



Appendix B. Attachment of Report for additional measurement data

EQUIPMENT: Wireless Optical Mouse

TRADE NAME : Chic

MODEL NO. : RMO378; 97990

FCC ID: IOWRMO378UP

APPLICANT: Chic Technology Corp.

16F, No. 150, Chien-1 Road, 235 Chung Ho City, Taipei Hsien, Taiwan, R.O.C.

The test result shown in the test report is the same with that of the original one in test report no. **FR590805**, except the printed antenna with 1dBi and shielding. The difference between the original and the report is the test result of Radiation Emission.

Different layout has been changed into the project. Radiation Emissions below 1 GHz test have been modified.

This attachment should be filed together with original test report **FR590805** for reference.



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1. Test of Spurious Radiated Emission

1.1 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

1.2 Measuring Instruments and Setting

Please refer to section 5 in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100KHz / 100KHz for peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

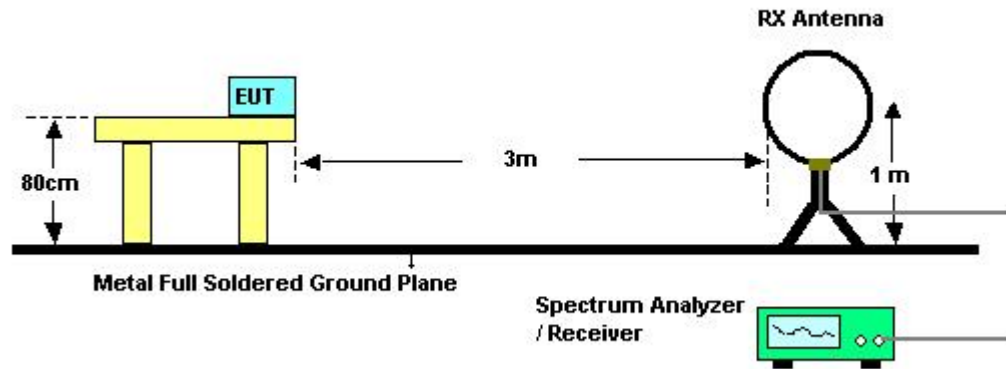


1.3 Test Procedures

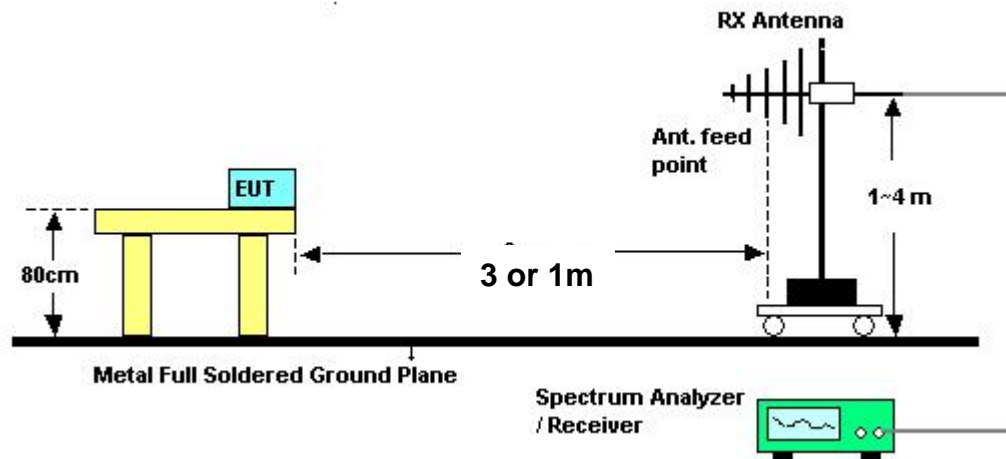
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

1.4 Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.

Distance extrapolation factor = $20 \log (\text{specific distance [3m]} / \text{test distance [1m]})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [9.54 dB].

1.5 Test Deviation

There are no deviations with the original standard.

1.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



1.7 Results of Radiated Emissions (9kHz~30MHz)

Temperature	27°C	Humidity	63%
Test Engineer	Ted Chiu	Configurations	channel 39

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

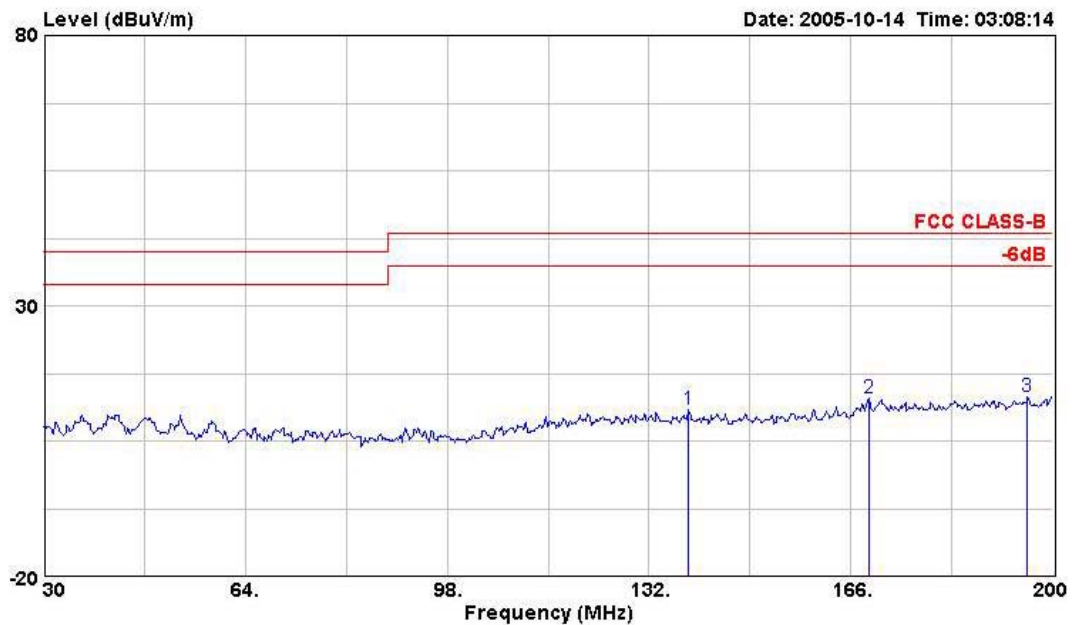
Limit line = specific limits (dBuV) + distance extrapolation factor.



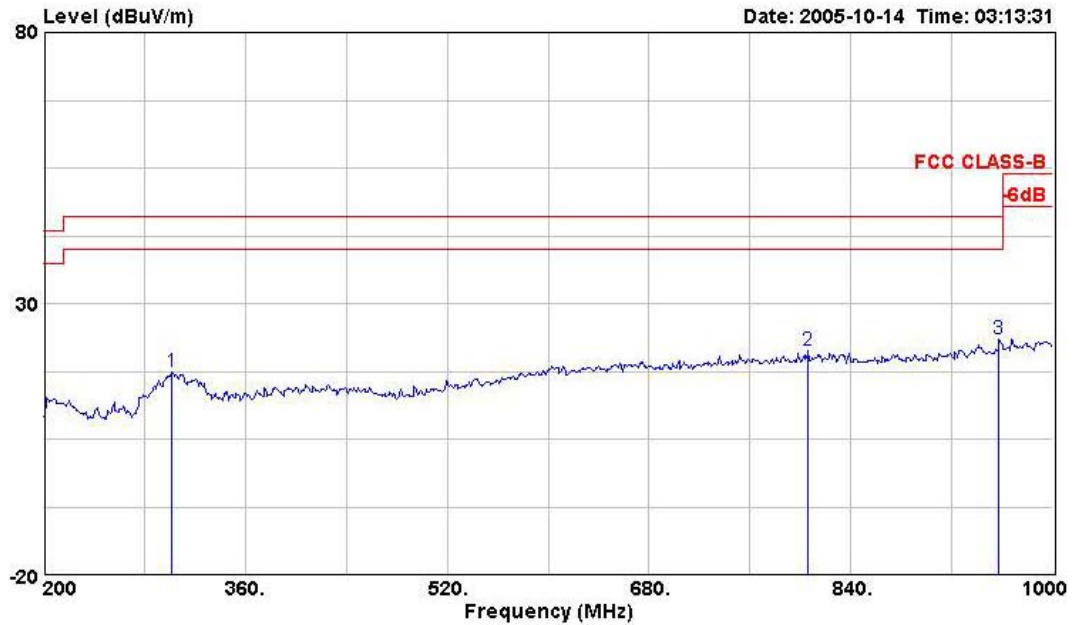
1.8 Test Results for CH 39 / 2441 MHz (for emission below 1GHz)

- Temperature: 27°C
- Relative Humidity: 63%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



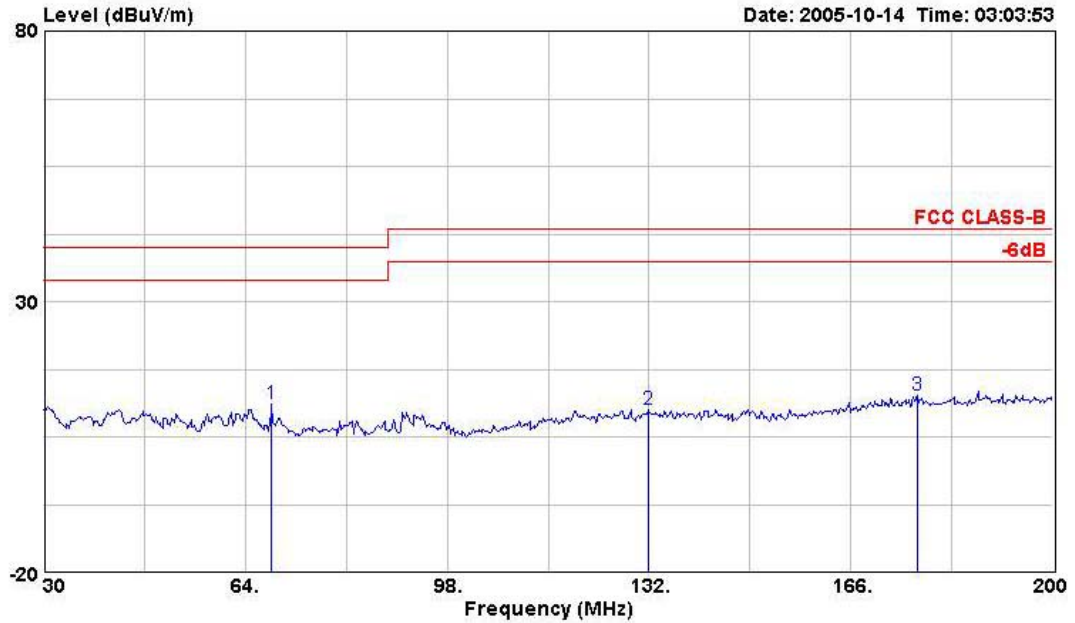
	Freq	Level	Over	Read	Limit	CableAntenna	Preamp		Table	Ant
	MHz	dBuV/m	Limit	Level	Line	Loss	Factor	Factor	Pos	Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB	deg	cm
1	138.630	10.70	-32.80	27.73	43.50	1.18	12.56	30.77	Peak	---
2	169.060	12.85	-30.65	27.95	43.50	1.28	13.57	29.95	Peak	---
3	195.750	13.18	-30.32	27.07	43.50	1.30	15.46	30.65	Peak	---



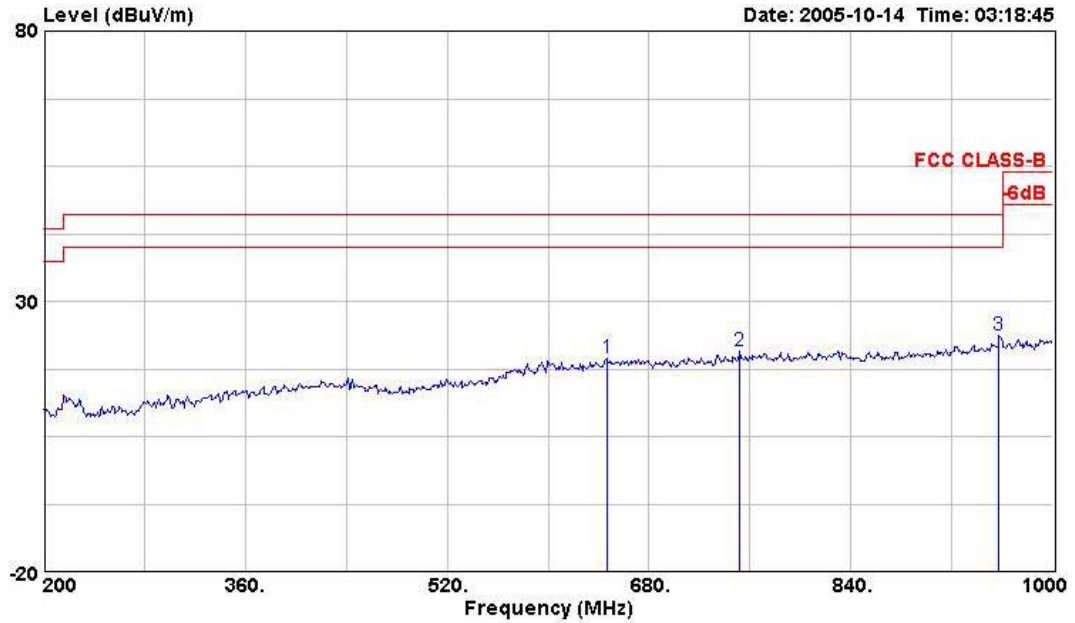
	Freq	Level	Over	Read	Limit	Cable	Antenna	Preamp		Table	Ant
	MHz	dBuV/m	Limit	Level	Line	Loss	Factor	Factor	Remark	Pos	Pos
			dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	301.600	17.33	-28.67	32.39	46.00	1.67	13.85	30.58	Peak	---	---
2	806.400	21.43	-24.57	27.39	46.00	2.81	21.89	30.65	Peak	---	---
3	957.600	23.43	-22.57	26.76	46.00	3.01	22.96	29.30	Peak	---	---



(B) Polarization: Vertical



	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	68.420	10.98	-29.02	30.54	40.00	0.82	9.91	30.29	Peak	---	---
2	131.830	10.07	-33.43	27.25	43.50	1.15	12.38	30.71	Peak	---	---
3	177.220	12.65	-30.85	27.16	43.50	1.27	14.20	29.98	Peak	---	---



	Freq	Level	Over	Read	Limit	Cable	Antenna	Preamp		Table	Ant
	MHz	dBuV/m	Limit	Level	Line	Loss	Factor	Factor	Remark	Pos	Pos
			dB	dBuV	dBuV/m	dB	dB/m	dB		deg	cm
1	646.400	19.40	-26.60	26.91	46.00	2.48	20.54	30.54	Peak	---	---
2	752.000	20.81	-25.19	27.13	46.00	2.79	21.33	30.44	Peak	---	---
3	957.600	23.82	-22.18	27.15	46.00	3.01	22.96	29.30	Peak	---	---

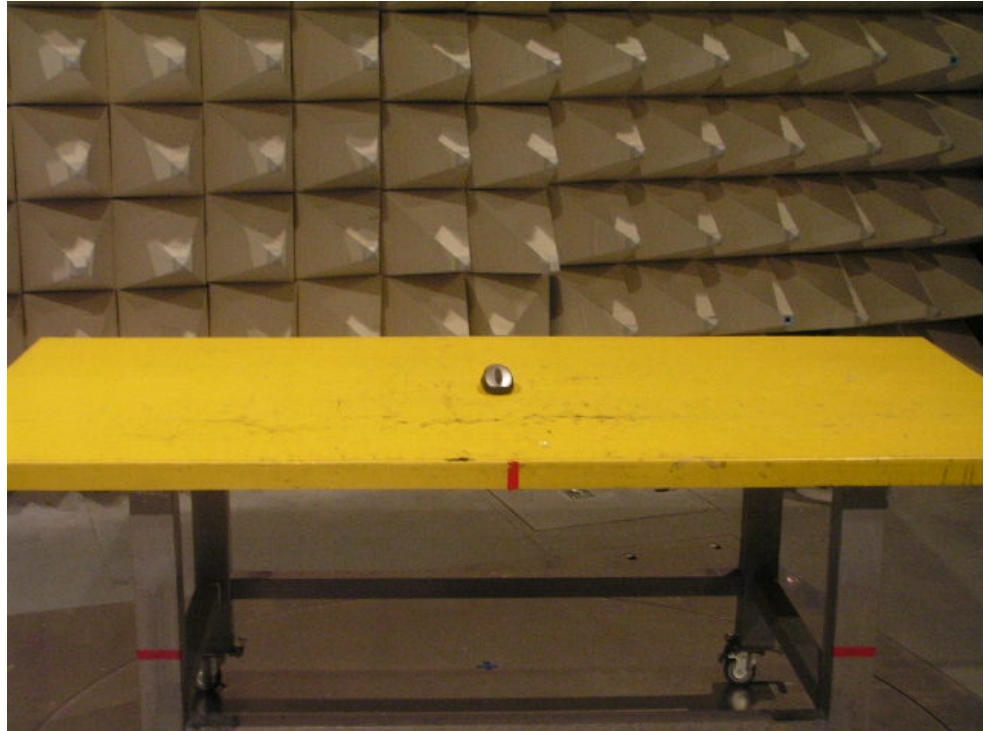
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

1.9 Photographs of Radiated Emission Test Configuration

FRONT VIEW



REAR VIEW

