

Necessary Bandwidth Description

PS1/NBD/AA

Description of Determination of Necessary Bandwidth for PS1 Radar

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Exhibit comprises total of 2 pages.

References :

- 1) Manual of Regulations and Procedures for Federal Radio Frequency Management; May 2003 Edition: Annex J, Guidance for Determination of Necessary Bandwidth.

1)Basis of Calculation

Necessary bandwidth is determined in accordance with Ref 1, Section 3.1 (1) using formula in Table A Pulsed, Radar, FM-pulse radars (intentional FM).

Relevant equation is :

$$B_n = B(-20 \text{ dB}) = 1.79 \sqrt{(tr \ t)} + 2B_c$$

Where :

tr = Pulse rise time

t = Pulse width

B_c = Chirp bandwidth

2)Calculation of Necessary Bandwidth for PS1 Radar

Fixed Values

Pulsewidth $t = 30 \mu s$

Risetime $tr = 100 ns$

Intermediate calculation :

$$1.79 / \sqrt{(tr t)} = 1.79 / \sqrt{(30E-6 * 100 E-9)}$$
$$= 1.033 MHz$$

Variable Values

Sweep	Total Swept Frequency Bc MHz	2* Bc	Necessary Bandwidth MHz
A	75	150	151.033
B	210	420	421.033
C	770	1540	1541.033