

FCC TEST REPORT (15.247)

REPORT NO.: RF121025C13-1

MODEL NO.: SHV-E220S

FCC ID: A3LSHVE220S

RECEIVED: Oct. 25, 2012

TESTED: Oct. 26 ~ Nov. 08, 2012

ISSUED: Nov. 15, 2012

APPLICANT: SAMSUNG Electronics Co., LTD.

ADDRESS: 129, Samsung-ro, Yeongtong-gu, Suwon-si,
Gyeonggi-do, 443-742, Republic of Korea

ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist.,
New Taipei City, Taiwan (R.O.C)

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

This report should not be used by the client to claim
product certification, approval, or endorsement by
TAF or any government agencies.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	5
1. CERTIFICATION.....	6
2. SUMMARY OF TEST RESULTS.....	7
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT.....	8
3.2 DESCRIPTION OF TEST MODES.....	10
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	11
3.3 DESCRIPTION OF SUPPORT UNITS.....	15
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST	15
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	15
4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)	16
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	16
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	16
4.1.2 TEST INSTRUMENTS	17
4.1.3 TEST PROCEDURES.....	18
4.1.4 DEVIATION FROM TEST STANDARD	18
4.1.5 TEST SETUP.....	19
4.1.6 EUT OPERATING CONDITIONS.....	19
4.1.7 TEST RESULTS	20
4.2 CONDUCTED EMISSION MEASUREMENT	30
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	30
4.2.2 TEST INSTRUMENTS	30
4.2.3 TEST PROCEDURES.....	31
4.2.4 DEVIATION FROM TEST STANDARD	31
4.2.5 TEST SETUP.....	32
4.2.6 EUT OPERATING CONDITIONS.....	32
4.2.7 TEST RESULTS	33
4.3 6dB BANDWIDTH MEASUREMENT	37
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	37
4.3.2 TEST SETUP.....	37
4.3.3 TEST INSTRUMENTS	37
4.3.4 TEST PROCEDURE.....	37
4.3.5 DEVIATION FROM TEST STANDARD	37
4.3.6 EUT OPERATING CONDITIONS.....	37
4.3.7 TEST RESULTS	38
4.4 CONDUCTED OUTPUT POWER.....	39
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	39
4.4.2 TEST SETUP.....	39
4.4.3 TEST INSTRUMENTS	39
4.4.4 TEST PROCEDURES.....	39
4.4.5 DEVIATION FROM TEST STANDARD	39
4.4.6 EUT OPERATING CONDITIONS.....	39
4.4.7 TEST RESULTS	40
4.5 POWER SPECTRAL DENSITY MEASUREMENT	41
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	41
4.5.2 TEST SETUP.....	41
4.5.3 TEST INSTRUMENTS	41



4.5.4	TEST PROCEDURE	41
4.5.5	DEVIATION FROM TEST STANDARD	41
4.5.6	EUT OPERATING CONDITION	41
4.5.7	TEST RESULTS	42
4.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	43
4.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT	43
4.6.2	TEST SETUP.....	43
4.6.3	TEST INSTRUMENTS	43
4.6.4	TEST PROCEDURE.....	43
4.6.5	DEVIATION FROM TEST STANDARD	44
4.6.6	EUT OPERATING CONDITION	44
4.6.7	TEST RESULTS	44
5.	TEST TYPES AND RESULTS (FOR 5.0GHz BAND)	51
5.1	RADIATED EMISSION AND BANDEDGE MEASUREMENT	51
5.1.1	LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	51
5.1.2	TEST INSTRUMENTS	52
5.1.3	TEST PROCEDURES.....	52
5.1.4	DEVIATION FROM TEST STANDARD	52
5.1.5	TEST SETUP.....	52
5.1.6	EUT OPERATING CONDITIONS.....	52
5.1.7	TEST RESULTS	53
5.2	CONDUCTED EMISSION MEASUREMENT	62
5.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	62
5.2.2	TEST INSTRUMENTS	62
5.2.3	TEST PROCEDURES.....	62
5.2.4	DEVIATION FROM TEST STANDARD	62
5.2.5	TEST SETUP.....	62
5.2.6	EUT OPERATING CONDITIONS.....	62
5.2.7	TEST RESULTS	63
5.3	6dB BANDWIDTH MEASUREMENT	67
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	67
5.3.2	TEST SETUP.....	67
5.3.3	TEST INSTRUMENTS	67
5.3.4	TEST PROCEDURE.....	67
5.3.5	DEVIATION FROM TEST STANDARD	67
5.3.6	EUT OPERATING CONDITIONS.....	67
5.3.7	TEST RESULTS	68
5.4	MAXIMUM OUTPUT POWER.....	69
5.4.1	LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT	69
5.4.2	TEST SETUP.....	69
5.4.3	INSTRUMENTS	69
5.4.4	TEST PROCEDURES.....	69
5.4.5	DEVIATION FROM TEST STANDARD	69
5.4.6	EUT OPERATING CONDITIONS.....	69
5.4.7	TEST RESULTS	70
5.5	POWER SPECTRAL DENSITY MEASUREMENT	71
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	71
5.5.2	TEST SETUP.....	71
5.5.3	TEST INSTRUMENTS	71
5.5.4	TEST PROCEDURE.....	71
5.5.5	DEVIATION FROM TEST STANDARD	71



A D T

5.5.6	EUT OPERATING CONDITION	71
5.5.7	TEST RESULTS	72
5.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	73
5.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	73
5.6.2	TEST SETUP	73
5.6.3	TEST INSTRUMENTS	73
5.6.4	TEST PROCEDURE	73
5.6.5	DEVIATION FROM TEST STANDARD	73
5.6.6	EUT OPERATING CONDITION	73
5.6.7	TEST RESULTS	73
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION	79
7.	INFORMATION ON THE TESTING LABORATORIES	80
8.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	81



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF121025C13-1	Original release	Nov. 15, 2012



A D T

1. CERTIFICATION

PRODUCT: Mobile Phone

MODEL NO.: SHV-E220S

BRAND: SAMSUNG

APPLICANT: SAMSUNG Electronics Co., LTD.

TESTED: Oct. 26 ~ Nov. 08, 2012

TEST SAMPLE: Production Unit

STANDARDS: FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10-2009

The above equipment (model: SHV-E220S) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Ivonne Wu , **DATE** : Nov. 15, 2012
Ivonne Wu / Senior Specialist

APPROVED BY : Anderson Chiu , **DATE** : Nov. 15, 2012
Anderson Chiu / Senior Engineer

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -10.42dB at 2.13281MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -7.29dB at 297.84MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Mobile Phone
MODEL NO.	SHV-E220S
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (Li-ion battery)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 135.0Mbps
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	198.61mW for 2412 ~ 2462MHz 305.49mW for 5745 ~ 5825MHz
ANTENNA TYPE	2.4GHz: Chip antenna with -0.13dBi gain 5.0GHz: Chip antenna with -1.1dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

NOTE:

- The EUT has following accessories.

No.	Product	Brand	MODEL	Description
1	Power Adapter	SAMSUNG	ETA0U18KBBK	I/P: 100-240Vac, 50-60Hz, 0.15A O/P: 5.0Vdc, 1.0A
2	Battery	SAMSUNG	EB-L1H2LLK	Rating: 3.8 Vdc, 7.98Wh Type: Li-ion
3	Earphone	SAMSUNG	EHS64AFWE (GH59-11720A)	1.2m non-shielded cable with ferrite core
4	USB Cable	SAMSUNG	ECC1DU4BBE (RT1C703KS E)	1.0m non-shielded cable without ferrite core

- SW version is E220S.001.
- HW version is REV01.

4. The EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX

5. The above EUT information is declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

FOR 5.0GHz (5745 ~ 5805MHz):

4 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on X-plane.

RADIATED EMISSION TEST (ABOVE 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

FOR 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G**: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Z-plane.

RADIATED EMISSION TEST (ABOVE 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5

RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	6.5
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	13.5

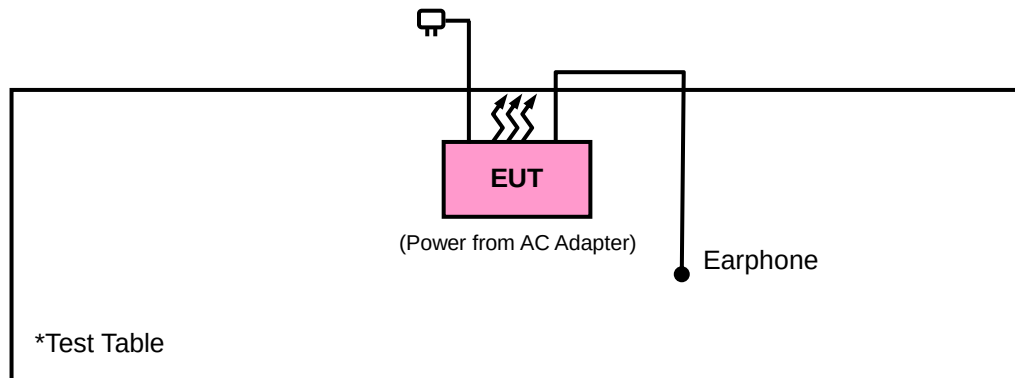
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2009

KDB 558074 D01 DTS Meas Guidance v01

All test items have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)

4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

FREQUENCIES (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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver Agilent	N9038A	MY51210203	Dec. 22, 2011	Dec. 21, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 21, 2011	Dec. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 20, 2011	Dec. 19, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 20, 2011	Dec. 19, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 20, 2011	Dec. 19, 2012
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 30, 2011	Dec. 29, 2012
Preamplifier EMCI	EMC 330H	980112	Dec. 30, 2011	Dec. 29, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 26, 2012	Oct. 25, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Jan. 02, 2012	Jan. 01, 2013
RF signal cable Worken	RG-213	NA	Jan. 02, 2012	Jan. 01, 2013
Software	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Power Meter	ML2495A	1232002	Aug. 10, 2012	Aug. 09, 2013
Power Sensor	MA2411B	1207325	Aug. 15, 2012	Aug. 14, 2013

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 9.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 460141.
6. The IC Site Registration No. is IC 7450F-4.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Height of receiving antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

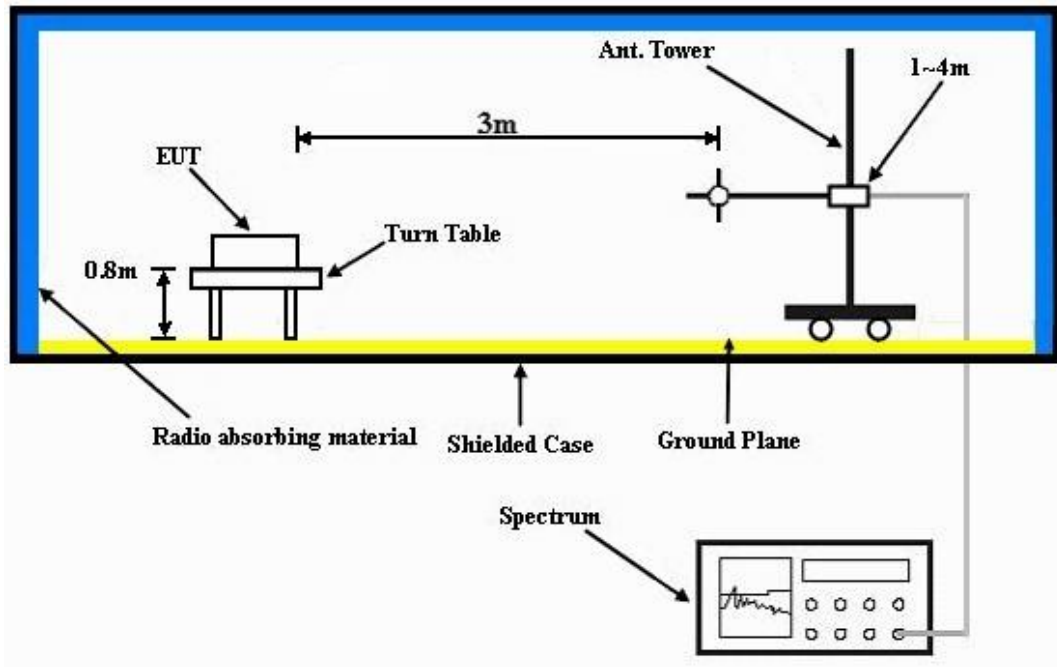
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2386	39.05	44.44	54	-14.95	27.26	4.85	37.5	102	21	Average
2386	50.4	55.79	74	-23.6	27.26	4.85	37.5	102	21	Peak
2412	93.09	98.43			27.31	4.87	37.52	102	21	Average
2412	97.15	102.49			27.31	4.87	37.52	102	21	Peak
2498	37.23	41.99	54	-16.77	27.55	4.94	37.25	102	21	Average
2498	50.08	54.84	74	-23.92	27.55	4.94	37.25	102	21	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2386	37.59	42.98	54	-16.41	27.26	4.85	37.5	100	305	Average
2386	50.35	55.74	74	-23.65	27.26	4.85	37.5	100	305	Peak
2412	89	94.34			27.31	4.87	37.52	100	305	Average
2412	92.74	98.08			27.31	4.87	37.52	100	305	Peak
2492	37.12	41.88	54	-16.88	27.55	4.94	37.25	100	305	Average
2492	49.15	53.91	74	-24.85	27.55	4.94	37.25	100	305	Peak
4824	42.21	56.17	54	-11.79	31.42	7.7	53.08	102	295	Average
4824	47.36	61.32	74	-26.64	31.42	7.7	53.08	102	295	Peak

REMARKS:

- 2412MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2376	37.1	42.54	54	-16.9	27.21	4.85	37.5	106	6	Average
2376	50.78	56.22	74	-23.22	27.21	4.85	37.5	106	6	Peak
2437	93.67	98.84			27.4	4.89	37.46	106	6	Average
2437	97.69	102.86			27.4	4.89	37.46	106	6	Peak
2494	37.27	42.03	54	-16.73	27.55	4.94	37.25	106	6	Average
2494	50.22	54.98	74	-23.78	27.55	4.94	37.25	106	6	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2368	36.69	42.18	54	-17.31	27.16	4.85	37.5	100	304	Average
2368	50.4	55.89	74	-23.6	27.16	4.85	37.5	100	304	Peak
2437	88.05	93.22			27.4	4.89	37.46	100	304	Average
2437	91.93	97.1			27.4	4.89	37.46	100	304	Peak
2488	37.04	41.89	54	-16.96	27.55	4.92	37.32	100	304	Average
2488	49.89	54.74	74	-24.11	27.55	4.92	37.32	100	304	Peak

REMARKS:

1. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2382	36.94	42.38	54	-17.06	27.21	4.85	37.5	104	7	Average
2382	50.27	55.71	74	-23.73	27.21	4.85	37.5	104	7	Peak
2462	93.03	98.06			27.45	4.91	37.39	104	7	Average
2462	97.36	102.39			27.45	4.91	37.39	104	7	Peak
2490	37.5	42.35	54	-16.5	27.55	4.92	37.32	104	7	Average
2490	50.58	55.43	74	-23.42	27.55	4.92	37.32	104	7	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2344	36.67	42.23	54	-17.33	27.11	4.82	37.49	100	303	Average
2344	50.2	55.76	74	-23.8	27.11	4.82	37.49	100	303	Peak
2462	87.8	92.83			27.45	4.91	37.39	100	303	Average
2462	92.12	97.15			27.45	4.91	37.39	100	303	Peak
2490	37.09	41.94	54	-16.91	27.55	4.92	37.32	100	303	Average
2490	50	54.85	74	-24	27.55	4.92	37.32	100	303	Peak

REMARKS:

- 2462MHz: Fundamental frequency.

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	41.09	46.48	54	-12.91	27.26	4.87	37.52	100	23	Average
2390	55.54	60.93	74	-18.46	27.26	4.87	37.52	100	23	Peak
2412	86.68	92.02			27.31	4.87	37.52	100	23	Average
2412	97.54	102.88			27.31	4.87	37.52	100	23	Peak
2486	38.09	42.99	54	-15.91	27.5	4.92	37.32	100	23	Average
2486	50.54	55.44	74	-23.46	27.5	4.92	37.32	100	23	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	39.12	44.51	54	-14.88	27.26	4.87	37.52	100	305	Average
2390	54.05	59.44	74	-19.95	27.26	4.87	37.52	100	305	Peak
2412	82.28	87.62			27.31	4.87	37.52	100	305	Average
2412	91.85	97.19			27.31	4.87	37.52	100	305	Peak
2488	37.86	42.71	54	-16.14	27.55	4.92	37.32	100	305	Average
2488	49.71	54.56	74	-24.29	27.55	4.92	37.32	100	305	Peak

REMARKS:

- 2412MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2382	37.86	43.3	54	-16.14	27.21	4.85	37.5	105	7	Average
2382	50.2	55.64	74	-23.8	27.21	4.85	37.5	105	7	Peak
2437	88.36	93.53			27.4	4.89	37.46	105	7	Average
2437	97.76	102.93			27.4	4.89	37.46	105	7	Peak
2492	38.27	43.03	54	-15.73	27.55	4.94	37.25	105	7	Average
2492	50.61	55.37	74	-23.39	27.55	4.94	37.25	105	7	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2380	36.87	42.31	54	-17.13	27.21	4.85	37.5	100	305	Average
2380	50.01	55.45	74	-23.99	27.21	4.85	37.5	100	305	Peak
2437	81.52	86.69			27.4	4.89	37.46	100	305	Average
2437	91.03	96.2			27.4	4.89	37.46	100	305	Peak
2492	37.97	42.73	54	-16.03	27.55	4.94	37.25	100	305	Average
2492	50.36	55.12	74	-23.64	27.55	4.94	37.25	100	305	Peak

REMARKS:

1. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2332	37.65	43.27	54	-16.35	27.06	4.79	37.47	104	10	Average
2332	50.38	56	74	-23.62	27.06	4.79	37.47	104	10	Peak
2462	86.82	91.85			27.45	4.91	37.39	104	10	Average
2462	97.58	102.61			27.45	4.91	37.39	104	10	Peak
2484	38.54	43.44	54	-15.46	27.5	4.92	37.32	104	10	Average
2484	53.24	58.14	74	-20.76	27.5	4.92	37.32	104	10	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2360	37.4	42.91	54	-16.6	27.16	4.82	37.49	100	314	Average
2360	49.81	55.32	74	-24.19	27.16	4.82	37.49	100	314	Peak
2462	80.36	85.39			27.45	4.91	37.39	100	314	Average
2462	90.66	95.69			27.45	4.91	37.39	100	314	Peak
2496	38.04	42.8	54	-15.96	27.55	4.94	37.25	100	314	Average
2496	49.47	54.23	74	-24.53	27.55	4.94	37.25	100	314	Peak

REMARKS:

- 2462MHz: Fundamental frequency.

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	41.14	46.53	54	-12.86	27.26	4.87	37.52	100	23	Average
2390	60.13	65.52	74	-13.87	27.26	4.87	37.52	100	23	Peak
2412	85.78	91.12			27.31	4.87	37.52	100	23	Average
2412	96.05	101.39			27.31	4.87	37.52	100	23	Peak
2492	38.19	42.95	54	-15.81	27.55	4.94	37.25	100	23	Average
2492	51.15	55.91	74	-22.85	27.55	4.94	37.25	100	23	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	39.81	45.2	54	-14.19	27.26	4.87	37.52	100	305	Average
2390	53.1	58.49	74	-20.9	27.26	4.87	37.52	100	305	Peak
2412	81.99	87.33			27.31	4.87	37.52	100	305	Average
2412	91.7	97.04			27.31	4.87	37.52	100	305	Peak
2494	37.96	42.72	54	-16.04	27.55	4.94	37.25	100	305	Average
2494	50.98	55.74	74	-23.02	27.55	4.94	37.25	100	305	Peak

REMARKS:

- 2412MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2378	37.8	43.24	54	-16.2	27.21	4.85	37.5	104	9	Average
2378	50.36	55.8	74	-23.64	27.21	4.85	37.5	104	9	Peak
2437	86.64	91.81			27.4	4.89	37.46	104	9	Average
2437	95.75	100.92			27.4	4.89	37.46	104	9	Peak
2492	38.15	42.91	54	-15.85	27.55	4.94	37.25	104	9	Average
2492	50.04	54.8	74	-23.96	27.55	4.94	37.25	104	9	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2326	37.22	42.84	54	-16.78	27.06	4.79	37.47	100	305	Average
2326	50.04	55.66	74	-23.96	27.06	4.79	37.47	100	305	Peak
2437	79.98	85.15			27.4	4.89	37.46	100	305	Average
2437	90.66	95.83			27.4	4.89	37.46	100	305	Peak
2484	37.76	42.66	54	-16.24	27.5	4.92	37.32	100	305	Average
2484	50.27	55.17	74	-23.73	27.5	4.92	37.32	100	305	Peak

REMARKS:

1. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	37.94	43.33	54	-16.06	27.26	4.87	37.52	103	4	Average
2390	51.69	57.08	74	-22.31	27.26	4.87	37.52	103	4	Peak
2462	87.78	92.81			27.45	4.91	37.39	103	4	Average
2462	97.4	102.43			27.45	4.91	37.39	103	4	Peak
2484	39.52	44.42	54	-14.48	27.5	4.92	37.32	103	4	Average
2484	55.07	59.97	74	-18.93	27.5	4.92	37.32	103	4	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2354	37.49	43	54	-16.51	27.16	4.82	37.49	100	302	Average
2354	49.85	55.36	74	-24.15	27.16	4.82	37.49	100	302	Peak
2462	80.42	85.45			27.45	4.91	37.39	100	302	Average
2462	90.14	95.17			27.45	4.91	37.39	100	302	Peak
2492	37.97	42.73	54	-16.03	27.55	4.94	37.25	100	302	Average
2492	50.75	55.51	74	-23.25	27.55	4.94	37.25	100	302	Peak

REMARKS:

- 2462MHz: Fundamental frequency.



A D T

BELOW 1GHz WORST-CASE DATA: 802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
42.69	21.11	37.91	40	-18.89	13.58	0.7	31.08	100	125	Peak
190.11	27.02	47.09	43.5	-16.48	10.05	1.55	31.67	102	302	Peak
273.54	35.32	53.17	46	-10.68	12.17	1.93	31.95	110	252	Peak
342	34.94	50.6	46	-11.06	13.96	2.2	31.82	102	10	Peak
402.2	26.72	40.99	46	-19.28	15.39	2.43	32.09	200	27	Peak
554.8	24.42	34.9	46	-21.58	18.57	2.96	32.01	100	174	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
36.75	27.83	45.15	40	-12.17	13.09	0.62	31.03	103	31	Peak
178.23	25.16	44.57	43.5	-18.34	10.92	1.49	31.82	100	252	Peak
297.84	25.82	42.71	46	-20.18	12.88	2.04	31.81	185	57	Peak
305.6	27.44	44.19	46	-18.56	13.08	2.07	31.9	133	220	Peak
366.5	29.32	44.43	46	-16.68	14.54	2.29	31.94	142	210	Peak
650	25.02	33.59	46	-20.98	20.21	3.24	32.02	103	37	Peak

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 19, 2011	Nov. 18, 2012
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 29, 2011	Dec. 28, 2012
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.7 TEST RESULTS

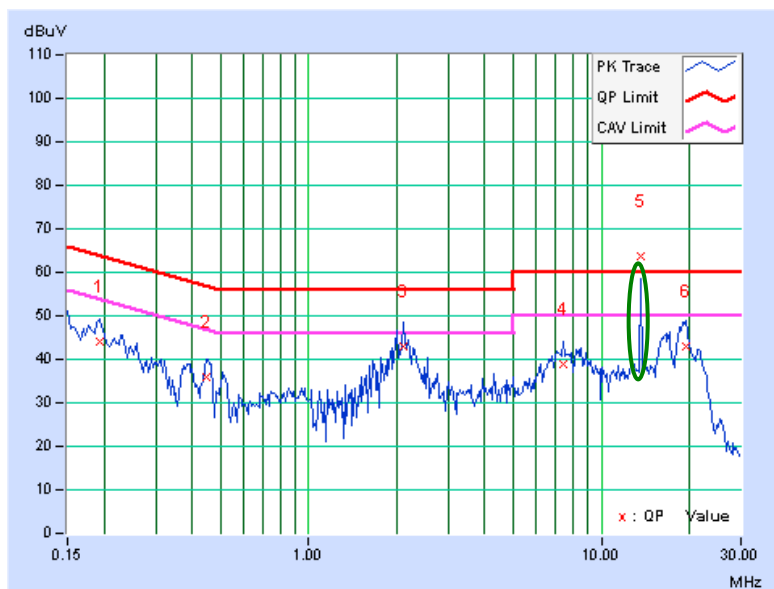
CONDUCTED WORST-CASE DATA : 802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.15	43.95	30.33	44.10	30.48	63.91	53.91	-19.81	-23.43
2	0.44688	0.17	35.60	26.78	35.77	26.95	56.93	46.93	-21.16	-19.98
3	2.10156	0.26	42.55	35.16	42.81	35.42	56.00	46.00	-13.19	-10.58
4	7.45703	0.39	38.45	31.08	38.84	31.47	60.00	50.00	-21.16	-18.53
5	13.56250	0.50	63.22	56.92	63.72	57.42	60.00	50.00	3.72	7.42
6	19.40234	0.62	42.22	33.15	42.84	33.77	60.00	50.00	-17.16	-16.23

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.
6. This is NFC signal inductive with measurement system. Please check P35-36 to see test result for EUT with a suitable dummy load.

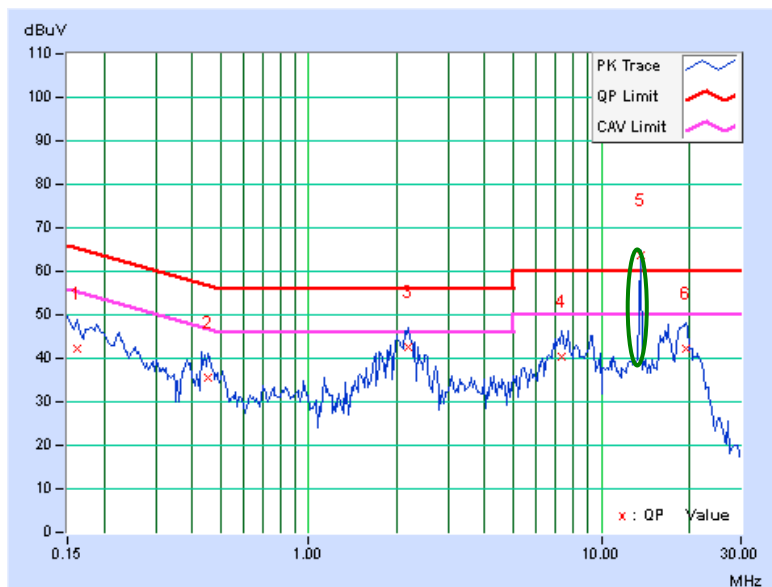


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.13	42.07	28.62	42.20	28.75	65.38	55.38	-23.17	-26.62
2	0.45078	0.16	35.22	27.52	35.38	27.68	56.86	46.86	-21.48	-19.18
3	2.19922	0.27	42.18	34.73	42.45	35.00	56.00	46.00	-13.55	-11.00
4	7.35156	0.42	40.04	31.51	40.46	31.93	60.00	50.00	-19.54	-18.07
5	13.56250	0.57	63.18	56.82	63.75	57.39	60.00	50.00	3.75	7.39
6	19.39844	0.71	41.38	32.61	42.09	33.32	60.00	50.00	-17.91	-16.68

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.
6. This is NFC signal inductive with measurement system. Please check P35-36 to see test result for EUT with a suitable dummy load.



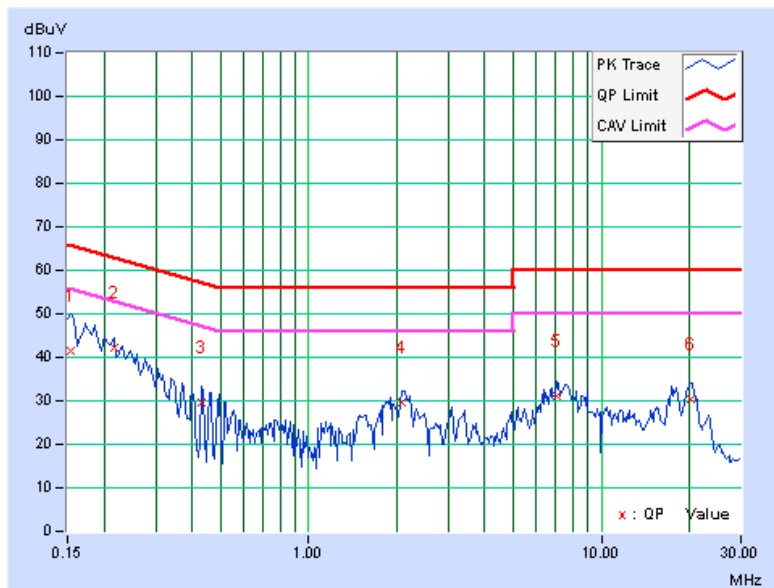
Test with suitable dummy load

PHASE	Line 1	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.15	41.30	19.79	41.45	19.94	65.79	55.79	-24.34	-35.85
2	0.21641	0.15	41.91	26.60	42.06	26.75	62.96	52.96	-20.89	-26.20
3	0.43125	0.17	29.51	24.94	29.68	25.11	57.23	47.23	-27.55	-22.12
4	2.08594	0.26	29.51	23.48	29.77	23.74	56.00	46.00	-26.23	-22.26
5	7.02734	0.39	30.81	23.52	31.20	23.91	60.00	50.00	-28.80	-26.09
6	20.14063	0.63	29.87	18.42	30.50	19.05	60.00	50.00	-29.50	-30.95

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

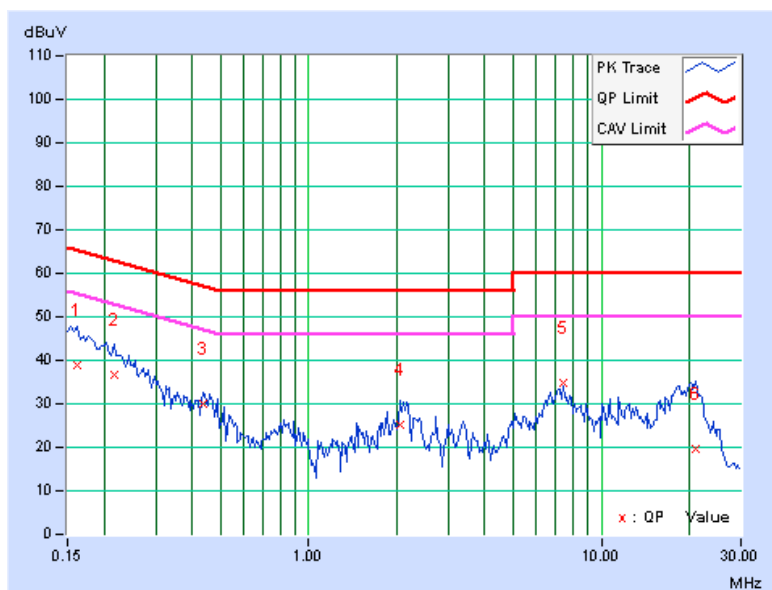


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.13	38.62	22.15	38.75	22.28	65.38	55.38	-26.62	-33.09
2	0.21641	0.14	36.61	19.88	36.75	20.02	62.96	52.96	-26.20	-32.93
3	0.43516	0.16	29.91	24.48	30.07	24.64	57.15	47.15	-27.08	-22.51
4	2.04297	0.26	24.87	15.52	25.13	15.78	56.00	46.00	-30.87	-30.22
5	7.42188	0.42	34.33	21.75	34.75	22.17	60.00	50.00	-25.25	-27.83
6	21.03516	0.70	18.80	11.05	19.50	11.75	60.00	50.00	-40.50	-38.25

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

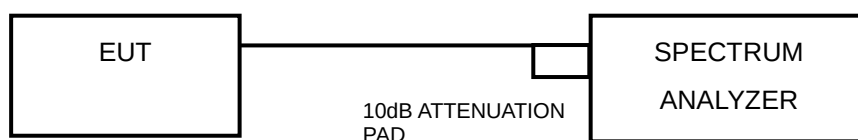


4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.3.4 TEST PROCEDURE

- Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.06	0.5	PASS
6	2437	8.06	0.5	PASS
11	2462	9.07	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.92	0.5	PASS
6	2437	16.03	0.5	PASS
11	2462	16.03	0.5	PASS

802.11n (20MHz)

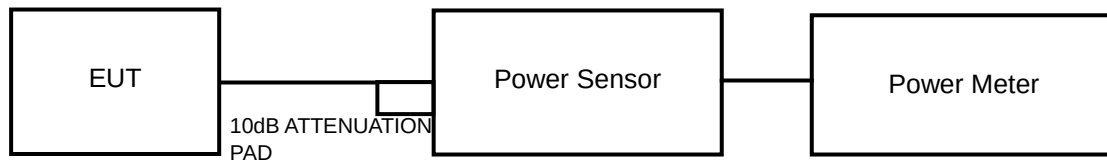
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.31	0.5	PASS
6	2437	17.41	0.5	PASS
11	2462	17.21	0.5	PASS

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the peak power level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	79.80	19.02	30	PASS
6	2437	88.51	19.47	30	PASS
11	2462	79.07	18.98	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	172.19	22.36	30	PASS
6	2437	197.24	22.95	30	PASS
11	2462	198.61	22.98	30	PASS

802.11n (20MHz)

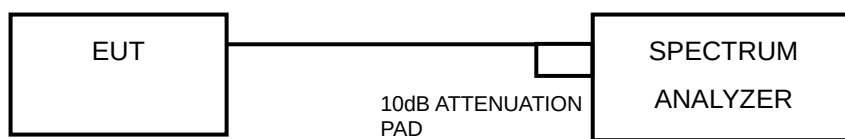
CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	166.34	22.21	30	PASS
6	2437	168.66	22.27	30	PASS
11	2462	172.98	22.38	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- Set the RBW = 100 kHz, VBW = 300 kHz, 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 in any 100 kHz band segment within the fundamental EBW.
- Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	7.38	-7.82	8	PASS
6	2437	7.37	-7.83	8	PASS
11	2462	8.15	-7.05	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	2.42	-12.78	8	PASS
6	2437	2.81	-12.39	8	PASS
11	2462	2.10	-13.10	8	PASS

802.11n (20MHz)

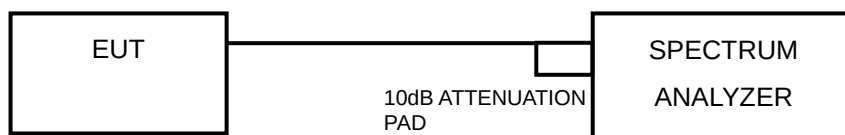
Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	2.39	-12.81	8	PASS
6	2437	1.82	-13.38	8	PASS
11	2462	1.75	-13.45	8	PASS

4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

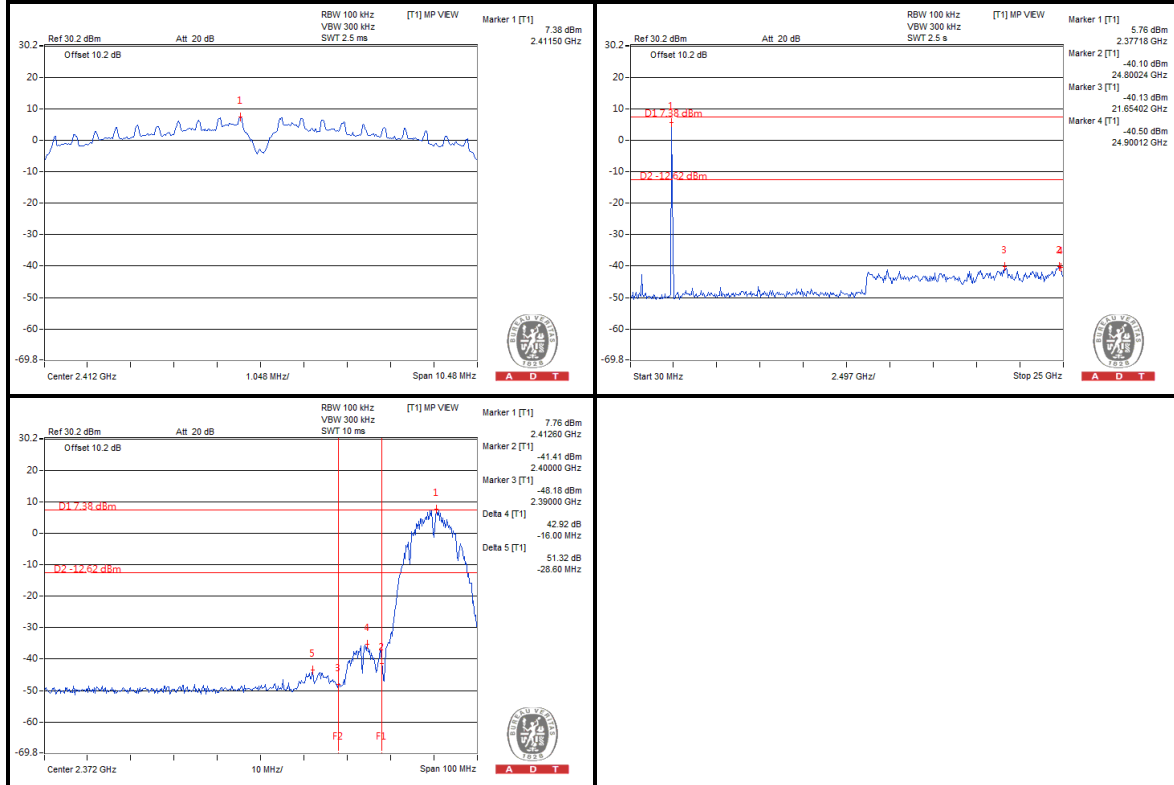
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



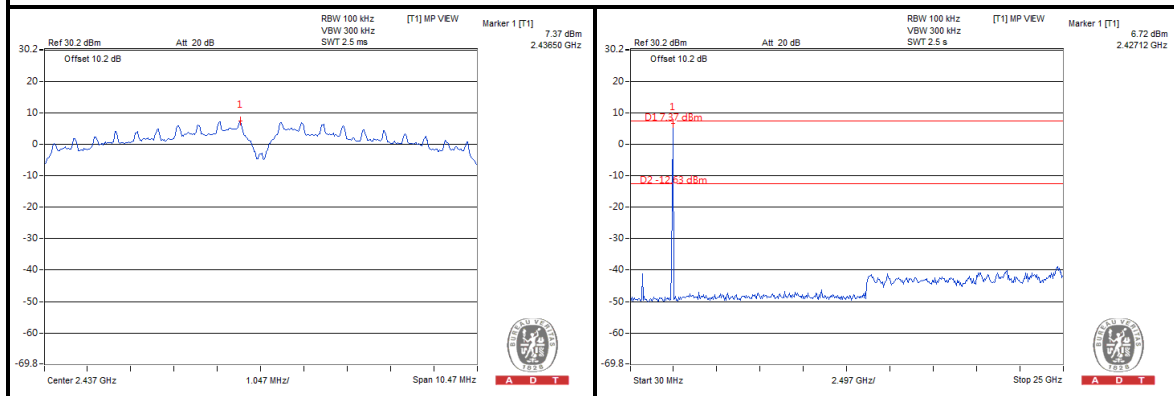
A D T

802.11b

CH 1



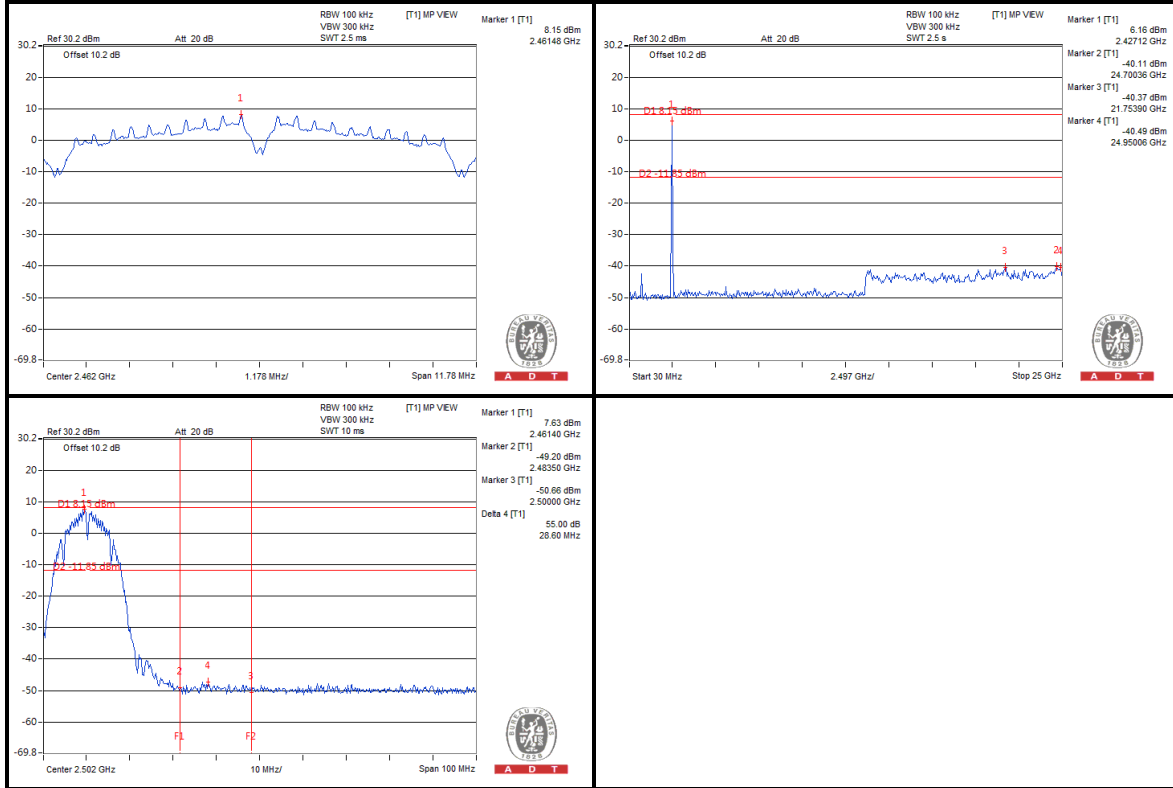
CH 6





A D T

CH 11

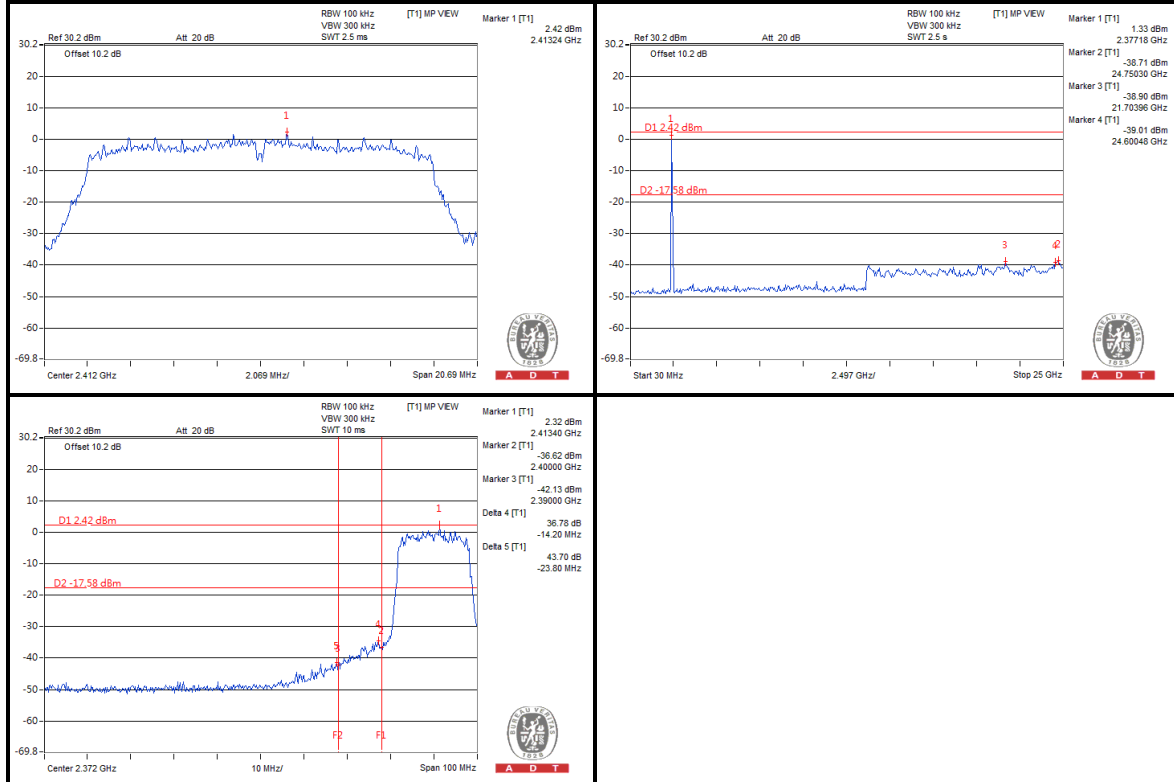




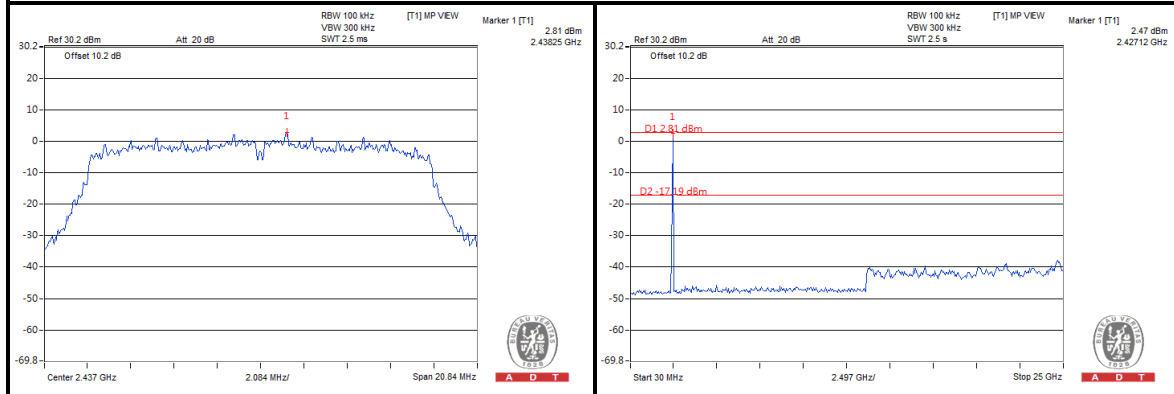
A D T

802.11g

CH 1



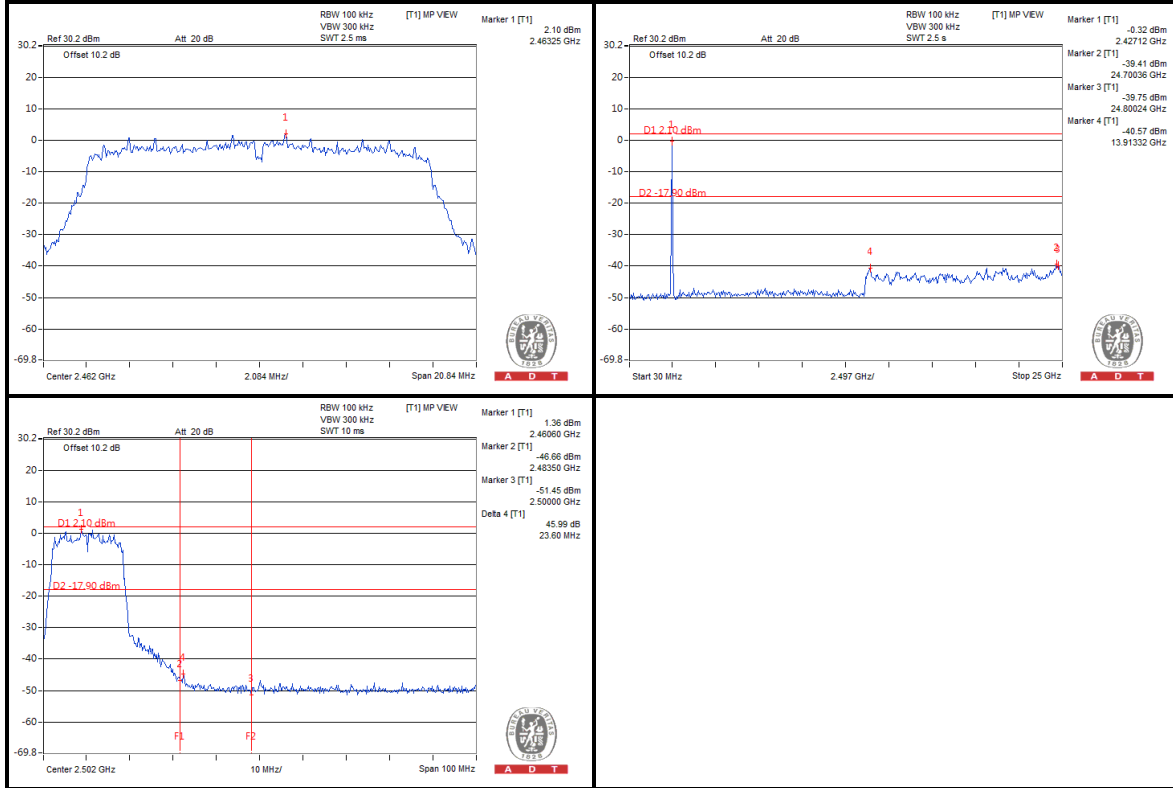
CH 6





A D T

CH 11

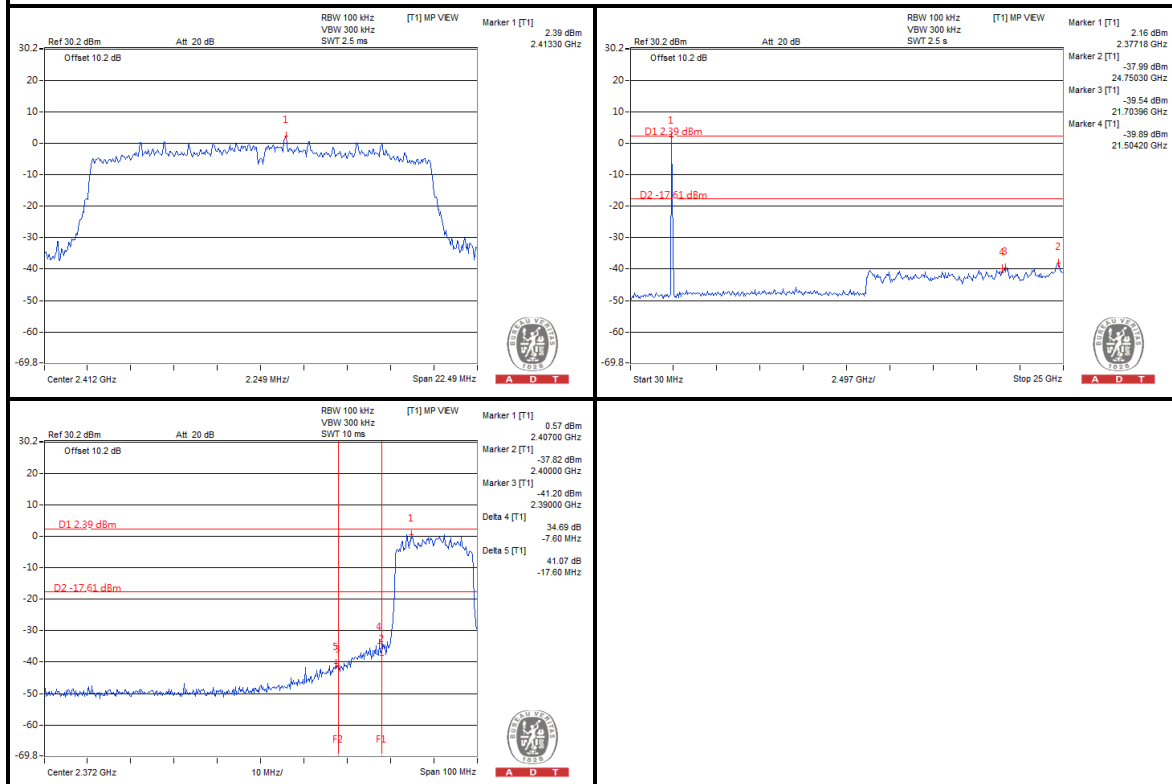




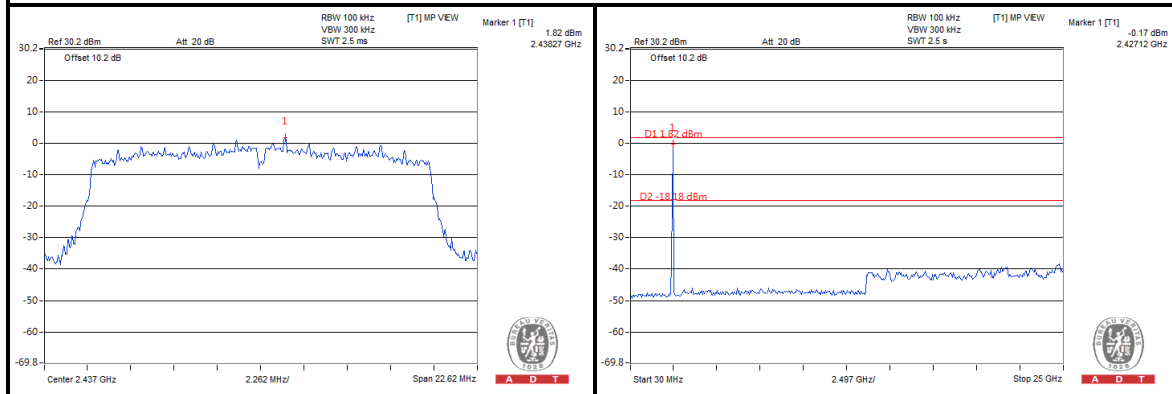
A D T

802.11n (20MHz)

CH 1



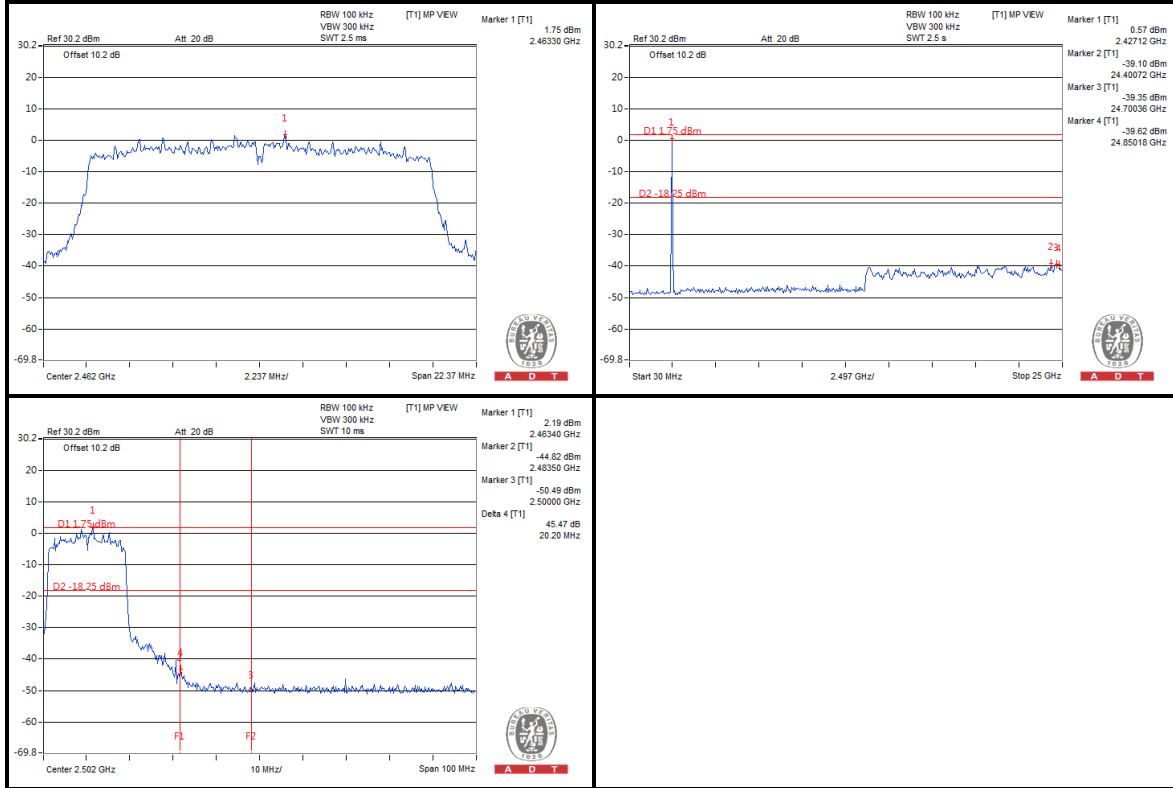
CH 6





A D T

CH 11



5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

5.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

5.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

FREQUENCIES (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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



A D T

5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

5.1.3 TEST PROCEDURES

Same as item 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as item 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

5.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	44.78	42.14	72.18	-27.4	32.36	7.71	37.43	102	119	Average
5725	63.26	60.62	81.63	-18.37	32.36	7.71	37.43	102	119	Peak
5745	92.18	89.53			32.38	7.74	37.47	102	119	Average
5745	101.63	98.98			32.38	7.74	37.47	102	119	Peak
5850	40.76	37.91	72.18	-31.42	32.53	7.83	37.51	102	119	Average
5850	51.51	48.66	81.63	-30.12	32.53	7.83	37.51	102	119	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	43.86	41.22	69.92	-26.06	32.36	7.71	37.43	108	19	Average
5725	56.26	53.62	79	-22.74	32.36	7.71	37.43	108	19	Peak
5745	89.92	87.27			32.38	7.74	37.47	108	19	Average
5745	99	96.35			32.38	7.74	37.47	108	19	Peak
5850	40.71	37.86	69.92	-29.21	32.53	7.83	37.51	108	19	Average
5850	52.1	49.25	79	-26.9	32.53	7.83	37.51	108	19	Peak

REMARKS:

- 5745MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	40.97	38.33	71.11	-30.14	32.36	7.71	37.43	100	121	Average
5725	50.98	48.34	80.59	-29.61	32.36	7.71	37.43	100	121	Peak
5785	91.11	88.42			32.43	7.8	37.54	100	121	Average
5785	100.59	97.9			32.43	7.8	37.54	100	121	Peak
5850	40.96	38.11	71.11	-30.15	32.53	7.83	37.51	100	121	Average
5850	50.13	47.28	80.59	-30.46	32.53	7.83	37.51	100	121	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	41.04	38.4	67.76	-26.72	32.36	7.71	37.43	100	36	Average
5725	50.89	48.25	76.73	-25.84	32.36	7.71	37.43	100	36	Peak
5785	87.76	85.07			32.43	7.8	37.54	100	36	Average
5785	96.73	94.04			32.43	7.8	37.54	100	36	Peak
5850	41.25	38.4	67.76	-26.51	32.53	7.83	37.51	100	36	Average
5850	50.85	48	76.73	-25.88	32.53	7.83	37.51	100	36	Peak

REMARKS:

- 5785MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	40.97	38.33	71.54	-30.57	32.36	7.71	37.43	100	125	Average
5725	51.59	48.95	80.6	-29.01	32.36	7.71	37.43	100	125	Peak
5825	91.54	88.74			32.51	7.82	37.53	100	125	Average
5825	100.6	97.8			32.51	7.82	37.53	100	125	Peak
5850	41.95	39.1	71.54	-29.59	32.53	7.83	37.51	100	125	Average
5850	53.18	50.33	80.6	-27.42	32.53	7.83	37.51	100	125	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	40.6	37.96	68.35	-27.75	32.36	7.71	37.43	109	173	Average
5725	50.9	48.26	77.07	-26.17	32.36	7.71	37.43	109	173	Peak
5825	88.35	85.55			32.51	7.82	37.53	109	173	Average
5825	97.07	94.27			32.51	7.82	37.53	109	173	Peak
5850	41.39	38.54	68.35	-26.96	32.53	7.83	37.51	109	173	Average
5850	52.24	49.39	77.07	-24.83	32.53	7.83	37.51	109	173	Peak

REMARKS:

1. 5805MHz: Fundamental frequency.
2. 5725MHz & 5850MHz: Out of restricted band



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	43.46	40.82	70.6	-27.14	32.36	7.71	37.43	102	120	Average
5725	59.37	56.73	80.01	-20.64	32.36	7.71	37.43	102	120	Peak
5745	90.6	87.95			32.38	7.74	37.47	102	120	Average
5745	100.01	97.36			32.38	7.74	37.47	102	120	Peak
5850	40.59	37.74	70.6	-30.01	32.53	7.83	37.51	102	120	Average
5850	50.45	47.6	80.01	-29.56	32.53	7.83	37.51	102	120	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	42.18	39.54	66.83	-24.65	32.36	7.71	37.43	100	26	Average
5725	54.48	51.84	76.2	-21.72	32.36	7.71	37.43	100	26	Peak
5745	86.83	84.18			32.38	7.74	37.47	100	26	Average
5745	96.2	93.55			32.38	7.74	37.47	100	26	Peak
5850	40.62	37.77	66.83	-26.21	32.53	7.83	37.51	100	26	Average
5850	51.11	48.26	76.2	-25.09	32.53	7.83	37.51	100	26	Peak

REMARKS:

- 5745MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	40.82	38.18	69.84	-29.02	32.36	7.71	37.43	100	114	Average
5725	51.57	48.93	79.31	-27.74	32.36	7.71	37.43	100	114	Peak
5785	89.84	87.15			32.43	7.8	37.54	100	114	Average
5785	99.31	96.62			32.43	7.8	37.54	100	114	Peak
5850	40.76	37.91	69.84	-29.08	32.53	7.83	37.51	100	114	Average
5850	51.01	48.16	79.31	-28.3	32.53	7.83	37.51	100	114	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	40.6	37.96	66.98	-26.38	32.36	7.71	37.43	100	37	Average
5725	51.03	48.39	75.92	-24.89	32.36	7.71	37.43	100	37	Peak
5785	86.98	84.29			32.43	7.8	37.54	100	37	Average
5785	95.92	93.23			32.43	7.8	37.54	100	37	Peak
5850	40.61	37.76	66.98	-26.37	32.53	7.83	37.51	100	37	Average
5850	50.11	47.26	75.92	-25.81	32.53	7.83	37.51	100	37	Peak

REMARKS:

- 5785MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	40.7	38.06	69.34	-28.64	32.36	7.71	37.43	100	111	Average
5725	52.12	49.48	78.29	-26.17	32.36	7.71	37.43	100	111	Peak
5825	89.34	86.54			32.51	7.82	37.53	100	111	Average
5825	98.29	95.49			32.51	7.82	37.53	100	111	Peak
5850	41.38	38.53	69.34	-27.96	32.53	7.83	37.51	100	111	Average
5850	55.92	53.07	78.29	-22.37	32.53	7.83	37.51	100	111	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	40.41	37.77	65.91	-25.5	32.36	7.71	37.43	100	192	Average
5725	51.32	48.68	75.15	-23.83	32.36	7.71	37.43	100	192	Peak
5825	85.91	83.11			32.51	7.82	37.53	100	192	Average
5825	95.15	92.35			32.51	7.82	37.53	100	192	Peak
5850	41.01	38.16	65.91	-24.9	32.53	7.83	37.51	100	192	Average
5850	53.01	50.16	75.15	-22.14	32.53	7.83	37.51	100	192	Peak

REMARKS:

- 5805MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	45.67	43.03	68.87	-23.2	32.36	7.71	37.43	100	122	Average
5725	62.89	60.25	78.35	-15.46	32.36	7.71	37.43	100	122	Peak
5755	88.87	86.19			32.41	7.74	37.47	100	122	Average
5755	98.35	95.67			32.41	7.74	37.47	100	122	Peak
5850	41.37	38.52	68.87	-27.5	32.53	7.83	37.51	100	122	Average
5850	52.17	49.32	78.35	-26.18	32.53	7.83	37.51	100	122	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	44.04	41.4	65.13	-21.09	32.36	7.71	37.43	100	37	Average
5725	57.96	55.32	74.41	-16.45	32.36	7.71	37.43	100	37	Peak
5755	85.13	82.45			32.41	7.74	37.47	100	37	Average
5755	94.41	91.73			32.41	7.74	37.47	100	37	Peak
5850	41.12	38.27	65.13	-24.01	32.53	7.83	37.51	100	37	Average
5850	51.36	48.51	74.41	-23.05	32.53	7.83	37.51	100	37	Peak

REMARKS:

- 5755MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	41.74	39.1	68.31	-26.57	32.36	7.71	37.43	100	127	Average
5725	50.97	48.33	78.29	-27.32	32.36	7.71	37.43	100	127	Peak
5795	88.31	85.59			32.46	7.8	37.54	100	127	Average
5795	98.29	95.57			32.46	7.8	37.54	100	127	Peak
5850	41.49	38.64	68.31	-26.82	32.53	7.83	37.51	100	127	Average
5850	51.3	48.45	78.29	-26.99	32.53	7.83	37.51	100	127	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5725	41.14	38.5	65.38	-24.24	32.36	7.71	37.43	107	26	Average
5725	51.95	49.31	75.11	-23.16	32.36	7.71	37.43	107	26	Peak
5795	85.38	82.66			32.46	7.8	37.54	107	26	Average
5795	95.11	92.39			32.46	7.8	37.54	107	26	Peak
5850	41.5	38.65	65.38	-23.88	32.53	7.83	37.51	107	26	Average
5850	51.57	48.72	75.11	-23.54	32.53	7.83	37.51	107	26	Peak

REMARKS:

1. 5795MHz: Fundamental frequency.
2. 5725MHz & 5850MHz: Out of restricted band



A D T

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
42.42	21	37.8	40	-19	13.58	0.7	31.08	100	282	Peak
185.79	24.27	44.15	43.5	-19.23	10.33	1.53	31.74	133	220	Peak
297.84	38.71	55.6	46	-7.29	12.88	2.04	31.81	125	274	Peak
358.1	28.13	43.48	46	-17.87	14.33	2.26	31.94	100	274	Peak
582.1	23.57	33.46	46	-22.43	19.19	3.04	32.12	101	24	Peak
828.5	27.26	32.61	46	-18.74	22.59	3.76	31.7	105	22	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
42.42	21.59	38.39	40	-18.41	13.58	0.7	31.08	100	153	Peak
149.61	18.28	35.87	43.5	-25.22	12.68	1.34	31.61	133	225	Peak
297.57	29.51	46.4	46	-16.49	12.88	2.04	31.81	102	285	Peak
365.8	27.85	42.98	46	-18.15	14.52	2.29	31.94	212	133	Peak
494.6	23.49	35.22	46	-22.51	17.21	2.76	31.7	125	312	Peak
737.5	27.02	33.65	46	-18.98	21.34	3.54	31.51	104	174	Peak

5.2 CONDUCTED EMISSION MEASUREMENT

5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.2.2 TEST INSTRUMENTS

Same as item 4.2.2.

5.2.3 TEST PROCEDURES

Same as item 4.2.3.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP

Same as item 4.2.5.

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

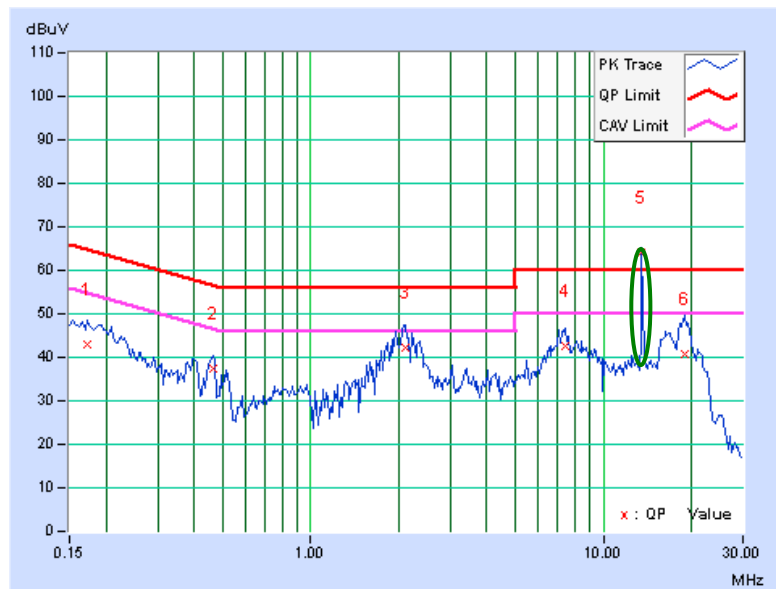
CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	0.15	42.98	30.66	43.13	30.81	64.79	54.79	-21.66	-23.98
2	0.46250	0.17	37.41	30.64	37.58	30.81	56.65	46.65	-19.07	-15.84
3	2.09766	0.26	42.09	34.46	42.35	34.72	56.00	46.00	-13.65	-11.28
4	7.38672	0.39	42.25	32.82	42.64	33.21	60.00	50.00	-17.36	-16.79
5	13.55859	0.50	63.48	57.14	63.98	57.64	60.00	50.00	3.98	7.64
6	18.90234	0.61	40.23	35.01	40.84	35.62	60.00	50.00	-19.16	-14.38

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.
6. This is NFC signal inductive with measurement system. Please check P62-63 to see test result for EUT with a suitable dummy load.

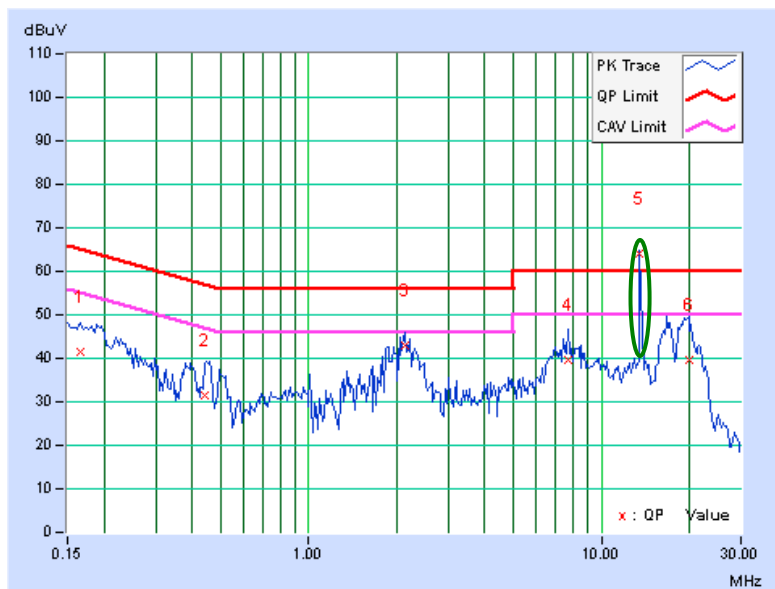


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.13	41.48	29.29	41.61	29.42	65.18	55.18	-23.56	-25.75
2	0.43906	0.16	31.22	25.45	31.38	25.61	57.08	47.08	-25.70	-21.47
3	2.13281	0.27	42.87	35.31	43.14	35.58	56.00	46.00	-12.86	-10.42
4	7.67969	0.43	39.37	32.00	39.80	32.43	60.00	50.00	-20.20	-17.57
5	13.55859	0.57	63.48	57.10	64.05	57.67	60.00	50.00	4.05	7.67
6	19.88672	0.72	38.97	28.58	39.69	29.30	60.00	50.00	-20.31	-20.70

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.
6. This is NFC signal inductive with measurement system. Please check P62-63 to see test result for EUT with a suitable dummy load.



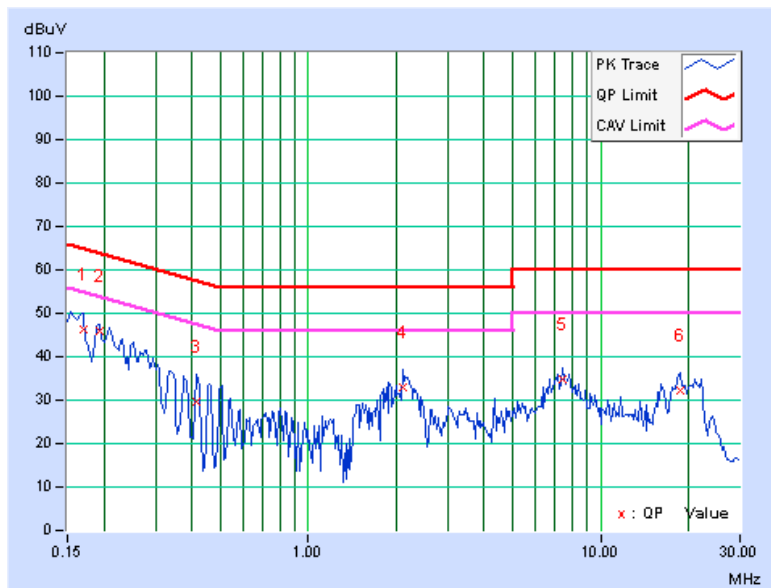
Test with suitable dummy load

PHASE	Line 1	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	0.15	46.15	26.85	46.30	27.00	64.98	54.98	-18.68	-27.98
2	0.19297	0.15	45.80	33.24	45.95	33.39	63.91	53.91	-17.96	-20.52
3	0.41563	0.17	29.43	20.15	29.60	20.32	57.54	47.54	-27.93	-27.21
4	2.10156	0.26	32.81	18.42	33.07	18.68	56.00	46.00	-22.93	-27.32
5	7.39844	0.39	34.32	23.70	34.71	24.09	60.00	50.00	-25.29	-25.91
6	18.86719	0.61	31.64	23.74	32.25	24.35	60.00	50.00	-27.75	-25.65

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

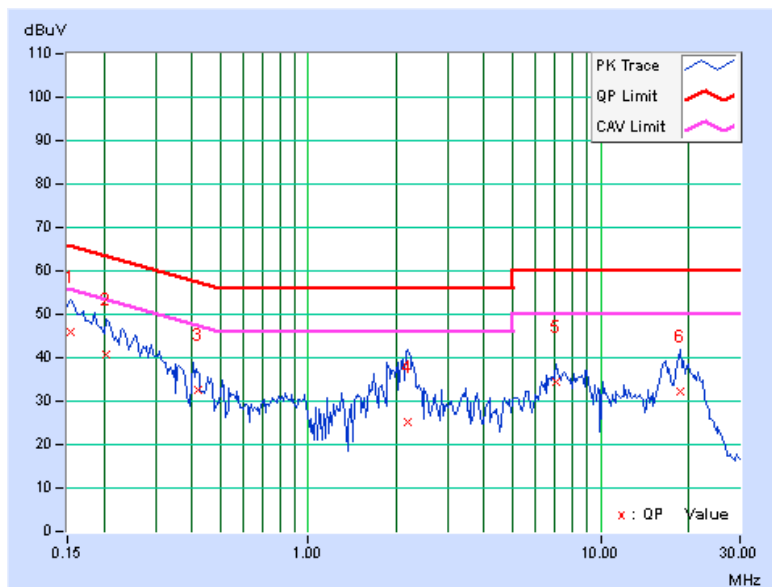


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.13	45.73	22.75	45.86	22.88	65.79	55.79	-19.93	-32.91
2	0.20469	0.14	40.46	27.59	40.60	27.73	63.42	53.42	-22.82	-25.69
3	0.41797	0.16	32.39	28.18	32.55	28.34	57.49	47.49	-24.94	-19.15
4	2.20313	0.27	24.82	10.69	25.09	10.96	56.00	46.00	-30.91	-35.04
5	7.08984	0.42	34.05	22.47	34.47	22.89	60.00	50.00	-25.53	-27.11
6	18.72266	0.69	31.61	22.47	32.30	23.16	60.00	50.00	-27.70	-26.84

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.3.2 TEST SETUP

Same as item 4.3.2.

5.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.3.4 TEST PROCEDURE

Same as item 4.3.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.

5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.63	0.5	PASS
157	5785	16.70	0.5	PASS
165	5825	16.59	0.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	18.02	0.5	PASS
157	5785	17.89	0.5	PASS
165	5825	17.91	0.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	35.27	0.5	PASS
159	5795	35.35	0.5	PASS

5.4 MAXIMUM OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725–5850 MHz bands: 1 Watt (30dBm)

5.4.2 TEST SETUP

Same as Item 4.4.2.

5.4.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.4.4 TEST PROCEDURES

Same as Item 4.4.4.

5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

5.4.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	305.49	24.85	30	PASS
157	5785	277.97	24.44	30	PASS
165	5825	280.54	24.48	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	260.02	24.15	30	PASS
157	5785	259.42	24.14	30	PASS
165	5825	258.82	24.13	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
151	5755	277.33	24.43	30	PASS
159	5795	280.54	24.48	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST SETUP

Same as item 4.5.2.

5.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.5.4 TEST PROCEDURE.

Same as item 4.5.4.

5.5.5 DEVIATION FROM TEST STANDARD

No deviation.

5.5.6 EUT OPERATING CONDITION

Same as item 4.3.6.

5.5.7 TEST RESULTS

802.11a

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	4.30	-10.90	8	PASS
157	5785	4.27	-10.93	8	PASS
165	5825	4.89	-10.31	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
149	5745	3.32	-11.88	8	PASS
157	5785	3.42	-11.78	8	PASS
165	5825	4.00	-11.20	8	PASS

802.11n (40MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
151	5755	2.39	-12.81	8	PASS
159	5795	2.33	-12.87	8	PASS

5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST SETUP

Same as Item 4.6.2

5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

5.6.4 TEST PROCEDURE

Same as Item 4.6.4

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

5.6.7 TEST RESULTS

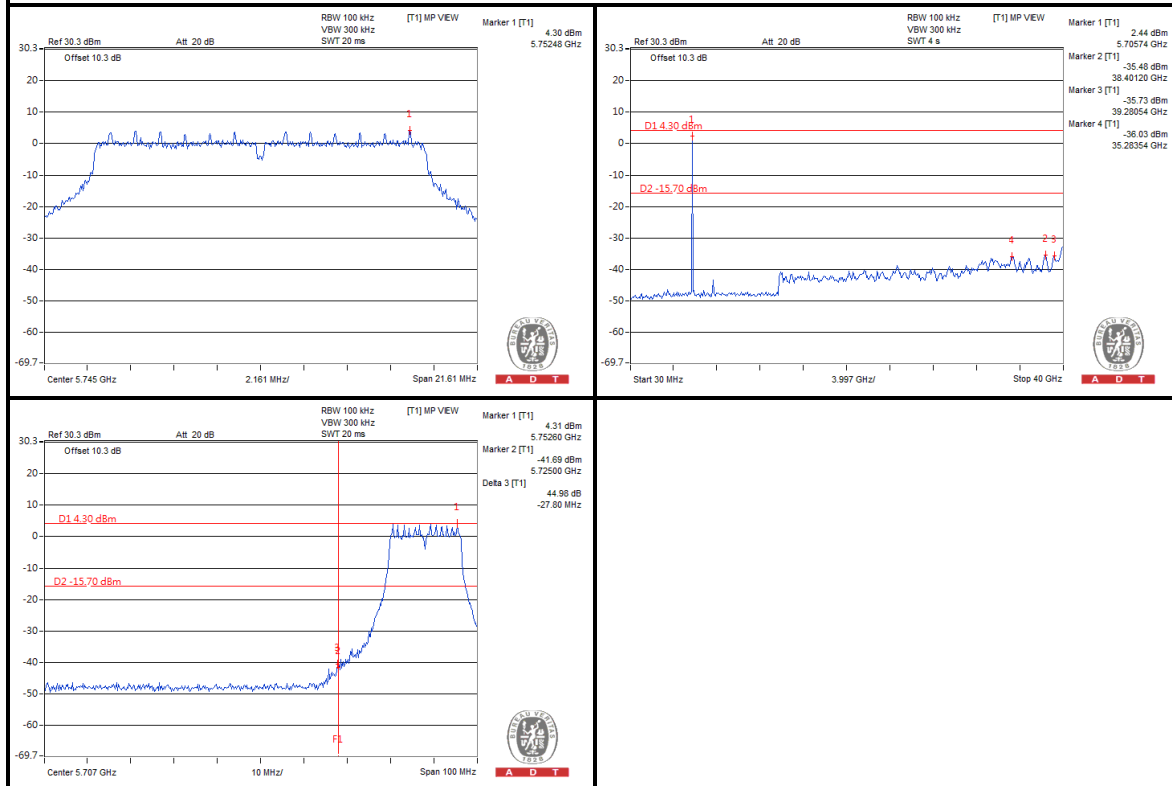
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



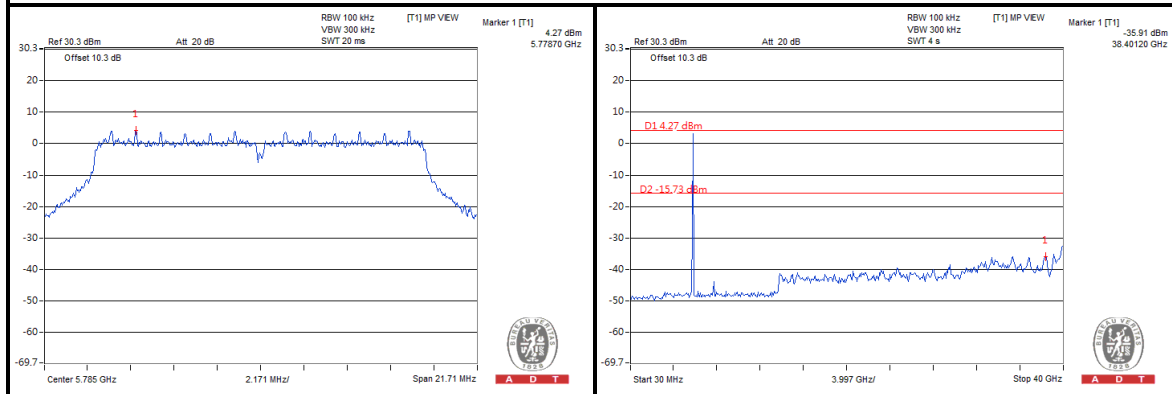
A D T

802.11a

CH 149



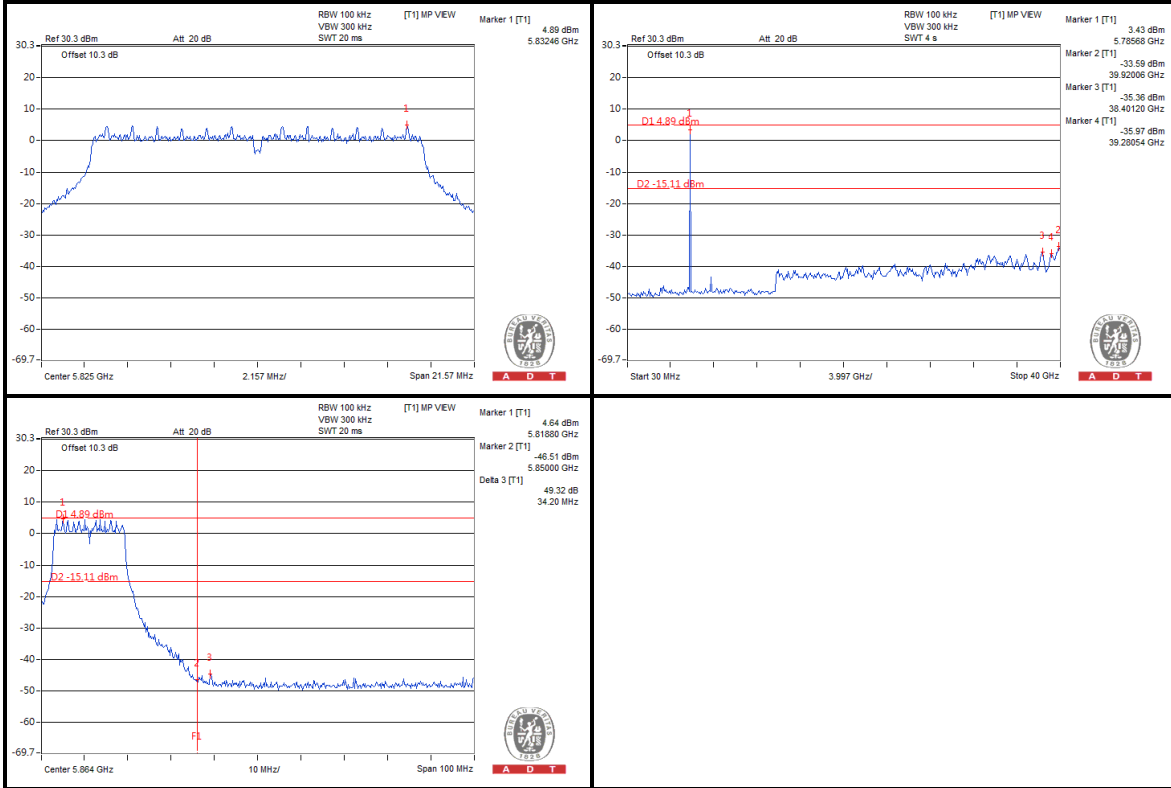
CH 157





A D T

CH 165

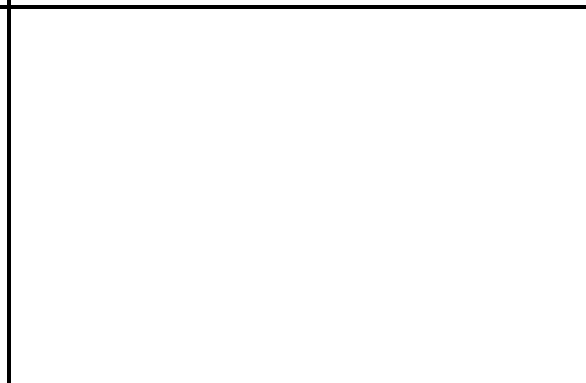
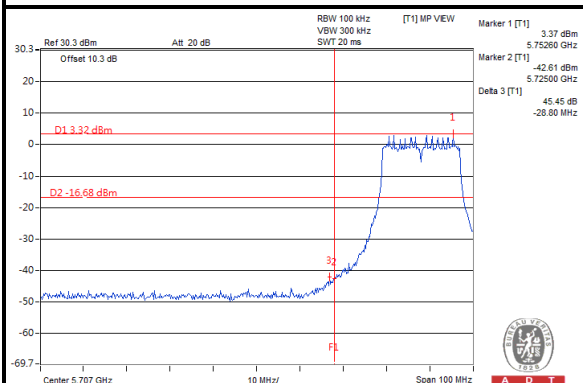
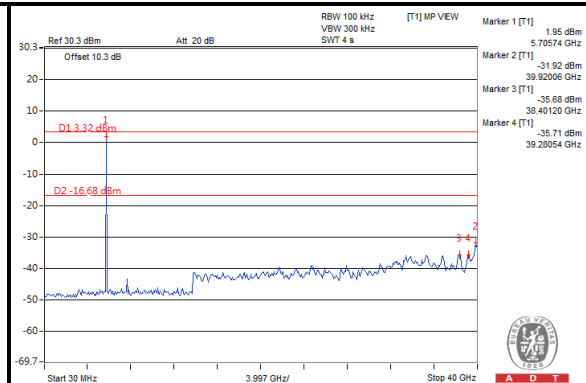
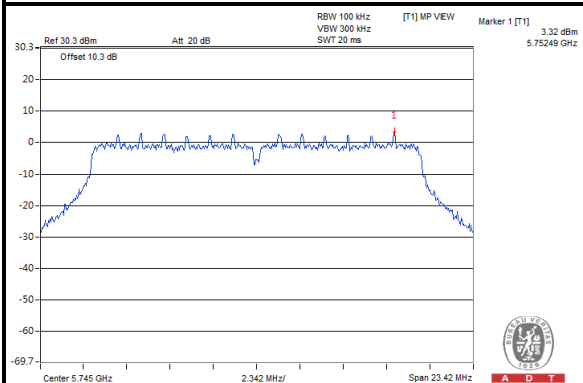




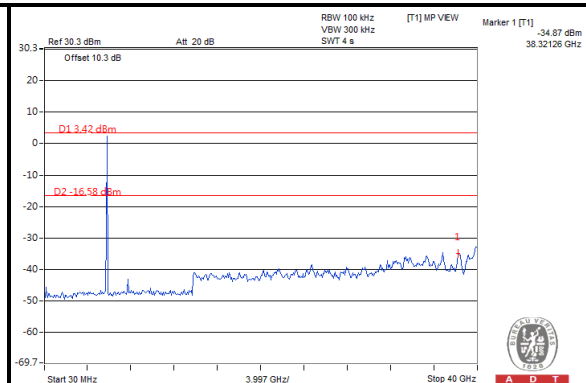
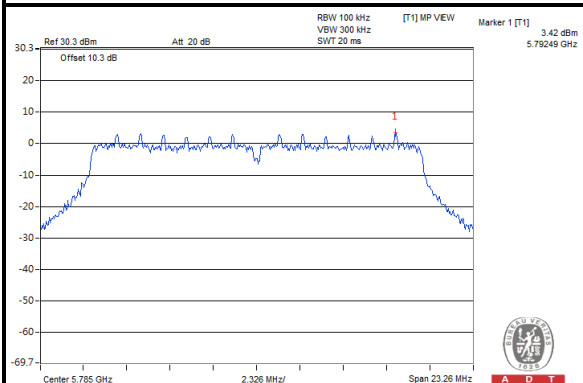
A D T

802.11n(20MHz)

CH 149



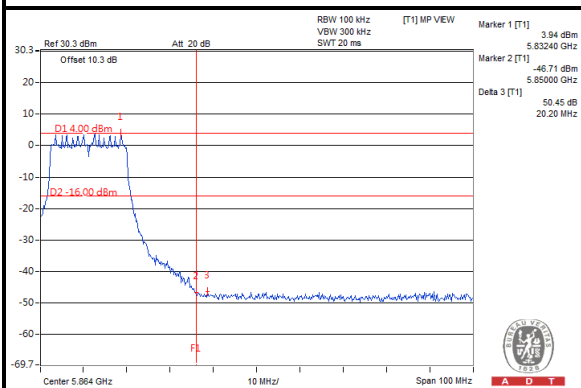
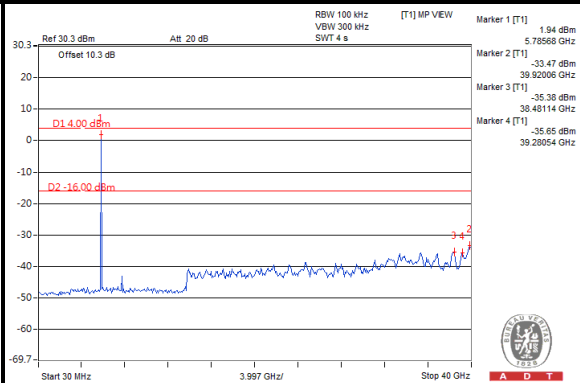
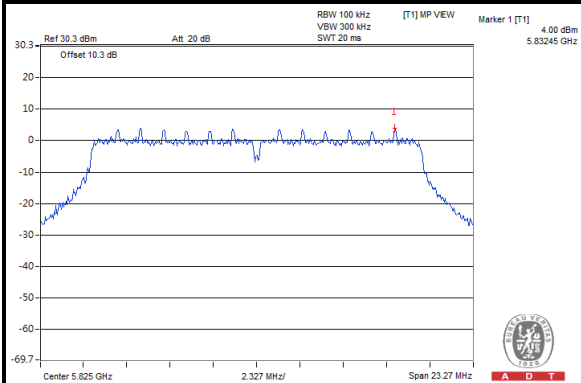
CH 157





A D T

CH 165

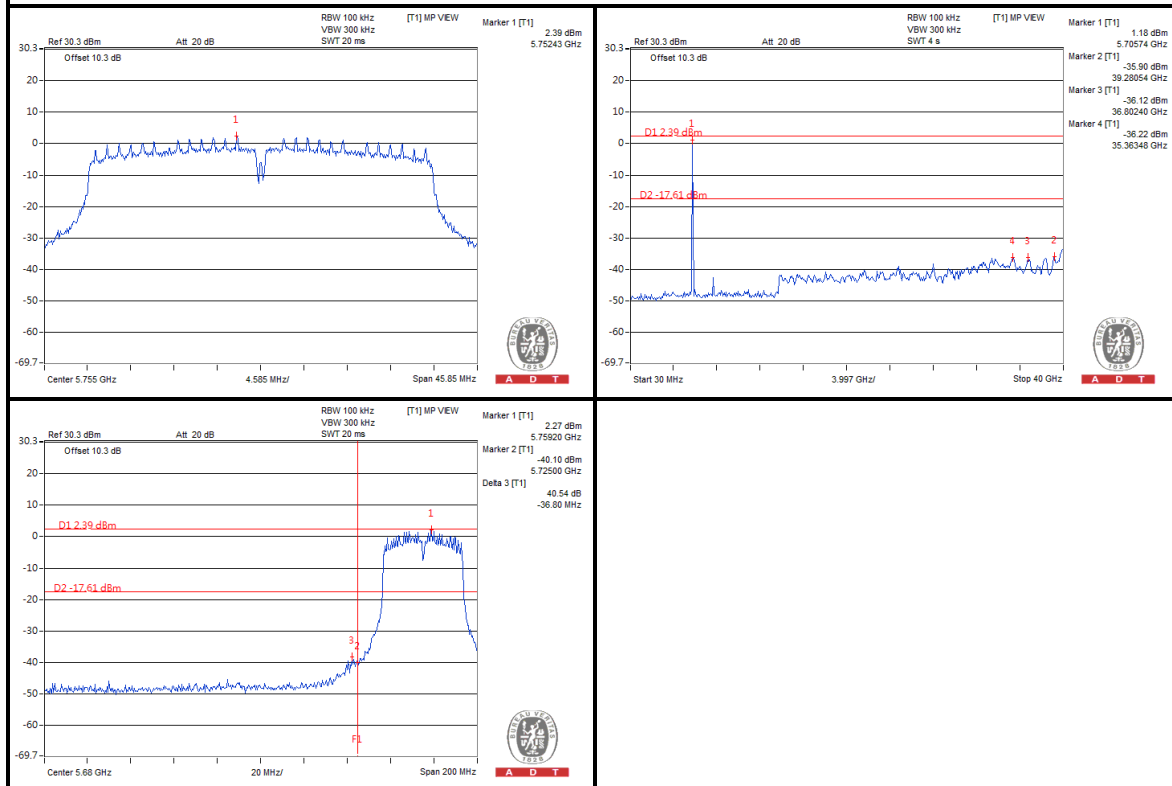




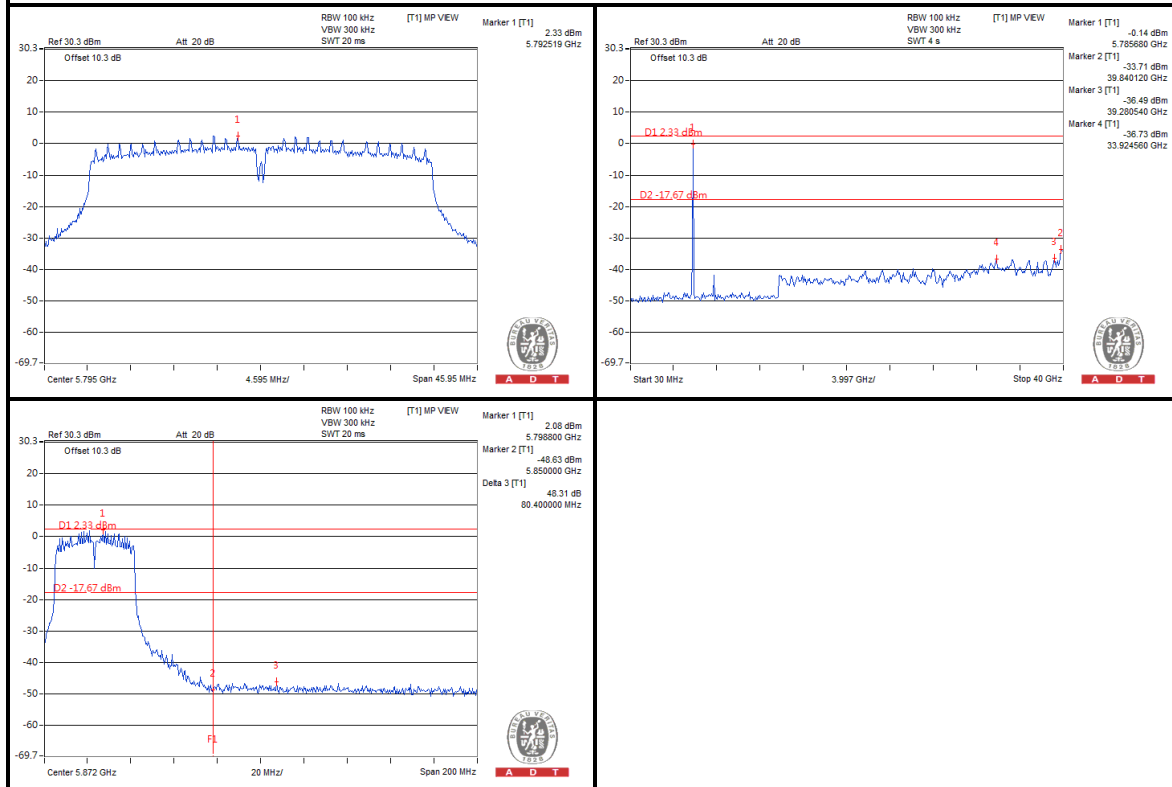
A D T

802.11n(40MHz)

CH 151



CH 159



6. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

7. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.



A D T

8. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---