



in cooperation with

Collins Bartholomew

GSMA Network Coverage Maps

Data Submission Guidelines

November 2019

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Collins Bartholomew



Quick Start Guide

As part of your membership of the GSMA you are entitled to show your mapped network coverage on the GSMA's Network Coverage Maps [website](#) and the GSMA's [InfoCentre](#). There is no charge for this service, and you can submit your coverage data as often as is necessary to keep it up-to-date.

This page is a brief description of the main points to remember when submitting your coverage data. Please refer to the section '[Detailed Information](#)' in the main document for further details.

Coverage Types

Please use the table below to classify your data into strong/variable signal strengths or indoor/outdoor coverage. This ensures consistency across all operators.

Network Type	Strong/Indoor	Variable/Outdoor
2G – GSM	Greater than -92 dBm	-92 to -100 dBm
3G – UMTS	Greater than -92 dBm	-92 to -100 dBm
4G - LTE	Greater than -105 dBm	-105 to -120 dBm

We also accept 5G coverage data but have not yet classified these signal strengths.

Accepted Data Formats

Data should be provided in one of the following formats in order of preference:

1. Vector Polygons – ESRI Shapefile, MapInfo TAB or MID/MIF, (or KMZ overlays)
2. Vertical Mapper Gridded Dataset – GRC
3. Raster Image Files – TIFF, JPEG, PNG but please see the main document for [further details](#)
4. List of cell tower location coordinates with a radius of coverage from each tower

Most of these formats can be exported from Radio Planning software. Samples of each format can be found on the Collins Bartholomew [website](#). If you are submitting gridded or image files then we recommend that a grid or pixel should represent about 100 metres on the ground.

File Names

To help identify your data, please name your files with the following convention:

NetworkName_CountryCode_NetworkType_Date

For example, Vodafone-DE-3G-201902. Alpha-2 country codes can be found [here](#).

Submitting Data

Please compress your files to ZIP or RAR format and use the [file upload](#) service to submit your data. If this service is unavailable then please email us at collinscoverage@harpercollins.co.uk for options.

Premium Online Maps Service – Collins Coverage

As the official mapping provider to the GSMA, Collins Bartholomew can provide a premium mapping service to embed on your own corporate website. This service includes high quality maps of your domestic and roaming coverage, with additional base mapping and zoom functionality. For further details, including a demo, please visit the Collins Coverage [website](#).

Detailed Information

Background

Collins Bartholomew 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 Collins Bartholomew for display on the GSMA's Network Coverage Maps [website](#) and 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 GSMA's Network Coverage Maps website. 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.

As an example of the Network Coverage Maps website, the following is a screenshot of Vodacom's GSM, 3G, and 4G coverage in South Africa...

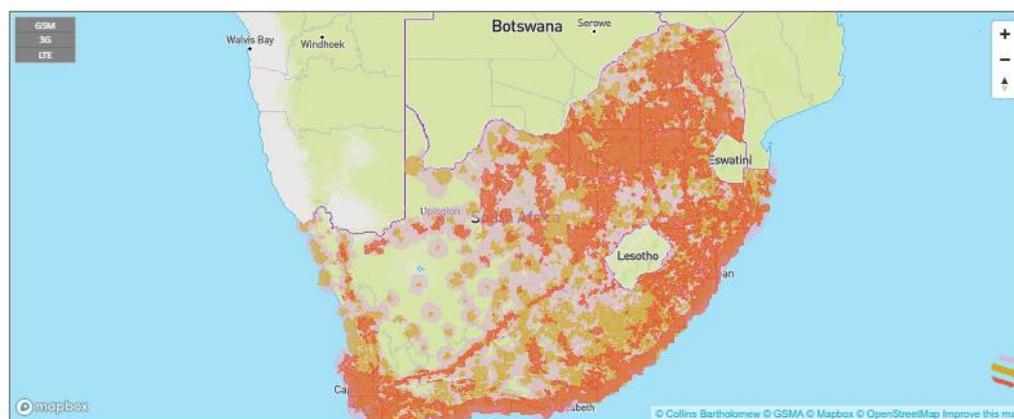


GSMA Members continuously update their network coverage and submit their latest coverage data to the GSMA. All of our members' latest network can be seen here. Simply select the country you are visiting and the operators in that country will be listed.

Select country or area	Select network operator
South Africa	Vodacom

South Africa

Operator: Vodacom



Our coverage maps are produced in partnership with Collins Bartholomew, a division of HarperCollins Publishers.

If you would like to include network coverage maps on your own website or are interested in coverage data, please contact collinscoverage@harpercollins.co.uk

Contact Details

The principal contact for coverage data submissions is collinscoverage@harpercollins.co.uk.

For information regarding the Collins Coverage mapping service the contact is:

John Allen, Data Sales Manager – Collins Bartholomew

john.allen@harpercollins.co.uk +44 7787 126660

The GSMA contact for coverage data submissions is:

Rick Costello, General Manager, Media – GSMA

rcostello@gsma.com +44 7817 925911

For details on GSMA Membership benefits, the contact is:

Member Services, GSMA

membership@gsma.com

Coverage Data Submission

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

1. Schedule

Data can be submitted at any time of year. Please send GSM, 3G (WCDMA, HSPA), 4G (LTE), and 5G network coverage data as appropriate. Note that HSPA networks should be submitted as 3G. 4G currently incorporates only LTE, TD-LTE, and 4G networks.

There is no charge for submitting data but please try to submit all networks at once, and only when there is significant change. We would encourage you submit your data annually.

Collins Bartholomew will process and publish a new coverage map within 28 days of receiving data. 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.

2. File Names

Please compress all files to an archive format for quick upload, e.g. zip, rar.

To ensure that all submissions are clearly identified, operators should name their compressed archive so that it includes network name, alpha-2 country code, network type, and date in the following format.

NetworkName_CountryCode_NetworkType_Date.zip

For example, China Mobile may submit their GSM coverage for February 2019 as

ChinaMobile_CN_GSM_201902.zip

Network Type will normally be 'GSM', '3G', '4G', '5G', or 'Satellite'. If you split your network by technology or signal strength then please state this in the file name, e.g. 3G-2100, or 4G-strong.

Please use dates in the format YYYYMMDD. For example, 17th February 2019 would be 20190217. If the specific day is not necessary, it may be omitted. e.g. February 2019 would be 201902.

3. Coverage Accuracy & Resolution

The coverage map service uses global base mapping provided by [MapBox](#) which allows panning and zooming at map scales up to approximately 1:100,000. This provides a level of detail found in a town or city district overview map but not to street level. We will attempt to process data at any resolution and scale it to a suitable level. If the 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 100m is supplied.

Any data submitted should be a true representation of your network coverage. Data that shows 'blanket' strong coverage across a large region or country, 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. Collins Bartholomew, 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 based on signal strengths – strong/indoor and variable/outdoor. The recommended signal strengths for the two classes are:

	Strong/Indoor	Variable/Outdoor
2G – GSM	Greater than -92 dBm	-92 to -100 dBm
3G – UMTS	Greater than -92 dBm	-92 to -100 dBm
4G - LTE	Greater than -105 dBm	-105 to -120 dBm

The two classes can be submitted either as two separate layers (e.g. ChinaMobile_CN_GSM-strong_201902.zip and ChinaMobile_CN_GSM-variable_201902.zip), or as a single layer if there is sufficient attribute information within the data to clearly identify the two classes.

It is preferable to include coverage over international borders and the sea in your data. If you "clip" your data to borders or coastlines then it is likely that this will not match the borders and coastlines shown on the maps, and apparent gaps in coverage may result.

Coverage will be separated by technology, i.e. there will be separate map layers for GSM, 3G, LTE, and 5G coverages. Frequencies within technologies will be merged by default. For example, if you submit LTE 900 and 2100 frequencies separately then these will be merged to create a single LTE coverage. If you do wish to display each technology frequency as a separate map layer then please make this clear when you send the data.

5. Submission Methods

Submissions should be made via the Collins Bartholomew file upload service found on <https://www.collinsbartholomew.com/mobile-coverage-maps/coverage-data-submissions/>.

This service is hosted by [Hightail](#) and is safe and secure. Please use the form to include your name, email address, and any other information you deem appropriate. Your details will be stored in a secure internal database and will only be used to contact you about your current or future submissions.

6. Data Formats

There are four general categories of data format that are acceptable, as outlined below in order of preference. The preferred format for data submission is vector polygons. If none of the formats are suitable, then please contact Collins Bartholomew for support.

Samples of each of the four formats are available to download from the [submissions page](#).

If you have Radio Planning software, you should be able to export one of the preferred formats:

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

Type I - GIS Vector Formats

Polygons representing coverage can be supplied in ESRI Shapefile, ESRI Geodatabase, MapInfo TAB, and MapInfo MID/MIF formats. If none of these vector options are available, then you may also provide KMZ ground overlays. It is essential that any data supplied includes the coordinate system (projection and datum) used. Some radio planning tools can export data in these formats.

Type II – Vertical Mapper Grid Files

Vertical Mapper GRC/TAB files are generally exported from Radio Planning software. The outputs should be of the best server type showing the best signal level achieved for each cell in a prediction region.

It is recommended that each grid cell/pixel represents 100 metres but if your network covers a large area then 200 metres may be more appropriate in order to keep file sizes small. It is essential that any data supplied includes the coordinate system (projection and datum) used.

Type III - GIS Raster Formats

Type III submissions may be supplied in GIS industry standard raster image format including TIFF, PNG, GIF, and JPEG. It is essential that ONLY the coverage extent appears on the image. No other features or place names should be visible. This is to ensure that it can be used as an overlay to the base mapping. It is recommended that each grid cell/pixel represents 100m on the ground but if your network covers a large area then 200 metres may be more appropriate.

It is essential that any data supplied as an image includes the coordinate system (projection and datum) used. This information will usually be in accompanying geographic registration files, e.g. for TIFF format then there should be an associated TFW or TIF.AUX.XML. These files ensure that the coverage shown in the image can be positioned in the correct location.

Type IV – Cell Tower Coordinates

Type IV submissions are a simple list of cell tower locations. This type of data should be supplied in a text file or as a Microsoft Excel spreadsheet with a single cell tower per row. Each location should be 'geocoded' to a latitude/longitude coordinate and a coverage radius calculated. The radius can be either an approximation for all towers or specified for each tower in a separate column. The unit of measurement (metres or kilometres) should be clearly specified.

The list will be converted into a polygon coverage using the cell tower coordinates as the centre of circles whose size is determined by the radius. The circles will then be merged to create a combined network coverage.

This submission type is the least accurate, therefore is requested that operators explore options to supply data in type I, II and III formats if possible.

Cost

This mapping service is provided free of charge as part of your full membership of the GSMA.

Data Security

All your data is held on secure networks and is not shared with anyone without your consent, subject to the uses outlined in the section '[Use of Data and Licences](#)' below.

Your data is uploaded securely through the [Hightail](#) file upload service, then transferred to internal servers, which are maintained by the HarperCollins IT Infrastructure Department (HarperCollins is the parent company of Collins Bartholomew.)

Data security is taken very seriously within the organisation. Data you provide is encrypted in transit and stored on servers with restricted access, with dedicated teams responsible for the transferring, handling and integrity of the data you provide. Data you provide is aggregated and anonymised, with no personally identifiable information processed.

In order to integrate the coverage data in the mapping services, the data is converted into vector polygons with an equivalent raster resolution of approximately 250 metres. These vector polygons are then uploaded to the MapBox servers for display on the Network Coverage Maps service. The vector polygons are also merged into a global representation of mobile coverage which forms the basis of Collins Bartholomew's [Mobile Coverage Explorer](#) data product which is available to license. The raw data submitted by operators is not included in this licensed dataset.

Use of Data and Licences

1. Agency

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

2. Use of Data for [gsma.com/coverage](#) and the GSMA InfoCentre

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

3. Collins Bartholomew Commercial Services

Collins Bartholomew 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, 4G (LTE), and 5G coverage on a global basis.

4. Warranty

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

5. Licences

By submitting any of your data to Collins Bartholomew you:

(a) grant the GSMA a perpetual licence that the data can be published as a digital map on gsma.com/coverage 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 Collins Bartholomew 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.

If you have any question about the use of data and licences then please contact John Allen, whose details can be found in the section '[Contact Details](#)'.