FCC Part 15 Certification
Test Report

FCC ID: SH5-CAP

FCC Rule Part: 15.247 Spread Spectrum Devices
15.407 U-NII Devices

ACS Report Number: 04-0273-15C

Manufacturer: Miltope Corporation
Equipment Type: Wireless LAN System
Model: CAP

RF Exposure Information

General Information:

Applicant:	Miltope Corporation
ACS Project:	04-0273
FCC ID:	SH5-CAP
Device Category:	Wireless LAN
Environment:	Fixed Mount on Aircraft
Operating Configuration:	Mobile
Exposure Conditions:	Uncontrolled - >20cm

Antenna Information:

The CAP antenna assembly is a horizontally polarized, multi-band antenna designed to provide worldwide IEEE 802.11a/b/g WLAN coverage with minimum package size. It is designed to operate in the 2.39 – 2.49 GHz and 4.9 – 5.9 GHz frequency bands with a VSWR of less than 2.0:1 across all bands. The antenna is provided with one integral RF, TNC type coax connector.

DESCRIPTION	SPECIFICATION
Frequency Range	2.39-2.49 GHz and 4.9-5.9 GHz
Peak Gain (2.45 GHz)	2 dBi
Peak Gain (5.0 GHz)	2.5 dBi
Peak Gain (5.25 GHz)	3.5 dBi
Peak Gain (5.8 GHz)	3.5 dBi
Polarization	Horizontal
Coax Cable Type	RG-316/U
Cable Length	7.5” +/- 0.25”
Connector Type	Male TNC

The WAB antenna assembly Aluminum blade antenna designed for spread spectrum local area network communication utilizing IEEE 802.11. Common 4 hole base plate design provides a common installation for commercial airline application.

DESCRIPTION	SPECIFICATION
Frequency Range	2.2 – 2.5 GHz
Peak Gain	5.5 dBi
VSWR	1.5:1
Impedance	50 Ohms
Pattern	Omni-Directional
Polarization	Vertical
Connector Type	Male TNC

MPE Calculation

The Power Density (mW/cm^2) is calculated as follows:

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

CAP Configuration - Co-Location of Transmitters

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*							
Transmit Freq. (MHz)	**Radio Power (dBm)**	**Power Density Limit (mW/Cm2)**	**Radio Power (mW)**	**Antenna Gain (dBi)**	**Antenna Gain (mW eq.)**	**Distance (cm)**	**Power Density (mW/cm^2)**
2412	25.4	1.00	346.73685	2	1.58	20.00	0.1380
2437	25.06	1.00	320.62693	2	1.58	20.00	0.1276
2462	24.4	1.00	275.42287	2	1.58	20.00	0.1096
5180	14.43	1.00	27.73320	2.5	1.78	20.00	0.0138
5260	17.69	1.00	58.74894	3.5	2.24	20.00	0.0409
5320	15.85	1.00	38.45918	3.5	2.24	20.00	0.0268
5745	12.68	1.00	18.53532	3.5	2.24	20.00	0.0129
5785	13.89	1.00	24.49063	3.5	2.24	20.00	0.0171
5805	14.02	1.00	25.23481	3.5	2.24	20.00	0.0176

Using the maximum power output and antenna gain for each channel and mode of operation, the summation of any two power density values does not exceed the specified limit of 1 mW/cm^2. This satisfies the requirements for devices with co-location transmitting antennas within a 20 cm separation distance.

WAB Configuration – Single Transmitter Configuration

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*							
Transmit Freq. (MHz)	**Radio Power (dBm)**	**Power Density Limit (mW/Cm2)**	**Radio Power (mW)**	**Antenna Gain (dBi)**	**Antenna Gain (mW eq.)**	**Distance (cm)**	**Power Density (mW/cm^2)**
2412	25.4	1.00	346.73685	5.5	3.55	20.00	0.3796
2437	25.06	1.00	320.62693	5.5	3.55	20.00	0.3510
2462	24.4	1.00	275.42287	5.5	3.55	20.00	0.3015

Installation Guidelines

The installation manual contains the following text advising how to install the equipment to maintain compliance with the FCC RF exposure requirements:

"RF Exposure (Intentional Radiators Only)

This equipment complies with the FCC RF radiation requirements for uncontrolled environments. To maintain compliance with these requirements, the antenna and any radiating elements should be installed to ensure that a minimum separation distance of 20 cm is maintained from the general population.

Conclusion

This device complies with the MPE requirements by providing adequate separation between the device, any radiating structure and the general population.