

Test Report

Product Name: 802.11b/g PCI-Express Mini Card

FCC ID: XB5-PX6101

MODEL NO. : AWM61G-X

Applicant:

Shenzhen Allwins Technology Corporation 902#, Block A, R&D Building, Tsinghua Hi-Tech Park, Nanshan District, Shenzhen, Guangdong, China

Date Received: 05/12/009

Date Tested: 05/10-11/2009



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FCC ID: XB5-PX6101

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EMC Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100492	Mar 10,2009	1 Year
LISN	ROHDE&SCHWARZ		100093	Mar 10,2009	1Year
EMI Test Receiver	ROHDE&SCHWARZ		101202	Mar 10,2009	1 Year
Spectrum Analyzer	ANRITSU	MS2651B	6200238316	Mar 10,2009	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10,2009	1 Year
Bilog Antenna	Sunol	JB3	A121206	Mar 10,2009	1 Year
Horn Antenna	EMCO	3115	640201028-0 6	Mar 10,2009	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10,2009	1 Year
Cable	Resenberger	N/A	NO.1	Mar 10,2009	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 10,2009	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 10,2009	1 Year
Single Phase Power Line Filter	Kikusui	LIN40MA-PC R-L	LM002352	Mar 10,2009	1Year
AC Power Source	Kikusui	AC40MA	LM003232	Mar 10,2009	1Year
Test analyzer	Kikusui	KHA1000	LM003720	Mar 10,2009	1Year
ESD Tester	Kikusui	KES4021	LM003537	Mar 10,2009	1 Year
Signal Generator	IFR	2032	203002/100	Mar 10,2009	1 Year
Amplifier	A&R	150W1000	301584	NCR	NCR
Dual Directional Coupler	A&R	DC6080	301508	Mar 10,2009	1 Year
Power Head	A&R	PH2000	301193	Mar 10,2009	1 Year
Power Meter	A&R	PM2002	302799	Mar 10,2009	1 Year
Field Monitor	A&R	FM5004	300329	Mar 10,2009	1 Year
Field Probe	A&R	FP5000	300221	Mar 10,2009	1 Year
EMCPRO System	EM Test	UCS-500-M4	V064810202 6	Mar 10,2009	1 Year
EMCPRO System	EM Test	UCS-500-M4	V064810202 6	Mar 10,2009	1 Year
Spectrum Analyzer	Agilent	E4446A	US44300459	Mar 10,2009	1 Year
Attenuator	Agilent	8491B	MY39262165	Mar 10,2009	1 Year

Remark:

Test Firm Name: Most Technology Service Co., Ltd. Test Firm Address: No. 5, 2nd Langshan Road, North District, Hi-tech Industrial Pa rk,Nanshan, Shenzhen, Guangdong, China FCC Registered Test Site Number: 490827



TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of MOST TECHNOLOGY SERVICE CO., LTD. The EUT was transmitting a test signal during the testing.

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a 50 U H LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25 with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. The ambient temperature of the EUT was 25 with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

Example: Freq (MHz) METER READING + ACF + CABLE = FS 33 20 dBuV + 10.36 dB + 0.9 dB= 31.26 dBuV/m @ 3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings were converted to average readings based on the duration of "ON" time.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.

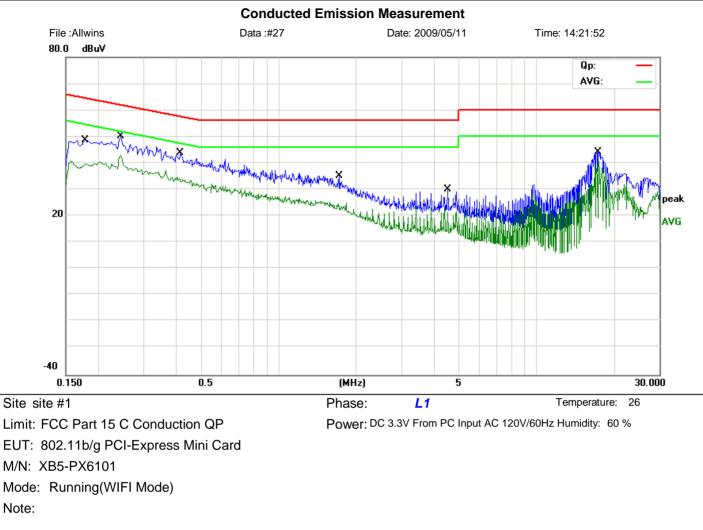


APPLICANT:	Shenzhen Allwins Technology Corporation							
FCC ID:	CC ID: XB5-PX5001							
NAME OF TEST:	TEST: Power Line Conducted Interference and Plots							
RULES PART NUMBER:	15.207							
REQUIREMENTS:								
Frequency of Emission	(MHz)	Conducted Quasi-peak	Limit (dBuV) Average					
0.15-0.5		66 to 56 *	56 to 46 *					
0.5-5		56 46						
5-30 60 50								
* Decreases with the legerithm of the frequency								

* Decreases with the logarithm of the frequency.

TEST PROCEDURE: ANSI STANDARD C63.4-2003

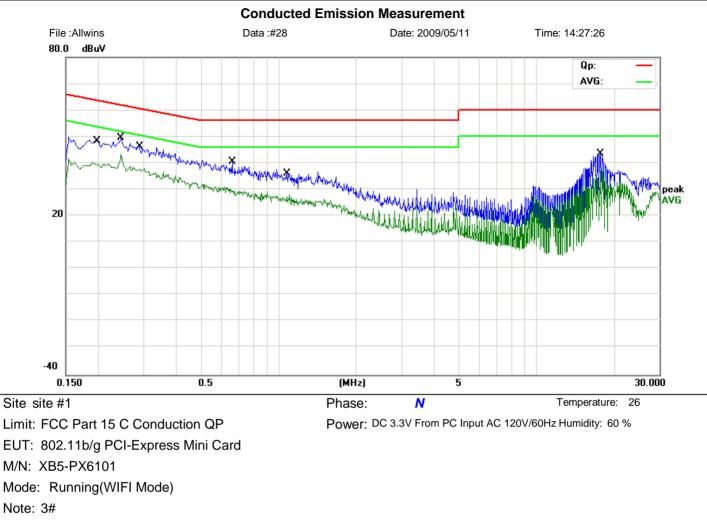




No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1780	38.07	10.68	48.75	64.58	-15.83	QP	
2 *	0.2460	38.39	11.69	50.08	61.89	-11.81	QP	
3	0.4180	33.32	10.55	43.87	57.49	-13.62	QP	
4	1.7260	25.84	9.27	35.11	56.00	-20.89	QP	
5	4.5340	18.40	11.53	29.93	56.00	-26.07	QP	
6	17.3900	35.17	9.00	44.17	60.00	-15.83	QP	

*:Maximum data x:Over limit !:over margin





No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1980	36.56	11.88	48.44	63.69	-15.25	QP	
2 *	0.2460	37.81	11.69	49.50	61.89	-12.39	QP	
3	0.2900	34.82	11.40	46.22	60.52	-14.30	QP	
4	0.6620	30.67	10.00	40.67	56.00	-15.33	QP	
5	1.0780	26.18	9.92	36.10	56.00	-19.90	QP	
6	17.7060	34.56	9.00	43.56	60.00	-16.44	QP	

*:Maximum data x:Over limit !:over margin



APPLICANT: Shenzhen Allwins Technology Corporation

FCC ID: XB5-PX6101

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.247, 15.209

REQUIREMENTS:

30-88 MHz 40 dBuV/m @3m 88-216 MHz 43.5 dBuV/m @3m 216-960 MHz 46 dBuV/m @3m 960-1000 MHz 54 dBuV/m @3m Above 1000MHz 74 dBuV/m(Peak) @3m, 54 dBuV/m(AV) @3m

EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 Db BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

REMARK: Emissions	attenuated more	e than 20	dB below	the permissible	value are not
reported.					

Frequency	Antenna	Emission Leve	el (dBuV/m)		FCC 15 Subpart C						
(MHz)	Polarization	Avg	QP	Peak	Limit(dBuV/m)						
	54Mbps for IEEE 802.11b TX High frequency (2412.00MHz)										
112.21	Vertical			32.12	40.0						
4824.00	Vertical			30.20	74.0						
7236.10	Vertical			31.34	74.0						
9648.20	Vertical			30.21	74.0						
341.09	Horizontal		33.01	34.91	46.0						
4824.00	Horizontal			33.24	74.0						
7236.10	Horizontal			32.08	74.0						
9648.20	Horizontal			30.33	74.0						
	54Mbps for I	EEE 802.11g TX	High frequend	cy (2412.00MHz))						
112.22	Vertical			32.29	40.0						
4824.09	Vertical			31.86	74.0						
7236.10	Vertical			32.16	74.0						
9648.01	Vertical			32.13	74.0						
341.08	Horizontal		33.19	34.56	46.0						
4824.01	Horizontal			32.04	74.0						
7236.10	Horizontal			31.21	74.0						
9648.21	Horizontal			30.03	74.0						



APPLICANT: Shenzhen Allwins Technology Corporation

FCC ID: XB5-PX6101

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.247, 15.209

REQUIREMENTS:

30-88 MHz 40 dBuV/m @3m 88-216 MHz 43.5 dBuV/m @3m 216-960 MHz 46 dBuV/m @3m 960-1000 MHz 54 dBuV/m @3m Above 1000MHz 74 dBuV/m(Peak) @3m, 54 dBuV/m(AV) @3m

EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 Db BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

REMARK: Emissions attenuated more than 20 dB below the permissible value are not reported. Continued:

Frequency	Antenna	Emission Leve	el (dBuV/m)		FCC 15 Subpart C
(MHz)	Polarization	Avg	QP	Peak	Limit(dBuV/m)
		0.0.0.111			
		EEE 802.11b TX	High frequenc	cy (2442.00MHz)	-
112.19	Vertical			31.22	43.5
4884.10	Vertical			30.15	74.0
7326.03	Vertical			32.38	74.0
9768.30	Vertical			32.54	74.0
341.10	Horizontal		32.07	34.63	46.0
4884.10	Horizontal			30.79	74.0
7326.20	Horizontal			31.37	74.0
9768.00	Horizontal			30.22	74.0
	54Mbps for I	EEE 802.11b TX	K High frequend	cy (2442.00MHz)	
112.21	Vertical			31.24	43.5
4884.09	Vertical			30.21	74.0
7326.00	Vertical			32.45	74.0
9768.11	Vertical			32.20	74.0
341.10	Horizontal		32.04	34.18	46.0
4884.10	Horizontal			31.52	74.0
7324.13	Horizontal			32.70	74.0
9768.01	Horizontal			31.31	74.0



APPLICANT: Shenzhen Allwins Technology Corporation

FCC ID: XB5-PX6101

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.247, 15.209

REQUIREMENTS:

30-88 MHz 40 dBuV/m @3m 88-216 MHz 43.5 dBuV/m @3m 216-960 MHz 46 dBuV/m @3m 960-1000 MHz 54 dBuV/m @3m Above 1000MHz 74 dBuV/m(Peak) @3m, 54 dBuV/m(AV) @3m

EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 Db BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

REMARK:	Emissions	attenuated	more	than	20	dB	below	the	permissible	value	are	not
reporte	d. Continue	ed:										

Frequency	Antenna	Emission Leve	el (dBuV/m)		FCC 15 Subpart C						
(MHz)	Polarization	Avg	QP	Peak	Limit(dBuV/m)						
-	54Mbps for IEEE 802.11b TX High frequency (2462.00MHz)										
112.21	Vertical			30.64	43.5						
4924.09	Vertical			30.28	74.0						
7386.11	Vertical			31.32	74.0						
9848.10	Vertical			32.35	74.0						
341.10	Horizontal			32.19	46.0						
4924.08	Horizontal		32.11	33.41	74.0						
7386.21	Horizontal			31.20	74.0						
9848.01	Horizontal			30.27	74.0						
	54Mbps for I	EEE 802.11b TX	High frequenc	y (2462.00MHz)							
112.21	Vertical			31.05	43.5						
4924.09	Vertical			30.32	74.0						
7386.11	Vertical			32.29	74.0						
9848.10	Vertical			31.30	74.0						
341.11	Horizontal			30.28	46.0						
4924.05	Horizontal		32.06	34.15	74.0						
7386.10	Horizontal			31.34	74.0						
9848.09	Horizontal			32.23	74.0						

Emissions attenuated more than 20 dB below the permissible value are not reported.

TEST PROCEDURE: ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector and an appropriate antenna. The resolution bandwidth of spectrum analyzer was 100 kHz below 1 GHz and 1 MHz above 1 GHz. An appropriate sweep speed was used. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.



APPLICANT: Shenzhen Allwins Technology Corporation

FCC ID: XB5-PX6101

NAME OF TEST: 6dB Bandwidth Test

RULES PART NUMBER: 15.247

REQUIREMENTS:The transmitter output was connected to a spectrum analyzer via a Attenuator.The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 100 KHz VBW.The 6dB Bandwidith is defined as the total spectrum the power of which is lower than peak power minus 6dB, The 6dB bandwidth shall be at least 500 KHz.

TEST RESULTS:

-	reperiode suppri	01 000;110 111		
	Test Frequency (MHz)	6DB Bandwidth(MHz)	Limit	Conclusion
	CH1:2412MHz	14.82	>500	PASS
	CH7:2442MHz	14.90	>500	PASS
	CH11:2462MHz	14.78	>500	PASS

Test Mode: 54Mbps for IEEE 802.11b TX

Test Mode: 54Mbps for IEEE 802.11g TX

Test Frequency (MHz)	6DB Bandwidth(MHz)	Limit	Conclusion
CH1:2412MHz	15.68	>500	PASS
CH7:2442MHz	15.68	>500	PASS
CH11:2462MHz	15.68	>500	PASS



APPLICANT: Shenzhen Allwins Technology Corporation

FCC ID: XB5-PX6101

NAME OF TEST: Output Power Test

RULES PART NUMBER: 15.247

REQUIREMENTS: The transmitter output was connected to a power meter via a Attenuator, use the power meter to read out the peak output power, the peak output power shall be not exceed 30dBmw .

TEST RESULTS:

Test Frequency	Read(PK)	Cable loss	Atten loss	Result	Limit	Conclusion
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	
CH1:2412MHz	-0.90	0.6	20	19.70	30	PASS
CH7:2442MHz	-1.10	0.6	20	19.50	30	PASS
CH11:2462MHz	-0.60	0.6	20	20.00	30	PASS

Test mode: 54Mbps for IEEE 802.11b TX

Test mode: 54Mbps for IEEE 802.11g TX

Test Frequency (MHz)	Read(PK) (dBm)	Cable loss (dB)	Atten loss (dB)	Result (dBm)	Limit (dBm)	Conclusion
CH1:2412MHz	-1.23	0.6	20	19.37	30	PASS
CH7:2442MHz	-1.30	0.6	20	19.30	30	PASS
CH11:2462MHz	-1.41	0.6	20	19.19	30	PASS

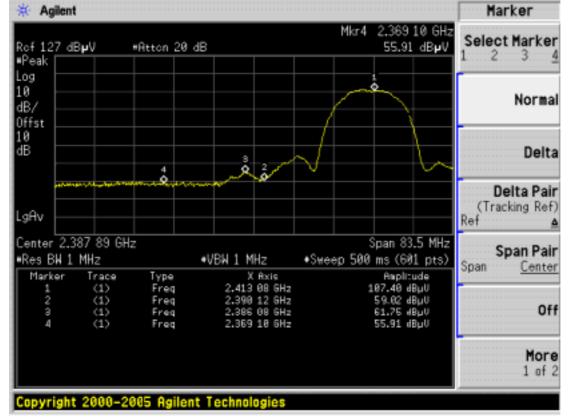


APPLICANT:	Shenzhen Allwins Technology Corporation
FCC ID:	XB5-PX6101
NAME OF TEST:	Band Edge Compliance Test
RULES PART NUMBER:	15.247

REQUIREMENTS:

54Mbps for IEEE 802.11b TX						
Band Edge Frequency	AV	QP	Peak	Limit		
2390 MHz	46.32dBuV	-	59.02 dBuV	54.0 dBuV		
2483.5 MHz	43.62dBuV	-	57.87 dBuV	54.0 dBuV		
54Mbps for IEEE 802.11g TX						
2390 MHz	51.34dBuV		73.15 dBuV	54.0 dBuV		
2483.5 MHz	49.09dBuV		67.60 dBuV	54.0 dBuV		

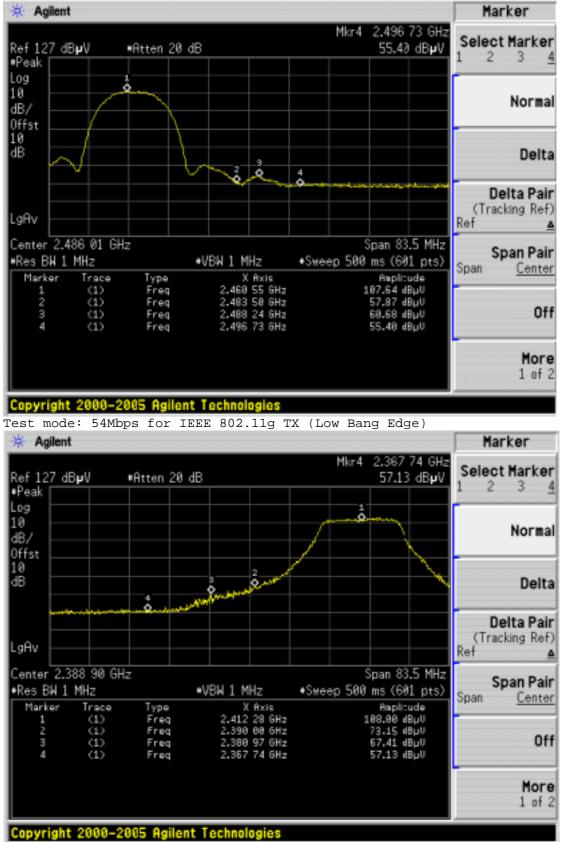
Emissions attenuated more than 20 dB below the permissible value are not reported.



Test mode: 54Mbps for IEEE 802.11b TX (Low Bang Edge)

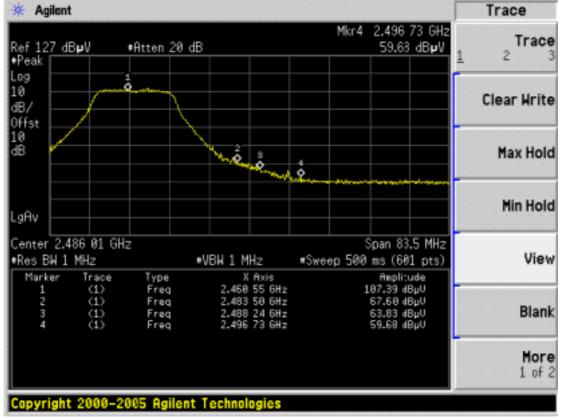


Test mode: 54Mbps for IEEE 802.11b TX (High Bang Edge)





Test mode: 54Mbps for IEEE 802.11g TX (High Bang Edge)





APPLICANT: Shenzhen Allwins Technology Corporation

FCC ID: XB5-PX6101

NAME OF TEST: Power Spectral Density Test

RULES PART NUMBER: 15.247

REQUIREMENTS: The transmitter output was connected to a spectrum analyzer via a Attenuator. The power density was measured by spectrum analyzer with 3 KHz RBW and 30 KHz VBW, sweep time=span/3KHz,the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3KHz band during any time interval of continuous transmission.

TEST RESULTS:

Test mode: 54Mbps for IEEE 802.11b TX

Test	Read(PK)	Cable loss	Atten loss	Result	Limit	Conclusion
Frequency	(dBm/3KHz)	(dB)	(dB)	(dBm/3KHz)	(dBm/3KHz)	
(MHz)						
CH1:2412MHz	-24.01	0.6	20	-3.41	8	PASS
CH7:2442MHz	-22.05	0.6	20	-1.45	8	PASS
CH11:2462MHz	-21.71	0.6	20	-1.11	8	PASS
CHITTE	21. · / 1	0.0	20	* • * *	U	TUDD

Test mode: 54Mbps for IEEE 802.11g TX

Test	Read(PK)	Cable loss	Atten loss	Result	Limit	Conclusion	
Frequency	(dBm/3KHz)	(dB)	(dB)	(dBm/3KHz)	(dBm/3KHz)		
(MHz)		. ,					
(1112)							
CH1:2412MHz	-26.93	0.6	20	-6.33	8	PASS	
CH7:2442MHz	-27.23	0.6	20	-6.63	0	PASS	
CH/·Z44ZMHZ	-27.23	0.0	20	-0.03	0	PASS	
CH11:2462MHz	-27.10	0.6	20	-6.50	8	PASS	
			-		-		