FCC RADIO TEST REPORT

according to

47 CFR FCC Part 15 Subpart C § 15.247

Equipment	:	**Class 1 Gen 2 RFID Integrated Reader**
Model No.	:	**CS203ETHER-2LHCP/2RHCP EPC**
Brand Name	:	**CSL**
Filing Type	:	**New Application**
Applicant	:	**Convergence Systems Limited** 12/F, Chung Nam Building, #1 Lockhart Road, Wan Chai, Hong Kong
FCC ID	:	**UB4CS203ETHERC1G2**
Manufacturer	:	**Convergence Systems Limited** 12/F, Chung Nam Building, #1 Lockhart Road, Wan Chai, Hong Kong
Received Date	:	Jun. 10, 2009
Final Test Date	:	Jun. 11, 2009

Statement

Test result included is only for the RFID of the product.

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.

Testing Laboratory
1190

SPORTON International Inc.

6F, No. 106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

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History of This Test Report

Original Issue Date: Jun. 16, 2009

Report No.: FR960348

■ No additional attachment.

□ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

according to

47 CFR FCC Part 15 Subpart C § 15.247

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Brand Name	:	CSL
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Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jun. 10, 2009 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.

Sam Lee 6.17.2009

Sam Lee / Supervisor

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei 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	Complies	7.52 dB
3.2	15.247(b)(2)	Maximum Peak Conducted Output Power	Complies	0.95 dB
3.3	15.247(a)(1)	Hopping Channel Separation	Complies	-
3.4	15.247(a)(1)	Number of Hopping Frequency	Complies	-
3.5	15.247(a)(1)	Dwell Time	Complies	-
3.6	15.247(d)	Radiated Emissions	Complies	3.15 dB
3.7	15.247(d)	Band Edge Emissions	Complies	-
3.8	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Peak Conducted Output Power	±0.8dB	Confidence levels of 95%
Hopping Channel Separation	$\pm 8.5\times 10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

2. GENERAL INFORMATION

2.1. Product Details

Only the radio detail of RFID is shown in the table below. For more detailed features description, please refer to the manufacturer's specifications or user's manual.

Items	Description
Power Type	12VDC from adapter ; 48VDC from POE
Modulation	FHSS (ASK)
Frequency Range	902 ~ 928MHz
Channel Number	50
Channel Band Width	428 kHz
Conducted Output Power	29.05 dBm

2.2. Accessories

- SFTP waterproof LAN Cable for converting to regular RJ45 Ethernet connector
- GPIO cable
- 12V switching power supply
- Extended mounting stud and nuts
- Plastic caps for connectors and cables

Note:

Power	Brand	Model	Rating
Power supply	SuperSun International Limited	YS04-120250U/J	INPUT: 100-240V~50/60Hz 1.0A MAX OUTPUT: 12VDC 0-2500mA

2.3. Table for Filed Antenna

Ant.	Antenna Type	Connector	Gain (dBi)	Remark
1	Circular Patch antenna	Reversed-SMA	3.5	RFID

2.4. Table for Carrier Frequencies

Channel No.	Frequency	Channel No.	Frequency	Channel No.	Frequency
1	902.75 MHz	18	911.25 MHz	35	919.75 MHz
2	903.25 MHz	19	911.75 MHz	36	920.25 MHz
3	903.75 MHz	20	912.25 MHz	37	920.75 MHz
4	904.25 MHz	21	912.75 MHz	38	921.25 MHz
5	904.75 MHz	22	913.25 MHz	39	921.75 MHz
6	905.25 MHz	23	913.75 MHz	40	922.25 MHz
7	905.75 MHz	24	914.25 MHz	41	922.75 MHz
8	906.25 MHz	25	914.75 MHz	42	923.25 MHz
9	906.75 MHz	26	915.25 MHz	43	923.75 MHz
10	907.25 MHz	27	915.75 MHz	44	924.25 MHz
11	907.75 MHz	28	916.25 MHz	45	924.75 MHz
12	908.25 MHz	29	916.75 MHz	46	925.25 MHz
13	908.75 MHz	30	917.25 MHz	47	925.75 MHz
14	909.25 MHz	31	917.75 MHz	48	926.25 MHz
15	909.75MHz	32	918.25 MHz	49	926.75 MHz
16	910.25 MHz	33	918.75 MHz	50	927.25 MHz
17	910.75 MHz	34	919.25 MHz	-	-

2.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. 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 Conducted Emissions	Adapter Mode / POE Mode	Hopping 1~50	1
Max. Conducted Output Power	RFID	1/26/50	NA
Hopping Channel Separation	RFID	1/26/50	NA
Number of Hopping Frequency	RFID	1~50	NA
Dwell Time	Hopping	1/26/50	NA
Radiated Emissions Below 1GHz	Adapter Mode / POE Mode	Hopping 1~50	1
Radiated Emissions Above 1GHz	RFID	1/26/50	1
Band Edge Emissions	RFID	1/50	1

2.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH02-HY	SAC	Hwa Ya	643075	IC 4086B-1	-
CO04-HY	Conduction	Hwa Ya	643075	IC 4086B-1	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

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

2.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	IBM	Type2007	N/A
POE	PHIHONG	POE20U-560(G)	N/A

2.8. Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power Parameters of Bluetooth

Test Software Version	ReadTagTest.exe		
Frequency	902.75 MHz	915.25 MHz	927.25 MHz
Power Parameters	default	default	default

2.9. EUT Operation during Test

An executive program, EMCTEST.EXE under WIN XP, which generates a complete line of continuously repeating " H " pattern was used as the test software.

The program was executed as follows :

Turn on the power of all equipment.

The NB reads the test program from the hard disk drive and runs it.

The NB sends " H " messages to the panel, and the panel displays " H " patterns on the screen.

At the same time, the following programs were executed:

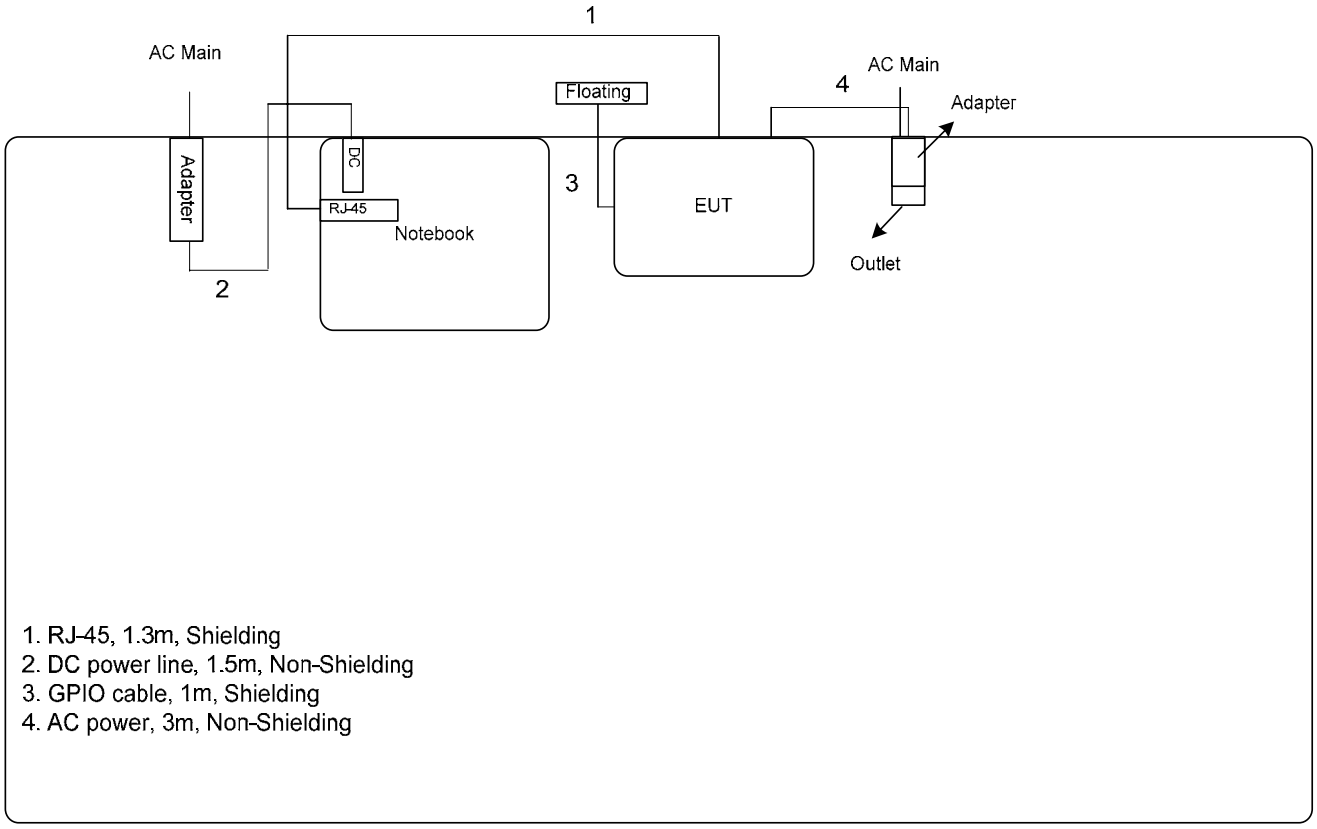
Executed " ReadTagTest.exe " to link EUT to keep transmitting signals at fixed frequency.

2.10. Test Configurations

2.10.1. Radiation Emissions Test Configuration

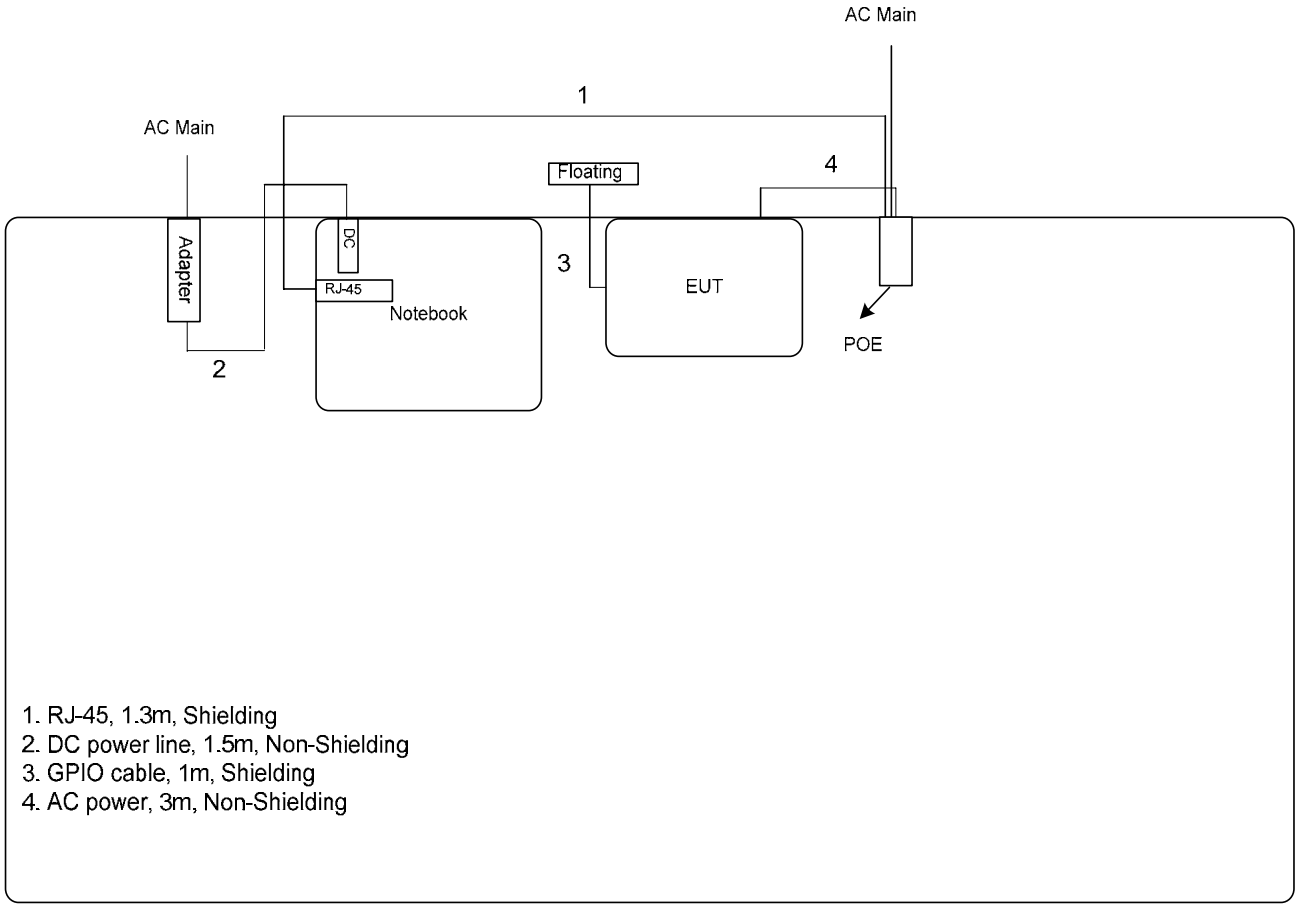
For radiated emissions above 30MHz

Adapter Mode



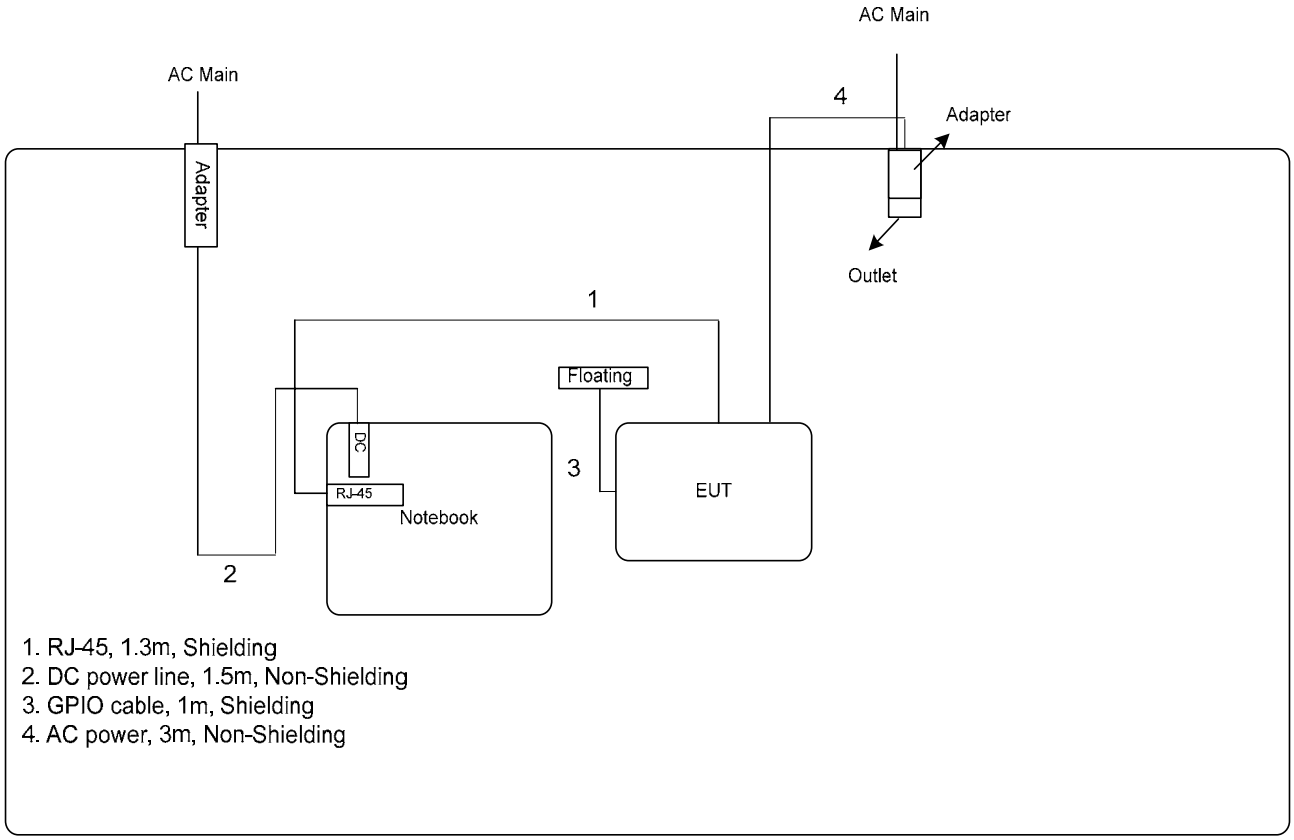
1. RJ-45, 1.3m, Shielding
2. DC power line, 1.5m, Non-Shielding
3. GPIO cable, 1m, Shielding
4. AC power, 3m, Non-Shielding

POE Mode



1. RJ-45, 1.3m, Shielding
2. DC power line, 1.5m, Non-Shielding
3. GPIO cable, 1m, Shielding
4. AC power, 3m, Non-Shielding

For radiated emissions above 1GHz



3. TEST RESULT

3.1. AC Power Line Conducted Emissions Measurement

3.1.1. 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.

Class A

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	79	66
0.5~30	73	60

Class B

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

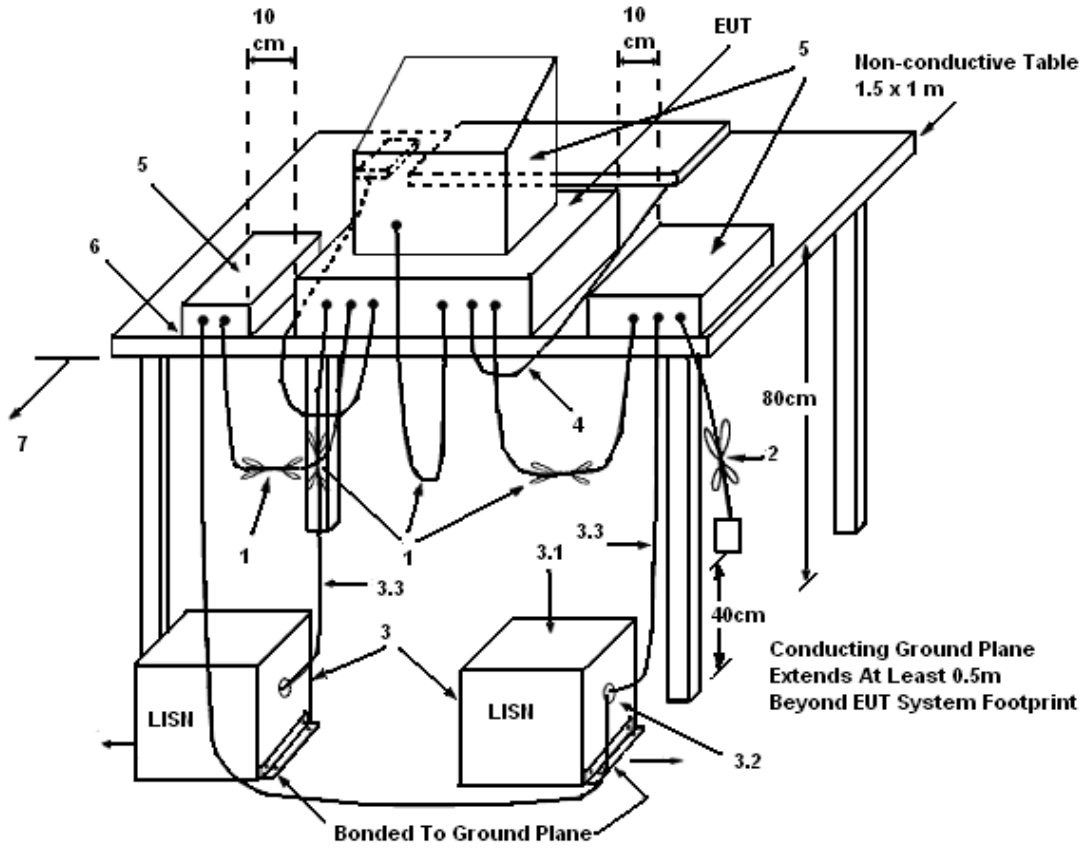
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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. 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.

3.1.4. Test Setup Layout



LEGEND:

(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 80 cm 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.

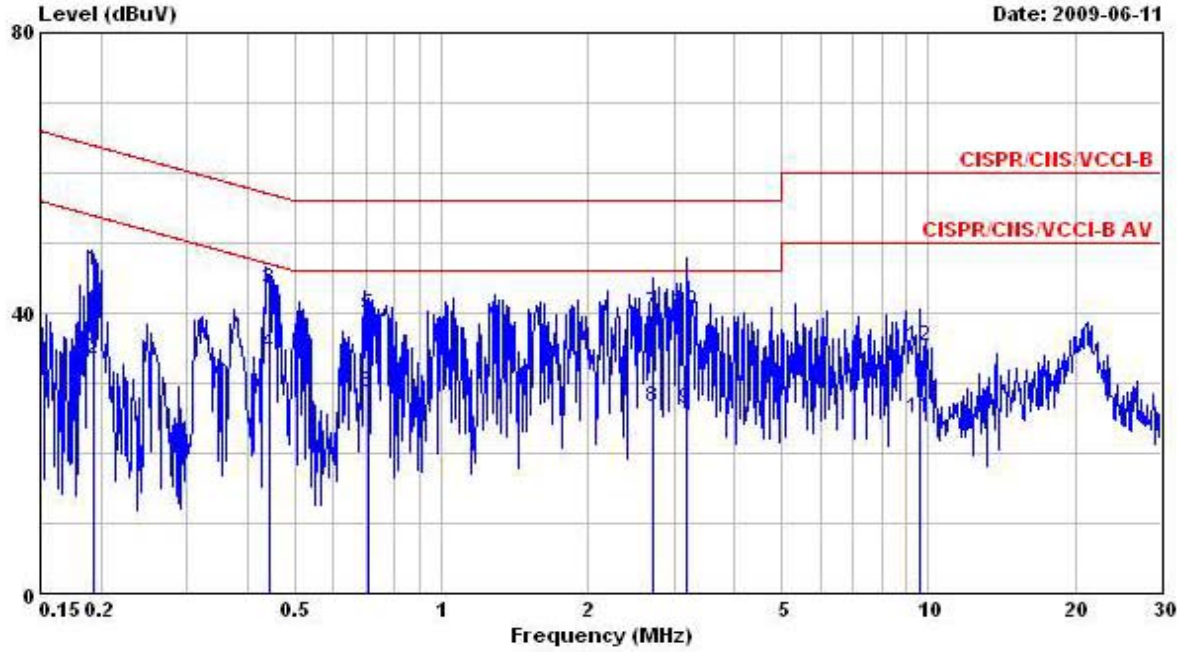
3.1.6. EUT Operation during Test

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

3.1.7. Results of AC Power Line Conducted Emissions Measurement

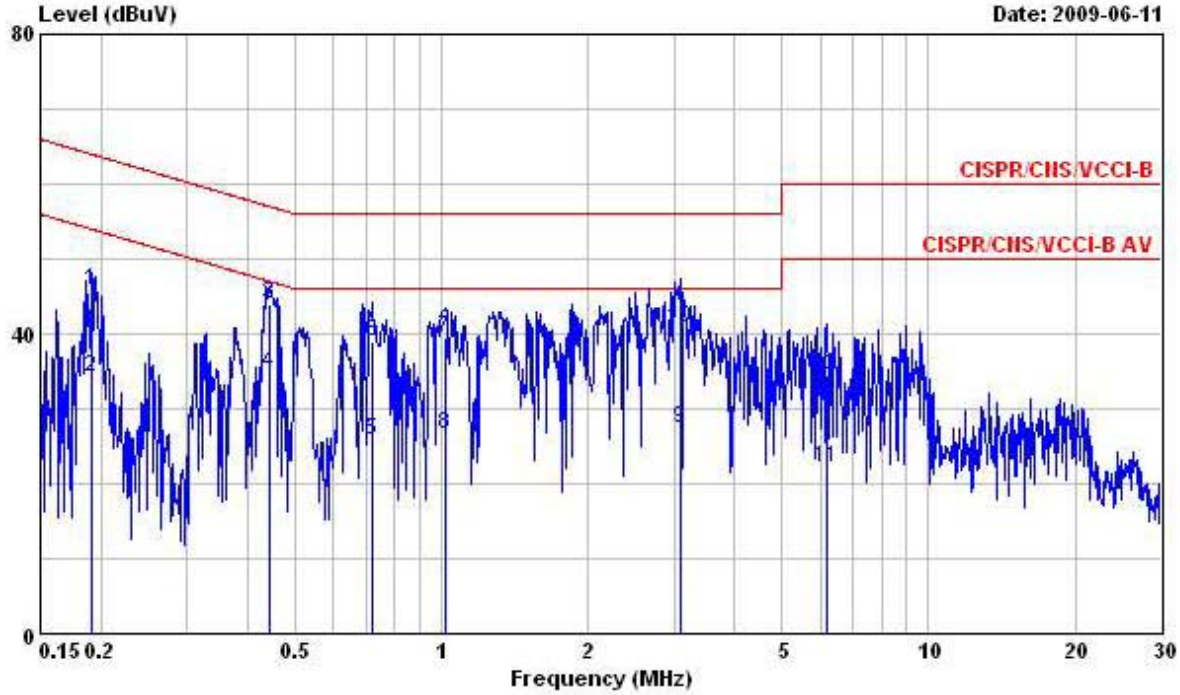
Final Test date	Jun. 11, 2009	**Test Site No.**	CO04-HY
Temperature	25℃	**Humidity**	55%
Test Engineer	Chris	**Configuration**	Adapter Mode

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1928800	45.94	-17.97	63.91	45.64	0.08	0.22	QP
2	0.1928800	33.46	-20.45	53.91	33.16	0.08	0.22	Average
3	0.4446090	43.45	-13.53	56.98	43.23	0.09	0.13	QP
4	0.4446090	34.27	-12.71	46.98	34.05	0.09	0.13	Average
5	0.7084240	39.72	-16.28	56.00	39.46	0.10	0.16	QP
6	0.7084240	28.70	-17.30	46.00	28.44	0.10	0.16	Average
7	2.710	39.90	-16.10	56.00	39.53	0.14	0.23	QP
8	2.710	26.68	-19.32	46.00	26.31	0.14	0.23	Average
9	3.179	26.29	-19.71	46.00	25.89	0.15	0.25	Average
10	3.179	40.39	-15.61	56.00	39.99	0.15	0.25	QP
11	9.550	24.98	-25.02	50.00	24.31	0.26	0.41	Average
12	9.550	35.34	-24.66	60.00	34.67	0.26	0.41	QP

Neutral



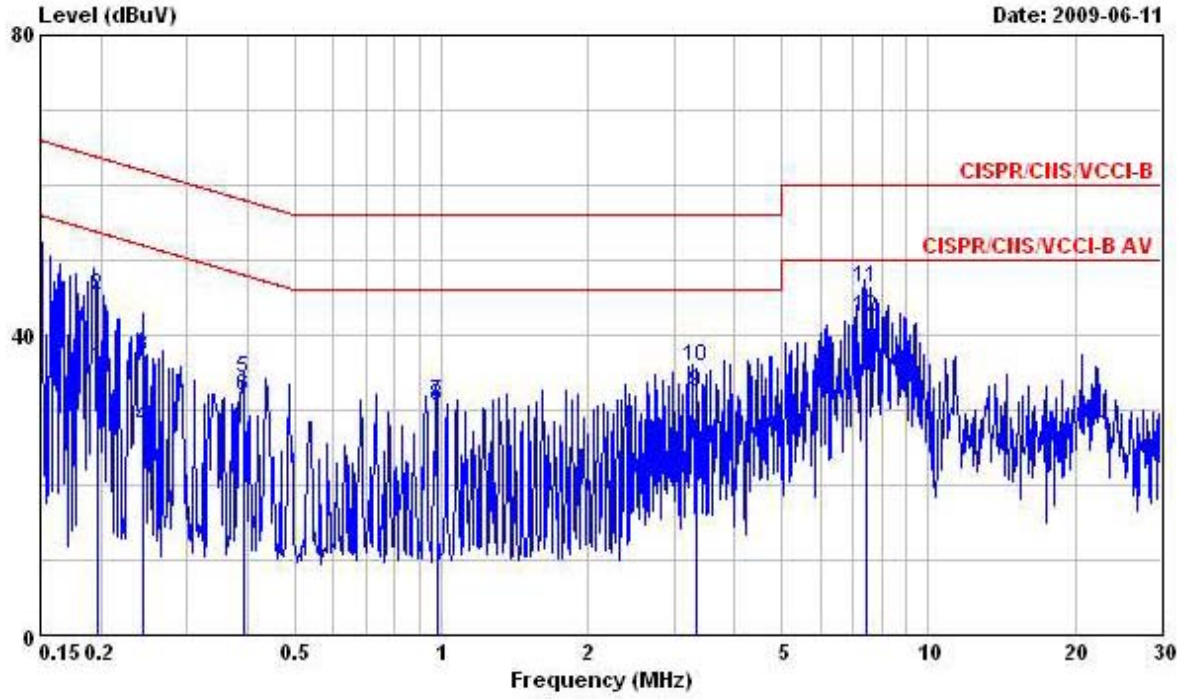
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1903870	45.79	-18.23	64.02	45.49	0.08	0.22	QP
2	0.1903870	34.26	-19.76	54.02	33.96	0.08	0.22	Average
3	0.4444290	43.96	-13.02	56.98	43.75	0.08	0.13	QP
4	@0.4444290	34.82	-12.16	46.98	34.61	0.08	0.13	Average
5	0.7235980	25.90	-20.10	46.00	25.65	0.09	0.16	Average
6	0.7235980	38.85	-17.15	56.00	38.60	0.09	0.16	QP
7	1.020	39.40	-16.60	56.00	39.12	0.10	0.18	QP
8	1.020	26.69	-19.31	46.00	26.41	0.10	0.18	Average
9	3.090	27.49	-18.51	46.00	27.10	0.14	0.25	Average
10	3.090	40.76	-15.24	56.00	40.37	0.14	0.25	QP
11	6.190	22.11	-27.89	50.00	21.56	0.20	0.35	Average
12	6.190	34.45	-25.55	60.00	33.90	0.20	0.35	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

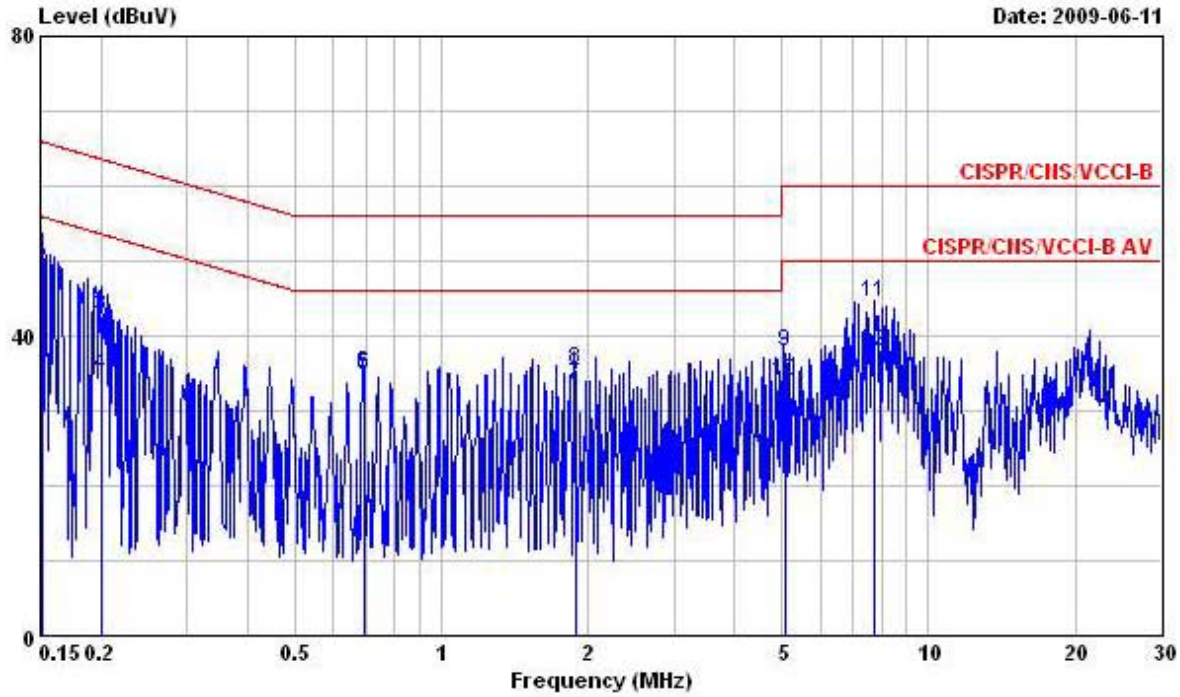
Final Test date	Jun. 11, 2009	**Test Site No.**	CO04-HY
Temperature	25℃	**Humidity**	55%
Test Engineer	Chris	**Configuration**	POE Mode

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1974950	35.60	-18.12	53.72	35.29	0.08	0.23	Average
2	0.1974950	45.22	-18.50	63.72	44.91	0.08	0.23	QP
3	0.2429320	37.10	-24.90	62.00	36.82	0.08	0.20	QP
4	0.2429320	27.65	-24.35	52.00	27.37	0.08	0.20	Average
5	0.3913610	34.31	-23.72	58.03	34.10	0.09	0.12	QP
6	0.3913610	31.83	-16.20	48.03	31.62	0.09	0.12	Average
7	0.9837220	31.07	-24.93	56.00	30.78	0.11	0.18	QP
8	0.9837220	30.43	-15.57	46.00	30.14	0.11	0.18	Average
9	3.343	32.35	-13.65	46.00	31.94	0.15	0.26	Average
10	3.343	35.69	-20.31	56.00	35.28	0.15	0.26	QP
11	7.434	46.42	-13.58	60.00	45.82	0.23	0.37	QP
12 @	7.434	42.48	-7.52	50.00	41.88	0.23	0.37	Average

Neutral



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1515980	38.98	-16.93	55.91	38.71	0.08	0.19	Average
2	0.1515980	48.99	-16.92	65.91	48.72	0.08	0.19	QP
3	0.2007470	42.62	-20.96	63.58	42.31	0.08	0.23	QP
4	0.2007470	34.79	-18.79	53.58	34.48	0.08	0.23	Average
5	@0.6924630	34.81	-11.19	46.00	34.56	0.09	0.16	Average
6	0.6924630	34.90	-21.10	56.00	34.65	0.09	0.16	QP
7	@ 1.880	33.38	-12.62	46.00	33.07	0.11	0.20	Average
8	1.880	35.46	-20.54	56.00	35.15	0.11	0.20	QP
9	5.103	37.81	-22.19	60.00	37.31	0.18	0.32	QP
10	5.103	34.08	-15.92	50.00	33.58	0.18	0.32	Average
11	7.755	44.45	-15.55	60.00	43.84	0.23	0.38	QP
12	@ 7.755	37.96	-12.04	50.00	37.35	0.23	0.38	Average

Note:

Level = Read Level + LISN Factor + Cable Loss.

3.2. Maximum Peak Output Power Measurement

3.2.1. Limit

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

3.2.2. Measuring Instruments and Setting

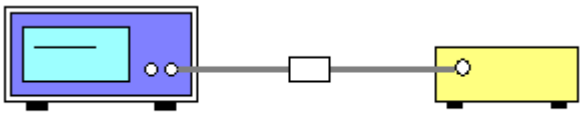
Please refer to section 4 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Filter No.	Auto
Measurement time	0.135 s ~ 26 s
Used Peak Sensor	NRV-Z32 (model 04)

3.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the peak power value.
3. Repeat above procedures on all channels needed to be tested.

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 programmed to be in continuously transmitting mode.

3.2.7. Test Result of Maximum Peak Output Power

Final Test date	Jun. 11, 2009	**Test Site No.**	TH01-HY
Temperature	27℃	**Humidity**	56%
Test Engineer	Duncan	**Configuration**	RFID

Channel	**Frequency**	**Conducted Power (dBm)**	**Max. Limit (dBm)**	**Result**
1	902.75 MHz	29.01	30.00	**Complies**
26	915.25 MHz	29.05	30.00	**Complies**
50	927.25 MHz	29.00	30.00	**Complies**

3.3. Hopping Channel Separation Measurement

3.3.1. Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

3.3.2. Measuring Instruments and Setting

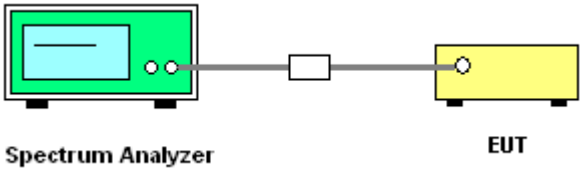
Please refer to section 4 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
VB	10 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 30 kHz and the video bandwidth of 10 kHz were utilized for 20 dB bandwidth measurement.
3. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were utilized for channel separation measurement.

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

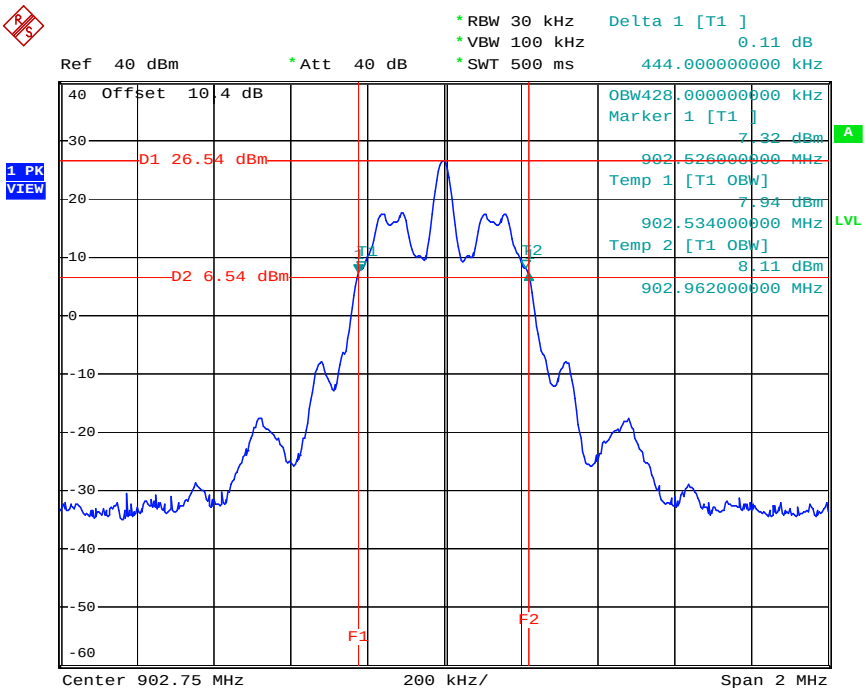
The EUT was programmed to be in continuously transmitting mode.

3.3.7. Test Result of Hopping Channel Separation

Final Test date	Jun. 11, 2009	**Test Site No.**	TH01-HY
Temperature	27℃	**Humidity**	56%
Test Engineer	Duncan	**Configuration**	RFID

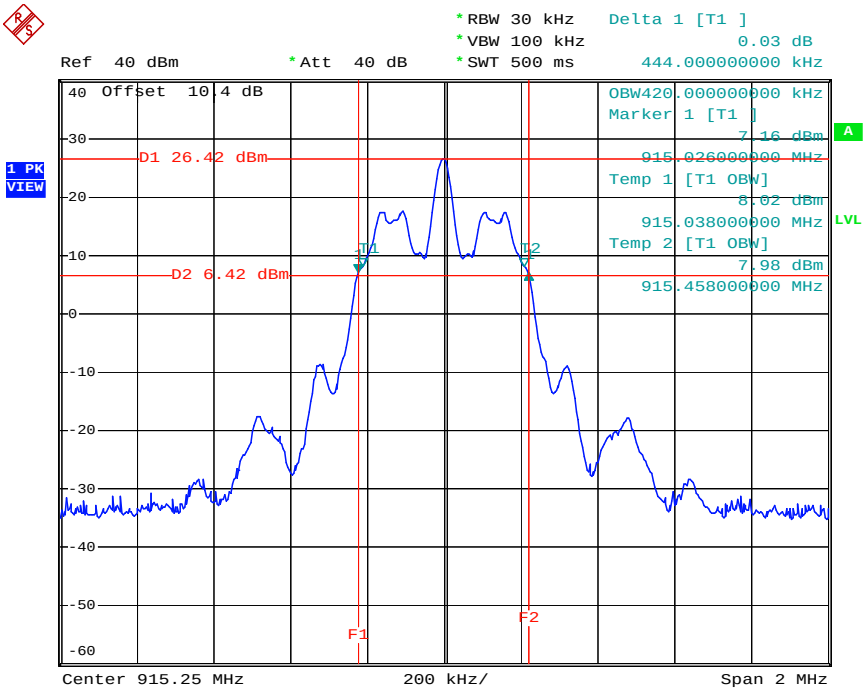
Frequency	**Ch. Separation (kHz)**	**20dB Bandwidth (kHz)**	**99% Occupied Bandwidth (kHz)**	**Result**
902.75 MHz	500.00	444.00	428.00	**Complies**
915.25 MHz	500.00	444.00	420.00	**Complies**
927.25 MHz	500.00	444.00	420.00	**Complies**

20 dB Bandwidth Plot on Channel 1 / 902.75 MHz



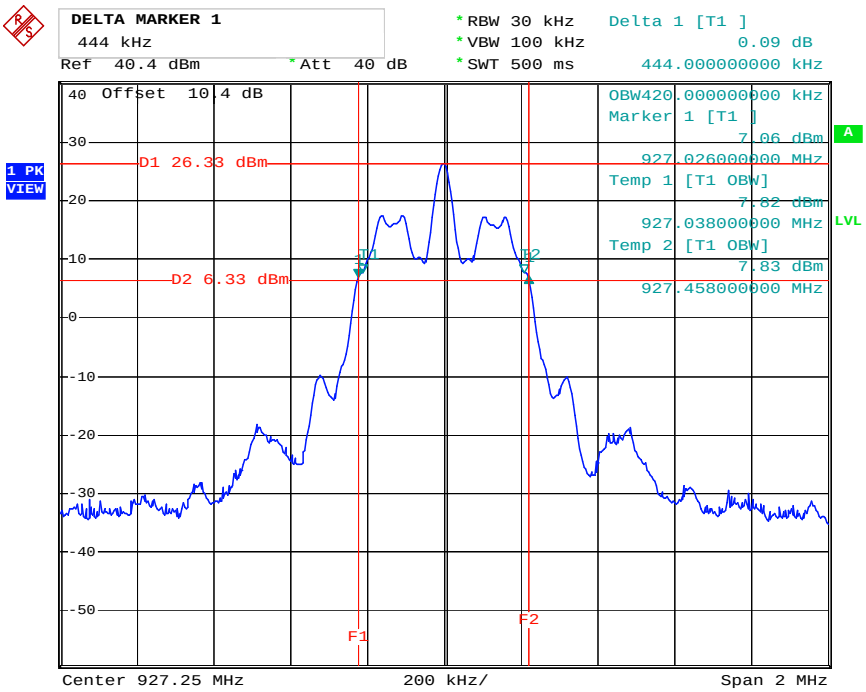
Date: 11.JUN.2009 17:52:37

20 dB Bandwidth Plot on Channel 26 / 915.25 MHz



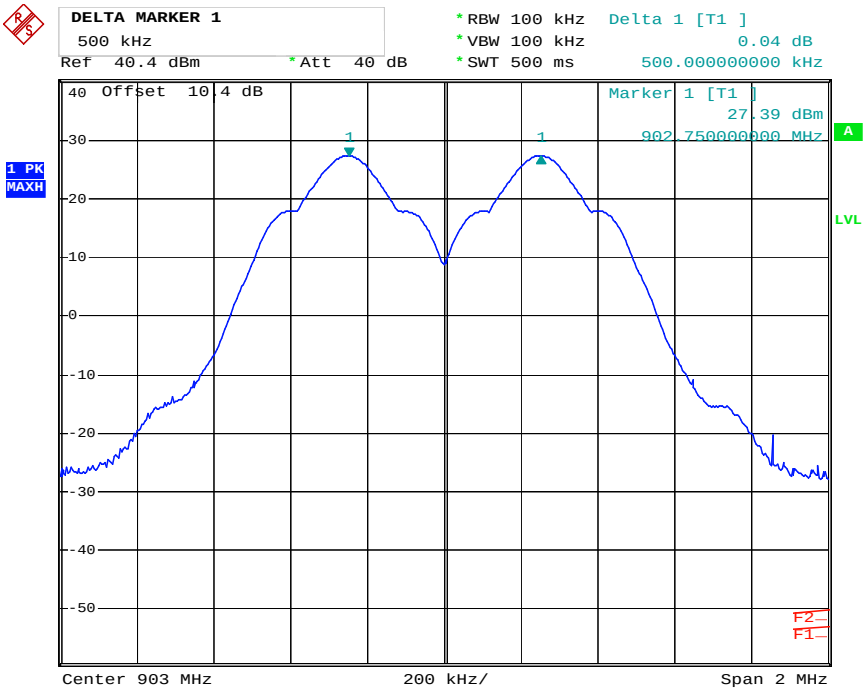
Date: 11.JUN.2009 17:55:42

20 dB Bandwidth Plot on Channel 50 / 927.25 MHz



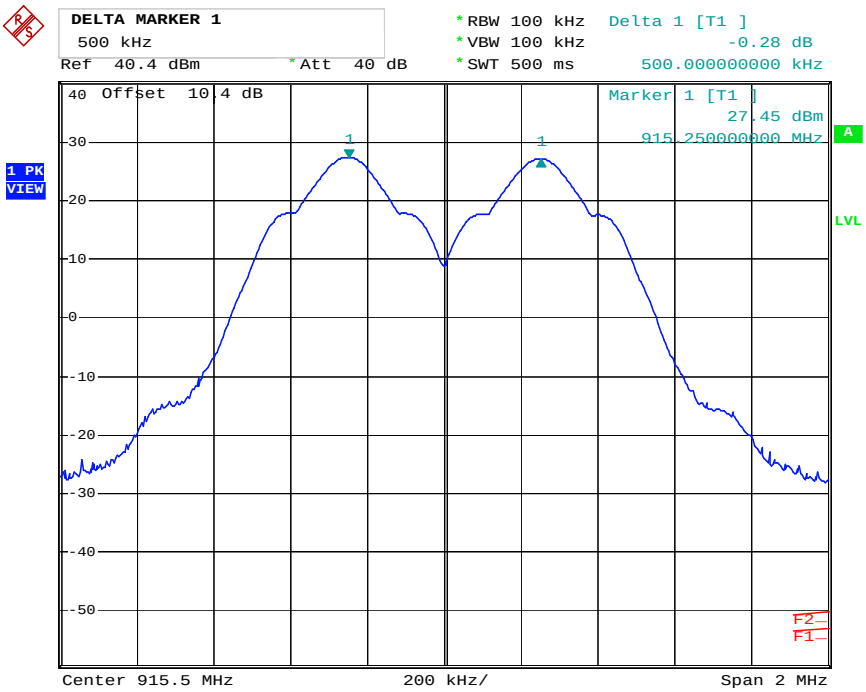
Date: 11.JUN.2009 19:40:57

Channel Separation Plot on Channel 1 / 902.75 MHz



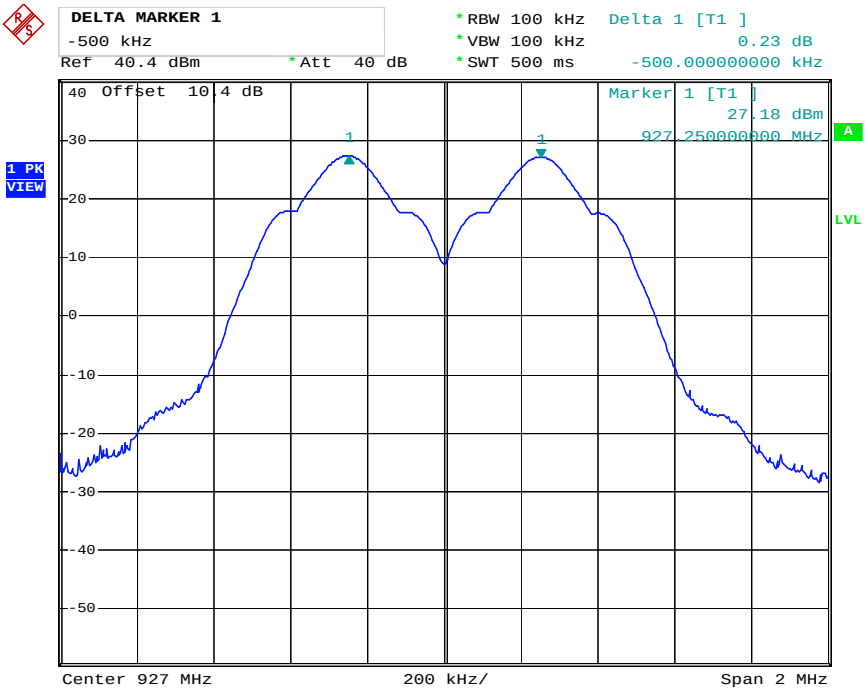
Date: 11.JUN.2009 19:47:30

Channel Separation Plot on Channel 26 / 915.25 MHz



Date: 11.JUN.2009 19:49:08

Channel Separation Plot on Channel 50 / 927.25 MHz



Date: 11.JUN.2009 19:50:10

3.4. Number of Hopping Frequency Measurement

3.4.1. Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

3.4.2. Measuring Instruments and Setting

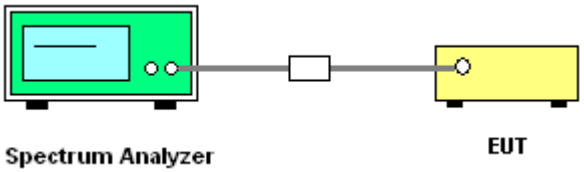
Please refer to section 4 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were utilized.
3. Observe frequency hopping in 902-928 MHz, there are at least 50 non-overlapping channels.

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

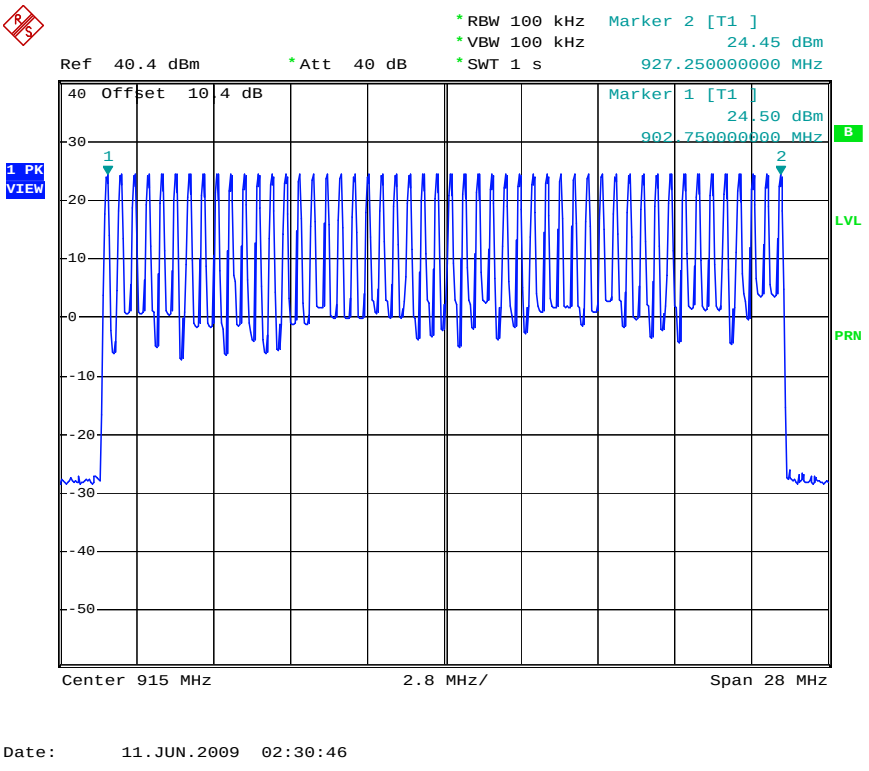
The EUT was programmed to be in continuously transmitting mode.

3.4.7. Test Result of Number of Hopping Frequency

Final Test date	Jun. 11, 2009	**Test Site No.**	TH01-HY
Temperature	27℃	**Humidity**	56%
Test Engineer	Duncan	**Configuration**	RFID

Modulation Type	**Channel No.**	**Frequency (MHz)**	**Hopping Ch. (Channels)**	**Min. Limit (Channels)**	**Test Result**
ASK	1~50	902.2 ~ 927.8	50	25	**Complies**

Number of Hopping Channel Plot on Channel 1~50 / 902.75 MHz ~ 927.25 MHz



3.5. Dwell Time Measurement

3.5.1. Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

3.5.2. Measuring Instruments and Setting

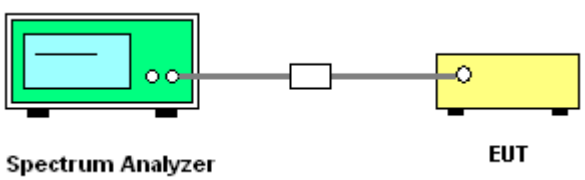
Please refer to section 4 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	30 kHz
VB	30 kHz
Detector	Peak
Trace	Single Trigger

3.5.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer
2. Set RBW of spectrum analyzer to 30kHz and VBW to 30kHz.
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 time duration of one single pulse.
7. Count the number of pulses in the dwell time duration.
8. Dwell time=pulse duration x number of pulses / measure time x dwell time duration.

3.5.4. Test Setup Layout



3.5.5. Test Deviation

There is no deviation with the original standard.

3.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

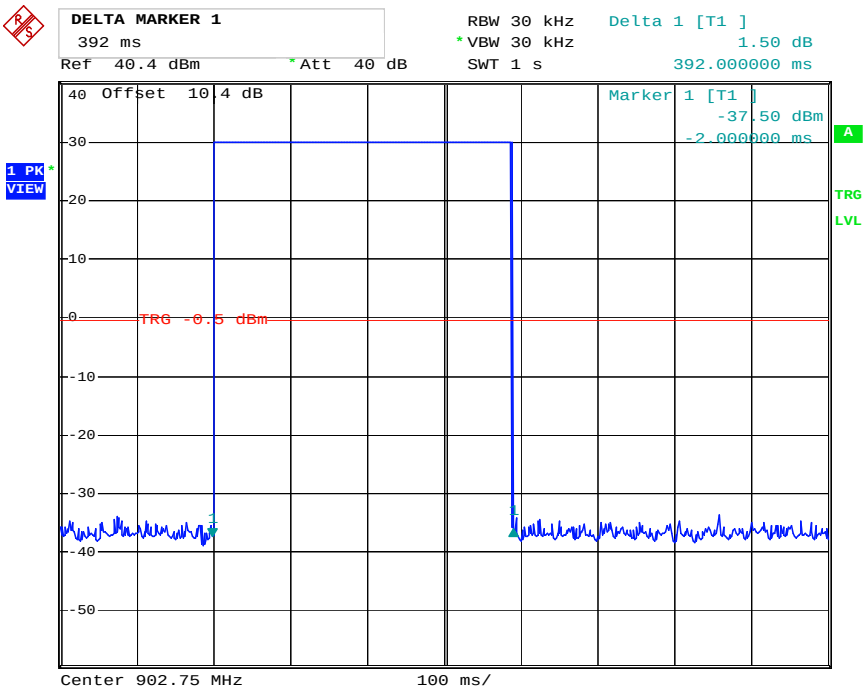
3.5.7. Test Result of Dwell Time

Final Test date	Jun. 11, 2009	**Test Site No.**	TH01-HY
Temperature	27℃	**Humidity**	56%
Test Engineer	Duncan	**Configuration**	RFID

Frequency	**Pulse Duration (ms)**	**Number of Pulses**	**Measure Time (s)**	**Dwell time duration (s)**	**Dwell Time (s)**	**Limits (s)**	**Test\ Result**
902.75 MHz	392.0000	1	20	20	0.3920	0.4000	**Complies**
915.25 MHz	392.0000	1	20	20	0.3920	0.4000	**Complies**
927.25 MHz	392.0000	1	20	20	0.3920	0.4000	**Complies**

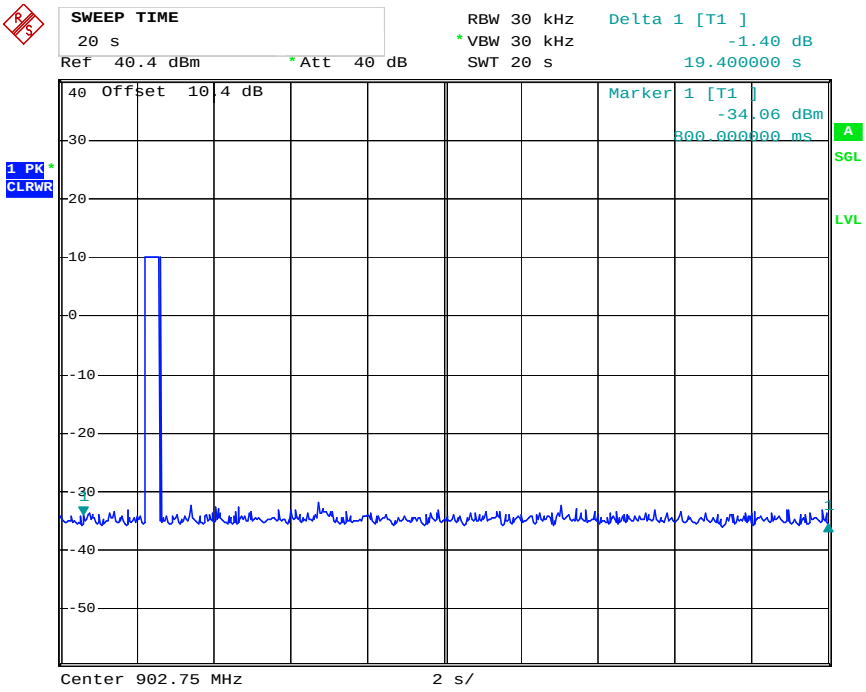
Note: Dwell time=pulse duration x number of pulses / measure time x dwell time duration

Single Pulse Plot on Channel 1 / 902.75 MHz



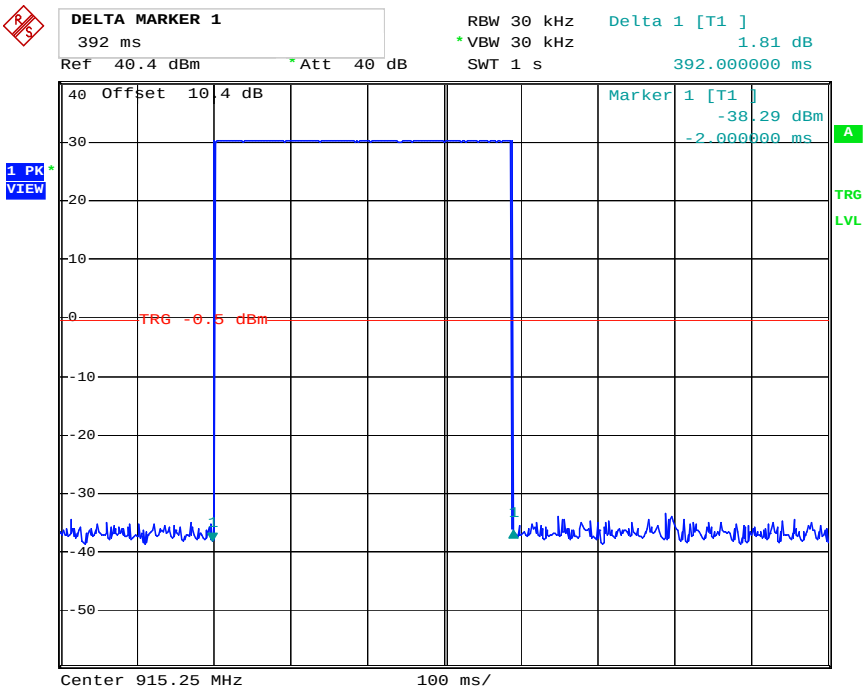
Date: 11.JUN.2009 21:10:24

Number of Pulses Plot on Channel 1 / 902.75 MHz



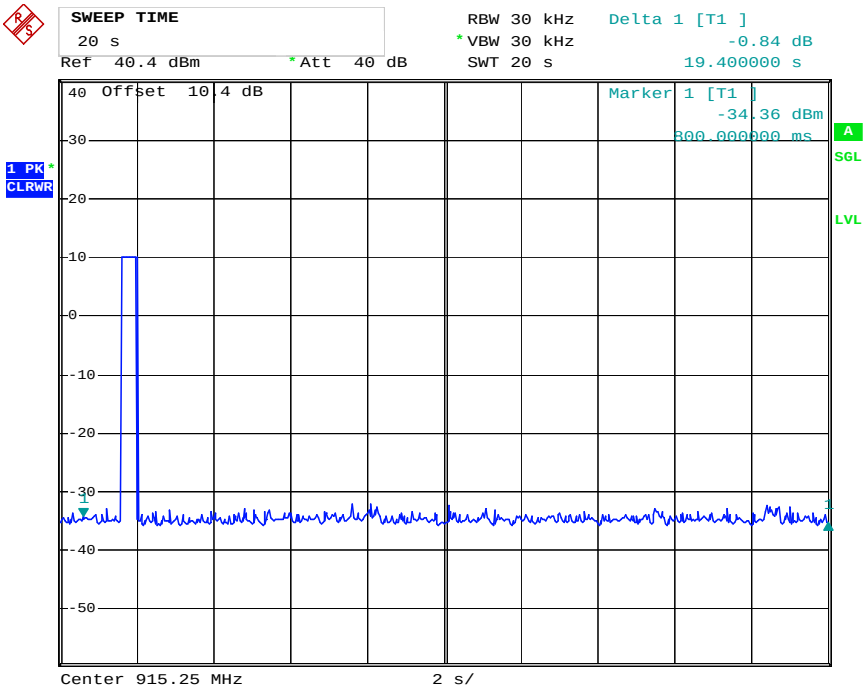
Date: 11.JUN.2009 20:45:34

Single Pulse Plot on Channel 26 / 915.25 MHz



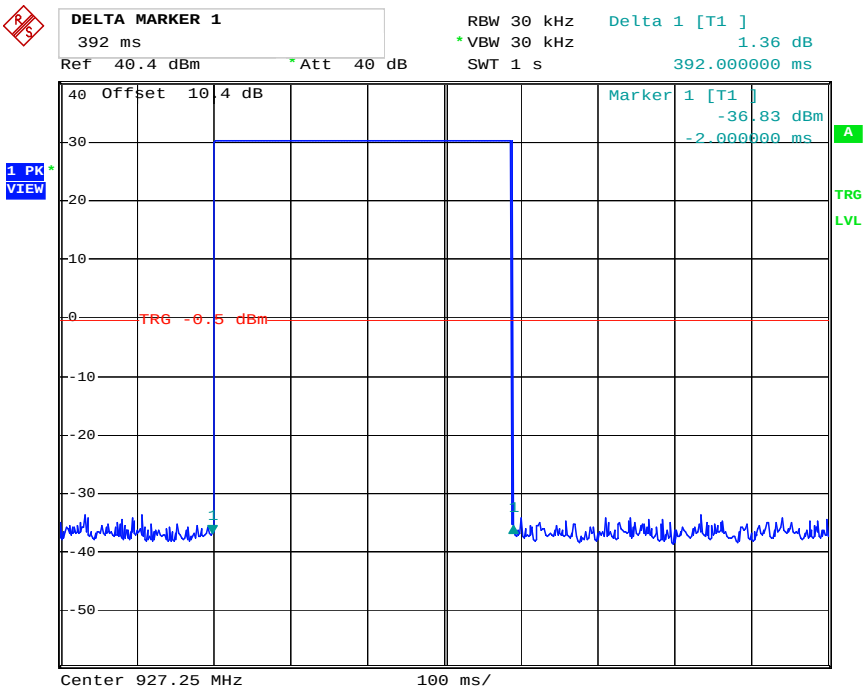
Date: 11.JUN.2009 21:11:30

Number of Pulses Plot on Channel 26 / 915.25 MHz



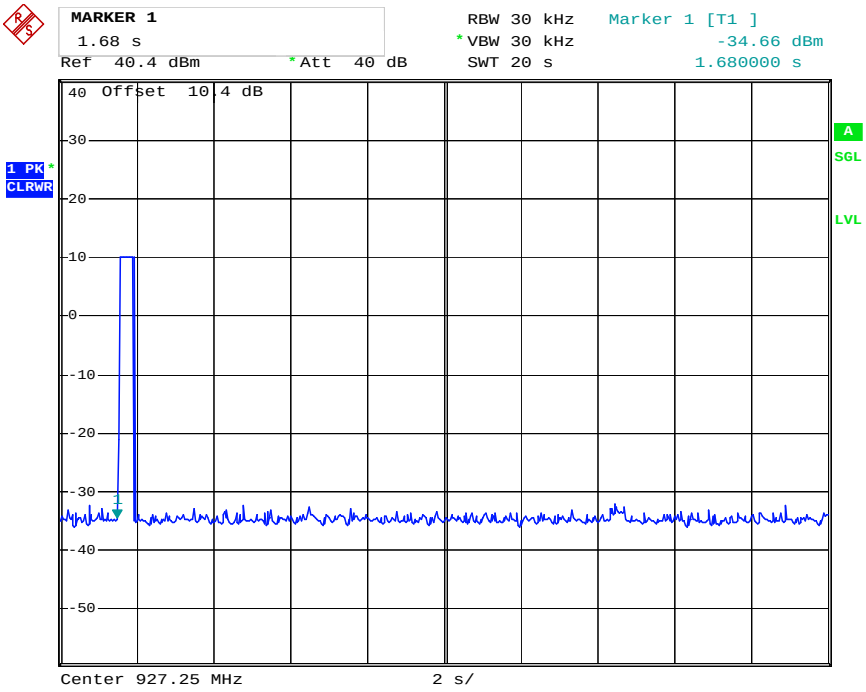
Date: 11.JUN.2009 20:48:49

Single Pulse Plot on Channel 50 / 927.25 MHz



Date: 11.JUN.2009 21:12:15

Number of Pulses Plot on Channel 50 / 927.25 MHz



Date: 11.JUN.2009 20:50:41

3.6. Radiated Emissions Measurement

3.6.1. Limit

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

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

3.6.2. 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 (Emission in non-restricted band)	1000KHz / 1000KHz for peak

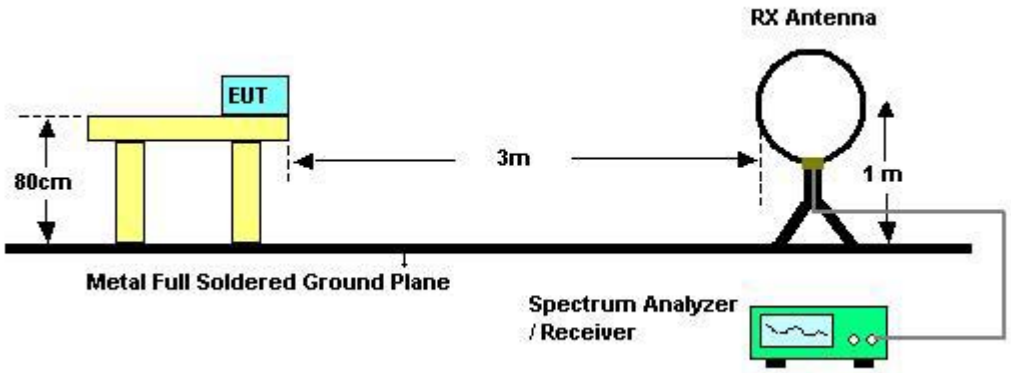
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.6.3. Test Procedures

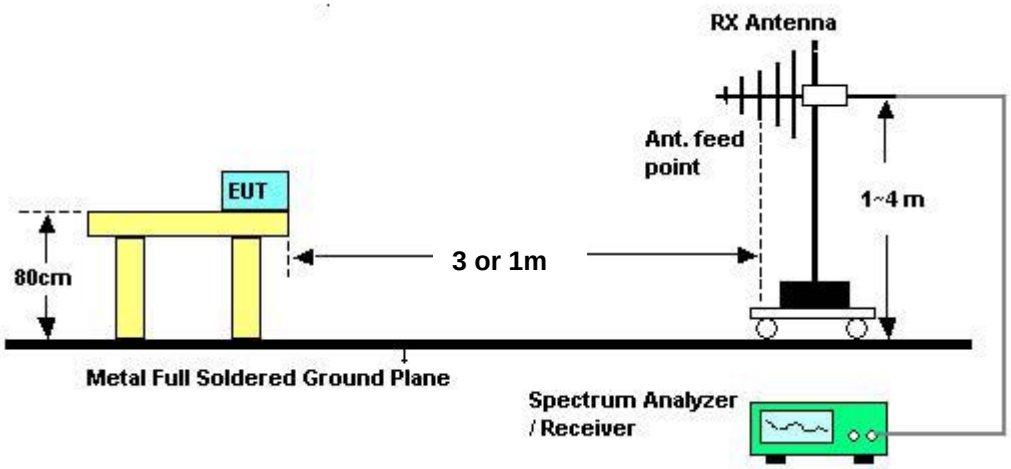
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

3.6.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB);

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

3.6.5. Test Deviation

There is no deviation with the original standard.

3.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Final Test date	Jun. 11, 2009	**Test Site No.**	03CH02-HY
Temperature	25.5℃	**Humidity**	53.7%
Test Engineer	David		

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 20dB below the permissible value has no need to be reported.

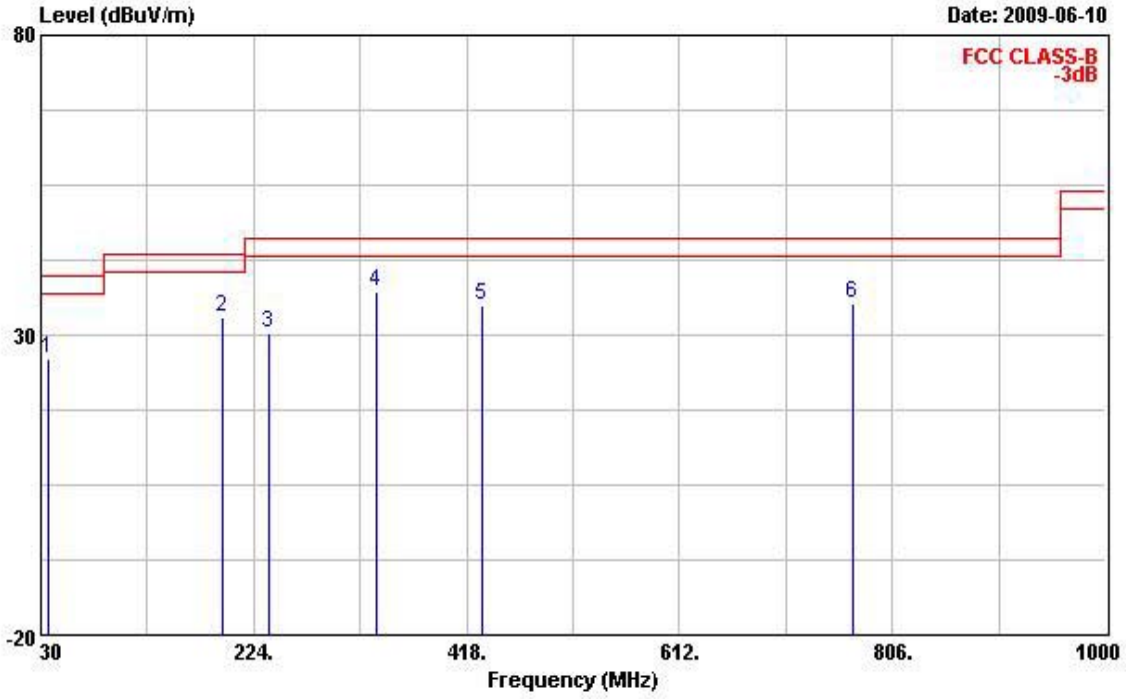
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

3.6.8. Results of Radiated Emissions (30MHz~1GHz)

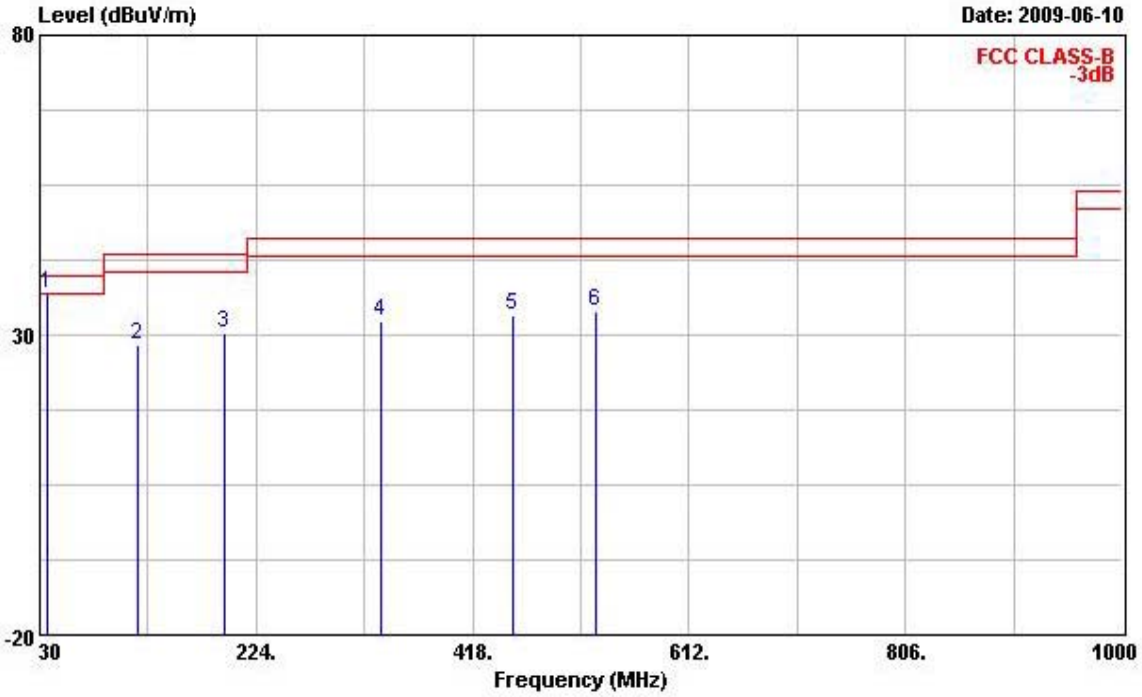
Final Test date	Jun. 10, 2009	**Test Site No.**	03CH02-HY
Temperature	25.5℃	**Humidity**	53.7%
Test Engineer	David	**Configurations**	Adapter Mode

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	36.790	26.10	-13.90	40.00	41.66	13.92	1.37	30.85	---	---	Peak
2	194.900	33.01	-10.49	43.50	49.85	10.99	2.79	30.61	---	---	Peak
3	238.550	30.21	-15.79	46.00	45.11	12.62	3.00	30.52	---	---	Peak
4	335.550	37.35	-8.65	46.00	49.79	14.26	3.63	30.33	---	---	Peak
5	431.580	34.94	-11.06	46.00	45.15	15.90	4.00	30.11	---	---	Peak
6	770.110	35.12	-10.88	46.00	38.94	19.84	5.40	29.06	---	---	Peak

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	36.790	36.85	-3.15	40.00	52.41	13.92	1.37	30.85	---	---	QP
2	118.270	28.40	-15.10	43.50	43.62	13.38	2.16	30.76	---	---	Peak
3	194.900	30.45	-13.05	43.50	47.29	10.99	2.79	30.61	---	---	Peak
4	335.550	32.34	-13.66	46.00	44.78	14.26	3.63	30.33	---	---	Peak
5	454.860	33.42	-12.58	46.00	42.98	16.37	4.10	30.04	---	---	Peak
6	528.580	33.80	-12.20	46.00	41.13	18.10	4.39	29.82	---	---	Peak

Note:

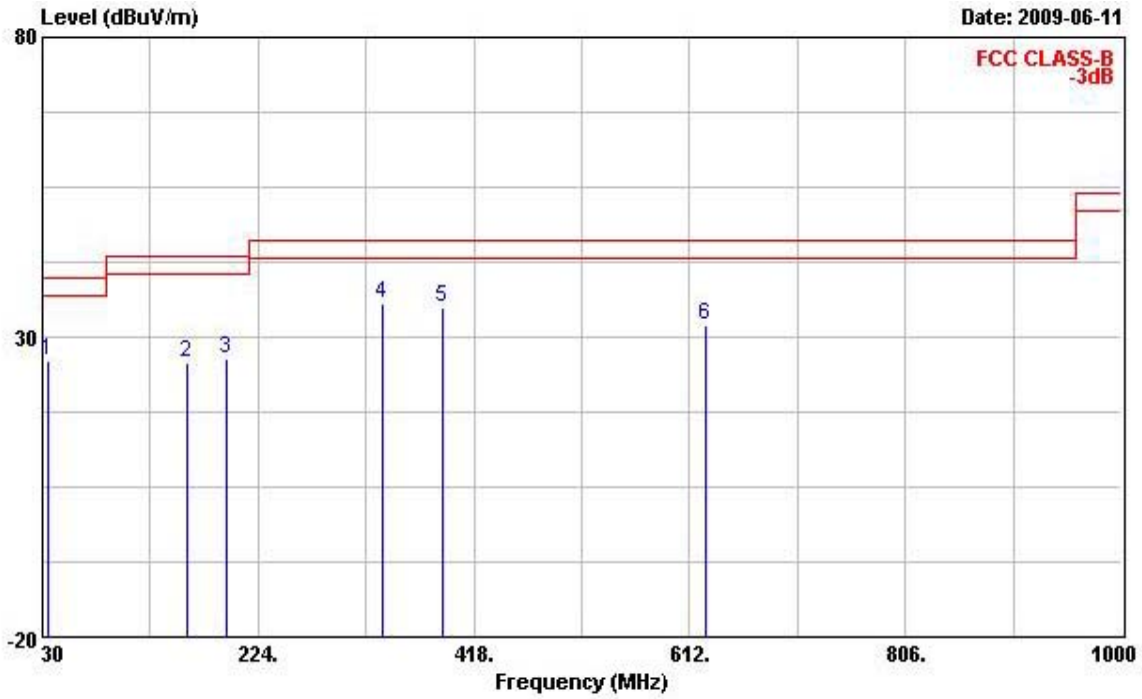
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

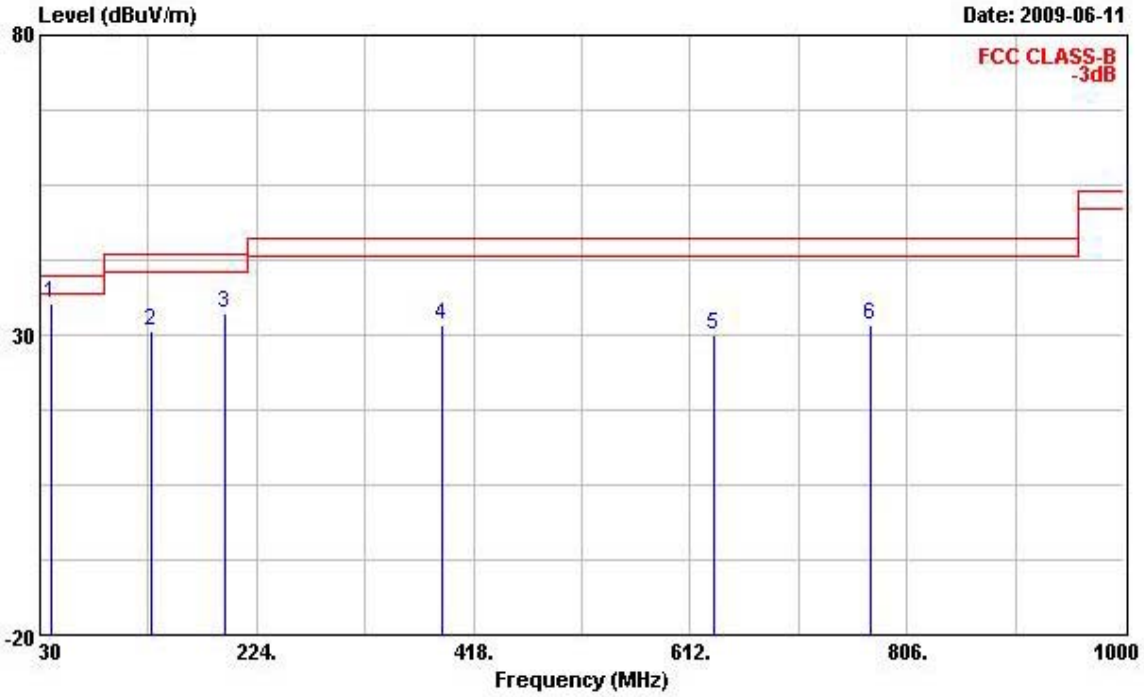
Final Test date	Jun. 11, 2009	Test Site No.	03CH02-HY
Temperature	25.5℃	Humidity	53.7%
Test Engineer	David	Configurations	POE Mode

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	35.820	25.93	-14.07	40.00	41.27	14.15	1.37	30.86	---	---	Peak
2	160.950	25.60	-17.90	43.50	43.21	10.51	2.56	30.68	---	---	Peak
3	194.900	26.49	-17.01	43.50	43.33	10.99	2.79	30.61	---	---	Peak
4	335.550	35.46	-10.54	46.00	47.90	14.26	3.63	30.33	---	---	Peak
5	389.870	35.09	-10.91	46.00	46.36	15.10	3.85	30.22	---	---	Peak
6	626.550	31.90	-14.10	46.00	36.57	19.83	5.00	29.49	---	---	Peak

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	40.670	35.42	-4.58	40.00	51.88	13.01	1.37	30.84	---	---	QP
2	128.940	30.53	-12.97	43.50	46.14	12.87	2.25	30.74	---	---	Peak
3	194.900	33.54	-9.96	43.50	50.38	10.99	2.79	30.61	---	---	Peak
4	389.870	31.64	-14.36	46.00	42.91	15.10	3.85	30.22	---	---	Peak
5	633.340	29.85	-16.15	46.00	34.53	19.74	5.05	29.47	---	---	Peak
6	773.020	31.55	-14.45	46.00	35.31	19.88	5.41	29.05	---	---	Peak

Note:

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

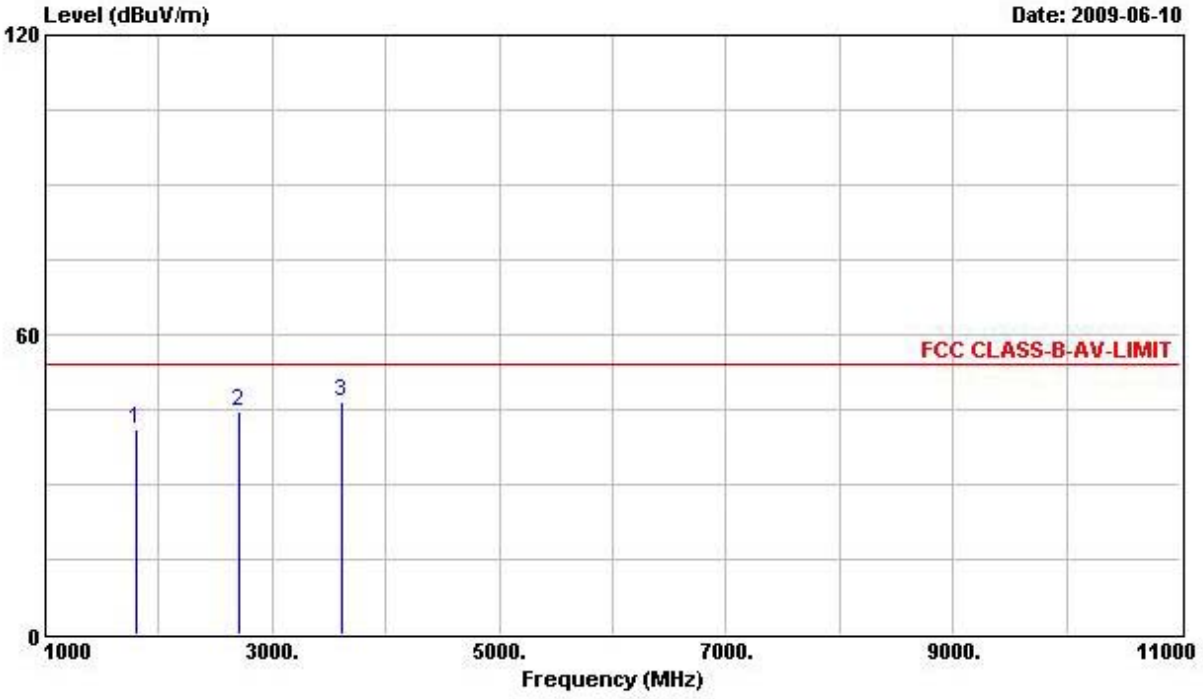
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

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

Final Test date	Jun. 10, 2009	**Test Site No.**	03CH02-HY
Temperature	25.5℃	**Humidity**	53.7%
Test Engineer	David	**Configurations**	Channel 1

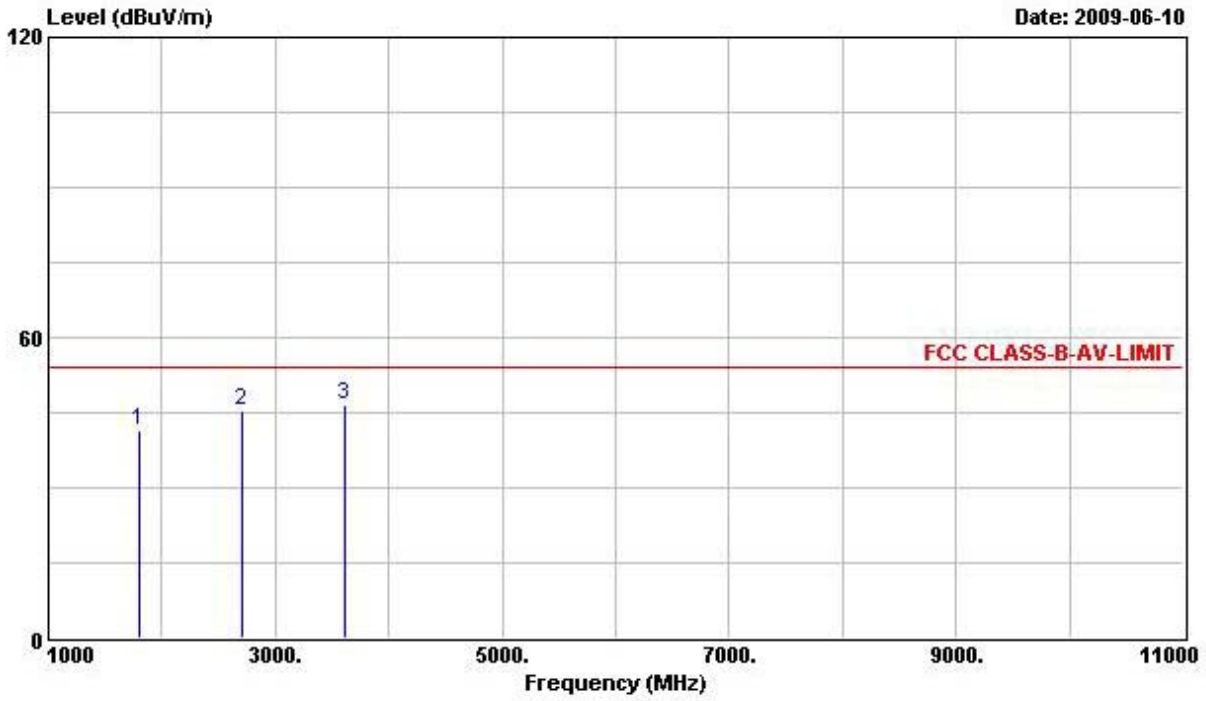
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1804.000	40.93	-13.07	54.00	44.09	29.12	2.56	34.84	---	---	Peak
2	2710.000	44.44	-9.56	54.00	43.52	32.72	3.24	35.04	---	---	Peak
3 @	3608.000	46.73	-7.27	54.00	44.20	33.61	3.92	35.00	---	---	Peak

Note: An item 1 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Vertical

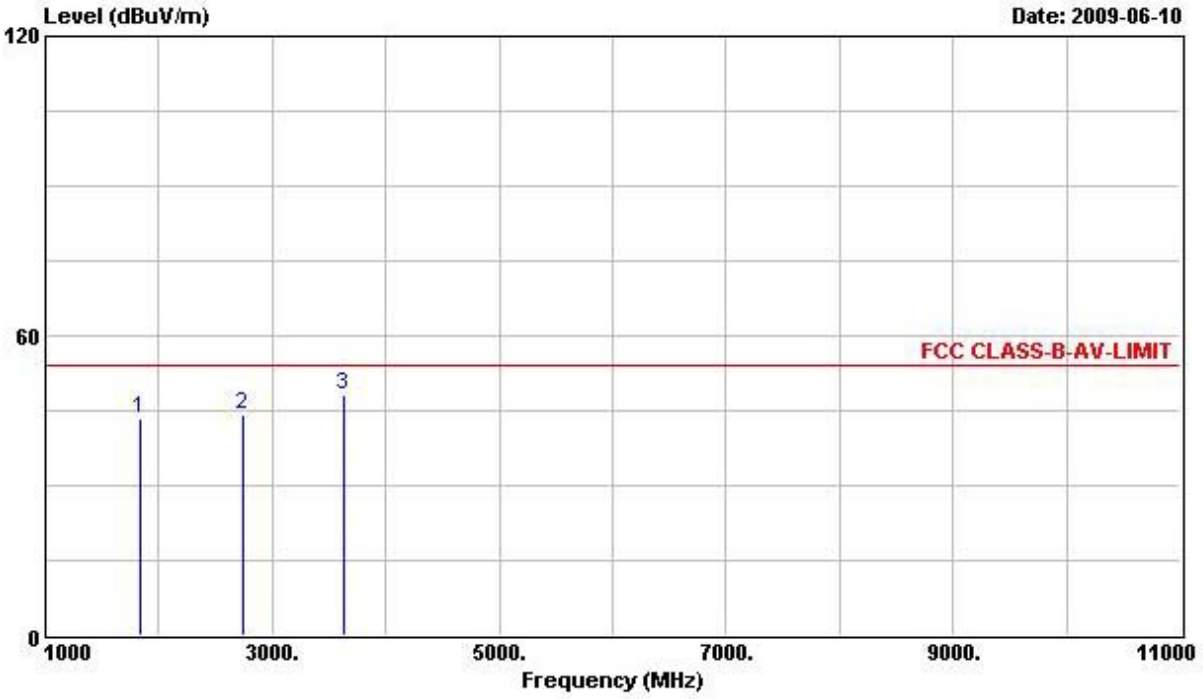


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1808.000	41.55	-12.45	54.00	44.11	29.72	2.56	34.84	---	---	Peak
2	2706.000	45.42	-8.58	54.00	44.51	32.72	3.24	35.04	---	---	Peak
3 @	3612.000	46.70	-7.30	54.00	44.26	33.52	3.92	35.00	---	---	Peak

Note: An item 1 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Final Test date	Jun. 10, 2009	Test Site No.	03CH02-HY
Temperature	25.5℃	Humidity	53.7%
Test Engineer	David	Configurations	Channel 26

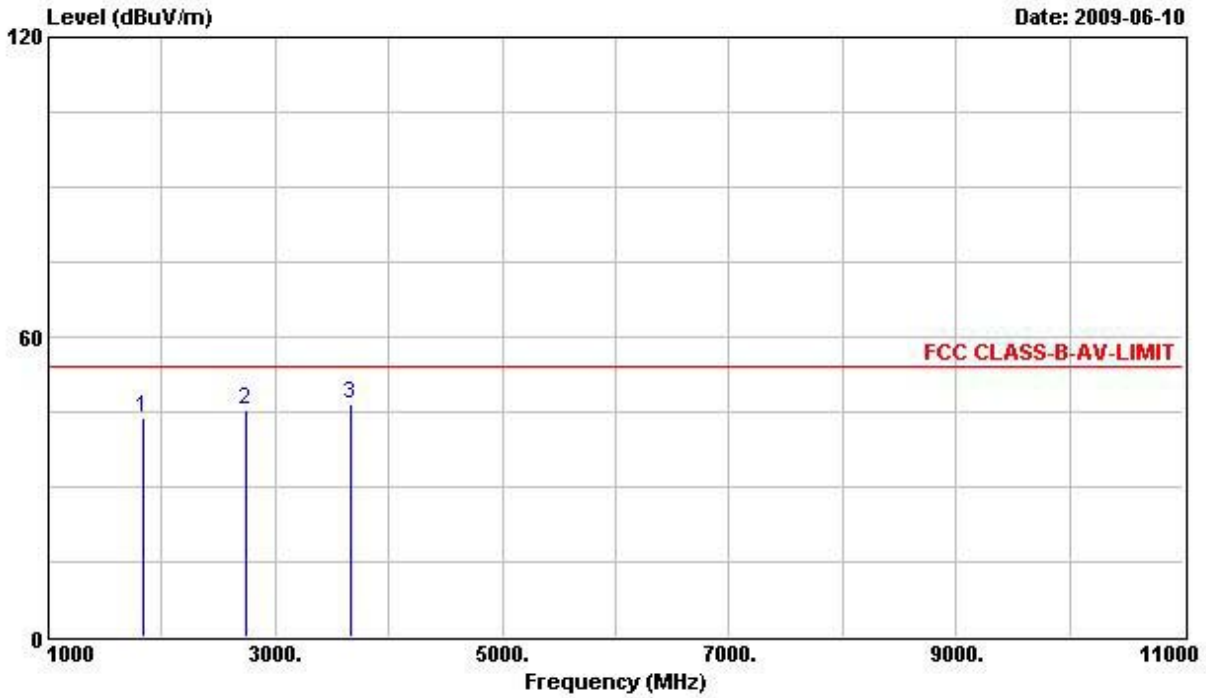
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1830.000	43.35	-10.65	54.00	46.32	29.30	2.56	34.83	---	---	Peak
2	2745.000	44.22	-9.78	54.00	43.20	32.80	3.26	35.05	---	---	Peak
3 @	3638.000	47.99	-6.01	54.00	45.37	33.68	3.94	35.00	---	---	Peak

Note: An item 1 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Vertical

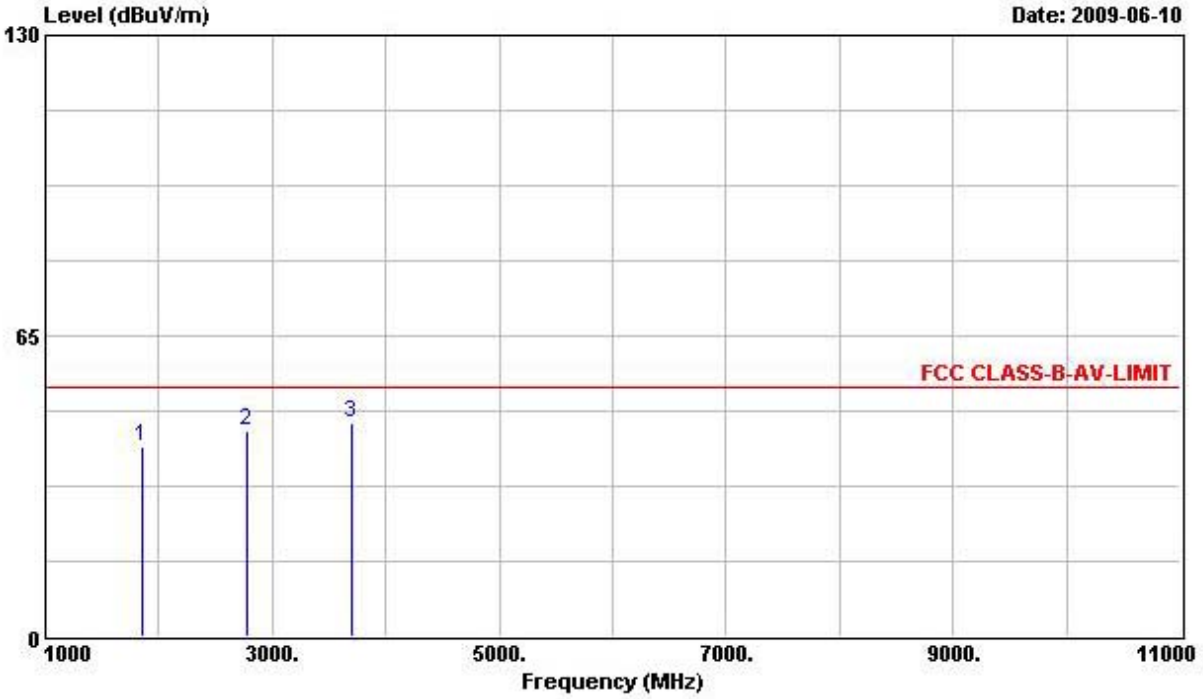


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1830.000	43.94	-10.06	54.00	46.41	29.80	2.56	34.83	---	---	Peak
2	2744.000	45.52	-8.48	54.00	44.50	32.80	3.26	35.05	---	---	Peak
3 @	3660.000	46.68	-7.32	54.00	44.16	33.58	3.94	35.00	---	---	Peak

Note: An item 1 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Final Test date	Jun. 10, 2009	**Test Site No.**	03CH02-HY
Temperature	25.5℃	**Humidity**	53.7%
Test Engineer	David	**Configurations**	Channel 50

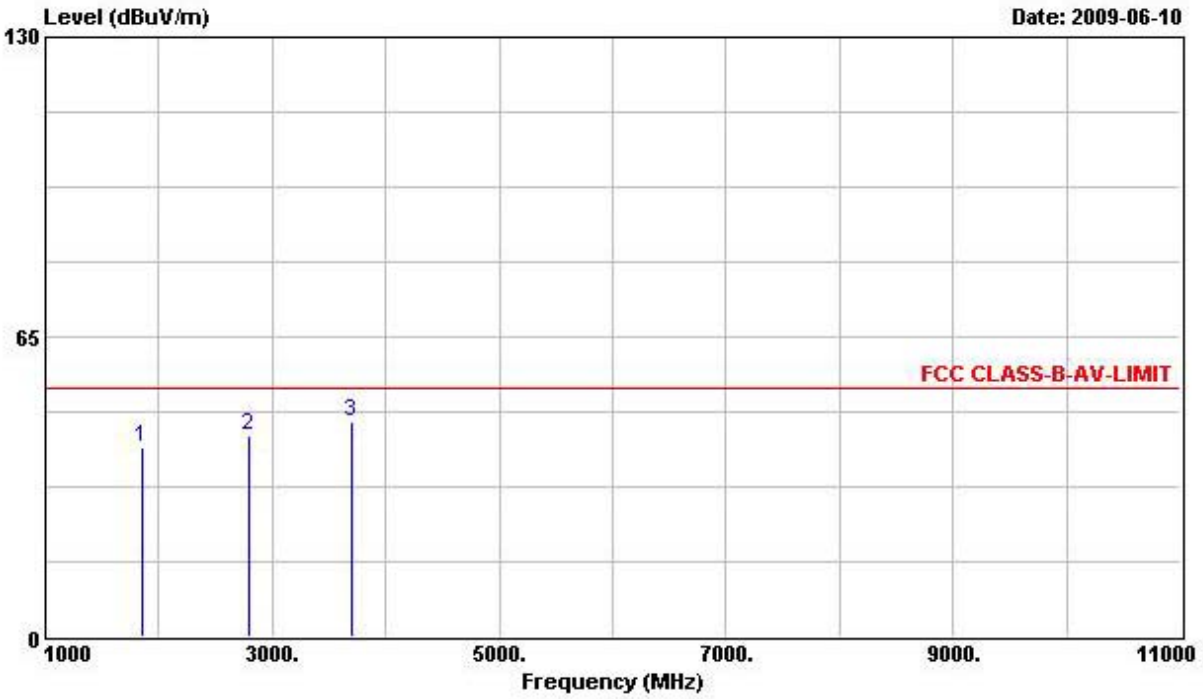
Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1850.000	41.11	-12.89	54.00	43.96	29.39	2.59	34.83	---	---	PEAK
2	2781.000	44.35	-9.65	54.00	43.24	32.88	3.29	35.06	---	---	Peak
3 @	3705.000	46.33	-7.67	54.00	43.55	33.81	3.97	35.00	---	---	Peak

Note: An item 1 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1852.000	40.87	-13.13	54.00	43.23	29.88	2.59	34.83	---	---	PEAK
2	2788.000	43.82	-10.18	54.00	42.73	32.85	3.29	35.06	---	---	Peak
3 @	3705.000	46.46	-7.54	54.00	43.82	33.67	3.97	35.00	---	---	Peak

Note:

An item 1 is on un-restricted band, so the limit is -20dB for the field strength of the fundamental emissions (see section 3.7.7).

The amplitude of spurious emissions which are attenuated by more than 20dB 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.

3.7. Band Edge Emissions Measurement

3.7.1. Limit

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

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

3.7.2. 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 Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

3.7.3. Test Procedures

1. The test procedure is the same as section 3.5.3, only the frequency range investigated is limited to 100MHz around band edges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

3.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 3.6.4.

3.7.5. Test Deviation

There is no deviation with the original standard.

3.7.6. EUT Operation during Test

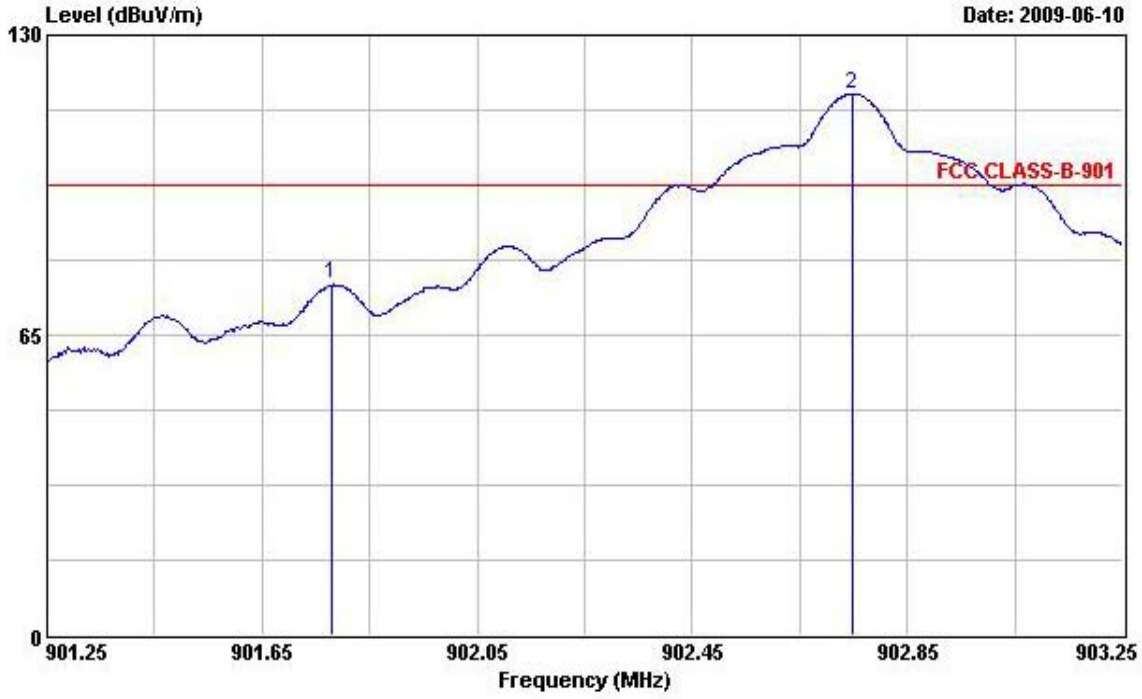
The EUT was programmed to be in continuously transmitting mode.

3.7.7. Test Result of Band Edge and Fundamental Emissions

Final Test date	Jun. 10, 2009	**Test Site No.**	03CH02-HY
Temperature	25.5℃	**Humidity**	53.7%
Test Engineer	David	**Configurations**	Channel 1, 26, 50

Vertical

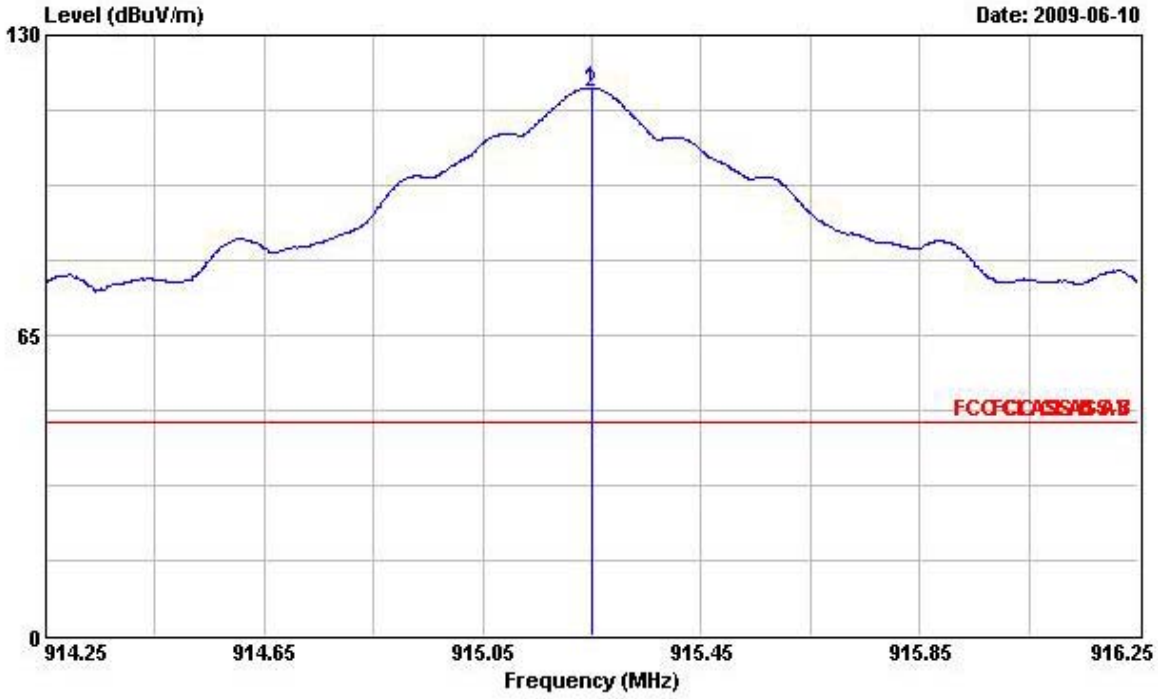
Channel 1



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	901.780	75.93	-21.41	97.34	78.60	20.08	5.94	28.69	---	---	Peak
2 @	902.750	117.34			119.98	20.10	5.95	28.69	---	---	Peak

Vertical

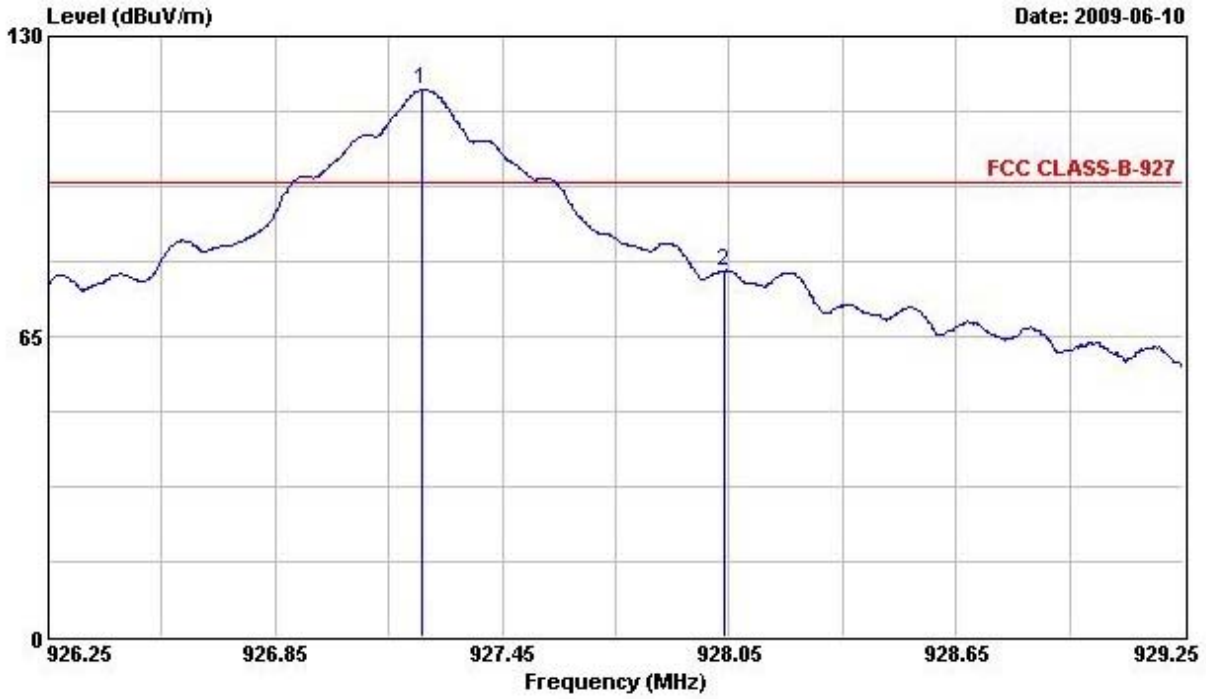
Channel 26



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	915.250	118.64	-----	-----	120.88	20.41	5.99	28.64	---	---	Peak

Vertical

Channel 50



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	927.240	118.39			120.26	20.70	6.02	28.59	---	---	Peak
2	928.040	79.29	-19.10	98.39	81.13	20.73	6.02	28.59	---	---	Peak

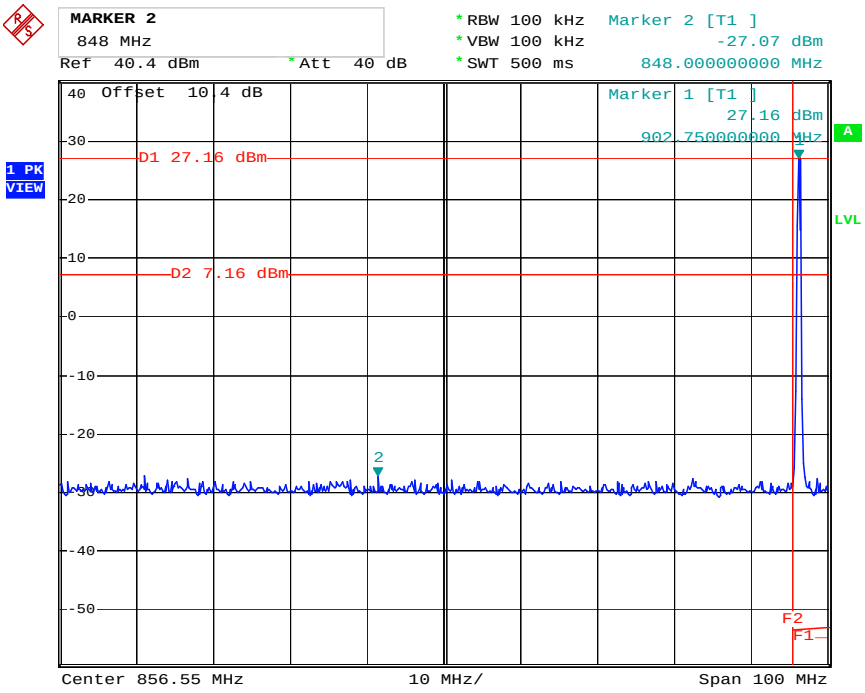
Note:

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

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

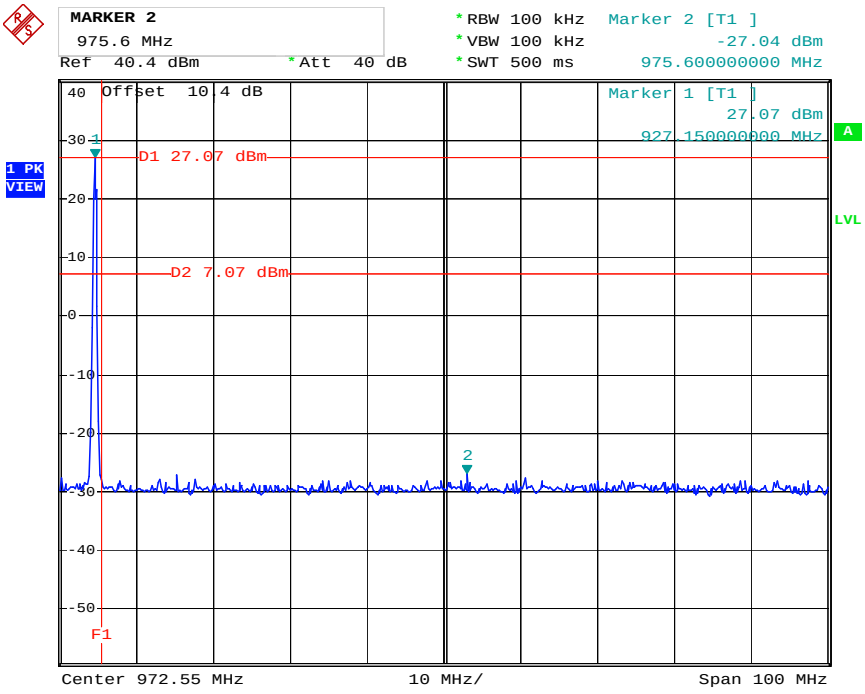
For Emission not in Restricted Band

Low Band Edge Plot on Channel 1 / 902.75 MHz



Date: 11.JUN.2009 20:01:45

High Band Edge Plot on Channel 50 / 927.25 MHz



Date: 11.JUN.2009 19:59:28

3.8. Antenna Requirements

3.8.1. 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.

3.8.2. Antenna Connector Construction

Please refer to section 2.3 in this test report; antenna connector complied with the requirements.

4. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Apr. 15, 2009	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Mar. 23, 2009	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Mar. 22, 2009	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2009	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSU26.5	100015	20Hz ~ 26.5GHz	Oct. 29, 2008	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100444	DC ~ 40GHz	Jul. 11, 2008	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100458	DC ~ 30GHz	Jul. 11, 2008	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jul. 11, 2008	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 13, 2009	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	N/A	Jul. 18, 2008	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 01, 2008	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 01, 2008	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Dec. 14, 2008	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 25, 2009	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	May 30, 2009*	Conducted (TH01-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30 MHz - 1 GHz 3m	May 11, 2009	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100 kHz – 1.3 GHz	Jul. 11, 2008	Radiation (03CH02-HY)
Spectrum Analyzer	R&S	FSP40	100305/040	9 kHz - 40GHz	Feb. 04, 2009	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30 MHz - 2 GHz	Nov. 30, 2008	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)
RF Cable-R03m	Jye Bao	RG142	CB020	30 MHz - 1 GHz	Dec. 17, 2008	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02373	1GHz – 26.5 GHz	Jul. 16, 2008	Radiation (03CH02-HY)
Horn Antenna	ETS-LINDGREN	3117	00091920	1GHz~18GHz	Oct. 22, 2008	Radiation (03CH02-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX106	03CH02-HY	1GHz~40GHz	Dec. 17, 2008	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 28, 2008*	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, Taiwan 221, 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 Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	: 886-2-2601-1640
	FAX	: 886-2-2601-1695
DUNGHU	ADD	: No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	: 886-2-2631-4739
	FAX	: 886-2-2631-9740
JUNGHE	ADD	: 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	: 886-2-8227-2020
	FAX	: 886-2-8227-2626
NEIHU	ADD	: 4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	: 886-2-2794-8886
	FAX	: 886-2-2794-9777
JHUBEI	ADD	: No.8, Lane 728, 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. : L1190-081212

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, 2007 to January 09, 2010
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 Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : December 12, 2008

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