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FCC Test Report

Report No.: AGC00529140202FE04

FCC ID	:	Y7WPLUMAXE
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Axe II 3G
BRAND NAME	:	plum
MODEL NAME	:	Z402
CLIENT	:	CLC Hong Kong Limited
DATE OF ISSUE	:	Feb. 15, 2014
STANDARD(S)	:	FCC Part 15 Rules
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

Report Version	Revise Time	Issued Date Valid Version		Notes	
V1.0	/	Feb. 15, 2014	Valid	Original Report	

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Applicant	CLC Hong Kong Limited		
Address	2209, Concordia Plaza, North Tower, No.1 Science Museum Road, Tsim Sha Tsui East, Kowloon, Hong Kong		
Manufacturer	CLC Technology Co. Ltd.		
Address Room 6G, Block C, NEO Building, Chegongmiao, Futian District, Shenzhe P.R.China			
Product Designation	Axe II 3G		
Brand Name	plum		
Test Model	Z402		
Date of test	Feb. 10, 2014 to Feb.13, 2014		
Deviation	None		
Condition of Test Sample	Normal		
Report Template	AGCRT-US-BGN/RF (2013-03-01)		

1. VERIFICATION OF CONFORMITY

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. 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 requirement of FCC Part 15 Rules requirement.

Prepared By

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Axe II 3G". It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major teermiear description	of Lot is described as following
Operation Frequency	2.412 GHz~2.462GHz
Output Power	IEEE 802.11b:11.24dBm; IEEE 802.11g:9.75dBm;
	IEEE 802.11n(20):8.3dBm; IEEE 802.11n(40):8.42dBm
Modulation	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
Number of channels	11
Hardware Version	V926F-03
Software Version	Axe_II_MT6572_V3.0
Antenna Designation	Integrated Antenna
Antenna Gain	1.2 dBi
Power Supply	DC3.7V by Built-in Li-ion Battery

A major technical description of EUT is described as following

2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	1	2412 MHZ
	2	2417 MHZ
	3	2422 MHZ
	4	2427 MHZ
	5	2432 MHZ
2400~2483.5MHZ	6	2437 MHZ
	7	2442 MHZ
	8	2447 MHZ
	9	2452 MHZ
	10	2457 MHZ
	11	2462 MHZ

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11 For 40MHZ bandwidth system use Channel 3 to Channel 9

MCS Index	Nss Modulation		R	NBPSC	NCBPS		NDBPS		Data rate(Mbps) 800nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

2.3. IEEE 802.11N MODULATION SCHEME

Symbol	Explanation	
NSS	Number of spatial streams	
R	Code rate	
NBPSC	Number of coded bits per single carrier	
NCBPS	Number of coded bits per symbol	
NDBPS	Number of data bits per symbol	
GI	Guard interval	

2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: Y7WPLUMAXE** filing to comply with the FCC Part 15 requirements.

2.5. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters. Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.247 rules.

2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 2.75dB Radiated measurement: +/- 3.2dB

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION					
1	Low channel TX					
2	Middle channel TX					
3	High channel TX					
4	Normal operating					
Note:	Note:					
Transmit by 802.11b with Date rate (1/2/5.5/11)						
Transm	Transmit by 802.11g with Date rate (6/9/12/18/24/36/48/54)					
Transm	Transmit by 802.11n (20MHz) with Date rate (6.5/13/19.5/26/39/52/58.5/65)					

Transmit by 802.11n (40MHz) with Date rate

(13.5/27/40.5/54/81/108/121.5/135)

Note:

1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency individually.

2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure:

EUT	Accessory
-----	-----------

5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Mobile Phone	Z402	FCC ID: Y7WPLUMAXE	EUT
2	Adapter	PMC44	DC5V /600mA	Accessory
3	Battery	PMB37	DC3.7V/ 1450 mAh	Accessory
4	Earphone	Z402	N/A	Accessory
5	USB Cable	Z402	N/A	Accessory

Note: All the accessories have been used during the test in conduction emission test.

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Peak Output Power	Compliant
§15.247	6 dB Bandwidth	Compliant
§15.247	Conducted Spurious Emission	Compliant
§15.247	Maximum Conducted Output Power SPECTRAL Density	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.207	Line Conduction Emission	Compliant

Note: The EUT received power from DC3.7V lithium battery.

6. TEST FACILITY

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd		
Location	2/F., Building 2, No.1-No.4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China		
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2003.		

ALL TEST EQUIPMENT LIST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Power Probe	R&S	NRP-Z23	100323	07/17/2013	07/16/2014
RF attenuator	N/A	RFA20db	68	N/A	N/A
Spectrum Analyzer	Agilent	E4440A	US41421290	07/17/2013	07/16/2014
Amplifier	EM	EM30180	0607030	07/17/2013	07/16/2014
Horn Antenna	EM	EM-AH-10180	67	04/21/2013	04/20/2014
Horn Antenna	A.H. Systems Inc.	SAS-574		07/17/2013	07/16/2014
EMI Test Receiver	Rohde & Schwarz	ESCI	100694	07/17/2013	07/16/2014
Biological Antenna	A.H. Systems Inc.	SAS-521-4	26	06/07/2013	06/06/2014
Loop Antenna	A.H.	SAS-526B	264	07/14/2013	07/13/2014
LISN	R&S	ESH3-Z5	8389791009	07/17/2013	07/16/2014

7. PEAK OUTPUT POWER

7.1. MEASUREMENT PROCEDURE

For peak power test:

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 3. Set the EUT Work on the top, middle and the bottom operation frequency individually.
- 4. Use the following spectrum analyzer settings:

Set the RBW = 1 MHz Set the VBW \geq 3 RBW Set the span \geq 1.5 x DTS bandwidth Detector = peak Sweep time = auto couple Trace mode = max hold

- 5. Allow the trace to stabilize. Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges.
- 6. Record the result form the Spectrum Analyzer.

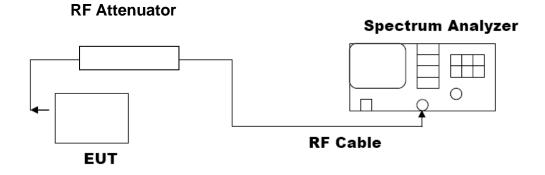
For average power test:

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Connect EUT RF output port to power probe through an RF attenuator.
- 3. Connect the power probe to the PC.
- 4. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 5. Record the maximum power from the software.
- 6. The maximum peak power shall be less 1 Watt (30dBm).

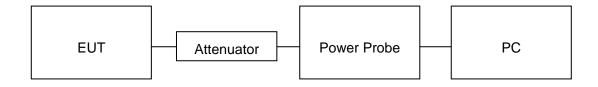
Note : The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

PEAK POWER TEST SETUP



AVERAGE POWER SETUP

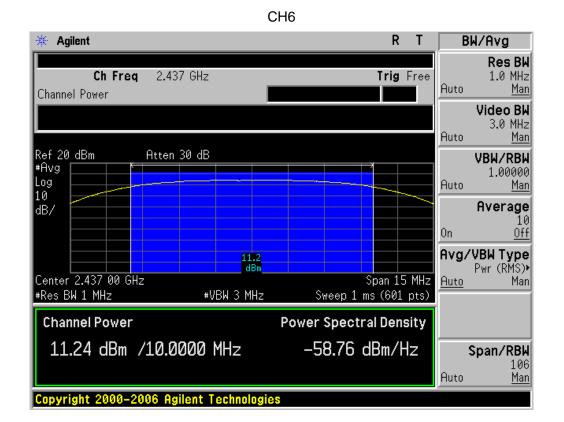


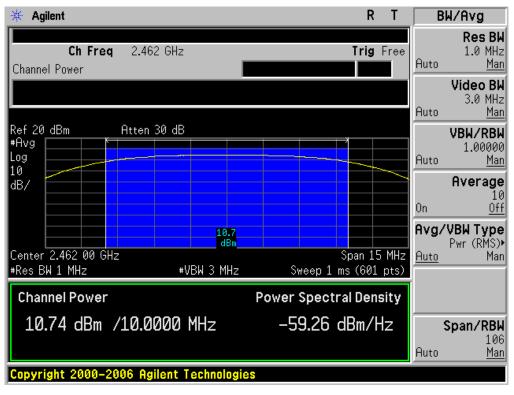
7.3. LIMITS AND MEASUREMENT RESULT

TEST ITEM	PEAK POWER
TEST MODE	802.11b with data rate 1

LIMITS AND MEASUREMENT RESULT					
Frequency (GHz)	Average Power (dBm)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail	
2.412	9.14	11.12	30	Pass	
2.437	9.26	11.24	30	Pass	
2.462	8.76	10.74	30	Pass	

CH3	
🔆 Agilent 🛛 🛛 R T	BW/Avg
Ch Freq 2.412 GHz Trig Free Channel Power	Res BW 1.0 MHz Auto <u>Man</u>
	Video BW 3.0 MHz Auto <u>Man</u>
Ref 20 dBm Atten 30 dB #Avg Log 10	VBW/RBW 1.00000 Auto <u>Man</u>
dB/	Average 10 On <u>Off</u>
dBm dBm	Avg/VBWType Pwr(RMS)► Auto Man
#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)	
Channel Power Power Spectral Density	
11.12 dBm /10.0000 MHz -58.88 dBm/Hz	Span/RBW
Copyright 2000–2006 Agilent Technologies	Auto <u>Man</u>

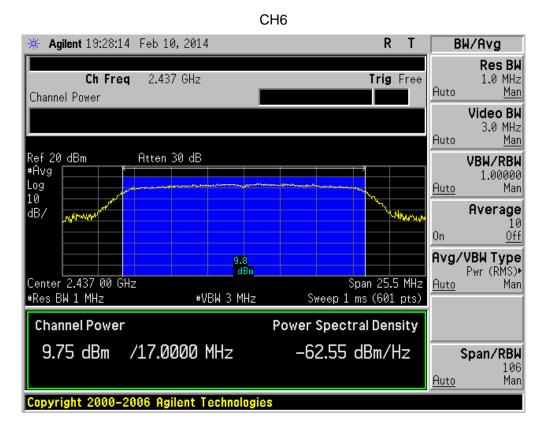


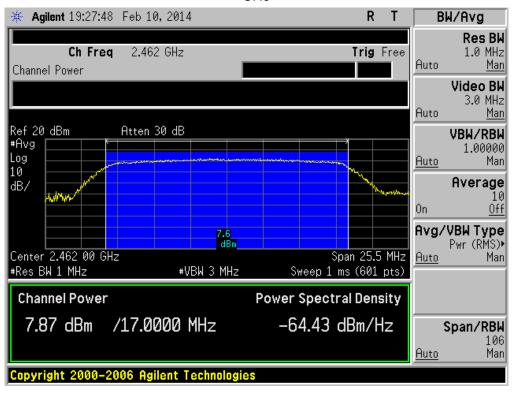


TEST ITEM	PEAK POWER
TEST MODE	802.11g with data rate 6

LIMITS AND MEASUREMENT RESULT					
Frequency (GHz)Average Power (dBm)Peak Power (dBm)Applicable Limits (dBm)Pass or Fail					
2.412	6.07	8.05	30	Pass	
2.437	7.77	9.75	30	Pass	
2.462	5.89	7.87	30	Pass	

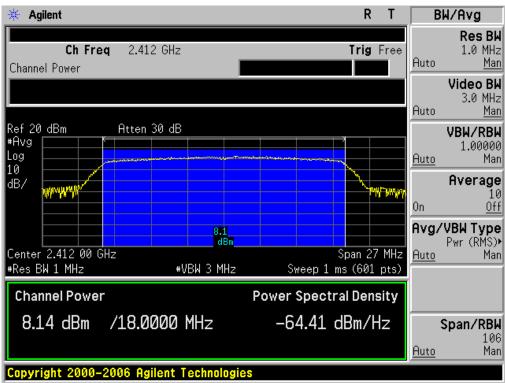
* Agilent R Т BW/Avg Res BW 1.0 MHz <u>Man</u> Ch Freq 2.412 GHz Trig Free Auto Channel Power Video BW 3.0 MHz <u>Man</u> Auto Ref 20 dBm #Avg Atten 30 dB VBW/RBW 1.00000 Log Man <u>Auto</u> 10 dB/ Average 10 0n <u> 0ff</u> Avg/VBW Type Pwr (RMS)► Auto Man 8.0 dBm Center 2.412 00 GHz Span 25.5 MHz <u>Auto</u> #Res BW 1 MHz Sweep 1 ms (601 pts) #VBW 3 MHz **Channel Power Power Spectral Density** /17.0000 MHz 8.05 dBm -64.26 dBm/Hz Span/RBW 106 Man <u>Auto</u> Copyright 2000–2006 Agilent Technologies

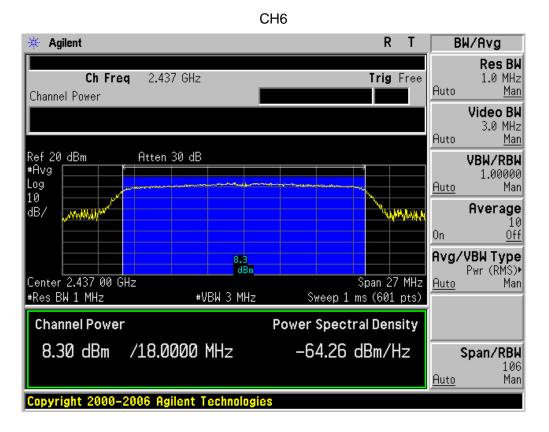


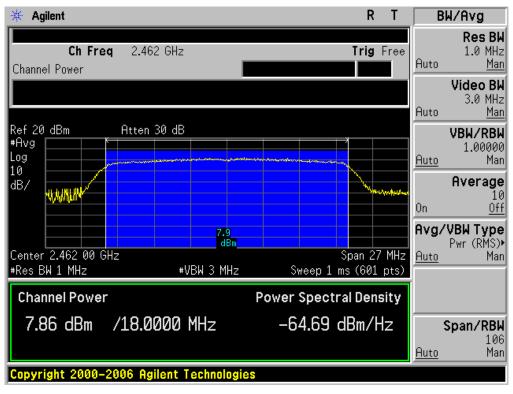


TEST ITEM	PEAK POWER
TEST MODE	802.11n 20 with data rate 6.5

LIMITS AND MEASUREMENT RESULT					
Frequency (GHz)Average Power (dBm)Peak Power (dBm)Applicable Limits (dBm)Pass or Fail					
2.412	6.16	8.14	30	Pass	
2.437	6.32	8.30	30	Pass	
2.462	5.88	7.86	30	Pass	

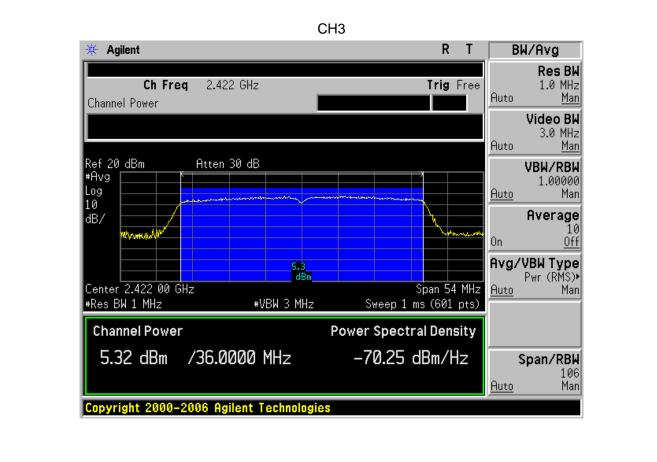


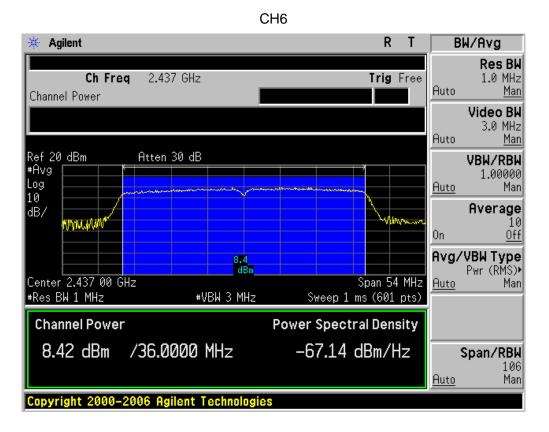


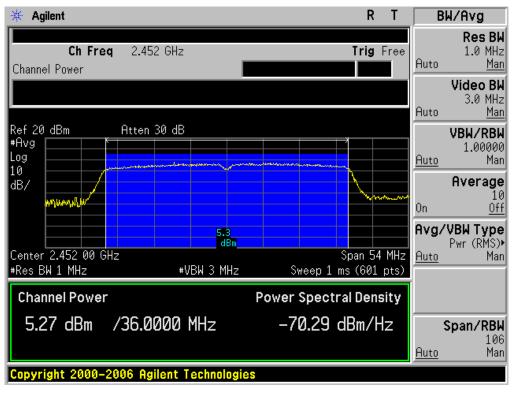


TEST ITEM	PEAK POWER
TEST MODE	802.11n 40 with data rate 13.5

LIMITS AND MEASUREMENT RESULT					
Frequency (GHz)Average Power (dBm)Peak Power (dBm)Applicable Limits (dBm)Pass or Fail					
2.422	3.34	5.32	30	Pass	
2.437	6.44	8.42	30	Pass	
2.452	3.29	5.27	30	Pass	







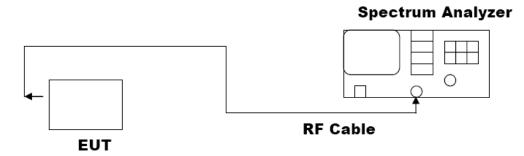
8. 6DB BANDWIDTH

8.1. MEASUREMENT PROCEDURE

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 4. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW ≥ RBW.
- 5. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



8.3. LIMITS AND MEASUREMENT RESULTS

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11b with data rate 11

LIMITS AND MEASUREMENT RESULT							
Applicable Limite	Applicable Limits						
Applicable Limits	Test Data (MHz) Criteria						
	Low Channel	9.090	PASS				
>500KHZ	Middle Channel	9.137	PASS				
	High Channel	9.542	PASS				

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11g with data rate 54

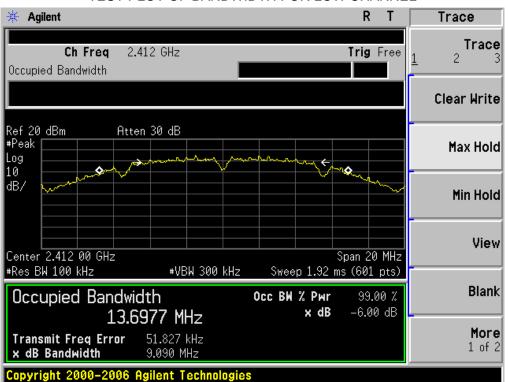
LIMITS AND MEASUREMENT RESULT							
Applicable Limite	Applicable Limits						
Applicable Limits	Test Data (MHz) Criteria						
	Low Channel	15.317	PASS				
>500KHZ	Middle Channel	15.358	PASS				
	High Channel	15.923	PASS				

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 20 with data rate 65

LIMITS AND MEASUREMENT RESULT							
Applicable Limite	Applicable Limits						
Applicable Limits	Test Data (MHz) Criteria						
	Low Channel	15.974	PASS				
>500KHZ	Middle Channel	15.695	PASS				
	High Channel	15.902	PASS				

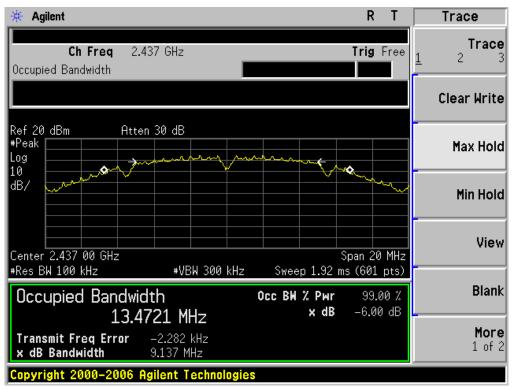
TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 40 with data rate 135

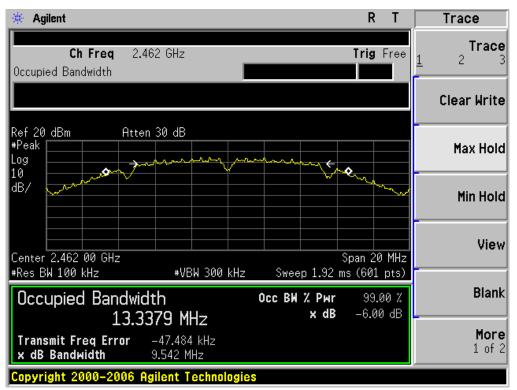
LIMITS AND MEASUREMENT RESULT							
Applicable Limite	Applicable Limits						
Applicable Limits	Test Data (MHz) Criteria						
	Low Channel	35.331	PASS				
>500KHZ	Middle Channel	35.335	PASS				
	High Channel	35.223	PASS				



802.11b TEST RESULT TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

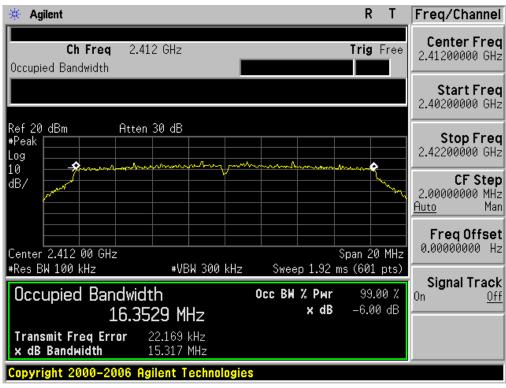


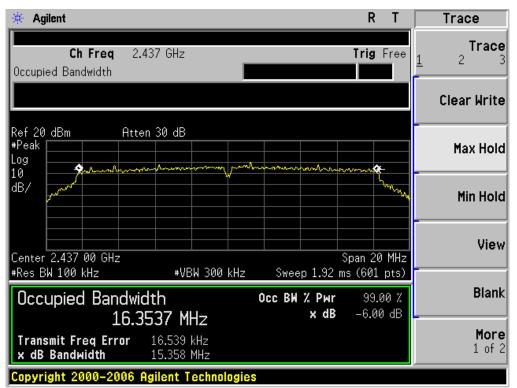


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

802.11g TEST RESULT

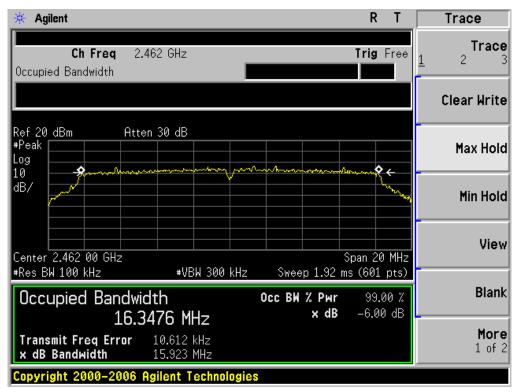
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

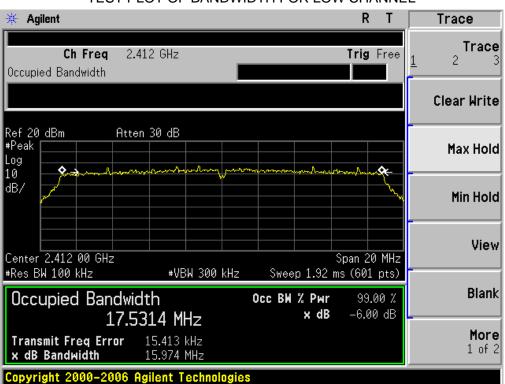




TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

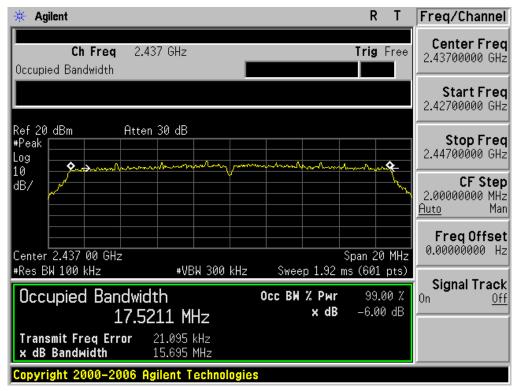




802.11n (20) TEST RESULT

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

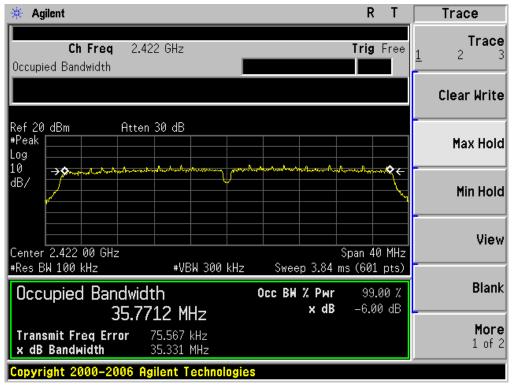


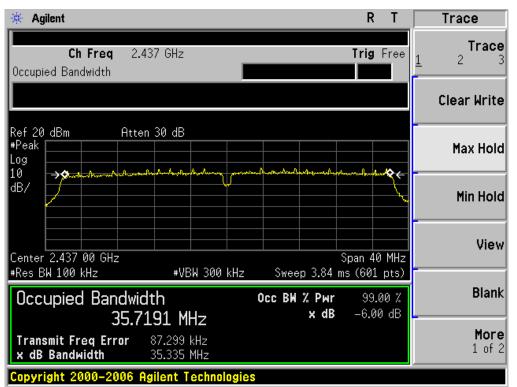
* Agilent R T	Freq/Channel
Ch Freq 2.462 GHz Trig Fre Occupied Bandwidth	e Center Freq 2.46200000 GHz
	Start Freq 2.45200000 GHz
Ref 20 dBm Atten 30 dB #Peak Log 10 \$ 2000 Atten 20 dB	Stop Freq 2.47200000 GHz
	CF Step 2.0000000 MHz <u>Auto</u> Man
Center 2.462 00 GHz Span 20 MH	
#Res BW 100 kHz	Signal Track
Occupied Bandwidth осс вн % Рыг 99.00 % 17.5048 MHz × dB -6.00 dE	<u>vii</u>
Transmit Freq Error 12.694 kHz × dB Bandwidth 15.902 MHz	
Copyright 2000–2006 Agilent Technologies	

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

802.11n(40) TEST RESULT

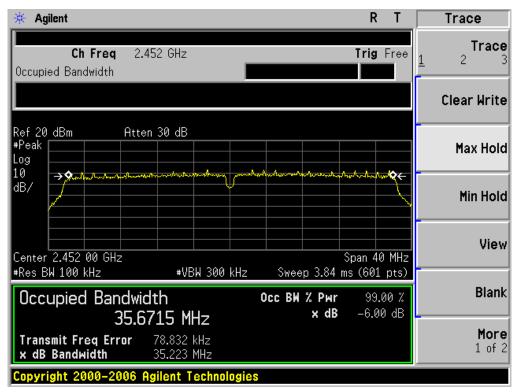
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL





TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 3, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 4. Set SPA Trace 1 Max hold, then View.
- Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements. Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW > RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW > RBW) are conform to the requirement.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

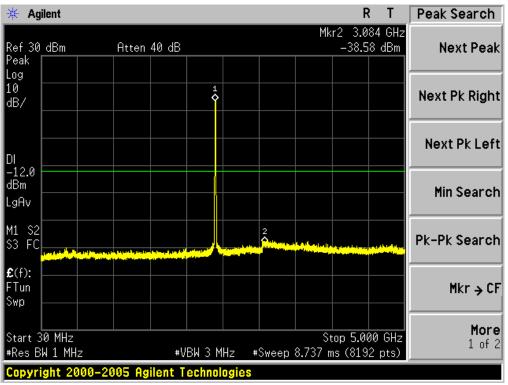
The same as described in section 8.2.

9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

9.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT							
Applieghte Limite	Measurement Result						
Applicable Limits	Test Data	Criteria					
In any 100 KHz Bandwidth Outside the	At least -20dBc than the limit						
frequency band in which the spread spectrum	Specified on the BOTTOM	PASS					
intentional radiator is operating, the radio frequency	Channel						
power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation 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))	At least -20dBc than the limit Specified on the TOP Channel	PASS					

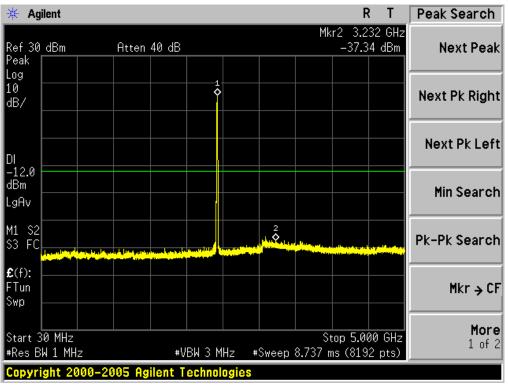


TEST PLOT OF OUT OF BAND EMISSIONS WITH THE WORST CASE OF 802.11b FOR MODULATION IN LOW CHANNEL

🔆 Agi	ilent							F	? Т	Peak Search
Ref 30 Peak	dBm	Atten	40 dB				Mk		92 GHz 9 dBm	Next Peak
Log 10 dB/								Mea	s Uncal	Next Pk Right
DI										Next Pk Left
-12.0 dBm LgAv										Min Search
M1 S2 S3 FC			t turke bi finale					a du tha (a		Pk-Pk Search
£(f): FTun Swp										Mkr → CF
Start 5 #Res Bl				вызм	IHz #	Sweep	Stc 8.737 n		00 GHz 2 pts)	More 1 of 2
_		005 Ag	#V I ilent T			Sweep	8.737 n	ns (819	2 pts)	

🔆 Agilent								R	Т	Peak Search
Ref 30 dBm Peak		Atten	40 dB				Mkr1	l 15.6) -35.9	76 GHz 3 dBm	Next Peak
Log 10 dB/								Meas	5 Uncal	Next Pk Right
DI										Next Pk Left
-12.0 dBm LgAv										Min Search
M1 S2 S3 FC	in the second			n fin di tang Managana		a bergi han ti palet. Ministra ti agrica			ing stilling for Second Second	Pk-Pk Search
€(f): FTun Swp										Mkr → CF
Start 12.000 #Res BW 1 M			#V	вы з м	Hz #	Sweep	Sto 8.737 m	p 19.00 is (819)		More 1 of 2
#Res BW 1 M Copyright 2		05 Agi				Sweep				1 UT 2

🔆 Agi	ilent								F	₹ T	Peak Search
Ref 30 Peak	dBm		Atten	40 dB				Mkr		177 GHz 15 dBm	Next Peak
Log 10 dB/									Mea	s Uncal	Next Pk Right
DI -12.0											Next Pk Left
dBm LgAv											Min Search
M1 S2 S3 FC				a lata bia di fast Prancis da fast						ار و المراجع و المراج ومراجع و المراجع و ال ومراجع و المراجع و ال	Pk-Pk Search
£ (f): FTun Swp											Mkr → CF
Start 1 #Res B				#\	ви з м	Hz #	Sweep			00 GHz 2 pts)	More 1 of 2
Copyri	ght 20	00-20)05 Ag	ilent T	echnol	ogies					



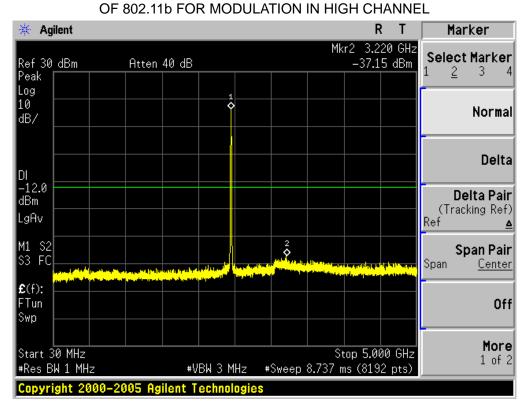
TEST PLOT OF OUT OF BAND EMISSIONS

OF 802.11b FOR MODULATION IN MIDDLE CHANNEL

🔆 Agil	lent								F	R Τ	Peak Search
Ref 30 Peak	dBm		Atten	40 dB				Mk		73 GHz 1 dBm	Next Peak
Log 10 dB/									Mea	s Uncal	Next Pk Right
DI 12.0											Next Pk Left
-12.0 dBm LgAv											Min Search
M1 S2 S3 FC			and the second second					ar bara bala bara pada pakabatan		antaji ti yant. Ina 1, inaji da	Pk-Pk Search
€(f): FTun Swp											Mkr → CF
Start 5. #Res Bl				#\	 /BW 3 M	Hz ŧ	↓ ŧSweep			00 GHz 2 pts)	More 1 of 2
Copyrig	ght 20	00-20	005 Ag	ilent T	echnol	ogies					

🔆 Agi	ilent								R	Т	Peak Search
Ref 30	٩٥٣		Otton	40 dB				Mkr:	1 14.9	49 GHz 9 dBm	Next Peak
Rer⊃ø Peak [apm		Htten	40 ab					-35.9	a apui	Next Peak
Log											
10 dB/									Meas	s Uncal	Next Pk Right
DI											Next Pk Left
–12.0 dBm											
LgAv											Min Search
M1 S2						Indus	العامية ا	Hallen ander		لم الماند	Pk-Pk Search
S3 FC		nista akandi Trapatakaty			a di katala mit	Contract of the				a sharara a shi kari	TK TK Searon
£ (f):		·									
FTun Swp											Mkr→CF
onp											
Start 1	2.000	GHz	<u> </u>	1	1	1	1	Sto	p 19.00)0 GHz	More 1 of 2
#Res Bl	W 1 MH	Z		#V	BW 3 M	IHz #	Sweep	8.737 m	ns (819)	2 pts)	I UT 2
Copyri	ght 20	00-20	005 Ag	ilent T	echnol	ogies					

🔆 Agi	ilent								F	? Т	Peak Search
Ref 30 Peak	dBm		Atten	40 dB				Mkr		90 GHz 7 dBm	Next Peak
Log 10 dB/									Mea	s Uncal	Next Pk Right
DI											Next Pk Left
-12.0 dBm LgAv											Min Search
M1 S2 S3 FC		lanal Homore Appendia		la dhe na dheadhac Tha tha tha tha tha				a a shi a shi a Marin			Pk-Pk Search
£ (f): FTun Swp											Mkr→CF
Start 1 #Res Bl				#V	ВМЗМ	Hz #	Sweep			00 GHz 2 pts)	More 1 of 2
Copyri	ght 20	00-20	005 Ag	ilent T	echnol	ogies					



TEST PLOT OF OUT OF BAND EMISSIONS

🔆 Agilent		R T Peak Se	arch
Ref 30 dBm Peak	Atten 40 dB	Mkr1 7.519 GHz -36.14 dBm Next	t Peak
Log 10 dB/		Meas Uncal Next Pk	Right
		Next P	k Left
-12.0 dBm LgAv		Min S	earch
M1 S2 S3 FC		Pk-Pk S	earch
£ (f): FTun Swp		Mk	r → CF
Start 5.000 GHz #Res BW 1 MHz	#VBW 3 N 2005 Agilent Techno		More 1 of 2

🔆 Agilent			RT	Peak Search
Ref 30 dBm Peak	Atten 40 dB	Mki	r1 14.370 GHz -35.29 dBm	Next Peak
Log 10 dB/			Meas Uncal	Next Pk Right
				Next Pk Left
-12.0 dBm LgAv				Min Search
M1 S2 S3 FC			latin a pisa a ata patri kata kan ka Mangana ang sa kan ya na ata kan ka	Pk-Pk Search
£(f): FTun Swp				Mkr → CF
Start 12.000 GHz #Res BW 1 MHz	#VBW 3		op 19.000 GHz ms (8192 pts)	More 1 of 2
	2005 Agilent Techn			

🔆 Agi	ilent								R	Т	Peak Search
Ref 30 Peak	dBm		Atten	40 dB				Mkr:		25 GHz 5 dBm	Next Peak
Log 10 dB/									Meas	s Uncal	Next Pk Right
DI											Next Pk Left
-12.0 dBm LgAv											Min Search
M1 S2 S3 FC											Pk-Pk Search
€(f): FTun Swp											Mkr → CF
Start 1 #Res B				#\	BN 3 M	Hz #	Sweep	Sto 8.737 m)0 GHz 2 pts)	More 1 of 2
Copyri	ght 20	00-20	005 Ag	ilent T	echnol	ogies					

10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

- (1). The EUT was placed on a turn table which is 0.8m above ground plane.
- (2). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (3). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (4). Set SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the KDB 558074 item 10.2 was used in this testing.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

10.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

10.4 LIMITS AND MEASUREMENT RESULT

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11b with data rate 1

Channel No.	PSD (dBm)	Limit (dBm)	Result
Low Channel	-9.93	8	Pass
Middle Channel	-10.31	8	Pass
High Channel	-7.96	8	Pass

TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11g with data rate 6

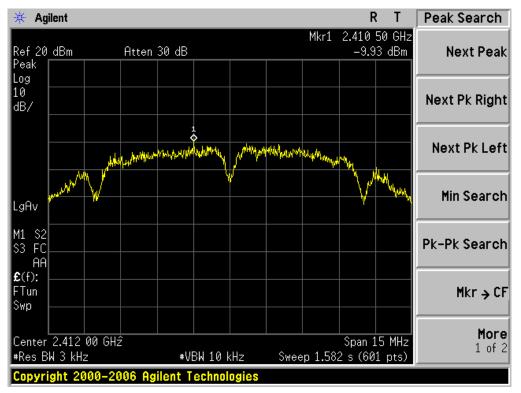
Channel No.	PSD (dBm)	Limit (dBm)	Result
Low Channel	-16.97	8	Pass
Middle Channel	-14.37	8	Pass
High Channel	-17.53	8	Pass

	PSD	Limit			
TEST MODE	802.11n 20 with data rate 6.5				
TEST ITEM	POWER PECTRAL DENSITY				

Channel No.	(dBm)	(dBm)	Result
Low Channel	-15.35	8	Pass
Middle Channel	-14.65	8	Pass
High Channel	-16.2	8	Pass

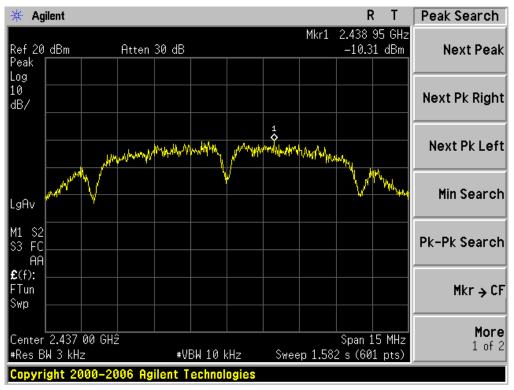
TEST ITEM	POWER PECTRAL DENSITY
TEST MODE	802.11n 40 with data rate 13.5

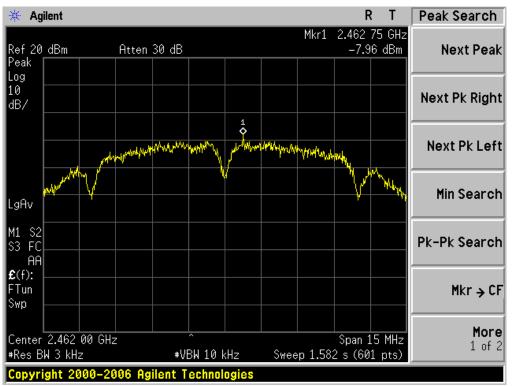
Channel No.	PSD (dBm)	Limit (dBm)	Result
Low Channel	-21.79	8	Pass
Middle Channel	-20.05	8	Pass
High Channel	-22.11	8	Pass



802.11b TEST RESULT TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

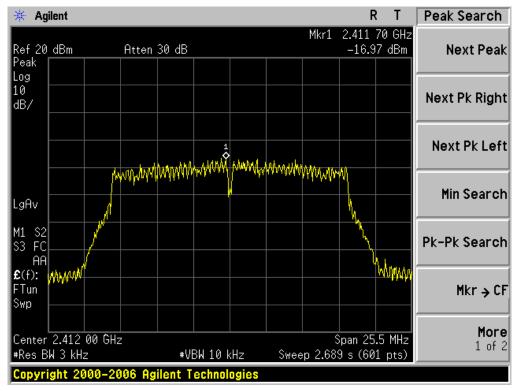


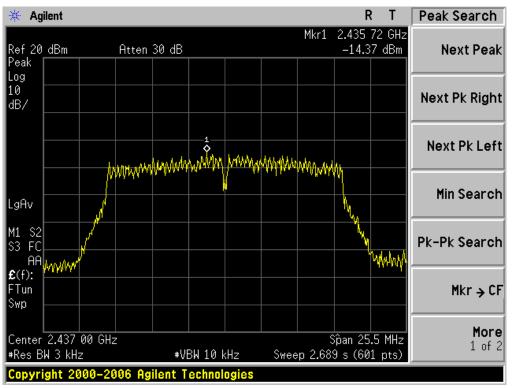


TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

802.11g TEST RESULT

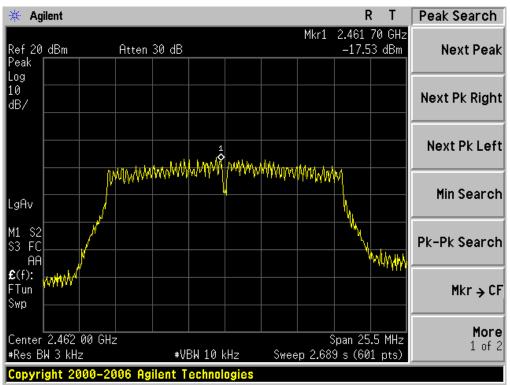
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

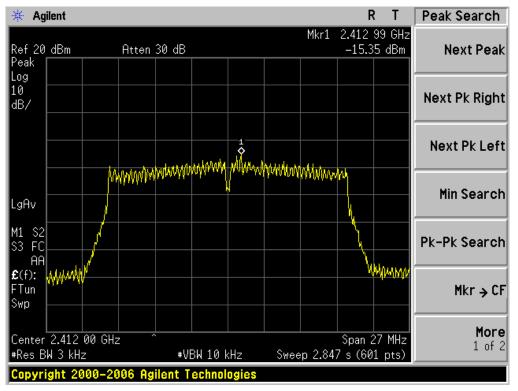




TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

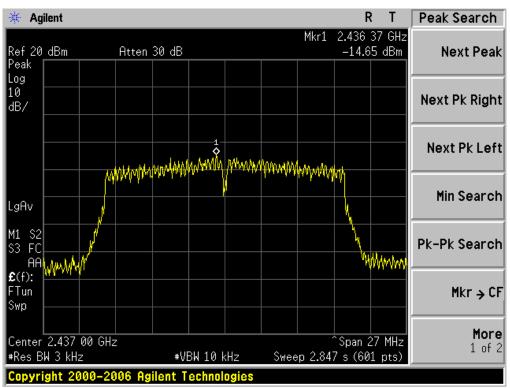
TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

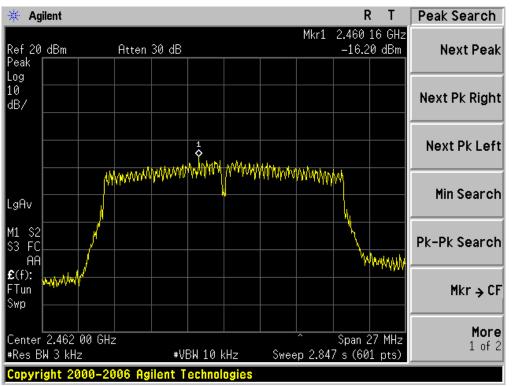




802.11n 20 TEST RESULT TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

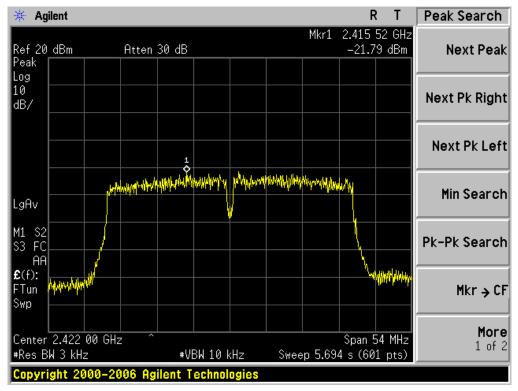


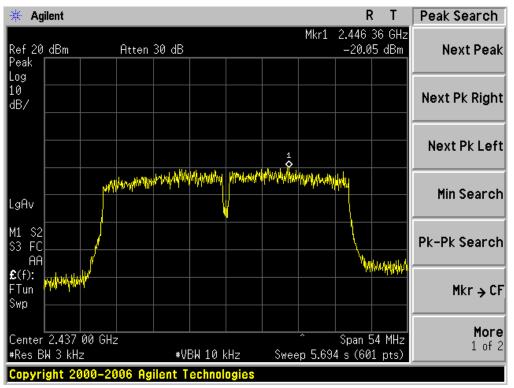


TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

802.11n 40 TEST RESULT

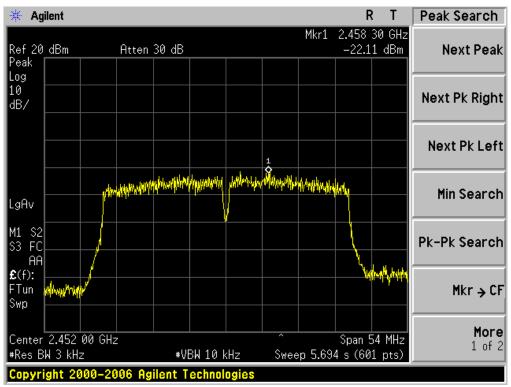
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL





TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



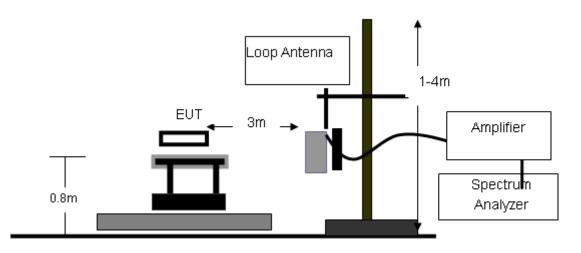
11. RADIATED EMISSION

11.1. MEASUREMENT PROCEDURE

- 1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

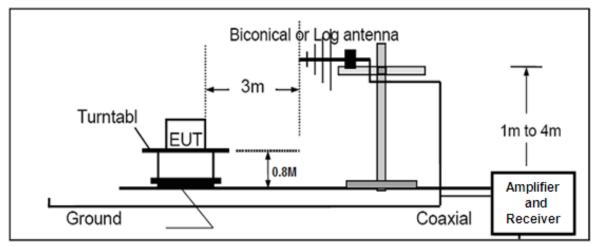
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

11.2. TEST SETUP

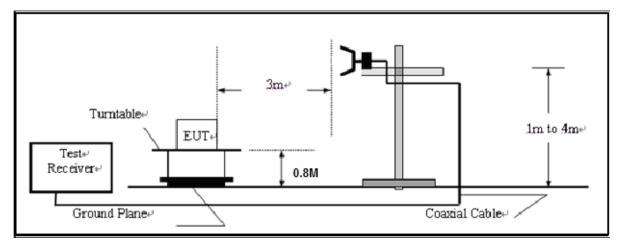


RADIATED EMISSION TEST SETUP BELOW 30MHz

RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
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

Note: All modes were tested For restricted band radiated emission,

the test records reported below are the worst result compared to other modes.

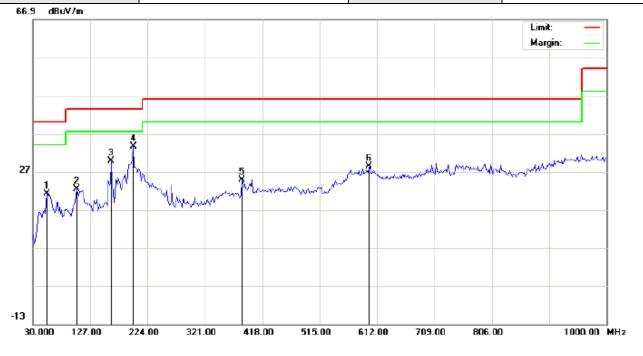
11.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal



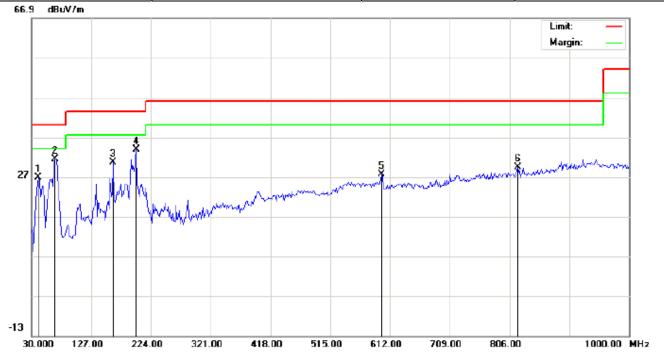
Site: site #1 Limit: FCC Class B 3M Radiation EUT: Axe II 3G M/N: Z402 Mode: Low Channel TX Note: Polarization: *Horizontal* Power: Temperature: 26 Humidity: 60 %

Distance:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	•	MHz	dBu∨	dB/m	dBu\//m	dBuV/m	dB		cm	degree	
1		54.2500	9.98	11.20	21.18	40.00	-18.82	peak			
2		104.3666	11.56	10.78	22.34	43.50	-21.16	peak			
3		162.5666	15.07	14.78	29.85	43.50	-13.65	peak			
4	*	199.7500	21.54	11.99	33.53	43.50	-9.97	peak			
5		384.0500	5.92	18.96	24.88	46.00	-21.12	peak			
6		599.0666	4.76	23.71	28.47	46.00	-17.53	peak			

Report No.: AGC00529140202FE04 Page 49 of 76

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical



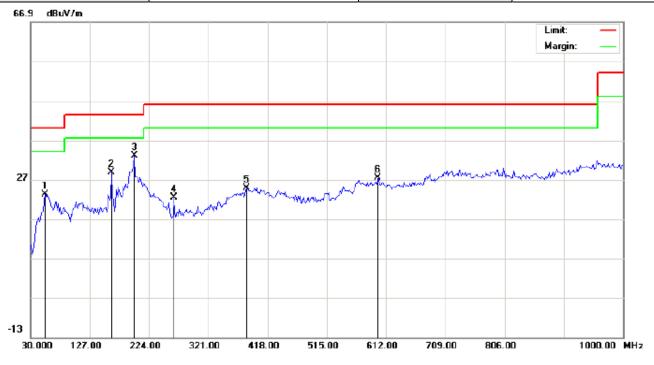
Site: site #1 Limit: FCC Class B 3M Radiation EUT: Axe II 3G M/N: Z402 Mode: Low Channel TX Note: Polarization: Vertical Power: Temperature: 26 Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∨	dB/m	dBu∀/m	dBuV/m	dB		cm	degree	
1		41.3166	17.92	8.81	26.73	40.00	-13.27	peak			
2	*	68.7998	26.77	4.73	31.50	40.00	-8.50	peak			
3		162.5666	15.34	15.17	30.51	43.50	-12.99	peak			
4		199.7500	24.66	9.06	33.72	43.50	-9.78	peak			
5		599.0666	4.93	22.73	27.66	46.00	-18.34	peak			
6		818.9333	2.07	27.32	29.39	46.00	-16.61	peak			

Distance:

Report No.: AGC00529140202FE04 Page 50 of 76

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Horizontal



Site: site #1 Limit: FCC Class B 3M Radiation EUT: Axe II 3G M/N: Z402 Mode: Middle Channel TX Note: Polarization: *Horizontal* Power: Temperature: 26 Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∨	dB/m	dBu\//m	dBuV/m	dB		cm	degree	
1		54.2500	11.98	11.20	23.18	40.00	-16.82	peak			
2		162.5666	14.07	14.78	28.85	43.50	-14.65	peak			
3	*	199.7500	21.04	11.99	33.03	43.50	-10.47	peak			
4		264.4166	8.09	14.34	22.43	46.00	-23.57	peak			
5		384.0500	5.92	18.96	24.88	46.00	-21.12	peak			
6		599.0666	3.76	23.71	27.47	46.00	-18.53	peak			

Distance:

Report No.: AGC00529140202FE04 Page 51 of 76

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Vertical



Site: site #1 Limit: FCC Class B 3M Radiation EUT: Axe II 3G M/N: Z402 Mode: Middle Channel TX Note: Polarization: Vertical Power:

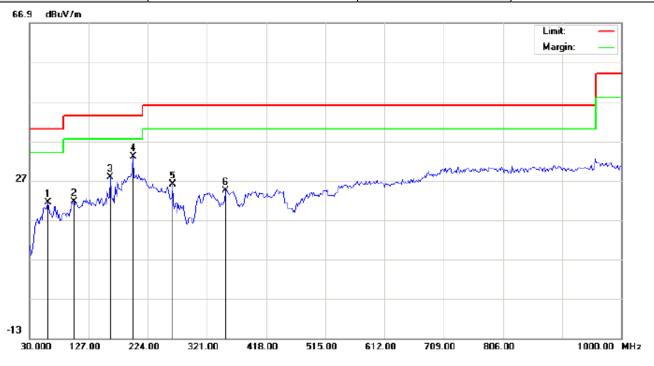
Distance:

Temperature: 26 Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
	•	MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		41.3166	18.92	8.81	27.73	40.00	-12.27	peak			
2	*	68.7998	25.77	4.73	30.50	40.00	-9.50	peak			
3		162.5666	12.34	15.17	27.51	43.50	-15.99	peak			
4		199.7500	22.16	9.06	31.22	43.50	-12.28	peak			
5		629.7833	1.69	23.40	25.09	46.00	-20.91	peak			
6		818.9333	1.07	27.32	28.39	46.00	-17.61	peak			

Report No.: AGC00529140202FE04 Page 52 of 76

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Horizontal



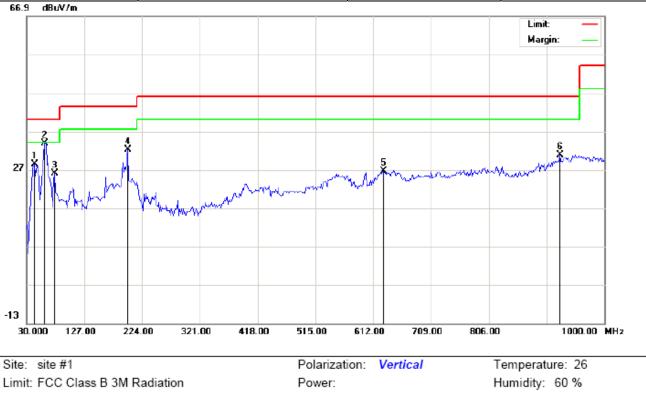
Site: site #1 Limit: FCC Class B 3M Radiation EUT: Axe II 3G M/N: Z402 Mode: High Channel TX Note: Polarization: *Horizontal* Power: Temperature: 26 Humidity: 60 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		60.7167	10.34	11.09	21.43	40.00	-18.57	peak			
2		102.7500	10.84	10.67	21.51	43.50	-21.99	peak			
3		162.5666	13.07	14.78	27.85	43.50	-15.65	peak			
4	*	199.7500	21.04	11.99	33.03	43.50	-10.47	peak			
5		264.4166	11.59	14.34	25.93	46.00	-20.07	peak			
6		351.7167	5.61	18.75	24.36	46.00	-21.64	peak			

Distance:

Report No.: AGC00529140202FE04 Page 53 of 76

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Vertical



EUT: Axe II 3G M/N: Z402 Mode: High Channel TX Note:

Distance:

N	o.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		-	MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
	1		42.9333	19.70	8.71	28.41	40.00	-11.59	peak			
	2	*	60.7167	25.99	7.87	33.86	40.00	-6.14	peak			
;	3		76.8833	23.39	2.57	25.96	40.00	-14.04	peak			
4	4		199.7500	23.16	9.06	32.22	43.50	-11.28	peak			
!	5		629.7833	3.19	23.40	26.59	46.00	-19.41	peak			
(6		925.6332	1.41	29.32	30.73	46.00	-15.27	peak			

RESULT: PASS

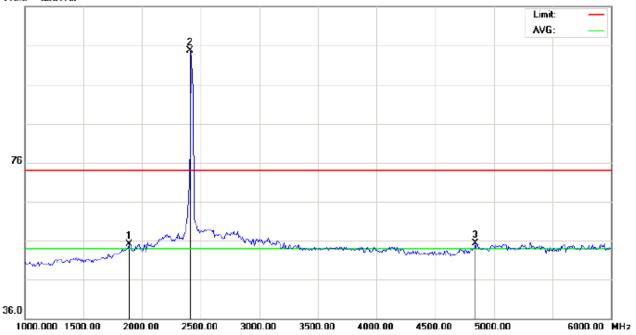
Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

RADIATED EMISSION ABOVE 1GHZ

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Horizontal





Site: site #1 Limit: FCC Class B 3M Radiation above 1GHZ(PK)

EUT: Axe II 3G

M/N: Z402

Mode: 802.11b Low Channel TX Note: Polarization: *Horizontal* Power:

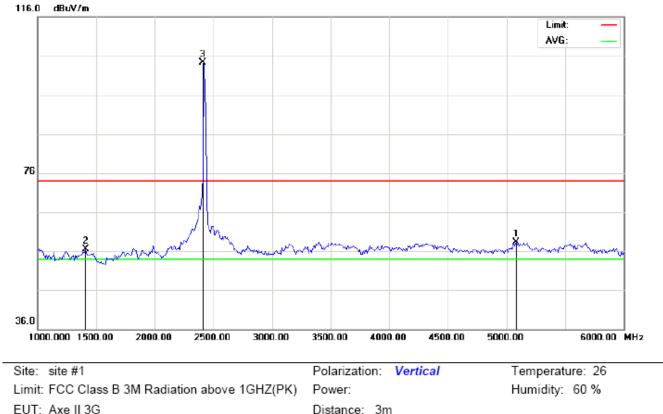
Distance: 3m

Temperature: 26 Humidity: 60 %

Antenna Table Over Measurement Freq. Reading Factor Limit Mk Height Degree Comment No. Detector MHz dBu∨ dB/m dBuV/m dBuV/m dB cm degree 55.16 74.00 -18.84 1891.667 66.42 -11.26 1 peak 2 2412.024 114.28 -9.67 104.61 74.00 30.61 * peak 3 4841.667 57.50 -2.21 55.29 74.00 -18.71 peak

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EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2412MHZ	Antenna	Vertical



M/N: Z402 Mode: 802.11b Low Channel TX Note:

Antenna Table Freq. Reading Factor Measurement Limit Over Mk Height Degree No. Detector Comment MHz dBu∨ dB/m dBuV/m dBuV/m dB cm degree 1 5083.333 60.08 -1.80 58.28 74.00 -15.72 peak 2 1408.333 71.98 -15.42 56.56 74.00 -17.44 peak 3 2412.022 114.07 -9.67 104.40 74.00 30.40 * peak

RESULT: PASS

Note: The other modes radiation emissions have more than 20dB margin.

All modes radiation emission from 6GHz to 25GHz at least have 20dB margin.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

12. BAND EDGE EMISSION

12.1. MEASUREMENT PROCEDURE

- 1. Set the EUT Work on the top, the bottom operation frequency individually.
- 2. Set SPA Start or Stop Frequency = Operation Frequency, RBW>=1%span, VBW>=RBW
- 3. The band edges was measured and recorded.

12.2. TEST SET-UP

Radiated same as 11.2

12.3. TEST RESULT

	T							
EUT	Axe II 3G			М	odel Nar	ne	Z402	
Temperature	25°C			R	elative H	umidity	55.4%	
Pressure	960hPa			Те	est Voltag	ge	Normal Voltage	
Test Mode	802.11b with data rate 1 2412MHZ				ntenna		Horizontal	
116.0 dBuV/m								
76	mmmor				3M	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		
36.0								

 Site:
 site #1
 Polarization:
 Horizontal
 Temperature:
 26

 Limit:
 FCC Class B 3M Radiation above 1GHZ(PK)
 Power:
 Humidity:
 60 %

 EUT:
 Axe II 3G
 Distance:
 3m

 M/N:
 Z402
 Vode:
 802.11b Low Channel TX

 Note:
 Vote:
 Vote:
 Vote:

2370.00

2384.00

2398.00

2412.00

2440.00 MHz

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∨	dB/m	dBu\//m	dBuV/m	dB		cm	degree	
1		2352.267	68.40	-9.73	58.67	74.00	-15.33	peak			
2	*	2412.000	114.86	-9.67	105.19	74.00	31.19	peak			
3		2390.000	74.90	-9.69	65.21	74.00	-8.79	peak			

RESULT: PASS

2300.000 2314.00

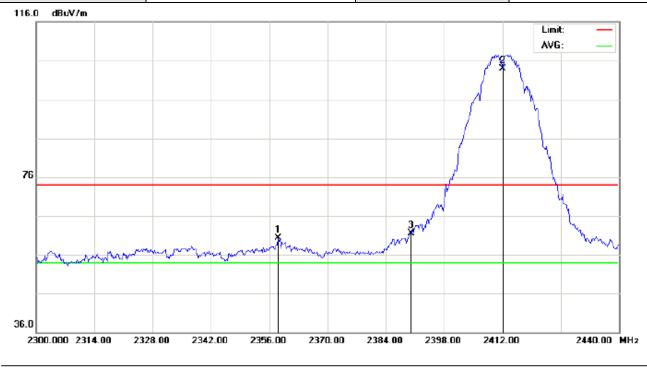
2328.00

2342.00

2356.00

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EUT	Axe II 3G	Model Name	Z402	
Temperature	25°C	Relative Humidity	55.4%	
Pressure	960hPa	Test Voltage	Normal Voltage	
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical	



 Site:
 site #1
 Polarization:
 Vertical
 Temperature:
 26

 Limit:
 FCC Class B 3M Radiation above 1GHZ(PK)
 Power:
 Humidity:
 60 %

 EUT:
 Axe II 3G
 Distance:
 3m

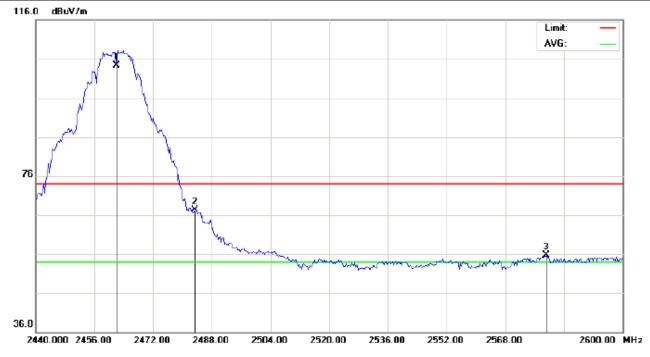
 M/N:
 Z402
 Z402
 Vertical
 Z402

 Mode:
 802.11b Low Channel TX
 Vertical
 Vertical

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∨	dB/m	/m dBu∨/m dBu∨/m dB		cm	degree			
1		2358.100	69.99	-9.73	60.26	74.00	-13.74	peak			
2	*	2412.000	113.58	-9.67	103.91	74.00	29.91	peak			
3		2390.000	71.28	-9.69	61.59	74.00	-12.41	peak			

Report No.: AGC00529140202FE04 Page 59 of 76

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Horizontal



 Site: site #1
 Polarization: Horizontal
 Temperature: 26

 Limit: FCC Class B 3M Radiation above 1GHZ(PK)
 Power:
 Humidity: 60 %

 EUT: Axe II 3G
 Distance: 3m

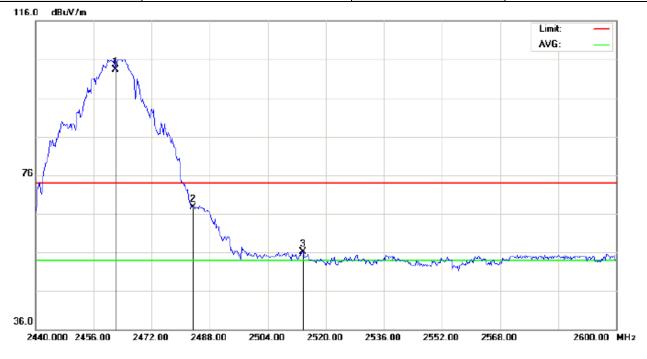
 M/N: Z402
 Mode: 802.11b High Channel TX

 Note:
 Value of the second se

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∨	dB/m	dBu\//m	dBuV/m	dB		cm	degree	
1	*	2462.042	113.89	-9.61	104.28	74.00	30.28	peak			
2		2483.500	76.81	-9.59	67.22	74.00	-6.78	peak			
3		2579.200	65.07	-9.38	55.69	74.00	-18.31	peak			

Report No.: AGC00529140202FE04 Page 60 of 76

EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHZ	Antenna	Vertical



 Site:
 site #1
 Polarization:
 Vertical
 Temperature:
 26

 Limit:
 FCC Class B 3M Radiation above 1GHZ(PK)
 Power:
 Humidity:
 60 %

 EUT:
 Axe II 3G
 Distance:
 3m

 M/N:
 Z402

 Mode:
 802.11b High Channel TX

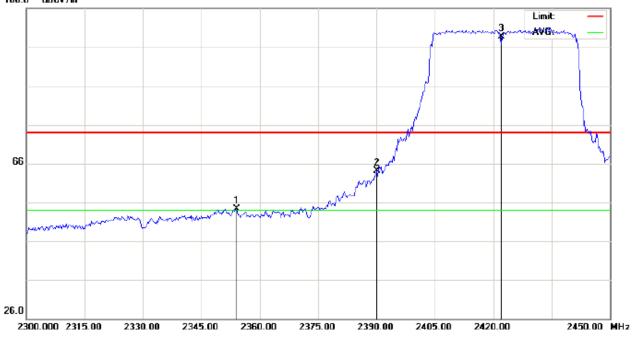
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	· [MHz	dBu∨	dB/m	dBuV/m	dBu∨/m	dB		cm	degree	
1	*	2462.017	112.92	-9.61	103.31	74.00	29.31	peak			
2		2483.500	77.22	-9.59	67.63	74.00	-6.37	peak			
3		2513.600	65.56	-9.54	56.02	74.00	-17.98	peak			

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EUT	Axe II 3G	Model Name	Z402
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 with data rate 13.5 2422MHZ	Antenna	Horizontal





Site: site #1

Limit: FCC Class B 3M Radiation above 1GHZ(PK) EUT: Axe II 3G

Power:

Polarization: Horizontal

Temperature: 26 Humidity: 60 %

Distance: 3m

M/N: Z402

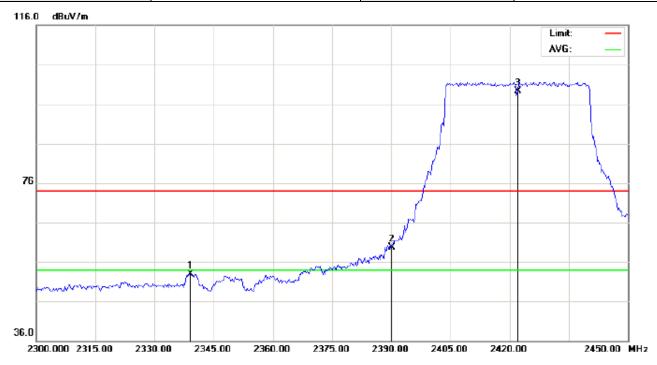
Mode: 802.11n(40) Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2354.000	64.10	-9.73	54.37	74.00	-19.63	peak			
2		2390.000	73.71	-9.69	64.02	74.00	-9.98	peak			
3	*	2422.013	108.31	-9.66	98.65	74.00	24.65	peak			

Report No.: AGC00529140202FE04 Page 62 of 76

EUT	Axe II 3G	Model Name	Z402	
Temperature	25°C	Relative Humidity	55.4%	
Pressure	960hPa	Test Voltage	Normal Voltage	
Test Mode	802.11n 40 with data rate 13.5 2422MHZ	Antenna	Vertical	



Site: site #1 Limit: FCC Class B 3M Radiation above 1GHZ(PK) EUT: Axe II 3G M/N: Z402

Polarization: Vertical

Temperature: 26 Humidity: 60 %

Mode: 802.11n(40) Low Channel TX Note:

Power:		
Distance:	3m	

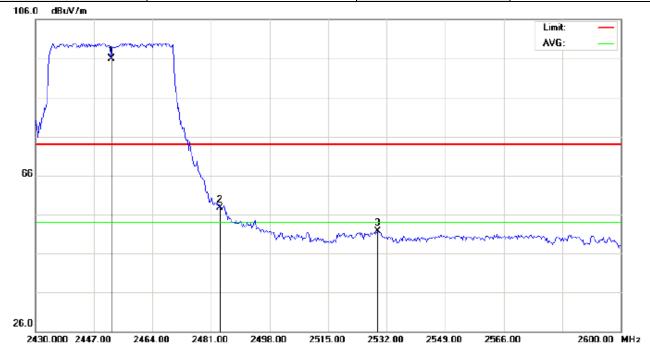
Antenna Table Freq. Reading Factor Measurement Limit Over Mk Height Degree Detector No. Comment . MHz dBu∨ dB/m dBuV/m dBu∀/m dB degree cm 2339.000 62.69 -9.75 52.94 74.00 -21.06 1 peak 2 2390.000 69.40 -9.69 59.71 74.00 -14.29 peak 3 99.21 25.21 2422.000 108.87 -9.66 74.00 peak

Report No.: AGC00529140202FE04 Page 63 of 76

Temperature: 26

Humidity: 60 %

EUT	Axe II 3G	Model Name	Z402	
Temperature	25°C	Relative Humidity	55.4%	
Pressure	960hPa	Test Voltage	Normal Voltage	
Test Mode	802.11n 40 with data rate 13.5 2452MHZ	Antenna	Horizontal	



 Site:
 site #1
 Polarization:
 Horizontal

 Limit:
 FCC Class B 3M Radiation above 1GHZ(PK)
 Power:
 Distance:
 3m

 EUT:
 Axe II 3G
 Distance:
 3m

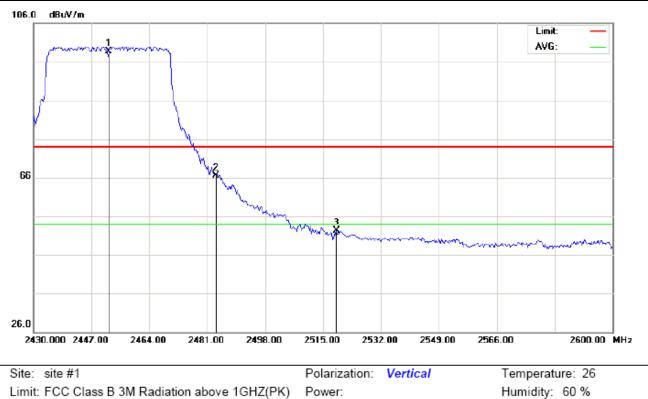
 M/N:
 Z402
 Z402
 Distance:
 3m

 Mode:
 802.11n(40) High Channel TX
 Note:
 Distance:
 3m

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment	
		MHz	dBu∨	dB/m	dBu\//m	dBuV/m	dB		cm	degree		
1	*	2452.010	105.47	-9.62	95.85	74.00	21.85	peak				
2		2483.500	67.29	-9.59	57.70	74.00	-16.30	peak				
3		2529.450	61.17	-9.50	51.67	74.00	-22.33	peak				

Report No.: AGC00529140202FE04 Page 64 of 76

EUT	Axe II 3G	Model Name	Z402		
Temperature	25°C	Relative Humidity	55.4%		
Pressure	960hPa	Test Voltage	Normal Voltage		
Test Mode	802.11n 40 with data rate 13.5 2452MHZ	Antenna	Vertical		



Limit: FCC Class B 3M Radiation above 1GHZ(PK) EUT: Axe II 3G M/N: Z402 Mode: 802.11n(40) High Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2452.005	108.40	-9.62	98.78	74.00	24.78	peak			
2		2483.500	76.03	-9.59	66.44	74.00	-7.56	peak			
3		2518.967	61.79	-9.52	52.27	74.00	-21.73	peak			

Distance: 3m

RESULT: PASS

Note: The other modes radiation emission have enough 20dB margin.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

13. FCC LINE CONDUCTED EMISSION TEST

13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

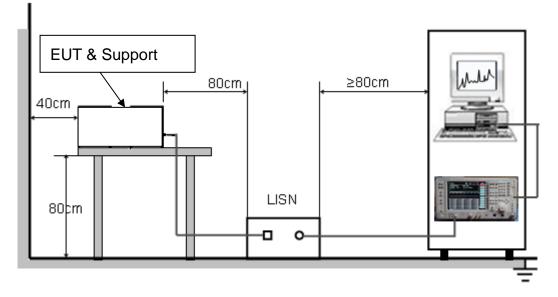
Frequency	Maximum RF Line Voltage							
Frequency	Q.P.(dBuV)	Average(dBuV)						
150kHz~500kHz	66-56	56-46						
500kHz~5MHz	56	46						
5MHz~30MHz	60	50						

Note:

1. The lower limit shall apply at the transition frequency.

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

13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

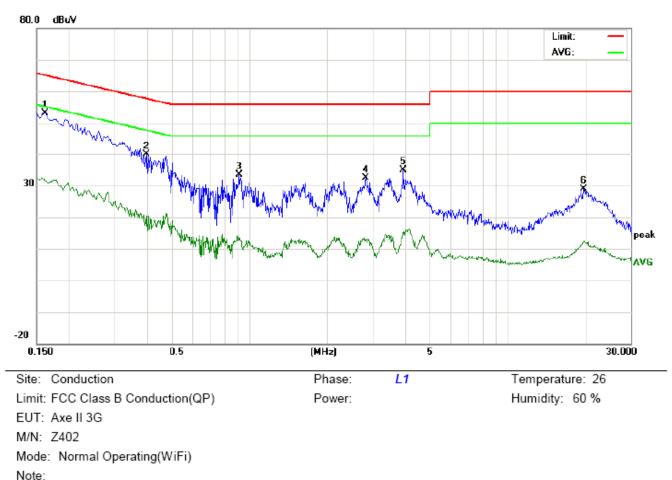
- The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.4.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4. All support equipments received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN..
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

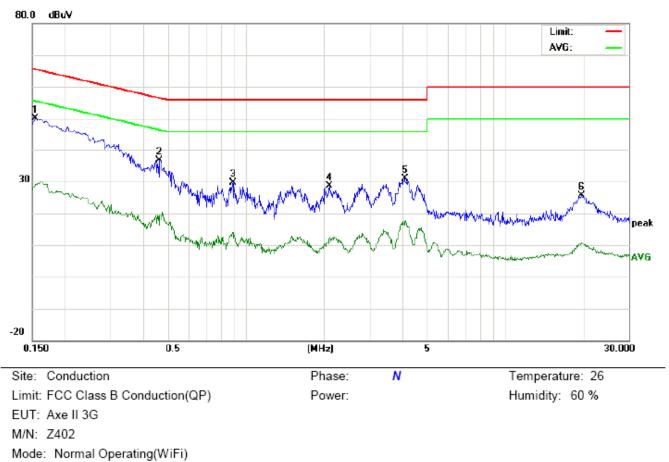
- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST



LINE CONDUCTED EMISSION TEST LINE 1-L

Reading_Level Margin Correct Measurement Limit Freq. (dBuV) Factor (dBuV) (dBuV) (dB) P/F No. Comment (MHz) QP QP Peak AVG dB Peak AVG QP AVG QP AVG 53.21 -23.95 1 0.1620 43.04 21.24 31.41 65.36 55.36 -12.15 Ρ 10.17 2 0.3980 29.67 10.01 40.00 20.34 57.89 47.89 -17.89 -27.55 Ρ 10.33 3 0.9140 22.93 2.78 10.40 33.33 13.18 56.00 46.00 -22.67 -32.82 Ρ 2.57 32.39 Ρ 4 2.8340 21.88 10.51 13.08 56.00 46.00 -23.61 -32.92 5 3.9580 24.56 4.56 10.44 35.00 15.00 56.00 46.00 -21.00 -31.00 Ρ 60.00 50.00 6 19.7099 18.80 2.16 10.11 28.91 12.27 -31.09 -37.73 Ρ



Line Conducted Emission Test Line 2-N

Note:

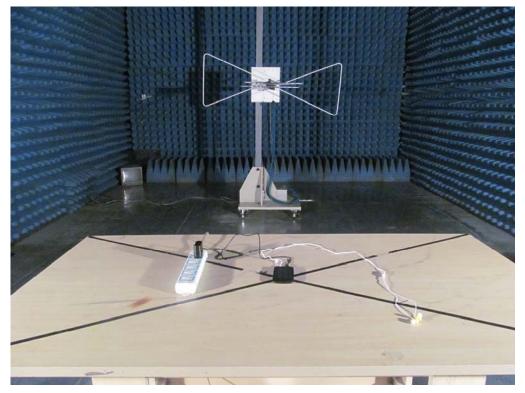
No.	Freq. (MHz)	Reading_Level (dBuV)		Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment	
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1539	40.03		19.02	10.16	50.19		29.18	65.78	55.78	-15.59	-26.60	Р	
2	0.4660	26.36		9.00	10.38	36.74		19.38	56.58	46.58	-19.84	-27.20	Р	
3	0.8940	19.17		3.47	10.40	29.57		13.87	56.00	46.00	-26.43	-32.13	Р	
4	2.1059	18.38		2.12	10.26	28.64		12.38	56.00	46.00	-27.36	-33.62	Р	
5	4.1059	20.43		6.04	10.38	30.81		16.42	56.00	46.00	-25.19	-29.58	Р	
6	19.6417	15.52		0.75	10.11	25.63		10.86	60.00	50.00	-34.37	-39.14	Р	

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP







TOTAL VIEW OF EUT





TOP VIEW OF EUT

BOTTOM VIEW OF EUT





FRONT VIEW OF EUT

BACK VIEW OF EUT





LEFT VIEW OF EUT

RIGHT VIEW OF EUT





OPEN VIEW OF EUT-1

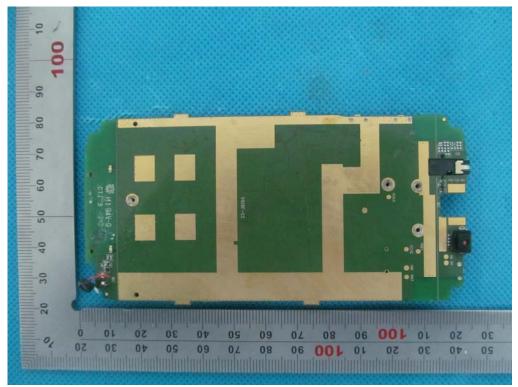
OPEN VIEW OF EUT-2





OPEN VIEW OF EUT-3

INTERNAL VIEW OF EUT-1





INTERNAL VIEW OF EUT-2

----END OF REPORT----