point-to-multipoint network is established in the 900 MHz frequency band as part of the Telepage paging system.
 - A number of radio relay links are also utilised by public entities namely the national security service organisations and the civil aviation authority. These links are established in bands both above and below 1GHz.

¹ Radio Links: A telecommunication facility of specified characteristics between 2 points provided by means of radio waves

2) Radio relay links (point-to-point) providing backbone or ancillary services to broadcasting networks:

- A number of point-to-point links providing broadcasting studio-to-transmitter (STL) connections as well as various mobile outside broadcasting unit (OBU) links are currently licensed.
- Licensed links are largely analogue.
- Links serve to relay both radio and television services.
- Links are established in bands both above and below 1GHz depending on whether they transmit audio or vision.

STL and OBU links are identified as SAB (Services Ancillary to Broadcasting) in the National Frequency Plan (NFP).

2.3 Current Assignment Methodology

So far, demand has never exceeded supply and all applications have been accommodated. However, prior to accepting an application, the Malta Communications Authority (MCA) carries out a validation process to ensure that the spectrum bands being requested are the most appropriate for the service being established. During this process the MCA initiates discussions with the applicant as may be necessary to ensure that the frequency selected is appropriate² for the service required with a view to making an efficient use of the available spectrum.

Also, from an administrative standpoint, where possible, namely where the risks of harmful interference are negligible, a frequency channel is also assigned to multiple operators.

2.4 Current Fees

Fees applicable to the licences under consideration are established in the Fees Leviable by Government Departments Regulations (S.L.35.01) made under the Fees Ordinance. Details of the fees are given in Appendix 2.

² For example the fixed service can be operated in a number of different frequency bands that have different characteristics. An optimum use of spectrum is therefore obtained when the most appropriate band is selected for the service required.

The following different fixed terrestrial links are identified under Section II of S.L. 35.01:

- *Fixed Radio-Relay Links (item 3):*
Fees (annual) are per terminal and dependant on bandwidth.
- *Broadcasting studio-to-transmitter link for both sound and vision (item 4):*
Fees (annual) are fixed and do not reflect actual bandwidth occupied per link. Fees however make a distinction depending on whether the link supports a radio or television network.
- S.L. 35.01 also makes reference to radio links as part of a National Public Analogue Radiotelephone Service (item 9). This service is no longer in operation.

While licences are issued on a link-by-link basis, re-use of the frequency by the same operator has been encouraged and taken up by some operators. To date there are no incentives to promote such a practice, which leads to an efficient use of spectrum.

Similarly, although digital Services Ancillary to Broadcasting (SAB) radio links are much more spectrum efficient than analogue links, no incentives exist to encourage broadcasters to migrate to digital.

3 Other Jurisdictions

3.1 Spectrum Assignment in Other Countries

In other countries frequency planning is done either by the administration or by the network operators themselves.

CEPT documentation identifies that in most cases, the frequency planning is undertaken by the competent authority, on a link-by-link basis, providing the frequency assignment by use of interference limited criteria to ensure a predefined degree of propagation related availability/performance for the link.³

On the other hand, there are instances where a band (or a part of a band) is assigned on an exclusive basis or by planning among different network operators to whom neighbouring frequency channels are assigned.

Administrative planning is normally undertaken in order to ensure the optimum use of the radio spectrum for the benefit of the maximum number of licensees. For example in Ireland the Administration has a policy not to allocate blocks of spectrum to individual licensees for radio link purposes, rather it assigns frequency channels to individual links on a first come first serve non-exclusive basis. Accordingly, different users may be licensed to use the same frequency channels at different geographic locations.

3.2 Fees in the European Union

The fees levied by other EU member states were researched with a view to establish an appropriate benchmark. Details of the fee structures and revenues generated by other countries were obtained from a Report to the European Commission Directorate General Information Society dated 14th November 2001 'Study on administrative and frequency fees related to the licensing of networks involving the use of frequencies.' The relevant excerpt is found in Appendix 2.

While the report can be considered dated, given that current local fees were already in force in 2001, a comparison with these fees, is considered to provide an indicator of how the local fees were and may still be positioned. In addition, a spot check carried out in Q3 2009 of the applicable fees in Denmark and Ireland has confirmed that the fee structure is still the same. A comparison of fee rates in Malta with rates in other countries is presented in Table1.

³ ECC RECOMMENDATION (01)05 LIST OF PARAMETERS OF DIGITAL POINT-TO-POINT FIXED RADIO LINKS USED FOR NATIONAL PLANNING October 01

Country	Average cost per link (€)	Average cost per inhabitant (€)	Average number of inhabitants per link
Austria	793	1.07	741
Belgium	840	0.41	2041
Denmark	776	0.36	2128
Ireland	1056	1.02	1031
Malta	832	1.30	626
Netherlands	200	0.06	3472
Portugal	1932	0.49	3968
UK	1182	0.52	2262

Table 1: Comparison of fees paid for radio links in different EU countries. Average fees are based on total fees paid by operators^{4,5}

This table indicates that whilst the cost per link in Malta is moderate when compared with that of other Member states, the link cost per inhabitant is high.

3.3 Fees Structure in Other European Countries

The fee structures adopted by Denmark, Ireland and the UK have been reviewed. These are captured in Appendix 2.

The following factors that are utilised by other countries in order to establish spectrum charges are considered to be relevant to the local context:

1. The use of different rates for bandwidth according to the band used:

In Denmark frequencies above 3 GHz are charged at one tenth the charge set for use of frequencies below 3 GHz due to the limited use and national coverage impact of using these higher frequencies.

In Ireland and UK radio links are normally licensed using frequencies above 1GHz.

In the UK a fee rate per MHz of bandwidth above 1GHz has been established. A band factor is then applied. The fee due is established by multiplying the fee rate by a band factor according to the frequency band used. The full cost (factor 1) is borne in the lower bands that support longer links with the factor reducing to 0.17 in the 49.20 to 57 GHz band.

In the UK radio links used by broadcasters are regulated separately. However the fee structure is still based on a per MHz fee that changes according to the band with the highest fee in the lower bands⁶.

⁴ Source: Table 3.21 [Study on administrative and frequency fees related to the licensing of networks involving the use of frequencies](#). Report to the European Commission Directorate General Information Society 14th November 2001

⁵ Rate of Exchange: EUR- MTL 0.4293

2. The use of fee rates that take into consideration bandwidth used:

Different countries take various approaches:

UK: A rate per MHz is established. The rate is for 2x1MHz channels i.e. for a bi-directional link.

Denmark: A rate per MHz is used

Ireland: A three-tier structure is utilised as follows

- Narrow Band (up to 50 kHz)
- Medium Band (between 50 kHz and 3.5 MHz)
- Wide Band (over 3.5 MHz)

3. The use of different rates that take into consideration frequency reuse:

Denmark has a fixed national coverage fee established on a re-use factor of five.

In the UK reused frequency channels are charged at 50%.

4. The use of different rates for unidirectional and bi-directional links:

In the UK unidirectional links are charged at 75% of the bi-directional link fee.

Other factors utilised by other countries relate to:

- Congestion charge – this has not been considered relevant since adequate spectrum is currently available locally.
- Link length charge - this has not been considered relevant given the size of the island.

⁶ <http://www.opsi.gov.uk/si/si2005/20051378.htm>

4 Policy Considerations

The spectrum available for radio links is a finite resource and while at present there is adequate spectrum to meet demand, it is highly important that any assignment/licensing procedure ensures that:

- 1 An efficient use of the available spectrum is made.

Efficient modulation schemes: The use of an efficient modulation scheme minimises the channel bandwidth requirement – for example analogue links are less efficient than digital links.

In order to encourage the use of efficient modulation schemes, spectrum pricing should be linked to bandwidth and should adequately reflect the opportunity cost.

Re-use of same frequency: The re-use of the same frequency for multiple link connections should be encouraged. This can be either established through administrative frequency planning on a link-by-link basis or by allowing the reuse of the assigned frequency for multiple, point-to-point links as is currently the practice.

Given the size of Malta, the relatively limited number of operators, and the fact that extensive reuse has been done by some operators even without any incentive, the current system of assigning a frequency to an operator and allowing for multiple links to be established through self-planning of the most appropriate locations and technical parameters is the most efficient way of assigning link spectrum. An appropriate incentive mechanism is however required to ensure that licensees continue to maximise the reuse potential.

- 2 An optimum use of the available spectrum is made.

Optimum Choice of Frequency Band: The fixed service can be operated in a number of different frequency bands that have different characteristics. An optimum use of spectrum is therefore obtained when the most appropriate band is selected for the service required.

At present a validation of the spectrum requested against the service required is carried out by MCA. This validation will be maintained.

Equivalent Spectrum Pricing: There are considerations to be made in respect of whether a different fee structure, which is dependant on the use to which the spectrum is put, should continue to be supported. Ideally one spectrum fee structure should apply when using the same frequency bands irrespective of the service. This is also in line with the principles of the electronic communications regulatory framework, primarily service and technology neutrality.

5 Proposals for Change in Spectrum Assignment Mechanism

5.1 Licensing Method

Radio apparatus that is used to provide links is classified by the R&TTE directive as Class 2 and therefore restrictions with respect to the placing on the market and putting into service can be applied. A general authorisation or an individual licence can cover conditions related to the putting into service of the apparatus.

The need for individual licensing emerges primarily from the need to assign rights of use of spectrum for each link from a given transmission site.

Proposal 1:

An individual licence will continue to be required as per Appendix 5.

5.2 Proposed Assignment Methodology

At present frequencies are assigned following a public notice of all applications received. To date all requests have been accommodated.

Proposal 2:

Applications for spectrum will continue to be awarded on a first come first served basis following a public notification

5.3 Spectrum Charges

At present there is no fixed fee rate for bandwidth and spectrum is generally priced according to service and not according to the frequency band used.

Any fee structure should ideally reflect the spectrum's commercial value. On this basis it is considered justifiable to establish a different pricing scheme for links dependent of the frequency band used. At this stage a differentiation between frequencies below and above 1GHz is being made to take into consideration the different propagation characteristics.

However, for the time being it is not felt necessary to differentiate the fee according to the bands above 1GHz. In this way the MCA will continue to retain the full flexibility to assign any of the bands (within technical limitations) to applicants. This system has to date allowed MCA to accommodate all the requests for spectrum.

Proposal 3:

The same fee structure will apply for all links above 1GHz

The current structures are not considered to be properly reflective of the existing bandwidth usage by operators. In particular, for broadcasting services (Ancillary), pricing is per link irrespective of bandwidth used. On the other hand, the fee structure for fixed radio relay links is a multi-tier system based on the amount of bandwidth used per link but is not properly structured and penalises lower bandwidth usage.

For the purposes of the following analysis the fees as established for fixed radio relay links are used.

The following table captures the current fees for links of different bandwidth payable in Malta compared to the fees payable in the countries that have been reviewed. Further comparisons are available in Appendix 3. From these calculations it is clear that the current fees in Malta are very high, in most cases the highest, particularly when considered on a per inhabitant basis.

Bandwidth	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
1 MHz	0.743	0.205	0.021	0.025	0.739
3.5 MHz	1.110	0.719	0.072	0.087	0.739
7 MHz	1.110	1.437	0.144	0.174	0.924
14MHz	1.486	2.875	0.287	0.349	0.924
28 MHz	1.486	5.749	0.575	0.697	0.924

Table 2: Fees per inhabitant for unidirectional links of different bandwidths

A fee structure that best reflects bandwidth usage is considered to be one linked to fixed units of bandwidth. For bands above 1GHz the UK and Danish models of price per 1MHz bandwidth are considered to best reflect actual usage.

Proposal 4:

It is therefore proposed that a spectrum charge per 1MHz of bandwidth be established for spectrum in bands above 1GHz

Spectrum charges vary considerably between countries and are dependant on a number of factors such as pricing of alternative connections and scarcity of spectrum:

*'Absolute charges for fixed links vary significantly, from a few hundred euros per annum in some Member States, to over € 10,000 per annum for long haul links in Portugal.'*⁷

This report also highlights that there are a number of difficulties inherent in valuing radio spectrum, even for similar applications in similar frequency bands.

Given that the current fees can be considered comparatively high at the lower bandwidth levels but on the lower end for the higher bandwidths (see table 2), the chosen approach was to identify a fee based on a per MHz rate that would address the above anomaly.

Furthermore the proposed fee was also compared with fees of foreign jurisdictions. This comparison shows that a fee of €45 per MHz would be more comparable to that in other European states, as can be seen from Appendix 4.

Proposal 5:

It is therefore being proposed that a €45 per MHz fee be established.

5.3.1 Re-Use Factor

An incentive needs to be introduced to encourage operators to invest in the reutilisation of assigned frequencies.

Proposal 6:

It is proposed that both a reduced fee for re-use by the operators themselves be established; for re-used channels, fees would be reduced by 50%.

Proposal 7:

It is proposed that a fixed fee that would allow users to establish any number of links (a national coverage fee) be established. A national coverage fee would also be applied to point-to-multipoint links. The national coverage fee would be set at the fee due for 10 re-uses. The fee rate that would be due for 1 MHz of bandwidth (unidirectional) having national coverage at €45 per MHz is €247.50 per MHz

⁷ Extract from **Study on administrative and frequency fees related to the licensing of networks involving the use of frequencies Report to the European Commission Directorate General Information Society dated November 2001**

Proposal 8:

The choice of the type of licence (i.e. per link or national coverage) will reside with the operators.

Note 1: First link is charged at €45 per MHz, the remaining 9 links in the same frequency band are charged at €22.50 per MHz. Subsequent links in the same band are free of charge

Note 2: The payment of a national coverage fee would give the operator the right to deploy any number of links with the channel spacing less than or equal to the relevant frequency channel for which the national coverage fee has been paid⁸.

5.3.2 Unidirectional and Bidirectional Links

At present fees do not take into consideration how links are used but are solely based on the bandwidth requested. This means that bi-directional links are charged twice unidirectional ones.

This procedure supports efficient use of spectrum since when unidirectional links are assigned the related paired channel can be assigned to other parties for another unidirectional link even in the same area.

Proposal 9:

This report supports a bandwidth related fee and therefore recommends that the current procedure be maintained.

5.4 Fee Structure for Services Ancillary to Broadcasting

At present specific fee structures are established for licences ancillary to broadcasting. These fee structures are markedly different from the fee structures established for other links making use of the same spectrum. In addition the current fee structure is a fixed fee per link and does not encourage an efficient and optimum use of frequency.

Ideally no distinction should be made between the services to which the link is put to use, and all links using the same spectrum should pay the same fee. This approach would also be in line with the EU framework which strives to create a technology and service neutral environment.

Proposal 10:

It is proposed that the same fee structures are applied irrespective of service.

13. Do you agree that the same fee structures should apply irrespective of

5.5 Implementation

At the same time a transition to the fee structures proposed in section 5.3 above will introduce a substantial increase in operating costs for some operators in particular broadcasters.

Proposal 11:

It is therefore proposed that a 2-year transition period to introduce the new fee structures is adopted such that:

- Adequate time is provided for current licensees to take action to reduce use of spectrum through the introduction of digital links and appropriate technology as may be possible and
- any increase in costs can be planned for over a period of time

5.6 Licence Terms and Conditions

Currently the licence duration is of one (1) year renewable. One licence is currently issued per operator and this captures all the authorised links.

Proposal 12:

It is proposed that this structure is maintained. A copy of the draft licence is available in Appendix 5.

⁸ For example: if the operator pays the nationwide coverage fee for a 28MHz channel in the 23GHz band, the operator in question would be able to deploy any number of links using channels even with 3.5MHz channel spacing that fall entirely within the 28MHz.

6 Conclusion

The MCA invites comments from interested parties regarding this Consultation Paper. The consultation period will run until 16:00pm on Monday 19th October 2009. Comments should be sent to:

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Written representations will be made public by the MCA subject to the MCA's Internal Guidelines on Confidentiality published on 16 December 2004.

Ing. Philip Micallef

Chairman

4 September 2009

APPENDIX 1

Spectrum Bands Under Consideration

Bands	Frequency Range
5GHz	5925 – 6167.575 / 6182.415 – 6425 MHz
6GHz	6425 – 6750 / 6770 – 7090 MHz
7GHz	7125 – 7268 / 7282 – 7425 MHz 7425 – 7568 / 7582 – 7725 MHz
8GHz	7900 – 8185 / 8215 – 8500 MHz
10GHz	10150 – 10300 / 10500 – 10650 MHz
11GHz	10700 – 11195 / 11205 – 11685 MHz
13GHz	12.75 – 13.0 / 13.0 – 13.25 GHz
15GHz	14.5 – 15.35 GHz
18GHz	17.7 – 18.7 / 18.7 – 19.7 GHz
23GHz	22 – 22.6 / 23- 23.6 GHz
38GHz	37 – 38.178 / 38.318 – 39.5 GHz

APPENDIX 2

Country Fee Structures

MALTA

Extract from SUBSIDIARY LEGISLATION 35.01 – Fees Leviable by Government Departments Regulations

3. Fixed Radio-Relay link, for each terminal, depending upon the bandwidth, per annum fee:

(a) not more than 100KHz	€230
(b) more than 100KHz up to 1MHz	€465
(c) more than 1MHz up to 10MHz	€695
(d) more than 10MHz up to 100MHz	€930
(e) more than 100MHz, per 100MHz bandwidth	€930

4. Broadcasting services (Ancillary), per annum fee:

(a) Sound -	
(i) Studio to transmitter link	€116
(ii) Outside broadcasting unit	€116.40
(iii) Repeater	€116.40
(b) Vision -	
(i) Studio to transmitter link	€230
(ii) Outside broadcasting unit	€230
(iii) Repeater	€116.40

9. (a) National Public Analogue Radiotelephone Service, per annum fee:

(i) for 143 paired 25 kHz channels in the 900 MHz band and 6 paired microwave channels in the 10 GHz band	€26,320
(ii) for each additional paired 25 kHz channel in the 900 MHz band	€170

(b) GSM end user terminals operating in the 900MHz and/or 1800MHz bands
..... no charge

EUROPE

The following table is extracted from **Study on administrative and frequency fees related to the licensing of networks involving the use of frequencies Report to the European Commission Directorate General Information Society dated November 2001.**

Table 3.21: Approximate number of fixed links and revenue generated by administrative fees and spectrum fees / charges in EU Member States (where provided by NRAs)

	No. of links	No. of links per 1M population	Approx. annual revenue (€)
B	5,000	490	4,200,000
DK	2,500	470	1,940,000
D	40,800	495	Not available
E	17,000	435	Not available
IRL	3,800	970	3,800,000
I	3,000	53	Not available
NL	4,500	288	900,000
A	11,000	1,350	8,720,000
P	2,500	252	4,830,000
FIN	7,516	1,482	1,620,000
UK	25,647 ^[1]	442	30,323,000

[1]: links currently licensed by RA – further links operated by BT and Cable and Wireless in currently self-managed spectrum.

DENMARK

Extract from Executive Order No. 1494 of 16 December 2004 - Executive Order on the National Telecom Agency's Fees and Charges in 2005.⁹

3.-(1) For licences for frequency use of the following radioservices, frequency charges shall be paid. The frequency charges consist partly of a usage charge of DKK 180 (€24.12), collected annually for all licences, including new licences issued, and partly of the spectrum charges listed below:

- 41) Fixed radio link below 3 GHz, per MHz - DKK 3,260 (€436.87)
- 42) Fixed radio link and FWA per position above 3 GHz, per MHz - DKK 326 (€43.69)
- 43) Fixed radio link above 3 GHz, per MHz, nationwide - DKK 1630 (€218.44) (x5 factor)

National frequency use is charged at five times the fee of a single transmitter position i.e. an average re-use factor of 5 is assumed.

Exchange Rate Danish Kroner to Euro 7.4623: source Central Bank of Malta 8th October 2008.

⁹ <http://en.itst.dk/law-material/executive-orders-1/executive-order-on-the-national-telecom-agencys-fees-and-charges-in-2005/?searchterm=Executive%20Order%20on%20the%20National%20Telecom%20Agency's%20Fees%20and%20Charges>

UNITED KINGDOM

According to the Wireless Telegraphy (Licence Charges) Regulations 2005¹⁰, spectrum fees for point-to-point radio links are calculated based on a formula that takes into consideration a number of factors –

$$As = Sp \times Bwf \times Bf \times Plf \times Avf$$

Where –

- 'As' means the sum to be calculated in pounds sterling
- 'SP' is the spectrum price, being a sum set at £88 per 2 x 1 MHz for each bi-directional
- 'Bwf' means the value of actual system bandwidth (MHz)
- 'Bf' means the band factor which is determined by the actual frequency band.
- 'Plf' is the path length factor which is determined from the actual path length (Pl).
- 'Avf' means the availability factor which is determined from the required system availability.

In 2006, OFCOM consulted on the possibility that the 'Plf' factor is set at 1 for the Channel Islands as the constraints of the island necessitated a simplification of the formula¹¹. In its response to consultation¹², OFCOM stated that it will implement this change at a suitable opportunity. This change was eventually implemented in August 2007¹³.

Conditional modifiers to the licence fee are:

- For a customer with an additional link co-ordinated on a bi-directional basis and where links are operating co-channel and cross-polar along common paths, then the additional link(s) are charged at 50 percent of the original sum.
- For each uni-directional fixed link then 75 per cent of the prescribed sum specified is applied.

IRELAND

Source Revised Guidelines to Applicants for Radio Links – Point-to-Point Document No: ComReg 98/14R6 Date: October 2008¹⁴

Bandwidth of Radio Link	Radio Link Licence Fee (Point to Point)
Narrow Band (up to 50 kHz)	€571.38per radio link
Medium Band (between 50 kHz and 3.5 MHz)	€761.84 per radio link
Wide Band (over 3.5 MHz)	€952.30 per radio link

¹⁰ <http://www.opsi.gov.uk/si/si2005/20051378.htm>

¹¹ Modifications to Spectrum Pricing A consultation on proposals for setting wireless telegraphy act licence fees 6th July 06

¹² <http://www.ofcom.org.uk/consult/condocs/pricing06/statement/statement.pdf>

¹³ <http://www.ofcom.org.uk/consult/condocs/licencecharges/statement/wtstatement.pdf>

¹⁴ http://www.comreg.ie/_fileupload/publications/ComReg9814R6.pdf

APPENDIX 3

Comparison of Existing Fee Structures

	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
Inhabitant per link	626	2128	2128	2262	1031
Population	400,000	5319149	5319149	58024887	3711340.21

Fee Comparison - assuming uni-directional link

Bandwidth	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
1 MHz	465	436.87	43.69	84.48	761.84
3.5 MHz	695	1529.045	152.915	295.68	761.84
7 MHz	695	3058.09	305.83	591.36	952.30
14MHz	930	6116.18	611.66	1182.72	952.30
28 MHz	930	12232.36	1223.32	2365.44	952.30

Fee per 'inhabitant per link' Comparison

Bandwidth	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
1 MHz	0.743	0.205	0.021	0.025	0.739
3.5 MHz	1.110	0.719	0.072	0.087	0.739
7 MHz	1.110	1.437	0.144	0.174	0.924
14MHz	1.486	2.875	0.287	0.349	0.924
28 MHz	1.486	5.749	0.575	0.697	0.924

Fee per 'inhabitant per link' per MHz Comparison

Bandwidth	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
1 MHz	0.743	0.205	0.021	0.025	0.739
3.5 MHz	0.317	0.205	0.021	0.025	0.211
7 MHz	0.159	0.205	0.021	0.025	0.132
14MHz	0.106	0.205	0.021	0.025	0.066
28 MHz	0.053	0.205	0.021	0.025	0.033

APPENDIX 4

Comparison of Proposed Fee Structures @ €45 per MHz

	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
Inhabitant per link	626	2128	2128	2262	1031
Population	400,000	5319149	5319149	58024887	3711340.21

Fee Comparison - assuming uni-directional link

Bandwidth	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
1 MHz	45	436.87	43.69	84.48	761.84
3.5 MHz	157.5	1529.045	152.915	295.68	761.84
7 MHz	315	3058.09	305.83	591.36	952.30
14MHz	630	6116.18	611.66	1182.72	952.30
28 MHz	1260	12232.36	1223.32	2365.44	952.30

Fee per 'inhabitant per link' Comparison

Bandwidth	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
1 MHz	0.072	0.205	0.021	0.037	0.739
3.5 MHz	0.252	0.719	0.072	0.131	0.739
7 MHz	0.503	1.437	0.144	0.261	0.924
14MHz	1.006	2.875	0.287	0.523	0.924
28 MHz	2.013	5.749	0.575	1.046	0.924

Fee per 'inhabitant per link' per MHz Comparison

Bandwidth	Malta	Denmark (Below 3GHz)	Denmark (Above 3GHz)	UK	Ireland
1 MHz	0.072	0.205	0.021	0.037	0.739
3.5 MHz	0.072	0.205	0.021	0.037	0.211
7 MHz	0.072	0.205	0.021	0.037	0.132
14MHz	0.072	0.205	0.021	0.037	0.066
28 MHz	0.072	0.205	0.021	0.037	0.033

APPENDIX 5

Licence Template

GRANT OF RIGHTS OF USE OF RADIO FREQUENCY SPECTRUM AND RELATED RADIOCOMMUNICATIONS APPARATUS FOR THE ESTABLISHMENT AND OPERATION OF RADIO LINKS

Name of Licensee:	[XXXXXX]
Registered Address:	[XXXXXX]
Company Registration Number:	[XXXXXX]

Article 1. Definitions

- 1.1 Any reference in this Licence to the "ECRA" is a reference to the Electronic Communications (Regulation) Act (Cap. 399 of the Laws of Malta), any reference in this Licence to the "RCA" is a reference to the Radiocommunications Act (Cap. 49 of the Laws of Malta), and subject to Article 1.2 of this Licence, the provisions of the said laws shall apply to this Licence.
- 1.2 In this Licence, unless the context otherwise requires:
- "Authority" means the Malta Communications Authority;
- "the Commencement Date" means [XXXXXX];
- "the Expiry Date" means [XXXXXX];
- "the Radiocommunications Apparatus" means all the apparatus comprising the radio links as defined in Annex II to this Licence;
- "the Radio Frequency Spectrum" means that defined in Annex I to this Licence;
- "R&TTE Regulations" means the Radio Equipment and Telecommunications Terminal Equipment and the Mutual Recognition of their Conformity Regulations, 2002;
- "the Licensee" means [XXXXXX].

SECTION A: RIGHT OF USE OF RADIO FREQUENCY SPECTRUM

The provisions under this section of the Licence are being issued by the Malta Communications Authority in exercise of the powers conferred by the Electronic Communications (Regulation) Act, (Cap.399) of the Laws of Malta.

Article 2. Grant of Licence

- 2.1 By virtue of this Licence, the Authority hereby assigns to the Licensee the right of use of the Radio Frequency Spectrum, for the purpose of establishing and operating radio links according to the conditions listed hereunder.

Article 3. Licence Duration

- 3.1 This Licence shall commence on the Commencement Date and shall remain in force until the Expiry Date, unless otherwise lawfully terminated in accordance with the ECRA and/ or this Licence.
- 3.2 This Licence shall cease to have effect immediately on the Expiry Date.
- 3.3 Irrespective of whether the Licensee is still using the Radio Frequency Spectrum, the right of use of which is granted to it by virtue of this Licence, the Authority shall, at any time prior to the expiry of this Licence, have the right to commence any procedures necessary for the re-assignment of the rights of use of the Radio Frequency Spectrum upon the expiry of this Licence.

Article 4. Use of Radio Frequency Spectrum

- 4.1 The Radio Frequency Spectrum shall be used by the Licensee only to establish and operate radio links in accordance with the parameters laid down in Annex I to this Licence and subject to the terms, conditions and limitations stated in this Licence, unless otherwise previously authorised in writing by the Authority.
- 4.2 The Licensee shall at all times ensure that the Radio Frequency Spectrum is used efficiently in accordance with the Authority's directions.
- 4.3 The Radio Frequency Spectrum shall only be used by the Licensee. The right of use of the Radio Frequency Spectrum may not be assigned or transferred to third parties, unless otherwise previously authorised in writing by the Authority.

Provided that a change, in anyway whatsoever, in the ownership of shares with voting rights of the Licensee shall be considered to constitute an assignment or transfer of the Radio Frequency Spectrum.

- 4.4 The Licensee shall immediately in writing inform the Authority of any changes effected to its corporate structure, including, but not limited to, any changes in shareholding, and registered address.

Article 5. Non-Interference

- 5.1 The Licensee shall comply with any directives and, or decisions, however so described, issued by the Authority in relation to harmful interference.
- 5.2 The Licensee shall ensure that the Radiocommunications Apparatus at all times complies with the technical and performance standards generally accepted by the industry, or as may be prescribed by the Authority, or accepted by the Authority as being adequate to ensure that such system does not cause harmful interference with, seriously reduce the quality of, or repeatedly disrupt the lawful use or operation, of any other electronic communications networks and, or services.
- 5.3 The Licensee shall ensure that its Radiocommunications Apparatus does not cause harmful interference with, seriously reduce the quality of, or disrupt the lawful use or operation of, any other electronic communications networks and, or services.
- 5.4 Neither the Authority, nor the Government of Malta, shall be held responsible in any manner whatsoever by the Licensee for any harmful interference that may hinder the use or operation of its Radiocommunications Apparatus.

Article 6. Exposure to Electromagnetic Fields

- 6.1 The Licensee shall comply with any radiation emission standards adopted and published by the International Commission for Non-Ionising Radiation Protection (ICNIRP) and any other appropriate standards as may be specified by law or by the Authority.
- 6.2 The Licensee shall comply with any decisions issued by the Authority in relation to electromagnetic radiation and shall ensure that the Radiocommunications Apparatus at all times complies with the technical and performance standards generally accepted by the industry, or as may be prescribed by the Authority in line with national and European Community Law, or accepted by the Authority as being adequate to ensure the limitation of exposure of the general public to electromagnetic fields.
- 6.3 The Licensee shall ensure that its Radiocommunications Apparatus is not installed or operated at a location and in a manner such as to be the cause of the aggregate non-ionising radiation emissions exceeding the limits published by the ICNIRP or any other appropriate standards as may be specified by law or by the Authority.

SECTION B: RIGHT OF USE OR POSSESSION OF RADIOCOMMUNICATIONS APPARATUS

The provisions under this section of the Licence are being issued by the Malta Communications Authority in exercise of the powers conferred by the Radiocommunications Act (Chapter 49 of the Laws of Malta) by virtue of Government Notice 835 of the 30th July 2004.

Article 7. Grant of Licence

7.1 By virtue of this Licence, the Authority hereby assigns to the Licensee the right to hold and operate the Radiocommunications Apparatus for the purpose of establishing and operating radio links according to the conditions listed hereunder.

Article 8. Licence Duration

8.1 This Licence shall commence on the Commencement Date and shall remain in force until the Expiry Date, unless otherwise lawfully terminated in accordance with the RCA and/ or this Licence.

8.2 This Licence shall cease to have effect immediately on the Expiry Date.

Article 9. Fee for Right of Use of Radiocommunications Apparatus

9.1 The Licensee shall immediately upon issue of this Licence and thereafter annually, in advance, for the duration of this Licence, pay to the Authority the fees stipulated from time to time under the Fees Ordinance (Cap. 35 of the Laws of Malta) or any other legislation applicable from time to time in respect of radiocommunications apparatus.

Provided that the Licensee shall effect such payments punctually and that any late payments shall be subject to the penalties prescribed under the Radiocommunications Act and any other applicable legislation:

Provided further that any non-payment or late payment of dues under this Article shall also constitute a breach of this Licence.

9.2 All payments effected by the Licensee in accordance with Article 9.1 of this Licence are not refundable by the Authority and/or Government.

Article 10. Conditions of Use and Possession of the Radiocommunications Apparatus

10.1 The Radiocommunications Apparatus shall be maintained so as to remain compliant with the provisions of the R&TTE Regulations.

10.2 The Radiocommunications Apparatus shall be used by the Licensee only to establish and operate radio links in accordance with the parameters laid down in Annex I to this Licence and subject to the terms, conditions and limitations stated in this Licence, unless otherwise previously authorised in writing by the Authority.

10.3 This Licence does not authorise the Licensee to transfer the ownership, authorise the use or dispose of the Radiocommunications Apparatus, or any part thereof, in any way whatsoever, without the prior express consent in writing by the Authority.

Provided that a change, in anyway whatsoever, in the ownership of shares with voting rights of the Licensee shall be considered to constitute an assignment or transfer of the Radiocommunications Apparatus.

- 10.4 The Radiocommunications Apparatus shall be operated exclusively by personnel duly authorised by the Licensee and under the responsibility of the Licensee.
- 10.5 The Licensee shall not permit any unauthorised persons to operate the Radiocommunications Apparatus.
- 10.6 The Licensee shall ensure that persons authorised to operate the Radiocommunications Apparatus mentioned in Annex II to this Licence observe the terms, conditions and limitations of this Licence.

SECTION C: COMMON PROVISIONS

The provisions under this section of the Licence are being issued by the Malta Communications Authority in exercise of the powers conferred by the Electronic Communications (Regulation) Act, (Cap.399 of the Laws of Malta) and by the Radiocommunications Act (Cap. 49 of the Laws of Malta).

Article 11. Information

- 11.1 The Licensee shall facilitate and ensure access to any information that the Authority may, in accordance with its functions at law, request.
- 11.2 The Licensee shall promptly provide the Authority, in such a manner and at such times as the Authority may reasonably request, any information related to the use of the Radio Frequency Spectrum and/or the Radiocommunications Apparatus assigned to the Licensee, or any other information that the Authority considers necessary to ensure compliance with this Licence and, or with the provisions of any law, or for statistical purposes.

Article 12. Further Compliance

- 12.1 The Licensee shall comply with:
 - a) all laws;
 - b) any orders, decisions or other directives, however so described, of the Authority; and
 - c) all the articles of this Licence.
- 12.2 Nothing in this Licence shall absolve the Licensee from any legal requirement to obtain any other permissions, authorisations or licences, however so described, as may be necessary for the provision of the service and for the exercise of its rights and the discharge of its obligations under this Licence:

Provided that failure on the part of the Licensee to comply with any other requirements shall not exempt the Licensee from any failure to discharge its obligations under this Licence.

Provided further that the Licensee shall be solely responsible for all costs, expenses and other commitments, however so described, whether financial or otherwise, in respect of the Licence and the provision of the service, and the Authority shall bear no responsibility for any such costs, expenses or commitments.

Article 13. Termination

13.1 Without prejudice to any other measures, including the imposition of penalties, that may be taken at law for the non-observance of the conditions of this Licence, the right of use of the Radio Frequency Spectrum and/or the right of use or possession of the Radiocommunications Apparatus may be withdrawn at any time by the Authority if any of the conditions laid down at law or in any section of this Licence are not observed.

Provided that the Authority shall have the discretion to terminate the right of use or possession of only that part of the Radiocommunications Apparatus which is not compliant with the law or with any section of this Licence.

13.2 The right of use of the Radio Frequency Spectrum and/or the right of use or possession of the Radiocommunications Apparatus shall automatically be terminated with immediate effect and returned by the Licensee to the Authority, in any of the following cases:

- a. upon the expiration of the term of the Licence;
- b. upon renunciation by the Licensee;
- c. upon revocation of this Licence in accordance with the articles of this Licence and, or of law;
- d. upon insolvency, liquidation or bankruptcy of the Licensee;
- e. upon the winding up or dissolution of the Licensee; or
- f. in accordance with any provisions of the ECRA/RCA and/or Article 14.2 of this Licence.

13.3 Termination of the right of use of the Radio Frequency Spectrum in accordance with this article shall also bring about the automatic termination of the right of use or possession of the Radiocommunications Apparatus.

13.4 Termination of the right of use or possession of the Radiocommunications Apparatus in accordance with this article shall NOT bring about the automatic termination of the right of use of the Radio Frequency Spectrum, which right of use shall remain in force unless specifically terminated.

Article 14. Rights and Remedies of the Authority

14.1 In addition to its power to terminate this Licence in accordance with Article 13 above, the Authority shall, in accordance with its powers at law, have the power to impose administrative fines on the Licensee for any non-compliance with the conditions of this Licence.

14.2 The Authority may add to, or amend or revoke any of the terms and conditions of this Licence, including the Radio Frequency Spectrum the right of use of which is being granted by this Licence, when such additions or amendments are necessary

as a result of any international obligations entered into by the Authority or by the Government of Malta, or by the need to ensure compliance with the ECRA/RCA or any other law, or by the need to ensure efficient frequency planning:

Provided that the Authority shall not be held responsible in any manner whatsoever for any damages suffered or expenses incurred by the Licensee as a result of any amendment of the terms or conditions of this Licence.

Provided further that the Authority should inform the Licensee in advance and take into account its views if relevant impact is foreseeable on the Licensee and circumstances so permit, granting a reasonable timeframe for the implementation of the relevant additions and, or amendments to the conditions.

14.3 If any article of this Licence is declared to be unenforceable by any court of law or tribunal however so described, such declaration shall have no effect on the enforceability of the remaining articles of this Licence, all of which will remain in force until the termination of this Licence.

14.4 The Authority and any persons duly authorised by the Authority to act on its behalf, shall have the right to carry out inspections and measurements on any site and apparatus, being operated by the Licensee at any reasonable time, for the purpose of ensuring that the Licensee is abiding with the articles of this Licence and, or with any legal requirements:

Provided that in cases of urgency the Authority may carry out any such inspections outside normal business hours.

14.5 All the articles under this Licence shall for the purpose of law be considered as decisions imposed by the Authority and any failure to abide with any such articles may, without prejudice to any other measures that the Authority may in accordance with the applicable legislation take, be sanctioned by the imposition of the appropriate administrative fines in accordance with the applicable legislation.

14.6 The ECRA/RCA, any other national laws, directives and decisions however so described of the Authority shall apply to the Licensee for all purposes and shall form an integral part of this Licence.

Signed in duplicate.

Malta Communications Authority

Annex I – Description of the Technical Parameters of the Radiocommunications Apparatus

AI.1 Description of radio frequencies

Operating radio frequencies: [XXXXXXX] MHz

Radio frequency bandwidth: [XXXXXXX] MHz

AI.2 Description of Emissions:

Designation of emission: [XXXXXXX]

Maximum output power: [XXXXXXX] Watts

Annex II – Description of the Radiocommunications Apparatus

AII.1 Description of the Radiocommunications Apparatus:

Type of Equipment	Manufacture	Model	Serial Number

AII.2 Description of installation location:

Address: [XXXXXX]

Geographical coordinates: [XXXXXX]
[XXXXXX]

Antenna altitude above sea level: [XXXXXX]

AII.3 Description of Antenna:

Type of Antenna: [XXXXXX]

Antenna beamwidth: [XXXXXX]

Antenna azimuth: [XXXXXX]

Maximum bore-sight gain: [XXXXXX]

AII.4 Radiocommunications Apparatus communications:

Radiocommunications apparatus communicating with: [XXXXXX]

Length of Radio Path: [XXXXXX]

Bibliography

Denmark

Executive Order No. 1494 of 16 December 2004 - Executive Order on the National Telecom Agency's Fees and Charges in 2005.

'The Danish frequency administration in an international perspective' report dated April 2000 from the National Telecom Agency.

Ireland

Revised Guidelines to Applicants for Radio Links – Point-to-Point Document No: ComReg 98/14R6 Date: October 2008

New Zealand Documentation

A Guide to the Radiocommunications Regulations 2001:
<http://www.rsm.govt.nz/legislation/rr2001guide/rr2001guide.pdf>

United Kingdom

Licensing Procedures Manual for Private Business Systems Version 4 June 2003 issued by the Radiocommunications Agency.

OfW48: UK Frequency Allocations for Scanning Telemetry and Fixed (Point-to-Point) Wireless Services (formerly RA 143)

Other

ECC RECOMMENDATION (01)05 LIST OF PARAMETERS OF DIGITAL POINT-TO-POINT FIXED RADIO LINKS USED FOR NATIONAL PLANNING October 01

New EU Radio Spectrum Strategy - MEMO/05/345

Study on administrative and frequency fees related to the licensing of networks involving the use of frequencies Report to the European Commission Directorate General Information Society dated November 2001