

FCC TEST REPORT

(Part 15, Subpart C)

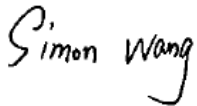
Applicant:	Xiaomi Communications Co.,Ltd.
Address:	#019, 9th Floor, Building 6, 33Xi'erqi Middle Road, Haidian District

Manufacturer or Supplier:	Xiaomi Communications Co.,Ltd.
Address:	#019, 9th Floor, Building 6, 33Xi'erqi Middle Road, Haidian District
Product:	2.4GHz WIFI+Bluetooth dual-mode module
Brand Name:	MI
Model Name:	MHCWB8S-B
FCC ID:	2AFZZ-MHCWB8S-B
Date of tests:	Nov. 21, 2024 ~ Dec. 5, 2024

The tests have been carried out according to the requirements of the following standard:

- ☒ **FCC Part 15, Subpart C, Section 15.247**
- ☒ **ANSI C63.10-2020**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
	
Date: Dec. 5, 2024	Date: Dec. 5, 2024

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



**BUREAU
VERITAS**

Test Report No.: PSU-NQN2412170109RF02

TABLE OF CONTENTS

RELEASE CONTROL RECORD	6
1 SUMMARY OF TEST RESULTS.....	7
1.1 MEASUREMENT UNCERTAINTY	8
2 GENERAL INFORMATION	9
2.1 GENERAL DESCRIPTION OF EUT	9
2.2 DESCRIPTION OF TEST MODES	11
2.2.1 CONFIGURATION OF SYSTEM UNDER TEST	12
2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	12
2.3 DUTY CYCLE OF TEST SIGNAL	16
2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	17
2.5 DESCRIPTION OF SUPPORT UNITS	17
3 TEST TYPES AND RESULTS.....	18
3.1 CONDUCTED EMISSION MEASUREMENT	18
3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	18
3.1.2 TEST INSTRUMENTS.....	18
3.1.3 TEST PROCEDURES	19
3.1.4 DEVIATION FROM TEST STANDARD	19
3.1.5 TEST SETUP	20
3.1.6 EUT OPERATING CONDITIONS	20
3.1.7 TEST RESULTS	21
3.2 RADIATED EMISSION MEASUREMENT	22
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	22
3.2.2 TEST INSTRUMENTS.....	23
3.2.3 TEST PROCEDURES	24
3.2.4 DEVIATION FROM TEST STANDARD	24
3.2.5 TEST SETUP	25
3.2.6 EUT OPERATING CONDITIONS	26
3.2.7 TEST RESULTS	27
3.3 6 DB BANDWIDTH MEASUREMENT	109
3.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT	109
3.3.2 TEST INSTRUMENTS.....	109
3.3.3 TEST PROCEDURE.....	109
3.3.4 DEVIATION FROM TEST STANDARD	110
3.3.5 TEST SETUP	110



3.3.6	EUT OPERATING CONDITIONS	110
3.3.7	TEST RESULTS	111
3.4	CONDUCTED OUTPUT POWER.....	112
3.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	112
3.4.2	TEST SETUP	112
3.4.3	TEST INSTRUMENTS.....	112
3.4.4	TEST PROCEDURES	112
3.4.5	DEVIATION FROM TEST STANDARD	112
3.4.6	EUT OPERATING CONDITIONS	112
3.4.7	TEST RESULTS	113
3.4.7.1	MAXIMUM PEAK OUTPUT POWER	113
3.4.7.2	AVERAGE OUTPUT POWER (FOR REFERENCE).....	114
3.5	POWER SPECTRAL DENSITY MEASUREMENT	115
3.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	115
3.5.2	TEST SETUP	115
3.5.3	TEST INSTRUMENTS.....	115
3.5.4	TEST PROCEDURE.....	115
3.5.5	DEVIATION FROM TEST STANDARD	115
3.5.6	EUT OPERATING CONDITION	115
3.5.7	TEST RESULTS	116
3.6	OUT OF BAND EMISSION MEASUREMENT	117
3.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	117
3.6.2	TEST SETUP	117
3.6.3	TEST INSTRUMENTS.....	117
3.6.4	TEST PROCEDURE.....	117
3.6.5	DEVIATION FROM TEST STANDARD	118
3.6.6	EUT OPERATING CONDITION	118
3.6.7	TEST RESULTS	118
3.7	ANTENNA REQUIREMENTS.....	119
3.7.1	STANDARD APPLICABLE	119
3.7.2	ANTENNA CONNECTED CONSTRUCTION	119
3.7.3	ANTENNA GAIN	119
4	PHOTOGRAPHS OF THE TEST CONFIGURATION	119
5	MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	
	120	
6	APPENDIX 1.....	121



WLAN 2.4G	121
DTS BANDWIDTH	121
TEST RESULT	121
TEST GRAPHS	122
OCCUPIED CHANNEL BANDWIDTH	130
TEST RESULT	130
TEST GRAPHS	131
MAXIMUM CONDUCTED OUTPUT POWER	139
TEST RESULT	139
MAXIMUM POWER SPECTRAL DENSITY	142
TEST RESULT	142
TEST GRAPHS	143
BAND EDGE MEASUREMENTS	152
TEST GRAPHS	152
CONDUCTED SPURIOUS EMISSION	156
TEST RESULT	156
DUTY CYCLE	164
TEST RESULT	164
TEST GRAPHS	165
7 APPENDIX 2 BLE	166
DTS BANDWIDTH	166
TEST RESULT	166
TEST GRAPHS	167
OCCUPIED CHANNEL BANDWIDTH	168
TEST RESULT	168
TEST GRAPHS	169
MAXIMUM CONDUCTED OUTPUT POWER	170
TEST RESULT	170
MAXIMUM POWER SPECTRAL DENSITY	171
TEST RESULT	171
TEST GRAPHS	172
BAND EDGE MEASUREMENTS	173
TEST GRAPHS	173
CONDUCTED SPURIOUS EMISSION	174
TEST GRAPHS	174
DUTY CYCLE	175



**BUREAU
VERITAS**

Test Report No.: PSU-NQN2412170109RF02

TEST RESULT	175
TEST GRAPHS.....	176



**BUREAU
VERITAS**

Test Report No.: PSU-NQN2412170109RF02

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2412170109RF02	Original release	Dec. 5, 2024



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
15.207	AC Power Conducted Emission	Compliance
15.205 15.209	Radiated Emissions	Compliance
15.247(d)	Out of band Emission Measurement	Compliance
15.247(a)(2)	6dB bandwidth	Compliance
15.247(b)	Conducted Output power	Compliance
15.247(e)	Power Spectral Density	Compliance
15.203	Antenna Requirement	Compliance

Note : 1.Except RSE, other data please refer to Appendix 1 (for WIFI-2.4G) and Appendix 2 (for BLE).



1.1 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	UNCERTAINTY
AC Power Conducted emissions	$\pm 2.70\text{dB}$
Radiated emissions (9KHz~30MHz)	$\pm 2.68\text{dB}$
Radiated emissions (30MHz~1GHz)	$\pm 4.98\text{dB}$
Radiated emissions (1GHz ~6GHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GHz ~18GHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GHz ~40GHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Power Spectral Density	$\pm 0.85\text{ dB}$

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



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	2.4GHz WIFI+Bluetooth dual-mode module
BRAND NAME	MI
MODEL NAME	MHCWB8S-B
NOMINAL VOLTAGE	3.3Vdc (DC supply)
MODULATION	DSSS, OFDM, GFSK, OFDMA
TRANSMISSION RATE	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n(HT20)/ax(HE20): up to 144.4 Mbps 802.11n(HT40)/ax(HE40): up to 300 Mbps BT_LE: 1 Mbps 802.11ax 20 (RU26/52/106/242): up to 286.8Mbps 802.11ax 40 (RU484): up to 573.5Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20/40)/ax(HE20/40) 2402-2480MHz for BT-LE(GFSK) 2412-2462MHz for ax(20M RU26/52/106/242)/ax (40M RU484)
MAX. OUTPUT POWER	WLAN: 0.087mW (Maximum) BT-LE: 0.037mW (Maximum) RU WLAN: 0.153mW (Maximum)
ANTENNA TYPE	PCB Antenna with 0.7dBi gain for BLE/WIFI
HW VERSION	V1.1
SW VERSION	V1.0.2
I/O PORTS	Refer to user's manual



**BUREAU
VERITAS**

Test Report No.: PSU-NQN2412170109RF02

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n(HT20)/ax(HE20)	1TX /1RX
802.11n(HT40)/ax(HE40)	1TX /1RX
802.11ax (20MHz RU 26/52/106/242)	1TX /1RX
802.11ax (40MHz RU 484)	1TX /1RX
BT_LE(1MHz)	1TX /1RX
BT_LE(2MHz)	1TX /1RX
BT_LE(S2)	1TX /1RX
BT_LE(S8)	1TX /1RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.



2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20), 802.11ax20 (HE20); 802.11ax20 (RU 26/52/106/242):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n (HT40), 802.11ax40 (HE40); 802.11ax40 (RU 484):

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

40 channels are provided for BT-LE (GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480



2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 4 photographs of the test configuration for reference.

2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.
The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

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

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

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

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).
- ☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
BT-LE	0 to 39	39	GFSK	1.0

**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).

☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11ax HE20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
802.11ax HE40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	1.0
802.11ax 20 (RU 26/52/106/242)	1 to 11	1, 11	OFDMA	MCS0
802.11ax 40 (RU 484)	3 to 9	3, 9	OFDMA	MCS0

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).

☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11ax 20 (RU 26)	1 to 11	1, 11	OFDMA	MCS0

**BANDEDGE MEASUREMENT:**

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11ax HE20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
802.11n HE40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	1.0
802.11ax 20 (RU 26)	1 to 11	1,11	OFDMA	MCS0
802.11ax 40 (RU 26)	3 to 9	3 ,9	OFDMA	MCS0

**ANTENNA PORT CONDUCTED MEASUREMENT:**

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11ax HE20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
802.11ax HE40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	1.0
802.11ax 20 (RU 26)	1 to 11	1,11	OFDMA	MCS0
802.11ax 40 (RU 26)	3 to 9	3,9	OFDMA	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 3.3V DC Supply	Jace Hu
RE≥1G	23deg. C, 70%RH	DC 3.3V DC Supply	Jace Hu
PLC	25deg. C, 52%RH	DC 3.3V DC Supply	Carl Xie
APCM	25deg. C, 60%RH	DC 3.6V By DC Supply	James Fu



Test Report No.: PSU-NQN2412170109RF02

2.3 DUTY CYCLE OF TEST SIGNAL

Please Refer to Appendix1/2 Of this test report.



2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C, Section 15.247

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2020

Note :

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

2.5 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
1	Desktop	Lenovo	M73 SFF	PC04GRQV	N/A
2	Desktop	Lenovo	M73 SFF	PC06CS27	N/A
3	Laptop	Lenovo	Thinkpad T450	PC-049PT1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m
2	AC Line: Unshielded, Detachable 1.5m
3	AC Line: Unshielded, Detachable 1.5m



3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 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 0.50MHz.
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.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Feb. 13,24	Feb. 12,25
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Mar. 09,24	Mar. 08,25

NOTE:

1. The test was performed in CE shielded room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



3.1.3 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. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

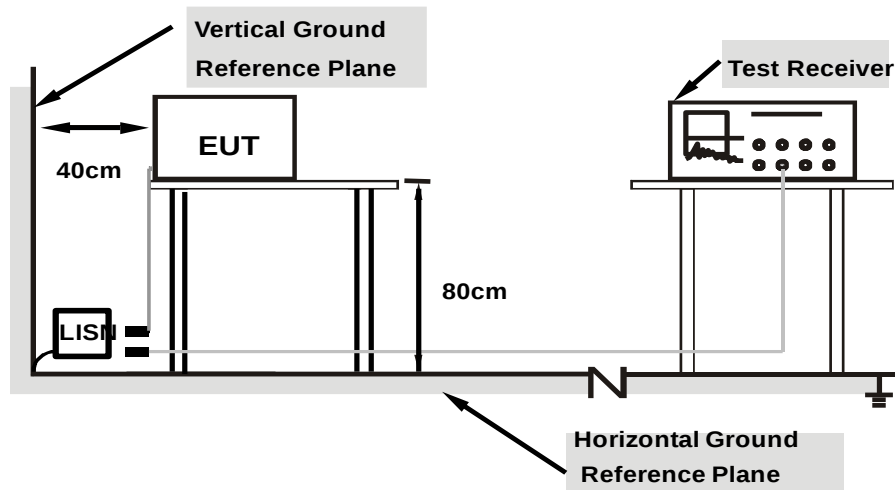
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.



3.1.5 TEST SETUP



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

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

3.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.



Test Report No.: PSU-NQN2412170109RF02

3.1.7 TEST RESULTS

NA



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

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. As shown in 15.35(b), 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.



3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Nov. 14,23	Nov. 13,26
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 17,24	Feb. 16,25
Horn Antenna	ETS-LINDGREN	3117	00168692	Feb. 17,24	Feb. 16,25
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Sep.02, 24	Sep.01, 25
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120-3	3.2.06	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	N/A	May. 05,24	May. 04,25
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 27,24	Mar. 26,25
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 05,24	May. 04,25
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.09,24	May.08,25
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 16,24	Feb. 15,25
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 10,24	Aug. 09,25
Power Meter	Anritsu	ML2495A	1506002	Feb. 13,24	Feb. 12,25
Power Sensor	Anritsu	MA2411B	1339352	Feb. 13,24	Feb. 12,25
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.01,24	Aug.31,25

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Chamber.
 3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



3.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

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.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

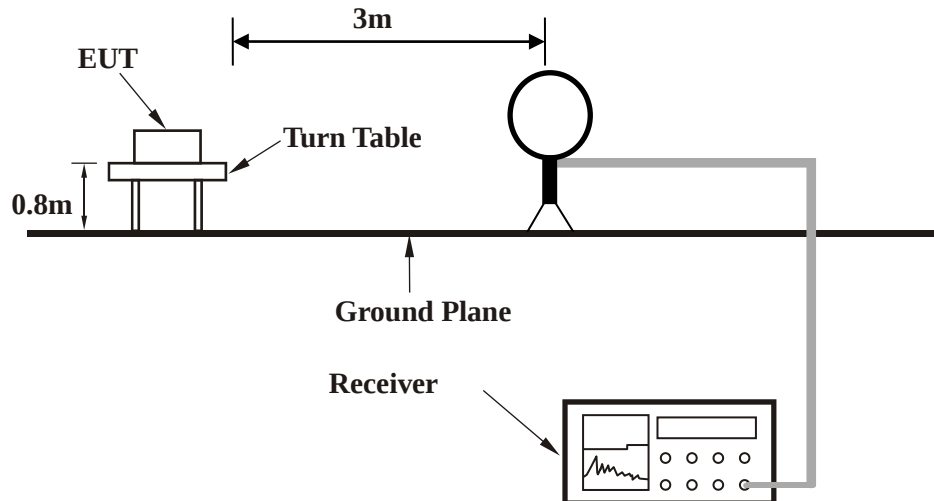


BUREAU
VERITAS

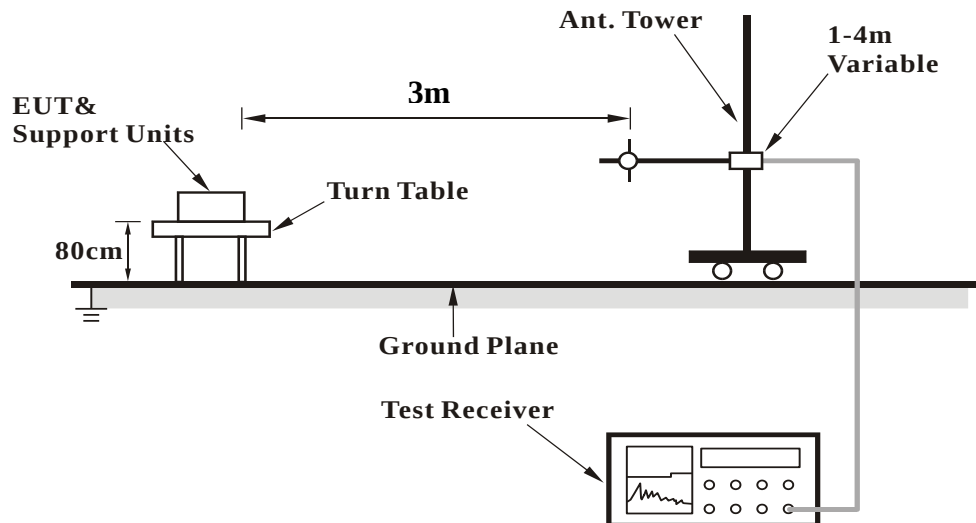
Test Report No.: PSU-NQN2412170109RF02

3.2.5 TEST SETUP

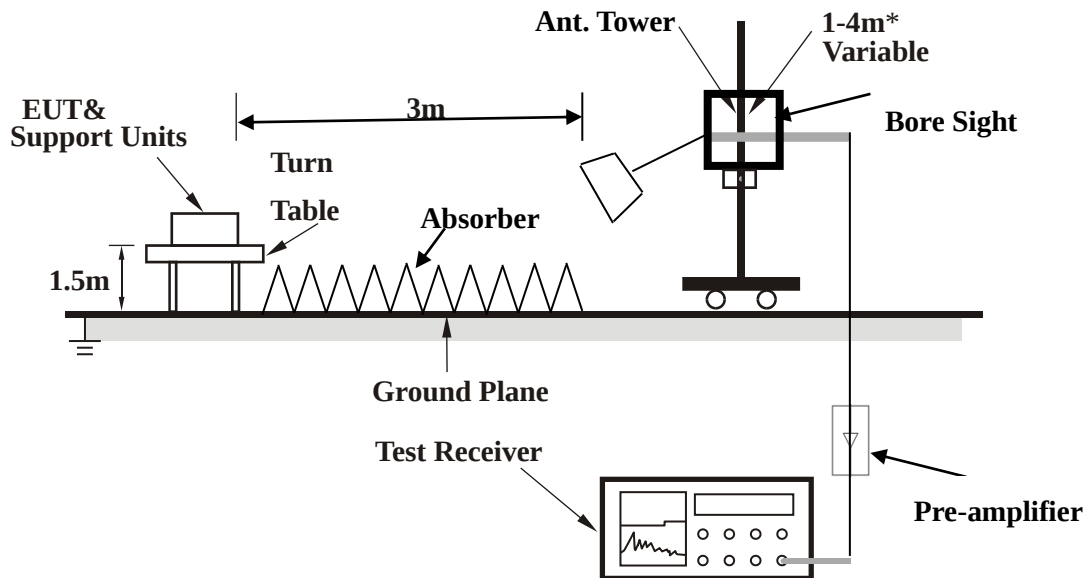
<Frequency Range 9KHz~30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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

3.2.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.



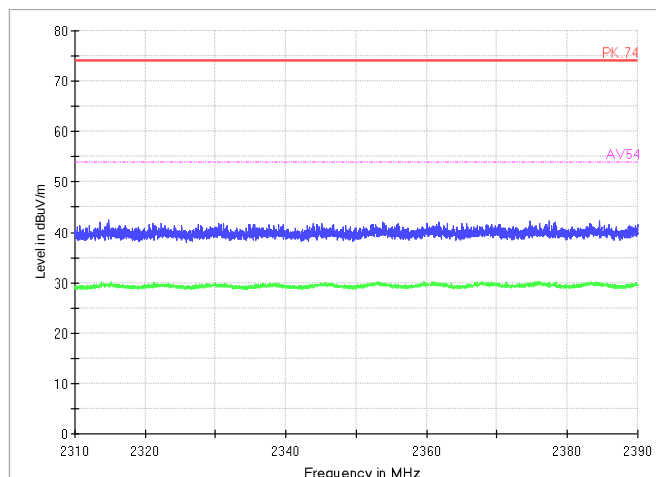
BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

3.2.7 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Radiated Emission Band Edge for BLE

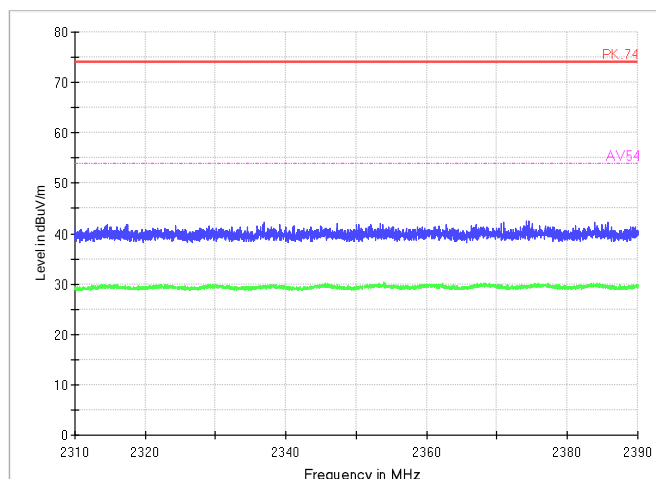


Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE 1Mbps)

Polarity: Vertical



Carrier frequency (MHz): 2402

Channel No.:0

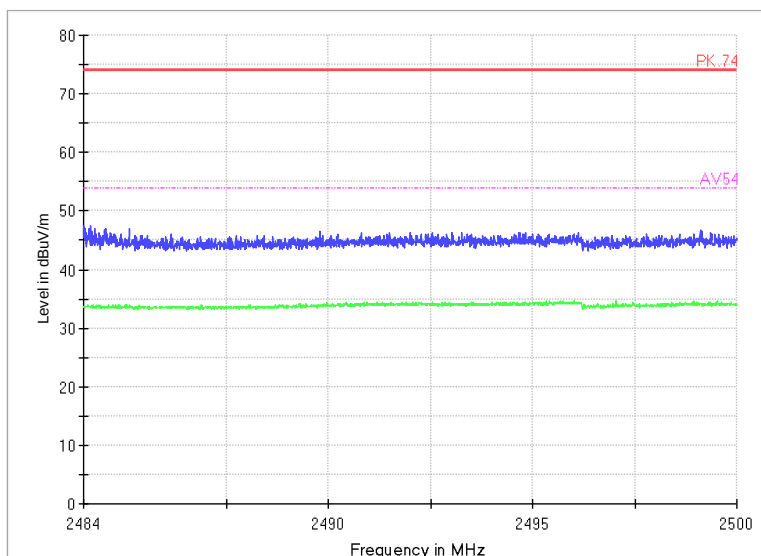
Test Mode: GFSK (LE 1Mbps)

Polarity: Horizontal



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

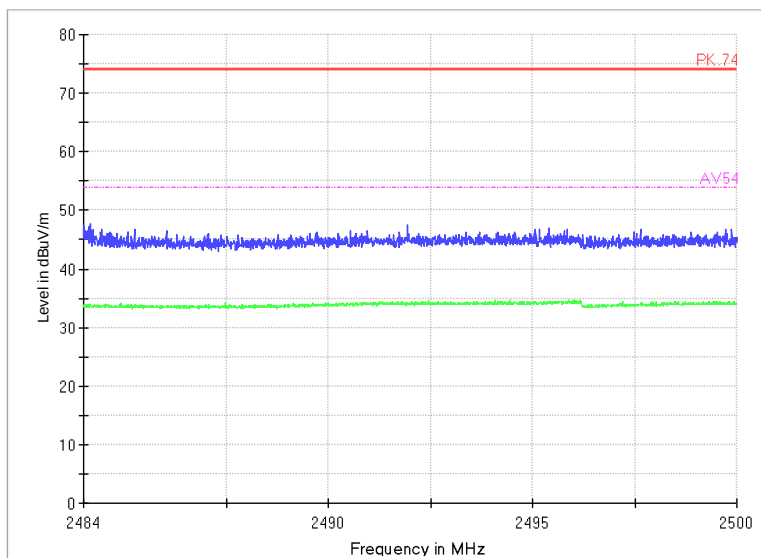


Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE 1Mbps)

Polarity: Vertical



Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE 1Mbps)

Polarity: Horizontal



Radiated Emission for BLE

After comparison, the worst case attitude is EUT lay down.

Determining Spurious Emissions Levels

A “reference path loss” is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{mea}} + A_{Rpl}$$

Sample calculation: $(8.95 \text{ dB}\mu\text{V/m}) = (24.75 \text{ BuV}) + (-15.8 \text{ dB/m})$, the corresponding frequency is 44.453 MHz.

For GFSK (LE 1Mbps)

Channel No.:0

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
44.453	8.95	-15.8	24.75	Vertical	40	31.05
55.802	9.42	-15.7	25.12	Vertical	40	30.58
103.7685	10.54	-17	27.54	Vertical	43.5	32.96
287.8745	13.32	-14.2	27.52	Vertical	46	32.68
430.222	21.14	-10.5	31.64	Vertical	46	24.86
843.1025	23.69	-3.3	26.99	Vertical	46	22.31

Channel No.:19

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
32.813	8.93	-19.1	28.03	Vertical	40	31.07
54.2015	9.6	-15.6	25.2	Vertical	40	30.4
102.6045	9.68	-17.1	26.78	Vertical	43.5	33.82
275.895	11.88	-14.7	26.58	Vertical	46	34.12
429.7855	20.67	-10.5	31.17	Vertical	46	25.33
787.57	22.13	-3.7	25.83	Vertical	46	23.87

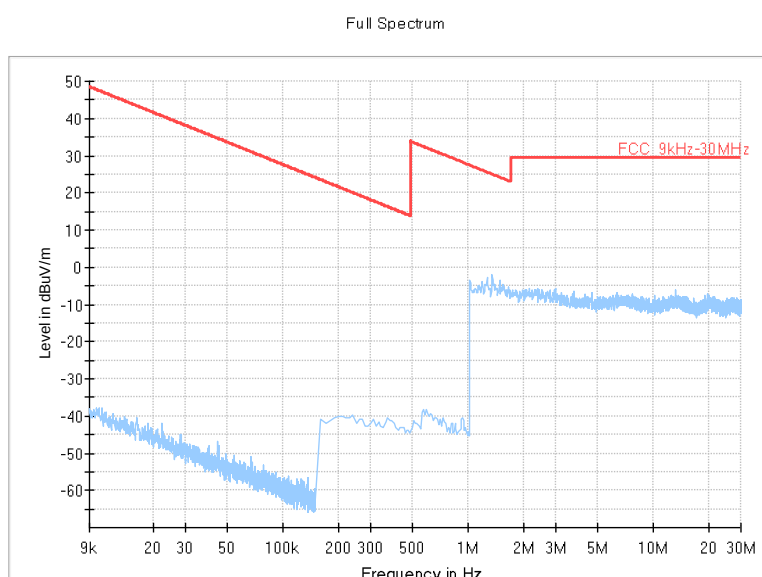


BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Channel No.:39

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
32.716	9.28	-19.1	28.38	Vertical	40	30.72
54.4925	9.61	-15.6	25.21	Vertical	40	30.39
100.325	9.7	-17.2	26.9	Vertical	43.5	33.8
274.9735	10.93	-14.7	25.63	Vertical	46	35.07
437.4	21	-10.4	31.4	Vertical	46	25
833.8875	23.94	-3.4	27.34	Vertical	46	22.06



Frequency Range: 9kHz -30MHz

Detector: QP mode

Note: The relevant tests have been performed in order to verify in which mode would have the worst features, the result show above is the worst case.

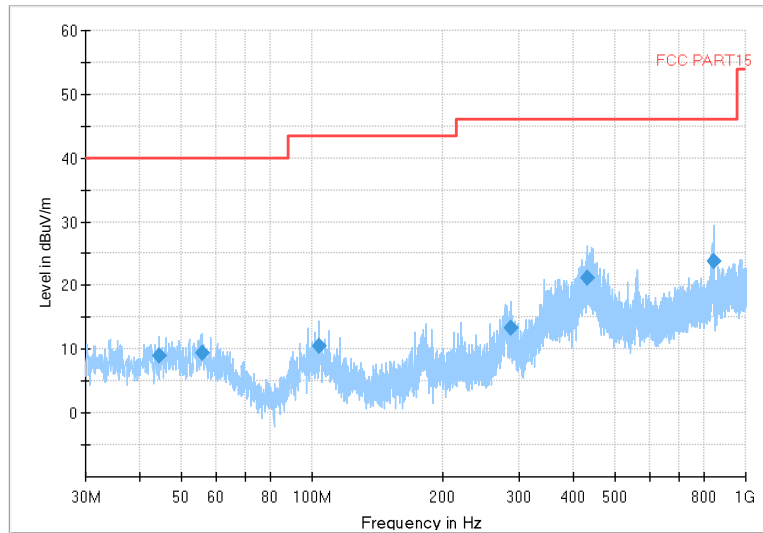
Channel No.:0



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

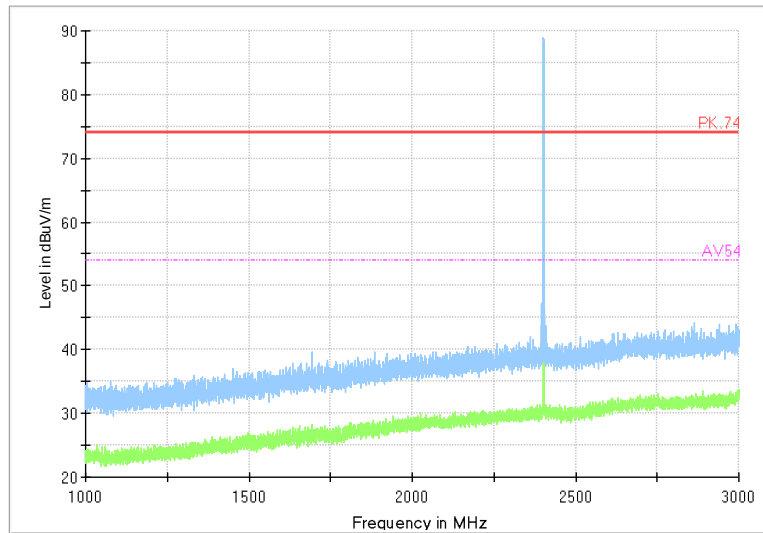


Frequency Range: 30MHz-1GHz

Detector: QP mode

Modulation type: GFSK (LE 1Mbps)

Full Spectrum



Frequency Range: 1GHz-3GHz

Detector: Av mode and PK mode

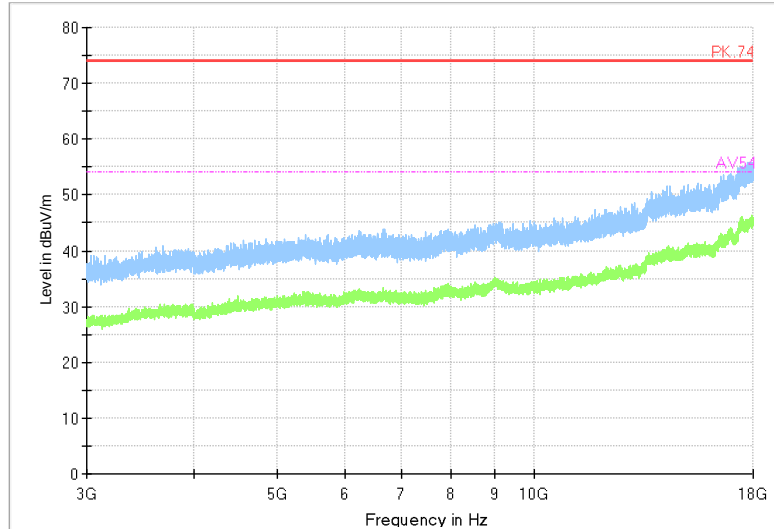
Modulation type: GFSK (LE 1Mbps)



BUREAU
VERITAS

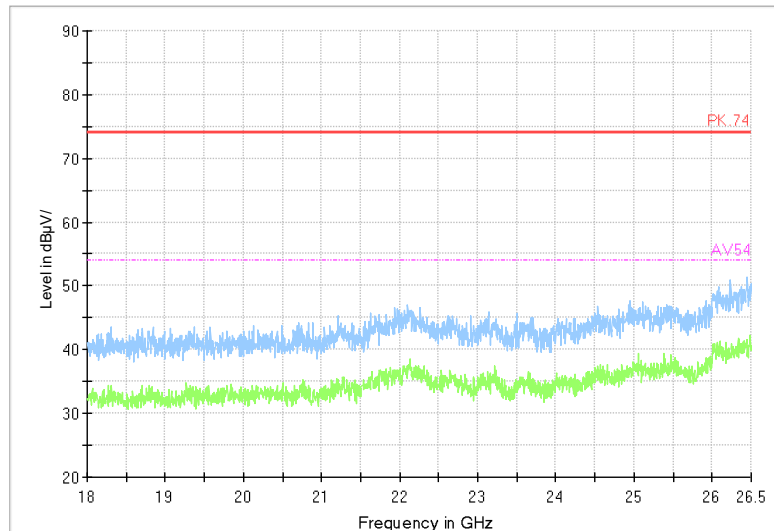
Test Report No.: PSU-NQN2412170109RF02

Full Spectrum



Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 1Mbps)

Full Spectrum



Frequency Range: 18GHz-26GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 1Mbps)

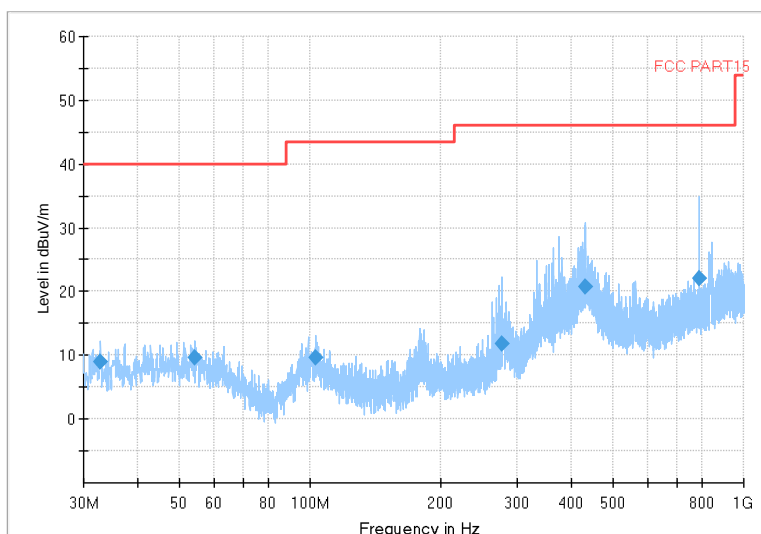


BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Channel No.:19

Full Spectrum

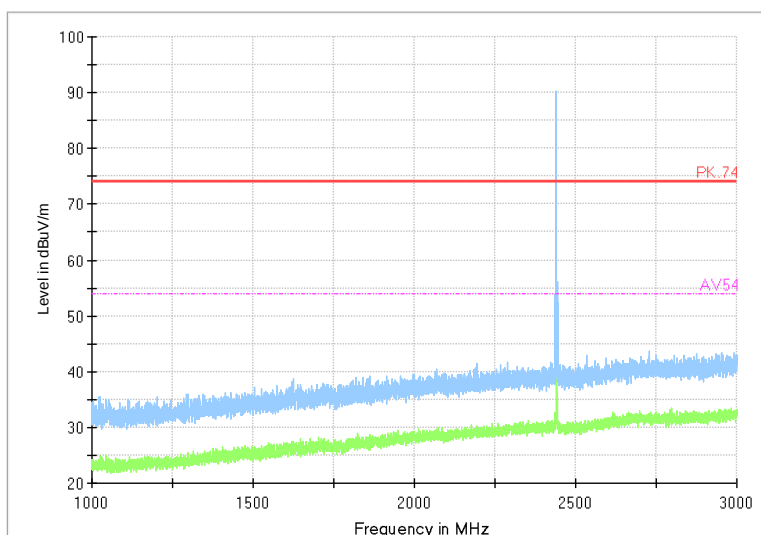


Frequency Range: 30MHz-1GHz

Detector: QP mode

Modulation type: GFSK (LE 1Mbps)

Full Spectrum



Frequency Range: 1GHz-3GHz

Detector: Av mode and PK mode

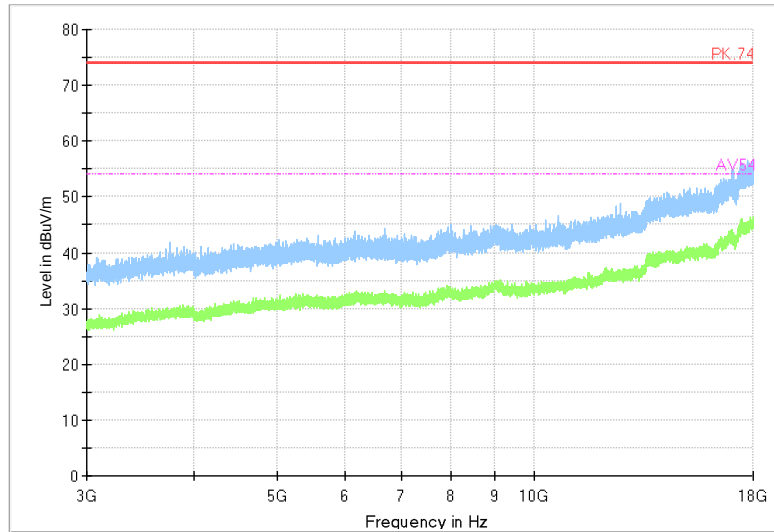
Modulation type: GFSK (LE 1Mbps)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

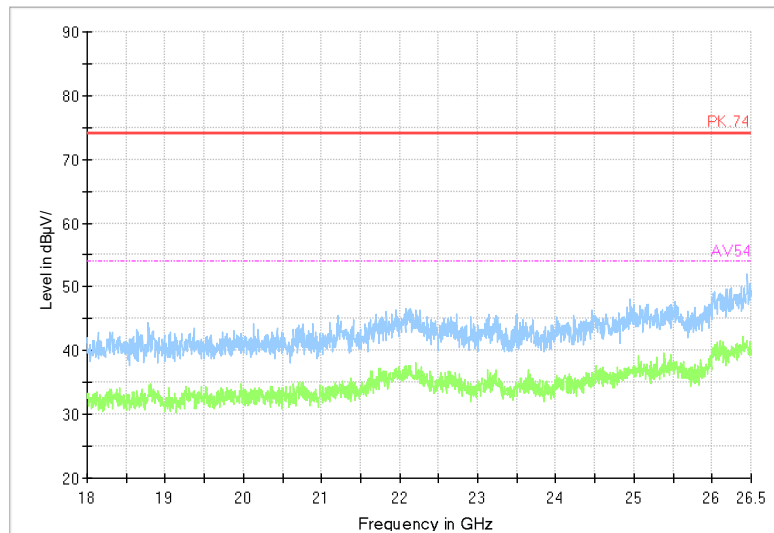


Frequency Range: 3GHz-18GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 1Mbps)

Full Spectrum



Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 1Mbps)

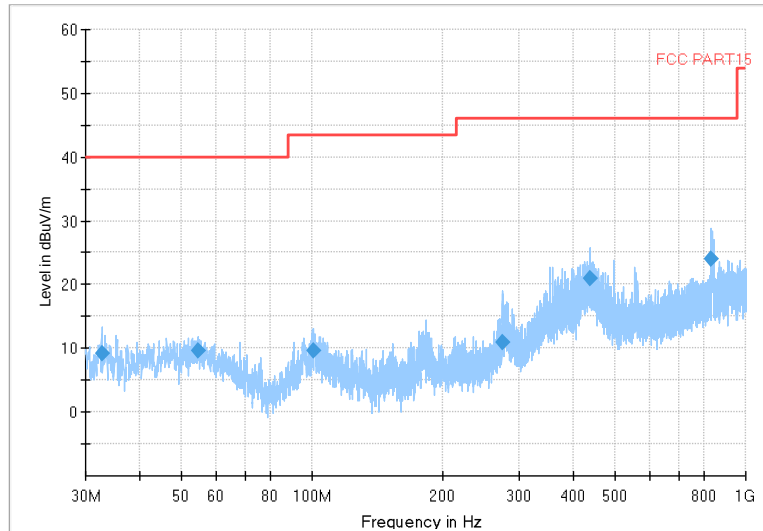


BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Channel No.:39

Full Spectrum

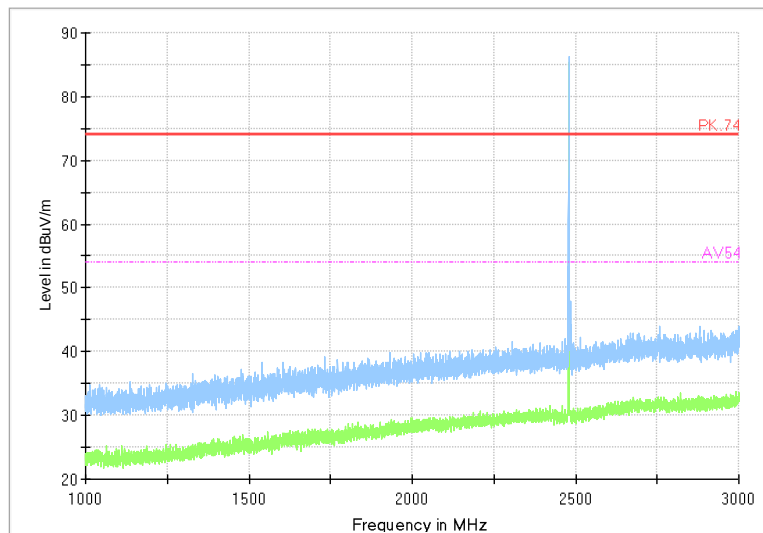


Frequency Range: 30MHz-1GHz

Detector: QP mode

Modulation type: GFSK (LE 1Mbps)

Full Spectrum



Frequency Range: 1GHz-3GHz

Detector: Av mode and PK mode

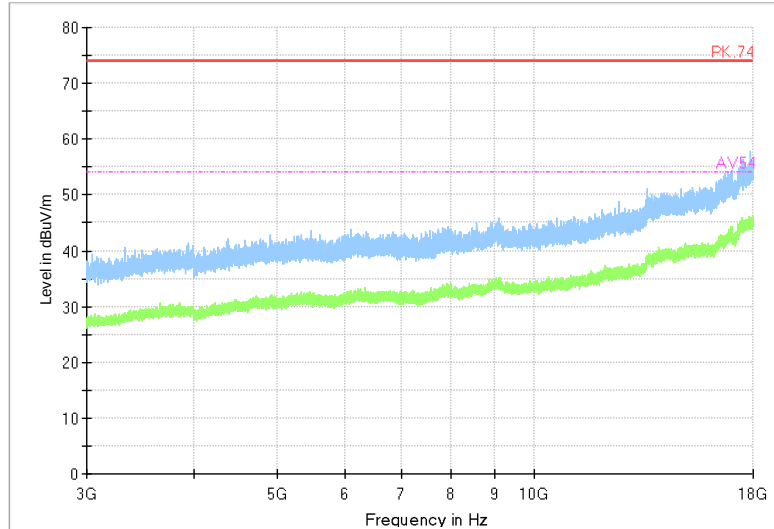
Modulation type: GFSK (LE 1Mbps)



BUREAU
VERITAS

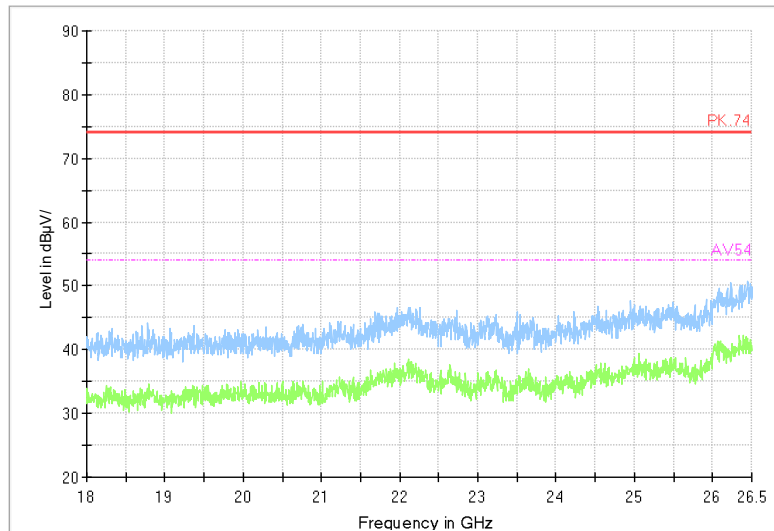
Test Report No.: PSU-NQN2412170109RF02

Full Spectrum



Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 1Mbps)

Full Spectrum



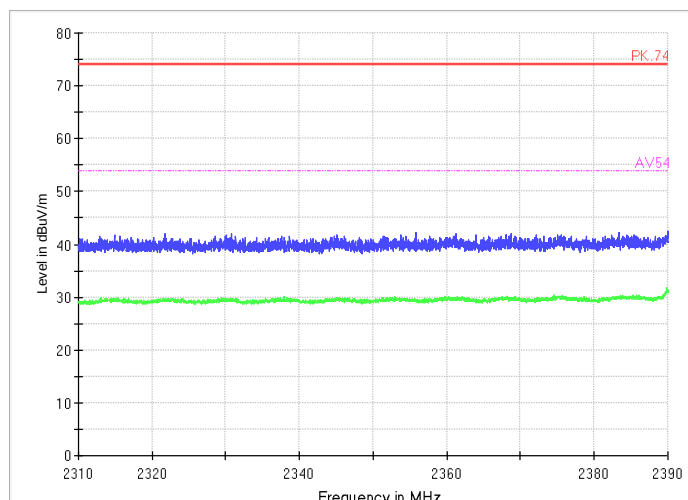
Frequency Range: 18GHz-26GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 1Mbps)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Radiated Emission Band Edge for WIFI

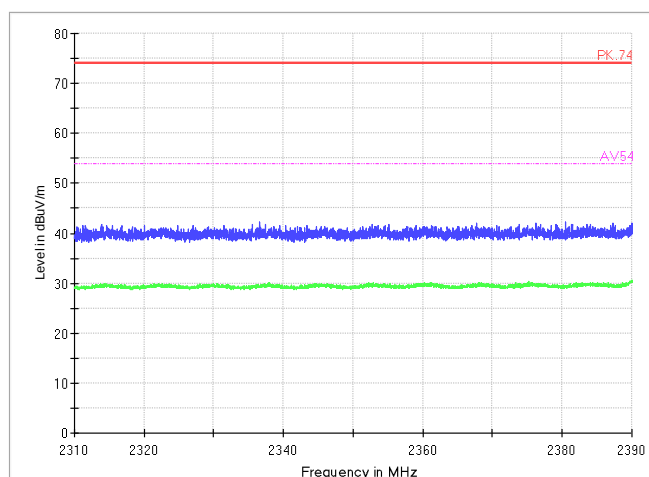


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11b

Polarization: V



Radiated Emission Band Edge

Channel No.:1

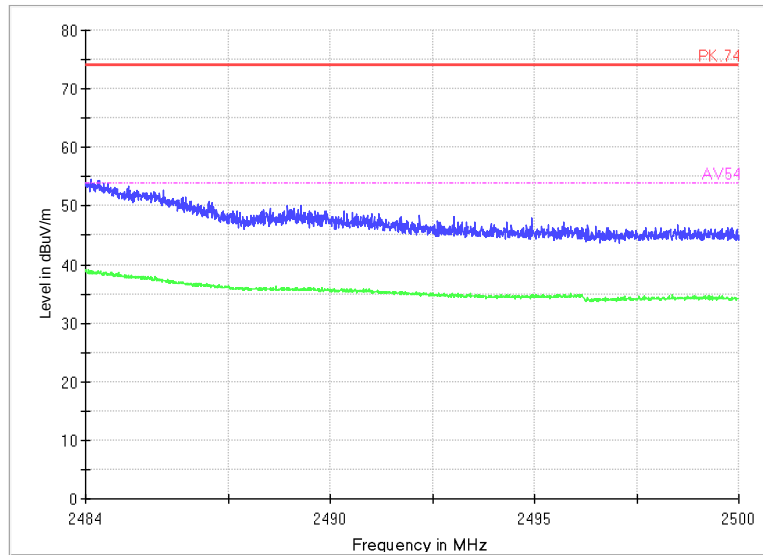
Test Mode: 802.11b

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

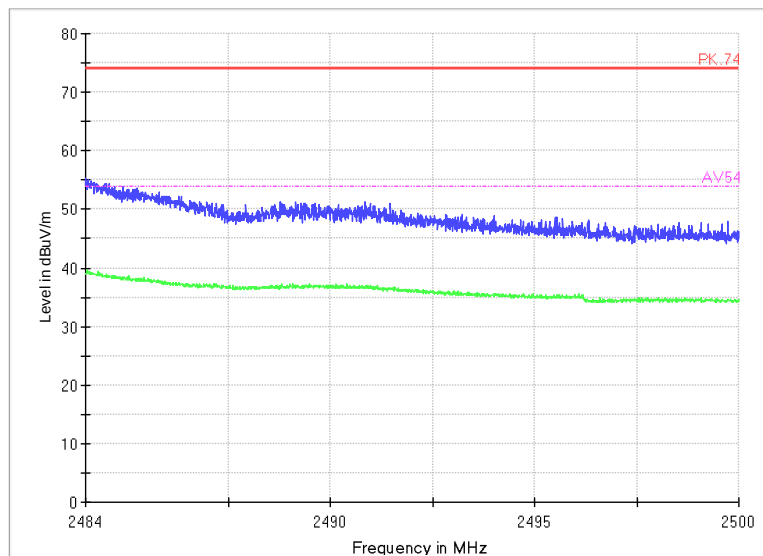


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11b

Polarization: V



Radiated Emission Band Edge

Channel No.:11

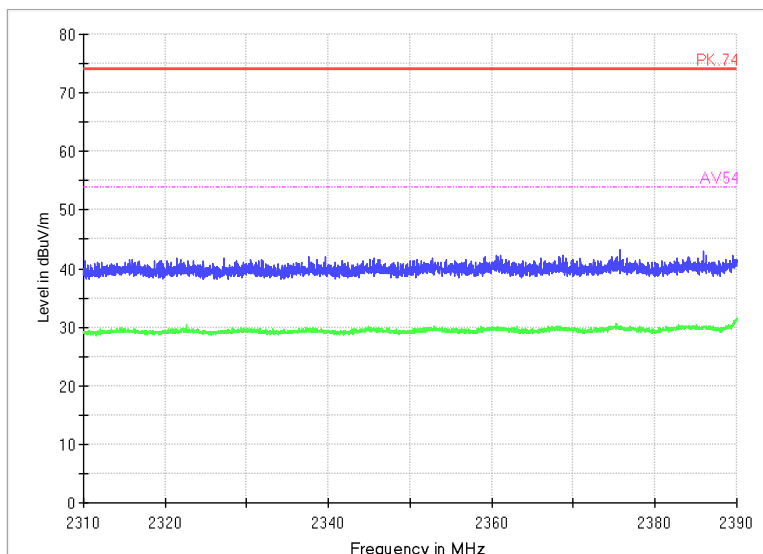
Test Mode: 802.11b

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

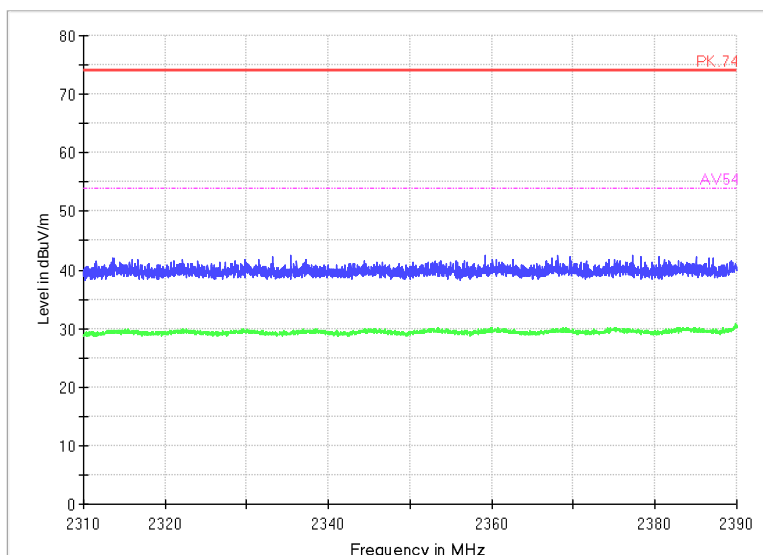


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11g

Polarization: V



Radiated Emission Band Edge

Channel No.:1

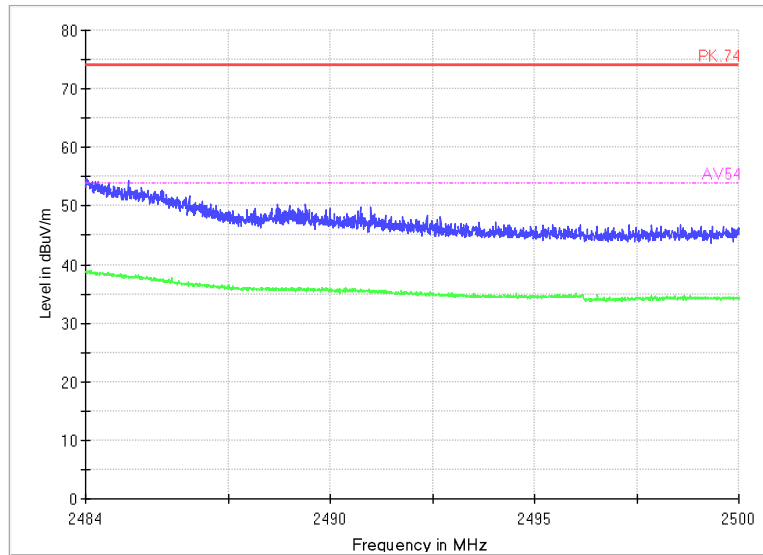
Test Mode: 802.11g

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

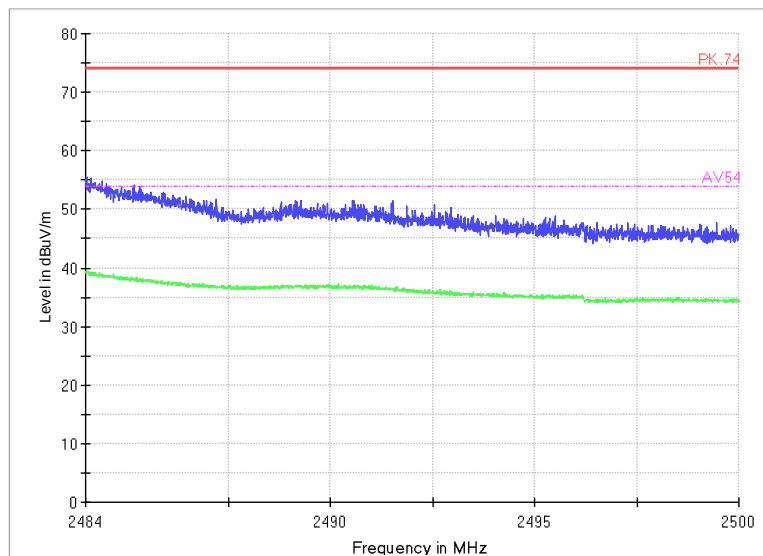


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11g

Polarization: V



Radiated Emission Band Edge

Channel No.:11

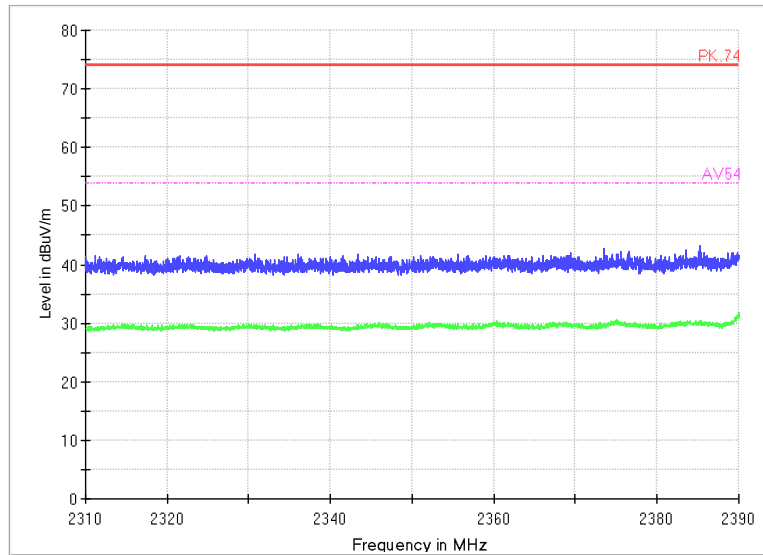
Test Mode: 802.11g

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

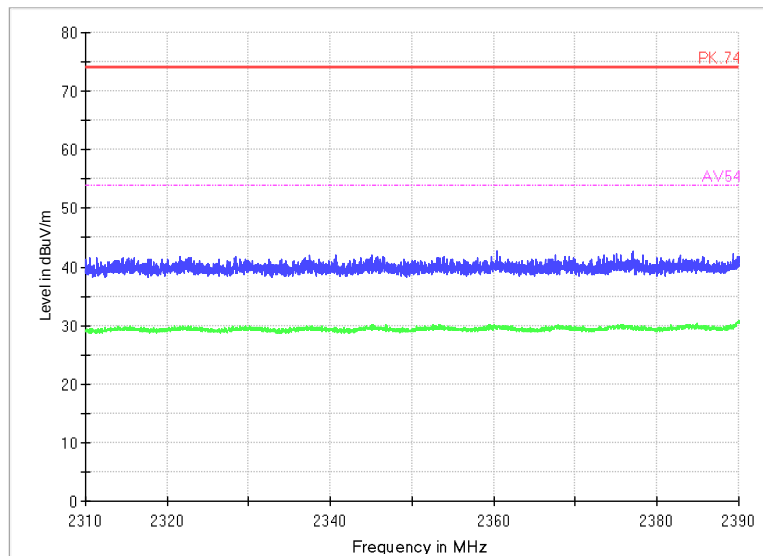


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11n(HT20)

Polarization: V



Radiated Emission Band Edge

Channel No.:1

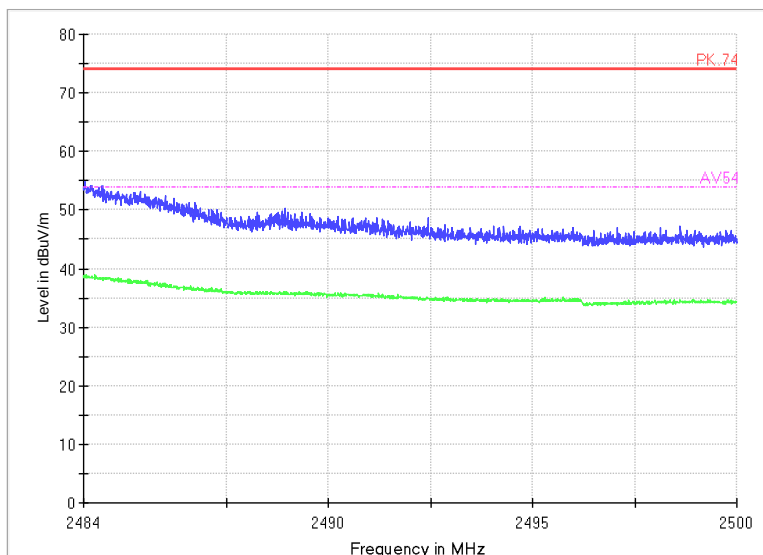
Test Mode: 802.11n(HT20)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

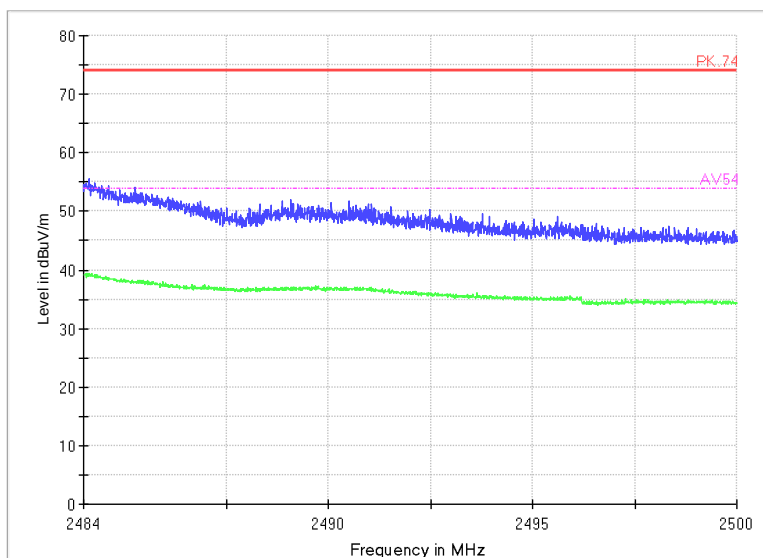


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11n(HT20)

Polarization: V



Radiated Emission Band Edge

Channel No.:11

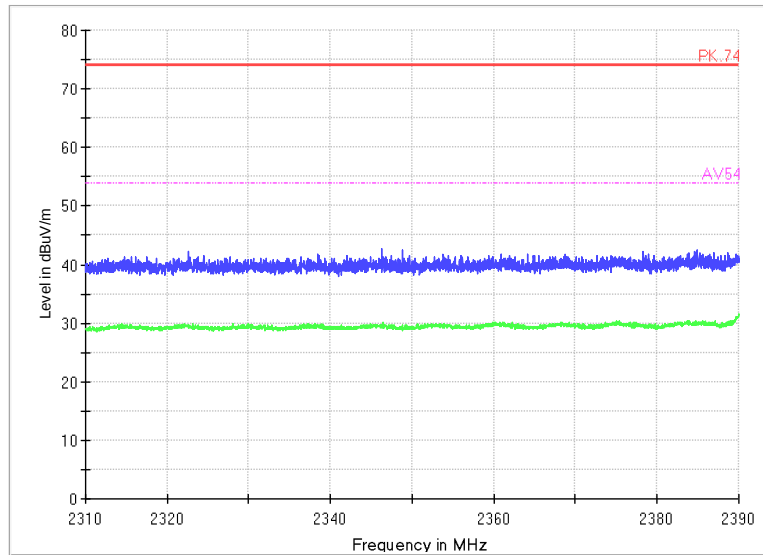
Test Mode: 802.11n(HT20)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

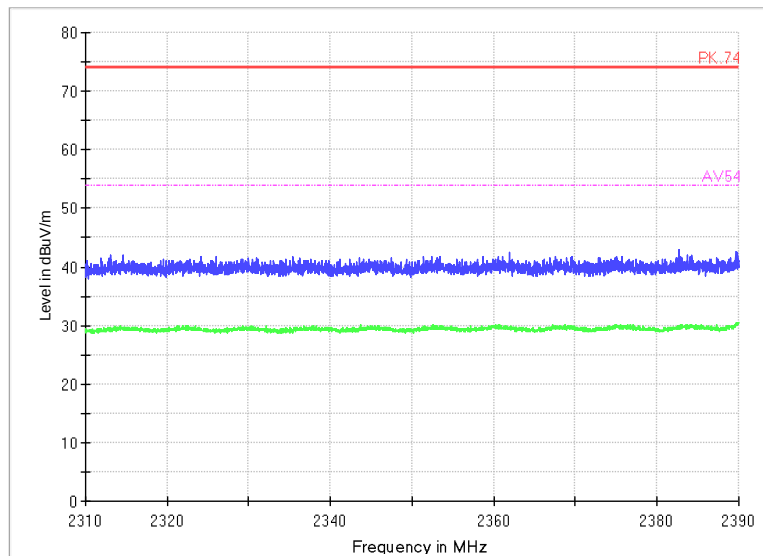


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11ax(HE20)

Polarization: V



Radiated Emission Band Edge

Channel No.:1

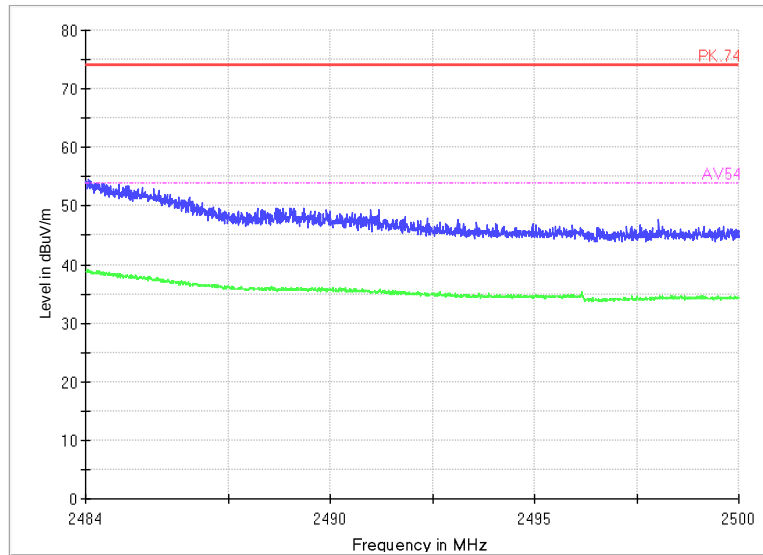
Test Mode: 802.11ax(HE20)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

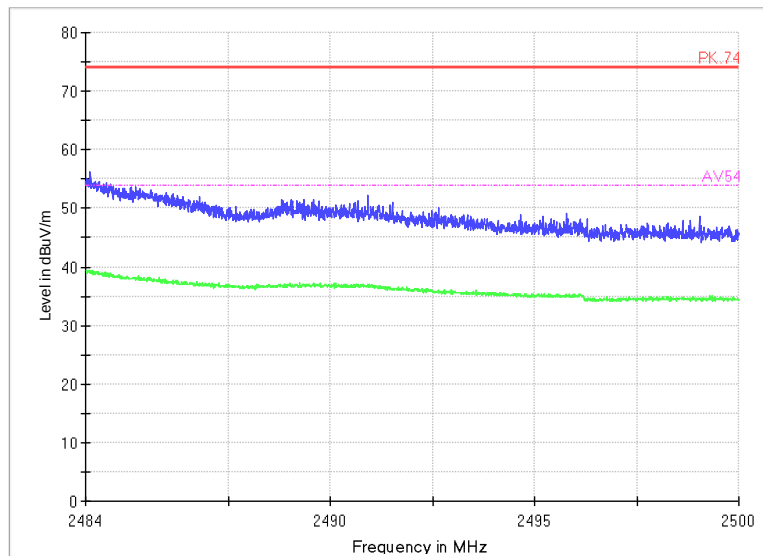


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11ax(HE20)

Polarization: V



Radiated Emission Band Edge

Channel No.:11

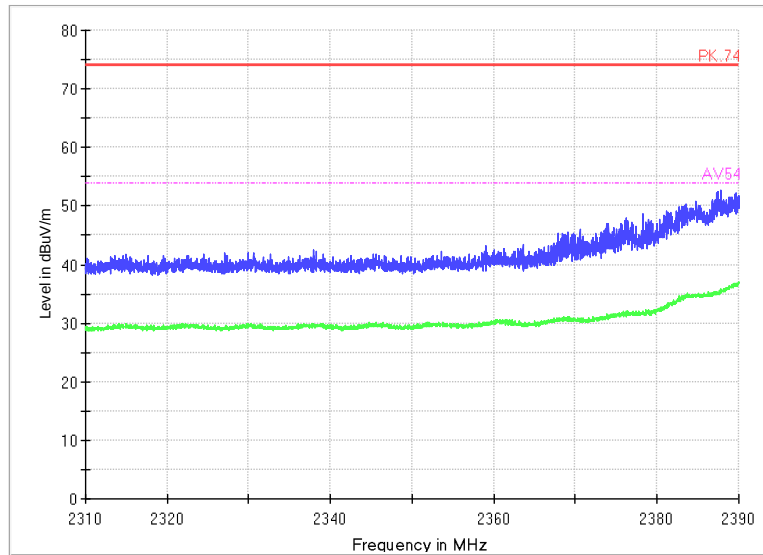
Test Mode: 802.11ax(HE20)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

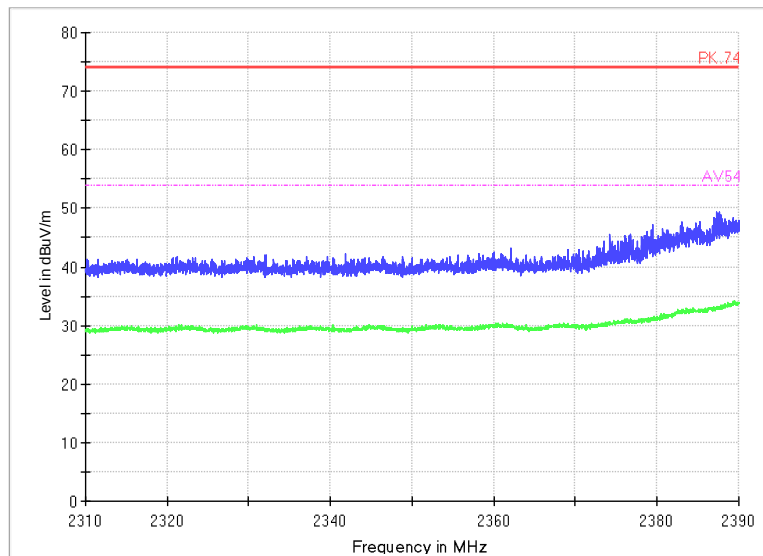


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11n(HT40)

Polarization: V



Radiated Emission Band Edge

Channel No.:3

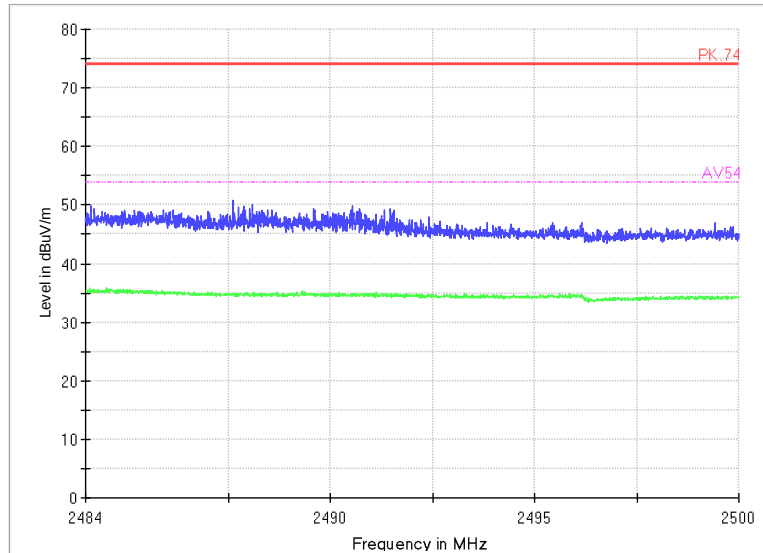
Test Mode: 802.11n(HT40)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

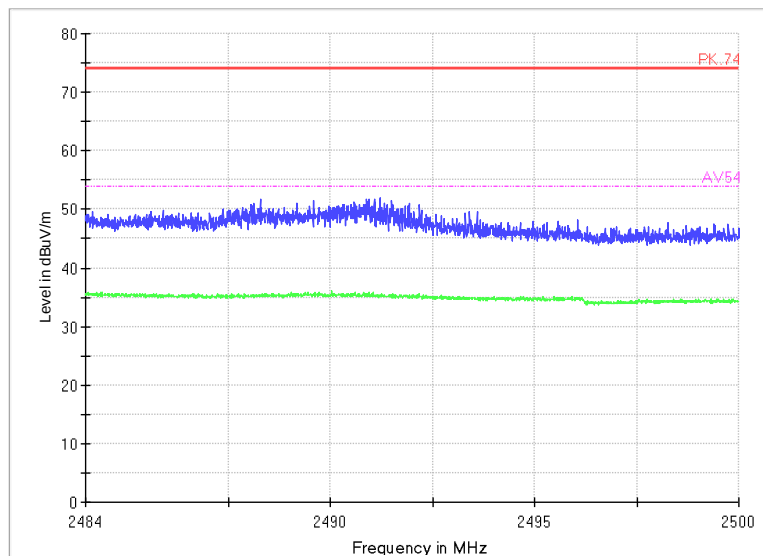


Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11n(HT40)

Polarization: V



Radiated Emission Band Edge

Channel No.:9

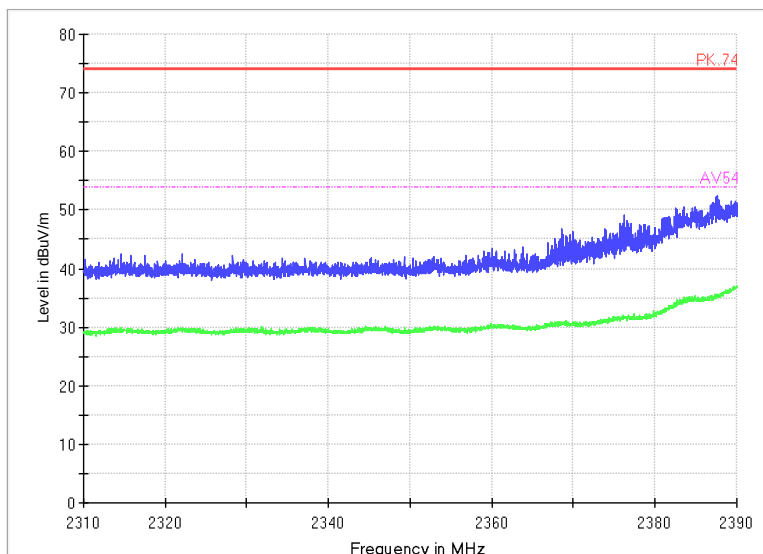
Test Mode: 802.11n(HT40)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

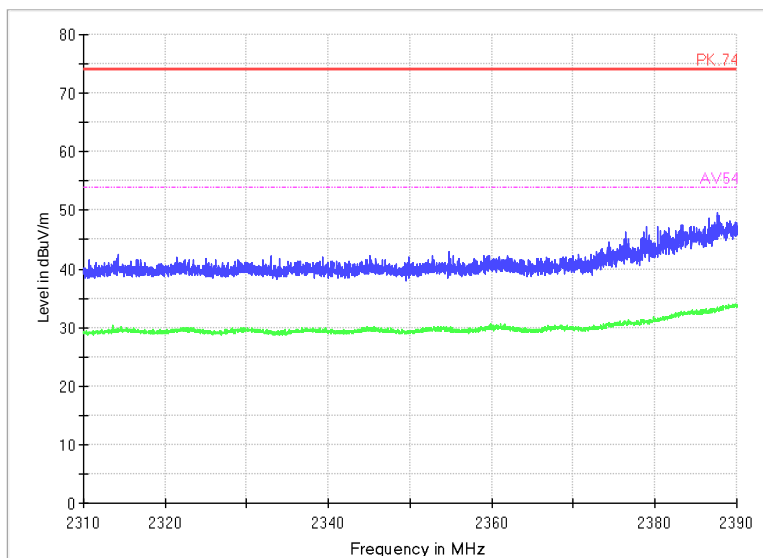


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11ax(HE40)

Polarization: V



Radiated Emission Band Edge

Channel No.:3

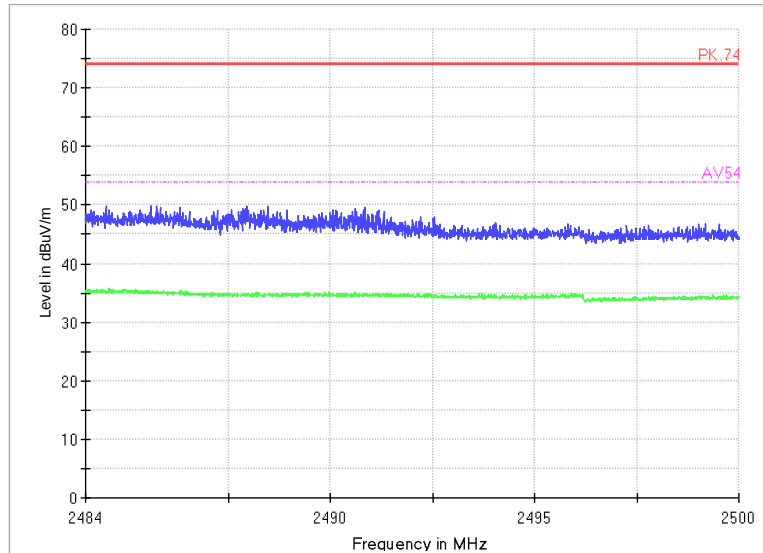
Test Mode: 802.11ax(HE40)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

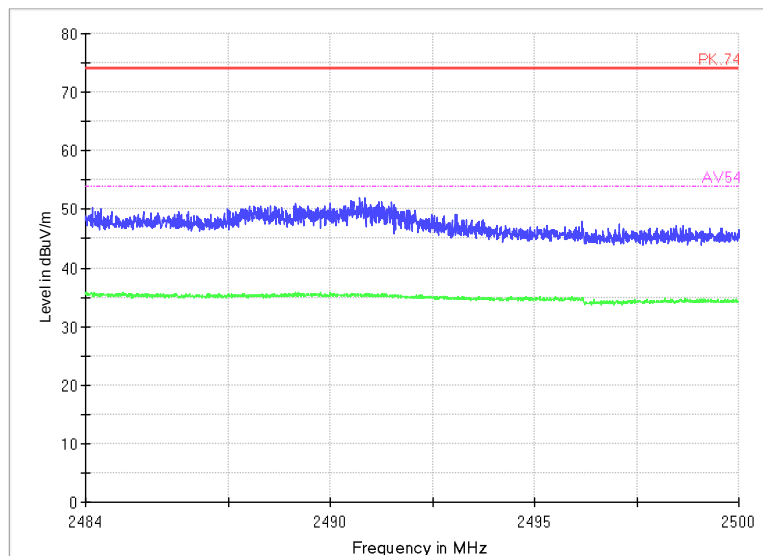


Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11ax(HE40)

Polarization: V



Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11ax(HE40)

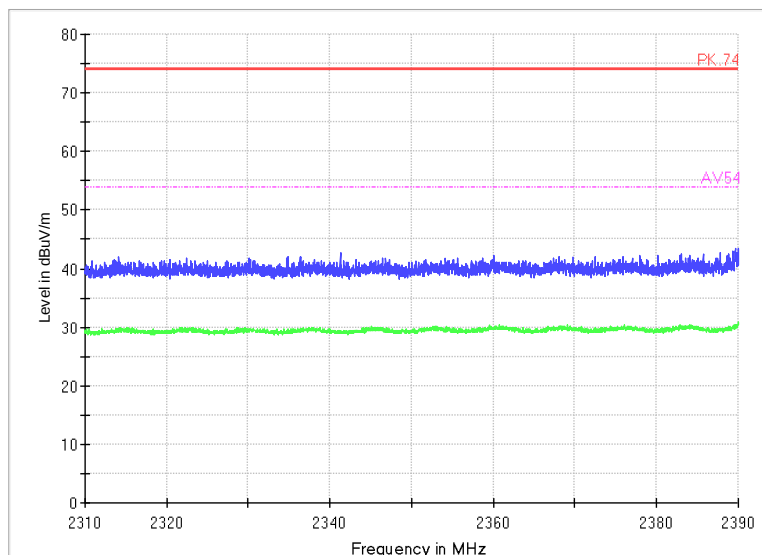
Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Partial RU (Tone26)

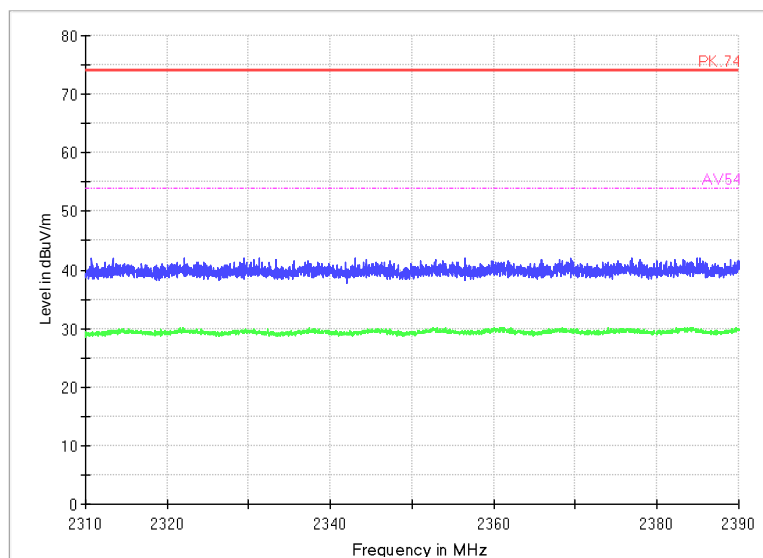


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11ax(HE20)

Polarization: V



Radiated Emission Band Edge

Channel No.:1

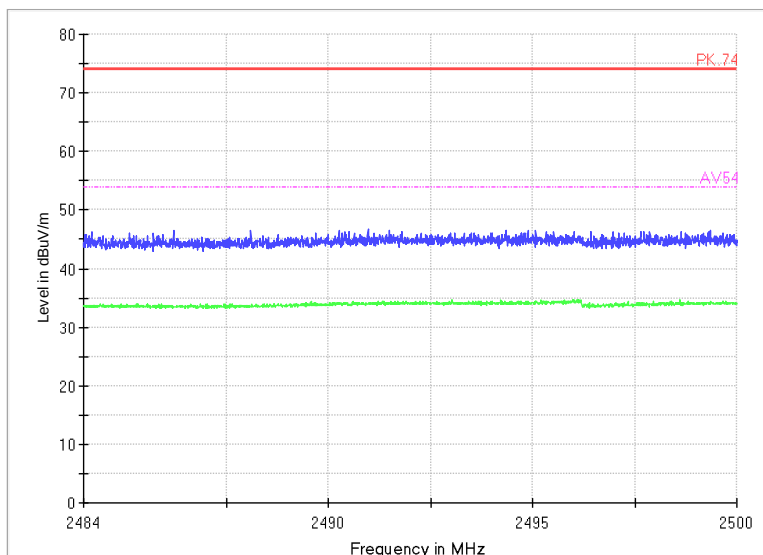
Test Mode: 802.11ax(HE20)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

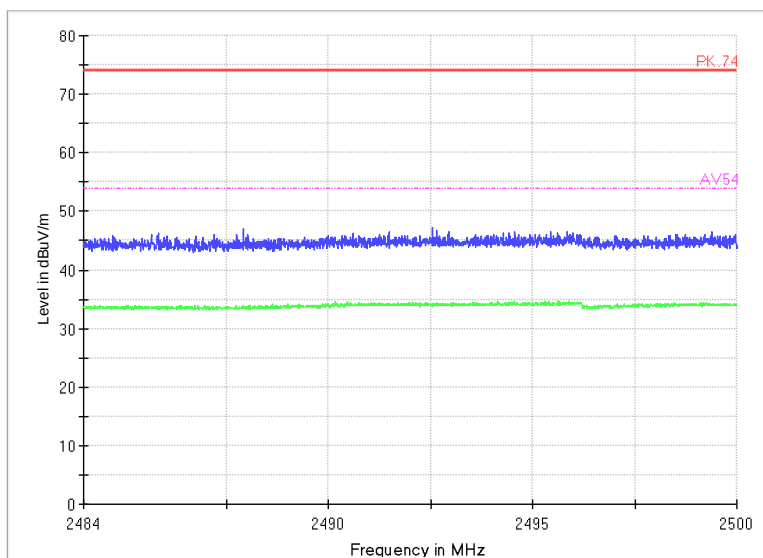


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11ax(HE20)

Polarization: V



Radiated Emission Band Edge

Channel No.:11

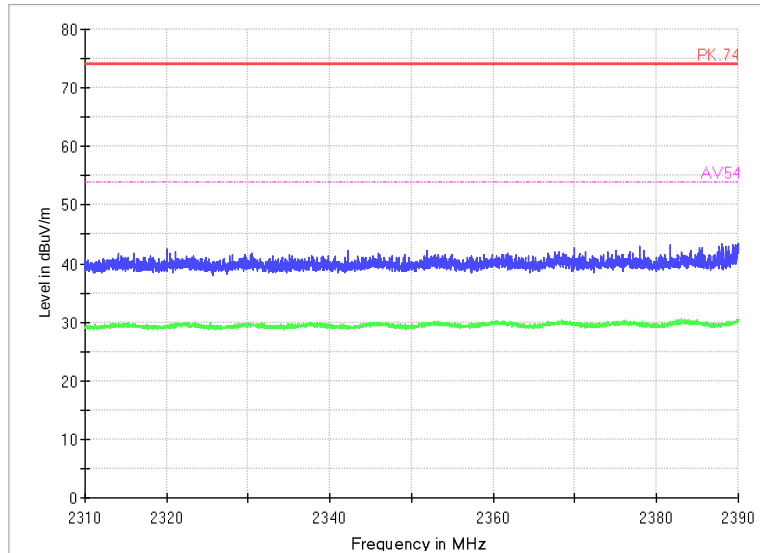
Test Mode: 802.11ax(HE20)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

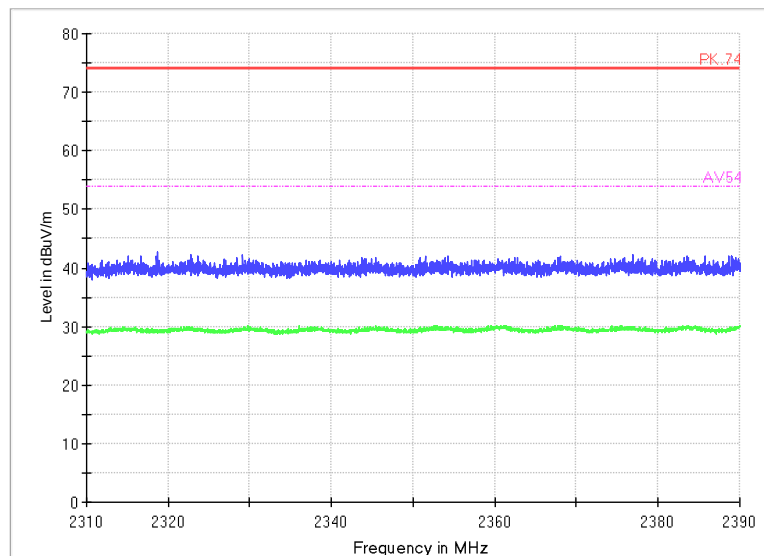


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11ax(HE40)

Polarization: V



Radiated Emission Band Edge

Channel No.:3

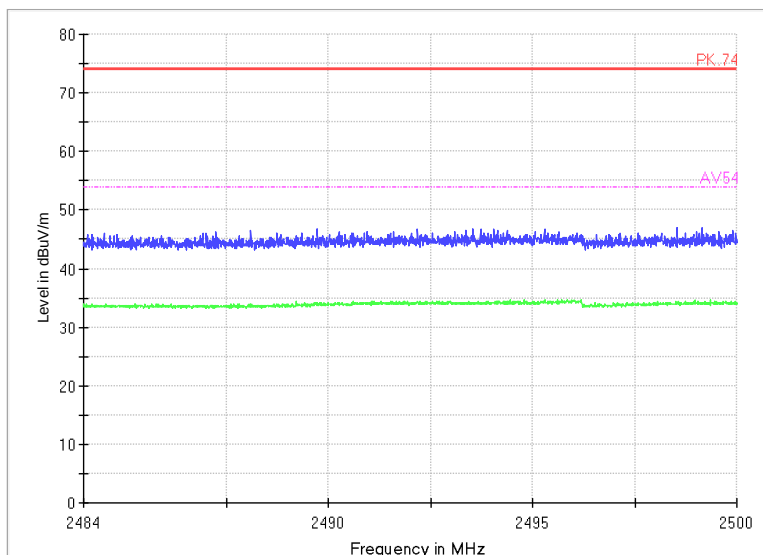
Test Mode: 802.11ax(HE40)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

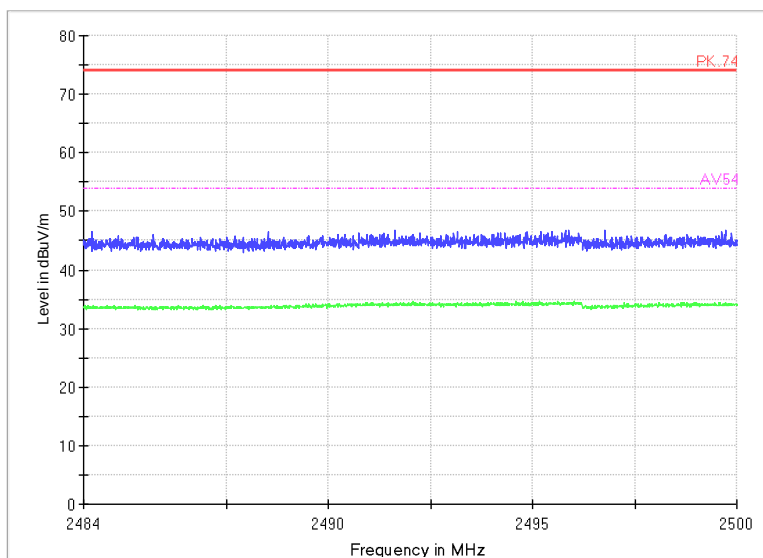


Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11ax(HE40)

Polarization: V



Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11ax(HE40)

Polarization: H



Radiated Emission for WIFI

After comparison, the worst case attitude is EUT lay down.

Determining Spurious Emissions Levels

A “reference path loss” is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

Result = $P_{mea} + A_{Rpl}$

Sample calculation: $(10.73 \text{ dB}\mu\text{V/m}) = (26.43 \text{ dB}\mu\text{V}) + (-15.7 \text{ dB/m})$, the corresponding frequency is 45.1805 MHz.

For 802.11b Channel No.:1

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{mea} (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
45.1805	10.73	-15.7	26.43	Vertical	40	29.27
64.92	10.95	-17.4	28.35	Vertical	40	29.05
102.4105	11.82	-17.1	28.92	Vertical	43.5	31.68
205.376	6.45	-17.2	23.65	Vertical	43.5	37.05
550.6475	13	-8.2	21.2	Vertical	46	33
840.629	22.43	-3.4	25.83	Vertical	46	23.57

For 802.11g Channel No.:1

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{mea} (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
43.968	11.91	-15.9	27.81	Vertical	40	28.09
58.033	9.48	-16	25.48	Vertical	40	30.52
104.399	10.79	-17	27.79	Vertical	43.5	32.71
215.367	8.65	-17	25.65	Vertical	43.5	34.85
519.85	13.36	-8.8	22.16	Vertical	46	32.64
834.6635	22.49	-3.4	25.89	Vertical	46	23.51

For 802.11n(HT20) Channel No.:1



Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
35.335	14.56	-18.5	33.06	Vertical	40	25.44
55.802	11.43	-15.7	27.13	Vertical	40	28.57
103.041	11.14	-17	28.14	Vertical	43.5	32.36
283.7035	14.67	-14.3	28.97	Vertical	46	31.34
524.991	25.33	-8.7	34.03	Vertical	46	20.67
842.666	24.39	-3.3	27.69	Vertical	46	21.61

For 802.11ax(HE20) Channel No.:1

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.3095	12.64	-19.2	31.84	Vertical	40	27.36
59.1485	10.51	-16.2	26.71	Vertical	40	29.49
103.623	10.64	-17	27.64	Vertical	43.5	32.86
280.551	14.88	-14.4	29.28	Vertical	46	31.12
524.991	28.74	-8.7	37.44	Vertical	46	17.26
787.57	16.88	-3.7	20.58	Vertical	46	29.12

For 802.11b Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.1595	14.86	-18.2	33.06	Vertical	40	25.14
57.354	8.74	-15.9	24.64	Vertical	40	31.26
102.459	10.13	-17.1	27.23	Vertical	43.5	33.37
289.087	15.7	-14.2	29.9	Vertical	46	30.3
426.1965	31.58	-10.6	42.18	Vertical	46	14.42
840.144	23.93	-3.4	27.33	Vertical	46	22.07

For 802.11g Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.1595	15.27	-18.2	33.47	Vertical	40	24.73
54.153	9.8	-15.6	25.4	Vertical	40	30.2
101.295	10.31	-17.1	27.41	Vertical	43.5	33.19



BUREAU VERITAS Test Report No.: PSU-NQN2412170109RF02

287.0015	13.74	-14.2	27.94	Vertical	46	32.26
427.409	32.51	-10.6	43.11	Vertical	46	13.49
841.6475	24.14	-3.3	27.44	Vertical	46	21.86

For 802.11n(HT20) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.1595	15.25	-18.2	33.45	Vertical	40	24.75
60.555	10.17	-16.4	26.57	Vertical	40	29.83
100.5675	10.36	-17.2	27.56	Vertical	43.5	33.14
280.3085	15.52	-14.5	30.02	Vertical	46	30.48
427.506	32.58	-10.6	43.18	Vertical	46	13.42
833.451	23.6	-3.4	27	Vertical	46	22.4

For 802.11ax(HE20) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
32.522	13.15	-19.2	32.35	Vertical	40	26.85
62.6405	9.83	-17	26.83	Vertical	40	30.17
103.3805	10.24	-17	27.24	Vertical	43.5	33.26
284.7705	13.9	-14.3	28.2	Vertical	46	32.1
524.991	29.71	-8.7	38.41	Vertical	46	16.29
841.5505	24.47	-3.3	27.77	Vertical	46	21.53

For 802.11b Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.111	13.87	-18.2	32.07	Vertical	40	26.13
60.555	10.68	-16.4	27.08	Vertical	40	29.32
103.914	10.33	-17	27.33	Vertical	43.5	33.17
280.842	14.2	-14.4	28.6	Vertical	46	31.8
424.4505	31.55	-10.6	42.15	Vertical	46	14.45
835.391	23.86	-3.4	27.26	Vertical	46	22.14

For 802.11g Channel No.:11



BUREAU VERITAS Test Report No.: PSU-NQN2412170109RF02

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
47.1205	9.31	-15.6	24.91	Vertical	40	30.69
54.0075	9.57	-15.6	25.17	Vertical	40	30.43
102.8955	10.11	-17	27.11	Vertical	43.5	33.39
179.9135	10.58	-18.9	29.48	Vertical	43.5	32.92
436.042	21.71	-10.4	32.11	Vertical	46	24.29
836.361	23.49	-3.4	26.89	Vertical	46	22.51

For 802.11n(HT20) Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
42.513	8.88	-16.4	25.28	Vertical	40	31.12
54.2985	9.99	-15.6	25.59	Vertical	40	30.01
96.639	8.64	-17.8	26.44	Vertical	43.5	34.86
181.5625	11.02	-18.7	29.72	Vertical	43.5	32.48
436.818	25.39	-10.4	35.79	Vertical	46	20.61
833.936	23.92	-3.4	27.32	Vertical	46	22.08

For 802.11ax(HE20) Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
35.432	9.3	-18.5	27.8	Vertical	40	30.7
63.368	8.13	-17.2	25.33	Vertical	40	31.87
102.75	10.02	-17	27.02	Vertical	43.5	33.48
278.8535	13.8	-14.5	28.3	Vertical	46	32.2
524.991	28.72	-8.7	37.42	Vertical	46	17.28
842.3265	24.77	-3.3	28.07	Vertical	46	21.23

For 802.11n(HT40) Channel No.:3

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.3095	12.56	-19.2	31.76	Vertical	40	27.44
54.7835	9.85	-15.6	25.45	Vertical	40	30.15
99.064	11.71	-17.4	29.11	Vertical	43.5	31.79



BUREAU VERITAS Test Report No.: PSU-NQN2412170109RF02

278.8535	19.13	-14.5	33.63	Vertical	46	26.87
426.924	35.01	-10.6	45.61	Vertical	46	10.99
835.5365	23.61	-3.4	27.01	Vertical	46	22.39

For 802.11ax(HE40) Channel No.:3

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.0625	9.74	-18.2	27.94	Vertical	40	30.26
54.735	9.73	-15.6	25.33	Vertical	40	30.27
100.519	11.08	-17.2	28.28	Vertical	43.5	32.42
179.1375	11	-19	30	Vertical	43.5	32.5
426.924	32.52	-10.6	43.12	Vertical	46	13.48
833.5965	24.1	-3.4	27.5	Vertical	46	21.9

For 802.11n(HT40) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.1595	15.17	-18.2	33.37	Vertical	40	24.83
61.8645	8.32	-16.8	25.12	Vertical	40	31.68
104.399	11.14	-17	28.14	Vertical	43.5	32.37
277.932	15.18	-14.6	29.78	Vertical	46	30.82
427.312	32.21	-10.6	42.81	Vertical	46	13.79
834.2755	24.06	-3.4	27.46	Vertical	46	21.94

For 802.11ax(HE40) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.1595	14.65	-18.2	32.85	Vertical	40	25.35
55.22	9.69	-15.7	25.39	Vertical	40	30.31
102.9925	10.4	-17	27.4	Vertical	43.5	33.1
280.5025	16.27	-14.4	30.67	Vertical	46	29.73
423.5775	32.58	-10.6	43.18	Vertical	46	13.42
833.936	24.16	-3.4	27.56	Vertical	46	21.84

For 802.11n(HT40) Channel No.:9



BUREAU VERITAS Test Report No.: PSU-NQN2412170109RF02

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.1595	14.27	-18.2	32.47	Vertical	40	25.73
54.2985	10.11	-15.6	25.71	Vertical	40	29.89
104.4475	10.53	-17	27.53	Vertical	43.5	32.97
283.5095	12.93	-14.3	27.23	Vertical	46	33.07
426.633	32.13	-10.6	42.73	Vertical	46	13.87
842.569	24.42	-3.3	27.72	Vertical	46	21.58

For 802.11ax(HE40) Channel No.:9

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.3095	12.32	-19.2	31.52	Vertical	40	27.68
54.153	9.81	-15.6	25.41	Vertical	40	30.19
100.5675	10.21	-17.2	27.41	Vertical	43.5	33.29
287.341	13.55	-14.2	27.75	Vertical	46	32.45
427.0695	31.91	-10.6	42.51	Vertical	46	14.09
833.742	24.38	-3.4	27.78	Vertical	46	21.62

Partial RU (Tone26)

For 802.11ax(HE20) Channel No.:1

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.208	12.05	-18.2	30.25	Vertical	40	27.95
53.9105	9.85	-15.6	25.45	Vertical	40	30.15
102.8955	10.46	-17	27.46	Vertical	43.5	33.04
278.611	15.18	-14.5	29.68	Vertical	46	30.82
426.9725	31.93	-10.6	42.53	Vertical	46	14.07
833.936	23.95	-3.4	27.35	Vertical	46	22.05

For 802.11ax(HE20) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
43.7255	9.57	-16	25.57	Vertical	40	30.43
60.6035	9.27	-16.4	25.67	Vertical	40	30.73



BUREAU VERITAS Test Report No.: PSU-NQN2412170109RF02

107.9395	8.16	-17.3	25.46	Vertical	43.5	35.34
286.565	16.3	-14.3	30.6	Vertical	46	29.7
524.991	15.15	-8.7	23.85	Vertical	46	30.85
834.033	24.43	-3.4	27.83	Vertical	46	21.57

For 802.11ax(HE20) Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.358	10.77	-19.2	29.97	Vertical	40	29.23
54.6865	9.8	-15.6	25.4	Vertical	40	30.2
103.7685	10.78	-17	27.78	Vertical	43.5	32.72
280.648	15.61	-14.4	30.01	Vertical	46	30.39
425.2265	30.76	-10.6	41.36	Vertical	46	15.24
842.4235	24.3	-3.3	27.6	Vertical	46	21.7

For 802.11ax(HE40) Channel No.:3

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
41.7855	9.65	-16.5	26.15	Vertical	40	30.35
56.6265	8.97	-15.8	24.77	Vertical	40	31.03
99.937	9.78	-17.2	26.98	Vertical	43.5	33.72
285.013	12.8	-14.3	27.1	Vertical	46	33.2
445.6935	20.21	-10.3	30.51	Vertical	46	25.79
844.218	20.99	-3.3	24.29	Vertical	46	25.01

For 802.11ax(HE40) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
36.79	8.2	-18	26.2	Vertical	40	31.8
55.4625	9.48	-15.7	25.18	Vertical	40	30.52
102.0225	9.58	-17.1	26.68	Vertical	43.5	33.92
280.26	14.67	-14.5	29.17	Vertical	46	31.33
421.298	20.54	-10.7	31.24	Vertical	46	25.46
834.615	23.96	-3.4	27.36	Vertical	46	22.04



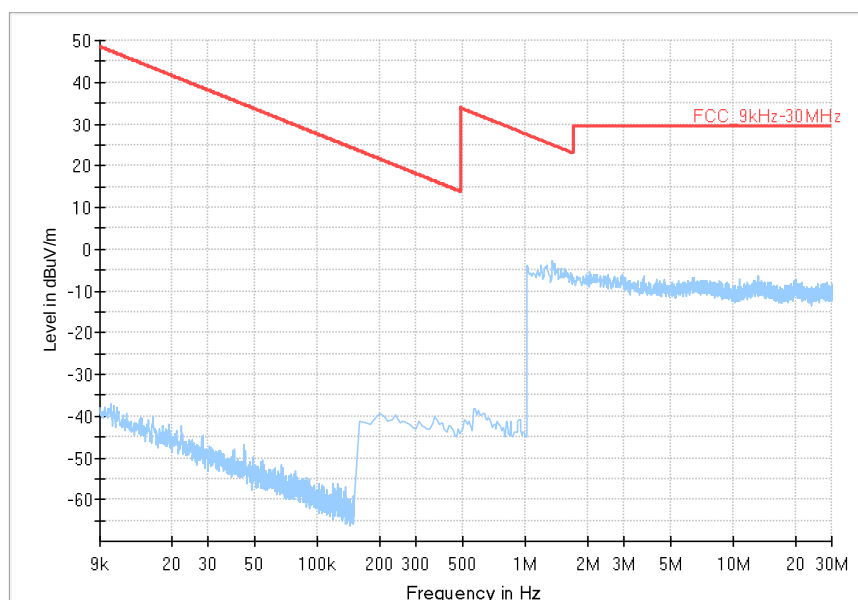
BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

For 802.11ax(HE40) Channel No.:9

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
47.1205	9.41	-15.6	25.01	Vertical	40	30.59
53.9105	9.51	-15.6	25.11	Vertical	40	30.49
104.3505	10.63	-17	27.63	Vertical	43.5	32.87
278.0775	14.53	-14.6	29.13	Vertical	46	31.47
439.049	21.32	-10.4	31.72	Vertical	46	24.68
840.241	23.46	-3.4	26.86	Vertical	46	22.54

Full Spectrum



Frequency Range: 9kHz -30MHz

Detector: QP mode

Note: The relevant tests have been performed in order to verify in which mode would have the worst features, the result show above is the worst case.

Carrier frequency (MHz): 2412

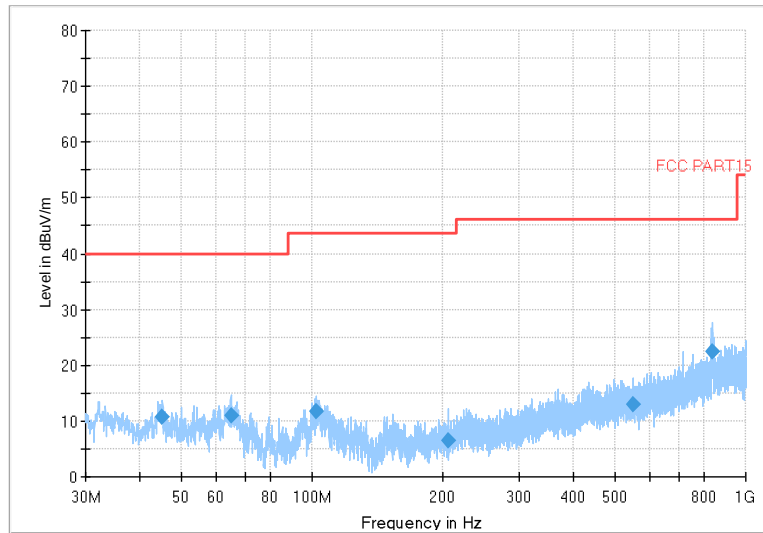
Channel No.:1



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

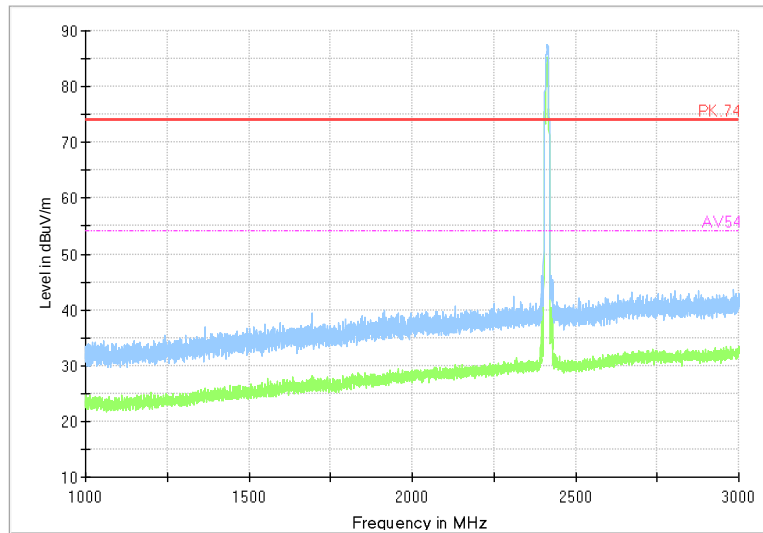


Frequency Range 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

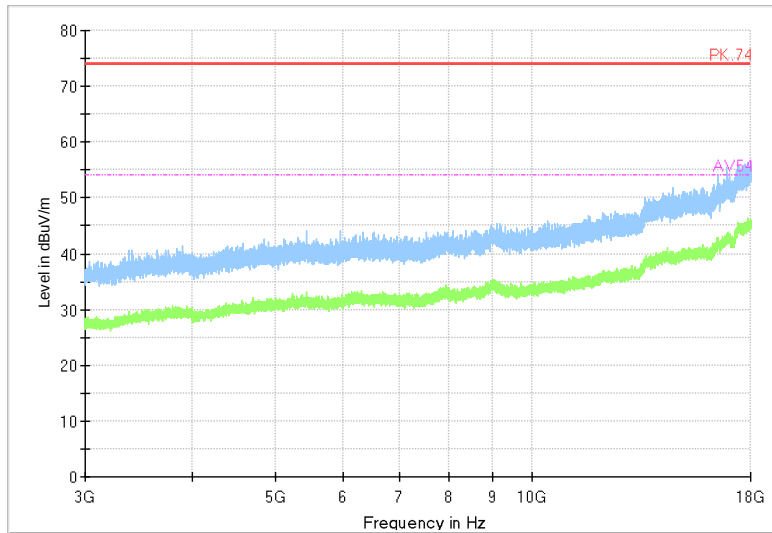
Modulation type: 802.11b



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

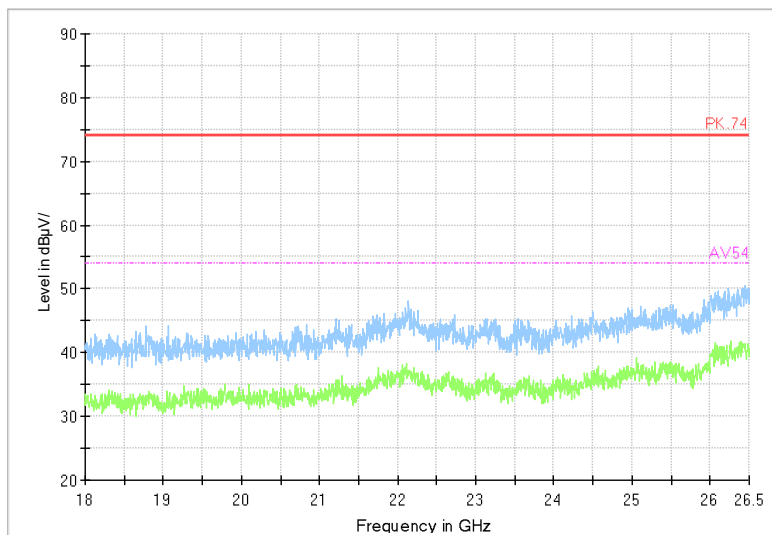


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

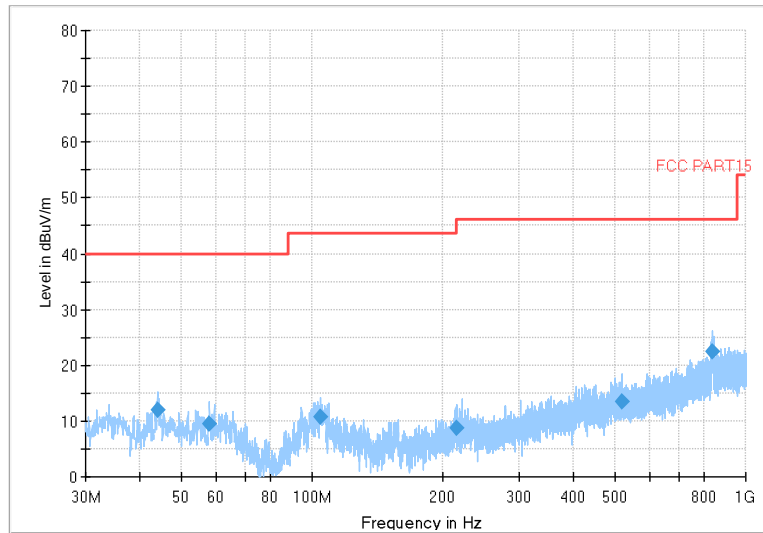
Modulation type: 802.11b



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

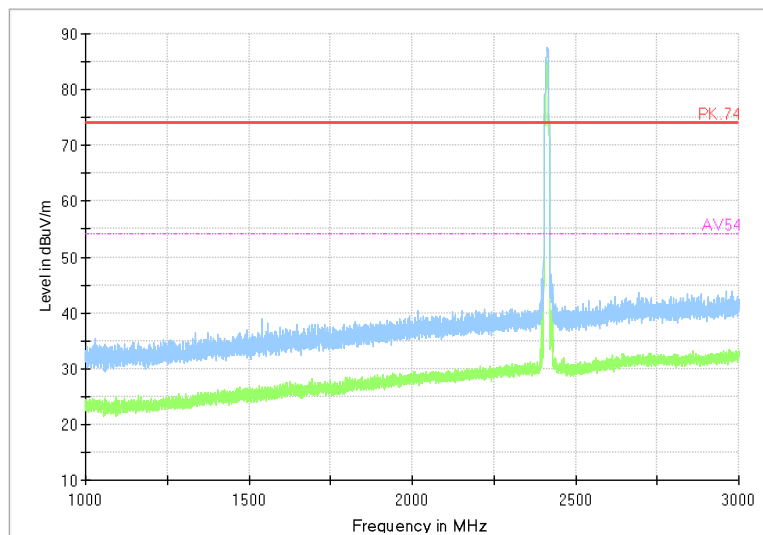


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

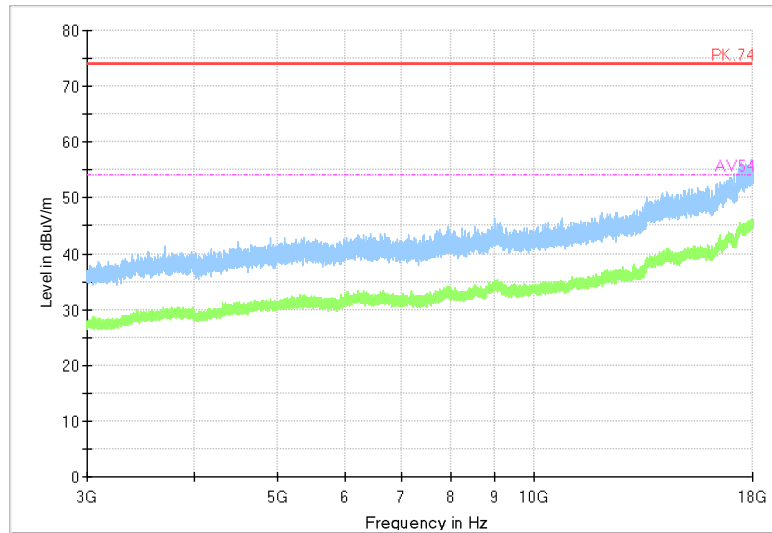
Modulation type: 802.11g



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

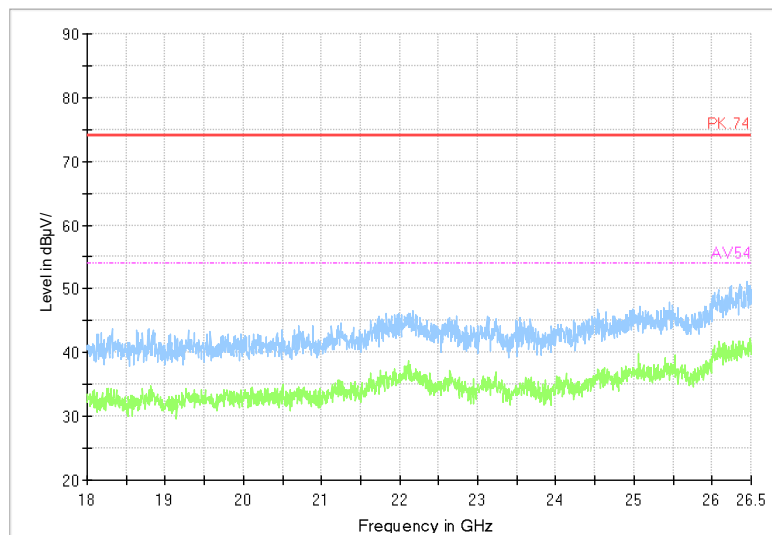


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

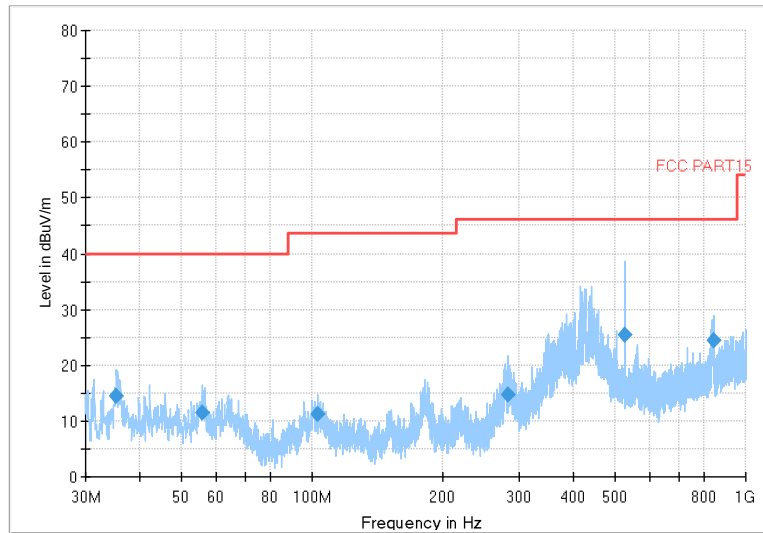
Modulation type: 802.11g



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

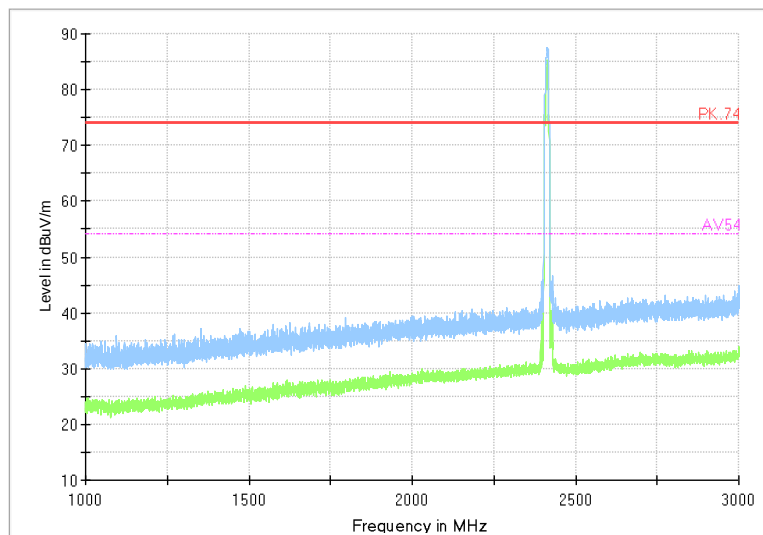


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

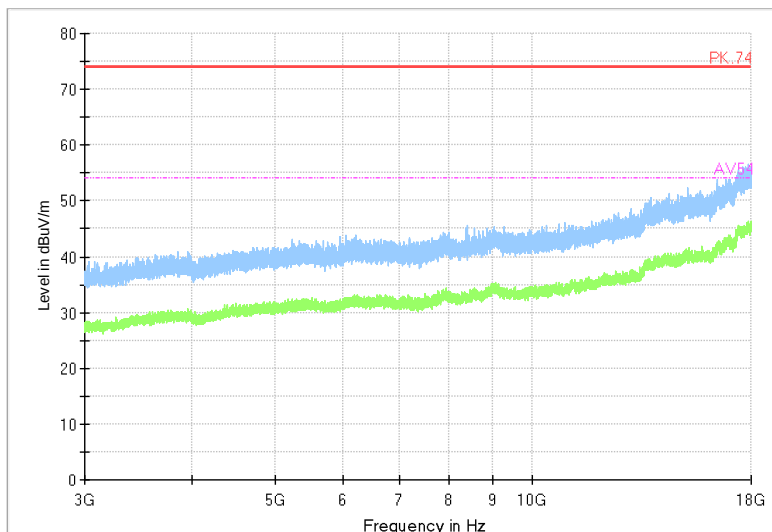
Modulation type: 802.11n(HT20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

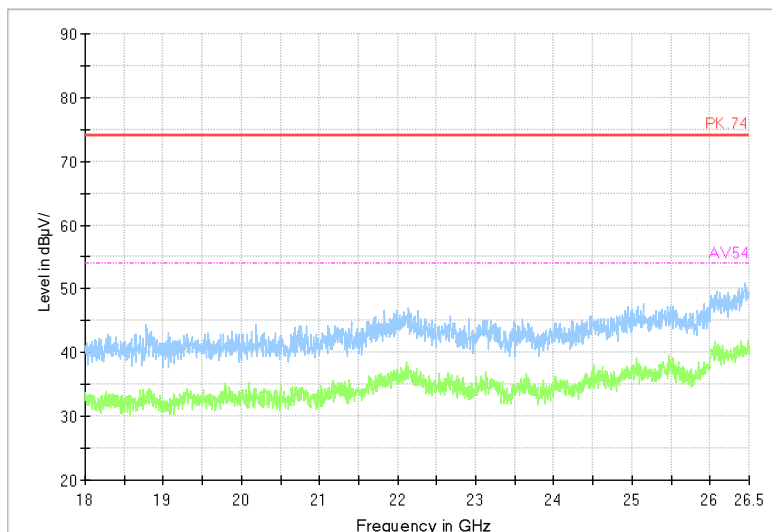


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

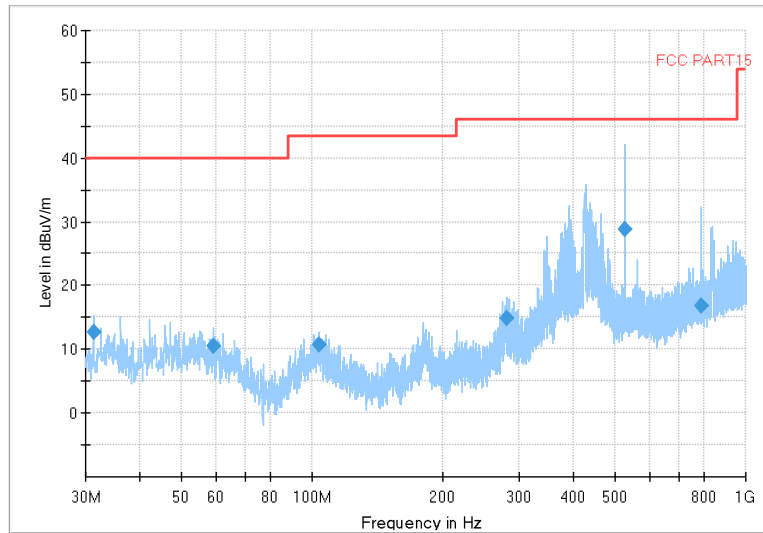
Modulation type: 802.11n(HT20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

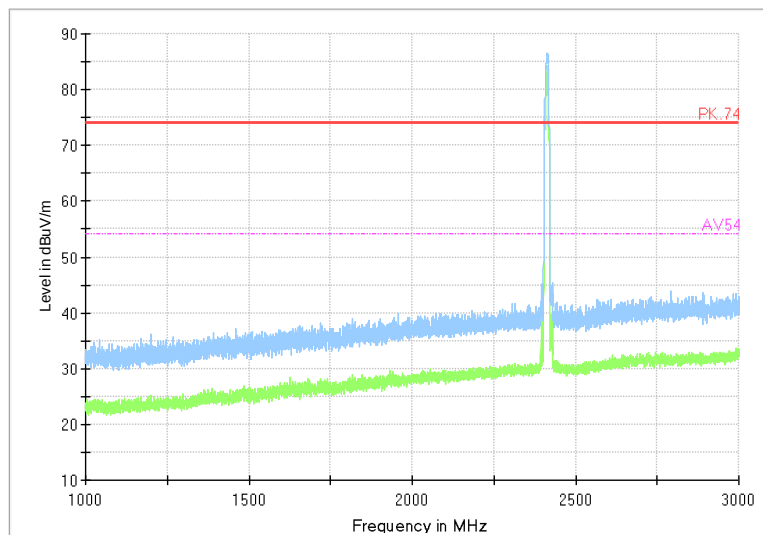


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

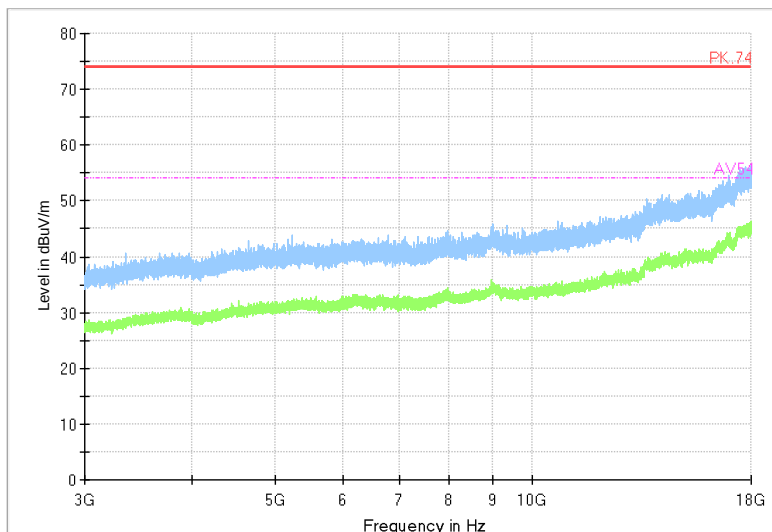
Modulation type: 802.11 ax(HE20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

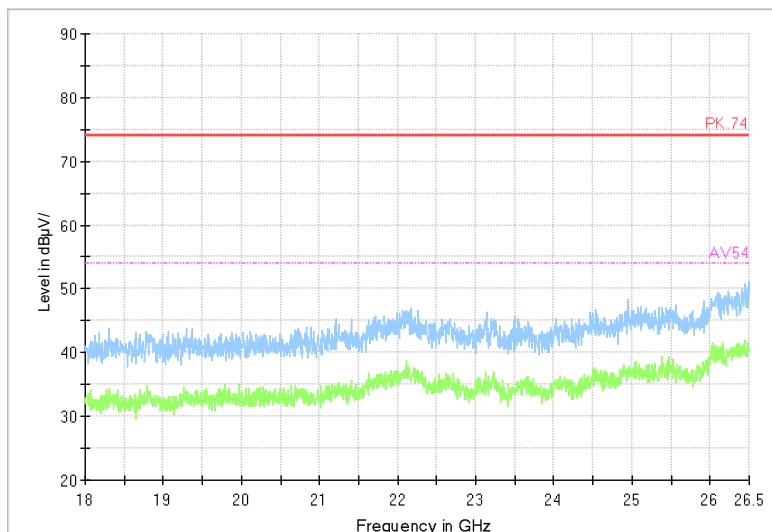


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Carrier frequency (MHz): 2437

BV 7Layers Communications Technology
(Shenzhen) Co., Ltd

Room B37, Warehouse A5, No.3 Chiwan 4th Road,
Zhaoshang Street, Nanshan District Shenzhen,
Guangdong, People's Republic of China

Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@bureauveritas.com

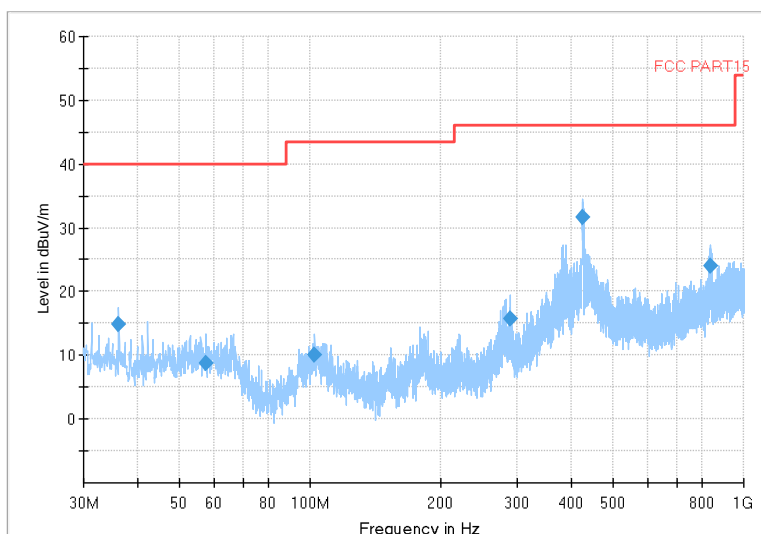


BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Channel No.:6

Full Spectrum

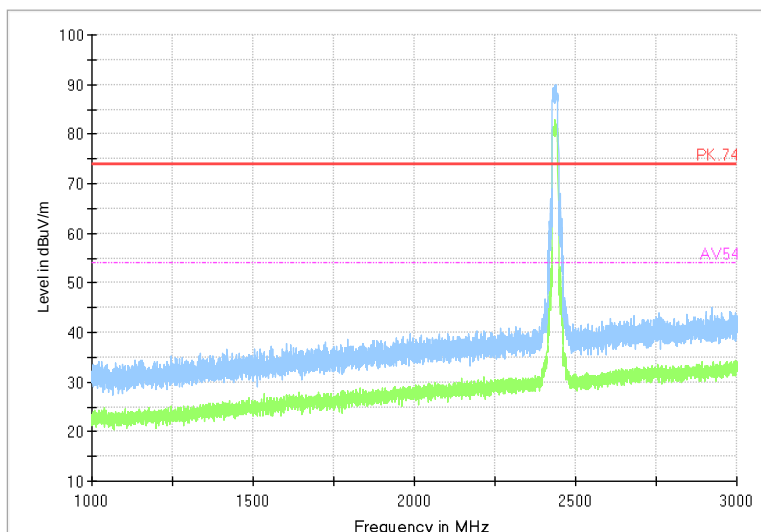


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

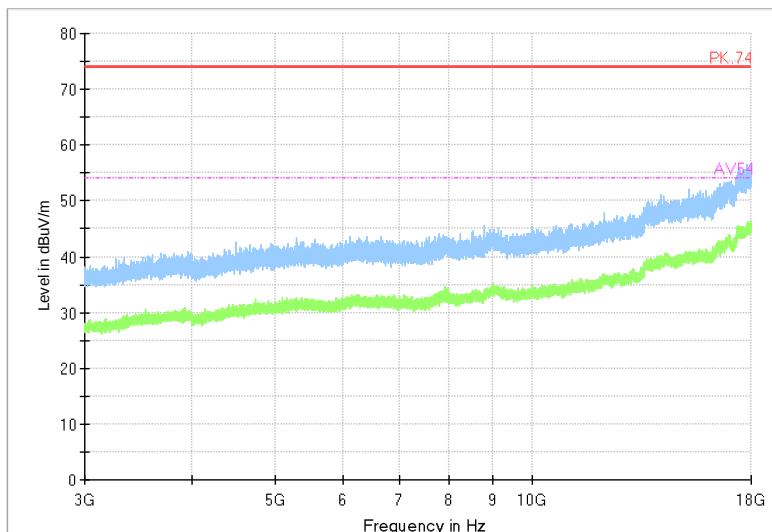
Modulation type: 802.11b



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

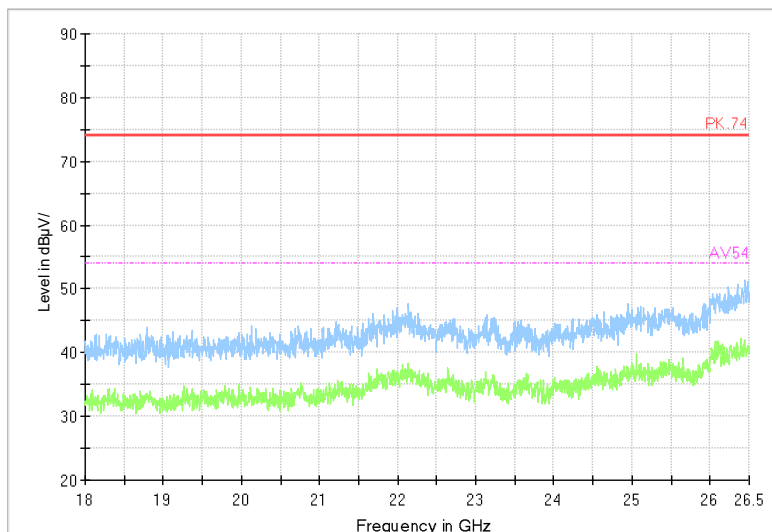


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

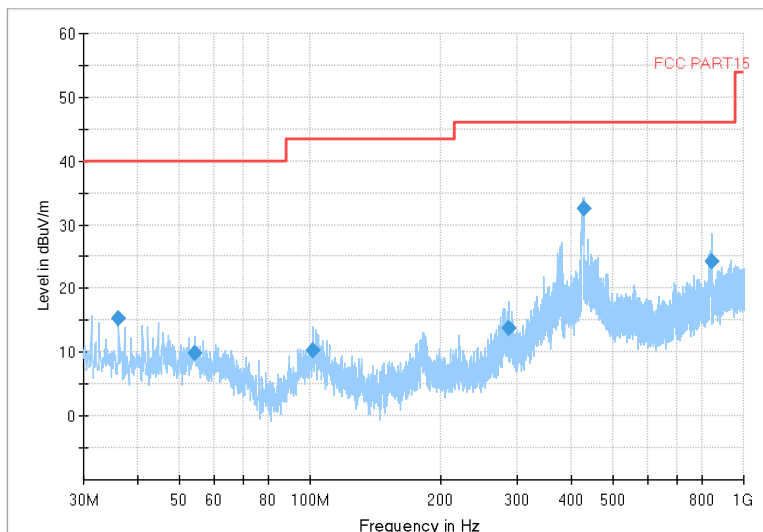
Modulation type: 802.11b



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

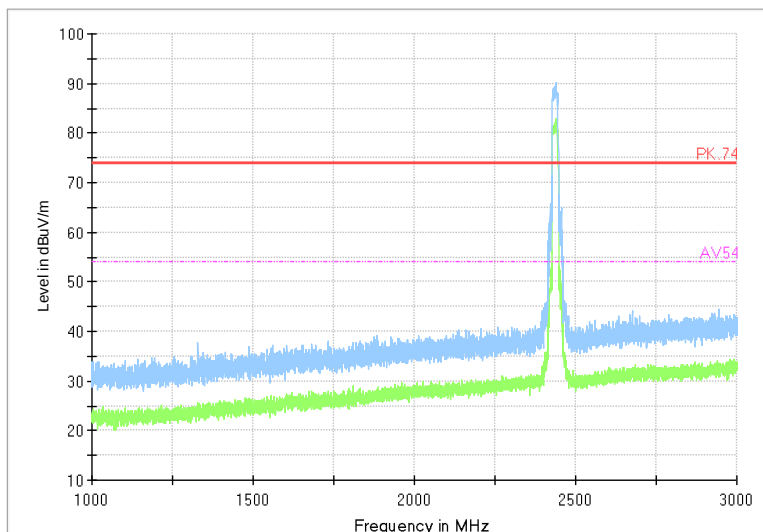


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

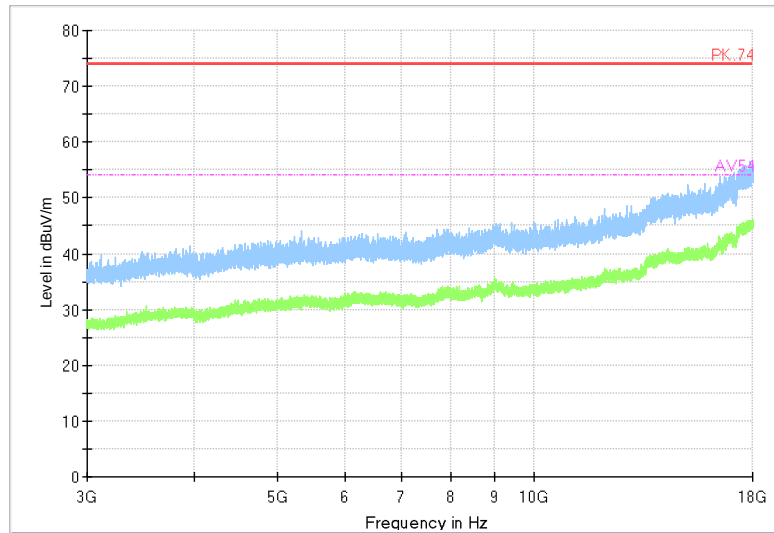
Modulation type: 802.11g



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

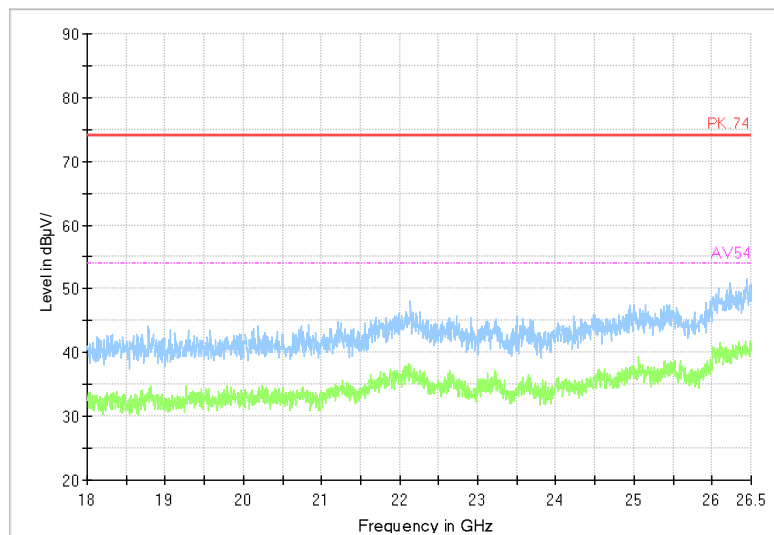


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

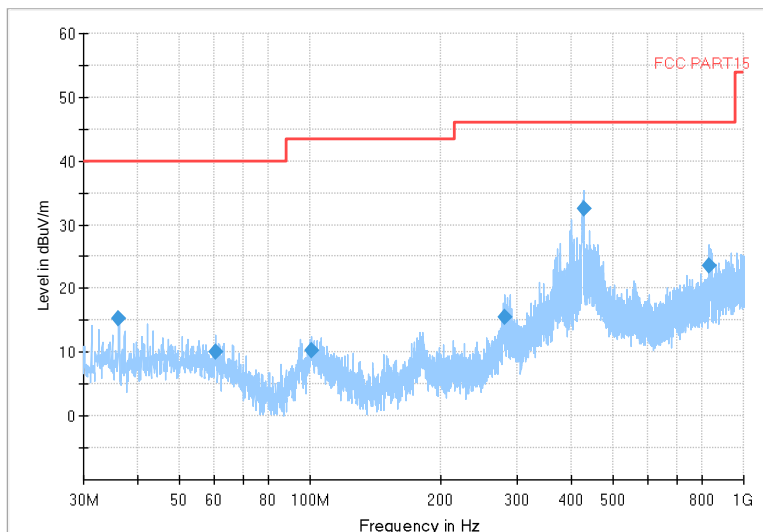
Modulation type: 802.11g



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

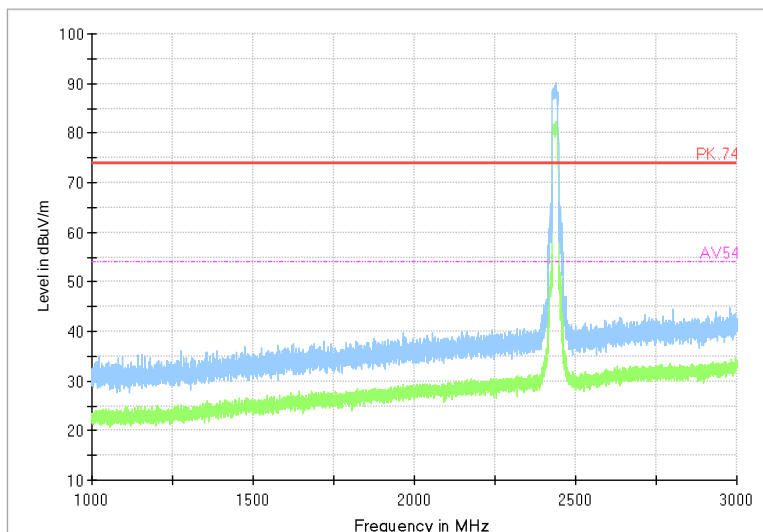


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

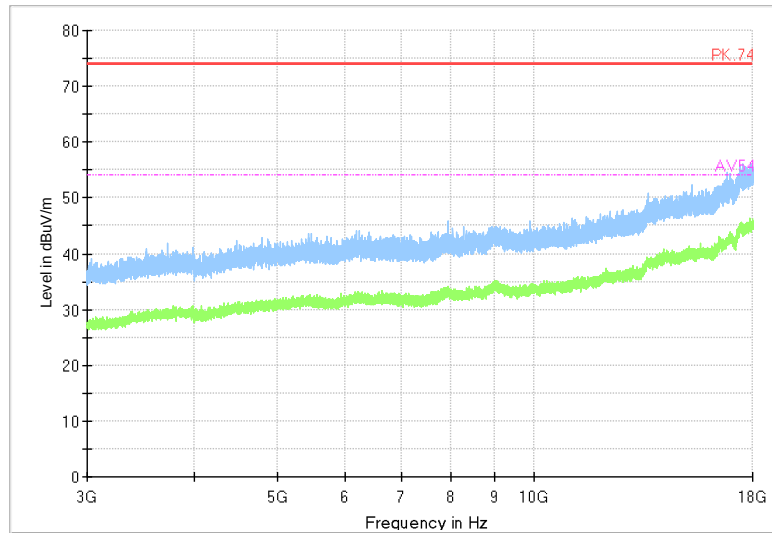
Modulation type: 802.11n(HT20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

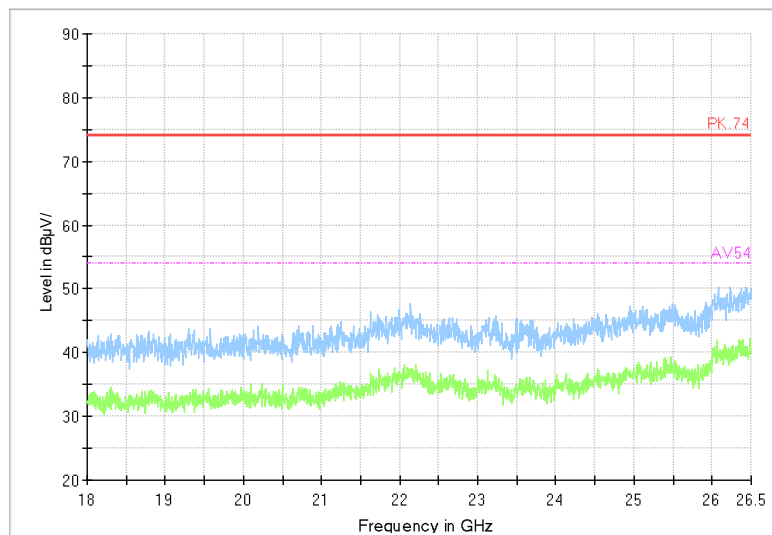


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

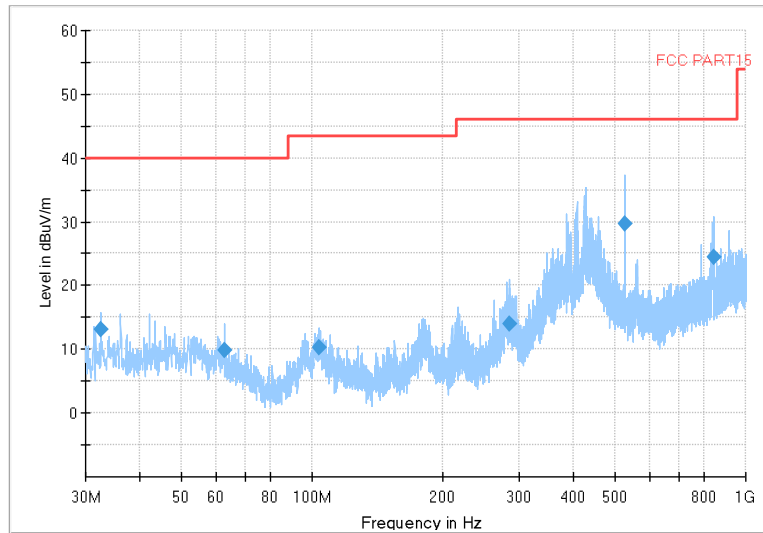
Modulation type: 802.11n(HT20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

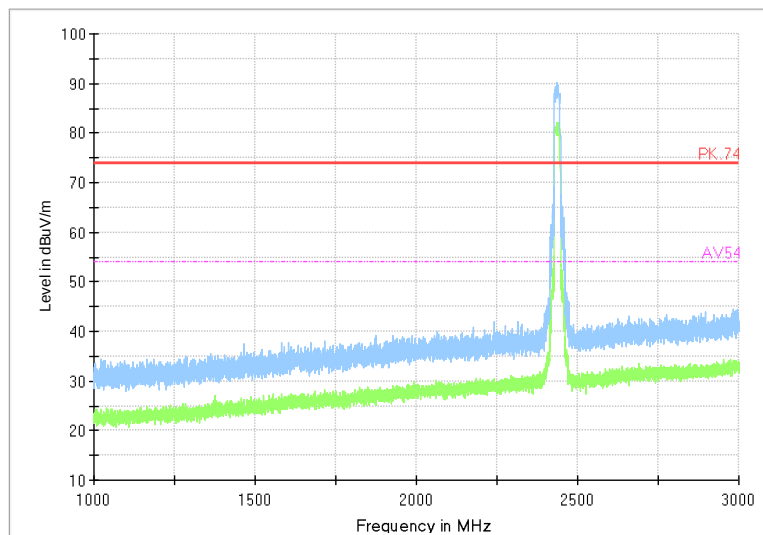


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

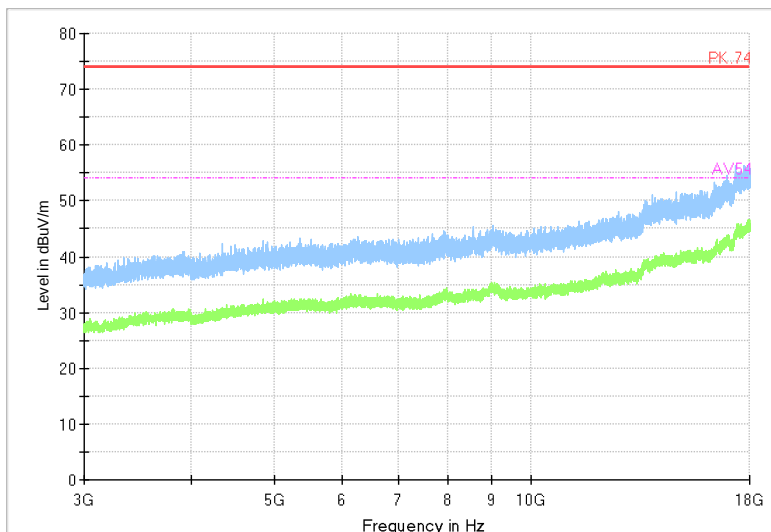
Modulation type: 802.11 ax(HE20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

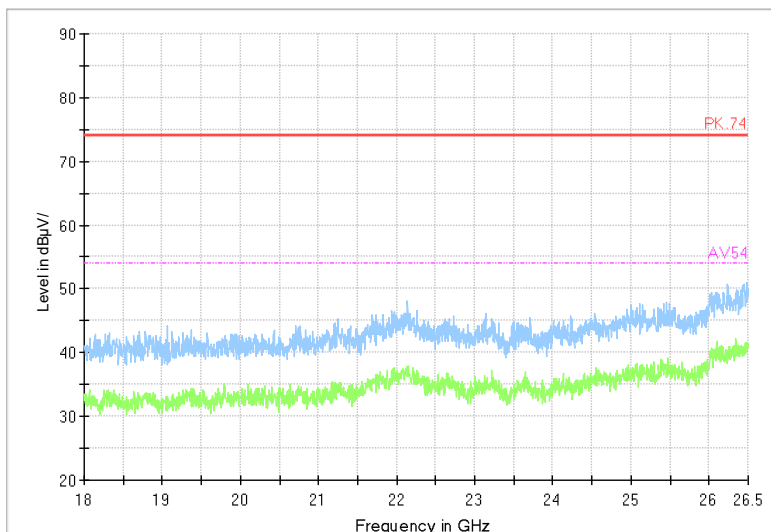


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Carrier frequency (MHz): 2462

Channel No.:11

BV 7Layers Communications Technology
(Shenzhen) Co., Ltd

Room B37, Warehouse A5, No.3 Chiwan 4th Road,
Zhaoshang Street, Nanshan District Shenzhen,
Guangdong, People's Republic of China

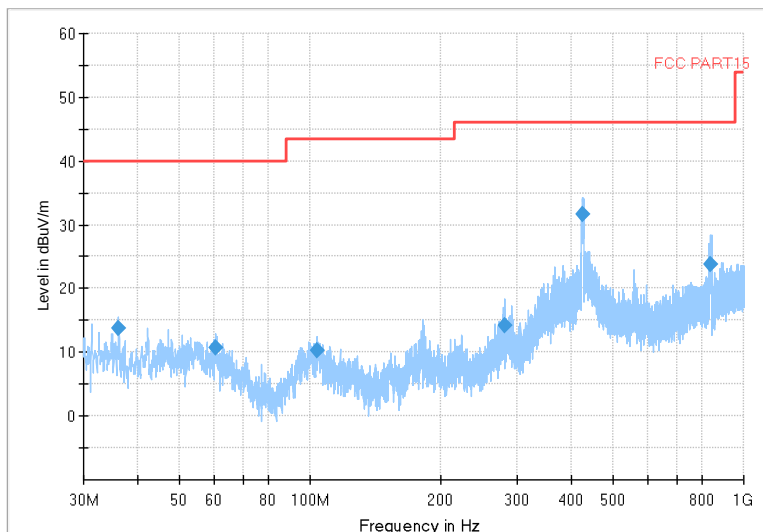
Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@bureauveritas.com



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

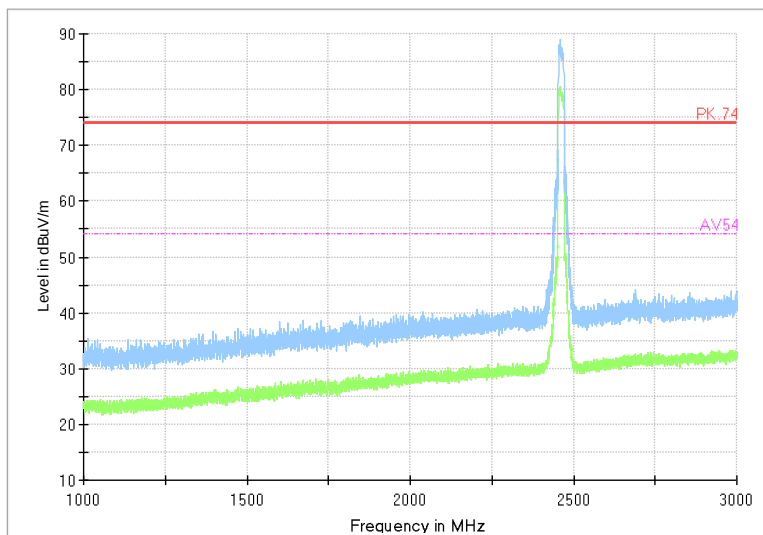


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

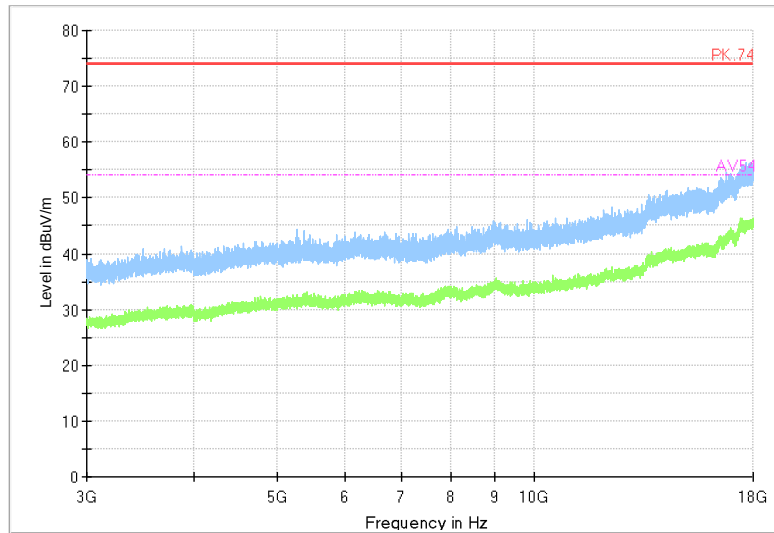
Modulation type: 802.11b



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

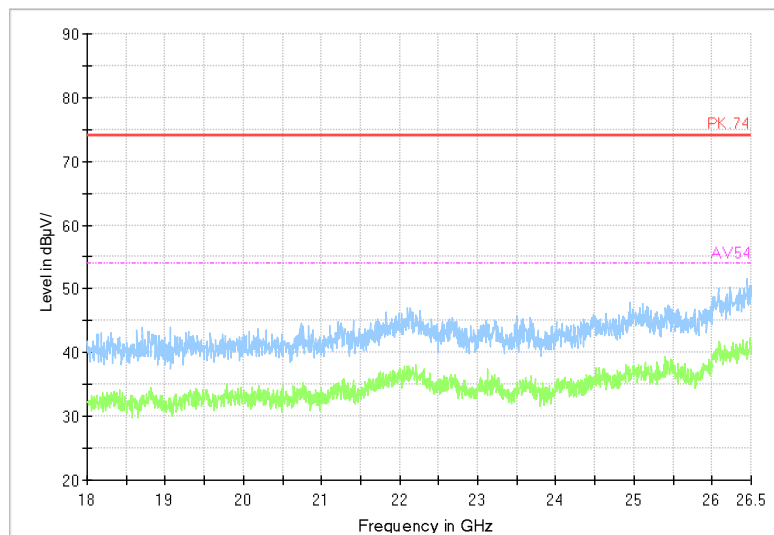


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

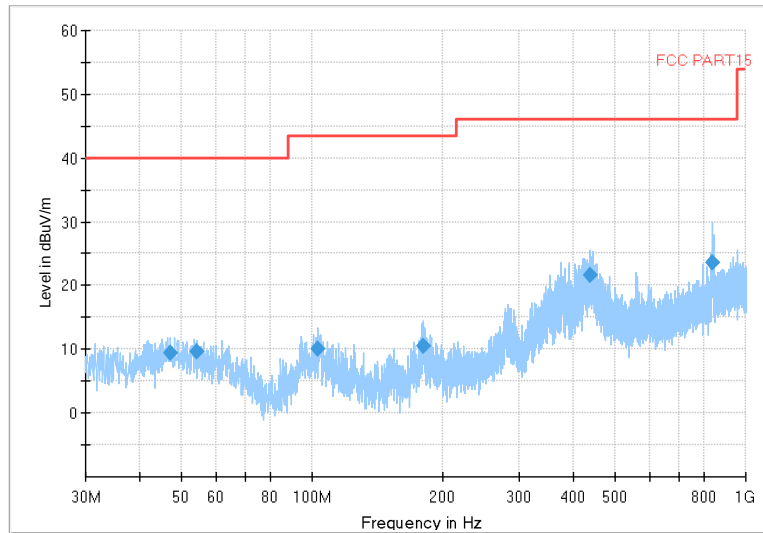
Modulation type: 802.11b



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

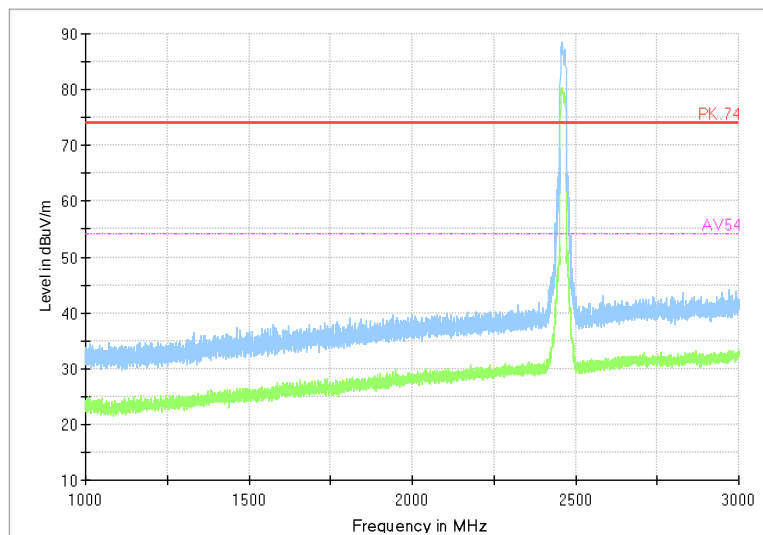


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

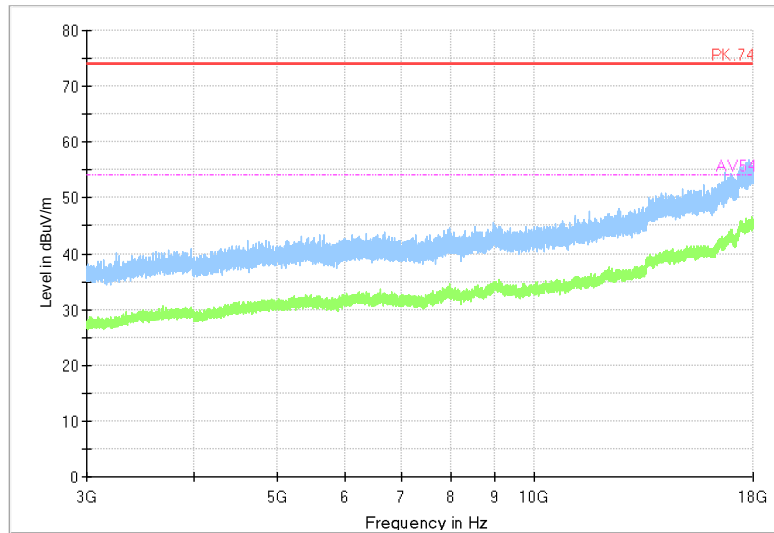
Modulation type: 802.11g



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

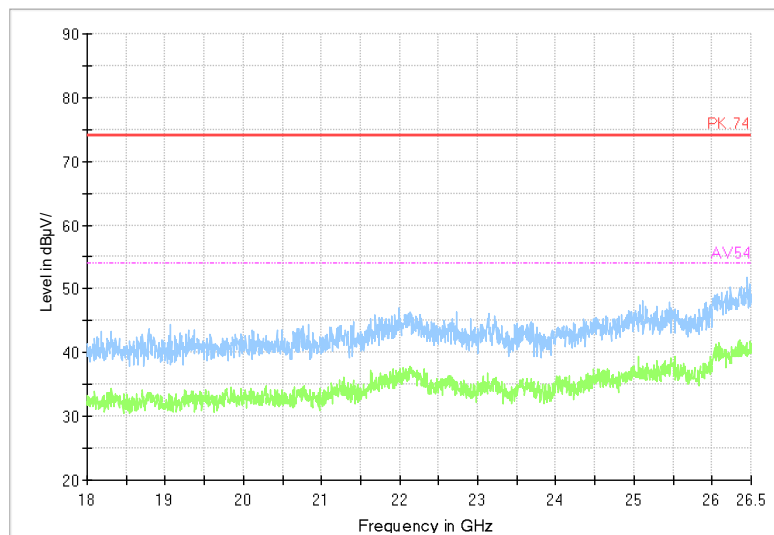


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

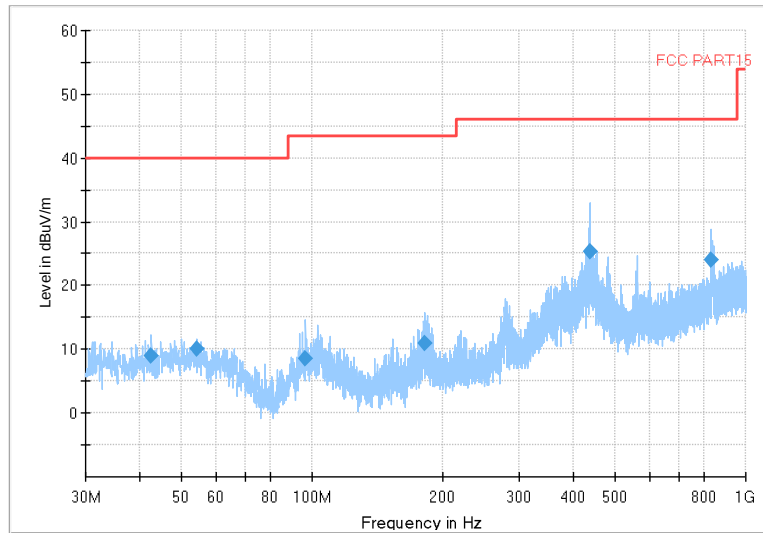
Modulation type: 802.11g



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

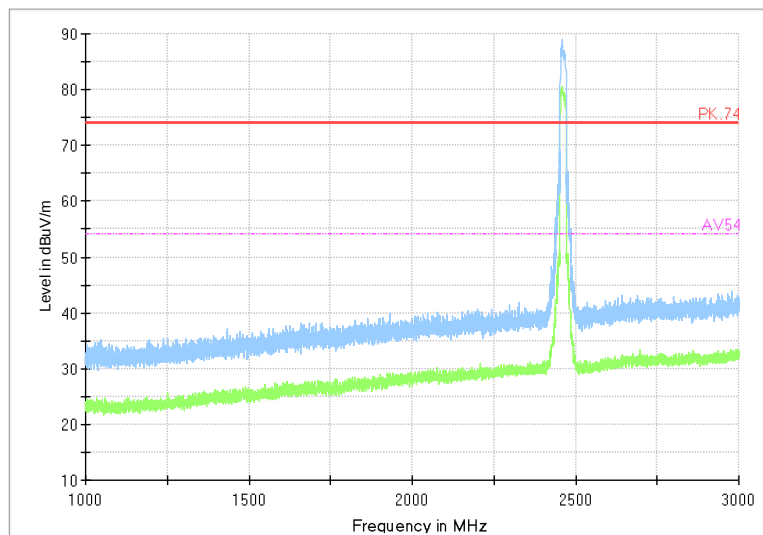


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

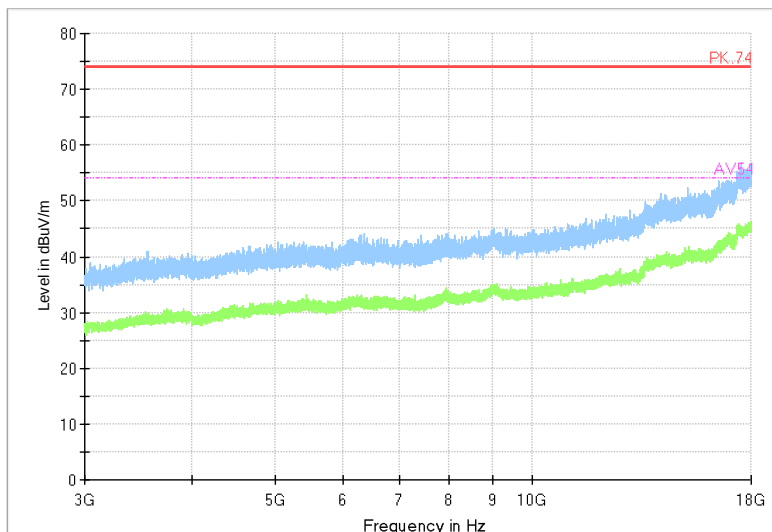
Modulation type: 802.11n(HT20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

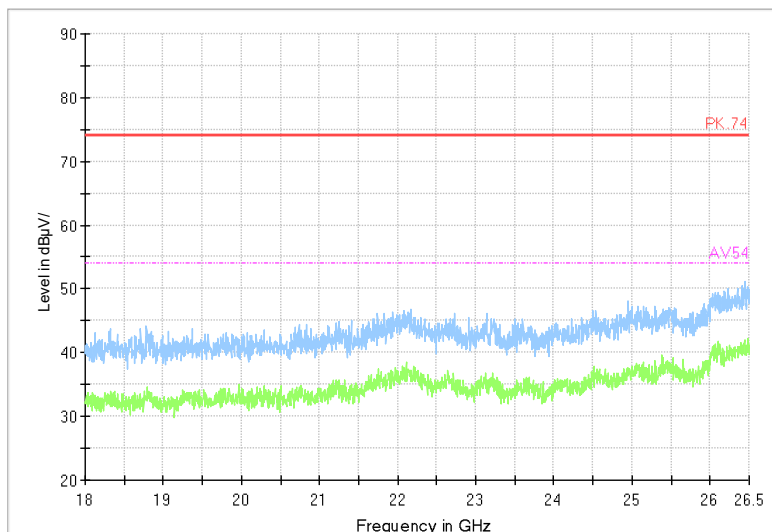


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

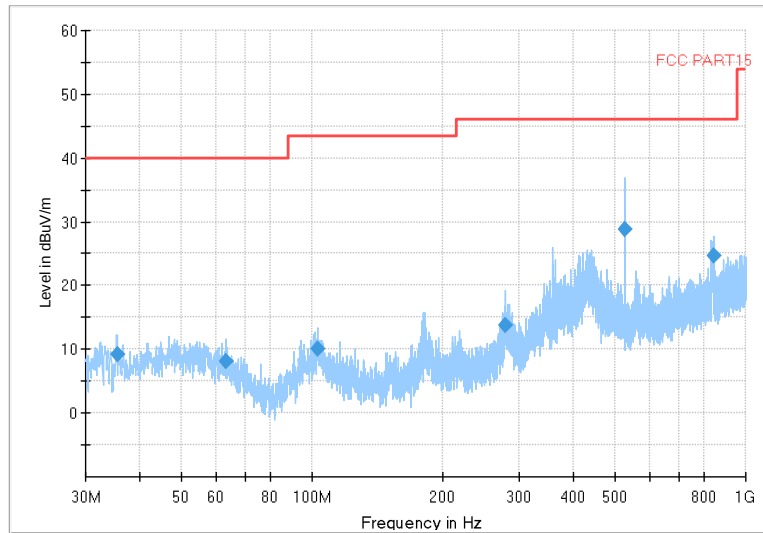
Modulation type: 802.11n(HT20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

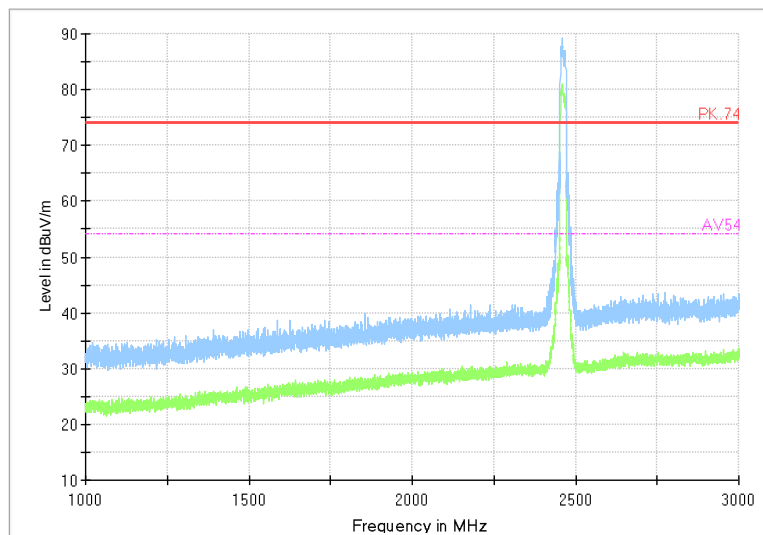


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

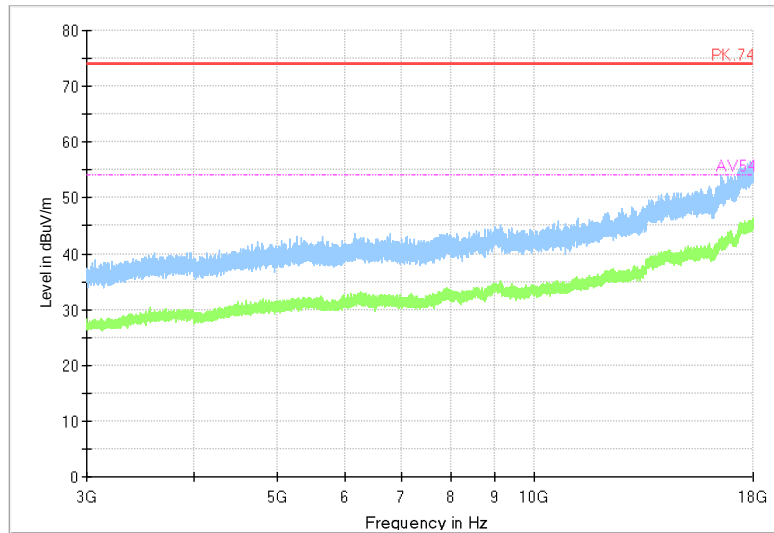
Modulation type: 802.11 ax(HE20)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

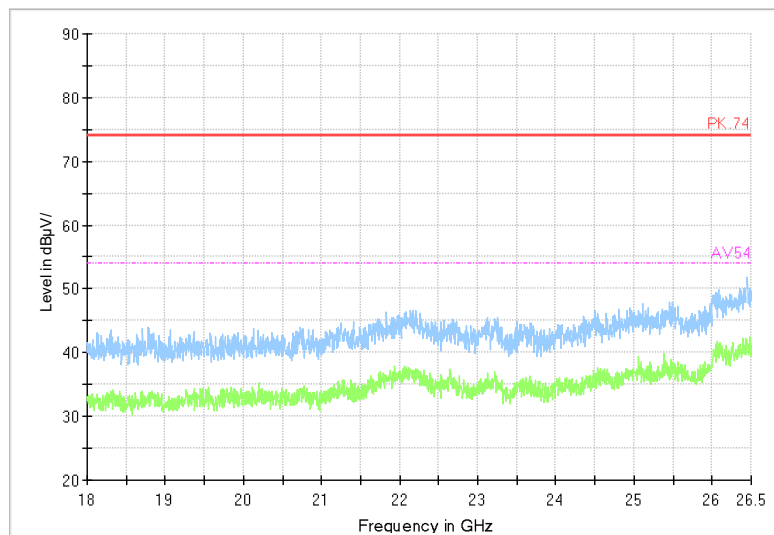


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Carrier frequency (MHz): 2422

Channel No.:3

BV 7Layers Communications Technology
(Shenzhen) Co., Ltd

Room B37, Warehouse A5, No.3 Chiwan 4th Road,
Zhaoshang Street, Nanshan District Shenzhen,
Guangdong, People's Republic of China

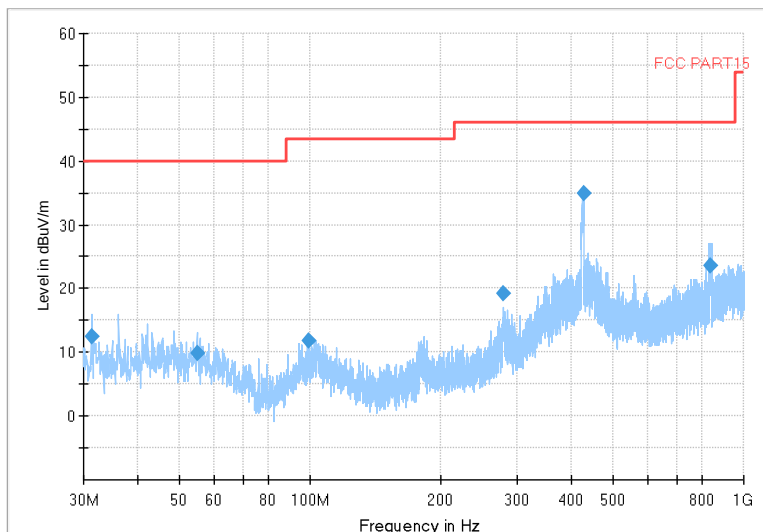
Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@bureauveritas.com



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

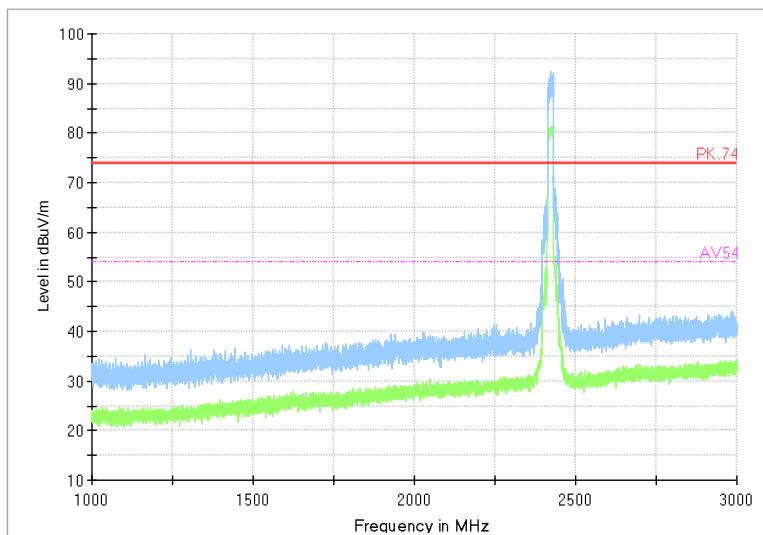


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

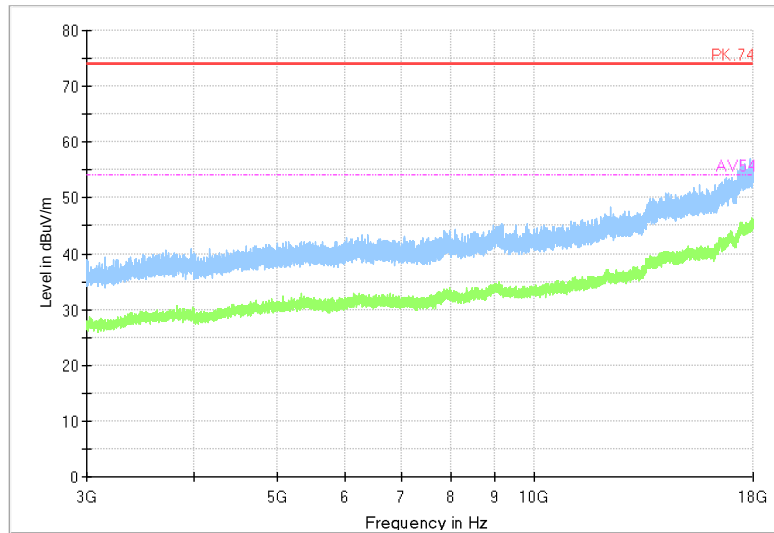
Modulation type: 802.11n(HT40)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

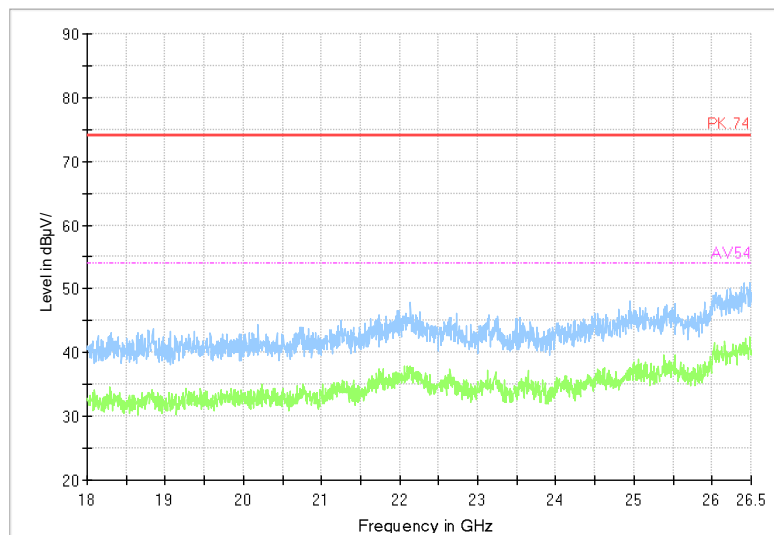


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

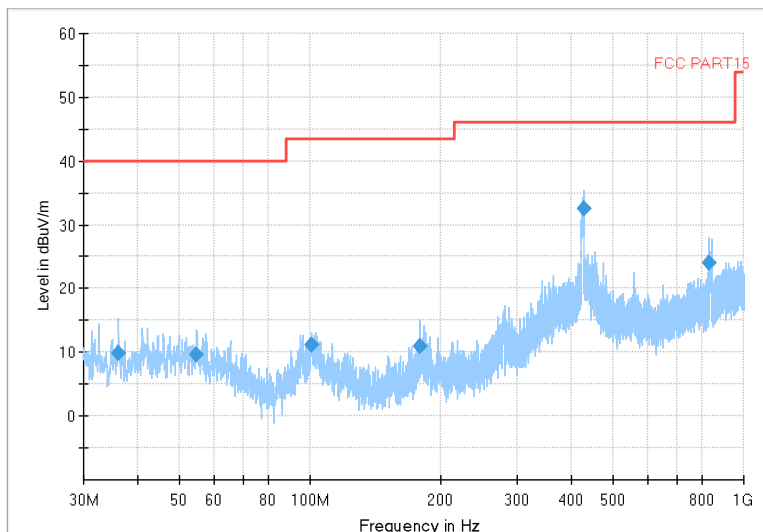
Modulation type: 802.11n(HT40)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

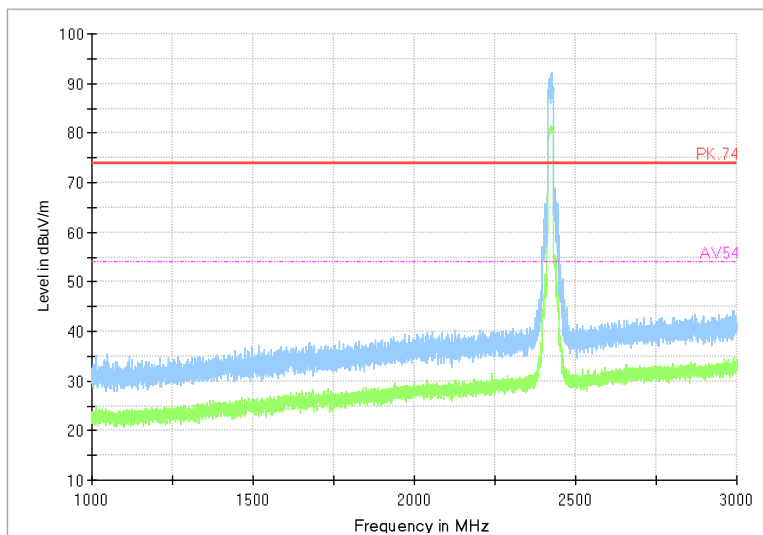


Frequency Range: 30MHz -1GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE40)

Full Spectrum



Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

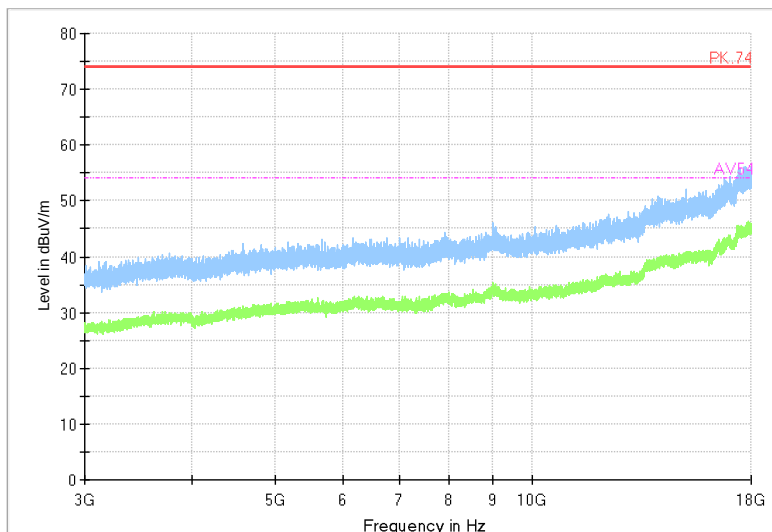
Modulation type: 802.11 ax(HE40)



BUREAU
VERITAS

Test Report No.: PSU-NQN2412170109RF02

Full Spectrum

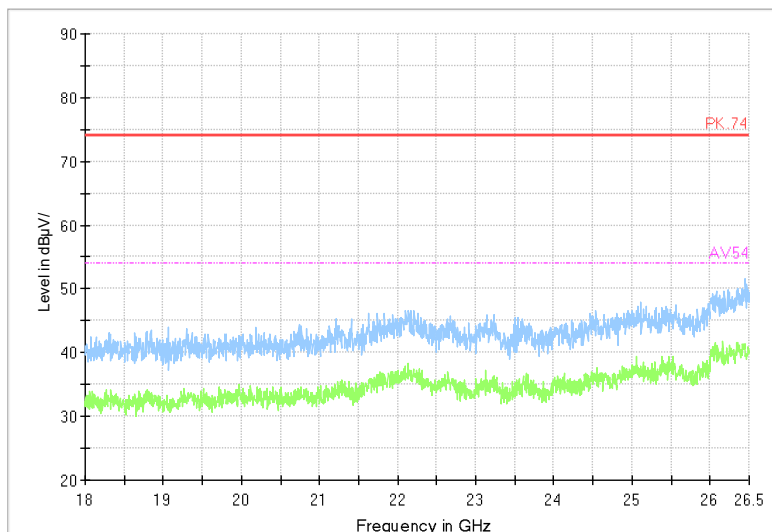


Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE40)

Full Spectrum



Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE40)

Carrier frequency (MHz): 2437

BV 7Layers Communications Technology
(Shenzhen) Co., Ltd

Room B37, Warehouse A5, No.3 Chiwan 4th Road,
Zhaoshang Street, Nanshan District Shenzhen,
Guangdong, People's Republic of China

Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@bureauveritas.com