FCC TEST REPORT

CATEGORY	:	Mobile
PRODUCT NAME	:	AP3750 Managed Access Point
FCC ID.	:	O9C-AP3750
FILING TYPE	:	Certification
BRAND NAME	:	3COM
MODEL NAME	:	AP3750
APPLICANT	:	**3Com Corporation** 350 Campus Drive, Marlborough, Mass. 01752 USA
MANUFACTURER	:	**Same as Applicant**

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 (5725MHz ~ 5850MHz) 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.

Certificate or Test Report could not be used by the applicant to claim the product endorsement by CNLA and any agency of U.S. government.

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

1190
ILAC MRA

Table of Contents

HISTORY OF THIS TEST REPORT

Test Date: May 26, 2005
Original Report Issue Date: May 27, 2005
Report No.: FR540715

■ No additional attachment.
☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

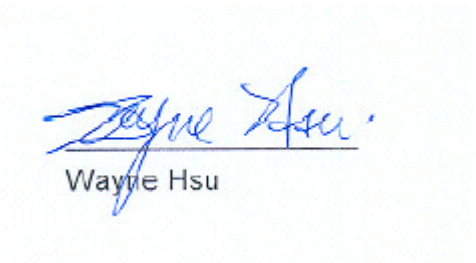
with

47 CFR FCC Part 15 Subpart C

PRODUCT NAME	:	AP3750 Managed Access Point
BRAND NAME	:	3COM
MODEL NAME	:	AP3750
APPLICANT	:	**3Com Corporation** 350 Campus Drive, Marlborough, Mass. 01752 USA
MANUFACTURER	:	**Same as Applicant**

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 Subpart C. Testing was carried out on May 26, 2005 at SPORTON International Inc. LAB.



1. General Description of Equipment under Test

1.1. Applicant

3Com Corporation
350 Campus Drive, Marlborough, Mass. 01752 USA

1.2. Manufacturer

Same as Applicant

1.3. Basic Description of Equipment under Test

This product is a Wireless Access Point with 802.11a/b/g wireless solution. The technical data has been listed on section " Features of Equipment under Test ". 4 types of antenna are filed in this report.

1.4. Features of Equipment under Test

Items	Description
Type of Modulation	DSSS (CCK / DQPSK / DBPSK) OFDM (16QAM / 64QAM / DQPSK / DBPSK)
Number of Channels	7
Frequency Band	5725 MHz ~ 5850 MHz
Carrier Frequency	See section 1.6 for details
Data Rate	CCK : 1, 2, 5.5, 11Mbps OFDM : 6, 12, 18, 24, 36, 48, 54, 108Mbps
Max. Conducted Output Power	18.84dBm
Antenna Type	See section 1.5 for details
Communication Type	Half-Duplex
Testing Duty Cycle	100.00%
Test Power Source	48 VDC from POE
Temperature Range (Operating)	-10 ~ 55 °C

1.5. Antenna Description

No.	Antenna Type	Gain (dBi)
1	Internal Antenna	4.00dBi @5.0GHz
2	High Gain Omni-Directional Antenna (3CWE591)	8.00dBi @5.0GHz
3	Hallway Bi-Directional Antenna (3CWE597)	8.00dBi @5.0GHz
4	Medium Gain Panel (3CWE598)	10.00dBi @5.0GHz

1.6. Table for Carrier Frequencies

Normal Mode

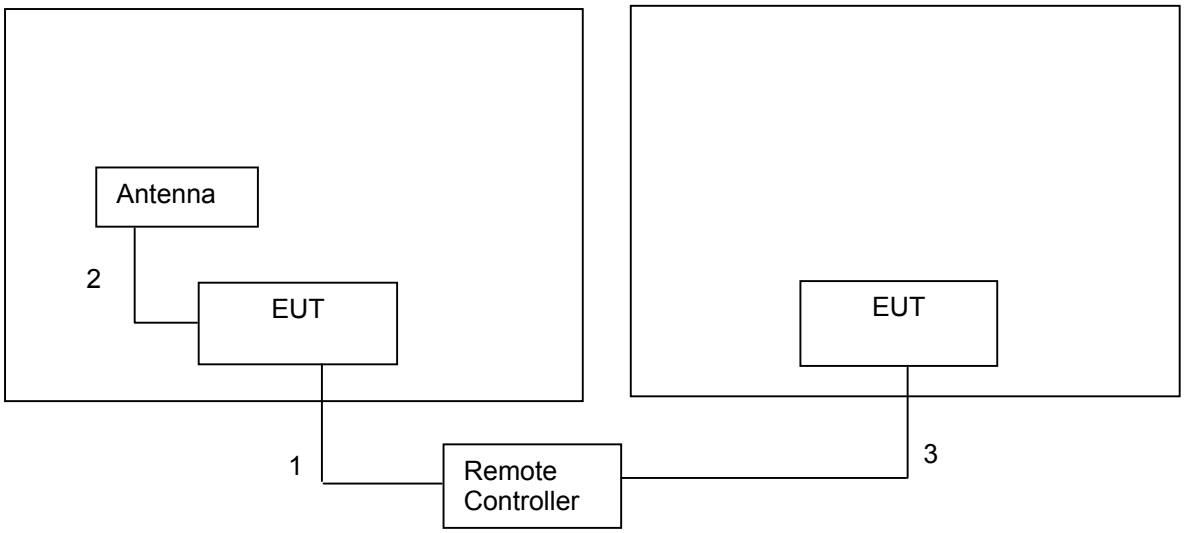
Frequency Bands	
5725MHz ~ 5825MHz	
Channel	**Frequency**
149	5745 MHz
153	5765 MHz
157	5785 MHz
161	5805 MHz
165	5825 MHz

Turbo Mode

Frequency Bands	
5725MHz ~ 5825MHz	
Channel	**Frequency**
152	5760 MHz
160	5800 MHz

2. Test Configuration of the Equipment under Test

2.1. Connection Diagram of Test System



1. RJ45, 5m, non-shielding
2. Antenna Cable, 2m, non-shielding
3. RJ45, 5m, non-shielding

2.2. The Test Mode Description

1. For OFDM modulation, BPSK is the worst case on all test items.
2. According to ANSI C63.4-2003: If frequency range of EUT is more than 10 MHz, we have to test the lowest, middle and highest channels of EUT.
3. Spurious emission below 1GHz is independent of channel selection and modulation types. So only channel 165/5825MHz with Antenna 4 was tested since Antenna 4 produced worst emission nature.
4. AC conduction emission is independent of channel selection, modulation types and types of antenna. So only channel 165/5825MHz with OFDM modulation was tested.
5. There are 4 types of antennas were filed:
   Mode 1 : Ant. 1 Internal Antenna
   Mode 2 : Ant. 2 High Gain Omni-Directional Antenna (3CWE591)
   Mode 3 : Ant. 3 Hallway Bi-Directional Antenna (3CWE597)
   Mode 4 : Ant. 4 Medium Gain Panel (3CWE598)

2.3. Description of Test Supporting Units

Support Unit 1. – Notebook (COMPAQ) – for remote workstation

FCC ID	: N/A
Model No.	: PRESARIO 1500
Serial No.	: SP0004
Remark	: This support device was tested to comply with FCC standards and authorized under Declaration of Conformity.

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 : 03CH03-HY / TH01-HY / CO04-HY

3.2. Test Conditions

Normal Voltage : 110.00VAC (adapter of POE)
Normal Temperature : 20℃

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 FCC Part 15 Subpart C

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 30 MHz to 10th carrier harmonic

3.6. Test Distance

The test distance of radiated emission (30MHz~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.

Mode 1

Software Version	: ART
Ch149 / OFDM	: 17/TX Power
Ch157 / OFDM	: 17/TX Power
Ch165 / OFDM	: 17/TX Power
Turbo Ch152 / OFDM	17/TX Power
Turbo Ch160 / OFDM	17/TX Power
IP Address of EUT	: 192.168.1.20

Mode 3

Software Version	: ART
Ch149 / OFDM	: 17/TX Power
Ch157 / OFDM	: 17/TX Power
Ch165 / OFDM	: 17/TX Power
Turbo Ch152 / OFDM	17/TX Power
Turbo Ch160 / OFDM	17/TX Power
IP Address of EUT	: 192.162.1.20

Mode 2

Software Version	: ART
Ch149 / OFDM	: 17/TX Power
Ch157 / OFDM	: 17/TX Power
Ch165 / OFDM	: 17/TX Power
Turbo Ch152 / OFDM	17/TX Power
Turbo Ch160 / OFDM	17/TX Power
IP Address of EUT	: 192.162.1.20

Mode 4

Software Version	: ART
Ch149 / OFDM	: 17/TX Power
Ch157 / OFDM	: 17/TX Power
Ch165 / OFDM	: 17/TX Power
Turbo Ch152 / OFDM	17/TX Power
Turbo Ch160 / OFDM	17/TX Power
IP Address of EUT	: 192.162.1.20

4. List of Measurements

4.1. Summary of the Test Results

Applied Standard: 47 CFR FCC Part 15 Subpart C			
Paragraph	**FCC Section**	**Description of Test**	**Result**
5.1	15.247(a)(2)	6dB Spectrum Bandwidth	Pass
5.2	15.247(b)(3)	Maximum Peak Conducted Output Power	Pass
5.3	15.247(e)	Peak Power Spectral Density	Pass
5.4	15.207	AC Power Line Conducted Emission	Pass
5.6	15.247(d)	Spurious Radiated Emission	Pass
5.7	15.203/15.247(b)/(c)	Antenna Requirement	Pass
5.8	2.1091	Maximum Permissible Exposure	Pass

5. Test Result

5.1. Test of 6dB Spectrum Bandwidth

5.1.1. Applicable Standard

Section 15.247(a)(2): For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

5.1.2. Measuring Instruments

Item 18 of the table on section 6.

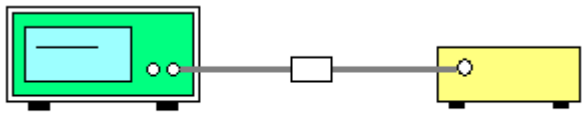
5.1.3. Description of Major Test Instruments Setting

- Spectrum Analyzer : R&S FSP30
  Attenuation : Auto
  Center Frequency : 5745MHz / 5785MHz / 5825MHz
  Span Frequency : > 6dB Bandwidth
  RB : 100 kHz
  VB : 100 kHz
  Detector : Peak
  Trace : Max Hold
  Sweep Time : Auto

5.1.4. Test Procedures

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.Trace to Max hold and Detector PK.
3. The 6dB bandwidth is the spectrum range with level higher than 6dB below the peak level.
4. Repeat points 1~3 for the middle and highest channel of the EUT.

5.1.5. Test Setup Layout



5.1.6. Test Criteria

All test results complied with the requirements of 15.247(a)(2). Measurement Uncertainty is $1x10^{-5}$.

5.1.7. Test Result

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

Mode 1

Normal Mode

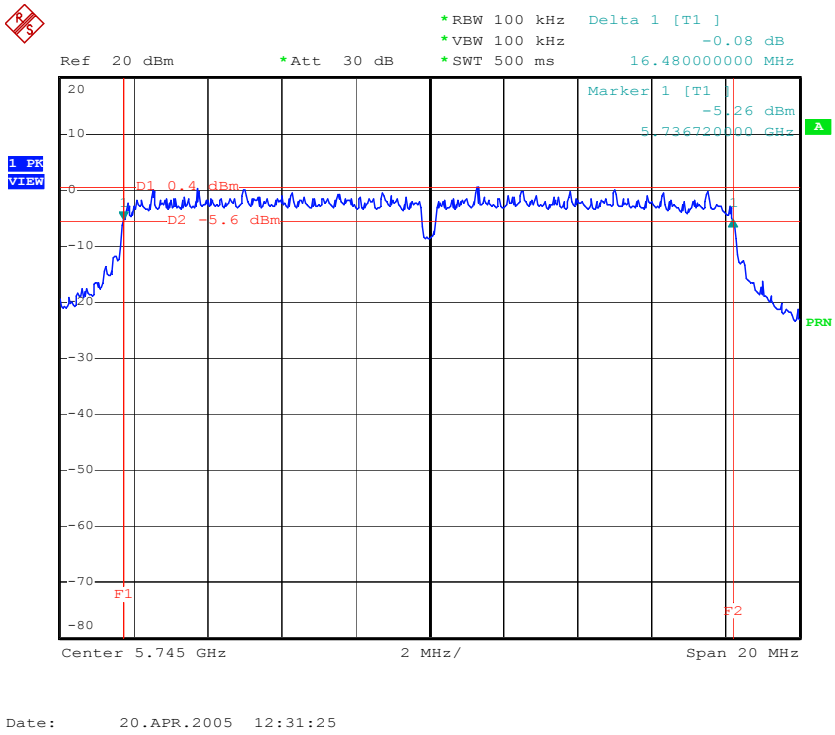
Modulation Type	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Min. Limit (MHz)
OFDM	149	5745 MHz	16.48	0.5
OFDM	157	5785 MHz	16.48	0.5
OFDM	165	5825 MHz	16.48	0.5

Turbo Mode

Modulation Type	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Min. Limit (MHz)
OFDM	152	5760 MHz	32.60	0.5
OFDM	160	5800 MHz	32.60	0.5

Normal Mode

Modulation Type: OFDM (Channel 149 / 5745 MHz) :



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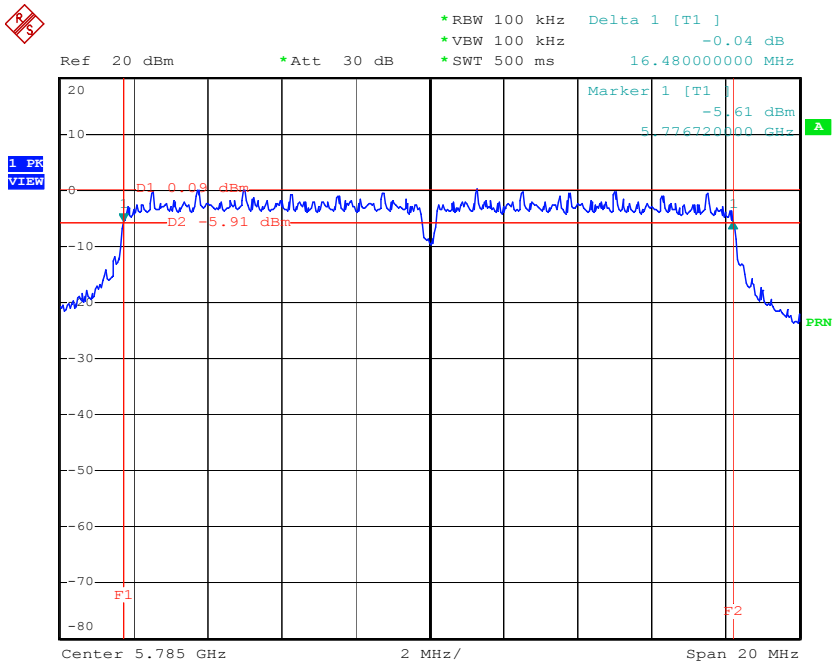
Modulation Type: OFDM (Channel 157 / 5785 MHz) :



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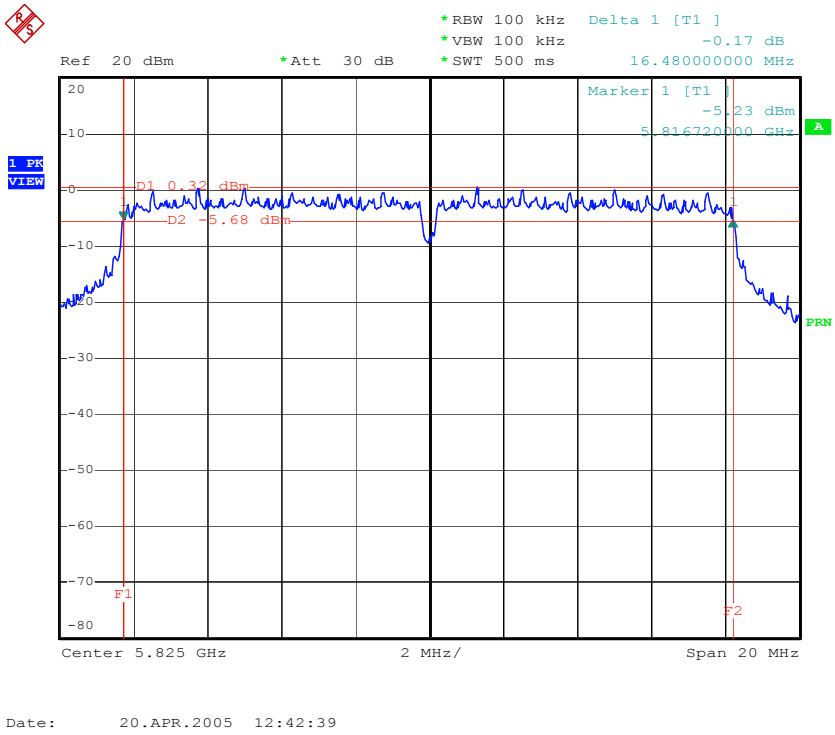
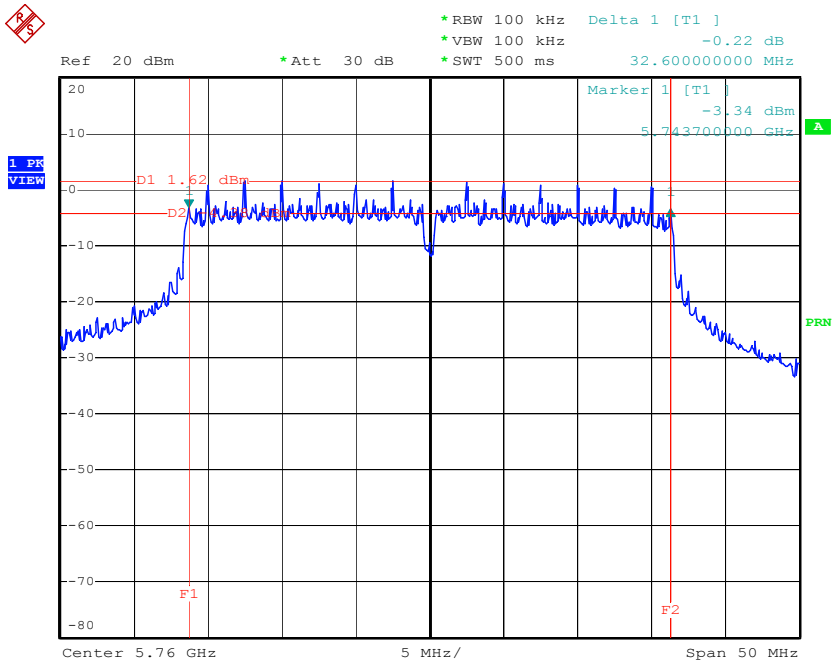
Modulation Type: OFDM (Channel 165 / 5825 MHz) :



Turbo Mode

Modulation Type: OFDM (Channel 152 / 5760 MHz) :



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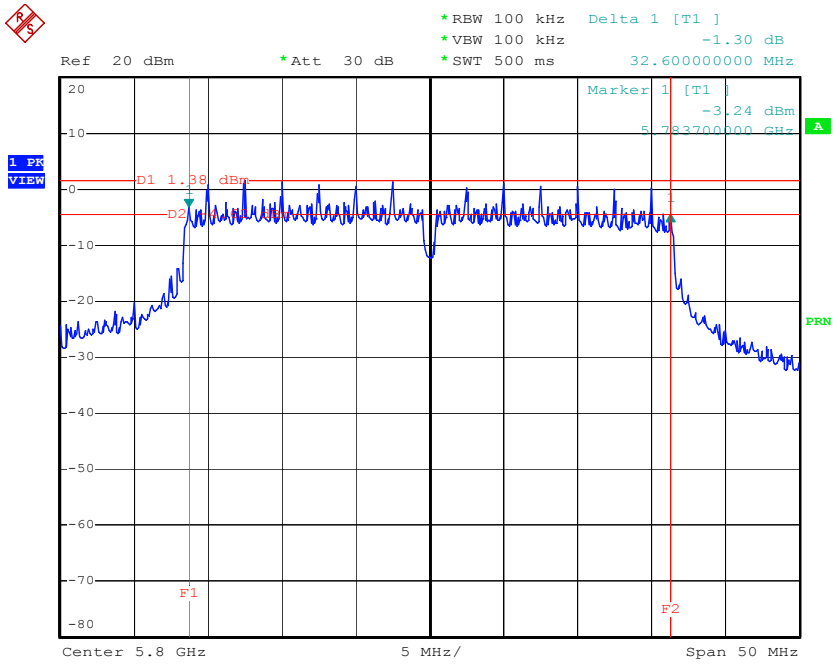
Modulation Type: OFDM (Channel 160 / 5800 MHz) :



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Mode 2~4

Normal Mode

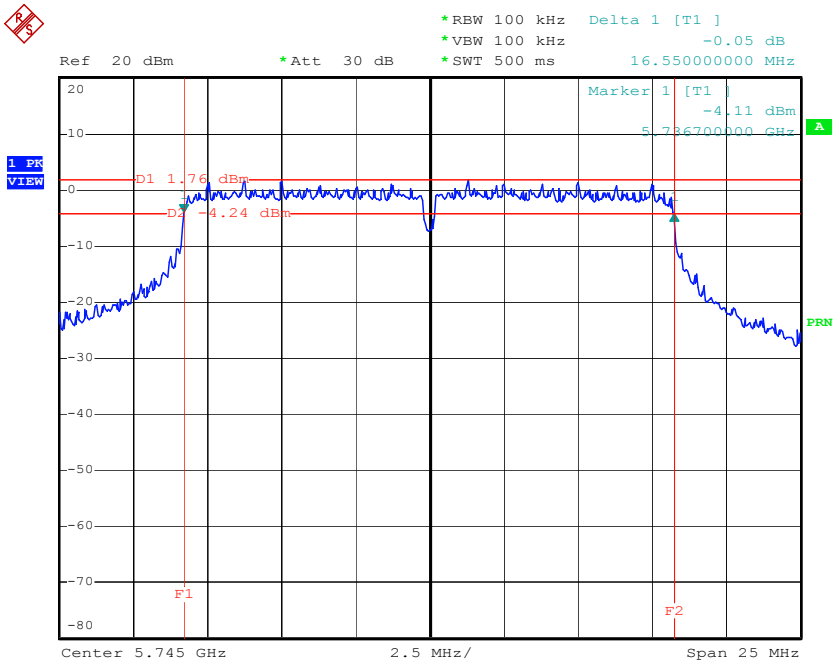
Modulation Type	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Min. Limit (MHz)
OFDM	149	5745 MHz	16.55	0.5
OFDM	157	5785 MHz	16.50	0.5
OFDM	165	5825 MHz	16.55	0.5

Turbo Mode

Modulation Type	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Min. Limit (MHz)
OFDM	152	5760 MHz	32.60	0.5
OFDM	160	5800 MHz	32.60	0.5

Normal Mode

Modulation Type: OFDM (Channel 149 / 5745 MHz) :



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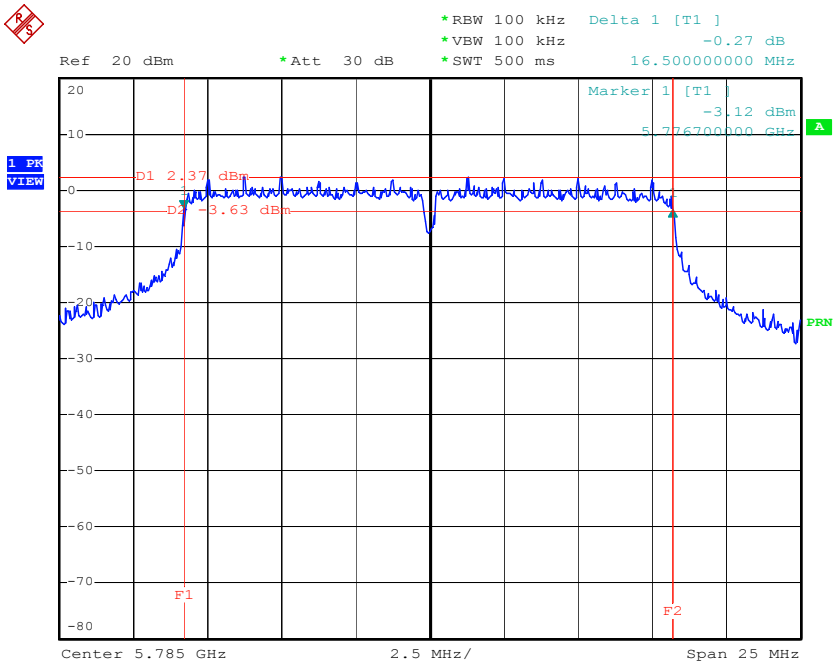
Modulation Type: OFDM (Channel 157 / 5785 MHz) :



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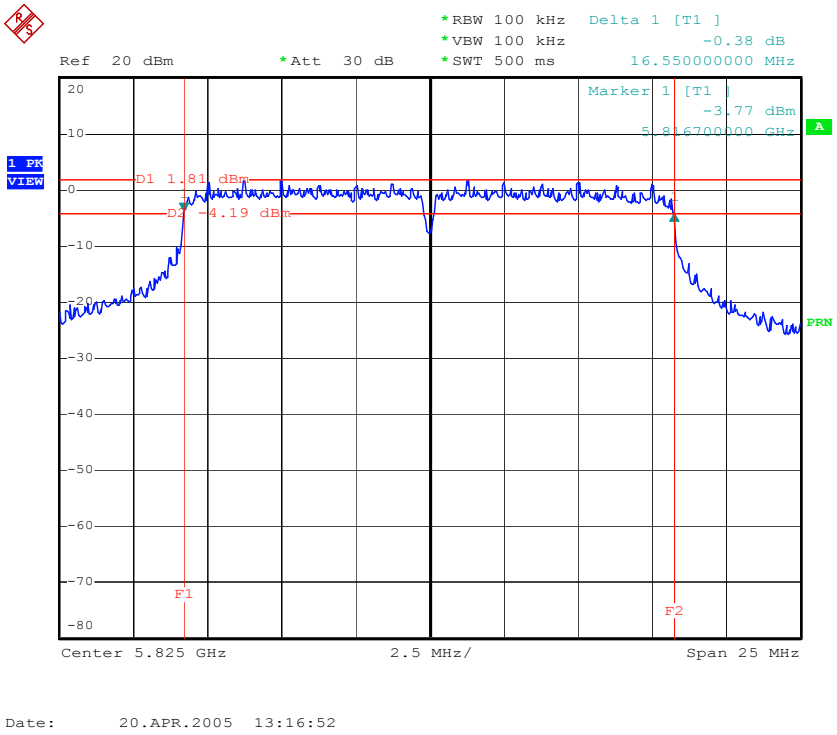
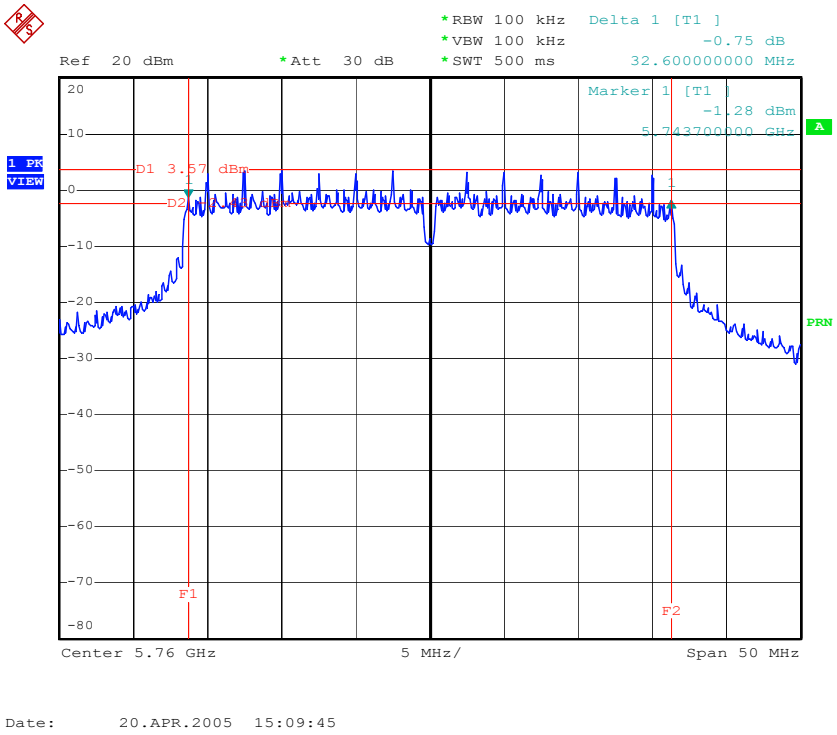
Modulation Type: OFDM (Channel 165 / 5825 MHz) :

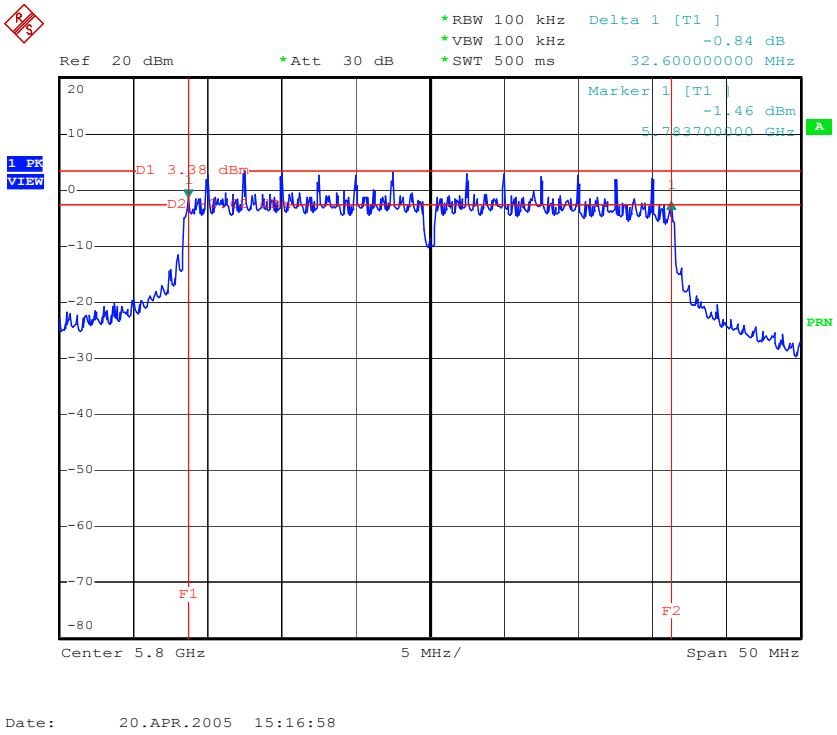


Turbo Mode

Modulation Type: OFDM (Channel 152 / 5760 MHz) :



Modulation Type: OFDM (Channel 160 / 5800 MHz) :



5.2. Test of Maximum Peak Conducted Output Power

5.2.1. Applicable Standard

Section 15.247(b)(3): The maximum peak output power shall not exceed 1 watt (30dBm). Except as shown below, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the above stated values by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

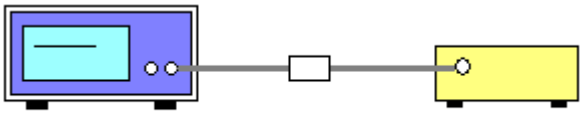
5.2.2. Measuring Instruments

Item 19, 21 of the table on section 6.

5.2.3. Test Procedures and Test Instruments Setting

1. The transmitter output was connected to the peak power meter through an attenuator.
2. Repeated point 1 for the middle and highest channel of the EUT.

5.2.4. Test Setup Layout



5.2.5. Test Criteria

All test results complied with the requirements of 15.247(b)(3). Measurement Uncertainty is 1.5dB.

5.2.6. Test Result of Conducted Power

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

Mode 1

Normal Mode

Modulation Type	Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
OFDM	149	5745 MHz	17.83	30
OFDM	157	5785 MHz	17.75	30
OFDM	165	5825 MHz	17.92	30

Turbo Mode

Modulation Type	Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
OFDM	152	5760 MHz	18.45	30
OFDM	160	5800 MHz	18.84	30

Mode 2~4

Normal Mode

Modulation Type	Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
OFDM	149	5745 MHz	17.40	28
OFDM	157	5785 MHz	17.65	28
OFDM	165	5825 MHz	17.67	28

Turbo Mode

Modulation Type	Channel No.	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
OFDM	152	5760 MHz	18.30	28
OFDM	160	5800 MHz	18.46	28

5.3. Test of Peak Power Spectral Density

5.3.1. Applicable Standard

Section 15.247(e): For digital modulation systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.3.2. Measuring Instruments

Item 18 of the table on section 6.

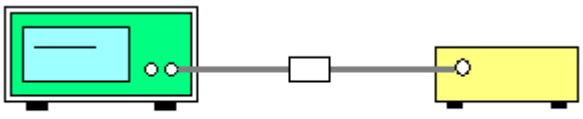
5.3.3. Description of Major Test Instruments Setting

- Spectrum Analyzer : R&S FSP30
  Attenuation : Auto
  Center Frequency : 5745MHz / 5785MHz / 5825MHz
  Span Frequency : 1.5MHz
  RB : 3 kHz
  VB : 30 kHz
  Detector : Peak
  Trace : Max Hold
  Sweep Time : 500s

5.3.4. Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 3kHz and VBW to 30kHz. Set Detector to Peak, Trace to Max Hold.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum.
4. Set the span to 1.5MHz and the sweep time to 500s and record the maximum peak value.
5. Repeated point 1~4 for the middle and highest channel of the EUT.

5.3.5. Test Setup Layout



5.3.6. Test Criteria

All test results complied with the requirements of 15.247(e). Measurement Uncertainty is 1.5dB.

5.3.7. Test Result

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

Mode 1

Normal Mode

Modulation Type	Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
OFDM	149	5745 MHz	-10.46	8
OFDM	157	5785 MHz	-12.61	8
OFDM	165	5825 MHz	-12.12	8

Turbo Mode

Modulation Type	Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
OFDM	152	5760 MHz	-14.07	8
OFDM	160	5800 MHz	-12.12	8

Mode 2~4

Normal Mode

Modulation Type	Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
OFDM	149	5745 MHz	-10.27	8
OFDM	157	5785 MHz	-9.78	8
OFDM	165	5825 MHz	-10.16	8

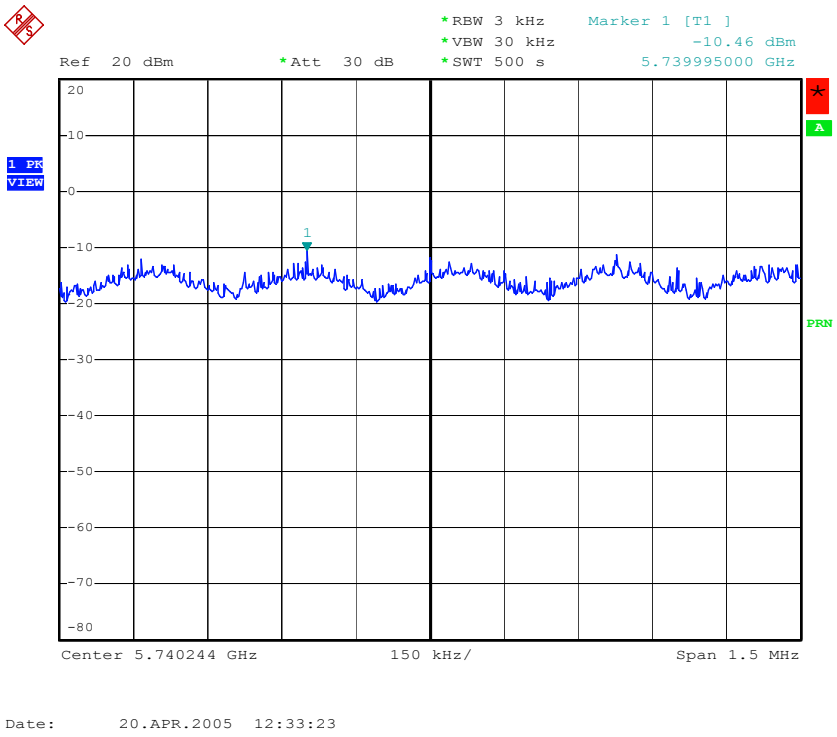
Turbo Mode

Modulation Type	Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
OFDM	152	5760 MHz	-13.63	8
OFDM	160	5800 MHz	-11.33	8

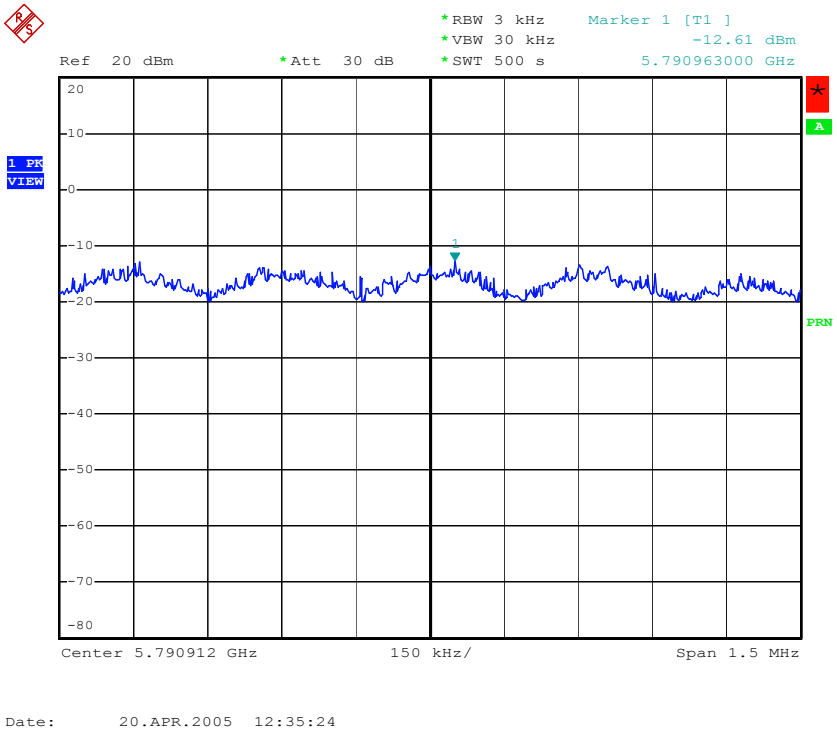
Mode 1

Normal Mode

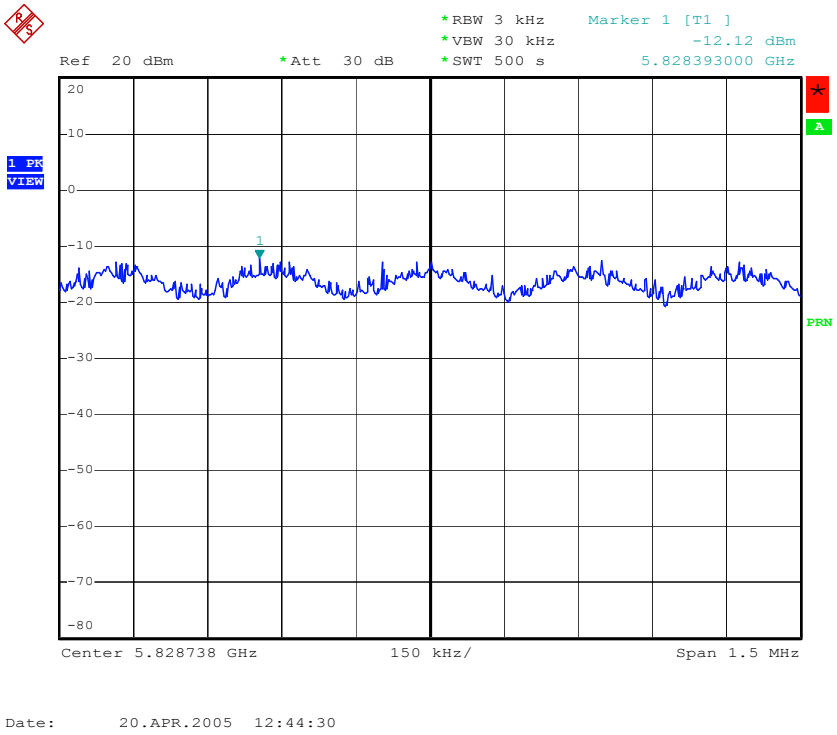
Modulation Type: OFDM (Channel 149 / 5745 MHz) :



Modulation Type: OFDM (Channel 157 / 5785 MHz) :

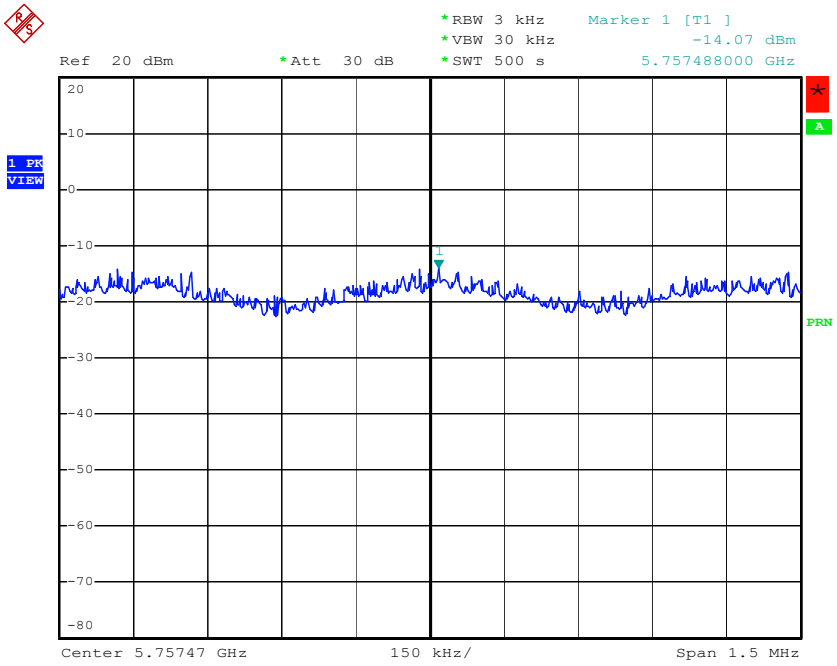


Modulation Type: OFDM (Channel 165 / 5825 MHz) :



Turbo Mode

Modulation Type: OFDM (Channel 152/ 5760 MHz)：



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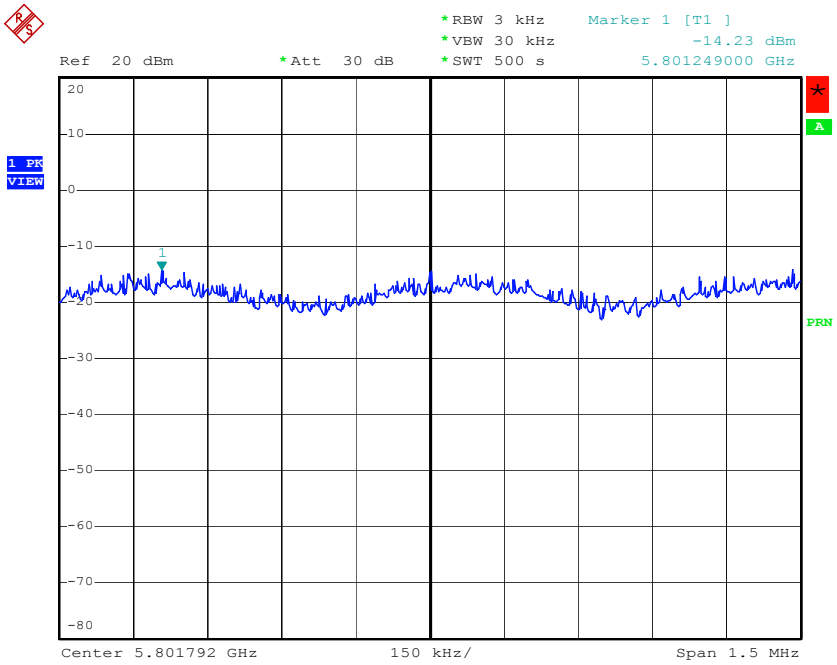
Modulation Type: OFDM (Channel 160/ 5800 MHz：



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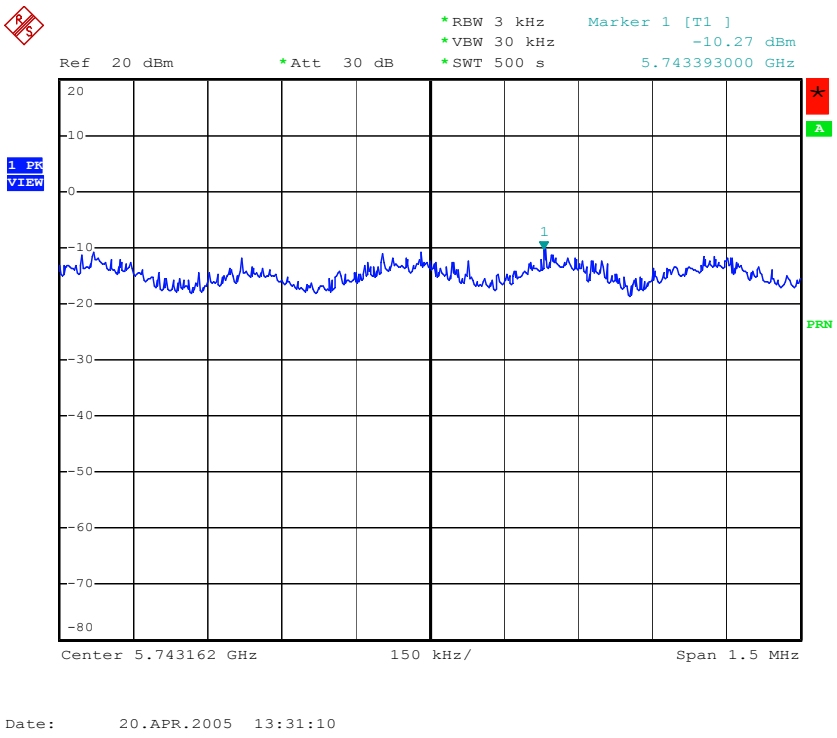
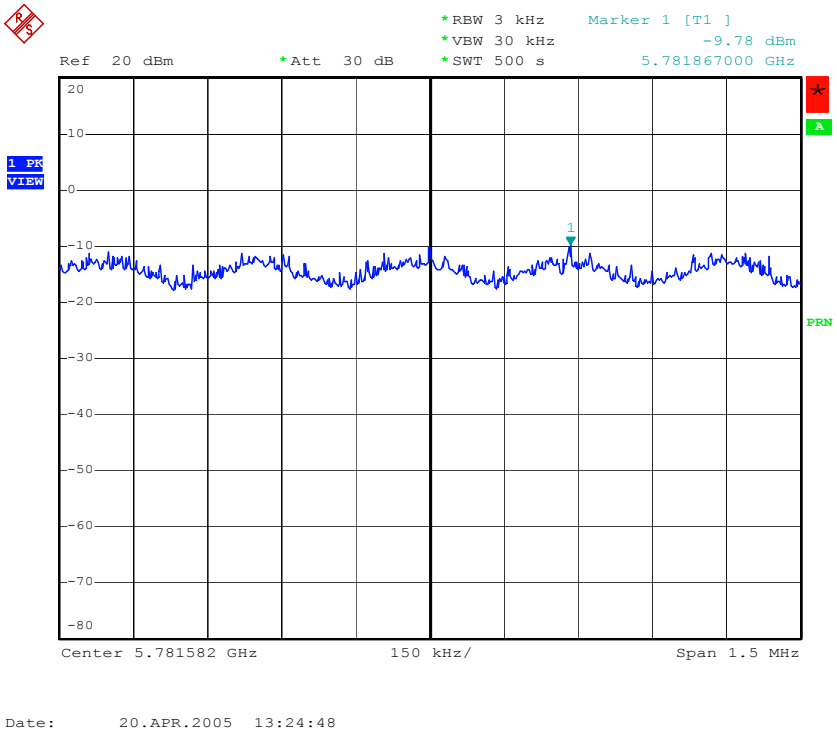
Mode 2~4
Normal Mode

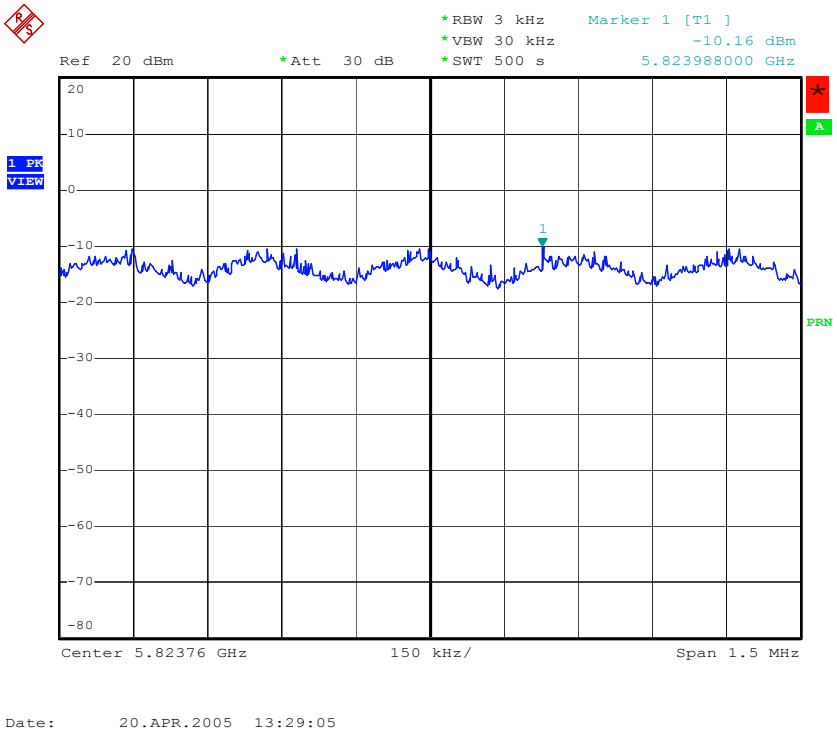
Modulation Type: OFDM (Channel 149 / 5745 MHz) :



Modulation Type: OFDM (Channel 157 / 5785 MHz) :

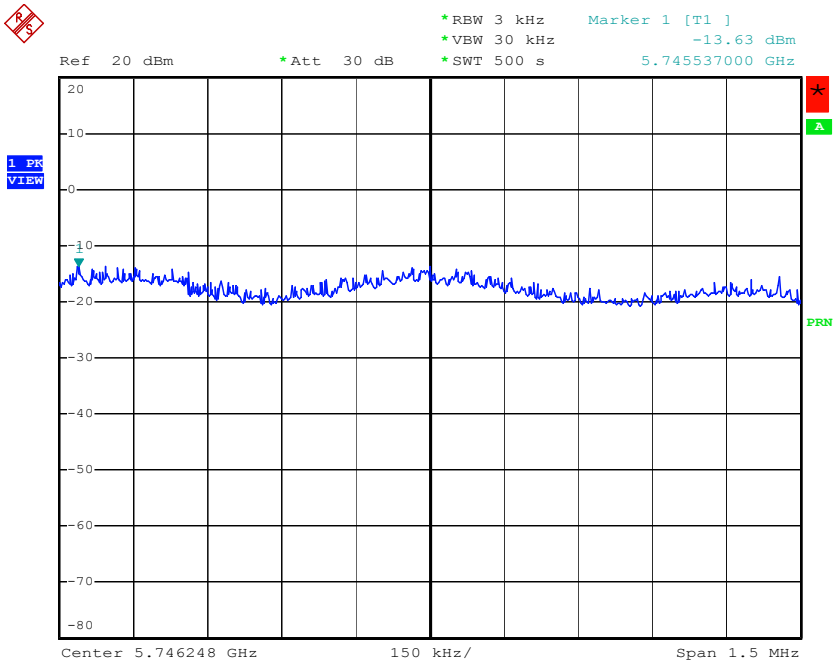


Modulation Type: OFDM (Channel 165 / 5825 MHz) :



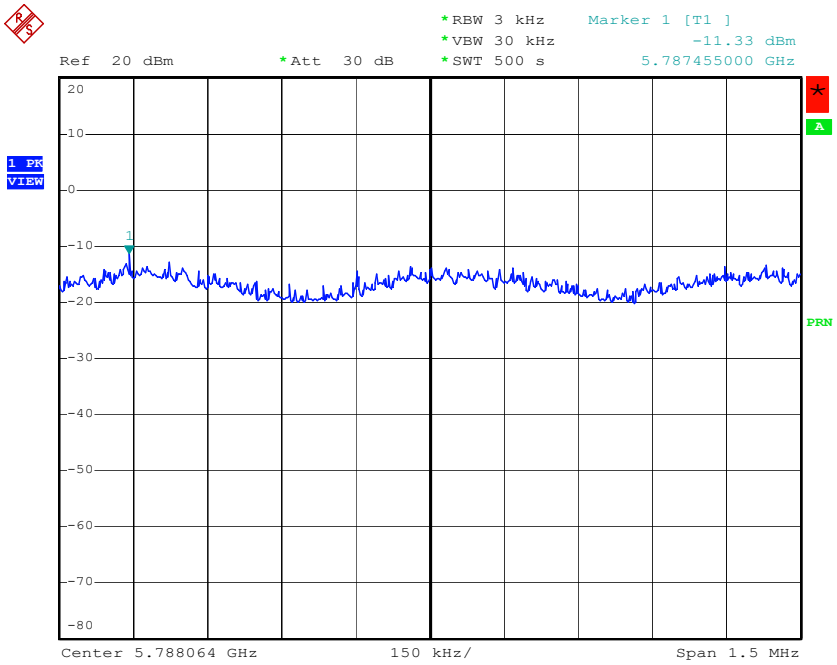
Turbo Mode

Modulation Type: OFDM (Channel 152/ 5760 MHz) :



Date: 20.APR.2005 15:13:27

Modulation Type: OFDM (Channel 160/ 5800 MHz) :



Date: 20.APR.2005 15:15:23

5.4. Test of Band Edges Emission

5.4.1. Measuring Instruments

Item 18 of the table on section 6.

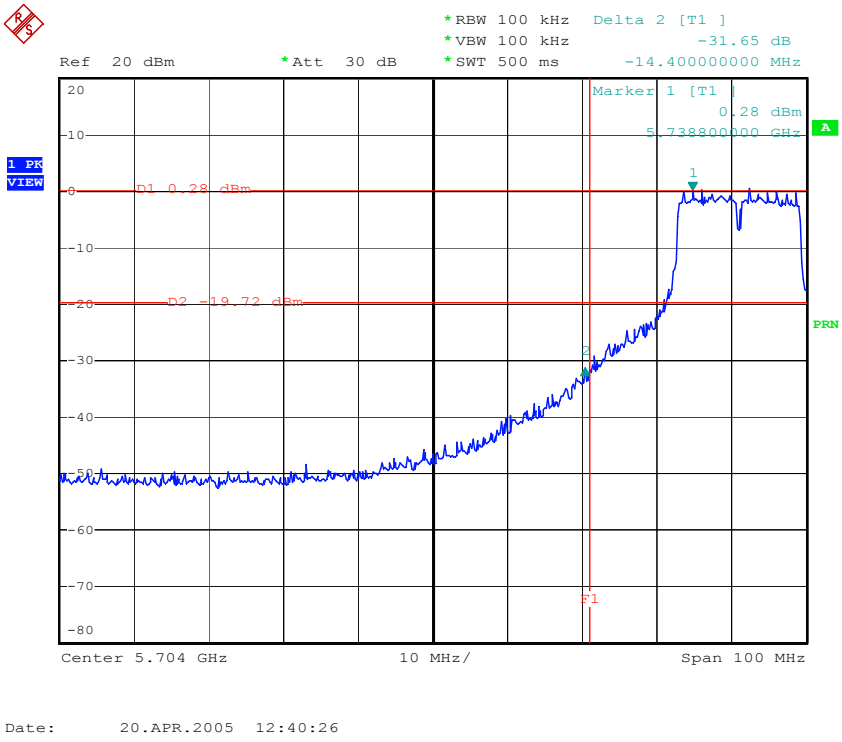
5.4.2. Test Procedures

1. The transmitter is set to the lowest channel.
2. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.
3. Set both RBW and VBW of spectrum analyzer to 100KHz with convenient frequency span including 100MHz bandwidth from lower band edge.
4. The lowest band edges emission was measured and recorded.
5. The transmitter set to the highest channel and repeated 2~4.

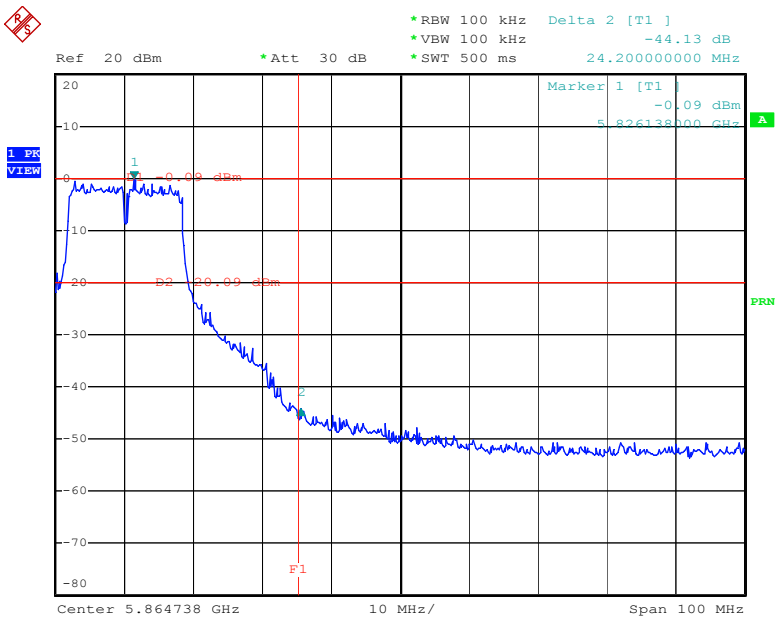
5.4.3. Test Result

Temperature: 26°C
Relative Humidity: 64%
Duty Cycle of the Equipment During the Test: 100.00%
Test Engineer: Eason Lu
Mode 1
Normal Mode

Modulation Type: OFDM (Channel 149 / 5745 MHz) :

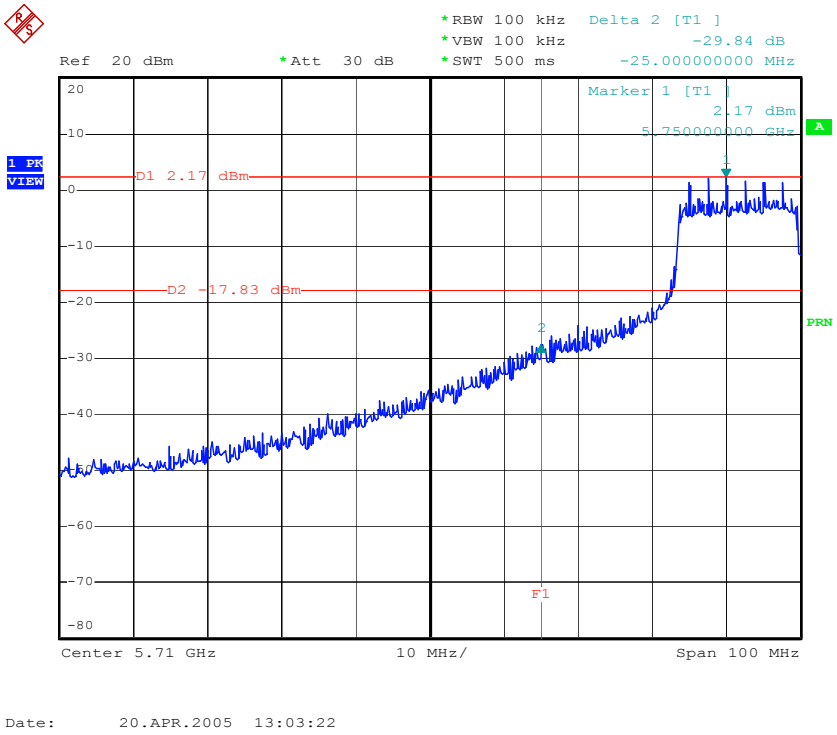


Modulation Type: OFDM (Channel 165 / 5825 MHz) :



Turbo Mode

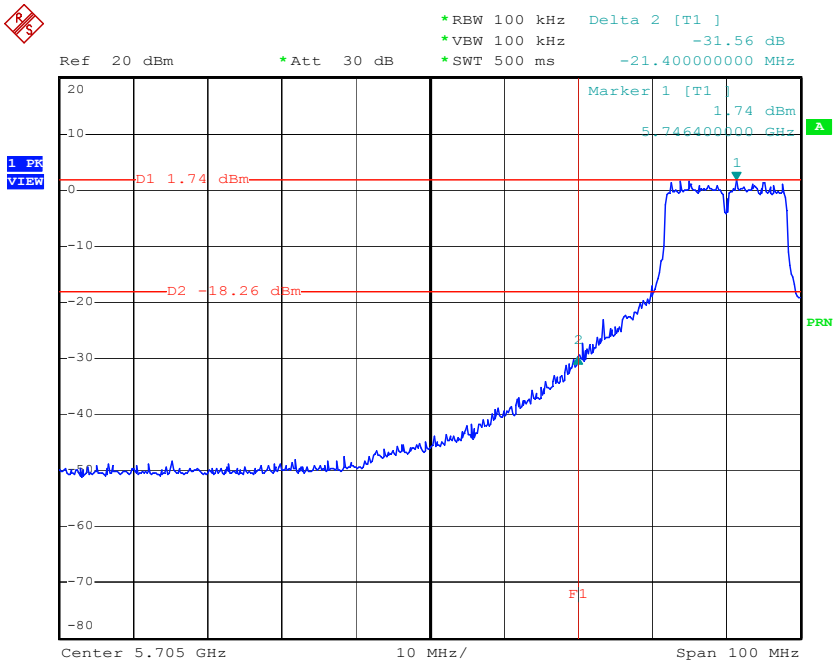
Modulation Type: OFDM (Channel 152/ 5760 MHz)：



Mode 2~3

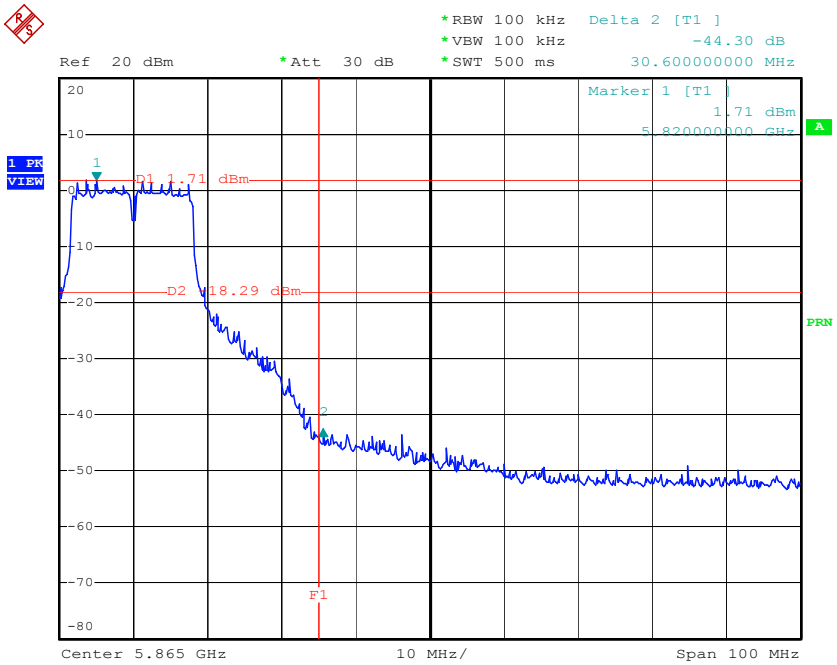
Normal Mode

Modulation Type: OFDM (Channel 149 / 5745 MHz) :



Date: 20.APR.2005 15:06:04

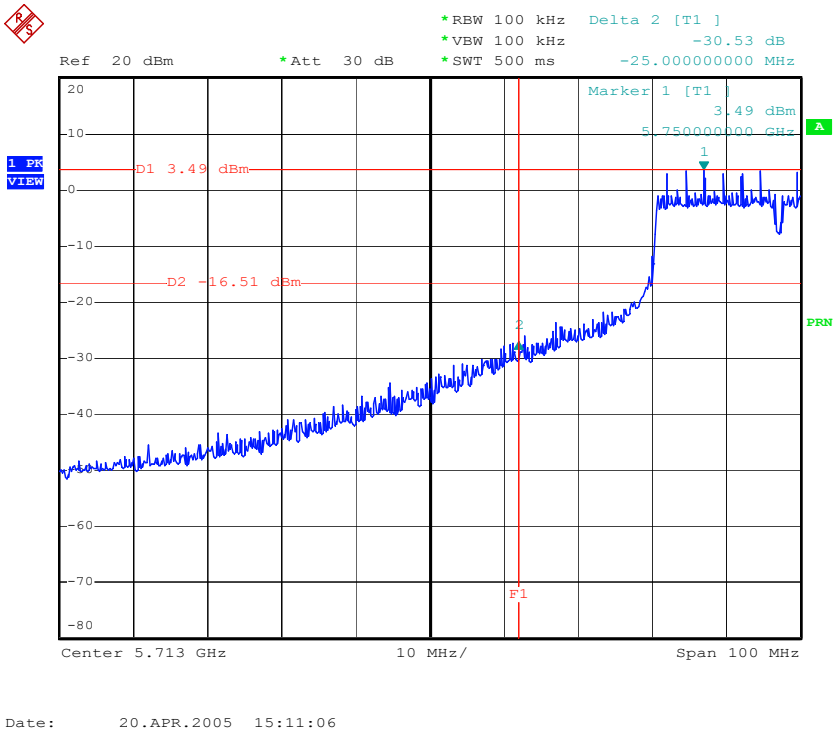
Modulation Type: OFDM (Channel 165 / 5825 MHz) :



Date: 20.APR.2005 13:18:38

Turbo Mode

Modulation Type: OFDM (Channel 152/ 5760 MHz)：



5.5. Test of AC Power Line Conducted Emission

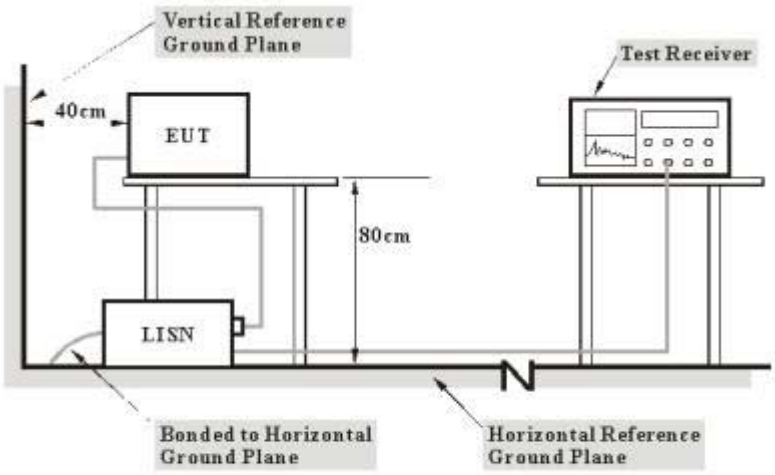
5.5.1. Measuring Instruments

Please reference item 1~5 in chapter 6 for the instruments used for testing.

5.5.2. Test Procedures

1. Configure the EUT according to ANSI C63.4.
2. The EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN)
4. All the support units are connected to the other LISNs. The LISN should provides 50uH/50ohms coupling impedance.
5. The frequency range from 150 KHz to 30 MHz was searched.
6. Use the Channel & Power Controlling software to make the EUT working on selected channel and expected output power, then use the “H” Patter Generator software to make the supporting equipments stay on working condition.
7. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
8. The measurement has to be done between each power line and ground at the power terminal for each RF channel. Only one RF channel has to be investigated since this test is independent with the RF channel selection.

5.5.3. Test Setup Layout

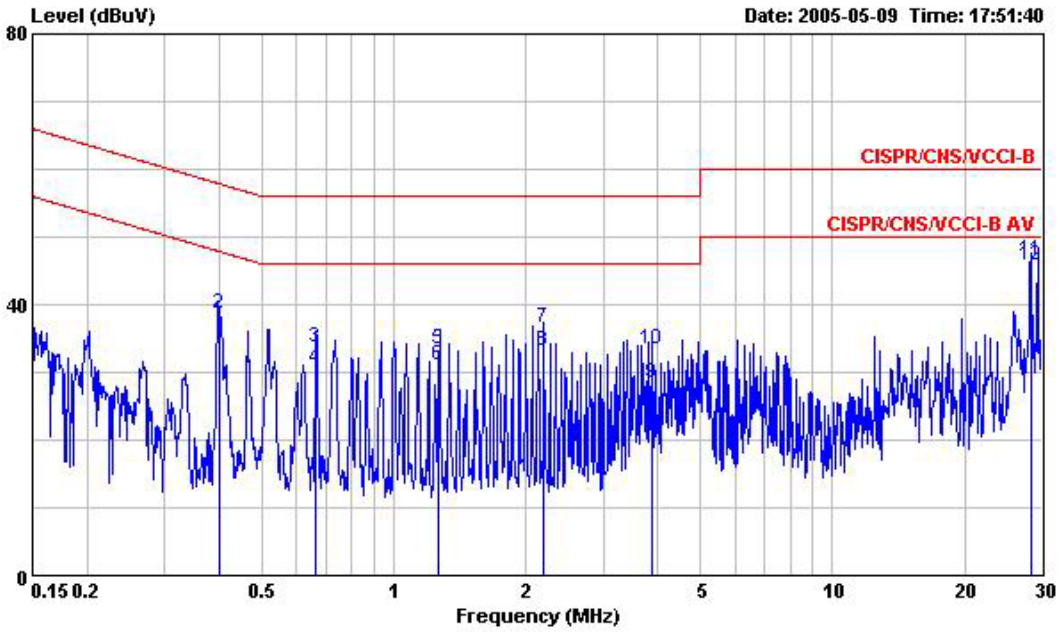


Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

5.5.4. Test Result of Conducted Emission

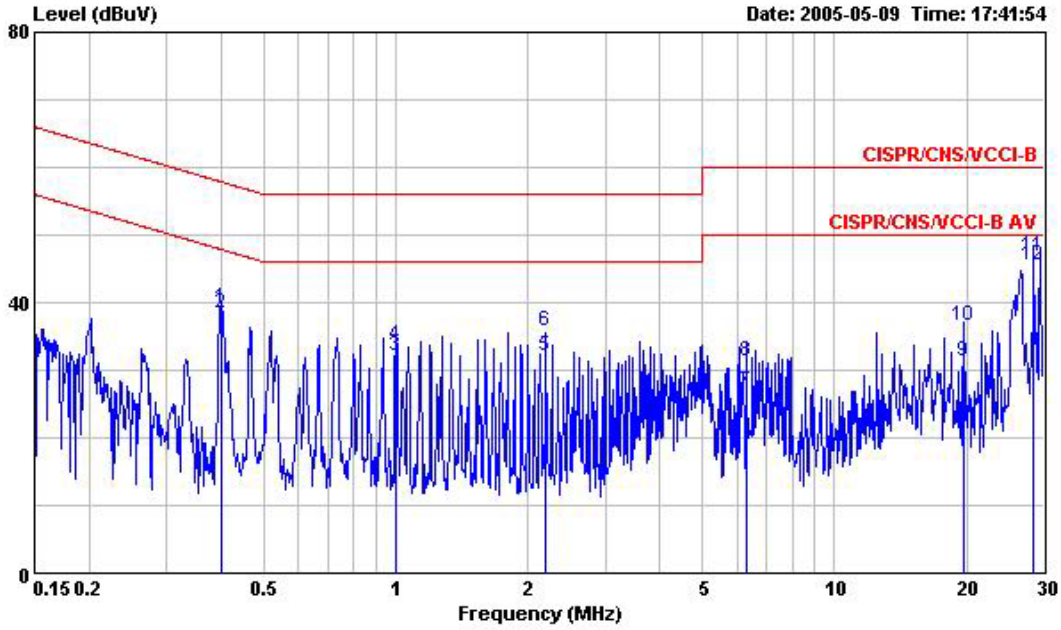
- Temperature: 26°C
- Relative Humidity: 64%
- Test Engineer: Sky Wu

Line to Ground



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.3997440	37.66	-10.20	47.86	37.32	0.06	0.28	Average
2	0.3997440	38.65	-19.21	57.86	38.31	0.06	0.28	QP
3	0.6647840	33.66	-22.34	56.00	32.90	0.11	0.65	QP
4	0.6647840	30.53	-15.47	46.00	29.77	0.11	0.65	Average
5	1.266	33.32	-22.68	56.00	32.71	0.11	0.50	QP
6	1.266	31.05	-14.95	46.00	30.44	0.11	0.50	Average
7	2.201	36.55	-19.45	56.00	36.20	0.12	0.23	QP
8	2.201	33.28	-12.72	46.00	32.93	0.12	0.23	Average
9	3.867	28.40	-17.60	46.00	27.89	0.21	0.30	Average
10	3.867	33.37	-22.63	56.00	32.86	0.21	0.30	QP
11	28.332	46.70	-13.30	60.00	45.75	0.45	0.50	QP
12	28.332	45.66	-4.34	50.00	44.71	0.45	0.50	Average

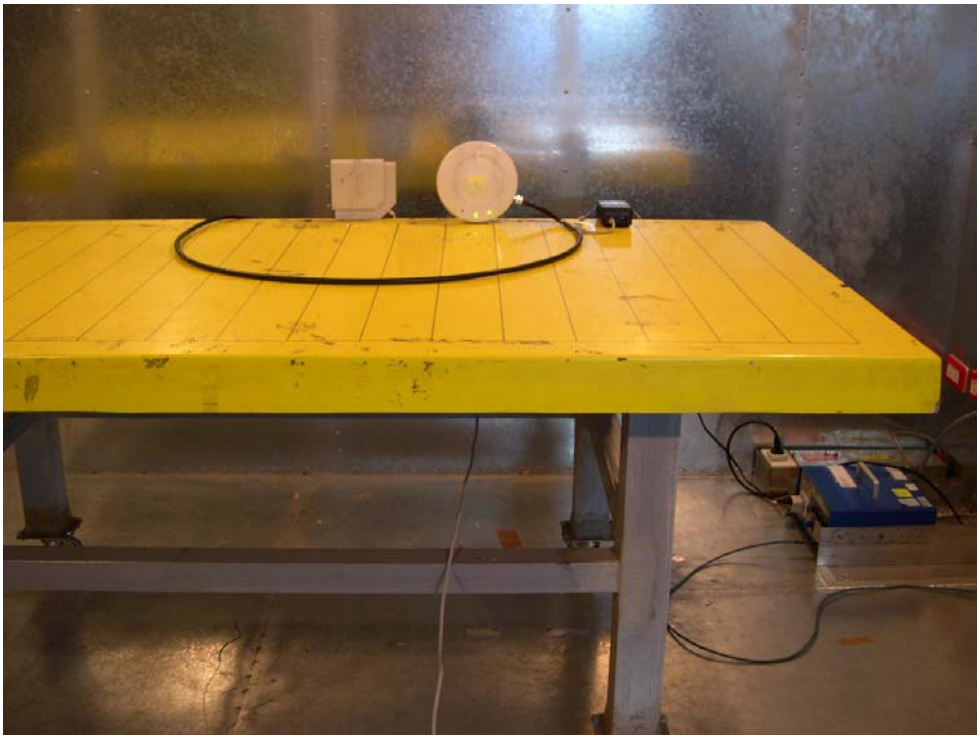
Neutral to Ground



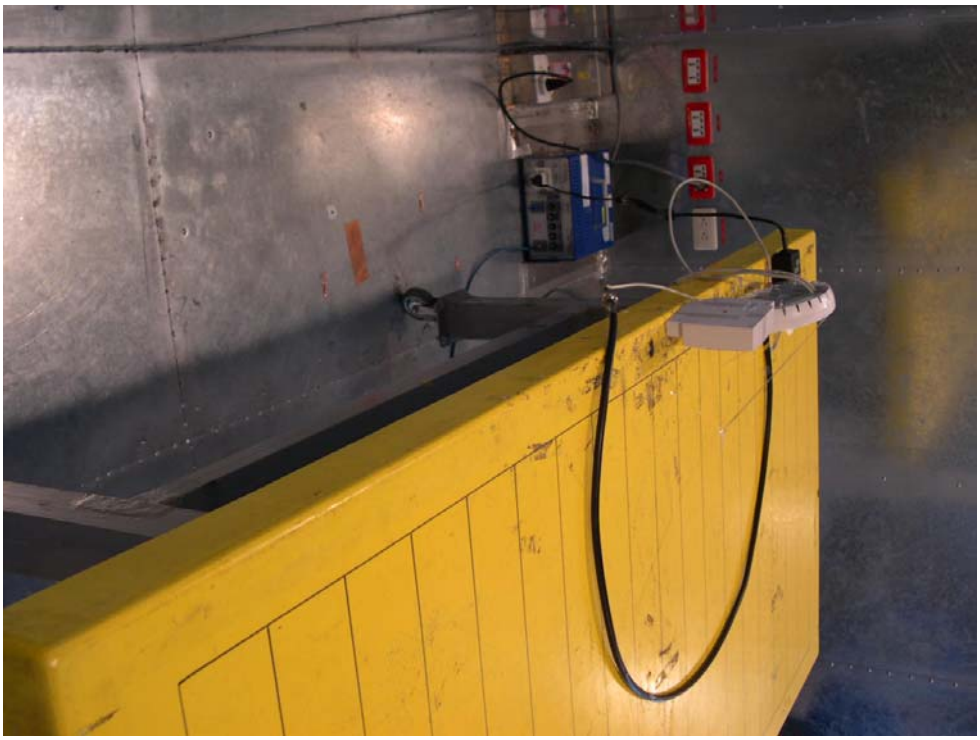
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.3997440	39.33	-18.53	57.86	38.94	0.11	0.28	QP
2	0.3997440	38.52	-9.34	47.86	38.13	0.11	0.28	Average
3	1.001	32.10	-13.90	46.00	31.23	0.23	0.64	Average
4	1.001	33.64	-22.36	56.00	32.77	0.23	0.64	QP
5	2.201	32.21	-13.79	46.00	31.75	0.23	0.23	Average
6	2.201	35.82	-20.18	56.00	35.36	0.23	0.23	QP
7	6.272	26.82	-23.18	50.00	26.30	0.28	0.24	Average
8	6.272	31.19	-28.81	60.00	30.67	0.28	0.24	QP
9	19.708	31.28	-18.72	50.00	30.44	0.43	0.41	Average
10	19.708	36.57	-23.43	60.00	35.73	0.43	0.41	QP
11	28.440	46.76	-13.24	60.00	45.58	0.67	0.51	QP
12	28.440	45.57	-4.43	50.00	44.39	0.67	0.51	Average

5.5.5. Photographs of Conducted Emission Test Configuration

FRONT VIEW



REAR VIEW



5.6. Test of Spurious Radiated Emission

5.6.1. Applicable Standard

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

5.6.2. Measuring Instruments

Please reference item 1~17 in chapter 6 for the instruments used for testing.

5.6.3. Description of Major Test Instruments Setting

- Spectrum Analyzer : R&S FSP40
  Attenuation : Auto
  Start Frequency : 1000 MHz
  Stop Frequency : 10th carrier harmonic
  RB / VB : 1 MHz / 1MHz for Peak
  RB / VB : 1 MHz / 10Hz for Average

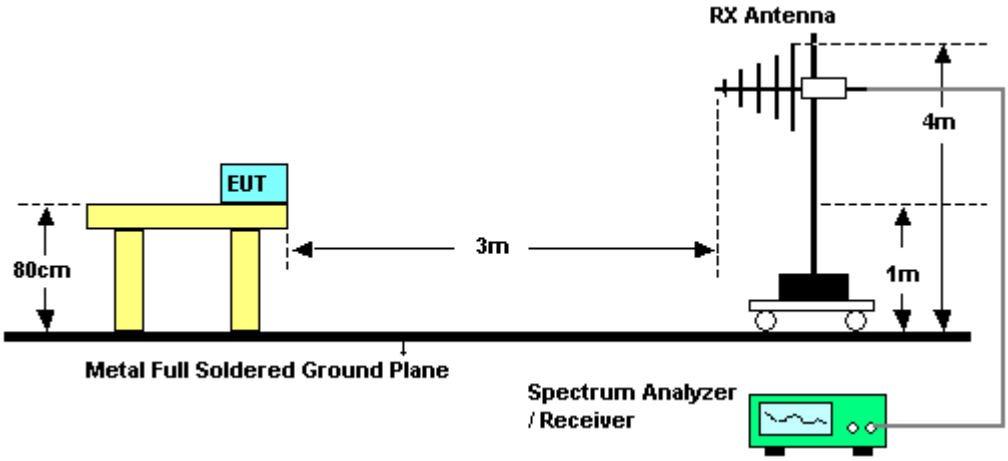
- Test Receiver : R&S ESCS 30
  Attenuation : Auto
  Start Frequency : 30 MHz
  Stop Frequency : 1000 MHz
  RB : 120 KHz for QP or PK

5.6.4. 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. Power on the EUT and all the supporting units.
5. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
6. 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.
7. For each suspected emission, 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.
8. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
9. For emission above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.

10. If the emission 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 and average method for above the 1GHz. the reported.
11. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB higher than average limit (that means the emission 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.

5.6.5. Test Setup Layout



5.6.6. Test Criteria

All test results complied with the requirements of 15.247(d). Measurement Uncertainty is 2.26dB.

5.6.7. Test Results for CH 165 / 5825MHz (for emission below 1GHz)

- **Normal Mode**
- 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	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
98.340	33.35	-10.15	53.75	43.50	-20.40	0.94	30.26	Peak
109.900	39.36	-4.14	58.20	43.50	-18.84	1.03	30.29	Peak
138.460	35.17	-8.33	52.20	43.50	-17.03	1.17	30.76	Peak
329.600	27.24	-18.76	41.55	46.00	-14.31	1.76	30.76	Peak
550.400	26.69	-19.31	37.38	46.00	-10.69	2.24	31.17	Peak
768.800	31.16	-14.84	37.37	46.00	-6.21	2.79	30.53	Peak

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
33.060	36.78	-3.22	54.28	40.00	-17.50	0.56	30.39	QP
35.950	37.80	-2.20	55.69	40.00	-17.89	0.57	30.50	QP
71.140	35.66	-4.34	55.33	40.00	-19.67	0.83	30.27	Peak
249.600	26.17	-19.83	42.83	46.00	-16.66	1.53	30.49	Peak
329.600	26.56	-19.44	40.87	46.00	-14.31	1.76	30.76	Peak
768.800	29.60	-16.40	35.81	46.00	-6.21	2.79	30.53	Peak

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

5.6.8. Test Results for CH 149 / 5745MHz (for emission above 1GHz)

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

Mode 1

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5150.000	48.07	-25.93	51.69	74.00	-3.62	PEAK
11488.000	53.42	-20.58	48.17	74.00	5.25	PEAK
11488.000	40.65	-13.35	35.40	54.00	5.25	Average
17232.000	57.34	-16.66	45.35	74.00	12.00	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5145.700	41.05	-12.95	44.67	54.00	-3.62	Average
5145.700	52.94	-21.06	56.56	74.00	-3.62	PEAK
11488.000	55.95	-18.05	50.70	74.00	5.25	PEAK
11488.000	44.39	-9.61	39.14	54.00	5.25	Average
17232.000	57.79	-16.21	45.79	74.00	12.00	PEAK

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

Mode 2

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5115.600	46.78	-27.22	50.47	74.00	-3.70	PEAK
11488.000	53.53	-20.47	48.28	74.00	5.25	PEAK
11488.000	40.99	-13.01	35.74	54.00	5.25	Average
16588.000	61.43	-12.57	54.91	74.00	6.52	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5128.500	42.63	-11.37	46.30	54.00	-3.67	Average
5128.500	55.00	-19.00	58.66	74.00	-3.67	PEAK
11488.000	57.33	-16.67	52.08	74.00	5.25	PEAK
11488.000	44.69	-9.31	39.44	54.00	5.25	Average
16612.000	61.20	-12.80	54.61	74.00	6.59	PEAK

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

Mode 3

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5141.400	47.47	-26.53	51.09	74.00	-3.62	PEAK
11492.000	52.98	-21.02	47.74	74.00	5.24	PEAK
11492.000	41.98	-12.02	36.74	54.00	5.24	Average
17236.000	61.86	-12.14	49.86	74.00	12.00	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5111.300	42.52	-11.48	46.22	54.00	-3.70	Average
5111.300	55.00	-19.00	58.70	74.00	-3.70	PEAK
11488.000	55.92	-18.08	50.67	74.00	5.25	PEAK
11488.000	44.24	-9.76	38.99	54.00	5.25	Average
17244.000	63.20	-10.80	51.06	74.00	12.14	PEAK

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

Mode 4

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5140.800	46.64	-27.36	50.26	74.00	-3.62	PEAK
12298.000	53.30	-20.70	47.98	74.00	5.32	PEAK
12298.000	38.59	-15.41	33.27	54.00	5.32	Average
17228.000	57.44	-16.56	45.44	74.00	12.00	PEAK
17228.000	45.91	-8.09	33.91	54.00	12.00	Average

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5067.200	57.93	-16.07	61.73	74.00	-3.79	PEAK
5067.200	42.28	-11.72	46.07	54.00	-3.79	Average
11488.000	55.33	-18.67	50.08	74.00	5.25	PEAK
11488.000	42.73	-11.27	37.48	54.00	5.25	Average
17240.000	59.73	-14.27	47.71	74.00	12.02	PEAK
17240.000	46.11	-7.89	34.09	54.00	12.02	Average

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

5.6.9. Test Results for CH 153 / 5765MHz (for emission above 1GHz)

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

Mode 1

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5141.400	49.13	-24.87	52.75	74.00	-3.62	PEAK
11528.000	40.53	-13.47	35.25	54.00	5.28	Average
11528.000	53.60	-20.40	48.33	74.00	5.28	PEAK
17300.000	58.82	-15.18	46.01	74.00	12.81	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5145.700	53.79	-20.21	57.41	74.00	-3.62	PEAK
5145.700	40.77	-13.23	44.39	54.00	-3.62	Average
11524.000	56.95	-17.05	51.67	74.00	5.28	PEAK
11524.000	43.36	-10.64	38.08	54.00	5.28	Average
17300.000	64.27	-9.73	51.46	74.00	12.81	PEAK

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

Mode 2

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5068.300	46.68	-27.32	50.47	74.00	-3.79	PEAK
12104.000	53.71	-20.29	48.23	74.00	5.48	PEAK
12104.000	39.23	-14.77	33.75	54.00	5.48	Average
17068.000	64.55	-9.45	55.20	74.00	9.35	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5128.500	55.09	-18.91	58.76	74.00	-3.67	PEAK
5128.500	43.54	-10.46	47.21	54.00	-3.67	Average
11524.000	42.60	-11.40	37.32	54.00	5.28	Average
11524.000	54.38	-19.62	49.10	74.00	5.28	PEAK
16656.000	62.07	-11.93	55.22	74.00	6.84	PEAK

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

Mode 3

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5137.100	48.35	-25.65	52.02	74.00	-3.67	PEAK
11524.000	52.37	-21.63	47.10	74.00	5.28	PEAK
11524.000	40.74	-13.26	35.46	54.00	5.28	Average
17292.000	62.68	-11.32	50.00	74.00	12.68	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5141.400	54.07	-19.93	57.69	74.00	-3.62	PEAK
5141.400	42.77	-11.23	46.39	54.00	-3.62	Average
11516.000	43.43	-10.57	38.15	54.00	5.28	Average
11516.000	55.77	-18.23	50.49	74.00	5.28	PEAK
17296.000	63.46	-10.54	50.66	74.00	12.81	PEAK

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

Mode 4

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
4999.500	47.11	-26.89	51.03	74.00	-3.93	PEAK
12808.000	53.08	-20.92	47.50	74.00	5.58	PEAK
17236.000	57.29	-16.71	45.29	74.00	12.00	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5119.900	44.37	-9.63	48.06	54.00	-3.69	Average
5119.900	56.67	-17.33	60.36	74.00	-3.69	PEAK
11524.000	54.76	-19.24	49.48	74.00	5.28	PEAK
11524.000	43.35	-10.65	38.07	54.00	5.28	Average
17304.000	59.04	-14.96	46.23	74.00	12.81	PEAK

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

5.6.10. Test Results for CH 157 / 5785MHz (for emission above 1GHz)

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

Mode 1

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5081.200	44.33	-29.67	47.91	74.00	-3.58	2.95	40.13	Peak
11568.000	57.25	-16.75	50.47	74.00	6.78	4.72	38.57	Peak
11568.000	44.72	-9.28	37.94	54.00	6.78	4.72	38.57	Average
17356.000	66.82	-7.18	48.88	74.00	17.94	7.40	36.53	

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5141.400	41.65	-12.35	45.18	54.00	-3.53	2.97	40.11	Average
5141.400	51.99	-22.01	55.52	74.00	-3.53	2.97	40.11	Peak
11572.000	56.89	-17.11	50.12	74.00	6.77	4.71	38.57	Peak
11572.000	45.01	-8.99	38.24	54.00	6.77	4.71	38.57	Average
17352.000	64.06	-9.94	46.14	74.00	17.92	7.40	36.55	

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

Mode 2

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5115.600	46.75	-27.25	50.31	74.00	-3.56	2.96	40.12	PEAK
11572.000	57.14	-16.86	50.37	74.00	6.77	4.71	38.57	PEAK
11572.000	45.50	-8.50	38.73	54.00	6.77	4.71	38.57	Average
17360.000	66.70	-7.30	48.76	74.00	17.94	7.40	36.53	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5085.500	43.93	-30.07	47.51	74.00	-3.58	2.95	40.13	Peak
11572.000	55.62	-18.38	48.85	74.00	6.77	4.71	38.57	PEAK
11572.000	43.41	-10.59	36.64	54.00	6.77	4.71	38.57	Average
17360.000	67.05	-6.95	49.11	74.00	17.94	7.40	36.53	PEAK

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

Mode 3

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5124.200	44.02	-29.98	47.57	74.00	-3.55	2.96	40.11	Peak
5124.200	27.97	-26.03	31.52	54.00	-3.55	2.96	40.11	Average
12268.000	55.09	-18.91	47.50	74.00	7.59	4.72	38.53	Peak
12268.000	41.35	-12.65	33.76	54.00	7.59	4.72	38.53	Average
17356.000	64.64	-9.36	46.70	74.00	17.94	7.40	36.53	Peak

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5094.100	45.40	-28.60	48.97	74.00	-3.57	2.95	40.12	Peak
5094.100	30.73	-23.27	34.30	54.00	-3.57	2.95	40.12	Average
11576.000	54.62	-19.38	47.85	74.00	6.77	4.71	38.56	Peak
11576.000	44.23	-9.77	37.46	54.00	6.77	4.71	38.56	Average
16620.000	56.00	-18.00	45.76	74.00	10.24	5.09	37.12	Peak

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

Mode 4

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5124.200	50.81	-23.19	54.36	74.00	-3.55	2.96	40.11	Peak
11568.000	45.44	-8.56	38.66	54.00	6.78	4.72	38.57	Average
11568.000	57.59	-16.41	50.81	74.00	6.78	4.72	38.57	PEAK
17356.000	67.23	-6.77	49.29	74.00	17.94	7.40	36.53	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5150.000	50.29	-23.71	53.82	74.00	-3.53	2.97	40.11	PEAK
11568.000	58.69	-15.31	51.91	74.00	6.78	4.72	38.57	PEAK
11568.000	45.03	-8.97	38.25	54.00	6.78	4.72	38.57	Average
17356.000	66.03	-7.97	48.10	74.00	17.94	7.40	36.53	PEAK

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

5.6.11. Test Results for CH 165/ 5825MHz (for emission above 1GHz)

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

Mode 1

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5150.000	47.46	-26.54	51.08	74.00	-3.62	PEAK
11612.000	52.36	-21.64	47.03	74.00	5.32	PEAK
11612.000	40.28	-13.72	34.96	54.00	5.32	Average
17408.000	61.48	-12.52	47.05	74.00	14.43	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5141.400	40.10	-13.90	43.72	54.00	-3.62	Average
5141.400	52.66	-21.34	56.28	74.00	-3.62	PEAK
11604.000	54.34	-19.66	49.00	74.00	5.33	PEAK
11604.000	42.51	-11.49	37.18	54.00	5.33	Average
17416.000	62.84	-11.16	48.30	74.00	14.55	PEAK

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

Mode 2

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5115.600	46.88	-27.12	50.58	74.00	-3.70	PEAK
12824.000	53.57	-20.43	47.98	74.00	5.60	PEAK
16660.000	62.38	-11.62	55.53	74.00	6.84	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5128.500	42.61	-11.39	46.28	54.00	-3.67	Average
5128.500	55.71	-18.29	59.37	74.00	-3.67	PEAK
11612.000	55.29	-18.71	49.97	74.00	5.32	PEAK
11612.000	44.17	-9.83	38.85	54.00	5.32	Average
16588.000	61.60	-12.40	55.08	74.00	6.52	PEAK

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

Mode 3

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5137.100	47.32	-26.68	50.98	74.00	-3.67	PEAK
11616.000	54.56	-19.44	49.24	74.00	5.32	PEAK
11616.000	41.71	-12.29	36.39	54.00	5.32	Average
17412.000	64.08	-9.92	49.65	74.00	14.43	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5055.400	41.11	-12.89	44.92	54.00	-3.81	Average
5055.400	54.83	-19.17	58.64	74.00	-3.81	PEAK
11604.000	56.42	-17.58	51.09	74.00	5.33	PEAK
11604.000	43.26	-10.74	37.93	54.00	5.33	Average
17408.000	65.64	-8.36	51.21	74.00	14.43	PEAK

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

Mode 4

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5124.200	46.43	-27.57	50.10	74.00	-3.67	PEAK
12868.000	53.14	-20.86	47.50	74.00	5.64	PEAK
17416.000	60.46	-13.54	45.91	74.00	14.55	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5111.300	58.02	-15.98	61.71	74.00	-3.70	PEAK
5111.300	45.42	-8.58	49.12	54.00	-3.70	Average
11612.000	54.40	-19.60	49.08	74.00	5.32	PEAK
11612.000	42.76	-11.24	37.44	54.00	5.32	Average
17416.000	60.80	-13.20	46.25	74.00	14.55	PEAK

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

5.6.12. Test Results for CH 165 / 5825MHz (for emission above 1GHz)

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

Mode 1

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5042.500	44.14	-29.86	47.74	74.00	-3.61	2.94	40.14	Peak
5042.500	30.64	-23.36	34.25	54.00	-3.61	2.94	40.14	Average
11644.000	56.08	-17.92	49.19	74.00	6.89	4.70	38.56	Peak
11644.000	44.80	-9.20	37.91	54.00	6.89	4.70	38.56	Average
17468.000	65.63	-8.37	46.35	74.00	19.29	8.18	36.46	

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
4960.800	44.97	-29.03	48.72	74.00	-3.74	2.91	40.15	Peak
4960.800	29.86	-24.14	33.60	54.00	-3.74	2.91	40.15	Average
11640.000	55.23	-18.77	48.34	74.00	6.89	4.70	38.56	
11640.000	43.31	-10.69	36.42	54.00	6.89	4.70	38.56	Average
17128.000	60.87	-13.13	45.59	74.00	15.27	5.83	36.72	

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

Mode 2

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5085.500	45.80	-28.20	49.38	74.00	-3.58	2.95	40.13	PEAK
11644.000	56.92	-17.08	50.03	74.00	6.89	4.70	38.56	PEAK
11644.000	43.94	-10.06	37.05	54.00	6.89	4.70	38.56	Average
17480.000	66.95	-7.05	47.65	74.00	19.30	8.18	36.44	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5085.500	57.06	-16.94	60.64	74.00	-3.58	2.95	40.13	PEAK
5085.500	44.38	-9.62	47.96	54.00	-3.58	2.95	40.13	Average
11660.000	54.36	-19.64	47.45	74.00	6.91	4.69	38.56	PEAK
11660.000	42.50	-11.50	35.59	54.00	6.91	4.69	38.56	Average
16624.000	54.50	-19.50	44.26	74.00	10.24	5.09	37.12	PEAK

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

Mode 3

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5046.800	44.48	-29.52	48.08	74.00	-3.60	2.94	40.14	Peak
5046.800	30.60	-23.40	34.20	54.00	-3.60	2.94	40.14	Average
12996.000	54.48	-19.52	47.57	74.00	6.91	5.01	38.50	Peak
17476.000	65.52	-8.48	46.23	74.00	19.29	8.18	36.46	Peak

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5072.600	44.35	-29.65	47.93	74.00	-3.58	2.95	40.13	Peak
5072.600	30.87	-23.13	34.45	54.00	-3.58	2.95	40.13	Average
11656.000	54.82	-19.18	47.91	74.00	6.91	4.69	38.56	Peak
11656.000	42.53	-31.47	35.62	74.00	6.91	4.69	38.56	Peak
17472.000	67.06	-6.94	47.77	74.00	19.29	8.18	36.46	Peak

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

Mode 4

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5145.700	50.15	-23.85	53.68	74.00	-3.53	2.97	40.11	PEAK
11640.000	54.93	-19.07	48.04	74.00	6.89	4.70	38.56	PEAK
11640.000	40.66	-13.34	33.77	54.00	6.89	4.70	38.56	Average
17476.000	66.98	-7.02	47.69	74.00	19.29	8.18	36.46	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB	dB	
5145.700	48.96	-25.04	52.49	74.00	-3.53	2.97	40.11	PEAK
11636.000	40.85	-13.15	33.96	54.00	6.89	4.70	38.56	Average
11636.000	54.78	-19.22	47.89	74.00	6.89	4.70	38.56	PEAK
17484.000	64.91	-9.09	45.54	74.00	19.37	8.18	36.44	PEAK

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

5.6.13. Test Results for CH 152 / 5760MHz (for emission above 1GHz)

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

Mode 1

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5137.100	49.58	-24.42	53.25	74.00	-3.67	PEAK
12656.000	38.80	-15.20	33.41	54.00	5.39	Average
12656.000	53.29	-20.71	47.90	74.00	5.39	PEAK
17128.000	56.03	-17.97	45.63	74.00	10.40	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5145.700	52.11	-21.89	55.73	74.00	-3.62	PEAK
5145.700	40.66	-13.34	44.28	54.00	-3.62	Average
11512.000	53.37	-20.63	48.10	74.00	5.26	PEAK
11512.000	41.16	-12.84	35.90	54.00	5.26	Average
16576.000	57.25	-16.75	50.81	74.00	6.43	PEAK

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

Mode 2

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5115.600	48.85	-25.15	52.55	74.00	-3.70	PEAK
12948.000	53.69	-20.31	47.95	74.00	5.74	PEAK
17268.000	65.41	-8.59	52.86	74.00	12.54	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5124.200	57.62	-16.38	61.29	74.00	-3.67	PEAK
5124.200	45.02	-8.98	48.69	54.00	-3.67	Average
11512.000	55.45	-18.55	50.19	74.00	5.26	PEAK
11512.000	42.59	-11.41	37.33	54.00	5.26	Average
17264.000	61.27	-12.73	48.99	74.00	12.28	PEAK

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

Mode 3

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5150.000	46.90	-27.10	50.52	74.00	-3.62	PEAK
11520.000	50.70	-23.30	45.42	74.00	5.28	PEAK
16464.000	55.12	-18.88	49.13	74.00	5.98	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5150.000	52.69	-21.31	56.31	74.00	-3.62	PEAK
5150.000	37.08	-16.92	40.70	54.00	-3.62	Average
11516.000	40.89	-13.11	35.61	54.00	5.28	Average
11516.000	52.32	-21.68	47.04	74.00	5.28	PEAK
17308.000	56.13	-17.87	43.04	74.00	13.09	PEAK

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

Mode 4

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5124.200	48.59	-25.41	52.25	74.00	-3.67	PEAK
12648.000	53.71	-20.29	48.33	74.00	5.38	PEAK
12648.000	39.60	-14.40	34.22	54.00	5.38	Average
17260.000	60.54	-13.46	48.38	74.00	12.16	PEAK
17260.000	48.48	-5.52	36.32	54.00	12.16	Average

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5145.700	54.34	-19.66	57.96	74.00	-3.62	PEAK
5145.700	42.78	-11.22	46.40	54.00	-3.62	Average
11516.000	54.43	-19.57	49.16	74.00	5.28	PEAK
11516.000	42.61	-11.39	37.33	54.00	5.28	Average
17264.000	61.88	-12.12	49.60	74.00	12.28	PEAK

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

5.6.14. Test Results for CH 160 / 5800MHz (for emission above 1GHz)

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

Mode 1

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5050.000	47.23	-26.77	51.06	74.00	-3.83	PEAK
12896.000	53.14	-20.86	47.46	74.00	5.68	PEAK
17080.000	55.25	-18.75	45.52	74.00	9.73	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5029.500	48.89	-25.11	52.75	74.00	-3.86	PEAK
11600.000	51.70	-22.30	46.36	74.00	5.33	PEAK
11600.000	41.05	-12.95	35.72	54.00	5.33	Average
17384.000	59.66	-14.34	45.37	74.00	14.28	PEAK

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

Mode 2

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5115.600	47.49	-26.51	51.19	74.00	-3.70	PEAK
12992.000	53.38	-20.62	47.59	74.00	5.78	PEAK
17404.000	66.42	-7.58	51.99	74.00	14.43	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5128.500	57.10	-16.90	60.76	74.00	-3.67	PEAK
5128.500	45.13	-8.87	48.80	54.00	-3.67	Average
11600.000	53.58	-20.42	48.24	74.00	5.33	PEAK
11600.000	41.42	-12.58	36.09	54.00	5.33	Average
17392.000	66.29	-7.71	52.00	74.00	14.28	PEAK

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

Mode 3

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5150.000	45.82	-28.18	49.44	74.00	-3.62	PEAK
12780.000	52.60	-21.40	47.06	74.00	5.54	PEAK
17404.000	59.85	-14.15	45.43	74.00	14.43	PEAK

(B) Polarization: Vertical

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5141.400	54.34	-19.66	57.96	74.00	-3.62	PEAK
5141.400	41.68	-12.32	45.30	54.00	-3.62	Average
12900.000	53.18	-20.82	47.50	74.00	5.68	PEAK
16684.000	55.17	-18.83	48.15	74.00	7.03	PEAK

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

Mode 4

(A) Polarization: Horizontal

Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5137.100	50.38	-23.62	54.04	74.00	-3.67	PEAK
12572.000	53.79	-20.21	48.50	74.00	5.29	PEAK
12572.000	38.86	-15.14	33.57	54.00	5.29	Average
17396.000	61.35	-12.65	47.07	74.00	14.28	PEAK

(B) Polarization: Vertical

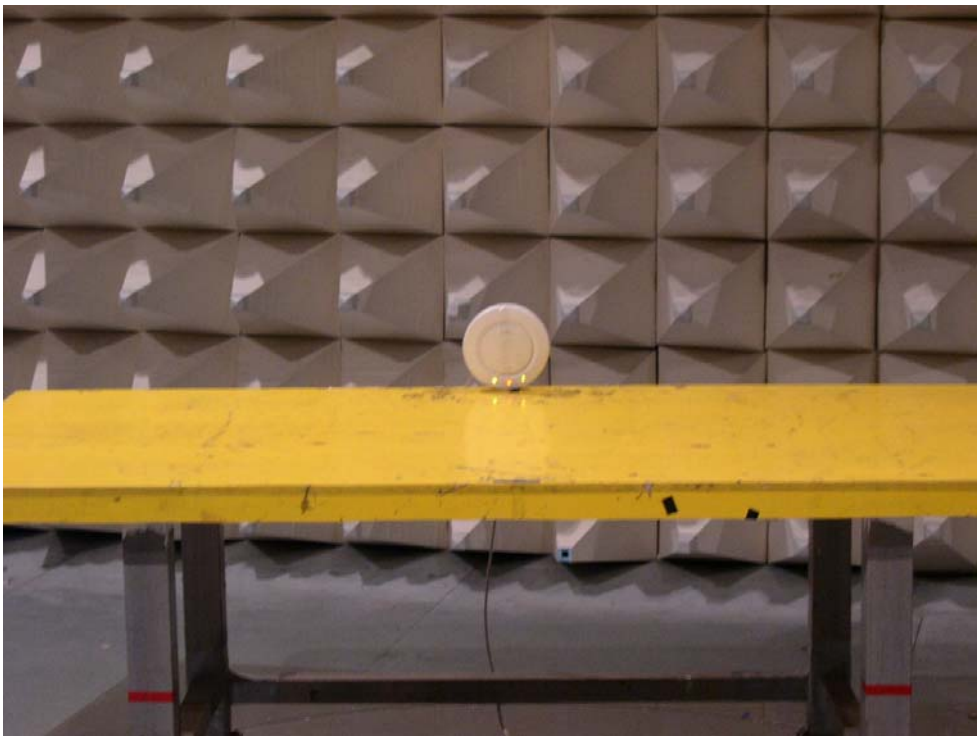
Freq	Level	Over Limit	Read Level	Limit Line	Factor	Remark
MHz	dBuV/m	dB	dBuV	dBuV/m	dB	
5068.300	53.53	-20.47	57.31	74.00	-3.79	PEAK
5068.300	40.56	-13.44	44.35	54.00	-3.79	Average
11596.000	53.78	-20.22	48.46	74.00	5.32	PEAK
11596.000	41.62	-12.38	36.30	54.00	5.32	Average
17412.000	62.06	-11.94	47.64	74.00	14.43	PEAK

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

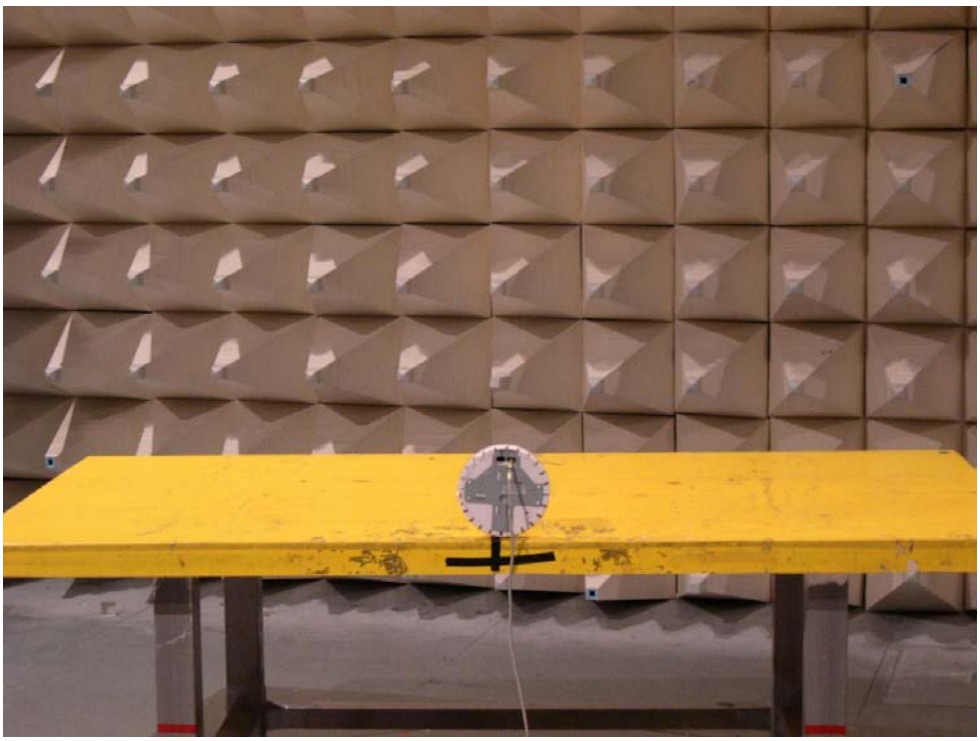
5.6.15. Photographs of Radiated Emission Test Configuration

Mode 1

FRONT VIEW

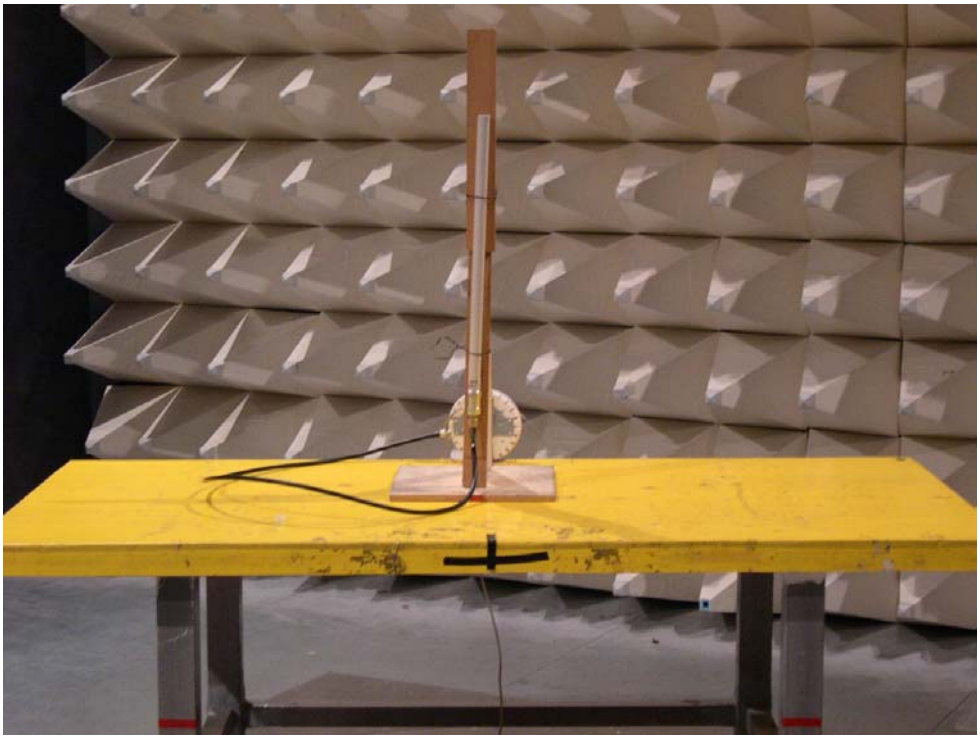


REAR VIEW

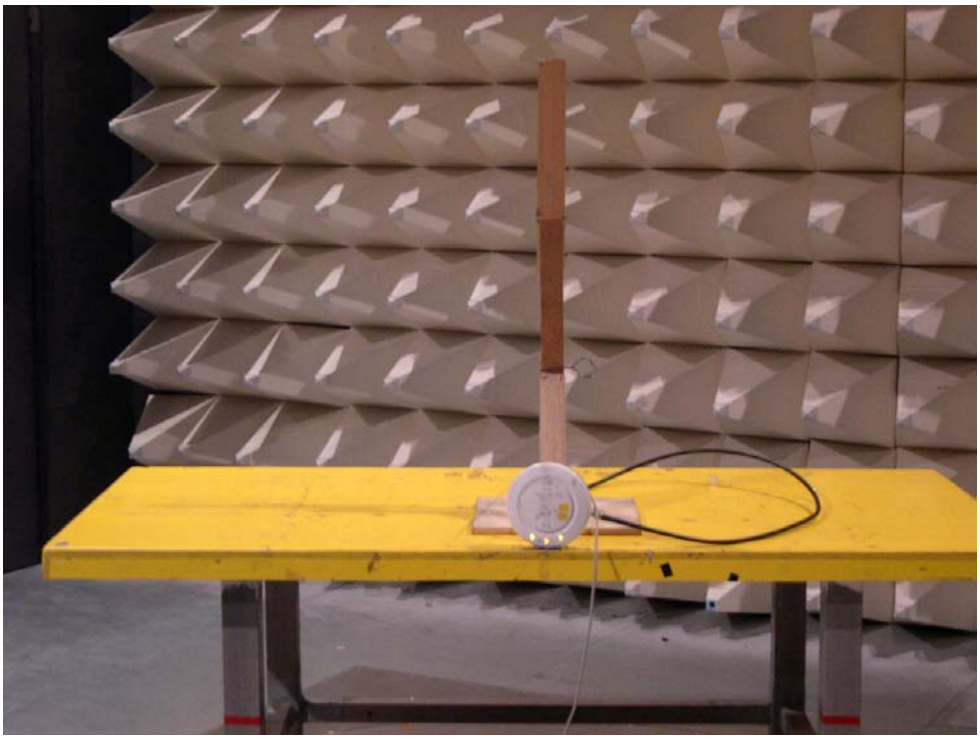


Mode 2

FRONT VIEW



REAR VIEW



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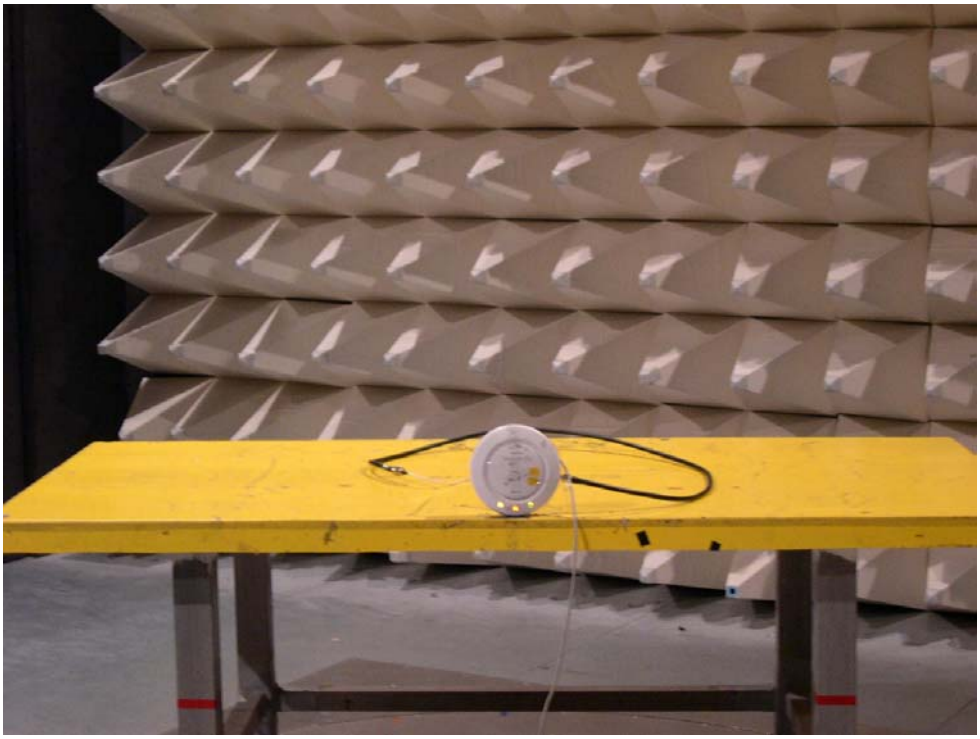
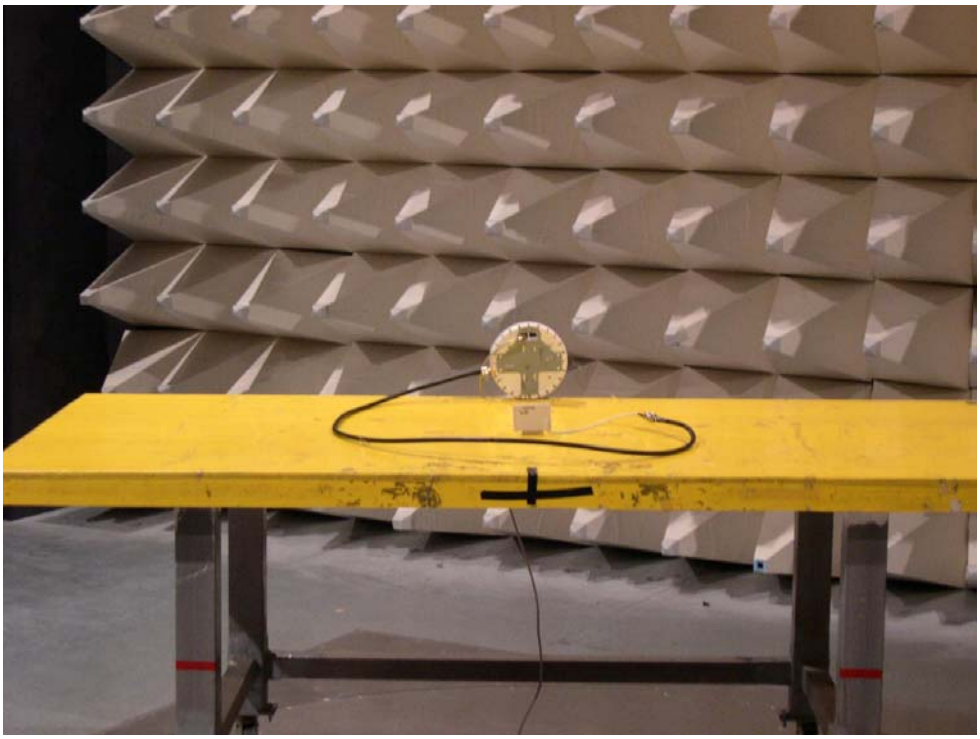
Mode 3

FRONT VIEW



REAR VIEW



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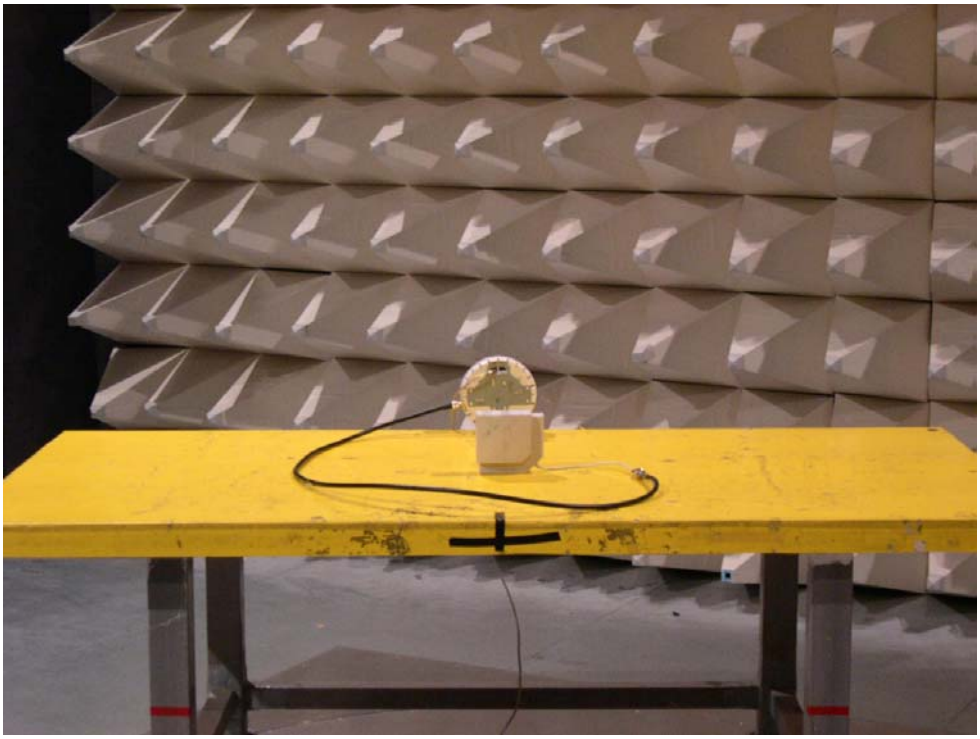
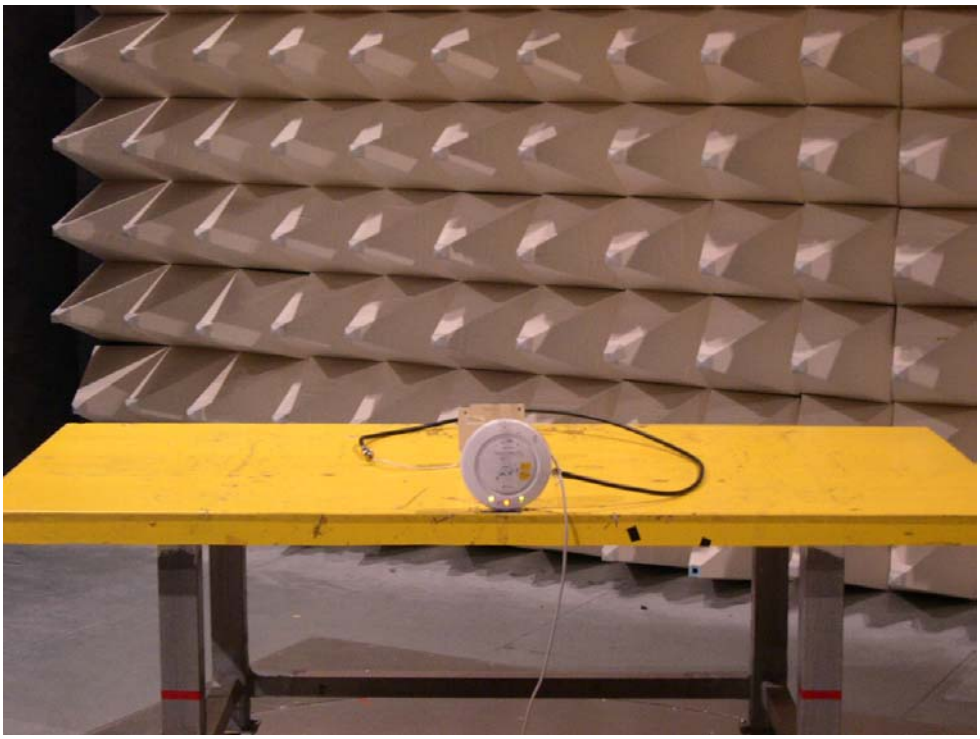
Mode 4

FRONT VIEW



REAR VIEW



5.7. Antenna Requirements

5.7.1. Standard Applicable

Section 15.203:
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 a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Section 15.247(b)/(c):
If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
If the intentional radiator is used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

5.7.2. Antenna Connected Construction

There are 4 kinds of antenna. External antenna uses SMA connector. Internal antenna has no connector.

5.7.3. Test Criteria

All test results complied with the requirements of 15.203/15.247(b)/(c).

5.8. RF Exposure

5.8.1. 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

5.8.2. MPE Calculation Method

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

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.

5.8.3. Calculated Result and Limit

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

Mode 1

Normal Mode

Channel No.	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)
149	4.00	2.51	17.83	60.67	0.0303	1
157	4.00	2.51	17.75	59.57	0.0298	1
165	4.00	2.51	17.92	61.94	0.0309	1

Turbo Mode

Channel No.	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)
152	4.00	2.51	18.45	69.98	0.0350	1
160	4.00	2.51	18.81	76.03	0.0380	1

Mode 2 ~ 4

Normal Mode

Channel No.	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)
149	4.00	2.51	17.40	54.95	0.0275	1
157	4.00	2.51	17.65	58.21	0.0291	1
165	4.00	2.51	17.67	58.48	0.0292	1

Turbo Mode

Channel No.	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)
152	4.00	2.51	18.30	67.61	0.0338	1
160	4.00	2.51	18.46	70.15	0.0350	1

6. List of Measuring Equipments Used

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
1	EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Feb. 16, 2005	Conduction (CO04-HY)
2	LISN	MessTec	NNB-2/16Z	2001/004	9kHz – 30MHz	Jun. 09, 2004	Conduction (CO04-HY)
3	LISN (Support Unit)	PIC	NNB-2/16Z	2001/008	9kHz – 30MHz	May 06, 2005	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	CB049	9kHz – 30MHz	Apr. 20, 2005	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	SCHAFFNER	CPA9231A	18667	9KHz – 2GHz	Jan. 10, 2005	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	Feb. 22, 2005	Radiation (03CH03-HY)
12	Amplifier	MITEQ	AFS44	849984	100MHz~26.5GHz	Mar. 25, 2005	Radiation (03CH03-HY)
13	Horn Antenna	EMCO	3115	6741	1GHz – 18GHz	Apr. 22, 2005	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.01, 2004	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year.

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
18	Spectrum Analyzer	R&S	FSP30	100023	9kHz – 30GHz	Aug. 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	DC Power Source	G.W.	GPC-6030D	C671845	DC 1V – 60V	Dec.. 28, 2004	Conducted (TH01-HY)
24	Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2004	Conducted (TH01-HY)
25	RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz – 7GHz	Jan. 01, 2005	Conducted (TH01-HY)
26	RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz – 1GHz	Jan. 01, 2005	Conducted (TH01-HY)
27	Data Generator	Tektronix	J310345	J310345	400Mbps	Dec. 21, 2004	Conducted (TH01-HY)
28	OscilloScope	Tektronix	TDS1012	C038520	100MHz-1Gs/s	Jan. 02, 2005	Conducted (TH01-HY)

※ Calibration Interval of instruments listed above is one year.

7. Company Profile

SPORTON Lab. was established in 1986 with one shielded room: the first private EMI test facility, offering local manufacturers an alternative EMI test familial apart from ERSO. In 1988, one 3M and 10M/3M open area test site were setup and also obtained official accreditation from FCC, VCCI and NEMKO. In 1993, a Safety laboratory was founded and obtained accreditation from UL of USA, CSA of Canada and TUV (Rhineland & PS) of Germany. In 1995, one EMC lab, including EMI and EMS test facilities was setup. In 1997, SPORTON Group has provided financial expense to relocate the headquarter to Orient Scientific Park in Taipei Hsien to offer more comprehensive, more qualified and better service to local suppliers and manufactures. In 1999, Safety Group and Component Group were setup. In 2001, SPORTON has established 3M/10M chamber in Hwa Ya Technology Park.

7.1. Certificate of Accreditation

Taiwan	BSMI, CNLA, DGT
USA	FCC, NVLAP, UL
EU	Nemko, TUV
Japan	VCCI
Canada	Industry Canada

7.2. Test Location

SHIJR	ADD :	6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL :	02-2696-2468
	FAX :	02-2696-2255
HWA YA	ADD :	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL :	03-327-3456
	FAX :	03-318-0055
LINKOU	ADD :	No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL :	02-2601-1640
	FAX :	02-2601-1695
DUNGHU	ADD :	No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL :	02-2631-4739
	FAX :	02-2631-9740
JUNGHE	ADD :	7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL :	02-8227-2020
	FAX :	02-8227-2626
NEIHU	ADD :	4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL :	02-2794-8886
	FAX :	02-2794-9777

8. CNLA Certificate of Accreditation

Test Lab.	:	Sporton International Inc.
Accreditation Number	:	1190
Originally Accredited	:	2003/12/15
Effective Period	:	2003/12/15~2006/12/14
Accredited Scope	:	47 CFR FCC Part 15 Subpart C (9kHz~40GHz)

Taiwan Accreditation Foundation
Chinese National Laboratory Accreditation
Certificate of Accreditation

Accreditation Criteria:	ISO 17025
Accreditation Number:	1190
Organization/Laboratory:	EMC & Wireless Communications Laboratory,Sporton International Inc.
Originally Accredited:	December 15, 2003
Effective Period:	December 15, 2003 To December 14, 2006
Accredited Scope:	Electrical Testing Field, 7 items, details shown in the following pages.
Specific Accreditation Program:	Recognition and Approval of Designated Laboratory for Commodities Inspection

President, Taiwan Accreditation Foundation
Date:July 19, 2004

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