

FCC RADIO TEST REPORT

According to

47 CFR FCC Part 15 Subpart C § 15.231

Equipment : Remote Controller
Model No. : TR-009-1B
Filing Type : New Application
Applicant : **KAB Enterprise Co., Ltd.**
21F, -1, No. 33, Sec. 1, Minsheng Rd., Banqiao Dist.,
New Taipei City 220, Taiwan (R.O.C)
FCC ID : **PAGTR-009-1B**
Manufacturer : **Verdant Electronics (Dong Guan) Co., Ltd.**
Langxie Administrative District, Qiaotou, Dongguan City,
Guang Dong Sheng, China.
Received Date : Feb. 06, 2012
Final Test Date : Apr. 17, 2012

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 C63.4-2009** and **47 CFR FCC Part 15 Subpart C**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.



SPORTON International Inc.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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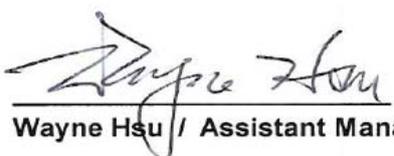
CERTIFICATE OF COMPLIANCE

According to

47 CFR FCC Part 15 Subpart C § 15.231

Equipment : Remote Controller
Model No. : TR-009-1B
Applicant : KAB Enterprise Co., Ltd.
21F, -1, No. 33, Sec. 1, Minsheng Rd., Banqiao Dist.,
New Taipei City 220, Taiwan (R.O.C)

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Feb. 06, 2012 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.


Wayne Hsu / Assistant Manager

SPORTON International Inc.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

1. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	Rule Section	Description of Test	Result	Under Limit
3.1	15.207	AC Power Line Conducted Emissions	-	-
3.2	15.231(b)/(e)	Field Strength of Fundamental Emissions	Complies	10.24 dB
3.3	15.231(c)	20dB Spectrum Bandwidth	Complies	-
3.4	15.231(a)/(e)	Deactivating time	Complies	-
3.5	15.231(b)/(e)	Radiated Emissions	Complies	0.96 dB
3.6	15.231(b)/(e)	Band Edge Emissions	Complies	-
3.7	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	±6.25×10 ⁻⁷	Confidence levels of 95%
Radiated Emissions/ Band Edge Emissions	±3.72dB	Confidence levels of 95%

2. GENERAL INFORMATION

2.1 Product Details

For more detailed features description, please refer to the manufacturer's specifications or user's manual.

Items	Description
Power Rating	12Vdc from Battery
Modulation	ASK
Frequency Range	315 MHz
Channel Number	1
Channel Band Width (99%)	80 kHz
Max. Fundamental Field Strength	65.37 dBuV/m at 3m (Average)
Antenna	Integrated Antenna

2.2 Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency
315 MHz	1	314.9020 MHz

2.3 Test Signal Duty Cycle

Test Signal Duty Cycle (x)

Modulation Mode	Duty Factor [dB] = (20 log x); x=duty cycle																														
<input checked="" type="checkbox"/> Transmissions occur regularly in time – 29.9%	-10.48																														
<p style="font-size: small;">Date: 16.JUN.2012 17:50:17</p>	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <td>VISA session</td> <td>Marker 1 (sec)</td> <td>Set Points (501)</td> <td>Space Time of Point</td> <td>No. of Pulse</td> </tr> <tr> <td>GPIB1::21:</td> <td>0</td> <td>2001</td> <td>0.00005</td> <td>458</td> </tr> <tr> <td>FSP & FSL</td> <td>Marker 2 (sec)</td> <td>Set Sweep Time</td> <td>Mark 1 Point</td> <td>Close TX Time</td> </tr> <tr> <td></td> <td>0.1</td> <td>0.1</td> <td>1</td> <td>0.0229</td> </tr> <tr> <td></td> <td>Total Trace of Points</td> <td>Threshold (dBm)</td> <td>Mark 2 Point</td> <td>Trace Data</td> </tr> <tr> <td></td> <td>2001</td> <td>-60</td> <td>2001</td> <td>0</td> </tr> </table> <p>Total transmission time bin 458 [0.0299 s]; Total period time bin 2001 [0.1 s]; Total transmission time 0.0299 s in 0.1 s period Duty cycle = 29.9%</p>	VISA session	Marker 1 (sec)	Set Points (501)	Space Time of Point	No. of Pulse	GPIB1::21:	0	2001	0.00005	458	FSP & FSL	Marker 2 (sec)	Set Sweep Time	Mark 1 Point	Close TX Time		0.1	0.1	1	0.0229		Total Trace of Points	Threshold (dBm)	Mark 2 Point	Trace Data		2001	-60	2001	0
VISA session	Marker 1 (sec)	Set Points (501)	Space Time of Point	No. of Pulse																											
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FSP & FSL	Marker 2 (sec)	Set Sweep Time	Mark 1 Point	Close TX Time																											
	0.1	0.1	1	0.0229																											
	Total Trace of Points	Threshold (dBm)	Mark 2 Point	Trace Data																											
	2001	-60	2001	0																											
EUT has been operated using the worst-case duty cycle in continuously transmitter mode (regardless normally operated different key function mode).																															

2.4 Table for Test Modes

The following table is a list of the test modes shown in this test report.

Test Items	Mode	Channel
AC Power Line Conducted Emissions	N/A	N/A
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX	1
Deactivating Time	Normal Use	1
Radiated Emissions 9kHz~30MHz Radiated Emissions 30MHz~10 th Harmonic Band Edge Emissions	CTX	1

Note: CTX=continuously transmitter.

2.5 Table for Testing Locations

Test Site No.	Site Category	Location
TH01-HY	OVEN Room	Hwa Ya
03CH02-HY	SAC	Hwa Ya

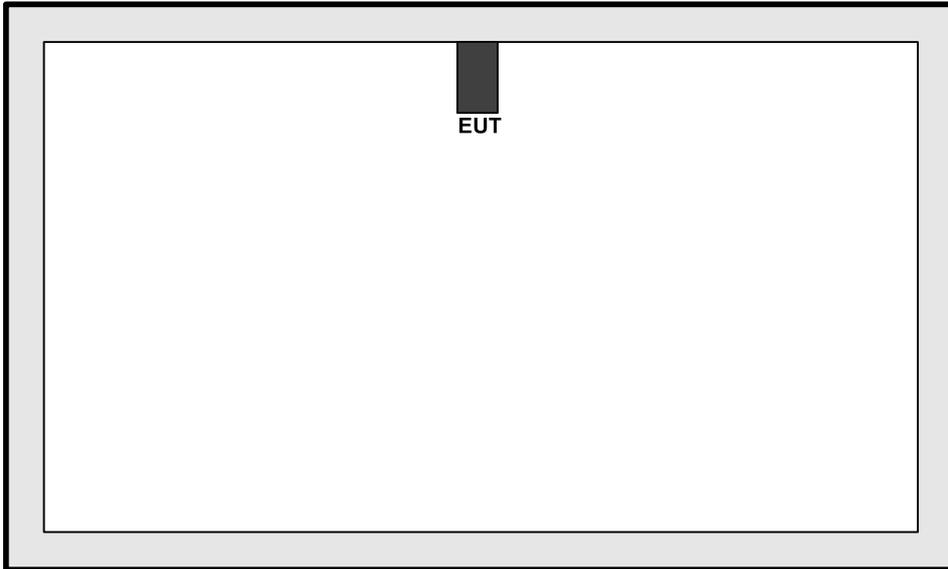
Semi Anechoic Chamber (SAC).

2.6 Table for Supporting Units

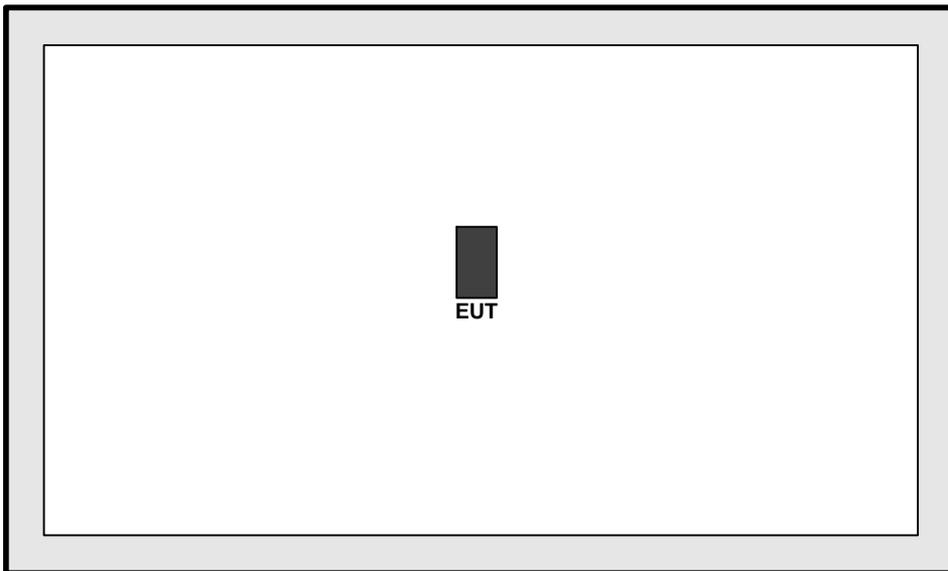
The EUT was tested alone.

2.7 Test Configurations

For radiated emissions 9kHz~1GHz



For radiated emissions above 1GHz



3. TEST RESULT

3.1 AC Power Line Conducted Emissions Measurement

3.1.1 Limit

For a Low-power Radio-frequency Device 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

3.1.2 Measuring Instruments and Setting

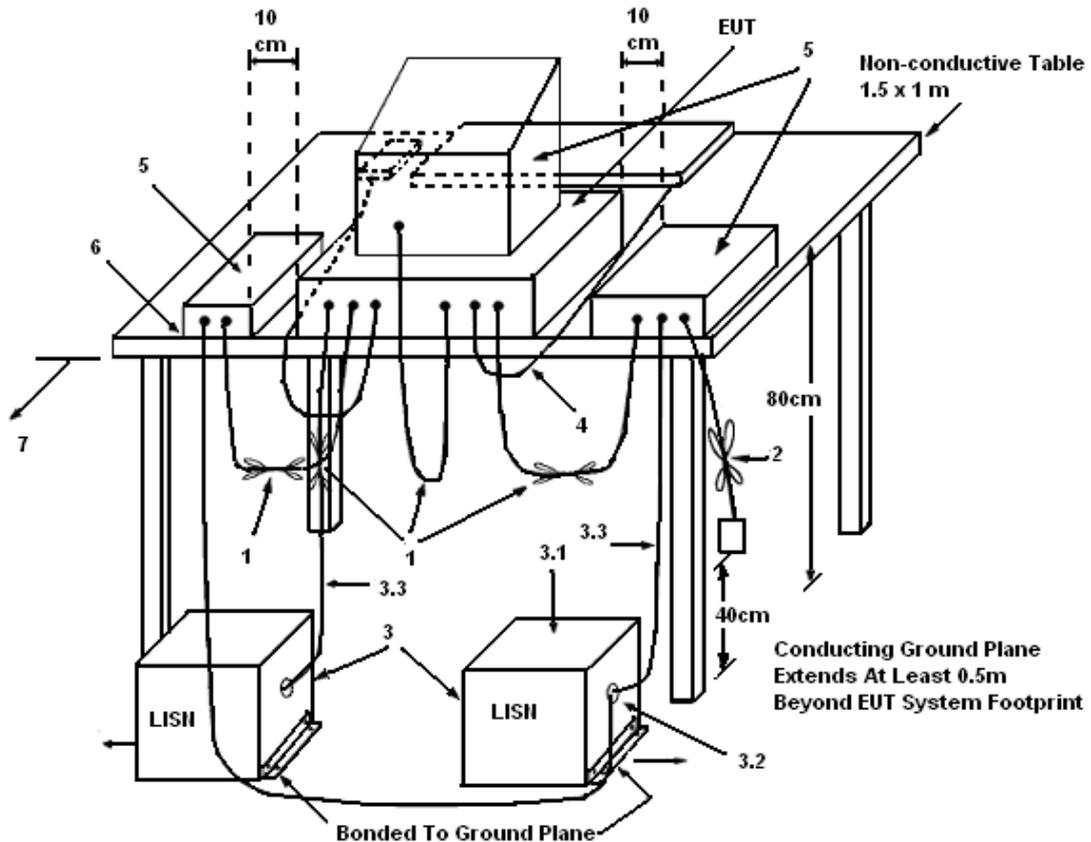
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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

3.1.3 Test Procedures

1. The EUT warm up about 15 minutes then start test.
2. 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.
3. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
5. The frequency range from 150 kHz to 30 MHz was searched.
6. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
7. The measurement has to be done between each power line and ground at the power terminal.

3.1.4 Test Setup Layout



1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
2. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3. EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.
 - 3.1 All other equipment powered from additional LISN(s).
 - 3.2 Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
 - 3.3 LISN at least 80cm from nearest part of EUT chassis.
4. Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
5. Non-EUT components of EUT system being tested.
6. Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
7. Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

3.1.5 Test Deviation

There is no deviation with the original standard.

3.1.6 Results of AC Power Line Conducted Emissions Measurement

The EUT is battery powered; there is no need to do this testing.

3.2 Field Strength of Fundamental Emissions Measurement

3.2.1 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, $\mu\text{V/m}$ at 3 meters = $56.81818 \times (\text{operating frequency, MHz}) - 6136.3636$;

(2) for the band 260 - 470 MHz, $\mu\text{V/m}$ at 3 meters = $41.6667 \times (\text{operating frequency, MHz}) - 7083.3333$.

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

Carrier Frequency (MHz)	Fundamental Emissions Limit (dBuV/m) at 3m
314.9020 MHz	75.62 (Average)
314.9020 MHz	95.62 (Peak)

3.2.2 Measuring Instruments and Setting

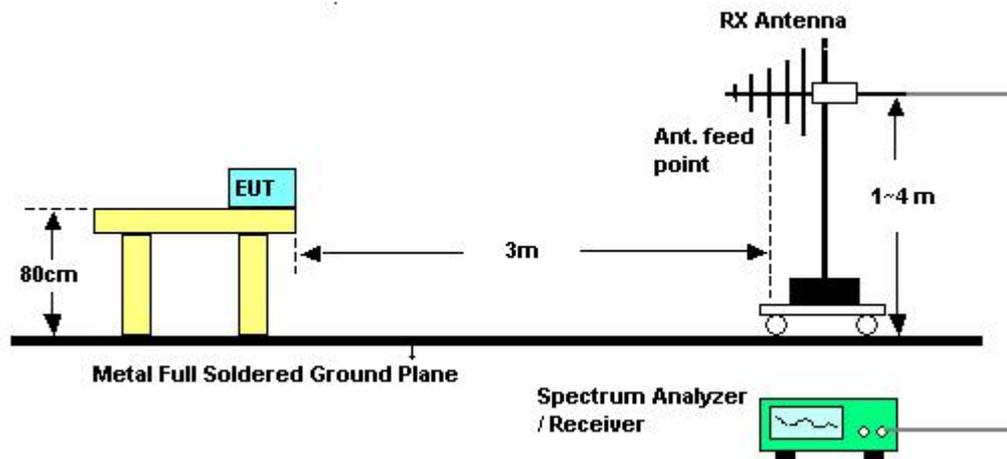
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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

3.2.3 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.

3.2.4 Test Setup Layout



3.2.5 Test Deviation

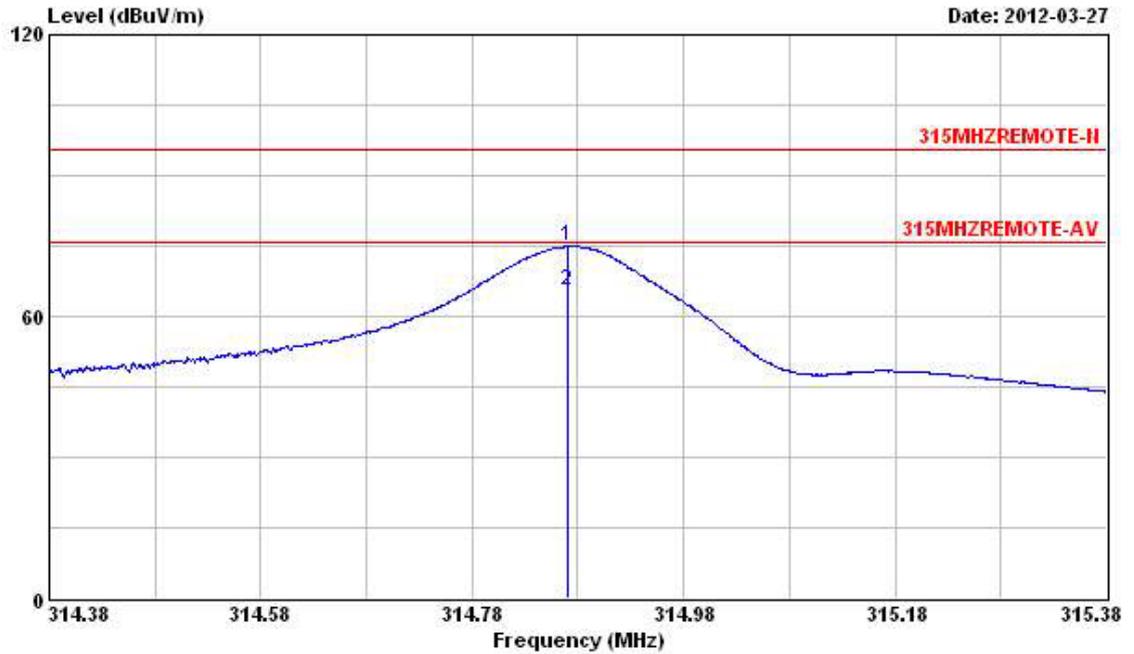
There is no deviation with the original standard.

3.2.6 EUT Operation during Test

The EUT was manually operated to be in transmitting mode.

3.2.7 Test Result of Field Strength of Fundamental Emissions

Final Test Date	Mar. 27, 2012	Test Site No.	03CH02-HY
Temperature	24.1°C	Humidity	67%
Test Engineer	Streak	Configurations	Channel 1



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	314.870	74.87	-20.75	95.62	85.17	13.93	3.03	27.26	Peak	---	---
2	314.870	65.37	-10.25	75.62	75.67	13.93	3.03	27.26	Average	---	---

Note:

For pulsed transmitter emissions, average measurements are dependent on the pulse width or pulse train characteristics. Following as formula:

Average emission = peak emission + 20 log (duty cycle); duty cycle = on time/100 ms period = 29.9%.

Average emission = 74.87 -10.48 = 64.39 dBuV/m at 3m under limit 75.6 dBuV/m.

3.3 20dB Spectrum Bandwidth Measurement

3.3.1 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 calculated in below table.

Fundamental Frequency	20dB Bandwidth Limits (kHz)
314.9020 MHz	790

3.3.2 Measuring Instruments and Setting

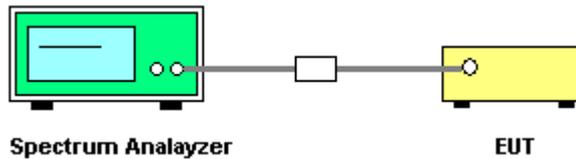
Please refer to section 4 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

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

3.3.3 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.

3.3.4 Test Setup Layout



3.3.5 Test Deviation

There is no deviation with the original standard.

3.3.6 EUT Operation during Test

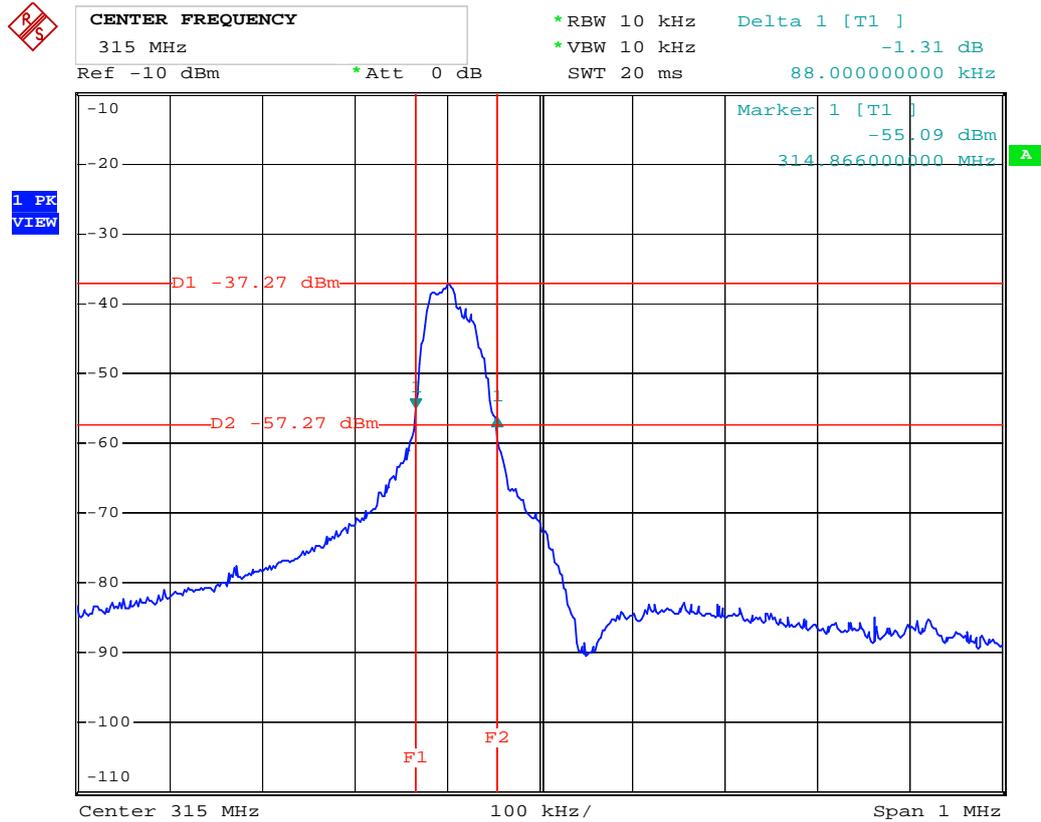
The EUT was manually operated to be in transmitting mode.

3.3.7 Test Result of 20dB Spectrum Bandwidth

Final Test Date	Apr. 17, 2012	Test Site No.	TH01-HY
Temperature	25.6°C	Humidity	39%
Test Engineer	Ian	Configurations	Channel 1

Frequency	20dB BW (kHz)	99% OBW (kHz)	Limits (MHz)	Test Result
314.9020 MHz	88.00	80.00	0.79	Complies

20 dB Bandwidth Plot on 314.9020 MHz



Date: 17.APR.2012 09:29:58

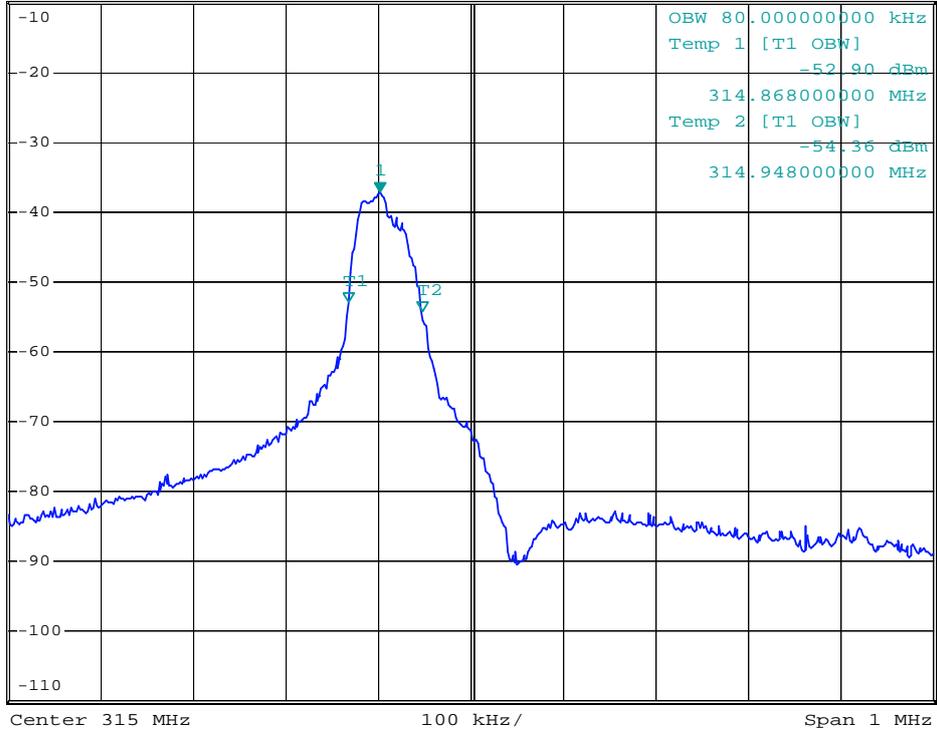
99% Bandwidth Plot on 314.9020 MHz



POWER BW (%)
 99 %
 Ref -10 dBm *Att 0 dB

*RBW 10 kHz Marker 1 [T1]
 *VBW 10 kHz -37.27 dBm
 SWT 20 ms 314.90200000 MHz

1 PK
 VIEW



Date: 17.APR.2012 09:31:11

3.4 Deactivating Time

3.4.1 Limit

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

3.4.2 Measuring Instruments and Setting

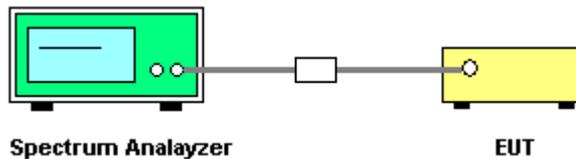
Please refer to section 4 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

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

3.4.3 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 one 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 time duration of one single pulse.

3.4.4 Test Setup Layout



3.4.5 Test Deviation

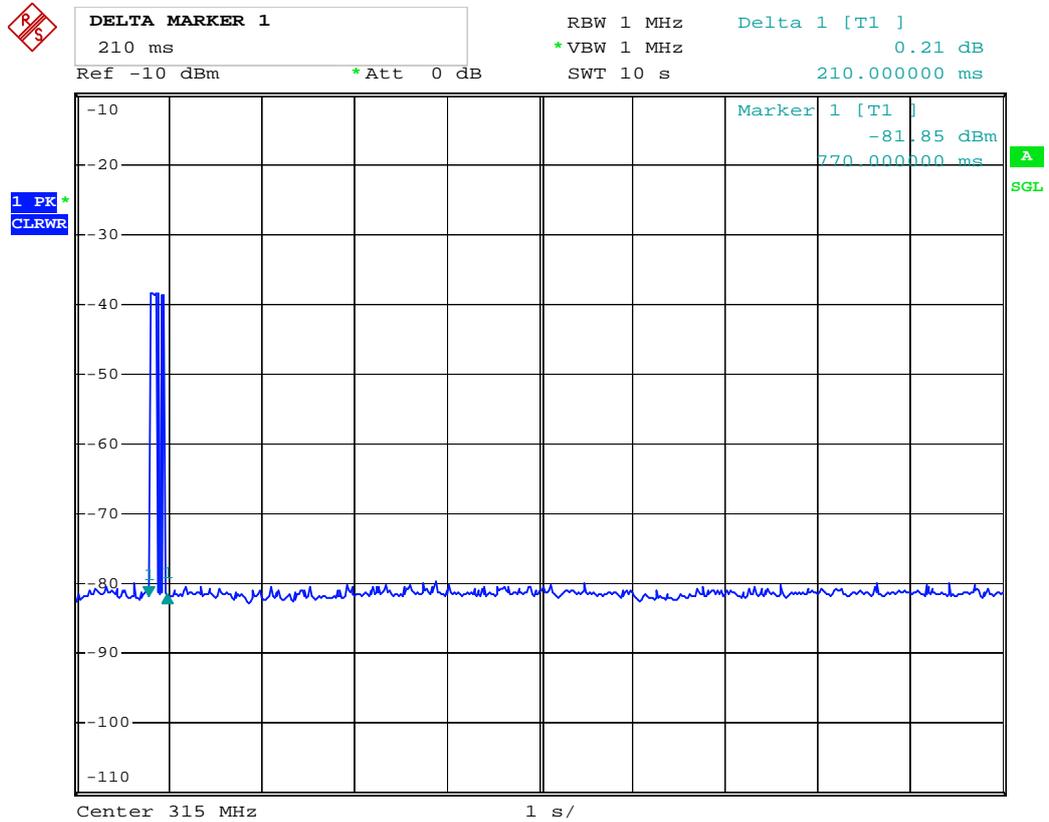
There is no deviation with the original standard.

3.4.6 EUT Operation during Test

The EUT was manually operated to be in transmitting mode.

3.4.7 Deactivating Time

Final Test Date	Apr. 17, 2012	Test Site No.	TH01-HY
Temperature	25.6°C	Humidity	39%
Test Engineer	Ian	Configurations	Channel 1



Date: 17.APR.2012 09:47:39

Note: The EUT is deactivated immediately after being released.

3.4.8 Test Result of Operation Restriction

Periodic Operation Restriction	Applicable	Declared by applicant	Test performance	Passed
The transmitter is used for				
<input type="checkbox"/> security or safety applications <input checked="" type="checkbox"/> other applications		<input checked="" type="checkbox"/>		
The transmitter is operated				
<input checked="" type="checkbox"/> manually <input type="checkbox"/> automatically		<input checked="" type="checkbox"/>		
Periodic operation according to				
<input checked="" type="checkbox"/> 47 CFR FCC Part 15 Subpart C <input checked="" type="checkbox"/> 15.231(a)/(e)				
Only control signals are sent and there is on continuous transmission.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(3) Periodic transmissions at regular predetermined intervals are <input checked="" type="checkbox"/> not permitted <input type="checkbox"/> 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)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> 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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

3.5 Radiated Emissions Measurement

3.5.1 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 (up/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, $\mu\text{V/m}$ at 3 meters = $56.81818 \times (\text{operating frequency, MHz}) - 6136.3636$;

(2) for the band 260 - 470 MHz, $\mu\text{V/m}$ at 3 meters = $41.6667 \times (\text{operating frequency, MHz}) - 7083.3333$.

(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 (microrvolts/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

3.5.2 Measuring Instruments and Setting

Please refer to section 4 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 (other emission)	1MHz / 1MHz for peak

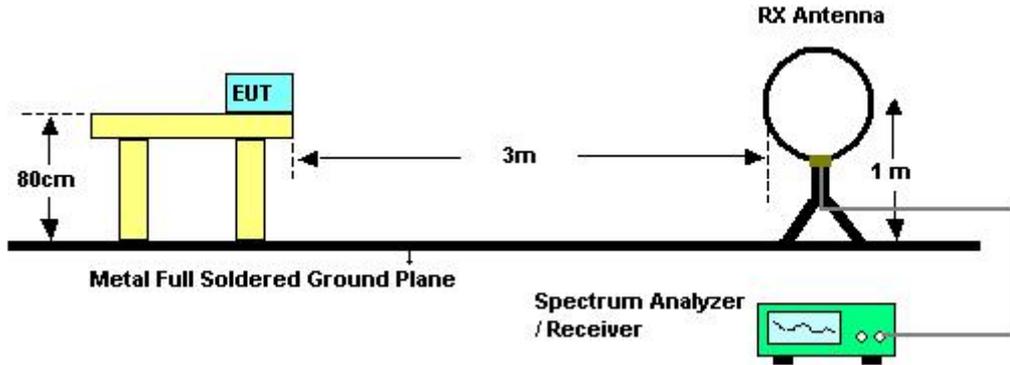
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.5.3 Test Procedures

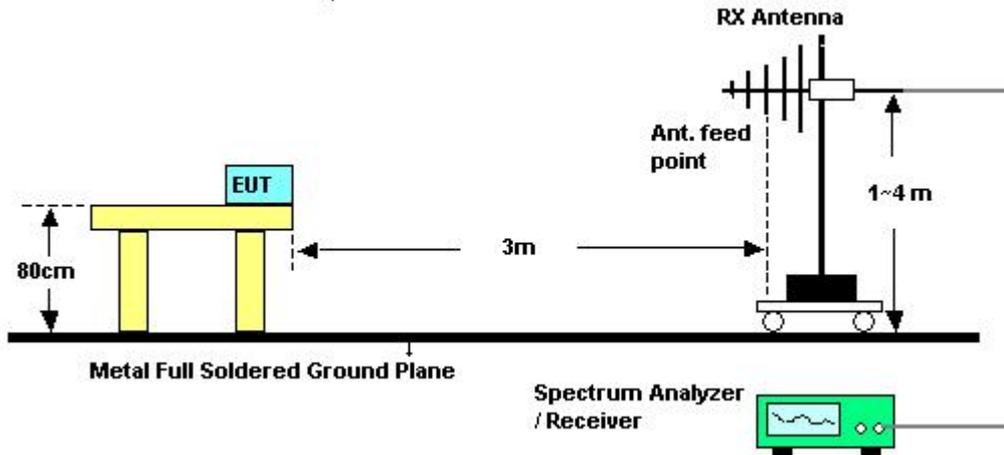
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

3.5.4 Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.5.5 Test Deviation

There is no deviation with the original standard.

3.5.6 EUT Operation during Test

The EUT was manually operated to be in transmitting mode.

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

Final Test Date	Mar. 27, 2012	Test Site No.	03CH02-HY
Temperature	24.1°C	Humidity	67%
Test Engineer	Streak	Configurations	Channel 1

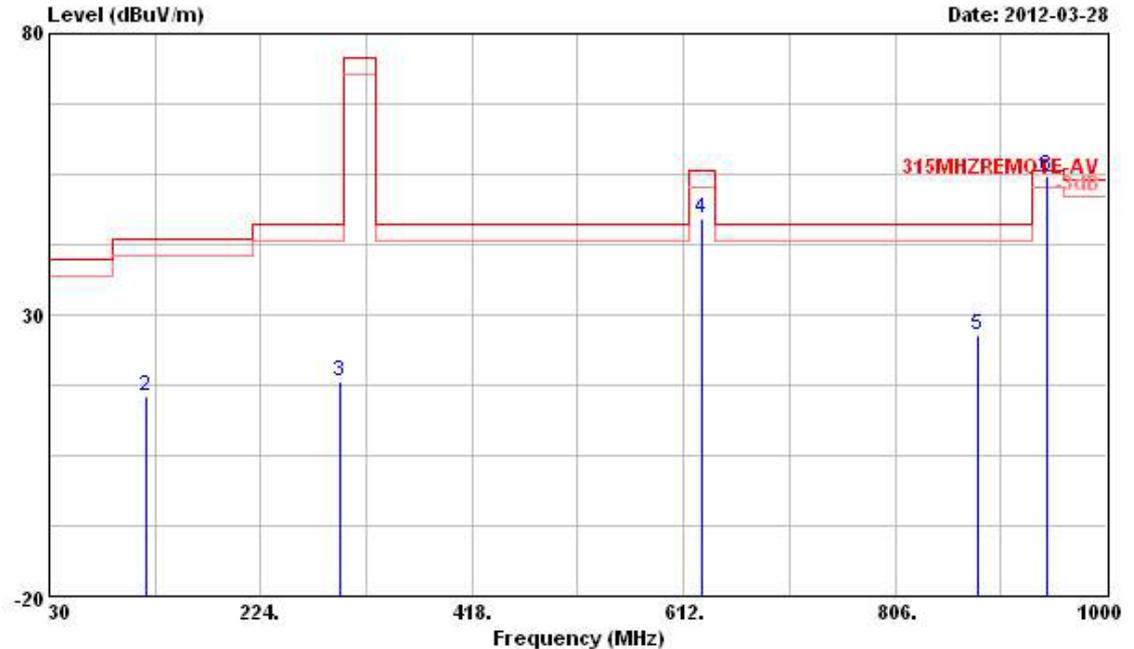
Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

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.

3.5.8 Results for Radiated Emissions (30MHz~1GHz)

Final Test Date	Mar. 28, 2012	Test Site No.	03CH02-HY
Temperature	24.4°C	Humidity	67%
Test Engineer	Streak	Configurations	Channel 1

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	30.000	17.73	-22.27	40.00	28.57	16.22	0.89	27.95	Peak	---	---
2	119.240	15.61	-27.89	43.50	28.05	13.50	1.82	27.76	Peak	---	---
3	296.750	18.10	-27.90	46.00	28.66	13.66	2.95	27.17	Peak	---	---
4	629.460	47.26	-8.36	55.62	51.55	19.79	4.33	28.41	Peak	---	---
5	882.630	26.37	-19.63	46.00	28.78	20.07	5.18	27.66	Peak	---	---
6	944.710	54.66	-0.96	55.62	55.46	21.13	5.50	27.43	QP	---	---

Note:

Peak limit 75.6 dBuV/m in non-restricted bands

Average limit 55.6 dBuV/m in non-restricted bands

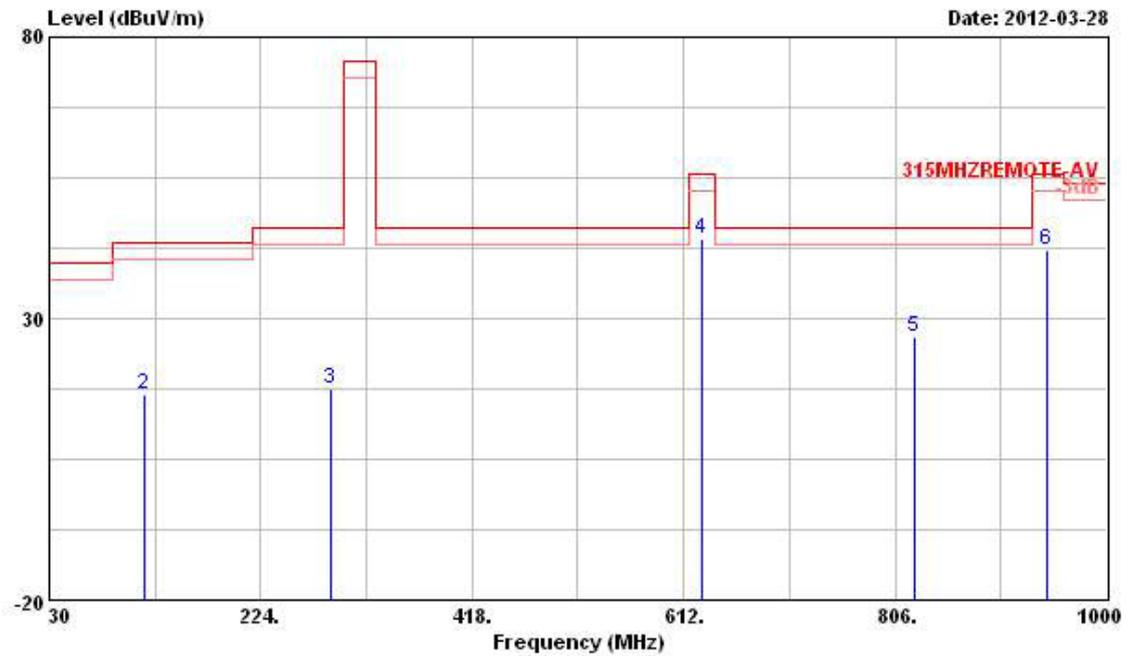
629.46MHz and 944.71MHz are harmonic pulsed transmitter emissions in non-restricted bands.

Non-restricted bands emissions complied with peak and average limits. For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition. For pulsed transmitter emissions, average measurements are dependent on the pulse width or pulse train characteristics. Following as formula: Average emission = peak emission + 20 log (duty cycle); duty cycle = on time/100 ms period = 29.9%.

629.46MHz - AV = 47.26 -10.48 = 36.78 dBuV/m at 3m under limit 55.6 dBuV/m

944.71MHz - AV = 54.66 -10.48 = 44.18 dBuV/m at 3m under limit 55.6 dBuV/m

Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	30.000	17.71	-22.29	40.00	28.55	16.22	0.89	27.95	Peak	---	---
2	117.300	16.51	-26.99	43.50	29.21	13.27	1.81	27.78	Peak	---	---
3	288.990	17.43	-28.57	46.00	28.15	13.55	2.92	27.19	Peak	---	---
4	629.460	44.14	-11.48	55.62	48.43	19.79	4.33	28.41	Peak	---	---
5	823.460	26.58	-19.42	46.00	29.26	20.21	4.97	27.86	Peak	---	---
6	944.710	42.30	-13.32	55.62	43.10	21.13	5.50	27.43	Peak	---	---

Note:

Peak limit 75.6 dBuV/m in non-restricted bands

Average limit 55.6 dBuV/m in non-restricted bands

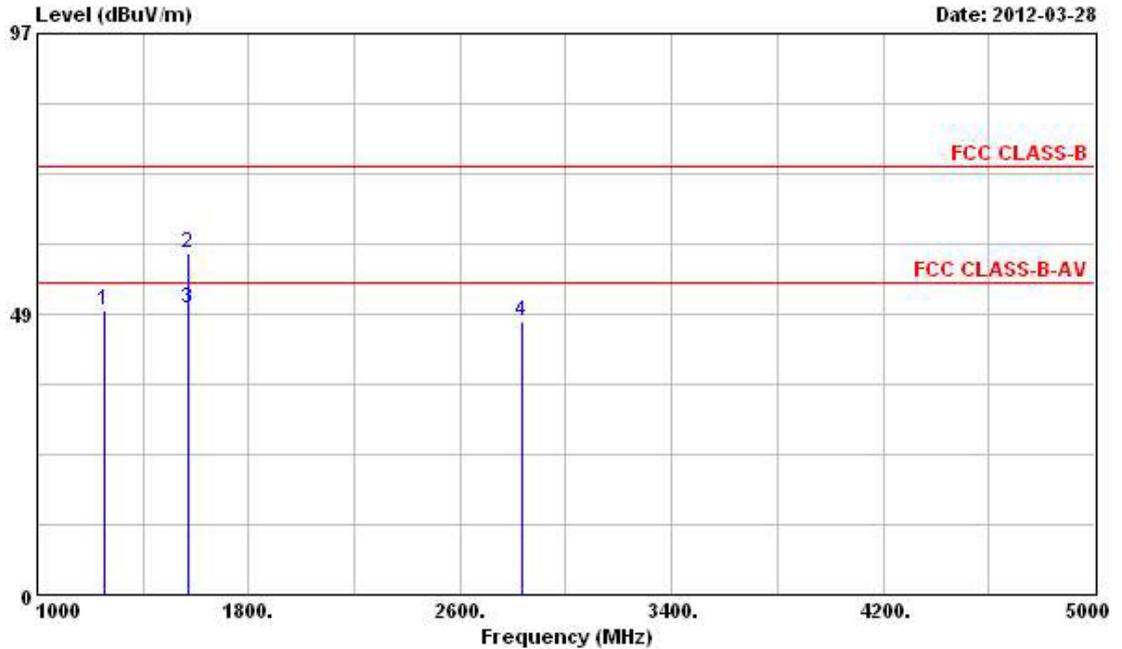
629.46MHz and 944.71MHz are harmonic pulsed transmitter emissions in non-restricted bands.

Non-restricted bands emissions complied with peak and average limits. For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

3.5.9 Results for Radiated Emissions (1GHz~10th harmonic of highest frequency)

Final Test Date	Mar. 28, 2012	Test Site No.	03CH02-HY
Temperature	24.1°C	Humidity	67%
Test Engineer	Streak	Configurations	Channel 1

Horizontal



Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	1254.000	49.19	-24.81	74.00	54.98	27.31	2.07	35.17 Peak	---	---
2	1572.000	58.98	-15.02	74.00	63.43	27.95	2.36	34.76 Peak	---	---
3	1572.000	49.48	-4.52	54.00	53.93	27.95	2.36	34.76 Average	---	---
4	2836.000	47.28	-6.72	54.00	45.86	33.00	3.32	34.90 PK	---	---

Note:

Peak limit 75.6 dBuV/m in non-restricted bands

Average limit 55.6 dBuV/m in non-restricted bands

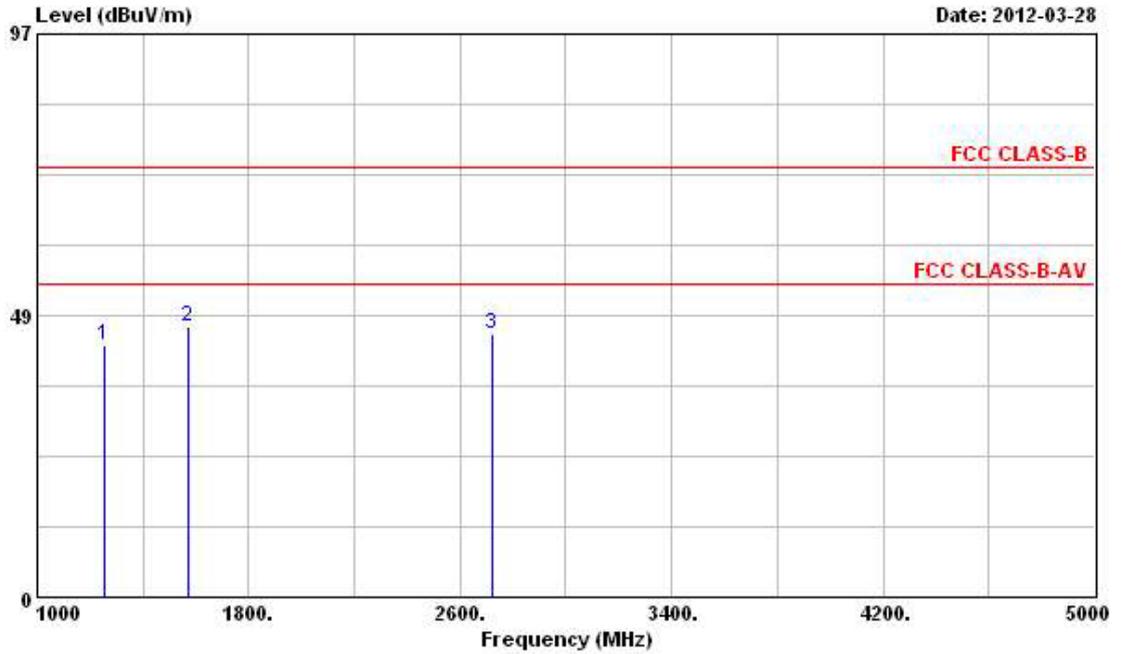
1252MHz is harmonic pulsed transmitter emissions in non-restricted bands. Non-restricted bands emissions complied with peak and average limits. For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Peak limit 74 dBuV/m in restricted bands

Average limit 54 dBuV/m in restricted bands

2836MHz is harmonic pulsed transmitter emissions in restricted bands. Restricted bands emissions complied with peak and average limits. For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	1254.000	43.40	-30.60	74.00	48.93	27.57	2.07	35.17	Peak	---	---
2	1572.000	46.44	-7.56	54.00	50.24	28.60	2.36	34.76	PK	---	---
3	2718.000	45.16	-8.84	54.00	44.04	32.75	3.24	34.87	PK	---	---

Note:

Peak limit 75.6 dBuV/m in non-restricted bands

Average limit 55.6 dBuV/m in non-restricted bands

1252MHz is harmonic pulsed transmitter emissions in non-restricted bands. Non-restricted bands emissions complied with peak and average limits. For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Peak limit 74 dBuV/m in restricted bands

Average limit 54 dBuV/m in restricted bands

1572MHz and 2718MHz are harmonic pulsed transmitter emissions in restricted bands. Restricted bands emissions complied with peak and average limits. For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

3.6 Antenna Requirements

3.6.1 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.

3.6.2 Antenna Connector Construction

Please refer to section 2.1 in this test report, all antenna connectors comply with the requirements.

4. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP 40	100305	9 KHz ~ 40 GHz	Feb. 21, 2012	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jun. 03, 2011	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20~100℃	Dec. 07, 2011	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10 MHz ~ 40 GHz	Jun. 07, 2011	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	1027452	300 MHz ~ 40 GHz	Jun. 16, 2011	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	1124009	300 MHz ~ 40 GHz	Jun. 20, 2011	Conducted (TH01-HY)
RF Cable-1m	Jye Bao	RG142	CB034-1m	20 MHz ~ 7 GHz	Dec. 03, 2011	Conducted (TH01-HY)
RF Cable-2m	Jye Bao	RG142	CB035-2m	20 MHz ~ 1 GHz	Dec. 03, 2011	Conducted (TH01-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	Jun. 09, 2011*	Conducted (TH01-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP40	100593	9 kHz ~ 40 GHz	Aug. 08, 2011	Radiation (03CH02-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30 MHz ~ 1 GHz 3m	May 11, 2011	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100 kHz ~ 1.3 GHz	Jul. 25, 2011	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02373	1 GHz ~ 26.5 GHz	Jul. 25, 2011	Radiation (03CH02-HY)
Horn Antenna	ETS-LINDGREN	3117	00091920	1 GHz ~ 18 GHz	Nov. 15, 2011	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz ~ 1 GHz	Nov. 11, 2011	Radiation (03CH02-HY)
RF Cable-high	SUHNER	SUCOFLEX106	03CH02-HY	1 GHz ~ 40 GHz	Mar. 06, 2012	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30 MHz ~ 2 GHz	Oct. 22, 2011	Radiation (03CH02-HY)
Turn Table	HD	DS 420	420/649/00	0 - 360 degree	N/A	Radiation (03CH02-HY)
Antenna Mast	HD	MA 240	240/559/00	1 m - 4 m	N/A	Radiation (03CH02-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	Jul. 29, 2010*	Radiation (03CH02-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz ~ 40GHz	Apr. 19, 2011*	Radiation (03CH02-HY)

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

5. TEST LOCATION

SHIJR	ADD : 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei 221, Taiwan, R.O.C. TEL : 886-2-2696-2468 FAX : 886-2-2696-2255
HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
LINKOU	ADD : No. 30-2, Dingfu Vil., Linkou Dist., New Taipei City 244, Taiwan, R.O.C. TEL : 886-2-2601-1640 FAX : 886-2-2601-1695
DUNGHU	ADD : No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei 114, Taiwan, R.O.C. TEL : 886-2-2631-4739 FAX : 886-2-2631-9740
JUNGHE	ADD : 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei 235, Taiwan, R.O.C. TEL : 886-2-8227-2020 FAX : 886-2-8227-2626
NEIHU	ADD : 4Fl., No. 339, Hsin Hu 2 nd Rd., Taipei 114, Taiwan, R.O.C. TEL : 886-2-2794-8886 FAX : 886-2-2794-9777
JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

6. TAF CERTIFICATE OF ACCREDITATION



Certificate No. : L1190-111208

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
 No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
 Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2010 to January 09, 2013
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities



Jay-San Chen
 President, Taiwan Accreditation Foundation
 Date : December 08, 2011

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix