

APPLICATION FOR CERTIFICATION
On Behalf of
Radio Station Technology Co., Ltd.
RF Wireless Easy Mouse
(Transmitter)

Model : RFM001T

FCC ID : PBHRFM001T

Prepared for : Radio Station Technology Co., Ltd.
No. 21, Jen-Shyan Street, San-Chung City,
Taipei, Taiwan, R.O.C.

Prepared By : Taiwan Tokin EMC Eng. Corp.
No. 53-11, Tin-Fu Tsun, Lin-Kou,
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Date of Test : Oct. 30, 2000
Date of Report : Nov. 06, 2000

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TEST REPORT CERTIFICATION

Applicant : Radio Station Technology Co., Ltd.
 Manufacturer : Radio Station Technology Co., Ltd.
 FCC ID : PBHRFM001T
 EUT Description : RF Wireless Easy Mouse (Transmitter)
 (A) MODEL NO. : RFM001T
 (B) SERIAL NO. : N/A
 (C) POWER SUPPLY : DC 2.2V~3.5V

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, APRIL 1999
 AND FCC / ANSI C63.4-1992
 (FCC CFR 47 Part 15C, §15.227、§15.209 and §15.207)

The device described above was tested by TAIWAN TOKIN EMC ENG. CORP. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C limits both radiated and conducted emissions.

The measurement results are contained in this test report and TAIWAN TOKIN EMC ENG. CORP. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Taiwan Tokin EMC Eng. corp.

Date of Test : Oct. 30, 2000

Prepared by : 
 (CHERRY WANG)

Test Engineer : 
 (ALLEN WANG)

Approve & Authorized Signer : 
 (JACKIE DENG)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	RF Wireless Easy Mouse (Transmitter)
Model Number	:	RFM001T
FCC ID	:	PBHRFM001T
Applicant	:	Radio Station Technology Co., Ltd. No. 21, Jen-Shyan Street, San-Chung City, Taipei, Taiwan, R.O.C.
Manufacturer	:	Radio Station Technology Co., Ltd. No. 21, Jen-Shyan Street, San-Chung City, Taipei, Taiwan, R.O.C.
RF Fundamental Operation Frequency	:	Channel 1: 27.0525MHz Channel 2: 27.1875MHz
RF Transmission	:	FSK
Output Power	:	< 5mW
Date of Receipt of Sample	:	Oct. 23, 2000
Date of Test	:	Oct. 30, 2000

Remark:

The EUT is a Radio Wireless 3D Mouse, which is a transmitter device. The 3D Mouse have two transmission channels (FM), one is 27.0525MHz other is 27.1875MHz.

1.2. Description of Test Facility

Anechoic Chamber Description	:	May 16, 2000 Re-file on Federal Communication Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, U.S.A.
Name of Firm	:	Taiwan Tokin EMC Eng. Corp.
Site Location	:	No. 53-11, Tin-Fu Tsun, Lin-Kou, Taipei Hsien, Taiwan, R.O.C.
NVLAP lab. Code	:	200077-0

2. POWERLINE CONDUCTED TEST

【This EUT input voltage is DC power operated, so no conductive emissions were performed according to FCC Part 15 section §15.207】

3. RADIATED EMISSION TEST

3.1. Test Equipment

The following test equipment are used during the radiated emission tests :

3.1.1. For 1.705MHz to 30MHz Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8590L	3710A01838	Jul. 03, 00'	1 Year
2.	Test Receiver	Rohde & Schwarz	ESH3	880647/035	Jun. 26, 00'	1 Year
3.	Loop Antenna	Rohde & Schwarz	HFH2-Z2	891847/27	Jun. 20, 00'	1 Year

3.1.2. For 30MHz to 1000MHz Measurement

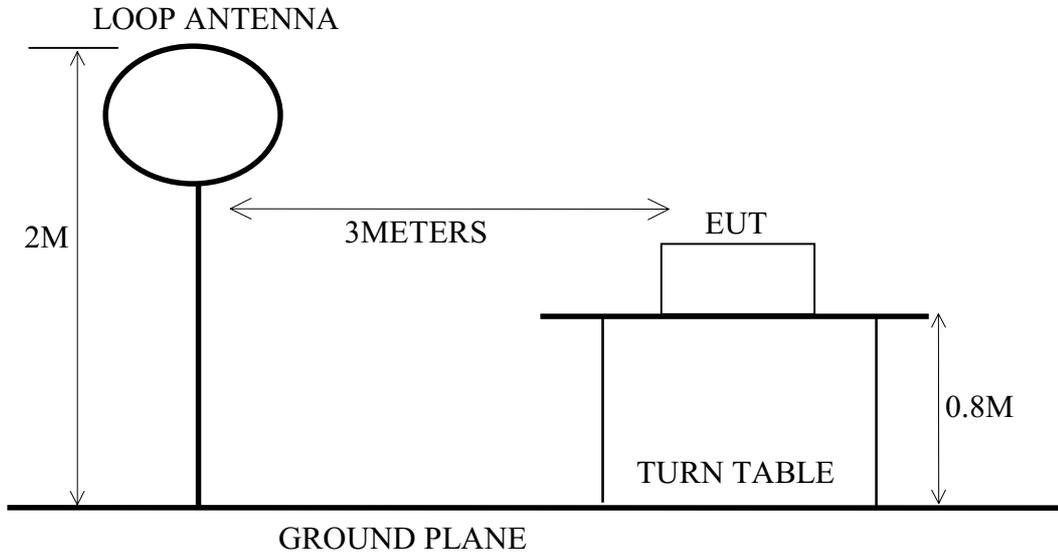
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8590L	3710A01838	Jul. 03, 00'	1 Year
2.	Test Receiver	Rohde & Schwarz	ESVP	861190/011	Jan. 13, 00'	1 Year
3.	Pre-Amplifier	HP	8447D	2944A06305	Mar.16, 00'	1 Year
4.	Broadband Antenna	Schwarzbeck	BBA 9106	A3L	Dec. 04, 99'	1 Year
5.	Broadband Antenna	Schwarzbeck	UHALP 9107	A3H	Dec. 04, 99'	1 Year

3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

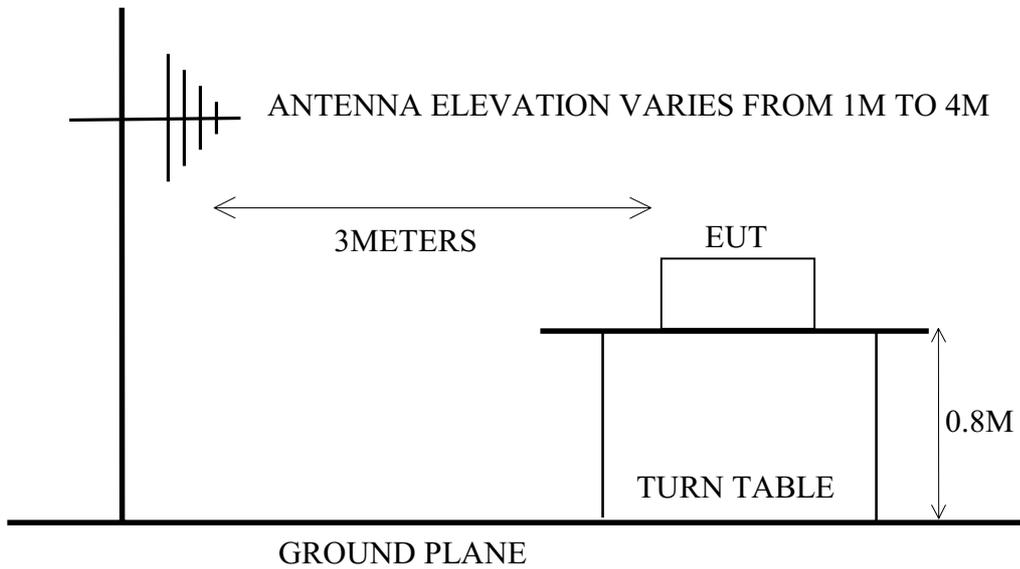
RF WIRELESS EASY MOUSE (TRANSMITTER, EUT)
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3.2.2. Anechoic Chamber Setup Diagram (1.705MHz~ 30MHz, 3m)



3.2.3. Anechoic Chamber Setup Diagram (30MHz ~ 1000MHz, 3m)

ANTENNA TOWER



3.3. Radiation Limit (§15.227 & §15.209)

3.3.1. §15.227 Radiated Emission Limits (Transmitter, Part 15C)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/M}$	$\text{dB}\mu\text{V/M}$
26.96 – 27.28	3	10,000	80 (Average)

Remark: Emission level ($\text{dB}\mu\text{V/M}$) = 20 log Emission level ($\mu\text{V/M}$)

3.3.2. §15.209 Radiated Emission Limits (Harmonics, Part 15C)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/M}$	$\text{dB}\mu\text{V/M}$
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	2400/F(kHz)	---
1.705 ~ 30	30	30	29.5
1.705 ~ 30	3	300	49.5
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

Remark : (1) Emission level ($\text{dB}\mu\text{V/M}$) = 20 log Emission level ($\mu\text{V/M}$)

(2) The tighter limit applies at the edge between two frequency bands.

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

3.4. EUT's Configuration during Compliance Measurement

The following equipment were installed on radiation measurement to meet the Commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

3.4.1. RF Wireless Easy Mouse (Transmitter, EUT)

Model Number	:	RFM001T
Serial Number	:	N/A
FCC ID.	:	PBHRFM001T
Manufacturer	:	Radio Station Technology Co., Ltd.
RF Fundamental	:	Channel 1: 27.0525MHz
Operation Frequency	:	Channel 2: 27.1875MHz
RF Transmission	:	FSK

3.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown on 3.2.

3.5.2. Turn on the power of all equipment.

3.5.3. The RF Wireless Easy Mouse (Transmitter, EUT) was on transmitting situation during test.

3.6. Test Procedure

3.6.1. For 1.705MHz to 30MHz Frequency Range

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. The receiving antenna is 3 meters and fixed at 2 meter height.

The bandwidth of the R&S Test Receiver ESH3 was set at 10KHz.

3.6.2. For 30MHz to 1000MHz Frequency Range

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. For 30MHz to 1000MHz frequency range, EUT was set at 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 to 4 meters for 30MHz to 1000MHz frequency range to find out the maximum emission level. Broadband antenna such as calibrated biconical and log- periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-1992 regulation.

The bandwidth of the R&S Test Receiver ESVP was set at 120KHz.

EUT with two frequency channels were done during radiated measurement and all the test results are listed in section 3.8.

The details of test modes are as follows:

(1) Channel 1: 27.0525MHz (Transmitting Mode)

(2) Channel 2: 27.1875MHz (Transmitting Mode)

3.7. Test Results

PASSED. Please refer to the following pages.

3.8. Radiated Emission Noise Measurement Results

The frequency spectrum from 27MHz to 1000MHz is investigated. All the emissions not reported below are too low against the FCC part 15 subpart C limit.

Date of Test : Oct. 30, 2000 Temperature : 23°C
 EUT : RF Wireless Easy Mouse Humidity : 66%
 (Transmitter)

3.8.1. Fundamental Freq. (Average Values)

Frequency (MHz)	Emission Level Horizontal (dB μ V/m)	Limits dB μ V/m	Margin dB
Channel 1: 27.0525MHz			
27.05	48.77	80.00	31.23
Channel 2: 27.1875MHz			
27.19	49.97	80.00	30.03

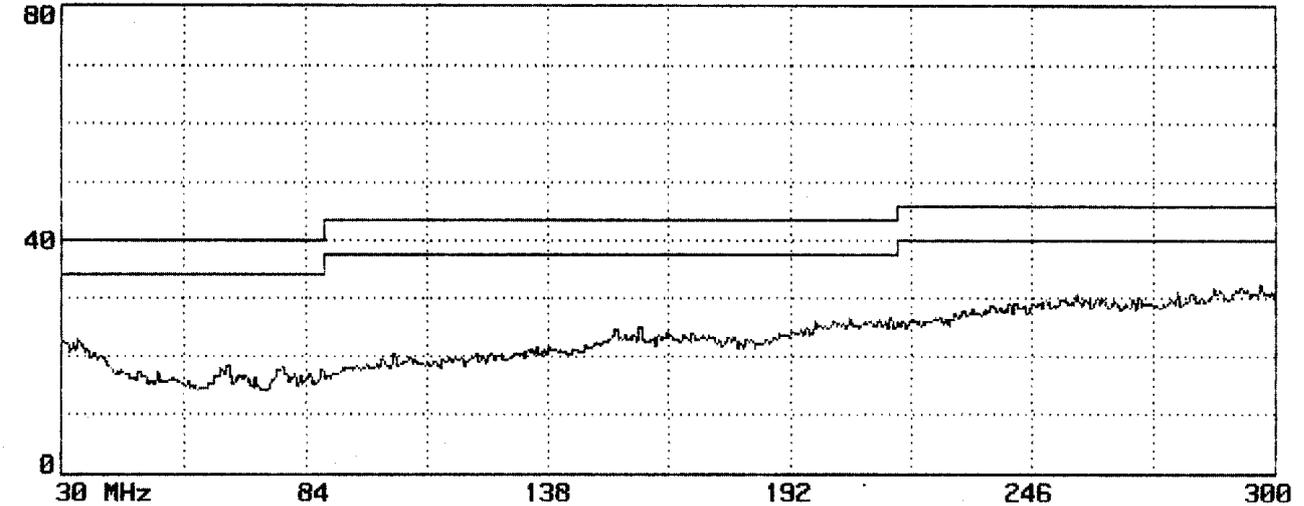
Frequency (MHz)	Emission Level Vertical (dB μ V/m)	Limits dB μ V/m	Margin dB
Channel 1: 27.0525MHz			
27.05	47.46	80.00	32.54
Channel 2: 27.1875MHz			
27.19	48.96	80.00	31.04

3.8.2. Harmonic Freq. (Quasi-Peak Values)

Measurement was up to 1000MHz (included 10th harmonic frequency), but the emissions level (Horizontal and Vertical) were too low against the official limit and not report. The measuring waveform were attached in the following pages.

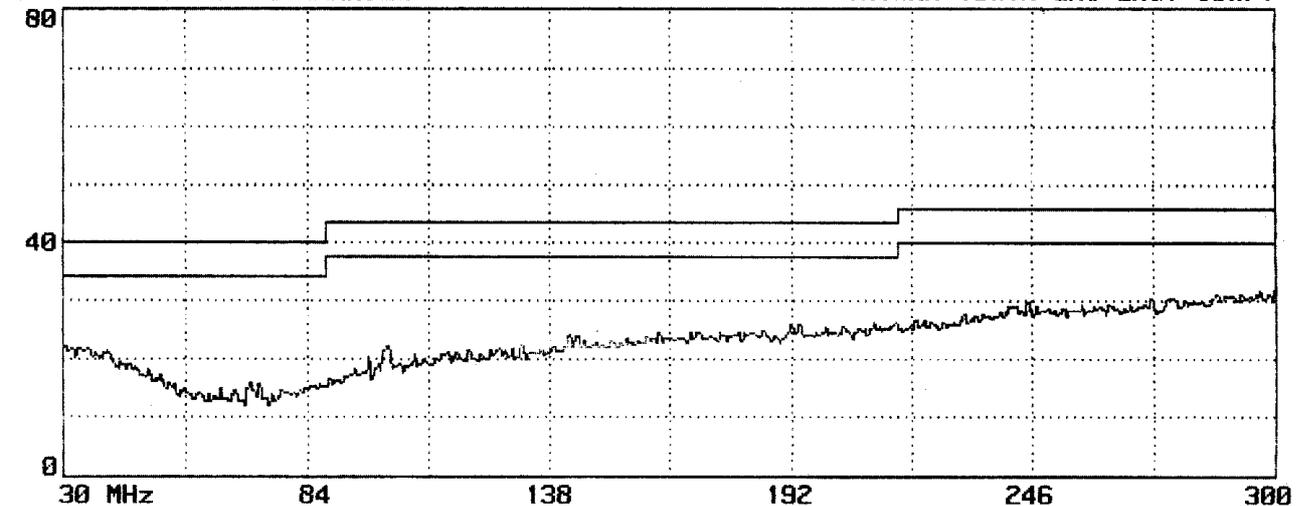
Channel 1: 27.0525MHz (30MHz~300MHz)

Page#: 12 SP File#: RADIOSTA.EI Date: 10-30-2000 Time: 15:21:57
 dBµV/m ANECHOIC CHAMBER TAIWAN TOKIN EMC ENG. CORP.



Limit : FCC CLASS-B 3m Probe: BBA9106B(1209)A/C VERTICAL
 EUT : RF MOUSE M/N:RFM001T Power:
 Margin: 6dB Standard: 0 Trace: 12, 0, 0, 0, 0
 Memo : MOUSE(27.05MHz)

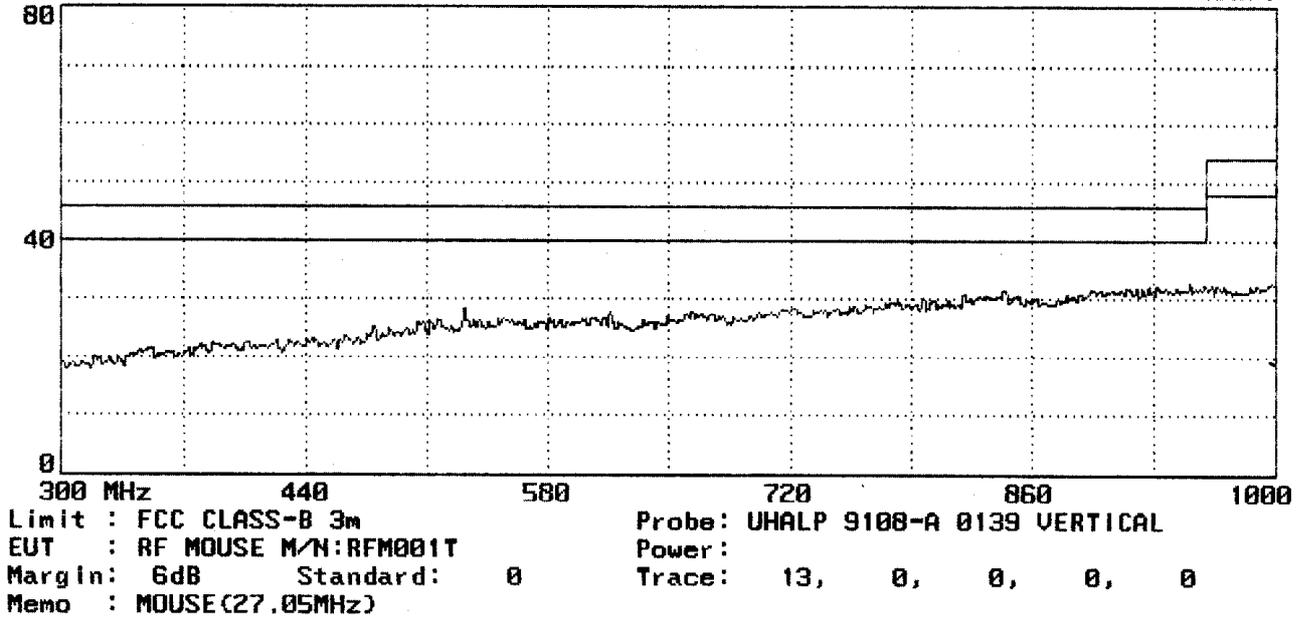
Page#: 11 SP File#: RADIOSTA.EI Date: 10-30-2000 Time: 15:19:31
 dBµV/m ANECHOIC CHAMBER TAIWAN TOKIN EMC ENG. CORP.



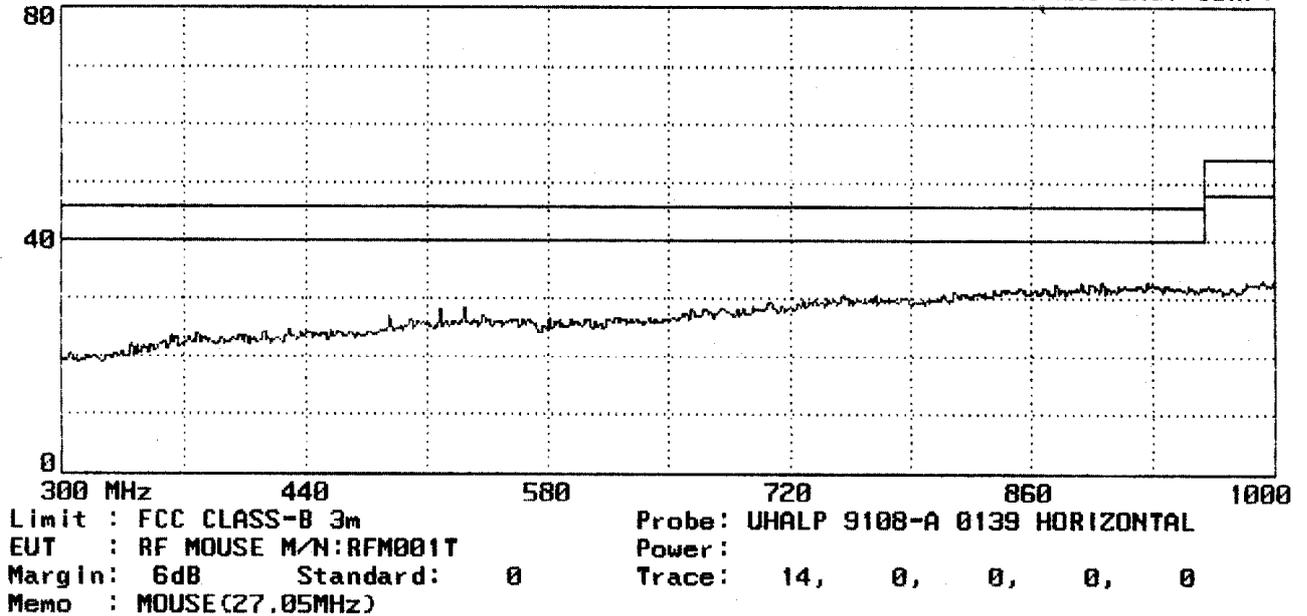
Limit : FCC CLASS-B 3m Probe: BBA9106B(1209)A/C HORIZONTAL
 EUT : RF MOUSE M/N:RFM001T Power:
 Margin: 6dB Standard: 0 Trace: 11, 0, 0, 0, 0
 Memo : MOUSE(27.05MHz)

Channel 1: 27.0525MHz (300MHz~1000MHz)

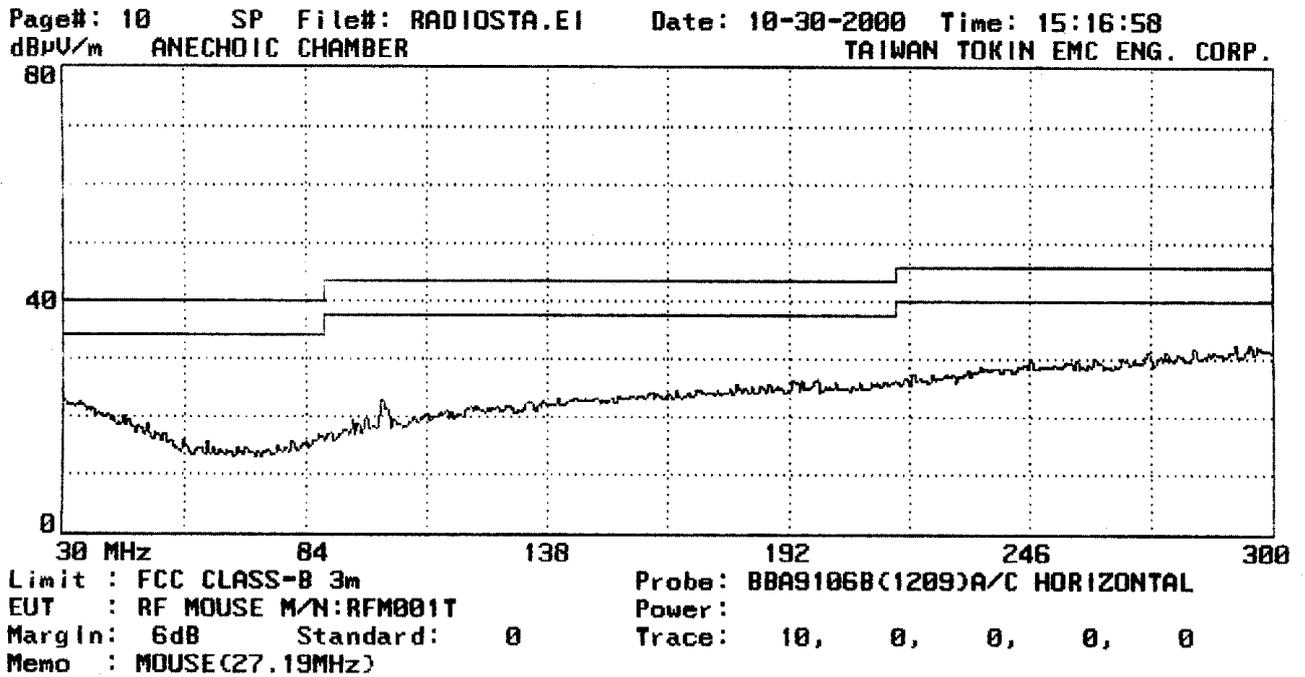
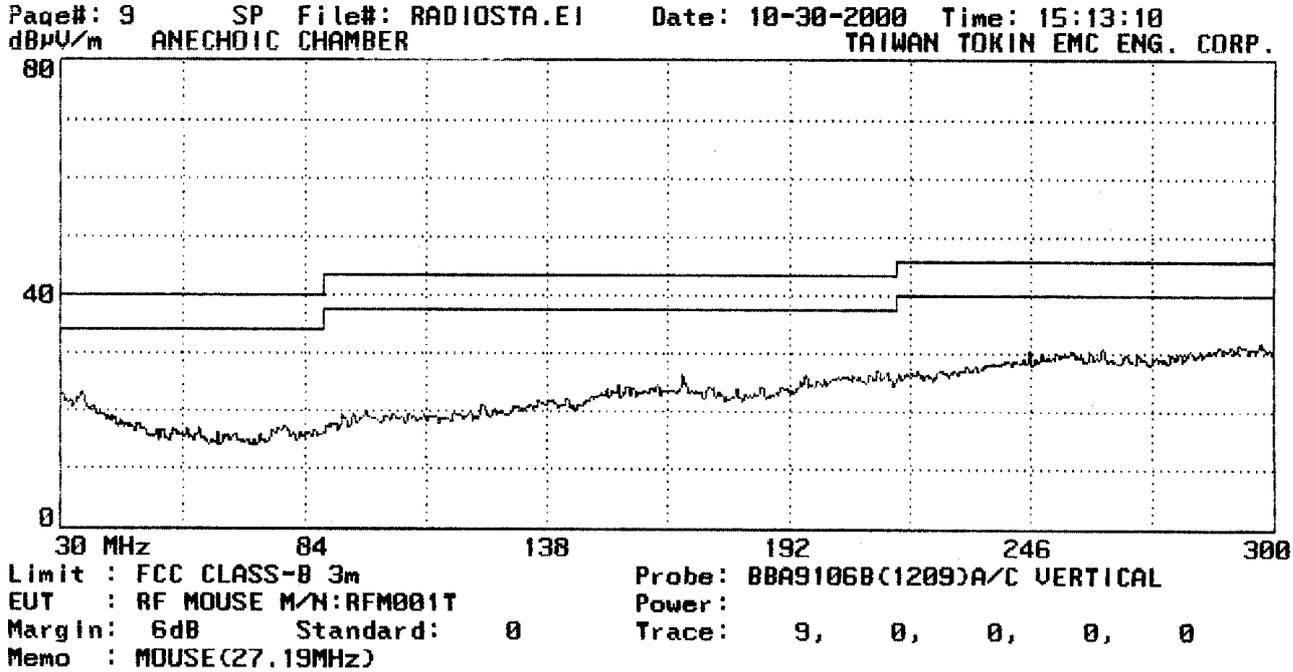
Page#: 13 SP File#: RADIOSTA.EI Date: 10-30-2000 Time: 15:24:43
 dB μ V/m ANECHOIC CHAMBER TAIWAN TOKIN EMC ENG. CORP.



Page#: 14 SP File#: RADIOSTA.EI Date: 10-30-2000 Time: 15:27:04
 dB μ V/m ANECHOIC CHAMBER TAIWAN TOKIN EMC ENG. CORP.

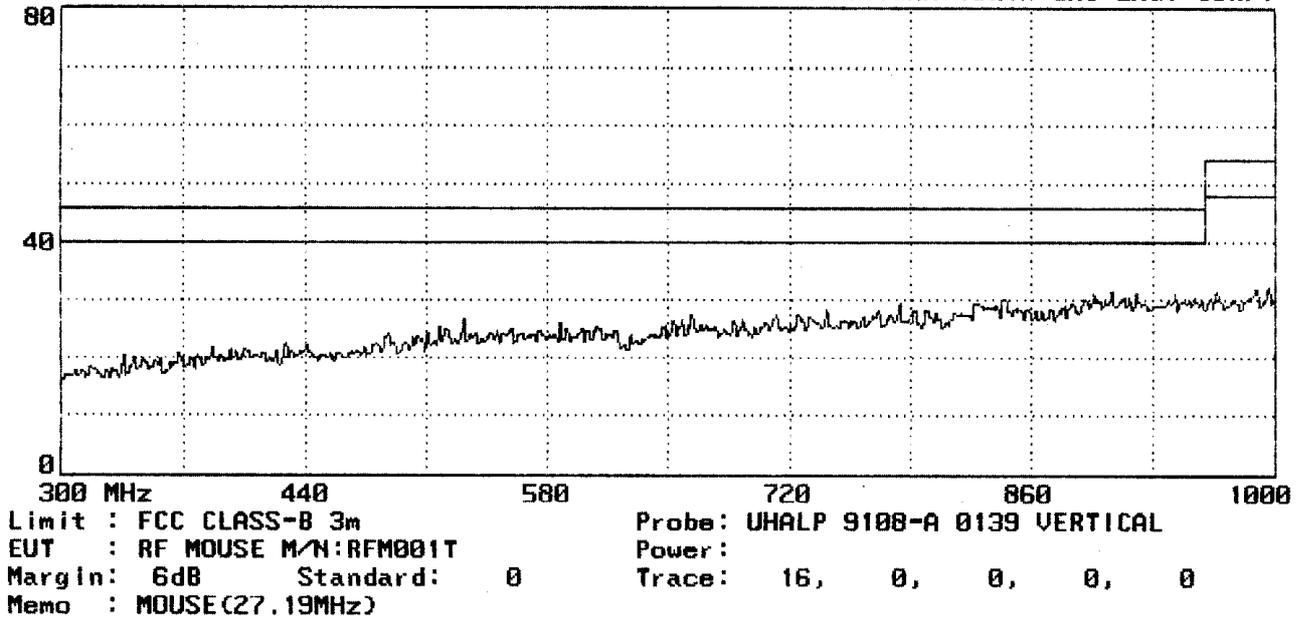


Channel 2: 27.1875MHz (30MHz ~ 300MHz)

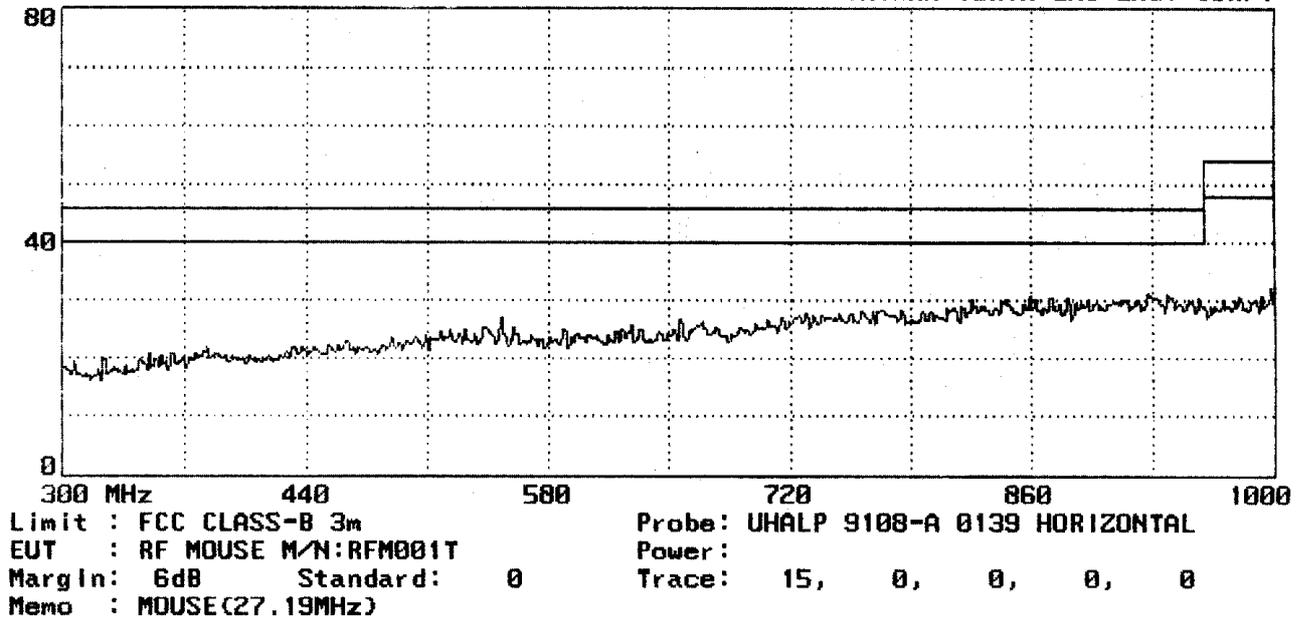


Channel 2: 27.1875MHz (300MHz ~ 1000MHz)

Page#: 16 SP File#: RADIOSTA.E1 Date: 10-30-2000 Time: 15:33:27
 dB μ V/m ANECHOIC CHAMBER TAIWAN TOKIN EMC ENG. CORP.



Page#: 15 SP File#: RADIOSTA.E1 Date: 10-30-2000 Time: 15:30:59
 dB μ V/m ANECHOIC CHAMBER TAIWAN TOKIN EMC ENG. CORP.

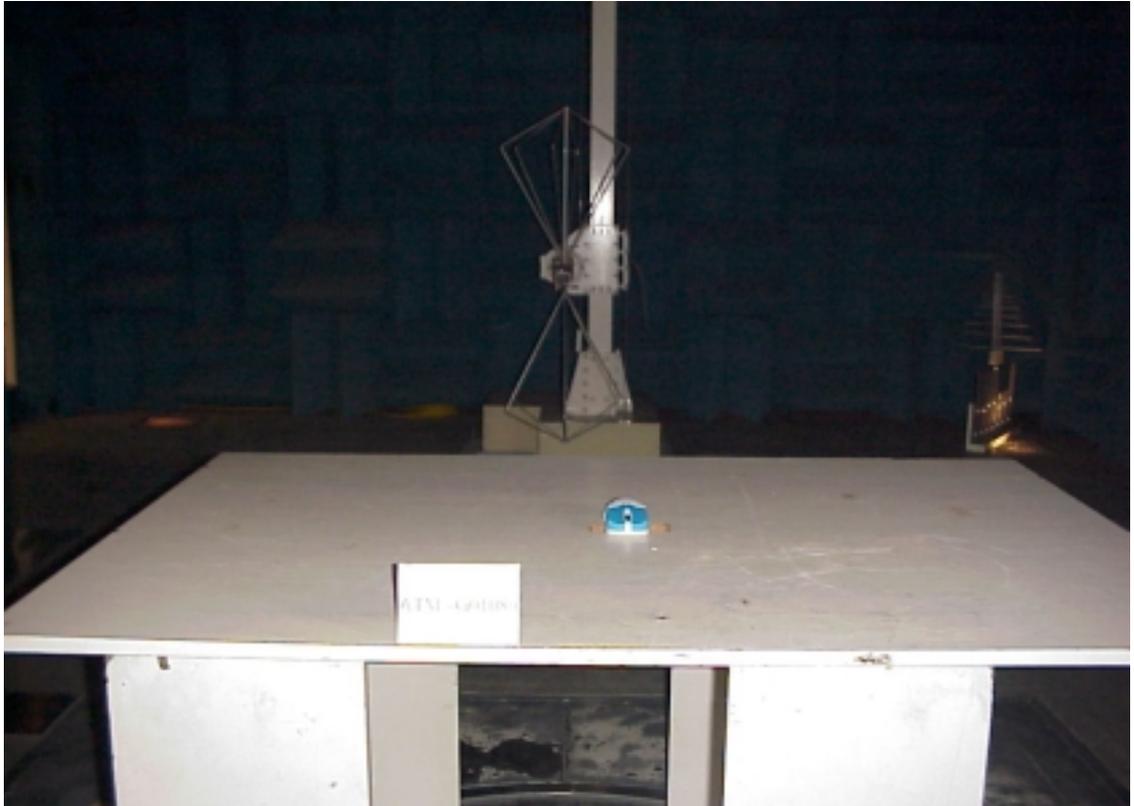


4. DEVIATION TO TEST SPECIFICATIONS

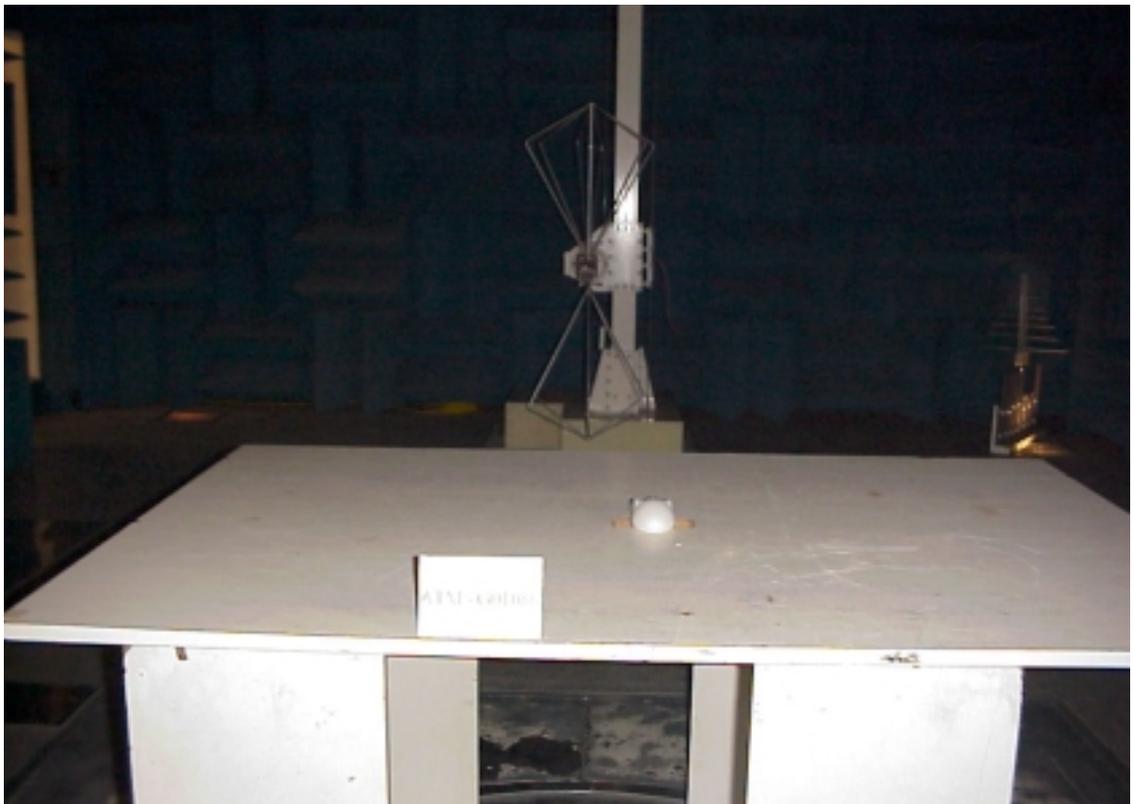
【NONE】

5. PHOTOGRAPHS

5.1. Photos of Radiated Measurement at Anechoic Chamber



FRONT VIEW OF RADIATED TEST



BACK VIEW OF RADIATED TEST