

TEST REPORT

Applicant Name : Invixium Access Inc.
Address : 300-111 Gordon Baker Road Toronto M2H 3R1 Canada
Report Number : 2401W43894E-RF-00E
FCC ID: S38-IXM6490

Test Standard (s)

FCC PART 15.407

Sample Description

Product Type: IXM6490
Model No.: IXM6490
Multiple Model(s) No.: N/A
Trade Mark: Invixium
Date Received: 2024/08/28
Issue Date: 2024/12/24

Test Result:

Pass[▲]

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

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Approved By:

Nancy Wang

Nancy Wang
RF Supervisor

Note: The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401W43894E-RF-00E	Original Report	2024/12/24

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	IXM6490
Tested Model	IXM6490
Multiple Models	N/A
Frequency Range	U-NII 5: 5925-6425 MHz, U-NII 6: 6425-6525 MHz U-NII 7:6525-6875 MHz, U-NII 8:6875-7125 MHz
Equipment Classes	Low-power indoor client(6XD)
Mode	802.11a/ax20/ax40/ax80/ax160
Maximum Conducted Average Output Power	5925-6425 MHz: 11.91dBm, 6425-6525MHz: 10.74dBm 6525-6875 MHz: 10.86dBm, 6875-7125 MHz: 10.99dBm
Maximum EIRP	5925-6425 MHz: 17.52dBm, 6425-6525MHz: 16.35dBm 6525-6875 MHz: 16.47dBm, 6875-7125 MHz: 16.60dBm
Modulation Technique	OFDM, OFDMA
Antenna Specification [#]	2.6dBi (It is provided by the applicant)
Voltage Range	3.3V _{DC}
Sample serial number	2QNT-1 (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And

KDB789033 D02 General U-NII Test Procedures New Rules v02r01,
KDB 987594 D02 U-NII 6 GHZ EMC Measurement v03,
KDB662911D01v02r01 and ANS C63.10-2013.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		109.2kHz(k=2, 95% level of confidence)
RF output power, conducted		0.86dB(k=2, 95% level of confidence)
Power Spectral Density		0.90dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.60dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.63dB(k=2, 95% level of confidence)
	150kHz-30MHz	3.66dB(k=2, 95% level of confidence)
Radiated Emissions	9kHz - 30MHz	3.60dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	5.32dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	5.43dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	5.77dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.73dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.34dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.40dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.64dB(k=2, 95% level of confidence)
Temperature		±1°C
Humidity		±1%
Supply voltages		±0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 715558, the FCC Designation No. : CN5045.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which was provided by manufacturer.

For 5925-7125 MHz Band, 109 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5955	47	6185	93	6415	141	6655	187	6885
3	5965	49	6195	97	6435	143	6665	189	6895
5	5975	51	6205	99	6445	145	6675	193	6915
7	5985	53	6215	101	6455	147	6685	195	6925
9	5995	55	6225	103	6465	149	6695	197	6935
11	6005	57	6235	105	6475	151	6705	199	6945
13	6015	59	6245	107	6485	153	6715	201	6955
15	6025	61	6255	109	6495	155	6725	203	6965
17	6035	65	6275	111	6505	157	6735	205	6975
19	6045	67	6285	113	6515	161	6755	207	6985
21	6055	69	6295	115	6525	163	6765	209	6995
23	6065	71	6305	117	6535	165	6775	211	7005
25	6075	73	6315	119	6545	167	6785	213	7015
27	6085	75	6325	121	6555	169	6795	215	7025
29	6095	77	6335	123	6565	171	6805	217	7035
33	6115	79	6345	125	6575	173	6815	219	7045
35	6125	81	6355	129	6595	175	6825	221	7055
37	6135	83	6365	131	6605	177	6835	225	7075
39	6145	85	6375	133	6615	179	6845	227	7085
41	6155	87	6385	135	6625	181	6855	229	7095
43	6165	89	6395	137	6635	183	6865	233	7115
45	6175	91	6405	139	6645	185	6875	/	/

Tested Channels:

CH. #	U-NII 5	U-NII 6	U-NII 7	U-NII 8
	802.11a/ax20	802.11a/ax20	802.11a/ax20	802.11a/ax20
Low	1	97	117	189
Middle	45	105	149	209
High	93	113	181	233
Straddle	-	-	-	185

CH. #	U-NII 5	U-NII 6	U-NII 7	U-NII 8
	802.11 ax40	802.11 ax40	802.11 ax40	802.11 ax40
Low	3	99	123	195
Middle	43	-	147	203
High	91	107	179	227
Straddle	-	115	-	187

CH. #	U-NII 5	U-NII 6	U-NII 7	U-NII 8
	802.11 ax80	802.11 ax80	802.11 ax80	802.11 ax80
Low	7	-	135	199
Middle	39	103	151	-
High	87	-	167	215
Straddle	-	119	183	-

CH. #	U-NII 5	U-NII 6	U-NII 7	U-NII 8
	802.11 ax160	802.11 ax160	802.11 ax160	802.11 ax160
Low	15	-	-	-
Middle	47	-	143	207
High	79	-	-	-
Straddle	-	111	175	-

EUT Exercise Software

“QRCT4”[#] software was used and power level as below. The software and power level was provided by the applicant. The device was tested with the worst case was performed as below:

U-NII	Mode	Data rate	Power Level [#]			
			Low Channel	Middle Channel	High Channel	Straddle Channel
U-NII-5	802.11a	6Mbps	2	2	2	/
	802.11ax-HE20	MCS0	2	2	2	/
	802.11ax-HE40	MCS0	4	5	5	/
	802.11ax-HE80	MCS0	7	7	7	/
	802.11ax-HE160	MCS0	11	11	11	/
U-NII-6	802.11a	6Mbps	-2	0	0	/
	802.11ax-HE20	MCS0	0	0	1	/
	802.11ax-HE40	MCS0	5	/	5	5
	802.11ax-HE80	MCS0	/	7	/	7
	802.11ax-HE160	MCS0	/	/	/	11
U-NII-7	802.11a	6Mbps	2	2	1	/
	802.11ax-HE20	MCS0	1	1	1	/
	802.11ax-HE40	MCS0	4	4	4	/
	802.11ax-HE80	MCS0	6	6	6	6
	802.11ax-HE160	MCS0	/	11	/	11
U-NII-8	802.11a	6Mbps	1	1	1	1
	802.11ax-HE20	MCS0	1	1	-8	1
	802.11ax-HE40	MCS0	4	4	4	4
	802.11ax-HE80	MCS0	6	/	6	/
	802.11ax-HE160	MCS0	/	11	/	/

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the power and PSD across all data rates, bandwidths and modulations.

The device support SISO and MIMO, for 802.11ax mode, the MIMO mode support beamforming, the SISO/MIMO and beamforming/nonbeamforming modes have same parameter, which was declared by applicant. The MIMO/beamforming was the worst mode which was selected to test.

For 802.11 ax modes, the device not support partial RU mode.

All the antenna ports have the same power level.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

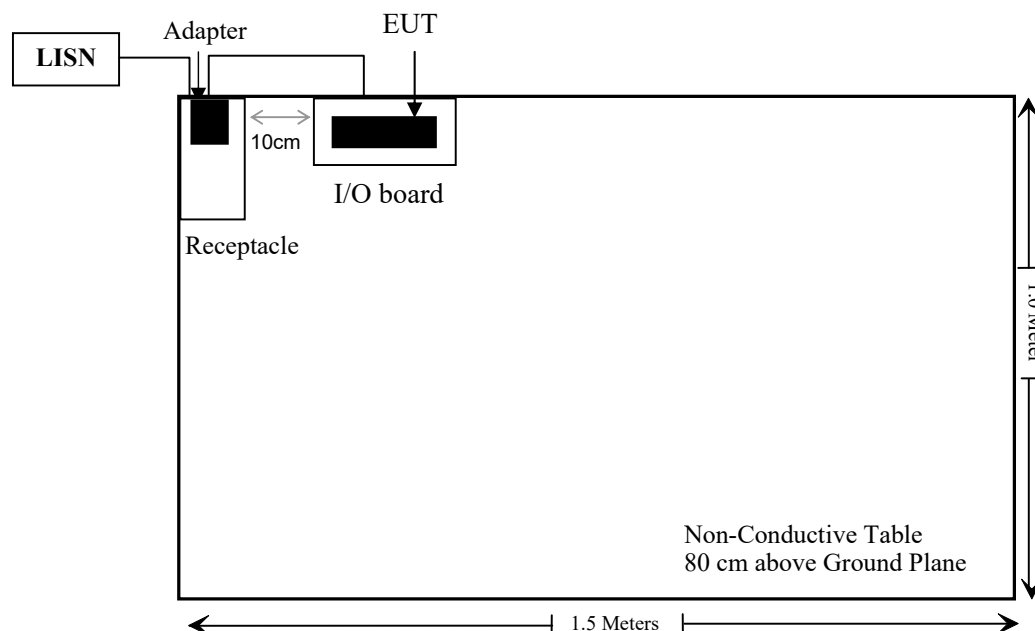
Manufacturer	Description	Model	Serial Number
GUANDONG LIANYONDA ELECTRONIC CO.,LTD	Adapter	LYD1202000B	Unknown
Invizium Access Inc.	I/O board	TITAN ONE	Unknown

External I/O Cable

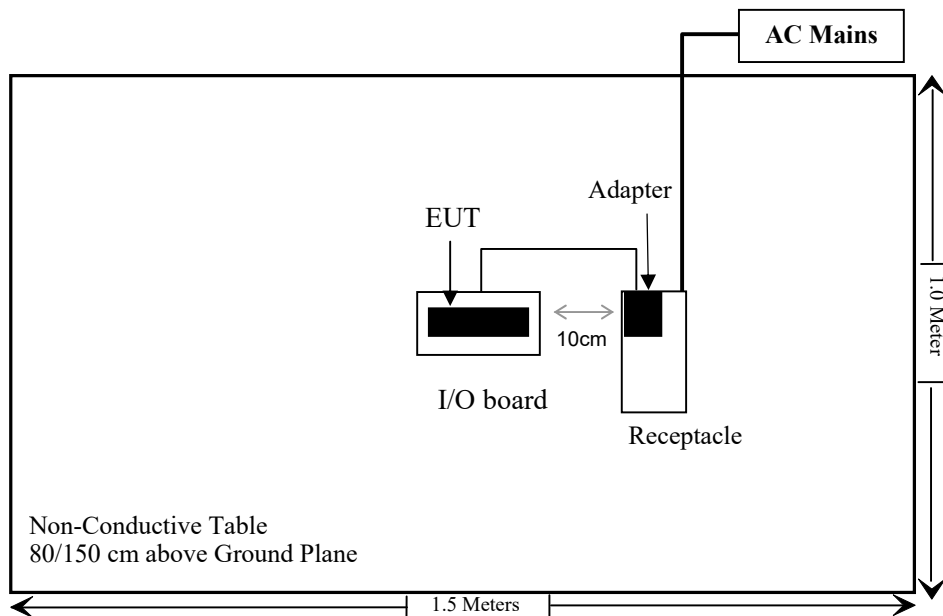
Cable Description	Length (m)	From Port	To
Un-shielding Un-Detachable AC Cable	1.0	Receptacle	LISN/AC Mains
Un-shielding Un-Detachable DC Cable	1.5	Adapter	I/O board

Block Diagram of Test Setup

For Conducted Emissions



For Radiated Emissions:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.407(b)(9)& §15.207(a)	Conducted Emissions	Compliant
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliant
§15.407(a) (11)	26 dB Emission Bandwidth & 99% Occupied bandwidth	Compliant
§15.407(a) (8)	Conducted Transmitter Output Power	Compliant
§15.407 (a) (8)	Power Spectral Density	Compliant
§15.407 (b) (7)	In-Band Emissions	Compliant
§15.407 (d) (6)	Contention Based Protocol	Compliant
C63.10 §11.6	Duty Cycle	/

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/01/16	2025/01/15
Rohde & Schwarz	LISN	ENV216	101613	2024/01/16	2025/01/15
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Cable	2Y194	0735	2024/05/21	2025/05/20
Unknown	Cable	PNG214	1354	2024/05/21	2025/05/20
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
COM-POWER	Pre-amplifier	PA-122	181919	2024/06/18	2025/06/17
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	735	2024/06/18	2025/06/17
Unknown	RF Cable	UFA147	219661	2024/06/18	2025/06/17
JD	Multiplex Switch Test Control Set	DT7220FSU	DQ77926	2024/06/18	2025/06/17
A.H.System	Pre-amplifier	PAM-1840VH	190	2024/06/18	2025/06/17
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
UTIFLEX	RF Cable	NO. 13	232308-001	2024/06/18	2025/06/17
Audix	EMI Test software	E3	191218(V9)	NCR	NCR

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV40	101942	2024/09/20	2025/09/19
ANRITSU	Microwave peak power sensor	MA24418A	12622	2024/05/21	2025/05/20
Unknown	10dB Attenuator	Unknown	F-03-EM190	2024/06/27	2025/06/26
Rohde & Schwarz	Spectrum Analyzer	FSV40	101473	2024/01/16	2025/01/15
Keysight	MXG Vector Signal Generator	N5182B	MY53051503	2024/01/08	2025/01/07
Keysight	Frequency Extender	N5182BX07	MY59362537	2024/05/21	2025/05/20
HP	Power Splitter	11667A	1610A	2024/06/27	2025/06/26
WEINSCHTEL	3dB Attenuator	Unknown	F-03-EM220	2024/06/27	2025/06/26
Unknown	RF Cable	65475	01670515	2024/06/27	2025/06/26

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247(i) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Result

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data:

For worst case:

Mode	Frequency (MHz)	Antenna Gain [#]		Max Tune-up Power [#]		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
BT	2402-2480	2.50	1.78	2.5	1.78	25	0.0004	1.0
BLE	2402-2480	2.50	1.78	7.0	5.01	25	0.0011	1.0
2.4G Wi-Fi	2412-2462	5.51	3.56	30.0	1000	25	0.4533	1.0
5G Wi-Fi	5150-5250	5.61	3.64	15.5	35.48	25	0.0164	1.0
	5250-5350	5.61	3.64	16.5	44.67	25	0.0207	1.0
	5470-5725	5.61	3.64	16.0	39.81	25	0.0185	1.0
	5725-5850	5.61	3.64	19.0	79.43	25	0.0368	1.0
	5850-5895	5.61	3.64	20.5	112.20	25	0.0520	1.0
6G Wi-Fi	5925-6425	5.61	3.64	12.0	15.85	25	0.0073	1.0
	6425-6525	5.61	3.64	11.0	12.59	25	0.0058	1.0
	6525-6875	5.61	3.64	11.0	12.59	25	0.0058	1.0
	6875-7125	5.61	3.64	11.0	12.59	25	0.0058	1.0

Note:

- 1) The tune up conducted power and antenna gain was declared by the applicant.
- 2) For the Wi-Fi mode, the antenna gain should be the directional gain.
- 3) The BT, 2.4G Wi-Fi, 5G Wi-Fi and 6G Wi-Fi cannot Simultaneous transmitting.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 25cm from nearby persons.

Result: Compliant.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.
- c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

No standard antenna connect port with this module, The EUT tested with two FPC antennas arrangement for Wi-Fi which were integrated on the main PCB use the MHF-Type connector and no consideration of replacement, fulfill the requirement of this section. Please refer to the EUT photos.

Type	Antenna Gain	Impedance	Frequency Range
FPC	2.6dBi	50 Ω	5925-7125MHz

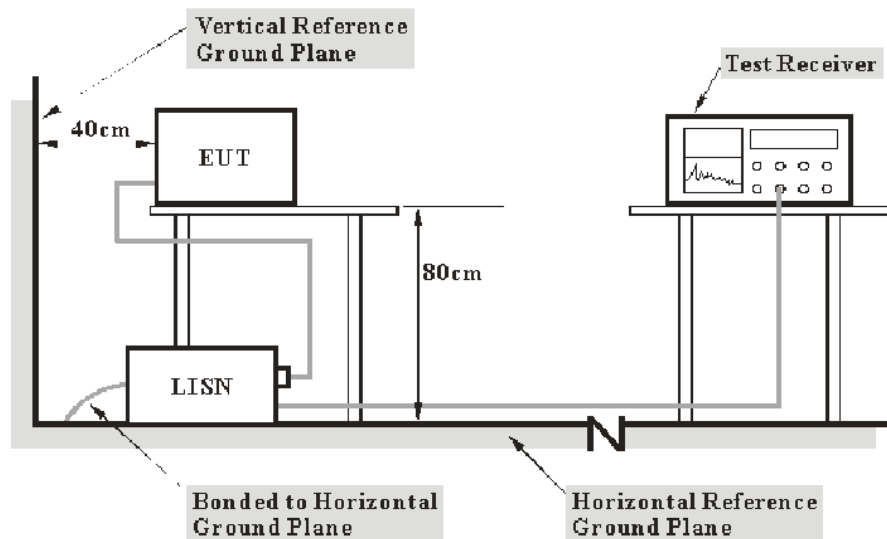
Result: Compliant.

FCC §15.407 (b) (9) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (9)

EUT Setup



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

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and Average detection mode.

Transd Factor & Margin Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss}$$

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

$$\begin{aligned}\text{Over Limit} &= \text{Level} - \text{Limit} \\ \text{Level} &= \text{Read Level} + \text{Factor}\end{aligned}$$

Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

Test Data

Environmental Conditions

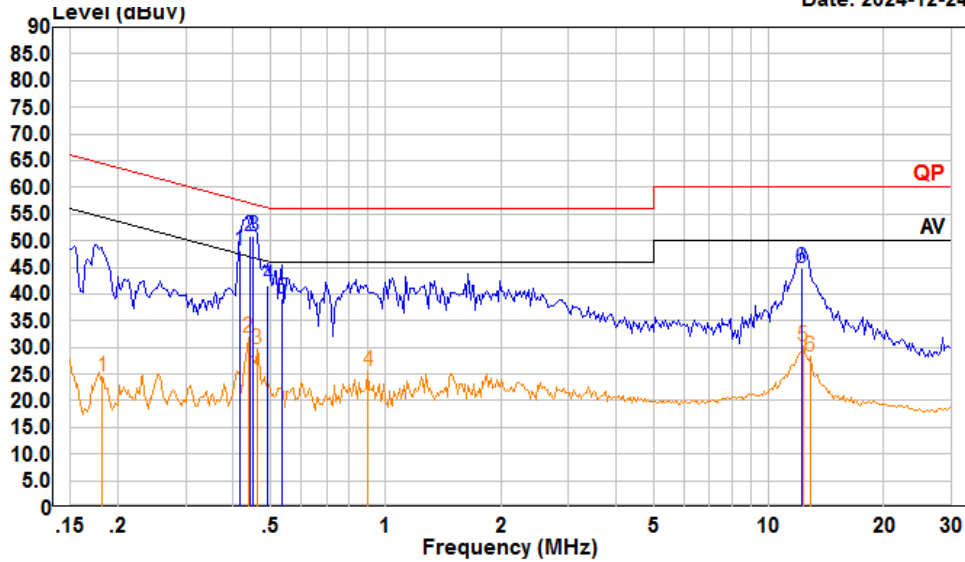
Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101 kPa

The testing was performed by Macy Shi on 2024-12-24.

EUT operation mode: Transmitting (Maximum Output Power Mode, 802.11ax160 6025MHz)

AC 120V/60 Hz, Line

Date: 2024-12-24



Trace: 1

Condition: Line

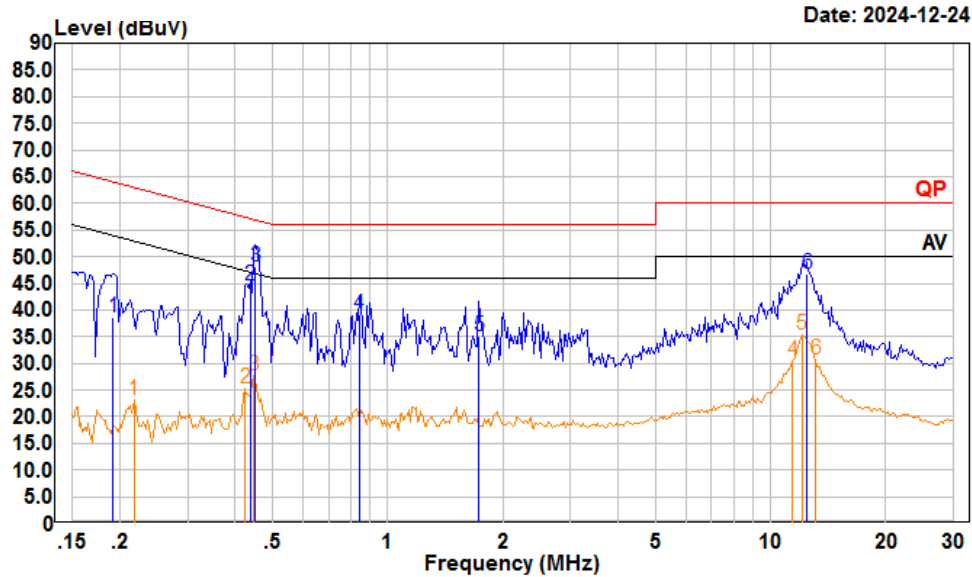
Project : 2401W43894E-RF

tester : Macy.shi Note:Transmitting

Setting : RBW:9kHz VBW:Auto SWT:Auto

		Read		LISN	Cable	Limit	Over	
	Freq	Level	Level	Factor	Loss	Line	Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.415	27.40	48.07	10.56	10.11	57.55	-9.48	QP
2	0.442	30.10	50.76	10.54	10.12	57.02	-6.26	QP
3	0.452	30.20	50.85	10.53	10.12	56.85	-6.00	QP
4	0.491	20.89	41.54	10.51	10.14	56.14	-14.60	QP
5	0.535	18.40	39.03	10.50	10.13	56.00	-16.97	QP
6	12.188	24.00	44.81	10.60	10.21	60.00	-15.19	QP
	Freq	Read		LISN	Cable	Limit	Over	
	MHz	Level	Level	Factor	Loss	Line	Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.182	3.54	24.47	10.83	10.10	54.42	-29.95	Average
2	0.437	11.13	31.78	10.54	10.11	47.11	-15.33	Average
3	0.461	8.91	29.56	10.53	10.12	46.67	-17.11	Average
4	0.899	5.06	25.59	10.43	10.10	46.00	-20.41	Average
5	12.318	9.45	30.26	10.60	10.21	50.00	-19.74	Average
6	12.852	7.42	28.24	10.60	10.22	50.00	-21.76	Average

AC 120V/60 Hz, Neutral



Condition: Neutral

Project : 2401W43894E-RF

tester : Macy.shi Note:Transmitting

Setting : RBW:9kHz VBW:Auto SWT:Auto

		Read		LISN	Cable	Limit	Over	
	Freq	Level	Level	Factor	Loss	Line	Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.191	18.10	38.62	10.43	10.09	63.98	-25.36	QP
2	0.437	23.80	44.57	10.66	10.11	57.11	-12.54	QP
3	0.452	27.30	48.09	10.67	10.12	56.85	-8.76	QP
4	0.844	18.21	39.12	10.80	10.11	56.00	-16.88	QP
5	1.734	14.41	35.08	10.50	10.17	56.00	-20.92	QP
6	12.449	25.80	46.81	10.80	10.21	60.00	-13.19	QP
	Freq	Read		LISN	Cable	Limit	Over	
	Freq	Level	Level	Factor	Loss	Line	Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.217	2.65	23.17	10.43	10.09	52.92	-29.75	Average
2	0.424	4.50	25.26	10.65	10.11	47.37	-22.11	Average
3	0.447	6.90	27.68	10.66	10.12	46.93	-19.25	Average
4	11.438	9.52	30.53	10.80	10.21	50.00	-19.47	Average
5	12.060	14.37	35.38	10.80	10.21	50.00	-14.62	Average
6	13.127	9.69	30.71	10.80	10.22	50.00	-19.29	Average

§15.205 & §15.209 & §15.407(B)– UNDESIRABLE EMISSION

Applicable Standard

FCC §15.407 (b); §15.209; §15.205;

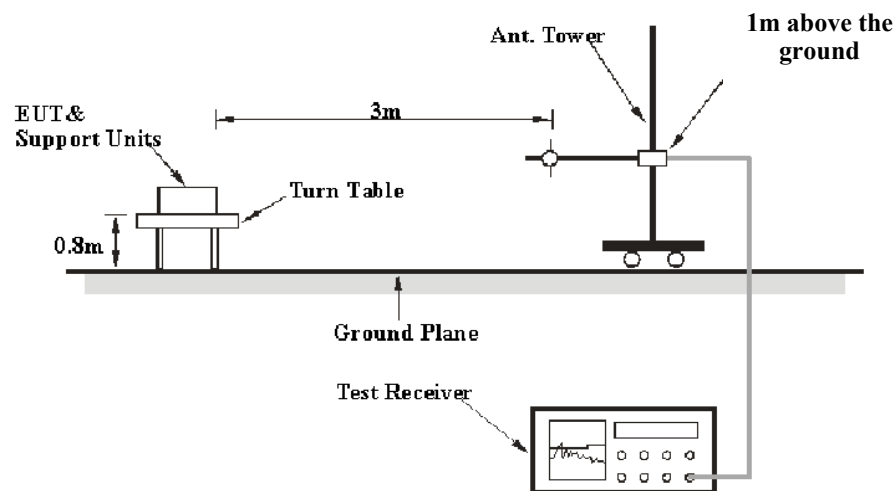
(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(6) For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of -27 dBm/MHz.

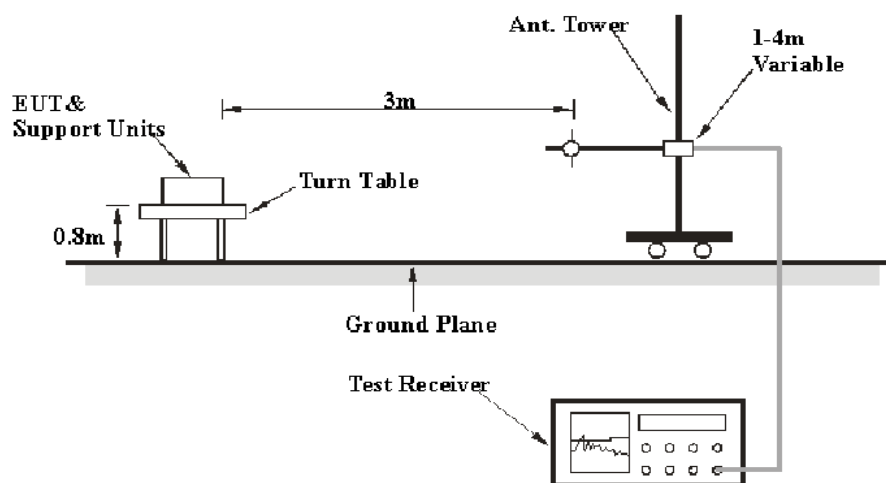
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

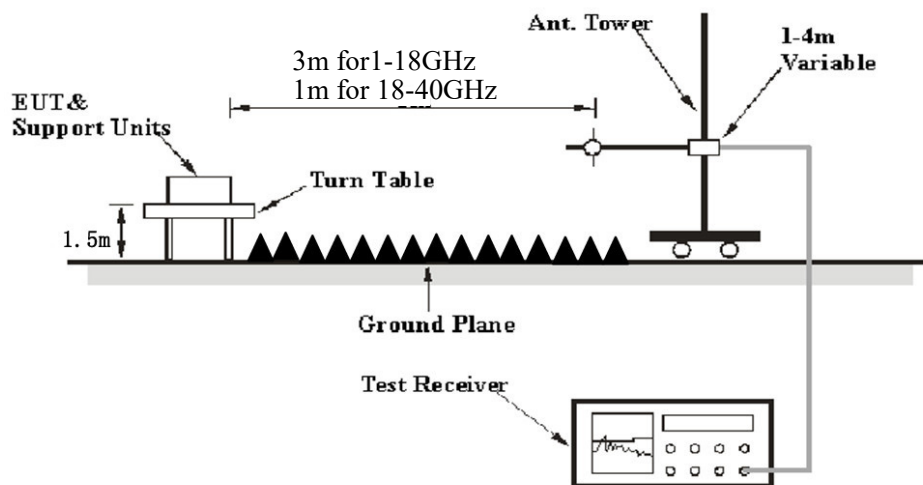
EUT Setup

9 kHz-30MHz:



Below 1 GHz:



Above 1 GHz:

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

9 kHz-1GHz:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	/	/	200 Hz	QP
	300 Hz	1 kHz	/	PK
150 kHz – 30 MHz	/	/	9 kHz	QP
	10 kHz	30 kHz	/	PK
30 MHz – 1000 MHz	/	/	120 kHz	QP
	100 kHz	300 kHz	/	PK

1-40GHz:

Pre-scan

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	5 kHz
	<98%	1MHz	≥1/Ton, not less than 5 kHz

Final measurement for emission identified during pre-scan

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	10 Hz
	<98%	1MHz	≥1/Ton

Note: Ton is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Test Procedure

Radiated Spurious Emission

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

All final data was recorded in Quasi-peak detection mode except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, average detection modes for frequency bands 9–90 kHz and 110–490 kHz, peak and average detection modes for frequencies above 1 GHz.

For 9 kHz-30MHz, the report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground-parallel) unless the margin is greater than 20 dB.

All emissions under the average limit and under the noise floor have not recorded in the report.

According to ANSI C63.10-2013,9.4: For field strength measurements made at other than the distance at which the applicable limit is specified, extrapolate the measured field strength to the field strength at the distance specified by the limit using an inverse distance correction factor (20 dB/decade of distance). In some cases, a different distance correction factor may be required;

$$E_{\text{SpecLimit}} = E_{\text{Meas}} + 20 \log \left(\frac{d_{\text{Meas}}}{d_{\text{SpecLimit}}} \right)$$

where

$E_{\text{SpecLimit}}$ is the field strength of the emission at the distance specified by the limit, in dB μ V/m

E_{Meas} is the field strength of the emission at the measurement distance, in dB μ V/m

d_{Meas} is the measurement distance, in m

$d_{\text{SpecLimit}}$ is the distance specified by the limit, in m

So the extrapolation factor of 1m is $20 \cdot \log(1/3) = -9.5$ dB, for 18-40GHz range, the limit of 1m distance was added by 9.5dB from limit of 3m to compared with the result measurement at 1m distance.

Factor & Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Over Limit/Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

$$\begin{aligned}\text{Over Limit} &= \text{Level} - \text{Limit}; \text{Margin} = \text{Limit} - \text{Corrected Amplitude} \\ \text{Level} / \text{Corrected Amplitude} &= \text{Read Level} + \text{Factor}\end{aligned}$$

Test Data

Environmental Conditions

Temperature:	22~25 °C
Relative Humidity:	50~54 %
ATM Pressure:	101 kPa

The testing was performed by Anson Su on 12-04 for below 1GHz and Zenos Qiao on 2024-11-06 for above 1GHz.

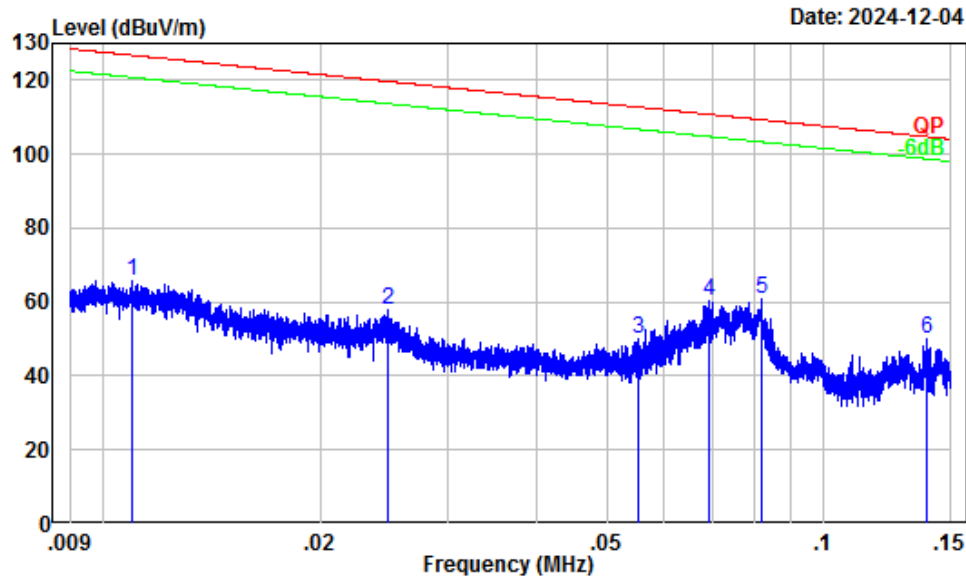
EUT operation mode: Transmitting

Note: Pre-scan in the X, Y and Z axes of orientation, the worst case Z-axis of orientation was recorded.

9 kHz-30MHz: (Maximum Output Power Mode, 802.11ax160 6025MHz)

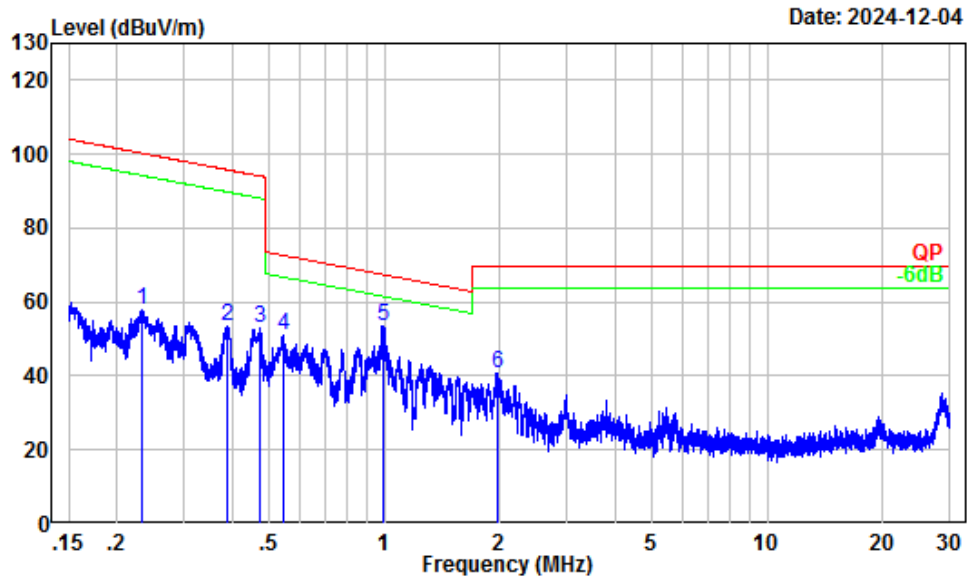
Note: When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded.

Parallel (worst case)



Site : Chamber A
Condition : 3m
Project Number: 2401W43894E-RF
Test Mode : WIFI 6E Transmitting
Tester : Anson Su

	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	Line	Limit	
1	0.01	37.19	28.41	65.60	126.80	-61.20	Peak
2	0.02	30.14	27.80	57.94	119.72	-61.78	Peak
3	0.06	22.37	27.83	50.20	112.77	-62.57	Peak
4	0.07	20.47	39.87	60.34	110.79	-50.45	Peak
5	0.08	18.83	41.97	60.80	109.33	-48.53	Peak
6	0.14	15.23	34.76	49.99	104.75	-54.76	Peak

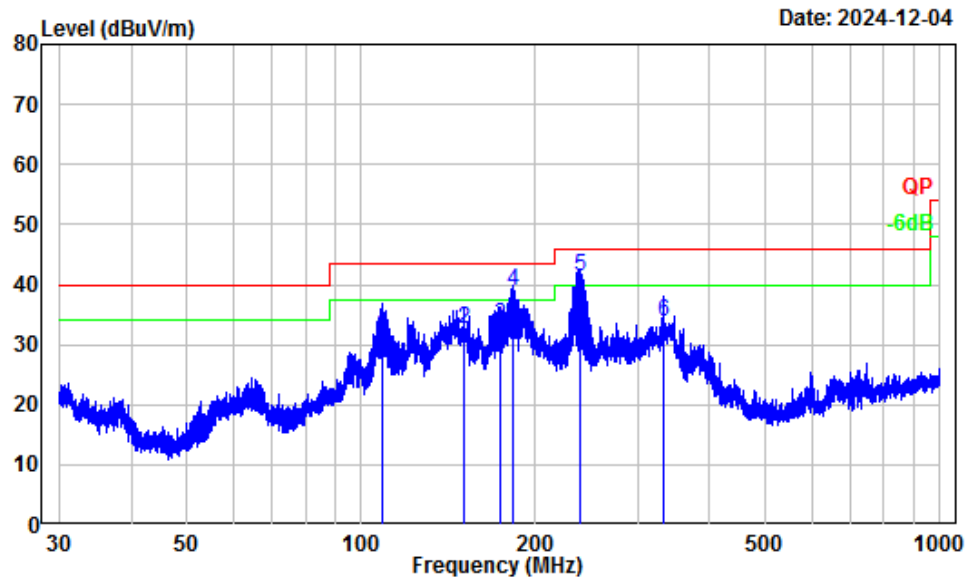


Site : Chamber A
Condition : 3m
Project Number: 2401W43894E-RF
Test Mode : WIFI 6E Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.23	10.80	46.99	57.79	100.22	-42.43	Peak
2	0.39	5.83	47.75	53.58	95.80	-42.22	Peak
3	0.47	4.06	48.71	52.77	94.11	-41.34	Peak
4	0.54	2.95	47.98	50.93	72.86	-21.93	Peak
5	1.00	-1.57	55.16	53.59	67.50	-13.91	Peak
6	1.98	-5.01	45.75	40.74	69.54	-28.80	Peak

30 MHz–1 GHz: (Maximum Output Power Mode, 802.11ax160 6025MHz)

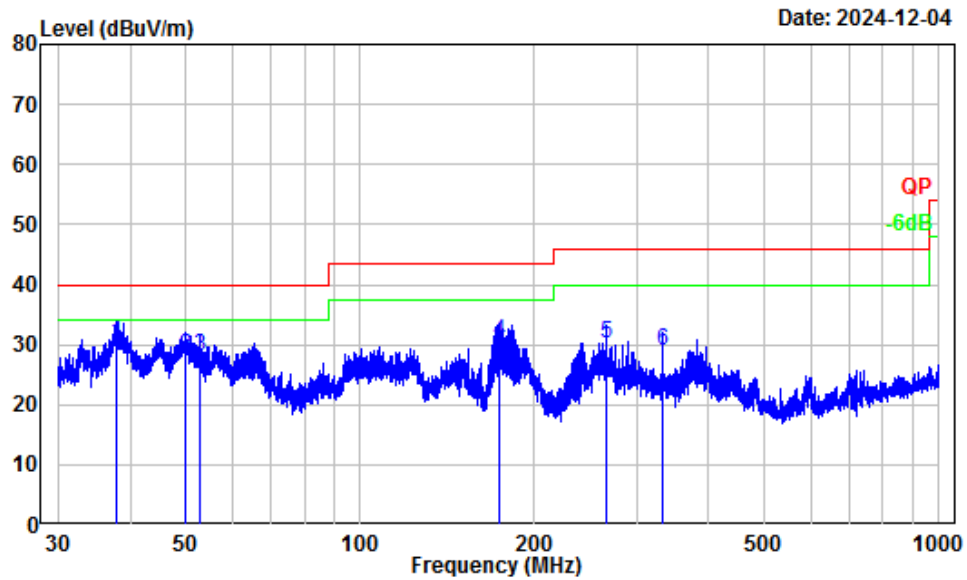
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401W43894E-RF
Test Mode : WIFI 6E Transmitting
Tester : Anson Su

	Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	108.74	-14.38	46.20	31.82	43.50	-11.68	QP
2	150.80	-13.61	46.20	32.59	43.50	-10.91	QP
3	173.43	-13.91	46.99	33.08	43.50	-10.42	QP
4	183.12	-13.01	52.00	38.99	43.50	-4.51	QP
5	238.41	-14.53	56.00	41.47	46.00	-4.53	QP
6	331.94	-12.50	46.30	33.80	46.00	-12.20	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number: 2401W43894E-RF
Test Mode : WIFI 6E Transmitting
Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	37.94	-11.74	42.00	30.26	40.00	-9.74	QP
2	49.99	-18.74	46.77	28.03	40.00	-11.97	QP
3	52.64	-19.08	47.02	27.94	40.00	-12.06	QP
4	173.74	-13.88	44.25	30.37	43.50	-13.13	QP
5	265.33	-13.91	44.02	30.11	46.00	-15.89	QP
6	333.10	-12.48	41.61	29.13	46.00	-16.87	QP

Above 1GHz:**Wi-Fi 6E_ U-NII 5:**

Frequency (MHz)	Reading (dBμV)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a							
5955MHz							
11910.00	47.35	PK	H	13.75	61.10	74	-12.90
11910.00	32.69	AV	H	13.75	46.44	54	-7.56
11910.00	47.03	PK	V	13.75	60.78	74	-13.22
11910.00	32.50	AV	V	13.75	46.25	54	-7.75
6175MHz							
12350.00	46.45	PK	H	13.35	59.80	74	-14.20
12350.00	31.84	AV	H	13.35	45.19	54	-8.81
12350.00	46.11	PK	V	13.35	59.46	74	-14.54
12350.00	31.62	AV	V	13.35	44.97	54	-9.03
6415MHz							
12830.00	45.67	PK	H	13.91	59.58	88.2	-28.62
12830.00	31.05	AV	H	13.91	44.96	68.2	-23.24
12830.00	45.34	PK	V	13.91	59.25	88.2	-28.95
12830.00	30.83	AV	V	13.91	44.74	68.2	-23.46
802.11ax20							
5955MHz							
11910.00	47.15	PK	H	13.75	60.90	74	-13.10
11910.00	32.57	AV	H	13.75	46.32	54	-7.68
11910.00	46.80	PK	V	13.75	60.55	74	-13.45
11910.00	32.38	AV	V	13.75	46.13	54	-7.87
6175MHz							
12350.00	46.36	PK	H	13.35	59.71	74	-14.29
12350.00	31.78	AV	H	13.35	45.13	54	-8.87
12350.00	46.09	PK	V	13.35	59.44	74	-14.56
12350.00	31.57	AV	V	13.35	44.92	54	-9.08
6415MHz							
12830.00	45.58	PK	H	13.91	59.49	88.2	-28.71
12830.00	31.02	AV	H	13.91	44.93	68.2	-23.27
12830.00	45.27	PK	V	13.91	59.18	88.2	-29.02
12830.00	30.85	AV	V	13.91	44.76	68.2	-23.44

Frequency (MHz)	Reading (dBμV)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11ax40							
5965MHz							
11930.00	47.17	PK	H	13.77	60.94	74	-13.06
11930.00	32.64	AV	H	13.77	46.41	54	-7.59
11930.00	46.89	PK	V	13.77	60.66	74	-13.34
11930.00	32.46	AV	V	13.77	46.23	54	-7.77
6165MHz							
12330.00	46.59	PK	H	13.39	59.98	74	-14.02
12330.00	31.97	AV	H	13.39	45.36	54	-8.64
12330.00	46.31	PK	V	13.39	59.70	74	-14.30
12330.00	31.78	AV	V	13.39	45.17	54	-8.83
6405MHz							
12810.00	46.06	PK	H	13.91	59.97	88.2	-28.23
12810.00	31.38	AV	H	13.91	45.29	68.2	-22.91
12810.00	45.75	PK	V	13.91	59.66	88.2	-28.54
12810.00	31.20	AV	V	13.91	45.11	68.2	-23.09
802.11ax80							
5985MHz							
11970.00	46.94	PK	H	13.81	60.75	74	-13.25
11970.00	32.22	AV	H	13.81	46.03	54	-7.97
11970.00	46.67	PK	V	13.81	60.48	74	-13.52
11970.00	32.01	AV	V	13.81	45.82	54	-8.18
6145MHz							
12290.00	46.47	PK	H	13.46	59.93	74	-14.07
12290.00	32.04	AV	H	13.46	45.50	54	-8.50
12290.00	46.19	PK	V	13.46	59.65	74	-14.35
12290.00	31.85	AV	V	13.46	45.31	54	-8.69
6385MHz							
12770.00	46.06	PK	H	13.77	59.83	88.2	-28.37
12770.00	31.83	AV	H	13.77	45.60	68.2	-22.60
12770.00	45.78	PK	V	13.77	59.55	88.2	-28.65
12770.00	31.65	AV	V	13.77	45.42	68.2	-22.78

Frequency (MHz)	Reading (dB μ V)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11ax160							
6025MHz							
12050.00	46.83	PK	H	13.84	60.67	74	-13.33
12050.00	31.94	AV	H	13.84	45.78	54	-8.22
12050.00	46.55	PK	V	13.84	60.39	74	-13.61
12050.00	31.77	AV	V	13.84	45.61	54	-8.39
6185MHz							
12370.00	46.57	PK	H	13.32	59.89	74	-14.11
12370.00	31.73	AV	H	13.32	45.05	54	-8.95
12370.00	46.24	PK	V	13.32	59.56	74	-14.44
12370.00	31.56	AV	V	13.32	44.88	54	-9.12
6345MHz							
12690.00	46.30	PK	H	13.45	59.75	74	-14.25
12690.00	31.52	AV	H	13.45	44.97	54	-9.03
12690.00	46.06	PK	V	13.45	59.51	74	-14.49
12690.00	31.34	AV	V	13.45	44.79	54	-9.21

Wi-Fi 6E_ U-NII 6:

Frequency (MHz)	Reading (dBμV)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a							
6435MHz							
12870.00	46.48	PK	H	13.94	60.42	88.2	-27.78
12870.00	31.56	AV	H	13.94	45.50	68.2	-22.70
12870.00	46.21	PK	V	13.94	60.15	88.2	-28.05
12870.00	31.40	AV	V	13.94	45.34	68.2	-22.86
6475MHz							
12950.00	45.96	PK	H	13.83	59.79	88.2	-28.41
12950.00	31.25	AV	H	13.83	45.08	68.2	-23.12
12950.00	45.69	PK	V	13.83	59.52	88.2	-28.68
12950.00	31.08	AV	V	13.83	44.91	68.2	-23.29
6515MHz							
13030.00	45.57	PK	H	13.79	59.36	88.2	-28.84
13030.00	30.79	AV	H	13.79	44.58	68.2	-23.62
13030.00	45.33	PK	V	13.79	59.12	88.2	-29.08
13030.00	30.62	AV	V	13.79	44.41	68.2	-23.79
802.11ax20							
6435MHz							
12870.00	46.64	PK	H	13.94	60.58	88.2	-27.62
12870.00	31.78	AV	H	13.94	45.72	68.2	-22.48
12870.00	46.37	PK	V	13.94	60.31	88.2	-27.89
12870.00	31.59	AV	V	13.94	45.53	68.2	-22.67
6475MHz							
12950.00	46.18	PK	H	13.83	60.01	88.2	-28.19
12950.00	31.43	AV	H	13.83	45.26	68.2	-22.94
12950.00	45.92	PK	V	13.83	59.75	88.2	-28.45
12950.00	31.26	AV	V	13.83	45.09	68.2	-23.11
6515MHz							
13030.00	45.87	PK	H	13.79	59.66	88.2	-28.54
13030.00	30.93	AV	H	13.79	44.72	68.2	-23.48
13030.00	45.61	PK	V	13.79	59.40	88.2	-28.80
13030.00	30.75	AV	V	13.79	44.54	68.2	-23.66

Frequency (MHz)	Reading (dB μ V)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11ax40							
6445MHz							
12890.00	46.95	PK	H	13.95	60.90	88.2	-27.30
12890.00	31.71	AV	H	13.95	45.66	68.2	-22.54
12890.00	46.68	PK	V	13.95	60.63	88.2	-27.57
12890.00	31.53	AV	V	13.95	45.48	68.2	-22.72
6485MHz							
12970.00	46.54	PK	H	13.78	60.32	88.2	-27.88
12970.00	31.18	AV	H	13.78	44.96	68.2	-23.24
12970.00	46.29	PK	V	13.78	60.07	88.2	-28.13
12970.00	31.02	AV	V	13.78	44.80	68.2	-23.40
6525MHz							
13050.00	46.12	PK	H	13.84	59.96	88.2	-28.24
13050.00	30.69	AV	H	13.84	44.53	68.2	-23.67
13050.00	45.87	PK	V	13.84	59.71	88.2	-28.49
13050.00	30.50	AV	V	13.84	44.34	68.2	-23.86
802.11ax80							
6465MHz							
12930.00	46.50	PK	H	13.87	60.37	88.2	-27.83
12930.00	31.87	AV	H	13.87	45.74	68.2	-22.46
12930.00	46.24	PK	V	13.87	60.11	88.2	-28.09
12930.00	31.68	AV	V	13.87	45.55	68.2	-22.65
6545MHz							
13090.00	45.85	PK	H	13.96	59.81	88.2	-28.39
13090.00	31.46	AV	H	13.96	45.42	68.2	-22.78
13090.00	45.61	PK	V	13.96	59.57	88.2	-28.63
13090.00	31.29	AV	V	13.96	45.25	68.2	-22.95
802.11ax160							
6505MHz							
13010.00	46.27	PK	H	13.73	60.00	88.2	-28.20
13010.00	31.32	AV	H	13.73	45.05	68.2	-23.15
13010.00	46.01	PK	V	13.73	59.74	88.2	-28.46
13010.00	31.16	AV	V	13.73	44.89	68.2	-23.31

Wi-Fi 6E_ U-NII 7:

Frequency (MHz)	Reading (dBμV)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a							
6535MHz							
13070.00	45.72	PK	H	13.90	59.62	88.2	-28.58
13070.00	30.84	AV	H	13.90	44.74	68.2	-23.46
13070.00	45.48	PK	V	13.90	59.38	88.2	-28.82
13070.00	30.67	AV	V	13.90	44.57	68.2	-23.63
6695MHz							
13390.00	45.34	PK	H	14.55	59.89	74	-14.11
13390.00	30.56	AV	H	14.55	45.11	54	-8.89
13390.00	45.13	PK	V	14.55	59.68	74	-14.32
13390.00	30.40	AV	V	14.55	44.95	54	-9.05
6855MHz							
13710.00	45.01	PK	H	15.41	60.42	88.2	-27.78
13710.00	30.29	AV	H	15.41	45.70	68.2	-22.50
13710.00	44.77	PK	V	15.41	60.18	88.2	-28.02
13710.00	30.12	AV	V	15.41	45.53	68.2	-22.67
802.11ax20							
6535MHz							
13070.00	45.59	PK	H	13.90	59.49	88.2	-28.71
13070.00	30.73	AV	H	13.90	44.63	68.2	-23.57
13070.00	45.34	PK	V	13.90	59.24	88.2	-28.96
13070.00	30.56	AV	V	13.90	44.46	68.2	-23.74
6695MHz							
13390.00	45.27	PK	H	14.55	59.82	74	-14.18
13390.00	30.45	AV	H	14.55	45.00	54	-9.00
13390.00	45.03	PK	V	14.55	59.58	74	-14.42
13390.00	30.31	AV	V	14.55	44.86	54	-9.14
6855MHz							
13710.00	44.98	PK	H	15.41	60.39	88.2	-27.81
13710.00	30.17	AV	H	15.41	45.58	68.2	-22.62
13710.00	44.72	PK	V	15.41	60.13	88.2	-28.07
13710.00	30.03	AV	V	15.41	45.44	68.2	-22.76

Frequency (MHz)	Reading (dB μ V)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11ax40							
6565MHz							
13130.00	47.28	PK	H	14.02	61.30	88.2	-26.90
13130.00	32.33	AV	H	14.02	46.35	68.2	-21.85
13130.00	47.04	PK	V	14.02	61.06	88.2	-27.14
13130.00	32.16	AV	V	14.02	46.18	68.2	-22.02
6685MHz							
13370.00	46.47	PK	H	14.53	61.00	74	-13.00
13370.00	31.50	AV	H	14.53	46.03	54	-7.97
13370.00	46.21	PK	V	14.53	60.74	74	-13.26
13370.00	31.32	AV	V	14.53	45.85	54	-8.15
6845MHz							
13690.00	45.75	PK	H	15.34	61.09	88.2	-27.11
13690.00	30.87	AV	H	15.34	46.21	68.2	-21.99
13690.00	45.52	PK	V	15.34	60.86	88.2	-27.34
13690.00	30.69	AV	V	15.34	46.03	68.2	-22.17

Frequency (MHz)	Reading (dB μ V)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11ax80							
6625MHz							
13250.00	46.87	PK	H	14.28	61.15	74	-12.85
13250.00	31.92	AV	H	14.28	46.20	54	-7.80
13250.00	46.64	PK	V	14.28	60.92	74	-13.08
13250.00	31.75	AV	V	14.28	46.03	54	-7.97
6705MHz							
13410.00	47.20	PK	H	14.58	61.78	88.2	-26.42
13410.00	32.28	AV	H	14.58	46.86	68.2	-21.34
13410.00	46.96	PK	V	14.58	61.54	88.2	-26.66
13410.00	32.12	AV	V	14.58	46.70	68.2	-21.50
6785MHz							
13570.00	46.35	PK	H	15.10	61.45	88.2	-26.75
13570.00	31.42	AV	H	15.10	46.52	68.2	-21.68
13570.00	46.11	PK	V	15.10	61.21	88.2	-26.99
13570.00	31.26	AV	V	15.10	46.36	68.2	-21.84
6865MHz							
13730.00	45.49	PK	H	15.53	61.02	88.2	-27.18
13730.00	30.71	AV	H	15.53	46.24	68.2	-21.96
13730.00	45.24	PK	V	15.53	60.77	88.2	-27.43
13730.00	30.55	AV	V	15.53	46.08	68.2	-22.12
802.11ax160							
6665MHz							
13330.00	46.74	PK	H	14.50	61.24	74	-12.76
13330.00	32.37	AV	H	14.50	46.87	54	-7.13
13330.00	46.48	PK	V	14.50	60.98	74	-13.02
13330.00	32.19	AV	V	14.50	46.69	54	-7.31
6825MHz							
13650.00	46.06	PK	H	15.30	61.36	88.2	-26.84
13650.00	31.90	AV	H	15.30	47.20	68.2	-21.00
13650.00	45.82	PK	V	15.30	61.12	88.2	-27.08
13650.00	31.73	AV	V	15.30	47.03	68.2	-21.17

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Frequency (MHz)	Reading (dBμV)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
802.11a							
6875MHz							
13750.00	45.05	PK	H	15.65	60.70	88.2	-27.50
13750.00	30.18	AV	H	15.65	45.83	68.2	-22.37
13750.00	44.82	PK	V	15.65	60.47	88.2	-27.73
13750.00	30.03	AV	V	15.65	45.68	68.2	-22.52
6895MHz							
13790.00	46.09	PK	H	15.89	61.98	88.2	-26.22
13790.00	31.37	AV	H	15.89	47.26	68.2	-20.94
13790.00	45.86	PK	V	15.89	61.75	88.2	-26.45
13790.00	31.21	AV	V	15.89	47.10	68.2	-21.10
6995MHz							
13990.00	45.67	PK	H	17.03	62.70	88.2	-25.50
13990.00	31.08	AV	H	17.03	48.11	68.2	-20.09
13990.00	45.43	PK	V	17.03	62.46	88.2	-25.74
13990.00	30.92	AV	V	17.03	47.95	68.2	-20.25
7115MHz							
14230.00	45.28	PK	H	17.22	62.50	88.2	-25.70
14230.00	30.56	AV	H	17.22	47.78	68.2	-20.42
14230.00	45.05	PK	V	17.22	62.27	88.2	-25.93
14230.00	30.39	AV	V	17.22	47.61	68.2	-20.59

Frequency (MHz)	Reading (dB μ V)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11ax20							
6875MHz							
13750.00	45.12	PK	H	15.65	60.77	88.2	-27.43
13750.00	30.27	AV	H	15.65	45.92	68.2	-22.28
13750.00	44.88	PK	V	15.65	60.53	88.2	-27.67
13750.00	30.09	AV	V	15.65	45.74	68.2	-22.46
6895MHz							
13790.00	46.38	PK	H	15.89	62.27	88.2	-25.93
13790.00	31.45	AV	H	15.89	47.34	68.2	-20.86
13790.00	46.14	PK	V	15.89	62.03	88.2	-26.17
13790.00	31.27	AV	V	15.89	47.16	68.2	-21.04
6995MHz							
13990.00	45.94	PK	H	17.03	62.97	88.2	-25.23
13990.00	31.17	AV	H	17.03	48.20	68.2	-20.00
13990.00	45.69	PK	V	17.03	62.72	88.2	-25.48
13990.00	31.02	AV	V	17.03	48.05	68.2	-20.15
7115MHz							
14230.00	45.52	PK	H	17.22	62.74	88.2	-25.46
14230.00	30.63	AV	H	17.22	47.85	68.2	-20.35
14230.00	45.26	PK	V	17.22	62.48	88.2	-25.72
14230.00	30.45	AV	V	17.22	47.67	68.2	-20.53

Frequency (MHz)	Reading (dB μ V)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11ax40							
6885MHz							
13770.00	45.30	PK	H	15.77	61.07	88.2	-27.13
13770.00	30.88	AV	H	15.77	46.65	68.2	-21.55
13770.00	45.05	PK	V	15.77	60.82	88.2	-27.38
13770.00	30.71	AV	V	15.77	46.48	68.2	-21.72
6925MHz							
13850.00	46.15	PK	H	16.40	62.55	88.2	-25.65
13850.00	31.64	AV	H	16.40	48.04	68.2	-20.16
13850.00	45.93	PK	V	16.40	62.33	88.2	-25.87
13850.00	31.49	AV	V	16.40	47.89	68.2	-20.31
6965MHz							
13930.00	45.68	PK	H	16.91	62.59	88.2	-25.61
13930.00	31.12	AV	H	16.91	48.03	68.2	-20.17
13930.00	45.44	PK	V	16.91	62.35	88.2	-25.85
13930.00	30.96	AV	V	16.91	47.87	68.2	-20.33
7085MHz							
14170.00	45.24	PK	H	17.12	62.36	88.2	-25.84
14170.00	30.59	AV	H	17.12	47.71	68.2	-20.49
14170.00	45.01	PK	V	17.12	62.13	88.2	-26.07
14170.00	30.43	AV	V	17.12	47.55	68.2	-20.65

Frequency (MHz)	Reading (dB μ V)	PK/AV	Polar (H/V)	Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
802.11ax80							
6945MHz							
13890.00	46.76	PK	H	16.76	63.52	88.2	-24.68
13890.00	31.87	AV	H	16.76	48.63	68.2	-19.57
13890.00	46.51	PK	V	16.76	63.27	88.2	-24.93
13890.00	31.72	AV	V	16.76	48.48	68.2	-19.72
7025MHz							
14050.00	46.14	PK	H	17.07	63.21	88.2	-24.99
14050.00	31.23	AV	H	17.07	48.30	68.2	-19.90
14050.00	45.91	PK	V	17.07	62.98	88.2	-25.22
14050.00	31.08	AV	V	17.07	48.15	68.2	-20.05
802.11ax160							
6985MHz							
13970.00	45.61	PK	H	16.99	62.60	88.2	-25.60
13970.00	30.75	AV	H	16.99	47.74	68.2	-20.46
13970.00	45.36	PK	V	16.99	62.35	88.2	-25.85
13970.00	30.57	AV	V	16.99	47.56	68.2	-20.64

Note:

Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

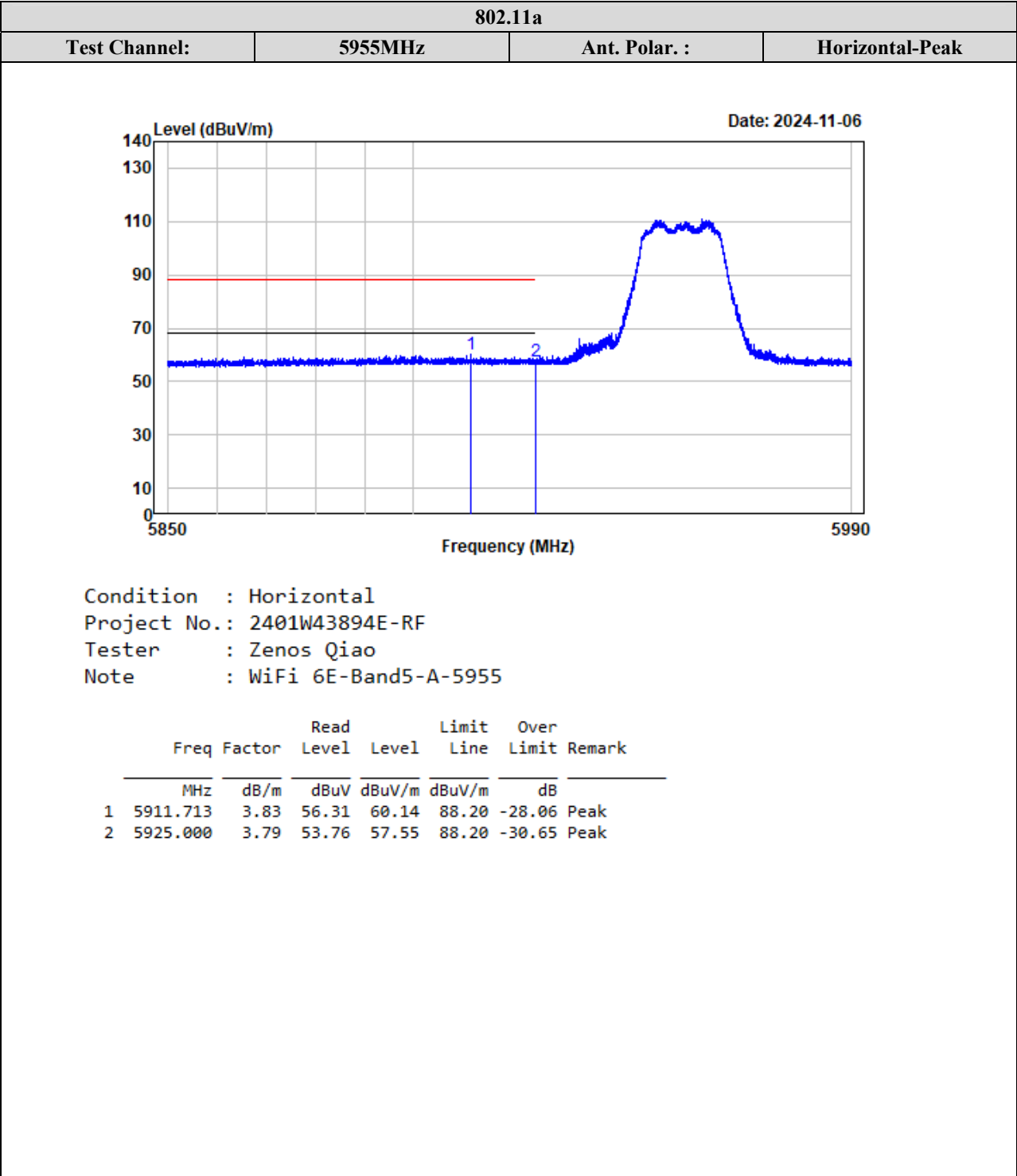
Corrected Amplitude = Factor + Reading

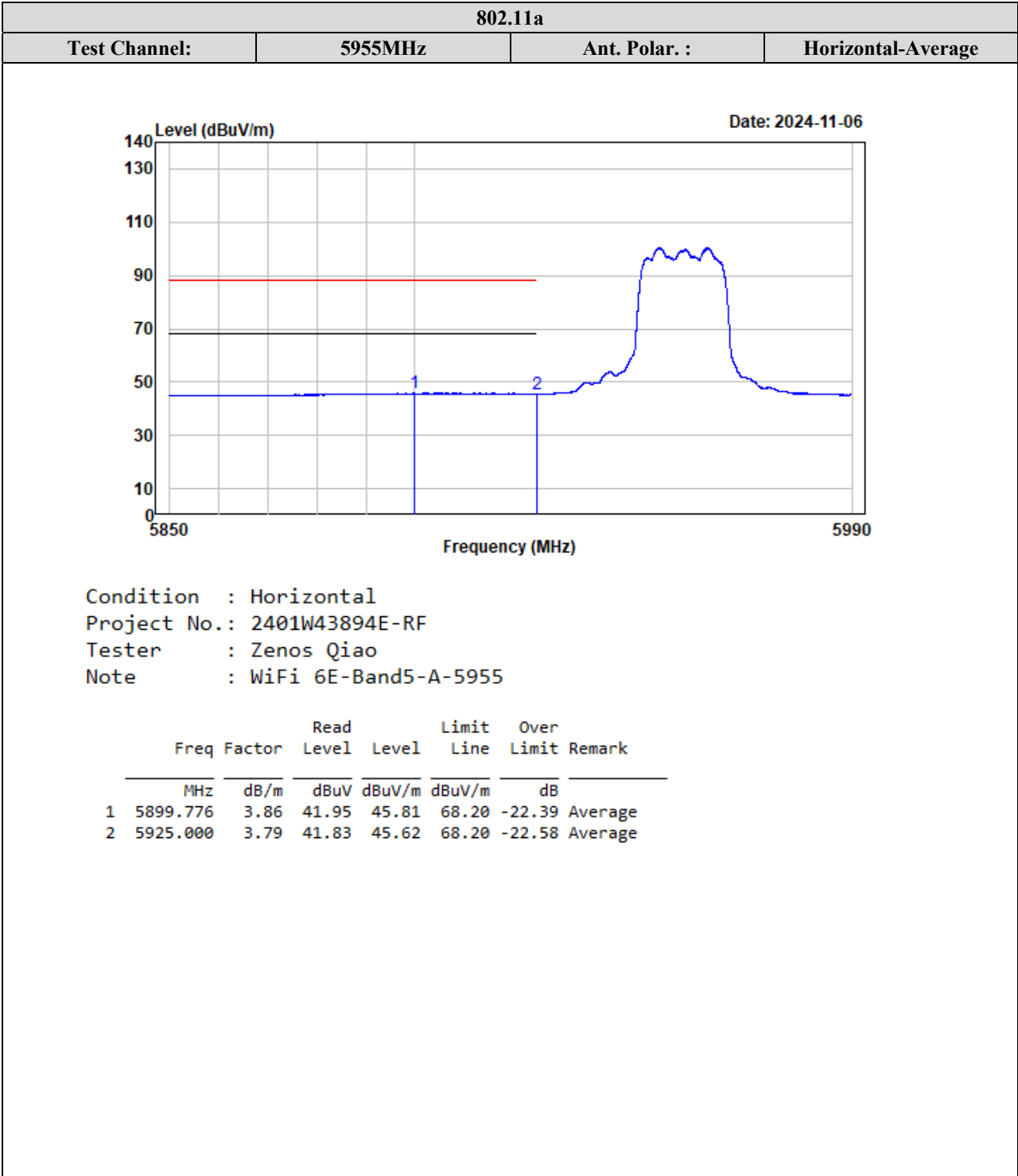
Margin = Corrected. Amplitude - Limit

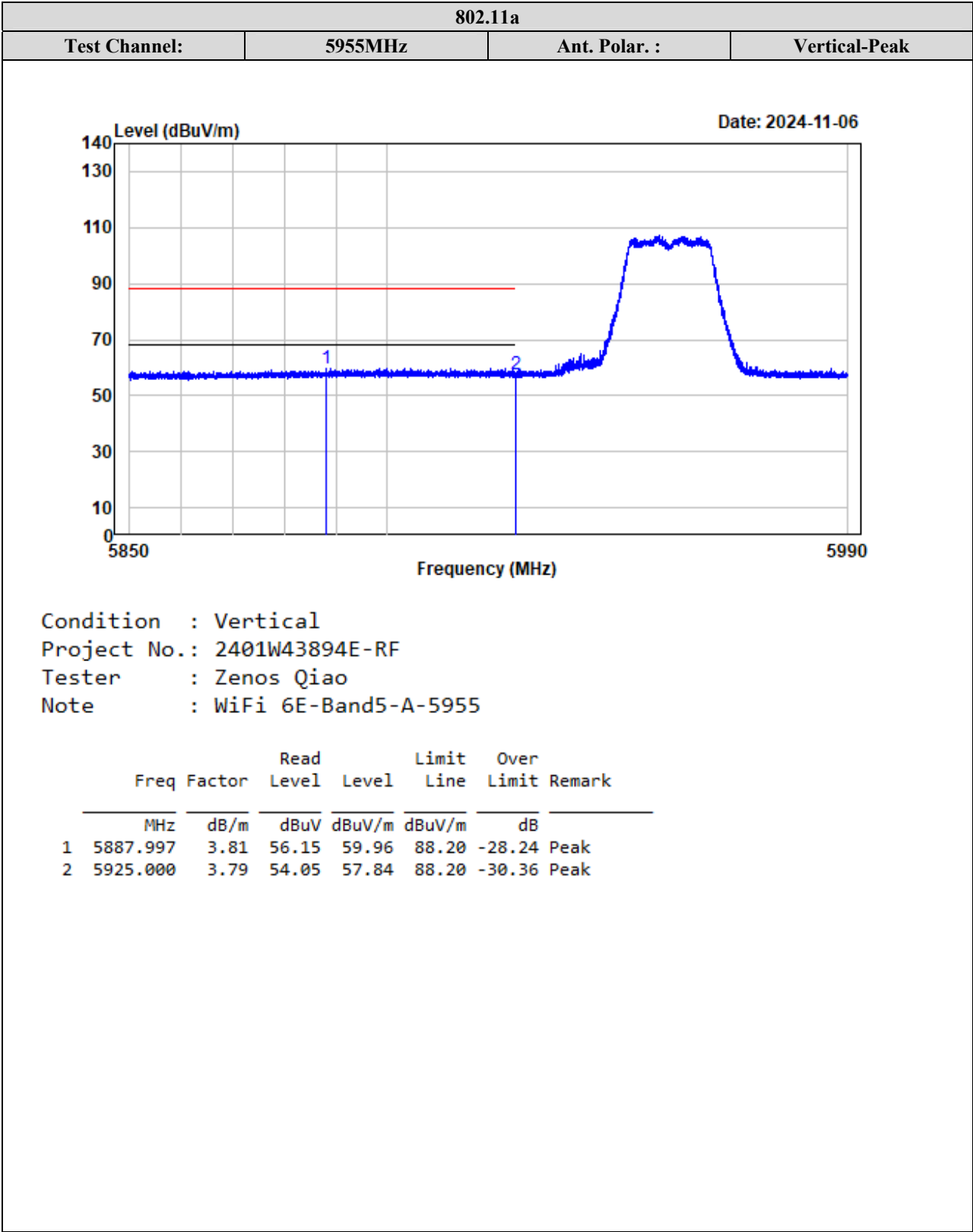
The other spurious emission which is in the noise floor level was not recorded.

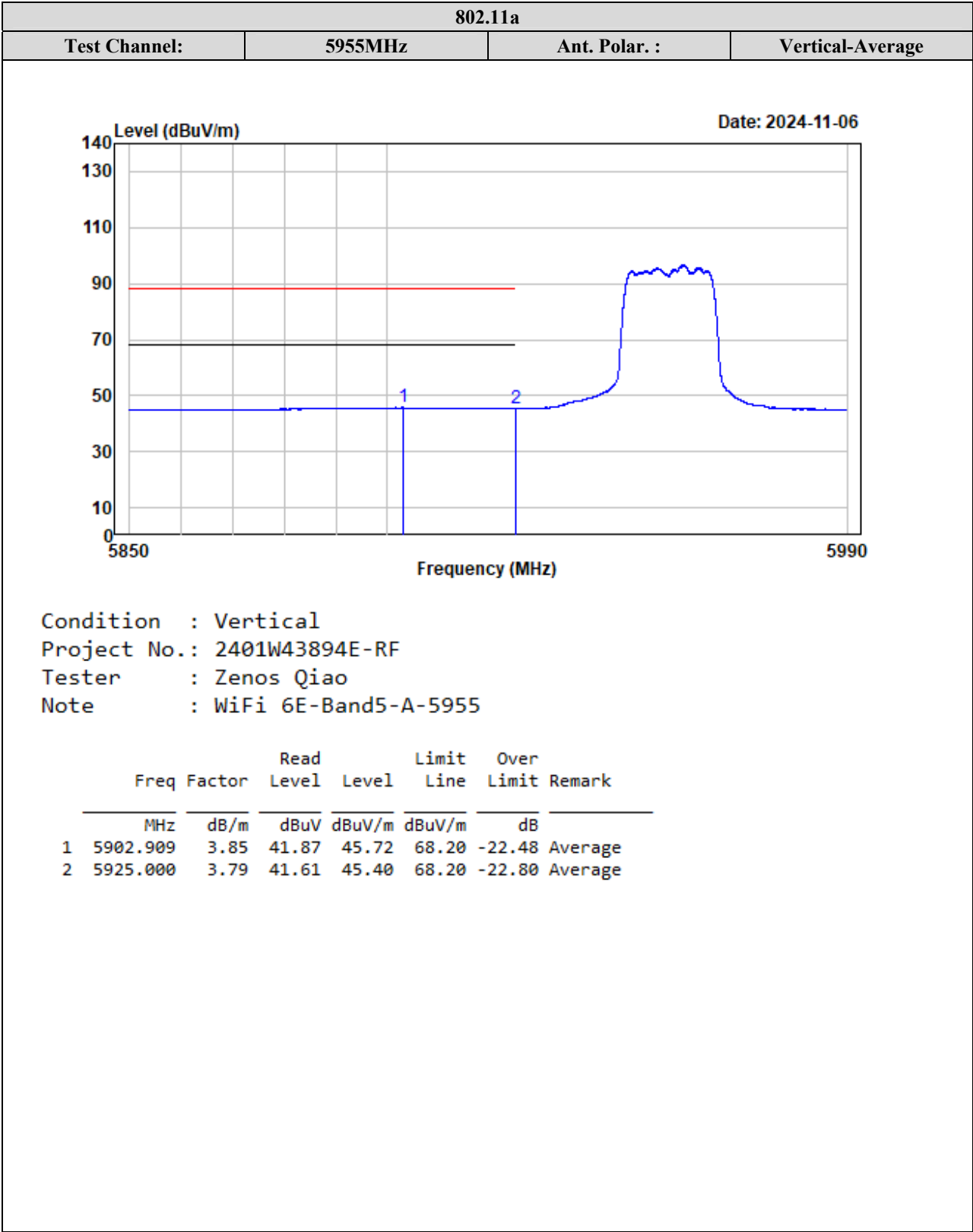
Test plots for Band Edge Measurements (Radiated)

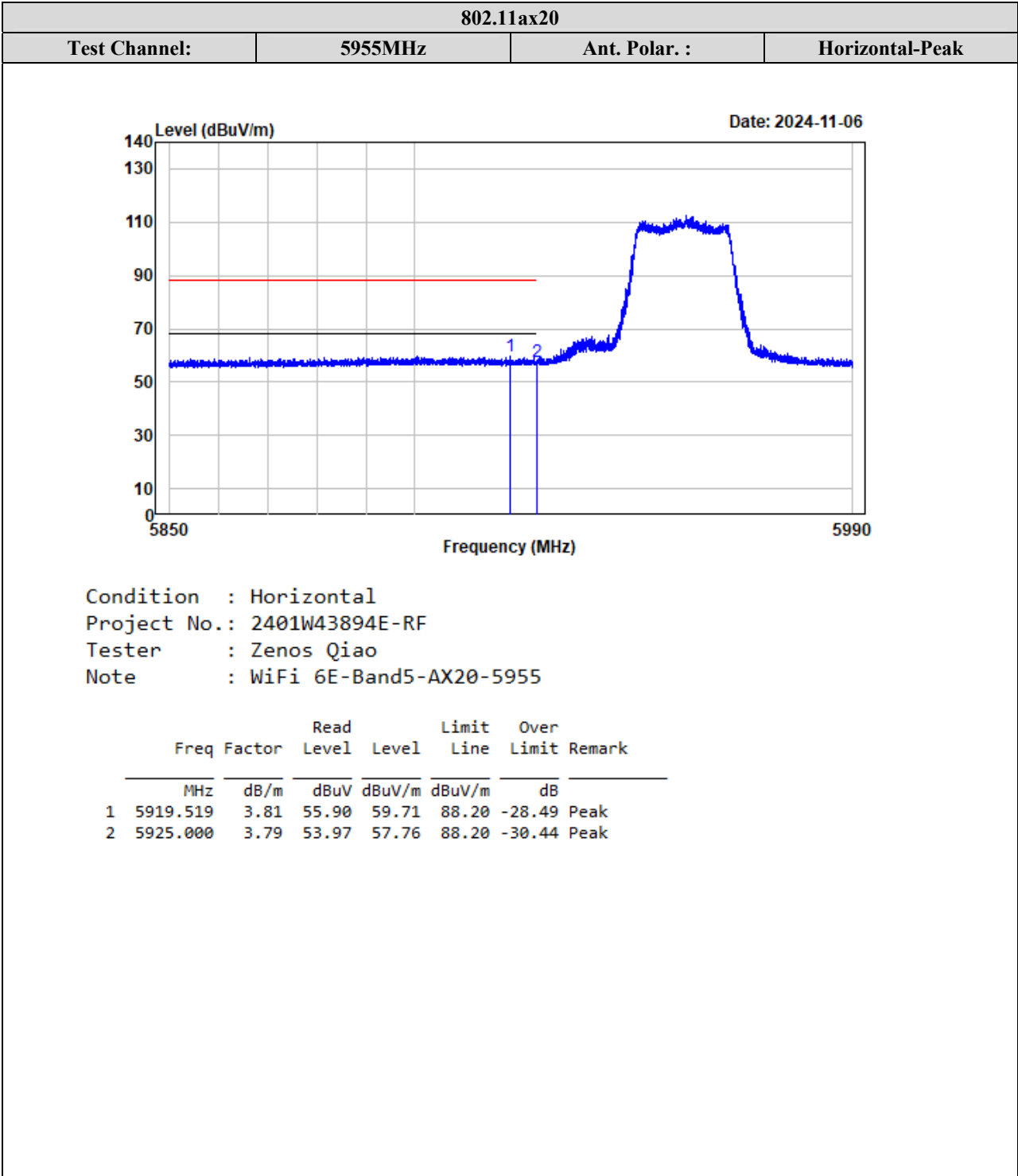
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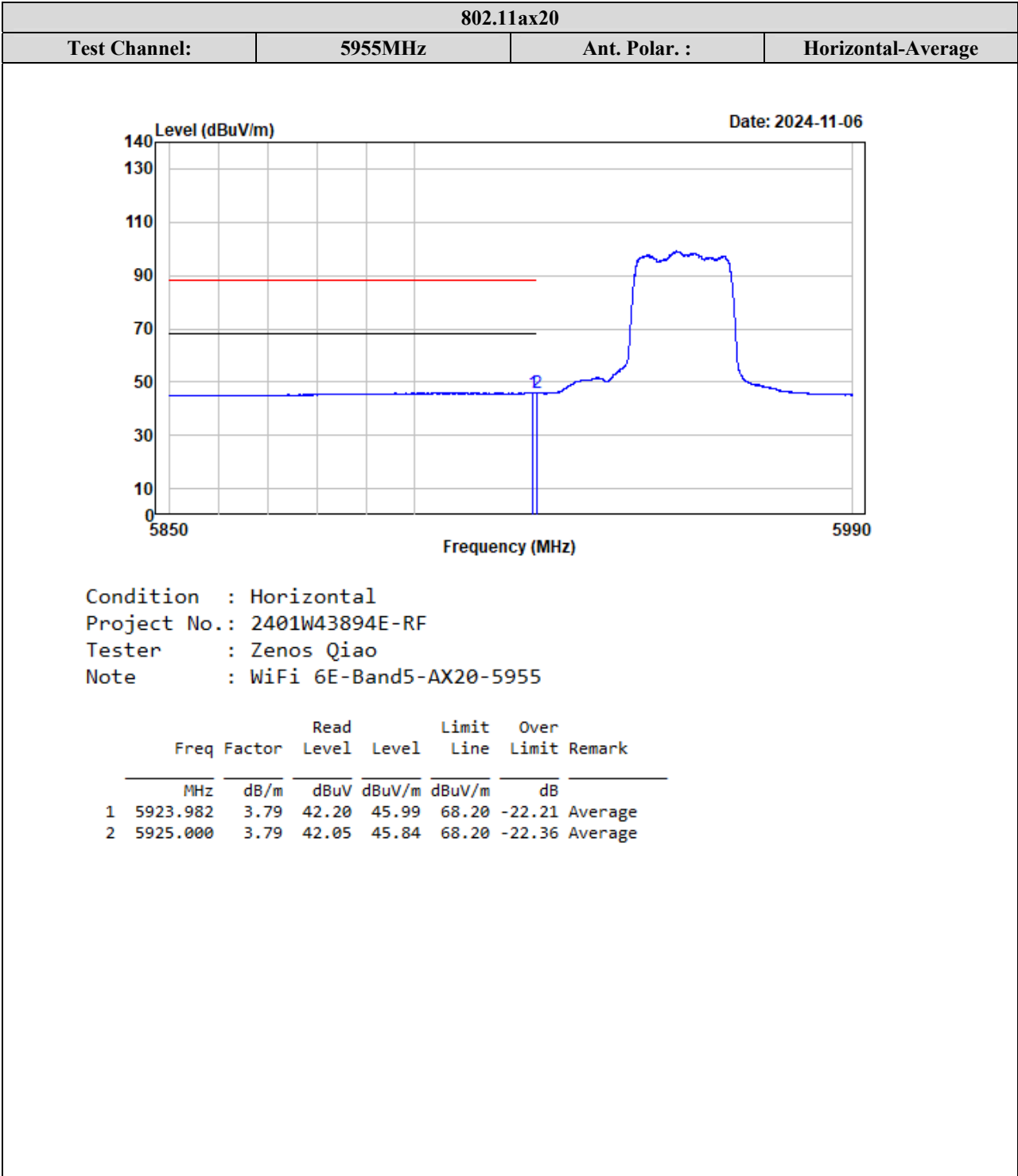


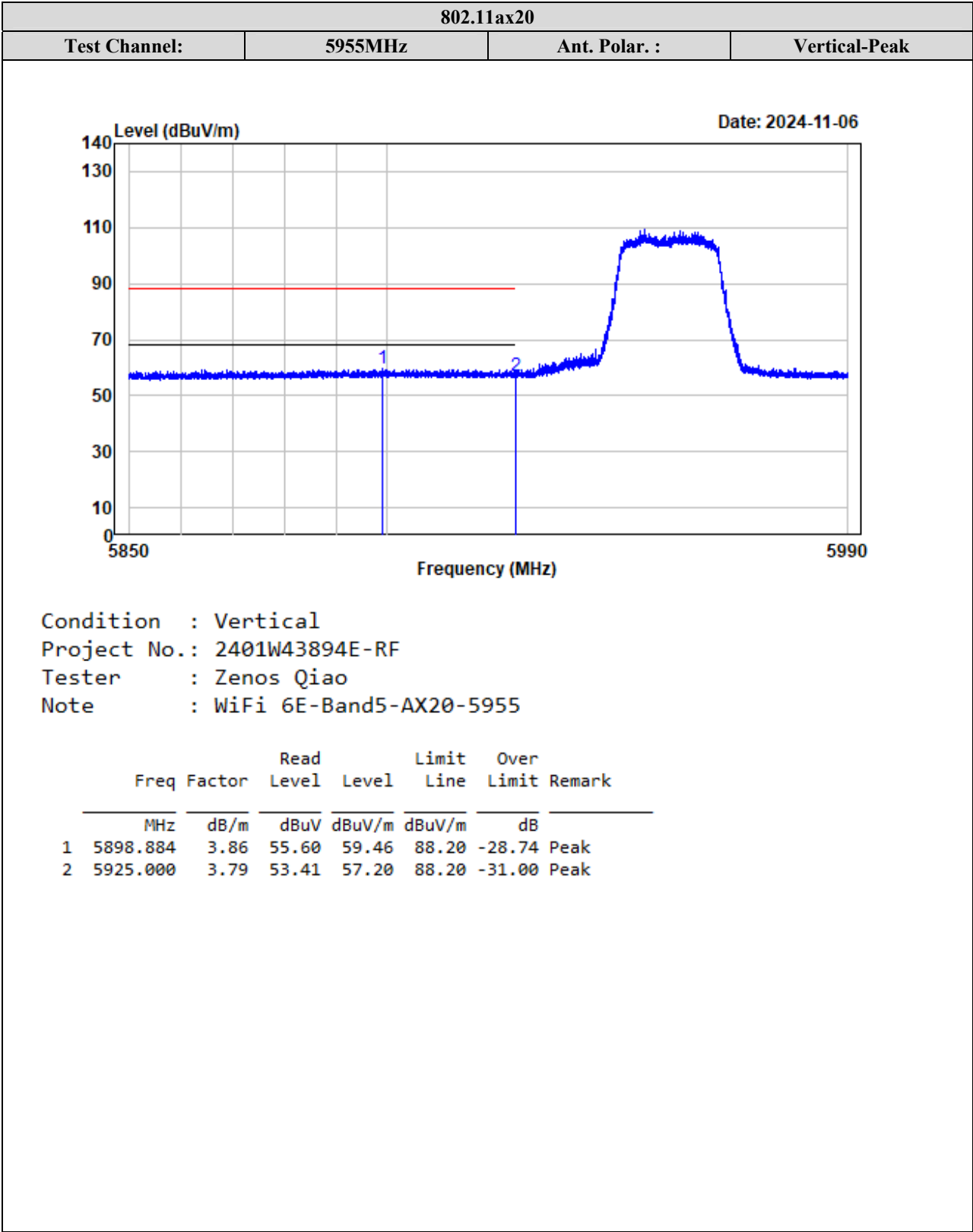


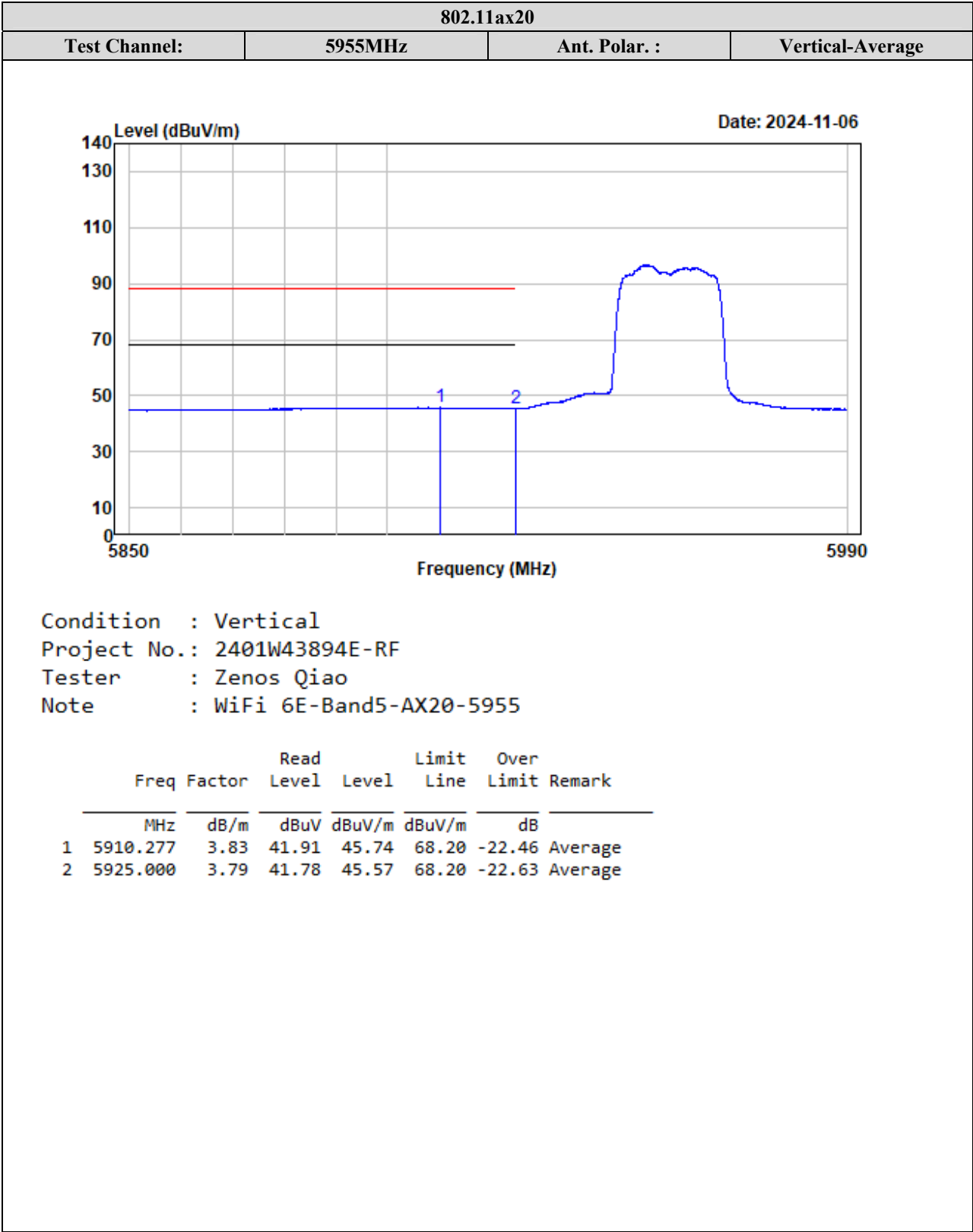


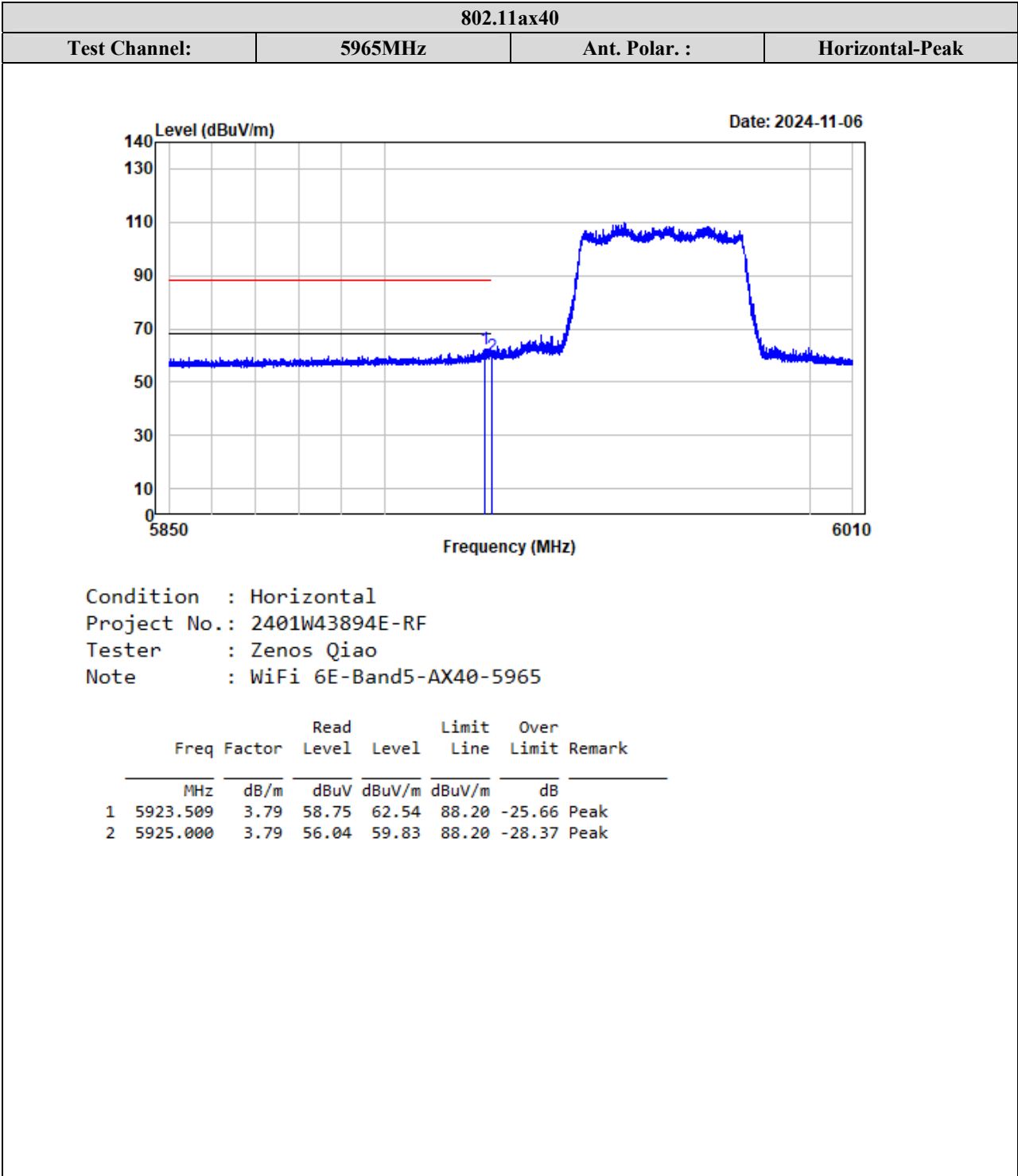


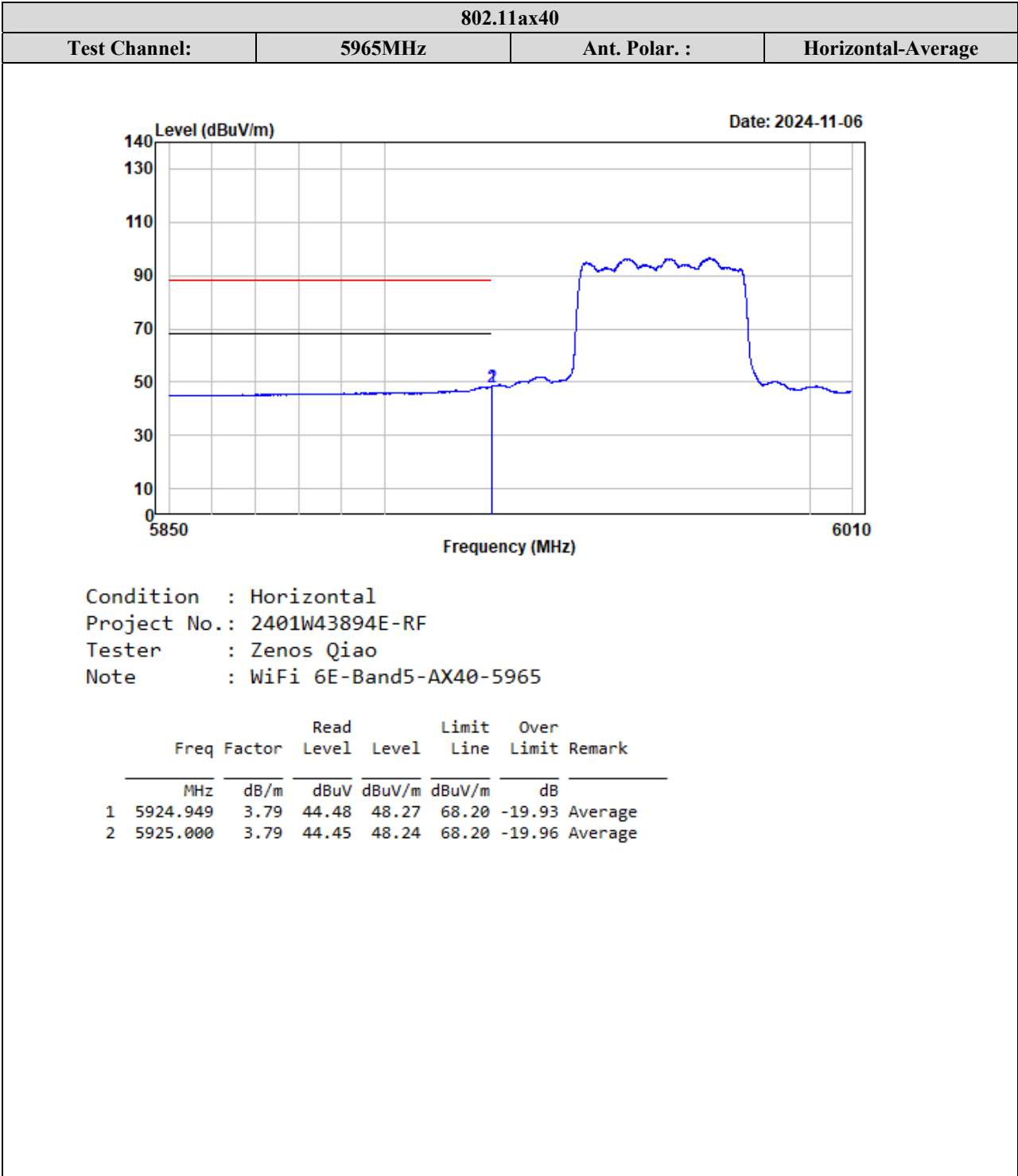


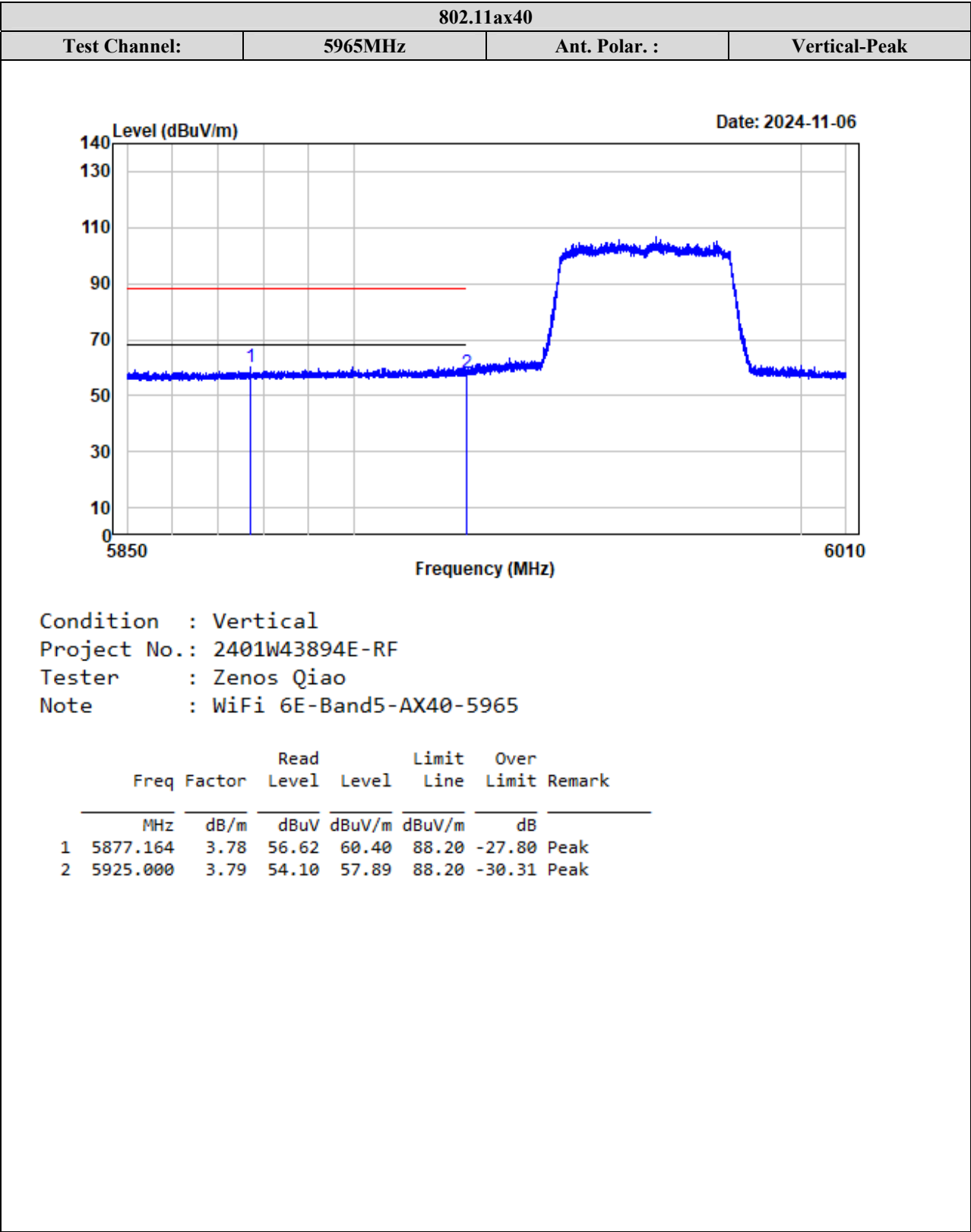


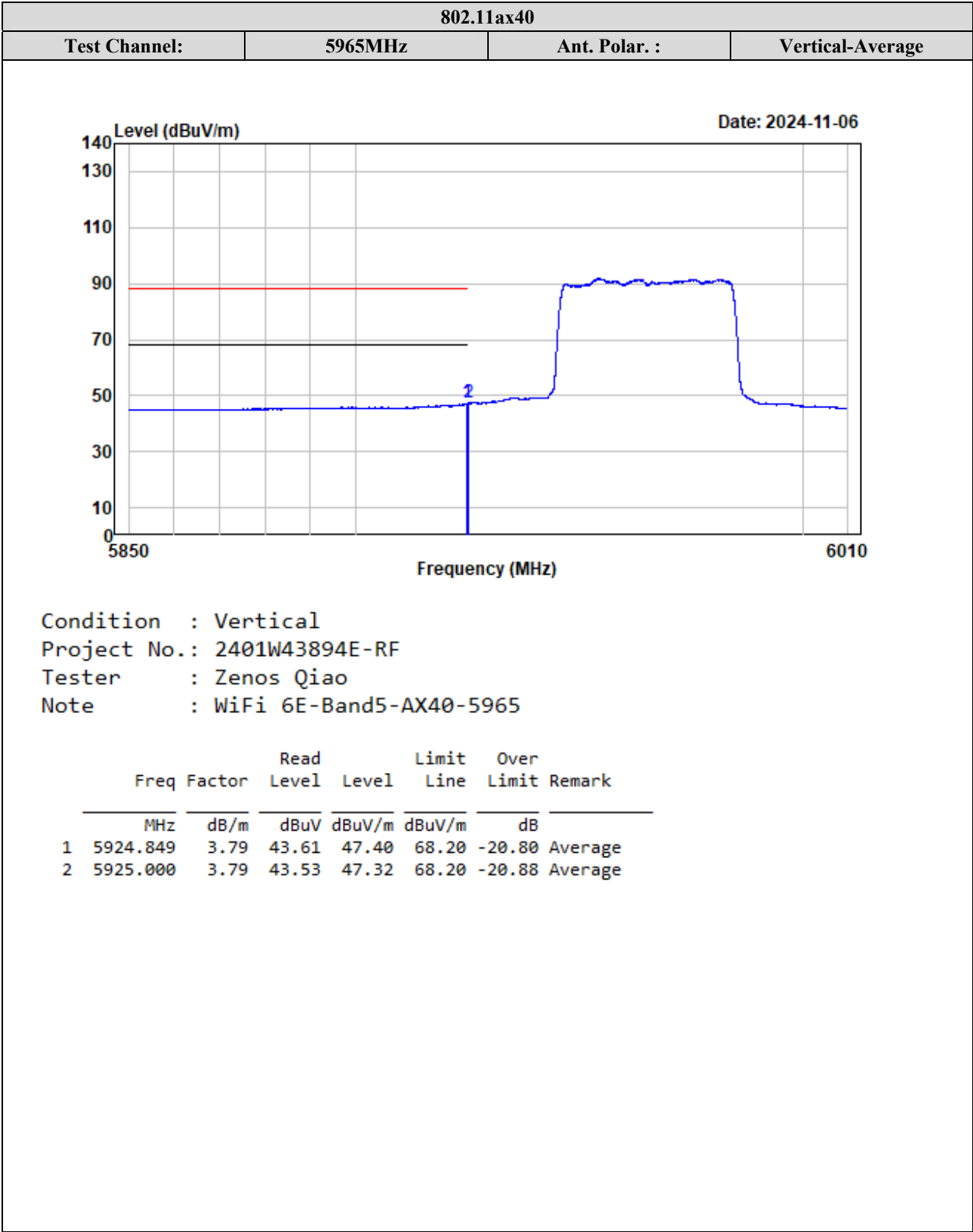


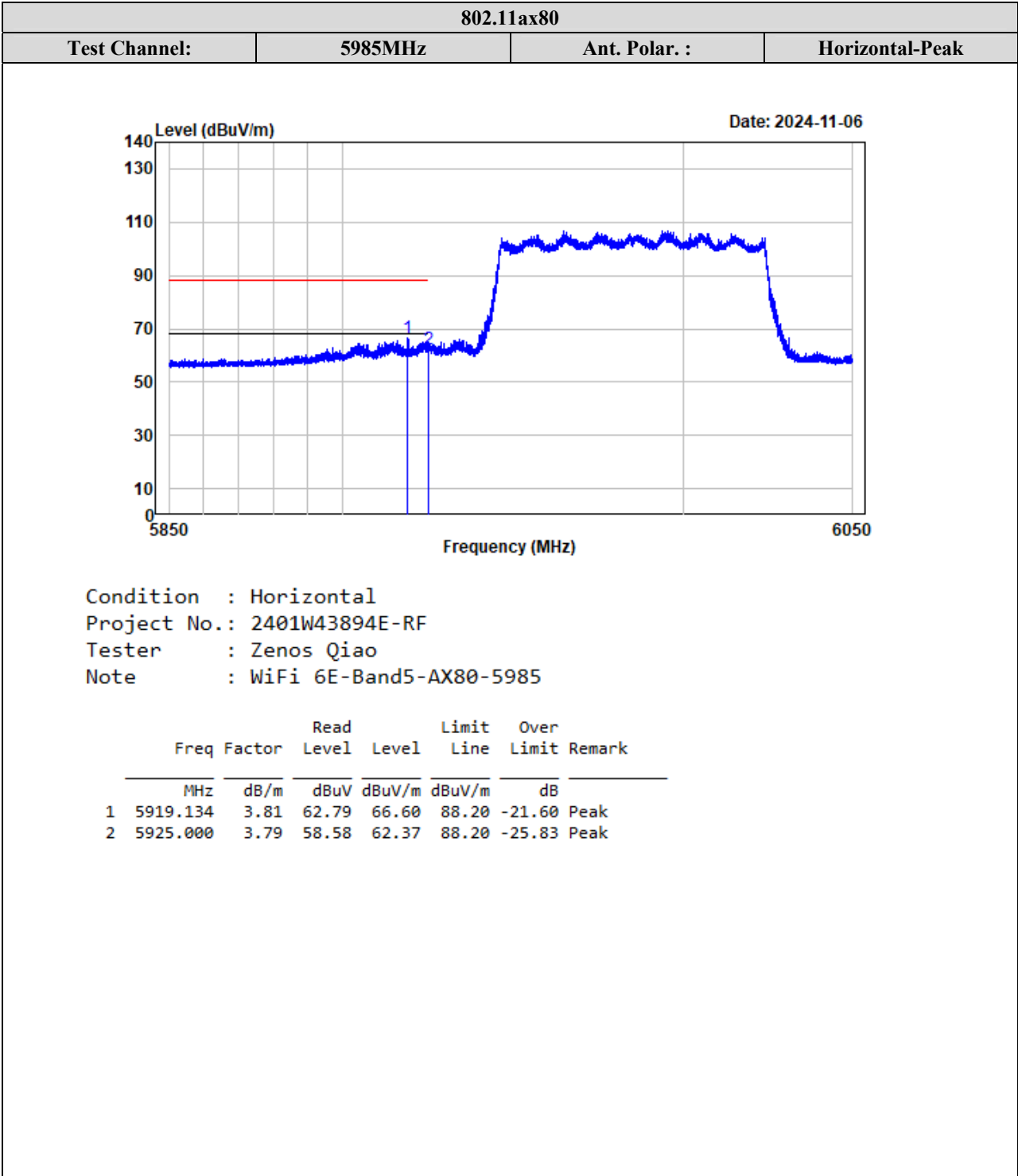


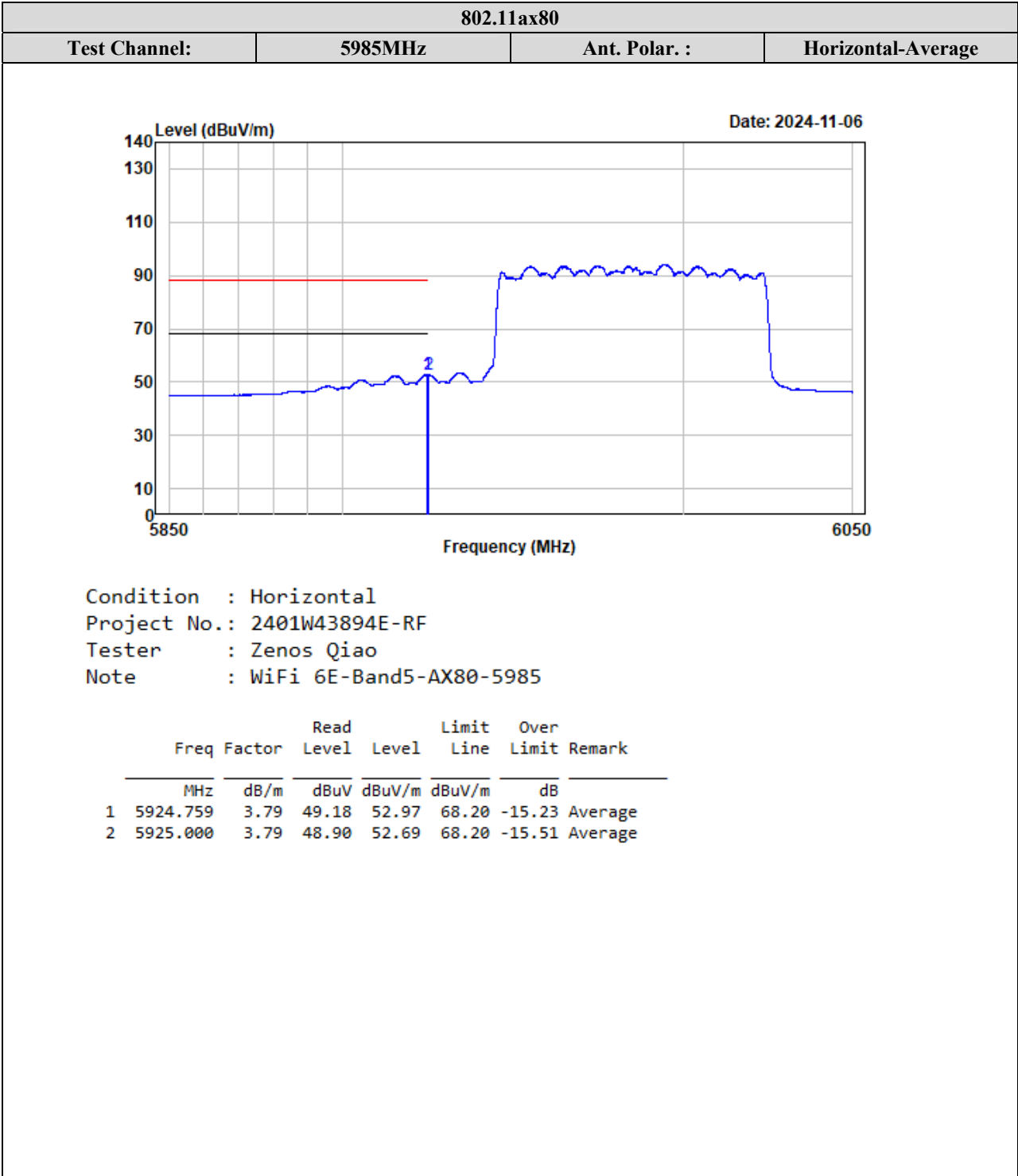


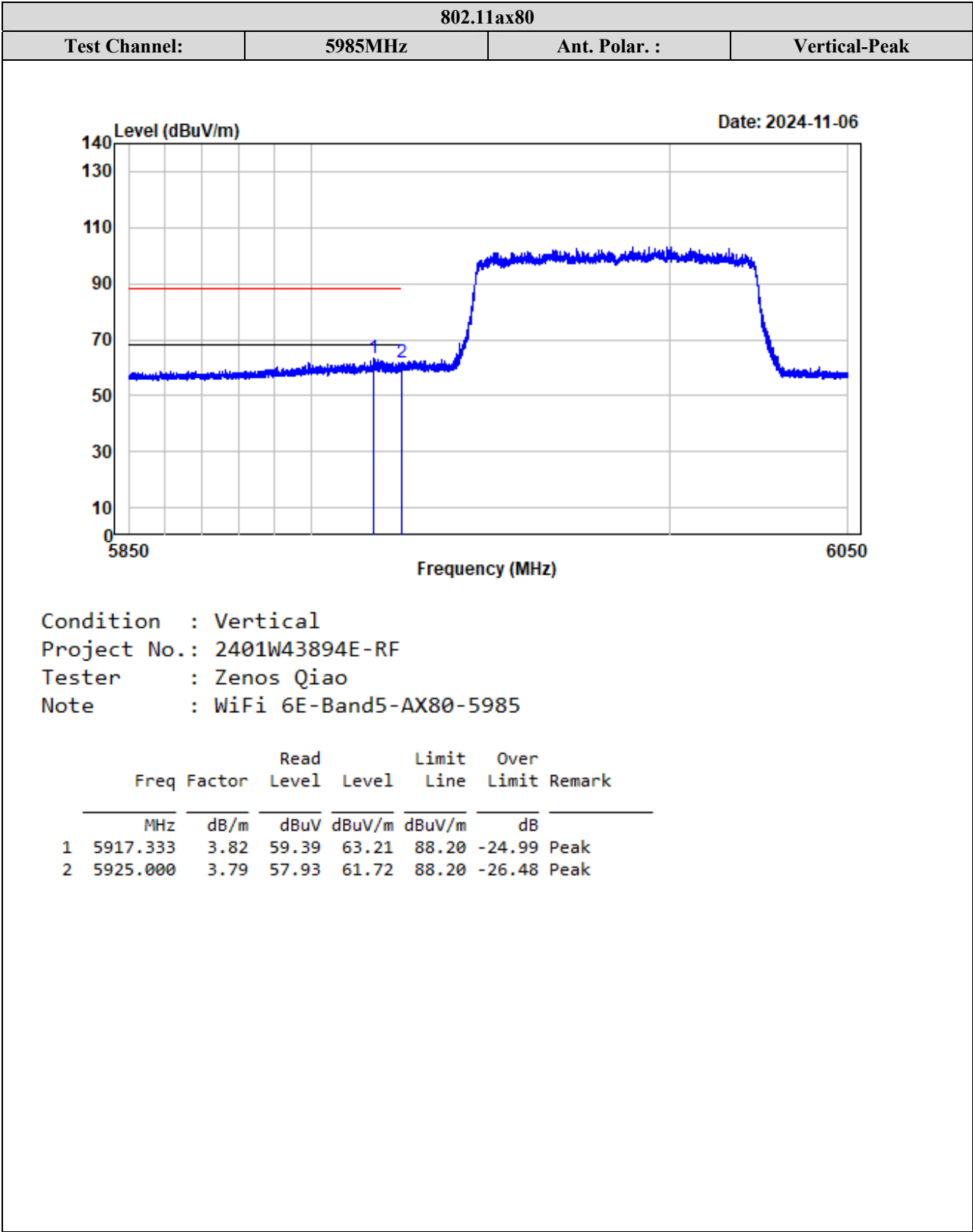


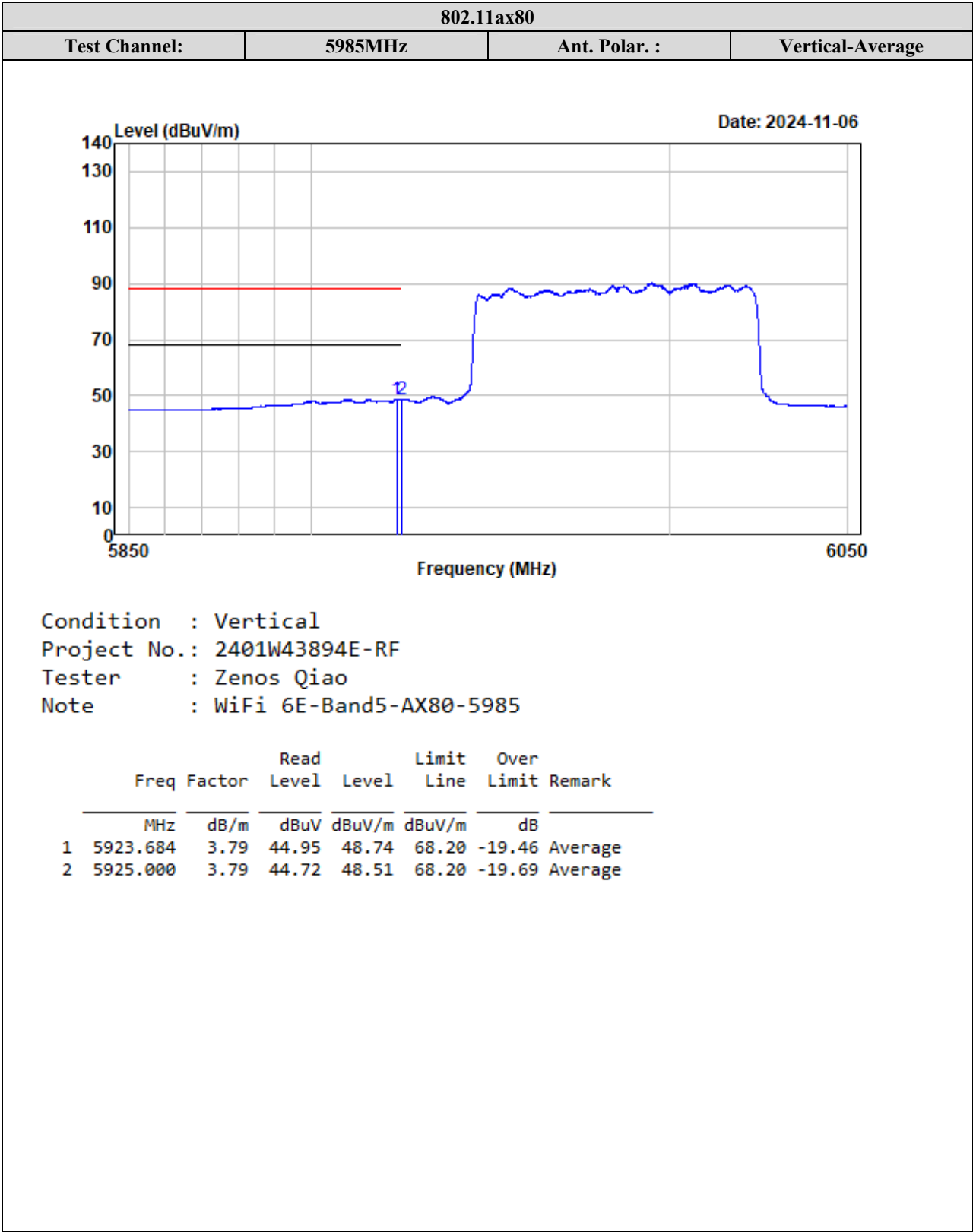


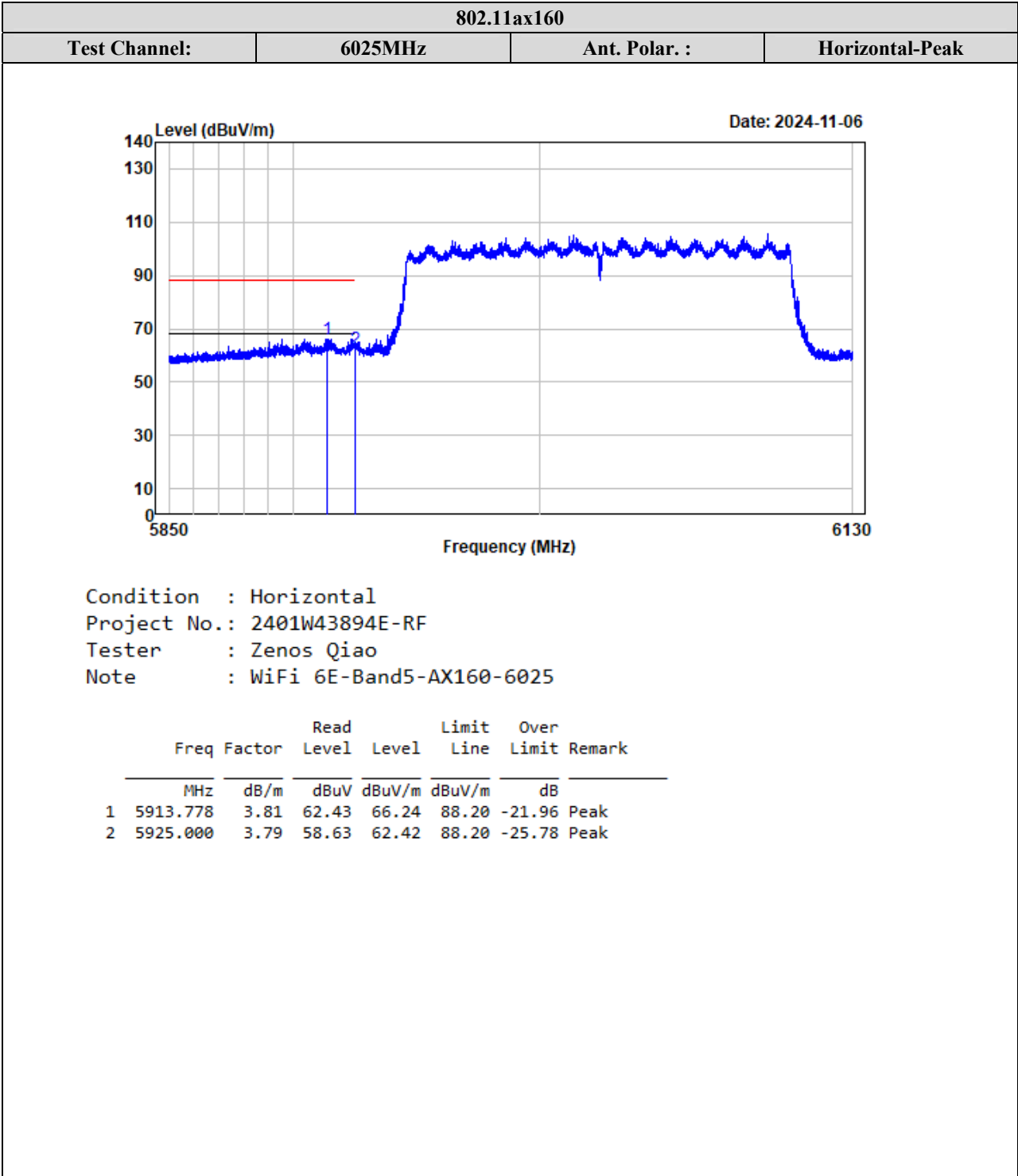


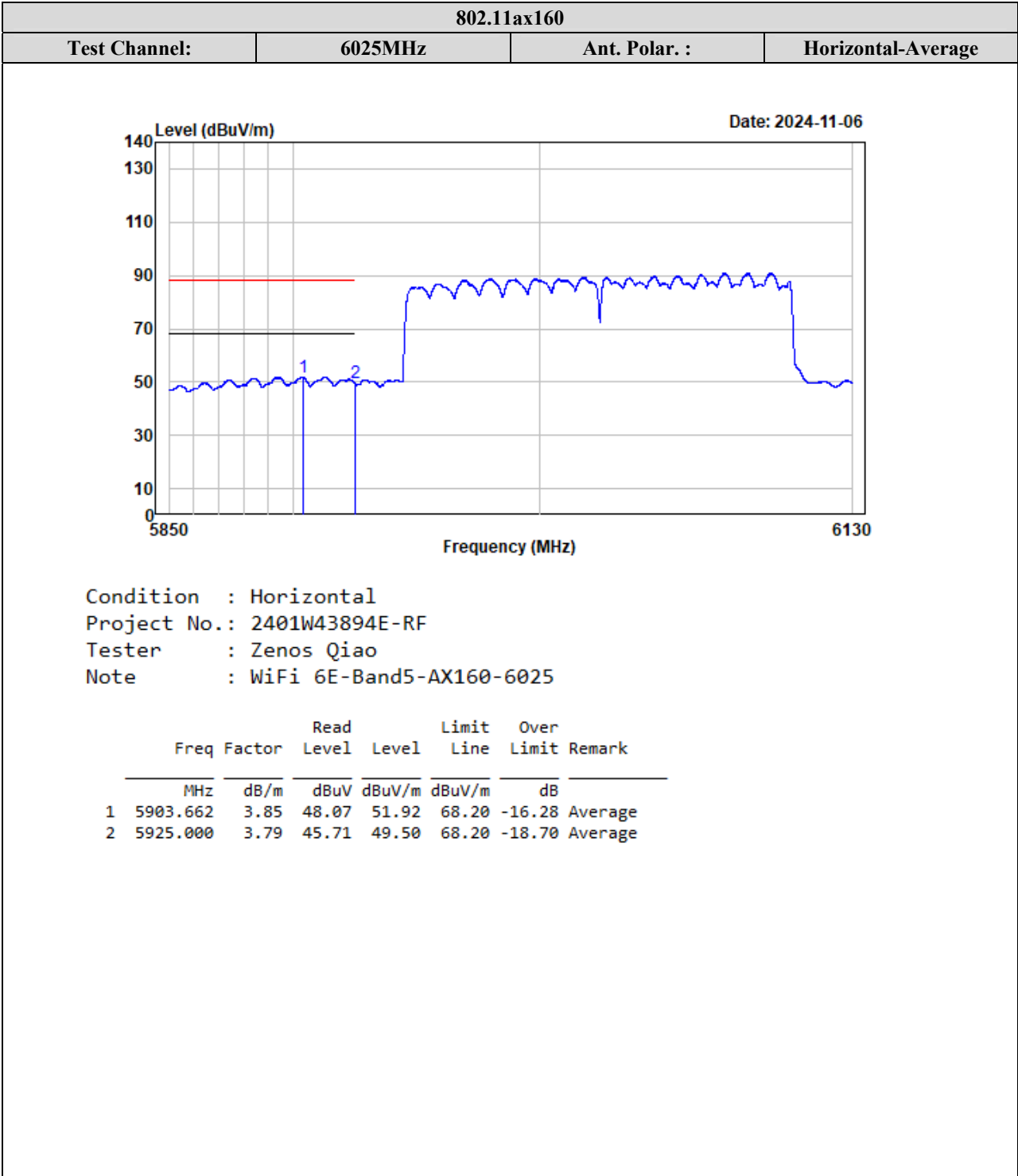


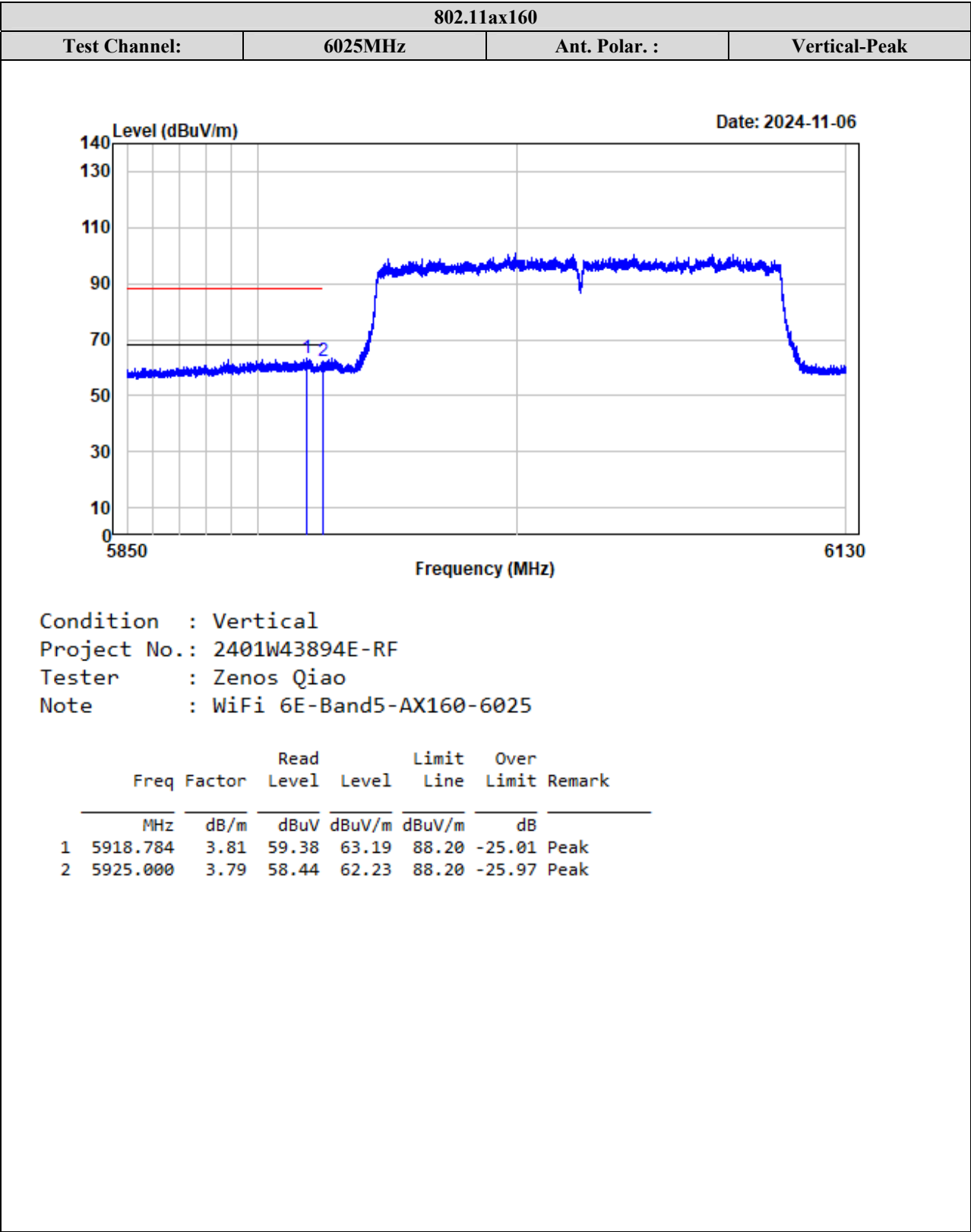


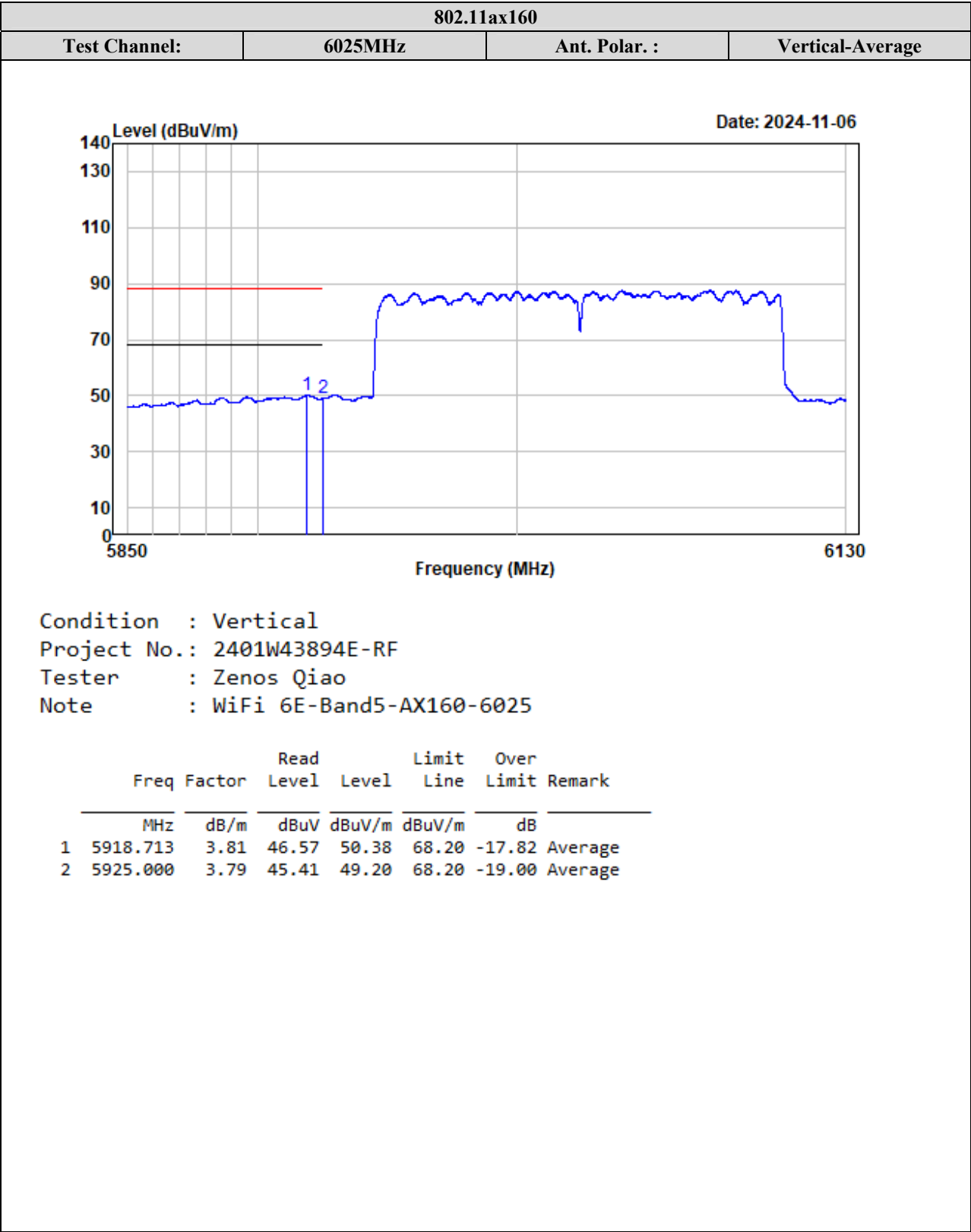




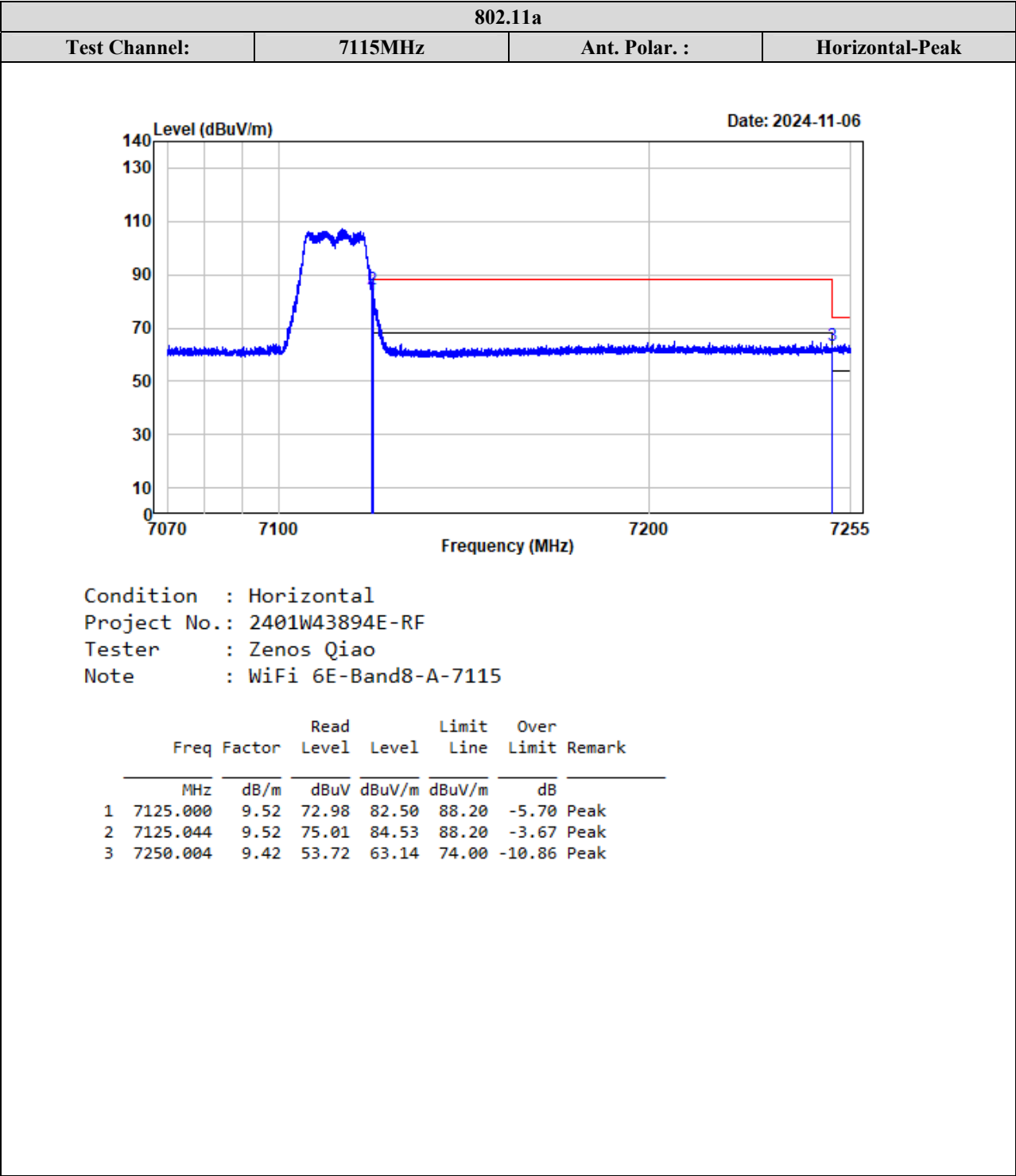


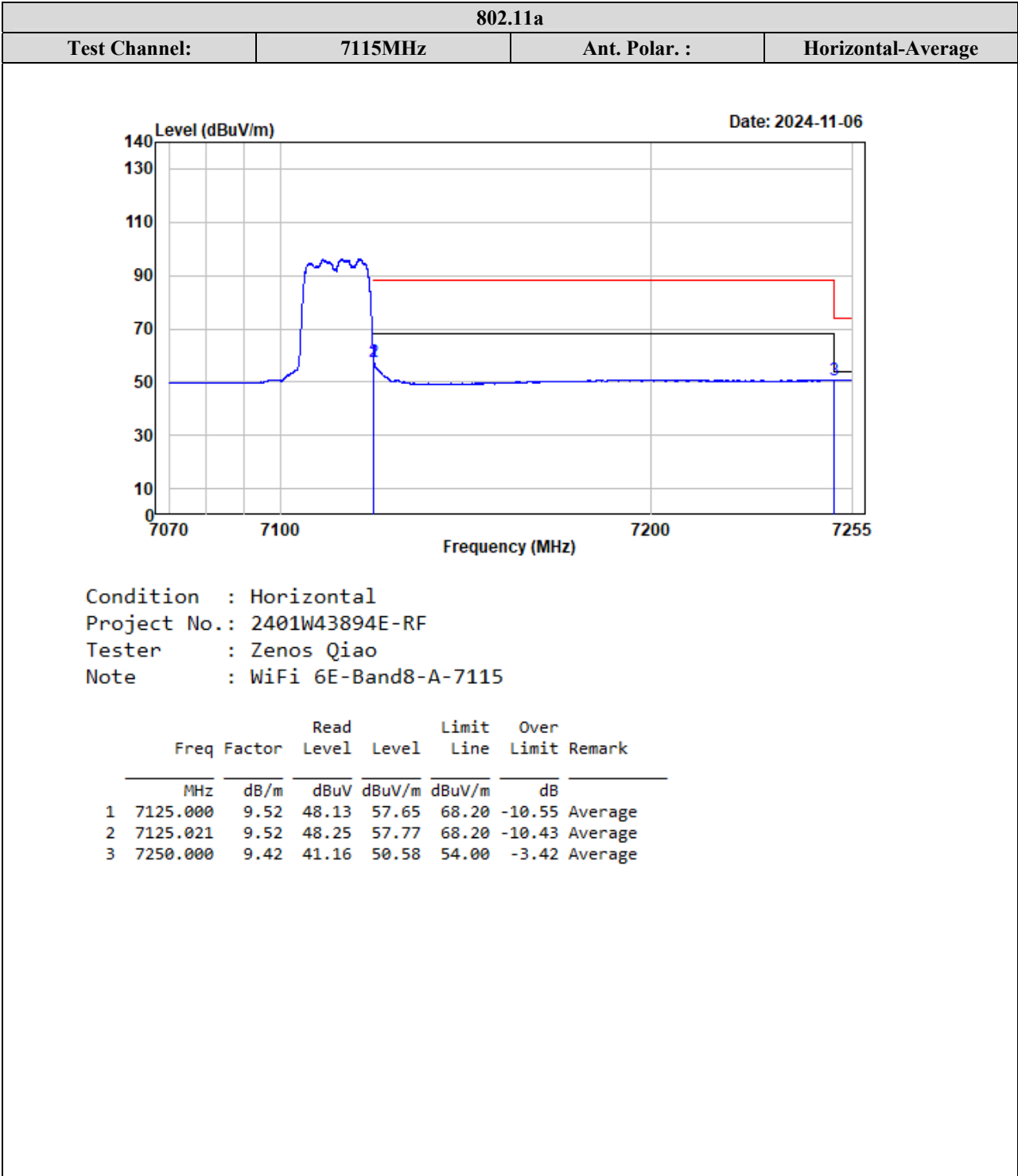


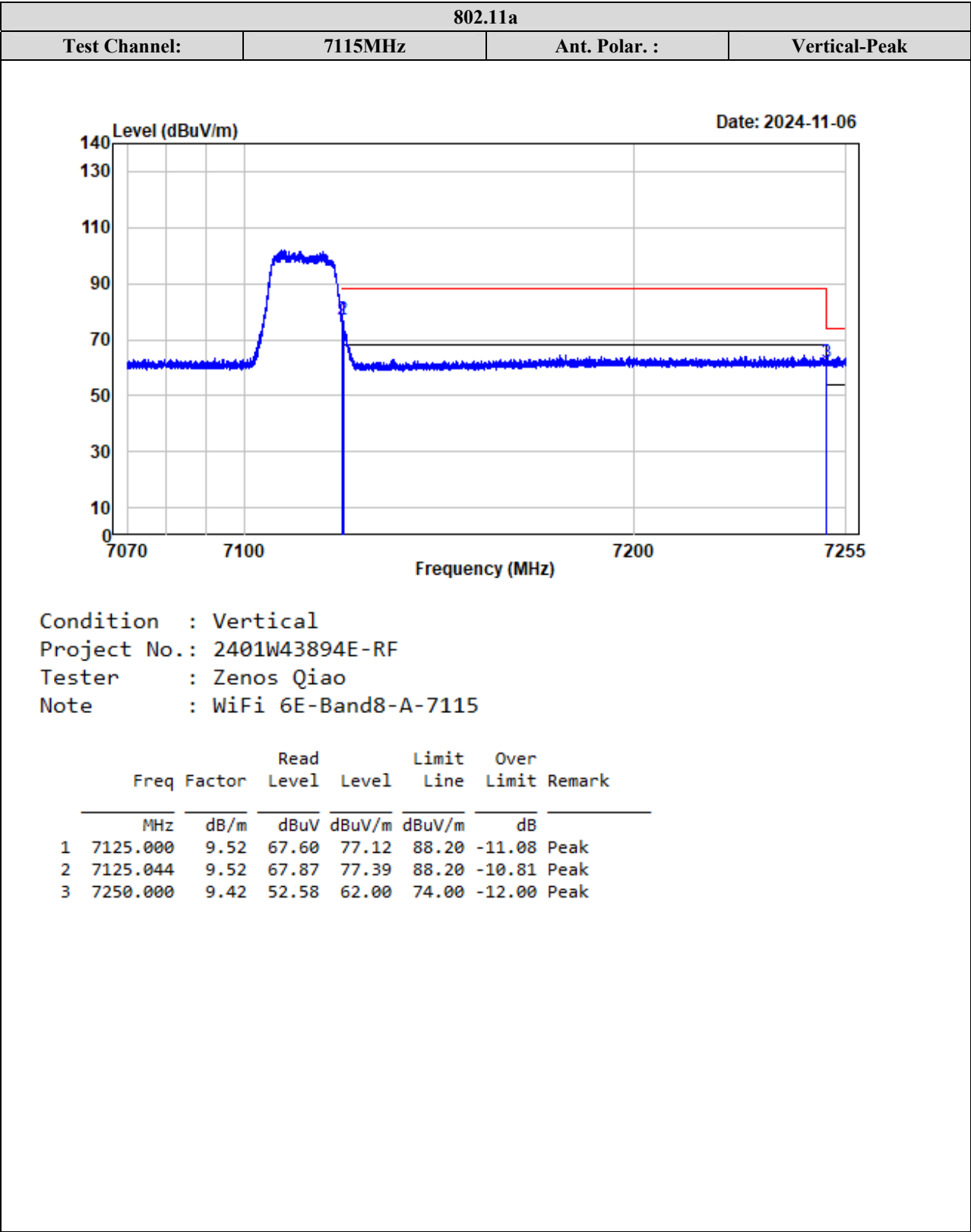


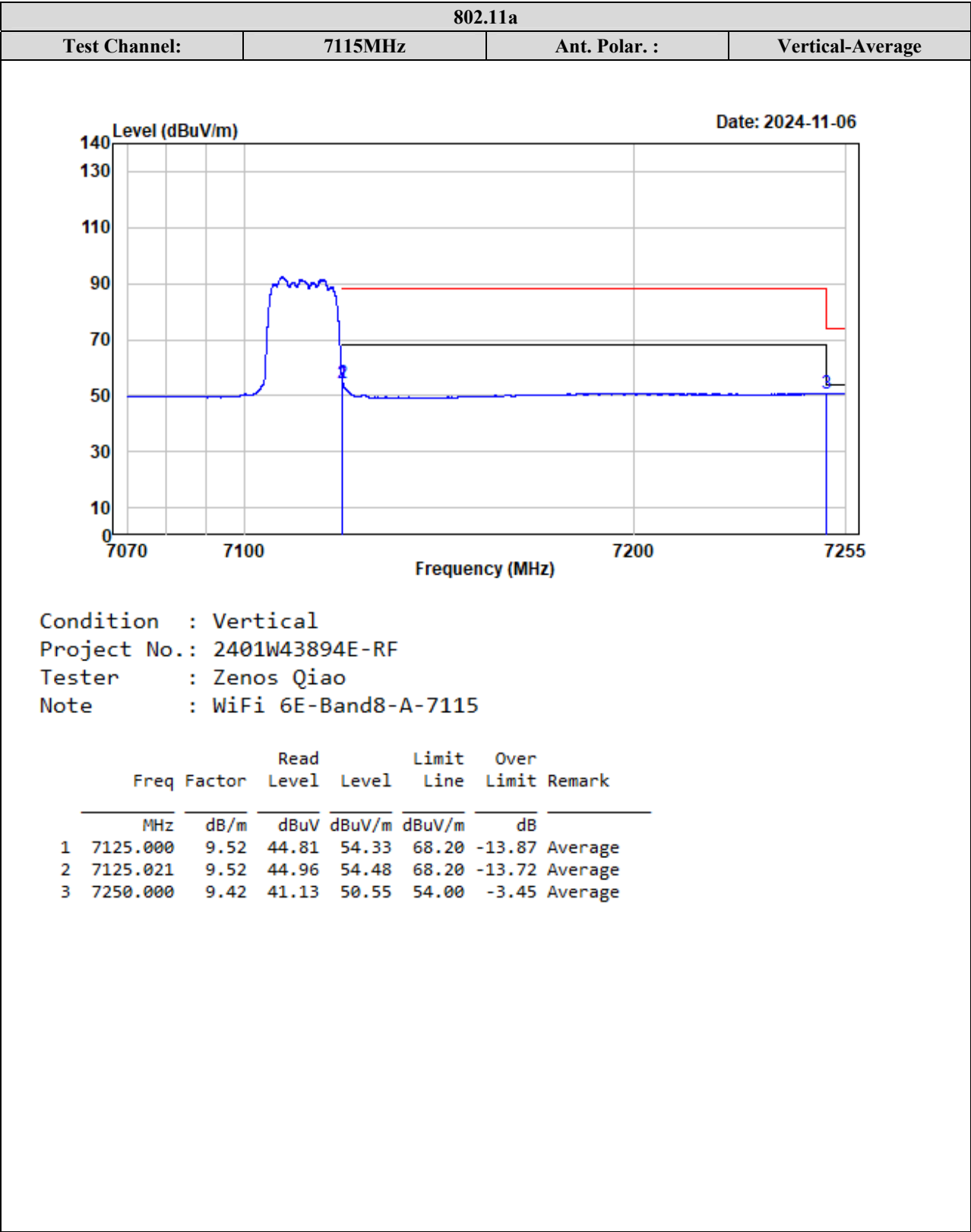


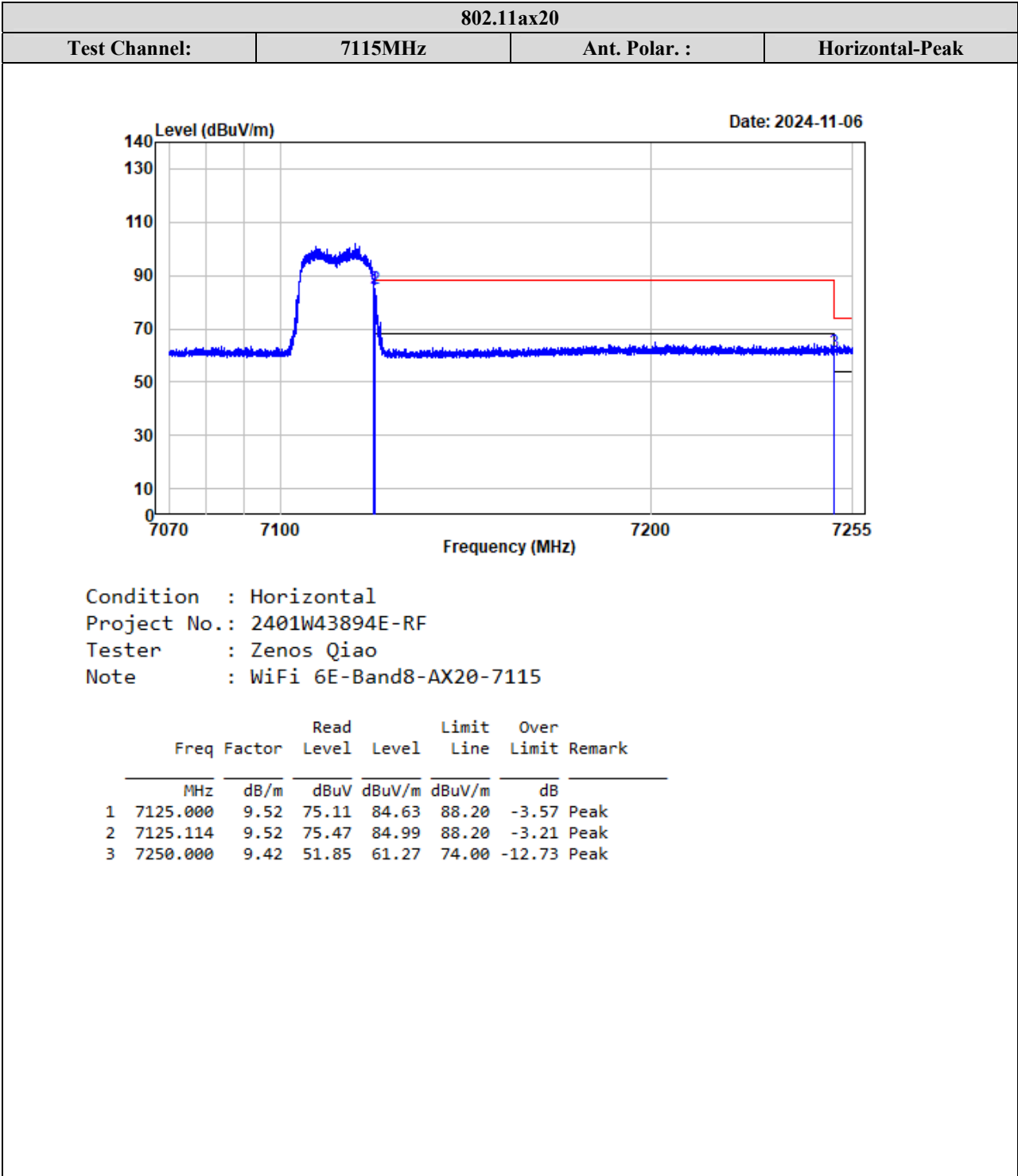
Wi-Fi 6E_ U-NII 8:

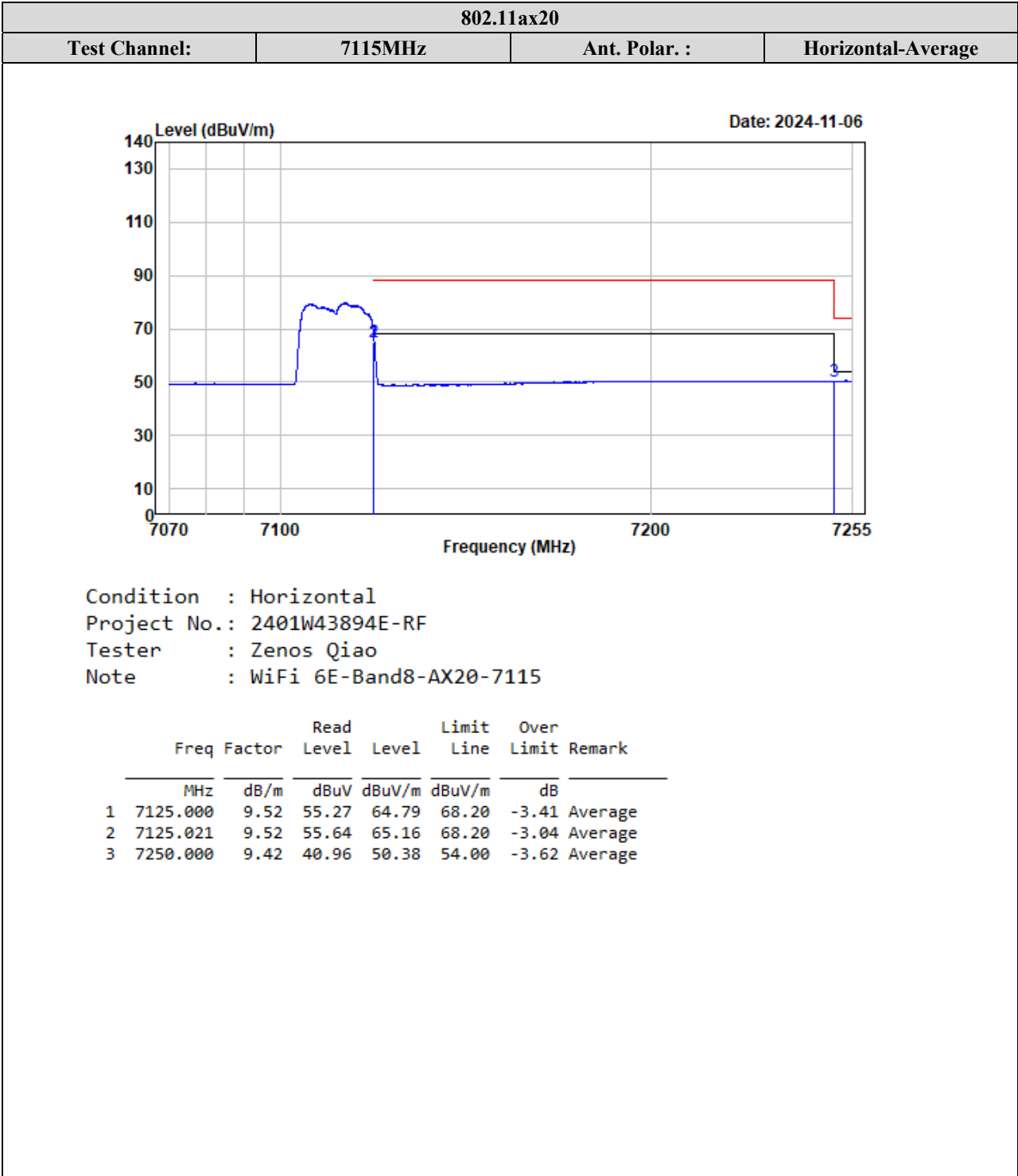


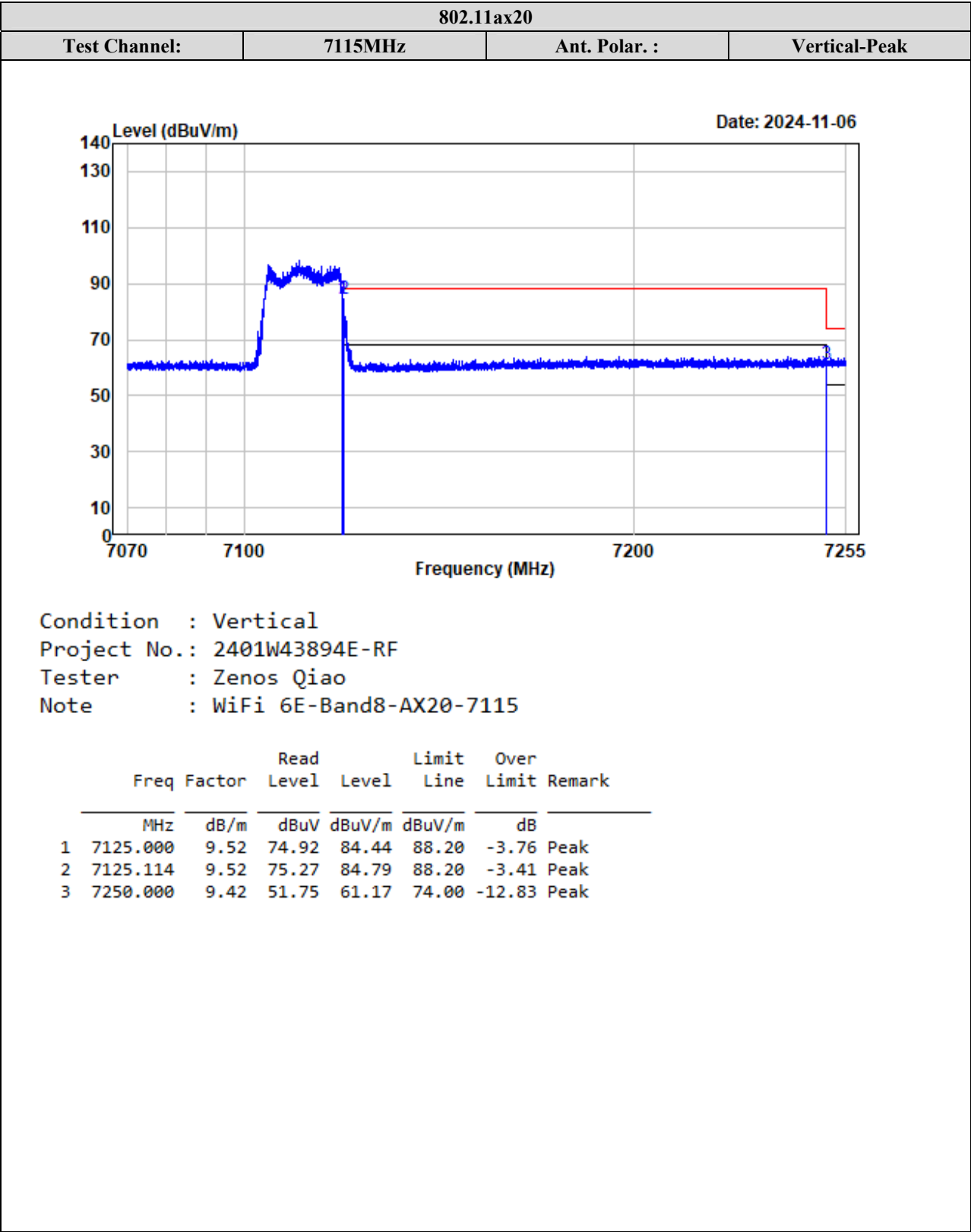


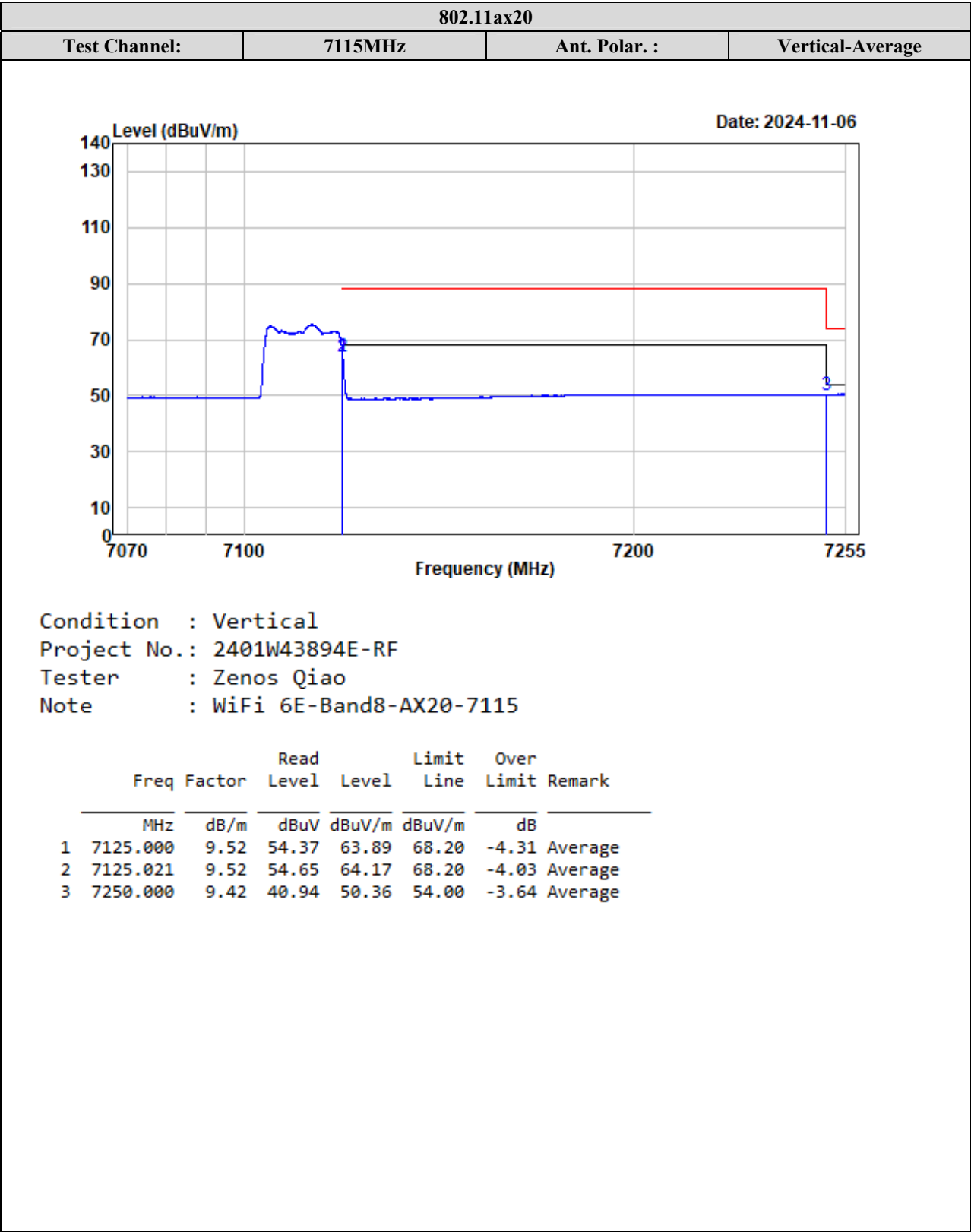


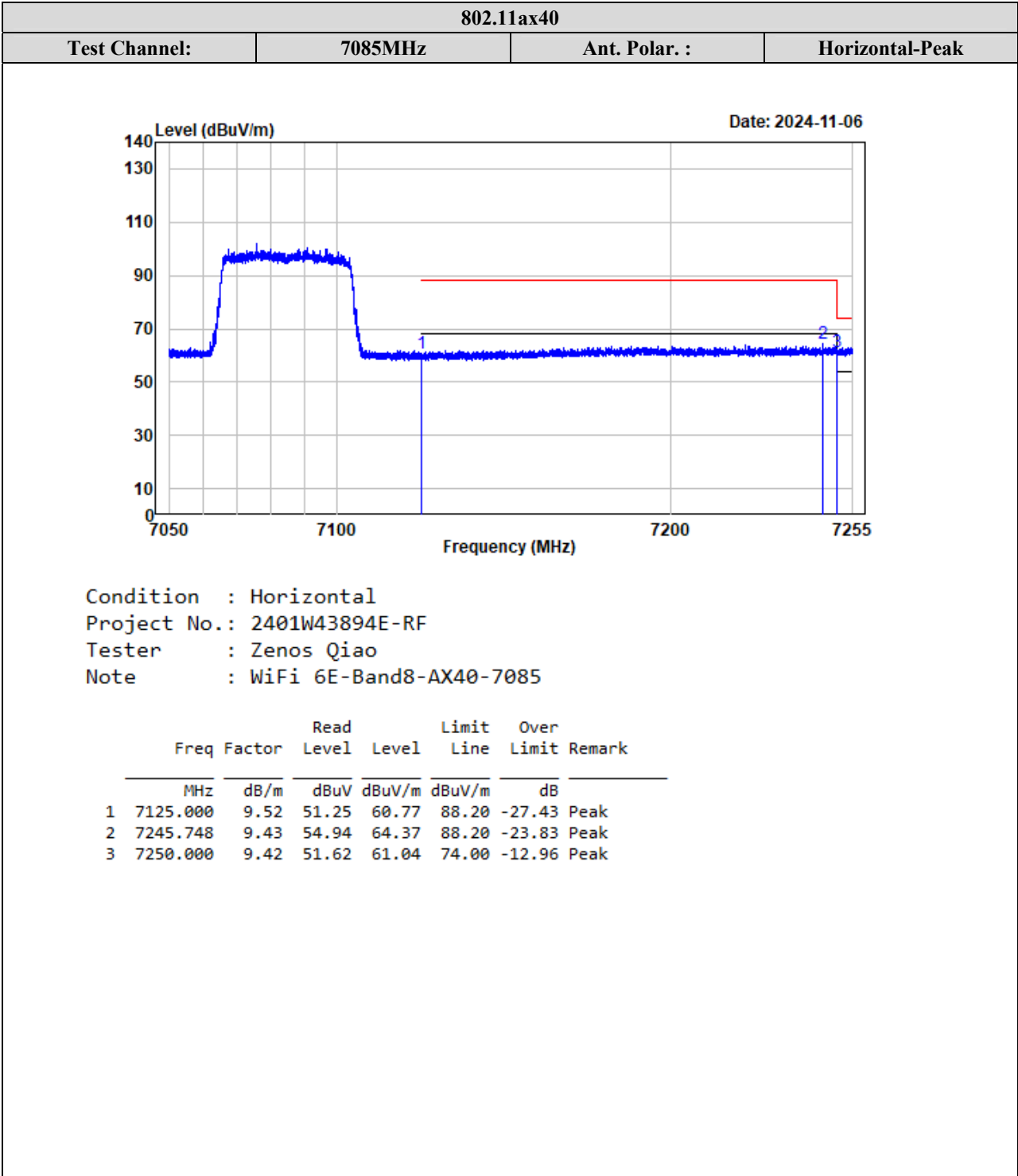


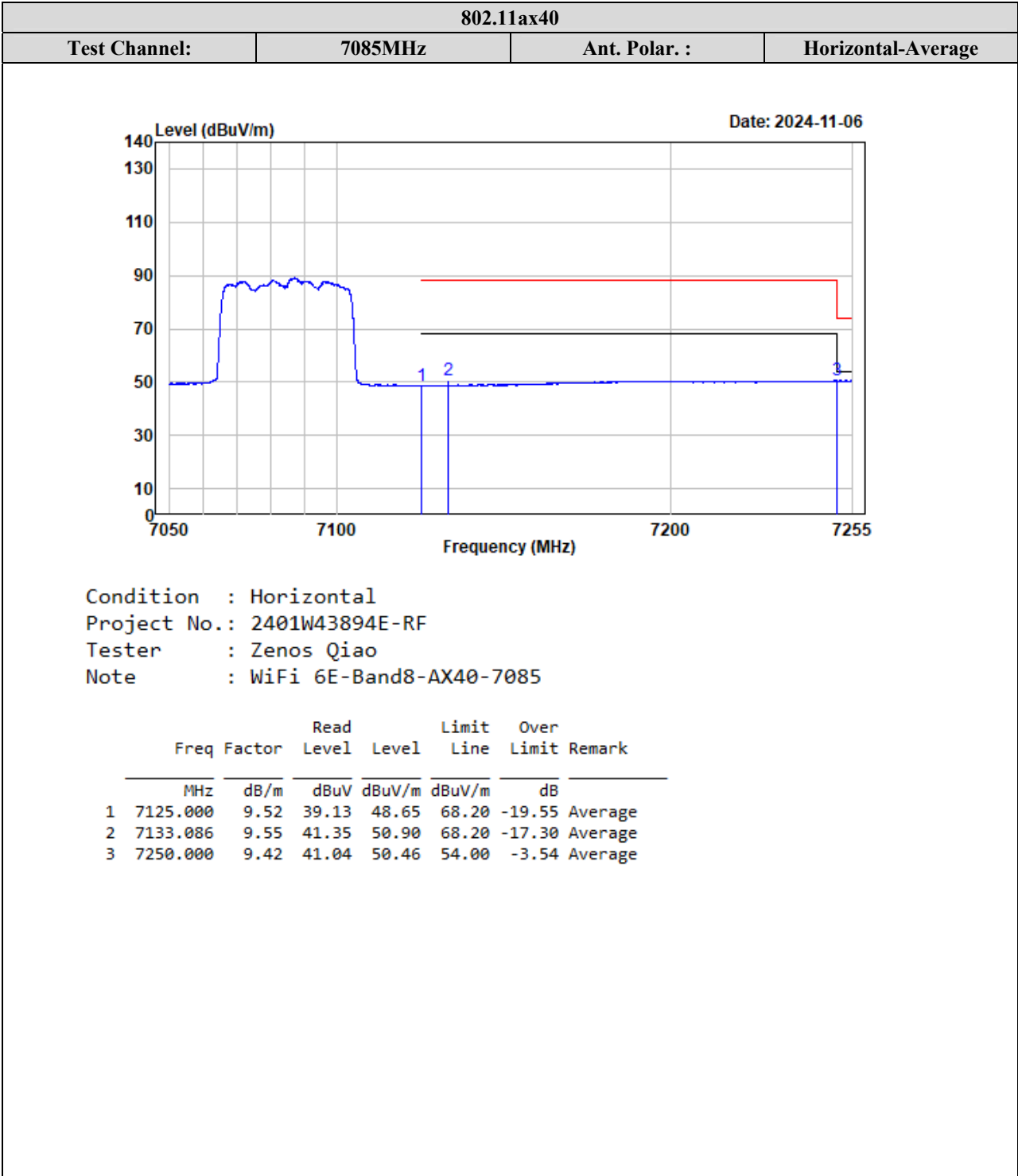


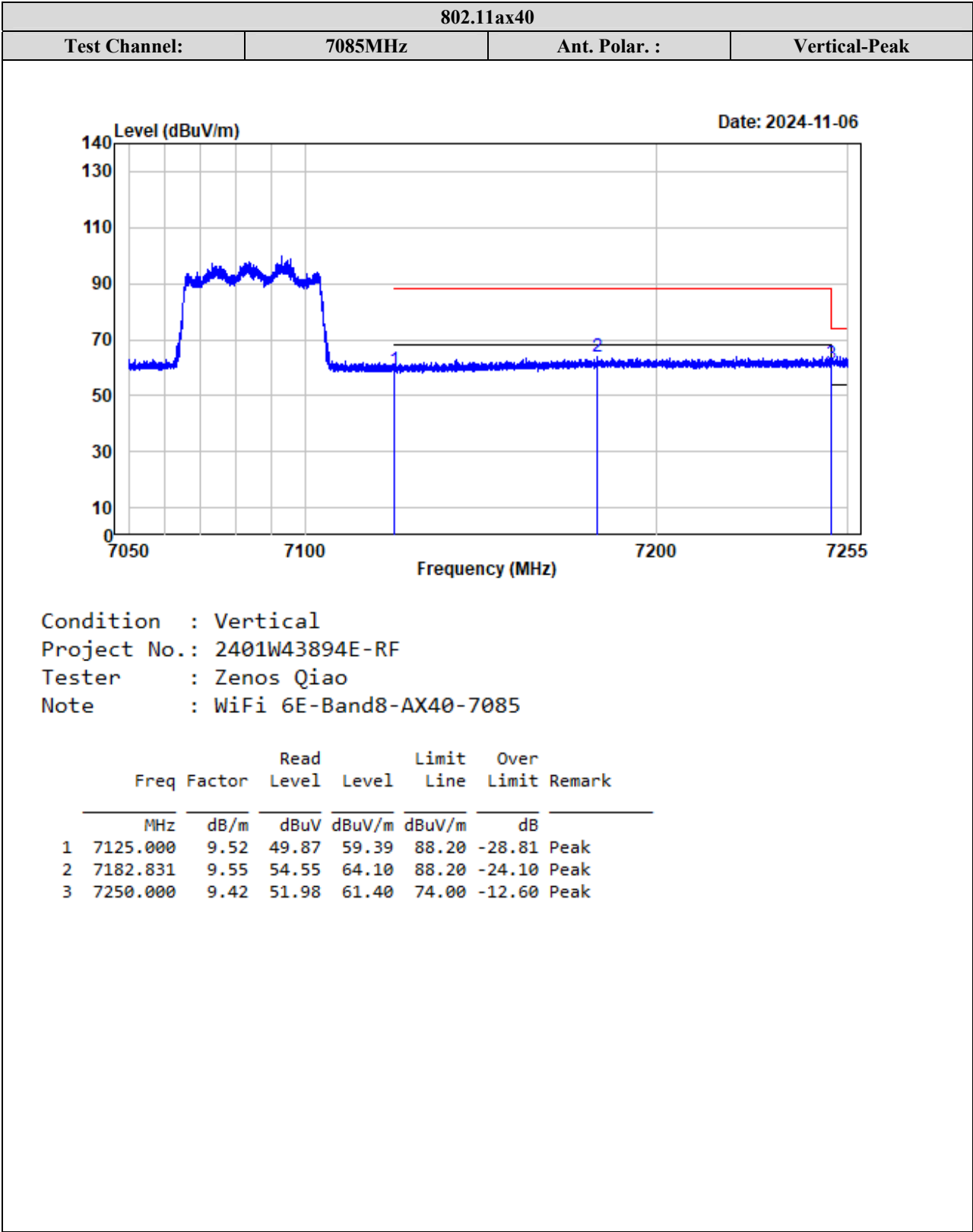


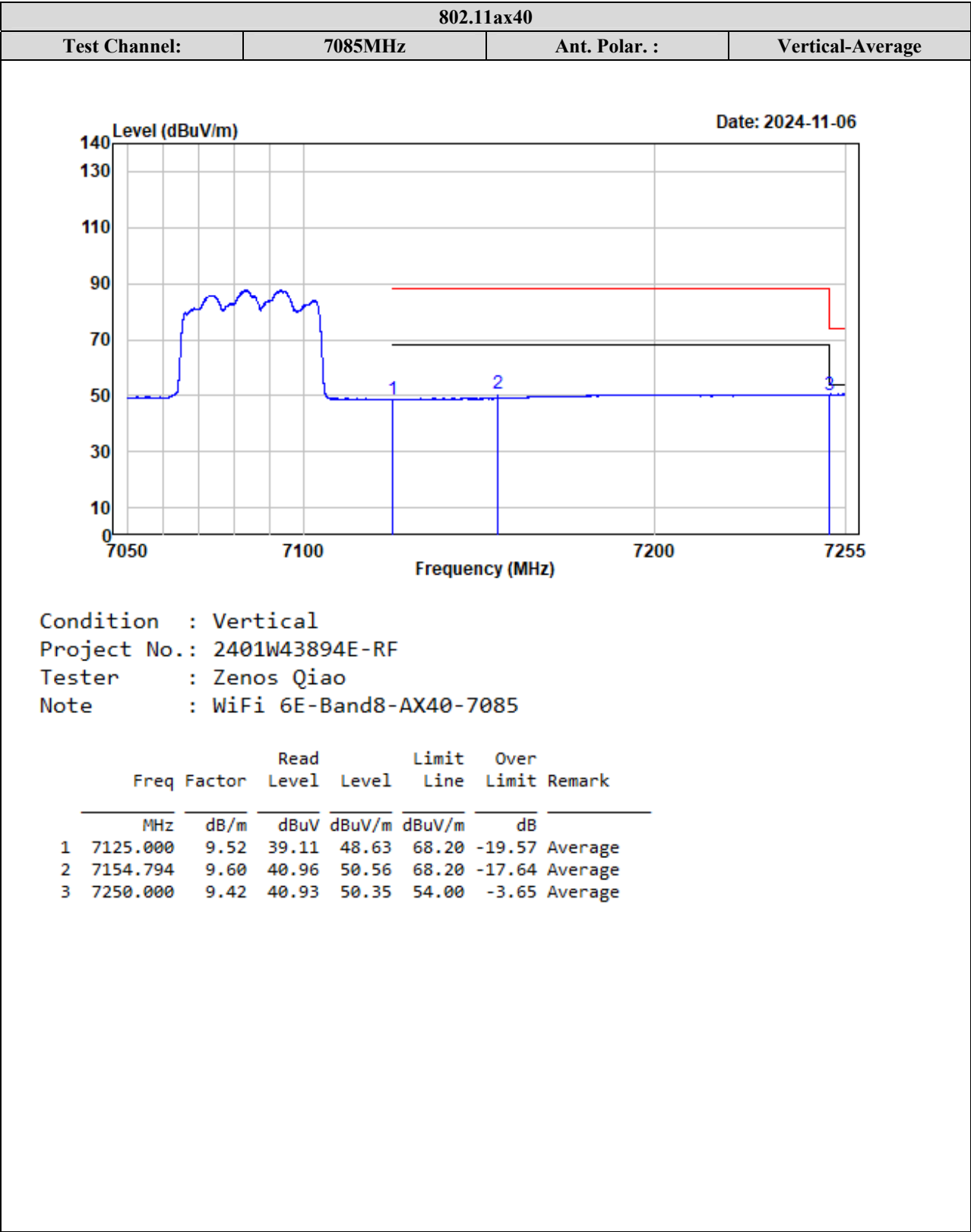


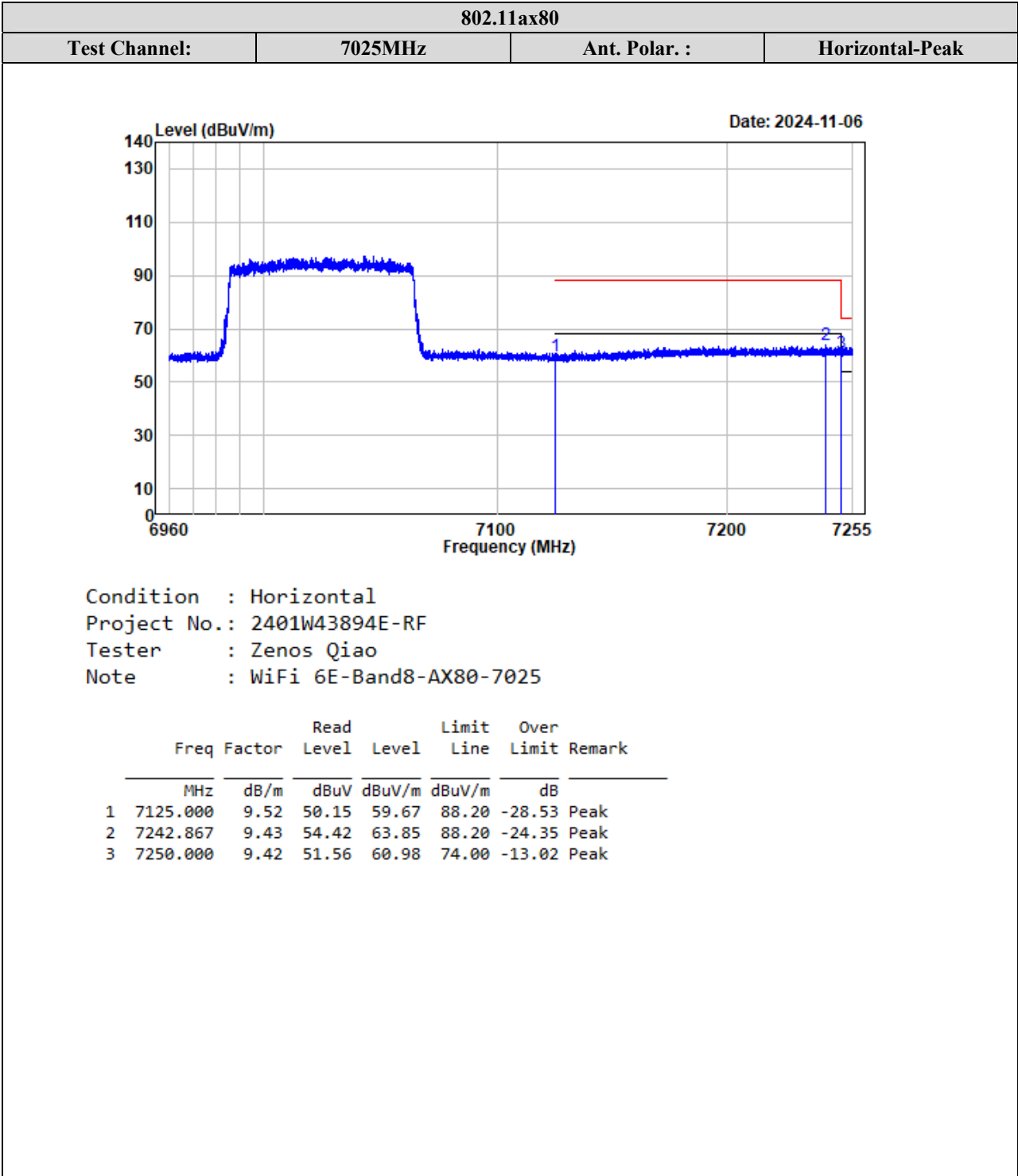


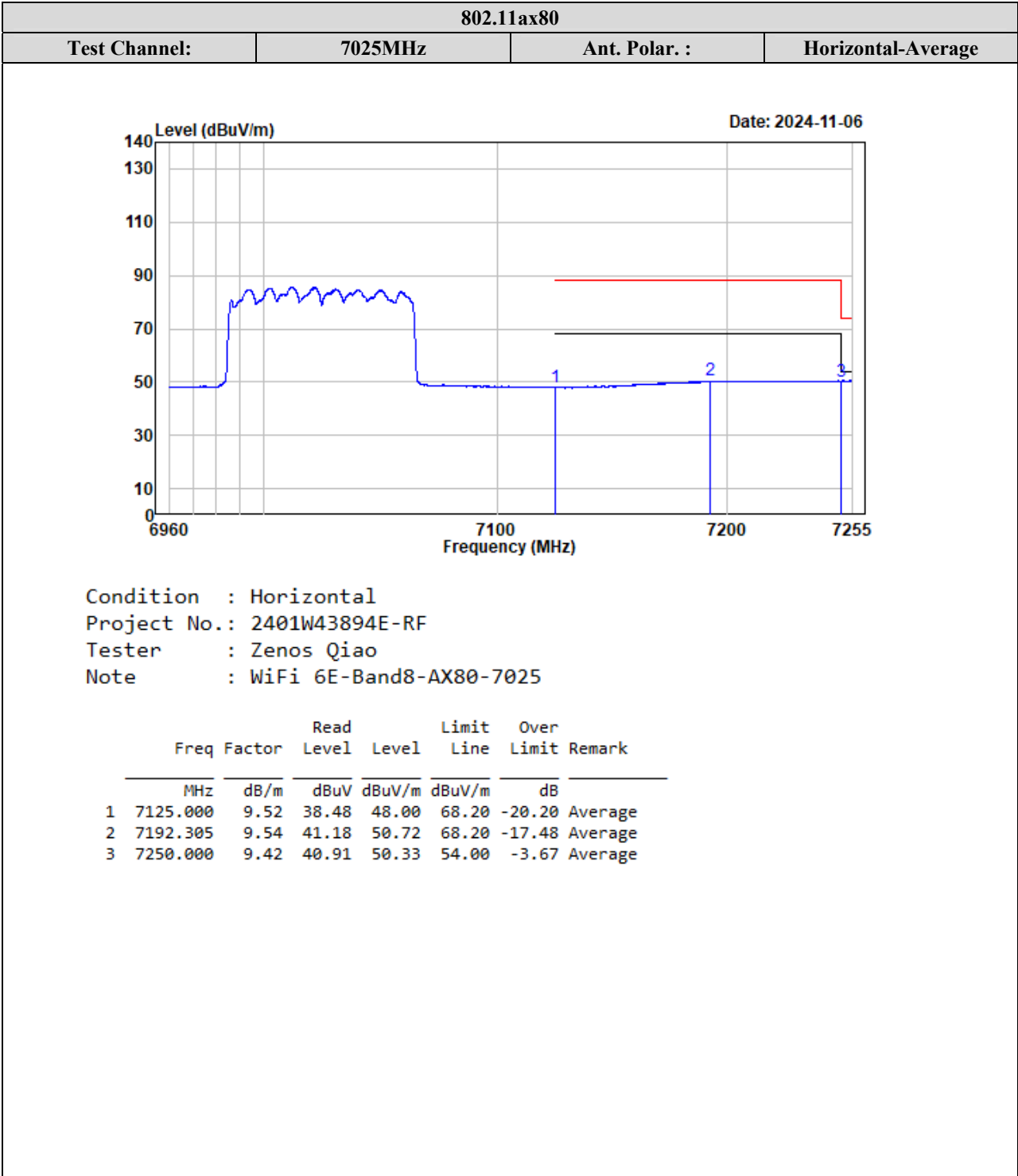


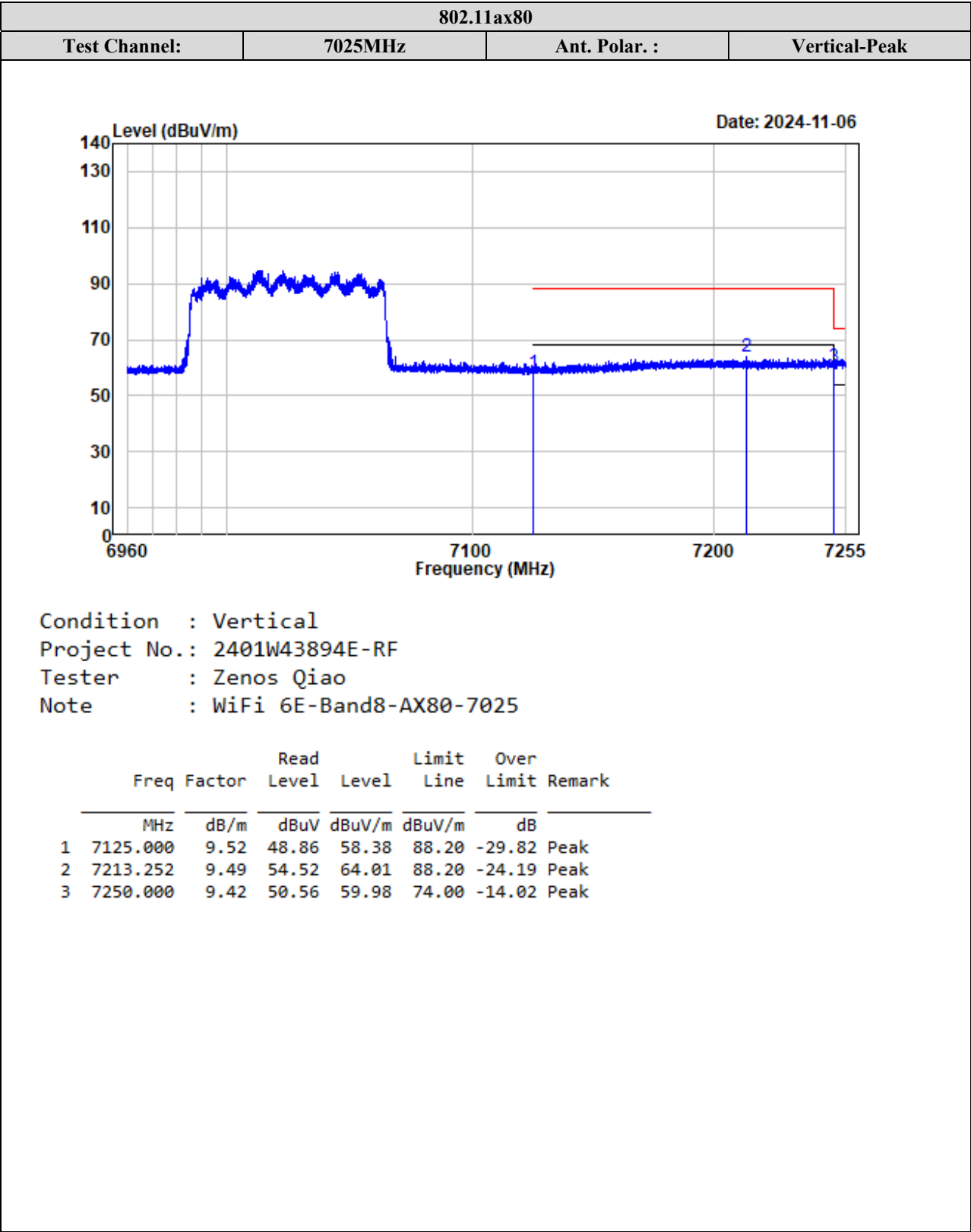


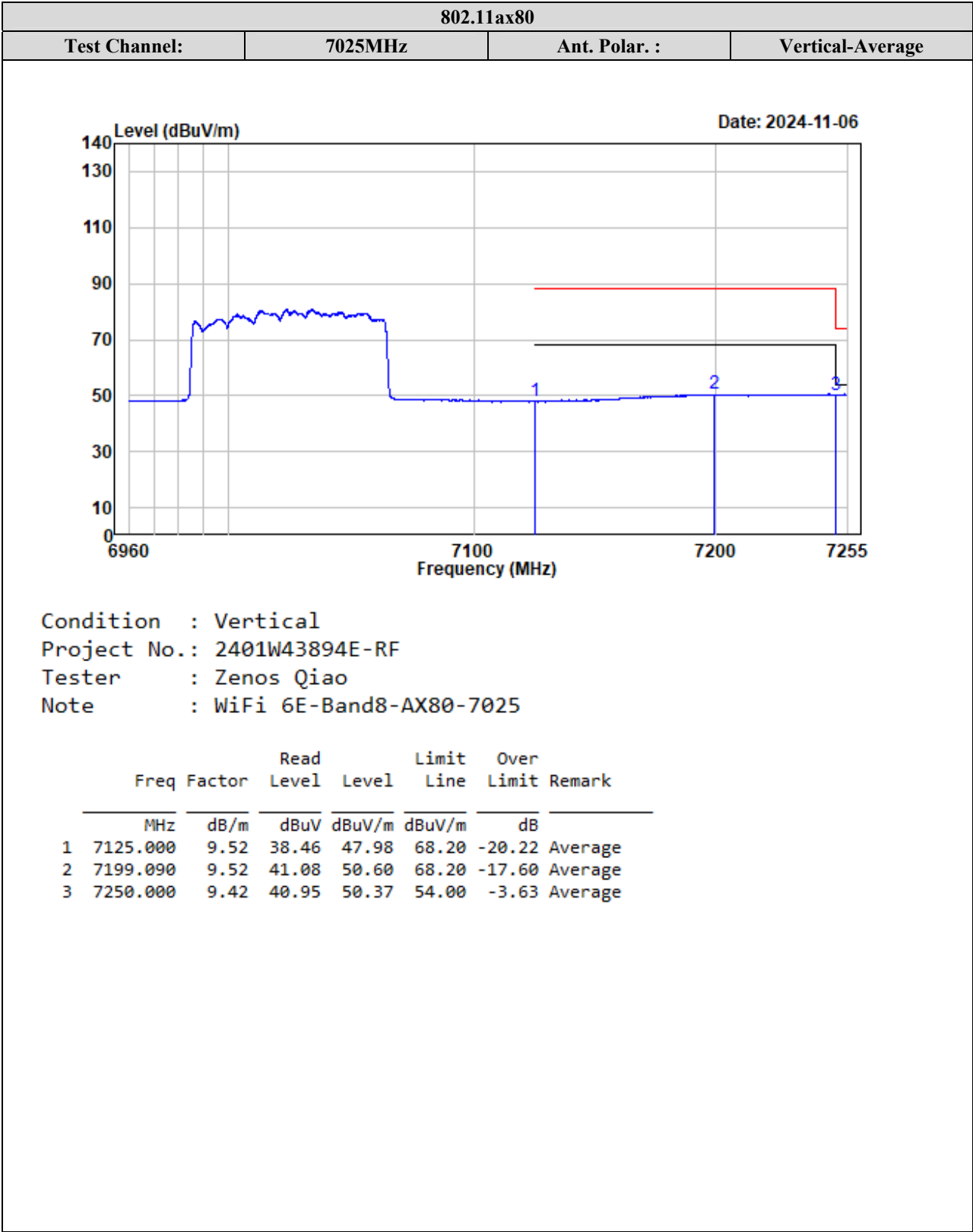


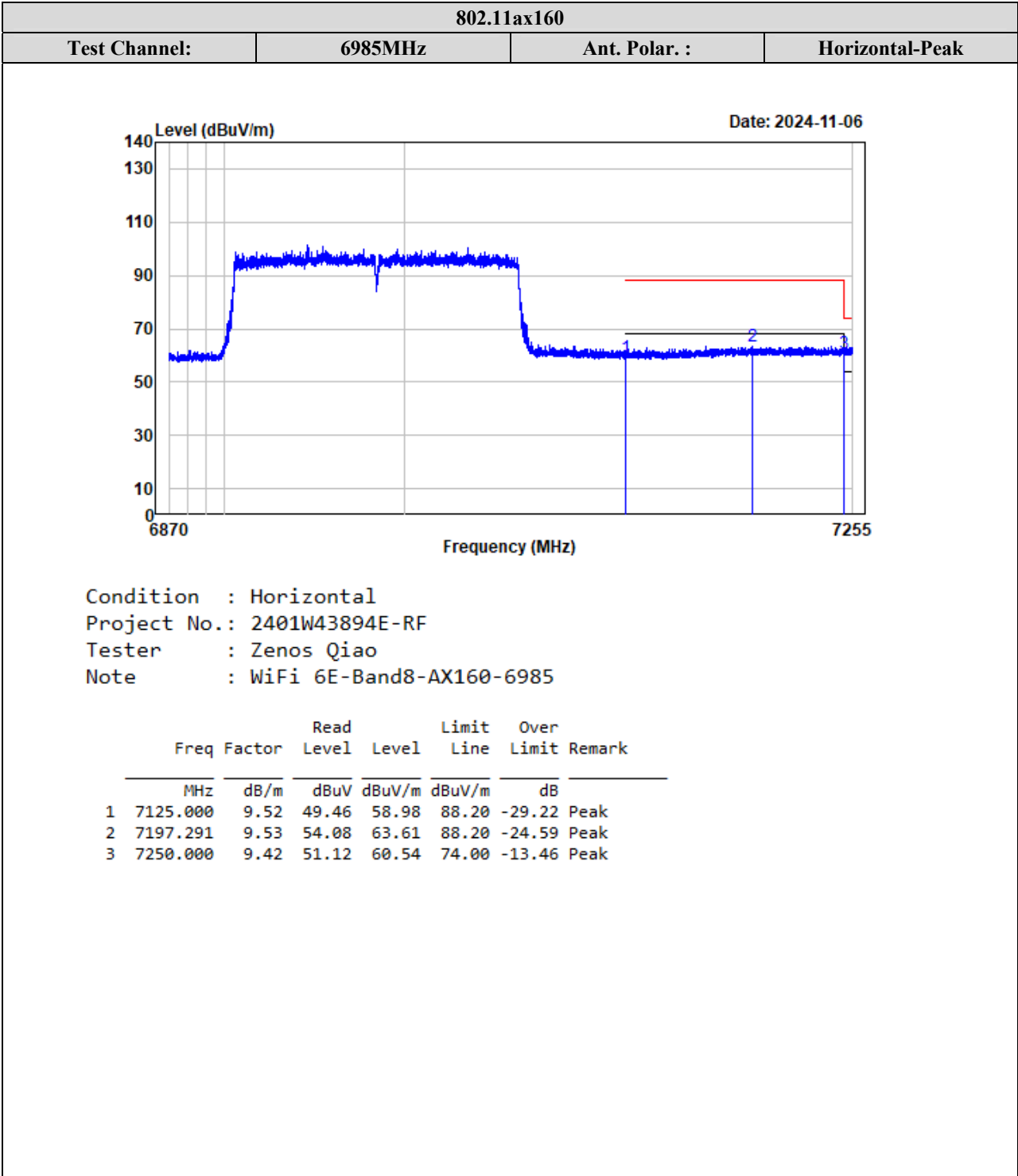


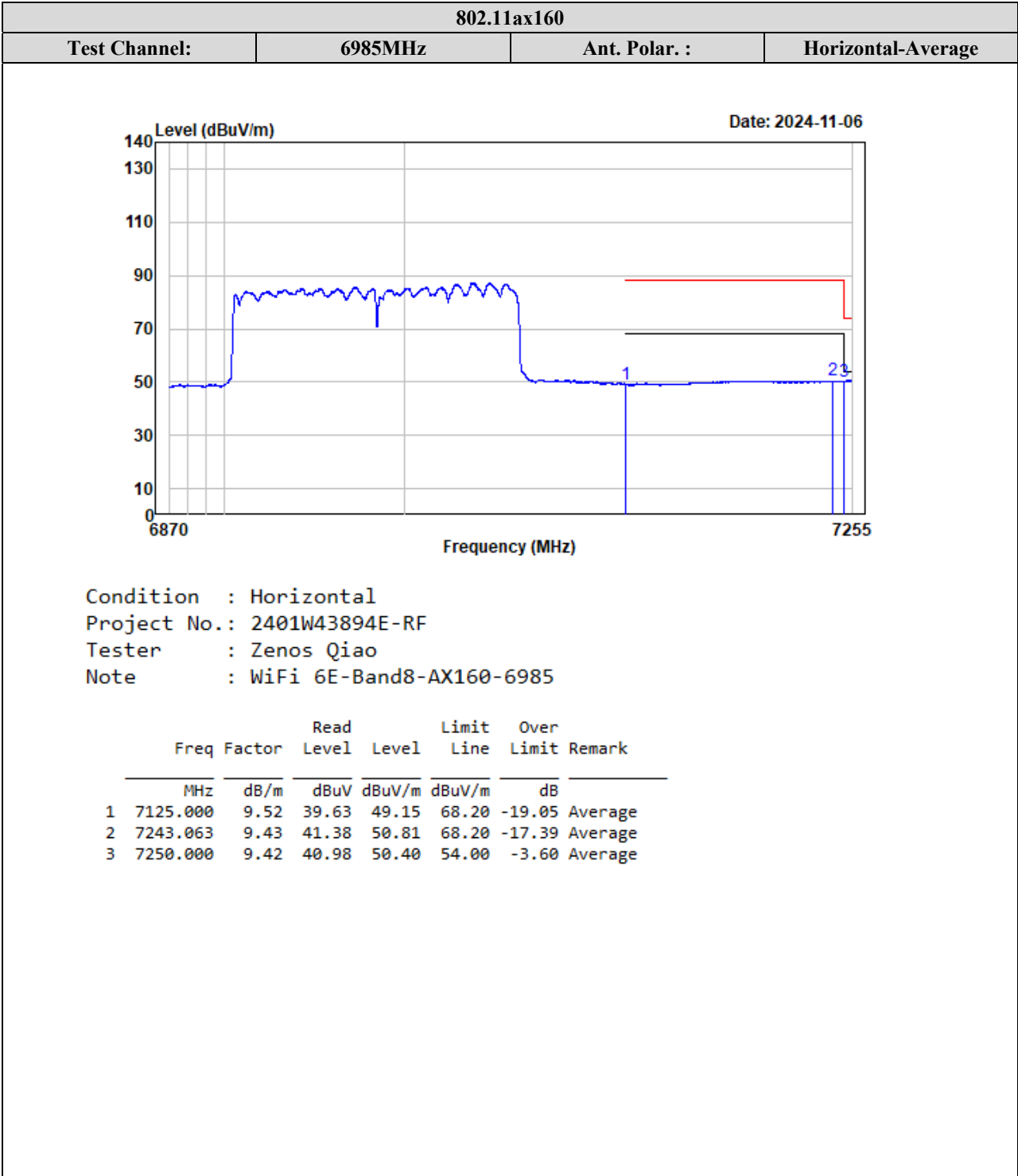


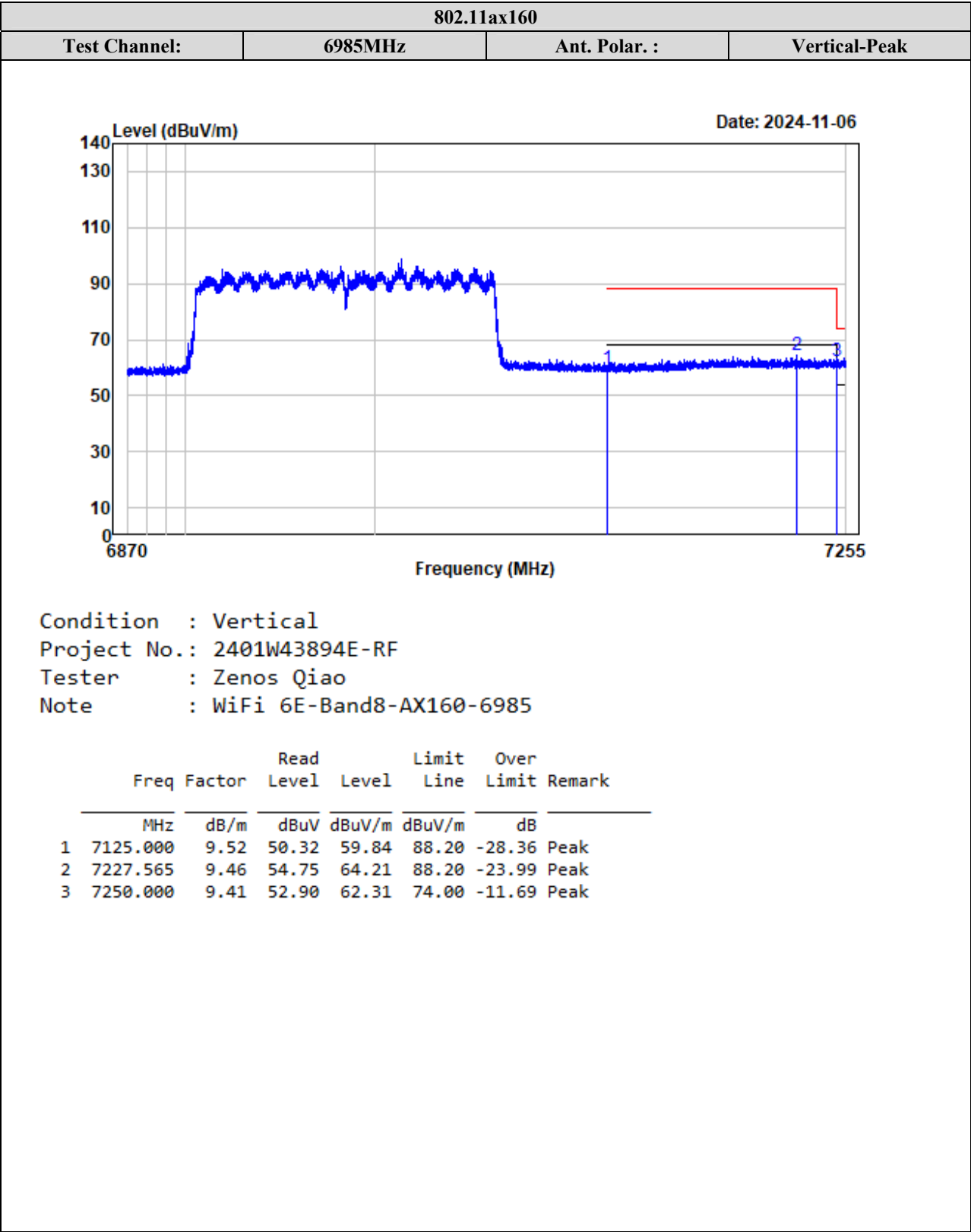


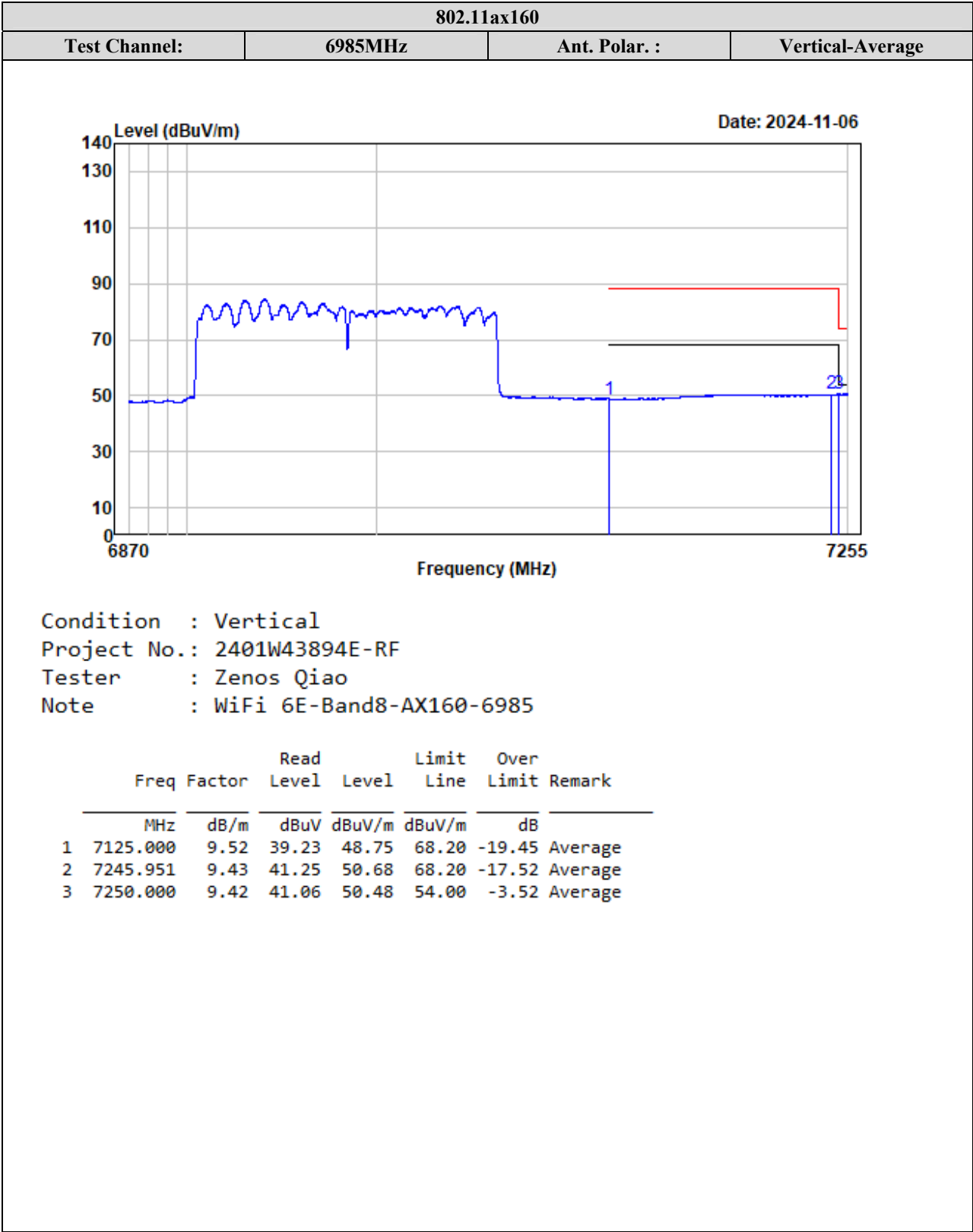








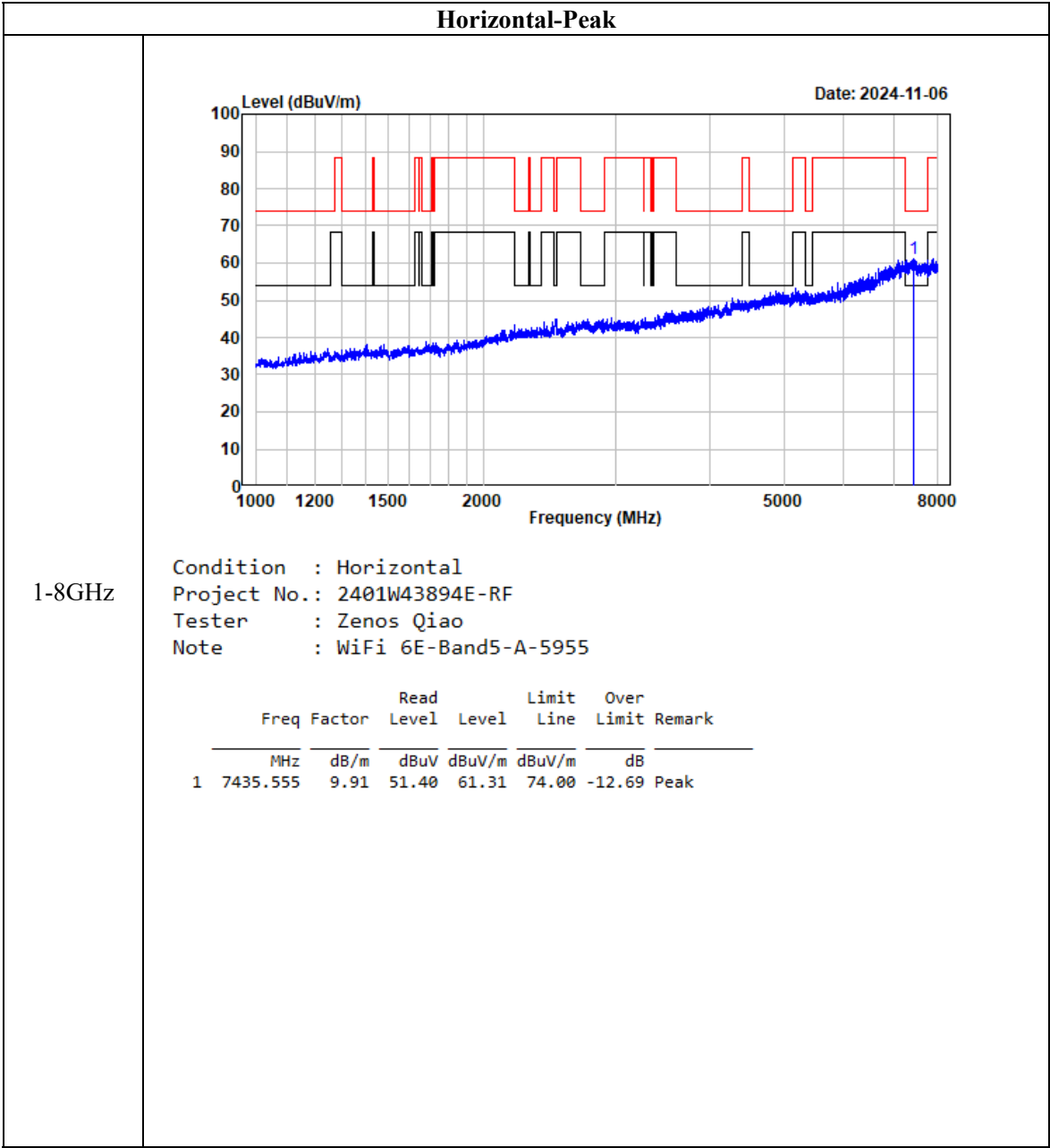


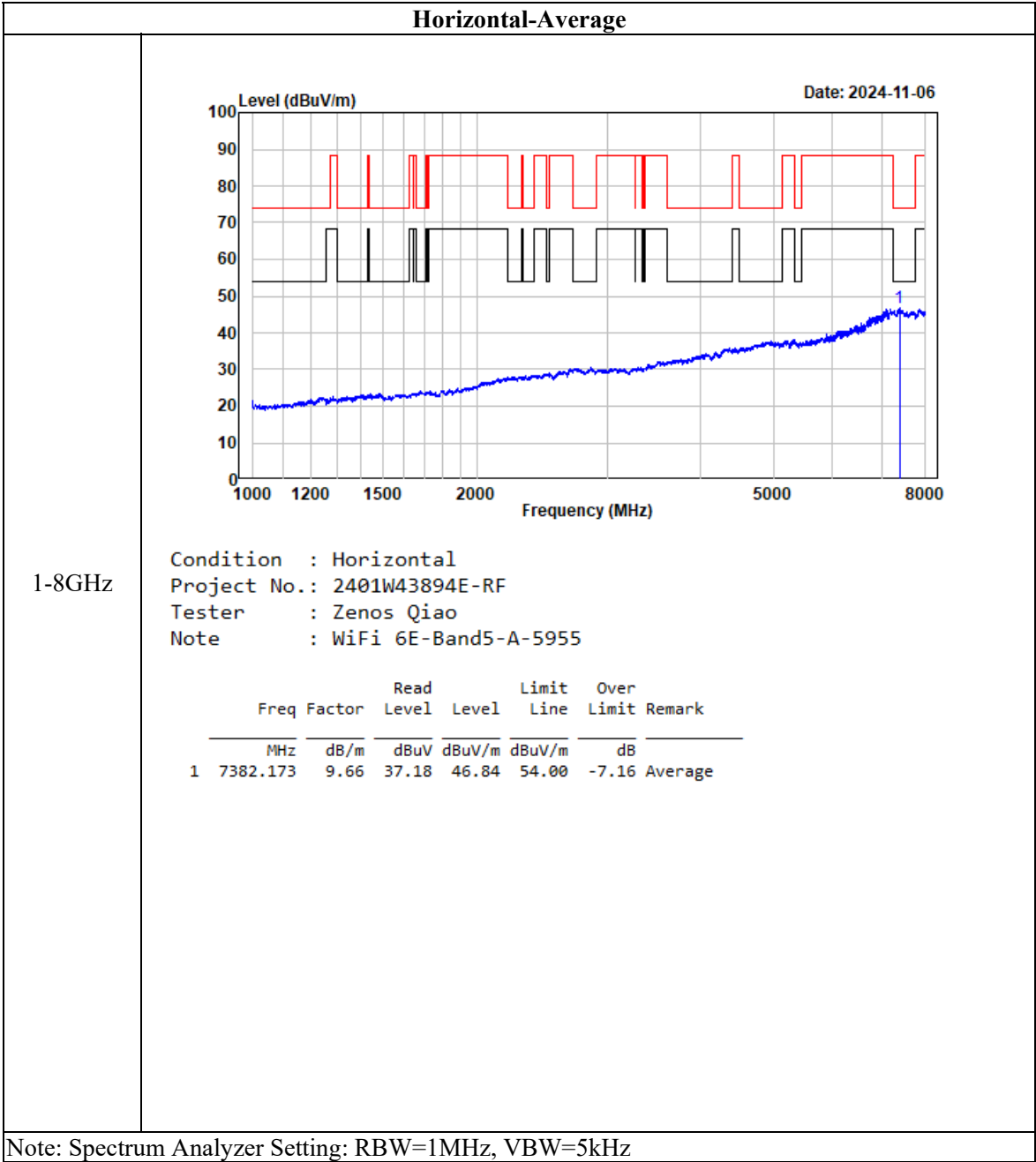


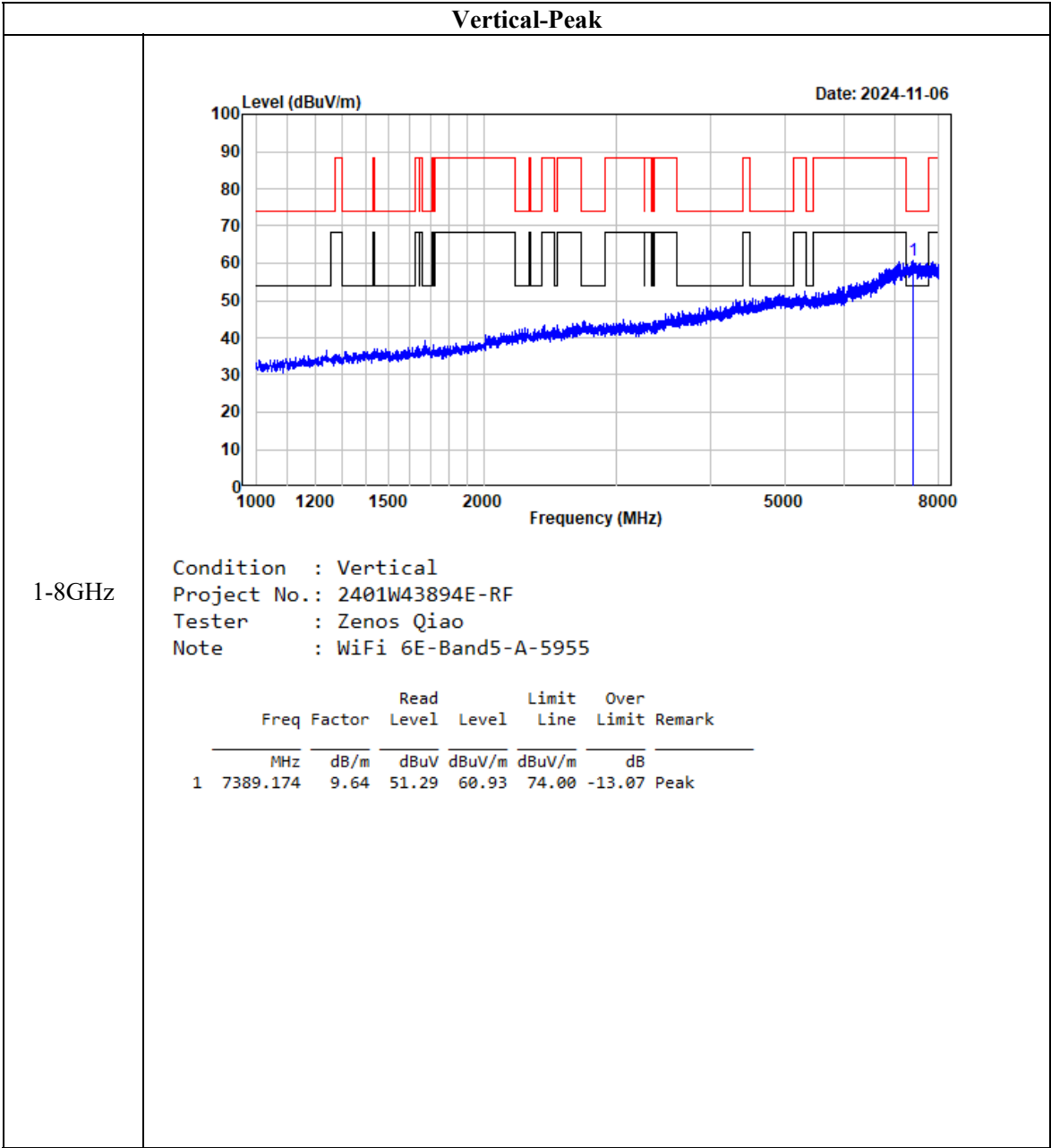
1-18GHz (Listed with the worst harmonic margin test plots):

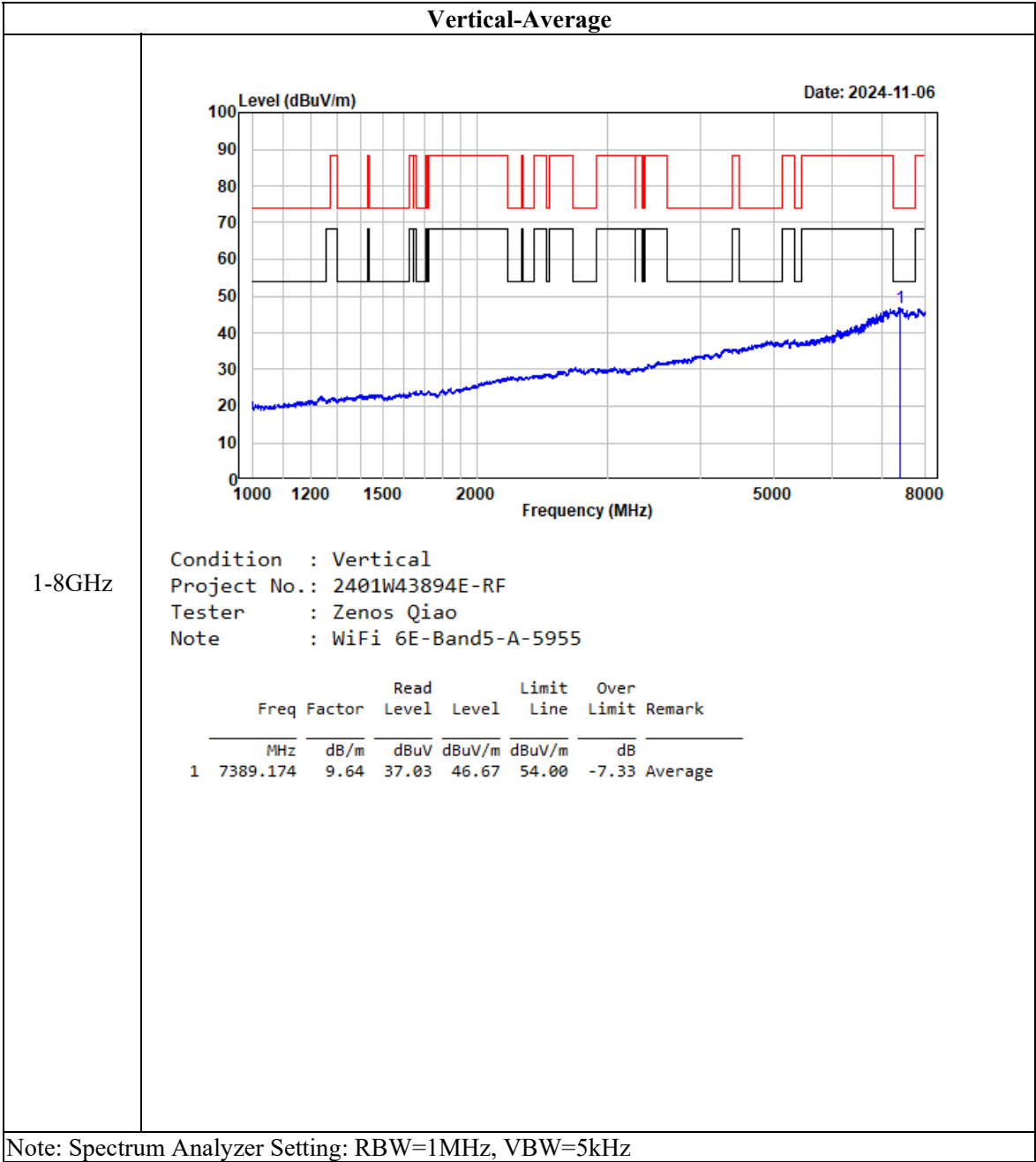
Wi-Fi 6E_ U-NII 5:

802.11a, 5955MHz

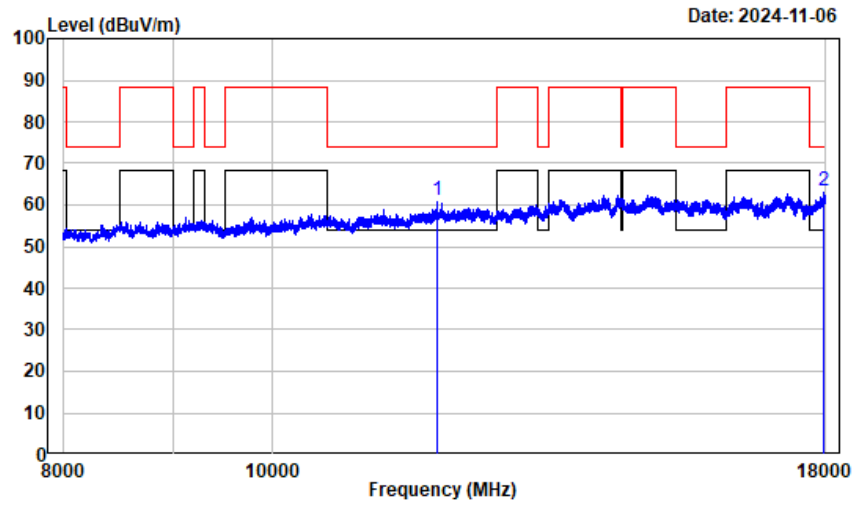








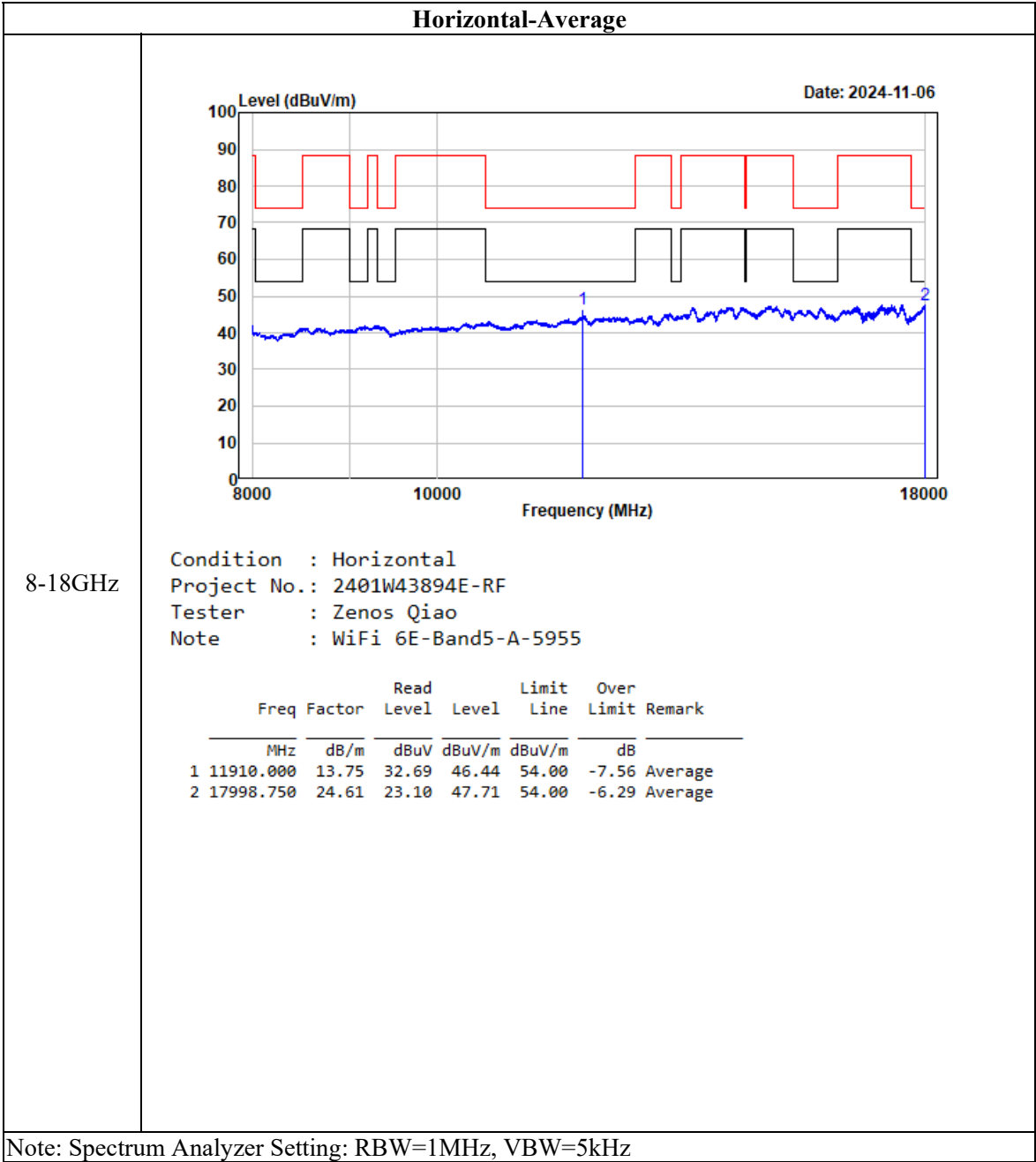
Horizontal-Peak

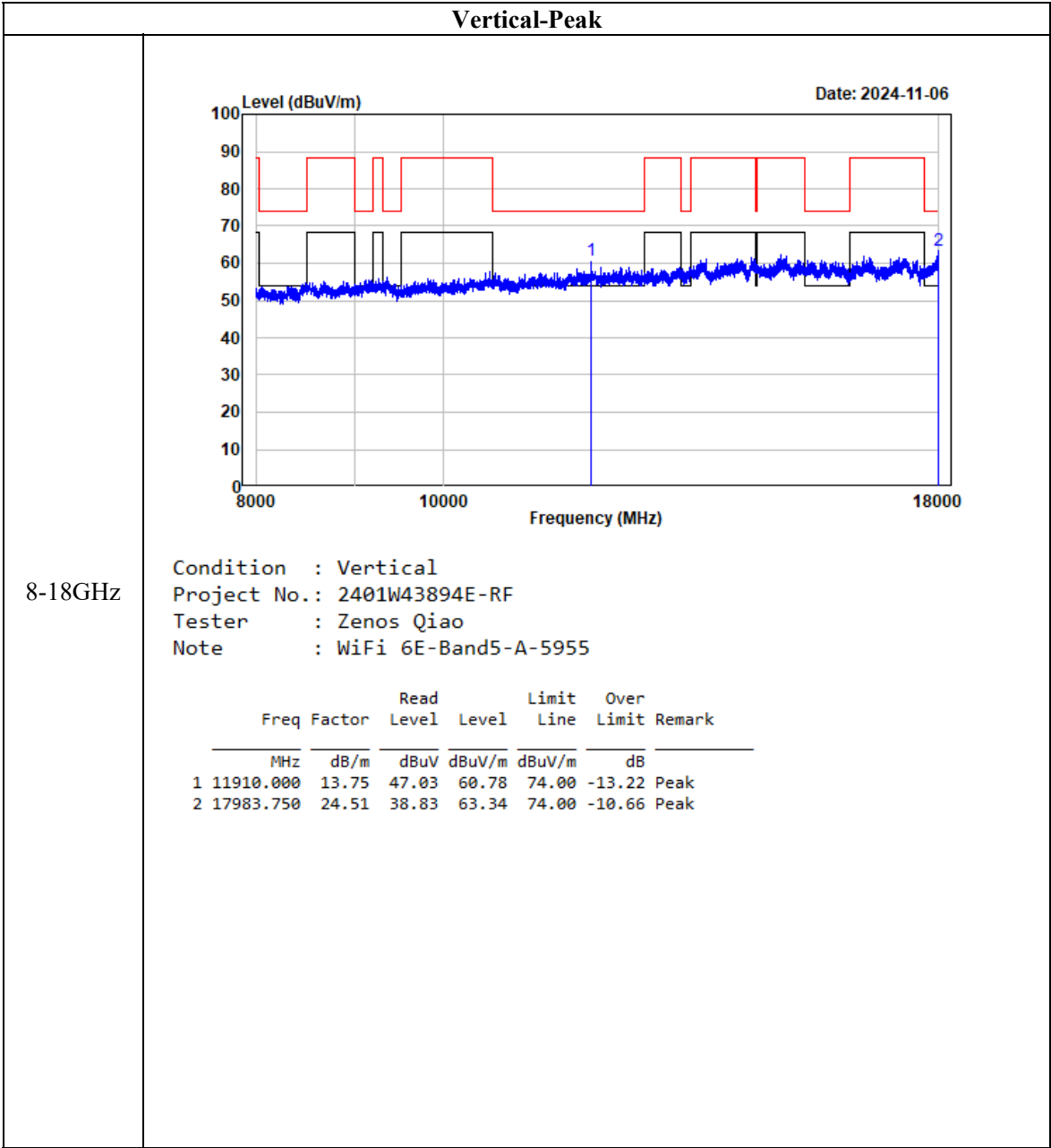


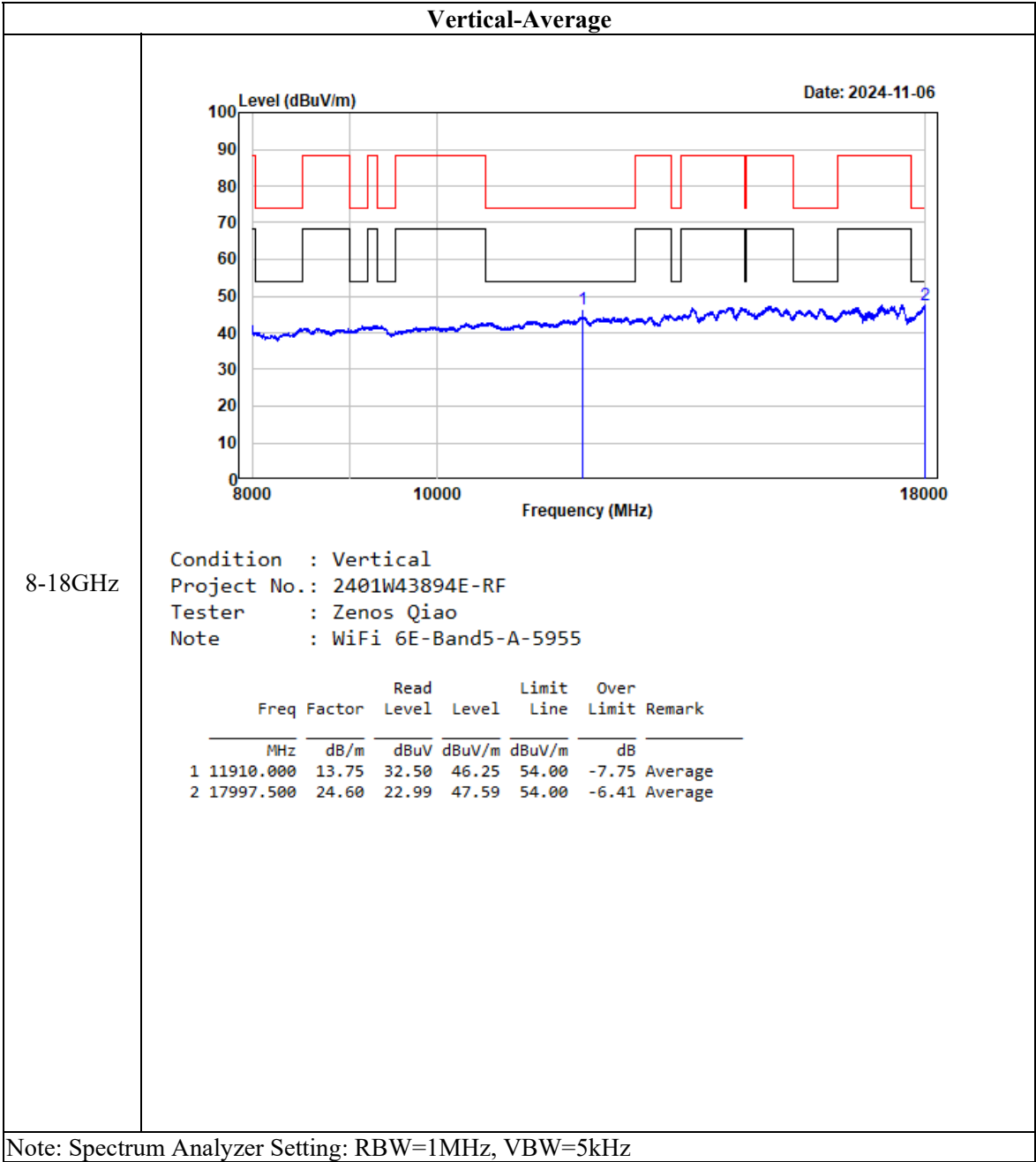
8-18GHz

Condition : Horizontal
Project No.: 2401W43894E-RF
Tester : Zenos Qiao
Note : WiFi 6E-Band5-A-5955

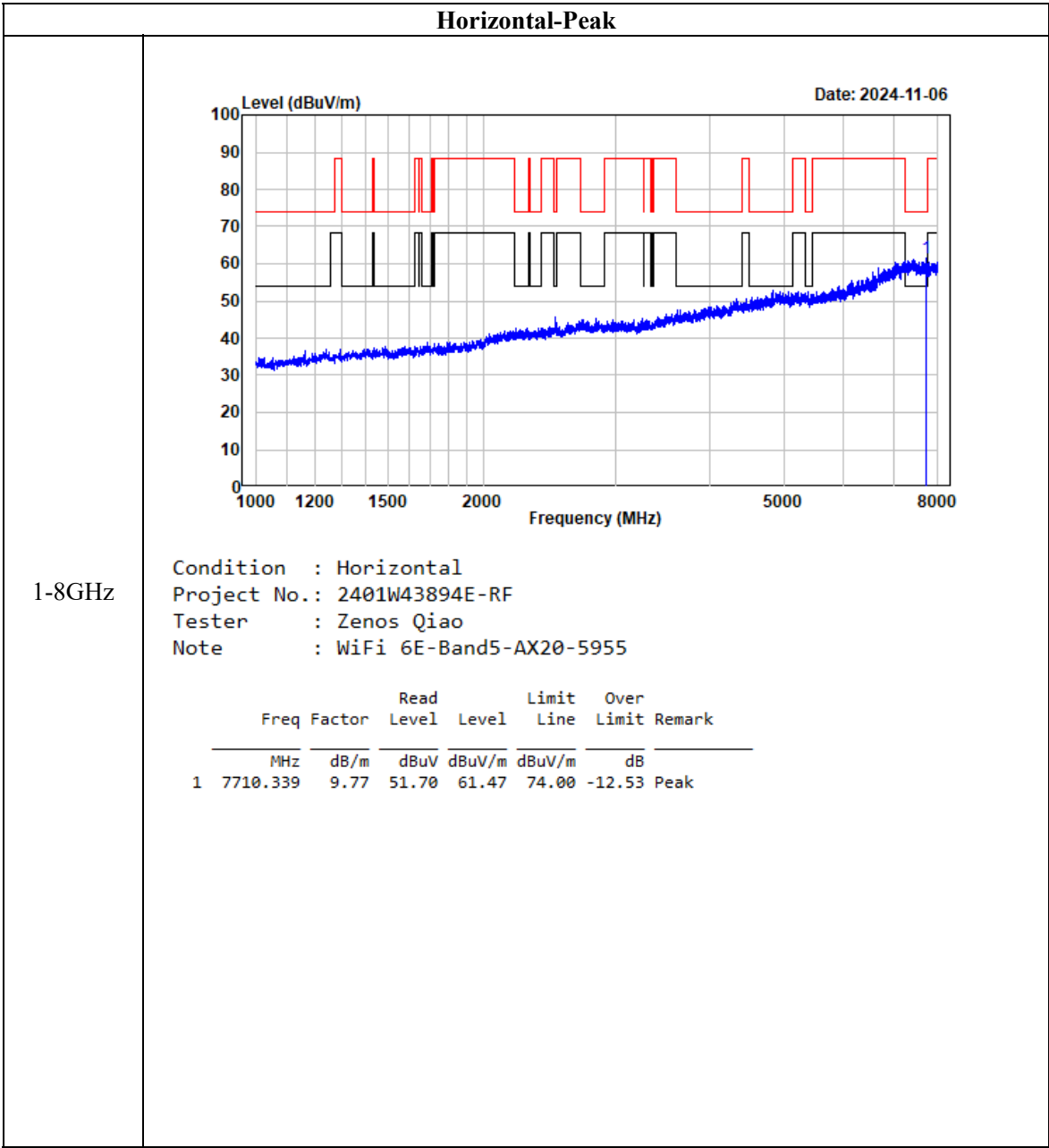
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	11910.000	13.75	47.35	61.10	74.00	-12.90	Peak
2	17951.240	24.28	39.20	63.48	74.00	-10.52	Peak

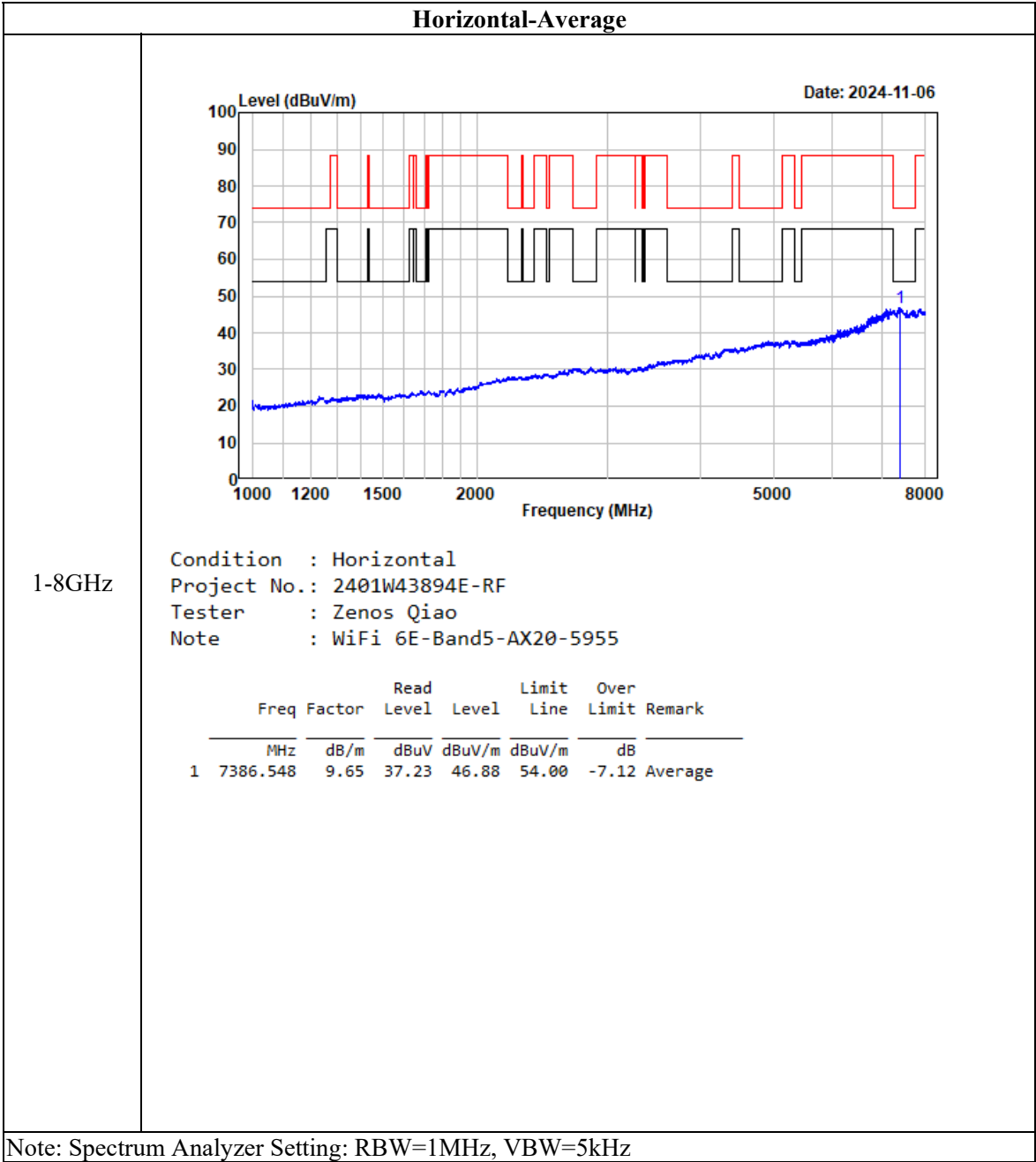


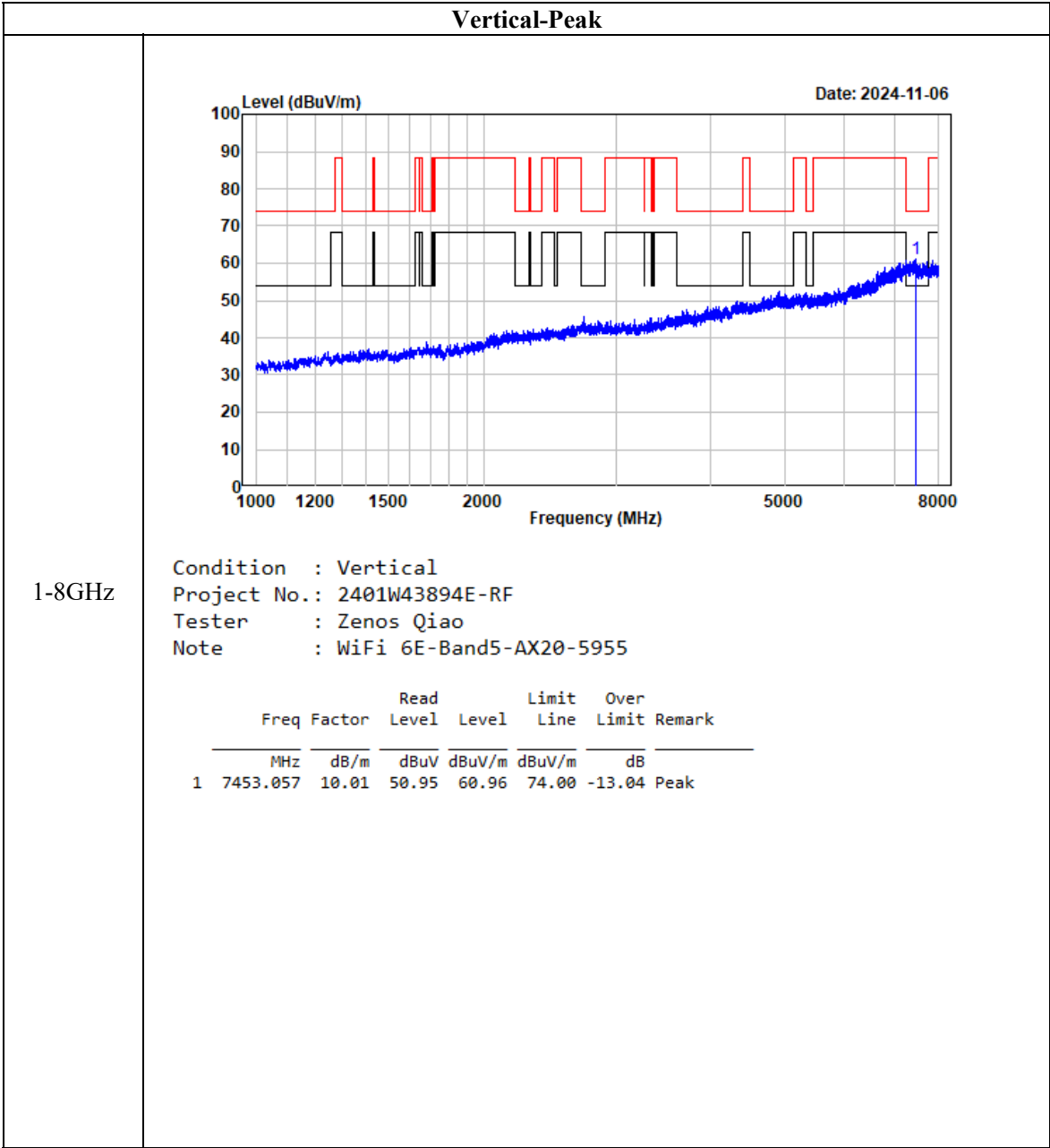


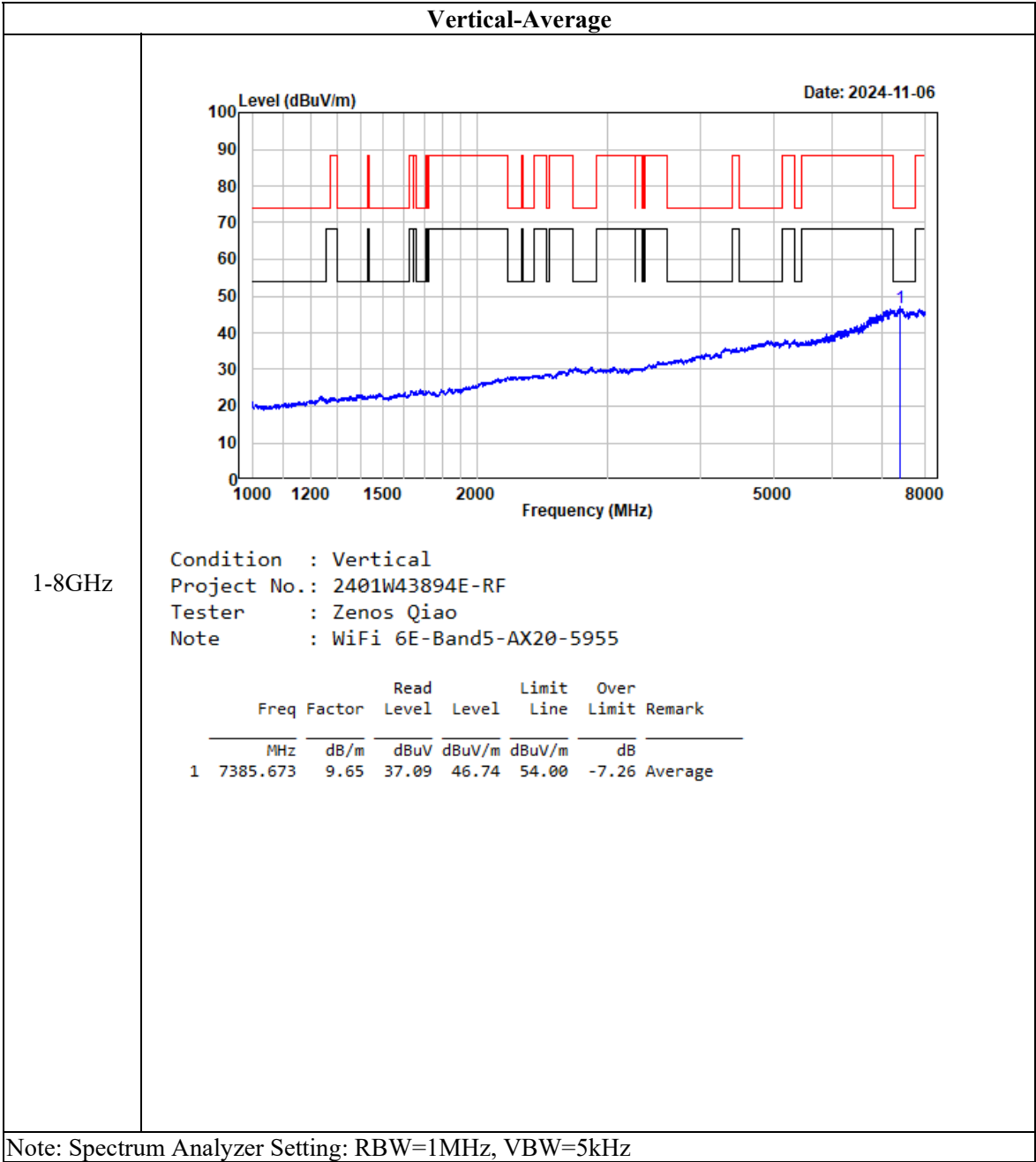


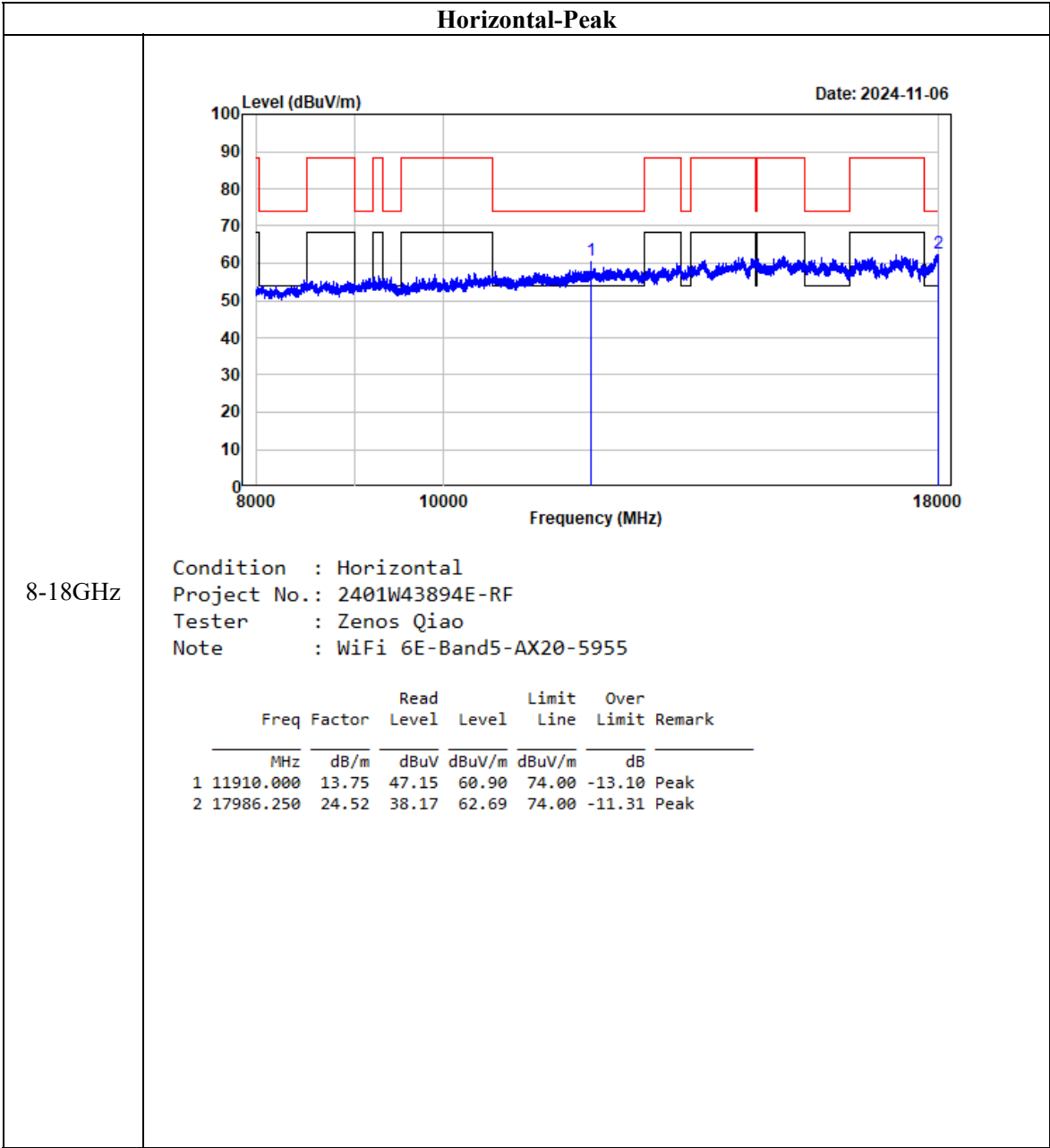
802.11ax20, 5955MHz

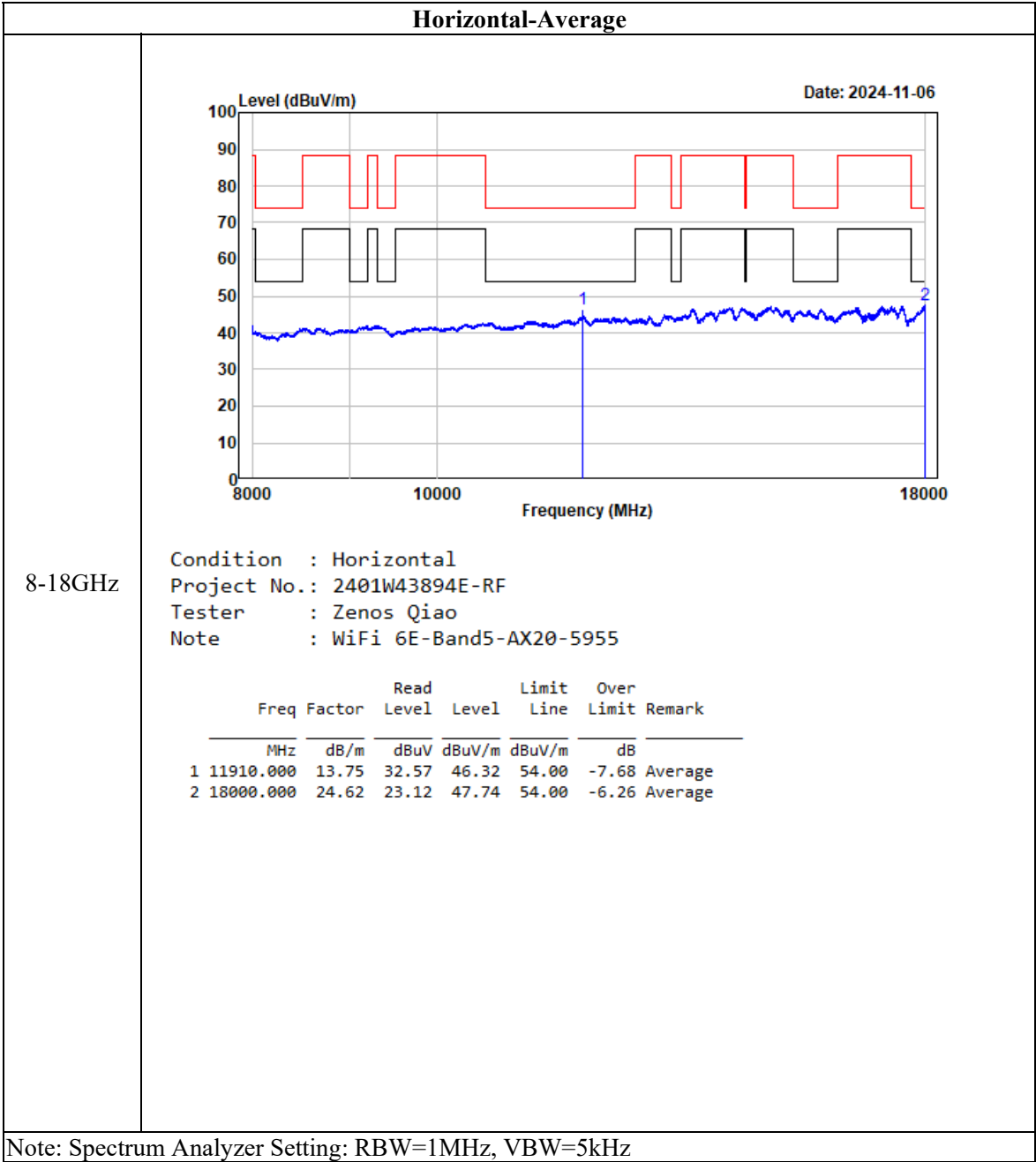


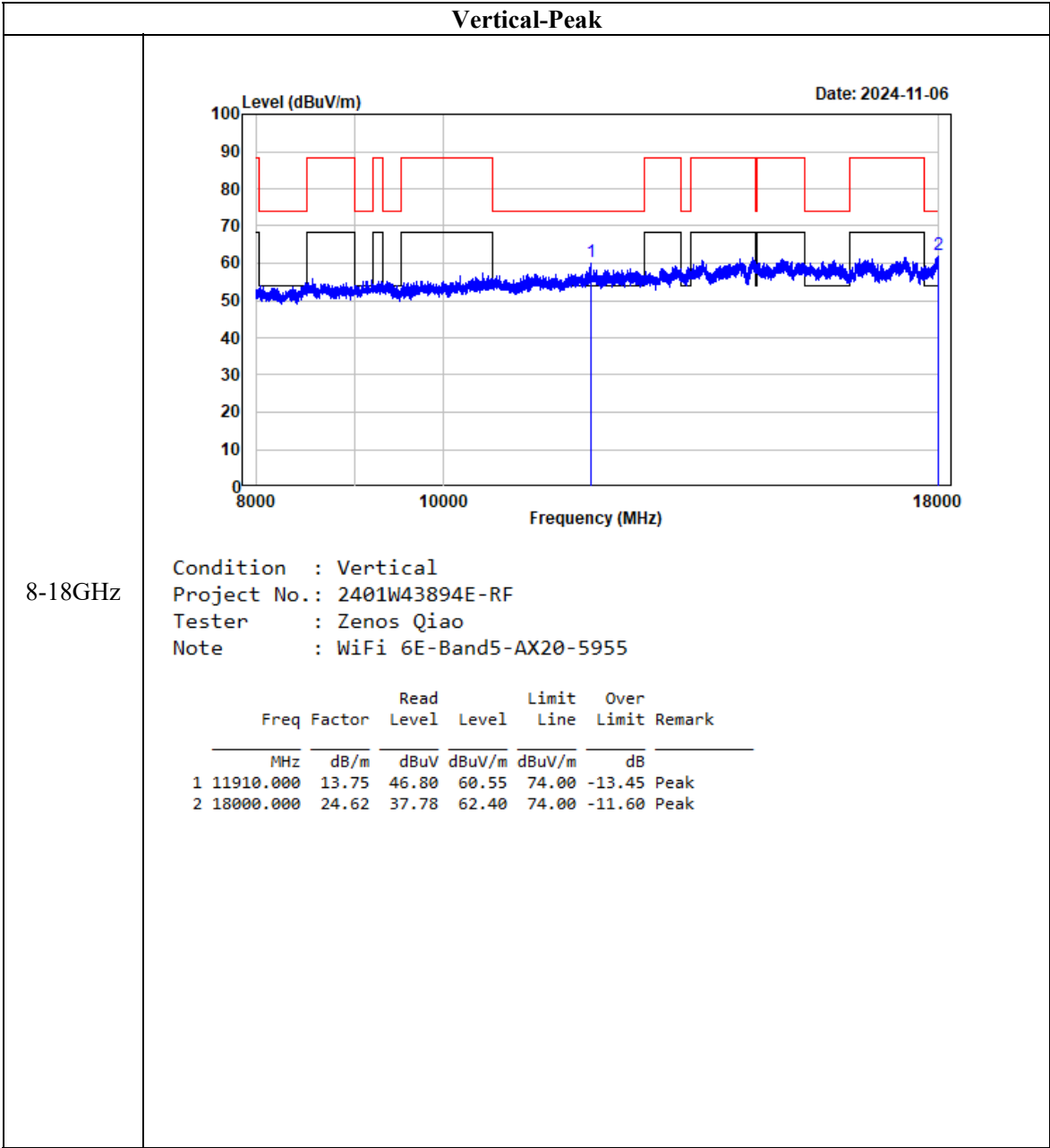


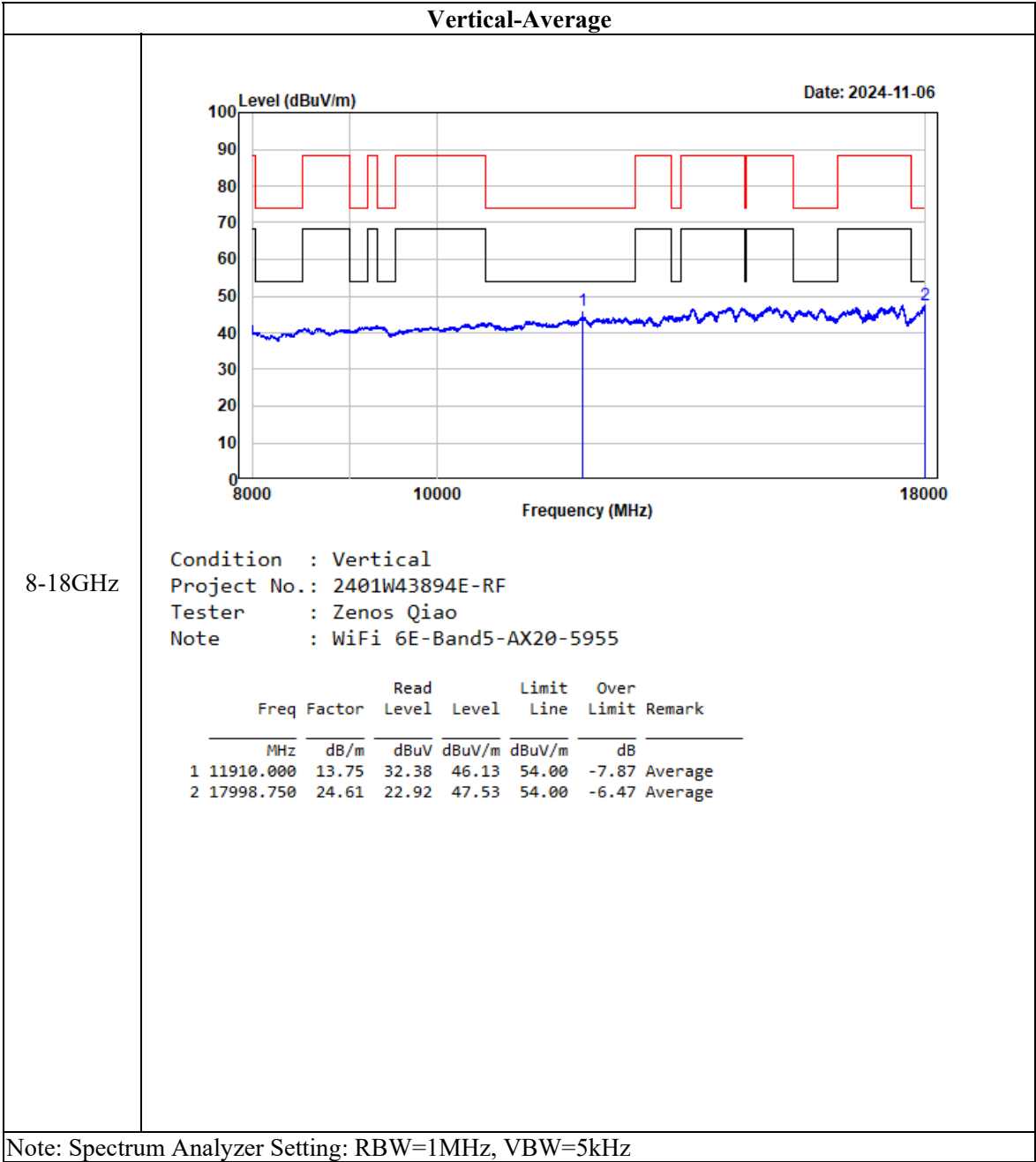




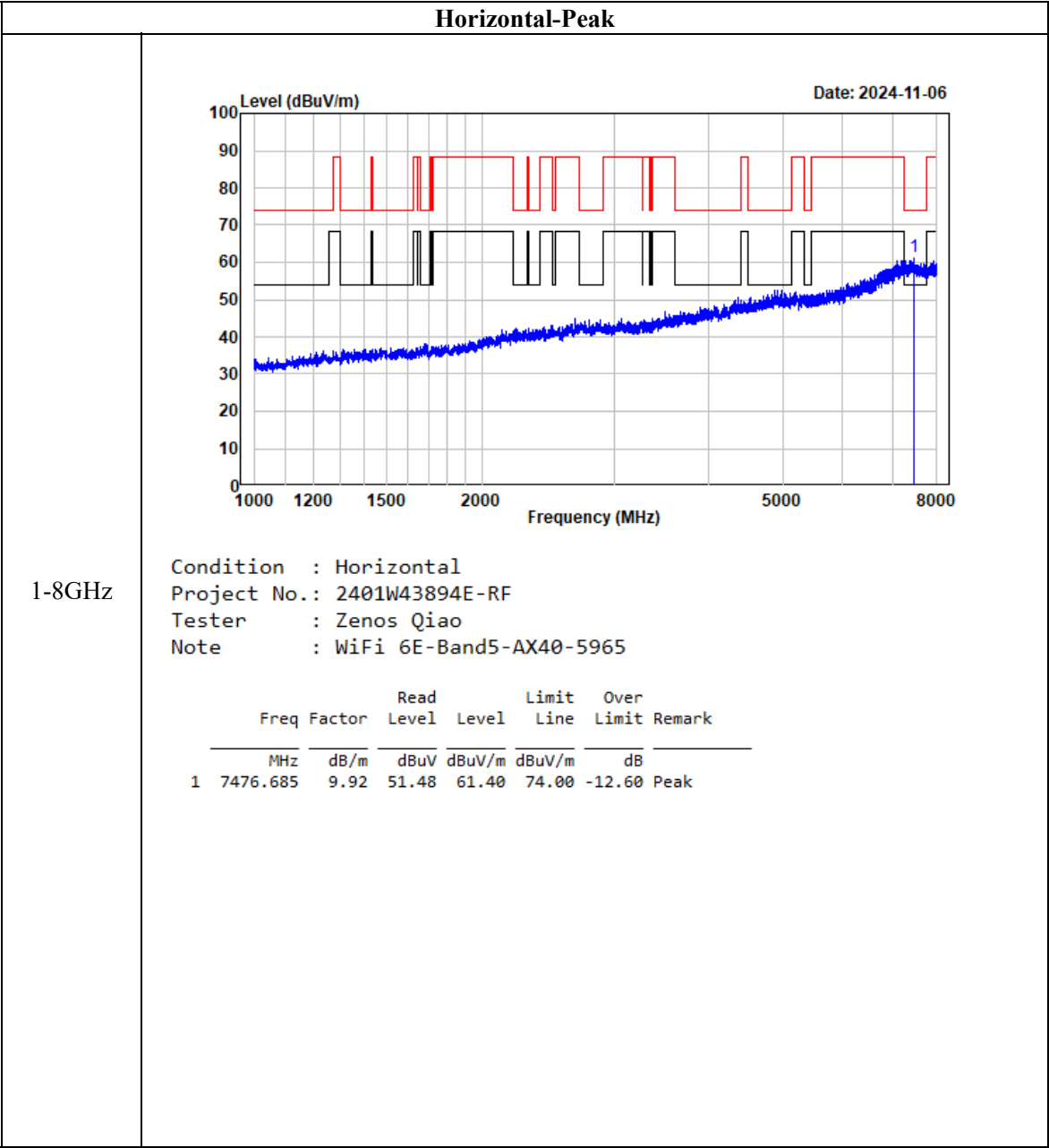


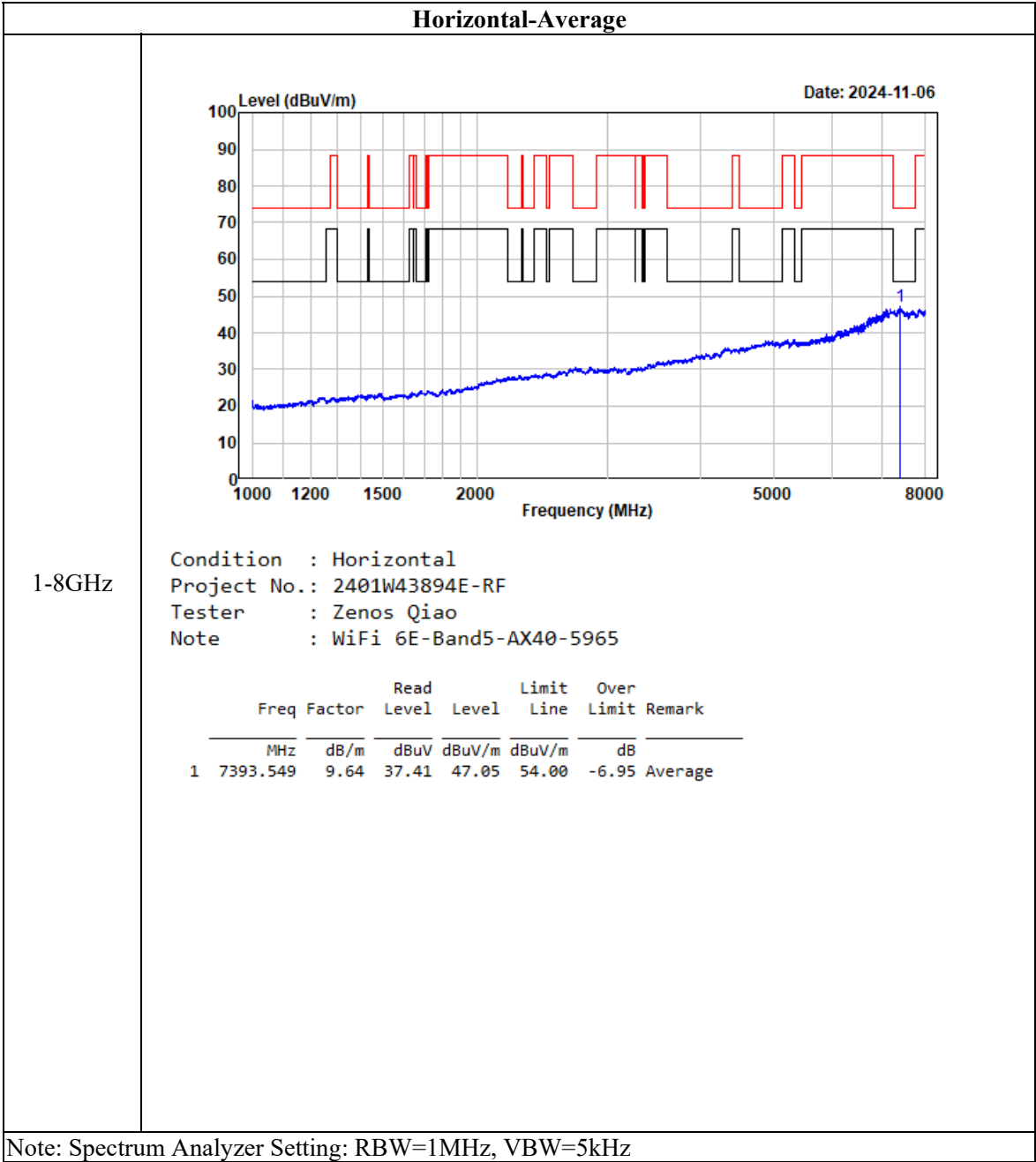


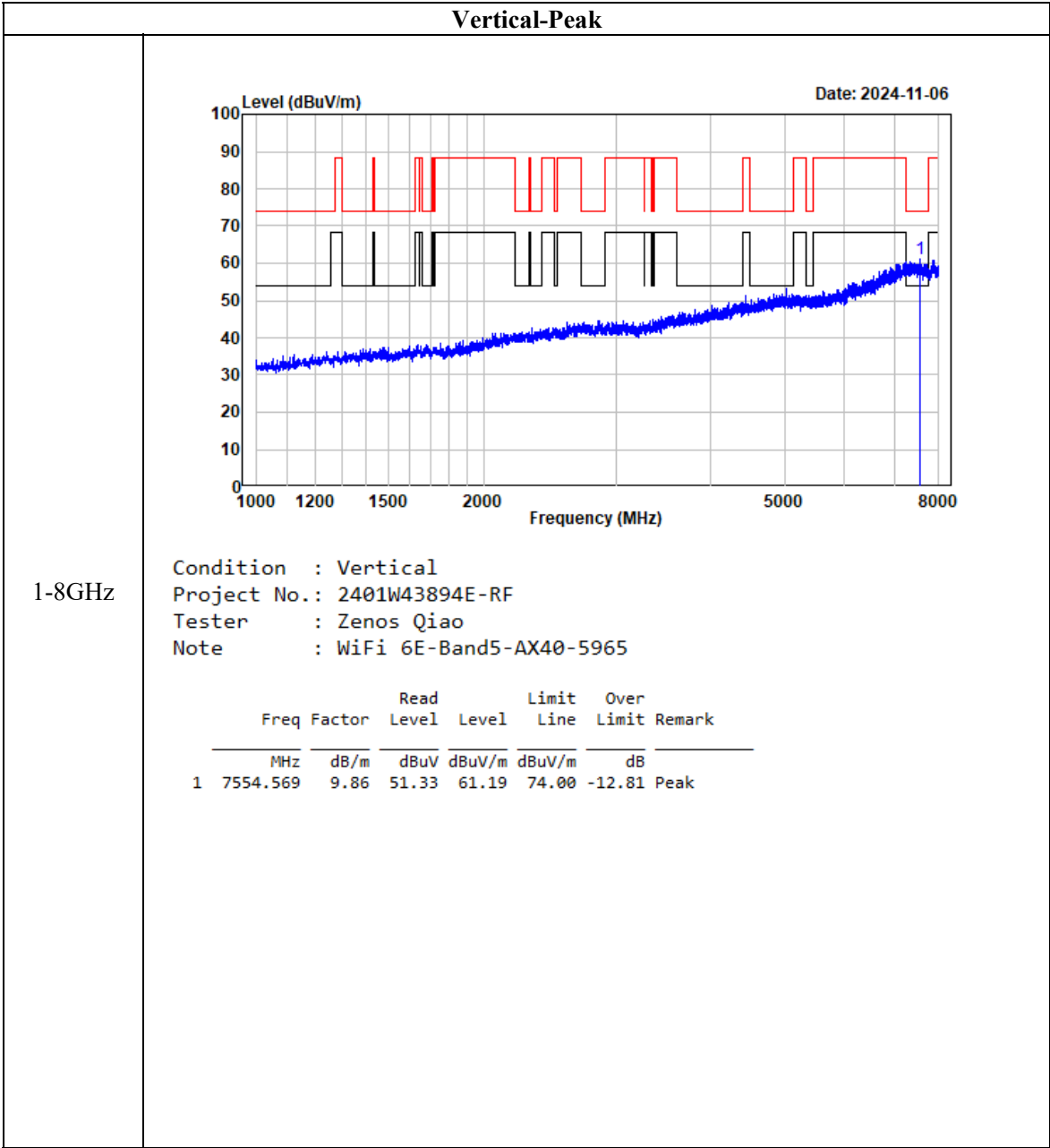


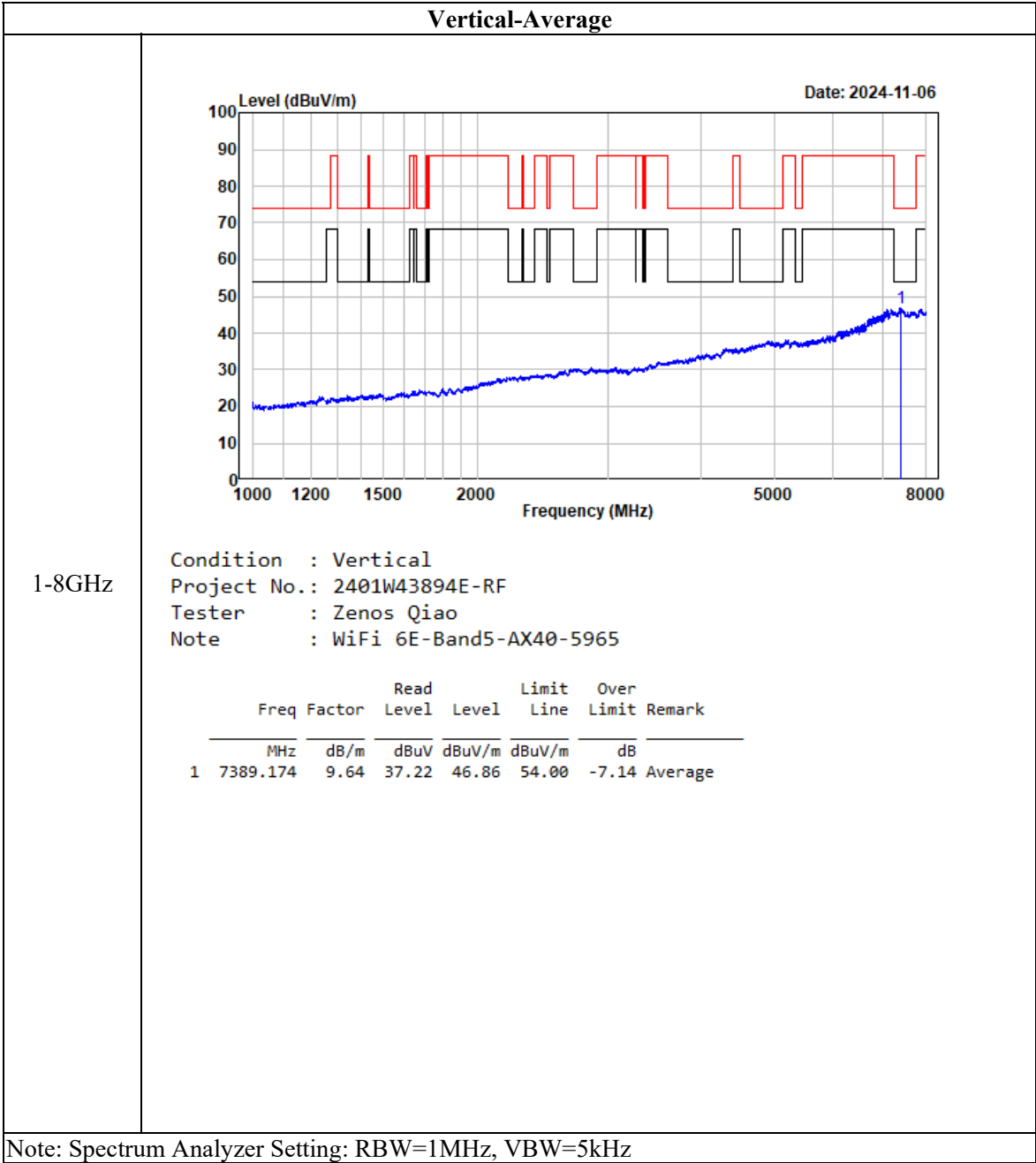


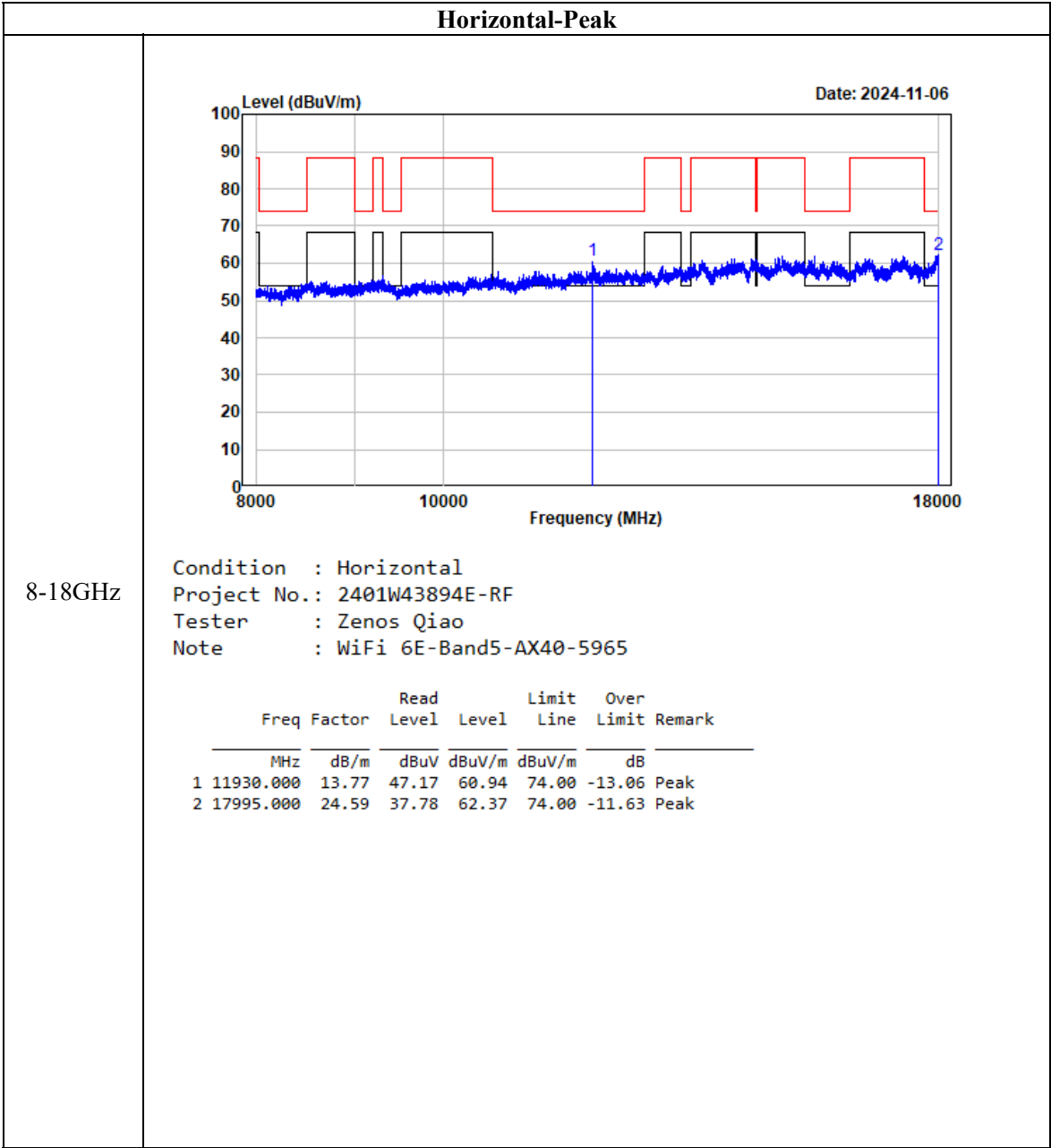
802.11ax40, 5965MHz

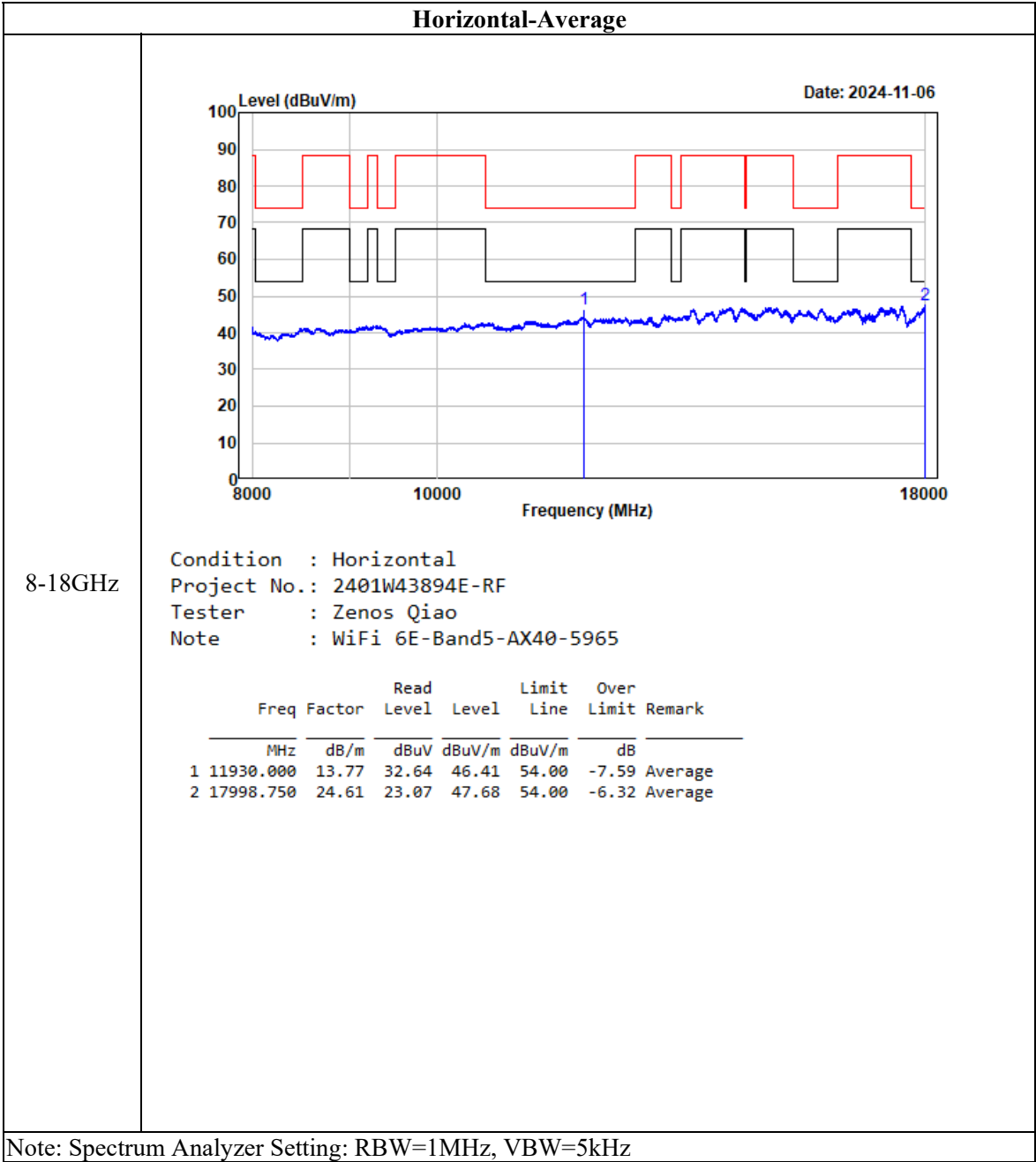


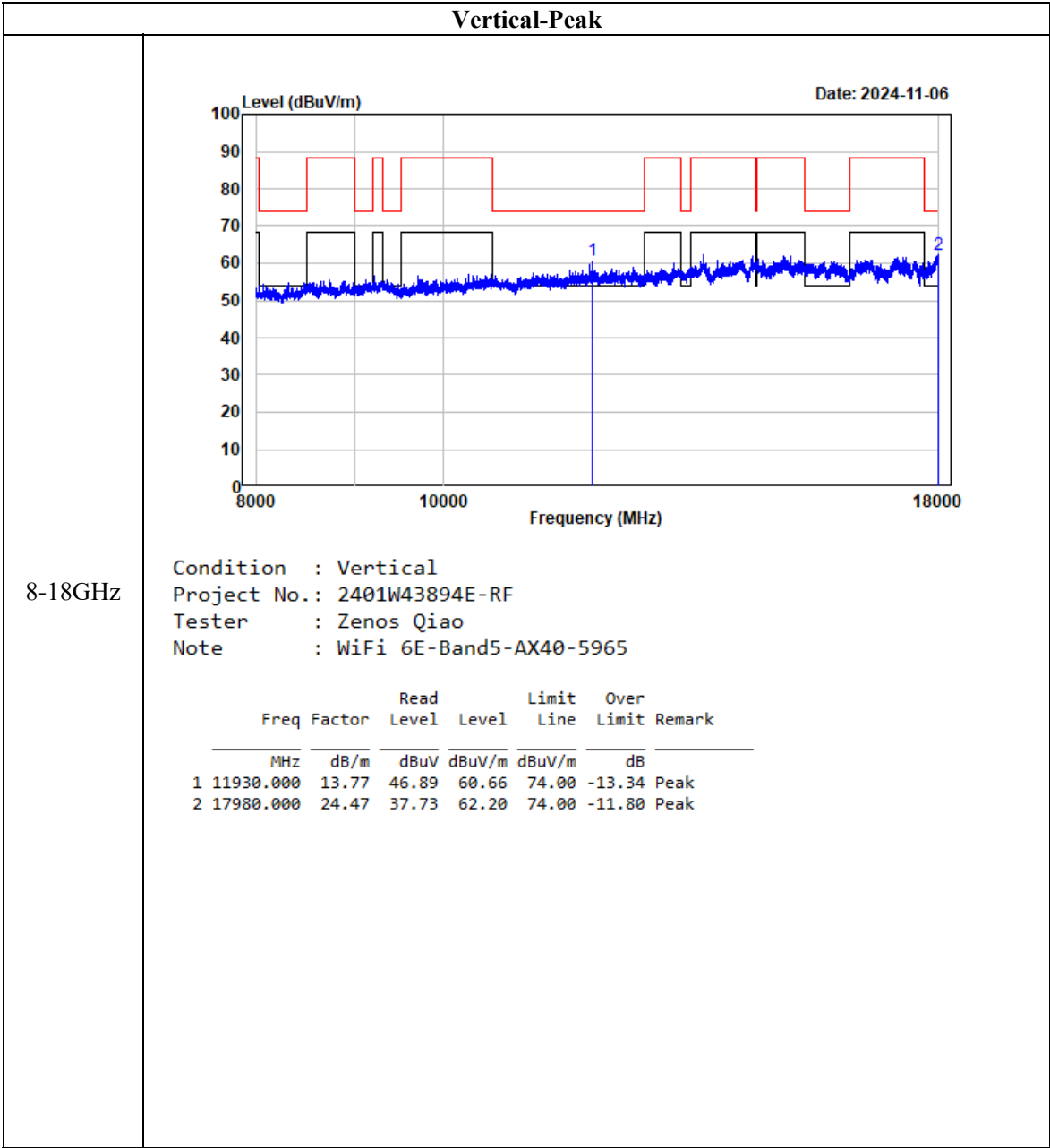




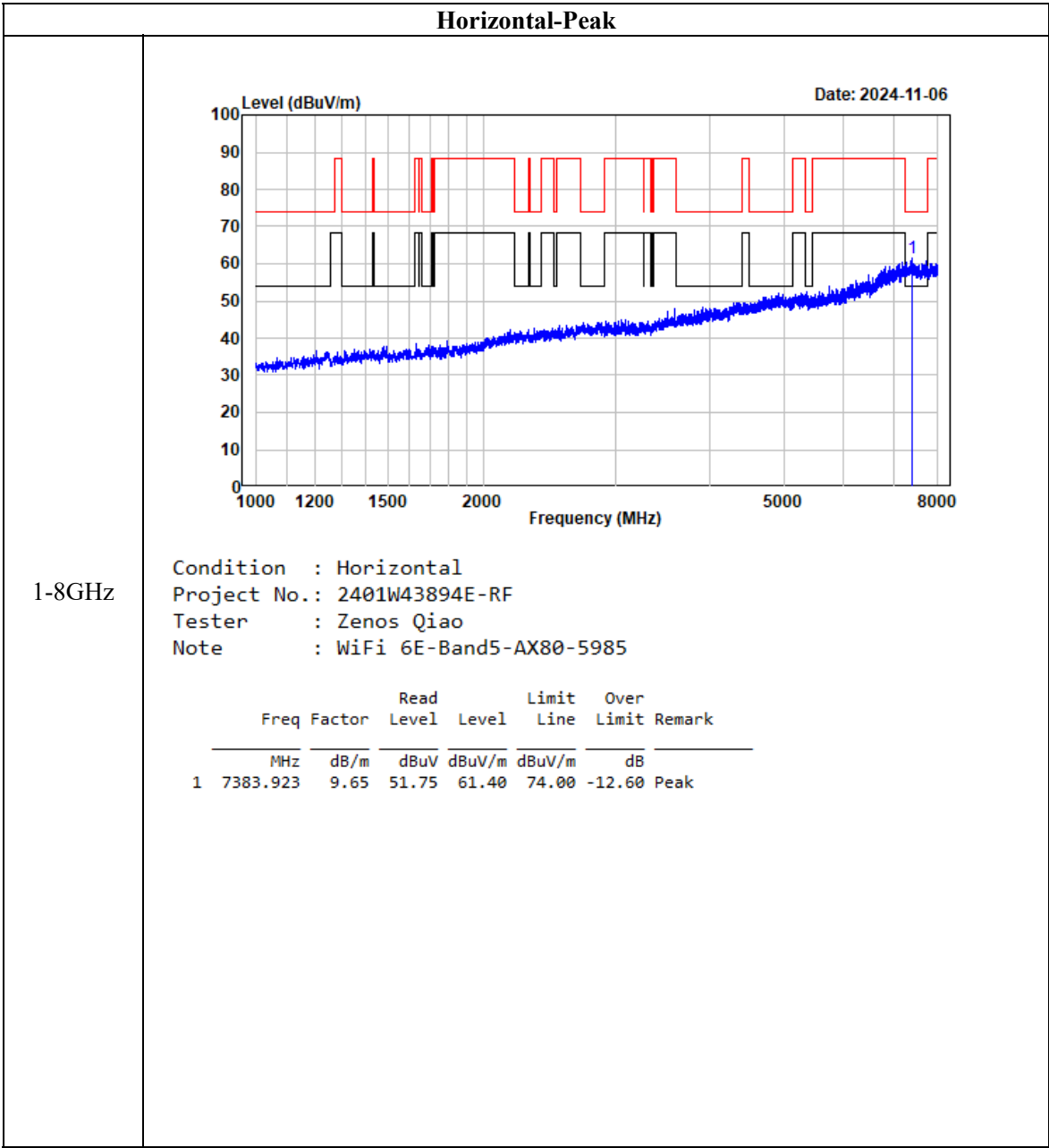


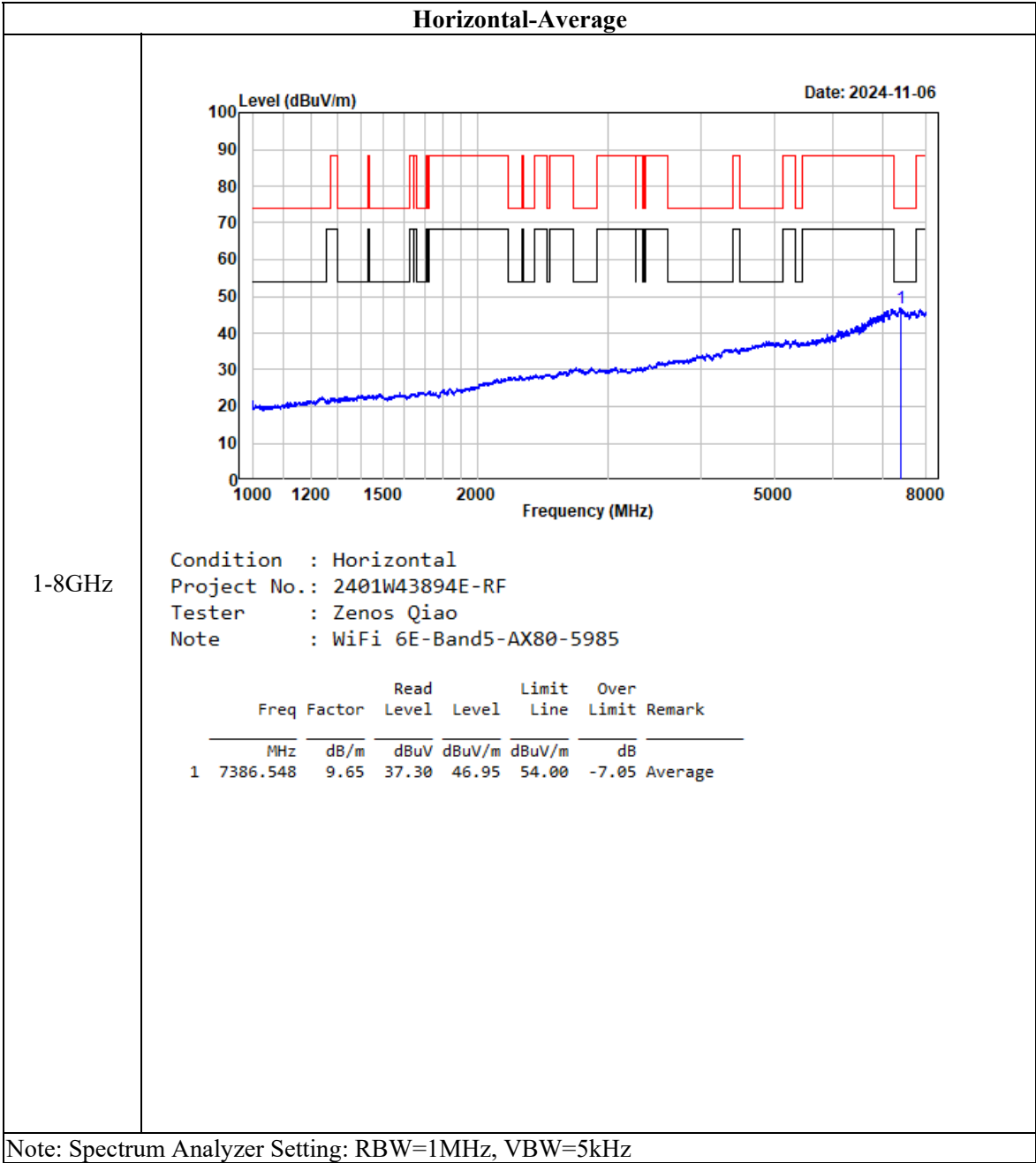


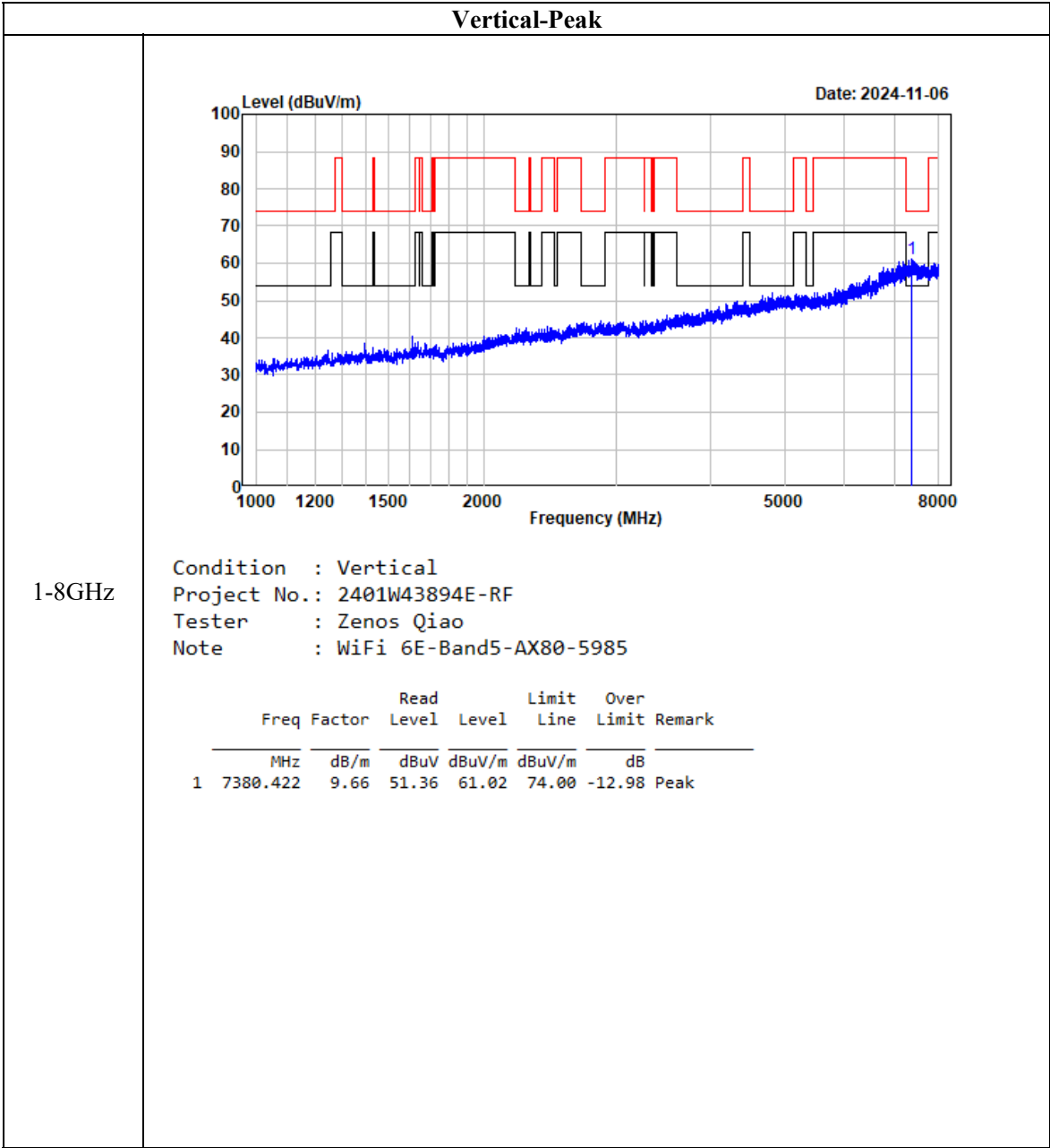


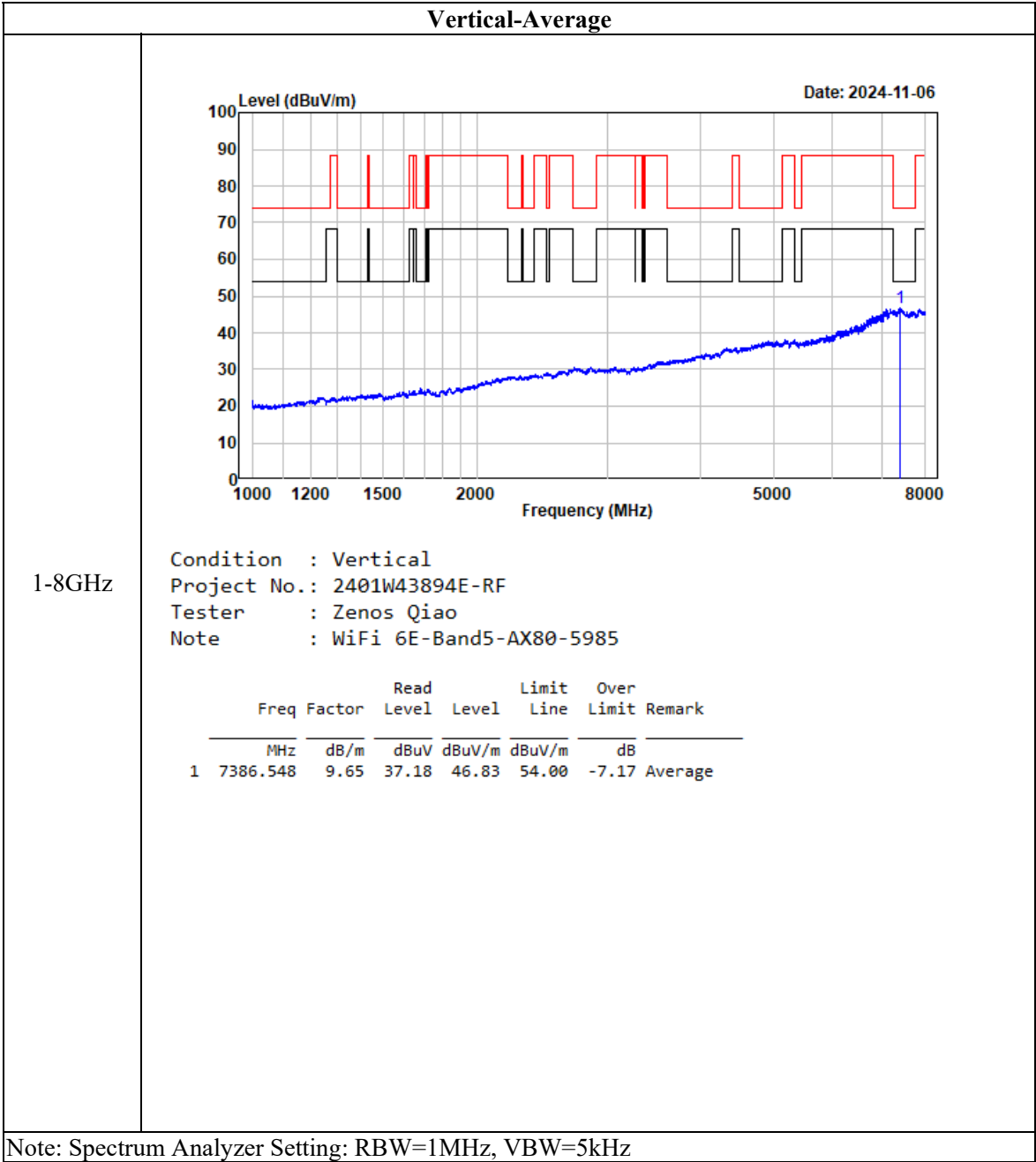


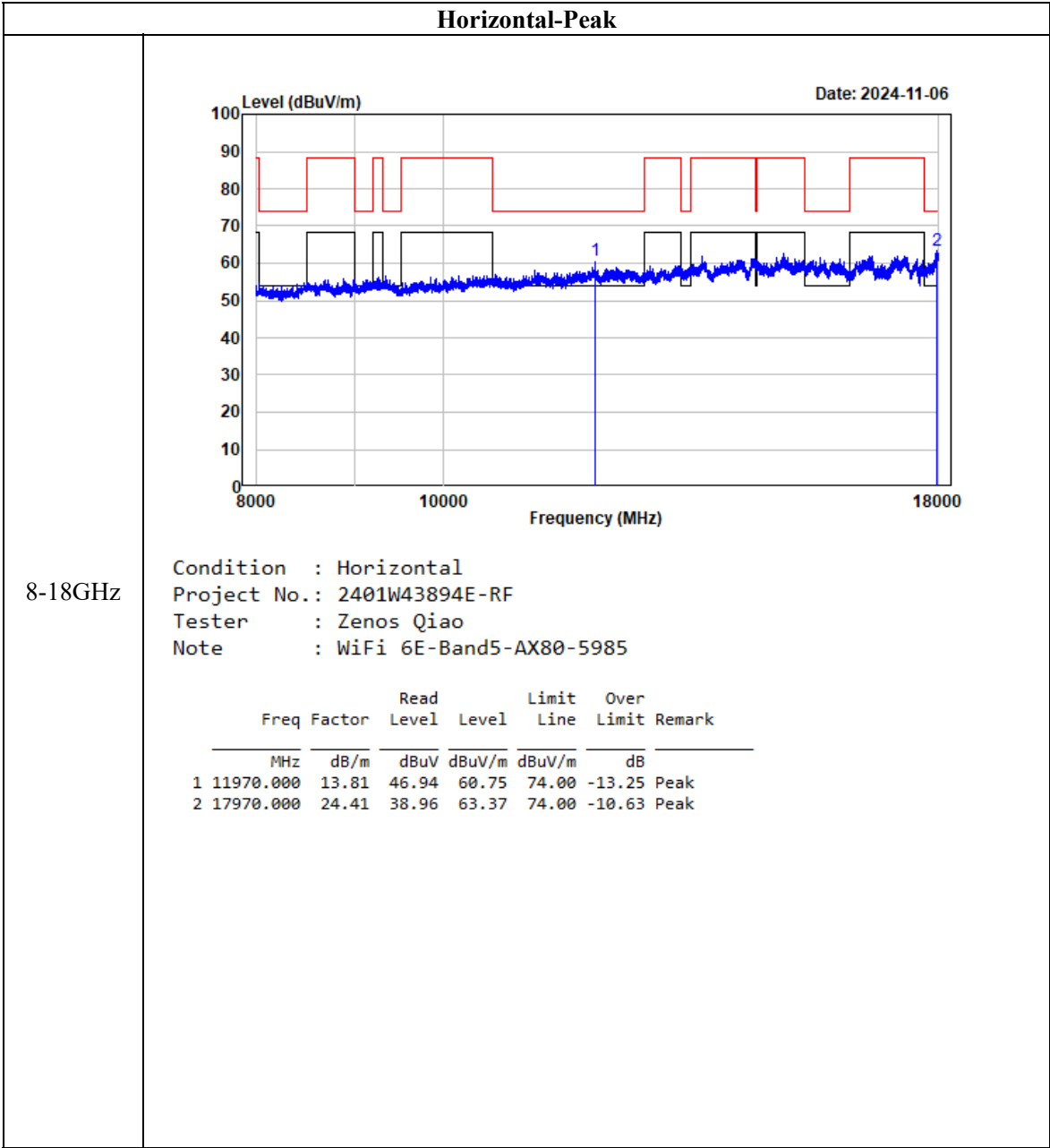
802.11ax80, 5985MHz

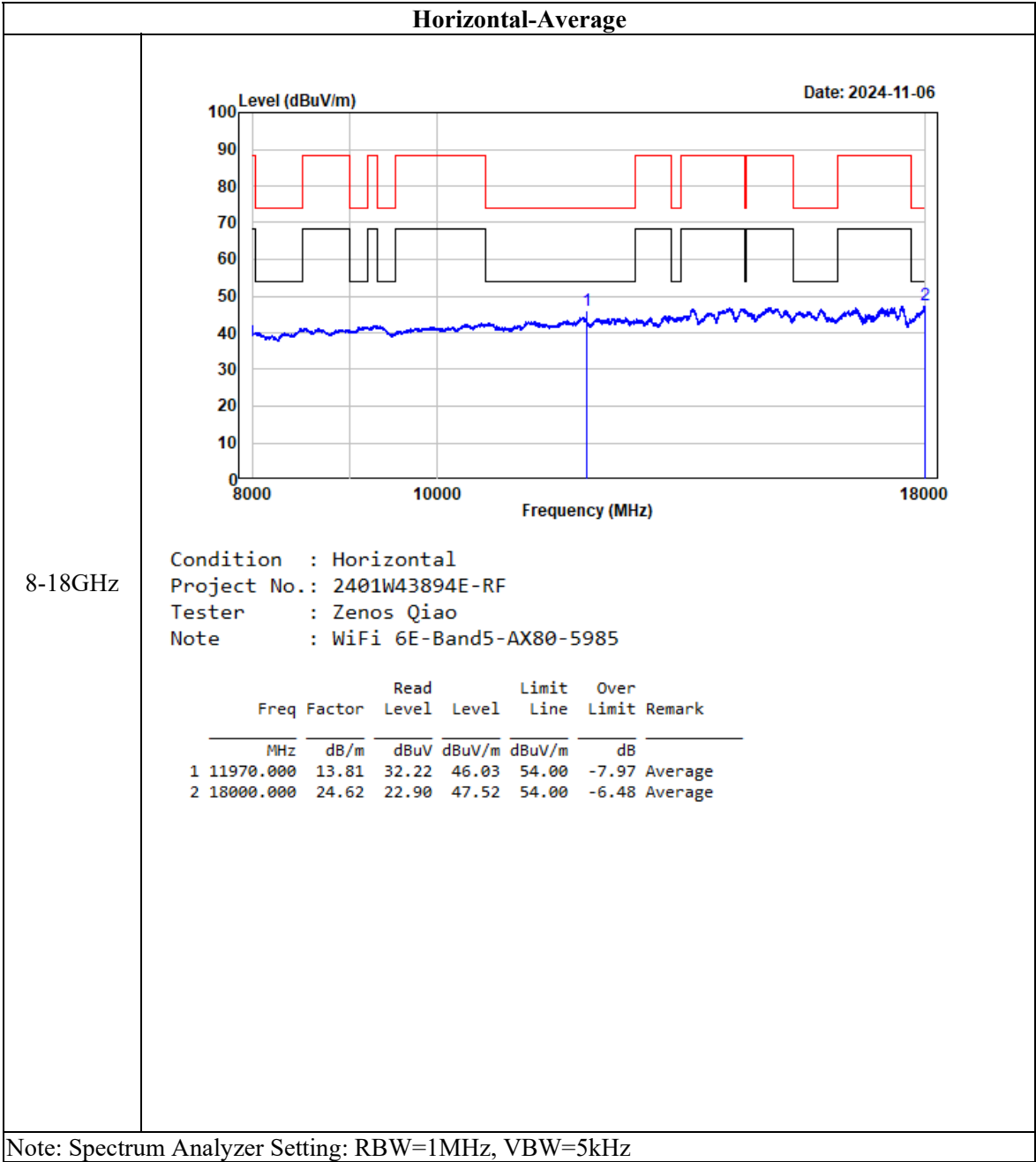


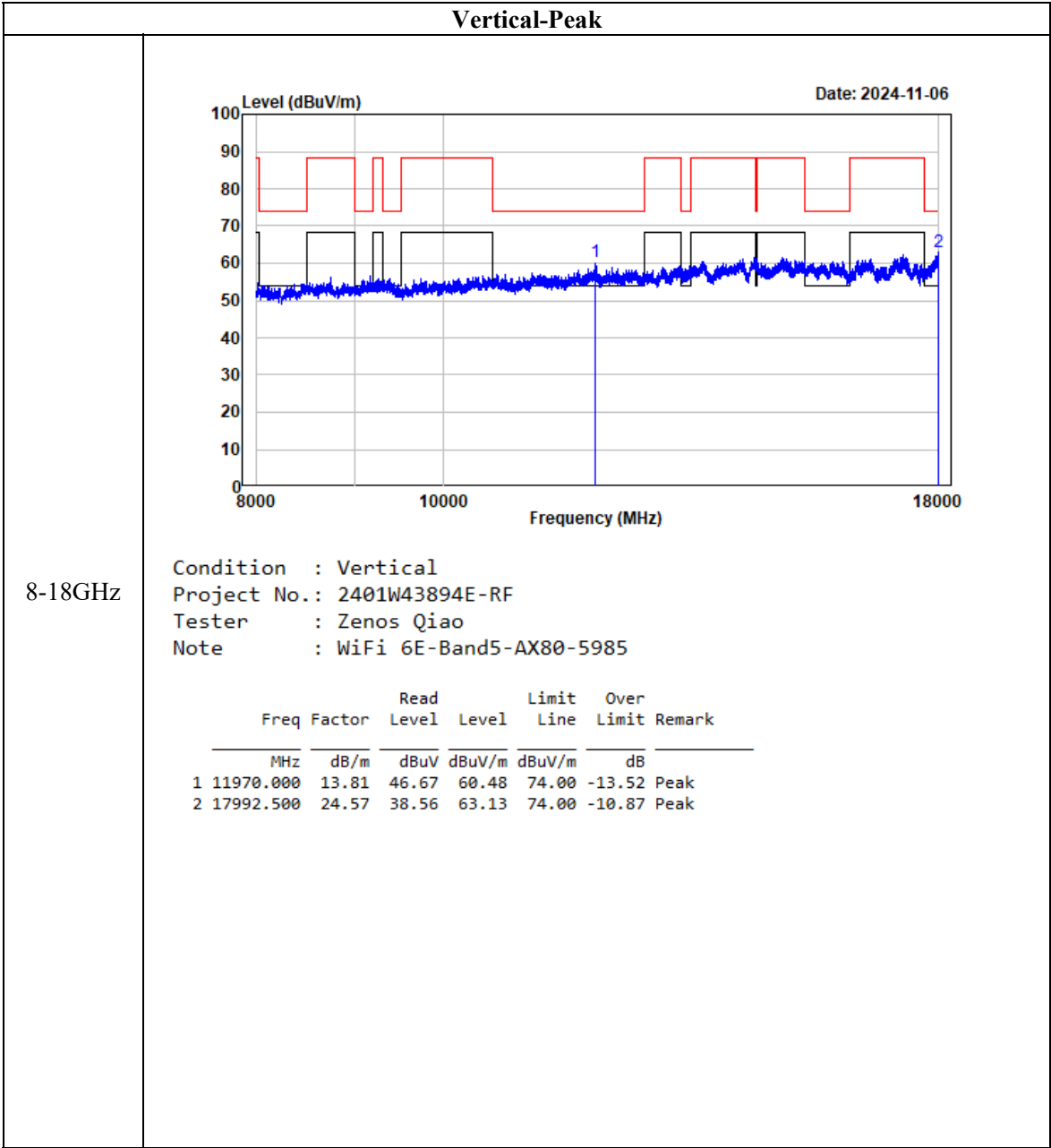


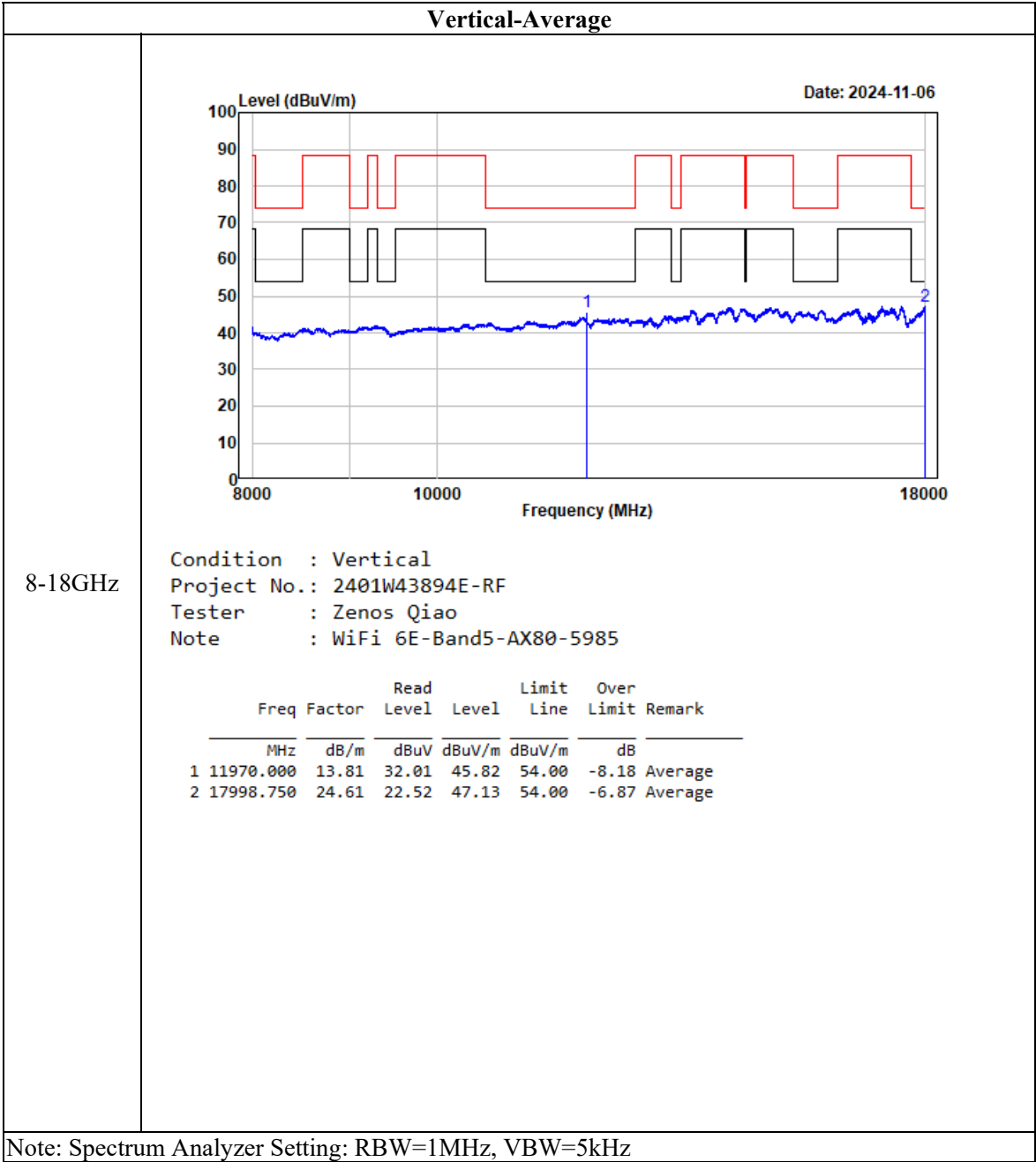




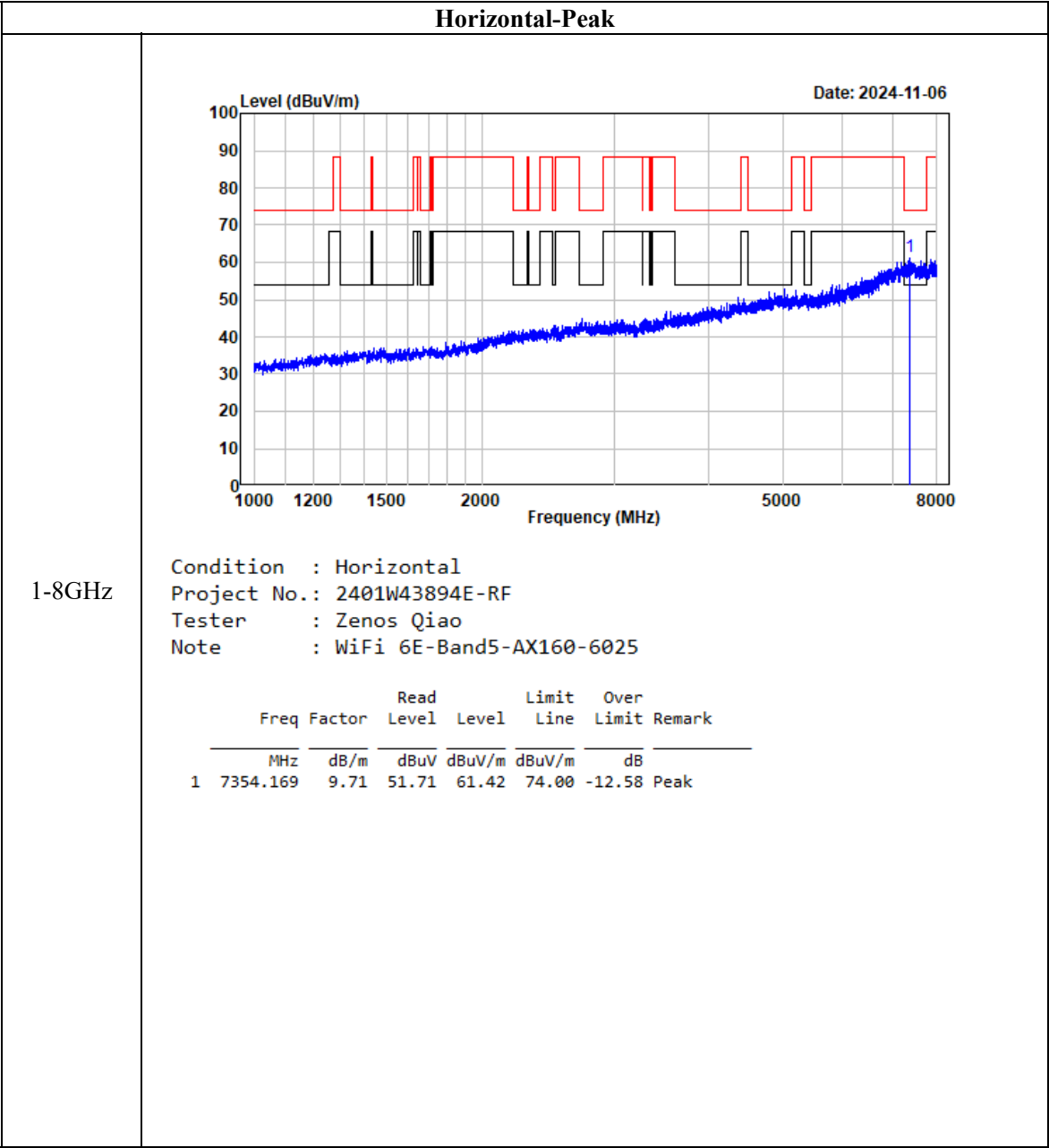


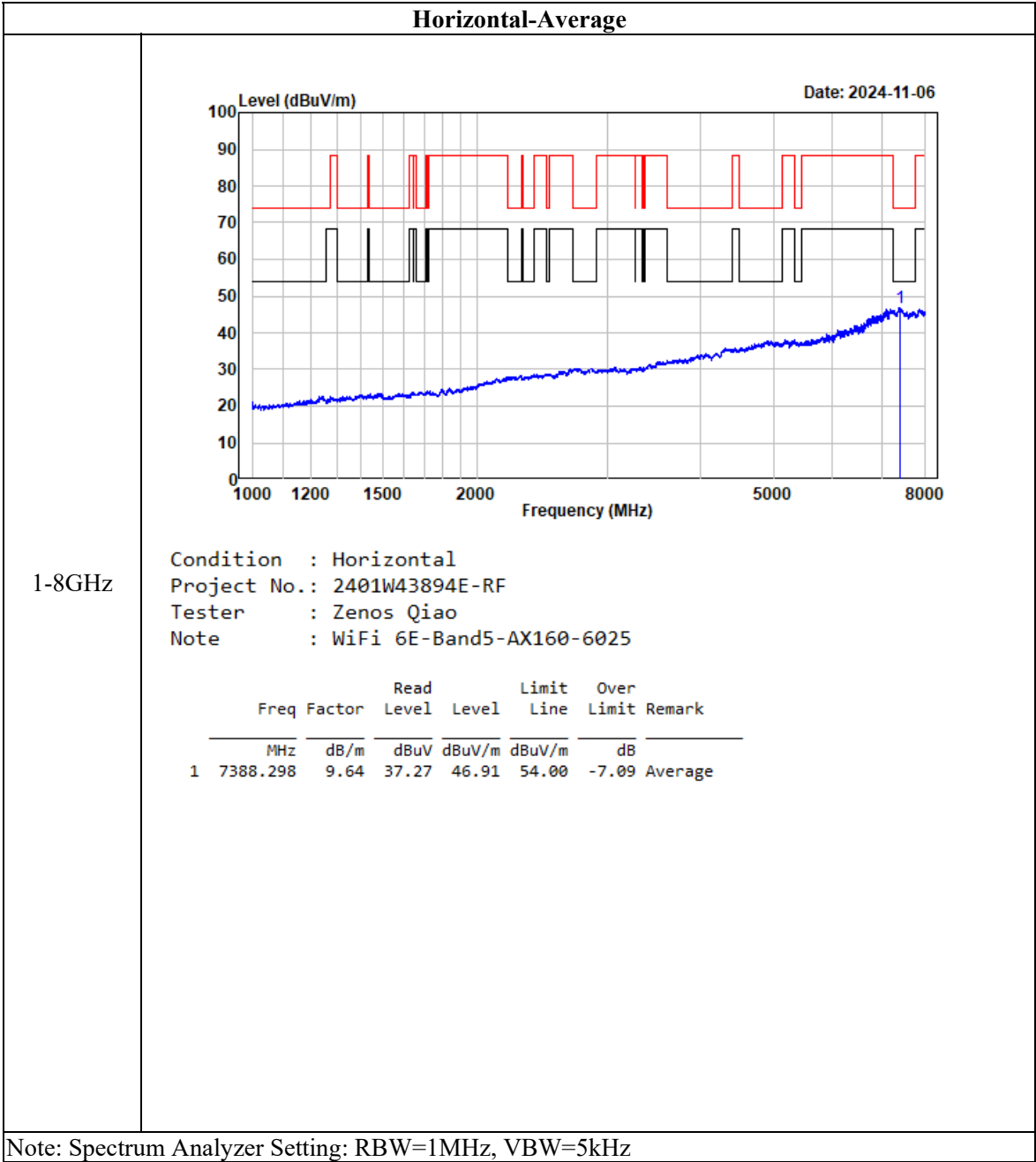


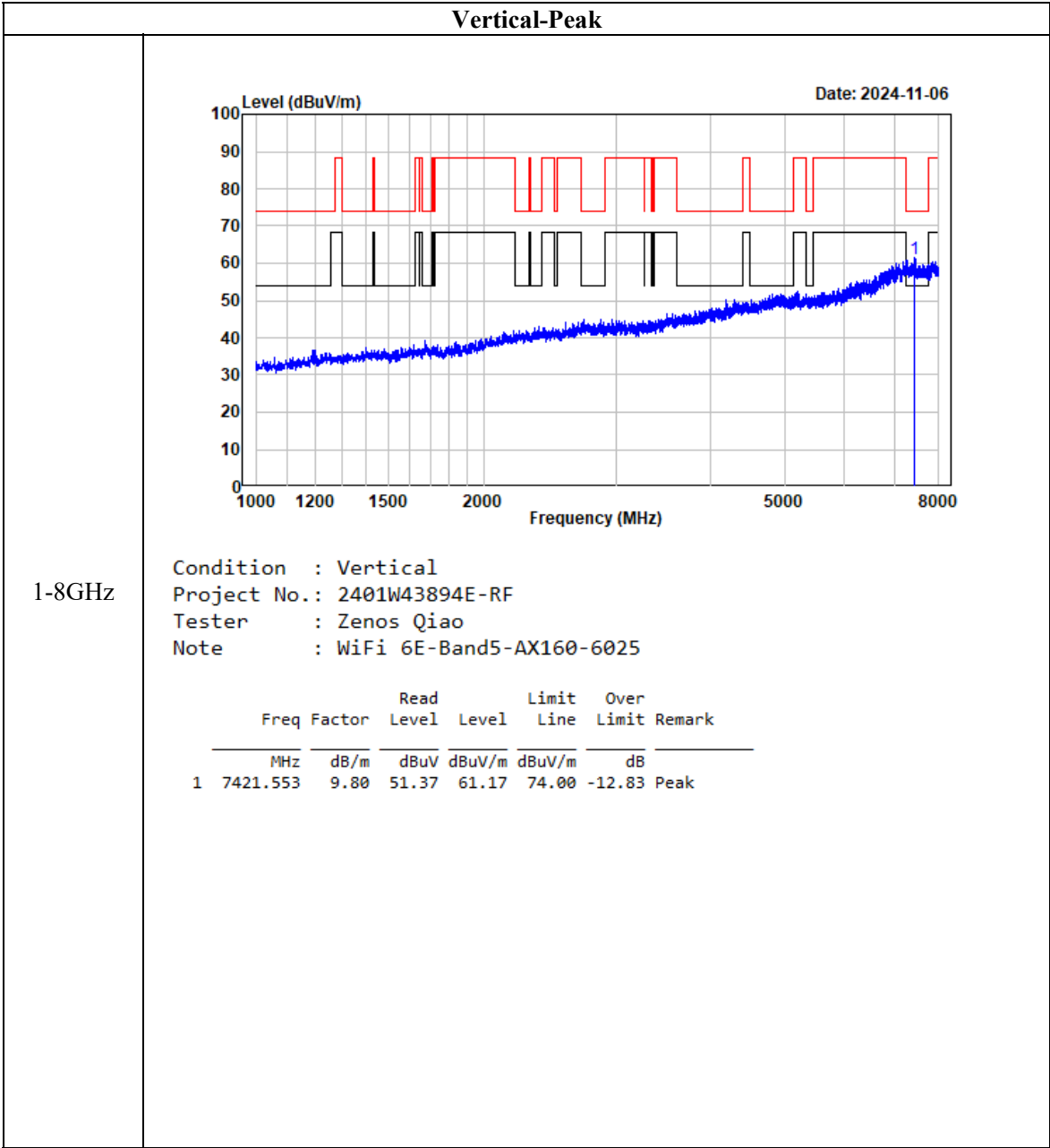


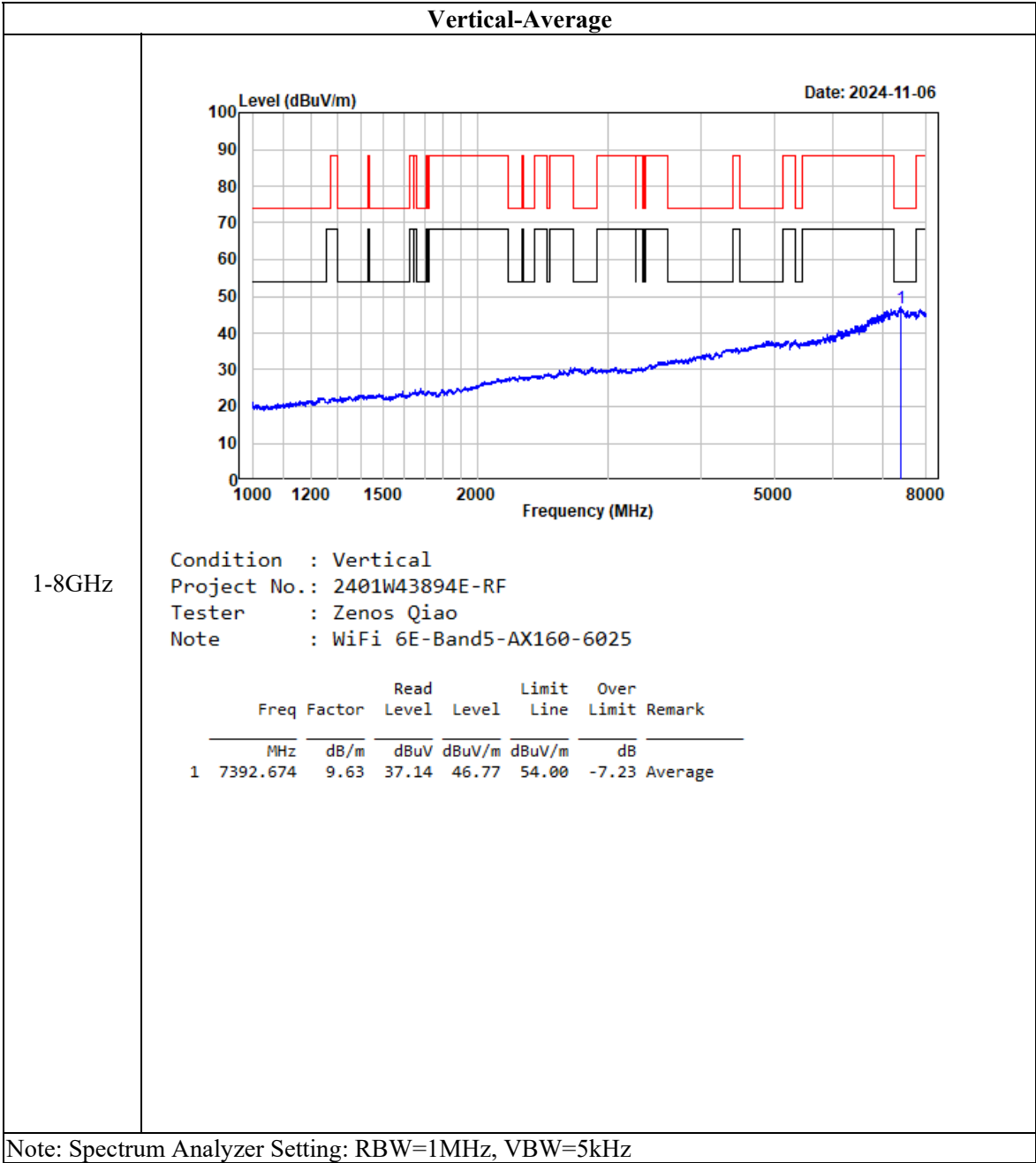


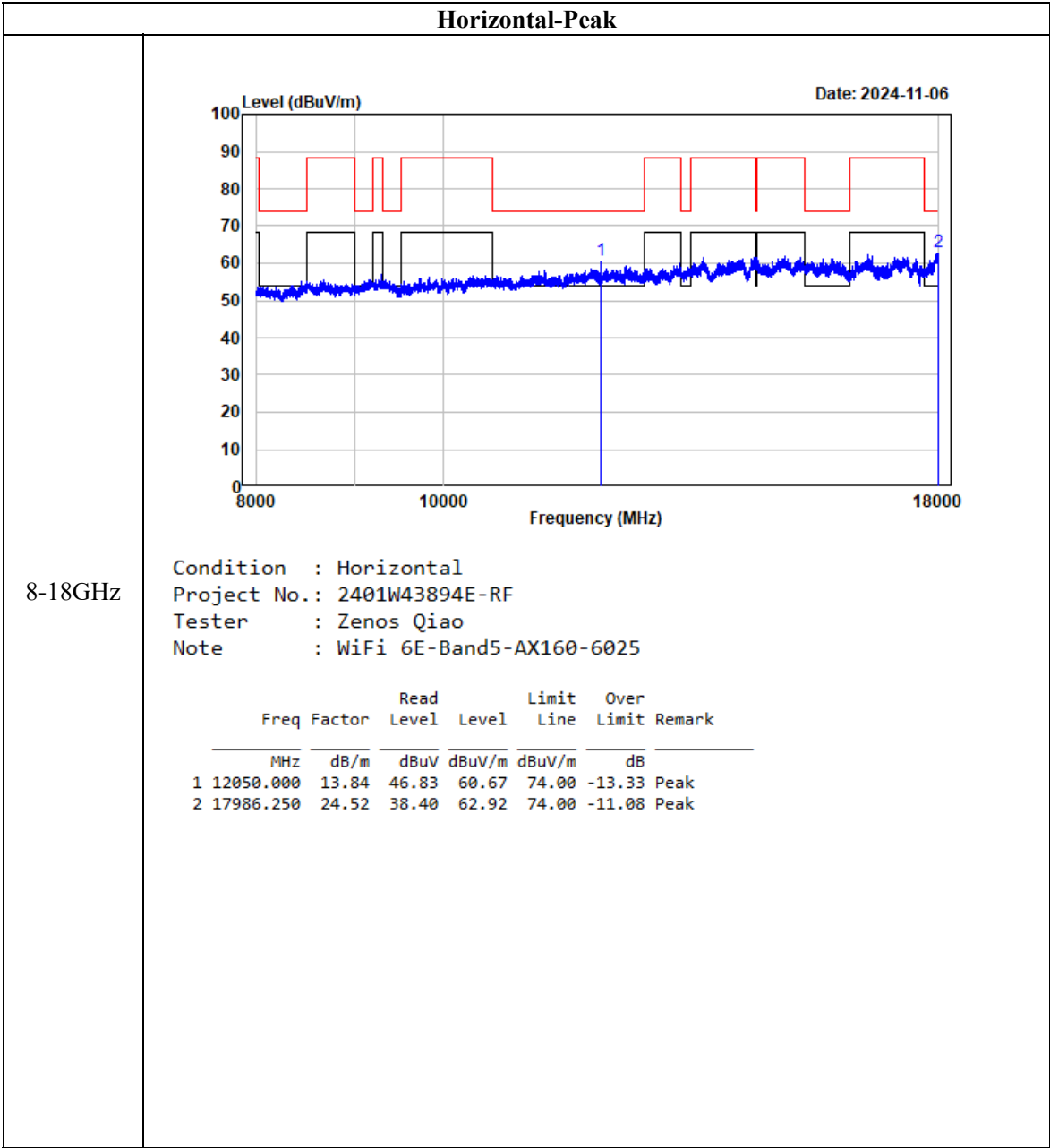
802.11ax160, 6025MHz

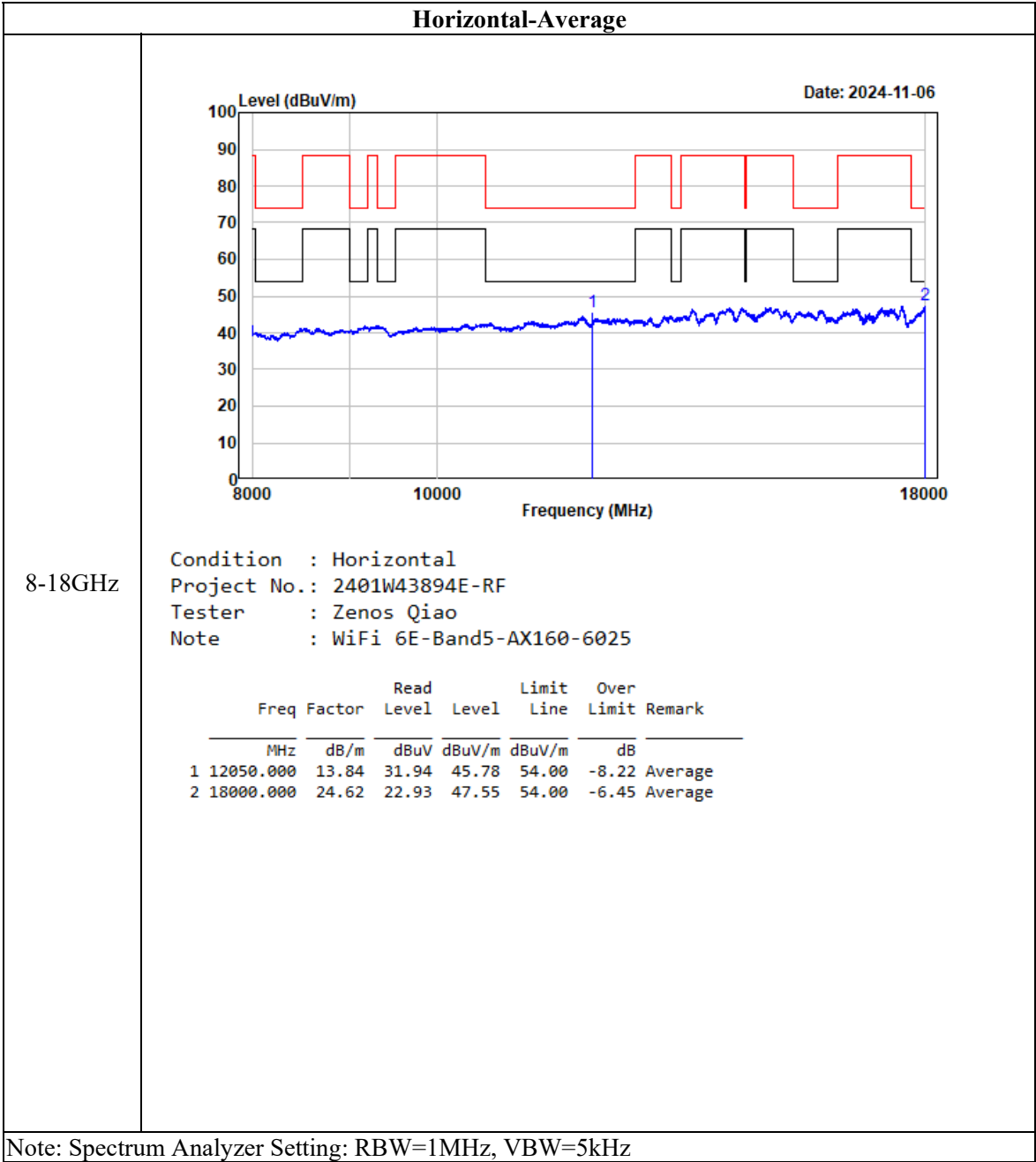


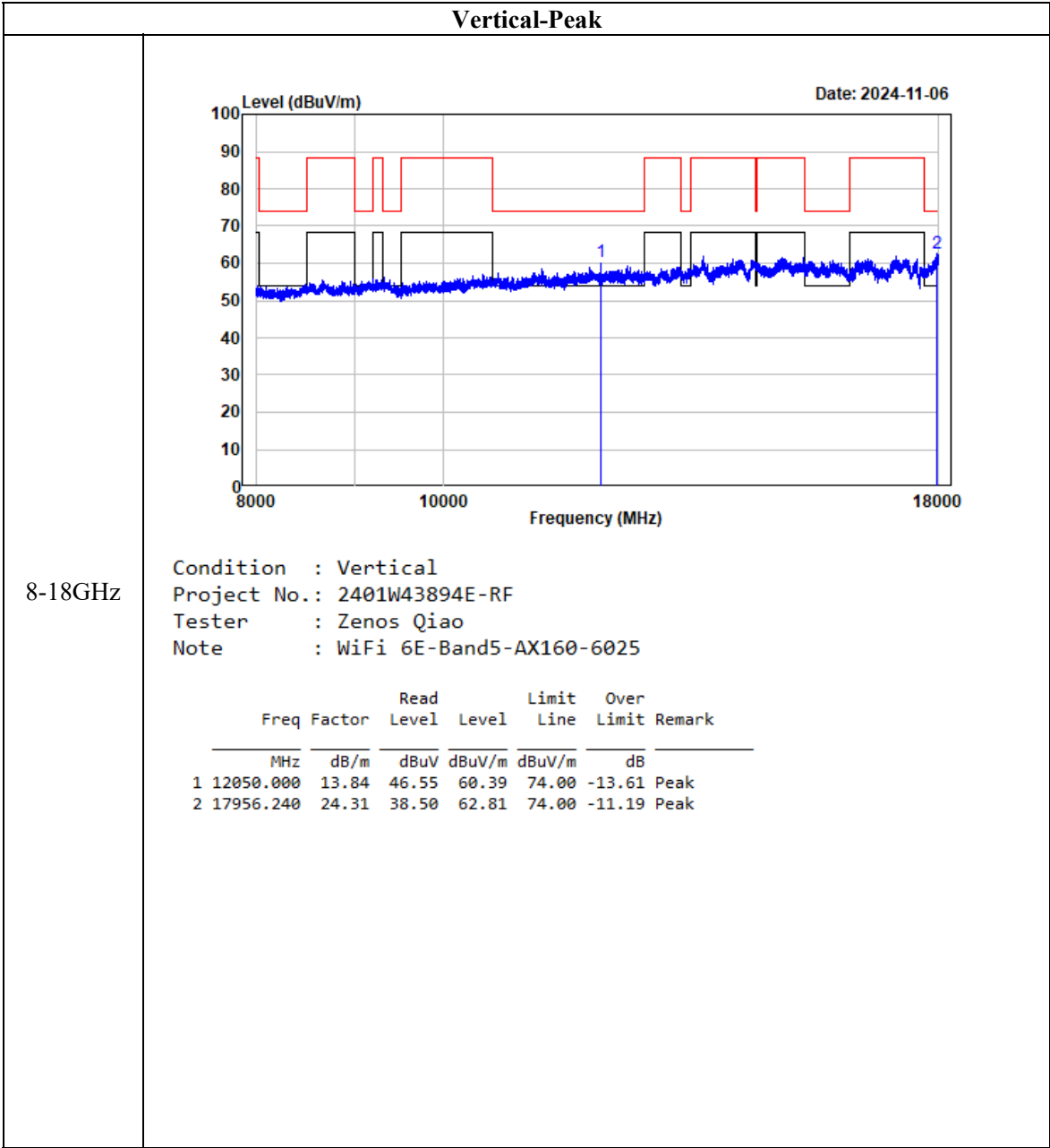


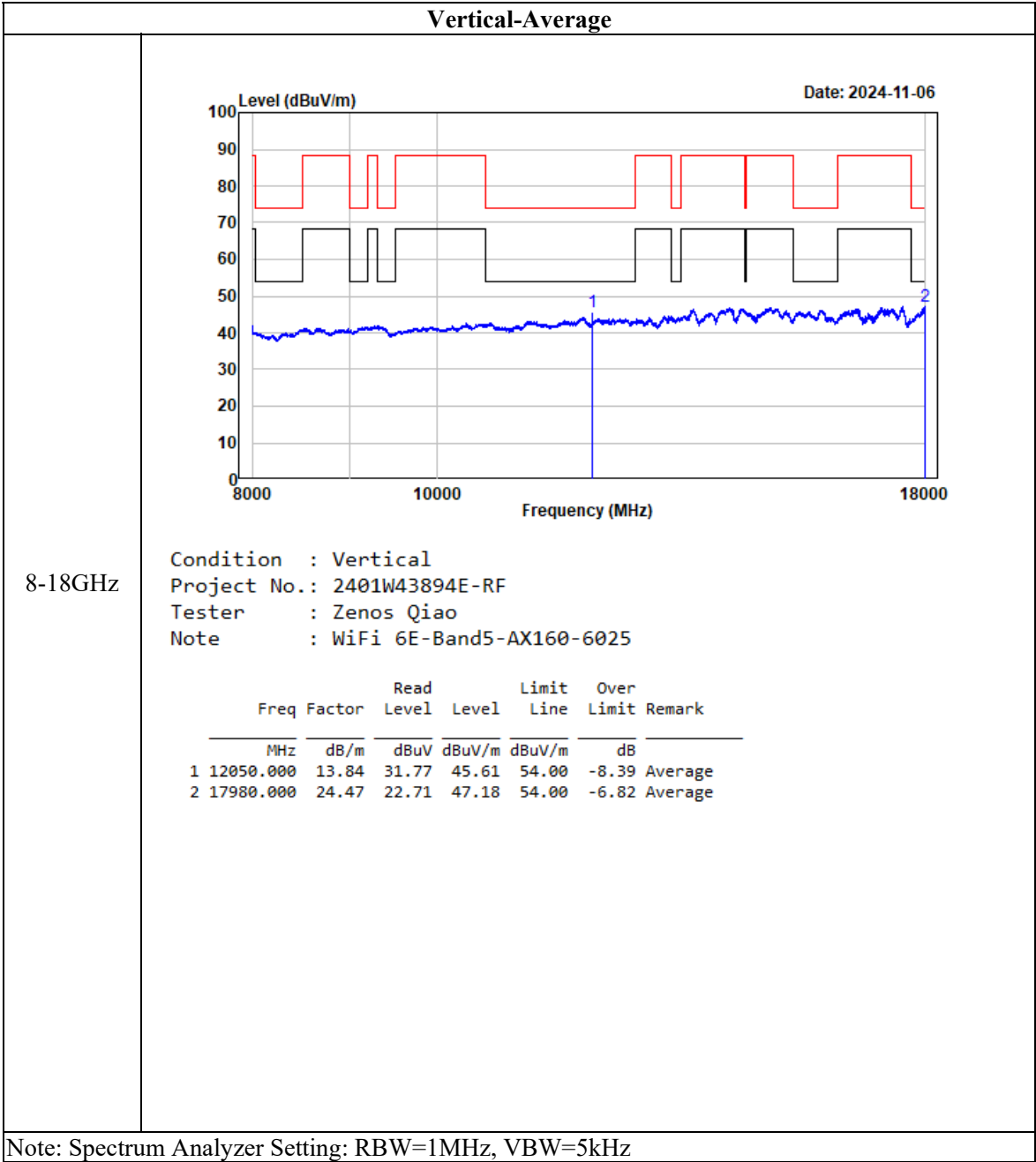






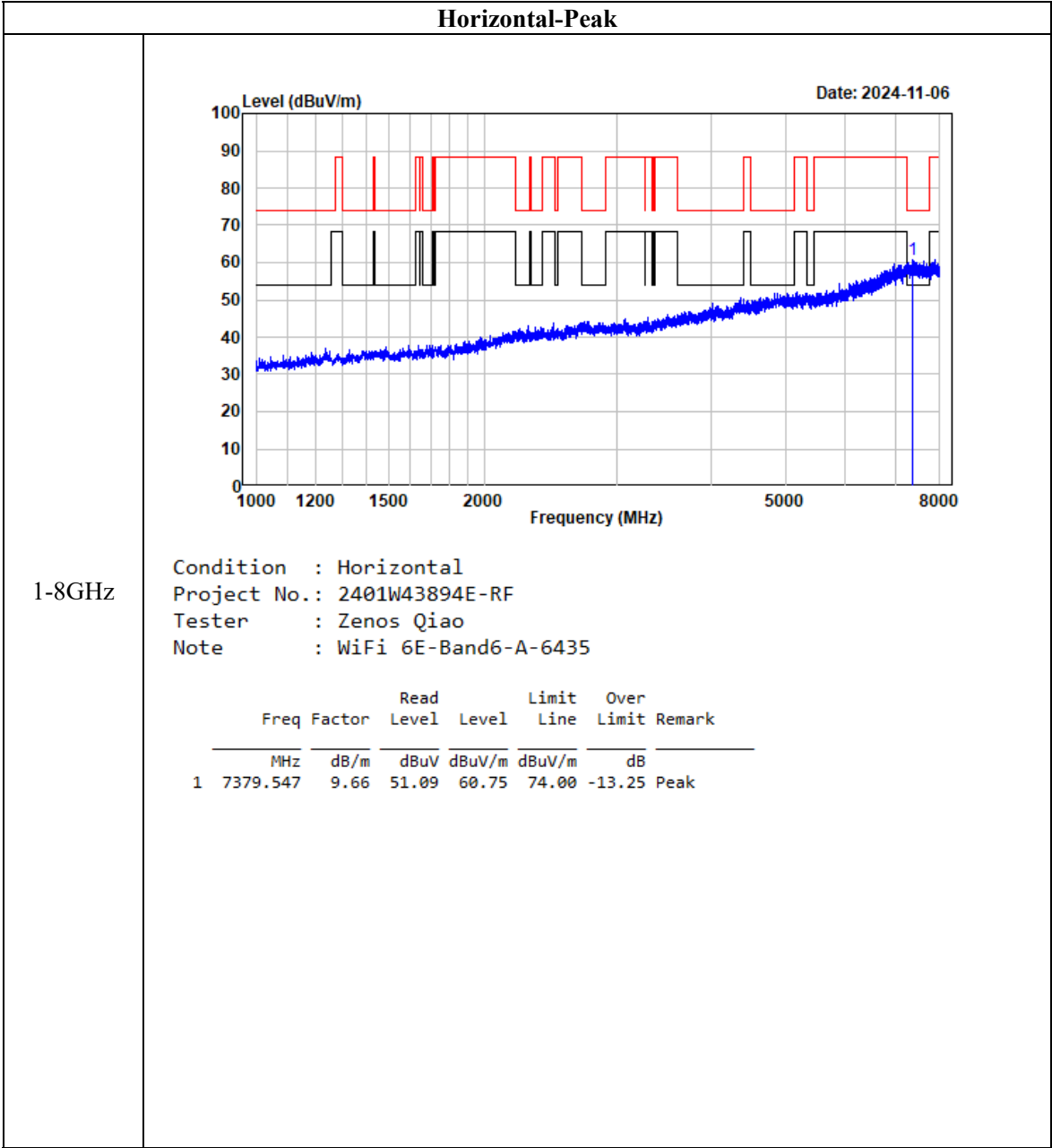


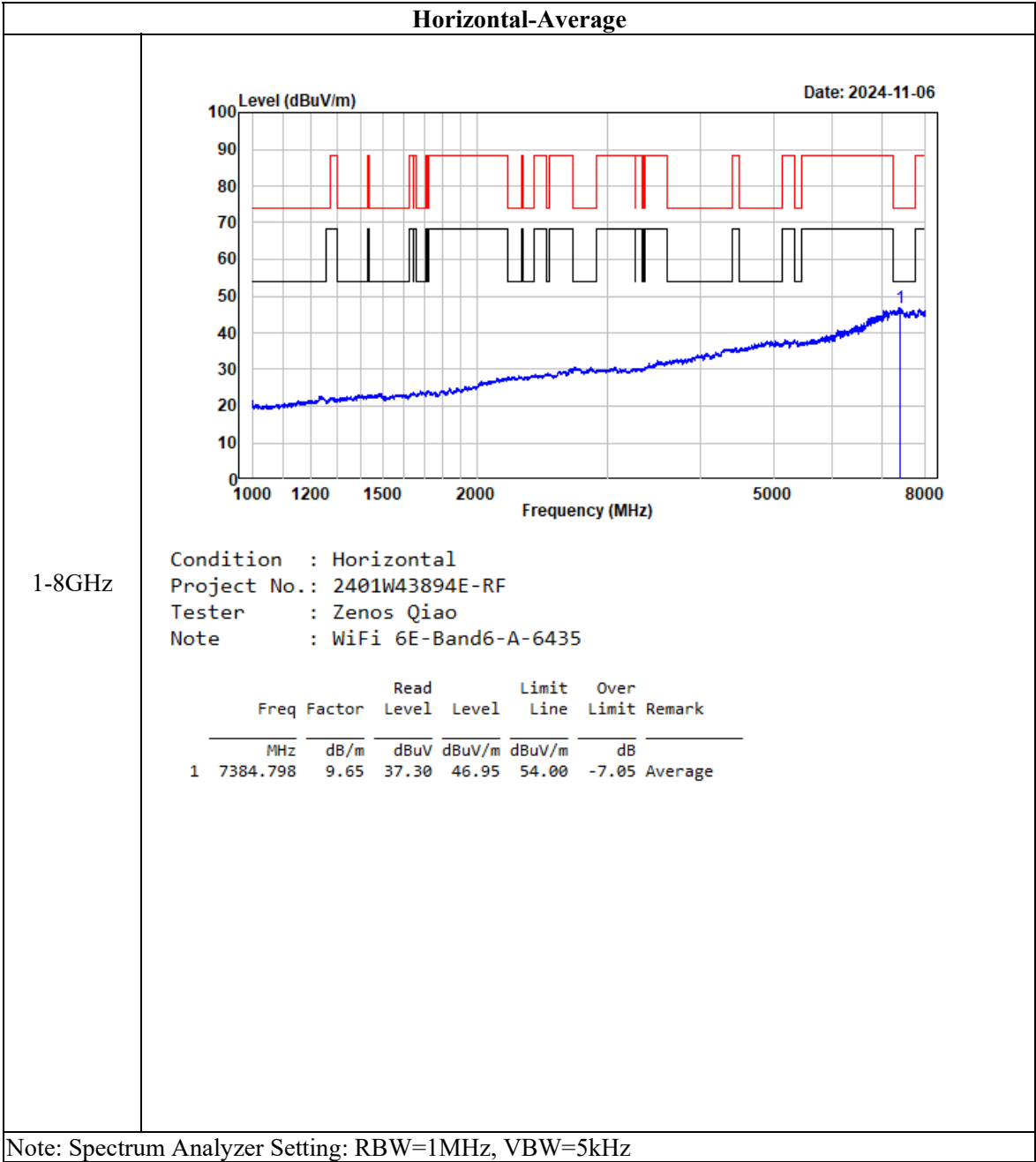


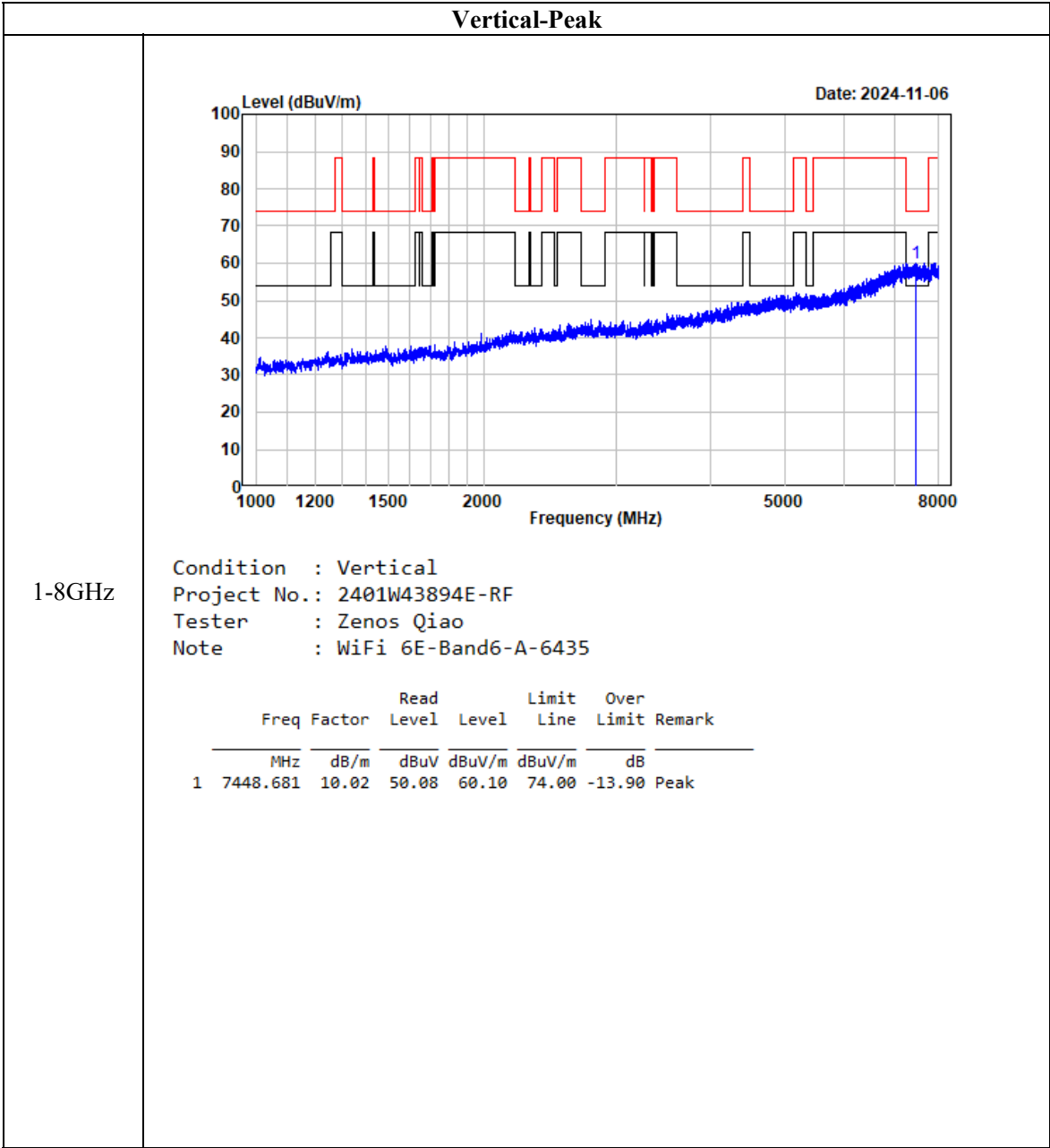


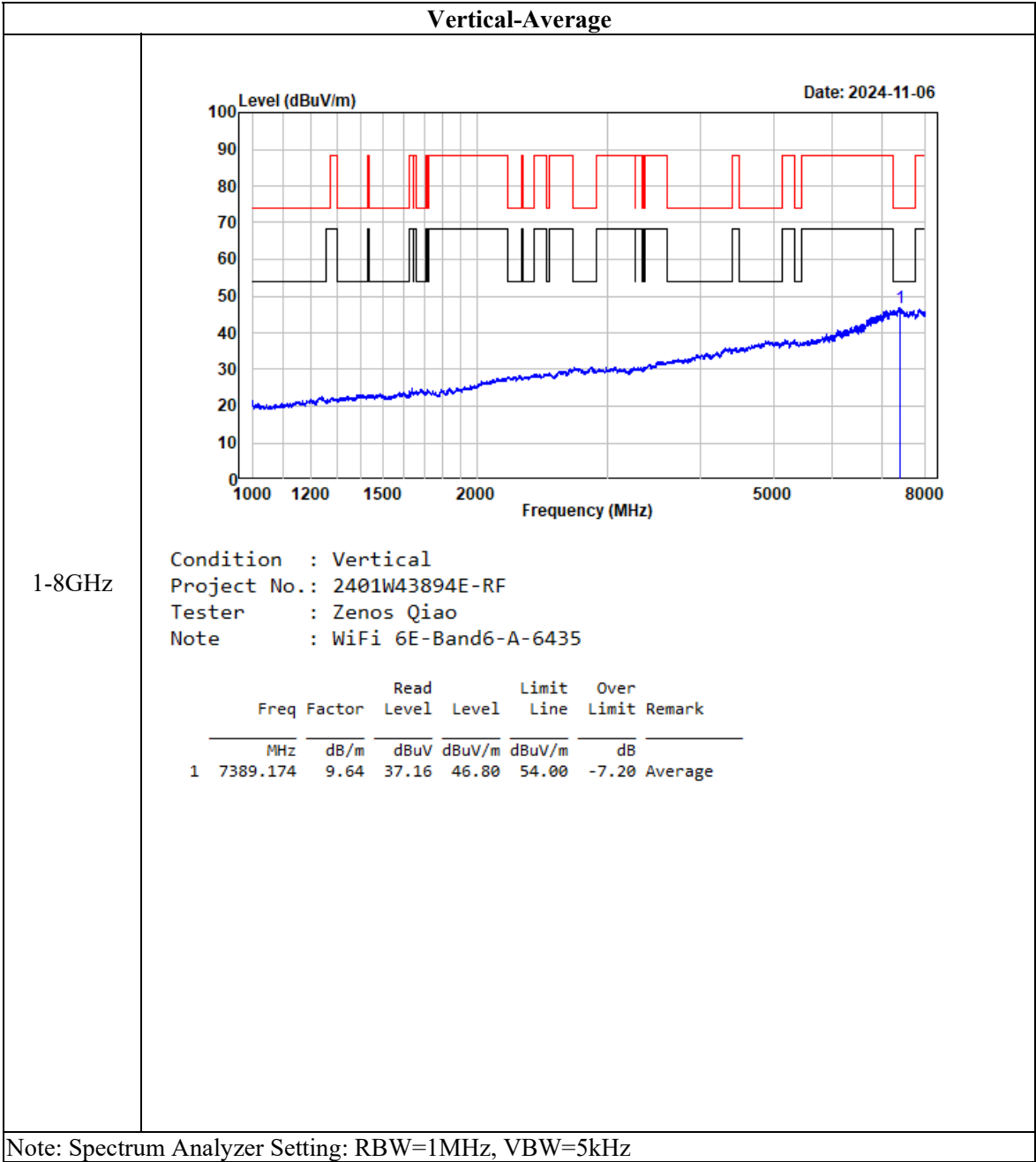
Wi-Fi 6E_ U-NII 6:

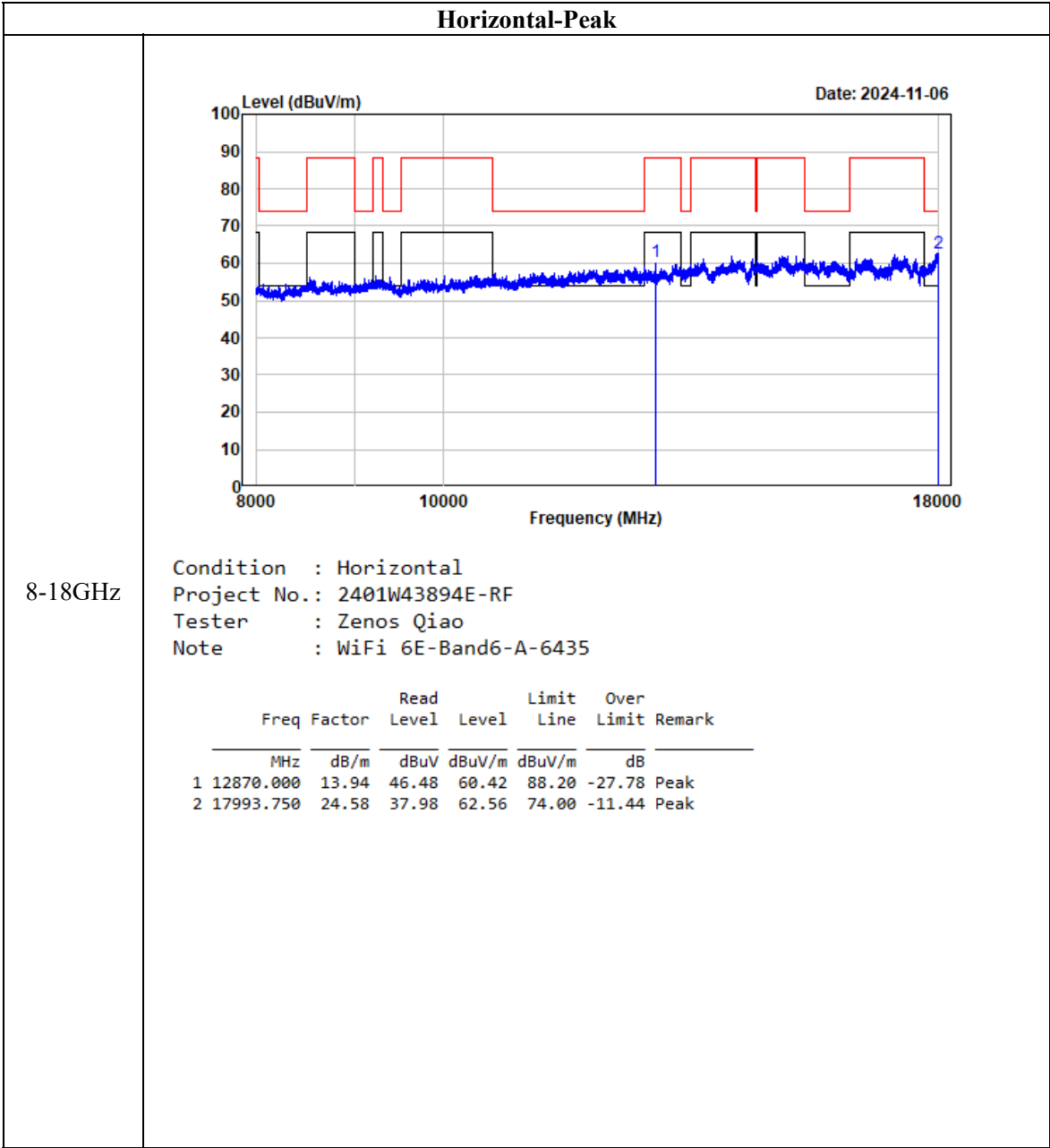
802.11a, 6435MHz

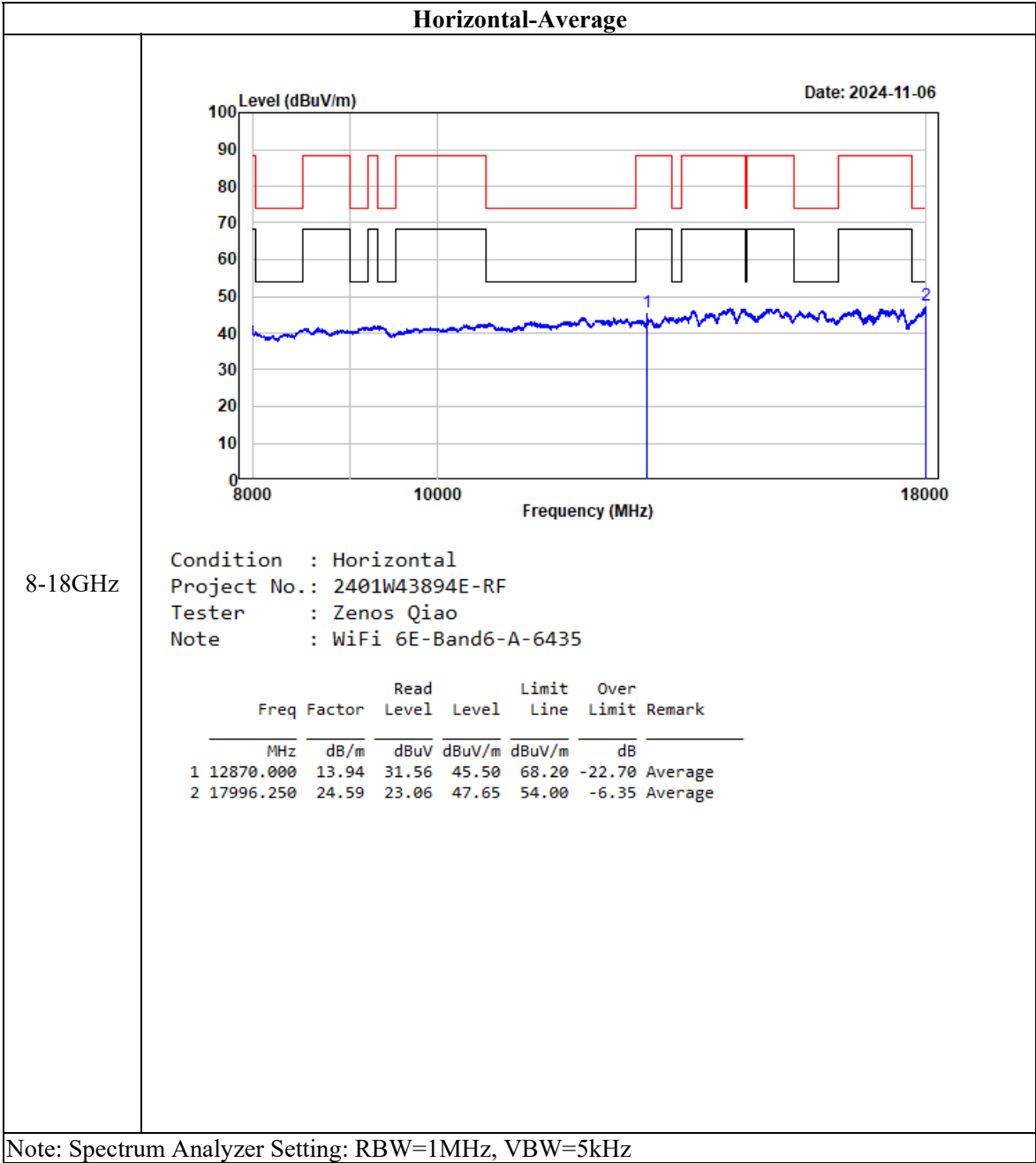


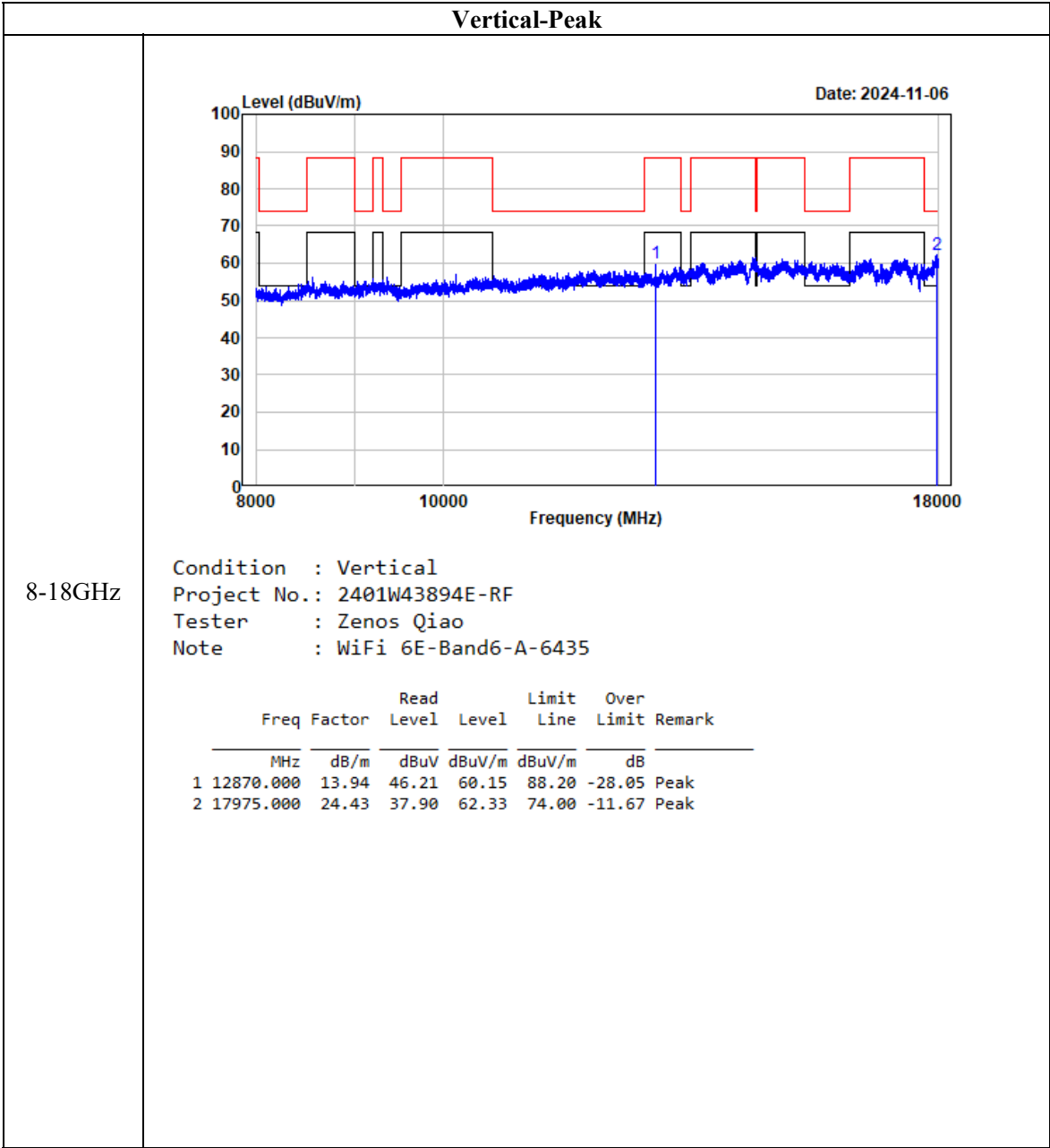


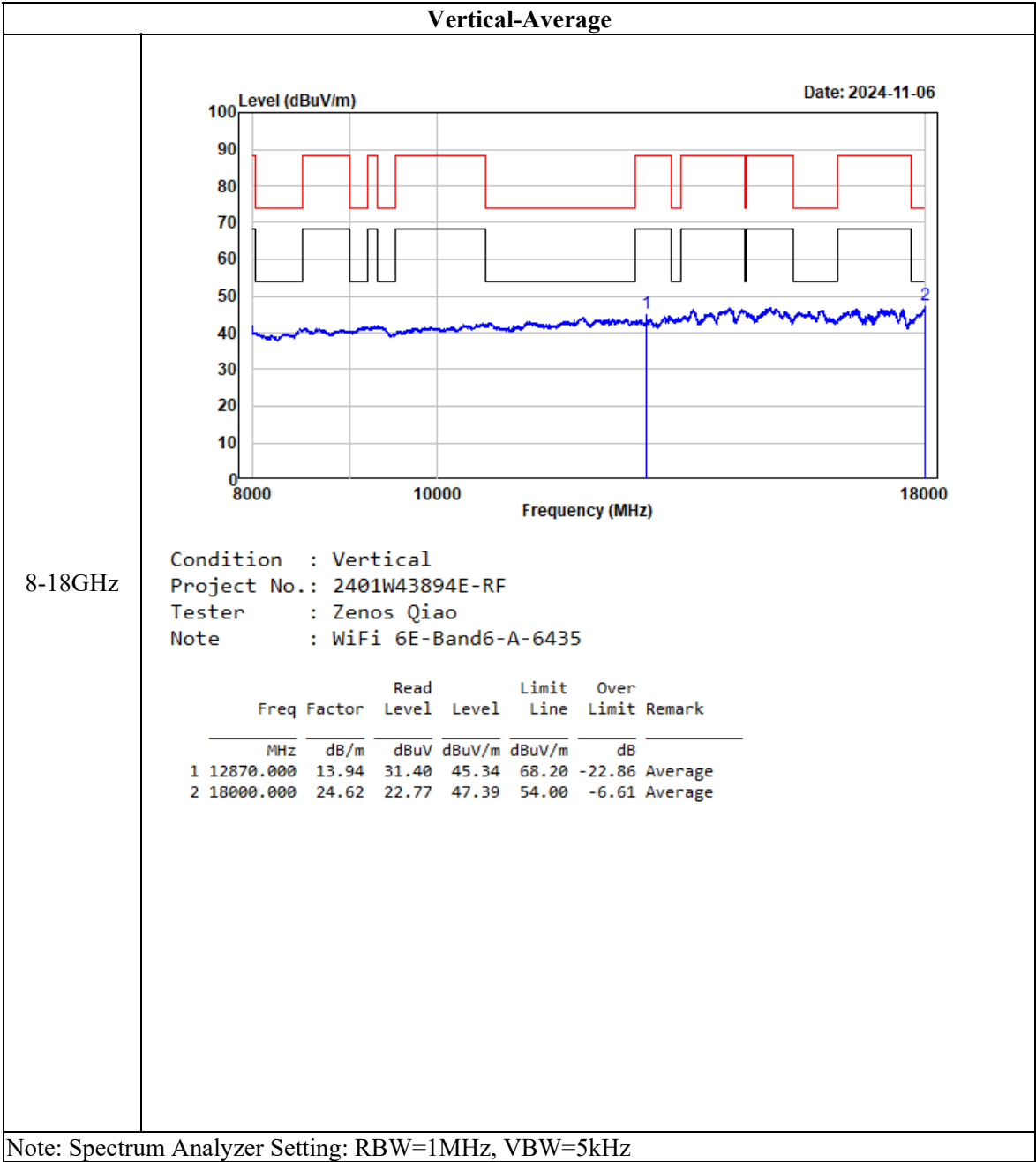




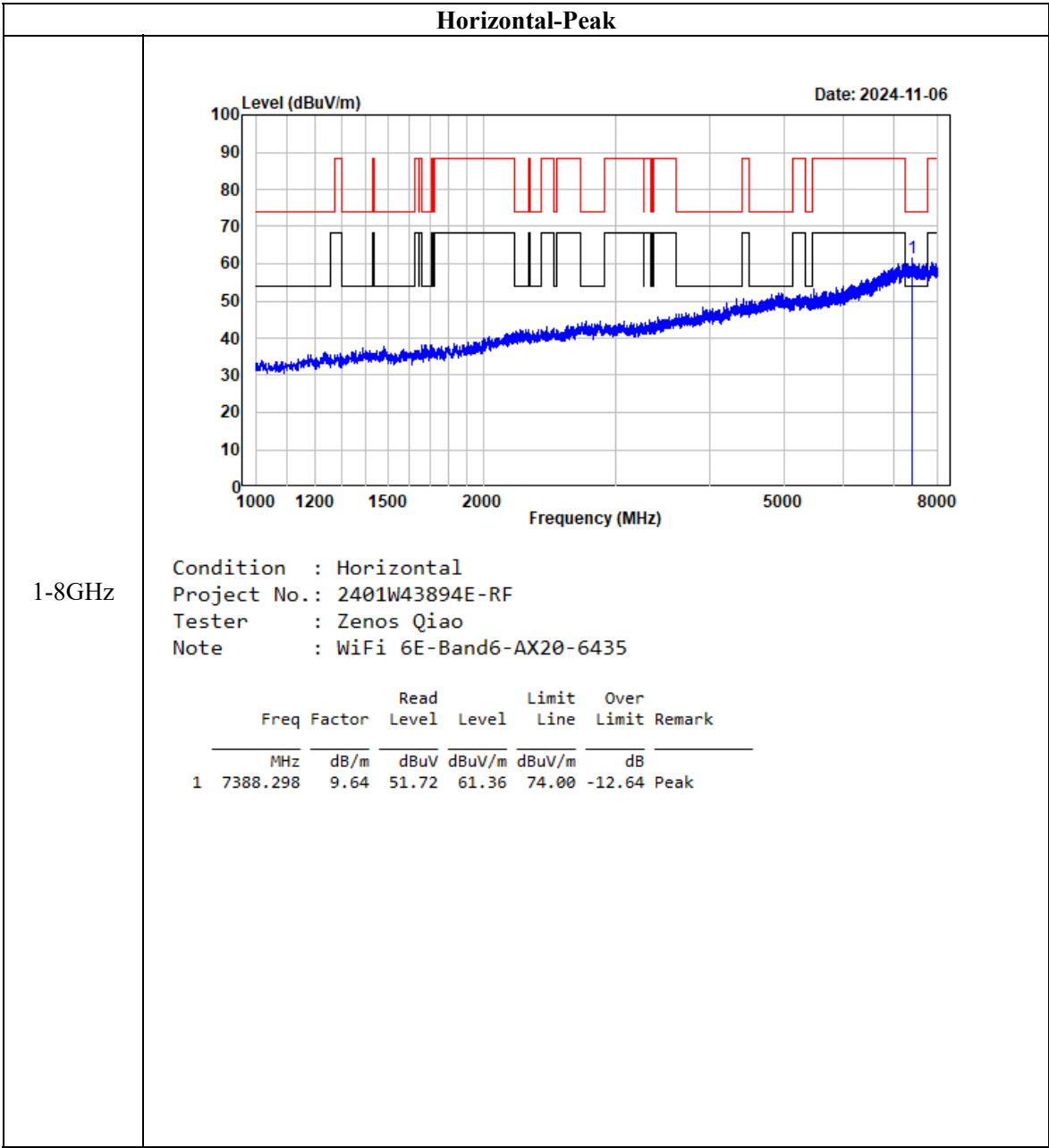


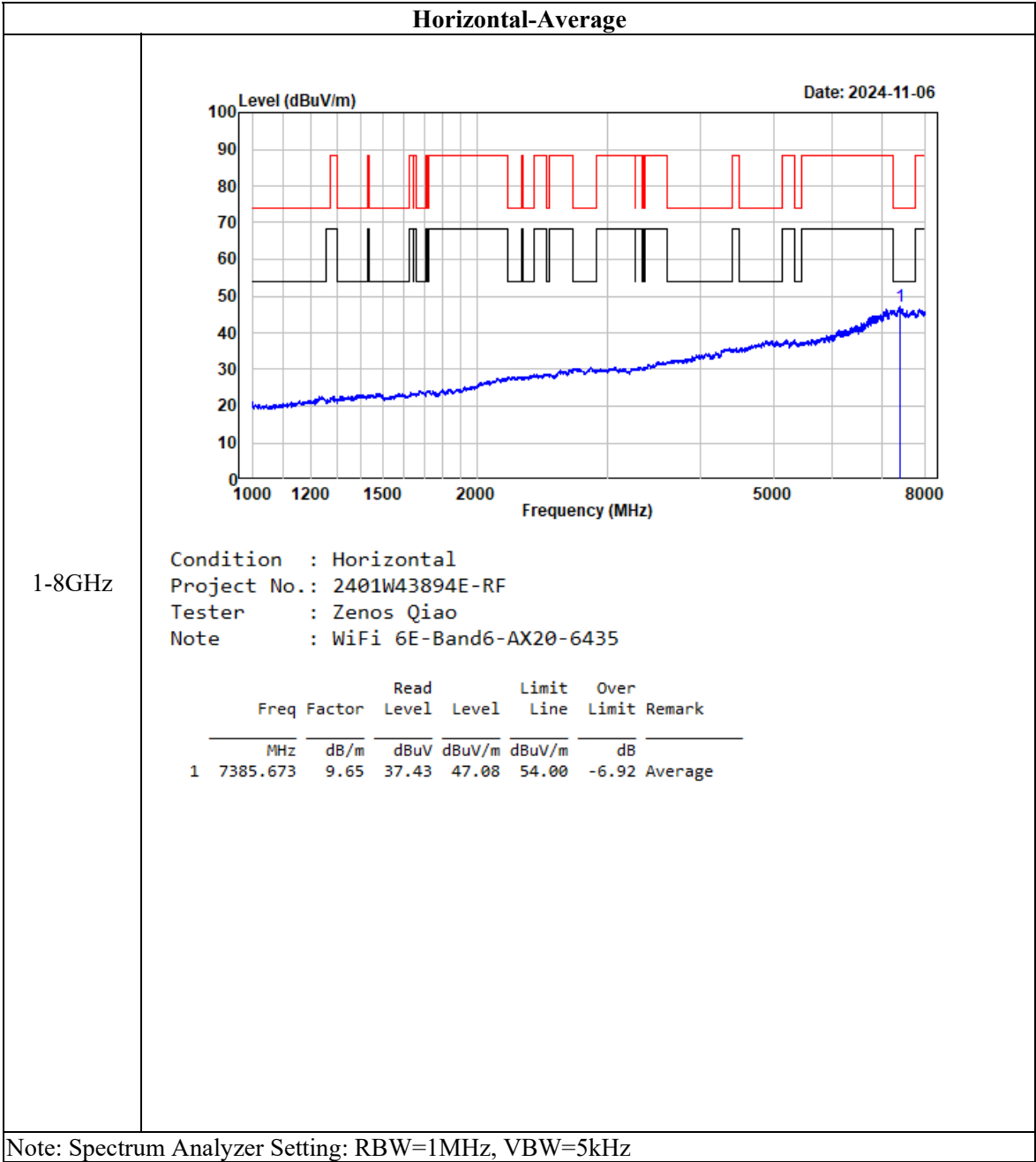


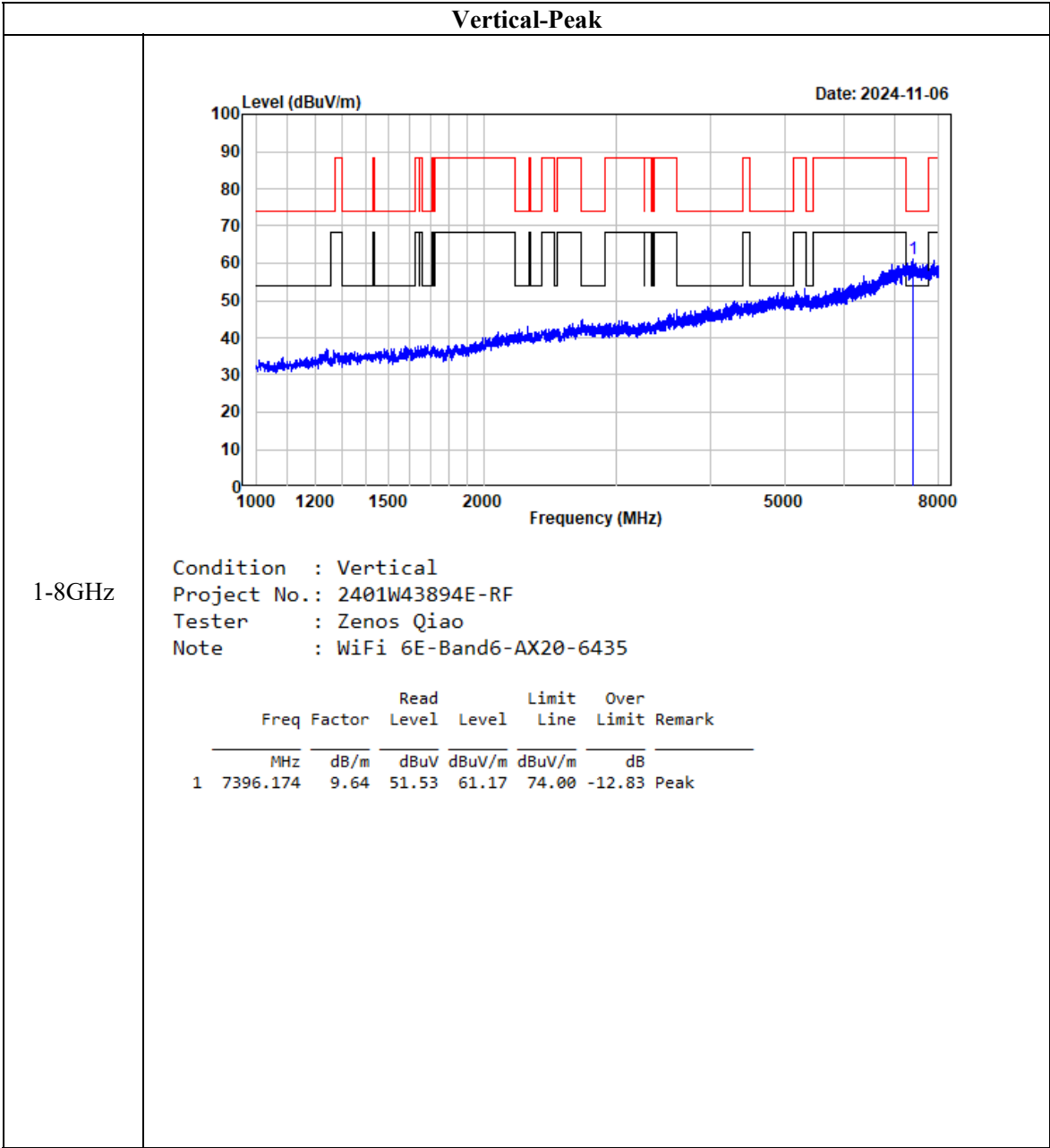


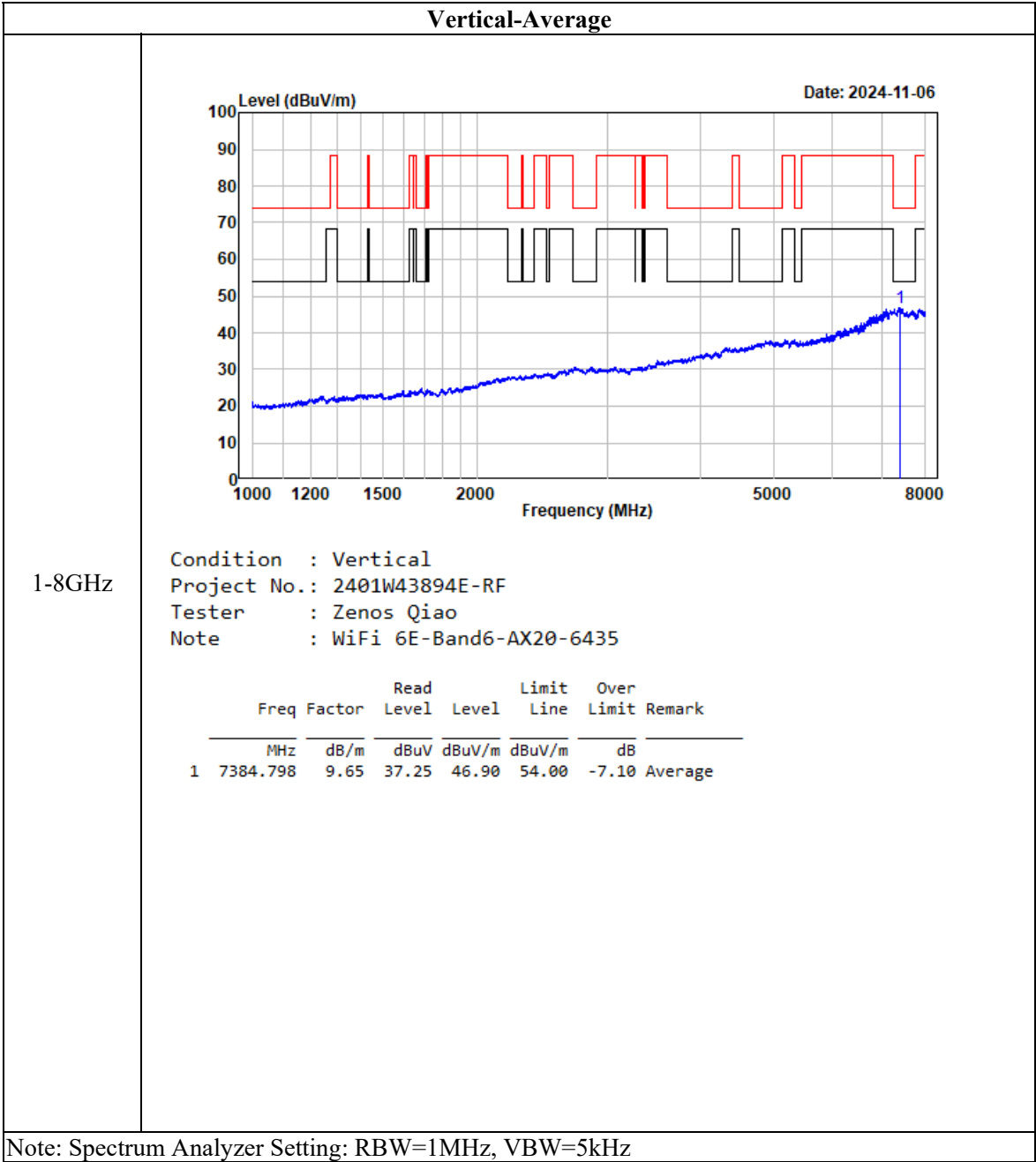


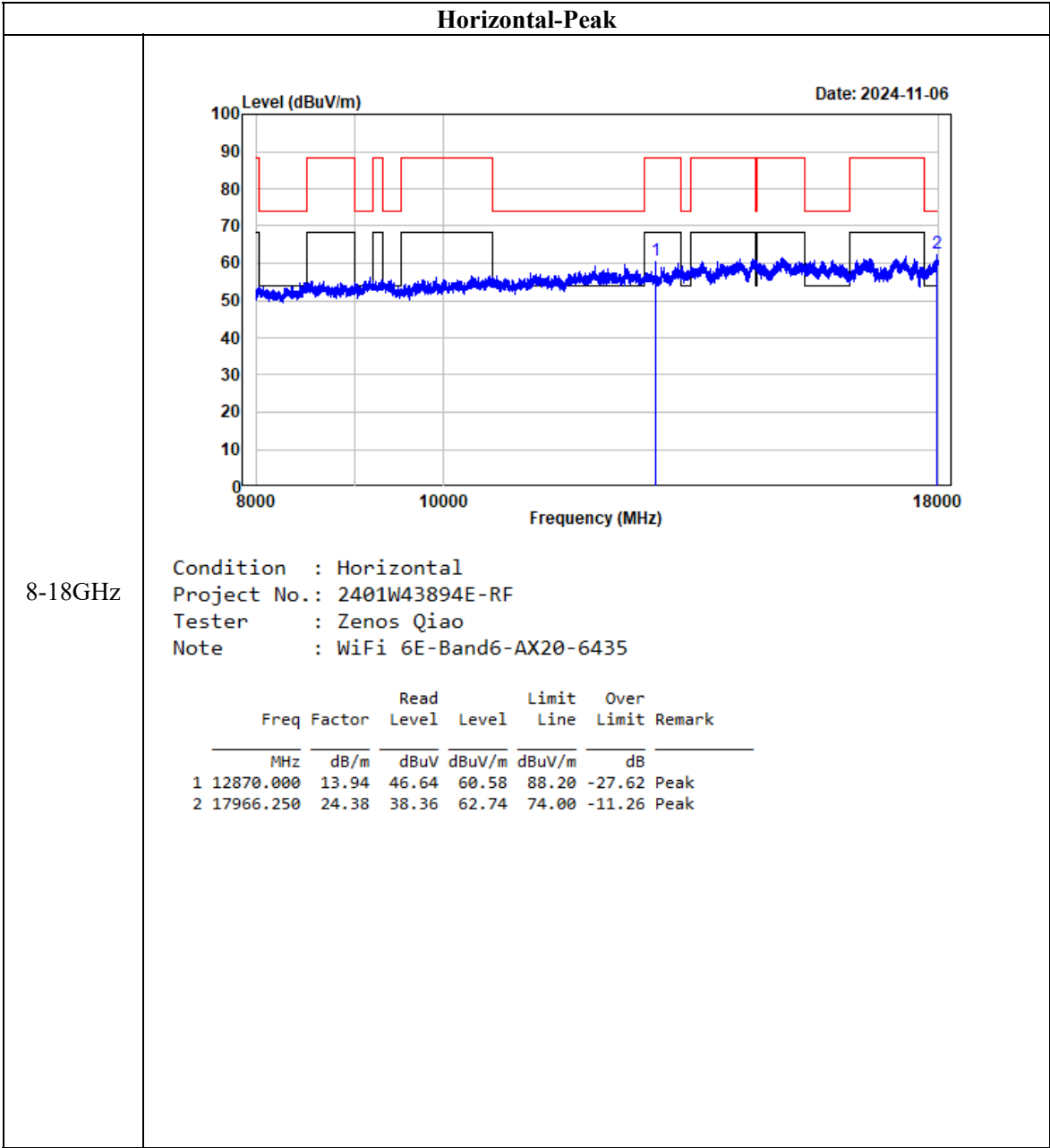
802.11ax20, 6435MHz

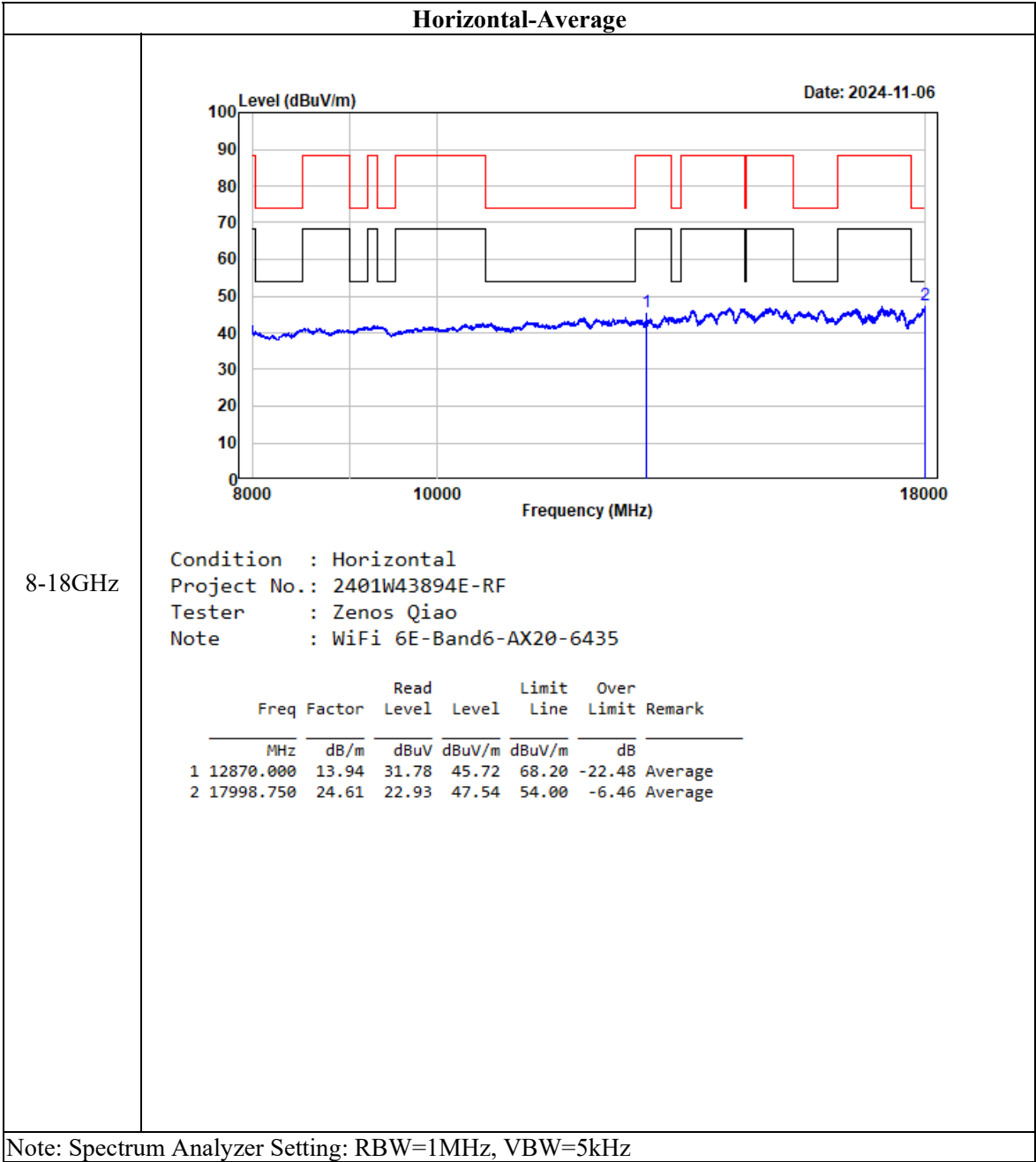


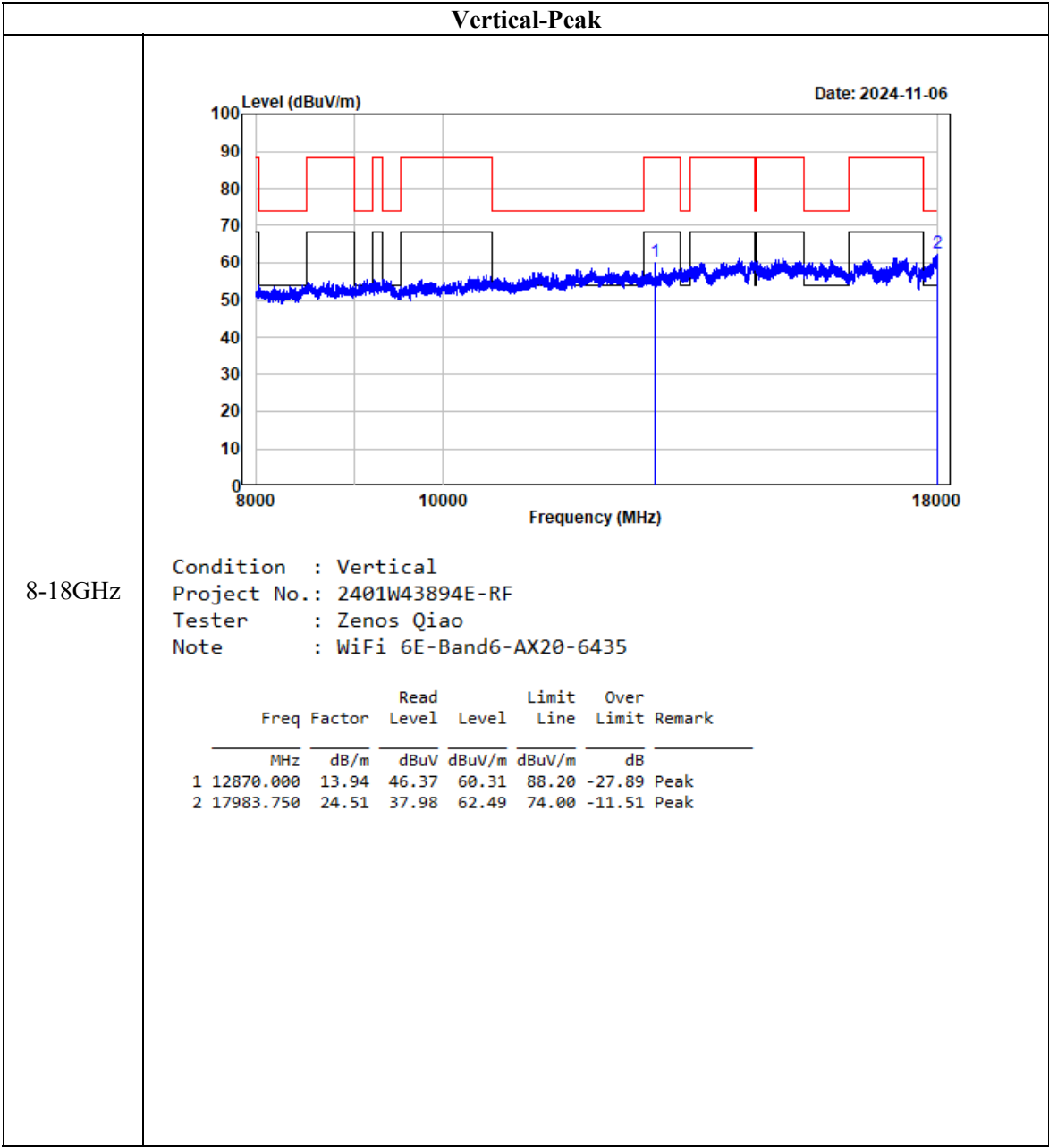


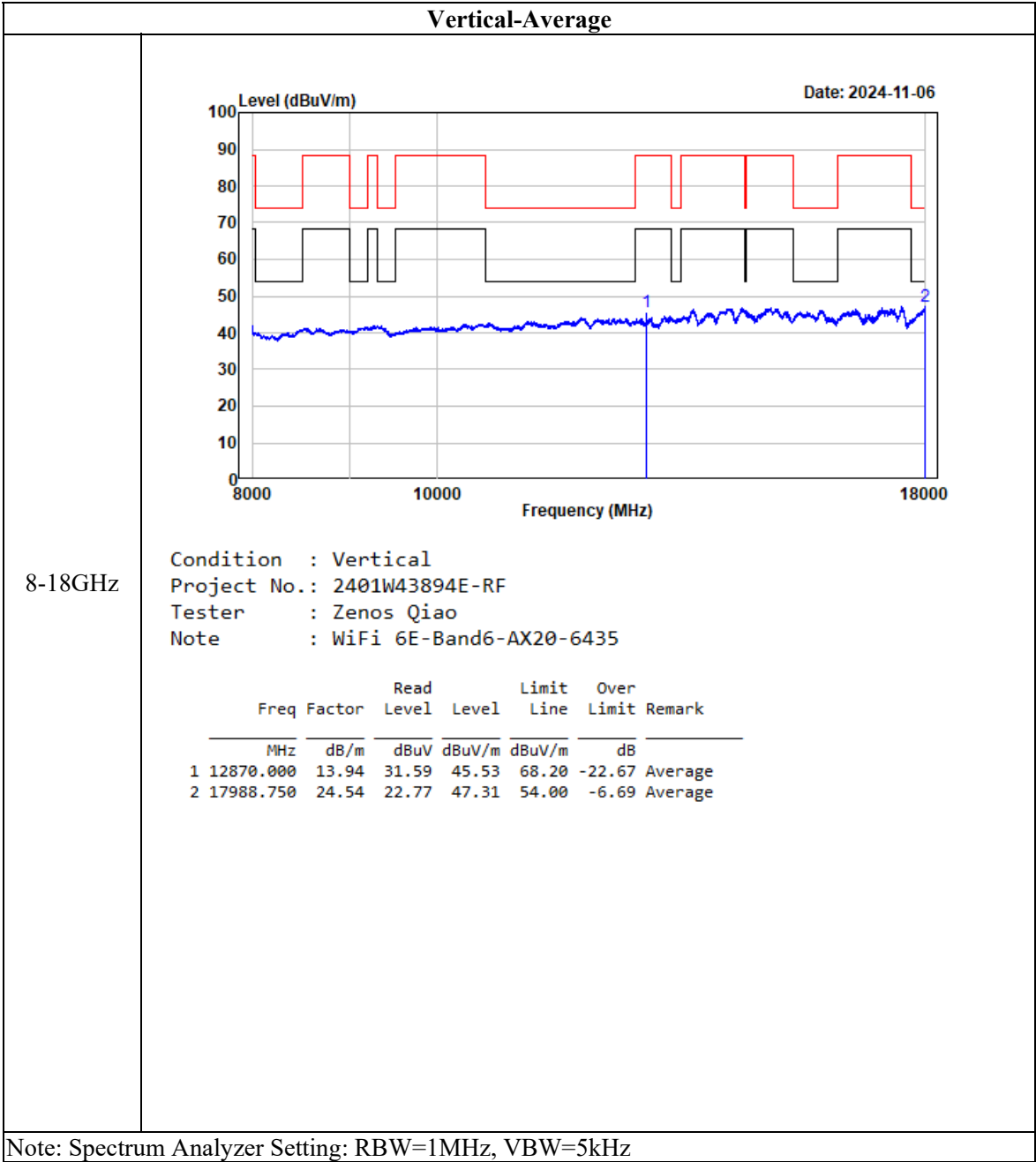




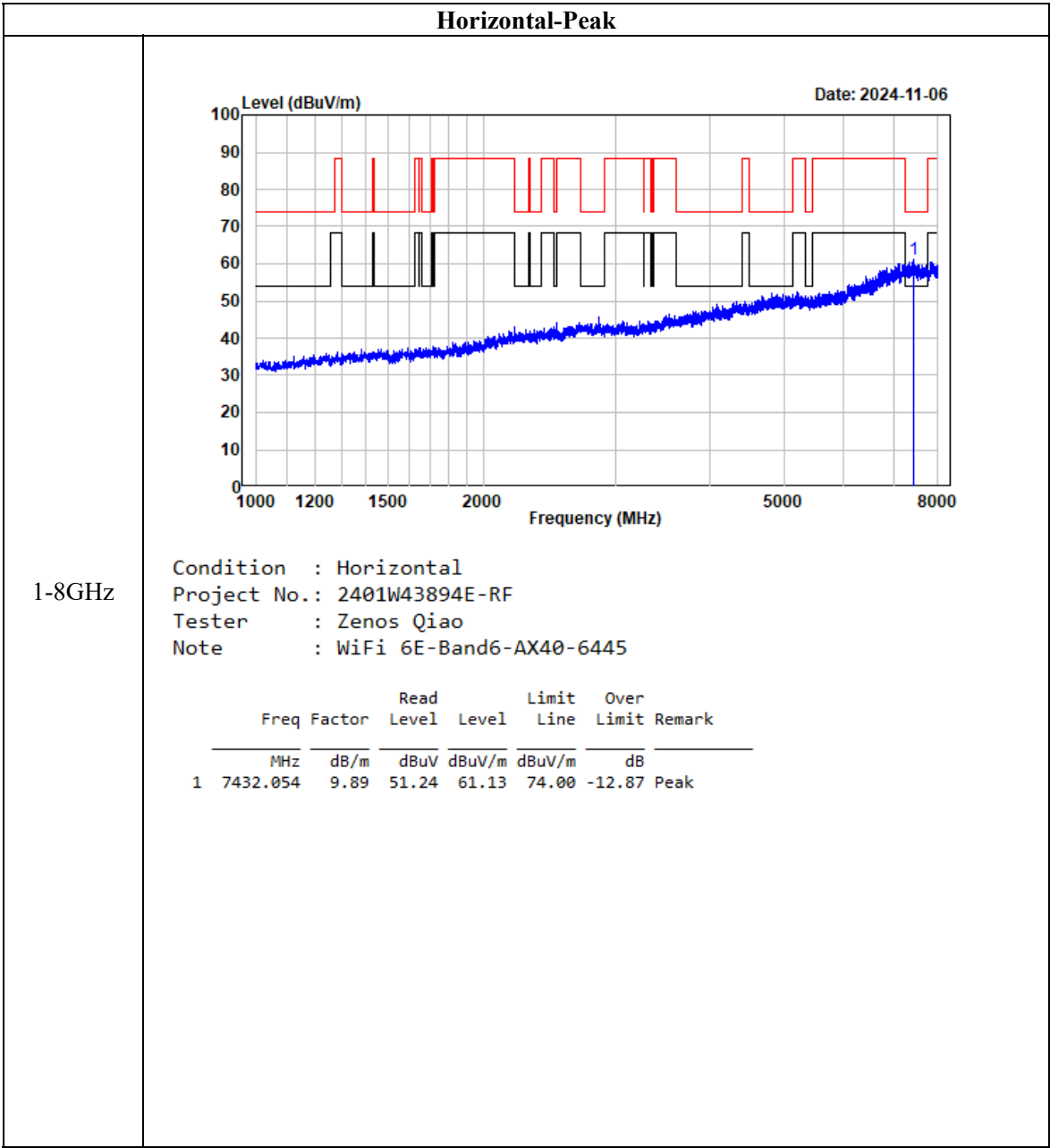


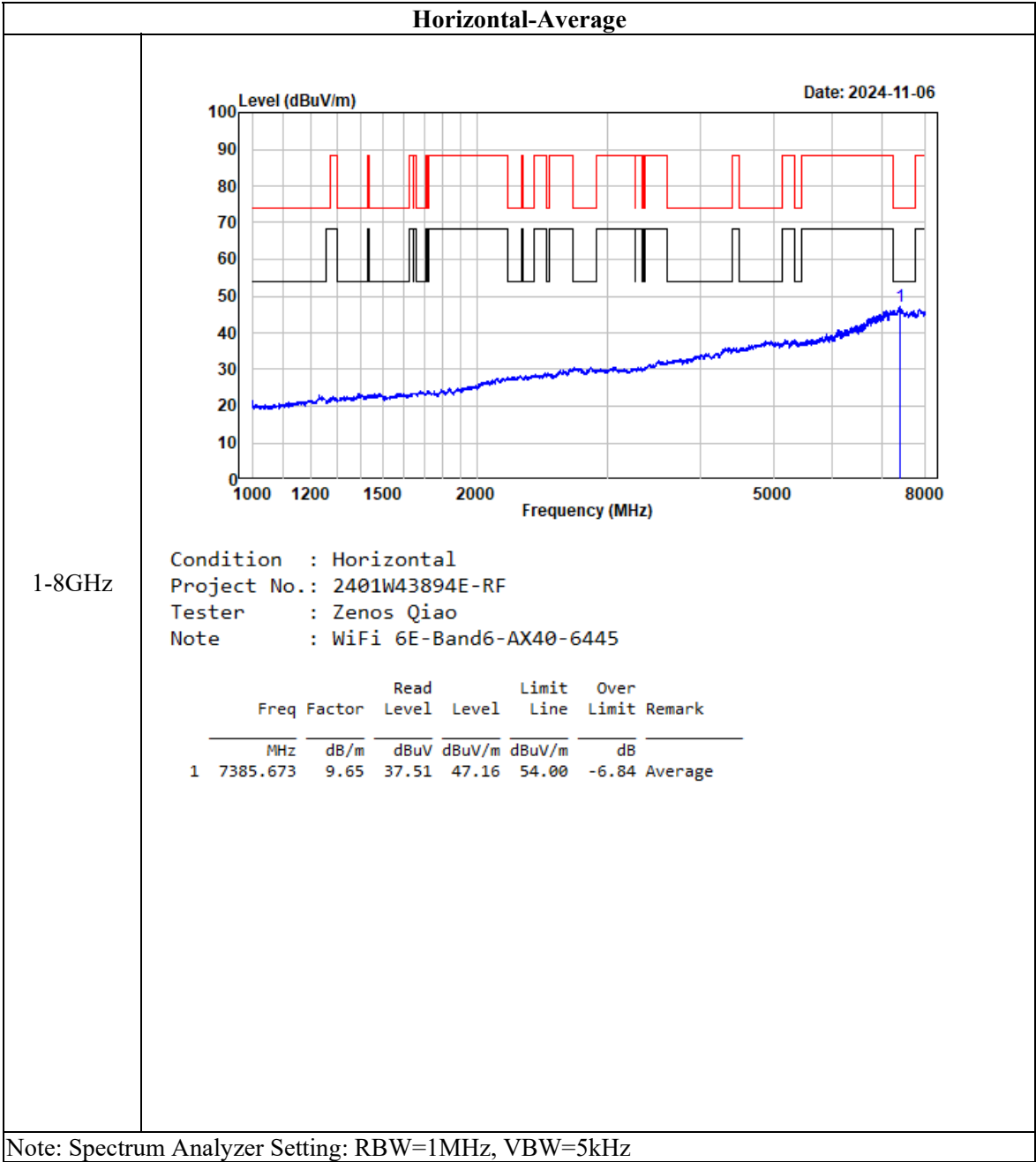


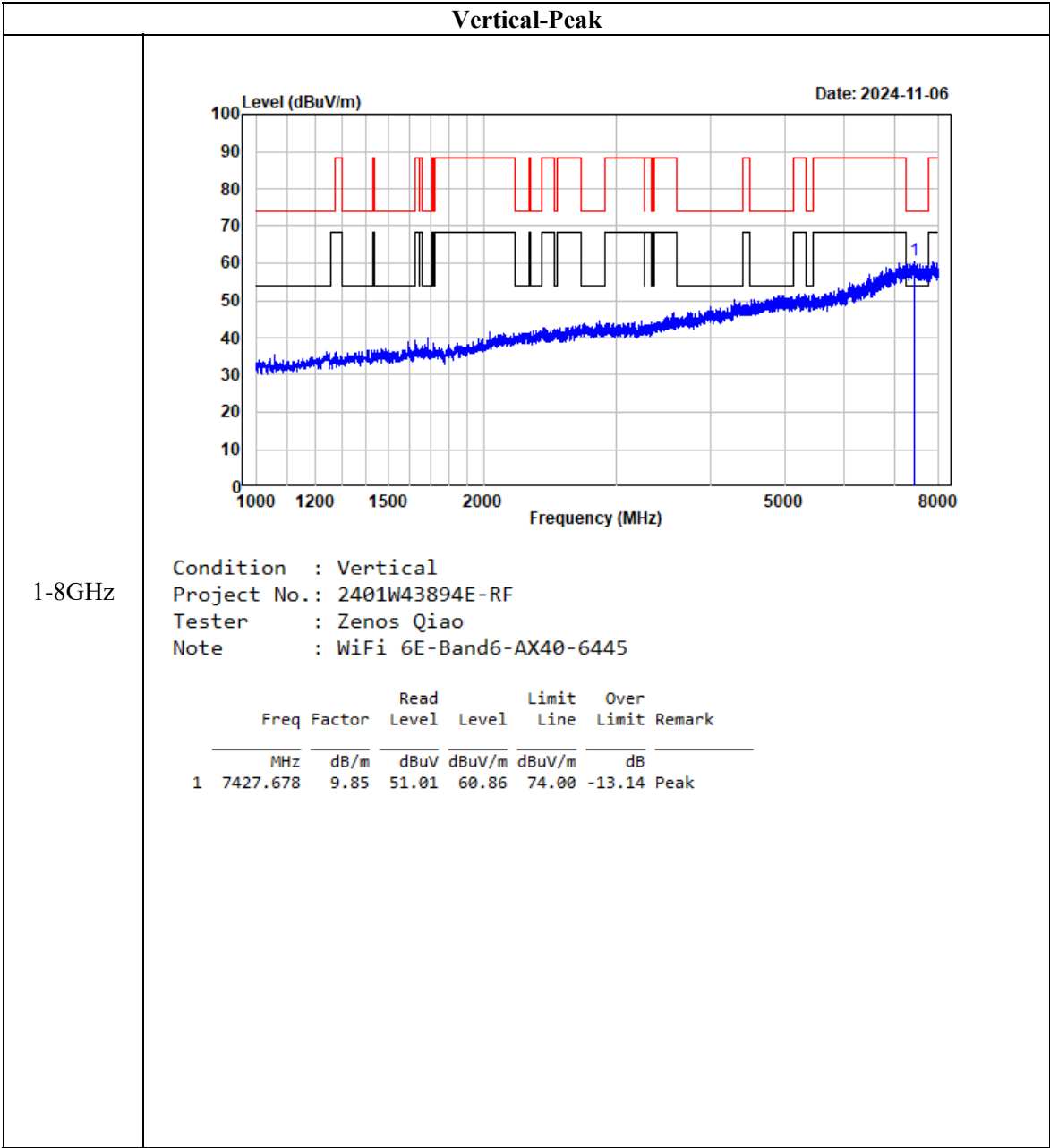


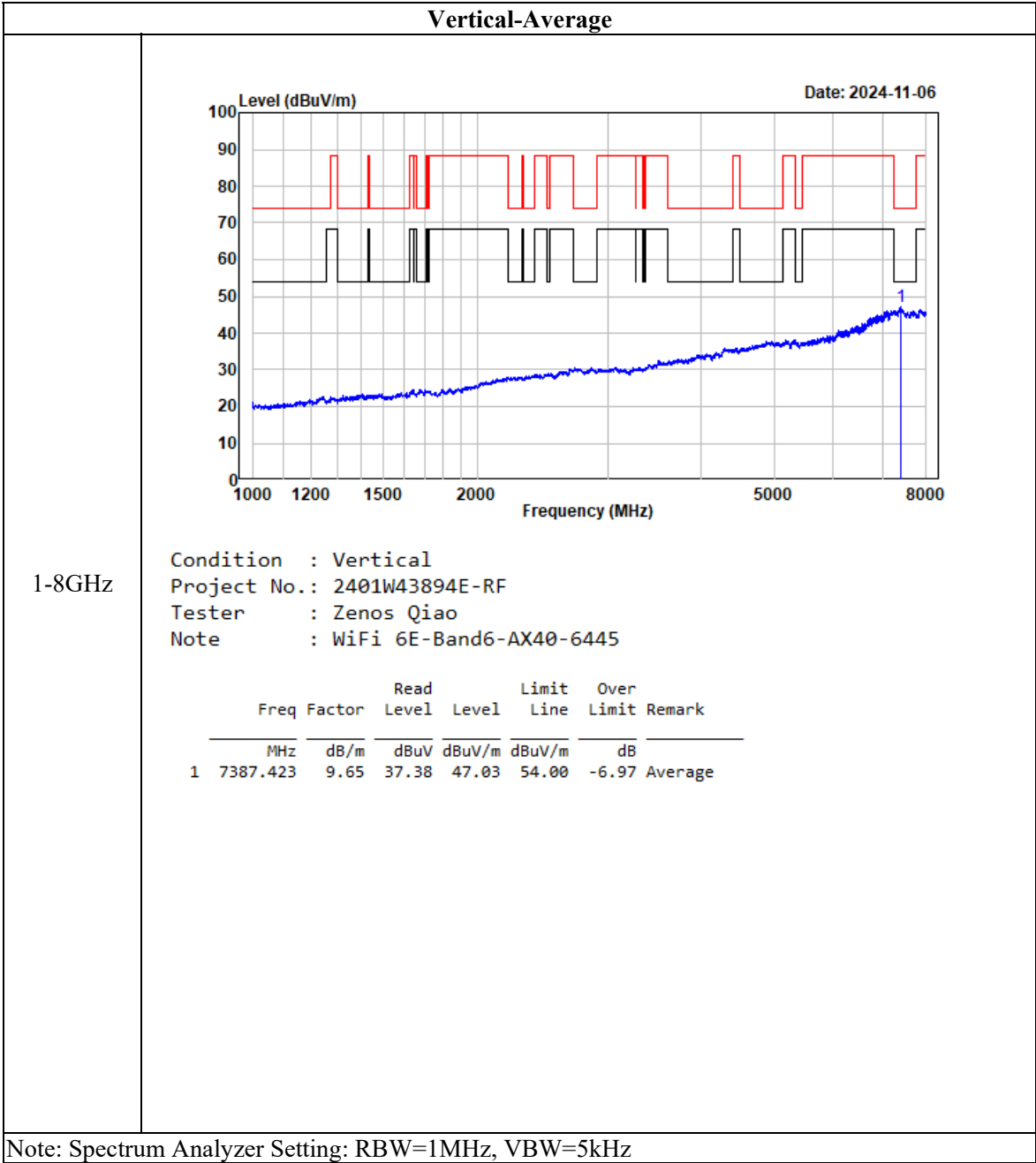


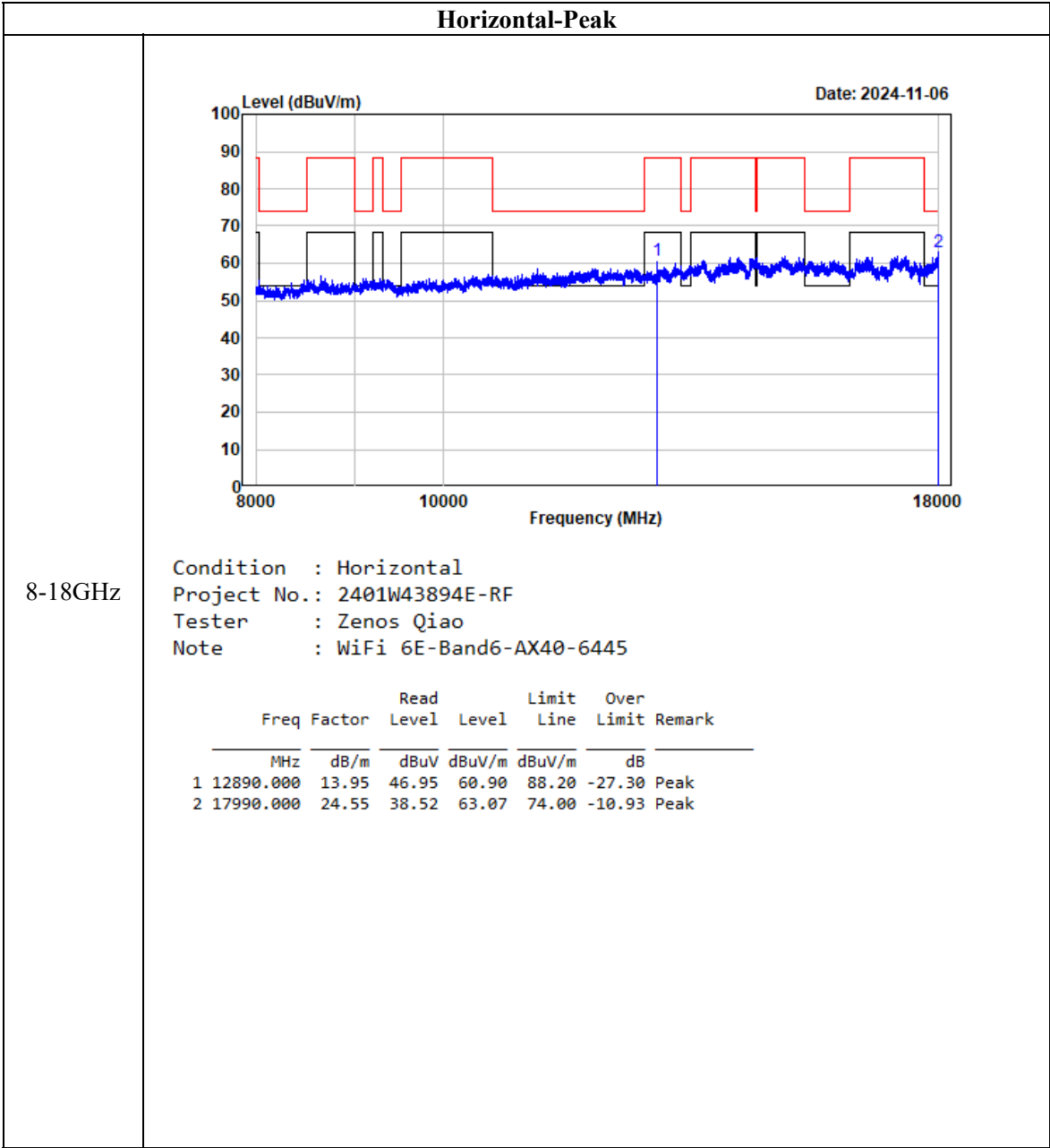
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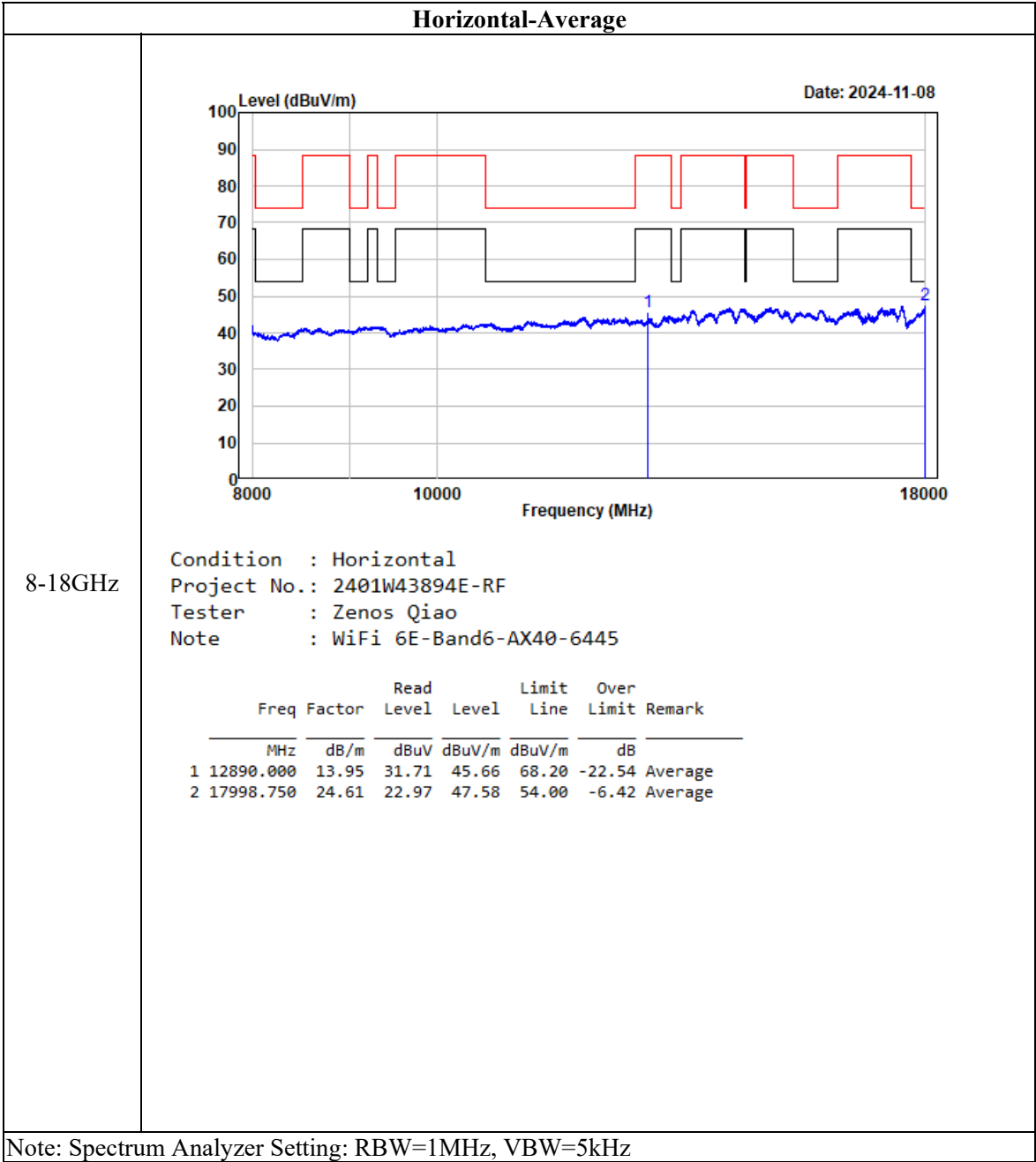


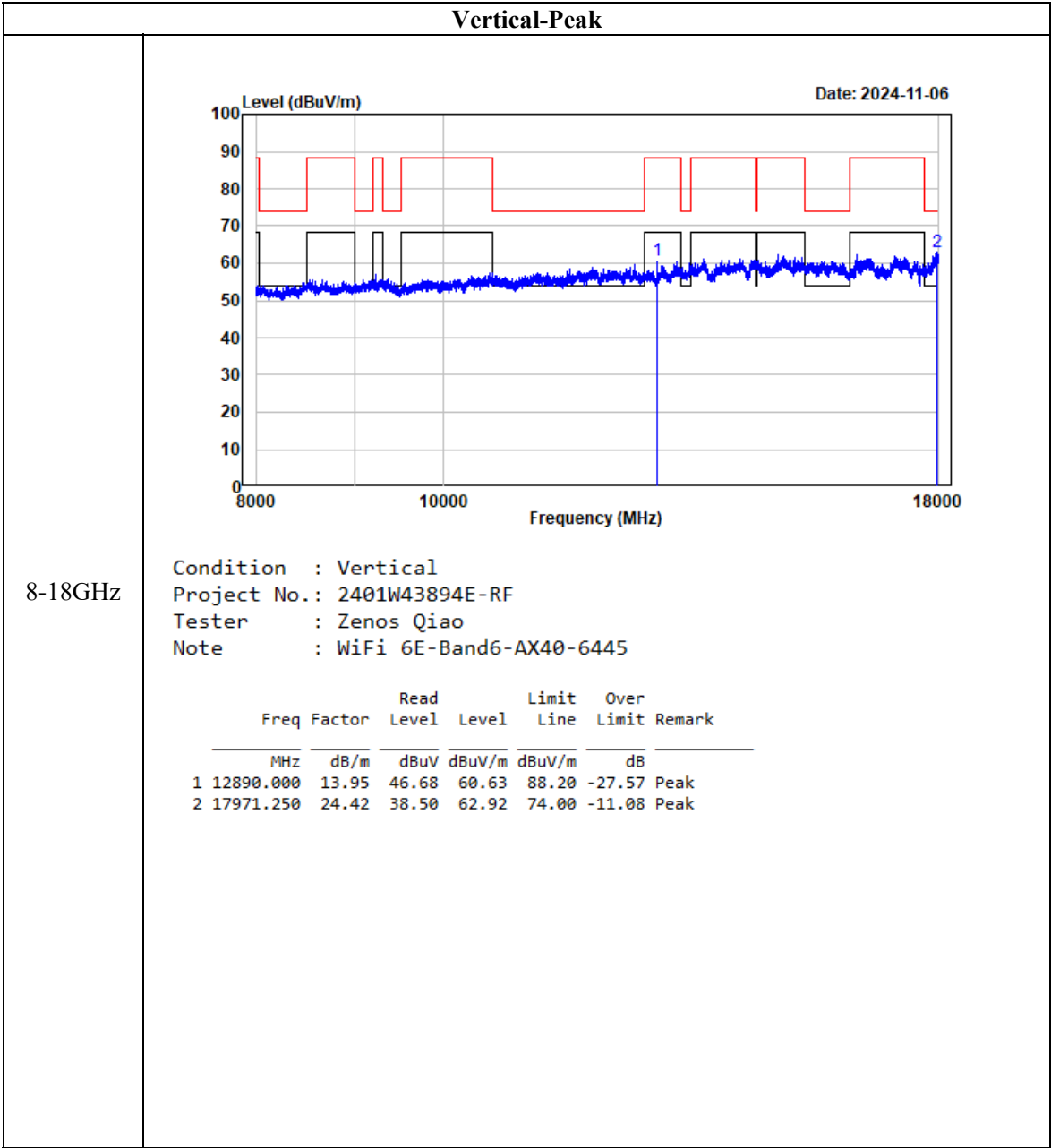


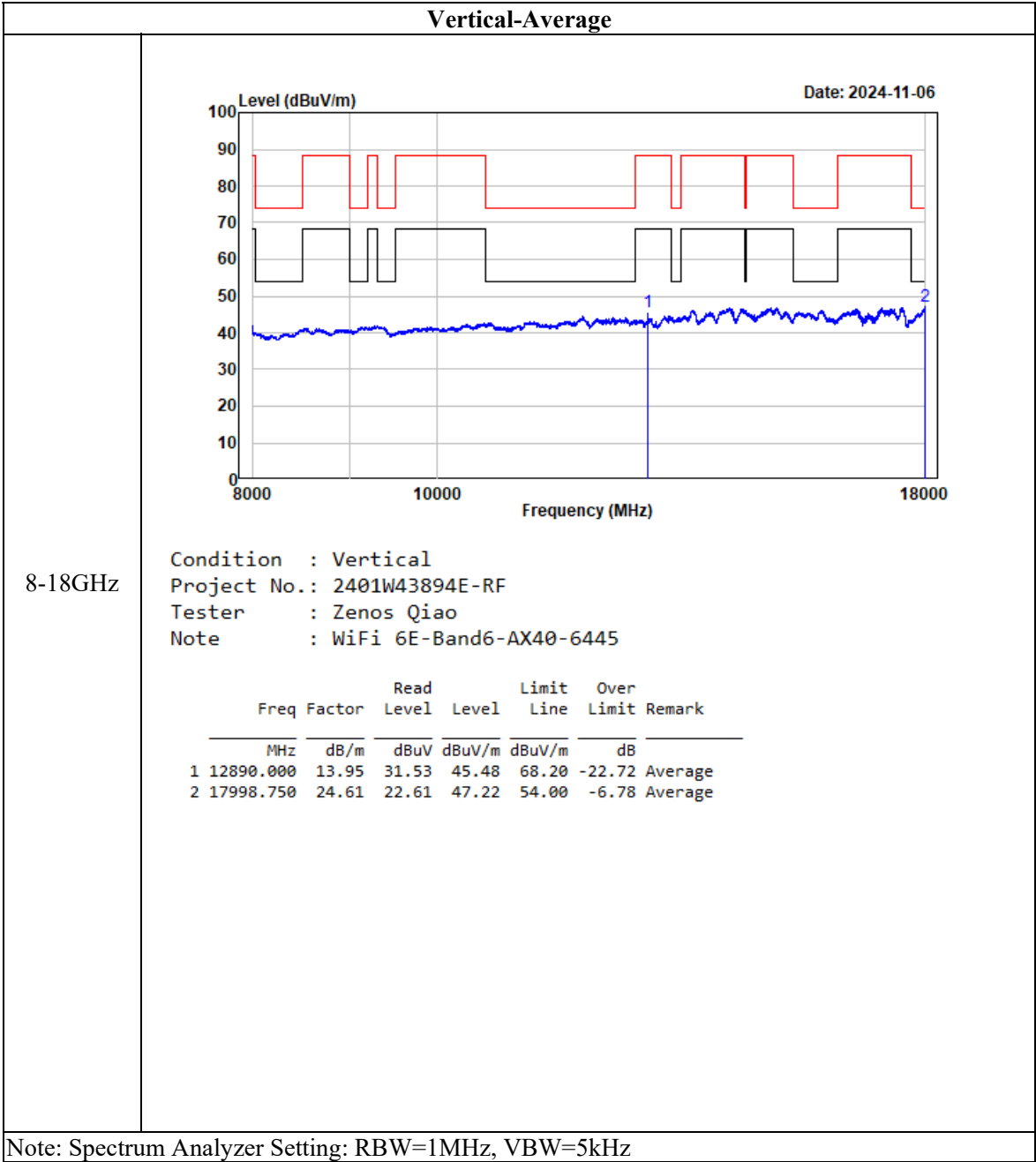




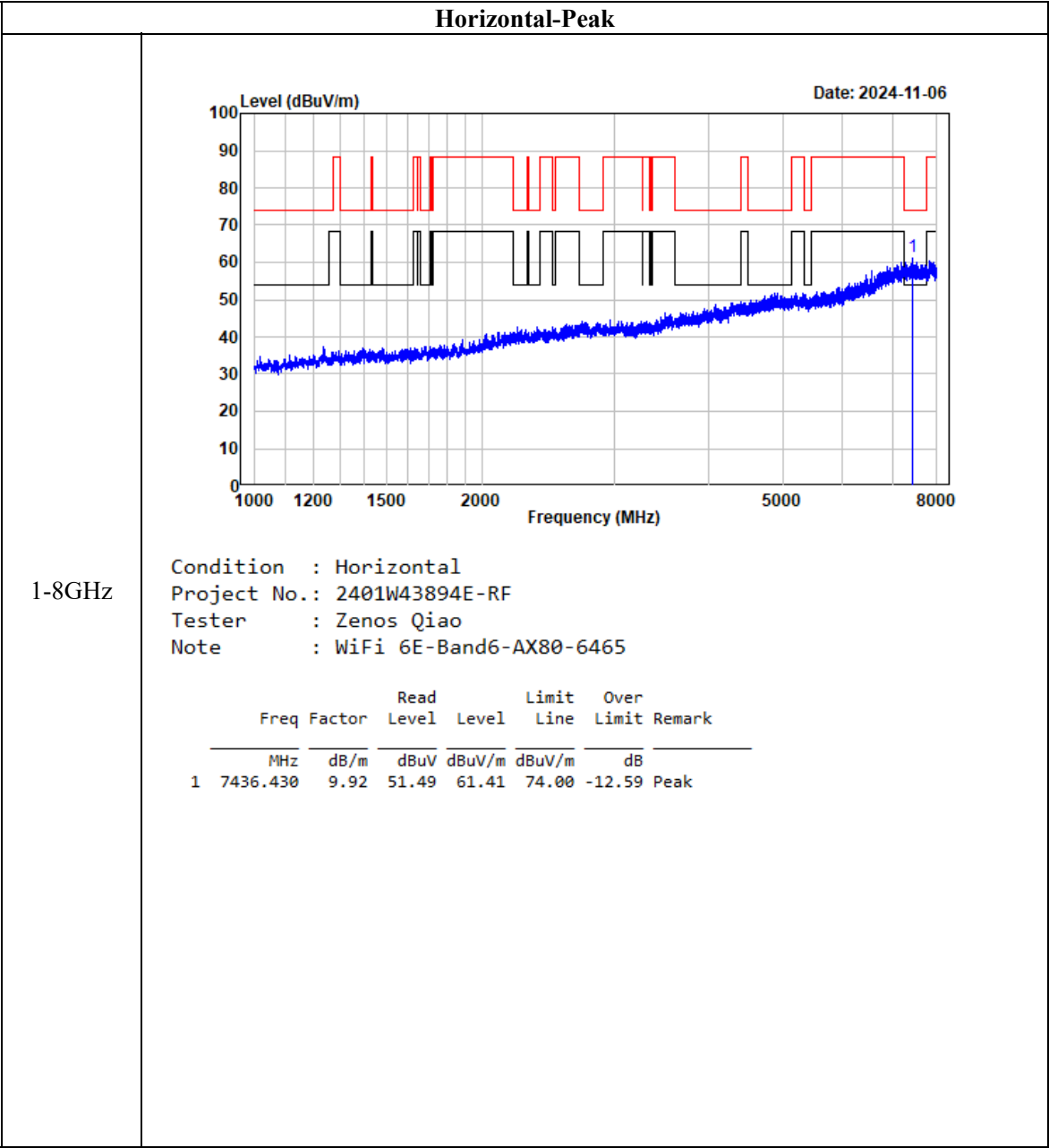


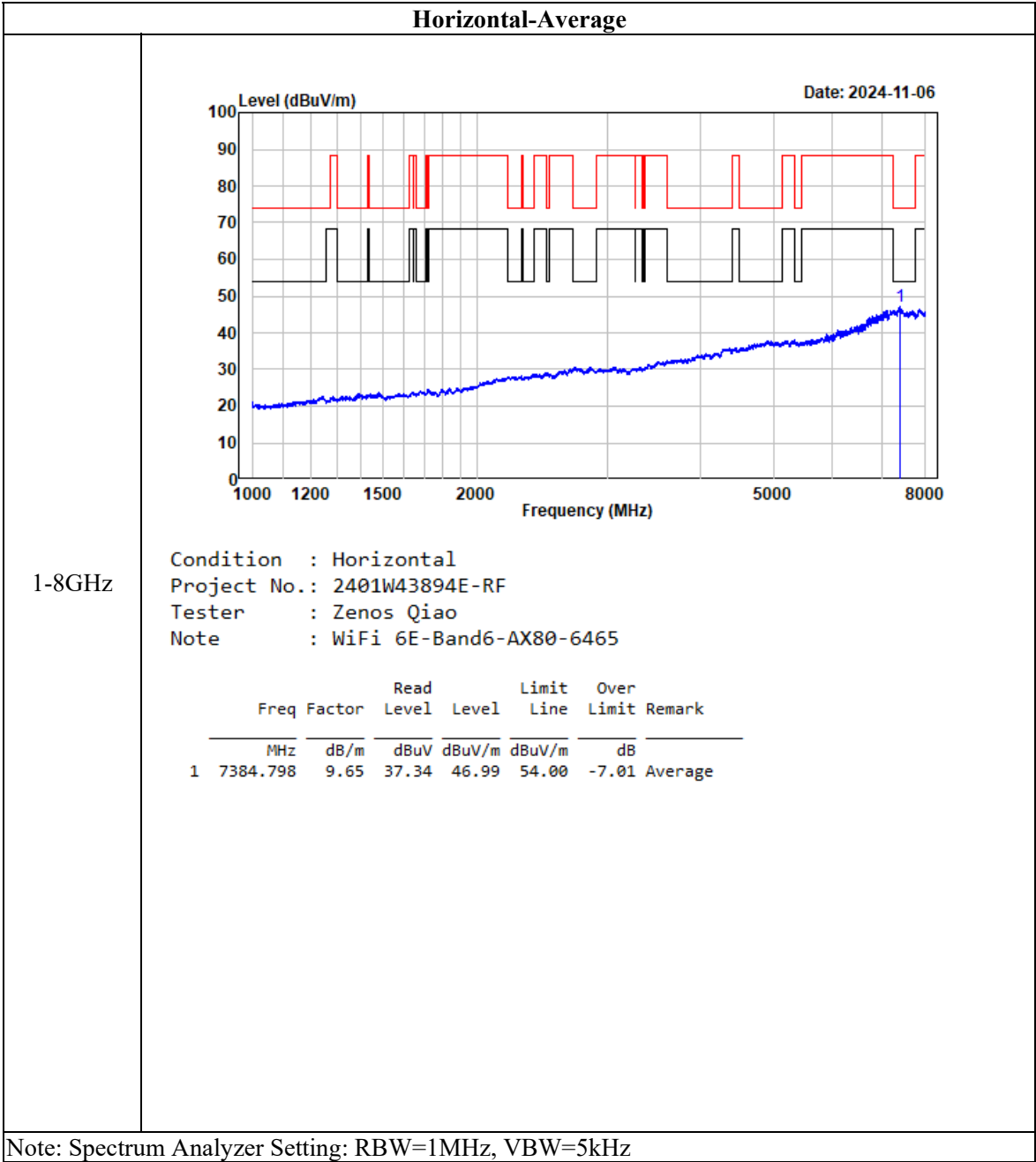


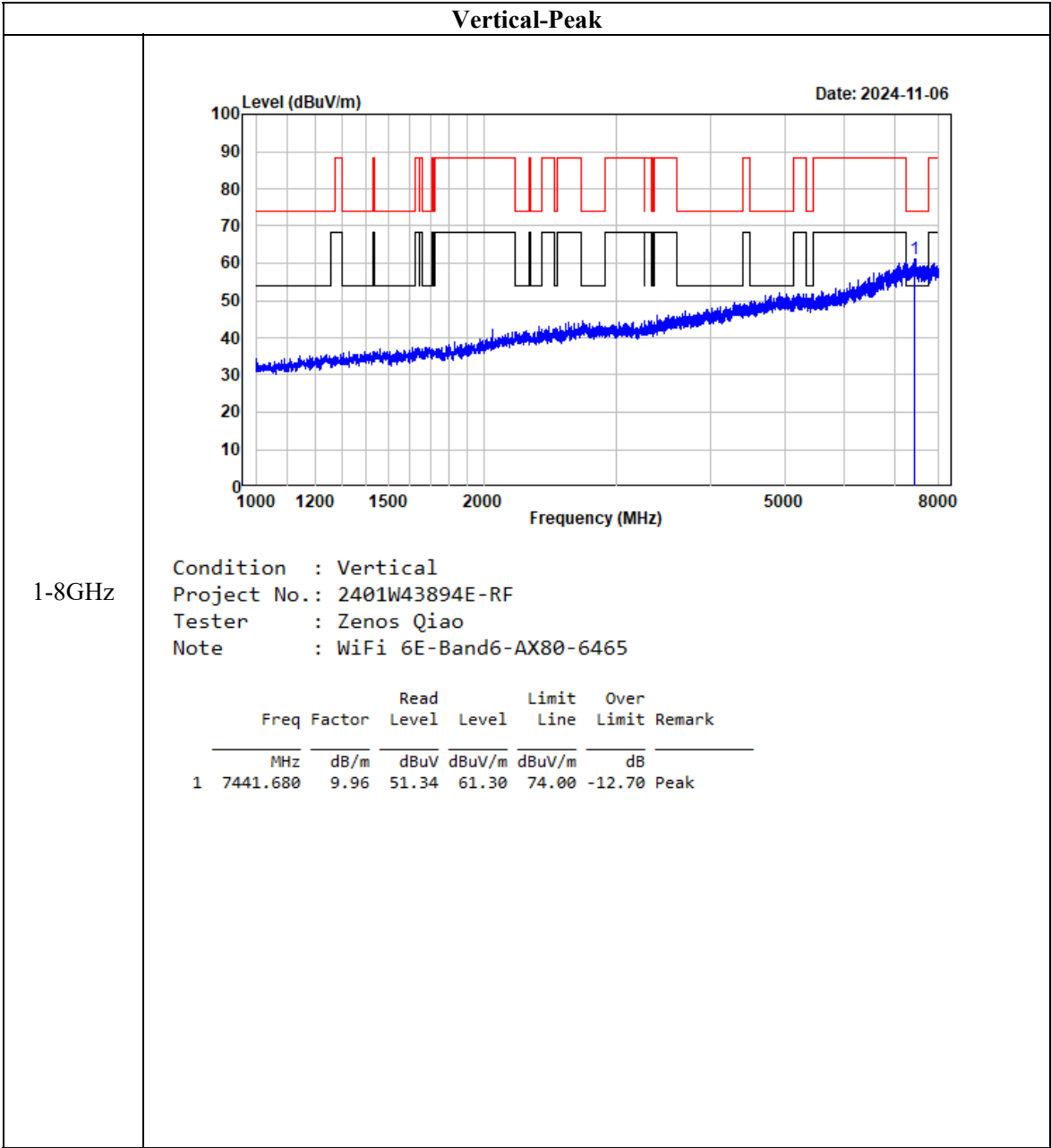


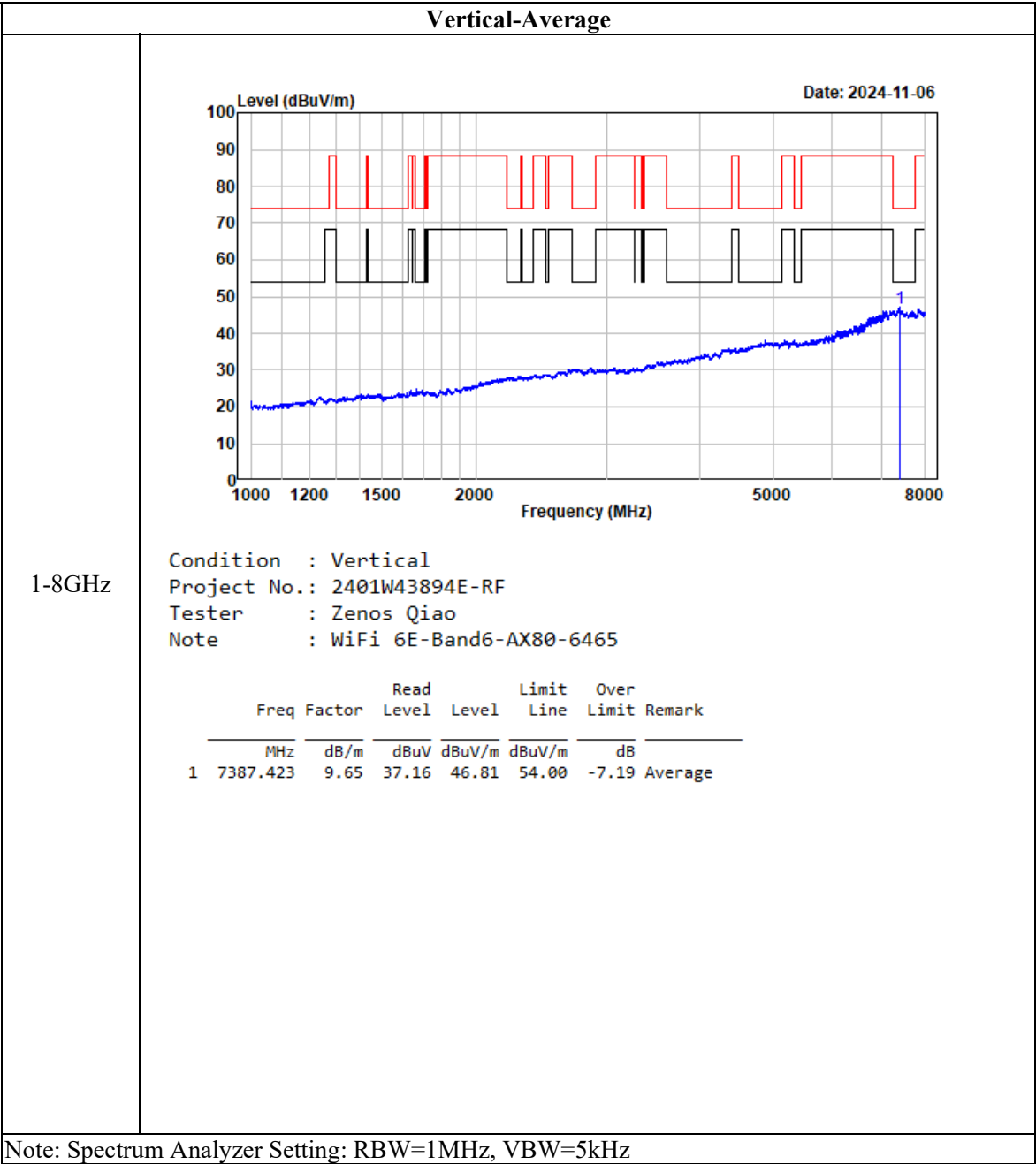


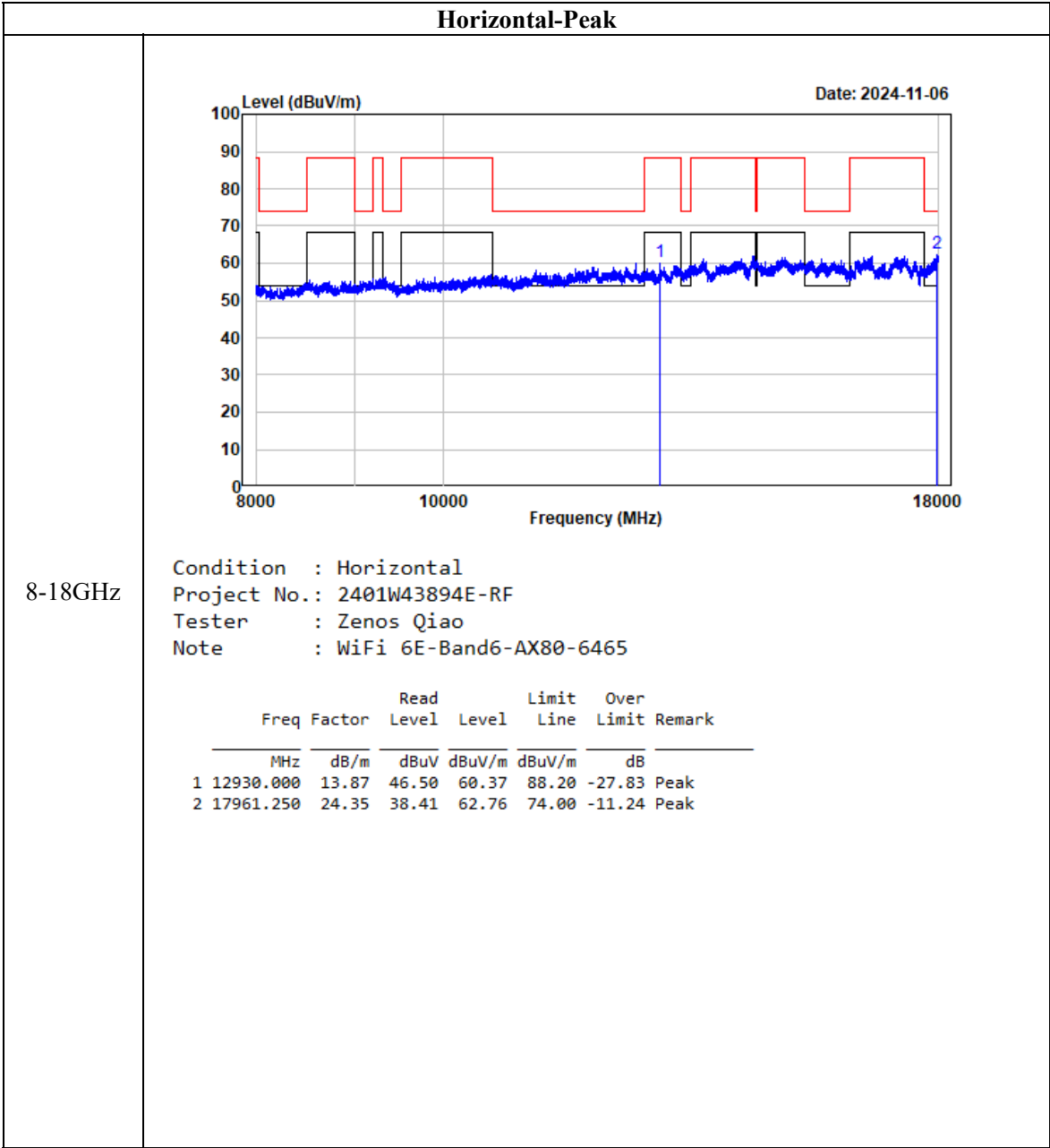
802.11ax80, 6465MHz

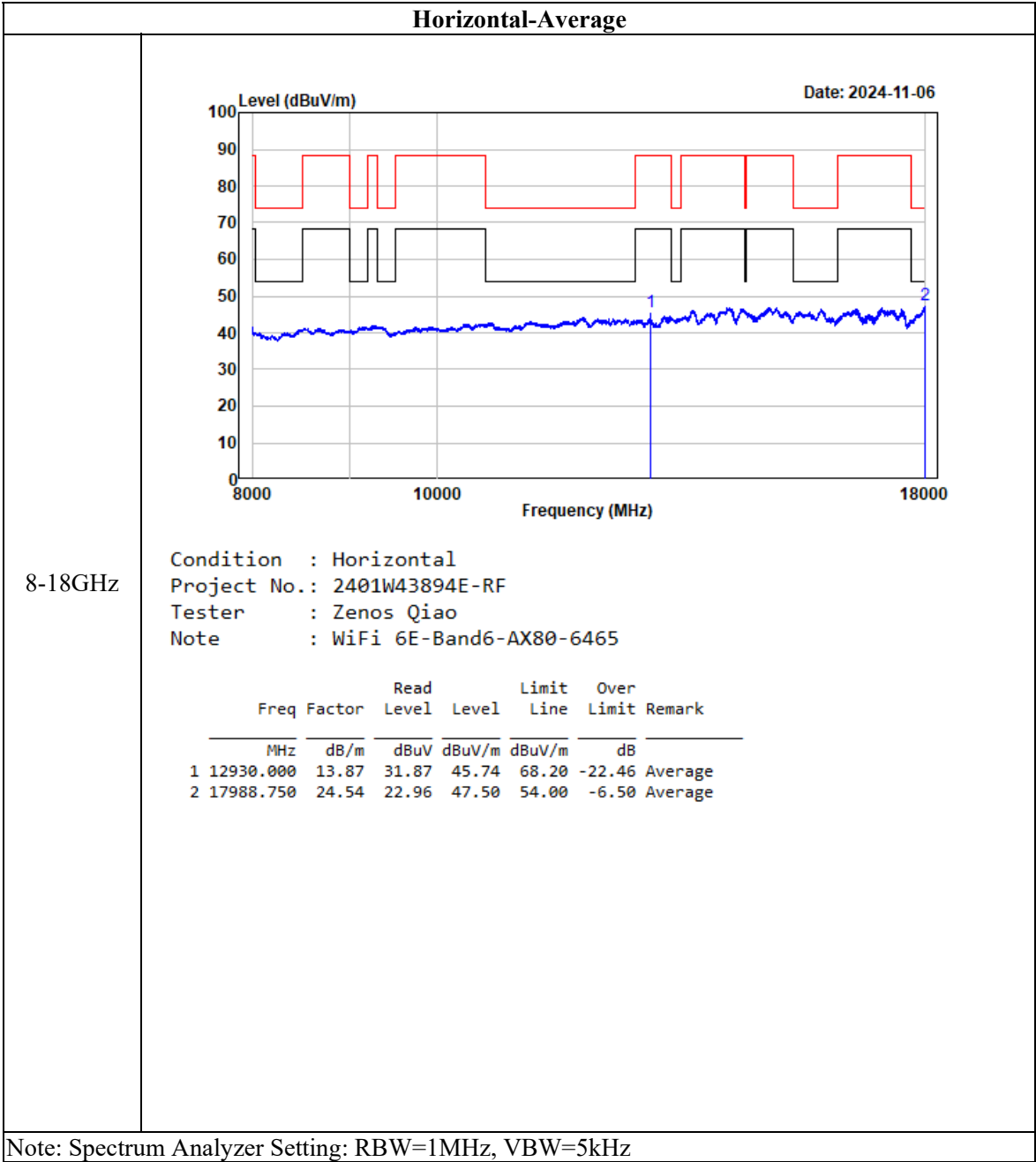


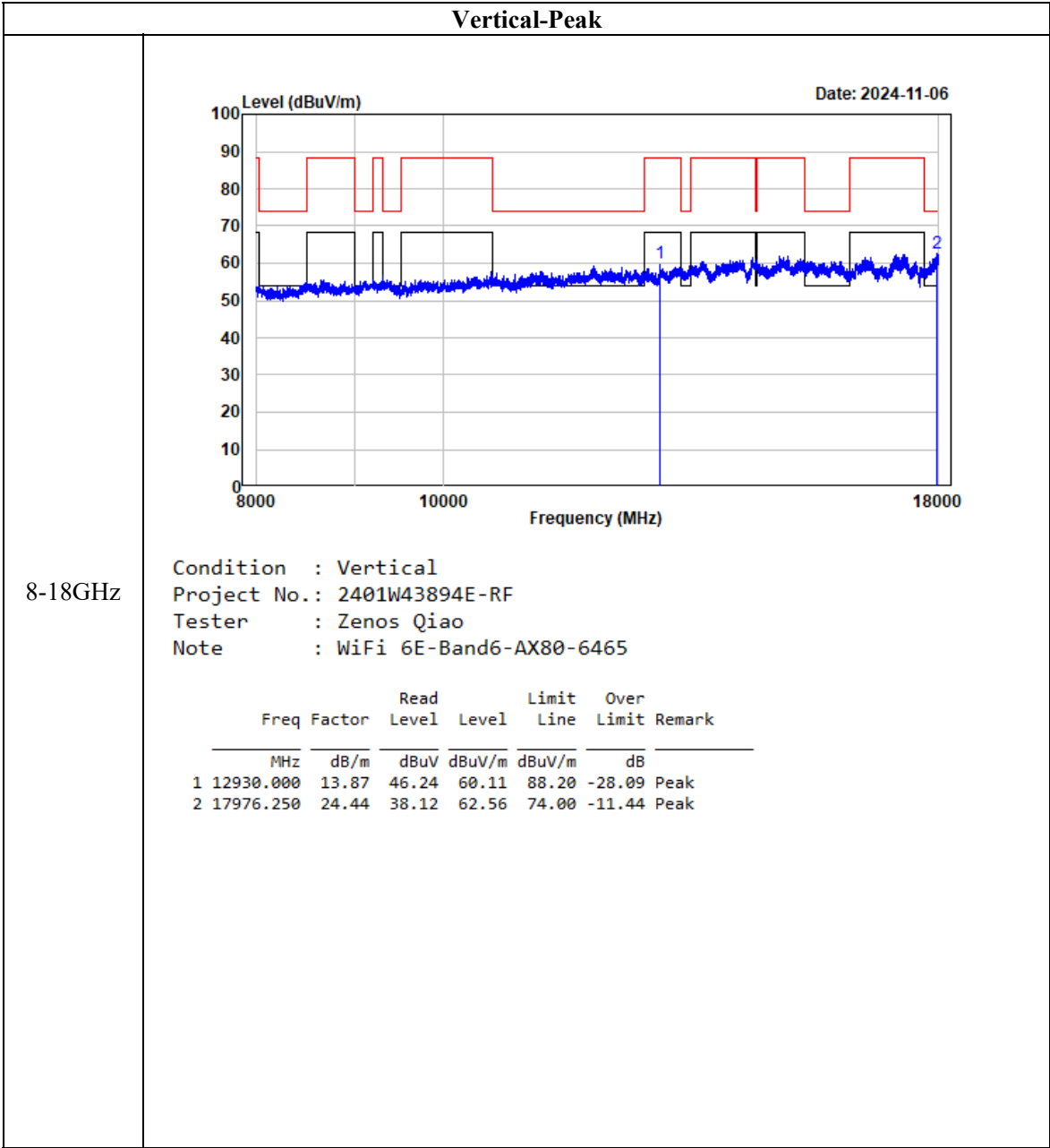


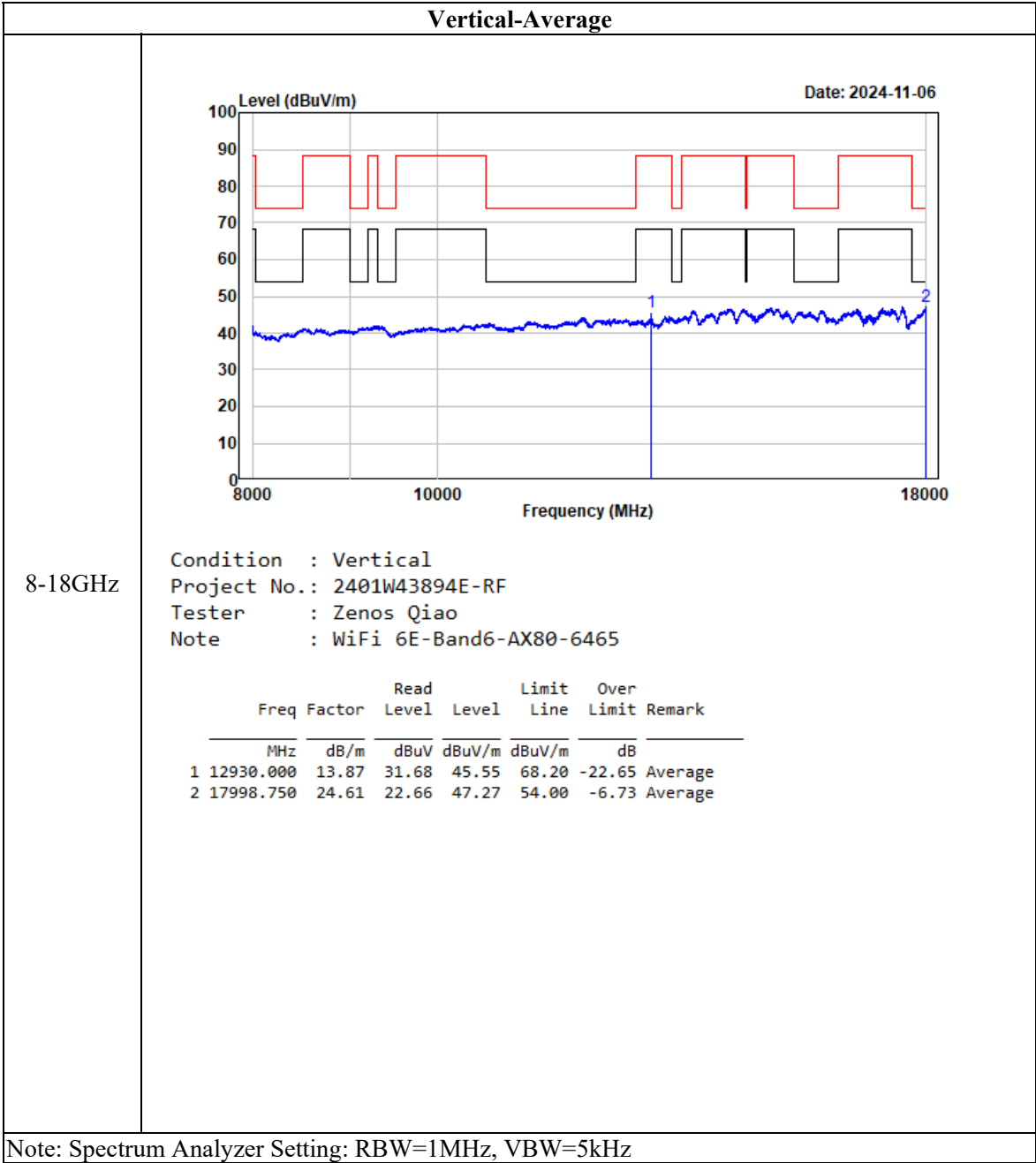




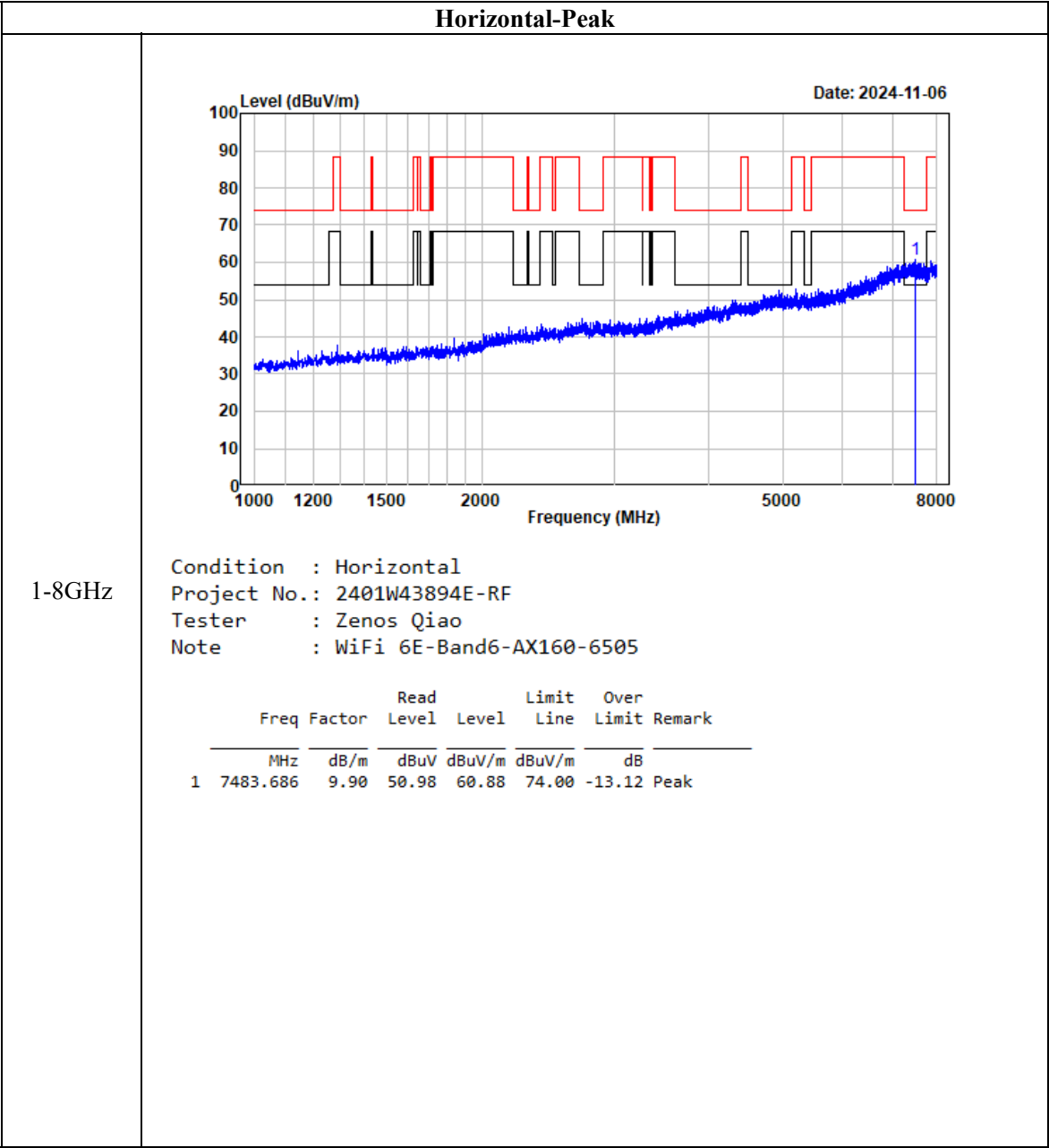


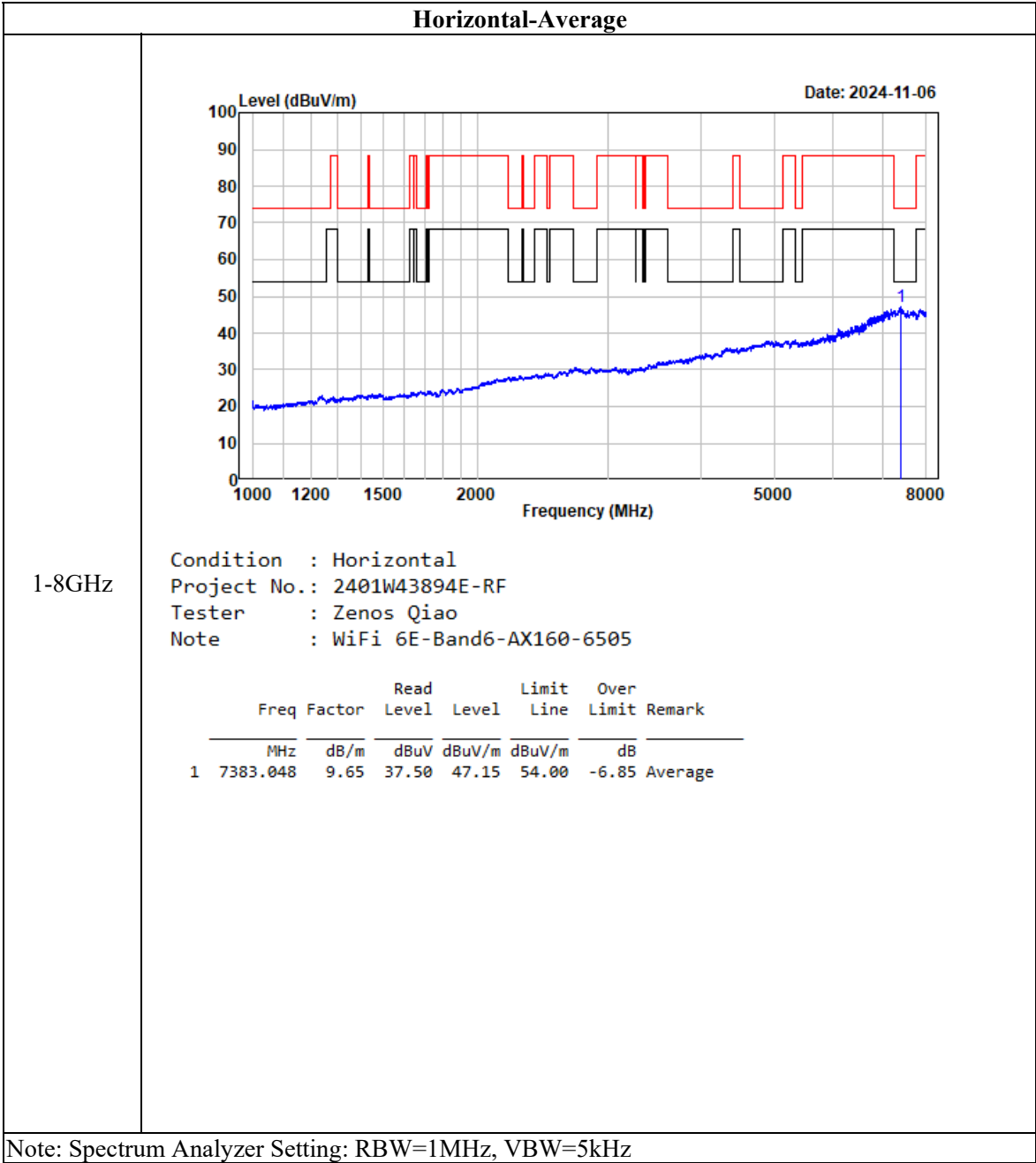


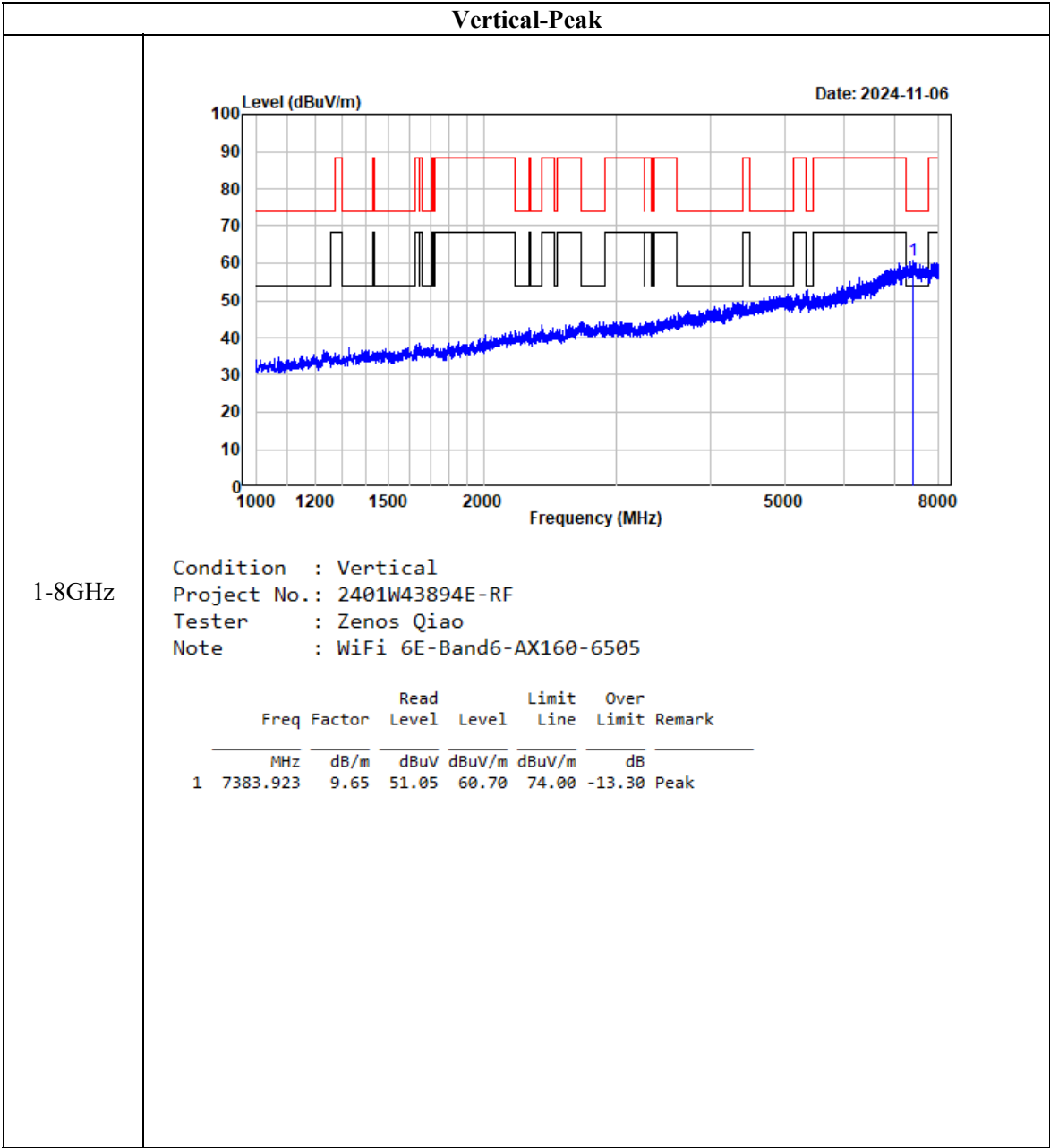


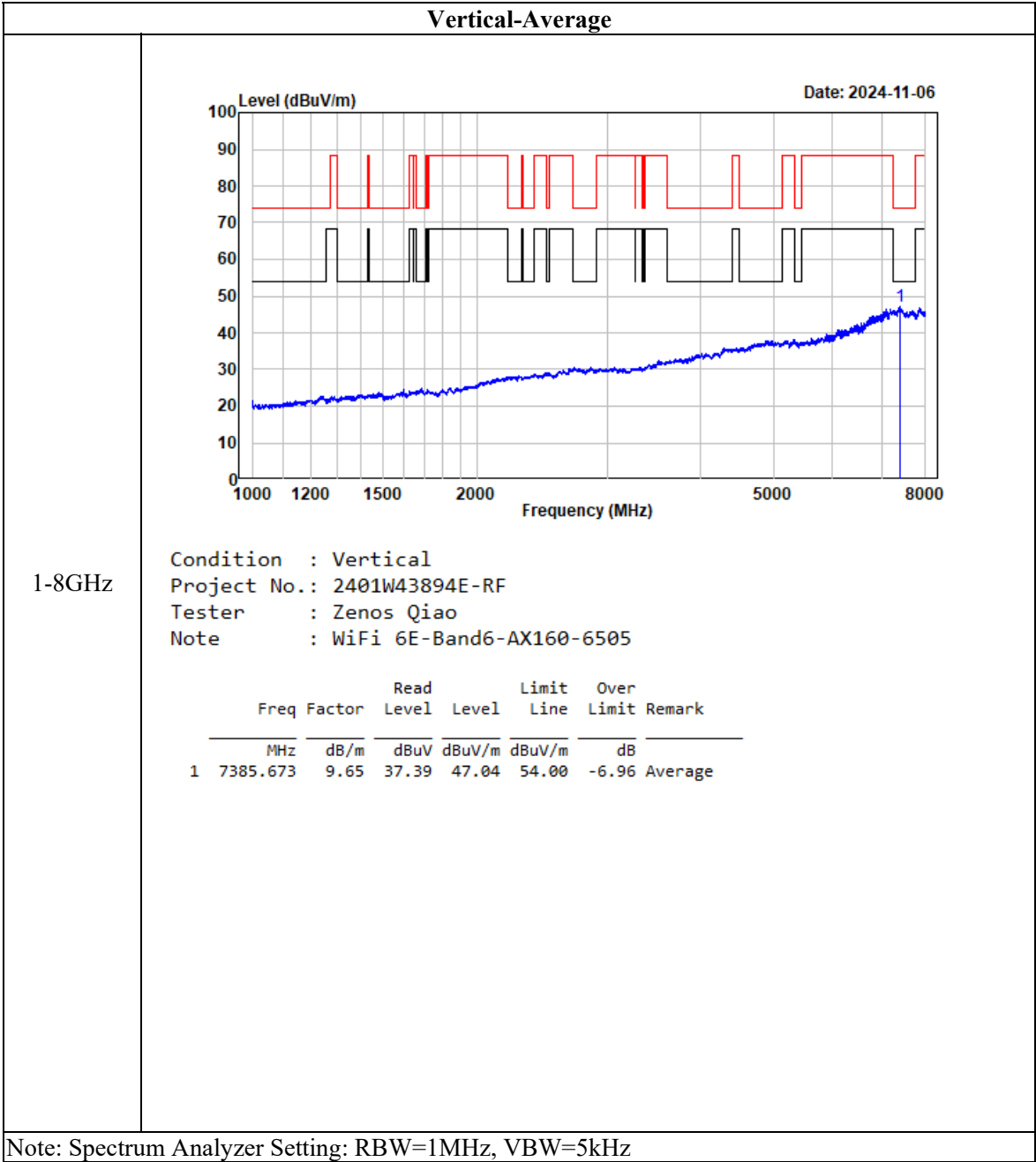


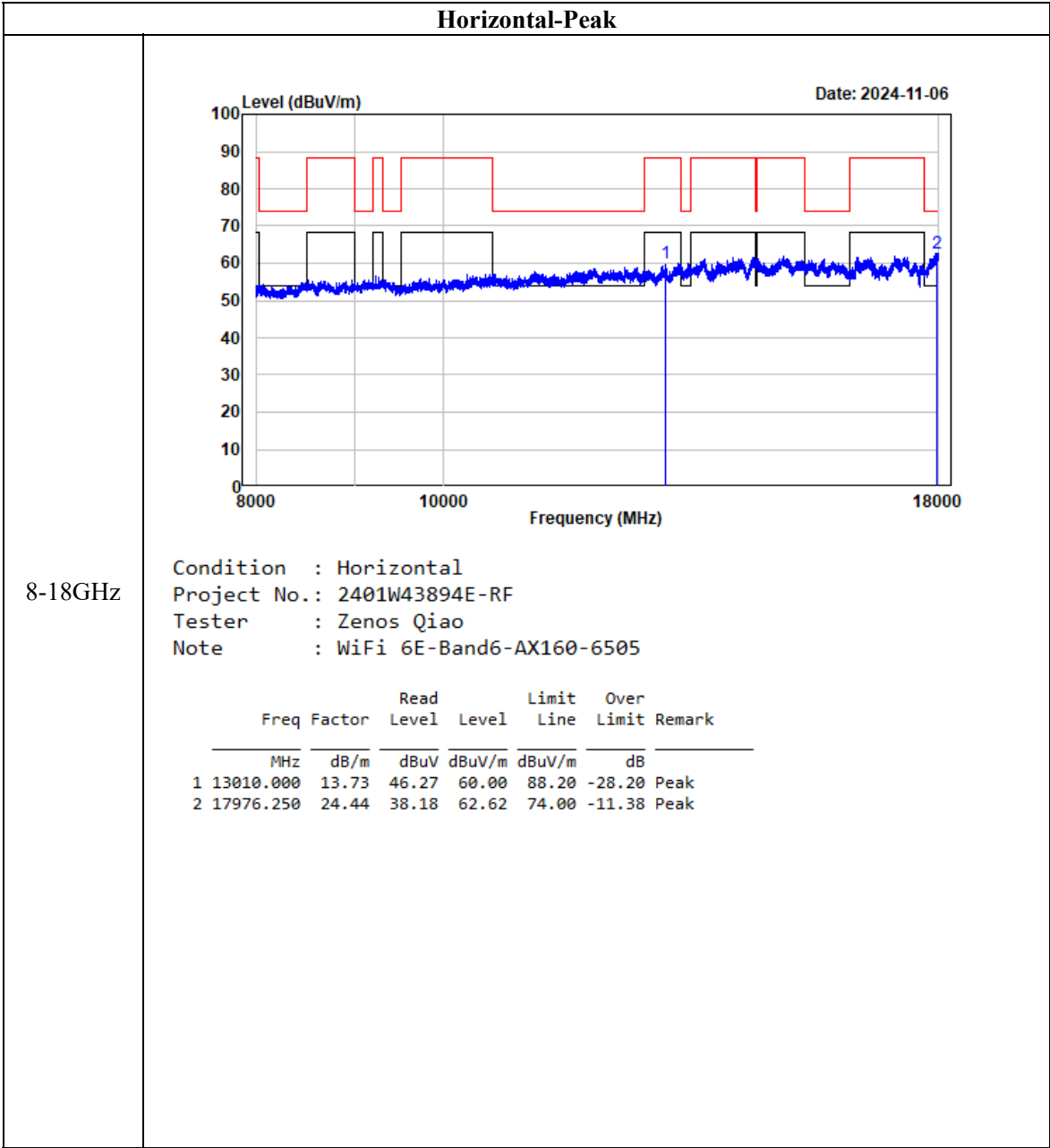
802.11ax160, 6505MHz

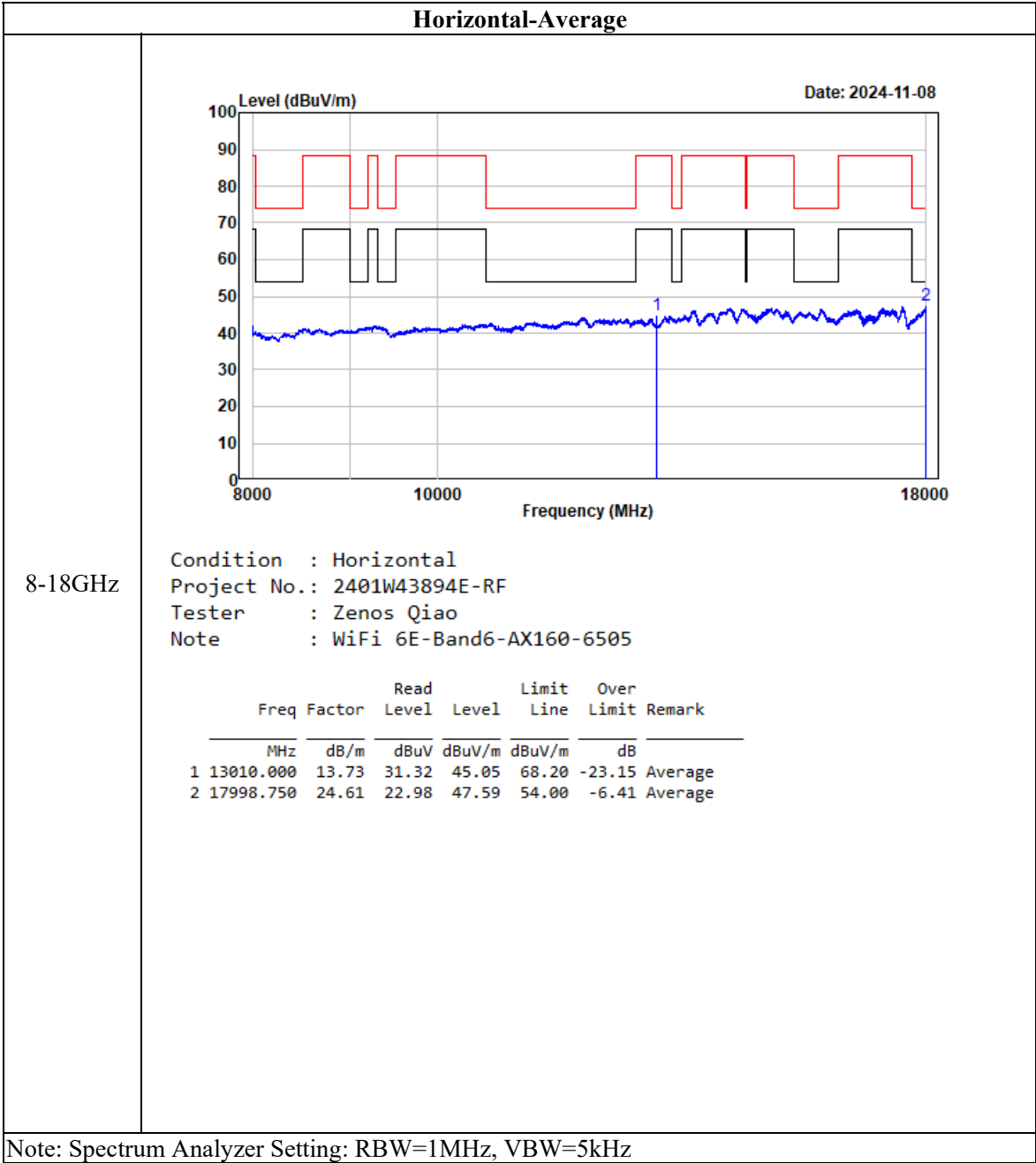


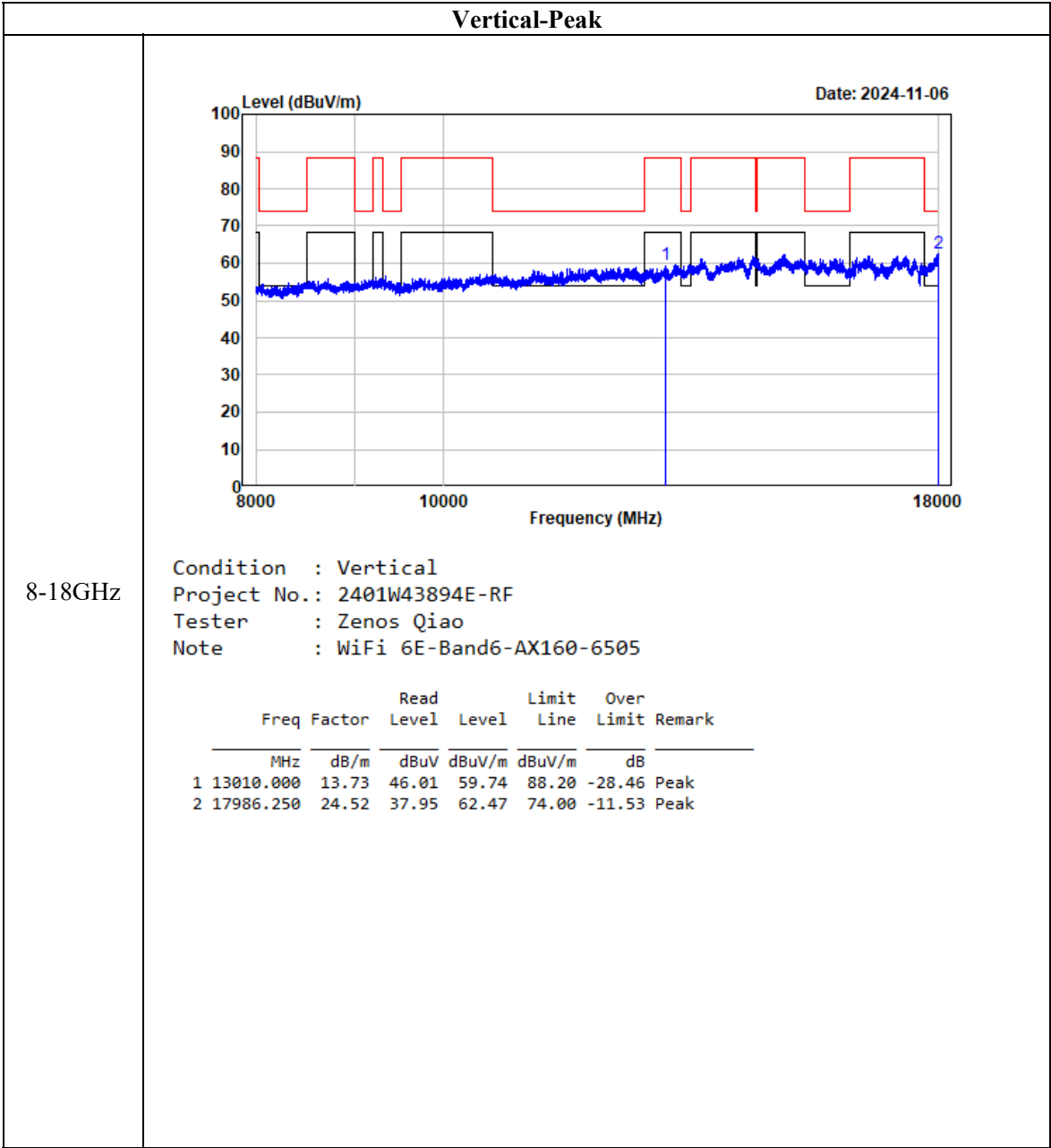


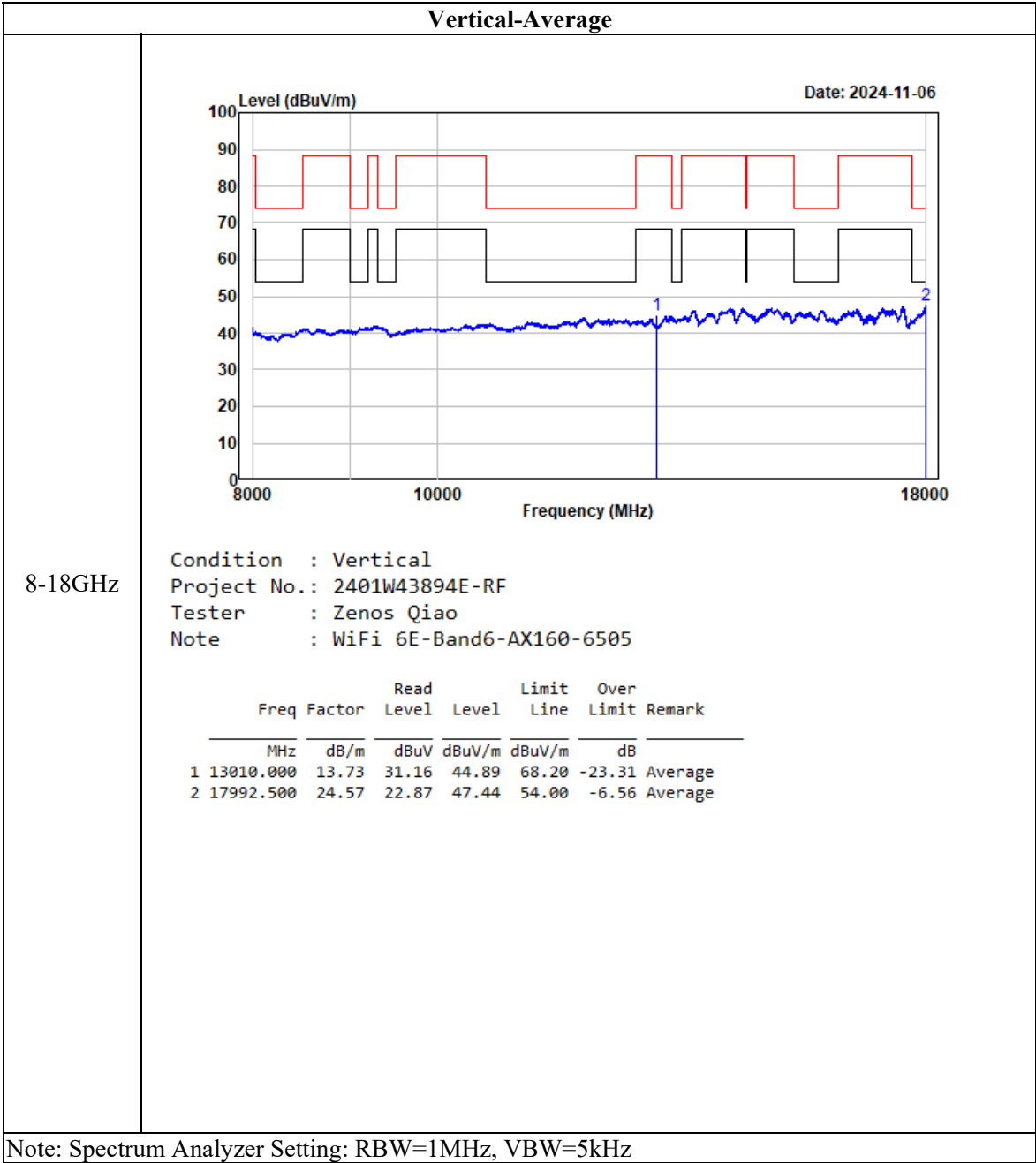






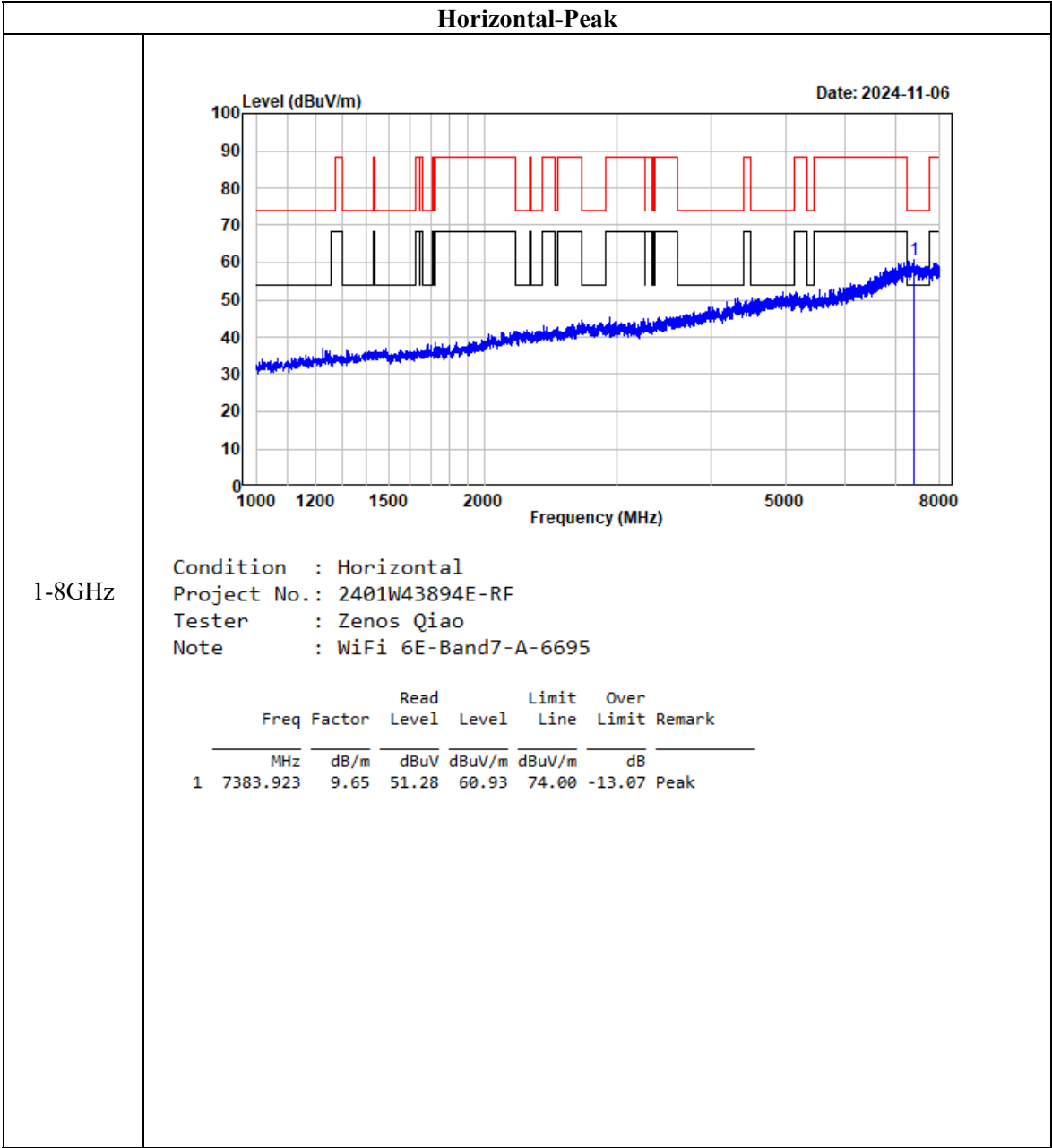


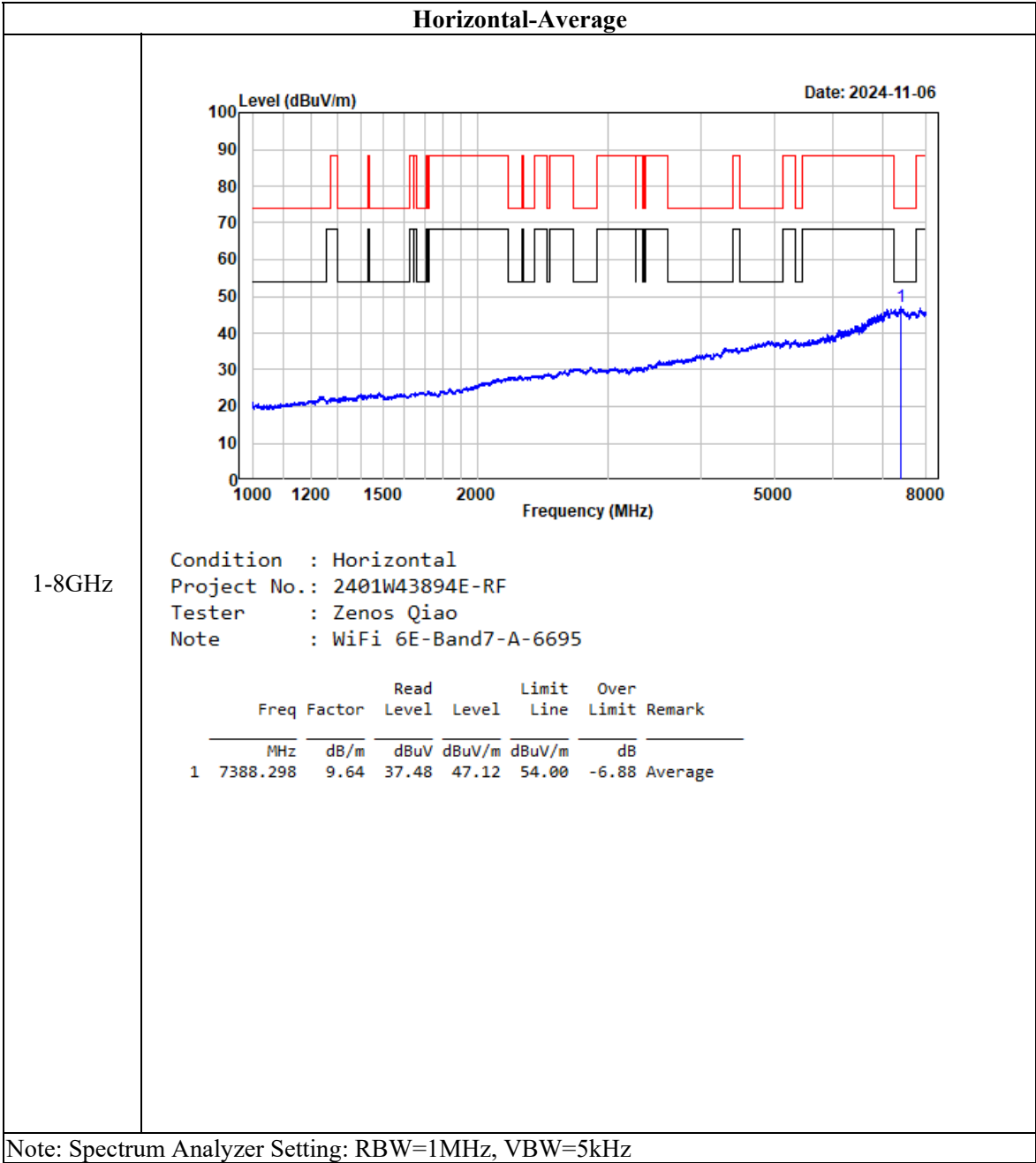


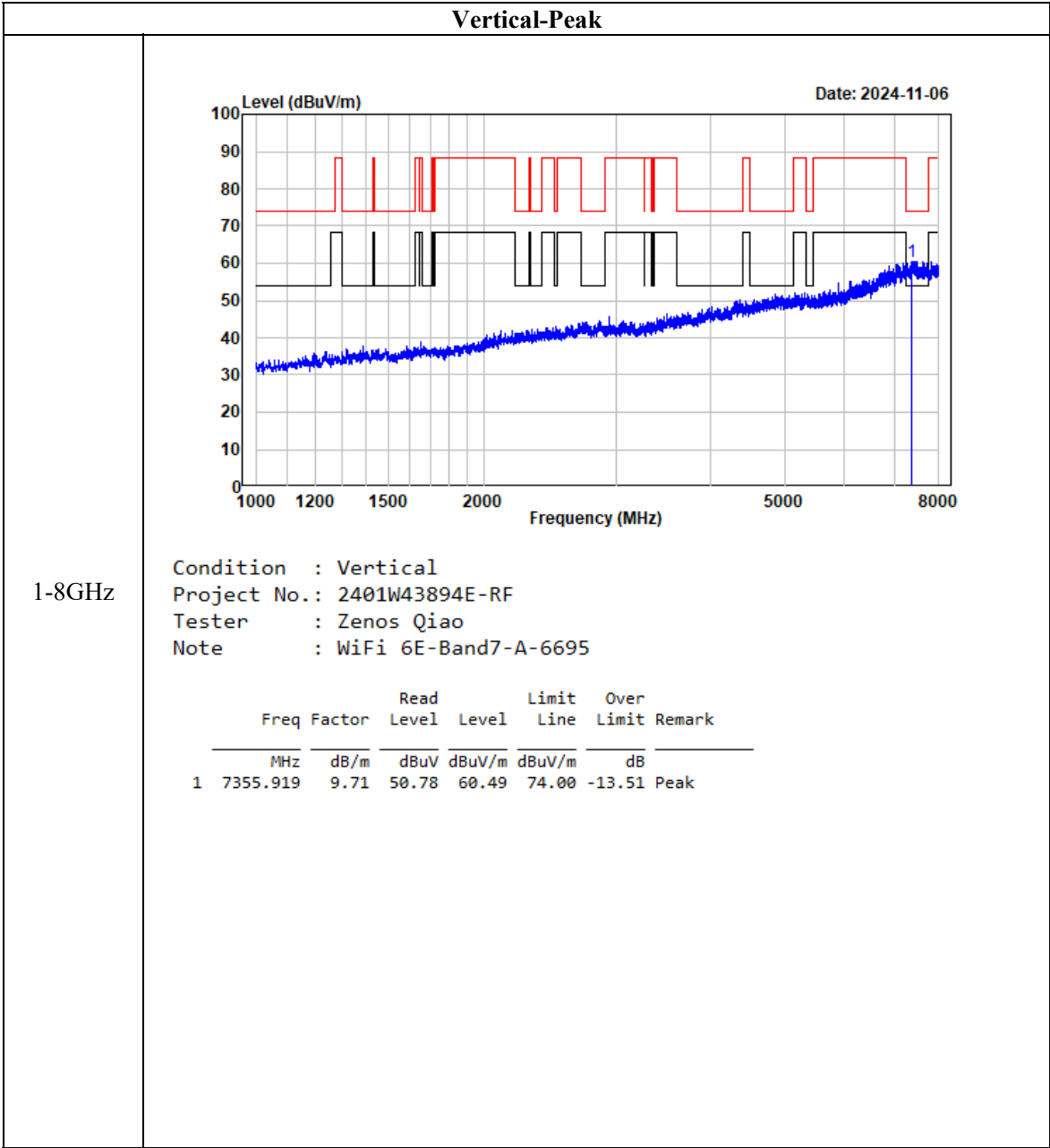


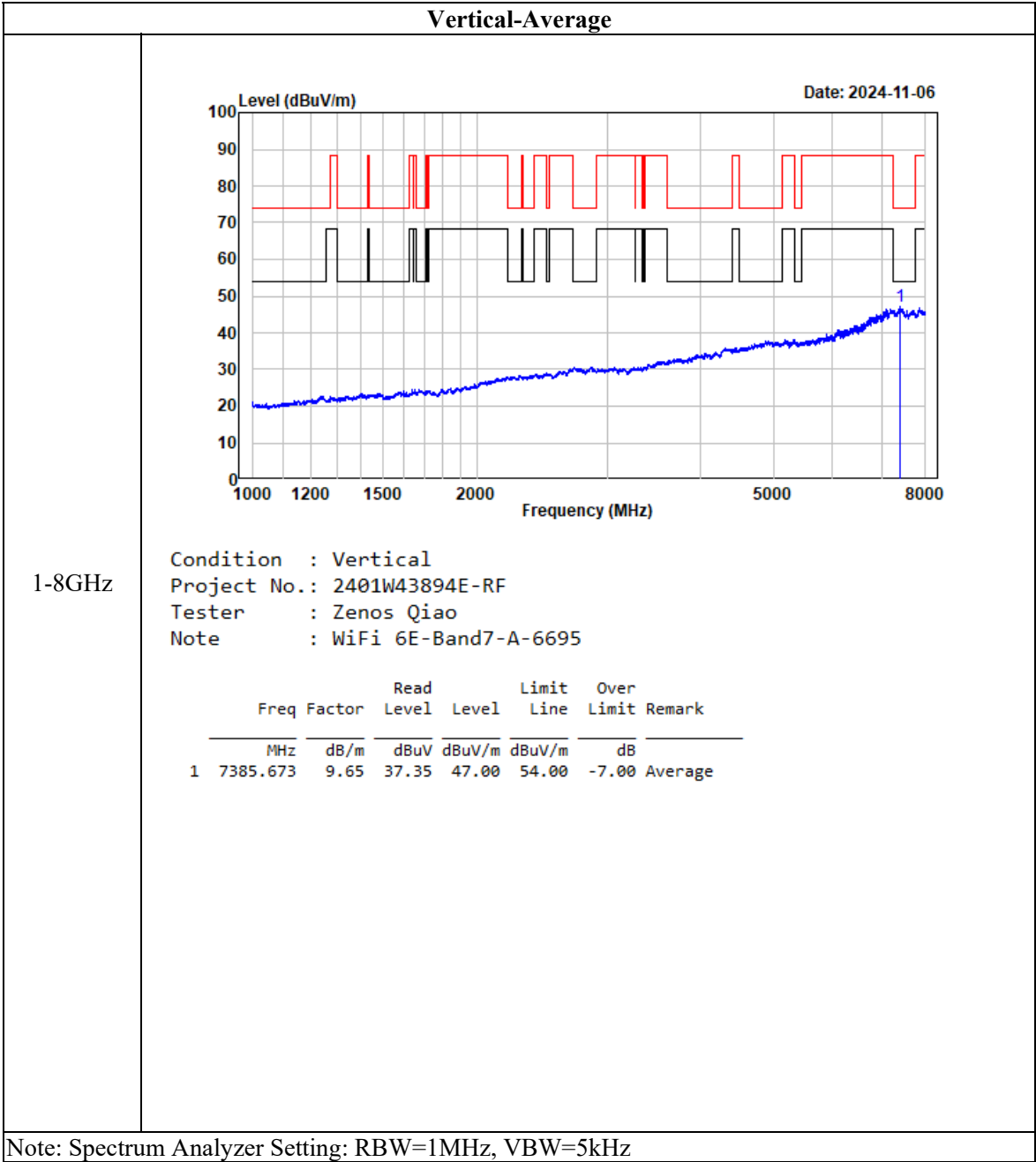
Wi-Fi 6E_ U-NII 7:

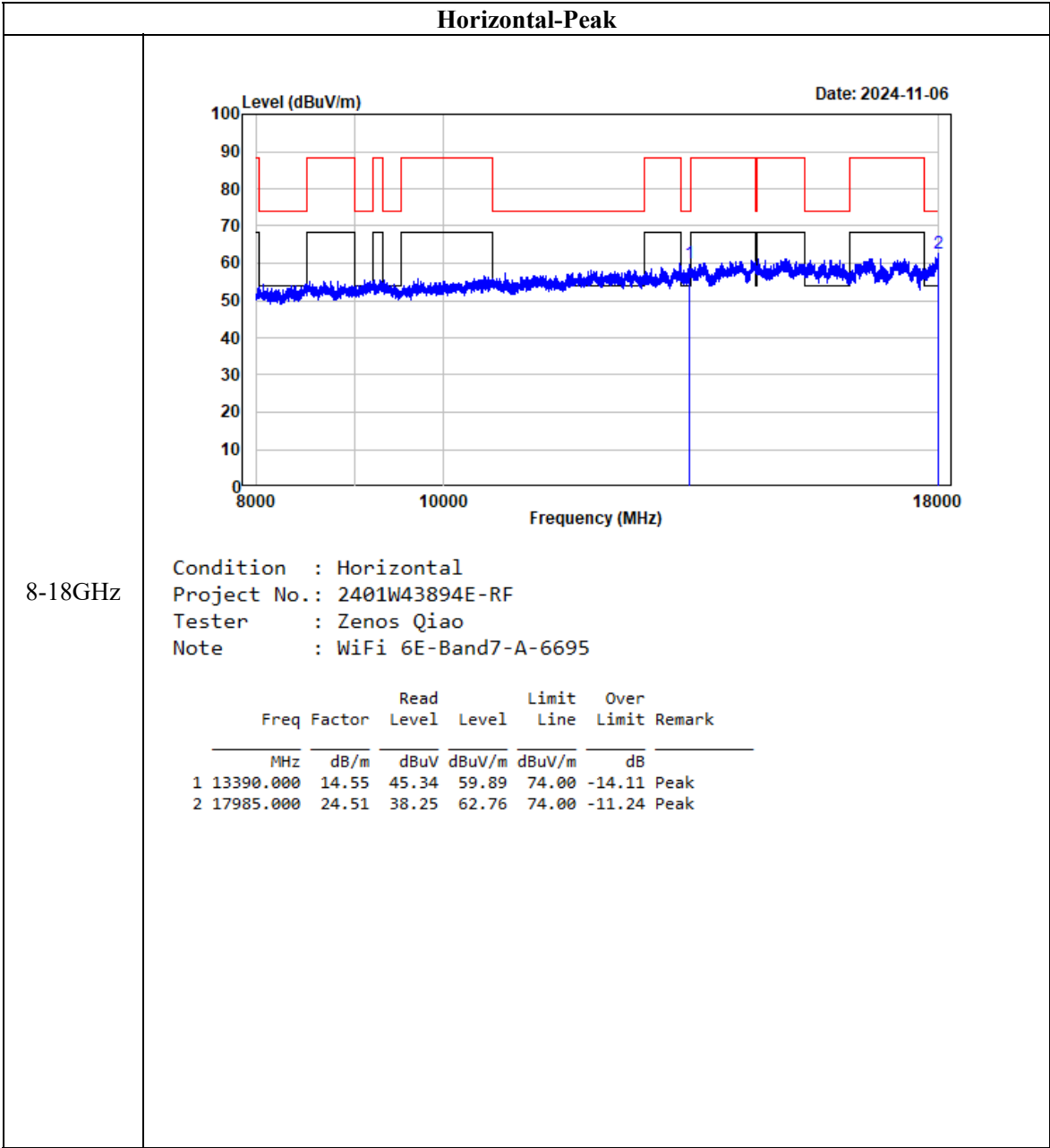
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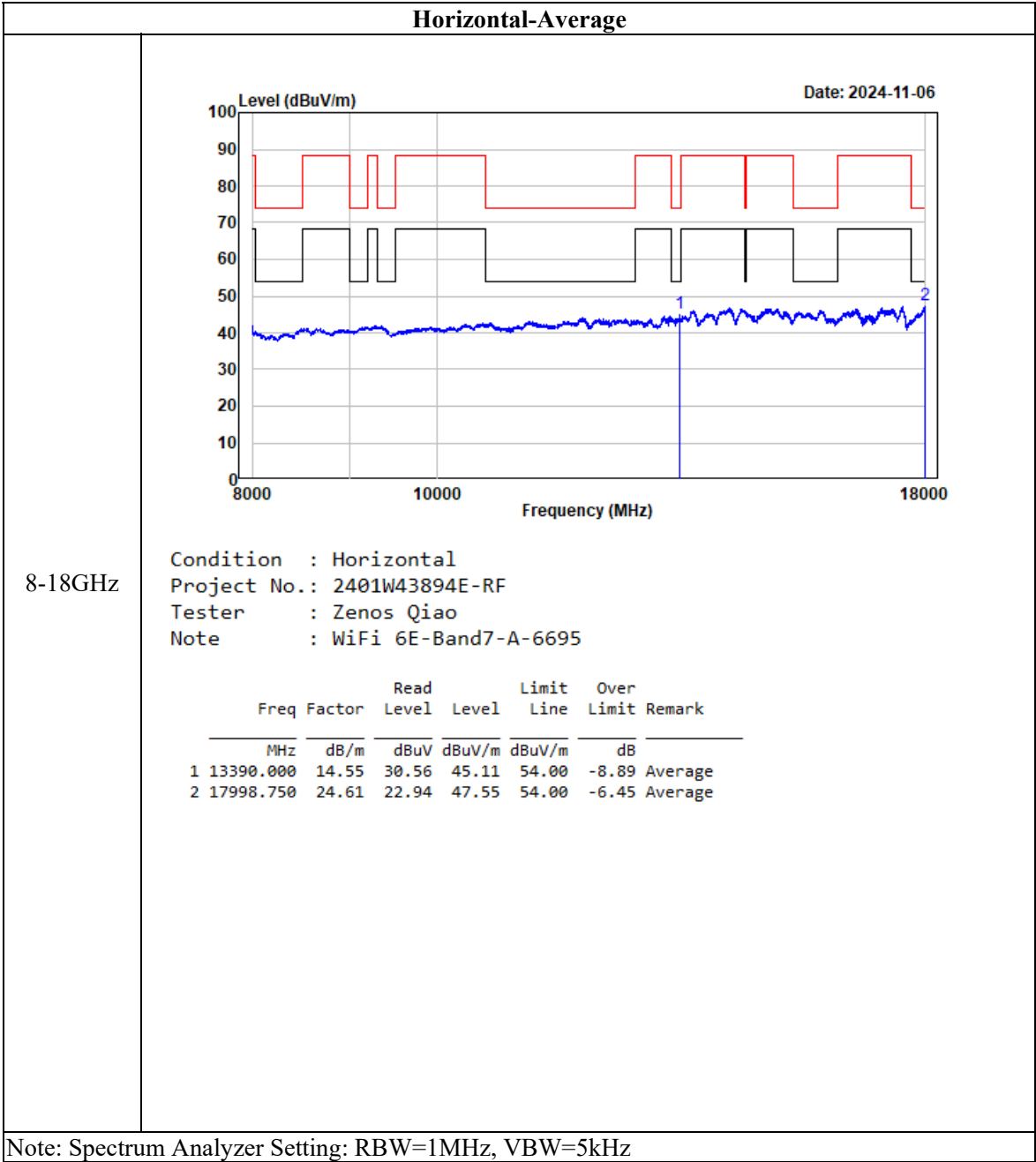


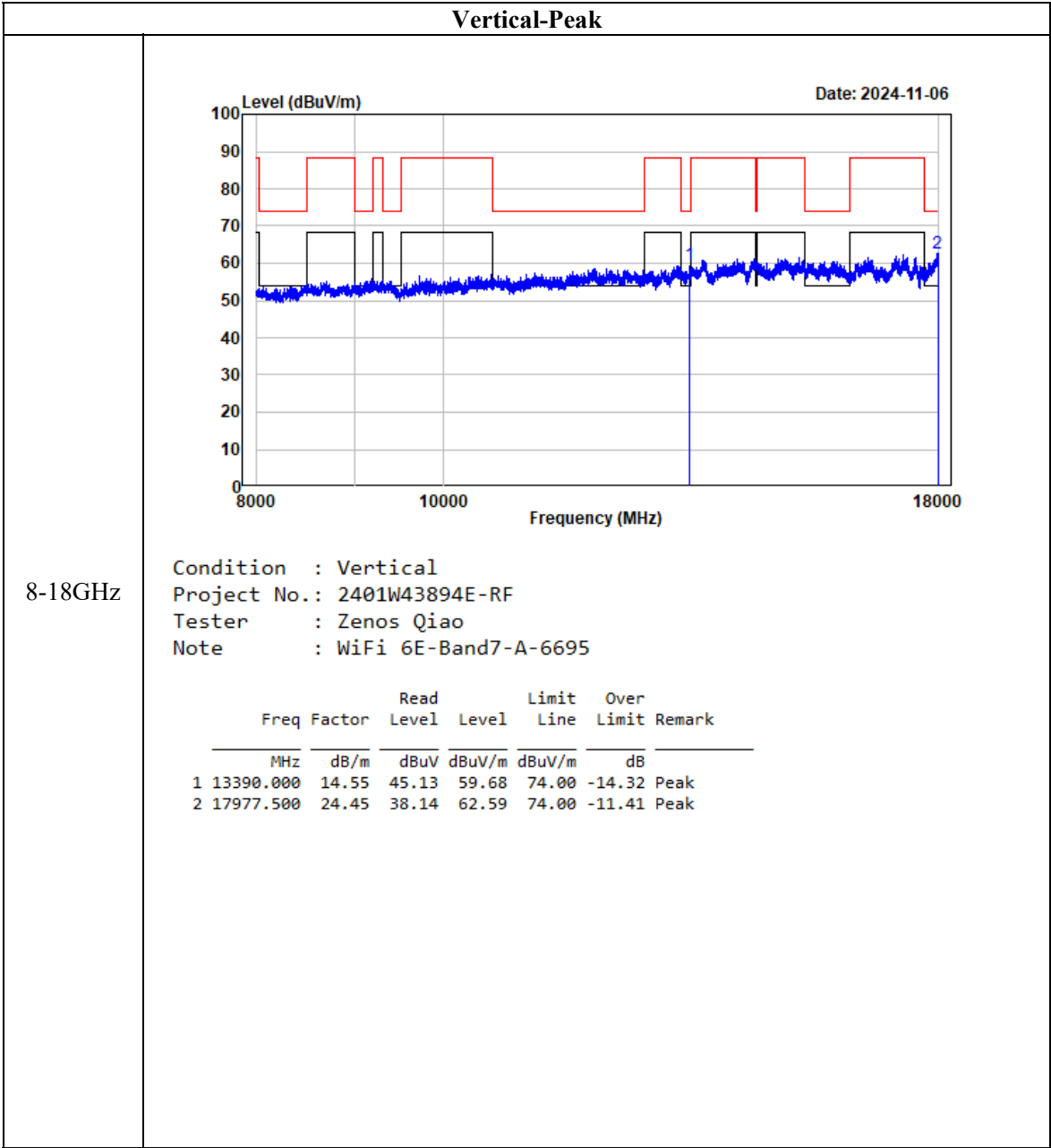


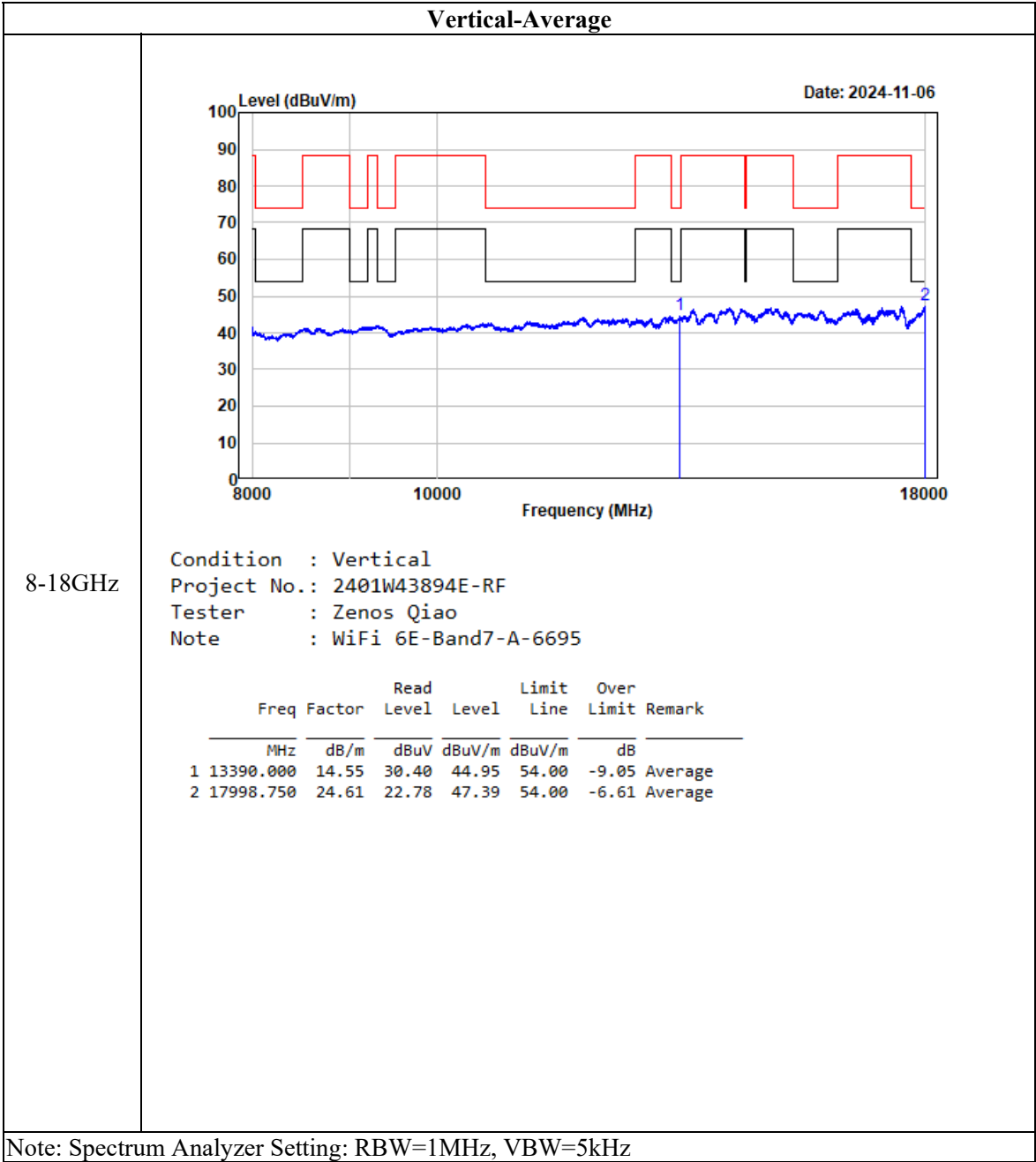




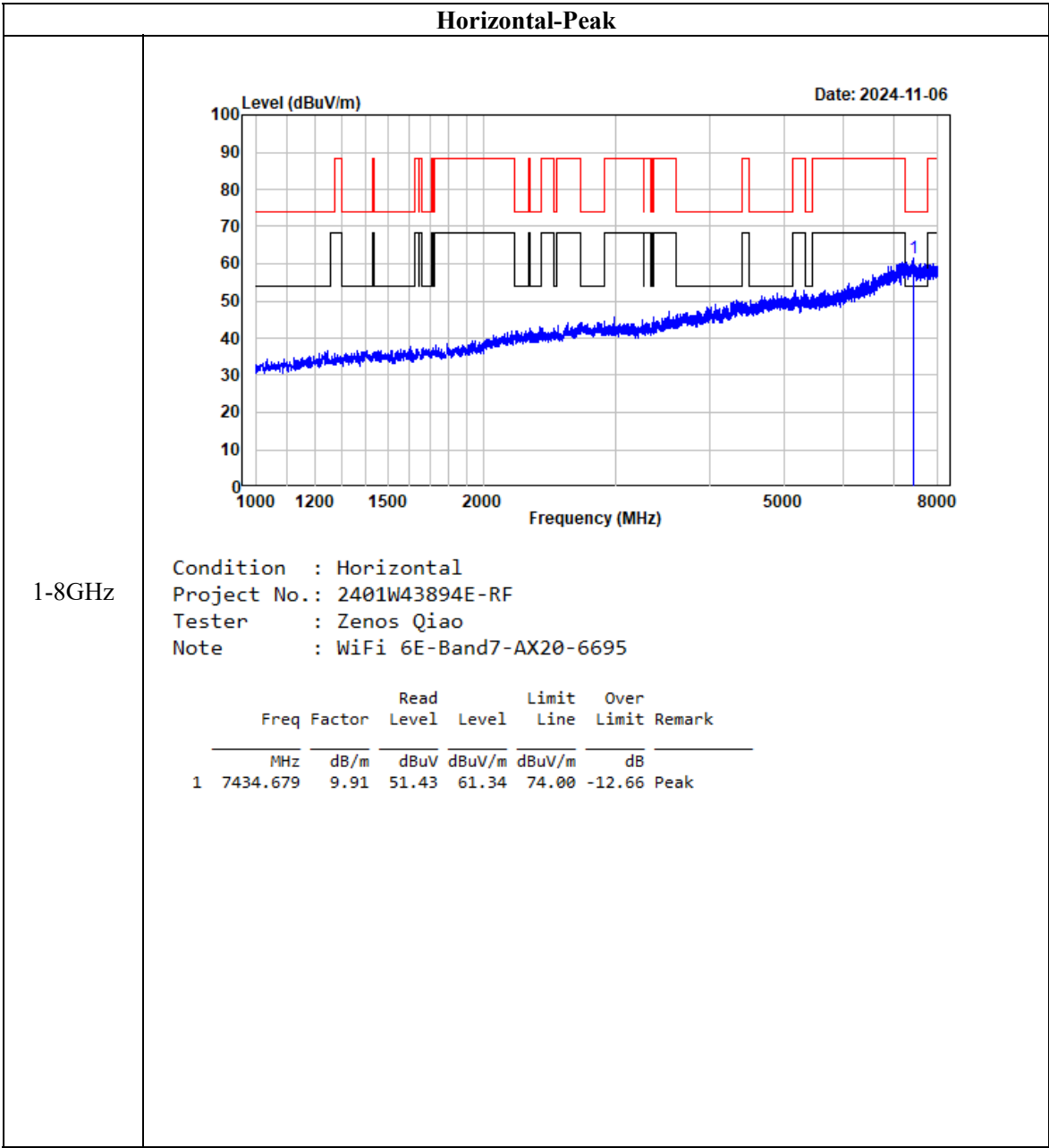


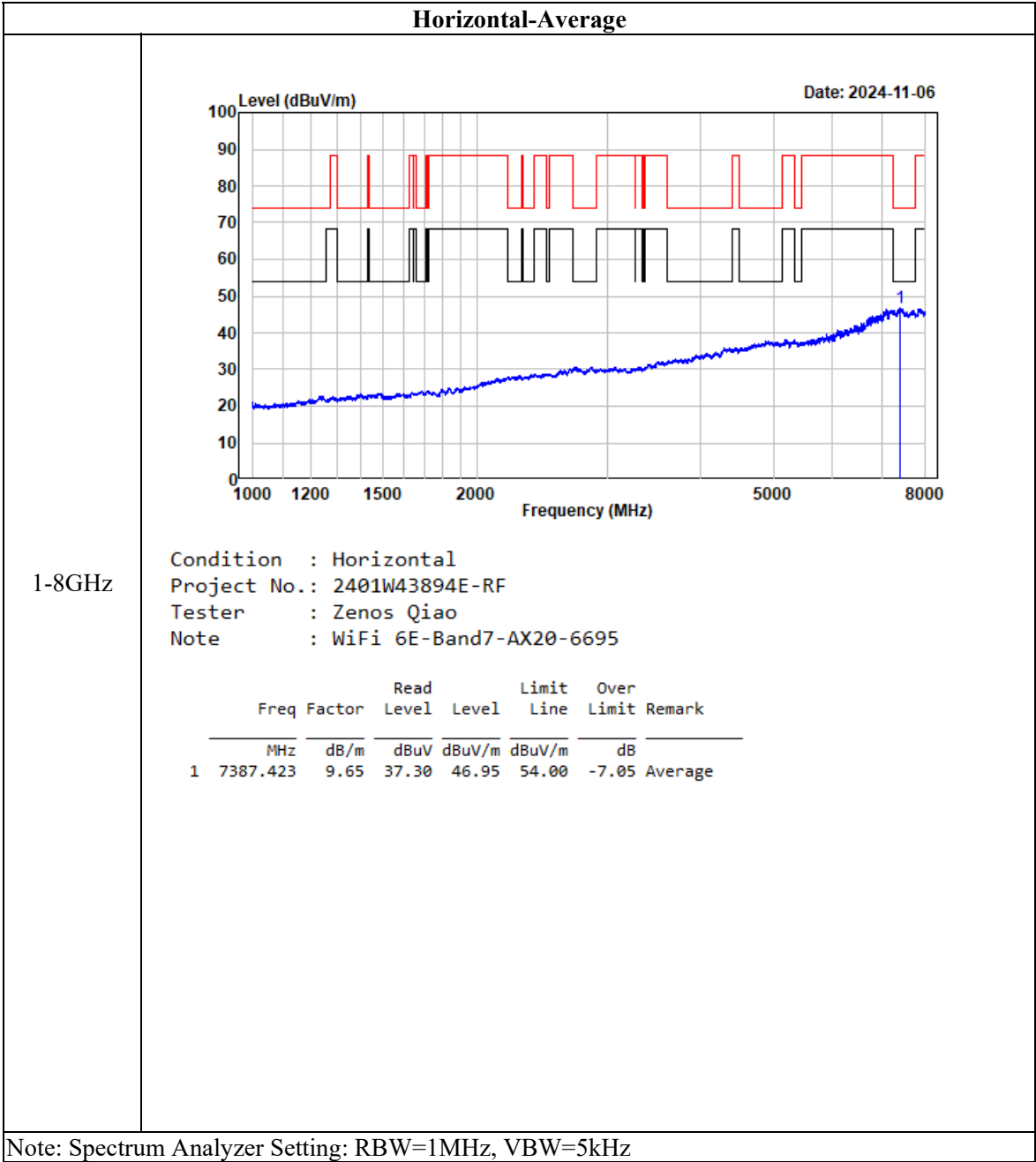


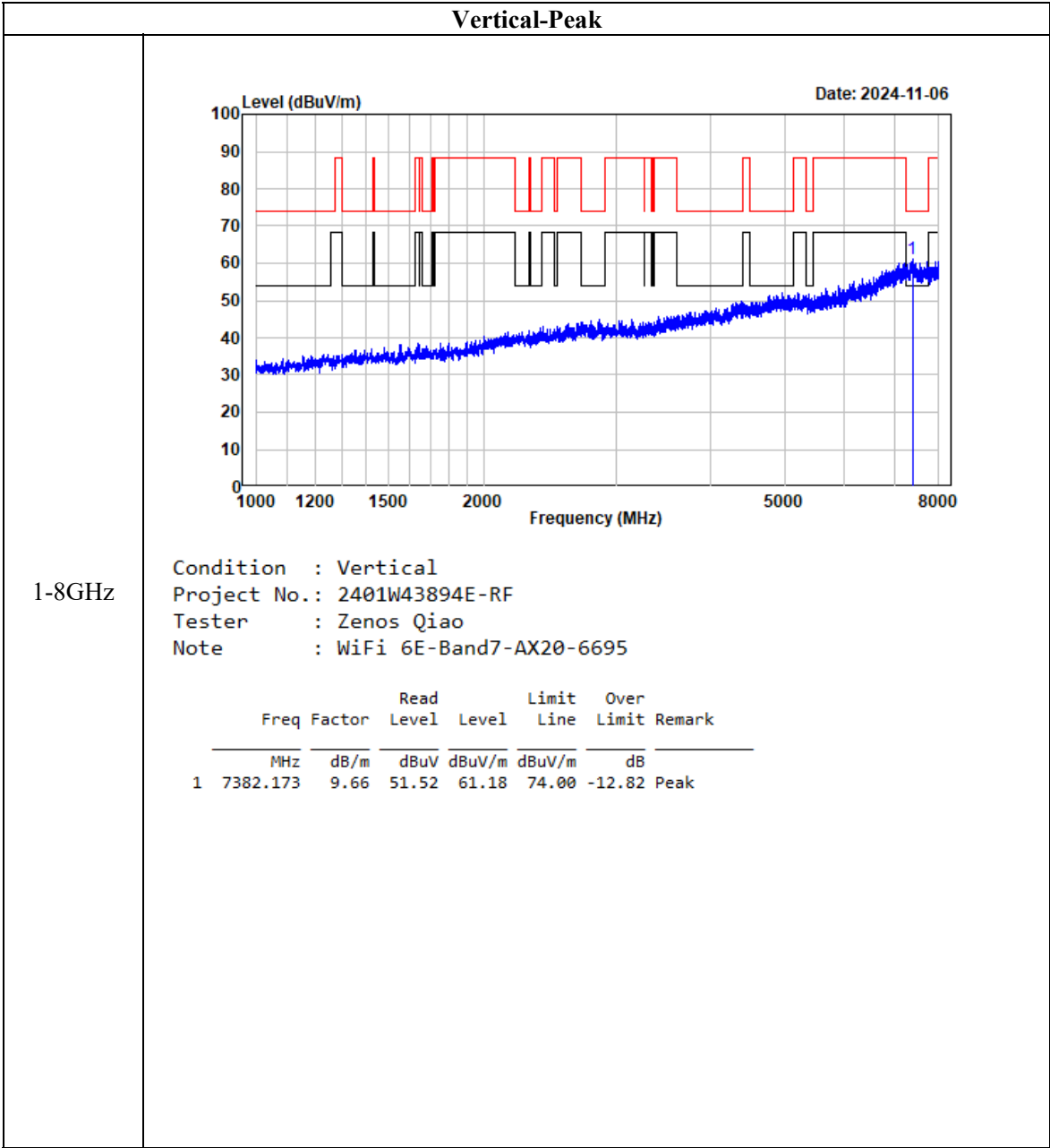


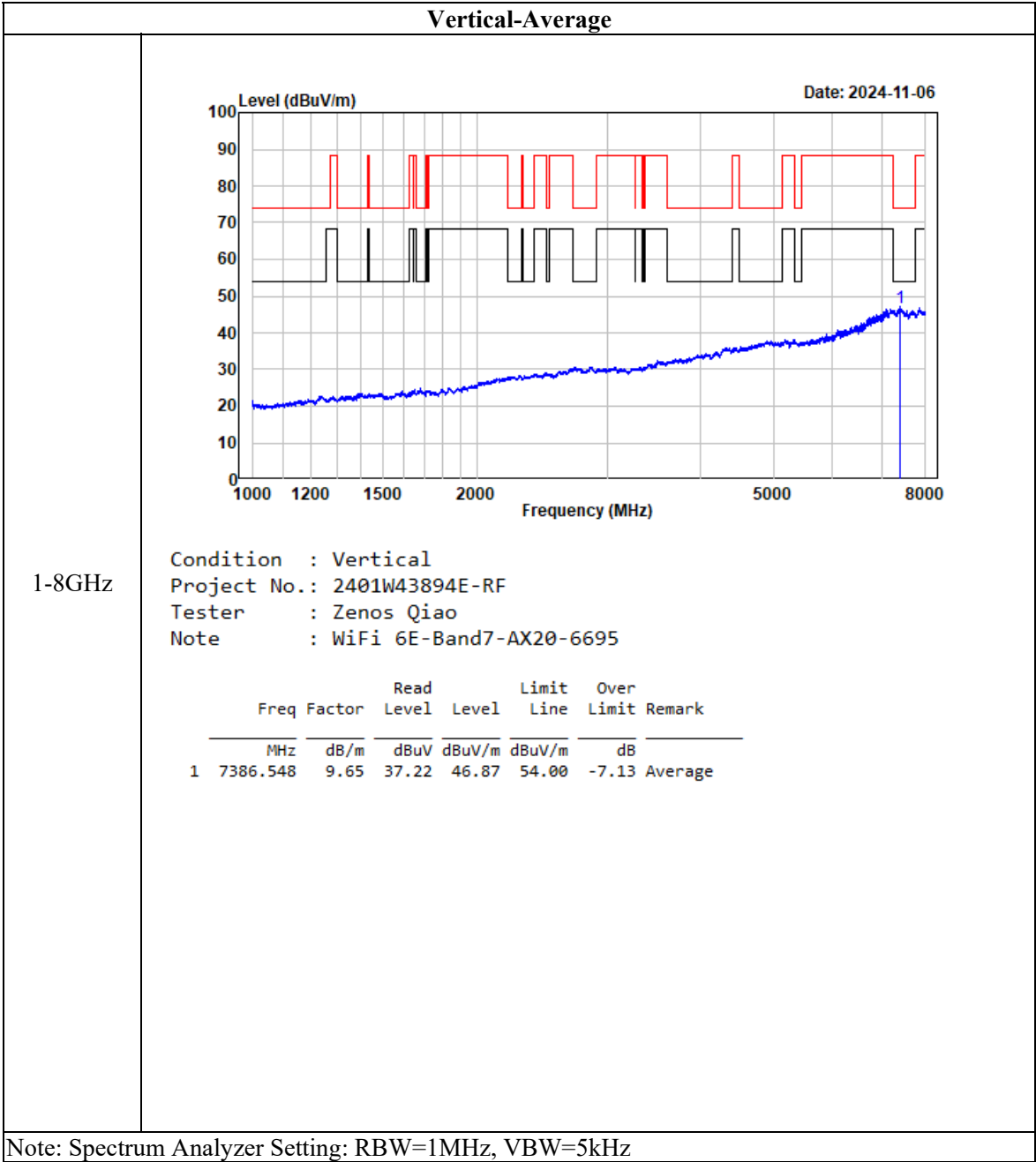


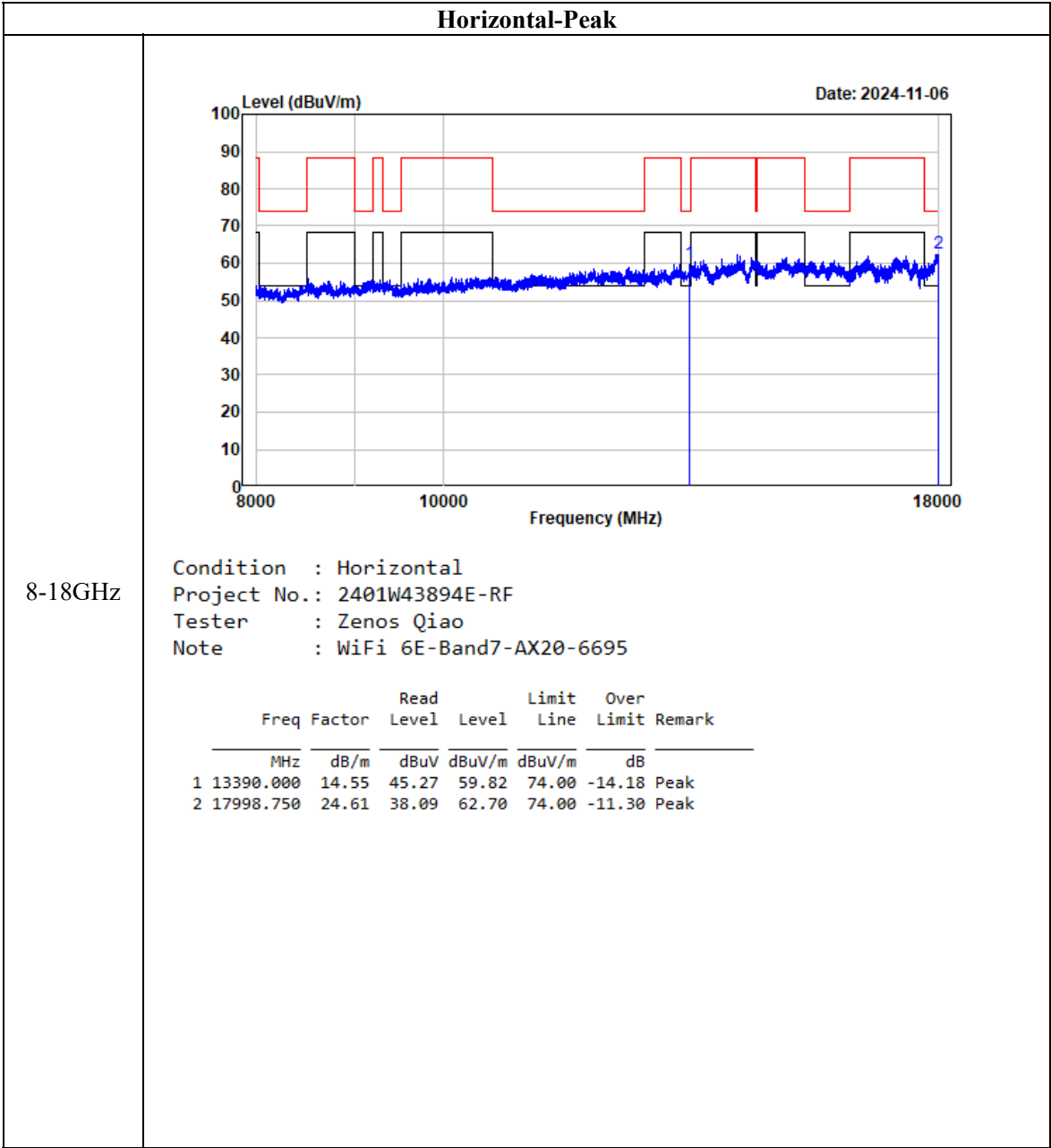
802.11ax20, 6695MHz

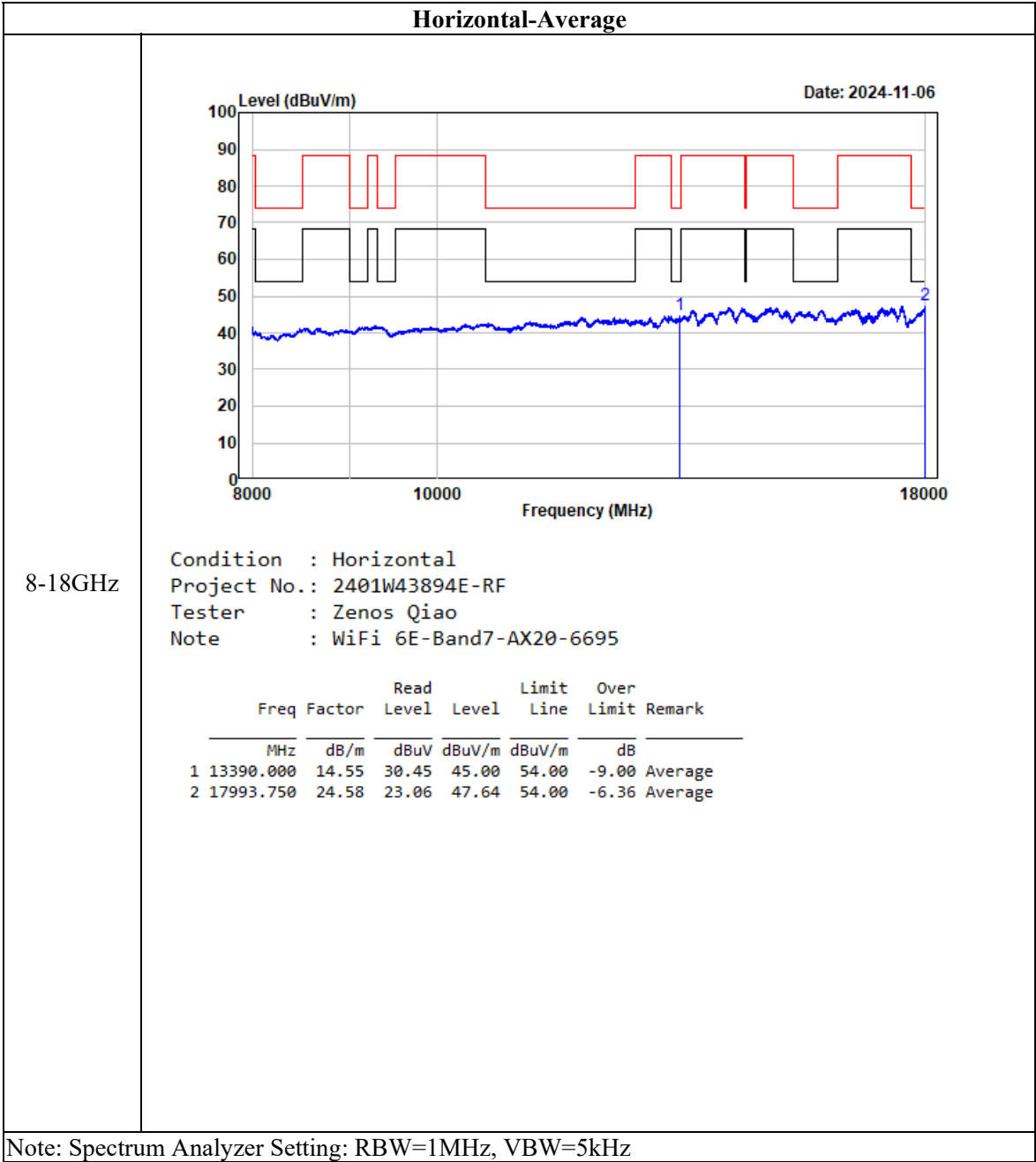


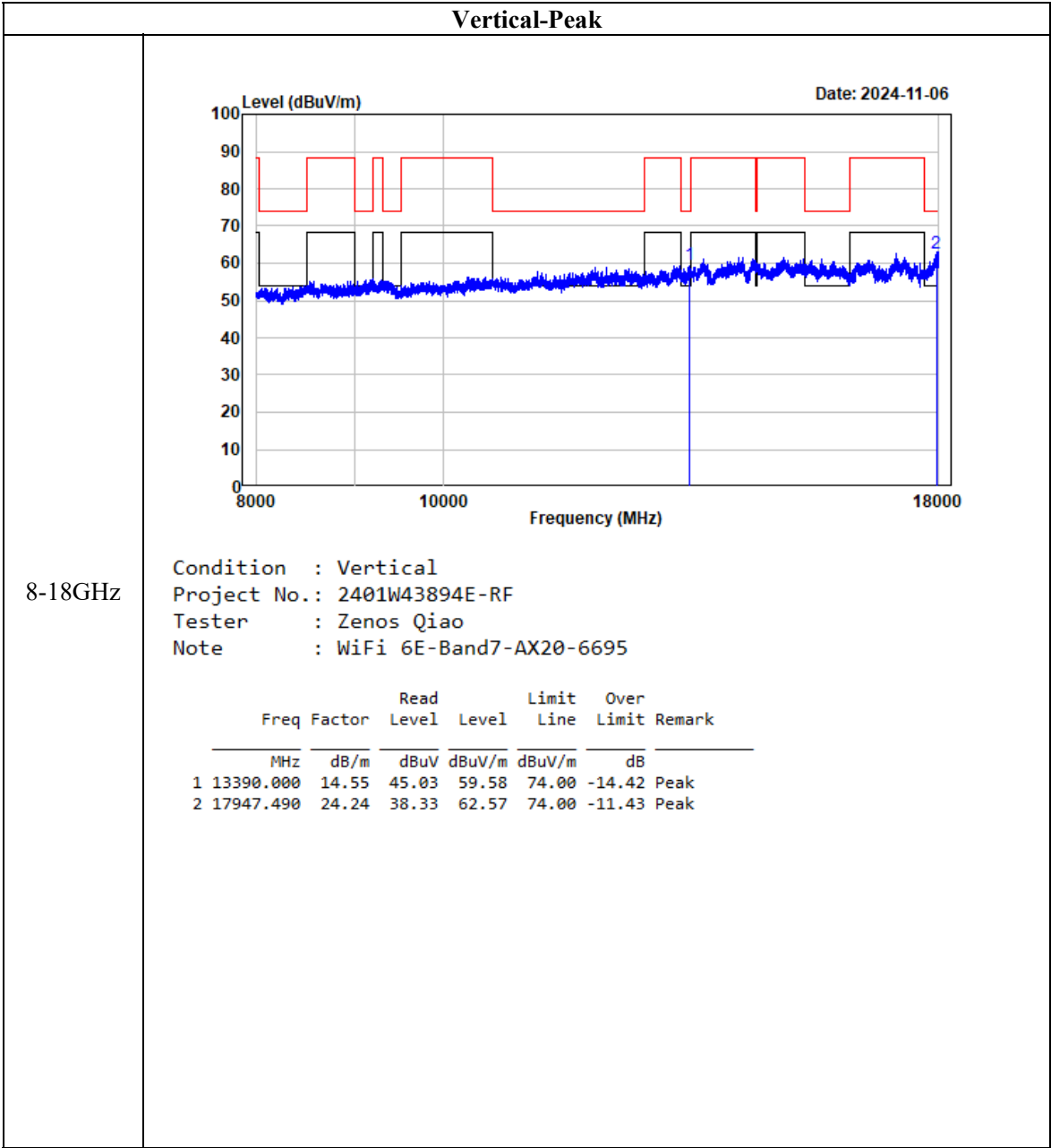


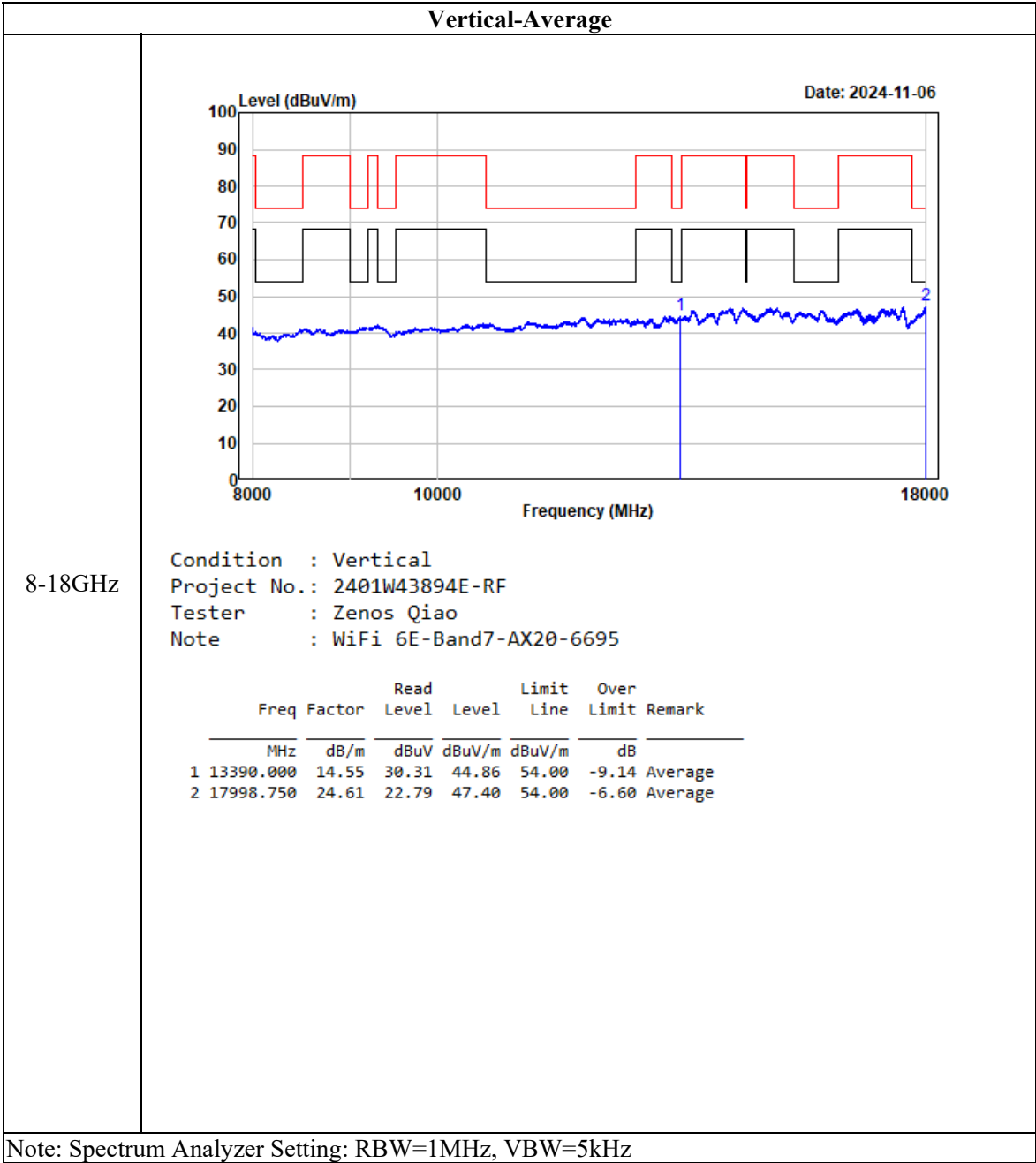




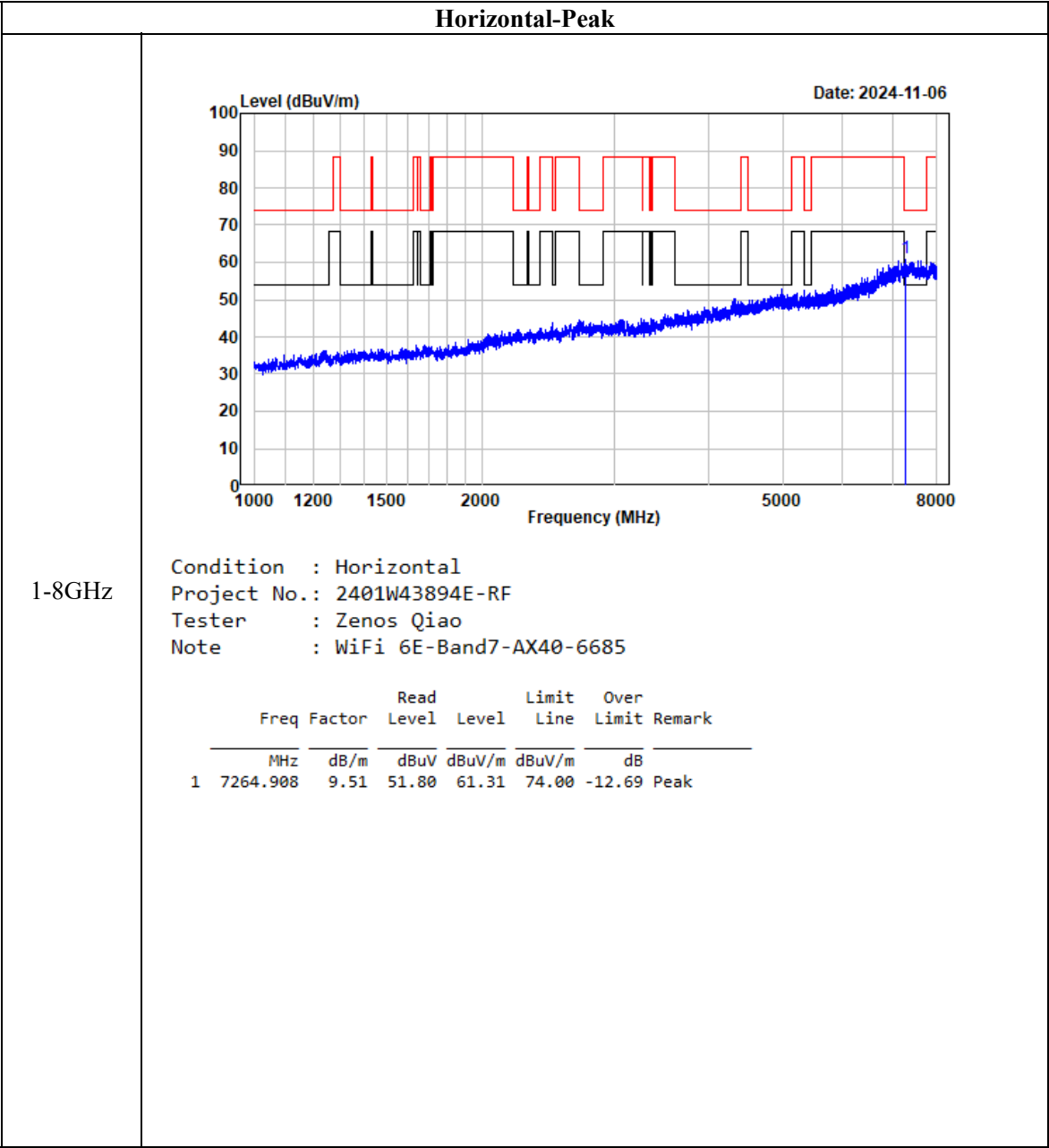


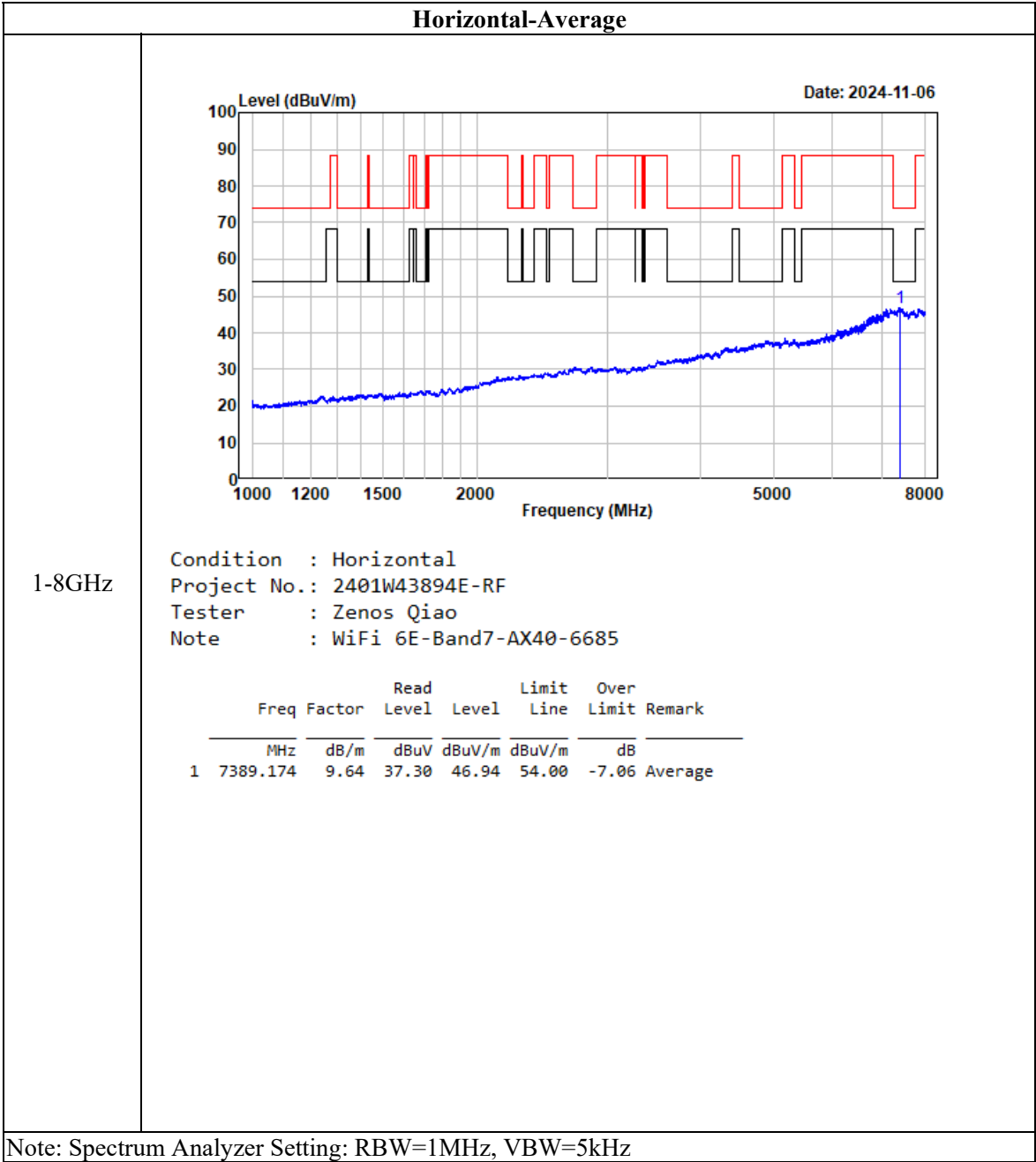


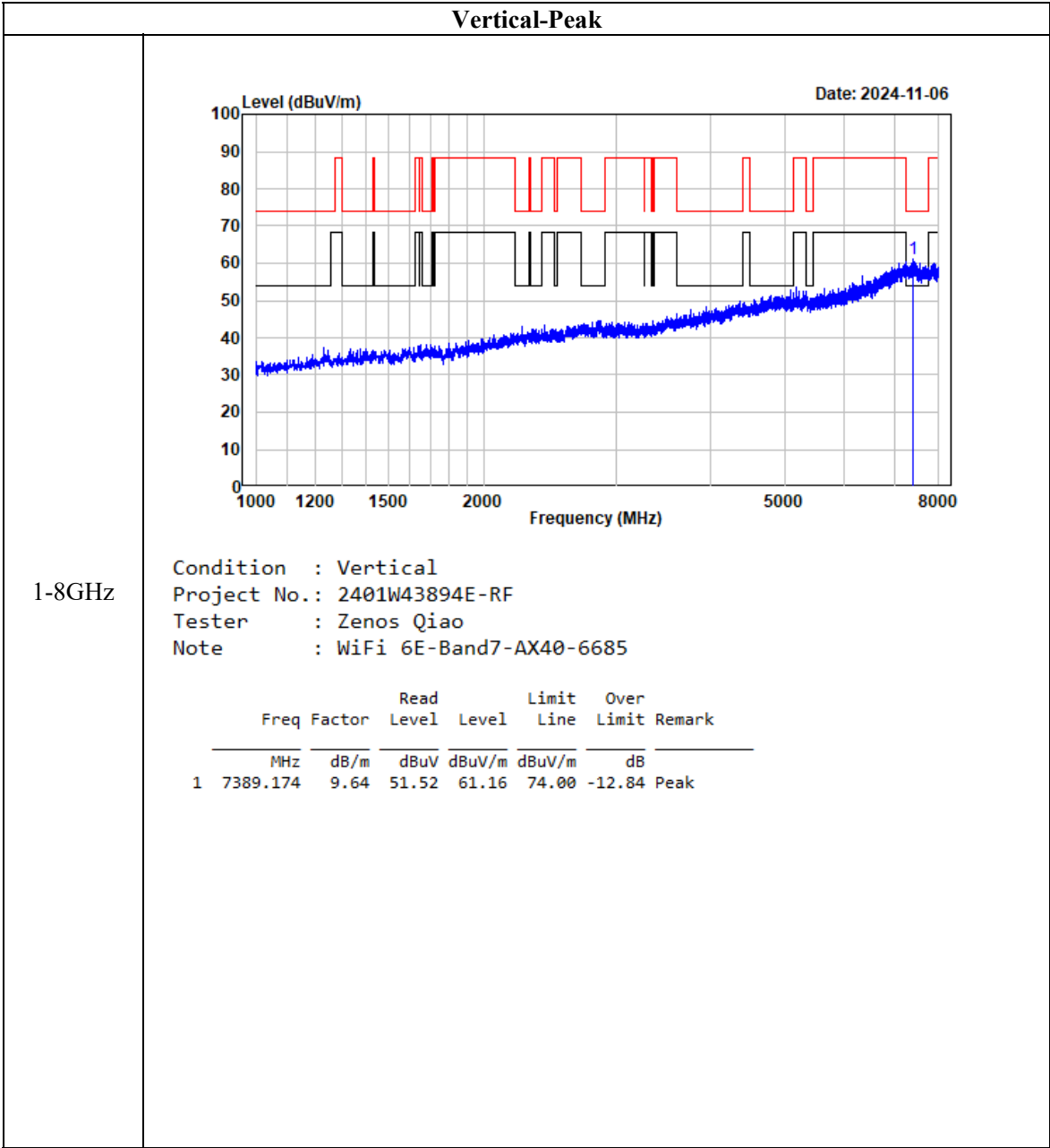


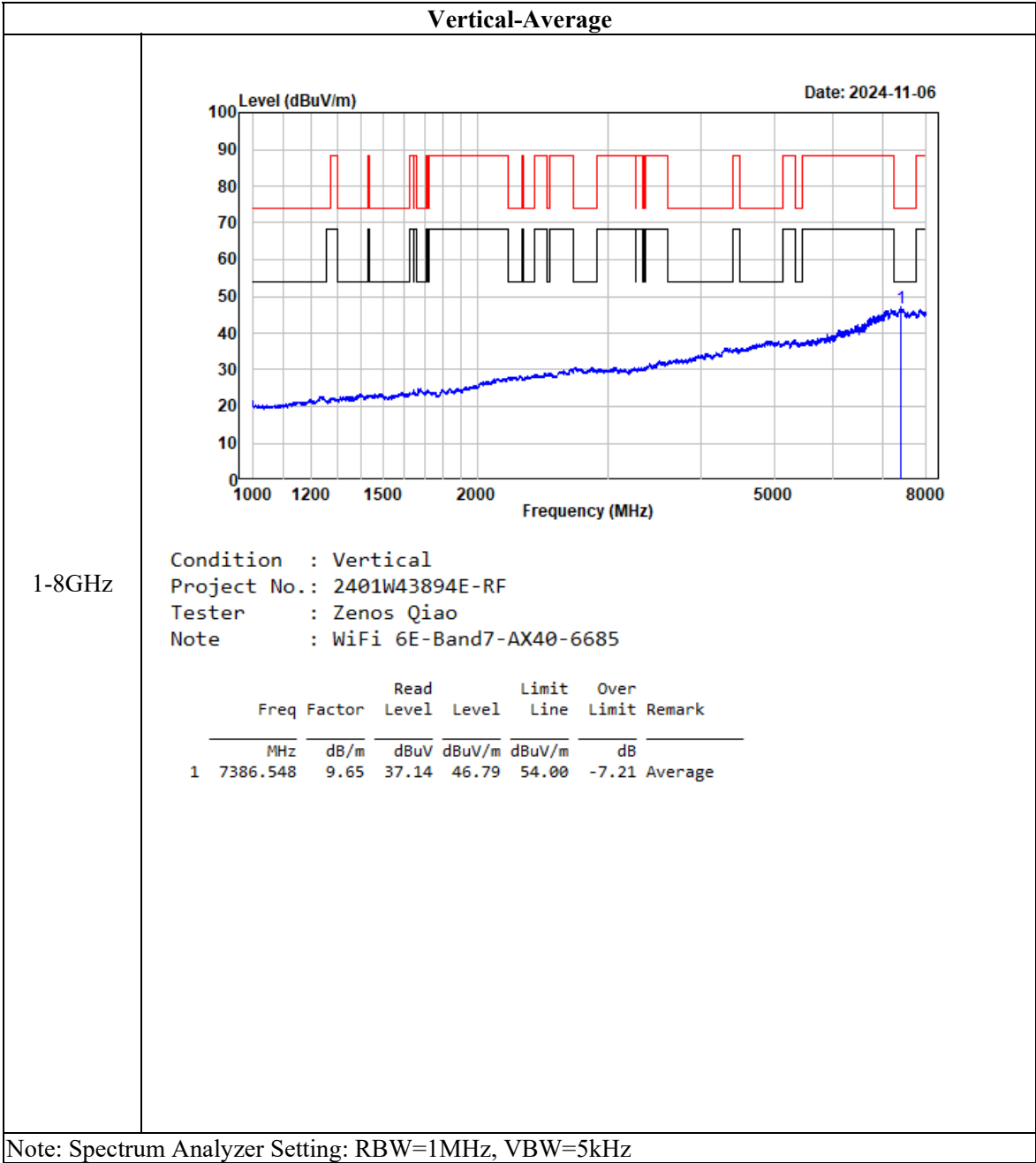


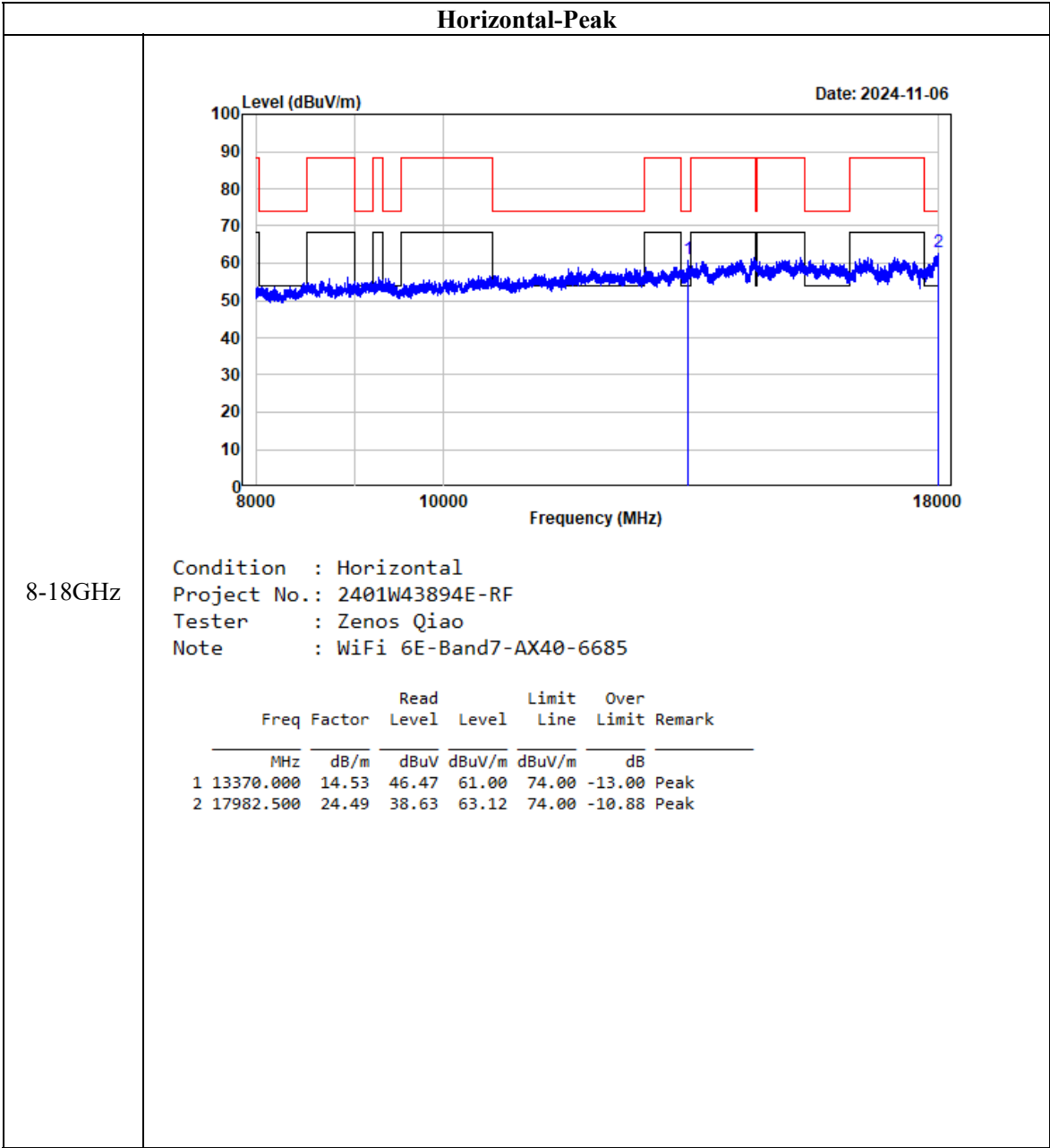
802.11ax40, 6685MHz

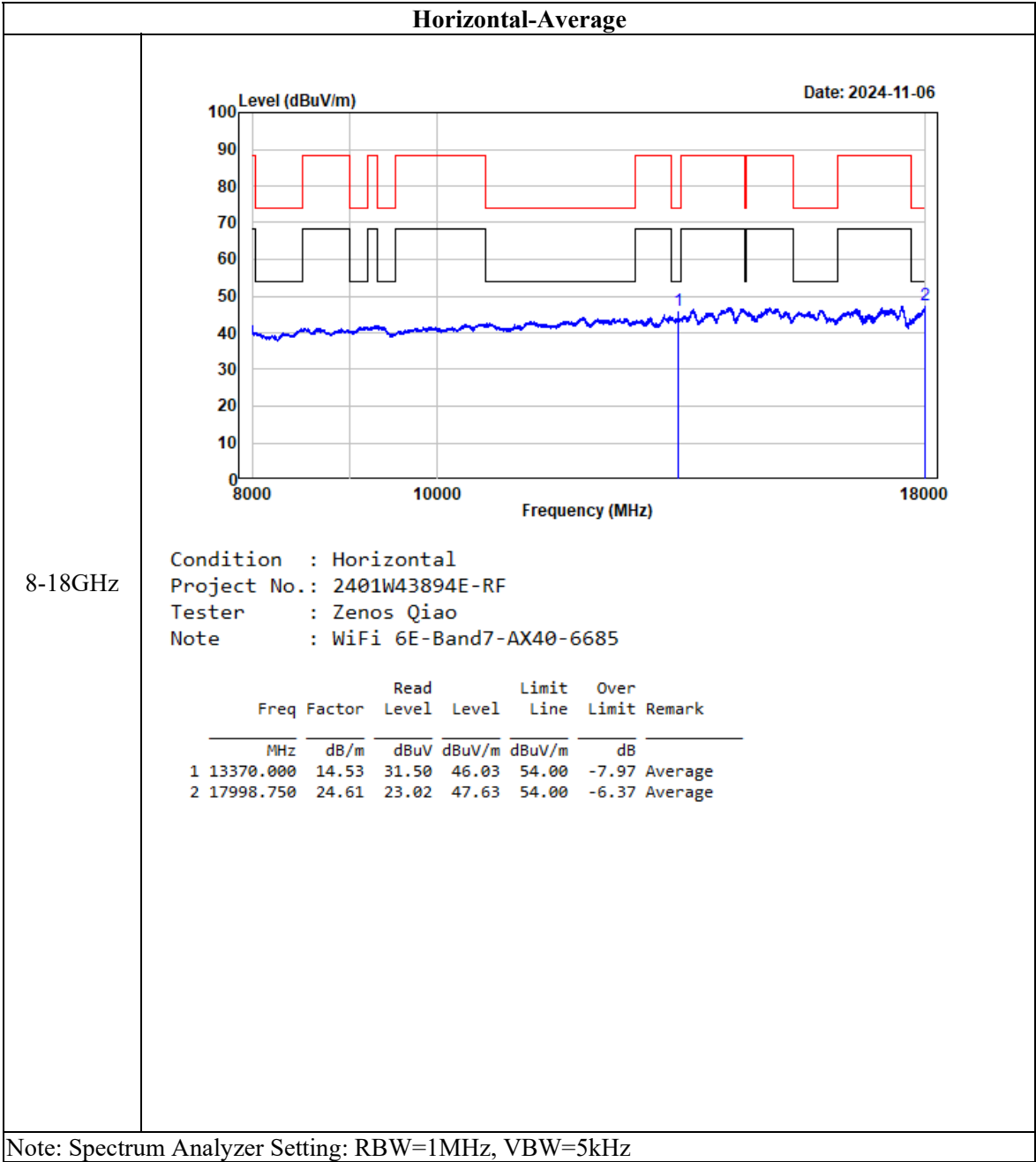


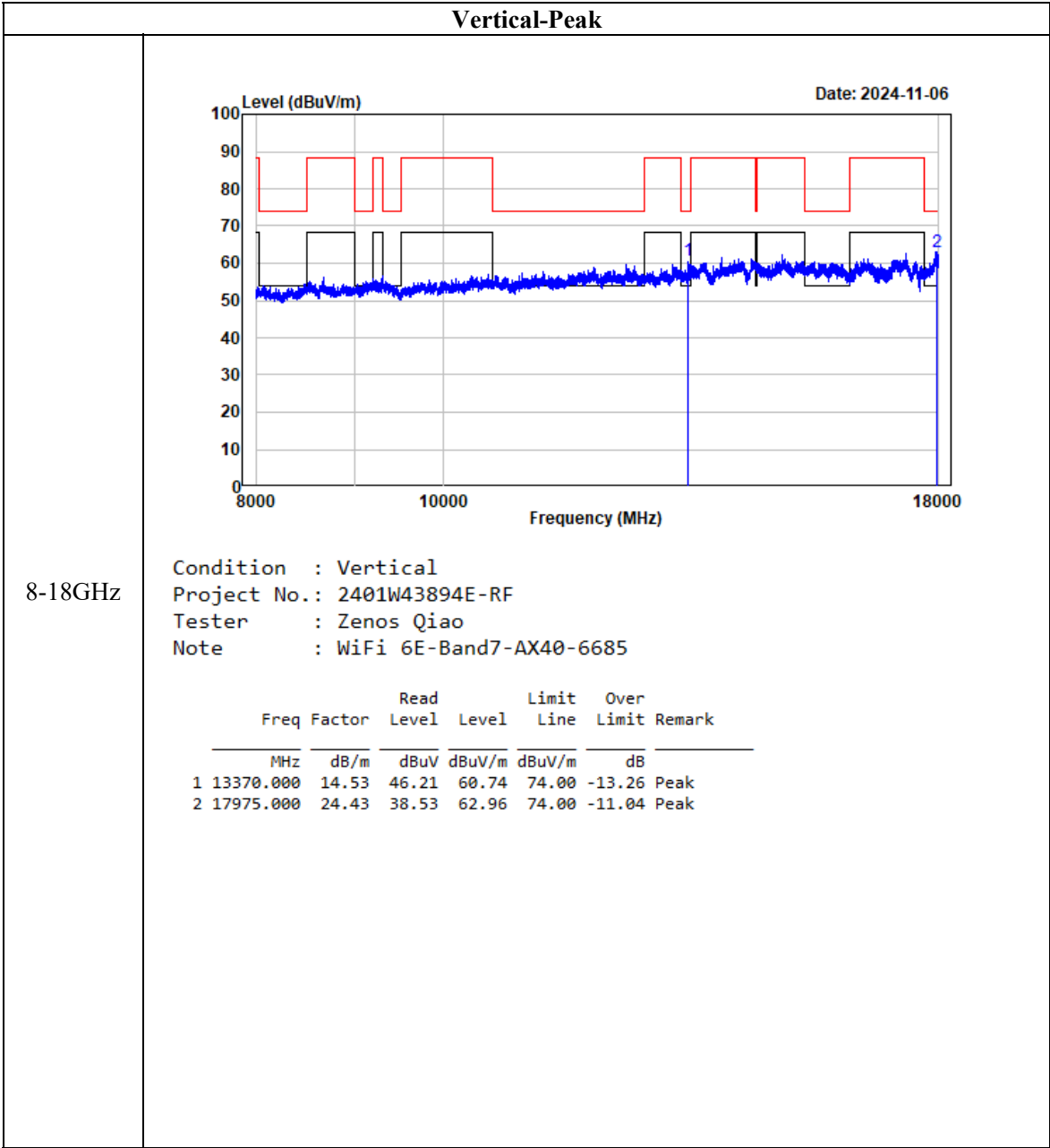


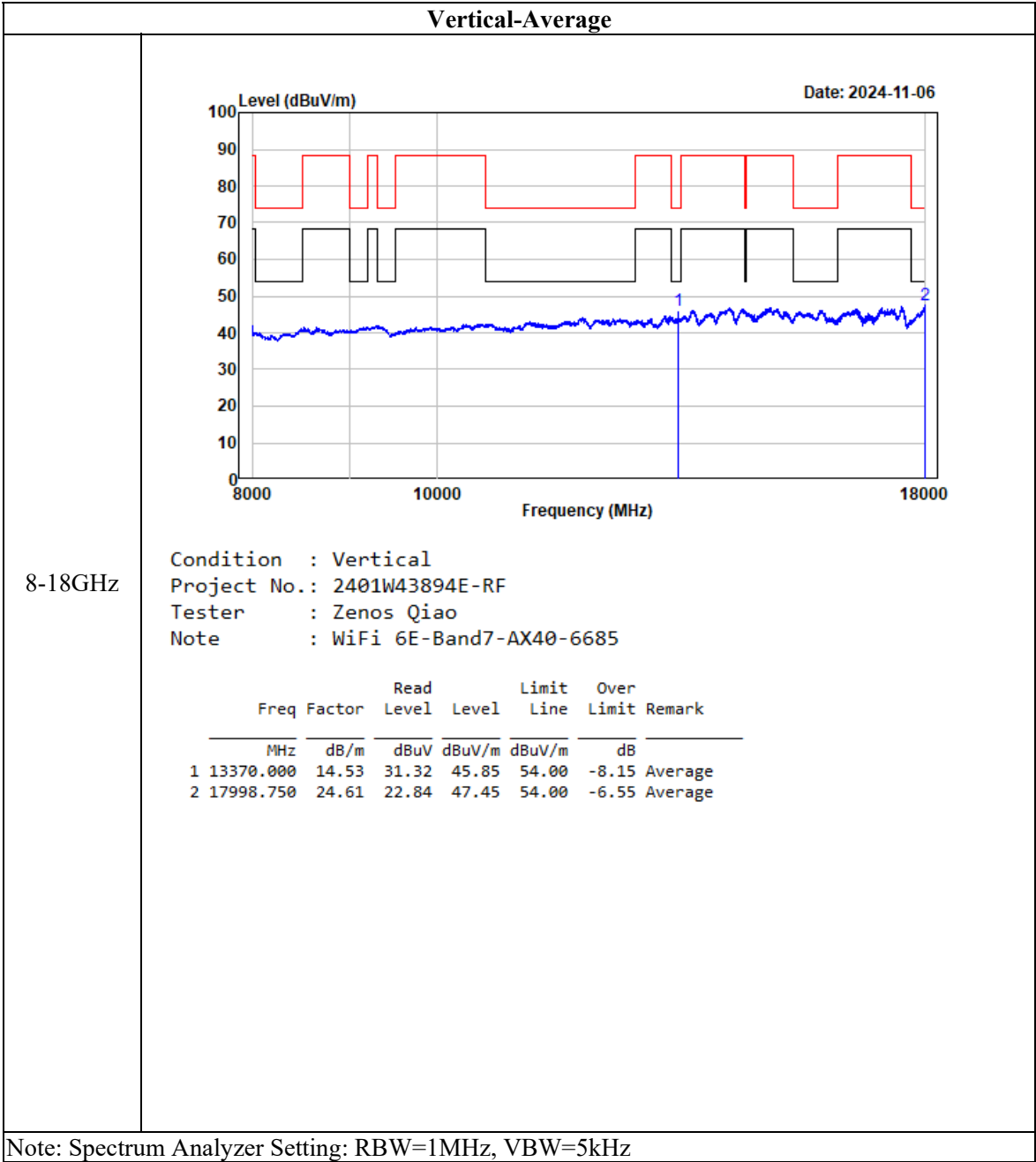




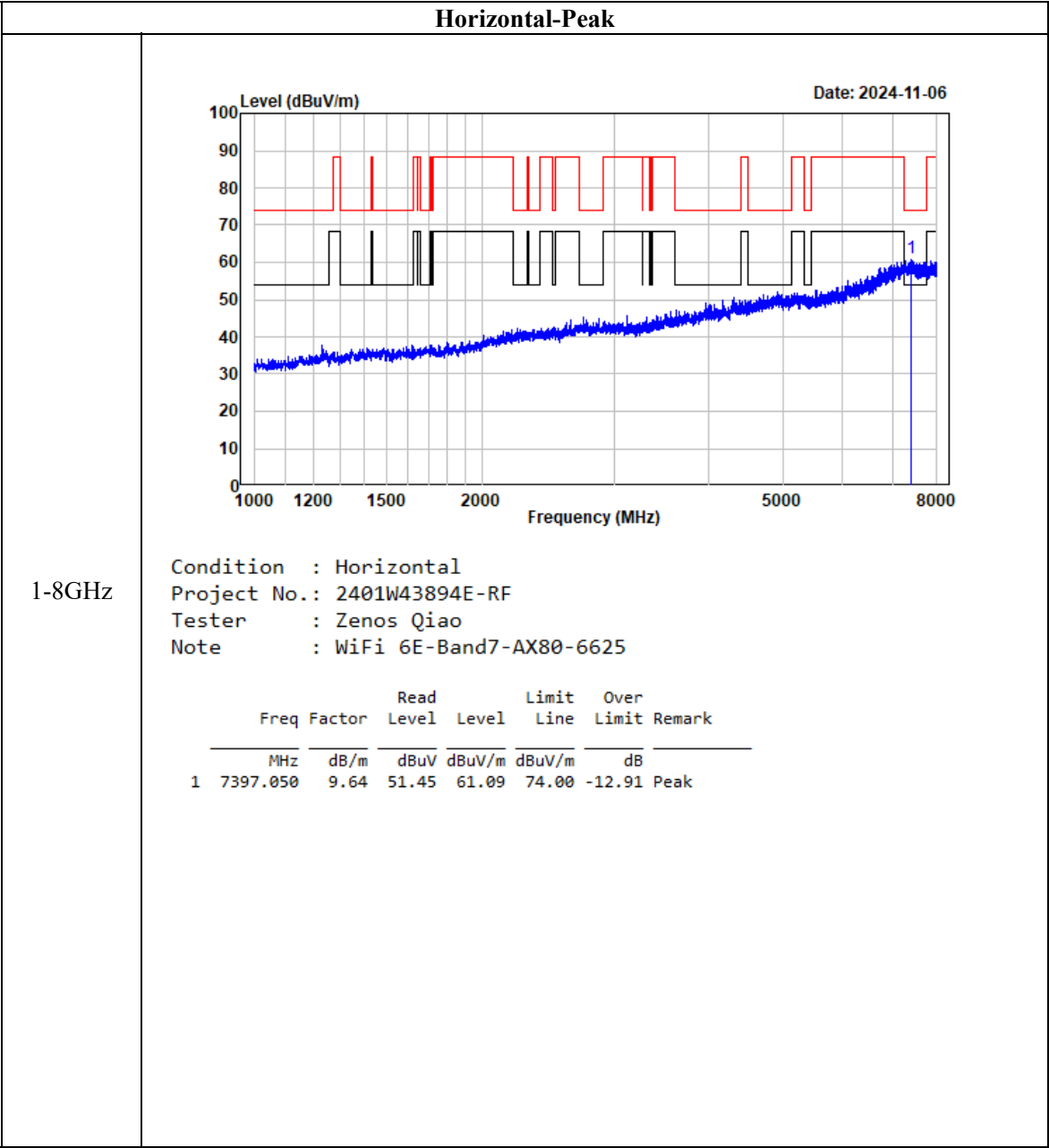


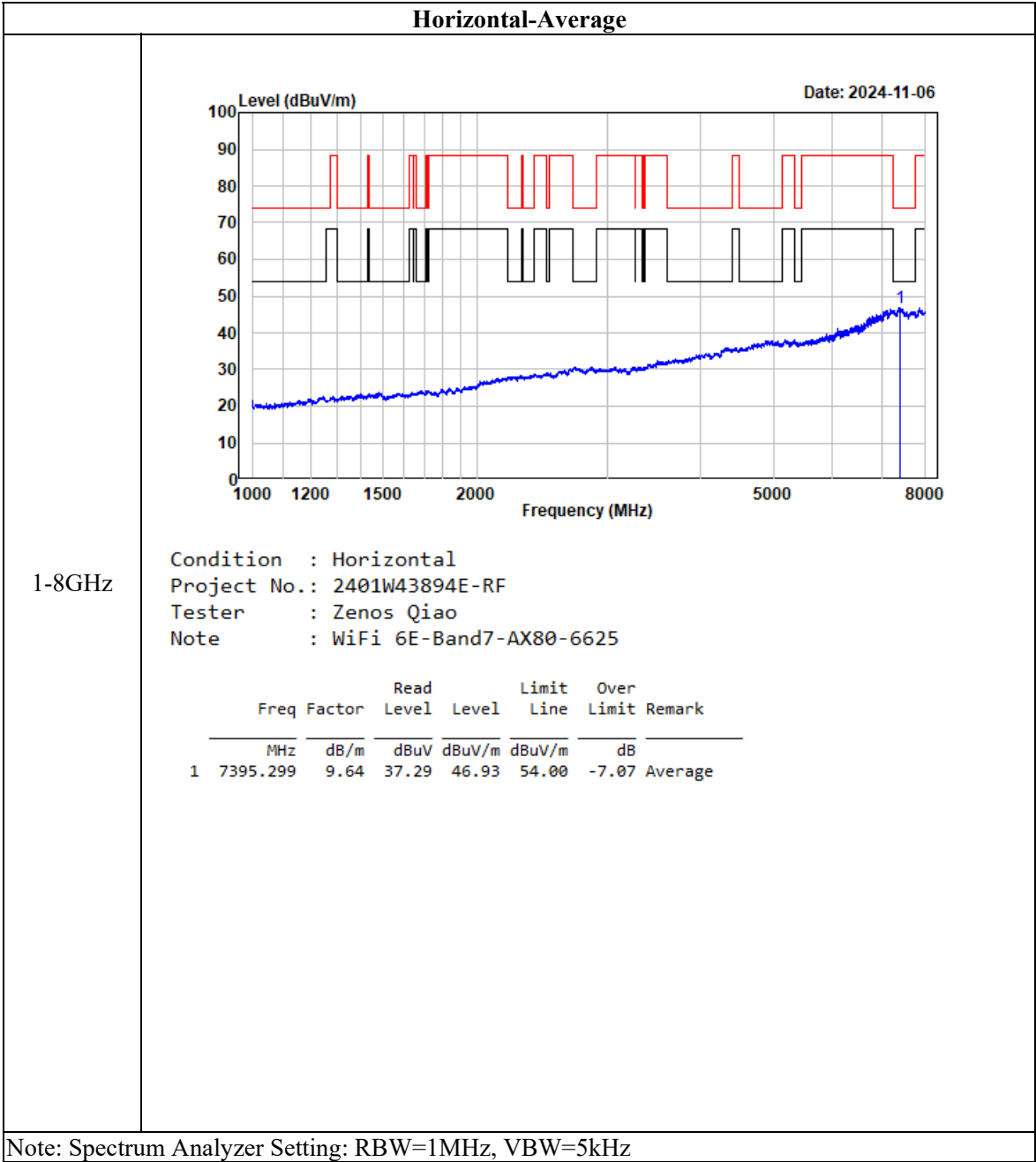


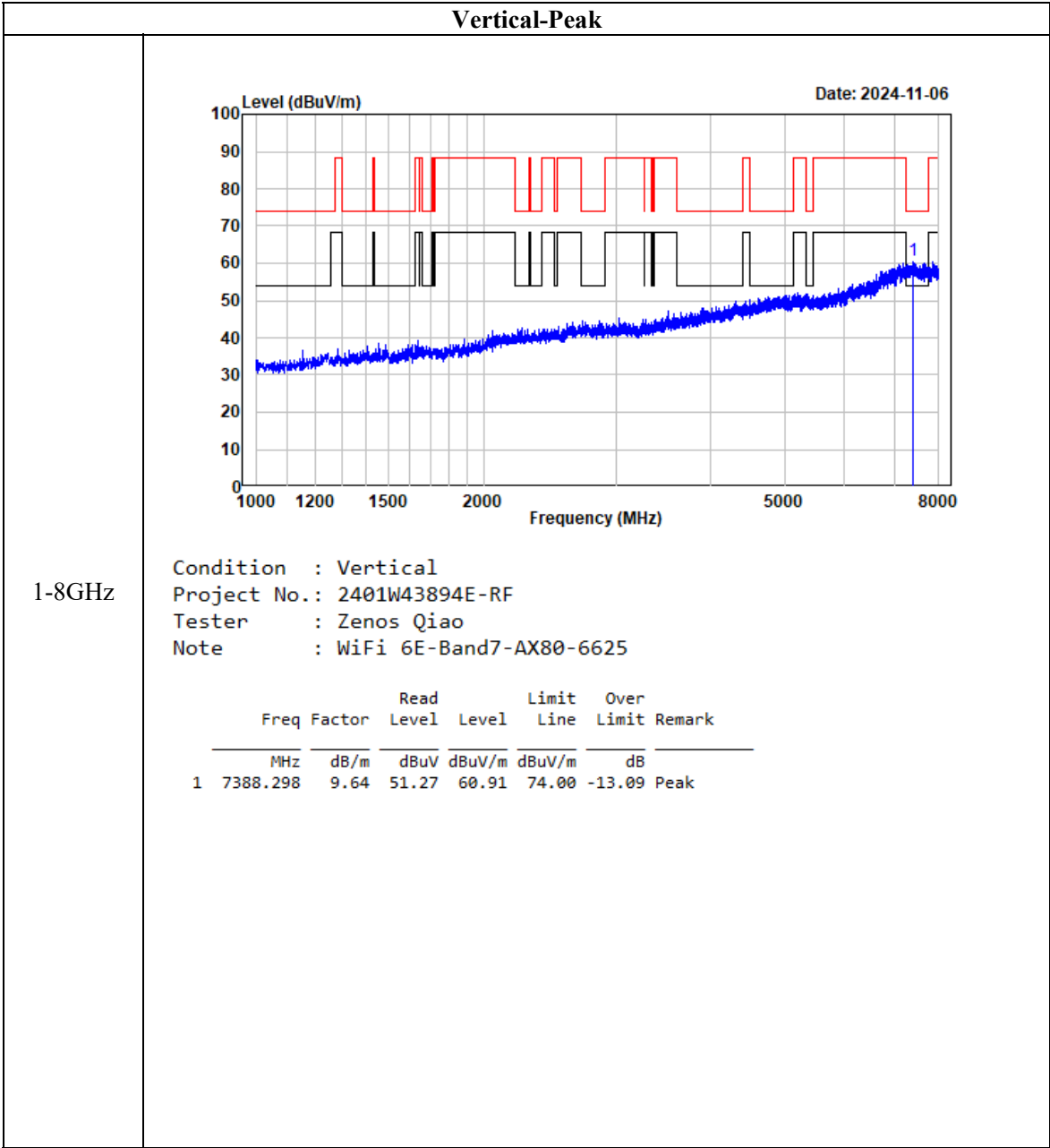


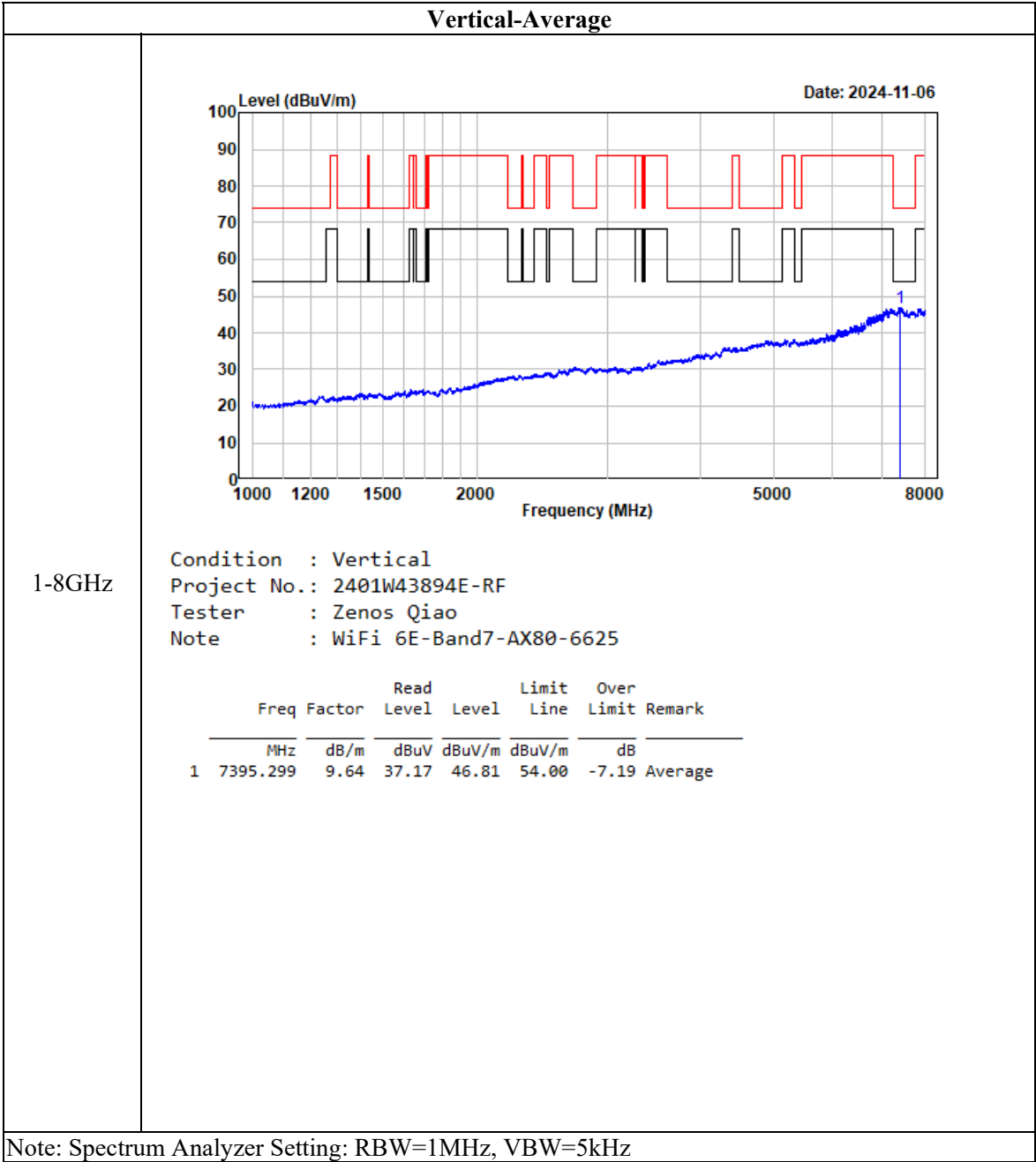


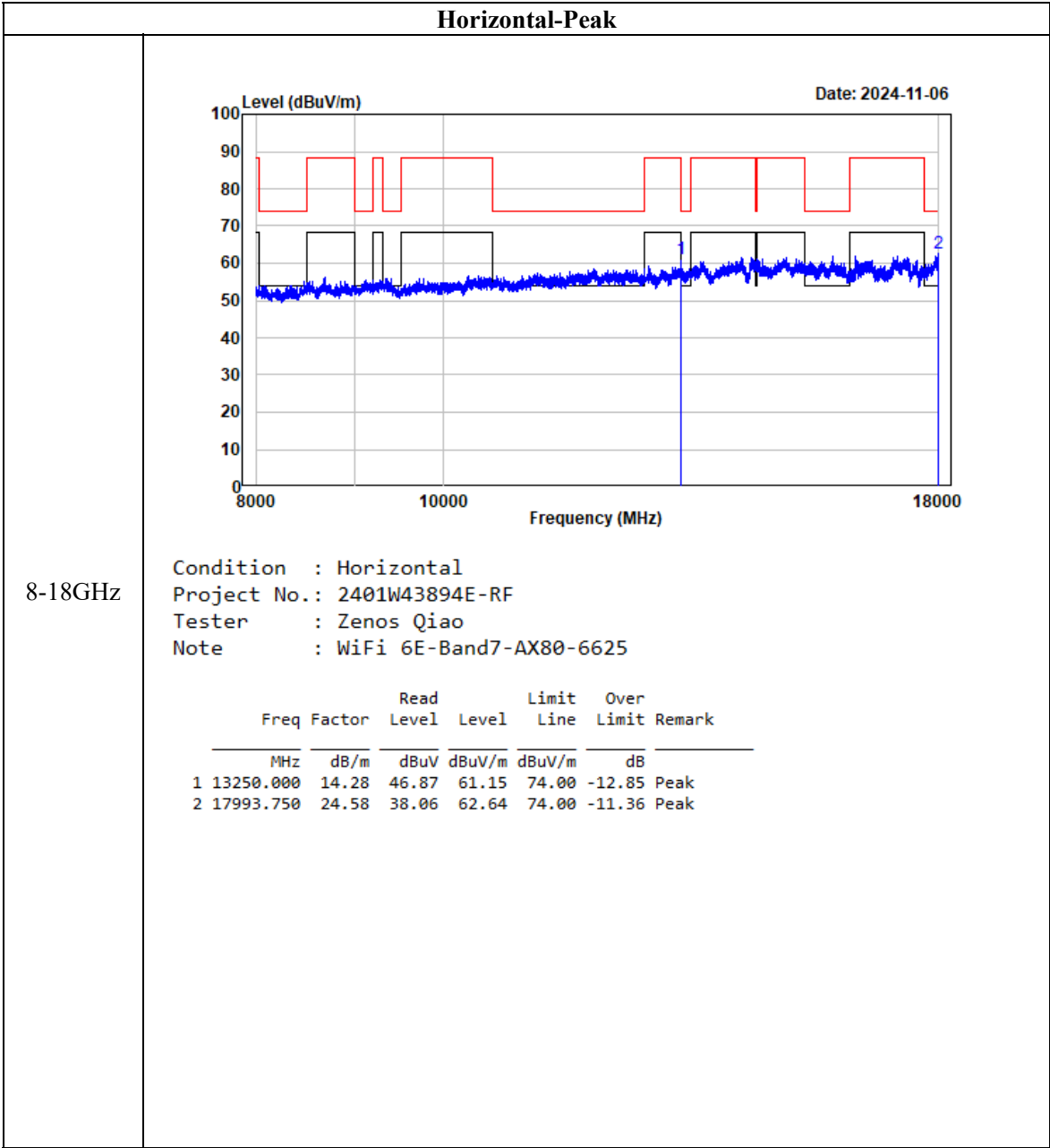
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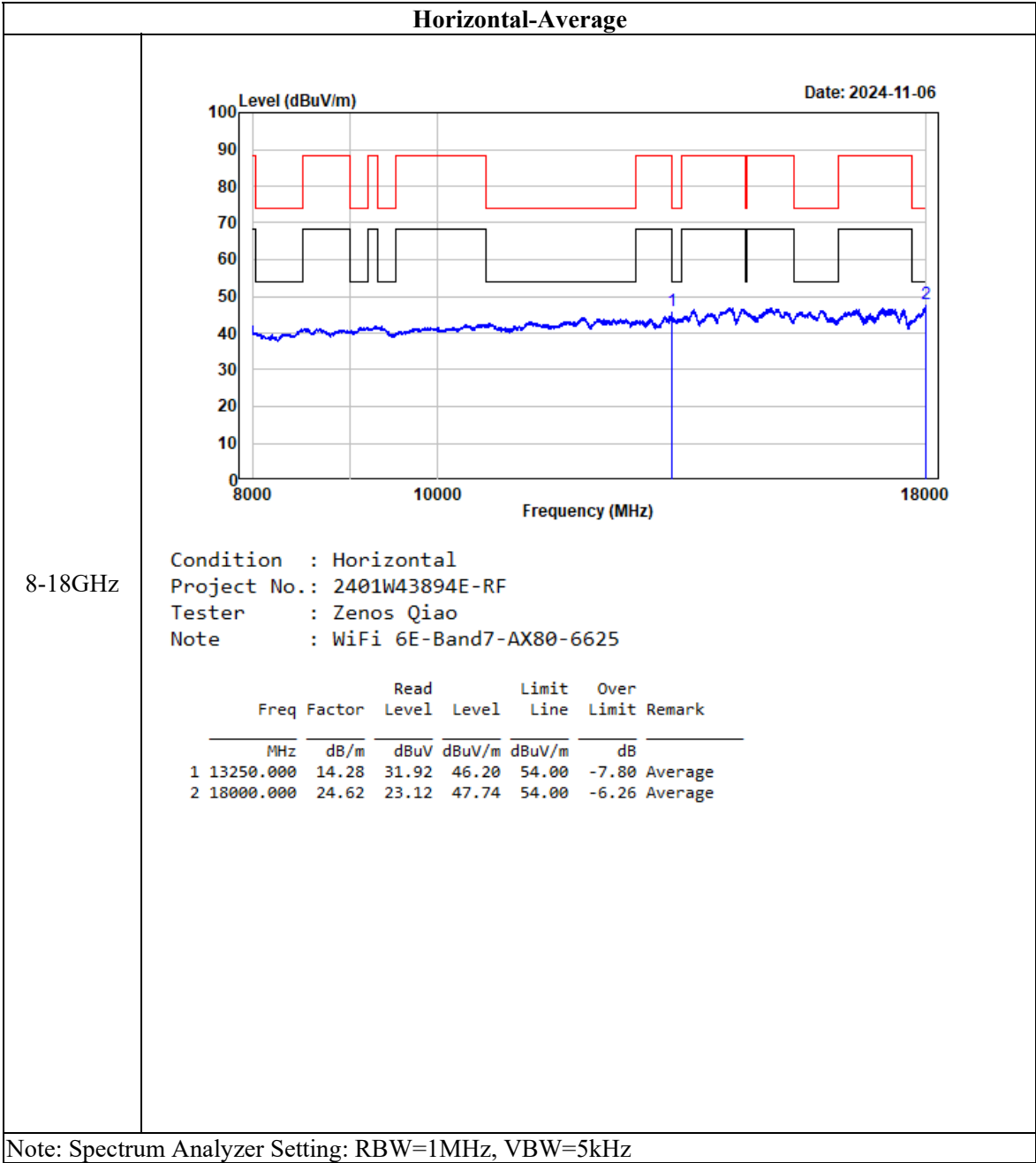


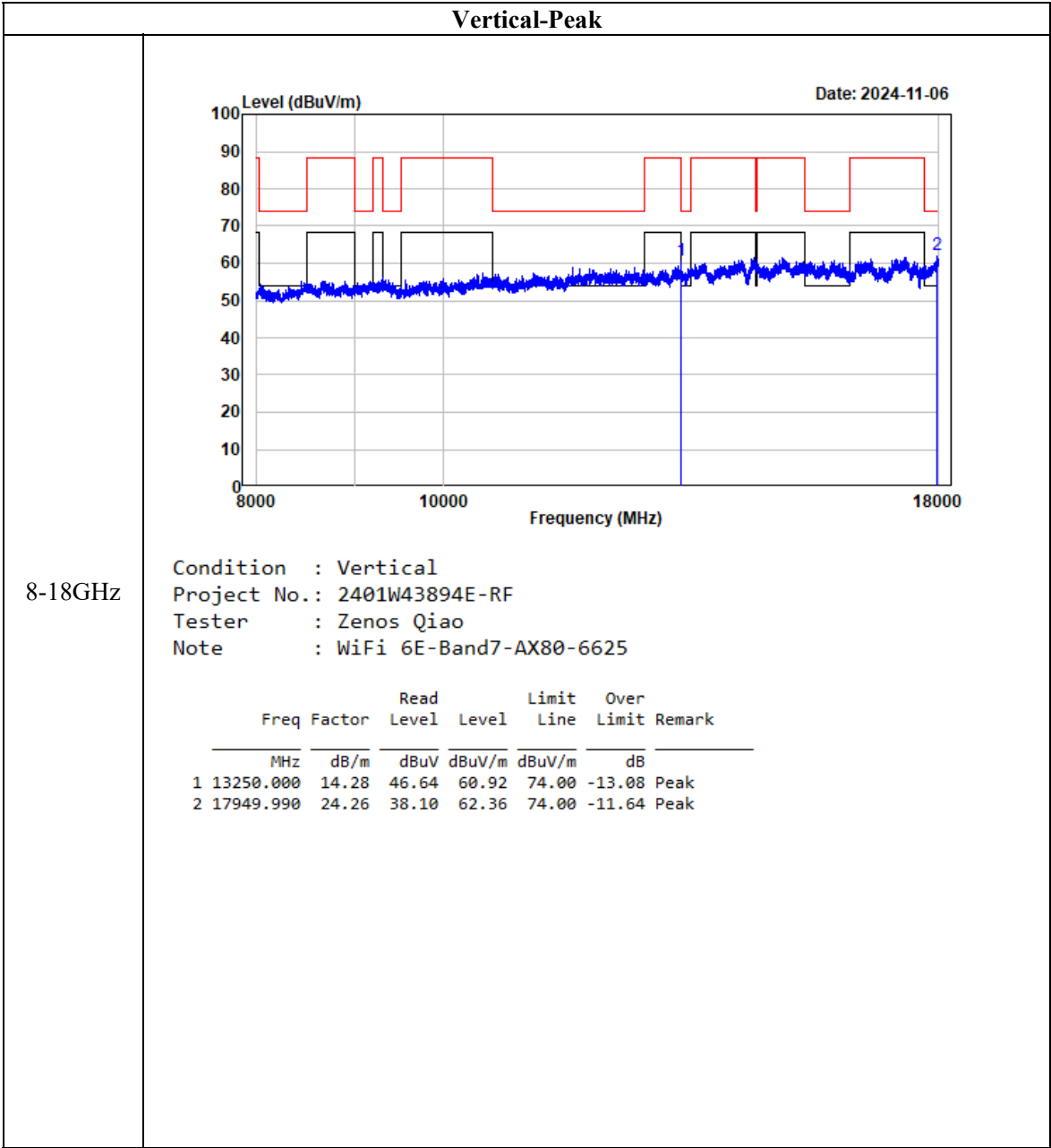


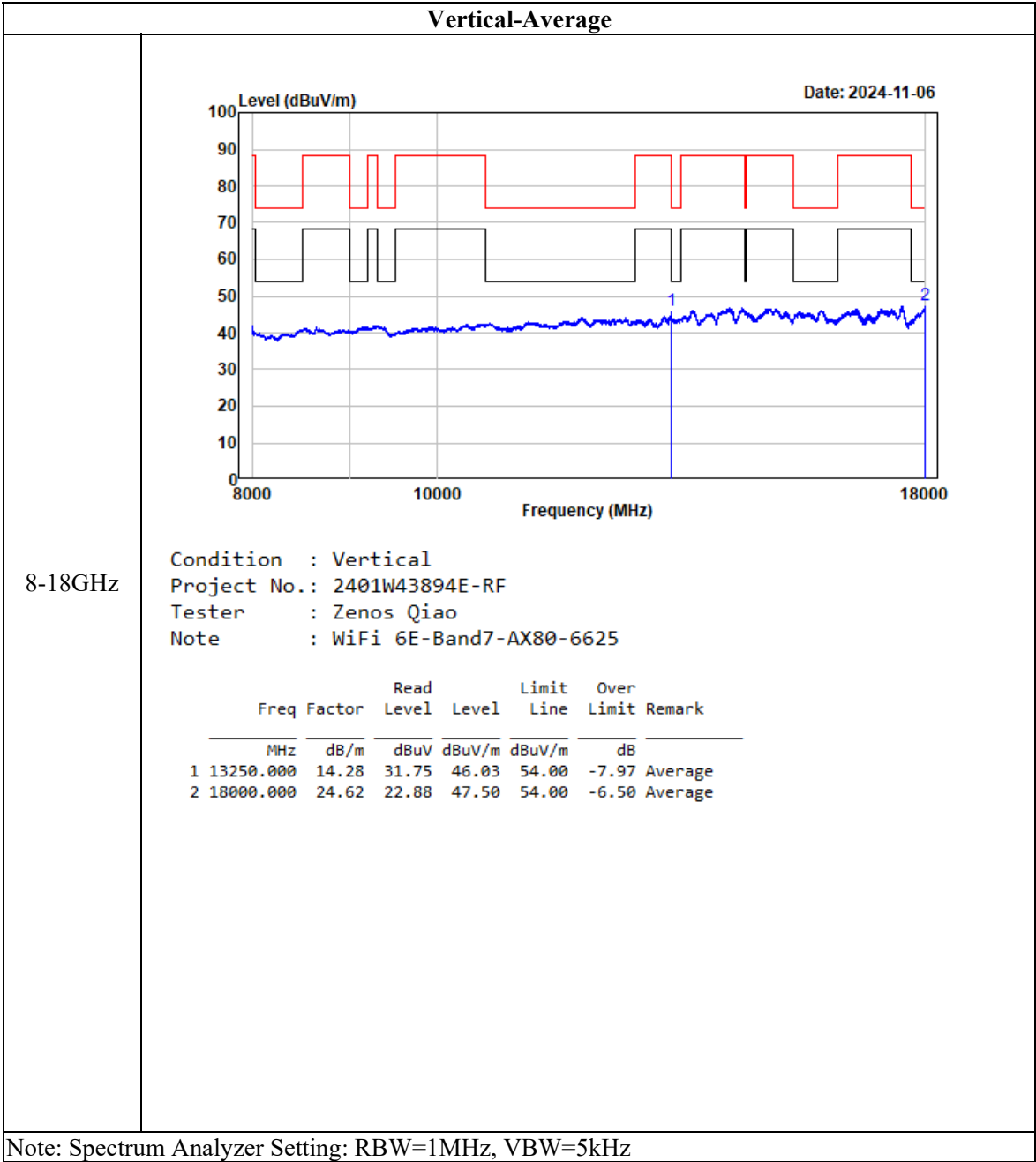




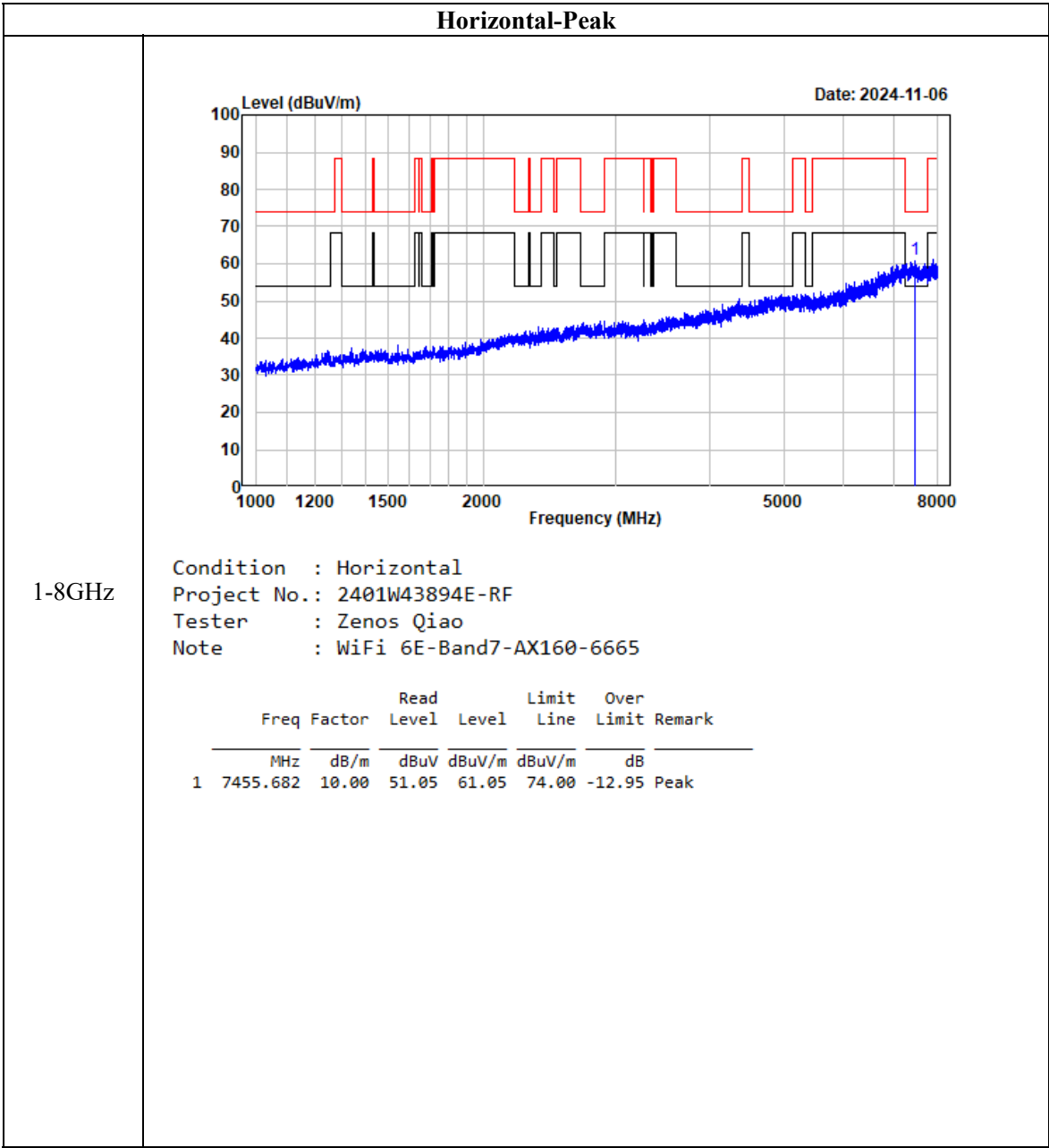


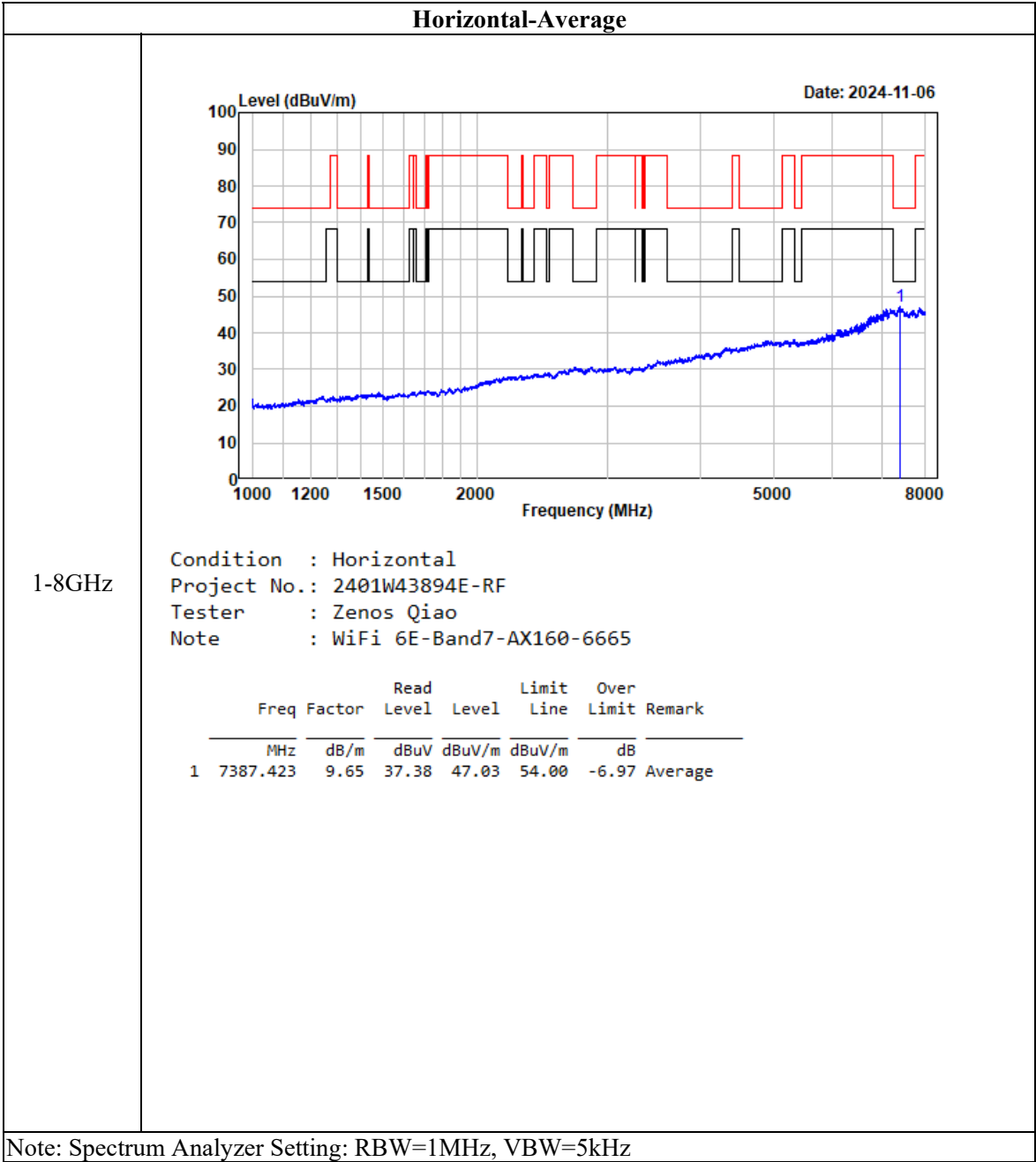


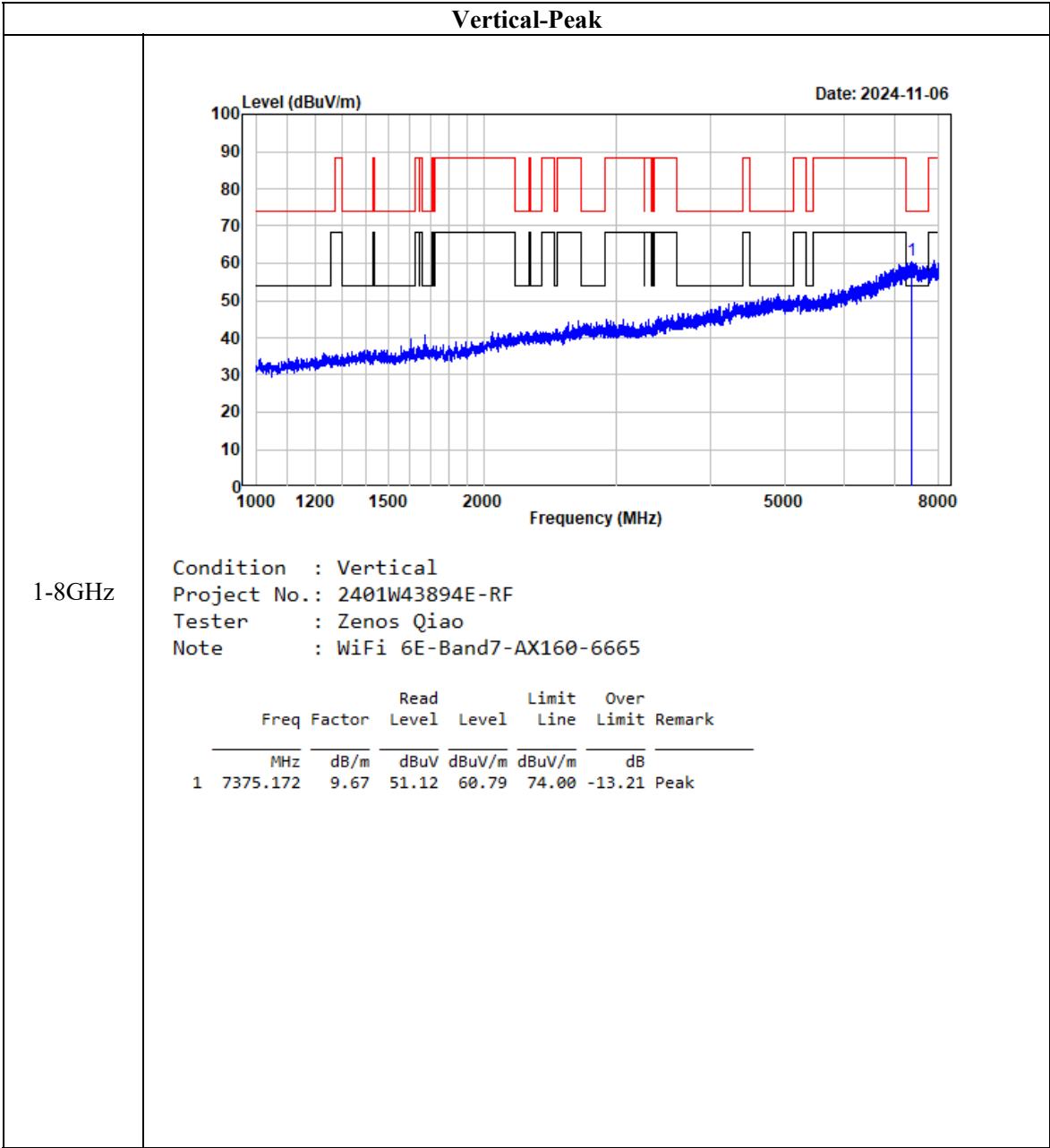


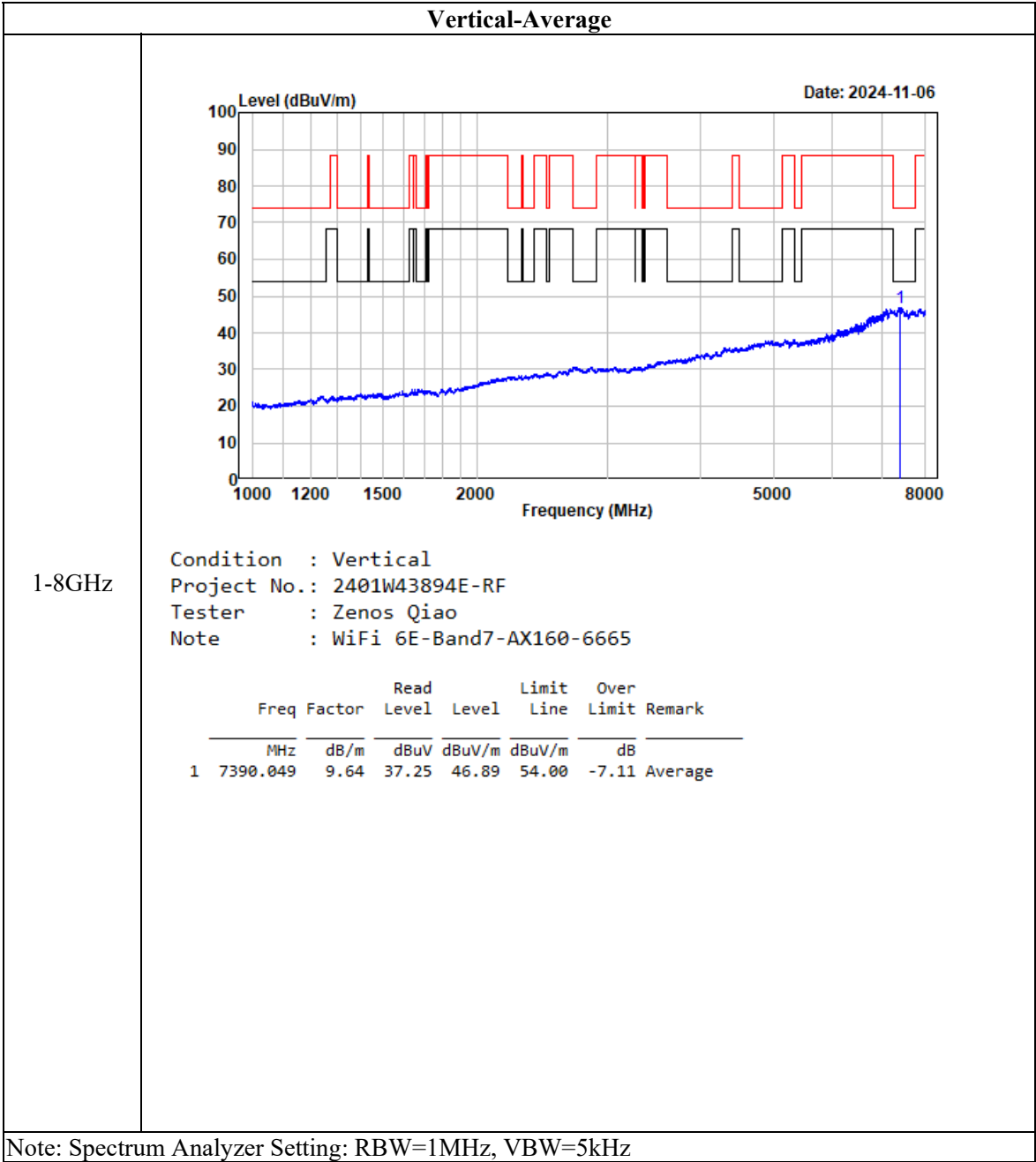


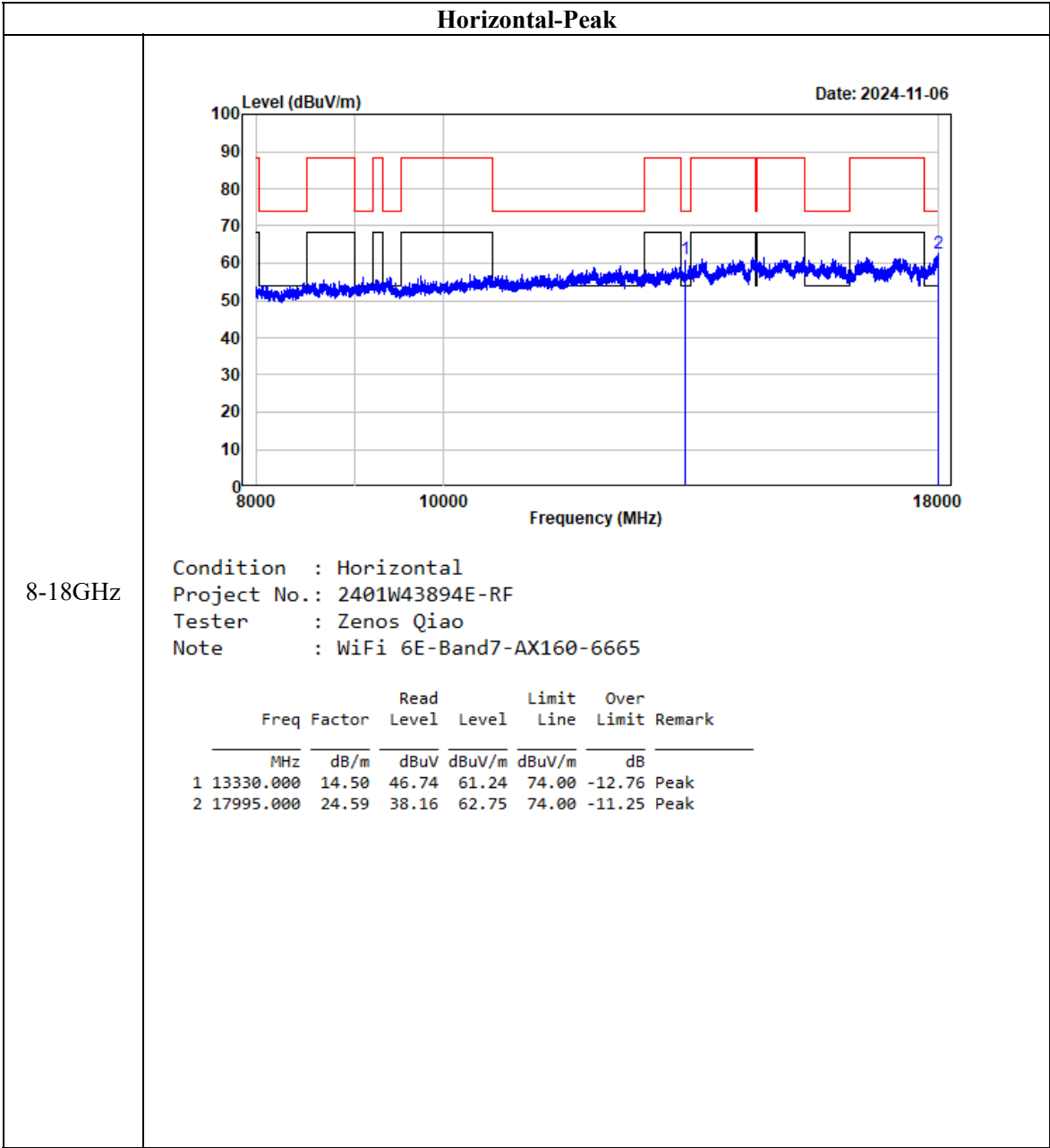
802.11ax160, 6665MHz

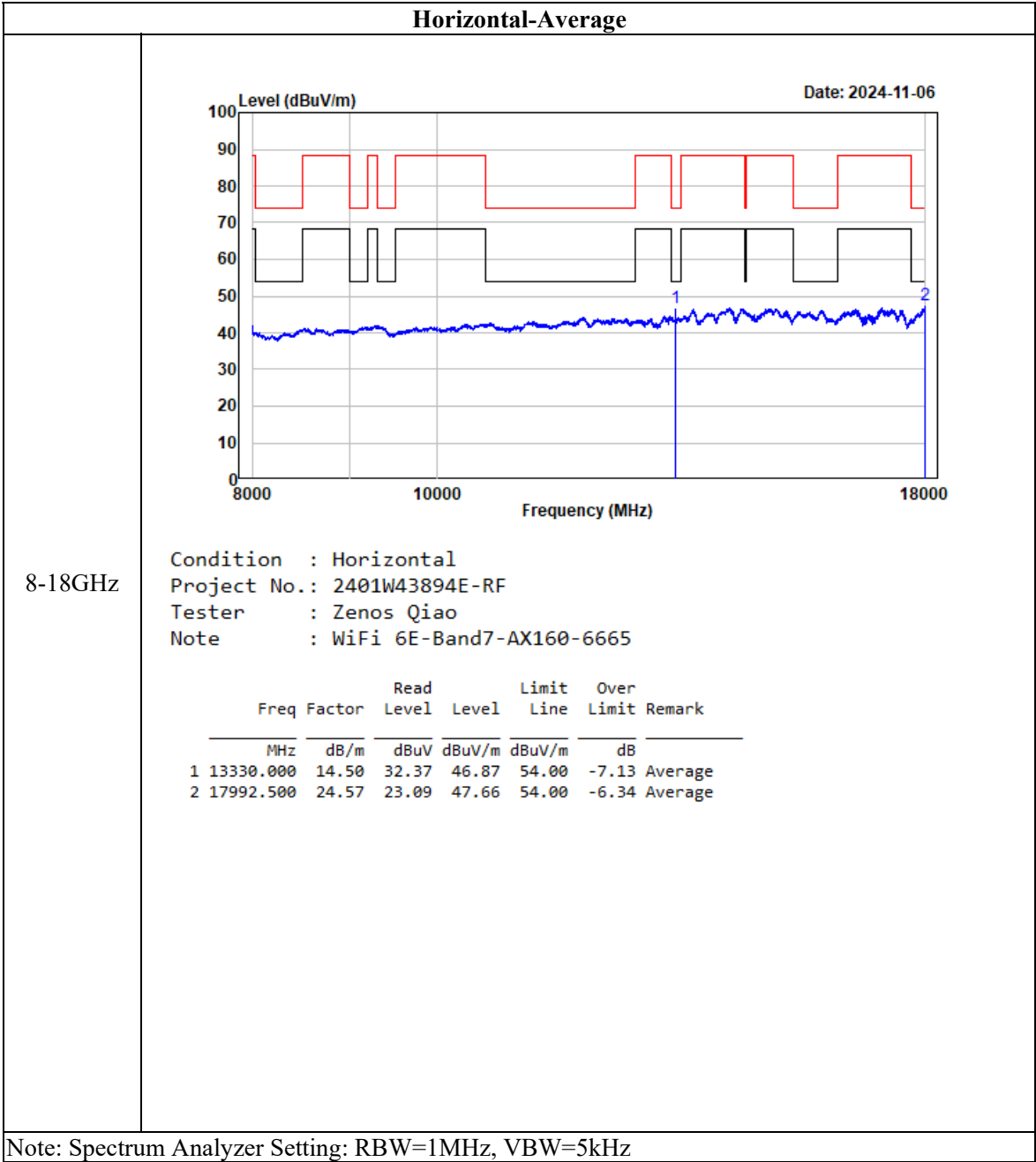


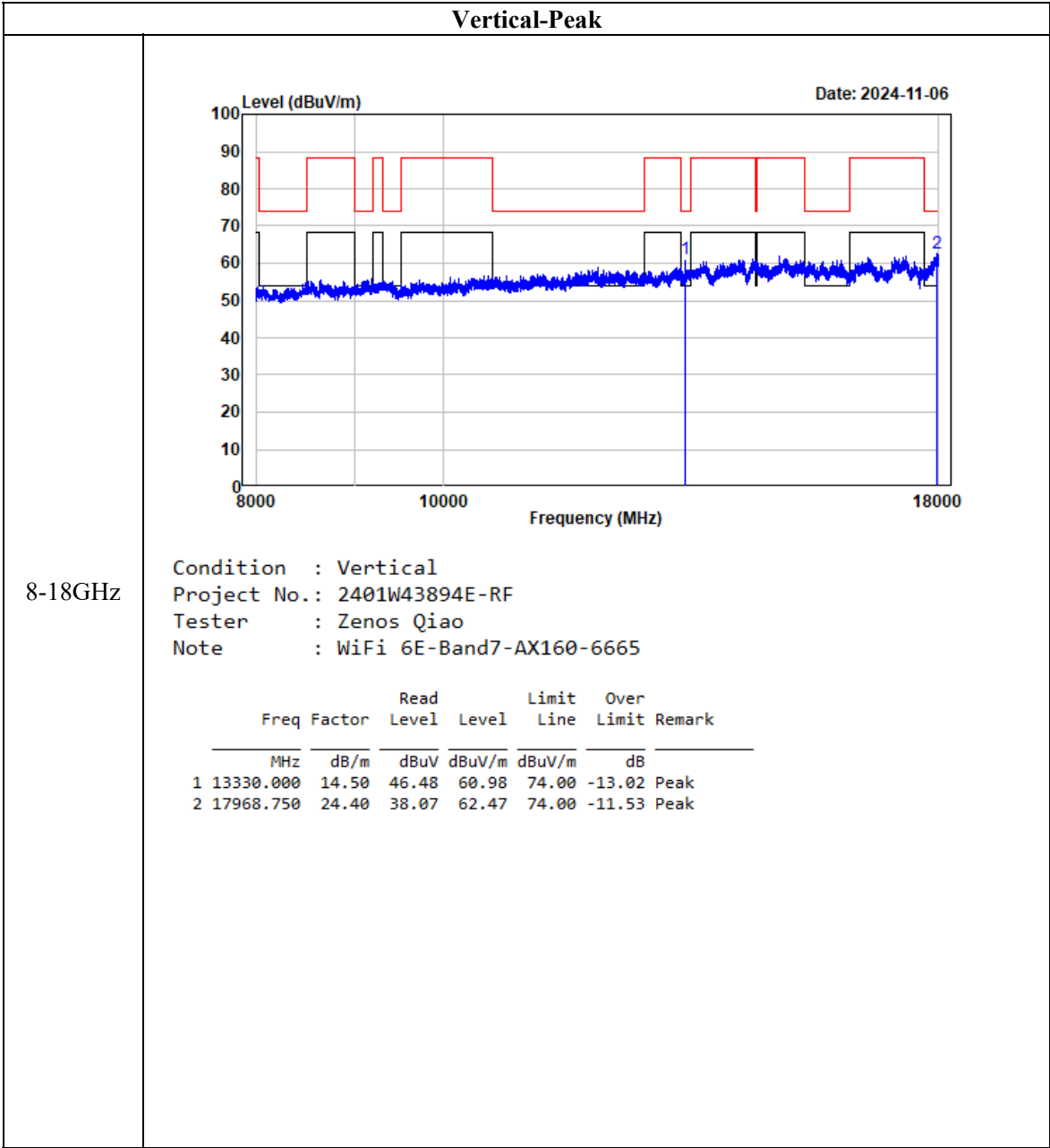


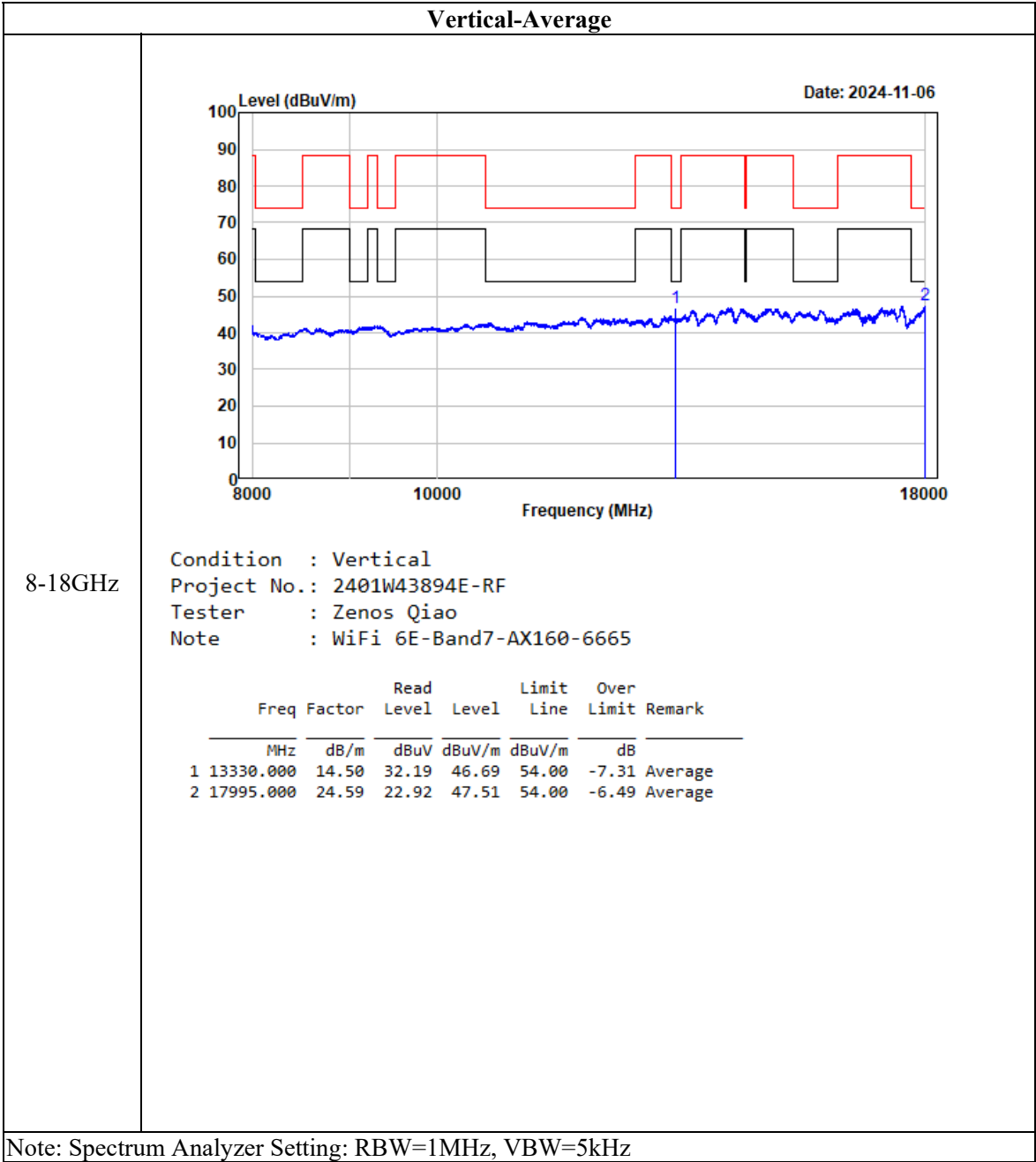






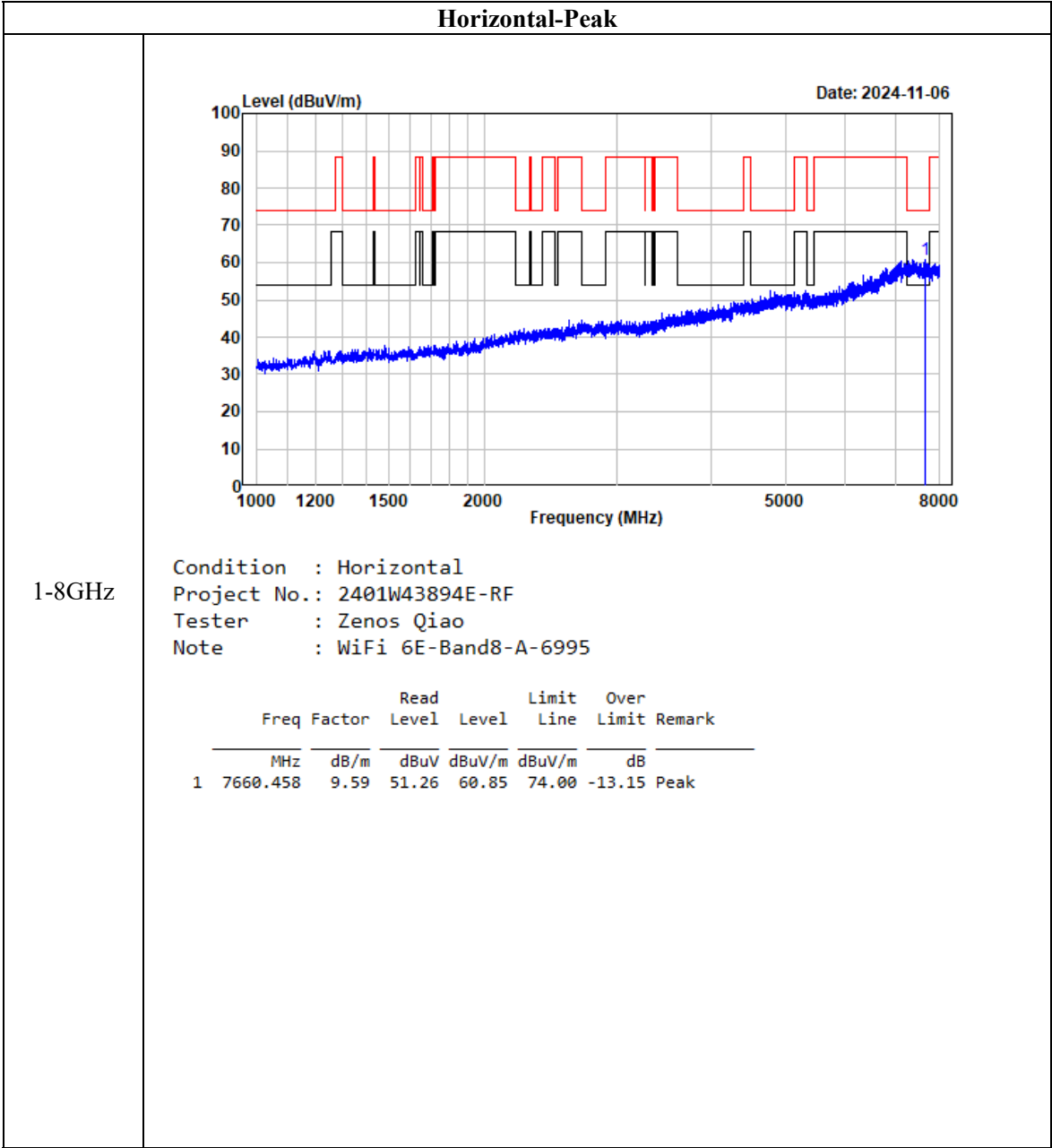


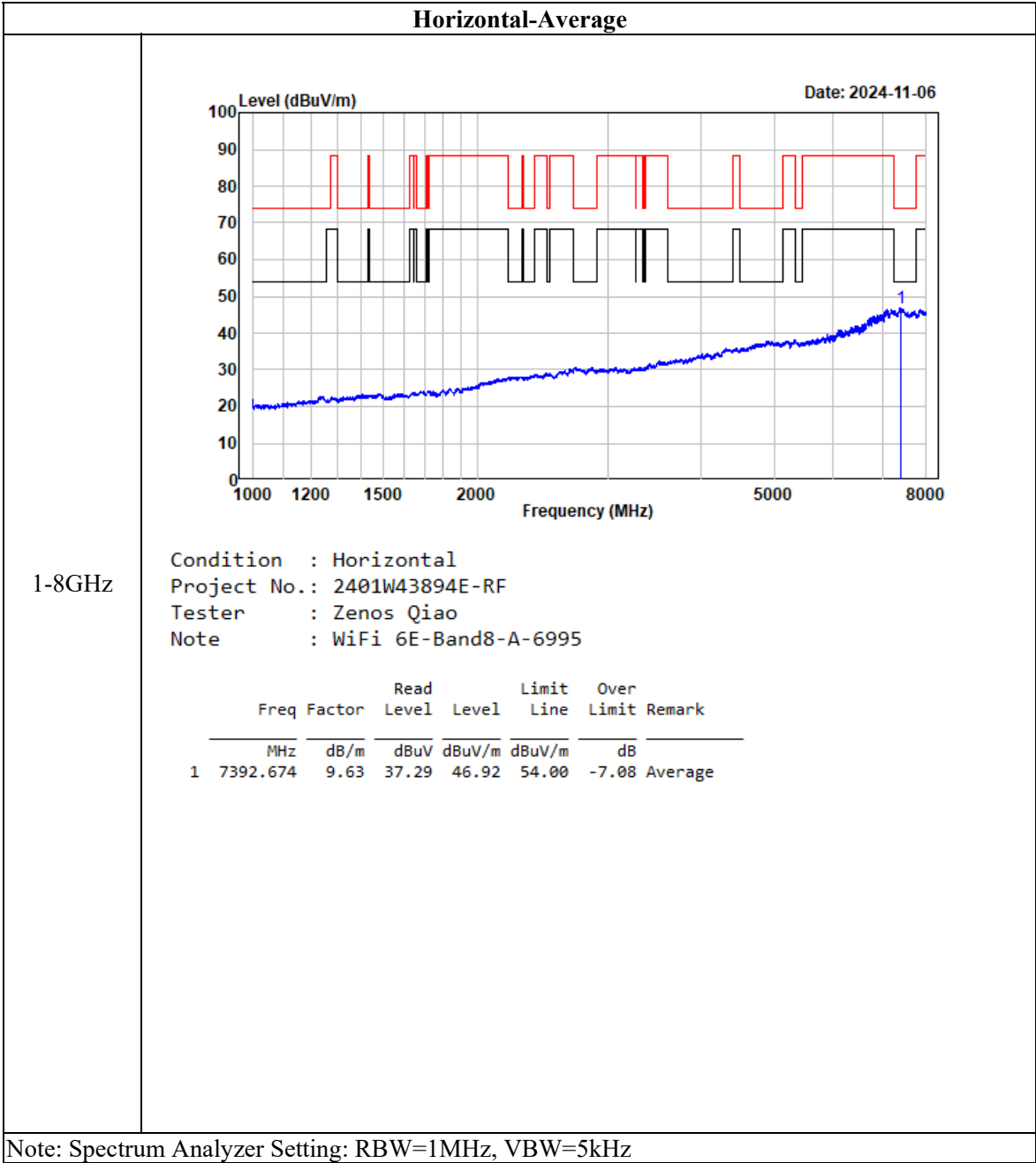


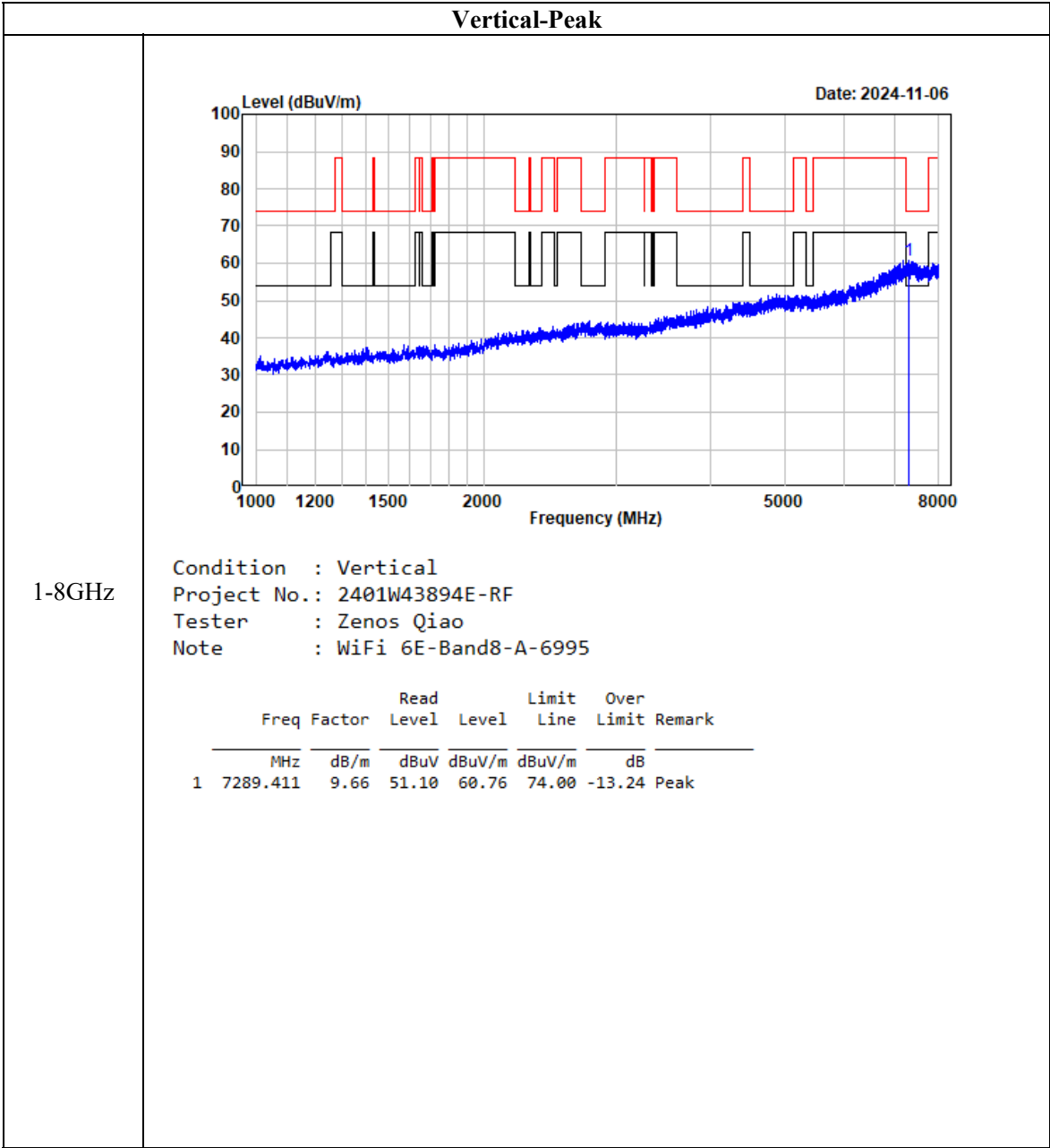


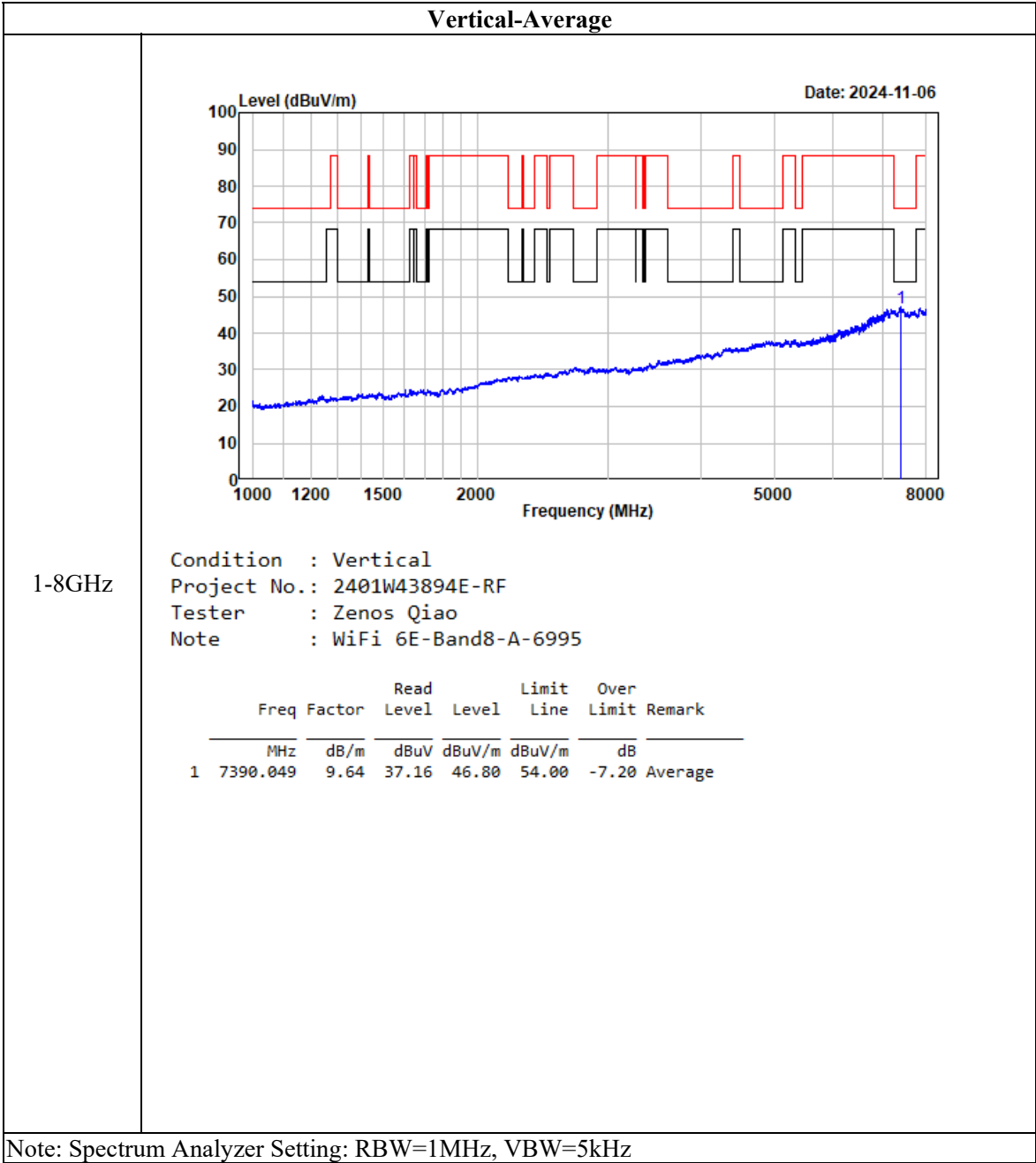
Wi-Fi 6E_ U-NII 8:

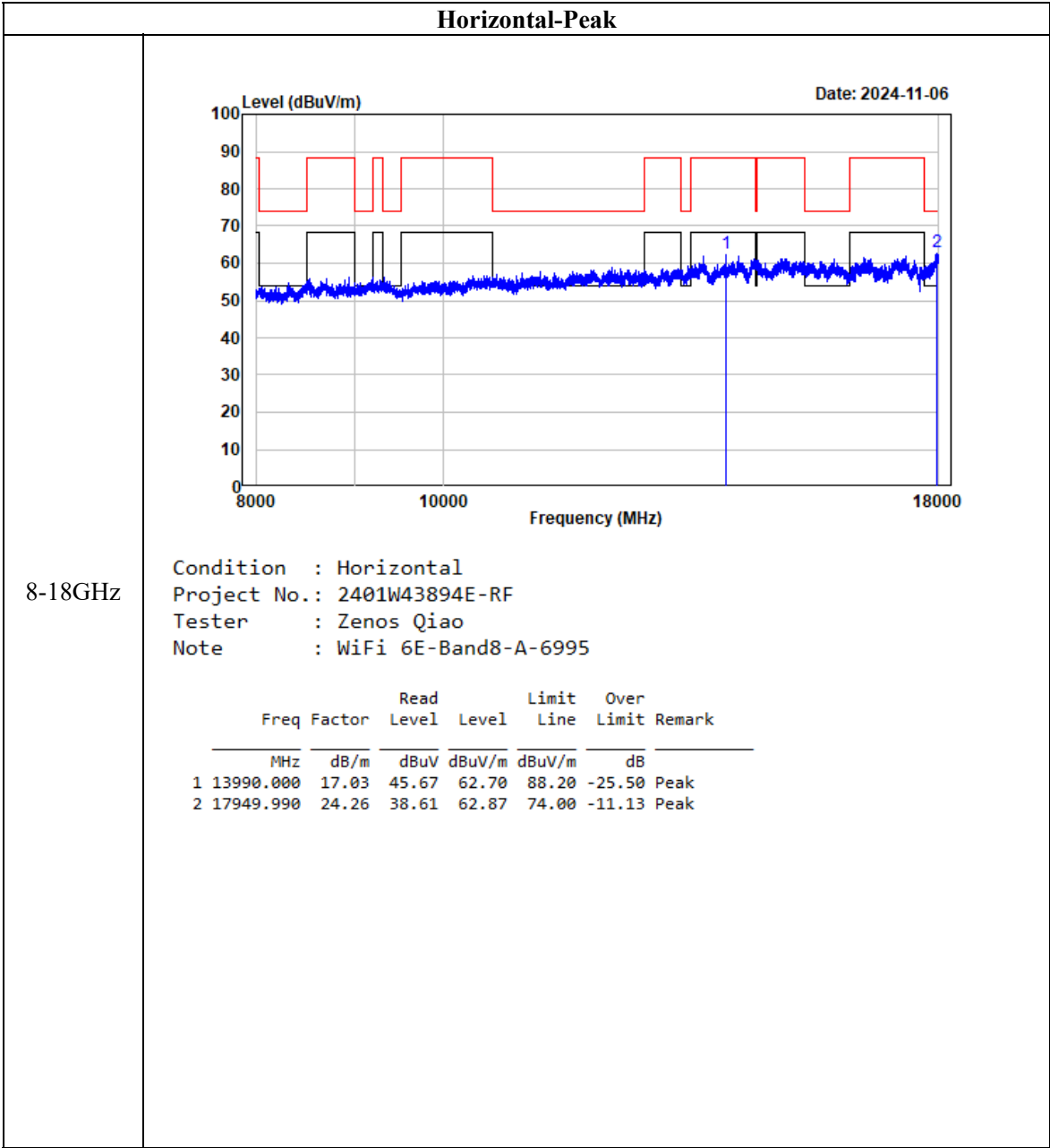
802.11a, 6995MHz

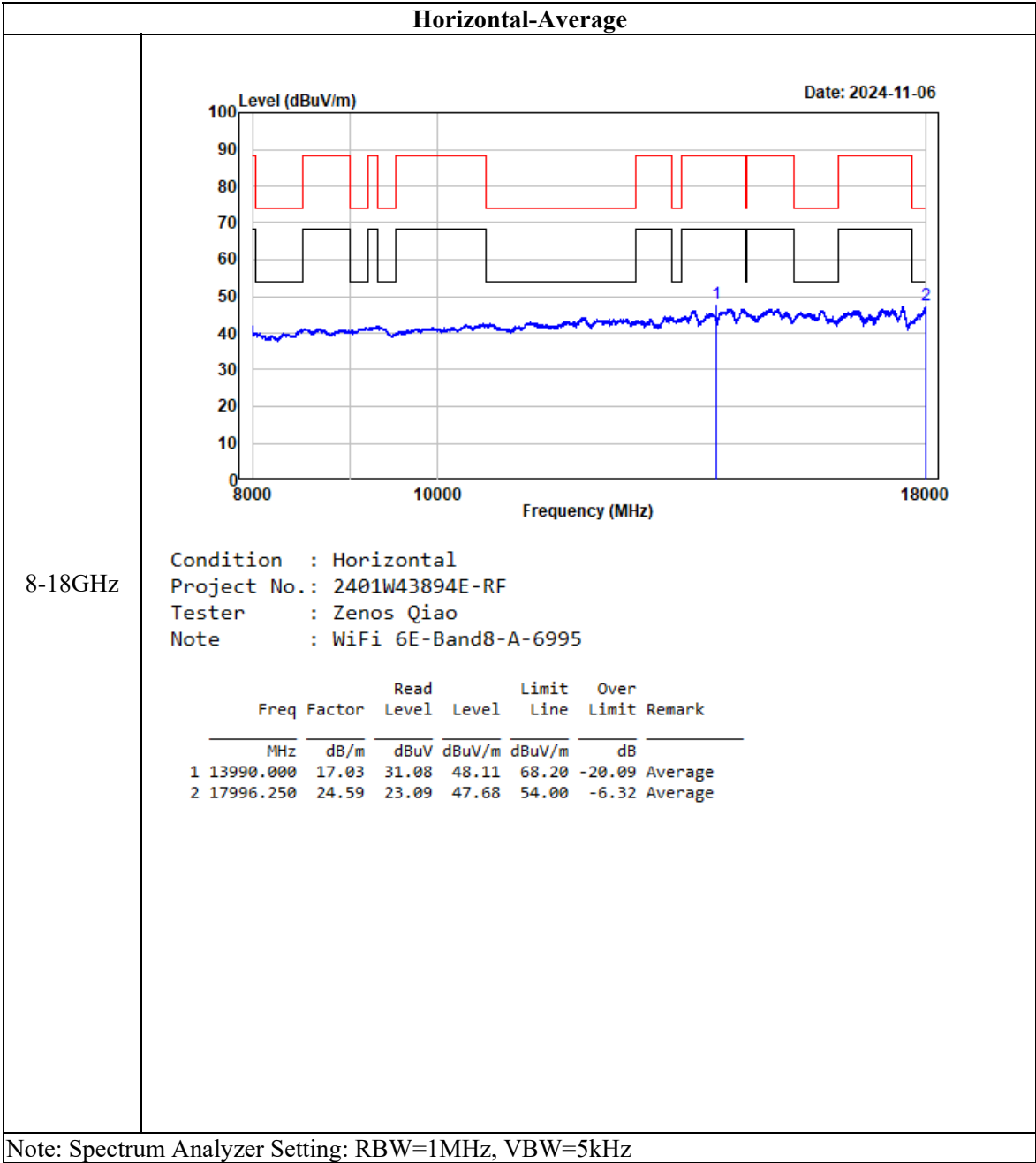


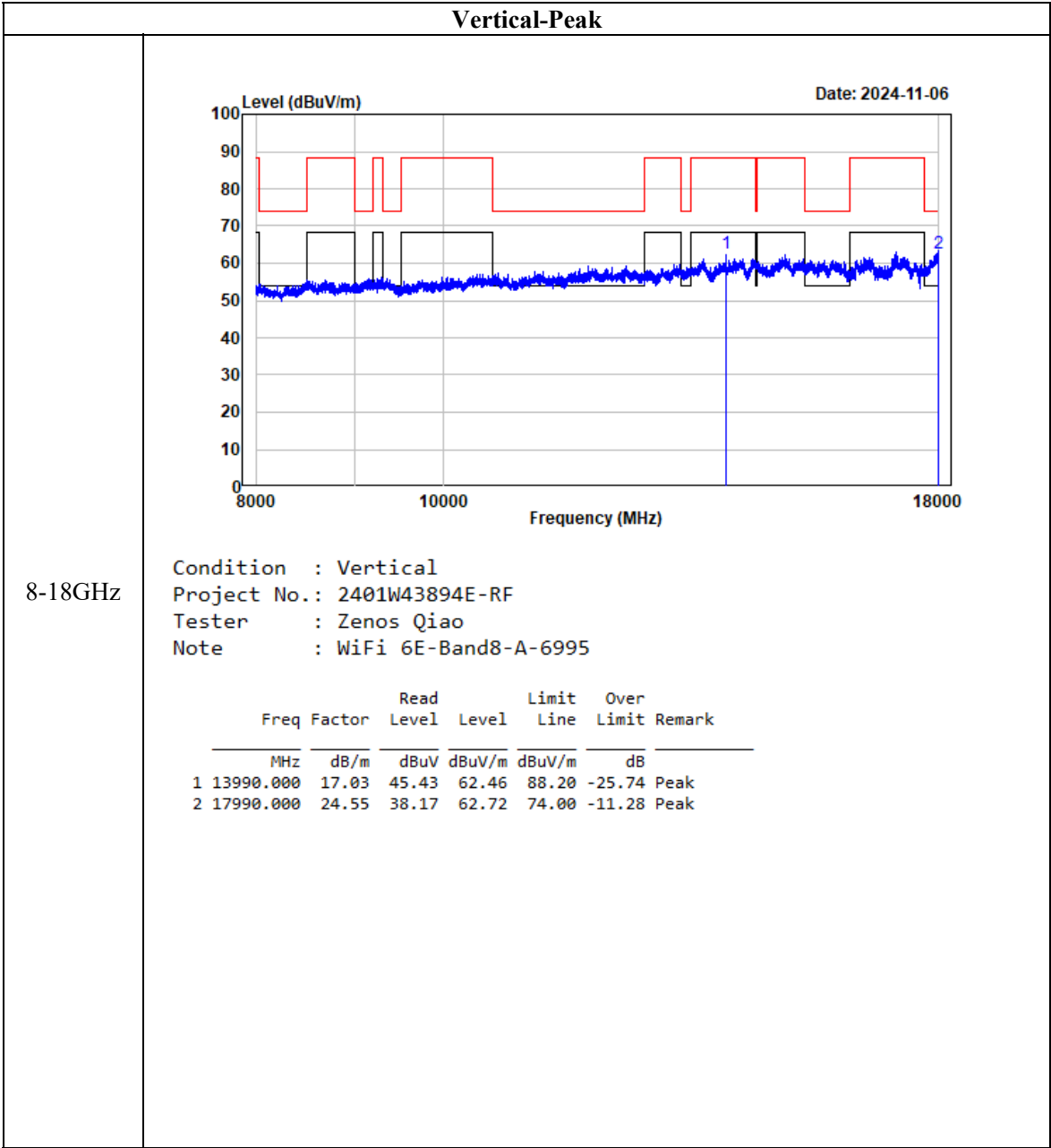


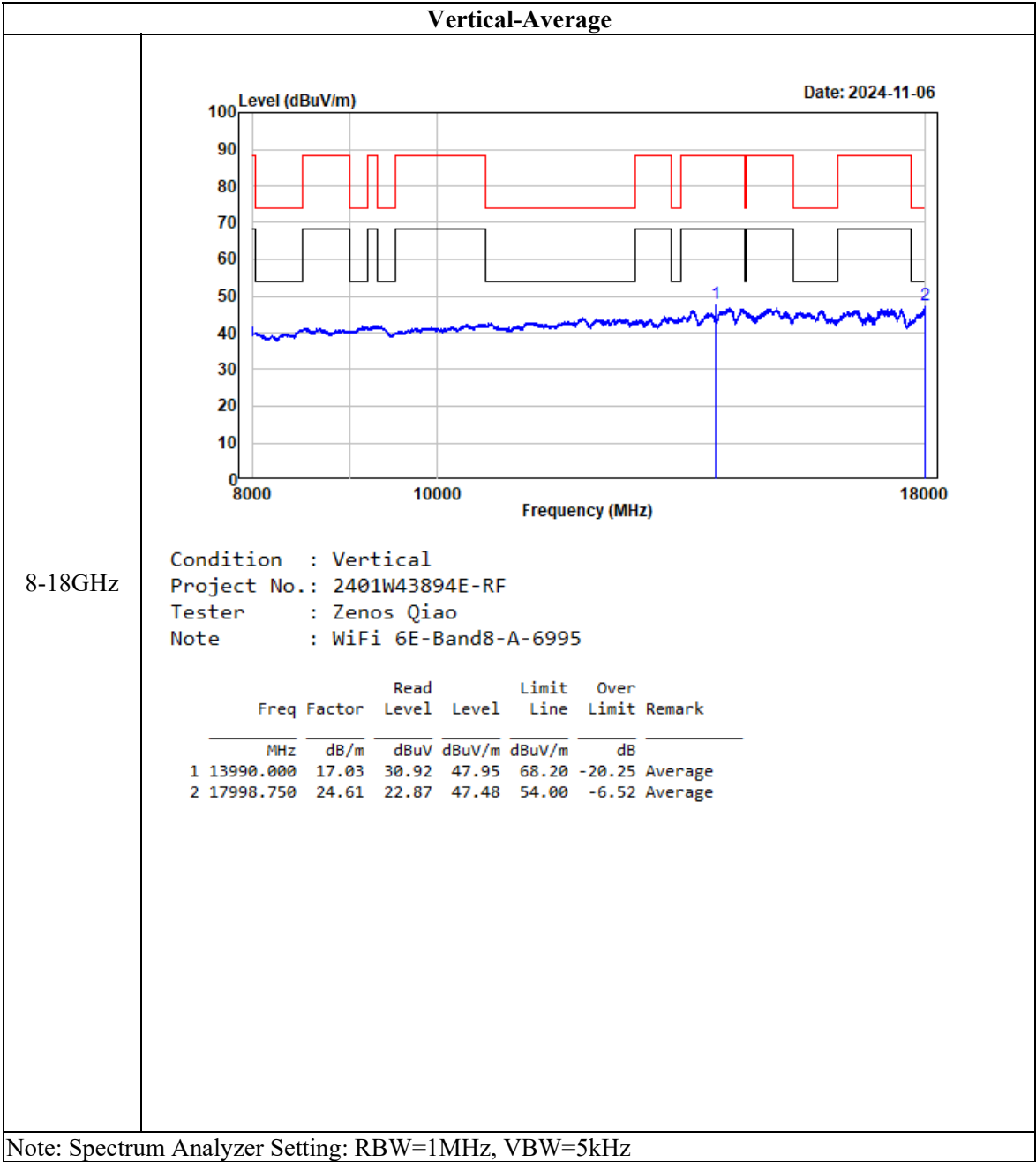




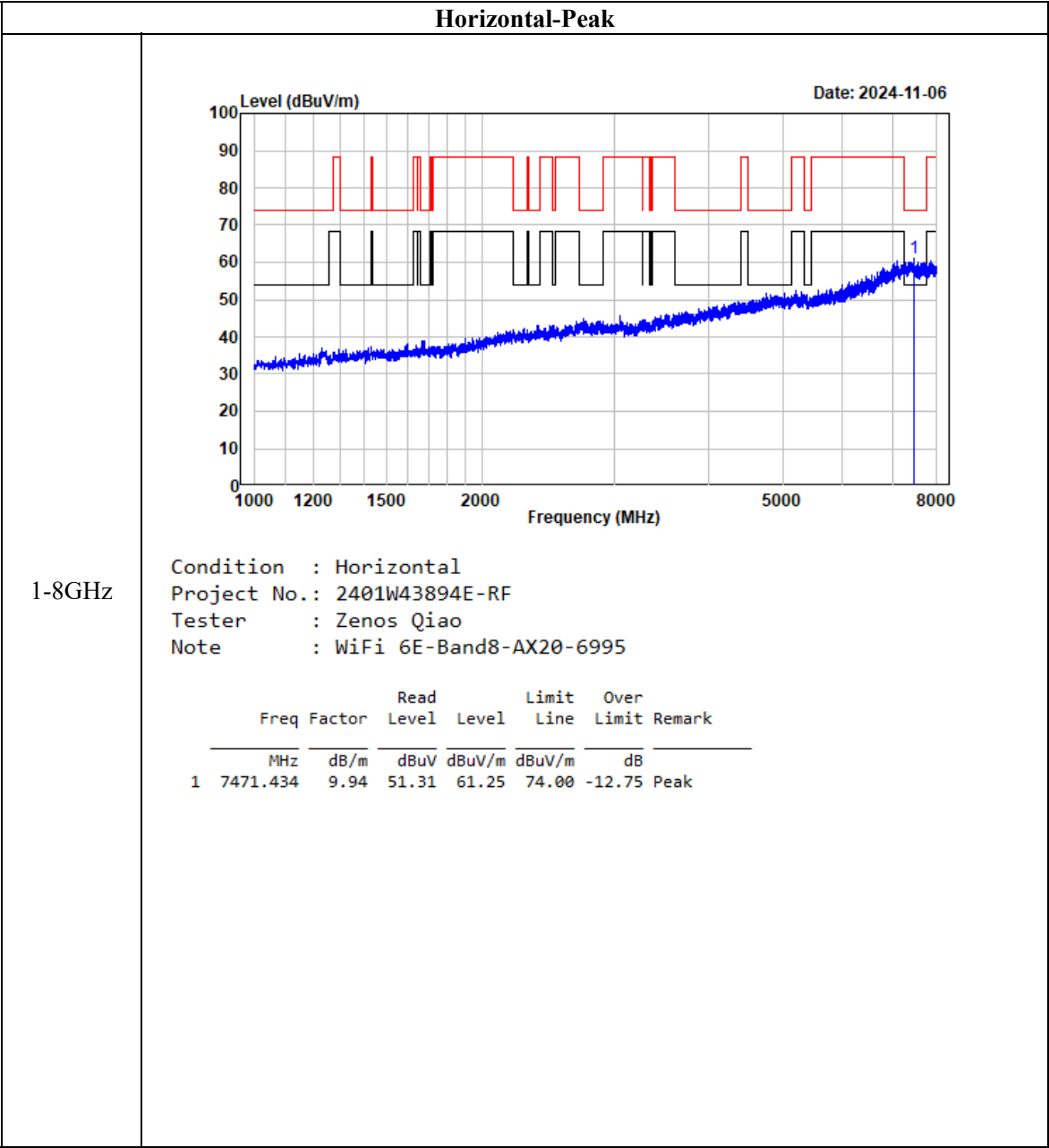


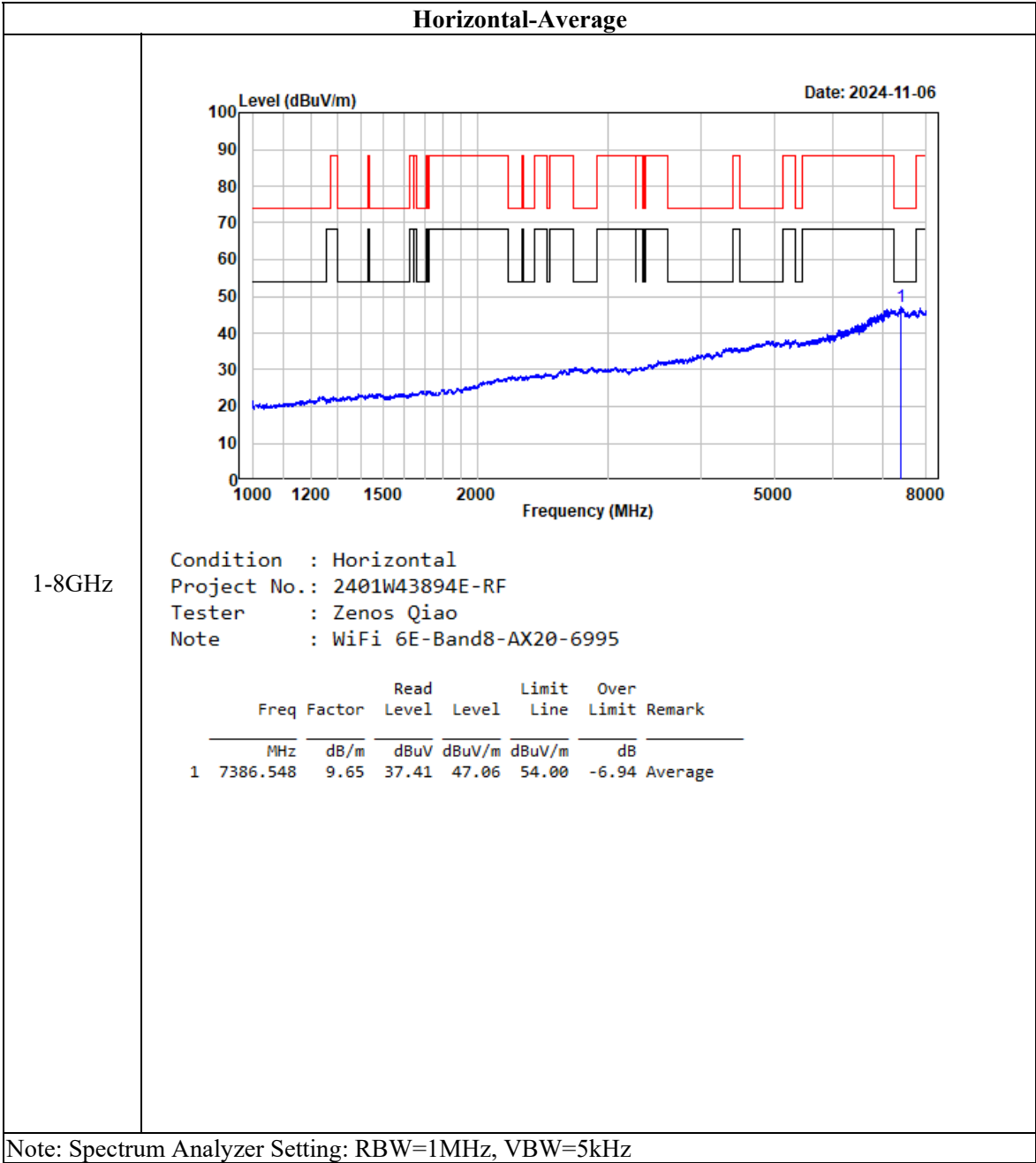


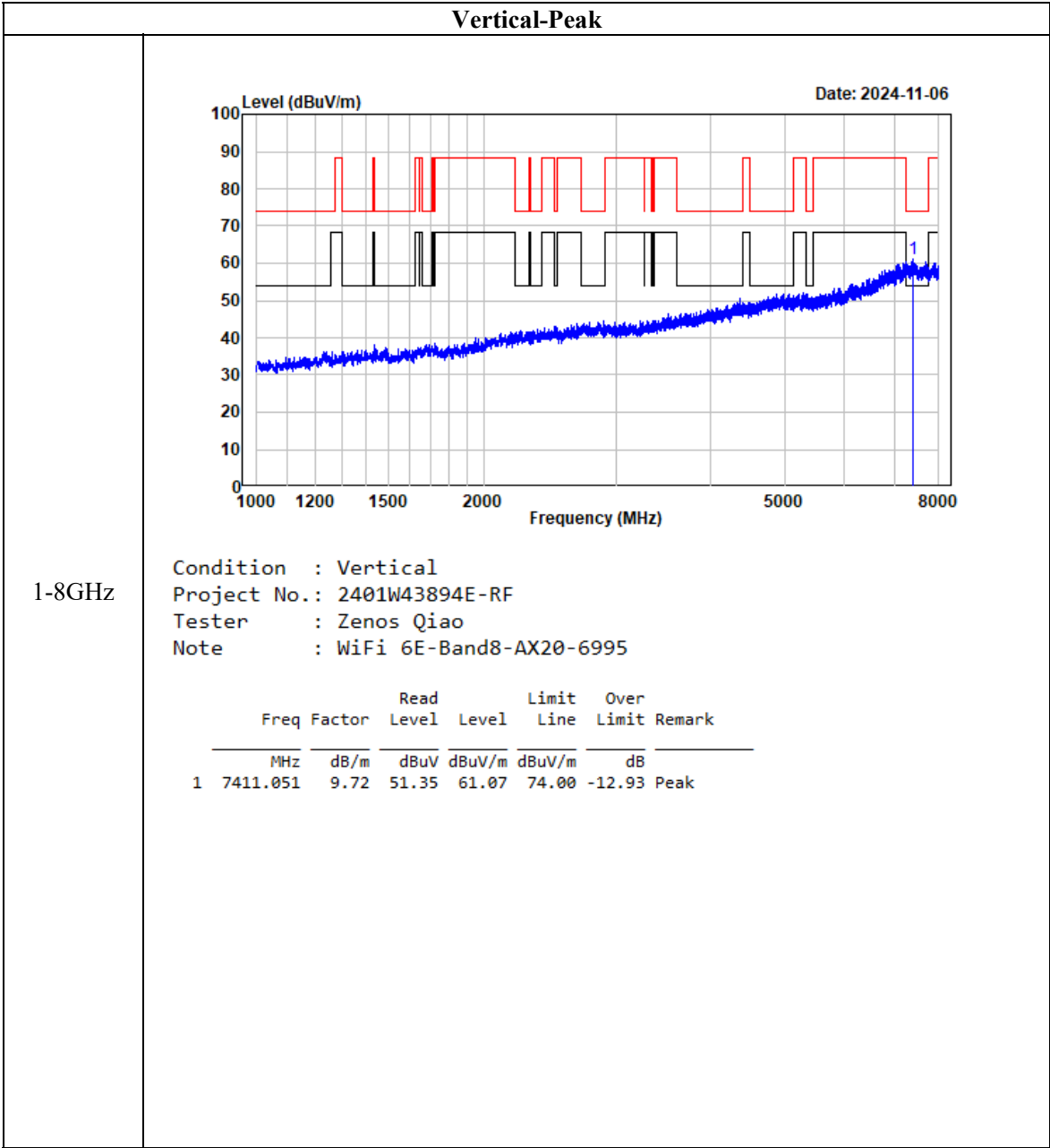


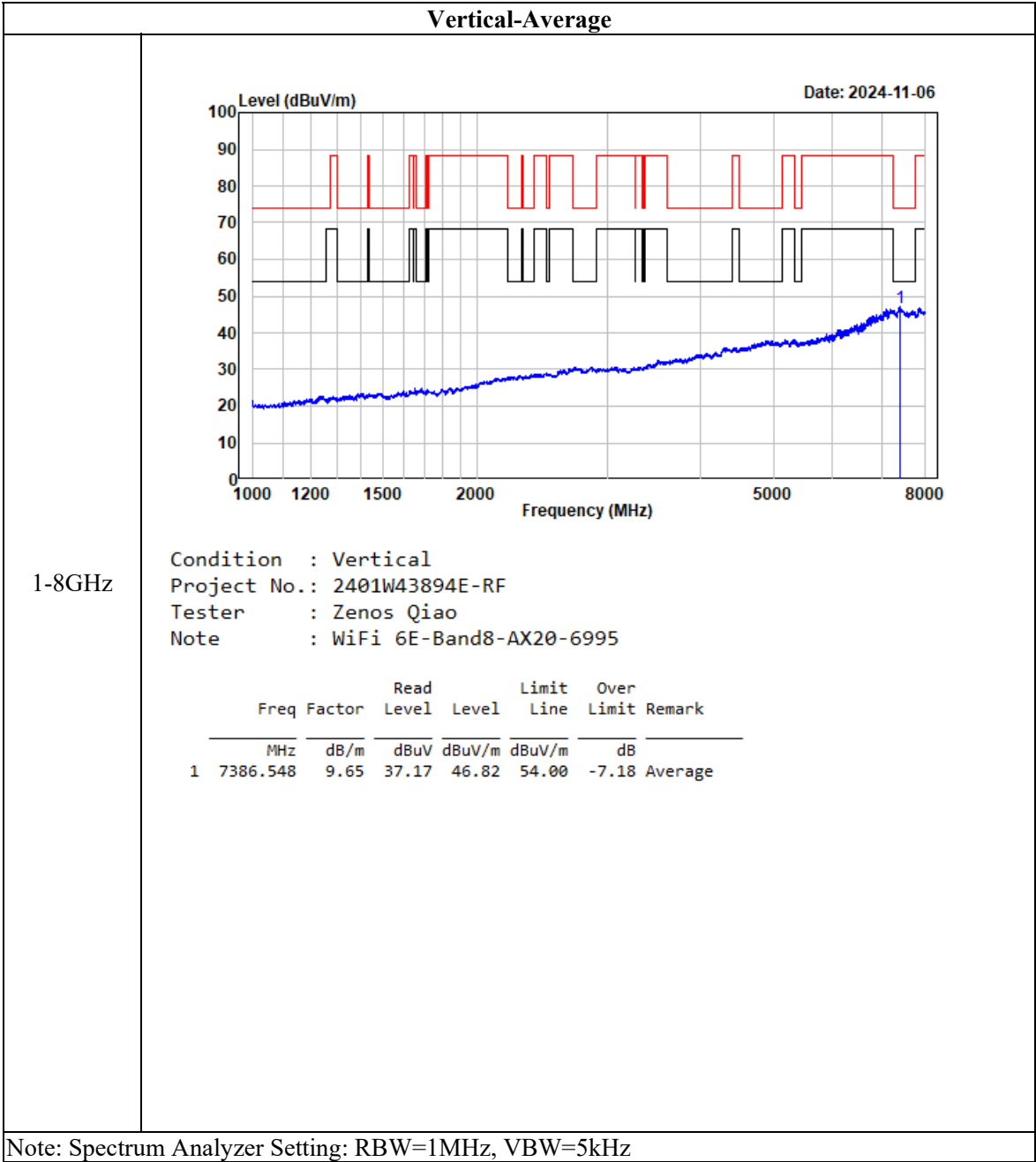


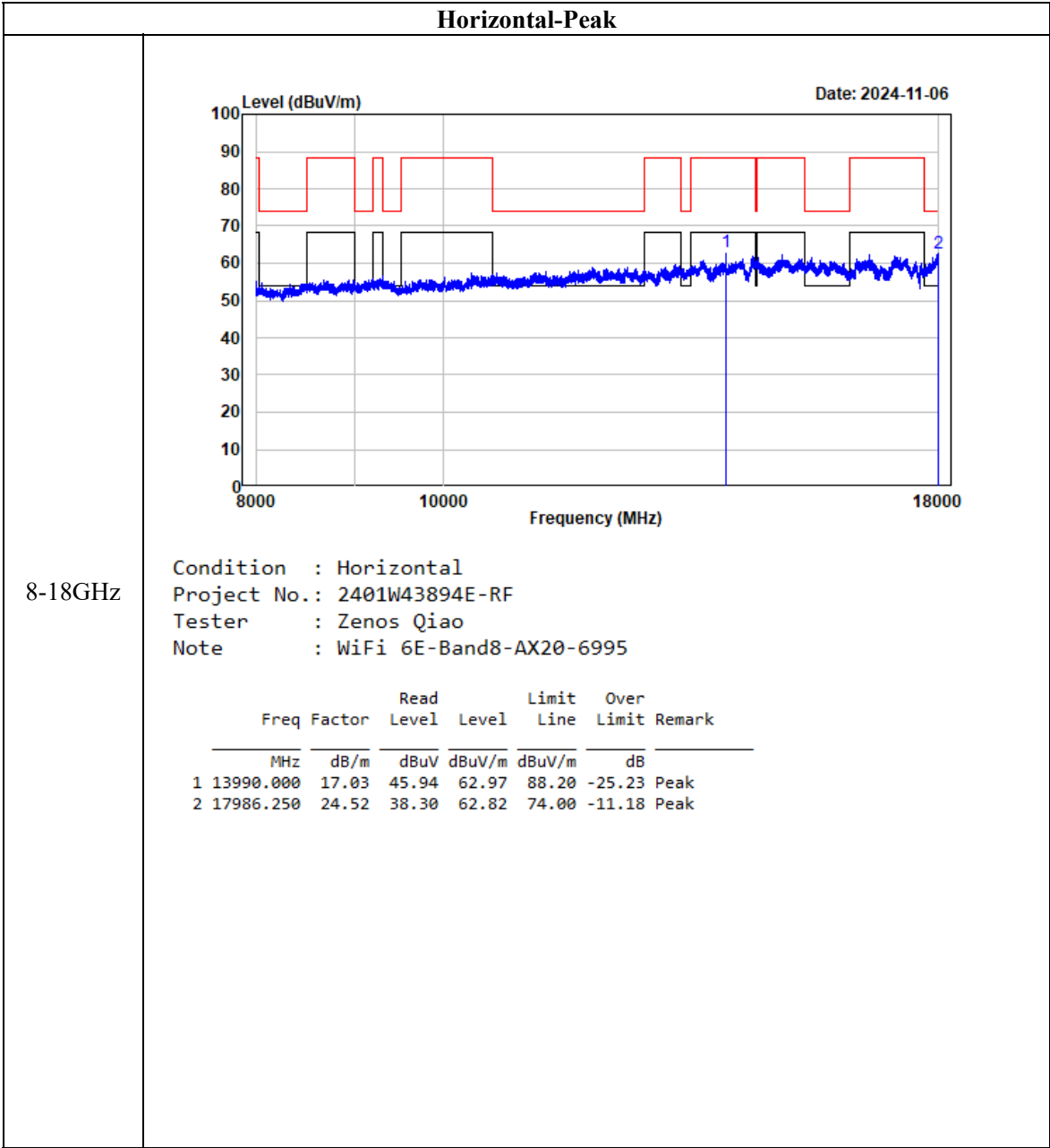
802.11ax20, 6995MHz

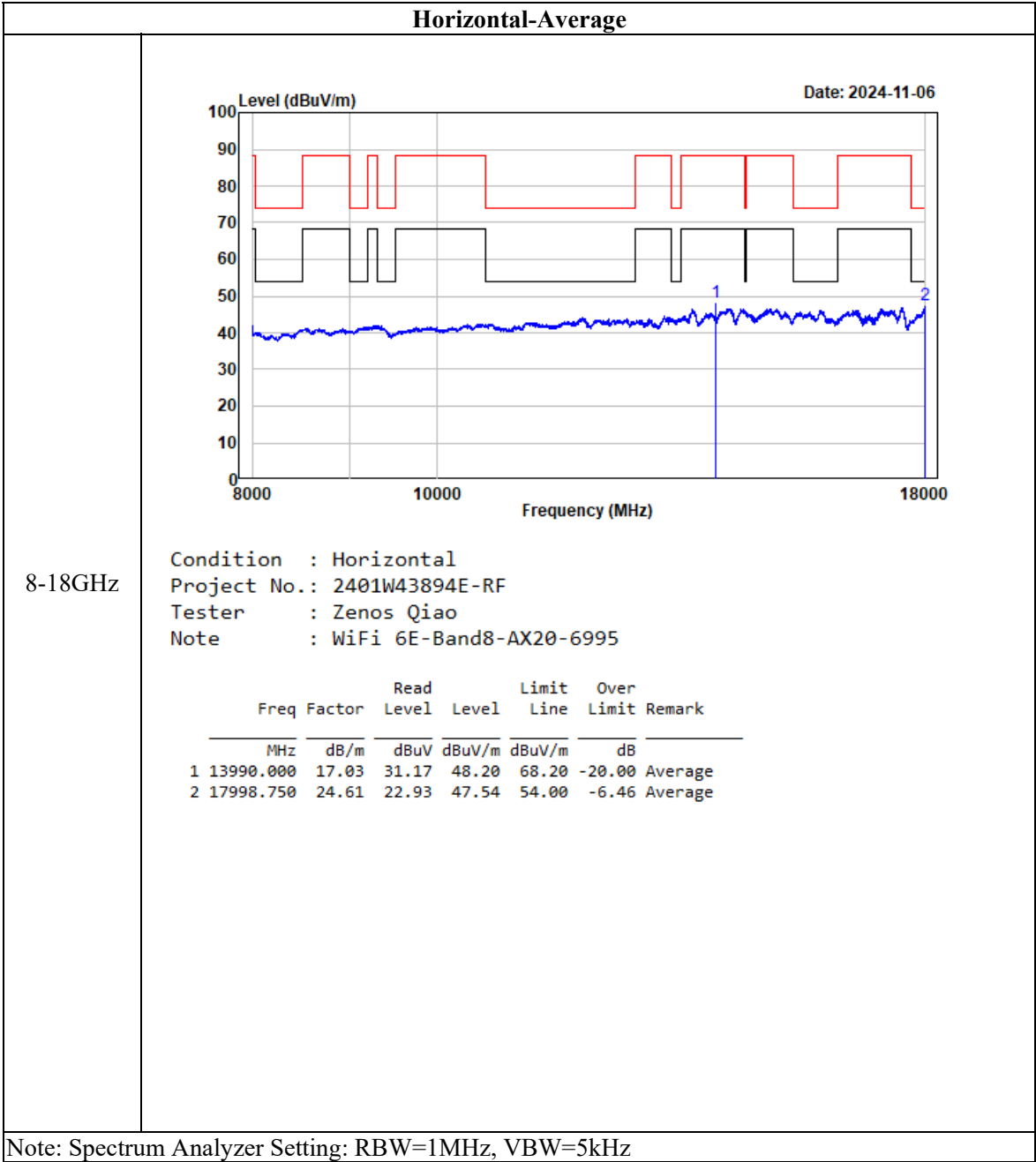


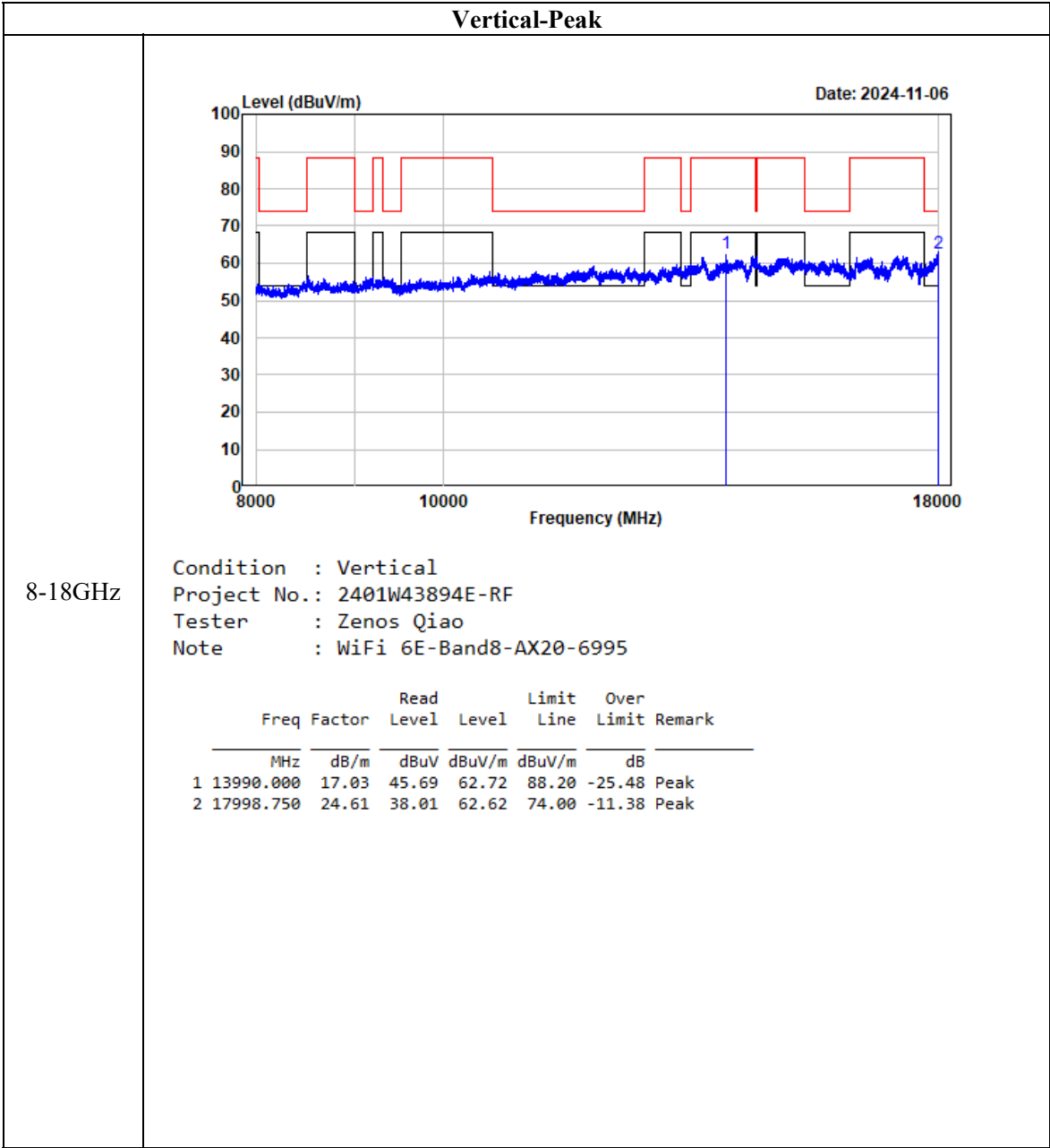


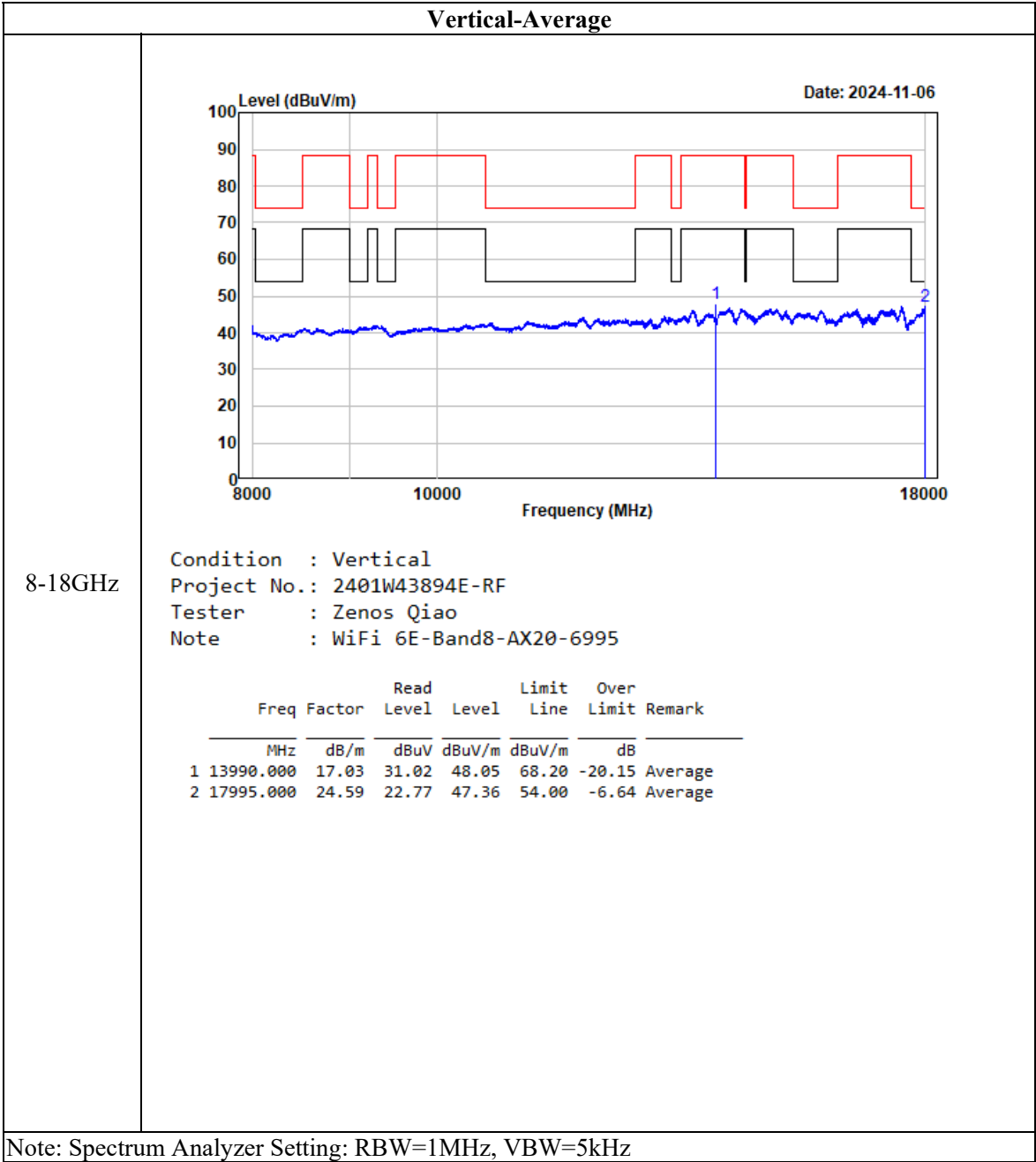




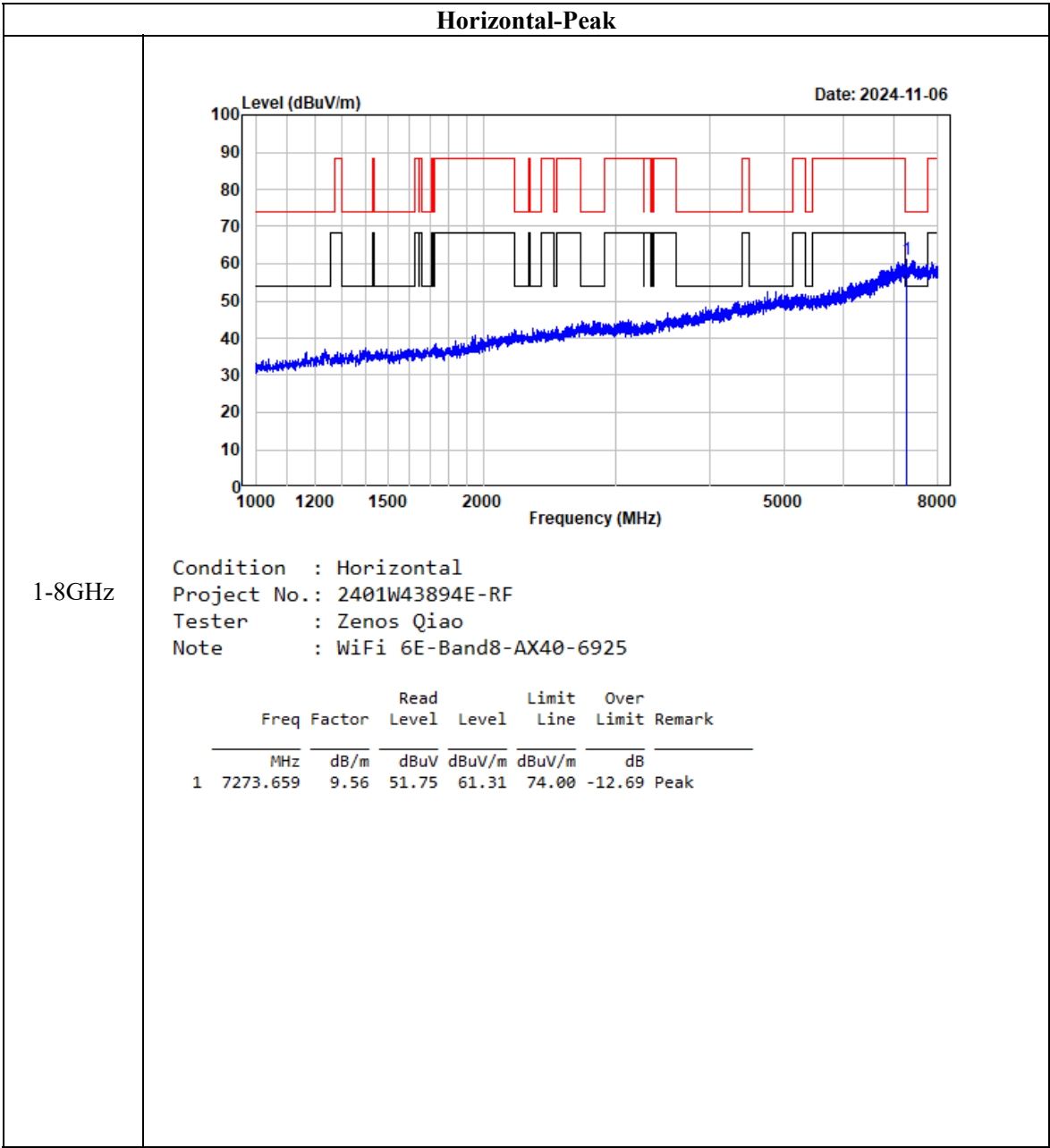


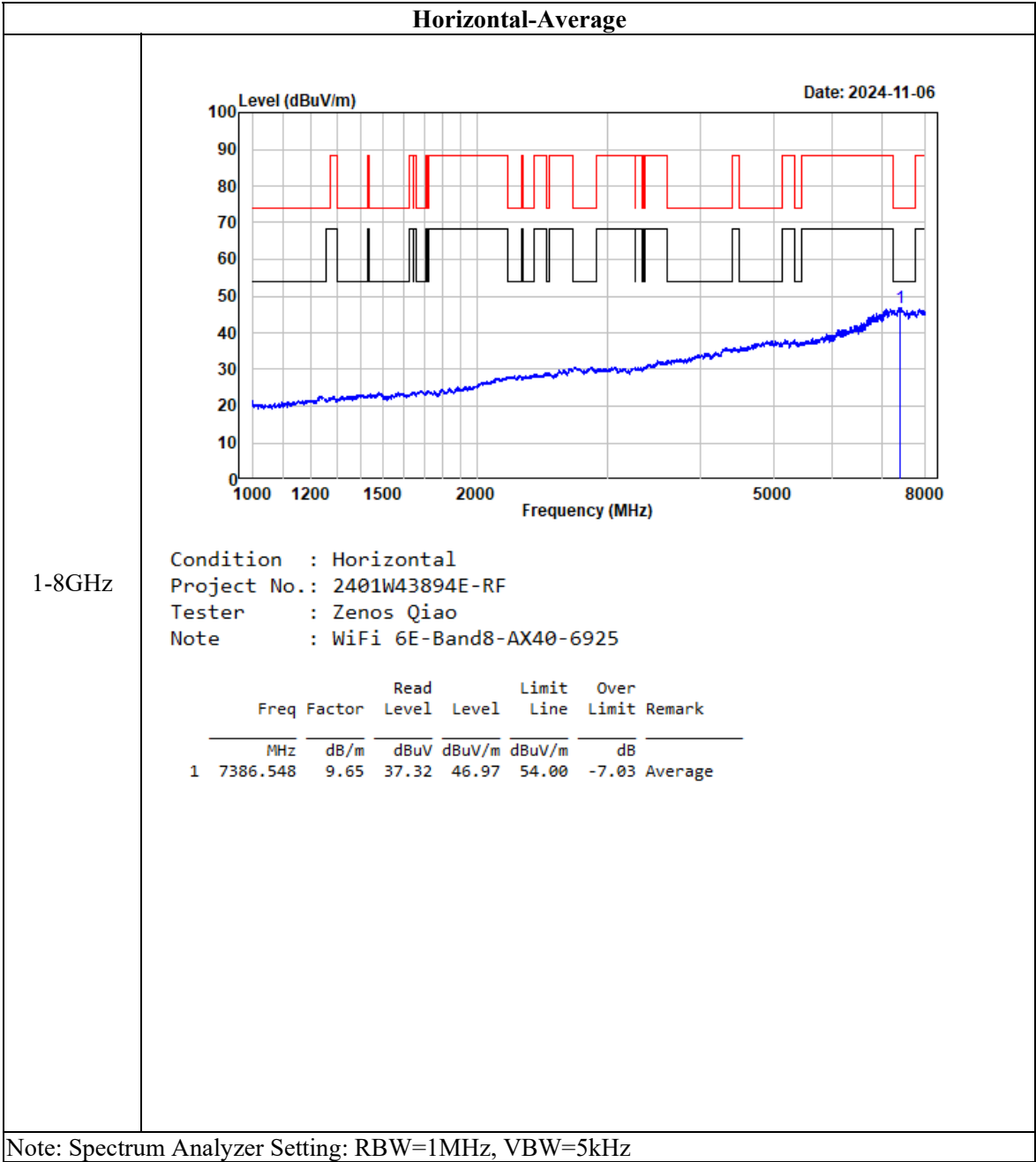


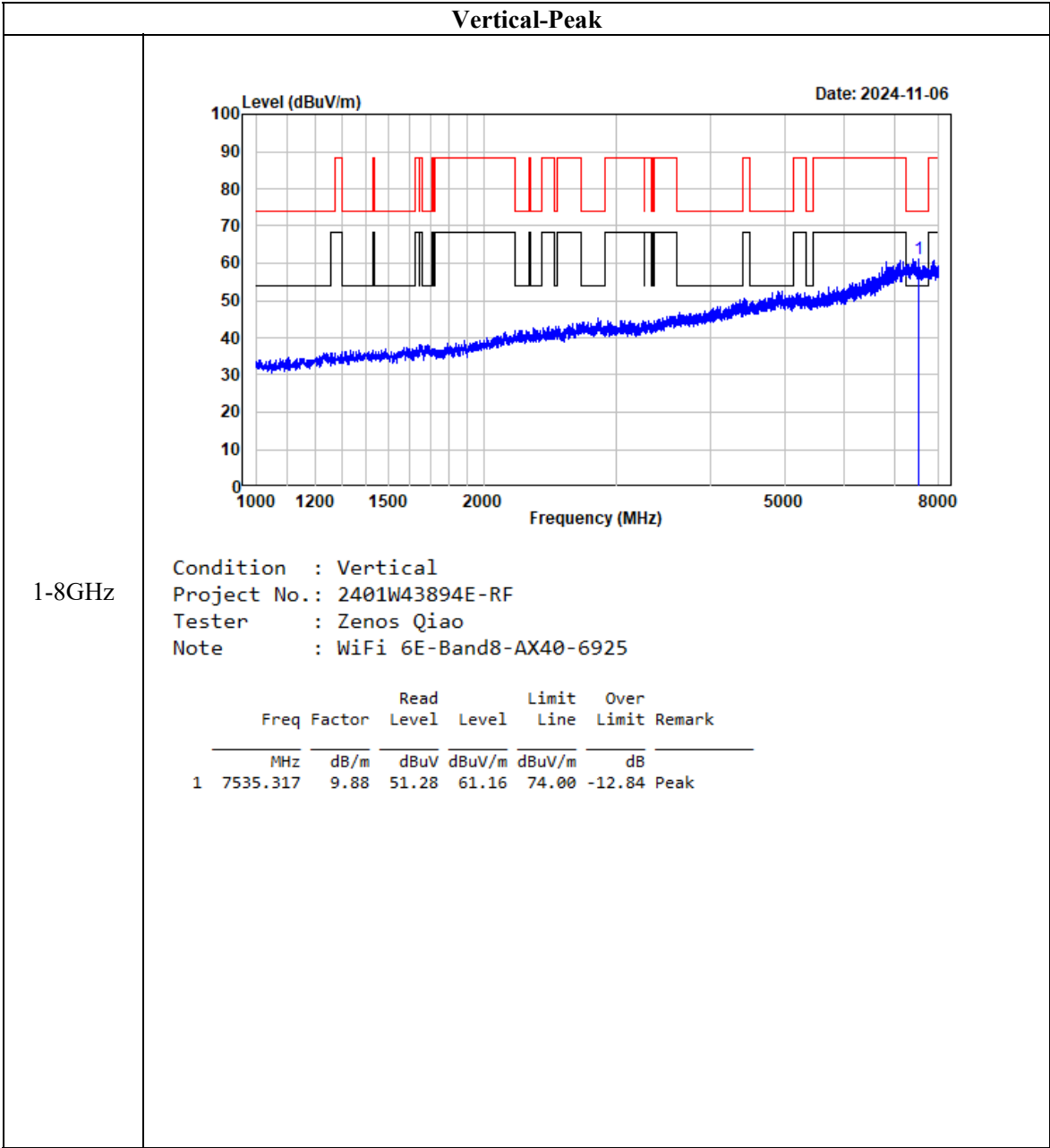


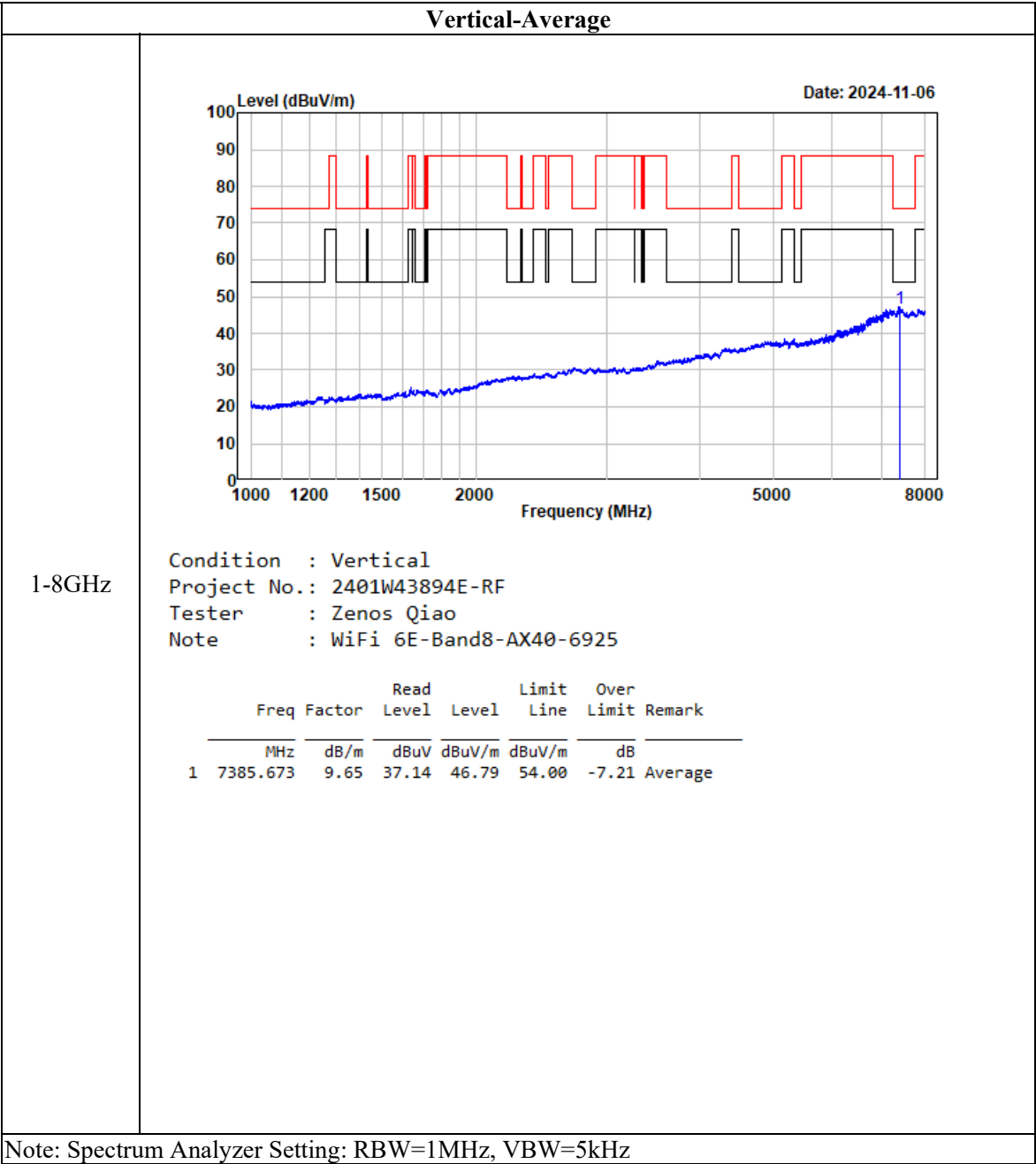


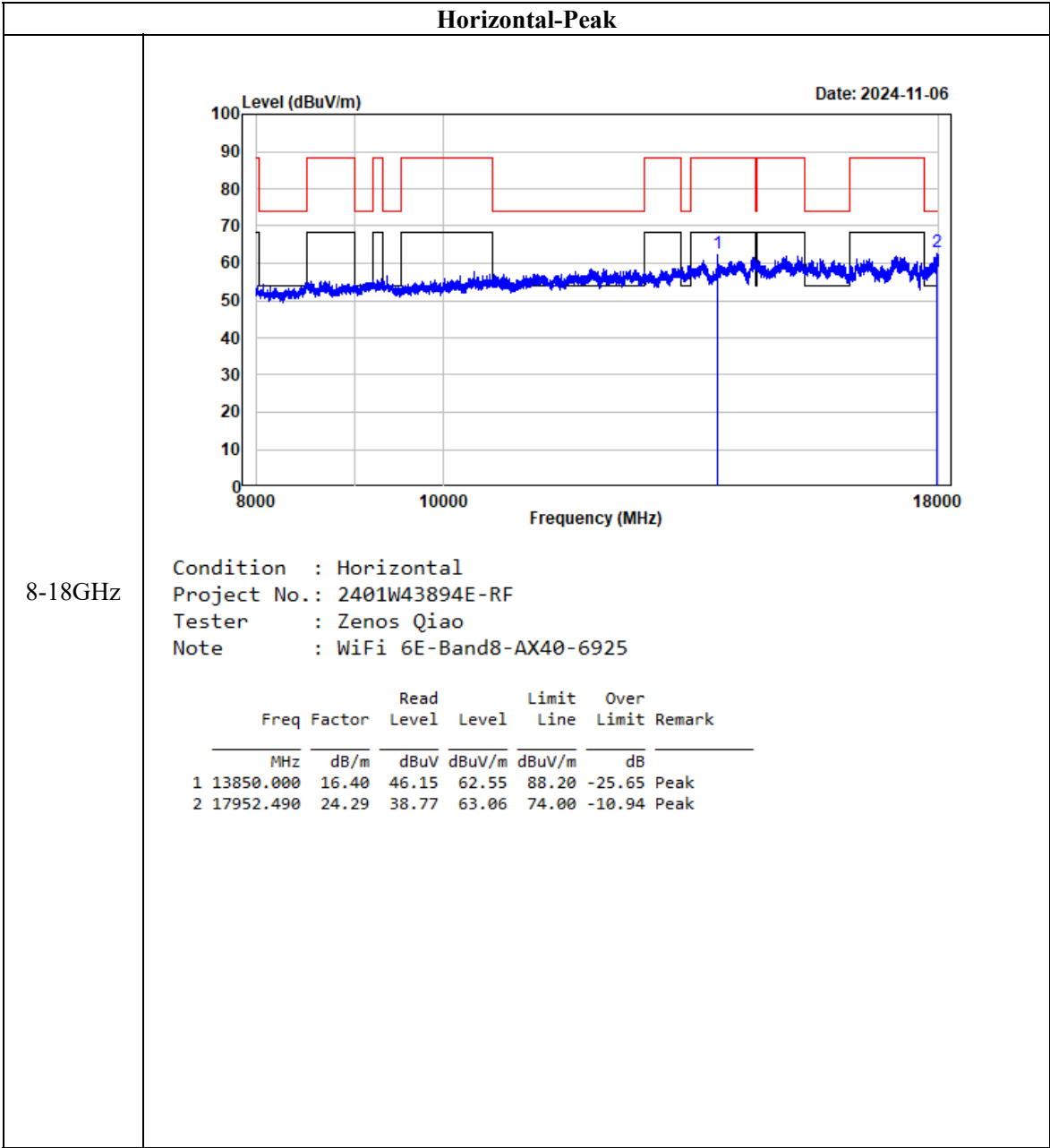
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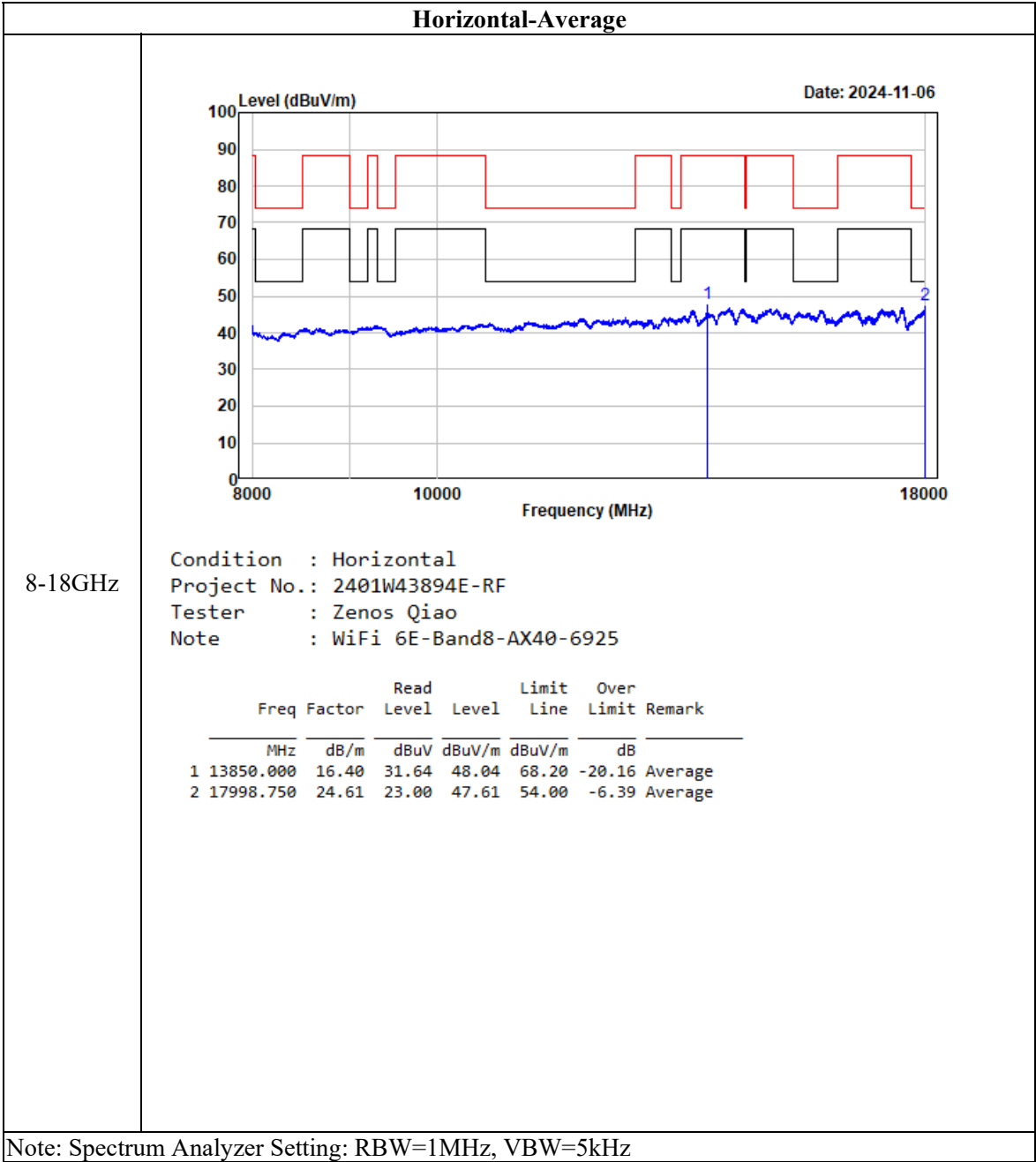


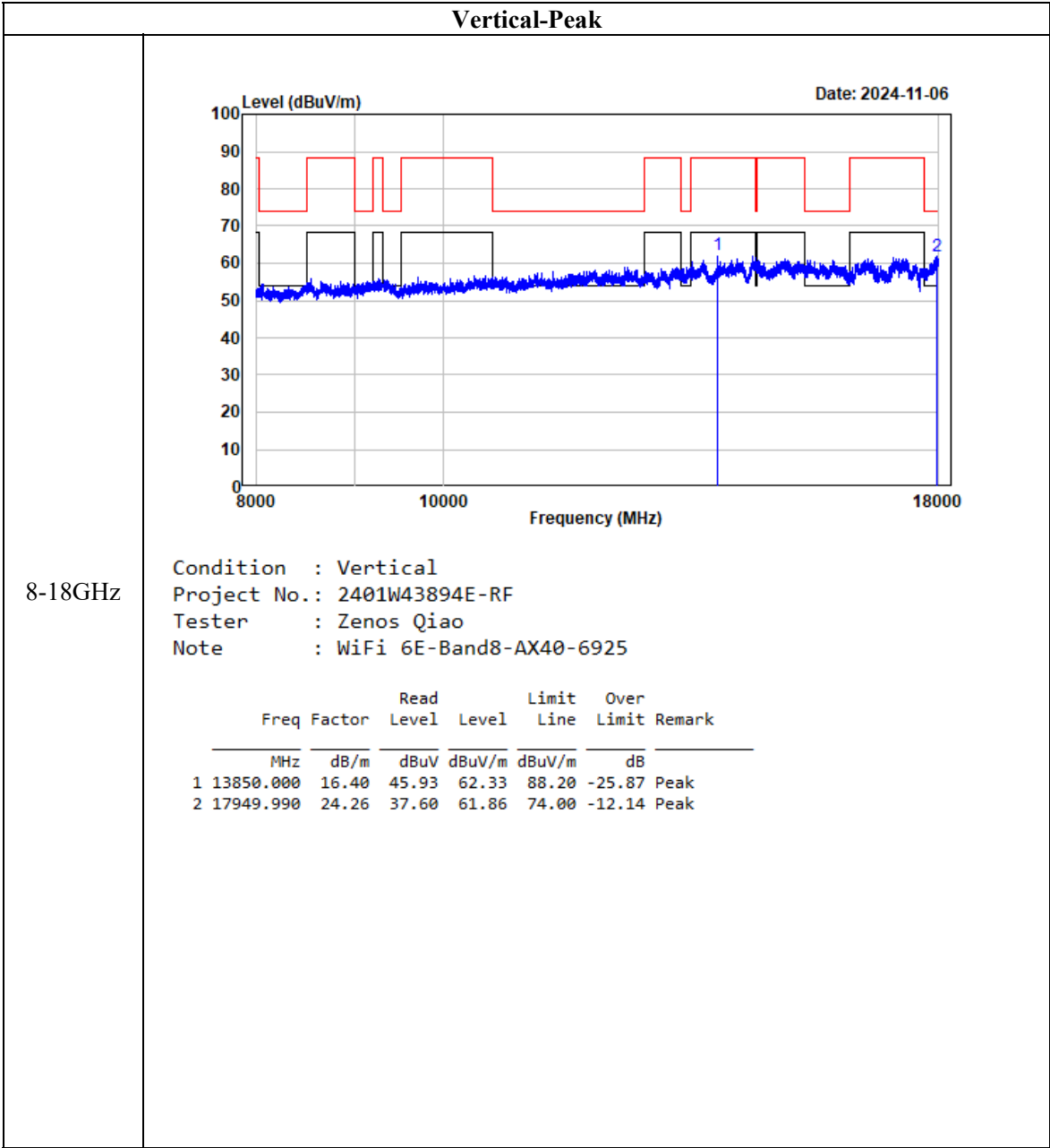


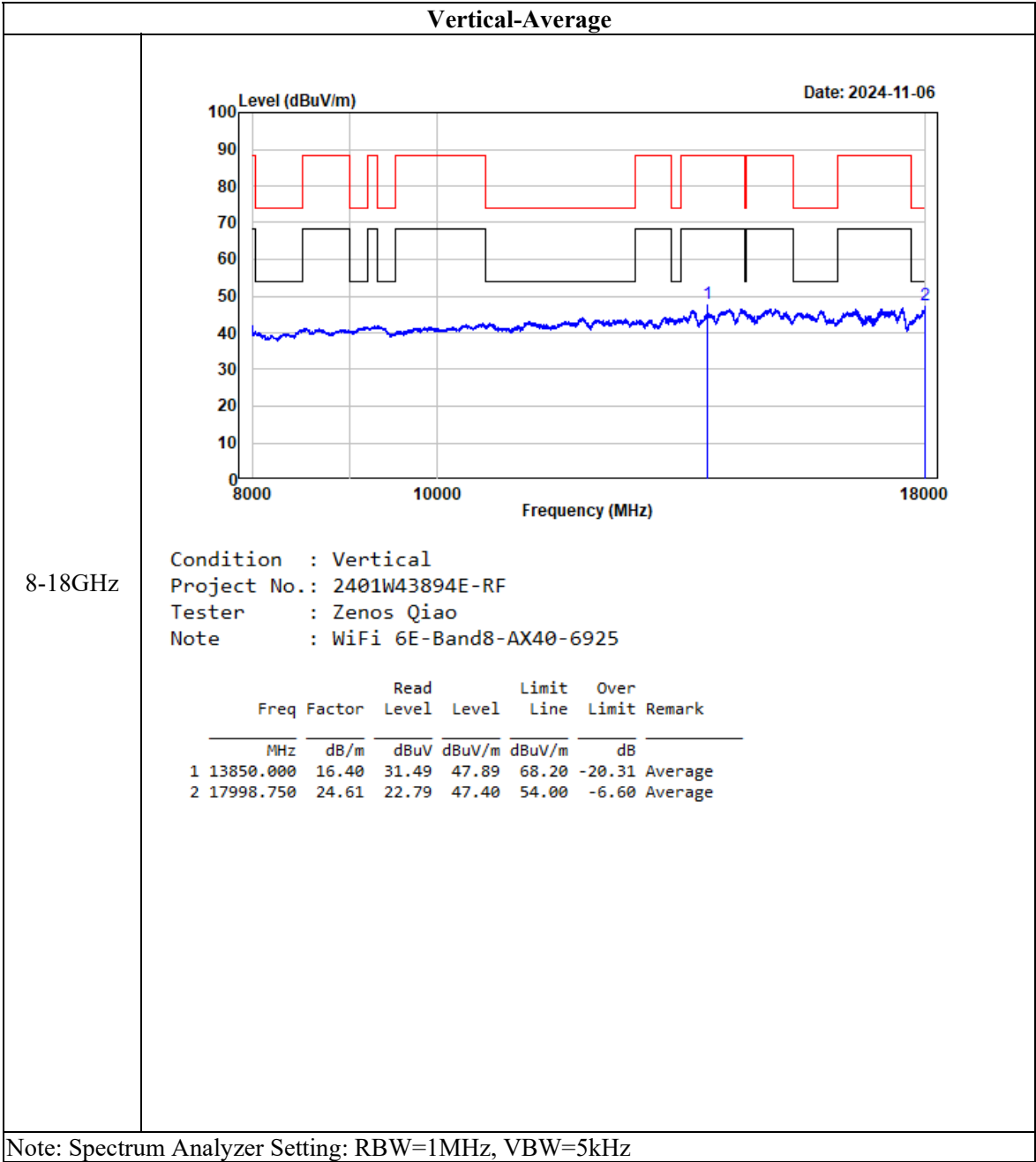




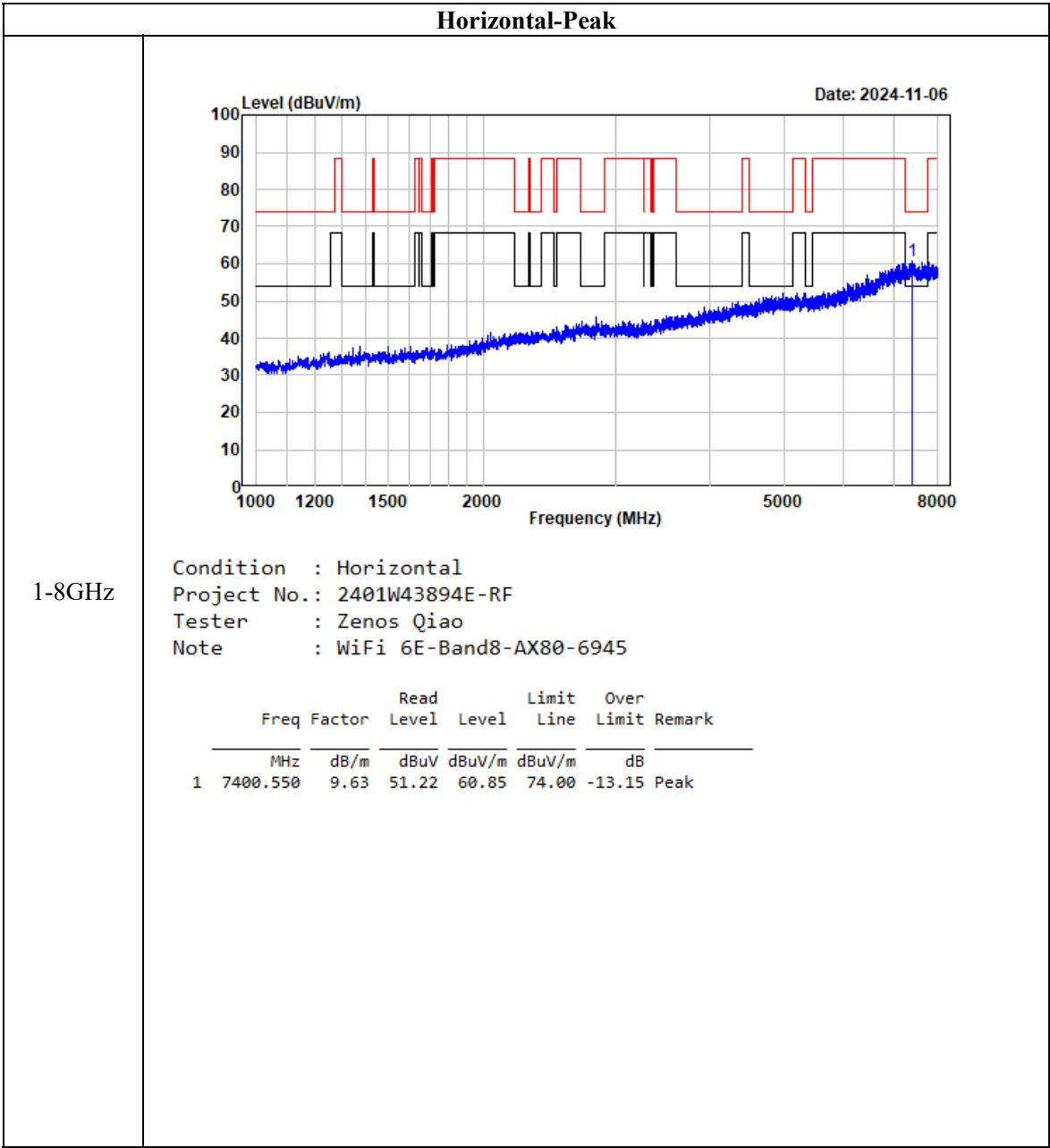


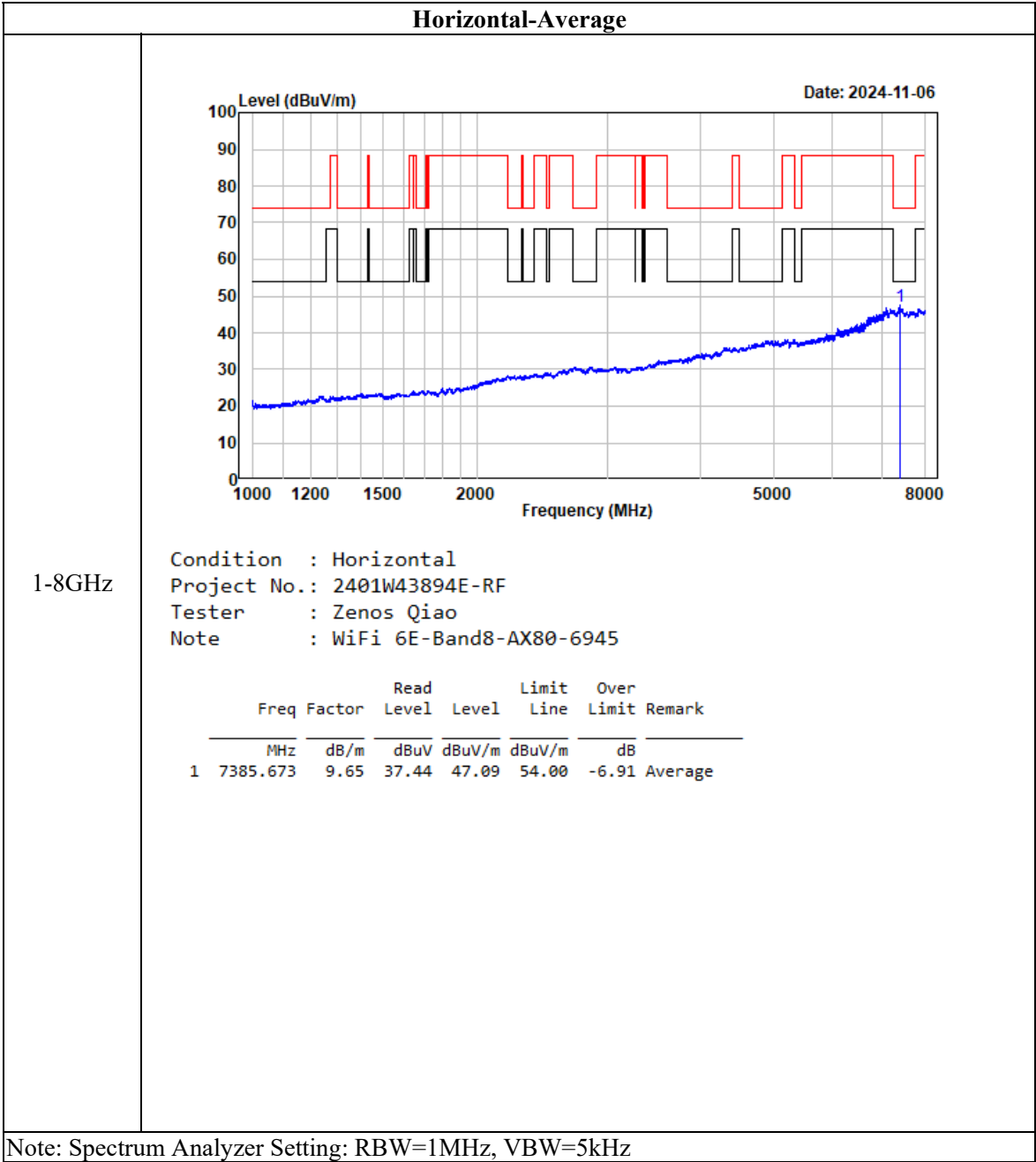


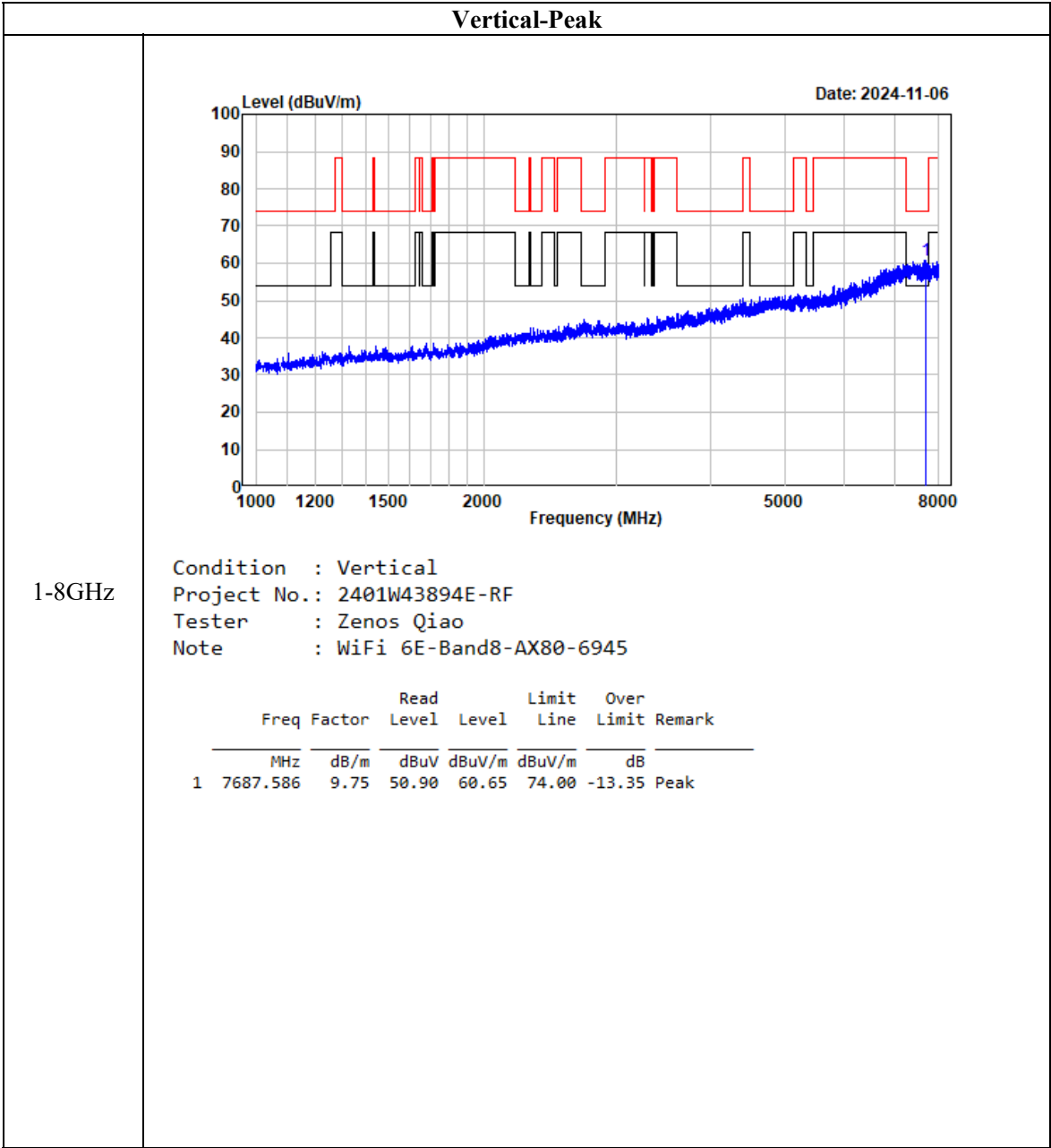


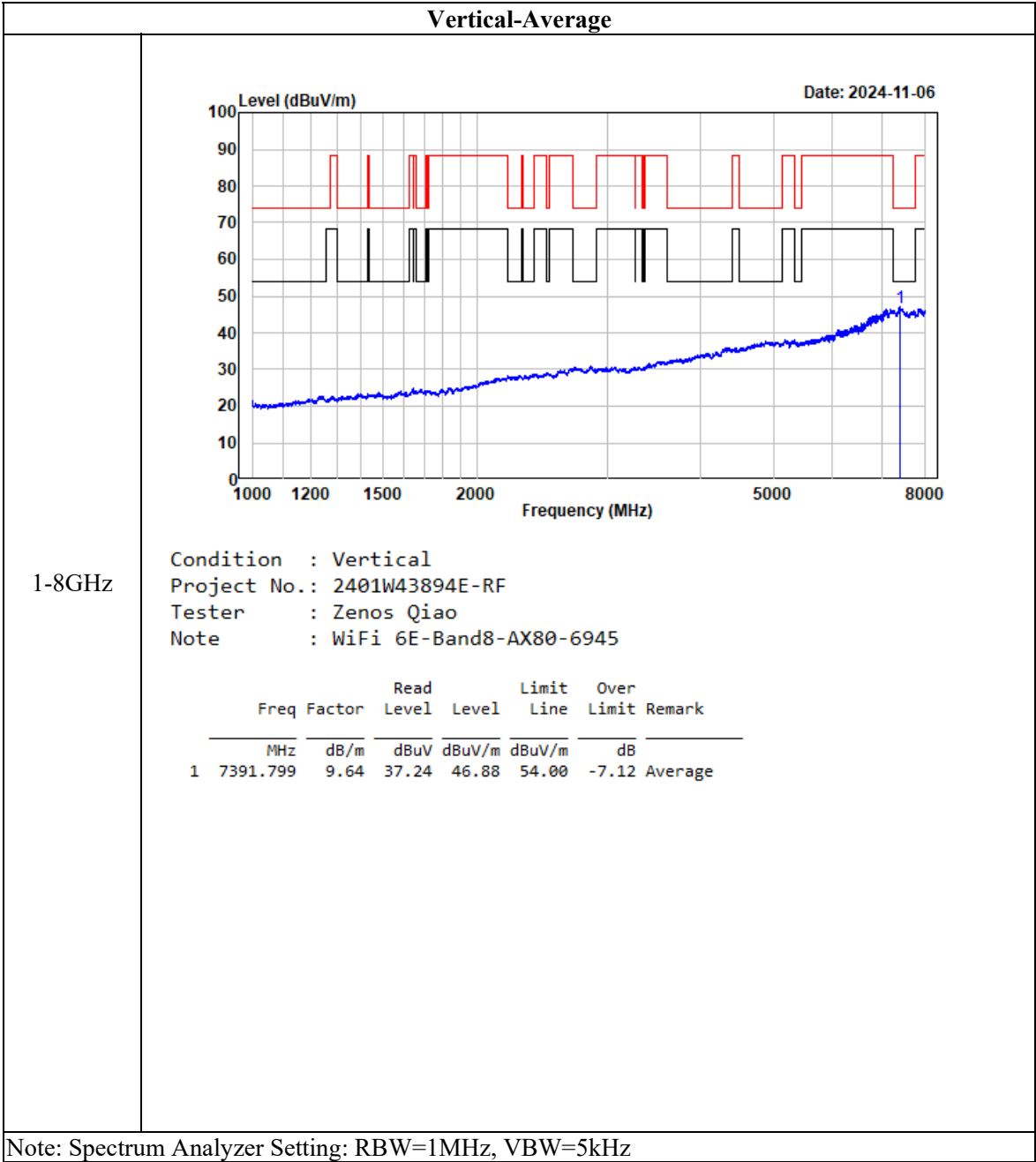


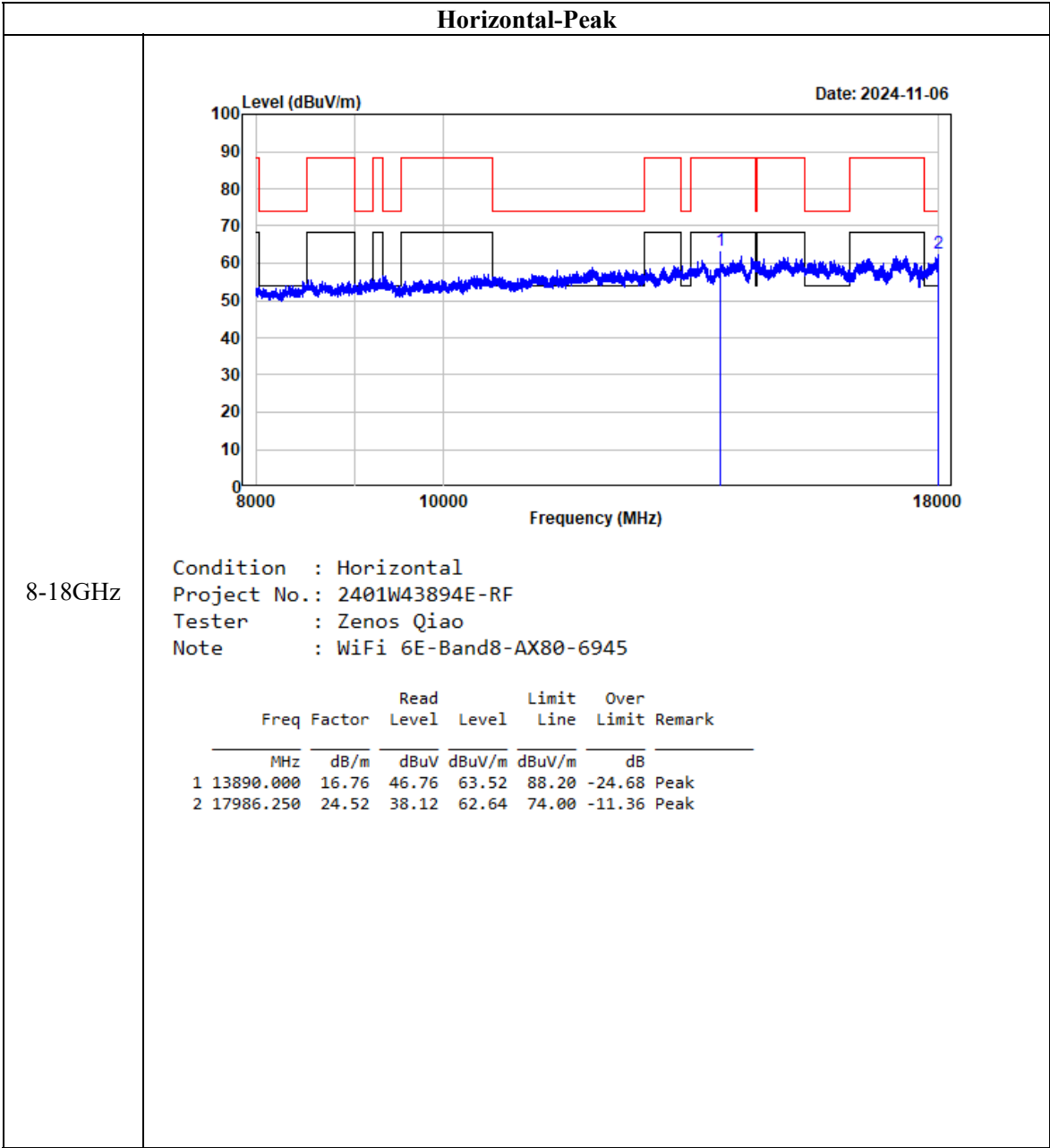
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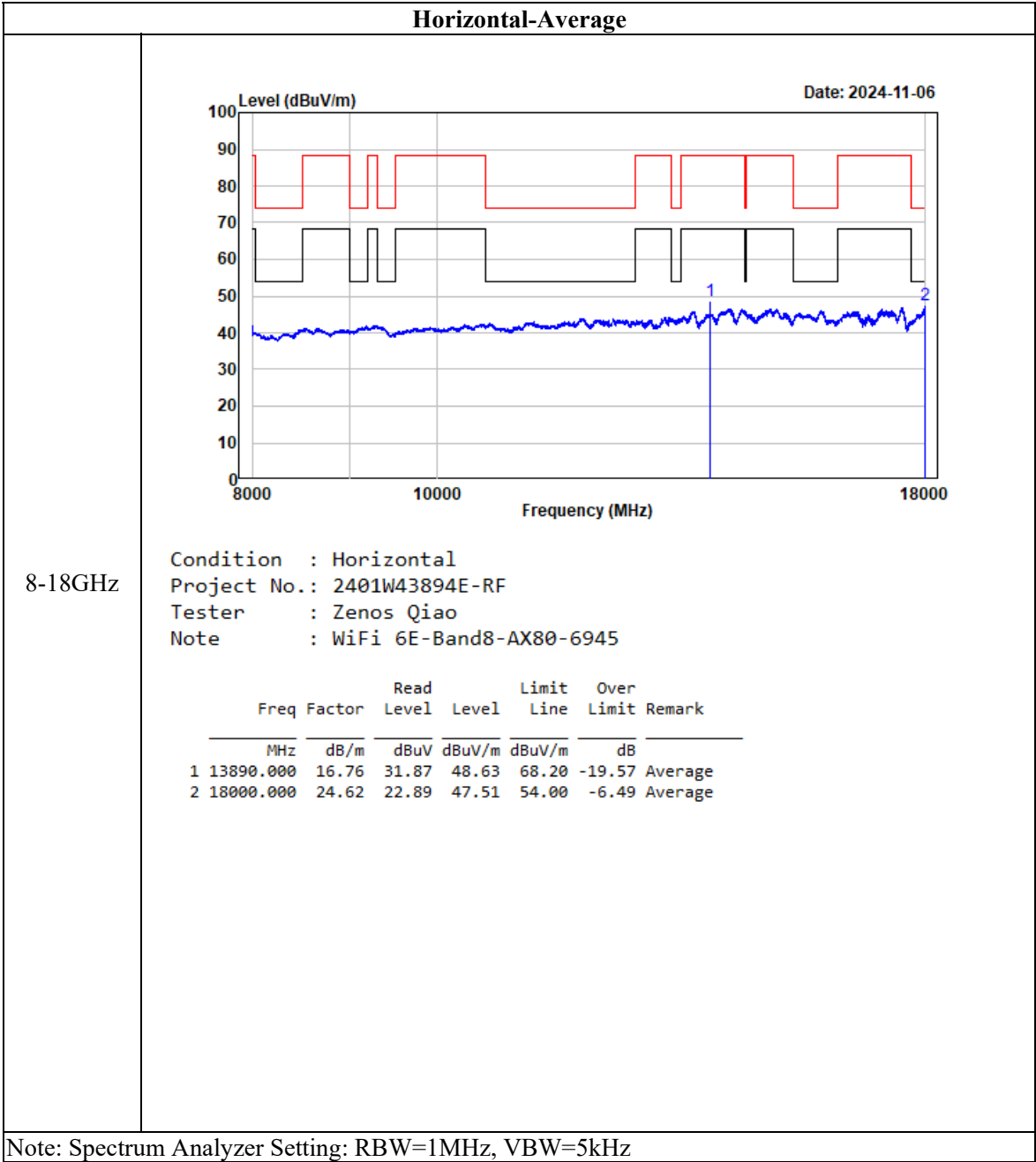


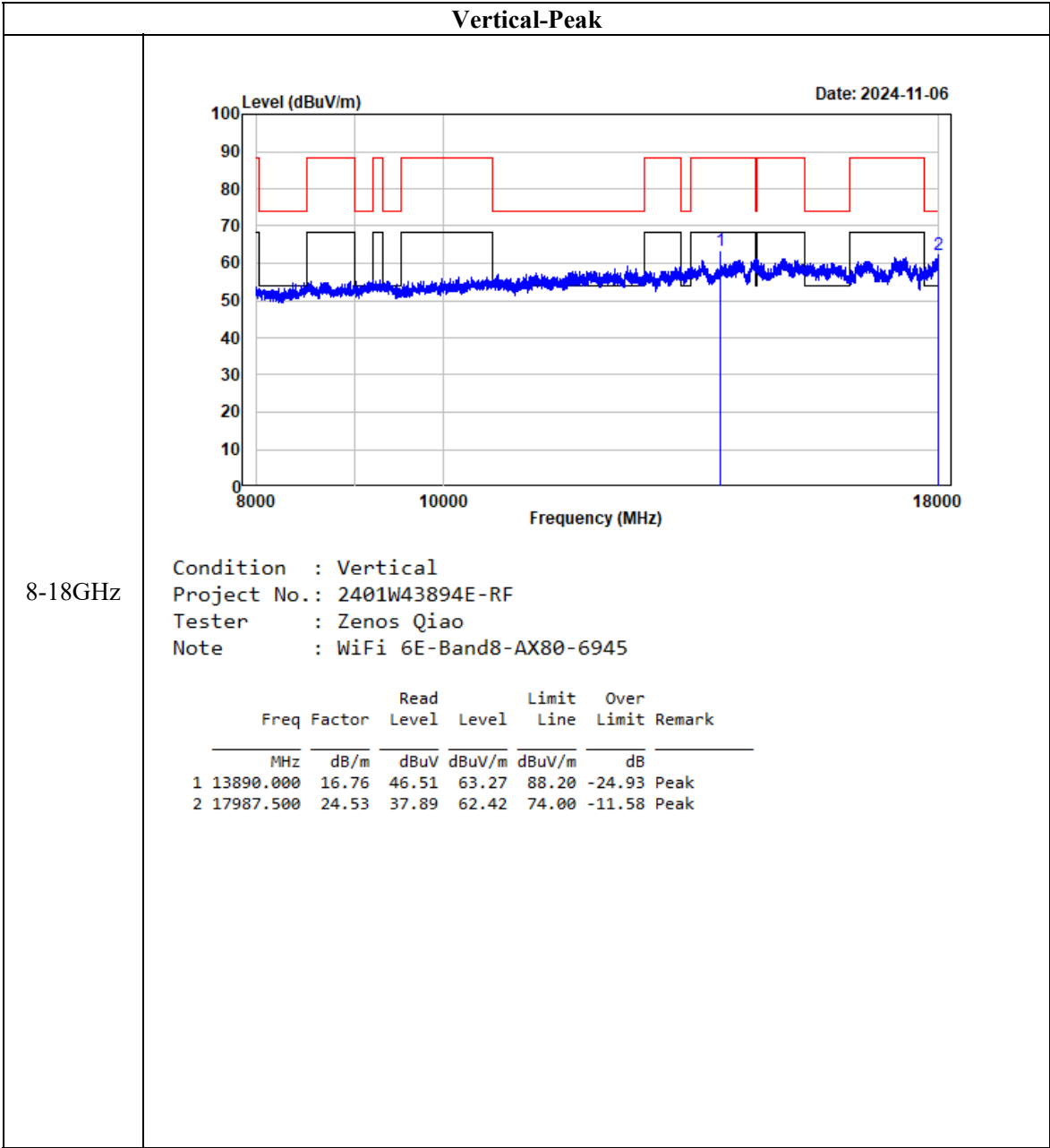


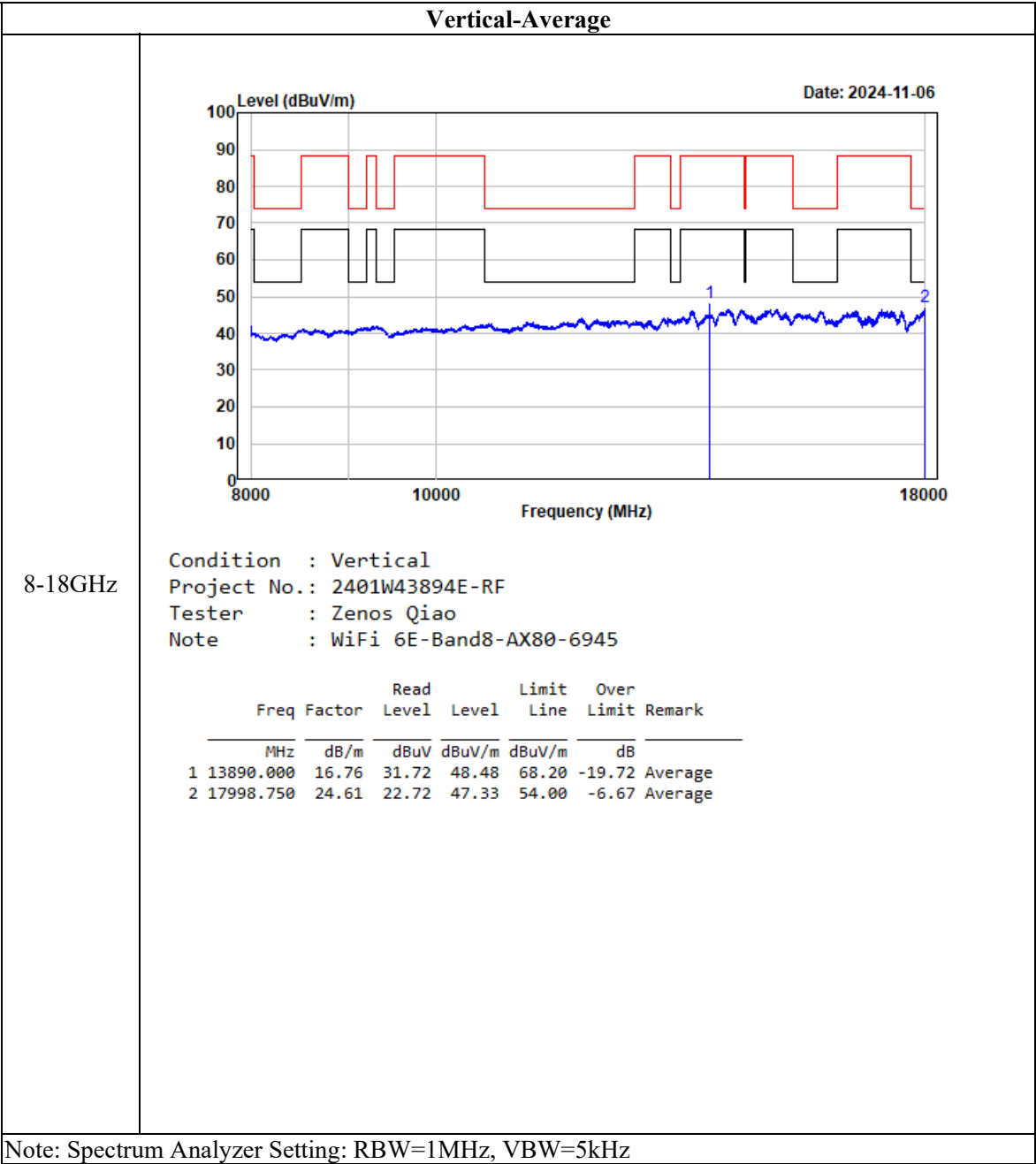




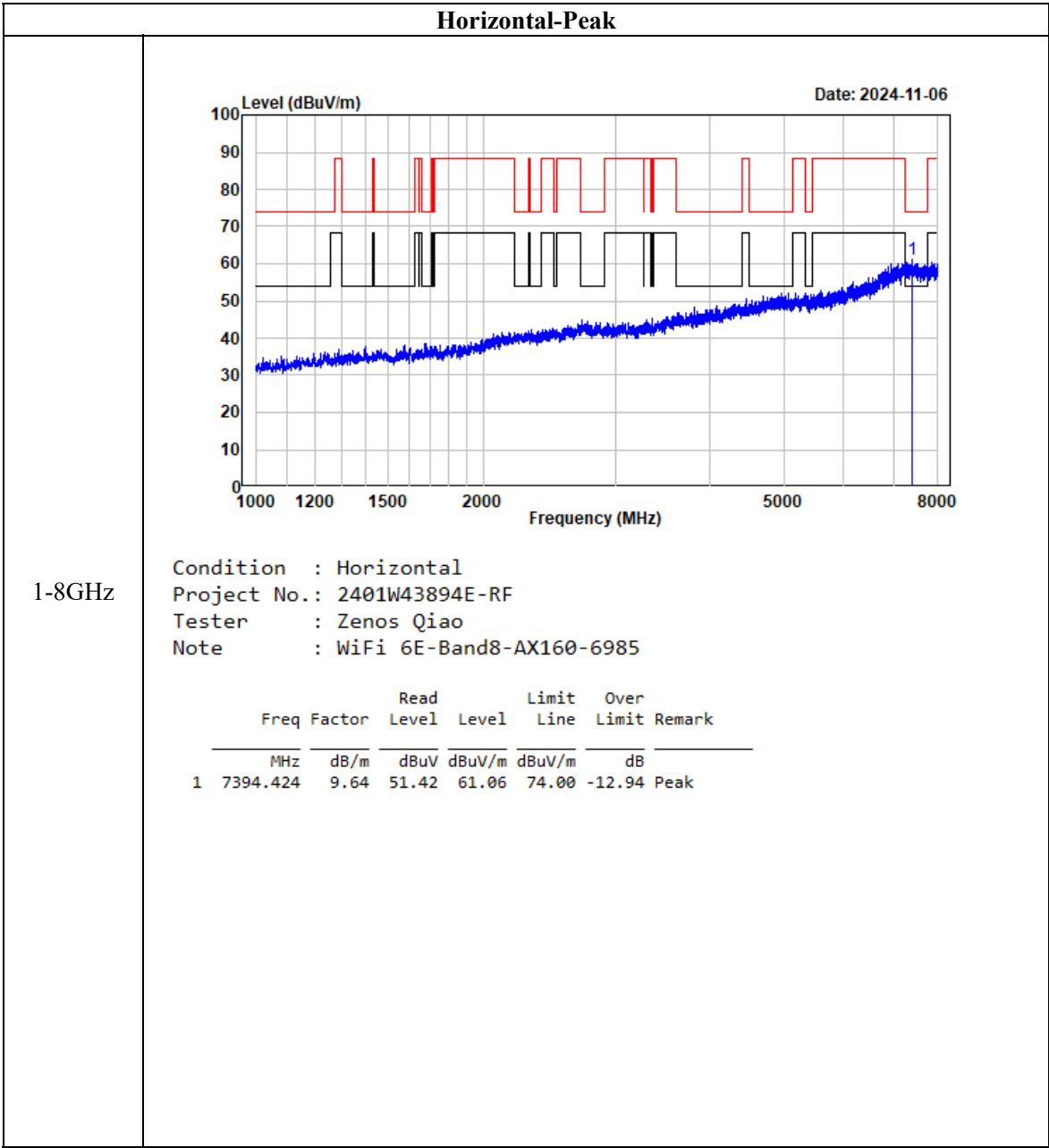


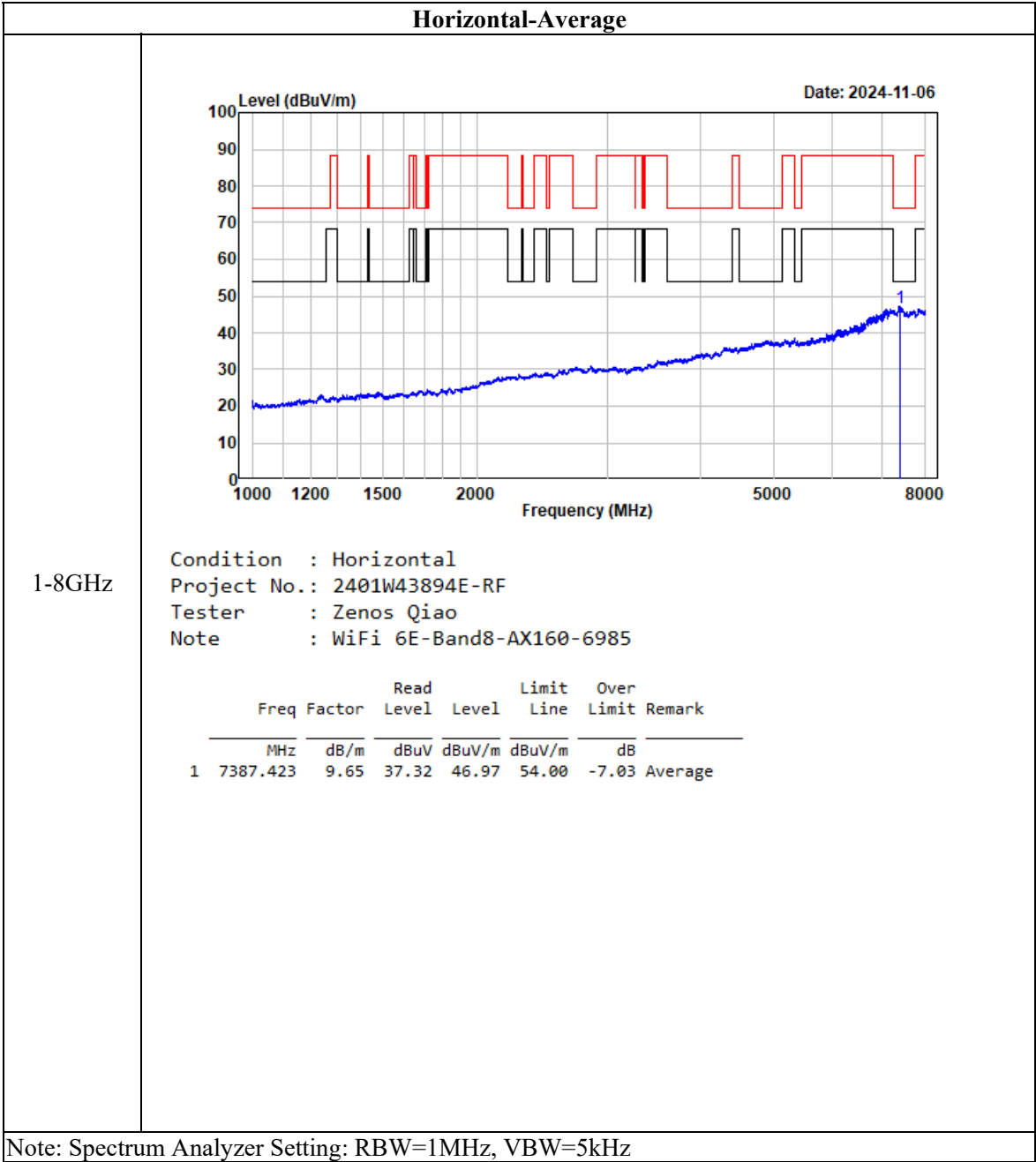


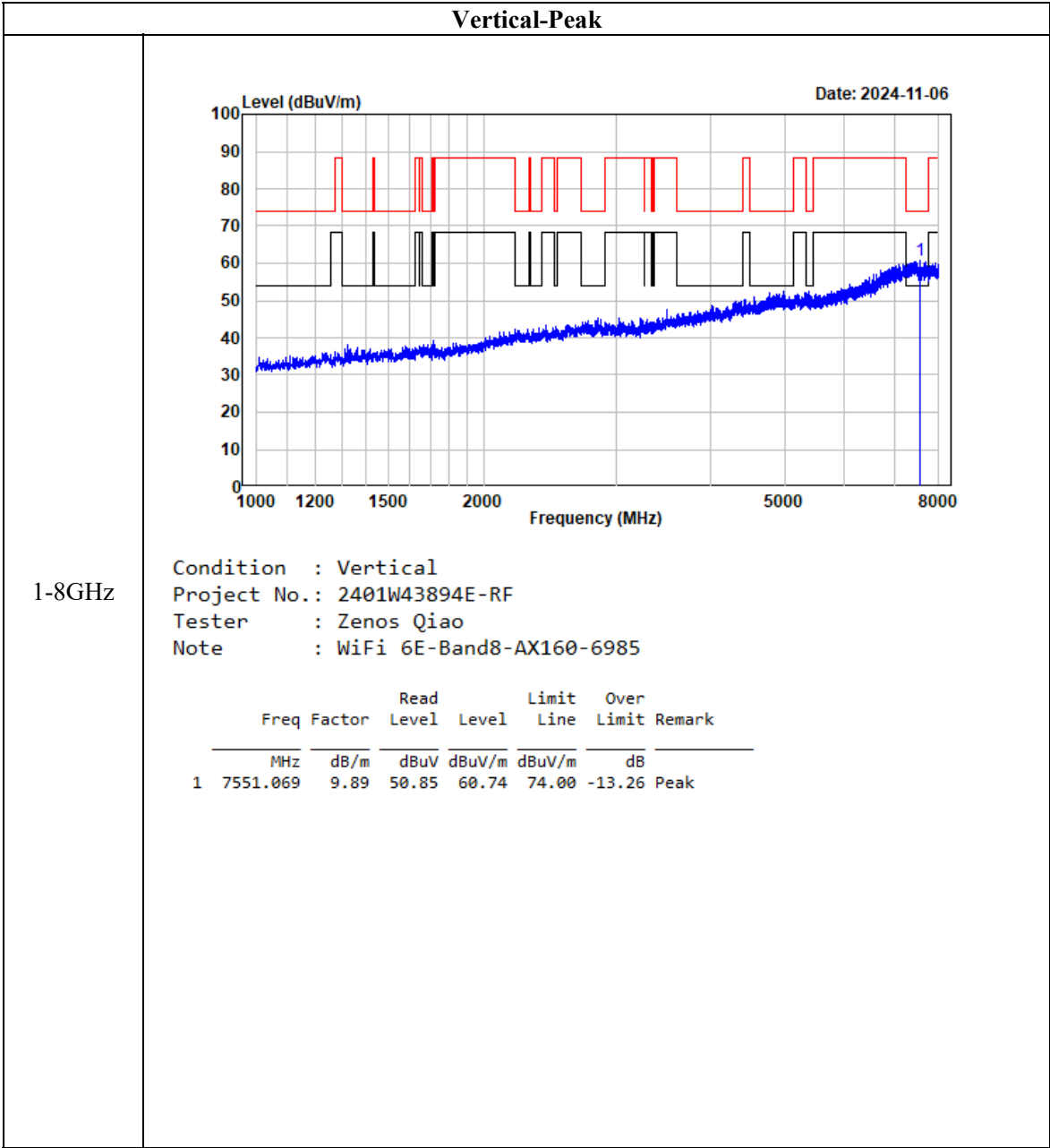


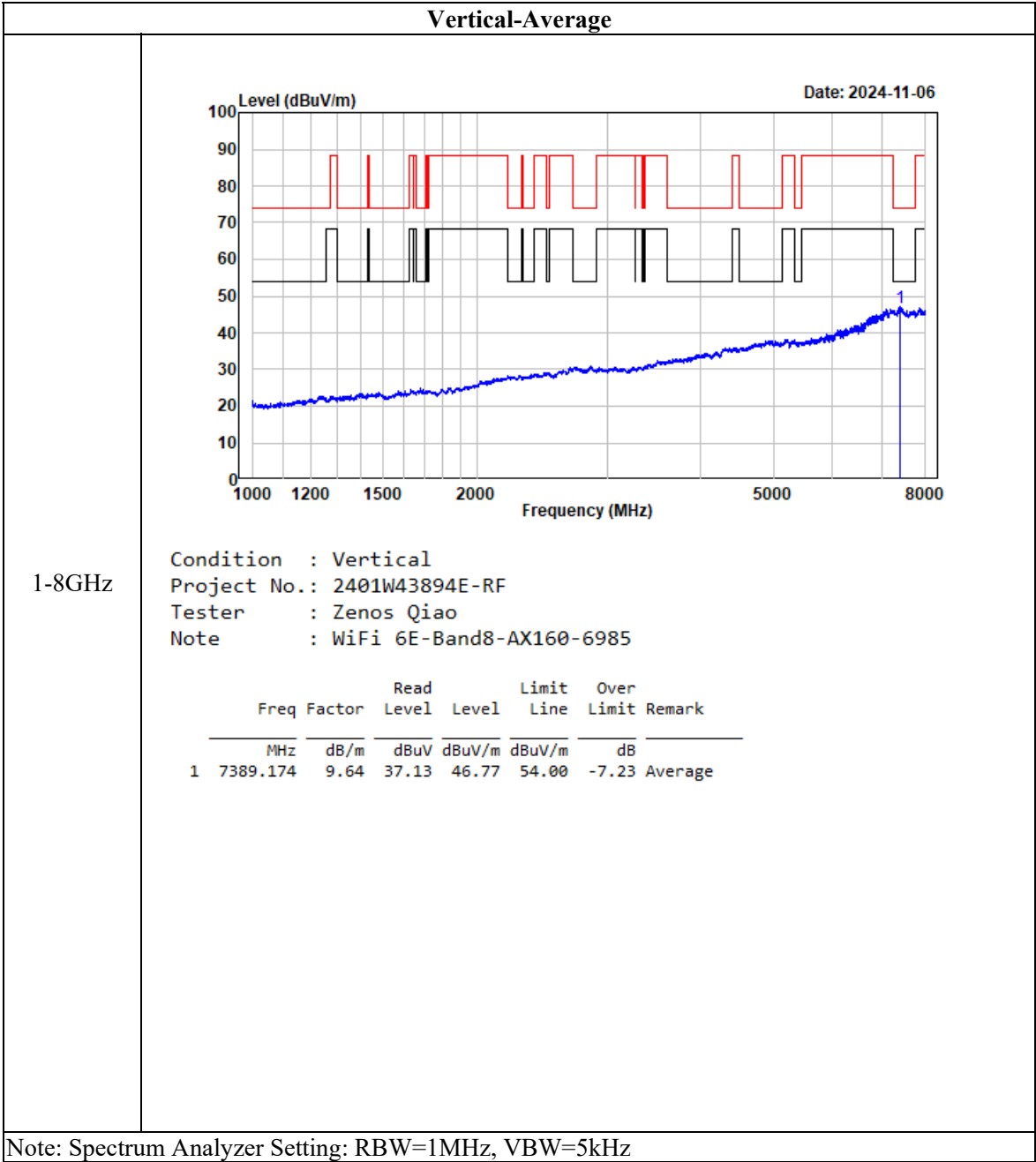


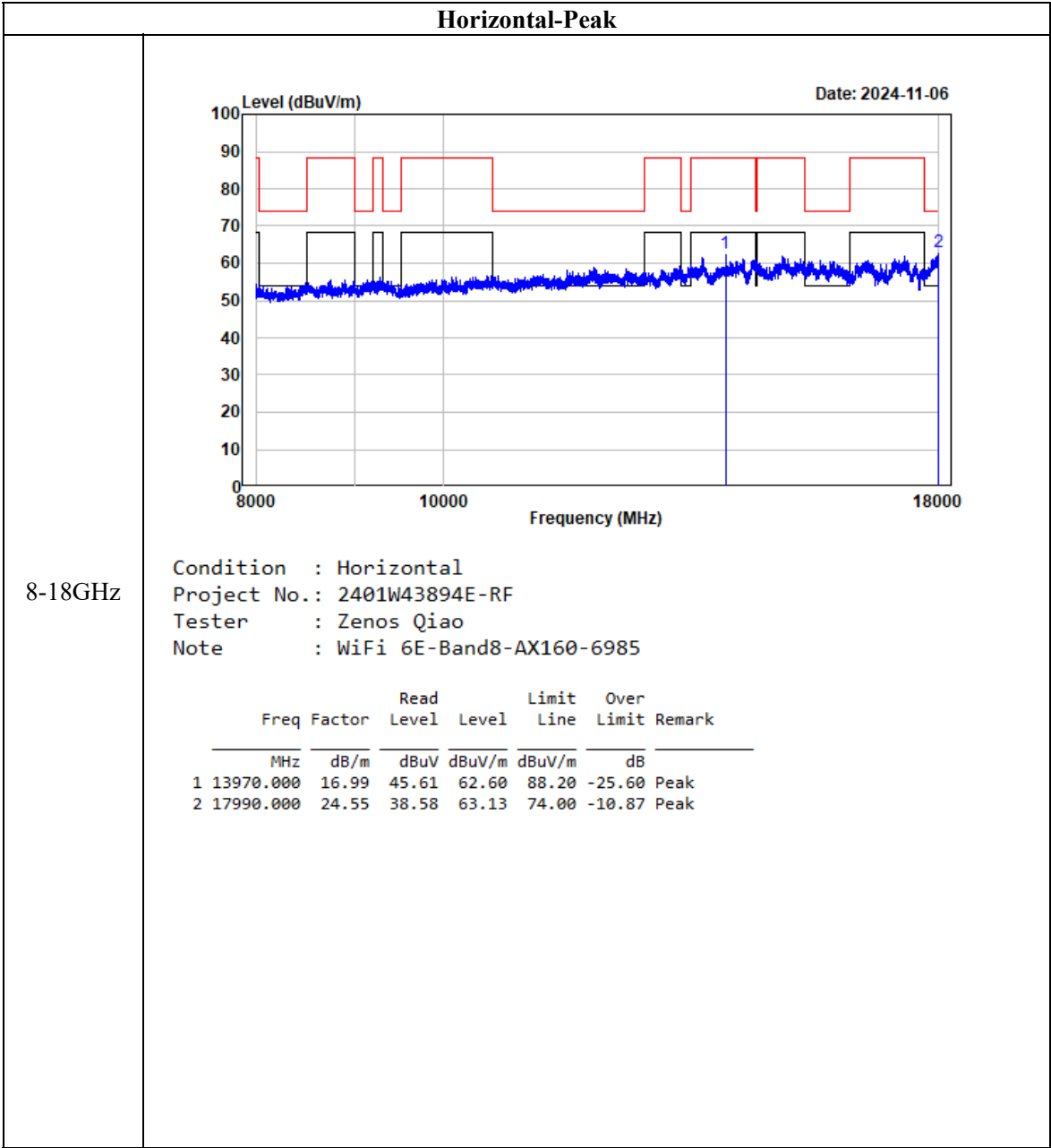
802.11ax160, 6985MHz

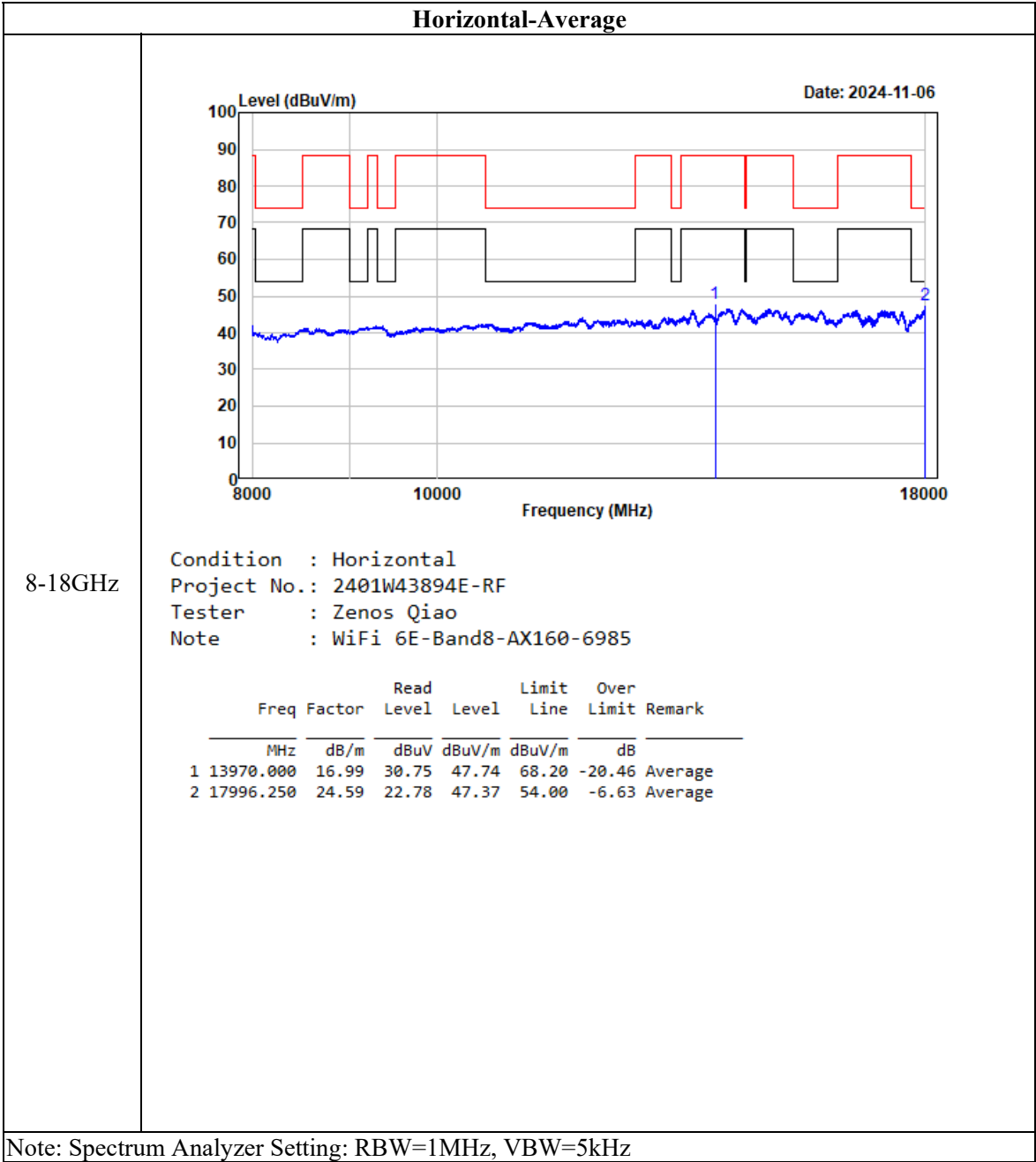


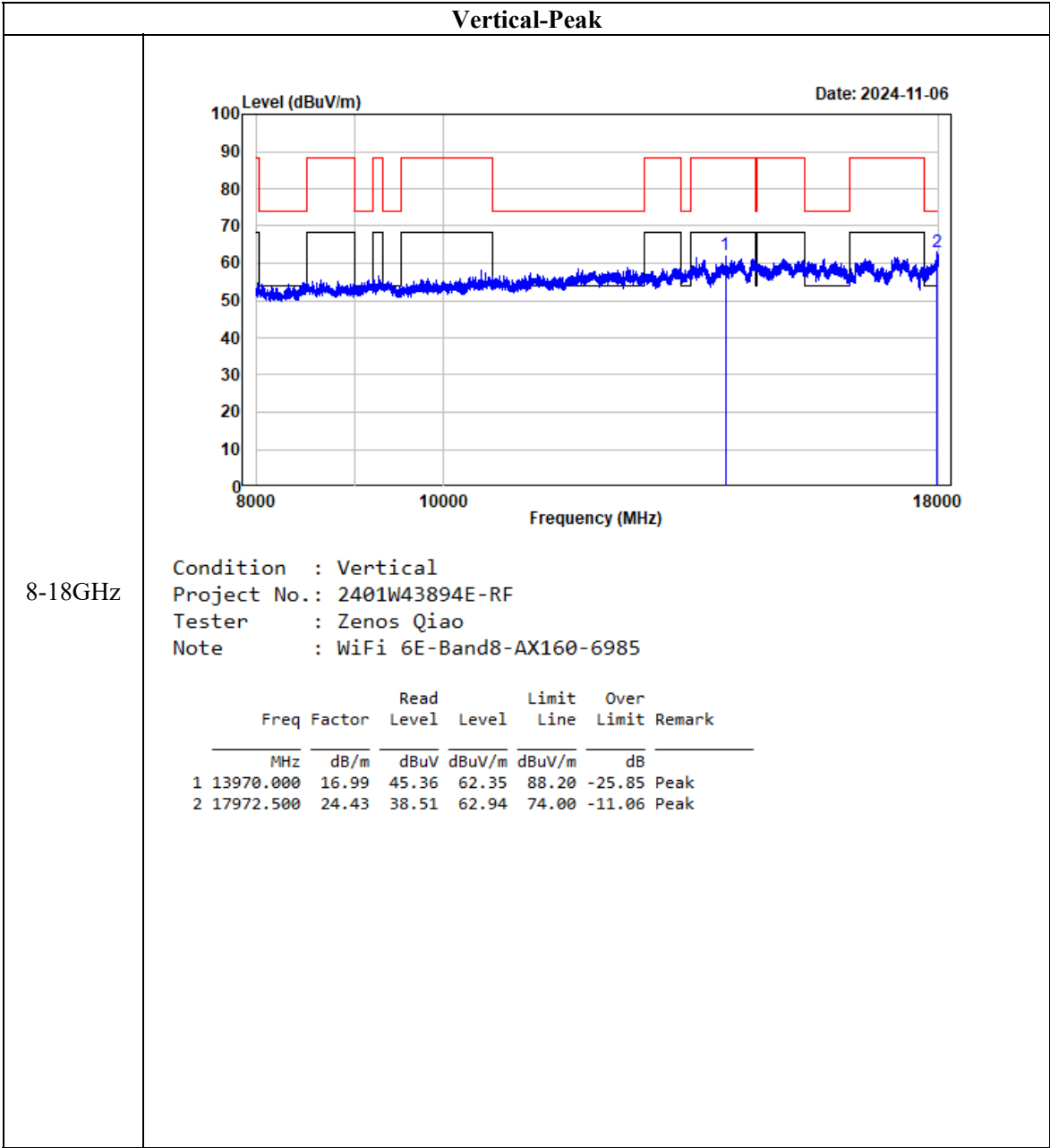


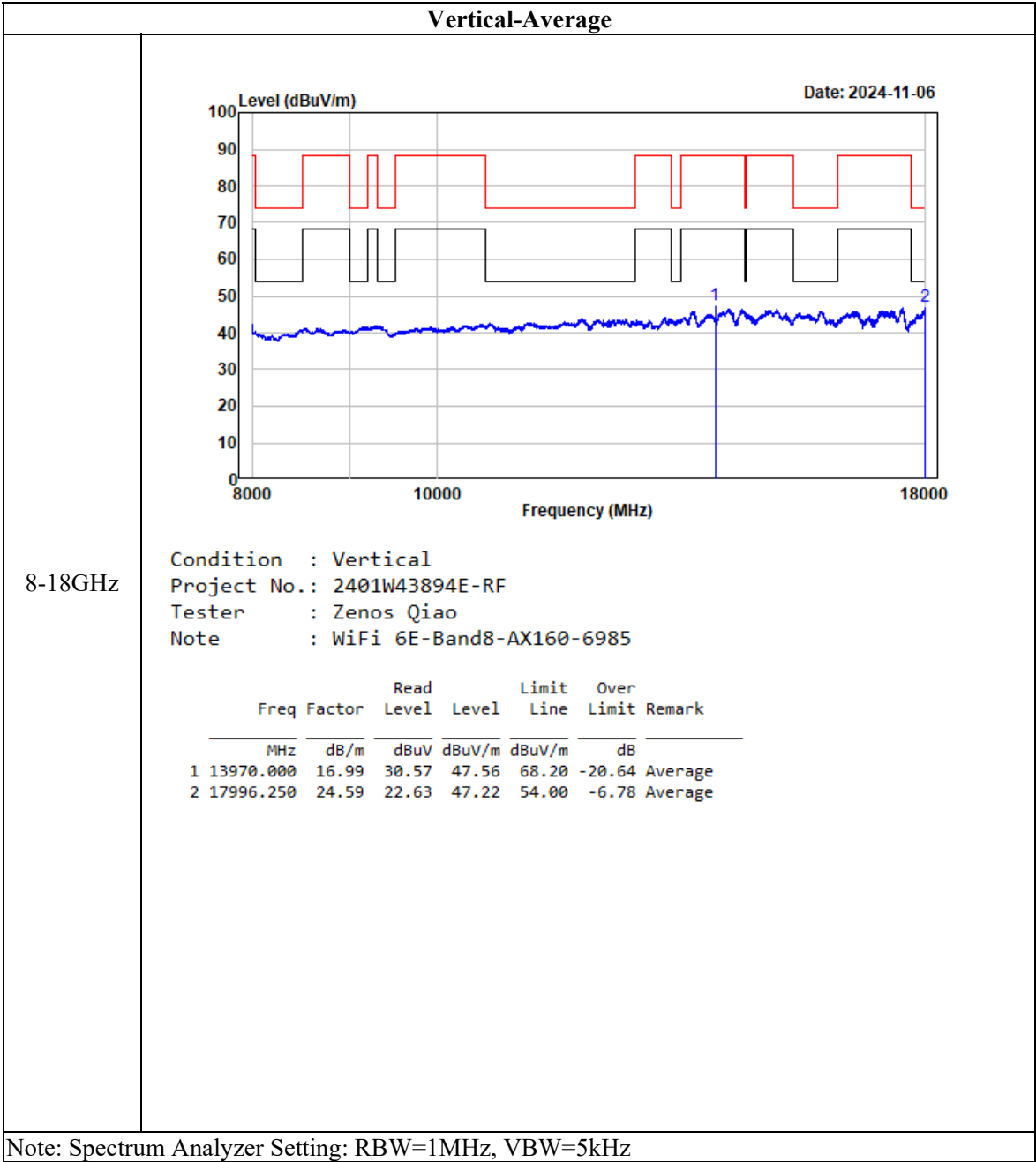




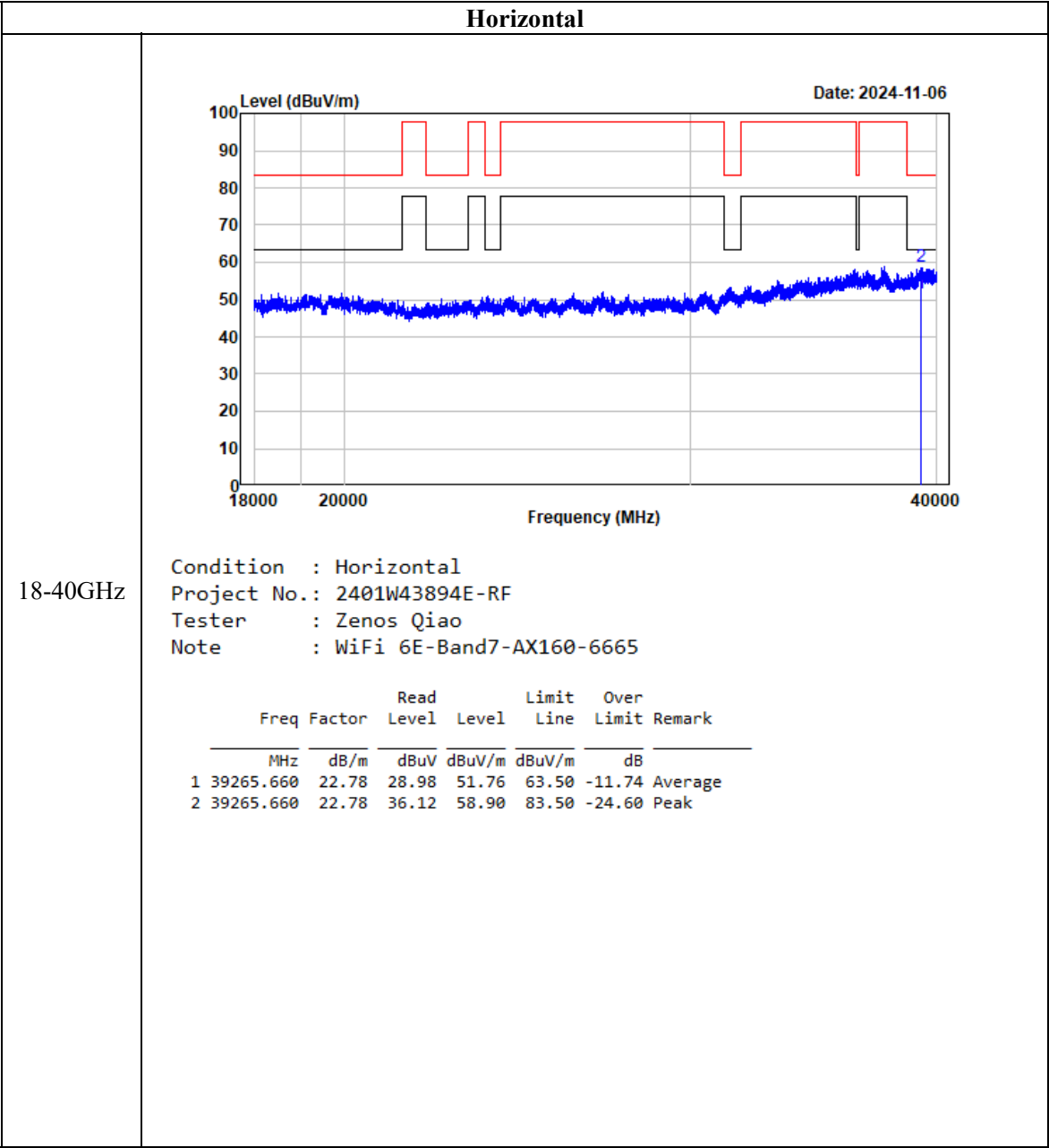


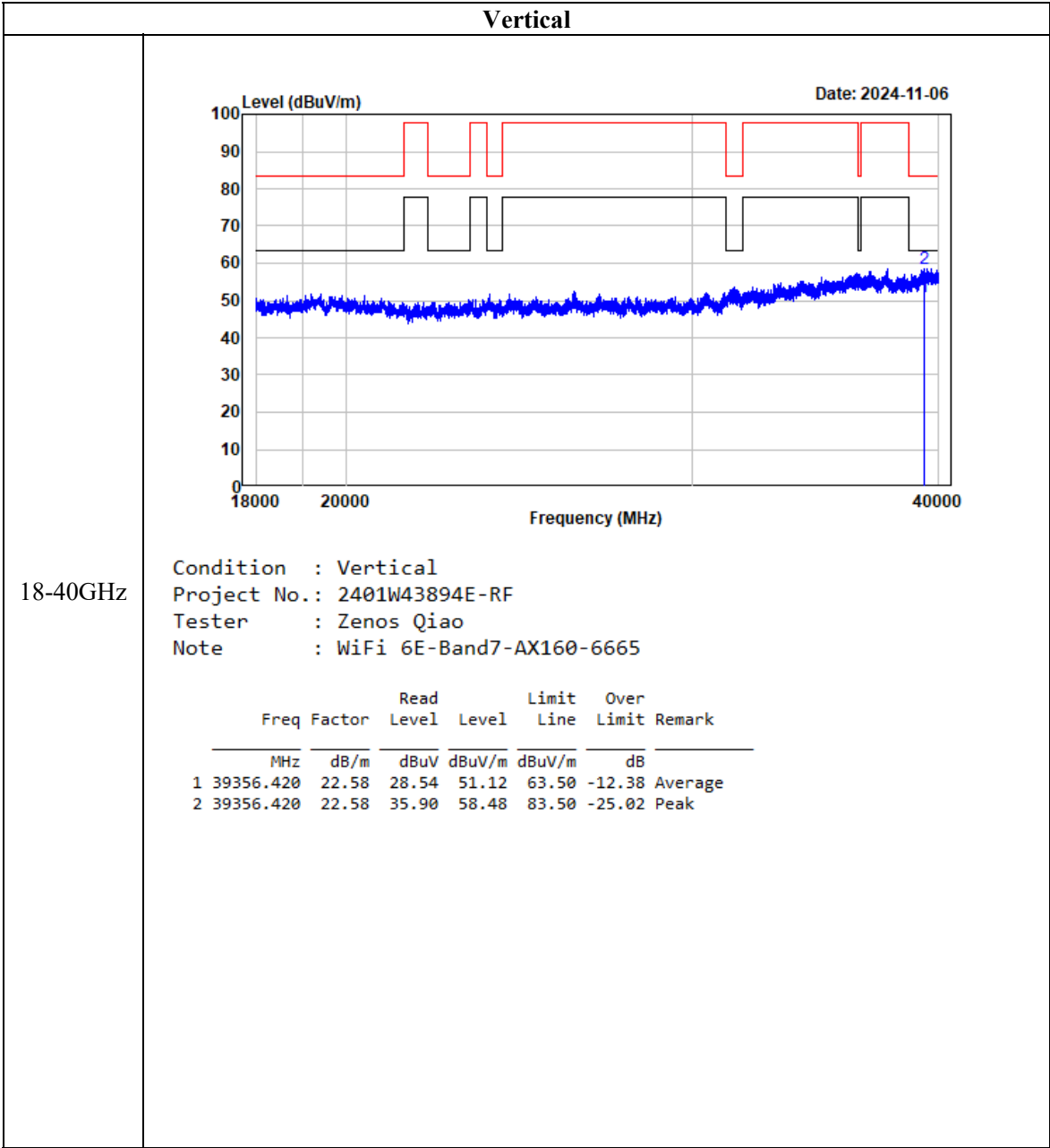






18-40GHz (Only with worst case margin mode plot):





FCC §15.407(a)(11) – 26 dB Emission Bandwidth & 99% Occupied bandwidth**Applicable Standard**

According to FCC§15.407(a)(11), The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz..

Test Procedure**1. Emission Bandwidth (EBW)**

Test Method: KDB789033 D02 Clause II.C

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- f) For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) $\geq 3 \times$ RBW.
- g) Measure and record the results in the test report.

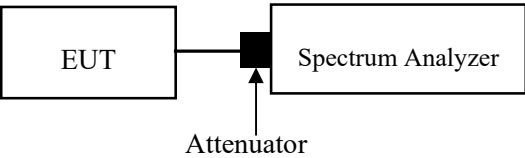
2. 99% Occupied Bandwidth:

According to ANSI C63.10-2013 Section 12.4.2&6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).



Test Data

Environmental Conditions

Temperature:	26~28 °C
Relative Humidity:	54~58 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang from 2024-11-12 to 2024-11-14.

EUT operation mode: Transmitting

Test Result: Pass

The test data please refer to the Appendix E1&E2.

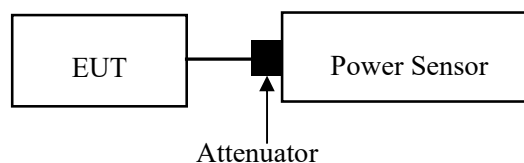
FCC §15.407(a)(8) –CONDUCTED TRANSMITTER OUTPUT POWER**Applicable Standard**

According to the FCC §15.407(a)(8), For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum power spectral density must not exceed -1 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method PM should be applied

- Place the EUT on a bench and set it in transmitting mode.
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- Add a correction factor to the display.



Note: A short RF cable with low cable loss connected to the EUT antenna port, which was provided by client or lab, the cable loss was add with offset into test equipment, the total offset consists of attenuator and/or RF cable and/or power splitter loss.

Test Data**Environmental Conditions**

Temperature:	26~28 °C
Relative Humidity:	54~58 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang from 2024-11-13 to 2024-11-16.

EUT operation mode: Transmitting

Test Result: Pass

The test data please refer to the Appendix G.

FCC §15.407(a)(8) –POWER SPECTRAL DENSITY**Applicable Standard**

According to the FCC §15.407(a)(8), For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum power spectral density must not exceed -1 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Duty cycle $\geq 98\%$

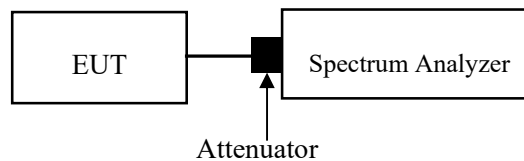
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-1 should be applied.

Duty cycle $< 98\%$, duty cycle variations are less than $\pm 2\%$

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-2 should be applied.

Duty cycle $< 98\%$, duty cycle variations exceed $\pm 2\%$

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Method SA-3 should be applied.

**Test Data****Environmental Conditions**

Temperature:	26~28 °C
Relative Humidity:	54~58 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang from 2024-11-13 to 2024-11-18.

EUT operation mode: Transmitting

Test Result: Pass

The test data please refer to the Appendix F.

FCC §15.407(b) (7) IN-BAND EMISSIONS

Applicable Standard

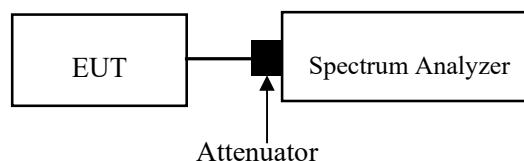
According to FCC§15.407(b) (7),

For transmitters operating within the 5.925-7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

Test Procedure

Test Method: KDB 987594 D02 Clause J

1. Connect output of the antenna port to a spectrum analyzer or EMI receiver, with appropriate attenuation, as to not damage the instrumentation.
2. Set the reference level of the measuring equipment in accordance with procedure 4.1.5.2 of ANSI C63.10-2013.
3. Take nominal bandwidth as reference channel bandwidth provided that 26 dB emission bandwidth is always larger than nominal bandwidth.
4. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:
 - a) Set the span to encompass the entire 26 dB EBW of the signal.
 - b) Set RBW = same RBW used for 26 dB EBW measurement.
 - c) Set VBW $\geq 3 \times$ RBW
 - d) Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$.
 - e) Sweep time = auto.
 - f) Detector = RMS (i.e., power averaging)
 - g) Trace average at least 100 traces in power averaging (rms) mode.
 - h) Use the peak search function on the instrument to find the peak of the spectrum.
5. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
 - a. Suppressed by 20 dB at 1 MHz outside of the channel edge.
 - b. Suppressed by 28 dB at one channel bandwidth from the channel center.
 - c. Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
6. Adjust the span to encompass the entire mask as necessary.
7. Clear trace.
8. Trace average at least 100 traces in power averaging (rms) mode.
9. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.



Test Data**Environmental Conditions**

Temperature:	26~28 °C
Relative Humidity:	54~58 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang from 2024-11-13 to 2024-11-16.

EUT operation mode: Transmitting

Test Result: Pass

The test data please refer to the Appendix H.

FCC §15.407(d) (6) CONTENTION BASED PROTOCOL

Applicable Standard

According to FCC15.407(d) (6) &KDB 98754 D02.

Indoor access points , subordinate devices and client devices operating in the 5.925-7.125 GHz band (herein referred to as unlicensed devices) are required to use technologies that include a contention-based protocol to avoid co-channel interference with incumbent devices sharing the band . To ensure incumbent co-channel operations are detected in a technology-agnostic manner, unlicensed devices are required to detect co-channel radio frequency energy (energy detect) and avoid simultaneous transmission.

Unlicensed low-power indoor devices must detect co-channel radio frequency power that is at least -62 dBm or lower . Upon detection of energy in the band , unlicensed low power indoor devices must vacate the channel (in which incumbent signal is transmitted) and stay off the incumbent channel as long as detected radio frequency power is equal to or greater than the threshold (-62dBm)1. The -62dBm(or lower) Threshold is referenced to a 0dBi antenna gain.

To ensure incumbent operations are reliably detected in the band , low power indoor devices must detect RF energy throughout intended operating channel . For example , an 802 .device that plans to transmit a 40 MHz-wide signal (on a primary 20 MHz channel and a secondary 20 MHz channel) must detect energy throughout the entire 40 MHz channel. Additionally , low-power indoor devices must detect co-channel energy with 90% or greater certainty .

Table 1. Criteria to determine number of times detection threshold test may be performed

If	Number of Tests	Placement of Incumbent Transmission
$BW_{EUT} \leq BW_{Inc}$	Once	Tune incumbent and EUT transmissions ($f_{c1} = f_{c2}$)
$BW_{Inc} < BW_{EUT} \leq 2BW_{Inc}$	Once	Incumbent transmission is contained within BW_{EUT}
$2BW_{Inc} < BW_{EUT} \leq 4BW_{Inc}$	Twice. Incumbent transmission is contained within BW_{EUT}	Incumbent transmission is located as closely as possible to the lower edge and upper edge, respectively, of the EUT channel
$BW_{EUT} > 4BW_{Inc}$	Three times	Incumbent transmission is located as closely as possible to the lower edge of the EUT channel, in the middle of EUT channel, and as closely as possible to the upper edge of the EUT channel

where:

BW_{EUT} : Transmission bandwidth of EUT signal

BW_{Inc} : Transmission bandwidth of the simulated incumbent signal (10 MHz wide AWGN signal)

f_{c1} : Center frequency of EUT transmission

f_{c2} : Center frequency of simulated incumbent signal

Test Procedure

Test Method: KDB 987594 D02 Clause I

1. Configure the EUT to transmit with a constant duty cycle.
2. Set the operating parameters of the EUT including power level, operating frequency, modulation and bandwidth.
3. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT.
Connect the output port of the EUT to the signal analyzer 2, as shown in Figure 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.
4. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.
5. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
6. Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT as shown in Figure 2.
7. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
8. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
9. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
10. Refer to Table 1 to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 5, choose a different center frequency for the AWGN signal and repeat the process.

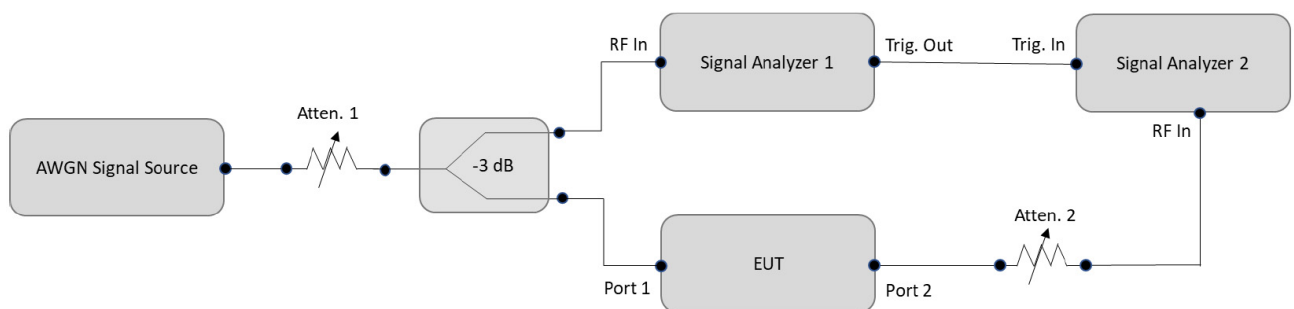


Figure 2. Contention-based protocol test setup, conducted method Step-by-Step Procedure, Conducted Setup

Test Data

Environmental Conditions

Temperature:	26~28 °C
Relative Humidity:	54~58 %
ATM Pressure:	101 kPa

The testing was performed by Navilite Cai from 2024-12-05 to 2024-12-13.

EUT operation mode: Transmitting

Test Result: Pass

The test data please refer to the Appendix J.

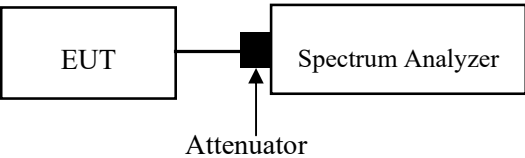
C63.10 §11.6- DUTY CYCLE

Test Procedure

According to ANSI C63.10-2013 Section 11.6

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

- 1) Set the center frequency of the instrument to the center frequency of the transmission.
- 2) Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value.
- 3) Set $VBW \geq RBW$. Set detector = peak or average.
- 4) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if $T \leq 16.7 \mu s$.)



Test Data

Environmental Conditions

Temperature:	26~28 °C
Relative Humidity:	54~58 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang from 2024-11-13 to 2024-11-14.

EUT operation mode: Transmitting

Test Result: Pass

The test data please refer to the Appendix I.

EUT PHOTOGRAPHS

Please refer to the attachment 2401W43894E-RF External photo and 2401W43894E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401W43894E-RFB Test Setup photo.

******* END OF REPORT *******