

FCC TEST REPORT

(WALN 15.407)

REPORT NO.: RF141107D05-1

MODEL NO.: HSTNH-O402

FCC ID: B94HHO402

RECEIVED: Nov. 7, 2014

TESTED: Nov. 24 ~ 2014 ~ Jan. 14, 2015

ISSUED: Jan. 26, 2015

APPLICANT: Hewlett-Packard Company

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ISSUED BY: Bureau Veritas Consumer Products Services
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A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141107D05-1	Original release.	Jan. 26, 2015

1. CERTIFICATION

PRODUCT: HP Pro Portable Tablet Dock
BRAND NAME: hp
MODEL: HSTNH-O402
APPLICANT: Hewlett-Packard Company
TESTED: Nov. 24 ~ 2014 ~ Jan. 14, 2015
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment 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 : Annie Chang , **DATE:** Jan. 26, 2015
(Annie Chang / Supervisor)

APPROVED BY : Rex Lai , **DATE:** Jan. 26, 2015
(Rex Lai / Assistant Manager)

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 Under New Rule)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -17.11dB at 0.15000MHz.
15.407(b)(1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.4dB at 5725.00MHz.
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.

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	150kHz~30MHz	3.43 dB
Radiated emissions	30MHz ~ 1GHz	4.00 dB
	Above 1GHz	3.36 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	HP Pro Portable Tablet Dock
MODEL NO.	HSTNH-O402
POWER SUPPLY	12V, 1.5A
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54/ 48/ 36/ 24/ 18/ 12/ 9/ 6Mbps 802.11n: up to 300Mbps
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	5180 ~ 5240MHz: 18.2mW 5745 ~ 5825MHz: 18.5mW
ANTENNA TYPE	Printed antenna with 5.9dBi gain
ANTENNA CONNECTOR	N/A
DATA CABLE	N/A
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. The EUT uses following adapter.

Brand	hp (Acbel)	hp
Model	WAD007	8395-V101-1880
AC Input Power	100-240V, 0.6A, 50-60Hz	100-240V, 0.6A, 50-60Hz
DC Output Power	12V, 1.5A	12V, 1.5A
Power Line	Non-shielded DC cable (1.0m)	Non-shielded DC cable (1.0m)

After pre-tested, model: **WAD007** was the worst case, therefore, only its data was recorded un this report.

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

Modulation Mode	Tx Function
802.11a	1TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

3. The above EUT information is declared by 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 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 (40 MHz)

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

FOR 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

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

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

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, 40, 48	OFDM	BPSK	6
-	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	13
-	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	27
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
-	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	13
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	27

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)
-	802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6
-	802.11a	5745-5825	149 to 165	149	OFDM	BPSK	6

POWER LINE CONDUCTED EMISSION TEST:

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

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	OFDM	BPSK	6

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, 40, 48	OFDM	BPSK	6
-	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	13
-	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	27
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
-	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	13
-	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	27

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 71% RH	120Vac, 60Hz	Aaron You
RE<1G	24deg. C, 71% RH	120Vac, 60Hz	Aaron You
PLC	24deg. C, 68% RH	120Vac, 60Hz	Dalen Dai
APCM	25deg. C, 60% RH	120Vac, 60Hz	Saxon Lee

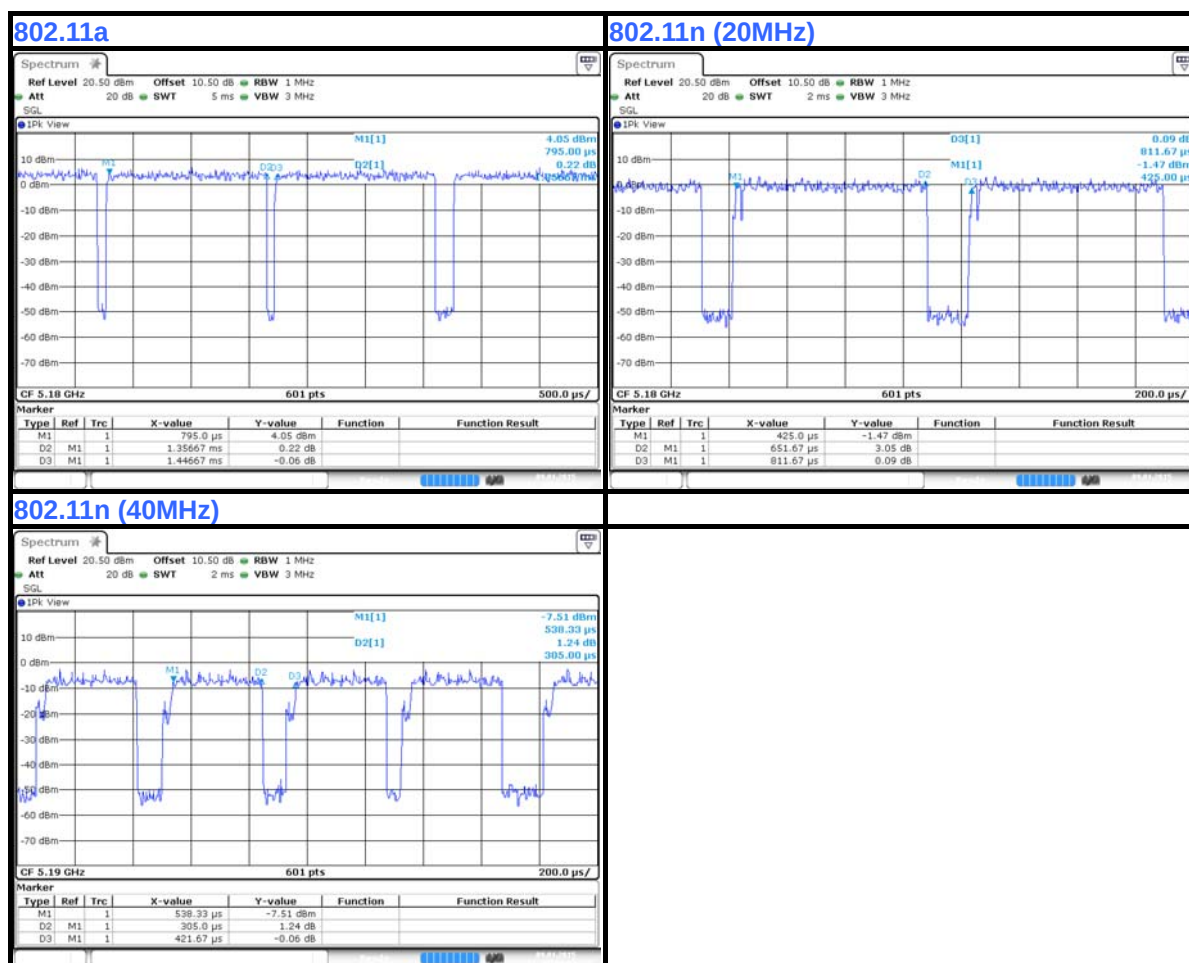
3.3 DUTY CYCLE OF TEST SIGNAL

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

802.11a: Duty cycle = $1.357/1.447 = 0.938$, Duty factor = $10 * \log(1/0.938) = 0.28$

802.11n (20MHz): Duty cycle = $0.652/0.812 = 0.803$, Duty factor = $10 * \log(1/0.803) = 0.95$

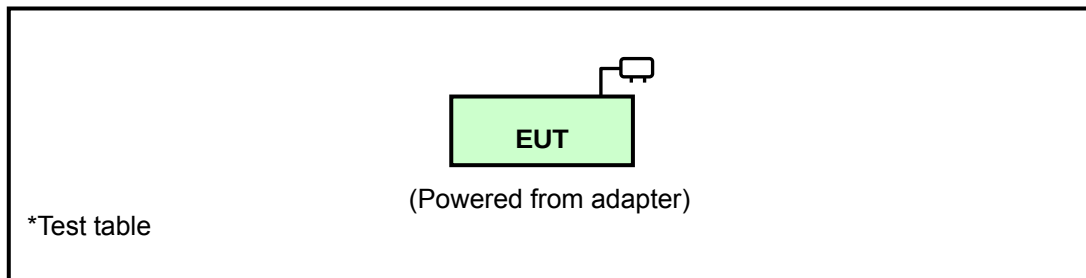
802.11n (40MHz): Duty cycle = $0.305/0.422 = 0.723$, Duty factor = $10 * \log(1/0.723) = 1.41$



3.4 DESCRIPTION OF SUPPORT UNITS

EUT has been tested as an independent unit together without other necessary accessories or support units.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specification of the EUT declared by 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

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

NOTE: The product 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 (dBuV/m)	AV: 54 (dBuV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBuV/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 (dBuV/m) ^{*1} PK: 78.2 (dBuV/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.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 26, 2014	Feb. 25, 2015
HP Preamplifier	8449B	3008A01201	Feb. 26, 2014	Feb. 25, 2015
MITEQ Preamplifier	AMF-6F-260400-3 3-8P	892164	Mar. 01, 2014	Feb. 28, 2015
Agilent Spectrum	E4446A	MY51100050	Oct. 24, 2014	Oct. 23, 2015
Agilent TEST RECEIVER	N9038A	MY51210129	Jan. 18, 2014	Jan. 17, 2015
Schwarzbeck Antenna	VULB 9168	139	Feb. 24, 2014	Feb. 23, 2015
Schwarzbeck Antenna	VHBA 9123	480	May 29, 2013	May 28, 2015
Schwarzbeck Horn Antenna	BBHA-9170	212	Aug. 26, 2014	Aug. 25, 2015
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Aug. 26, 2014	Aug. 25, 2015
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V7. 6.15.9.4	NA	NA	NA
SUHNER RF cable	SF104	CABLE-CH6	Aug. 15, 2014	Aug. 14, 2015
SUHNER RF cable	SF102	Cable-CH8-3.6m	Aug. 15, 2014	Aug. 14, 2015
EMCO Horn Antenna	3115	00028257	Aug. 28, 2014	Aug. 27, 2015
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 29, 2014	Sep. 28, 2015
Anritsu Power Sensor	MA2411B	0738404	Apr. 21, 2014	Apr. 20, 2015
Anritsu Power Meter	ML2495A	0842014	Apr. 21, 2014	Apr. 20, 2015

- NOTE:** 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.

4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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. 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:

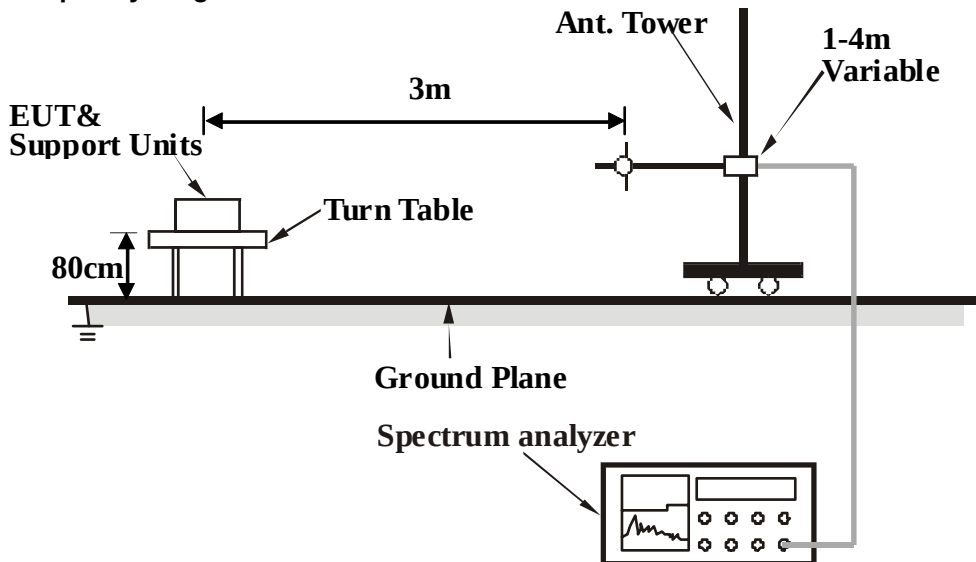
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 DEVIATION FROM TEST STANDARD

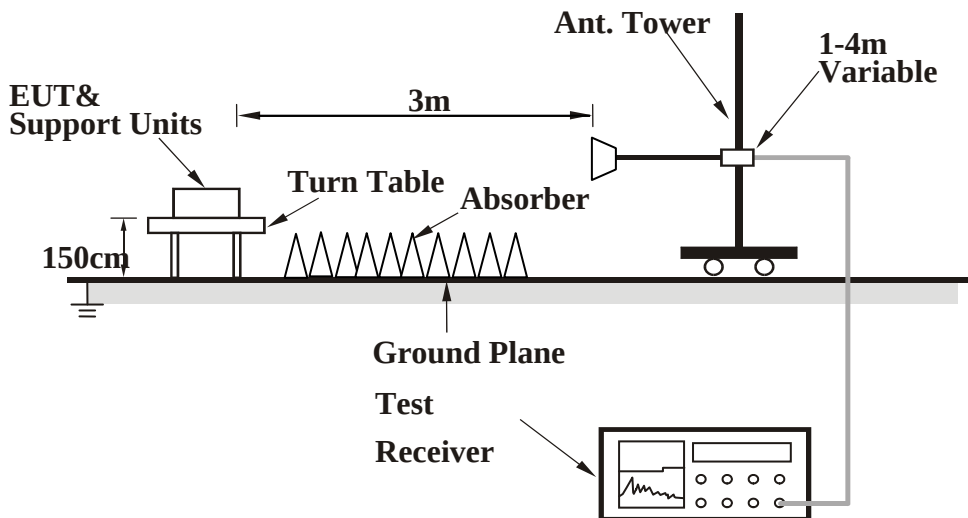
No deviation.

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 CONDITION

Set the EUT under transmission condition continuously at specific channel frequency.

4.1.8 TEST RESULTS

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	56.6 PK	74.0	-17.5	1.21 H	256	53.28	3.27
2	#5150.00	43.3 AV	54.0	-10.7	1.21 H	256	40.02	3.27
3	*5180.00	96.9 PK			1.21 H	256	93.64	3.25
4	*5180.00	85.2 AV			1.21 H	256	81.93	3.25
5	#10360.00	56.1 PK	74.0	-17.9	1.00 H	111	42.29	13.83
6	#10360.00	42.6 AV	54.0	-11.4	1.00 H	111	28.75	13.83
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	55.8 PK	74.0	-18.2	1.03 V	275	52.55	3.27
2	#5150.00	43.1 AV	54.0	-10.9	1.03 V	275	39.82	3.27
3	*5180.00	96.7 PK			1.03 V	275	93.44	3.25
4	*5180.00	85.1 AV			1.03 V	275	81.80	3.25
5	#10360.00	57.4 PK	74.0	-16.6	1.13 V	208	43.56	13.83
6	#10360.00	44.1 AV	54.0	-9.9	1.13 V	208	30.25	13.83

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	96.9 PK			1.18 H	262	93.69	3.22
2	*5200.00	85.5 AV			1.18 H	262	82.27	3.22
3	#10400.00	56.1 PK	74.0	-17.9	1.00 H	117	42.26	13.80
4	#10400.00	43.0 AV	54.0	-11.1	1.00 H	117	29.15	13.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	96.8 PK			1.01 V	276	93.62	3.22
2	*5200.00	85.2 AV			1.01 V	276	81.95	3.22
3	#10400.00	56.8 PK	74.0	-17.2	1.25 V	229	43.02	13.80
4	#10400.00	44.9 AV	54.0	-9.1	1.25 V	229	31.11	13.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	99.3 PK			1.19 H	272	96.01	3.29
2	*5240.00	87.5 AV			1.19 H	272	84.17	3.29
3	#5350.00	58.9 PK	74.0	-15.1	1.19 H	272	55.46	3.48
4	#5350.00	44.9 AV	54.0	-9.1	1.19 H	272	41.39	3.48
5	#10480.00	56.6 PK	74.0	-17.4	1.07 H	291	42.18	14.45
6	#10480.00	44.1 AV	54.0	-10.0	1.07 H	291	29.60	14.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	97.0 PK			1.01 V	274	93.66	3.29
2	*5240.00	86.1 AV			1.01 V	274	82.76	3.29
3	#5350.00	57.1 PK	74.0	-16.9	1.00 V	274	53.58	3.48
4	#5350.00	42.9 AV	54.0	-11.2	1.00 V	274	39.37	3.48
5	#10480.00	57.7 PK	74.0	-16.3	1.02 V	67	43.27	14.45
6	#10480.00	45.5 AV	54.0	-8.5	1.02 V	67	31.02	14.45

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	75.8 PK	78.2	-2.5	1.10 H	162	71.40	4.35
2	*5745.00	104.3 PK			1.10 H	162	99.83	4.46
3	*5745.00	92.8 AV			1.10 H	162	88.34	4.46
4	#11490.00	59.1 PK	74.0	-14.9	1.27 H	210	42.81	16.33
5	#11490.00	46.8 AV	54.0	-7.2	1.27 H	210	30.50	16.33
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	74.8 PK	78.2	-3.4	1.21 V	77	70.45	4.35
2	*5745.00	103.4 PK			1.21 V	77	98.94	4.46
3	*5745.00	92.4 AV			1.21 V	77	87.92	4.46
4	#11490.00	62.6 PK	74.0	-11.4	1.06 V	248	46.27	16.33
5	#11490.00	48.4 AV	54.0	-5.6	1.06 V	248	32.05	16.33

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	103.0 PK			1.08 H	162	98.33	4.68
2	*5785.00	91.7 AV			1.08 H	162	87.05	4.68
3	#11570.00	57.3 PK	74.0	-16.8	1.22 H	159	41.89	15.36
4	#11570.00	45.4 AV	54.0	-8.6	1.22 H	159	30.02	15.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	102.5 PK			1.20 V	74	97.84	4.68
2	*5785.00	91.3 AV			1.20 V	74	86.63	4.68
3	#11570.00	58.6 PK	74.0	-15.4	1.19 V	208	43.27	15.36
4	#11570.00	47.9 AV	54.0	-6.1	1.19 V	208	32.58	15.36

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	102.8 PK			1.05 H	272	98.04	4.80
2	*5825.00	90.9 AV			1.05 H	272	86.13	4.80
3	#5850.00	59.5 PK	74.0	-14.5	1.05 H	272	54.62	4.85
4	#5850.00	46.1 AV	54.0	-7.9	1.05 H	272	41.27	4.85
5	#11650.00	56.9 PK	74.0	-17.1	1.09 H	201	41.68	15.24
6	#11650.00	45.3 AV	54.0	-8.7	1.09 H	201	30.02	15.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	102.0 PK			1.21 V	74	97.20	4.80
2	*5825.00	90.8 AV			1.21 V	74	85.97	4.80
3	#5850.00	58.8 PK	74.0	-15.2	1.21 V	74	53.92	4.85
4	#5850.00	45.1 AV	54.0	-9.0	1.21 V	74	40.20	4.85
5	#11650.00	57.5 PK	74.0	-16.5	1.37 V	270	42.30	15.24
6	#11650.00	46.8 AV	54.0	-7.3	1.37 V	270	31.51	15.24

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11n (20MHz)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	58.1 PK	74.0	-15.9	1.19 H	277	54.87	3.27
2	#5150.00	44.6 AV	54.0	-9.4	1.19 H	277	41.33	3.27
3	*5180.00	105.6 PK			1.19 H	277	102.39	3.25
4	*5180.00	94.3 AV			1.19 H	277	91.09	3.25
5	#10360.00	56.2 PK	74.0	-17.9	1.02 H	317	42.32	13.83
6	#10360.00	42.9 AV	54.0	-11.1	1.02 H	317	29.10	13.83
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	57.8 PK	74.0	-16.2	1.38 V	76	54.52	3.27
2	#5150.00	44.1 AV	54.0	-9.9	1.38 V	76	40.82	3.27
3	*5180.00	105.4 PK			1.38 V	76	102.11	3.25
4	*5180.00	94.3 AV			1.38 V	76	91.06	3.25
5	#10360.00	57.8 PK	74.0	-16.2	1.10 V	173	43.97	13.83
6	#10360.00	45.4 AV	54.0	-8.6	1.10 V	173	31.58	13.83

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	107.3 PK			1.19 H	278	104.04	3.22
2	*5200.00	96.5 AV			1.19 H	278	93.31	3.22
3	#10400.00	55.9 PK	74.0	-18.1	1.02 H	118	42.10	13.80
4	#10400.00	43.5 AV	54.0	-10.5	1.02 H	118	29.73	13.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	107.1 PK			1.36 V	76	103.89	3.22
2	*5200.00	96.4 AV			1.36 V	76	93.15	3.22
3	#10400.00	57.7 PK	74.0	-16.3	1.27 V	104	43.89	13.80
4	#10400.00	45.9 AV	54.0	-8.2	1.27 V	104	32.05	13.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.1 PK			1.19 H	276	102.77	3.29
2	*5240.00	95.3 AV			1.19 H	276	92.05	3.29
3	#5350.00	56.1 PK	74.0	-17.9	1.19 H	276	52.63	3.48
4	#5350.00	43.7 AV	54.0	-10.3	1.19 H	276	40.21	3.48
5	#10480.00	56.7 PK	74.0	-17.3	1.30 H	112	42.23	14.45
6	#10480.00	44.6 AV	54.0	-9.4	1.30 H	112	30.12	14.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	104.2 PK			1.01 V	272	100.94	3.29
2	*5240.00	92.7 AV			1.01 V	272	89.37	3.29
3	#5350.00	55.2 PK	74.0	-18.8	1.01 V	272	51.71	3.48
4	#5350.00	42.8 AV	54.0	-11.2	1.01 V	272	39.33	3.48
5	#10480.00	57.7 PK	74.0	-16.3	1.05 V	110	43.28	14.45
6	#10480.00	47.0 AV	54.0	-7.0	1.05 V	110	32.57	14.45

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	75.2 PK	78.2	-3.0	1.20 H	312	70.83	4.35
2	*5745.00	103.7 PK			1.20 H	312	99.21	4.46
3	*5745.00	92.8 AV			1.20 H	312	88.32	4.46
4	#11490.00	58.3 PK	74.0	-15.7	1.11 H	19	41.97	16.33
5	#11490.00	46.6 AV	54.0	-7.4	1.11 H	19	30.26	16.33
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	74.1 PK	78.2	-4.1	1.09 V	78	69.74	4.35
2	*5745.00	103.6 PK			1.09 V	78	99.10	4.46
3	*5745.00	92.4 AV			1.09 V	78	87.94	4.46
4	#11490.00	59.3 PK	74.0	-14.7	1.08 V	227	42.99	16.33
5	#11490.00	48.9 AV	54.0	-5.1	1.08 V	227	32.58	16.33

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	106.3 PK			1.16 H	311	101.64	4.68
2	*5785.00	95.7 AV			1.16 H	311	90.97	4.68
3	#11570.00	57.2 PK	74.0	-16.8	1.20 H	127	41.83	15.36
4	#11570.00	44.9 AV	54.0	-9.1	1.20 H	127	29.56	15.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	106.2 PK			1.19 V	84	101.56	4.68
2	*5785.00	95.2 AV			1.19 V	84	90.56	4.68
3	#11570.00	58.4 PK	74.0	-15.6	1.51 V	117	43.08	15.36
4	#11570.00	47.3 AV	54.0	-6.7	1.51 V	117	31.93	15.36

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	106.8 PK			1.17 H	312	102.02	4.80
2	*5825.00	95.8 AV			1.17 H	312	91.01	4.80
3	#5850.00	75.3 PK	78.2	-2.9	1.17 H	312	70.45	4.85
4	#11650.00	57.8 PK	74.0	-16.2	1.06 H	166	42.60	15.24
5	#11650.00	45.6 AV	54.0	-8.5	1.06 H	166	30.31	15.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	106.8 PK			1.19 V	84	101.95	4.80
2	*5825.00	95.5 AV			1.19 V	84	90.66	4.80
3	#5850.00	75.3 PK	78.2	-2.9	1.19 V	84	70.43	4.85
4	#11650.00	58.7 PK	74.0	-15.3	1.00 V	107	43.48	15.24
5	#11650.00	48.3 AV	54.0	-5.8	1.00 V	107	33.01	15.24

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11n (40MHz)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	66.4 PK	74.0	-7.7	1.19 H	274	63.08	3.27
2	#5150.00	51.5 AV	54.0	-2.5	1.19 H	274	48.27	3.27
3	*5190.00	103.0 PK			1.19 H	274	99.75	3.23
4	*5190.00	92.1 AV			1.19 H	274	88.89	3.23
5	#10380.00	55.6 PK	74.0	-18.4	1.09 H	230	41.80	13.81
6	#10380.00	43.5 AV	54.0	-10.5	1.09 H	230	29.73	13.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	66.3 PK	74.0	-7.7	1.23 V	76	63.06	3.27
2	#5150.00	51.0 AV	54.0	-3.0	1.23 V	76	47.74	3.27
3	*5190.00	102.3 PK			1.23 V	76	99.03	3.23
4	*5190.00	91.6 AV			1.23 V	76	88.36	3.23
5	#10380.00	56.7 PK	74.0	-17.3	1.08 V	191	42.88	13.81
6	#10380.00	46.0 AV	54.0	-8.0	1.08 V	191	32.17	13.81

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	104.7 PK			1.18 H	278	101.38	3.27
2	*5230.00	94.1 AV			1.18 H	278	90.81	3.27
3	#5350.00	56.3 PK	74.0	-17.7	1.18 H	278	52.86	3.48
4	#5350.00	43.8 AV	54.0	-10.3	1.18 H	278	40.27	3.48
5	#10460.00	56.1 PK	74.0	-17.9	1.16 H	221	41.78	14.28
6	#10460.00	44.5 AV	54.0	-9.5	1.16 H	221	30.25	14.28
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	104.4 PK			1.21 V	77	101.15	3.27
2	*5230.00	93.8 AV			1.21 V	77	90.49	3.27
3	#5350.00	55.3 PK	74.0	-18.8	1.21 V	77	51.77	3.48
4	#5350.00	43.0 AV	54.0	-11.0	1.21 V	77	39.54	3.48
5	#10460.00	57.3 PK	74.0	-16.7	1.43 V	115	43.00	14.28
6	#10460.00	46.8 AV	54.0	-7.2	1.43 V	115	32.51	14.28

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	76.8 PK	78.2	-1.4	1.19 H	312	72.42	4.35
2	*5755.00	102.6 PK			1.19 H	312	98.06	4.52
3	*5755.00	92.4 AV			1.19 H	312	87.88	4.52
4	#11510.00	58.0 PK	74.0	-16.0	1.02 H	26	41.83	16.21
5	#11510.00	45.8 AV	54.0	-8.2	1.02 H	26	29.58	16.21
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	76.7 PK	78.2	-1.5	1.33 V	84	72.39	4.35
2	*5755.00	101.9 PK			1.33 V	84	97.39	4.52
3	*5755.00	91.4 AV			1.33 V	84	86.90	4.52
4	#11510.00	59.3 PK	74.0	-14.7	1.03 V	340	43.10	16.21
5	#11510.00	48.3 AV	54.0	-5.7	1.03 V	340	32.08	16.21

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	103.6 PK			1.18 H	313	98.89	4.73
2	*5795.00	92.6 AV			1.18 H	313	87.87	4.73
3	#5850.00	64.9 PK	74.0	-9.1	1.18 H	313	60.03	4.85
4	#5850.00	48.8 AV	54.0	-5.2	1.18 H	313	43.97	4.85
5	#11590.00	57.7 PK	74.0	-16.3	1.29 H	348	42.60	15.08
6	#11590.00	44.7 AV	54.0	-9.3	1.29 H	348	29.58	15.08
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	103.0 PK			1.21 V	79	98.25	4.73
2	*5795.00	92.4 AV			1.21 V	79	87.62	4.73
3	#5850.00	63.9 PK	74.0	-10.1	1.21 V	79	59.05	4.85
4	#5850.00	48.7 AV	54.0	-5.3	1.21 V	79	43.82	4.85
5	#11590.00	58.3 PK	74.0	-15.7	1.12 V	154	43.26	15.08
6	#11590.00	47.2 AV	54.0	-6.8	1.12 V	154	32.09	15.08

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

BELOW 1GHz WORST-CASE DATA: 802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	166.28	20.4 QP	43.5	-23.1	2.61 H	108	33.88	-13.51
2	232.39	30.0 QP	46.0	-16.0	2.20 H	273	45.79	-15.76
3	299.32	29.0 QP	46.0	-17.0	2.43 H	264	41.13	-12.11
4	365.81	29.7 QP	46.0	-16.3	1.68 H	346	40.54	-10.83
5	677.18	24.5 QP	46.0	-21.5	1.00 H	308	29.63	-5.13
6	896.79	27.7 QP	46.0	-18.3	1.00 H	50	29.28	-1.54
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	166.28	31.3 QP	43.5	-12.2	1.06 V	1	44.77	-13.51
2	232.34	36.6 QP	46.0	-9.4	1.22 V	16	52.33	-15.77
3	497.93	31.3 QP	46.0	-14.7	1.73 V	359	39.63	-8.36
4	761.96	26.8 QP	46.0	-19.2	2.61 V	3	30.27	-3.46
5	827.83	27.3 QP	46.0	-18.7	1.99 V	297	29.75	-2.41
6	899.22	28.6 QP	46.0	-17.4	1.64 V	219	29.98	-1.40

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	33.10	21.2 QP	40.0	-18.8	2.65 H	318	36.58	-15.34
2	232.39	29.9 QP	46.0	-16.1	2.17 H	290	45.62	-15.76
3	299.32	29.2 QP	46.0	-16.8	2.20 H	264	41.32	-12.11
4	365.81	29.3 QP	46.0	-16.7	1.69 H	344	40.10	-10.83
5	432.36	27.2 QP	46.0	-18.8	1.73 H	349	36.59	-9.41
6	852.27	27.6 QP	46.0	-18.4	1.00 H	247	29.87	-2.25
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	166.04	30.7 QP	43.5	-12.8	1.02 V	0	44.23	-13.50
2	232.78	36.4 QP	46.0	-9.6	1.00 V	0	52.09	-15.68
3	298.74	28.4 QP	46.0	-17.7	1.00 V	360	40.48	-12.13
4	431.48	29.6 QP	46.0	-16.4	2.51 V	320	39.06	-9.44
5	497.88	31.5 QP	46.0	-14.5	1.87 V	360	39.89	-8.36
6	898.01	28.1 QP	46.0	-17.9	1.98 V	301	29.60	-1.46

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

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.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	100276	Apr. 18, 2014	Apr. 17, 2015
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ENV216	101197	Apr. 18, 2014	Apr. 17, 2015
LISN With Adapter (for EUT)	AD10	C10Ada-002	Apr. 18, 2014	Apr. 17, 2015
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Nov. 25, 2014	Nov. 24, 2015
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 08, 2014	May 07, 2015
Software	ADT_Cond_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Feb. 18, 2014	Feb. 17, 2015
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-011484	May 27, 2014	May 26, 2015
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 20, 2014	Nov. 19, 2015
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 20, 2014	Nov. 19, 2015

Notes: 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 Shielded Room No. 10.
3. The VCCI Site Registration No. C-1852.

4.2.3 TEST PROCEDURES

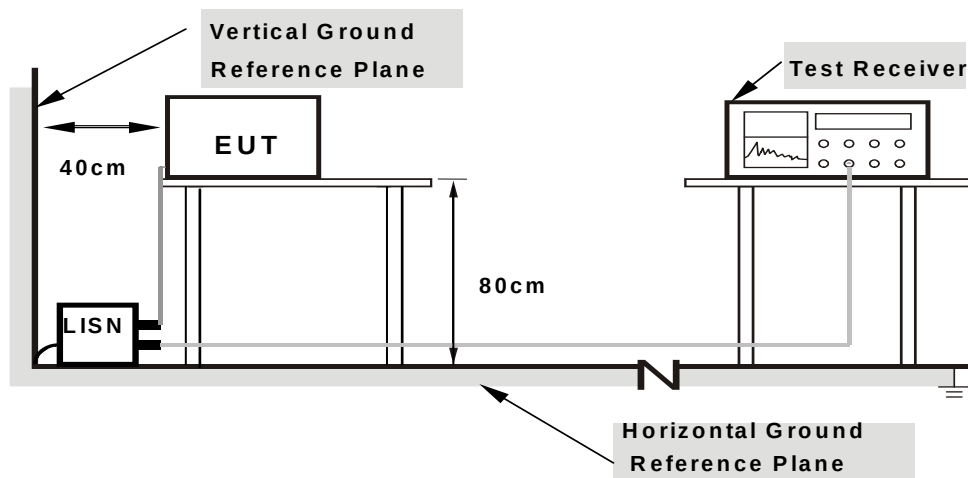
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were 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 cm 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 item 4.1.6.

4.2.7 TEST RESULTS

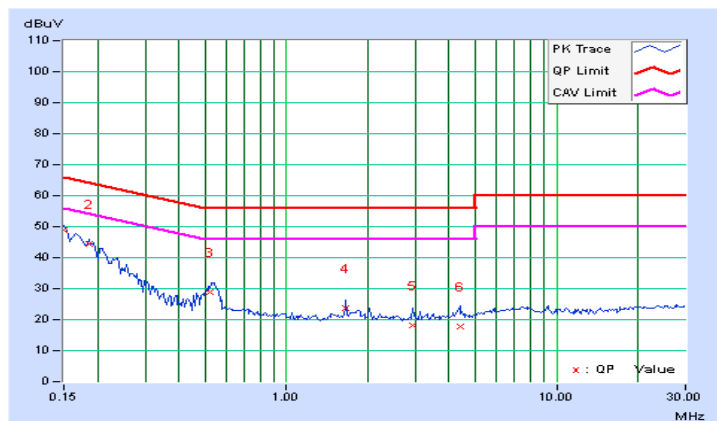
CONDUCTED WORST-CASE DATA

PHASE	Line 1	6dB BANDWIDTH	9kHz
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Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.69	39.20	25.25	48.89	34.94	66.00	56.00	-17.11	-21.06
2	0.18516	9.68	34.84	21.45	44.52	31.13	64.25	54.25	-19.73	-23.12
3	0.52255	9.70	19.26	15.62	28.96	25.32	56.00	46.00	-27.04	-20.68
4	1.65625	9.73	14.01	11.49	23.74	21.22	56.00	46.00	-32.26	-24.78
5	2.94667	9.77	8.52	4.05	18.29	13.82	56.00	46.00	-37.71	-32.18
6	4.39952	9.81	7.87	4.44	17.68	14.25	56.00	46.00	-38.32	-31.75

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

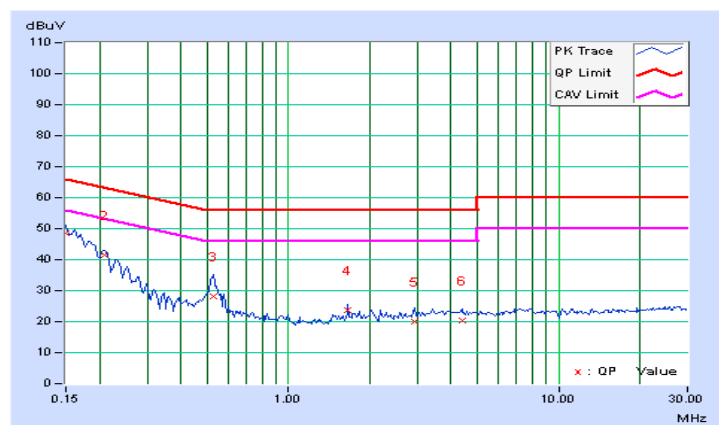


PHASE	Line 2	6dB BANDWIDTH	9kHz
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.68	38.90	24.86	48.58	34.54	66.00	56.00	-17.42	-21.46
2	0.20859	9.68	31.72	21.33	41.40	31.01	63.26	53.26	-21.86	-22.25
3	0.52500	9.70	18.42	11.21	28.12	20.91	56.00	46.00	-27.88	-25.09
4	1.65753	9.75	13.83	11.53	23.58	21.28	56.00	46.00	-32.42	-24.72
5	2.94531	9.80	10.14	5.51	19.94	15.31	56.00	46.00	-36.06	-30.69
6	4.38690	9.86	10.45	6.60	20.31	16.46	56.00	46.00	-35.69	-29.54

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

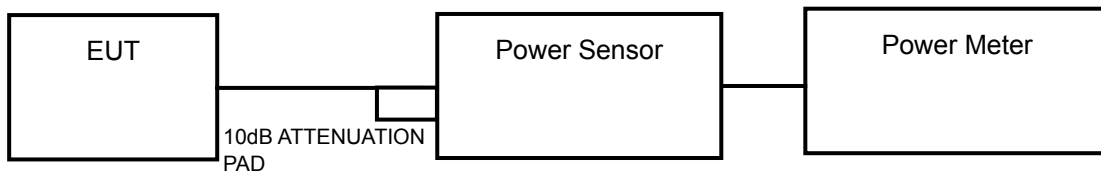


4.3 TRANSMIT POWER MEASUREMENT

4.3.1 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-3	√	---	1 Watt (30 dBm)

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 PROCEDURE

FOR AVERAGE POWER MEASUREMENT

For 802.11a, 802.11n (HT20), 802.11n (HT40)

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%.

4.3.5 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 specific channel frequencies individually.

4.3.7 TEST RESULTS

POWER OUTPUT:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	MAXIMUM CONDUCTED POWER (dBm)	MAXIMUM CONDUCTED POWER (mW)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	12.54	17.9	30	PASS
40	5200	12.57	18.1	30	PASS
48	5240	12.48	17.7	30	PASS
149	5745	12.63	18.3	30	PASS
157	5785	12.64	18.4	30	PASS
165	5825	12.67	18.5	30	PASS

802.11n (20MHz)

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	9.51	9.58	18.0	12.56	30	PASS
40	5200	9.52	9.57	18.0	12.56	30	PASS
48	5240	9.54	9.61	18.1	12.59	30	PASS
149	5745	9.52	9.58	18.0	12.56	30	PASS
157	5785	9.56	9.59	18.1	12.59	30	PASS
165	5825	9.54	9.63	18.2	12.60	30	PASS

802.11n (40 MHz)

CHAN.	FREQ. (MHz)	MAXIMUM CONDUCTED POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	9.52	9.64	18.2	12.59	30	PASS
46	5230	9.49	9.62	18.1	12.57	30	PASS
151	5755	9.51	9.54	17.9	12.54	30	PASS
159	5795	9.50	9.57	18.0	12.55	30	PASS

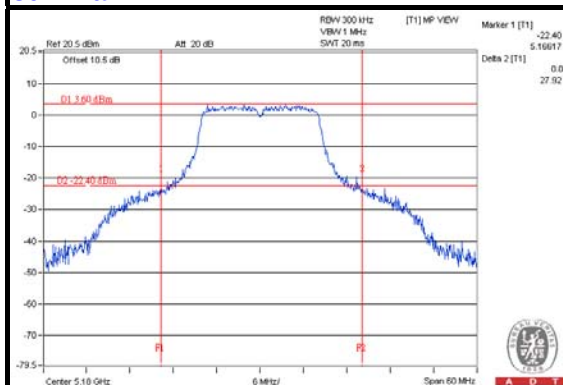
26dB BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
802.11a			
36	5180	27.92	PASS
40	5200	26.32	PASS
48	5240	26.23	PASS

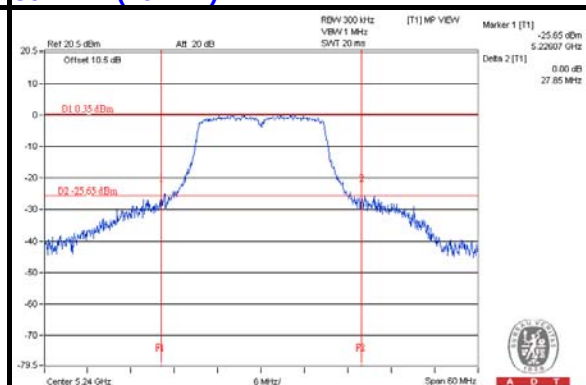
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
802.11n (20MHz)				
36	5180	24.16	25.60	PASS
40	5200	23.32	25.64	PASS
48	5240	23.21	27.85	PASS
802.11n (40MHz)				
38	5190	50.26	67.40	PASS
46	5230	45.49	61.67	PASS

SPECTRUM PLOT OF WORST VALUE

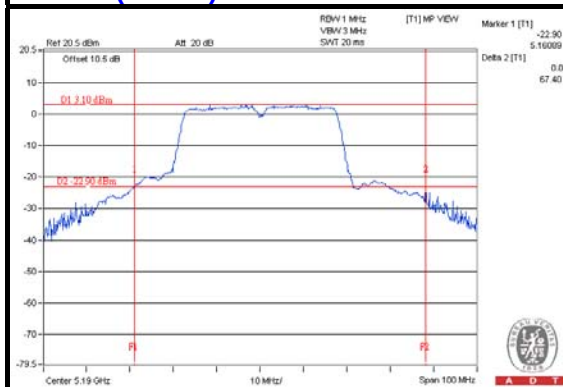
802.11a



802.11n (20MHz)



802.11n (40MHz)

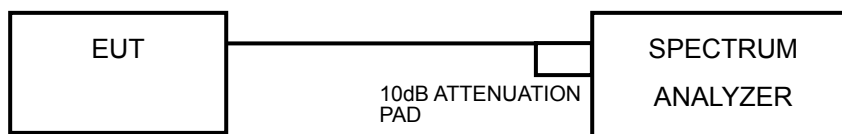


4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 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-3	√	---	30dBm/ 500kHz

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.4.4 TEST PROCEDURES

For U-NII-1 band:

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW $\geq$ 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 and add 10 log (1/duty cycle)

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)

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6.

4.4.7 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	-3.09	0.28	-2.81	17	PASS
40	5200	-2.63	0.28	-2.35	17	PASS
48	5240	-3.29	0.28	-3.01	17	PASS

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

802.11n (20MHz)

CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
36	5180	-7.82	-7.55	-3.72	0.95	-2.77	14.09	PASS
40	5200	-7.55	-7.97	-3.79	0.95	-2.84	14.09	PASS
48	5240	-8.33	-6.88	-3.58	0.95	-2.63	14.09	PASS

Note: 1. Refer to section 3.3 for duty cycle spectrum plot.

2. Directional gain = $5.9\text{dBi} + 10\log(2) = 8.91\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (8.91 - 6) = 14.09\text{dBm}$.

802.11n (40MHz)

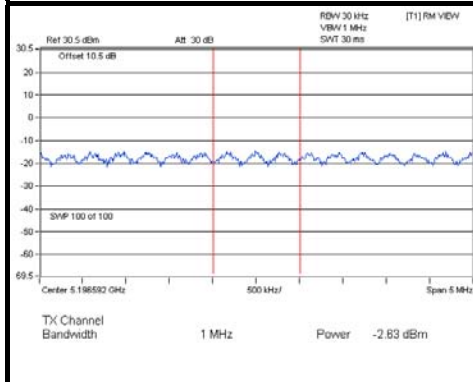
CHAN.	FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
38	5190	-17.43	-15.35	-11.84	1.41	-10.43	14.09	PASS
46	5230	-15.48	-14.06	-10.29	1.41	-8.88	14.09	PASS

Note: 1. Refer to section 3.3 for duty cycle spectrum plot.

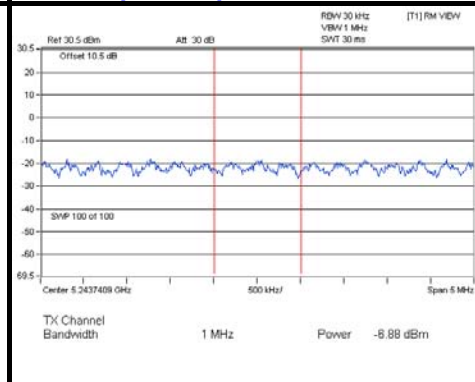
2. Directional gain = $5.9\text{dBi} + 10\log(2) = 8.91\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (8.91 - 6) = 14.09\text{dBm}$

SPECTRUM PLOT OF WORST VALUE

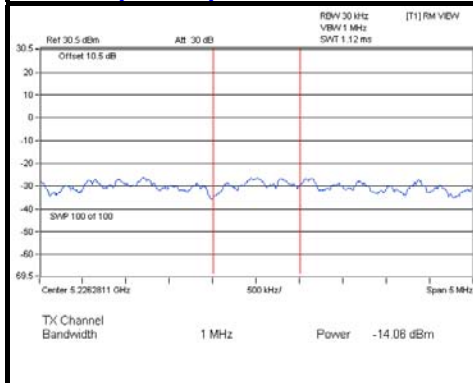
802.11a



802.11n (20 MHz)



802.11n (40MHz)



For U-NII-3 Band

802.11a

Channel	Freq. (MHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
149	5745	5.84	30	PASS
157	5785	4.52	30	PASS
165	5825	3.89	30	PASS

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	149	5745	3.31	3.01	7.27	27.09	PASS
	157	5785	2.76	3.01	6.72	27.09	PASS
	165	5825	1.76	3.01	5.72	27.09	PASS
1	149	5745	2.10	3.01	6.06	27.09	PASS
	157	5785	2.02	3.01	5.98	27.09	PASS
	165	5825	1.90	3.01	5.86	27.09	PASS

NOTE: Directional gain = 5.9dBi +10 log(2) = 8.91dBi > 6dBi, so the power density limit shall be reduced to 30-(8.91-6) = 27.09dBm.

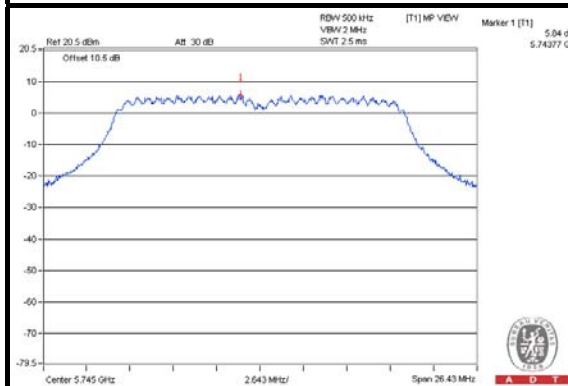
802.11n (40MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
0	151	5755	1.09	3.01	5.51	27.09	PASS
	159	5795	0.25	3.01	4.67	27.09	PASS
1	151	5755	-1.00	3.01	3.42	27.09	PASS
	159	5795	-2.11	3.01	2.31	27.09	PASS

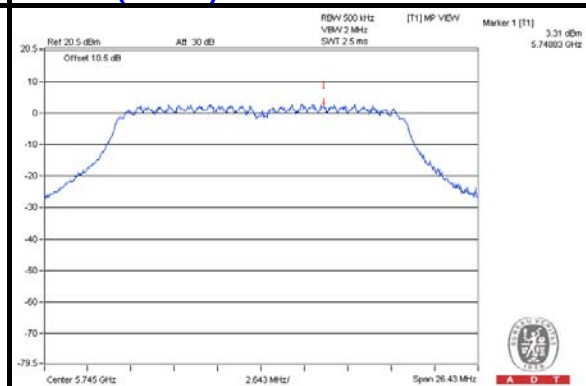
NOTE: Directional gain = 5.9dBi +10 log(2) = 8.91dBi > 6dBi, so the power density limit shall be reduced to 30-(8.91-6) = 27.09dBm.

SPECTRUM PLOT OF WORST VALUE

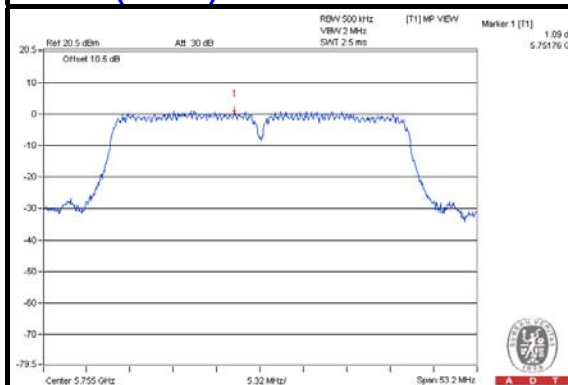
802.11a



802.11n (20MHz)



802.11n (40MHz)

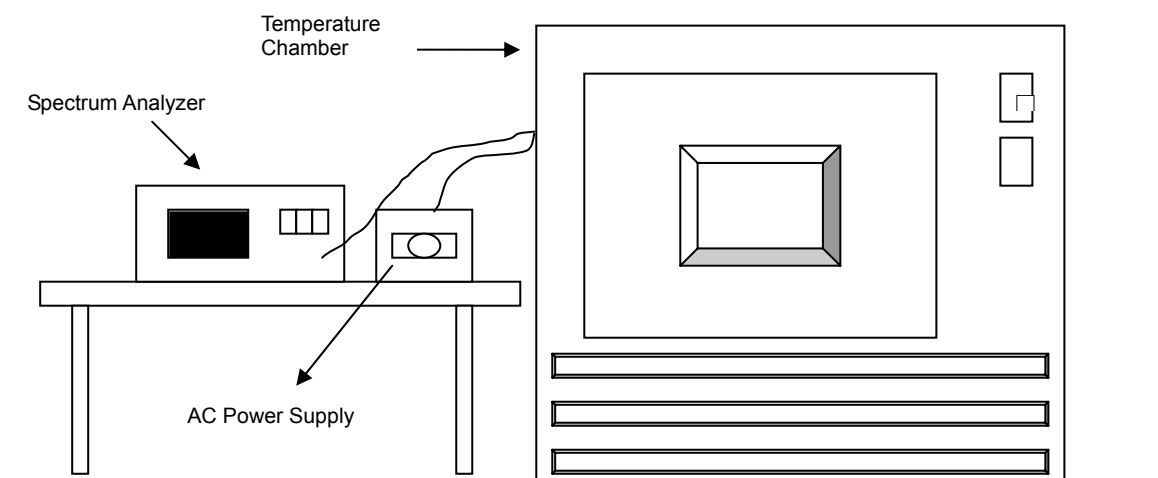


4.5 FREQUENCY STABILITY

4.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

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

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

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

4.5.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	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	120	5180.042446	8.1942302	5180.042803	8.2630537	5180.042529	8.2102790	5180.042948	8.2911540
40	120	5180.042571	8.2183868	5180.042766	8.2559323	5180.042819	8.2661853	5180.042806	8.2637099
30	120	5180.042935	8.2885181	5180.042873	8.2765616	5180.042743	8.2514681	5180.0429	8.2818994
20	120	5180.042709	8.2449761	5180.042631	8.2298580	5180.042931	8.2878639	5180.042954	8.2923164
10	120	5180.043356	8.3699784	5180.04305	8.3108682	5180.042867	8.2755705	5180.043329	8.3647076
0	120	5180.042898	8.2813749	5180.043109	8.3222735	5180.042716	8.2463261	5180.042766	8.2560385
-10	120	5180.042577	8.2195410	5180.042726	8.2482636	5180.042412	8.1876281	5180.042599	8.2237507
-20	120	5180.042812	8.2649152	5180.043287	8.3566485	5180.042886	8.2792189	5180.043248	8.3490677

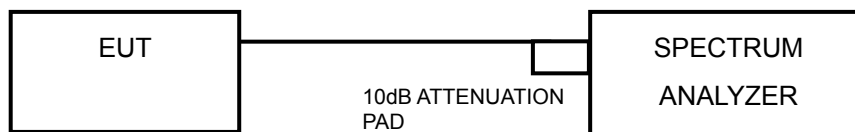
FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5180.042935	8.2886831	5180.042756	8.2540417	5180.042677	8.2388990	5180.042982	8.2977178
	120	5180.042709	8.2449761	5180.042631	8.2298580	5180.042931	8.2878639	5180.042954	8.2923164
	102	5180.043064	8.3134808	5180.042788	8.2602843	5180.042906	8.2830344	5180.042854	8.2730456

4.6 6dB BANDWIDTH MEASUREMENT

4.6.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

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

- 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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITIONS

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

4.6.7 TEST RESULTS

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.62	0.5	PASS
157	5785	17.63	0.5	PASS
165	5825	17.63	0.5	PASS

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	

802.11n (20MHz)

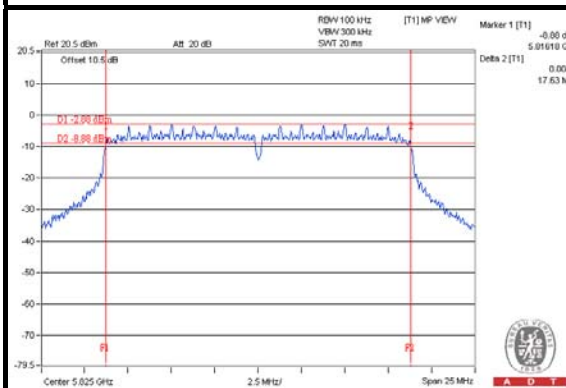
149	5745	17.62	17.62	PASS
157	5785	17.63	17.62	PASS
165	5825	17.61	17.61	PASS

802.11n (40MHz)

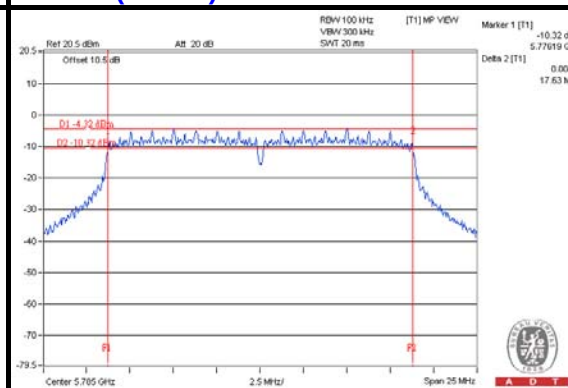
151	5775	35.47	35.61	PASS
159	5795	35.46	35.82	PASS

SPECTRUM PLOT OF WORST VALUE

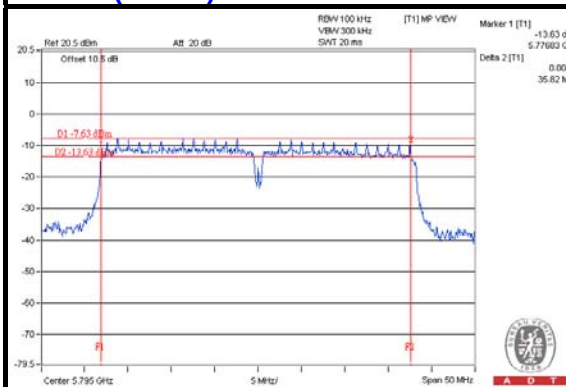
802.11a



802.11n (20MHz)



802.11n (40MHz)



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

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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.

7. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---