FCC TEST REPORT

FCC ID : HAP90448T49

Applicant : **Echo Toys Ltd**
Room1108,Peninsula Centre,67 Mody Road,Tsim Sha Tsui East, Kowloon HongKong

Equipment Under Test (EUT) :

Product description : PRO FLYING SAUCER

Model No. : 90448

Standards : FCC 15 Paragraph 15.205, Paragraph 15.209, Paragraph 15.235, Paragraph 15.31, Paragraph 15.33, Paragraph 15.35.

Date of Test : July 12, 2005

Test Engineer : Tiger Su

Reviewed By : Phillo zhong

PERPARED BY:
Shenzhen Huatongwei International Inspection Co., Ltd
Keji S,12th,Road, Hi-tech Industrial Park, Shenzhen, Guangdong, China

FCC Registration Number: 662850

2 Contents

3 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC PART 15: 2003	ANSI C63.4: 1992	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15: 2003	ANSI C63.4: 1992	Class B	N/A

4 General Information

4.1 Client Information

Applicant:	**Echo Toys Ltd**
Address of Applicant:	Room1108,Peninsula Centre,67 Mody Road,Tsim Sha Tsui East, Kowloon HongKong

4.2 General Description of E.U.T.

Product description:	PRO FLYING SAUCER
Model No.:	90448

4.3 Details of E.U.T.

Power Supply:	Transmitter :9.0V DC Battery

4.4 Description of Support Units

The EUT has been tested as an independent device unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a PRO FLYING SAUCER. The standards used were FCC 15 Paragraph 15.205, Paragraph 15.209, Paragraph 15.235,Paragraph 15.31,Paragraph 15.33, Paragraph 15.35.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC – Registration No.: 662850**

  Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 662850, November 17, 2003.

4.7 Test Location

All Emissions testswere performed at:-Shenzhen Huatongwei International Inspection Co., Ltd. at Keji S,12th,Road, Hi-tech Industrial Park, Shenzhen, Guangdong, China.

5 Equipment Used during Test

	Conducted Emission Test					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Due date**
1	Shielding Room	ETS	8 x 4 x 4 m^3	N0.2	N/A	N/A
2	LISN	Rohde & Schwarz	ESH2-Z5	100028	06-11-2004	05-11-2005
3	EMI Test Receiver	Rohde & Schwarz	ESCS30	100038	18-11-2004	17-11-2005
	Radiated Emission Test					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Due date**
1	3m Semi- Anechoic Chamber	ETS	N/A	N/A	05-11-2004	04-11-2005
2	EMI Test Receiver	ROHDE & SCHWARZ	ESI 26	100009	05-11.2004	04-11-2005
3	EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	100038	05-11.2004	04-11-2005
4	EMI Test Software	ROHDE & SCHWARZ	ES-K1	N/A	N/A	N/A
5	Bilog Type Antenna	ETS	2075	2346	02-12-2004	01-12-2005
6	Horn Antenna	ROHDE & SCHWARZ	HF906	1000029	05-11.2004	04-11-2005
7	Ultra-Broadband Antenna	ROHDE & SCHWARZ	HL562	100015	02-12-2004	01-12-2005
	Common Used Equipment					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Series No.**	**Cal. Date**	**Due date**
1	Temperature, Humidity & Barometer	OREGON SCIENTIFIC	BA-888	20001 to20004	25-07-2004	25-07-2005
2	DMM	FLUKE	73	70681567 or 70671126	23-07-2004	23-07-2005

6 Conducted Emission Test

Product:	PRO FLYING SAUCER
Test Requirement:	FCC Part15 Paragraph 15.207
Test Method:	Based on FCC Part15 Paragraph 15.207
Test Date:	…….
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 Test Equipment

Please refer to Section 5 this report.

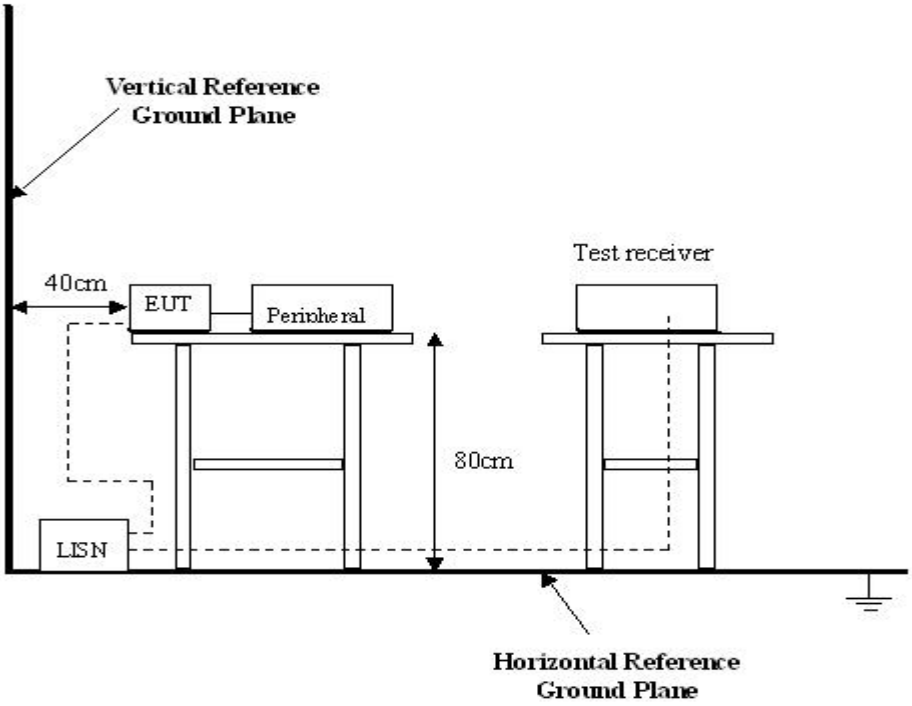
6.2 Test Procedure

1. The EUT was tested according to ANSI C63.4. The frequency spectrum from 150kHz to 30MHz was investigated.

2. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.3 Conducted Test Setup

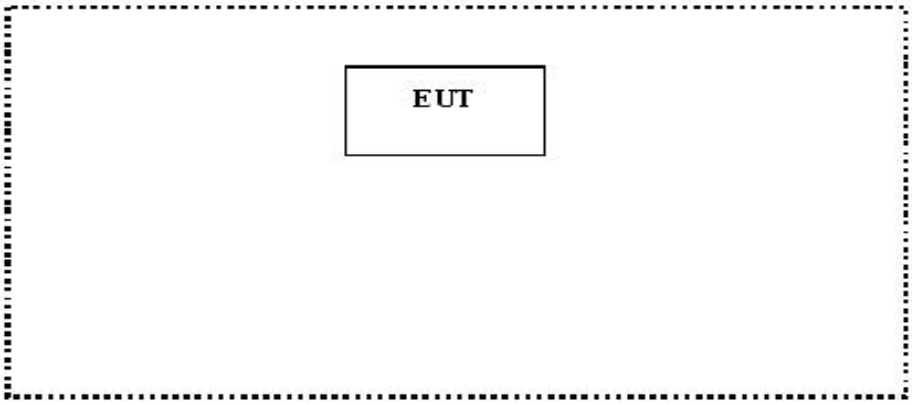
The conducted emission tests were performed using the setup accordance with the ANSI C63.4, The specification used in this report was the FCC Part15 Paragraph 15.207 limits.



6.4 EUT Operating Condition

Operating condition is according to ANSI C63.4.

A. Setup the EUT and simulators as shown on follow.
B. Enable RF signal and confirm EUT active.
C. Modulate output capacity of EUT up to specification.



6.5 Conducted Emission Limits

66-56 dBμV/m between 0.15MHz & 0.5MHz
56 dBμV/m between 0.5MHz & 5MHz
60 dBμV/m between 5MHz & 30MHz

Note: In the above limits, the tighter limit applies at the band edges.

6.6 Conducted Emission Test Result

Owing to the DC operation of EUT, this test is not performed

7 Radiation Emission Test

Product:	PRO FLYING SAUCER
Test Requirement:	FCC Part15 Paragraph 15.209, Paragraph 15.235
Test Method:	Based on FCC Part15 Paragraph 15.33
Test Date:	July 12, 2005
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Detector:	Peak for pre-scan (120kHz resolution bandwidth)
	Quasi-Peak if maximised peak within 6dB of limit

7.1 Test Equipment

Please refer to Section 5 this report.

7.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

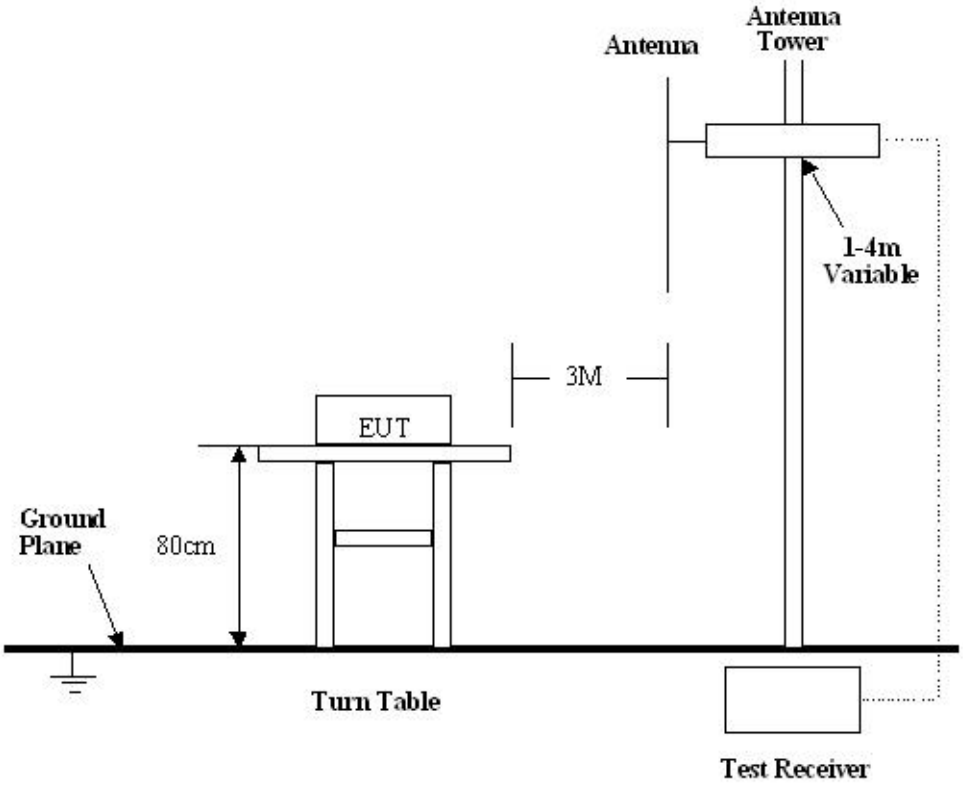
Based on ANSI C63.4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at SZHTW is +4.0 dB.

7.3 Test Procedure

1. For the radiated emissions test, since the EUT does not have a power source, there was no connection to AC outlets.
2. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
3. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dBμV of specification limits), and are distinguished with a "Qp" in the data table.
4. The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

7.4 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4, The specification used in this report was the FCC Part15 Paragraph 15.209, Paragraph 15.235 limits.



7.5 Spectrum Analyzer Setup

According to FCC Part15 Paragraph 15.209, Paragraph 15.235 Rules, the system was tested to 1000 MHz.

Start Frequency.....30 MHz
Stop Frequency .....1000 MHz
Sweep Speed Auto
IF Bandwidth .....100 kHz
Video Bandwidth.....1 MHz
Quasi-Peak Adapter Bandwidth .....120 kHz
Quasi-Peak Adapter Mode.....Normal
Resolution Bandwidth 1MHz

7.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Class B Limit

7.7 Summary of Test Results

According to the data in section 7.10, the EUT complied with the FCC Part15 Paragraph 15.209 and Paragraph 15.235 standards.

7.8 EUT Operating Condition

Same as section 6.4 of this report.

7.9 Radiated Emissions Limit

A. FCC Part 15 subpart C Paragraph 15.235 Limit

Fundamental Frequency(MHZ)	Field Strength of Fundamental
	dBuV/m
49.860	80.0

Note:(1) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency(MHZ)	Distance(m)	Field strength(dBuV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: (1) RF Voltage(dBuV)=20 log RF Voltage(uV)

(2) In the Above Table,the tighter limit applies at the band edges.

(3) Distance refers to the distance in meters between the measuring instrument antenna.

7.10 Radiated Emissions Test Result

Formula of conversion factors:the field strength at 3m was egtablished by adding The meter reading of the spectrum analyer (which is set to read in units of dBuV) To the antenna correction factor supplied by the antenna manufacturer. The antenna Correction factors are stared in terms of dB.The gain of the pressletor was accounted For in the spectrum analyser meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

33 20dBuV+10.36dB=30.36dBuV/m @3m

A. Fundamental Radiated Emission Data for 49.860MHz

Test Item: Fundamental Radiated Emission Data

Test Voltage: 9VDC Battery

Test Mode: TX On

Temperature: 24 °C

Humidity: 52%RH

Test Result: PASS

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
49.860	Vertical	63.4	80.0	16.6	1.5	90
49.860	Horizontal	61.6	80.0	18.4	1.5	90

B. General Radiated Emission Data

Test Item: General Radiated Emission Data
Test Voltage: 9VDC Battery
Test Mode: TX On
Temperature: 24 °C
Humidity: 52%RH
Test Result: PASS

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
99.861723	Vertical	35.00	43.5	8.5	1.2	90
199.473812	Vertical	33.00	43.5	10.5	1.5	45
900.861723	Vertical	32.80	46.0	13.2	1.5	160
99.861723	Horizontal	34.20	43.5	9.3	1.2	60
199.473812	Horizontal	31.20	43.5	12.3	1.5	210
945.571142	Horizontal	32.60	46.0	13.4	1.5	90

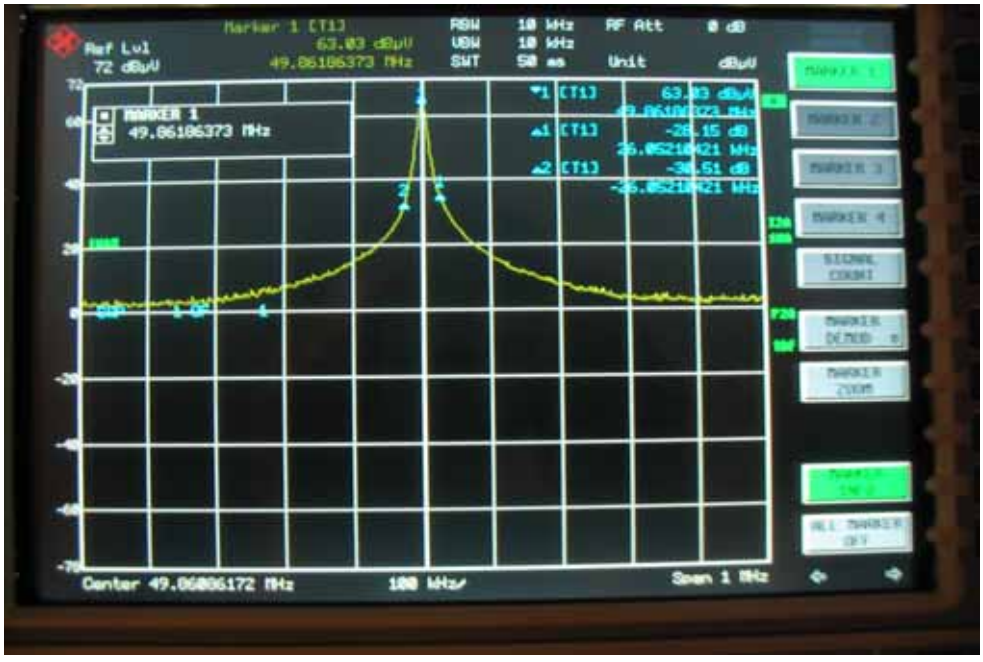
8 Occupied Bandwidth

Test Requirement:	FCC Part15 C
Test Method:	Based on FCC Part15 Paragraph 15.235
	Operation winthin the band 49.35-50.35MHz
Test Date:	July 12, 2005
Test mode:	TX On
Temperature:	24 °C
Humidity:	52%RH

8.1 Test Procedure

1. The field strength of any emissions which appear outside of the band shall not exceed the general radiated emission limits in section 15.209.
2. The useful radiated emission form the EUT was detected by the spectrum analyser with peak detector.

The graph as below.



9 Photographs of Testing

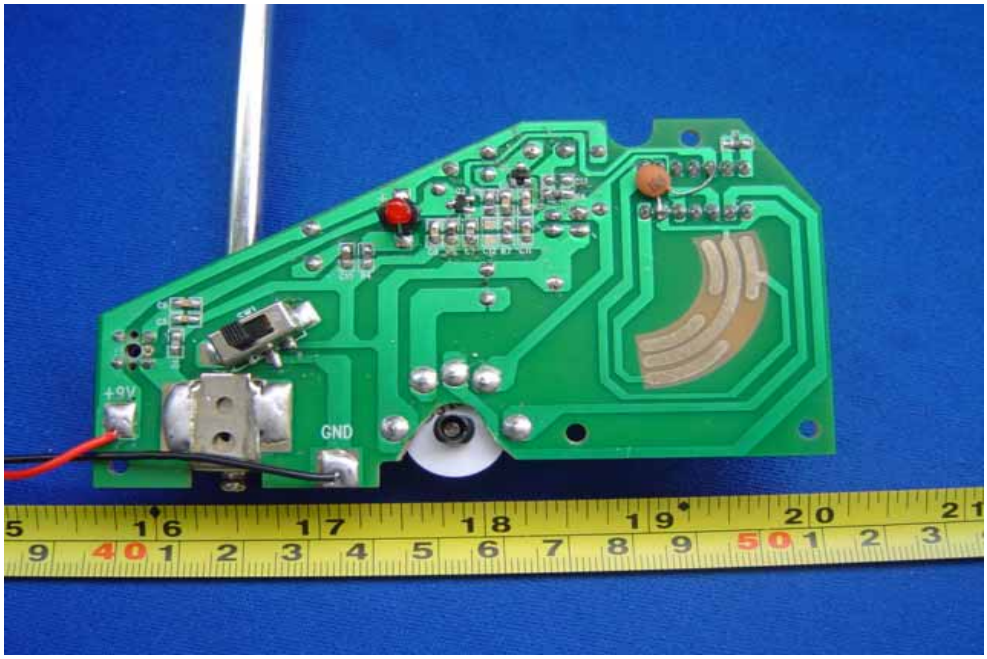
9.1 Radiation Emission Test View For 30MHz-1000MHz

10 Photographs - Constructional Details

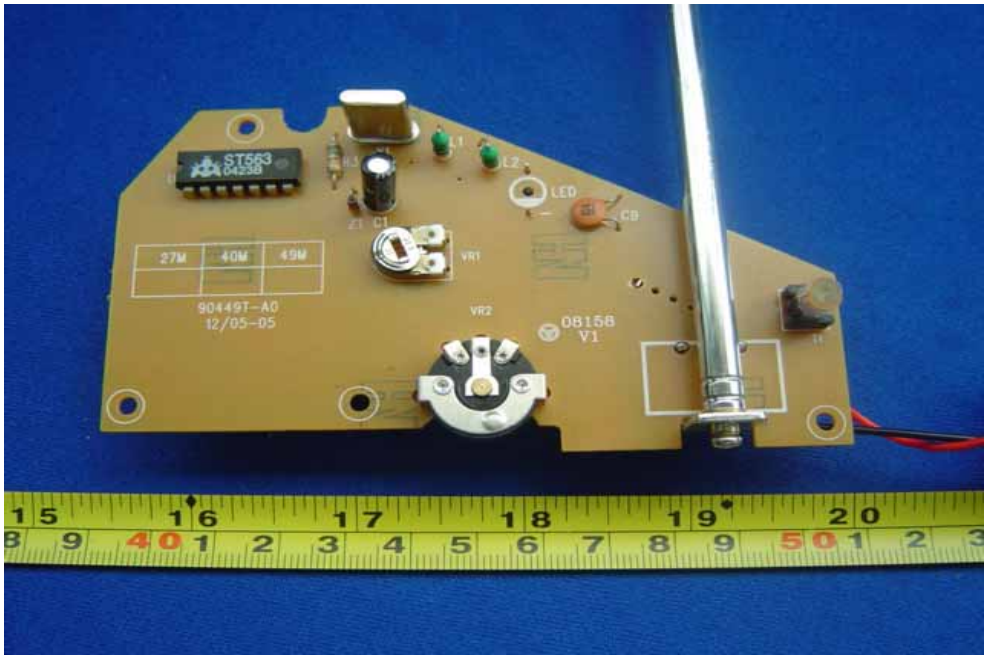
10.1 EUT - Front View

10.2 EUT - Back View

10.3 PCB - Solder View



10.4 PCB - Component View



11 FCC ID Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation.
The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT
EUT Bottom View/proposed FCC Mark Location