

FCC TEST REPORT (15.247)

REPORT NO.: RF140317C23-1
MODEL NO.: TPN-Q145
FCC ID: B94TNQ145
RECEIVED: Mar. 17, 2014
TESTED: Mar. 26, 2014 ~ Mar. 28, 2014
ISSUED: Apr. 07, 2014

APPLICANT: HEWLETT-PACKARD COMPANY

ADDRESS: 3000 HANOVER STREET, PALO ALTO,
CALIFORNIA 94304, USA

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 DUTY CYCLE TEST SIGNAL	16
3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	19
4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)	20
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	20
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	20
4.1.2 TEST INSTRUMENTS	21
4.1.3 TEST PROCEDURES	22
4.1.4 DEVIATION FROM TEST STANDARD	22
4.1.5 TEST SETUP	23
4.1.6 EUT OPERATING CONDITIONS	24
4.1.7 TEST RESULTS	25
4.2 CONDUCTED EMISSION MEASUREMENT	44
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	44
4.2.2 TEST INSTRUMENTS	44
4.2.3 TEST PROCEDURES	45
4.2.4 DEVIATION FROM TEST STANDARD	45
4.2.5 TEST SETUP	46
4.2.6 EUT OPERATING CONDITIONS	46
4.2.7 TEST RESULTS	47
4.3 6dB BANDWIDTH MEASUREMENT	49
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	49
4.3.2 TEST SETUP	49
4.3.3 TEST INSTRUMENTS	49
4.3.4 TEST PROCEDURE	49
4.3.5 DEVIATION FROM TEST STANDARD	49
4.3.6 EUT OPERATING CONDITIONS	49
4.3.7 TEST RESULTS	50
4.4 CONDUCTED OUTPUT POWER	52
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	52
4.4.2 TEST SETUP	52
4.4.3 TEST INSTRUMENTS	52
4.4.4 TEST PROCEDURES	52
4.4.5 DEVIATION FROM TEST STANDARD	52
4.4.6 EUT OPERATING CONDITIONS	52
4.4.7 TEST RESULTS	53
4.5 POWER SPECTRAL DENSITY MEASUREMENT	55
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	55
4.5.2 TEST SETUP	55
4.5.3 TEST INSTRUMENTS	55
4.5.4 TEST PROCEDURE	55
4.5.5 DEVIATION FROM TEST STANDARD	55
4.5.6 EUT OPERATING CONDITION	55



4.5.7	TEST RESULTS.....	56
4.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	59
4.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT	59
4.6.2	TEST SETUP	59
4.6.3	TEST INSTRUMENTS.....	59
4.6.4	TEST PROCEDURE	59
4.6.5	DEVIATION FROM TEST STANDARD	59
4.6.6	EUT OPERATING CONDITION.....	59
4.6.7	TEST RESULTS.....	60
5.	TEST TYPES AND RESULTS (FOR 5.0GHz BAND)	68
5.1	RADIATED EMISSION AND BANDEDGE MEASUREMENT	68
5.1.1	LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	68
5.1.2	TEST INSTRUMENTS.....	69
5.1.3	TEST PROCEDURES	69
5.1.4	DEVIATION FROM TEST STANDARD	69
5.1.5	TEST SETUP	69
5.1.6	EUT OPERATING CONDITIONS	69
5.1.7	TEST RESULTS.....	70
5.2	CONDUCTED EMISSION MEASUREMENT	84
5.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	84
5.2.2	TEST INSTRUMENTS.....	84
5.2.3	TEST PROCEDURES	84
5.2.4	DEVIATION FROM TEST STANDARD	84
5.2.5	TEST SETUP	84
5.2.6	EUT OPERATING CONDITIONS	84
5.2.7	TEST RESULTS.....	85
5.3	6dB BANDWIDTH MEASUREMENT	87
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	87
5.3.2	TEST SETUP	87
5.3.3	TEST INSTRUMENTS.....	87
5.3.4	TEST PROCEDURE	87
5.3.5	DEVIATION FROM TEST STANDARD	87
5.3.6	EUT OPERATING CONDITIONS	87
5.3.7	TEST RESULTS.....	88
5.4	MAXIMUM OUTPUT POWER	90
5.4.1	LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT	90
5.4.2	TEST SETUP	90
5.4.3	INSTRUMENTS	90
5.4.4	TEST PROCEDURES	90
5.4.5	DEVIATION FROM TEST STANDARD	90
5.4.6	EUT OPERATING CONDITIONS	90
5.4.7	TEST RESULTS.....	91
5.5	POWER SPECTRAL DENSITY MEASUREMENT.....	92
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	92
5.5.2	TEST SETUP	92
5.5.3	TEST INSTRUMENTS.....	92
5.5.4	TEST PROCEDURE	92
5.5.5	DEVIATION FROM TEST STANDARD	92
5.5.6	EUT OPERATING CONDITION.....	92
5.5.7	TEST RESULTS.....	93
5.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT	95
5.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	95
5.6.2	TEST SETUP	95
5.6.3	TEST INSTRUMENTS.....	95
5.6.4	TEST PROCEDURE	95



A D T

5.6.5	DEVIATION FROM TEST STANDARD	95
5.6.6	EUT OPERATING CONDITION.....	95
5.6.7	TEST RESULTS.....	95
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	103
7.	INFORMATION ON THE TESTING LABORATORIES	104
8.	APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	105



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140317C23-1	Original release	Apr. 07, 2014



A D T

1. CERTIFICATION

PRODUCT: Laptop

MODEL NO.: TPN-Q145

BRAND: hp; Hewlett-Packard

APPLICANT: HEWLETT-PACKARD COMPANY

TESTED: Mar. 26, 2014 ~ Mar. 28, 2014

TEST SAMPLE: PRODUCTION UNIT

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

ANSI C63.10-2009

The above equipment (model: TPN-Q145) 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 : Evonne Liu , **DATE** : Apr. 07, 2014
Evonne Liu / Specialist

APPROVED BY : Sam Chen , **DATE** : Apr. 07, 2014
Sam Chen / Senior Project 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 -6.72dB at 0.44688MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.81dB at 4824MHz.
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	Laptop
MODEL NO.	TPN-Q145
POWER SUPPLY	5.25Vdc (adapter or host equipment) 11.1Vdc (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 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11a: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to MCS7
OPERATING FREQUENCY	2.4GHz: 2412 ~ 2462MHz 5.0GHz: 5745 ~ 5825MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	379.300mW for 2412 ~ 2462MHz 284.253mW for 5745 ~ 5825MHz
ANTENNA TYPE	2.4GHz: PIFA antenna with 2.93dBi gain 5.0GHz: PIFA antenna with 0.7dBi 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 contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
Adapter	ITE	PA-1150-22GO	I/P: 100-240Vac, 50-60Hz, 0.6A O/P: 5.25Vdc, 3A
Battery	Simplo	SQU-1208	11.1Vdc, 2600Ah
WLAN/BT Module	Marvell	8797	--

2. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	1TX 2TX
802.11n (40MHz)	1TX 2TX

3. The antenna information is listed as below.

Antenna Type	Manufacturer	Parts Number	Antenna Gain
PIFA	WNC	Main Antenna: 81EAAR15.G19	2.4GHz: -2.75 5GHz: 0.23
		Aux Antenna: 81EAAR15.G19	2.4GHz: 2.67 5GHz: 0.53
	YAGEO	Main Antenna: ANTA0HQ08952WLAN1	2.4GHz: 1.55 5GHz: 0.7
		Aux Antenna: ANTA0HQ08952WLAN1	2.4GHz: 2.93 5GHz: -1.55

*The antenna gain was the worst for the final test.

4. 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		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

FOR 5.0GHz (5745 ~ 5825MHz):

5 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

WLAN 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	1 Tx
B	√	-	-	√	2 Tx

Where **RE≥1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	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	MCS0
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0
B	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS8
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS12

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1	DSSS	DBPSK	1.0

POWER LINE CONDUCTED EMISSION TEST:

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1	DSSS	DBPSK	1.0

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	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	MCS0
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0
B	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS8
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS12

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	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	MCS0
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0
B	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS8
	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS12

Test CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Peter Weng
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Peter Weng
PLC	25deg. C, 65%RH	120Vac, 60Hz	Peter Weng
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

WLAN 5.0GHz (5745 ~ 5825MHz):

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	1 Tx
B	√	-	-	√	2 Tx

Where **RE≥1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 161	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)	149 to 161	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0
B	802.11n (20MHz)	149 to 161	149, 157, 165	OFDM	BPSK	MCS8
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS8

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11n (40MHz)	151 to 159	151	OFDM	BPSK	MCS0

POWER LINE CONDUCTED EMISSION TEST:

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11n (40MHz)	151 to 159	151	OFDM	BPSK	MCS0

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 161	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)	149 to 161	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0
B	802.11n (20MHz)	149 to 161	149, 157, 165	OFDM	BPSK	MCS8
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS8

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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 161	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)	149 to 161	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS0
B	802.11n (20MHz)	149 to 161	149, 157, 165	OFDM	BPSK	MCS8
	802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	MCS8

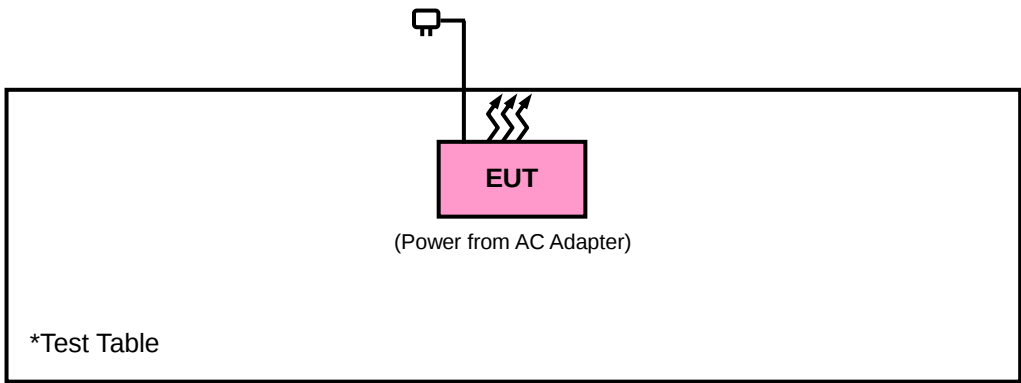
Test CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Peter Weng
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Peter Weng
PLC	25deg. C, 65%RH	120Vac, 60Hz	Peter Weng
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 DUTY CYCLE TEST SIGNAL

MODE A

WLAN 2.4GHz

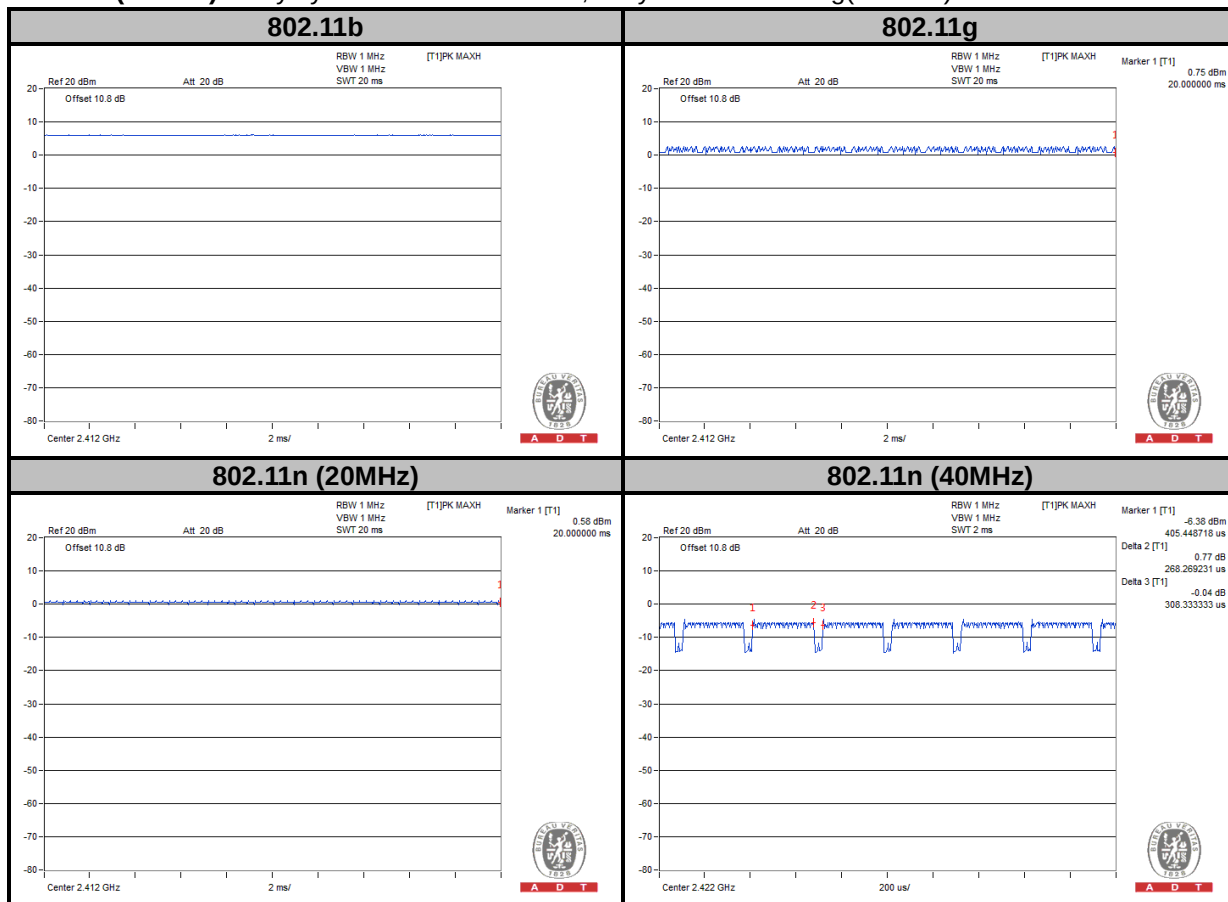
802.11b: Duty cycle of test signal is 100 %, duty factor is not required.

802.11g: Duty cycle of test signal is 100 %, duty factor is not required.

802.11n (20MHz): Duty cycle of test signal is 100 %, duty factor is not required.

If duty cycle is < 98%, duty factor shall be considered.

802.11n (40MHz): Duty cycle = $268/308 = 0.870$, Duty factor = $10 * \log(1/0.870) = 0.60$





A D T

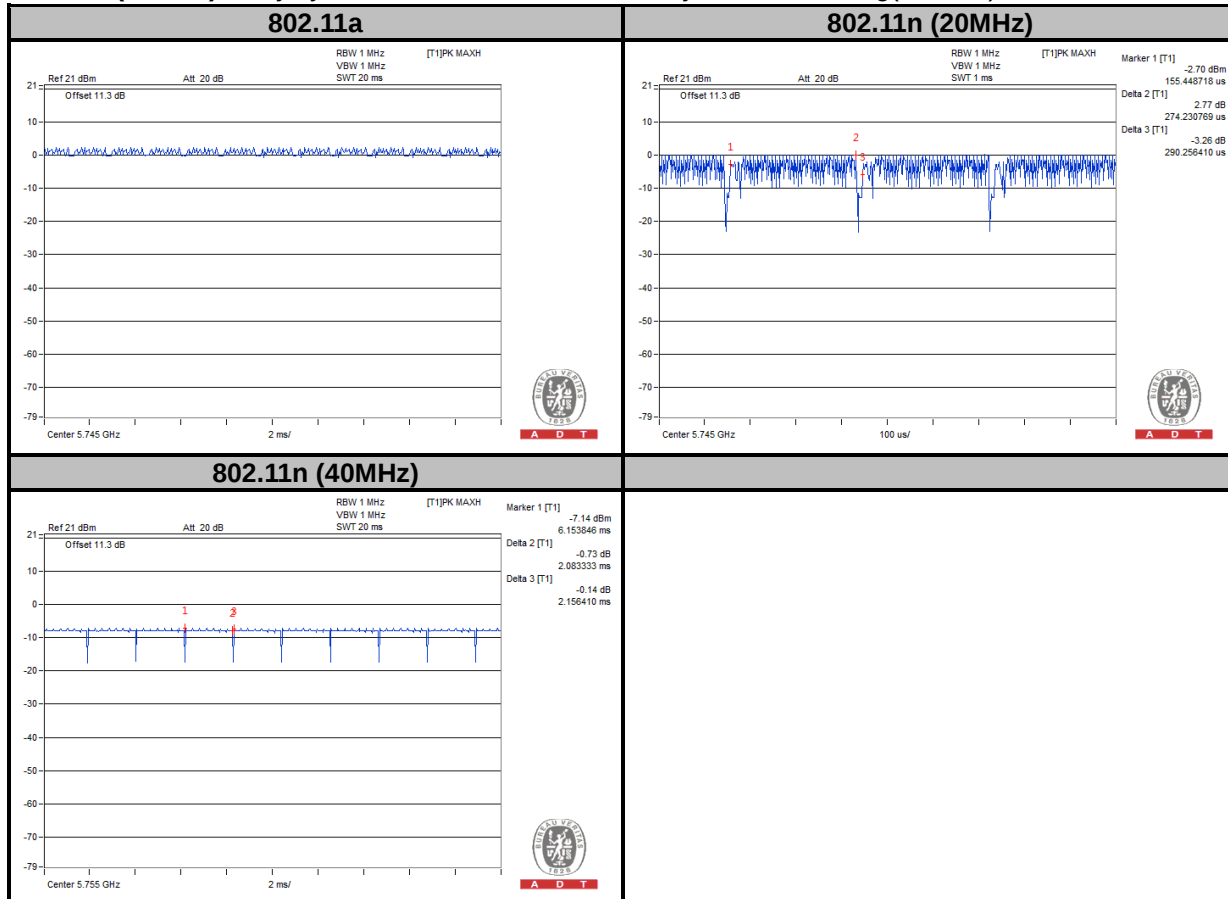
5745 ~ 5825MHz

802.11a: Duty cycle of test signal is 100 %, duty factor is not required.

If duty cycle is < 98%, duty factor shall be considered.

802.11n (20MHz): Duty cycle = $274/290 = 0.944$, Duty factor = $10 * \log(1/0.944) = 0.25$

802.11n (40MHz): Duty cycle = $2.083/2.156 = 0.966$, Duty factor = $10 * \log(1/0.966) = 0.15$



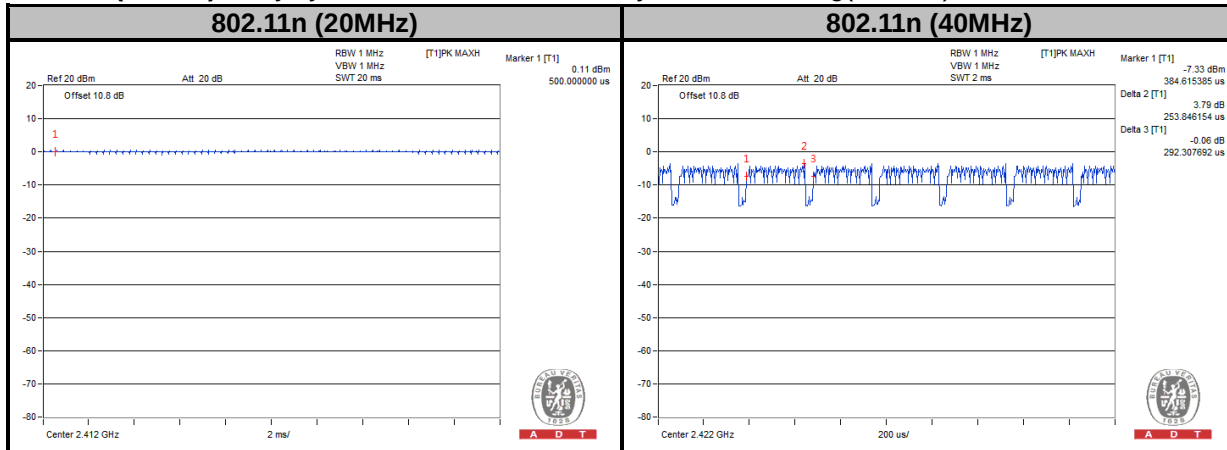
MODE B

WLAN 2.4GHz

802.11n (20MHz): Duty cycle of test signal is 100 %, duty factor is not required.

If duty cycle is < 98%, duty factor shall be considered.

802.11n (40MHz): Duty cycle = 254/292 = 0.869, Duty factor = $10 * \log(1/0.869) = 0.61$

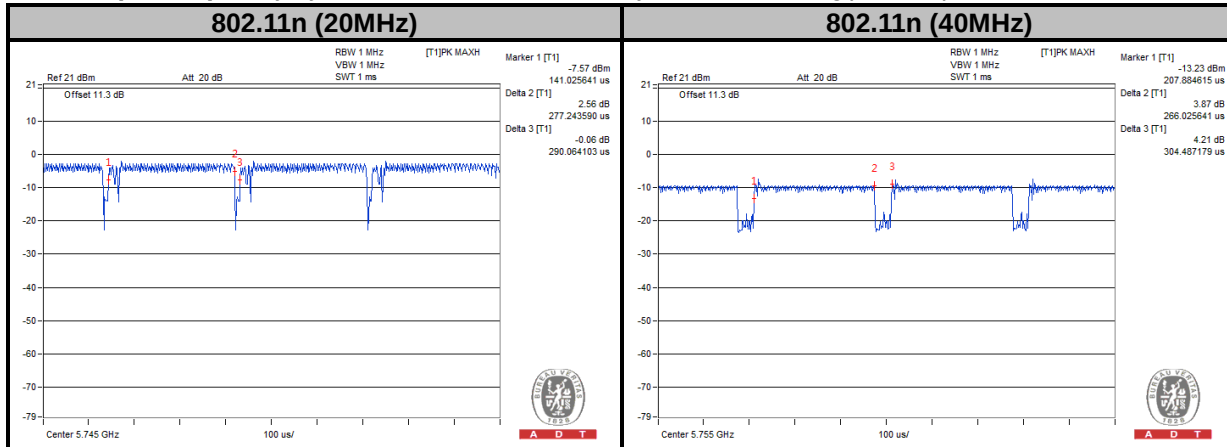


5745 ~ 5825MHz

If duty cycle is < 98%, duty factor shall be considered.

802.11n (20MHz): Duty cycle = 277/290 = 0.955, Duty factor = $10 * \log(1/0.955) = 0.20$

802.11n (40MHz): Duty cycle = 266/304 = 0.875, Duty factor = $10 * \log(1/0.875) = 0.58$



3.5 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

558074 D01 DTS Meas Guidance v03r01

662911 D01 Multiple Transmitter Output v02r01

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 ROHDE & SCHWARZ	ESCI	100744	Apr. 15, 2013	Apr. 14, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 21, 2013	Dec. 20, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 27, 2014	Feb. 26, 2015
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Feb. 19, 2014	Feb. 18, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 18, 2013	Dec. 17, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 26, 2013	Dec. 25, 2014
Preamplifier EMCI	EMC 184045	980116	Jan. 13, 2014	Jan. 12, 2015
Preamplifier EMCI	EMC 330H	980112	Dec. 27, 2013	Dec. 26, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2013	Oct. 17, 2014
RF signal cable Worken	RG-213	NA	Nov. 07, 2013	Nov. 06, 2014
Software BV ADT	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. 23, 2013	Aug. 22, 2014
Power Sensor	MA2411B	1207325	Aug. 23, 2013	Aug. 22, 2014

- 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 10.
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 690701.
6. The IC Site Registration No. is IC 7450F-10.
7. Tested Date: Mar. 26, 2014 ~ Mar. 28, 2014

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:

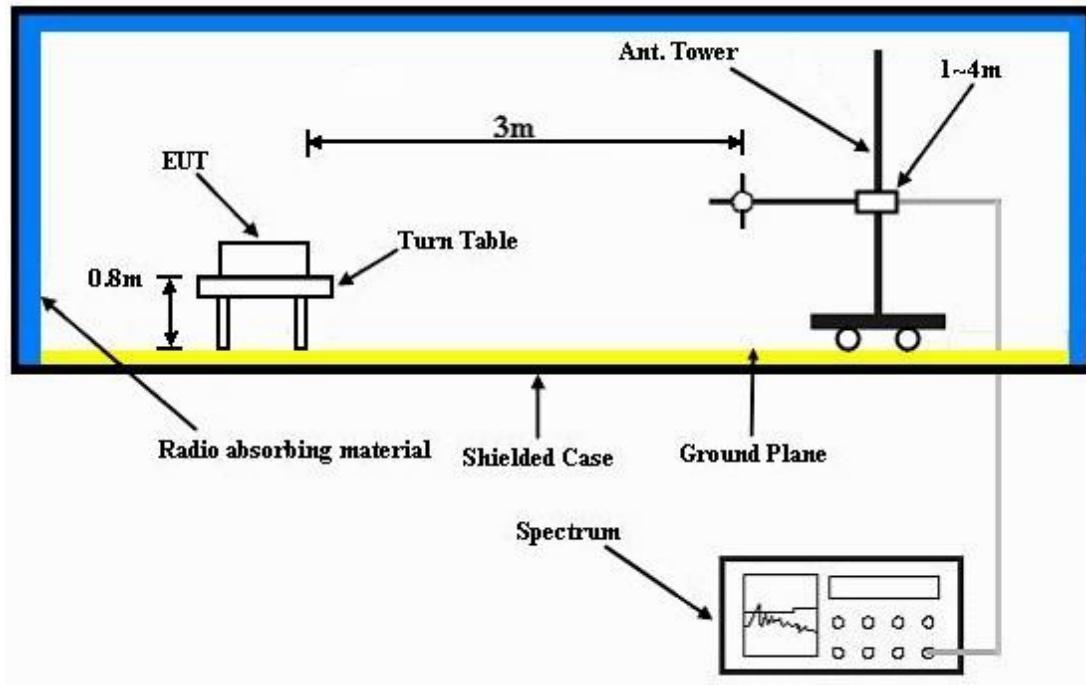
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) 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

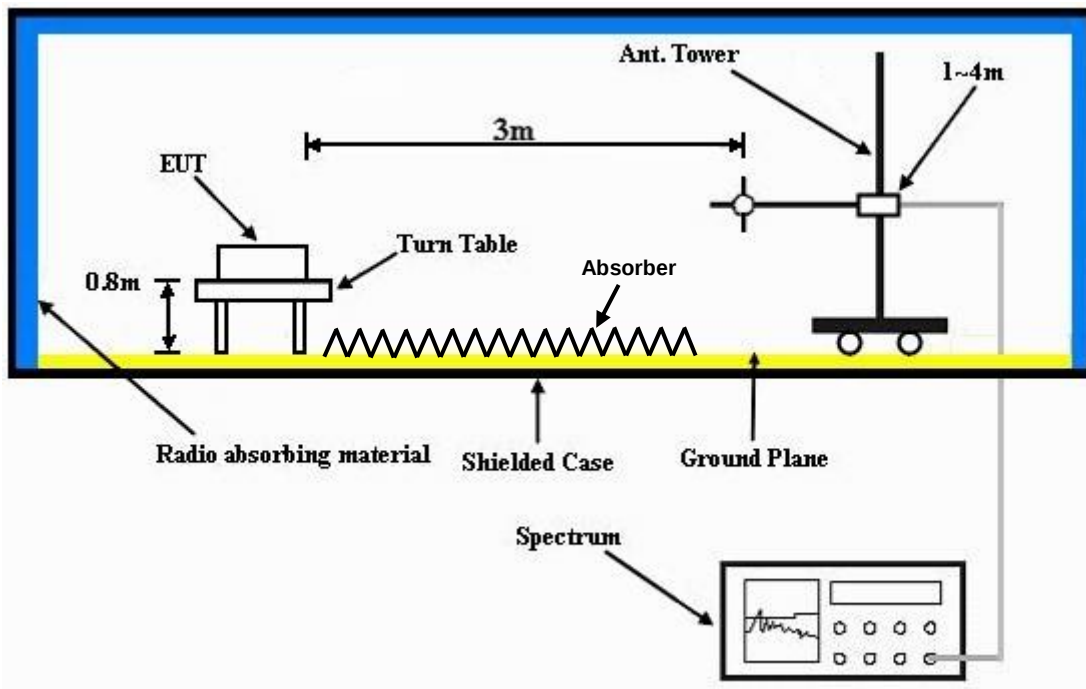
No deviation.

4.1.5 TEST SETUP

Frequency Range 30MHz ~ 1GHz



Frequency Range above 1GHz



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

4.1.6 EUT OPERATING CONDITIONS

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

4.1.7 TEST RESULTS

MODE A

ABOVE 1GHz WORST-CASE DATA

802.11b

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

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	38.4	45.47	54	-15.6	26.91	3.52	37.5	100	339	Average
2386	52.16	59.23	74	-21.84	26.91	3.52	37.5	100	339	Peak
2412	101.66	108.68			26.96	3.54	37.52	100	339	Average
2412	105.96	112.98			26.96	3.54	37.52	100	339	Peak
2500	35.6	42.03	54	-18.4	27.2	3.62	37.25	100	339	Average
2500	53.65	60.08	74	-20.35	27.2	3.62	37.25	100	339	Peak
4824	43.37	59.69	54	-10.63	30.99	5.77	53.08	100	90	Average
4824	46.72	63.04	74	-27.28	30.99	5.77	53.08	100	90	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	40.91	47.98	54	-13.09	26.91	3.54	37.52	100	82	Average
2390	57.19	64.26	74	-16.81	26.91	3.54	37.52	100	82	Peak
2412	104.39	111.41			26.96	3.54	37.52	100	82	Average
2412	108.73	115.75			26.96	3.54	37.52	100	82	Peak
2484	36.41	42.98	54	-17.59	27.15	3.6	37.32	100	82	Average
2484	53.37	59.94	74	-20.63	27.15	3.6	37.32	100	82	Peak
4824	49.19	65.51	54	-4.81	30.99	5.77	53.08	104	199	Average
4824	51.06	67.38	74	-22.94	30.99	5.77	53.08	104	199	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412MHz: Fundamental frequency.

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

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	33.16	40.23	54	-20.84	26.91	3.54	37.52	100	340	Average
2390	52.22	59.29	74	-21.78	26.91	3.54	37.52	100	340	Peak
2437	98.01	104.85			27.06	3.56	37.46	100	340	Average
2437	102.03	108.87			27.06	3.56	37.46	100	340	Peak
2490	34.15	40.65	54	-19.85	27.2	3.62	37.32	100	340	Average
2490	52.02	58.52	74	-21.98	27.2	3.62	37.32	100	340	Peak
4874	36.72	52.91	54	-17.28	31.06	5.8	53.05	155	89	Average
4874	43.47	59.66	74	-30.53	31.06	5.8	53.05	155	89	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
2378	33.49	40.61	54	-20.51	26.86	3.52	37.5	100	84	Average
2378	52.55	59.67	74	-21.45	26.86	3.52	37.5	100	84	Peak
2437	101.41	108.25			27.06	3.56	37.46	100	84	Average
2437	105.31	112.15			27.06	3.56	37.46	100	84	Peak
2494	34.75	41.18	54	-19.25	27.2	3.62	37.25	100	84	Average
2494	52.61	59.04	74	-21.39	27.2	3.62	37.25	100	84	Peak
4874	42.29	58.48	54	-11.71	31.06	5.8	53.05	103	198	Average
4874	46.18	62.37	74	-27.82	31.06	5.8	53.05	103	198	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437MHz: Fundamental frequency.

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

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	33.42	40.49	54	-20.58	26.91	3.54	37.52	100	339	Average
2390	50.8	57.87	74	-23.2	26.91	3.54	37.52	100	339	Peak
2462	98.5	105.21			27.1	3.58	37.39	100	339	Average
2462	102.65	109.36			27.1	3.58	37.39	100	339	Peak
2484	38.15	44.72	54	-15.85	27.15	3.6	37.32	100	339	Average
2484	53.62	60.19	74	-20.38	27.15	3.6	37.32	100	339	Peak
4924	39.04	55.12	54	-14.96	31.12	5.83	53.03	100	345	Average
4924	46.23	62.31	74	-27.77	31.12	5.83	53.03	100	345	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	33.66	40.73	54	-20.34	26.91	3.54	37.52	100	82	Average
2390	52.05	59.12	74	-21.95	26.91	3.54	37.52	100	82	Peak
2462	101.62	108.33			27.1	3.58	37.39	100	82	Average
2462	105.9	112.61			27.1	3.58	37.39	100	82	Peak
2484	38.27	44.84	54	-15.73	27.15	3.6	37.32	100	82	Average
2484	52.31	58.88	74	-21.69	27.15	3.6	37.32	100	82	Peak
4924	44.23	60.31	54	-9.77	31.12	5.83	53.03	100	186	Average
4924	48.55	64.63	74	-25.45	31.12	5.83	53.03	100	186	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462MHz: Fundamental frequency.

802.11g

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

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	35.22	42.29	54	-18.78	26.91	3.54	37.52	100	340	Average
2390	55.09	62.16	74	-18.91	26.91	3.54	37.52	100	340	Peak
2412	91.17	98.19			26.96	3.54	37.52	100	340	Average
2412	100.12	107.14			26.96	3.54	37.52	100	340	Peak
2484	37.17	43.74	54	-16.83	27.15	3.6	37.32	100	340	Average
2484	55.72	62.29	74	-18.28	27.15	3.6	37.32	100	340	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	35.79	42.86	54	-18.21	26.91	3.54	37.52	100	90	Average
2390	56.74	63.81	74	-17.26	26.91	3.54	37.52	100	90	Peak
2412	93.22	100.24			26.96	3.54	37.52	100	90	Average
2412	102.42	109.44			26.96	3.54	37.52	100	90	Peak
2484	36.12	42.69	54	-17.88	27.15	3.6	37.32	100	90	Average
2484	56.22	62.79	74	-17.78	27.15	3.6	37.32	100	90	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412MHz: Fundamental frequency.



A D T

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

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	34.07	41.14	54	-19.93	26.91	3.54	37.52	100	339	Average
2390	55.45	62.52	74	-18.55	26.91	3.54	37.52	100	339	Peak
2437	91.1	97.94			27.06	3.56	37.46	100	339	Average
2437	100.09	106.93			27.06	3.56	37.46	100	339	Peak
2484	35.31	41.88	54	-18.69	27.15	3.6	37.32	100	339	Average
2484	55.66	62.23	74	-18.34	27.15	3.6	37.32	100	339	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	34.29	41.36	54	-19.71	26.91	3.54	37.52	100	83	Average
2390	55.4	62.47	74	-18.6	26.91	3.54	37.52	100	83	Peak
2437	93.42	100.26			27.06	3.56	37.46	100	83	Average
2437	102.4	109.24			27.06	3.56	37.46	100	83	Peak
2484	35.42	41.99	54	-18.58	27.15	3.6	37.32	100	83	Average
2484	56.05	62.62	74	-17.95	27.15	3.6	37.32	100	83	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437MHz: Fundamental frequency.

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

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	34.1	41.17	54	-19.9	26.91	3.54	37.52	100	336	Average
2390	55.1	62.17	74	-18.9	26.91	3.54	37.52	100	336	Peak
2462	91.14	97.85			27.1	3.58	37.39	100	336	Average
2462	100.39	107.1			27.1	3.58	37.39	100	336	Peak
2484	37.41	43.98	54	-16.59	27.15	3.6	37.32	100	336	Average
2484	55.89	62.46	74	-18.11	27.15	3.6	37.32	100	336	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	34.37	41.44	54	-19.63	26.91	3.54	37.52	100	81	Average
2390	54.99	62.06	74	-19.01	26.91	3.54	37.52	100	81	Peak
2462	93.16	99.87			27.1	3.58	37.39	100	81	Average
2462	102.13	108.84			27.1	3.58	37.39	100	81	Peak
2484	37.8	44.37	54	-16.2	27.15	3.6	37.32	100	81	Average
2484	56.11	62.68	74	-17.89	27.15	3.6	37.32	100	81	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462MHz: Fundamental frequency.

802.11n (20MHz)

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

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	35.59	42.66	54	-18.41	26.91	3.54	37.52	103	338	Average
2390	55.65	62.72	74	-18.35	26.91	3.54	37.52	103	338	Peak
2412	90.52	97.54			26.96	3.54	37.52	103	338	Average
2412	99.69	106.71			26.96	3.54	37.52	103	338	Peak
2484	36.98	43.55	54	-17.02	27.15	3.6	37.32	103	338	Average
2484	57.64	64.21	74	-16.36	27.15	3.6	37.32	103	338	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	35.93	43	54	-18.07	26.91	3.54	37.52	100	84	Average
2390	55.99	63.06	74	-18.01	26.91	3.54	37.52	100	84	Peak
2412	92.6	99.62			26.96	3.54	37.52	100	84	Average
2412	101.5	108.52			26.96	3.54	37.52	100	84	Peak
2484	37.26	43.83	54	-16.74	27.15	3.6	37.32	100	84	Average
2484	55.78	62.35	74	-18.22	27.15	3.6	37.32	100	84	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412MHz: Fundamental frequency.



A D T

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

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	34.21	41.28	54	-19.79	26.91	3.54	37.52	101	340	Average
2390	56.12	63.19	74	-17.88	26.91	3.54	37.52	101	340	Peak
2437	90.58	97.42			27.06	3.56	37.46	101	340	Average
2437	99.31	106.15			27.06	3.56	37.46	101	340	Peak
2484	35.3	41.87	54	-18.7	27.15	3.6	37.32	101	340	Average
2484	56.15	62.72	74	-17.85	27.15	3.6	37.32	101	340	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	34.27	41.34	54	-19.73	26.91	3.54	37.52	100	82	Average
2390	55.55	62.62	74	-18.45	26.91	3.54	37.52	100	82	Peak
2437	92.55	99.39			27.06	3.56	37.46	100	82	Average
2437	101.44	108.28			27.06	3.56	37.46	100	82	Peak
2484	35.44	42.01	54	-18.56	27.15	3.6	37.32	100	82	Average
2484	55.8	62.37	74	-18.2	27.15	3.6	37.32	100	82	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437MHz: Fundamental frequency.

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

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	33.88	40.95	54	-20.12	26.91	3.54	37.52	100	336	Average
2390	55.18	62.25	74	-18.82	26.91	3.54	37.52	100	336	Peak
2462	91.33	98.04			27.1	3.58	37.39	100	336	Average
2462	100.29	107			27.1	3.58	37.39	100	336	Peak
2484	36.97	43.54	54	-17.03	27.15	3.6	37.32	100	336	Average
2484	56.45	63.02	74	-17.55	27.15	3.6	37.32	100	336	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	33.81	40.88	54	-20.19	26.91	3.54	37.52	100	84	Average
2390	55.71	62.78	74	-18.29	26.91	3.54	37.52	100	84	Peak
2462	92.96	99.67			27.1	3.58	37.39	100	84	Average
2462	102.02	108.73			27.1	3.58	37.39	100	84	Peak
2484	37.24	43.81	54	-16.76	27.15	3.6	37.32	100	84	Average
2484	57.42	63.99	74	-16.58	27.15	3.6	37.32	100	84	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462MHz: Fundamental frequency.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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	38.67	45.74	54	-15.33	26.91	3.54	37.52	100	334	Average
2390	57.18	64.25	74	-16.82	26.91	3.54	37.52	100	334	Peak
2422	88.24	95.13			27.01	3.56	37.46	100	334	Average
2422	97.62	104.51			27.01	3.56	37.46	100	334	Peak
2492	37.33	43.76	54	-16.67	27.2	3.62	37.25	100	334	Average
2492	56.88	63.31	74	-17.12	27.2	3.62	37.25	100	334	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	40.5	47.57	54	-13.5	26.91	3.54	37.52	100	83	Average
2390	59.24	66.31	74	-14.76	26.91	3.54	37.52	100	83	Peak
2422	90.67	97.56			27.01	3.56	37.46	100	83	Average
2422	99.76	106.65			27.01	3.56	37.46	100	83	Peak
2496	37.46	43.89	54	-16.54	27.2	3.62	37.25	100	83	Average
2496	56.55	62.98	74	-17.45	27.2	3.62	37.25	100	83	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2422MHz: Fundamental frequency.

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

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
2384	35.6	42.72	54	-18.4	26.86	3.52	37.5	124	333	Average
2384	56.64	63.76	74	-17.36	26.86	3.52	37.5	124	333	Peak
2437	87.66	94.5			27.06	3.56	37.46	124	333	Average
2437	96.96	103.8			27.06	3.56	37.46	124	333	Peak
2484	38.31	44.88	54	-15.69	27.15	3.6	37.32	124	333	Average
2484	57.67	64.24	74	-16.33	27.15	3.6	37.32	124	333	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
2336	36.16	43.38	54	-17.84	26.77	3.48	37.47	100	83	Average
2336	56.11	63.33	74	-17.89	26.77	3.48	37.47	100	83	Peak
2437	90.12	96.96			27.06	3.56	37.46	100	83	Average
2437	99.32	106.16			27.06	3.56	37.46	100	83	Peak
2494	39.5	45.93	54	-14.5	27.2	3.62	37.25	100	83	Average
2494	56.28	62.71	74	-17.72	27.2	3.62	37.25	100	83	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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
2330	34.56	41.83	54	-19.44	26.72	3.48	37.47	100	334	Average
2330	56.9	64.17	74	-17.1	26.72	3.48	37.47	100	334	Peak
2452	88.09	94.84			27.06	3.58	37.39	100	334	Average
2452	96.85	103.6			27.06	3.58	37.39	100	334	Peak
2484	43.62	50.19	54	-10.38	27.15	3.6	37.32	100	334	Average
2484	59.1	65.67	74	-14.9	27.15	3.6	37.32	100	334	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	35.19	42.26	54	-18.81	26.91	3.52	37.5	100	83	Average
2386	56.58	63.65	74	-17.42	26.91	3.52	37.5	100	83	Peak
2452	90.19	96.94			27.06	3.58	37.39	100	83	Average
2452	99.11	105.86			27.06	3.58	37.39	100	83	Peak
2484	44.37	50.94	54	-9.63	27.15	3.6	37.32	100	83	Average
2484	59.68	66.25	74	-14.32	27.15	3.6	37.32	100	83	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2452MHz: Fundamental frequency.

BELOW 1GHz WORST-CASE DATA:

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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
43.5	24.44	41.25	40	-15.56	13.59	0.71	31.11	129	155	Peak
152.85	22.7	40.31	43.5	-20.8	12.72	1.36	31.69	104	157	Peak
241.41	24.93	43.83	46	-21.07	11.11	1.8	31.81	111	25	Peak
552	22.63	33.15	46	-23.37	18.5	2.95	31.97	100	118	Peak
743.8	29	35.41	46	-17	21.44	3.56	31.41	100	238	Peak
899.9	28.67	33.2	46	-17.33	23.51	3.97	32.01	100	135	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
30.54	30.92	49.33	40	-9.08	12.14	0.57	31.12	102	310	QP
38.64	34.18	51.15	40	-5.82	13.39	0.64	31	105	197	Peak
225.75	23.92	43.54	46	-22.08	10.46	1.72	31.8	115	67	Peak
500.2	29.82	41.33	46	-16.18	17.33	2.78	31.62	100	228	Peak
647.9	27.83	36.44	46	-18.17	20.19	3.23	32.03	100	152	Peak
892.9	27.72	32.35	46	-18.28	23.42	3.95	32	100	177	Peak

REMARKS: Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

MODE B

802.11n (20MHz)

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

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
2370	34.98	42.1	54	-19.02	26.86	3.52	37.5	112	62	Average
2370	52.34	59.46	74	-21.66	26.86	3.52	37.5	112	62	Peak
2412	92.3	99.32			26.96	3.54	37.52	112	62	Average
2412	101.02	108.04			26.96	3.54	37.52	112	62	Peak
2486	35.81	42.38	54	-18.19	27.15	3.6	37.32	112	62	Average
2486	53.02	59.59	74	-20.98	27.15	3.6	37.32	112	62	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	36.7	43.87	54	-17.3	26.81	3.52	37.5	100	88	Average
2368	52.94	60.11	74	-21.06	26.81	3.52	37.5	100	88	Peak
2412	95.39	102.41			26.96	3.54	37.52	100	88	Average
2412	104.56	111.58			26.96	3.54	37.52	100	88	Peak
2498	37.35	43.78	54	-16.65	27.2	3.62	37.25	100	88	Average
2498	53.39	59.82	74	-20.61	27.2	3.62	37.25	100	88	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412MHz: Fundamental frequency.

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

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
2360	34.37	41.55	54	-19.63	26.81	3.5	37.49	100	57	Average
2360	52.44	59.62	74	-21.56	26.81	3.5	37.49	100	57	Peak
2437	92.35	99.19			27.06	3.56	37.46	100	57	Average
2437	101.08	107.92			27.06	3.56	37.46	100	57	Peak
2490	35.28	41.78	54	-18.72	27.2	3.62	37.32	100	57	Average
2490	52.48	58.98	74	-21.52	27.2	3.62	37.32	100	57	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
2388	35.3	42.35	54	-18.7	26.91	3.54	37.5	100	93	Average
2388	52.24	59.29	74	-21.76	26.91	3.54	37.5	100	93	Peak
2437	96.1	102.94			27.06	3.56	37.46	100	93	Average
2437	105.19	112.03			27.06	3.56	37.46	100	93	Peak
2490	37.48	43.98	54	-16.52	27.2	3.62	37.32	100	93	Average
2490	52.71	59.21	74	-21.29	27.2	3.62	37.32	100	93	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437MHz: Fundamental frequency.



A D T

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

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	34.39	41.46	54	-19.61	26.91	3.52	37.5	100	58	Average
2386	53.1	60.17	74	-20.9	26.91	3.52	37.5	100	58	Peak
2462	92.09	98.8			27.1	3.58	37.39	100	58	Average
2462	101.22	107.93			27.1	3.58	37.39	100	58	Peak
2484	38.72	45.29	54	-15.28	27.15	3.6	37.32	100	58	Average
2484	55.25	61.82	74	-18.75	27.15	3.6	37.32	100	58	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	34.49	41.66	54	-19.51	26.81	3.52	37.5	100	86	Average
2368	53.55	60.72	74	-20.45	26.81	3.52	37.5	100	86	Peak
2462	96.54	103.25			27.1	3.58	37.39	100	86	Average
2462	105.37	112.08			27.1	3.58	37.39	100	86	Peak
2484	41.16	47.73	54	-12.84	27.15	3.6	37.32	100	86	Average
2484	58.07	64.64	74	-15.93	27.15	3.6	37.32	100	86	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462MHz: Fundamental frequency.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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	41.42	48.49	54	-12.58	26.91	3.54	37.52	116	61	Average
2390	55.38	62.45	74	-18.62	26.91	3.54	37.52	116	61	Peak
2422	90.44	97.33			27.01	3.56	37.46	116	61	Average
2422	99.2	106.09			27.01	3.56	37.46	116	61	Peak
2484	36.67	43.24	54	-17.33	27.15	3.6	37.32	116	61	Average
2484	52.43	59	74	-21.57	27.15	3.6	37.32	116	61	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
2388	43.7	50.75	54	-10.3	26.91	3.54	37.5	100	86	Average
2388	57.93	64.98	74	-16.07	26.91	3.54	37.5	100	86	Peak
2422	92.65	99.54			27.01	3.56	37.46	100	86	Average
2422	101.64	108.53			27.01	3.56	37.46	100	86	Peak
2490	38.28	44.78	54	-15.72	27.2	3.62	37.32	100	86	Average
2490	52.95	59.45	74	-21.05	27.2	3.62	37.32	100	86	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2422MHz: Fundamental frequency.



A D T

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

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
2368	35.74	42.91	54	-18.26	26.81	3.52	37.5	112	62	Average
2368	52.24	59.41	74	-21.76	26.81	3.52	37.5	112	62	Peak
2437	90.08	96.92			27.06	3.56	37.46	112	62	Average
2437	100.11	106.95			27.06	3.56	37.46	112	62	Peak
2486	37.75	44.32	54	-16.25	27.15	3.6	37.32	112	62	Average
2486	53.73	60.3	74	-20.27	27.15	3.6	37.32	112	62	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
2350	37.47	44.69	54	-16.53	26.77	3.5	37.49	119	91	Average
2350	52.43	59.65	74	-21.57	26.77	3.5	37.49	119	91	Peak
2437	92.85	99.69			27.06	3.56	37.46	119	91	Average
2437	102.86	109.7			27.06	3.56	37.46	119	91	Peak
2486	39.83	46.4	54	-14.17	27.15	3.6	37.32	119	91	Average
2486	54.87	61.44	74	-19.13	27.15	3.6	37.32	119	91	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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
2374	35.18	42.3	54	-18.82	26.86	3.52	37.5	134	59	Average
2374	52.72	59.84	74	-21.28	26.86	3.52	37.5	134	59	Peak
2452	90.01	96.76			27.06	3.58	37.39	134	59	Average
2452	99.51	106.26			27.06	3.58	37.39	134	59	Peak
2484	45.57	52.14	54	-8.43	27.15	3.6	37.32	134	59	Average
2484	58.72	65.29	74	-15.28	27.15	3.6	37.32	134	59	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
2366	35.6	42.77	54	-18.4	26.81	3.52	37.5	100	83	Average
2366	52.79	59.96	74	-21.21	26.81	3.52	37.5	100	83	Peak
2452	92.88	99.63			27.06	3.58	37.39	100	83	Average
2452	102.82	109.57			27.06	3.58	37.39	100	83	Peak
2484	47.34	53.91	54	-6.66	27.15	3.6	37.32	100	83	Average
2484	61.14	67.71	74	-12.86	27.15	3.6	37.32	100	83	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2452MHz: Fundamental frequency.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

- 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	100288	Nov. 17, 2013	Nov. 16, 2014
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 23, 2013	Dec. 22, 2014
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 08, 2013	Jul. 07, 2014
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. Tested Date: Mar. 28, 2014



A D T

4.2.3 TEST PROCEDURES

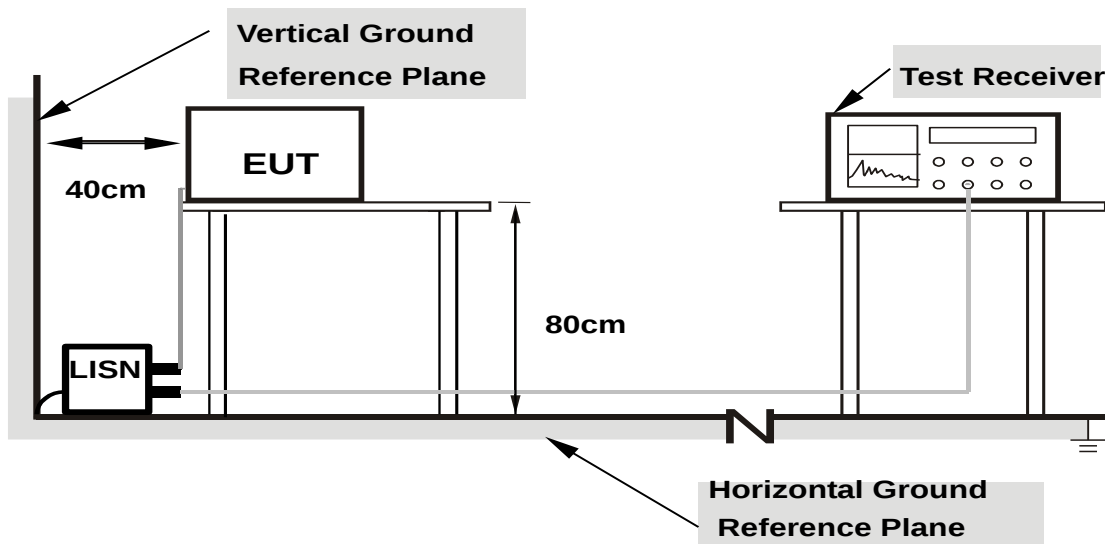
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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.

4.2.5 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT OPERATING CONDITIONS

Same as section 4.1.6

4.2.7 TEST RESULTS

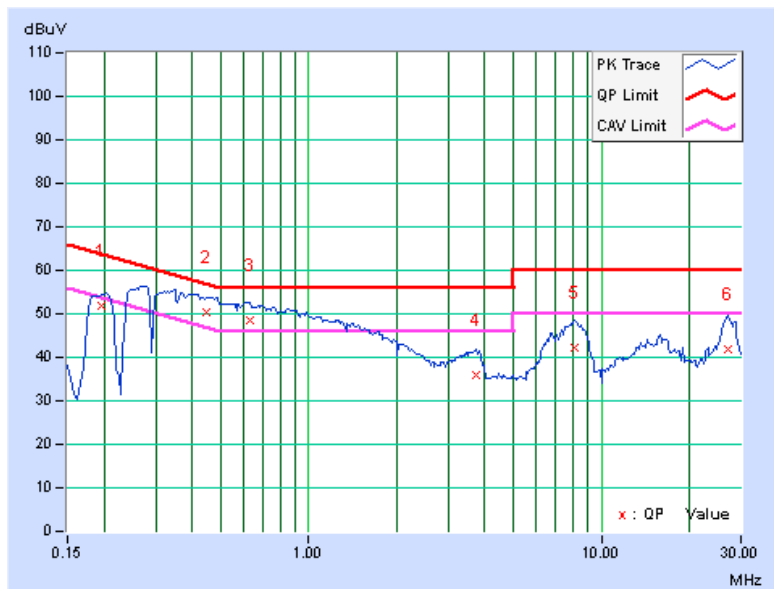
CONDUCTED WORST-CASE DATA :

PHASE	Line 1	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	0.19687	0.28	51.48	36.43	51.76	36.71	63.74	53.74	-11.98	-17.03
2	0.44688	0.30	49.91	31.42	50.21	31.72	56.93	46.93	-6.72	-15.21
3	0.63047	0.32	48.12	30.45	48.44	30.77	56.00	46.00	-7.56	-15.23
4	3.73438	0.42	35.50	25.35	35.92	25.77	56.00	46.00	-20.08	-20.23
5	8.05859	0.48	41.69	30.75	42.17	31.23	60.00	50.00	-17.83	-18.77
6	27.18750	0.49	41.32	32.30	41.81	32.79	60.00	50.00	-18.19	-17.21

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

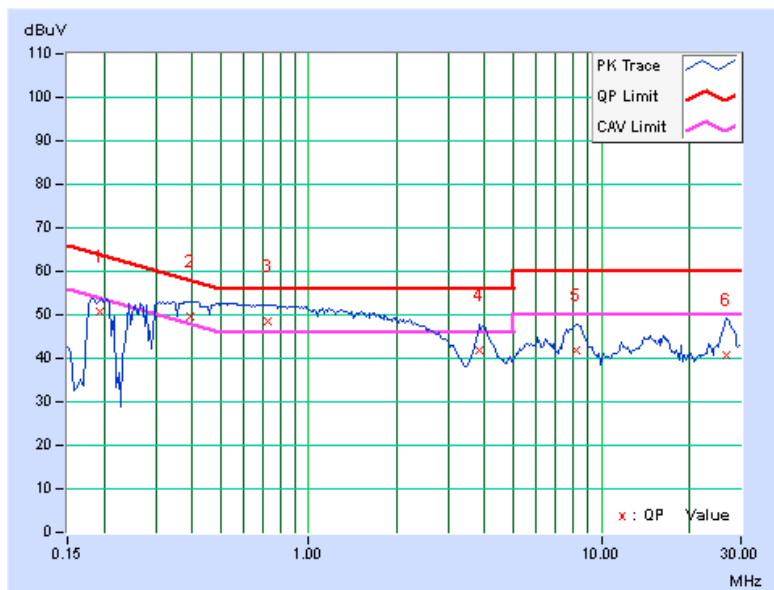


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

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	0.19297	0.28	50.48	34.96	50.76	35.24	63.91	53.91	-13.15	-18.67
2	0.39219	0.30	49.40	30.39	49.70	30.69	58.02	48.02	-8.32	-17.33
3	0.72422	0.32	48.12	30.71	48.44	31.03	56.00	46.00	-7.56	-14.97
4	3.82422	0.43	41.33	33.76	41.76	34.19	56.00	46.00	-14.24	-11.81
5	8.21484	0.50	41.36	33.19	41.86	33.69	60.00	50.00	-18.14	-16.31
6	26.64844	0.53	40.29	30.36	40.82	30.89	60.00	50.00	-19.18	-19.11

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

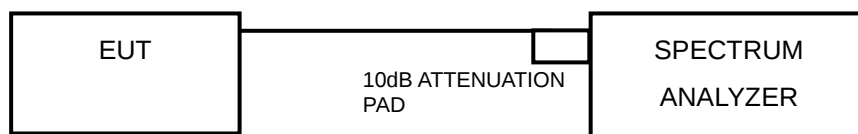


4.3 6dB BANDWIDTH MEASUREMENT

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) = 100kHz
- 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

MODE A

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.74	0.5	PASS
6	2437	10.06	0.5	PASS
11	2462	10.06	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.41	0.5	PASS
6	2437	16.44	0.5	PASS
11	2462	16.40	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.02	0.5	PASS
6	2437	16.96	0.5	PASS
11	2462	16.97	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	35.84	0.5	PASS
6	2437	36.06	0.5	PASS
6	2452	36.40	0.5	PASS



A D T

MODE B

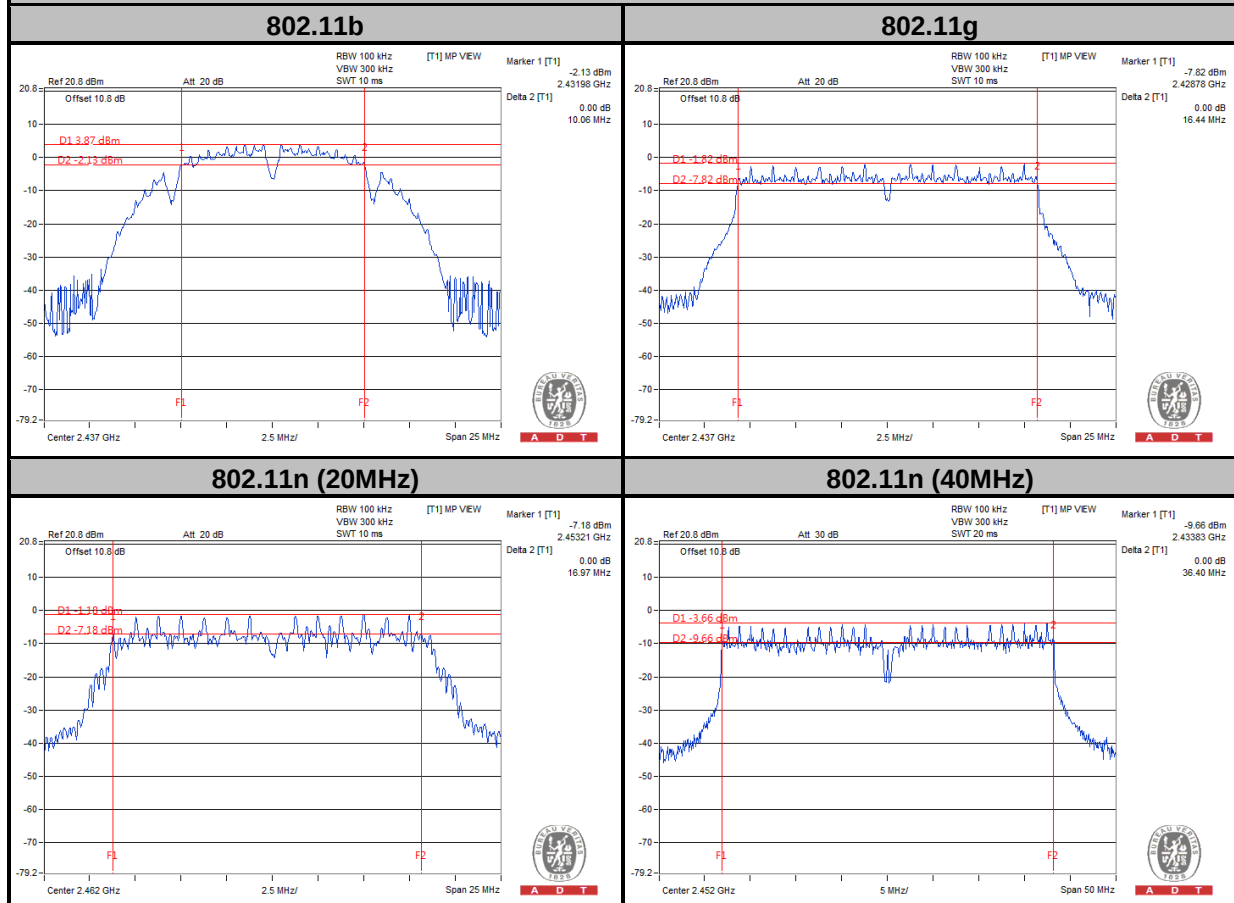
802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.28	16.01	0.5	PASS
6	2437	16.28	16.96	0.5	PASS
11	2462	16.28	16.95	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	35.79	35.92	0.5	PASS
6	2437	35.83	36.01	0.5	PASS
6	2452	36.27	36.01	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

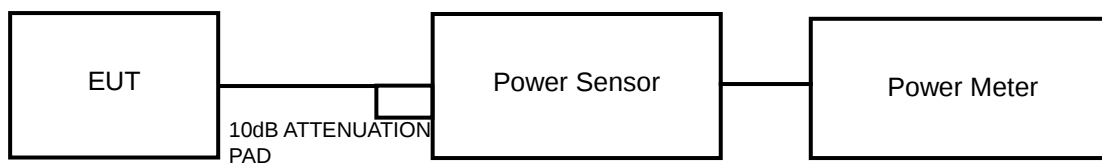


4.4 CONDUCTED OUTPUT POWER

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 section 4.3.6.



A D T

4.4.7 TEST RESULTS

MODE A

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
1	2412	46.77	16.7	30	PASS
6	2437	50.70	17.05	30	PASS
11	2462	49.89	16.98	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
1	2412	94.62	19.76	30	PASS
6	2437	96.61	19.85	30	PASS
11	2462	94.41	19.75	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
1	2412	86.50	19.37	30	PASS
6	2437	84.72	19.28	30	PASS
11	2462	82.60	19.17	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
3	2422	105.20	20.22	30	PASS
6	2437	104.23	20.18	30	PASS
9	2452	110.66	20.44	30	PASS

**A D T****MODE B****802.11n (20MHz)**

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	19.15	19.81	177.944	22.50	30	PASS
6	2437	18.62	18.35	141.169	21.50	30	PASS
11	2462	18.00	19.25	147.235	21.68	30	PASS

802.11n (40MHz)

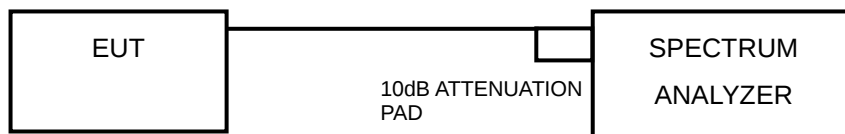
CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	21.62	23.60	374.298	25.73	30	PASS
6	2437	21.61	23.70	379.300	25.79	30	PASS
9	2452	20.84	23.29	334.643	25.25	30	PASS

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 = 3 kHz, VBW = 10 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as section 4.3.6.

4.5.7 TEST RESULTS

MODE A

802.11b

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS / FAIL
1	2412	-12.76	8	PASS
6	2437	-11.70	8	PASS
11	2462	-11.70	8	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS / FAIL
1	2412	-6.27	8	PASS
6	2437	-7.54	8	PASS
11	2462	-6.63	8	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS / FAIL
1	2412	-6.40	8	PASS
6	2437	-6.38	8	PASS
11	2462	-5.71	8	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS / FAIL
3	2422	-8.81	8	PASS
6	2437	-9.07	8	PASS
9	2452	-8.66	8	PASS

MODE B

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-8.00	3.01	-4.99	8	PASS
	6	2437	-8.02	3.01	-5.01	8	PASS
	11	2462	-8.12	3.01	-5.11	8	PASS
1	1	2412	-7.19	3.01	-4.18	8	PASS
	6	2437	-6.89	3.01	-3.88	8	PASS
	11	2462	-6.92	3.01	-3.91	8	PASS

NOTE: Directional gain = 2.93dBi + 10log(2) = 5.94dBi < 6dBi, so the limit no need to reduced.

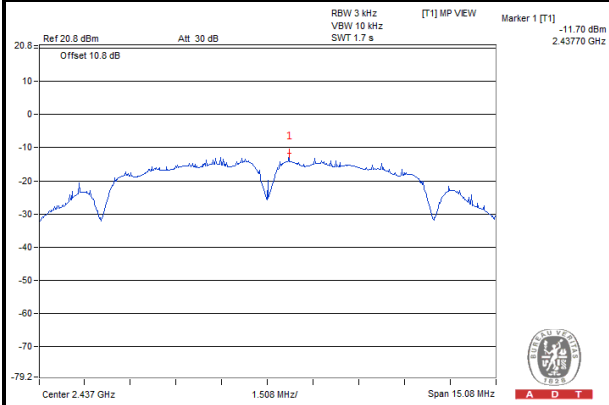
802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-10.31	3.01	-7.30	8	PASS
	6	2437	-10.30	3.01	-7.29	8	PASS
	9	2452	-11.31	3.01	-8.30	8	PASS
1	3	2422	-9.09	3.01	-6.08	8	PASS
	6	2437	-8.75	3.01	-5.74	8	PASS
	9	2452	-9.36	3.01	-6.35	8	PASS

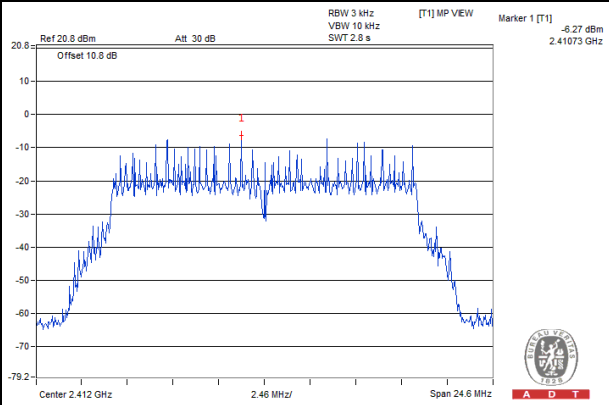
NOTE: Directional gain = 2.93dBi + 10log(2) = 5.94dBi < 6dBi, so the limit no need to reduced.

SPECTRUM PLOT OF WORST VALUE

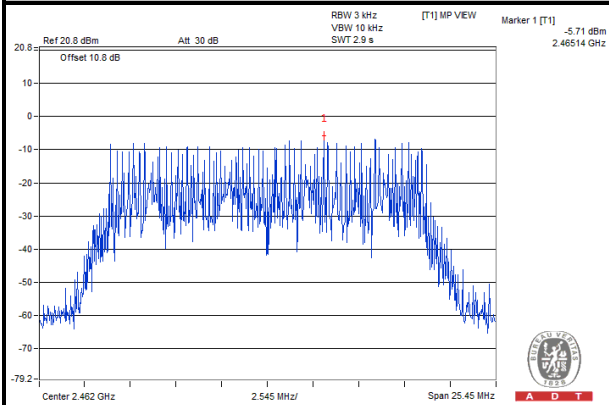
802.11b



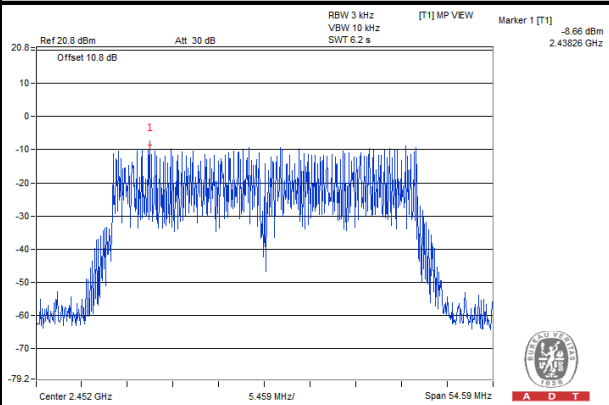
802.11g



802.11n (20MHz)



802.11n (40MHz)

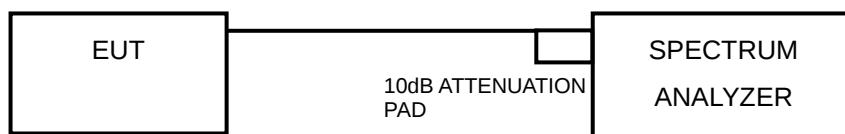


4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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 $\geq 300\text{ kHz}$.
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 $\geq 300\text{ kHz}$.
3. Ensure that the number of measurement points $\geq \text{span}/\text{RBW}$
4. According to measurement points to set differ measurement span.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

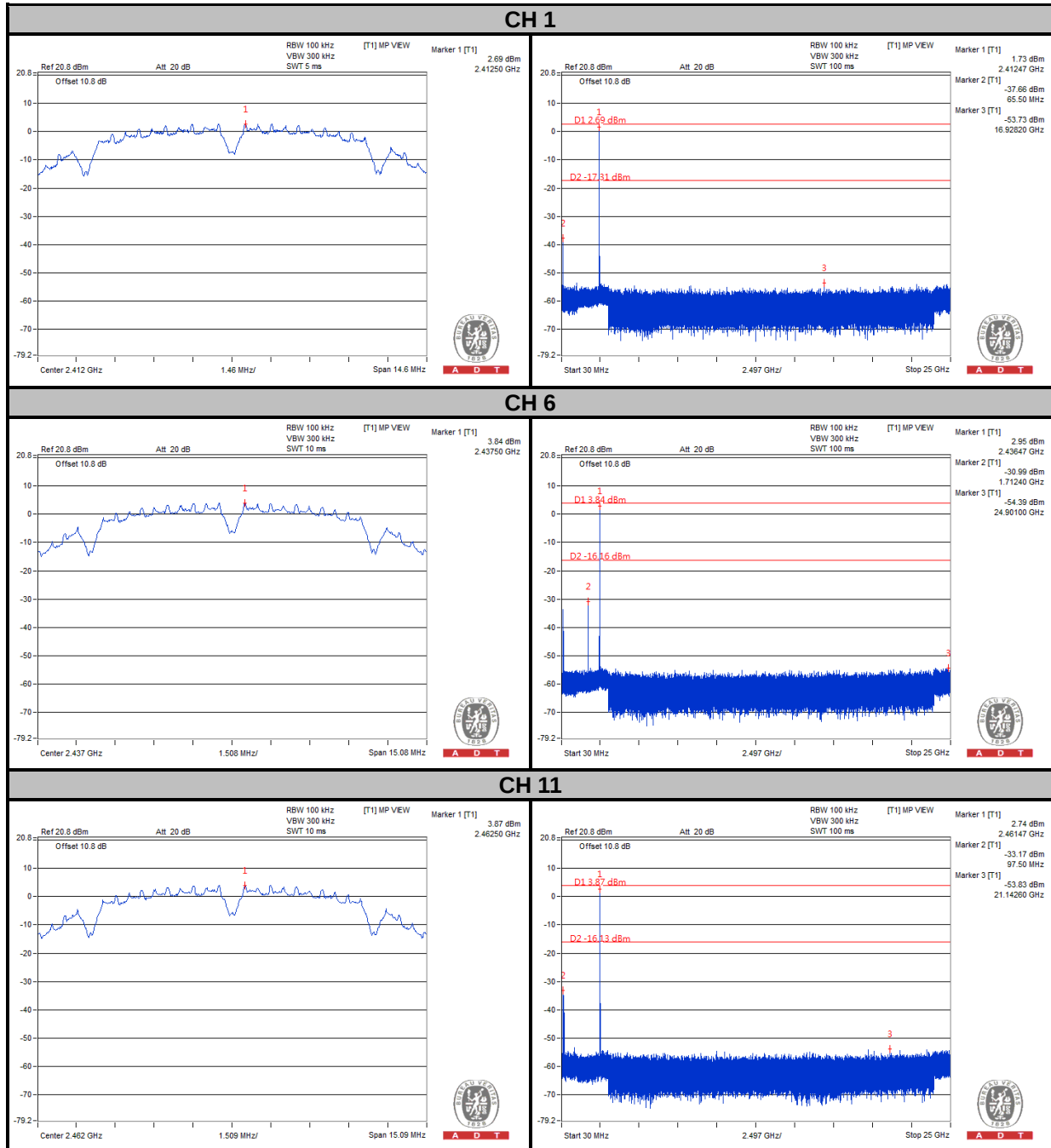
Same as section 4.3.6.

4.6.7 TEST RESULTS

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

MODE A

802.11b

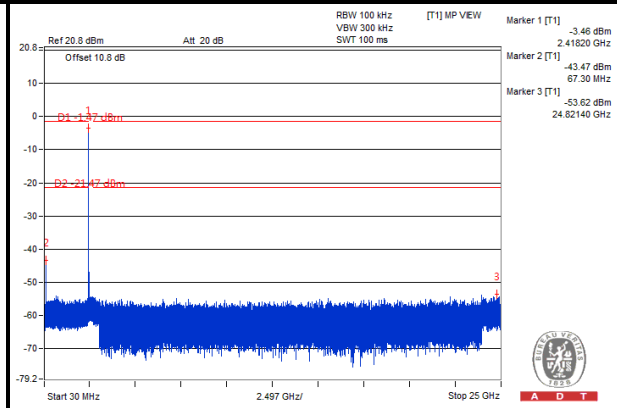
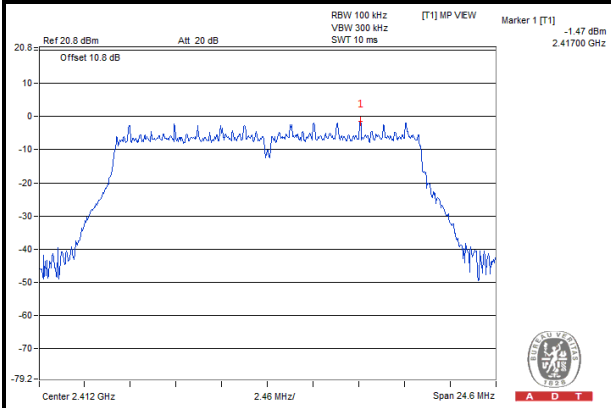




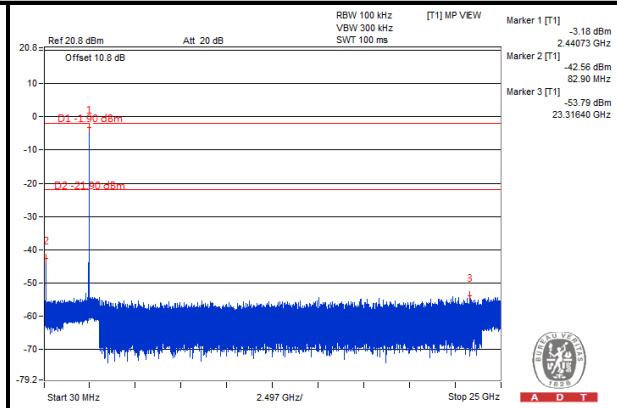
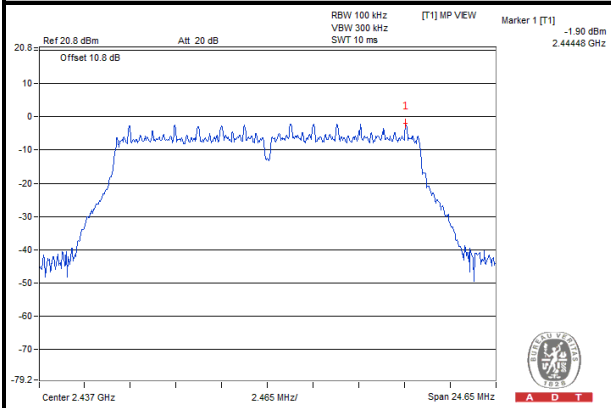
A D T

802.11g

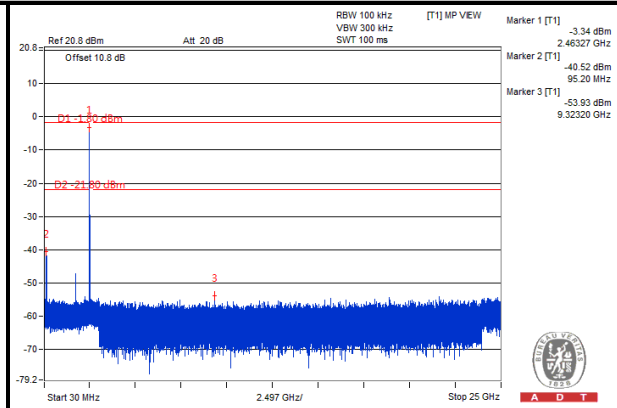
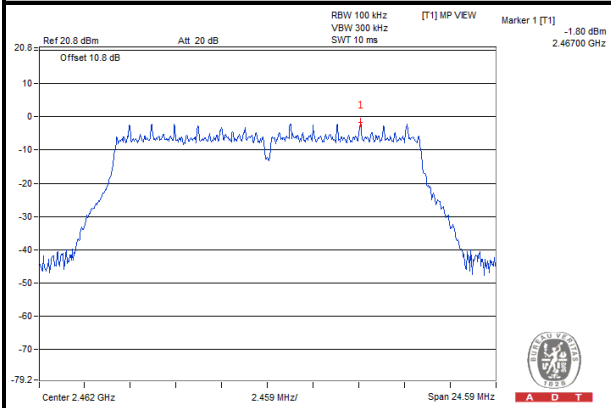
CH 1



CH 6



CH 11

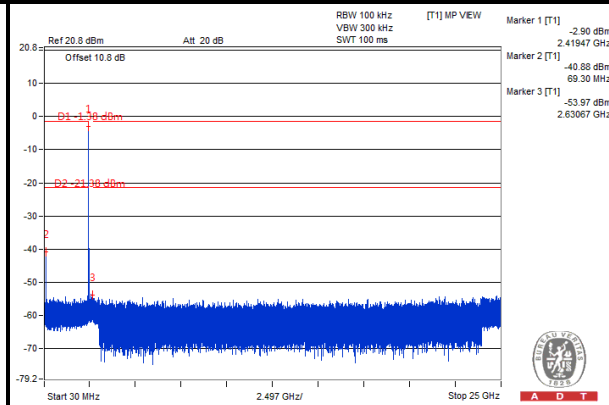
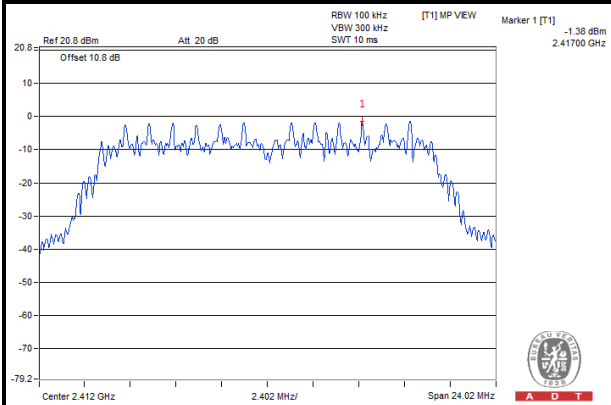




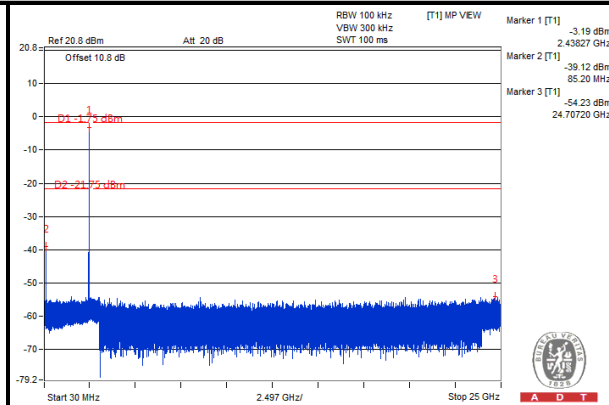
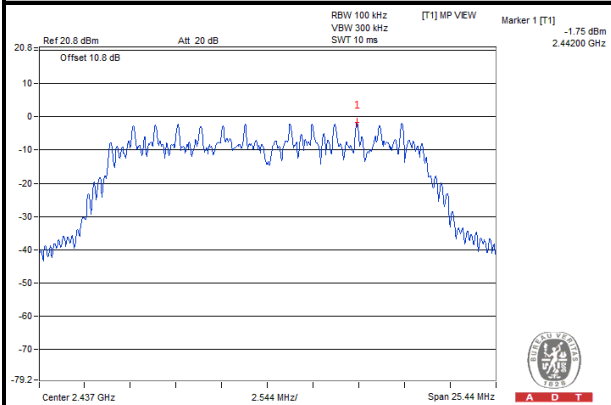
A D T

802.11n (20MHz)

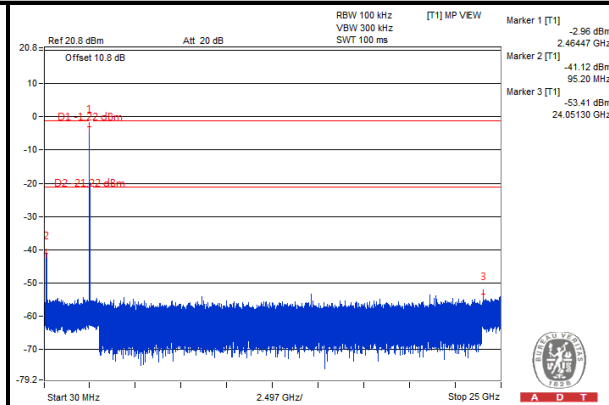
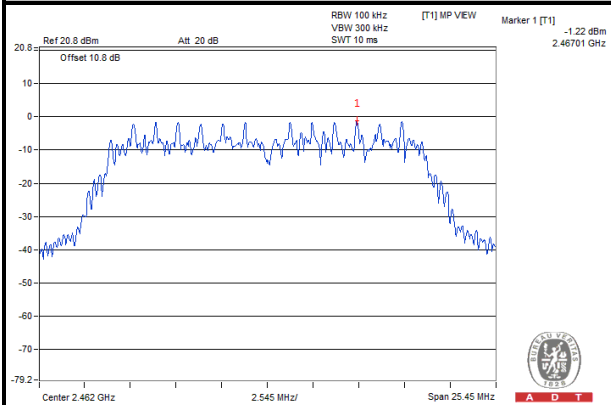
CH 1



CH 6



CH 11

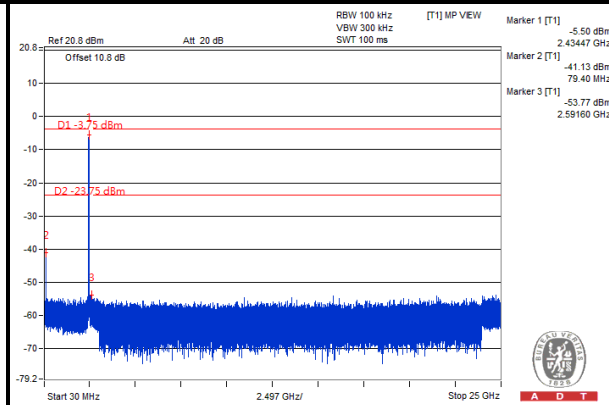
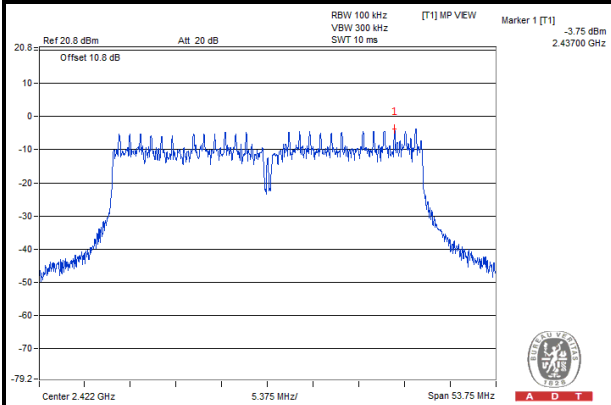




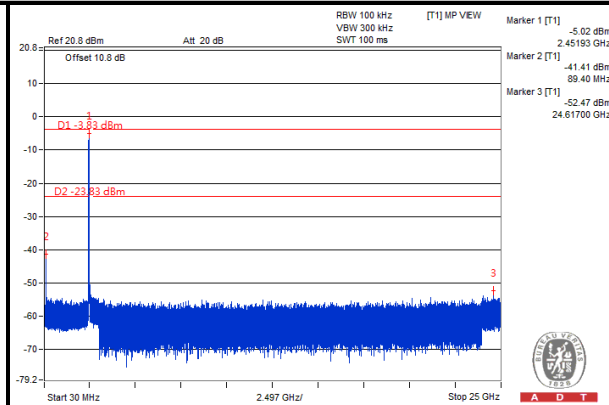
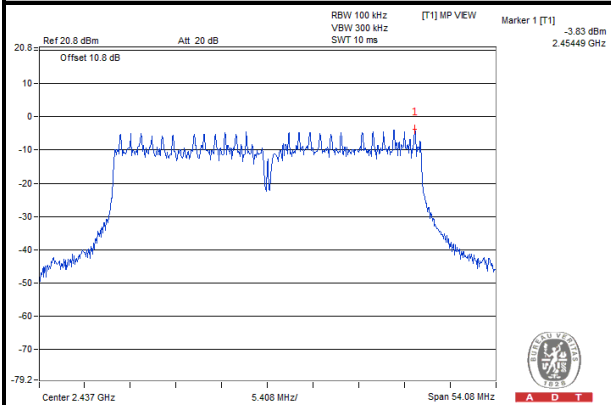
A D T

802.11n (40MHz)

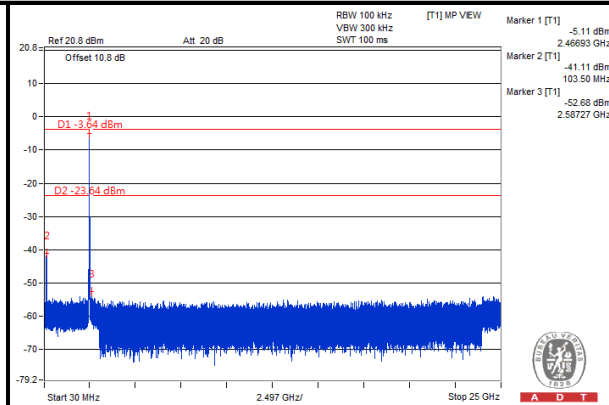
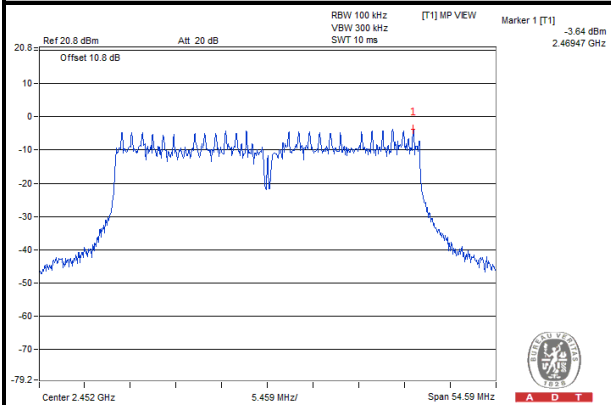
CH 3



CH 6



CH 9





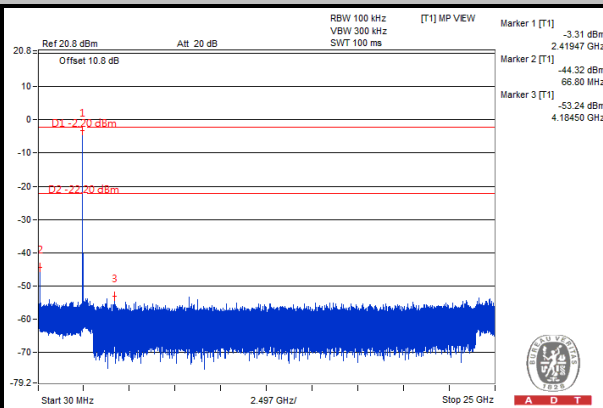
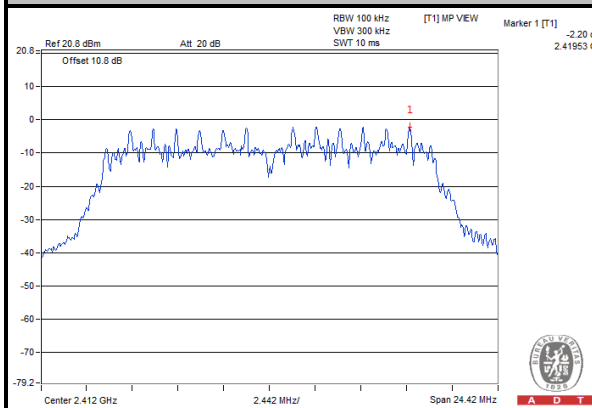
A D T

MODE B

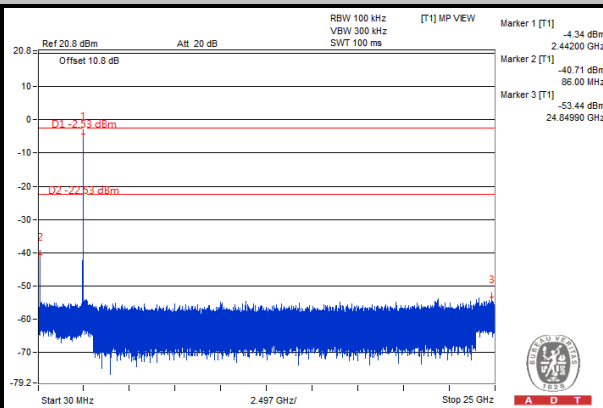
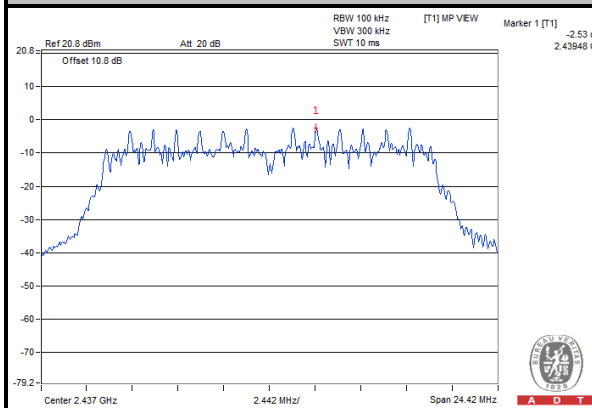
CHAIN 0

802.11n (20MHz)

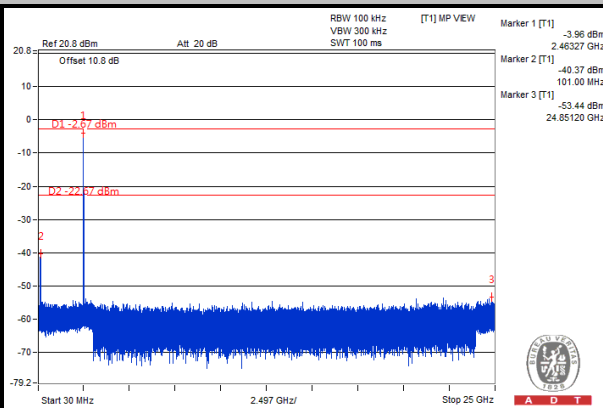
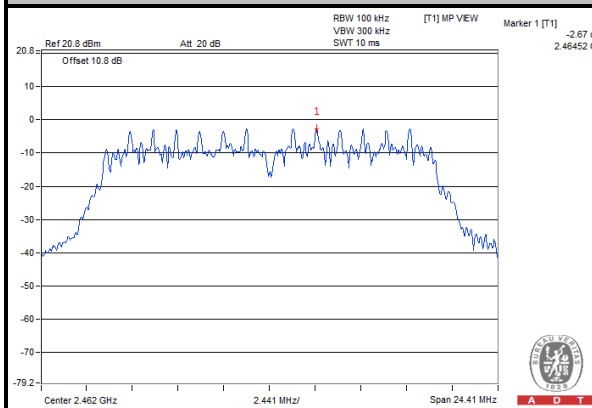
CH 1



CH 6



CH 11

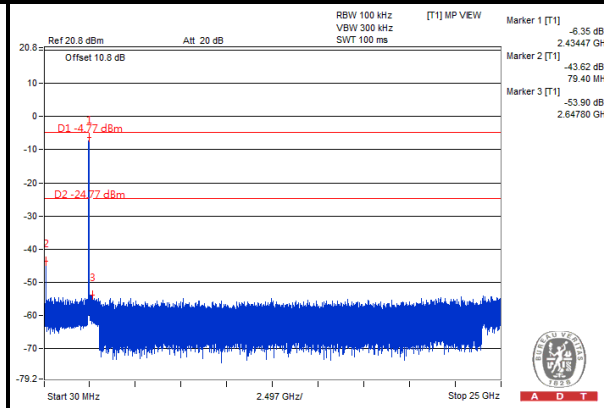
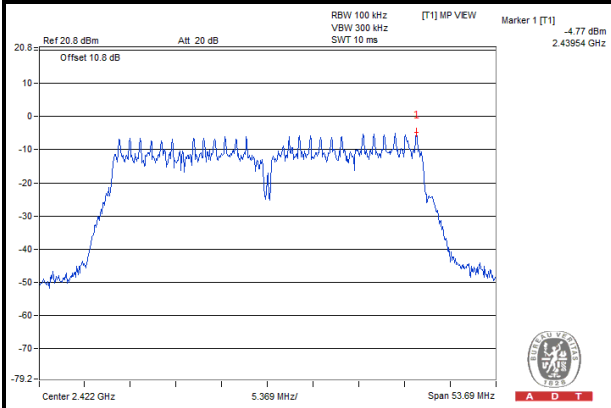




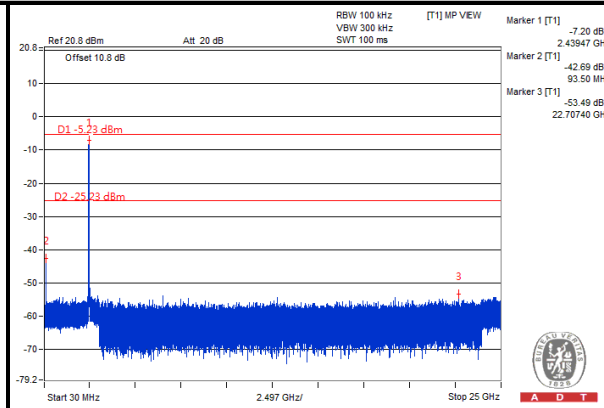
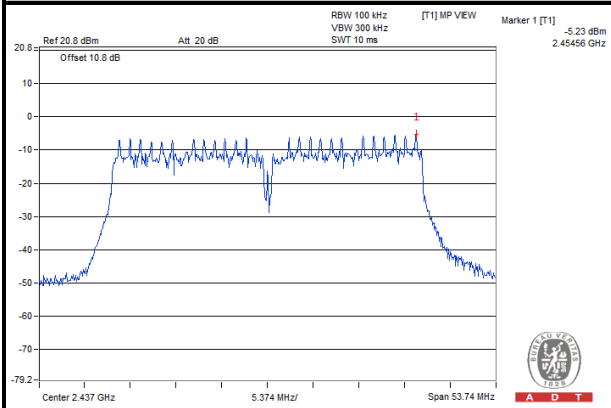
A D T

802.11n (40MHz)

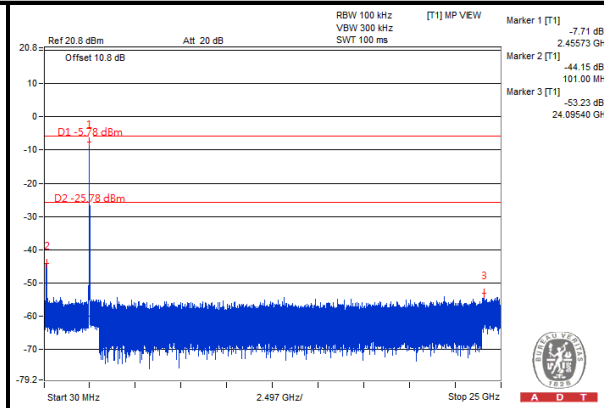
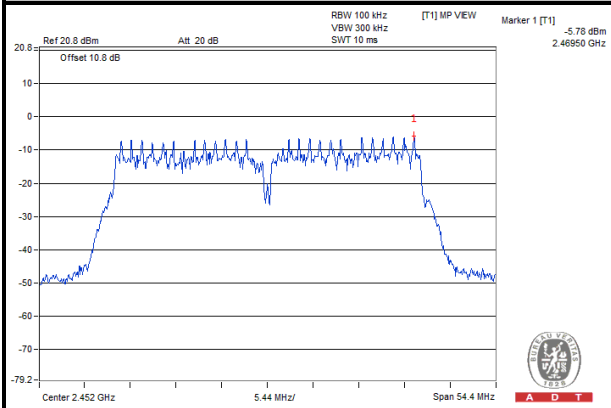
CH 3



CH 6



CH 9



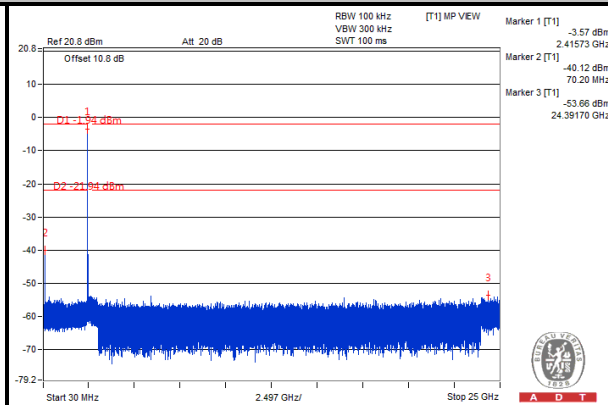
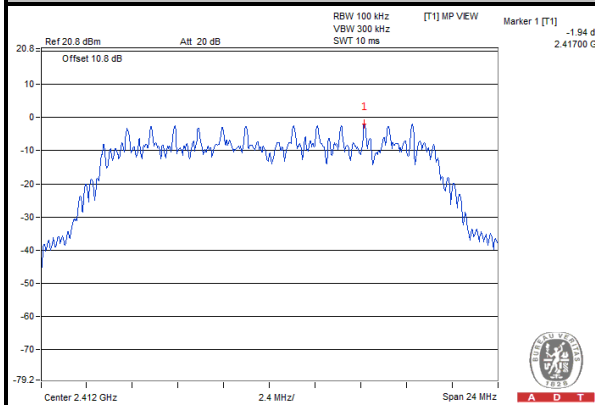


A D T

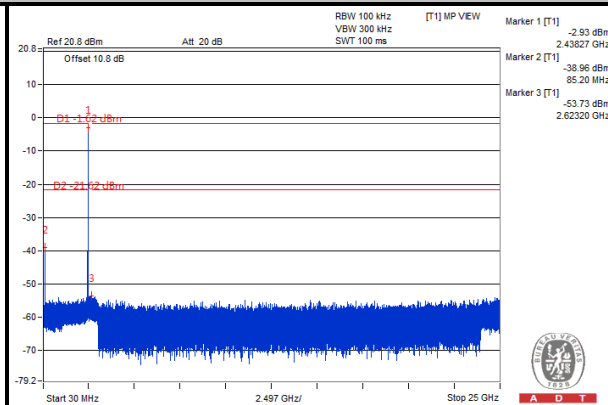
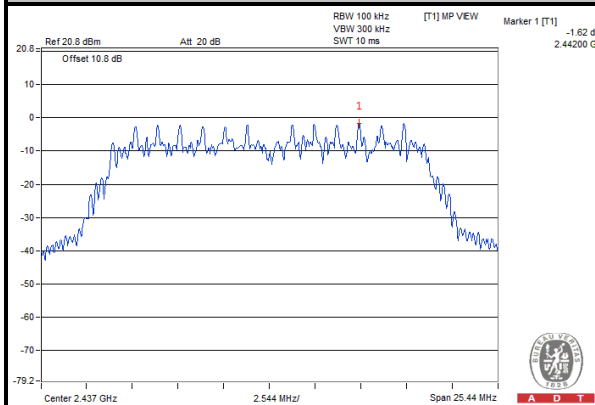
CHAIN 1

802.11n (20MHz)

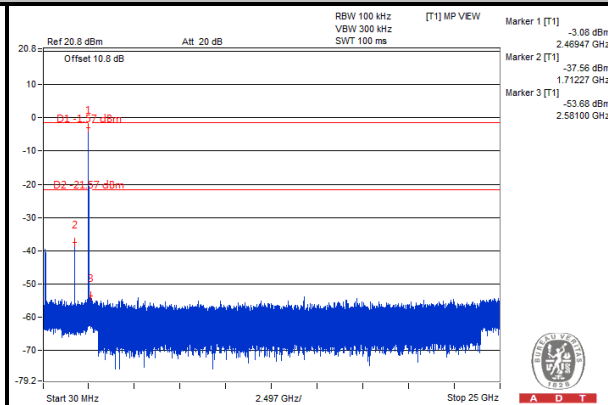
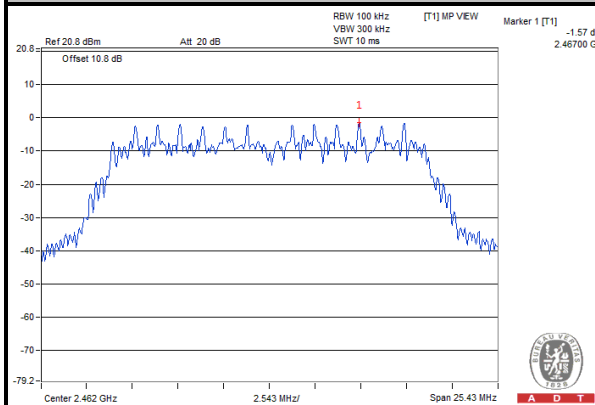
CH 1



CH 6



CH 11

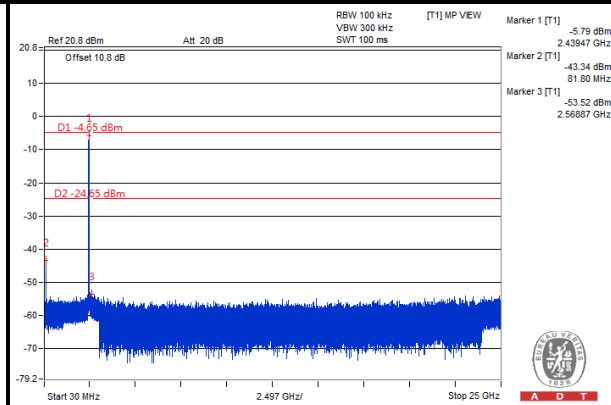
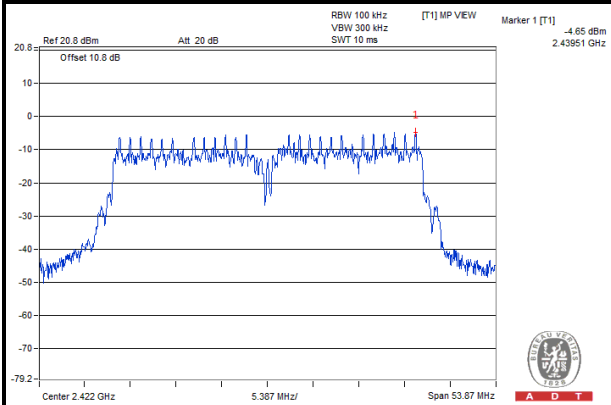




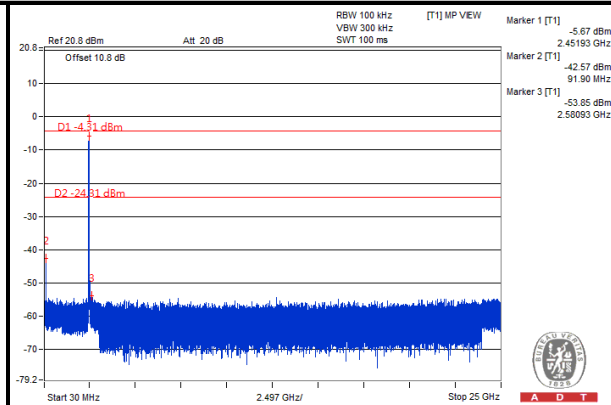
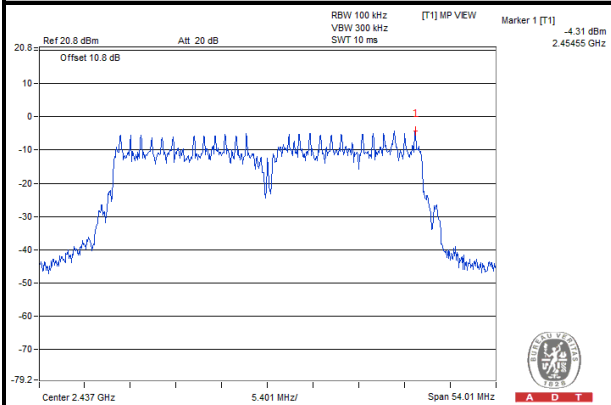
A D T

802.11n (40MHz)

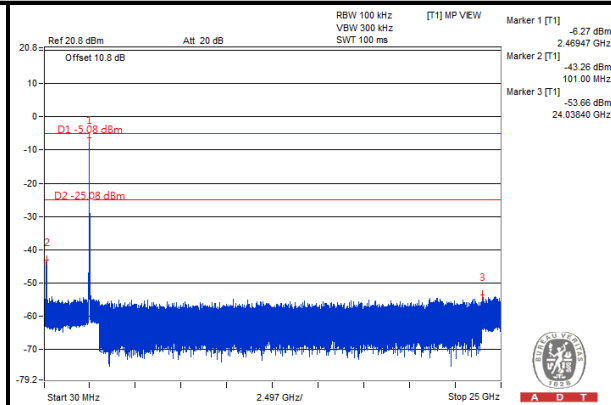
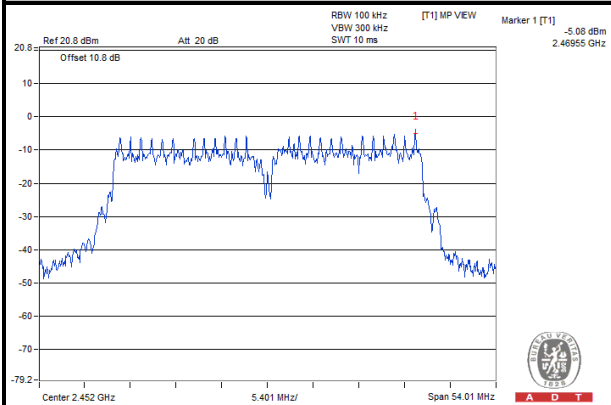
CH 3



CH 6



CH 9



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 section 4.1.2.

5.1.3 TEST PROCEDURES

Same as section 4.1.3.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

5.1.5 TEST SETUP

Same as section 4.1.5.

5.1.6 EUT OPERATING CONDITIONS

Same as section 4.1.6.

5.1.7 TEST RESULTS

MODE A

ABOVE 1GHz WORST-CASE DATA :

802.11a

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

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	42.57	42.45	71.34	-28.77	31.96	5.59	37.43	107	288	Average
5725	60.04	59.92	80.89	-20.85	31.96	5.59	37.43	107	288	Peak
5745	91.34	91.22			31.99	5.6	37.47	107	288	Average
5745	100.89	100.77			31.99	5.6	37.47	107	288	Peak
5850	38.82	38.52	71.34	-32.52	32.15	5.66	37.51	107	288	Average
5850	59.43	59.13	80.89	-21.46	32.15	5.66	37.51	107	288	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	42.9	42.78	72.44	-29.54	31.96	5.59	37.43	100	144	Average
5725	60.35	60.23	81.99	-21.64	31.96	5.59	37.43	100	144	Peak
5745	92.44	92.32			31.99	5.6	37.47	100	144	Average
5745	101.99	101.87			31.99	5.6	37.47	100	144	Peak
5850	38.62	38.32	72.44	-33.82	32.15	5.66	37.51	100	144	Average
5850	58.25	57.95	81.99	-23.74	32.15	5.66	37.51	100	144	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5745MHz: Fundamental frequency.
3. 5725MHz & 5850MHz: Out of restricted band

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

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	38.61	38.49	71.64	-33.03	31.96	5.59	37.43	110	288	Average
5725	59.95	59.83	80.89	-20.94	31.96	5.59	37.43	110	288	Peak
5785	91.64	91.52			32.04	5.62	37.54	110	288	Average
5785	100.89	100.77			32.04	5.62	37.54	110	288	Peak
5850	38.79	38.49	71.64	-32.85	32.15	5.66	37.51	110	288	Average
5850	60.42	60.12	80.89	-20.47	32.15	5.66	37.51	110	288	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	38.58	38.46	72.8	-34.22	31.96	5.59	37.43	100	166	Average
5725	57.89	57.77	81.77	-23.88	31.96	5.59	37.43	100	166	Peak
5785	92.8	92.68			32.04	5.62	37.54	100	166	Average
5785	101.77	101.65			32.04	5.62	37.54	100	166	Peak
5850	38.77	38.47	72.8	-34.03	32.15	5.66	37.51	100	166	Average
5850	59.62	59.32	81.77	-22.15	32.15	5.66	37.51	100	166	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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	38.56	38.44	70.65	-32.09	31.96	5.59	37.43	108	290	Average
5725	57.72	57.6	79.23	-21.51	31.96	5.59	37.43	108	290	Peak
5825	90.65	90.42			32.12	5.64	37.53	108	290	Average
5825	99.23	99			32.12	5.64	37.53	108	290	Peak
5850	39.36	39.06	70.65	-31.29	32.15	5.66	37.51	108	290	Average
5850	58.93	58.63	79.23	-20.3	32.15	5.66	37.51	108	290	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	38.41	38.29	71.75	-33.34	31.96	5.59	37.43	100	159	Average
5725	59.52	59.4	80.02	-20.5	31.96	5.59	37.43	100	159	Peak
5825	91.75	91.52			32.12	5.64	37.53	100	159	Average
5825	100.02	99.79			32.12	5.64	37.53	100	159	Peak
5850	39.23	38.93	71.75	-32.52	32.15	5.66	37.51	100	159	Average
5850	59.04	58.74	80.02	-20.98	32.15	5.66	37.51	100	159	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

802.11n (20MHz)

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

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	44.98	44.86	71.72	-26.74	31.96	5.59	37.43	114	289	Average
5725	62.08	61.96	80.09	-18.01	31.96	5.59	37.43	114	289	Peak
5745	91.72	91.6			31.99	5.6	37.47	114	289	Average
5745	100.09	99.97			31.99	5.6	37.47	114	289	Peak
5850	38.88	38.58	71.72	-32.84	32.15	5.66	37.51	114	289	Average
5850	57.84	57.54	80.09	-22.25	32.15	5.66	37.51	114	289	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	45.05	44.93	72.68	-27.63	31.96	5.59	37.43	100	147	Average
5725	61.34	61.22	81.19	-19.85	31.96	5.59	37.43	100	147	Peak
5745	92.68	92.56			31.99	5.6	37.47	100	147	Average
5745	101.19	101.07			31.99	5.6	37.47	100	147	Peak
5850	38.74	38.44	72.68	-33.94	32.15	5.66	37.51	100	147	Average
5850	58.04	57.74	81.19	-23.15	32.15	5.66	37.51	100	147	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5745MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

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

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	38.48	38.36	72.02	-33.54	31.96	5.59	37.43	112	289	Average
5725	59.12	59	80.71	-21.59	31.96	5.59	37.43	112	289	Peak
5785	92.02	91.9			32.04	5.62	37.54	112	289	Average
5785	100.71	100.59			32.04	5.62	37.54	112	289	Peak
5850	38.84	38.54	72.02	-33.18	32.15	5.66	37.51	112	289	Average
5850	58.7	58.4	80.71	-22.01	32.15	5.66	37.51	112	289	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	38.58	38.46	73	-34.42	31.96	5.59	37.43	100	150	Average
5725	58.44	58.32	81.61	-23.17	31.96	5.59	37.43	100	150	Peak
5785	93	92.88			32.04	5.62	37.54	100	150	Average
5785	101.61	101.49			32.04	5.62	37.54	100	150	Peak
5850	38.8	38.5	73	-34.2	32.15	5.66	37.51	100	150	Average
5850	58.92	58.62	81.61	-22.69	32.15	5.66	37.51	100	150	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

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

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	38.6	38.48	70.56	-31.96	31.96	5.59	37.43	111	290	Average
5725	58.89	58.77	79.22	-20.33	31.96	5.59	37.43	111	290	Peak
5825	90.56	90.33			32.12	5.64	37.53	111	290	Average
5825	99.22	98.99			32.12	5.64	37.53	111	290	Peak
5850	39.74	39.44	70.56	-30.82	32.15	5.66	37.51	111	290	Average
5850	59.76	59.46	79.22	-19.46	32.15	5.66	37.51	111	290	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	38.47	38.35	71.59	-33.12	31.96	5.59	37.43	100	161	Average
5725	58.2	58.08	80.03	-21.83	31.96	5.59	37.43	100	161	Peak
5825	91.59	91.36			32.12	5.64	37.53	100	161	Average
5825	100.03	99.8			32.12	5.64	37.53	100	161	Peak
5850	39.53	39.23	71.59	-32.06	32.15	5.66	37.51	100	161	Average
5850	58.73	58.43	80.03	-21.3	32.15	5.66	37.51	100	161	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

802.11n (40MHz)

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

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	48.2	48.08	68.41	-20.21	31.96	5.59	37.43	110	290	Average
5725	62.66	62.54	77.51	-14.85	31.96	5.59	37.43	110	290	Peak
5755	88.41	88.27			32.01	5.6	37.47	110	290	Average
5755	97.51	97.37			32.01	5.6	37.47	110	290	Peak
5850	38.93	38.63	68.41	-29.48	32.15	5.66	37.51	110	290	Average
5850	58.42	58.12	77.51	-19.09	32.15	5.66	37.51	110	290	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	47.73	47.61	69.47	-21.74	31.96	5.59	37.43	100	146	Average
5725	62.5	62.38	78.46	-15.96	31.96	5.59	37.43	100	146	Peak
5755	89.47	89.33			32.01	5.6	37.47	100	146	Average
5755	98.46	98.32			32.01	5.6	37.47	100	146	Peak
5850	38.82	38.52	69.47	-30.65	32.15	5.66	37.51	100	146	Average
5850	59.18	58.88	78.46	-19.28	32.15	5.66	37.51	100	146	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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	38.89	38.77	69.71	-30.82	31.96	5.59	37.43	109	288	Average
5725	58.19	58.07	79.49	-21.3	31.96	5.59	37.43	109	288	Peak
5795	89.71	89.55			32.07	5.63	37.54	109	288	Average
5795	99.49	99.33			32.07	5.63	37.54	109	288	Peak
5850	39.55	39.25	69.71	-30.16	32.15	5.66	37.51	109	288	Average
5850	59.62	59.32	79.49	-19.87	32.15	5.66	37.51	109	288	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	38.97	38.85	70.65	-31.68	31.96	5.59	37.43	100	153	Average
5725	59.3	59.18	80.46	-21.16	31.96	5.59	37.43	100	153	Peak
5795	90.65	90.49			32.07	5.63	37.54	100	153	Average
5795	100.46	100.3			32.07	5.63	37.54	100	153	Peak
5850	39.66	39.36	70.65	-30.99	32.15	5.66	37.51	100	153	Average
5850	58.13	57.83	80.46	-22.33	32.15	5.66	37.51	100	153	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5795MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

BELOW 1GHz WORST-CASE DATA :

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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
51.06	17.86	35.53	40	-22.14	12.87	0.77	31.31	174	102	Peak
98.04	19.7	41.69	43.5	-23.8	8.91	1.06	31.96	155	262	Peak
261.66	25.12	43.32	46	-20.88	11.82	1.87	31.89	173	200	Peak
499.5	28.87	40.41	46	-17.13	17.31	2.78	31.63	175	332	Peak
600.3	28.26	37.81	46	-17.74	19.61	3.09	32.25	100	166	Peak
647.9	28.92	37.53	46	-17.08	20.19	3.23	32.03	155	146	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
31.08	30.34	48.75	40	-9.66	12.14	0.57	31.12	167	148	QP
38.37	27.03	44	40	-12.97	13.39	0.64	31	169	325	Peak
173.1	18.47	37.4	43.5	-25.03	11.38	1.46	31.77	146	289	Peak
500.2	27.72	39.23	46	-18.28	17.33	2.78	31.62	174	299	Peak
600.3	32.31	41.86	46	-13.69	19.61	3.09	32.25	185	247	Peak
647.9	27.06	35.67	46	-18.94	20.19	3.23	32.03	100	196	Peak

REMARKS: Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

MODE B

ABOVE 1GHz WORST-CASE DATA :

802.11n (20MHz)

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

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	46.57	46.45	75.71	-29.14	31.96	5.59	37.43	113	290	Average
5725	64.19	64.07	83.83	-19.64	31.96	5.59	37.43	113	290	Peak
5745	95.71	95.59			31.99	5.6	37.47	113	290	Average
5745	103.83	103.71			31.99	5.6	37.47	113	290	Peak
5850	38.95	38.65	75.71	-36.76	32.15	5.66	37.51	113	290	Average
5850	58.09	57.79	83.83	-25.74	32.15	5.66	37.51	113	290	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	48.57	48.45	76.62	-28.05	31.96	5.59	37.43	100	148	Average
5725	61.78	61.66	84.55	-22.77	31.96	5.59	37.43	100	148	Peak
5745	96.62	96.5			31.99	5.6	37.47	100	148	Average
5745	104.55	104.43			31.99	5.6	37.47	100	148	Peak
5850	38.74	38.44	76.62	-37.88	32.15	5.66	37.51	100	148	Average
5850	58.68	58.38	84.55	-25.87	32.15	5.66	37.51	100	148	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5745MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band



A D T

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

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	38.74	38.62	76.03	-37.29	31.96	5.59	37.43	111	290	Average
5725	59.77	59.65	84.23	-24.46	31.96	5.59	37.43	111	290	Peak
5785	96.03	95.91			32.04	5.62	37.54	111	290	Average
5785	104.23	104.11			32.04	5.62	37.54	111	290	Peak
5850	39.02	38.72	76.03	-37.01	32.15	5.66	37.51	111	290	Average
5850	57.43	57.13	84.23	-26.8	32.15	5.66	37.51	111	290	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	39.32	39.2	76.97	-37.65	31.96	5.59	37.43	100	151	Average
5725	58.78	58.66	85.22	-26.44	31.96	5.59	37.43	100	151	Peak
5785	96.97	96.85			32.04	5.62	37.54	100	151	Average
5785	105.22	105.1			32.04	5.62	37.54	100	151	Peak
5850	38.93	38.63	76.97	-38.04	32.15	5.66	37.51	100	151	Average
5850	57.9	57.6	85.22	-27.32	32.15	5.66	37.51	100	151	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

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

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	38.79	38.67	75.01	-36.22	31.96	5.59	37.43	111	289	Average
5725	59.08	58.96	83.38	-24.3	31.96	5.59	37.43	111	289	Peak
5825	95.01	94.78			32.12	5.64	37.53	111	289	Average
5825	103.38	103.15			32.12	5.64	37.53	111	289	Peak
5850	40.69	40.39	75.01	-34.32	32.15	5.66	37.51	111	289	Average
5850	59.62	59.32	83.38	-23.76	32.15	5.66	37.51	111	289	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	39.18	39.06	75.94	-36.76	31.96	5.59	37.43	100	148	Average
5725	59.21	59.09	84.39	-25.18	31.96	5.59	37.43	100	148	Peak
5825	95.94	95.71			32.12	5.64	37.53	100	148	Average
5825	104.39	104.16			32.12	5.64	37.53	100	148	Peak
5850	40.34	40.04	75.94	-35.6	32.15	5.66	37.51	100	148	Average
5850	59.14	58.84	84.39	-25.25	32.15	5.66	37.51	100	148	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

802.11n (40MHz)

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

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	51.06	50.94	71.03	-19.97	31.96	5.59	37.43	112	289	Average
5725	64.92	64.8	80.79	-15.87	31.96	5.59	37.43	112	289	Peak
5755	91.03	90.89			32.01	5.6	37.47	112	289	Average
5755	100.79	100.65			32.01	5.6	37.47	112	289	Peak
5850	39.42	39.12	71.03	-31.61	32.15	5.66	37.51	112	289	Average
5850	59.17	58.87	80.79	-21.62	32.15	5.66	37.51	112	289	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	52.54	52.42	72.3	-19.76	31.96	5.59	37.43	100	149	Average
5725	65.11	64.99	81.62	-16.51	31.96	5.59	37.43	100	149	Peak
5755	92.3	92.16			32.01	5.6	37.47	100	149	Average
5755	101.62	101.48			32.01	5.6	37.47	100	149	Peak
5850	38.9	38.6	72.3	-33.4	32.15	5.66	37.51	100	149	Average
5850	58.79	58.49	81.62	-22.83	32.15	5.66	37.51	100	149	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Peter Weng

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	39.24	39.12	71.47	-32.23	31.96	5.59	37.43	114	290	Average
5725	58.79	58.67	81.18	-22.39	31.96	5.59	37.43	114	290	Peak
5795	91.47	91.31			32.07	5.63	37.54	114	290	Average
5795	101.18	101.02			32.07	5.63	37.54	114	290	Peak
5850	39.76	39.46	71.47	-31.71	32.15	5.66	37.51	114	290	Average
5850	58.9	58.6	81.18	-22.28	32.15	5.66	37.51	114	290	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	39.83	39.71	72.6	-32.77	31.96	5.59	37.43	100	154	Average
5725	59.05	58.93	81.98	-22.93	31.96	5.59	37.43	100	154	Peak
5795	92.6	92.44			32.07	5.63	37.54	100	154	Average
5795	101.98	101.82			32.07	5.63	37.54	100	154	Peak
5850	39.63	39.33	72.6	-32.97	32.15	5.66	37.51	100	154	Average
5850	58.8	58.5	81.98	-23.18	32.15	5.66	37.51	100	154	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5795MHz: Fundamental frequency.
- 5725MHz & 5850MHz: Out of restricted band

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 section 4.2.2.

5.2.3 TEST PROCEDURES

Same as section 4.2.3.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

5.2.5 TEST SETUP

Same as section 4.2.5.

5.2.6 EUT OPERATING CONDITIONS

Same as section 4.1.6.

5.2.7 TEST RESULTS

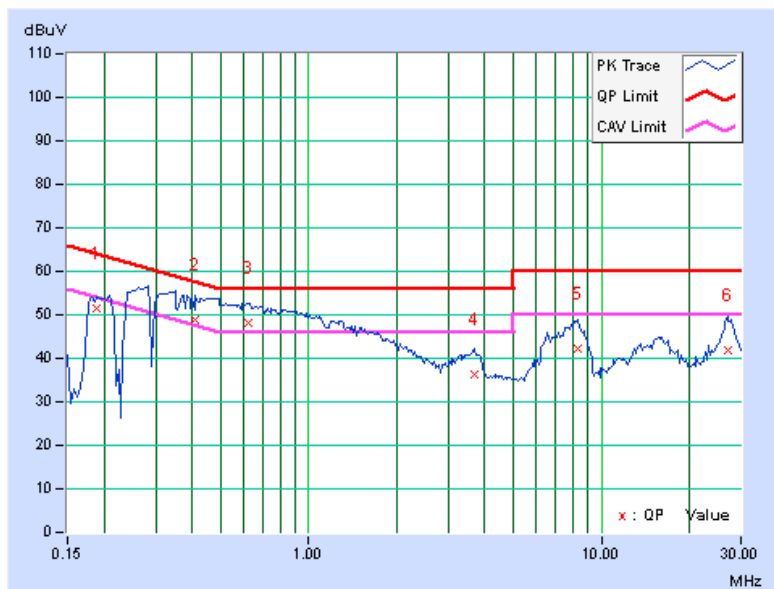
CONDUCTED WORST-CASE DATA :

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	0.18906	0.28	51.19	36.99	51.47	37.27	64.08	54.08	-12.61	-16.81
2	0.41172	0.30	48.66	30.95	48.96	31.25	57.61	47.61	-8.65	-16.36
3	0.61875	0.31	47.86	31.03	48.17	31.34	56.00	46.00	-7.83	-14.66
4	3.66406	0.42	35.78	25.03	36.20	25.45	56.00	46.00	-19.80	-20.55
5	8.33203	0.48	41.89	31.02	42.37	31.50	60.00	50.00	-17.63	-18.50
6	26.96094	0.50	41.32	31.99	41.82	32.49	60.00	50.00	-18.18	-17.51

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

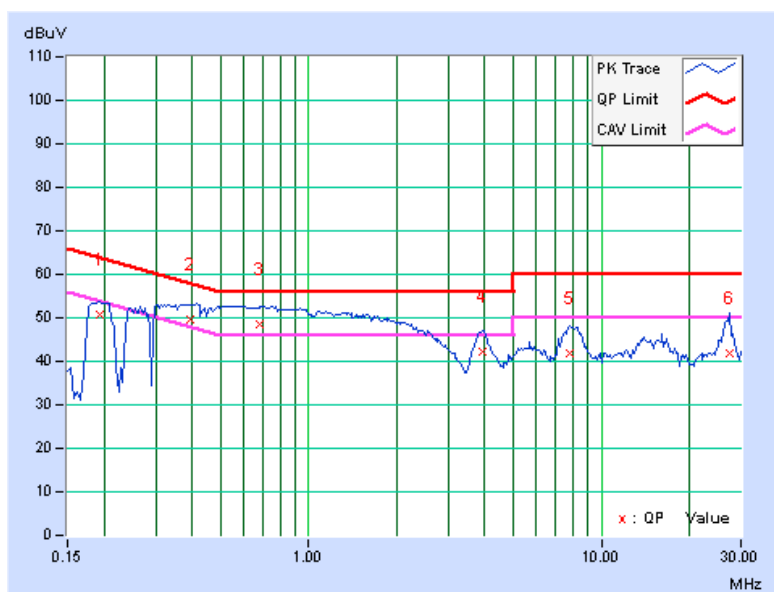


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]	(dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.28	50.54	34.98	50.82	35.26	63.91	53.91	-13.09	-18.65
2	0.39219	0.30	49.46	30.39	49.76	30.69	58.02	48.02	-8.26	-17.33
3	0.68125	0.32	48.17	31.81	48.49	32.13	56.00	46.00	-7.51	-13.87
4	3.92578	0.44	41.90	34.49	42.34	34.93	56.00	46.00	-13.66	-11.07
5	7.79297	0.49	41.25	32.93	41.74	33.42	60.00	50.00	-18.26	-16.58
6	27.37109	0.51	41.16	32.49	41.67	33.00	60.00	50.00	-18.33	-17.00

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 section 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 section 4.3.4.

5.3.5 DEVIATION FROM TEST STANDARD

No deviation.

5.3.6 EUT OPERATING CONDITIONS

Same as section 4.3.6.

5.3.7 TEST RESULTS

MODE A

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.41	0.5	PASS
157	5785	16.41	0.5	PASS
165	5825	16.41	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.98	0.5	PASS
157	5785	16.97	0.5	PASS
165	5825	16.98	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	36.38	0.5	PASS
159	5795	36.39	0.5	PASS



A D T

MODE B

802.11n (20MHz)

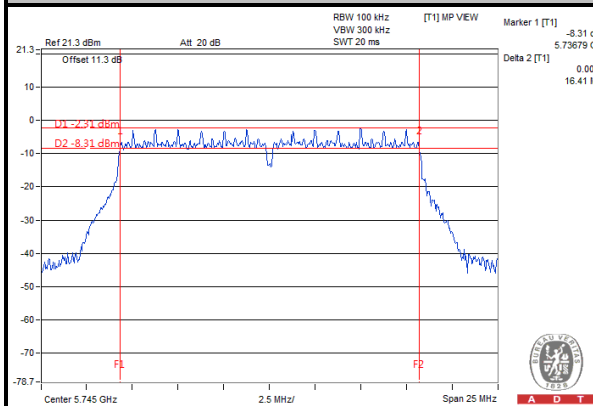
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.20	17.42	0.5	PASS
157	5785	15.21	16.03	0.5	PASS
165	5825	15.20	15.19	0.5	PASS

802.11n (40MHz)

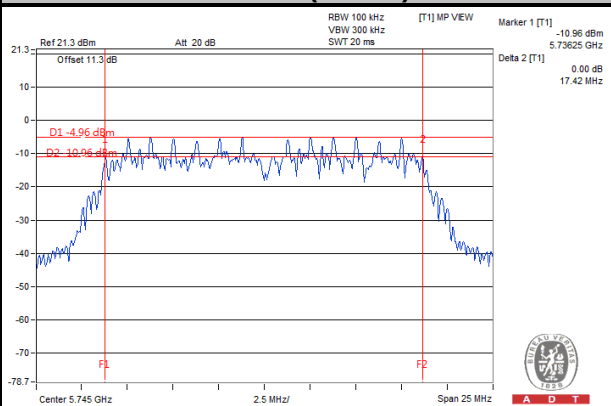
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	35.86	35.99	0.5	PASS
159	5795	36.11	35.92	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

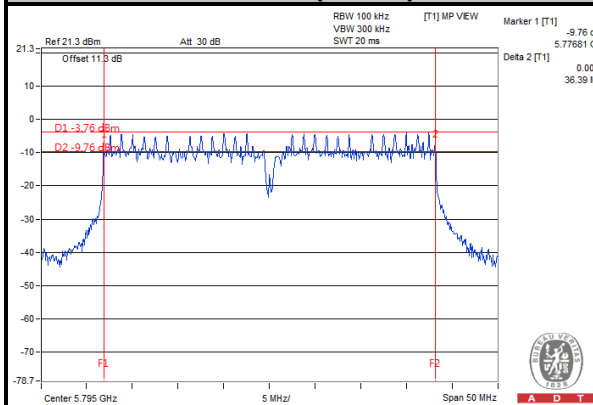
802.11a



802.11n (20MHz)



802.11n (40MHz)



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 section 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 section 4.4.4.

5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

5.4.6 EUT OPERATING CONDITIONS

Same as section 4.3.6.

5.4.7 TEST RESULTS

MODE A

802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
149	5745	103.04	20.13	30	PASS
157	5785	87.30	19.41	30	PASS
165	5825	75.51	18.78	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
149	5745	103.99	20.17	30	PASS
157	5785	73.11	18.64	30	PASS
165	5825	82.04	19.14	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS / FAIL
151	5755	118.30	20.73	30	PASS
159	5795	115.35	20.62	30	PASS

MODE B

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	19.72	20.17	197.748	22.96	30	PASS
157	5785	19.47	20.26	194.681	22.89	30	PASS
165	5825	19.10	20.00	181.283	22.58	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	21.07	21.94	284.253	24.54	30	PASS
159	5795	20.83	21.33	256.891	24.10	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 section 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 section 4.5.4.

5.5.5 DEVIATION FROM TEST STANDARD

No deviation.

5.5.6 EUT OPERATING CONDITION

Same as section 4.3.6.

5.5.7 TEST RESULTS

MODE A

802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS / FAIL
149	5745	-8.77	8	PASS
157	5785	-10.11	8	PASS
165	5825	-9.30	8	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS / FAIL
149	5745	-7.72	8	PASS
157	5785	-7.61	8	PASS
165	5825	-7.57	8	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS / FAIL
151	5755	-10.71	8	PASS
159	5795	-8.57	8	PASS

MODE B

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-5.99	3.01	-2.98	8	PASS
	157	5785	-8.01	3.01	-5.00	8	PASS
	165	5825	-7.99	3.01	-4.98	8	PASS
1	149	5745	-9.15	3.01	-6.14	8	PASS
	157	5785	-4.73	3.01	-1.72	8	PASS
	165	5825	-6.77	3.01	-3.76	8	PASS

NOTE: Directional gain = $0.7\text{dBi} + 10\log(2) = 3.71\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

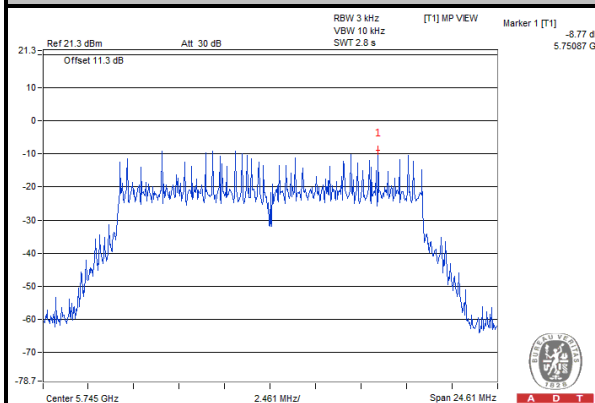
802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-11.65	3.01	-8.64	8	PASS
	159	5795	-9.94	3.01	-6.93	8	PASS
1	151	5755	-10.78	3.01	-7.77	8	PASS
	159	5795	-8.47	3.01	-5.46	8	PASS

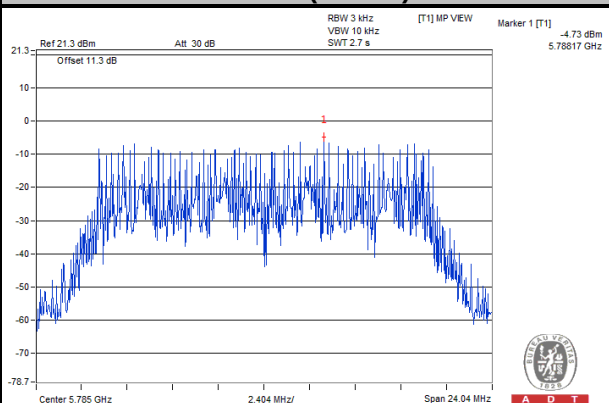
NOTE: Directional gain = $0.7\text{dBi} + 10\log(2) = 3.71\text{dBi} < 6\text{dBi}$, so the limit no need to reduced.

SPECTRUM PLOT OF WORST VALUE

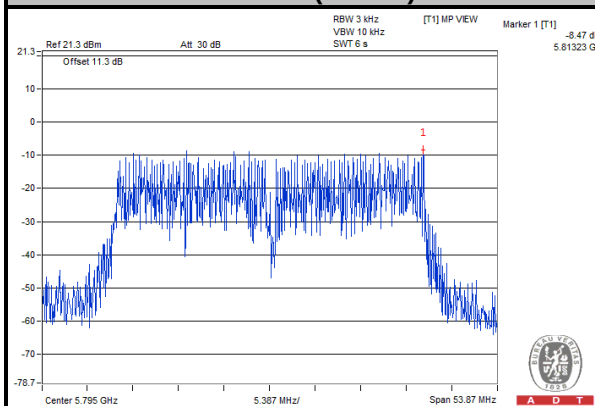
802.11a



802.11n (20MHz)



802.11n (40MHz)



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 section 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 section 4.6.4

5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

5.6.6 EUT OPERATING CONDITION

Same as section 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.

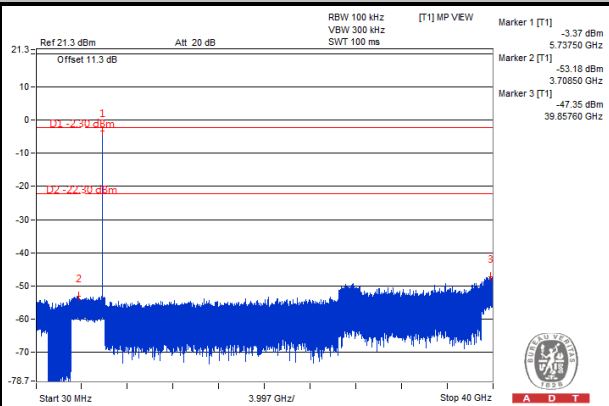
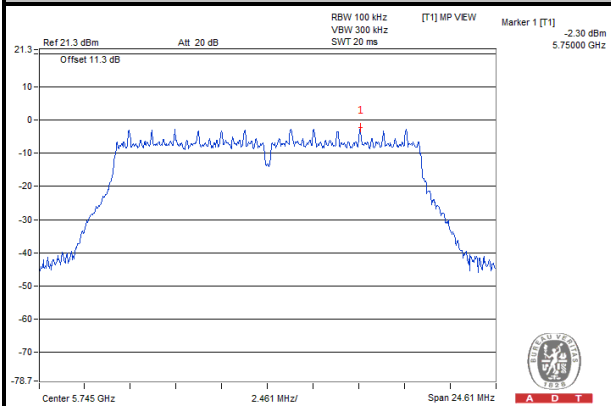


A D T

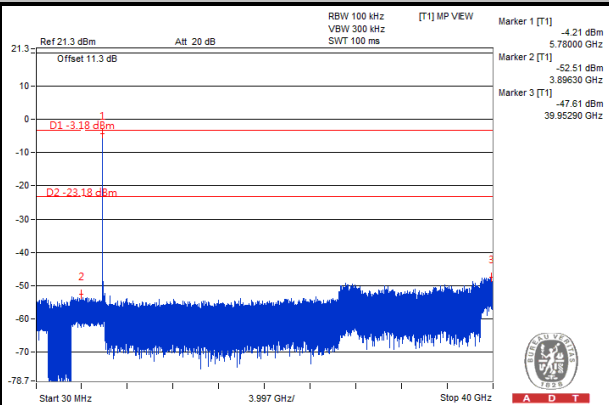
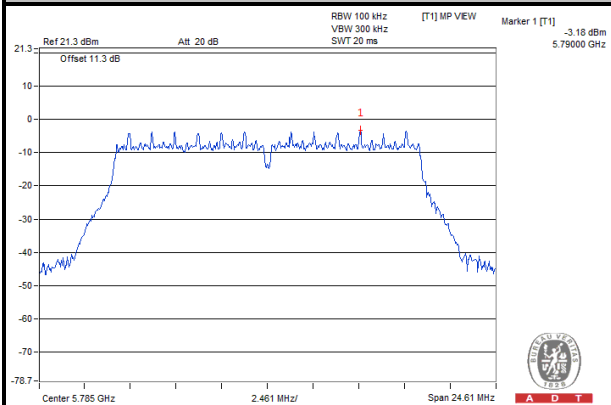
MODE A

802.11a

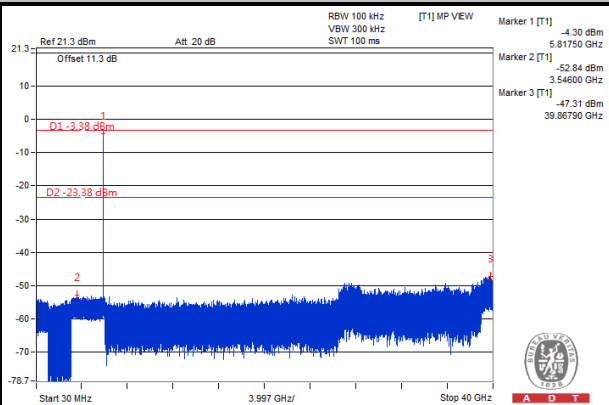
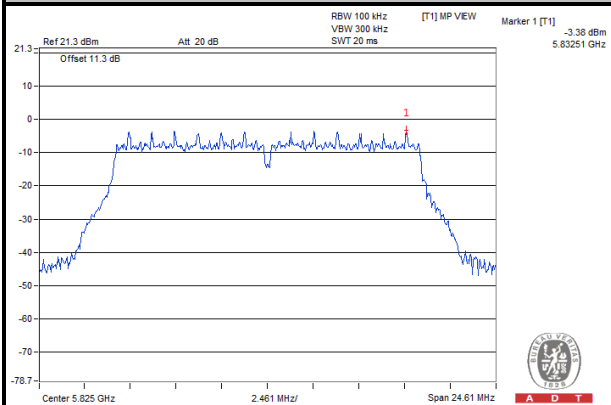
CH 149



CH 157



CH 165

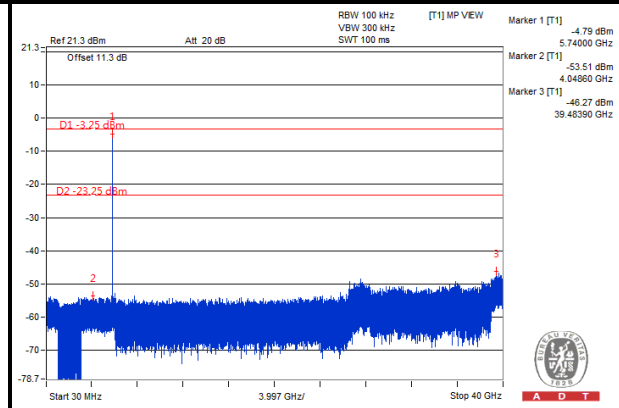
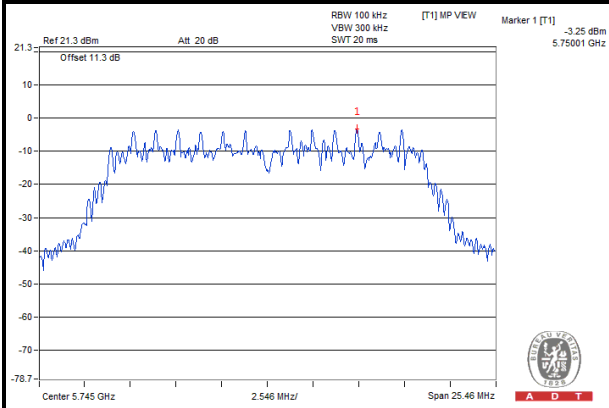




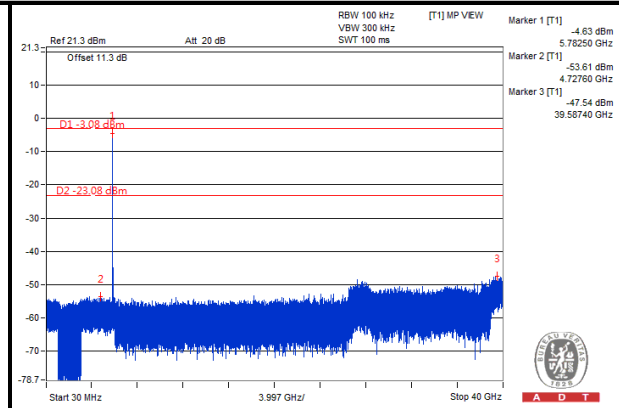
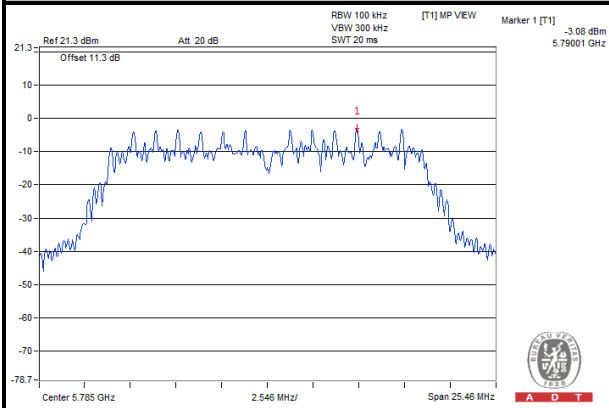
A D T

802.11n (20MHz)

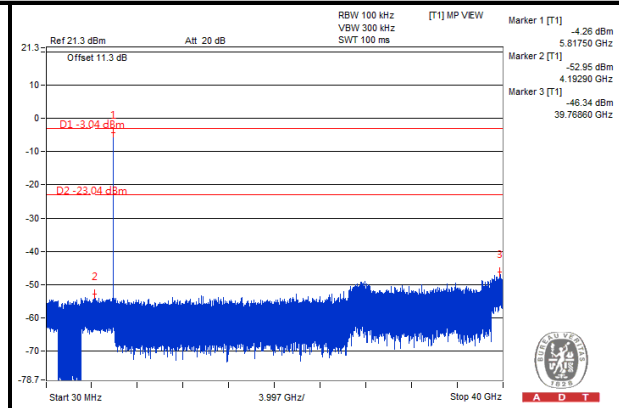
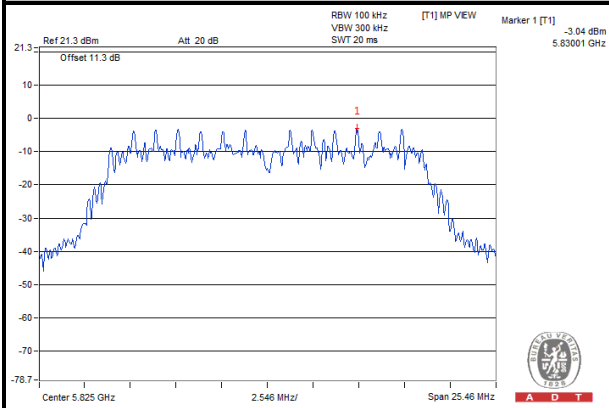
CH 149



CH 157



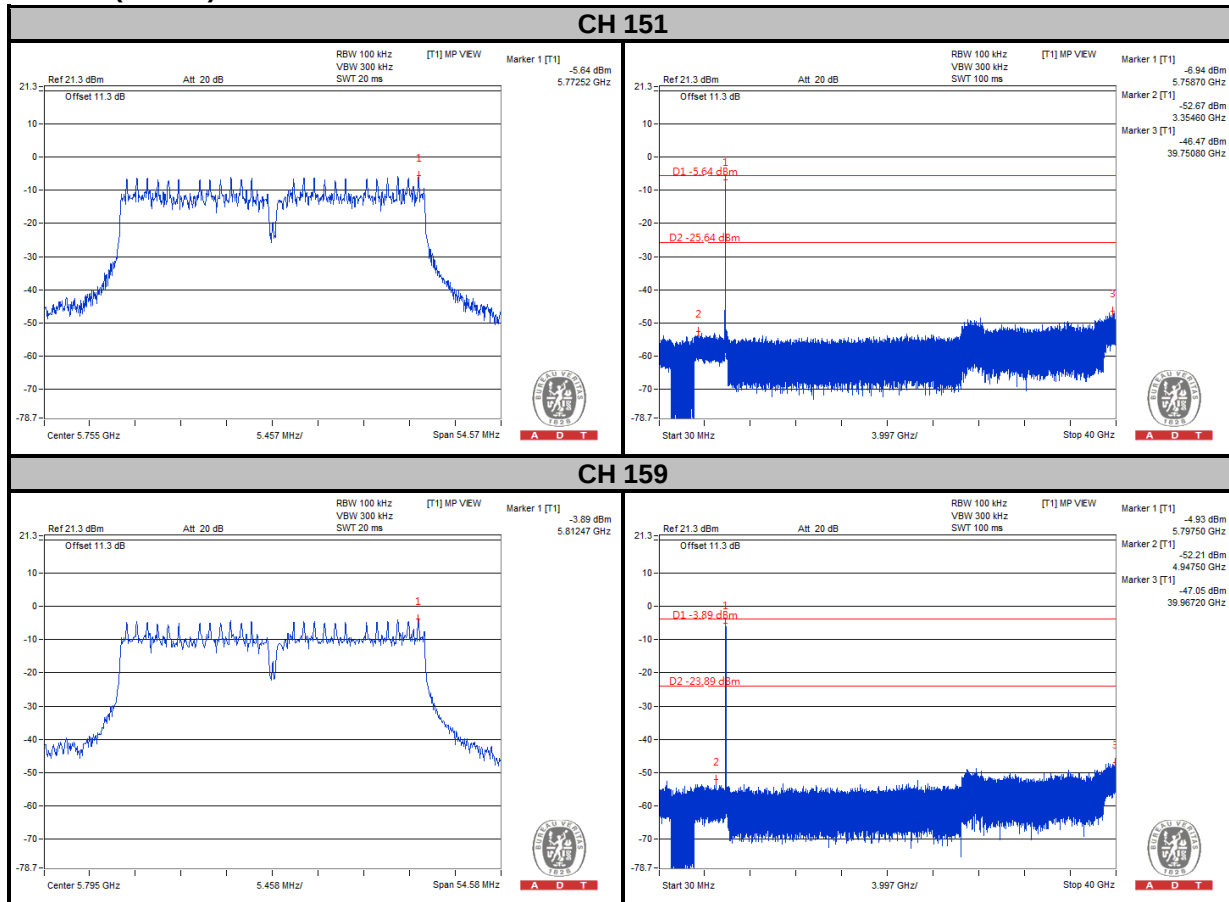
CH 165





A D T

802.11n (40MHz)





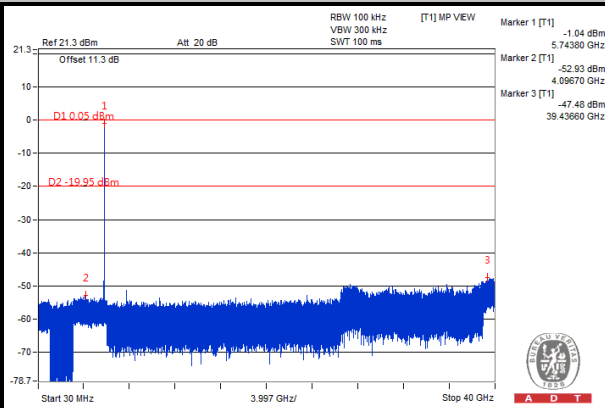
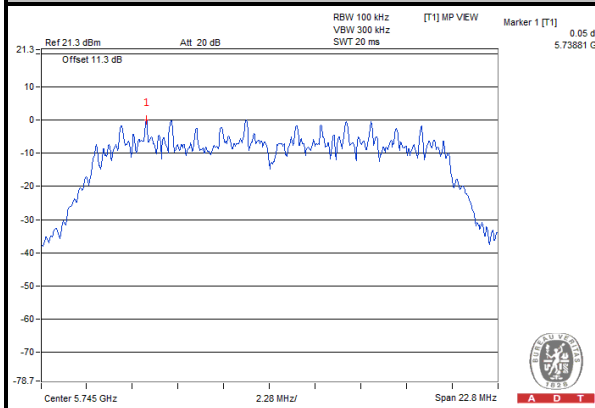
A D T

MODE B

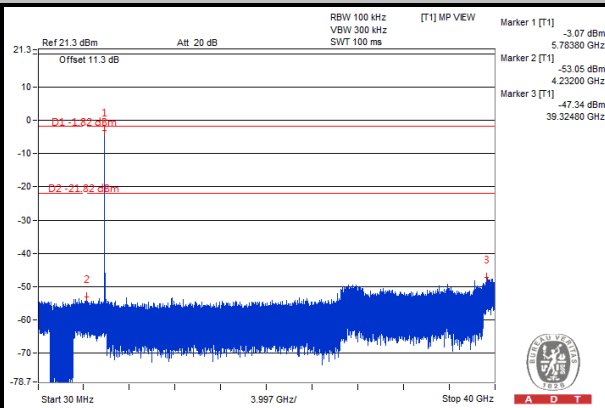
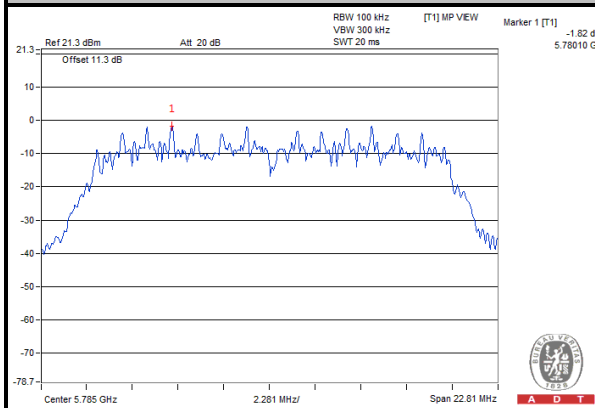
CHAIN 0

802.11n (20MHz)

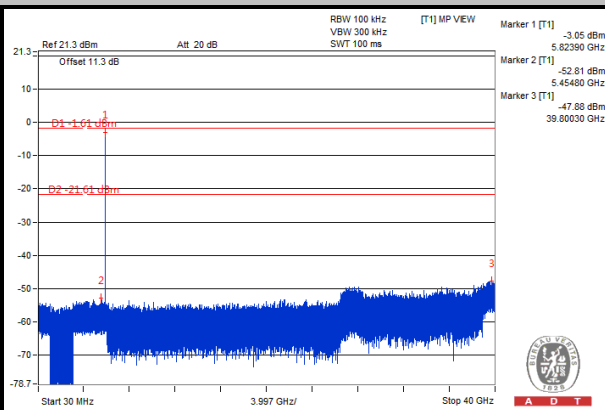
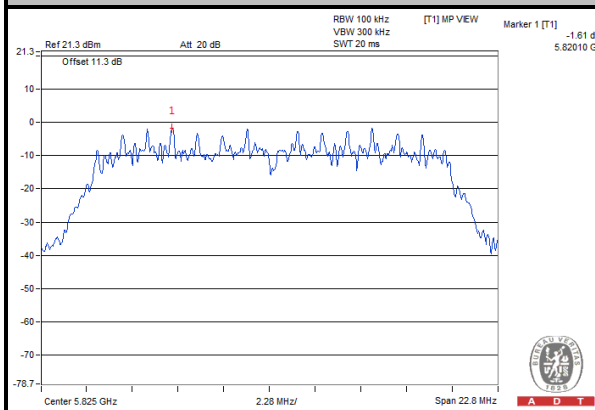
CH 149



CH 157



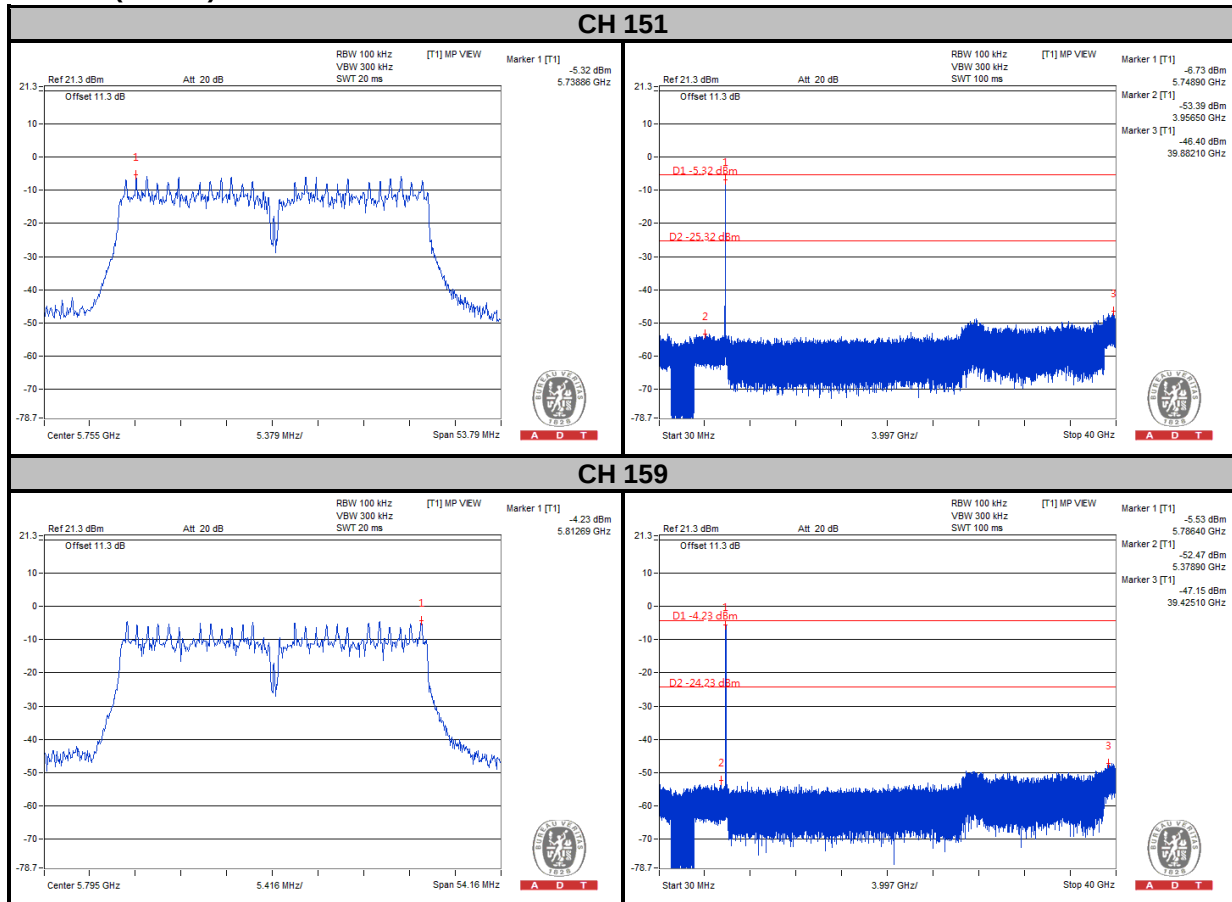
CH 165





A D T

802.11n (40MHz)



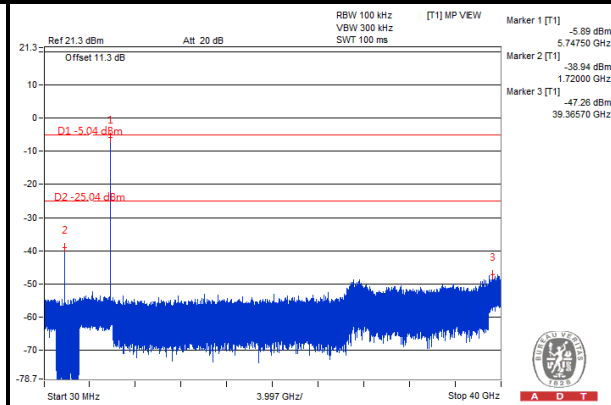
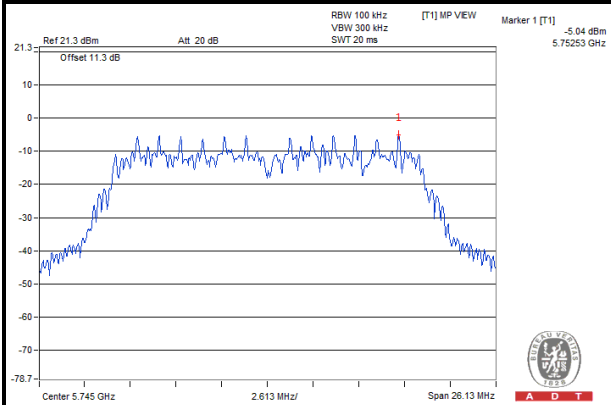


A D T

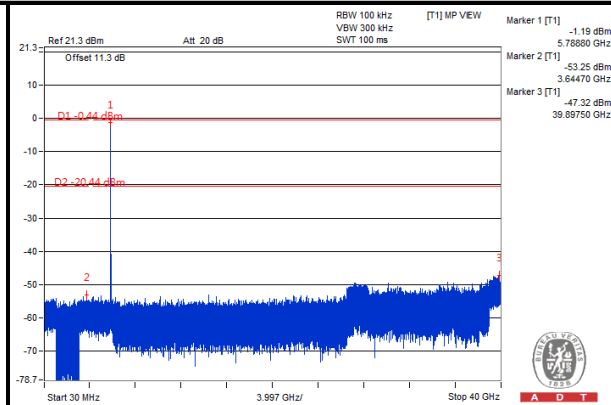
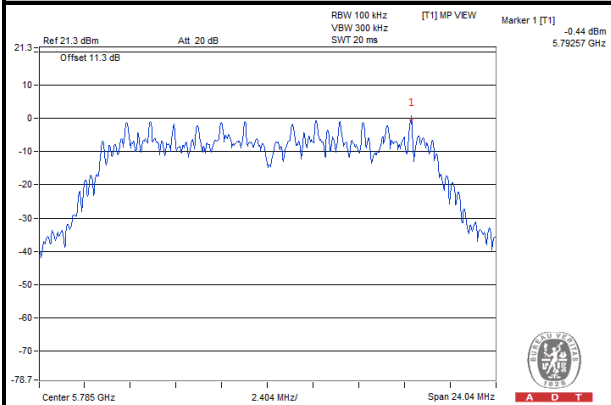
CHAIN 1

802.11n (20MHz)

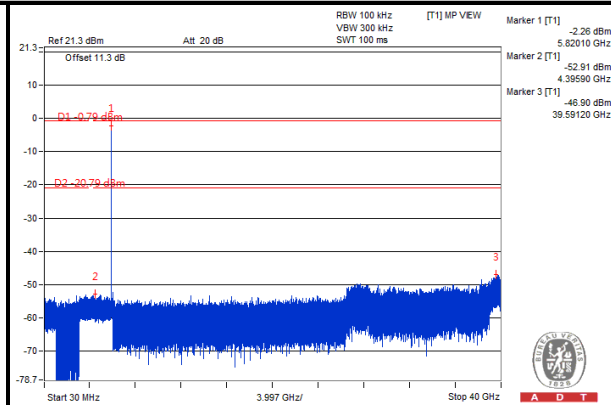
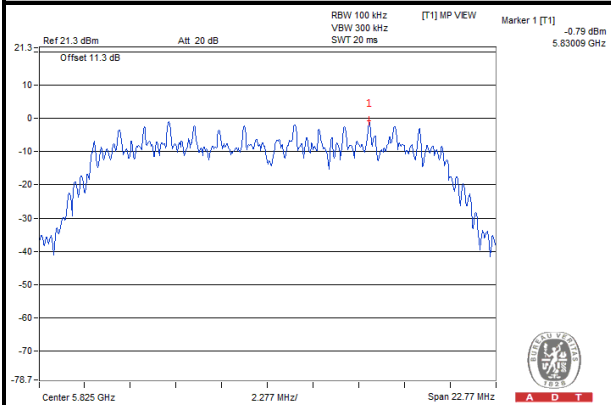
CH 149



CH 157



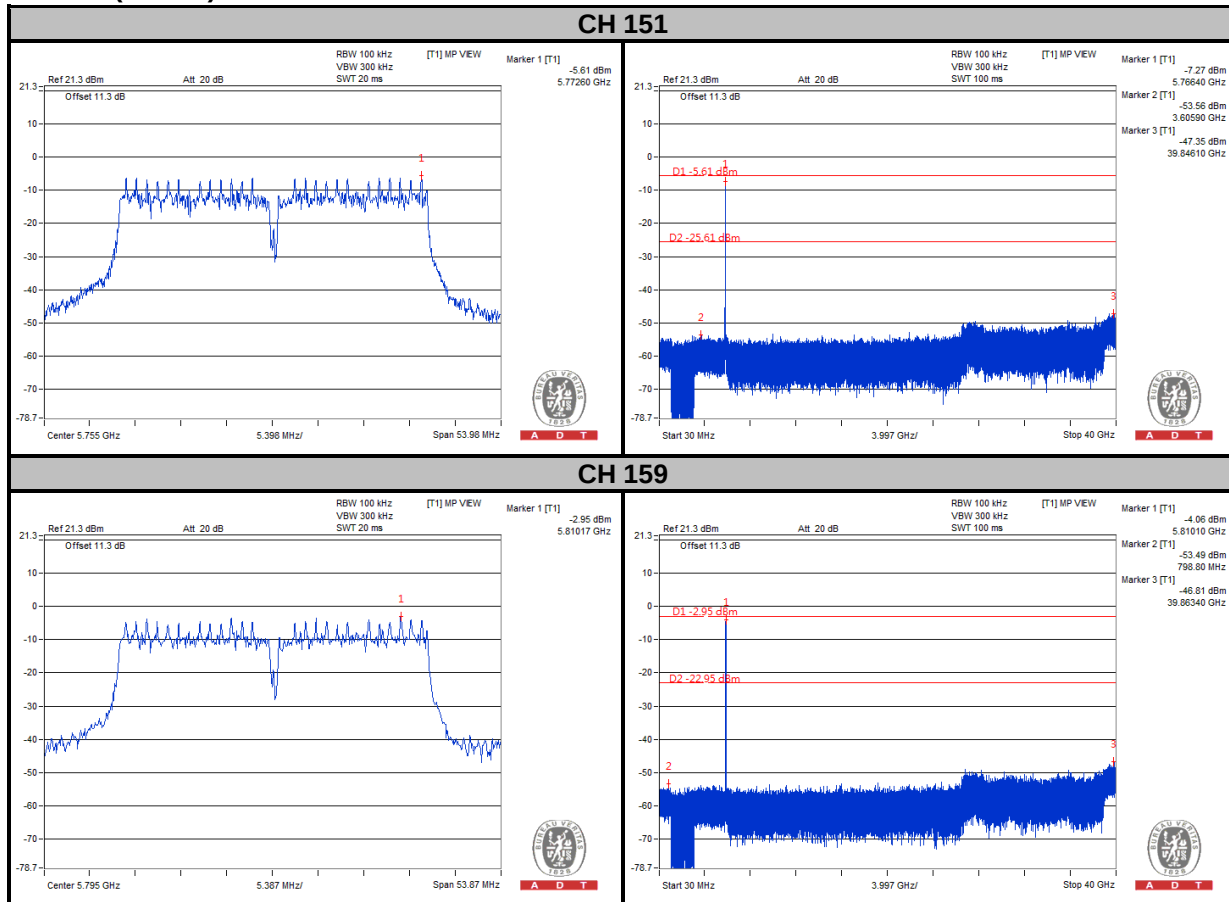
CH 165





A D T

802.11n (40MHz)





A D T

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---