



FCC TEST REPORT (15.407)

REPORT NO.: RF140606E08-1

MODEL NO.: WND930

FCC ID: PY314200281

RECEIVED: June 06, 2014

TESTED: June 20 to Aug. 06, 2014

ISSUED: Aug. 20, 2014

APPLICANT: Netgear Incorporated

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140606E08-1	Original release	Aug. 20, 2014



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1. CERTIFICATION

PRODUCT: Outdoor High Power Wireless N Access Point
BRAND NAME: NETGEAR
MODEL NO.: WND930
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: Netgear Incorporated
TESTED: June 20 to Aug. 06, 2014
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment (Model: WND930) 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 : , **DATE:** Aug. 20, 2014
(Lori Chung, Specialist)

APPROVED BY : , **DATE:** Aug. 20, 2014
(May Chen, Manager)



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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	PASS	Meet the requirement of limit. Minimum passing margin is -11.04dB at 0.49375MHz
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.4dB at 5150.00MHz.
15.407(a/1/2)	Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF)_internal and N type(M)_external not a standard connector.

NOTE: 1. For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.25GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.25GHz. For the 2400 ~ 2483.5MHz and 5.725~5.850GHz RF parameters was recorded in another test report.



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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:

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

Measurement	Value
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.43 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Outdoor High Power Wireless N Access Point
MODEL NO.	WND930
POWER SUPPLY	48Vdc (from POE)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS,OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a / g: up to 54Mbps 802.11n: up to 300Mbps
OPERATING FREQUENCY	For 15.407 5GHz: 5.18 ~ 5.24GHz For 15.247 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	For 15.407 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) For 15.247 (2.4GHz) 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) For 15.247 (5GHz) 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	For 15.407 802.11a: 19.53mW 802.11n (HT20): 18.199mW 802.11n (HT40): 35.591mW For 15.247 (2.4GHz) 802.11b: 301.535mW 802.11g: 474.558mW 802.11n (HT20): 366.511mW 802.11n (HT40): 117.232mW For 15.247 (5GHz) 802.11a: 499.668mW 802.11n (HT20): 507.064mW 802.11n (HT40): 365.563mW



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ANTENNA TYPE	Refer to note as below
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

Note:

1. There is WLAN (2.4GHz & 5GHz) technology used for the EUT.
2. The emission of the simultaneous operation WLAN (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
3. The antennas provided to the EUT, please refer to the following table:

Internal Antenna				
Transmitter Circuit	Antenna Gain(dBi) Including cable loss	Frequency range	Antenna Type	Connector Type
Chain (0)	5	2.4~2.4835GHz	Panel	i-pex(MHF)
Chain (1)	5		Panel	i-pex(MHF)
Chain (0)	5	5.150~5.850GHz	Panel	i-pex(MHF)
Chain (1)	5		Panel	i-pex(MHF)
External Antenna				
Transmitter Circuit	Antenna Gain(dBi) Including cable loss	Frequency range	Antenna Type	Connector Type
Chain (0)	5	2.4~2.4835GHz	Dipole	N type(M)
Chain (1)	5		Dipole	N type(M)
Chain (0)	7	5.150~5.850GHz	Dipole	N type(M)
Chain (1)	7		Dipole	N type(M)

4. The EUT incorporates a MIMO function without beamforming.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX CDD	2RX
802.11b	1 ~ 11Mbps	2TX CDD	2RX
802.11g	6 ~ 54Mbps	2TX CDD	2RX
802.11n (HT20)	MCS 0~7	2TX CDD	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX CDD	2RX
	MCS 8~15	2TX	2RX

5. The above EUT information was 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

Operated in 5150 ~ 5250MHz band:

4 channels are provided for 802.11a, 802.11n (HT20):

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

2 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY
38	5190 MHz
46	5230 MHz



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	
1	-	√	√	√	With External antenna
2	√	√	√	-	With Internal antenna

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

POWER LINE CONDUCTED EMISSION TEST:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (MBPS)
802.11n (HT40)	38 to 46	46	OFDM	BPSK	13.5

RADIATED EMISSION TEST (BELOW 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (MBPS)
802.11n (HT40)	38 to 46	46	OFDM	BPSK	13.5



RADIATED EMISSION TEST (ABOVE 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATI ON TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATI ON TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	25deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Nelson Teng
RE≥1G	23deg. C, 67%RH	120Vac, 60Hz	Robert Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	James Chan



3.3 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 D01 General UNII Test Procedures Old Rules v01r04

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 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.

3.4 DUTY CYCLE OF TEST SIGNAL

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

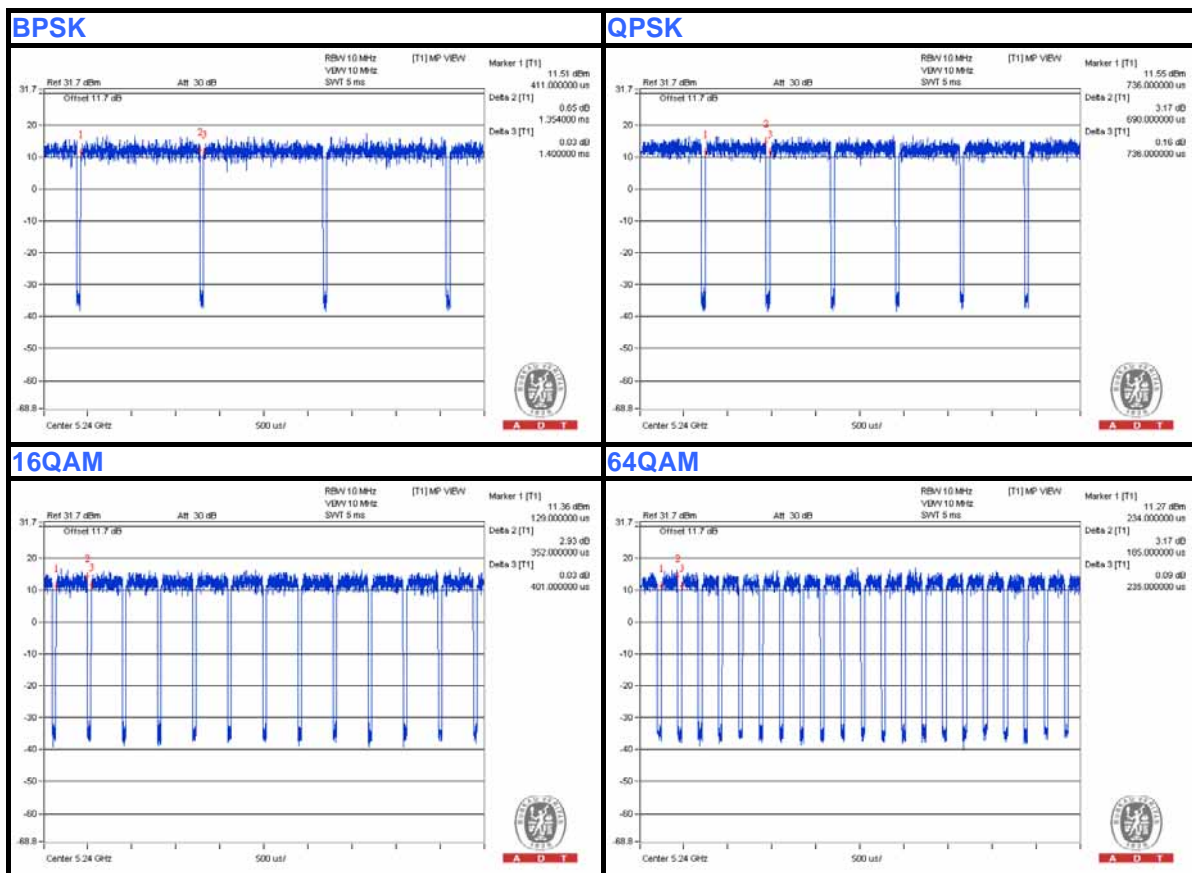
802.11a

BPSK: Duty cycle = 1.354 ms/1.4 ms = 0.967, Duty factor = $10 * \log(1/0.967) = 0.15$

QPSK: Duty cycle = 0.69 ms/0.736 ms = 0.938, Duty factor = $10 * \log(1/0.938) = 0.28$

16QAM: Duty cycle = 0.352 ms/0.401 ms = 0.878, Duty factor = $10 * \log(1/0.974) = 0.57$

64QAM: Duty cycle = 0.185 ms/0.235 ms = 0.787, Duty factor = $10 * \log(1/0.787) = 1.04$



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

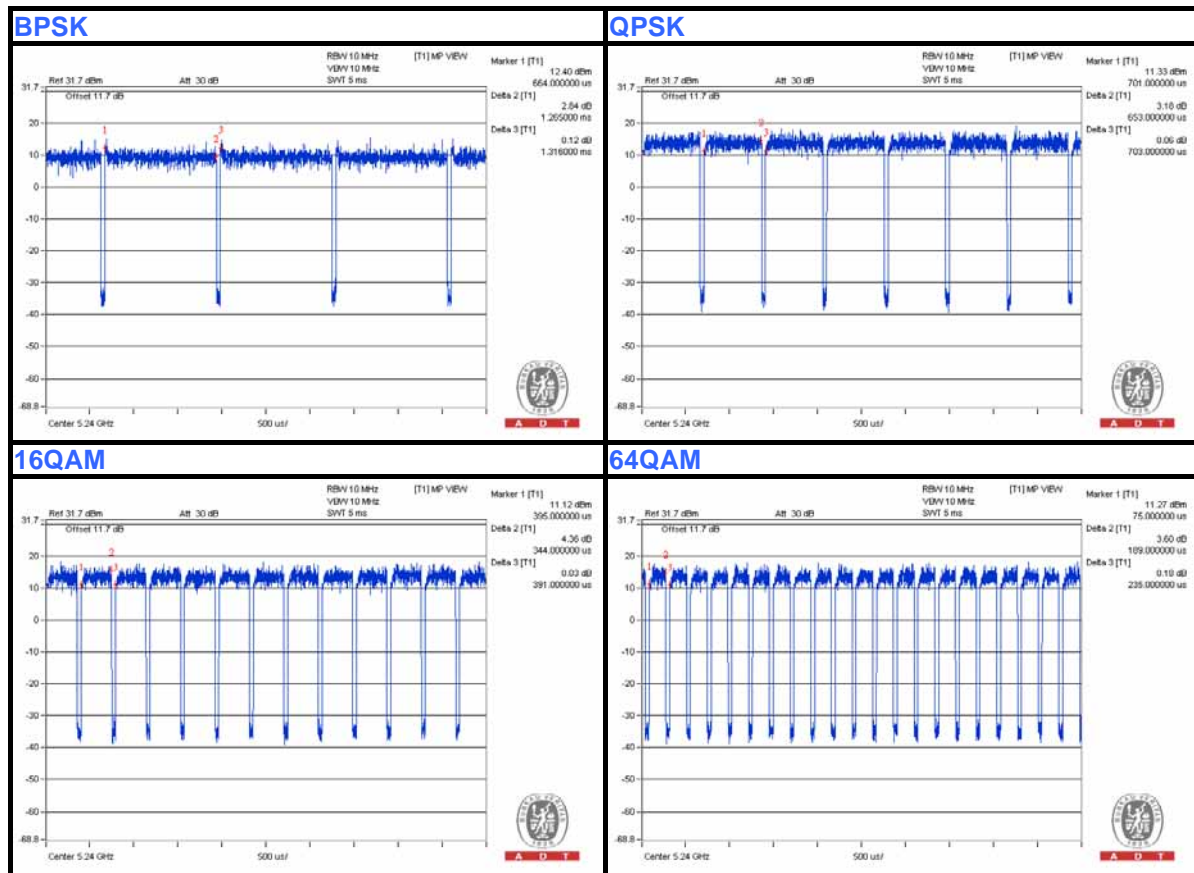
802.11n (HT20)

BPSK: Duty cycle = 1.265 ms/1.316 ms = 0.961, Duty factor = $10 * \log(1/0.961) = 0.17$

QPSK: Duty cycle = 0.653 ms/0.703 ms = 0.929, Duty factor = $10 * \log(1/0.929) = 0.32$

16QAM: Duty cycle = 0.344 ms/0.391 ms = 0.88, Duty factor = $10 * \log(1/0.88) = 0.56$

64QAM: Duty cycle = 0.189 ms/0.235 ms = 0.804, Duty factor = $10 * \log(1/0.804) = 0.95$





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

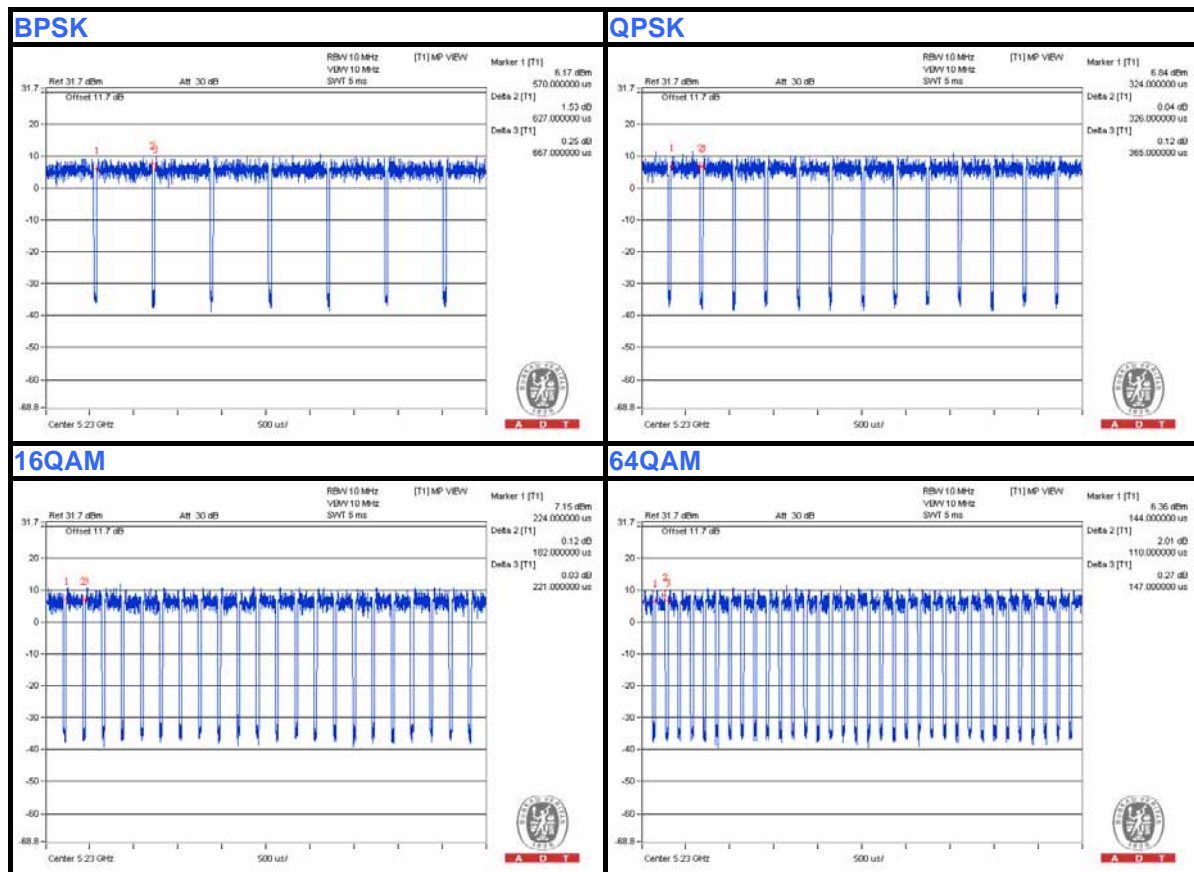
802.11n (HT40)

BPSK: Duty cycle = 0.627 ms/0.667 ms = 0.94, Duty factor = $10 * \log(1/0.94) = 0.27$

QPSK: Duty cycle = 0.326 ms/0.365 ms = 0.893, Duty factor = $10 * \log(1/0.893) = 0.49$

16QAM: Duty cycle = 0.182 ms/0.221 ms = 0.824, Duty factor = $10 * \log(1/0.824) = 0.84$

64QAM: Duty cycle = 0.11 ms/0.147 ms = 0.748, Duty factor = $10 * \log(1/0.748) = 1.26$





3.5 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	Remark
A	NOTEBOOK	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B	POE	Symbol	AP-PSBIAS-1P2-AFR	NA	FCC DoC	Supplied by client
C	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Supplied by Client

NOTE:

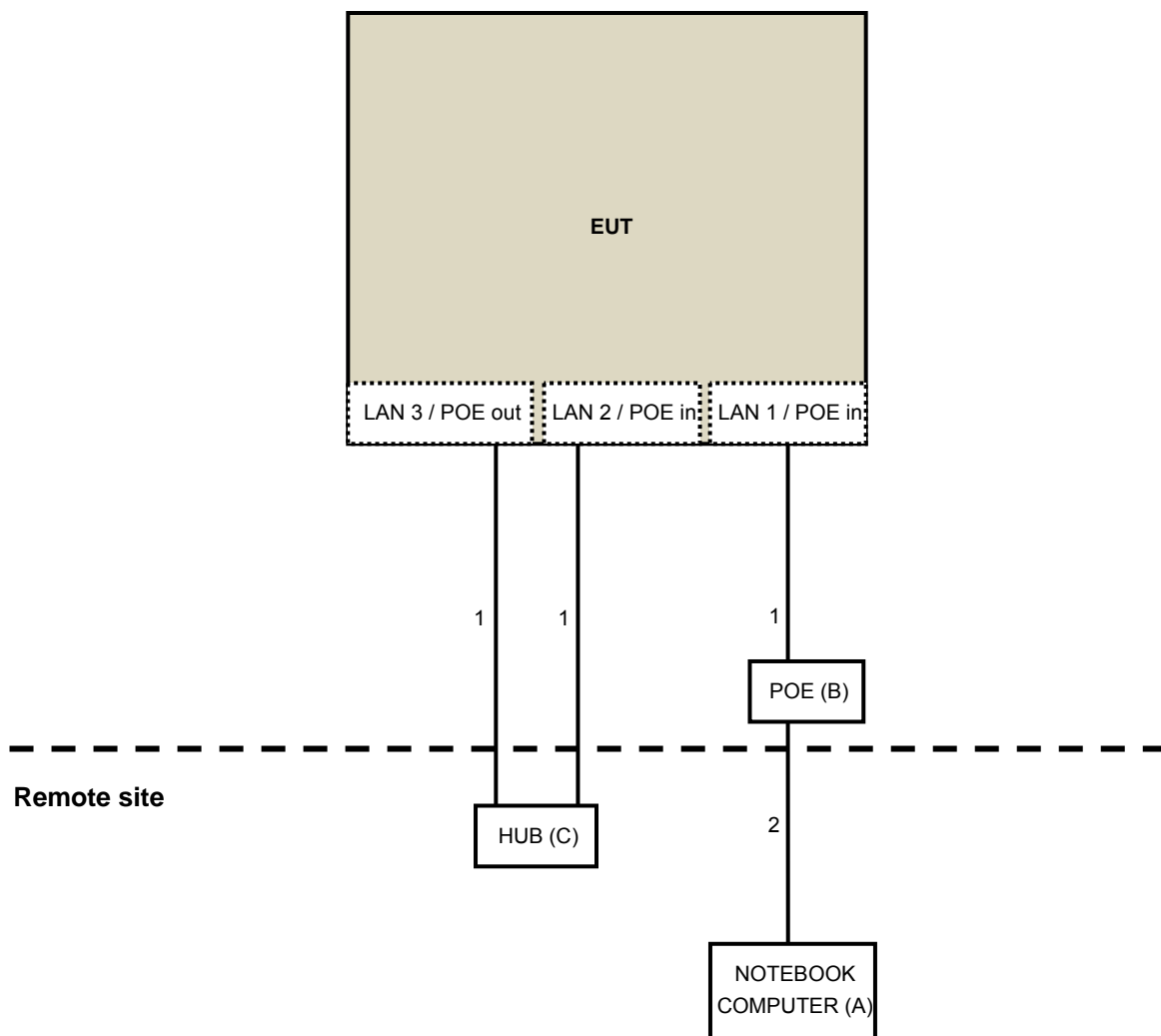
1. All power cords of the above support units are non-shielded (1.8 m).

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	RJ45	1	10	No	0	Provided by Lab
2	RJ45	1	3	No	0	Provided by Lab

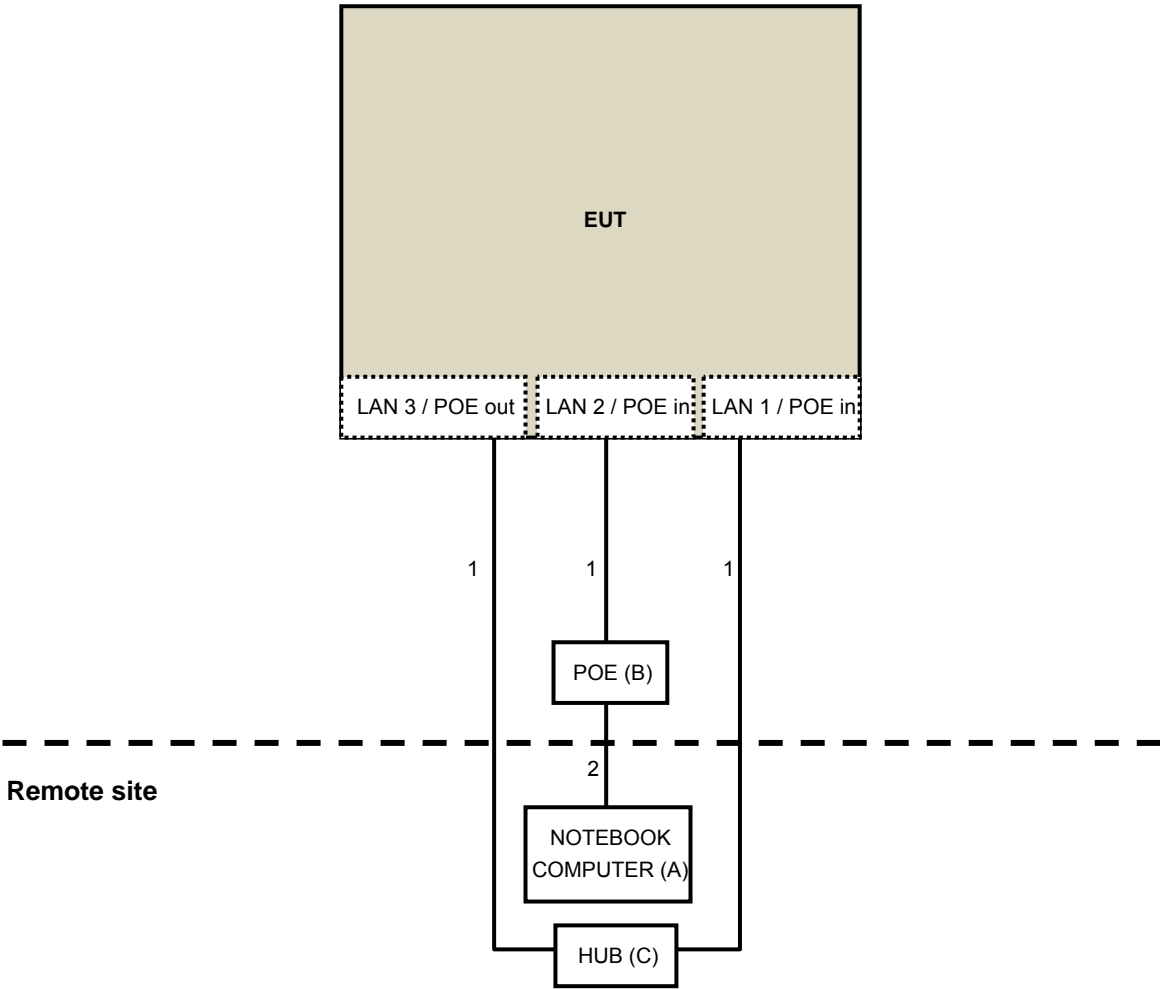
3.6 CONFIGURATION OF SYSTEM UNDER TEST

For conducted emission test:

LAN 1 / POE in



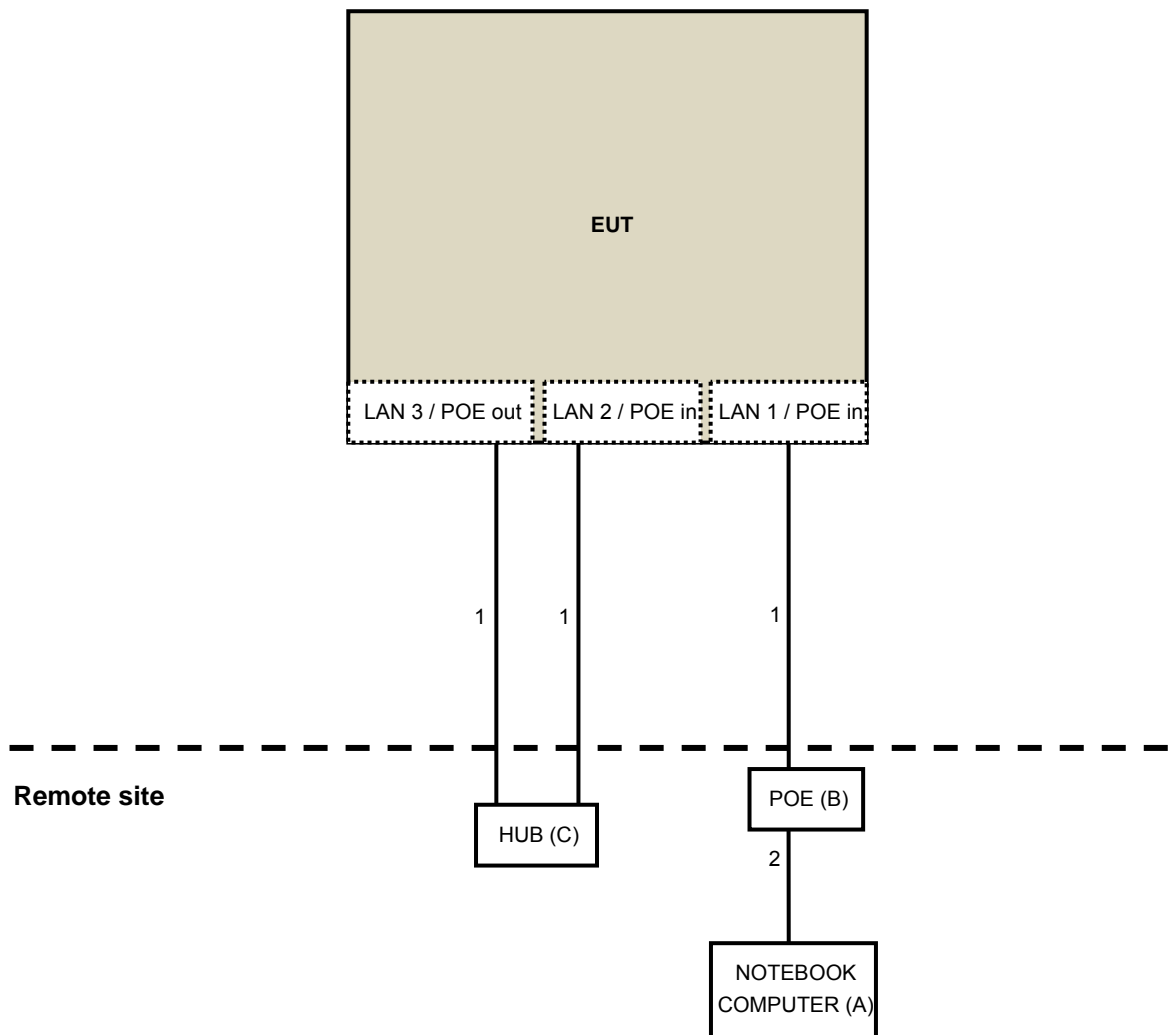
For conducted emission test:
LAN 2 / POE in





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For other test items:





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4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 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 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 12, 2013	Sep. 11, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10, 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
Software ADT	BV ADT_Cond_V7.3.7. 3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: June 20, 2014

4.1.3 TEST PROCEDURES

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

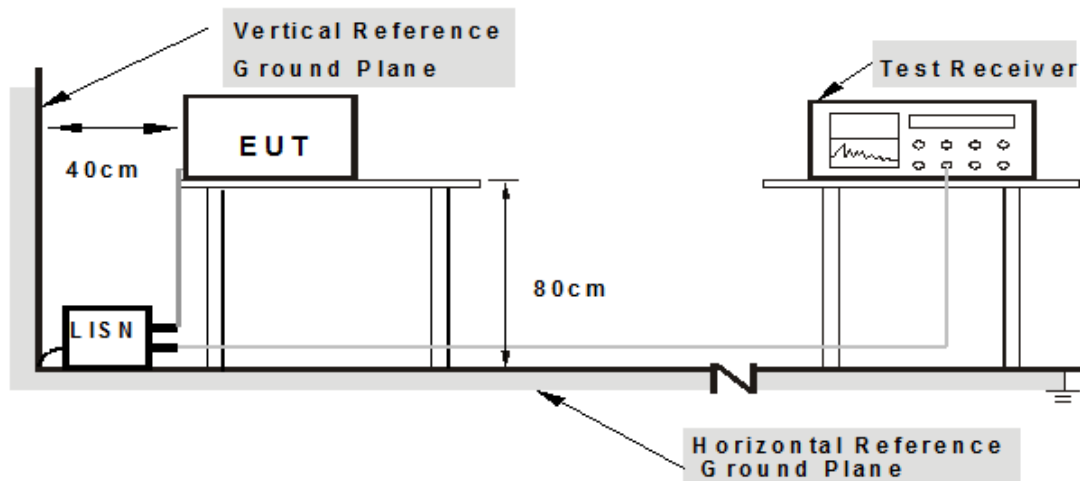
NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared support unit A (NOTEBOOK COMPUTER) to act as communication partner.
3. The communication partner run test program “ART2_VER_2_28_7BIN” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS (MODE 2)

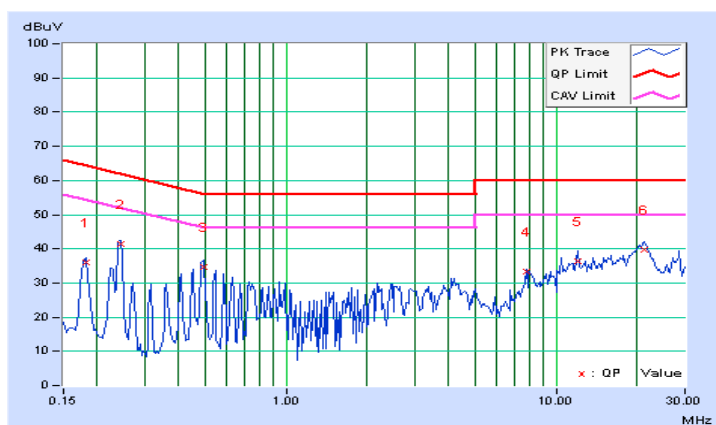
LAN 1 / POE in

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
--------------	----------	--------------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.07	36.06	35.75	36.13	35.82	64.43	54.43	-28.30	-18.61
2	0.24375	0.07	41.40	38.16	41.47	38.23	61.97	51.97	-20.49	-13.73
3	0.49375	0.10	34.61	32.98	34.71	33.08	56.10	46.10	-21.40	-13.03
4	7.75781	0.38	32.88	30.37	33.26	30.75	60.00	50.00	-26.74	-19.25
5	12.05859	0.51	35.84	34.18	36.35	34.69	60.00	50.00	-23.65	-15.31
6	21.14844	0.74	39.03	37.76	39.77	38.50	60.00	50.00	-20.23	-11.50

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

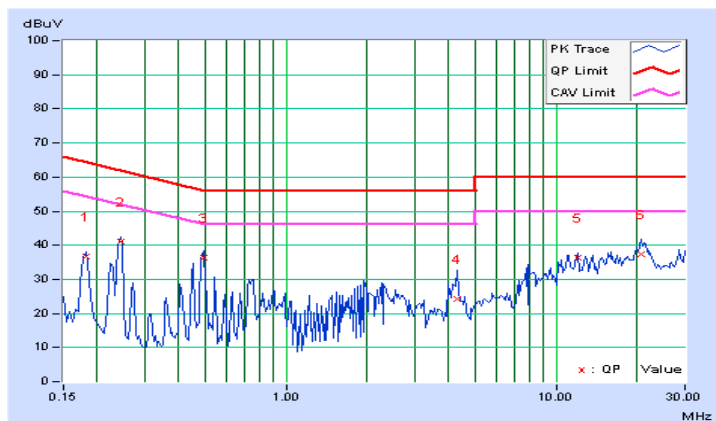


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor [dB]	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.07	36.73	35.53	36.80	35.60	64.43	54.43	-27.63	-18.83
2	0.24375	0.07	41.04	38.12	41.11	38.19	61.97	51.97	-20.85	-13.77
3	0.49375	0.10	36.35	34.97	36.45	35.07	56.10	46.10	-19.66	-11.04
4	4.30859	0.27	24.14	15.52	24.41	15.79	56.00	46.00	-31.59	-30.21
5	12.06250	0.51	36.02	34.02	36.53	34.53	60.00	50.00	-23.47	-15.47
6	20.56250	0.72	36.72	34.51	37.44	35.23	60.00	50.00	-22.56	-14.77

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



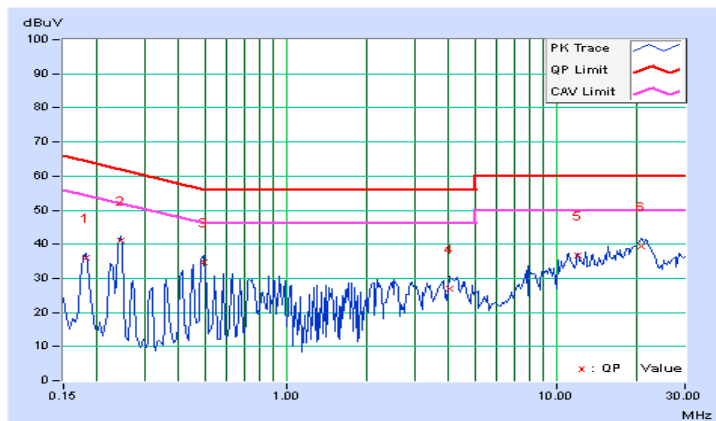
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PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.18125	0.07	36.12	35.71	36.19	35.78	64.43
2	0.24375	0.07	41.08	38.14	41.15	38.21	61.97	51.97	-20.81	-13.75
3	0.49375	0.10	34.65	32.98	34.75	33.08	56.10	46.10	-21.36	-13.03
4	4.05859	0.26	26.78	23.47	27.04	23.73	56.00	46.00	-28.96	-22.27
5	12.05859	0.51	36.06	34.42	36.57	34.93	60.00	50.00	-23.43	-15.07
6	20.60156	0.73	38.60	36.97	39.33	37.70	60.00	50.00	-20.67	-12.30

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

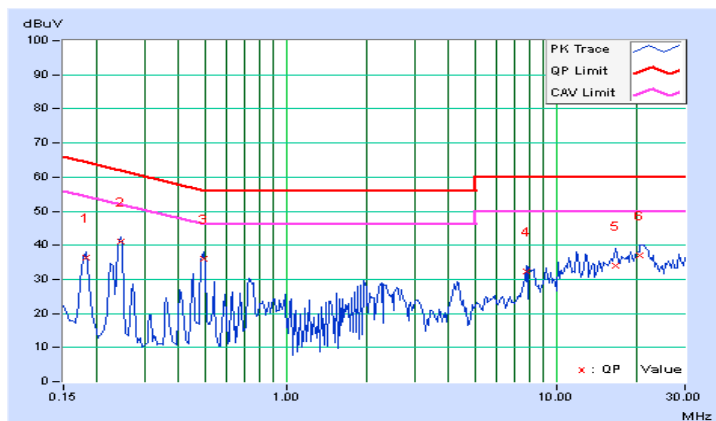


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.07	36.22	34.87	36.29	34.94	64.43	54.43	-28.14	-19.49
2	0.24375	0.07	40.92	37.98	40.99	38.05	61.97	51.97	-20.97	-13.91
3	0.49375	0.10	35.88	34.45	35.98	34.55	56.10	46.10	-20.13	-11.56
4	7.75803	0.38	31.91	29.82	32.29	30.20	60.00	50.00	-27.71	-19.80
5	16.61719	0.62	33.45	30.36	34.07	30.98	60.00	50.00	-25.93	-19.02
6	20.51888	0.71	36.36	33.76	37.07	34.47	60.00	50.00	-22.93	-15.53

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





4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 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.

4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
√	FIELD STRENGTH AT 3m (dBμV/m)	
	PK	AV
	74	54
	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m)
	PK	PK
	-27	68.2

NOTE:

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

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



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4.2.3 TEST INSTRUMENTS

For below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 15, 2014	Jan. 14, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: June 20, 2014



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For above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Aug. 01, 2014



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4.2.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters 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 height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

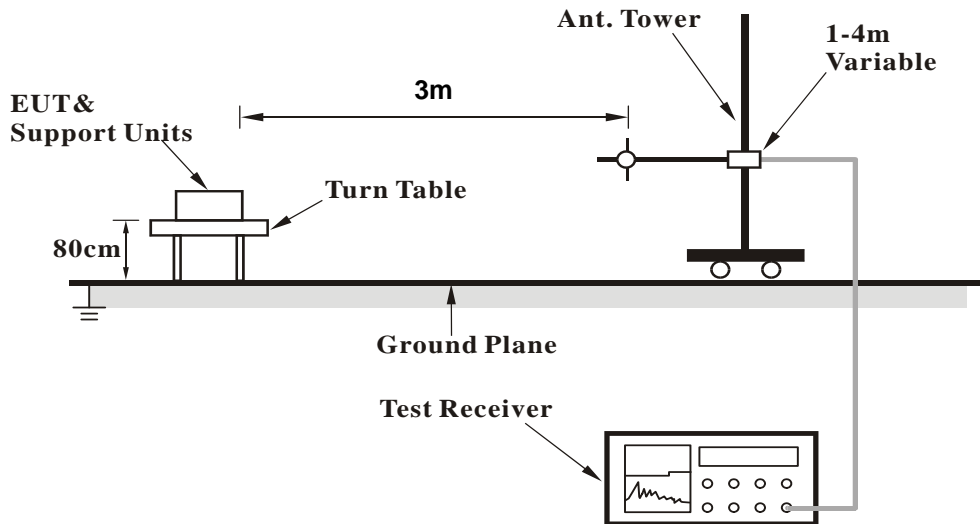
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.2.5 DEVIATION FROM TEST STANDARD

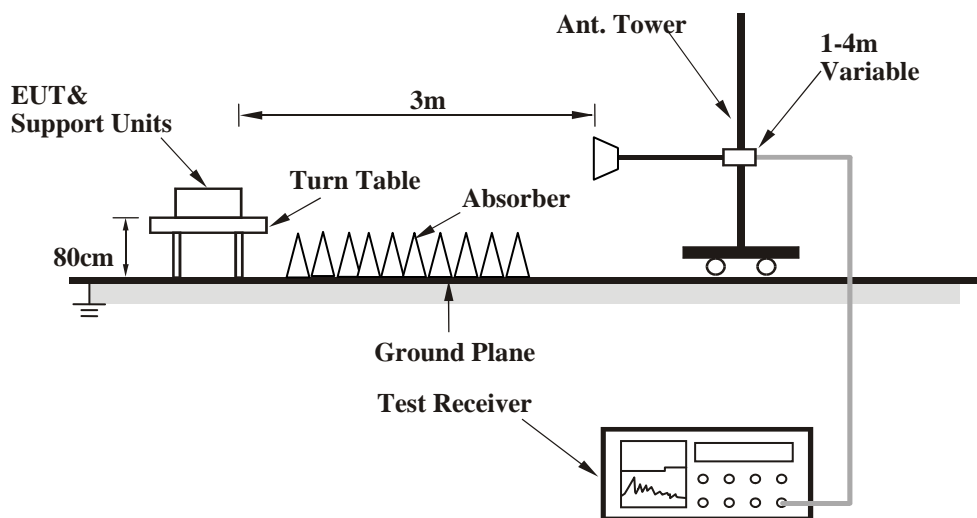
No deviation

4.2.6 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.7 EUT OPERATING CONDITION

Same as 4.1.6



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4.2.8 TEST RESULTS (MODE 1)

BELOW 1GHz WORST-CASE DATA

802.11n (HT40)

CHANNEL	TX Channel 46	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	108.34	31.0 QP	43.5	-12.5	1.52 H	247	47.20	-16.17
2	165.20	31.9 QP	43.5	-11.6	1.54 H	101	45.10	-13.22
3	199.67	31.7 QP	43.5	-11.8	1.03 H	6	47.81	-16.13
4	250.62	39.8 QP	46.0	-6.2	1.01 H	330	53.83	-14.05
5	375.03	39.2 QP	46.0	-6.9	1.85 H	86	49.45	-10.30
6	999.67	42.4 QP	54.0	-11.6	1.05 H	324	40.77	1.66

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	35.82	28.8 QP	40.0	-11.2	1.00 V	264	43.16	-14.38
2	124.90	28.1 QP	43.5	-15.5	1.04 V	55	42.71	-14.66
3	249.82	32.0 QP	46.0	-14.0	1.74 V	79	46.05	-14.07
4	375.32	37.1 QP	46.0	-8.9	1.03 V	348	47.38	-10.29
5	430.41	37.1 QP	46.0	-8.9	1.00 V	17	45.62	-8.51
6	1000.00	44.3 QP	54.0	-9.7	1.56 V	33	42.68	1.66

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



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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	51.6 PK	74.0	-22.4	1.04 H	324	44.80	6.80
2	5150.00	39.5 AV	54.0	-14.5	1.04 H	324	32.70	6.80
3	*5180.00	99.9 PK			1.02 H	312	92.95	6.95
4	*5180.00	91.0 AV			1.02 H	312	84.05	6.95
5	5450.00	51.2 PK	74.0	-22.8	1.00 H	318	43.33	7.87
6	5450.00	39.2 AV	54.0	-14.8	1.00 H	318	31.33	7.87
7	#10360.00	53.8 PK	74.0	-20.2	1.00 H	214	40.69	13.11
8	#10360.00	40.1 AV	54.0	-13.9	1.00 H	214	26.99	13.11
9	15540.00	58.1 PK	74.0	-15.9	1.14 H	106	39.41	18.69
10	15540.00	47.2 AV	54.0	-6.8	1.14 H	106	28.51	18.69

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	5000.00	57.2 PK	74.0	-16.8	1.00 V	242	50.78	6.42
2	5000.00	50.4 AV	54.0	-3.6	1.00 V	242	43.98	6.42
3	5150.00	58.8 PK	74.0	-15.2	1.00 V	300	52.00	6.80
4	5150.00	45.9 AV	54.0	-8.1	1.00 V	300	39.10	6.80
5	*5180.00	115.8 PK			1.09 V	302	108.85	6.95
6	*5180.00	104.9 AV			1.09 V	302	97.95	6.95
7	5450.00	62.2 PK	74.0	-11.8	1.31 V	49	54.33	7.87
8	5450.00	49.9 AV	54.0	-4.1	1.31 V	49	42.03	7.87
9	#10360.00	54.1 PK	74.0	-19.9	1.04 V	168	40.99	13.11
10	#10360.00	40.8 AV	54.0	-13.2	1.04 V	168	27.69	13.11
11	15540.00	59.0 PK	74.0	-15.0	1.00 V	214	40.31	18.69
12	15540.00	47.7 AV	54.0	-6.3	1.00 V	214	29.01	18.69

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.



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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	5000.00	51.9 PK	74.0	-22.1	1.06 H	334	45.48	6.42
2	5000.00	39.8 AV	54.0	-14.2	1.06 H	334	33.38	6.42
3	*5200.00	99.8 PK			1.00 H	312	92.75	7.05
4	*5200.00	91.1 AV			1.00 H	312	84.05	7.05
5	5443.00	50.4 PK	74.0	-23.6	1.00 H	317	42.57	7.83
6	5443.00	38.6 AV	54.0	-15.4	1.00 H	317	30.77	7.83
7	#10400.00	53.8 PK	74.0	-20.2	1.00 H	201	40.58	13.22
8	#10400.00	40.4 AV	54.0	-13.6	1.00 H	201	27.18	13.22
9	15600.00	57.4 PK	74.0	-16.6	1.11 H	94	38.70	18.70
10	15600.00	46.8 AV	54.0	-7.2	1.11 H	94	28.10	18.70

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	5000.00	62.5 PK	74.0	-11.5	1.23 V	63	56.08	6.42
2	5000.00	50.1 AV	54.0	-3.9	1.23 V	63	43.68	6.42
3	*5200.00	115.2 PK			1.05 V	292	108.15	7.05
4	*5200.00	104.5 AV			1.05 V	292	97.45	7.05
5	5443.00	56.9 PK	74.0	-17.1	1.01 V	289	49.07	7.83
6	5443.00	50.4 AV	54.0	-3.6	1.01 V	289	42.57	7.83
7	#10400.00	54.2 PK	74.0	-19.8	1.01 V	173	40.98	13.22
8	#10400.00	41.0 AV	54.0	-13.0	1.01 V	173	27.78	13.22
9	15600.00	58.9 PK	74.0	-15.1	1.00 V	224	40.20	18.70
10	15600.00	48.0 AV	54.0	-6.0	1.00 V	224	29.30	18.70

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.



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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	5000.00	50.6 PK	74.0	-23.4	1.07 H	303	44.18	6.42
2	5000.00	39.3 AV	54.0	-14.7	1.07 H	303	32.88	6.42
3	*5240.00	100.0 PK			1.00 H	320	92.84	7.16
4	*5240.00	91.1 AV			1.00 H	320	83.94	7.16
5	5442.00	51.4 PK	74.0	-22.6	1.05 H	321	43.57	7.83
6	5442.00	39.6 AV	54.0	-14.4	1.05 H	321	31.77	7.83
7	#10480.00	53.7 PK	74.0	-20.3	1.00 H	219	40.54	13.16
8	#10480.00	40.1 AV	54.0	-13.9	1.00 H	219	26.94	13.16
9	15720.00	58.0 PK	74.0	-16.0	1.12 H	87	39.60	18.40
10	15720.00	47.1 AV	54.0	-6.9	1.12 H	87	28.70	18.40

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	5000.00	56.8 PK	74.0	-17.2	1.00 V	265	50.38	6.42
2	5000.00	50.3 AV	54.0	-3.7	1.00 V	265	43.88	6.42
3	*5240.00	115.7 PK			1.13 V	305	108.54	7.16
4	*5240.00	105.1 AV			1.13 V	305	97.94	7.16
5	5442.00	62.1 PK	74.0	-11.9	1.11 V	56	54.27	7.83
6	5442.00	49.5 AV	54.0	-4.5	1.11 V	56	41.67	7.83
7	#10480.00	54.2 PK	74.0	-19.8	1.00 V	157	41.04	13.16
8	#10480.00	40.8 AV	54.0	-13.2	1.00 V	157	27.64	13.16
9	15720.00	58.6 PK	74.0	-15.4	1.00 V	212	40.20	18.40
10	15720.00	47.3 AV	54.0	-6.7	1.00 V	212	28.90	18.40

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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802.11n (HT20)

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	50.8 PK	74.0	-23.2	1.00 H	335	44.00	6.80
2	5150.00	39.2 AV	54.0	-14.8	1.00 H	335	32.40	6.80
3	*5180.00	98.9 PK			1.00 H	314	91.95	6.95
4	*5180.00	90.3 AV			1.00 H	314	83.35	6.95
5	5450.00	51.6 PK	74.0	-22.4	1.10 H	311	43.73	7.87
6	5450.00	40.0 AV	54.0	-14.0	1.10 H	311	32.13	7.87
7	#10360.00	53.2 PK	74.0	-20.8	1.00 H	217	40.09	13.11
8	#10360.00	39.2 AV	54.0	-14.8	1.00 H	217	26.09	13.11
9	15540.00	57.9 PK	74.0	-16.1	1.11 H	80	39.21	18.69
10	15540.00	47.0 AV	54.0	-7.0	1.11 H	80	28.31	18.69

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	5000.00	57.0 PK	74.0	-17.0	1.00 V	288	50.58	6.42
2	5000.00	50.8 AV	54.0	-3.2	1.00 V	288	44.38	6.42
3	5150.00	58.2 PK	74.0	-15.8	1.00 V	308	51.40	6.80
4	5150.00	45.8 AV	54.0	-8.2	1.00 V	308	39.00	6.80
5	*5180.00	113.5 PK			1.11 V	279	106.55	6.95
6	*5180.00	104.8 AV			1.11 V	279	97.85	6.95
7	5450.00	61.9 PK	74.0	-12.1	1.27 V	42	54.03	7.87
8	5450.00	49.8 AV	54.0	-4.2	1.27 V	42	41.93	7.87
9	#10360.00	52.8 PK	74.0	-21.2	1.00 V	153	39.69	13.11
10	#10360.00	39.5 AV	54.0	-14.5	1.00 V	153	26.39	13.11
11	15540.00	57.8 PK	74.0	-16.2	1.00 V	211	39.11	18.69
12	15540.00	46.8 AV	54.0	-7.2	1.00 V	211	28.11	18.69

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.



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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	5000.00	51.4 PK	74.0	-22.6	1.00 H	314	44.98	6.42
2	5000.00	39.1 AV	54.0	-14.9	1.00 H	314	32.68	6.42
3	*5200.00	99.4 PK			1.05 H	310	92.35	7.05
4	*5200.00	90.7 AV			1.05 H	310	83.65	7.05
5	5441.00	50.1 PK	74.0	-23.9	1.02 H	316	42.27	7.83
6	5441.00	38.3 AV	54.0	-15.7	1.02 H	316	30.47	7.83
7	#10400.00	53.6 PK	74.0	-20.4	1.06 H	212	40.38	13.22
8	#10400.00	39.9 AV	54.0	-14.1	1.06 H	212	26.68	13.22
9	15600.00	58.4 PK	74.0	-15.6	1.11 H	120	39.70	18.70
10	15600.00	47.6 AV	54.0	-6.4	1.11 H	120	28.90	18.70

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	5000.00	62.5 PK	74.0	-11.5	1.37 V	47	56.08	6.42
2	5000.00	50.3 AV	54.0	-3.7	1.37 V	47	43.88	6.42
3	*5200.00	113.9 PK			1.15 V	267	106.85	7.05
4	*5200.00	105.1 AV			1.15 V	267	98.05	7.05
5	5441.00	56.4 PK	74.0	-17.6	1.13 V	255	48.57	7.83
6	5441.00	49.7 AV	54.0	-4.3	1.13 V	255	41.87	7.83
7	#10400.00	54.6 PK	74.0	-19.4	1.00 V	182	41.38	13.22
8	#10400.00	41.0 AV	54.0	-13.0	1.00 V	182	27.78	13.22
9	15600.00	58.8 PK	74.0	-15.2	1.00 V	217	40.10	18.70
10	15600.00	47.3 AV	54.0	-6.7	1.00 V	217	28.60	18.70

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.



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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	5000.00	51.7 PK	74.0	-22.3	1.02 H	314	45.28	6.42
2	5000.00	40.0 AV	54.0	-14.0	1.02 H	314	33.58	6.42
3	*5240.00	99.2 PK			1.00 H	303	92.04	7.16
4	*5240.00	90.3 AV			1.00 H	303	83.14	7.16
5	5441.00	51.8 PK	74.0	-22.2	1.07 H	332	43.97	7.83
6	5441.00	40.0 AV	54.0	-14.0	1.07 H	332	32.17	7.83
7	#10480.00	53.8 PK	74.0	-20.2	1.00 H	206	40.64	13.16
8	#10480.00	40.4 AV	54.0	-13.6	1.00 H	206	27.24	13.16
9	15720.00	56.8 PK	74.0	-17.2	1.12 H	95	38.40	18.40
10	15720.00	46.3 AV	54.0	-7.7	1.12 H	95	27.90	18.40

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	5000.00	57.7 PK	74.0	-16.3	1.12 V	271	51.28	6.42
2	5000.00	51.0 AV	54.0	-3.0	1.12 V	271	44.58	6.42
3	*5240.00	114.8 PK			1.10 V	315	107.64	7.16
4	*5240.00	105.2 AV			1.10 V	315	98.04	7.16
5	5441.00	63.3 PK	74.0	-10.7	1.39 V	36	55.47	7.83
6	5441.00	50.7 AV	54.0	-3.3	1.39 V	36	42.87	7.83
7	#10480.00	54.1 PK	74.0	-19.9	1.00 V	215	40.94	13.16
8	#10480.00	40.5 AV	54.0	-13.5	1.00 V	215	27.34	13.16
9	15720.00	59.2 PK	74.0	-14.8	1.00 V	215	40.80	18.40
10	15720.00	47.8 AV	54.0	-6.2	1.00 V	215	29.40	18.40

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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802.11n (HT40)

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	50.7 PK	74.0	-23.3	1.06 H	328	43.90	6.80
2	5150.00	38.6 AV	54.0	-15.4	1.06 H	328	31.80	6.80
3	*5190.00	99.1 PK			1.08 H	286	92.10	7.00
4	*5190.00	90.2 AV			1.08 H	286	83.20	7.00
5	5441.00	50.1 PK	74.0	-23.9	1.08 H	311	42.27	7.83
6	5441.00	38.5 AV	54.0	-15.5	1.08 H	311	30.67	7.83
7	#10380.00	53.4 PK	74.0	-20.6	1.00 H	214	40.23	13.17
8	#10380.00	39.9 AV	54.0	-14.1	1.00 H	214	26.73	13.17
9	15570.00	58.6 PK	74.0	-15.4	1.12 H	104	39.91	18.69
10	15570.00	47.6 AV	54.0	-6.4	1.12 H	104	28.91	18.69

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	70.4 PK	74.0	-3.6	1.11 V	294	63.60	6.80
2	5150.00	53.6 AV	54.0	-0.4	1.11 V	294	46.80	6.80
3	*5190.00	109.7 PK			1.11 V	294	102.70	7.00
4	*5190.00	98.4 AV			1.11 V	294	91.40	7.00
5	5441.00	60.7 PK	74.0	-13.3	1.36 V	38	52.87	7.83
6	5441.00	48.4 AV	54.0	-5.6	1.36 V	38	40.57	7.83
7	#10380.00	54.0 PK	74.0	-20.0	1.00 V	143	40.83	13.17
8	#10380.00	40.9 AV	54.0	-13.1	1.00 V	143	27.73	13.17
9	15570.00	59.1 PK	74.0	-14.9	1.00 V	211	40.41	18.69
10	15570.00	47.6 AV	54.0	-6.4	1.00 V	211	28.91	18.69

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.



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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	5000.00	51.1 PK	74.0	-22.9	1.10 H	325	44.68	6.42
2	5000.00	39.2 AV	54.0	-14.8	1.10 H	325	32.78	6.42
3	*5230.00	100.2 PK			1.00 H	312	93.08	7.12
4	*5230.00	91.3 AV			1.00 H	312	84.18	7.12
5	5457.00	50.8 PK	74.0	-23.2	1.05 H	312	42.90	7.90
6	5457.00	39.0 AV	54.0	-15.0	1.05 H	312	31.10	7.90
7	#10460.00	53.2 PK	74.0	-20.8	1.00 H	199	40.02	13.18
8	#10460.00	40.0 AV	54.0	-14.0	1.00 H	199	26.82	13.18
9	15690.00	57.4 PK	74.0	-16.6	1.18 H	88	39.02	18.38
10	15690.00	46.3 AV	54.0	-7.7	1.18 H	88	27.92	18.38

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	5000.00	58.0 PK	74.0	-16.0	1.08 V	249	51.58	6.42
2	5000.00	49.9 AV	54.0	-4.1	1.08 V	249	43.48	6.42
3	*5230.00	112.6 PK			1.10 V	328	105.48	7.12
4	*5230.00	103.0 AV			1.10 V	328	95.88	7.12
5	5457.00	61.9 PK	74.0	-12.1	1.34 V	39	54.00	7.90
6	5457.00	49.2 AV	54.0	-4.8	1.34 V	39	41.30	7.90
7	#10460.00	54.1 PK	74.0	-19.9	1.00 V	164	40.92	13.18
8	#10460.00	40.7 AV	54.0	-13.3	1.00 V	164	27.52	13.18
9	15690.00	58.3 PK	74.0	-15.7	1.00 V	204	39.92	18.38
10	15690.00	47.2 AV	54.0	-6.8	1.00 V	204	28.82	18.38

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.



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4.2.9 TEST RESULTS (MODE 2)

BELOW 1GHz WORST-CASE DATA

802.11n (HT40)

CHANNEL	TX Channel 46	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	107.73	31.2 QP	43.5	-12.3	1.60 H	262	47.41	-16.24
2	164.92	30.8 QP	43.5	-12.7	1.62 H	110	43.97	-13.19
3	199.99	32.5 QP	43.5	-11.0	1.00 H	16	48.66	-16.13
4	249.92	39.3 QP	46.0	-6.7	1.00 H	324	53.34	-14.07
5	375.77	39.5 QP	46.0	-6.5	1.80 H	90	49.77	-10.28
6	999.99	42.3 QP	54.0	-11.7	1.09 H	305	40.63	1.66

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	35.95	29.4 QP	40.0	-10.7	1.00 V	263	43.73	-14.38
2	124.89	28.5 QP	43.5	-15.0	1.08 V	37	43.19	-14.66
3	249.80	32.3 QP	46.0	-13.7	1.73 V	105	46.41	-14.07
4	375.75	36.4 QP	46.0	-9.6	1.04 V	348	46.71	-10.29
5	430.25	36.8 QP	46.0	-9.2	1.07 V	28	45.31	-8.51
6	999.73	44.0 QP	54.0	-10.0	1.63 V	51	42.36	1.66

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



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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	5000.00	57.8 PK	74.0	-16.2	1.35 H	0	51.38	6.42
2	5000.00	49.7 AV	54.0	-4.3	1.35 H	0	43.28	6.42
3	5150.00	59.6 PK	74.0	-14.4	1.24 H	12	52.80	6.80
4	5150.00	45.8 AV	54.0	-8.2	1.24 H	12	39.00	6.80
5	*5180.00	115.9 PK			1.24 H	12	108.95	6.95
6	*5180.00	106.9 AV			1.24 H	12	99.95	6.95
7	5400.00	61.7 PK	74.0	-12.3	1.42 H	347	53.99	7.71
8	5400.00	51.3 AV	54.0	-2.7	1.42 H	347	43.59	7.71
9	#10360.00	52.9 PK	74.0	-21.1	1.02 H	259	39.79	13.11
10	#10360.00	41.7 AV	54.0	-12.3	1.02 H	259	28.59	13.11
11	15540.00	59.2 PK	74.0	-14.8	1.00 H	135	40.51	18.69
12	15540.00	46.8 AV	54.0	-7.2	1.00 H	135	28.11	18.69

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	58.7 PK	74.0	-15.3	1.03 V	310	51.90	6.80
2	5150.00	44.9 AV	54.0	-9.1	1.03 V	310	38.10	6.80
3	*5180.00	108.3 PK			1.03 V	310	101.35	6.95
4	*5180.00	99.6 AV			1.03 V	310	92.65	6.95
5	5400.00	65.4 PK	74.0	-8.6	1.07 V	19	57.69	7.71
6	5400.00	52.8 AV	54.0	-1.2	1.07 V	19	45.09	7.71
7	#10360.00	53.1 PK	74.0	-20.9	1.29 V	186	39.99	13.11
8	#10360.00	40.8 AV	54.0	-13.2	1.29 V	186	27.69	13.11
9	15540.00	60.4 PK	74.0	-13.6	1.00 V	62	41.71	18.69
10	15540.00	47.6 AV	54.0	-6.4	1.00 V	62	28.91	18.69

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.



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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	115.4 PK			1.22 H	10	108.35	7.05
2	*5200.00	106.3 AV			1.22 H	10	99.25	7.05
3	5400.00	59.2 PK	74.0	-14.8	1.25 H	10	51.49	7.71
4	5400.00	45.4 AV	54.0	-8.6	1.25 H	10	37.69	7.71
5	#10400.00	52.9 PK	74.0	-21.1	1.08 H	268	39.68	13.22
6	#10400.00	41.9 AV	54.0	-12.1	1.08 H	268	28.68	13.22
7	15600.00	59.3 PK	74.0	-14.7	1.00 H	113	40.60	18.70
8	15600.00	46.7 AV	54.0	-7.3	1.00 H	113	28.00	18.70

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	107.8 PK			1.04 V	295	100.75	7.05
2	*5200.00	99.3 AV			1.04 V	295	92.25	7.05
3	5400.00	63.4 PK	74.0	-10.6	1.07 V	26	55.69	7.71
4	5400.00	51.5 AV	54.0	-2.5	1.07 V	26	43.79	7.71
5	#10400.00	53.5 PK	74.0	-20.5	1.31 V	201	40.28	13.22
6	#10400.00	41.0 AV	54.0	-13.0	1.31 V	201	27.78	13.22
7	15600.00	60.9 PK	74.0	-13.1	1.00 V	54	42.20	18.70
8	15600.00	48.0 AV	54.0	-6.0	1.00 V	54	29.30	18.70

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.



A D T

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	116.3 PK			1.20 H	27	109.14	7.16
2	*5240.00	107.1 AV			1.20 H	27	99.94	7.16
3	5350.00	58.8 PK	74.0	-15.2	1.20 H	27	51.31	7.49
4	5350.00	45.3 AV	54.0	-8.7	1.20 H	27	37.81	7.49
5	5400.00	58.6 PK	74.0	-15.4	1.36 H	11	50.89	7.71
6	5400.00	44.6 AV	54.0	-9.4	1.36 H	11	36.89	7.71
7	#10480.00	52.9 PK	74.0	-21.1	1.06 H	268	39.74	13.16
8	#10480.00	41.9 AV	54.0	-12.1	1.06 H	268	28.74	13.16
9	15720.00	58.7 PK	74.0	-15.3	1.00 H	135	40.30	18.40
10	15720.00	46.3 AV	54.0	-7.7	1.00 H	135	27.90	18.40

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	108.3 PK			1.05 V	279	101.14	7.16
2	*5240.00	99.3 AV			1.05 V	279	92.14	7.16
3	5350.00	59.0 PK	74.0	-15.0	1.03 V	294	51.51	7.49
4	5350.00	45.2 AV	54.0	-8.8	1.03 V	294	37.71	7.49
5	5400.00	63.4 PK	74.0	-10.6	1.16 V	32	55.69	7.71
6	5400.00	51.3 AV	54.0	-2.7	1.16 V	32	43.59	7.71
7	#10480.00	53.3 PK	74.0	-20.7	1.29 V	200	40.14	13.16
8	#10480.00	40.9 AV	54.0	-13.1	1.29 V	200	27.74	13.16
9	15720.00	60.6 PK	74.0	-13.4	1.00 V	52	42.20	18.40
10	15720.00	47.8 AV	54.0	-6.2	1.00 V	52	29.40	18.40

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



A D T

802.11n (HT20)

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	60.1 PK	74.0	-13.9	1.20 H	18	53.30	6.80
2	5150.00	46.1 AV	54.0	-7.9	1.20 H	18	39.30	6.80
3	*5180.00	116.0 PK			1.20 H	18	109.05	6.95
4	*5180.00	106.8 AV			1.20 H	18	99.85	6.95
5	5400.00	59.2 PK	74.0	-14.8	1.18 H	18	51.49	7.71
6	5400.00	45.3 AV	54.0	-8.7	1.18 H	18	37.59	7.71
7	#10360.00	52.3 PK	74.0	-21.7	1.00 H	266	39.19	13.11
8	#10360.00	41.2 AV	54.0	-12.8	1.00 H	266	28.09	13.11
9	15540.00	58.4 PK	74.0	-15.6	1.00 H	123	39.71	18.69
10	15540.00	46.1 AV	54.0	-7.9	1.00 H	123	27.41	18.69

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	58.2 PK	74.0	-15.8	1.02 V	299	51.40	6.80
2	5150.00	44.5 AV	54.0	-9.5	1.02 V	299	37.70	6.80
3	*5180.00	107.7 PK			1.05 V	305	100.75	6.95
4	*5180.00	99.3 AV			1.05 V	305	92.35	6.95
5	5400.00	63.4 PK	74.0	-10.6	1.20 V	49	55.69	7.71
6	5400.00	51.3 AV	54.0	-2.7	1.20 V	49	43.59	7.71
7	#10360.00	52.8 PK	74.0	-21.2	1.34 V	199	39.69	13.11
8	#10360.00	40.3 AV	54.0	-13.7	1.34 V	199	27.19	13.11
9	15540.00	59.9 PK	74.0	-14.1	1.00 V	53	41.21	18.69
10	15540.00	47.3 AV	54.0	-6.7	1.00 V	53	28.61	18.69

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.



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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	114.8 PK			1.27 H	7	107.75	7.05
2	*5200.00	106.0 AV			1.27 H	7	98.95	7.05
3	5400.00	58.7 PK	74.0	-15.3	1.24 H	7	50.99	7.71
4	5400.00	45.3 AV	54.0	-8.7	1.24 H	7	37.59	7.71
5	#10400.00	51.9 PK	74.0	-22.1	1.04 H	255	38.68	13.22
6	#10400.00	40.8 AV	54.0	-13.2	1.04 H	255	27.58	13.22
7	15600.00	58.7 PK	74.0	-15.3	1.00 H	119	40.00	18.70
8	15600.00	46.2 AV	54.0	-7.8	1.00 H	119	27.50	18.70

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	108.2 PK			1.00 V	312	101.15	7.05
2	*5200.00	99.4 AV			1.00 V	312	92.35	7.05
3	5400.00	63.4 PK	74.0	-10.6	1.12 V	27	55.69	7.71
4	5400.00	51.3 AV	54.0	-2.7	1.12 V	27	43.59	7.71
5	#10400.00	53.3 PK	74.0	-20.7	1.23 V	179	40.08	13.22
6	#10400.00	40.9 AV	54.0	-13.1	1.23 V	179	27.68	13.22
7	15600.00	60.1 PK	74.0	-13.9	1.00 V	58	41.40	18.70
8	15600.00	47.4 AV	54.0	-6.6	1.00 V	58	28.70	18.70

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.



A D T

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	116.0 PK			1.24 H	12	108.84	7.16
2	*5240.00	107.1 AV			1.24 H	12	99.94	7.16
3	5350.00	58.3 PK	74.0	-15.7	1.04 H	7	50.81	7.49
4	5350.00	46.9 AV	54.0	-7.1	1.04 H	7	39.41	7.49
5	5400.00	59.6 PK	74.0	-14.4	1.24 H	12	51.89	7.71
6	5400.00	45.5 AV	54.0	-8.5	1.24 H	12	37.79	7.71
7	#10480.00	52.0 PK	74.0	-22.0	1.00 H	265	38.84	13.16
8	#10480.00	41.2 AV	54.0	-12.8	1.00 H	265	28.04	13.16
9	15720.00	58.7 PK	74.0	-15.3	1.00 H	123	40.30	18.40
10	15720.00	46.4 AV	54.0	-7.6	1.00 H	123	28.00	18.40

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	107.6 PK			1.00 V	326	100.44	7.16
2	*5240.00	99.2 AV			1.00 V	326	92.04	7.16
3	5350.00	58.4 PK	74.0	-15.6	1.00 V	316	50.91	7.49
4	5350.00	44.5 AV	54.0	-9.5	1.00 V	316	37.01	7.49
5	5400.00	62.7 PK	74.0	-11.3	1.16 V	9	54.99	7.71
6	5400.00	50.6 AV	54.0	-3.4	1.16 V	9	42.89	7.71
7	#10480.00	53.8 PK	74.0	-20.2	1.16 V	194	40.64	13.16
8	#10480.00	41.3 AV	54.0	-12.7	1.16 V	194	28.14	13.16
9	15720.00	60.4 PK	74.0	-13.6	1.00 V	47	42.00	18.40
10	15720.00	47.5 AV	54.0	-6.5	1.00 V	47	29.10	18.40

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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802.11n (HT40)

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	69.4 PK	74.0	-4.6	1.02 H	6	62.60	6.80
2	5150.00	53.3 AV	54.0	-0.7	1.02 H	6	46.50	6.80
3	*5190.00	111.4 PK			1.02 H	6	104.40	7.00
4	*5190.00	100.3 AV			1.02 H	6	93.30	7.00
5	#10380.00	51.2 PK	74.0	-22.8	1.00 H	273	38.03	13.17
6	#10380.00	40.7 AV	54.0	-13.3	1.00 H	273	27.53	13.17
7	15570.00	58.4 PK	74.0	-15.6	1.00 H	127	39.71	18.69
8	15570.00	46.6 AV	54.0	-7.4	1.00 H	127	27.91	18.69

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	68.8 PK	74.0	-5.2	1.00 V	316	62.00	6.80
2	5150.00	53.2 AV	54.0	-0.8	1.00 V	316	46.40	6.80
3	*5190.00	103.2 PK			1.00 V	316	96.20	7.00
4	*5190.00	92.3 AV			1.00 V	316	85.30	7.00
5	#10380.00	53.4 PK	74.0	-20.6	1.04 V	200	40.23	13.17
6	#10380.00	41.2 AV	54.0	-12.8	1.04 V	200	28.03	13.17
7	15570.00	59.9 PK	74.0	-14.1	1.00 V	35	41.21	18.69
8	15570.00	47.4 AV	54.0	-6.6	1.00 V	35	28.71	18.69

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.



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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	113.0 PK			1.00 H	12	105.88	7.12
2	*5230.00	103.5 AV			1.00 H	12	96.38	7.12
3	5350.00	57.7 PK	74.0	-16.3	1.04 H	12	50.21	7.49
4	5350.00	46.6 AV	54.0	-7.4	1.04 H	12	39.11	7.49
5	#10460.00	51.6 PK	74.0	-22.4	1.00 H	259	38.42	13.18
6	#10460.00	41.2 AV	54.0	-12.8	1.00 H	259	28.02	13.18
7	15690.00	57.6 PK	74.0	-16.4	1.00 H	130	39.22	18.38
8	15690.00	45.6 AV	54.0	-8.4	1.00 H	130	27.22	18.38

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	105.4 PK			1.00 V	295	98.28	7.12
2	*5230.00	94.1 AV			1.00 V	295	86.98	7.12
3	5350.00	59.0 PK	74.0	-15.0	1.00 V	295	51.51	7.49
4	5350.00	44.9 AV	54.0	-9.1	1.00 V	295	37.41	7.49
5	#10460.00	53.4 PK	74.0	-20.6	1.21 V	203	40.22	13.18
6	#10460.00	41.1 AV	54.0	-12.9	1.21 V	203	27.92	13.18
7	15690.00	60.3 PK	74.0	-13.7	1.00 V	46	41.92	18.38
8	15690.00	47.6 AV	54.0	-6.4	1.00 V	46	29.22	18.38

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.

4.3 TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.47 – 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

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

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.



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4.3.2 TEST INSTRUMENTS

FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

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. Tested date : Aug. 06, 2014

FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

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. Tested date : Aug. 06, 2014

4.3.3 TEST PROCEDURE

FOR POWER OUTPUT 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 OCCUPIED BANDWIDTH

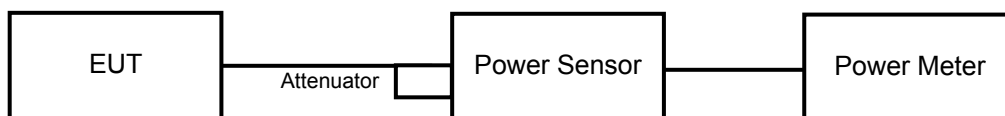
1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement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

4.3.4 DEVIATION FROM TEST STANDARD

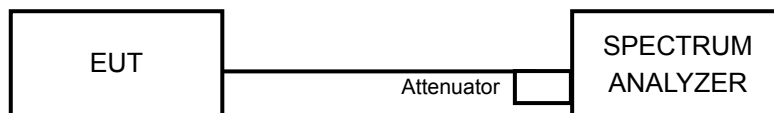
No deviation

4.3.5 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.3.6 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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4.3.7 TEST RESULTS

802.11a

CONDUCTED POWER:

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	10.56	8.72	18.823	12.75	16	PASS
40	5200	10.32	8.56	17.943	12.54	16	PASS
48	5240	10.72	8.88	19.53	12.91	16	PASS

NOTE: The directional gain is 7dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to $17 - (7 - 6) = 16\text{dBm}$.

26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
36	5180	23.01	22.42
40	5200	22.69	21.30
48	5240	22.60	21.49

Note: For output power limitation is determined based on 26dBc bandwidth.

Power Limit = $4\text{dBm} + 10\log B < \text{UNII Band 1}>$			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
36	5180	22.42	$17.5 > 17$
40	5200	21.30	$17.28 > 17$
48	5240	21.49	$17.32 > 17$



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802.11n (HT20)

CONDUCTED POWER:

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	10.06	8.94	17.973	12.55	16	PASS
40	5200	10.32	8.56	17.943	12.54	16	PASS
48	5240	10.56	8.34	18.199	12.60	16	PASS

NOTE: The directional gain is 7dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 17-(7-6) = 16dBm.

26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
36	5180	23.89	23.93
40	5200	23.73	23.43
48	5240	23.65	22.86

Note: For output power limitation is determined based on 26dBc bandwidth.

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
36	5180	23.89	17.78 > 17
40	5200	23.43	17.69 > 17
48	5240	22.86	17.59 > 17



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802.11n (HT40)

CONDUCTED POWER:

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	10.78	8.67	19.329	12.86	16	PASS
46	5230	12.76	12.23	35.591	15.51	16	PASS

NOTE: The directional gain is 7dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to $17 - (7 - 6) = 16$ dBm.

26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
38	5190	47.36	47.44
46	5230	48.44	48.09

Note: For output power limitation is determined based on 26dBc bandwidth.

Power Limit = $4\text{dBm} + 10\log B$ < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
38	5190	47.36	$20.75 > 17$
46	5230	48.09	$20.82 > 17$



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4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.47 ~ 5.725GHz	11dBm
5.725 ~ 5.825GHz	17dBm

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

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. Tested date : Aug. 06, 2014

4.4.3 TEST PROCEDURES

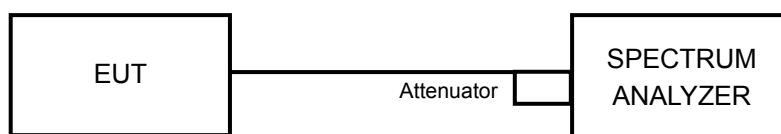
Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW \geq 3 MHz, 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)

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP





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4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6



4.4.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)		DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	-2.13	-5.36	0.15	-0.30	-0.01	PASS
40	5200	-1.63	-6.48	0.15	-0.25	-0.01	PASS
48	5240	-1.98	-5.30	0.15	-0.17	-0.01	PASS

NOTE: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7dBi + 10log(2) = 10.01dBi > 6dBi , so the power density limit shall be reduced to 4-(10.01-6) = -0.01dBm.

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)		DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	-1.92	-6.12	0.17	-0.35	-0.01	PASS
40	5200	-2.08	-5.60	0.17	-0.31	-0.01	PASS
48	5240	-1.64	-6.96	0.17	-0.35	-0.01	PASS

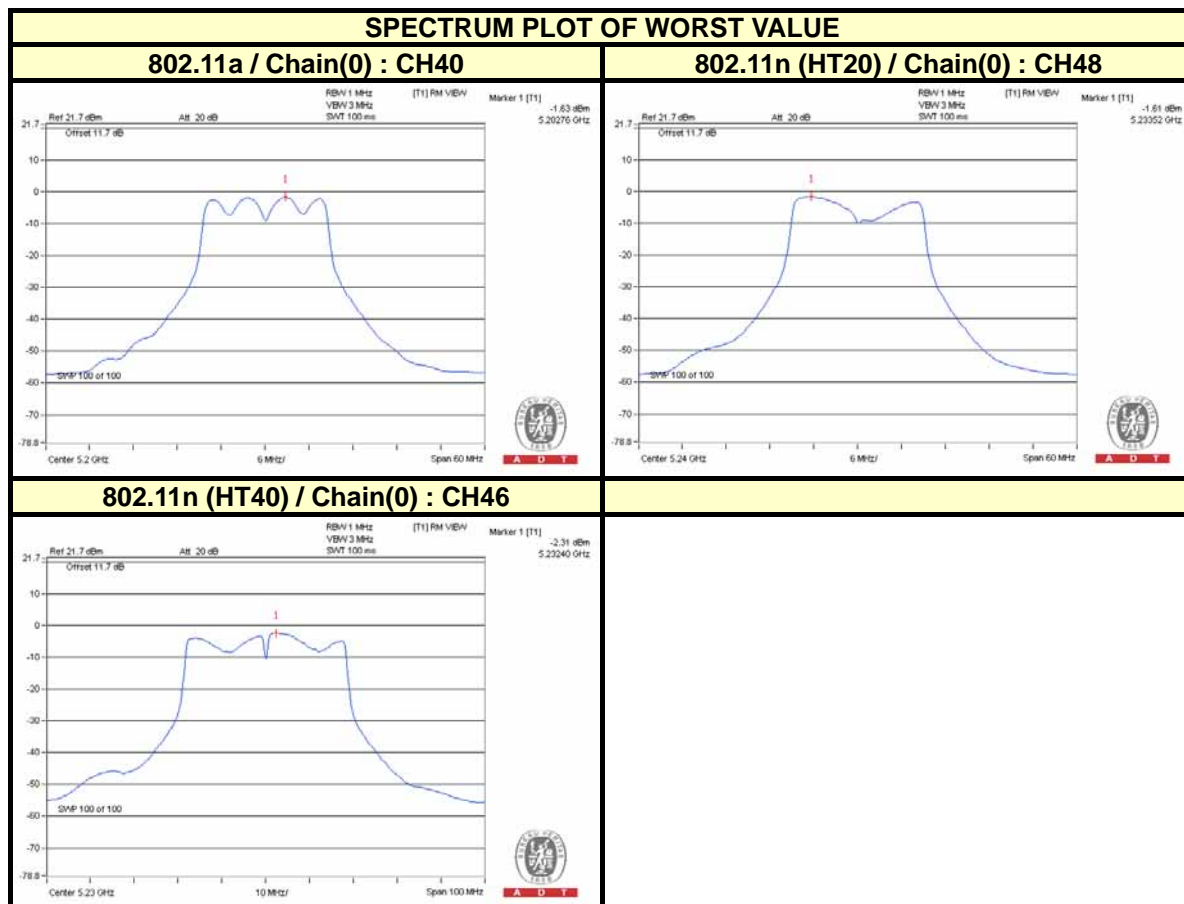
NOTE: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7dBi + 10log(2) = 10.01dBi > 6dBi , so the power density limit shall be reduced to 4-(10.01-6) = -0.01dBm.

802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)		DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	-4.77	-9.80	0.27	-3.32	-0.01	PASS
46	5230	-2.31	-5.69	0.27	-0.40	-0.01	PASS

NOTE: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = $7\text{dBi} + 10\log(2) = 10.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $4 - (10.01 - 6) = -0.01\text{dBm}$.





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4.5 PEAK POWER EXCURSION MEASUREMENT

4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015

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. Tested date : Aug. 06, 2014

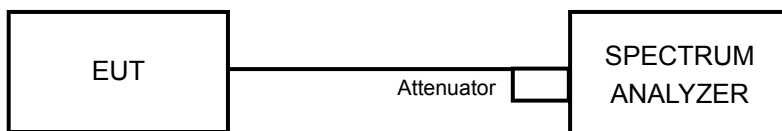
4.5.3 TEST PROCEDURE

1. Set RBW = 1 MHz, VBW \geq 3 MHz, Detector = peak.
2. Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak search function to find the peak of the spectrum.
4. Measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

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



4.5.7 TEST RESULTS

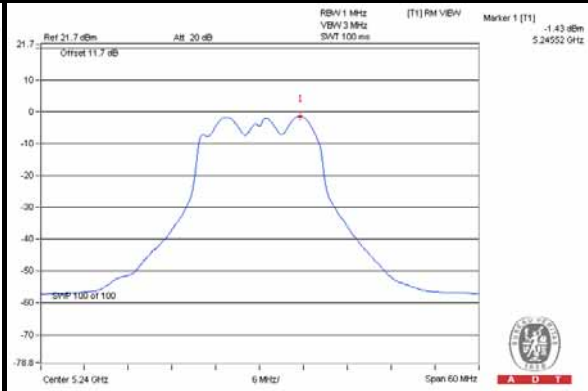
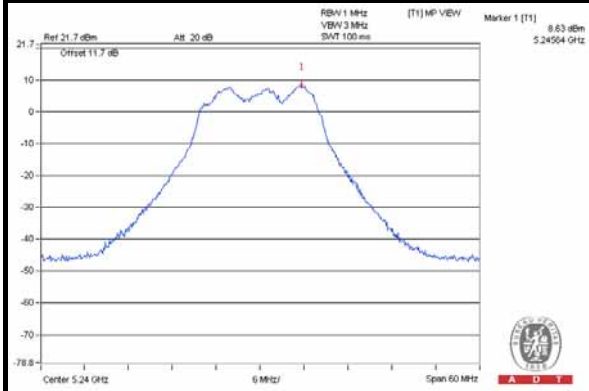
MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/F AIL
802.11a	BPSK	5240	5.91	-1.88	-1.73	7.64	13	PASS
	QPSK		8.13	-0.98	-0.70	8.83	13	PASS
	16QAM		8.63	-1.43	-0.86	9.49	13	PASS
	64QAM		8.04	-1.87	-0.83	8.87	13	PASS
802.11n (HT20)	BPSK	5240	7.19	-1.61	-1.44	8.63	13	PASS
	QPSK		8.14	-1.73	-1.41	9.55	13	PASS
	16QAM		8.62	-1.90	-1.34	9.96	13	PASS
	64QAM		8.54	-2.37	-1.42	9.96	13	PASS
802.11n (HT40)	BPSK	5230	7.24	-2.31	-2.04	9.28	13	PASS
	QPSK		5.46	-4.46	-3.97	9.43	13	PASS
	16QAM		6.47	-4.43	-3.59	10.06	13	PASS
	64QAM		5.93	-4.95	-3.69	9.62	13	PASS



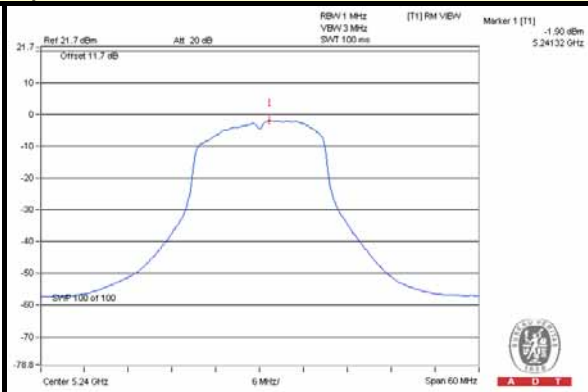
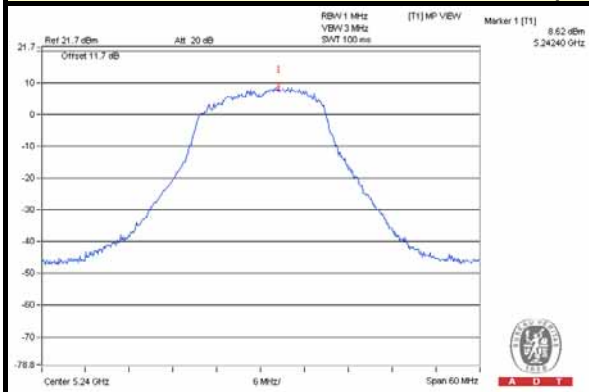
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SPECTRUM PLOT OF WORST VALUE

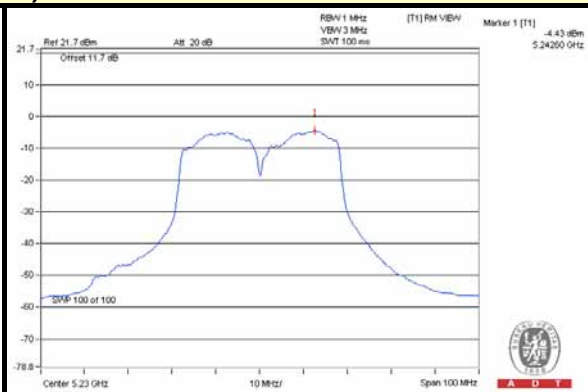
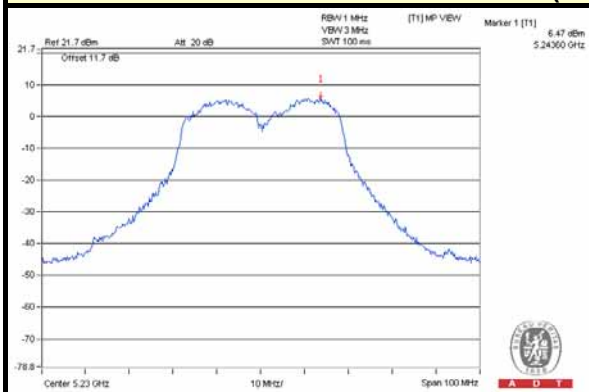
802.11a / 16QAM



802.11n (HT20) / 16QAM



802.11n (HT40) / 16QAM





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4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 05, 2014	July 04, 2015
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-SP-AR	MAA0812-008	Jan. 13, 2014	Jan. 12, 2015

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. Tested date : Aug. 06, 2014

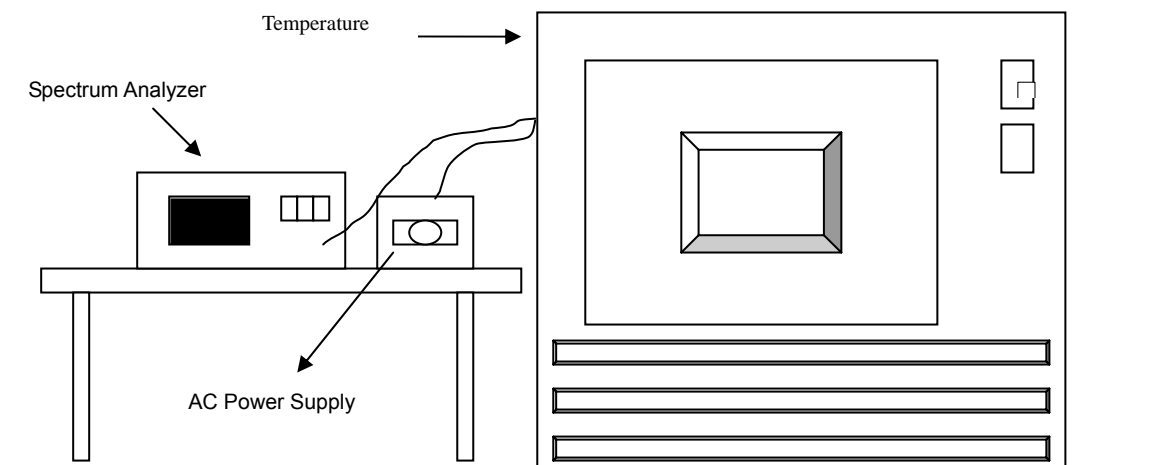
4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. 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.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. 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.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

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



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4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
50	120	5239.9951	-0.00009	5239.9936	-0.00012	5239.9963	-0.00007	5239.997	-0.00006
40	120	5239.9829	-0.00033	5239.9818	-0.00035	5239.9845	-0.00030	5239.9833	-0.00032
30	120	5239.9998	0.00000	5240.0023	0.00004	5239.9978	-0.00004	5239.9979	-0.00004
20	120	5239.9778	-0.00042	5239.9797	-0.00039	5239.9818	-0.00035	5239.9802	-0.00038
10	120	5239.9984	-0.00003	5239.9995	-0.00001	5239.9974	-0.00005	5239.9989	-0.00002
0	120	5240.0132	0.00025	5240.0086	0.00016	5240.0133	0.00025	5240.0105	0.00020
-10	120	5240.0094	0.00018	5240.0113	0.00022	5240.0107	0.00020	5240.0083	0.00016
-20	120	5239.9961	-0.00007	5239.9945	-0.00010	5239.995	-0.00010	5239.9982	-0.00003
-30	120	5239.9794	-0.00039	5239.981	-0.00036	5239.9771	-0.00044	5239.979	-0.00040

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5240MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
20	138	5239.9786	-0.00041	5239.9805	-0.00037	5239.9819	-0.00035	5239.9808	-0.00037
	120	5239.9778	-0.00042	5239.9797	-0.00039	5239.9818	-0.00035	5239.9802	-0.00038
	102	5239.977	-0.00044	5239.9803	-0.00038	5239.9824	-0.00034	5239.9802	-0.00038

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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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: 886-2-26052943

Hsin Chu EMC/RF Lab:

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Fax: 886-3-3270892

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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 modifications were made to the EUT by the lab during the test.

--- END ---