

Report No.: AGC00338130502FE04 Page 1 of 68

FCC Test Report

Report No.: AGC00338130502FE04

FCC ID : 2AAA6S400W

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION: Cellular phone

BRAND NAME : Senwa

MODEL NAME : S400W

CLIENT: SENWA MEXICO, S.A. DE C.V

DATE OF ISSUE : June 13,2013

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	1	June 13,2013	Valid	Original Report

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1. VERIFICATION OF CONFORMITY

Applicant	SENWA MEXICO ,S.A. DE C.V
Address	Av. Javier Barros Sierra 540, Torre I, of. 503, Planta 5; COL. LOMAS DE SANTA FE DELEGACION ALVARO OBREGON C.P. 01210 MEXICO, DISTRITO FEDERAL
Manufacturer	GPLUS TELECOM CO., LTD.
Address	2nd, Fl., B Building, Jiada R&D Building 5 Langshan Rd., North, Hi-tech Industrial Park, Shenzhen, China
Product Designation	Cellular phone
Brand Name	Senwa
Test Model	S400W
Date of test	June 3, 2013 to June 7, 2013
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BGN/RF (2013-03-01)

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.

Wall Huang June 13,2013

Checked By

Forrest Lei June 13,2013

Authorized By

Solger Zhang June 13,2013

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "Cellular phone". It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

A major technical description of EoT is described as following			
Operation Frequency 2.412 GHz~2.462GHz			
Max. Output Power	802.11b:11.95dBm, 802.11g:11.39dBm, 802.11n(20):10.93dBm, 802.11n(40):7.68dBm		
Modulation	DSSS(BPSK/QPSK/CCK);OFDM(16-QAM/64-QAM)		
Data Rate	DSSS(1/2/5.5/11),OFDM(6/9/12/18/24/36/48/54) See section 2.3 for 802.11n		
Number of channels	11		
Hardware Version	E108_V1.1_PCB		
Software Version	N/A		
Antenna Designation	Integrated Antenna		
Antenna Gain	1.2dBi		
Power Supply	DC3.7V by Built-in Li-ion Battery		

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

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2.3. IEEE 802.11N MODULATION SCHEME

MCS Index	Nss	Modulation	R	NBPSC	NCI	NCBPS NDBPS		NDBPS Data rate(Mbps) 800nsGl		
					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

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: 2AAA6S400W** filing to comply with the FCC Part 15 requirements.

2.5. TEST METHODOLOGY

Because the EUT received power from DC3.7V lithium battery, so only 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.

2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

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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 (WiFi)

Note:

Transmit by 802.11b with Date rate (1/2/5.5/11)

Transmit by 802.11g with Date rate (6/9/12/18/24/36/48/54)

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:

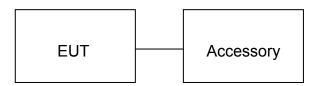
- 1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency individually.
- 2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
- 3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Cellular phone	S400W	FCC ID: 2AAA6S400W	EUT
2	Adapter	S400W	DC5.0V /500mA	Accessory
3	Battery	S400W	DC3.7V/ 850 mAh	Accessory
4	Earphone	S400W	N/A	Accessory
5	USB Cable	S400W	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.

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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 meter	R&S	NRP-Z23	100323	07/18/2012	07/17/2013
RF attenuator	N/A	RFA20db	68	N/A	N/A
Spectrum Analyzer	Agilent	E4440A	US41421290	07/18/2012	07/17/2013
Amplifier	EM	EM30180	0607030	07/18/2012	07/17/2013
Horn Antenna	EM	EM-AH-10180	67	04/21/2013	04/20/2014
Horn Antenna	A.H. Systems Inc.	SAS-574		07/18/2012	07/17/2013
EMI Test Receiver	Rohde & Schwarz	ESCI	100694	07/18/2012	07/17/2013
Biological Antenna	A.H. Systems Inc.	SAS-521-4	26	06/08/2012	06/07/2013
Loop Antenna	A.H.	SAS-526B	264	07/15/2012	07/14/2013

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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. Set the RBW greater than 6DB bandwidth of emission.
- 5. Record the maximum power from the Spectrum Analyzer.

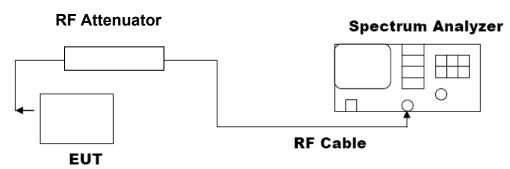
For average power test:

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

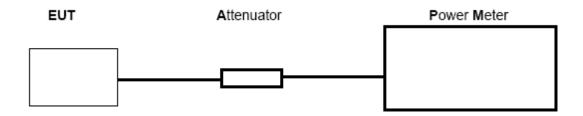
Note: The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

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

PEAK POWER TEST SETUP



AVERAGE POWER SETUP



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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	9.86	11.80	30	Pass
2.437	9.79	11.74	30	Pass
2.462	9.99	11.95	30	Pass

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	9.38	11.33	30	Pass
2.437	9.33	11.27	30	Pass
2.462	9.44	11.39	30	Pass

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	8.94	10.88	30	Pass
2.437	8.88	10.83	30	Pass
2.462	8.97	10.93	30	Pass

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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	5.57	7.63	30	Pass
2.437	5.53	7.42	30	Pass
2.452	5.73	7.68	30	Pass

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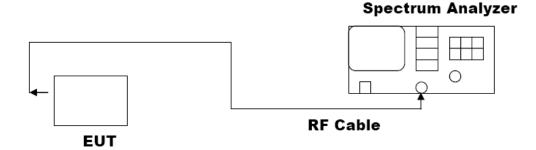
8. 6DB BANDWIDTH

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.
- 3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW≥RBW.
- 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.

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



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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		Criteria	
	Low Channel	10.098	PASS	
>500KHZ	Middle Channel	10.077	PASS	
	High Channel	10.057	PASS	

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

LIMITS AND MEASUREMENT RESULT			
Annlinghla Limita	Applicable Limits		
Applicable Limits	Test Data (MHz)		Criteria
>500KHZ	Low Channel	16.518	PASS
	Middle Channel	16.524	PASS
	High Channel	16.525	PASS

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

LIMITS AND MEASUREMENT RESULT			
Applicable Limits			
Applicable Limits	Test Data (MHz)		Criteria
>500KHZ	Low Channel	17.739	PASS
	Middle Channel	17.711	PASS
	High Channel	17.722	PASS

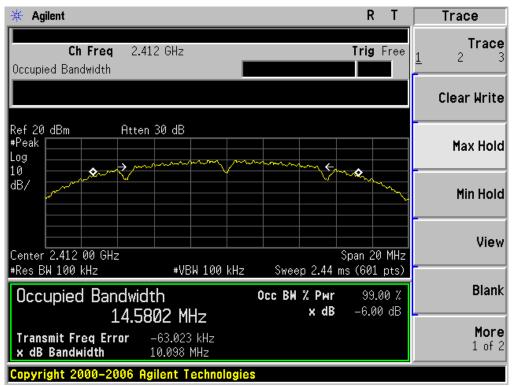
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TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 40 with data rate 135

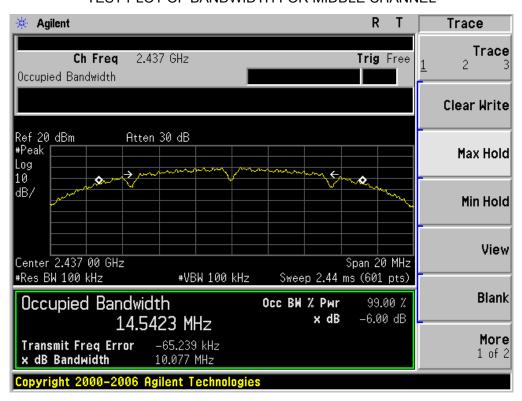
LIMITS AND MEASUREMENT RESULT			
Applicable Limits			
Applicable Limits	Test Data (MHz)		Criteria
>500KHZ	Low Channel	36.469	PASS
	Middle Channel	36.466	PASS
	High Channel	36.439	PASS

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802.11b TEST RESULTTEST PLOT OF BANDWIDTH FOR LOW CHANNEL

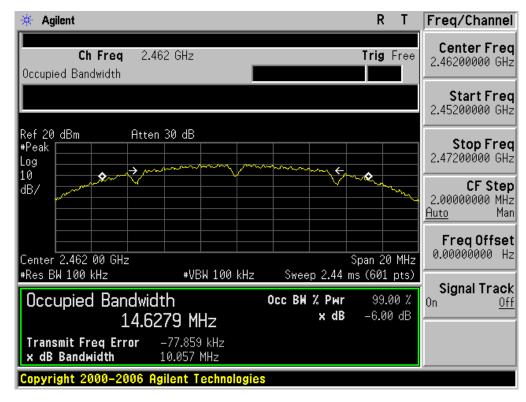


TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



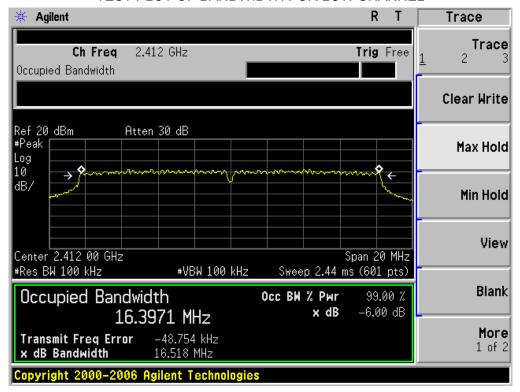
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TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

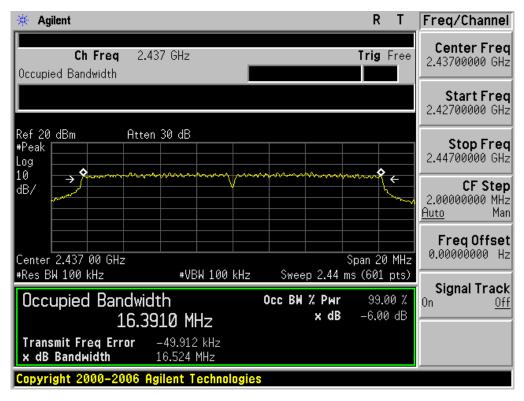


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802.11g TEST RESULTTEST PLOT OF BANDWIDTH FOR LOW CHANNEL

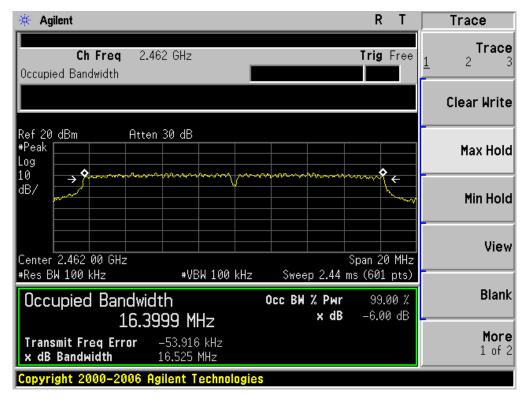


TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



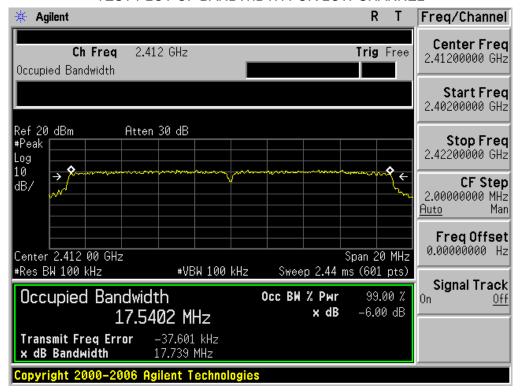
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TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

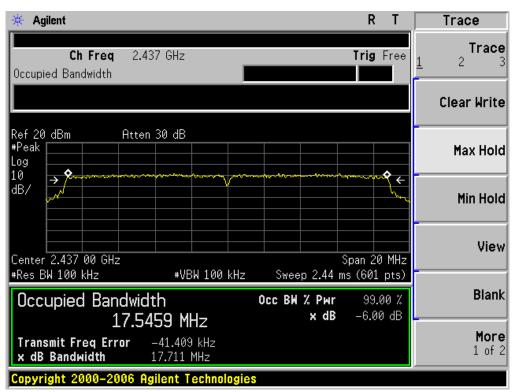


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802.11n(20) TEST RESULT
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

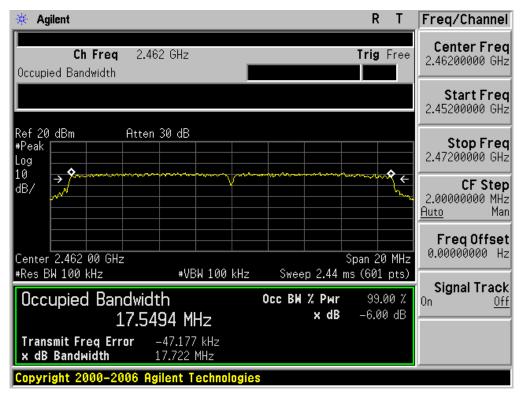


TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



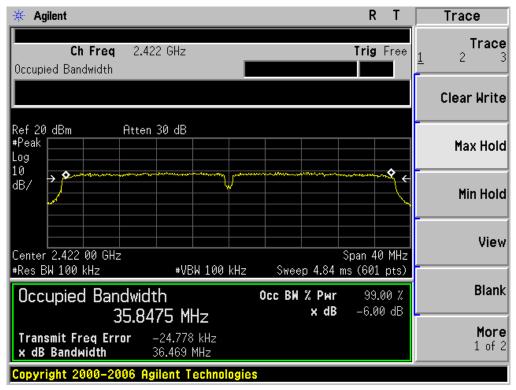
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TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

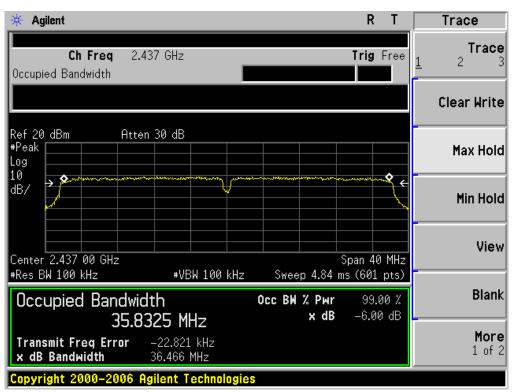


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802.11n(40) TEST RESULT
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

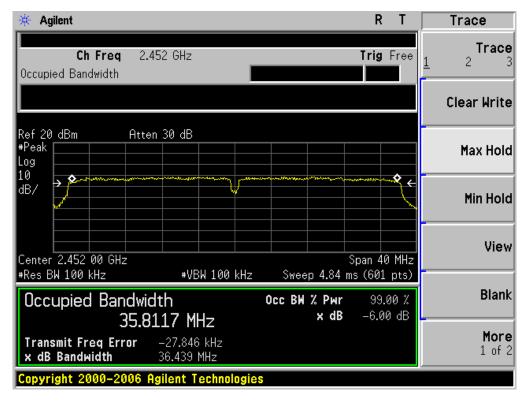


TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



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TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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9. CONDUCTED SPURIOUS EMISSION

9.1. MEASUREMENT PROCEDURE

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 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. Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

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

The same as described in section 8.2.

9.3. MEASUREMENT EQUIPMENT USED

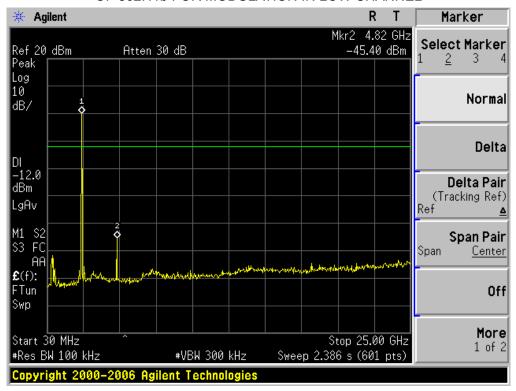
The same as described in section 6.

9.4. LIMITS AND MEASUREMENT RESULT

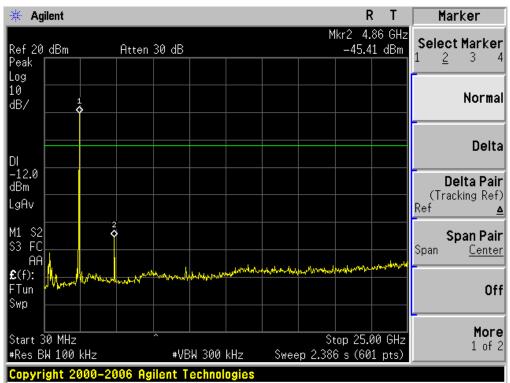
LIMITS AND MEASUREMENT RESULT				
Angliaghla Limite	Measurement Result			
Applicable Limits	Test Data	Criteria		
In any 100 KHz Bandwidth Outside the	At least -20dBc than the limit			
frequency band in which the spread spectrum	Specified on the BOTTOM	PASS		
intentional radiator is operating, the radio 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.	At least -20dBc than the limit	DACC		
In addition, radiation emissions which fall in the	Specified on the TOP Channel	PASS		
restricted bands, as defined in §15.205(a), must also				
comply with the radiated emission limits specified				
in§15.209(a))				

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

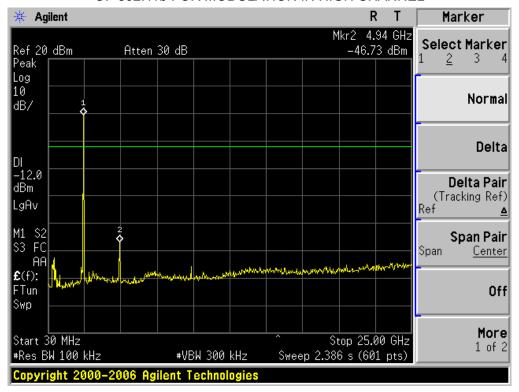


TEST PLOT OF OUT OF BAND EMISSIONS
OF 802.11b FOR MODULATION IN MIDDLE CHANNEL



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TEST PLOT OF OUT OF BAND EMISSIONS OF 802.11b FOR MODULATION IN HIGH CHANNEL



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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.

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	-18.53	8	Pass
Middle Channel	-18.86	8	Pass
High Channel	-16.24	8	Pass

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

Channel No.	PSD (dBm)	Limit (dBm)	Result
Low Channel	-21.28	8	Pass
Middle Channel	-21.19	8	Pass
High Channel	-20.89	8	Pass

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

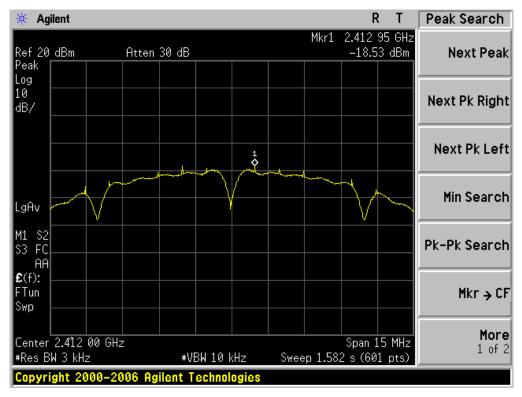
Channel No.	PSD (dBm)	Limit (dBm)	Result
Low Channel	-22.80	8	Pass
Middle Channel	-22.41	8	Pass
High Channel	-22.97	8	Pass

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

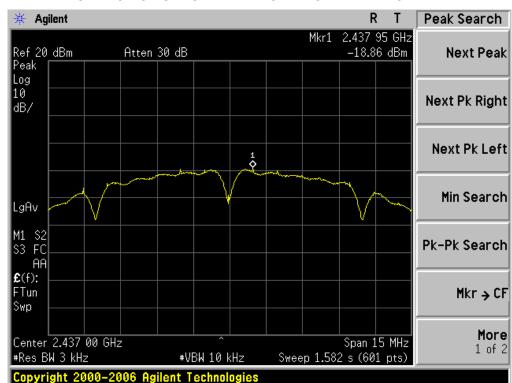
Channel No.	PSD (dBm)	Limit (dBm)	Result
Low Channel	-24.65	8	Pass
Middle Channel	-25.02	8	Pass
High Channel	-24.68	8	Pass

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

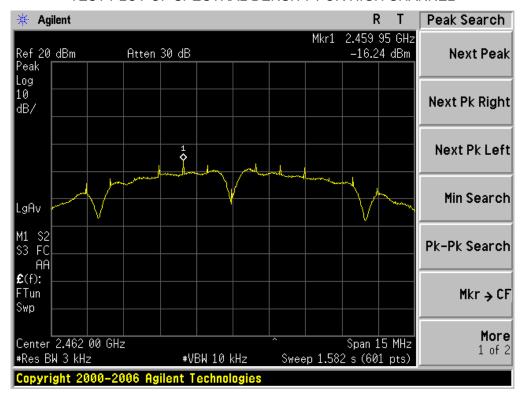


TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



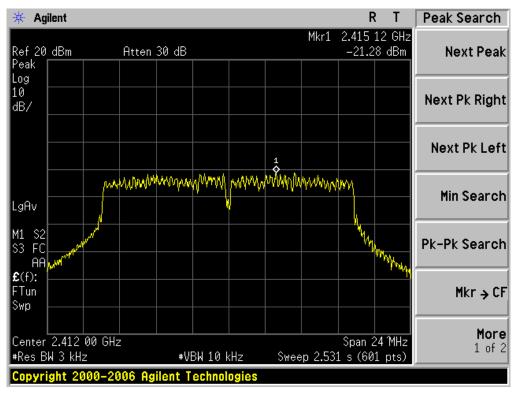
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TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

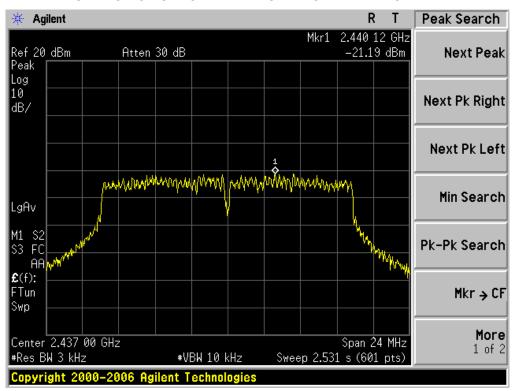


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802.11g TEST RESULTTEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

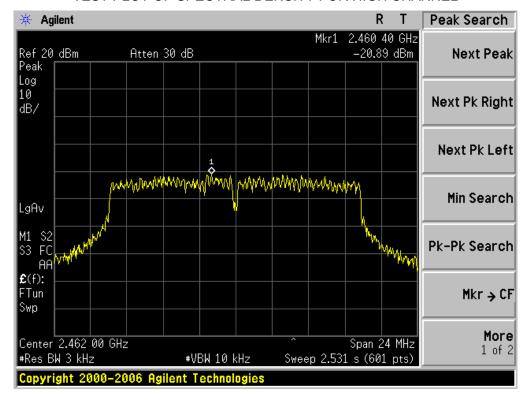


TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



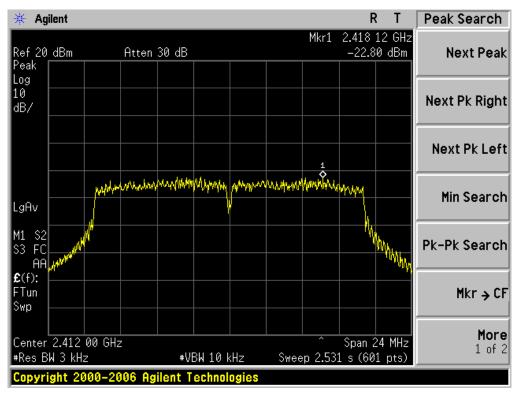
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TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

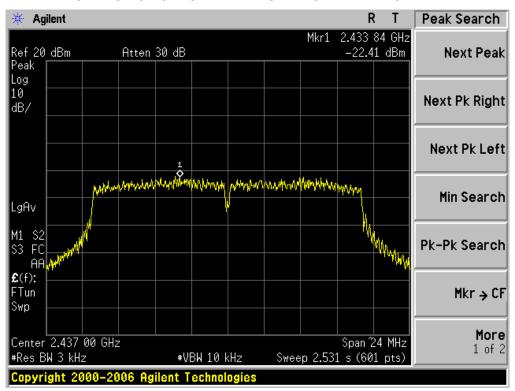


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802.11n 20 TEST RESULTTEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

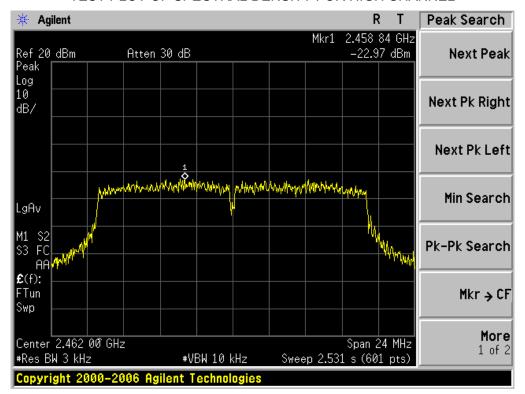


TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



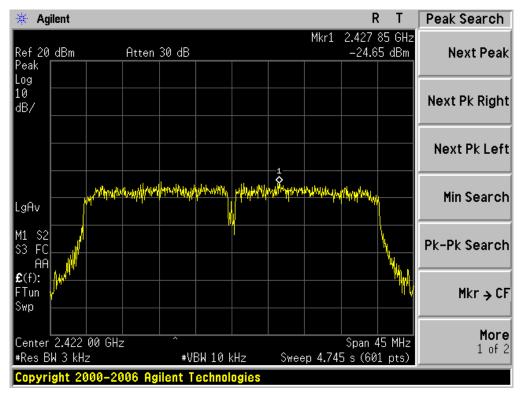
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TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

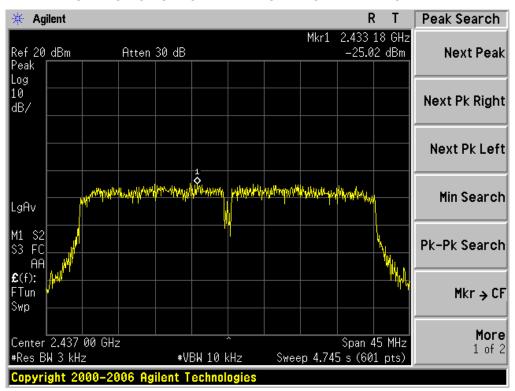


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802.11n 40 TEST RESULT
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL

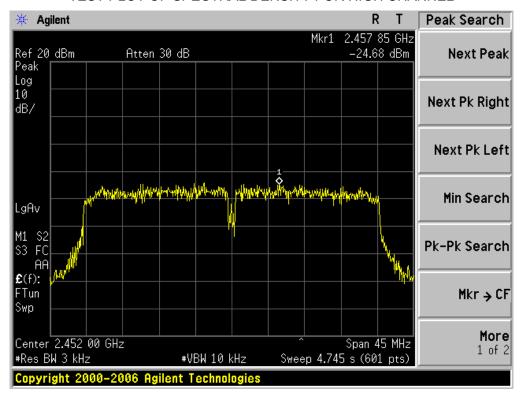


TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



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TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



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11. RADIATED EMISSION

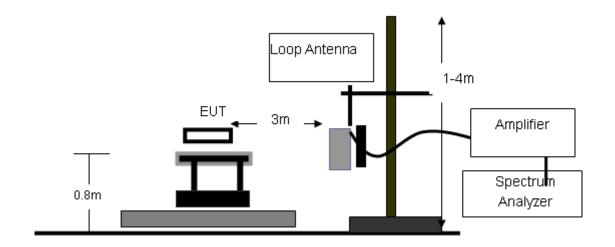
11.1. MEASUREMENT PROCEDURE

- 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.

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11.2. TEST SETUP

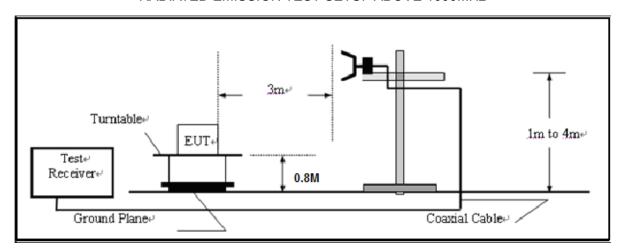
RADIATED EMISSION TEST SETUP BELOW 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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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

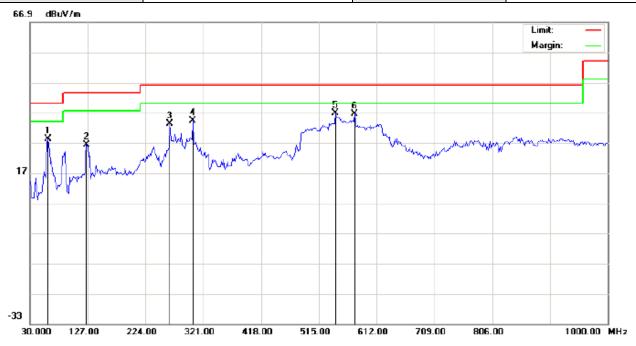
RADIATED EMISSION BELOW 30MHZ

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

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RADIATED EMISSION BELOW 1GHZ

EUT	Cellular phone	Model Name	S400W
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 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

M/N: S400W

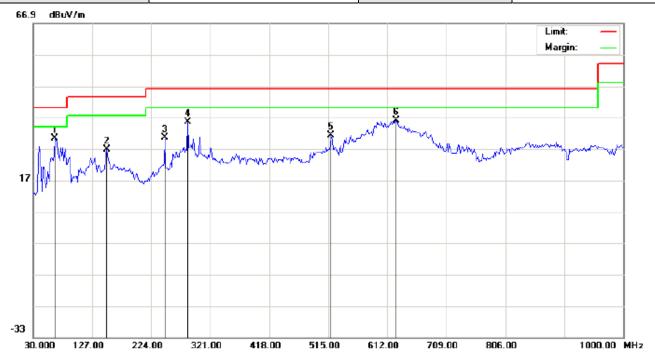
Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu√/m	dBu∀/m	dB		cm	degree	
1		60.7167	24.12	4.06	28.18	40.00	-11.82	peak			
2		125.3833	13.58	12.72	26.30	43.50	-17.20	peak			
3		264.4166	18.57	14.71	33.28	46.00	-12.72	peak			
4		303.2167	17.04	17.21	34.25	46.00	-11.75	peak			
5	*	542.4832	16.20	20.62	36.82	46.00	-9.18	peak			
6		574.8166	12.03	24.49	36.52	46.00	-9.48	peak			

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EUT	Cellular phone	Model Name	S400W	
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 Polarization: Vertical Temperature: 26
Limit: FCC Class B 3M Radiation Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

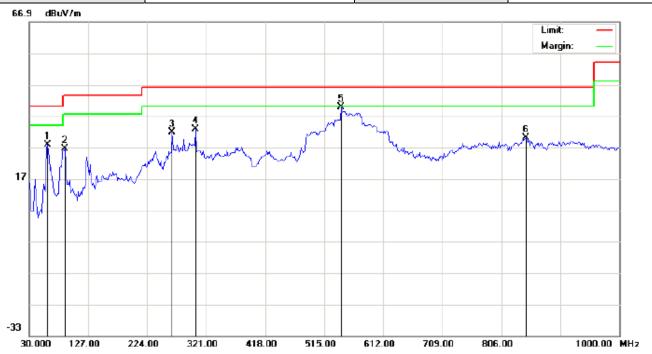
M/N: S400W

Mode: Low 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	*	65.5665	27.76	2.64	30.40	40.00	-9.60	peak			
2		151.2500	13.08	13.67	26.75	43.50	-16.75	peak			
3		246.6332	16.20	14.23	30.43	46.00	-15.57	peak			
4		283.8167	18.49	17.16	35.65	46.00	-10.35	peak			
5		519.8500	8.06	23.29	31.35	46.00	-14.65	peak			
6		626.5499	11.16	24.96	36.12	46.00	-9.88	peak			

EUT	Cellular phone	Model Name	S400W
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 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

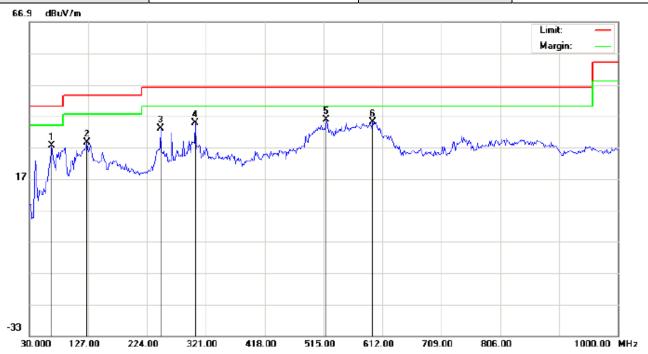
M/N: S400W

Mode: Middle 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		60.7167	23.62	4.06	27.68	40.00	-12.32	peak			
2		88.2000	10.44	16.03	26.47	43.50	-17.03	peak			
3		264.4166	17.07	14.71	31.78	46.00	-14.22	peak			
4		303.2167	15.54	17.21	32.75	46.00	-13.25	peak			
5	*	542.4832	19.20	20.62	39.82	46.00	-6.18	peak			
6		846.4166	-0.60	30.63	30.03	46.00	-15.97	peak			

EUT	Cellular phone	Model Name	S400W
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 Polarization: Vertical Temperature: 26
Limit: FCC Class B 3M Radiation Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

M/N: S400W

Mode: Middle Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		67.1833	24.41	3.21	27.62	40.00	-12.38	peak			
2		125.3833	21.09	7.53	28.62	43.50	-14.88	peak			
3		246.6332	18.70	14.23	32.93	46.00	-13.07	peak			
4		303.2167	17.56	17.21	34.77	46.00	-11.23	peak			
5	*	519.8500	12.56	23.29	35.85	46.00	-10.15	peak			
6		595.8333	10.15	24.87	35.02	46.00	-10.98	peak			

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EUT	Cellular phone	Model Name	S400W
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 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

M/N: S400W

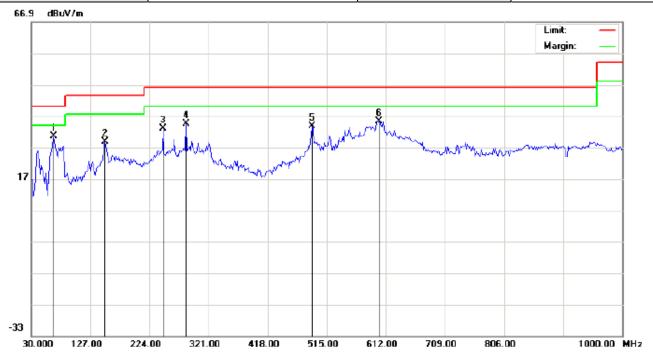
Mode: High Channel TX

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		39.7000	20.79	8.04	28.83	40.00	-11.17	peak			
2		86.5832	10.43	14.95	25.38	40.00	-14.62	peak			
3		264.4166	18.07	14.71	32.78	46.00	-13.22	peak			
4		458.4166	12.38	21.52	33.90	46.00	-12.10	peak			
5	*	608.7667	12.90	24.98	37.88	46.00	-8.12	peak			
6		846.4166	1.90	30.63	32.53	46.00	-13.47	peak			

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EUT	Cellular phone	Model Name	S400W
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Vertical



Site: site #1 Polarization: Vertical Temperature: 26
Limit: FCC Class B 3M Radiation Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

M/N: S400W

Mode: High Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1	*	67.1833	27.41	3.21	30.62	40.00	-9.38	peak			
2		151.2500	15.08	13.67	28.75	43.50	-14.75	peak			
3		246.6332	18.70	14.23	32.93	46.00	-13.07	peak			
4		283.8167	17.49	17.16	34.65	46.00	-11.35	peak			
5		490.7500	11.49	22.36	33.85	46.00	-12.15	peak			
6		600.6833	10.34	24.92	35.26	46.00	-10.74	peak			

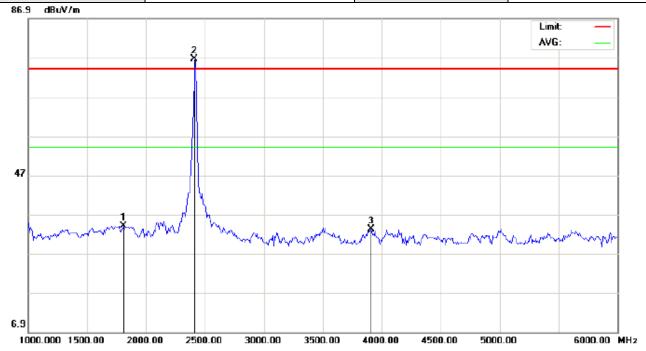
RESULT: PASS

Note: Measurement= Reading + Factor, Over=Measure-Limit.

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RADIATED EMISSION ABOVE 1GHZ

EUT	Cellular phone	Model Name	S400W
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 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

M/N: S400W

Mode: Low Channel TX

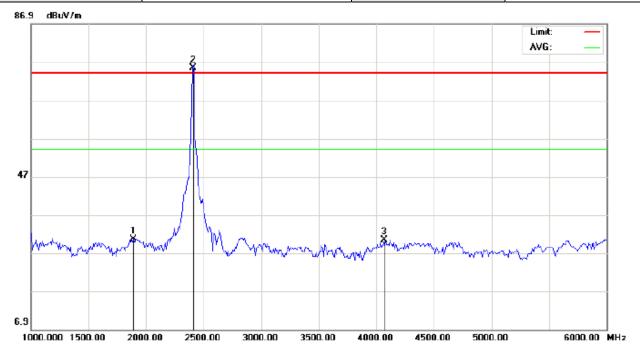
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		1808.333	34.08	0.00	34.08	74.00	-39.92	peak			
2	*	2412.000	76.66	0.00	76.66	74.00	2.66	peak			
3		3908.333	33.16	0.00	33.16	74.00	-40.84	peak			

^{**}The mark "2" is the basic frequency.

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EUT	Cellular phone	Model Name	S400W
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 Polarization: Vertical Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

Distance: 3m

EUT: Cellular phone

M/N: S400W

Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		1891.667	30.53	0.00	30.53	74.00	-43.47	peak			
2	*	2412.000	75.42	0.00	75.42	74.00	1.42	peak			
3		4066.667	30.38	0.00	30.38	74.00	-43.62	peak			

^{**}The mark "2" is the basic frequency.

RESULT: PASS

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

Measurement= Reading + Factor, Over=Measure-Limit.

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

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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.

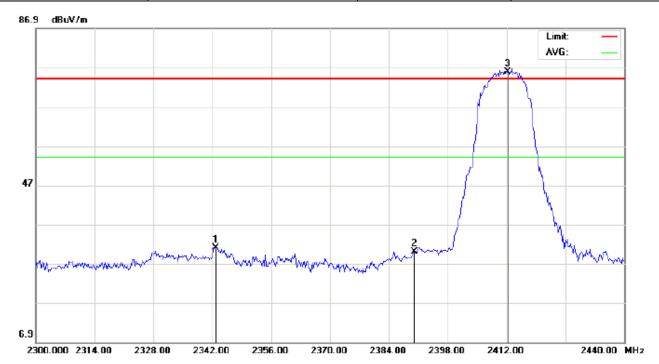
12.2. TEST SET-UP

Radiated same as 11.2

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12.3. TEST RESULT

EUT	Cellular phone	Model Name	S400W
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal



Site: site #1 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

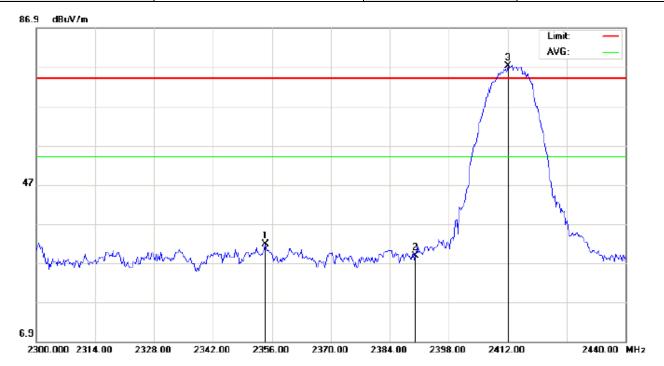
M/N: S400W

Mode: 802.11b Low channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		2342.933	31.08	0.00	31.08	74.00	-42.92	peak			
2		2390.000	30.10	0.00	30.10	74.00	-43.90	peak			
3	*	2412.200	75.73	0.00	75.73	74.00	1.73	peak			

EUT	Cellular phone	Model Name	S400W
Temperature	25°C	Relative Humidity	55.4%
Pressure	sure 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: Cellular phone Distance: 3m

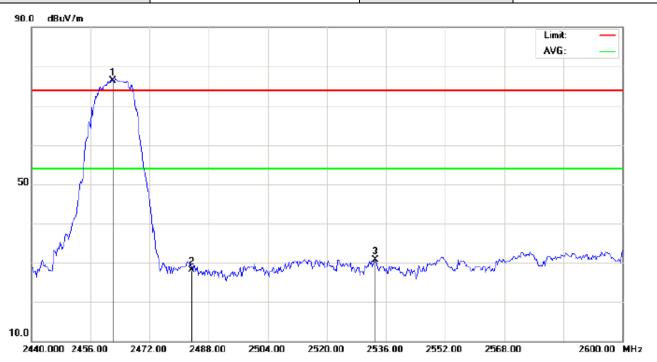
M/N: S400W

Mode: 802.11b Low channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBu∀	dB/m	dBu\//m	dBu∀/m	dB		cm	degree	
1		2354.367	31.82	0.00	31.82	74.00	-42.18	peak			
2		2390.000	28.75	0.00	28.75	74.00	-45.25	peak			
3	*	2412.000	77.19	0.00	77.19	74.00	3.19	peak			

EUT	Cellular phone	Model Name	S400W
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: Cellular phone Distance: 3m

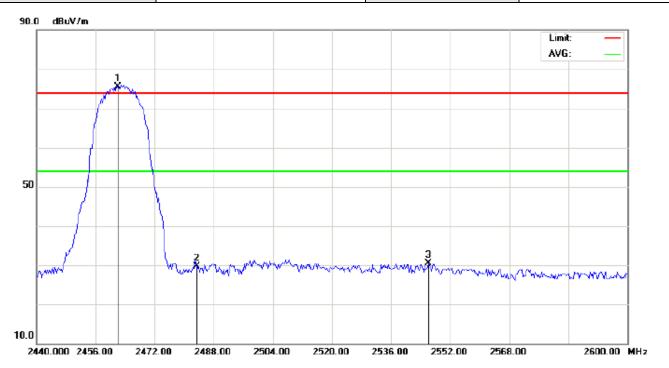
M/N: S400W

Mode: 802.11b High channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height		Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1	*	2462.000	76.26	0.00	76.26	74.00	2.26	peak			
2		2483.500	28.08	0.00	28.08	74.00	-45.92	peak			
3		2533.067	30.75	0.00	30.75	74.00	-43.25	peak			

EUT	Cellular phone	Model Name	S400W
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: Cellular phone Distance: 3m

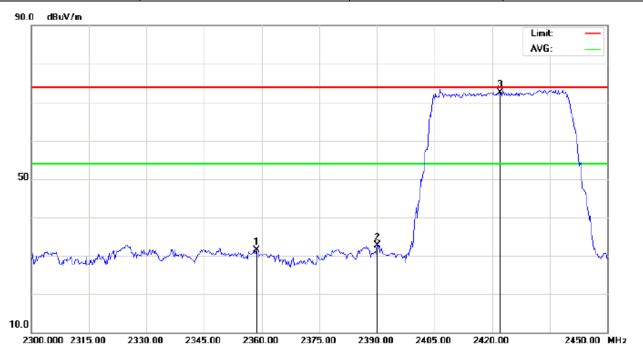
M/N: S400W

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	dBu∀/m	dBu∀/m	dB		cm	degree	
1	*	2462.000	75.49	0.00	75.49	74.00	1.49	peak			
2		2483.500	29.63	0.00	29.63	74.00	-44.37	peak			
3		2546.133	30.52	0.00	30.52	74.00	-43.48	peak			

EUT	Cellular phone	Model Name	S400W
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 Polarization: Horizontal Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

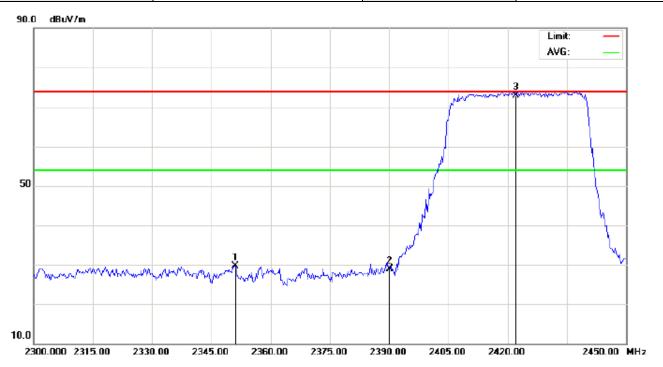
M/N: S400W

Mode: 802.11n40 Low channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment	
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree		
1		2358.750	31.53	0.00	31.53	74.00	-42.47	peak				
2		2390.000	32.74	0.00	32.74	74.00	-41.26	peak				
3	*	2422.079	72.43	0.00	72.43	74.00	-1.57	peak				

EUT	Cellular phone	Model Name	S400W
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 Polarization: Vertical Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

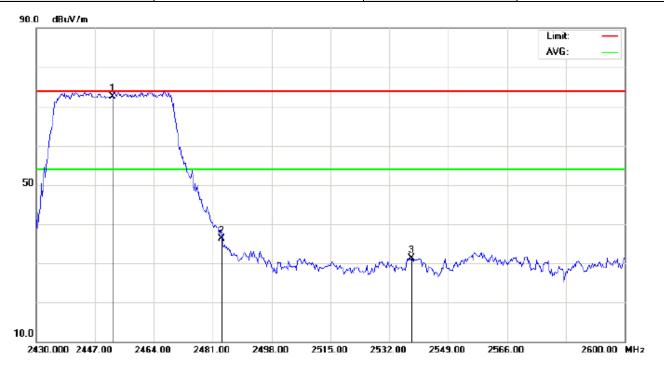
M/N: S400W

Mode: 802.11n40 Low channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1		2351.000	29.68	0.00	29.68	74.00	-44.32	peak			
2		2390.100	28.81	0.00	28.81	74.00	-45.19	peak			
3	*	2422.102	72.87	0.00	72.87	74.00	-1.13	peak			

EUT	Cellular phone	Model Name	S400W
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 Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

M/N: S400W

Mode: 802.11n40 High channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu\//m	dBu∀/m	dB		cm	degree	
1	*	2452.011	72.50	0.00	72.50	74.00	-1.50	peak			
2		2483.500	36.23	0.00	36.23	74.00	-37.77	peak			
3		2538.517	31.33	0.00	31.33	74.00	-42.67	peak			

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EUT	Cellular phone	Model Name	S400W	
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	



Site: site #1 Polarization: Vertical Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Cellular phone Distance: 3m

M/N: S400W

Mode: 802.11n40 High channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	-	MHz	dBu∀	dB/m	dBu∀/m	dBu∀/m	dB		cm	degree	
1	*	2452.069	73.20	0.00	73.20	74.00	-0.80	peak			
2		2483.500	33.92	0.00	33.92	74.00	-40.08	peak			
3		2534.550	33.71	0.00	33.71	74.00	-40.29	peak			

RESULT: PASS

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

Measurement= Reading + Factor, Over=Measure-Limit.

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13. FCC LINE CONDUCTED EMISSION TEST

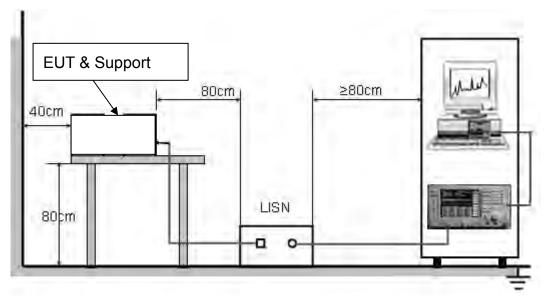
13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Francisco	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



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13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. 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 DC5V 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

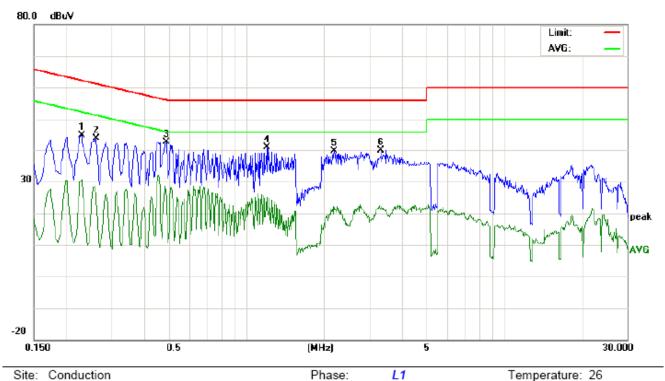
- EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used 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.

Humidity: 60 %

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13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST LINE 1-L



Site: Conduction

Limit: FCC Class B Conduction(QP)

EUT: Cellular phone

M/N: S400W

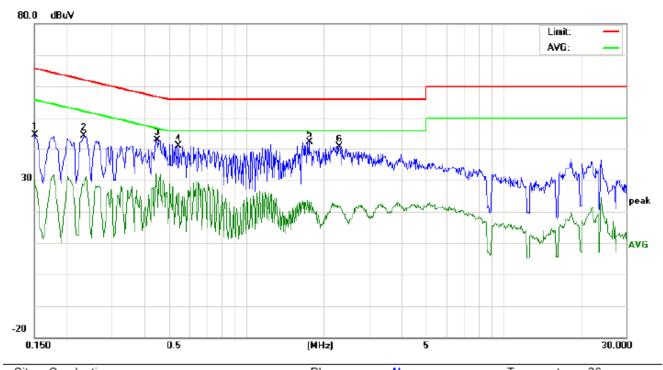
Mode: Normal Operating(WiFi)

Note:

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)					Margin (dB)		Comment	
	(MHz)	Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.2300	34.53		20.30	10.25	44.78		30.55	62.45	52.45	-17.67	-21.90	Р	
2	0.2600	33.59		15.65	10.27	43.86		25.92	61.43	51.43	-17.57	-25.51	Р	
3	0.4899	32.20		13.47	10.39	42.59		23.86	56.17	46.17	-13.58	-22.31	Р	
4	1.2018	30.45		14.74	10.37	40.82		25.11	56.00	46.00	-15.18	-20.89	Р	
5	2.1979	29.43		11.52	10.30	39.73		21.82	56.00	46.00	-16.27	-24.18	Р	
6	3.3420	29.40		11.10	10.52	39.92		21.62	56.00	46.00	-16.08	-24.38	Р	

Power:

Line Conducted Emission Test Line 2-N



Site: Conduction Phase: N Temperature: 26
Limit: FCC Class B Conduction(QP) Power: Humidity: 60 %

EUT: Cellular phone M/N: S400W

Mode: Normal Operating(WiFi)

Note:

No.	Freq.	Reading_Level (dBuV)					Limit (dBuV)		Margin (dB)		P/F	Comment		
	(MHz)	Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1499	34.35		19.84	10.16	44.51		30.00	66.00	56.00	-21.49	-26.00	Р	
2	0.2340	34.22		18.19	10.25	44.47		28.44	62.30	52.30	-17.83	-23.86	Р	
3	0.4500	32.60		18.26	10.37	42.97		28.63	56.87	46.87	-13.90	-18.24	Р	
4	0.5460	30.59		15.65	10.36	40.95		26.01	56.00	46.00	-15.05	-19.99	Р	
5	1.7580	31.93		12.70	10.30	42.23		23.00	56.00	46.00	-13.77	-23.00	Р	
6	2.3020	30.34		11.46	10.35	40.69		21.81	56.00	46.00	-15.31	-24.19	Р	

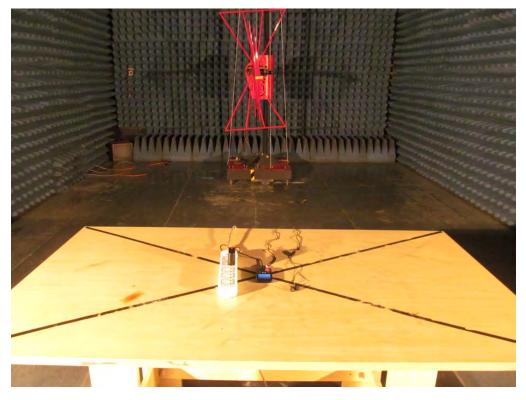
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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP



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APPENDIX B: PHOTOGRAPHS OF EUT

TOTAL VIEW OF EUT



TOP VIEW OF EUT



BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



BACK VIEW OF EUT



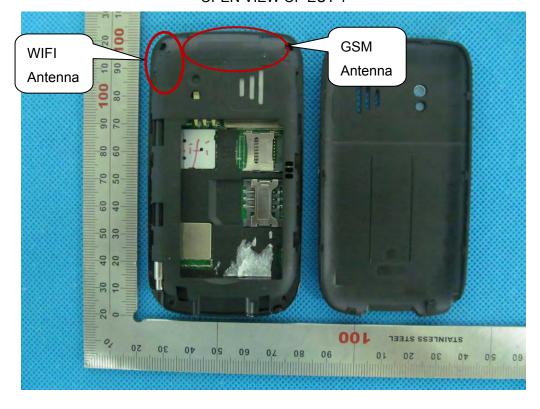
LEFT VIEW OF EUT



RIGHT VIEW OF EUT



OPEN VIEW OF EUT-1



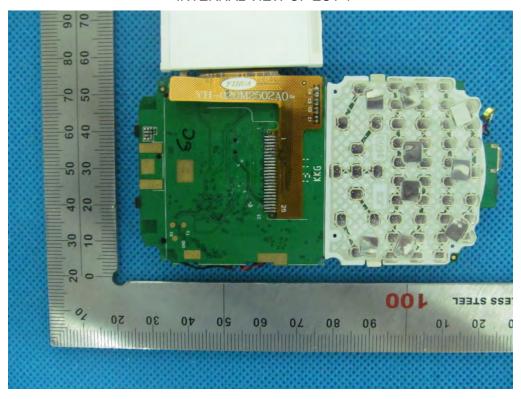
OPEN VIEW OF EUT-2



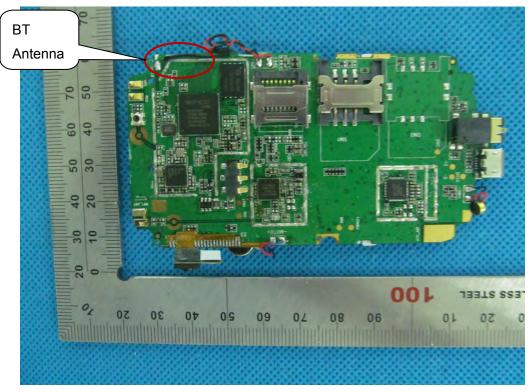
OPEN VIEW OF EUT-3



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



----END OF REPORT----