

Regulatory status for using RFID in the UHF spectrum 29 November 2005

The table attached provides an overview of the Ultra High Frequency (UHF) regulations worldwide. Suggestions for amendments, updates or additions to this report are welcome and should be communicated to Henri Barthel at GS1 Head Office (henri.barthel@gs1.org).

Each entry includes the following data:

- ❑ **Country name.** All GS1 member countries as well as major non-member countries are included, representing a total of 98,46% of the world Gross National Income (GNI).
- ❑ **Status.** The following convention indicates the status of UHF regulation in the country:

OK	Regulations are in place or will be in place shortly
IP	In Progress. Appropriate regulations expected first half of 2006
PI	Possible Issue. Appropriate regulations not available yet
NA	Information Not Available

- ❑ **Frequency.** Indicates the frequency band(s) authorised in the country for RFID applications. The objective is to get a band available in the 860 to 960 MHz spectrum.
- ❑ **Power.** Indicates the maximum power available to RFID applications. The power is expressed either as eirp (Effective Isotropic Radiated Power) or erp (Effective Radiated Power). Please note that 2 Watts erp is equivalent to 3.2 Watts eirp.
- ❑ **Technique.** Indicates the reader to tag communication technique. FHSS stands for Frequency Hopping Spread Spectrum and LBT stands for Listen Before Talk.
- ❑ **Comments.** Provides additional information on the regulatory status.

The following statistics can be derived from the data that are currently available:

- ❑ Regulations are in place or will be in place shortly in 29 countries representing 71% of the global GNI.
- ❑ Regulations should be settled by the first half of 2006 in 25 countries representing 13% of the global GNI.
- ❑ Issues need to be sorted out in 5 countries representing 11% of the global GNI.
- ❑ Information is not yet available for 57 countries representing 4% of the global GNI.

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<i>Country</i>	<i>Status</i>	<i>Frequency</i>	<i>Power</i>	<i>Technique</i>	<i>Comments</i>
Algeria	NA				
Argentina	OK	902-928 MHz	4W eirp	FHSS	
Armenia	IP	865.6-867.6 MHz			
Australia	OK	920-926 MHz	4W eirp		4W eirp available through license managed by GS1 Australia. Open release likely in 2007.
Austria	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Azerbaijan	NA				
Bahrain	NA				
Bangladesh	NA				
Belarus	NA				
Belgium	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Bolivia	NA				
Bosnia Herzegovina	NA				
Botswana	NA				
Brazil	OK	902-907.5 MHz	4W eirp	FHSS	
Brazil		915-928 MHz	4W eirp	FHSS	
Bulgaria	NA				
Cambodia	NA				
Cameroon	NA				
Canada	OK	902-928 MHz	4W eirp	FHSS	
Chile	OK	902-928 MHz	4W eirp	FHSS	
China	IP	917-922 MHz	2W erp		Provisional allocation. Temporary licence required.
Colombia	IP				Dialogue with regulators initiated by GS1 Colombia
Congo, Dem. Rep.	NA				
Congo, Rep.	NA				
Costa Rica	OK	902-928 MHz	4W eirp	FHSS	
Côte d'Ivoire	NA				
Croatia	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Cyprus	OK	865.6-867.6 MHz	2W erp	LBT	
Czech Republic	OK	865.6-867.6 MHz	2W erp	LBT	
Denmark	OK	865.6-867.6 MHz	2W erp	LBT	New regulations in place since January 2005
Dominican Republic	OK	902-928 MHz	4W eirp	FHSS	
Ecuador	NA				
Egypt, Arab Rep.	IP				Work in progress
El Salvador	NA				
Estonia	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06

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Finland	OK	865.6-867.6 MHz	2W erp	LBT	New regulations in place since 3 February 2005
France	PI	865.6-867.6 MHz	2W erp	LBT	Licensed use only. Conflict with band allocated to tactical relays military applications
Georgia	NA				
Germany	OK	865.6-867.6 MHz	2W erp	LBT	New regulations in place since 22 December 2004
Greece	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Guatemala	NA				
Honduras	NA				
Hong Kong, China	OK	865-868 MHz	2W erp		
Hong Kong, China		920-925 MHz	4W eirp		
Hungary	IP	865.6-867.6 MHz	2W erp	LBT	Re-structuring currently in progress within government ministries. Decision unlikely before mid 2005
Iceland	OK	865.6-867.6 MHz	2W erp	LBT	
India	OK	865-867 MHz	4W erp		Approved in May 2005
Indonesia	IP				Band 917 to 920 MHz being considered
Iran, Islamic Rep.	NA				
Ireland	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Israel	PI				Work in progress
Italy	PI	865.6-867.6 MHz	2W erp	LBT	Conflict with band allocated to tactical relays military applications. Temporary licences not available.
Jamaica	NA				
Japan	OK	952-954MHz	4W eirp		950-956 MHz being considered for lower power
Jordan	NA				
Kazakhstan	NA				
Kenya	NA				
Korea, Rep.	OK	908.5-910 MHz	4W eirp	LBT	Approved July 2004
Korea, Rep.		910-914 MHz	4W eirp	FHSS	Approved July 2004
Kuwait	NA				
Kyrgyz Republic	NA				
Latvia	OK	865.6-867.6 MHz	2W erp	LBT	
Lebanon	NA				
Lithuania	IP	865.6-867.6 MHz	2W erp	LBT	Individual licence required. New regulations should be in place by 1Q06
Luxembourg	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Macao, China	NA				

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Macedonia, FYR	NA				
Malaysia	IP	866-869 MHz	0.5W erp		
Malaysia		918-922 MHz	2W erp		Regulations being reviewed and should be resolved by end 2005
Malta	IP	865.6-867.6 MHz	2W erp	LBT	Individual licence required. New regulations should be in place by 1Q06
Mauritius	NA				
Mexico	OK	902-928 MHz	4W eirp	FHSS	
Moldova	OK	865.6-867.6 MHz	2W erp	LBT	
Mongolia	NA				
Morocco	NA				
Netherlands	IP	865.6-867.6 MHz	2W erp	LBT	New regulations will be in place by end 2005. Some relaxation possible in interim period
New Zealand	OK	864-868 MHz	4W eirp		
Nicaragua	NA				
Nigeria	NA				
Norway	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Oman	NA				
Pakistan	NA				
Panama	NA				
Paraguay	NA				
Peru	NA				
Philippines	NA				
Poland	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Portugal	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Puerto Rico	NA				
Romania	NA				
Russian Federation	IP	865.6-867.6 MHz	2W erp	LBT	Licensed use only. Will decide whether to adopt following completion of internal compatibility study due mid 2005
Saudi Arabia	NA				
Senegal	NA				
Serbia and Montenegro	NA				
Singapore	OK	866-869 MHz	0.5W erp		
Singapore		923-925 MHz	2Werp		Licence required for power above 0.5W erp
Slovak Republic	IP	865.6-867.6 MHz	2W erp	LBT	New regulations should be in place by 1Q06
Slovenia	OK	865.6-867.6 MHz	2W erp	LBT	
South Africa	OK	865.6-867.6 MHz	2W erp	LBT	Should be in place by March 2006

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South Africa		917-921 MHz	4W eirp	FHSS	
Spain	PI	865.6-867.6 MHz	2W erp	LBT	Conflicting band allocated to radio/television applications. Issue being addressed. Temporary licenses available.
Sri Lanka	NA				
Sudan	NA				
Sweden	OK	865.6-867.6 MHz	2W erp	LBT	New regulations in place
Switzerland	OK	865.6-867.6 MHz	2W erp	LBT	
Syrian Arab Rep.	NA				
Taiwan	OK	922-928 MHz	1W erp	FHSS	Indoor
Taiwan		922-928 MHz	0.5W erp	FHSS	Outdoor
Tanzania	NA				
Thailand	IP				Process to get regulations amended has started. Looking at 2-3 MHz in the 920-925 range
Trinidad and Tobago	NA				
Tunisia	IP	865.6-867.6 MHz	2W erp	LBT	Plans adopting European regulations
Turkey	PI	865.6-867.6 MHz	2W erp	LBT	Conflict with band allocated to tactical relays military applications
Turkmenistan	NA				
Uganda	NA				
Ukraine	NA				
United Kingdom	OK	865.6-867.6 MHz	2W erp	LBT	New regulations in place since October 2005
United States	OK	902-928 MHz	4W eirp	FHSS	
Uruguay	OK	902-928 MHz	4W eirp	FHSS	
Uzbekistan	NA				
Venezuela, RB	IP				Targeting 902-928 MHz. Conflicting allocation with cellular telephony
Vietnam	NA				
Yemen, Rep.	NA				
Zimbabwe	NA				