

FCC RF Test Report

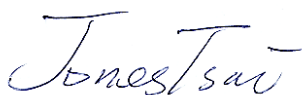
APPLICANT : Senga Na Lenga Limited Liability Company
EQUIPMENT : Tablet
MODEL NAME : SR87CV
FCC ID : 2ACBF-6708
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The testing was completed on May 14, 2015. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

Report No. : FR520216-01C
Report Version : Rev. 01
Page Number : 1 of 39

Report Template No.: BU5-FR15CWL Version 1.0

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR520216-01C	Rev. 01	Initial issue of report	Jun. 02, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm/3kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.38 dB at 2483.960 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 11.00 dB at 1.078 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Senga Na Lenga Limited Liability Company
3900 N. Causeway Blvd.
Suite 1200
Metairie, Louisiana 70002

1.2 Product Feature of Equipment Under Test

Product Feature	
Equipment	Tablet
Model Name	SR87CV
FCC ID	2ACBF-6708
EUT supports Radios application	WLAN 11b/g/n (HT20) WLAN 11a/n (HT20/HT40) WLAN 11ac (VHT20/VHT40/VHT80) Bluetooth v4.1 EDR/LE

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.3 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to Antenna	802.11b : 17.64 dBm (0.0581 W) 802.11g : 23.81 dBm (0.2404 W) 802.11n HT20 : 23.66 dBm (0.2323 W)
Antenna Type	Fixed Internal Antenna type with gain 1.20 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH02-HY	CO05-HY

Note: The test site complies with ANSI C63.4 2009 requirement.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH11-HY	

1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
- ANSI C63.10-2009

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. FCC permits the use of the 1.5 meter table as an alternative in C63.10-2013 through inquiry tracking number 961829.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	17.64	17.20	17.08	17.10

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	23.81	23.18	23.14	23.09	23.11	23.42	23.40	23.47

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	23.66	23.05	23.11	23.05	22.93	22.83	23.35	23.01

2.3 Test Mode

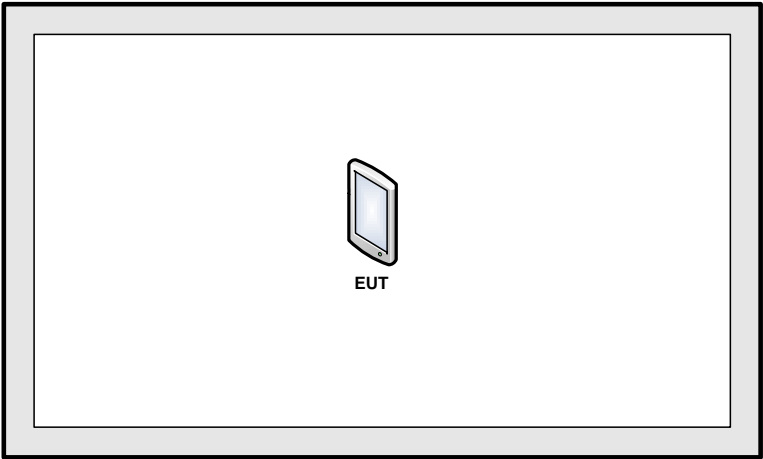
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

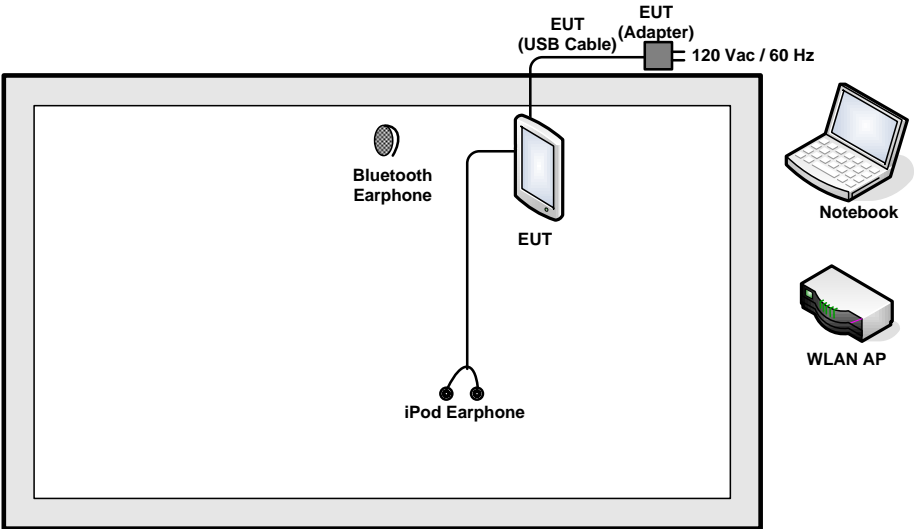
Test Cases	
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Earphone + USB Cable (Charging from Adapter) + MicroSD Card

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.6 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

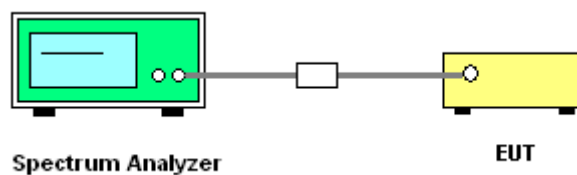
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

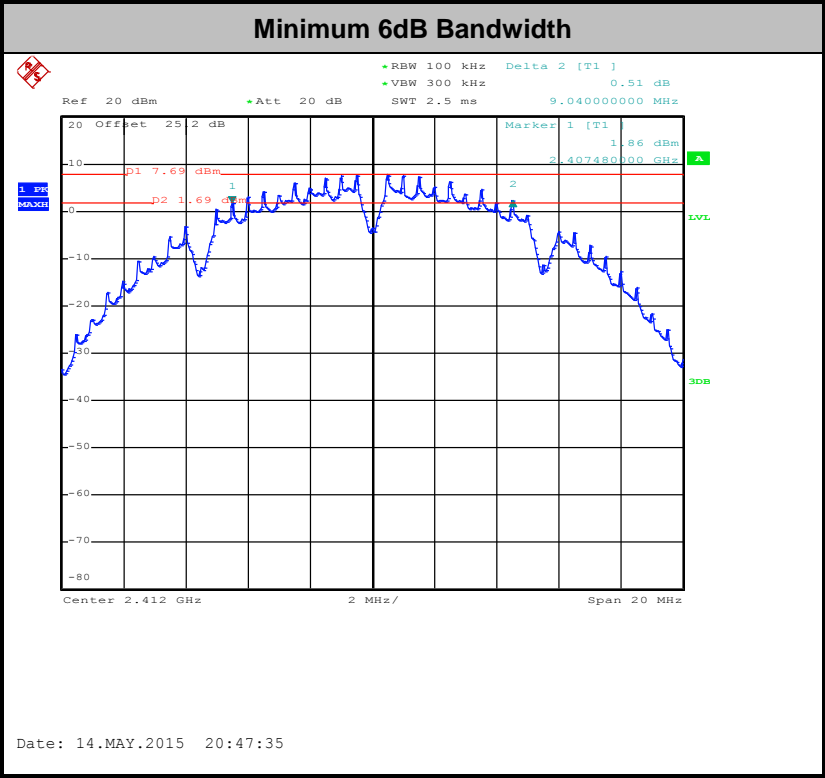
1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A of this test report.



3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting Antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the Antenna exceeds 6dBi.

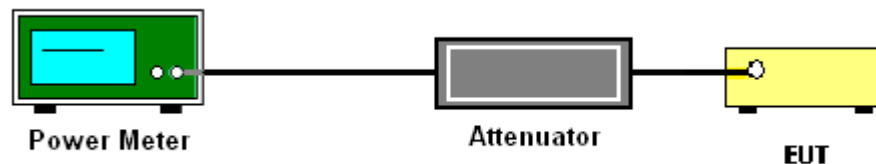
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r02 section 9.1.2 PKPM1 Peak power meter method.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Please refer to Appendix A of this test report.

3.2.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A of this test report.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

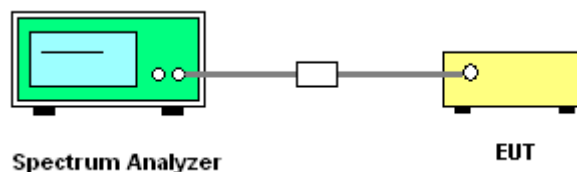
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

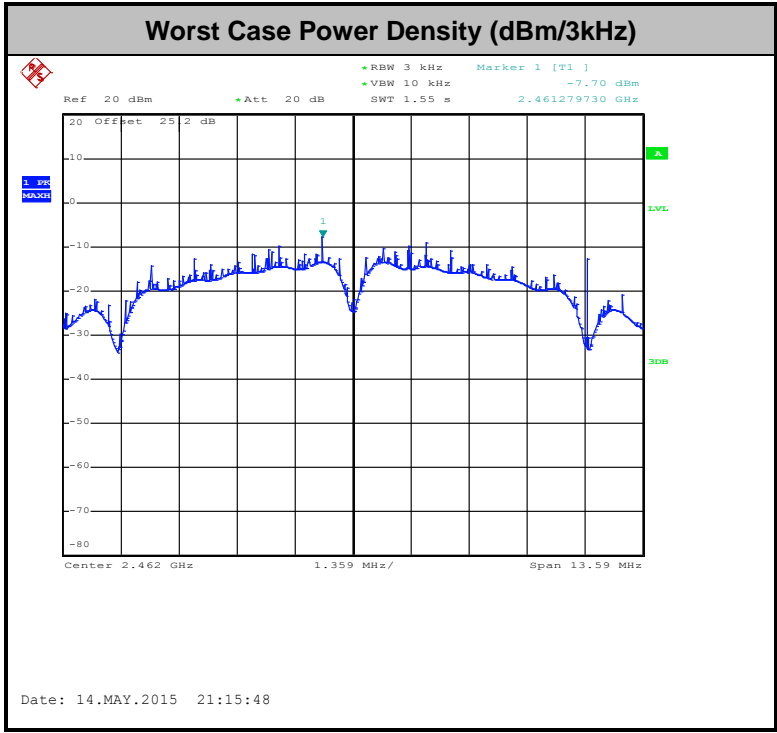
1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A of this test report.



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

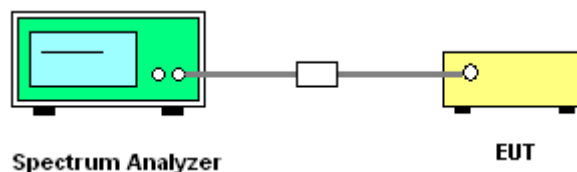
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

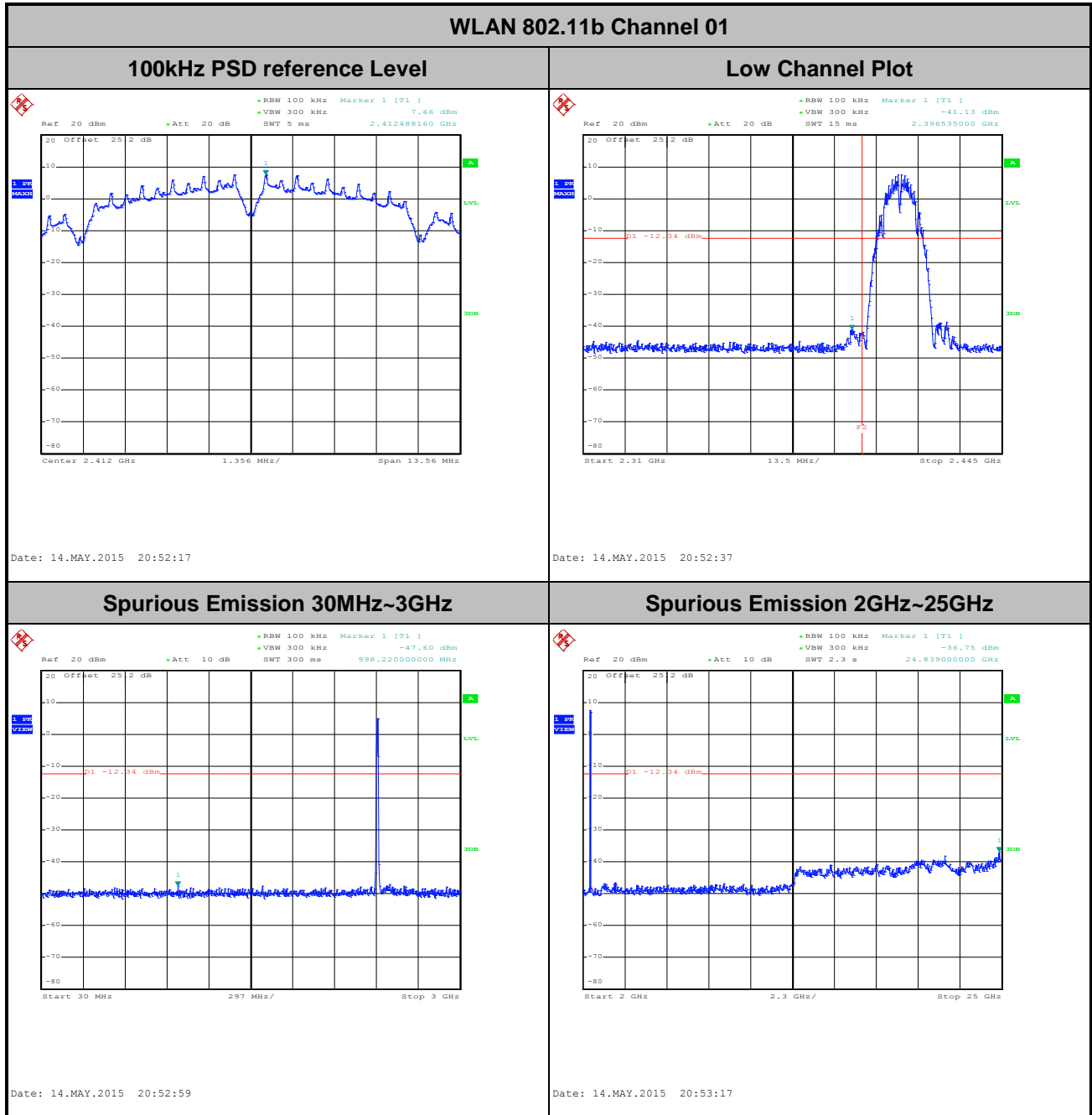
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup

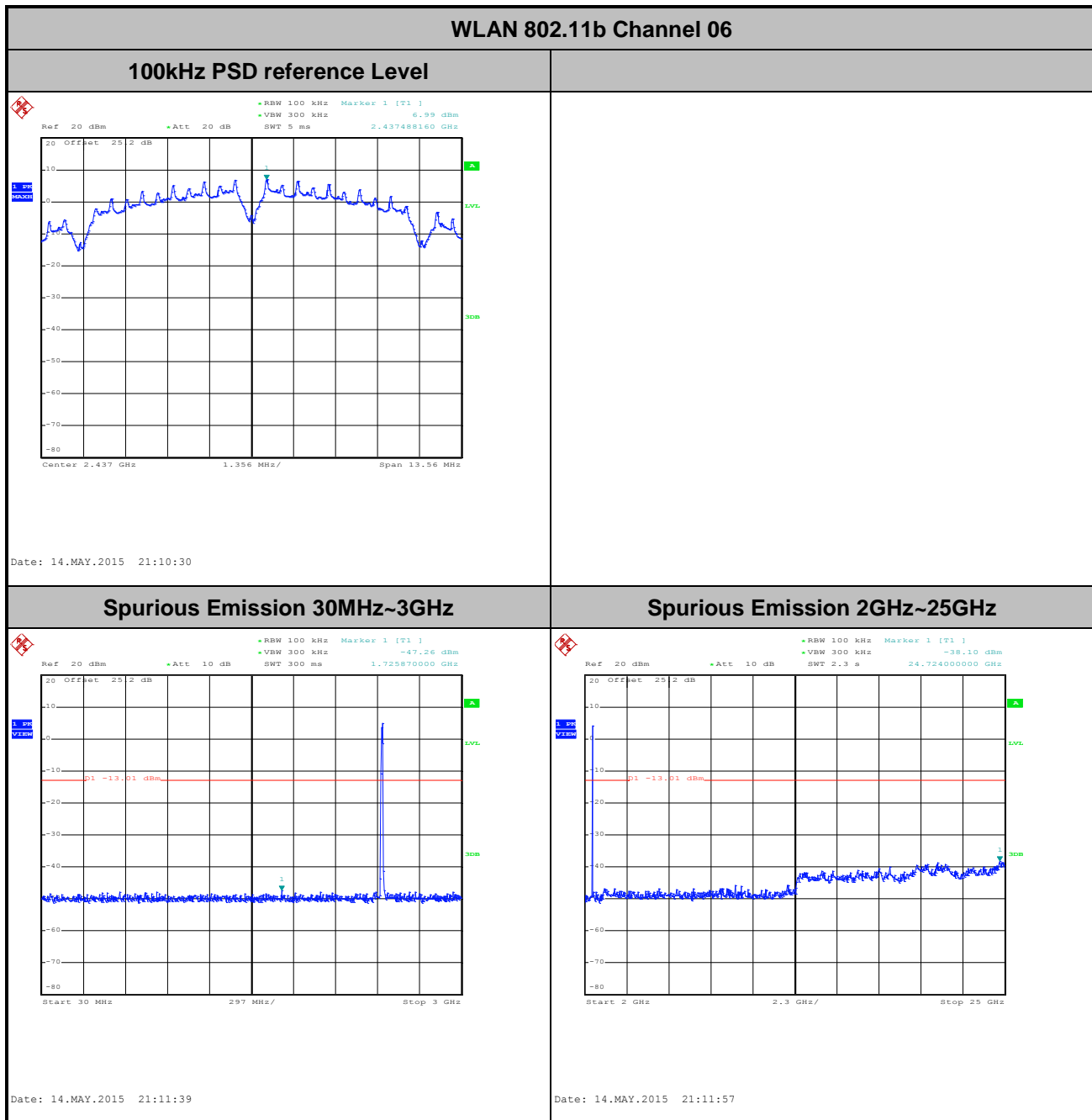


3.4.5 Test Result of Conducted Band Edges and Spurious Emission

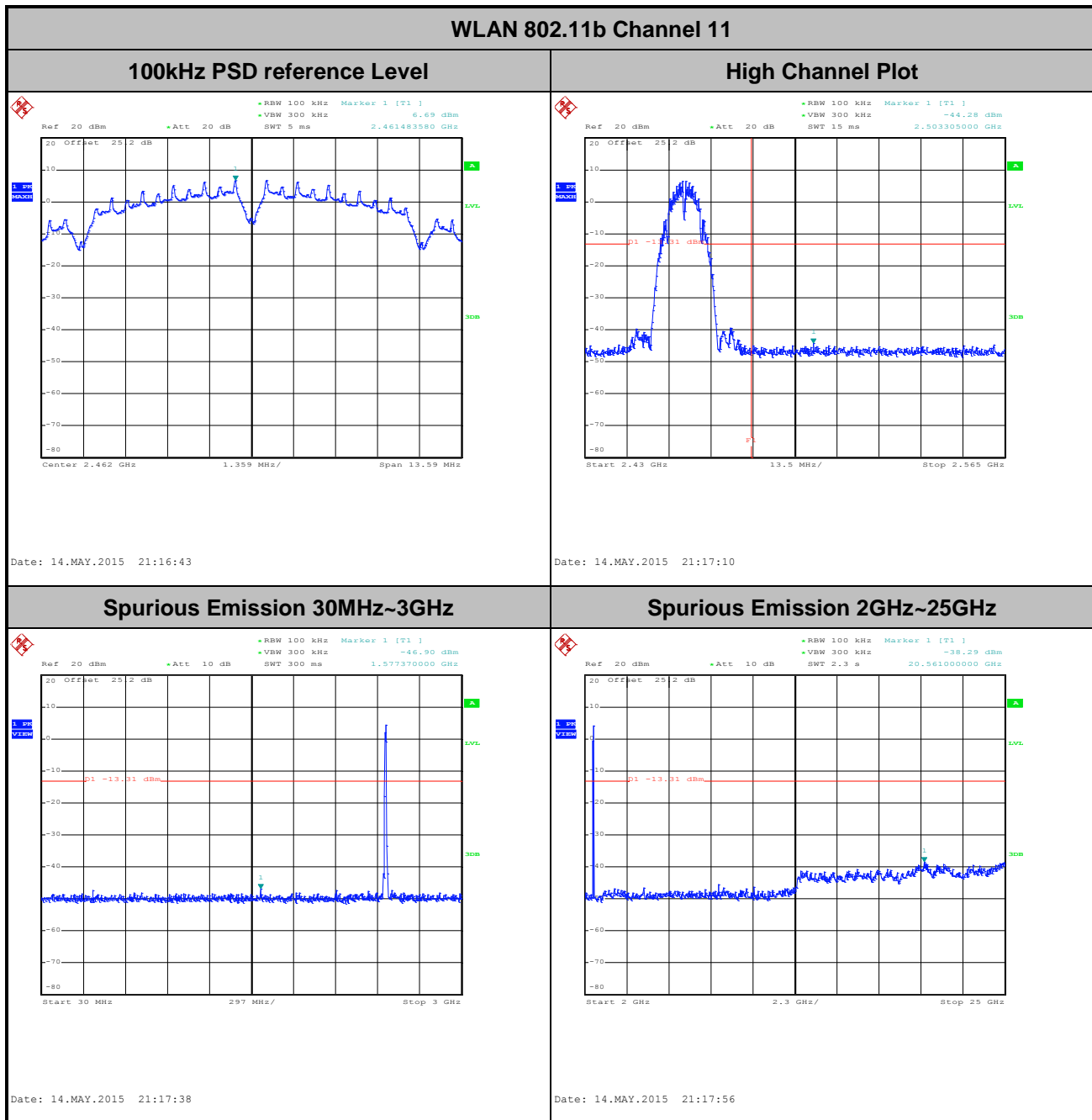
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang



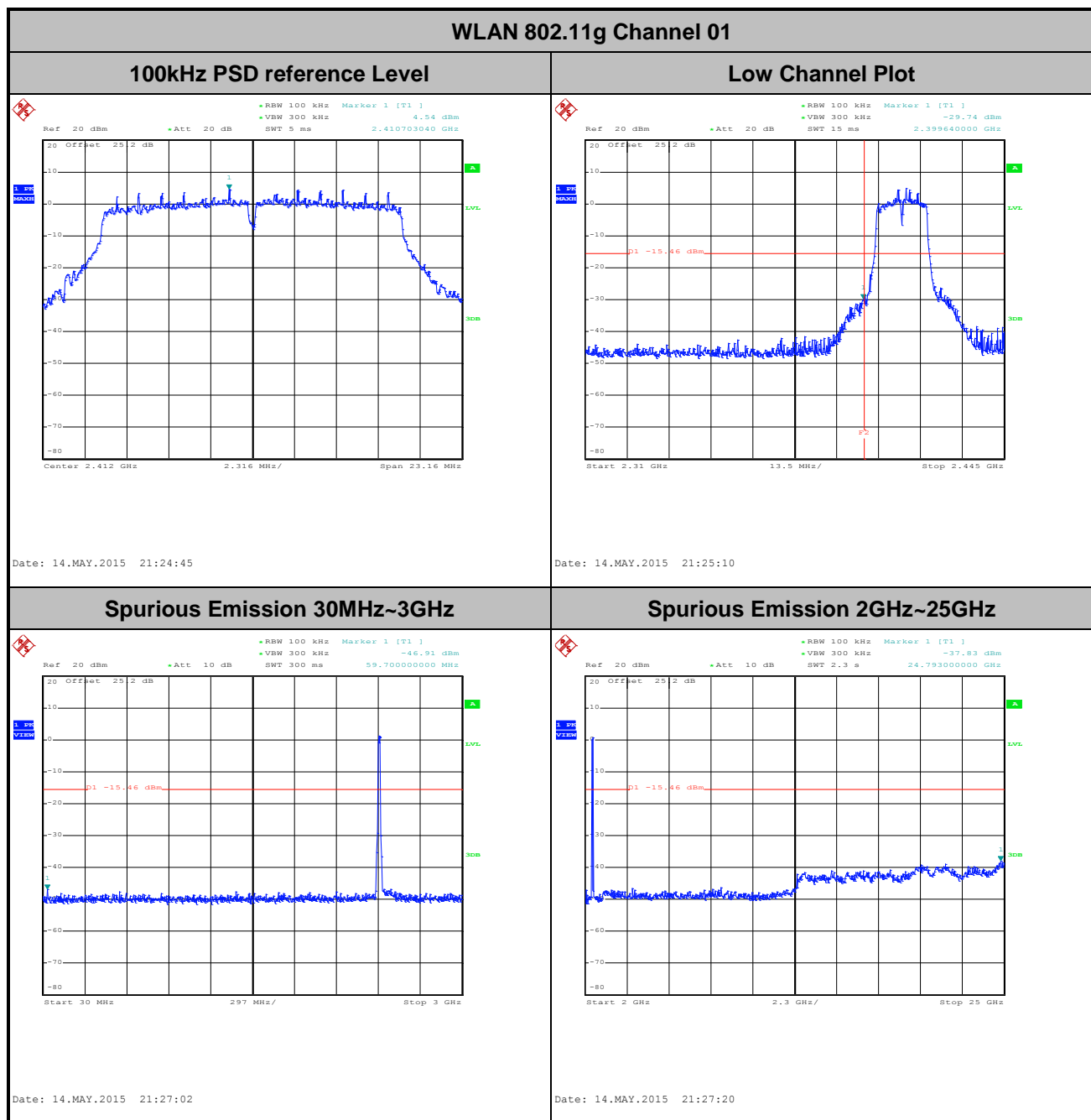
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang



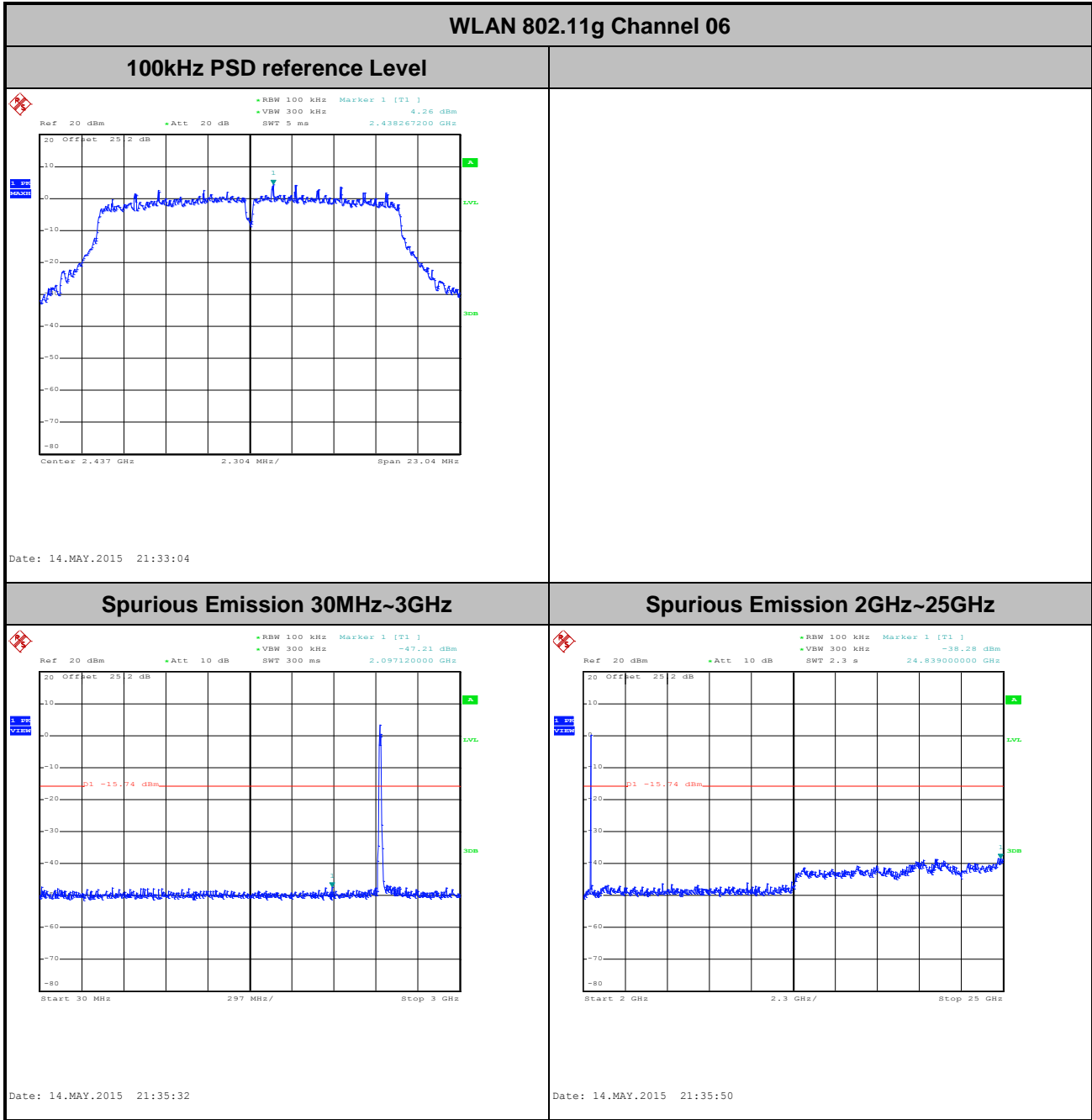
Test Mode :	802.11b	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang



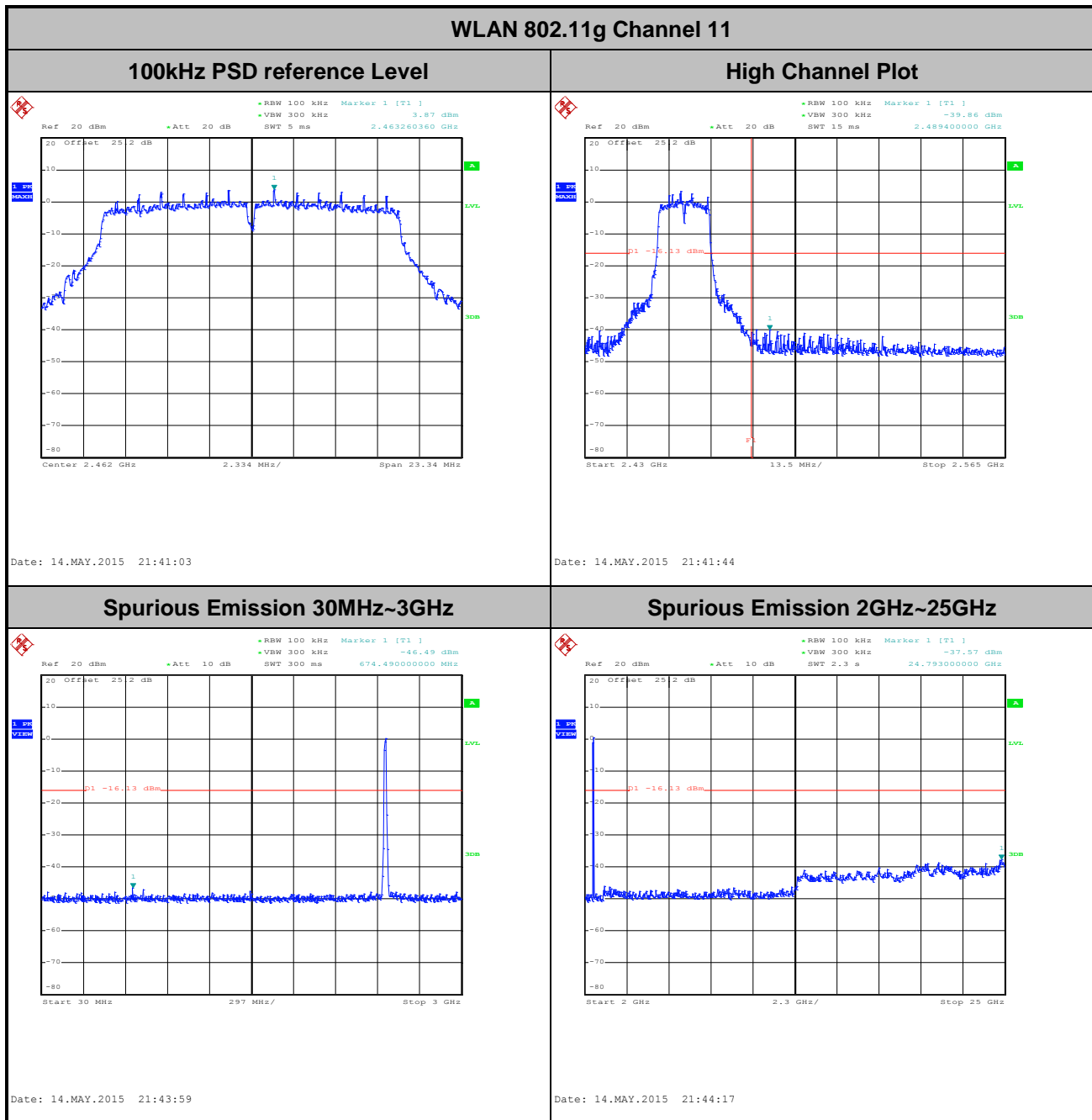
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang



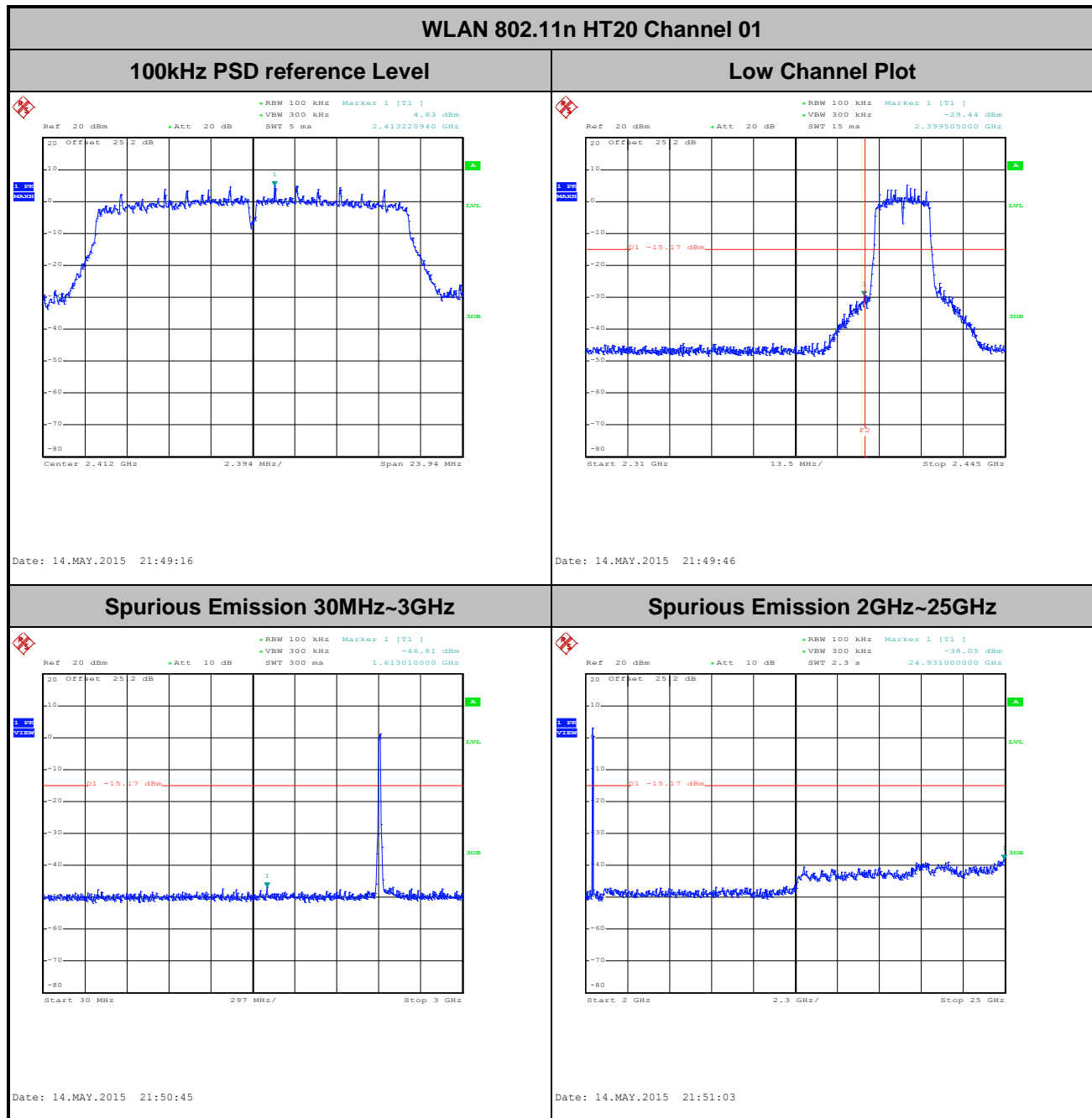
Test Mode :	802.11g	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang



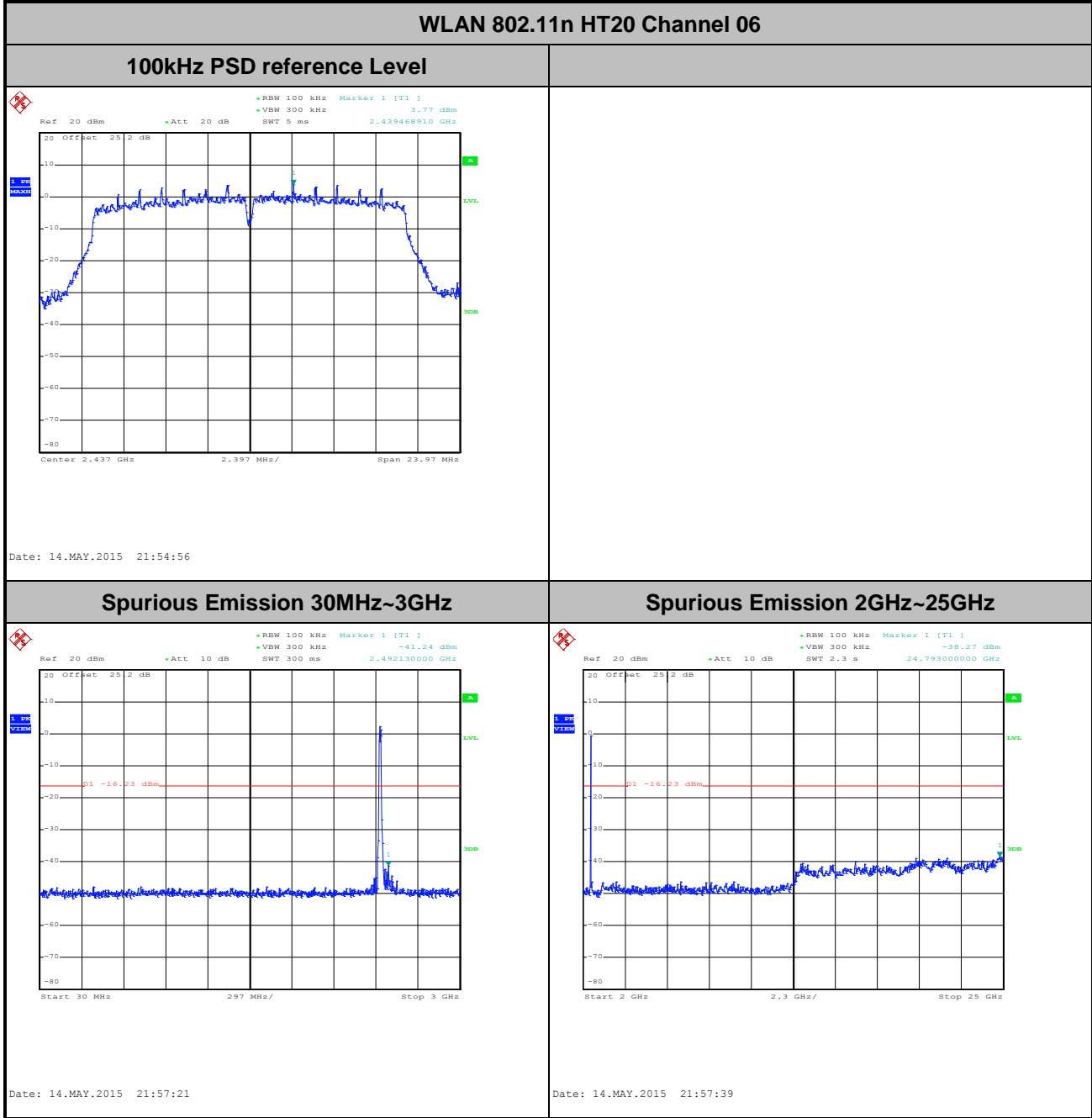
Test Mode :	802.11g	Temperature :	21~25°C
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang



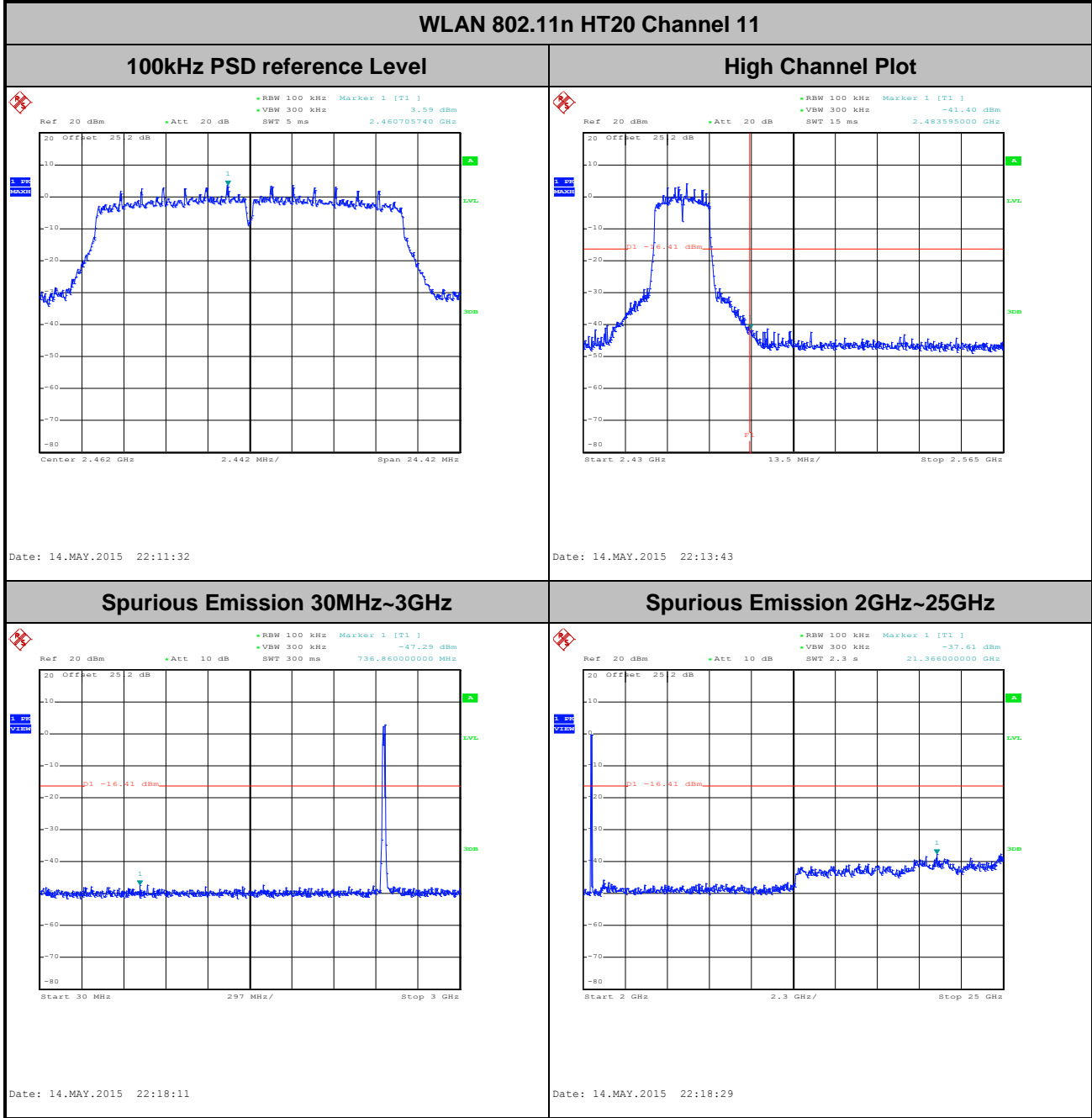
Test Mode :	802.11n HT20	Temperature :	21~25°C
Test Band :	2.4GHz Low	Relative Humidity :	51~54%
Test Channel :	01	Test Engineer :	AC Chang



Test Mode :	802.11n HT20	Temperature :	21~25℃
Test Band :	2.4GHz Mid	Relative Humidity :	51~54%
Test Channel :	06	Test Engineer :	AC Chang



Test Mode :	802.11n HT20	Temperature :	21~25℃
Test Band :	2.4GHz High	Relative Humidity :	51~54%
Test Channel :	11	Test Engineer :	AC Chang



3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/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

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

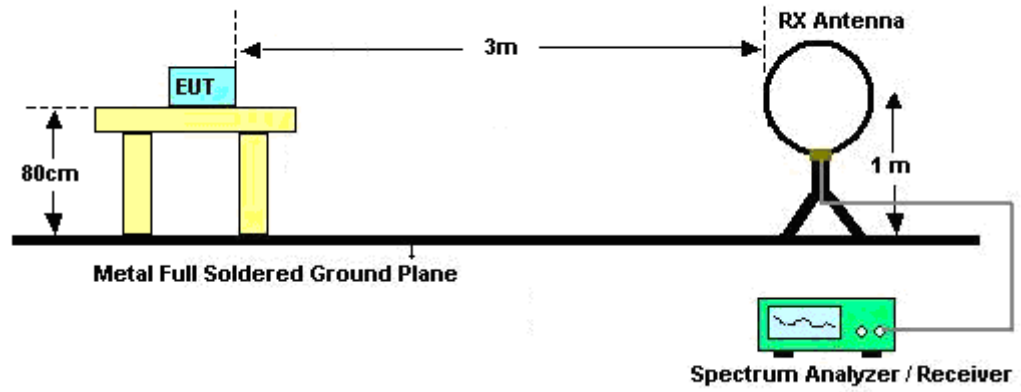
3.5.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

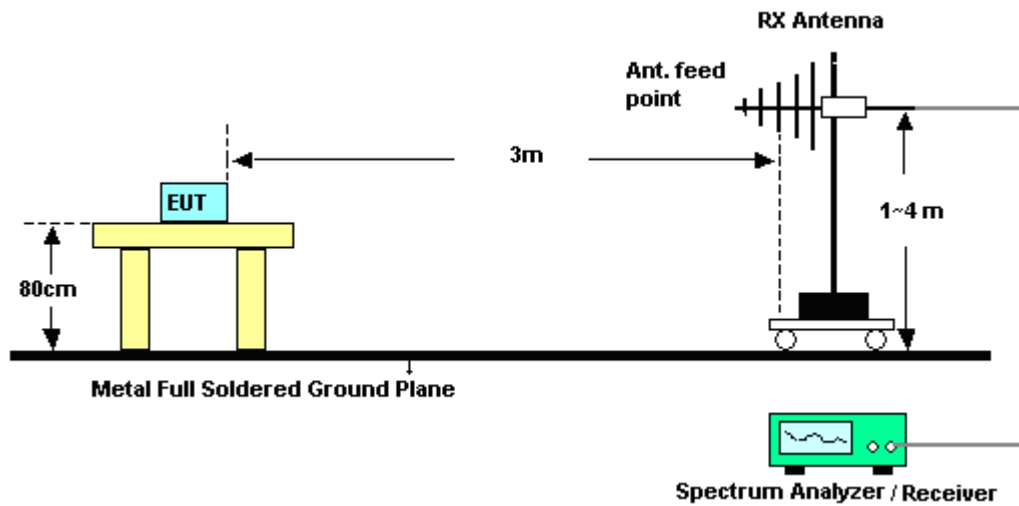
Band	Duty Cycle(%)	T(μ s)	1/T(kHz)	VBW Setting
802.11b	99.26	-	-	10Hz
802.11g	97.14	4080	0.25	300Hz
2.4GHz 802.11n HT20	97.44	3800	0.26	300Hz

3.5.4 Test Setup

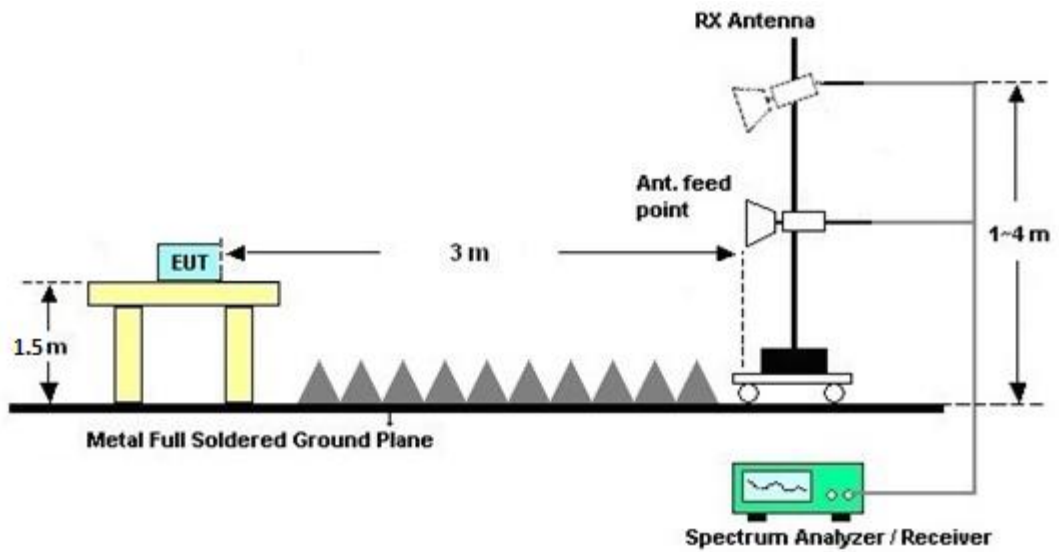
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

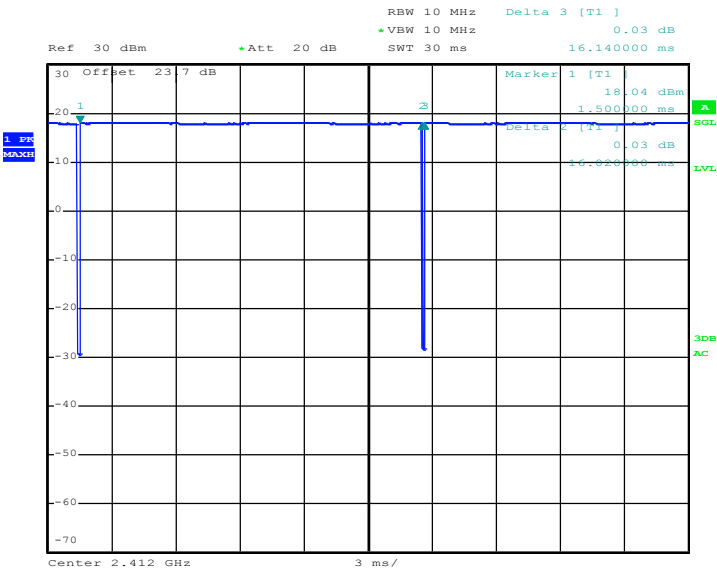
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

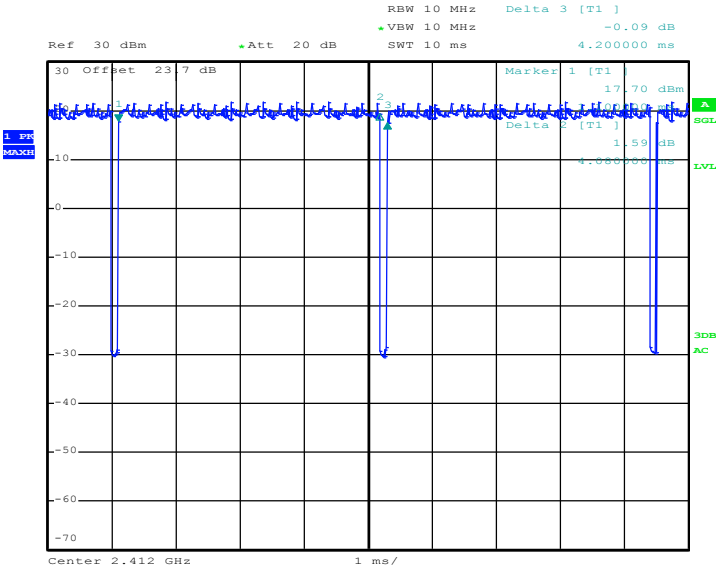
3.5.7 Duty Cycle

802.11b



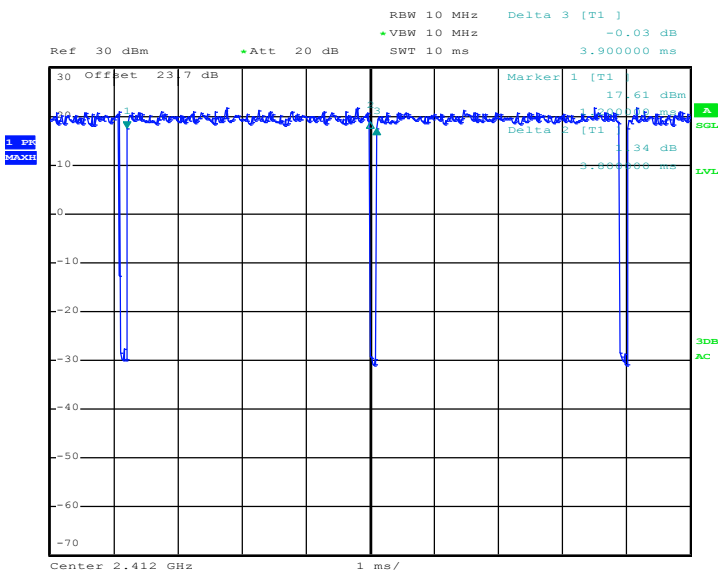
Date: 12.MAY.2015 15:15:19

802.11g



Date: 12.MAY.2015 15:20:42

802.11n HT20



Date: 12.MAY.2015 15:19:14

3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

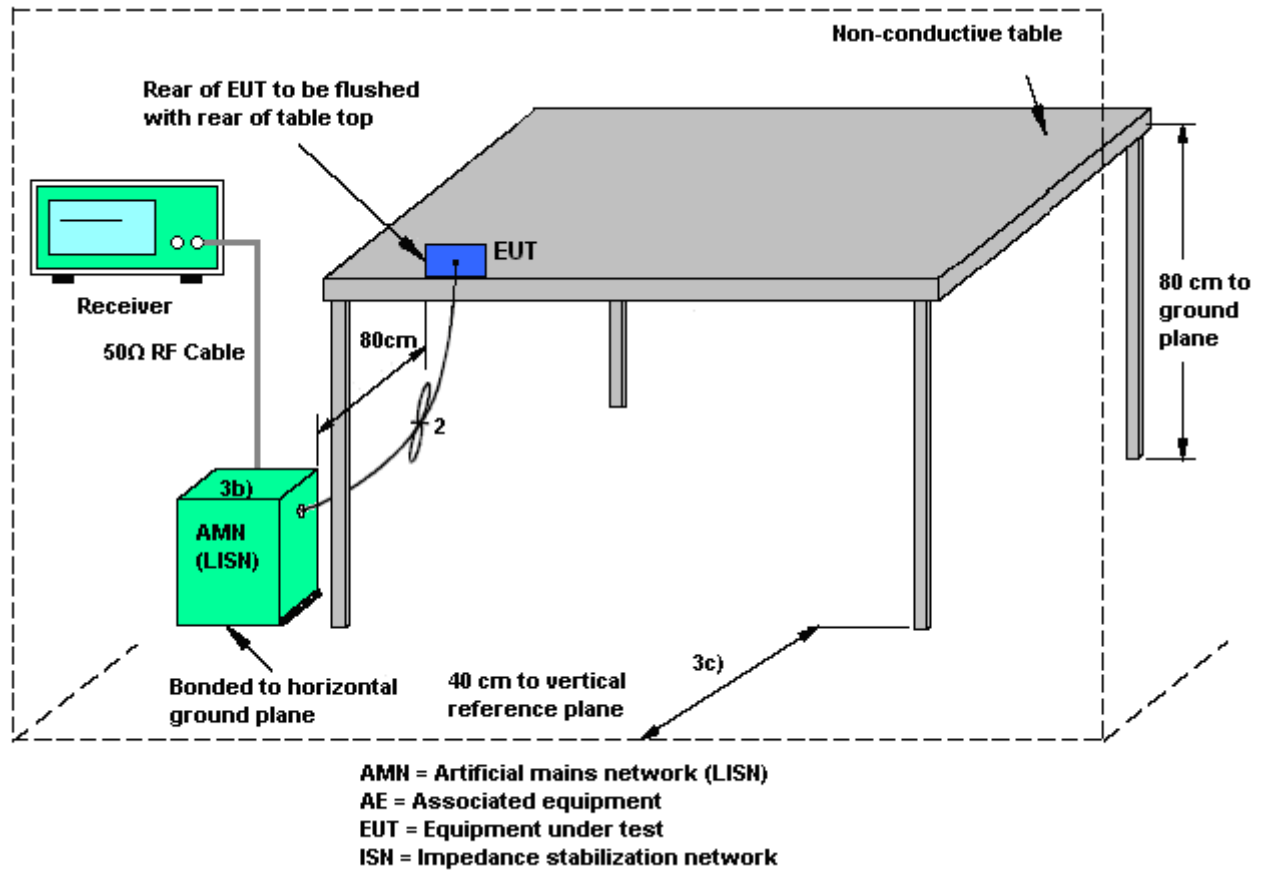
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

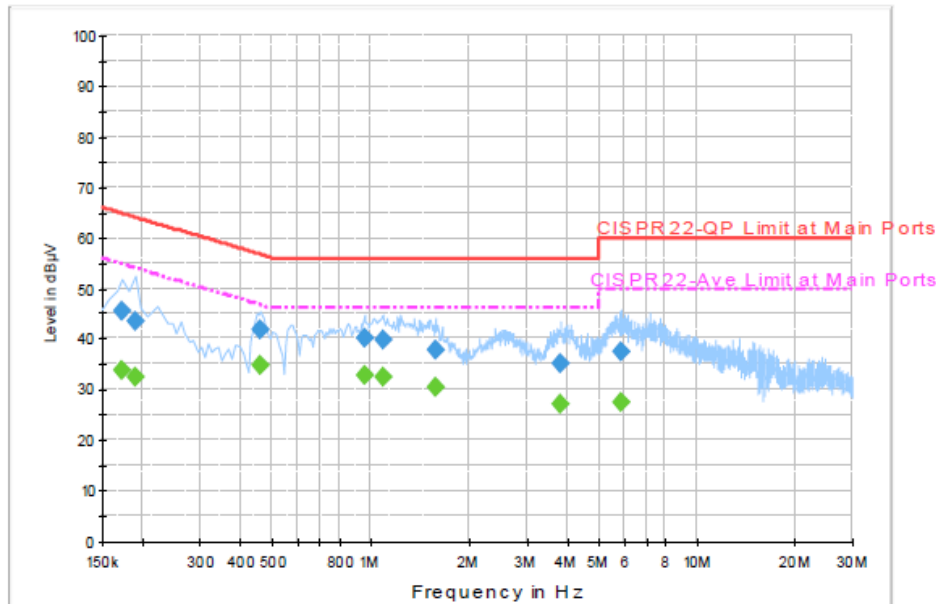
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	24~26°C
Test Engineer :	Eric Jeng	Relative Humidity :	48~50%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Earphone + USB Cable (Charging from Adapter) + MicroSD Card		



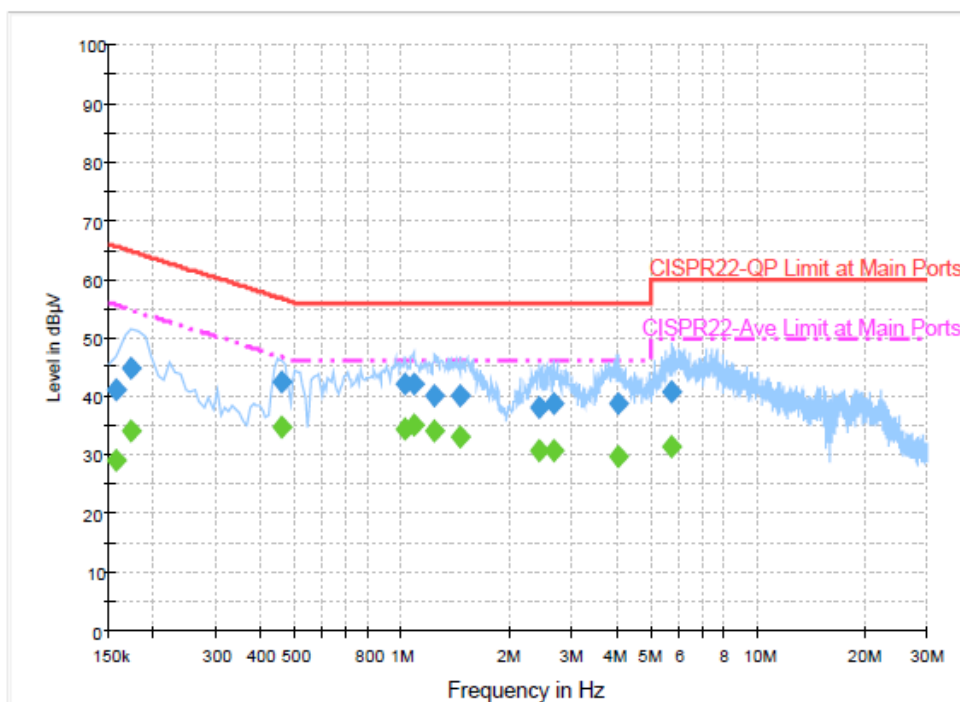
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	45.5	Off	L1	19.4	19.3	64.8
0.190000	43.4	Off	L1	19.5	20.6	64.0
0.462000	41.9	Off	L1	19.4	14.8	56.7
0.958000	40.0	Off	L1	19.6	16.0	56.0
1.094000	39.8	Off	L1	19.6	16.2	56.0
1.582000	37.7	Off	L1	19.5	18.3	56.0
3.822000	35.3	Off	L1	19.7	20.7	56.0
5.846000	37.3	Off	L1	19.7	22.7	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.174000	33.7	Off	L1	19.4	21.1	54.8
0.190000	32.6	Off	L1	19.5	21.4	54.0
0.462000	34.7	Off	L1	19.4	12.0	46.7
0.958000	32.7	Off	L1	19.6	13.3	46.0
1.094000	32.5	Off	L1	19.6	13.5	46.0
1.582000	30.3	Off	L1	19.5	15.7	46.0
3.822000	27.2	Off	L1	19.7	18.8	46.0
5.846000	27.4	Off	L1	19.7	22.6	50.0

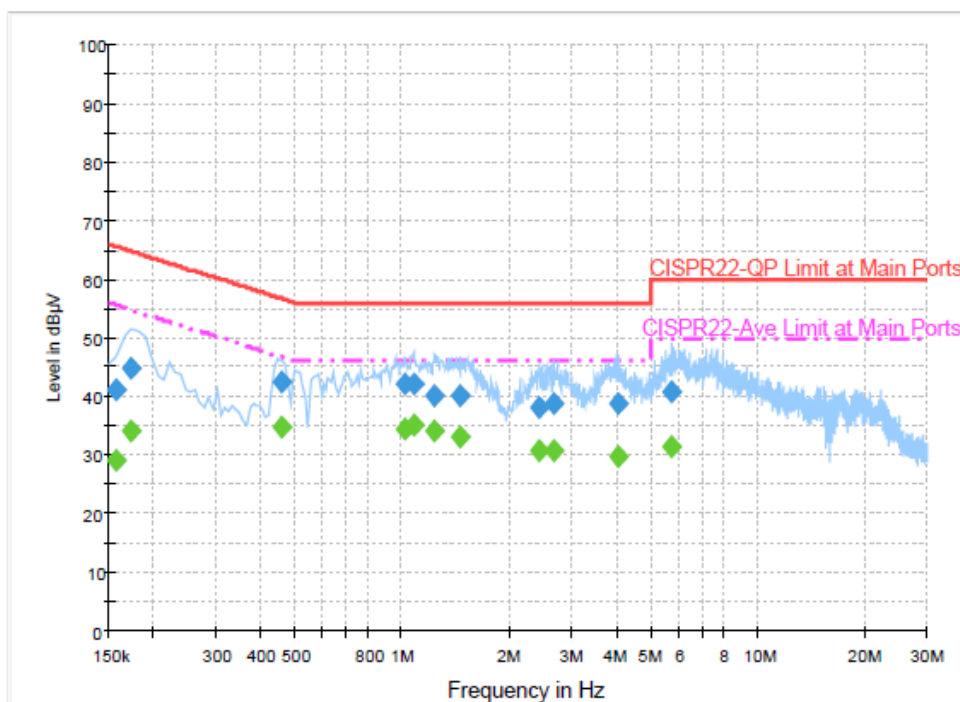
Test Mode :	Mode 1	Temperature :	24~26℃
Test Engineer :	Eric Jeng	Relative Humidity :	48~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Earphone + USB Cable (Charging from Adapter) + MicroSD Card		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	41.0	Off	N	19.4	24.6	65.6
0.174000	44.7	Off	N	19.4	20.1	64.8
0.462000	42.4	Off	N	19.4	14.3	56.7
1.014000	42.1	Off	N	19.5	13.9	56.0
1.078000	42.2	Off	N	19.5	13.8	56.0
1.238000	40.1	Off	N	19.6	15.9	56.0
1.462000	40.3	Off	N	19.5	15.7	56.0
2.430000	38.3	Off	N	19.7	17.7	56.0
2.662000	38.7	Off	N	19.7	17.3	56.0
4.070000	38.9	Off	N	19.7	17.1	56.0
5.710000	41.0	Off	N	19.7	19.0	60.0

Test Mode :	Mode 1	Temperature :	24~26°C
Test Engineer :	Eric Jeng	Relative Humidity :	48~50%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (2.4GHz) Link + MPEG4 + Earphone + USB Cable (Charging from Adapter) + MicroSD Card		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	29.0	Off	N	19.4	26.6	55.6
0.174000	34.0	Off	N	19.4	20.8	54.8
0.462000	34.9	Off	N	19.4	11.8	46.7
1.014000	34.4	Off	N	19.5	11.6	46.0
1.078000	35.0	Off	N	19.5	11.0	46.0
1.238000	34.1	Off	N	19.6	11.9	46.0
1.462000	33.0	Off	N	19.5	13.0	46.0
2.430000	30.8	Off	N	19.7	15.2	46.0
2.662000	30.6	Off	N	19.7	15.4	46.0
4.070000	29.8	Off	N	19.7	16.2	46.0
5.710000	31.4	Off	N	19.7	18.6	50.0

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1218006	300MHz~40GHz	Oct. 18, 2014	May 12, 2015 ~ May 14, 2015	Oct. 17, 2015	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Oct. 18, 2014	May 12, 2015 ~ May 14, 2015	Oct. 17, 2015	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Oct. 17, 2014	May 12, 2015 ~ May 14, 2015	Oct. 16, 2015	Conducted (TH05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz ~ 2.75GHz	Dec. 01, 2014	May 05, 2015	Nov. 30, 2015	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2014	May 05, 2015	Dec. 01, 2015	Conduction (CO05-HY)
LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 08, 2014	May 05, 2015	Dec. 07, 2015	Conduction (CO05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	May 05, 2015	N/A	Conduction (CO05-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170 584	18GHz- 40GHz	Nov. 03, 2014	May 07, 2015 ~ May 11, 2015	Nov. 02, 2015	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 24, 2014	May 07, 2015 ~ May 11, 2015	Nov. 23, 2015	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Oct. 24, 2014	May 07, 2015 ~ May 11, 2015	Oct. 23, 2015	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-132 6	1GHz ~ 18GHz	Oct. 03, 2014	May 07, 2015 ~ May 11, 2015	Oct. 02, 2015	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY532700 80	1GHz~26.5GHz	Nov. 20, 2014	May 07, 2015 ~ May 11, 2015	Nov. 19, 2015	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY542004 86	10Hz ~ 44GHZ	Sep. 24, 2014	May 07, 2015 ~ May 11, 2015	Sep. 23, 2015	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	May 07, 2015 ~ May 11, 2015	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0-360 degree	N/A	May 07, 2015 ~ May 11, 2015	N/A	Radiation (03CH11-HY)
Preamplifier	MITEQ	JS44-180040 00-33-8P	1840917	18GHz ~ 40GHz	Jun. 09, 2014	May 07, 2015 ~ May 11, 2015	Jun. 08, 2015	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jul. 28, 2014	May 07, 2015 ~ May 11, 2015	Jul. 27, 2015	Radiation (03CH11-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.80
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Appendix A. Conducted Test Results

Test Engineer:	AC Chang	Temperature:	21~25	°C
Test Date:	2015/5/12~2015/5/14	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 99% Occupied Bandwidth

2.4GHz Band								
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	13.70	9.04	0.50	Pass
11b	1Mbps	1	6	2437	13.65	9.04	0.50	Pass
11b	1Mbps	1	11	2462	13.75	9.06	0.50	Pass
11g	6Mbps	1	1	2412	17.65	15.44	0.50	Pass
11g	6Mbps	1	6	2437	17.65	15.36	0.50	Pass
11g	6Mbps	1	11	2462	17.75	15.56	0.50	Pass
HT20	MCS0	1	1	2412	18.30	15.96	0.50	Pass
HT20	MCS0	1	6	2437	18.30	15.98	0.50	Pass
HT20	MCS0	1	11	2462	18.35	16.28	0.50	Pass

TEST RESULTS DATA
Peak Power Table

2.4GHz Band										
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
11b	1Mbps	1	1	2412	17.61	30.00	1.20	18.81	36.00	Pass
11b	1Mbps	1	6	2437	17.64	30.00	1.20	18.84	36.00	Pass
11b	1Mbps	1	11	2462	17.16	30.00	1.20	18.36	36.00	Pass
11g	6Mbps	1	1	2412	23.81	30.00	1.20	25.01	36.00	Pass
11g	6Mbps	1	6	2437	23.39	30.00	1.20	24.59	36.00	Pass
11g	6Mbps	1	11	2462	22.83	30.00	1.20	24.03	36.00	Pass
HT20	MCS0	1	1	2412	23.66	30.00	1.20	24.86	36.00	Pass
HT20	MCS0	1	6	2437	23.33	30.00	1.20	24.53	36.00	Pass
HT20	MCS0	1	11	2462	22.75	30.00	1.20	23.95	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

2.4GHz Band						
Mod.	Data Rate	N _{TX}	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.03	15.50
11b	1Mbps	1	6	2437	0.03	15.51
11b	1Mbps	1	11	2462	0.03	15.00
11g	6Mbps	1	1	2412	0.13	15.28
11g	6Mbps	1	6	2437	0.13	15.16
11g	6Mbps	1	11	2462	0.13	14.91
HT20	MCS0	1	1	2412	0.11	15.13
HT20	MCS0	1	6	2437	0.11	14.97
HT20	MCS0	1	11	2462	0.11	14.76

TEST RESULTS DATA
Peak Power Density

2.4GHz Band								
Mod.	Data Rate	NTx	CH.	Freq. (MHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
11b	1Mbps	1	1	2412	-8.24	1.20	8.00	Pass
11b	1Mbps	1	6	2437	-8.48	1.20	8.00	Pass
11b	1Mbps	1	11	2462	-7.70	1.20	8.00	Pass
11g	6Mbps	1	1	2412	-10.91	1.20	8.00	Pass
11g	6Mbps	1	6	2437	-12.09	1.20	8.00	Pass
11g	6Mbps	1	11	2462	-13.12	1.20	8.00	Pass
HT20	MCS0	1	1	2412	-11.71	1.20	8.00	Pass
HT20	MCS0	1	6	2437	-11.88	1.20	8.00	Pass
HT20	MCS0	1	11	2462	-11.86	1.20	8.00	Pass

Appendix B. Radiated Spurious Emission

Test Engineer :	Jesse Wang and Derreck Chen	Temperature :	23~24°C
		Relative Humidity :	46~48%

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01 2412MHz		2374.53	53.77	-20.23	74	54.61	27.19	6.01	34.04	100	41	P	H
		2381.91	43.37	-10.63	54	44.21	27.19	6.01	34.04	100	41	A	H
	*	2412	106.3	-	-	107.02	27.28	6.04	34.04	100	41	P	H
	*	2412	103.73	-	-	104.45	27.28	6.04	34.04	100	41	A	H
													H
													H
		2383.62	53.5	-20.5	74	54.34	27.19	6.01	34.04	362	356	P	V
		2382	43.04	-10.96	54	43.88	27.19	6.01	34.04	362	356	A	V
	*	2412	106.04	-	-	106.76	27.28	6.04	34.04	362	356	P	V
	*	2412	103.58	-	-	104.3	27.28	6.04	34.04	362	356	A	V
													V
													V
802.11b CH 06 2437MHz		2371.38	54.44	-19.56	74	55.28	27.19	6.01	34.04	151	41	P	H
		2386.05	44.1	-9.9	54	44.9	27.23	6.01	34.04	151	41	A	H
	*	2435.822	107.12	-	-	107.79	27.32	6.04	34.03	151	41	P	H
	*	2437.992	104.48	-	-	105.1	27.37	6.04	34.03	151	41	A	H
		2490.32	56.49	-17.51	74	56.91	27.5	6.09	34.01	151	41	P	H
		2498.68	46.28	-7.72	54	46.69	27.5	6.09	34	151	41	A	H
		2379.03	53.74	-20.26	74	54.58	27.19	6.01	34.04	355	355	P	V
		2388.39	43.57	-10.43	54	44.37	27.23	6.01	34.04	355	355	A	V
	*	2438.243	106.09	-	-	106.71	27.37	6.04	34.03	355	355	P	V
	*	2435.905	103.6	-	-	104.27	27.32	6.04	34.03	355	355	A	V
		2488.96	55.37	-18.63	74	55.79	27.5	6.09	34.01	355	355	P	V
		2495.32	45.74	-8.26	54	46.15	27.5	6.09	34	355	355	A	V

802.11b CH 11 2462MHz	*	2460.872	107.74	-	-	108.28	27.41	6.07	34.02	147	43	P	H
	*	2460.788	105.19	-	-	105.73	27.41	6.07	34.02	147	43	A	H
		2497.96	55.92	-18.08	74	56.33	27.5	6.09	34	147	43	P	H
		2499.2	45.61	-8.39	54	46.02	27.5	6.09	34	147	43	A	H
													H
													H
	*	2463.126	104.1	-	-	104.64	27.41	6.07	34.02	355	321	P	V
	*	2463.126	101.6	-	-	102.14	27.41	6.07	34.02	355	321	A	V
		2498.36	54.5	-19.5	74	54.91	27.5	6.09	34	355	321	P	V
		2498.8	43.81	-10.19	54	44.22	27.5	6.09	34	355	321	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz
WIFI 802.11b (Harmonic @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		4824	46.88	-27.12	74	40.46	31.32	8.65	33.55	100	0	P	H
													H
													H
													H
		4824	44.54	-29.46	74	38.12	31.32	8.65	33.55	100	0	P	V
													V
													V
													V
802.11b CH 06 2437MHz		4872	47.72	-26.28	74	41.16	31.41	8.69	33.54	100	0	P	H
		7310	50.86	-23.14	74	38.63	36.28	10.39	34.44	100	0	P	H
													H
													H
		4872	44.67	-29.33	74	38.11	31.41	8.69	33.54	100	0	P	V
		7310	49.92	-24.08	74	37.69	36.28	10.39	34.44	100	0	P	V
													V
													V
802.11b CH 11 2462MHz		4924	50.3	-23.7	74	43.56	31.49	8.79	33.54	100	0	P	H
		7385	51.07	-22.93	74	38.6	36.47	10.48	34.48	100	0	P	H
													H
													H
		4924	45.15	-28.85	74	38.41	31.49	8.79	33.54	100	0	P	V
		7385	50.01	-23.99	74	37.54	36.47	10.48	34.48	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		2389.38	57.47	-16.53	74	58.27	27.23	6.01	34.04	100	215	P	H
		2389.74	46.65	-7.35	54	47.45	27.23	6.01	34.04	100	215	A	H
	*	2413.611	105.45	-	-	106.17	27.28	6.04	34.04	100	215	P	H
	*	2413.36	98.16	-	-	98.88	27.28	6.04	34.04	100	215	A	H
													H
													H
		2389.92	54.84	-19.16	74	55.64	27.23	6.01	34.04	365	178	P	V
		2390	45.17	-8.83	54	45.97	27.23	6.01	34.04	365	178	A	V
	*	2410.521	103.91	-	-	104.63	27.28	6.04	34.04	365	178	P	V
	*	2410.187	96.88	-	-	97.6	27.28	6.04	34.04	365	178	A	V
													V
													V
802.11g CH 06 2437MHz		2384.52	55.3	-18.7	74	56.14	27.19	6.01	34.04	126	213	P	H
		2389.92	45.02	-8.98	54	45.82	27.23	6.01	34.04	126	213	A	H
	*	2438.41	106.21	-	-	106.83	27.37	6.04	34.03	126	213	P	H
	*	2435.655	98.92	-	-	99.59	27.32	6.04	34.03	126	213	A	H
		2491.76	57.27	-16.73	74	57.68	27.5	6.09	34	126	213	P	H
		2496.96	46.99	-7.01	54	47.4	27.5	6.09	34	126	213	A	H
		2384.88	54.56	-19.44	74	55.4	27.19	6.01	34.04	355	177	P	V
		2386	43.72	-10.28	54	44.52	27.23	6.01	34.04	355	177	A	V
	*	2435.655	104.13	-	-	104.8	27.32	6.04	34.03	355	177	P	V
	*	2438	96.9	-	-	97.52	27.37	6.04	34.03	355	177	A	V
		2486.6	55.54	-18.46	74	56	27.46	6.09	34.01	355	177	P	V
		2487.68	45.21	-8.79	54	45.63	27.5	6.09	34.01	355	177	A	V

802.11g CH 11 2462MHz	*	2460.788	106.89	-	-	107.43	27.41	6.07	34.02	100	217	P	H
	*	2460.788	99.66	-	-	100.2	27.41	6.07	34.02	100	217	A	H
		2484.2	59.27	-14.73	74	59.73	27.46	6.09	34.01	100	217	P	H
		2483.6	48	-6	54	48.46	27.46	6.09	34.01	100	217	A	H
													H
													H
	*	2463.627	104.07	-	-	104.61	27.41	6.07	34.02	349	175	P	V
	*	2463.293	96.98	-	-	97.52	27.41	6.07	34.02	349	175	A	V
		2483.8	58.69	-15.31	74	59.15	27.46	6.09	34.01	349	175	P	V
		2483.64	46.54	-7.46	54	47	27.46	6.09	34.01	349	175	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		4824	45.06	-28.94	74	38.64	31.32	8.65	33.55	100	0	P	H
													H
													H
													H
		4824	44.39	-29.61	74	37.97	31.32	8.65	33.55	100	0	P	V
													V
													V
													V
802.11g CH 06 2437MHz		4872	45.24	-28.76	74	38.68	31.41	8.69	33.54	100	0	P	H
		7310	50.24	-23.76	74	38.01	36.28	10.39	34.44	100	0	P	H
													H
													H
		4872	46.16	-27.84	74	39.6	31.41	8.69	33.54	100	0	P	V
		7310	49.36	-24.64	74	37.13	36.28	10.39	34.44	100	0	P	V
													V
													V
802.11g CH 11 2462MHz		4924	45.46	-28.54	74	38.72	31.49	8.79	33.54	100	0	P	H
		7385	50.87	-23.13	74	38.4	36.47	10.48	34.48	100	0	P	H
													H
													H
		4924	45.09	-28.91	74	38.35	31.49	8.79	33.54	100	0	P	V
		7385	50.32	-23.68	74	37.85	36.47	10.48	34.48	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		2389.74	59.68	-14.32	74	60.48	27.23	6.01	34.04	121	42	P	H
		2390.01	46.64	-7.36	54	47.44	27.23	6.01	34.04	121	42	A	H
	*	2412	104.03	-	-	104.75	27.28	6.04	34.04	121	42	P	H
	*	2412	97	-	-	97.72	27.28	6.04	34.04	121	42	A	H
													H
													H
		2390.01	56.87	-17.13	74	57.67	27.23	6.01	34.04	369	326	P	V
		2389.83	44.9	-9.1	54	45.7	27.23	6.01	34.04	369	326	A	V
	*	2412	102.79	-	-	103.51	27.28	6.04	34.04	369	326	P	V
	*	2412	94.25	-	-	94.97	27.28	6.04	34.04	369	326	A	V
													V
													V
802.11n HT20 CH 06 2437MHz		2374.08	56.72	-17.28	74	57.56	27.19	6.01	34.04	153	42	P	H
		2381.46	44.3	-9.7	54	45.14	27.19	6.01	34.04	153	42	A	H
	*	2437	105.09	-	-	105.71	27.37	6.04	34.03	153	42	P	H
	*	2437	97.77	-	-	98.39	27.37	6.04	34.03	153	42	A	H
		2486.68	59.87	-14.13	74	60.33	27.46	6.09	34.01	153	42	P	H
		2497.44	45.96	-8.04	54	46.37	27.5	6.09	34	153	42	A	H
		2381.55	53.73	-20.27	74	54.57	27.19	6.01	34.04	351	356	P	V
		2389.29	43.93	-10.07	54	44.73	27.23	6.01	34.04	351	356	A	V
	*	2437	104.13	-	-	104.75	27.37	6.04	34.03	351	356	P	V
	*	2437	96.82	-	-	97.44	27.37	6.04	34.03	351	356	A	V
		2487.04	57.89	-16.11	74	58.35	27.46	6.09	34.01	351	356	P	V
		2495.24	45.62	-8.38	54	46.03	27.5	6.09	34	351	356	A	V

802.11n HT20 CH 11 2462MHz	*	2462	104.64	-	-	105.18	27.41	6.07	34.02	144	44	P	H
	*	2462	97.6	-	-	98.14	27.41	6.07	34.02	144	44	A	H
		2483.64	63.45	-10.55	74	63.91	27.46	6.09	34.01	144	44	P	H
		2483.96	48.62	-5.38	54	49.08	27.46	6.09	34.01	144	44	A	H
													H
													H
	*	2462	104.52	-	-	105.06	27.41	6.07	34.02	380	357	P	V
	*	2462	97.39	-	-	97.93	27.41	6.07	34.02	380	357	A	V
		2483.52	64.03	-9.97	74	64.49	27.46	6.09	34.01	380	357	P	V
		2485.76	48.5	-5.5	54	48.96	27.46	6.09	34.01	380	357	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 01 2412MHz		4824	44.54	-29.46	74	38.12	31.32	8.65	33.55	100	0	P	H
		7235	49.73	-24.27	74	37.73	36.13	10.29	34.42	100	0	P	H
													H
													H
		4824	44.78	-29.22	74	38.36	31.32	8.65	33.55	100	0	P	V
		7235	49.62	-24.38	74	37.62	36.13	10.29	34.42	100	0	P	V
													V
													V
802.11n HT20 CH 06 2437MHz		4872	50.79	-23.21	74	44.23	31.41	8.69	33.54	100	0	P	H
		7310	49.65	-24.35	74	37.42	36.28	10.39	34.44	100	0	P	H
													H
													H
		4872	47.82	-26.18	74	41.26	31.41	8.69	33.54	100	0	P	V
		7310	50.24	-23.76	74	38.01	36.28	10.39	34.44	100	0	P	V
													V
													V
802.11n HT20 CH 11 2462MHz		4924	46.76	-27.24	74	40.02	31.49	8.79	33.54	100	0	P	H
		7385	49.15	-24.85	74	36.68	36.47	10.48	34.48	100	0	P	H
													H
													H
		4924	45.51	-28.49	74	38.77	31.49	8.79	33.54	100	0	P	V
		7385	48.9	-25.1	74	36.43	36.47	10.48	34.48	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz
2.4GHz WIFI 802.11n HT20 (LF)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
2.4GHz 802.11n HT20 LF		39.99	11.83	-28.17	40	30.27	12.71	0.67	31.82			P	H
		155.82	26.45	-17.05	43.5	47	9.77	1.46	31.78	100	78	P	H
		257.88	16.95	-29.05	46	33.99	12.79	1.94	31.77			P	H
		419.7	17.1	-28.9	46	29.82	16.69	2.41	31.82			P	H
		757.1	21.48	-24.52	46	30.47	19.73	3.25	31.97			P	H
		946.1	23.76	-22.24	46	30.59	20.56	3.68	31.07			P	H
													H
													H
													H
													H
													H
													H
		65.37	21.27	-18.73	40	47.12	4.9	1.04	31.79	229	66	P	V
		130.71	17.38	-26.12	43.5	36.16	11.54	1.46	31.78			P	V
		221.7	14.03	-31.97	46	35.58	8.44	1.79	31.78			P	V
		500.9	18.43	-27.57	46	30.37	17.31	2.64	31.89			P	V
		650.7	18.29	-27.71	46	28.22	19.09	3.02	32.04			P	V
		883.8	23.73	-22.27	46	31.76	20.04	3.44	31.51			P	V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical

A calculation example for radiated spurious emission is shown as below:

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 01		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.