

FCC RADIO TEST REPORT

according to

47 CFR FCC Part 15 Subpart E § 15.407

Equipment : MelodyWing SP
Model No. : SST18SC03
Brand Name : SST
Filing Type : New Application
Applicant : Silicon Storage Technology, Inc.
16F-6, No. 75, Sec. 1, Sintai 5th Rd., Sijhih City, Taipei County
22101
FCC ID : VN8SST18SC03A
Manufacturer : Silicon Storage Technology, Inc.
16F-6, No. 75, Sec. 1, Sintai 5th Rd., Sijhih City, Taipei County
22101
Received Date : Sep. 15, 2008
Final Test Date : Oct. 27, 2008

Statement

Test result included is only for the 5G Band 5150 ~ 5250MHz 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 E**.

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



SPORTON International Inc.

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

Table of Contents

1 SUMMARY OF THE TEST RESULT	2
2 GENERAL INFORMATION.....	3
2.1 Product Details	3
2.2 Table for Filed Antenna	3
2.3 Table for Carrier Frequencies	3
2.4 Table for Test Modes	4
2.5 Table for Testing Locations	4
2.6 Table for Supporting Units.....	4
2.7 Table for Parameters of Test Software Setting	5
2.8 EUT Operation during Test	5
2.9 Test Configuration	6
3 TEST RESULT	8
3.1 AC Power Line Conducted Emissions Measurement.....	8
3.2 99% Occupied Bandwidth Measurement	12
3.3 Maximum Conducted Output Power Measurement	16
3.4 Power Spectral Density Measurement.....	20
3.5 Peak Excursion Measurement	24
3.6 Radiated Emissions Measurement.....	28
3.7 Band Edge and Fundamental Emissions Measurement	56
3.8 Frequency Stability Measurement.....	60
3.9 Antenna Requirements.....	62
4 LIST OF MEASURING EQUIPMENTS	63
5 TEST LOCATION.....	65
6 TAF CERTIFICATE OF ACCREDITATION	66
APPENDIX A. MAXIMUM PERMISSIBLE EXPOSURE.....	A1 ~ A3
APPENDIX B. TEST PHOTOS	B1 ~ B15
APPENDIX C. PHOTOGRAPHS OF EUT	C1 ~ C13

History of This Test Report

Original Issue Date: Oct. 30, 2008

Report No.: FR891209AA

- No additional attachment.
- Additional attachment were issued as following record:

CERTIFICATE OF COMPLIANCE

according to

47 CFR FCC Part 15 Subpart E § 15.407

Equipment : MelodyWing SP

Model No. : SST18SC03

Brand Name : SST

Applicant : Silicon Storage Technology, Inc.
16F-6, No. 75, Sec. 1, Sintai 5th Rd., Sijhih
City, Taipei County 22101

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Sep. 15, 2008 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 3.11.08

Wayne Hsu

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 E				
Part	Rule Section	Description of Test	Result	Under Limit
3.1	15.207	AC Power Line Conducted Emissions	Complies	3.45 dB
3.2	15.407(a)	26dB Spectrum Bandwidth	Complies	-
3.3	15.407(a)	Maximum Conducted Output Power	Complies	5.10 dB
3.4	15.407(a)	Power Spectral Density	Complies	0.76 dB
3.5	15.407(a)	Peak Excursion	Complies	10.18 dB
3.6	15.407(b)	Radiated Emissions	Complies	2.57 dB
3.7	15.407(b)	Band Edge Emissions	Complies	8.66 dB
3.8	15.407(g)	Frequency Stability	Complies	-
3.9	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Conducted Output Power	±0.5dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
Peak Excursion	±0.5dB	Confidence levels of 95%
26dB Spectrum Bandwidth / Frequency Stability	±8.5×10 ⁻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 5G band 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	5V DC Power
Data Modulation	DSSS (CCK)
Data Rate (Mbps)	DSSS (11)
Frequency Range	5150 ~ 5250MHz
Channel Number	4
Channel Band Width (99%)	10.24 MHz
Conducted Output Power	11.90 dBm

2.2 Table for Filed Antenna

Ant.	Antenna Type	Connector	For 2.4G Ant. Gain (dBi)	For 5G Ant. Gain (dBi)
1	Dipole Ant. (Black)	I-PEX	5.20	3.30
2	Dipole Ant. (White)	I-PEX	2.00	2.00
3	Chip Ant.	I-PEX	1.93	3.56

Note: EUT has the TX diversity function for the dipole (1), (2) and chip (3) antenna. Investigation has been done on the entire possible Configuration for TX diversity function.

2.3 Table for Carrier Frequencies

Frequency Allocation

Frequency Band	Channel No.	Frequency
5150~5250 MHz Band 1	36	5170 MHz
	40	5190 MHz
	44	5210 MHz
	48	5230 MHz

2.4 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 Configuration for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
AC Power Conducted Emission	Adapter Mode	Auto	-
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Max. Conducted Output Power Power Spectral Density Peak Excursion	Band 1/CCK	11Mbps	36/40/48
Radiated Emission Below 1GHz	See the Note	Auto	-
Radiated Emission Above 1GHz Band Edge Emission	Band 1/CCK	11Mbps	36/40/48
Band Edge and Fundamental Emission	Band 1/CCK	11Mbps	36/48
Frequency Stability	Un-modulation	-	36

Note: The Radiated Emissions tested is following dipole (1), (2) and chip (3) antenna modes were tested.

2.5 Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH02-HY	SAC	Hwa Ya	101377	IC 4086B-1	-
CO01-HY	Conduction	Hwa Ya	101377	IC 4086B-1	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

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

2.6 Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D400	DoC
MelodyWing SP (Remote Workstation)	SST	SST18SC03	N/A
AP (Remote Workstation)	D-Link	DNS-G120	DoC
Test Fixture	-	-	-

2.7 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 5G Band

Test Software Version	Terminal V1.9b		
Frequency	5170MHz	5190MHz	5230MHz
5G Band	Default	Default	Default

2.8 EUT Operation during Test

<Conduction>

During the test, the following programs under WIN XP were executed:

Executed "ping.exe" to link with the remote workstation to receive and transmit data by LAN and WLAN.

<Radiation>

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:

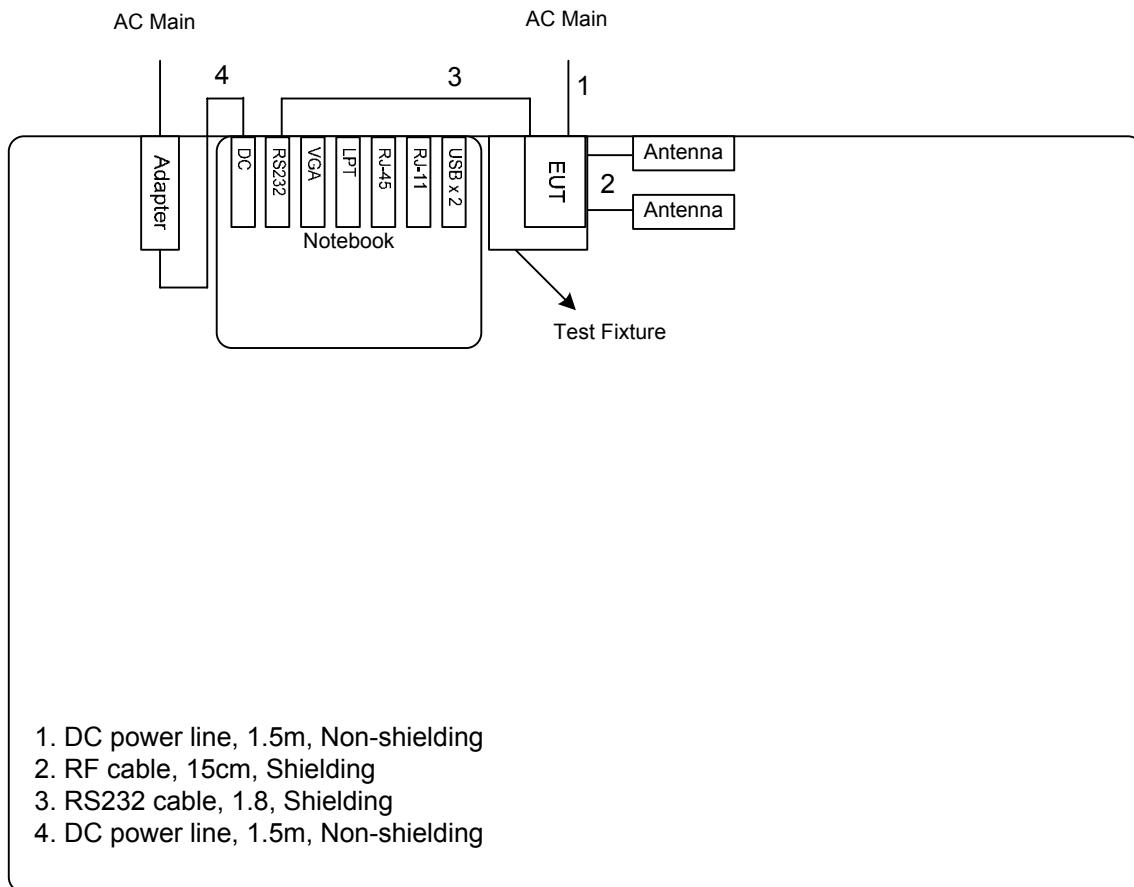
The NB sends "H" messages to the panel, and the panel displays "H" patterns on the screen.

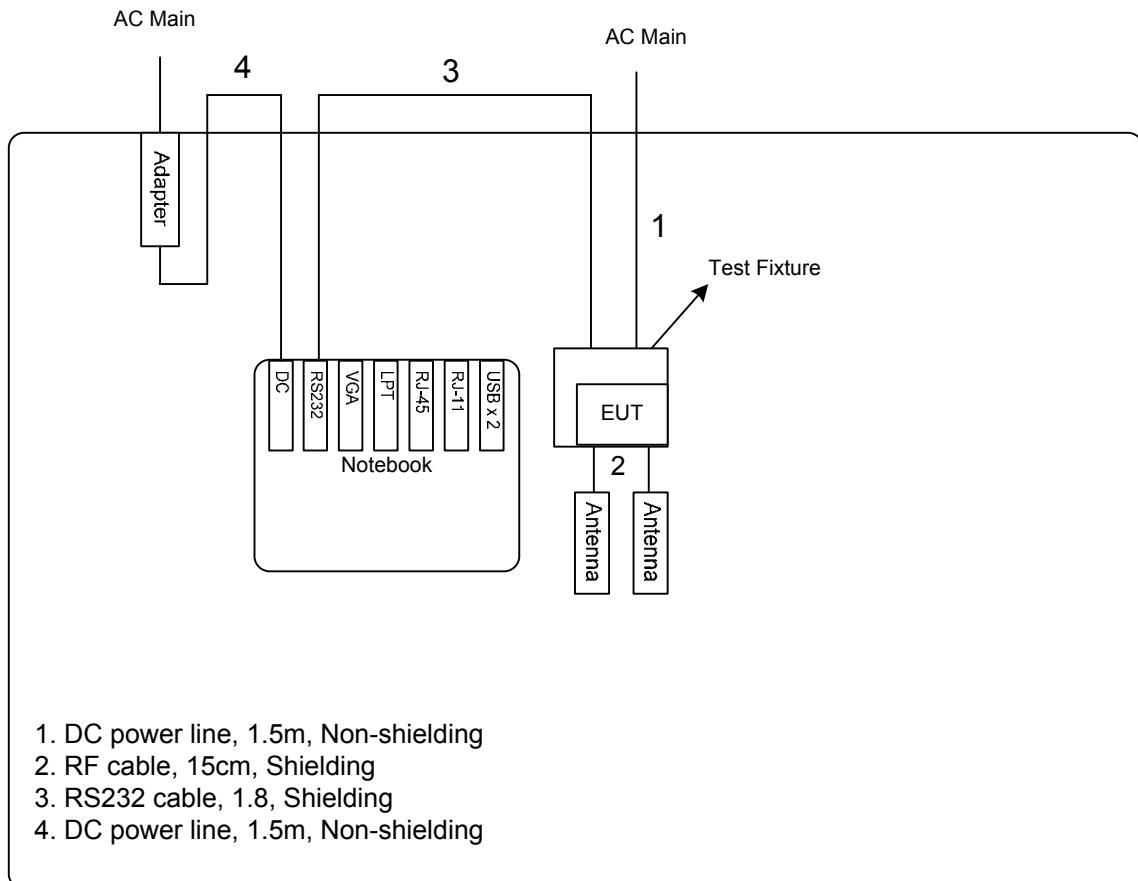
Executed "Terminal V1.9b" to link with the EUT to receive and transmit data by WLAN.

2.9 Test Configuration

2.9.1 Radiation Emissions Test Configuration

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 this product that is designed to connect 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 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

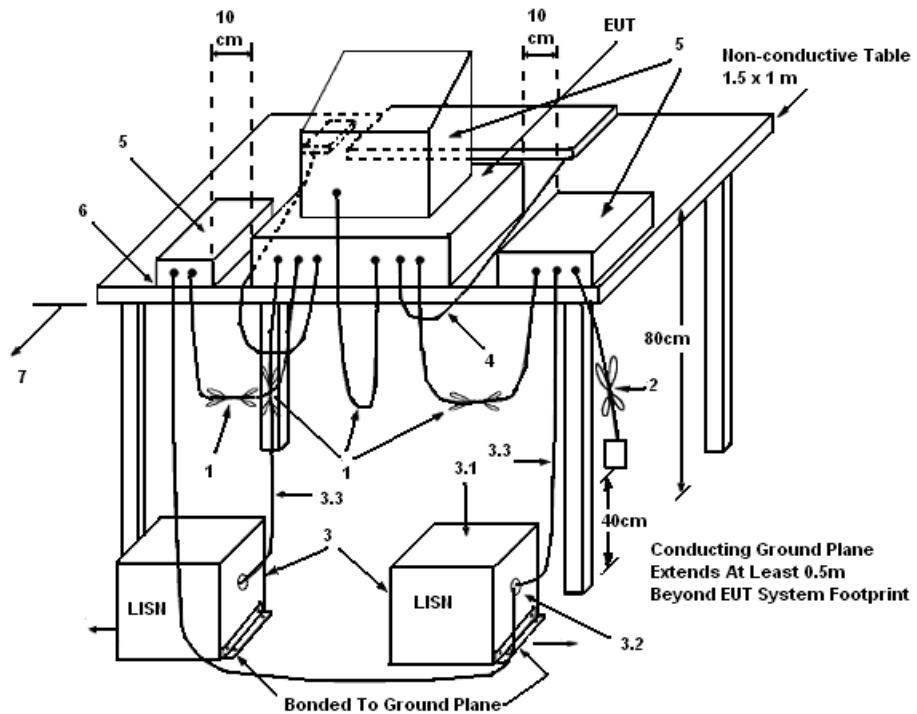
Please refer to section 4 of equipments list in this report. The following table is the setting of the receiver.

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 50Ω . 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

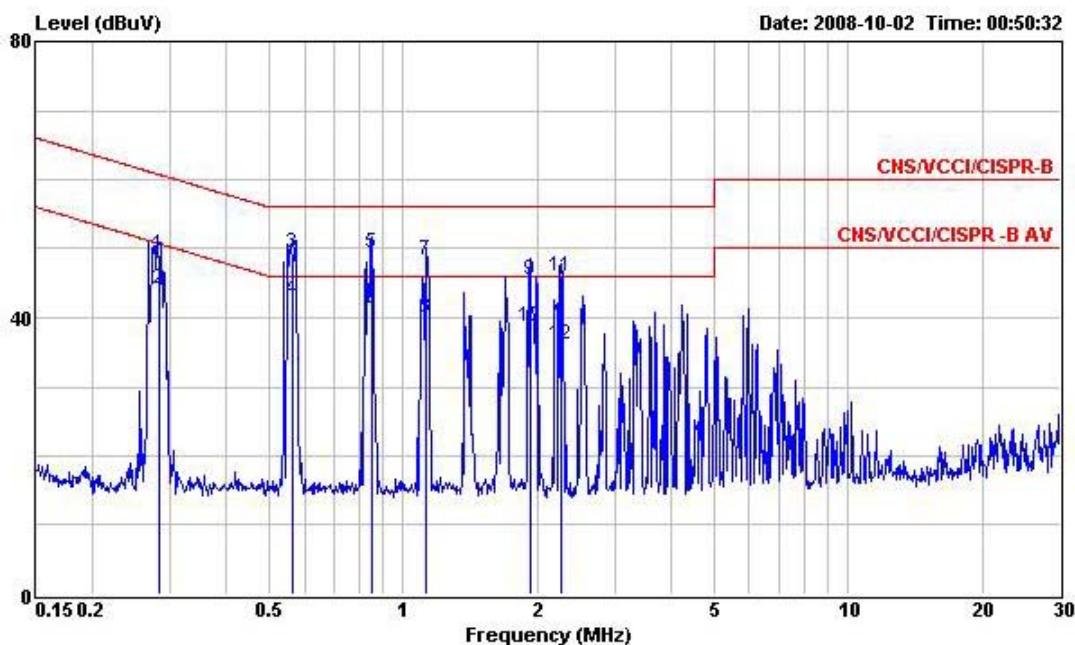
There is no deviation with the original standard.

3.1.6 EUT Operation during Test

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

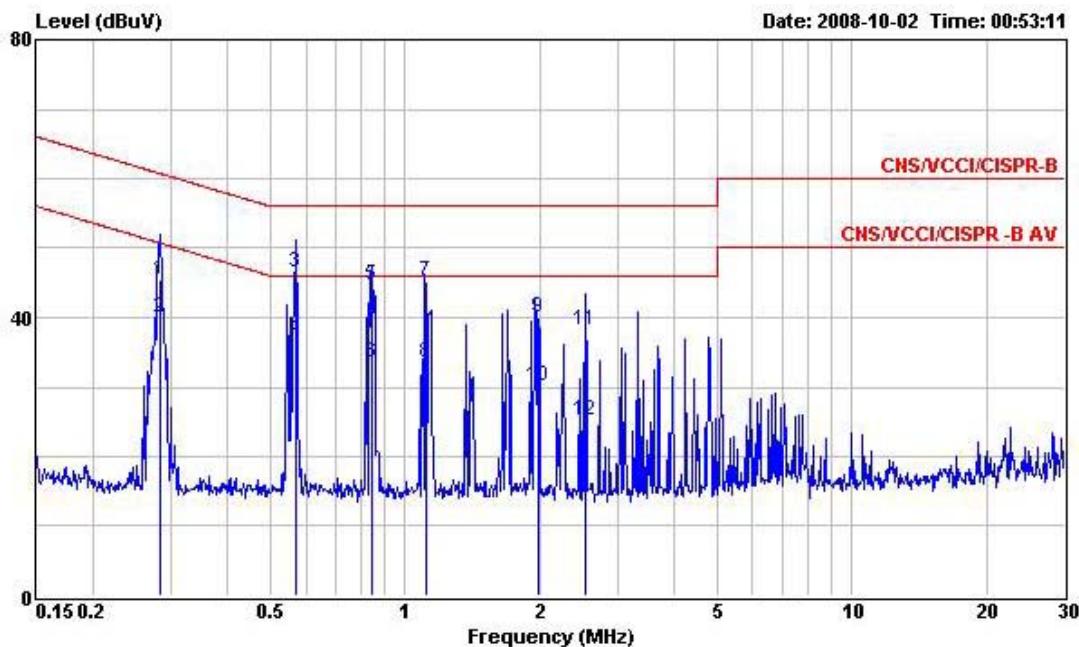
3.1.7 Results of AC Power Line Conducted Emissions Measurement

Test date	Oct. 02, 2008	Test Site No.	CO01-HY
Temperature	23	Humidity	63%
Test Engineer	Steven	Phase	Line
Configuration	Adapter Mode		



Freq	Level	Over Limit	Limit	Read		Cable	Loss	Remark
				Line	Level Factor			
1	0.283	49.22	-11.51	60.73	49.06	0.09	0.07	QP
2	0.283	44.03	-6.70	50.73	43.87	0.09	0.07	Average
3	0.563	49.24	-6.76	56.00	49.07	0.10	0.07	QP
4	0.563	42.54	-3.46	46.00	42.37	0.10	0.07	Average
5	0.848	49.46	-6.54	56.00	49.26	0.11	0.09	QP
6	0.848	41.27	-4.73	46.00	41.07	0.11	0.09	Average
7	1.130	48.22	-7.78	56.00	47.99	0.12	0.11	QP
8	1.130	39.93	-6.07	46.00	39.70	0.12	0.11	Average
9	1.930	45.48	-10.52	56.00	45.18	0.14	0.16	QP
10	1.930	38.81	-7.19	46.00	38.51	0.14	0.16	Average
11	2.260	45.88	-10.12	56.00	45.58	0.15	0.15	QP
12	2.260	36.06	-9.94	46.00	35.76	0.15	0.15	Average

Test date	Oct. 02, 2008	Test Site No.	CO01-HY
Temperature	23	Humidity	63%
Test Engineer	Steven	Phase	Neutral
Configuration	Adapter Mode		



Freq	Level	Over Limit	Limit	Read		Cable	Remark
				Line	Level		
MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.282	45.37	-15.39	60.76	45.22	0.07	0.08 QP
2	0.282	39.98	-10.78	50.76	39.83	0.07	0.08 Average
3	0.567	46.51	-9.49	56.00	46.35	0.08	0.08 QP
4	0.567	36.85	-9.15	46.00	36.69	0.08	0.08 Average
5	0.844	44.68	-11.32	56.00	44.50	0.09	0.09 QP
6	0.844	33.48	-12.52	46.00	33.30	0.09	0.09 Average
7	1.110	45.14	-10.86	56.00	44.94	0.09	0.11 QP
8	1.110	33.42	-12.58	46.00	33.22	0.09	0.11 Average
9	1.980	40.13	-15.87	56.00	39.86	0.11	0.16 QP
10	1.980	30.13	-15.87	46.00	29.86	0.11	0.16 Average
11	2.540	38.18	-17.82	56.00	37.91	0.12	0.15 QP
12	2.540	25.32	-20.68	46.00	25.05	0.12	0.15 Average

Note:

Level = Read Level + LISN Factor + Cable Loss.

3.2 99% Occupied Bandwidth Measurement

3.2.1 Limit

No restriction limits. But resolution bandwidth within band edge measurement is 1% of the 99% occupied bandwidth.

3.2.2 Measuring Instruments and Setting

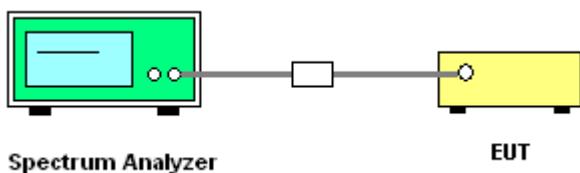
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RB	300 kHz
VB	1000 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.2.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 300 kHz and the video bandwidth of 1000 kHz were used.
3. Measured the spectrum width with power higher than 26dB below carrier.

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.

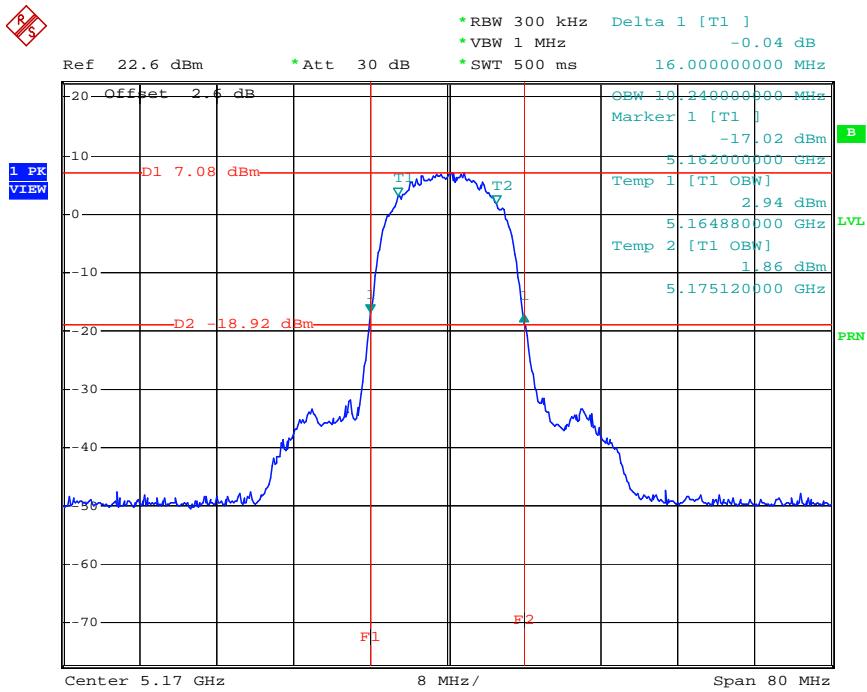
3.2.7 Test Result of 99% Occupied Bandwidth

Test date	Oct. 27, 2008	Test Site No.	TH01-HY
Temperature	28	Humidity	58%
Test Engineer	Tom	Configuration	5G Band

Configuration

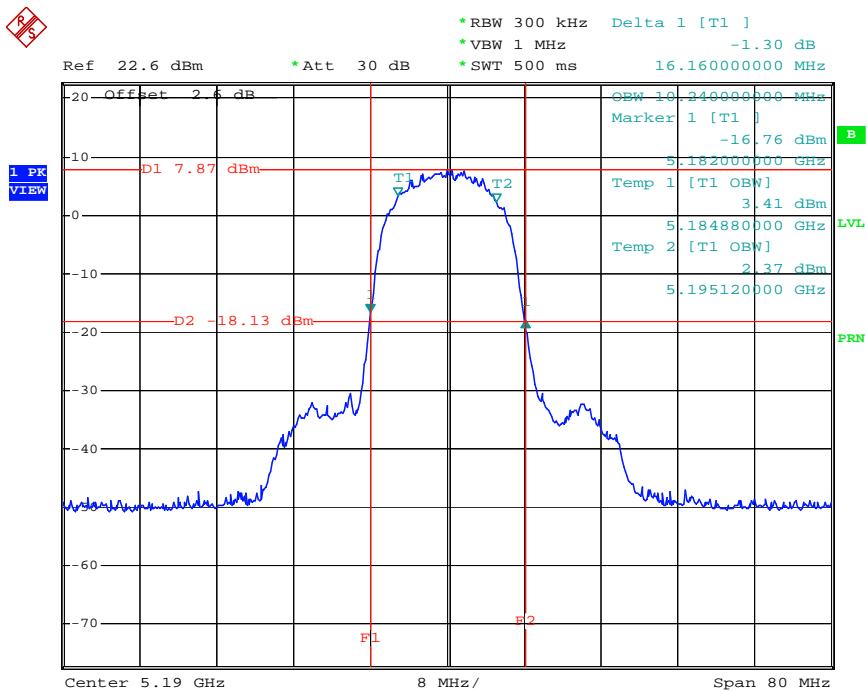
Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5170MHz	16.00	10.24
5190MHz	16.16	10.24
5230 MHz	16.00	10.24

26 dB Bandwidth Plot on Configuration 5170MHz



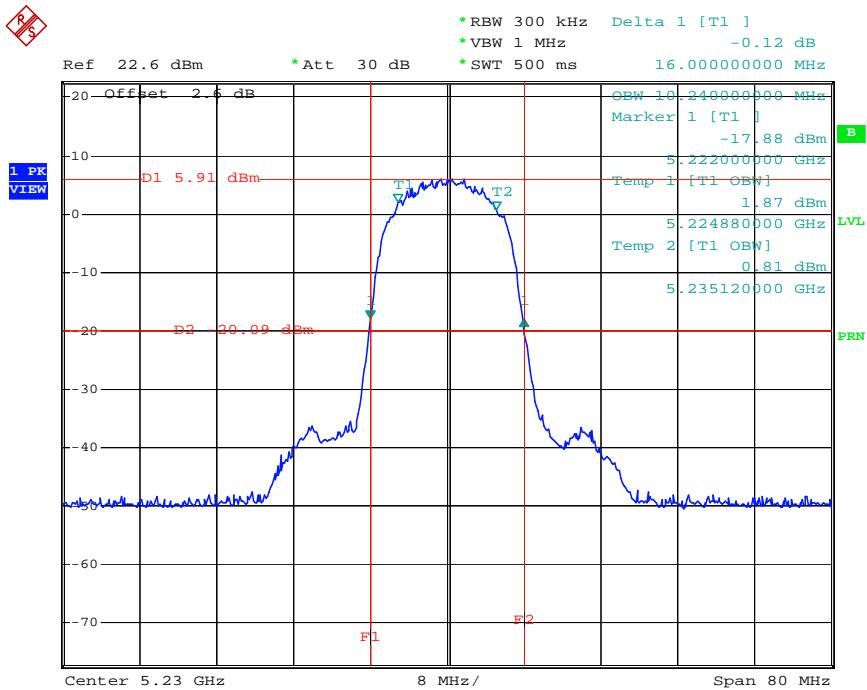
Date: 27.OCT.2008 17:29:47

26 dB Bandwidth Plot on Configuration 5190MHz



Date: 27.OCT.2008 16:49:27

26 dB Bandwidth Plot on Configuration 5230 MHz



Date: 27.OCT.2008 17:08:38

3.3 Maximum Conducted Output Power Measurement

3.3.1 Limit

For the band 5.15~5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B, where B is the 26 dB emissions bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power and power density from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments and Setting

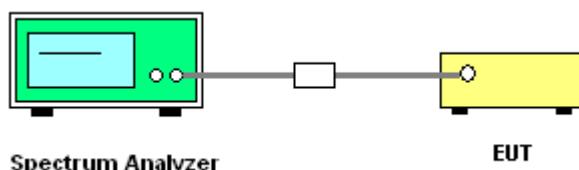
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	300 kHz
Detector	Sample
Trace	Max Hold
Sweep Time	60s

3.3.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with method #3 of FCC Public Notice DA-02-2138.

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.

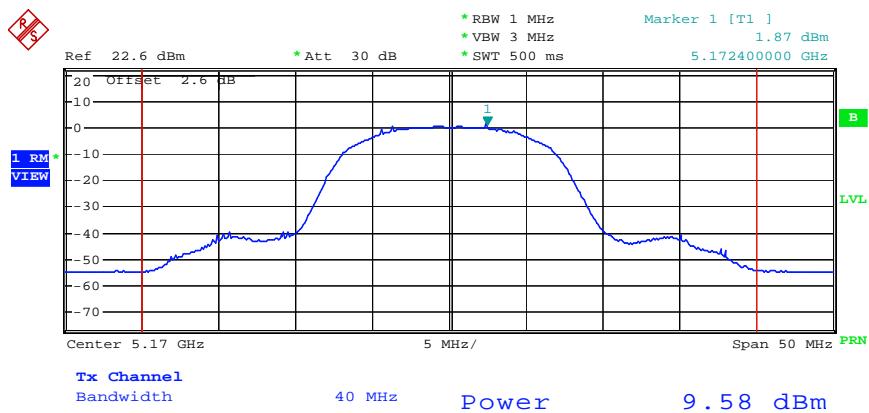
3.3.7 Test Result of Maximum Conducted Output Power

Test date	Oct. 27, 2008	Test Site No.	TH01-HY
Temperature	28	Humidity	58%
Test Engineer	Tom	Configuration	5G Band

Configuration

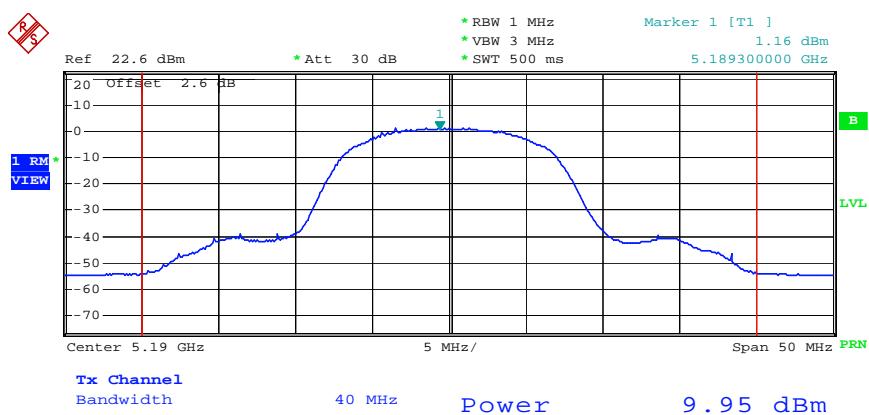
Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
5170MHz	9.58	17.00	Complies
5190MHz	9.95	17.00	Complies
5230 MHz	11.90	17.00	Complies

Channel Output Power Plot on Configuration 5170MHz



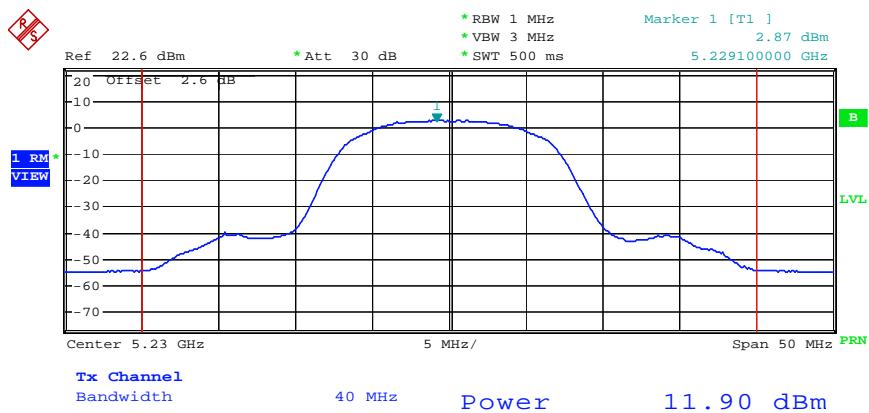
Date: 27.OCT.2008 15:47:18

Channel Output Power Plot on Configuration 5190MHz



Date: 27.OCT.2008 16:44:22

Channel Output Power Plot on Configuration 5230 MHz



Date: 27.OCT.2008 17:04:57

3.4 Power Spectral Density Measurement

3.4.1 Limit

The power spectral density is defined as the highest level of power in dBm per MHz generated by the transmitter within the power envelope. The following table is power spectral density limits and decrease power density limit rule refer to section 3.3.1.

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.15~5.25 GHz	4
5.25-5.35 GHz	11
5.725-5.825	17

3.4.2 Measuring Instruments and Setting

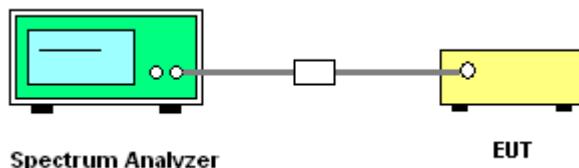
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	Sample
Trace	Average
Sweep Time	Auto

3.4.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 1000 kHz and VBW to 3000 kHz. Set Detector to Sample, Trace to Average. Mark the frequency with maximum power as the center of the display of the spectrum.

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.

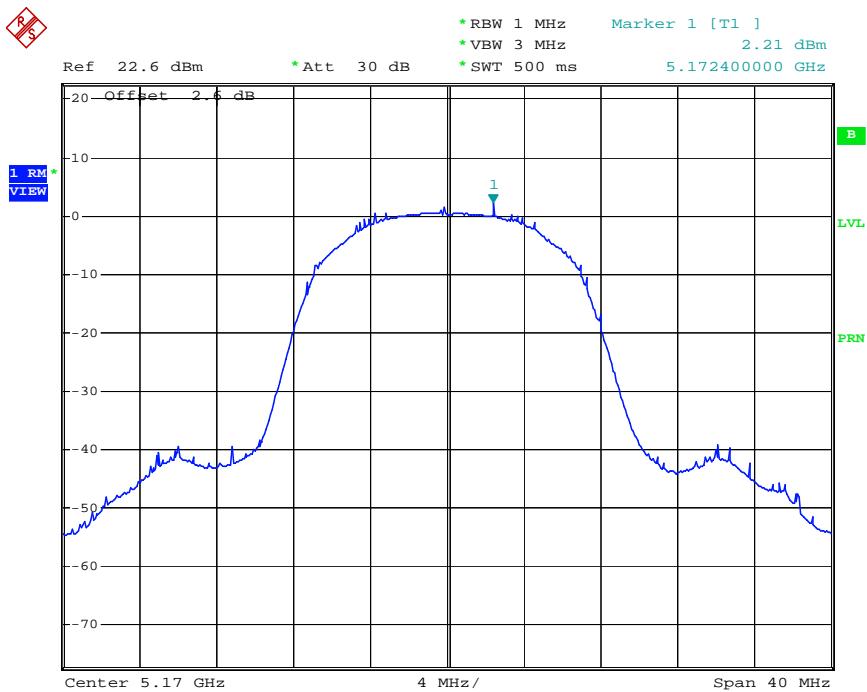
3.4.7 Test Result of Power Spectral Density

Test date	Oct. 27, 2008	Test Site No.	TH01-HY
Temperature	28	Humidity	58%
Test Engineer	Tom	Configuration	5G Band

Configuration

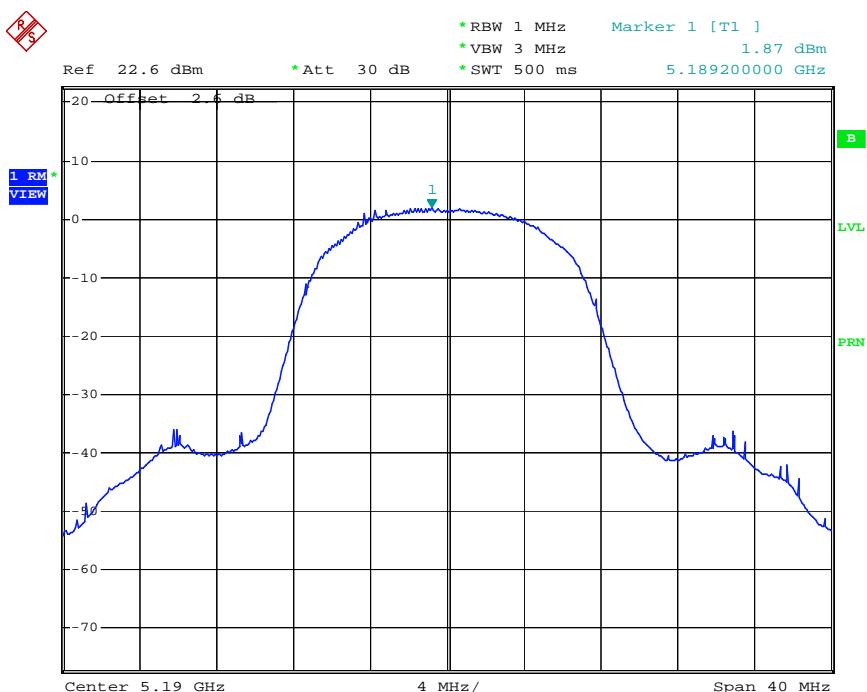
Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
5170MHz	2.21	4.00	Complies
5190MHz	1.87	4.00	Complies
5230 MHz	3.24	4.00	Complies

Power Density Plot on Configuration 5170MHz



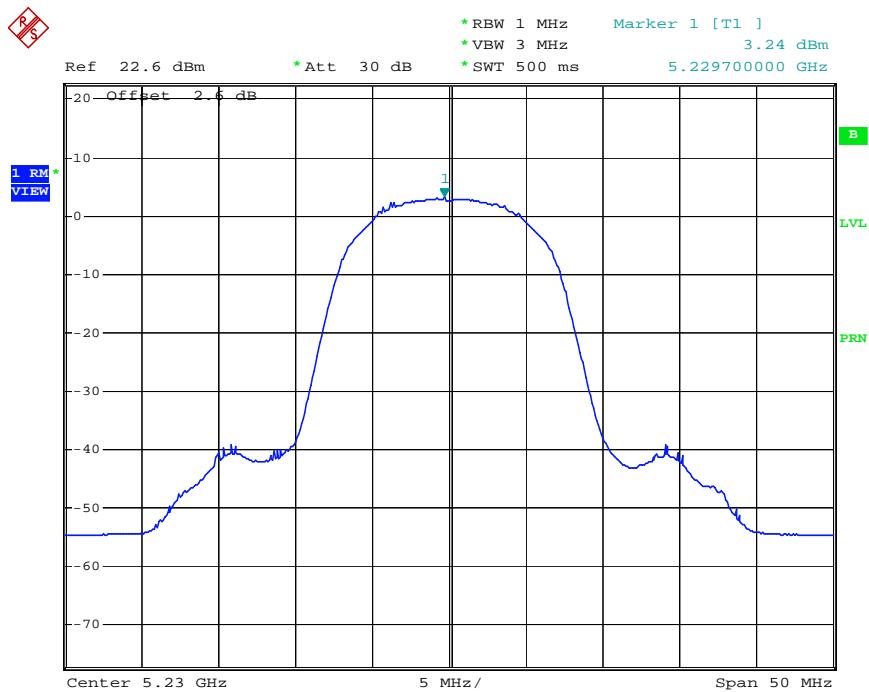
Date: 27.OCT.2008 16:02:33

Power Density Plot on Configuration 5190MHz



Date: 27.OCT.2008 16:45:02

Power Density Plot on Configuration 5230 MHz



Date: 27.OCT.2008 17:06:26

3.5 Peak Excursion Measurement

3.5.1 Limit

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emissions bandwidth whichever is less.

3.5.2 Measuring Instruments and Setting

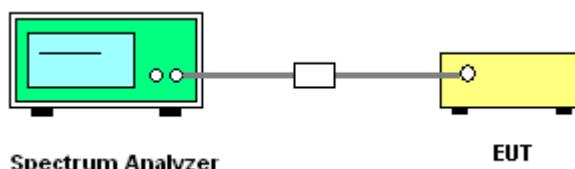
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz (Peak Trace) / 1000 kHz (Average Trace)
VB	3000 kHz (Peak Trace) / 300 kHz (Average Trace)
Detector	Peak (Peak Trace) / Sample (Average Trace)
Trace	Max Hold
Sweep Time	60s

3.5.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set the spectrum analyzer span to view the entire emissions bandwidth. The largest difference between the following two traces (Peak Trace and Average Trace) must be ≤ 13 dB for all frequencies across the emissions bandwidth. Submit a plot.
3. Peak Trace: Set RBW = 1 MHz, VBW \geq 3 MHz with peak detector and max-hold settings.
4. Average Trace: Method #3—video averaging with max hold--and sum power across the band. Set span to encompass the entire emissions bandwidth (EBW) of the signal. Set sweep trigger to “free run”. Set RBW = 1 MHz. Set VBW $\geq 1/T$ (VBW = 300kHz $\geq 1/4\mu s$). Use sample detector mode if bin width (i.e., span/number of points in spectrum) < 0.5 RBW. Otherwise use peak detector mode. Set max hold. Allow max hold to run for 60 seconds.

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.

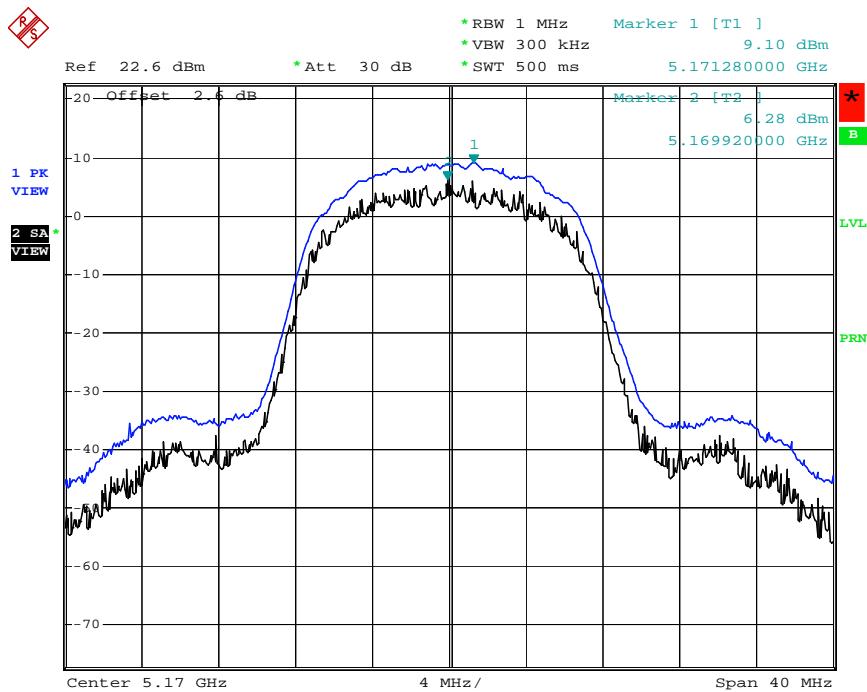
3.5.7 Test Result of Peak Excursion

Test date	Oct. 27, 2008	Test Site No.	TH01-HY
Temperature	28	Humidity	58%
Test Engineer	Tom	Configuration	5G Band

Configuration

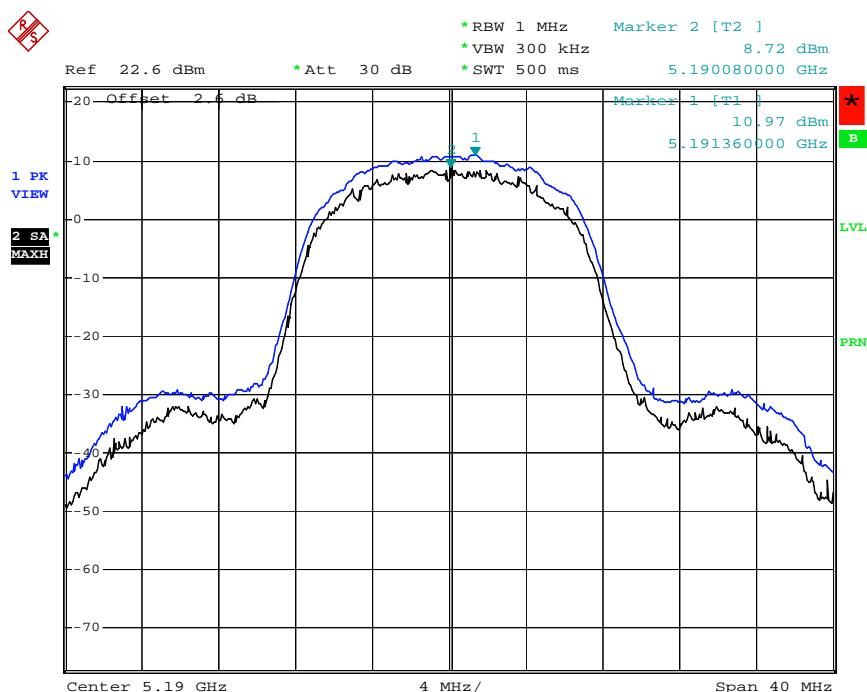
Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
5170MHz	2.82	13	Complies
5190MHz	2.25	13	Complies
5230 MHz	2.55	13	Complies

Peak Excursion Plot on Configuration 5170MHz



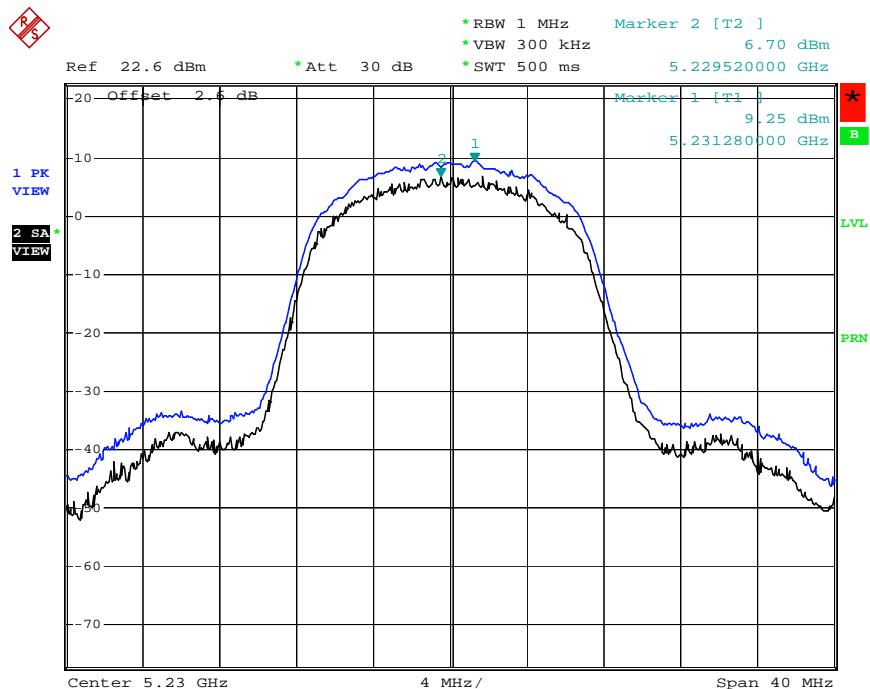
Date: 27.OCT.2008 16:39:08

Peak Excursion Plot on Configuration 5190MHz



Date: 27.OCT.2008 16:54:31

Peak Excursion Plot on Configuration 5230 MHz



Date: 27.OCT.2008 17:15:23

3.6 Radiated Emissions Measurement

3.6.1 Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

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	40 GHz
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

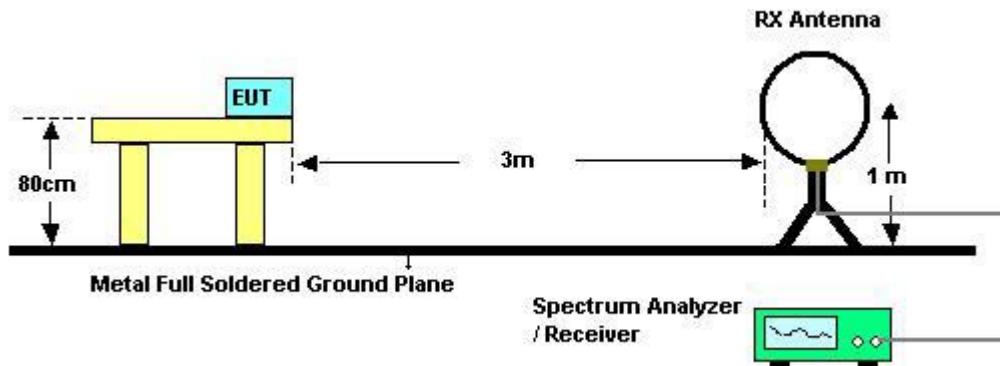
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.6.3 Test Procedures

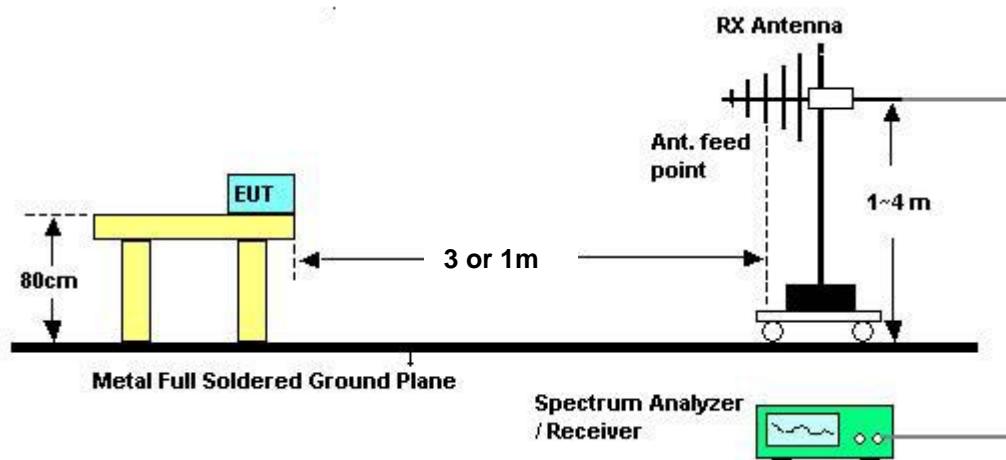
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.

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

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

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)

Test date	Sep. 25, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam		

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

Note:

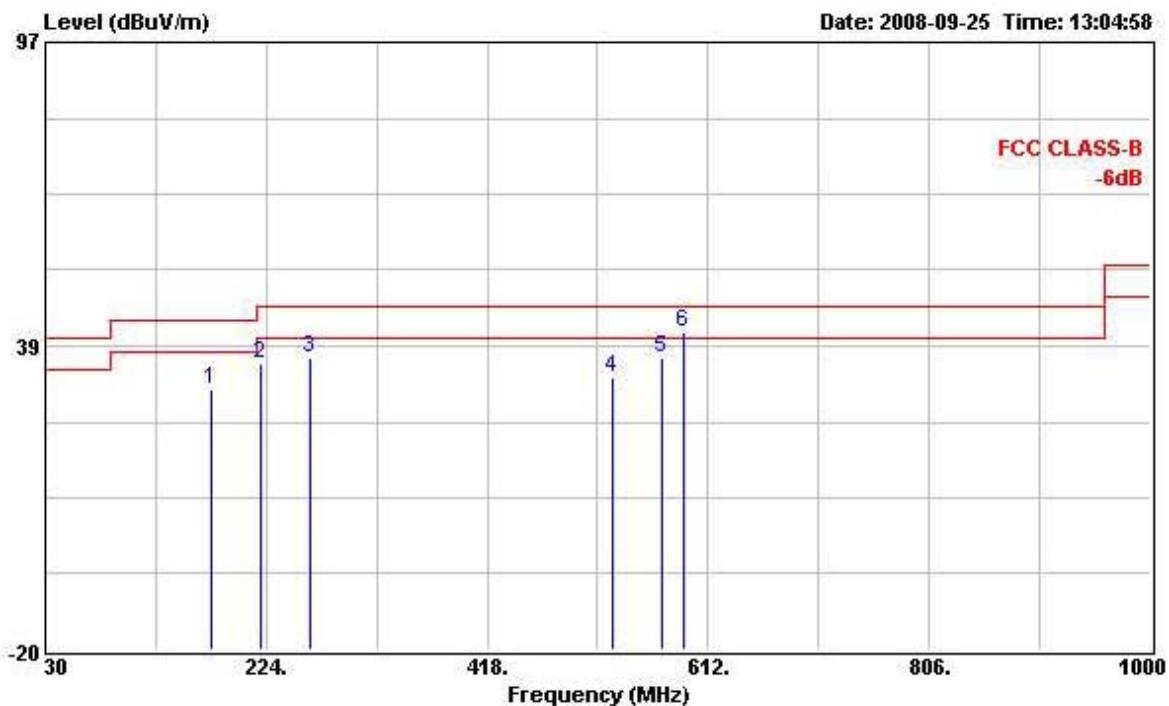
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

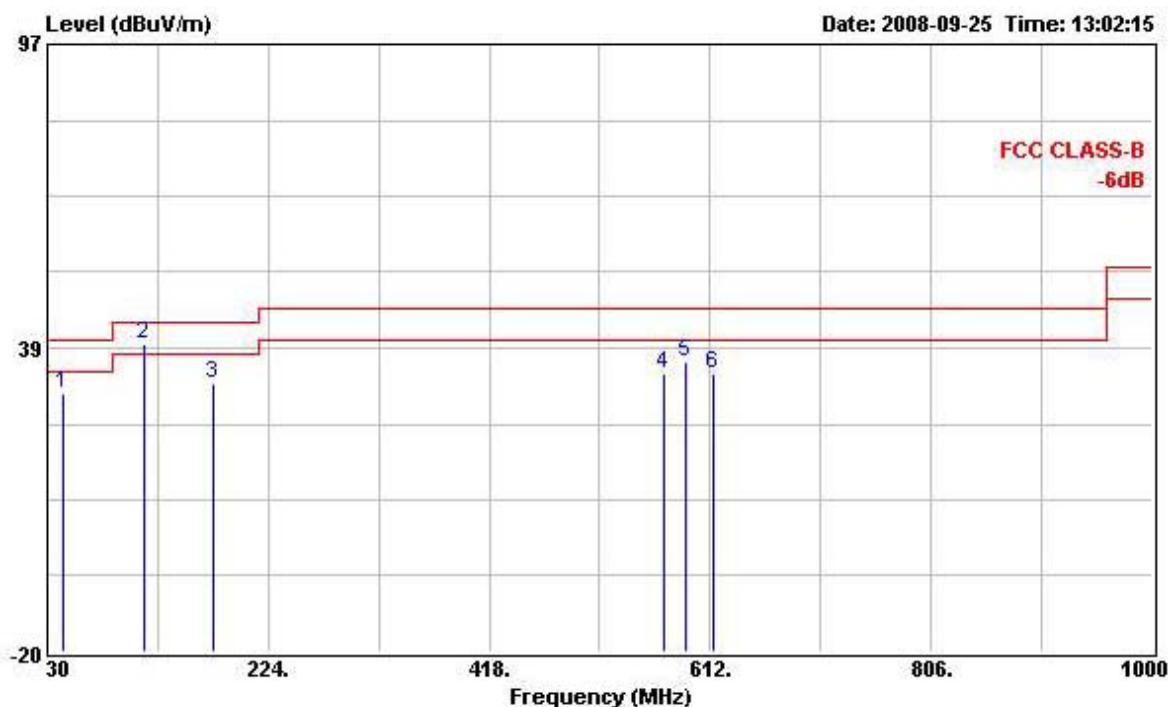
3.6.8 Results of Radiated Emissions (30MHz~1GHz)

Test date	Sep. 25, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	Dipole Ant. (Black)

Horizontal

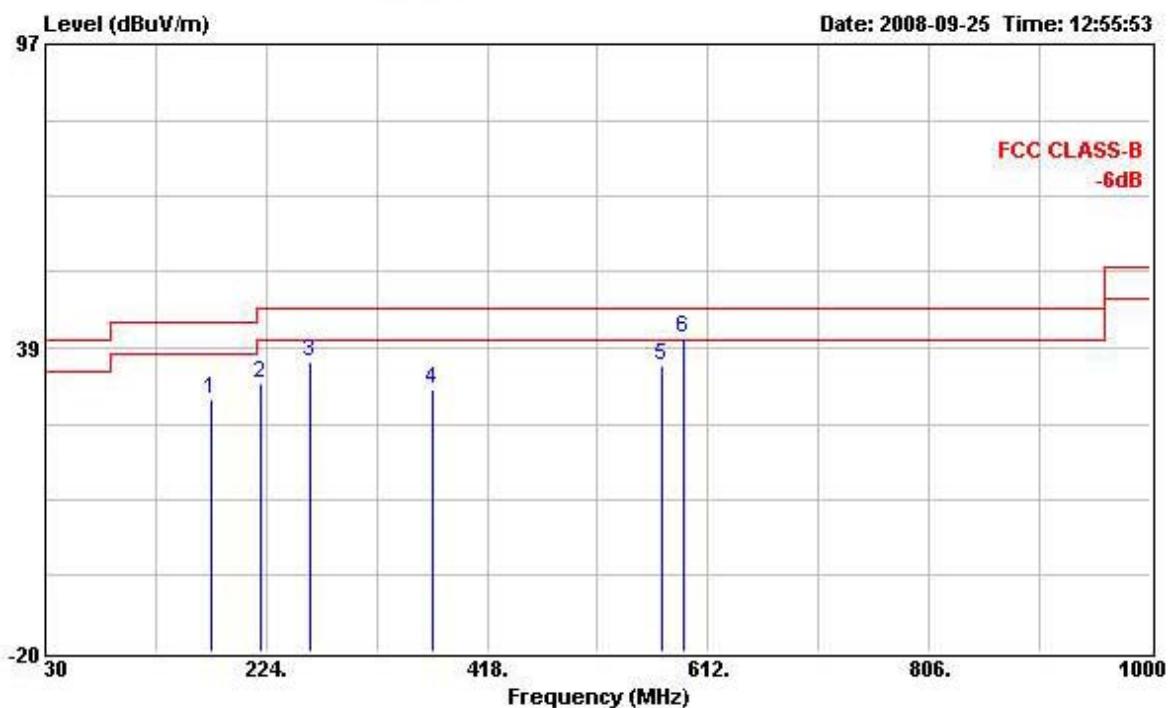
Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table	
		Limit	Line	Level	Factor	Loss	Factor			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB			
1 175.500	30.07	-13.43	43.50	48.26	9.88	2.58	30.65	Peak	---	---
2 219.150	34.97	-11.03	46.00	50.61	11.98	2.94	30.56	Peak	---	---
3 261.830	36.09	-9.91	46.00	50.21	13.16	3.20	30.48	Peak	---	---
4 528.580	32.35	-13.65	46.00	39.68	18.10	4.39	29.82	Peak	---	---
5 571.260	36.13	-9.87	46.00	41.86	19.34	4.62	29.69	Peak	---	---
6 ! 590.660	41.05	-4.95	46.00	46.03	19.90	4.75	29.63	Peak	---	---

Vertical



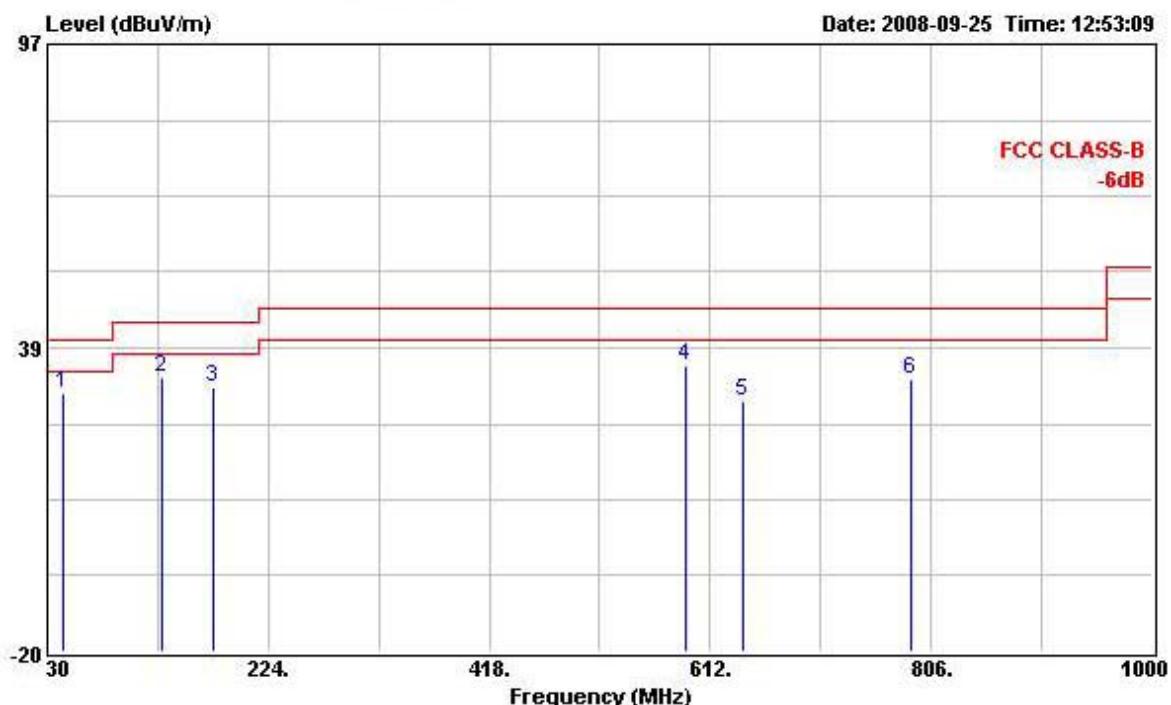
Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table
		Limit	Line	Level	Factor	Loss	Factor		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg
1	43.580	29.81	-10.19	40.00	46.99	12.27	1.38	30.83	Peak
2	114.390	39.14	-4.36	43.50	54.86	12.92	2.13	30.77	Peak
3	175.500	31.76	-11.74	43.50	49.95	9.88	2.58	30.65	Peak
4	571.260	33.66	-12.34	46.00	39.39	19.34	4.62	29.69	Peak
5	590.660	35.87	-10.13	46.00	40.85	19.90	4.75	29.63	Peak
6	614.910	33.65	-12.35	46.00	38.29	19.98	4.92	29.54	Peak

Test date	Sep. 25, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	Dipole Ant. (White)

Horizontal

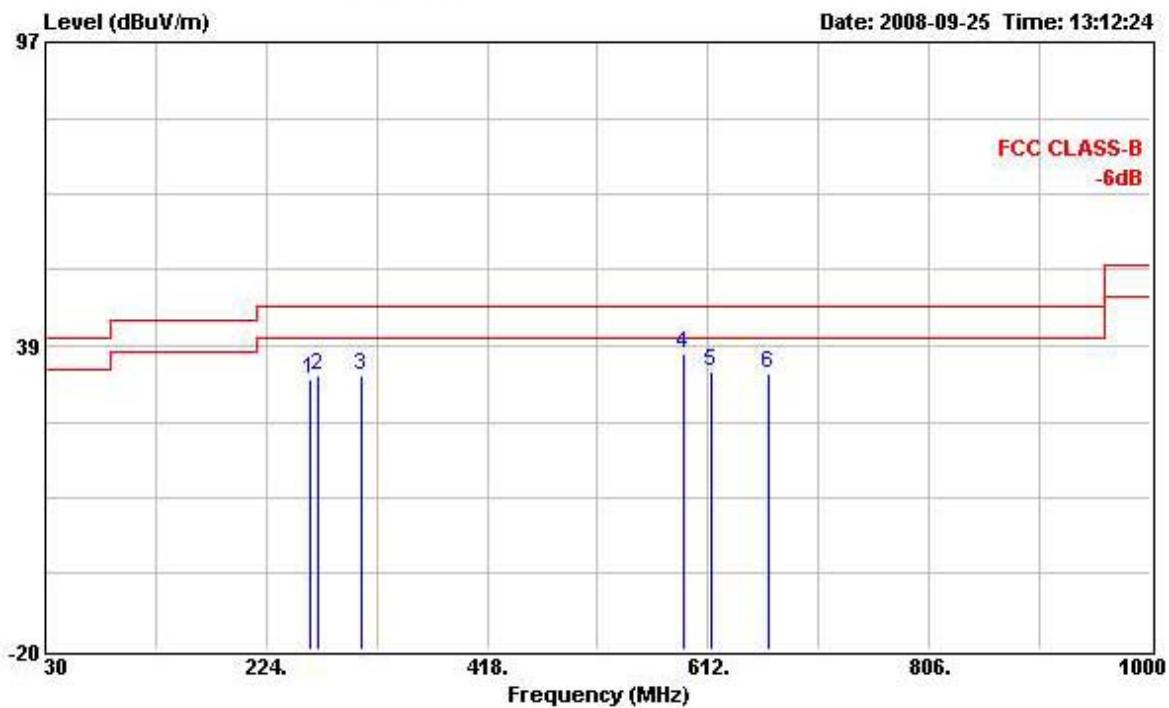
Freq	Level	Over Limit	Limit	Read Line	Probe Level	Cable Factor	Preamp Loss	Factor	Ant	Table
									Pos	Pos
									cm	deg
MHz	dBuV/m	dB	dBuV/m	dBuV	dB		dB	dB		
1 175.500	28.46	-15.04	43.50	46.65	9.88	2.58	30.65	Peak	---	---
2 219.150	31.85	-14.15	46.00	47.49	11.98	2.94	30.56	Peak	---	---
3 261.830	35.68	-10.32	46.00	49.80	13.16	3.20	30.48	Peak	---	---
4 369.500	30.37	-15.63	46.00	42.11	14.78	3.74	30.26	Peak	---	---
5 571.260	35.05	-10.95	46.00	40.78	19.34	4.62	29.69	Peak	---	---
6 ! 590.660	40.34	-5.66	46.00	45.32	19.90	4.75	29.63	Peak	---	---

Vertical



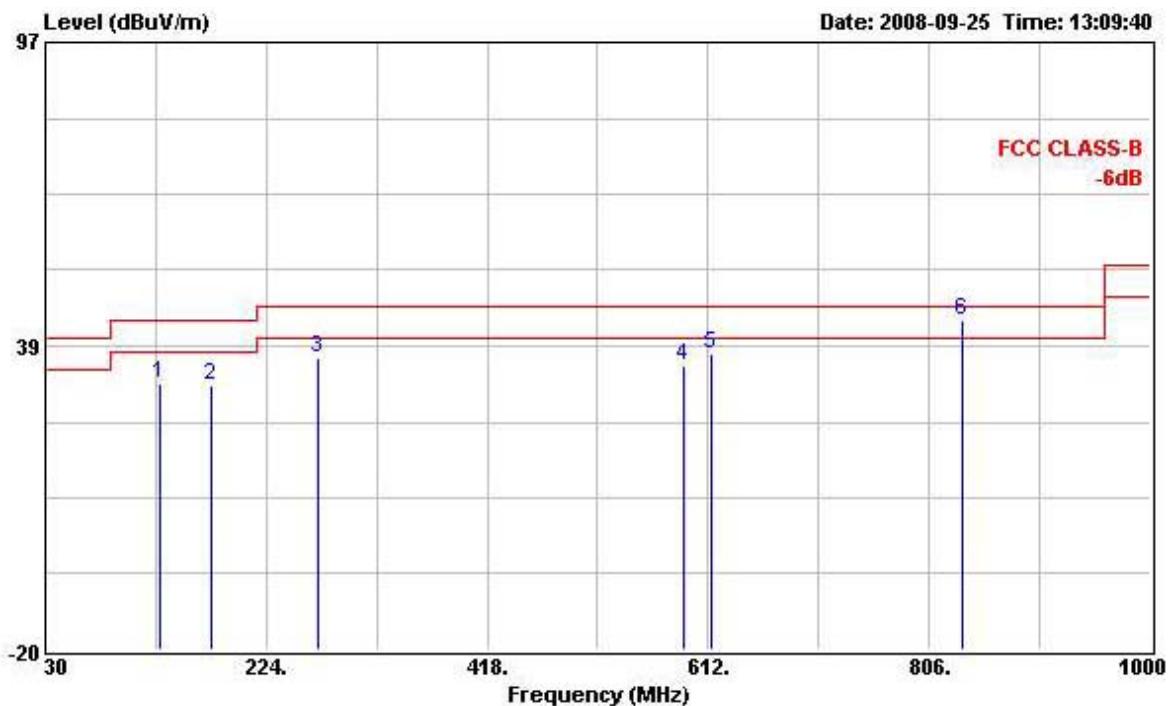
Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table	
		Limit	Line	Level	Factor	Loss	Factor			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 43.580	29.81	-10.19	40.00	46.99	12.27	1.38	30.83	Peak	---	---
2 129.910	32.62	-10.88	43.50	48.30	12.80	2.26	30.74	Peak	---	---
3 175.500	30.85	-12.65	43.50	49.04	9.88	2.58	30.65	Peak	---	---
4 590.660	35.23	-10.77	46.00	40.21	19.90	4.75	29.63	Peak	---	---
5 641.100	28.37	-17.63	46.00	33.08	19.63	5.10	29.44	Peak	---	---
6 788.540	32.46	-13.54	46.00	35.92	20.10	5.46	29.02	Peak	---	---

Test date	Sep. 25, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	Chip Ant.

Horizontal

Freq	Level	Over Limit	Limit Line	Read	Probe	Cable	Preamp	Ant Pos	Table Pos
				Level	Factor	Cable	Preamp		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg
1 261.830	31.98	-14.02	46.00	46.10	13.16	3.20	30.48	Peak	---
2 269.590	32.91	-13.09	46.00	46.84	13.27	3.26	30.46	Peak	---
3 307.420	32.80	-13.20	46.00	45.91	13.82	3.45	30.38	Peak	---
4 590.660	36.80	-9.20	46.00	41.78	19.90	4.75	29.63	Peak	---
5 614.910	33.44	-12.56	46.00	38.08	19.98	4.92	29.54	Peak	---
6 664.380	33.26	-12.74	46.00	38.13	19.32	5.15	29.34	Peak	---

Vertical



Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table	
		Limit	Line	Level	Factor	Loss	Factor			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1	129.910	31.15	-12.35	43.50	46.83	12.80	2.26	30.74	Peak	---
2	175.500	30.86	-12.64	43.50	49.05	9.88	2.58	30.65	Peak	---
3	269.590	36.05	-9.95	46.00	49.98	13.27	3.26	30.46	Peak	---
4	590.660	34.72	-11.28	46.00	39.70	19.90	4.75	29.63	Peak	---
5	614.910	36.97	-9.03	46.00	41.61	19.98	4.92	29.54	Peak	---
6	835.100	43.43	-2.57	46.00	46.61	20.19	5.52	28.89	Peak	---

Note:

The amplitude of spurious emissions that 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).

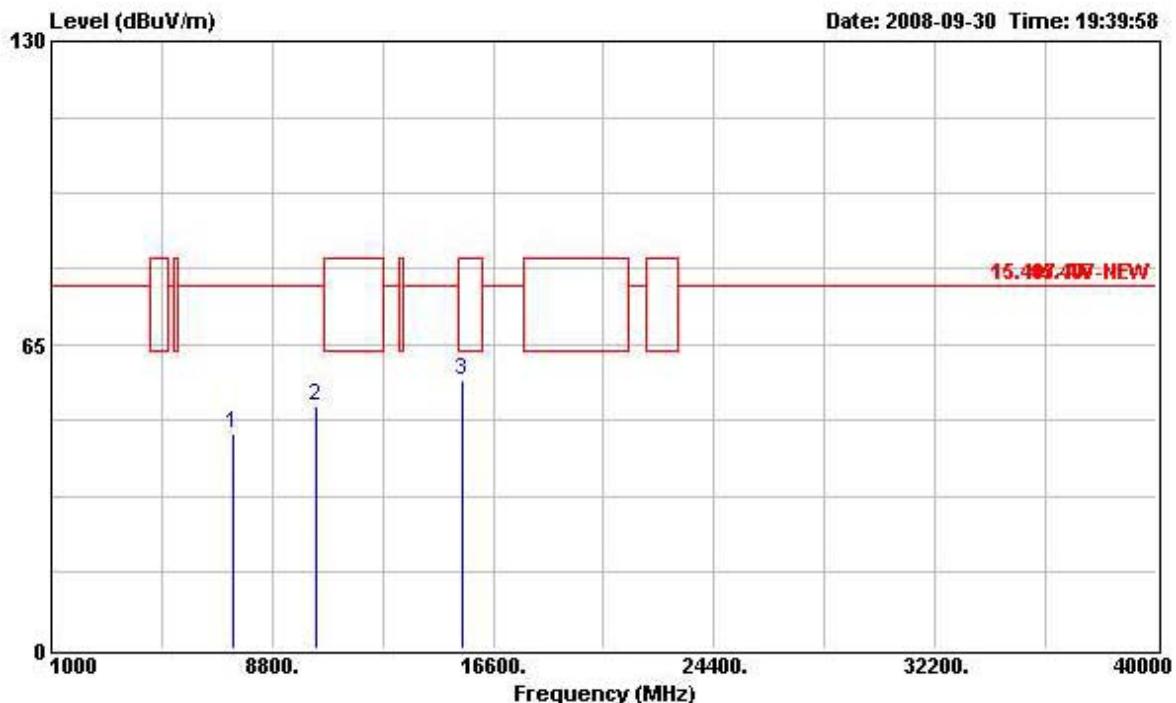
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

3.6.9 Results for Radiated Emissions (1GHz~40GHz)

Dipole Ant. (Black)

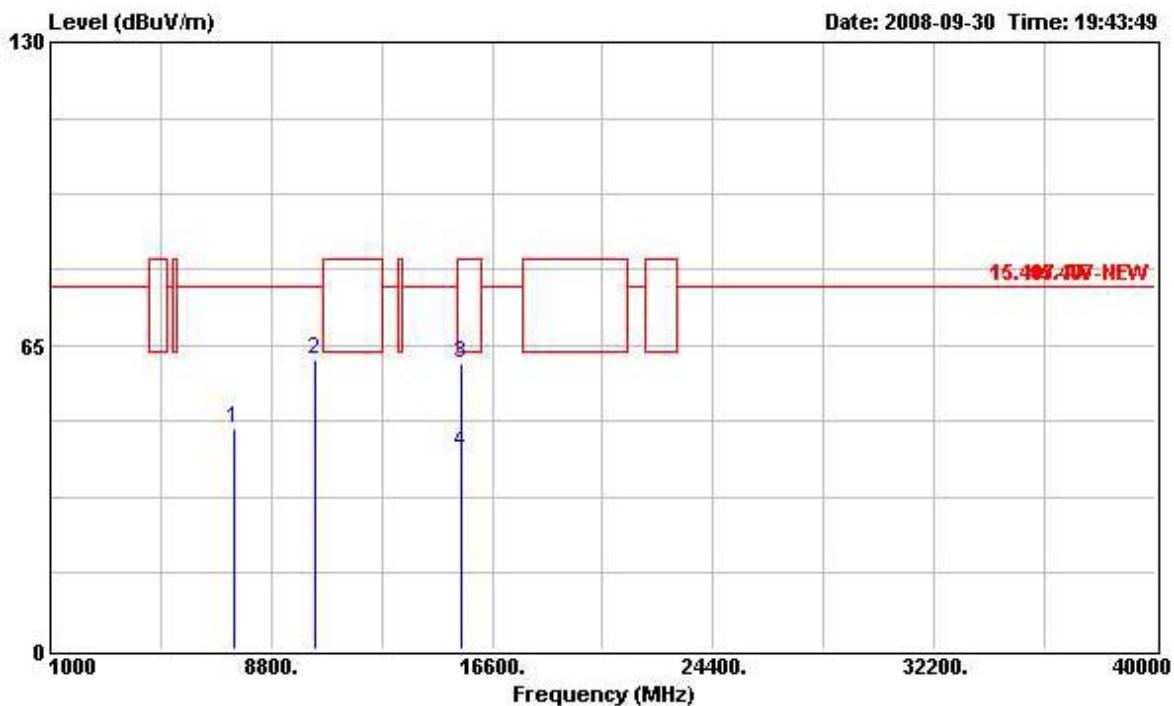
Test date	Sep. 30, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5170MHz

Horizontal



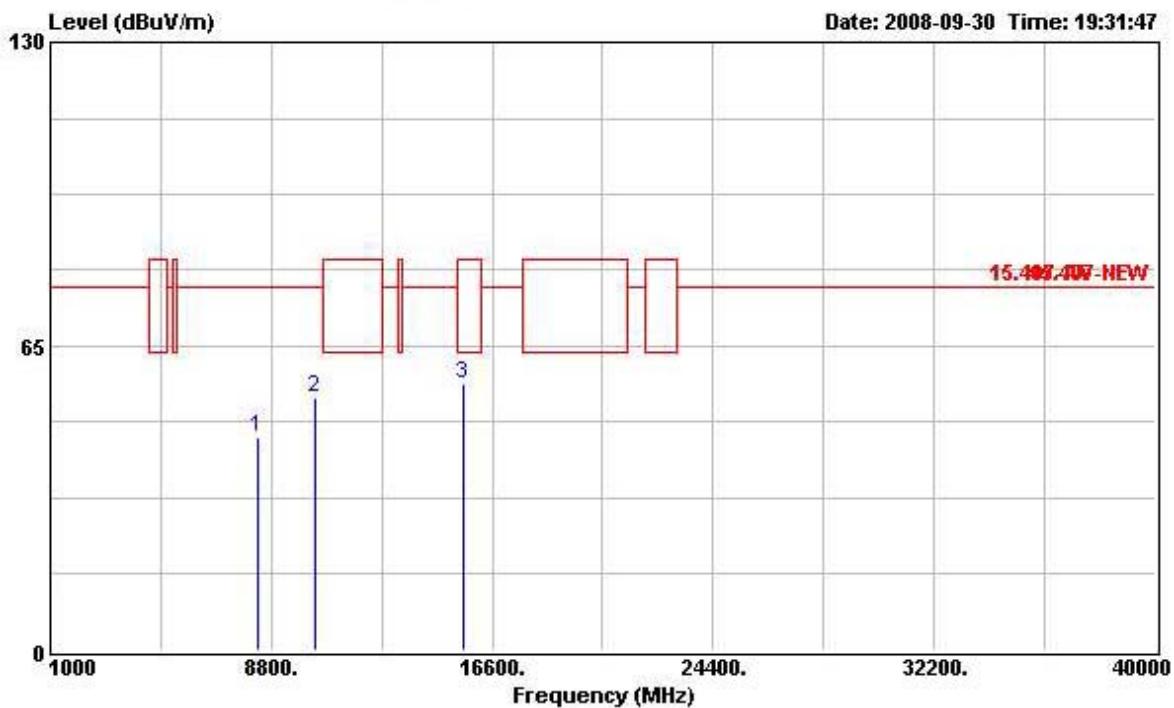
Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table	
		Limit	Line	Level	Factor	Cable	Preamp			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 7448.000	46.09	-31.75	77.84	44.81	36.57	0.00	35.29	Peak	---	---
2 10340.000	52.08	-25.76	77.84	49.22	38.30	0.00	35.44	Peak	---	---
3 15508.000	57.22	-26.32	83.54	54.62	37.70	0.00	35.10	Peak	---	---

Vertical



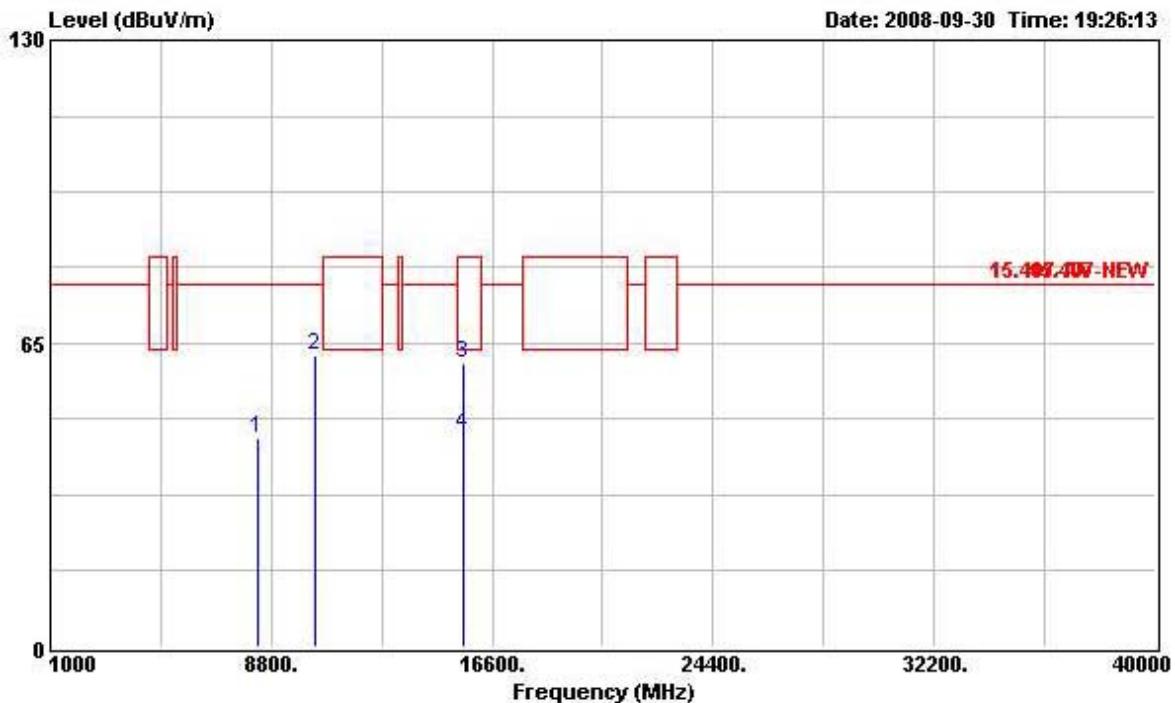
Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table	
		Limit	Line	Level	Factor	Loss	Factor			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 7504.000	47.38	-30.46	77.84	45.97	36.71	0.00	35.30	Peak	---	---
2 10340.000	62.20	-15.64	77.84	59.34	38.30	0.00	35.44	Peak	---	---
3 15512.000	61.11	-22.43	83.54	58.53	37.68	0.00	35.10	Peak	---	---
4 15512.000	42.05	-41.49	83.54	39.47	37.68	0.00	35.10	Average	---	---

Test date	Sep. 30, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5190MHz

Horizontal

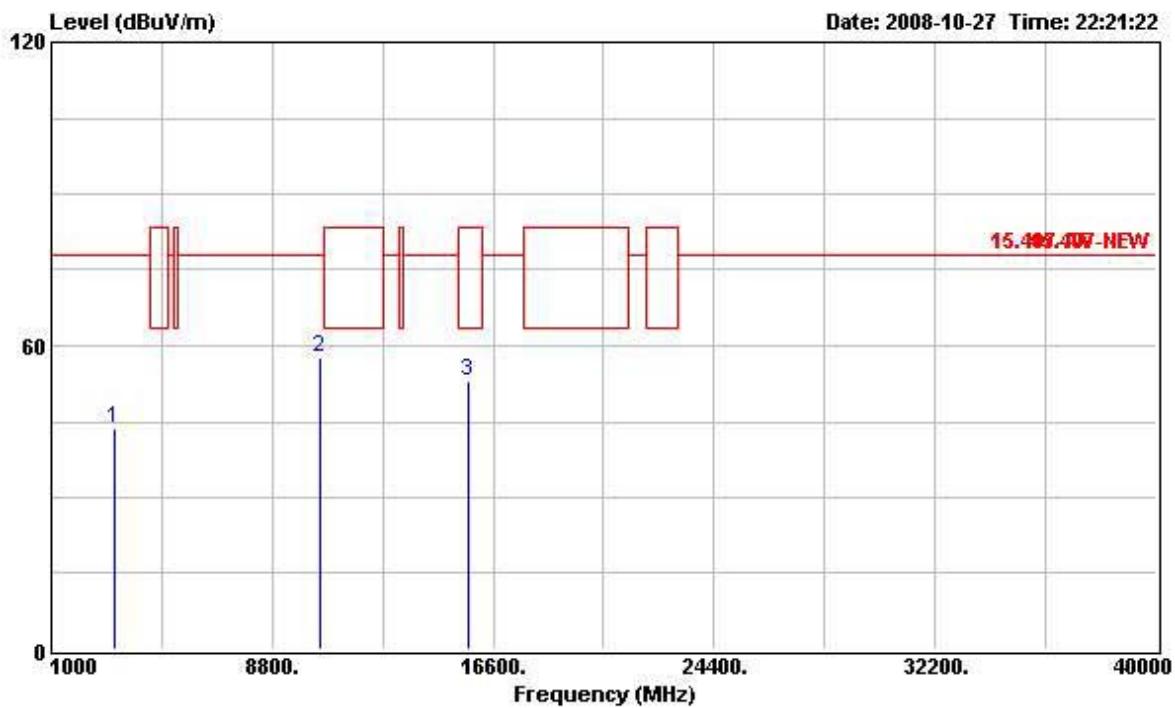
Freq	Level	Over Limit	Limit Line	Read	Probe	Cable	Preamp	Ant Pos	Table Pos
				Level	Factor	Cable	Preamp		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg
1 8292.000	45.43	-32.41	77.84	43.68	37.19	0.00	35.44	Peak	---
2 10380.000	54.06	-23.78	77.84	51.13	38.33	0.00	35.40	Peak	---
3 15576.000	57.04	-6.50	63.54	54.63	37.60	0.00	35.19	Average	---

Vertical



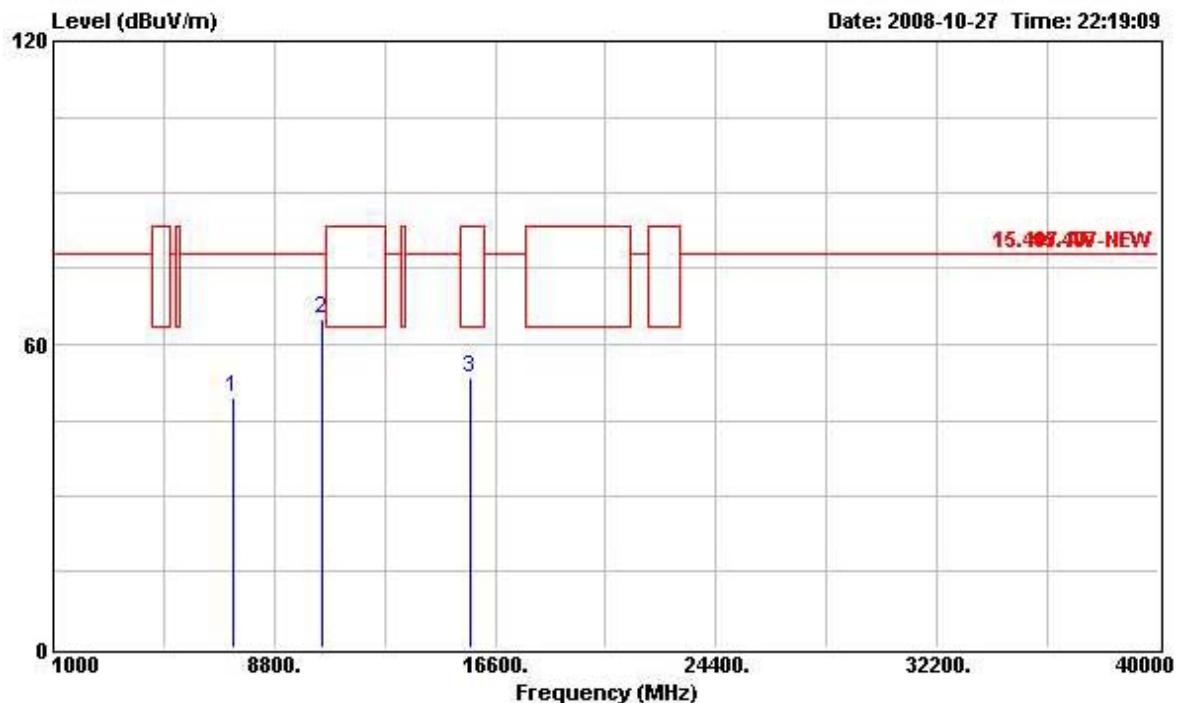
Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Preamp			Ant Pos	Table Pos
						dB	dBuV/m	dB		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	dB	cm	deg
1 8332.000	44.76	-33.08	77.84	42.96	37.23	0.00	35.43	Peak	---	---
2 10380.000	62.56	-15.28	77.84	59.63	38.33	0.00	35.40	Peak	---	---
3 15576.000	60.86	-22.68	83.54	58.45	37.60	0.00	35.19	Peak	---	---
4 15576.000	45.77	-37.77	83.54	43.36	37.60	0.00	35.19	Average	---	---

Test date	Oct. 27, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5230MHz

Horizontal

Freq	Level	Over Limit	Limit Line	Read	Probe	Cable	Preamp	Ant Pos	Table Pos
				Level	Factor	Loss	Factor		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg
1 3215.100	43.65	-34.19	77.84	48.15	30.56	0.00	35.06	Peak	---
2 10460.000	57.64	-20.20	77.84	54.61	38.37	0.00	35.34	Peak	---
3 15690.000	53.12	-10.42	63.54	51.01	37.43	0.00	35.32	Average	---

Vertical

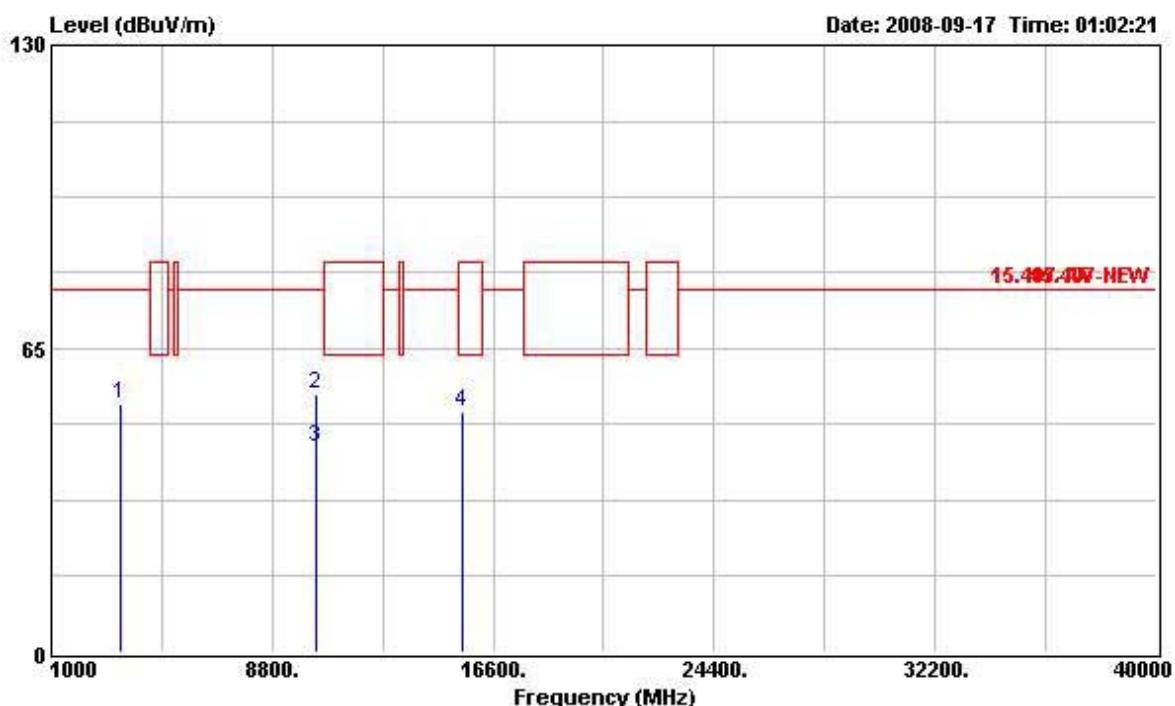


Freq	Level	Over Limit	Limit Line	Read Level		Probe Factor	Cable Preamp		Remark	Ant Pos	Table Pos
				dB	dBuV/m		dB	dBuV			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	dB	cm	deg	
1 7321.100	49.59	-28.25	77.84	48.60	36.25	0.00	35.26	Peak	---	---	
2 10460.000	65.24	-12.60	77.84	62.21	38.37	0.00	35.34	Peak	---	---	
3 15690.000	53.26	-10.28	63.54	51.15	37.43	0.00	35.32	Average	---	---	

Dipole Ant. (White)

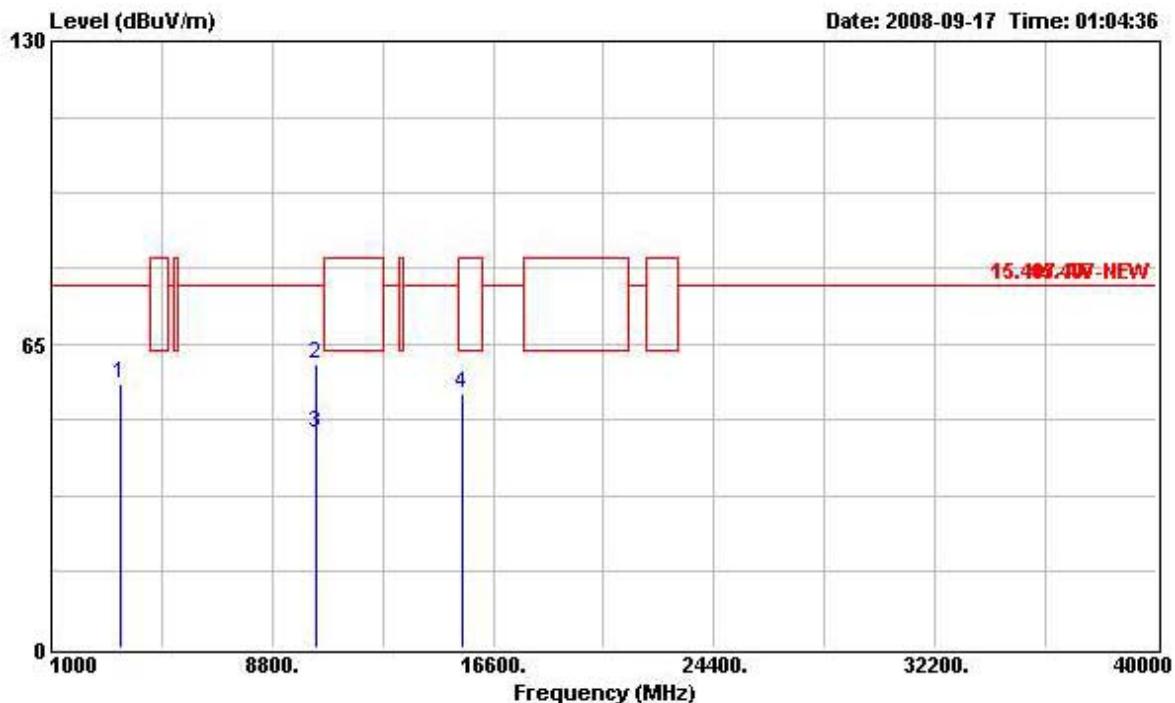
Test date	Sep. 17, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5170MHz

Horizontal



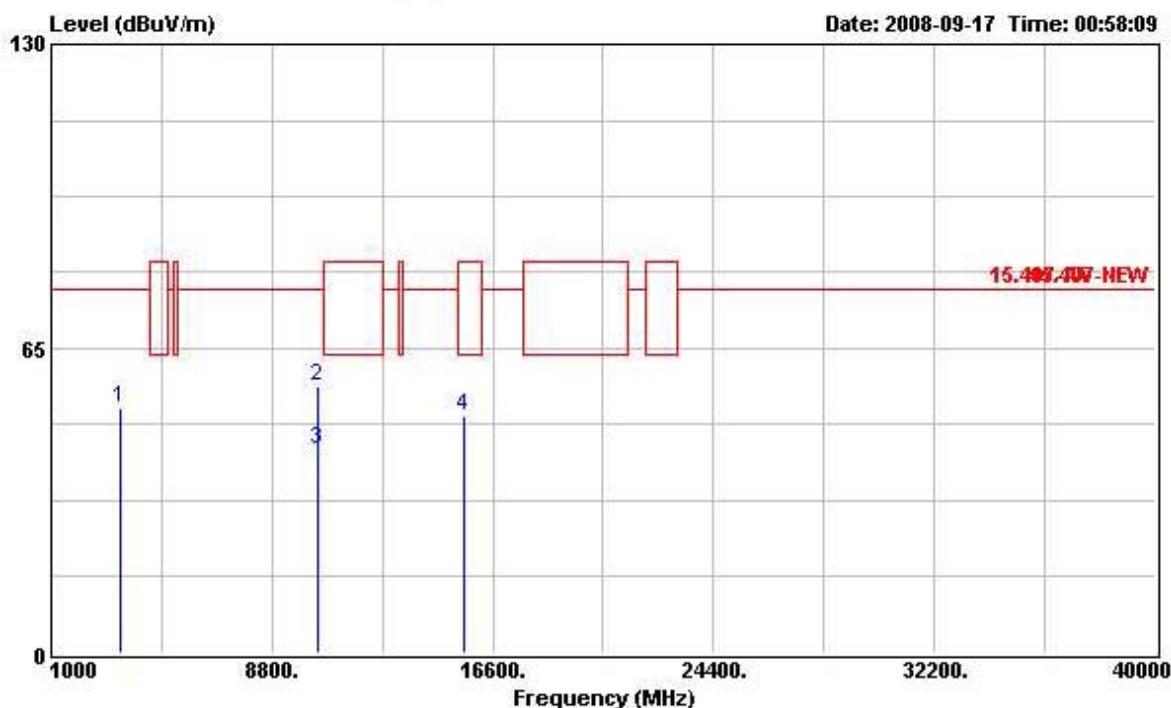
Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table	
		Limit	Line	Level	Factor	Loss	Factor			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 3450.000	53.07	-24.77	77.84	56.99	31.09	0.00	35.01	Average	---	---
2 10340.000	55.40	-22.44	77.84	52.54	38.30	0.00	35.44	Peak	---	---
3 10340.000	43.94	-33.90	77.84	41.08	38.30	0.00	35.44	Average	---	---
4 15510.000	51.64	-31.90	83.54	49.06	37.68	0.00	35.10	Peak	---	---

Vertical



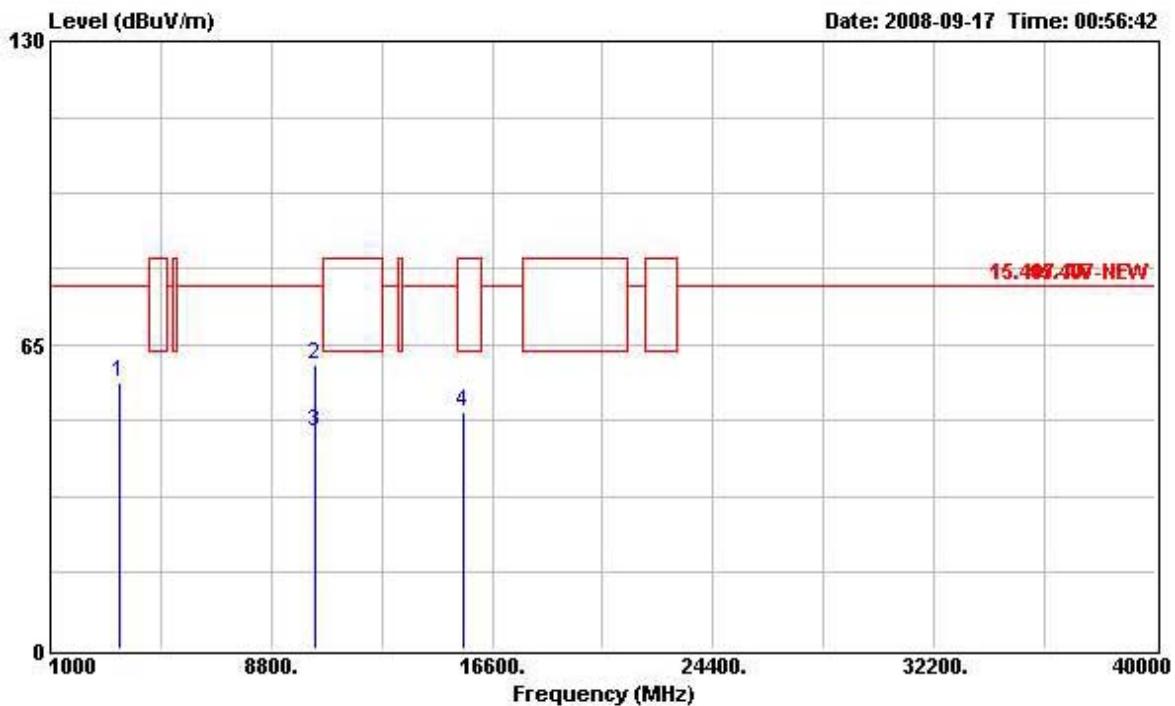
Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table
		Limit	Line	Level	Factor	Loss	Factor		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg
1	3450.000	56.37	-21.47	77.84	60.29	31.09	0.00	35.01	Peak
2	10340.000	60.74	-17.10	77.84	57.88	38.30	0.00	35.44	Peak
3	10340.000	46.02	-31.82	77.84	43.16	38.30	0.00	35.44	Average
4	15510.000	54.50	-29.04	83.54	51.92	37.68	0.00	35.10	Peak

Test date	Sep. 17, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5190MHz

Horizontal

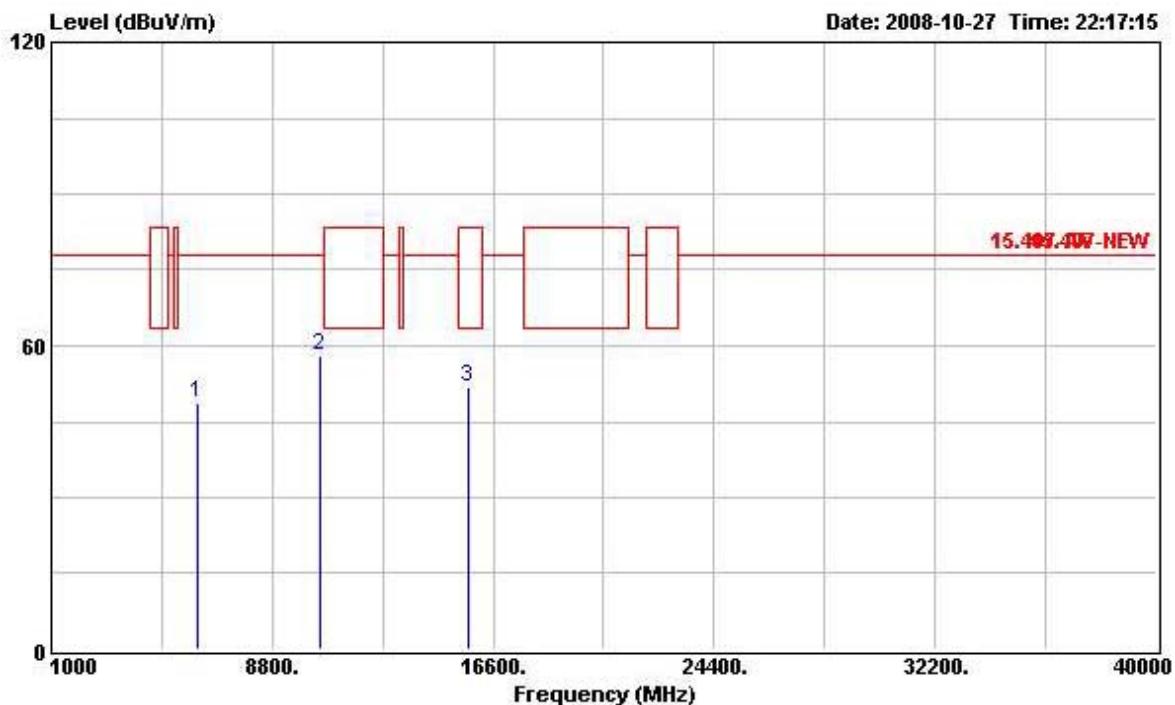
Freq	Level	Over Limit	Limit	Read Line	Probe Level	Cable Factor	Preamp Loss	Factor	Ant	Table
									Pos	Pos
MHz	dBuV/m			dB	dBuV/m	dBuV	dB	dB	cm	deg
1 3464.000	52.29	-25.55	77.84	56.18	31.12	0.00	35.01	Peak	---	---
2 10384.000	57.12	-20.72	77.84	54.19	38.33	0.00	35.40	Peak	---	---
3 10384.000	43.60	-34.24	77.84	40.67	38.33	0.00	35.40	Average	---	---
4 15570.000	50.75	-32.79	83.54	48.31	37.60	0.00	35.16	Peak	---	---

Vertical



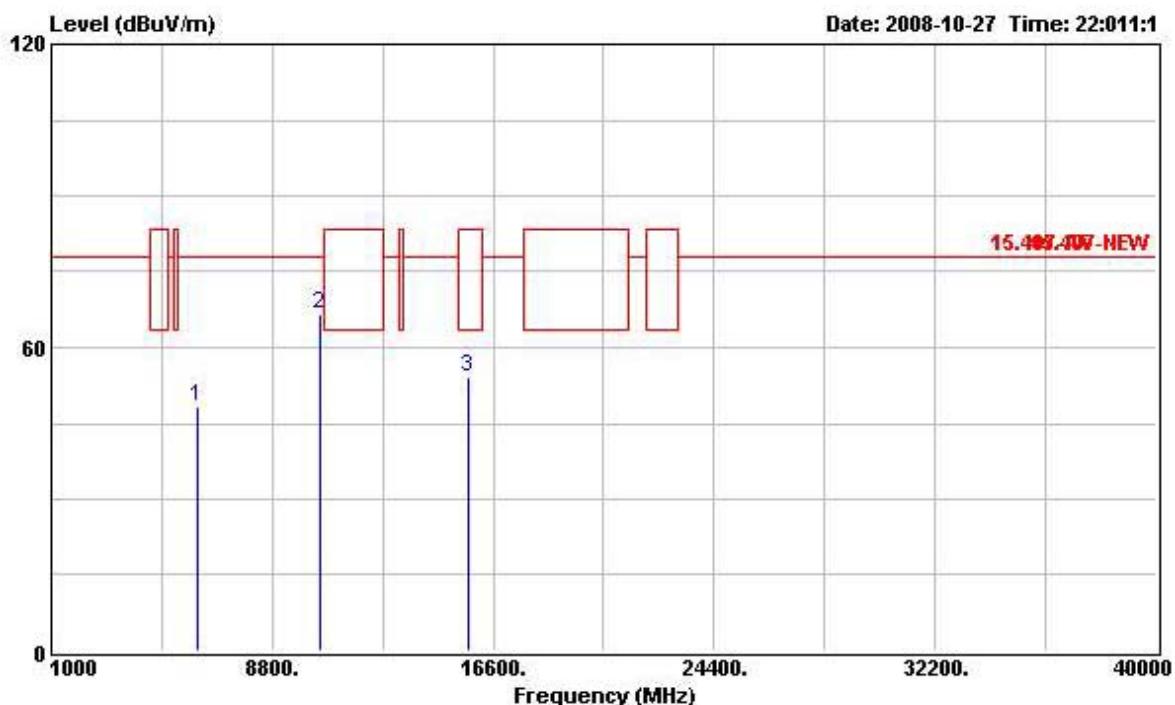
Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	Ant	Table	
		Limit	Line	Level	Factor	Loss	Factor			
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg	
1 3464.000	57.00	-20.84	77.84	60.89	31.12	0.00	35.01	Peak	---	---
2 10380.000	60.89	-16.95	77.84	57.96	38.33	0.00	35.40	Peak	---	---
3 10380.000	46.30	-31.54	77.84	43.37	38.33	0.00	35.40	Average	---	---
4 15570.000	50.61	-32.93	83.54	48.17	37.60	0.00	35.16	Peak	---	---

Test date	Oct. 27, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5230MHz

Horizontal

Freq	Level	Over Limit	Limit Line	Read	Probe	Cable	Preamp	Ant Pos	Table Pos
				Level	Factor	Cable	Preamp		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg
1 6153.500	48.88	-28.96	77.84	49.65	34.26	0.00	35.03	Peak	---
2 10460.000	58.13	-19.71	77.84	55.10	38.37	0.00	35.34	Peak	---
3 15690.000	51.76	-11.78	63.54	49.65	37.43	0.00	35.32	Average	---

Vertical

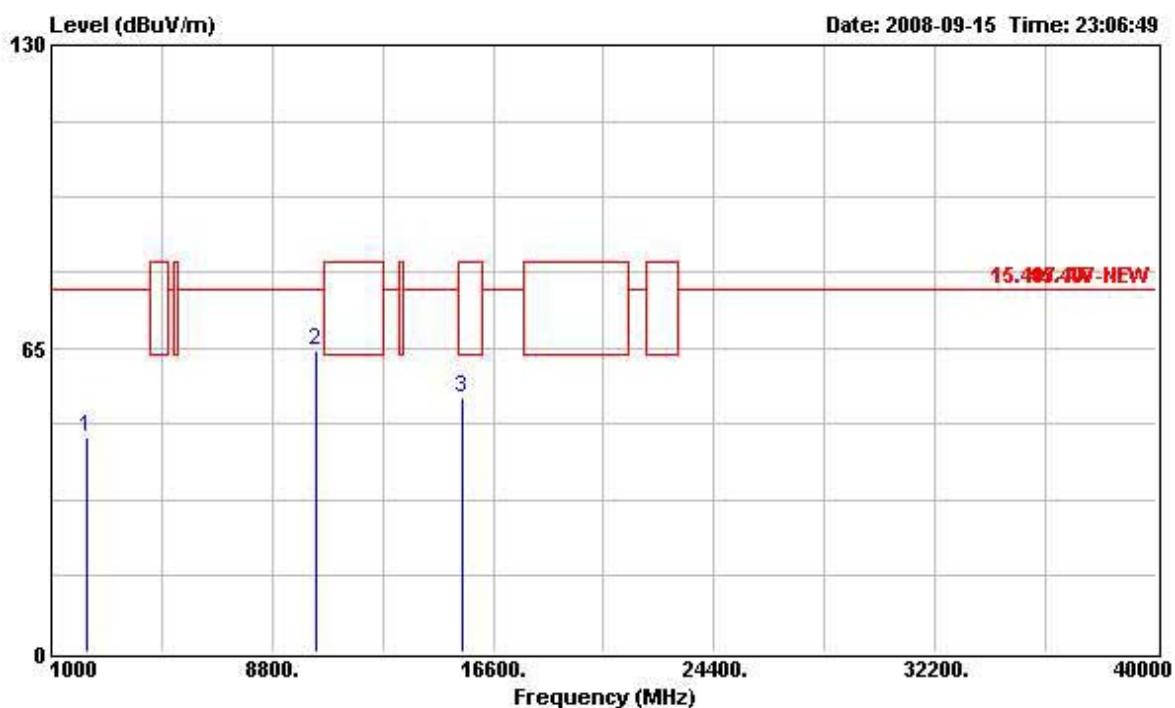


Freq	Level	Over Limit	Limit	Read Line	Probe Level	Cable Factor	Preamp Factor	Remark	Ant	Table
									Pos	Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	dB	cm	deg
1 6132.100	48.38	-29.46	77.84	49.16	34.25	0.00	35.03	Peak	---	---
2 10460.000	66.48	-11.36	77.84	63.45	38.37	0.00	35.34	Peak	---	---
3 15690.000	54.26	-9.28	63.54	52.15	37.43	0.00	35.32	Average	---	---

Chip Ant.

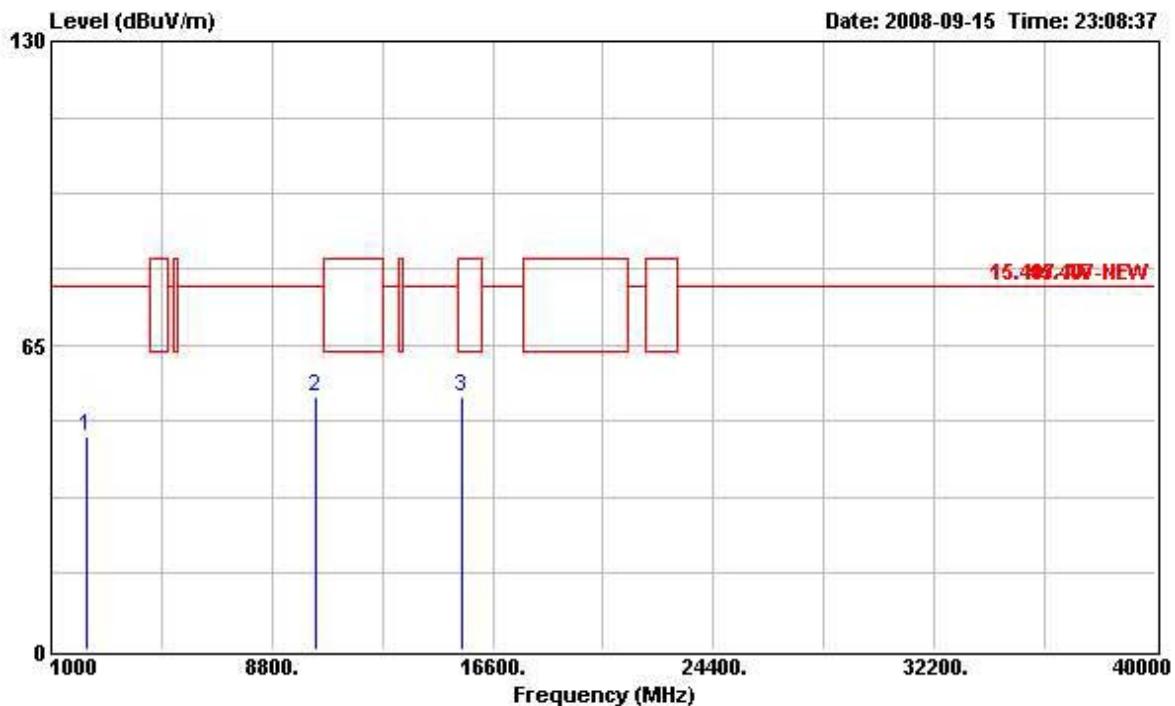
Test date	Sep. 15, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5170MHz

Horizontal



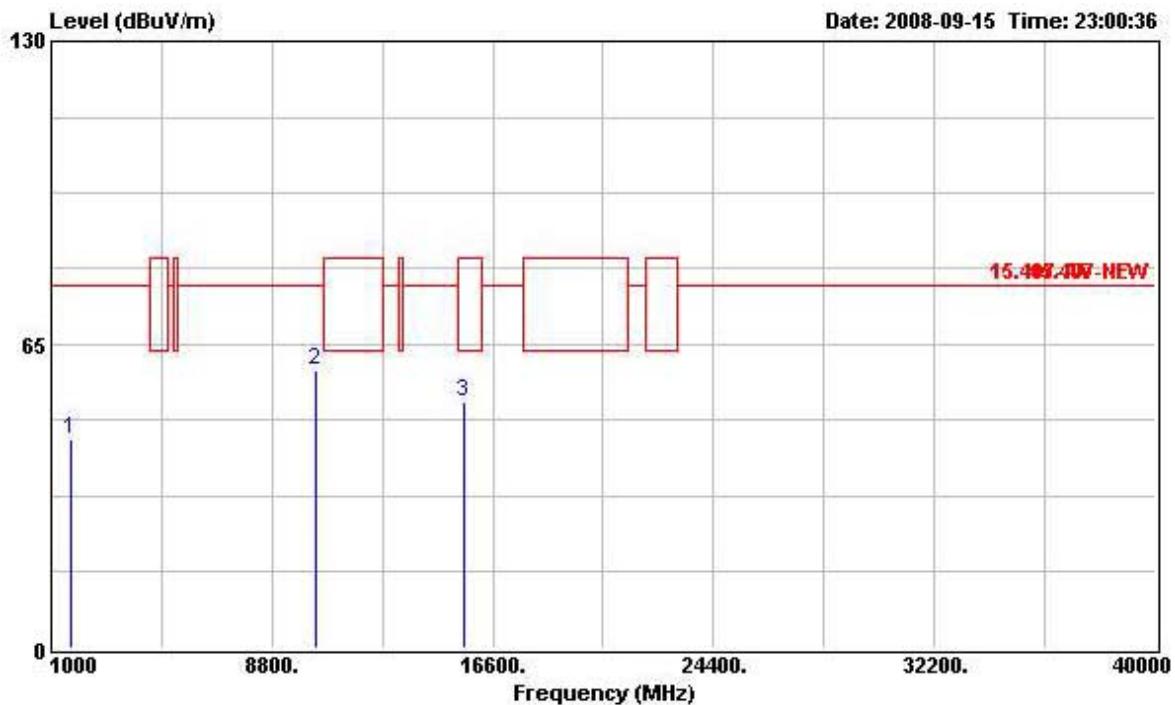
Freq	Level	Over Limit	Limit Line	Read		Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
				MHz	dBuV/m	dB	dBuV/m	dB	dB	cm	deg
1 2275.000	46.18	-31.66	77.84	53.22	27.87	0.00	34.91	Peak	---	---	---
2 10340.000	64.74	-13.10	77.84	61.88	38.30	0.00	35.44	Peak	---	---	---
3 15508.000	54.54	-29.00	83.54	51.94	37.70	0.00	35.10	Peak	---	---	---

Vertical



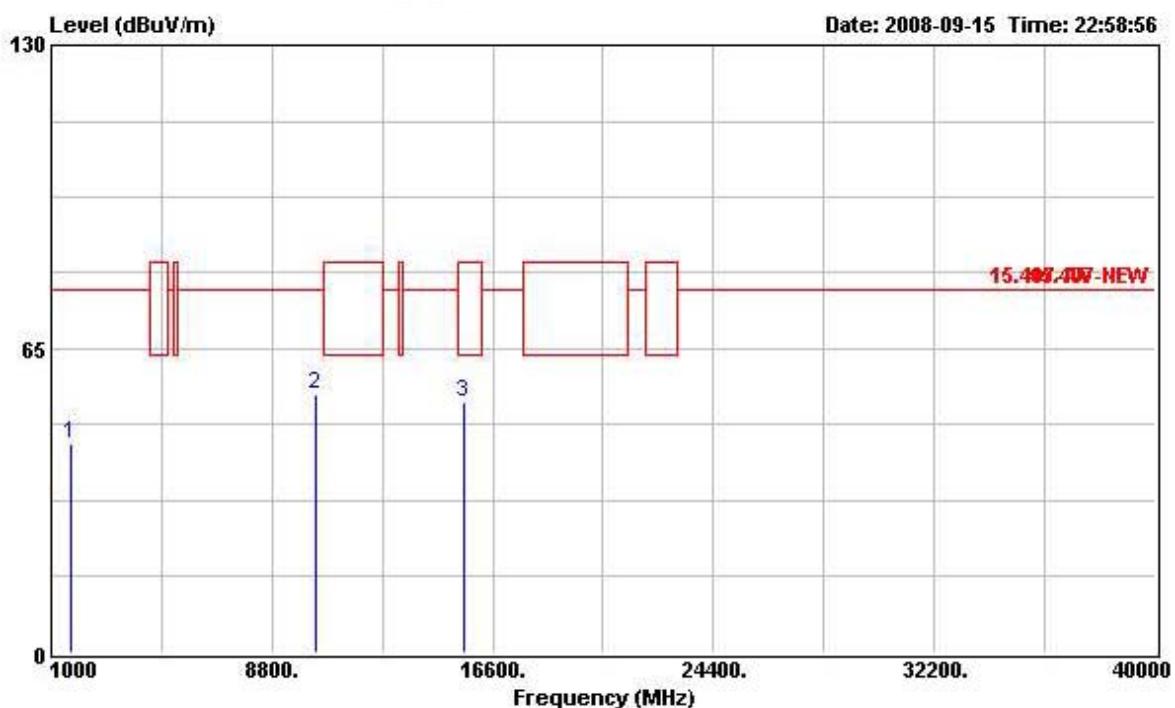
Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Preamp			Ant Pos	Table Pos
						dB	dBuV/m	dB		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	dB	cm	deg
1 2278.000	45.59	-32.25	77.84	52.63	27.87	0.00	34.91	Peak	---	---
2 10340.000	54.12	-23.72	77.84	51.26	38.30	0.00	35.44	Peak	---	---
3 15512.000	53.84	-29.70	83.54	51.26	37.68	0.00	35.10	Peak	---	---

Test date	Sep. 15, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5190MHz

Horizontal

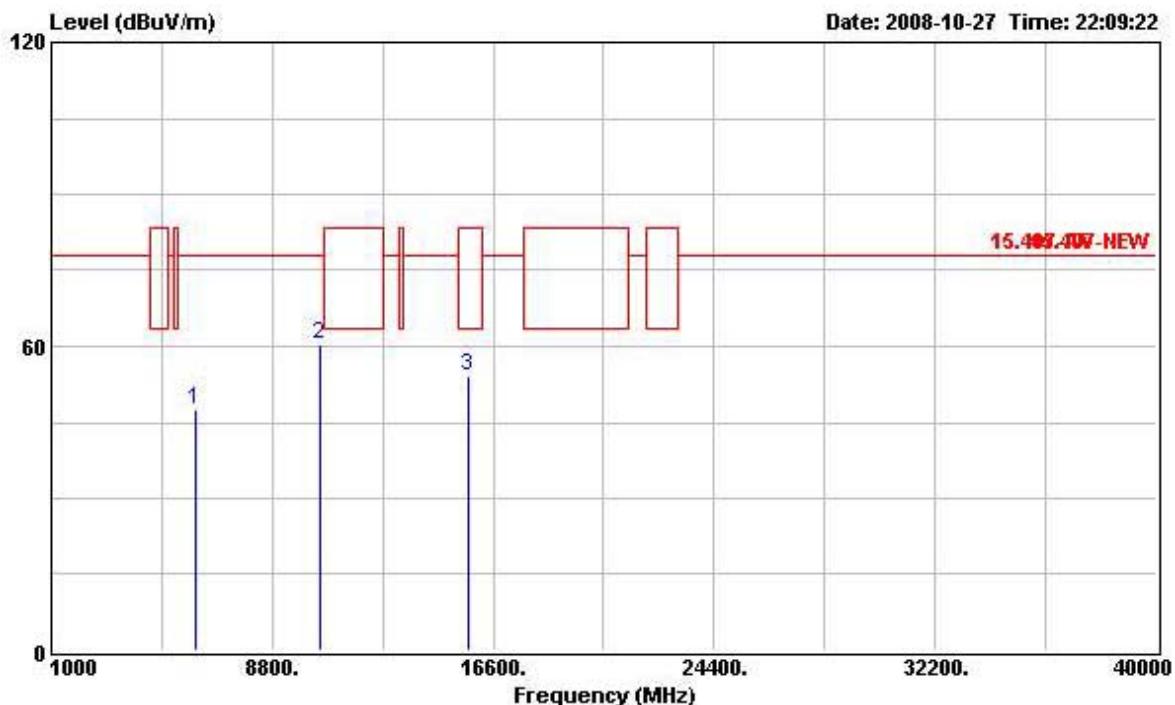
Freq	Level	Over Limit	Limit Line	Read	Probe	Cable	Preamp	Ant Pos	Table Pos
				Level	Factor	Cable	Preamp		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB	cm	deg
1 1698.000	44.80	-33.04	77.84	53.64	26.02	0.00	34.86	Peak	---
2 10380.000	59.48	-18.36	77.84	56.55	38.33	0.00	35.40	Peak	---
3 15572.000	52.77	-30.77	83.54	50.33	37.60	0.00	35.16	Peak	---

Vertical



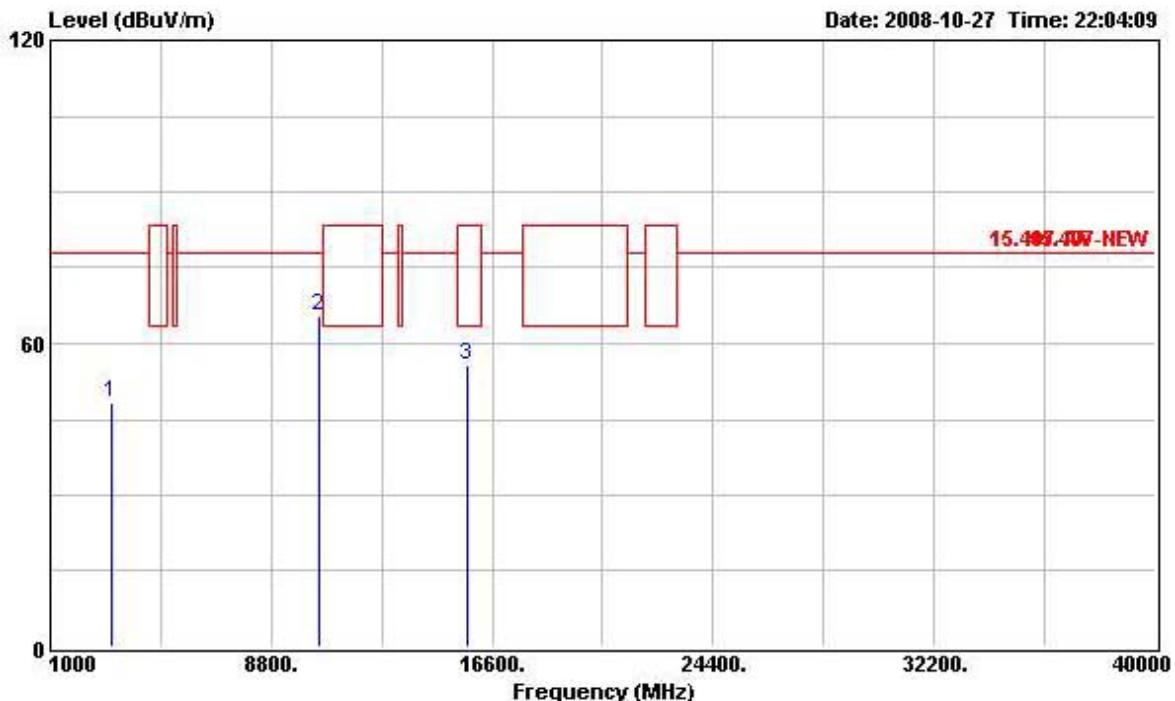
Freq	Level	Over Limit	Limit Line	Read		Probe Level	Cable Factor	Preamp Factor	Remark	Ant Pos	Table Pos
				MHz	dBuV/m	dB	dBuV/m	dB			
1	1698.000	44.76	-33.08	77.84	53.60	26.02	0.00	34.86	Peak	---	---
2	10382.000	55.18	-22.66	77.84	52.25	38.33	0.00	35.40	Peak	---	---
3	15578.000	53.71	-29.83	83.54	51.32	37.58	0.00	35.19	Peak	---	---

Test date	Oct. 27, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5230MHz

Horizontal

Freq	Level	Over Limit	Limit Line	Read	Probe	Cable	Preamp	Ant Pos	Table Pos
				Level	Factor	Loss	Factor		
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	cm	deg
1	6104.000	47.59	-30.25	77.84	48.37	34.24	0.00	35.02 Peak	---
2	10460.000	60.20	-17.64	77.84	57.17	38.37	0.00	35.34 Peak	---
3	15690.000	54.27	-9.27	63.54	52.16	37.43	0.00	35.32 Average	---

Vertical



Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Preamp		Ant Pos	Table Pos
						dB	dBuV		
MHz	dBuV/m							cm	deg
1 3155.100	48.50	-29.34	77.84	53.12	30.44	0.00	35.06	Peak	---
2 10460.000	65.56	-12.28	77.84	62.53	38.37	0.00	35.34	Peak	---
3 15690.000	55.75	-7.79	63.54	53.64	37.43	0.00	35.32	Average	---

Note:

The amplitude of spurious emissions that 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.

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 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].

3.7 Band Edge and Fundamental Emissions Measurement

3.7.1 Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/m at 3m); for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

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)	1 MHz /1 MHz for Peak

3.7.3 Test Procedures

1. The test procedure is the same as section 3.6.3, only the frequency range investigated is limited to 100MHz around bandedges.
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

Dipole Ant. (Black)

Test date	Oct. 27, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5170MHz, 5230MHz

5170MHz

Freq	Level	Over Limit		Read Line	Probe Level	Cable Preamp		Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB			
1	5149.500	74.88	-8.66	83.54	41.34	33.54	0.00	0.00 Peak	---	---
2	X 5170.300	118.47			84.90	33.57	0.00	0.00 Peak	---	---
1	5150.000	52.84	-25.00	77.84	19.30	33.54	0.00	0.00 Average	---	---
2	X 5170.200	94.59			61.02	33.57	0.00	0.00 Average	---	---

An item 2 is Fundamental Emissions.

5230MHz

Freq	Level	Over Limit		Read Line	Probe Level	Cable Preamp		Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB			
1	X 5230.940	116.15			82.48	33.67	0.00	0.00 Peak	---	---
2	5361.980	64.23	-19.31	83.54	30.34	33.89	0.00	0.00 Peak	---	---
1	X 5230.140	89.78			56.11	33.67	0.00	0.00 Average	---	---
2	5356.860	51.55	-11.99	63.54	17.69	33.86	0.00	0.00 Average	---	---

An item 1 is Fundamental Emissions.

Dipole Ant. (White)

Test date	Oct. 27, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5170MHz, 5230MHz

5170MHz

Freq	Level	Over Limit		Read Line	Probe Factor	Cable Preamp		Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB			
1	5149.990	74.62	-8.92	83.54	41.08	33.54	0.00	0.00 Peak	---	---
2	X 5170.300	115.24			81.67	33.57	0.00	0.00 Peak	---	---
1	5148.700	51.74	-11.80	63.54	18.20	33.54	0.00	0.00 Average	---	---
2	X 5170.300	91.88			58.31	33.57	0.00	0.00 Average	---	---

An item 2 is Fundamental Emissions.

5230MHz

Freq	Level	Over Limit		Read Line	Probe Factor	Cable Preamp		Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB			
1	X 5230.300	113.91			80.24	33.67	0.00	0.00 Peak	---	---
2	5351.100	64.13	-19.41	83.54	30.27	33.86	0.00	0.00 Peak	---	---
1	X 5230.300	88.50			54.83	33.67	0.00	0.00 Average	---	---
2	5364.700	51.55	-11.99	63.54	17.66	33.89	0.00	0.00 Average	---	---

An item 1 is Fundamental Emissions.

Chip Ant.

Test date	Oct. 27, 2008	Test Site No.	03CH02-HY
Temperature	26	Humidity	52.6%
Test Engineer	Sam	Configuration	5170MHz, 5230MHz

5170MHz

Freq	Level	Over Limit		Read Line	Probe Factor	Cable Preamp			Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		
1	5142.700	64.97	-18.57	83.54	31.43	33.54	0.00	0.00	Peak	---
2	X 5171.000	107.69			74.12	33.57	0.00	0.00	Peak	---
1	5149.950	51.17	-12.37	63.54	17.63	33.54	0.00	0.00	Average	---
2	X 5170.600	86.27			52.70	33.57	0.00	0.00	Average	---

An item 2 is Fundamental Emissions.

5230MHz

Freq	Level	Over Limit		Read Line	Probe Factor	Cable Preamp			Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB		
1 X	5230.950	108.62			74.95	33.67	0.00	0.00	Peak	---
2	5362.350	64.52	-19.02	83.54	30.63	33.89	0.00	0.00	Peak	---
1 X	5229.150	84.57			50.90	33.67	0.00	0.00	Average	---
2	5355.750	51.54	-12.00	63.54	17.68	33.86	0.00	0.00	Average	---

An item 1 is Fundamental Emissions.

Note:

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

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

The limits above 5GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 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].

3.8 Frequency Stability Measurement

3.8.1 Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or $\pm 20\text{ppm}$.

3.8.2 Measuring Instruments and Setting

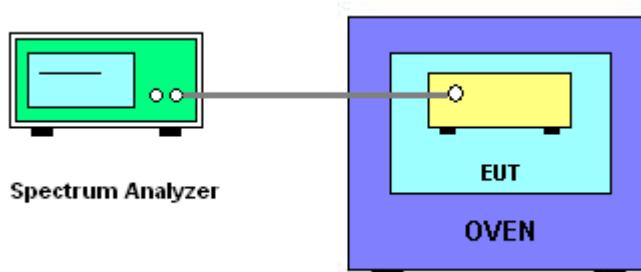
Please refer to section 4 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RB	10 kHz
VB	10 kHz
Sweep Time	Auto

3.8.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c-f)/f_c \times 10^6$ ppm and the limit is less than $\pm 20\text{ppm}$.
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature rule is $-30^\circ\text{C} \sim 50^\circ\text{C}$.

3.8.4 Test Setup Layout



3.8.5 Test Deviation

There is no deviation with the original standard.

3.8.6 EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

3.8.7 Test Result of Frequency Stability

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5190
138	5189.998800
120	5189.998300
102	5189.997100
Max. Deviation (MHz)	0.002900
Max. Deviation (ppm)	0.56

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
()	5190
-30	5189.960000
-20	5189.970000
-10	5189.980000
0	5189.980000
10	5189.980000
20	5189.988000
30	5189.990000
40	5190.010000
50	5190.020000
Max. Deviation (MHz)	0.040000
Max. Deviation (ppm)	7.71

3.9 Antenna Requirements

3.9.1 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.

3.9.2 Antenna Connector Construction

Please refer to section 2.2 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	100132	9kHz – 2.75GHz	Jul. 24, 2008	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/004	9kHz – 30MHz	Mar. 24, 2008	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/009	9kHz – 30MHz	Mar. 13, 2008	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 – 60Hz	N/A	Conduction (CO01-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832010001	9kHz – 30MHz	May 07, 2008	Conduction (CO01-HY)
Isolation Transformer	Erika Fiedler OHG	D-65396 Walluf	58	45MHz-2.15GHz	N/A	Conduction (CO01-HY)

Note: Calibration Interval of instruments listed above is one 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 12, 2008	Radiation (03CH02-HY)
Amplifier	ADVANTEST	BB525C	CH300001	9 kHz - 2 GHz	Dec. 05, 2007	Radiation (03CH02-HY)
Spectrum Analyzer	R&S	FSP40	100305/040	9 kHz - 40GHz	Jan. 10, 2008	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30 MHz - 2 GHz	Dec. 22, 2007	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. 08, 2007	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02373	1GHz – 26.5 GHz	Jul. 16, 2008	Radiation (03CH02-HY)
Horn Antenna	EMCO	3115	6903	1GHz~18GHz	Apr. 21, 2008	Radiation (03CH02-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX106	03CH02-HY	1GHz~40GHz	Dec. 12, 2007	Radiation (03CH02-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	FSP30	100023	9kHz ~ 30GHz	Jan. 10, 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, 2008	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, 2007	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 01, 2007	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Nov. 14, 2007	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 10, 2008	Conducted (TH01-HY)
Oscilloscope	Tektonix	TDS380	B016197	400MHz/ 2GS/s	Jun. 27, 2008	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, 2008*	Conducted (TH01-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 2 nd 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.: L1190-070110

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

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : January 10, 2007

P1, total 9 pages

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