



FCC TEST REPORT (15.407)

REPORT NO.: RF130326C14-5
MODEL NO.: K005
FCC ID: MSQK005
RECEIVED: Mar. 26, 2013
TESTED: Apr. 14, 2013 ~ Apr. 20, 2013
ISSUED: Apr. 25, 2013

APPLICANT: ASUSTek COMPUTER INC.

ADDRESS: 4F., No. 150, LI-TE Rd., PEITOU, TAIPEI 112, TAIWAN

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

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

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130326C14-5	Original release	Apr. 25, 2013



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1. CERTIFICATION

PRODUCT: ASUS Tablet

MODEL NO.: K005

BRAND: ASUS

APPLICANT: ASUSTek COMPUTER INC.

TESTED: Apr. 14, 2013 ~ Apr. 20, 2013

TEST SAMPLE: Production Unit

STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**

ANSI C63.10-2009

The above equipment (model: K005) 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 : Vera Huang , **DATE** : Apr. 25, 2013

Vera Huang / Specialist

APPROVED BY : Sam chen , **DATE** : Apr. 25, 2013

Sam Chen / 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)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -10.37dB at 0.40391MHz.
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -7.29dB at 42.15MHz.
15.407(a/1/2)	Peak 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	No antenna connector is used.

2.1 MEASUREMENT UNCERTAINTY

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

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

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



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	ASUS Tablet
MODEL NO.	K005
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.7Vdc (Li-ion battery)
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to MCS7
OPERATING FREQUENCY	5180 ~ 5240MHz
NUMBER OF CHANNEL	4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	15.922mW
ANTENNA TYPE	Chip antenna with 3.47dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	Refer to Note as below
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below



NOTE:

1. The EUT has following accessories.

ITEM	BRAND	MODEL	DESCRIPTION
AC Adapter 1	ASUS	AD83531	Input: 100-240Vac, 50/60Hz, 0.3A Output: 5Vdc, 2A
AC Adapter 2	ASUS	W12-010N3A	Input: 100-240Vac, 50/60Hz, 0.3A Output: 5Vdc, 2A
Battery	SMP (cell SDI)	C12P1302	Rating: 3.7Vdc, 6560mAh / 25Wh
USB Cable	ASUS	AA757600	0.9m shielded cable without ferrite core
LCD Panel	AUO	AUO/B101UAN01.7_ H/W 1A	--
Video Camera (Front)	Liteon	LITEON/10P2SF130K	--
Video Camera (Rear)	Liteon	LITEON/12P2BA540	--
WWAN Module	Qualcomm	MDM-9215M	--
WLAN Module	Qualcomm	WCN-3660	--
CPU	Qualcomm	APQ-8064	1.7GHz, 1067 pins
Mainboard	Asus	ME302KL	--

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

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

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



3.2 DESCRIPTION OF TEST MODES

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	6.5
802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5

RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (20MHz)	5180-5240	36 to 48	48	OFDM	BPSK	6.5

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	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (20MHz)	5180-5240	36 to 48	48	OFDM	BPSK	6.5



BANDEDGE MEASUREMENT:

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	6.5
802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	6.5
802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5

TEST CONDITION:

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

3.3 DESCRIPTION OF SUPPORT UNITS

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

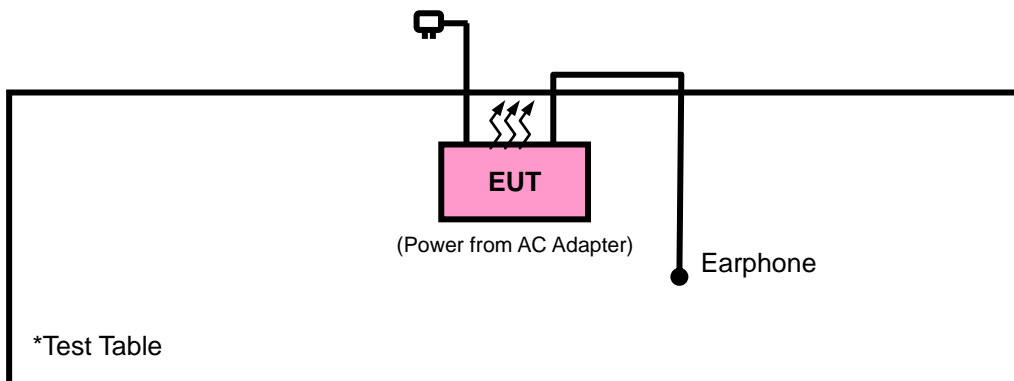
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	EARPHONE	Acon	CW-010M.V	N/A	N/A

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

NOTE:

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

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



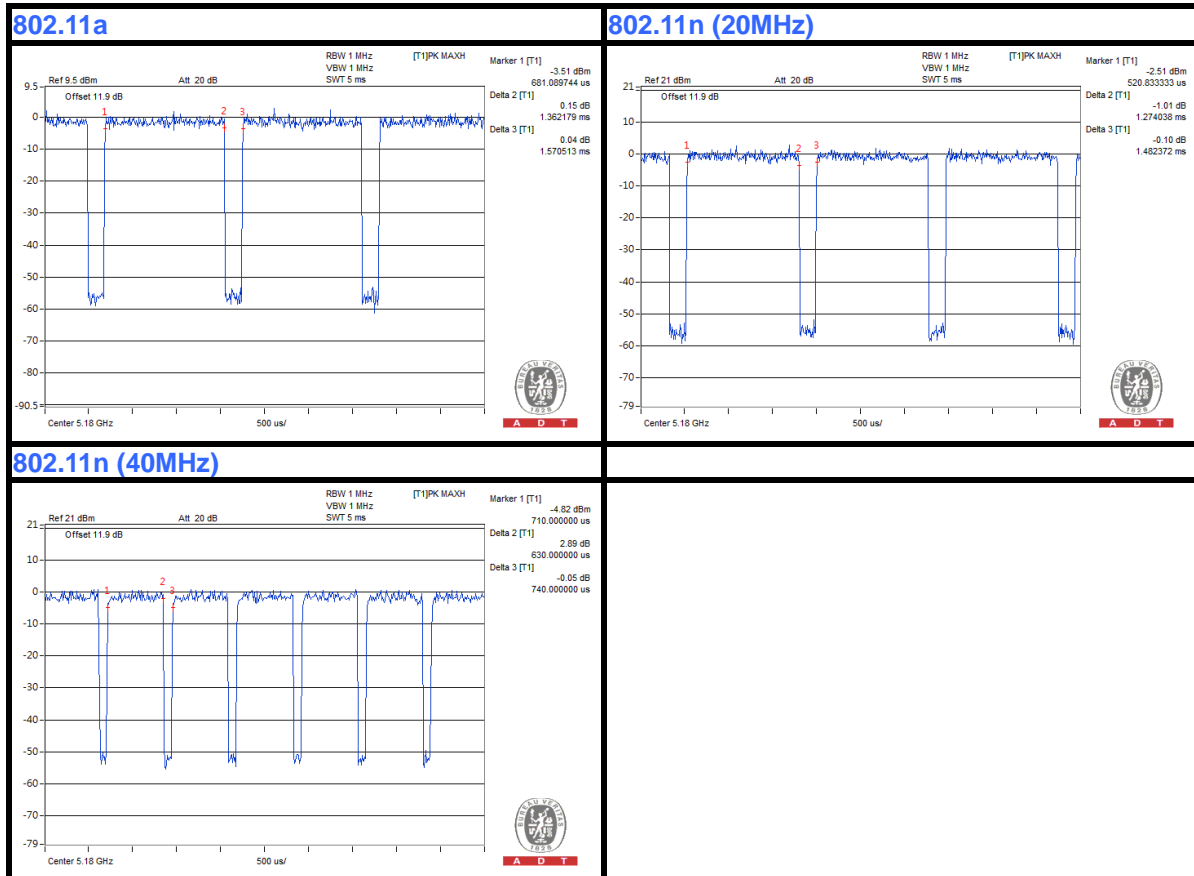
3.4 DUTY CYCLE OF TEST SIGNAL

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

802.11a: Duty cycle = 1.362/1.57 = 0.867, Duty factor = $10 * \log(1/0.867) = 0.62$

802.11n (20MHz): Duty cycle = 1.274/1.482 = 0.859, Duty factor = $10 * \log(1/0.859) = 0.66$

802.11n (40MHz): Duty cycle = 630/740 = 0.851, Duty factor = $10 * \log(1/0.851) = 0.70$



3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)

ANSI C63.10-2009

KDB 789033 D01 General UNII Test Procedures v01r02

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

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

EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBµV/m)
PK	PK
-27	68.3

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

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



4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 21, 2012	Aug. 20, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2012	Dec. 16, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 07, 2013	Jan. 06, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 25, 2012	Dec. 24, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 184045	980116	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2012	Dec. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable Worken	RG-213	NA	Dec. 29, 2012	Dec. 28, 2013
Software	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 10.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 690701.
6. The IC Site Registration No. is IC 7450F-10.



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.

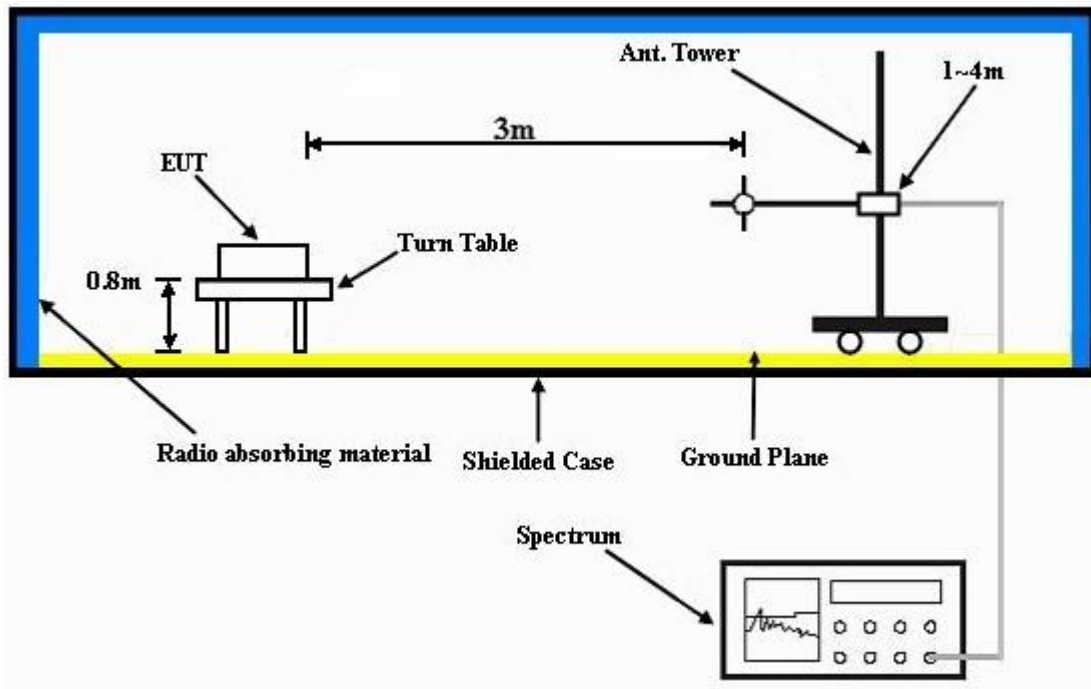
NOTE:

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

4.1.5 DEVIATION FROM TEST STANDARD

No deviation.

4.1.6 TEST SETUP



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

4.1.7 EUT OPERATING CONDITION

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



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4.1.8 TEST RESULTS

ABOVE 1GHz DATA:

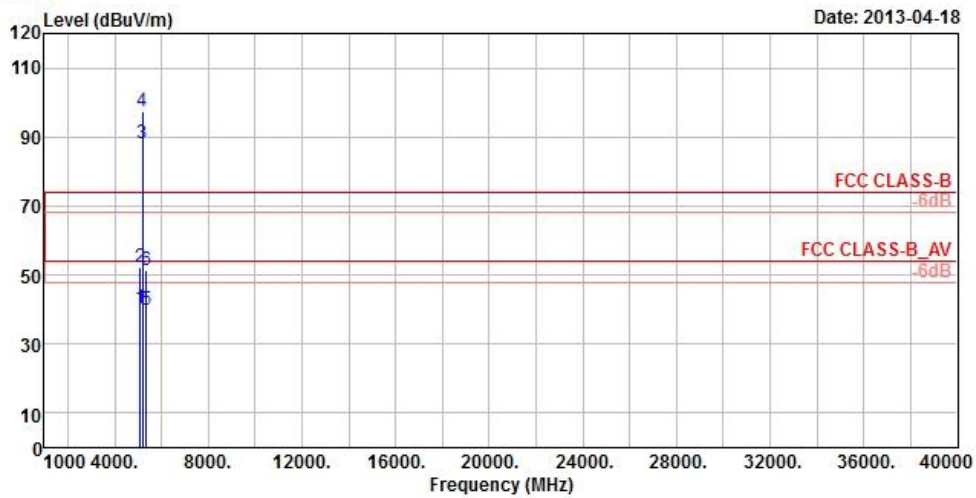
802.11a



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Data: 19



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : 11A TX CH36
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : 6M
 Power : 1, -4
 IMEI : 356239051102253

	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos			
Freq	Level	Level	Limit	Loss	Loss			Remark		
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	5078.00	40.48	39.18	54.00	-13.52	31.27	7.30	37.27	100	232 Average
2	5078.00	52.21	50.91	74.00	-21.79	31.27	7.30	37.27	100	232 Peak
3 pp	5180.00	88.13	86.80			31.35	7.32	37.34	100	232 Average
4 pk	5180.00	97.46	96.13			31.35	7.32	37.34	100	232 Peak
5	5360.00	39.92	38.22	54.00	-14.08	31.48	7.40	37.18	100	232 Average
6	5360.00	51.41	49.71	74.00	-22.59	31.48	7.40	37.18	100	232 Peak



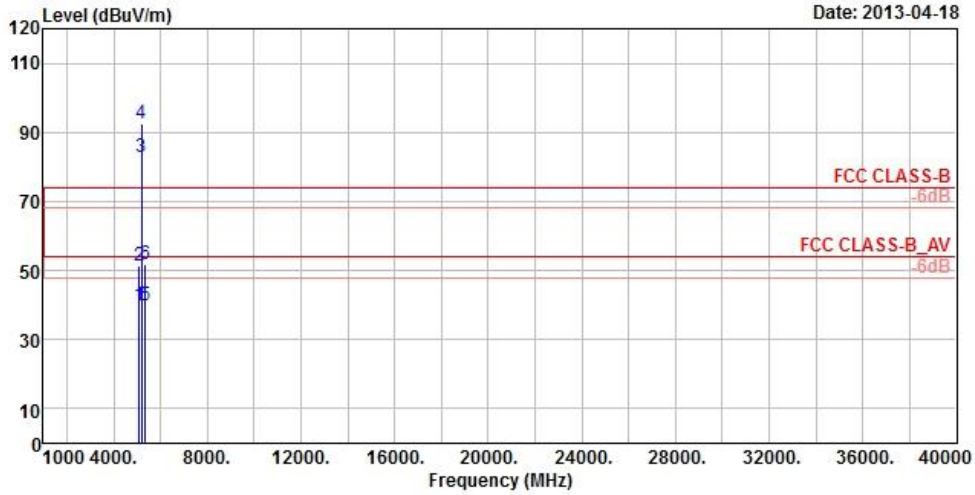
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Data: 20



Date: 2013-04-18

Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : 11A TX CH36
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : 6M
 Power : 1, -4
 IMEI : 356239051102253

	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos	Remark			
Freq	Level	Level	Limit	Loss	Loss						
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg		
1	5090.00	39.71	38.40	54.00	-14.29	31.28	7.30	37.27	102	314	Average
2	5090.00	51.43	50.12	74.00	-22.57	31.28	7.30	37.27	102	314	Peak
3	pp 5180.00	82.80	81.47			31.35	7.32	37.34	102	314	Average
4	pk 5180.00	92.71	91.38			31.35	7.32	37.34	102	314	Peak
5	5370.00	39.82	38.11	54.00	-14.18	31.49	7.40	37.18	102	314	Average
6	5370.00	51.97	50.26	74.00	-22.03	31.49	7.40	37.18	102	314	Peak



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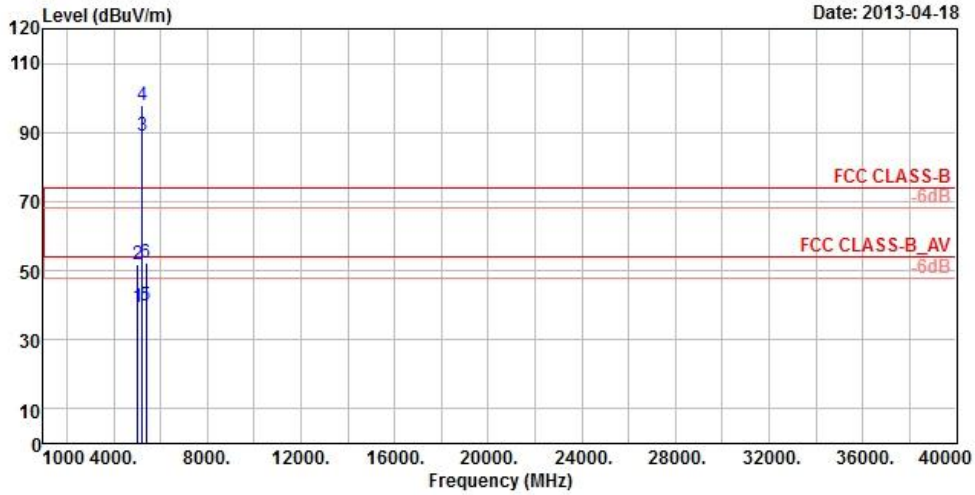


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A D T

Data: 19

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : 11A TX CH44
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : 6M
 Power : 1, -4
 IMEI : 356239051102253

	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
Freq	Level	Level	Line	Limit	Factor	Loss	Factor	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm deg
1	5022.00	39.31	38.13	54.00	-14.69	31.23	7.19	37.24 100 229 Average
2	5022.00	51.90	50.72	74.00	-22.10	31.23	7.19	37.24 100 229 Peak
3	5220.00	88.84	87.51			31.37	7.32	37.36 100 229 Average
4	5220.00	98.00	96.67			31.37	7.32	37.36 100 229 Peak
5	5402.00	39.74	38.00	54.00	-14.26	31.52	7.40	37.18 100 229 Average
6	5402.00	52.23	50.49	74.00	-21.77	31.52	7.40	37.18 100 229 Peak



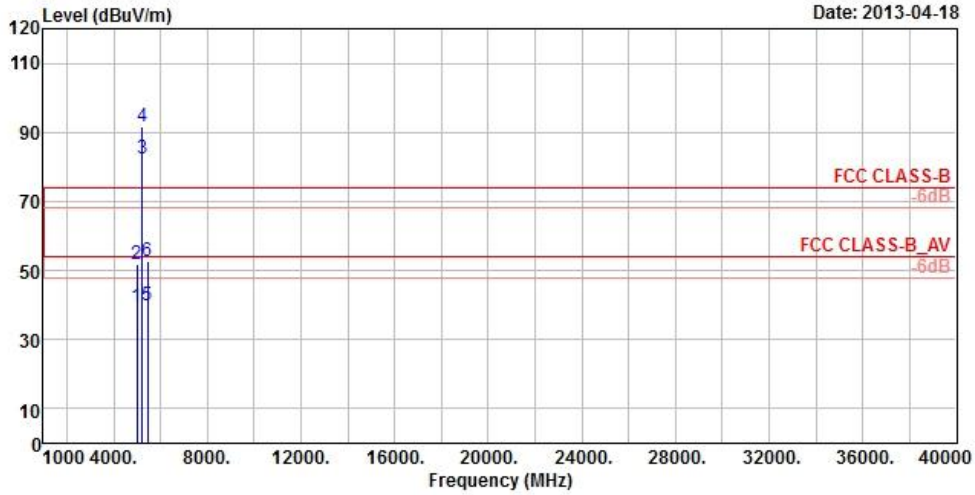
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20



Date: 2013-04-18

Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : 11A TX CH44
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : 6M
 Power : 1, -4
 IMEI : 356239051102253

	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos	Remark			
Freq	Level	Level	Limit	Loss	Factor						
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg		
1	5012.00	39.26	38.14	54.00	-14.74	31.21	7.14	37.23	102	314	Average
2	5012.00	51.81	50.69	74.00	-22.19	31.21	7.14	37.23	102	314	Peak
3 pp	5220.00	82.19	80.86			31.37	7.32	37.36	102	314	Average
4 pk	5220.00	91.54	90.21			31.37	7.32	37.36	102	314	Peak
5	5444.00	39.91	38.02	54.00	-14.09	31.55	7.47	37.13	102	314	Average
6	5444.00	52.59	50.70	74.00	-21.41	31.55	7.47	37.13	102	314	Peak



A D T

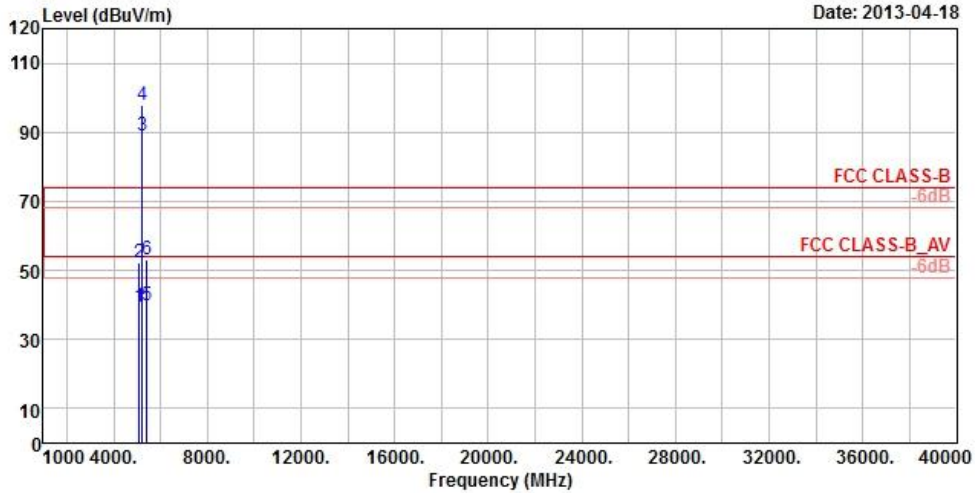


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : 11A TX CH48
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : 6M
 Power : 1, -4
 IMEI : 356239051102253

	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark		
Freq	Level	Line	Limit	Factor	Loss	Factor	cm	deg			
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB					
1	5086.00	39.38	38.08	54.00	-14.62	31.27	7.30	37.27	100	231	Average
2	5086.00	52.22	50.92	74.00	-21.78	31.27	7.30	37.27	100	231	Peak
3	5240.00	88.80	87.39			31.39	7.34	37.32	100	231	Average
4	5240.00	98.00	96.59			31.39	7.34	37.32	100	231	Peak
5	5410.00	40.04	38.30	54.00	-13.96	31.52	7.40	37.18	100	231	Average
6	5410.00	52.99	51.25	74.00	-21.01	31.52	7.40	37.18	100	231	Peak



A D T

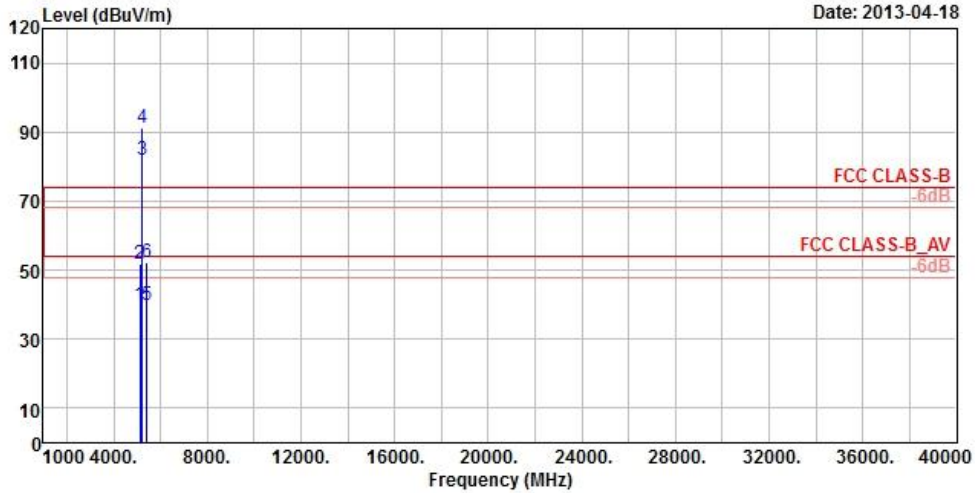


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : 11A TX CH48
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : 6M
 Power : 1, -4
 IMEI : 356239051102253

	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
Freq	Level	Level	Line	Limit	Factor	Loss	Factor		
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg
1	5124.00	39.84	38.49	54.00	-14.16	31.31	7.34	37.30	100 315 Average
2	5124.00	51.81	50.46	74.00	-22.19	31.31	7.34	37.30	100 315 Peak
3 pp	5240.00	82.04	80.63			31.39	7.34	37.32	100 315 Average
4 pk	5240.00	91.24	89.83			31.39	7.34	37.32	100 315 Peak
5	5408.00	39.72	37.98	54.00	-14.28	31.52	7.40	37.18	100 315 Average
6	5408.00	52.11	50.37	74.00	-21.89	31.52	7.40	37.18	100 315 Peak



A D T

802.11n (20MHz)

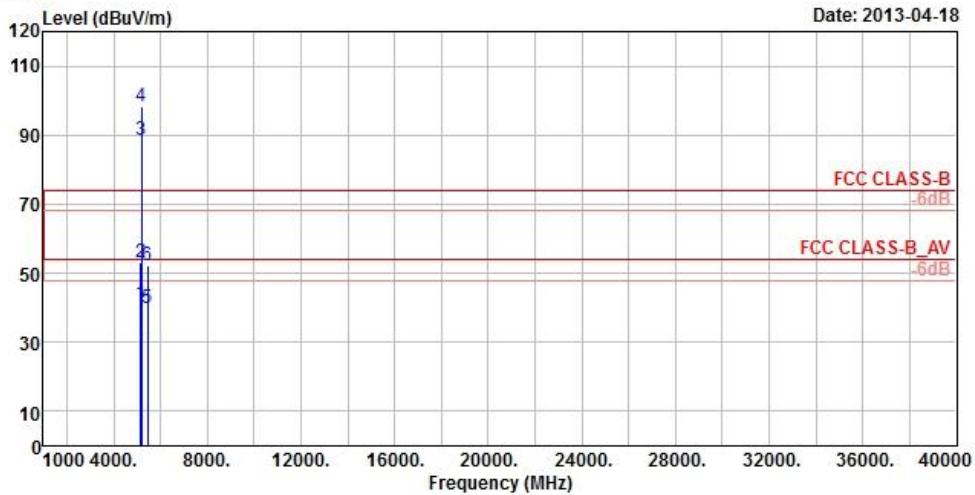


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : 11N_HT20 CH36
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1
 IMEI : 356239051102253

	Freq	Level	Read Level	Limit Line	OverAntenna Limit	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	5150.00	41.09	39.76	54.00	-12.91	31.32	7.33	37.32	100	228	Average
2	5150.00	53.31	51.98	74.00	-20.69	31.32	7.33	37.32	100	228	Peak
3 pp	5180.00	88.75	87.42			31.35	7.32	37.34	100	228	Average
4 pk	5180.00	98.19	96.86			31.35	7.32	37.34	100	228	Peak
5	5446.00	39.82	37.92	54.00	-14.18	31.56	7.47	37.13	100	228	Average
6	5446.00	52.35	50.45	74.00	-21.65	31.56	7.47	37.13	100	228	Peak



A D T

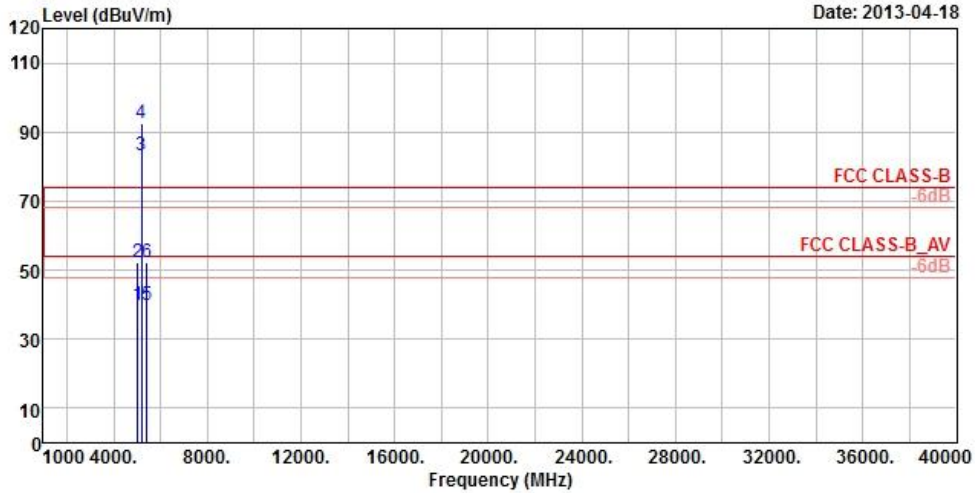


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : 11N_HT20 CH36
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1
 IMEI : 356239051102253

	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark		
Freq	Level	Line	Limit	Factor	Loss	Factor	cm	deg			
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB					
1	5038.00	39.75	38.56	54.00	-14.25	31.24	7.19	37.24	100	312	Average
2	5038.00	52.31	51.12	74.00	-21.69	31.24	7.19	37.24	100	312	Peak
3	pp 5180.00	83.29	81.96			31.35	7.32	37.34	100	312	Average
4	pk 5180.00	92.73	91.40			31.35	7.32	37.34	100	312	Peak
5	5436.00	39.87	37.98	54.00	-14.13	31.55	7.47	37.13	100	312	Average
6	5436.00	52.37	50.48	74.00	-21.63	31.55	7.47	37.13	100	312	Peak



A D T

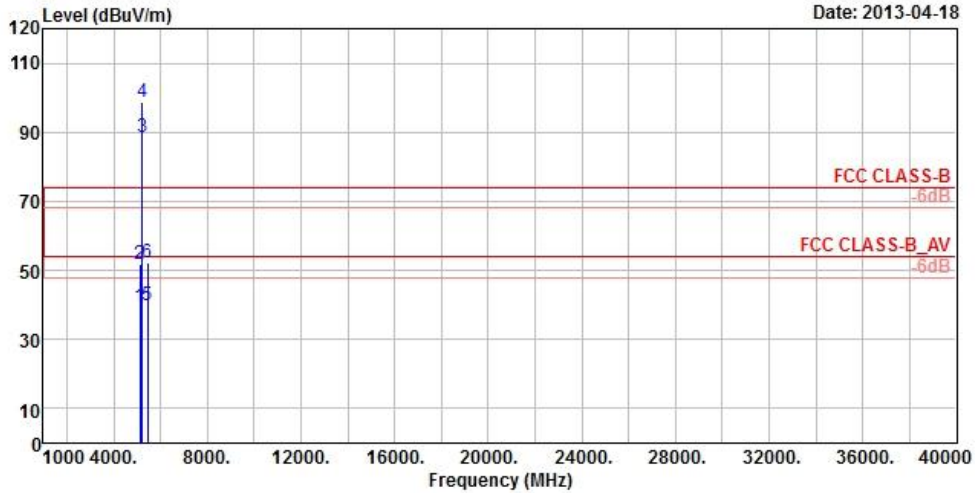


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : 11N_HT20 CH44
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1
 IMEI : 356239051102253

	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark		
Freq	Level	Level	Line	Limit	Factor	Loss	Factor				
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg		
1	5128.00	39.51	38.16	54.00	-14.49	31.31	7.34	37.30	100	229	Average
2	5128.00	51.64	50.29	74.00	-22.36	31.31	7.34	37.30	100	229	Peak
3	pp 5220.00	88.69	87.36			31.37	7.32	37.36	100	229	Average
4	pk 5220.00	98.84	97.51			31.37	7.32	37.36	100	229	Peak
5	5446.00	39.91	38.01	54.00	-14.09	31.56	7.47	37.13	100	229	Average
6	5446.00	52.08	50.18	74.00	-21.92	31.56	7.47	37.13	100	229	Peak



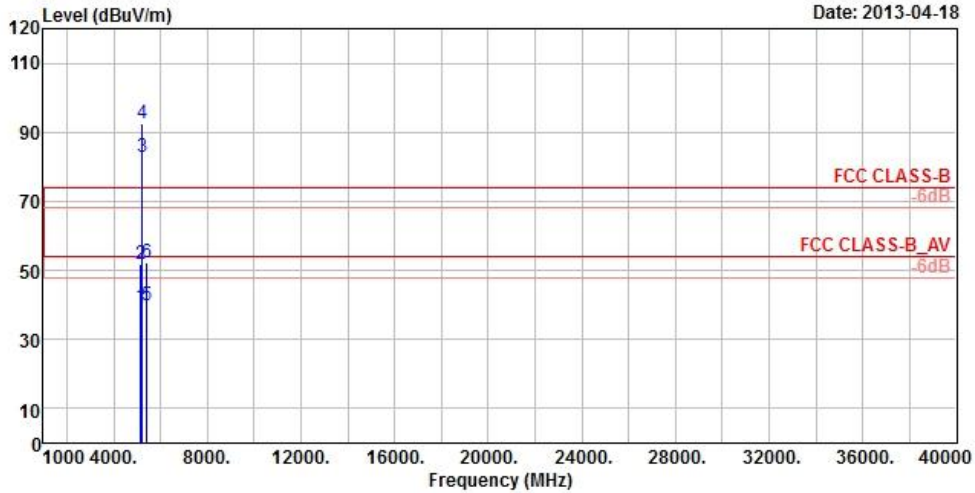
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Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20



Date: 2013-04-18

Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : 11N_HT20 CH44
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1
 IMEI : 356239051102253

	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos	Remark			
Freq	Level	Line	Limit	Loss	Factor						
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg		
1	5146.00	39.55	38.22	54.00	-14.45	31.32	7.33	37.32	100	310	Average
2	5146.00	51.92	50.59	74.00	-22.08	31.32	7.33	37.32	100	310	Peak
3	pp 5220.00	83.01	81.68			31.37	7.32	37.36	100	310	Average
4	pk 5220.00	92.60	91.27			31.37	7.32	37.36	100	310	Peak
5	5424.00	39.74	37.99	54.00	-14.26	31.53	7.40	37.18	100	310	Average
6	5424.00	52.11	50.36	74.00	-21.89	31.53	7.40	37.18	100	310	Peak



A D T

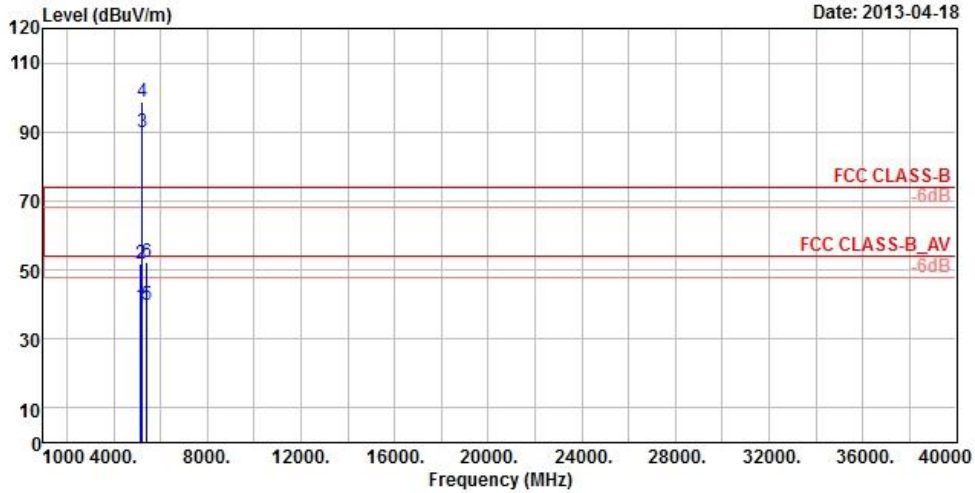


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : 11N_HT20 CH48
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1
 IMEI : 356239051102253

	Freq	Level	Read Level	Limit Line	Over Limit	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	5146.00	39.49	38.16	54.00	-14.51	31.32	7.33	37.32	100	232	Average
2	5146.00	51.99	50.66	74.00	-22.01	31.32	7.33	37.32	100	232	Peak
3 pp	5240.00	89.72	88.31			31.39	7.34	37.32	100	232	Average
4 pk	5240.00	98.80	97.39			31.39	7.34	37.32	100	232	Peak
5	5422.00	39.86	38.11	54.00	-14.14	31.53	7.40	37.18	100	232	Average
6	5422.00	52.35	50.60	74.00	-21.65	31.53	7.40	37.18	100	232	Peak



A D T

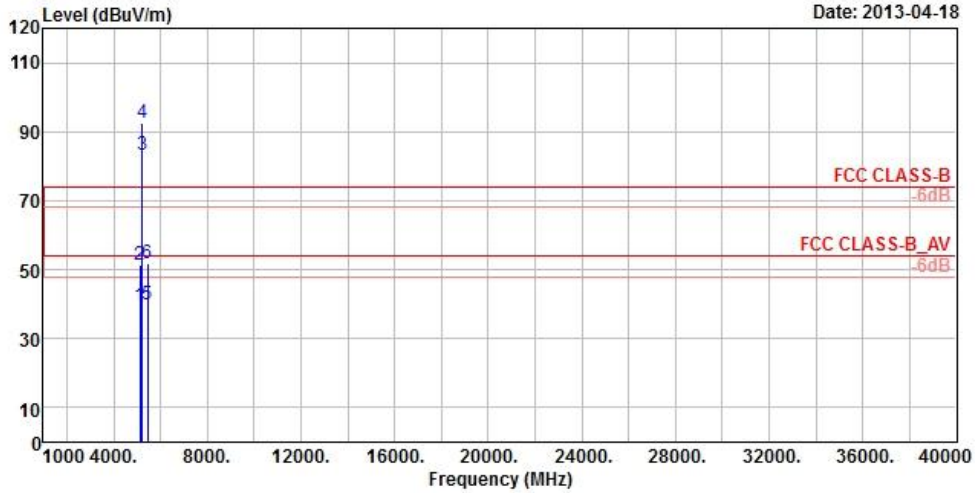


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : 11N_HT20 CH48
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1
 IMEI : 356239051102253

	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark		
Freq	Level	Level	Line	Limit	Factor	Loss	Factor				
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg		
1	5124.00	39.57	38.22	54.00	-14.43	31.31	7.34	37.30	100	315	Average
2	5124.00	51.55	50.20	74.00	-22.45	31.31	7.34	37.30	100	315	Peak
3	5240.00	83.44	82.03			31.39	7.34	37.32	100	315	Average
4	5240.00	92.36	90.95			31.39	7.34	37.32	100	315	Peak
5	5452.00	39.96	37.95	54.00	-14.04	31.56	7.53	37.08	100	315	Average
6	5452.00	51.62	49.61	74.00	-22.38	31.56	7.53	37.08	100	315	Peak



A D T

802.11n (40MHz)

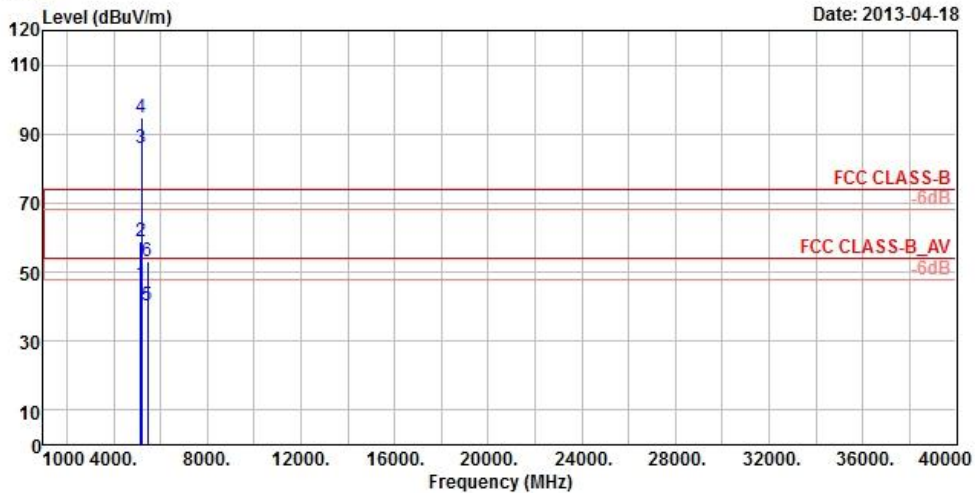


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : 11N_HT40 CH38
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1, -4
 IMEI : 356239051102253

	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos				
Freq	Level	Level	Line	Limit	Factor	Loss	Factor	cm	deg	Remark	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB				
1	5150.00	46.56	45.23	54.00	-7.44	31.32	7.33	37.32	100	229	Average
2	5150.00	58.95	57.62	74.00	-15.05	31.32	7.33	37.32	100	229	Peak
3	pp 5190.00	85.72	84.39			31.35	7.32	37.34	100	229	Average
4	pk 5190.00	94.81	93.48			31.35	7.32	37.34	100	229	Peak
5	5442.00	40.50	38.61	54.00	-13.50	31.55	7.47	37.13	100	229	Average
6	5442.00	52.95	51.06	74.00	-21.05	31.55	7.47	37.13	100	229	Peak



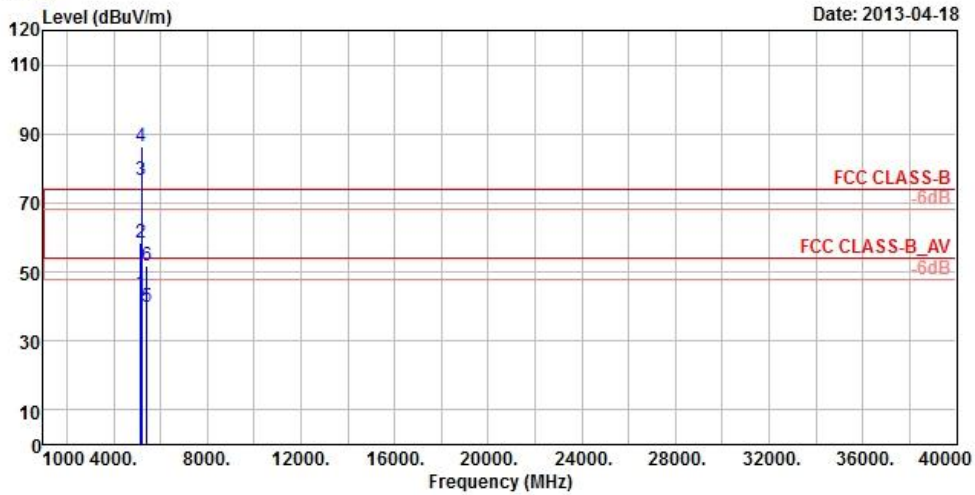
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Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20



Date: 2013-04-18

Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : 11N_HT40 CH38
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1, -4
 IMEI : 356239051102253

	Freq	Level	Read Level	Limit Line	OverLimit	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	5150.00	43.71	42.38	54.00	-10.29	31.32	7.33	37.32	100	283	Average
2	5150.00	58.28	56.95	74.00	-15.72	31.32	7.33	37.32	100	283	Peak
3 pp	5190.00	76.55	75.22			31.35	7.32	37.34	100	283	Average
4 pk	5190.00	86.46	85.13			31.35	7.32	37.34	100	283	Peak
5	5420.00	39.79	38.04	54.00	-14.21	31.53	7.40	37.18	100	283	Average
6	5420.00	51.93	50.18	74.00	-22.07	31.53	7.40	37.18	100	283	Peak



A D T

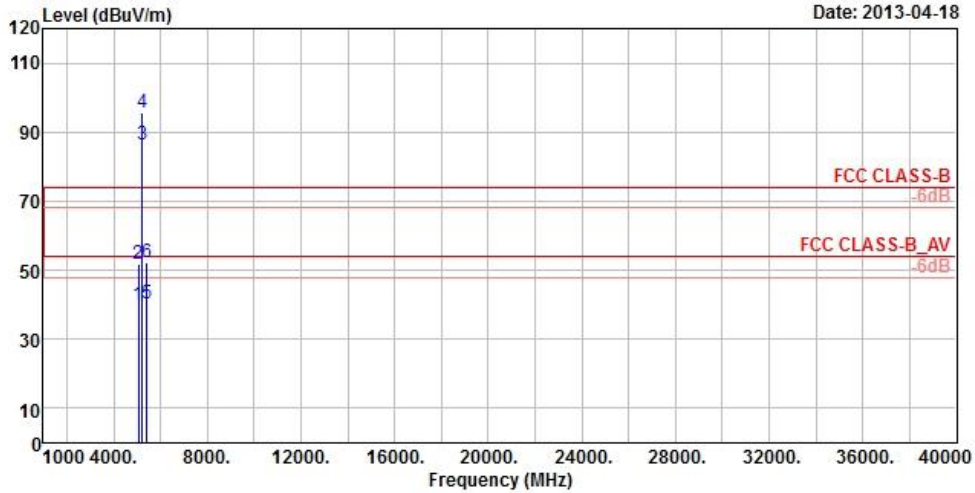


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19

Date: 2013-04-18



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : 11N_HT40 CH46
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1, -4
 IMEI : 356239051102253

	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos	Remark			
Freq	Level	Line	Limit	Loss	Factor						
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg		
1	5064.00	39.95	38.70	54.00	-14.05	31.25	7.25	37.25	100	230	Average
2	5064.00	51.92	50.67	74.00	-22.08	31.25	7.25	37.25	100	230	Peak
3 pp	5230.00	86.36	84.95			31.39	7.34	37.32	100	230	Average
4 pk	5230.00	95.86	94.45			31.39	7.34	37.32	100	230	Peak
5	5416.00	40.33	38.58	54.00	-13.67	31.53	7.40	37.18	100	230	Average
6	5416.00	52.27	50.52	74.00	-21.73	31.53	7.40	37.18	100	230	Peak



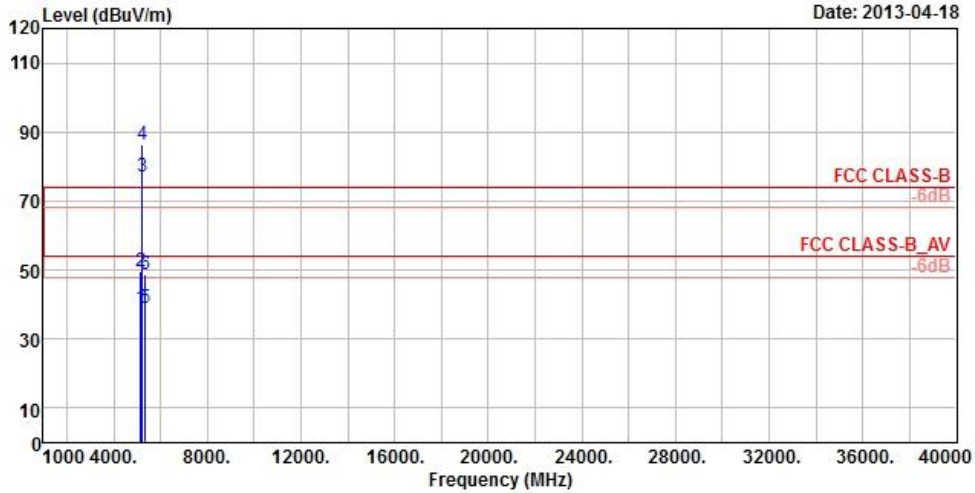
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Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : 11N_HT40 CH46
 Tested by : Johnson Liao
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 Rate : MCS0
 Power : 1, -4
 IMEI : 356239051102253

	Freq	Level	Read Level	Limit Line	OverLimit	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	5150.00	38.81	37.48	54.00	-15.19	31.32	7.33	37.32	100	311	Average
2	5150.00	49.61	48.28	74.00	-24.39	31.32	7.33	37.32	100	311	Peak
3 pp	5230.00	76.98	75.57			31.39	7.34	37.32	100	311	Average
4 pk	5230.00	86.29	84.88			31.39	7.34	37.32	100	311	Peak
5	5350.00	39.02	37.32	54.00	-14.98	31.48	7.40	37.18	100	311	Average
6	5350.00	48.63	46.93	74.00	-25.37	31.48	7.40	37.18	100	311	Peak



A D T

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz)

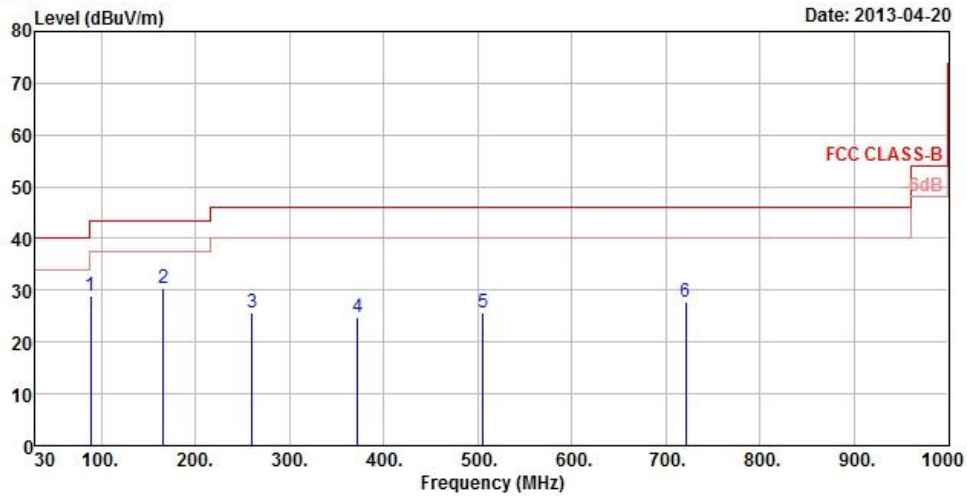


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 2013-04-20



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m HORIZONTAL
 Brand/Model: K005
 Remark : B1 LF
 Tested by : David Huang
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 IMEI : 356239051102253

	Freq	Level	Read Level	Limit Line	OverLimit	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	89.13	28.82	51.43	43.50	-14.68	8.28	1.02	31.91	100	162	Peak
2 pp	165.81	30.38	48.60	43.50	-13.12	12.15	1.42	31.79	100	184	Peak
3	260.58	25.74	43.95	46.00	-20.26	11.79	1.87	31.87	100	221	Peak
4	372.10	24.76	39.69	46.00	-21.24	14.68	2.32	31.93	100	195	Peak
5	505.80	25.74	37.08	46.00	-20.26	17.46	2.80	31.60	100	136	Peak
6	721.40	27.78	34.82	46.00	-18.22	21.12	3.49	31.65	100	141	Peak



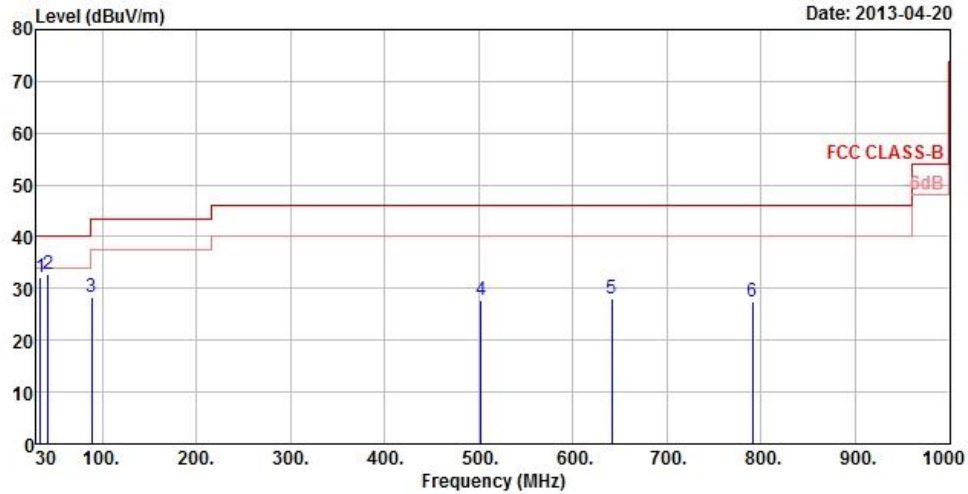
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5
 Condition : FCC CLASS-B 3m VERTICAL
 Brand/Model: K005
 Remark : B1 LF
 Tested by : David Huang
 Temperature : 25°C
 Humidity : 65%
 Plane : X
 IMEI : 356239051102253

	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos	Remark		
Freq	Level	Level	Limit	Loss	Loss					
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	34.32	32.28	50.14	40.00	-7.72	12.63	0.59	31.08	100	114 QP
2 pp	42.15	32.71	49.51	40.00	-7.29	13.58	0.70	31.08	100	174 QP
3 pk	89.13	28.43	51.04	43.50	-15.07	8.28	1.02	31.91	100	132 Peak
4	502.30	27.70	39.15	46.00	-18.30	17.37	2.79	31.61	100	186 Peak
5	641.60	27.96	36.70	46.00	-18.04	20.12	3.22	32.08	100	357 Peak
6	790.70	27.59	33.23	46.00	-18.41	22.09	3.67	31.40	100	201 Peak



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4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 21, 2012	Dec. 20, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 TEST PROCEDURES

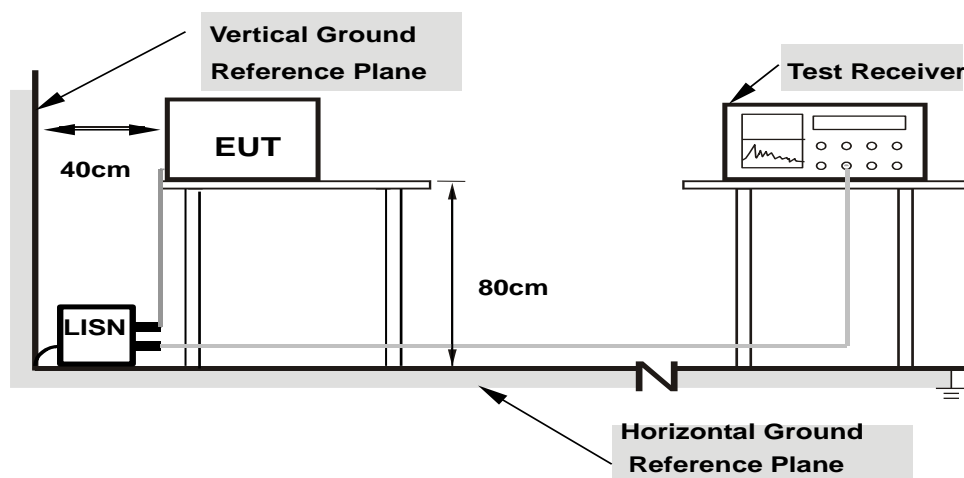
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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) was not recorded.

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

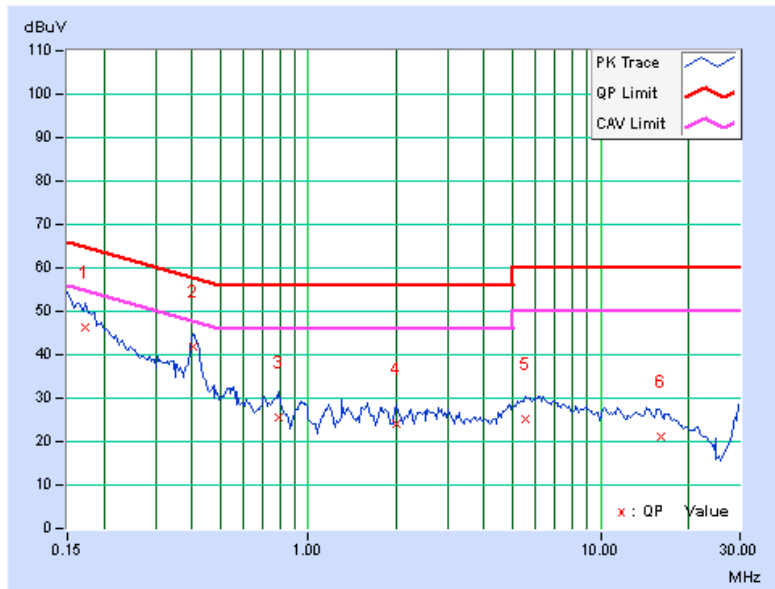
CONDUCTED WORST-CASE DATA : 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq.	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1		0.17344	0.12	46.17	33.17	46.29	33.29	64.79	54.79
2	0.40391	0.15	41.61	37.25	41.76	37.40	57.77	47.77	-16.01	-10.37
3	0.79063	0.19	25.37	21.74	25.56	21.93	56.00	46.00	-30.44	-24.07
4	2.01563	0.23	23.81	19.14	24.04	19.37	56.00	46.00	-31.96	-26.63
5	5.56641	0.43	24.58	17.82	25.01	18.25	60.00	50.00	-34.99	-31.75
6	16.01953	1.01	19.98	13.53	20.99	14.54	60.00	50.00	-39.01	-35.46

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.

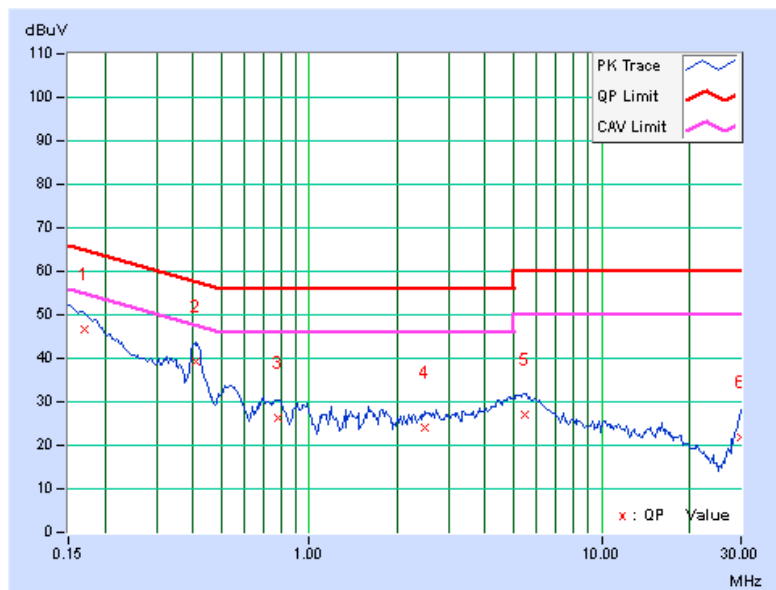


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.16953	0.17	46.50	33.46	46.67	33.63	64.98
2	0.41172	0.21	38.91	34.30	39.12	34.51	57.61	47.61	-18.49	-13.10
3	0.78281	0.24	26.05	20.89	26.29	21.13	56.00	46.00	-29.71	-24.87
4	2.48047	0.30	23.64	18.76	23.94	19.06	56.00	46.00	-32.06	-26.94
5	5.47656	0.43	26.72	16.68	27.15	17.11	60.00	50.00	-32.85	-32.89
6	29.98828	1.11	20.66	9.44	21.77	10.55	60.00	50.00	-38.23	-39.45

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 PEAK TRANSMIT POWER MEASUREMENT

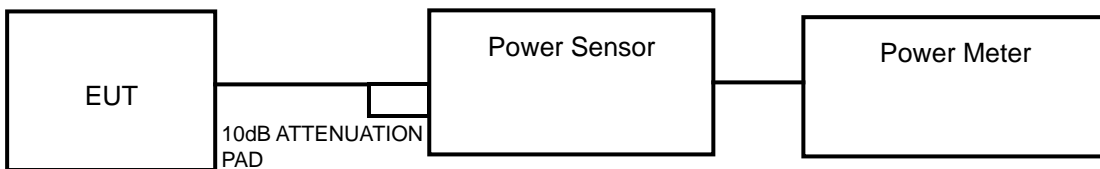
4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB

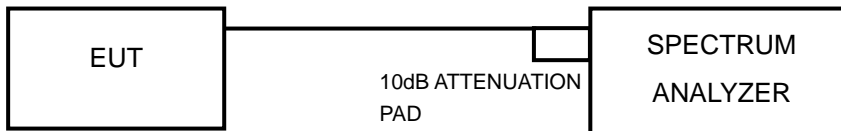
NOTE: Where B is the 26dB emission bandwidth in MHz.

4.3.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB BANDWIDTH



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

<802.11a, 802.11n (20MHz), 802.11n (40MHz)>

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)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	10.520	10.22	17	PASS
44	5220	10.641	10.27	17	PASS
48	5240	10.765	10.32	17	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	13.122	11.18	17	PASS
44	5220	13.243	11.22	17	PASS
48	5240	15.922	12.02	17	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	12.560	10.99	17	PASS
46	5230	10.375	10.16	17	PASS



26dB BANDWIDTH:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	22.79	PASS
44	5220	22.83	PASS
48	5240	22.93	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	23.01	PASS
44	5220	23.57	PASS
48	5240	24.37	PASS

802.11n (40MHz)

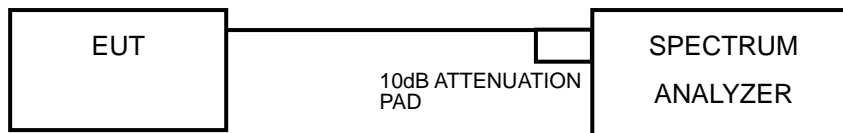
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
38	5190	46.93	PASS
46	5230	36.72	PASS

4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	4dBm

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

<802.11a, 802.11n (20MHz), 802.11n (40MHz)>

Using method SA-2 alternative

- 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 = 4second.
- 4) Perform a single sweep.
- 5) Record the max value and add $10 \log (1/\text{duty cycle})$



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

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	-2.51	0.62	-1.89	4	PASS
44	5220	-2.36	0.62	-1.74	4	PASS
48	5240	-2.36	0.62	-1.74	4	PASS

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

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	-1.74	0.66	-1.08	4	PASS
44	5220	-1.87	0.66	-1.21	4	PASS
48	5240	-1.94	0.66	-1.28	4	PASS

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

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
38	5190	-6.08	0.70	-5.38	4	PASS
46	5230	-5.94	0.70	-5.24	4	PASS

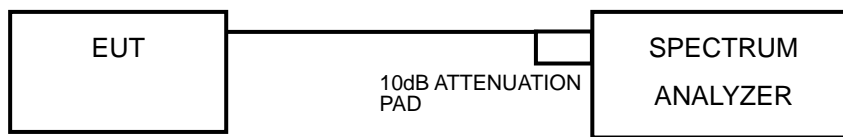
NOTE: Refer to section 3.3 for duty cycle spectrum plot.

4.5 PEAK POWER EXCURSION MEASUREMENT

4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB.

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

- 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITIONS

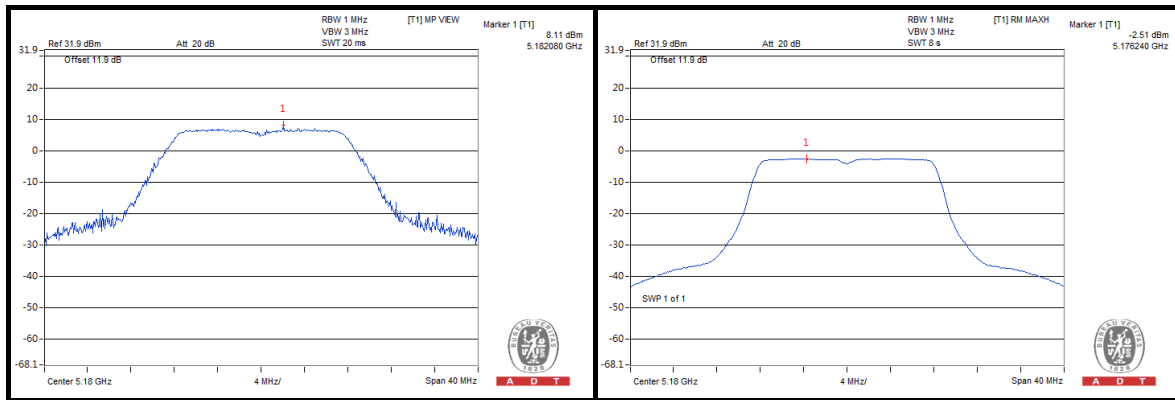
Same as 4.2.6

4.5.7 TEST RESULTS

802.11a

CHAN.	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS /FAIL
36	5180	8.11	-2.51	-1.89	10.000	13	PASS
44	5220	7.54	-2.36	-1.74	9.280	13	PASS
48	5240	7.79	-2.36	-1.74	9.530	13	PASS

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

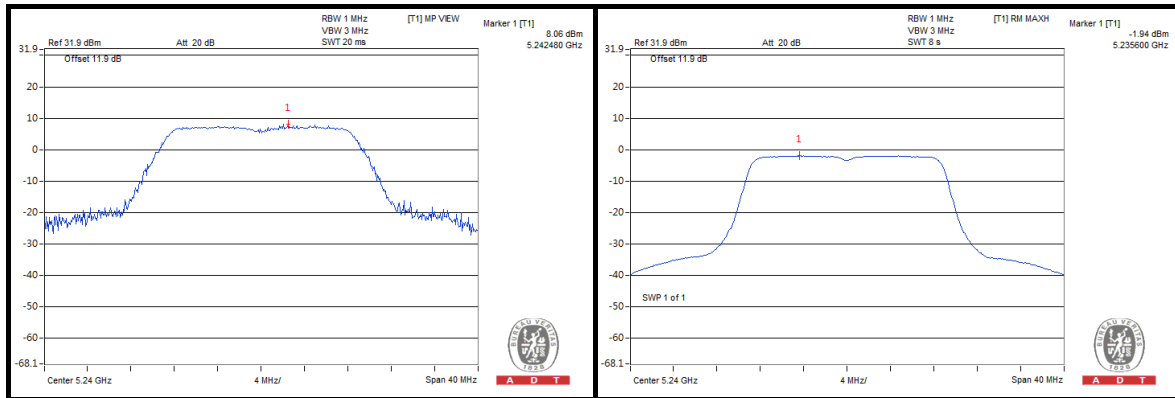




802.11n (20MHz)

CHAN.	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS /FAIL
36	5180	7.93	-1.74	-1.08	9.012	13	PASS
44	5220	8.11	-1.87	-1.21	9.322	13	PASS
48	5240	8.06	-1.94	-1.28	9.342	13	PASS

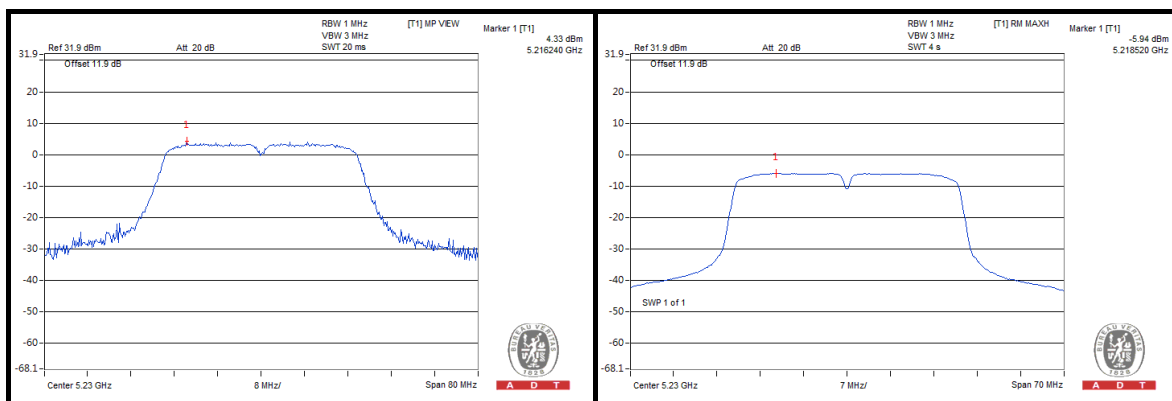
NOTE: Refer to section 3.3 for duty cycle spectrum plot.



802.11n (40MHz)

CHAN.	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS /FAIL
38	5190	3.77	-6.08	-5.38	9.15	13	PASS
46	5230	4.33	-5.94	-5.24	9.57	13	PASS

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

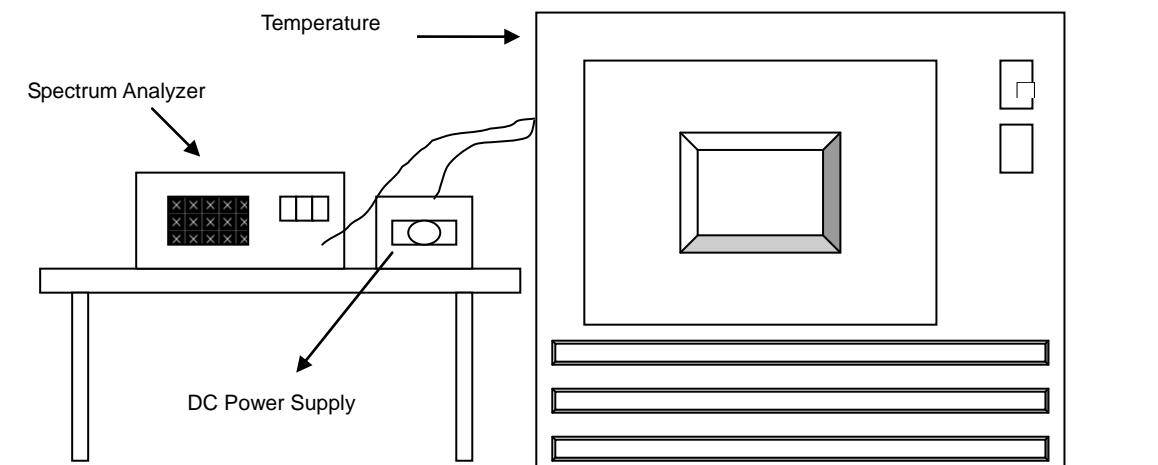


4.6 FREQUENCY STABILITY

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 SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

4.6.4 TEST PROCEDURE

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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

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



4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	4.0	5240.042349	8.082	5240.042666	8.142	5240.042599	8.130	5240.042490	8.109
40	4.0	5240.043069	8.219	5240.042794	8.167	5240.043127	8.230	5240.042685	8.146
30	4.0	5240.044185	8.432	5240.044219	8.439	5240.043863	8.371	5240.044030	8.403
20	4.0	5240.044739	8.538	5240.045011	8.590	5240.045127	8.612	5240.044825	8.554
10	4.0	5240.046267	8.830	5240.046700	8.912	5240.046354	8.846	5240.046202	8.817
0	4.0	5240.045575	8.698	5240.044832	8.556	5240.045288	8.643	5240.044790	8.548
-10	4.0	5240.043906	8.379	5240.043760	8.351	5240.043790	8.357	5240.043917	8.381
-20	4.0	5240.042943	8.195	5240.043192	8.243	5240.042925	8.192	5240.043016	8.209
-30	4.0	5240.041856	7.988	5240.042350	8.082	5240.042209	8.055	5240.042131	8.040

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5240MHz									
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	3.6	5240.044415	8.476	5240.044848	8.559	5240.044370	8.468	5240.044649	8.521
	4.0	5240.044739	8.538	5240.045011	8.590	5240.045127	8.612	5240.044825	8.554
	4.30	5240.046357	8.847	5240.046039	8.786	5240.046680	8.908	5240.046698	8.912



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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

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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---