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FCC RADIO TEST REPORT

Applicant's company	**Good Mind Industries Co Ltd**
Applicant Address	22 Ta Yeou 2 Street Ta Fa Industrial District Ta Liau Shi Kaohsiung Hsien, Taiwan
FCC ID	**C2SLF30SRX**
Manufacturer's company	**GOOD MIND EIECTRONICS CO., LTD**
Manufacturer Address	Lou Gang Tour,Tung Fang Village,Sung Kang Jim,Baoan District Shenzhen,Guanggond,P.R.China

Product Name	Wireless A/V Transmitter and Receiver System
Brand Name	TERK
Model Name	LF-30S
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.231
Test Frequency	433.92 MHz
Receive Date	Jul. 3, 2006
Final Test Date	Jul. 13, 2006
Submission Type	Original Equipment

Statement

The test result in this report refers exclusively to the presented test model / sample.
Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.4-2003** and **47 CFR FCC Part 15 Subpart C**.
The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Lab Code: 200079-0

Table of Contents

History of This Test Report

Original Issue Date: Jul. 13, 2006

Report No.: FR661704-AA

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Wireless A/V Transmitter and Receiver System
Brand Name	:	TERK
Model Name	:	LF-30S
Applicant	:	Good Mind Industries Co Ltd
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.231

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jul. 3, 2006 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Prepared By:	Tested By:	Reviewed By:
Mandy Liang / Specialist	Steven Lu / Engineer	Wayne Hsu

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	29.28 dB
4.2	15.231(b)	Field Strength of Fundamental Emissions	Complies	9.53 dB
4.3	15.231(c)	20dB Spectrum Bandwidth	Complies	-
4.4	15.231(a)(1)	De-activating Time	Complies	-
4.5	15.231(b)	Radiated Emissions	Complies	2.90 dB
4.6	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.26dB	Confidence levels of 95%
Field Strength of Fundamental Emissions	±3.72dB	Confidence levels of 95%
20dB Spectrum Bandwidth/ De-activating Time	±6.25×10-7	Confidence levels of 95%
Radiated Emissions/ Band Edge Emissions	±3.72dB	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Operation Type	A manually operated transmitter
Power Type	Power Adapter
Modulation	ASK
Channel Number	1
Channel Band Width (99%)	94.00 kHz
Max. Field Strength	70.47 dBuV/m at 3m (Average)
Carrier Frequencies	433.92 MHz (CH 1)
Antenna	Please refer to section 3.3

3.2. Accessories

Power	Brand	Model	Rating
Adapter 1	KTEC	KA12D090030033U	INPUT: 120VAC, 60Hz, 75mA OUTPUT: 9VDC, 300mA
Product Name	**Brand**	**Model**	**Remark**
AV Sender	TERK	LF30S-TX	2.4GHz Transmitter

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	ROD Antenna	NA	0

3.4. Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	1	1
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX	1	1
De-activating Time	Normal Link	1	1
Radiated Emissions 9kHz~1GHz	Normal Link	1	1
Radiated Emissions 1GHz ~10th Harmonic	CTX	1	1

Note: CTX=continuously transmitting

3.5. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH03-HY	SAC	Hwa Ya	101377	IC 4088	-
CO04-HY	Conduction	Hwa Ya	101377	IC 4088	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

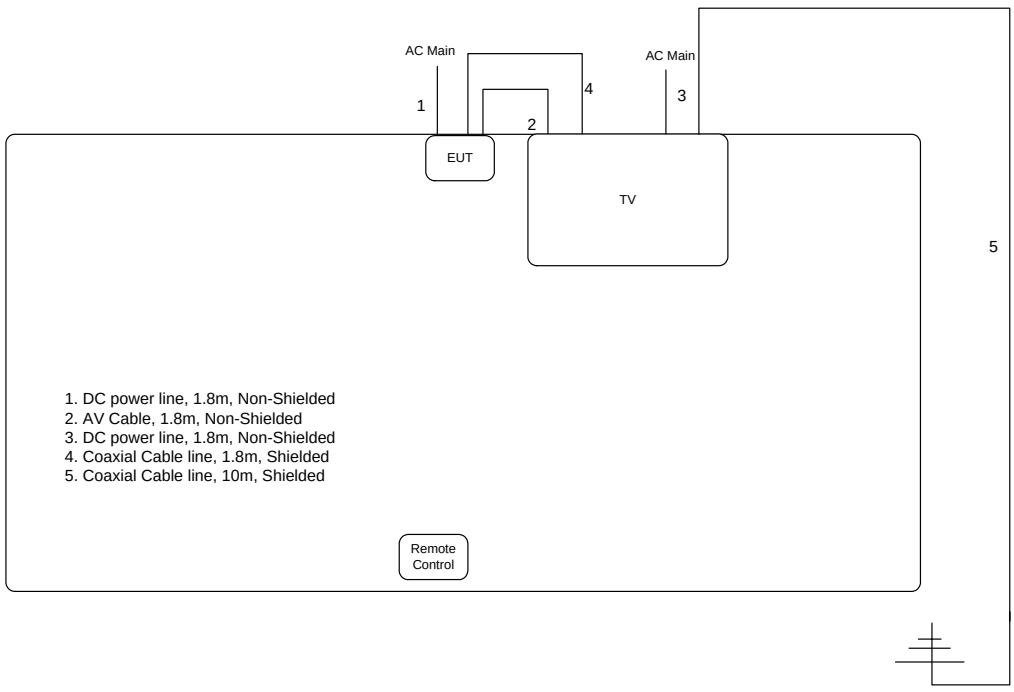
3.6. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
TV	SV	PMH-215C	DOC
DVD PLAYER	Withe-Westinghouse	WDV-5250PK	DOC
Remote Control	TECO	TZRM67G	DOC

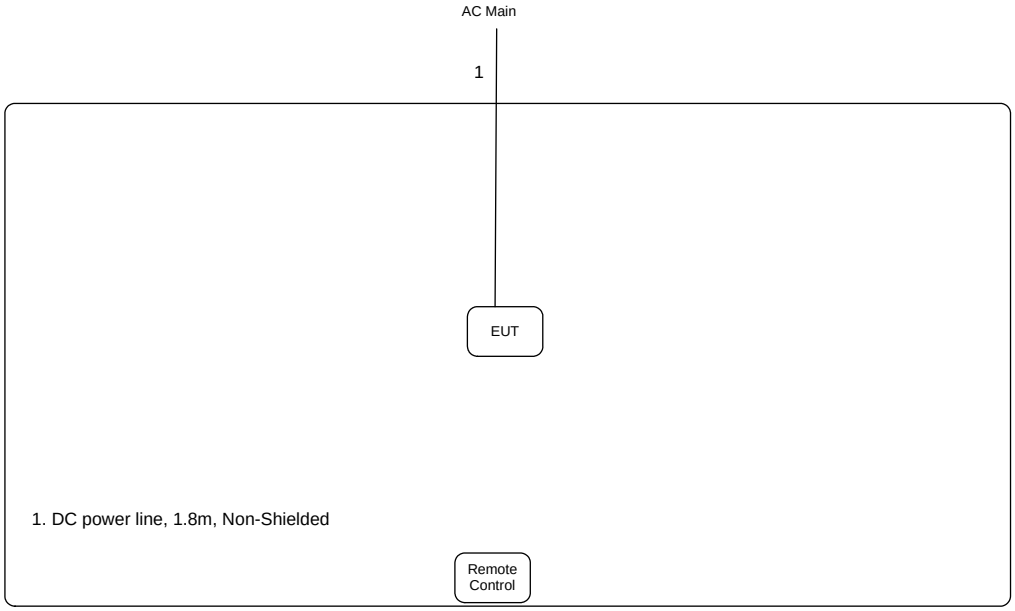
3.7. Test Configurations

3.7.1. Radiation Emissions Test Configuration

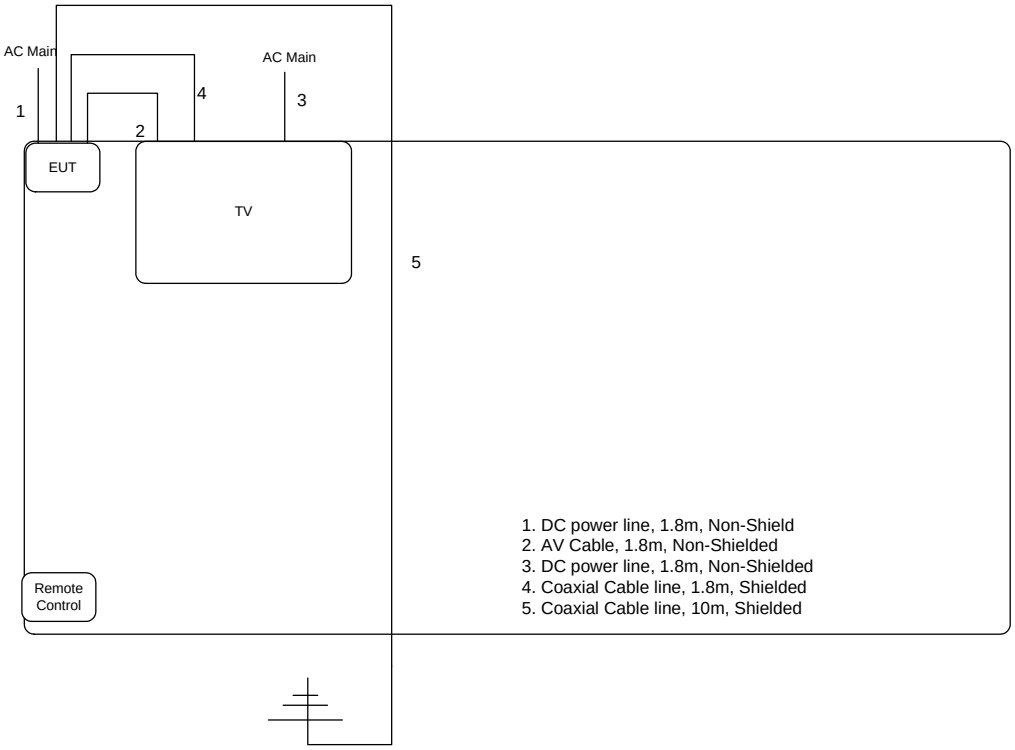
9kHz~1GHZ (Normal Link)



Above 1GHz (CTX)



3.7.2. AC Power Line Conduction Emissions Test Configuration



4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

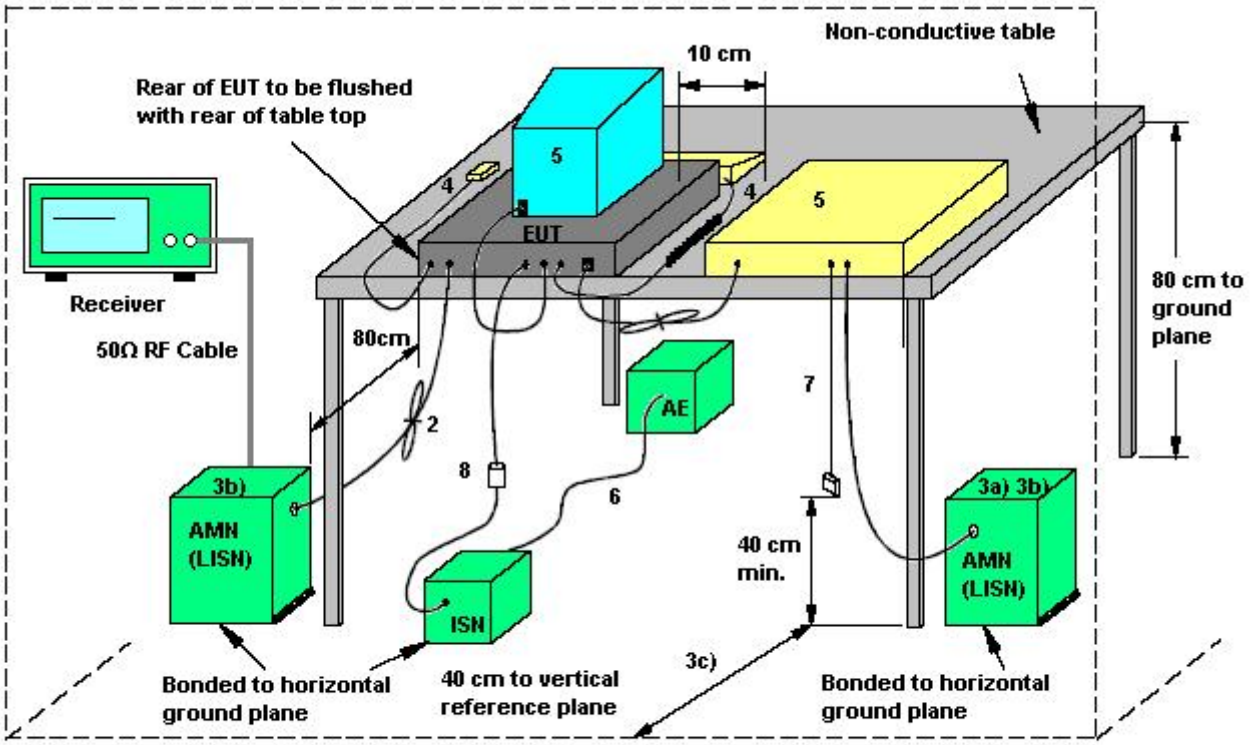
Please refer to section 5 of equipments list in this report.The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

1. If cables, which hang closer than 40 cm to the horizontal metal groundplane, cannot be shortened to appropriate length, the excess shall be folded back and forth forming a bundle 30 cm to 40 cm long.
2. Excess mains cord shall be bundled in the centre or shortened to appropriate length.
3. EUT is connected to one artificial mains network (AMN). All AMNs and ISNs may alternatively be connected to a vertical reference plane or metal wall.
4. All other units of a system are powered from a second AMN. A multiple outlet strip can be used for multiple mains cords.
5. AMN and ISN are 80 cm from the EUT and at least 80 cm from other units and other metal planes.
6. Mains cords and signal cables shall be positioned for their entire lengths, as far as possible, at 40 cm from the vertical reference plane.
7. Cables of hand operated devices, such as keyboards, mouses, etc. shall be placed as for normal usage.
8. Peripherals shall be placed at a distance of 10 cm from each other and from the controller, except for the monitor which, if this is an acceptable installation practice, shall be placed directly on the top of the controller.
9. I/O signal cable intended for external connection.
10. The end of the I/O signal cables which are not connected to an AE may be terminated, if required, using correct terminating impedance.
11. If used, the current probe shall be placed at 0,1 m from the ISN.

4.1.5. Test Deviation

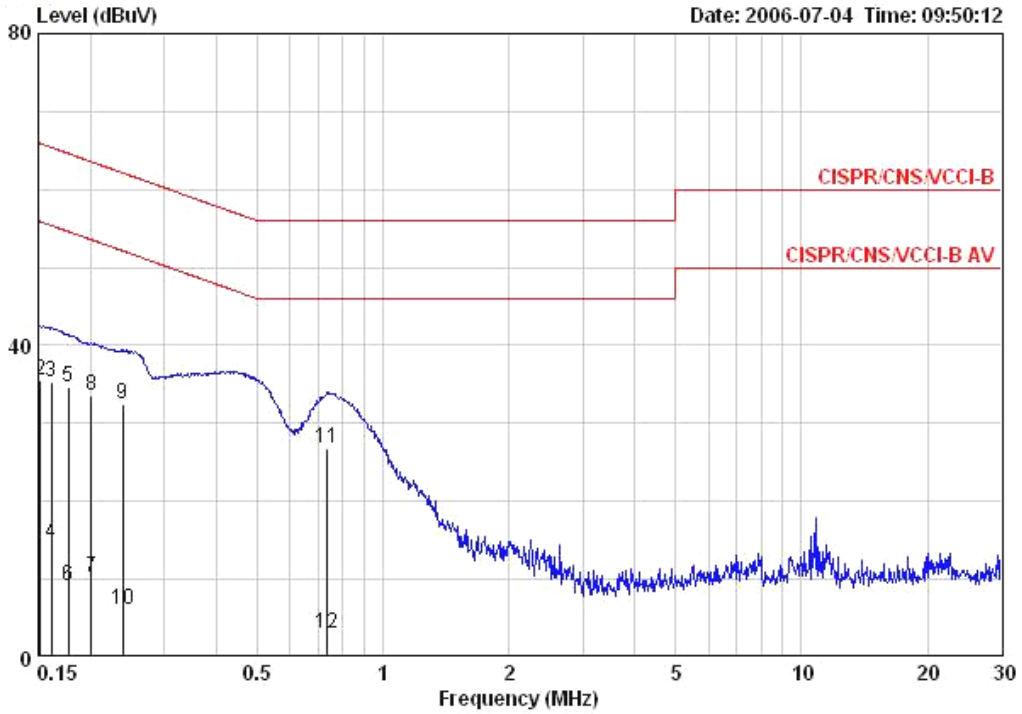
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

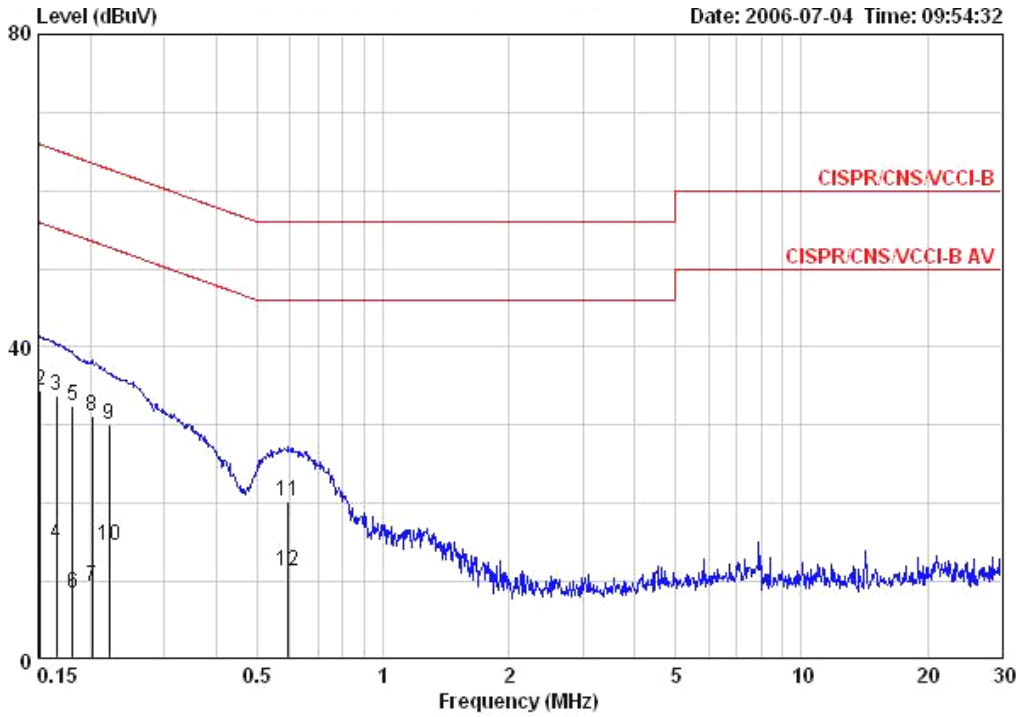
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15160	13.85	-42.07	55.91	11.63	2.02	0.20	AVERAGE
2	0.15160	35.64	-30.28	65.91	33.42	2.02	0.20	QP
3	0.16155	35.34	-30.05	65.38	33.07	2.07	0.20	QP
4	0.16155	14.51	-40.88	55.38	12.24	2.07	0.20	AVERAGE
5	0.17678	34.60	-30.04	64.64	32.64	1.76	0.20	QP
6	0.17678	9.10	-45.54	54.64	7.14	1.76	0.20	AVERAGE
7	0.20075	10.32	-43.26	53.58	8.83	1.29	0.20	AVERAGE
8	0.20075	33.47	-30.11	63.58	31.98	1.29	0.20	QP
9	0.23910	32.55	-29.58	62.13	31.35	1.00	0.20	QP
10	0.23910	6.06	-46.07	52.13	4.86	1.00	0.20	AVERAGE
11	0.73519	26.72	-29.28	56.00	26.12	0.40	0.20	QP
12	0.73519	2.95	-43.05	46.00	2.35	0.40	0.20	AVERAGE

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15160	13.11	-42.80	55.91	11.01	1.90	0.20	AVERAGE
2	0.15160	34.40	-31.51	65.91	32.30	1.90	0.20	QP
3	0.16589	33.69	-31.47	65.16	31.71	1.78	0.20	QP
4	0.16589	14.89	-40.27	55.16	12.91	1.78	0.20	AVERAGE
5	0.18152	32.38	-32.04	64.42	30.77	1.41	0.20	QP
6	0.18152	8.50	-45.92	54.42	6.89	1.41	0.20	AVERAGE
7	0.20181	9.40	-44.14	53.54	8.02	1.18	0.20	AVERAGE
8	0.20181	31.22	-32.32	63.54	29.84	1.18	0.20	QP
9	0.22201	30.10	-32.65	62.74	28.92	0.98	0.20	QP
10	0.22201	14.71	-38.04	52.74	13.53	0.98	0.20	AVERAGE
11	0.59164	20.24	-35.76	56.00	19.74	0.30	0.20	QP
12	0.59164	11.41	-34.59	46.00	10.91	0.30	0.20	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Field Strength of Fundamental Emissions Measurement

4.2.1. Limit

Devices complying with 47 CFR FCC Part 15 Subpart C, section 15.231(a). The field strength of emissions from intentional radiators at 3 meters operated under this Section shall not exceed the following:

Frequency Band (MHz)	Fundamental Emissions Limit (uV/m) at 3m
40.66-40.70	2250
70-130	1250
130-174	1250-3750(**)
174-260	3750
260-470	3750-12500(**)
Above 470	12500

**1. Linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

(1) for the band 130 - 174 MHz, μV/m at 3 meters = 56.81818×(operating frequency, MHz) - 6136.3636;

(2) for the band 260 - 470 MHz, μV/m at 3 meters = 41.6667×(operating frequency, MHz) - 7083.3333.

So the field strength of emission limits have been calculated in below table.

Carrier Frequency (MHz)	Fundamental Emissions Limit (dBuV/m) at 3m
433.92 MHz	80.8 (Average)
433.92 MHz	100.8 (Peak)

4.2.2. Measuring Instruments and Setting

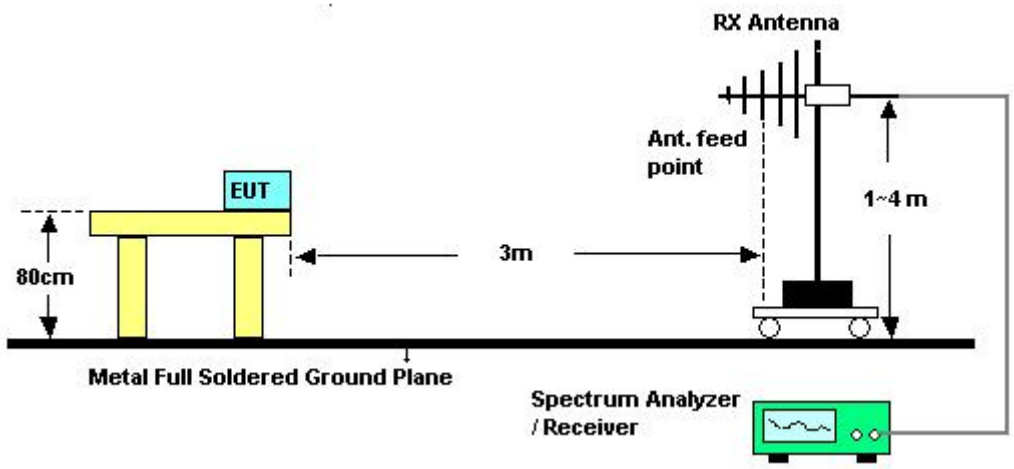
Please refer to section 5 of equipments list in this report.The following table is the setting of the receiver.

Receiver Parameter	Setting
Attenuation	Auto
Center Frequency	Fundamental Frequency
RB	120 kHz
Detector	Peak / Average

4.2.3. 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. For Fundamental emissions, use the receiver to measure peak and average reading.
6. 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.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

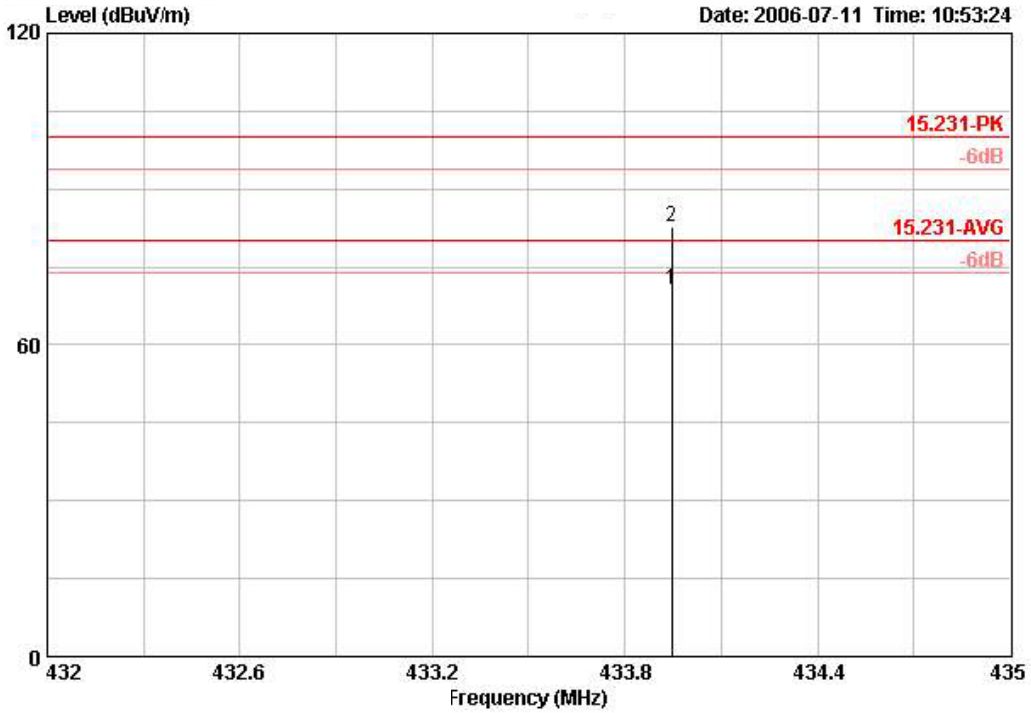
4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Field Strength of Fundamental Emissions

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1

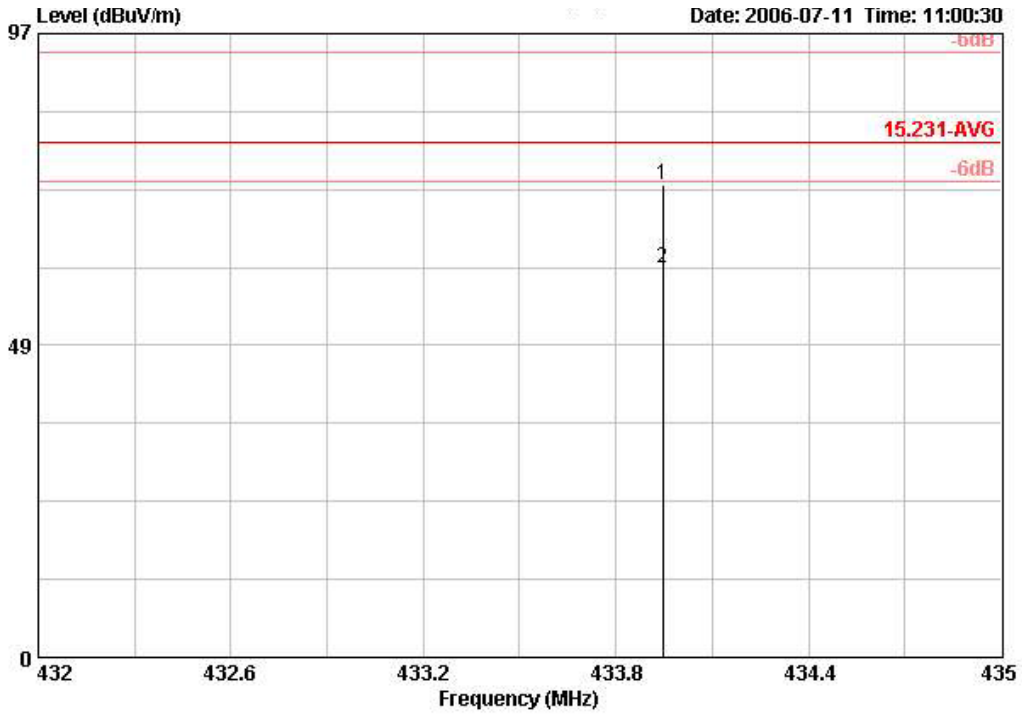
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1 @	433.946	70.47	-9.53	80.00	50.60	17.03	2.84	0.00	Average	VERTICAL	3
2	433.946	82.83	-17.17	100.00	62.96	17.03	2.84	0.00	PEAK	VERTICAL	3

Item 1, 2 are the fundamental frequency.

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	433.945	73.61	-26.39	100.00	53.74	17.03	2.84	0.00	PEAK	HORIZONTAL	3
2	433.945	60.47	-19.53	80.00	40.60	17.03	2.84	0.00	Average	HORIZONTAL	3

Item 1, 2 are the fundamental frequency.

Note:

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

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

4.3. 20dB Spectrum Bandwidth Measurement

4.3.1. Limit

The bandwidth of the emissions shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. So the emission bandwidth limits have been calcuated in below table.

Fundamental Frequency	20dB Bandwidth Limits (kHz)
433.92 MHz	1080

4.3.2. Measuring Instruments and Setting

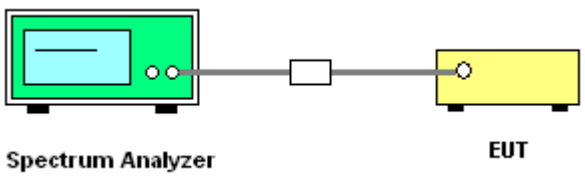
Please refer to section 5 of equipments list in this report.The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 20dB Bandwidth
RB	10 kHz
VB	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 10 kHz and the video bandwidth of 10 kHz were used.
3. Measured the spectrum width with power higher than 20dB below carrier.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

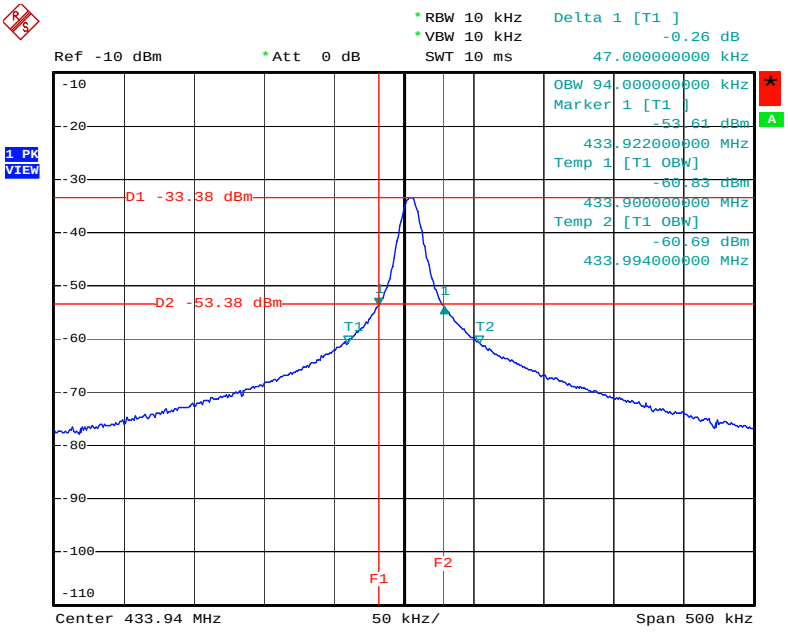
The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of 20dB Spectrum Bandwidth

Temperature	20℃	Humidity	70%
Test Engineer	Sam Lee	Configurations	Channel 1

Frequency	20dB BW (kHz)	99% OBW (kHz)	Limits (kHz)	Test Result
433.92 MHz	47.0	94.00	1080	Complies

20 dB/99% Bandwidth Plot on 433.92 MHz



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4.4. De-activating Time Measurement

4.4.1. Limit

A manually operated transmitter shall employ a push-to-operate switch and be under manual control at all transmission times. When released, the transmitter shall cease transmission (holdover time of up to 5 seconds is permitted).

4.4.2. Measuring Instruments and Setting

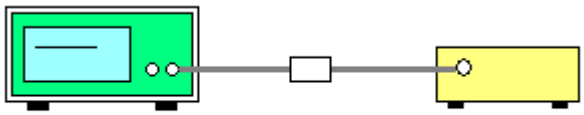
Please refer to section 5 of equipments list in this report.The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	1000 kHz
VB	1000 kHz
Detector	Peak
Trace	Single Trigger
Attenuation	Auto

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser
2. Set RBW of spectrum analyzer to 1000kHz and VBW to 1000kHz.
3. Use a video trigger with the trigger level set to enable triggering only on full pulses.
4. Sweep Time is more than once pulse time.
5. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
6. Measure the maximum de-activating time of the EUT .

4.4.4. Test Setup Layout



4.4.5. Test Deviation

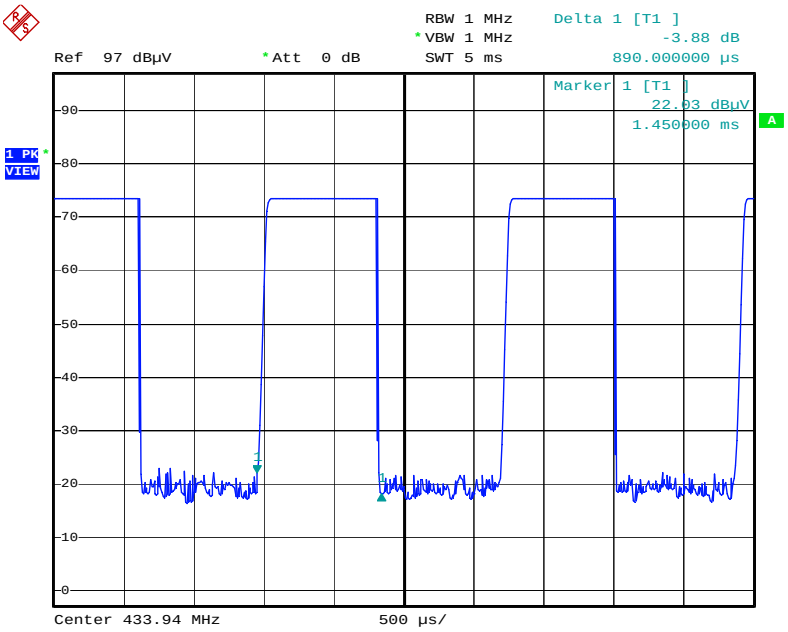
There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT is in normal operation and released manually.

4.4.7. Test Result of De-activating Time

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1



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The EUT is de-activated immediately after being released.

4.4.8. Test Result of Operation Restriction

Periodic Operation Restriction	Applicable	Declared by applicant	Test performance	Passed
The transmitter is used for				
☐ security or safety applications ☒ other applications		☒		
The transmitter is operated				
☒ manually ☐ automatically		☒		
Periodic operation according to				
☒ 47 CFR FCC Part 15 Subpart C 15.231(a)(1)				
Only control signals are sent and there is on continuous transmission.	☒	☒	☐	☒
(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.	☒	☐	☒	☒
(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.	☐	☐	☐	☐
(3) Periodic transmissions at regular predetermined intervals are ☐ not permitted ☐ permitted with total transmission time of two seconds per hour or less (for polling or supervision transmission to determine system integrity of transmitters used in security or safety applications)	☐	☐	☐	☐
☐ 47 CFR FCC Part 15 Subpart C 15.231(e)				
The device is provided with a means for automatically limiting operation so that the duration of each transmissions is not greater than one second and the silent period between transmissions is at least 30 times the duration of the transmission but in no case less than 10 seconds.	☐	☐	☐	☐

Note: Result may be based on the applicant declaration (i.e. no test is performed). However, in this casethere is no vertification by the test laboratory.

4.5. Radiated Emissions Measurement

4.5.1. Limit

Devices complying with 47 CFR FCC Part 15 Subpart C, section 15.231(a). The field strength of emissions from intentional radiators at 3 meters operated under this Section shall not exceed the following:

Frequency Band (MHz)	Spurious Emissions Limit (uV/m) at 3m
40.66-40.70	225
70-130	125
130-174	125-375(**)
174-260	375
260-470	375-1250(**)
Above 470	1250

**1. Linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

(1) for the band 130 - 174 MHz, μV/m at 3 meters = 56.81818×(operating frequency, MHz) - 6136.3636;

(2) for the band 260 - 470 MHz, μV/m at 3 meters = 41.6667×(operating frequency, MHz) - 7083.3333.

(3)The maximum permitted unwanted emissions level is 20 dB below the maximum permitted fundamental level. In addition field strength of any emissions which appear inside of the restriction band shall not exceed the general radiated emissions limits in Section 15.209(a).

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

4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list 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 (Emission in non-restricted band)	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

4.5.3. Test Procedures

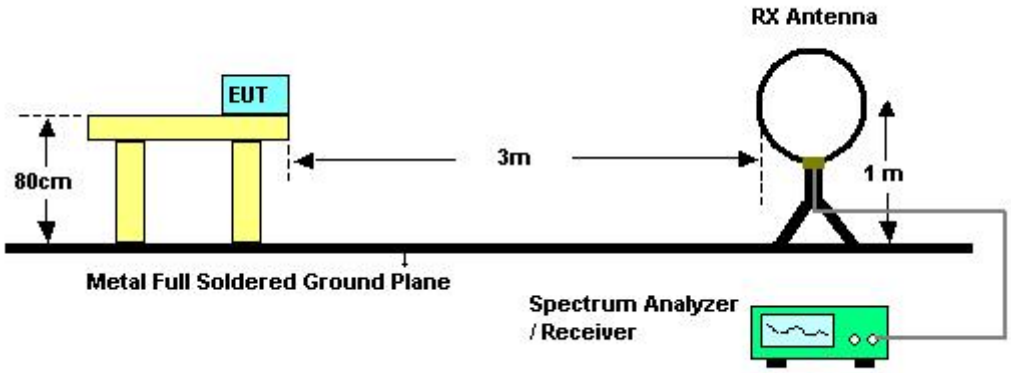
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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.

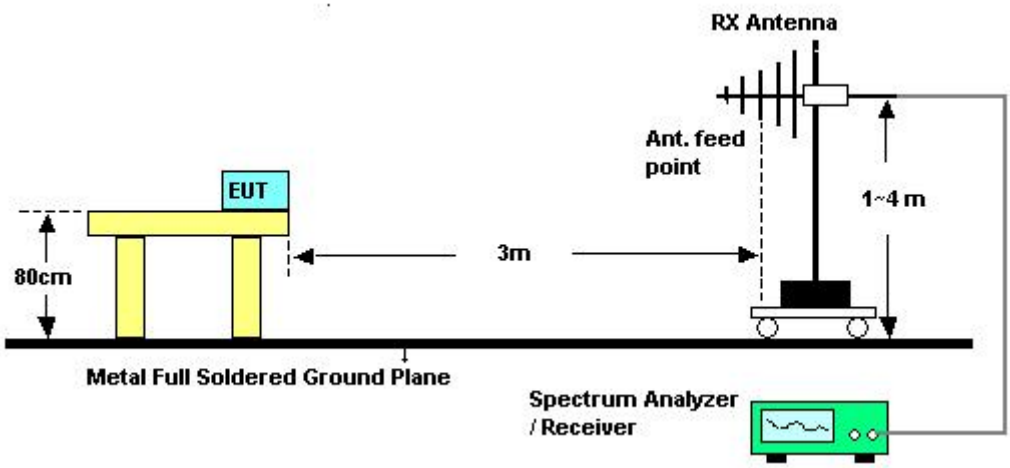
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For 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.

4.5.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1

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.

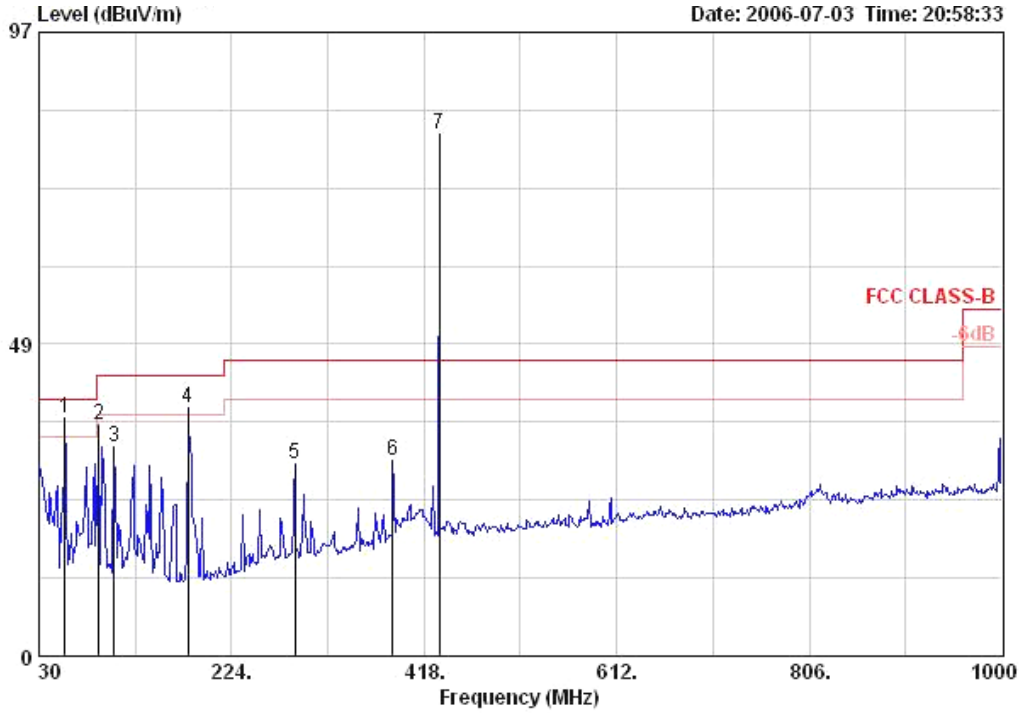
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

4.5.8. Results for Radiated Emissions (30MHz~1GHz)

Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1

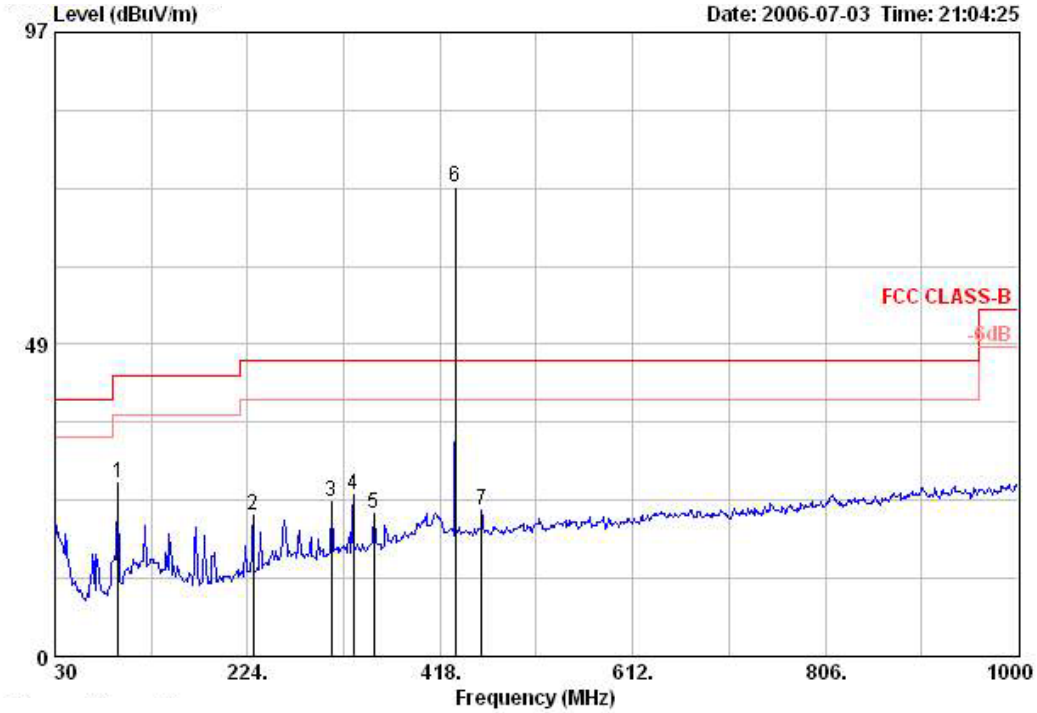
Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1 !	56.190	37.10	-2.90	40.00	7.82	0.63	29.82	58.47	Peak	---	---
2	90.140	35.91	-7.59	43.50	9.30	0.78	30.09	55.92	Peak	---	---
3	105.660	32.61	-10.89	43.50	11.98	0.82	30.08	49.88	Peak	---	---
4 !	180.350	38.48	-5.02	43.50	9.70	1.06	30.05	57.77	Peak	---	---
5	288.020	29.94	-16.06	46.00	13.66	1.34	30.04	44.97	Peak	---	---
6	385.990	30.42	-15.58	46.00	16.17	1.56	30.46	43.15	Peak	---	---
7 @	433.520	81.10			16.97	1.64	30.43	92.92	Peak	---	---

Note: Item 7 is the fundamental frequency.

Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		cm	deg
1	94.020	26.95	-16.55	43.50	10.06	0.79	30.11	46.22	Peak	---	---
2	229.820	21.82	-24.18	46.00	11.30	1.20	30.07	39.39	Peak	---	---
3	308.390	23.93	-22.07	46.00	14.14	1.39	30.26	38.66	Peak	---	---
4	330.700	25.13	-20.87	46.00	14.76	1.43	30.50	39.44	Peak	---	---
5	351.070	22.31	-23.69	46.00	15.32	1.48	30.58	36.09	Peak	---	---
6	433.520	72.98			16.97	1.64	30.43	84.81	Peak	---	---
7	459.710	22.83	-23.17	46.00	17.32	1.70	30.47	34.28	Peak	---	---

Note: Item 6 is the fundamental frequency.

Note:

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

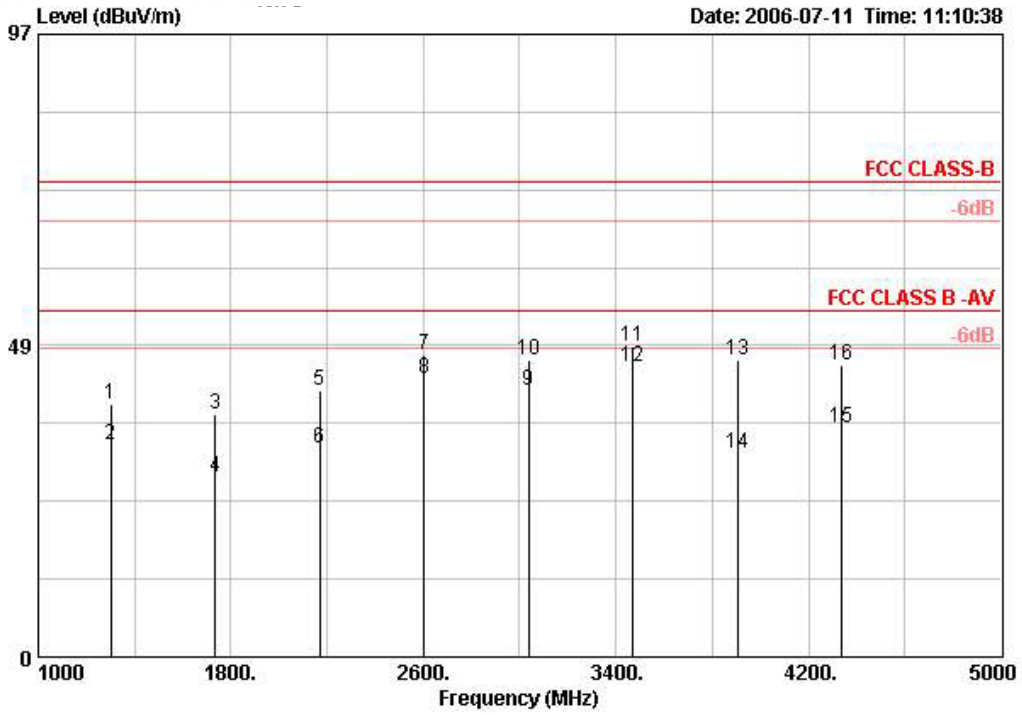
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

4.5.9. Results for Radiated Emissions (1GHz ~10th Harmonic)

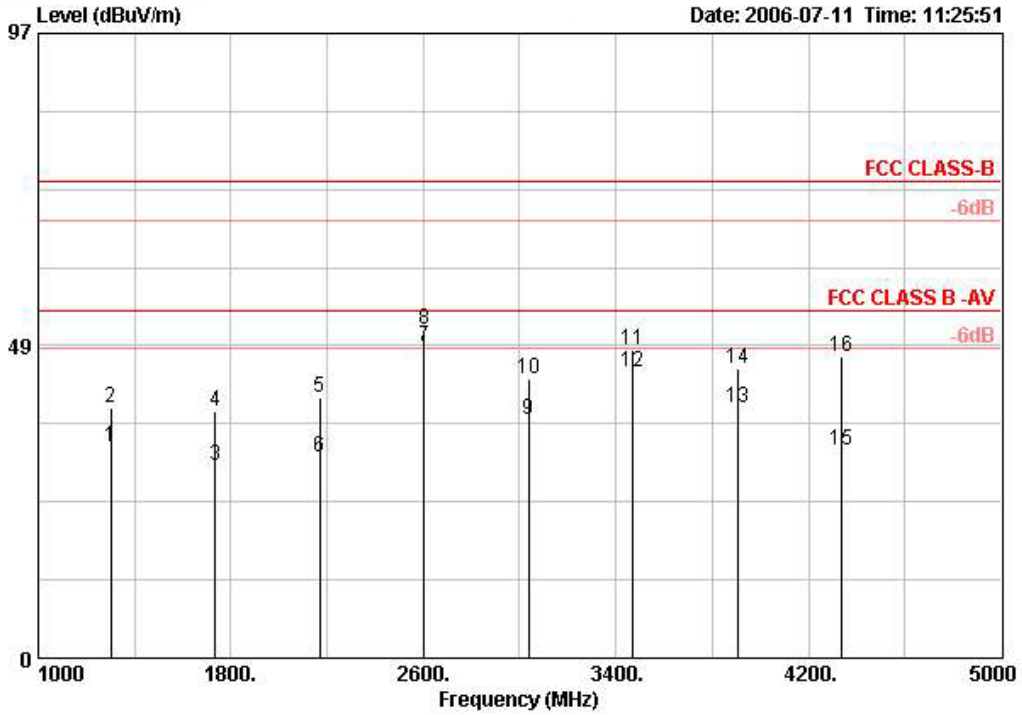
Temperature	24℃	Humidity	64%
Test Engineer	Leo Hung	Configurations	Channel 1

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	1301.732	39.37	-34.63	74.00	47.12	24.77	2.01	34.53	PEAK	VERTICAL	3
2	1301.732	32.99	-21.01	54.00	40.74	24.77	2.01	34.53	AVERAGE	VERTICAL	3
3	1735.552	37.93	-36.07	74.00	43.60	26.75	2.35	34.77	PEAK	VERTICAL	3
4	1735.704	27.99	-26.01	54.00	33.67	26.75	2.35	34.77	AVERAGE	VERTICAL	3
5	2169.588	41.52	-32.48	74.00	45.28	28.61	2.61	34.98	PEAK	VERTICAL	3
6	2169.804	32.53	-21.47	54.00	36.29	28.61	2.61	34.98	AVERAGE	VERTICAL	3
7	2603.640	47.03	-26.97	74.00	50.00	29.30	2.88	35.16	PEAK	VERTICAL	3
8	2603.640	43.25	-10.75	54.00	46.22	29.30	2.88	35.16	AVERAGE	VERTICAL	3
9	3037.524	41.58	-12.42	54.00	43.08	30.56	3.05	35.11	AVERAGE	VERTICAL	3
10	3037.604	46.36	-27.64	74.00	47.86	30.56	3.05	35.11	PEAK	VERTICAL	3
11	3471.472	48.49	-25.51	74.00	49.00	31.34	3.28	35.13	PEAK	VERTICAL	3
12	3471.568	45.18	-8.82	54.00	45.69	31.34	3.28	35.13	AVERAGE	VERTICAL	3
13	3905.444	46.23	-27.77	74.00	45.38	32.31	3.55	35.01	PEAK	VERTICAL	3
14	3905.492	31.75	-22.25	54.00	30.90	32.31	3.55	35.01	AVERAGE	VERTICAL	3
15	4339.416	35.58	-18.42	54.00	34.15	32.50	4.09	35.16	AVERAGE	VERTICAL	3
16	4339.472	45.54	-28.46	74.00	44.11	32.50	4.09	35.16	PEAK	VERTICAL	3

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Pol/Phase	Distance
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			m
1	1301.748	32.79	-21.21	54.00	40.54	24.77	2.01	34.53	AVERAGE	HORIZONTAL	3
2	1302.116	38.79	-35.21	74.00	46.54	24.77	2.01	34.53	PEAK	HORIZONTAL	3
3	1735.808	29.91	-24.09	54.00	35.59	26.75	2.35	34.77	AVERAGE	HORIZONTAL	3
4	1735.856	38.34	-35.66	74.00	44.01	26.75	2.35	34.77	PEAK	HORIZONTAL	3
5	2169.676	40.46	-33.54	74.00	44.22	28.61	2.61	34.98	PEAK	HORIZONTAL	3
6	2169.828	31.07	-22.93	54.00	34.83	28.61	2.61	34.98	AVERAGE	HORIZONTAL	3
7 @	2603.640	48.45	-5.55	54.00	51.43	29.30	2.88	35.16	AVERAGE	HORIZONTAL	3
8	2603.760	50.94	-23.06	74.00	53.92	29.30	2.88	35.16	PEAK	HORIZONTAL	3
9	3037.564	36.88	-17.12	54.00	38.38	30.56	3.05	35.11	AVERAGE	HORIZONTAL	3
10	3037.844	43.27	-30.73	74.00	44.77	30.56	3.05	35.11	PEAK	HORIZONTAL	3
11	3471.496	47.94	-26.06	74.00	48.45	31.34	3.28	35.13	PEAK	HORIZONTAL	3
12	3471.520	44.27	-9.73	54.00	44.78	31.34	3.28	35.13	AVERAGE	HORIZONTAL	3
13	3905.452	38.97	-15.03	54.00	38.12	32.31	3.55	35.01	AVERAGE	HORIZONTAL	3
14	3905.628	44.98	-29.02	74.00	44.13	32.31	3.55	35.01	PEAK	HORIZONTAL	3
15	4339.592	32.37	-21.63	54.00	30.94	32.50	4.09	35.16	AVERAGE	HORIZONTAL	3
16	4339.761	46.86	-27.14	74.00	45.42	32.50	4.09	35.16	PEAK	HORIZONTAL	3

Note:

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

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

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

4.6. Antenna Requirements

4.6.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.6.2. Antenna Connector Construction

Please refer to section 3.3 in this test report, antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Feb. 22, 2006	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Dec. 19, 2005	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9708-1839	9kHz – 30MHz	Mar. 18, 2006	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2006	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 15, 2006	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	CPA9231A	3565	9 kHz - 2 GHz	Jan. 18, 2006	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	May 29, 2006	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	923364	26.5 GHz - 40 GHz	Jan. 24, 2006*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100004/040	9 kHZ - 40 GHz	Sep. 30, 2005	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 23, 2006*	Radiation (03CH03-HY)
Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30 MHz - 200 MHz	Jul. 22, 2005	Radiation (03CH03-HY)
Log Antenna	SCHWARZBECK	VUSLP 9111	221	200 MHz - 1 GHz	Jul. 22, 2005	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6903	1GHz ~ 18GHz	Mar. 15, 2006	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	NCR	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec.02, 2005	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Dec.02, 2005	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Nov. 26, 2005	Conducted (TH01-HY)
AC power source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Apr. 21, 2005*	Conducted (TH01-HY)
DC power source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Dec. 28, 2005	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2005	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 30, 2005	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 30, 2005	Conducted (TH01-HY)
Oscilloscope	Tektronix	TDS1012	CO38515	100MHz / 1GS/s	Jun. 20, 2006	Conducted (TH01-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Dec. 30, 2005	Conducted (TH01-HY)
Data Generator	Tektronix	DG2030	063-2920-50	0.1Hz~400MHz	Jun. 16, 2006	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Note: * Calibration Interval of instruments listed above is two year.

Note: NCR means Non-Calibration required.

6. SPORTON COMPANY PROFILE

SPORTON Lab. was established in 1986 with one shielded room: the first private EMI test facility, offering local manufacturers an alternative EMI test familial apart from ERSO. In 1988, one 3M and 10M/3M open area test site were setup and also obtained official accreditation from FCC, VCCI and NEMKO. In 1993, a Safety laboratory was founded and obtained accreditation from UL of USA, CSA of Canada and TUV (Rhineland & PS) of Germany. In 1995, one EMC lab, including EMI and EMS test facilities was setup. In 1997, SPORTON Group has provided financial expense to relocate the headquarter to Orient Scientific Park in Taipei Hsien to offer more comprehensive, more qualified and better service to local suppliers and manufactures. In 1999, Safety Group and Component Group were setup. In 2001, SPORTON has established 3M/10M chamber in Hwa Ya Technology Park.

6.1. Test Location

SHIJR	ADD	: 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL	: 02-2696-2468
	FAX	: 02-2696-2255
HWA YA	ADD	: No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	: 03-327-3456
	FAX	: 03-318-0055
LINKOU	ADD	: No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	: 02-2601-1640
	FAX	: 02-2601-1695
DUNGHU	ADD	: No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	: 02-2631-4739
	FAX	: 02-2631-9740
JUNGHE	ADD	: 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	: 02-8227-2020
	FAX	: 02-8227-2626
NEIHU	ADD	: 4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	: 02-2794-8886
	FAX	: 02-2794-9777
JHUBEI	ADD	: No.8, Lane 728, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.
	TEL	: 03-656-9065
	FAX	: 03-656-9085

7. NVLAP CERTIFICATE OF ACCREDITATION

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:1999

NVLAP LAB CODE: 200079-0

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Tao Yuan Hsien 333
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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

2006-01-01 through 2006-12-31
Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Institute of Standards and Technology

NVLAP-01C (REV. 2005-05-19)