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Federal Department of the Environment,
Transport, Energy and Communications DETEC

Federal Office of Communications OFCOM

Public Consultation

concerning

**the re-tender for and award of mobile radio frequencies
in Switzerland by 1 January 2014**

Contents

- 1 Introduction 3
- 2 Overview 4
- 3 Information on the party making the submission 8
- 4 Comments on the analysis report 9
- 5 Questionnaire 10
 - 5.1 Questions concerning technological development 10
 - 5.2 Questions concerning the development of the mobile radio market in Switzerland .. 11
 - 5.3 Questions concerning the procedure outlined by ComCom 13
 - 5.4 Questions concerning frequency configuration 14
 - 5.5 Questions concerning environmental issues 15

1 Introduction

In autumn 2007 on behalf of the Federal Communications Commission (ComCom) OFCOM carried out a public consultation concerning the possibilities of allocating free frequencies in the UMTS core band and extension band. This consultation showed that incumbent operators had certain though not essential interest in the available frequencies of the UMTS core band, but not in the frequencies of the UMTS extension band. Furthermore no interest on these frequencies from any new mobile network operator could be identified.

Due to the fact that the GSM licences of Orange, Sunrise and Swisscom have expired on 31 May 2008, ComCom decided to extend the intended purpose of these licences (in the sense of an utilisation of the considered frequency ranges both for GSM technology and UMTS technology) and to prolong the term of license to the end of 2013. In particular, the motivation of this prolongation was to achieve harmonisation of the term of the licences with those of Tele2 and In&Phone.

Considering the mutual dependencies of tender procedures for mobile radio licences in different frequency bands, on 7 April 2008 ComCom decided first of all not to invite tenders for the free UMTS frequencies, but rather to acquire an overall view of the mobile radio frequencies which would be available in the future (900MHz band, 1800MHz band, 2.1GHz band, 2.6GHz band and the digital dividend). In this context, ComCom envisages a re-allocation of the entire Swiss mobile radio spectrum from the beginning of 2014 (with corresponding transfers of the rights to use the UMTS core frequency band from the beginning of 2017) by way of an auction.

With particular regard to the currently high price level in the Swiss mobile radio market, ComCom considered the possibility of stimulating the mobile radio market by means of a new national operator. However, in view of the prospects of success of such a scenario generally classed as low, ComCom intends to avoid any specific measures to promote a new entrant to the market. For technical (ONIR, Digital Dividend), economical (LTE market maturity) and legal (lack of a legal basis for national roaming or price ceilings) reasons the specific support regarding the market entry of an additional national provider with own infrastructure has been assessed to have less chance of success. In fact, ComCom is focusing on scenarios which are based on an auction of the entire available spectrum in small frequency blocks open to all interested parties. Currently this may stimulate competition in the Swiss mobile market soonest. The existing mobile radio providers should also have an opportunity to acquire frequency configurations suited to contribute to more intensive competition and associated lower prices; finally the number of competitors is a result of the market.

ComCom commissioned OFCOM to begin the preparatory work for an award of corresponding licences. It is expected that the award process will take place in the course of 2010 / 2011.

Within the framework of the above-mentioned preparatory work, OFCOM is inviting all interested parties (e.g. network operators, consumer organisations, service providers, content providers, equipment manufacturers, etc.) to submit their written comments on the (also online) published analysis report as well as on questions related to the award of licences to the following address by **26th June 2009**:

Bundesamt für Kommunikation
Sektion Mobil- und Satellitenfunkdienst
Zukunftstrasse 44
CH-2501 Biel/Bienne

Comments should also be submitted in electronic form (Word format). The comments will be incorporated in an evaluation report, which will be published.

Any possible further questions concerning the consultation should be submitted in writing to the above address.

2 Overview

With regard to the re-allocation of the entire frequency spectrum in Switzerland for mobile radio, the current situation was analyzed.. The basic findings from the situation analysis can be summarised as follows:

Current situation

All available frequencies are currently allocated in the 900 MHz GSM band. In the 1800 MHz GSM band, the frequencies allocated to Tele2 became free again at the end of 2008 as a result of the take-over of Tele2 by Sunrise. The corresponding GSM licences expire at the end of 2013. Within the framework of the procedure to renew the licences of Orange, Sunrise and Swisscom, these operators attempt to use the GSM spectrum also for UMTS. The procedure regarding the use of these frequencies after 2013 should be arranged as soon as possible.

Regarding the UMTS core band (2100 MHz), bandwidth of approximately 2 x 15 MHz FDD and 1 x 5 MHz TDD is available. The remaining frequencies are currently allocated. The corresponding licences expire at the end of 2016. Although, from today's viewpoint, additional spectrum in the UMTS core band does not appear to be essential for the existing licensees in the next few years, the question is posed as to whether this spectrum should be made available temporarily for overcoming any capacity bottlenecks. In this context, it would be conceivable to allocate one 5 MHz FDD channel on request, as long as sufficient channels are available for all interested parties. Allocation would take place at the latest by the conclusion of an award procedure, provisionally in 2010. Any licensees would have to pay the regular administration and licence fees (annual licence fee for 5 MHz FDD: CHF 624,000.00; annual administration fee for 5 MHz FDD: CHF 40,000.00). You can comment on the procedure outlined under question 20 of the questionnaire below, and in particular state any interest in allocation of individual UMTS core band frequencies which are free.

In the UMTS extension band (2600 MHz) 190 MHz bandwidth is available. Considering the results of the public consultation in autumn 2007 concerning the possibilities of allocating free UMTS frequencies, there seems to be less interest in these frequencies, either from existing licensees or other companies.

It can be assumed that a bandwidth of 72 MHz resulting from the digital dividend in the UHF band (< 1GHz) will be available from about 2013 for the provision of mobile radio services, including the technical standards necessary for their utilisation. Given their very good propagation characteristics, high interest is expected for these frequencies. If neighbouring countries decide to continue using the 790-862 MHz frequency band for broadcasting services, this might lead to technical limitations in border areas for Swiss mobile radio operators. In October 2008, the French government announced that the upper sub-band will be used for mobile services in France from 2012. A corresponding decision still has to be taken in Germany. From today's viewpoint, it can be assumed that it will be possible to introduce mobile radio services in this frequency band from 2013/15 at least in German-speaking and French-speaking Switzerland. Since Italy intends to use this frequency band for broadcasting beyond

2015, there is a risk that in border areas near Italy fairly major technical restrictions will have to be taken into consideration.

Frequencies in low frequency ranges (UHF, GSM) are more attractive, given their propagation characteristics and good penetration of buildings, than frequencies in higher frequency ranges (UMTS core band and extension band as well as BWA).

Internationally, the objective will be a frequency utilisation which is as flexible as possible. Frequency utilisation rights should be awarded in a technology-neutral and service-neutral manner and the licences should include as few technical and regulatory conditions as possible.

Technical development is heading towards mobile broadband connections with bandwidths >100 Mbit/s. It is to be expected that LTE (Long Term Evolution), a further development of the UMTS standard, will make its mark and will provisionally be available by 2012.

There is potential for increasing competition in the Swiss mobile radio market. However, the possibilities of stimulating competition through the award of frequencies and licences are limited.

Important issues concerning a re-allocation

The following key issues were analysed with reference to a re-allocation of the frequency spectrum for Swiss mobile radio. The most important findings are:

New invitation to tender vs. renewal: From a legal and economic viewpoint, a new invitation to tender, as the normal case provided for in the TCA, is the preferable alternative.

Auction vs. beauty contest According ComCom point of view the advantages of an auction prevail in comparison to a beauty contest. Hence preference is given to an auction. The Competition Commission has repeatedly expressed its position on possible award procedures in connection with earlier tender procedures and has maintained that it considers an auction as the most appropriate procedure.

Sequential vs. simultaneous award: In view of the extent of the frequencies available in the different frequency ranges from the end of 2013 to 2016, it is apparent that there are major interdependencies in terms of value. On the one hand, providers need frequencies in the lower frequency ranges, which have better technical propagation characteristics, and on the other hand frequencies in the higher frequency ranges are also required, particularly for expanding capacity in densely populated areas. A simultaneous award of the frequencies to be awarded from the end of 2013/2016 is therefore preferable to a sequential award.

Small vs. large blocks of frequencies: Since the providers are more in tune with the market than the licensing authorities and are better able to assess possible developments, they are also better able to estimate the optimal frequency configuration from their point of view. The licensing authority can develop guidelines for a competitive final result through the introduction of spectrum caps¹. Award of the frequencies available from the end of 2013/2016 in small blocks (for example 5 MHz each) therefore appears to be a reasonable procedure.

Encouraging a newcomer: In view of the market situation and the existing difficulties with constructing infrastructure, it does not seem appropriate to actively encourage a newcomer, e.g. by reserving frequencies or licences. However, to ensure that possible new providers are not excluded from the award procedure, it should be designed so that it is possible even for a newcomer to acquire individual packages of frequencies, but without them being exclusively reserved for it.

¹ Spectrum Cap: Limitation of bandwidth, which a possible licensee is admitted to acquire

Neutrality in respect of technology and services vs. harmonised application: From today's perspective, an award which is neutral in terms of technology and services should be the aim of the allocation of the frequencies which are free at the end of 2013.

Relevant aspects with regard to demand: Concerning the frequencies already available today in the different frequency ranges, it can be assumed that for existing operators additional frequency spectrum in the UMTS core band will probably not be essential in the next few years. The interest in frequencies in the UMTS extension band appears at present to be rather limited, in terms of both the existing and potential operators.

As far as the digital dividend frequencies are concerned, it can be assumed that demand will be high because of their good propagation characteristics. This band will probably be available in its entirety from 2013, apart from possible border coordination restrictions. Availability of commercialised equipment both for network deployment and for end user terminals is not expected before 2013.

The objective of an award: End users must be a prime concern when setting an objective for an allocation of frequencies. According to the preamble to the Telecommunications Act, users must be provided with a range of affordable, high-quality services which are competitive nationally and internationally. This objective is pursued by means of an adequate number of strong providers, with their own network infrastructure and their own frequency utilisation rights, which can generate intensive and sustainable competitive pressure.

The form of the award: An award should be designed so that the following points in particular are taken into account:

- Frequency users applying same business models should have the possibility of achieving an approximately equal frequency configuration;
- Different business models should be possible;
- No degradation of the status quo regarding market structure and the range of available services;
- Prompt allocation of available frequencies, insofar as efficient utilisation is to be expected;
- Prevention of hoarding of frequencies;
- Minimising the negative effects of frequency utilisation (e.g. minimising the population's exposure to radiation, spatial effects).

With regard to minimising exposure to radiation, it should be noted that this basically depends not on the number of networks but generally on the prevailing volume of traffic.

Transition period: Depending on the scenarios, particular attention must be paid to the organisation of a transition period from the existing to the new allocation of frequencies. This applies especially with regard to protection of users from interruption of services and premature ageing of terminals. Granting a transition period is particularly important if existing providers wish in future to provide their existing services on the basis of a different technology or the utilisation of different frequencies. For example, if operators wish in future to offer mobile radio services almost solely on the basis of UHF frequencies, they should be given the option, for a specified period during which the new infrastructure is being constructed, to continue to provide their existing services using the GSM or UMTS frequencies. On conclusion of the transition period, the services would then have to be definitively switched to the new technology or frequency. The duration of such a transition period should not be too short, to avoid any coverage problems. On the other hand it must not be too long either, to ensure incentives for a speedy change-over.

Scenarios

In terms of auctioning the entire Swiss mobile radio spectrum, two approaches were considered. On the one hand, different scenarios were analysed in which frequencies are auctioned and allocated as soon as they become available. On the other hand, allocation options were analysed which involve a bundled allocation of all frequencies available at the end of 2013/2016. An evaluation of the individual scenarios showed that scenarios with a bundled allocation should be preferred. Two alternatives were identified:

- A staggered procedure with allocation of all frequencies available at the end of 2013 in 2010/2011, and another, later allocation of the UMTS core band frequencies allocated by the end of 2016.
- Award of all frequencies available at the end of 2013, including all UMTS core bands available from beginning 2017, in 2010/2011. The new allocation for all frequencies available at the end of 2013 would become valid from 2014; the allocations for the UMTS core band frequencies becoming available at the end of 2016 would apply from the beginning of 2017.

In both cases an award will be made without further extending the GSM licences. If the auction takes place in 2010/2011, the transition period will extend over 2-3 years. This period appears to be adequate from today's viewpoint. The second alternative has the advantage that an efficient re-allocation of all frequencies available from the end of 2016 is possible within the framework of a single award procedure. A detailed presentation of the above points is provided in the attached analysis report on the public consultation.

3 Information on the party making the submission

Company _____
Contact _____
Street _____
Zipcode, City _____
Tel. _____ Fax _____
E-mail _____

- GSM or UMTS operator
- Network operator of a regional network in Switzerland
- Network operator of a national network in Switzerland
- Operator of a mobile radio network abroad
- Manufacturer
- Service Provider
- Content Provider
- Consumer organisation
- Pressure group
- Authority
- Analyst
- Other, please specify

Please mark all statements below for which you are claiming an interest in legitimate confidentiality.

4 Comments on the analysis report

This section gives you an opportunity for general comments and remarks on the attached analysis report. In particular, comments on the following sections of the analysis report are sought:

Section 1: Situation analysis

Section 2.1: Important questions in defining the scenarios. In particular:

- New invitation to tender vs. renewal
- Auction vs. beauty contest
- Sequential vs. simultaneous award
- Small vs. large frequency blocks
- Encouraging a newcomer
- Neutrality in respect of technology and services vs. harmonised application
- Relevant aspects with regard to demand
- The objective of an award
- Transition period

Section 2.2: Scenarios

- Award of all frequencies available at the end of 2013.
- Award of all frequencies available at the end of 2013 incl. all frequencies of the UMTS core band available at the end of 2016.

5 Questionnaire

5.1 Questions concerning technological development

1. In your opinion, within what timeframe could GSM technologies be definitively superseded by technologies with higher transmission bandwidths and better spectral efficiency?

2. Within what timeframe do you see the introduction of LTE (Long Term Evolution) in Switzerland, with regard to the frequency bands which are the subject of the invitation to tender (800MHz, 900MHz, 1800MHz, 2.1GHz, and 2.6GHz)? What migration scenarios do you identify with reference to the introduction of LTE in the different frequency bands?

3. In your view, should LTE transmission technology be regarded as exclusively for mobile data networks to enhance GSM/UMTS or as an integrated overall solution which also provides voice services, in a quality commensurate with that currently provided by the use of GSM or UMTS technology?

4. In your opinion, from when will network components and terminals be available in sufficient quantities for use with LTE/ UMTS transmission technology for the 800 MHz frequency band (digital dividend) and the 900 and 1800 MHz frequency bands?

5. In your view, what reasons are there for or against a technology-neutral configuration of the licences?

6. In their media release of 21 February 2002², ComCom communicated its position towards joint use of mobile radio infrastructure (at that time with reference to UMTS technology). According to its interpretation, ComCom, on application, allows the joint use of Node B and RNC network elements, as long as these can be controlled independently by each sharing partner, i.e. as long as a unitary network with a frequency pool is not created as a result. In your opinion is there a need to configure the possibilities of joint use of mobile radio infrastructures in a technology-neutral way and to extend it to other network elements?

5.2 Questions concerning the development of the mobile radio market in Switzerland

7. How do you view the development of the Swiss mobile radio market in the next 5-10 years with regard to
- market structure,
 - the number of mobile radio users,
 - demand and ARPU,
 - price level
 - the development of data communications?

² <http://www.comcom.admin.ch/aktuell/00429/00636/00712/index.html?lang=de&msg-id=1782>

8. How much will/may the introduction of new multimedia devices such as the iPhone or other smart phones, as well as data cards and USB sticks, affect the behaviour of mobile radio customers with regard to the use of mobile data services and the resulting volume of data?

9. Will mobile radio using broadband transmission technologies such as LTE (Long Term Evolution) be able to replace the fixed network connection in future? In rural areas in particular, is LTE an alternative to an optical fibre connection (FTTH)?

10. Is there a need to operate local or regional mobile radio networks in Switzerland? Should there be a frequency allocation with national or regionally restricted use for this purpose?

5.3 Questions concerning the procedure outlined by ComCom

11. How do you assess the award scenarios considered by ComCom in section 2.2 of the analysis report?

12. Which of the two scenarios described would be preferable, in your view, and why?

- a. Scenario 1: a staggered procedure with allocation of all frequencies available at the end of 2013, in 2010/2011, and another, later allocation of the UMTS core band frequencies available at the end of 2016;
- b. Scenario 2: award of all frequencies available at the end of 2013 incl. all UMTS core bands available from 2017 in 2010/2011. The new allocation for all frequencies available at the end of 2013 applies from 2014; the allocations for the UMTS core band frequencies becoming available at the end of 2016 apply from beginning of 2017.

13. What other award scenarios do you see as a viable alternative to the procedure outlined by ComCom?

14. In your view, is a shorter transition period (from the existing to the new frequency allocation) than two or three years as considered by ComCom also conceivable?

15. What opportunities and risks do you see in the award scenarios considered by Com-Com?

5.4 Questions concerning frequency configuration

16. Which bandwidths from which frequency ranges do you consider appropriate for the operation of a national mobile radio network? What is the minimum necessary for the operation of a national network?

17. Do you consider a bandwidth of 5 MHz appropriate as an allocation unit? If not, in what units, in your view, should the frequencies being allocated and why?

18. In defining the auction, should so-called spectrum caps be designated in order to achieve a final result which promotes competition? If so, in what frequency bands and to what extent?

19. For what period should the licences be awarded?

20. As a result of the revocation of 3G mobile licence by ComCom, three UMTS FDD carriers in the UMTS core band are unused and would be available for overcoming any capacity bottlenecks up to the conclusion of an award procedure, provisionally in 2010/2011.

- a) Do you consider an allocation of individual channels on application, until the conclusion of an award procedure at the latest, expected in 2010/2011, to be appropriate?
- b) Would you be interested in using a UMTS FDD carrier accordingly? If so, outline the reasons and indicate how you wish to use these carriers.

5.5 Questions concerning environmental issues

21. Will additional base station sites be needed in the future as the result of the introduction of new transmission technologies such as LTE? If so, to what extent?

22. Will additional exposure to non-ionising radiation occur as a result of the use of new transmission technologies? What effect will new networks and technologies have on transmitter power and exposure to radiation?

23. How many infrastructures and networks respectively will an operator have to operate in parallel in future, at least for a transition period? How long do you estimate the duration of this transition period?

24. In your view, to what extent might resistance based on the fear of non-ionising radiation and spatial planning concerns impede or prevent the extension of the existing networks with additional frequencies from the digital dividend and the UMTS extension band?

25. In your view, to what extent do planning concerns and resistance to non-ionising radiation impede or prevent the deployment of new antenna equipment by existing or additional network operators? Is the construction of an additional country-wide mobile radio network still realistic under the general conditions prevailing today?

26. Do you see any possibilities of using the additional frequencies to be allocated to reduce the transmission power of existing base stations?

Attachment: Analysis report on the public consultation