

**Agreement between the National Post and Telecom
Agencies in Norway and Sweden concerning the
use of the frequency bands 876 - 880 MHz
and 921 - 925 MHz for GSM-R
in the border areas.**

2003

Agreement between the National Post and Telecom Agencies in Norway and Sweden
concerning the use of the frequency bands 876-880 MHz and 921-925 MHz for
GSM-R in the border areas.

1 Frequencies

- 1.1 The centre frequencies of the duplex channels in the 876 - 880 MHz and 921 - 925 MHz frequency bands spaced by 200 kHz are listed and allocated as preferential channels between Norway and Sweden as shown in Annex 1.

2 Use of GSM-R channels at the land border

- 2.1 Sweden may use its preferential channels without co-ordination with Norway if the field strength of every single carrier produced by a base station does not exceed 19 dB μ V/m at a distance of 15 km inside Norway.
- 2.2 Norway may use its preferential channels without co-ordination with Sweden if the field strength of every single carrier produced by a base station does not exceed 19 dB μ V/m at a distance of 15 km inside Sweden.
- 2.3 Sweden can use preferential channels assigned to Norway without co-ordination, if the field strength of every single carrier produced by a base station does not exceed 19 dB μ V/m at the border.
- 2.4 Norway can use preferential channels assigned to Sweden without co-ordination, if the field strength of every single carrier produced by a base station does not exceed 19 dB μ V/m at the border.
- 2.5 The above mentioned field strength values are based on receiving antenna height of 3 m, 10 % of the time and 50 % of the locations, bandwidth of 200 kHz.

3 Use of GSM-R channels at the sea border

- 3.1 Sweden may use all channels in Annex 1 without co-ordination with Norway if the field strength of every single carrier produced by a base station does not exceed 19 dB μ V/m at the sea border to Norway.
- 3.2 Norway may use all channels in Annex 1 without co-ordination with Sweden if the field strength of every single carrier produced by a base station does not exceed 19 dB μ V/m at the sea border to Sweden.
- 3.3 The above mentioned field strength values are based on receiving antenna height of 3 m, 10 % of the time and 50 % of the locations, bandwidth of 200 kHz.

4 Direct mode operation

- 4.1 Five (5) channels within the band 876.000 - 876.100 MHz are designated for European harmonised Direct Mode Operation (DMO) of GSM-R 900 systems. The channel spacing for DMO is 12.5 kHz. Both Parties may use these channels for GSM-R 900 DMO without co-ordination on a non-protected basis. Table 2 in Annex 1 describes DMO parameters.

* Or a line midway between the Norwegian coast and the Swedish coast.

5 Other provisions

- 5.1 A field strength exceeding the above-mentioned levels shall be coordinated with the other country by the frequency management authorities.
- 5.2 A complaint in case of interference shall be based on the median values of measurements of field strength at 3 m of receiving antenna height at least on two different occasions over a range of at least 100 m along the border. Measurement of field strength according to ITU-R recommendation P.1546-1, referring to Annex 2.

6 Revision and cancellation

- 6.1 This agreement may be cancelled as desired by one of the administrations with a notice of one year.
- 6.2 This agreement may be revised if mutual understanding is reached at the negotiations between the administrations.
- 6.3 In case this agreement is cancelled and a new one is not concluded the co-ordination procedure will be based on CEPT Recommendation T/R 20-08, noting that CEPT Recommendation T/R 20-08 does not cover the GSM-R frequency band.

This Agreement shall come into effect from date of signature.

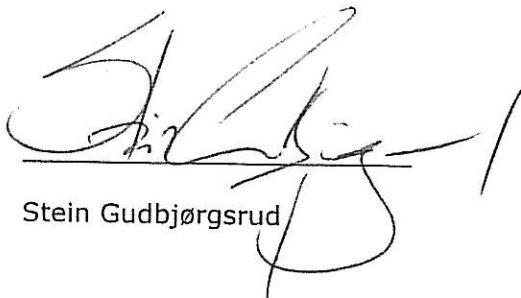
This agreement has been drawn up in two identical copies, of which each party has taken one each.

Oslo 16 11/2 2003

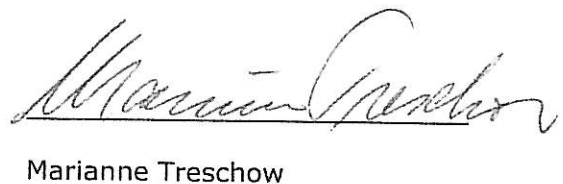
Stockholm 16 11/2 2003

For the Norwegian Administration

For the Swedish Administration



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Assignment of preferential frequencies between Norway and Sweden

Frequency band 876 – 880 MHz and 921 – 925 MHz

Channel #	Centre Frequency Mobile TX [MHz]	Centre Frequency Base TX [MHz]	Preferential frequency
955	876.200	921.200	Norway
956	876.400	921.400	Norway
957	876.600	921.600	Norway
958	876.800	921.800	Norway
959	877.000	922.000	Norway
960	877.200	922.200	Sweden
961	877.400	922.400	Sweden
962	877.600	922.600	Sweden
963	877.800	922.800	Sweden
964	878.000	923.000	Sweden
965	878.200	923.200	Sweden
966	878.400	923.400	Sweden
967	878.600	923.600	Sweden
968	878.800	923.800	Sweden
969	879.000	924.000	Sweden
970	879.200	924.200	Norway
971	879.400	924.400	Norway
972	879.600	924.600	Norway
973	879.800	924.800	Norway
974	880.000	925.000	Norway

* Channel number 974 may be considered as a guard channel to other services in adjacent bands.

Centre Frequency Mobile TX [MHz]	Centre Frequency Base TX [MHz]	Comments
876.0125	876.0125	DMO
876.0250	876.0250	DMO
876.0375	876.0375	DMO
876.0500	876.0500	DMO
876.0625	876.0625	DMO

Table 1. 876.000 - 876.100 MHz for Direct Mode Operation (DMO) using single frequency mode. The frequency spacing for DMO is 12.5 kHz.

Parameter	Mobile Station
Channel Spacing	12.5 kHz
Transmit Power	30 dBm
Receiver Bandwidth	8 kHz
Antenna Height	1.5 m
Antenna Gain	0 dBi
Active Interferer Density Range	variable
Receiver Sensitivity	- 107 dBm
Receiver Protection Ratio	21 dB
Power Control Characteristic	not used

Table 2. Parameters Assumed for 12.5 kHz FM Systems.