

## 26. The San Marco Series

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This is the **twenty-sixth** in a series of articles about unmanned satellites on postage stamps. This article features the Italian San Marco series of satellites. Five San Marco satellites were successfully launched, starting with San Marco-1 on December 15, 1964, and ending with San Marco-D/L on March 25, 1988. The San Marco-D/M launch was the only failure, occurring in 1983. In addition, the San Marco satellites were preceded by two San Marco sub-orbital rockets launched in 1963.



San Marco is not only the name of a series of satellites, but also is the name of a floating launch facility located near the Earth's equator off the coast of Kenya, close to the town of Malindi. The San Marco sub-orbital launches and that of San Marco-1 were from Wallops Island, VA, but the remaining San Marcos as well as several other satellites were launched from the San Marco platform. One of those other satellites was Explorer-42/Uhuru, the first American satellite launched by a foreign team. The San Marco platform appears on two of the stamps issued by Paraguay in 1966 (Scott 962 and 963).

The San Marco satellites were designed to measure air density at orbital altitude, as well as to monitor ionospheric characteristics. San Marco-1 and 2 were spherical in shape, to provide a constant cross section to eliminate the need for satellite attitude control and simplify the determination of atmospheric drag through observations of changes in the satellite's orbit. The satellites had telemetry and command antennas attached to the spherical body.

San Marco-3 and 4 were a bit larger and consisted of two parts: a heavier internal structure and a lighter outer shell. A series of flexible arms connected the two parts. Stresses in the flexible arms caused by atmospheric drag were used to determine the air density at orbital altitude. These San Marcos employed an attitude control system and a spin rate control system, and were powered by rows of solar panels mounted equatorially on the inner core.

According to available documentation, the first four San Marco satellites had black and white longitudinal sections painted on

their surface for thermal control. However these stripes are often not reproduced on postal items showing the satellites. Moreover, in cases where the stripes are shown, they are red and white (see the stamps from Ajman, Manama, Micronesia, and Poland) rather than black and white.

The non-striped images of the satellites on the Ecuador, Panama, and Paraguay stamps have an appearance that is more like that of Vanguard-2, and include a launch attachment that is reminiscent of some of the Vanguard-1 images seen on stamps. This

San Marco  
Launch Facility



common but likely incorrect image of San Marco-1 on all these items may be the result of the same designer working on them. Another possibility is that multiple designers may have been influenced by an incorrect reference image of the satellite in their stamp designs, and the incorrect image propagated from one stamp to another.

The final satellite in the series, San Marco-5 (D/L), was about 1 meter in diameter with wider rows of equatorially-mounted solar panels, and no stripes. This was the last satellite launched from the San Marco platform. This satellite appears on only two stamps, one issued by Comoro Islands and the other by Italy.

*Philatelic Checklist on page 86*



# GALLERY OF SAN MARCO THEMED POSTAGE STAMPS



# Checklist of San Marco Series Satellites Postal Items

COUNTRY	CATALOG #	Description	Issued	Notes
Ajman	Mi266		1968	San Marco-1/2 <sup>1</sup>
Comoro Isl.		SS1	1992	San Marco-D/L
Ecuador	756 (Mi1283) 756A (Mi1284) 756B (Mi1285)	On selvage in BLACK	1966	San Marco-1 <sup>2</sup>
Ecuador	756 (Mi1283) 756A (Mi1284) 756B (Mi1285)	On selvage in RED	1966	San Marco-1 <sup>2</sup>
Ecuador	757 (Mi1292) 757A (Mi1293) 757B (Mi1294)	Stamp and on selvage in BLACK 757B has image ONLY on selvage	1966	San Marco-1 <sup>2</sup>
Ecuador		Stamp and on selvage in BLACK	1966	San Marco-1 <sup>2</sup>
Ecuador	757c (MiBL31) i757c (MiBL32)	MS3 (757-757B) Changed colors / imperforate	1966	San Marco-1 <sup>2</sup>
Ecuador	758 (Mi1301) 758A-E (Mi1302-6)	Only on selvage in BLACK	1966	San Marco-1 <sup>2</sup>
Hungary	C254	NOT San Marco-1 <sup>3</sup>	1965	SolRad-1/7
Italy	1189		1975	San Marco-D/L
Manama	Mi96A / Mi96B		1968	San Marco-1/2 <sup>1</sup>
Micronesia	81g	One of MS9 (81a-i)	1989	San Marco-3/4 <sup>1</sup>
Panama	469 (Mi893) i469 (Mi898)	Changed colors / imperforate	1966	San Marco-1 launch
Panama	469A (Mi894) i469A (Mi899)	Changed colors / imperforate	1966	San Marco-1 <sup>2</sup>
Panama	469B (Mi895) i469B (Mi900)	Changed colors / imperforate	1966	San Marco name
Panama	469D (Mi897) i469D (Mi902)	Changed colors / imperforate	1966	San Marco-1 <sup>2</sup>
Panama	469e (MiBL53)	MS2 (469C-469D)	1966	San Marco-1 <sup>2</sup>
Panama	C365b (Mi1138)	One of MS6 (C365a-f) and on selvage	1969	San Marco-2 <sup>2</sup>
Paraguay	959 (Mi1591) i959 (Mi1599)	On stamp and selvage. Changed colors / imperforate	1966	San Marco-1 <sup>2</sup>
Paraguay	961 (Mi1593) i961 (Mi1601)	On selvage only	1966	San Marco-1 <sup>2</sup> also San Marco platform <sup>4</sup>
Paraguay	962 (Mi1594) i962 (Mi1602)	On stamp and selvage. Changed colors / imperforate	1966	San Marco-1 <sup>2</sup> also San Marco platform <sup>4</sup>
Paraguay	963 (Mi1595) i963 (Mi1603)	On stamp and selvage. Changed colors / imperforate	1966	San Marco-1 <sup>2</sup> also San Marco platform <sup>4</sup>
Paraguay	966 (Mi1598) i966 (Mi1606)	On stamp and selvage. Changed colors / imperforate	1966	San Marco-1 <sup>2</sup>
Paraguay	966a (MiBL87) i966a (MiBL88)	SS1 Changed colors / imperforate	1966	San Marco-1 <sup>2</sup>
Paraguay	966a (MiBL87) i966a (MiBL88)	overprinted "MUESTRA" Changed colors / imperforate	1966	San Marco-1 <sup>2</sup>
Poland	1472		1966	San Marco-1/2 <sup>1</sup>
Yugoslavia	1045		1971	San Marco

1 - Red and white longitudinal stripes are incorrect, as the stripes were actually black and white according to reference materials.

2 - Images are similar but incorrect, looking like Vanguard-2, a spherical satellite without stripes, some with attachment similar to Vanguard-1.

3 - SolRad-1/7, NOT San Marco-1 as indicated on the stamp.

4 - Italy's oldest launch site, consisting of a floating platform in the Indian Ocean off the coast of Kenya.

\* Scott catalog number, unless prefixed with Mi or BL for Michel; "i" prefix denotes imperforate version.

SS# = souvenir sheet, MS# = miniature sheet # is number of stamps in sheet; numbers in parentheses are catalog numbers of the stamp(s)

Readers are referred to the authors' website for more San Marco satellite images, launch covers and postal items at: [www.cira.colostate.edu/ramm/hillger/Eole.htm](http://www.cira.colostate.edu/ramm/hillger/Eole.htm) E-mail correspondence is welcome; Don Hillger can be reached at [hillger@cira.colostate.edu](mailto:hillger@cira.colostate.edu) and Garry Toth at [garry\\_toth@hotmail.com](mailto:garry_toth@hotmail.com)