

Enhanced Audio / Application Notes

AN-5

International Frequency and Voltage Table (for Hum Frequency Identification)

The following table may be found useful as aid in authenticating the country of origin of a particular audio recording. It can also be used to focus in on the line frequency on a particular recording if the country of origin is known. It is strictly useful as “knock-out” criteria of a suspect recording. For example, if a recording is said to have been produced in a country having a line frequency of 50 Hz and 60 Hz is the only frequency found, then its stated origin is suspect. This table is designed to be used in conjunction with the Spectrum Analyzer in high-resolution mode. For more details, please refer to the Spectrum Analyzer section of your Users Manual. Lastly, the AC RMS Line Voltages are included in case you need to travel to one of these countries to testify as an expert witness. This will help you assure that any electronic equipment that you will be traveling with will be compatible with the AC mains of your destination country.

Note: 1 Hz = 1 CPS (Cycle per Second)

Country	Frequency	Voltage (AC RMS Volts)
Afghanistan	50Hz	220
Albania	50Hz	220
Algeria	50Hz	127-220
American Samoa	60Hz	120-220
Angola	50Hz	220
Anguilla	60Hz	240
Antigua	60Hz	220
Argentina	50Hz	220
Armenia	50Hz	220
Aruba	60Hz	115
Australia	50Hz	220
Austria	50Hz	220

Azerbaijan	50Hz	220
Azores (Portuguese)	50Hz	220
Bahamas	60Hz	120
Bahrain	50Hz	220
Bali	50Hz	220
Bangladesh	50Hz	220
Barbados	50Hz	115
Belarus	50Hz	220
Belgium	50Hz	220
Belize	60Hz	110
Benin	50Hz	220
Bermuda	60Hz	120
Bhutan	50Hz	220
Bolivia	50Hz	110-220
Bosnia-Herzegovina	50Hz	220
Botswana	50Hz	220
Brazil	60Hz	110-220
Bulgaria	50Hz	220
Burkina Faso	50Hz	220
Burma (Myanmar)	50Hz	220
Burundi	50Hz	220
Cambodia	50Hz	110-220
Cameroon	50Hz	220
Canada	60Hz	120
Canary Islands Spain	50Hz	220
Cape Verde Islands	50Hz	220
Cayman Islands	60Hz	120
Cen. African Rep.	50Hz	220
Chad	50Hz	220
Chile	50Hz	220
China	50Hz	220
Columbia	60Hz	110-220
Comoros	50Hz	220

Congo	50Hz	220
Costa Rica	60Hz	120
Croatia	50Hz	220
Cuba	60Hz	120
Curacao	50Hz	110-120
Cyprus	50Hz	220
Czech Republic	50Hz	220
Denmark	50Hz	220
Djibouti Dem. Reb.	50Hz	220
Dominica	50Hz	230
Dominican Republic	60Hz	110
Ecuador	60Hz	120
Egypt	50Hz	220
El Slavador	60Hz	115
Equatorial Guinea	50Hz	220
Eritrea	50Hz	220
Estonia	50Hz	220
Ethopia	50Hz	220
Fiji	50Hz	220
Finland	50Hz	220
France	50Hz	220
Gabon	50Hz	220
Gambia	50Hz	220
Georgia	50Hz	220
Germany	50Hz	220
Ghana	50Hz	220
Gibraltar	50Hz	220
Greece	50Hz	220
Greenland	50Hz	220
Grenadines	50Hz	230
Guadeloupe	50Hz	220
Guam	60Hz	120
Guatemala	60Hz	120

Guinea	50Hz	220
Guyana	50-60Hz	110
Haiti	50-60Hz	110-220
Honduras	60Hz	110
Hong Kong	50Hz	220
Hungary	50Hz	220
Iceland	50Hz	220
India	50Hz	220
Indonesia	50Hz	220
Israel	50Hz	230
Italy	50Hz	230
Ivory Coast	50Hz	220
Jamaica	50Hz	110
Japan	50-60Hz	100
Jordan	50Hz	220
Kazakhstan	50Hz	220
Kenya	50Hz	220
B, D, E	50Hz	220
Korea	60Hz	220
Kuwait	50Hz	220
Laos	50Hz	220
Latvia	50Hz	220
Lebanon	50Hz	110-220
Lesotho	50Hz	220
Liberia	60Hz	120
Libya	50Hz	127-220
Liechtenstein	50Hz	220
Lithuania	50Hz	220
Luxemborg	50Hz	220
Macao	50Hz	220
Macedonia	50Hz	220
Madagascar	50Hz	220
Madeira (Portuguese)	50Hz	220

Malawi	50Hz	220
Malaysia	50Hz	220
Maldives	50Hz	220
Mali	50Hz	220
Malta	50Hz	220
Martinique	50Hz	220
Mauritania	50Hz	220
Mauritius	50Hz	220
Maynmar (Burma)	50Hz	230
Mexico	60Hz	120
Moldova	50Hz	220
Monaco	50Hz	220
Mongolia	50Hz	220
Morocco	50Hz	220
Mozambique	50Hz	220
Namibia	50Hz	220
Nepal	50Hz	220
Netherlands	50Hz	220
Netherlands Antilles	50-60Hz	120-220
New Caledonia	50Hz	220
New Zealand	50Hz	220
Nicaragua	60Hz	120
Niger	50Hz	220
Nigeria	50Hz	220
Norway	50Hz	220
Oman	50Hz	220
Pakistan	50Hz	220
Panama	60Hz	110
Papua New Guinea	50Hz	240
Paraguay	50Hz	220
Peru	50-60Hz	110-220
Phillippines	60Hz	115
Poland	50Hz	220

Portugal	50Hz	220
Puerto Rico	60Hz	120
Qatar	50Hz	220
Romania	50Hz	220
Russian Federation	50Hz	220
Senegal	50Hz	220
Seychelles	50Hz	220
Sierra Leone	50Hz	220
Singapore	50Hz	220
Slovak Republic	50Hz	220
Slovenia	50Hz	220
Solomon Islands	50Hz	220
Somalia	50Hz	220
South Africa	50Hz	220
Spain	50Hz	220
Sri Lanka	50Hz	230
St. Kitts-Nevis	60Hz	220
St. Lucia	50Hz	240
St. Vincent	50Hz	230
Sudan	50Hz	240
Surinam	60Hz	110-220
Swaziland	50Hz	220
Sweden	50Hz	220
Switzerland	50Hz	220
Syria	50Hz	220
Tahiti	50Hz	220
Taiwan	60Hz	110
Tajikistan	50Hz	220
Tanzania	50Hz	220
Thailand	50Hz	220
Togo	50Hz	220
Tonga	50Hz	110-220
Trinidad & Tobago	60Hz	115-220

Tunisia	50Hz	220
Turkey	50Hz	220
Turkmenistan	50Hz	220
Uganda	50Hz	220
Ukraine	50Hz	220
United Arab Emirates	50Hz	220
United Kingdom	50Hz	220
United States of America	60Hz	120
Upper Volta	50Hz	240
Uruguay	50Hz	220
Uzbekistan	50Hz	220
Venezuela	60Hz	120
Vietnam	50Hz	120-220
Virgin Islands	60Hz	120
Western Samoa	50Hz	230
Yemen	50Hz	230
Yemen, Arab Republic	50Hz	220
Yugoslavia	50Hz	220
Zaire	50Hz	220
Zambia	50Hz	220
Zimbabwe	50Hz	220