



5G COUNTRY PROFILE



VATICAN CITY STATE

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Version 1.1

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Note: Version 1.1 of this document is an advanced draft for possible additional inputs, comments, feedback. The final version of the document is planned to be released after the ITU Regional Forum for Europe.

1. ICT background and current status of broadband

The State of Vatican City is the smallest state in the world in terms of population as well as territorial extension, extending over an area of fewer than 50 hectares enclaved in the heart of Rome in Italy.¹ The Vatican's interior telecommunication system is composed of two strongly integrated sub-system: fixed infrastructure and mobile infrastructure. It is important to note that the mobile communication system has been designed to be capable of using satellite connections so that it is possible to ensure the telecommunication services whenever needed, following the Pastoral travels of the Pope.²

With a small number of residents, the Vatican City's telephone system operates through an automatic digital exchange. In terms of ICTs, the Vatican is known for controlling its own Internet top-level domain (TLD), which is registered as (.va), and broadband service is widely available in the State.³ Vatican City has also been given a radio ITU prefix, HV, and this is sometimes used by amateur radio operators, moreover maritime and aeronautical international callsigns have also been assigned."

In face of the new digital transformation, the State of Vatican City has increasingly relied on new ICT-enabled services for a wider reach of messages from the Pope and other institutions in the state to the rest of the world. In November 2018, a Vatican's digital expert urged priests around the world to get online and take advantage of the affordances enabled by broadband.⁴

Furthermore, is also important to underline that the Vatican 5G strategy evolves in the time and is subject to changes.

2. Broadband and mobile telecommunication sectors data

In terms of telephone service, Governorate's Department of Telecommunication has been responsible for the Vatican Telephone Service since 2012, although it was first officially launched in 1930 and offered services to approximately 360 end users. Since 1960, the capacity has increased tremendously.⁵ In the 1990s, the Vatican expanded its internal telecom infrastructure, providing the city with a highly advanced state-of-the-art network. Currently (2020), the about 5000 phone terminals in Vatican City State are connected through an IMS exchange. Fiber optics links provide phone and data connectivity to Italian communications operator and international data carriers, as well as to the extra-territorial zones.

3. Current progress on 5G: consultations and national strategies

As of October 2020, no public information concerning the 5G consultation and strategies from the Vatican State is available.

¹ See: <https://www.vaticanstate.va/it/>

² See: <https://ieeexplore.ieee.org/abstract/document/5678677>

³ See: https://en.wikipedia.org/wiki/Vatican_City

⁴ See: <https://br.reuters.com/article/idUSKCN1NB2E7>

⁵ See: <https://www.encyclopedia.com/places/spain-portugal-italy-greece-and-balkans/italian-political-geography/vatican-city>

4. Spectrum assignment for 5G & market development

As of October 2020, no public information concerning the 5G spectrum assignment in the Vatican State is available. However, the Vatican City State coordinates its spectrum use with neighbouring country according to the ITU provisions.

In the near future, a 5G broadband application scenario could be to develop and improve broadcasting applications.

5. Electromagnetic fields levels and the implementation dynamics

Since 1992, through the resolution of the Special Delegate of the Pontifical Commission for the Vatican City State (prot. Gen. 225620 of 16/12/1992), the Vatican has adopted precautionary values provided by the ICNIRP (International Commission on Not-Ionizing Radiation Protection) for the EMF exposure limits for the 0 Hz- 300 GHz frequency range.⁶ Italy adopted the Ministerial Decree 381/98 (which entered into force in January 1999) a limit of 20V/m regardless to frequency, however, in the case of the presence for continuous stays of not less than 4 hours, the Decree reduces these limits to 6 V / m for all electromagnetic waves.⁷

In face of the challenges provided by alleged EMF exposure violations of Italy's Ministerial Decree 381/98 on the occasion of the alleged violation of the Vatican Radio antennas in the city of Rome⁸, the State of Vatican City agreed to have part of its programs broadcast by other stations in Italy or abroad (from within Principality of Monaco), and the Italian government agreed to pay for the costs of the transfer.⁹ Ever since, the national Italian EMF limits currently in force were set by Decree of the Prime Minister in August 2003, replacing a previous decree of 1992,¹⁰ and present more restrictive quantitative limits than the standards provided by ICNIRP.¹¹

6. 5G commercial launches: announcements, trail cities, and digital cross-border corridors

As of October 2020, no 5G commercial launched has occurred in the Vatican City. Despite that, developments are swiftly undergoing in the surrounding areas of the enclave, primarily conducted by operators such as TIM (which activated its 5G network in parts of Rome and Turin in June 2019) and Vodafone (which switched its network around the same time in Rome and Turin as well as Bologna, Naples and the metropolitan areas of Milan). In early in 2019, both TIM and Vodafone signed an agreement on the cost-share of rolling out new 5G infrastructure throughout Italy.¹²

⁶ See: https://www.who.int/docstore/peh-emf/EMFStandards/who-0102/Europe/Vatican_files/table_vt.htm

⁷ See: http://www.radiovaticana.va/archivio/010403_rv_em.html

⁸ See: <https://spectrum.ieee.org/energy/the-smarter-grid/sins-of-transmission>

⁹ See: https://repository.upenn.edu/cgi/viewcontent.cgi?article=1018&context=be_papers

¹⁰ See: https://www.who.int/docstore/peh-emf/EMFStandards/who-0102/Europe/Italy_files/table_it.htm

¹¹ See: <https://www.5gitaly.eu/2018/wp-content/uploads/2019/01/5G-Italy-White-eBook-5G-planning-under-EMF-constraints.pdf>

¹² See: <https://5gobservatory.eu/tim-launches-5g-services-in-parts-of-rome-and-turin-with-new-5g-plans/>