



In Cooperation with

Collins Bartholomew

GSMA Network Coverage Maps
Data Submission Guidelines
December 2016

Security Classification Category

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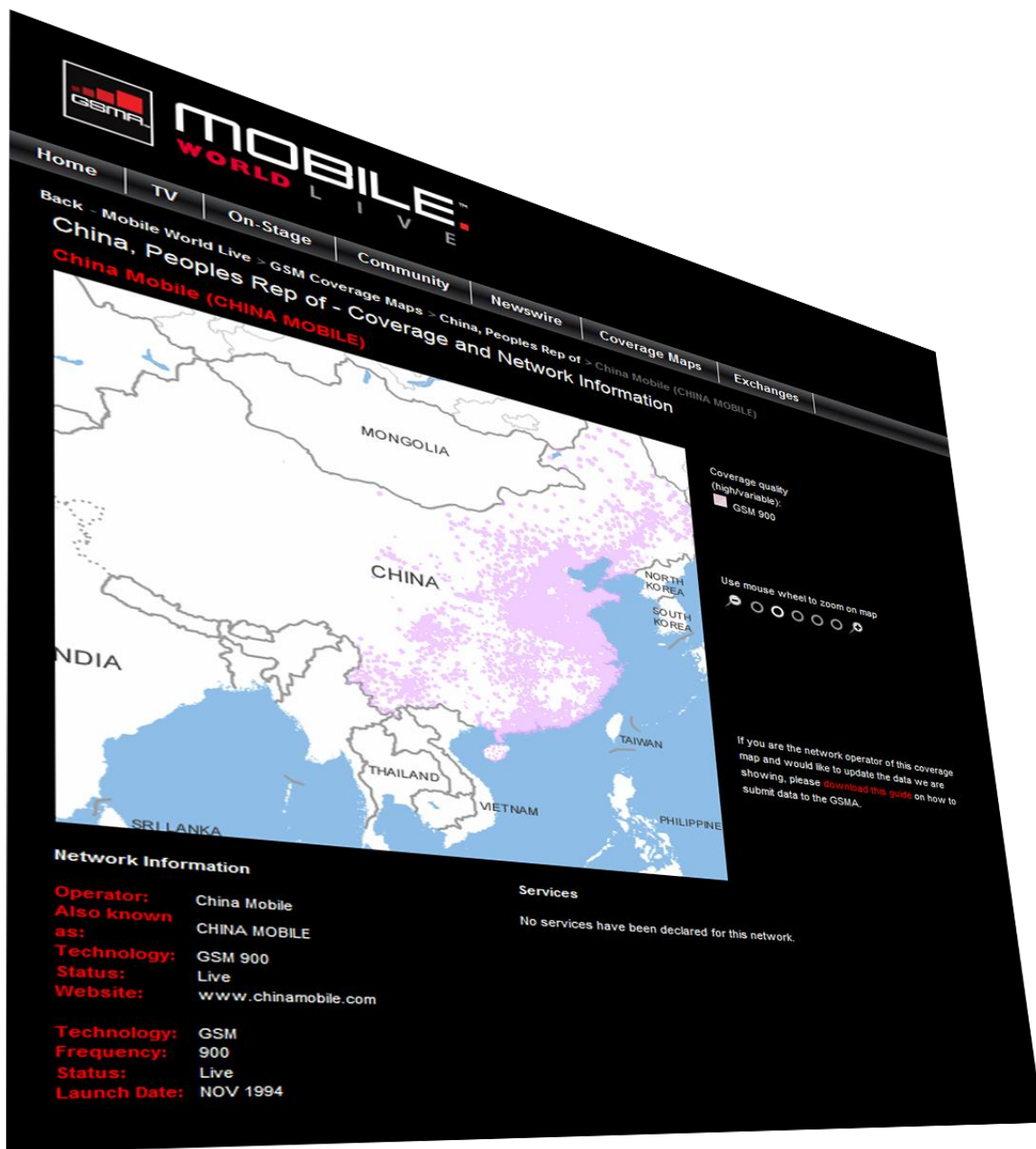


Background

CollinsBartholomew is the GSMA's mapping agent and should be your first point of contact regarding the submission of coverage data.

This document outlines the guidelines for submitting coverage data to CollinsBartholomew for display on Mobile World Live, the GSMA's services website, and also the GSMA's Infocentre, the members' extranet.

The coverage service provides members of the GSMA with the facility to display their coverage information on the hugely popular Mobile World Live web site which receives over 1.2 million site visits per year and 10 million page views. The service is mainly used by consumers checking coverage before they travel. This is a valuable industry service and helps reduce the burden on your own customer service operations.



Contact Details

The principal contact with regard to coverage data submissions is:

John Allen, Data Sales Manager – CollinsBartholomew

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The principal GSMA contact with regard coverage data submissions is:

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For details on GSMA Membership benefits, the contact is:

Member Services, GSMA

membership@gsm.com

Data Submission

This section describes the methods and data formats operators may use to submit coverage data to CollinsBartholomew.

1. Schedule

Data can be submitted at any time of year. We allow one network update per year. If more than one update is required, please contact CollinsBartholomew with details of the requirement.

CollinsBartholomew will process and publish a new coverage map within 28 days. However, please be advised that complicated formats or overly-detailed coverage may take longer. Coverage data submissions are processed strictly in the order in which they are received as long as there is no technical or commercial reason for delay. It is essential to submit data that complies with the specifications in this document.

Please note that submissions are by technology not operator, so one submission of more than one technology is free of charge and not counted as a multiple submission. Please send GSM, 3G (WCDMA, HSPA), and 4G (LTE) network coverage data.

2. File Names

Please compress all files in to an archive format using WinZip. Other compression formats may be supported by special arrangement – contact CollinsBartholomew for details.

Operators should name their compressed archive so that it includes network name, country two-letter ISO code (see appendix 1), network type and date in the following format. This will ensure that all submissions are clearly identified.

For example: *NetworkName-CountryCode-NetworkType-Date.zip*

NetworkType will normally be “GSM”, “3G”, “4G” or “Satellite”. Please contact Collins Bartholomew to submit coverage of a different type so that a keyword can be allocated. (Note that HSPA networks should be submitted as 3G. 4G currently incorporates only LTE, TD-LTE, and 4G networks.

Please use dates in the format *yyyymmdd*. For example, 17 October 2016 would be 20161017. If the specific day is not necessary, it may be omitted. E.g. October 2016 would be 201610.

For example, China Mobile may submit their GSM coverage for January 2016 as:

ChinaMobile-CN-GSM-201601.zip

Within an archive, if there are multiple layers of information, file names should clearly reflect the content. Eg. “strong” and “variable” coverage.

3. Coverage Accuracy & Resolution

All coverage maps are overlaid on to a 1:1,000,000 scale digital base map of the earth. This provides a level of detail found in a continental road atlas but not down to city street level. This however can be varied if a country is very large (e.g. Russia) or very compact/dense (eg. Singapore). We will attempt to process data at any resolution and scale it to a suitable level. If data provided is too coarse, the resulting coverage maps may not show a mobile network in the best possible light. It is recommended for raster formats that a resolution of 200m is supplied.

All coverage maps are overlaid on to 5 fixed online mapping scales, the largest of which is at 1:1,000,000.

Please note that CollinsBartholomew on behalf of the GSMA reserves the right to reject poor data.

4. Coverage Types

As standard, each coverage map can show two classes of coverage. Therefore, please differentiate between strong and variable or indoor and outdoor signal strengths if relevant. These classifications can be submitted either as two separate layers (one for each class), or as a single layer if there is sufficient attribute information to clearly identify the two classes.

Any data submitted should be a true representation of your network coverage. Data that shows ‘blanket’ strong coverage across a large region or countries or which appears out-of-line with our understanding of your network will result in us querying the submission, delayed publication or no display at all.

It is preferable to include coverage over international borders and the sea in your data. If you “clip” your data to internal borders/coastlines, it is likely that this will not match the borders/coastlines that we use, and apparent gaps in coverage may result.

Coverage maps on Mobile World Live and the InfoCentre are displayed as separate technologies. For example, if an operator has a GSM 900/1800 and a 3G network, they will be implemented on separate maps.

5 Submission Methods

There are currently two methods for submission of coverage map data. All submissions are made at the operator’s own cost. The methods are:

Via email

If less than 5Mb compressed, please e-mail data submissions to collinscoverage@harpercollins.co.uk, and

Via file upload

Submissions larger than 5MB can be sent via the file upload service at:

<http://www.collinsbartholomew.com/coveragemaps/coverage-data-submission/>

This facility is safer and more secure.

Please also include full contact details including e-mail address.

6 Data Formats

There are four general categories of data format acceptable, presented below in order of preference.

The preferred format for data submission is vector (regions represented as polygons made up of node coordinates). We can also accept output from radio planning tools or raster (image or grid data aligned to a geographic location). Marketing maps generally cannot be used.

Samples of each of the formats below are available to download at

<http://www.collinsbartholomew.com/coveragemaps/coverage-data-submission/>

It is essential that any data supplied includes the coordinate system, projection and datum used.

Type I - GIS Vector Formats

Type I submissions may be supplied in GIS industry standard vector formats including ESRI Shapefile, ESRI Geodatabase, MapInfo TAB, MapInfo MIF/MID and KML files. It is essential that any data supplied includes the coordinate system, projection and datum used. Some radio planning tools are able to export data in these formats.

Type II – Export from Radio Planning Tools

Type II submissions may be supplied in formats that are exported from radio planning tool software. The outputs should be of the best server type showing the best signal level achieved for each cell in a prediction region. The current tools are supported:

- Marconi Planet EV (supply Vertical Mapper classified grid files GRC/TAB if the vector formats outlined in Type I are not supported)
- Aircom Asset / Enterprise (export coverage prediction to MapInfo MIF/MID format).
- ESRI ArcView based tools (please supply Shapefiles)

It is recommended that each grid cell/pixel represent 200m. It is essential that any data supplied includes the coordinate system, projection and datum used. If you are using another radio planning tool and are unable to find a format in this document that seems to be suitable, please contact CollinsBartholomew.

Type III - GIS Raster Formats

Type III submissions may be supplied in GIS industry standard raster image or grid formats including TIFF, PNG, GIF, JPEG or Vertical Mapper grid. It is essential that raster image data includes ONLY the coverage information. No other features or place names should appear on the images. It is also essential a geographic registration file such as an ESRI world file (TFW) for TIFFs is supplied. It is recommended that each grid cell/pixel represent 200m.

It is essential that any data supplied includes the coordinate system, projection and datum used.

Type IV – Base Station Coordinates or Place Lists

Type IV submissions are supplied as a list of base station coordinates or place names. Place names must be provided in local language form and with the 1st level administrative region in which they reside. This type of data should be supplied in text, or Microsoft Excel data format with a single entry per row. For place names, each location should be "geocoded" to a latitude/longitude coordinate and a coverage radius calculated (which is either fixed or can be specified as a data field, with units clearly specified).

Secondary (variable quality) coverage can be specified with a slightly increased radius. This submission type is the least accurate, therefore is requested that operators explore options to supply data in type I, II and III formats.

It is essential that any data supplied includes the coordinate system, projection and datum used.

Costs

As part of full membership, your first network coverage submission each year is free of charge. This includes a multi-band GSM submission, a 3G submission and a 4G submission as one. Please contact CollinsBartholomew regarding the cost of additional submissions.

Use of Data and Licences

1. Agency

CollinsBartholomew is acting solely as an agent of the GSMA when collecting/receiving data from GSMA Members and other operators. Any data submissions made to CollinsBartholomew are effectively made to the GSMA and the GSMA reserve the right to change its agents at any time.

2. Use of Data for mobileworldlive.com and the GSMA InfoCentre

Collins Bartholomew will manage the collection and verification of Overlay Data from GSMA Members and other operators on behalf of the GSMA and will use software to convert the raw Overlay Data into user-friendly web-compatible Coverage Overlay. Utilising an established digital world map as reference, Coverage Overlay will display coverage information for any part of the world. Coverage Maps are compiled from the combination of Coverage Overlays created from radio planning or GIS data provided by GSMA Members and digital world maps created by CollinsBartholomew.

3. CollinsBartholomew commercial services

CollinsBartholomew provides commercial coverage services to third parties for which they charge. Such services include 'Collins Coverage'; an interactive web based coverage map service and 'Mobile Coverage Explorer'; a digital map dataset showing aggregated 2G (GSM), 3G and 4G (LTE) coverage on a global basis.

4. Warranty

CollinsBartholomew warrants that it will handle and use your data in a responsible and professional manner.

5. Licences

By submitting any of your data to CollinsBartholomew you:

- (a) grant the GSMA a perpetual licence that the data can be published as a digital map on mobileworldlive.com and the GSMA InfoCentre or can be used in any manner by the GSMA for the purpose of the GSMA as the GSMA deems fit; and
- (b) grant the GSMA at its discretion the right to sub licence such data for CollinsBartholomew or any other agent or service provider:
 - (i) to perform additional services including the production of printed maps, coverage analysis and data preparation for approved organisations and any other purpose as the GSMA deems appropriate; and
 - (ii) to provide its or similar commercial services set out in Clause 3.

Appendix 1 – ISO country codes

This list states the country names (official short names in English) in alphabetical order as given in ISO 3166-1 and the corresponding ISO 3166-1-alpha-2 code elements. For an updated list, please go to:

<https://www.iso.org/obp/ui/#search/code/>

Country names	ISO 3166-1-alpha-2 code
AFGHANISTAN	AF
ÅLAND ISLANDS	AX
ALBANIA	AL
ALGERIA	DZ
AMERICAN SAMOA	AS
ANDORRA	AD
ANGOLA	AO
ANGUILLA	AI
ANTARCTICA	AQ
ANTIGUA AND BARBUDA	AG
ARGENTINA	AR
ARMENIA	AM
ARUBA	AW
AUSTRALIA	AU
AUSTRIA	AT
AZERBAIJAN	AZ
BAHAMAS	BS
BAHRAIN	BH
BANGLADESH	BD
BARBADOS	BB
BELARUS	BY
BELGIUM	BE
BELIZE	BZ
BENIN	BJ
BERMUDA	BM
BHUTAN	BT
BOLIVIA, PLURINATIONAL STATE OF	BO
BOSNIA AND HERZEGOVINA	BA
BOTSWANA	BW
BOUVET ISLAND	BV
BRAZIL	BR
BRITISH INDIAN OCEAN TERRITORY	IO
BRUNEI DARUSSALAM	BN
BULGARIA	BG
BURKINA FASO	BF
BURUNDI	BI
CAMBODIA	KH
CAMEROON	CM
CANADA	CA
CAPE VERDE	CV
CAYMAN ISLANDS	KY
CENTRAL AFRICAN REPUBLIC	CF
CHAD	TD

CHILE	CL
CHINA	CN
CHRISTMAS ISLAND	CX
COCOS (KEELING) ISLANDS	CC
COLOMBIA	CO
COMOROS	KM
CONGO	CG
CONGO, THE DEMOCRATIC REPUBLIC OF THE	CD
COOK ISLANDS	CK
COSTA RICA	CR
CÔTE D'IVOIRE	CI
CROATIA	HR
CUBA	CU
CYPRUS	CY
CZECH REPUBLIC	CZ
DENMARK	DK
DJIBOUTI	DJ
DOMINICA	DM
DOMINICAN REPUBLIC	DO
ECUADOR	EC
EGYPT	EG
EL SALVADOR	SV
EQUATORIAL GUINEA	GQ
ERITREA	ER
ESTONIA	EE
ETHIOPIA	ET
FALKLAND ISLANDS (MALVINAS)	FK
FAROE ISLANDS	FO
FIJI	FJ
FINLAND	FI
FRANCE	FR
FRENCH GUIANA	GF
FRENCH POLYNESIA	PF
FRENCH SOUTHERN TERRITORIES	TF
GABON	GA
GAMBIA	GM
GEORGIA	GE
GERMANY	DE
GHANA	GH
GIBRALTAR	GI
GREECE	GR
GREENLAND	GL
GRENADA	GD
GUADELOUPE	GP
GUAM	GU
GUATEMALA	GT
GUERNSEY	GG
GUINEA	GN
GUINEA-BISSAU	GW
GUYANA	GY
HAITI	HT
HEARD ISLAND AND MCDONALD ISLANDS	HM
HOLY SEE (VATICAN CITY STATE)	VA
HONDURAS	HN
HONG KONG	HK

HUNGARY	HU
ICELAND	IS
INDIA	IN
INDONESIA	ID
IRAN, ISLAMIC REPUBLIC OF	IR
IRAQ	IQ
IRELAND	IE
ISLE OF MAN	IM
ISRAEL	IL
ITALY	IT
JAMAICA	JM
JAPAN	JP
JERSEY	JE
JORDAN	JO
KAZAKHSTAN	KZ
KENYA	KE
KIRIBATI	KI
KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF	KP
KOREA, REPUBLIC OF	KR
KUWAIT	KW
KYRGYZSTAN	KG
LAO PEOPLE'S DEMOCRATIC REPUBLIC	LA
LATVIA	LV
LEBANON	LB
LESOTHO	LS
LIBERIA	LR
LIBYAN ARAB JAMAHIRIYA	LY
LIECHTENSTEIN	LI
LITHUANIA	LT
LUXEMBOURG	LU
MACAO	MO
MACEDONIA, THE FORMER YUGOSLAV REPUBLIC OF	MK
MADAGASCAR	MG
MALAWI	MW
MALAYSIA	MY
MALDIVES	MV
MALI	ML
MALTA	MT
MARSHALL ISLANDS	MH
MARTINIQUE	MQ
MAURITANIA	MR
MAURITIUS	MU
MAYOTTE	YT
MEXICO	MX
MICRONESIA, FEDERATED STATES OF	FM
MOLDOVA, REPUBLIC OF	MD
MONACO	MC
MONGOLIA	MN
MONTENEGRO	ME
MONTSERRAT	MS
MOROCCO	MA
MOZAMBIQUE	MZ
MYANMAR	MM
NAMIBIA	NA
NAURU	NR

NEPAL	NP
NETHERLANDS	NL
NETHERLANDS ANTILLES	AN
NEW CALEDONIA	NC
NEW ZEALAND	NZ
NICARAGUA	NI
NIGER	NE
NIGERIA	NG
NIUE	NU
NORFOLK ISLAND	NF
NORTHERN MARIANA ISLANDS	MP
NORWAY	NO
OMAN	OM
PAKISTAN	PK
PALAU	PW
PALESTINIAN TERRITORY, OCCUPIED	PS
PANAMA	PA
PAPUA NEW GUINEA	PG
PARAGUAY	PY
PERU	PE
PHILIPPINES	PH
PITCAIRN	PN
POLAND	PL
PORTUGAL	PT
PUERTO RICO	PR
QATAR	QA
RÉUNION	RE
ROMANIA	RO
RUSSIAN FEDERATION	RU
RWANDA	RW
SAINT BARTHÉLEMY	BL
SAINT HELENA, ASCENSION AND TRISTAN DA CUNHA	SH
SAINT KITTS AND NEVIS	KN
SAINT LUCIA	LC
SAINT MARTIN	MF
SAINT PIERRE AND MIQUELON	PM
SAINT VINCENT AND THE GRENADINES	VC
SAMOA	WS
SAN MARINO	SM
SAO TOME AND PRINCIPE	ST
SAUDI ARABIA	SA
SENEGAL	SN
SERBIA	RS
SEYCHELLES	SC
SIERRA LEONE	SL
SINGAPORE	SG
SLOVAKIA	SK
SLOVENIA	SI
SOLOMON ISLANDS	SB
SOMALIA	SO
SOUTH AFRICA	ZA
SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS	GS
SPAIN	ES
SRI LANKA	LK
SUDAN	SD

SURINAME	SR
SVALBARD AND JAN MAYEN	SJ
SWAZILAND	SZ
SWEDEN	SE
SWITZERLAND	CH
SYRIAN ARAB REPUBLIC	SY
TAIWAN, PROVINCE OF CHINA	TW
TAJKISTAN	TJ
TANZANIA, UNITED REPUBLIC OF	TZ
THAILAND	TH
TIMOR-LESTE	TL
TOGO	TG
TOKELAU	TK
TONGA	TO
TRINIDAD AND TOBAGO	TT
TUNISIA	TN
TURKEY	TR
TURKMENISTAN	TM
TURKS AND CAICOS ISLANDS	TC
TUVALU	TV
UGANDA	UG
UKRAINE	UA
UNITED ARAB EMIRATES	AE
UNITED KINGDOM	GB
UNITED STATES	US
UNITED STATES MINOR OUTLYING ISLANDS	UM
URUGUAY	UY
UZBEKISTAN	UZ
VANUATU	VU
VATICAN CITY STATE	see HOLY SEE
VENEZUELA, BOLIVARIAN REPUBLIC OF	VE
VIET NAM	VN
VIRGIN ISLANDS, BRITISH	VG
VIRGIN ISLANDS, U.S.	VI
WALLIS AND FUTUNA	WF
WESTERN SAHARA	EH
YEMEN	YE
ZAMBIA	ZM
ZIMBABWE	ZW