paging system. Consequently, the proposed rule would impose a new requirement. And, as proposed, an incumbent who covered the vast majority of a market with facilities prior to the auction would nevertheless become subject to the disclosure requirement if peripheral territory were acquired in the market area auction was then included in a sale transaction.

59. It is inconsistent for the Commission to propose an anti-collusion rule intended to prevent competitors from sharing bids and bidding strategy in the FCC auction context, while requiring those who acquire systems in the paging marketplace to disclose the same type of information to the world at large. Purchase and sale agreements can reveal considerable information regarding the manner in which an acquiring company values an existing property. In many instances, valuation techniques have been refined after much experience in the marketplace. AirTouch believes that requiring the public disclosure of purchase and sale agreements on a routine basis would put a chilling effect on transactions and disrupt the marketplace.

I. Treatment of Designated Entities

60. The Commission proposes to establish special provisions in its paging rules for competitive

bidding by small businesses.[105/] These proposals do not serve the public interest and should not be adopted. Even without such preferences, small businesses will succeed in acquiring market area licenses at the auction. Thus, the statutory objective of encouraging the participation of small businesses (including those owned by members of minority groups and women) in this communication sector will be satisfied.

61. A considerable number of the channels that become available for auction as a result of this proceeding will only be of interest to incumbents because of the extent of the current build-out. In many instances, these incumbents are small businesses. Thus, without special preferences or procedures, small businesses will prevail in the auction and participate meaningfully in this communications business.

62. A strong argument also can be made that bidding credits do not provide any real benefit to small businesses. The results in the narrowband PCS

105/ The Commission has tentatively concluded that it is not necessary to adopt a set-aside for entrepreneurs. AirTouch Paging agrees. Set-asides are inherently contrary to the open eligibility concepts so often endorsed by the Commission, and can prevent licenses from getting into the hands of carriers who value them most highly.

auction clearly indicate that parties who were bidding with bidding credits ended up paying higher prices for licenses than did others without the credits. The net effect was that the small businesses received no comparative discount on their licenses. Consequently, the benefit of the bidding credit proved to be illusory.

63. If the benefit were real, offering it to only a select group of bidders could prove to be pernicious. The paging business is highly competitive and prices to consumers are rapidly being driven by market forces to each carriers' marginal cost. Since this is a low margin business, any disruption in the market which subjects one competitor to higher costs than another can have devastating competitive implications. AirTouch believes it would be fundamentally unfair to create a class of paging carriers (i.e., large carriers) who are denied the ability to compete on a level playing field for the spectrum they need to implement their business plans.

64. AirTouch's position in this regard is supported by the overall economics of the industry. Because paging transmitters operate at relatively high powers, companies can offer substantial coverage with relatively small fixed costs. The Commission

previously recognized these economic realities when it eliminated financial showings in connection with paging applications. These economic assumptions are ratified by the proliferation of paging companies throughout the country. The evidence from the market clearly demonstrates that capital is available to start-up paging companies, and they can succeed. In the face of this market reality, the Commission should not adopt special preferences for small businesses in the absence of a substantial record indicating that such procedures are necessary in order to foster a competitive paging market in which big and small companies alike are able to succeed.

IV. Conclusion

65. The foregoing premises having been duly considered, AirTouch respectfully requests that the

Commission adopt permanent licensing procedures as outlined above in order to facilitate the future development of paging systems.

Respectfully submitted,

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ATTACHMENT 1

Introduction

Upon close inspection of the technical issues proposed in the NPRM, Comp Comm presents comments on the formulas proposed for 929 MHz and 931 MHz paging service and interference contour distances. The following discussion comments upon the formulas proposed in the NPRM. The NPRM formulas for paging in the 929-931 MHz band were derived from a basic assumption of a 47 dBμV/m reliable service signal strength, although it fails to present any technical foundation for this assumption. It is the Commission's position to apply equivalent regulations to similar services. A more realistic reliable service signal level assumption can be derived from the Carey Report using the same method as used for the lower paging frequency bands. This signal strength is applied to the Okumura curves and two new formulas are proposed in the discussion.

The Carey Report and Determination of the Minimum Required Signal Strength for Reliable Service

The determination of the median field strength required to support formulas for 929 MHz and 931 MHz propagation should remain consistent with previous Commission procedures used for formulas in the lower CCP frequency bands. The formulas currently used for lower band CCP as described in C.F.R. 47 § 22 were derived from the Carey Report (FCC Report No. R-6406). The Commission derived formulas designed to approximate the Carey curves based upon reliable service signal strengths, e.g., the

formula used to determine Service Area Boundary (SAB) distances for the cellular radio service is based upon a 32 dBμV/m service contour.

The signal strength values at the reliable service contour were determined for the lower bands from the Carey Report as follows:

$$A = 105 + 10\log P_r + 20\log f_{MHz} \qquad \text{(eq. 1)}$$

where A is field strength corresponding to the receiver threshold in dBμV/m, P_r is the receiver input power in watts, and f_{MHz} is frequency in MHz. The Carey Report assumes that the logarithm of the field strength follows a normal distribution. Accordingly, the probability P for receiving a signal with a mean (median) field strength μ is given by

$$P = \frac{1}{\sigma\sqrt{2\pi}} \int_{A}^{\infty} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2} dx \qquad \text{eq. 2}$$

where A is defined above. Using the data and definitions in the Carey Report, $\sigma_{VHF} = 8.58 dB\mu$ and $\sigma_{UHF} = 10.92 dB\mu$; this corresponds to a correction factor of 11 dB and 14 dB, respectively, to correct the probability from the mean value (50%) to the point of 90% reliability. In general, the receiver threshold is determined by either the receiver sensitivity or the noise floor associated with the frequency band under study. The 930 MHz frequency band has a very low noise floor and the receiver sensitivity can be used to determine the required signal strength for reliable service. Probability theory, as demonstrated in the Carey Report, uses this figure to determine the 50% value for reliable service, as determined by equation 1. This is then corrected to a 90% value by utilizing the 14 dB correction factor calculated using $\sigma_{UHF} = 10.92 dB\mu$ as outlined above..

Using equation 1 of these comments, and the assumptions outlined above, with a typical receiver sensitivity of 0.35 μV for a 931 MHz pager, the required field strength at the receiver is calculated to be 19.38 dBμ for a 50% reliability value. This value is corrected to the 90% reliability value as outlined above to a 33.38 dBμ value for reliable service.

In order to determine the required signal strength to the interference contour, the desired-to-undesired signal ratio must be determined from the following equation in the Carey Report:

$$Desired - to - Undesired - Ratio = 6 + (14^2 + 14^2 + T_U^2)^{1/2} \qquad \text{eq. 3}$$

where 6 is the acceptance ratio, and T_u is the time fading of the interfering signal. T_u is usually small and can be neglected. For 930 MHz, this calculation provides for a desired-to-undesired ratio of 25.8 dB, which corresponds to the value of 26 dB as determined by the Commission. Using this calculated value, the signal strength for the undesired signal must not exceed 7dBμ.

Formulas Based on the Assumptions of 33 dBμV/m Service and 7 dBμV/m Interference Contours

As discussed above, the 929-931 MHz paging service contour formula should be based upon a median receive signal strength of 33 dBμV/m. The interference contour formula, separated by desired-to-undesired signal ratio of 26 dB, should be based upon a signal strength of 7 dBμV/m. These values are used in the Okumura curves and formulas

which approximate the Okumura distance are determined. The following formulas are proposed to define contour distances for 929-931 MHz paging service:

$$d_{Service(km)} = 0.46 \times haat_m^{0.48} \times erp_w^{0.30}$$

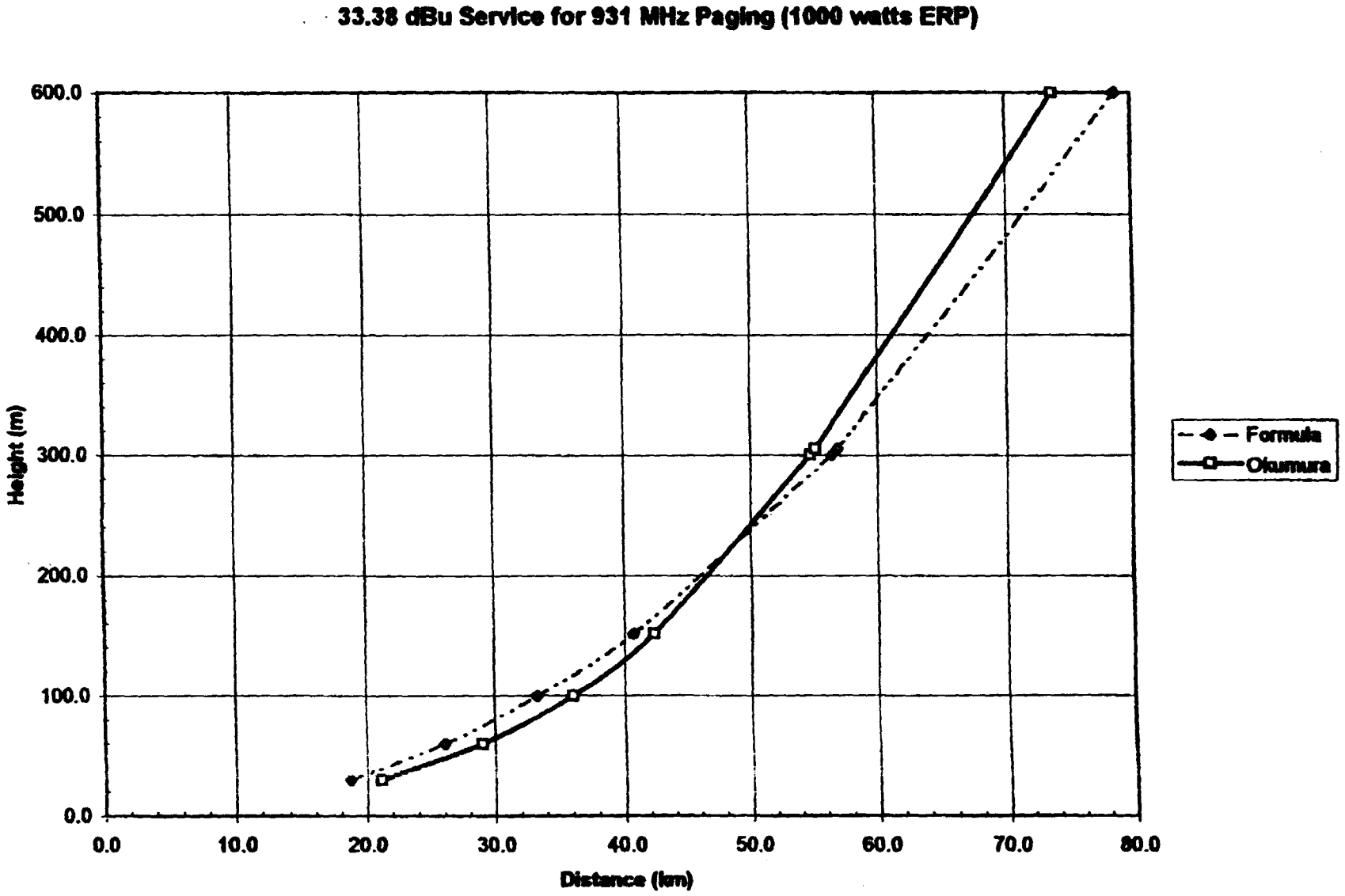
$$d_{Interference(km)} = 4.75 \times haat_m^{0.36} \times erp_w^{0.18}$$

Attachment A graphs the proposed formulas against the Okumura curves for the same values.

Conclusion

The use of formulas to determine the distances to the reliable service and interference contours in the 930 MHz frequency range should be maintained. However, using a signal strength value of 47 dBμV/m is not technically sound. It is demonstrated above that the signal strengths for reliable service and interference level, using the methods of the lower frequency bands, are better defined at 33 dBμV/m and 7 dBμV/m respectively.

Attachment A
1 of 2



Attachment A
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