



FCC TEST REPORT (15.407)

REPORT NO.: RF150610C15A

MODEL NO.: AP6234A

FCC ID: ZQ6-AP6234A

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TESTED: Jul. 07, 2015 ~ Jul. 09, 2015

ISSUED: Jul. 16, 2015

APPLICANT: Ampak Technology Inc.

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ISSUED BY: Bureau Veritas Consumer Products Services
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TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1. CERTIFICATION	5
2. SUMMARY OF TEST RESULTS	6
2.1 MEASUREMENT UNCERTAINTY	6
3. GENERAL INFORMATION	7
3.1 GENERAL DESCRIPTION OF EUT	7
3.2 DESCRIPTION OF TEST MODES	9
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	10
3.3 DESCRIPTION OF SUPPORT UNITS	12
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST	12
3.4 DUTY CYCLE TEST SIGNAL	13
3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	17
4. TEST TYPES AND RESULTS	18
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	18
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	18
4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	18
4.1.3 TEST INSTRUMENTS	19
4.1.4 TEST PROCEDURES	20
4.1.5 DEVIATION FROM TEST STANDARD	20
4.1.6 TEST SETUP	21
4.1.7 EUT OPERATING CONDITIONS	21
4.1.8 TEST RESULTS	22
4.2 TRANSMIT POWER MEASUREMENT	39
4.2.1 LIMITS OF TRANSMIT POWER MEASUREMENT	39
4.2.2 TEST SETUP	39
4.2.3 TEST INSTRUMENTS	39
4.2.4 TEST PROCEDURE	40
4.2.5 DEVIATION FROM TEST STANDARD	40
4.2.6 EUT OPERATING CONDITIONS	40
4.2.7 TEST RESULTS	41
4.3 PEAK POWER SPECTRAL DENSITY MEASUREMENT	42
4.3.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	42
4.3.2 TEST SETUP	42
4.3.3 TEST INSTRUMENTS	42
4.3.4 TEST PROCEDURES	42
4.3.5 DEVIATION FROM TEST STANDARD	43
4.3.6 EUT OPERATING CONDITIONS	43
4.3.7 TEST RESULTS	44
4.4 FREQUENCY STABILITY	48
4.4.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT	48
4.4.2 TEST SETUP	48
4.4.3 TEST INSTRUMENTS	48
4.4.4 TEST PROCEDURE	49
4.4.5 DEVIATION FROM TEST STANDARD	49
4.4.6 EUT OPERATING CONDITION	49
4.4.7 TEST RESULTS	50
4.5 6dB BANDWIDTH MEASUREMENT	51
4.5.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	51
4.5.2 TEST SETUP	51
4.5.3 TEST INSTRUMENTS	51
4.5.4 TEST PROCEDURE	51



A D T

4.5.5	DEVIATION FROM TEST STANDARD	51
4.5.6	EUT OPERATING CONDITIONS	51
4.5.7	TEST RESULTS.....	52
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	54
6.	INFORMATION ON THE TESTING LABORATORIES	55
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	56



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF150610C15A	Original release	Jul. 16, 2015

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	N/A	Refer to Note
15.407(b/1/2/3) (b)(6)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -3.2dB at 5722MHz.
15.407(a/1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

Note: Only the test item for conducted and radiated emission had been tested for this addendum and the test data for 5260 ~ 5320MHz and 5500 ~ 5700MHz is referring to module report (Report No.: FR440102-11AN, brand: Ampak, model: AP6234A, AP6234AL, FCC ID: ZQ6-AP6234A). The test data for AC power conducted emission is also referring to above module report.

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
Radiated emissions	30MHz ~ 200MHz	2.01 dB
	200MHz ~ 1000MHz	2.02 dB
	1GHz ~ 18GHz	1.01 dB
	18GHz ~ 40GHz	1.15 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	WiFi Dual Band + BT combo module
MODEL NO.	AP6234A
POWER SUPPLY	5.0Vdc (from host equipment)
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to MCS7
OPERATING FREQUENCY	5180 ~ 5240MHz, 5745 ~ 5825MHz
NUMBER OF CHANNEL	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	34.59mW for 5180 ~ 5240MHz 35.73mW for 5745 ~ 5825MHz
ANTENNA TYPE	PIFA antenna with 4.78dBi gain (5180 ~ 5240MHz) PIFA antenna with 3.15dBi gain (5745 ~ 5825MHz)
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 is authorized for use in specific End-product. Please refer to below table for more details.

Product	BRAND	MODEL	DIFFERENCE
ASUS Tablet	ASUS	T100H	All models are electrically identical, different model names are for marketing purpose.
		R104H	
		H100H	



2. The End-product (ASUS Tablet) contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
Adapter	ASUS	AD2022320	I/P: 100-240Vac, 50/60Hz, 0.5A O/P: 5Vdc or 9Vdc, 2A
Battery	ASUS	C12N1435	3.8Vdc, 30Wh
USB Cable 1	ASUS	L65U2009-CS-B	0.85m shielded cable w/o core
USB Cable 2	ASUS	AA781000	0.85m shielded cable w/o core
USB Cable 3	ASUS	CUBB04M-AS0D0-EF	0.85m shielded cable w/o core
Front Camera	CHICONY	CCFE21620003871LH	2M
Front Camera	LITEON	5SF201P2	2M
Rear Camera	CHICONY	CJAF51720003870LH	5M
LCD Panel	AUO	B101EAN02.0	10.1"
Main Board	ASUS	T100HA_MB MAIN BOARD	--
CPU	Intel	INT Z8500	1.44GHz/2M SR27N BGA PIN Number: FCBGA 1380
WLAN +BT Module	AMPAK	AP6234A	--
eMMC 1	Samsung	KLMBG4GEND-B031	32GB eMMC
eMMC 2	SanDisk	SDIN9DS2-32G	32GB eMMC
eMMC 3	Samsung	KLMCG8GEND-B031	64GB eMMC
eMMC 4	SanDisk	SDIN9DS2-64G	64GB eMMC
eMMC 5	Samsung	128GB FBGA153	128GB eMMC

3. 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.



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3.2 DESCRIPTION OF TEST MODES

WLAN 5180 ~ 5240MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

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



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3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

APCM: Antenna Port Conducted Measurement

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

RADIATED EMISSION TEST (ABOVE 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	MCS0
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (20MHz)	5745-5825	149 to 165	149	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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	MCS0
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	MCS0
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Karl Lee
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Karl Lee
APCM	25deg. C, 65%RH	120Vac, 60Hz	Carlos Chen

3.3 DESCRIPTION OF SUPPORT UNITS

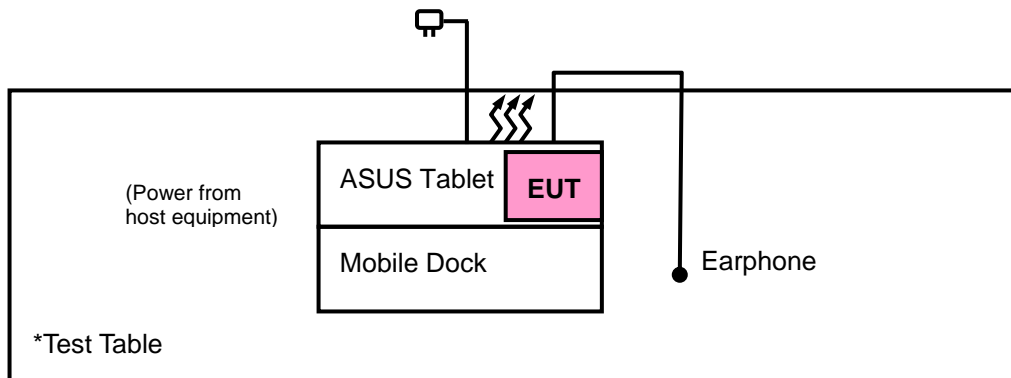
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Mobile Dock	ASUS	T100H Mobile Dock, R104H Mobile Dock, H100H Mobile Dock	N/A	N/A
2	Earphone	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	N/A

NOTE: 1. All power cords of the above support units are non shielded (1.8m).

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 DUTY CYCLE TEST SIGNAL

MODULATION TYPE: BPSK

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

802.11a: Duty cycle = 1.362/1.514 = 0.9, Duty factor = $10 * \log(1/0.9) = 0.46$

802.11n (20MHz): Duty cycle = 1.266/1.394 = 0.908, Duty factor = $10 * \log(1/0.908) = 0.42$

802.11n (40MHz): Duty cycle = 584.93/729.16 = 0.802, Duty factor = $10 * \log(1/0.802) = 0.96$





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MODULATION TYPE: QPSK

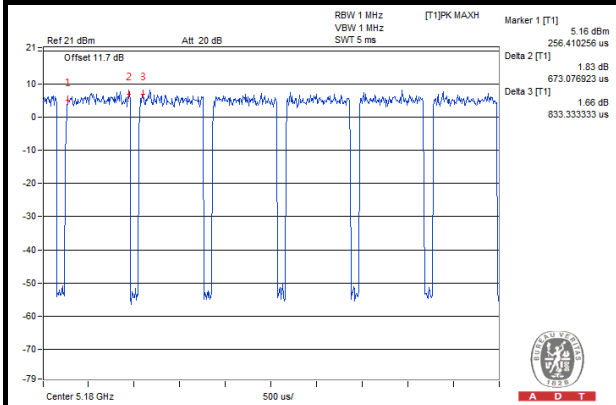
If duty cycle is < 98%, duty factor shall be considered.

802.11a: Duty cycle = $673.07/833.33 = 0.808$, Duty factor = $10 * \log(1/0.808) = 0.93$

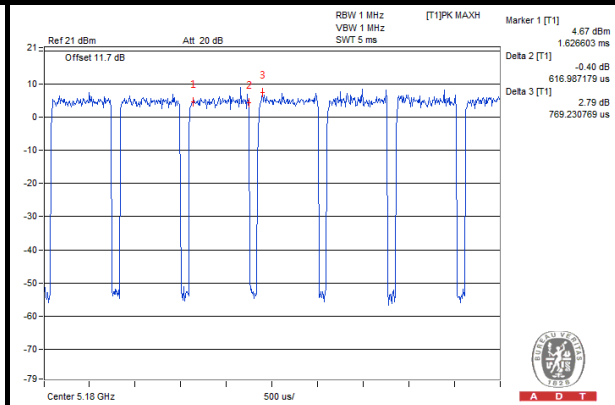
802.11n (20MHz): Duty cycle = $616.98/769.23 = 0.802$, Duty factor = $10 * \log(1/0.802) = 0.96$

802.11n (40MHz): Duty cycle = $296.47/432.69 = 0.685$, Duty factor = $10 * \log(1/0.685) = 1.64$

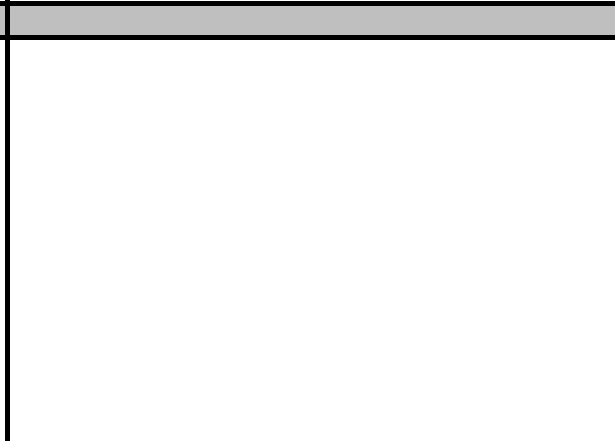
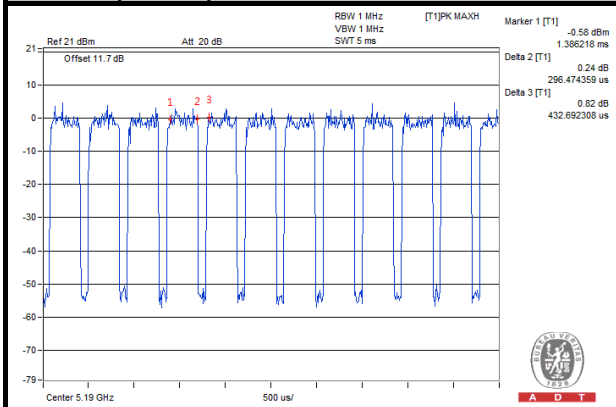
802.11a



802.11n (20MHz)



802.11n (40MHz)





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MODULATION TYPE: 16QAM

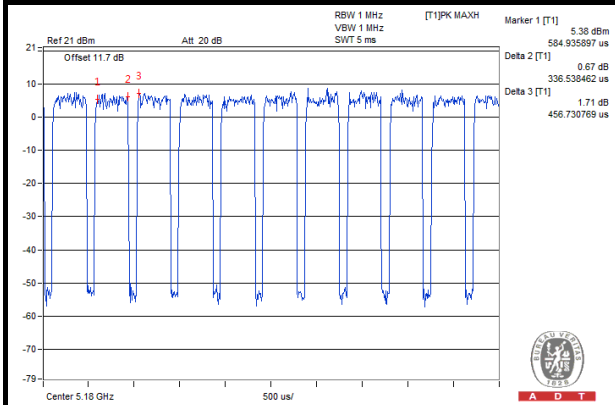
If duty cycle is < 98%, duty factor shall be considered.

802.11a: Duty cycle = 336.53/456.73 = 0.737, Duty factor = $10 * \log(1/0.737) = 1.33$

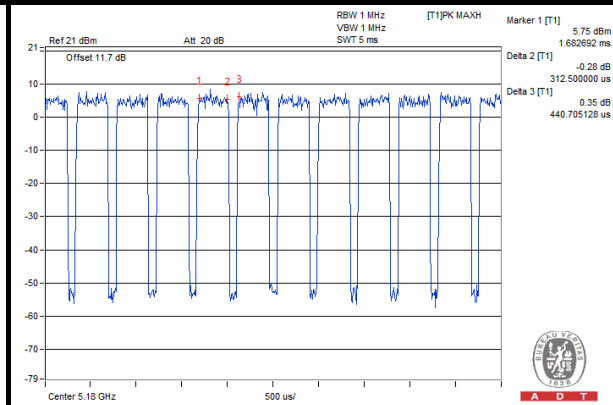
802.11n (20MHz): Duty cycle = 312.50/440.70 = 0.709, Duty factor = $10 * \log(1/0.709) = 1.49$

802.11n (40MHz): Duty cycle = 168.26/288.46 = 0.583, Duty factor = $10 * \log(1/0.583) = 2.34$

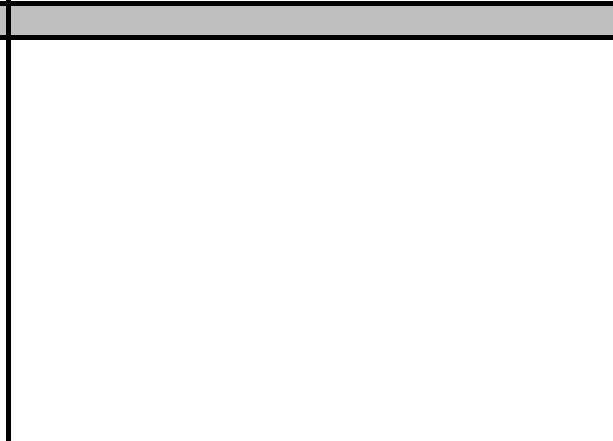
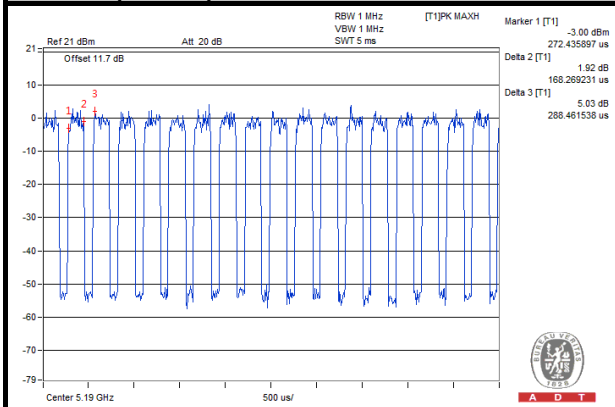
802.11a



802.11n (20MHz)



802.11n (40MHz)





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MODULATION TYPE: 64QAM

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

802.11a: Duty cycle = $160.25/296.47 = 0.541$, Duty factor = $10 * \log(1/0.541) = 2.67$

802.11n (20MHz): Duty cycle = $160.25/280.44 = 0.571$, Duty factor = $10 * \log(1/0.571) = 2.43$

802.11n (40MHz): Duty cycle = $88.14/216.34 = 0.407$, Duty factor = $10 * \log(1/0.407) = 3.90$





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 E (15.407)

789033 D02 General UNII Test Procedures New Rules v01

644545 D01 Guidance for IEEE 802 11ac v01r02

ANSI C63.10-2013

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

NOTE: The EUT 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

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:

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 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK: -27 (dBm/MHz) ^{*1} PK: -17 (dBm/MHz) ^{*2}	PK: 68.2 (dBµV/m) ^{*1} PK: 78.2 (dBµV/m) ^{*2}

NOTE: ^{*1} beyond 10MHz of the band edge ^{*2} within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$



4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Spectrum Analyzer Agilent Technologies	N9038A	MY52260177	May 19, 2015	May 18, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna Schwarbeck	VULB9168	9168-148	Feb. 02, 2015	Feb. 01, 2016
HORN Antenna ETS-Lindgren	3117	00143293	Aug. 28, 2014	Aug. 27, 2015
Agilent Communications Tester-Wireless	8960 Series 10	9170-480	Feb. 05, 2015	Feb. 04, 2016
Preamplifier Agilent	310N	187226	Jun. 29, 2015	Jun. 28, 2016
Preamplifier Agilent	83017A	980116	Jan. 09, 2015	Jan. 08, 2016
Power Meter Anritsu	ML2495A	1232002	Sep. 17, 2014	Sep. 16, 2015
Power Sensor Anritsu	MA2411B	1207325	Sep. 17, 2014	Sep. 16, 2015
RF signal cable ETS-LINDGREN	5D-FB	Cable-RF1-01(RFC-SMS-100-SMS-120+MY13379/4)	Oct. 09, 2014	Oct. 08, 2015
RF signal cable ETS-LINDGREN	8D-FB	Cable-RF1-02(RFC-SMS-100-NMS-120+8120_5140_2911)	Oct. 09, 2014	Oct. 08, 2015
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	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 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 HsinTien Chamber 1.
 4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 5. The IC Site Registration No. is IC 7450I-1.

4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. 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. The antenna is a broadband antenna, and its height 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 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

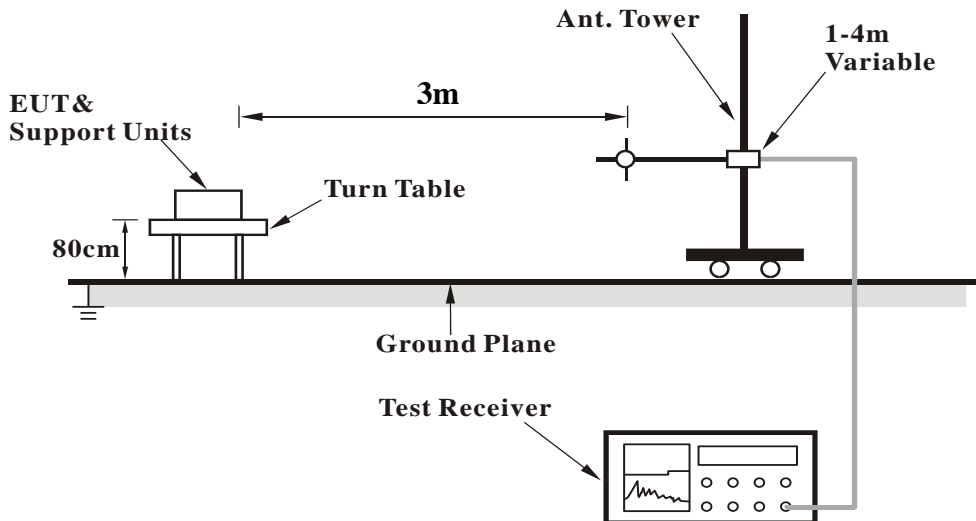
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency 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.

4.1.5 DEVIATION FROM TEST STANDARD

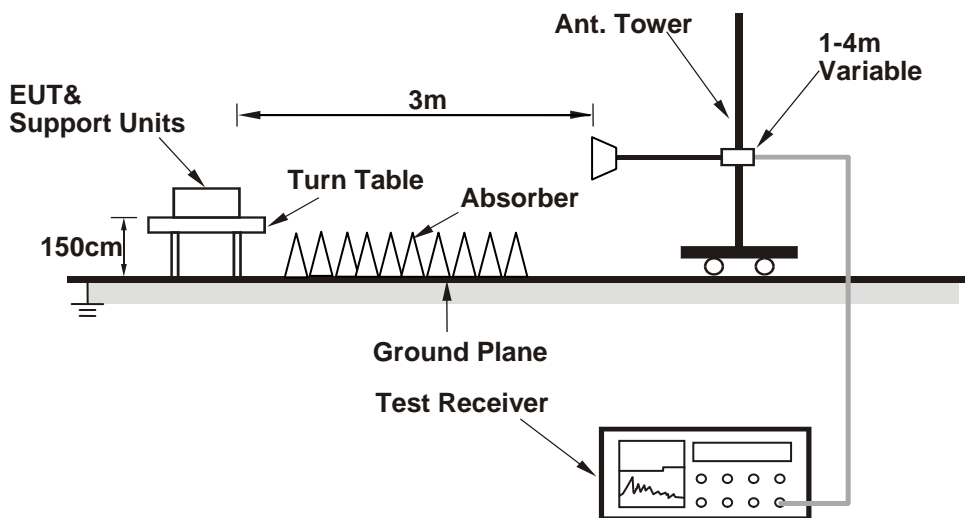
No deviation.

4.1.6 TEST SETUP

<Frequency Range 30MHz ~ 1GHz>



<Frequency Range above 1GHz>



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

4.1.7 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.



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4.1.8 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
5148	48.91	40.66	54	-5.09	34.12	8.13	34	157	333	Average
5148	64.72	56.47	74	-9.28	34.12	8.13	34	157	333	Peak
5180	101.67	93.36			34.15	8.16	34	157	333	Average
5180	109.09	100.78			34.15	8.16	34	157	333	Peak
5422	45.6	36.83	54	-8.4	34.33	8.48	34.04	157	333	Average
5422	57.8	49.03	74	-16.2	34.33	8.48	34.04	157	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
5150	48.17	39.92	54	-5.83	34.12	8.13	34	100	7	Average
5150	66.01	57.76	74	-7.99	34.12	8.13	34	100	7	Peak
5180	99.7	91.39			34.15	8.16	34	100	7	Average
5180	107.16	98.85			34.15	8.16	34	100	7	Peak
5378	43.77	35.09	54	-10.23	34.31	8.41	34.04	100	7	Average
5378	57.02	48.34	74	-16.98	34.31	8.41	34.04	100	7	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5180MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 44	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
5102	44.25	36.09	54	-9.75	34.08	8.07	33.99	194	335	Average
5102	56.46	48.3	74	-17.54	34.08	8.07	33.99	194	335	Peak
5220	101.55	93.16			34.17	8.22	34	194	335	Average
5220	109.02	100.63			34.17	8.22	34	194	335	Peak
5438	45.24	36.45	54	-8.76	34.35	8.48	34.04	194	335	Average
5438	57.24	48.45	74	-16.76	34.35	8.48	34.04	194	335	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
5044	44.05	35.99	54	-9.95	34.04	8	33.98	106	7	Average
5044	57.45	49.39	74	-16.55	34.04	8	33.98	106	7	Peak
5220	99.8	91.41			34.17	8.22	34	106	7	Average
5220	107.53	99.14			34.17	8.22	34	106	7	Peak
5420	44.94	36.17	54	-9.06	34.33	8.48	34.04	106	7	Average
5420	57.23	48.46	74	-16.77	34.33	8.48	34.04	106	7	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5220MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
5034	42.77	34.71	54	-11.23	34.03	8	33.97	154	345	Average
5034	56.72	48.66	74	-17.28	34.03	8	33.97	154	345	Peak
5240	101.84	93.4			34.19	8.26	34.01	154	345	Average
5240	109.09	100.65			34.19	8.26	34.01	154	345	Peak
5426	43.14	34.37	54	-10.86	34.33	8.48	34.04	154	345	Average
5426	57.36	48.59	74	-16.64	34.33	8.48	34.04	154	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
5114	43.29	35.09	54	-10.71	34.09	8.1	33.99	100	7	Average
5114	57.4	49.2	74	-16.6	34.09	8.1	33.99	100	7	Peak
5240	99.26	90.82			34.19	8.26	34.01	100	7	Average
5240	107.15	98.71			34.19	8.26	34.01	100	7	Peak
5414	42.67	33.94	54	-11.33	34.33	8.44	34.04	100	7	Average
5414	57.78	49.05	74	-16.22	34.33	8.44	34.04	100	7	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5240MHz: Fundamental frequency.



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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	Karl Lee

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
5712	64.47	55.32	68.2	-3.73	34.61	8.65	34.11	149	339	Peak
5724	74.47	65.31	78.2	-3.73	34.62	8.65	34.11	149	339	Peak
5745	101.03	91.84			34.64	8.66	34.11	149	339	Average
5745	109.05	99.86			34.64	8.66	34.11	149	339	Peak
5858	57	47.68	78.2	-21.2	34.76	8.7	34.14	149	339	Peak
5868	57.23	47.9	68.2	-10.97	34.76	8.71	34.14	149	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
5712	58.94	49.79	68.2	-9.26	34.61	8.65	34.11	131	53	Peak
5724	64.77	55.61	78.2	-13.43	34.62	8.65	34.11	131	53	Peak
5745	99.02	89.83			34.64	8.66	34.11	131	53	Average
5745	107.54	98.35			34.64	8.66	34.11	131	53	Peak
5854	57.32	48	78.2	-20.88	34.76	8.7	34.14	131	53	Peak
5868	57.95	48.62	68.2	-10.25	34.76	8.71	34.14	131	53	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 5745MHz: Fundamental frequency.
3. 5712MHz & 5724MHz & 5854MHz & 5858MHz & 5868MHz: Out of restricted band



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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	Karl Lee

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
5706	57.6	48.45	68.2	-10.6	34.61	8.65	34.11	192	326	Peak
5722	57.81	48.65	78.2	-20.39	34.62	8.65	34.11	192	326	Peak
5785	101	91.77			34.68	8.68	34.13	192	326	Average
5785	109.94	100.71			34.68	8.68	34.13	192	326	Peak
5860	57.82	48.5	78.2	-20.38	34.76	8.7	34.14	192	326	Peak
5866	57.54	48.21	68.2	-10.66	34.76	8.71	34.14	192	326	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
5710	56.05	46.9	68.2	-12.15	34.61	8.65	34.11	201	13	Peak
5720	57.65	48.49	78.2	-20.55	34.62	8.65	34.11	201	13	Peak
5785	99.78	90.55			34.68	8.68	34.13	201	13	Average
5785	107.64	98.41			34.68	8.68	34.13	201	13	Peak
5858	56.48	47.16	78.2	-21.72	34.76	8.7	34.14	201	13	Peak
5868	56.68	47.35	68.2	-11.52	34.76	8.71	34.14	201	13	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785MHz: Fundamental frequency.
- 5706MHz & 5710MHz & 5720MHz & 5722MHz & 5858MHz & 5860MHz & 5866MHz & 5868MHz:
Out of restricted band



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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	Karl Lee

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
5714	58.03	48.88	68.2	-10.17	34.61	8.65	34.11	156	338	Peak
5716	58.16	49.01	78.2	-20.04	34.61	8.65	34.11	156	338	Peak
5825	101.29	92			34.73	8.69	34.13	156	338	Average
5825	109.52	100.23			34.73	8.69	34.13	156	338	Peak
5852	70.31	61.01	78.2	-7.89	34.74	8.7	34.14	156	338	Peak
5866	64.41	55.08	68.2	-3.79	34.76	8.71	34.14	156	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
5712	56.91	47.76	68.2	-11.29	34.61	8.65	34.11	258	349	Peak
5718	57.89	48.73	78.2	-20.31	34.62	8.65	34.11	258	349	Peak
5825	99.12	89.83			34.73	8.69	34.13	258	349	Average
5825	107.65	98.36			34.73	8.69	34.13	258	349	Peak
5854	60.99	51.67	78.2	-17.21	34.76	8.7	34.14	258	349	Peak
5862	60.13	50.8	68.2	-8.07	34.76	8.71	34.14	258	349	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- 5712MHz & 5716MHz & 5718MHz & 5852MHz & 5854MHz & 5866MHz & 5862MHz: Out of restricted band



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802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
5150	47.72	39.47	54	-6.28	34.12	8.13	34	157	333	Average
5150	63.88	55.63	74	-10.12	34.12	8.13	34	157	333	Peak
5180	101.95	93.64			34.15	8.16	34	157	333	Average
5180	109.49	101.18			34.15	8.16	34	157	333	Peak
5378	44.88	36.2	54	-9.12	34.31	8.41	34.04	157	333	Average
5378	56.49	47.81	74	-17.51	34.31	8.41	34.04	157	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
5148	47.73	39.48	54	-6.27	34.12	8.13	34	100	7	Average
5148	59.71	51.46	74	-14.29	34.12	8.13	34	100	7	Peak
5180	99.62	91.31			34.15	8.16	34	100	7	Average
5180	107.46	99.15			34.15	8.16	34	100	7	Peak
5452	45.23	36.41	54	-8.77	34.36	8.51	34.05	100	7	Average
5452	57.68	48.86	74	-16.32	34.36	8.51	34.05	100	7	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5180MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 44	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
5108	44.41	36.21	54	-9.59	34.09	8.1	33.99	194	335	Average
5108	57.83	49.63	74	-16.17	34.09	8.1	33.99	194	335	Peak
5220	101.9	93.51			34.17	8.22	34	194	335	Average
5220	109.44	101.05			34.17	8.22	34	194	335	Peak
5450	45.39	36.57	54	-8.61	34.36	8.51	34.05	194	335	Average
5450	57.86	49.04	74	-16.14	34.36	8.51	34.05	194	335	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
5146	45.4	37.15	54	-8.6	34.12	8.13	34	106	7	Average
5146	57.42	49.17	74	-16.58	34.12	8.13	34	106	7	Peak
5220	99.62	91.23			34.17	8.22	34	106	7	Average
5220	107.17	98.78			34.17	8.22	34	106	7	Peak
5444	45.66	36.87	54	-8.34	34.35	8.48	34.04	106	7	Average
5444	57.86	49.07	74	-16.14	34.35	8.48	34.04	106	7	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5220MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
5058	42.84	34.74	54	-11.16	34.05	8.03	33.98	154	346	Average
5058	56.52	48.42	74	-17.48	34.05	8.03	33.98	154	346	Peak
5240	101.1	92.66			34.19	8.26	34.01	154	346	Average
5240	109.34	100.9			34.19	8.26	34.01	154	346	Peak
5362	43.04	34.4	54	-10.96	34.29	8.38	34.03	154	346	Average
5362	57.59	48.95	74	-16.41	34.29	8.38	34.03	154	346	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
5024	43.17	35.14	54	-10.83	34.03	7.97	33.97	100	7	Average
5024	56.22	48.19	74	-17.78	34.03	7.97	33.97	100	7	Peak
5240	99.36	90.92			34.19	8.26	34.01	100	7	Average
5240	107.52	99.08			34.19	8.26	34.01	100	7	Peak
5384	43.47	34.79	54	-10.53	34.31	8.41	34.04	100	7	Average
5384	57.35	48.67	74	-16.65	34.31	8.41	34.04	100	7	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5240MHz: Fundamental frequency.



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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	Karl Lee

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
5714	64.91	55.76	68.2	-3.29	34.61	8.65	34.11	149	339	Peak
5722	75	65.84	78.2	-3.2	34.62	8.65	34.11	149	339	Peak
5745	101.01	91.82			34.64	8.66	34.11	149	339	Average
5745	109.35	100.16			34.64	8.66	34.11	149	339	Peak
5852	57.48	48.18	78.2	-20.72	34.74	8.7	34.14	149	339	Peak
5866	57.49	48.16	68.2	-10.71	34.76	8.71	34.14	149	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
5712	59.56	50.41	68.2	-8.64	34.61	8.65	34.11	131	53	Peak
5724	69.44	60.28	78.2	-8.76	34.62	8.65	34.11	131	53	Peak
5745	99.76	90.57			34.64	8.66	34.11	131	53	Average
5745	107.83	98.64			34.64	8.66	34.11	131	53	Peak
5858	55.94	46.62	78.2	-22.26	34.76	8.7	34.14	131	53	Peak
5864	56.04	46.71	68.2	-12.16	34.76	8.71	34.14	131	53	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5745MHz: Fundamental frequency.
- 5714MHz & 5722MHz & 5852MHz & 5866MHz & 5712MHz & 5724MHz & 5858MHz & 5864MHz:
Out of restricted band



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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	Karl Lee

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
5714	58.96	49.81	68.2	-9.24	34.61	8.65	34.11	192	326	Peak
5716	58.9	49.75	78.2	-19.3	34.61	8.65	34.11	192	326	Peak
5785	101.06	91.83			34.68	8.68	34.13	192	326	Average
5785	109.48	100.25			34.68	8.68	34.13	192	326	Peak
5852	58.15	48.85	78.2	-20.05	34.74	8.7	34.14	192	326	Peak
5870	58.12	48.79	68.2	-10.08	34.76	8.71	34.14	192	326	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
5714	57.28	48.13	68.2	-10.92	34.61	8.65	34.11	201	13	Peak
5718	58.27	49.11	78.2	-19.93	34.62	8.65	34.11	201	13	Peak
5785	99.95	90.72			34.68	8.68	34.13	201	13	Average
5785	107.16	97.93			34.68	8.68	34.13	201	13	Peak
5858	56.19	46.87	78.2	-22.01	34.76	8.7	34.14	201	13	Peak
5870	56.32	46.99	68.2	-11.88	34.76	8.71	34.14	201	13	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5785MHz: Fundamental frequency.
- 5714MHz & 5716MHz & 5852MHz & 5870MHz & 5718MHz & 5858MHz: Out of restricted band



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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	Karl Lee

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
5708	57.66	48.51	68.2	-10.54	34.61	8.65	34.11	156	338	Peak
5718	56.51	47.35	78.2	-21.69	34.62	8.65	34.11	156	338	Peak
5825	101.41	92.12			34.73	8.69	34.13	156	338	Average
5825	109.01	99.72			34.73	8.69	34.13	156	338	Peak
5852	69.37	60.07	78.2	-8.83	34.74	8.7	34.14	156	338	Peak
5862	62.83	53.5	68.2	-5.37	34.76	8.71	34.14	156	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
5710	56.48	47.33	68.2	-11.72	34.61	8.65	34.11	258	349	Peak
5720	56.69	47.53	78.2	-21.51	34.62	8.65	34.11	258	349	Peak
5825	99.34	90.05			34.73	8.69	34.13	258	349	Average
5825	107.35	98.06			34.73	8.69	34.13	258	349	Peak
5854	61.04	51.72	78.2	-17.16	34.76	8.7	34.14	258	349	Peak
5862	58.23	48.9	68.2	-9.97	34.76	8.71	34.14	258	349	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- 5708MHz & 5718MHz & 5852MHz & 5862MHz & 5710MHz & 5720MHz & 5854MHz: Out of restricted band



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802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
5148	48.52	40.27	54	-5.48	34.12	8.13	34	157	330	Average
5148	67.2	58.95	74	-6.8	34.12	8.13	34	157	330	Peak
5190	100.66	92.32			34.15	8.19	34	157	330	Average
5190	108.75	100.41			34.15	8.19	34	157	330	Peak
5452	46.02	37.2	54	-7.98	34.36	8.51	34.05	157	330	Average
5452	57.41	48.59	74	-16.59	34.36	8.51	34.05	157	330	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
5146	48.76	40.51	54	-5.24	34.12	8.13	34	100	7	Average
5146	59.76	51.51	74	-14.24	34.12	8.13	34	100	7	Peak
5190	98.61	90.27			34.15	8.19	34	100	7	Average
5190	106.39	98.05			34.15	8.19	34	100	7	Peak
5428	44.26	35.49	54	-9.74	34.33	8.48	34.04	100	7	Average
5428	57.33	48.56	74	-16.67	34.33	8.48	34.04	100	7	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5190MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
5070	44.15	36.05	54	-9.85	34.05	8.03	33.98	154	346	Average
5070	56.31	48.21	74	-17.69	34.05	8.03	33.98	154	346	Peak
5230	100.66	92.26			34.19	8.22	34.01	154	346	Average
5230	108.07	99.67			34.19	8.22	34.01	154	346	Peak
5430	43.28	34.49	54	-10.72	34.35	8.48	34.04	154	346	Average
5430	57.82	49.03	74	-16.18	34.35	8.48	34.04	154	346	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
5130	45	36.78	54	-9	34.11	8.1	33.99	100	7	Average
5130	57.28	49.06	74	-16.72	34.11	8.1	33.99	100	7	Peak
5230	98.49	90.09			34.19	8.22	34.01	100	7	Average
5230	106.1	97.7			34.19	8.22	34.01	100	7	Peak
5438	43.23	34.44	54	-10.77	34.35	8.48	34.04	100	7	Average
5438	57.23	48.44	74	-16.77	34.35	8.48	34.04	100	7	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5230MHz: Fundamental frequency.



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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	Karl Lee

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
5714	64.4	55.25	68.2	-3.8	34.61	8.65	34.11	149	339	Peak
5720	70.71	61.55	78.2	-7.49	34.62	8.65	34.11	149	339	Peak
5755	100.46	91.25			34.66	8.66	34.11	149	339	Average
5755	108.89	99.68			34.66	8.66	34.11	149	339	Peak
5852	56.8	47.5	78.2	-21.4	34.74	8.7	34.14	149	339	Peak
5862	56.69	47.36	68.2	-11.51	34.76	8.71	34.14	149	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
5714	64.12	54.97	68.2	-4.08	34.61	8.65	34.11	131	53	Peak
5720	63.74	54.58	78.2	-14.46	34.62	8.65	34.11	131	53	Peak
5755	98.8	89.59			34.66	8.66	34.11	131	53	Average
5755	106.56	97.35			34.66	8.66	34.11	131	53	Peak
5856	57.86	48.54	78.2	-20.34	34.76	8.7	34.14	131	53	Peak
5864	57.55	48.22	68.2	-10.65	34.76	8.71	34.14	131	53	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5755MHz: Fundamental frequency.
- 5714MHz & 5720MHz & 5852MHz & 5862MHz & 5856MHz & 5864MHz: Out of restricted band



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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	Karl Lee

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
5706	59.21	50.06	68.2	-8.99	34.61	8.65	34.11	156	338	Peak
5724	59.16	50	78.2	-19.04	34.62	8.65	34.11	156	338	Peak
5795	100.69	91.45			34.69	8.68	34.13	156	338	Average
5795	108.67	99.43			34.69	8.68	34.13	156	338	Peak
5858	62.71	53.39	78.2	-15.49	34.76	8.7	34.14	156	338	Peak
5870	59.68	50.35	68.2	-8.52	34.76	8.71	34.14	156	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
5712	57.99	48.84	68.2	-10.21	34.61	8.65	34.11	258	349	Peak
5716	58.3	49.15	78.2	-19.9	34.61	8.65	34.11	258	349	Peak
5795	98.59	89.35			34.69	8.68	34.13	258	349	Average
5795	106.85	97.61			34.69	8.68	34.13	258	349	Peak
5860	58.46	49.14	78.2	-19.74	34.76	8.7	34.14	258	349	Peak
5862	57.86	48.53	68.2	-10.34	34.76	8.71	34.14	258	349	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 5795MHz: Fundamental frequency.
- 5706MHz & 5724MHz & 5858MHz & 5870MHz & 5712MHz & 5716MHz & 5860MHz & 5862MHz:
Out of restricted band



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BELOW 1GHz WORST-CASE DATA:

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Karl Lee

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
78.6	23.06	45.81	40	-16.94	8.35	1.11	32.21	178	160	Peak
162.57	22.8	42.96	43.5	-20.7	10.58	1.52	32.26	105	152	Peak
236.28	22.36	40.24	46	-23.64	12.42	1.85	32.15	185	124	Peak
525.4	27.64	36.39	46	-18.36	20.7	2.7	32.15	149	190	Peak
800.5	35.46	39.6	46	-10.54	24.6	3.32	32.06	124	63	Peak
962.9	28.97	30.23	54	-25.03	25.96	3.67	30.89	196	228	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
32.16	36.71	52.02	40	-3.29	16.21	0.74	32.26	116	232	Peak
38.64	35.17	54.62	40	-4.83	12.04	0.74	32.23	183	351	Peak
232.5	27.8	45.87	46	-18.2	12.25	1.85	32.17	122	185	Peak
549.9	28.38	37.52	46	-17.62	20.3	2.76	32.2	154	99	Peak
800.5	36.43	40.57	46	-9.57	24.6	3.32	32.06	101	320	Peak
960.1	28.91	30.14	54	-25.09	26.04	3.67	30.94	196	1	Peak

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

Margin value = Emission level – Limit value

4.2 TRANSMIT POWER MEASUREMENT

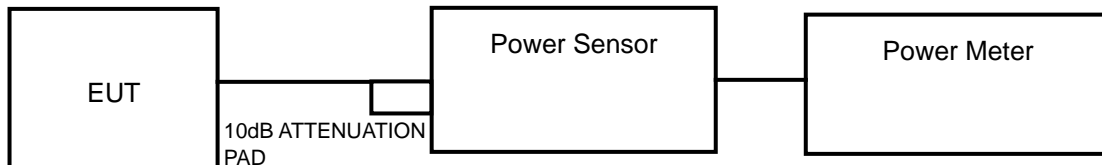
4.2.1 LIMITS OF TRANSMIT POWER MEASUREMENT

OPERATION BAND	EUT CATEGORY		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p \leq 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A		---	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C		---	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√	---	1 Watt (30 dBm)

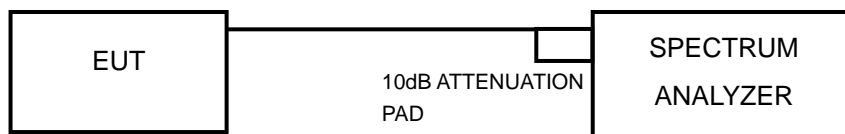
NOTE: Where B is the 26dB emission bandwidth in MHz.

4.2.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB BANDWIDTH



4.2.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.2.4 TEST PROCEDURE

FOR AVERAGE POWER MEASUREMENT

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

FOR 26dB BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission.
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.2.5 DEVIATION FROM TEST STANDARD

No deviation.

4.2.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.



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4.2.7 TEST RESULTS

POWER OUTPUT

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	29.44	14.69	24	PASS
44	5220	29.38	14.68	24	PASS
48	5240	28.91	14.61	24	PASS
149	5745	30.55	14.85	30	PASS
157	5785	29.85	14.75	30	PASS
165	5825	29.79	14.74	30	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	31.26	14.95	24	PASS
44	5220	31.05	14.92	24	PASS
48	5240	30.55	14.85	24	PASS
149	5745	34.99	15.44	30	PASS
157	5785	32.73	15.15	30	PASS
165	5825	32.14	15.07	30	PASS

802.11n (40MHz)

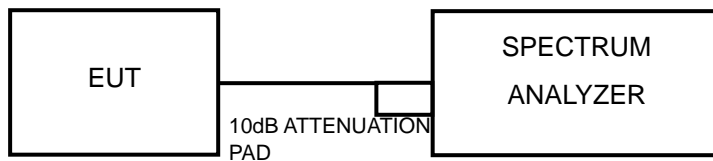
CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	34.59	15.39	24	PASS
46	5230	34.43	15.37	24	PASS
151	5755	35.73	15.53	30	PASS
159	5795	35.48	15.50	30	PASS

4.3 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.3.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Mobile and Portable client device	11dBm/ MHz
U-NII-2A		---	11dBm/ MHz
U-NII-2C		---	11dBm/ MHz
U-NII-3	√	---	30dBm/ 500kHz

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.3.4 TEST PROCEDURES

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW ≥ 1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to “free run”.
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value



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For U-NII-3 band:

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 500 kHz, Set VBW \geq 3 RBW, Detector = RMS
- 3) Sweep time = auto, trigger set to “free run”.
- 4) Trace average at least 100 traces in power averaging mode.
- 5) Record the max value and add 10 log (1/duty cycle)

4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



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4.3.7 TEST RESULTS

For U-NII-1 Band

802.11a

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	1.42	0.46	1.88	11	PASS
44	5220	1.47	0.46	1.93	11	PASS
48	5240	1.52	0.46	1.98	11	PASS

NOTE: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	1.19	0.42	1.61	11	PASS
44	5220	1.23	0.42	1.65	11	PASS
48	5240	1.32	0.42	1.74	11	PASS

NOTE: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
38	5190	-1.42	0.96	-0.46	11	PASS
46	5230	-1.25	0.96	-0.29	11	PASS

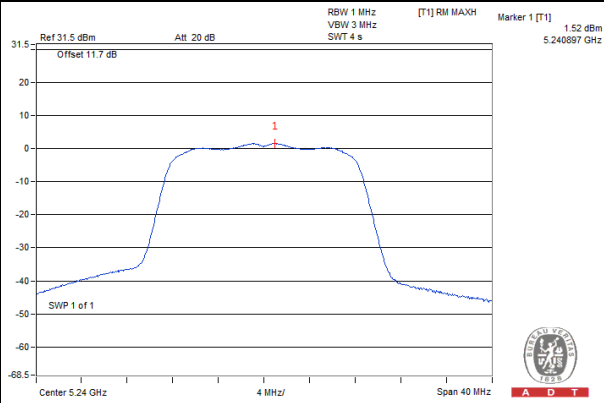
NOTE: Refer to section 3.3 for duty cycle spectrum plot.



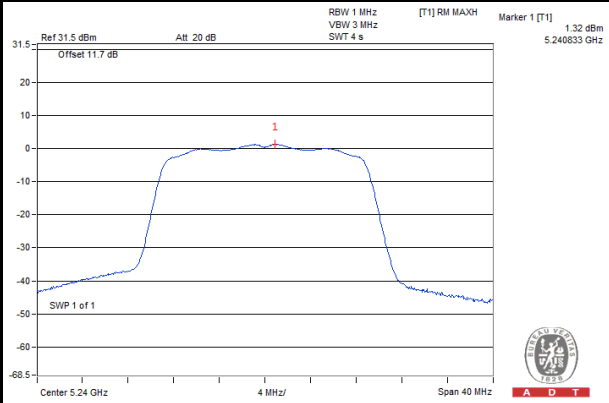
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SPECTRUM PLOT OF WORST VALUE

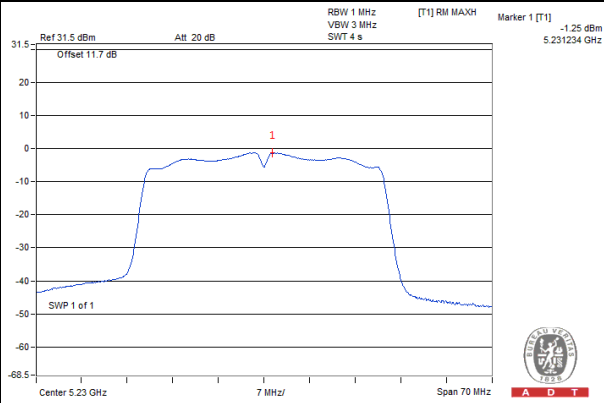
802.11a



802.11n (20MHz)



802.11n (40MHz)





For U-NII-3 Band

802.11a

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
149	5745	1.29	0.46	1.75	30	PASS
157	5785	1.30	0.46	1.76	30	PASS
165	5825	1.32	0.46	1.78	30	PASS

NOTE: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
149	5745	1.47	0.42	1.89	30	PASS
157	5785	1.27	0.42	1.69	30	PASS
165	5825	1.28	0.42	1.70	30	PASS

NOTE: Refer to section 3.3 for duty cycle spectrum plot.

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
151	5755	-1.37	0.96	-0.41	30	PASS
159	5795	-1.40	0.96	-0.44	30	PASS

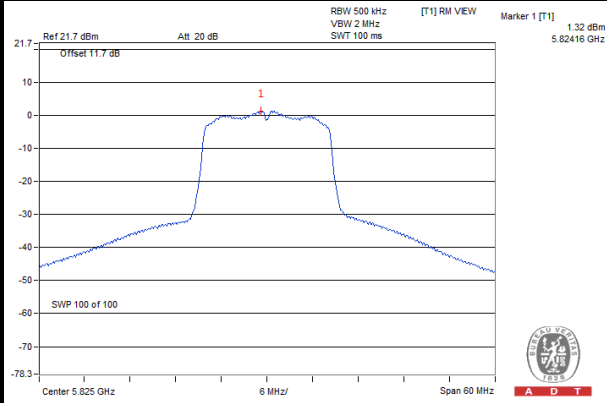
NOTE: Refer to section 3.3 for duty cycle spectrum plot.



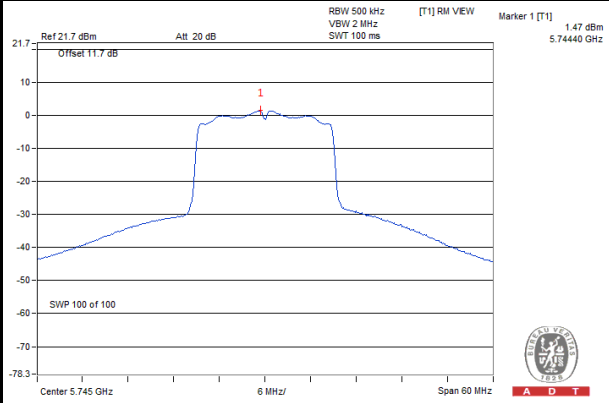
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SPECTRUM PLOT OF WORST VALUE

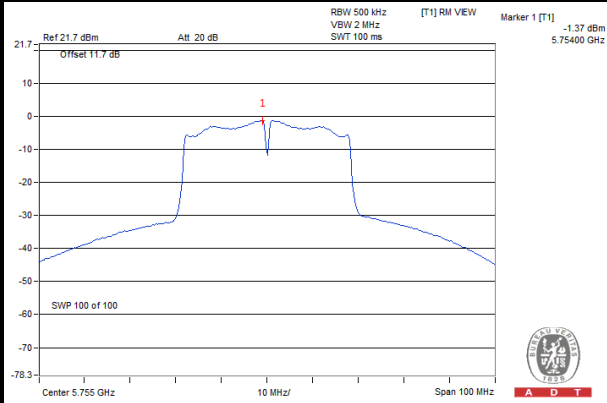
802.11a



802.11n (20MHz)



802.11n (40MHz)

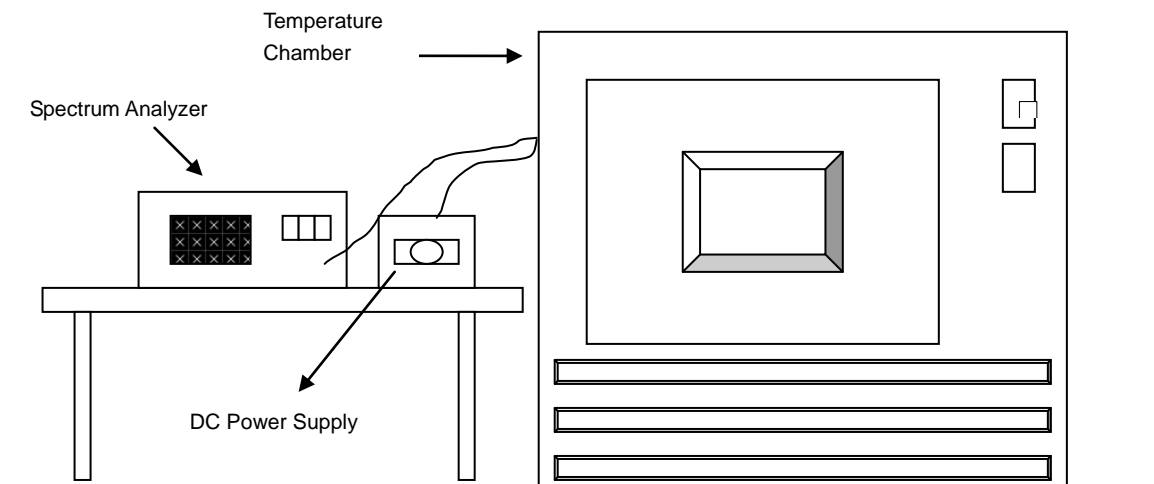


4.4 FREQUENCY STABILITY

4.4.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency of the carrier signal shall be maintained within band of operation.

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.



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4.4.4 TEST PROCEDURE

- a. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
- c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITION

Set the EUT transmit at un-modulation mode to test frequency stability.



4.4.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	3.3	5180.016217	3.131	5180.016272	3.141	5180.016510	3.187	5180.016299	3.147
40	3.3	5180.016785	3.240	5180.016718	3.227	5180.016680	3.220	5180.016844	3.252
30	3.3	5180.017378	3.355	5180.017764	3.429	5180.017713	3.419	5180.017390	3.357
20	3.3	5180.018558	3.583	5180.018532	3.578	5180.018472	3.566	5180.018789	3.627
10	3.3	5180.019683	3.800	5180.020126	3.885	5180.020129	3.886	5180.020173	3.894
0	3.3	5180.018418	3.556	5180.018766	3.623	5180.018629	3.596	5180.018845	3.638
-10	3.3	5180.017262	3.332	5180.017613	3.400	5180.016979	3.278	5180.016937	3.270
-20	3.3	5180.016975	3.277	5180.016737	3.231	5180.016730	3.230	5180.017185	3.318
-30	3.3	5180.014723	2.842	5180.014684	2.835	5180.014887	2.874	5180.014546	2.808

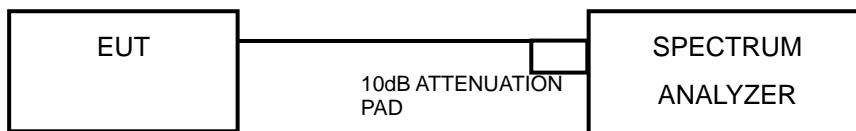
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	1.6	5180.018025	3.480	5180.018032	3.481	5180.018199	3.513	5180.018141	3.502
	3.3	5180.018558	3.583	5180.018532	3.578	5180.018472	3.566	5180.018789	3.627
	4.8	5180.019301	3.726	5180.019023	3.672	5180.019171	3.701	5180.019678	3.799

4.5 6dB BANDWIDTH MEASUREMENT

4.5.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.5.4 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITIONS

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



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4.5.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	15.13	0.5	PASS
157	5785	15.15	0.5	PASS
165	5825	15.16	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	15.13	0.5	PASS
157	5785	15.15	0.5	PASS
165	5825	15.15	0.5	PASS

802.11n (40MHz)

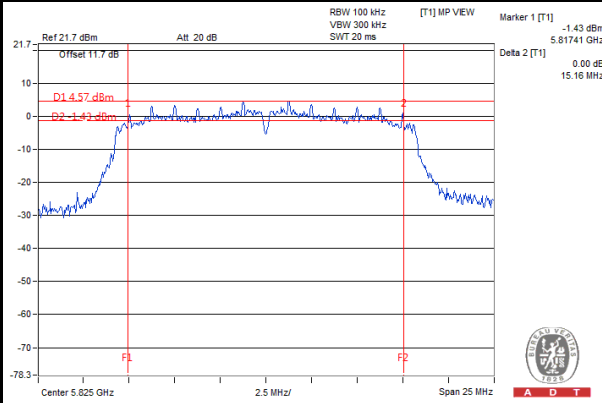
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	35.18	0.5	PASS
159	5795	35.22	0.5	PASS



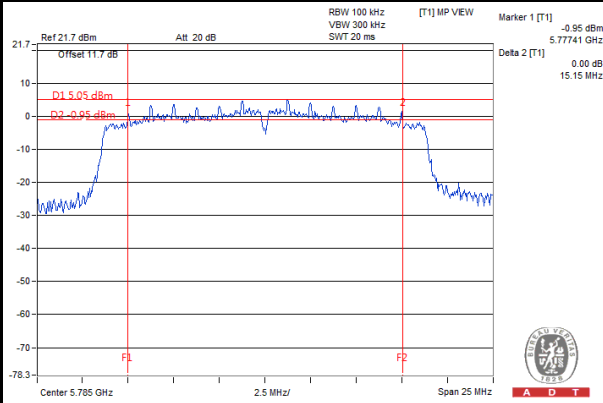
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SPECTRUM PLOT OF WORST VALUE

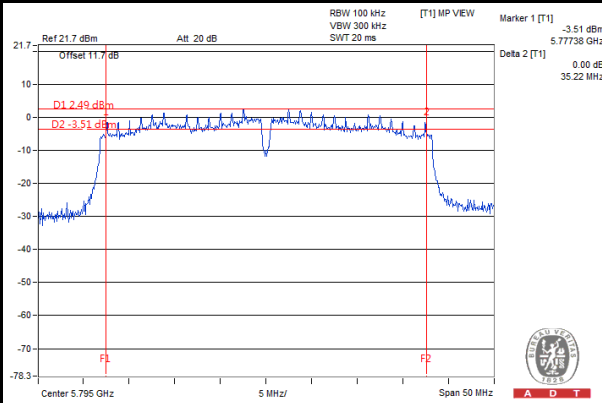
802.11a



802.11n (20MHz)



802.11n (40MHz)





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6. 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/Telecom Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety 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.



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7. 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---