

BUREAU
VERITAS

Test Report No.: PSU-NQN2503180111RF02



Certificate #6613.01

FCC TEST REPORT

(Part 15, Subpart C)

Applicant:	Qingdao Intelligent & Precise Electronics Co., Ltd.
Address:	No.218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province, China

Manufacturer or Supplier:	Qingdao Intelligent & Precise Electronics Co., Ltd.
Address:	No.218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province, China
Product:	WiFi/BT Module
Brand Name:	Hisense
Model Name:	MWH634B
FCC ID:	2AJVQ-MWH634B
Date of tests:	Feb.13, 2025 ~ Mar.19, 2025

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 Hanwen Xu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
 Date: Mar.19, 2025	 Date: Mar.19, 2025

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2502260117RF02	Original release	Mar.10, 2025



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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	N/A
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).

*Test Lab Information Reference

Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

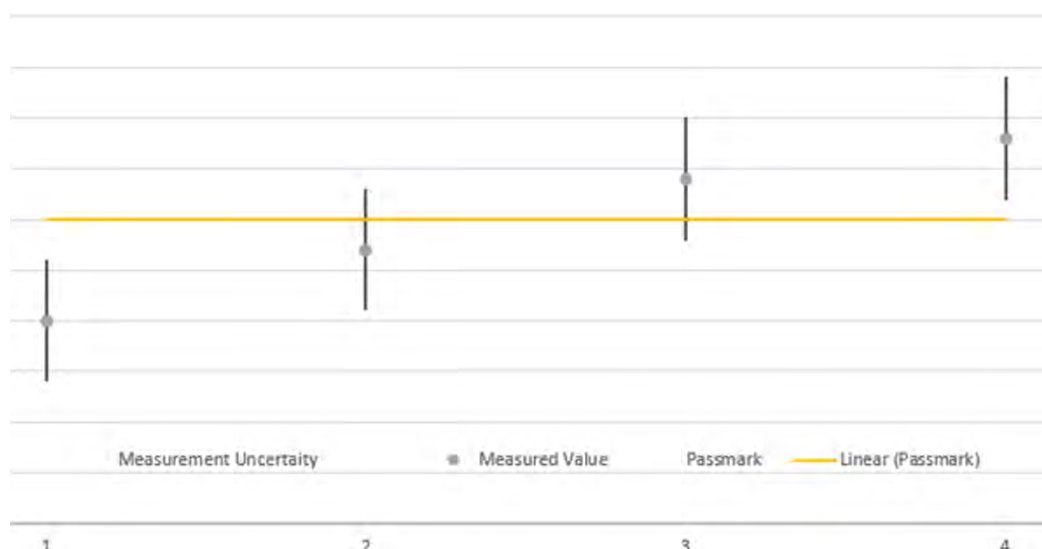
The FCC Site Registration No. is 434559; The Designation No. is CN1325.

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 $k = 2$.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	WiFi/BT Module
BRAND NAME*	Hisense
MODEL NAME*	MWH634B
NOMINAL VOLTAGE*	3.3Vdc (Battery Supply)
MODULATION *	DSSS, OFDM, OFDMA, GFSK
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: 0.125 Mbps /0.5 Mbps /1 Mbps/2 Mbps 802.11ax 20 (RU26/52/106/242): up to 286.8Mbps 802.11ax 40 (RU26/52/106/242/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 26/52/106/242/RU484)
MAX. OUTPUT POWER	WLAN: 396.278mW (Maximum) BT-LE: 3.936mW (Maximum) RU WLAN: 857.037mW (Maximum)
ANTENNA TYPE*	ANT0: Inverted F Antenna with 3.58dBi gain for WIFI ANT1: Inverted F Antenna with 3.01dBi gain for WIFI Loop Antenna with 4.17dBi gain for BLE
Directional Gain:	For Power/PSD: 3.30dBi(Uncorrelated) for WIFI
Beamforming Directional Gain:	N/A
HW VERSION*	V1.00
SW VERSION*	N/A

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I/O PORTS*	Refer to user's manual
CABLE SUPPLIED*	N/A

NOTE:

1. *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.
2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. The EUT incorporates a MIMO function. Physically, the EUT provides one transmitter and one receiver.

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

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
5. 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 26/52/106/242/484):

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
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
802.11ax 20	1 to 11	1, 6, 11	OFDMA	MCS0
802.11ax 40	3 to 9	3	OFDMA	MCS0
802.11ax 20 (RU 26)	1 to 11	1, 6, 11	OFDMA	MCS0
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
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
802.11ax 20	1 to 11	1, 6, 11	OFDMA	MCS0
802.11ax 40	3 to 9	3	OFDMA	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1.0
BT-LE	1 to 38	1,19, 38	GFSK	2.0

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)
802.11b	1 to 11	1, 6, 11	DSSS	1.0

**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
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
802.11ax 20	1 to 11	1, 6, 11	OFDMA	MCS0
802.11ax 40	3 to 9	3	OFDMA	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1.0
BT-LE	1 to 38	1,19, 38	GFSK	2.0

**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
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
802.11ax 20	1 to 11	1, 6, 11	OFDMA	MCS0
802.11ax 40	3 to 9	3	OFDMA	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1.0
BT-LE	1 to 38	1,19, 38	GFSK	2.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 3.3V By Battery Supply	Hanwen Xu
RE≥1G	23deg. C, 70%RH	DC 3.3V By Battery Supply	Hanwen Xu
PLC	25deg. C, 52%RH	DC 3.3V By Battery Supply	Hanwen Xu
APCM	25deg. C, 60%RH	DC 3.6V By Battery Supply	Hanwen Xu

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	Laptop	Lenovo	Thinkpad E14	SL10W47313	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	102749	Mar.28,24	Mar.27,26
ELEKTRA test software	Rohde&Schwarz	ELEKTRA	NA	N/A	N/A
LISN network	Rohde&Schwarz	ENV216	102640	Mar.28,24	Mar.27,26
CABLE	Rohde&Schwarz	W61.01	N/A	Apr.27,24	Apr.26,25
CABLE	Rohde&Schwarz	W601	N/A	Apr.27,24	Apr.26,25

NOTE:

1. The test was performed in CE shielded room.

2. The calibration interval of the above test instruments is 12 /24months 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.

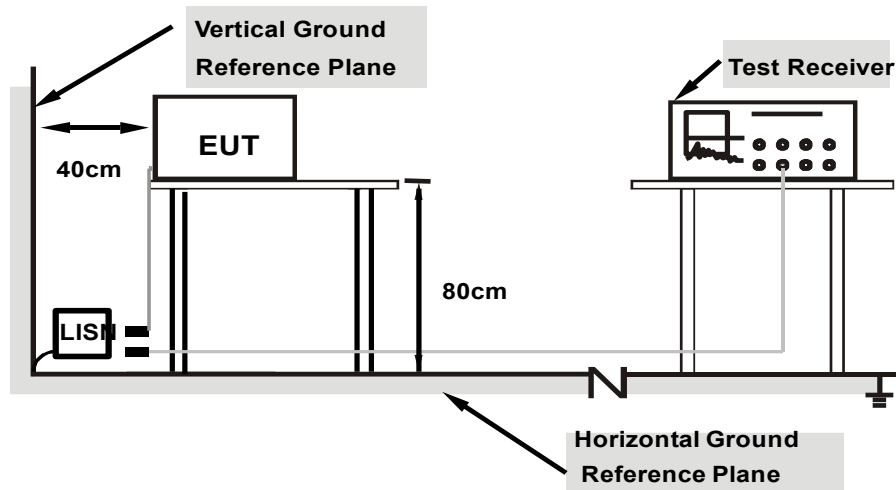
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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

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

3.1.7 TEST RESULTS

N/A



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.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,23	Aug.29,25
Pre-Amplifier	R&S	SCU08F1	101028	Jan.22,24	Jan.21,26
Signal Generator	R&S	SMB100A	182185	Mar.29,24	Mar.28,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESW44	101973	Mar.28,24	Mar.27,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Dec.26,23	Dec.25,25
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,23	Aug.21,25
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Jul.15,24	Jul.14,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,23	Aug.21,25
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,23	Feb.22,25
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.22,25	Feb.21,27
WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	N/A	N/A
DC Source	HYELEC	HY3010B	551016	Aug.31,23	Aug.30,25
Hygrothermograph	DELI	20210528	SZ014	Sep.06,23	Sep.05,25
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	N/A	N/A
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	W12.14	N/A	Apr.27,24	Apr.26,25

- NOTE:**
1. The calibration interval of the above test instruments is 12/ 24/ 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 434559; The Designation No. is CN1325.

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.

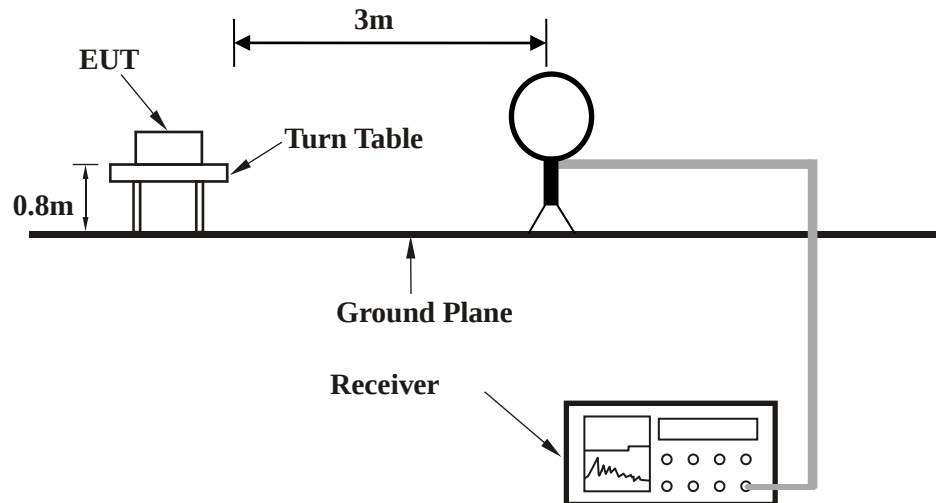
3.2.4 DEVIATION FROM TEST STANDARD

No deviation

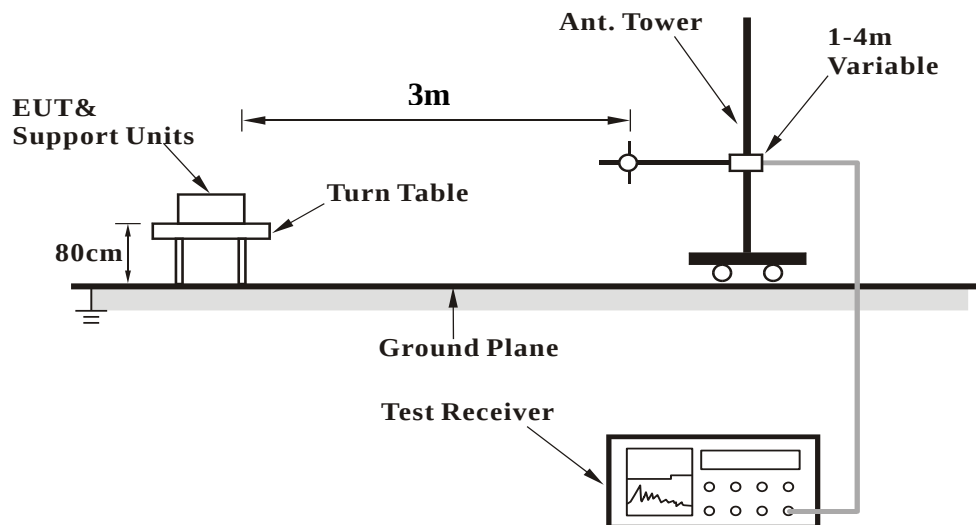


3.2.5 TEST SETUP

<Frequency Range 9KHz~30MHz >

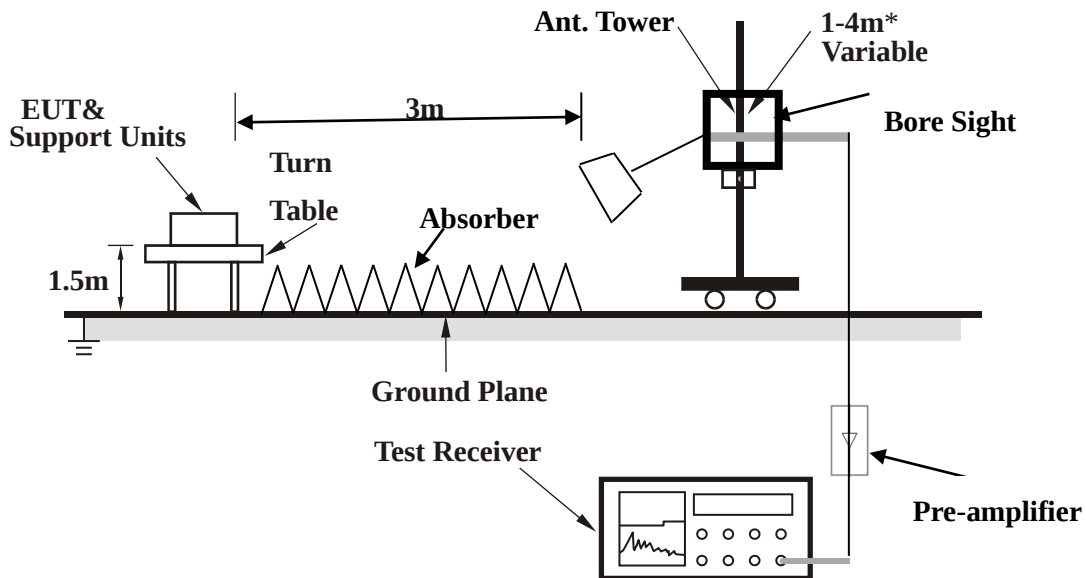


< Frequency Range 30MHz~1GHz >





<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

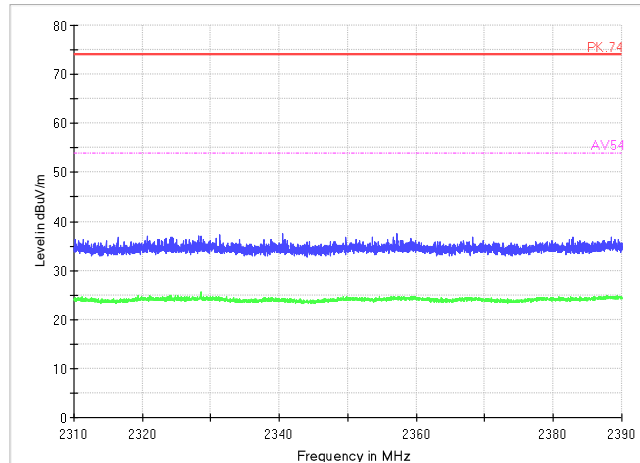
- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.



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

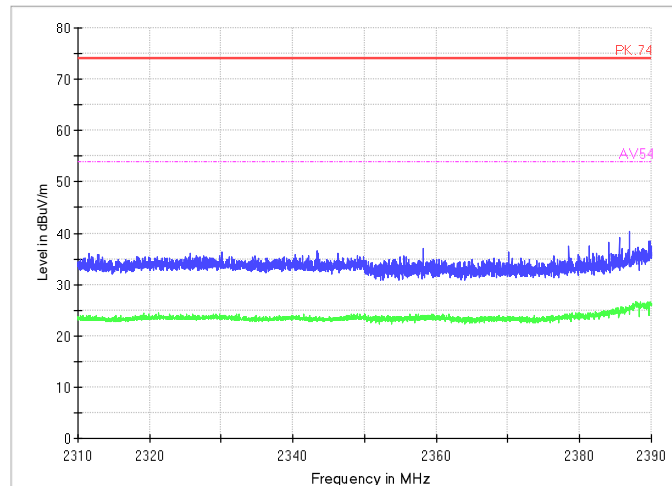


Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE 1Mbps)

Polarity: Vertical



Carrier frequency (MHz): 2402

Channel No.:0

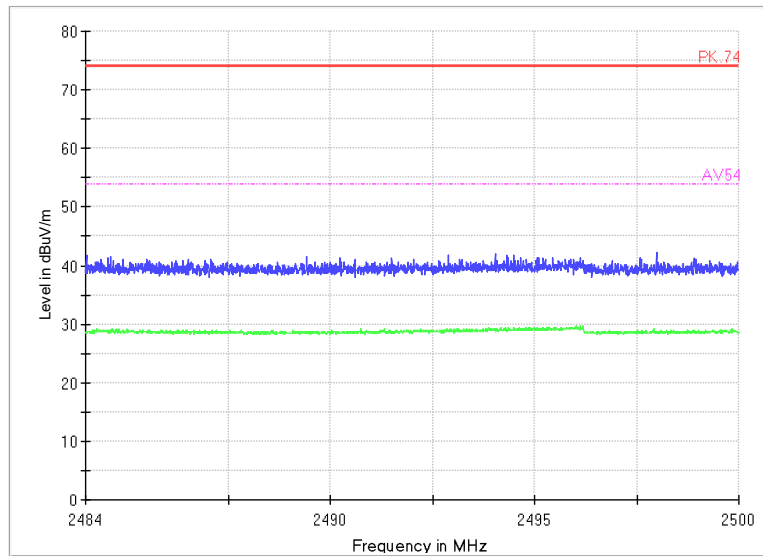
Test Mode: GFSK (LE 1Mbps)

Polarity: Horizontal



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Test Report No.: PSU-NQN2503180111RF02

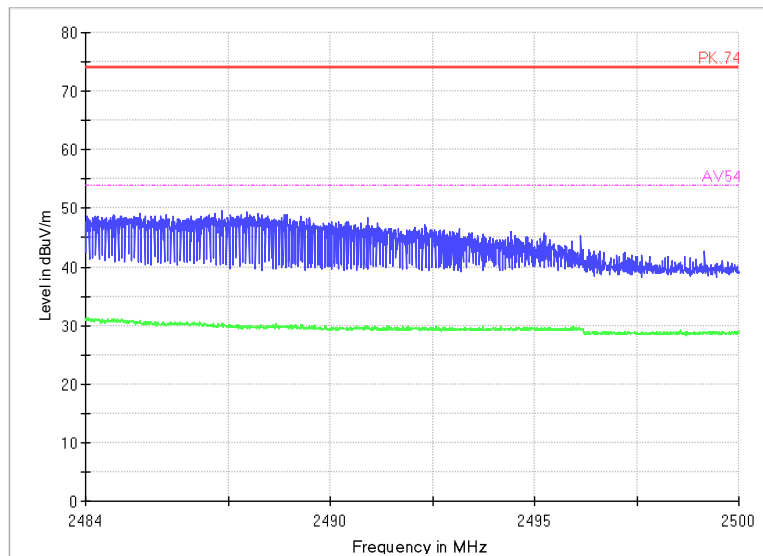


Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE 1Mbps)

Polarity: Vertical



Carrier frequency (MHz): 2480

Channel No.:39

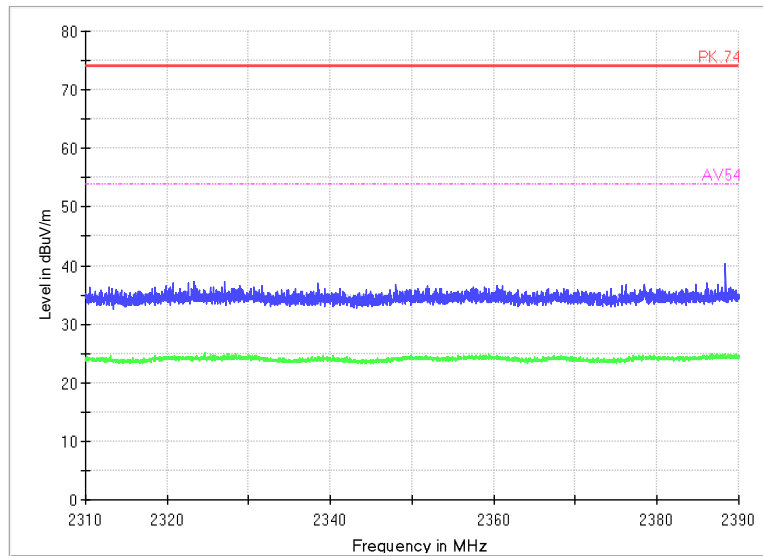
Test Mode: GFSK (LE 1Mbps)

Polarity: Horizontal



BUREAU
VERITAS

Test Report No.: PSU-NQN2503180111RF02

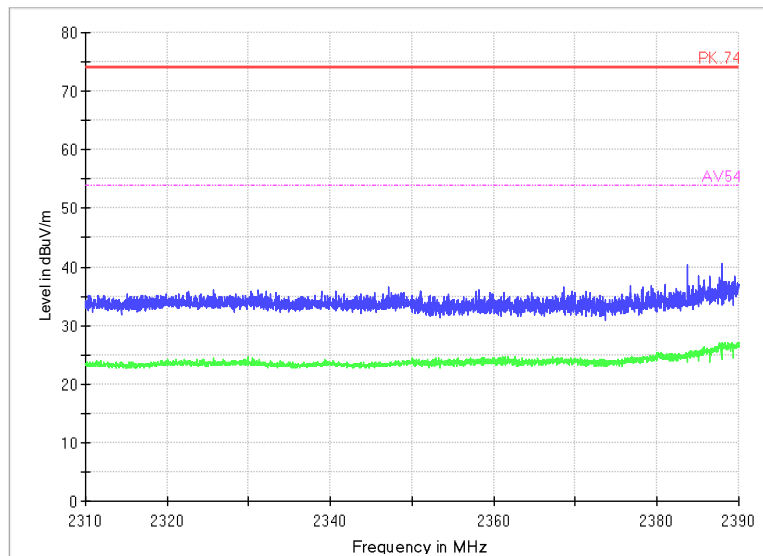


Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE 2Mbps)

Polarity: Vertical



Carrier frequency (MHz): 2402

Channel No.:0

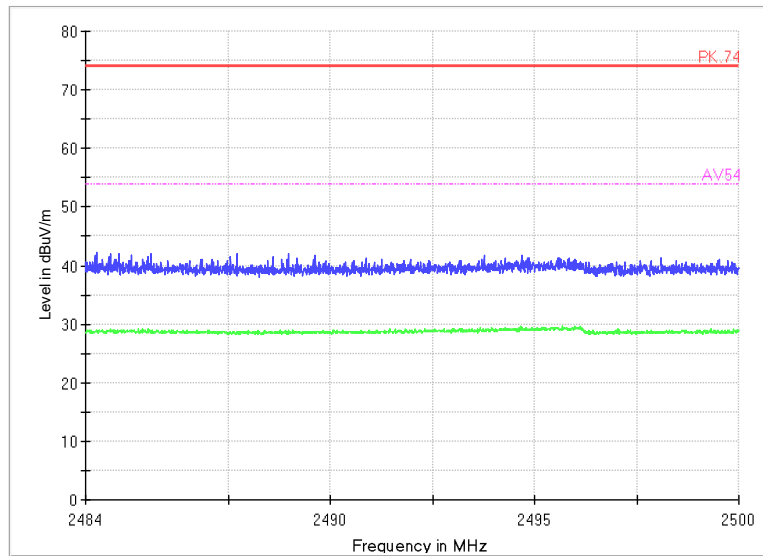
Test Mode: GFSK (LE 2Mbps)

Polarity: Horizontal



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

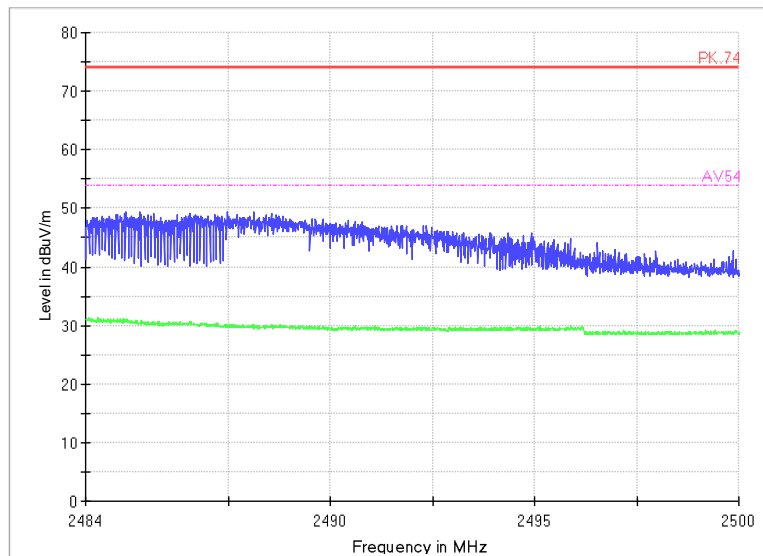


Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE 2Mbps)

Polarity: Vertical



Carrier frequency (MHz): 2480

Channel No.:39

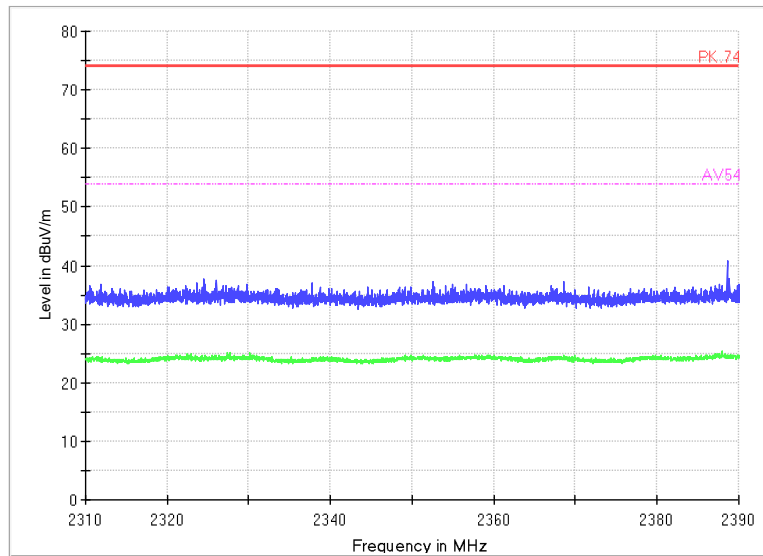
Test Mode: GFSK (LE 2Mbps)

Polarity: Horizontal



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

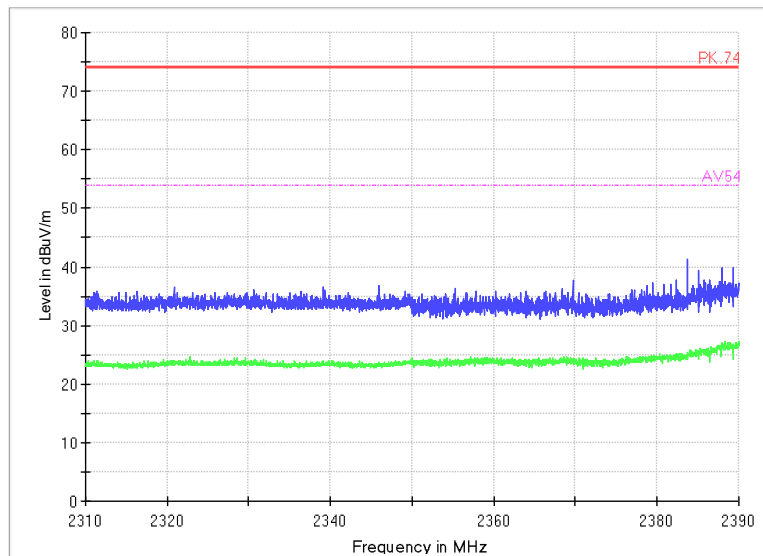


Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE 125Khz S=8)

Polarity: Vertical



Carrier frequency (MHz): 2402

Channel No.:0

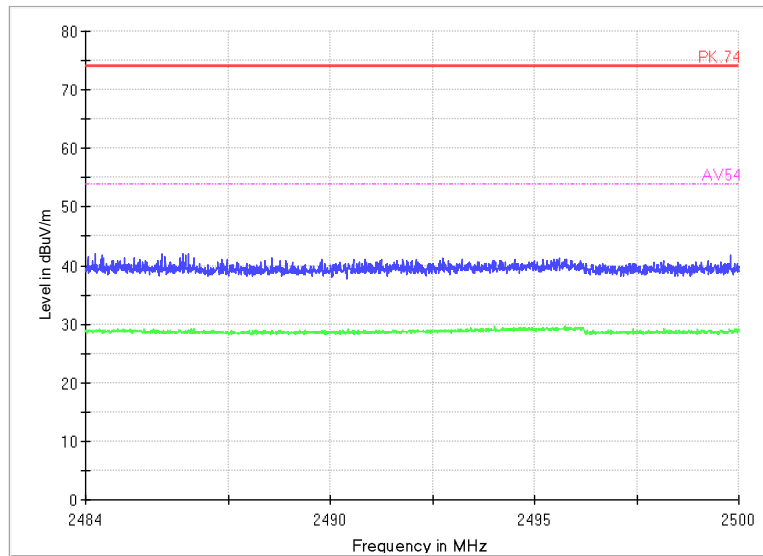
Test Mode: GFSK (LE 125Khz S=8)

Polarity: Horizontal



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

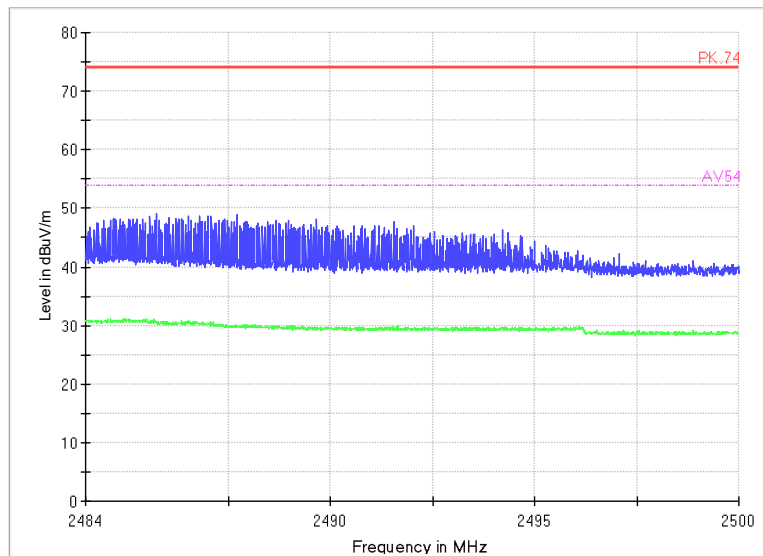


Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE 125Khz S=8)

Polarity: Vertical



Carrier frequency (MHz): 2480

Channel No.:39

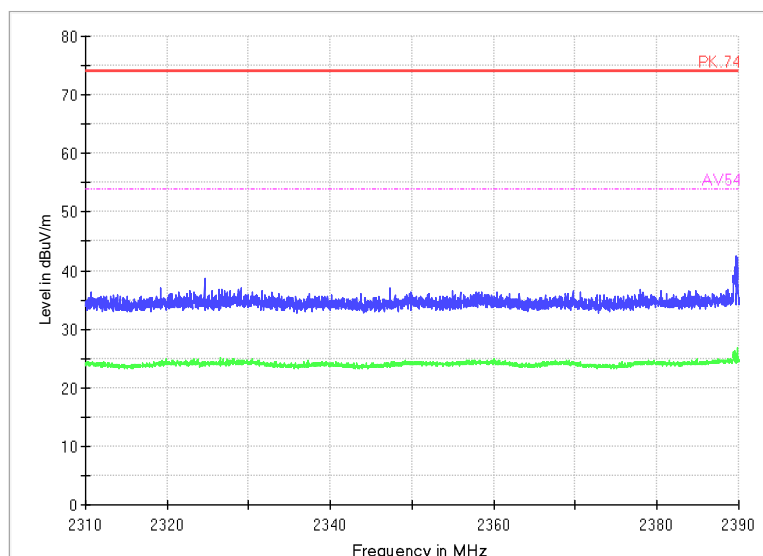
Test Mode: GFSK (LE 125Khz S=8)

Polarity: Horizontal



BUREAU
VERITAS

Test Report No.: PSU-NQN2503180111RF02

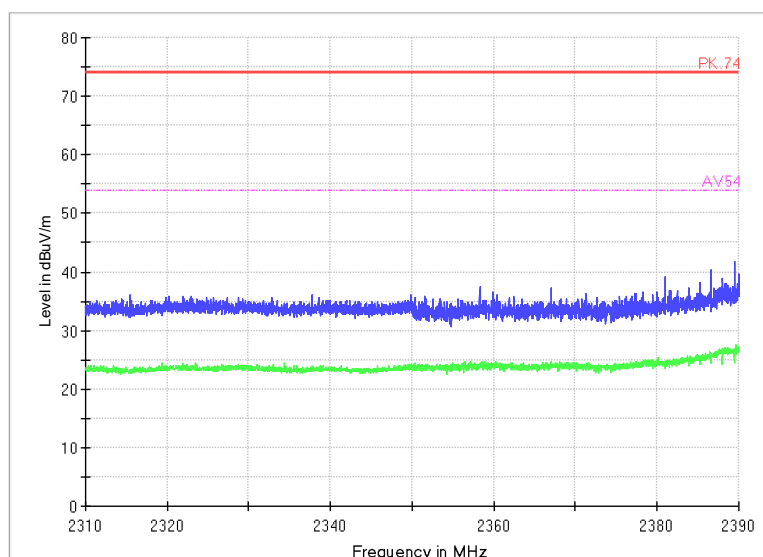


Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE 500Khz S=2)

Polarity: Vertical



Carrier frequency (MHz): 2402

Channel No.:0

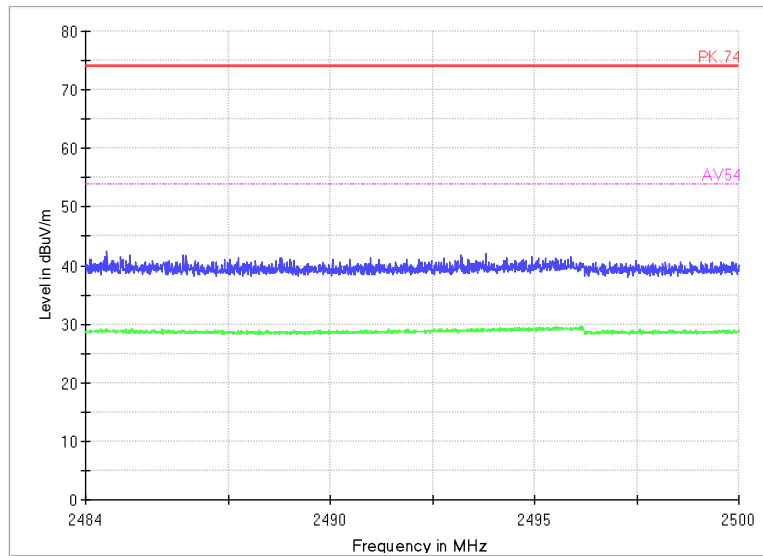
Test Mode: GFSK (LE 500Khz S=2)

Polarity: Horizontal



BUREAU
VERITAS

Test Report No.: PSU-NQN2503180111RF02

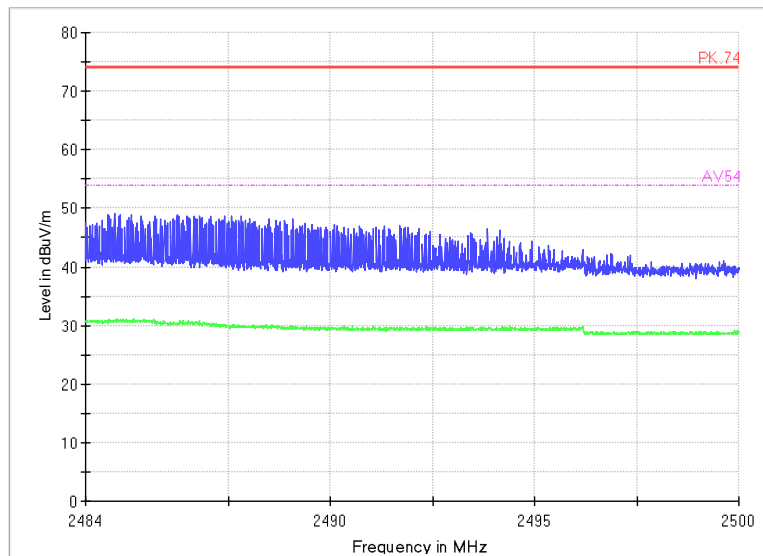


Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE 500Khz S=2)

Polarity: Vertical



Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE 500Khz S=2)

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: $(12.83 \text{ dB}\mu\text{V/m}) = (32.03 \text{ BuV}) + (-19.2 \text{ dB/m})$, the corresponding frequency is 32.4735 MHz.

For GFSK (LE 1Mbps)

Channel No.:0

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
32.4735	12.83	-19.2	32.03	Vertical	40	27.17
59.1485	9.21	-16.2	25.41	Vertical	40	30.79
121.9075	11.43	-19.3	30.73	Vertical	43.5	32.07
199.9925	16.77	-16.6	33.37	Vertical	43.5	26.73
436.333	21.73	-10.4	32.13	Vertical	46	24.27
791.9835	20.99	-3.8	24.79	Vertical	46	25.01

Channel No.:19

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.291	15.52	-18.8	34.32	Vertical	40	24.48
62.01	10.63	-16.8	27.43	Vertical	40	29.37
123.2655	12.71	-19.5	32.21	Vertical	43.5	30.79
199.9925	15.92	-16.6	32.52	Vertical	43.5	27.58
436.333	21.66	-10.4	32.06	Vertical	46	24.34
830.0075	18.02	-3.3	21.32	Vertical	46	27.98

Channel No.:39

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
52.892	12.17	-15.4	27.57	Vertical	40	27.83



BUREAU VERITAS Test Report No.: PSU-NQN2503180111RF02

57.451	12.83	-15.9	28.73	Vertical	40	27.17
104.593	8.91	-17	25.91	Vertical	43.5	34.59
199.1195	10.08	-16.5	26.58	Vertical	43.5	33.42
436.333	21.62	-10.4	32.02	Vertical	46	24.38
932.003	18.39	-1.7	20.09	Vertical	46	27.61

For GFSK (LE 2Mbps)

Channel No.:0

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
32.4735	12.66	-19.2	31.86	Vertical	40	27.34
60.9915	12.94	-16.5	29.44	Vertical	40	27.06
122.635	11.87	-19.4	31.27	Vertical	43.5	31.63
199.9925	16.65	-16.6	33.25	Vertical	43.5	26.85
436.333	21.81	-10.4	32.21	Vertical	46	24.19
833.4995	17.29	-3.4	20.69	Vertical	46	28.71

Channel No.:19

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.164	15.11	-19.1	34.21	Vertical	40	24.89
57.4995	12.73	-15.9	28.63	Vertical	40	27.27
123.9445	12.47	-19.6	32.07	Vertical	43.5	31.03
199.9925	15.83	-16.6	32.43	Vertical	43.5	27.67
436.333	21.72	-10.4	32.12	Vertical	46	24.28
873.4635	17.92	-2.4	20.32	Vertical	46	28.08

Channel No.:39

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.067	15.34	-19.1	34.44	Vertical	40	24.66
60.749	9.88	-16.5	26.38	Vertical	40	30.12
124.963	11.01	-19.8	30.81	Vertical	43.5	32.49
199.9925	15.88	-16.6	32.48	Vertical	43.5	27.62
436.333	21.68	-10.4	32.08	Vertical	46	24.32



BUREAU VERITAS Test Report No.: PSU-NQN2503180111RF02

861.7265	17.72	-2.6	20.32	Vertical	46	28.28
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For GFSK (LE 125Khz S=8)

Channel No.:0

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
52.1645	12.47	-15.4	27.87	Vertical	40	27.53
63.368	10.7	-17.2	27.9	Vertical	40	29.3
122.7805	9.04	-19.5	28.54	Vertical	43.5	34.46
199.9925	15.84	-16.6	32.44	Vertical	43.5	27.66
436.333	21.61	-10.4	32.01	Vertical	46	24.39
832.481	17.98	-3.3	21.28	Vertical	46	28.02

Channel No.:19

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.1455	16.11	-18.8	34.91	Vertical	40	23.89
58.1785	13.61	-16	29.61	Vertical	40	26.39
96.7845	10.15	-17.8	27.95	Vertical	43.5	33.35
194.5605	11.74	-16.9	28.64	Vertical	43.5	31.76
436.333	21.65	-10.4	32.05	Vertical	46	24.35
909.014	18.06	-2.2	20.26	Vertical	46	27.94

Channel No.:39

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.1455	13.83	-18.8	32.63	Vertical	40	26.17
60.9915	12.9	-16.5	29.4	Vertical	40	27.1
122.5865	12.44	-19.4	31.84	Vertical	43.5	31.06
199.9925	15.86	-16.6	32.46	Vertical	43.5	27.64
436.333	21.64	-10.4	32.04	Vertical	46	24.36
876.4705	17.95	-2.3	20.25	Vertical	46	28.05



BUREAU VERITAS Test Report No.: PSU-NQN2503180111RF02

For GFSK (LE 500Khz S=2)

Channel No.:0

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
32.619	13.08	-19.2	32.28	Vertical	40	26.92
58.227	13.45	-16	29.45	Vertical	40	26.55
154.9845	8.5	-20.3	28.8	Vertical	43.5	35
199.9925	15.85	-16.6	32.45	Vertical	43.5	27.65
436.3815	22.53	-10.4	32.93	Vertical	46	23.47
791.9835	20.98	-3.8	24.78	Vertical	46	25.02

Channel No.:19

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
51.6795	12.63	-15.4	28.03	Vertical	40	27.37
59.585	12.9	-16.3	29.2	Vertical	40	27.1
119.9675	9.51	-19	28.51	Vertical	43.5	33.99
199.9925	16.83	-16.6	33.43	Vertical	43.5	26.67
436.333	21.63	-10.4	32.03	Vertical	46	24.37
750.031	16.29	-4.2	20.49	Vertical	46	29.71

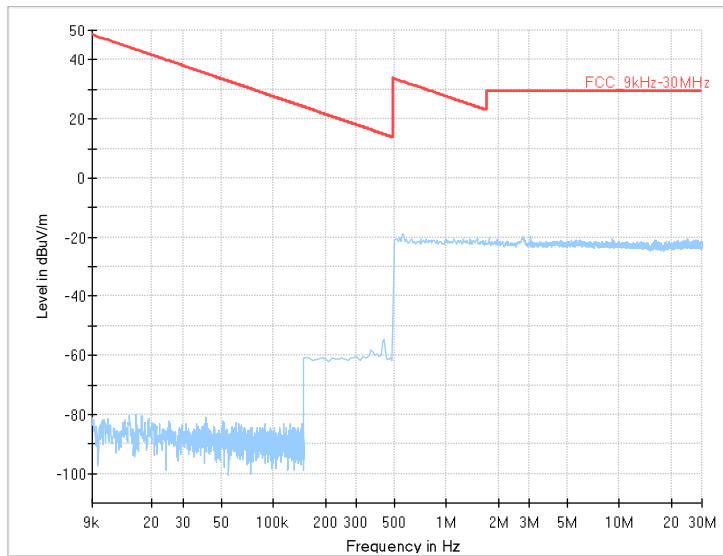
Channel No.:39

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
32.3765	11.52	-19.2	30.72	Vertical	40	28.48
63.271	11.08	-17.2	28.28	Vertical	40	28.92
124.769	11.69	-19.7	31.39	Vertical	43.5	31.81
193.2025	11.44	-17.2	28.64	Vertical	43.5	32.06
436.333	21.59	-10.4	31.99	Vertical	46	24.41
918.035	18.17	-1.8	19.97	Vertical	46	27.83



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VERITAS

Test Report No.: PSU-NQN2503180111RF02



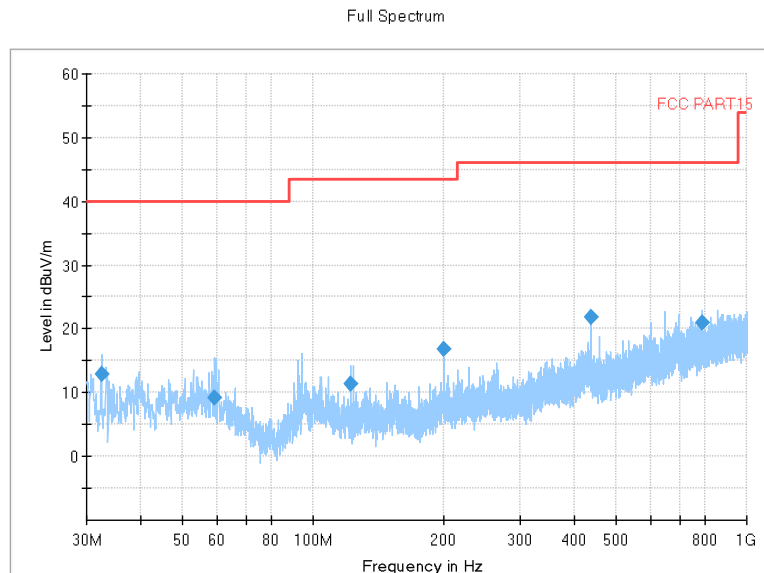
Frequency Range: 9kHz -30MHz

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.

LE 1Mbps

Channel No.:0



Frequency Range: 30MHz-1GHz

Detector: QP mode

Modulation type: GFSK (LE 1Mbps)

Huarui 7layers High Technology
(Suzhou) Co., Ltd.

Tower N, Innovation Center, 88 Zuyi Road, High-tech
District, Suzhou City, Anhui Province

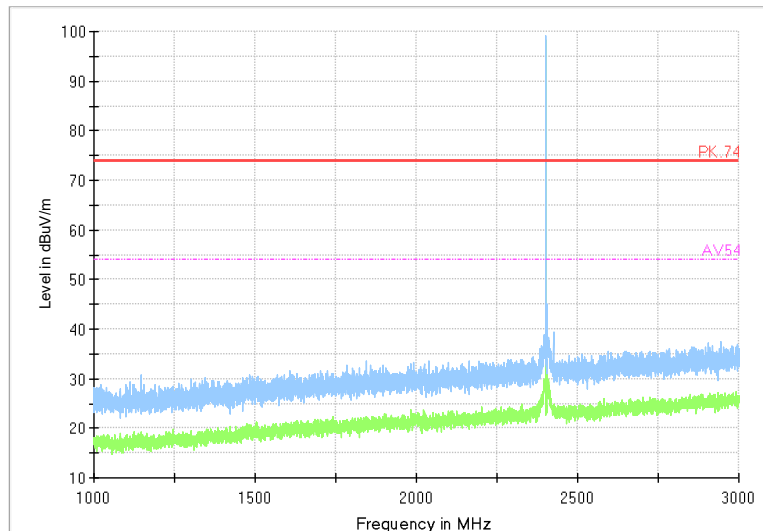
Tel: +86 (0557) 368 1008



BUREAU
VERITAS

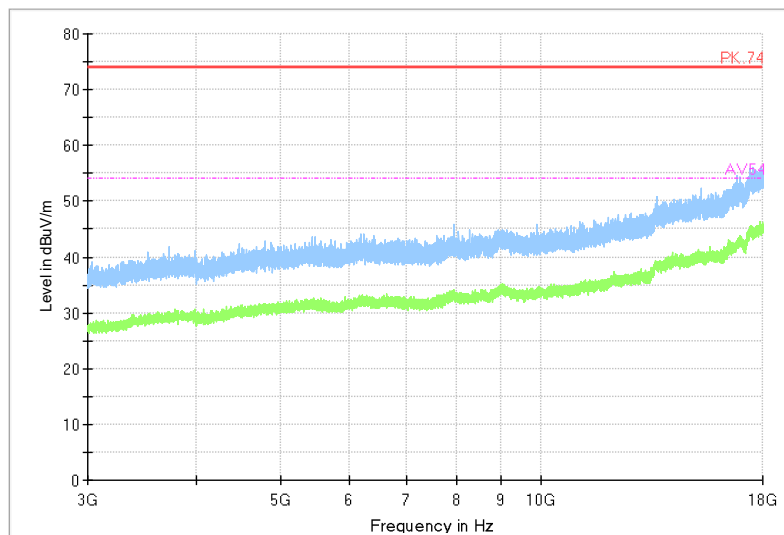
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



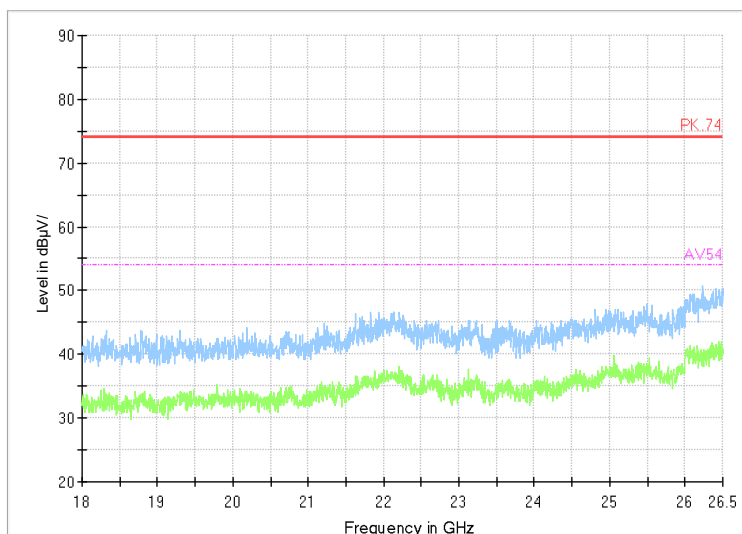
Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 1Mbps)

Full Spectrum



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

Full Spectrum



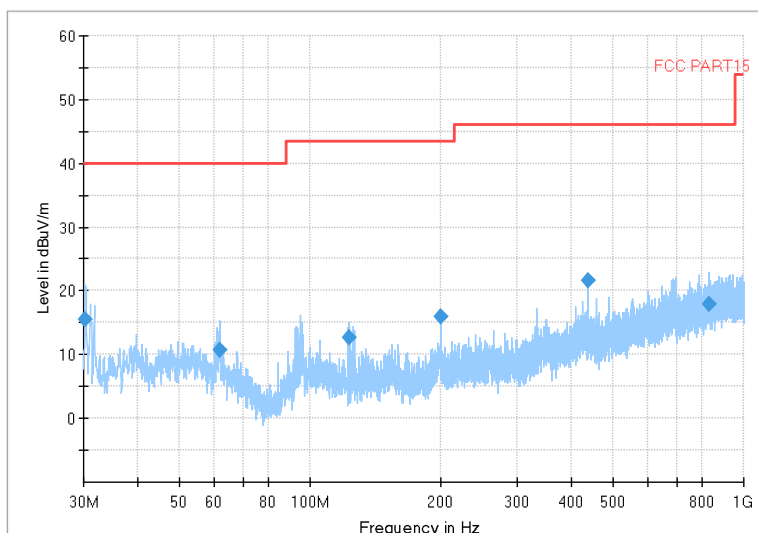
Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 1Mbps)

Channel No.:19

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector: QP mode

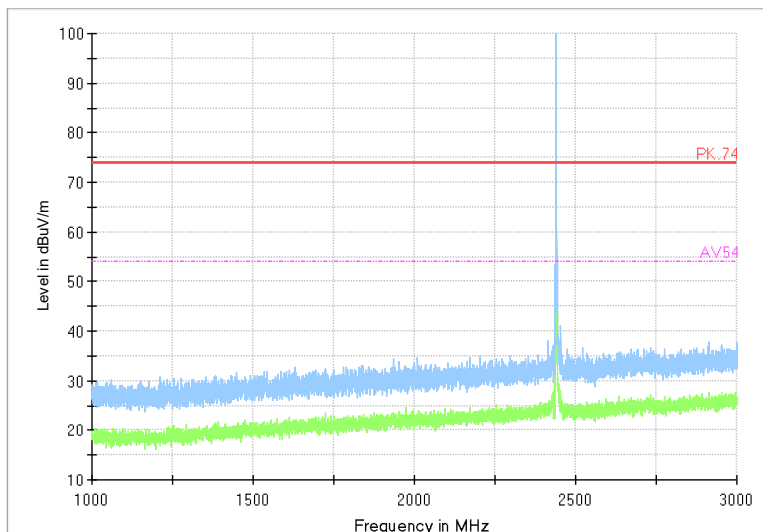
Modulation type: GFSK (LE 1Mbps)



BUREAU
VERITAS

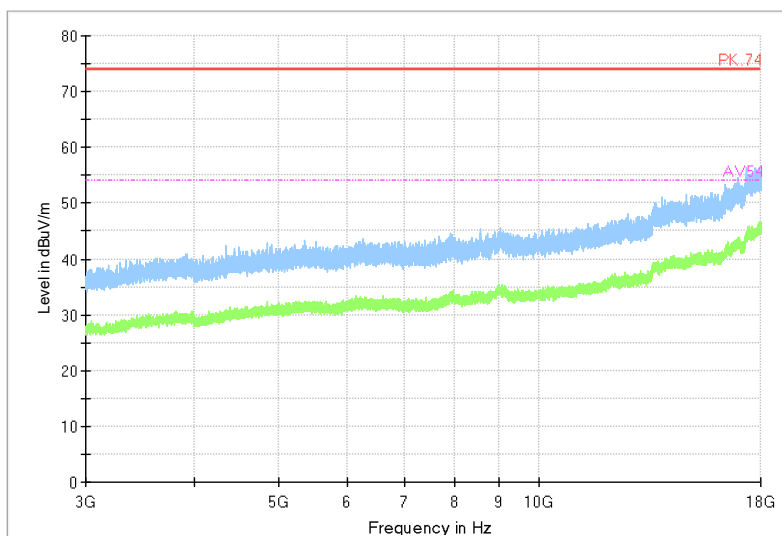
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



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

Full Spectrum



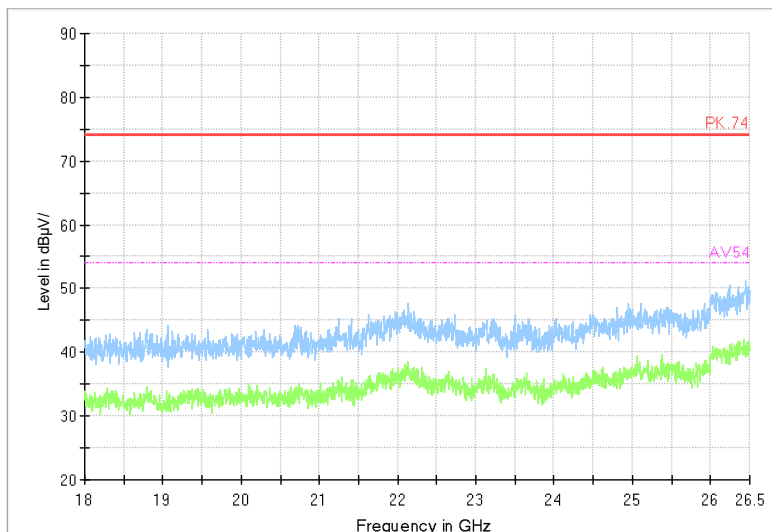
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 1Mbps)



BUREAU
VERITAS

Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



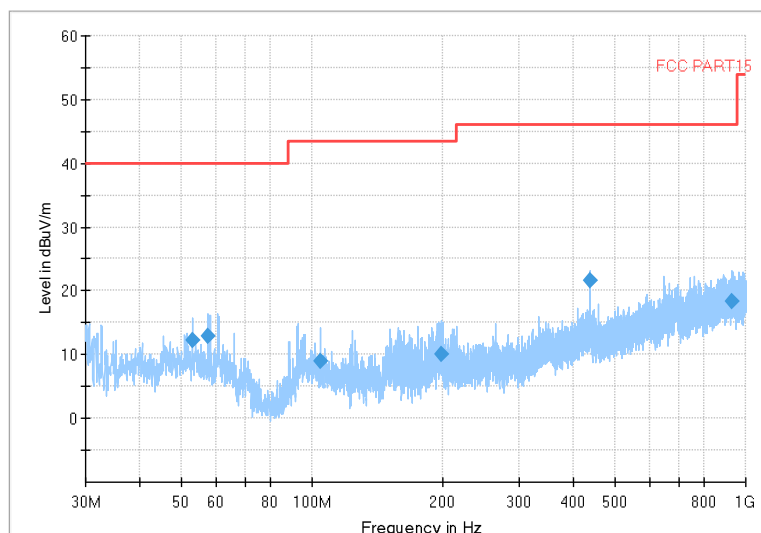
Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 1Mbps)

Channel No.:39

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector: QP mode

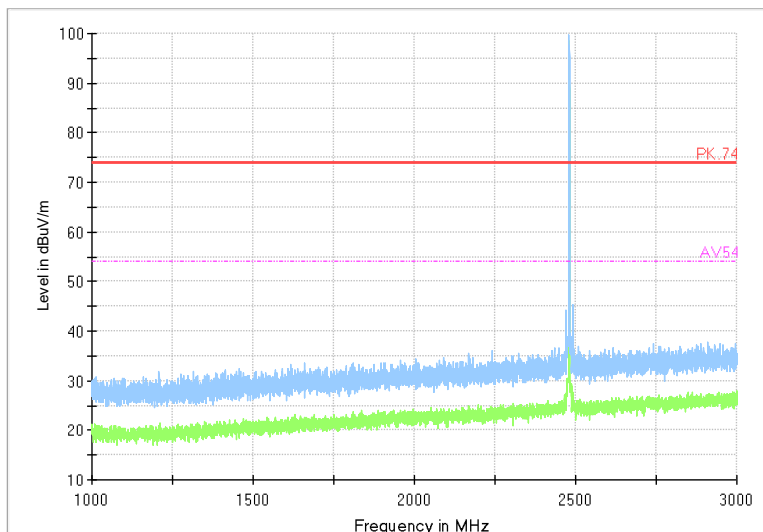
Modulation type: GFSK (LE 1Mbps)



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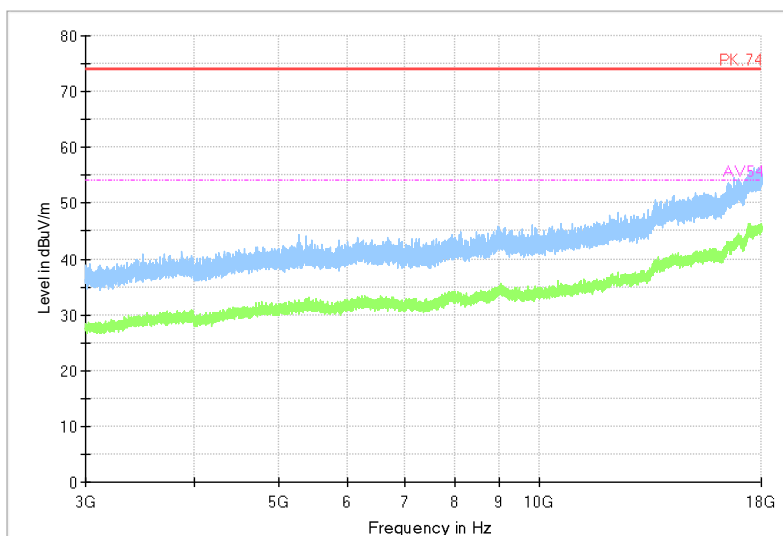
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



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

Full Spectrum



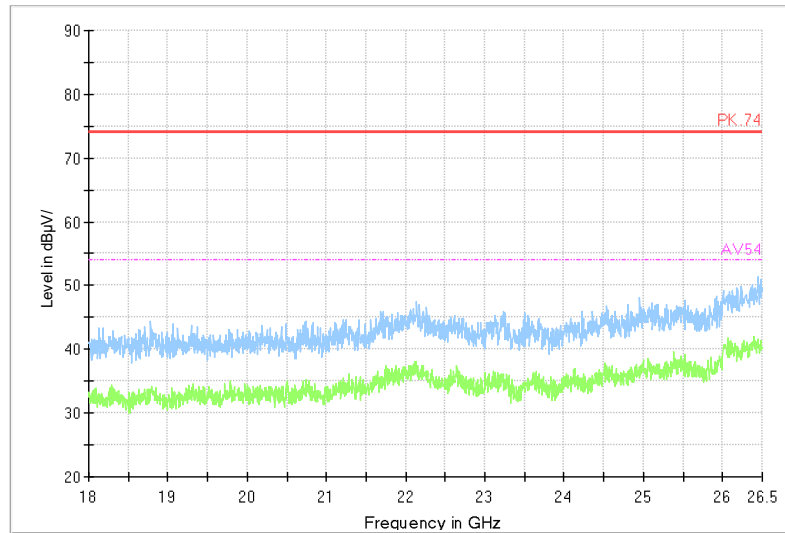
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 1Mbps)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 18GHz-26GHz

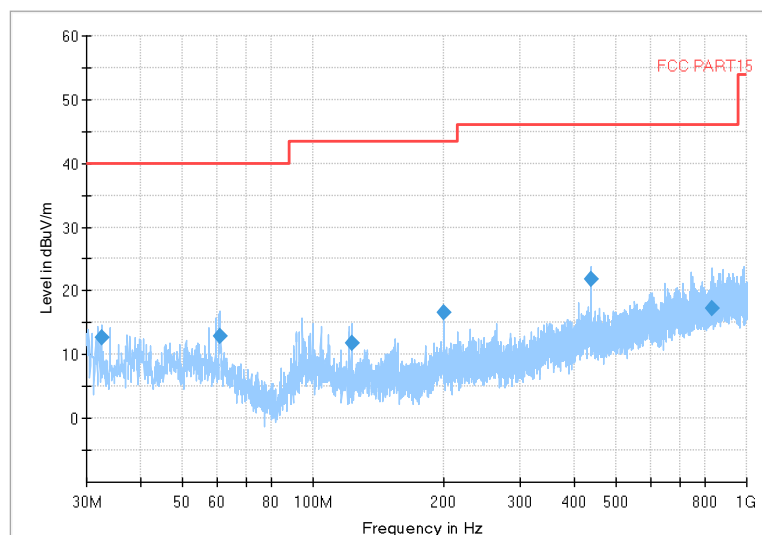
Detector: Av mode and PK mode

Modulation type: GFSK (LE 1Mbps)

LE 2Mbps

Channel No.:0

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector:QP mode

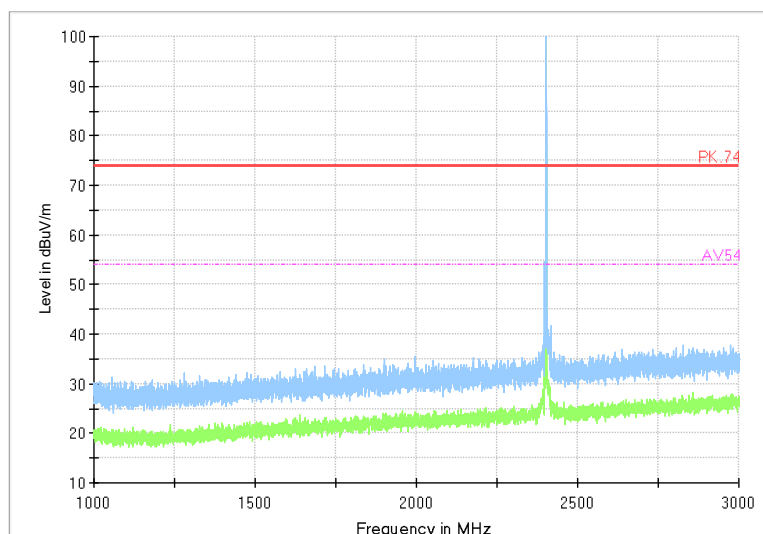
Modulation type: GFSK (LE 2Mbps)



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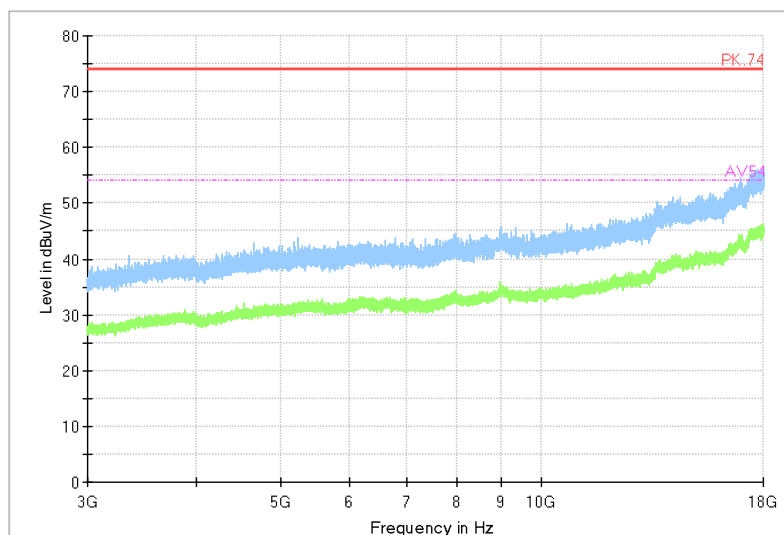
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 2Mbps)

Full Spectrum



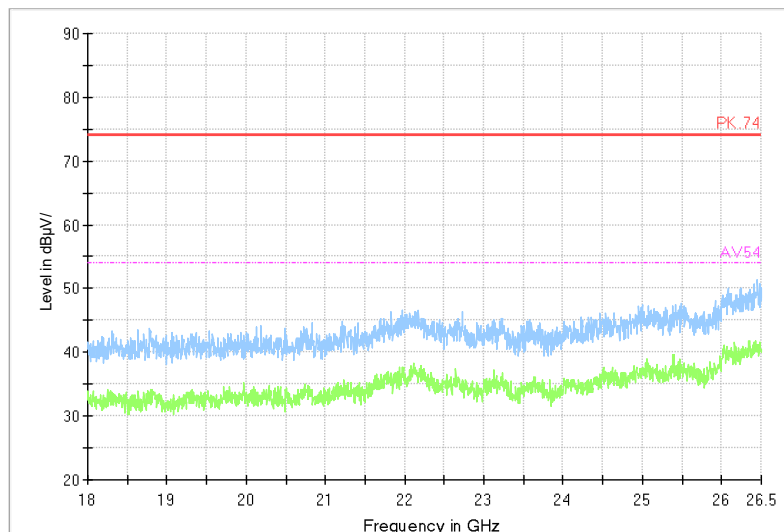
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 2Mbps)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



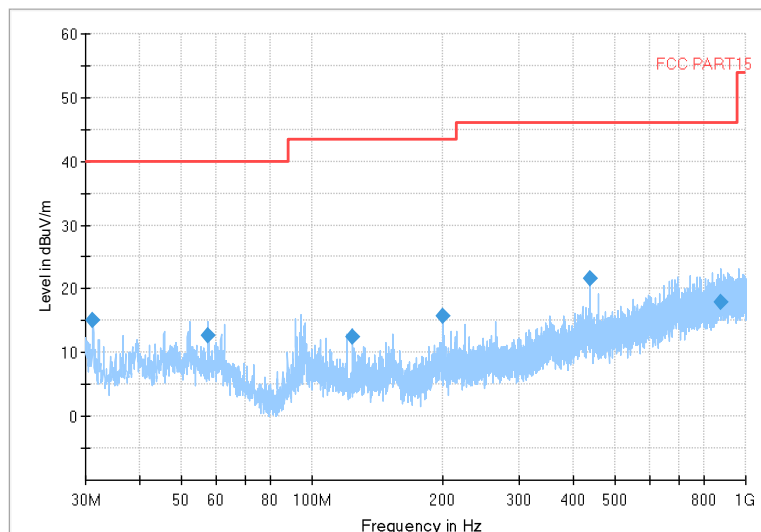
Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 2Mbps)

Channel No.:19

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector: QP mode

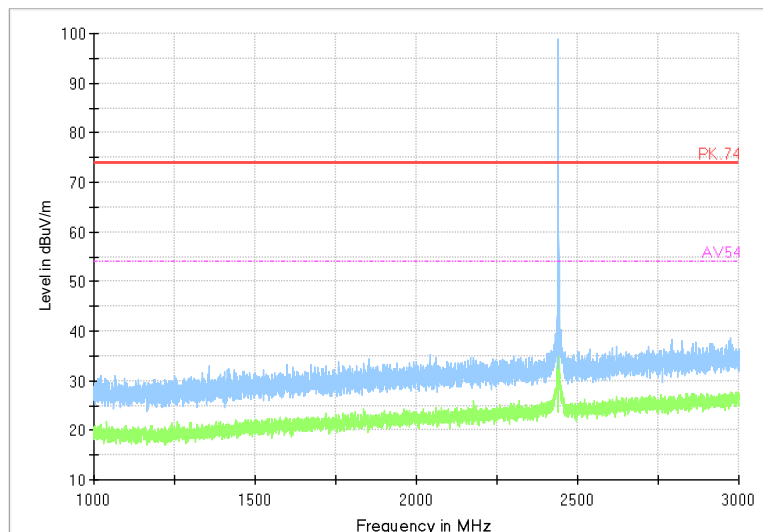
Modulation type: GFSK (LE 2Mbps)



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VERITAS

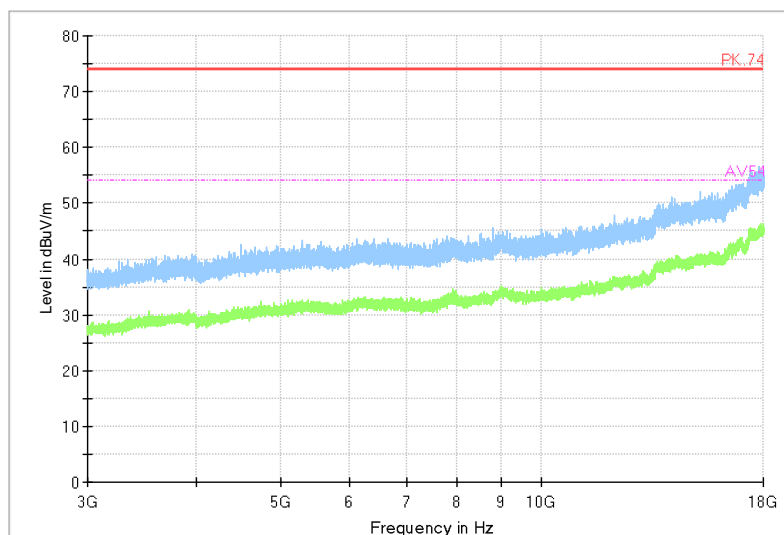
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 2Mbps)

Full Spectrum



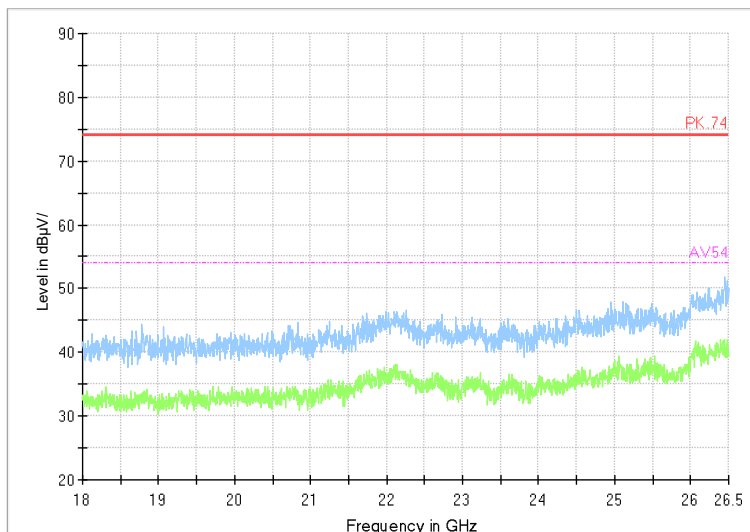
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 2Mbps)



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



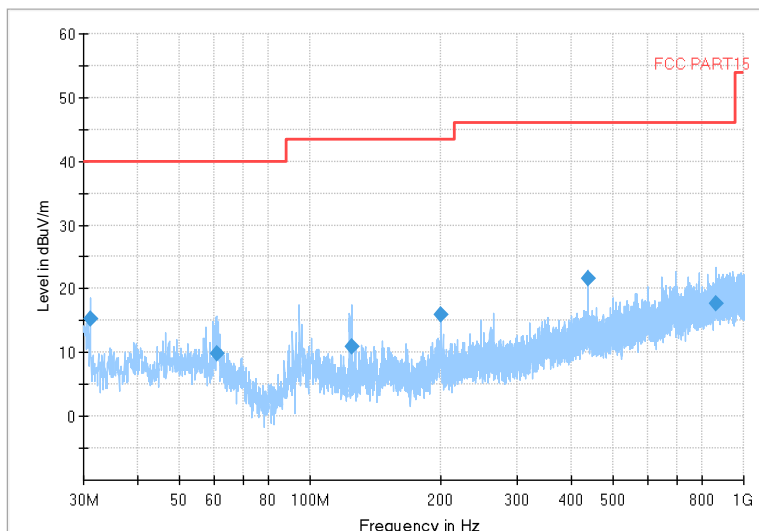
Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 2Mbps)

Channel No.:39

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector: QP mode

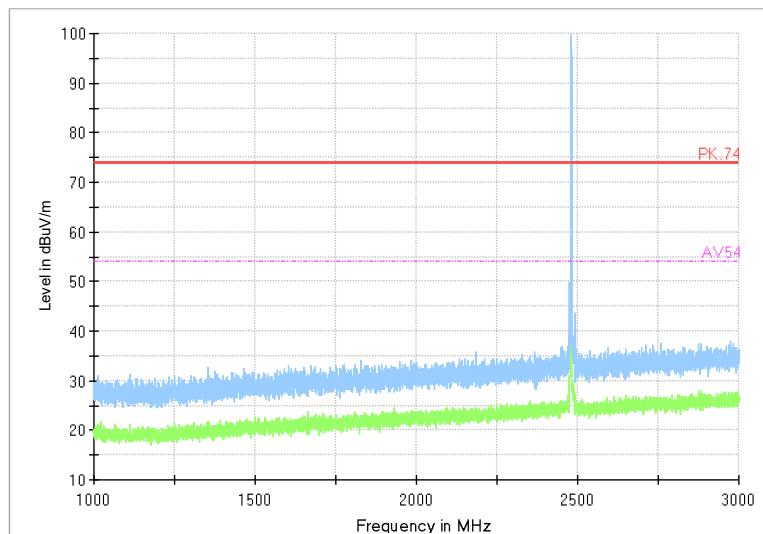
Modulation type: GFSK (LE 2Mbps)



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VERITAS

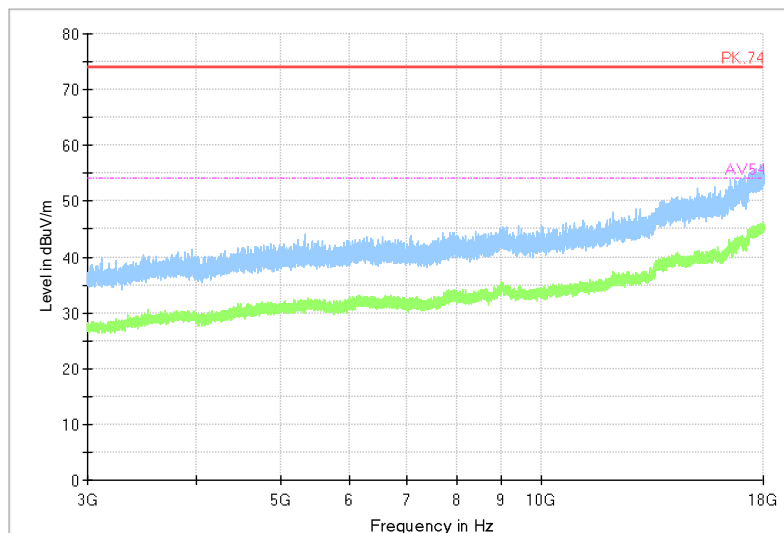
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 2Mbps)

Full Spectrum



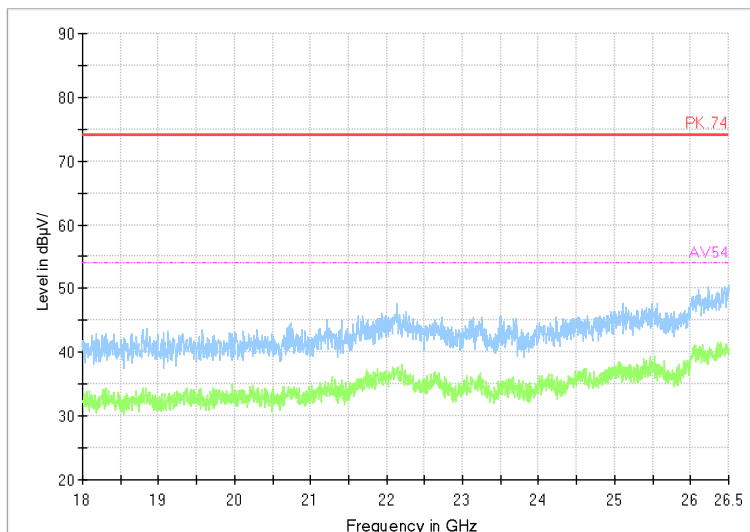
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 2Mbps)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 18GHz-26GHz

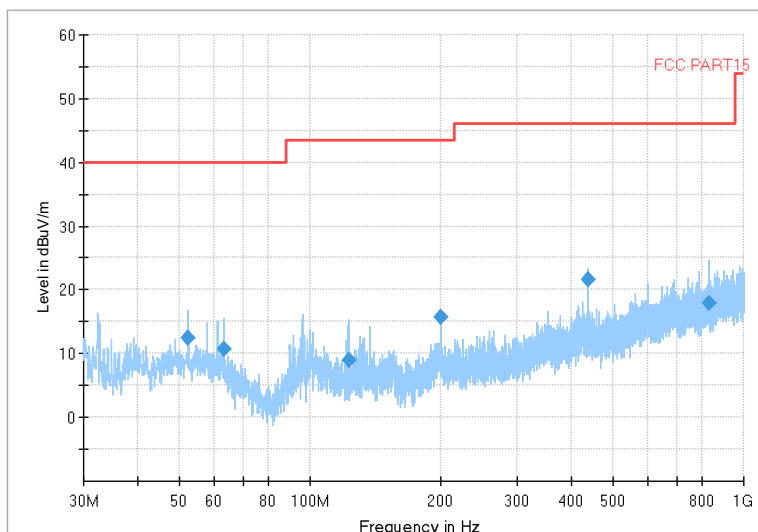
Detector: Av mode and PK mode

Modulation type: GFSK (LE 2Mbps)

LE 125Khz S=8

Channel No.:0

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector:QP mode

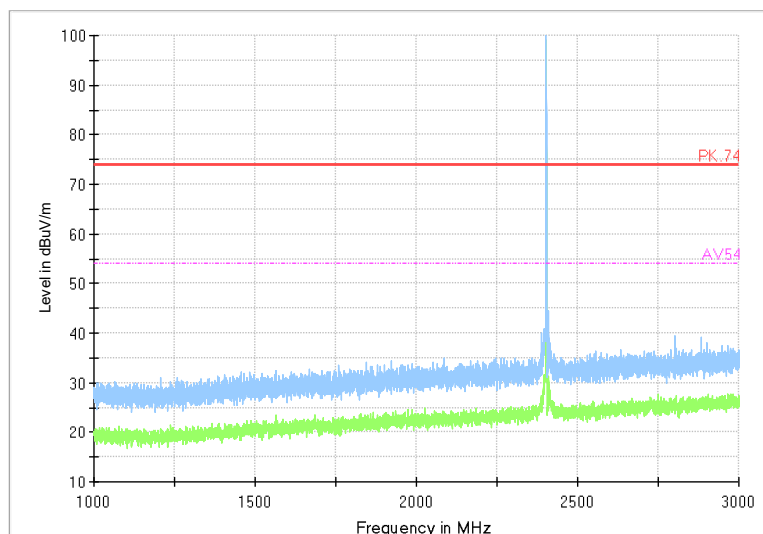
Modulation type: GFSK (LE 125Khz S=8)



BUREAU
VERITAS

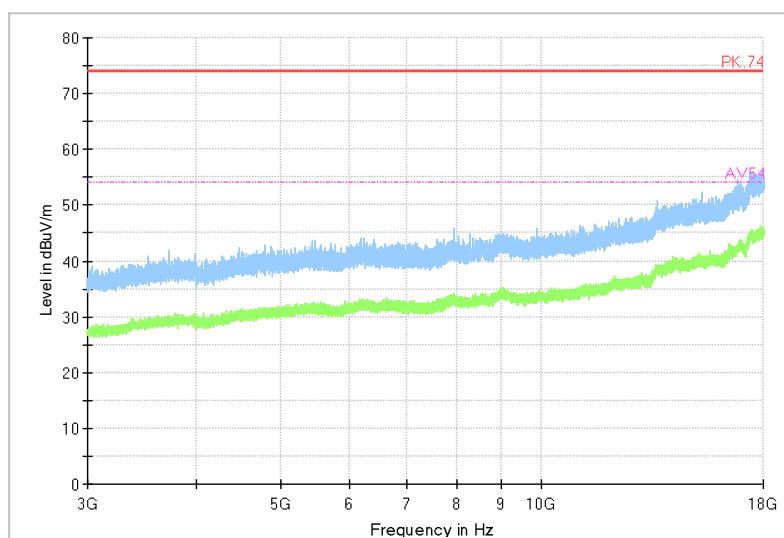
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 125Khz S=8)

Full Spectrum



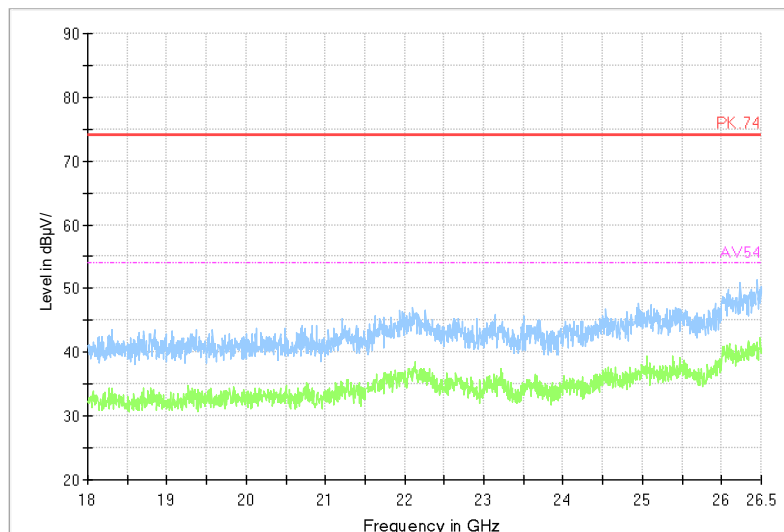
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 125Khz S=8)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



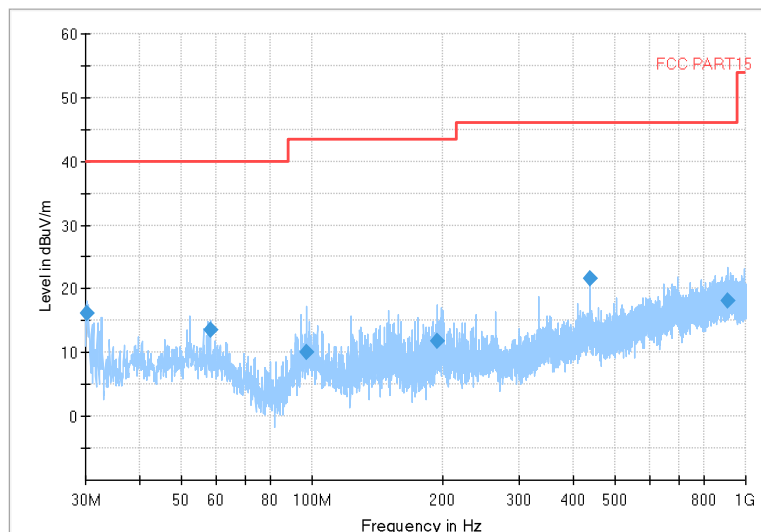
Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: (LE 125Khz S=8)

Channel No.:19

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector: QP mode

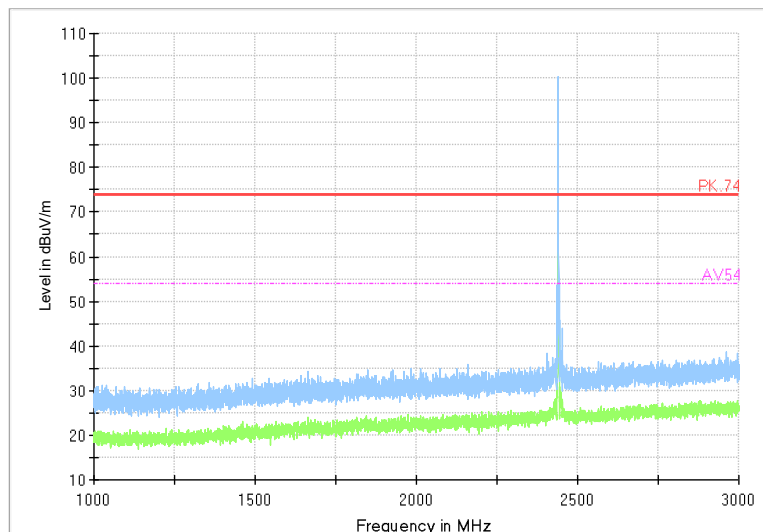
Modulation type: GFSK (LE 125Khz S=8)



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VERITAS

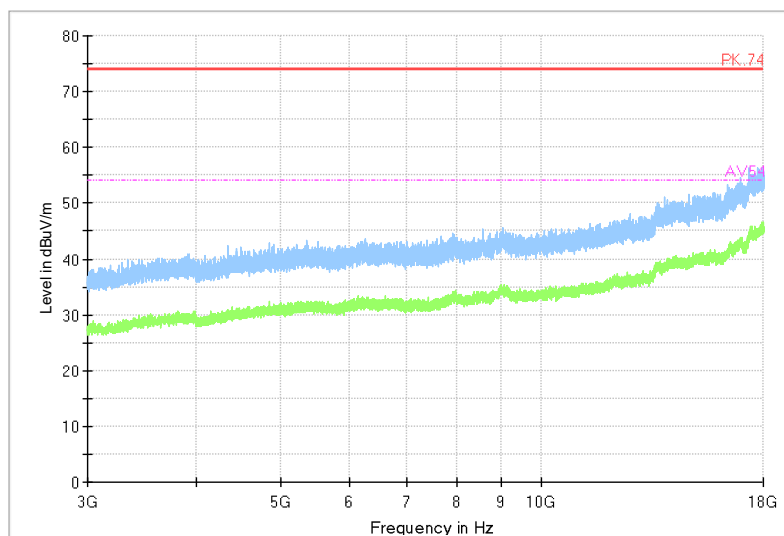
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 125Khz S=8)

Full Spectrum



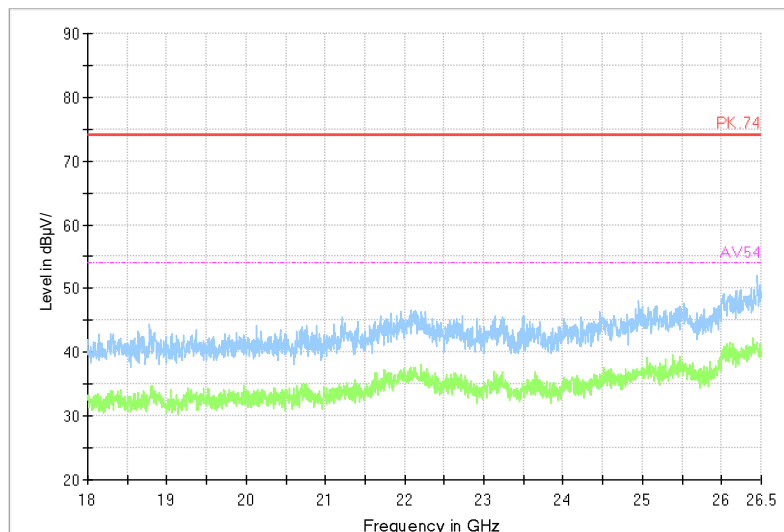
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 125Khz S=8)



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



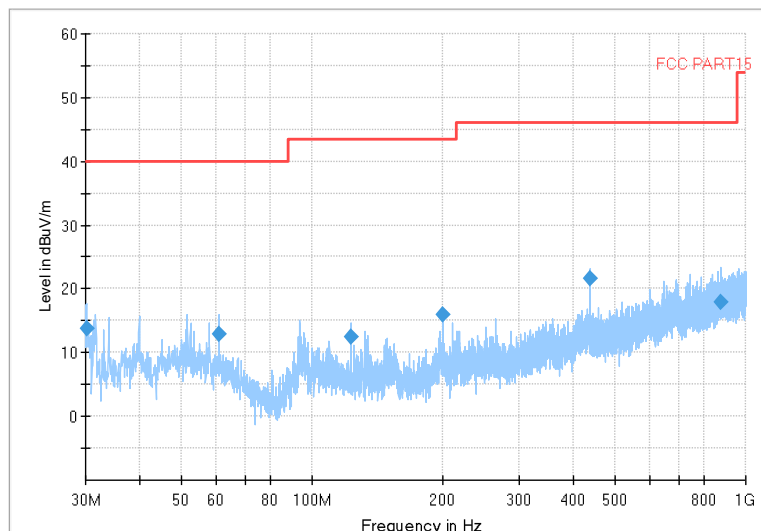
Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 125Khz S=8)

Channel No.:39

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector: QP mode

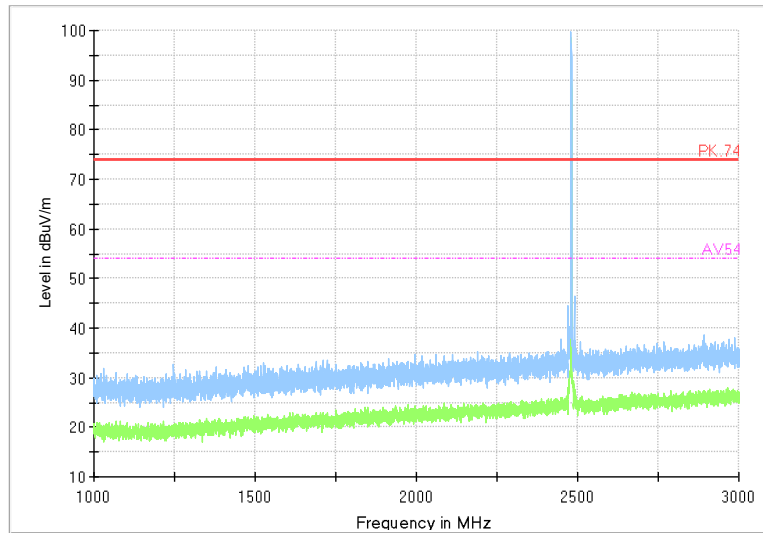
Modulation type: GFSK (LE 125Khz S=8)



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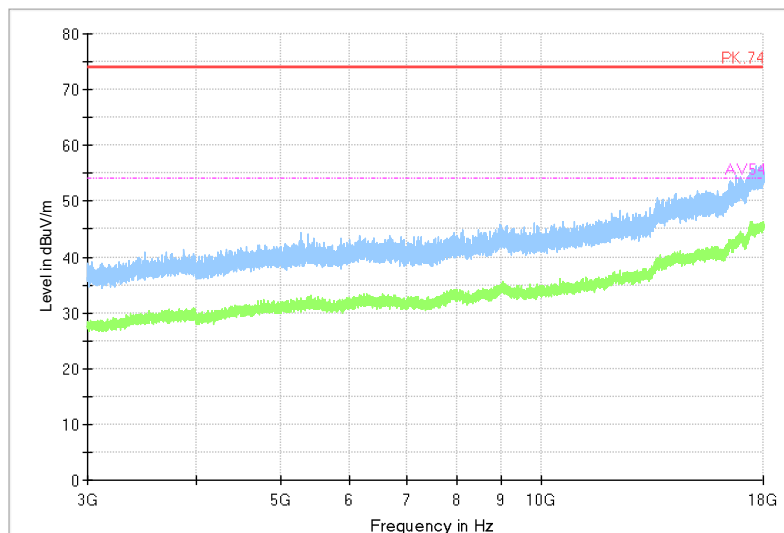
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 125Khz S=8)

Full Spectrum



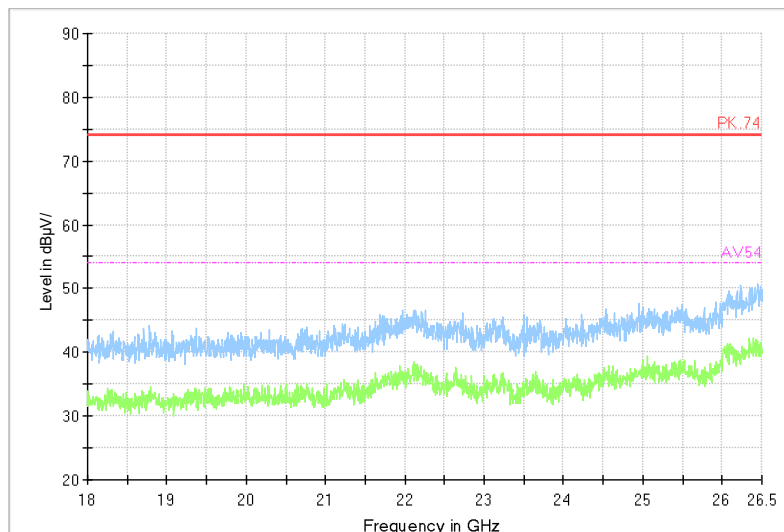
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 125Khz S=8)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 18GHz-26GHz

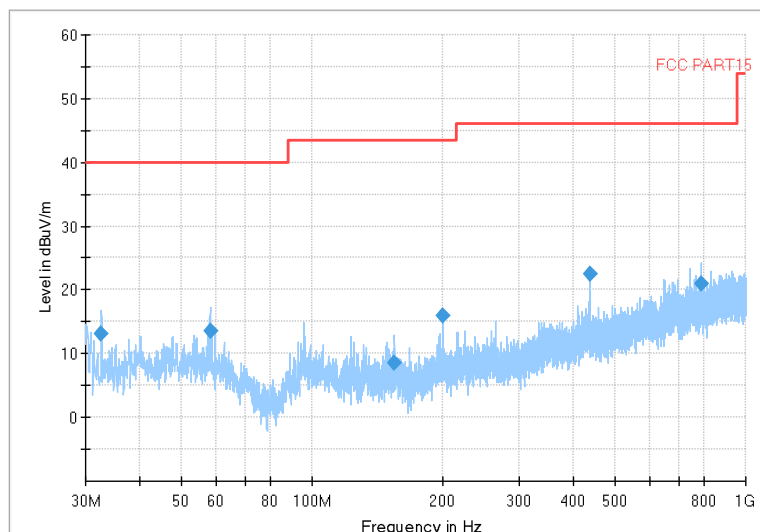
Detector: Av mode and PK mode

Modulation type: GFSK (LE 125Khz S=8)

LE 500Khz S=2

Channel No.:0

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector:QP mode

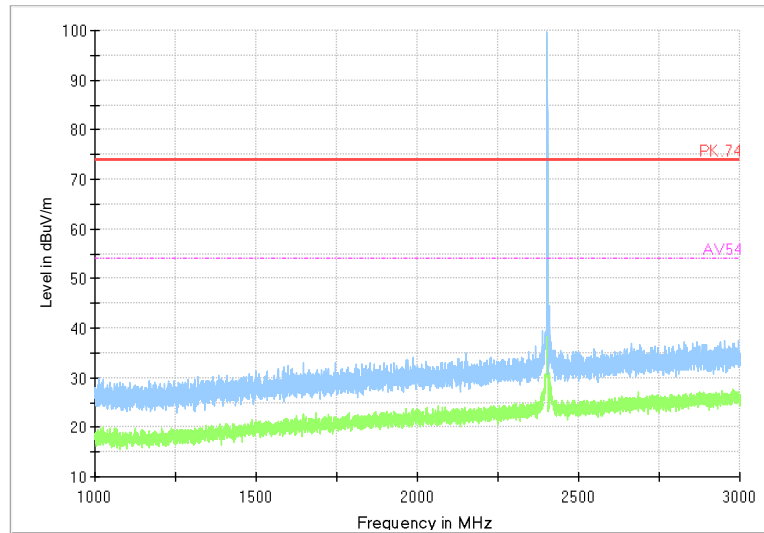
Modulation type: GFSK (LE 500Khz S=2)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum

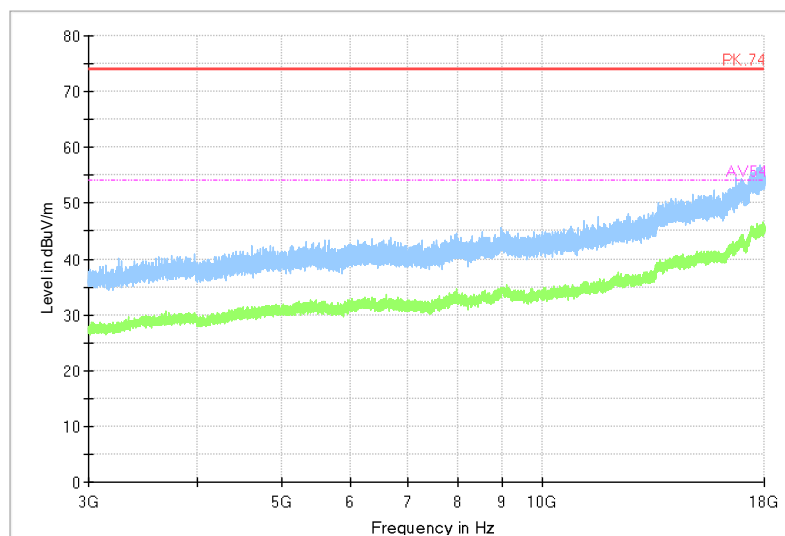


Frequency Range: 1GHz-3GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 500Khz S=2)

Full Spectrum



Frequency Range: 3GHz-18GHz

Detector: Av mode and PK mode

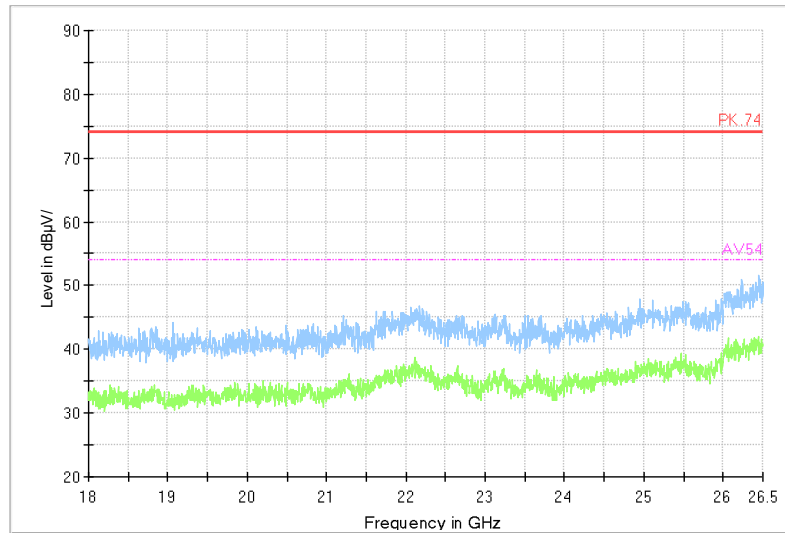
Modulation type: GFSK (LE 500Khz S=2)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



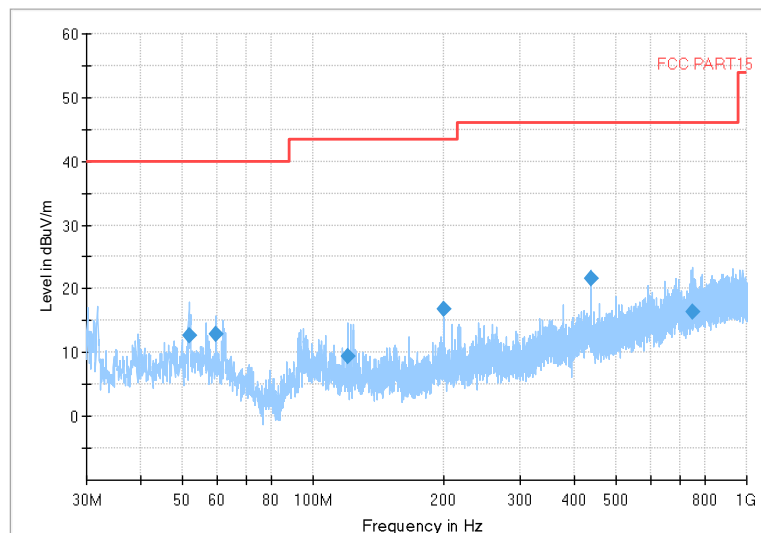
Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: (LE 500Khz S=2)

Channel No.:19

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector: QP mode

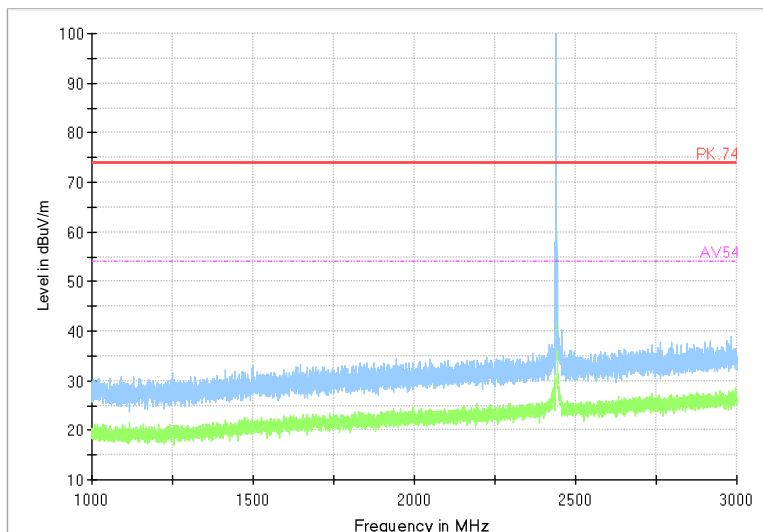
Modulation type: GFSK (LE 500Khz S=2)



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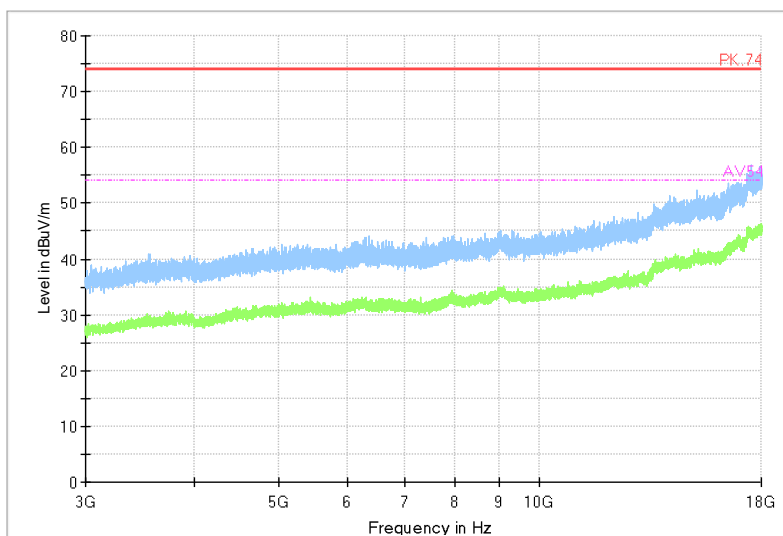
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 500Khz S=2)

Full Spectrum



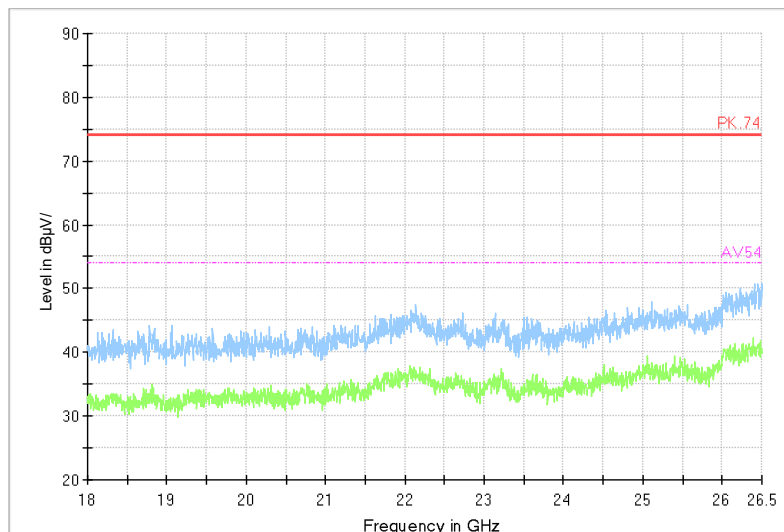
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 500Khz S=2)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



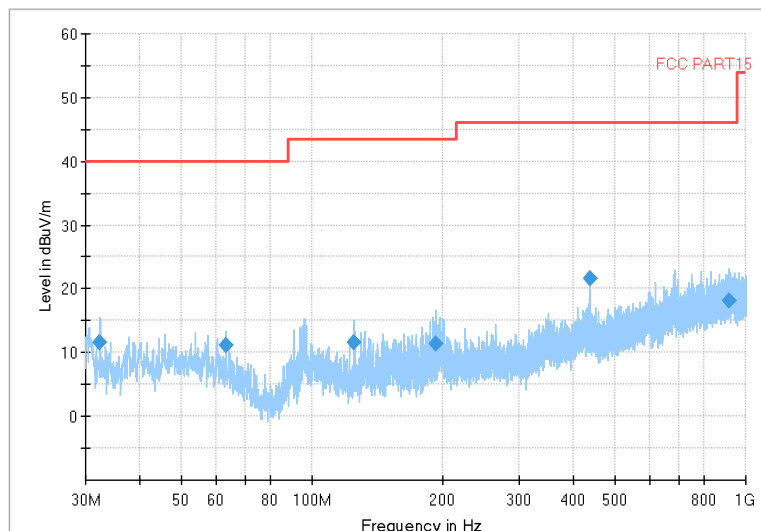
Frequency Range: 18GHz-26GHz

Detector: Av mode and PK mode

Modulation type: GFSK (LE 500Khz S=2)

Channel No.:39

Full Spectrum



Frequency Range: 30MHz-1GHz

Detector: QP mode

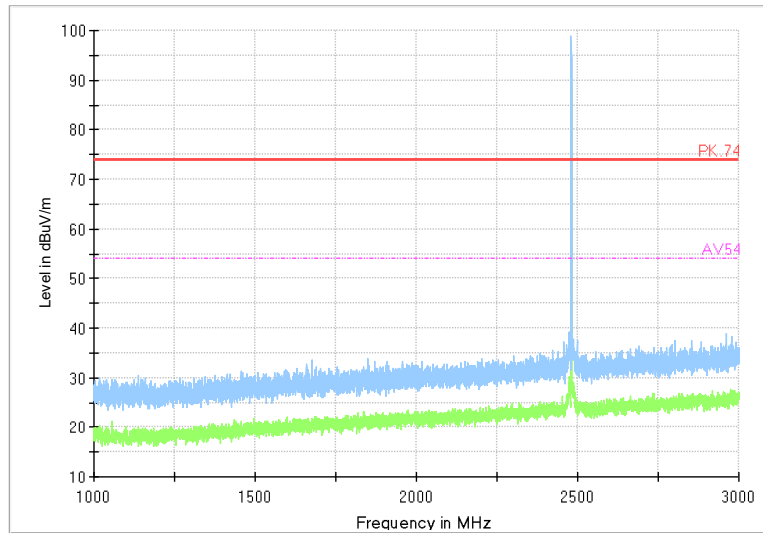
Modulation type: GFSK (LE 500Khz S=2)



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VERITAS

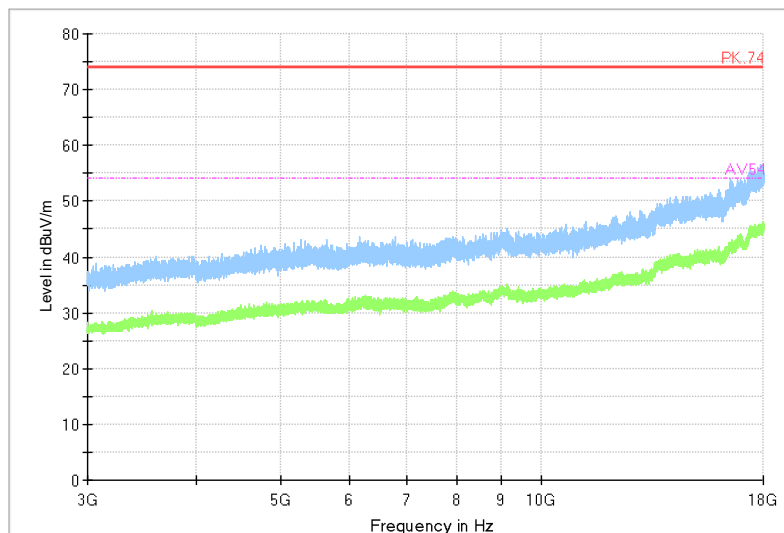
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 500Khz S=2)

Full Spectrum



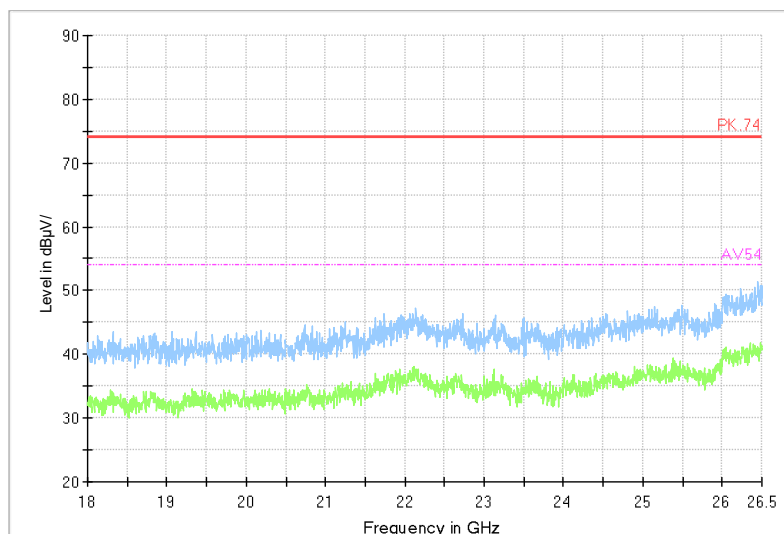
Frequency Range: 3GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE 500Khz S=2)



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 18GHz-26GHz

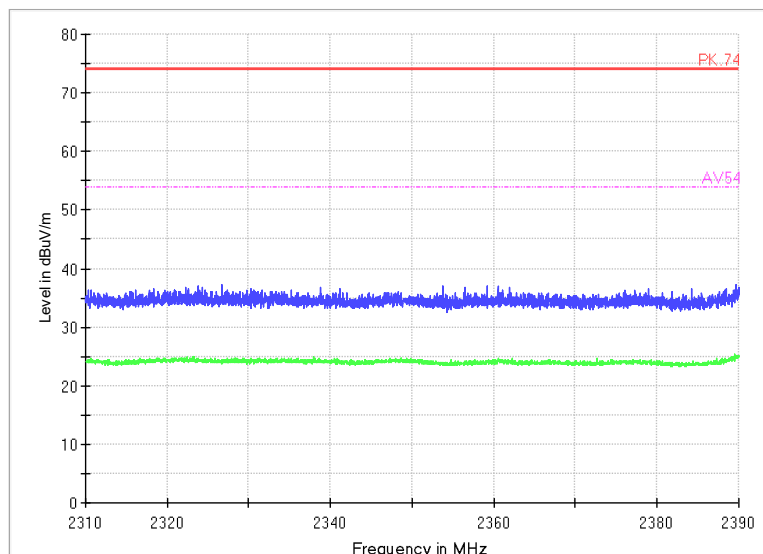
Detector: Av mode and PK mode

Modulation type: GFSK (LE 500Khz S=2)



BUREAU VERITAS Test Report No.: PSU-NQN2503180111RF02

Radiated Emission Band Edge for WIFI

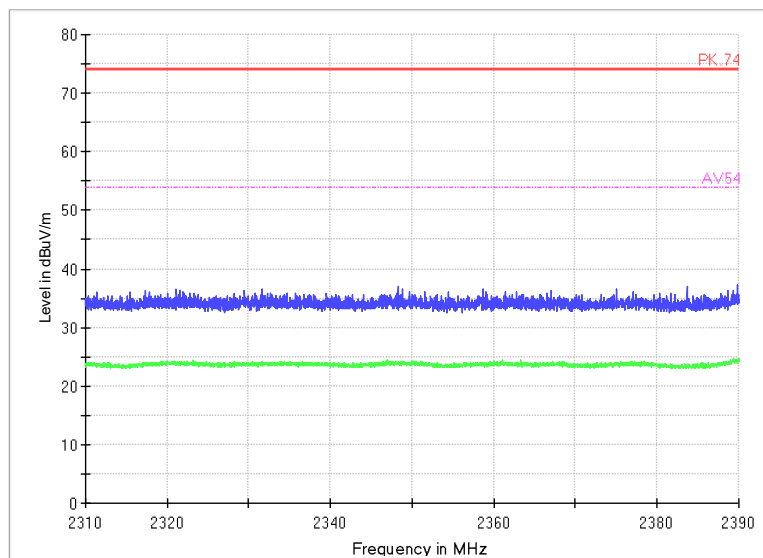


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11b

Polarization: V

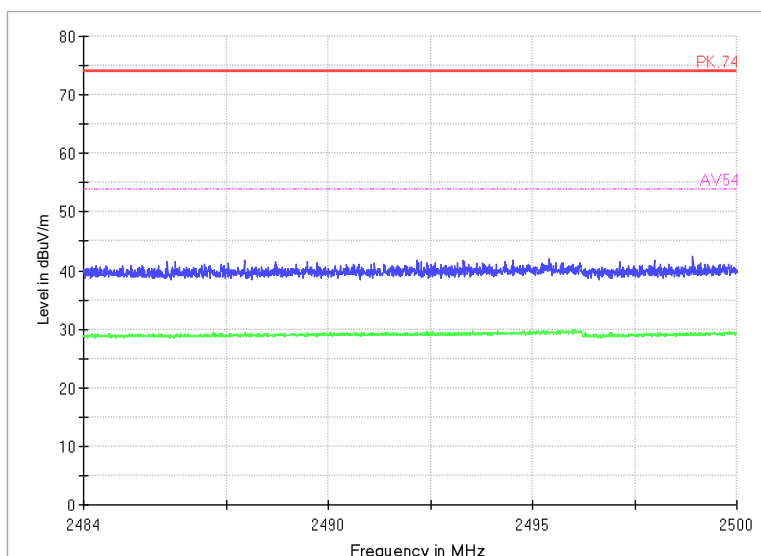


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11b

Polarization: H

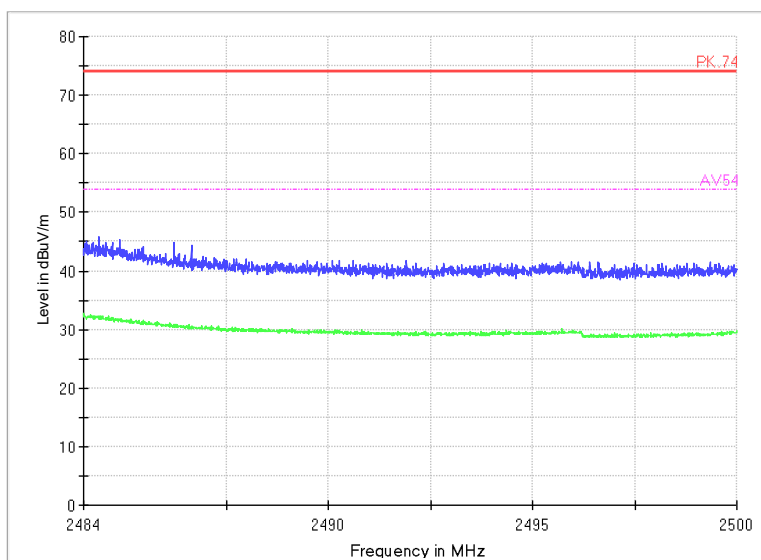


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11b

Polarization: V



Radiated Emission Band Edge

Channel No.:11

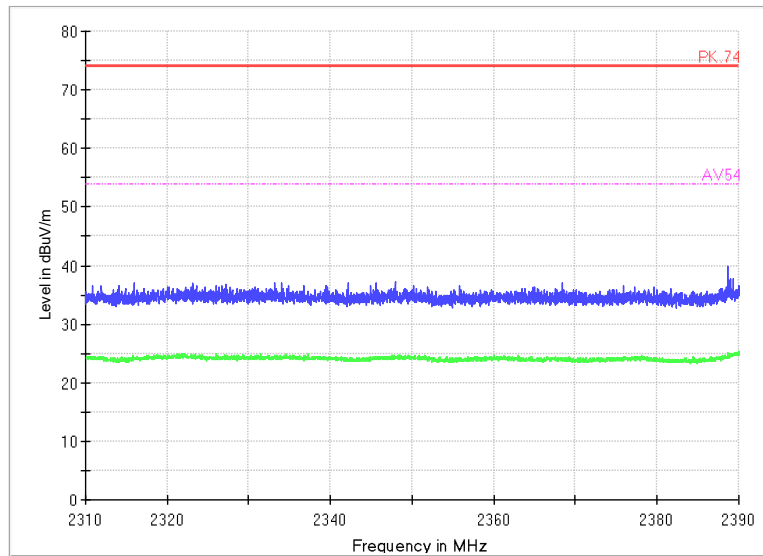
Test Mode: 802.11b

Polarization: H



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

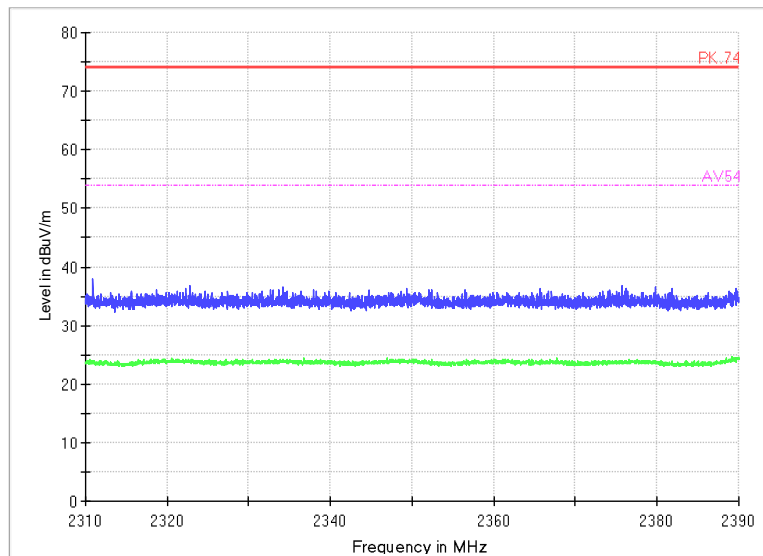


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11g

Polarization: V



Radiated Emission Band Edge

Channel No.:1

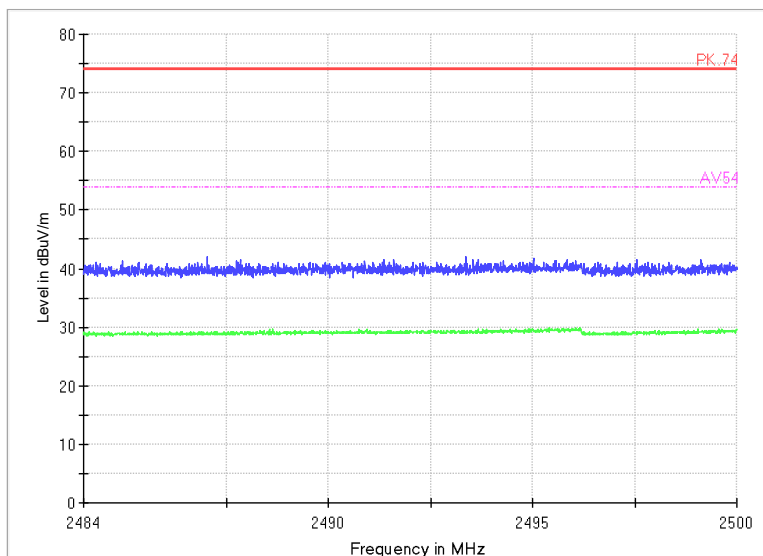
Test Mode: 802.11g

Polarization: H



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

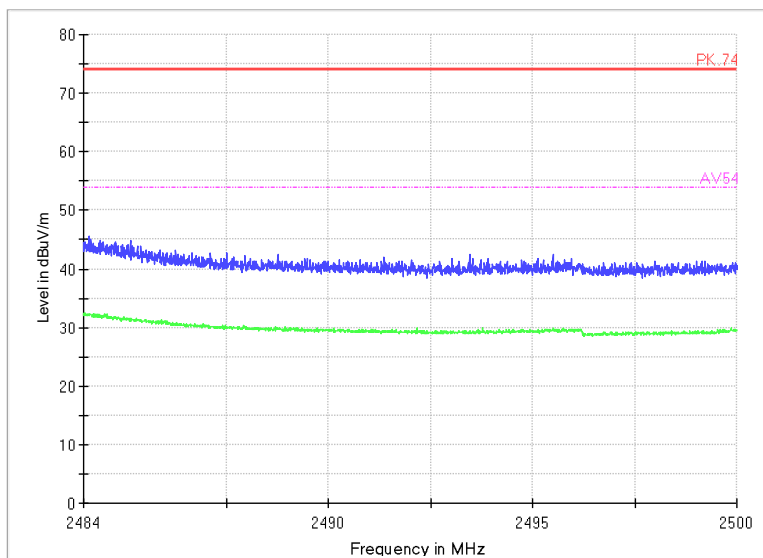


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11g

Polarization: V



Radiated Emission Band Edge

Channel No.:11

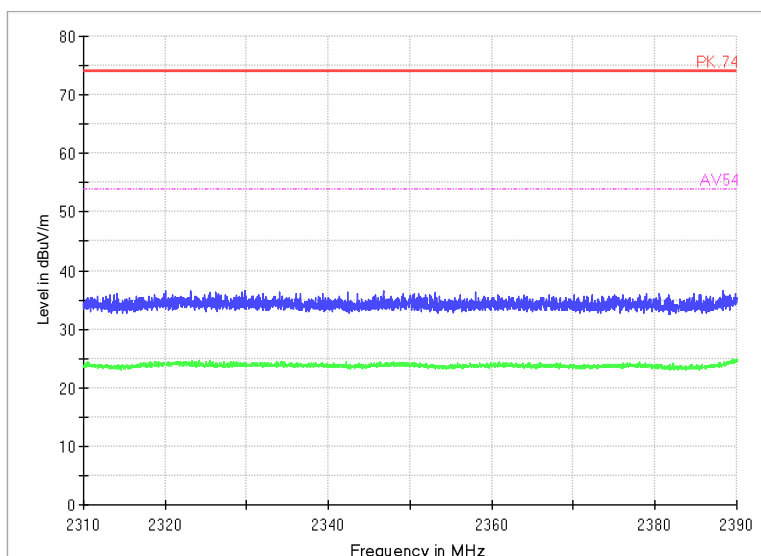
Test Mode: 802.11g

Polarization: H



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

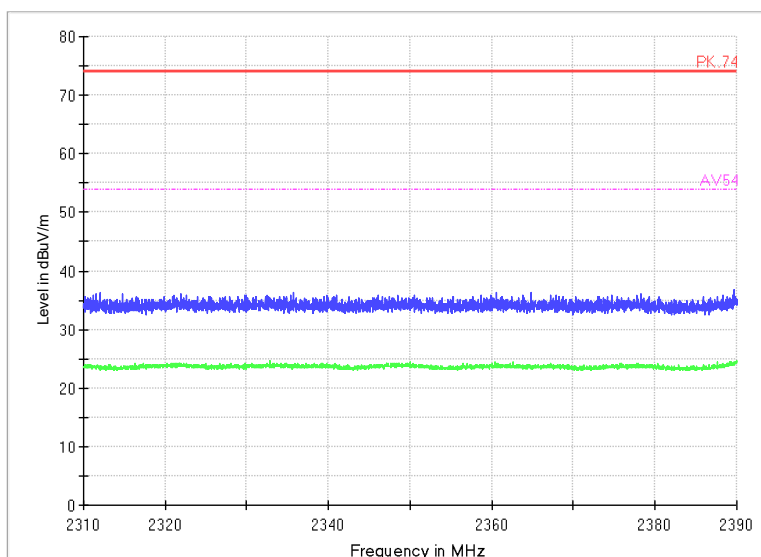


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11n(HT20)

Polarization: V



Radiated Emission Band Edge

Channel No.:1

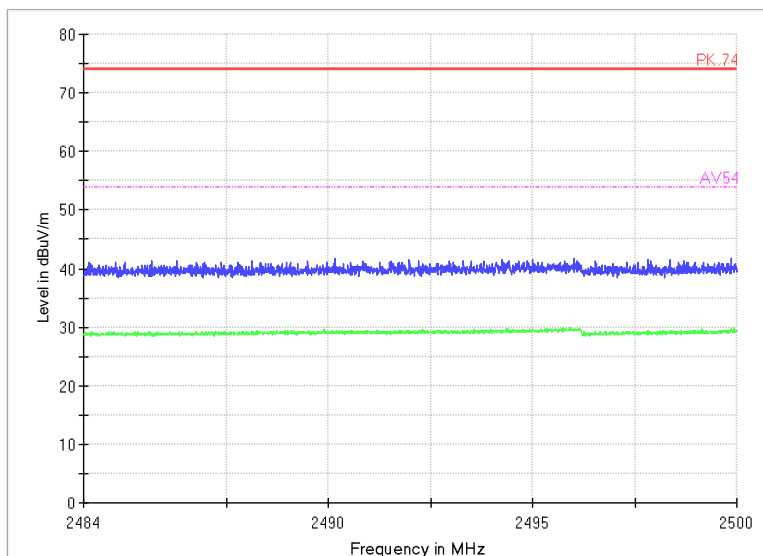
Test Mode: 802.11n(HT20)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2503180111RF02

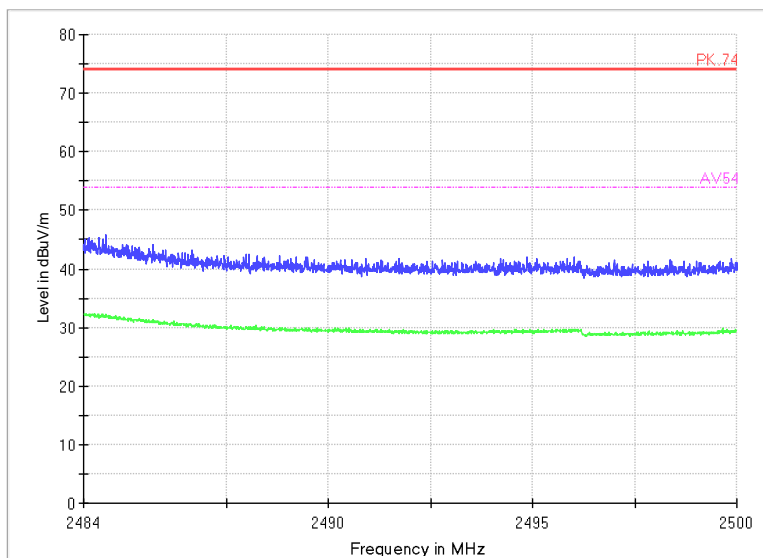


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11n(HT20)

Polarization: V



Radiated Emission Band Edge

Channel No.:11

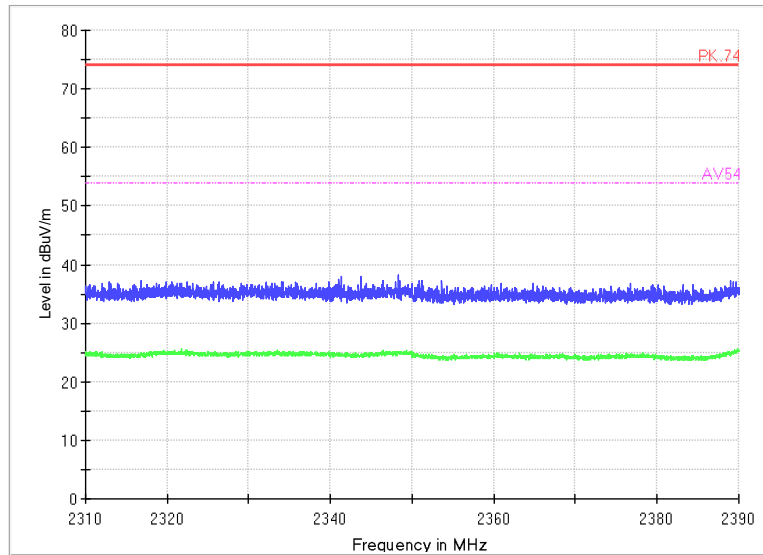
Test Mode: 802.11n(HT20)

Polarization: H



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

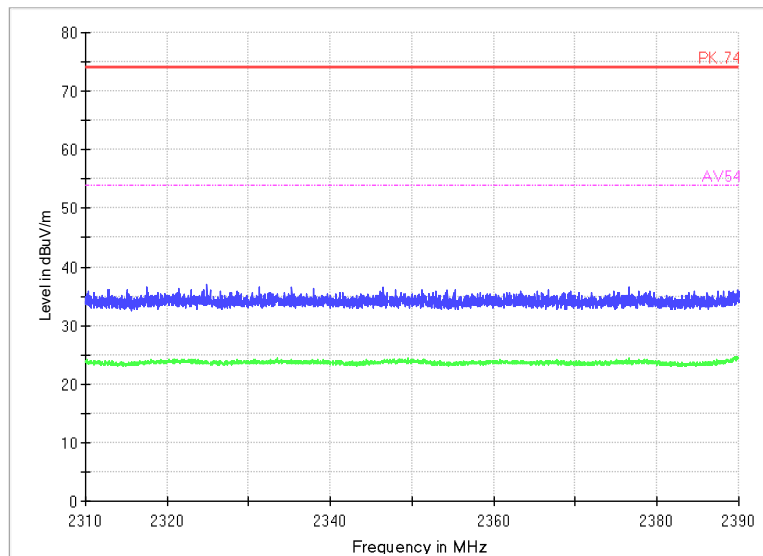


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11ax(HE20)

Polarization: V



Radiated Emission Band Edge

Channel No.:1

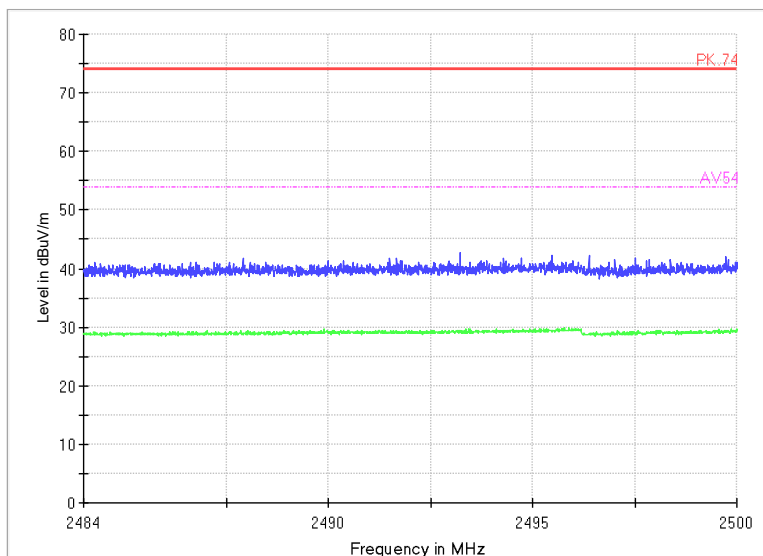
Test Mode: 802.11ax(HE20)

Polarization: H



BUREAU
VERITAS

Test Report No.: PSU-NQN2503180111RF02

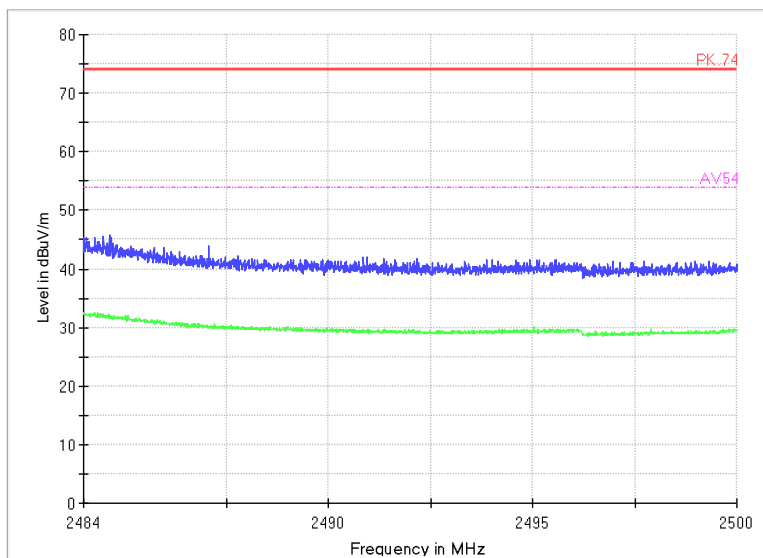


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11ax(HE20)

Polarization: V



Radiated Emission Band Edge

Channel No.:11

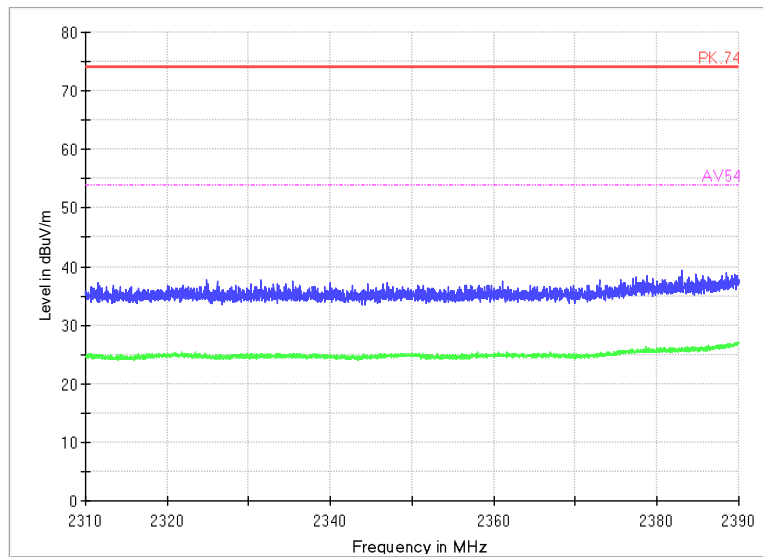
Test Mode: 802.11ax(HE20)

Polarization: H



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

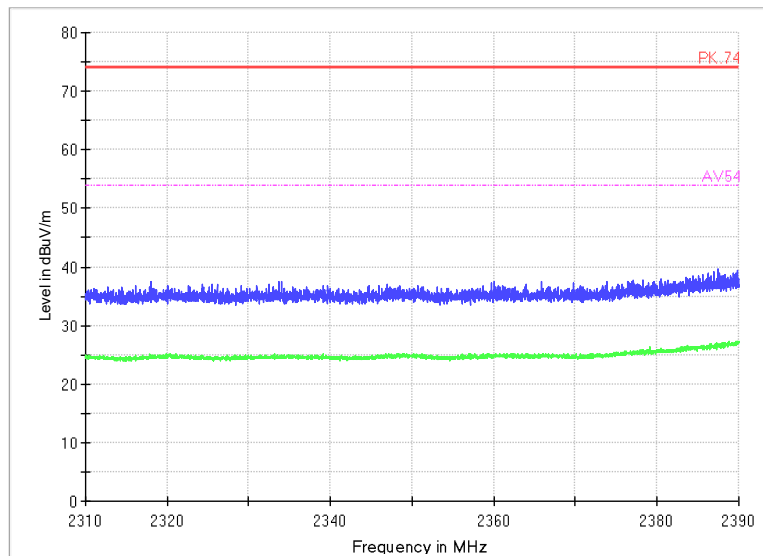


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11n(HT40)

Polarization: V



Radiated Emission Band Edge

Channel No.:3

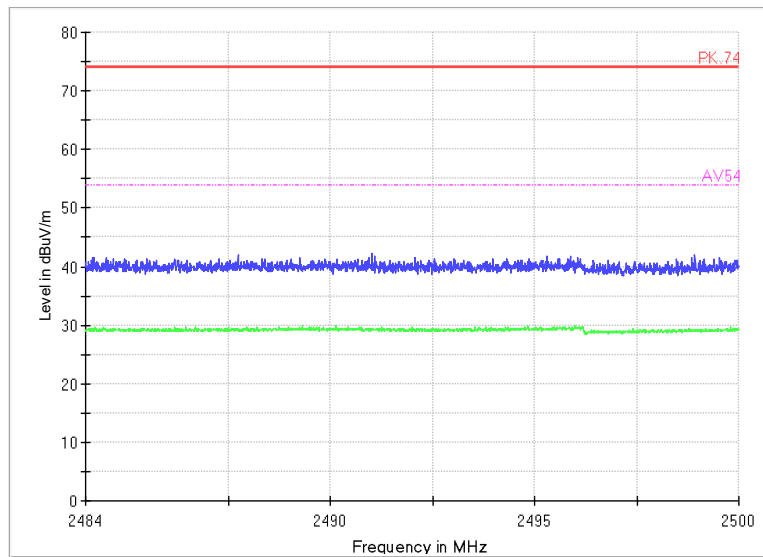
Test Mode: 802.11n(HT40)

Polarization: H



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

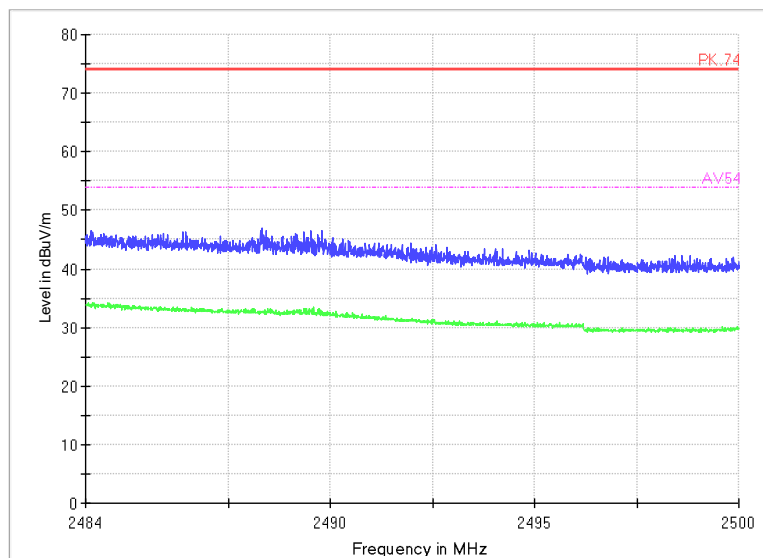


Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11n(HT40)

Polarization: V



Radiated Emission Band Edge

Channel No.:9

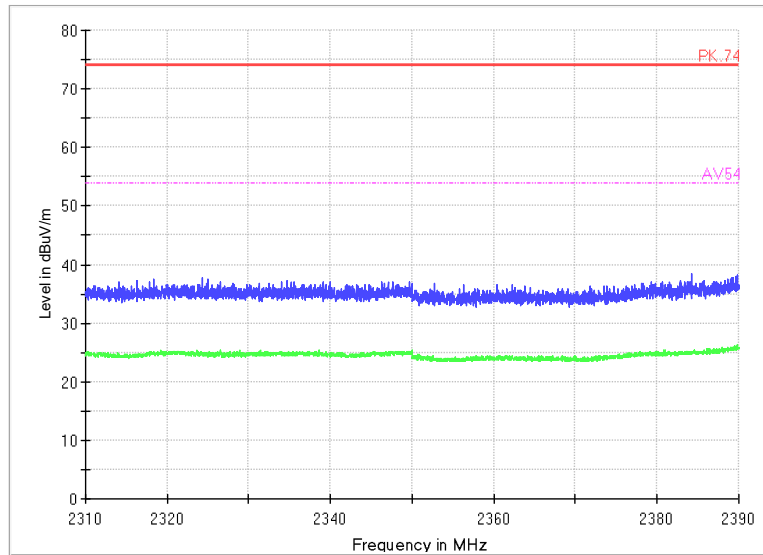
Test Mode: 802.11n(HT40)

Polarization: H



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Test Report No.: PSU-NQN2503180111RF02

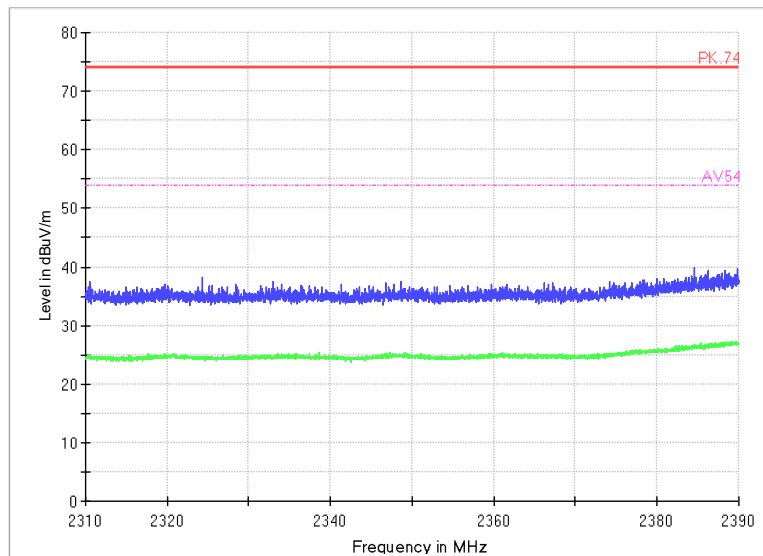


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11ax(HE40)

Polarization: V

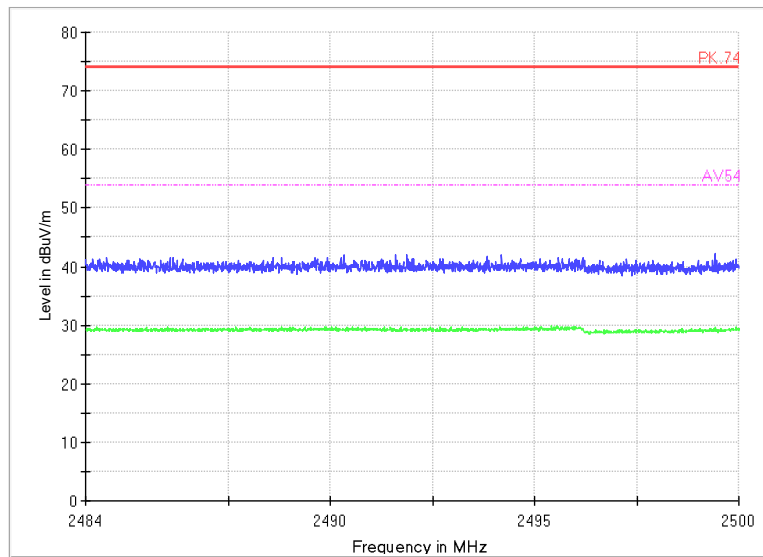


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11ax(HE40)

Polarization: H

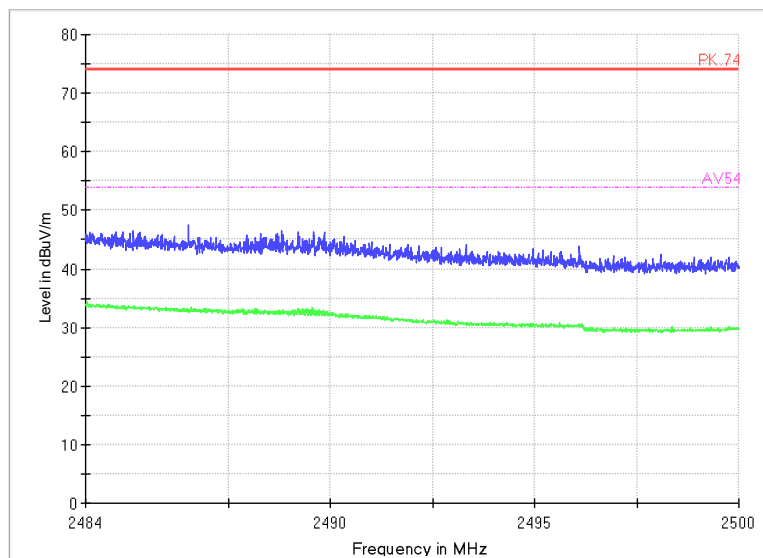


Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11ax(HE40)

Polarization: V



Radiated Emission Band Edge

Channel No.:9

Test Mode: 802.11ax(HE40)

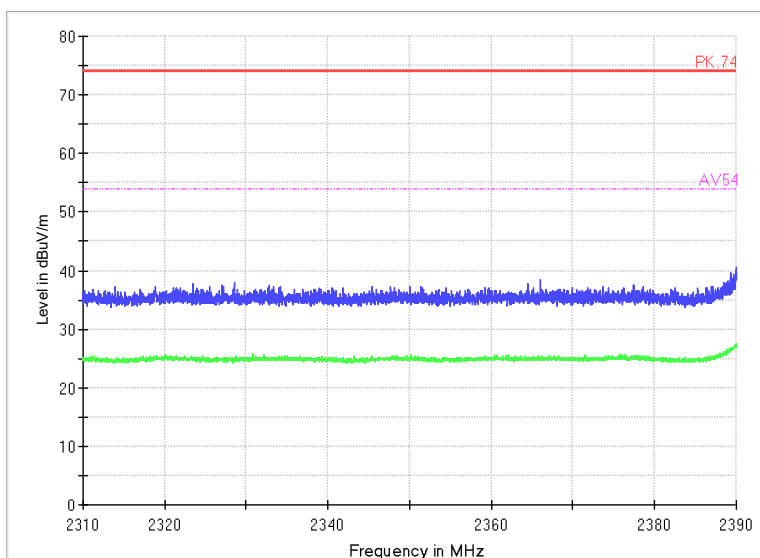
Polarization: H



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Test Report No.: PSU-NQN2503180111RF02

Partial RU (Tone26)

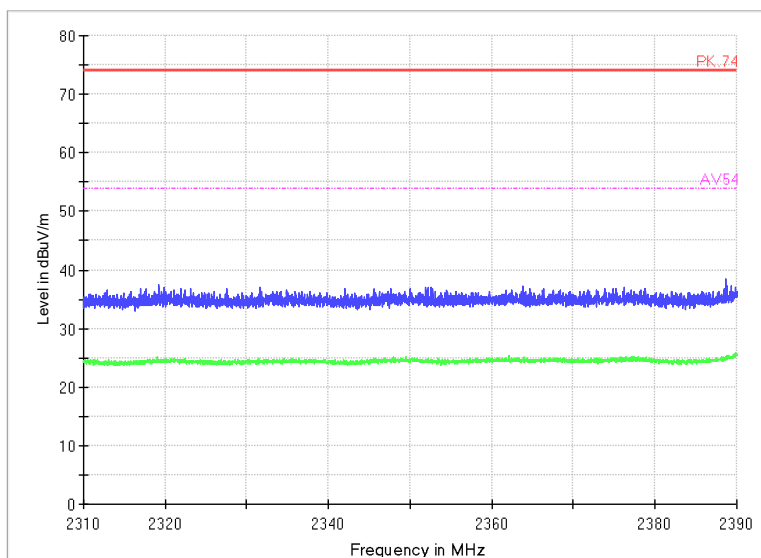


Radiated Emission Band Edge

Channel No.:1

Test Mode: 802.11ax(HE20)

Polarization: V



Radiated Emission Band Edge

Channel No.:1

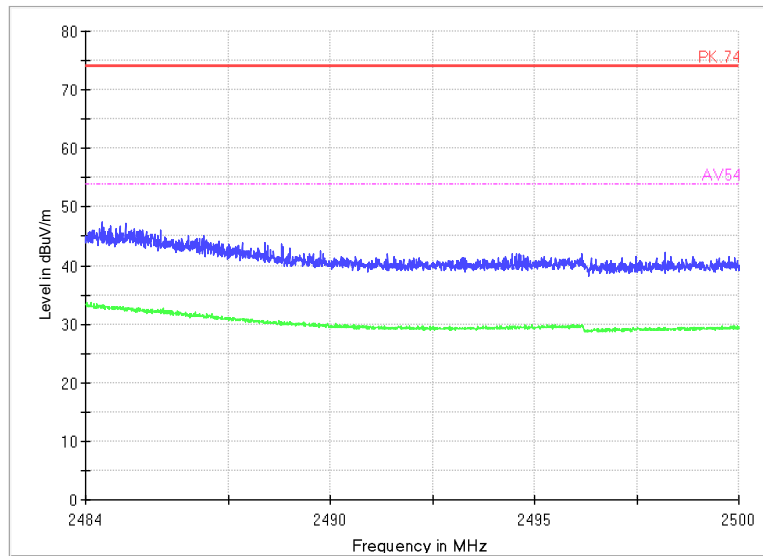
Test Mode: 802.11ax(HE20)

Polarization: H



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Test Report No.: PSU-NQN2503180111RF02

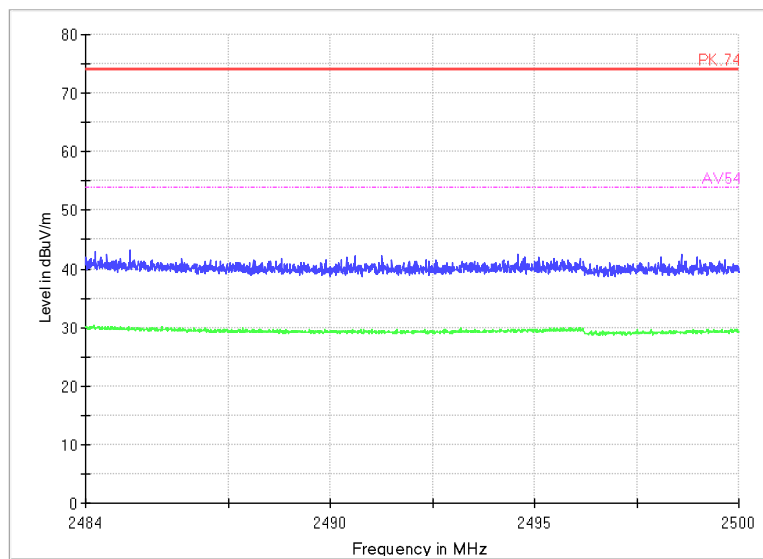


Radiated Emission Band Edge

Channel No.:11

Test Mode: 802.11ax(HE20)

Polarization: V



Radiated Emission Band Edge

Channel No.:11

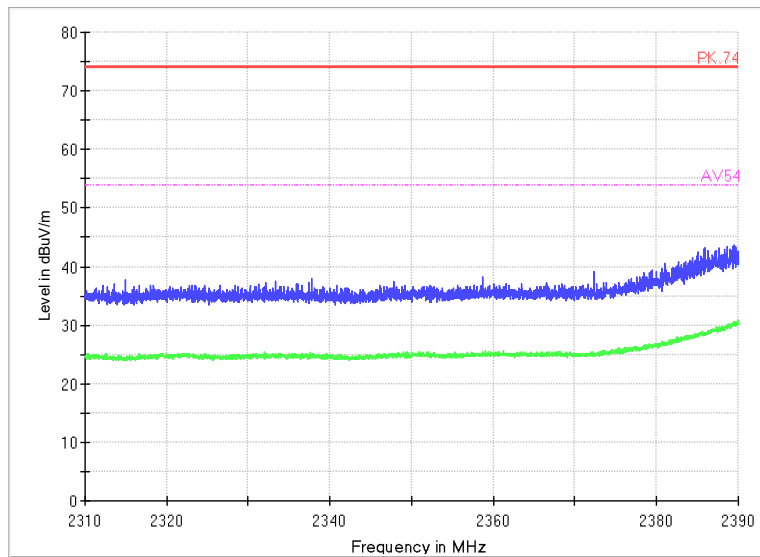
Test Mode: 802.11ax(HE20)

Polarization: H



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Test Report No.: PSU-NQN2503180111RF02

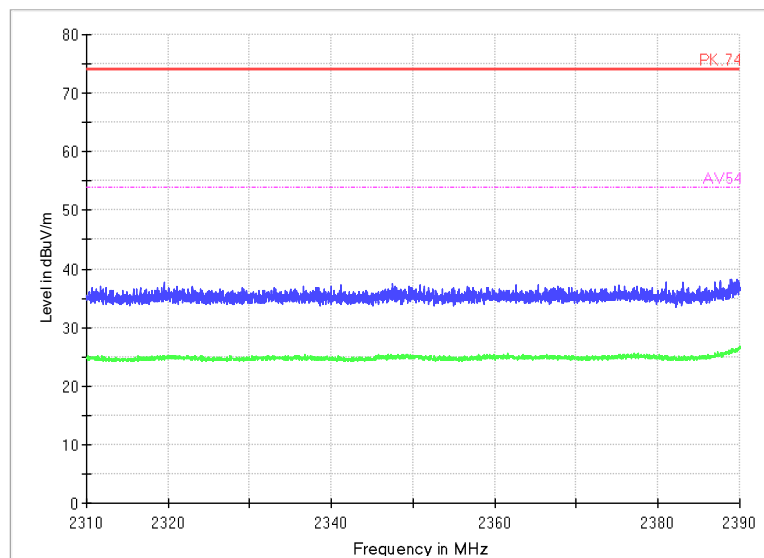


Radiated Emission Band Edge

Channel No.:3

Test Mode: 802.11ax(HE40)

Polarization: V



Radiated Emission Band Edge

Channel No.:3

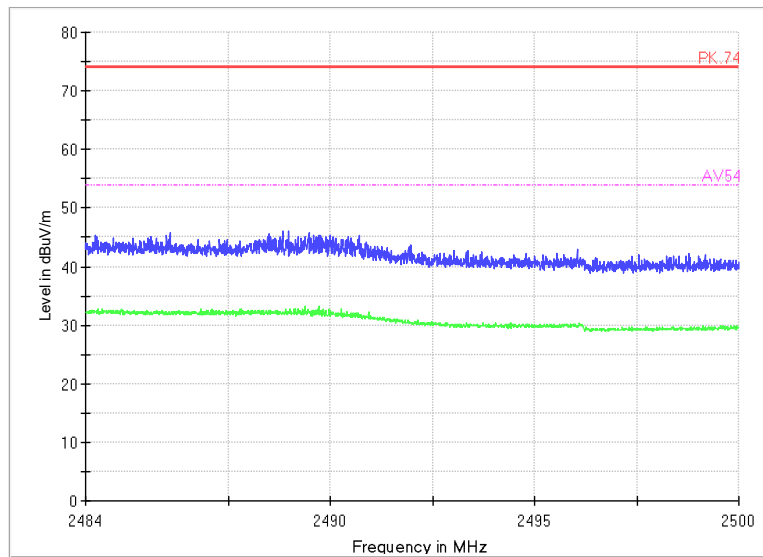
Test Mode: 802.11ax(HE40)

Polarization: H



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Test Report No.: PSU-NQN2503180111RF02

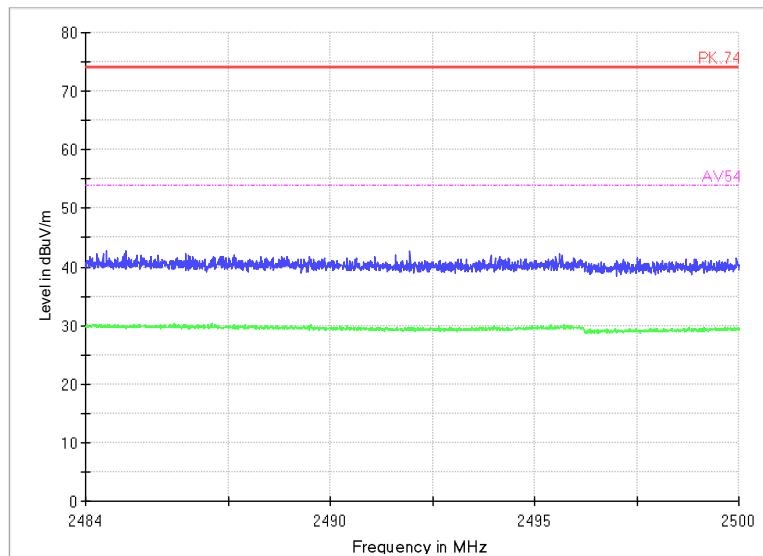


Radiated Emission Band Edge

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:

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

Sample calculation: $(19.92 \text{ dB}\mu\text{V/m}) = (38.82 \text{ dB}\mu\text{V}) + (-18.9 \text{ dB/m})$, the corresponding frequency is 30.5335 MHz.

For 802.11b Channel No.:1

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.5335	19.92	-18.9	38.82	Vertical	40	20.08
58.033	16.76	-16	32.76	Vertical	40	23.24
122.441	14.98	-19.4	34.38	Vertical	43.5	28.52
199.9925	20.35	-16.6	36.95	Vertical	43.5	23.15
436.3815	26.82	-10.4	37.22	Vertical	46	19.18
744.017	23.28	-4.2	27.48	Vertical	46	22.72

For 802.11g Channel No.:1

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.582	17.5	-18.9	36.4	Vertical	40	22.5
60.458	13.17	-16.4	29.57	Vertical	40	26.83
125.157	9.71	-19.8	29.51	Vertical	43.5	33.79
199.9925	20.57	-16.6	37.17	Vertical	43.5	22.93
436.333	23.82	-10.4	34.22	Vertical	46	22.18
744.017	22.99	-4.2	27.19	Vertical	46	23.01

For 802.11n(HT20) Channel No.:1

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
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30	18.17	-18.7	36.87	Vertical	40	21.83
62.301	10.75	-16.9	27.65	Vertical	40	29.25
123.896	13.28	-19.6	32.88	Vertical	43.5	30.22
199.9925	17.48	-16.6	34.08	Vertical	43.5	26.02
436.3815	24.38	-10.4	34.78	Vertical	46	21.62
872.736	22.78	-2.4	25.18	Vertical	46	23.22

For 802.11ax(HE20) Channel No.:1

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.3395	18.63	-18.8	37.43	Vertical	40	21.37
61.719	11.6	-16.7	28.3	Vertical	40	28.4
160.7075	11.31	-20	31.31	Vertical	43.5	32.19
199.944	14.79	-16.6	31.39	Vertical	43.5	28.71
436.333	23.61	-10.4	34.01	Vertical	46	22.39
750.031	20.64	-4.2	24.84	Vertical	46	25.36

For 802.11b Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.1455	17.23	-18.8	36.03	Vertical	40	22.77
60.652	9.77	-16.4	26.17	Vertical	40	30.23
124.963	12.23	-19.8	32.03	Vertical	43.5	31.27
199.9925	17.65	-16.6	34.25	Vertical	43.5	25.85
436.333	23.59	-10.4	33.99	Vertical	46	22.41
791.9835	23.63	-3.8	27.43	Vertical	46	22.37

For 802.11g Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.3395	18.45	-18.8	37.25	Vertical	40	21.55
58.906	13.2	-16.2	29.4	Vertical	40	26.8
123.9445	13.65	-19.6	33.25	Vertical	43.5	29.85
194.415	9.76	-16.9	26.66	Vertical	43.5	33.74
436.333	23.5	-10.4	33.9	Vertical	46	22.5



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869.9715	19.56	-2.4	21.96	Vertical	46	26.44
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For 802.11n(HT20) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
51.6795	13.48	-15.4	28.88	Vertical	40	26.52
60.2155	11.78	-16.4	28.18	Vertical	40	28.22
154.16	11.86	-20.4	32.26	Vertical	43.5	31.64
196.937	11.07	-16.5	27.57	Vertical	43.5	32.43
436.333	23.39	-10.4	33.79	Vertical	46	22.61
928.317	19.56	-1.7	21.26	Vertical	46	26.44

For 802.11ax(HE20) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.1155	17.31	-19.1	36.41	Vertical	40	22.69
60.5065	12.05	-16.4	28.45	Vertical	40	27.95
156.585	12.45	-20.3	32.75	Vertical	43.5	31.05
199.9925	18.12	-16.6	34.72	Vertical	43.5	25.38
436.333	23.45	-10.4	33.85	Vertical	46	22.55
888.0135	21.9	-2.4	24.3	Vertical	46	24.1

For 802.11b Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.3395	18.35	-18.8	37.15	Vertical	40	21.65
58.906	13.16	-16.2	29.36	Vertical	40	26.84
123.8475	12.16	-19.6	31.76	Vertical	43.5	31.34
199.9925	17.16	-16.6	33.76	Vertical	43.5	26.34
436.333	23.37	-10.4	33.77	Vertical	46	22.63
832.966	18.99	-3.3	22.29	Vertical	46	27.01

For 802.11g Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
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30.097	16.7	-18.7	35.4	Vertical	40	23.3
57.451	13.28	-15.9	29.18	Vertical	40	26.72
121.9075	12.96	-19.3	32.26	Vertical	43.5	30.54
199.9925	17.03	-16.6	33.63	Vertical	43.5	26.47
436.333	23.16	-10.4	33.56	Vertical	46	22.84
744.017	21.88	-4.2	26.08	Vertical	46	24.12

For 802.11n(HT20) Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.067	17.33	-19.1	36.43	Vertical	40	22.67
58.7605	11.65	-16.2	27.85	Vertical	40	28.35
120.986	11.22	-19.1	30.32	Vertical	43.5	32.28
199.9925	17.27	-16.6	33.87	Vertical	43.5	26.23
436.333	23.33	-10.4	33.73	Vertical	46	22.67
797.9005	17.56	-3.9	21.46	Vertical	46	28.44

For 802.11ax(HE20) Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.194	17.28	-18.8	36.08	Vertical	40	22.72
58.13	14.23	-16	30.23	Vertical	40	25.77
124.7205	12.37	-19.7	32.07	Vertical	43.5	31.13
199.9925	17.1	-16.6	33.7	Vertical	43.5	26.4
436.3815	24.22	-10.4	34.62	Vertical	46	21.78
791.9835	22.92	-3.8	26.72	Vertical	46	23.08

For 802.11n(HT40) Channel No.:3

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.97	16.26	-19.1	35.36	Vertical	40	23.74
60.3125	13.17	-16.4	29.57	Vertical	40	26.83
123.411	13.2	-19.6	32.8	Vertical	43.5	30.3
199.9925	17.28	-16.6	33.88	Vertical	43.5	26.22
436.333	23.33	-10.4	33.73	Vertical	46	22.67



920.654	19.42	-1.7	21.12	Vertical	46	26.58
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For 802.11ax(HE40) Channel No.:3

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.0485	16.78	-18.7	35.48	Vertical	40	23.22
57.451	13.18	-15.9	29.08	Vertical	40	26.82
123.702	11.19	-19.6	30.79	Vertical	43.5	32.31
237.677	11	-15.8	26.8	Vertical	46	35
436.333	23.13	-10.4	33.53	Vertical	46	22.87
851.7355	18.2	-3.1	21.3	Vertical	46	27.8

For 802.11n(HT40) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
31.164	17.02	-19.1	36.12	Vertical	40	22.98
61.913	11.99	-16.8	28.79	Vertical	40	28.01
166.5275	8.8	-19.7	28.5	Vertical	43.5	34.7
212.6995	10.32	-17.1	27.42	Vertical	43.5	33.18
436.3815	24.15	-10.4	34.55	Vertical	46	21.85
829.7165	19.29	-3.3	22.59	Vertical	46	26.71

For 802.11ax(HE40) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.1455	15.5	-18.8	34.3	Vertical	40	24.5
62.495	10.58	-17	27.58	Vertical	40	29.42
123.993	13.38	-19.6	32.98	Vertical	43.5	30.13
199.9925	16.49	-16.6	33.09	Vertical	43.5	27.01
436.333	22.6	-10.4	33	Vertical	46	23.4
830.832	18.66	-3.3	21.96	Vertical	46	27.34

For 802.11n(HT40) Channel No.:9

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
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52.2615	17.79	-15.4	33.19	Vertical	40	22.21
60.4095	15.17	-16.4	31.57	Vertical	40	24.83
154.6935	13.94	-20.4	34.34	Vertical	43.5	29.56
269.2505	19.89	-15	34.89	Vertical	46	26.11
424.2565	23.75	-10.6	34.35	Vertical	46	22.25
918.3745	19.07	-1.8	20.87	Vertical	46	26.93

For 802.11ax(HE40) Channel No.:9

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
51.34	13.7	-15.4	29.1	Vertical	40	26.3
61.04	15.38	-16.5	31.88	Vertical	40	24.62
155.809	13.97	-20.3	34.27	Vertical	43.5	29.53
263.964	23.22	-15.1	38.32	Vertical	46	22.78
423.238	23.32	-10.7	34.02	Vertical	46	22.68
903	18.7	-2.5	21.2	Vertical	46	27.3

**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)
52.213	17.04	-15.4	32.44	Vertical	40	22.96
64.047	11.43	-17.3	28.73	Vertical	40	28.57
150.9105	13.87	-20.6	34.47	Vertical	43.5	29.63
239.1805	18.09	-15.7	33.79	Vertical	46	27.91
430.222	22.74	-10.5	33.24	Vertical	46	23.26
995.926	24.8	-1.5	26.3	Vertical	54	29.2

For 802.11ax(HE20) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
30.291	15.08	-18.8	33.88	Vertical	40	24.92
57.3055	10.15	-15.9	26.05	Vertical	40	29.85
123.411	12.12	-19.6	31.72	Vertical	43.5	31.38
199.9925	15.43	-16.6	32.03	Vertical	43.5	28.07
436.333	21.85	-10.4	32.25	Vertical	46	24.15
918.52	18.02	-1.8	19.82	Vertical	46	27.98

For 802.11ax(HE20) Channel No.:11

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
34.074	7.27	-19	26.27	Vertical	40	32.73
57.6935	10.65	-15.9	26.55	Vertical	40	29.35
122.635	10.3	-19.4	29.7	Vertical	43.5	33.2
199.9925	14.18	-16.6	30.78	Vertical	43.5	29.32
436.3815	20.77	-10.4	31.17	Vertical	46	25.23
869.244	17.03	-2.4	19.43	Vertical	46	28.97

For 802.11ax(HE40) Channel No.:3

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
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52.1645	12.13	-15.4	27.53	Vertical	40	27.87
61.816	11.7	-16.8	28.5	Vertical	40	28.3
125.254	9.18	-19.8	28.98	Vertical	43.5	34.32
199.9925	15.07	-16.6	31.67	Vertical	43.5	28.43
436.3815	21.63	-10.4	32.03	Vertical	46	24.37
936.659	18.14	-1.8	19.94	Vertical	46	27.86

For 802.11ax(HE40) Channel No.:6

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
32.619	10.76	-19.2	29.96	Vertical	40	29.24
62.592	10.62	-17	27.62	Vertical	40	29.38
126.709	6.57	-20	26.57	Vertical	43.5	36.93
195.4335	9.26	-16.7	25.96	Vertical	43.5	34.24
436.333	20.59	-10.4	30.99	Vertical	46	25.41
883.309	17.64	-2.3	19.94	Vertical	46	28.36

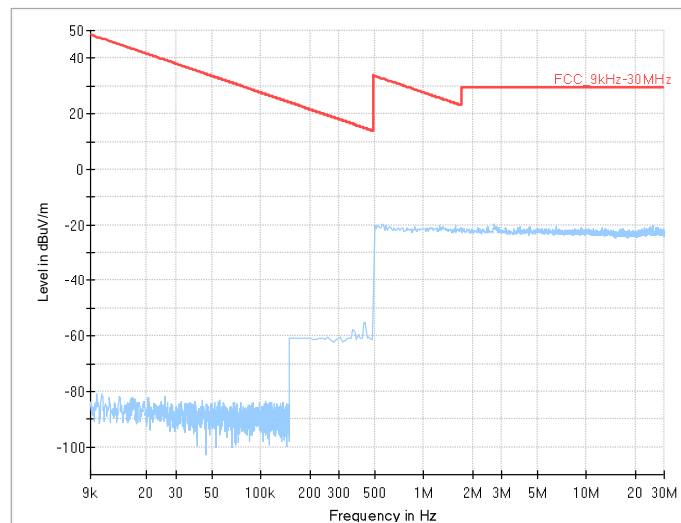
For 802.11ax(HE40) Channel No.:9

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)	Margin (dB)
52.31	13.63	-15.4	29.03	Vertical	40	26.37
61.719	11.03	-16.7	27.73	Vertical	40	28.97
100.5675	10.95	-17.2	28.15	Vertical	43.5	32.55
199.9925	15.41	-16.6	32.01	Vertical	43.5	28.09
436.333	21.13	-10.4	31.53	Vertical	46	24.87
941.7515	18.27	-1.9	20.17	Vertical	46	27.73



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Test Report No.: PSU-NQN2503180111RF02



Frequency Range: 9kHz -30MHz

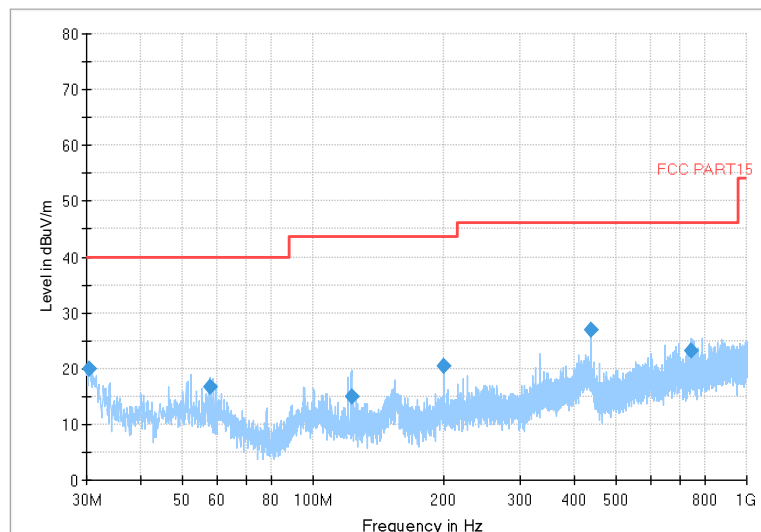
Detector: QP mode

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

Full Spectrum



Frequency Range 30MHz -1GHz

Detector: QP mode

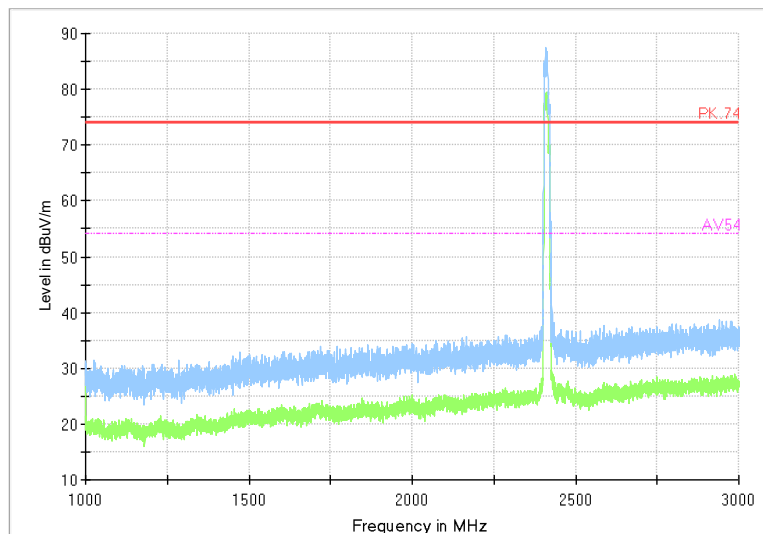
Modulation type: 802.11b



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum

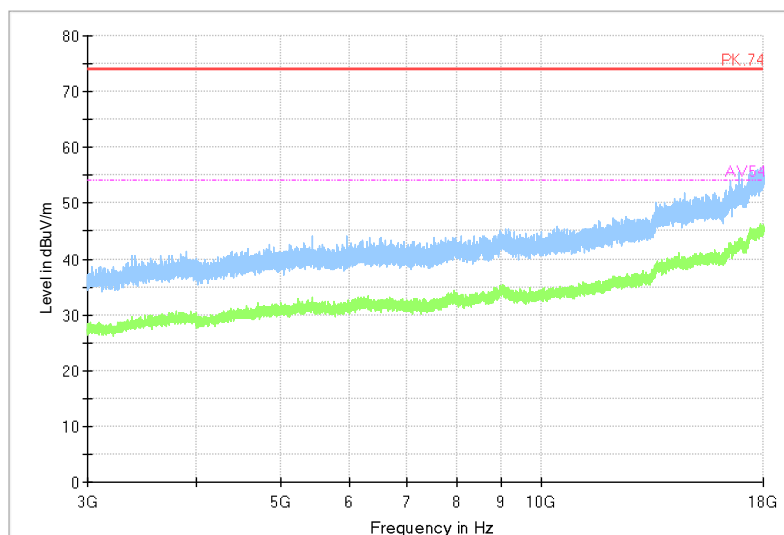


Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

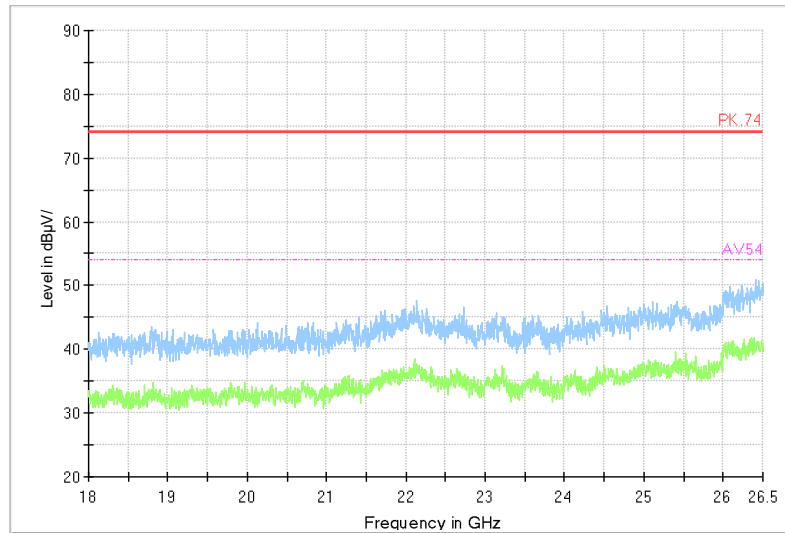
Modulation type: 802.11b



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum

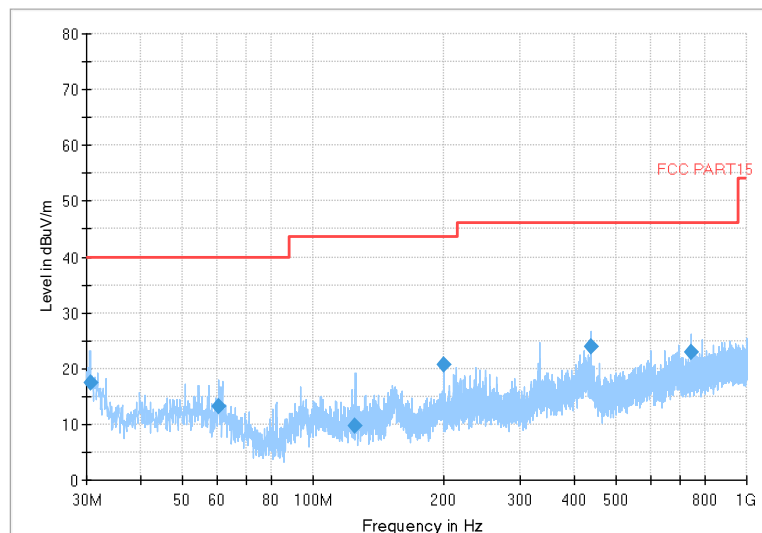


Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 30MHz -1GHz

Detector: QP mode

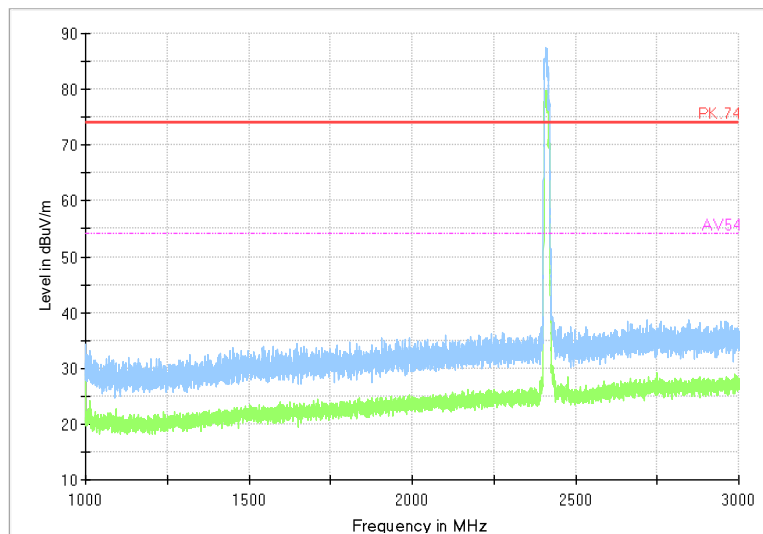
Modulation type: 802.11g



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum

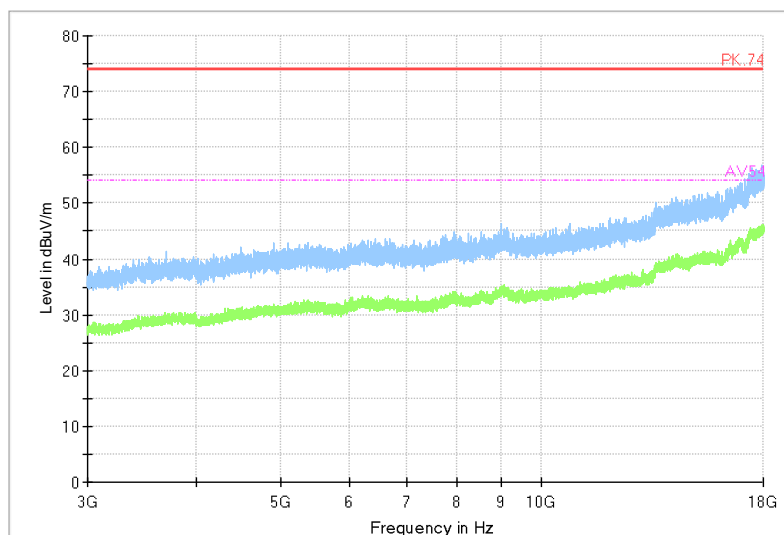


Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

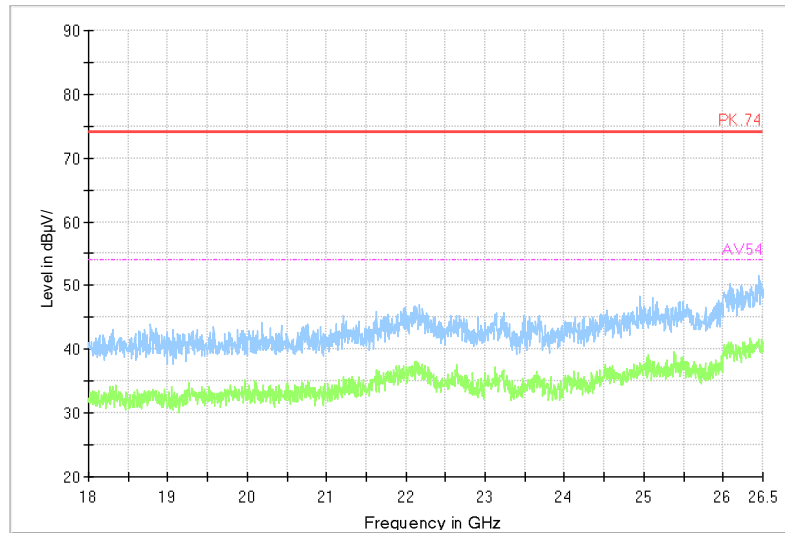
Modulation type: 802.11g



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum

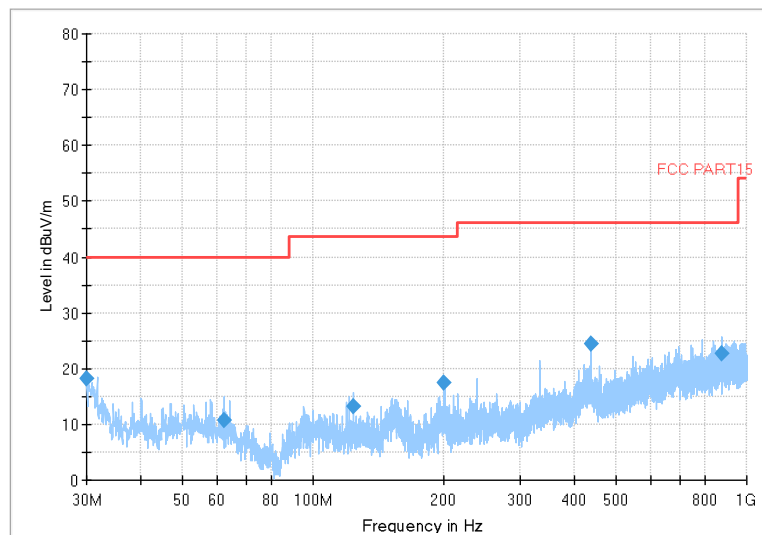


Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11g

Full Spectrum



Frequency Range: 30MHz -1GHz

Detector: QP mode

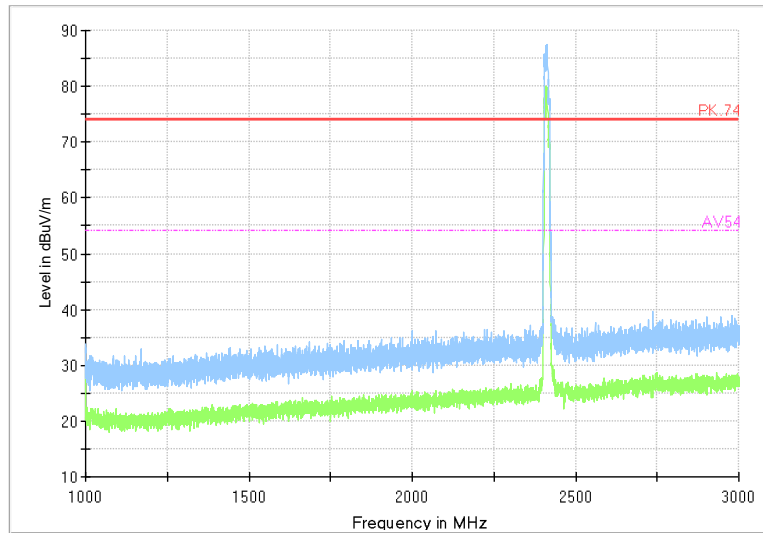
Modulation type: 802.11n(HT20)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum

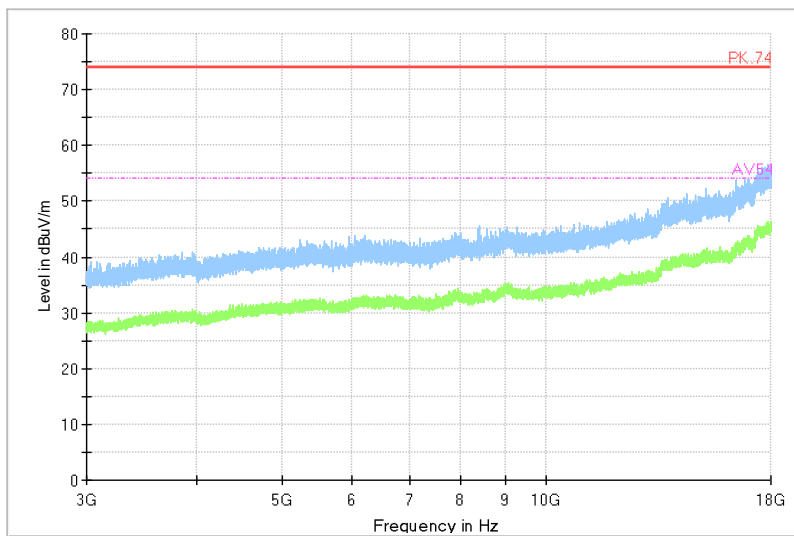


Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

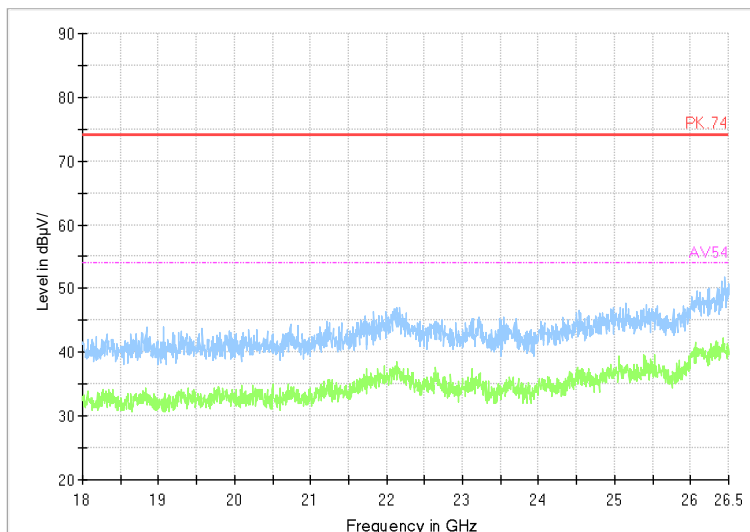
Modulation type: 802.11n(HT20)



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum

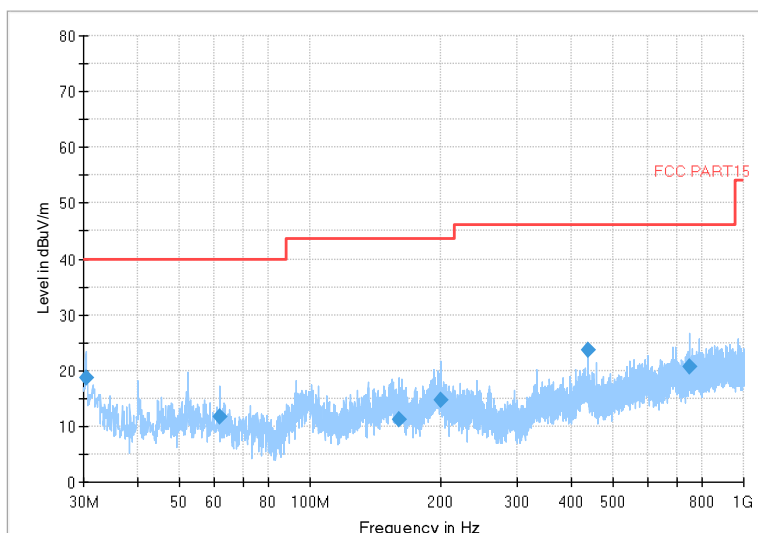


Frequency Range: 18GHz -26GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT20)

Full Spectrum



Frequency Range: 30MHz -1GHz

Detector: QP mode

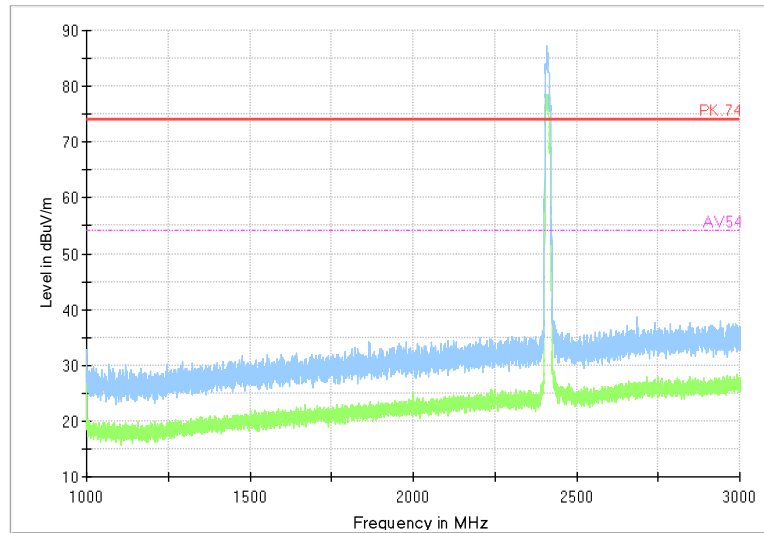
Modulation type: 802.11 ax(HE20)



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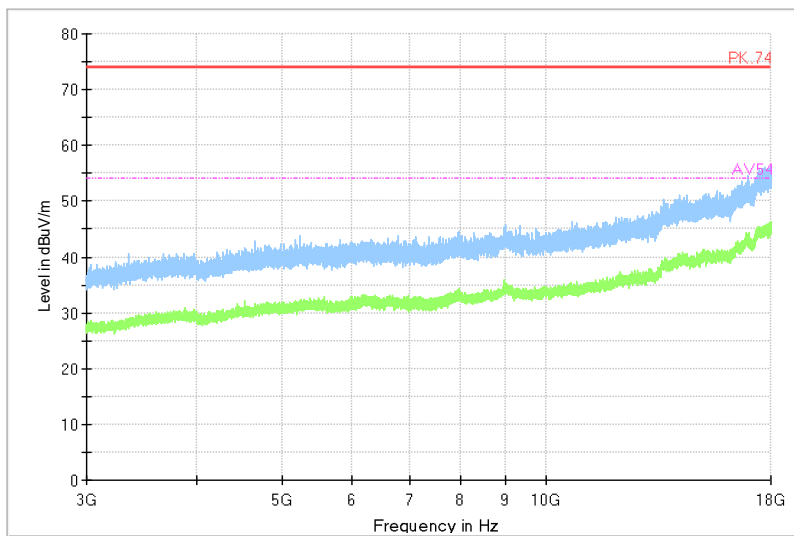
Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 1GHz -3GHz
Detector: Av mode and PK mode
Modulation type: 802.11 ax(HE20)

Full Spectrum



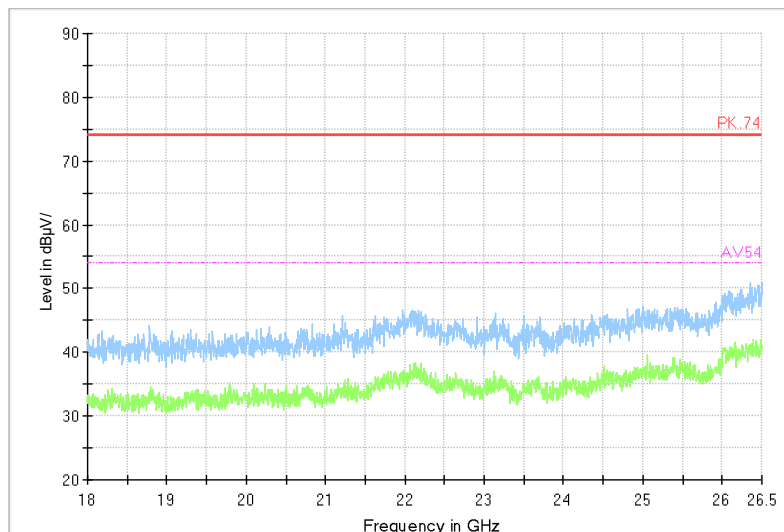
Frequency Range: 3GHz -18GHz
Detector: Av mode and PK mode
Modulation type: 802.11 ax(HE20)



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VERITAS

Test Report No.: PSU-NQN2503180111RF02

Full Spectrum



Frequency Range: 18GHz -26GHz

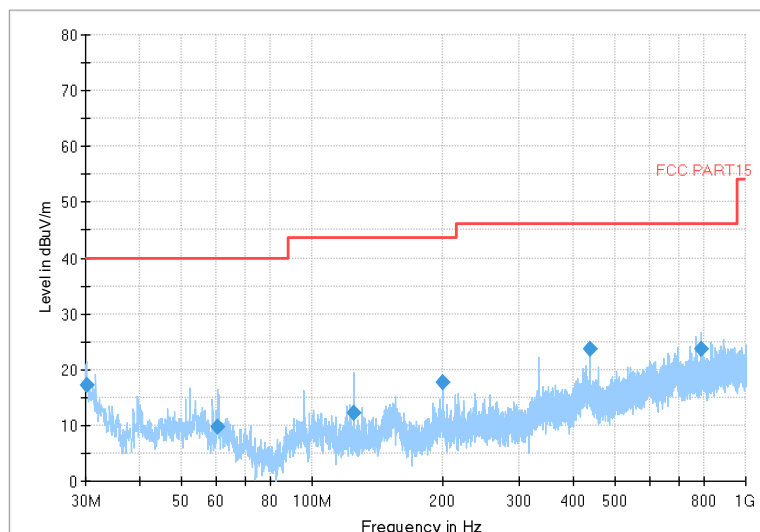
Detector: Av mode and PK mode

Modulation type: 802.11 ax(HE20)

Carrier frequency (MHz): 2437

Channel No.:6

Full Spectrum



Frequency Range: 30MHz -1GHz

Detector: QP mode

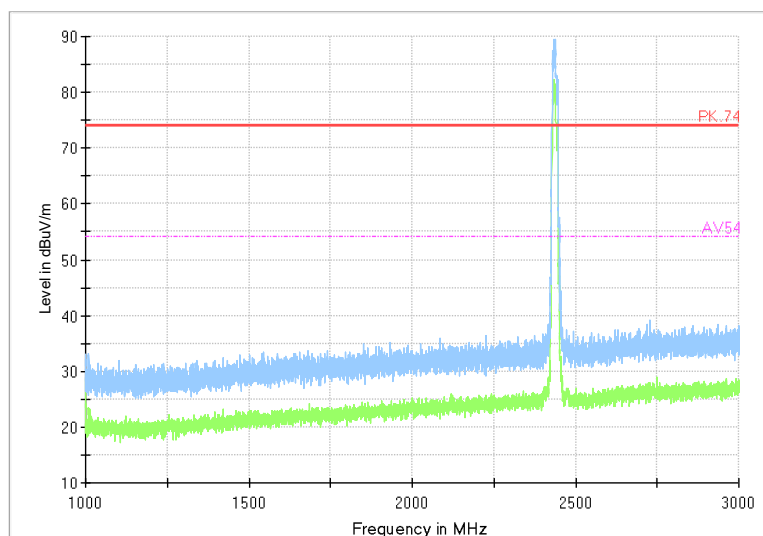
Modulation type: 802.11b



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Test Report No.: PSU-NQN2503180111RF02

Full Spectrum

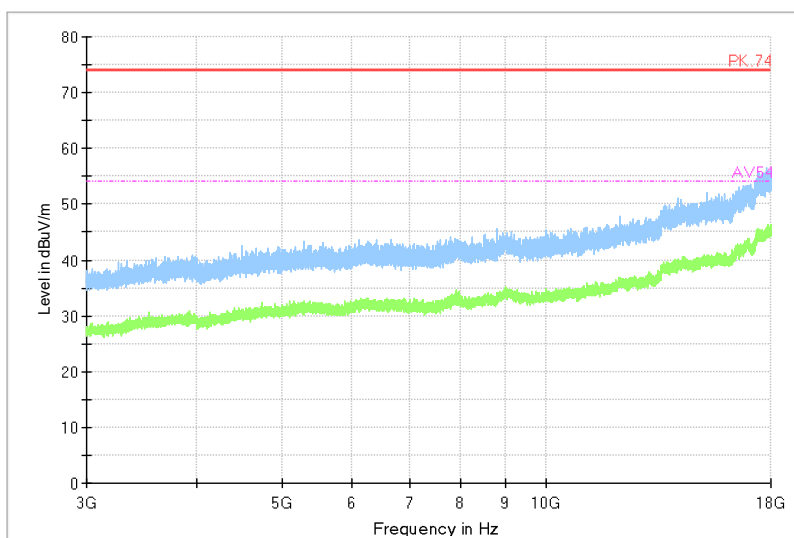


Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

Modulation type: 802.11b

Full Spectrum



Frequency Range: 3GHz -18GHz

Detector: Av mode and PK mode

Modulation type: 802.11b