

Reference No: KS100701A01-RP Report No: KS100701A01-RP

# FCC 47 CFR PART 15 SUBPART C

# **TEST REPORT**

For

WIRELESS-A 26dBm NETWORK MINI PCI ADAPTER WITH ESD MODEL: WLM54A26ESD Trade Name: Compex FCC ID: TK4-WLM54A26ESD Test Report Number: KS100701A01-RP

Issued for

Compex Systems Pte Ltd. 135 Joo Seng Road, #08-01 PM Industrial Building Singapore 368363

Issued by

Compliance Certification Services Inc. Kun shan Laboratory

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, P.R.O.C TEL: 86-512-57355888

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Issued Date: August 15, 2010



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FCC ID: TK4-WLM54A26ESD



Reference No: KS100701A01-RP Report No: KS100701A01-RP

# **Revision History**

Rev.	IssueDate	IssueDate Revisions		Revised By	
00	August 15, 2010 Initial Issue		ALL	Miro Chueh	

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## **1 TEST CERTIFICATION**

Product: WIRELESS-A 26dBm NETWORK MINI PCI ADAPTER WITH ESD Model: WLM54A26ESD Brand: Compex

Tested: From August 1, 2010 to August 10, 2010

#### Applicant: Compex Systems Pte Ltd.

135 Joo Seng Road, #08-01 PM Industrial Building Singapore 368363 Manufacturer: Compex Systems Pte Ltd. 135 Joo Seng Bood #08 01 PM Industrial Building Singapore 268263

135 Joo Seng Road, #08-01 PM Industrial Building Singapore 368363

	APPLICABLE STANDARDS									
Standard	Test Type	Standard	Test Type							
15.207(a)	Power Line Conducted Emissions	15.247(d) 15.209(a)	<ul> <li>Spurious Emissions</li> <li>Conducted Measurement</li> <li>Radiated Emissions</li> </ul>							
15.247(a)(2)	6dB Bandwidth Measurement	15.247(b)(3) 15.247(b)(4)	Peak Power Measurement							
15.247(d)	Band Edges Measurement	15.247(e)	Peak Power Spectral Density							

#### **DEVIATION FROM APPLICABLE STANDARD**

None

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.4: 2003** and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

Approved by:

Miro Chueh EMC Manager Compliance Certification Service Inc.

Reviewed by:

Spring Zhou EMC Section Manager Compliance Certification Service Inc.



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# 2 TEST RESULT SUMMARY

#### **APPLICABLE STANDARDS**

Standard	Test Type	Result	Remark
15.203	Antonno Doguiromont	Complies	Meet the requirement of
15.205	Antenna Requirement		limit.
15.205	Operation in Restricted Rend	Complian	Meet the requirement of
15.205	Operation in Restricted Band	Complies	limit.
15 247(0)(2)	6dB Bandwidth Measurement	Pass	Meet the requirement of
15.247(a)(2)		газэ	limit.
15.247(b)(3)	Peak Power Measurement	Dooo	Meet the requirement of
15.247(b)(4)	reak rower measurement	Pass	limit.
15.247(d)	Band Edges Measurement	N/A	Meet the requirement of limit.
15.247(e)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.247(d)	Spurious Emissions <ul> <li>Conducted Measurement</li> </ul>	Pass	Meet the requirement of
15.247(d) 15.209(a)	<ul> <li>Radiated Emissions</li> </ul>	газэ	limit.
15.207(a)	Power line Conducted Emissions	Pass	Meet the requirement of limit.

Note: 1. The test result judgment is decided by the limit of test standard

2. The information of measurement uncertainty is available upon the customer's request.



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## 2.1. EUT DESCRIPTION

Product Name	WIRELESS-A 26dBm NETWORK MINI PCI ADAPTER WITH ESD				
Trade Name	Compex				
	•				
Model No.	WLM54A26ESD				
Model Discrepancy	N/A				
Working Voltage	3.3VDC				
Frequency Range	IEEE802.11a: 5725-5850MHz				
	IEEE802.11a mode:				
	Peak Power:26.19 dBm				
Trenewit Dewer	Avarage Power:24.77 dBm				
Transmit Power	IEEE802.11a super mode:				
	Peak Power:26.11 dBm				
	Avarage Power:24.26 dBm				
	IEEE 802.11a mode (5725-5850 MHz) = 5				
Channel Number	IEEE 802.11a super mode (5725-5850 MHz) = 5				
Type of Modulation	OFMD: BPSK, QPSK, 16 QAM, 64QAM				
	IEEE 802.11a: 6/9/12/18/24/36/48/54/ Mbps				
Data Rate	IEEE 802.11a: 6/12/18/24/36/48/54/72/96/108 Mbps				
Antenna Gain	2.00 dBi gain (Max) for test				
	Dipole Antenna:				
	Model:C0053-ANG0003				
Number of External	Connector:RP SMA Plug,				
Test Ports Exercised	1 Antenna Port				

**Note:** 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

2. This submittal(s) (test report) is intended for FCC ID: **TK4-WLM54A26ESD** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



# **3 TEST METHODOLOGY**

## **3.1. DESCRIPTION OF TEST MODES**

The EUT had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only.

IEEE802.11a: Channel 149 (5745MHz), Channel 157(5785MHz) and Channel 165 (5825MHz) with preliminary test 6/9/12/18/24/36/48/54, After the preliminary scan, the following test mode 6Mbps highest data rate (the worst case) are chosen for the final testing.

IEEE802.11a super mode: Channel 149 (5745MHz), Channel 157(5785MHz) and Channel 165 (5825MHz) with preliminary test 6/12/18/24/36/48/54/72/96/108, After the preliminary scan, the following test mode 108Mbps highest data rate (the worst case) are chosen for the final testing.



# 4 SETUP OF EQUIPMENT UNDER TEST

## 4.1. 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.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	HDD-3	IC25N0 10ATDA04 -0	173T4556	DoC	IBM	Shielded, 1.5m	N/A

#### Note:

- 1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

## 4.2. CONFIGURATION OF SYSTEM UNDER TEST

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.



# **FACILITIES AND ACCREDITATIONS**

## 5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at

No.10Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City,

### Jiangsu, P.R.O.C

The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

# **5.2. ACCREDITATIONS**

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

Taiwan	TAF
USA	A2LA
China	CNAS

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

try Canada
-

Copies of granted accreditation certificates are available for downloading from our web site, http://www.ccsrf.com

# 5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in ETR 028:

Measurement		Frequency			Uncertainty	
Conducted emissions		9kHz~30MHz			+/- 3.43dB	
Measurement	ent Polarity		Frequency		Uncertainty	
			30MHz ~ 200MH	Z	+/- 4.72dB	
	Н	Н	200MHz ~1000MH	Ηz	+/- 4.72dB	
Radiated		1000MHz ~40000M	1Hz	+/- 3.94 dB		
emissions		V	30MHz ~ 200MH	Z	+/- 4.83dB	
			200MHz ~1000MH	Ηz	+/- 4.70dB	
			1000MHz ~40000M	1Hz	+/- 3.98dB	

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



# 6 LIMITS AND RESULTS

## 6.1. POWER LINE CONDUCTED EMISSIONS MEASUREMENT

#### 6.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range	Lin (dB	
(MHz)	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

#### NOTE:

(1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 6.1.2. TEST INSTRUMENTS

Conducted Emission									
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due					
EMC Analyzer	R&S	ESPI3	101026	04/28/2011					
V (V-LISN)	Schwarzbeck	NNLK 8129	8129-143	04/28/2011					
LISN (EUT)	FCC	FCC-LISN-50/250- 50-2-02	SN:05012	04/28/2011					
TRANSIENT LIMITER	SCHAFFNER	CFL9206	1710	05/07/2011					
Universal Radio Communication Tester	R&S	CMU200	111092	3/25/2011					

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

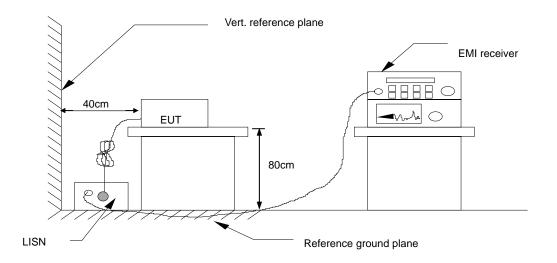


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#### 6.1.3. TEST PROCEDURES (please refer to measurement standard)

- The EUT and Support equipment, if needed, was placed on a non-conducted table, which is 0.8m above the ground plane and 0.4m away from the conducted wall.
- The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane. All support equipment power received from a second LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The frequency range from 150 kHz to 30 MHz was searched. The test data of the worst-case condition(s) was recorded. Emission levels under limit 20dB were not recorded.

#### 6.1.4. TEST SETUP



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



#### Data Sample:

Freq. (KHz)	Peak Amptd (dBuV)	QP Amptd (dBuV)	Avg Amptd (dBuV)	Q.P. Limit (dBuV)	Average Limit (dBuV)	QP Margin (dB)	AVG Margin (dB)	Factor (dB)
x.xx	50.65	47.84	35.08	56.00	46.00	-8.16	-10.92	10.15

Remark:

1. The measuring frequencies range between 0.15 MHz and 30 MHz.

2. The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.

3. "---" denotes the emission level was or more than 2dB below the Average limit, and no re-check was made.

4. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10KHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.

Freq. = Emission frequency in KHz

Factor (dB) = cable loss + Insertion loss of LISN+ Insertion loss of TRANSIENT LIMITER (The TRANSIENT LIMITER included 10 dB ATTENUATION)

Amptd dBuV = Uncorrected Analyzer/Receiver reading + cable loss + Insertion loss of LISN+ Insertion loss of TRANSIENT LIMITER, if it > 0.5 dB

Limit dBuV = Limit stated in standard

Margin dB = Reading in reference to limit

Q.P.: =Quasi-Peak

Calculation Formula

Margin (dB) = Amptd (dBuV) - Limit (dBuV)



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#### 6.1.5. TEST RESULTS

Model No.	IWAVEPORT WLM54A26ESD	Test Mode	Normal Link
Environmental Conditions	25deg.C,49% RH, 991 hPa	6dB BANDWIDTH	9 kHz
Tested by:	JESON		

Freq. (MHz)	Q.P. Raw reading (dBuV)	AVG Raw reading (dBuV)	Correction factor(dB)	_	AVG Amptd. (dBuV)		AVG Limit (dBuV)	Q.P. Margin (dB)	AVG Margin (dB)	Line/Neutral
0.183	43.98	26.93	10.84	54.82	37.77	65.07	55.07	-10.25	-17.30	Line
0.242	38.27	20.52	10.33	48.60	30.85	63.37	53.37	-14.77	-22.52	Line
0.883	30.73	17.95	10.09	40.82	28.04	56.00	46.00	-15.18	-17.96	Line
1.289	30.88	17.95	10.17	41.05	28.12	56.00	46.00	-14.95	-17.88	Line
5.884	38.84	30.44	10.53	49.37	40.97	60.00	50.00	-10.63	-9.03	Line
7.956	42.25	35.00	10.43	52.68	45.43	60.00	50.00	-7.32	-4.57	Line
0.186	44.50	30.26	10.73	55.23	40.99	64.98	54.98	-9.75	-13.99	Neutral
0.251	39.51	26.40	10.26	49.77	36.66	63.11	53.11	-13.34	-16.45	Neutral
0.434	35.73	23.01	10.22	45.95	33.23	57.88	47.88	-11.93	-14.65	Neutral
0.881	31.55	18.79	10.11	41.66	28.90	56.00	46.00	-14.34	-17.10	Neutral
5.858	38.81	30.40	10.35	49.16	40.75	60.00	50.00	-10.84	-9.25	Neutral
7.895	42.17	35.16	10.37	52.54	45.53	60.00	50.00	-7.46	-4.47	Neutral

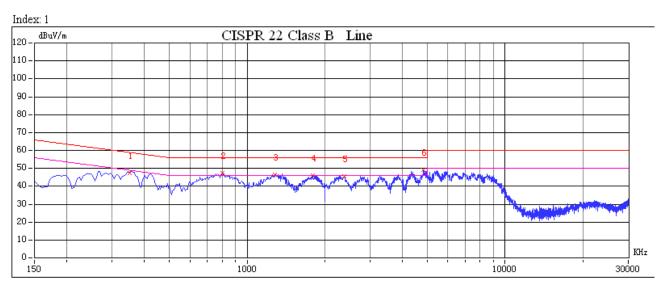
**REMARKS:** L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)



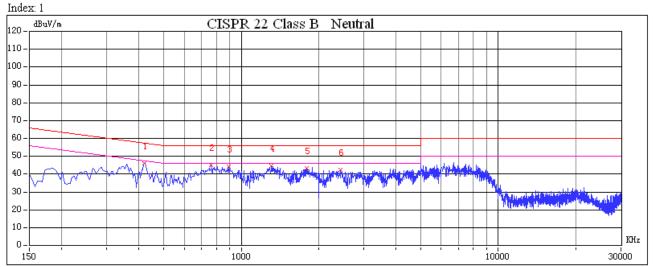
#### Reference No: KS100701A01-RP Report No: KS100701A01-RP

**Test Plots** 

#### Conducted emissions (Line 1)



#### Conducted emissions (Line 2)





## 6.2. SPURIOUS EMISSIONS MEASUREMENT

#### 6.2.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

#### 6.2.2. TEST INSTRUMENTS

Conducted Emissions Test Site						
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Spectrum Analyzer	Agilent	E4446A	MY44020154	08/15/2010		

#### 6.2.3. TEST PROCEDURE (please refer to measurement standard)

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site. The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

Measurements are made over the 30MHz to 40GHz range with the transmitter set to the lowest, middle, and highest channels.

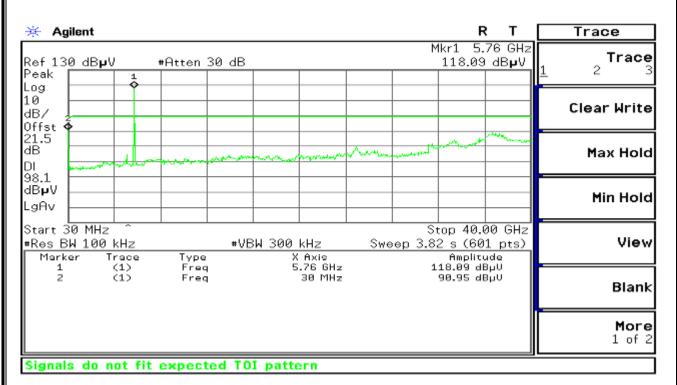
#### Reference No: KS100701A01-RP Report No: KS100701A01-RP

#### 6.2.4. TEST RESULTS

#### IEEE 802.11a mode:

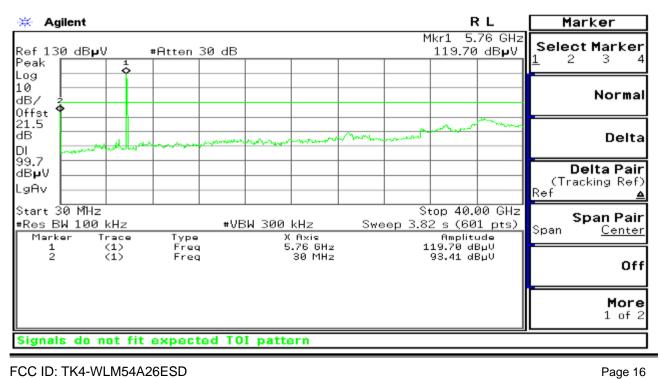
#### Channel 149

#### 30MHz ~ 40GHz



#### Channel 157

#### 30MHz ~ 40GHz

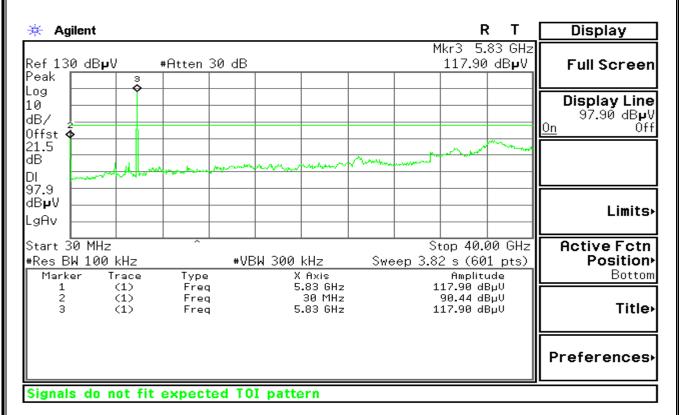




Reference No: KS100701A01-RP Report No: KS100701A01-RP

<u>Channel 165</u>

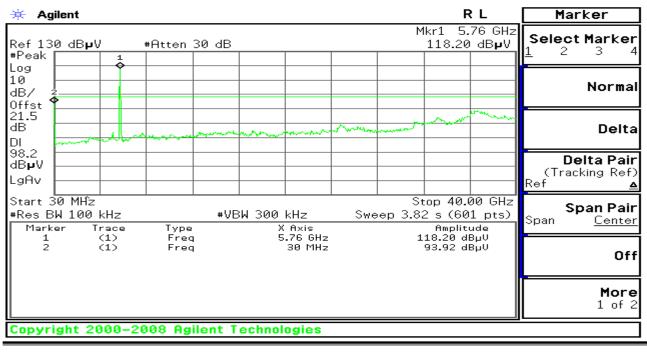
#### 30MHz ~ 40GHz



#### Test mode: IEEE 802.11a Super mode\_

#### Channel 149

#### 30MHz ~ 40GHz



#### FCC ID: TK4-WLM54A26ESD

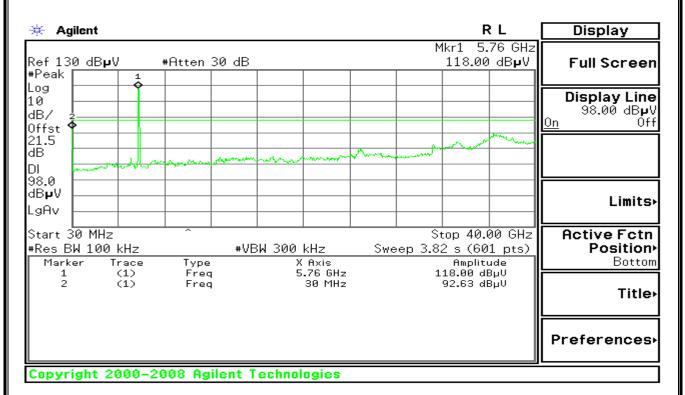
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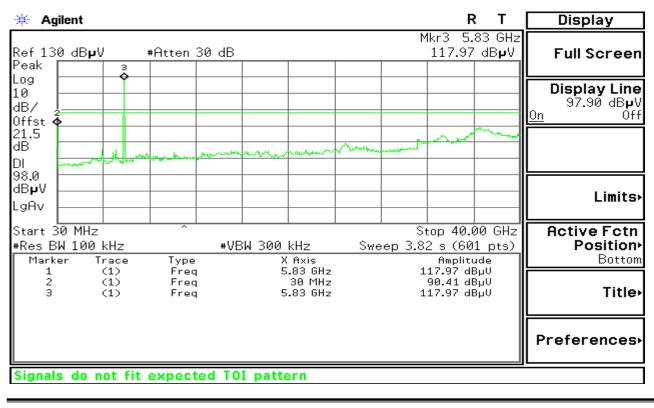
<u> Channel 157</u>

#### 30MHz ~ 40GHz



#### Channel 165

#### 30MHz ~ 40GHz



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#### 6.2.5. Radiated Emissions

#### 6.2.5.1. LIMITS OF RADIATED EMISSIONS MEASUREMENT

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

**Remark:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

2. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

**NOTE**: (1) The lower limit shall apply at the transition frequencies.

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



#### **TEST INSTRUMENTS**

3M Semi Anechoic Chamber (977) For 1 GHz -18GHz							
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due			
Spectrum Analyzer	Agilent	E4446A	MY44020154	04/24/2011			
Spectrum Analyzer	Agilent	E4446A	US44300398	04/24/2011			
EMI Test Receiver	R&S	ESPI3	101026	04/28/2011			
Pre-Amplfier	MINI	ZFL-1000VH2	d041703	02/28/2011			
Pre-Amplfier	Miteq	NSP4000-NF	870731	11/04/2010			
Bilog Antenna	Sunol	JB1	A110204-2	11/21/2010			
Horn-antenna	SCHWAR ZBECK	BBHA9120D	D:266	12/04/2010			
Turn Table	СТ	CT123	4165	N.C.R			
Antenna Tower	СТ	CTERG23	3256	N.C.R			
Controller	СТ	CT100	95637	N.C.R			
Site NSA	CCS	N/A	N/A	04/28/2011			
Universal Radio Communication Tester	R&S	CMU200	111092	3/25/2011			

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The FCC Site Registration number is 93105,90471.

4. N.C.R = No Calibration Required.



6.2.5.2. TEST PROCEDURE (please refer to measurement standard)

- 1. The EUT is placed on a turntable, which is 0.8m above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

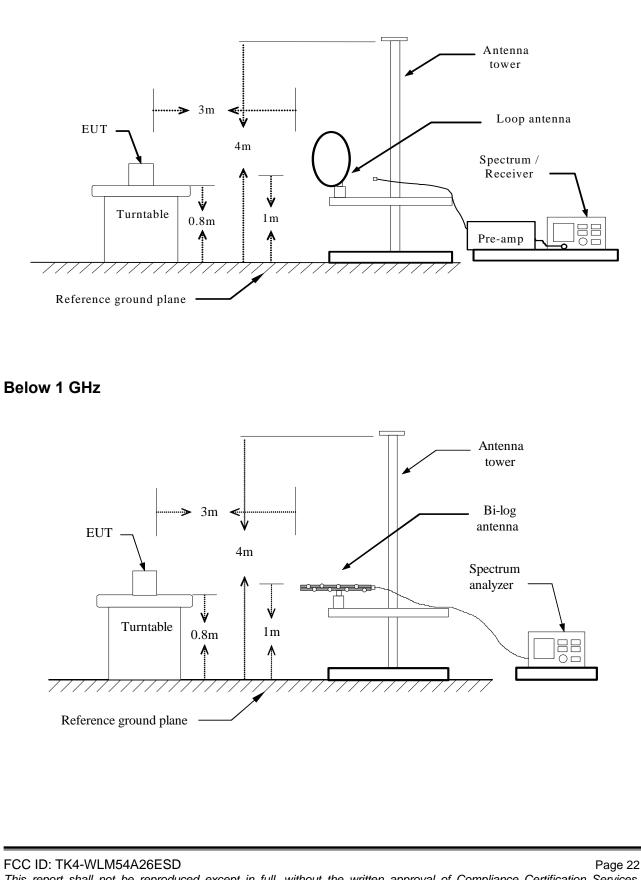
- (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
- (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
- 7. Repeat above procedures until the measurements for all frequencies are complete.



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#### 6.2.5.3. TEST SETUP

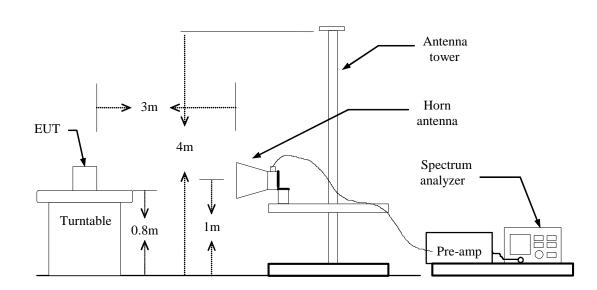
#### **Below 30MHz**





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Above 1 GHz





#### 6.2.5.4. Data Sample:

#### Below 1 GHz

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Remark) (dBuV)	Correction Factor (dB/m)	Result (Remark) (dBuV/m)	Limit (Peak) (dBuV/m)	Margin (dB)	Remark
ххх	V	12.12	10.21	22.33	37.00	-14.67	Peak

#### Above 1 GHz

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	· · ·	Limit (Average) (dBuV/m)	(08)	Remark
xxx	V	65.45	63.00	-11.12	54.33	51.88	74.00	54.00	-2.12	AVG



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#### 6.2.5.5. TEST RESULTS

#### Below 1 GHz

<b>Operation Mode:</b>	Normal Link	Test Date:	August 10,2010
Temperature:	25°C	Tested by:	Jeson
Humidity:	51 % RH	Polarity:	Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
36.49	V	Peak	38.86	-3.01	35.85	40.0	-4.15
200.44	V	Peak	33.77	-5.28	28.49	43.5	-15.01
347.69	V	Peak	34.82	-2.19	32.63	46.0	-13.37
590.38	V	Peak	30.63	3.24	33.87	46.0	-12.13
747.49	V	Peak	33.57	6.09	39.66	46.0	-6.34
854.11	V	Peak	33.44	7.29	40.73	46.0	-5.27
31.08	Н	Peak	30.75	0.97	31.72	40.0	-8.28
213.42	Н	Peak	42.43	-6.83	35.6	43.5	-7.90
322.44	Н	Peak	40.57	-3.09	37.48	46.0	-8.52
744.68	Н	Peak	33.59	6.08	39.67	46.0	-6.33
834.46	Н	Peak	32.82	7.21	40.03	46.0	-5.97
854.11	Н	Peak	36.26	7.29	43.55	46.0	-2.45



#### Test mode: IEEE 802.11a Super mode

<u>Below 1 GHz</u>			
<b>Operation Mode:</b>	Normal Link	Test Date:	August 10,2010
Temperature:	25°C	Tested by:	Jeson
Humidity:	51 % RH	Polarity:	Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
36.44	V	Peak	37.22	-3.01	34.21	40.0	-5.79
201.23	V	Peak	34.13	-5.28	28.85	43.5	-14.65
351.22	V	Peak	33.25	-2.19	31.06	46.0	-14.94
590.22	V	Peak	31.14	3.24	34.38	46.0	-11.62
749.33	V	Peak	34.26	6.09	40.35	46.0	-5.65
854.11	V	Peak	33.55	7.29	40.84	46.0	-5.16
30.22	Н	Peak	31.26	0.97	32.23	40.0	-7.77
222.15	Н	Peak	43.26	-6.83	36.43	43.5	-7.07
350.26	Н	Peak	41.12	-3.09	38.03	46.0	-7.97
748.55	Н	Peak	34.25	6.08	40.33	46.0	-5.67
835.66	Н	Peak	33.29	7.21	40.5	46.0	-5.5
854.12	Н	Peak	35.12	7.29	42.41	46.0	-3.59

#### Remark:

- 1.Measuring frequencies from 9 KHz to the 1GHz, No emission found between lowest internal used/generated frequency to 30 MHz.
- 2. Radiated emissions measured in frequency range from 9 KHz to 1000MHz were made with an instrument using Peak detector mode.
- 3. Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.



Above 1 GHz

<b>Operation Mode:</b>	TX / IEEE 802.11a / CH Low	Test Date:	August 10,2010
Temperature:	25°C	Tested by:	Jeson
Humidity:	51% RH	Polarity:	Ver. / Hor.

Frequency	Ant.Pol.	Reading	Reading	Correction Factor	Result	Result	Limit	Limit	Margin	
(MHz)	(H/V)	(Peak)	(Average)	(dB/m)	(Peak)	(Average)	(Peak)	(Average)	(dB)	Remark
		(dBuV)	(dBuV)		(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
1333.01	V	60.2	32.03	0.53	60.73	32.56	74.00	54.00	-21.44	average
3858.33	V	50.18	40.18	-4.69	45.49	35.49	74.00	54.00	-18.51	average
11490.33	V	21.97	11.8	9.25	31.22	21.05	74.00	54.00	-32.95	average
1330.00	Н	57.23	35.08	0.53	57.76	35.61	74.00	54.00	-18.39	average
3858.33	Н	46.23	38.32	-4.69	41.54	33.63	74.00	54.00	-20.37	average
11490.33	Н	21.29	11.19	9.25	30.54	20.44	74.00	54.00	-33.56	average

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



Reference No: KS100701A01-RP Report No: KS100701A01-RP

Operatio	on Mode	: TX/	IEEE 80	2.11a / C	H Mid	Те	st Date:	Augu	ist 10,20	)10
Tempera		25°C	;			Те	sted by	: Jeso	n	
Humidit	Humidity:		RH			Po	Polarity:		/er. / Hor.	
Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1860.00	V	53.89	29.63	1.84	55.73	31.47	74.00	54.00	-22.53	average
3858.11	V	45.66	35.65	-4.07	41.59	31.58	74.00	54.00	-22.42	average
11570.66	V	23.81	13.23	9.21	33.02	22.44	74.00	54.00	-31.56	average
1596.67	Н	47.28	34.44	0.76	48.04	35.2	74.00	54.00	-18.80	average
3858.44	Н	45.62	35.64	-4.07	41.55	31.57	74.00	54.00	-22.43	average
11570.66	Н	22.05	11.33	9.21	31.26	20.54	74.00	54.00	-33.46	average
										<u> </u>

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



Operatio	Operation Mode:		IEEE 80	2.11a / C	H High	Те	st Date:	Augu	st 10,2010			
Tempera	ture:	25°C	;			Tested by: Jeson			n			
Humidity	<b>y</b> :	51 %	RH			Po	olarity:	Ver. /	Hor.			
Frequency	Ant.Pol.	Reading	Reading	Correction Factor	Result	Result	Limit	Limit	Margin			
(MHz)	(H/V)	(Peak) (dBuV)	(Average) (dBuV)	(dB/m)	(Peak) (dBuV/m)	(Average) (dBuV/m)	(Peak) (dBuV/m)	(Average) (dBuV/m)	(dB)	Remark		
1330.00	V	59.29	33.63	0.53	59.82	34.16	74.00	54.00	-19.84	average		
3858.66	V	46.13	36.26	-4.07	42.06	32.19	74.00	54.00	-21.81	average		
11650.00	V	26.1	16.28	9.19	35.29	25.47	74.00	54.00	-28.53	average		
4000.07		50.07	25.50	0.50	50.00	26.44	74.00	54.00	47.00			
1326.67	H	56.37	35.59	0.52	56.89	36.11	74.00	54.00	-17.89	average		
3858.44 11650.00	H	46.32 25.03	36.25 13.37	-4.07 9.19	42.25 34.22	32.18 22.56	74.00 74.00	54.00 54.00	-21.82 -31.44	average average		

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 6. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



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#### Test mode: IEEE 802.11a Super mode

Above 1 GHz

<b>Operation Mode:</b>	TX / IEEE 802.11a Super mode / CH Low	v Test Date:	August 10,2010
Temperature:	25°C	Tested by:	Jeson
Humidity:	51% RH	Polarity:	Ver. / Hor.

Frequency	Ant.Pol.	Reading	Reading	Correction Factor	Result	Result	Limit	Limit	Margin	
(MHz)	(H/V)	(Peak)	(Average)	(dB/m)	(Peak)	(Average)	(Peak)	(Average)	(dB)	Remark
		(dBuV)	(dBuV)		(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)		
1333.01	V	58.83	32.72	0.53	59.36	33.25	74.00	54.00	-20.75	average
3858.33	V	48.82	40.92	-4.69	44.13	36.23	74.00	54.00	-17.77	average
11490.33	V	21	10.89	9.25	30.25	20.14	74.00	54.00	-33.86	average
			-							
1330.00	Н	55.73	34.03	0.53	56.26	34.56	74.00	54.00	-19.44	average
3858.33	Н	44.8	37.95	-4.69	40.11	33.26	74.00	54.00	-20.74	average
11490.33	Н	22.01	11.92	9.25	31.26	21.17	74.00	54.00	-32.83	average

- 7. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 8. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 9. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 10. Data of measurement within this frequency range shown "----" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 11. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 12. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).

Compliance Certification Services Inc.       Reference No: KS100701A01-RP Report No: KS100701A01-RP         Operation Mode:       TX / IEEE 802.11a Super mode / CH Low       Test Date:       August 10,2010         Temperature:       25°C       Tested by:       Jeson         Humidity:       51% RH       Polarity:       Ver. / Hor.										
Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1861.23	V	52.42	30.31	1.84	54.26	32.15	74.00	54.00	-21.85	average
3859.55	V	44.23	34.33	-4.07	40.16	30.26	74.00	54.00	-23.74	average
11572.23	V	22.85	13.94	9.21	32.06	23.15	74.00	54.00	-30.85	average
1599.36	Н	48.47	35.5	0.76	49.23	36.26	74.00	54.00	-17.74	average
3858.23	Н	44.23	34.23	-4.07	40.16	30.16	74.00	54.00	-23.84	average
11571.23	H	21.08	11.96	9.21	30.29	21.17	74.00	54.00	-32.83	average

- 7. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 8. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 9. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 10. Data of measurement within this frequency range shown "----" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 11. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 12. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



Operation Mode:		: TX/	IEEE 80	2.11a / C	H High	Test Date: August 10,2010				
Tempera	ature:	25°C	;			Те	sted by	: Jesoi	า	
Humidity	<b>y</b> :	51 %	RH			Po	olarity:	Ver. /	Hor.	
Frequency	Ant.Pol.	Reading	Reading	Correction Factor	Result	Result	Limit	Limit	Margin	Remark
(MHz)	(H/V)	(Peak) (dBuV)	(Average) (dBuV)	(dB/m)	(Peak) (dBuV/m)	(Average) (dBuV/m)	(Peak) (dBuV/m)	(Average) (dBuV/m)	(dB)	
1333.23	V	57.73	34.73	0.53	58.26	35.26	74.00	54.00	-18.74	average
3858.56	V	45.23	37.35	-4.07	41.16	33.28	74.00	54.00	-20.72	average
11651.26	V	27.04	16.95	9.19	36.23	26.14	74.00	54.00	-27.86	average
1325.14	Н	54.65	34.97	0.52	55.17	35.49	74.00	54.00	-18.51	average
3858.29	Н	45.16	37.61	-4.07	41.09	33.54	74.00	54.00	-20.46	average
11650.47	H	26.07	13.9	9.19	35.26	23.09	74.00	54.00	-30.91	average

- 7. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 8. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 9. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 10. Data of measurement within this frequency range shown "----" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 11. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 12. Margin (dB) = Remark result (dBuV/m) Average limit (dBuV/m).



## 6.3. 6dB BANDWIDTH MEASUREMENT

#### 6.3.1. LIMITS

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

#### 6.3.2. TEST INSTRUMENTS

Conducted Emissions Test Site									
Name of Equipment Manufacturer Model Serial Number Calibration Due									
Spectrum Analyzer Agilent E4446A MY44020154 08/15/2010									

6.3.3. TEST PROCEDURES (please refer to measurement standard)

- 1. Place the EUT on the table and set it in the transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW = 100kHz, VBW = 300kHz, Span = 20MHz, Sweep = auto.
- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat until all the rest channels are investigated.

#### 6.3.4. TEST SETUP





#### 6.3.5. TEST RESULTS

No non-compliance noted

#### <u>Test Data</u>

#### Test mode: IEEE 802.11a

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
149	5745	16372		PASS
157	5785	16344	>500	PASS
165	5825	16337		PASS

#### Test mode: IEEE 802.11a Super mode

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
149	5745	30299		PASS
157	5785	30306	>500	PASS
165	5825	31417		PASS

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# Compliance Certification Services Inc.

#### Reference No: KS100701A01-RP Report No: KS100701A01-RP

#### Test Plot (IEEE 802.11a mode)

#### 6dB Bandwidth (Channel 149)

* Agilent	R L Trace
Ch Freq 5.745 GHz Occupied Bandwidth	Trig Free 1 2 3
	Clear Write
Ref 20 dBm #Atten 30 dB #Peak	
Log 3	Max Hold
10 dB/	Min Hold
0ffst	
dB	View
Center 5.745 00 GHz	Span 20 MHz
#Res BW 100 kHz #VBW 300 kHz	Sweep 1.92 ms (601 pts)
	ссВW%Рыг 99.00% Blank хdB –6.00 dB
17.3779 MHz	More
Transmit Freq Error-10.603 kHzx dB Bandwidth16.372 MHz	1 of 2
Signals do not fit expected TOI pattern	

#### 6dB Bandwidth (Channel 157)

🔆 Ag	jilent							F	≀ т		Trace
Оссирі	<b>Ch</b> ied Ban	<b>i Freq</b> dwidth	5.7	85 GHz				Trig	; Free	<u>1</u>	Trace
								<b>•</b>		] (	Clear Write
Ref 20 #Peak Log	dBm		#Atter	1 30 dB		<b></b>	 	t	¢ <del>(</del>		Max Hold
10 dB/ 0ffst 21.5											Min Hold
		00 GHz	2						20 MHz		View
	upiec	d Ban			300 kH		ер 1.92 <b>% Рwr</b> х dB	99	1 pts) 3.00 % 00 dB		Blank
×dB	Bandr	eq Err vidth	or	-57.186 16.344	6 kHz MHz						<b>More</b> 1 of 2
Signal					I patter	n					

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* Agilent R L	Trace
Ch Freq 5.825 GHz Trig Free Occupied Bandwidth	<b>Trace</b> <u>1</u> 2 3
	Clear Write
Ref 20 dBm #Atten 30 dB #Peak Log 10	Max Hold
dB/ Offst 21.5 dB	Min Hold
Center 5.825 00 GHz         Span 20 MHz           #Res BW 100 kHz         #VBW 300 kHz         Sweep 1.92 ms (601 pts)	View
Occupied Bandwidth         Осс ВМ % Рыг         99.00 %           16.7020 MHz         × dB         -6.00 dB	Blank
Transmit Freq Error -86.225 kHz x dB Bandwidth 16.337 MHz	More 1 of 2
Signals do not fit expected TOI pattern	
Test mode: IEEE 802.11a Super mode 6dB Bandwidth (Channel 149) <u>* Agilent R L</u>	Freq/Channel
Ch Freq 5.745 GHz Trig Free Occupied Bandwidth	Center Freq 5.74500000 GHz
Ref 130 dB <b>µ</b> V #Atten 30 dB	<b>Start Freq</b> 5.72000000 GHz
Ref 130 dBµV #Atten 30 dB #Peak Log 10	Stop Freq 5.77000000 GHz
dB/ 0ffst	<b>CF Step</b> 5.00000000 MHz <u>Auto</u> Man
Center 5.745 00 GHz         Span 50 MHz           #Res BW 100 kHz         #VBW 300 kHz         Sweep 4.8 ms (601 pts)	Freq Offset 0.00000000 Hz
Occupied Bandwidth         Осс ВМ % Рыг         99.00 %           33.0416 MHz         × dB         -6.00 dB	Signal Track <sup>On <u>Off</u></sup>
Transmit Freq Error -105.260 kHz × dB Bandwidth 30.299 MHz	
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6dB Bandwidth (Channel 157)

* Agilent R T	Freq/Channel
Ch Freq 5.785 GHz Trig Free Occupied Bandwidth	Center Freq 5.78500000 GHz
	<b>Start Freq</b> 5.76000000 GHz
Ref 130 dBµV #Atten 30 dB #Peak	<b>Stop Freq</b> 5.81000000 GHz
10 mmmhh	CF Step 5.0000000 MHz <u>Auto</u> Man
dB Start 5.760 00 GHz Start 5.760 00 GHz Stop 5.810 00 GHz Stop 5.810 00 GHz	Freq Offset 0.00000000 Hz
#Res BW 100 kHz         #VBW 300 kHz         Sweep 4.8 ms (601 pts)           Occupied Bandwidth         Occ BW % Pwr         99.00 %           33.3752 MHz         × dB         -6.00 dB	Signal Track <sup>On <u>Off</u></sup>
Transmit Freq Error -300.234 kHz × dB Bandwidth 30.306 MHz	
Copyright 2000–2008 Agilent Technologies	
6dB Bandwidth (Channel 165) * Agilent R L	Freq/Channel
Ch Freq 5.825 GHz Trig Free Occupied Bandwidth	Center Freq 5.82500000 GHz
	<b>Start Freq</b> 5.80000000 GHz
Ref 130 dBµV #Atten 30 dB #Peak Log 10 dB/	<b>Stop Freq</b> 5.85000000 GHz
0ffst	<b>CF Step</b> 5.00000000 MHz <u>Auto</u> Man
dB Center 5.825 00 GHz Span 50 MHz	FreqOffset 0.00000000 Hz
#Res BW 100 kHz         #VBW 300 kHz         Sweep 4.8 ms (601 pts)           Occupied Bandwidth         Occ BW % Pwr         99.00 %           34.8977 MHz         × dB         -6.00 dB	Signal Track <sup>On <u>Off</u></sup>
Transmit Freq Error -669.695 kHz x dB Bandwidth 31.417 MHz	
Copyright 2000–2008 Agilent Technologies	

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## 6.4. PEAK OUTPUT POWER

#### 6.4.1. LIMITS

The maximum peak output power of the intentional radiator shall not exceed the following:

- 1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
- 2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 6.4.2. TEST INSTRUMENTS

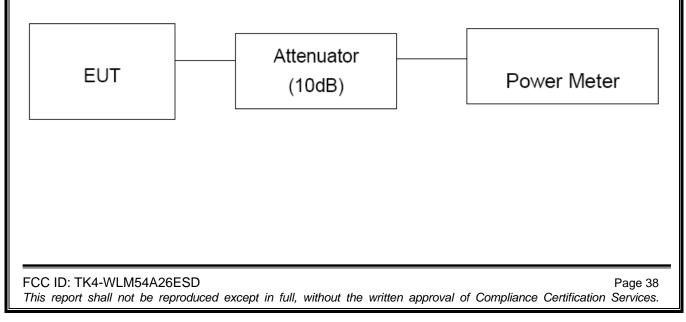
Conducted Emissions Test Site						
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Single channel EPM-Pseries power meter	Agilent	E4416A	GB41292714	3/25/2011		
Peak and Avg Power Sensor	Agilent	E9327A	US40441788	3/25/2011		

#### 6.4.3. TEST PROCEDURES (please refer to measurement standard)

1. The transmitter output was connected to the power meter through an attenuator; the bandwidth of the fundamental frequency was measured with the power meter.

2. Record the power level.

#### 6.4.4. TEST SETUP





Reference No: KS100701A01-RP Report No: KS100701A01-RP

#### 6.4.5. TEST RESULTS

No non-compliance noted

#### <u>Test Data</u>

#### Test mode: IEEE 802.11a

Channel	y (MH-2)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
149	5745	26.19	0.41591		PASS
157	5785	24.86	0.30620	1	PASS
165	5825	23.66	0.23227		PASS

#### Test mode: IEEE 802.11a Super mode

Channel	y (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
149	5745	26.11	0.40832		PASS
157	5785	24.61	0.28907	1	PASS
165	5825	23.46	0.22182		PASS



## 6.5. AVERAGE POWER

#### 6.5.1. LIMITS

None; for reporting purposes only

#### 6.5.2. TEST INSTRUMENTS

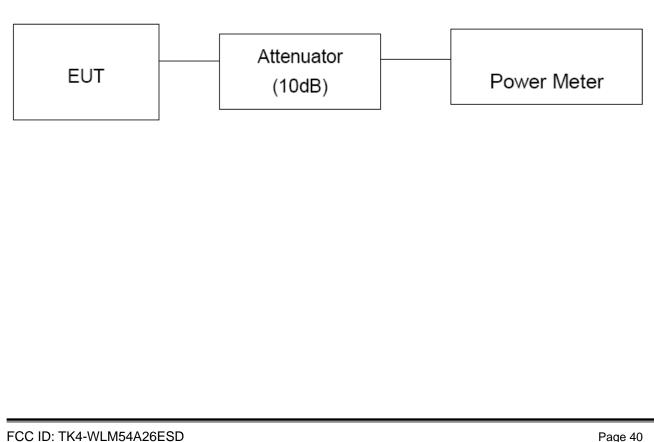
Conducted Emissions Test Site						
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Single channel EPM-Pseries power meter	Agilent	E4416A	GB41292714	3/25/2011		
Peak and Avg Power Sensor	Agilent	E9327A	US40441788	3/25/2011		

#### 6.5.3. TEST PROCEDURES (please refer to measurement standard)

1. The transmitter output was connected to the power meter through an attenuator; the bandwidth of the fundamental frequency was measured with the power meter.

2. Record the power level.

#### 6.5.4. TEST SETUP





#### 6.5.5. TEST RESULTS

No non-compliance noted

#### <u>Test Data</u>

#### Test mode: IEEE 802.11a

Channel	y (MLI-)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
149	5745	24.77	0.29992		PASS
157	5785	23.46	0.22182	1	PASS
165	5825	22.93	0.19634		PASS

#### Test mode: IEEE 802.11a Super mode

Channel	y (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
149	5745	24.26	0.26669		PASS
157	5785	22.98	0.19861	1	PASS
165	5825	22.47	0.17660		PASS



## 6.6. PEAK POWER SPECTRAL DENSITY MEASUREMENT

#### 6.6.1. LIMITS

- 1. According to §15.247(e), for digitally modulated systems, the 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.
- 2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

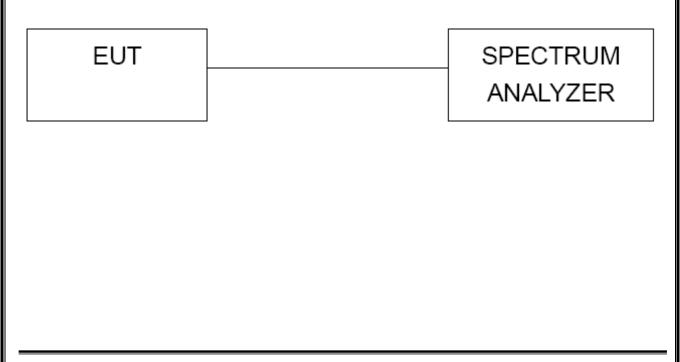
#### 6.6.2. TEST INSTRUMENTS

Conducted Emissions Test Site					
Name of Equipment Manufacturer Model Serial Number Calibration Du					
Spectrum Analyzer	Agilent	E4446A	MY44020154	08/15/2010	

#### 6.6.3. TEST PROCEDURES (please refer to measurement standard)

- 1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
- 3. Record the max. reading.
- 4. Repeat the above procedure until the measurements for all frequencies are completed.

#### 6.6.4. TEST SETUP





Reference No: KS100701A01-RP Report No: KS100701A01-RP

#### 6.6.5. TEST RESULTS

No non-compliance noted

#### <u>Test Data</u>

#### Test mode: IEEE 802.11a

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
149	5745	-5.86	8.00	PASS
157	5785	-9.01		PASS
165	5825	-7.37		PASS

#### Test mode: IEEE 802.11a Super mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
149	5745	-5.84		PASS
157	5785	-9.05	8.00	PASS
165	5825	-7.27		PASS



Reference No: KS100701A01-RP Report No: KS100701A01-RP

#### Test Plot (IEEE 802.11a mode)

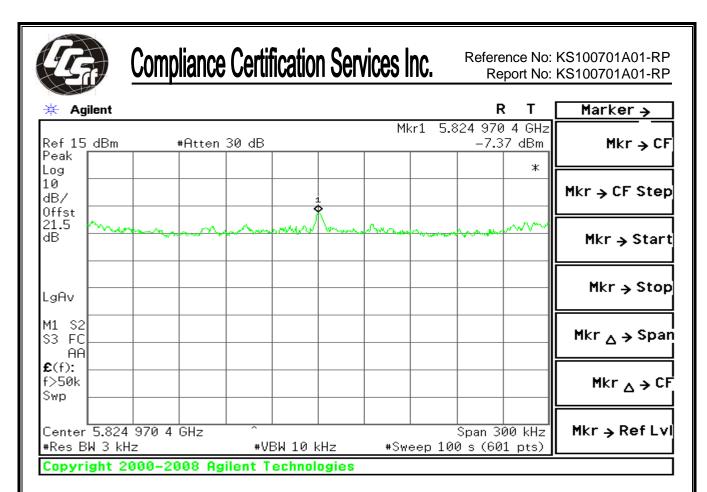
#### PPSD (CH Low)

Mkr1         5.744         971         4 GHz           Ref 15 dBm         #Atten 30 dB         -5.86 dBm           Peak	
	Next Peak
Offst	ext Pk Right
21.5 manufacture manufacture and	lext Pk Left
LgAv	Min Search
	-Pk Search
£(f):	Mkr → CF
Center 5.745 000 0 GHz         Span 300 kHz           #Res BW 3 kHz         #VBW 10 kHz         #Sweep 100 s (601 pts)           Copyright 2000-2008 Agilent Technologies	<b>More</b> 1 of 2

#### PPSD (CH Mid)

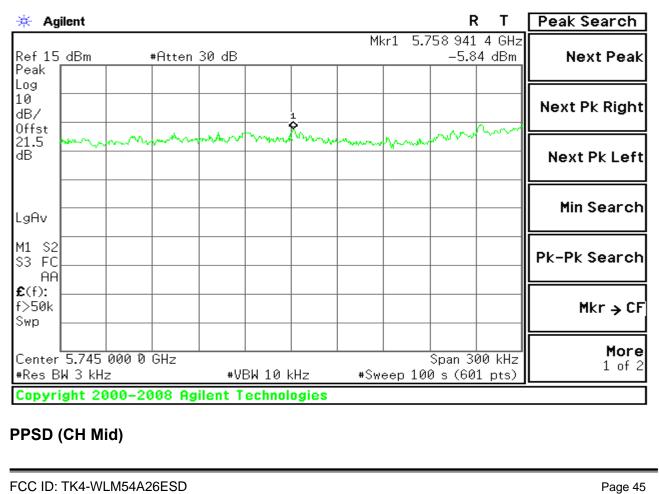
🔆 Agi	ilent								F	?Т	Peak Search
Ref 15 Peak	dBm		#Atten	30 dB			Mł	kr1 5.1	784 970 -9.0	9 GHz 1 dBm	Next Peak
Log 10 dB/ Offst				;	1						Next Pk Right
21.5 dB	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	~~~~	mm	mine	Mon	man	hann	~~~		Next Pk Left
LgAv											Min Search
M1 S2 S3 FC AA											Pk-Pk Search
<b>£</b> (f): f>50k Swp											Mkr → CF
Center #Res B	W 3 kH:	z			3W 10 K		#Sw	eep 10	 Span 3  0 s (60		More 1 of 2
Copyri	ght 20	000-20	08 Ag	ilent T	echnol	ogies					
PPSD (	CH Hi	gh)									

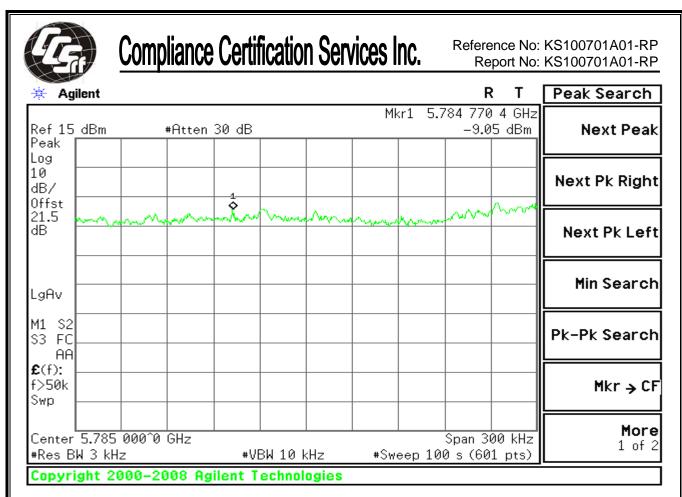
#### FCC ID: TK4-WLM54A26ESD



#### Test mode: IEEE 802.11a Super mode

#### PPSD (CH Low)





#### **PPSD (CH High)**

🔆 Agile	ent								R	т	Marker 🗲
Ref 15 c Peak	dBm		#Atten	30 dB			M	Mkr → CF			
Log 10 dB/ Offst					;						Mkr → CF Step
	min	*~^* <u>~</u> ~	~~~	~~~	m	man	- Man	A.,	and the second	~~~	Mkr→Start
LgAv											Mkr → Stop
M1 S2 S3 FC AA											Mkr <sub>∆</sub> → Span
<b>£</b> (f): f>50k Swp											Mkr <sub>∆</sub> → CF
Center 5 #Res BW			 GHz	- +V{	 3W 10 k	Hz	 #Sw	eep 10	 Span 30 0 s (60		Mkr → RefLvi
Copyrig	ht 20	00-20	)08 Ag	ilent T	echnol	ogies					

FCC ID: TK4-WLM54A26ESD

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