

Mapping schemes of PSK and APSK

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CONTENTS

1	PSK	1
2	APSK	1
2.1	16-APSK	1
2.2	32-APSK	1
References		1

Abstract—A brief description about the mapping schemes and constellation of PSK and APSK according to DVBS2 standard [1].

1. PSK

2. APSK

$$Y = X + N \quad (2.1)$$

A. 16-APSK

$$X = \begin{cases} r_1 e^{j(\phi_1 + \frac{2\pi}{4}n)} & n = 0, 1, 2, 3 \\ r_2 e^{j(\phi_2 + \frac{2\pi}{12}n)} & n = 0, 1, \dots, 11 \end{cases} \quad (2.2)$$

Where $\frac{r_2}{r_1} = 2.6, \phi_1 = 45, \phi_2 = 15$ Fig. 1 Shows the Constellation mapping for 16-APSK symbols.

B. 32-APSK

$$X = \begin{cases} r_1 e^{j(\phi_1 + \frac{2\pi}{4}n)} & n = 0, 1, 2, 3 \\ r_2 e^{j(\phi_2 + \frac{2\pi}{12}n)} & n = 0, 1, \dots, 11 \\ r_3 e^{j(\phi_3 + \frac{2\pi}{16}n)} & n = 0, 1, \dots, 16 \end{cases} \quad (2.3)$$

Where $\frac{r_2}{r_1} = 2.54, \frac{r_3}{r_2} = 4.33, \phi_1 = 45, \phi_2 = 15, \phi_3 = 0$ Fig. 2 Shows the Constellation mapping for 32-APSK symbols.

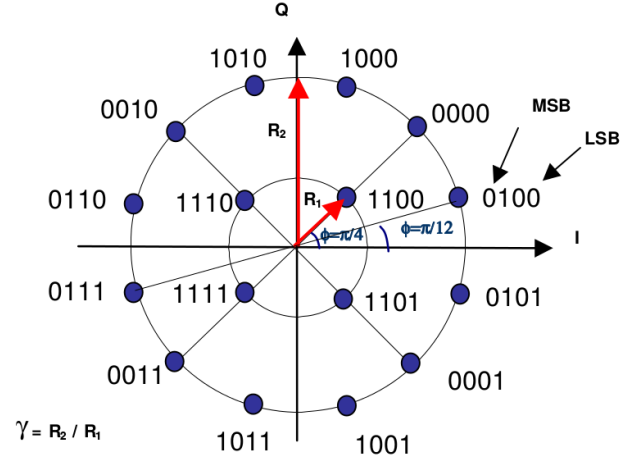


Fig. 1: Constellation diagram of 16APSK

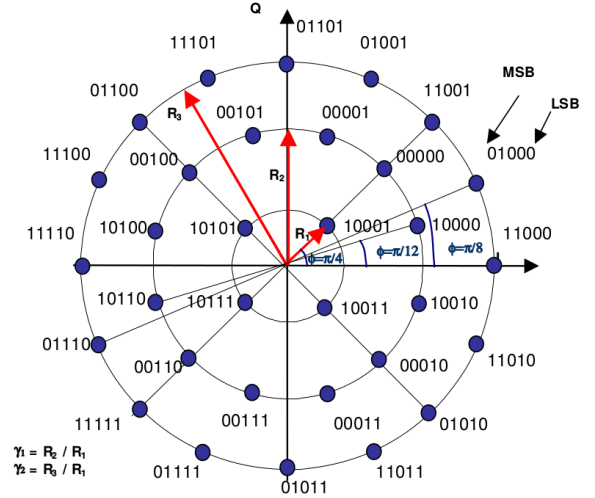


Fig. 2: Constellation diagram of 32APSK

REFERENCES

- [1] A. Morello and V. Mignone, "DVB-S2X: The New Extensions to the Second Generation DVB Satellite Standard DVB-S2," *Int. J. Satell. Commun. Netw.*, vol. 34, no. 3, pp. 323–325, May 2016. [Online]. Available: <https://doi.org/10.1002/sat.1167>

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