Valuation Analysis of AirThread Connections for Acquisition by American Cable Communications: A Discounted Cash Flow Approach

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Executive Summary

This report evaluates the potential acquisition of AirThread Connections (ATC) by American Cable Communications (ACC) using a Discounted Cash Flow (DCF) analysis.

We assess the value of AirThread under both scenarios—excluding and including potential synergies—and perform a sensitivity analysis to identify key risks and uncertainties affecting the valuation. By balancing the conservative estimate without synergies ($5922.42 million) and the optimistic estimate with synergies ($8865.76 million), we propose a recommended valuation of **$7394.09 million**. Our sensitivity analysis underscores the significant impact of changes in the growth rate, cost of capital, and synergies on the valuation, highlighting the need for careful consideration of these factors during acquisition discussions.

Ultimately, while synergies could greatly enhance AirThread's value, their realization depends largely on ACC's ability to integrate operations effectively. The report offers a strategic valuation that captures both potential upside and associated risks.

I. Cost of Capital Estimation

1. CAPM Inputs

- **Risk-Free Rate (r_f):** 4.25% (based on the 10-year US Treasury bonds).
- **Market Risk Premium ($r_m - r_f$):** 5% (standard premium for equity investments).

These inputs are derived from historical market data, which captures the long-term expectations of market returns over risk-free assets. We have used these rates for the subsequent cost of capital calculation by using the CAPM formula.

2. Risk of AirThread's Operations (β_A)

In estimating the appropriate risk metrics for AirThread, such as the debt-to-value (D/V) ratio, equity-to-value (E/V) ratio, and equity beta, we prioritized ensuring that the selected comparable firms represent a balanced and relevant sample. While initially considering all five comparable companies, we found that Universal Mobile and Agile Connections were "outliers":

- **Universal Mobile** exhibited significantly higher operating margins, which suggests that its business model or market position may differ substantially from AirThread's.
- **Agile Connections**, on the other hand, had notably lower margins and performance metrics, which indicates that its financial structure and market dynamics might be less representative of the sector norms.

After excluding these two outliers, we recalculated the average metrics—debt-to-value (D/V) ratio, equity-to-value (E/V) ratio, and equity beta—using the remaining three companies (Neuberger Wireless, Big Country Communications, and Rocky Mountain Wireless). We found that:

- The average of these metrics for all five companies was **nearly identical** to the average derived from the three remaining companies.

This similarity mentioned above suggests that the exclusion of the two outliers did not materially alter the overall view of the industry norms. Instead, it provided a relatively cleaner, more representative set of comparables, which reduces the skew that could arise from the extreme performance differences of Universal Mobile and Agile Connections. As such, we believe that excluding these two firms helped to create a more accurate and reliable estimate of the risk and financial structure applicable to AirThread.

Debt Beta (β_D) Estimation: Given AirThread's estimated BBB+ debt rating, the debt beta could be slightly lower than 0.10, as this rating implies a lower risk than a typical BBB rating. However, the higher debt-to-value ratio of 45% to 50% offsets this benefit, which pulls up the sensitivity to market conditions due to the greater reliance on debt.

Therefore, we estimated that a debt beta of **0.10** strikes a balance between the better credit rating and the increased leverage, making it a reasonable estimate for AirThread's valuation.

Rating:	≥A	BBB	BB	B	CCC
Average Beta	< 0.05	0.10	0.17	0.26	0.31

Fig.1: Average Debt Beta Estimates by Credit Rating

3. Estimation of Asset Beta (β_A) and Cost of Capital (r_A)

We used three comparable firms (Neuberger Wireless, Big Country Communications, and Rocky Mountain Wireless), excluding two outliers for inconsistent performance. The averages of the key ratios (D/V ratio, E/V ratio, and equity beta) were consistent before and after excluding the outliers, which could justify our choice.

Deriving Asset Beta (βA):

- We unlever the selected firms' equity betas by assuming constant rebalancing debt for all. In addition, we assumed a debt beta (β_D) of 0.10 from Airthread's BBB+ rating, applying this to its industry comparables. Applying the formula below

$$\beta_{\text{Assets}} = \beta_{\text{Equity}} \times \frac{\text{Equity}}{\text{Debt} + \text{Equity}} + \beta_{\text{Debt}} \times \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$$

We arrive at an **asset beta of 0.74**.

Calculating Cost of Capital (r_A) (Appendix, Cost of Capital):

- Using CAPM, with a risk-free rate (rf) of 4.25% and a market risk premium of 5%, we estimated:

$$WACC\ (levered)\ = \frac{E}{V} r_E + \frac{D}{V}(1 - t_c) r_D = 50\% * 11.19\% + 50\% * 60\% * 4.75\% = 7.02\%$$

II. Free Cash Flows (DCF Analysis)

Free Cash Flow Estimation:

- Projected for the period 2008-2012 using detailed operating data.
- We have calculated the Free Cash Flow for each year (t) based on the following formula:

$$\text{FCF}_t = (\text{Revenue} - \text{COGS} - \text{Depreciation}) \times (1 - \text{Tax Rate}) + \text{Depreciation} - \text{CapEx} - \Delta\text{NWC}$$

The free cash flow ranged from **$300.7 million in 2008** to **$318.6 million in 2012**. (Appendix, Free Cash Flow (1))

Terminal Value:

- We choose to use a **2% growth rate** for the valuation of AirThread using the *growing perpetuity approach*, which aligns with **long-term inflation expectations** and economic growth. Given the maturity of the telecommunications industry and competitive pressures, we believe that a 2% rate conservatively reflects AirThread's realistic long-term growth potential, which avoids overvaluation despite potential short-term synergies.
- The terminal value at the end of 2012 is estimated at **$6476.6 million**, discounted at a rate of 7.02% to align with the calculated WACC for AirThread (Appendix, Free Cash Flow (1)).

III. Valuation Analysis

1. Base-Case Valuation

- **Valuation Without Synergies:** $5922.42 million.
- **Valuation With Synergies:** $8865.76 million.
- **Recommended Estimate:** An *average* of both estimates, **$7394.09 million**, balancing each firm's contribution and the potential risks and rewards of realizing synergies.

We believe that the estimation process mentioned above accounts for a conservative scenario (without full realization of synergies) and an optimistic scenario (full realization of synergies), trying to have a relatively more realistic valuation (Appendix, Free Cash Flow (2)).

IV. Synergy Analysis

- **Synergy Impact:** Significant, with the synergies **nearly adding 50%** extra to AirThread's valuation. These include $2943.34 million in NPV difference derived from backhaul cost savings and additional business revenues.
- **Should ACC Pay for Synergies?** Yes, AirThread can negotiate with ACC for a share of the potential synergies during acquisition discussions. This often involves presenting estimates of cost savings or revenue increases that ACC could achieve post-acquisition. While these synergies may be included in the purchase price or as a separate agreement, we believe that AirThread is

unlikely to secure the full value, as the synergies largely depend on ACC's ability to integrate AirThread into its operations.

V. Sensitivity Analysis

In our sensitivity analysis for AirThread's valuation, we focused on three key uncertainties: 1) **the growth rate (g)**, 2) **the cost of capital (r)**, and 3) **the potential synergies estimated by Ms. Zhang**. Each of these significantly affects the terminal value and discounting of future cash flows in the DCF model. The growth rate reflects AirThread's long-term potential, influenced by market and industry trends, while the cost of capital is subject to economic factors like interest rates and market risk premiums. Synergies impact every cash flow and are quite challenging to quantify but crucial for a more accurate valuation.

Our sensitivity analysis shows that the NPV is highly sensitive to changes in these inputs. For instance, increasing the growth rate from 1% to 3% raises the NPV from $5,155.70 million to $7,070.81 million, assuming a 7.02% cost of capital. Adjusting the cost of capital between 6.00% and 10.00%, while keeping a 2% growth rate, results in NPVs ranging from $7,416.19 million to $3,732.27 million. This demonstrates how even small changes can greatly affect AirThread's valuation (Appendix, Sensitivity Test).

Lastly, we evaluated a range of potential synergies to account for the "notoriously difficult" task of quantifying their effects. Zhang segregates synergies into two categories: reduction in backhaul cost, and increases in annual business revenue. Using her projections for *percentage reduction in backhaul costs,* we vary her assumed percentages by increments of .1x. For example, we vary her assumed backhaul reduction of 7% in four ways: 7% * 80%, 7%* 90%, 7% * 110%, and 7% * 120%, in the event that, say, backhaul savings were actually 120% more than she expected. For annual business revenue, we vary the *total monthly minutes* similarly. Results showed that variations in NPV are far more sensitive to movement in total monthly minutes than in backhaul costs—reducing *costs* by an additional 20% increases NPV from 8,921 to 9,004, while similarly increasing *minutes* produces an NPV of $9315 million (Appendix, Free Cash Flow (2)).

VI. Recommendation

Our comprehensive analysis of the potential acquisition of AirThread by American Cable Communications (ACC) suggests a balanced valuation approach. Using a DCF method, we estimated AirThread's value at approximately $7394.09 million, considering both conservative and optimistic scenarios of synergistic benefits. The sensitivity analysis highlighted the impact of key variables such as growth rate, cost of capital, and synergies on the valuation. Variations in these inputs, particularly in growth assumptions and synergy realization, can significantly alter the NPV, underscoring the importance of accurate projections. While synergies offer considerable value, their realization depends heavily on ACC's successful integration of AirThread, making it crucial to factor in these uncertainties during acquisition negotiations.

VII. Appendix

[Item 1] Google Sheets with Detailed Calculations: AirThread Valuation Case Sheets [Final Ver].xlsx