



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Applicant : CHUNG HING INDUSTRY CO.,LTD.

Address : Block A-B, 1/F, Shing King Industrial Building. 45 Kut Shing Street, Chai Wan, Hong Kong

Product Name : Wireless Remote Control Transmitter

Model Name : DLT-110-01

Brand Name : N/A

FCC ID : WD4DLT-110-01

Report No. : SZSTS080612F1

Date of Issue : July 04, 2008

Issued by : Shenzhen Super Test Service Technology Co., Ltd.

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1. TEST RESULT CERTIFICATION

Applicant Name:	CHUNG HING INDUSTRY CO.,LTD.
Address:	Block A-B, 1/F, Shing King Industrial Building. 45 Kut Shing Street, Chai Wan, Hong Kong
Manufacturer Name:	SUN HING INDUSTRY COMPANY
Address:	8-10Zhenxing Road,388 Industrial, Liang An Tian, Ping Hu, Long Gang, Shenzhen, Guangdong, China
Brand Name:	N/A
Equipment Under Test:	Wireless remote control transmitter
Model Number:	DLT-110-01
Series Mode:	N/A
Difference description:	N/A
FCC ID:	WD4DLT-110-01
Test Standard	FCC 47 CFR Part 15 Subpart C
File Number:	SZSTS080612F1
Date of Test:	June.12 to July 04, 2008

We (STS) hereby certify that:

The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.207, 15.209 and Part 15.231.

The test results of this report relate only to the tested sample identified in this report.

Tested By Glyn He July.04.2008

Checked By Glyn He July.04.2008

Authorized By Terry Yang July.04.2008



2. Technical Information

Note: the following data is based on the information by the applicant.

2.1 EUT Description

Product	Wireless remote control transmitter
Brand Name	N/A
Model Number	DLT-110-01
Series Model Name:	N/A
Series Model Difference description:	N/A
Power Supply	Supply by magnet influence
Frequency Range	314.97225 MHz
Modulation Technique	FM
Antenna Type	Inside Antenna

Note:

1. *This submittal(s) (test report) is intended for FCC ID: WD4DLT-110-01 filing to comply with Section 15.207, 15.209 and 15.231 of the FCC Part 15, Subpart C Rules.*
2. *Please refer to Appendix I for the photographs of the EUT. For more details, please refer to the User's manual of the EUT.*

2.2 Objective

The tests documented in this report were performed in accordance with ANSI C63.4 (2003) and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.209 and 15.231.

2.3 Test Standards and Results

The EUT has been tested according to FCC CFR 47:

- Part 2: Frequency Allocations and Radio Treaty Matters: General Rules and Regulations (10-1-05 Edition)
- Part 15: Radio Frequency Device (10-1-05 Edition)

Test items and the results are as bellow:

No	Test Type	Test Data	Limit	Result
1	20 dB Bandwidth	80.25 KHz	787.43 KHz	PASS
2	Limit of Transmission Time	450 μ s	5 s	PASS
3	Duty Cycle	-9.86 dB	Nil	PASS
4	Radiated Emissions	Refer to Section 5.4	Refer to Section 5.4	PASS
5	Power line Conducted Emissions	Refer to Section 5.5	Refer to Section 5.5	Not Applicable

3. Details of Test

3.1 Identification of the Responsible Testing Laboratory

Company:	Shenzhen Super Test Service Technology Co., Ltd.
Address:	No.813 Unit A, Huameiju Business Center,Xinhu Road, Bao'an District, Shenzhen, China

3.2 Identification of the Responsible Testing Location

Test Site:	Bontek Compliance Testing Laboratory Ltd.
Address:	1/F,Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The EMC chamber Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2001 and CISPR 22/EN55022 requirements. The FCC Registration Number is 338263 .

3.3 List of Test Equipments

Description	Manufacturer	Model No.	Serial No.
Test Receiver	ROHDE&SCHWARZ	ESCI	100687
Test Receiver	ROHDE&SCHWARZ	ESPI7	100097
Spectrum Analyzer	Agilent	E4440A	N/A
Ultra Broadband Ant	ROHDE&SCHWARZ	HL562	0304224
EMS Antenna, Horn	SCHWARZBECK	BBHA9120A	B08000991-0001
Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811
High Field Bucolical Antenna	ELECTRO-METRICS	EM-6913	166
Power Frequency Test System	HAEFELY	PHF 555	0103105
Signal Generator	ROHDE&SCHWARZ	SML02	A0304261
Power Amplifier	HP	8447D	1937A02492
Field Monitor	Amplifier Research	AR FM5004	305128
Anechoic Chamber	CCS	9*6*6	N/A

3.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60%
- Atmospheric pressure: 86-106 k Pa

4. Test Methodology

4.1 General Test Procedures

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirement in Section 13.1.4.1 of ANSI C63.4:2001. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.

4.2 Description of Test Modes

The EUT has been tested under engineering test mode condition and the EUT staying in continuous transmitting mode.

4.3 FCC Part 15.205 Restricted Bands of Operations

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

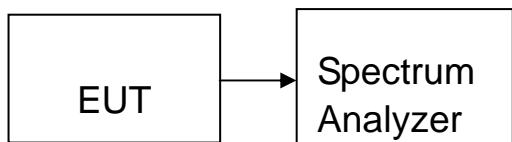
5. FCC Part 15.231 Requirements

5.1 20 dB Bandwidth

LIMIT

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

TEST CONFIGURATION



TEST PROCEDURE

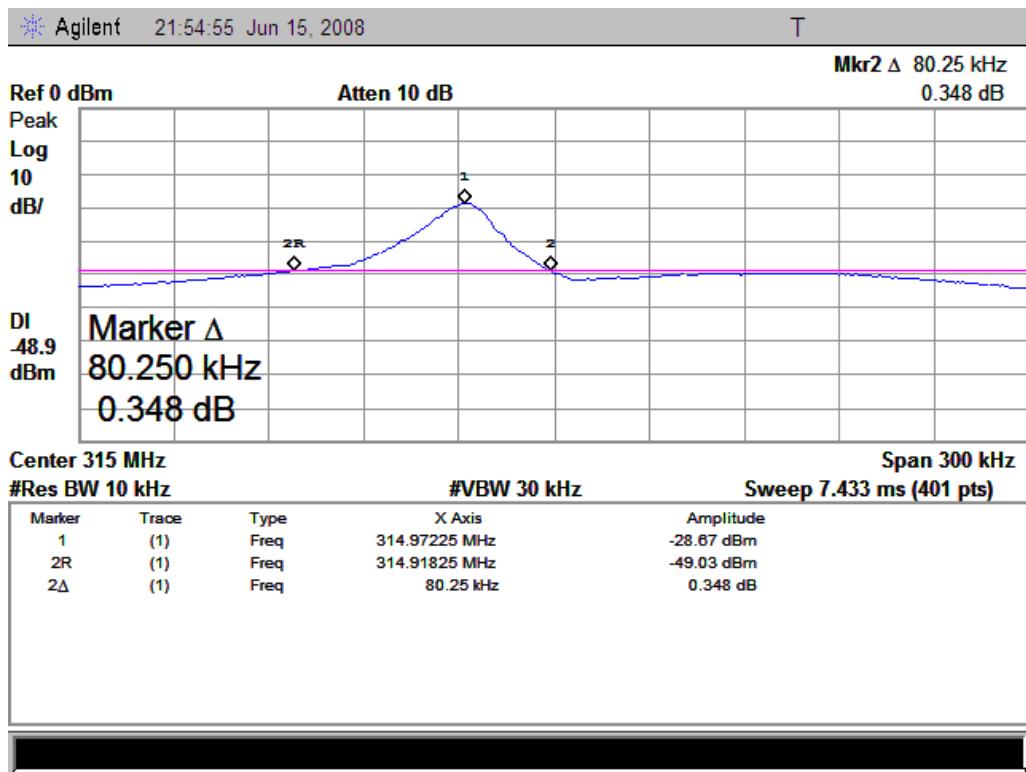
The transmitter output is connected to the spectrum analyzer. The spectrum analyzer center frequency is set to the transmitter frequency. The RBW is set to 10 kHz and VBW is set 30 KHz.

TEST RESULTS

Frequency (MHz)	20 dB Bandwidth (KHz)	Limit (KHz)	Result
314.97225	80.25	787.43	PASS

CONCLUSION: PASS

TEST PLOT

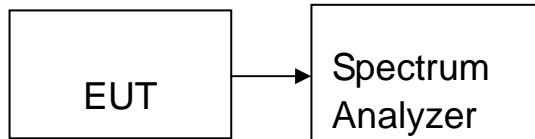


5.2 Limit of Transmission Time

LIMIT

According to 15.231 (a) (1), a manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

TEST CONFIGURATION



TEST PROCEDURE

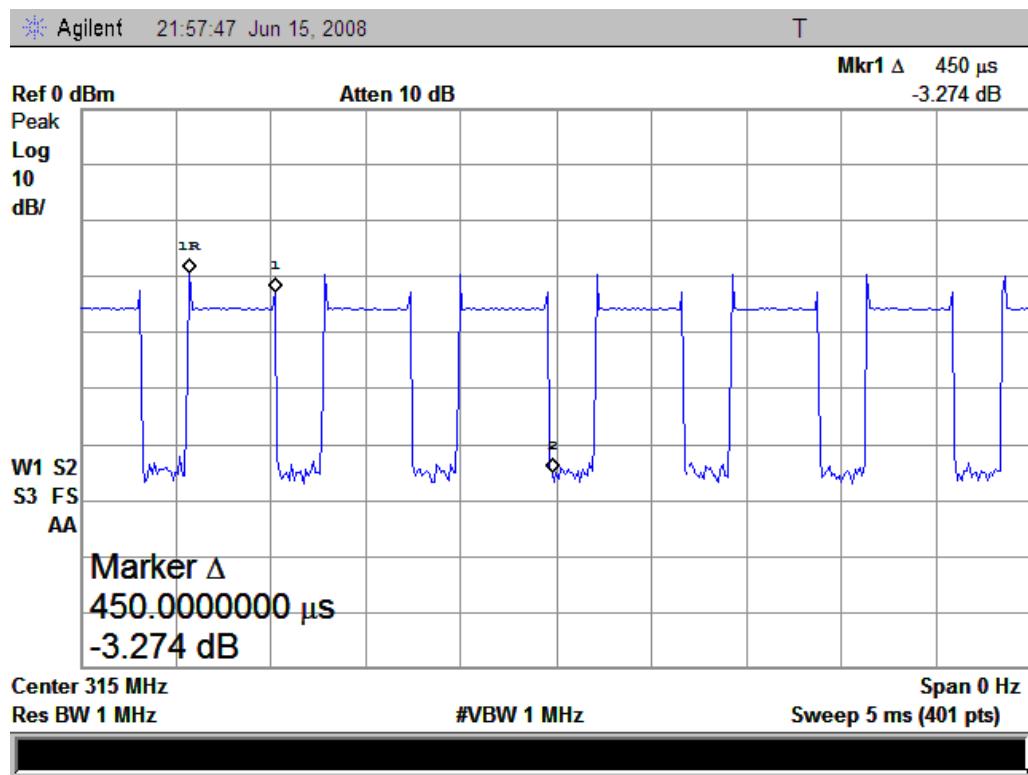
The transmitter output is connected to the spectrum analyzer. The spectrum analyzer center frequency is set to the transmitter frequency. The RBW and VBW are set to 1MHz.

TEST RESULTS

Frequency (MHz)	Transmission Time (μs)	Limit (Second)	Result
314.97225	450	5.00	PASS

CONCLUSION: PASS

TEST PLOT

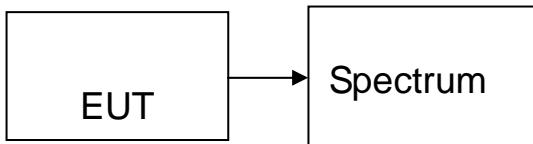


5.3 Duty Cycle

LIMIT

Nil (No dedicated limit specified in the Rules)

TEST CONFIGURATION



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW, VBW=100KHz, Span = 0Hz, Adjust Sweep = 30s
5. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

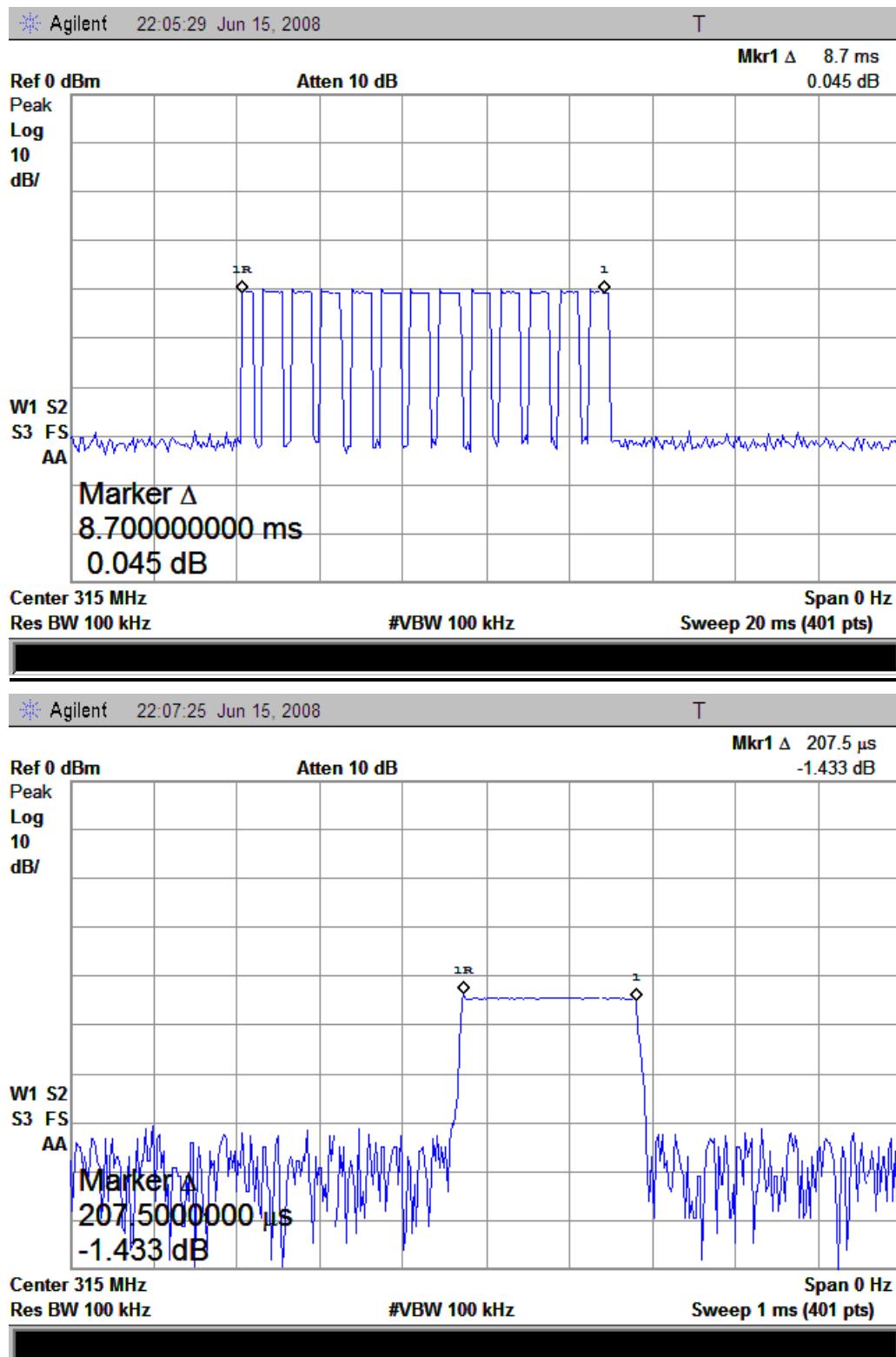
CONCLUSION: PASS

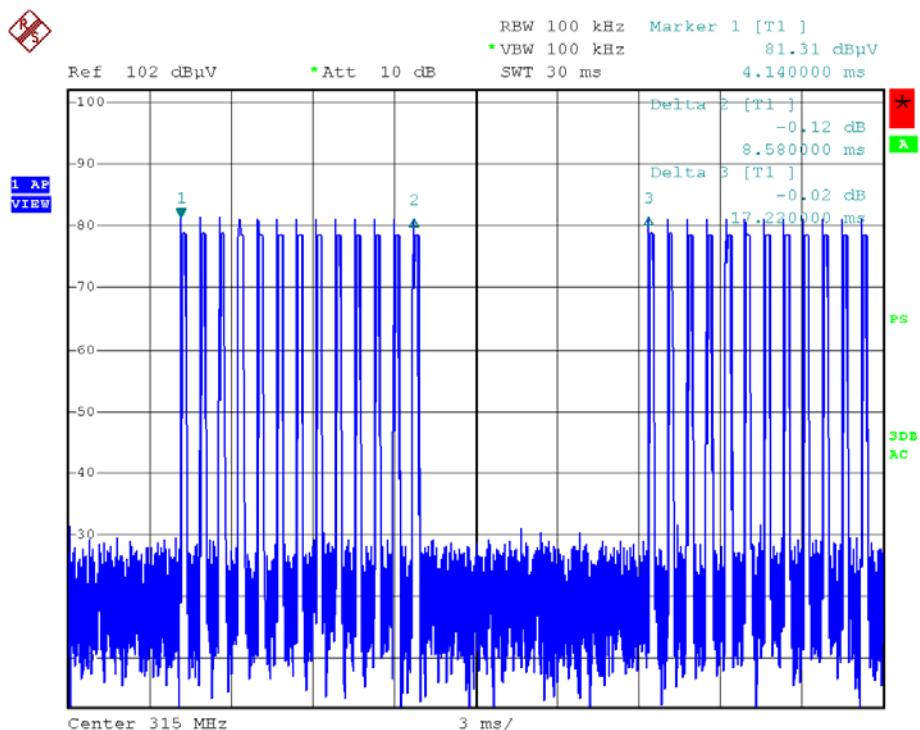
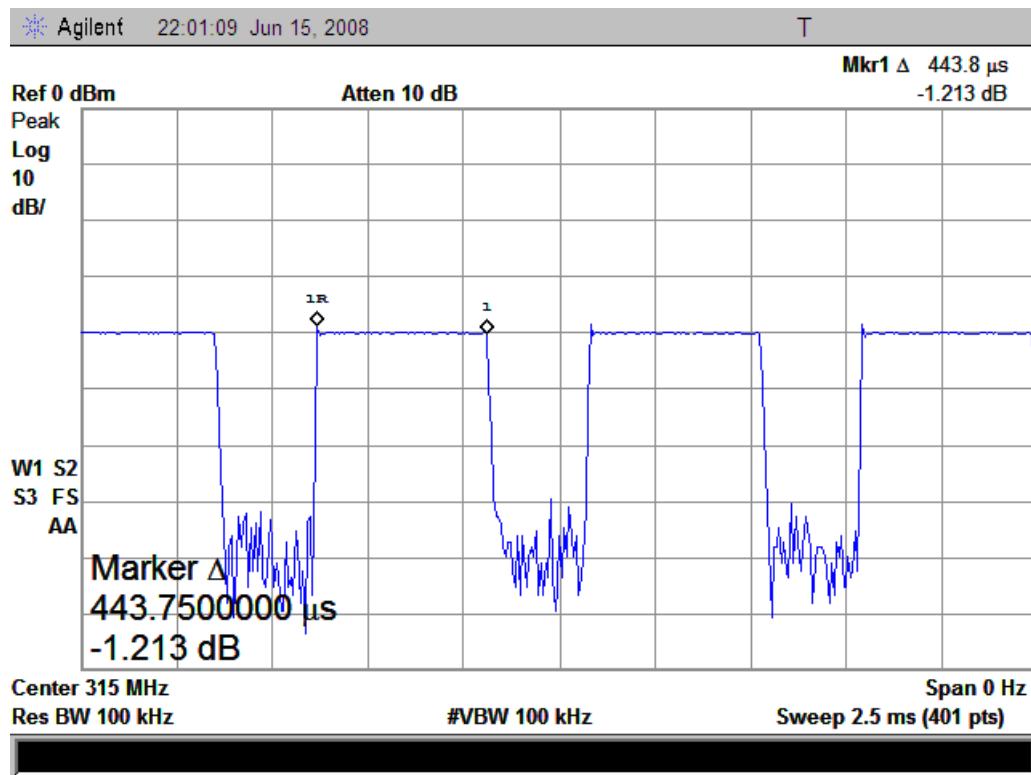
TEST DATA

T_p = 17.22 ms

T_{on} = 0.4438 * 12 + 0.2075 = 5.5331 (ms)

Factor = 20 *log(T_{on} / T_p) = 20 * log(5.5331/17.22) = -9.86 dB

TEST PLOT



Date: 27.JUN.2008 16:06:54

5.4 Radiated Emissions

LIMIT

1. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

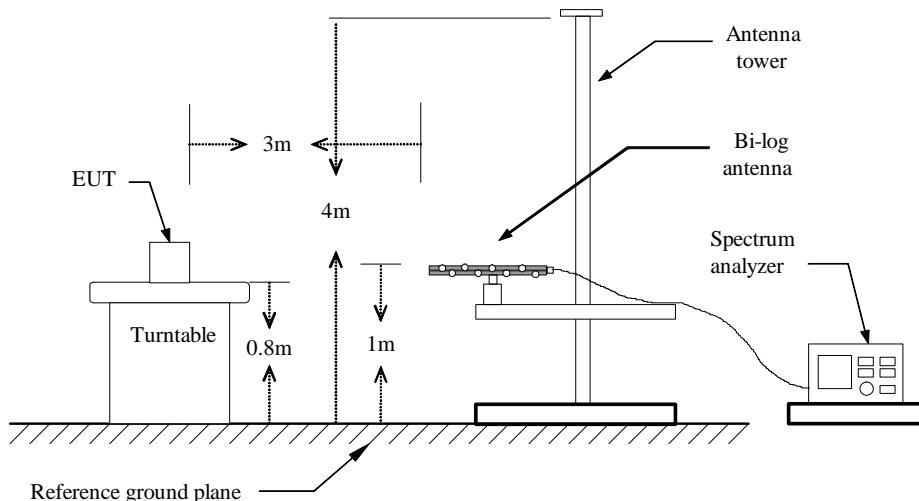
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

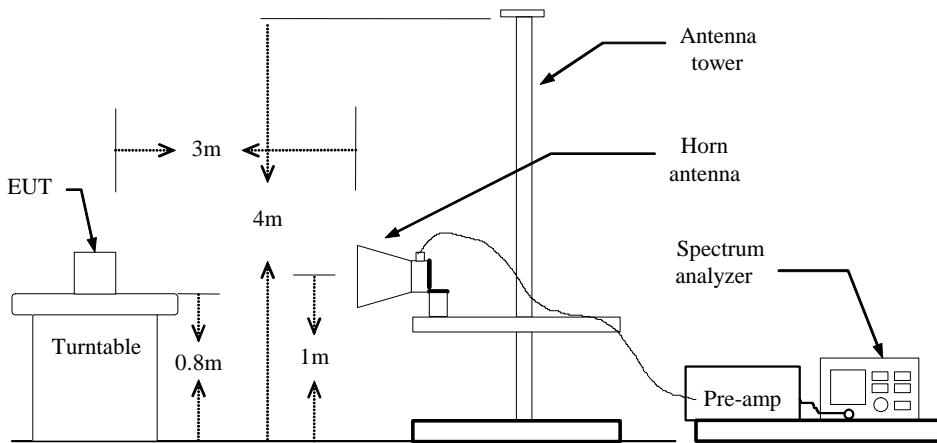
2. In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength (μ V/m at 3-meter)	Field Strength (dB μ V/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

TEST CONFIGURATION

Below 1 GHz



Above 1 GHz**TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100 KHz / VBW=300 KHz / Sweep=AUTO

Above 1GHz:

- (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
- (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

Below 1GHz

Operation Mode: TX **Test Date:** June 18, 2008
Temperature: 22°C **Tested by:** Glyn He
Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency	Detector	Reading Level	Factor	Actual FS	Limit 3m	Safe Margin
MHz	PK/QP	dB μ V	dB	dB μ V/m	dB μ V/m	dB
Antenna Polarization: Vertical						
315.18	PK	37.10	20.20	57.30	74.34	-17.04
631.40	PK	29.05	22.65	51.70	54.34	-2.64
945.68	PK	21.48	26.52	48.00	54.34	-6.34
N/A						
Antenna Polarization: Horizontal						
315.18	PK	39.20	20.20	59.40	74.34	-14.94
631.40	PK	30.25	22.65	52.90	54.34	-1.44
945.68	PK	22.20	26.52	48.72	54.34	-5.62
N/A						

Remark:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100 KHz.

Above 1 GHz

Operation Mode: TX **Test Date:** June 18, 2008
Temperature: 22°C **Tested by:** Glyn He
Humidity: 60 % RH **Polarity:** Ver. / Hor.

Frequency	Detector	Reading Level	Factor	Actual FS	Limit 3m	Safe Margin
MHz	PK/QP	dB μ V	dB	dB μ V/m	dB μ V/m	dB
Antenna Polarization: Vertical						
1261.7	PK	--	--	--	--	>10
1576.2	PK	--	--	--	--	>10
1891.3	PK	--	--	--	--	>10
2206.2	PK	--	--	--	--	>10
2520.5	PK	--	--	--	--	>10
2835.7	PK	--	--	--	--	>10
3151.8	PK	--	--	--	--	>10
N/A						
Antenna Polarization: Horizontal						
1261.7	PK	--	--	--	--	>10
1576.2	PK	--	--	--	--	>10
1891.3	PK	--	--	--	--	>10
2206.2	PK	--	--	--	--	>10
2520.5	PK	--	--	--	--	>10
2835.7	PK	--	--	--	--	>10
3151.8	PK	--	--	--	--	>10
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Spectrum Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. Spectrum AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.

Conclusion: PASS

5.5 Power line Conducted Emissions

LIMIT

For an intentional radiator which is designed to be connected to the public utility (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 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

TEST CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

Not applicable (Since the EUT is powered by magnet influence)

TEST RESULTS

Not applicable (Since the EUT is powered by magnet influence)