



FCC TEST REPORT

REPORT NO.: RF951124L01

MODEL NO.: DCMA-82, DCMA-82 High Power, DCMA-IHP,
DCMA-HP, CM11, CM10-HI, CM10-H, DCMA-SPI

RECEIVED: Nov. 24, 2006

TESTED: Dec. 27, 2006 to Jan. 18, 2007

ISSUED: Jan. 22, 2007

APPLICANT: Wistron NeWeb Corp.

ADDRESS: No. 10-1, Li-hsin Road I, Hsinchu Science Park,
Hsinchu 300, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien,
Taiwan, R.O.C.

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1 CERTIFICATION

PRODUCT : High Powered 802.11a/g WLAN Mini-PCI 3A,
Industry High Powered 802.11a/g WLAN Mini-PCI 3A
Commercial High Powered 802.11a/g WLAN Mini-PCI 3A
High Powered 802.11a/b/g WLAN Mini-PCI Module
(Industrial Grade)
High Powered 802.11a/b/g WLAN Mini-PCI Module
Industry High-Power Safety-802.11p WLAN

BRAND NAME : WNC

MODEL NO. : DCMA-82, DCMA-82 High Power, DCMA-IHP,
DCMA-HP, CM11, CM10-HI, CM10-H, DCMA-SPI

TESTED: Dec. 27, 2006 to Jan. 18, 2007

APPLICANT : Wistron NeWeb Corp.

TEST ITEM: ENGINEERING SAMPLE

STANDARDS : 47 CFR Part 90, Subpart Y
ANSI C63.4-2003

The above equipment (Model: DCMA-82) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Carol Liao , **DATE:** Jan. 22, 2007
(Carol Liao)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Jan. 22, 2007
Responsible for RF (Hank Chung)

APPROVED BY : May Chen , **DATE:** Jan. 22, 2007
(May Chen, Deputy Manager)



2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 90, Subpart Y			
Standard Section	Test Type and Limit	Result	REMARK
90.210(l)	RADIATED EMISSION MEASUREMENT	PASS	Meet the requirement of limit Minimum passing margin is -1.1 dB at 299.74 MHz
-	EMISSION BANDWIDTH MEASUREMENT	N/A	For reporting purposes only
90.1215(a)	MAXIMUM PEAK OUTPUT POWER	PASS	Meet the requirement of limit
-	AVERAGE POWER MEASUREMENT	N/A	For reporting purposes only
90.1215(a)	POWER SPECTRAL DENSITY MEASUREMENT Limit: max. 21dBm/MHz	PASS	Meet the requirement of limit
90.210(l)	EMISSION MASK AND CONDUCTED SPURIOUS MEASUREMENT	PASS	Meet the requirement of limit
90.213	FREQUENCY STABILITY	N/A	For reporting purposes only

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Measurement	Value
Radiated emissions (30MHz-1GHz)	2.98 dB
Radiated emissions (1GHz ~18GHz)	2.21 dB
Radiated emissions (18GHz ~40GHz)	1.88 dB



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	High Powered 802.11a/g WLAN Mini-PCI 3A, Industry High Powered 802.11a/g WLAN Mini-PCI 3A Commercial High Powered 802.11a/g WLAN Mini-PCI 3A High Powered 802.11a/b/g WLAN Mini-PCI Module (Industrial Grade) High Powered 802.11a/b/g WLAN Mini-PCI Module Industry High-Power Safety-802.11p WLAN
MODEL NO.	DCMA-82, DCMA-82 High Power, DCMA-IHP, DCMA-HP, CM11, CM10-HI, CM10-H, DCMA-SPI
FCC ID	NKRDCMA82
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11a: 54/48/36/24/18/12/9/6Mbps 802.11j: 54/48/36/24/18/12/9/6Mbps (Turbo mode: up to 108Mbps *see Note 2)
FREQUENCY RANGE	802.11b & 802.11g: 2412 ~ 2462MHz 802.11a: 5.15 ~ 5.25GHz and 5.725 ~ 5.850GHz 802.11j: 4940 ~ 4990MHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 (1 for 802.11g Turbo mode) 802.11a: 9 (3 for 802.11a Turbo mode) 802.11j: 8(3 for 10MHz System;5 for 20MHz System)
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz for Normal mode 802.11j: 5MHz and 10MHz
OUTPUT POWER	Please see note 5 (on next page)
ANTENNA TYPE	Please see note 3 (on next page)

NOTE:

1. The EUT operates in 4.9GHz and both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. This EUT is capable of providing data rates of up to 108 Mbps in 802.11a and 802.11g Turbo mode depending upon reception quality.

3. There are three antennas provided to this EUT, please refer to the following table:

For 4.9GHz							
No.	Brand Name	Model No.	Gain (dBi)	Cable Loss (dB)	Net Gain (dB)	Antenna Type	Connector
A	Wistron Neweb Corp.	DBA-SSMA-01	2.06	0.9	1.16	dipole	RSMA
B	CUSHCRUFT	SRS5150MRA	2	0.9	1.1	dipole	RSMA
C	** HUBER+SUHNER	SPA 5500/40/14/O/V_C	13.5	0.9	12.6	panel	SMA

Note: 1. For 4.9GHz antennas, **antenna A and C** were selected as representative antennas for the test.
 2. “***” is an Outdoor Antenna it can only be used in point-to-point applications.

4. Frequency Range of each Antennas are as followings:

For 4.9GHz	
Antenna No.	Frequency Range
No. A & B	4.4GHz~4.9GHz
No. C	4.4GHz~4.9GHz

5. Peak output power (Unit : mW) :

No.	Model No.	Operating Frequency (MHz)
		4955 ~ 4975
A	DBA-SSMA-01	476.431
B	SRS5150MRA	476.431
C	SPA 5500/40/14/O/V_C	476.431

6. The EUT has two samples, one is for MMCX connector the other is for U.FL. connector.

7. The two samples were pre-tested in chamber, EUT with MMCX connector, the worse case one, was chosen for final test.

8. The EUT has eight product names and model names, which are identical to each other in all aspects except for the followings:

Product name	Model name	Description
High Powered 802.11a/g WLAN Mini-PCI 3A	DCMA-82	for market
High Powered 802.11a/g WLAN Mini-PCI 3A	DCMA-82 High Power	
Industry High Powered 802.11a/g WLAN Mini-PCI 3A	DCMA-IHP	
Commercial High Powered 802.11a/g WLAN Mini-PCI 3A	DCMA-HP	
High Powered 802.11a/g WLAN Mini-PCI 3A	CM11	
High Powered 802.11a/b/g WLAN Mini-PCI Module (Industrial Grade)	CM10-HI	
High Powered 802.11a/b/g WLAN Mini-PCI Module	CM10-H	
Industry High-Power Safety-802.11p WLAN	DCMA-SPI	

From the above models, model: **DCMA-82** was selected as representative model for the test and its data was recorded in this report.

9. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 4940 ~ 4990MHz band:

For normal mode: Eight channels are provided to this EUT.

Frequency	Channel Bandwidth
4950MHz	20MHz
4965MHz	20MHz
4980MHz	20MHz
4945MHz	10MHz
4955MHz	10MHz
4965MHz	10MHz
4975MHz	10MHz
4985MHz	10MHz

3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	MPOP	PSD	RE	EM&CE	
-	√	√	√	√	NA

Where MPOP: Maximum Peak Output Power PSD: Power Spectrum Density
 RE: Radiated Emission EM&CE: Emission Mask and Conducted Emission Measurement

Radiated Emission Test :

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Channel Bandwidth	Total Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	3	20	3	OFDM	BPSK	6
2	5	10	3	OFDM	BPSK	3

MAXIMUM PEAK OUTPUT POWER:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Channel Bandwidth	Total Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	3	20	3	OFDM	BPSK	6
2	5	10	3	OFDM	BPSK	3

POWER SPECTRAL DENSITY :

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Channel Bandwidth	Total Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	3	20	3	OFDM	BPSK	6
2	5	10	3	OFDM	BPSK	3

EMISSION MASK AND CONDUCTED SPURIOUS MEASUREMENT:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Channel Bandwidth	Total Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
1	3	20	3	OFDM	BPSK	6
2	5	10	3	OFDM	BPSK	3



3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a High Powered 802.11a/g WLAN Mini-PCI 3A. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 90, Subpart Y
ANSI C63.4 : 2003

All tests have been performed and recorded as per the above standards.

3.5 DESCRIPTION OF SUPPORT UNITS

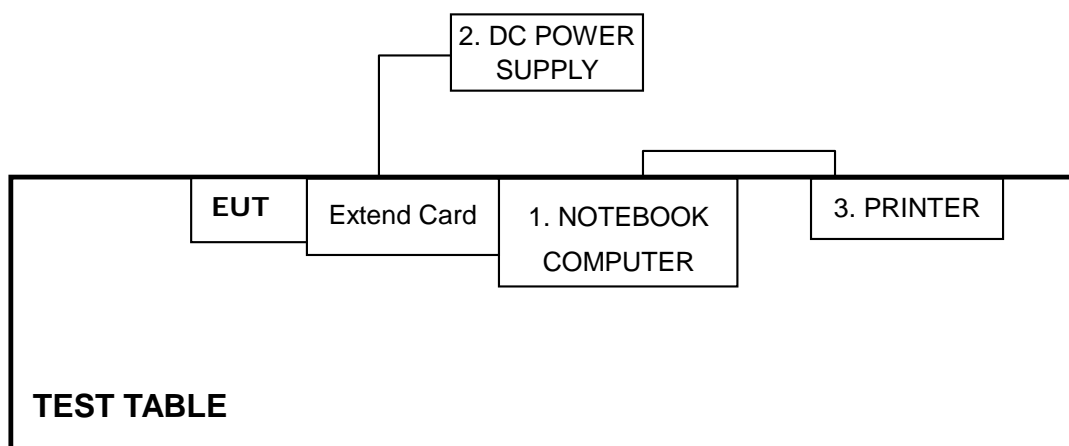
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	C600	6DRV601	FCC DoC
2	DC POWER SUPPLY	GOOD WILL INSTRUMENT CO., LTD.	GPC-3030D	7700087	B94C2642X
3	PRINTER	EPSON	LQ-300+	DCGY047261	B94C2642X
4	Extend Card	ADT	NA	NA	NA

No.	Signal cable description
1	NA
2	NA
3	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
4	NA

Note: 1. All power cords of the above support units are unshielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST



NOTE: 1. Please refer to the photos of test configuration.

4 TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

§90.210(M) Emission Mask M. For high power transmitters (greater than 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows: On any frequency removed from the assigned frequency above 150 % of the authorized bandwidth: 50 dB or $55 + 10 \log (P)$ dB, whichever is the lesser attenuation.

The Radiated Spurious Emission Limit is obtained by the following:

For Mode 1:

Channel 4950MHz: Measured Average Power Output of EUT:21.10dBm
Spur limit=21.10dBm-50dB=-28.90dBm

Channel 4965MHz: Measured Average Power Output of EUT:21.12dBm
Spur limit=21.12dBm-50dB =-28.88dBm

Channel 4980MHz: Measured Average Power Output of EUT:21.10dBm
Spur limit=21.10dBm-50dB=-28.90dBm

For Mode 2:

Channel 4945MHz: Measured Average Power Output of EUT:19.26dBm
Spur limit=19.26dBm-50dB=-30.74dBm

Channel 4965MHz: Measured Average Power Output of EUT:19.30dBm
Spur limit=19.30dBm-50dB =-30.70dBm

Channel 4985MHz: Measured Average Power Output of EUT:19.33dBm
Spur limit=19.33dBm-50dB=-30.67dBm



4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 03, 2007
HP Pre_Amplifier	8449B	3008A01922	Sep. 18, 2007
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Sep. 20, 2007
CHASE Broadband Antenna	VULB9168	138	Dec. 10, 2007
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jan. 01, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 04, 2008
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 08, 2009
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 08, 2009
R&S Loop Antenna	HFH2-Z2	881058/15	Nov. 29, 2007
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek)	SF102	22054-2	Nov. 14. 2007
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1 GHz	Jul. 15, 2007
Software	ADT_Radiated_V 5.14	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

- Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Biconical and Periodic Antenna) and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824A-3.
7. Loop antenna was used for all emissions below 30 MHz.

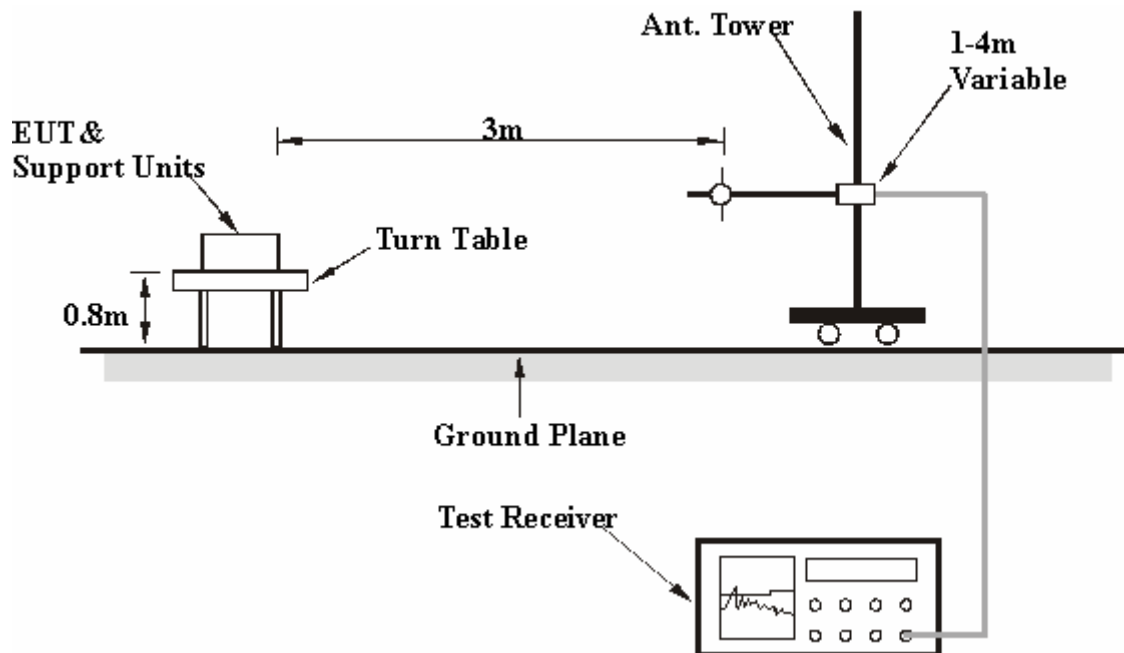
4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The maximum EIRP of the emission was calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps were carried out with the receiving antenna in both vertical and horizontal polarization. Harmonic emissions up to the 10th or 40GHz, whichever was the lesser, were investigated.

NOTE:

1. The resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz.

4.1.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.5 EUT OPERATING CONDITIONS

- Connect the EUT with the support unit 1 (Notebook computer) which placed on a testing table.
- The support unit 1 (Notebook computer) ran a test program “Art 53 b 5” to enable EUT under transmission condition continuously.
- Notebook computer sends "H" messages to printer, and the printer prints them on paper.

4.1.6 TEST RESULTS (MODE 1)

4.1.6.1 TEST RESULTS - Antenna A

MODE	Channel Frequency 4950MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6600.00	-47.08	-28.90	-18.18	-87.42	40.34
2	9900.00	-59.42	-28.90	-30.52	-104.61	45.19

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6600.00	-43.18	-28.90	-14.28	-83.52	40.34
2	9900.00	-55.42	-28.90	-26.52	-100.61	45.19

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. " * " : Fundamental frequency



MODE	Channel Frequency 4965MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-48.93	-28.88	-20.05	-89.32	40.39
2	9930.00	-59.14	-28.88	-30.26	-104.35	45.21

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-45.63	-28.88	-16.75	-86.02	40.39
2	9930.00	-55.74	-28.88	-26.86	-100.95	45.21

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. “ * “ : Fundamental frequency



MODE	Channel Frequency 4980MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6640.00	-48.71	-28.90	-19.81	-89.15	40.44
2	9960.00	-61.22	-28.90	-32.32	-106.44	45.22

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6640.00	-47.91	-28.90	-19.01	-88.35	40.44
2	9960.00	-55.55	-28.90	-26.65	-100.77	45.22

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. “ * “ : Fundamental frequency



4.1.6.2 TEST RESULTS - Antenna C

MODE	Channel Frequency 4950MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6600.60	-47.15	-28.90	-18.25	-87.49	40.34
2	9900.00	-59.36	-28.90	-30.46	-104.55	45.19

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6600.60	-43.07	-28.90	-14.17	-83.41	40.34
2	9900.00	-55.32	-28.90	-26.42	-100.51	45.19

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. “ * “ : Fundamental frequency



MODE	Channel Frequency 4965MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-48.85	-28.88	-19.97	-89.24	40.39
2	9930.00	-58.89	-28.88	-30.01	-104.10	45.21

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-45.57	-28.88	-16.69	-85.96	40.39
2	9930.00	-55.68	-28.88	-26.80	-100.89	45.21

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. " * " : Fundamental frequency



MODE	Channel Frequency 4980MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6640.00	-48.78	-28.90	-19.88	-89.22	40.44
2	9960.00	-61.05	-28.90	-32.15	-106.27	45.22

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6640.00	-47.85	-28.90	-18.95	-88.29	40.44
2	9960.00	-55.43	-28.90	-26.53	-100.65	45.22

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. “ * “ : Fundamental frequency



4.1.7 TEST RESULTS (MODE 2)

4.1.7.1 TEST RESULTS - Antenna A

MODE	Channel Frequency 4945MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6593.30	-47.81	-30.74	-17.07	-88.13	40.32
2	9890.00	-59.94	-30.74	-29.20	-105.13	45.19

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6593.30	-46.41	-30.74	-15.67	-86.73	40.32
2	9890.00	-55.64	-30.74	-24.90	-100.83	45.19

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. " * " : Fundamental frequency



MODE	Channel Frequency 4965MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-49.23	-30.70	-18.53	-89.62	40.39
2	9930.00	-62.54	-30.70	-31.84	-107.75	45.21

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-47.63	-30.70	-16.93	-88.02	40.39
2	9930.00	-55.24	-30.70	-24.54	-100.45	45.21

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. " * " : Fundamental frequency



MODE	Channel Frequency 4985MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6646.60	-50.40	-30.67	-19.73	-90.86	40.46
2	9970.00	-62.17	-30.67	-31.50	-107.40	45.23

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6646.60	-48.50	-30.67	-17.83	-88.96	40.46
2	9970.00	-59.27	-30.67	-28.60	-104.50	45.23

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. “ * “ : Fundamental frequency



4.1.7.2 TEST RESULTS - Antenna C

MODE	Channel Frequency 4945MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	9593.30	-47.75	-30.74	-17.01	-88.07	40.32
2	9890.00	-59.77	-30.74	-29.03	-104.96	45.19

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	9593.30	-46.33	-30.74	-15.59	-86.65	40.32
2	9890.00	-55.45	-30.74	-24.71	-100.64	45.19

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. “ * “ : Fundamental frequency



MODE	Channel Frequency 4965MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-49.11	-30.70	-18.41	-89.50	40.39
2	9930.00	-62.45	-30.70	-31.75	-107.66	45.21

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6620.00	-47.55	-30.70	-16.85	-87.94	40.39
2	9930.00	-55.12	-30.70	-24.42	-100.33	45.21

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. “ * “ : Fundamental frequency



MODE	Channel Frequency 4985MHz	FREQUENCY RANGE	1000~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) 300KHz/30KHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 56%RH, 965 hPa	TESTED BY	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6646.600	-50.24	-30.67	-19.57	90.70	40.46
2	9970.00	-61.96	-30.67	-31.29	-107.19	45.23

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Raw Value (dBm)	Correction Factor (dBm)
1	6646.600	-48.35	-30.67	-17.68	-88.81	40.46
2	9970.00	-58.88	-30.67	-28.21	-104.11	45.23

- REMARKS:**
1. Emission level(dBm)<EIRP>=SG reading-CL+Gain(dBi)
 2. The other emission levels were very low against the limit.
 3. Margin value = Emission level – Limit value.
 4. The limit value is defined as per 90.210
 5. “ * “ : Fundamental frequency

4.2 EMISSION BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 26dB BANDWIDTH MEASUREMENT

For reporting purposes only.

4.2.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 15, 2007

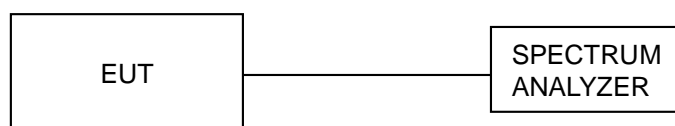
NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.2.3 TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 3% of the 26dB bandwidth and /or the 99% bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

4.2.4 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

4.2.5 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at channel frequencies individually.



4.2.6 TEST RESULTS (Mode 1)

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 965 hPa
TESTED BY	Wen Yu		

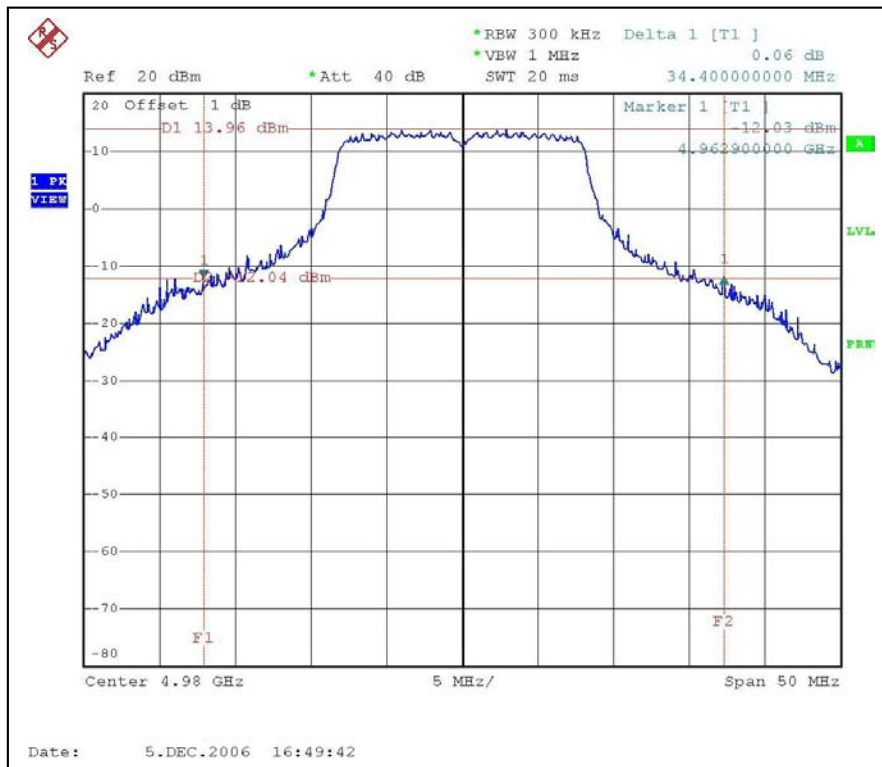
26dB Bandwidth

CHANNEL FREQUENCY (MHz)	26 dB BANDWIDTH (MHz)	10 Log B (dB)
4950	35.7	15.53
4965	32.1	15.07
4980	34.4	15.37

99% Bandwidth

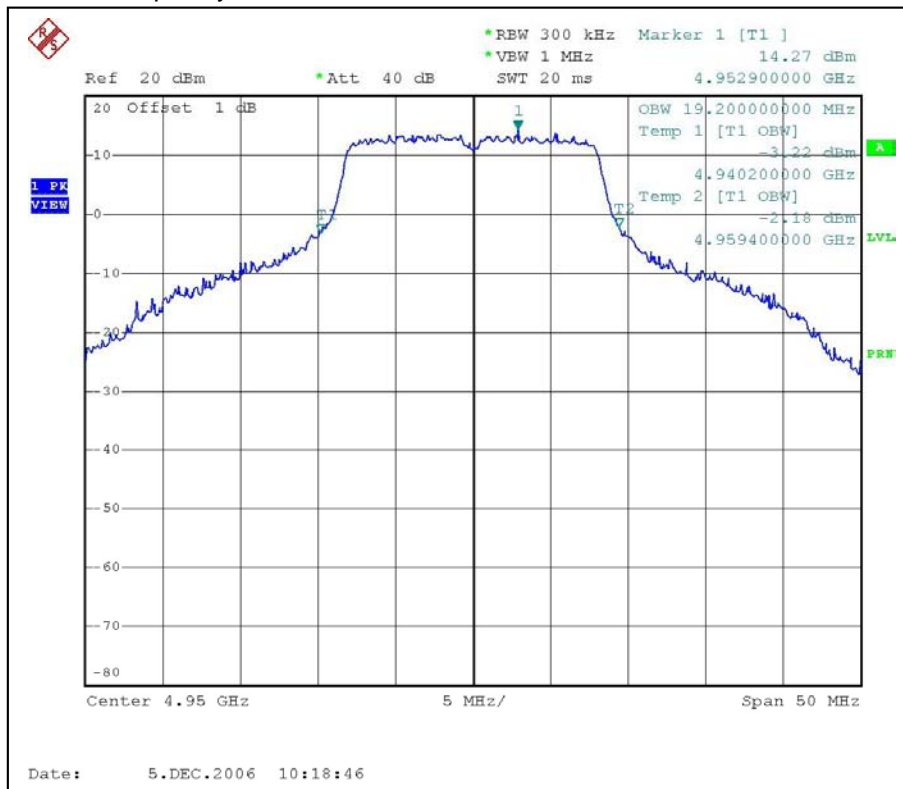
CHANNEL FREQUENCY (MHz)	99% BW (MHz)
4950	19.2
4965	18.8
4985	18.3

Channel Frequency: 4980 MHz

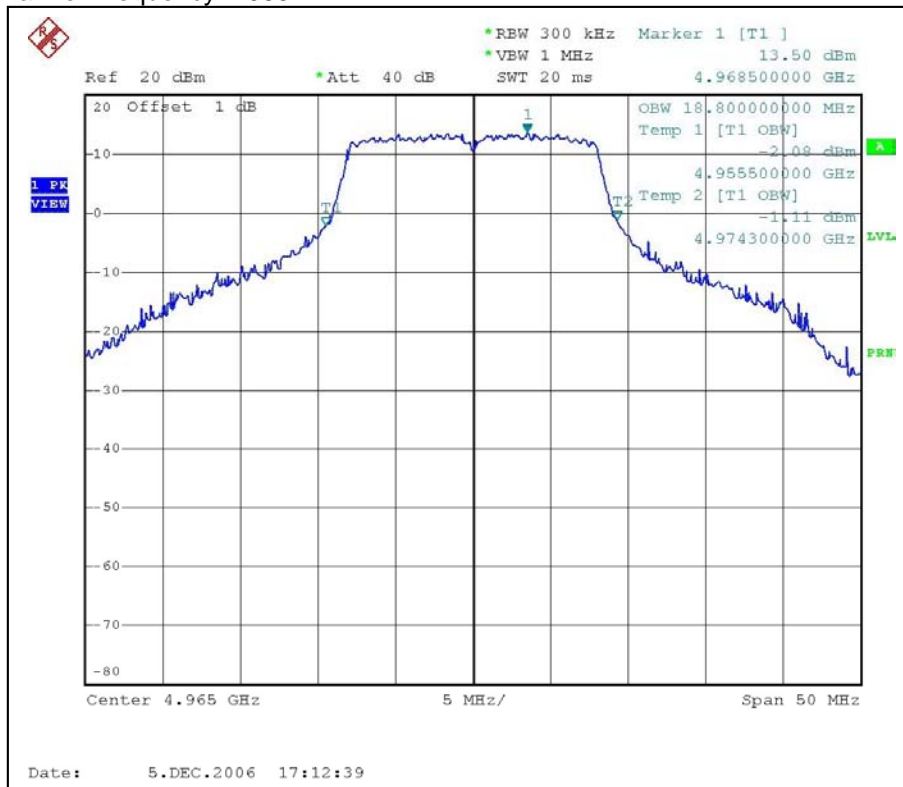


99% Bandwidth

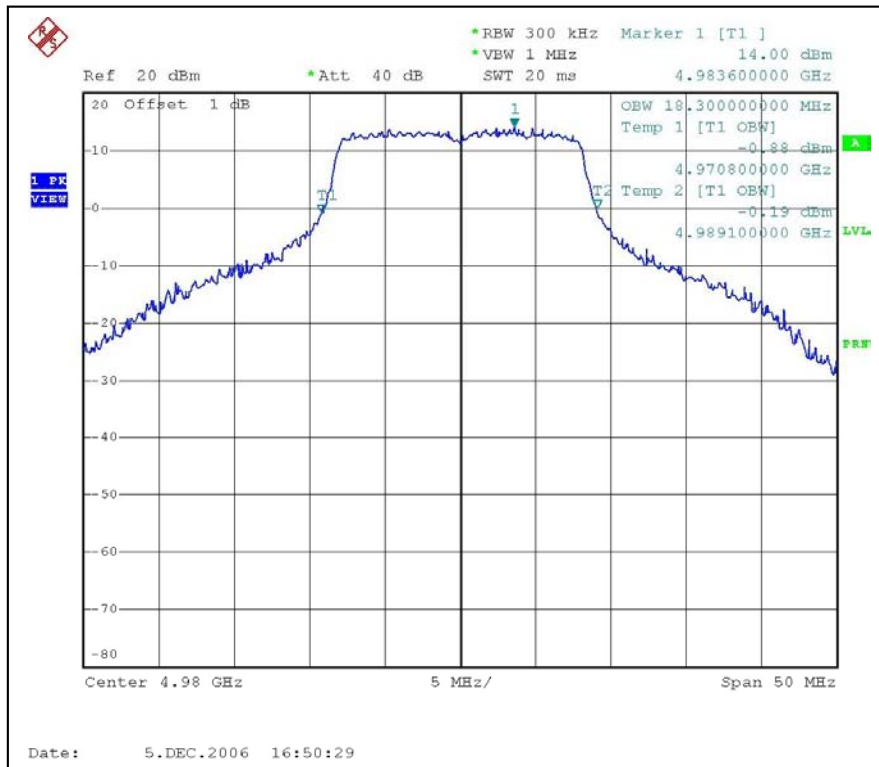
Channel Frequency: 4950 MHz



Channel Frequency: 4965 MHz



Channel Frequency: 4980 MHz





4.2.7 TEST RESULTS (Mode 2)

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 965 hPa
TESTED BY	Wen Yu		

26dB Bandwidth

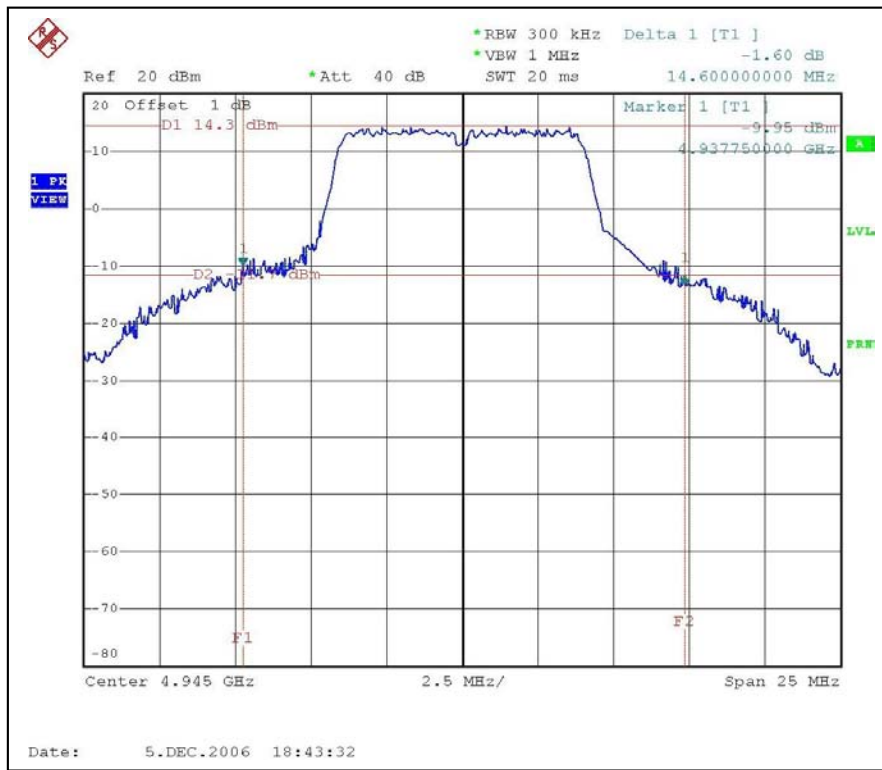
CHANNEL FREQUENCY (MHz)	26 dB BANDWIDTH (MHz)	10 Log B (dB)
4945	14.6	11.64
4965	14.6	11.64
4985	13.75	11.38

99% Bandwidth

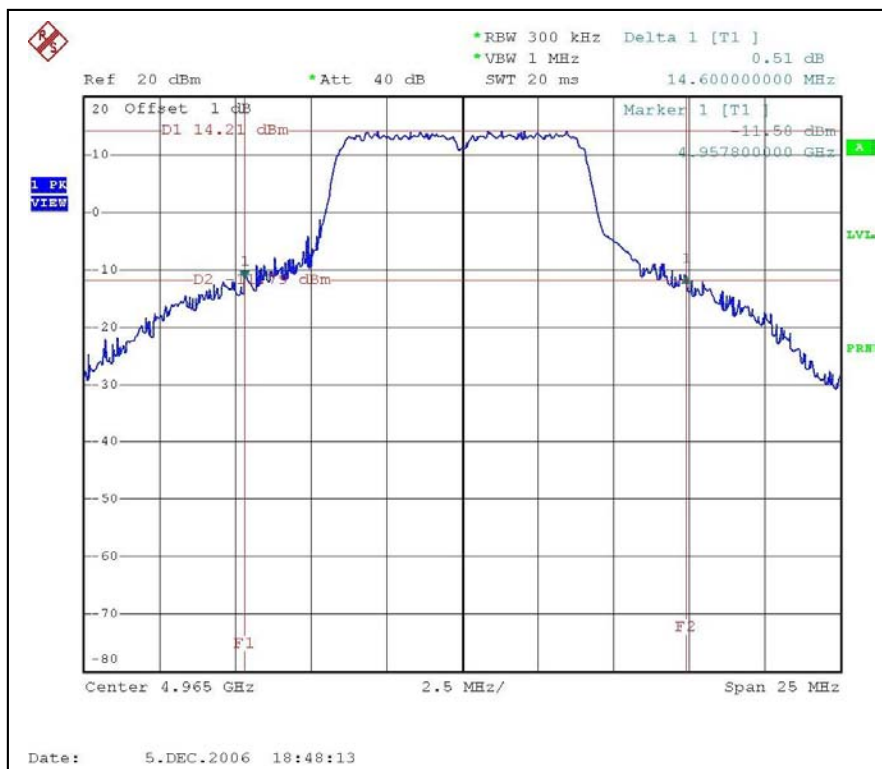
CHANNEL FREQUENCY (MHz)	99% BW (MHz)
4945	8.7
4965	8.7
4985	8.7

26dB Bandwidth

Channel Frequency: 4945 MHz

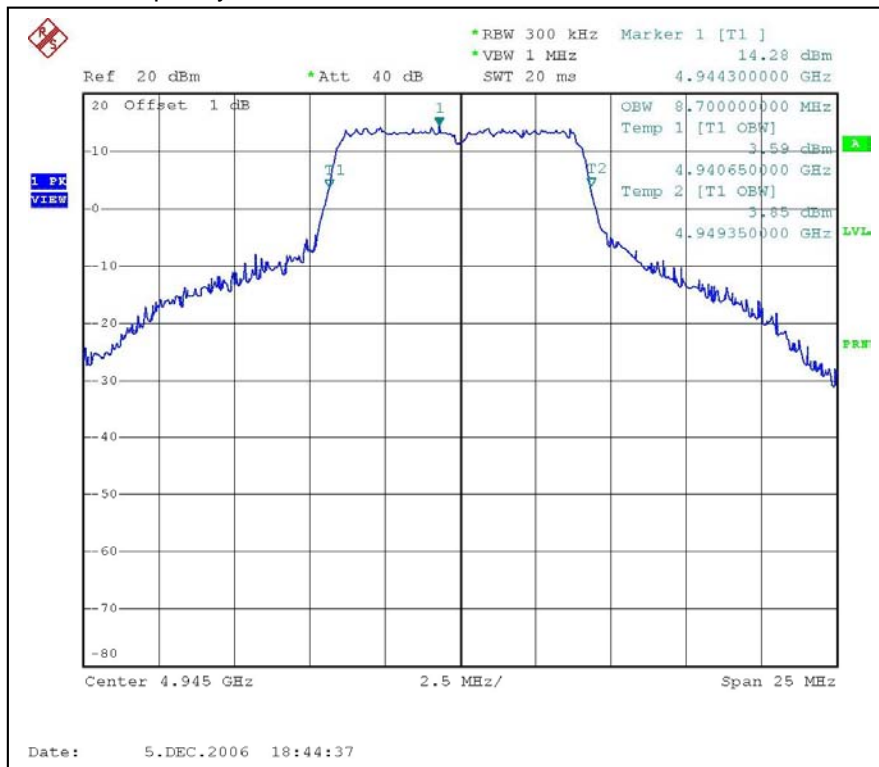


Channel Frequency: 4965 MHz

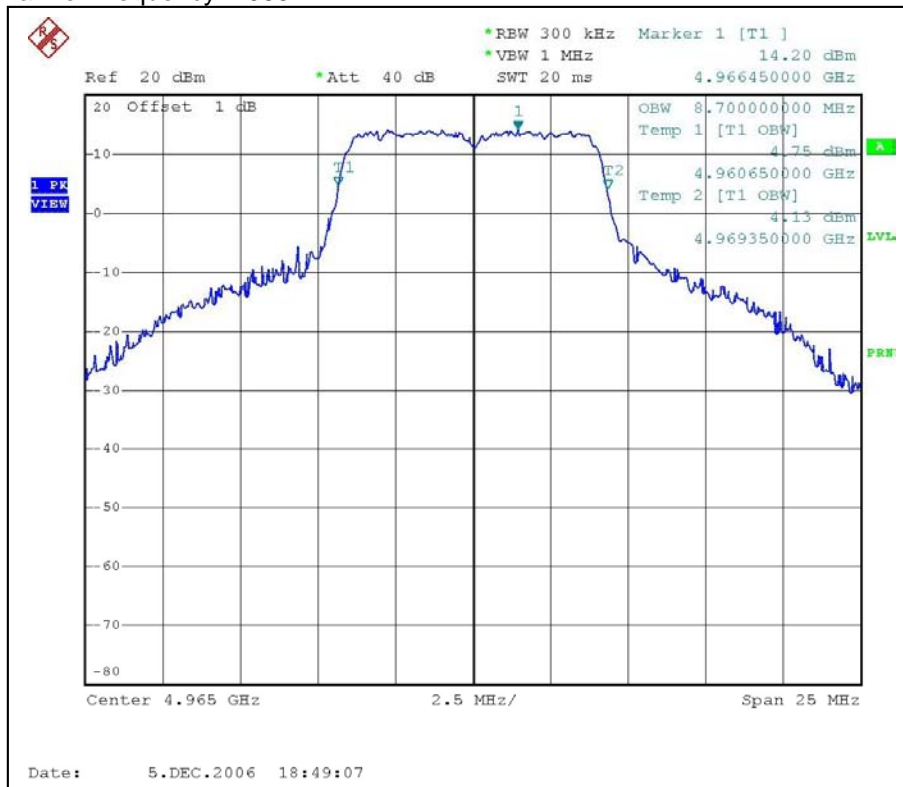


99% Bandwidth

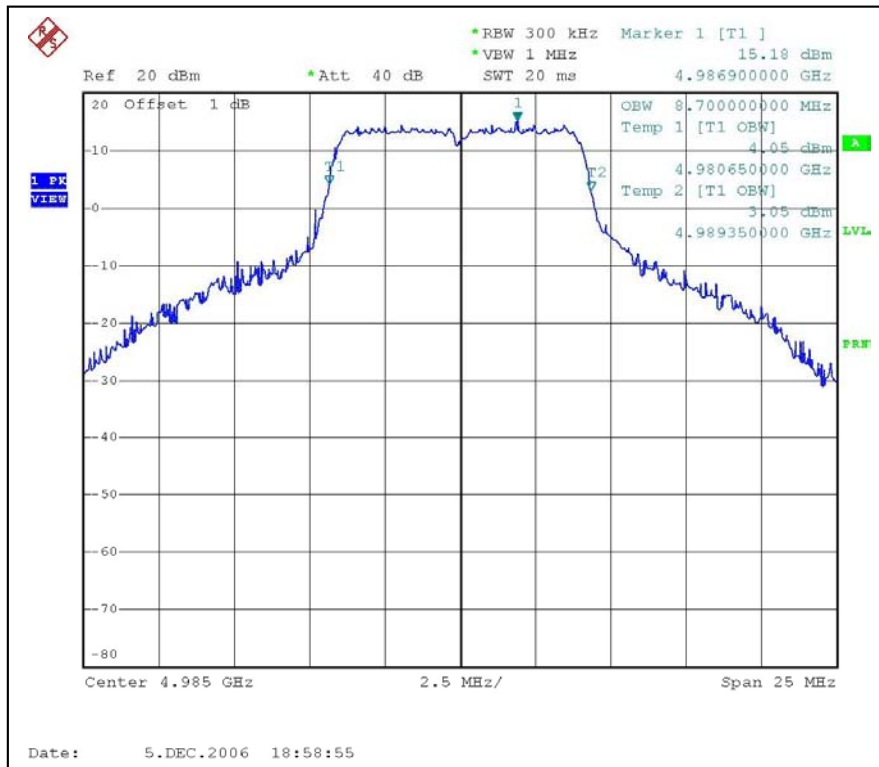
Channel Frequency: 4945 MHz



Channel Frequency: 4965 MHz



Channel Frequency: 4985 MHz





4.3 MAXIMUM PEAK OUTPUT POWER

4.3.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

§90.1215 The transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this section.

(a) The peak transmit power should not exceed:

Channel bandwidth (MHz)	Low power device peak transmitter power (dBm)	High power device peak transmitter power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
Power Meter	ML2487A	6K00001472	Jan. 8, 2007
Power Meter Sensor (Wide Bandwidth Sensor)	MA2491A	030951	Jan.18.2008

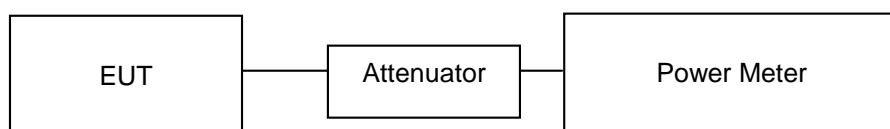
NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.3.3 TEST PROCEDURES

1. An attenuator was used on the output port of the EUT. Power meter was used and set peak function to measurement the Peak power.
2. The EUT power was adjusted maximum output power.
3. The output power was then recorded with peak reading.

4.3.4 TEST SETUP



4.3.5 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at channel frequencies individually and power was adjusted Maximum output power by software.



4.3.6 TEST RESULTS (Mode 1)

4.3.6.1 TEST RESULTS – Antenna A

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. c, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
4950	464.515	26.67	33	PASS
4965	467.735	26.70	33	PASS
4980	476.431	26.78	33	PASS

4.3.6.2 TEST RESULTS – Antenna C

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. c, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
4950	464.515	26.67	33	PASS
4965	467.735	26.70	33	PASS
4980	476.431	26.78	33	PASS



4.3.7 TEST RESULTS (Mode 2)

4.3.7.1 TEST RESULTS – Antenna A

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. c, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
4945	279.254	24.46	30	PASS
4965	284.446	24.54	30	PASS
4985	291.743	24.65	30	PASS

4.3.7.2 TEST RESULTS – Antenna C

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. c, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
4945	279.254	24.46	30	PASS
4965	284.446	24.54	30	PASS
4985	291.743	24.65	30	PASS

4.4 AVERAGE POWER

4.4.1 LIMITS OF AVERAGE POWER MEASUREMENT

None; for reporting purposes only.

4.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
Power Meter	ML2487A	6K00001472	Jan. 8, 2007
Power Meter Sensor (Wide Bandwidth Sensor)	MA2491A	030951	Jan.18.2008

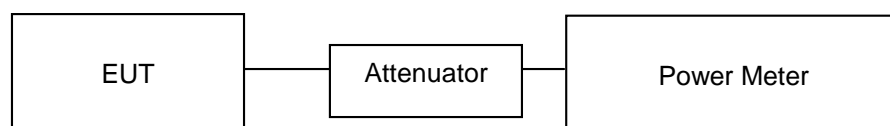
NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4.3 TEST PROCEDURES

- 1.An attenuator was used on the output port of the EUT. Power meter was used and set average function to measurement the Average power.
- 2.The EUT power was adjusted maximum output power.
- 3.The output power was then recorded with peak and average reading.

4.4.4 TEST SETUP



4.4.5 EUT OPERATING CONDITIONS

Same as Item 4.3.5



4.4.6 TEST RESULTS (Mode 1)

4.4.6.1 TEST RESULTS – Antenna A

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
4950	128.825	21.10
4965	129.420	21.12
4980	128.825	21.10

4.4.6.2 TEST RESULTS – Antenna C

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
4950	128.825	21.10
4965	129.420	21.12
4980	128.825	21.10



4.4.7 TEST RESULTS (Mode 2)

4.4.7.1 TEST RESULTS – Antenna A

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
4945	84.333	19.26
4965	85.114	19.30
4985	85.704	19.33

4.4.7.2 TEST RESULTS – Antenna C

INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
4945	84.333	19.26
4965	85.114	19.30
4985	85.704	19.33



4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

Complies § 90.1215 (a) High power devices.

System	Limit
For high power device	21dBm/MHz

Note:

If transmitting antennas of directional gain greater than 9dBi are used, both the peak transmit power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to point or point-to-multipoint operation (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26dBi without any corresponding reduction in the transmitter power or spectral density. Corresponding reduction in the peak transmit power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26dBi.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 15, 2007

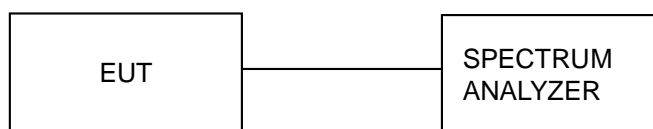
NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The measured with the spectrum analyzer using RBW=1MHz and VBW 1MHz. The EUT power was adjusted at the maximum output power level. Set max hold to capture the modulated envelope of the EUT. The peak power spectrum density was recorded.

4.5.4 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

Same as 4.2.5

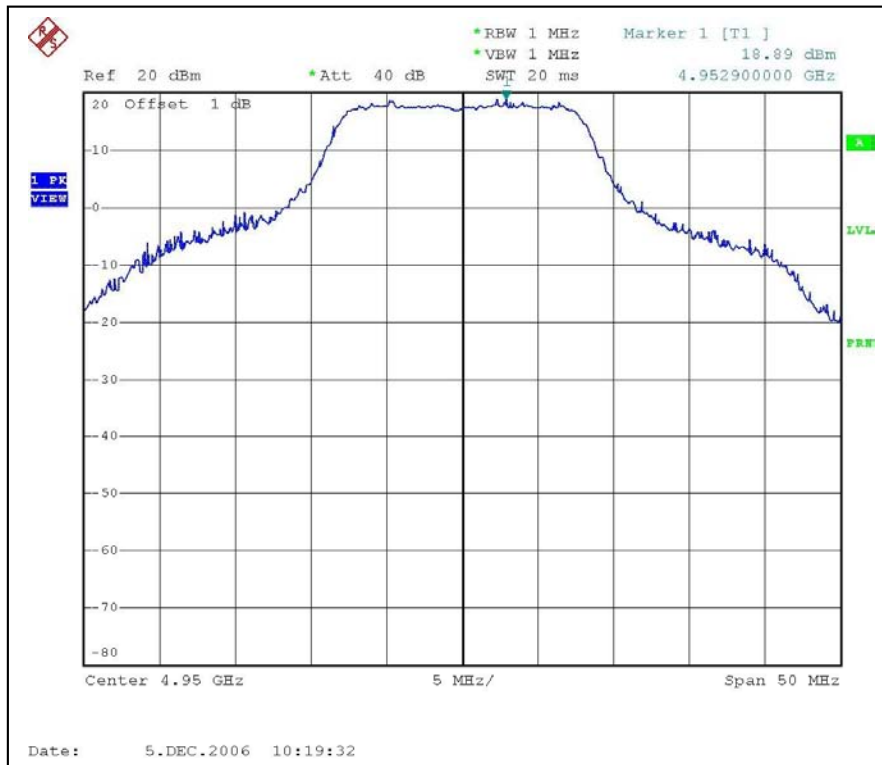


4.5.6 TEST RESULTS (Mode 1)

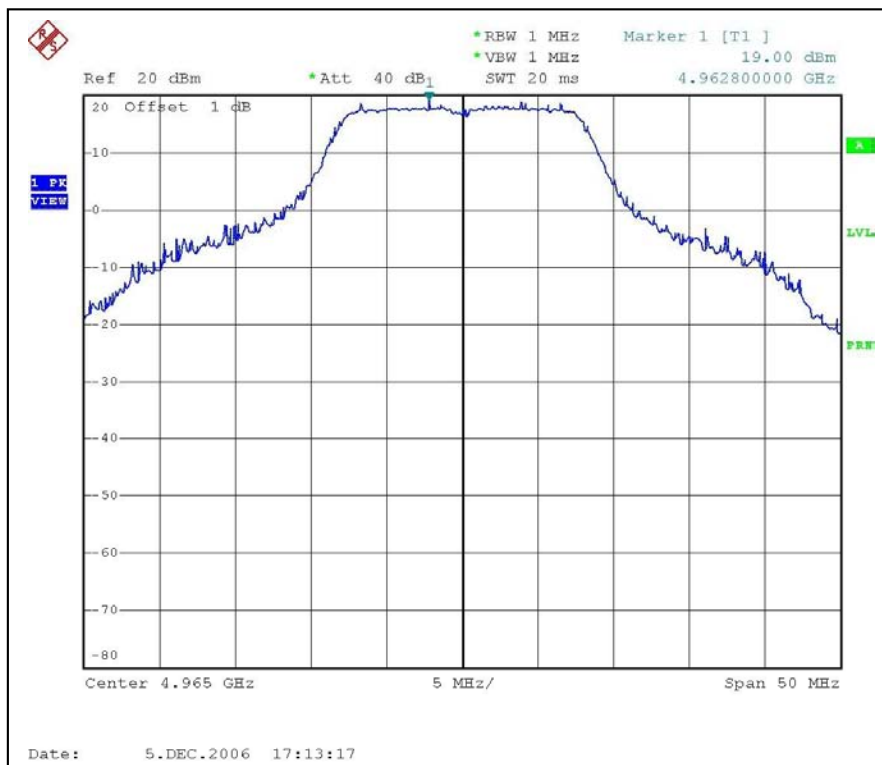
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	POWER SPECTRAL DENSITY (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
4950	18.89	21	PASS
4965	19.00	21	PASS
4980	18.73	21	PASS

Channel Frequency: 4950 MHz



Channel Frequency: 4965 MHz



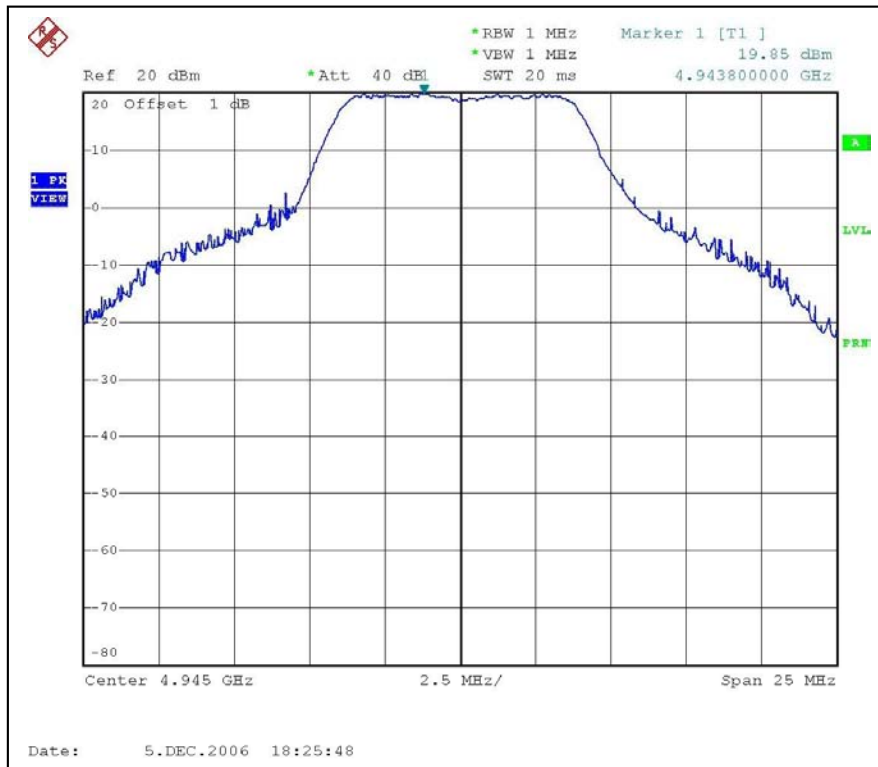


4.5.7 TEST RESULTS (Mode 2)

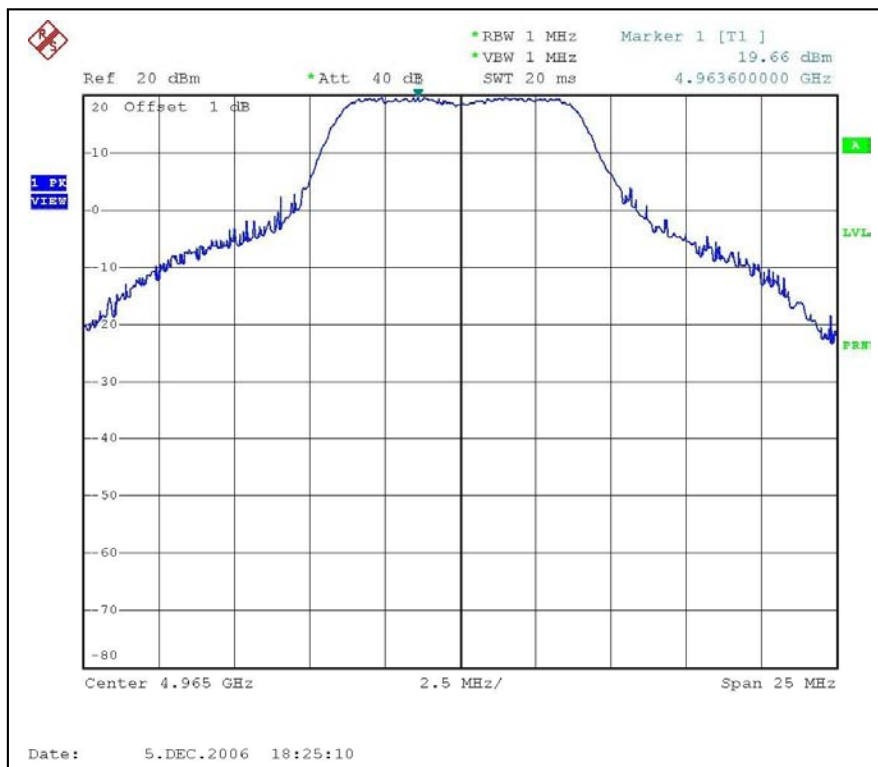
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	15 deg. C, 65%RH, 965 hPa
TESTED BY	Wen Yu		

CHANNEL FREQUENCY (MHz)	POWER SPECTRAL DENSITY (dBm/MHz)	MAXIMUM LIMIT (dBm/MHz)	PASS/FAIL
4945	19.85	21	PASS
4965	19.66	21	PASS
4985	20.39	21	PASS

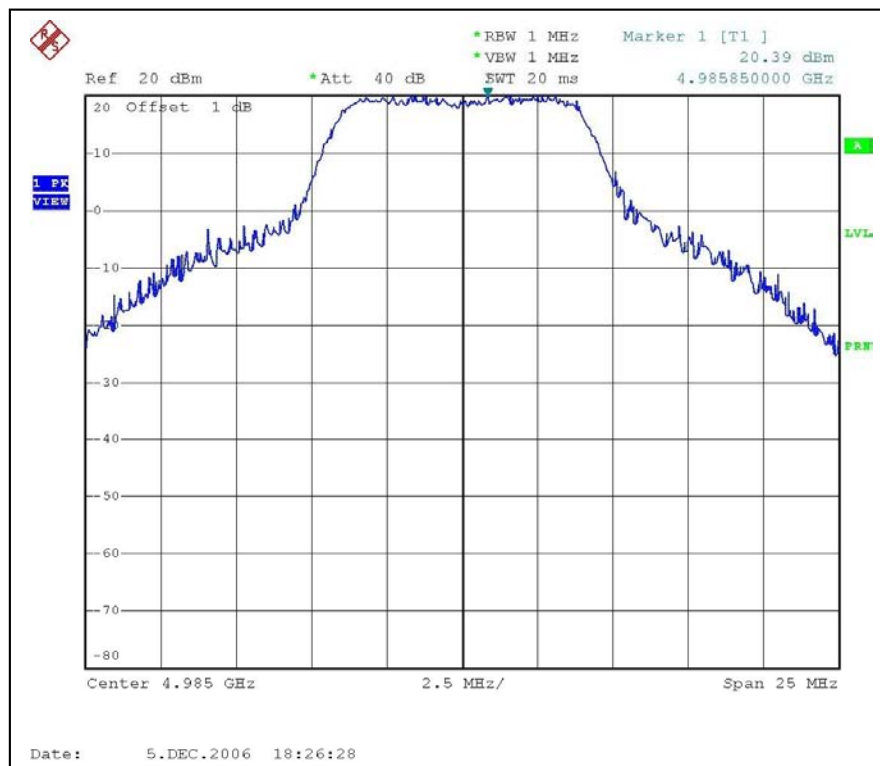
Channel Frequency: 4945 MHz



Channel Frequency: 4965 MHz



Channel Frequency: 4985 MHz



4.6 EMISSION MASK AND CONDUCTED SPURIOUS MEASUREMENT

4.6.1 LIMITS OF EMISSION MASK MEASUREMENT

Compliance §90.210(M) Emission Mask M (For High power device) .

PSD of the emission on any frequency removed from the assigned frequency must be attenuated below the output power of the transmitter as follows:

Authorized bandwidth(BW)	Limit
0-45%	0dB
45-50%	$568 \log (\% \text{ of (BW) / 45) \text{ dB}$
50-55%	$26 + 145 \log (\% \text{ of BW / 50) \text{ dB}$
55-100%	$32 + 31 \log (\% \text{ of (BW) / 55) \text{ dB}$
100-150%	$40 + 57 \log (\% \text{ of (BW) / 100) \text{ dB}$
Above 150%	50 dB or $55 + 10 \log (P) \text{ dB}$, whichever is the lesser attenuation.

Note: The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz.

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 15, 2007

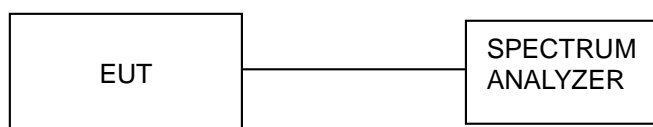
NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

The EUT is connected to the spectrum analyzer. The measured highest Average Power was set relative to zero dB reference. The RBW was set to at least 1% of the channel bandwidth with a VBW set to 30kHz. The EUT power was adjusted at the maximum output power level. Set max hold to capture the modulated envelope of the EUT. The Emission Mask was recorded.

4.6.4 TEST SETUP



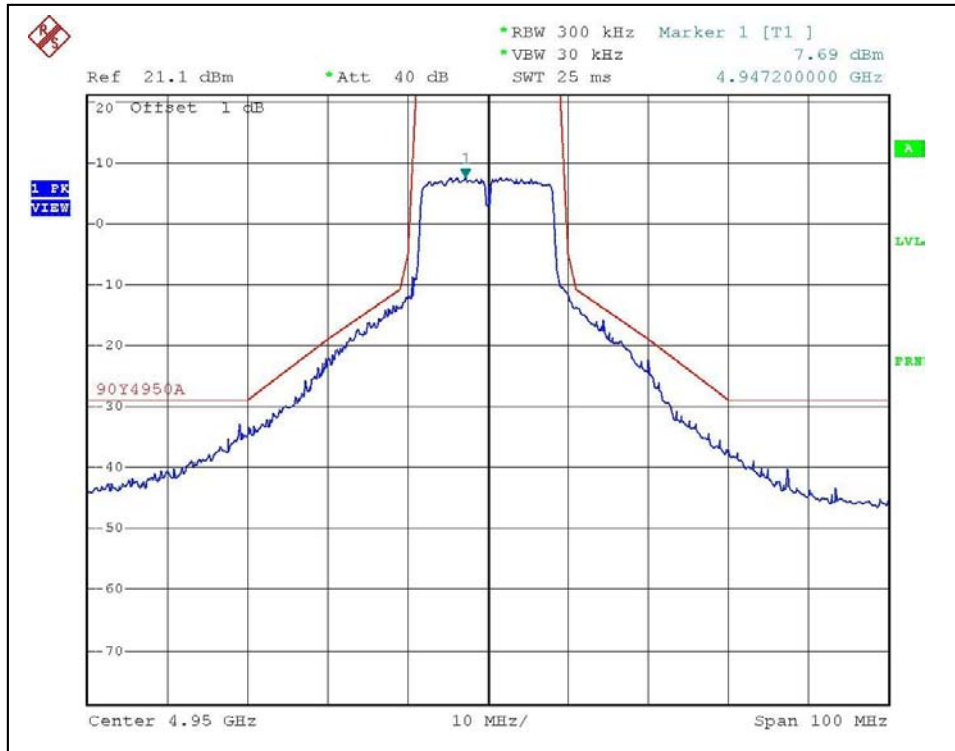
4.6.5 EUT OPERATING CONDITIONS

Same as 4.2.5

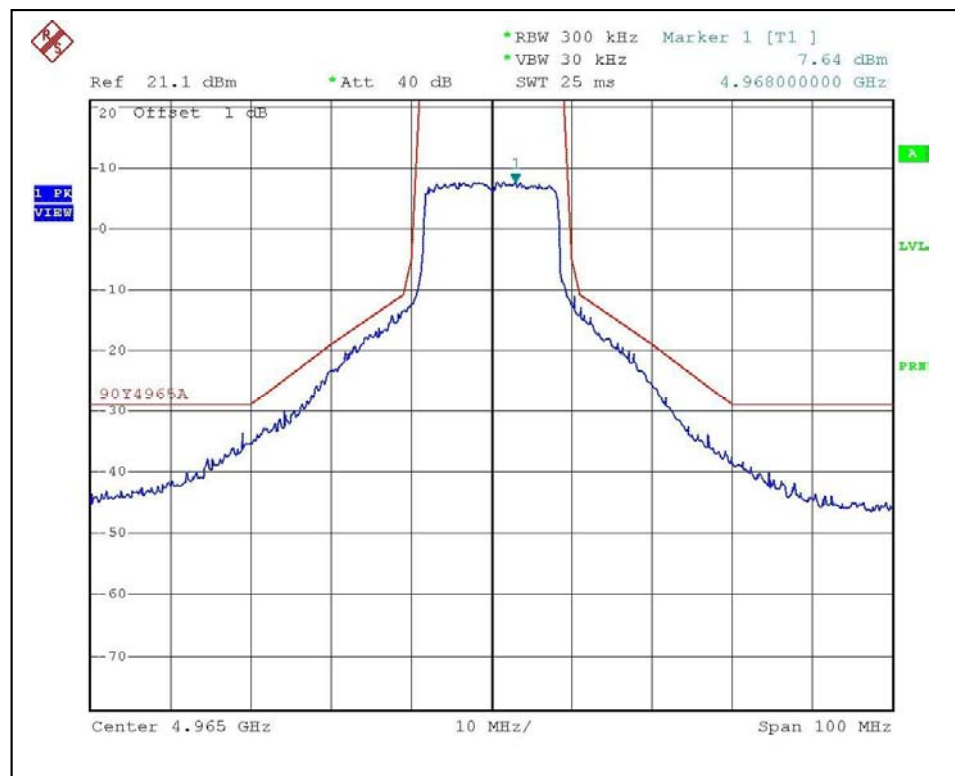
4.6.6 TEST RESULTS (Mode 1)

EMISSION MASK :

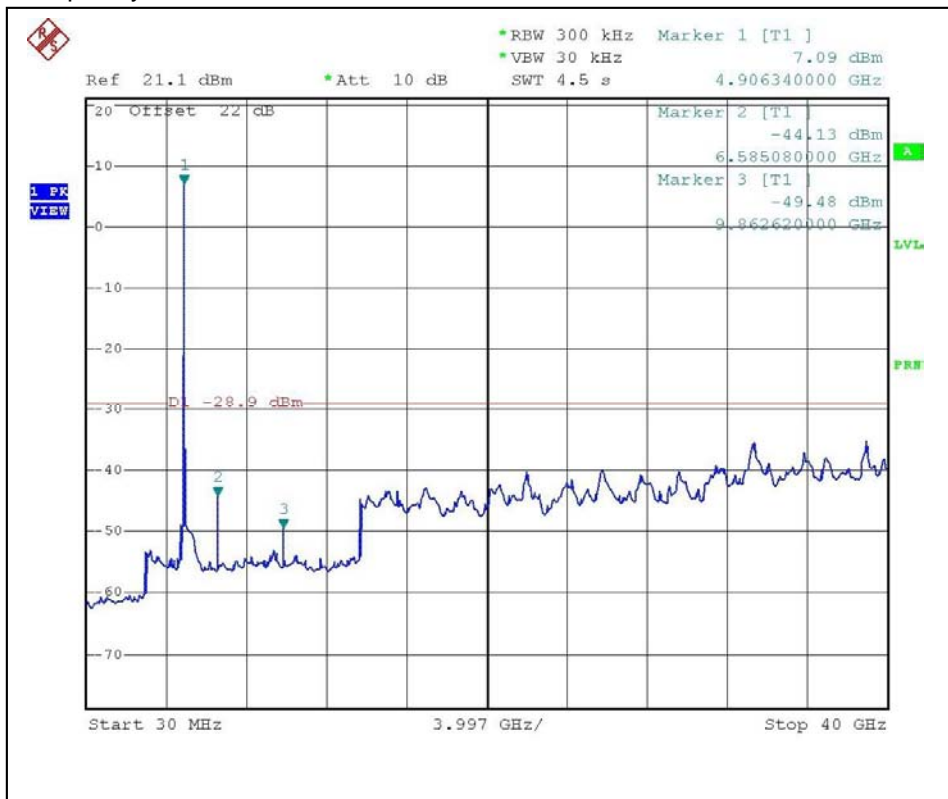
Channel Frequency: 4950 MHz



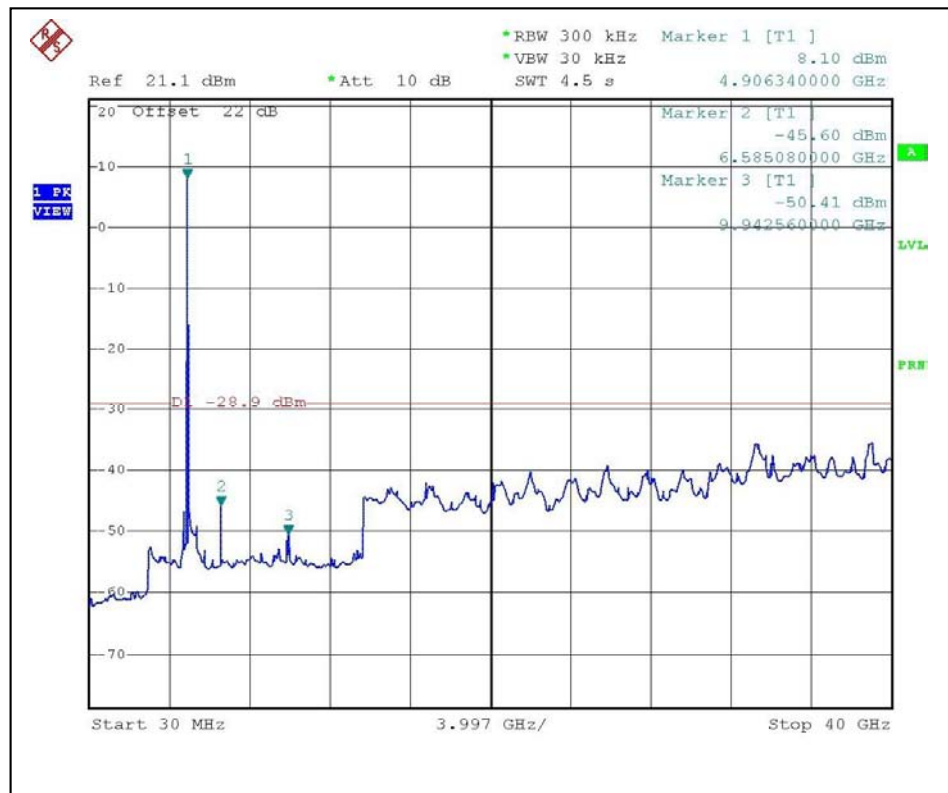
Channel Frequency: 4965 MHz



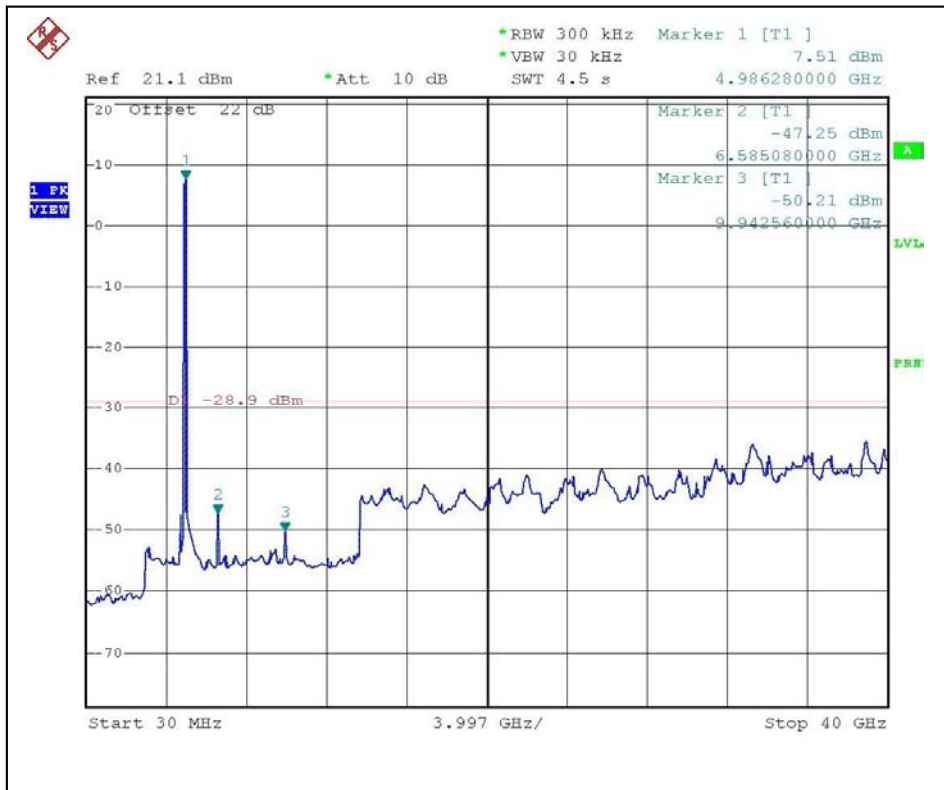
CONDUCTED SPURIOUS:
Channel Frequency: 4950 MHz



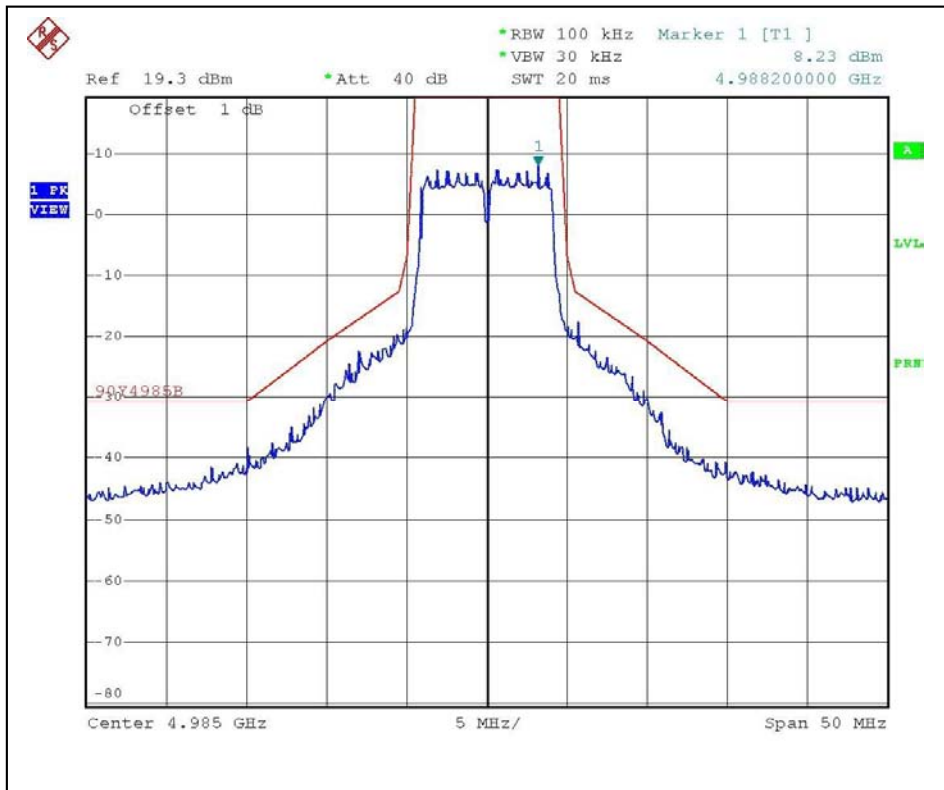
Channel Frequency: 4965 MHz



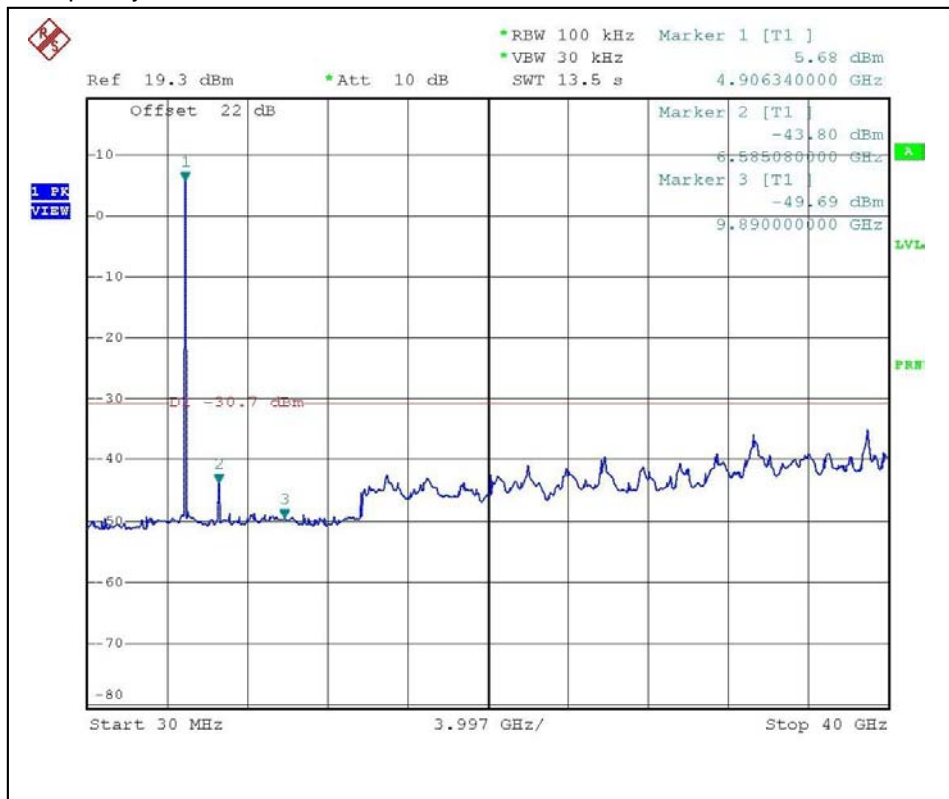
Channel Frequency: 4980 MHz



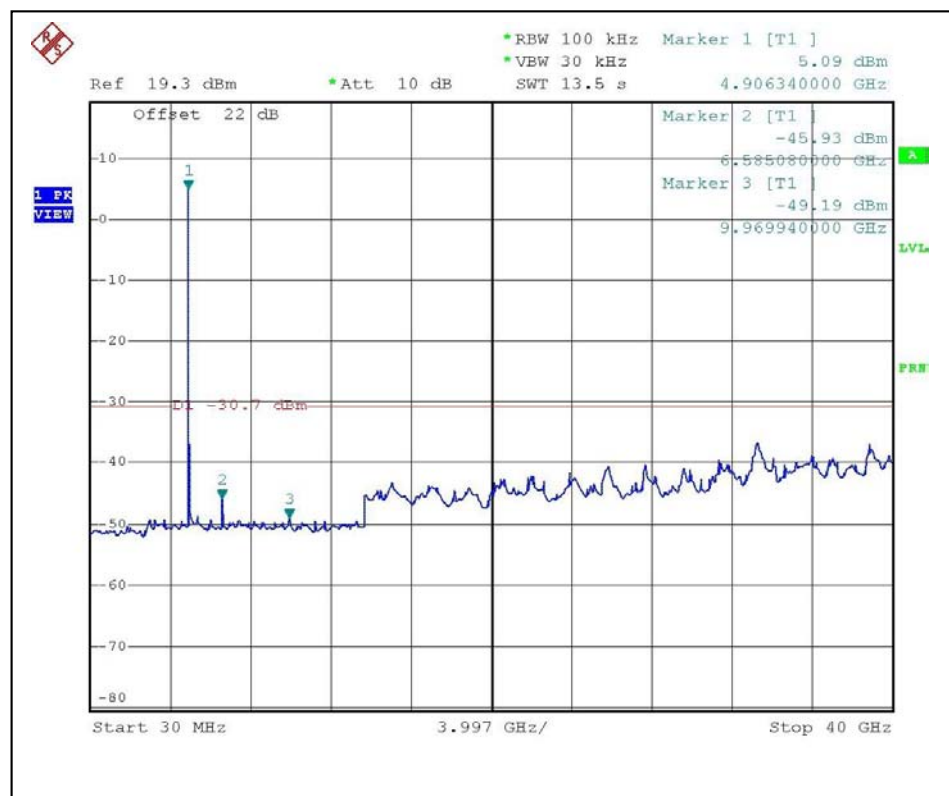
Channel Frequency: 4985 MHz



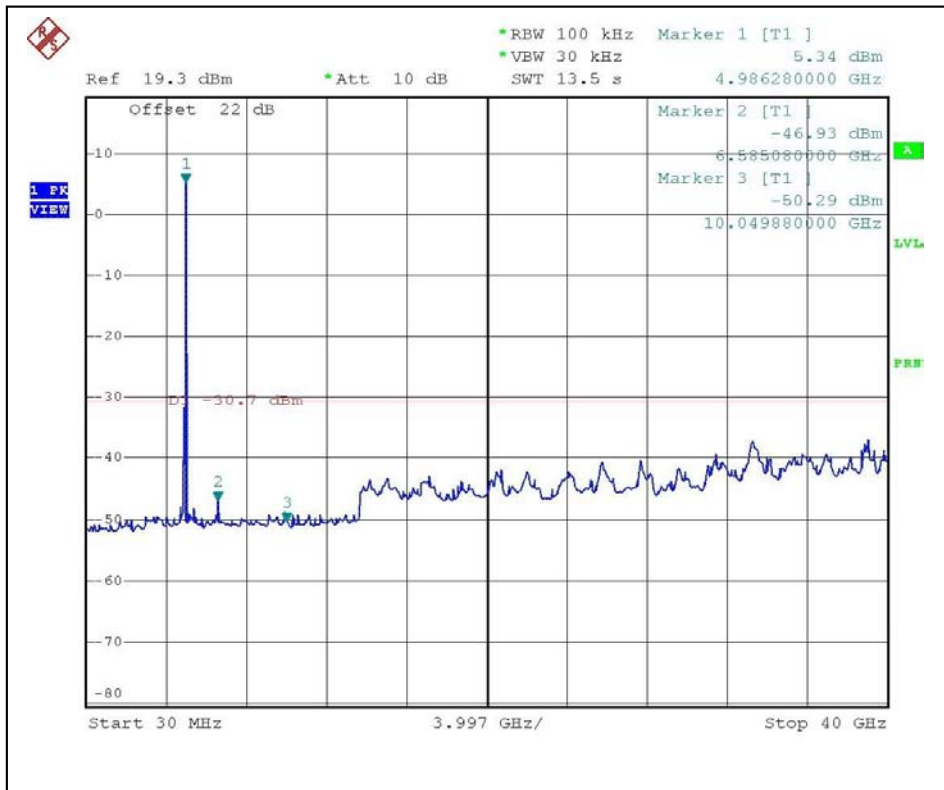
CONDUCTED SPURIOUS:
Channel Frequency: 4945 MHz



Channel Frequency: 4965 MHz



Channel Frequency: 4985 MHz



4.7 FREQUENCY STABILITY

4.7.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

For reporting purposes only.

4.7.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 15, 2007

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

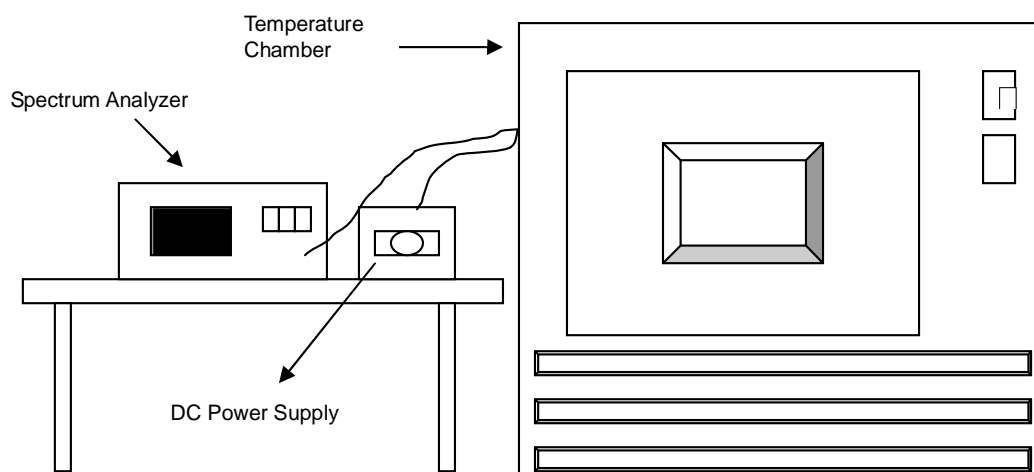
4.7.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



4.7.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.



4.7.7 TEST RESULTS

OPERATING FREQUENCY: MHZ							
Temp. (°C)	Power supply (VAC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	3.795	4964.9812	0.000379	4964.9812	0.000379	4964.9821	0.000361
	3.3	4964.9811	0.000381	4964.9811	0.000381	4964.9822	0.000359
	2.805	4964.981	0.000383	4964.981	0.000383	4964.9817	0.000369
40	3.795	4964.9802	0.000399	4964.9812	0.000379	4964.9812	0.000379
	3.3	4964.9801	0.000401	4964.9811	0.000381	4964.9812	0.000379
	2.805	4964.9798	0.000407	4964.9809	0.000385	4964.9810	0.000383
30	3.795	4964.9821	0.000361	4964.9824	0.000354	4964.9831	0.000340
	3.3	4964.9821	0.000361	4964.9822	0.000359	4964.9830	0.000342
	2.805	4964.9822	0.000359	4964.982	0.000363	4964.9825	0.000352
20	3.795	4964.9811	0.000381	4964.9802	0.000399	4964.9823	0.000356
	3.3	4964.981	0.000383	4964.9811	0.000381	4964.9820	0.000363
	2.805	4964.9798	0.000407	4964.9801	0.000401	4964.9815	0.000373
10	3.795	4964.9933	0.000135	4964.9923	0.000155	4964.9935	0.000131
	3.3	4964.9931	0.000139	4964.993	0.000141	4964.9940	0.000121
	2.805	4964.9928	0.000145	4964.9929	0.000143	4964.9931	0.000139
0	3.795	4964.9974	0.000052	4964.9975	0.000050	4964.9973	0.000054
	3.3	4964.9971	0.000058	4964.9980	0.000040	4964.9980	0.000040
	2.805	4964.9972	0.000056	4964.9974	0.000052	4964.9971	0.000058
-10	3.795	4965.0023	0.000046	4965.0022	0.000044	4965.0032	0.000064
	3.3	4965.002	0.000040	4965.0020	0.000040	4965.0030	0.000060
	2.805	4965.0018	0.000036	4965.0021	0.000042	4965.0026	0.000052



5 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025:

USA	FCC, NVLAP, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	CNLA, BSMI, NCC
Netherlands	Telefication
Singapore	PSB, GOST-ASIA (MOU)
Russia	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Email: service@adt.com.tw

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.



APPENDIX-A

MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.