FCC TEST REPORT

CATEGORY	:	Mobile
PRODUCT NAME	:	Fusion 50
FCC ID.	:	PPQ- FUSION50
FILING TYPE	:	Certification
BRAND NAME	:	U4EA
MODEL NAME	:	Fusion 50
APPLICANT	:	**LITE-ON Technology Corp.** 4F, No.90, Chien 1 Rd., Chung-Ho 235, Taipei Hsien, Taiwan, R.O.C.
MANUFACTURER	:	**DONG GUAN G-COM COMPUTER CO., LTD.** 1st Row Yin Shan Rd., Yin Hwu Industrial Area, Qingxi Town, DongGuan City, Guang Dong, China
ISSUED BY	:	**SPORTON INTERNATIONAL INC.** 6F, No. 106, Sec. 1, Hsin Tai Wu Rd., His Chih, Taipei Hsien, Taiwan, R.O.C.

Statements:

Only the test result of 802.11a part is shown in this test report.

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

Testing Laboratory
1190

ILAC MRA

Table of Contents

History of this test report

Original Report Issue Date: Sep. 12, 2008

Report No.: FR493039-03AA

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

with

47 CFR FCC Part 15 Subpart C (Section 15.407)

PRODUCT NAME : Fusion 50

BRAND NAME : U4EA

MODEL NAME : Fusion 50

APPLICANT : **LITE-ON Technology Corp.**
4F, No.90, Chien 1 Rd., Chung-Ho 235, Taipei Hsien, Taiwan, R.O.C.

MANUFACTURER : **DONG GUAN G-COM COMPUTER CO., LTD.**
1st Row Yin Shan Rd., Yin Hwu Industrial Area, Qingxi Town, DongGuan City, Guang Dong, China

I **HEREBY** CERTIFY THAT:

The measurements shown in this test report were made in accordance with the procedures given in ANSI C63.4 - 2003 and all test are performed according to 47 CFR FCC Part 15.

Testing was update on Sep. 11, 2008 at SPORTON International Inc. LAB.

12-9-08

Wayne Hsu
Sporton International Inc.

1. General Description of Equipment under Test

1.1. Applicant

LITE-ON Technology Corp.
4F, No.90, Chien 1 Rd., Chung-Ho 235, Taipei Hsien, Taiwan, R.O.C.

1.2. Manufacturer

DONG GUAN G-COM COMPUTER CO., LTD.
1st Row Yin Shan Rd., Yin Hwu Industrial Area, Qingxi Town, DongGuan City, Guang Dong, China

1.3. Basic Description of Equipment under Test

The different with original device is additional new adapter and appearance of the product. Update the test of AC power line conducted and Radiated Emissions (9KHz~1GHz) in this report.

1.4. Features of Equipment under Test

Items		Description
Type of Modulation	:	OFDM (16QAM / 64QAM / DQPSK / DBPSK)
Number of Channels	:	11
Frequency Band	:	5150MHz ~ 5250MHz, 5725MHz ~ 5825MHz
Carrier Frequency	:	See section 1.6 for details
Data Rate	:	6/9/12/18/24/36/48/54/108Mbps
Max. Conducted Output Power	:	See section 1.7 for details
Communication Type	:	Half-Duplex
Testing Duty Cycle	:	100.00%
Test Power Source	:	120.00V AC

1.5. Antenna Description

No.	Brand name	Model Name	Antenna Type	Gain (dBi)
1	3COM	3CWE502	Reverse-SMA Omni Antenna	2.50dBi @5GHz

1.6. Table for Carrier Frequencies

Normal Mode

Frequency Bands			
5150MHz ~ 5250MHz		5725MHz ~ 5825MHz	
Channel	Frequency	Channel	Frequency
01	5180 MHz	05	5745 MHz
02	5200 MHz	06	5765 MHz
03	5220 MHz	07	5785 MHz
04	5240 MHz	08	5805 MHz

Turbo Mode

Frequency Bands			
5150MHz ~ 5250MHz		5725MHz ~ 5825MHz	
Channel	Frequency	Channel	Frequency
01	5210 MHz	02	5760 MHz
-	-	03	5800 MHz

1.7. Table for Maximum Conducted Output Power

Normal Mode

Maximum Conducted Output Power (dBm)	
Frequency Bands 5150MHz ~ 5250MHz	Frequency Bands 5725MHz ~ 5825MHz
14.91	23.44

Turbo Mode

Maximum Conducted Output Power (dBm)	
Frequency Bands 5150MHz ~ 5250MHz	Frequency Bands 5725MHz ~ 5825MHz
14.31	17.30

2. Test Configuration of the Equipment under Test

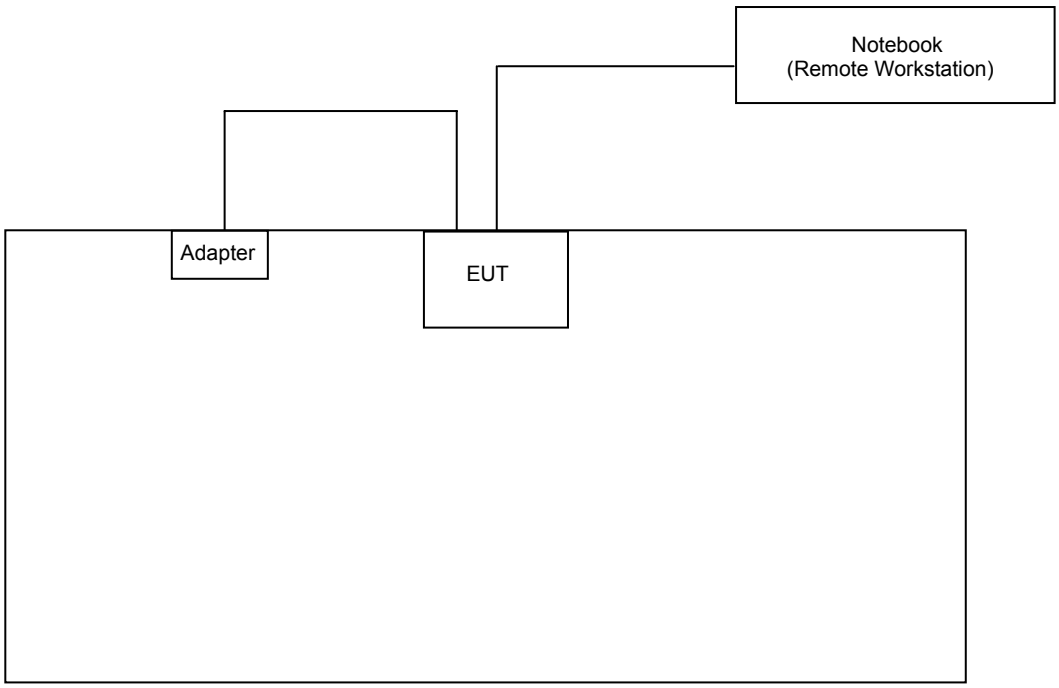
2.1. The Test Mode Description

1. For OFDM modulation, BPSK is the worst case on all test items.
2. AC conduction emission is only LAN 100Mbps was the tested.
3. Spurious emission below 1GHz is only normal mode was the tested.

2.2. Description of Test Supporting Units

Support unit	Brand	Model No.	CE mark
Notebook	DELL	D400	Yes
Mouse (USB)	Microsoft	1004	Yes
Modem	ACEEX	DM1414	Yes
Notebook (Remote Workstation)	DELL	D400	Yes
Notebook (Remote Workstation)	COMPAQ	PRESARIO 1500	Yes

2.3. Connection Diagram of Test System



3. General Information of Test

3.1. Test Facility

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C.

: TEL 886-3-327-3456

: FAX 886-3-318-0055

Test Site No : CO04-HY / 03CH03-HY / TH01-HY

3.2. Test Conditions

Normal Voltage : 120.00V (power adapter)

Normal Temperature : 20°C

3.3. Standards for Methods of Measurement

Here is the list of the standards followed in this test report.

ANSI C63.4-2003

47 CFR Part 15 Subpart C (Section 15.407)

3.4. DoC Statement

This EUT is also classified as a device of computer peripheral Class B which DoC has to be followed. It has been verified according to the rule of 47 CFR part 15 Subpart B, and found that all the requirements has been fulfilled.

3.5. Frequency Range Investigated

Radiated emission test: from 9 KHz to 10th carrier harmonic.

3.6. Test Distance

The test distance of radiated emission (9KHz~1GHz) test from antenna to EUT is 3 M.

The test distance of radiated emission (1GHz~10th carrier harmonic) test from antenna to EUT is 3 M.

3.7. Test Software

During testing, Channel & Power Controlling Software: This was provided by the manufacturer and is able to let the test engineer select the operating channel as well as the RF output power. The parameters for channel selection is trying to offer the test engineer the ability to fix the operating channel for testing, both normal data and continuously transmitting modes are allowed, and that for 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.

4. List of Measurements

4.1. Summary of the Test Results

Applied Standard: 47 CFR Part 15 and Part 2

Paragraph	FCC Rule	Description of Test	Result
5.1	15.407	26dB Spectrum Bandwidth	Pass
5.2	15.407	Maximum Conducted Output Power	Pass
5.3	15.407	Peak Power Spectral Density	Pass
5.4	15.407	Ratio of the Peak Excursion	Pass
5.5	15.407	Band Edges Emission	Pass
5.6	15.407	Test of Frequency Stability	Pass
5.7	15.407	AC Power Line Conducted Emission	Pass
5.8	15.209/15.407	Spurious Radiated Emission	Pass
5.9	15.203/15.407	Antenna Requirement	Pass
5.10	2.1091	Maximum Permissible Exposure	Pass

5. Test Result

5.1. Test of 26dB Spectrum Bandwidth

5.1.1. Measuring Instruments and Setting

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

5.1.2. Test Procedures

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 300KHz and VBW to 1000KHz.
3. The spectrum width with level higher than 26dB below the peak level.

5.1.3. Test Setup Layout

Spectrum Analyzer EUT

5.1.4. Test Result: See spectrum analyzer plots below

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Sam Lee

Normal Mode

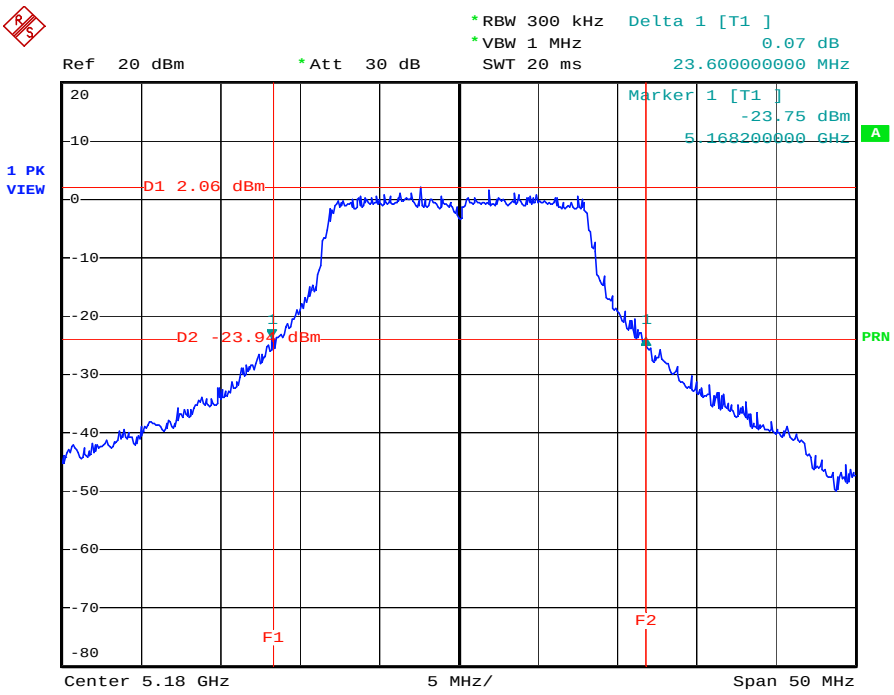
Frequency (MHz)	26dB Bandwidth (MHz)
5180 MHz	23.60
5200 MHz	27.80
5240 MHz	27.00
5745 MHz	23.40
5765 MHz	34.90
5805 MHz	24.30

Turbo Mode

Frequency (MHz)	26dB Bandwidth (MHz)
5210 MHz	47.40
5760 MHz	45.80
5800 MHz	48.60

Normal Mode

5180 MHz



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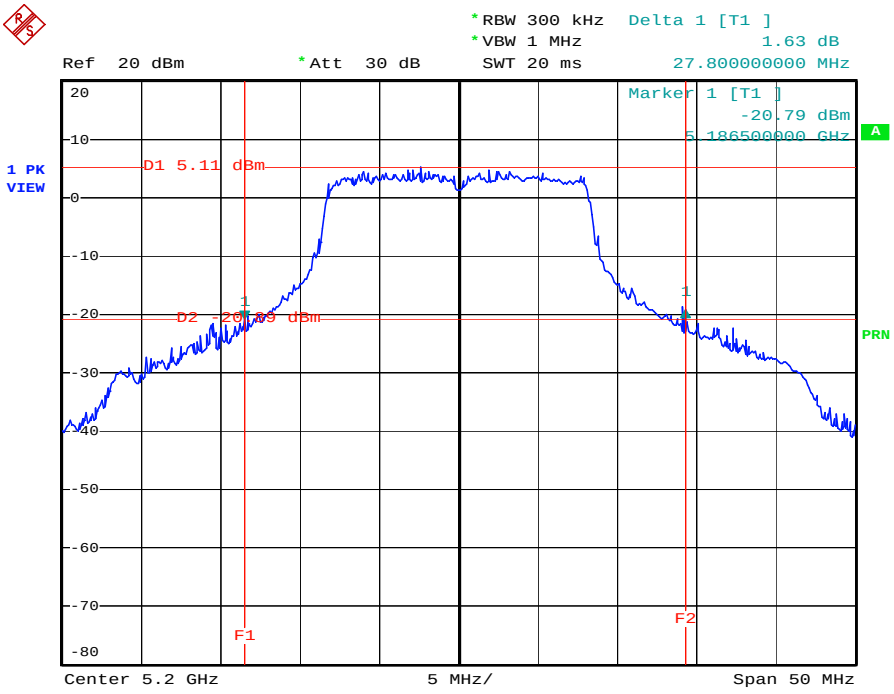
5200 MHz



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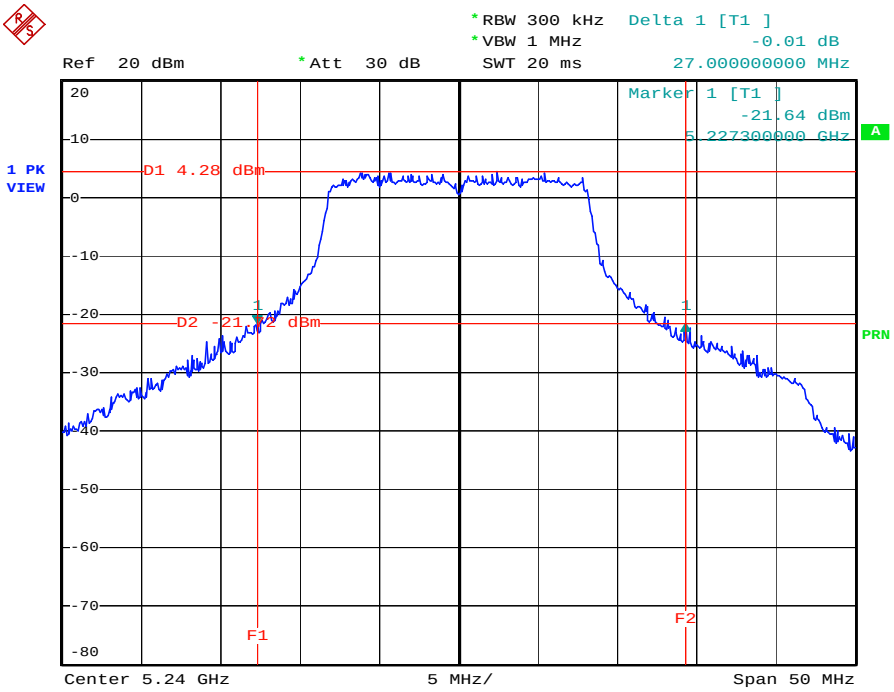
5240 MHz



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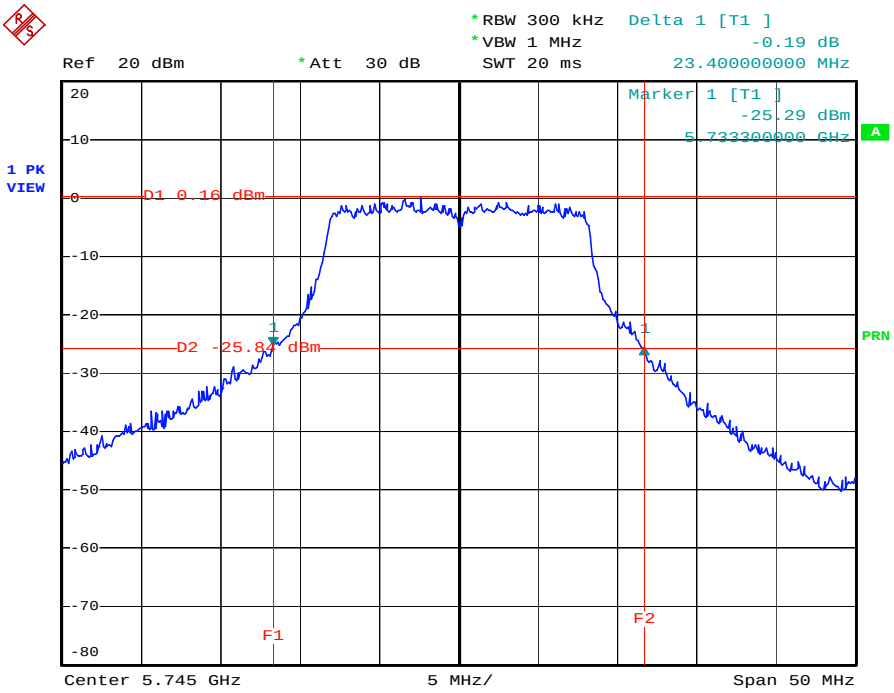
5745 MHz



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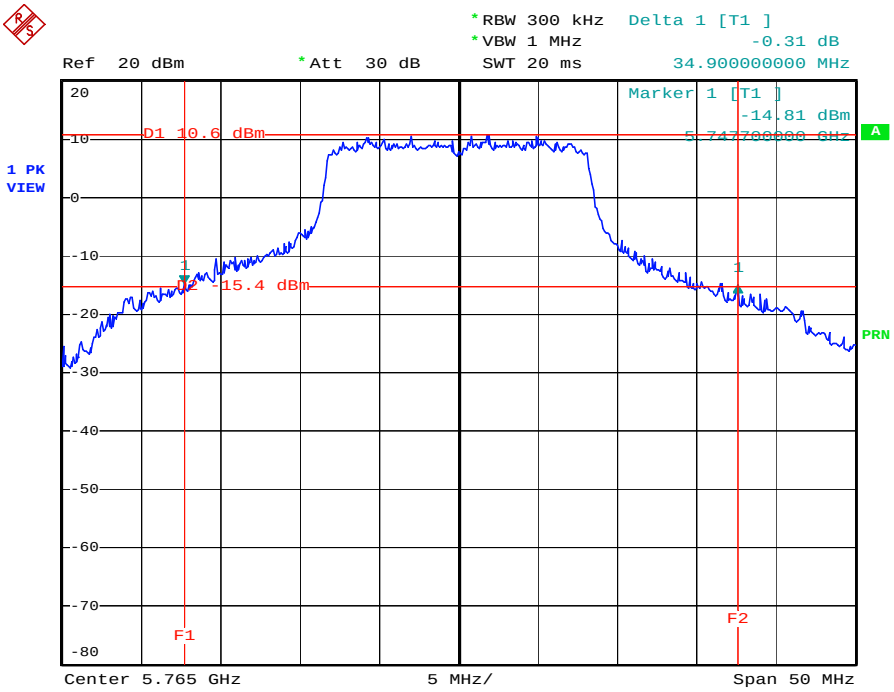
5765 MHz



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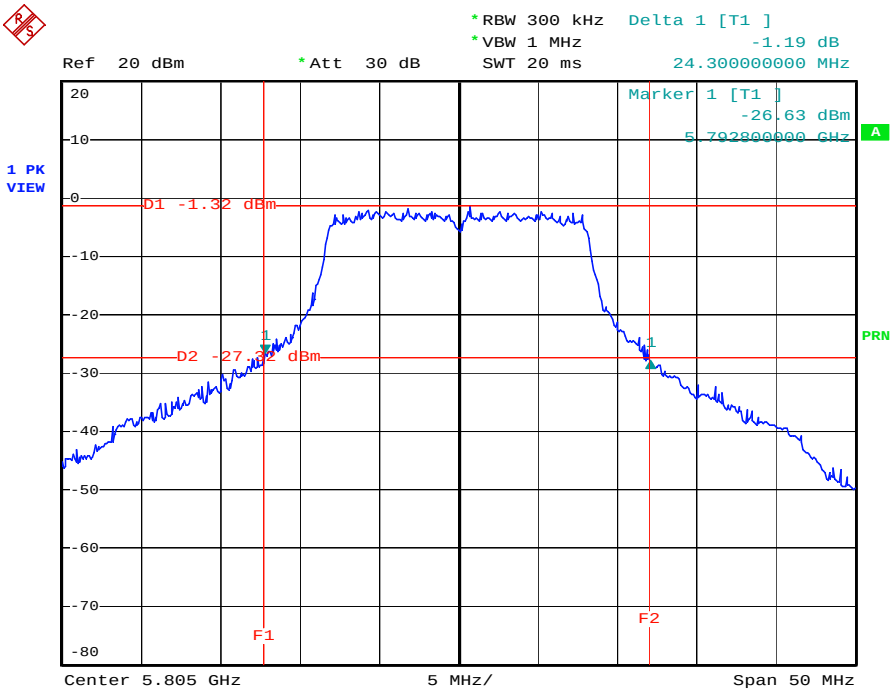
5805 MHz



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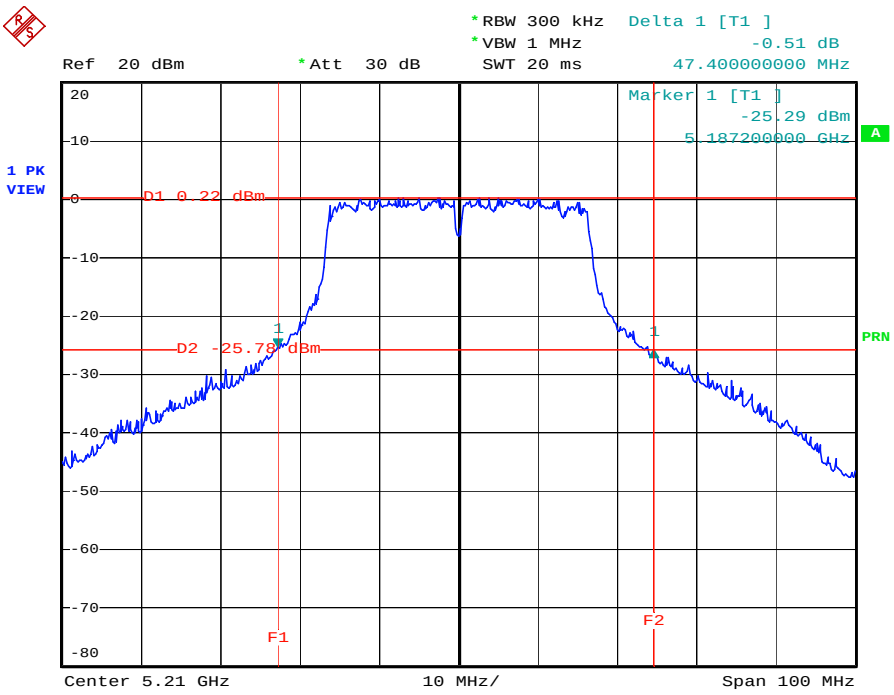
Turbo Mode

5210 MHz



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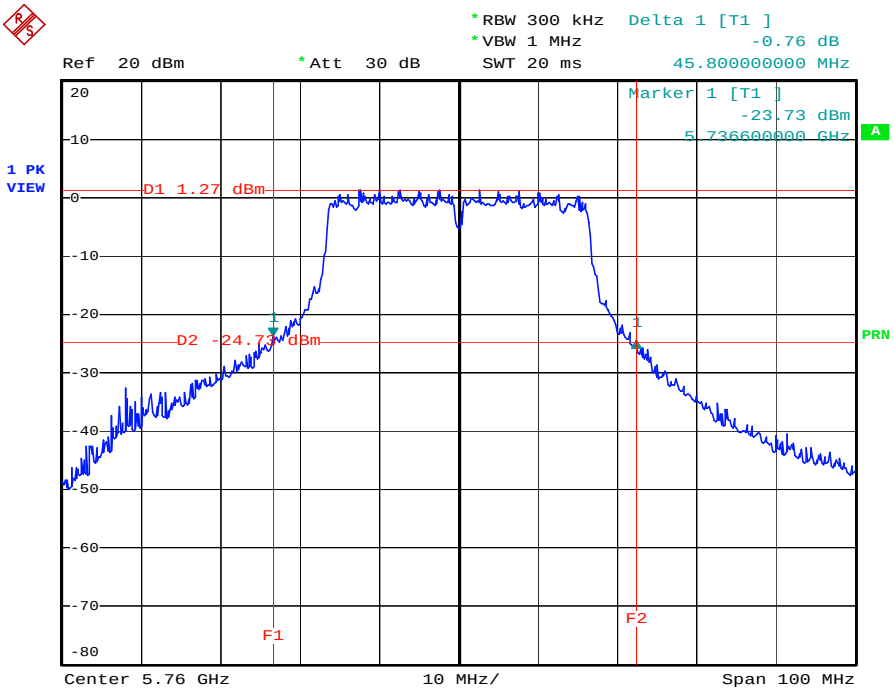
5760 MHz



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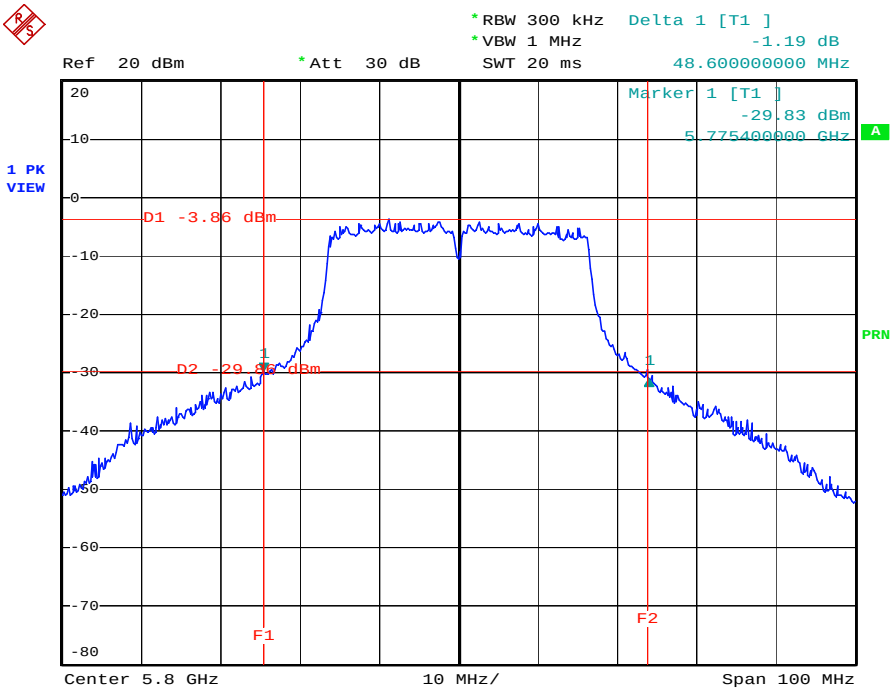
5800 MHz



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5.2. Test of Maximum Conducted Output Power

5.2.1. Limit

For the band 5.15~5.25 GHz and 5725~5825MHz, 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 and 1 W (30dBm) or 17 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.

5.2.2. Measuring Instruments and Setting

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

5.2.3. 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.

5.2.4. Test Setup Layout

Spectrum Analyzer EUT

5.2.5. Test Result of Conducted Power

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Sam Lee

Normal Mode

Frequency (MHz)	Output Power (dBm)	Limits (dBm)
5180 MHz	14.77	17
5200 MHz	14.91	17
5240 MHz	14.28	17
5745 MHz	13.08	30
5765 MHz	23.44	30
5805 MHz	13.96	30

The max output power in normal mode:

5150MHz~5250MHz is 14.91dBm / 5725MHz~5825MHz is 23.44dBm

Turbo Mode

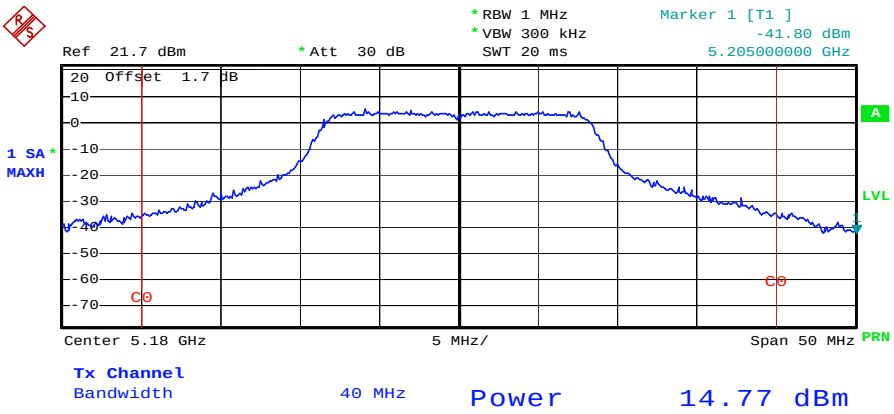
Frequency (MHz)	Output Power (dBm)	Limits (dBm)
5210 MHz	14.31	17
5760 MHz	17.30	30
5800 MHz	11.37	30

The max output power in turbo mode:

5150MHz~5250MHz is 14.31dBm / 5725MHz~5825MHz is 17.30dBm

Normal Mode

5180 MHz



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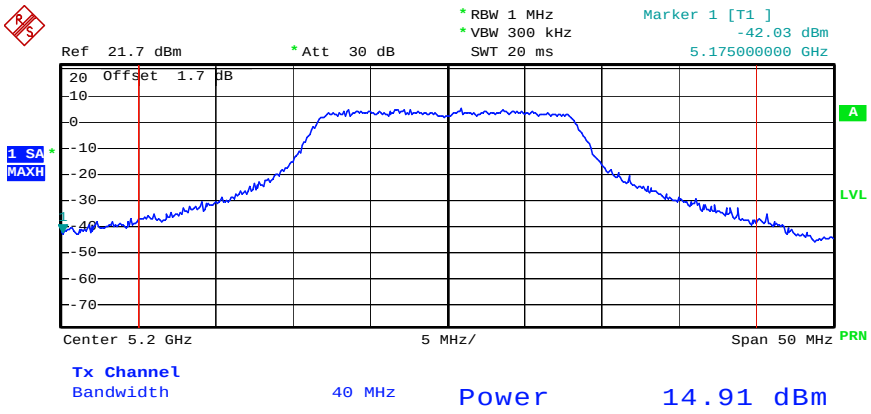
5200 MHz



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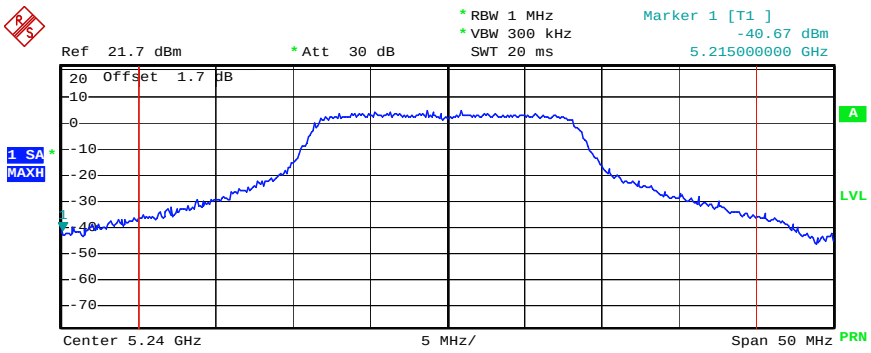
5240 MHz



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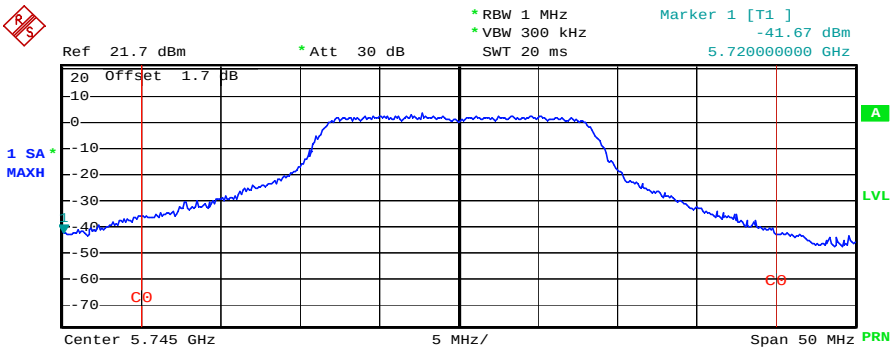

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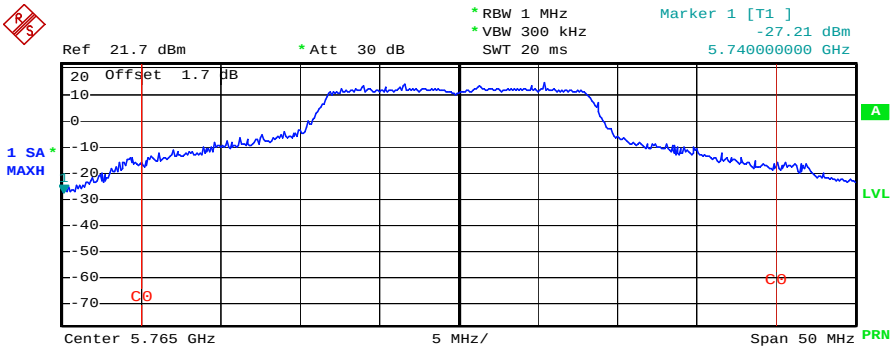
5765 MHz



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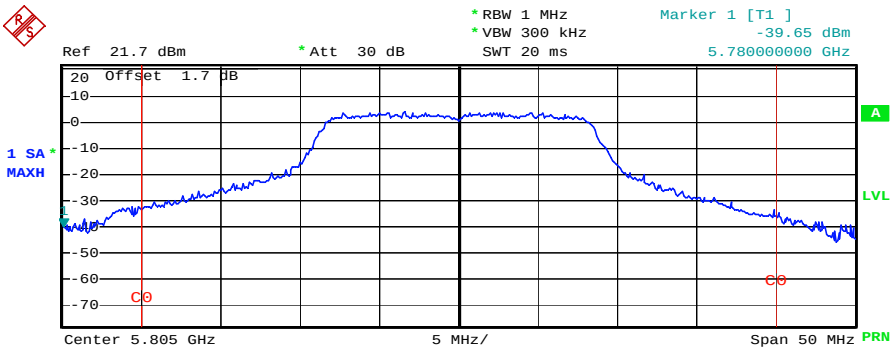
5805 MHz



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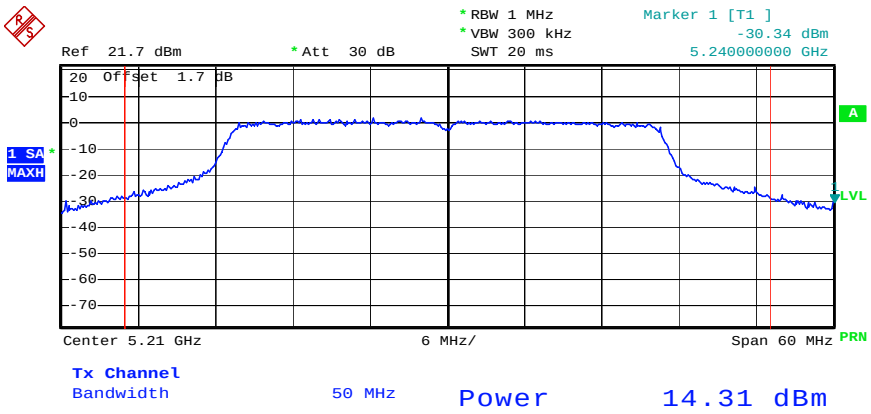
Turbo Mode

5210 MHz



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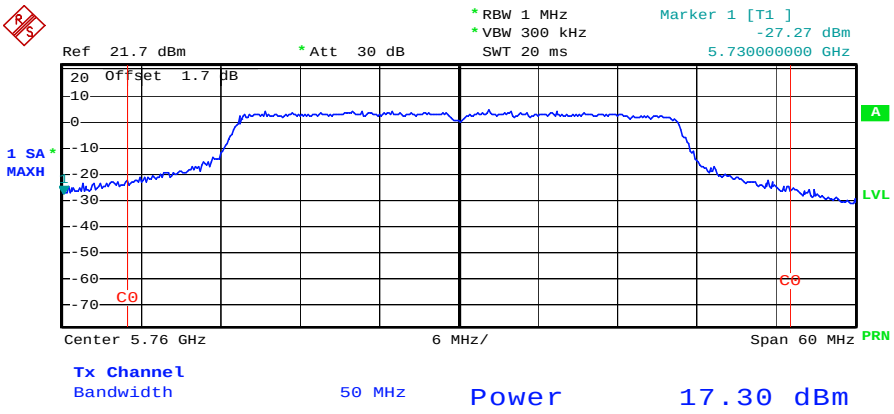
5760 MHz



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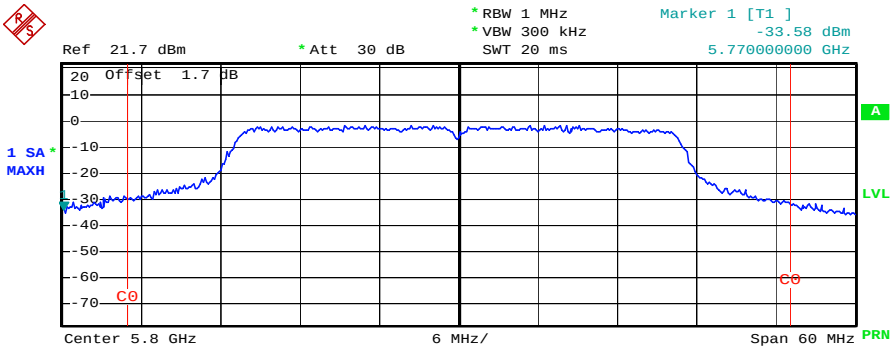
5800 MHz



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5.3. Test of Peak Power Spectral Density

5.3.1. Measuring Instruments and Setting

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

5.3.2. Test Procedures

1. According to FCC DA 02-2138 test procedure, EUT connected to spectrum analyzer, then used the same setup as power measurement of spectrum analyzer.
2. Repeated the 1 for the middle and highest channel of the EUT.

5.3.3. Test Setup Layout

Spectrum Analyzer EUT

5.3.4. Test Result of conducted peak power spectral density:

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Sam Lee

Normal Mode

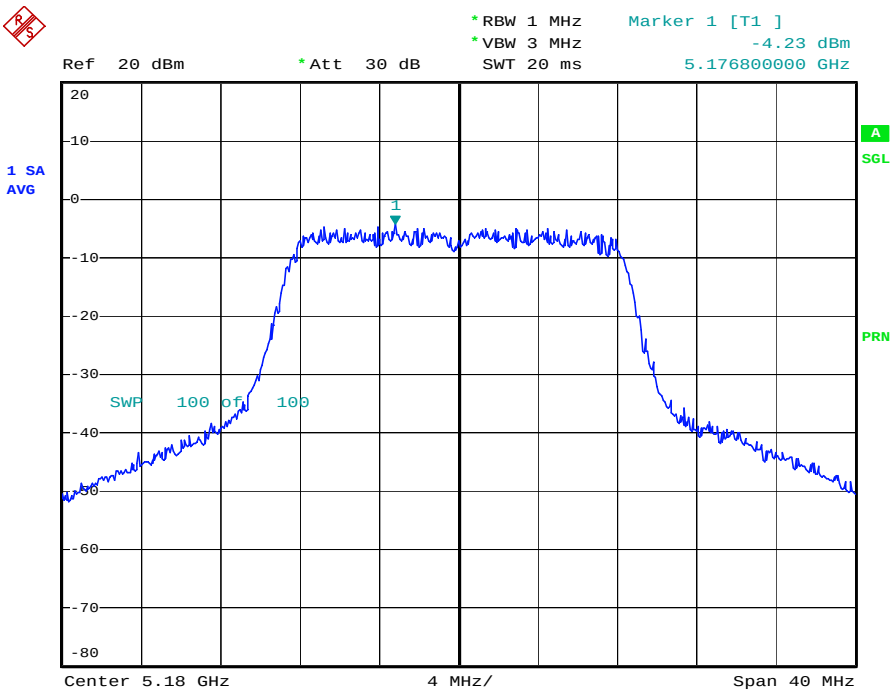
Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
01	5180 MHz	-4.23	4
02	5200 MHz	-1.44	4
04	5240 MHz	-1.38	4
05	5745 MHz	-6.55	17
06	5765 MHz	4.54	17
08	5805 MHz	-8.07	17

Turbo Mode

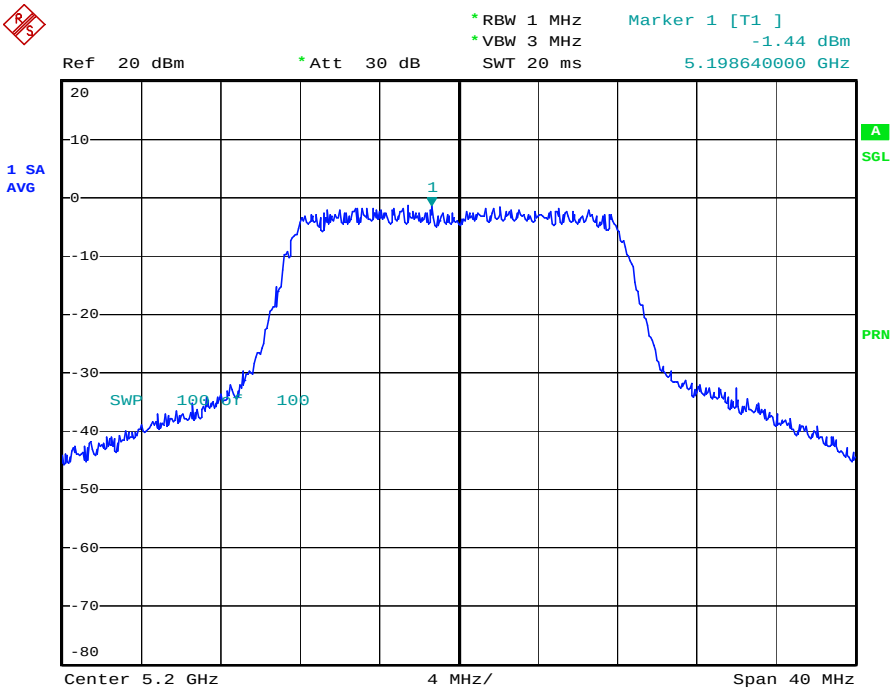
Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
01	5210 MHz	-5.71	2
02	5760 MHz	-4.44	15
03	5800 MHz	-9.97	15

Normal Mode

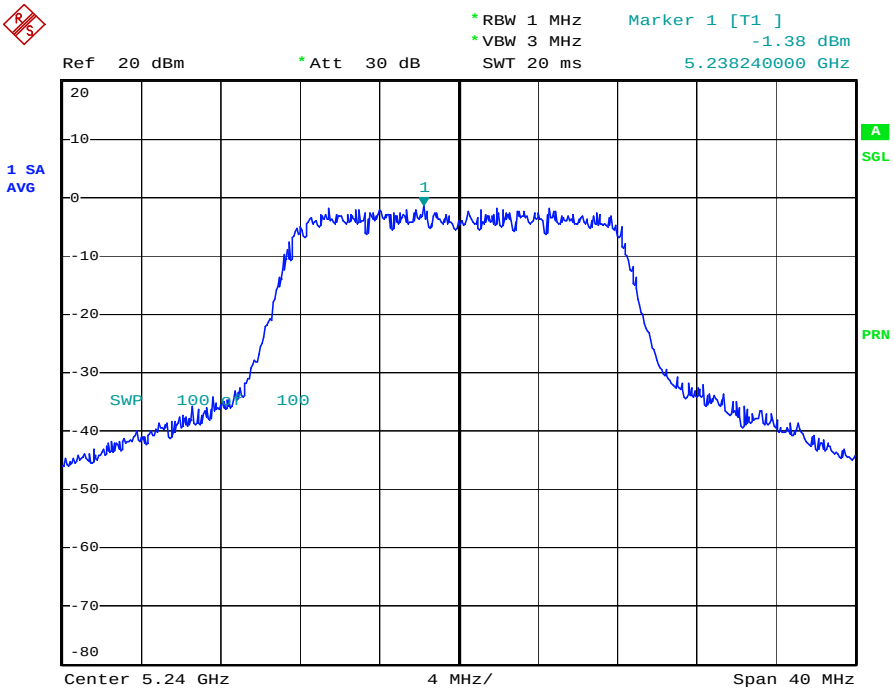
5180 MHz



5200 MHz



5240 MHz



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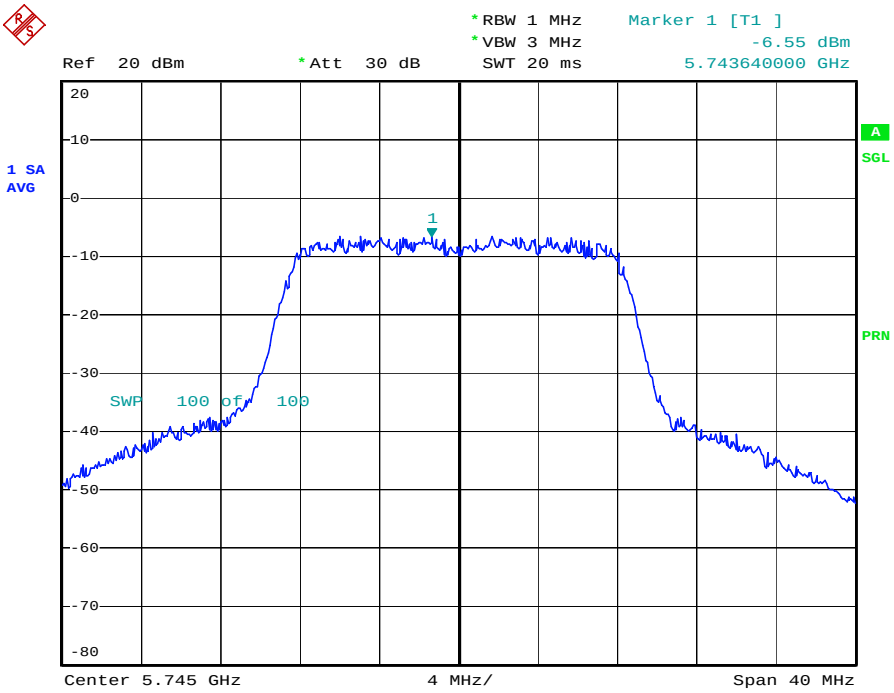
5745 MHz



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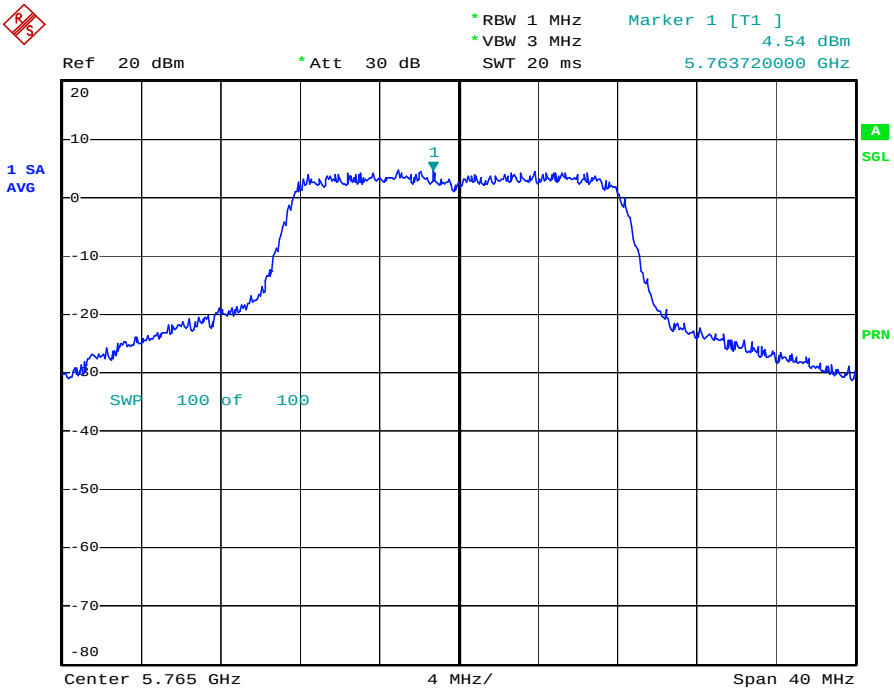
5765 MHz



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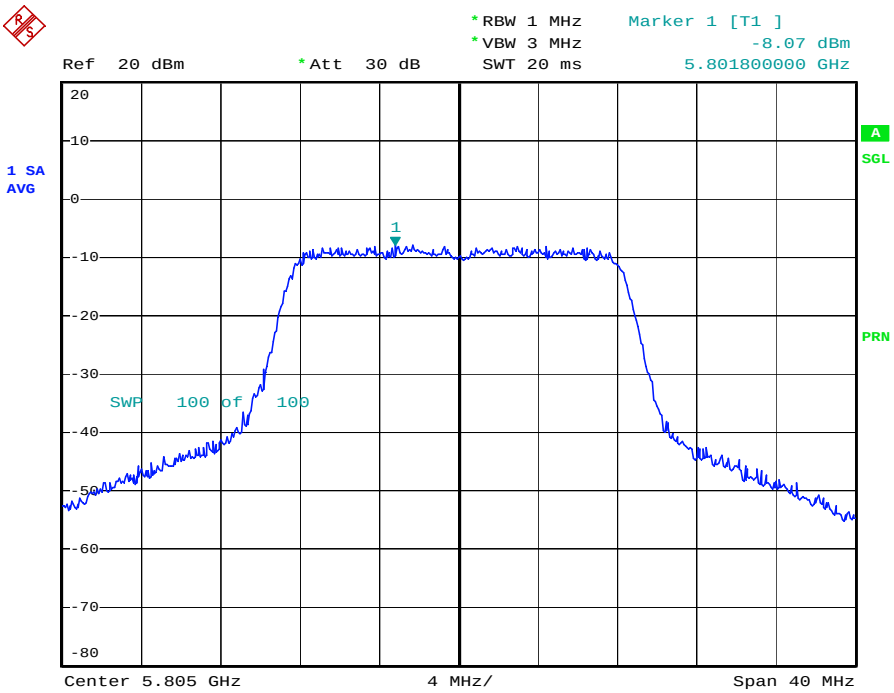
5805 MHz



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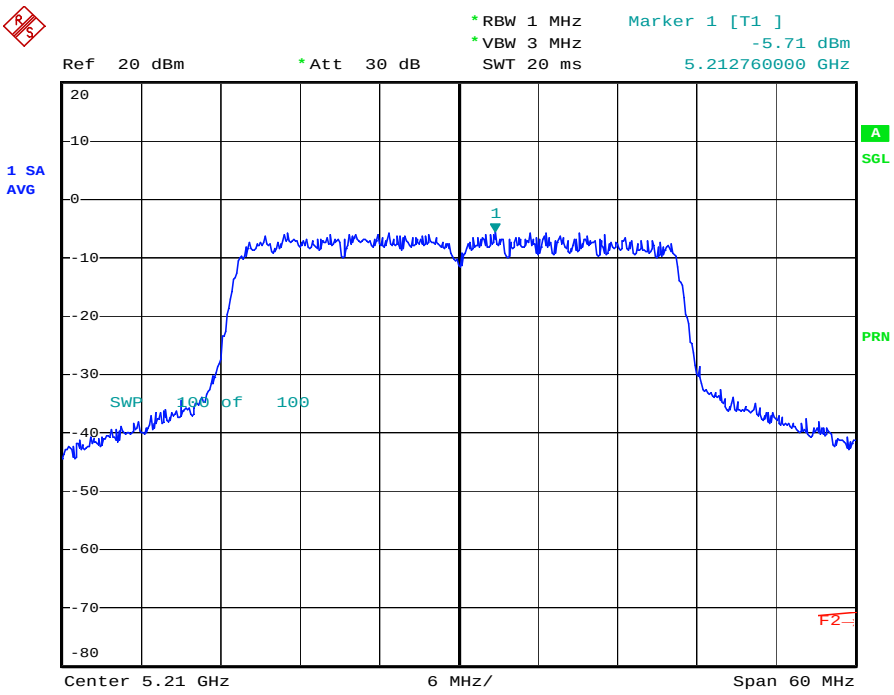
Turbo Mode

5210 MHz



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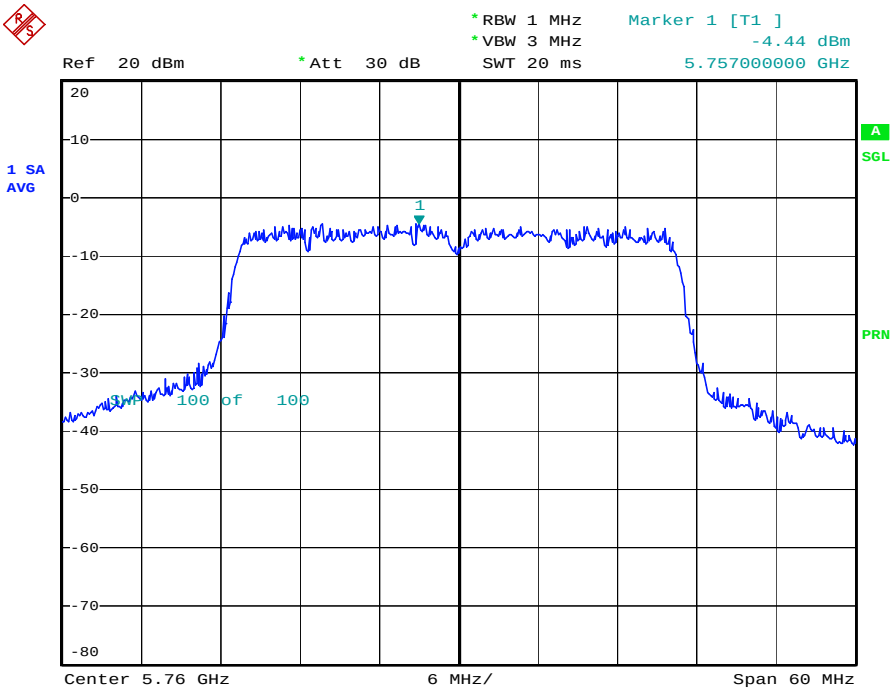

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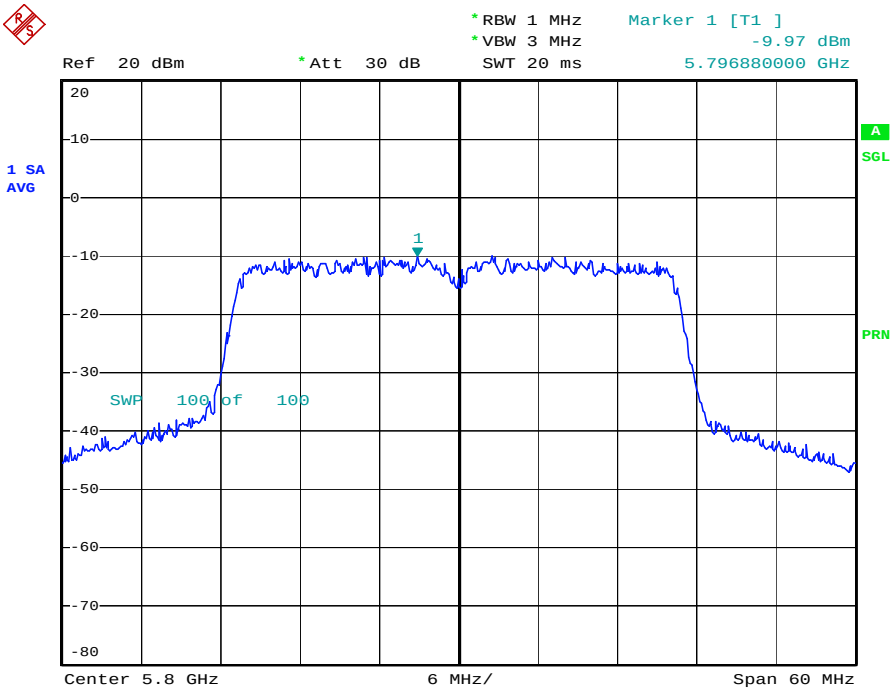
5800 MHz


*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-9.97 dBm
5.796880000 GHz
Ref 20 dBm
*Att 30 dB
1 SA
AVG
A
SGL
PRN
SWP 100 of 100
Center 5.8 GHz
6 MHz/
Span 60 MHz
Date: 23.OCT.2004 12:28:56

5.4. Ratio of the Peak Excursion

5.4.1. Measuring Instruments and Setting

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

5.4.2. Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Trace 1:Set RBW of spectrum analyzer to 1000kHz and VBW to 3000kHz.
3. Use peak detector mode, Max-hold and search the peak of trace 1.
4. Trace 1:Set RBW of spectrum analyzer to 1000kHz and VBW to 3000kHz.
5. Use sample detector mode, trace max-hold and search the peak of trace 2
6. The delta limits is 13dB between trace 1 and trace 2 of the peak value.

5.4.3. Test Setup Layout

5.4.4. Test Result of conducted peak power spectral density

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Sam Lee

Normal Mode

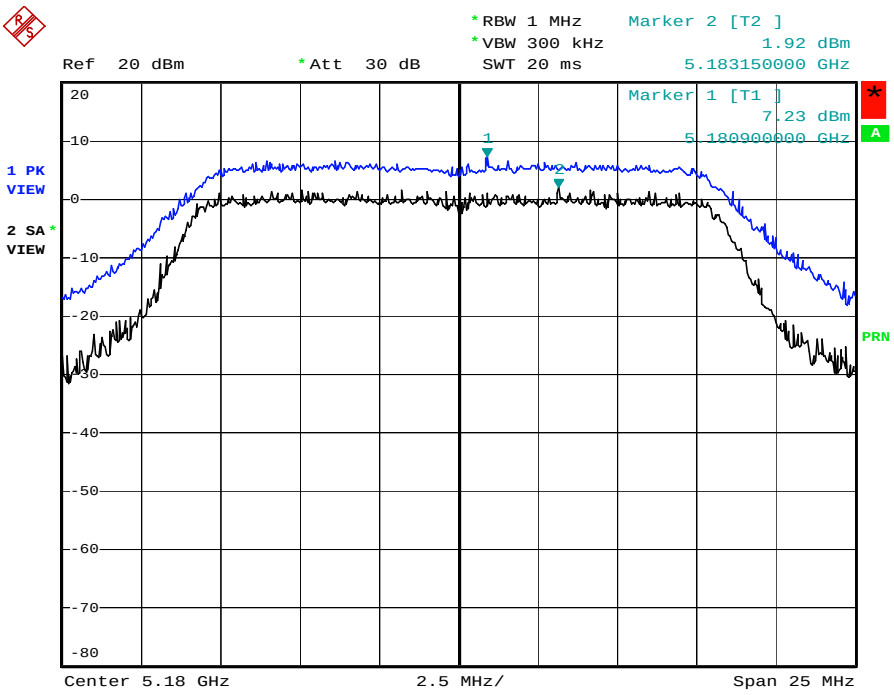
Channel	Frequency (MHz)	Peak Excursion (dB)	Max. Limits (dB)
01	5180 MHz	5.31	13
02	5200 MHz	4.91	13
04	5240 MHz	5.14	13
05	5745 MHz	5.26	13
06	5765 MHz	4.23	13
08	5805 MHz	4.27	13

Turbo Mode

Channel	Frequency (MHz)	Peak Excursion (dB)	Max. Limits (dB)
01	5210 MHz	4.66	13
02	5760 MHz	5.12	13
03	5800 MHz	3.90	13

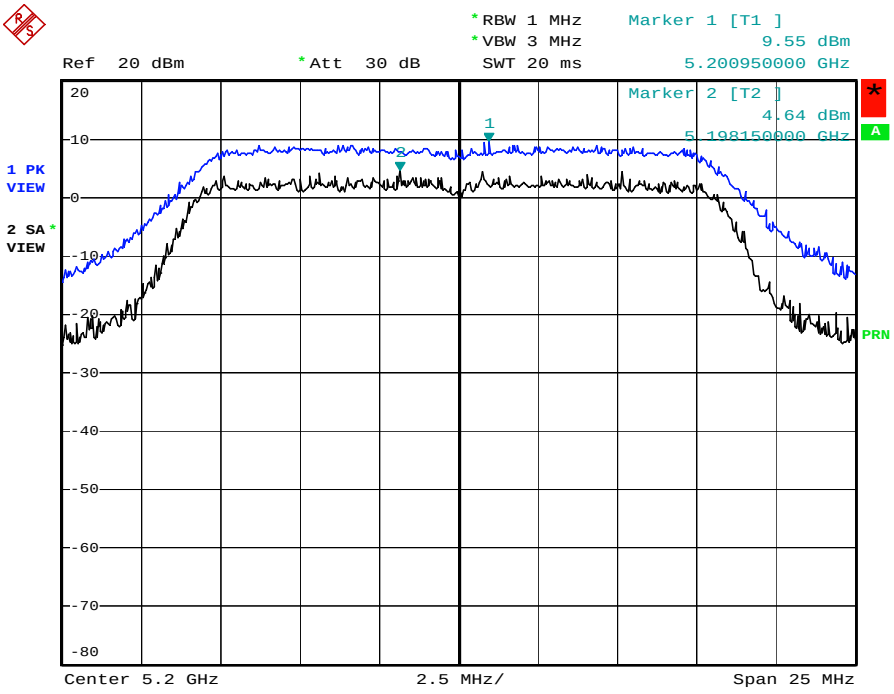
Normal Mode

5180 MHz



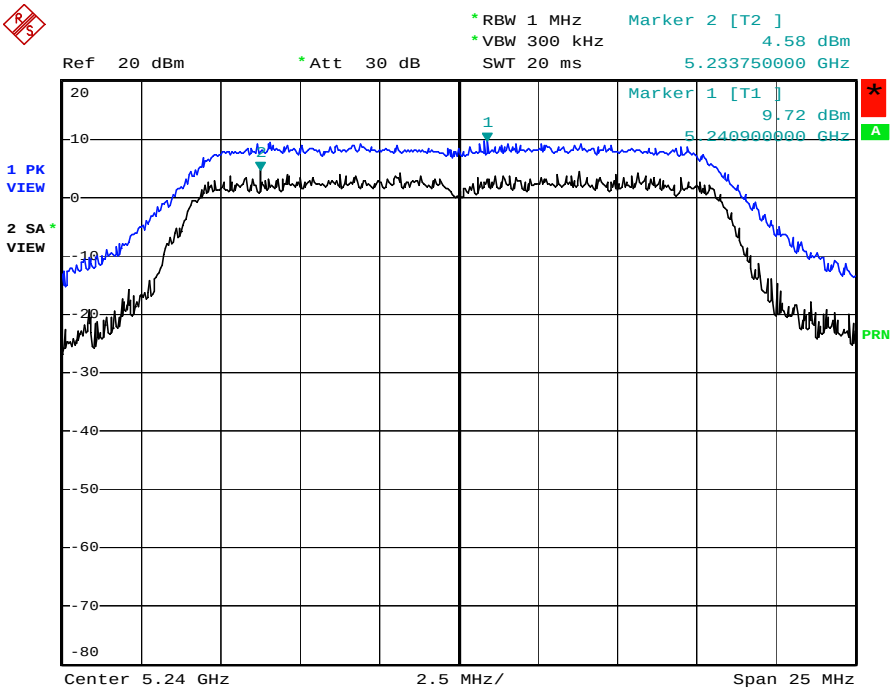
Date: 23.OCT.2004 14:44:39

5200 MHz



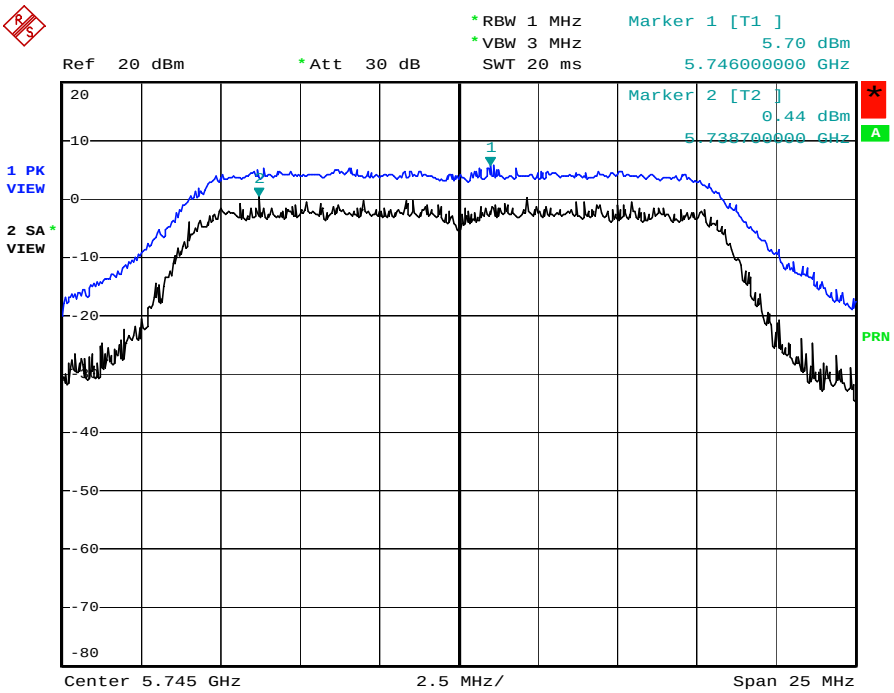
Date: 23.OCT.2004 14:47:03

5240 MHz



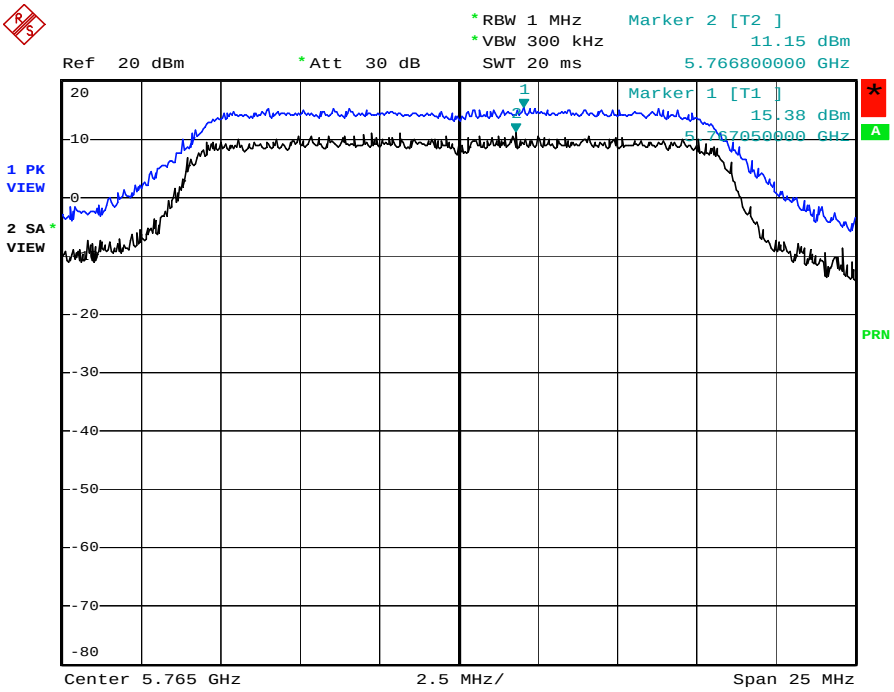
Date: 23.OCT.2004 14:48:03

5745 MHz



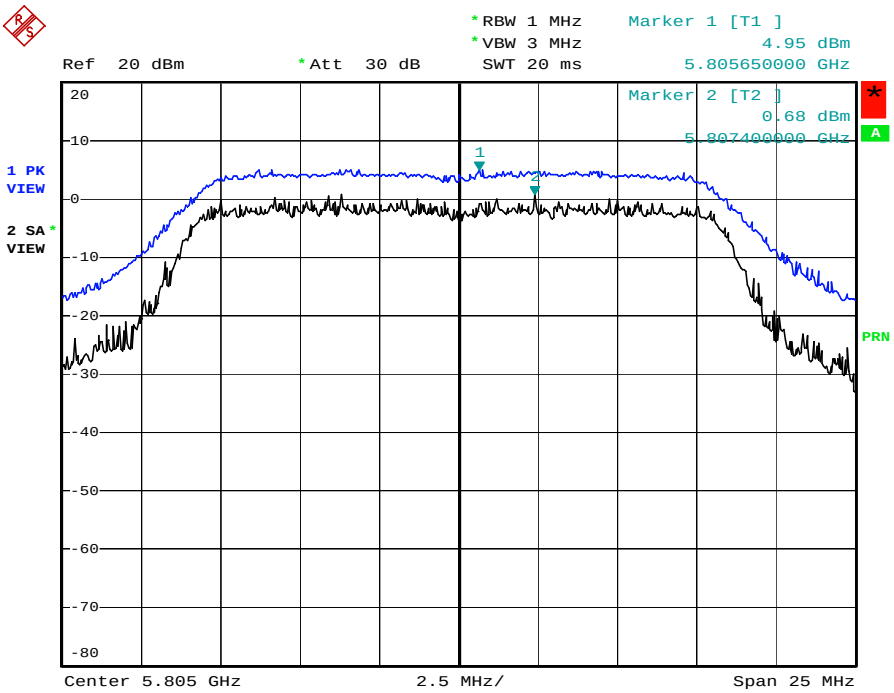
Date: 23.OCT.2004 15:03:37

5765 MHz



Date: 23.OCT.2004 15:05:15

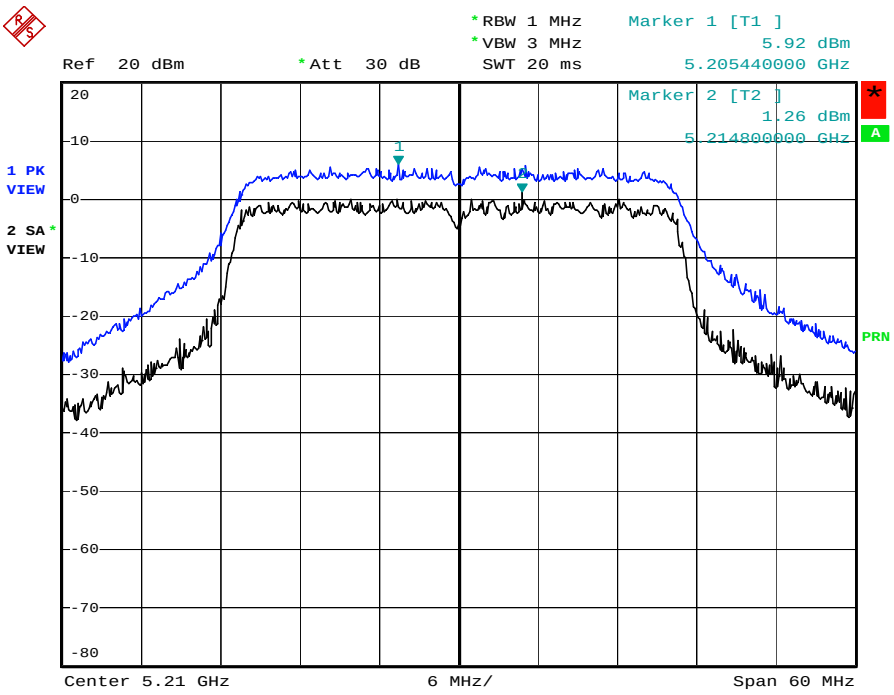
5805 MHz



Date: 23.OCT.2004 15:10:18

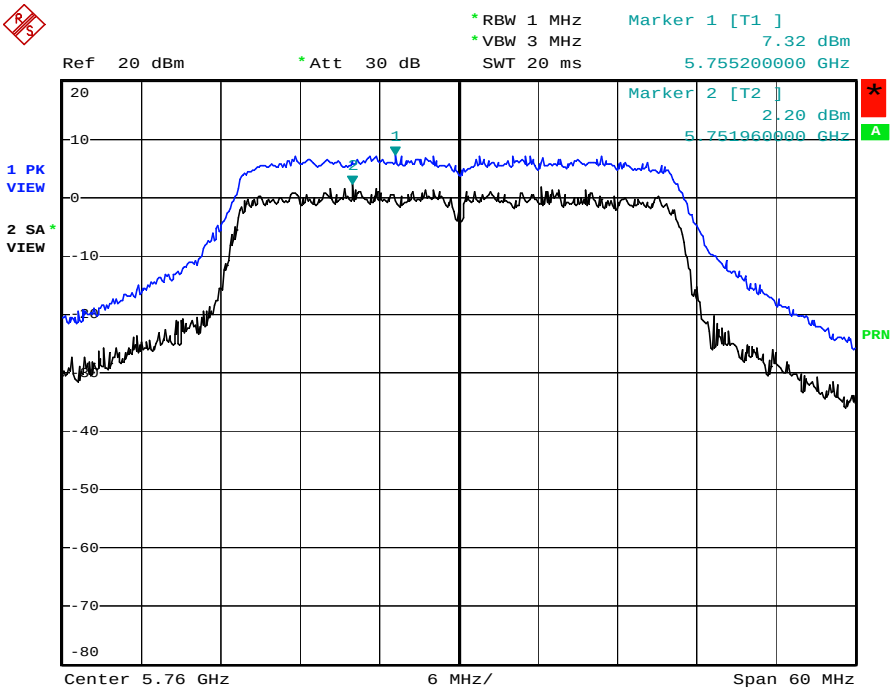
Turbo Mode

5210 MHz



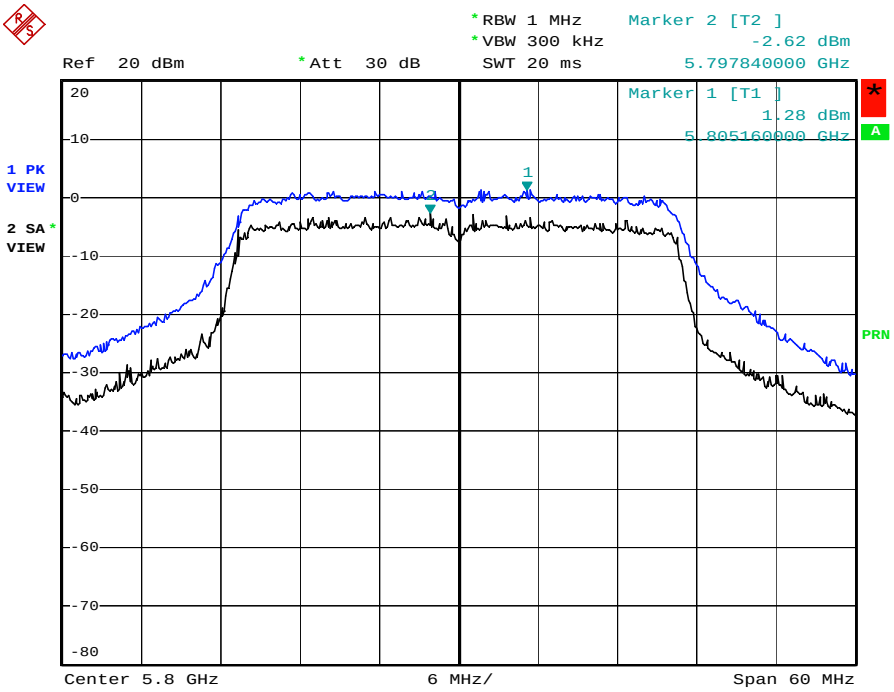
Date: 23.OCT.2004 14:39:38

5760 MHz



Date: 23.OCT.2004 14:28:47

5800 MHz



Date: 23.OCT.2004 14:24:05

5.5. Test of Band Edges Emission

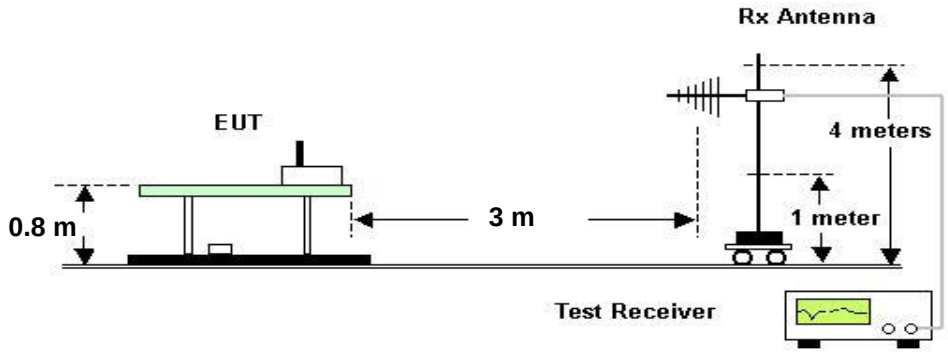
5.5.1. Measuring Instruments and Setting

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

5.5.2. Test Procedures

1. Configure the EUT according to ANSI C63.4.
2. The EUT was placed on the top of the turntable 0.8 meter above ground.
3. 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.
4. The transmitter is set to the lowest channel of each band.
5. The turntable was rotated 360 degrees to determine the position of the highest radiation.
6. Set both RBW and VBW of spectrum analyzer to 1MHz with convenient frequency span including 1MHz bandwidth from lower band edge.
7. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization. Record the maximum value of band-edge.
8. Remove the transmitter and replace it with a broadband substitution antenna.
9. With the substitution antennas at maximum polarized and with the signal generator tuned to a particular fundamental frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading (item 6). This should be done carefully repeating the adjustment of the test antenna and generator output.
10. Pd(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi). Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna.
11. The lowest and highest channels of band edges of each band emission was measured and recorded.

5.5.3. Test Setup Layout



5.5.4. Test Result

- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Sam Lee

Ant. No.	Gain (dBi)	Freq. Band (MHz)	Freq. (MHz)	Level* (dBm/MHz)	Margin (dB)	Limit (dBm/MHz)
1	2.5	5150~5250	5149.2	-33.15	-6.15	-27
1	2.5	5150~5250	5353.8	-34.85	-7.85	-27
1	2.5	5725~5825	5714.6	-31.28	-4.28	-27
1	2.5	5725~5825	5725.0	-24.31	-7.31	-17
1	2.5	5725~5825	5825.8	-25.53	-8.53	-17
1	2.5	5725~5825	5836.4	-34.21	-7.21	-27

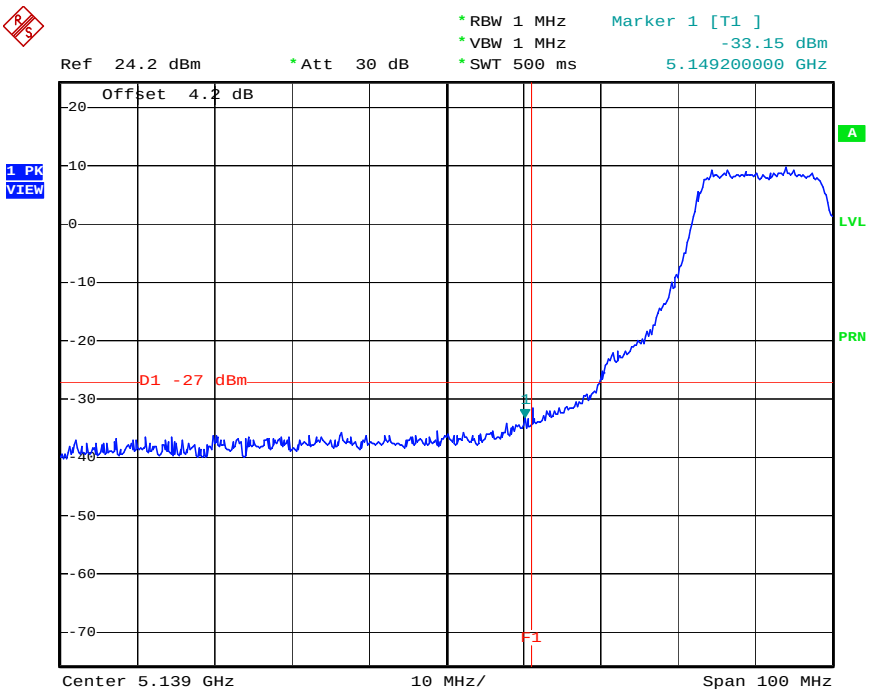
Level*: The max EIRP emission in the band-edge.

Turbo Mode

Ant. No.	Gain (dBi)	Freq. Band (MHz)	Freq. (MHz)	Level* (dBm/MHz)	Margin (dB)	Limit (dBm/MHz)
1	2.5	5150~5250	5147.4	-39.77	-12.77	-27
1	2.5	5725~5825	5724.2	-22.27	-5.27	-27
1	2.5	5725~5825	5714.0	-31.94	-4.94	-17
1	2.5	5725~5825	5825.2	-23.26	-6.26	-17
1	2.5	5725~5825	5836.6	-31.17	-4.17	-27

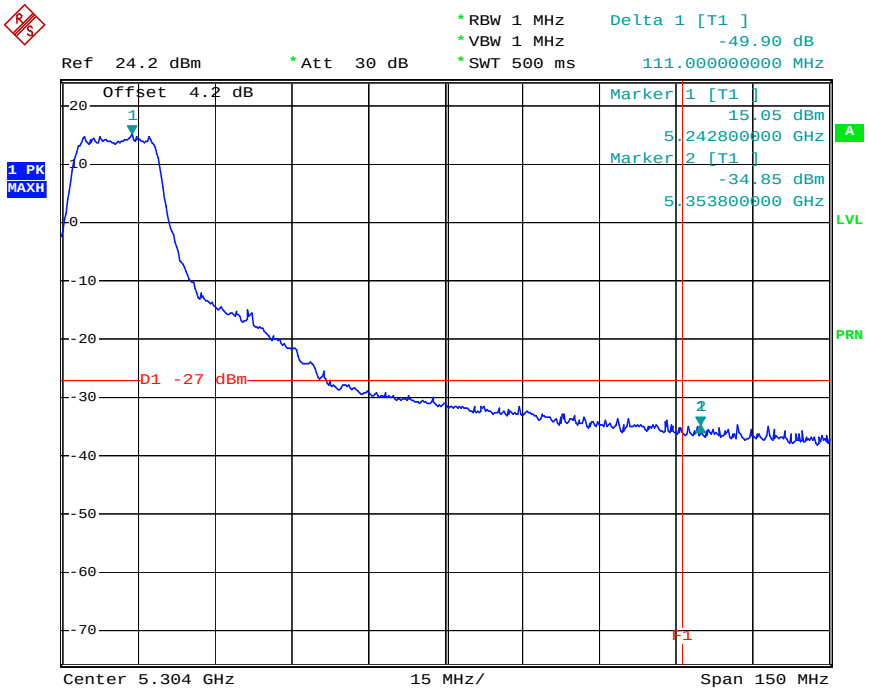
Level*: The max EIRP emission in the band-edge.

5180 MHz



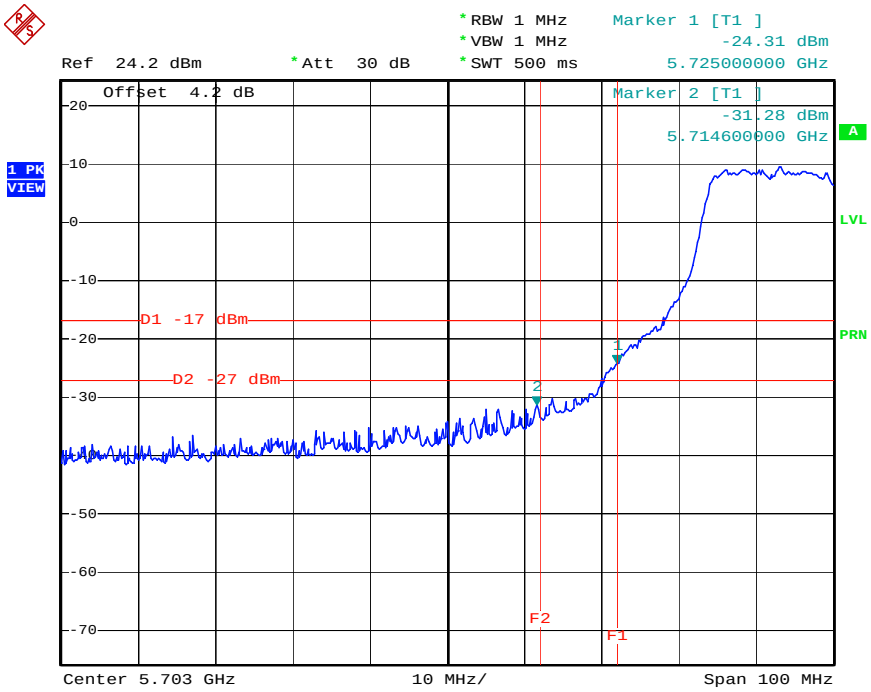
Date: 4.NOV.2004 17:32:16

5240 MHz



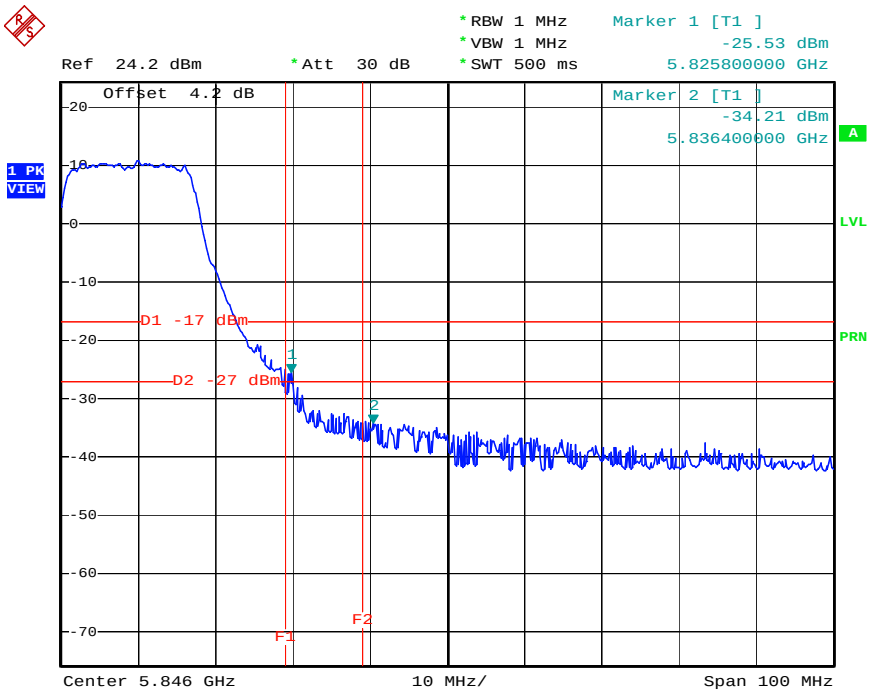
Date: 17.OCT.2008 20:04:56

5745 MHz



Date: 4.NOV.2004 17:46:32

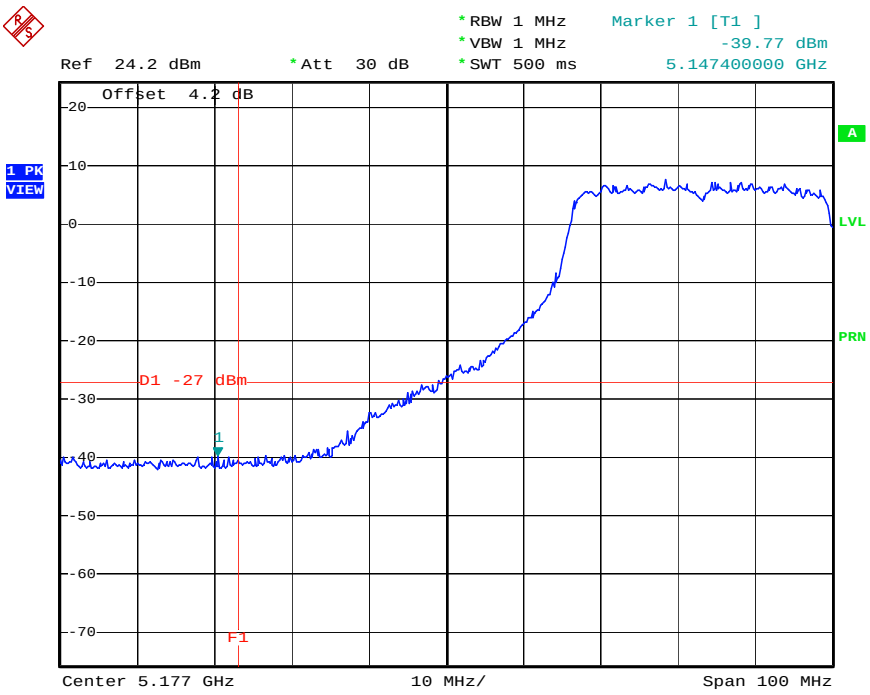
5805 MHz



Date: 4.NOV.2004 18:02:21

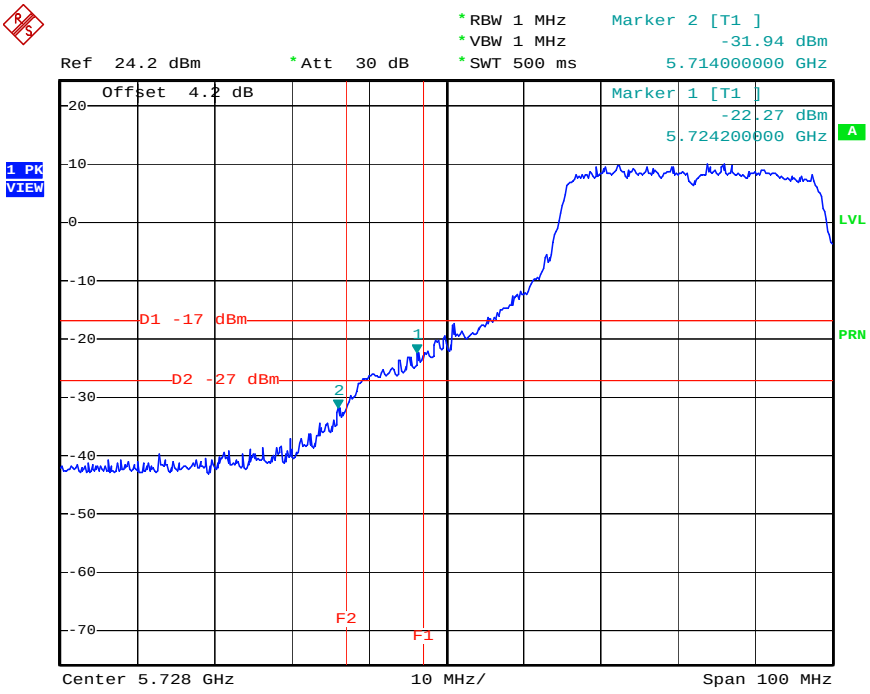
Turbo Mode

5210 MHz



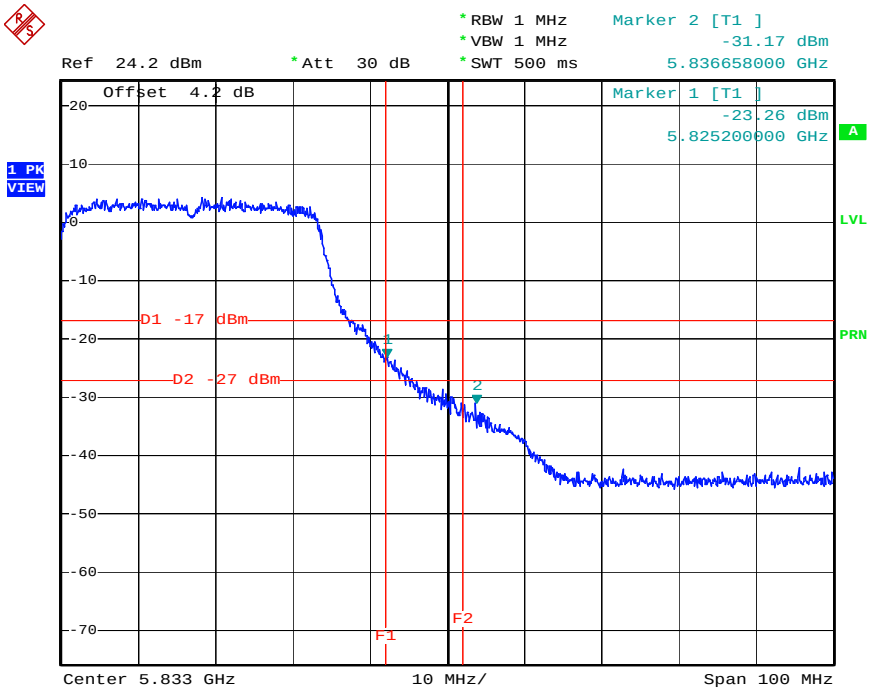
Date: 8.NOV.2004 11:17:26

5760 MHz



Date: 4.NOV.2004 18:28:17

5800 MHz


*RBW 1 MHz
*VBW 1 MHz
*SWT 500 ms
Marker 2 [T1]
-31.17 dBm
5.836658000 GHz
Ref 24.2 dBm
*Att 30 dB
Offset 4.2 dB
Marker 1 [T1]
-23.26 dBm
5.825200000 GHz
1 PK
VIEW
A
LVL
PRN
D1 -17 dBm
D2 -27 dBm
F1
F2
Center 5.833 GHz
10 MHz/
Span 100 MHz
Date: 4.NOV.2004 19:17:59

5.6. Test of Frequency Stability

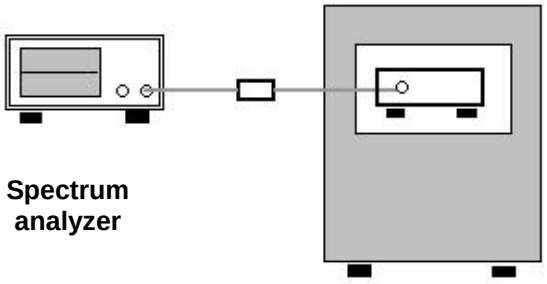
5.6.1. Measuring Instruments and Setting

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

5.6.2. Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 10kHz and VBW to 10kHz.
3. Use mark counter function to counter the peak un-modulation carrier frequency.
4. The test extreme voltage is, according to 2.1055(d)(1), is to change the primary supply voltage from 85 to 115 percent of the nominal value
5. Extreme temperature rule is, according to 2.1055(a)(1), -30°C~50°C.

5.6.3. Test Setup Layout



5.6.4. Test Result:

- Modulation Type: Un-Modulated Carrier
- Temperature: 25°C
- Relative Humidity: 62 %
- Duty cycle of the equipment during the test: 100%

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5240.0000	5805.0000
126.50	5240.0130	5805.007
110.00	5240.013	5805.008
93.50	5240.015	5805.006
Max. Deviation (MHz)	0.0150	0.0080
Max. Deviation (ppm)	2.86	1.38

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5240.0000	5805.0000
-30	5240.016	5805.001
-20	5240.022	5805.004
-10	5240.001	5805.004
0	5239.996	5805.002
10	5239.952	5805.004
20	5239.926	5805.006
30	5239.945	5805.002
40	5239.940	5805.001
50	5239.946	5805.000
Max. Deviation (MHz)	0.0740	0.0060
Max. Deviation (ppm)	14.12	1.03

5.7. Test of AC Power Line Conducted Emission

5.7.1. 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.

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

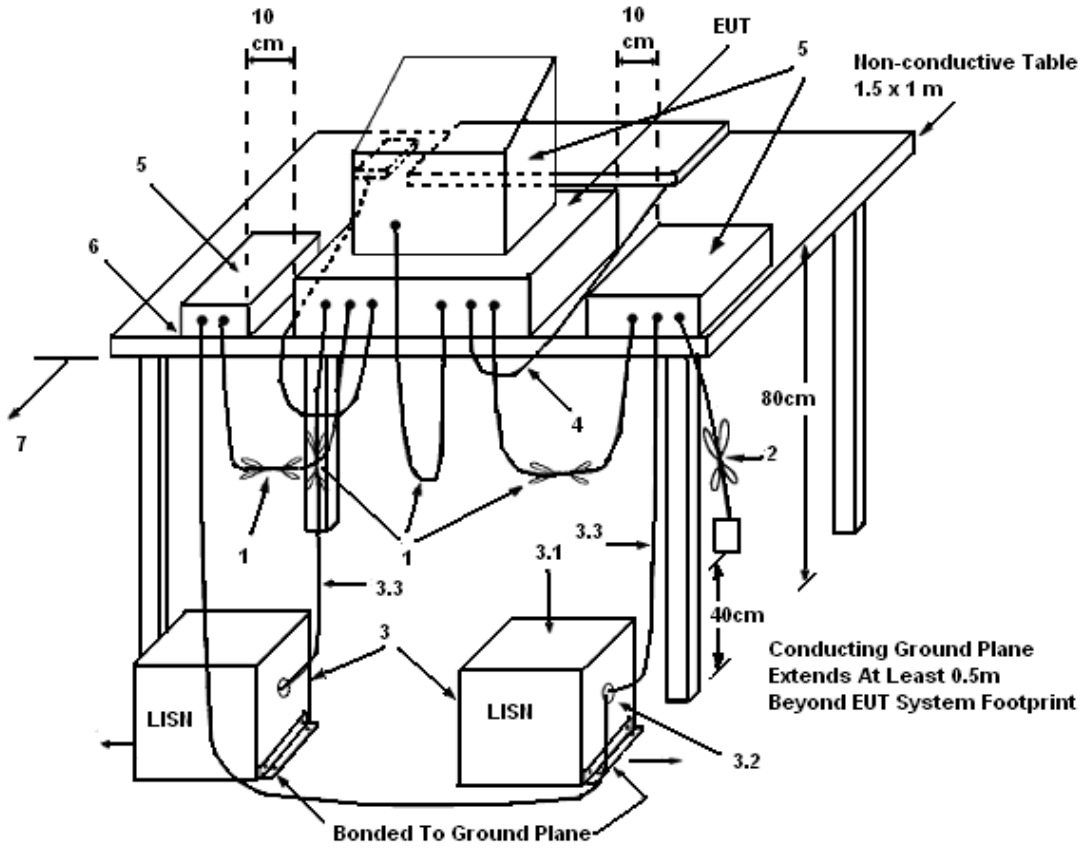
5.7.2. Measuring Instruments and Setting

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

5.7.3. 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.

5.7.4. Test Setup Layout

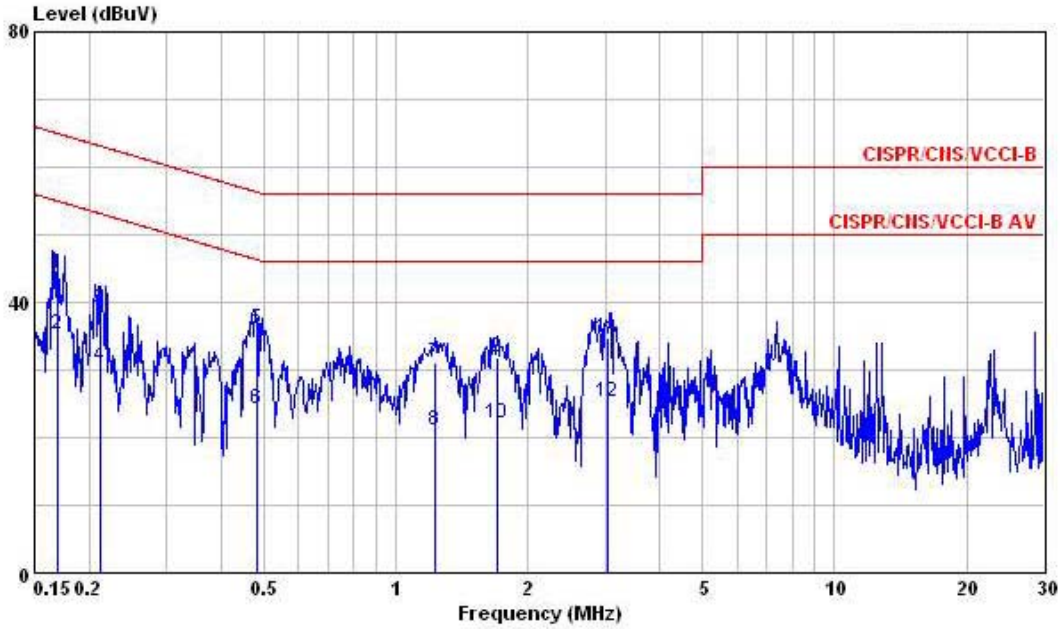


LEGEND:
(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, 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.

5.7.5. Test Result of Conducted Emission

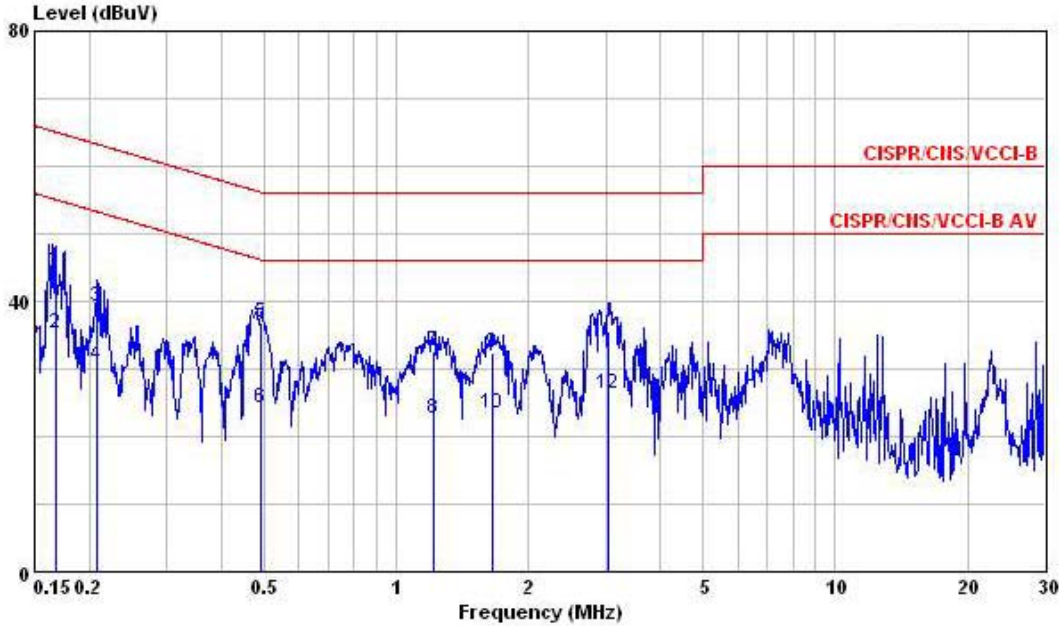
- Temperature: 24°C
- Relative Humidity: 63%
- Test Engineer: Steven

Line to Ground



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1699650	44.21	-20.75	64.96	43.89	0.09	0.23	QP
2	@0.1699650	35.35	-19.61	54.96	35.03	0.09	0.23	Average
3	0.2116700	38.86	-24.28	63.14	38.50	0.09	0.27	QP
4	0.2116700	30.62	-22.52	53.14	30.26	0.09	0.27	Average
5	0.4811910	36.15	-20.17	56.32	35.80	0.10	0.25	QP
6	0.4811910	24.25	-22.07	46.32	23.90	0.10	0.25	Average
7	1.230	31.15	-24.85	56.00	30.63	0.12	0.40	QP
8	1.230	20.98	-25.02	46.00	20.46	0.12	0.40	Average
9	1.710	31.75	-24.25	56.00	31.27	0.13	0.35	QP
10	1.710	22.19	-23.81	46.00	21.71	0.13	0.35	Average
11	3.040	34.66	-21.34	56.00	34.26	0.15	0.25	QP
12	3.040	25.34	-20.66	46.00	24.94	0.15	0.25	Average

Neutral to Ground

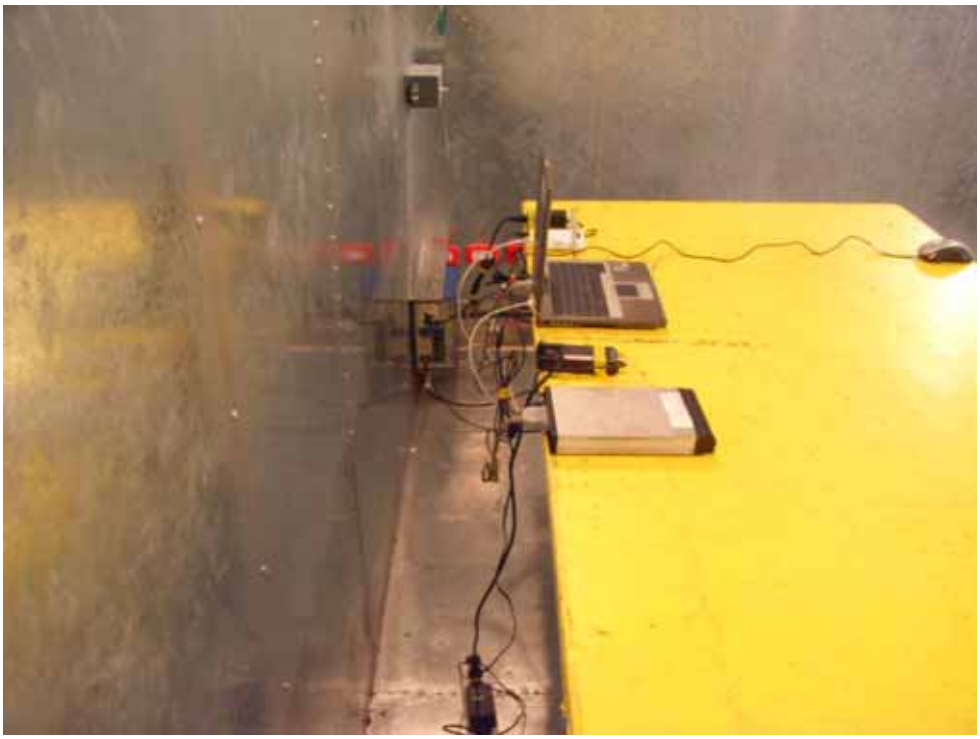


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1679580	44.75	-20.31	65.06	44.45	0.08	0.22	QP
2	0.1679580	35.26	-19.80	55.06	34.96	0.08	0.22	Average
3	0.2083320	39.15	-24.12	63.27	38.79	0.08	0.28	QP
4	0.2083320	30.42	-22.85	53.27	30.06	0.08	0.28	Average
5	@0.4915590	36.77	-19.37	56.14	36.43	0.09	0.25	QP
6	0.4915590	24.15	-21.99	46.14	23.81	0.09	0.25	Average
7	1.220	32.57	-23.43	56.00	32.05	0.11	0.41	QP
8	1.220	22.63	-23.37	46.00	22.11	0.11	0.41	Average
9	1.650	32.37	-23.63	56.00	31.90	0.12	0.35	QP
10	1.650	23.43	-22.57	46.00	22.96	0.12	0.35	Average
11	3.040	35.47	-20.53	56.00	35.08	0.14	0.25	QP
12	3.040	26.19	-19.81	46.00	25.80	0.14	0.25	Average

5.7.6. Photographs of Conducted Emission Test Configuration

FRONT VIEW

REAR VIEW



5.8. Test of Spurious Radiated Emission

5.8.1. Measuring Instruments

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

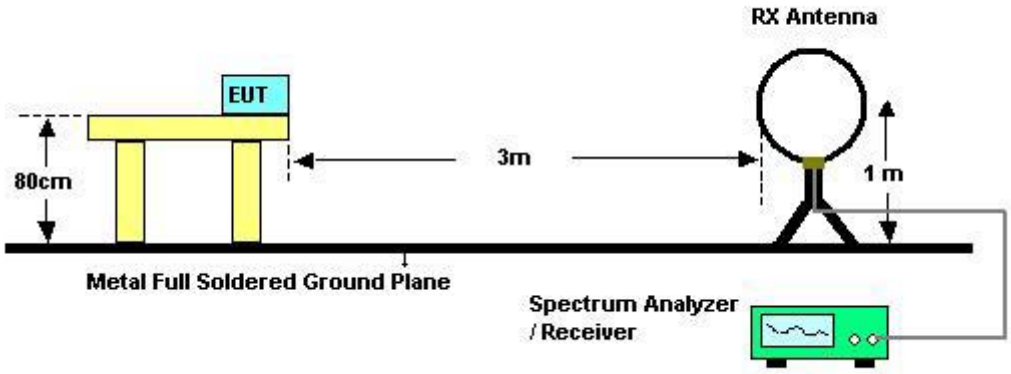
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

5.8.2. Test Procedures

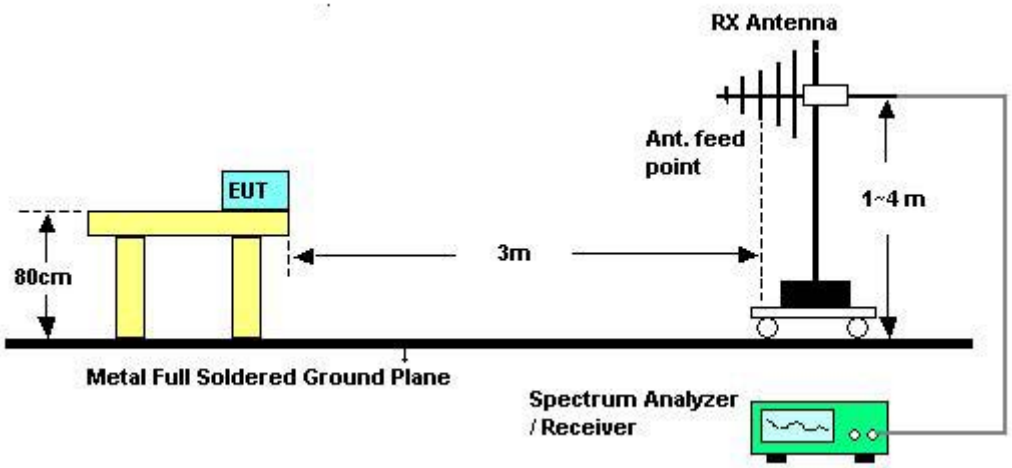
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

5.8.3. 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 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].

5.8.4. Test Deviation

There is no deviation with the original standard.

5.8.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

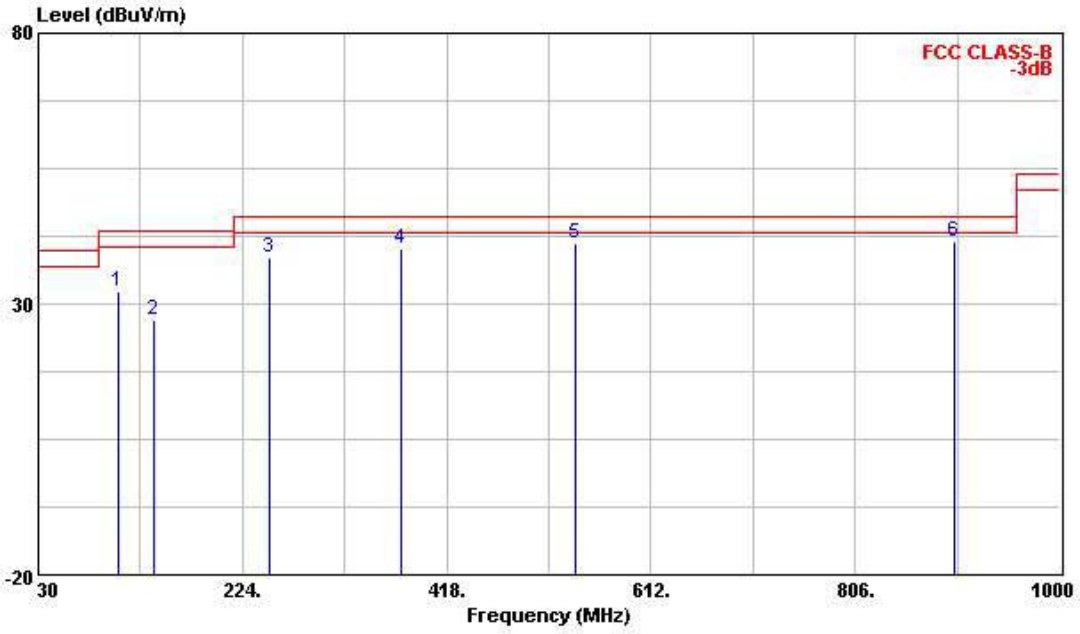
5.8.6. Results of Radiated Emissions (9kHz~30MHz)

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 (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.

5.8.7. Test Results for emission below 1GHz

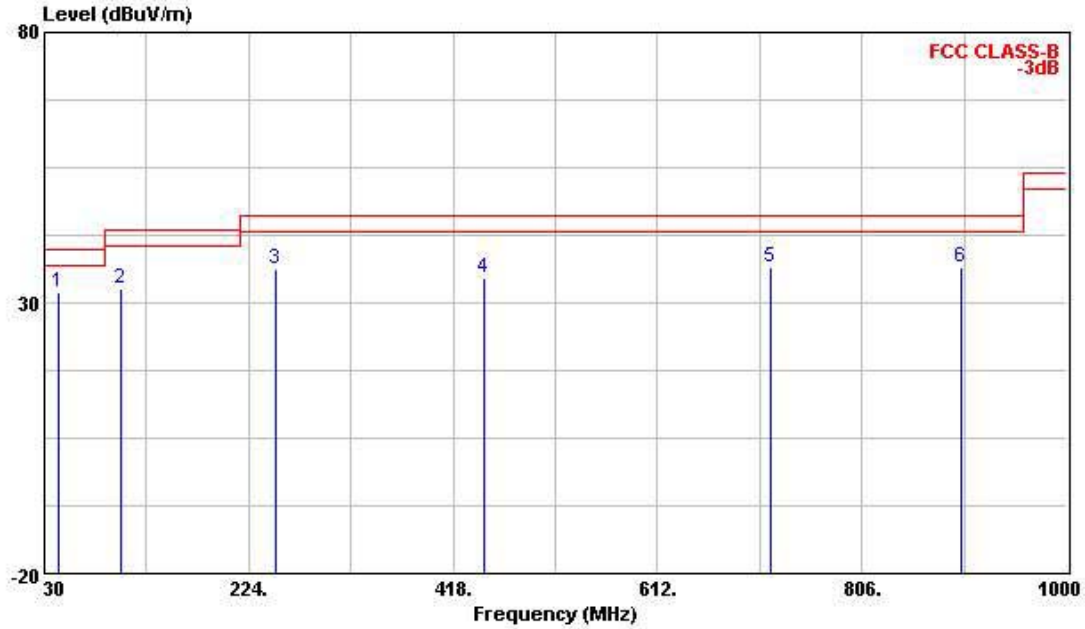
- **Normal Mode**
- Temperature: 26°C
- Relative Humidity: 56%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Eddie

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	105.660	32.15	-11.35	43.50	46.29	11.92	1.74	27.80	Peak
2	140.580	27.15	-16.35	43.50	41.53	11.36	2.18	27.92	Peak
3 @	249.220	38.53	-7.47	46.00	51.51	12.58	2.69	28.25	Peak
4 @	374.350	40.04	-5.96	46.00	49.76	15.62	3.42	28.76	Peak
5 @	540.220	41.33	-4.67	46.00	47.11	19.06	3.96	28.81	Peak
6 @	901.060	41.60	-4.40	46.00	44.64	21.04	5.25	29.33	Peak

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	43.580	32.06	-7.94	40.00	47.77	10.93	1.13	27.77	Peak
2	102.750	32.61	-10.89	43.50	47.12	11.56	1.74	27.81	Peak
3	249.220	36.28	-9.72	46.00	49.26	12.58	2.69	28.25	Peak
4	448.070	34.50	-11.50	46.00	42.76	17.08	3.69	29.03	Peak
5	719.670	36.58	-9.42	46.00	41.37	20.25	4.60	29.64	Peak
6	901.060	36.44	-9.56	46.00	39.48	21.04	5.25	29.33	Peak

Note:

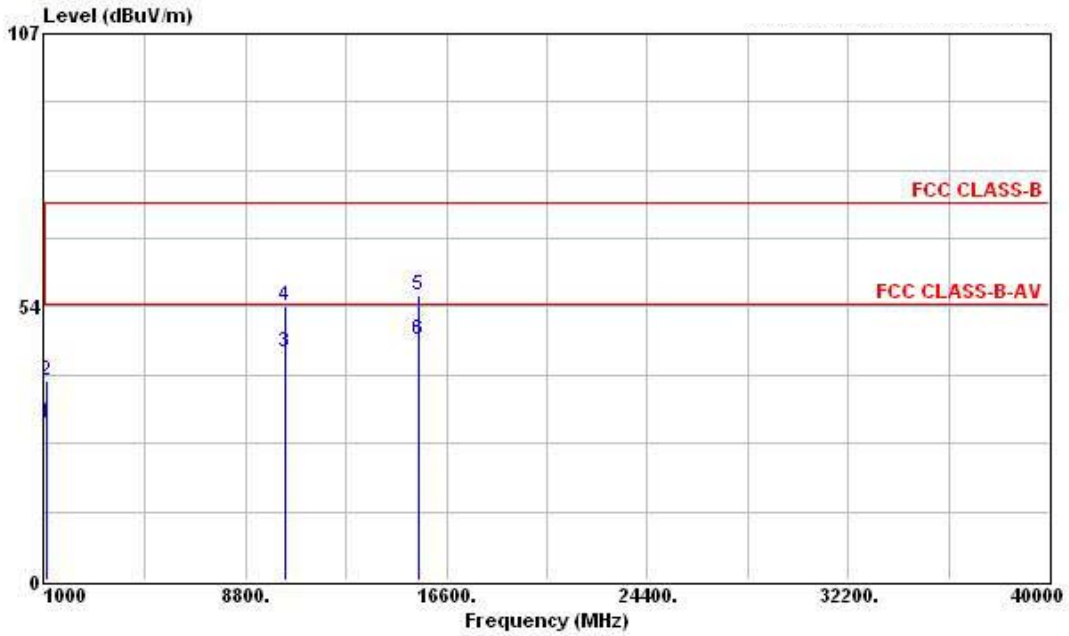
Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

5.8.8. Test Results for emission above 1GHz

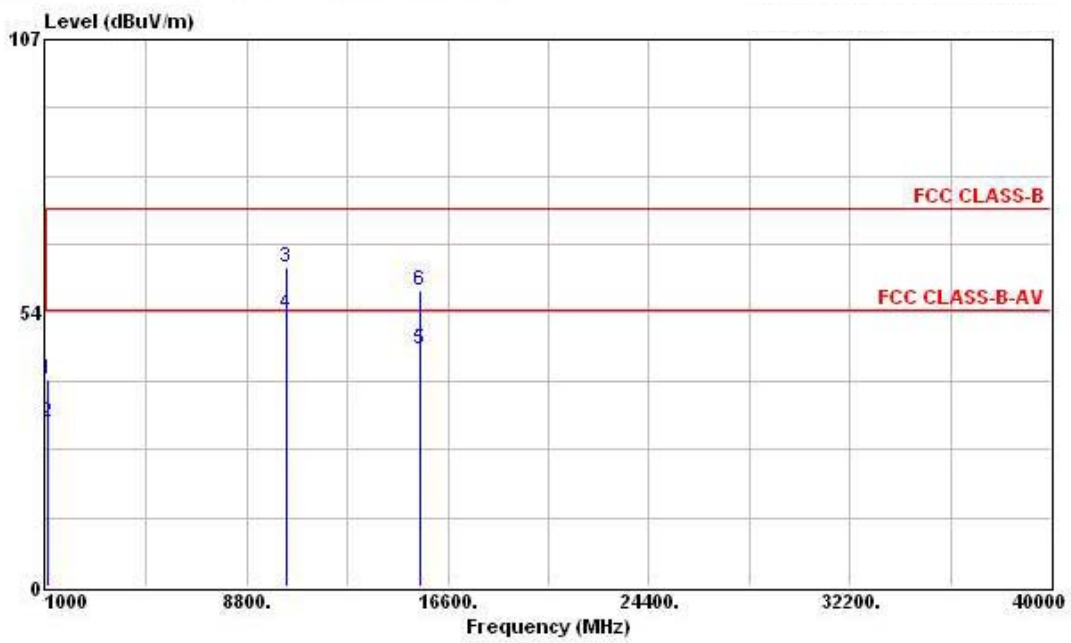
- 5180 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	30.79	-23.21	54.00	44.47	24.36	1.19	39.23	Average	100	100
2	1080.000	38.95	-35.05	74.00	52.63	24.36	1.19	39.23	Peak	100	100
3	10356.000	44.63	-9.37	54.00	40.34	38.90	4.01	38.62	Average	100	100
4	10356.000	53.52	-20.48	74.00	49.23	38.90	4.01	38.62	Peak	100	100
5	15520.000	55.73	-18.27	74.00	49.28	37.90	6.55	38.00	Peak	100	100
6	15520.000	47.13	-6.87	54.00	40.68	37.90	6.55	38.00	Average	100	100

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	40.58	-33.42	74.00	54.26	24.36	1.19	39.23	Peak	100	100
2	1080.000	32.21	-21.79	54.00	45.89	24.36	1.19	39.23	Average	100	100
3	10360.000	62.44	-11.56	74.00	58.15	38.90	4.01	38.62	Peak	100	100
4	10360.000	53.47	-0.53	54.00	49.18	38.90	4.01	38.62	Average	100	100
5	15544.000	46.31	-7.69	54.00	40.19	37.77	6.34	37.99	Average	0	0
6	15544.000	57.73	-16.27	74.00	51.61	37.77	6.34	37.99	Peak	0	0

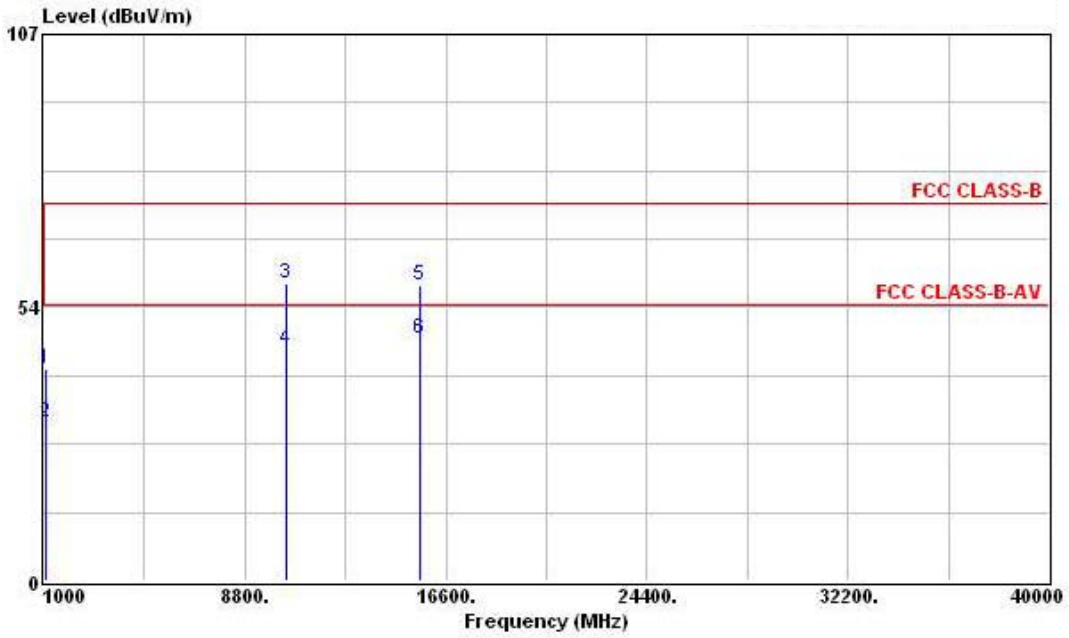
Note:

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

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

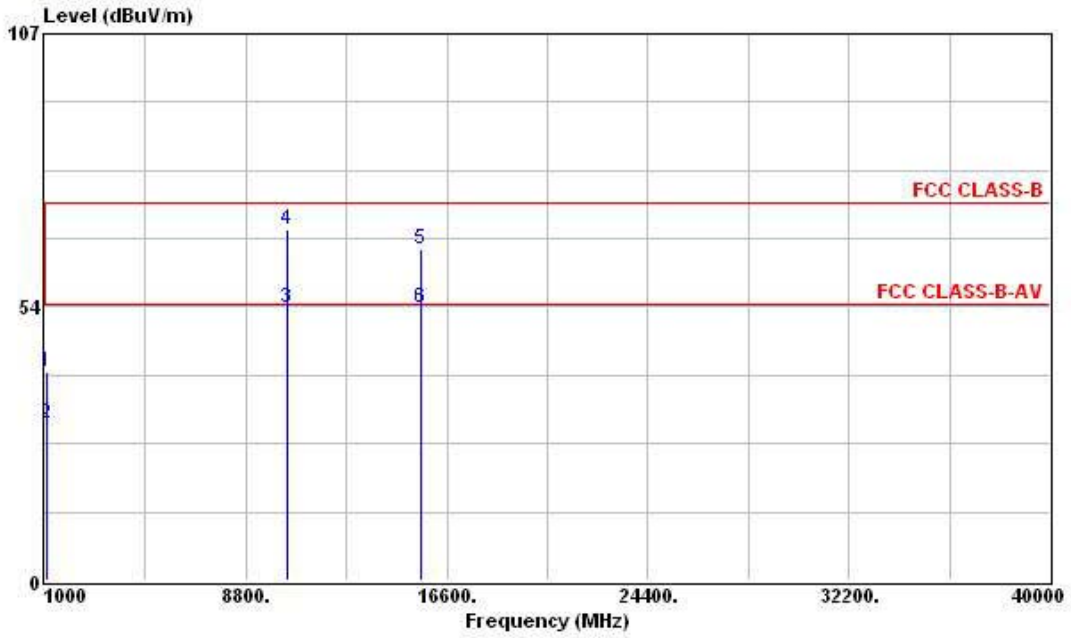
- 5200 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	41.48	-32.52	74.00	55.16	24.36	1.19	39.23	Peak	100	0
2	1080.000	31.09	-22.91	54.00	44.77	24.36	1.19	39.23	Average	100	0
3	10400.000	58.22	-15.78	74.00	53.93	38.90	4.01	38.62	Peak	100	100
4	10400.000	45.27	-8.73	54.00	40.98	38.90	4.01	38.62	Average	100	100
5	15592.000	57.99	-16.01	74.00	52.11	37.69	6.14	37.95	Peak	100	100
6	15592.000	47.54	-6.46	54.00	41.66	37.69	6.14	37.95	Average	100	100

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	40.70	-33.30	74.00	54.38	24.36	1.19	39.23	Peak	100	100
2	1080.000	30.66	-23.34	54.00	44.34	24.36	1.19	39.23	Average	100	100
3	10400.000	53.28	-0.72	54.00	48.99	38.90	4.01	38.62	Average	100	0
4	10400.000	68.58	-5.42	74.00	64.29	38.90	4.01	38.62	Peak	100	0
5	15604.000	64.78	-9.22	74.00	58.90	37.69	6.14	37.95	Peak	100	100
6	15604.000	53.26	-0.74	54.00	47.38	37.69	6.14	37.95	Average	100	100

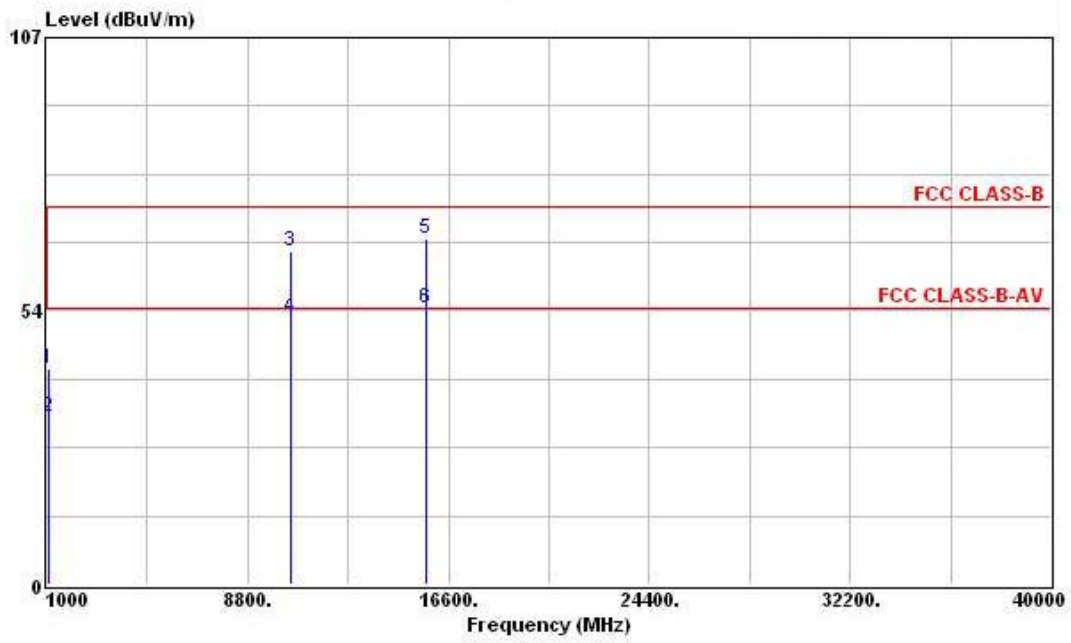
Note:

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

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

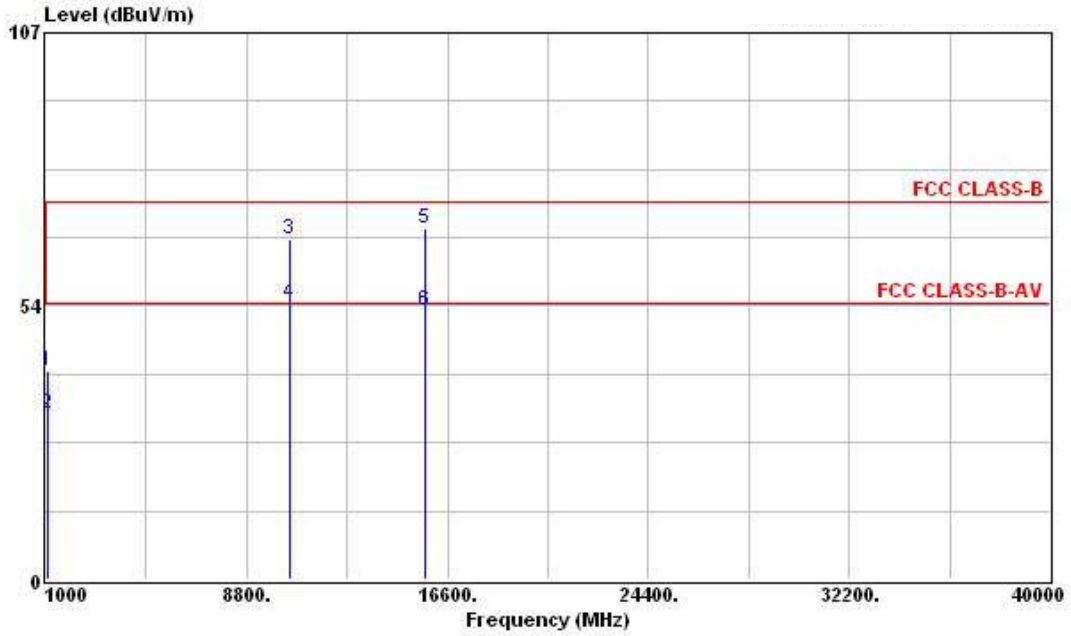
- 5240 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	42.06	-31.94	74.00	55.74	24.36	1.19	39.23	Peak	---	---
2	1080.000	32.59	-21.41	54.00	46.27	24.36	1.19	39.23	Average	---	---
3	10472.000	65.02	-8.98	74.00	61.49	38.90	3.25	38.62	Peak	100	100
4	10472.000	52.23	-1.77	54.00	48.70	38.90	3.25	38.62	Average	100	100
5	15724.000	67.77	-6.23	74.00	61.78	37.44	6.37	37.82	Peak	100	100
6	15724.000	53.99	-0.01	54.00	48.00	37.44	6.37	37.82	Average	100	100

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	40.77	-33.23	74.00	54.45	24.36	1.19	39.23	Peak	100	0
2	1080.000	32.28	-21.72	54.00	45.96	24.36	1.19	39.23	Average	100	0
3	10470.280	66.68	-7.32	74.00	63.15	38.90	3.25	38.62	Peak	100	0
4	10470.280	53.86	-0.14	54.00	50.33	38.90	3.25	38.62	Average	100	0
5	15721.400	68.57	-5.43	74.00	62.74	37.50	6.18	37.85	Peak	100	0
6	15721.400	52.70	-1.30	54.00	46.87	37.50	6.18	37.85	Average	100	0

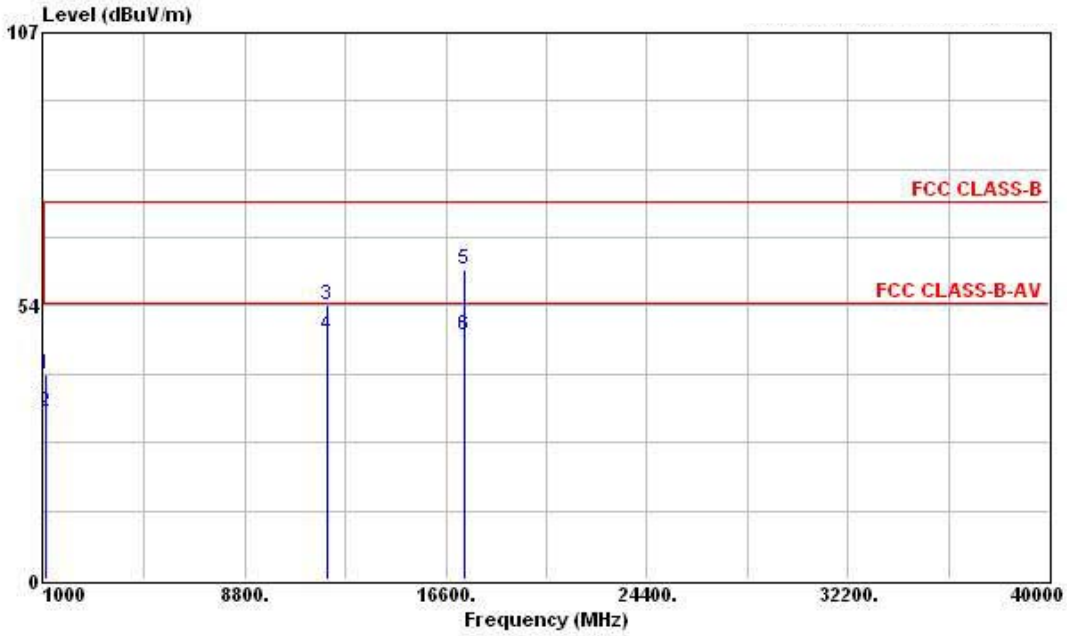
Note:

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

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

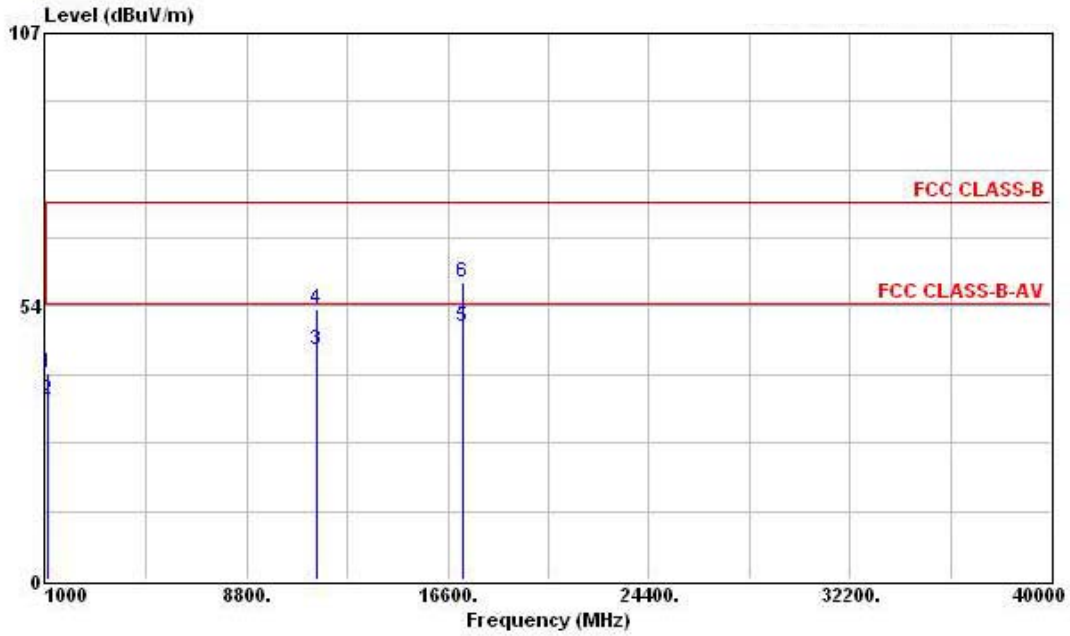
- 5745 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	40.15	-33.85	74.00	53.83	24.36	1.19	39.23	Peak	---	---
2	1080.000	32.60	-21.40	54.00	46.28	24.36	1.19	39.23	Average	---	---
3	11968.000	53.69	-20.31	74.00	48.27	39.47	4.50	38.55	Peak	---	---
4	11968.000	47.76	-6.24	54.00	42.34	39.47	4.50	38.55	Average	---	---
5	17300.000	60.63	-13.37	74.00	48.23	42.52	6.47	36.59	Peak	---	---
6	17300.000	47.70	-6.30	54.00	35.30	42.52	6.47	36.59	Average	---	---

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	40.39	-33.61	74.00	54.07	24.36	1.19	39.23	Peak	---	---
2	1080.000	35.19	-18.81	54.00	48.87	24.36	1.19	39.23	Average	---	---
3	11480.000	44.93	-9.07	54.00	40.01	39.08	4.41	38.57	Average	---	---
4	11480.000	53.02	-20.98	74.00	48.10	39.08	4.41	38.57	Peak	---	---
5	17168.000	49.53	-4.47	54.00	39.15	41.66	5.40	36.68	Average	---	---
6	17168.000	58.32	-15.68	74.00	47.94	41.66	5.40	36.68	Peak	---	---

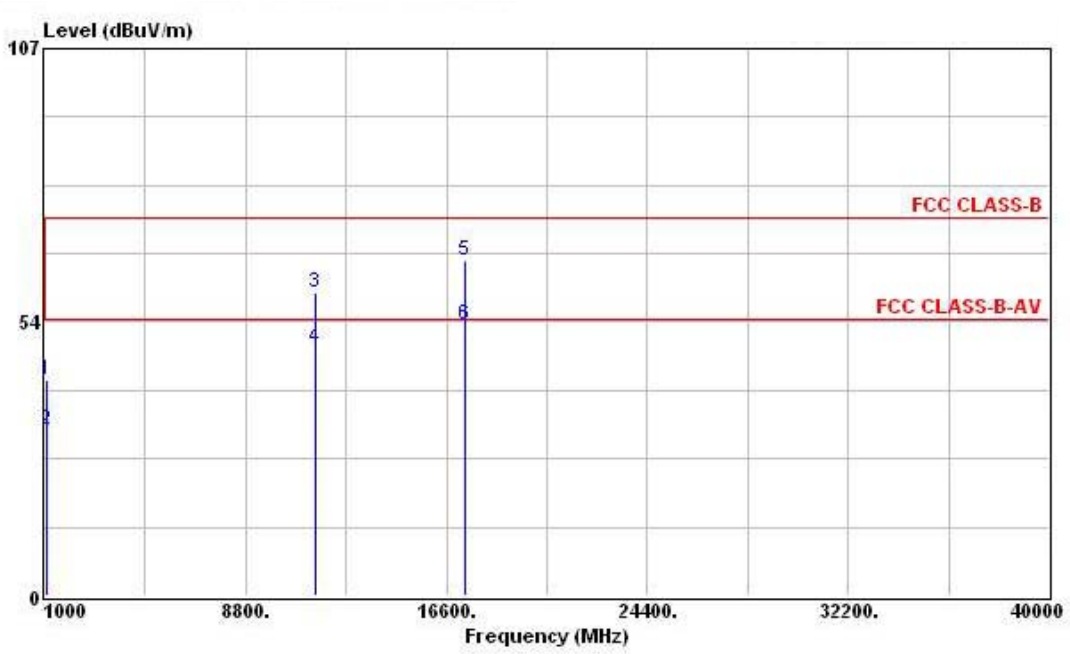
Note:

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

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

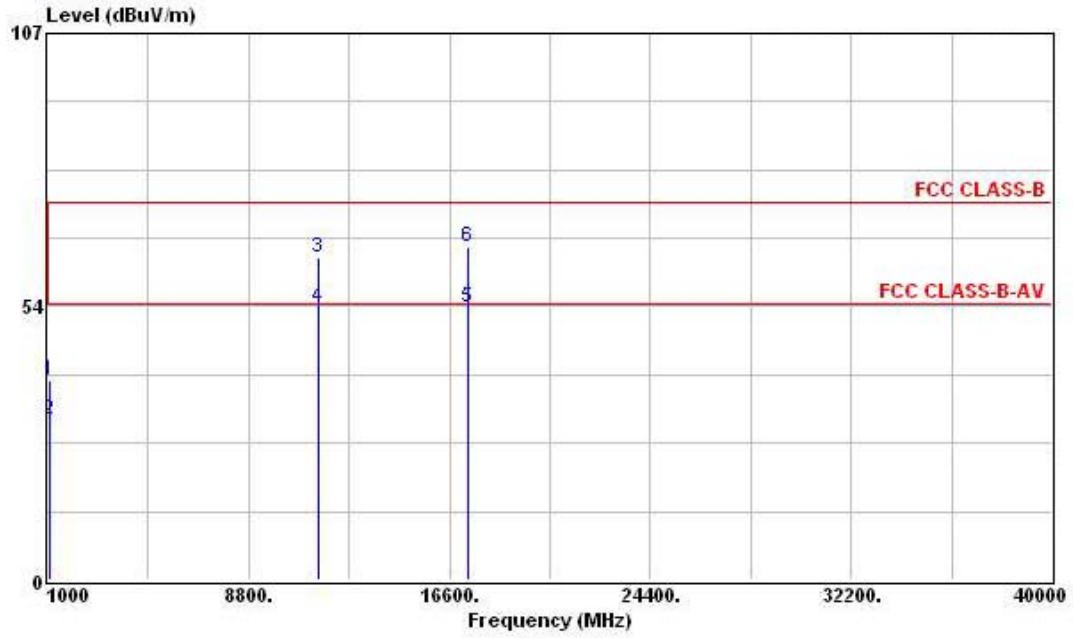
- 5765 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	42.09	-31.91	74.00	55.77	24.36	1.19	39.23	Peak	---	---
2	1080.000	32.49	-21.51	54.00	46.17	24.36	1.19	39.23	Average	---	---
3	11532.000	59.25	-14.75	74.00	54.18	39.11	4.53	38.57	Peak	---	---
4	11532.000	48.34	-5.66	54.00	43.27	39.11	4.53	38.57	Average	---	---
5	17300.000	65.51	-8.49	74.00	53.11	42.52	6.47	36.59	Peak	---	---
6	17300.000	53.09	-0.91	54.00	40.69	42.52	6.47	36.59	Average	---	---

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	39.08	-34.92	74.00	52.76	24.36	1.19	39.23	Peak	---	---
2	1080.000	31.47	-22.53	54.00	45.15	24.36	1.19	39.23	Average	---	---
3	11528.000	63.26	-10.74	74.00	58.19	39.11	4.53	38.57	Peak	---	---
4	11528.000	53.43	-0.57	54.00	48.36	39.11	4.53	38.57	Average	---	---
5	17300.000	53.38	-0.62	54.00	40.98	42.52	6.47	36.59	Average	---	---
6	17300.000	65.18	-8.82	74.00	52.78	42.52	6.47	36.59	Peak	---	---

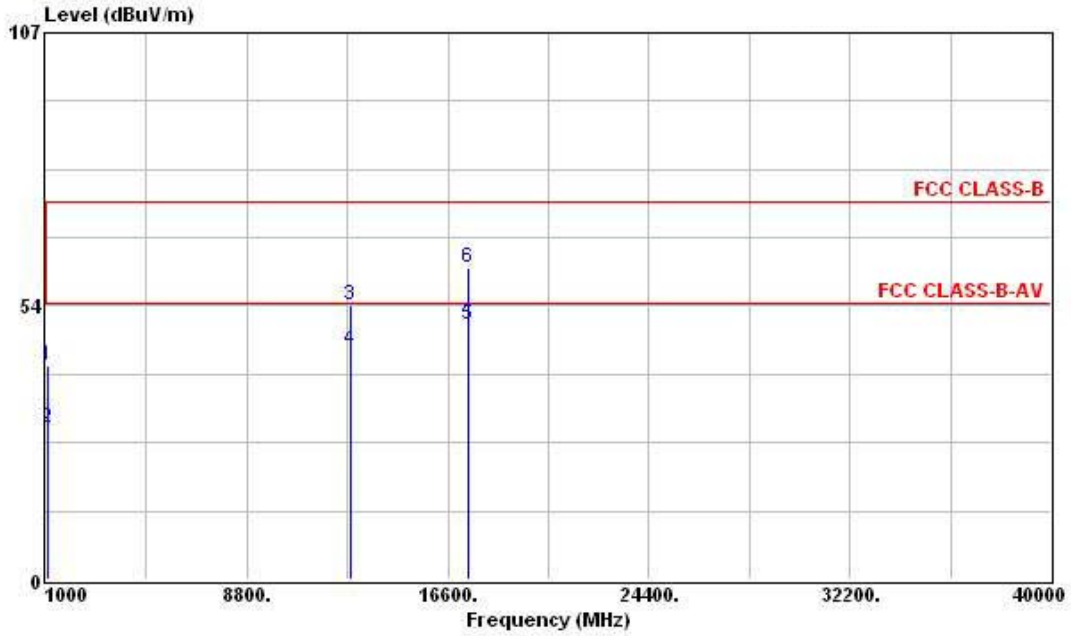
Note:

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

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

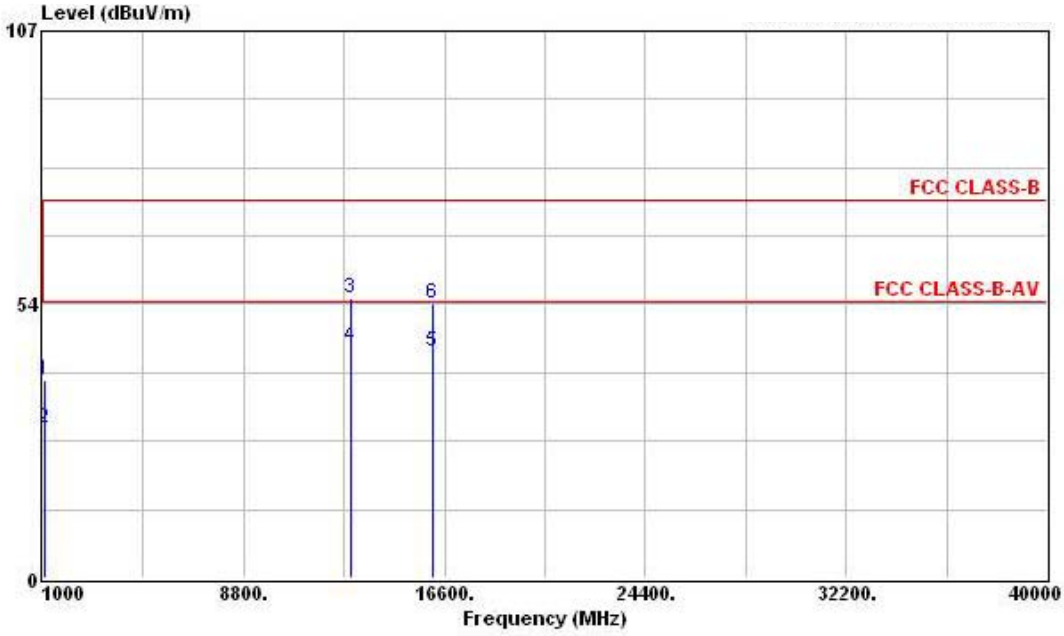
- 5805 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	41.92	-32.08	74.00	55.60	24.36	1.19	39.23	Peak	360	360
2	1080.000	29.46	-24.54	54.00	43.14	24.36	1.19	39.23	Average	360	360
3	12836.000	53.83	-20.17	74.00	48.31	39.15	4.88	38.51	Peak	360	360
4	12836.000	45.00	-9.00	54.00	39.48	39.15	4.88	38.51	Average	360	360
5	17372.000	49.96	-4.04	54.00	37.33	43.14	6.02	36.53	Average	360	360
6	17372.000	60.86	-13.14	74.00	48.23	43.14	6.02	36.53	Peak	360	360

(B) Polarization: Vertical

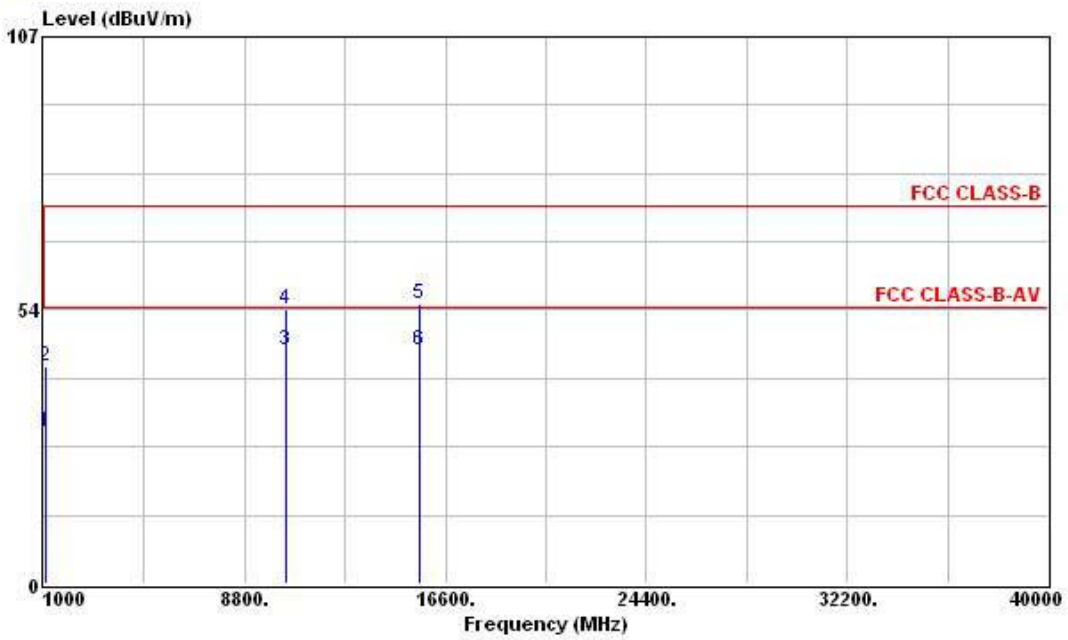


	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	38.58	-35.42	74.00	52.26	24.36	1.19	39.23	Peak	---	---
2	1080.000	29.28	-24.72	54.00	42.96	24.36	1.19	39.23	Average	---	---
3	12996.000	54.71	-19.29	74.00	48.92	39.33	4.96	38.50	Peak	---	---
4	12996.000	45.28	-8.72	54.00	39.49	39.33	4.96	38.50	Average	---	---
5	16112.000	44.31	-9.69	54.00	38.44	37.24	6.18	37.55	Average	---	---
6	16112.000	53.84	-20.16	74.00	47.97	37.24	6.18	37.55	Peak	---	---

Note:
Emission level (dBuV/m) = 20 log Emission level (uV/m)
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

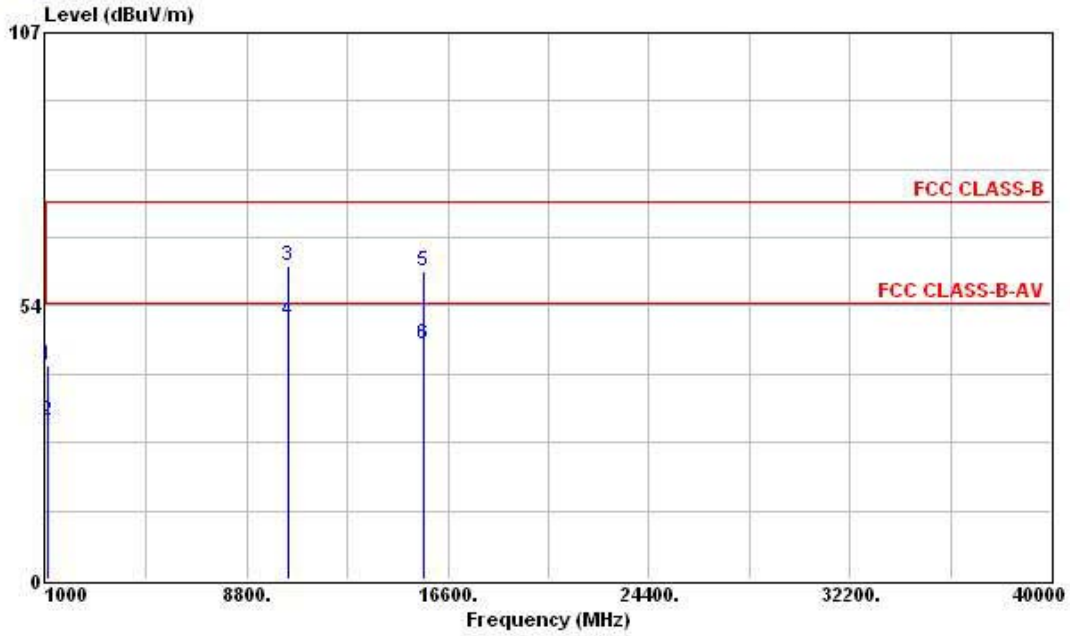
- **Turbo Mode**
- 5210 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	29.56	-24.44	54.00	43.24	24.36	1.19	39.23	Average	100	100
2	1080.000	42.54	-31.46	74.00	56.22	24.36	1.19	39.23	Peak	100	100
3	10420.000	45.82	-8.18	54.00	41.54	38.90	4.00	38.62	Average	100	100
4	10420.000	53.56	-0.44	54.00	49.28	38.90	4.00	38.62	Average	100	100
5	15608.000	54.70	-19.30	74.00	49.18	37.63	5.80	37.91	Peak	0	0
6	15608.000	45.67	-8.33	54.00	40.15	37.63	5.80	37.91	Average	0	0

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	41.80	-32.20	74.00	55.48	24.36	1.19	39.23	Peak	100	100
2	1080.000	31.09	-22.91	54.00	44.77	24.36	1.19	39.23	Average	100	100
3	10424.000	61.34	-12.66	74.00	57.06	38.90	4.00	38.62	Peak	100	360
4	10424.000	50.39	-3.61	54.00	46.11	38.90	4.00	38.62	Average	100	360
5	15636.000	60.28	-13.72	74.00	54.76	37.63	5.80	37.91	Peak	100	0
6	15636.000	45.84	-8.16	54.00	40.32	37.63	5.80	37.91	Average	100	0

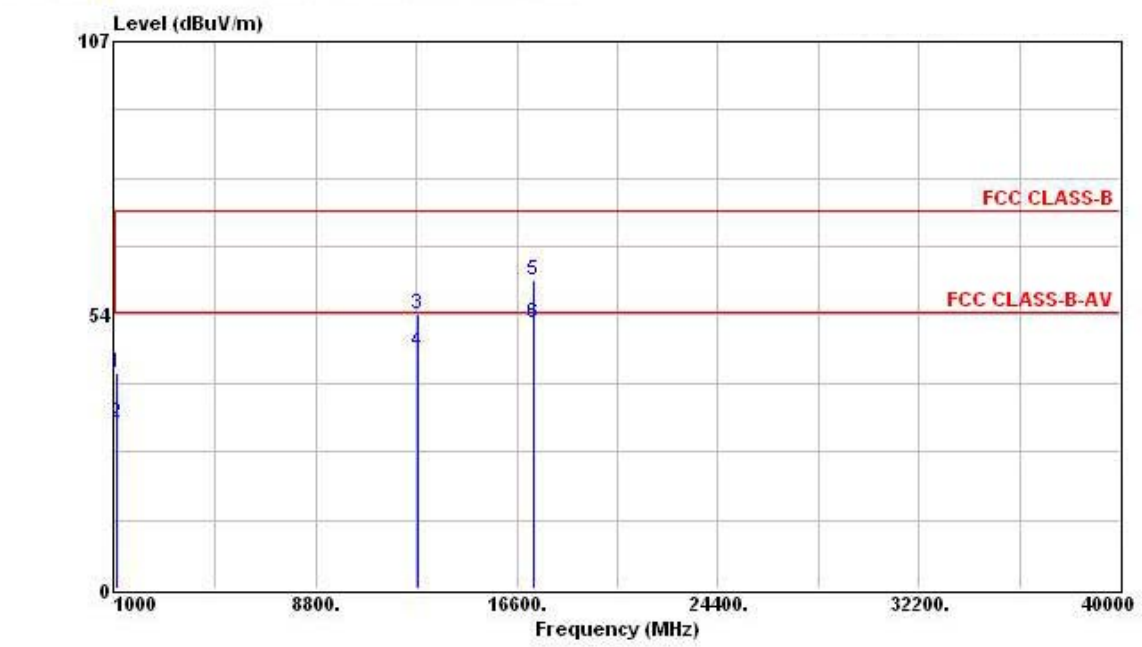
Note:

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

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

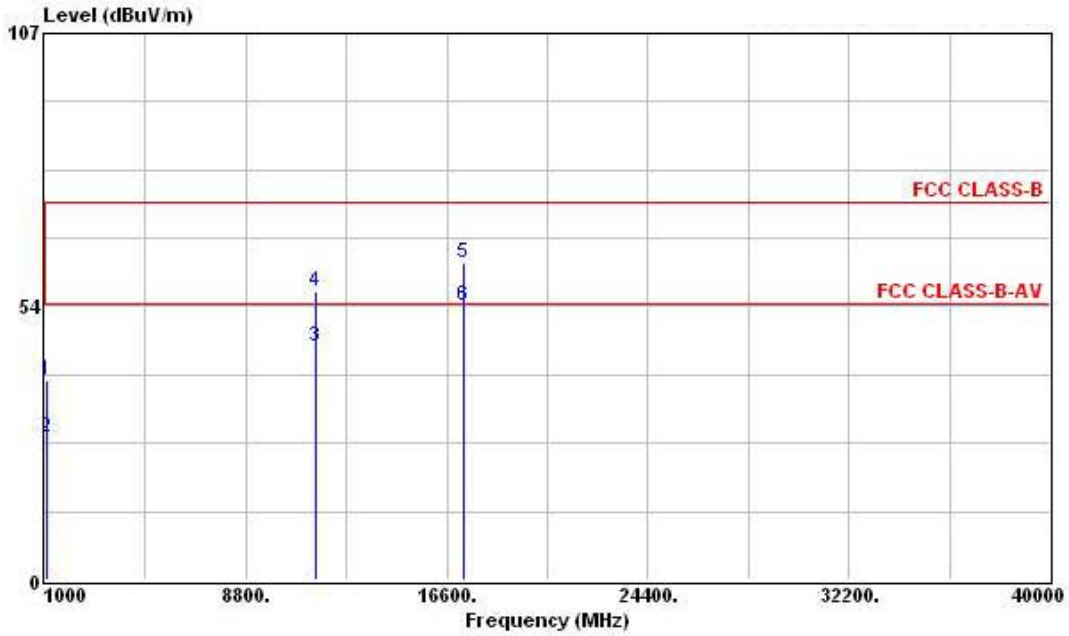
- **Turbo Mode**
- 5760 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	42.21	-31.79	74.00	55.89	24.36	1.19	39.23	Peak	360	360
2	1080.000	32.31	-21.69	54.00	45.99	24.36	1.19	39.23	Average	360	360
3	12784.000	53.82	-20.18	74.00	48.20	39.13	5.00	38.51	Peak	100	100
4	12784.000	46.23	-7.77	54.00	40.61	39.13	5.00	38.51	Average	100	100
5	17280.000	60.45	-13.55	74.00	48.69	42.27	6.12	36.63	Peak	100	100
6	17280.000	52.06	-1.94	54.00	40.30	42.27	6.12	36.63	Average	100	100

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	38.89	-35.11	74.00	52.57	24.36	1.19	39.23	Peak	100	100
2	1080.000	27.77	-26.23	54.00	41.45	24.36	1.19	39.23	Average	100	100
3	11524.000	45.56	-8.44	54.00	40.49	39.11	4.53	38.57	Average	100	100
4	11524.000	56.32	-17.68	74.00	51.25	39.11	4.53	38.57	Peak	100	100
5	17276.000	62.04	-11.96	74.00	50.28	42.27	6.12	36.63	Peak	360	360
6	17276.000	53.66	-0.34	54.00	41.90	42.27	6.12	36.63	Average	360	360

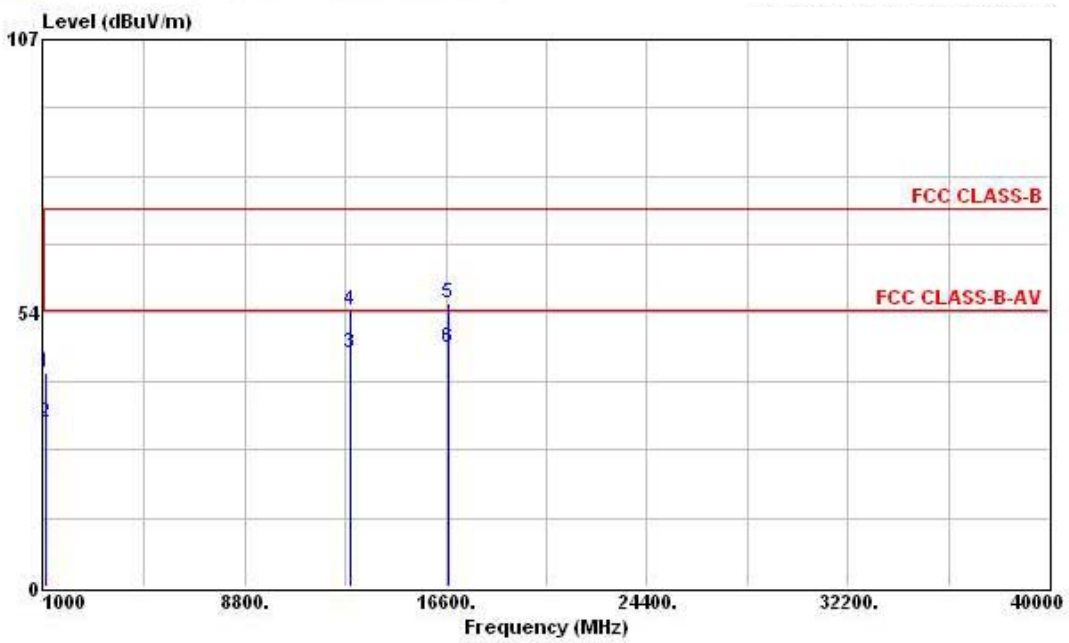
Note:

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

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

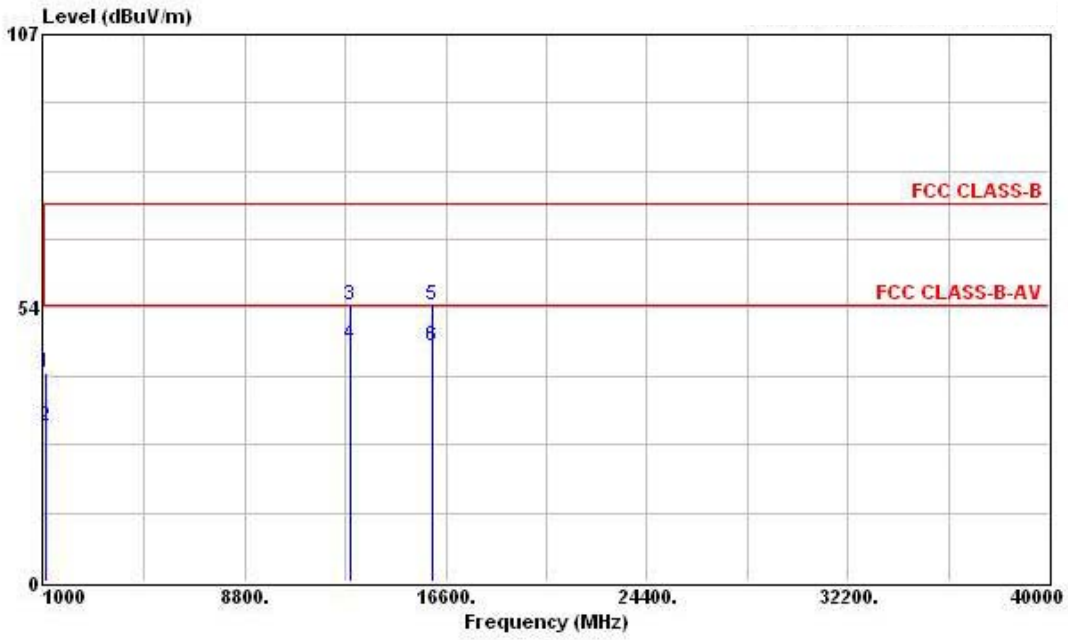
- **Turbo Mode**
- 5800 MHz
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	41.72	-32.28	74.00	55.40	24.36	1.19	39.23	Peak	100	100
2	1080.000	31.97	-22.03	54.00	45.65	24.36	1.19	39.23	Average	100	100
3	12874.000	45.65	-8.35	54.00	40.17	39.18	4.80	38.50	Average	100	100
4	12874.000	54.05	-19.95	74.00	48.57	39.18	4.80	38.50	Peak	100	100
5	16716.000	55.56	-18.44	74.00	47.93	39.14	5.55	37.06	Peak	100	100
6	16716.000	46.63	-7.37	54.00	39.00	39.14	5.55	37.06	Average	100	100

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1080.000	40.92	-33.08	74.00	54.60	24.36	1.19	39.23	Peak	100	100
2	1080.000	30.49	-23.51	54.00	44.17	24.36	1.19	39.23	Average	100	100
3	12874.000	53.93	-20.07	74.00	48.45	39.18	4.80	38.50	Peak	100	360
4	12874.000	46.33	-7.67	54.00	40.85	39.18	4.80	38.50	Average	100	360
5	16084.000	53.88	-20.12	74.00	48.01	37.24	6.18	37.55	Peak	100	100
6	16084.000	45.89	-8.11	54.00	40.02	37.24	6.18	37.55	Average	100	100

Note:

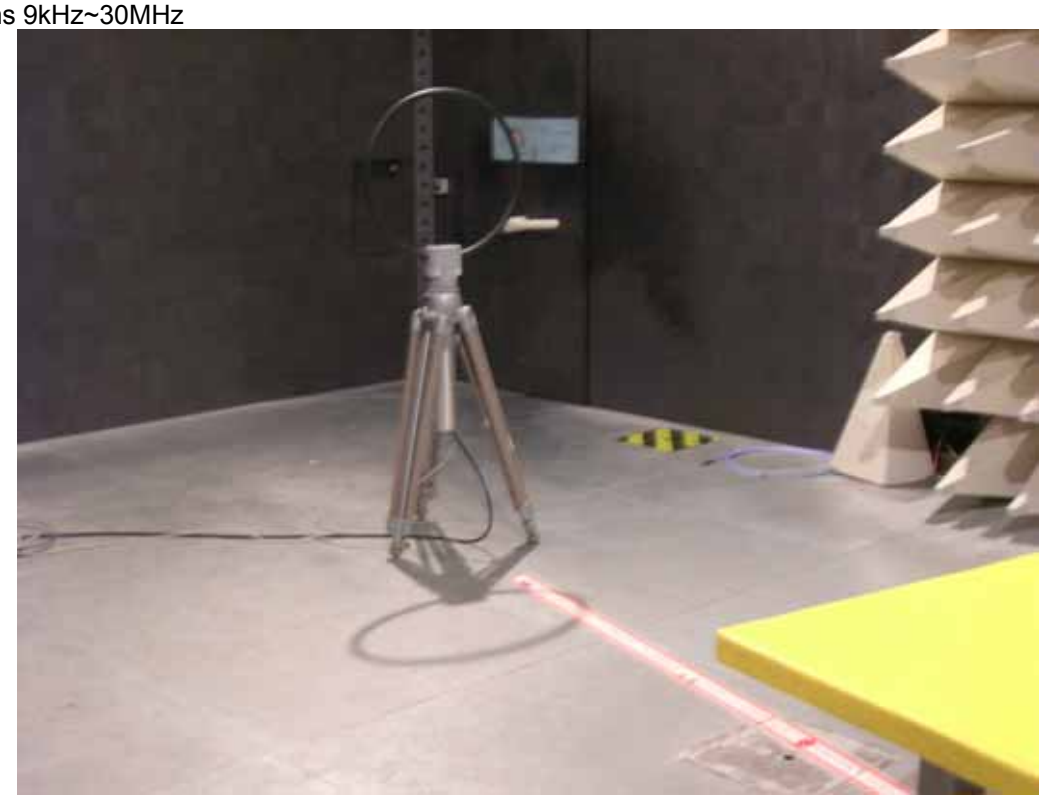
Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

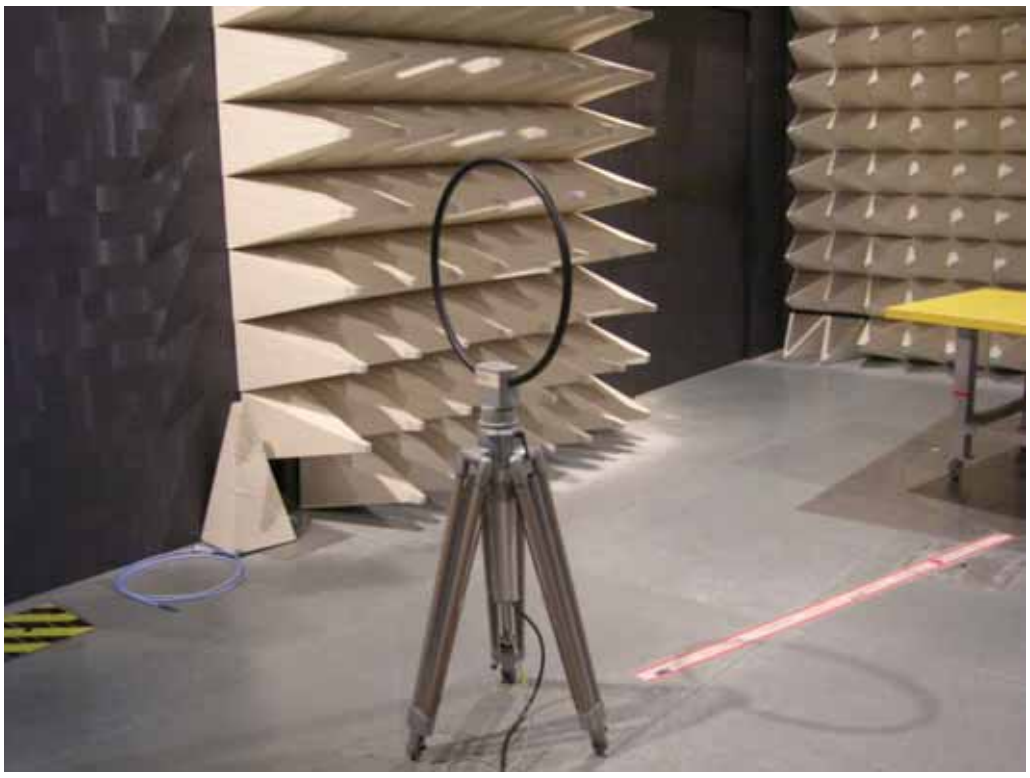
5.8.9. Photographs of Radiated Emission Test Configuration

For radiated emissions 9kHz~30MHz

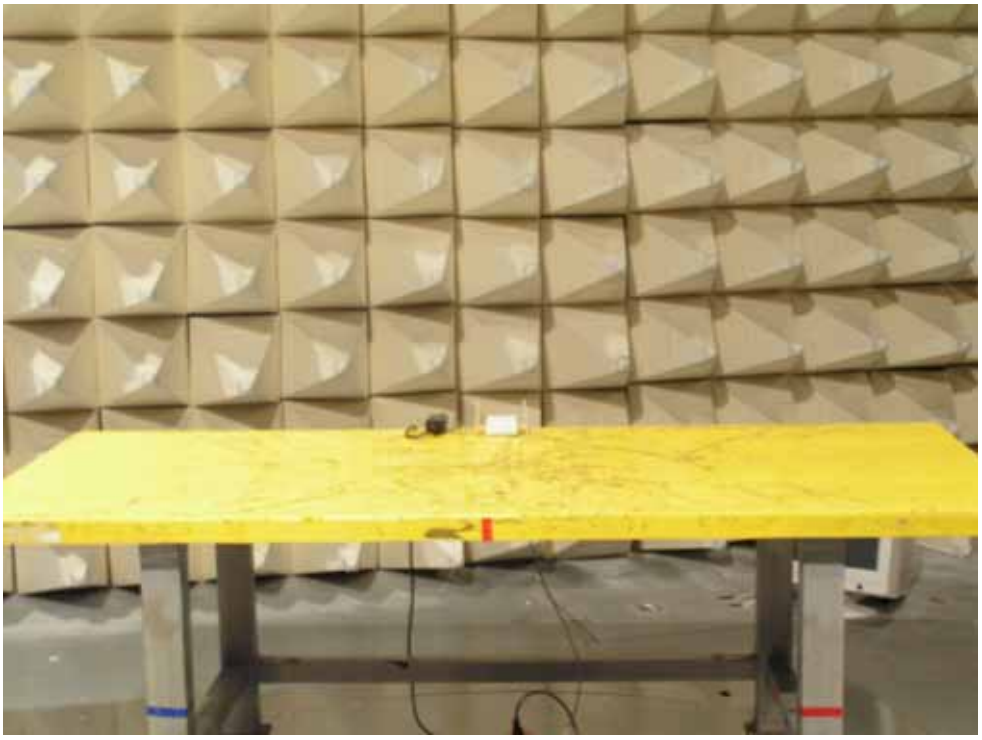
FRONT VIEW



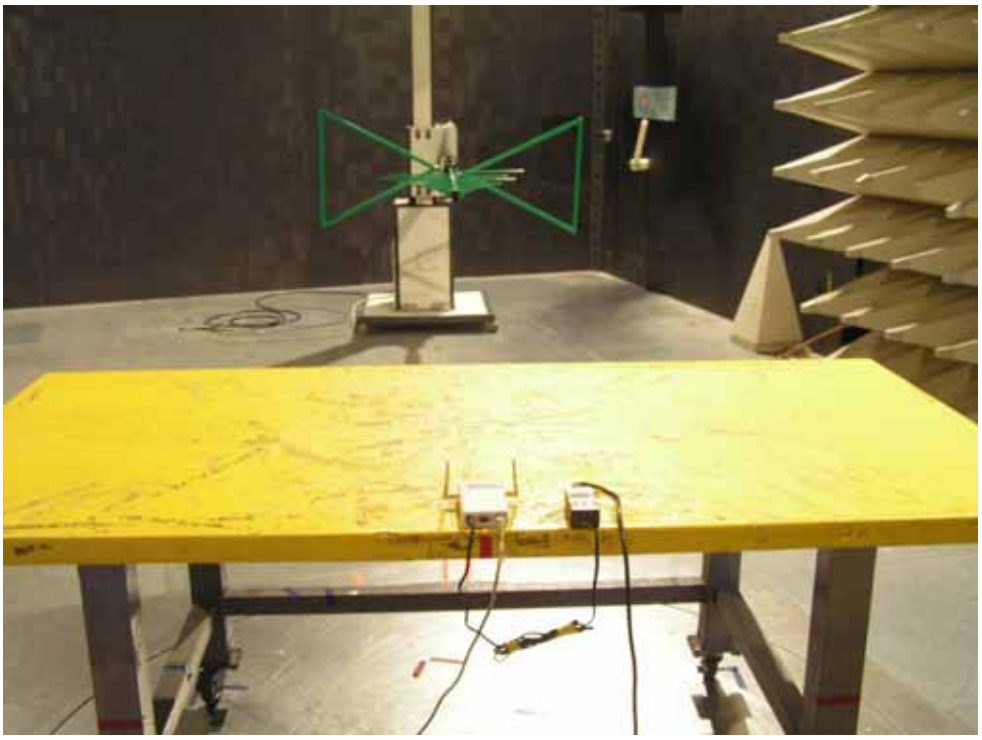
REAR VIEW



FRONT VIEW



REAR VIEW



5.9. Antenna Requirements

5.9.1. 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. Further, this requirement does not apply to intentional radiators that must be professionally installed.

5.9.2. Antenna Connected Construction

The connector for these antennas is Reverse-SMA.

5.10. RF Exposure

5.10.1. Limit For Maximum Permissible Exposure (MPE)

This product can be classified as mobile device, so the 20cm separation distance warning is required. In this section, the power density at 20cm location is calculated to examine if it is lower than the limit.

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|², |H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Time |E|², |H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

F = frequency in MHz

*Plane-wave equivalent power density

5.10.2. MPE Calculation Method

$$\text{E (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd\ (\text{mW/cm}^2) = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (mW)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=20cm, as well as the gain of the used antenna, the RF power density can be obtained.

5.10.3. Calculated Result and Limit

- **Normal Mode**
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

Frequency	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)
5180 MHz	2.5	1.78	14.71	29.58	0.0105	1
5200 MHz	2.5	1.78	14.91	30.97	0.0110	1
5240 MHz	2.5	1.78	14.28	26.79	0.0095	1
5745 MHz	2.5	1.78	13.08	20.32	0.0072	1
5765 MHz	2.5	1.78	23.44	220.80	0.0782	1
5805 MHz	2.5	1.78	13.96	24.89	0.0088	1

- **Turbo Mode**
- Temperature: 26°C
- Relative Humidity: 64%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

Frequency	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)
5210 MHz	2.5	1.78	14.31	26.98	0.0096	1
5760 MHz	2.5	1.78	17.30	53.70	0.0190	1
5800 MHz	2.5	1.78	11.37	13.71	0.0049	1

6. List of Measuring Equipments Used

Original

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
1	EMC Receiver	R&S	ESCS 30	100174	9 KHz – 2.75 GHz	Feb. 16, 2004	Conduction (CO04-HY)
2	LISN	MessTec	NNB-2/16Z	2001/004	9 KHz – 30 MHz	Jun. 09, 2004	Conduction (CO04-HY)
3	LISN (Support Unit)	MessTec	NNB-2/16Z	99041	9 KHz – 30 MHz	Apr. 27, 2004	Conduction (CO04-HY)
4	EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
5	RF Cable-CON	UTIFLEX	3102-26886-4	CB044	9KHz~30MHz	Apr. 21, 2004	Conduction (CO04-HY)
6	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 21, 2004	Radiation (03CH03-HY)
7	Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHz	Aug. 31, 2004	Radiation (03CH03-HY)
8	Amplifier	HP	8447D	2944A09072	100KHz – 1.3GHz	Nov. 05, 2003	Radiation (03CH03-HY)
9	Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30MHz –200MHz	Jul. 28, 2004	Radiation (03CH03-HY)
10	Log Antenna	SCHWARZBECK	VUSLP 9111	221	200MHz -1GHz	Jul. 28, 2004	Radiation (03CH03-HY)
11	RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	Dec. 03, 2003	Radiation (03CH03-HY)
12	Amplifier	MITEQ	AFS44	849984	100MHz~26.5GHz	Mar. 26, 2004	Radiation (03CH03-HY)
13	Horn Antenna	EMCO	3115	6821	1GHz – 18GHz	Sep. 11, 2004	Radiation (03CH03-HY)
14	Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
15	Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
16	Horn Antenna	Schwarzbeck	BBHA9170	154	18GHz~40GHz	Jun. 09, 2004	Radiation (03CH03-HY)
17	RF Cable-HIGH	Jye Bao	RG142	CB030-HIGH	1GHz~29.5GHz	Dec. 05, 2003	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year.

Original

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
18	Spectrum analyzer	R&S	FSP7	838858/014	9KHZ~7GHZ	Sep. 02, 2004	Conducted (TH01-HY)
19	Power meter	R&S	NRVS	100444	DC~40GHz	Jun. 15, 2004	Conducted (TH01-HY)
20	Power sensor	R&S	NRV-Z55	100049	DC~40GHz	Jun. 15, 2004	Conducted (TH01-HY)
21	Power Sensor	R&S	NRV-Z32	100057	30MHz-6GHz	Jun. 15, 2004	Conducted (TH01-HY)
22	AC power source	HPC	HPA-500W	HPA-9100024	AC 0~300V	Jun. 16, 2004	Conducted (TH01-HY)
23	AC power source	G.W.	GPC-6030D	C671845	DC 1V~60V	Nov. 06, 2003	Conducted (TH01-HY)
24	Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Sep. 30, 2004	Conducted (TH01-HY)
25	RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz~7GHz	Jan. 01, 2004	Conducted (TH01-HY)
26	RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz~1GHz	Jan. 01, 2004	Conducted (TH01-HY)

※ Calibration Interval of instruments listed above is one year.

Update

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
1	EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Mar. 03, 2008	Conduction (CO04-HY)
2	LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Mar. 31, 2008	Conduction (CO04-HY)
3	LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Mar. 22, 2008	Conduction (CO04-HY)
4	RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2008	Conduction (CO04-HY)
5	ISN	SCHAFFNER	ISN T400	21653	9kHz –30MHz	Mar. 27, 2008	Conduction (CO04-HY)
6	EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
7	Spectrum Analyzer	R&S	FSP40	100004	9 kHz - 40 GHz	Sep. 27, 2007	Radiation (03CH03-HY)
8	Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Jul. 12, 2008	Radiation (03CH03-HY)
9	Amplifier	SCHAFFNER	COA9231A	18667	9 kHz - 2 GHz	Jan. 14, 2008	Radiation (03CH03-HY)
10	RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec. 03, 2007	Radiation (03CH03-HY)
11	Loop Antenna	TESEQ	HLA6120	24155	9KHz ~ 30MHz	Jan. 18, 2007*	Radiation (03CH03-HY)
12	Spectrum Analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Jan. 10, 2008	Conducted (TH01-HY)

※ Calibration Interval of instruments listed above is one year.
※ * Calibration Interval of instruments listed above is two year.

7. 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.