

# FCC Test Report

Product Name	RadiX AXE6600 WiFi 6E Tri-Band Gaming Router
Model No	GRAXE66
FCC ID.	I4L-GRAXE66

Applicant	Micro-Star Int'l Co., Ltd.
Address	No.69, Lide St., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)

Date of Receipt	Jan. 11, 2022
Issued Date	Jul. 19, 2022
Report No.	2210313R-RFUSWL5V01-A
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

# Test Report

Issued Date: Jul. 19, 2022

Report No.: 2210313R-RFUSWL5V01-A



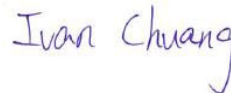
Product Name	RadiX AXE6600 WiFi 6E Tri-Band Gaming Router
Applicant	Micro-Star Int'l Co., Ltd.
Address	No.69, Lide St., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)
Manufacturer	LEADER ELECTRONICS INC.
Model No.	GRAXE66
FCC ID.	I4L-GRAXE66
EUT Rated Voltage	AC 100-240V, 50/60Hz
EUT Test Voltage	AC 120V / 60Hz
Trade Name	msi
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E ANSI C63.4: 2014, ANSI C63.10: 2013 KDB Publication 789033
Test Result	Complied

Documented By :



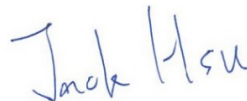
( Senior Project Specialist / Joanne Lin )

Tested By :



( Senior Engineer / Ivan Chuang )

Approved By :



( Senior Engineer / Jack Hsu )

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## Revision History

Report No.	Version	Description	Issued Date
2210313R-RFUSWL5V01-A	V1.0	Initial issue of report.	Jul. 19, 2022

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	RadiX AXE6600 WiFi 6E Tri-Band Gaming Router
Trade Name	msi
Model No.	GRAXE66
FCC ID.	I4L-GRAXE66
Frequency Range	802.11a/n/ac/ax-20MHz: 5180-5320MHz, 5500-5720MHz, 5745-5825MHz 802.11n/ac/ax-40MHz: 5190-5310MHz, 5510-5710MHz, 5755-5795MHz 802.11ac/ax-80MHz: 5210-5290MHz, 5530-5690MHz, 5775MHz
Number of Channels	802.11a/n/ac/ax-20MHz: 25CH, 802.11n/ac/ax-40MHz: 12CH, 802.11ac/ax-80MHz: 6CH
Data Rate	802.11a: 6 - 54Mbps, 802.11n: up to 1300MHz 802.11ac: up to 1733.3MHz, 802.11ax: up to 2402MHz
Type of Modulation	OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM OFDMA, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Antenna type	Dipole Antenna
Channel Control	Auto
Antenna Gain	Refer to the table "Antenna List"
LAN Cable	Non-shielded, 1m
Power Adapter	MFR: CWT, M/N: 2AEJ042FC Input: AC 100-240V~50/60Hz, 1.3A Output: 12.0V=3.5A, 42.0W Cable Out: Non-shielded, 1.5m

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	WIESON	ARY121-0350-005-00	Dipole Antenna	4.74dBi for 5150-5250MHz 4.83dBi for 5250-5350MHz 5.64dBi for 5470-5725MHz 5.61dBi for 5725-5850MHz
2	WIESON	ARY121-0350-006-00	Dipole Antenna	2.91dBi for 5150-5250MHz 3.67dBi for 5250-5350MHz 4.68dBi for 5470-5725MHz 5.49dBi for 5725-5850MHz

Note: The antenna of EUT is conform to FCC 15.203.

For power CDD Directional gain	For power Beamforming Directional gain
4.74dBi for 5150-5250MHz	7.75dBi for 5150-5250MHz
4.83dBi for 5250-5350MHz	7.84dBi for 5250-5350MHz
5.64dBi for 5470-5725MHz	8.65dBi for 5470-5725MHz
5.61dBi for 5725-5850MHz	8.62dBi for 5725-5850MHz

**For CDD mode:**

5150MHz-5250MHz: Directional gain = 4.74 dBi

5250MHz-5350MHz: Directional gain = 4.83 dBi

5470MHz-5725MHz: Directional gain = 5.64 dBi

5725MHz-5850MHz: Directional gain = 5.61 dBi

(Directional gain =  $G_{ANT MAX} + \text{Array Gain}$ , Array Gain = 0 dB for  $N_{ANT} \leq 4$ )**For Beamforming mode:**

5150MHz-5250MHz: Directional gain = 7.75 dBi

5250MHz-5350MHz: Directional gain = 7.84 dBi

5470MHz-5725MHz: Directional gain = 8.65 dBi

5725MHz-5850MHz: Directional gain = 8.62 dBi

Directional gain =  $G_{ANT MAX} + \text{Array Gain}$ , Array Gain =  $10 \cdot \log(2) = 3.01$  dB)

For PSD Directional gain
6.93dBi for 5150-5250MHz
7.03dBi for 5250-5350MHz
8.20dBi for 5470-5725MHz
8.56dBi for 5725-5850MHz

5150MHz-5250MHz: Directional gain = 6.93 dBi

5250MHz-5350MHz: Directional gain = 7.30 dBi

5470MHz-5725MHz: Directional gain = 8.20 dBi

5725MHz-5850MHz: Directional gain = 8.56 dBi

Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$  dBi

802.11a/n/ac/ax -20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 40:	5200 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz
Channel 52:	5260 MHz	Channel 56:	5280 MHz	Channel 60:	5300 MHz	Channel 64:	5320 MHz
Channel 100:	5500 MHz	Channel 104:	5520 MHz	Channel 108:	5540 MHz	Channel 112:	5560 MHz
Channel 116:	5580 MHz	Channel 120:	5600 MHz	Channel 124:	5620 MHz	Channel 128:	5640 MHz
Channel 132:	5660 MHz	Channel 136:	5680 MHz	Channel 140:	5700 MHz	Channel 144:	5720 MHz
Channel 149:	5745 MHz	Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz
Channel 165:	5825 MHz						

802.11n/ac/ax -40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz	Channel 54:	5270 MHz	Channel 62:	5310 MHz
Channel 102:	5510 MHz	Channel 110:	5550 MHz	Channel 118:	5590 MHz	Channel 126:	5630 MHz
Channel 134:	5670 MHz	Channel 142:	5710 MHz	Channel 151:	5755 MHz	Channel 159:	5795 MHz

802.11ac/ax -80MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 42:	5210 MHz	Channel 58:	5290 MHz	Channel 106:	5530 MHz	Channel 122:	5610 MHz
Channel 138:	5690 MHz	Channel 155:	5775 MHz				

Note:

1. This device is a RadiX AXE6600 WiFi 6E Tri-Band Gaming Router with built-in WLAN(802.11a/b/g/n/ac/ax) transceiver, this report for 5GHz WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps 、802.11ax-20BW/40BW/80BW is MCS0)
4. The CDD mode and Beamforming mode are presented in the power output test item. For other test items, CDD mode is the worst case for the final test and shown in this report.
5. The spectrum plot against conducted item only shows the worst case.
6. This device does not support partial RU function.
7. These tests were conducted on a sample for the purpose of demonstrating compliance of 802.11a/n/ac/ax transmitter with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.

Test Mode	Mode 1: Transmit (802.11a-CDD) Mode 2: Transmit (802.11ax-20BW-CDD) Mode 3: Transmit (802.11ax-40BW-CDD) Mode 4: Transmit (802.11ax-80BW-CDD) Mode 5: Transmit (802.11ax-20BW-Beamforming) Mode 6: Transmit (802.11ax-40BW-Beamforming) Mode 7: Transmit (802.11ax-80BW-Beamforming)
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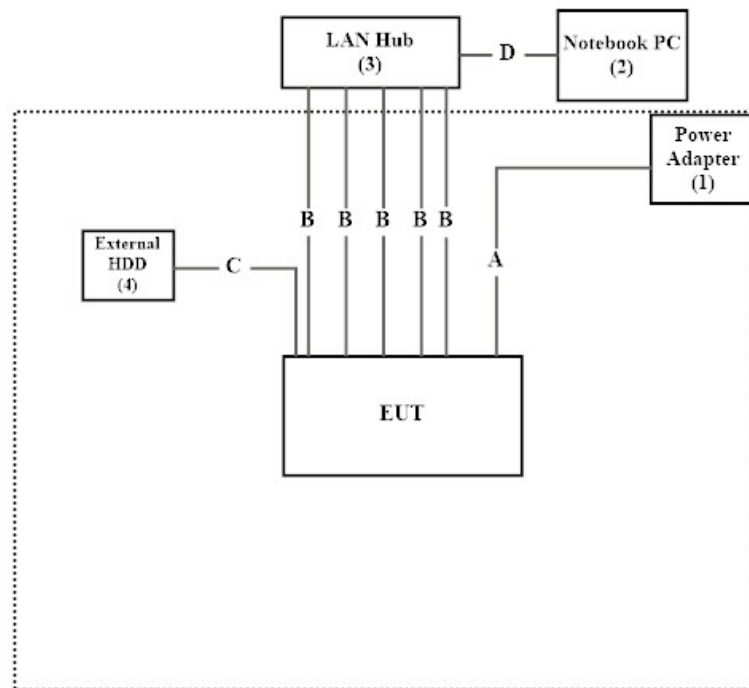
## 1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Power Adapter	CWT	2AEJ042FC	N/A	N/A
2 Notebook PC	DELL	P62G	CY9FJC2	N/A
3 LAN Hub	TP-LINK	TL-SG108	2161597000471	Non-Shielded, 1.5m
4 External HDD	Transcend	TS1TSJ25H3B	F21786-0103	N/A

Signal Cable Type	Signal cable Description
A Power Cable	Non-shielded, 1.5m
B LAN Cable	Non-shielded, 3m
C USB Cable	Shielded, 1m
D LAN Cable	Non-shielded, 3m

## 1.3. Configuration of tested System



## 1.4. EUT Exercise Software

1. Setup the EUT as shown in Section 1.3.
2. Execute software "QRCT Version 4.0.00192.0" on the Notebook PC.
3. Configure the test mode, the test channel, and the data rate.
4. Press "OK" to start the continuous Transmit.
5. Verify that the EUT works properly.

## 1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	23.9 °C
	Humidity (%RH)	10~90 %	62.7 %
Radiated Emission	Temperature (°C)	10~40 °C	24.1 °C
	Humidity (%RH)	10~90 %	63.8 %
Conductive	Temperature (°C)	10~40 °C	22 °C
	Humidity (%RH)	10~90 %	55 %

**USA** : **FCC Registration Number: TW0033**

**Canada** : **CAB Identifier Number: TW3023 / Company Number: 26930**

Site Description : Accredited by TAF  
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd  
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan  
Performed Location : No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.  
Phone number : +886-3-275-7255  
Fax number : +866-3-327-8031  
Email address : [info.tw@dekra.com](mailto:info.tw@dekra.com)  
Website : <http://www.dekra.com.tw>

## 1.6. List of Test Equipment

### For Conduction measurements / HY-SR01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	EMI Test Receiver	R&S	ESR7	101601	2021.06.19	2022.06.18
X	Two-Line V-Network	R&S	ENV216	101306	2022.05.23	2023.05.22
X	Two-Line V-Network	R&S	ENV216	10147	2021.08.13	2022.08.12
X	Coaxial Cable	SUHNER	RG400_BNC	RF001	2022.05.24	2023.05.23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : E3 210616 dekra V9.

### For Conducted measurements / HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Spectrum Analyzer	R&S	FSV30	103466	2021.12.27	2022.12.26
X	Peak Power Analyzer	KEYSIGHT	8900B	MY51000539	2022.05.27	2023.05.26
X	Power Sensor	KEYSIGHT	N1923A	MY59240002	2022.05.19	2023.05.18
X	Power Sensor	KEYSIGHT	N1923A	MY59240003	2022.05.19	2023.05.18

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : RF Conducted Test Tools R3 V3.0.1.19.

### For Radiated measurements / HY-CB01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Loop Antenna	AMETEK	HLA6121	56736	2022.05.14	2023.05.13
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2021.08.10	2022.08.09
X	Horn Antenna	ETS-Lindgren	3117	00201259	2021.11.09	2022.11.08
X	Horn Antenna	Com-Power	AH-1840	101101	2021.11.30	2022.11.29
X	Pre-Amplifier	SGH	SGH0301	20211007-7	2022.02.22	2023.02.21
X	Pre-Amplifier	EMCI	EMC051835SE	980312	2022.02.22	2023.02.21
X	Pre-Amplifier	EMCI	EMC05820SE	980362	2021.08.24	2022.08.23
X	Pre-Amplifier	EMCI	EMC184045SE	980369	2022.05.12	2023.05.11
	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314		
	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
	Filter	MICRO TRONICS	BRM50702	G251	2021.09.16	2022.09.15
X	Filter	MICRO TRONICS	BRM50716	G188	2021.09.16	2022.09.15
X	EMI Test Receiver	R&S	ESR	102792	2021.12.15	2022.12.14
X	Spectrum Analyzer	R&S	FSV3044	101113	2022.01.25	2023.02.24
X	Coaxial Cable	SUHNER	SUCOFLEX 106	25450/6	2022.03.22	2023.03.21
	Coaxial Cable	SGH	HA800	GD20110222-8		
	Coaxial Cable	SGH	SGH18	2021003-8		
	Coaxial Cable	EMCI	EMC106	151113		

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : E3 210616 dekra V9.

## 1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

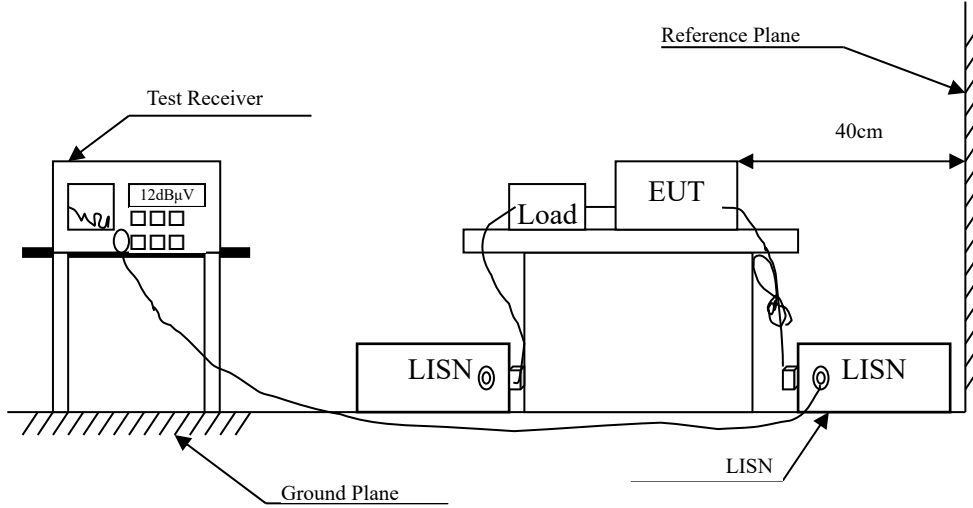
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty	
Conducted Emission	±3.42 dB	
Maximun conducted output power	Power Meter ±0.89 dB	Spectrum Analyzer ±2.06 dB
Peak Power Spectral Density	±2.06 dB	
Radiated Emission	Under 1GHz ±4.05 dB	Above 1GHz ±3.73 dB
Band Edge	Under 1GHz ±4.05 dB	Above 1GHz ±3.73 dB
Occupied Bandwidth	±1544.74 Hz	
Duty Cycle	±2.31msec	

## 2. Conducted Emission

### 2.1. Test Setup



### 2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB $\mu$ V) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

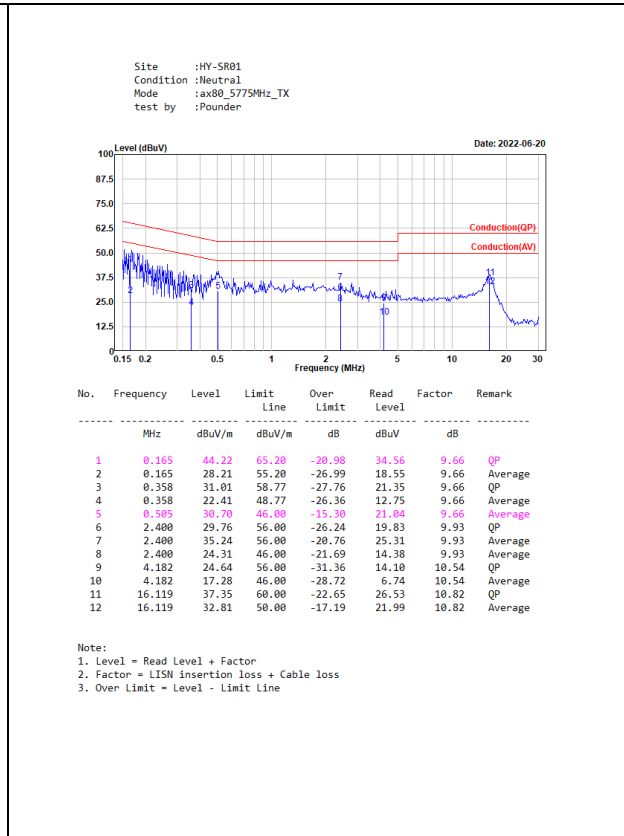
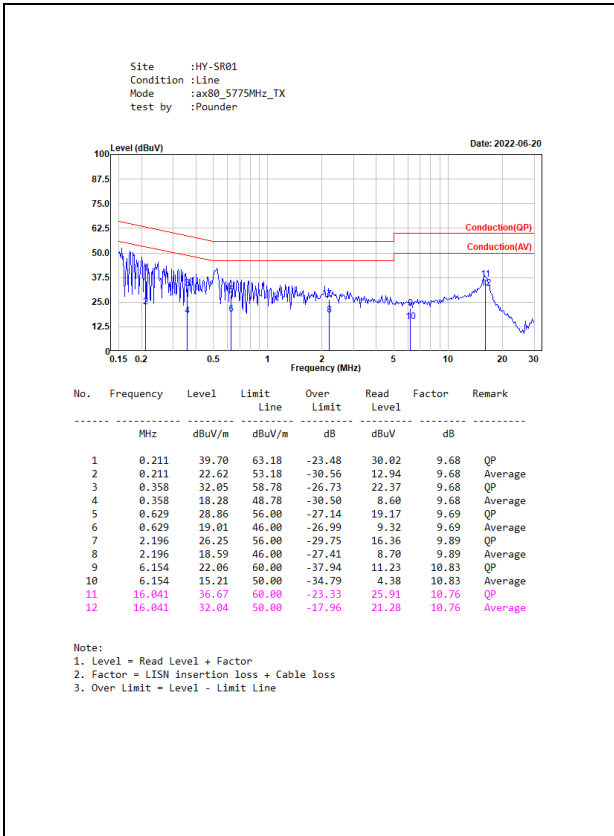
### 2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4:2014 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

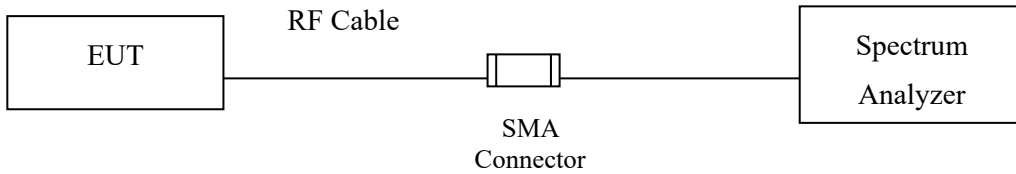
## 2.4. Test Result of Conducted Emission



### 3. Maximun conducted output power

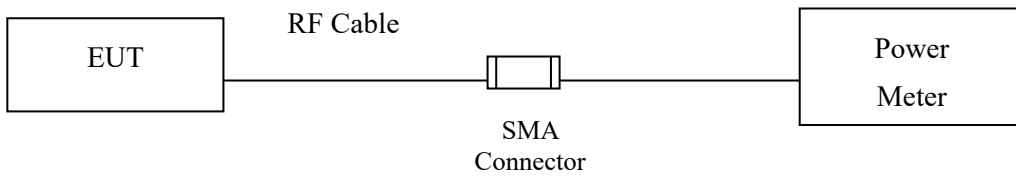
#### 3.1. Test Setup

##### 26dB Occupied Bandwidth

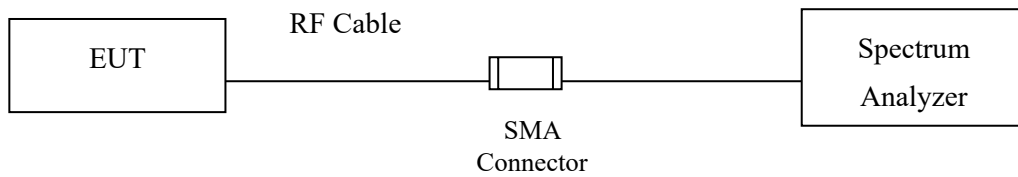


##### Conduction Power Measurement

Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac/ax)





### 3.2. Limits

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W, provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, if transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, if transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 99% emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, if transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

The maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**For CDD mode:**

5150MHz-5250MHz: Directional gain = 4.74 dBi, Limit= 30dBm

5250MHz-5350MHz: Directional gain = 4.83 dBi, Limit= 24dBm

5470MHz-5725MHz: Directional gain = 5.64 dBi, Limit= 24dBm

5725MHz-5850MHz: Directional gain = 5.61 dBi, Limit= 30dBm

(Directional gain =  $G_{ANT MAX} + \text{Array Gain}$ , Array Gain = 0 dB for  $N_{ANT} \leq 2$ )

**For Beamforming mode:**

5150MHz-5250MHz: Directional gain = 7.75 dBi, Limit= 28.25dBm

5250MHz-5350MHz: Directional gain = 7.84 dBi, Limit= 22.16dBm

5470MHz-5725MHz: Directional gain = 8.65 dBi, Limit= 21.35dBm

5725MHz-5850MHz: Directional gain = 8.62 dBi, Limit= 27.38dBm

(Directional gain =  $G_{ANT MAX} + \text{Array Gain}$ , Array Gain =  $10 \cdot \log(2) = 3.01$  dB)

### 3.3. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater than the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW  $\leq$  40MHz) Maximum conducted output power using KDB 789033 section E)3)b) Method PM-G (Measurement using a gated RF average power meter)

Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D03 section D) procedure is used for measurements.

### 3.4. Test Result of Maximum conducted output power

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximum conducted output power  
 Test Mode : Mode 1: Transmit (802.11a-CDD)  
 Test Date : 2022/04/18

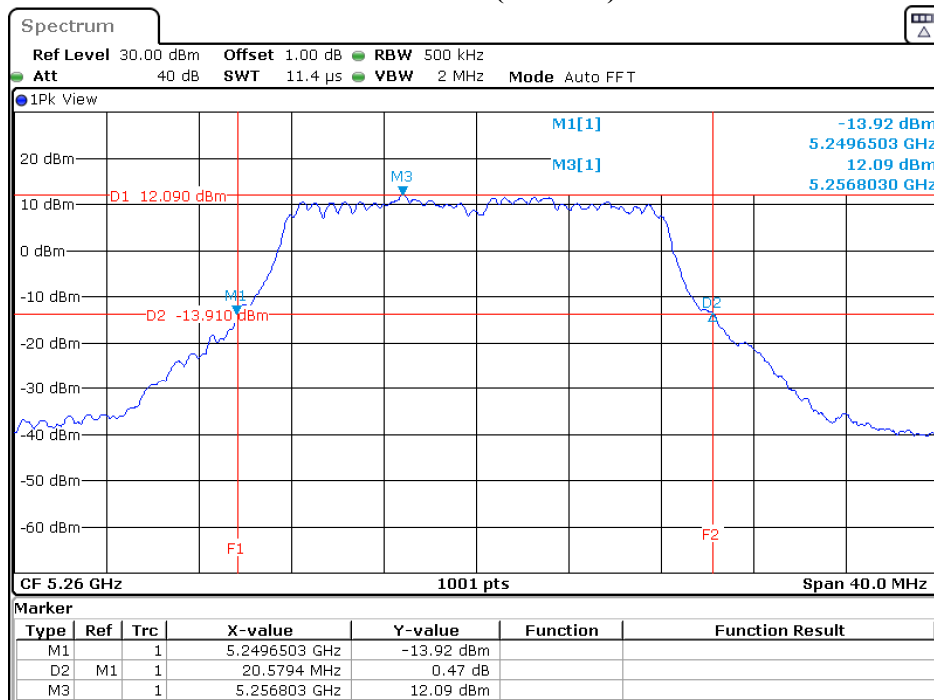
#### Maximum conducted output power Measurement:

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Output Power Limit	
						(dBm)	dBm+10log(BW)
36	5180	--	24.01	24.25	27.14	30	--
44	5220	--	23.95	24.45	27.22	30	--
48	5240	--	23.98	24.32	27.16	30	--
52	5260	20.58	18.54	18.41	21.49	24	24.13
60	5300	20.86	19.89	18.21	22.14	24	24.19
64	5320	20.26	18.12	18.26	21.20	24	24.07
100	5500	20.18	17.98	17.86	20.93	24	24.05
116	5580	20.46	17.35	17.34	20.36	24	24.11
140	5700	20.58	17.64	17.72	20.69	24	24.13
149	5745	--	26.66	26.72	29.70	30	--
157	5785	--	26.74	27.01	29.89	30	--
165	5825	--	26.81	27.02	29.93	30	--

Note:

- Output Power Value (dBm) = 10\*LOG (Chain A(mW)+ Chain B(mW))
- 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

#### 26dB Occupied Bandwidth: Channel 52: (Chain B)



Date: 19.APR.2022 18:04:09

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximum conducted output power  
 Test Mode : Mode 2: Transmit (802.11ax-20BW-CDD)  
 Test Date : 2022/04/25

**Maximum conducted output power Measurement:**

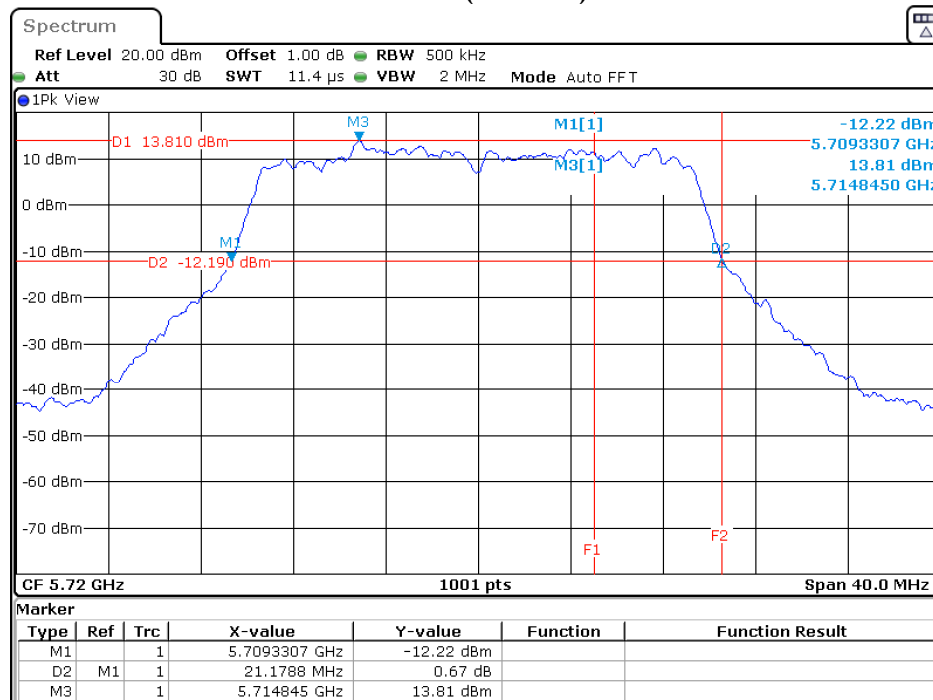
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Duty factor (dB)	Output Power Limit	
							(dBm)	dBm+10log(BW)
36	5180	--	22.47	22.56	25.53	--	30	--
44	5220	--	24.76	25.12	27.95	--	30	--
48	5240	--	24.12	24.56	27.36	--	30	--
52	5260	21.54	17.95	18.16	21.07	--	24	24.33
60	5300	21.70	17.98	18.21	21.11	--	24	24.36
64	5320	21.50	17.96	18.05	21.02	--	24	24.32
100	5500	21.82	17.52	17.23	20.39	--	24	24.39
116	5580	21.66	16.75	16.64	19.71	--	24	24.36
140	5700	21.70	18.17	18.08	21.14	--	24	24.36
144(U-NII-2C)	5720	15.67	15.59	15.64	18.88	0.26	24	22.95
144(U-NII-3)	5720	--	10.56	10.23	13.67	0.26	30	--
149	5745	--	27.15	26.68	29.93	--	30	--
157	5785	--	26.66	26.72	29.70	--	30	--
165	5825	--	25.16	25.58	28.39	--	30	--

Note:

- Output Power Value (dBm) = 10\*LOG (Chain A(mW)+Chain B(mW))
- 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

**26dB Occupied Bandwidth:**

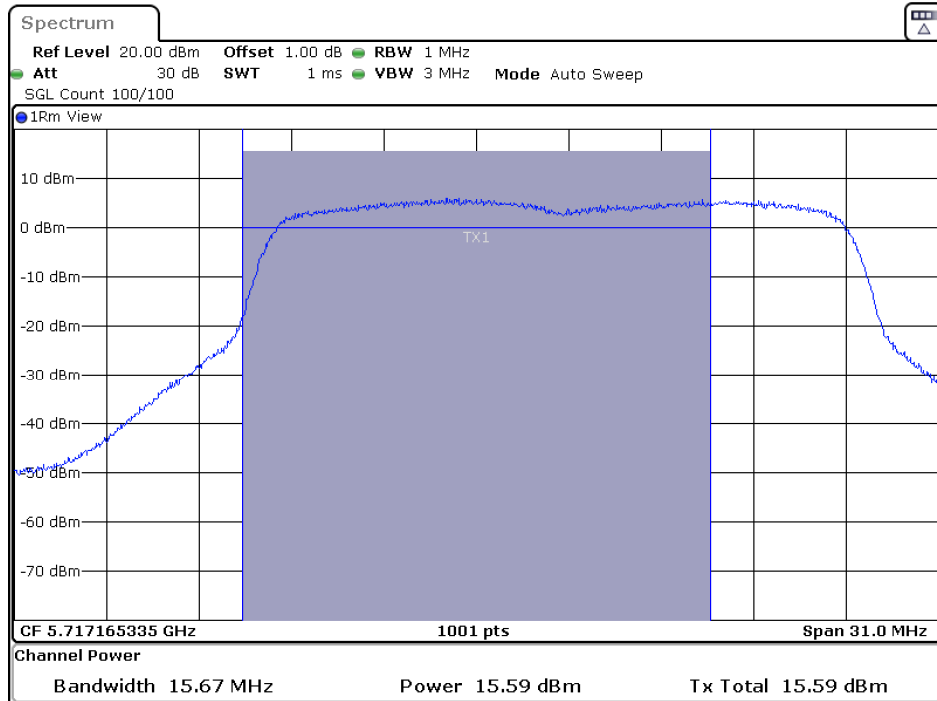
**Channel 144 (Chain A):**



Date: 25.APR.2022 14:01:45

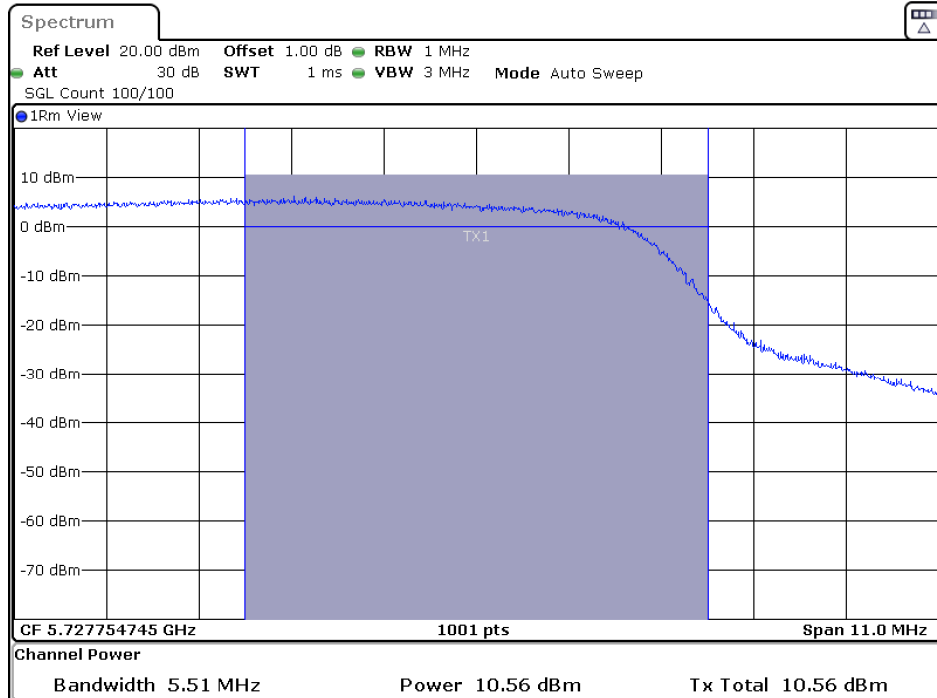
**Maximum conducted output power:**

**Channel 144 (U-NII-2C) (Chain A):**



Date: 25.APR.2022 14:02:17

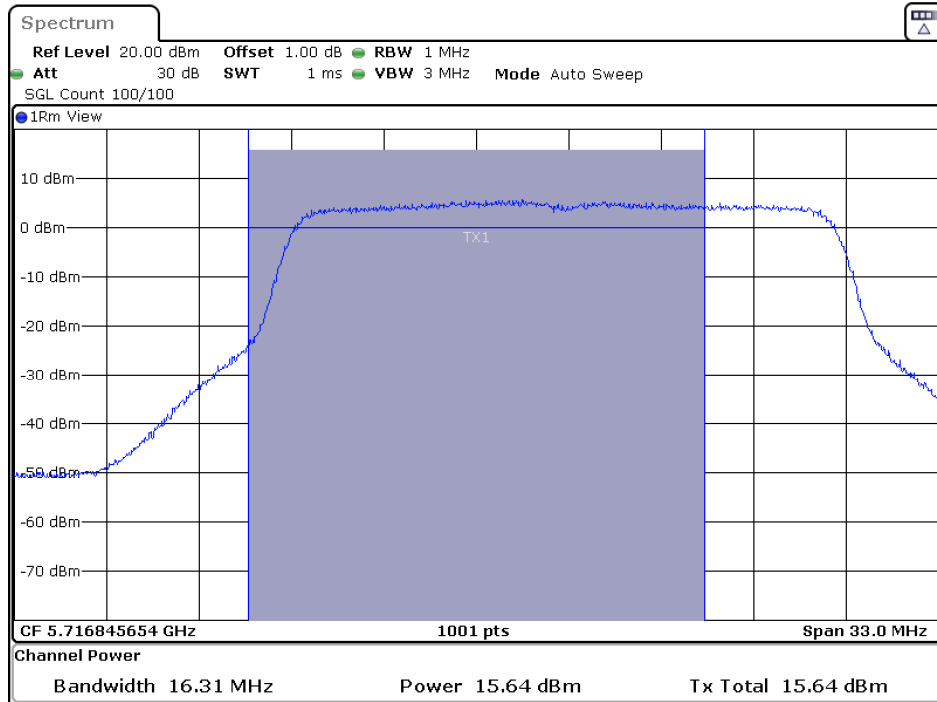
**Channel 144 (U-NII-3) (Chain A):**



Date: 25.APR.2022 14:02:20

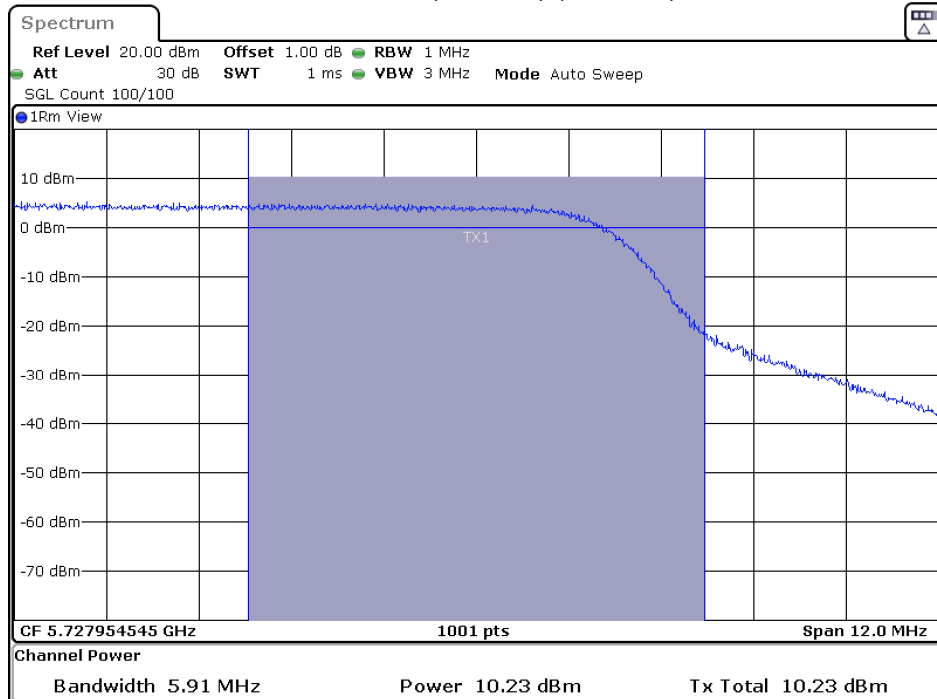
**Maximum conducted output power:**

**Channel 144 (U-NII-2C) (Chain B):**



Date: 25.APR.2022 14:08:56

**Channel 144 (U-NII-3) (Chain B):**



Date: 25.APR.2022 14:08:58

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximum conducted output power  
 Test Mode : Mode 3: Transmit (802.11ax-40BW-CDD)  
 Test Date : 2022/04/25

**Maximum conducted output power Measurement:**

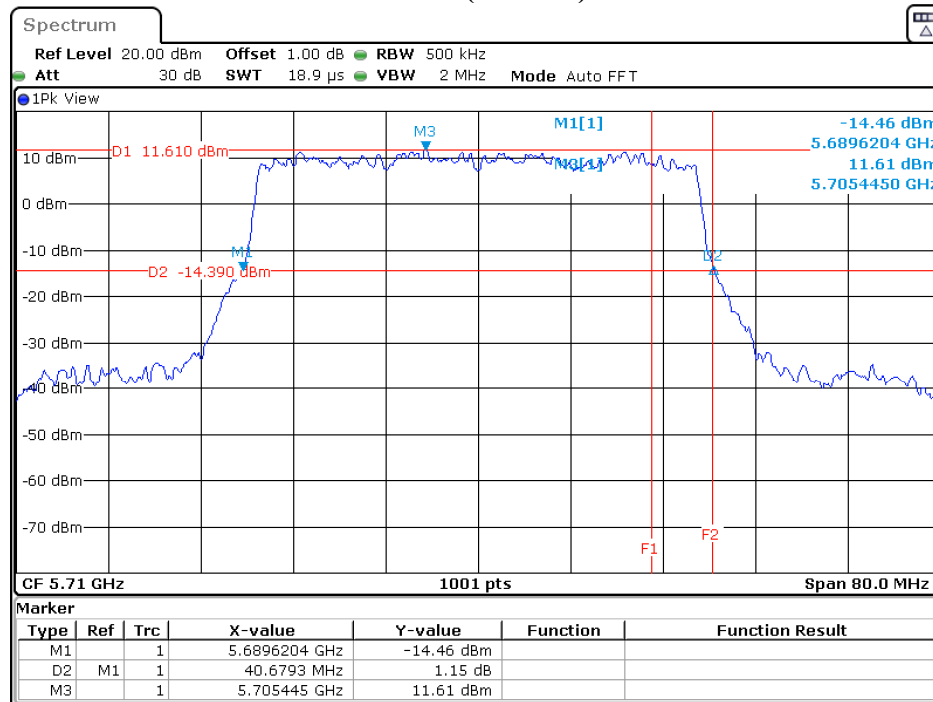
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Duty factor (dB)	Output Power Limit	
							(dBm)	dBm+10log(BW)
38	5190	--	21.24	21.23	24.25	--	30	--
46	5230	--	24.05	24.36	27.22	--	30	--
54	5270	40.52	20.61	20.85	23.74	--	24	27.08
62	5310	40.20	20.54	20.95	23.76	--	24	27.04
102	5510	40.52	20.73	20.67	23.71	--	24	27.08
110	5550	40.60	19.97	19.94	22.97	--	24	27.09
134	5670	40.92	20.34	20.55	23.46	--	24	27.12
142(U-NII-2C)	5710	35.38	18.79	18.65	22.04	0.31	24	26.49
142(U-NII-3)	5710	--	8.12	8.28	11.52	0.31	30	--
151	5755	--	20.53	20.81	23.68	--	30	--
159	5795	--	26.58	26.82	29.71	--	30	--

Note:

- Output Power Value (dBm) = 10\*LOG (Chain A(mW)+ Chain B(mW))
- 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

**26dB Occupied Bandwidth:**

**Channel 142 (Chain B):**

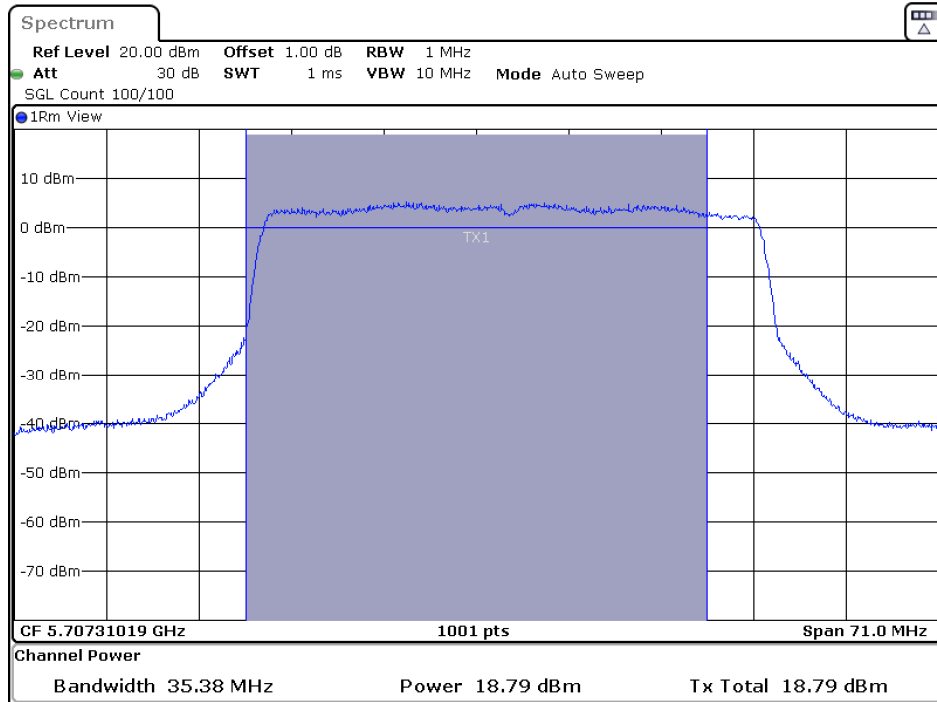


Date: 25.APR.2022 14:11:27



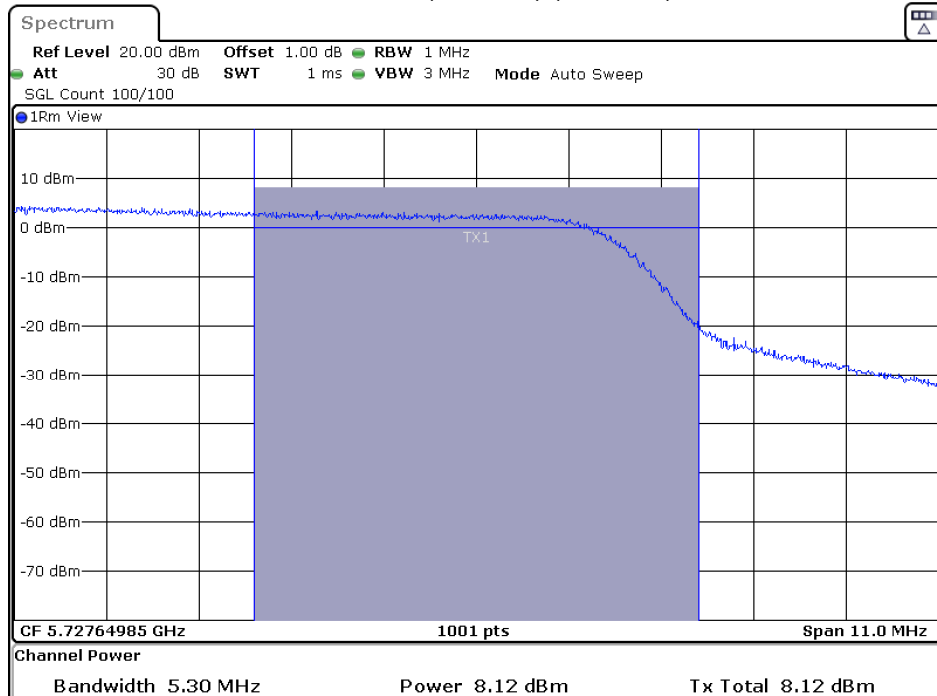
**Maximum conducted output power:**

**Channel 142(U-NII-2C) (Chain A):**



Date: 25.APR.2022 14:13:50

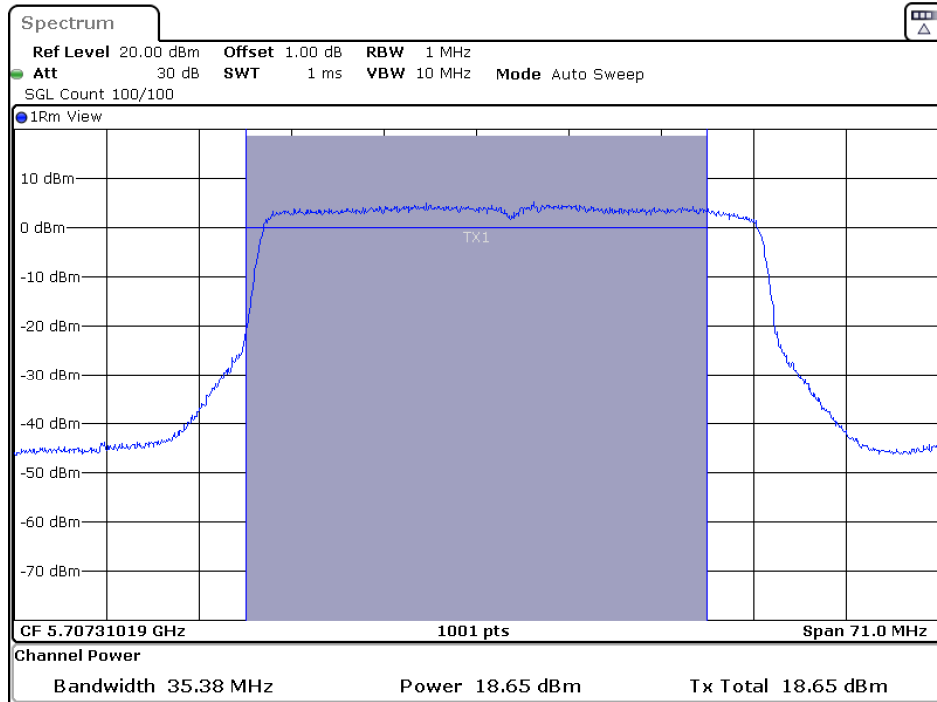
**Channel 142(U-NII-3) (Chain A):**



Date: 25.APR.2022 14:13:53

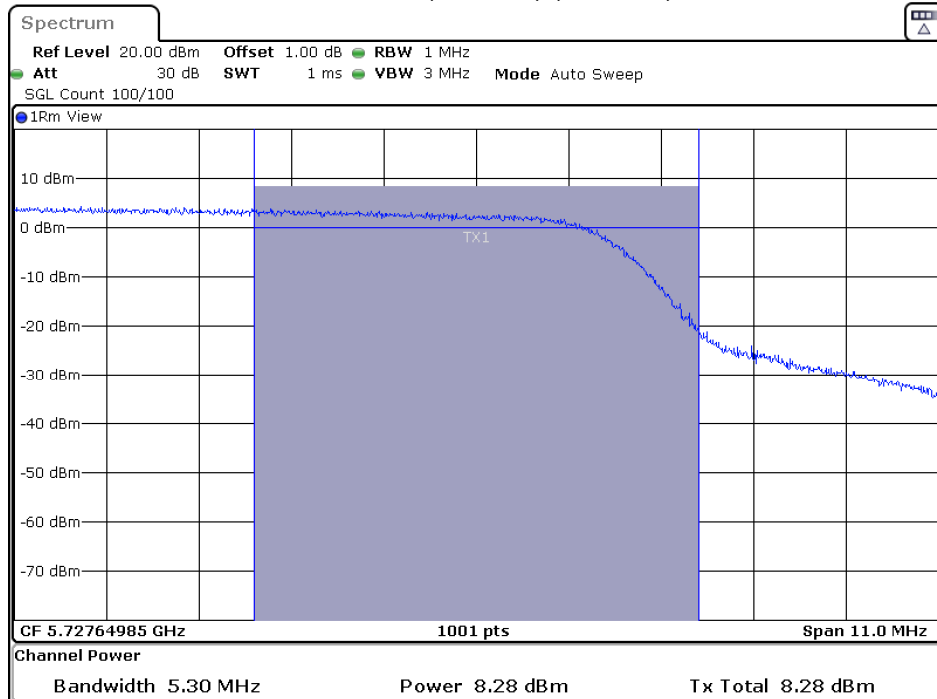
**Maximum conducted output power:**

**Channel 142(U-NII-2C) (Chain B):**



Date: 25.APR.2022 14:12:00

**Channel 142(U-NII-3) (Chain B):**



Date: 25.APR.2022 14:12:02

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximum conducted output power  
 Test Mode : Mode 4: Transmit (802.11ax-80BW-CDD)  
 Test Date : 2022/04/20

**Maximum conducted output power Measurement**

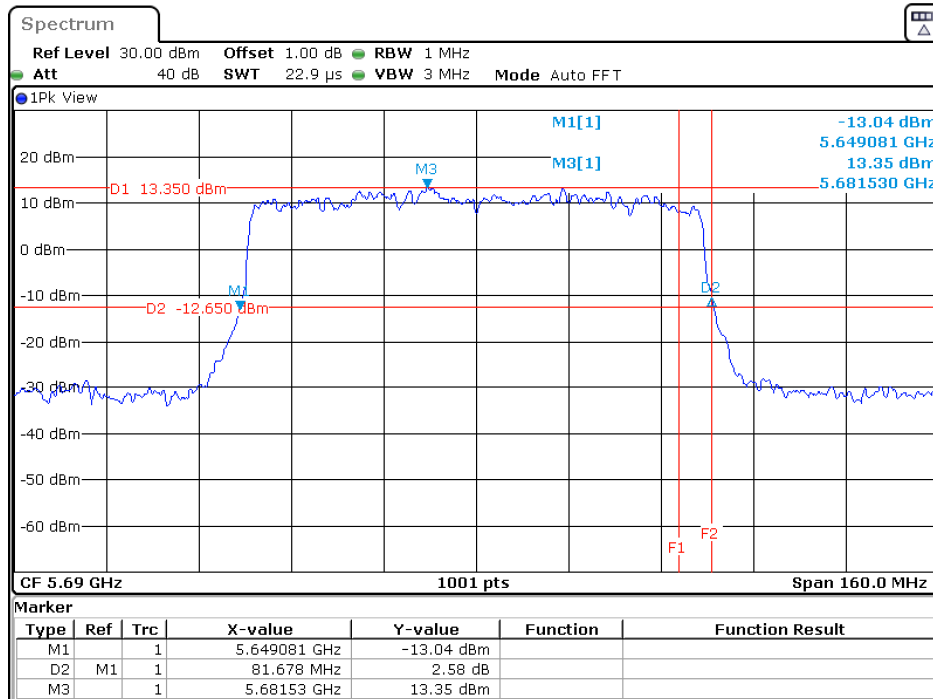
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Duty factor (dB)	Output Power Limit		Result
							(dBm)	dBm+10log(BW)	
42	5210	--	20.86	21.16	24.023	--	30	--	Pass
58	5290	81.36	20.65	20.87	23.772	--	24	30.10	Pass
106	5530	81.36	20.43	20.52	23.486	--	24	30.10	Pass
122	5610	80.72	20.78	20.64	23.721	--	24	30.07	Pass
138 (U-NII-2C)	5690	75.92	20.80	20.53	23.97	0.29	24	29.80	Pass
138 (U-NII-3)	5690	--	6.23	6.30	9.5683	0.29	30	--	Pass
155	5775	--	21.72	22.18	24.966	--	30	--	Pass

Note:

- Output Power Value (dBm) = 10\*LOG (Chain A(mW)+Chain B(mW))
- 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

**26dB Occupied Bandwidth:**

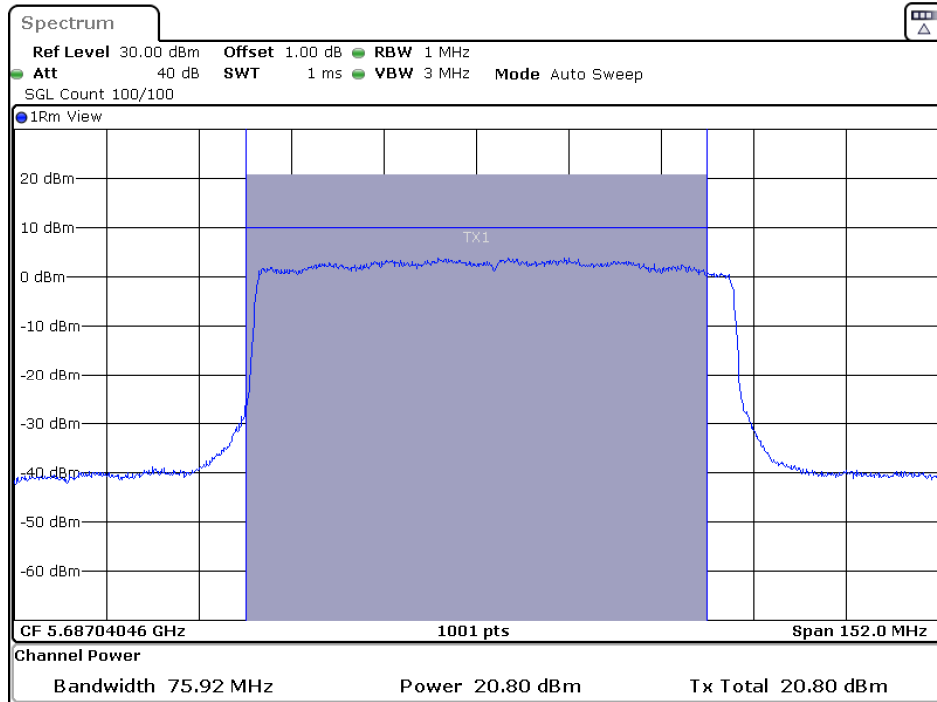
**Channel 138 (Chain A):**



Date: 20.APR.2022 17:02:29

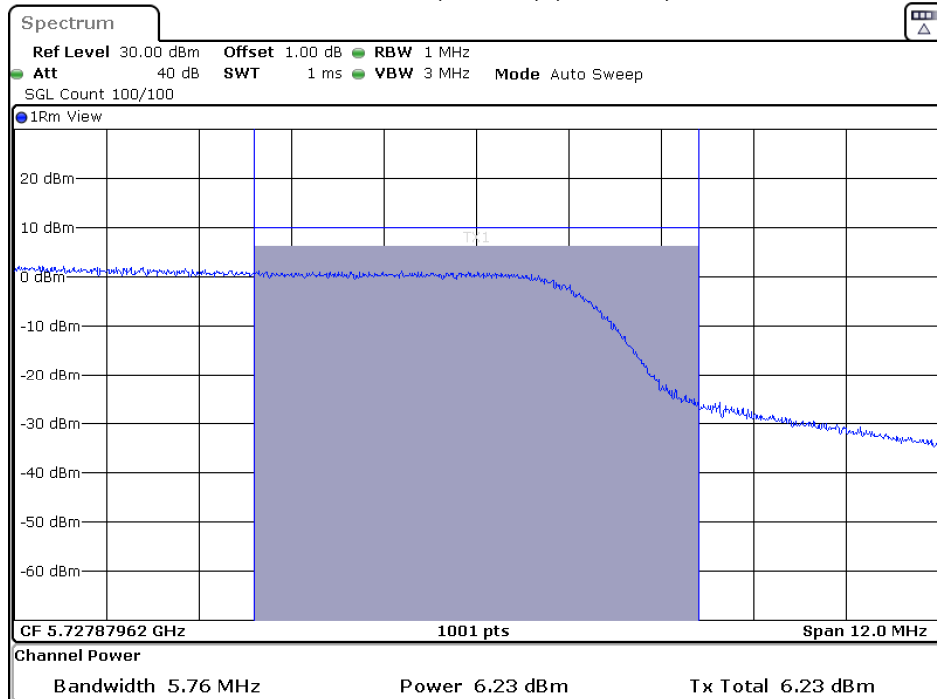
**Maximum conducted output power:**

**Channel 138 (U-NII-2C) (Chain A):**



Date: 20.APR.2022 17:03:02

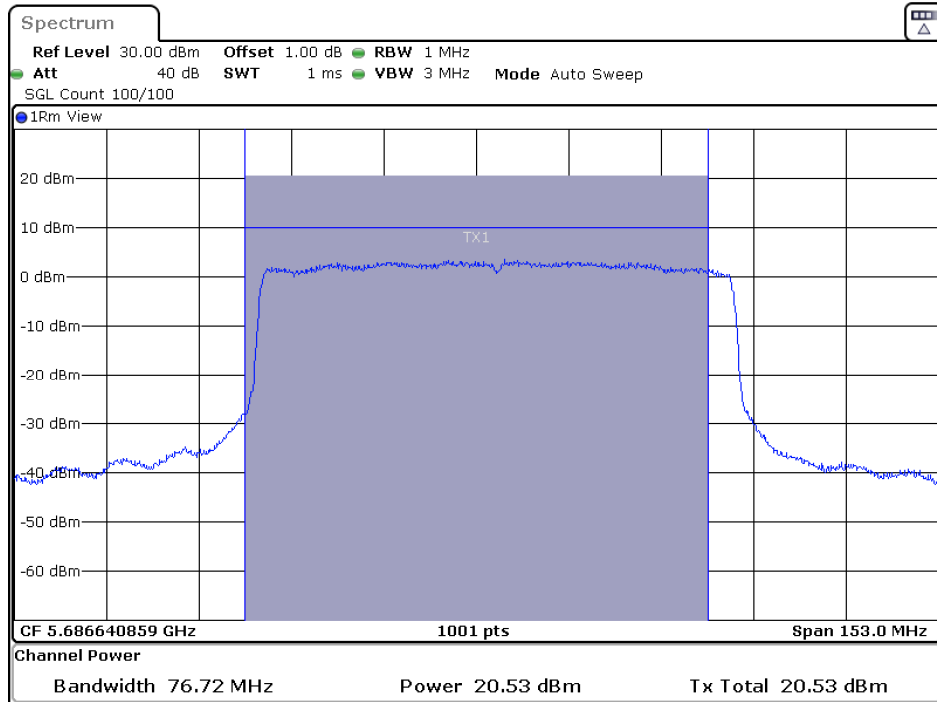
**Channel 138 (U-NII-3) (Chain A):**



Date: 20.APR.2022 17:03:05

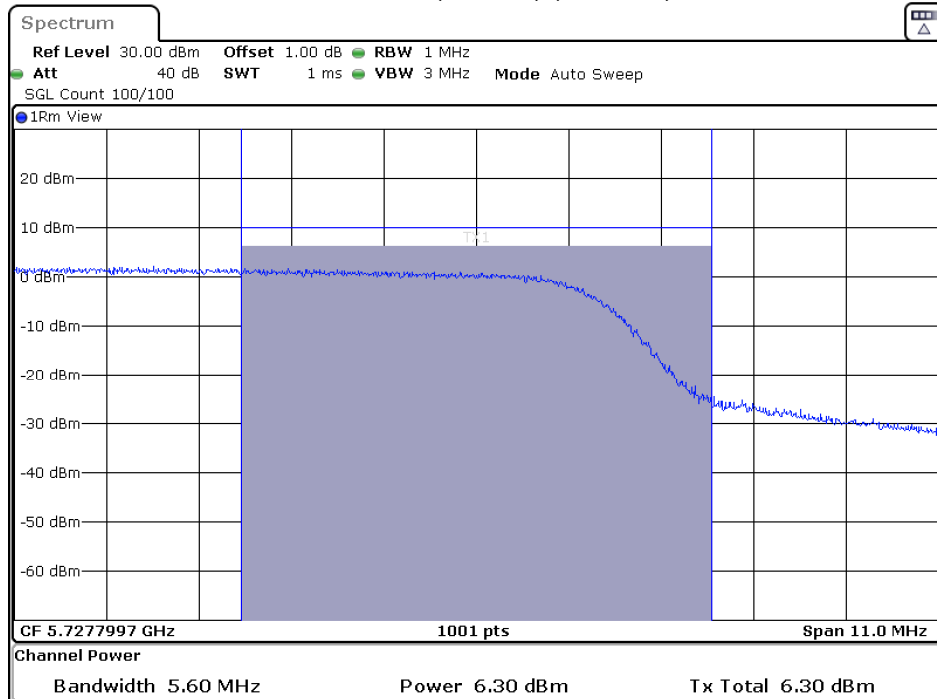
**Maximum conducted output power:**

**Channel 138 (U-NII-2C) (Chain B):**



Date: 20.APR.2022 17:05:24

**Channel 138 (U-NII-3) (Chain B):**



Date: 20.APR.2022 17:05:27

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximum conducted output power  
 Test Mode : Mode 5: Transmit (802.11ax-20BW-Beamforming)  
 Test Date : 2022/06/02

**Maximum conducted output power Measurement:**

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Duty factor (dB)	Output Power Limit	
							(dBm)	dBm+10log(BW)
36	5180	--	19.46	19.55	22.52	--	28.25	--
44	5220	--	21.75	22.11	24.94	--	28.25	--
48	5240	--	21.11	21.55	24.35	--	28.25	--
52	5260	21.54	14.94	15.15	18.06	--	22.16	24.33
60	5300	21.70	14.97	15.20	18.10	--	22.16	24.36
64	5320	21.50	14.95	15.04	18.01	--	22.16	24.32
100	5500	21.82	14.51	14.22	17.38	--	21.35	24.39
116	5580	21.66	13.74	13.63	16.70	--	21.35	24.36
140	5700	21.70	15.16	15.07	18.13	--	21.35	24.36
144(U-NII-2C)	5720	15.67	12.58	12.63	15.87	0.26	21.35	22.95
144(U-NII-3)	5720	--	7.55	7.22	10.66	0.26	27.38	--
149	5745	--	24.14	23.67	26.92	--	27.38	--
157	5785	--	23.65	23.71	26.69	--	27.38	--
165	5825	--	22.15	22.57	25.38	--	27.38	--

Note:

- Output Power Value (dBm) = 10\*LOG (Chain A(mW)+Chain B(mW))
- 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximum conducted output power  
 Test Mode : Mode 6: Transmit (802.11ax-40BW-Beamforming)  
 Test Date : 2022/06/02

**Maximum conducted output power Measurement:**

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Duty factor (dB)	Output Power Limit	
							(dBm)	dBm+10log(BW)
38	5190	--	18.23	18.22	21.24	--	28.25	--
46	5230	--	21.04	21.35	24.21	--	28.25	--
54	5270	40.52	17.60	17.84	20.73	--	22.16	27.08
62	5310	40.20	17.53	17.94	20.75	--	22.16	27.04
102	5510	40.52	17.72	17.66	20.70	--	21.35	27.08
110	5550	40.60	16.96	16.93	19.96	--	21.35	27.09
134	5670	40.92	17.33	17.54	20.45	--	21.35	27.12
142(U-NII-2C)	5710	35.38	15.78	15.64	19.03	0.31	21.35	26.49
142(U-NII-3)	5710	5.30	5.11	5.27	8.51	0.31	27.38	18.24
151	5755	--	17.52	17.80	20.67	--	27.38	--
159	5795	--	23.57	23.81	26.70	--	27.38	--

Note:

1. Output Power Value (dBm) = 10\*LOG (Chain A(mW)+Chain B(mW))
2. 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximum conducted output power  
 Test Mode : Mode 7: Transmit (802.11ax-80BW-Beamforming)  
 Test Date : 2022/06/02

### Maximum conducted output power Measurement

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Output Power (dBm)	Duty factor (dB)	Output Power Limit		Result
							(dBm)	dBm+10log(BW)	
42	5210	--	17.85	18.15	21.01	--	28.25	--	Pass
58	5290	81.36	17.64	17.86	20.76	--	22.16	30.10	Pass
106	5530	81.36	17.42	17.51	20.48	--	21.35	30.10	Pass
122	5610	80.72	17.77	17.63	20.71	--	21.35	30.07	Pass
138 (U-NII-2C)	5690	75.92	17.79	17.52	20.96	0.29	21.35	29.80	Pass
138 (U-NII-3)	5690	--	3.22	3.29	6.56	0.29	27.38	--	Pass
155	5775	--	18.71	19.17	21.96	--	27.38	--	Pass

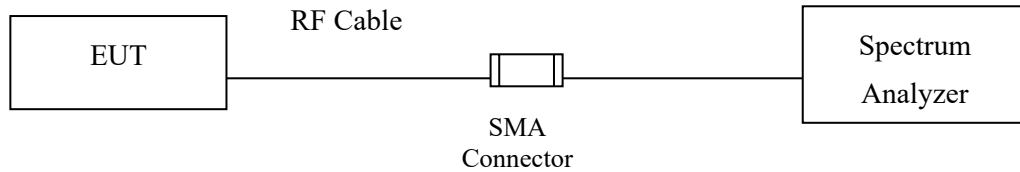
Note:

- Output Power Value (dBm) = 10\*LOG (Chain A(mW)+Chain B(mW))
- 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.



## 4. Maximun Power Spectral Density

### 4.1. Test Setup



### 4.2. Limits

For the band 5.15-5.25 GHz,

**(i)** For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**(ii)** For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**(iii)** For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

**(iv)** For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

The maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5150MHz-5250MHz: Directional gain = 6.93 dBi, Limit= 16.07dBm

5250MHz-5350MHz: Directional gain = 7.30 dBi, Limit= 9.70dBm

5470MHz-5725MHz: Directional gain = 8.20 dBi, Limit= 8.80dBm

5725MHz-5850MHz: Directional gain = 8.56 dBi, Limit= 27.44dBm

Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$  dBi

### 4.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

#### 4.4. Test Result of Maximun Power Spectral Density

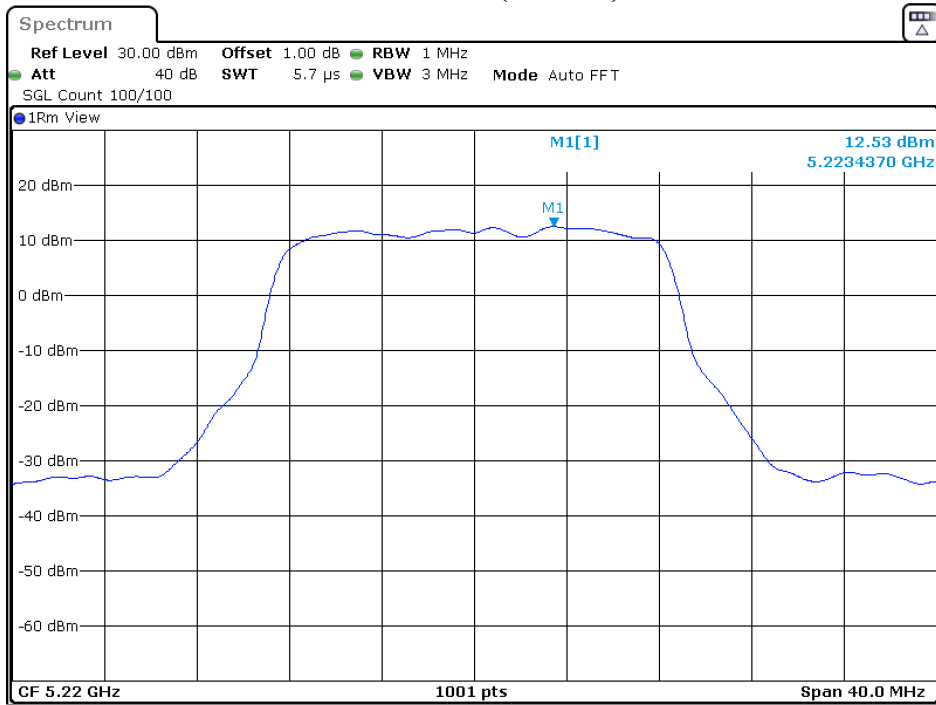
Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximun Power Spectral Density  
 Test Mode : Mode 1: Transmit (802.11a-CDD)

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
36	5180	6	A	11.73	0.22	15.24	16.07	Pass
			B	12.28				
44	5220	6	A	12.20	0.22	15.59	16.07	Pass
			B	12.53				
48	5240	6	A	12.17	0.22	15.52	16.07	Pass
			B	12.42				
52	5260	6	A	6.10	0.22	9.48	9.70	Pass
			B	6.40				
60	5300	6	A	6.26	0.22	9.32	9.70	Pass
			B	5.92				
64	5320	6	A	6.00	0.22	9.28	9.70	Pass
			B	6.11				
100	5500	6	A	5.56	0.22	8.74	8.80	Pass
			B	5.46				
116	5580	6	A	5.77	0.22	8.70	8.80	Pass
			B	5.15				
140	5700	6	A	5.74	0.22	8.74	8.80	Pass
			B	5.27				

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
149	5745	6	A	12.32	0.22	16.09	27.44	Pass
			B	13.34				
157	5785	6	A	13.04	0.22	16.46	27.44	Pass
			B	13.41				
165	5825	6	A	13.30	0.22	16.36	27.44	Pass
			B	12.95				

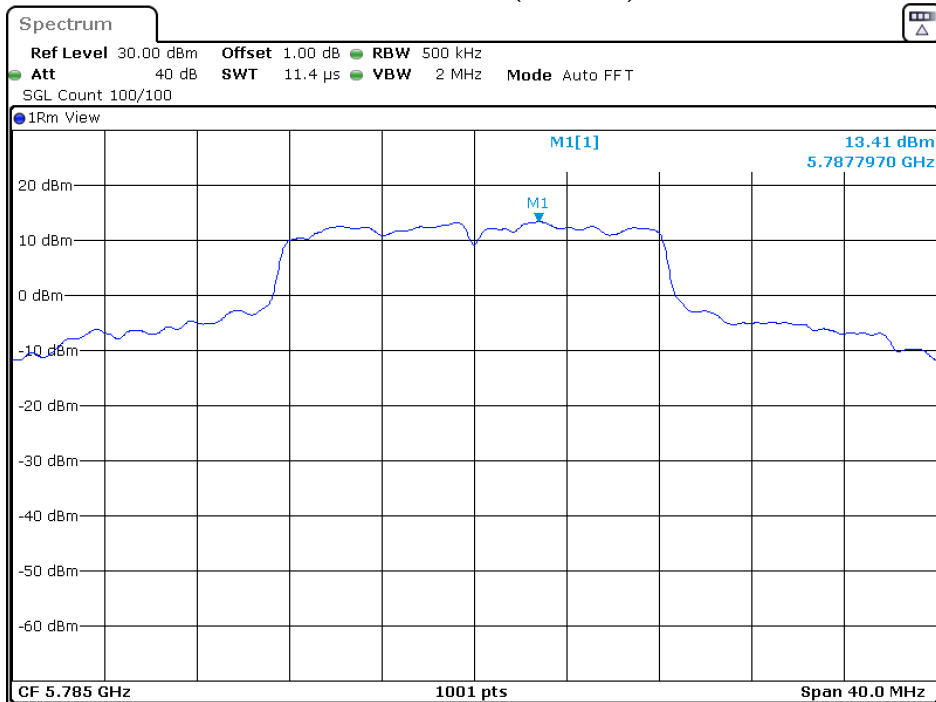
Note: Total PPSD =  $10 \cdot \log(\text{Chain A (mW)} + \text{Chain B (mW)} + \text{Duty factor})$ .

### Channel 44 (Chain B):



Date: 19.APR.2022 17:34:39

### Channel 157 (Chain B):



Date: 19.APR.2022 18:59:55

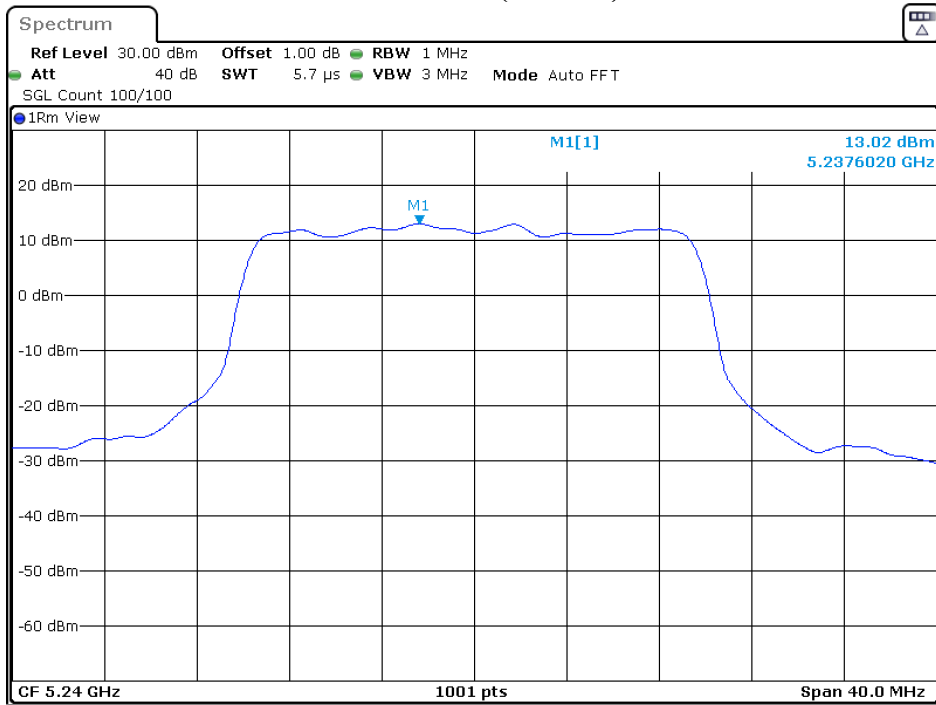
Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximun Power Spectral Density  
 Test Mode : Mode 2: Transmit (802.11ax-20BW-CDD)

Channel No.	Frequency (MHz)	Data Rate	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
36	5180	MCS0	A	10.24	0.26	13.50	16.07	Pass
			B	10.23				
44	5220	MCS0	A	12.83	0.26	15.82	16.07	Pass
			B	12.26				
48	5240	MCS0	A	12.51	0.26	16.04	16.07	Pass
			B	13.02				
52	5260	MCS0	A	6.23	0.26	9.45	9.7	Pass
			B	6.13				
60	5300	MCS0	A	5.95	0.26	9.40	9.7	Pass
			B	6.30				
64	5320	MCS0	A	6.07	0.26	9.53	9.7	Pass
			B	6.44				
100	5500	MCS0	A	5.57	0.26	8.75	8.8	Pass
			B	5.40				
116	5580	MCS0	A	5.30	0.26	8.64	8.8	Pass
			B	5.45				
140	5700	MCS0	A	5.45	0.26	8.79	8.8	Pass
			B	5.60				
144 (U-NII-2C)	5720	MCS0	A	5.40	0.26	8.77	8.8	Pass
			B	5.60				

Channel No.	Frequency (MHz)	Data Rate	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
144(U-NII-3)	5720	MCS0	A	2.51	0.26	5.22	27.44	Pass
			B	1.32				
149	5745	MCS0	A	12.21	0.26	15.41	27.44	Pass
			B	12.07				
157	5785	MCS0	A	12.16	0.26	15.62	27.44	Pass
			B	12.54				
165	5825	MCS0	A	10.69	0.26	14.06	27.44	Pass
			B	10.89				

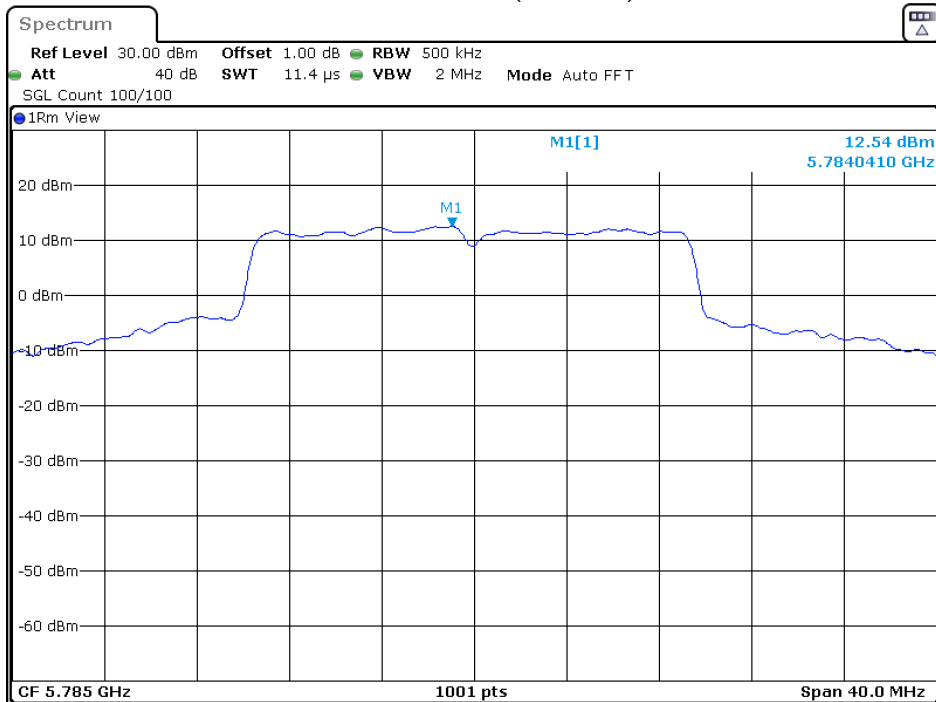
Note: Total PPSD = 10\*log(Chain A (mW) + Chain B (mW) + Duty factor

### Channel 48 (Chain B):



Date: 20.APR.2022 13:43:33

### Channel 157 (Chain B):



Date: 20.APR.2022 14:44:12

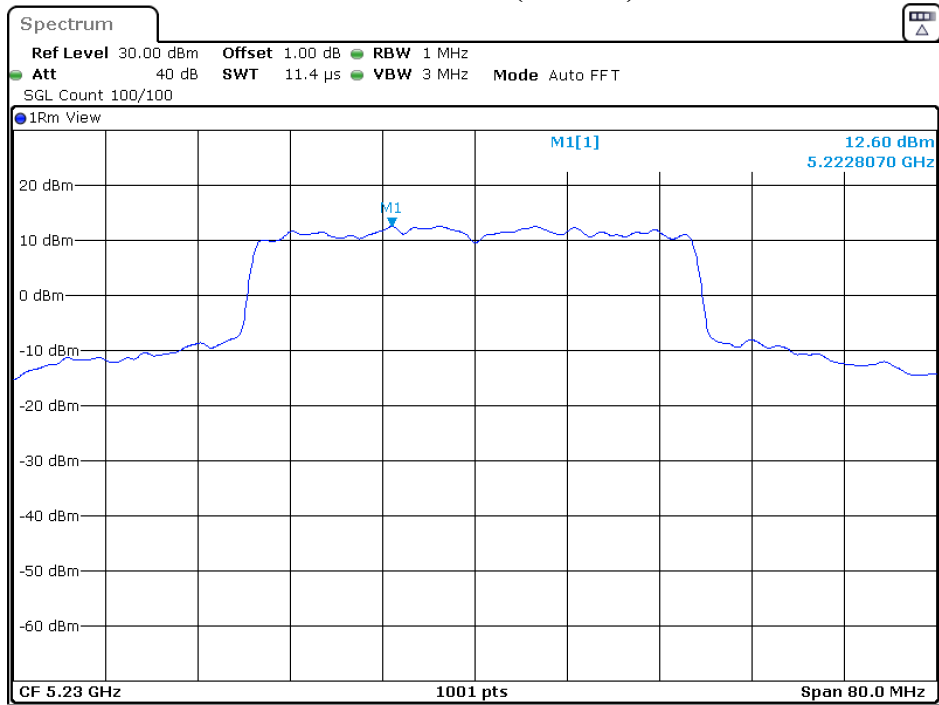
Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximun Power Spectral Density  
 Test Mode : Mode 3: Transmit (802.11ax-40BW-CDD)

Channel No.	Frequency (MHz)	Data Rate	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
38	5190	MCS0	A	6.48	0.31	9.88	16.07	Pass
			B	6.65				
46	5230	MCS0	A	12.60	0.31	15.81	16.07	Pass
			B	12.38				
54	5270	MCS0	A	6.37	0.31	9.57	9.7	Pass
			B	6.14				
62	5310	MCS0	A	5.93	0.31	9.26	9.7	Pass
			B	5.95				
102	5510	MCS0	A	5.41	0.31	8.75	8.8	Pass
			B	5.45				
110	5550	MCS0	A	5.41	0.31	8.68	8.8	Pass
			B	5.32				
134	5670	MCS0	A	5.47	0.31	8.77	8.8	Pass
			B	5.43				
142(U-NII-2C)	5710	MCS0	A	4.75	0.31	8.26	8.8	Pass
			B	5.12				

Channel No.	Frequency (MHz)	Data Rate	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
142(U-NII-3)	5710	MCS0	A	0.13	0.31	3.57	27.44	Pass
			B	0.38				
151	5755	MCS0	A	2.84	0.31	6.14	27.44	Pass
			B	2.80				
159	5795	MCS0	A	9.29	0.31	12.56	27.44	Pass
			B	9.20				

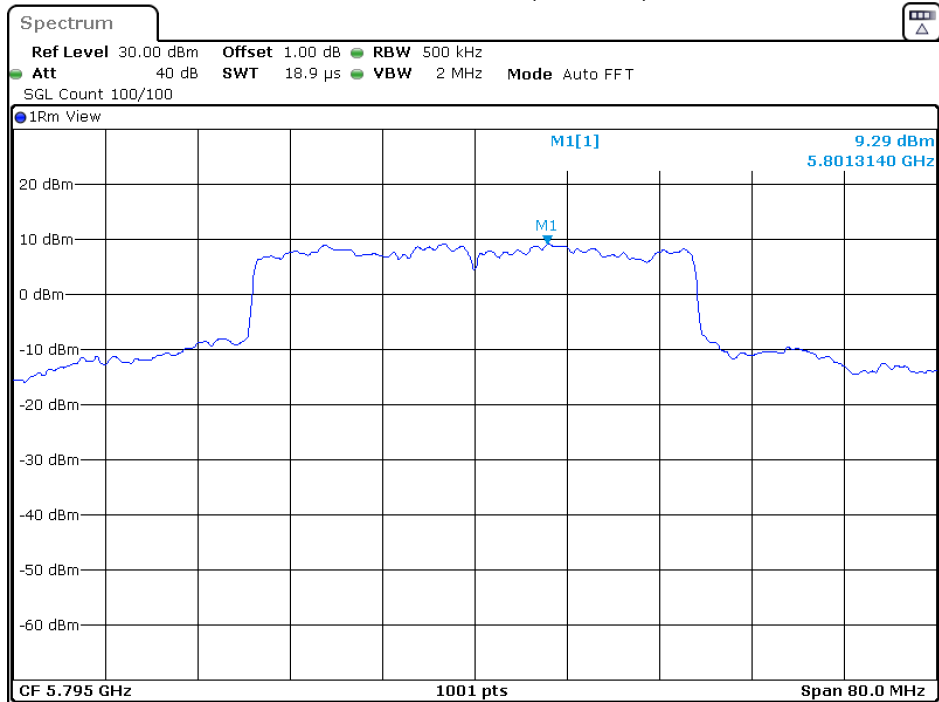
Note: Total PPSD =  $10 \cdot \log(\text{Chain A (mW)} + \text{Chain B (mW)} + \text{Duty factor})$

### Channel 46 (Chain A):



Date: 20.APR.2022 15:11:22

### Channel 159 (Chain A):



Date: 20.APR.2022 15:59:27



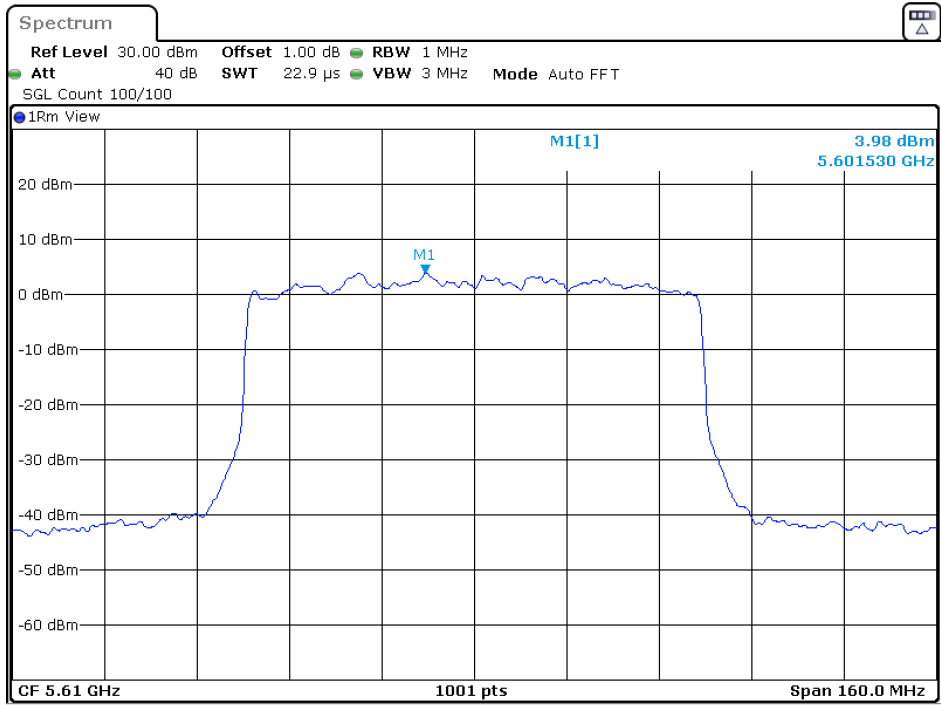
Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Maximun Power Spectral Density  
 Test Mode : Mode 4: Transmit (802.11ax-80BW-CDD)

Channel No.	Frequency (MHz)	Data Rate	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
42	5210	MCS0	A	3.52	0.29	6.92	16.07	Pass
			B	3.72				
58	5290	MCS0	A	3.55	0.29	6.98	9.7	Pass
			B	3.80				
106	5530	MCS0	A	3.08	0.29	6.43	8.8	Pass
			B	3.18				
122	5610	MCS0	A	3.98	0.29	7.05	8.8	Pass
			B	3.50				
138(U-NII-2C)	5690	MCS0	A	3.59	0.29	6.93	8.8	Pass
			B	3.66				

Channel No.	Frequency (MHz)	Data Rate	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
138 (U-NII-3)	5690	MCS0	A	-2.22	0.29	1.12	27.44	Pass
			B	-2.15				
155	5775	MCS0	A	1.70	0.29	4.81	27.44	Pass
			B	1.31				

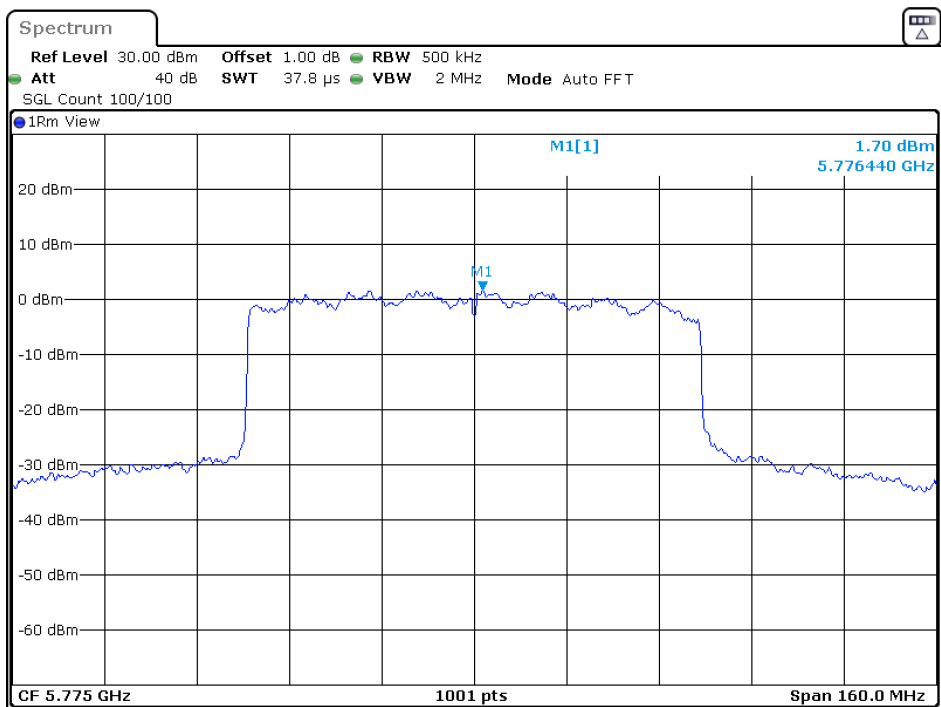
Note: Total PPSD = 10\*log(Chain A (mW) + Chain B (mW) + Duty factor

### Channel 122 (Chain A):



Date: 20.APR.2022 16:21:41

### Channel 155 (Chain A):

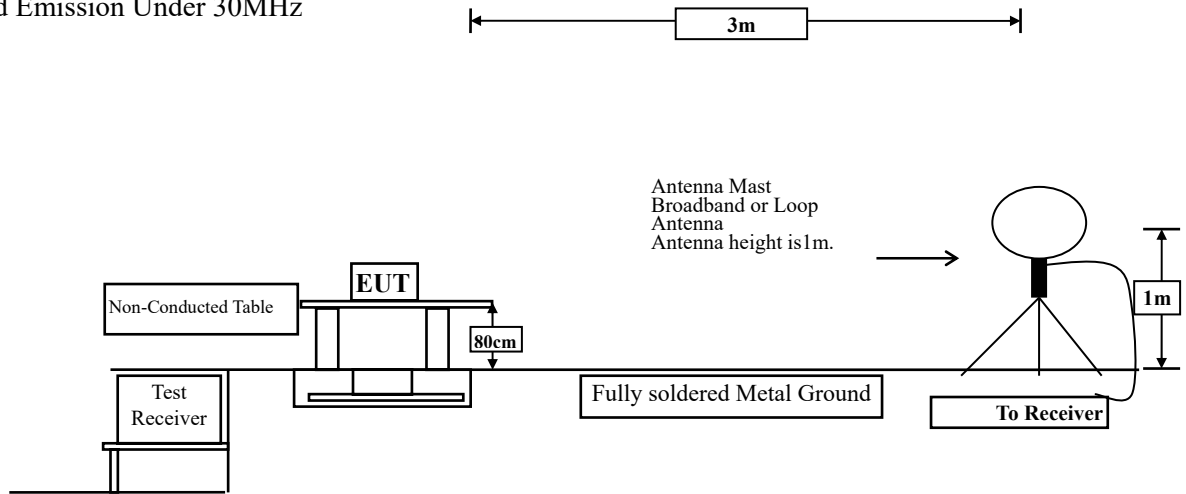


Date: 20.APR.2022 17:10:51

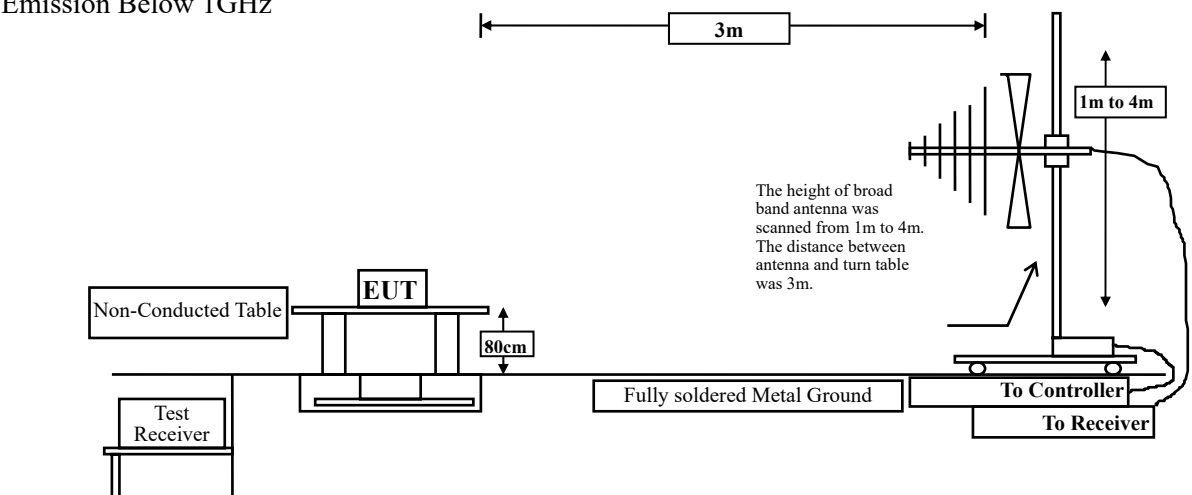
## 5. Radiated Emission

### 5.1. Test Setup

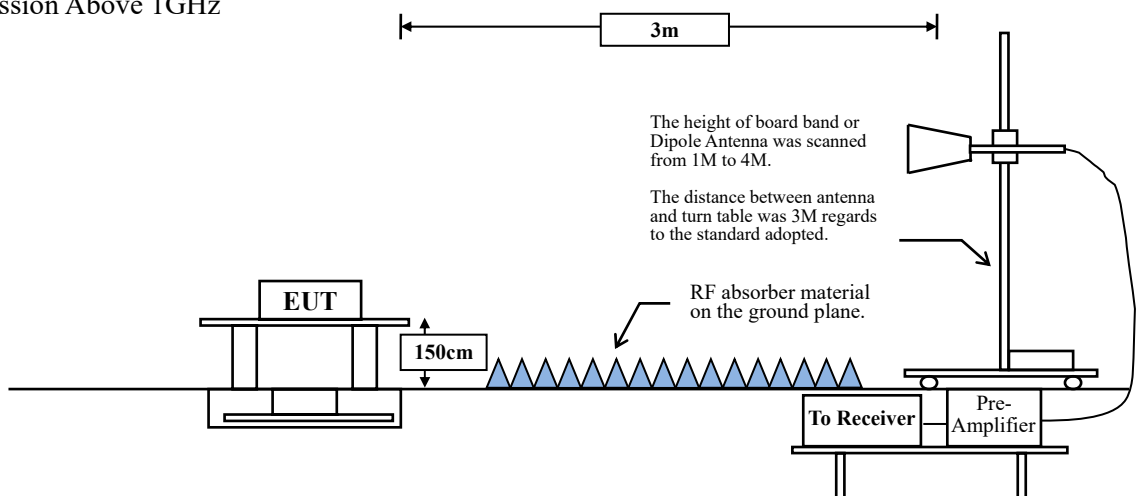
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



## 5.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

<b>FCC Part 15 Subpart C Paragraph 15.209(a) Limits</b>		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dB $\mu$ V/m) = 20 log E field strength (uV/m)

### 5.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

**RBW and VBW Parameter setting:**

According to KDB 789033 section II.G.5 Procedure for Unwanted Maximum Emissions  
Measurements above 1000 MHz.

RBW = 1MHz.

VBW  $\geq$  3MHz.

According to KDB 789033 section II.G.6 Procedures for Average Unwanted Emissions  
Measurements above 1000 MHz.

RBW = 1MHz.

VBW = 10Hz, when duty cycle  $\geq$  98 %

VBW  $\geq$  1/T, when duty cycle < 98 %

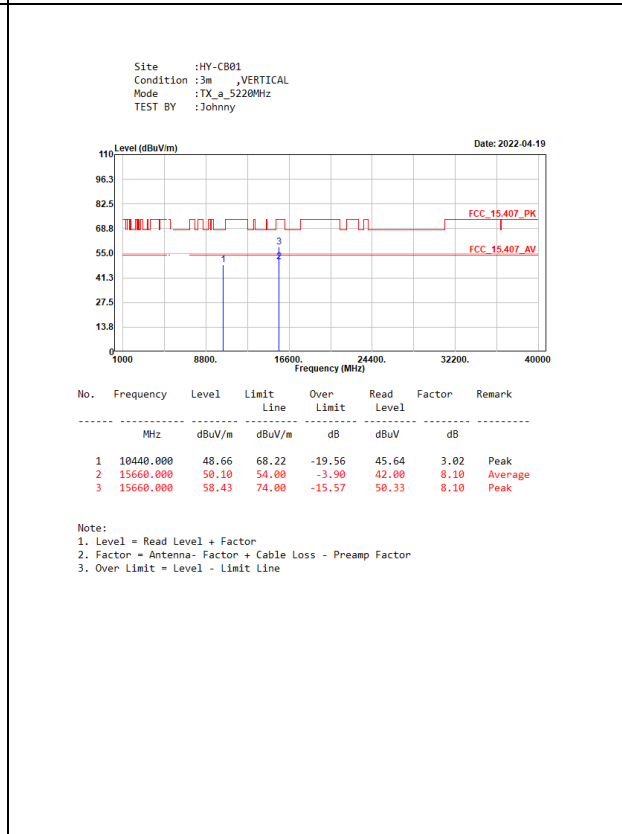
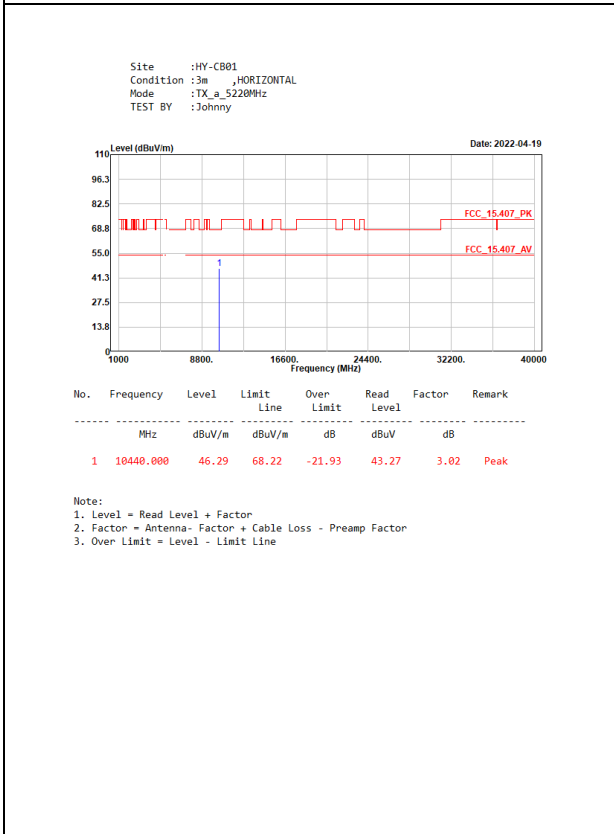
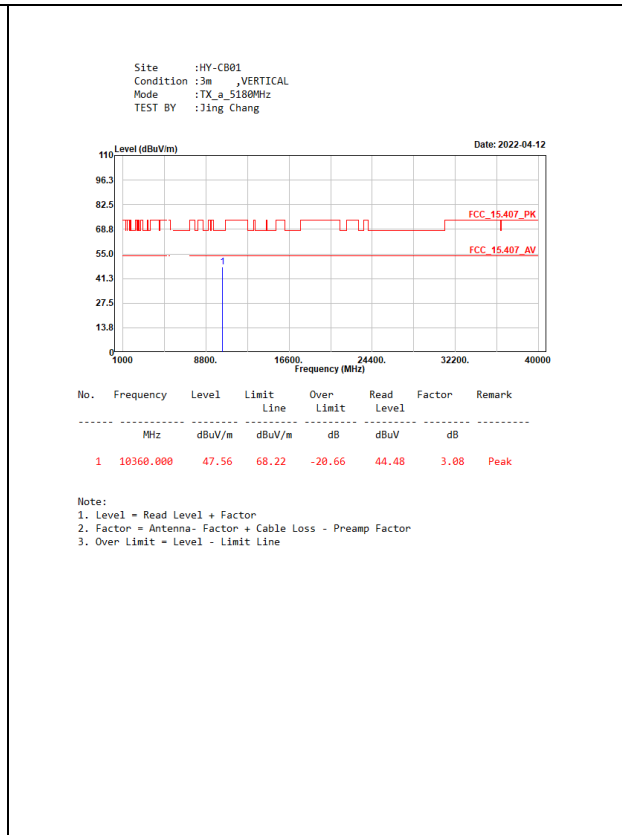
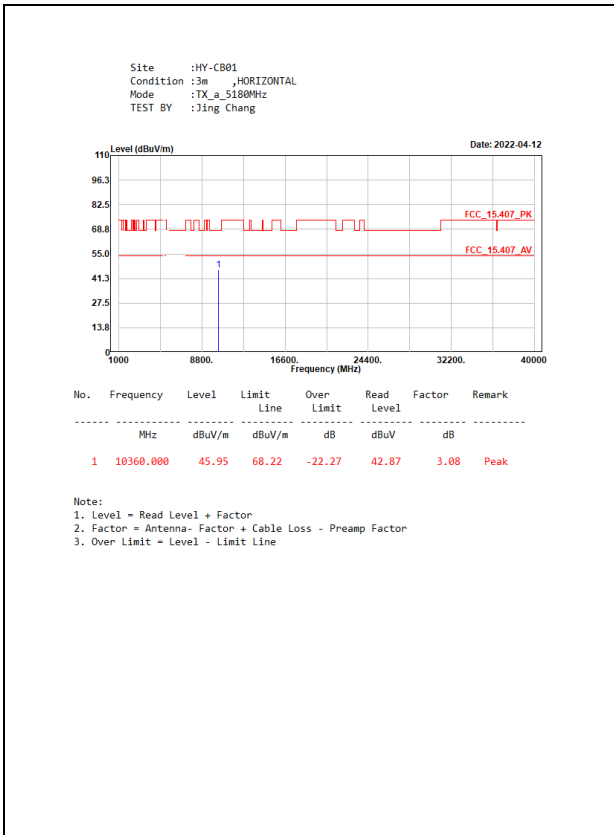
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

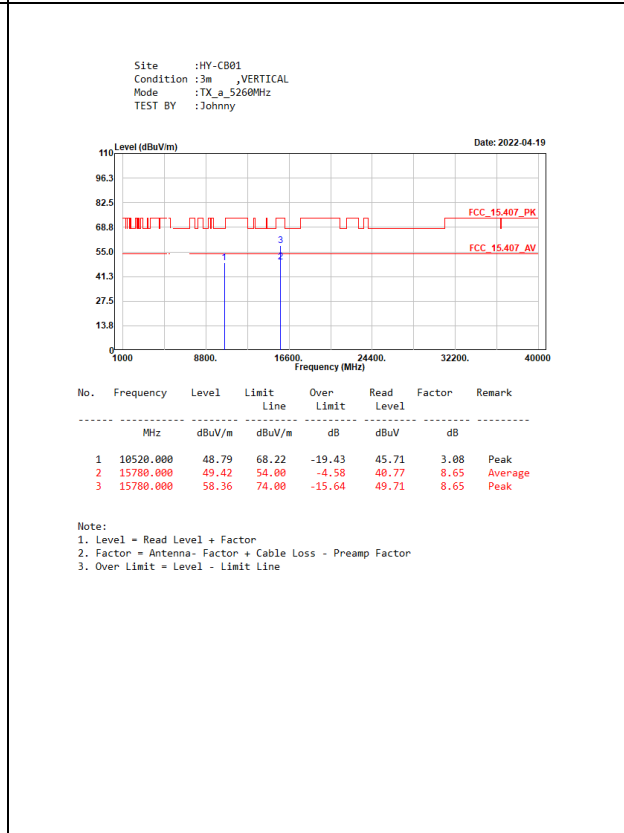
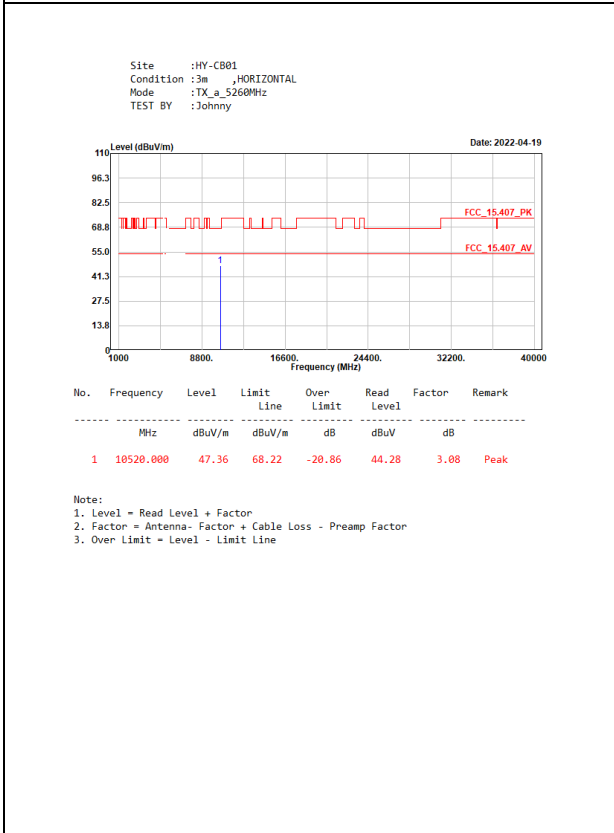
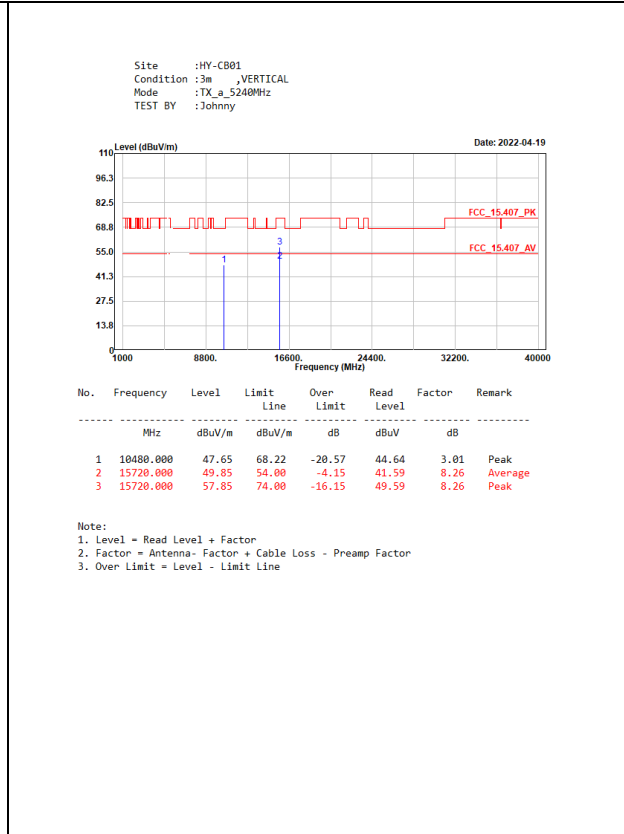
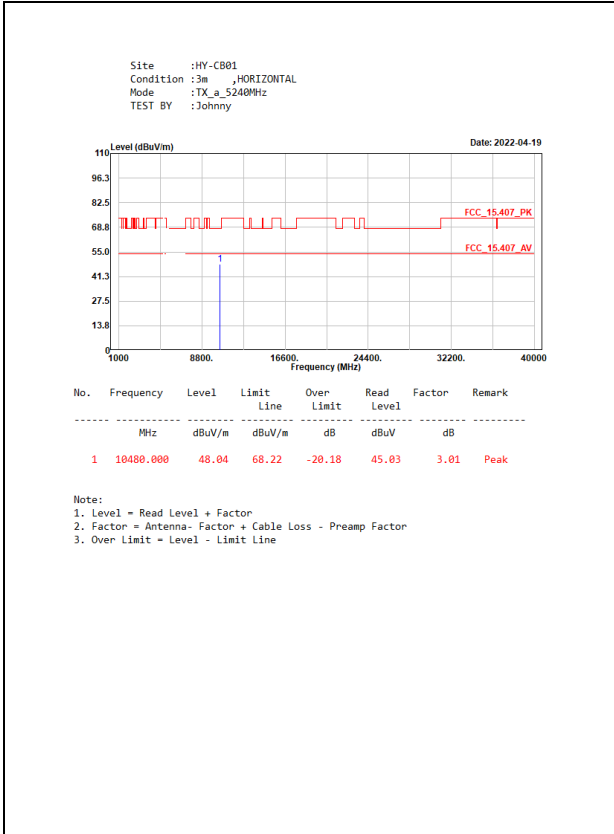
**CDD Mode:**

5GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11a	95.14	1.5650	639	1000
802.11ax20	94.22	5.2200	192	200
802.11ax40	93.19	5.2000	192	200
802.11ax80	93.48	5.1600	194	200

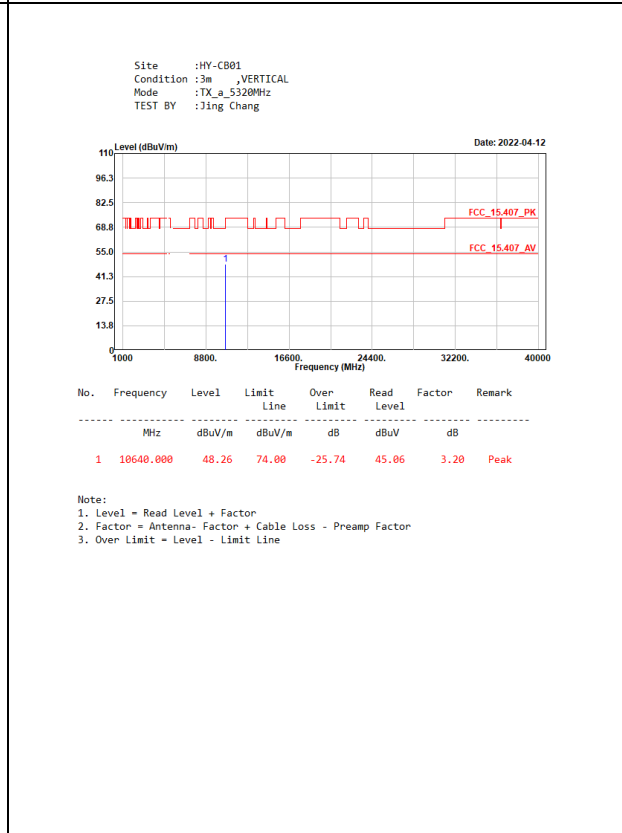
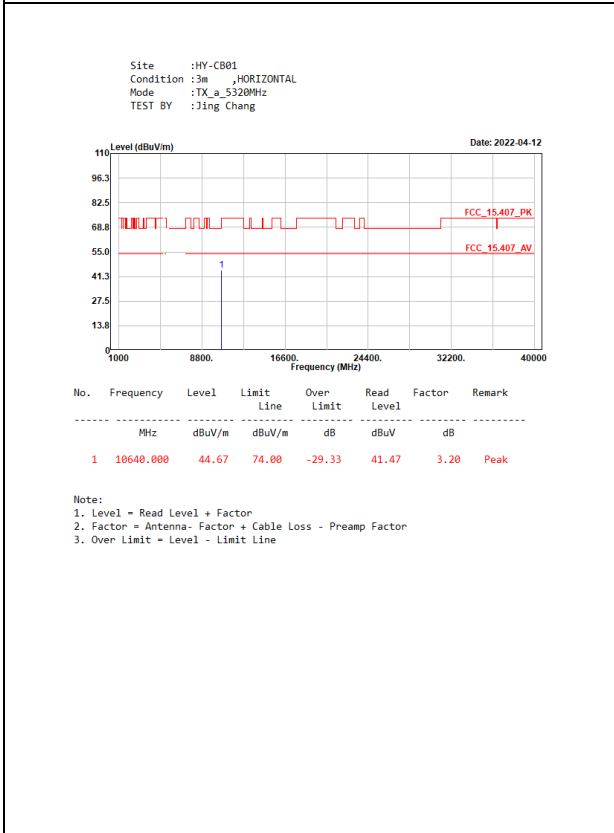
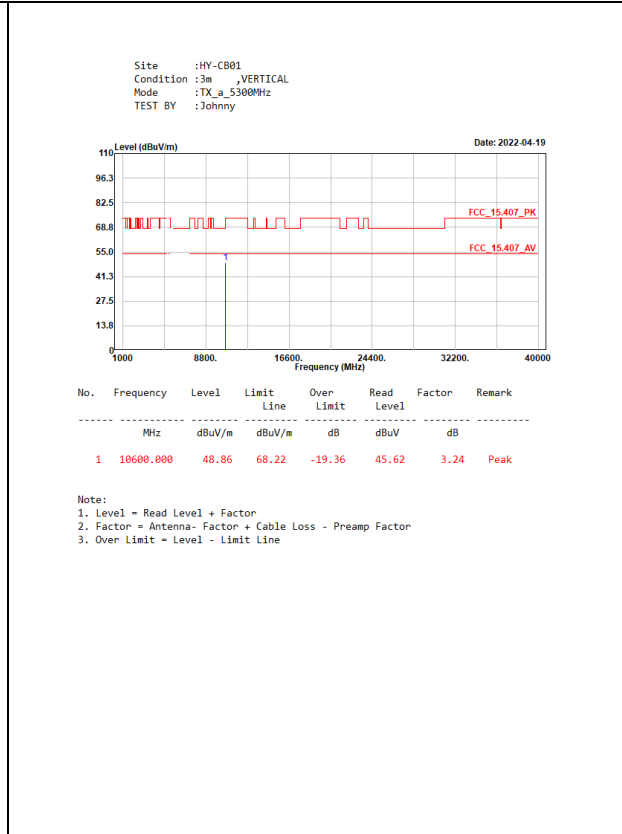
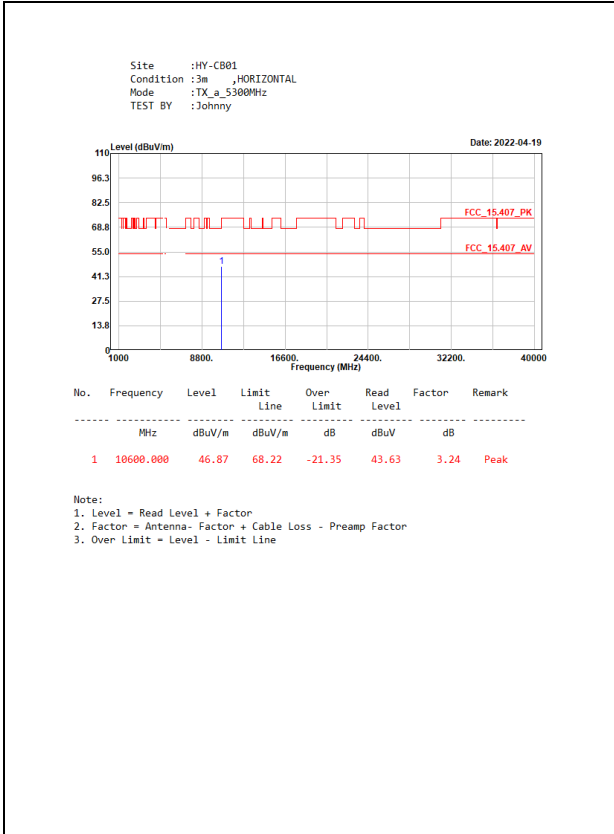
Note: Duty Cycle Refer to Section 8.

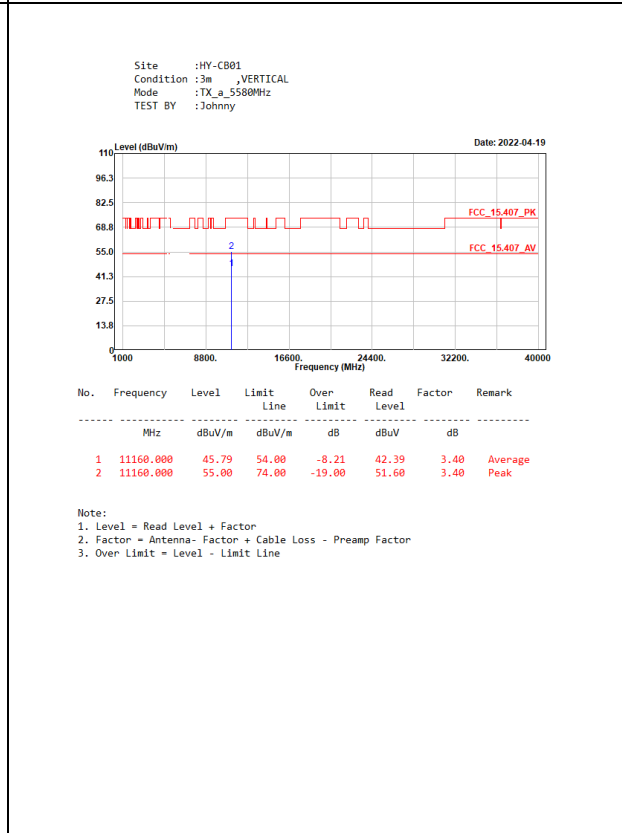
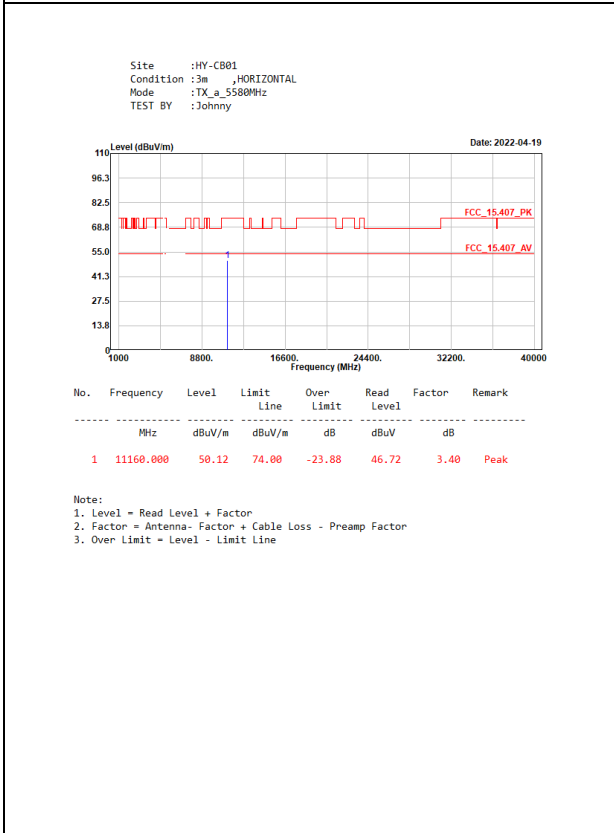
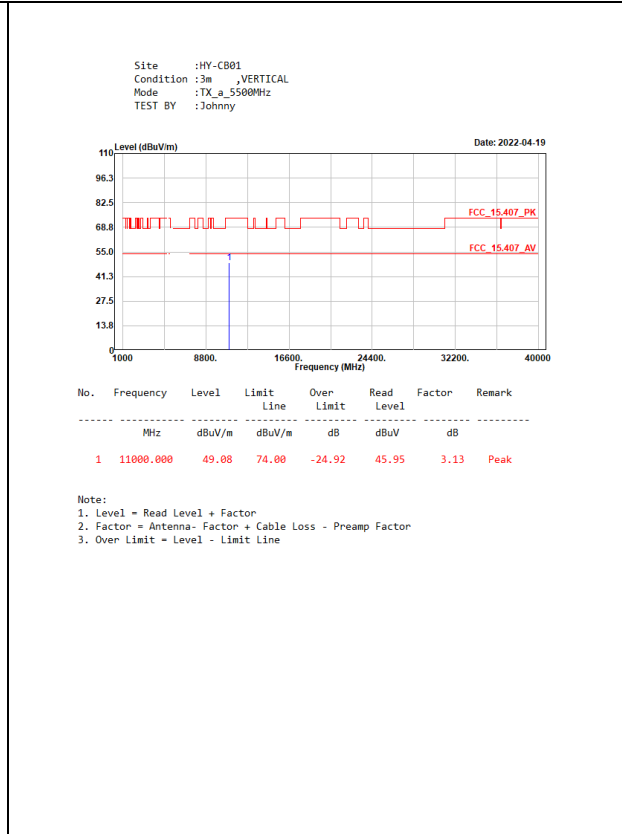
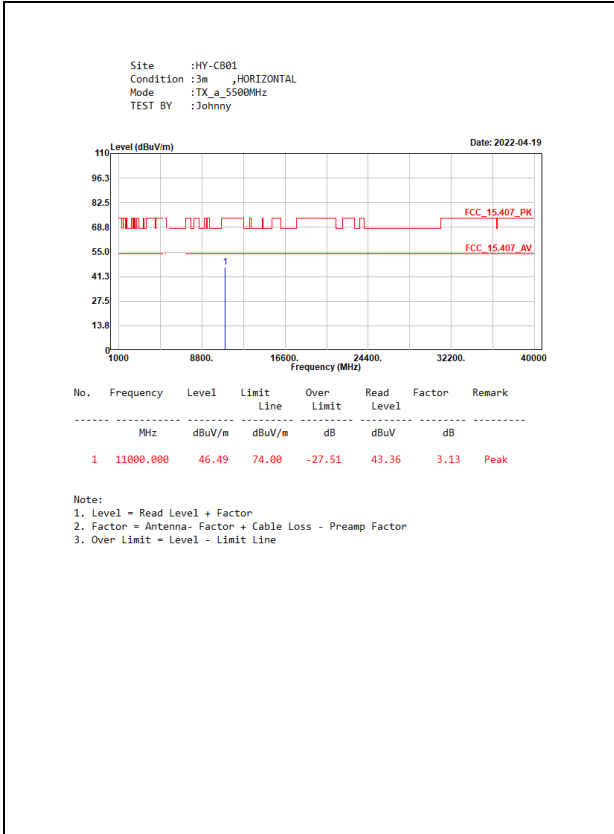
### 5.4. Test Result of Radiated Emission

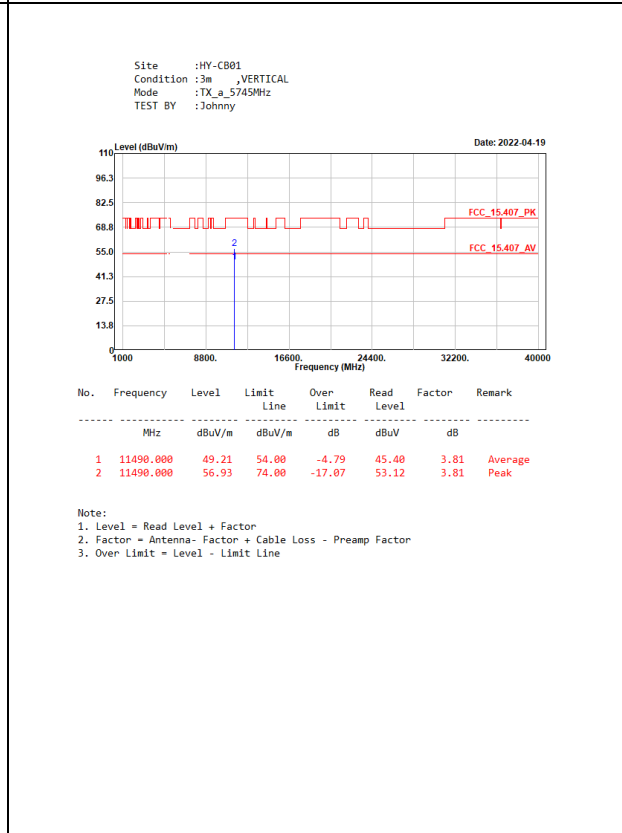
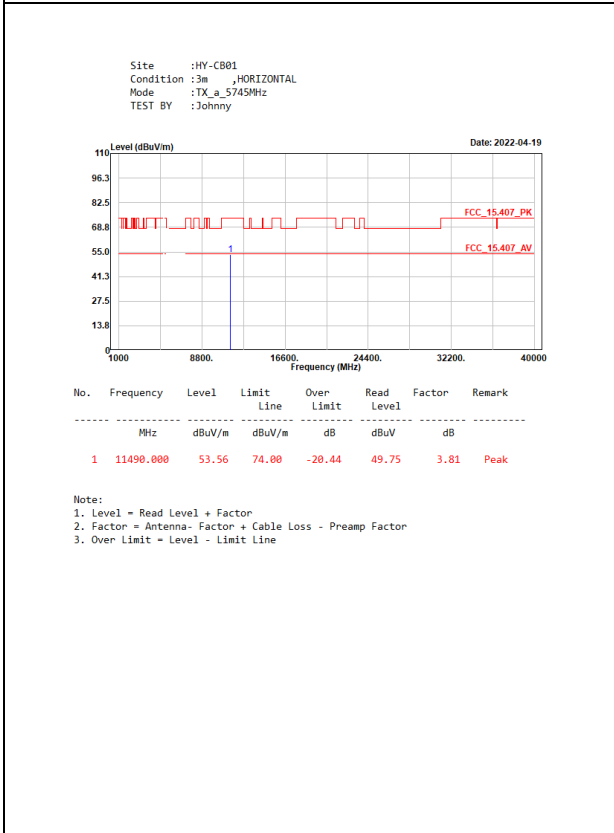
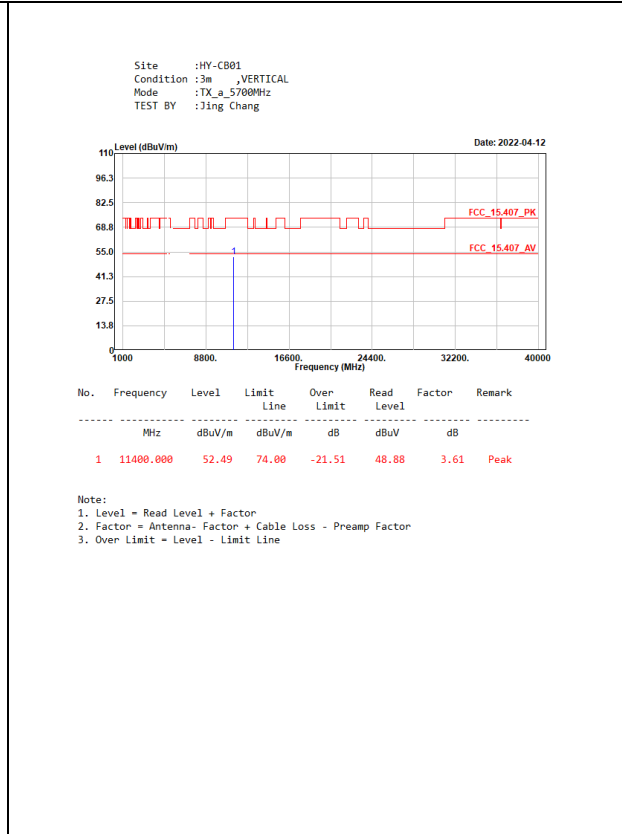
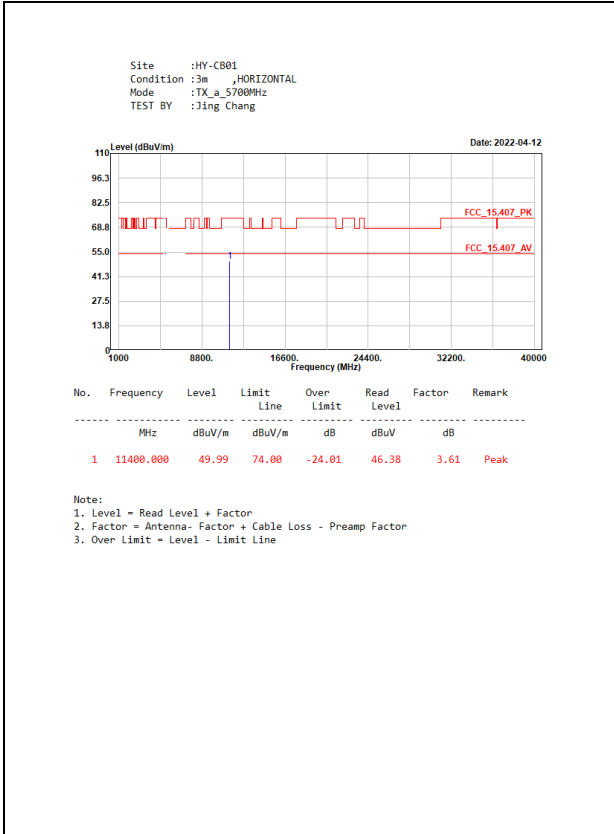


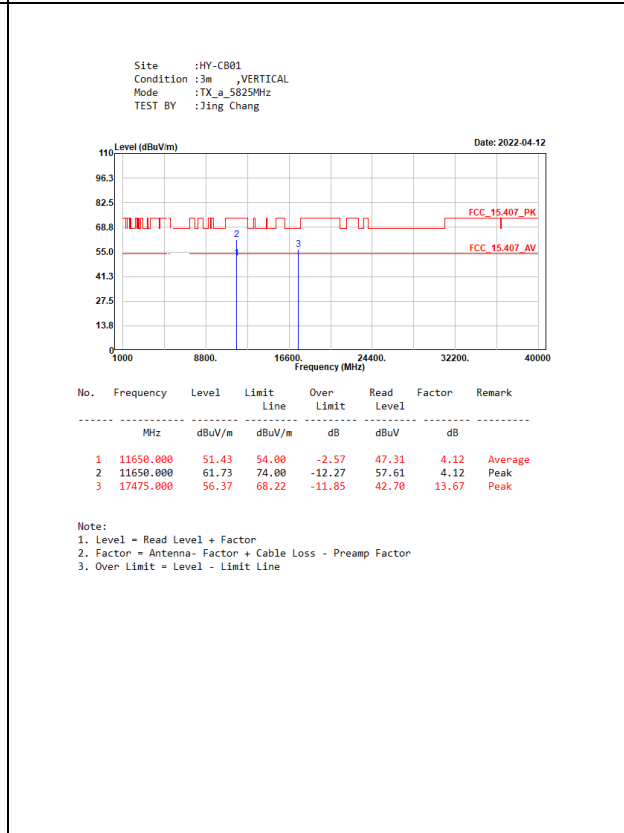
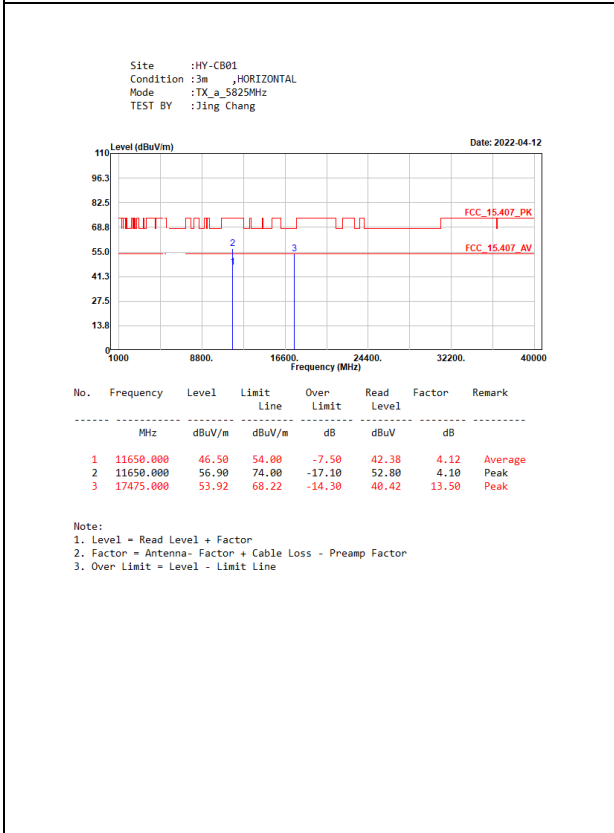
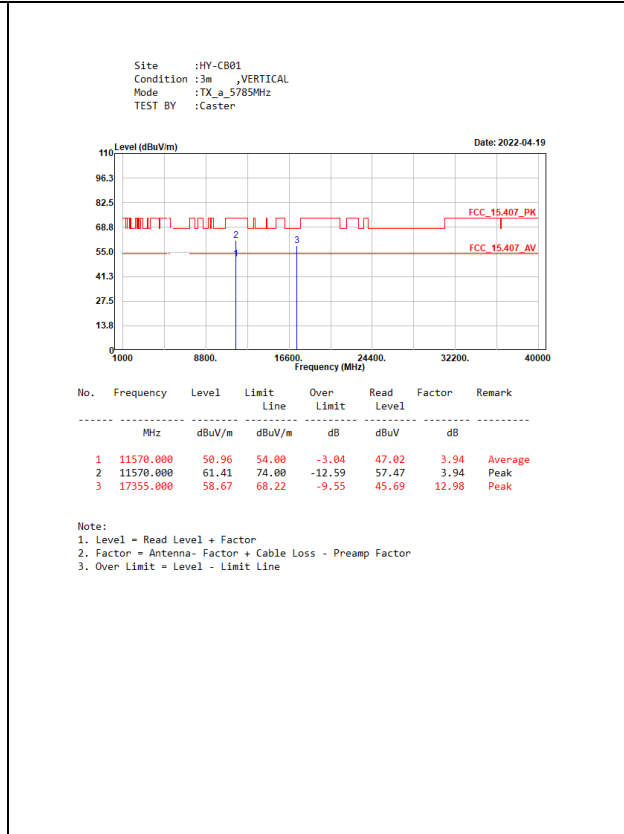
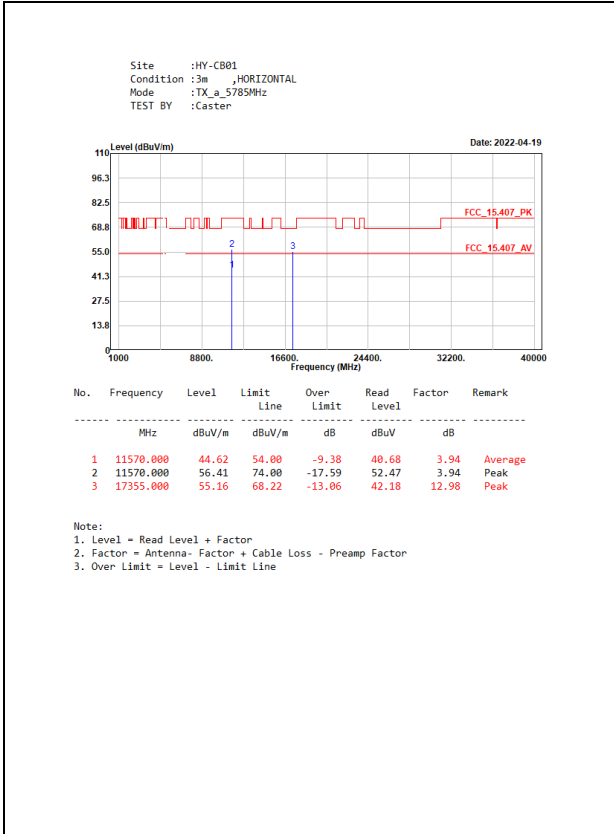


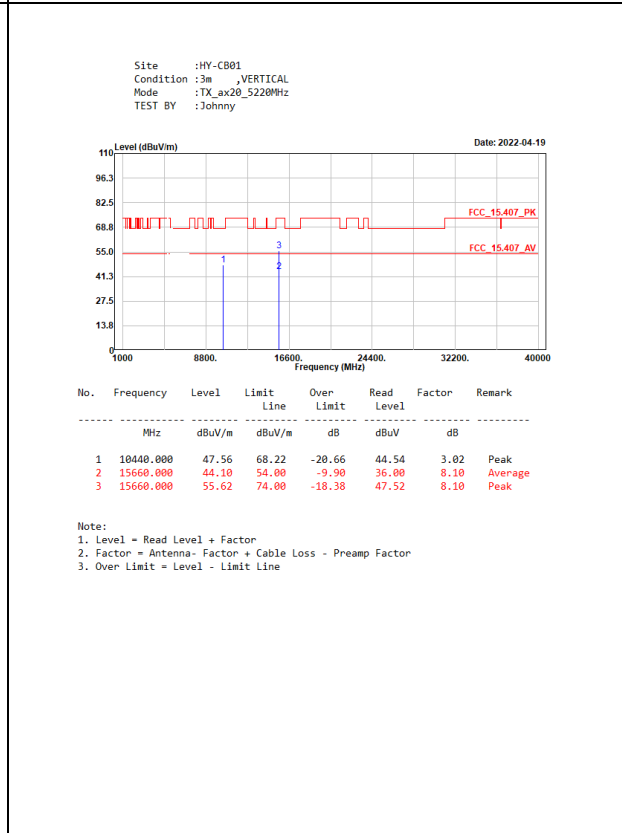
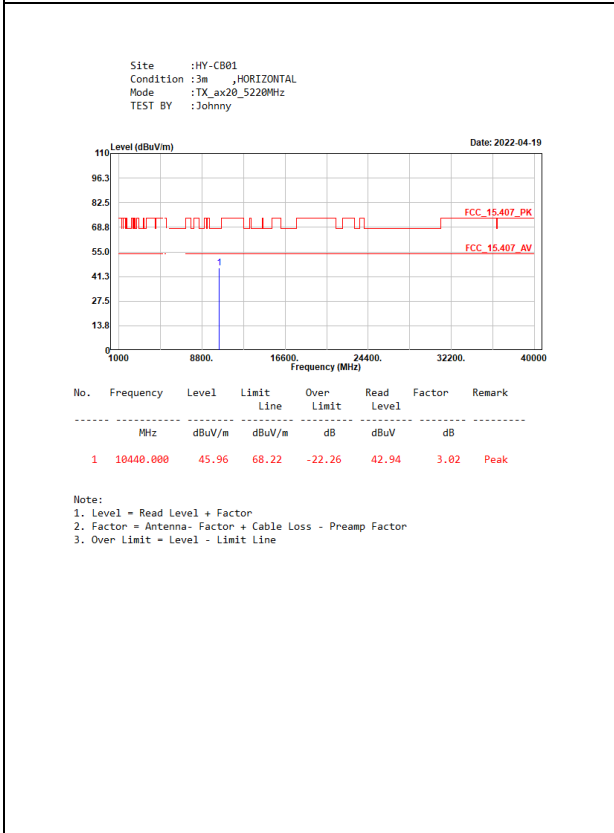
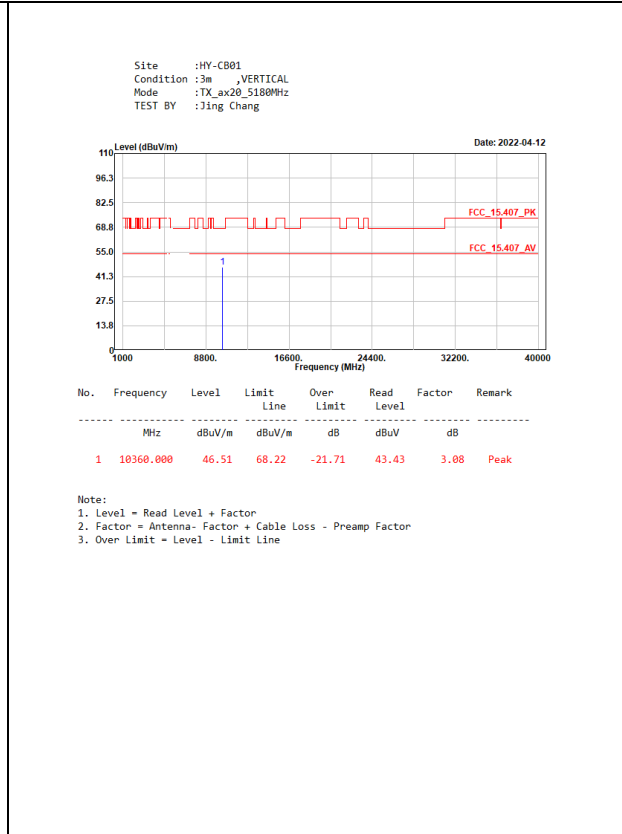
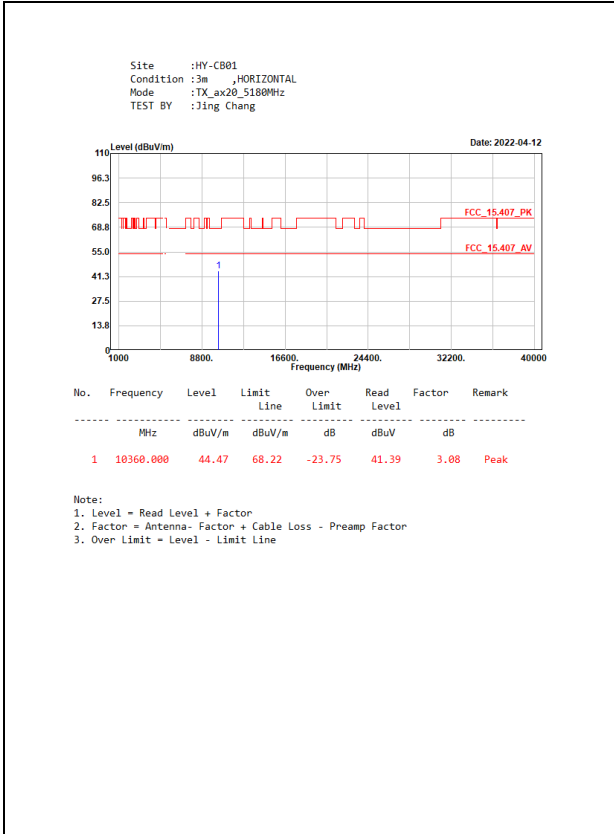


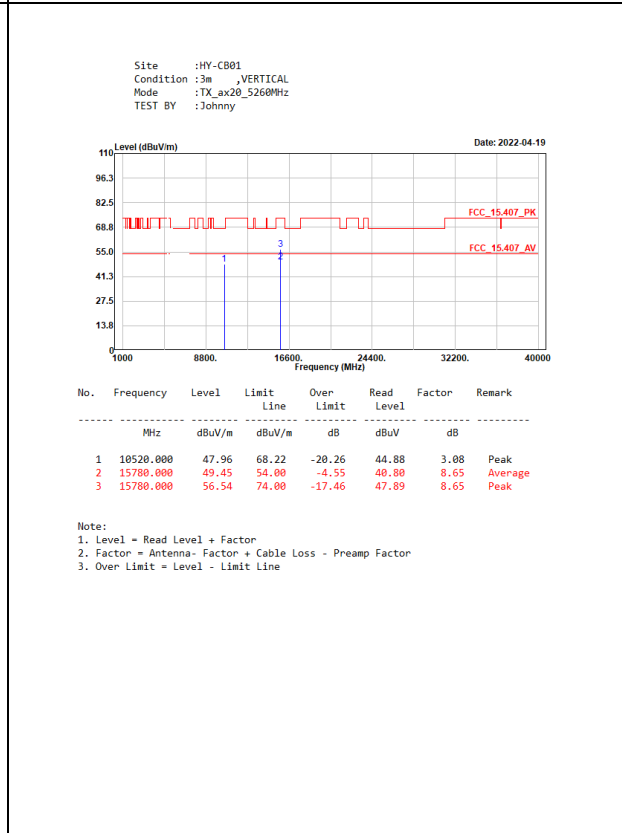
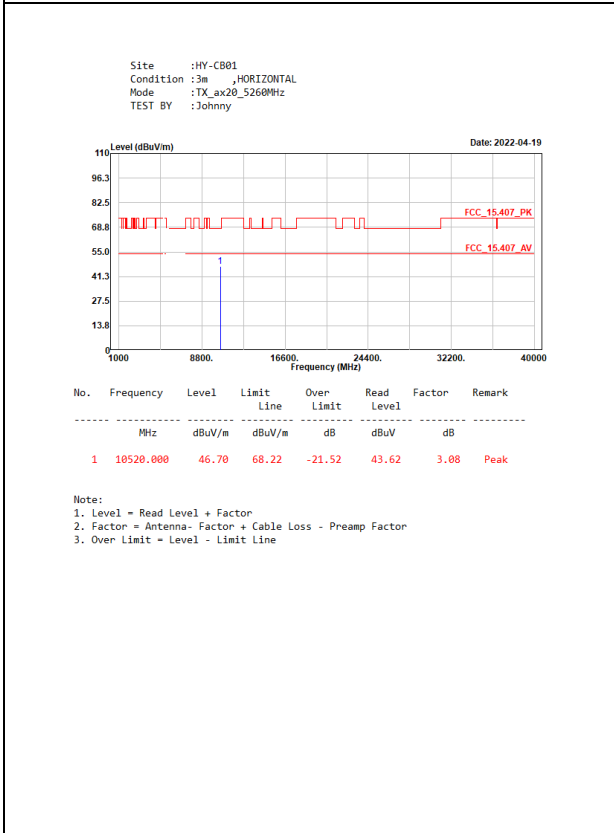
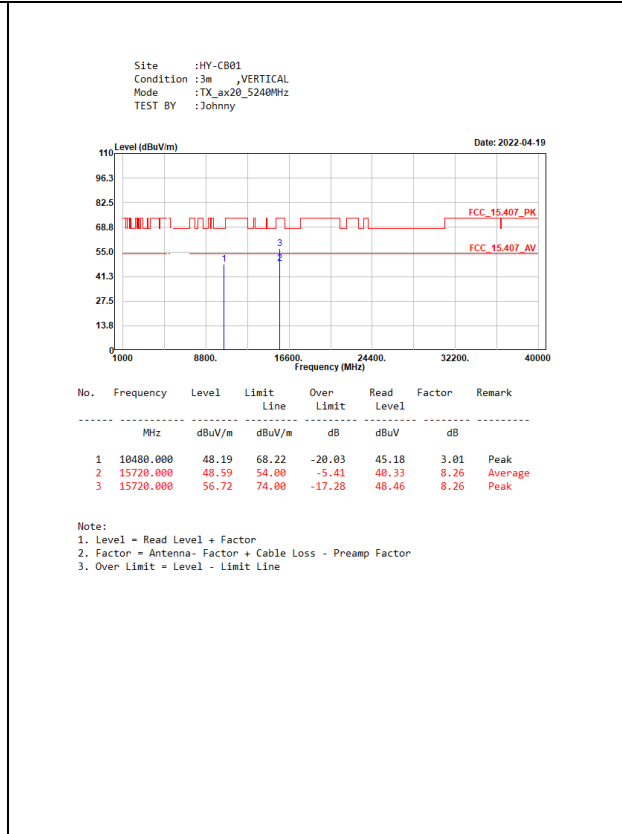
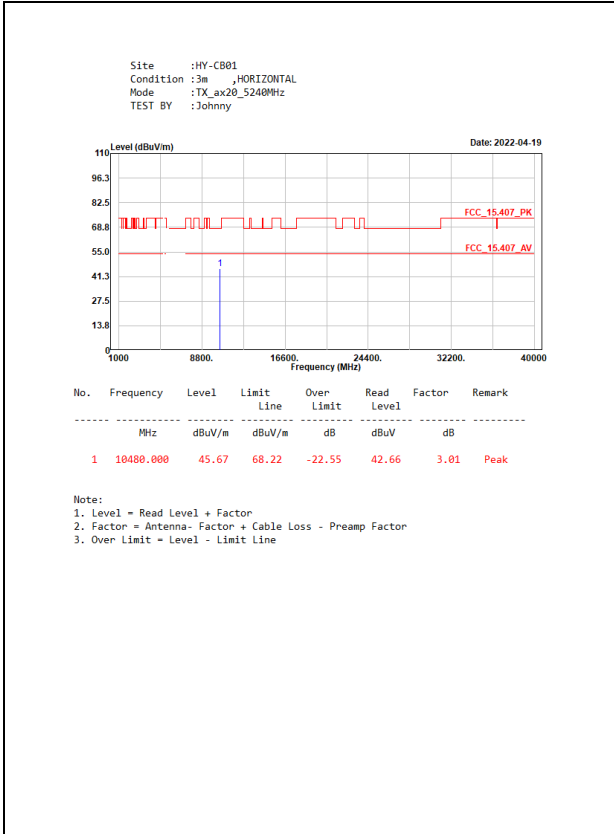


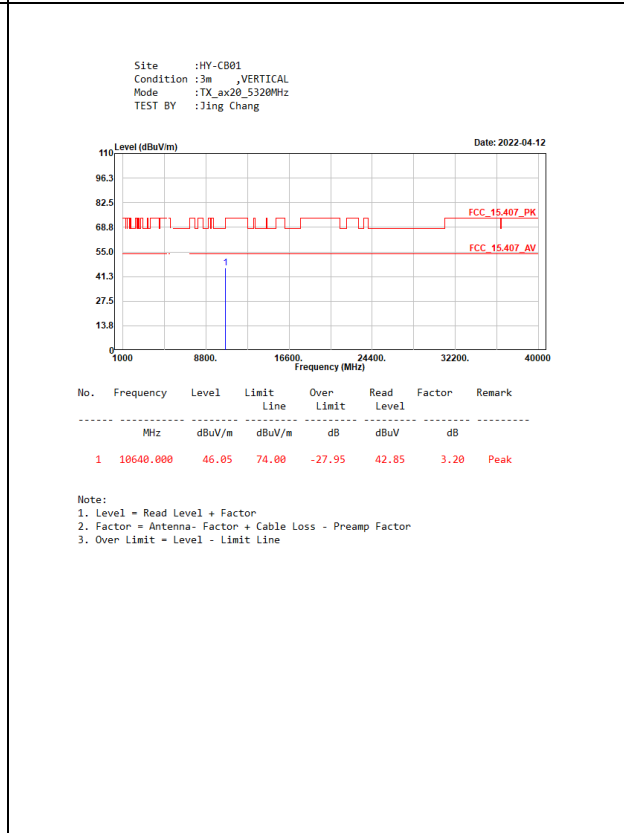
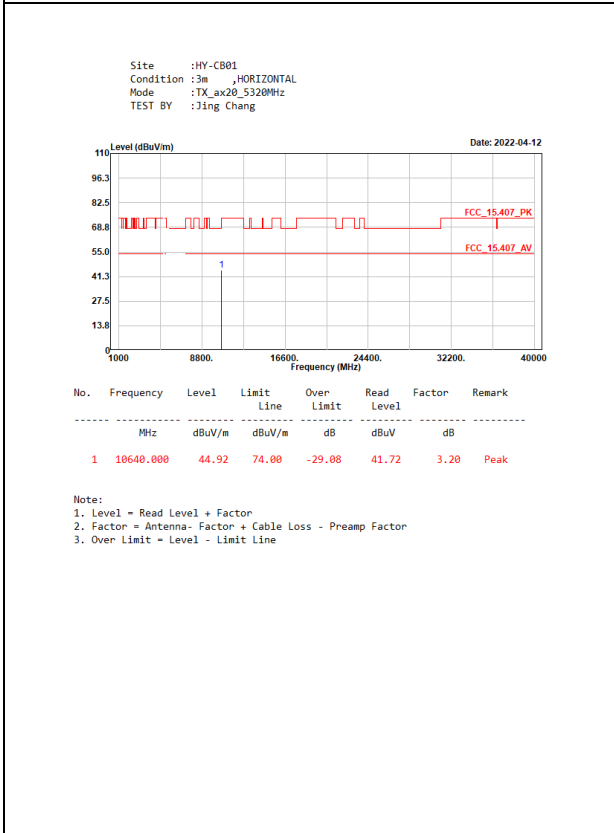
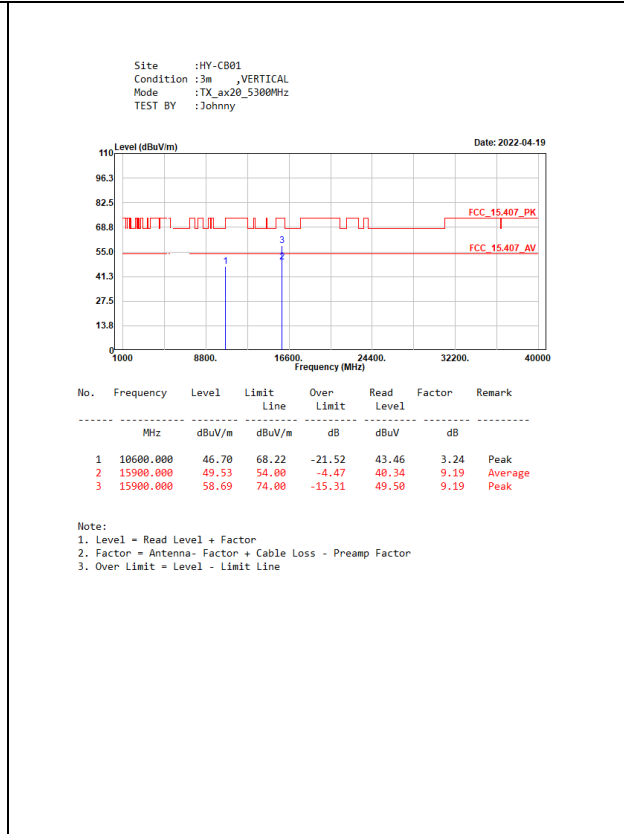
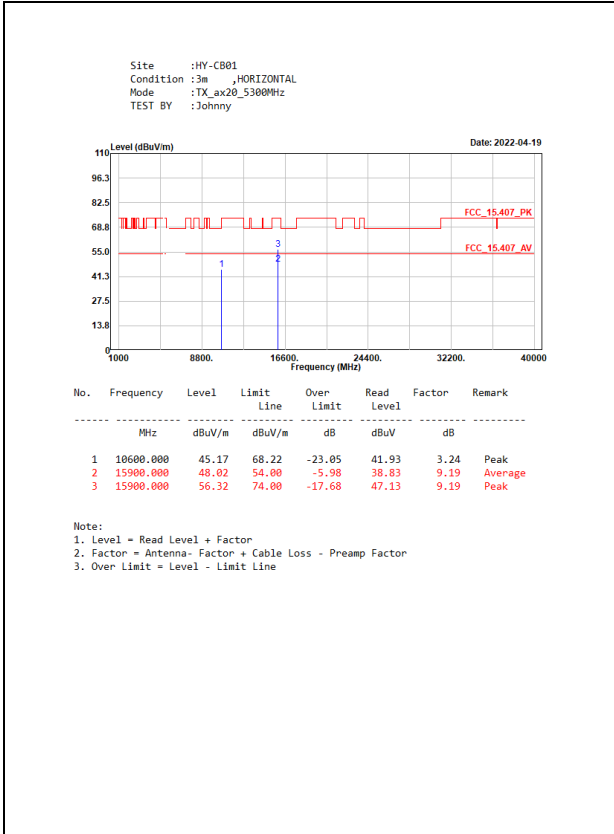


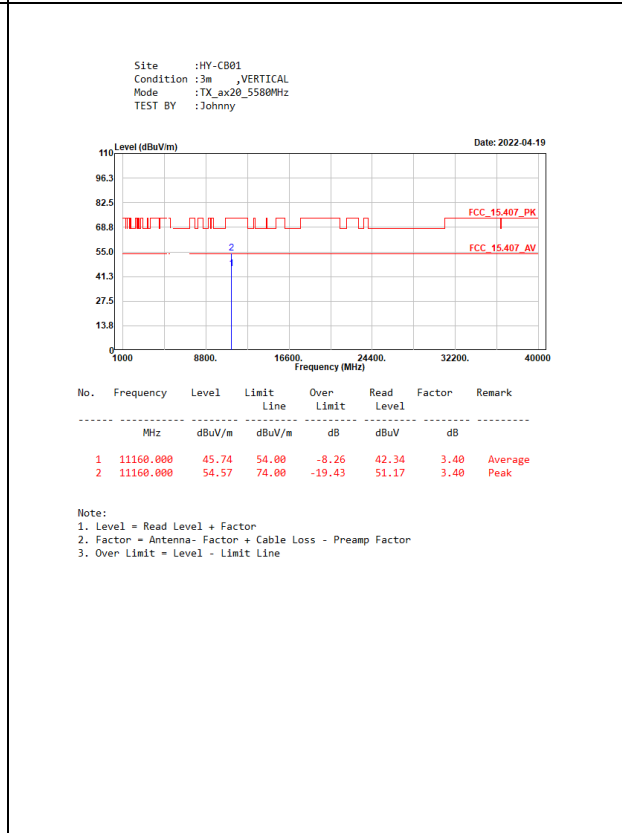
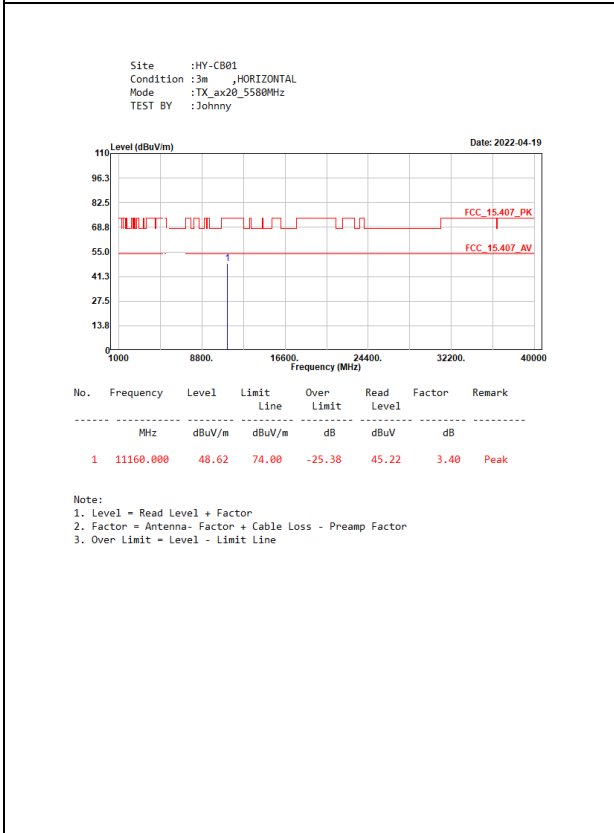
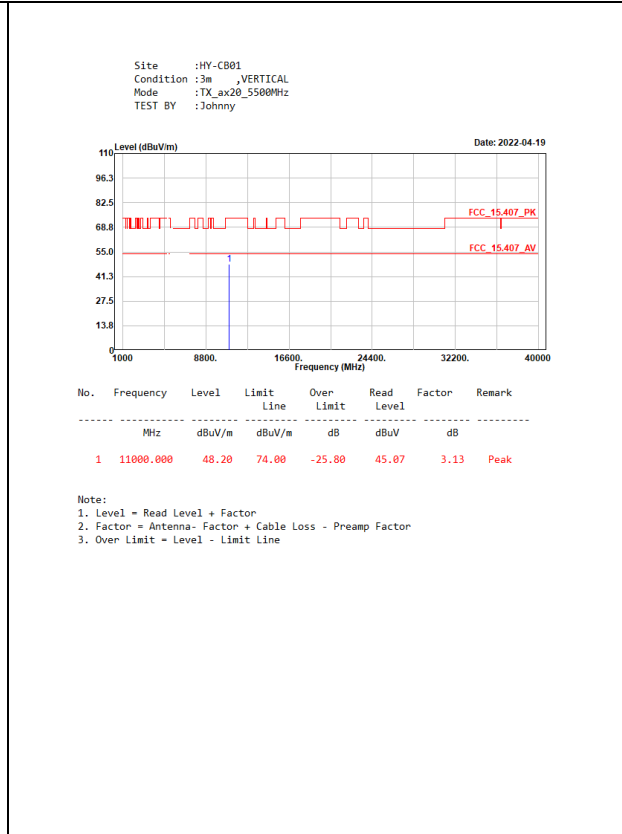
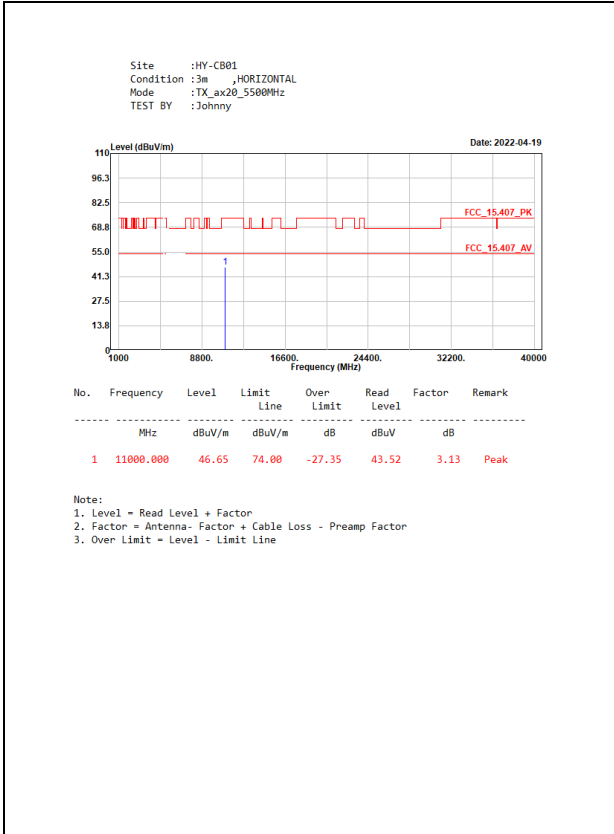




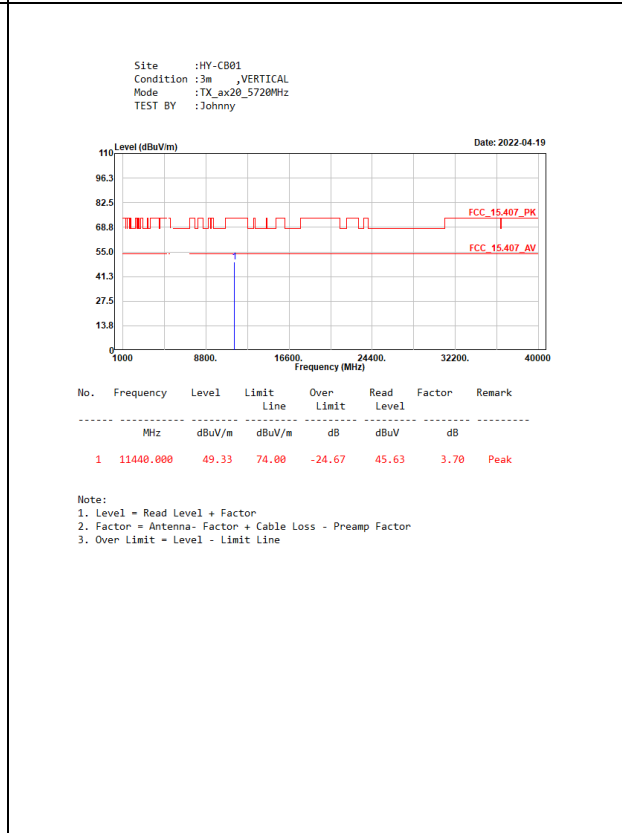
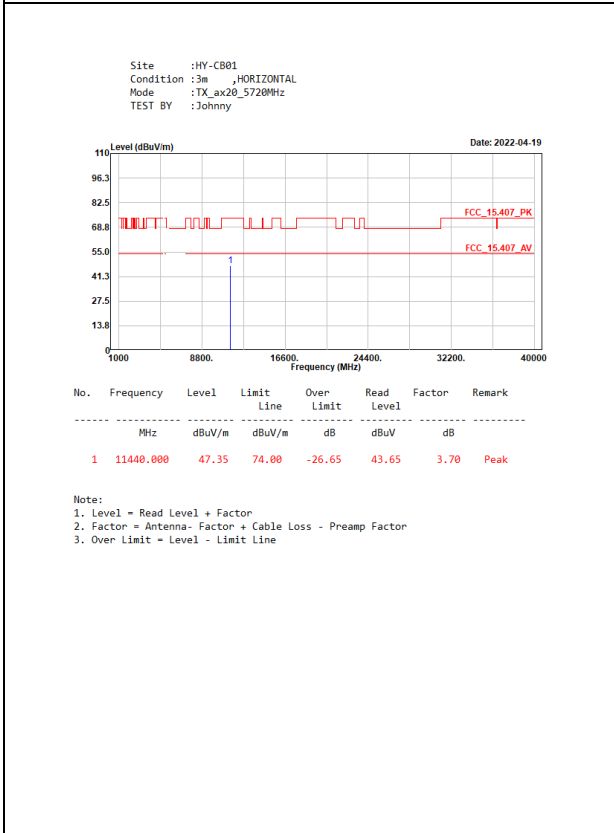
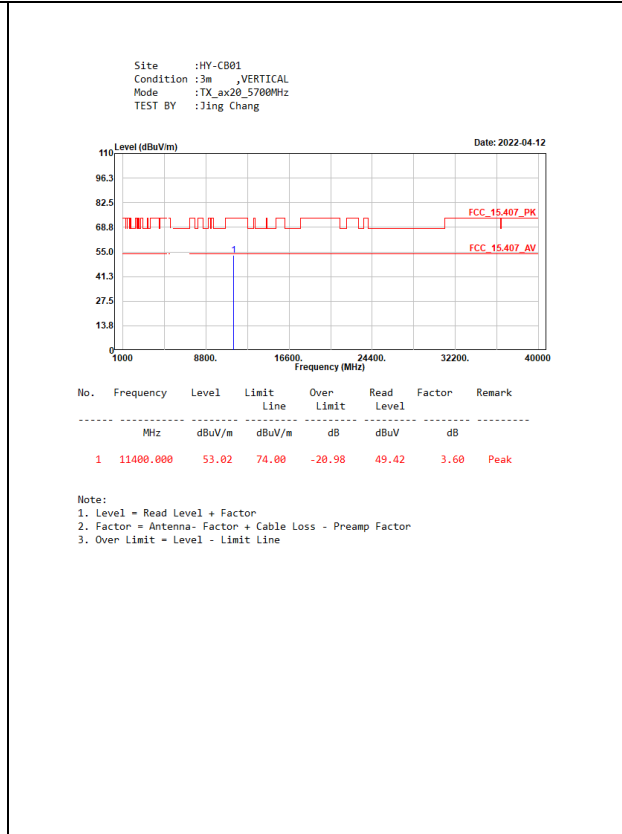
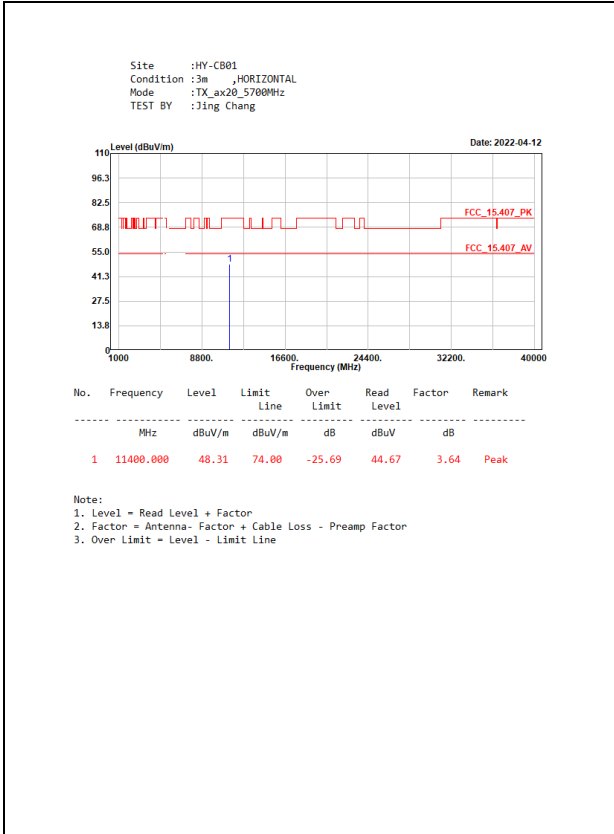


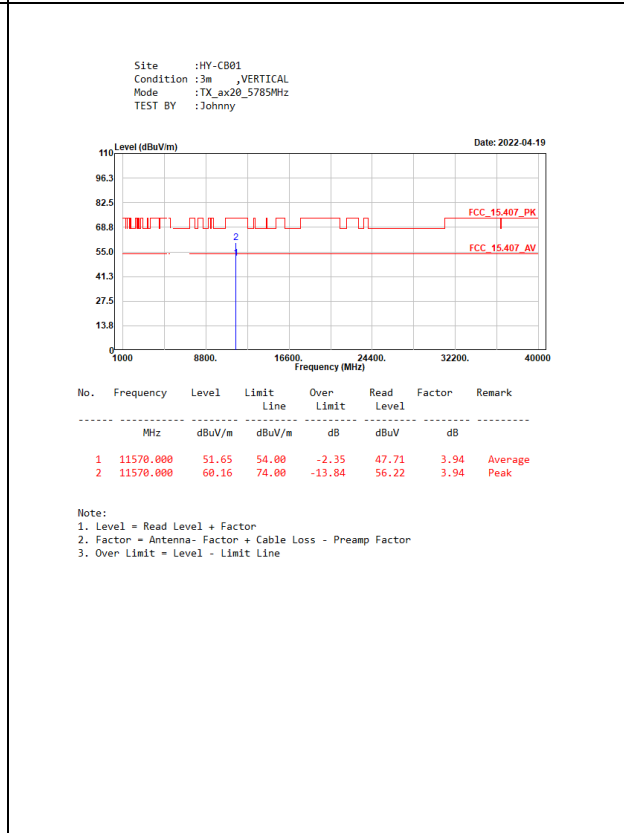
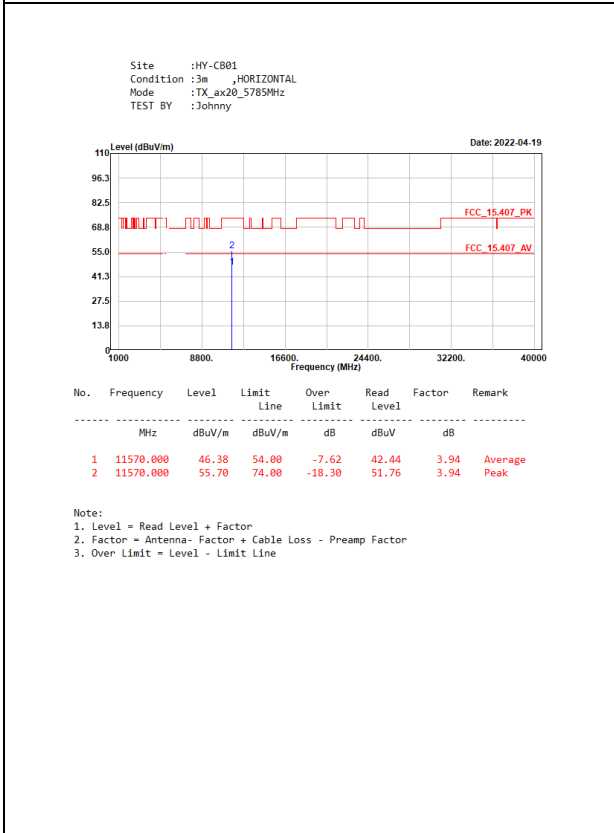
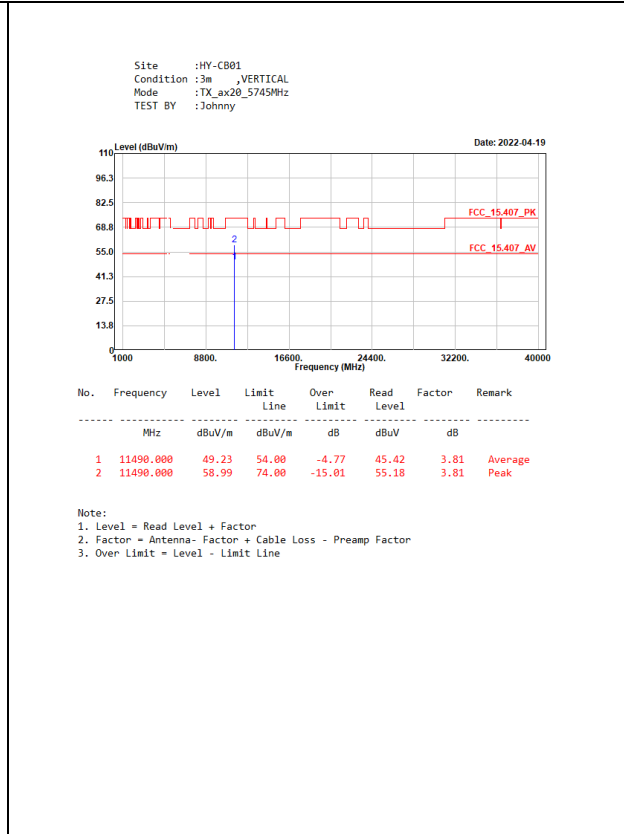
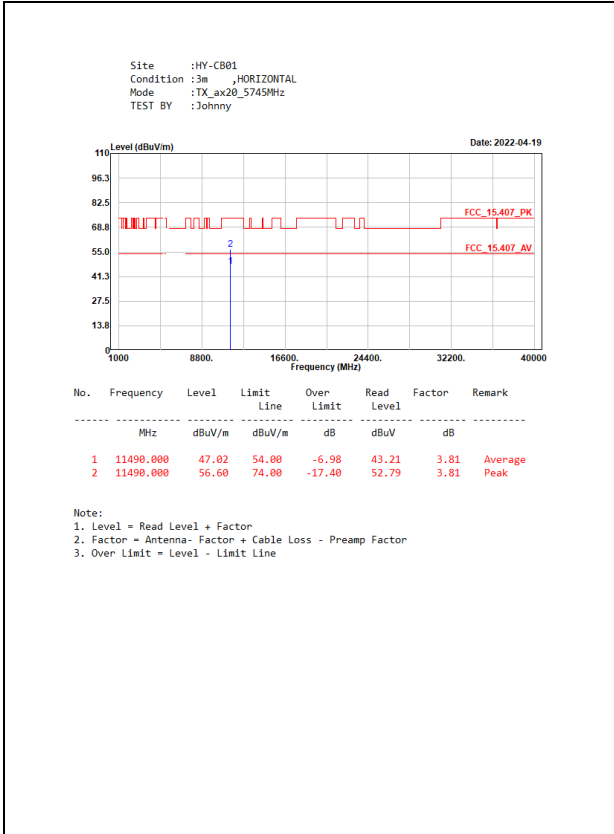


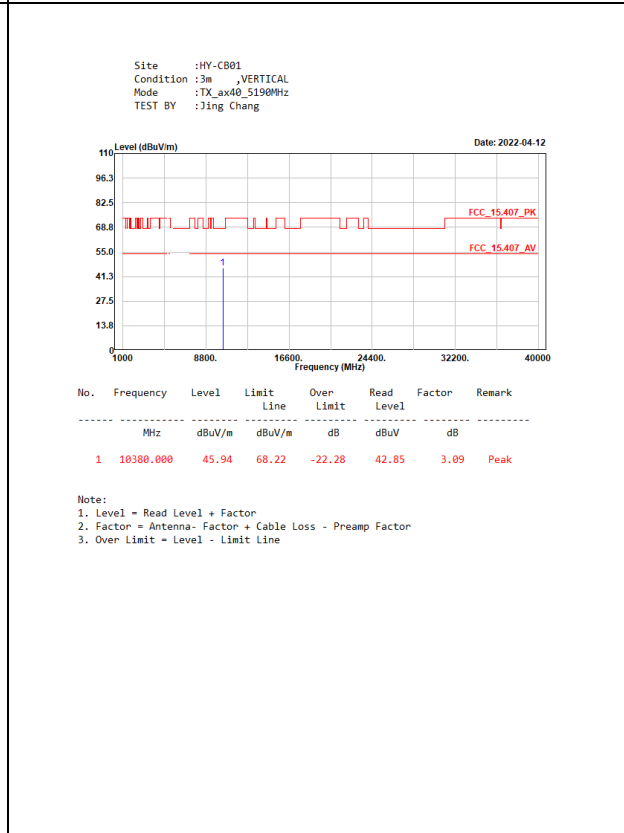
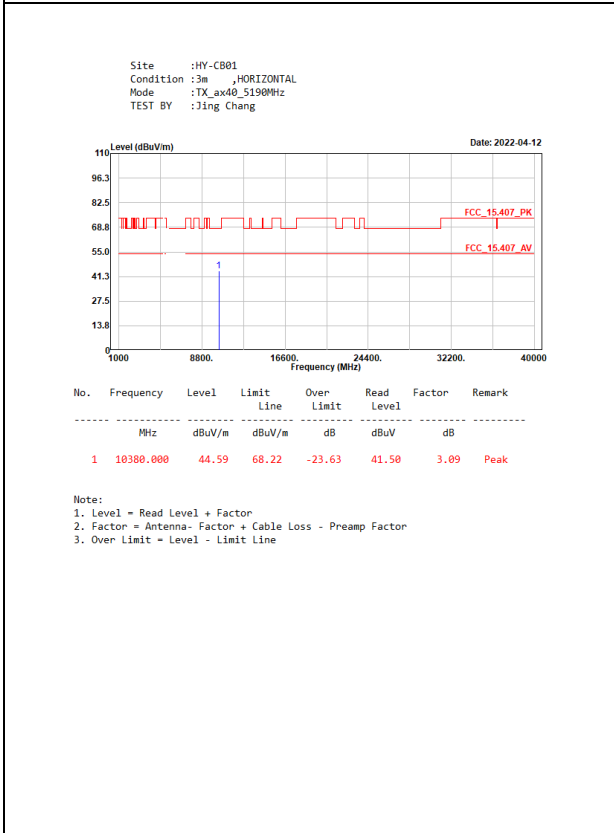
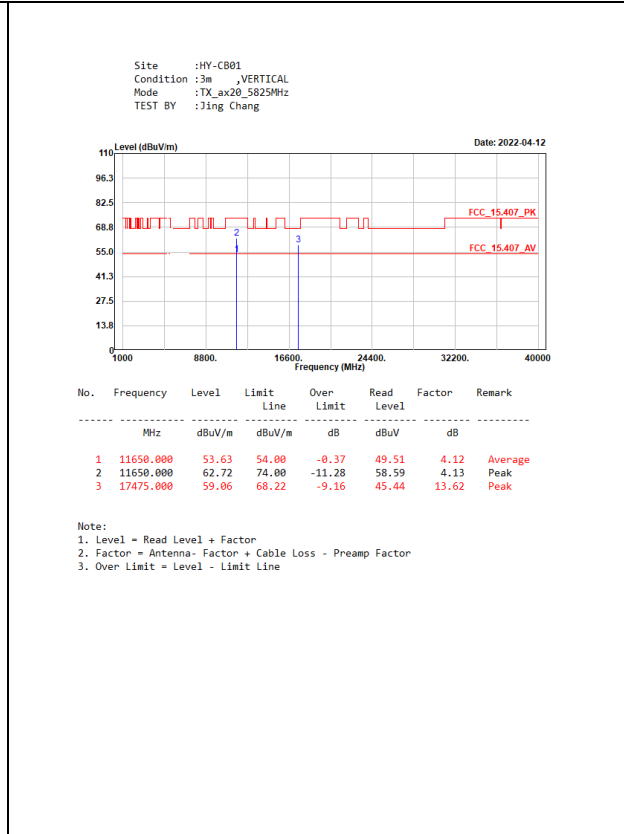
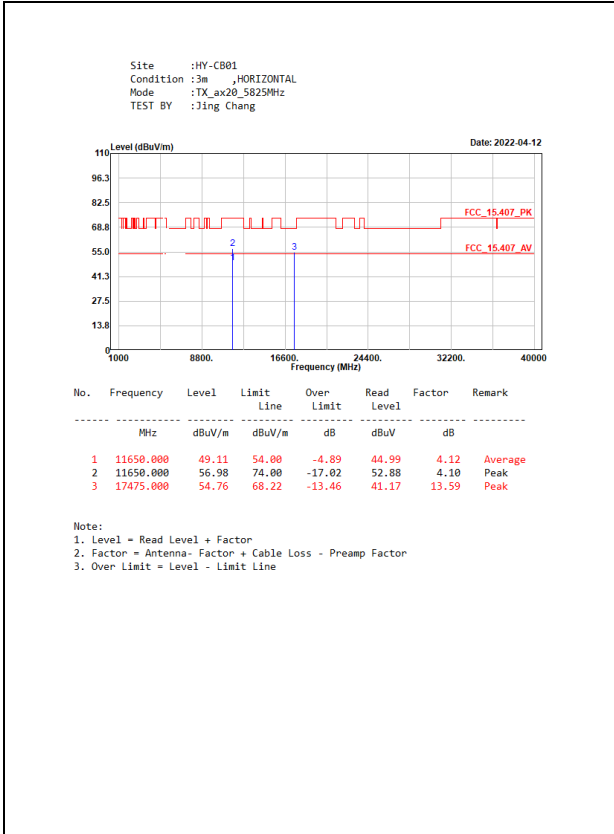


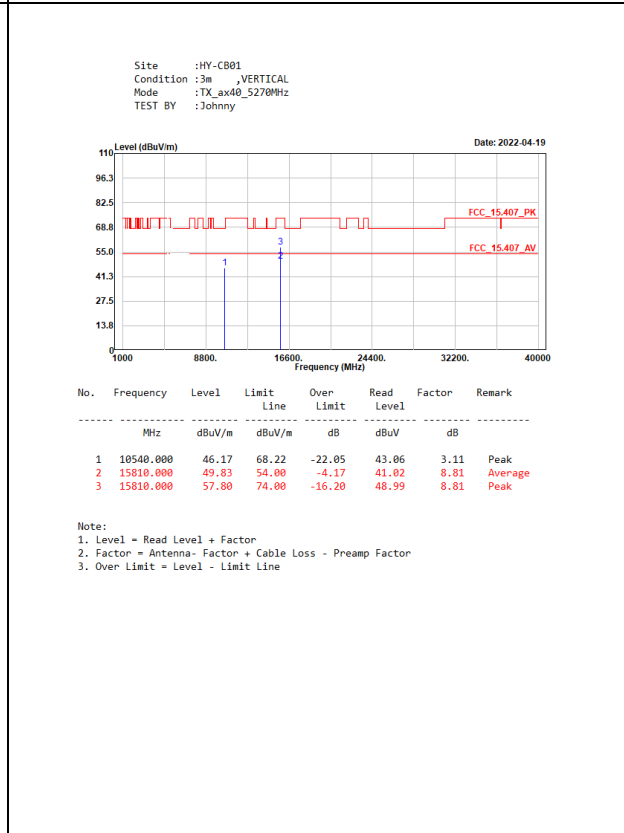
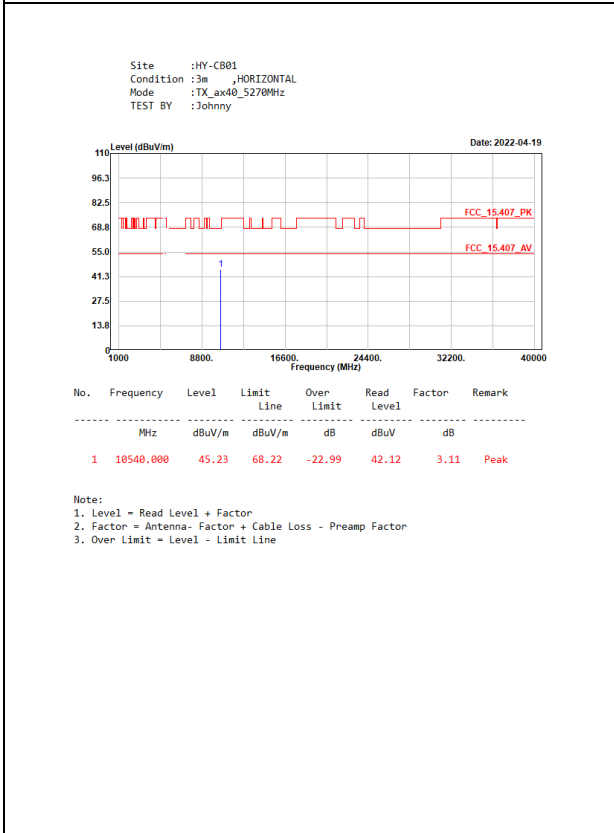
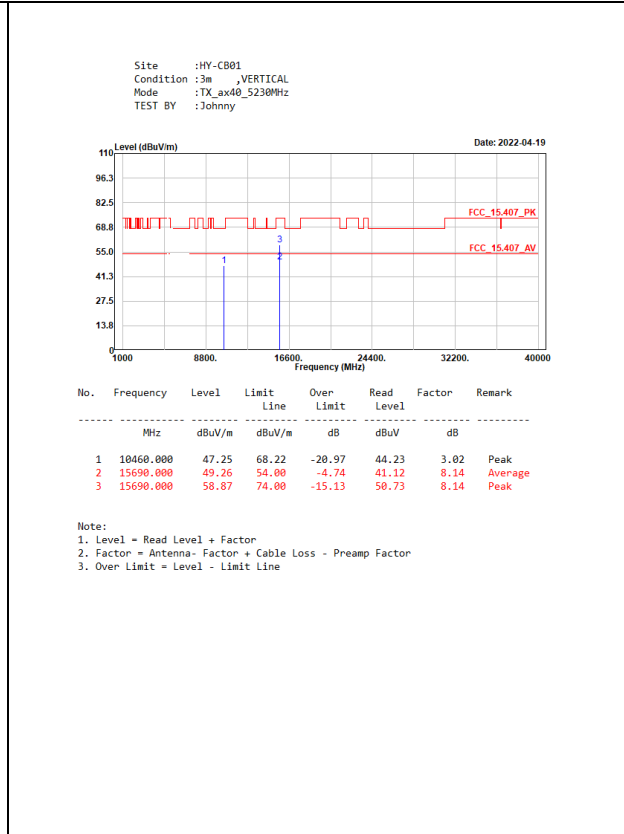
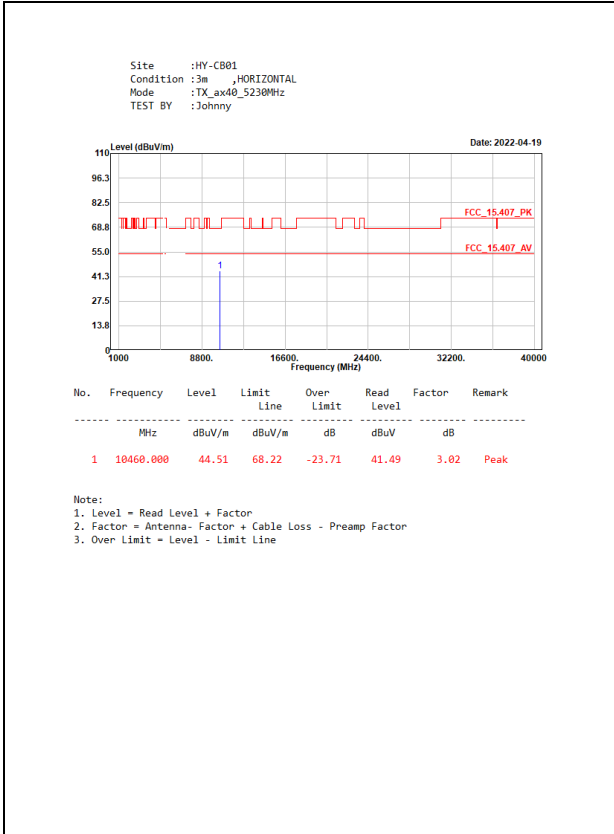


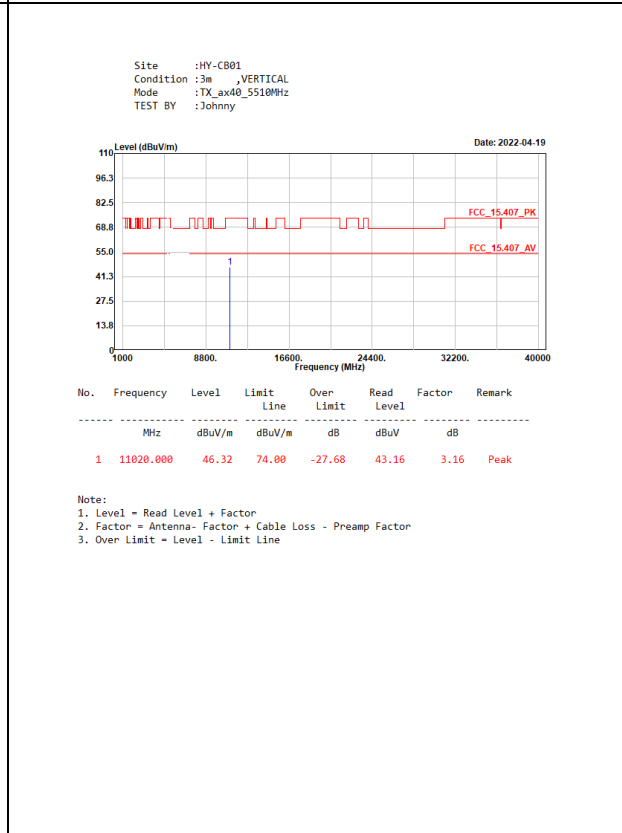
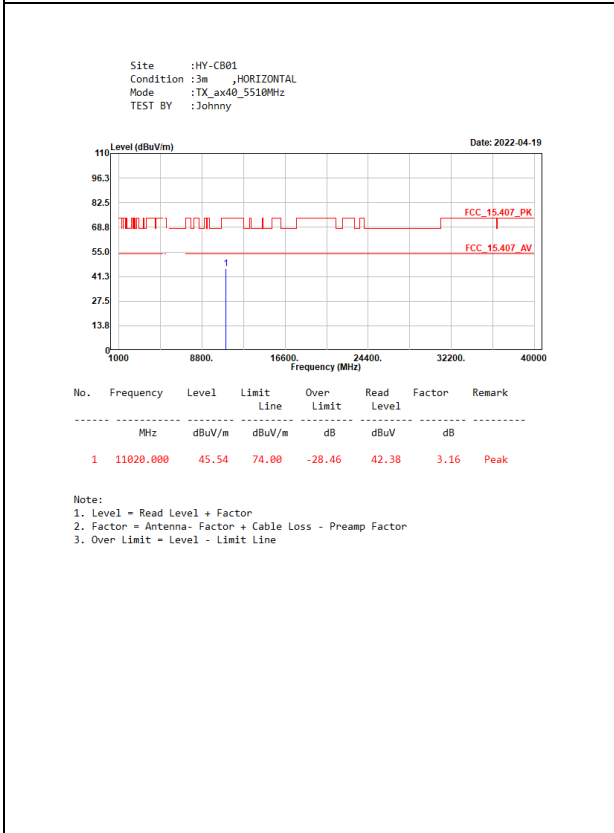
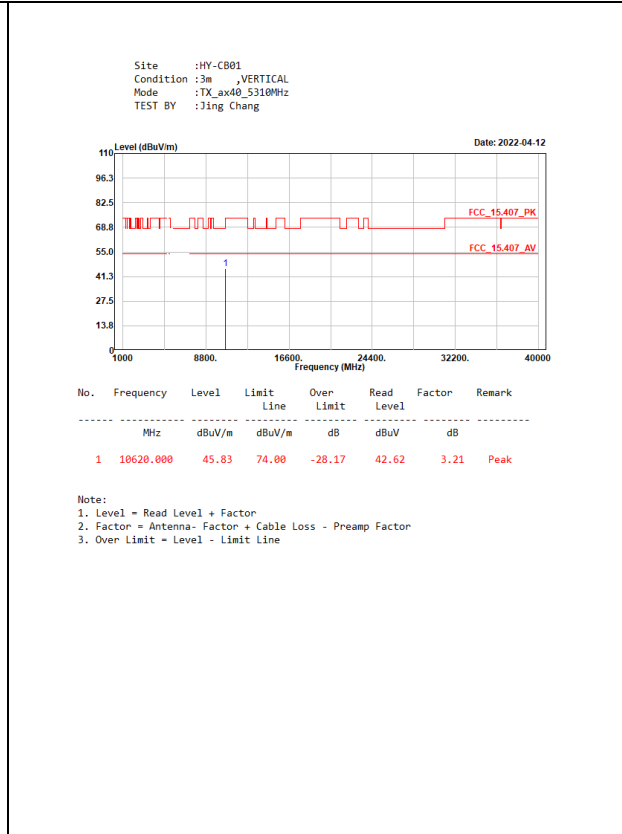
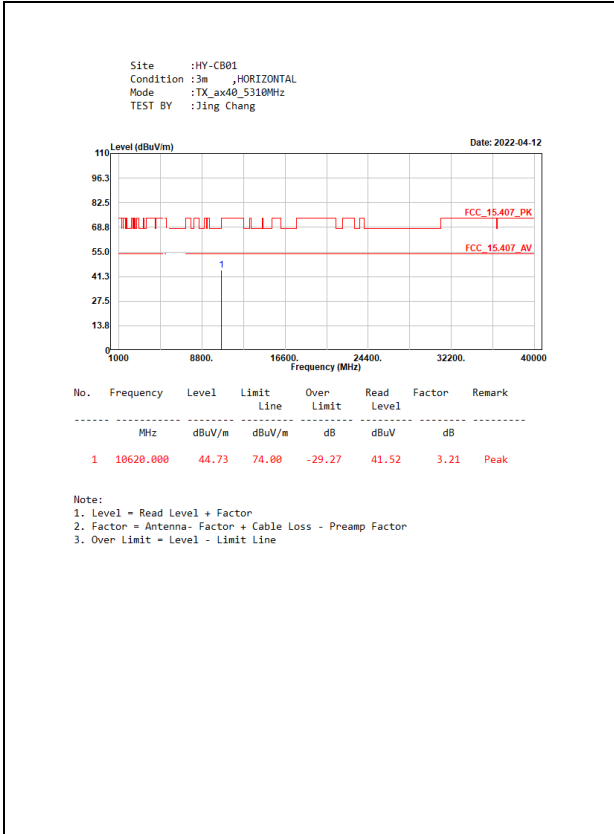


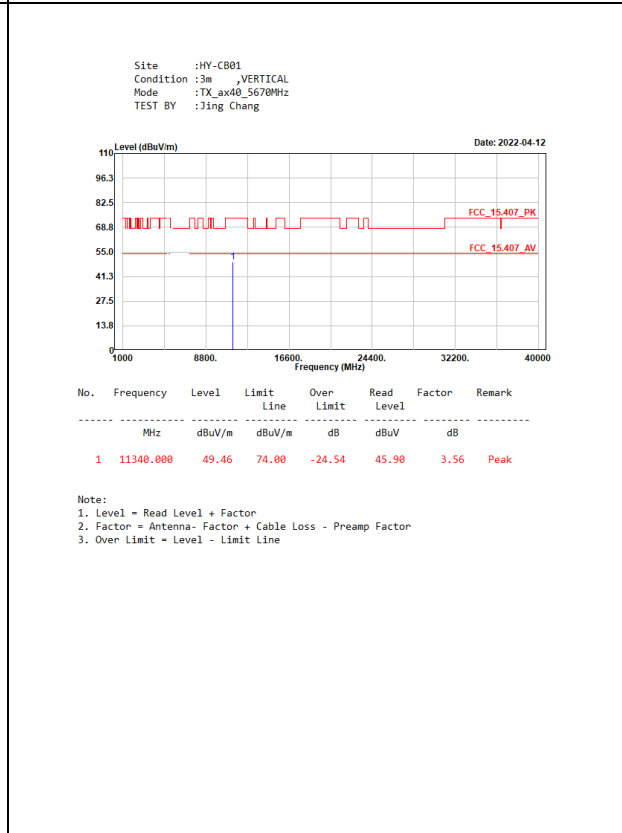
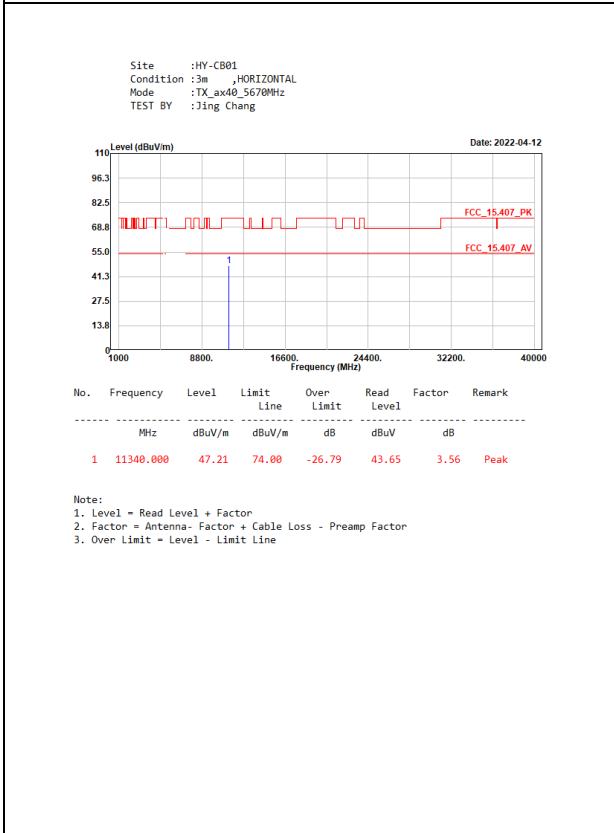
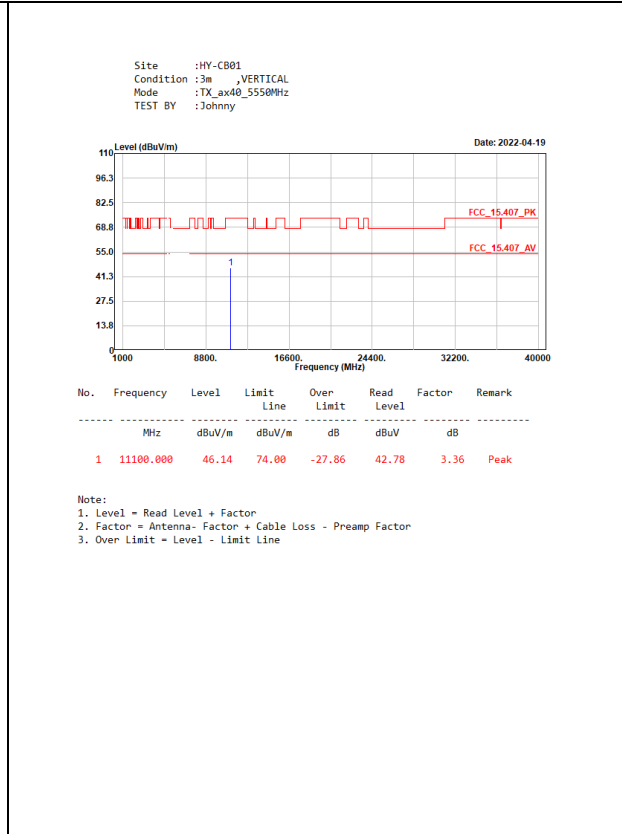
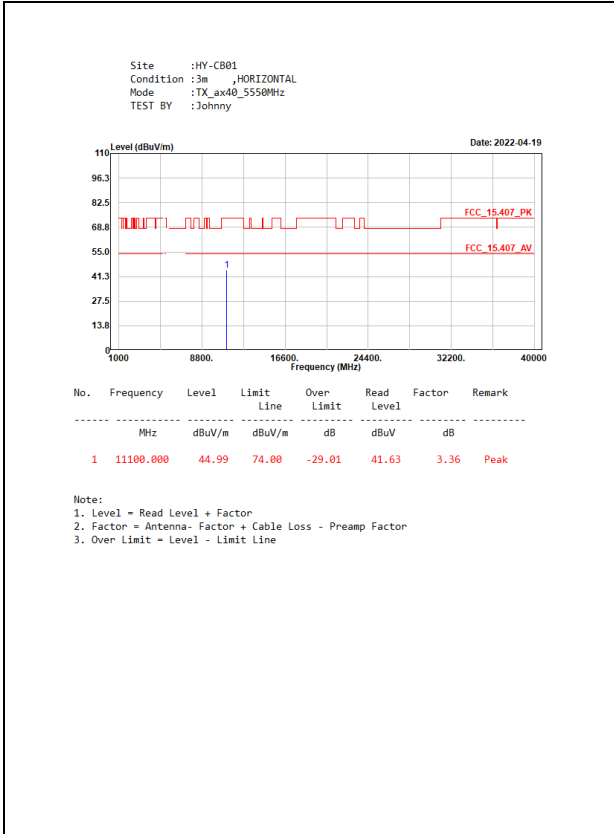


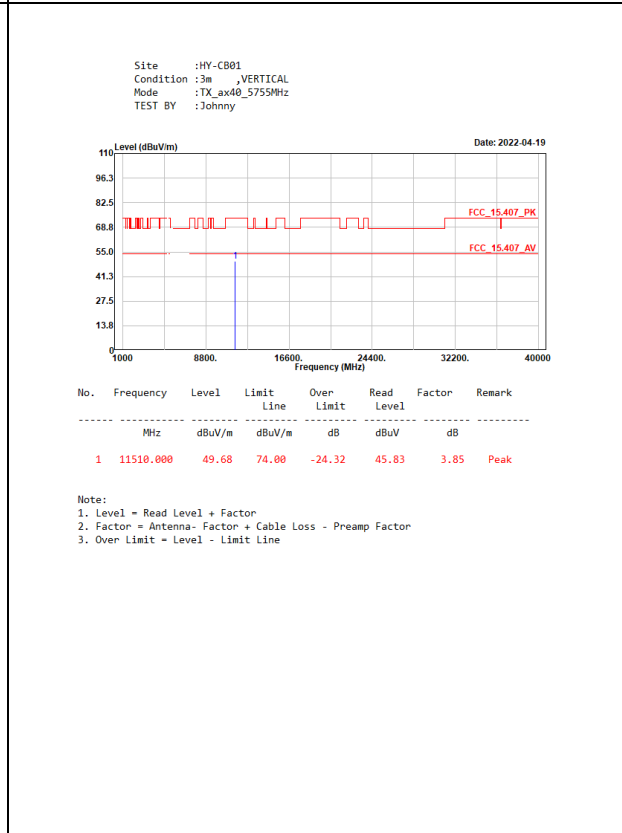
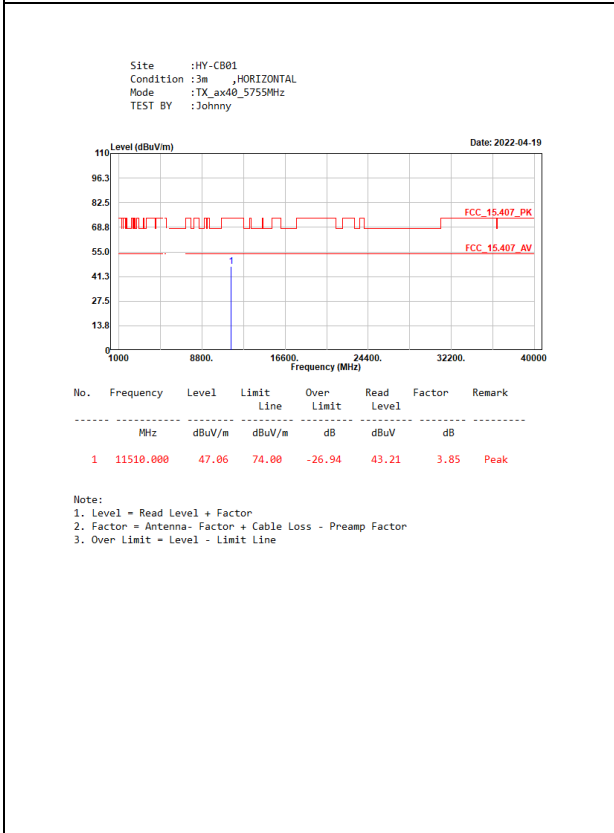
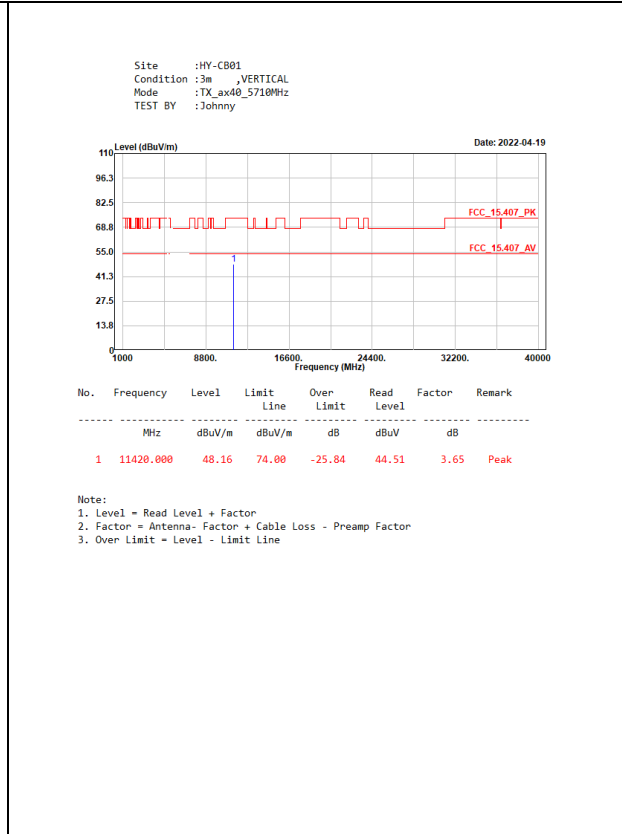
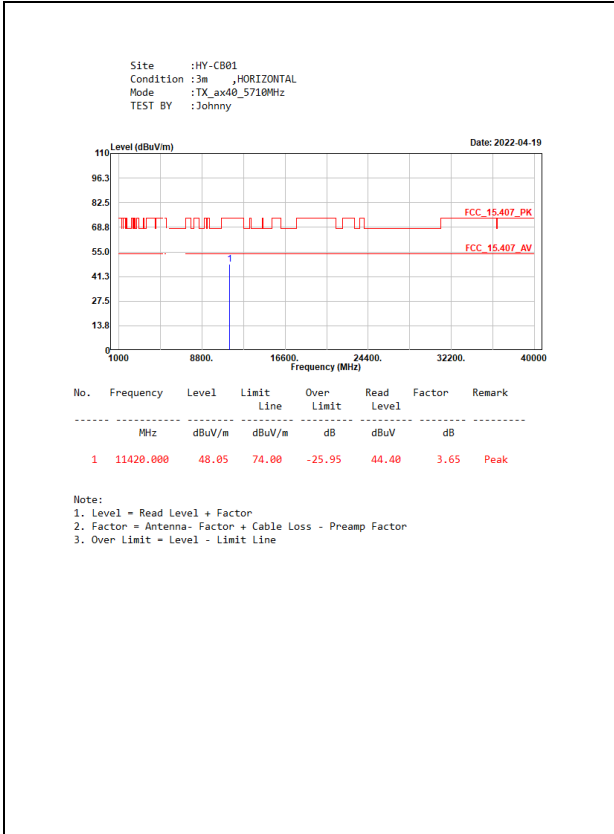


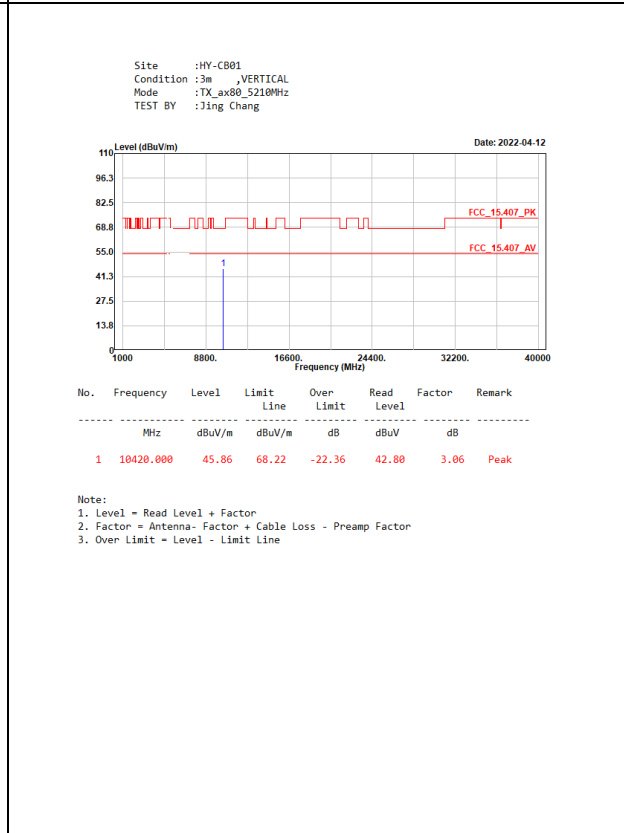
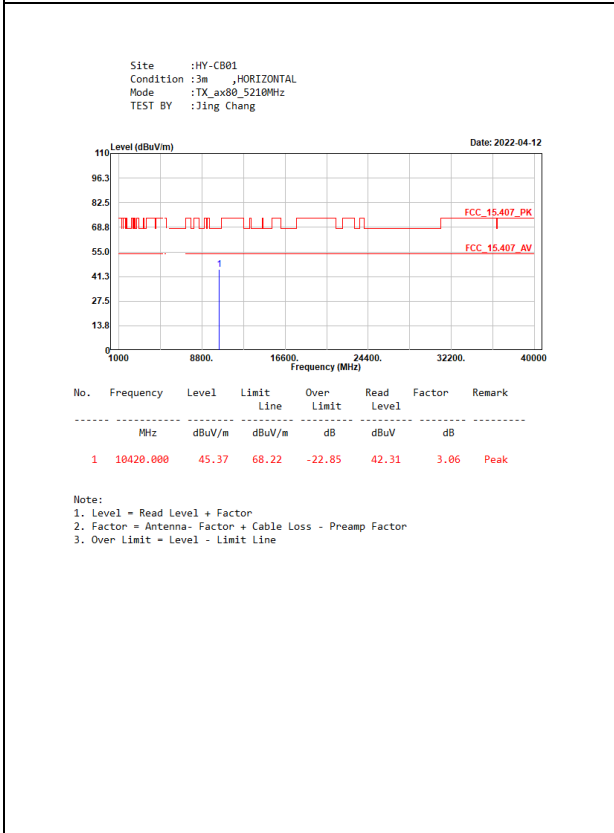
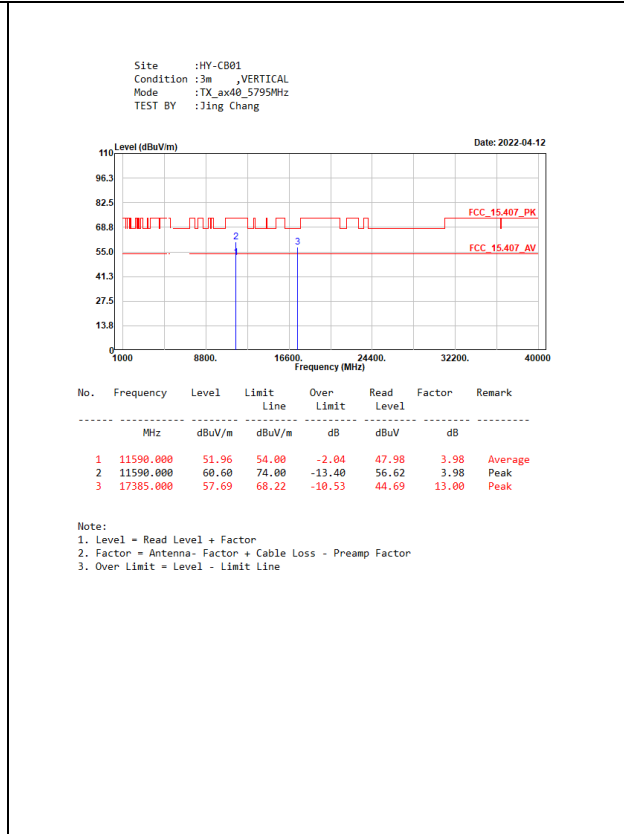
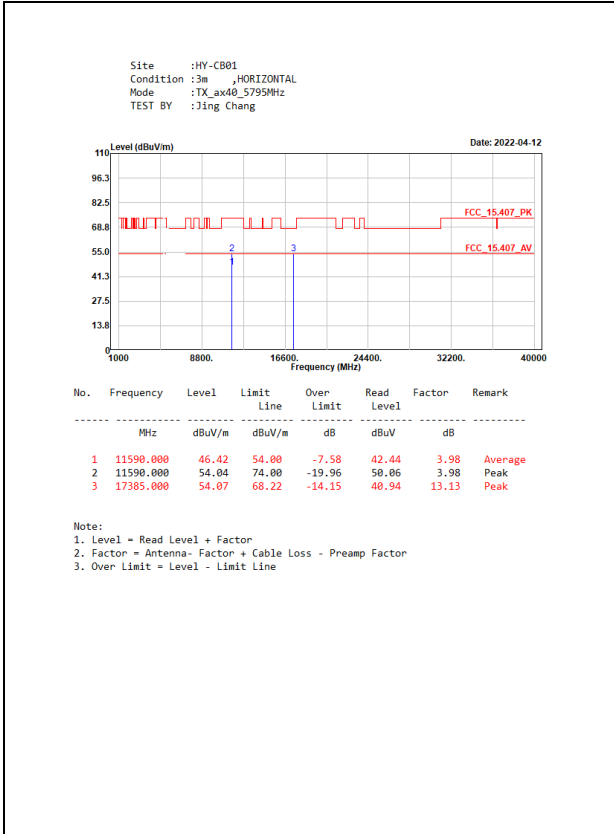




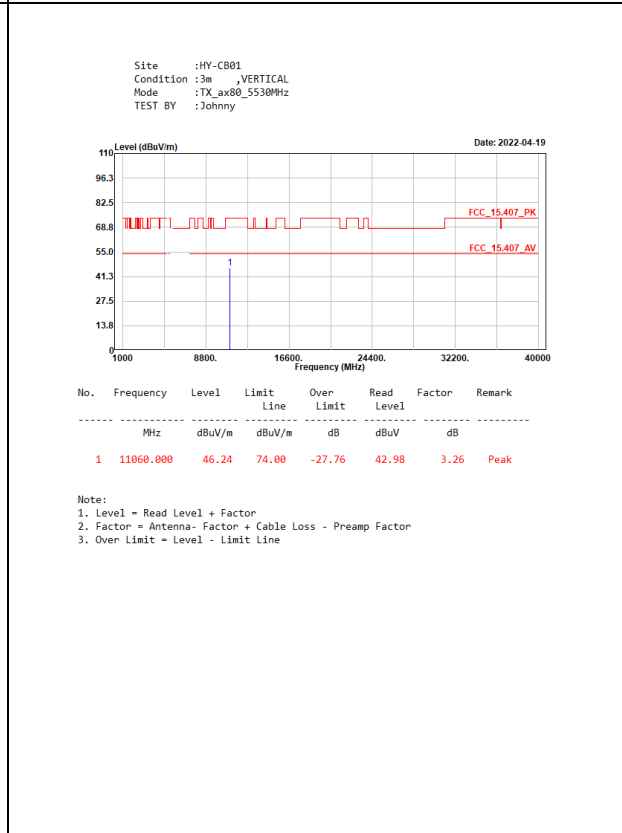
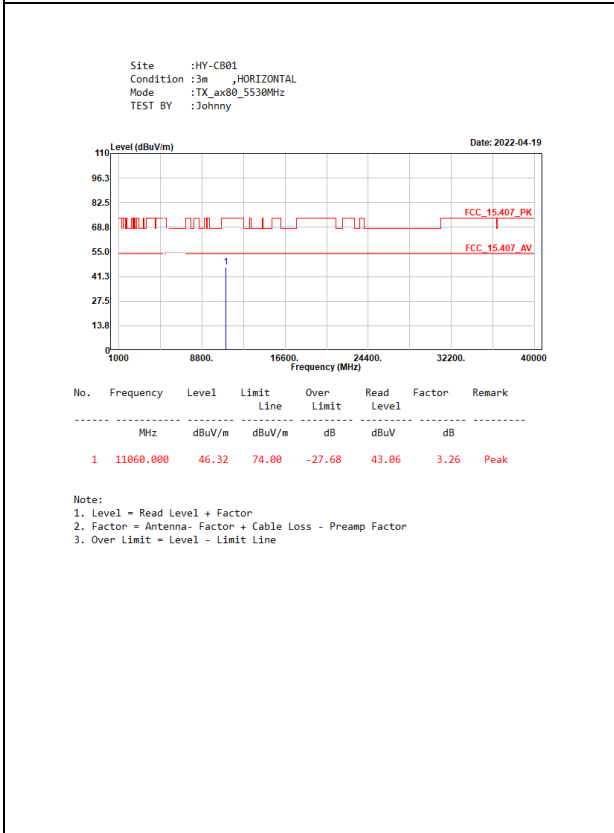
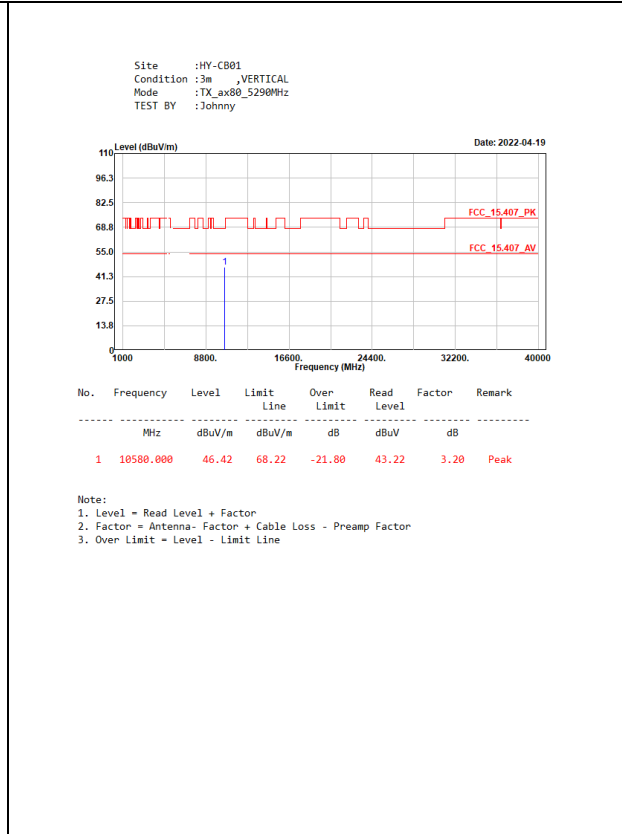
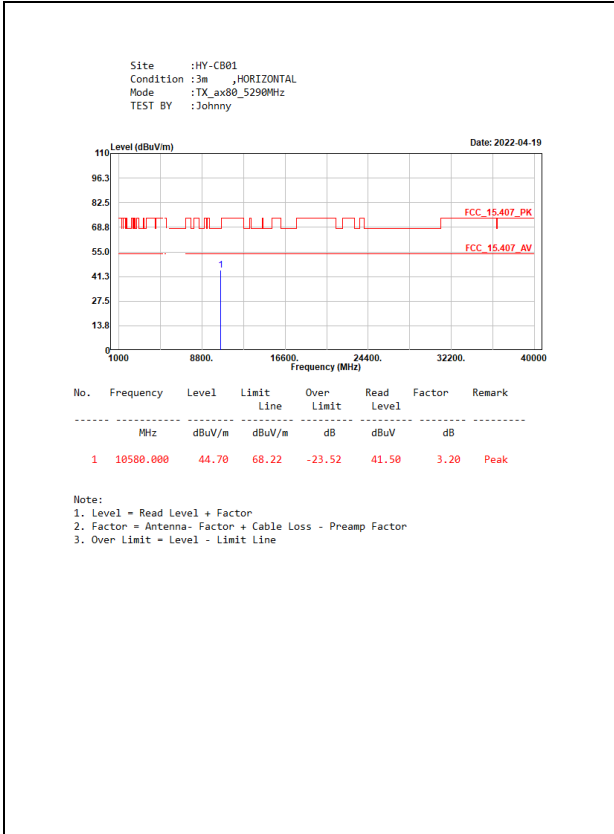


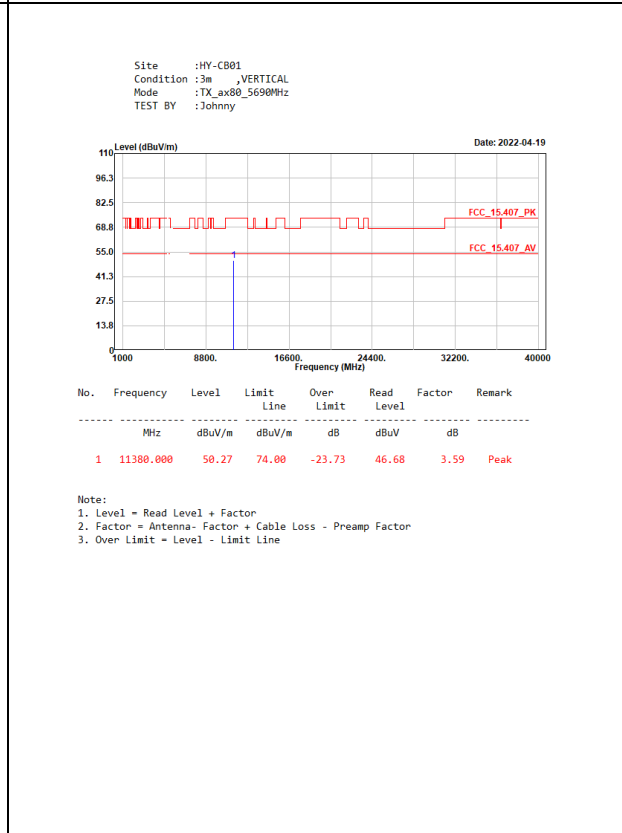
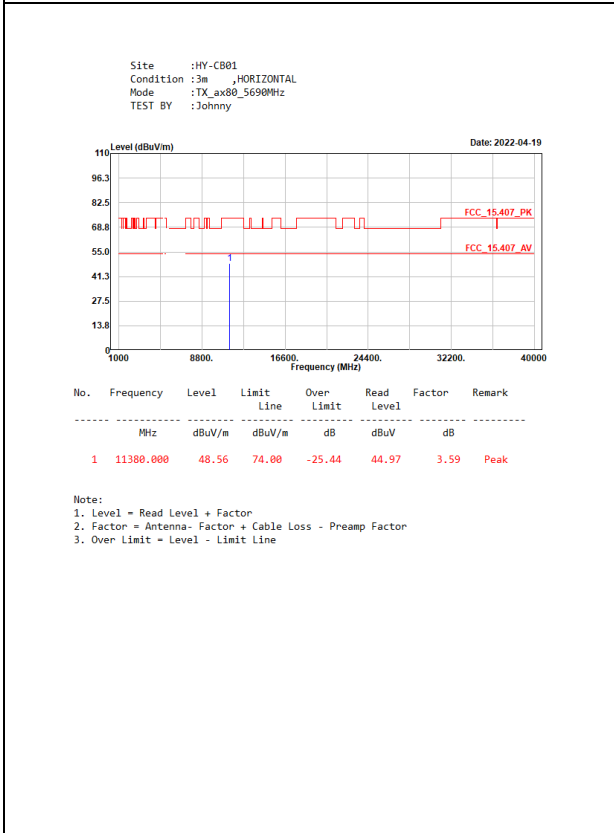
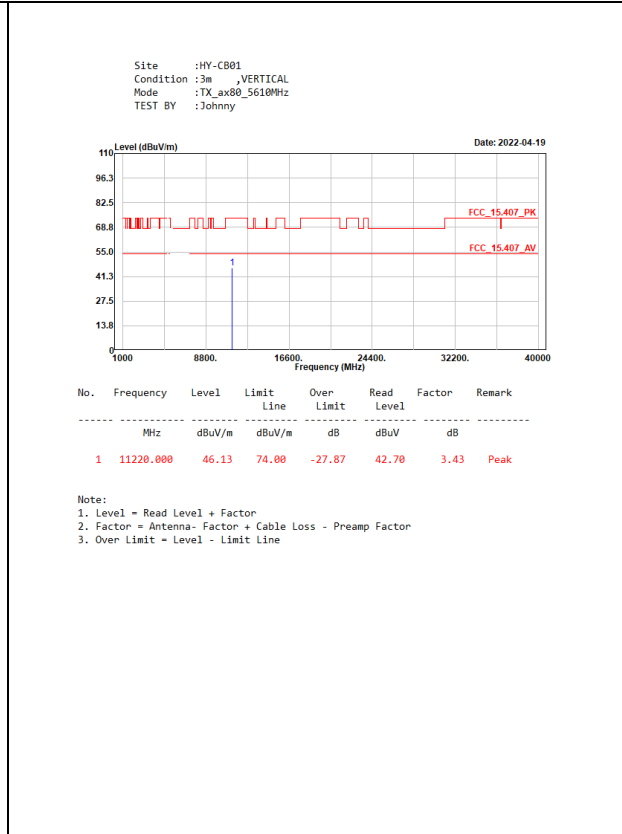
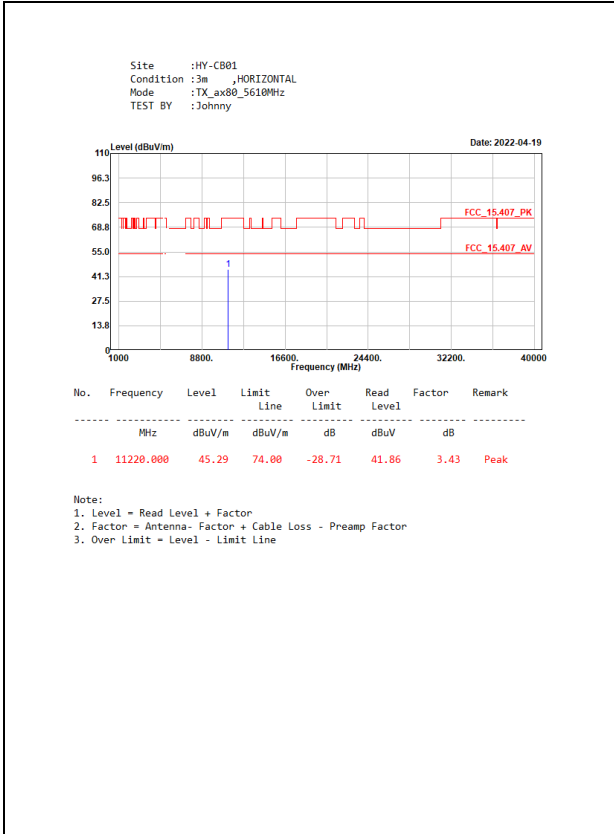


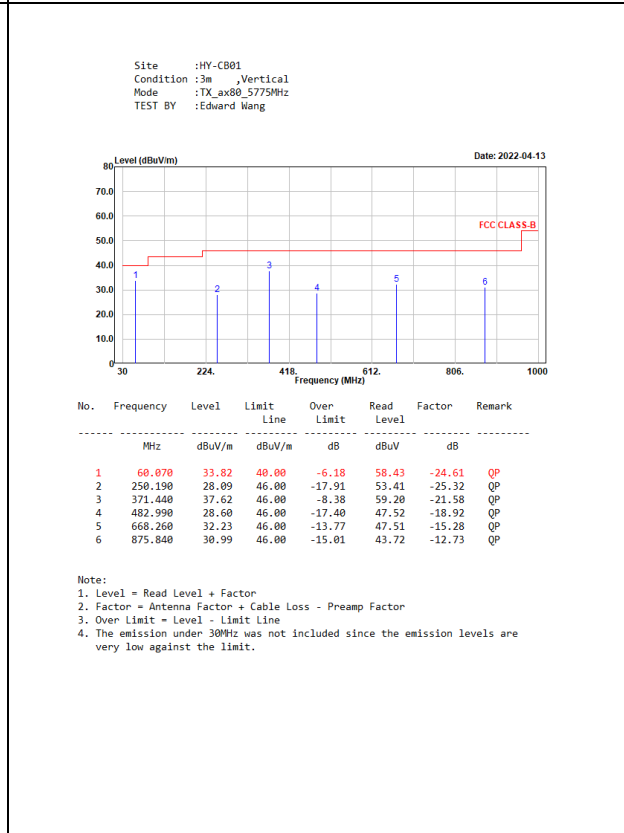
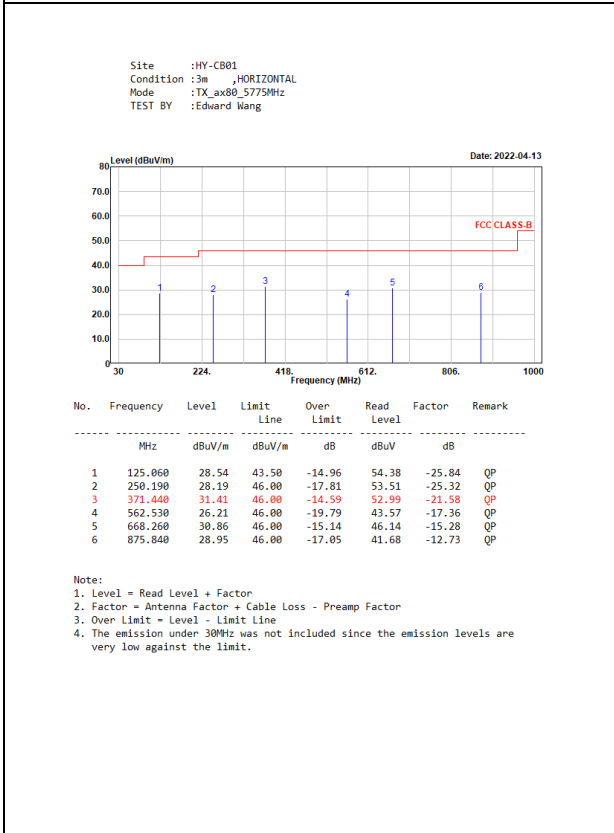
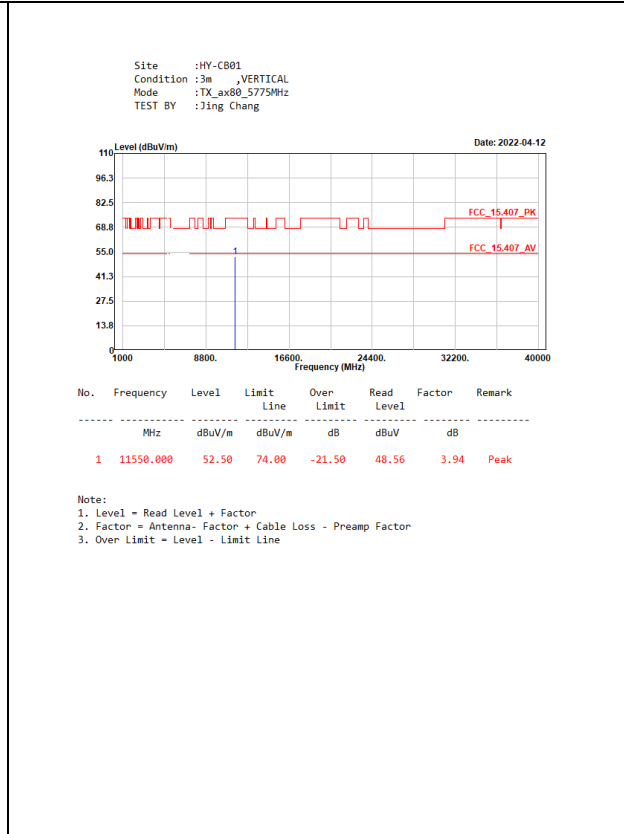
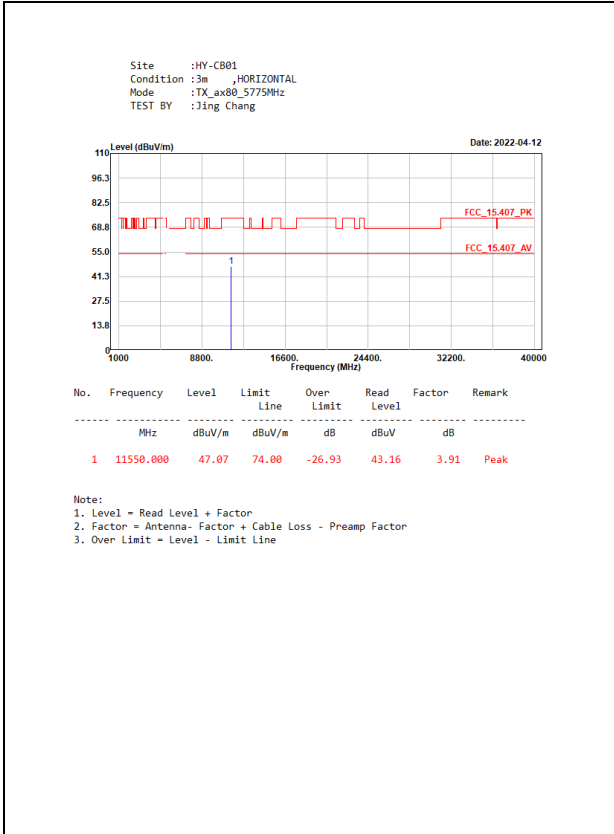








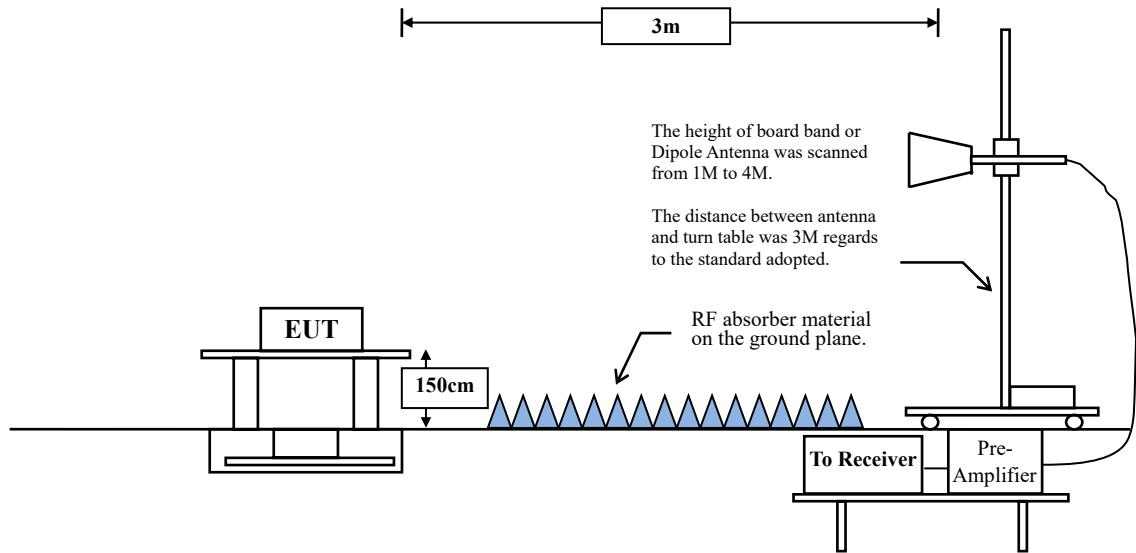




## 6. Band Edge

### 6.1. Test Setup

#### RF Radiated Measurement:



### 6.2. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

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

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBµV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks :
1. RF Voltage (dBµV) = 20 log RF Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

#### RBW and VBW Parameter setting:

According to KDB 789033 section II.G.5 Procedure for Unwanted Maximum Emissions Measurements above 1000 MHz.

RBW = 1MHz.

VBW  $\geq$  3MHz.

According to KDB 789033 section II.G.6 Procedures for Average Unwanted Emissions Measurements above 1000 MHz.

RBW = 1MHz.

VBW = 10Hz, when duty cycle  $\geq$  98 %

VBW  $\geq$  1/T, when duty cycle < 98 %

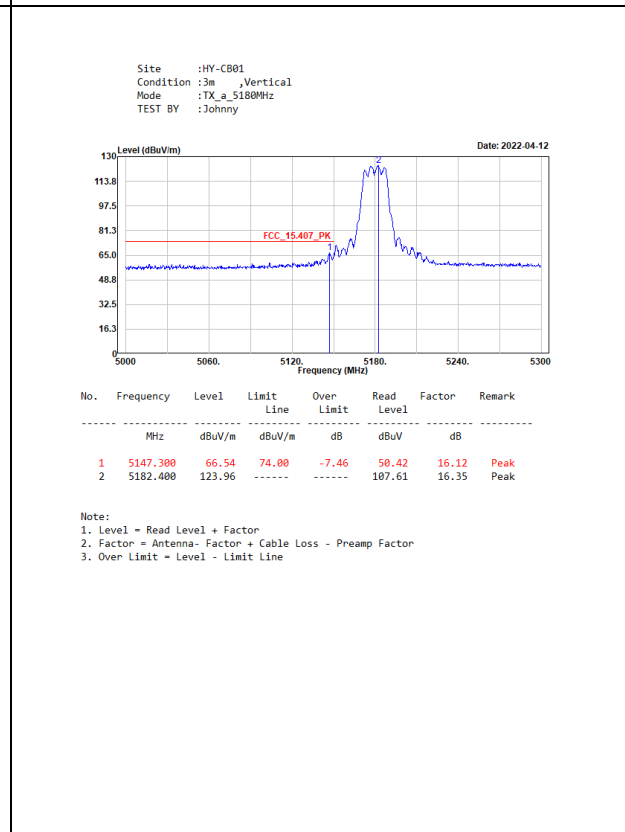
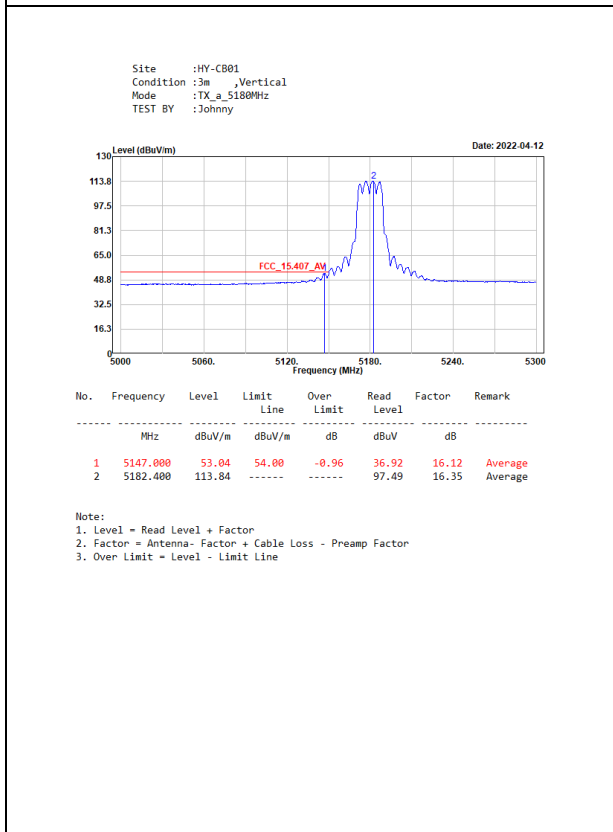
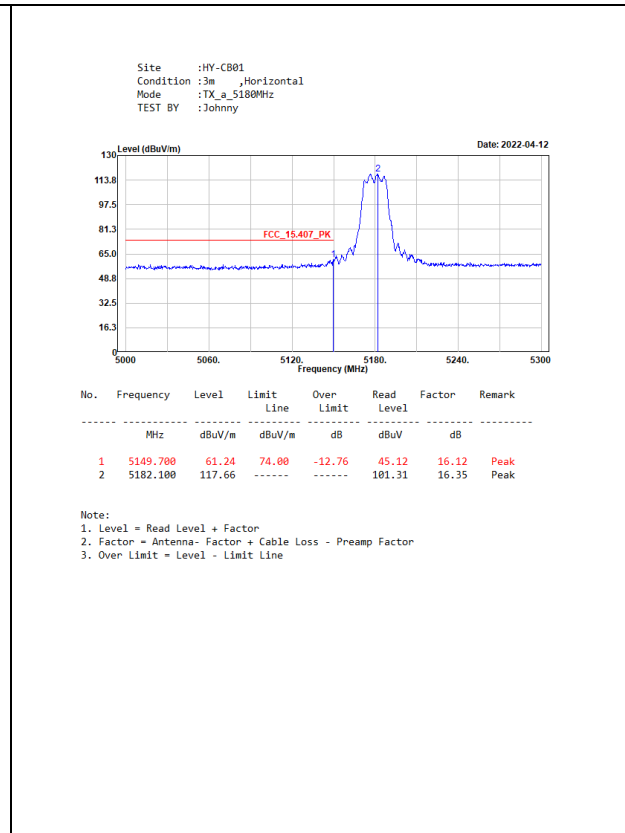
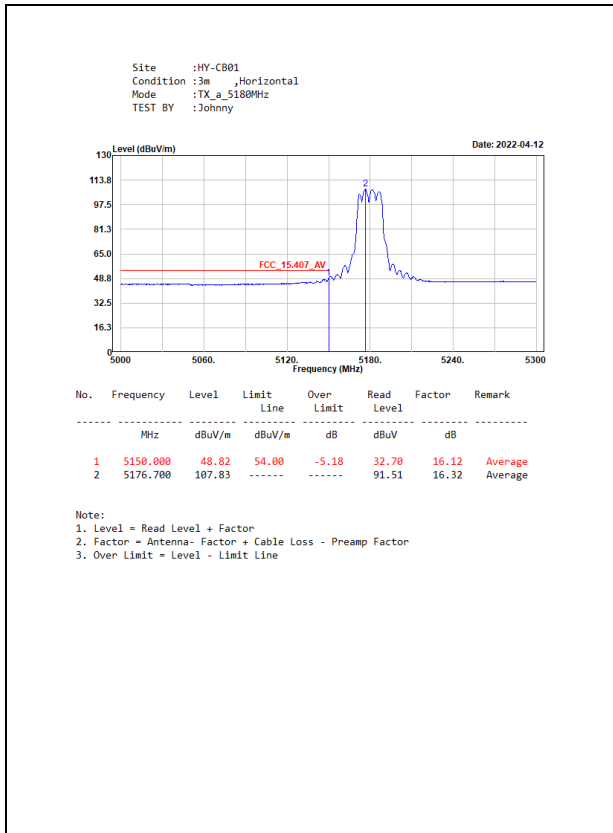
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

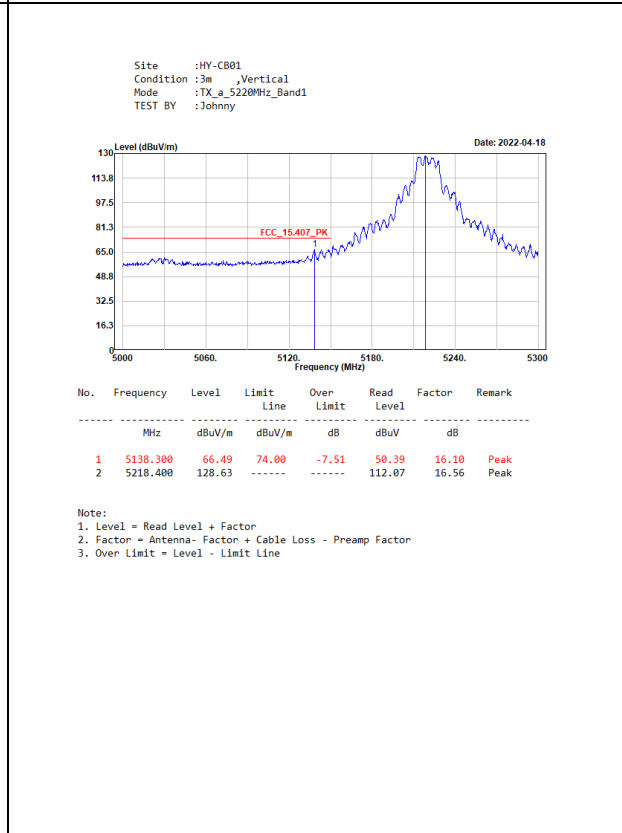
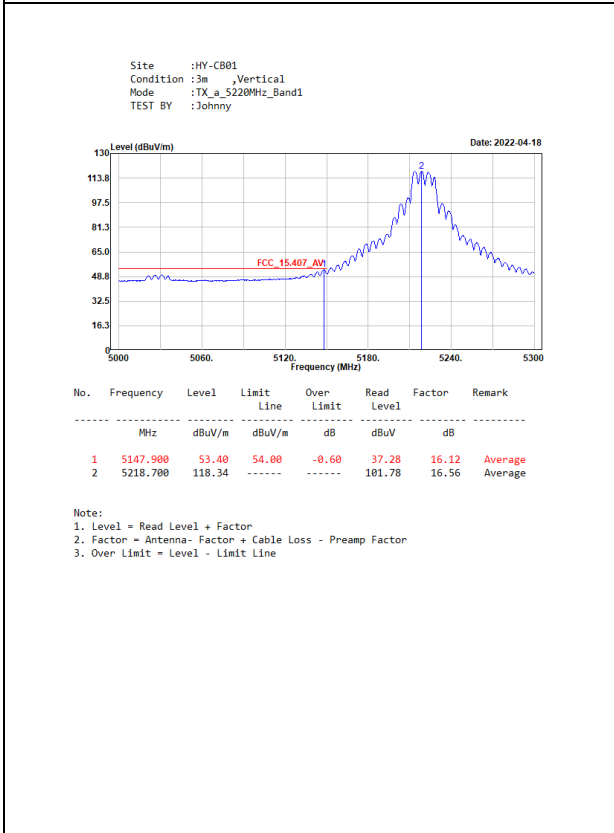
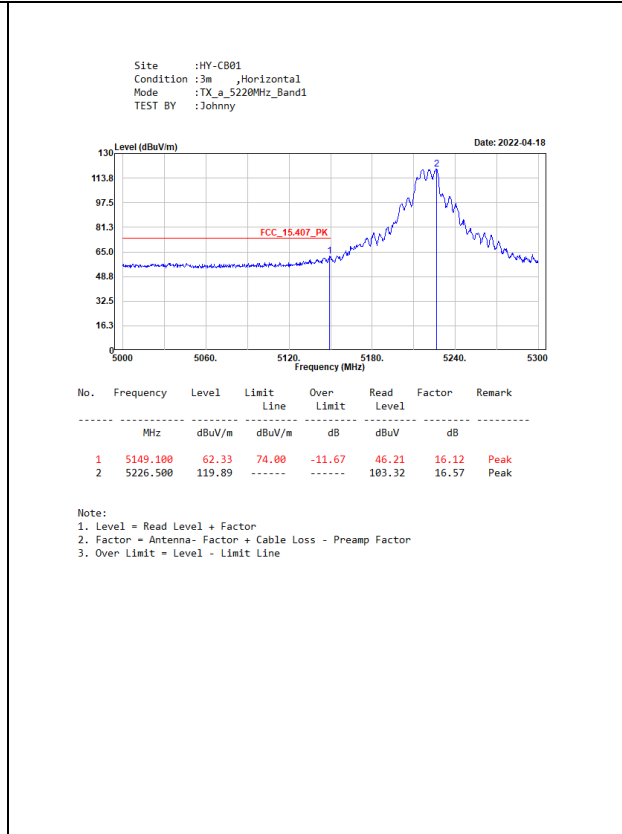
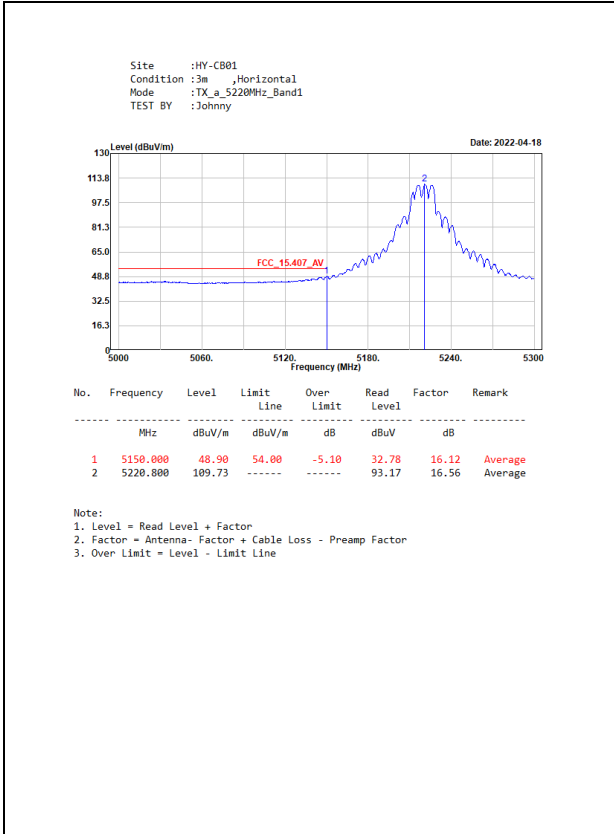
#### CDD Mode:

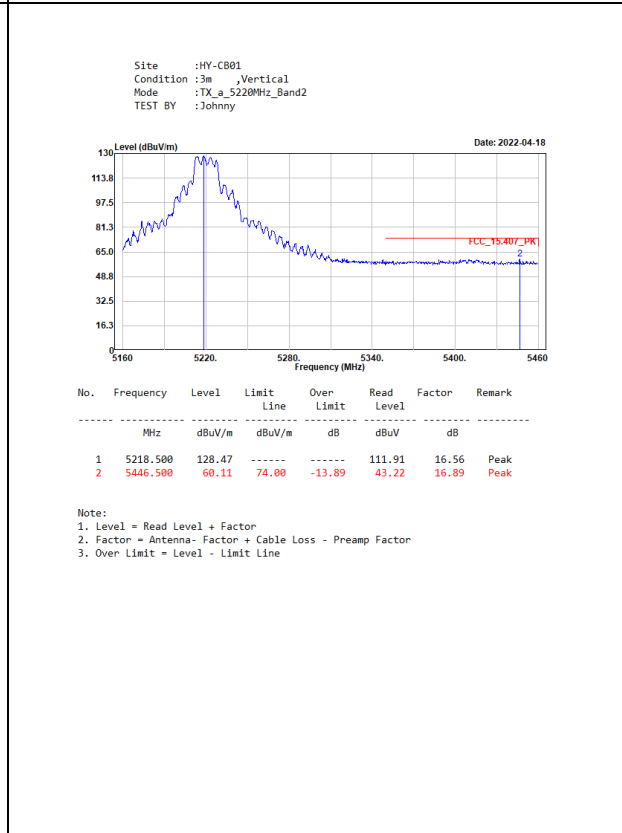
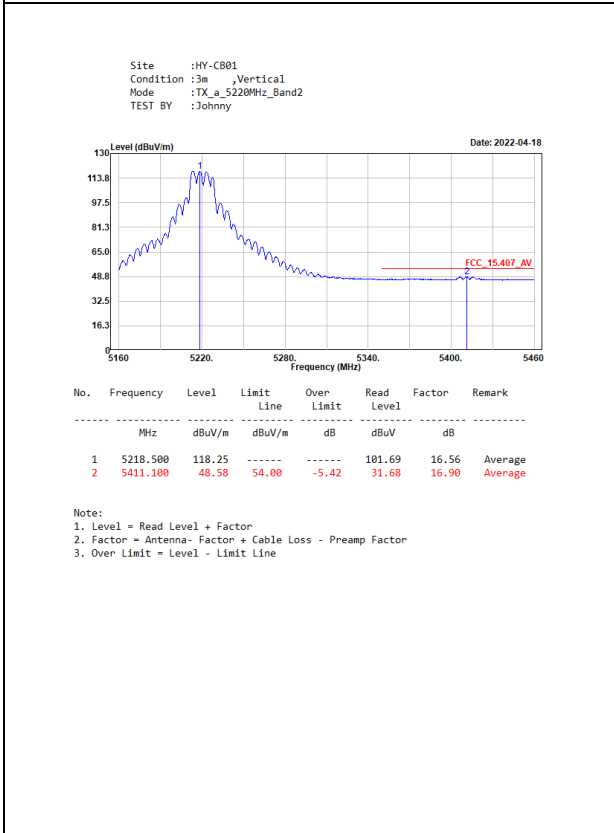
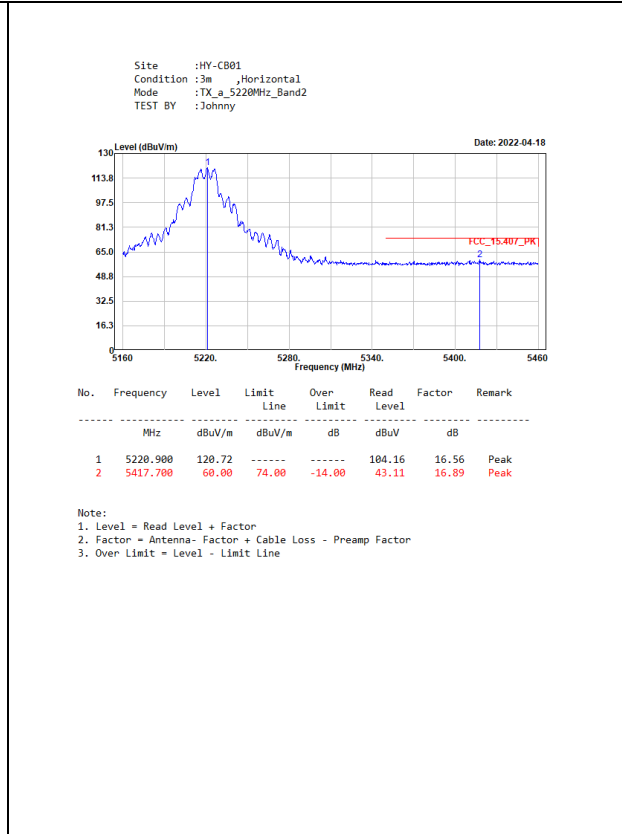
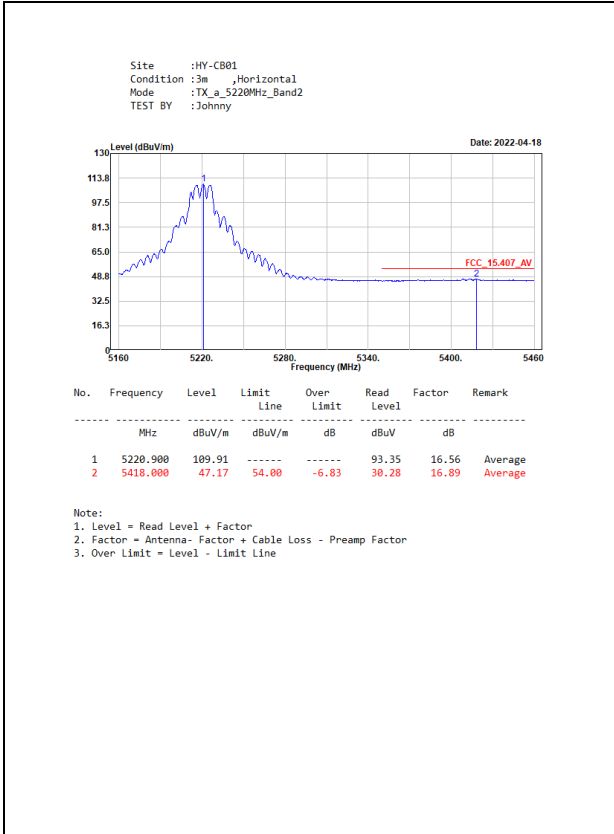
5GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11a	95.14	1.5650	639	1000
802.11ax20	94.22	5.2200	192	200
802.11ax40	93.19	5.2000	192	200
802.11ax80	93.48	5.1600	194	200

Note: Duty Cycle Refer to Section 8.

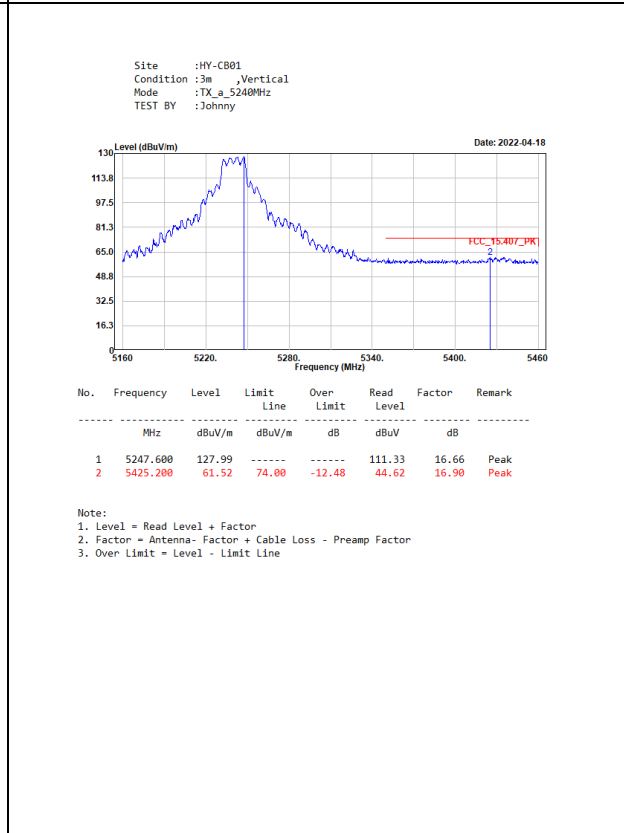
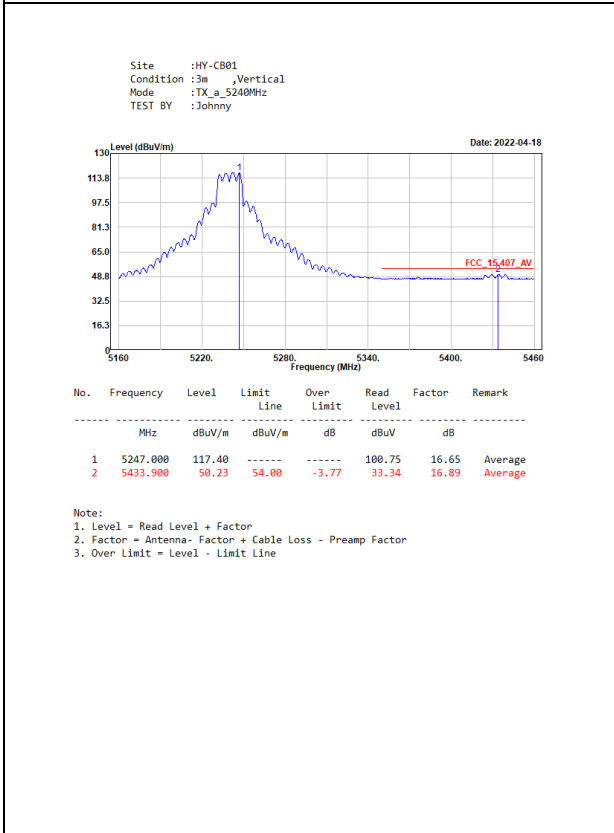
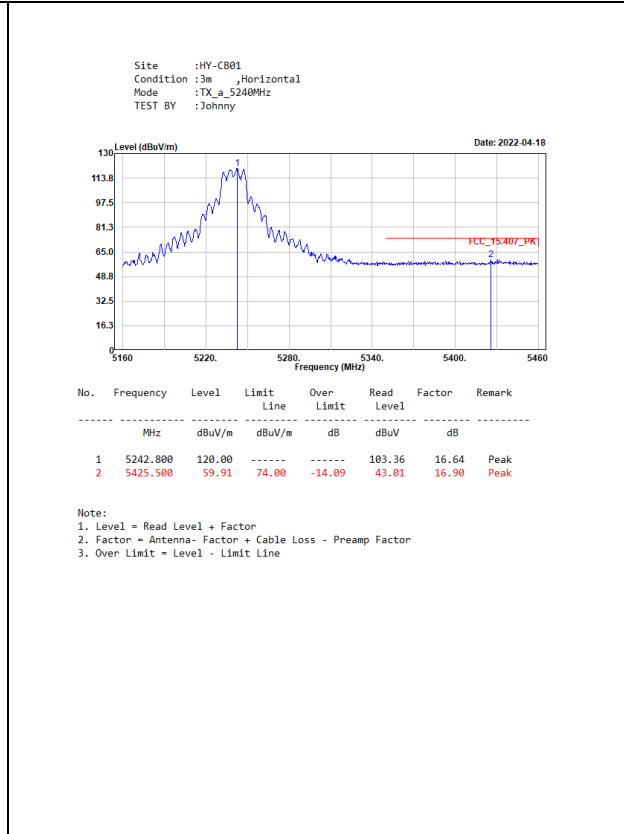
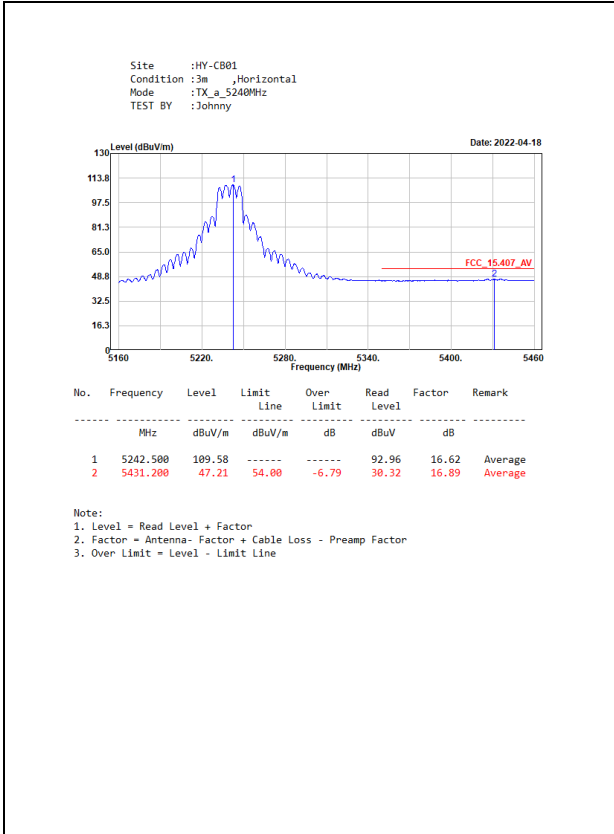
### 6.4. Test Result of Band Edge

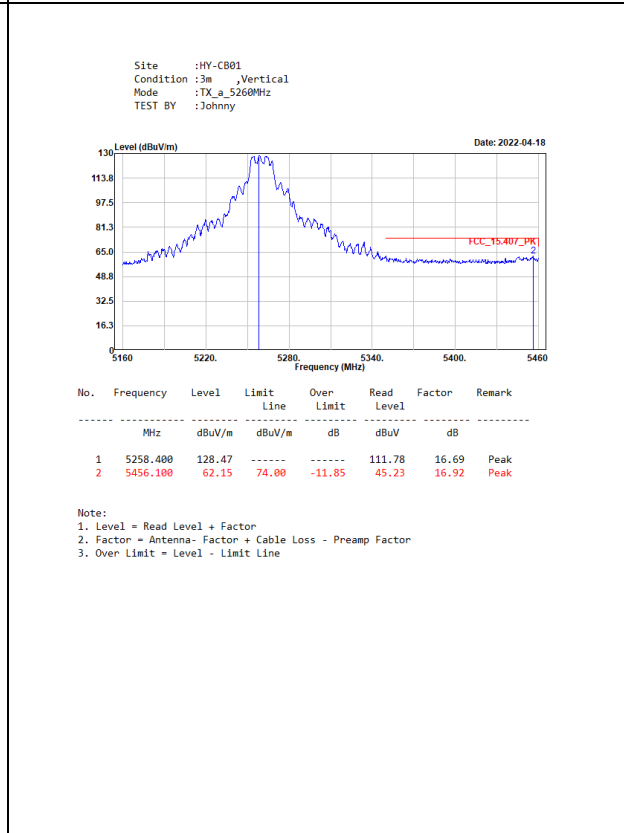
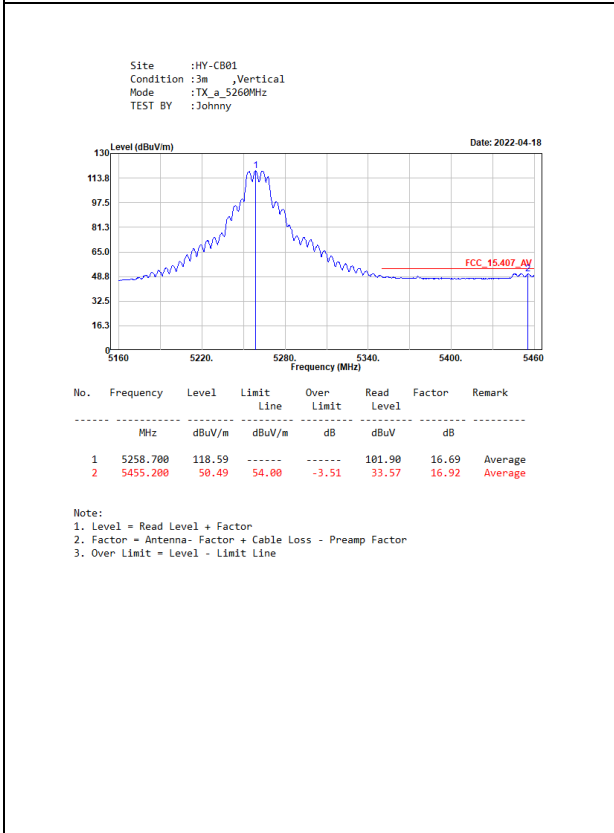
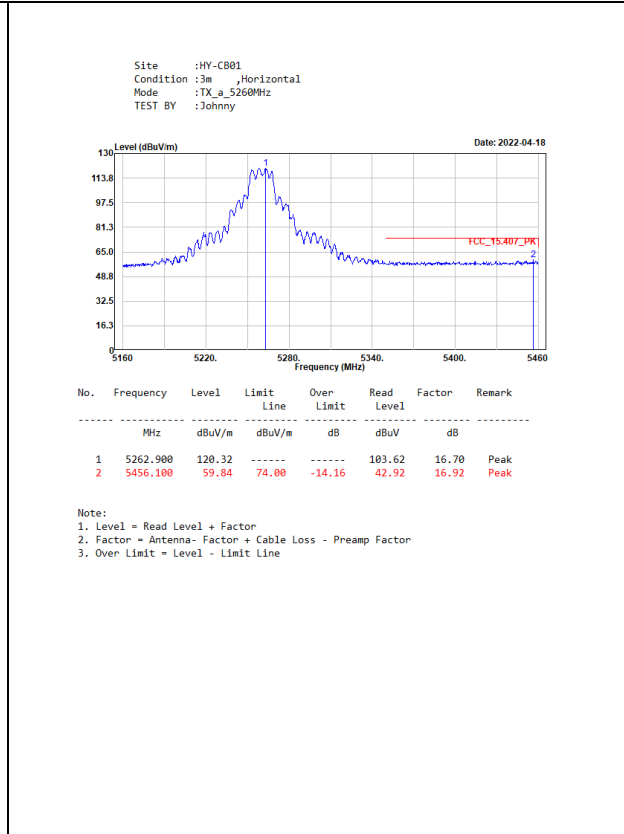
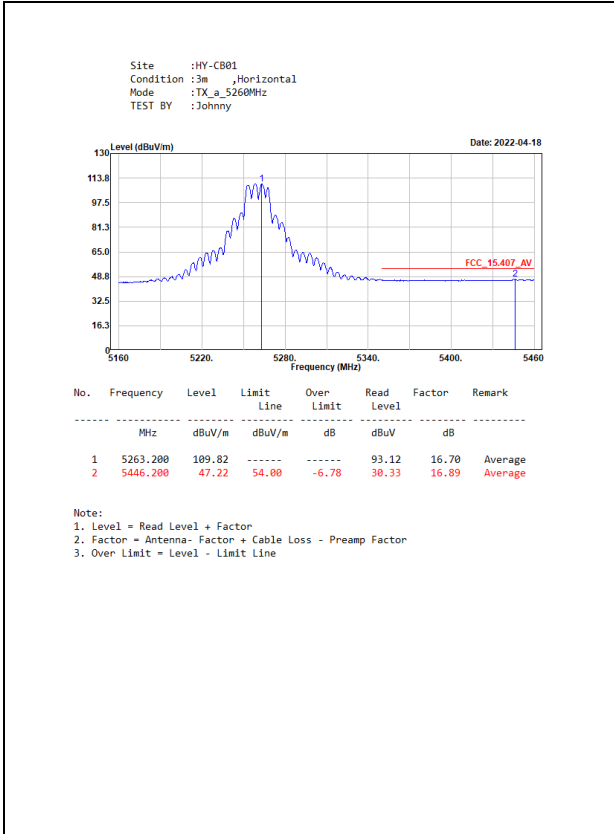


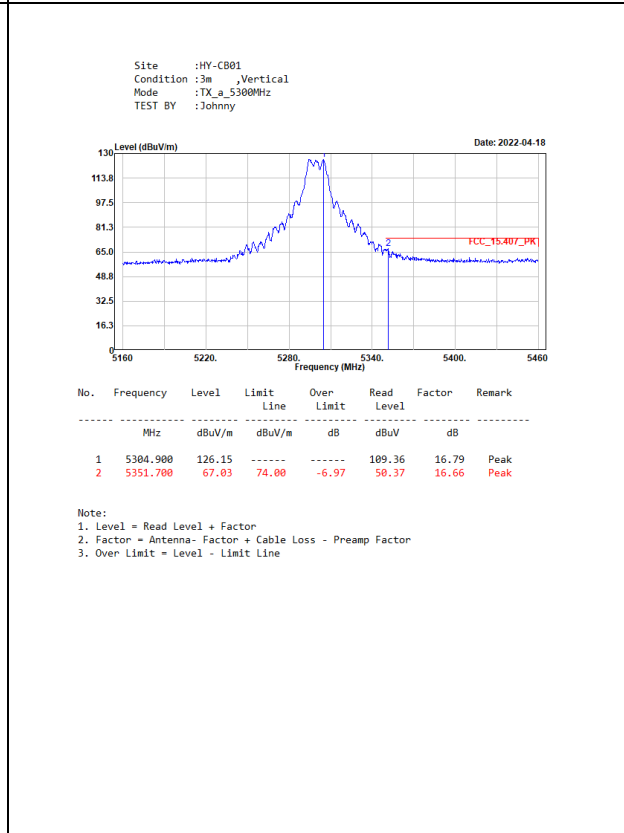
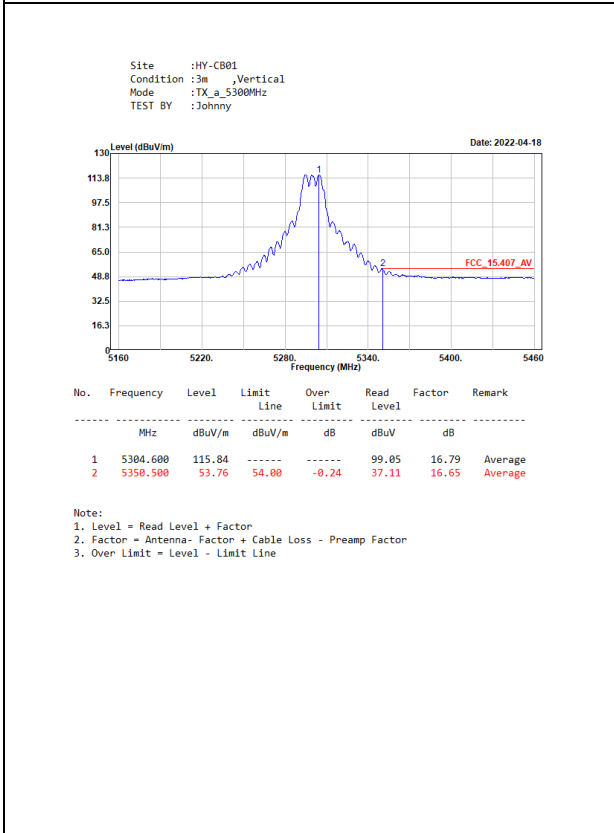
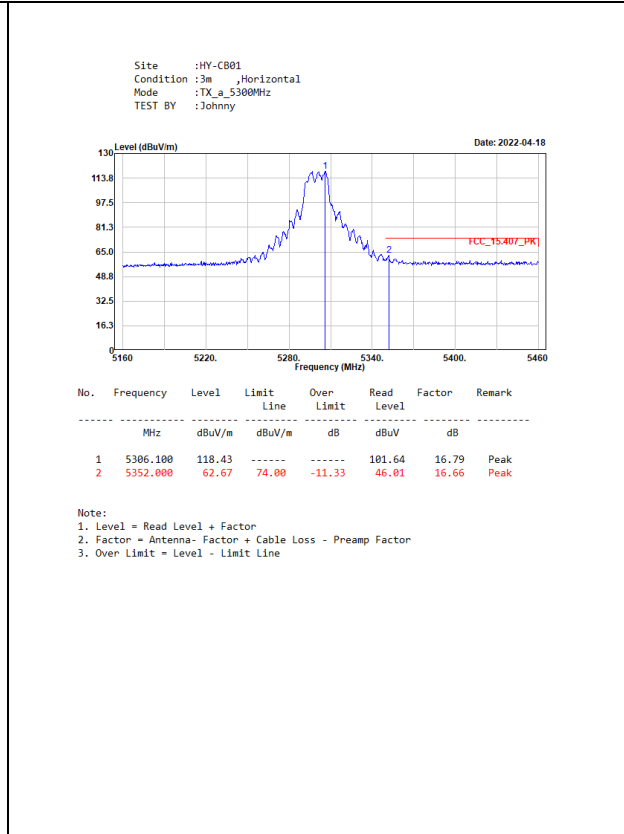
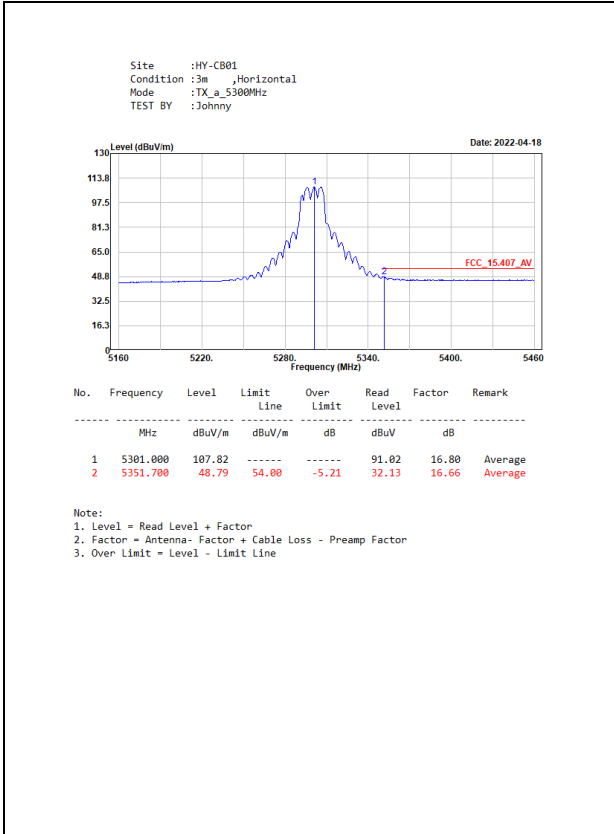


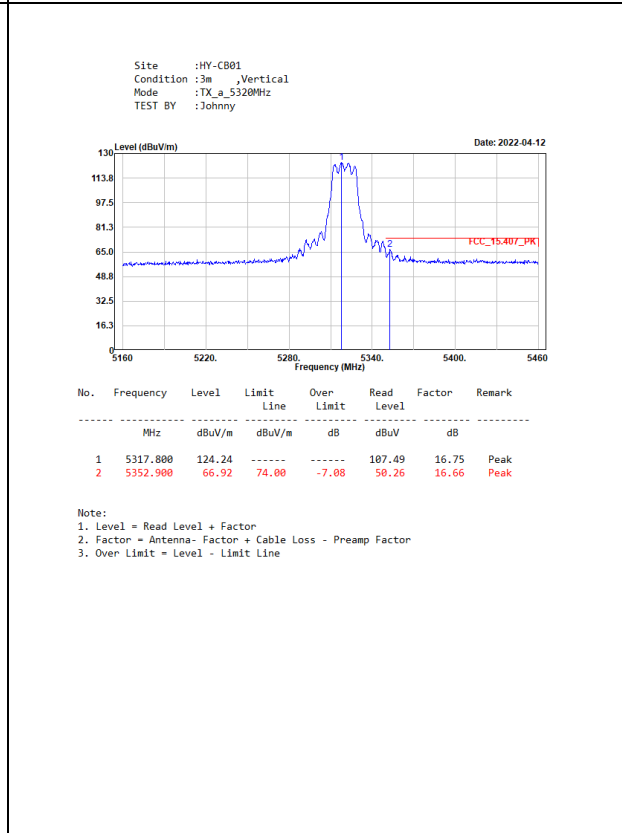
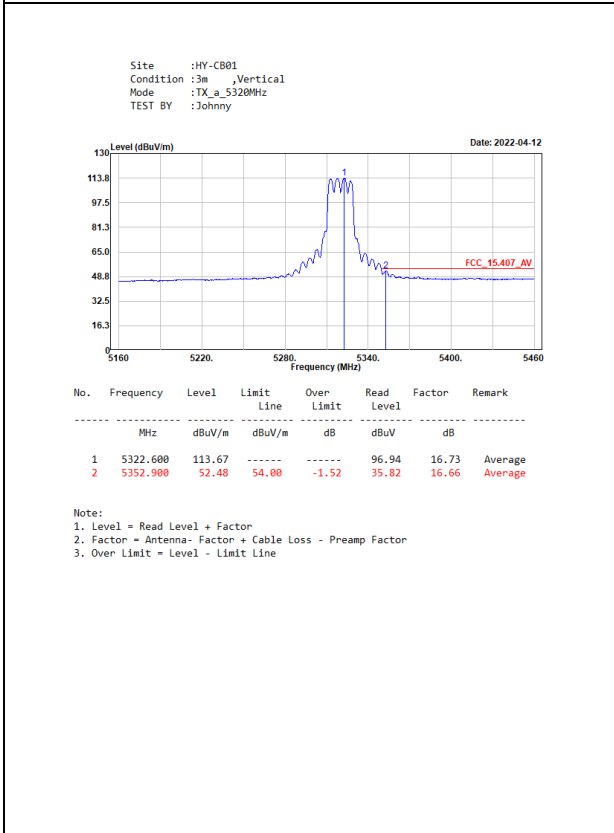
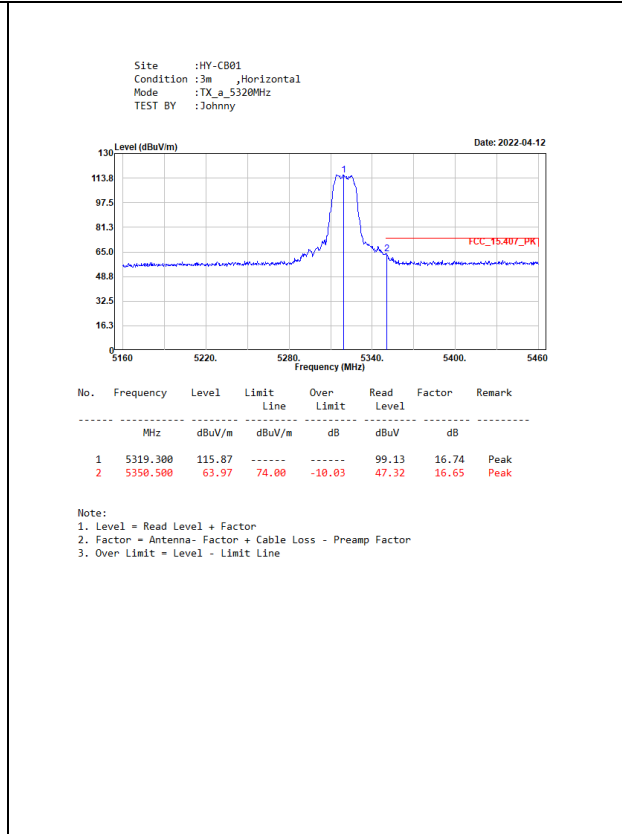
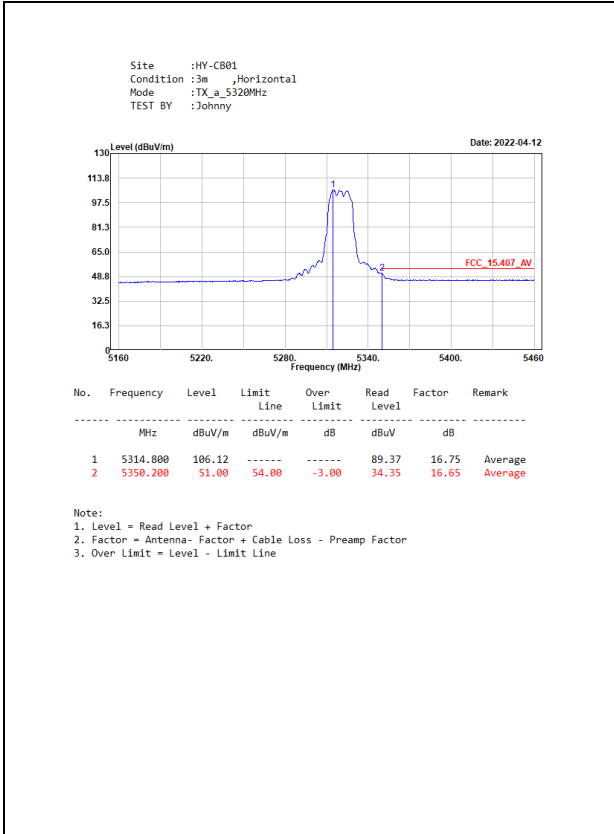


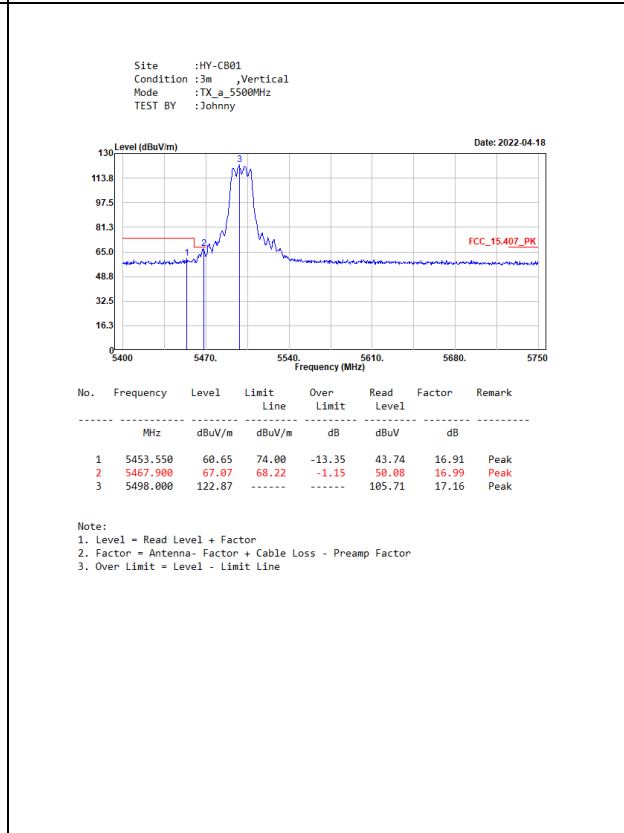
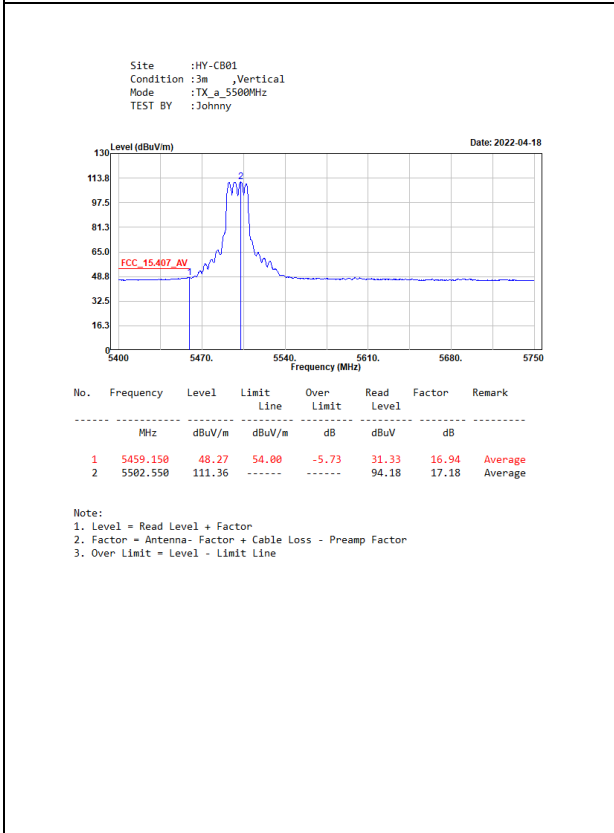
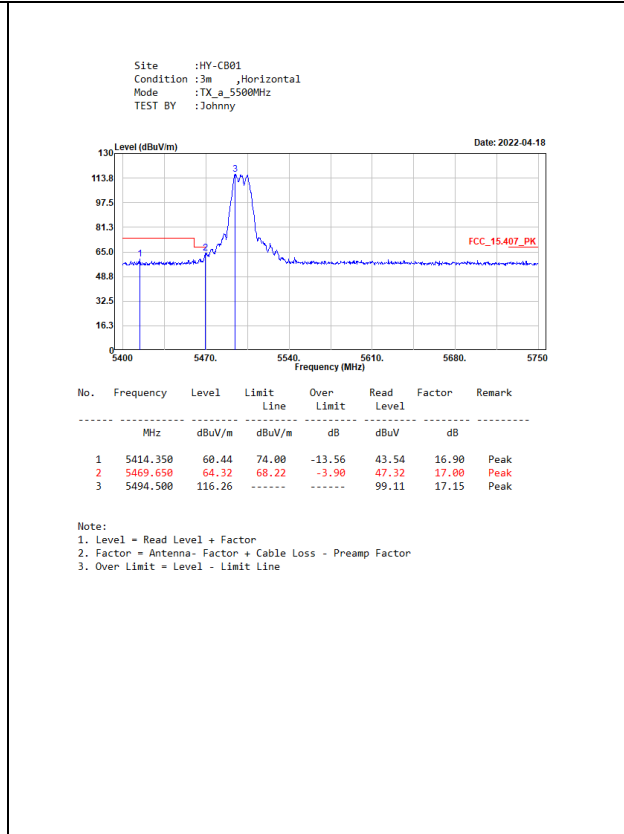
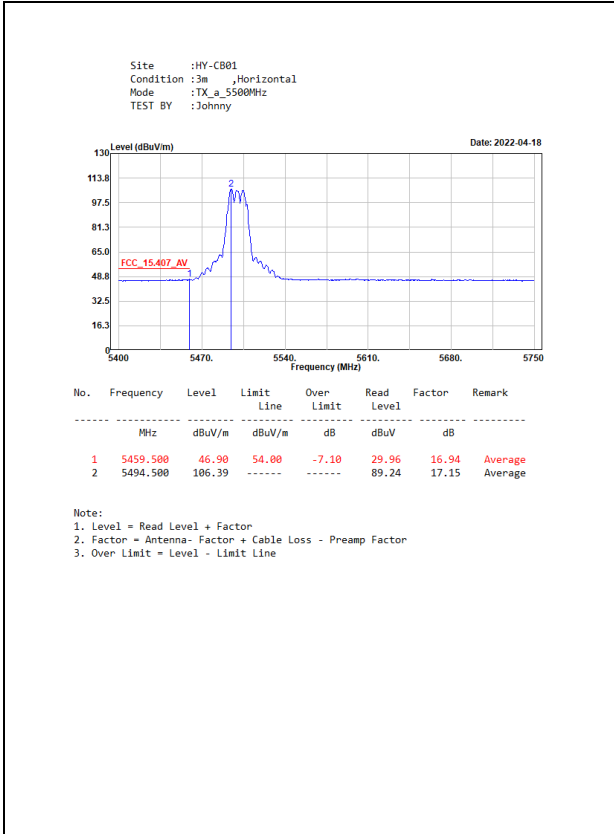


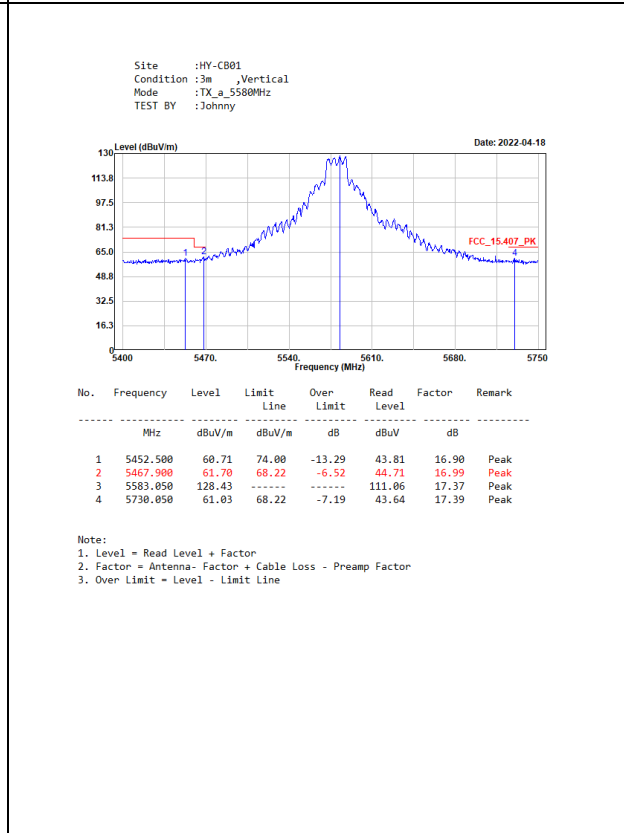
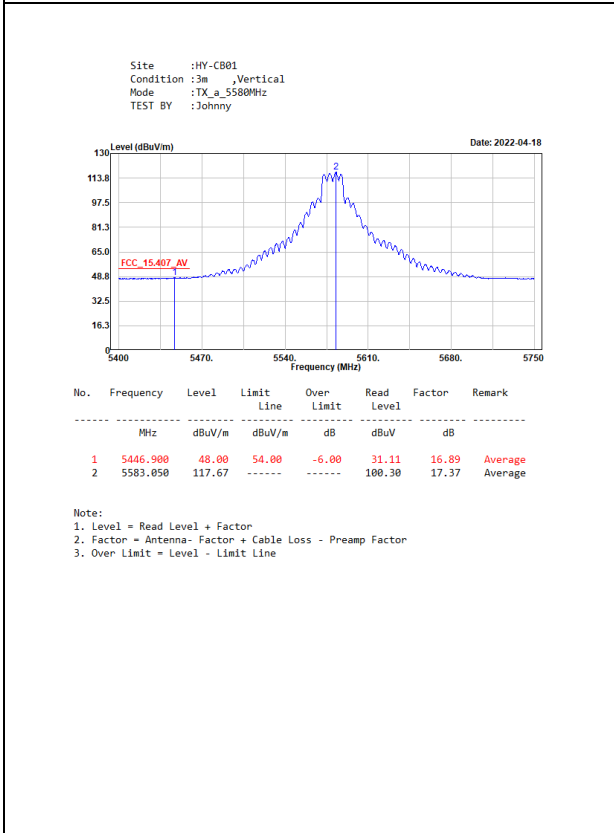
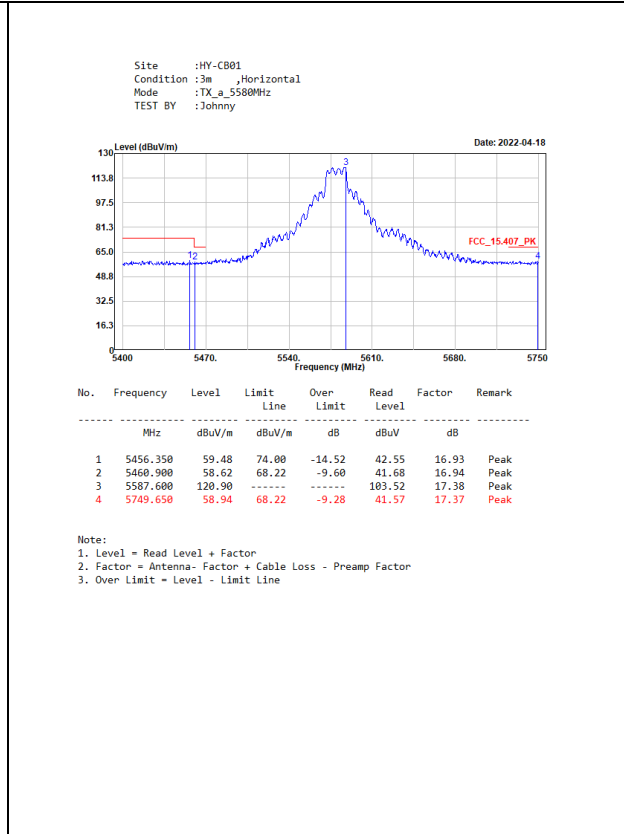
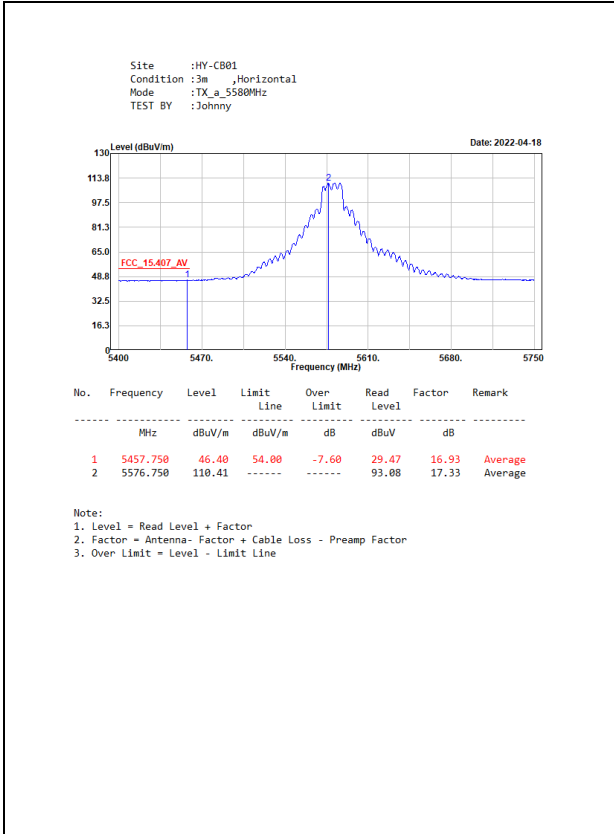


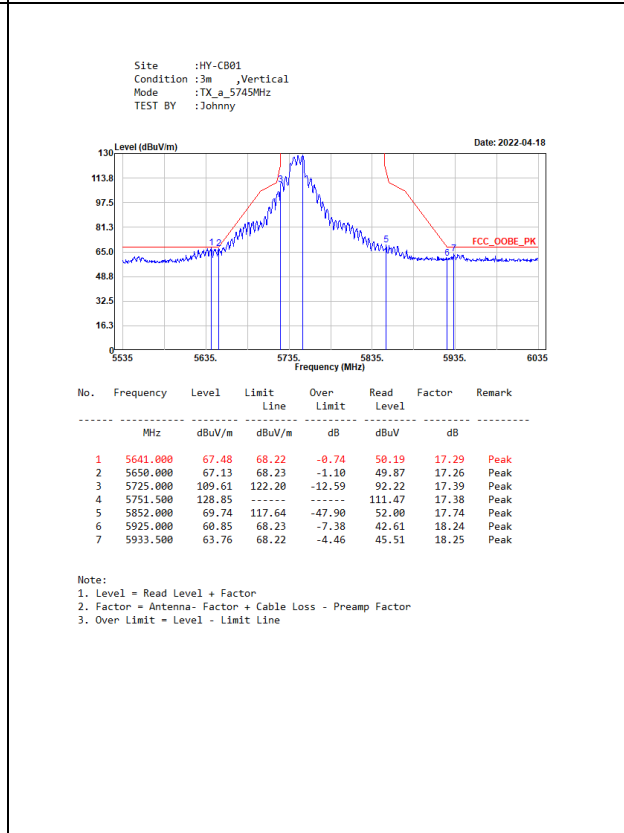
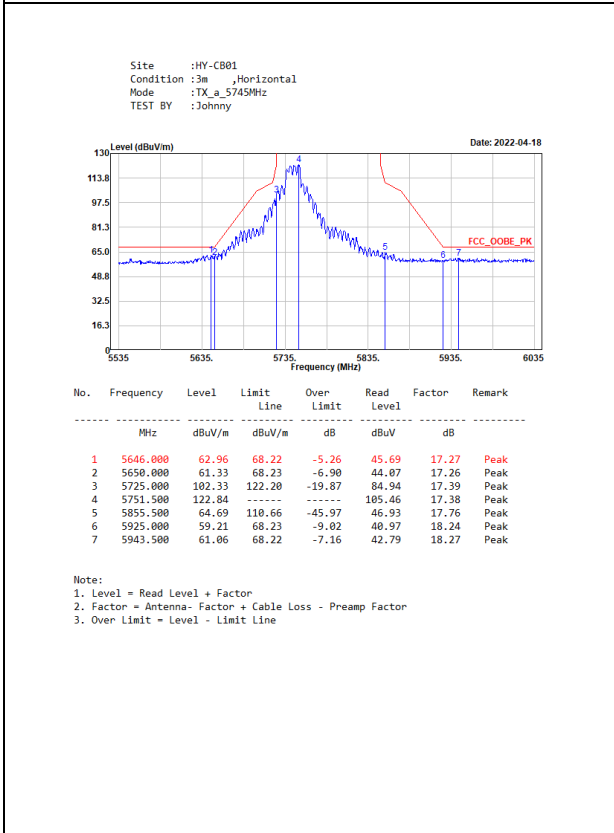
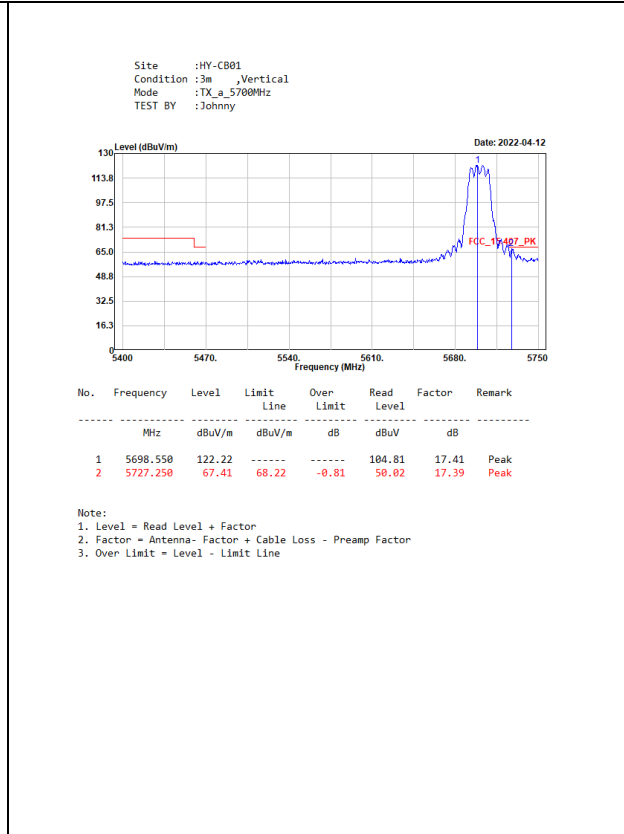
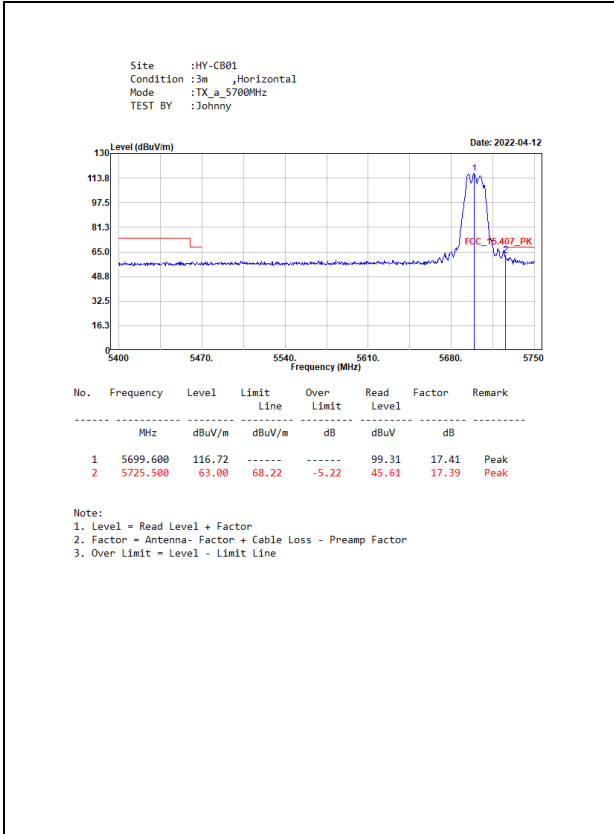


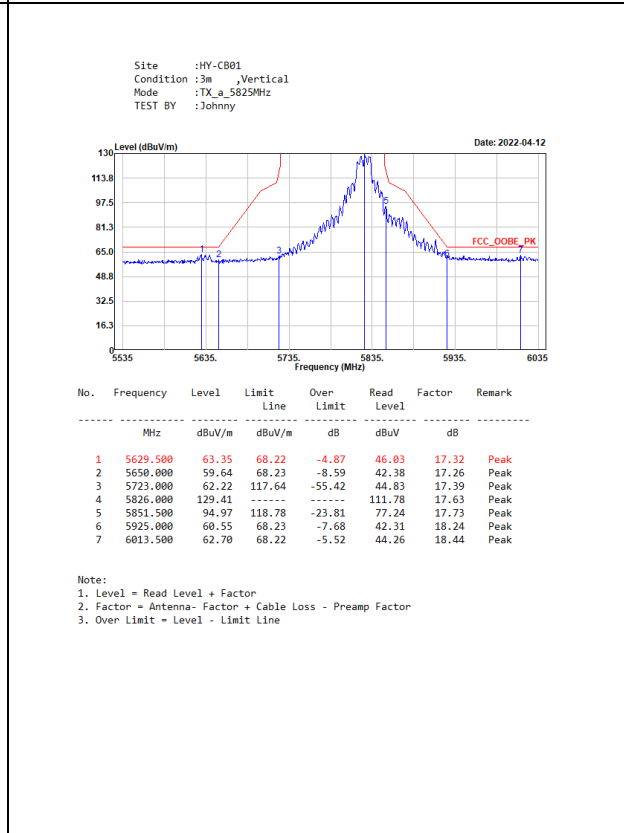
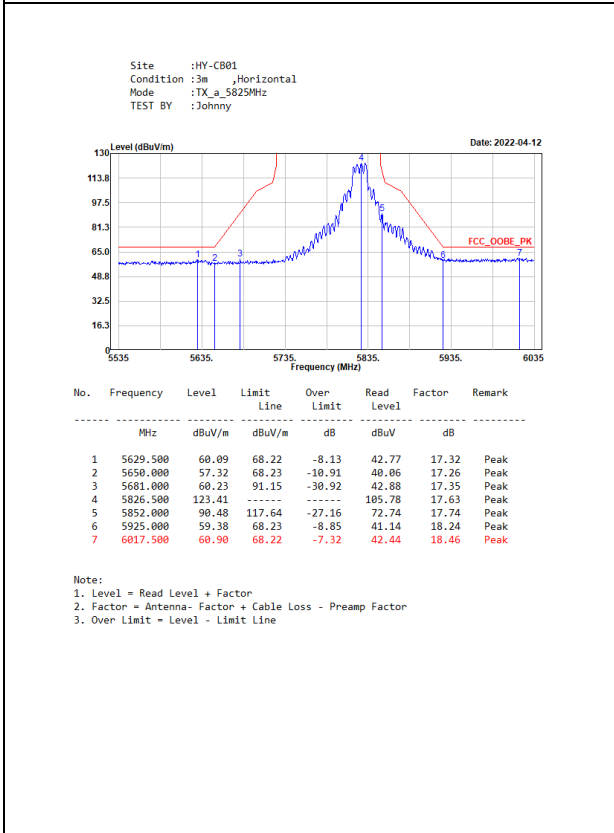
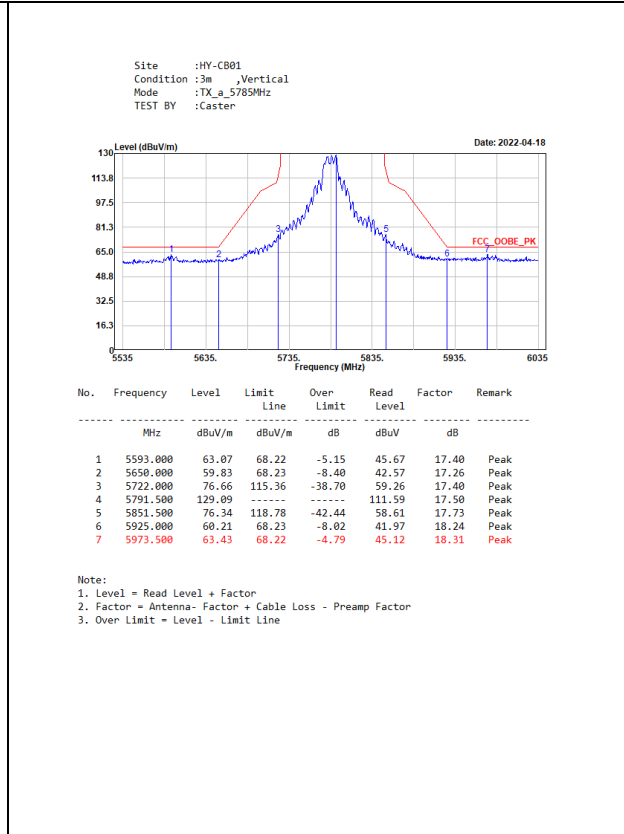
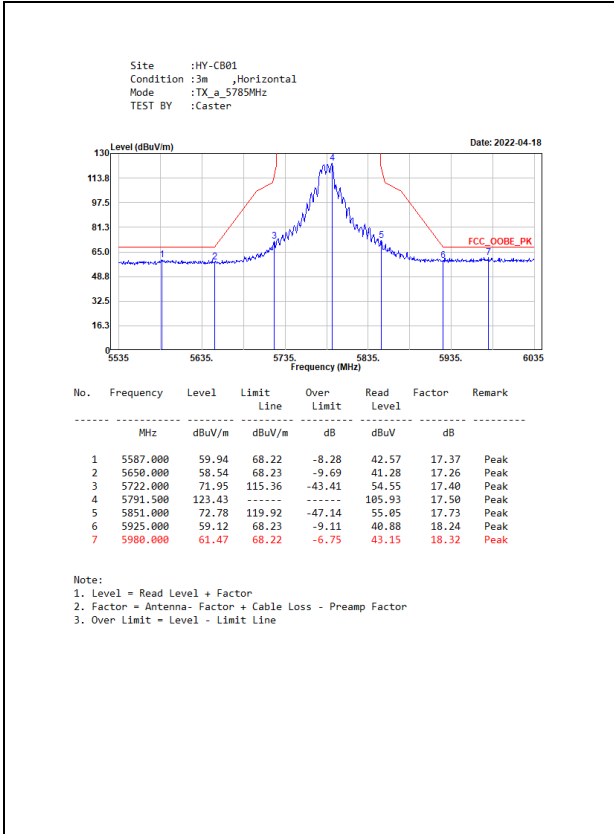




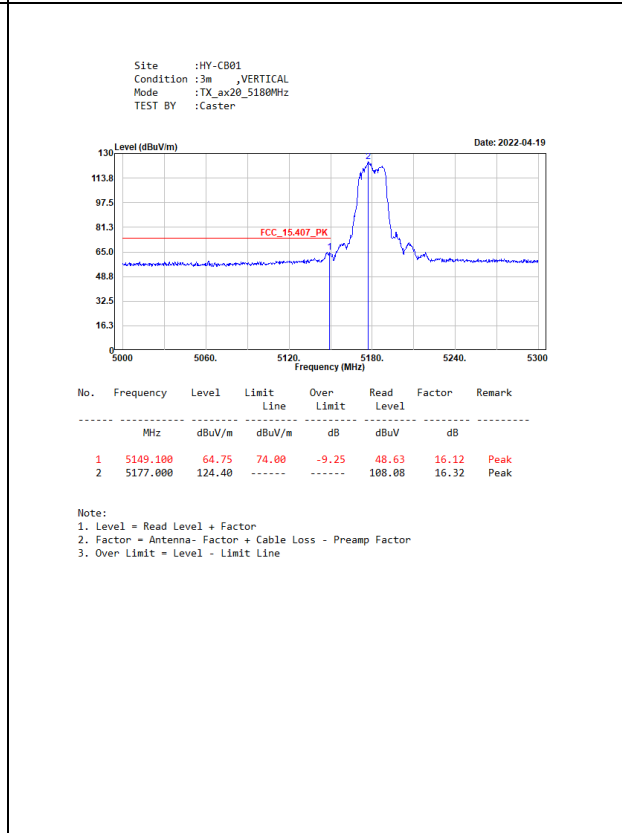
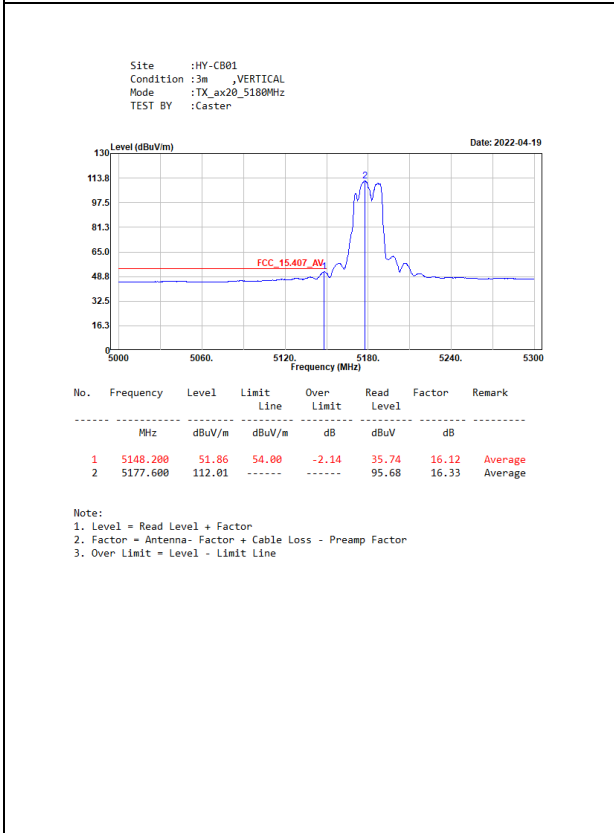
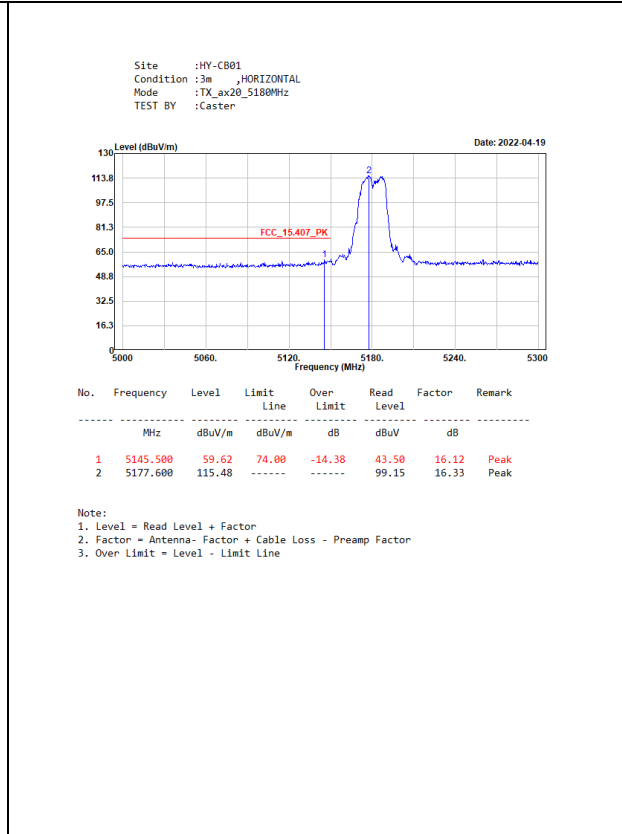
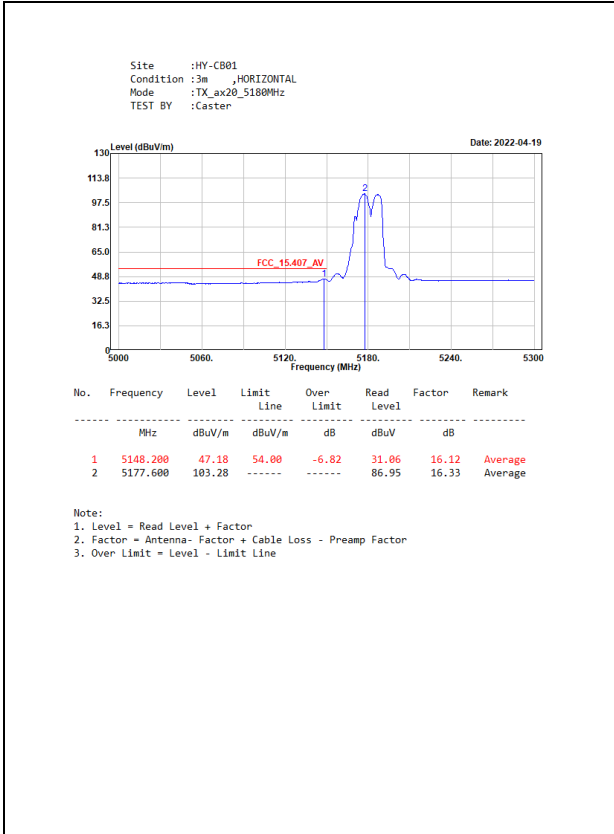


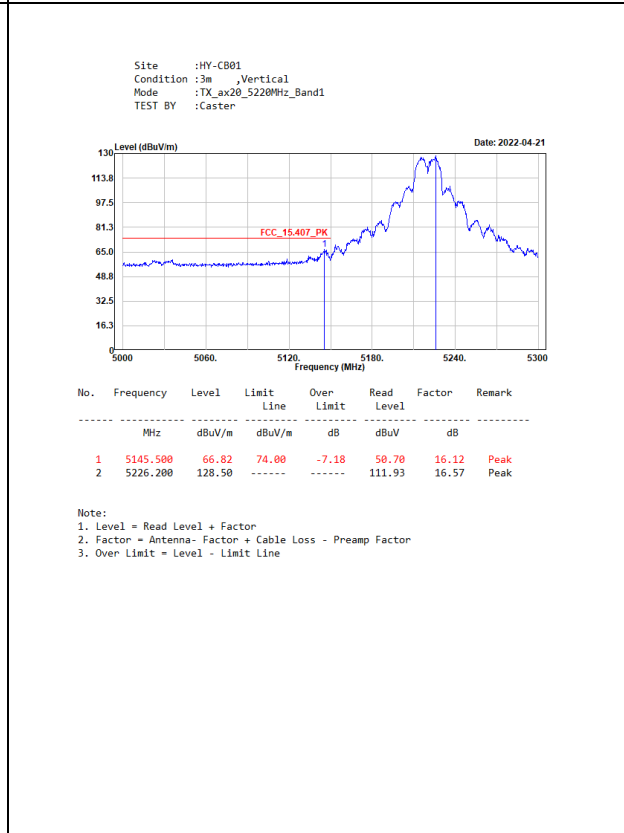
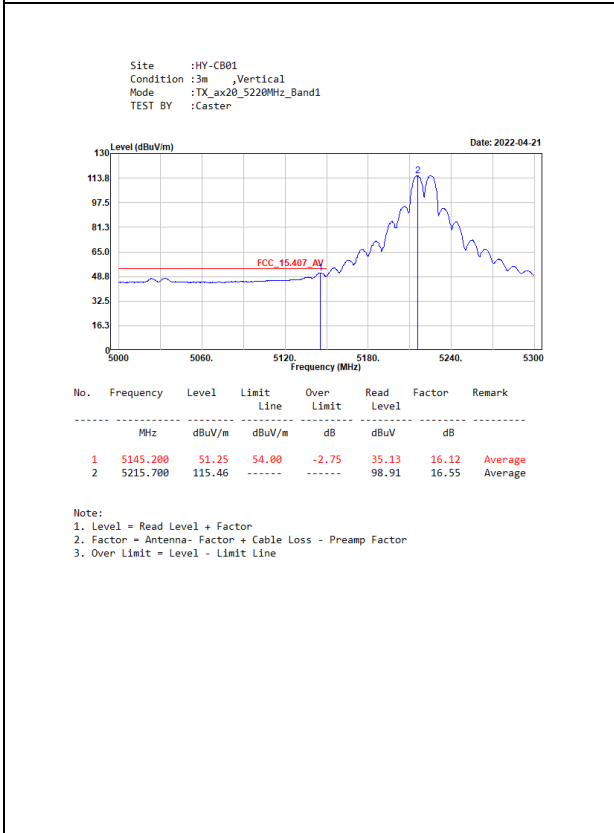
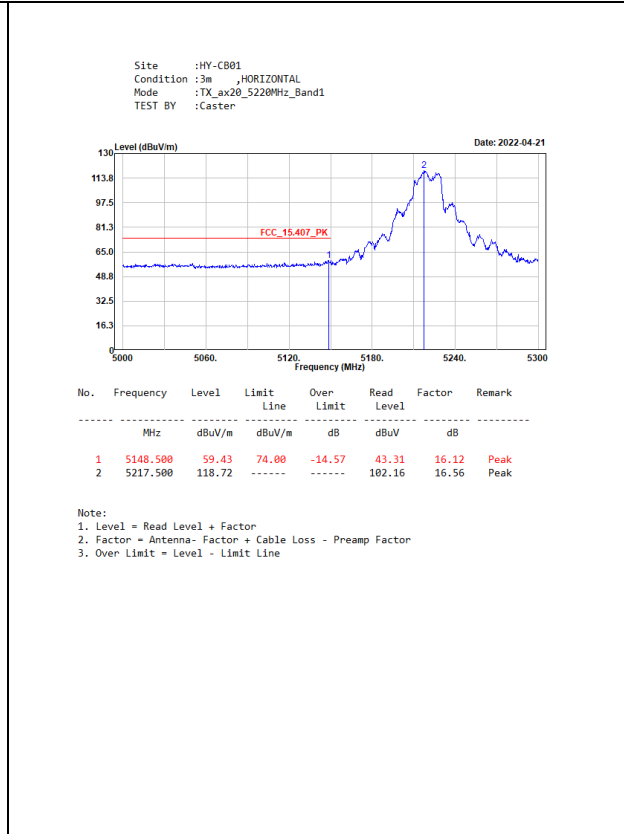
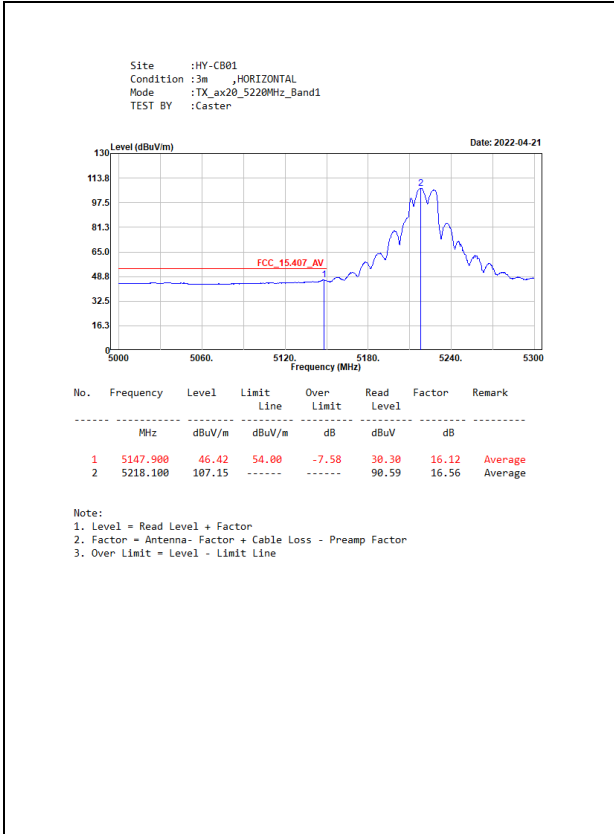


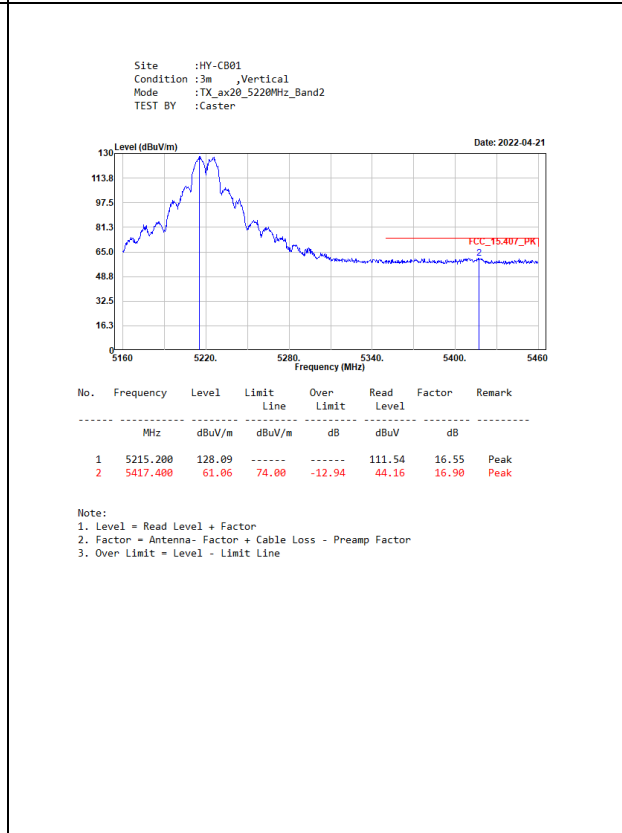
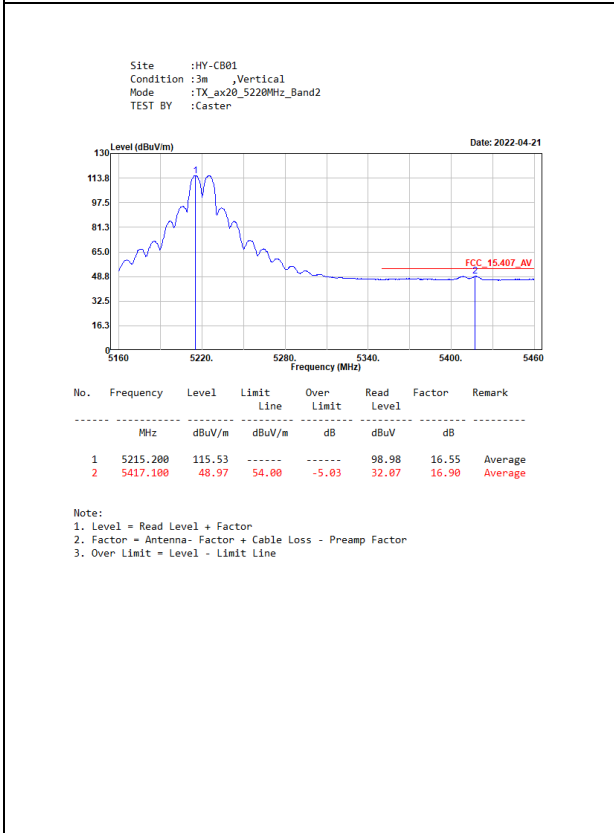
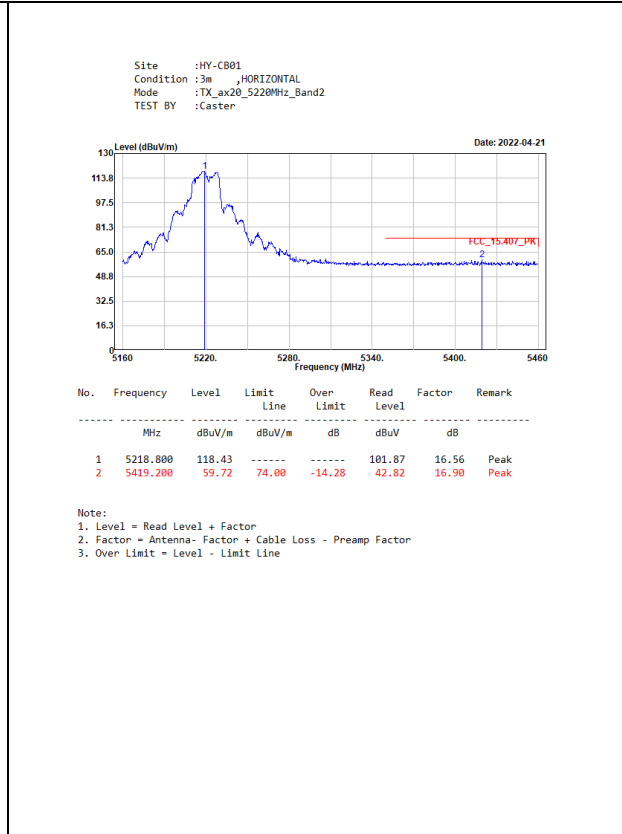
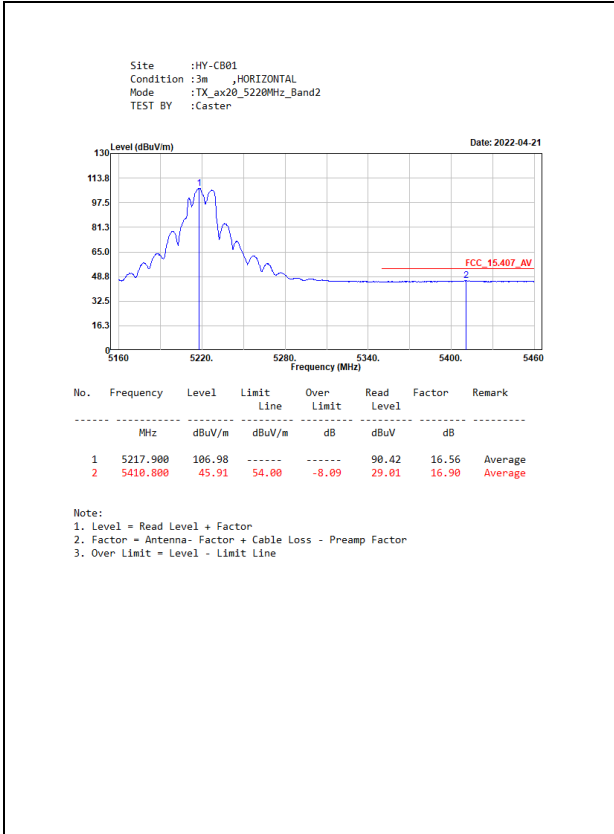


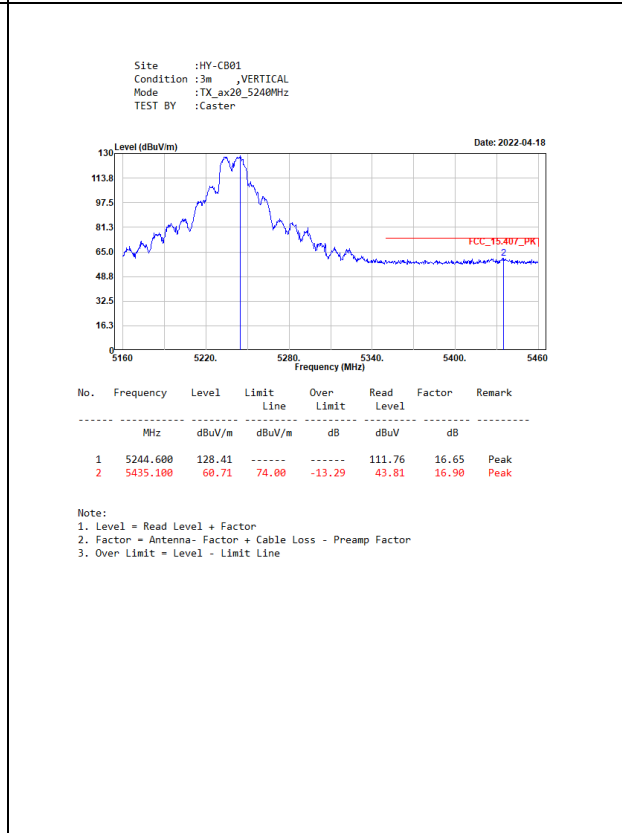
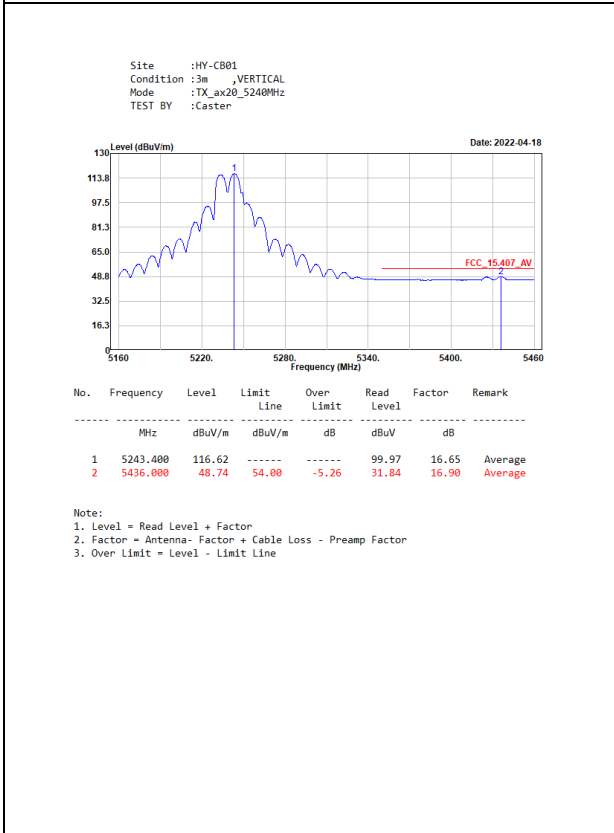
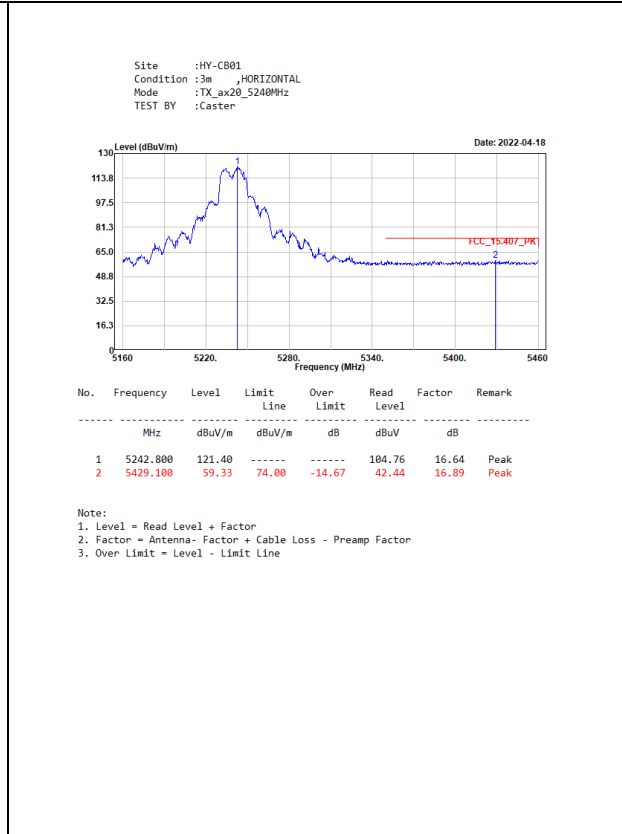
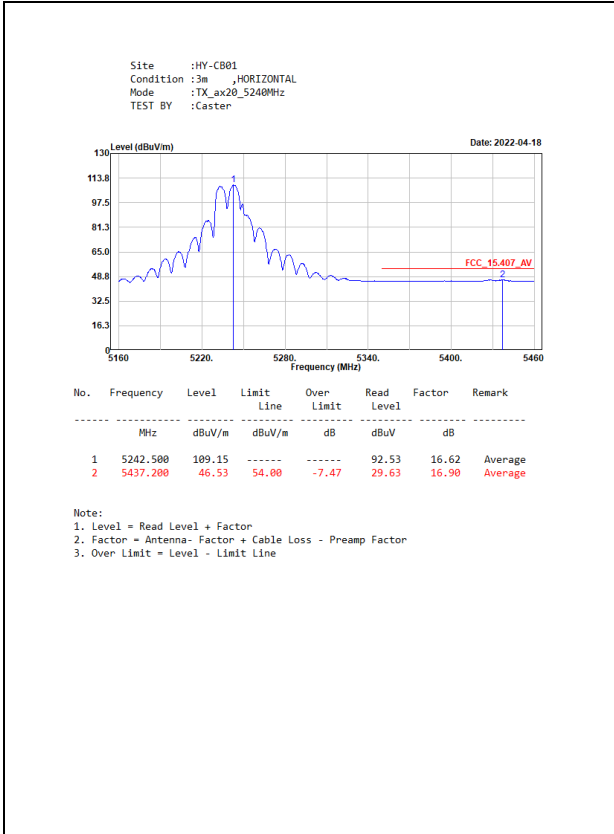


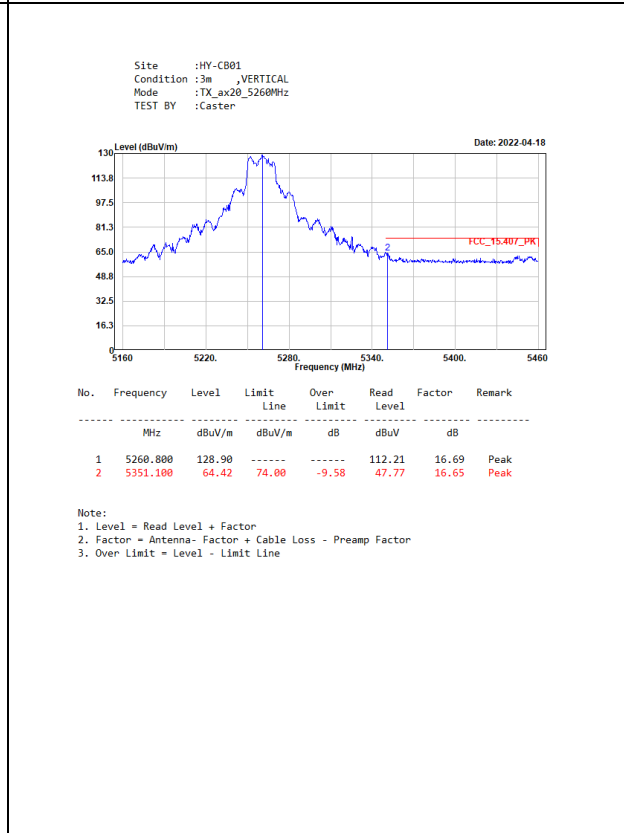
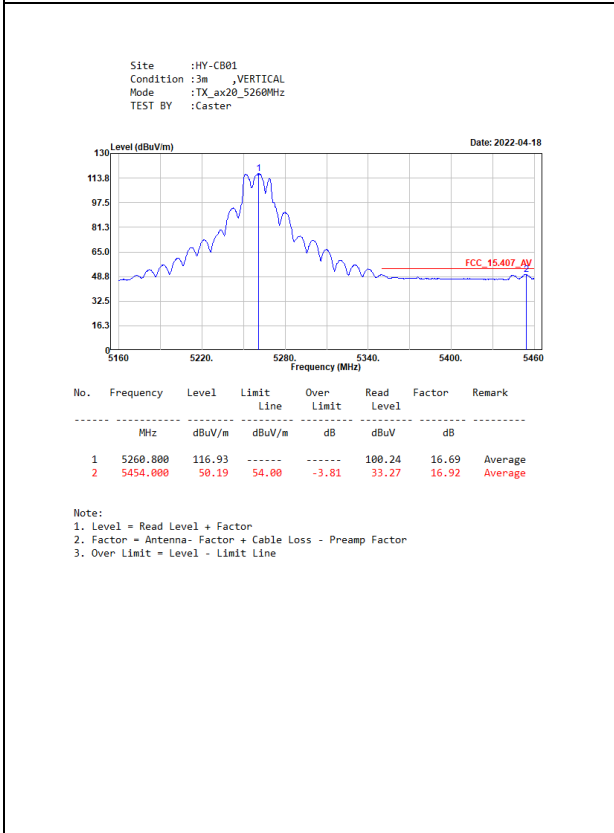
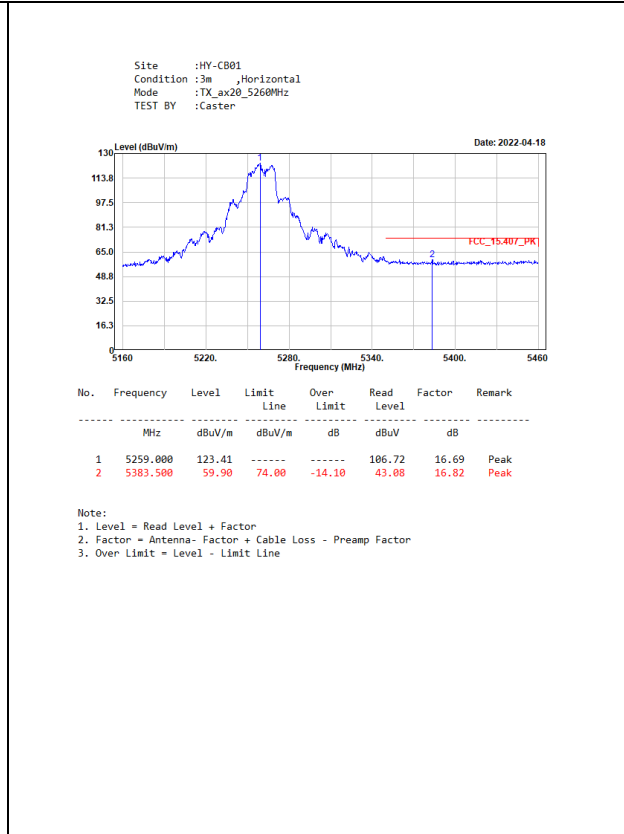
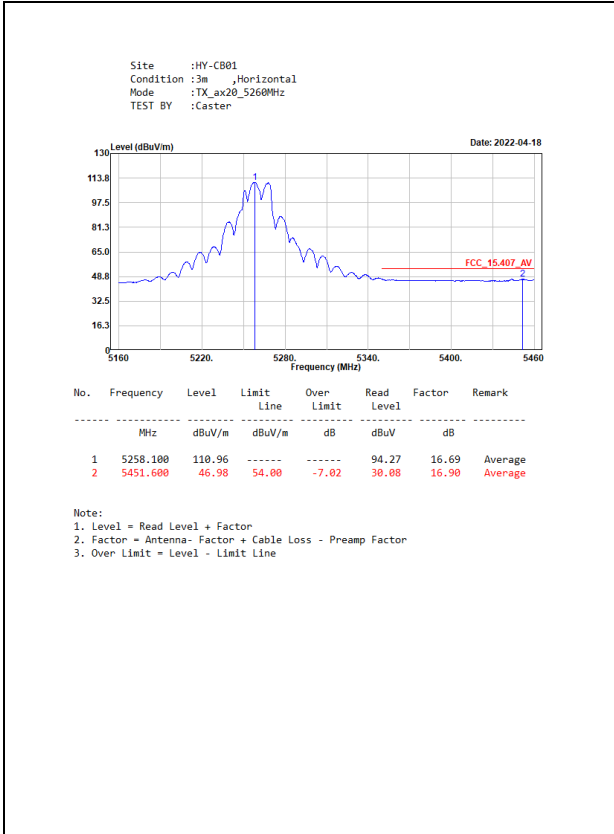


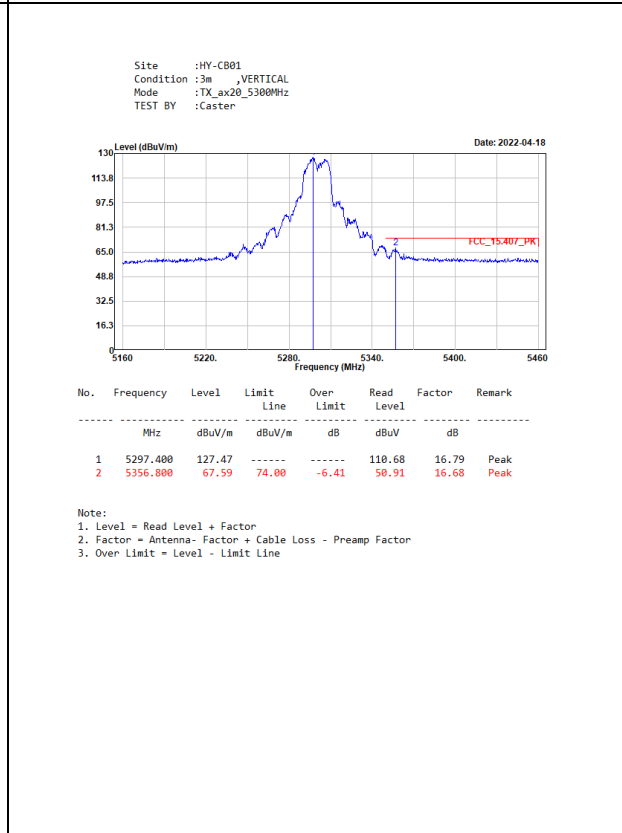
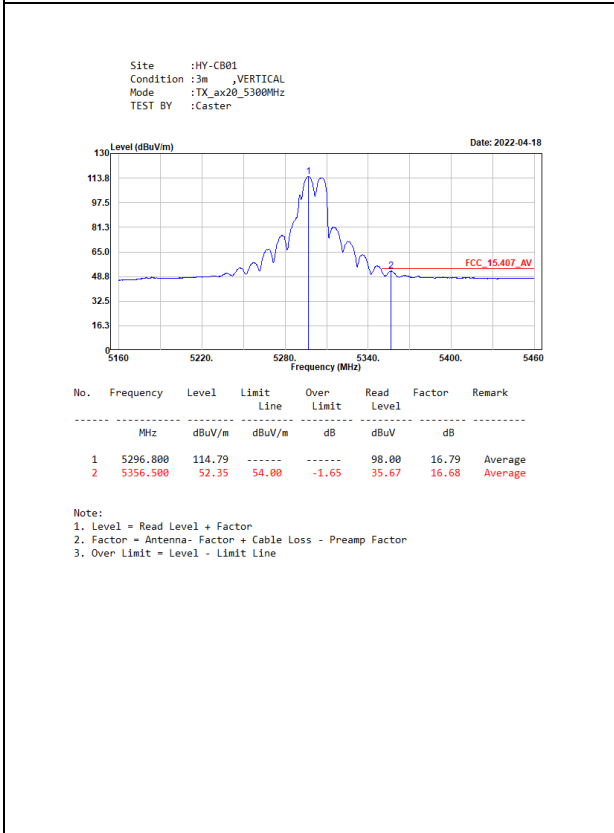
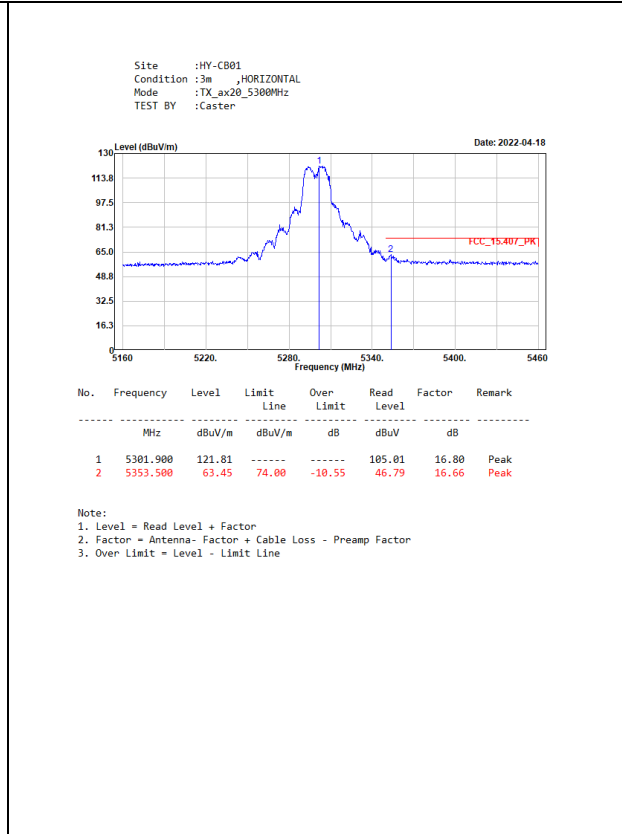
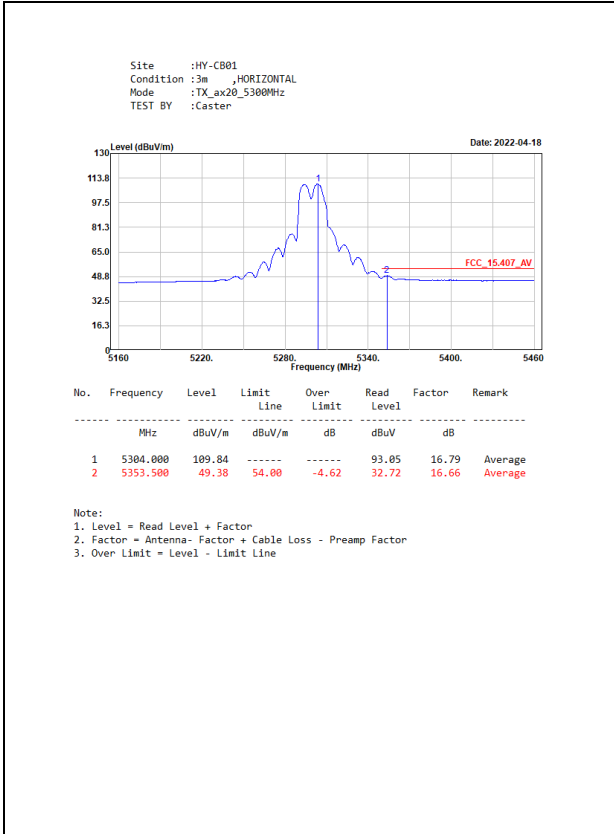


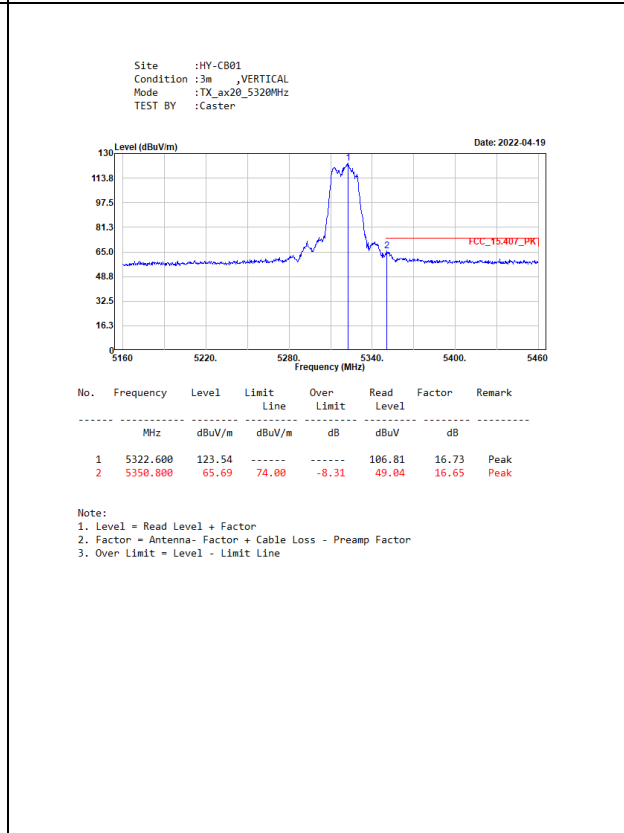
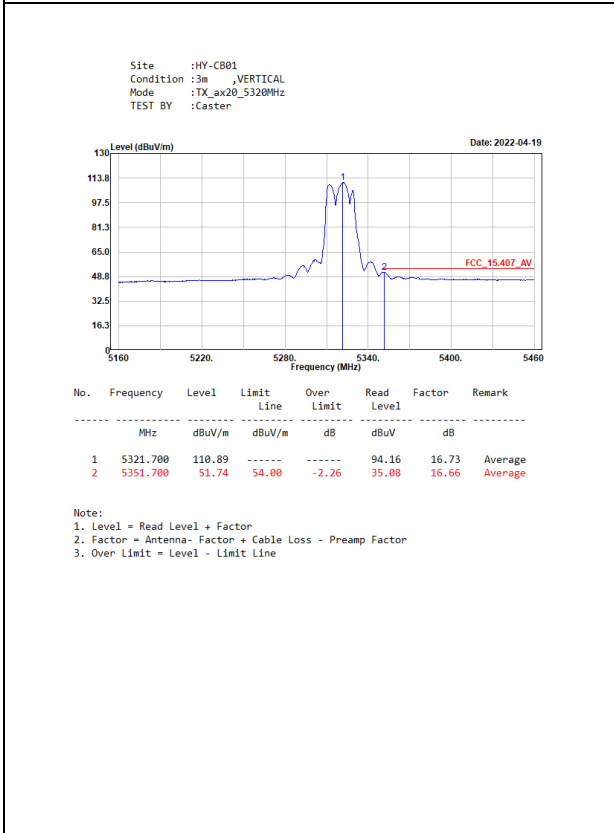
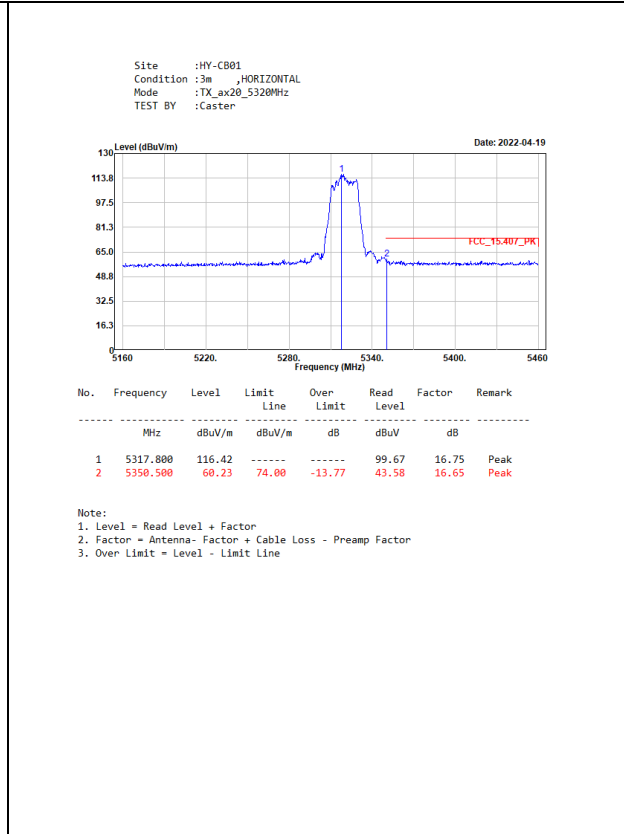
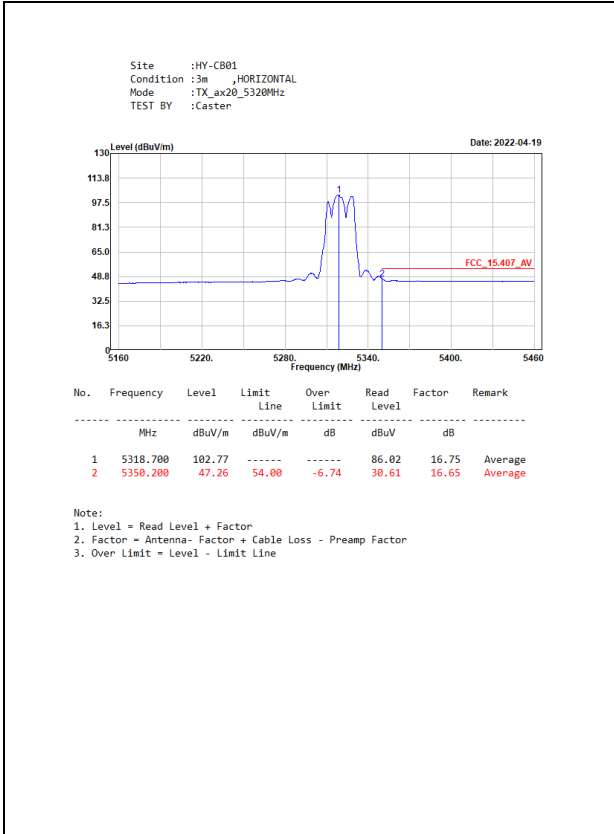


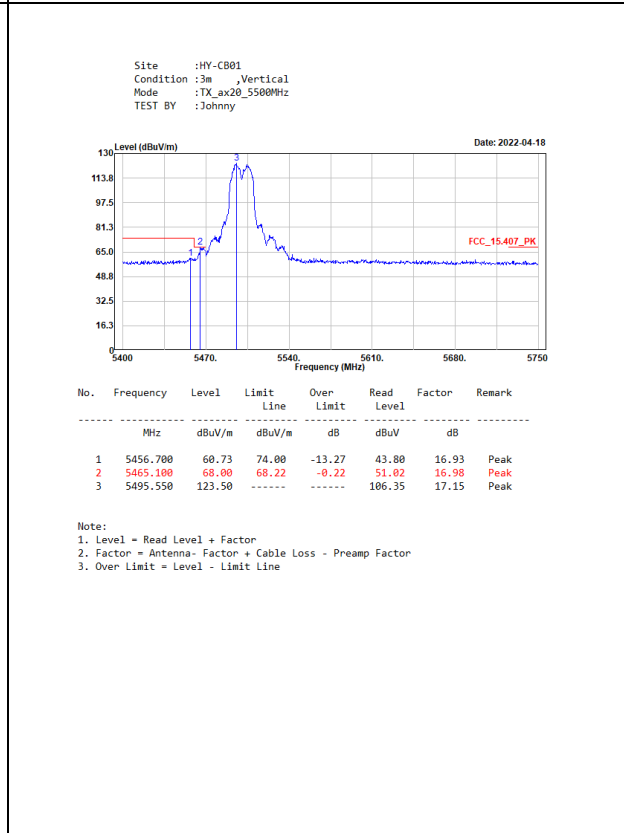
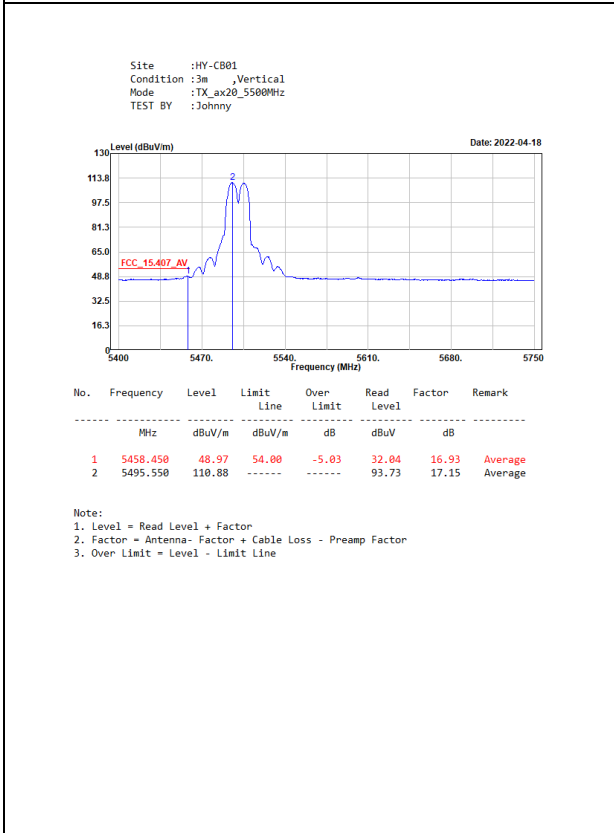
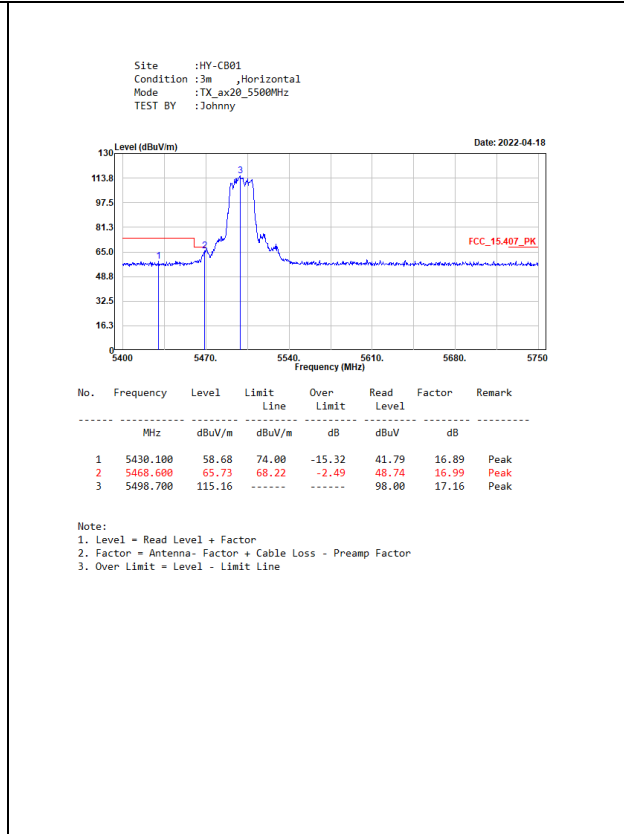
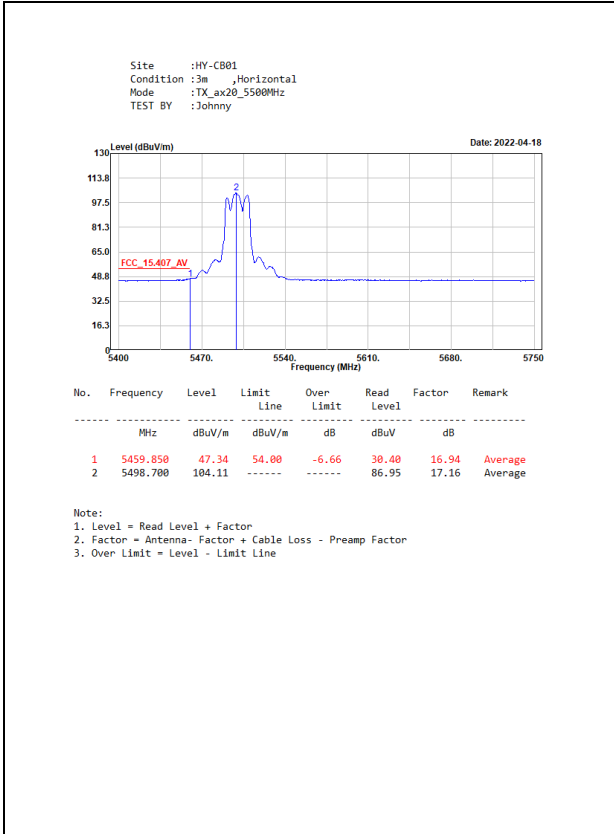




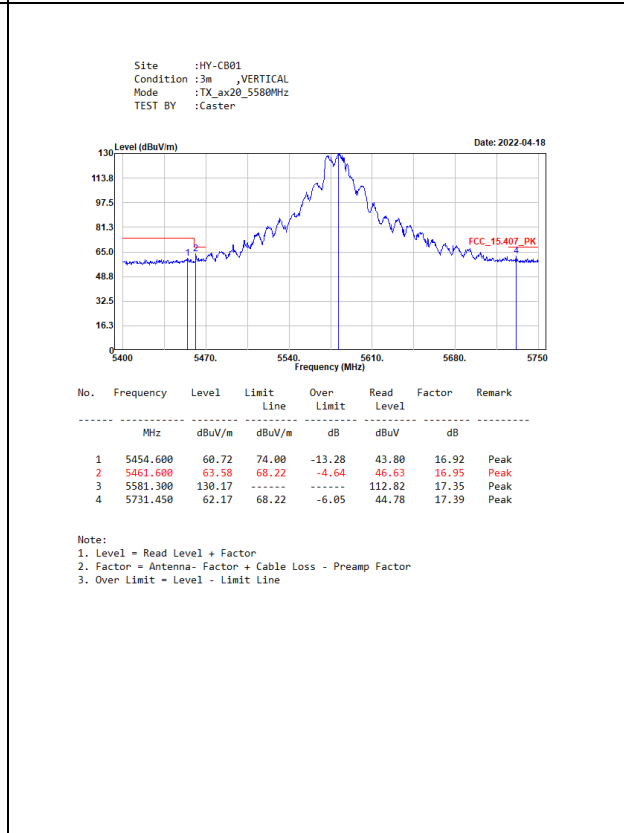
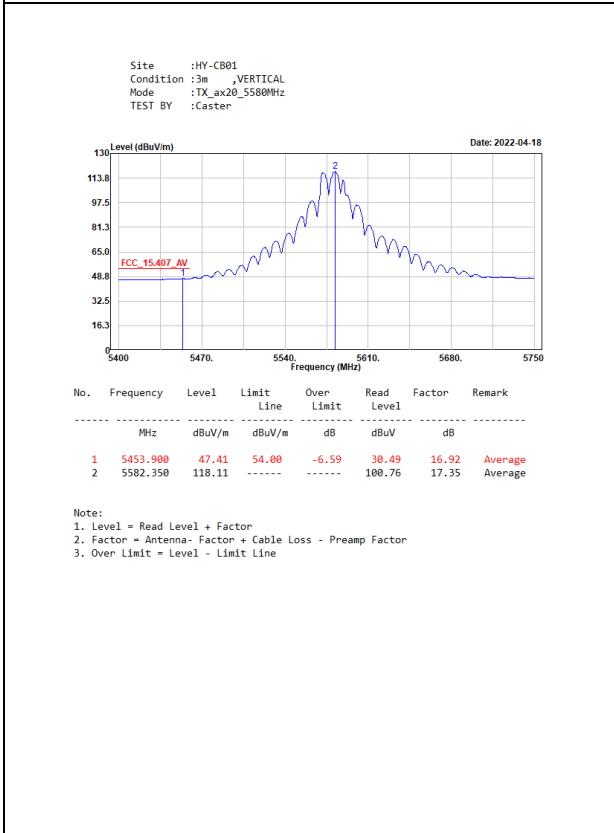
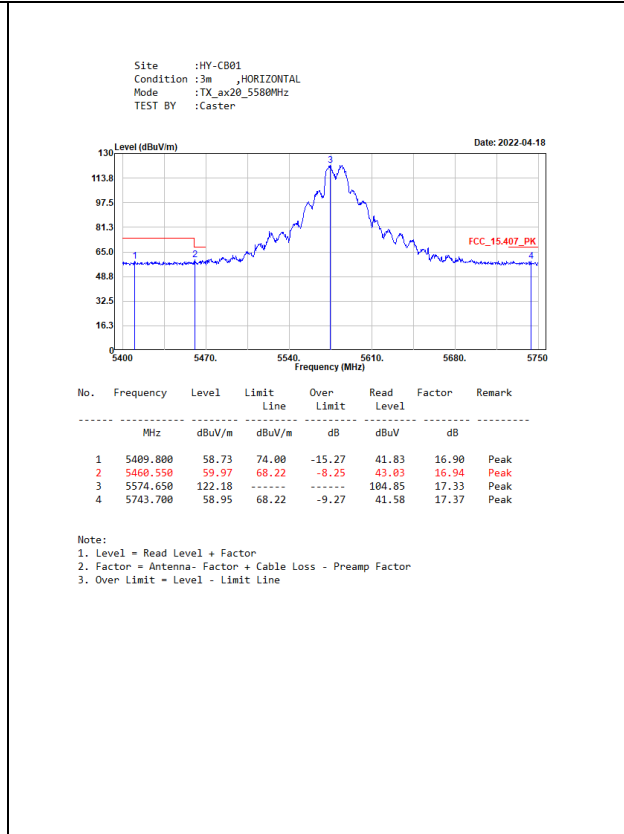
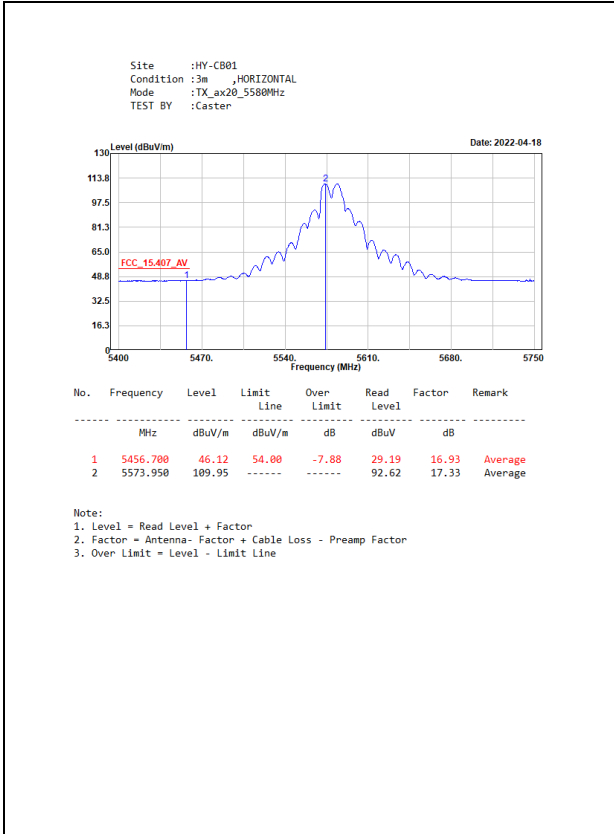


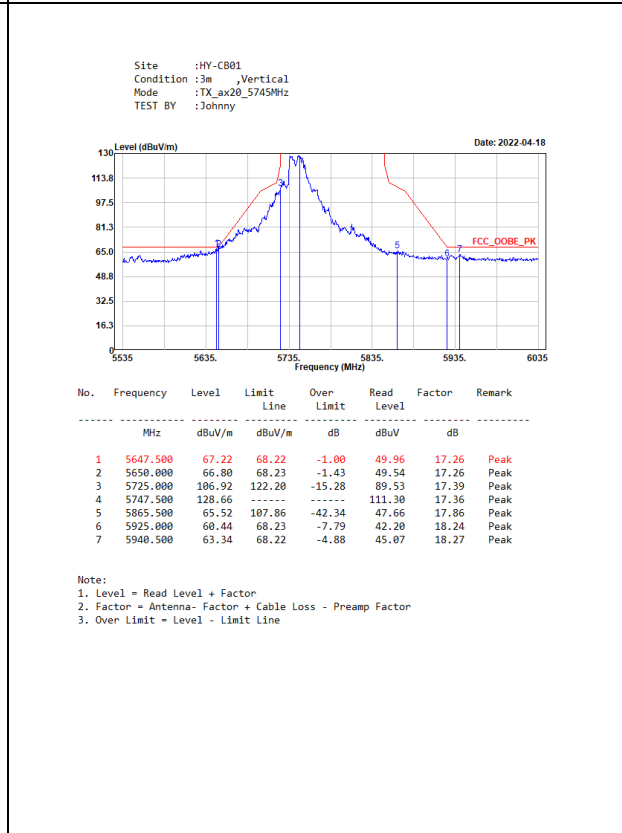
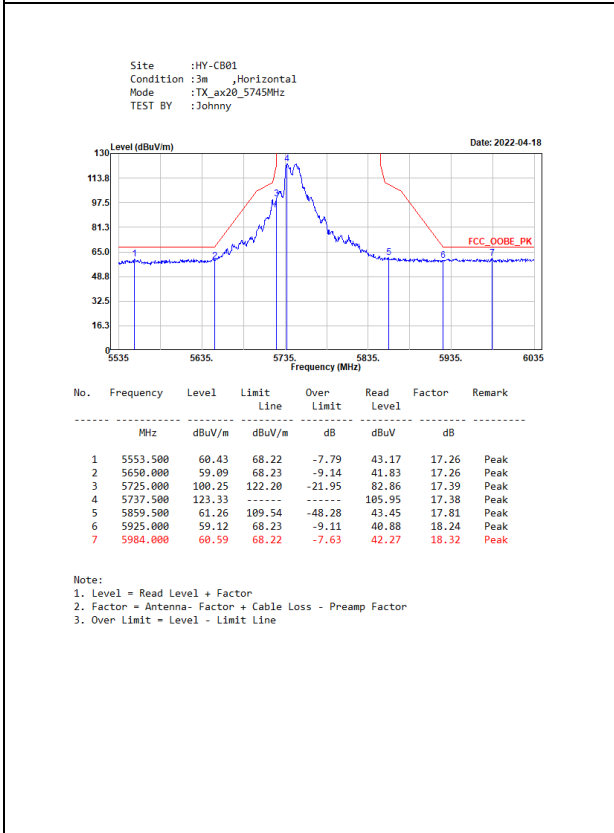
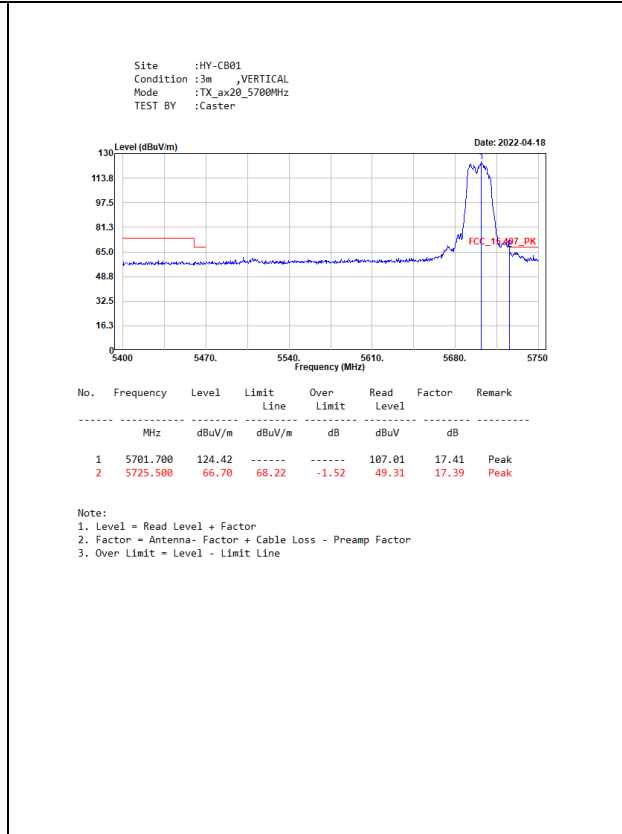
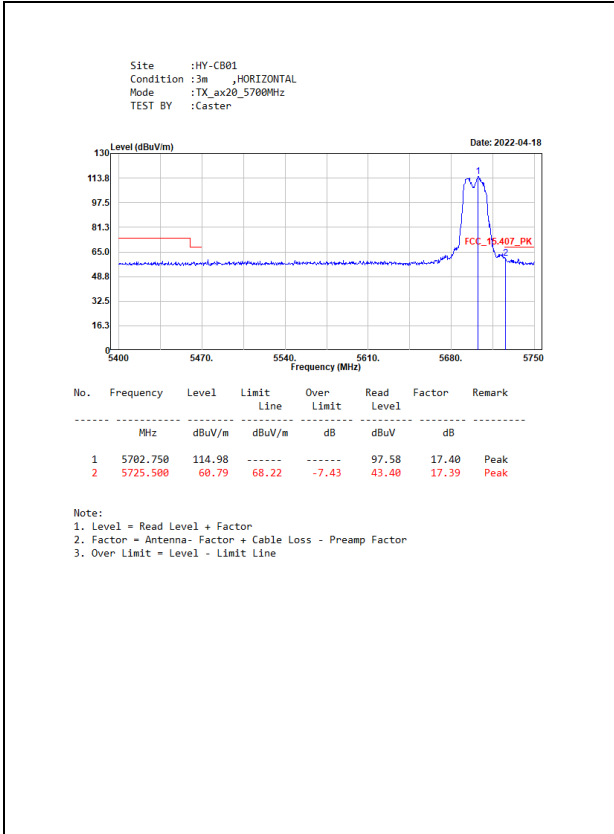


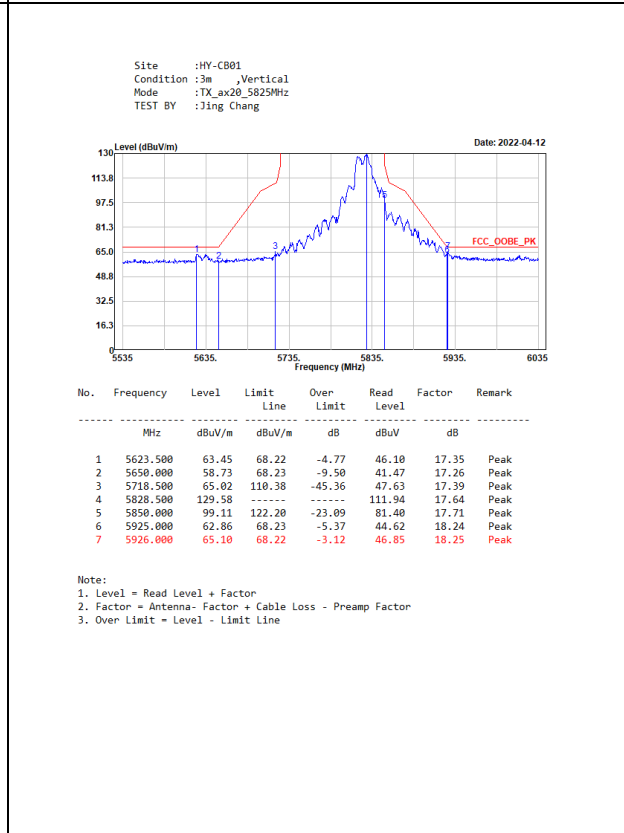
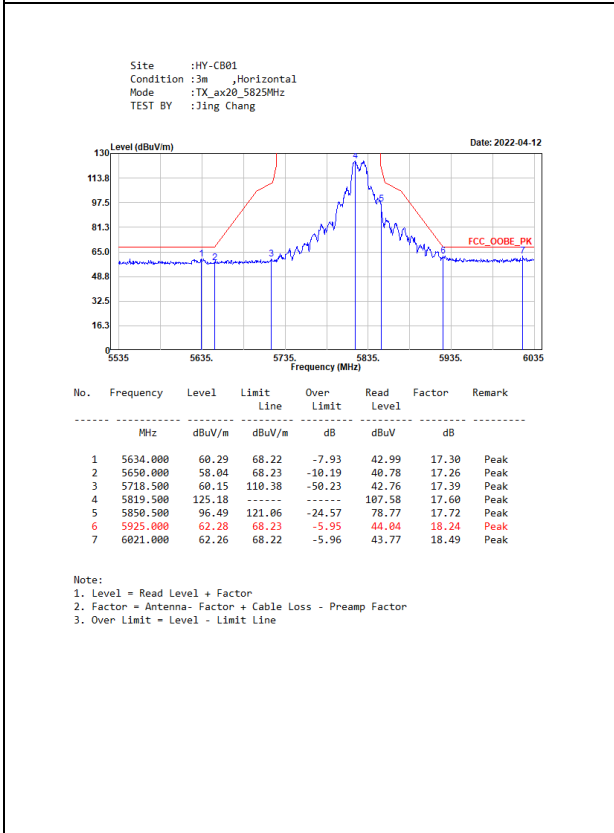
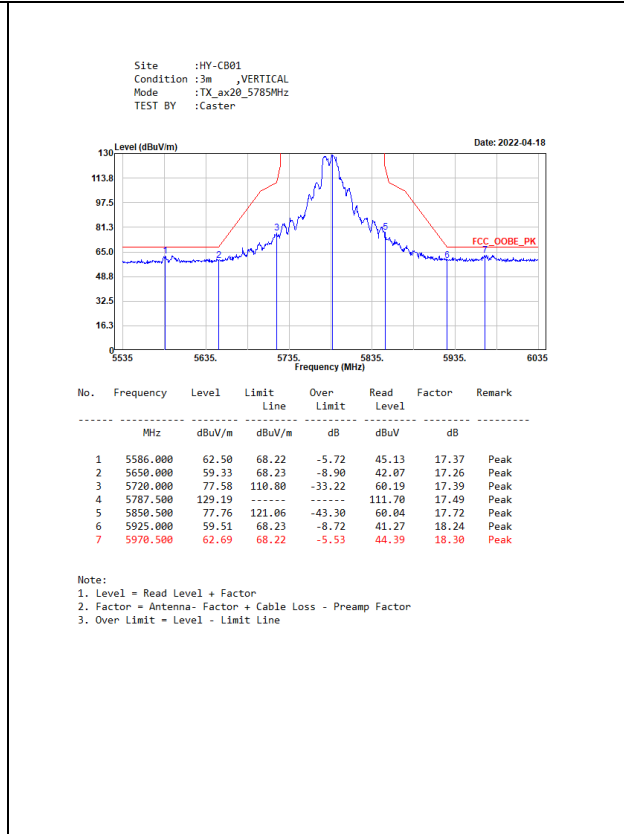
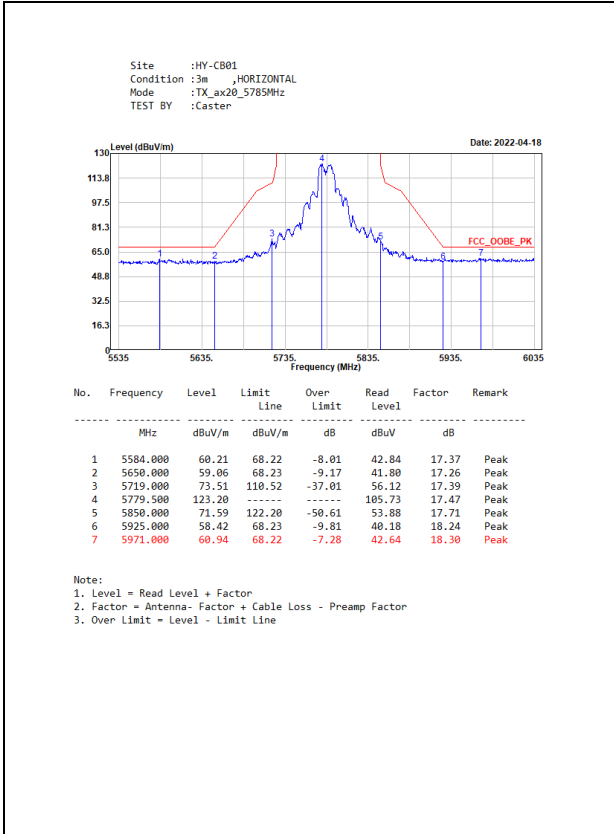


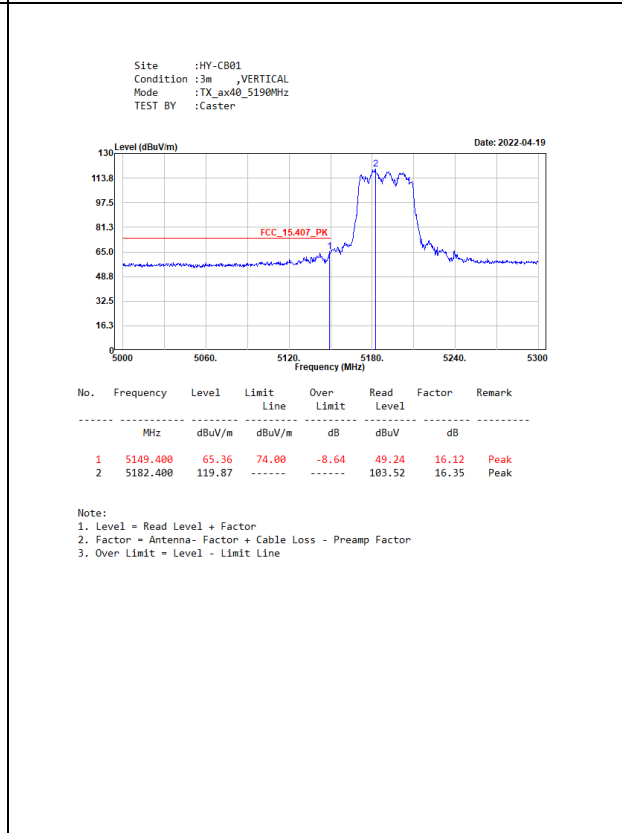
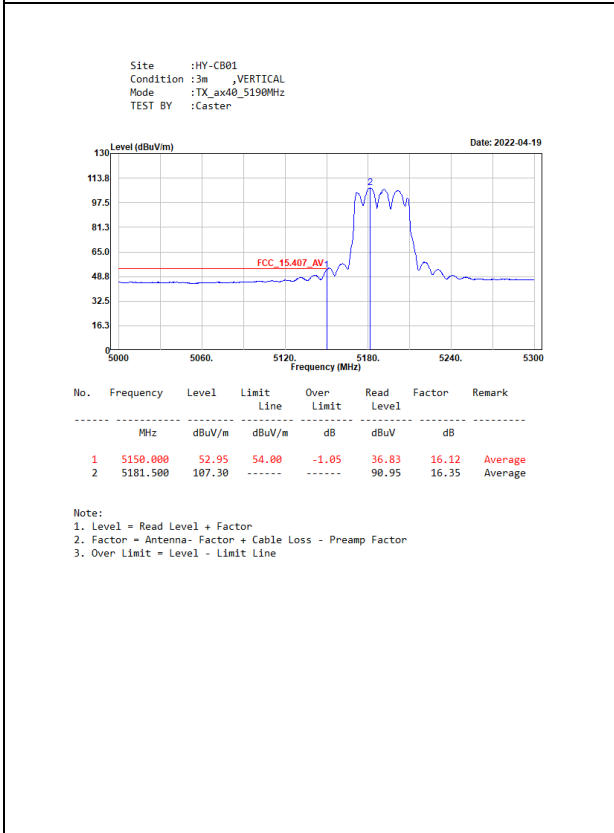
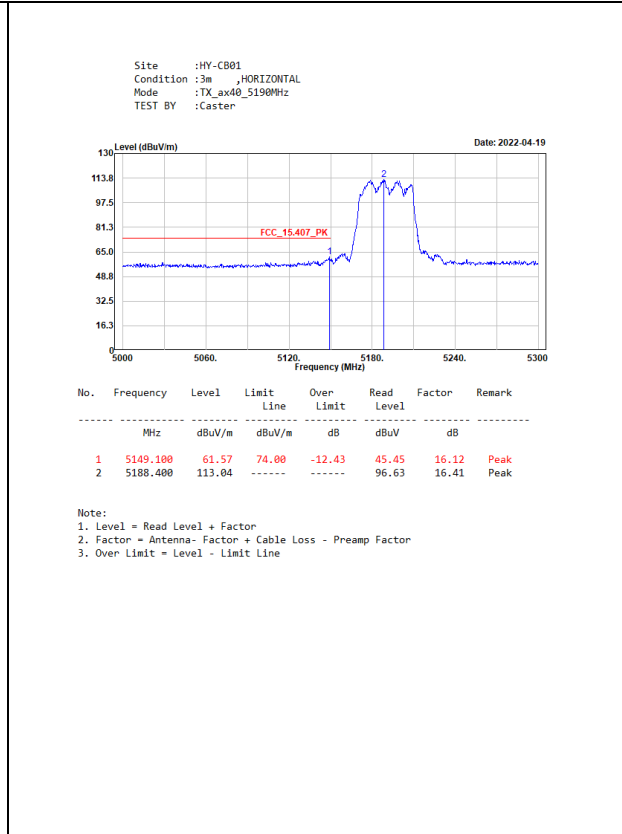
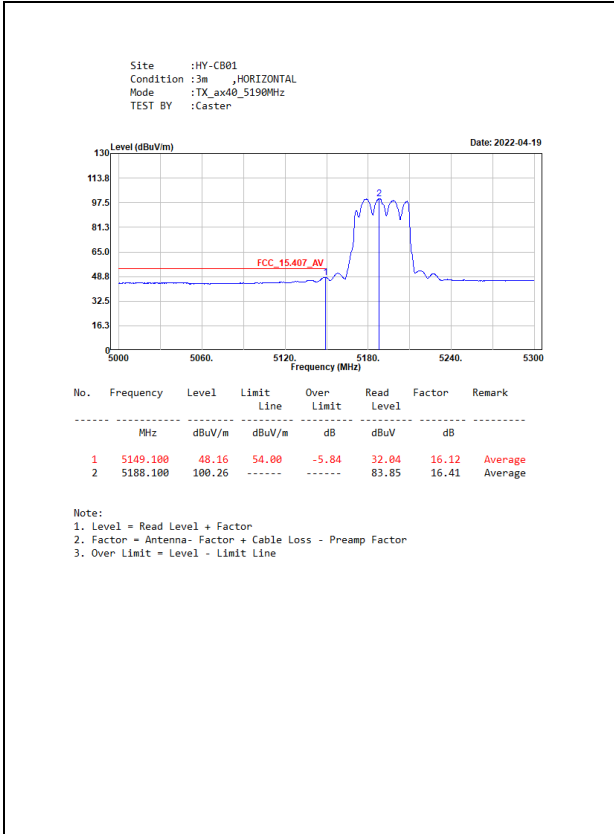


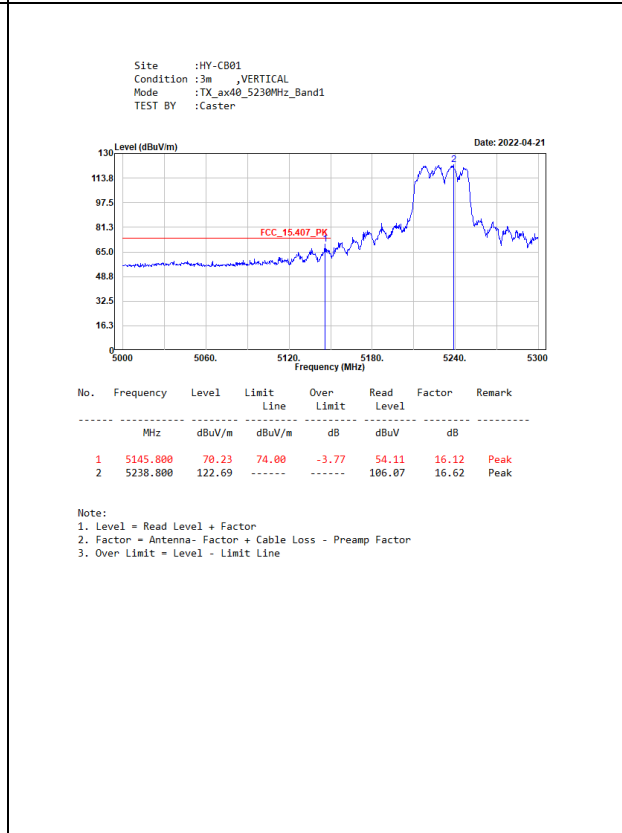
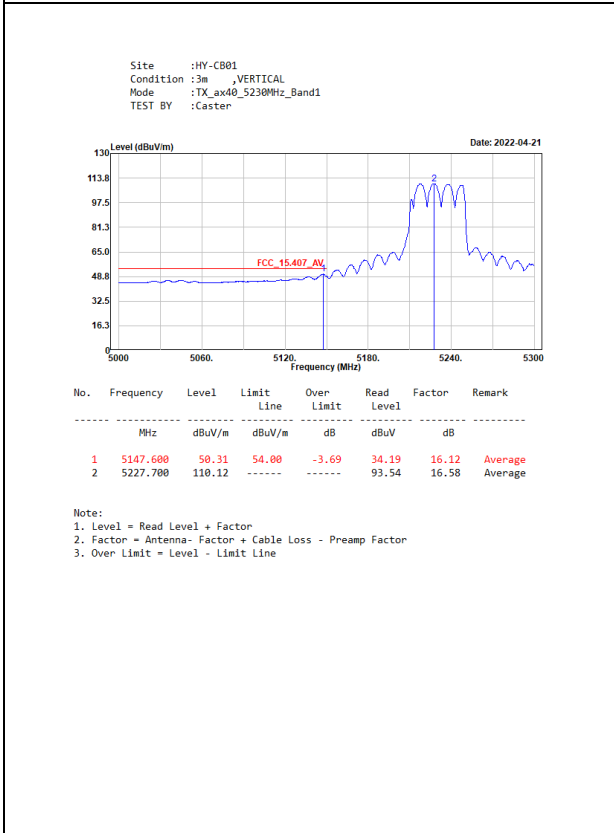
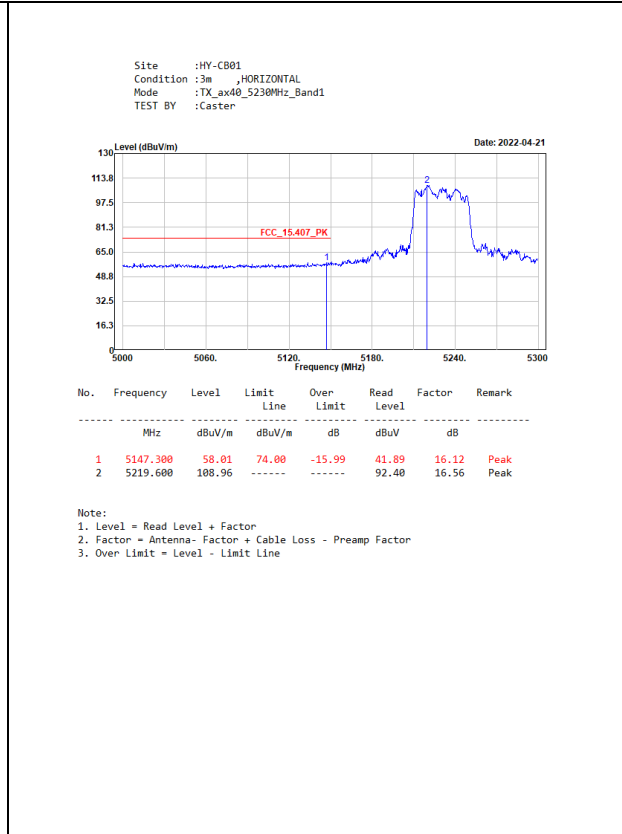
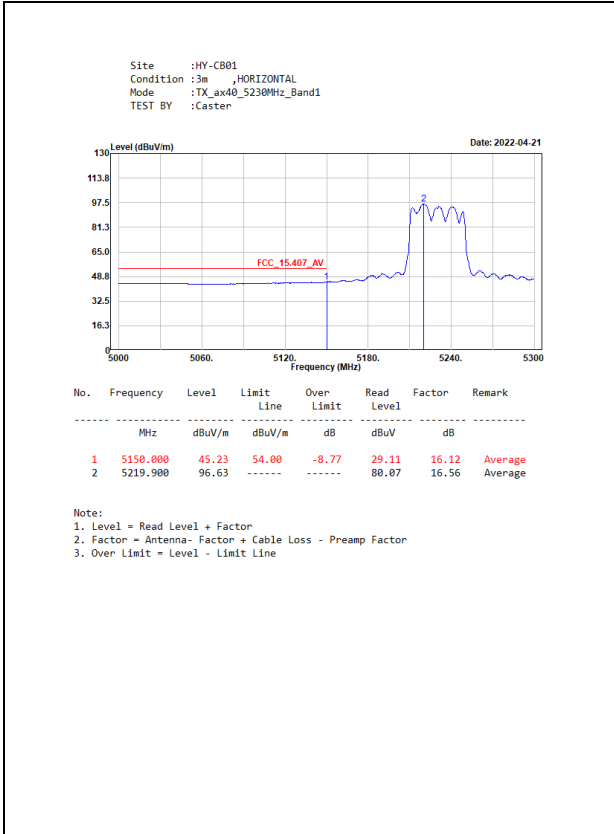


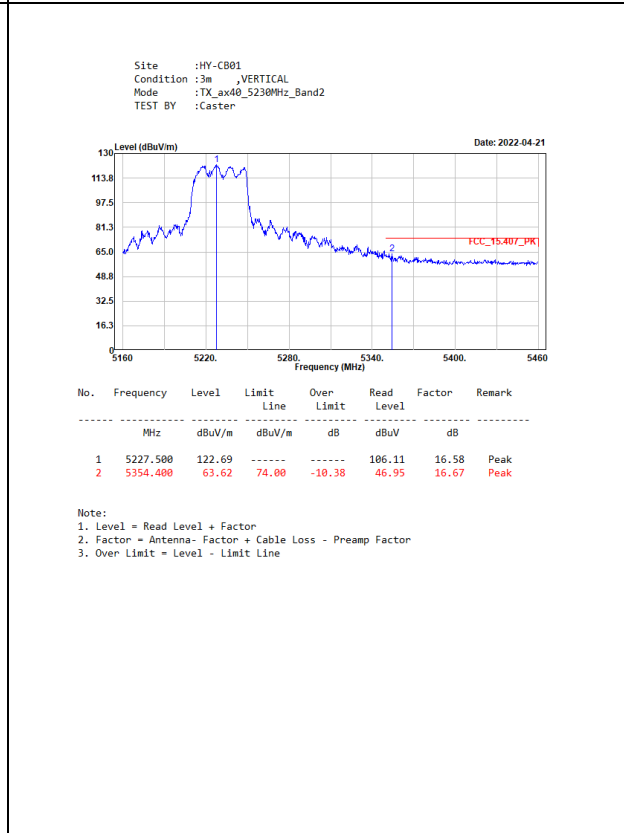
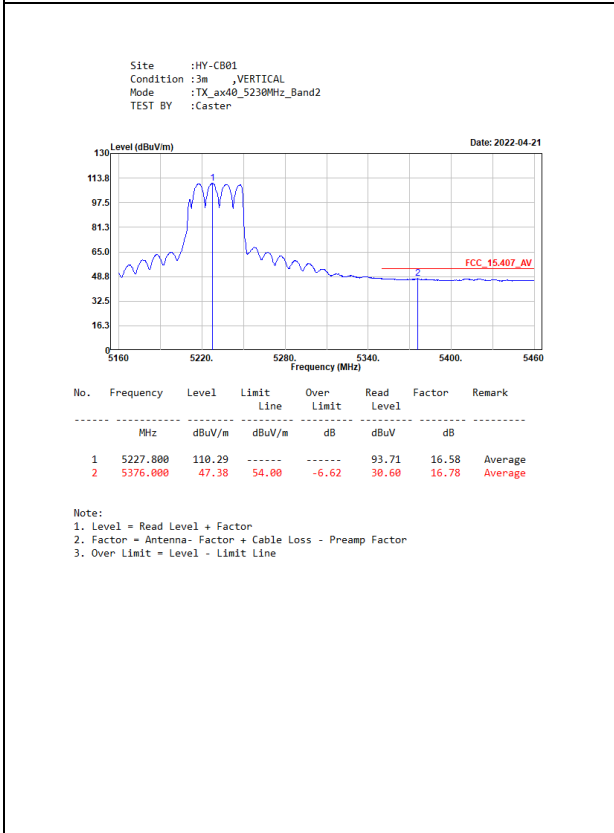
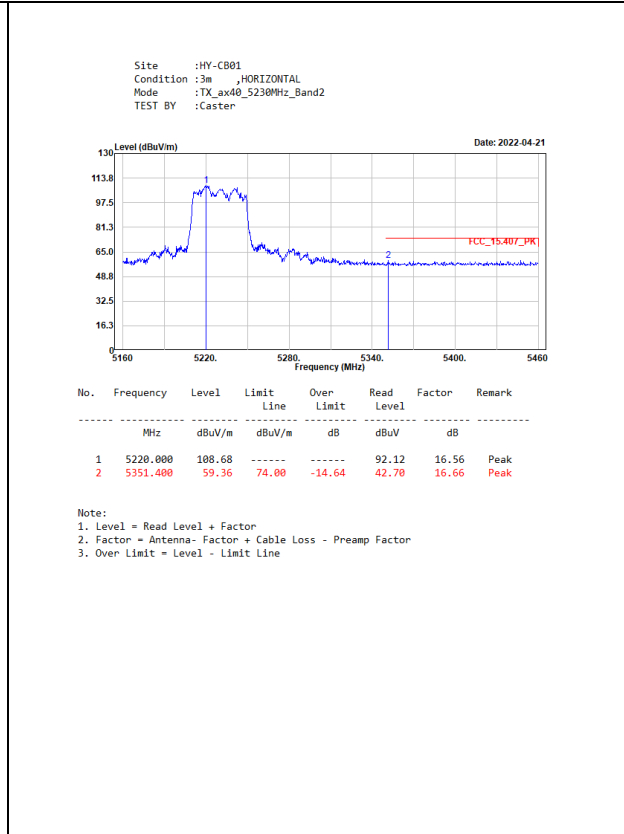
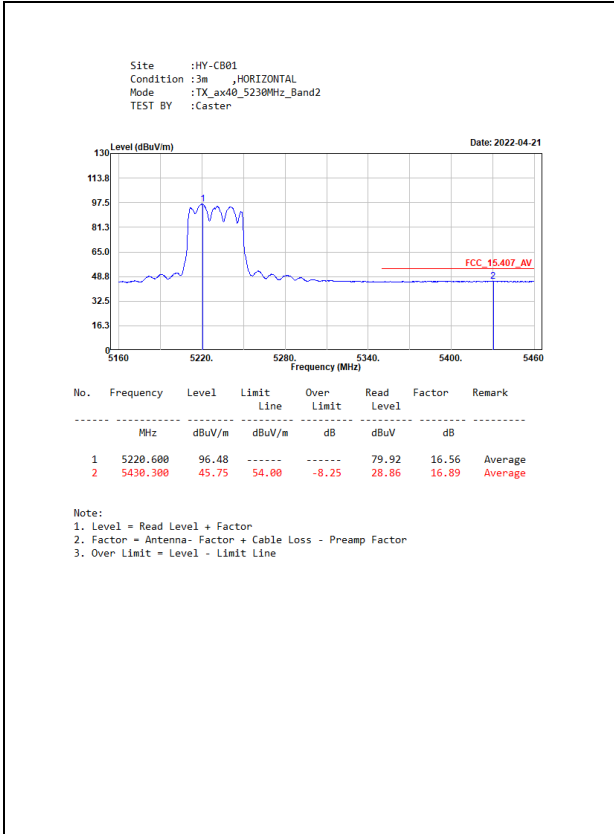


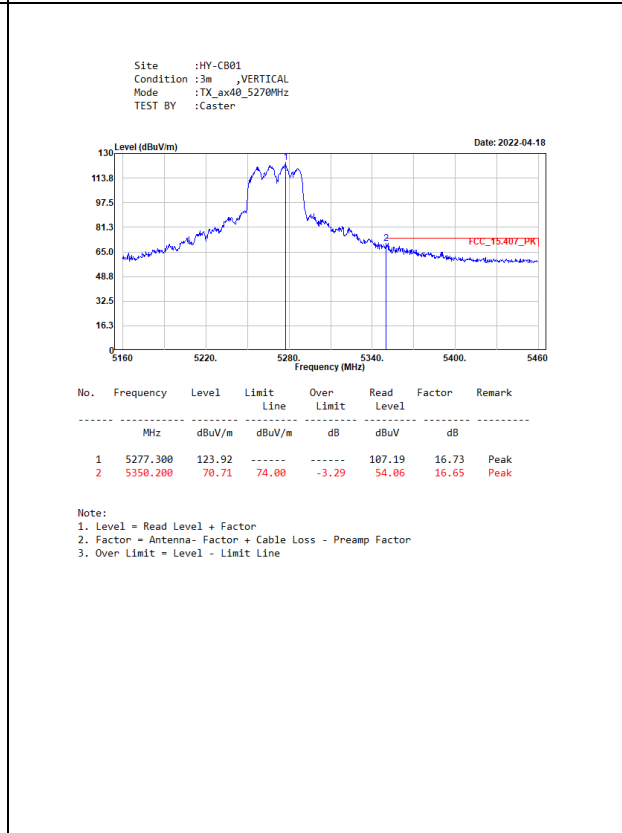
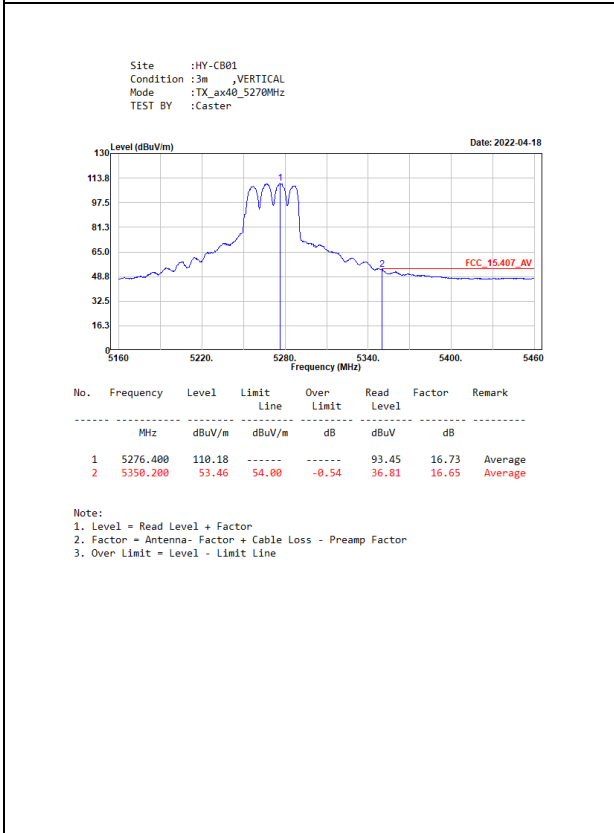
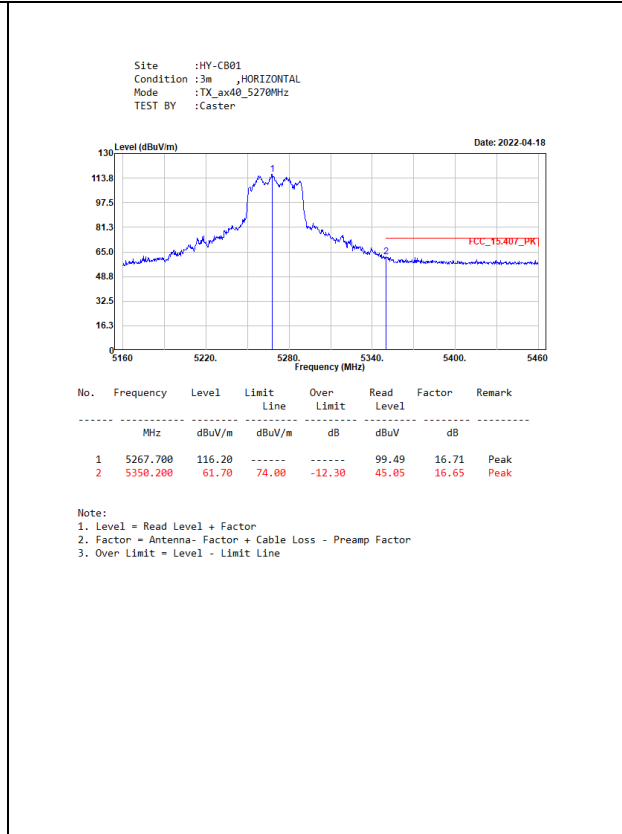
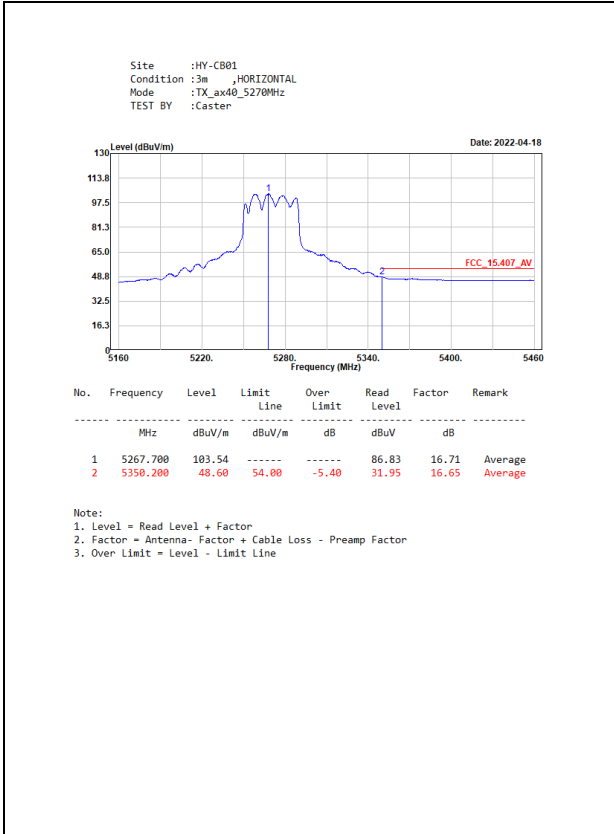


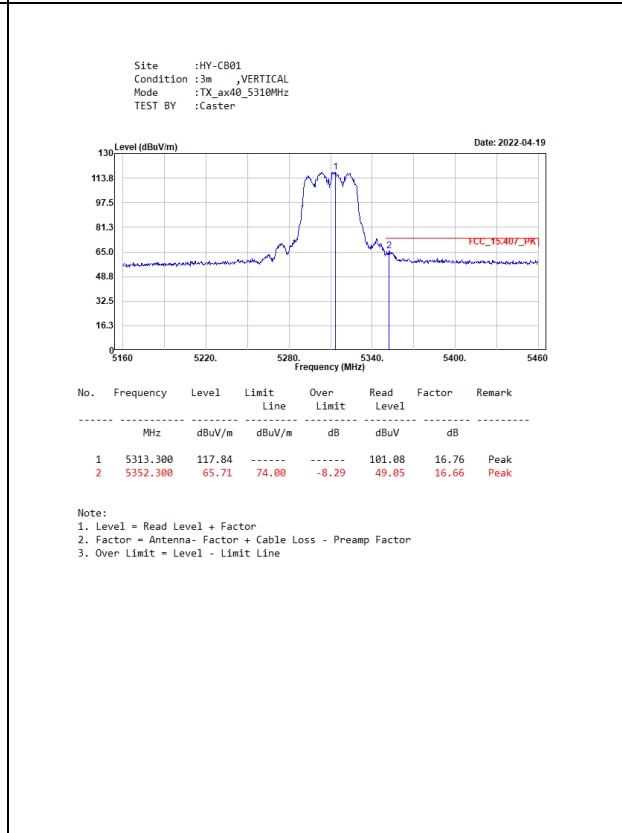
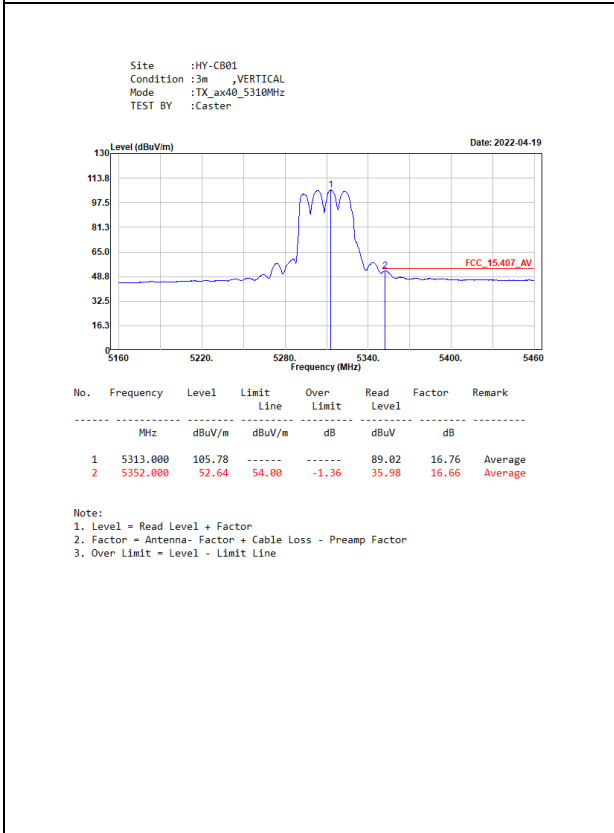
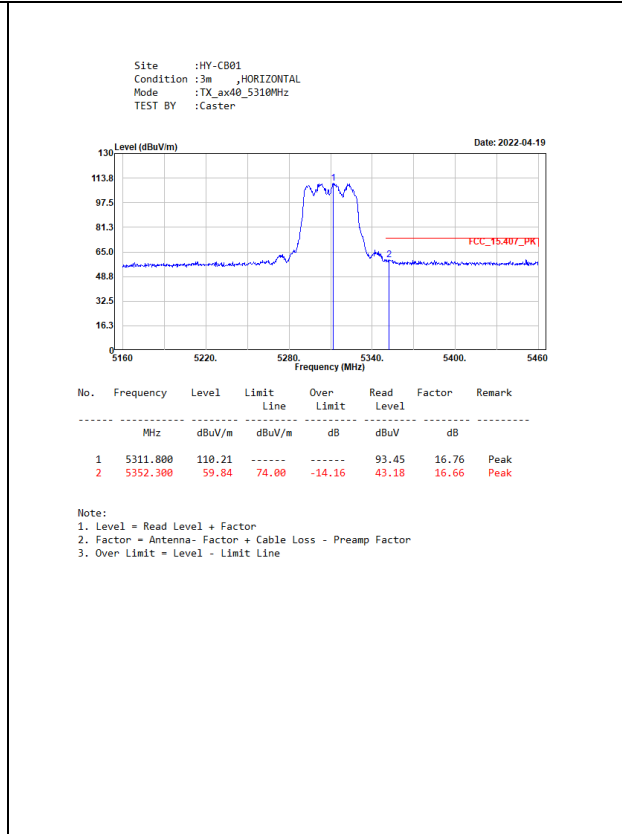
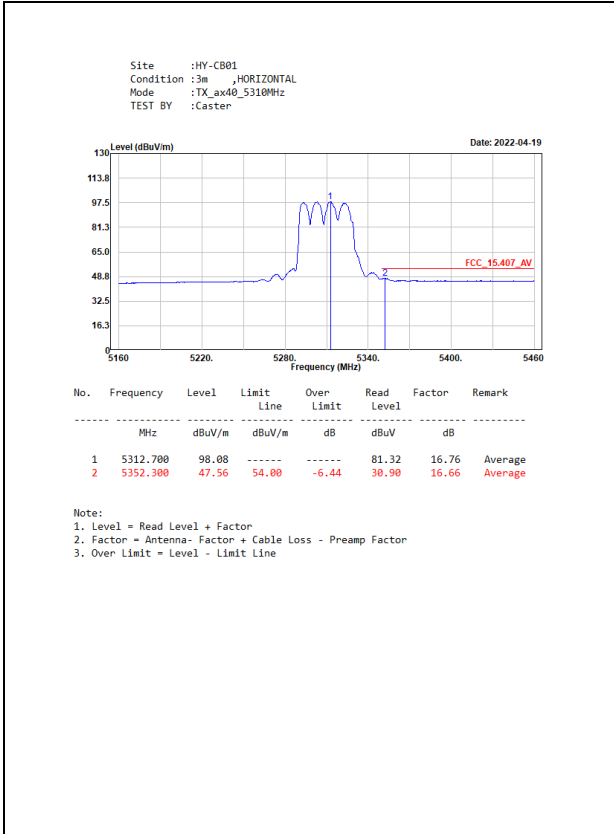




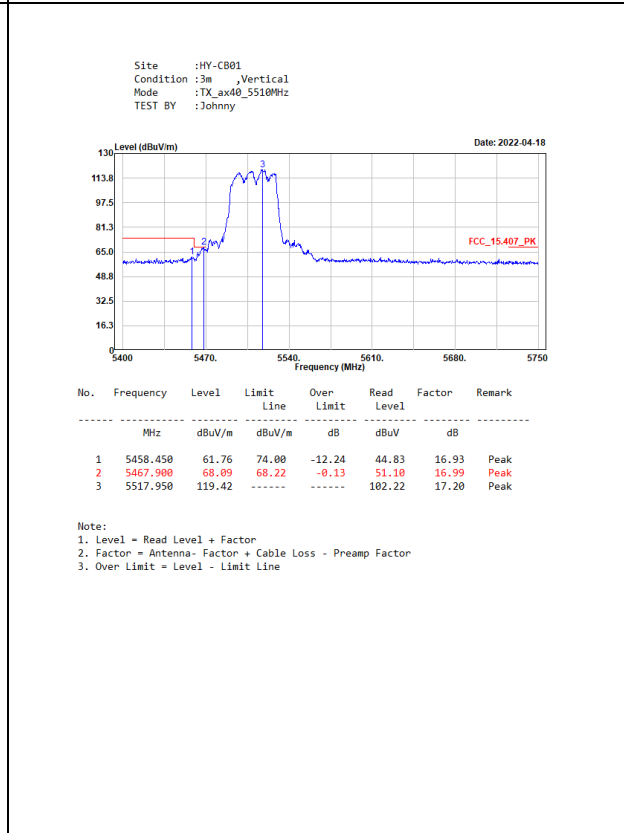
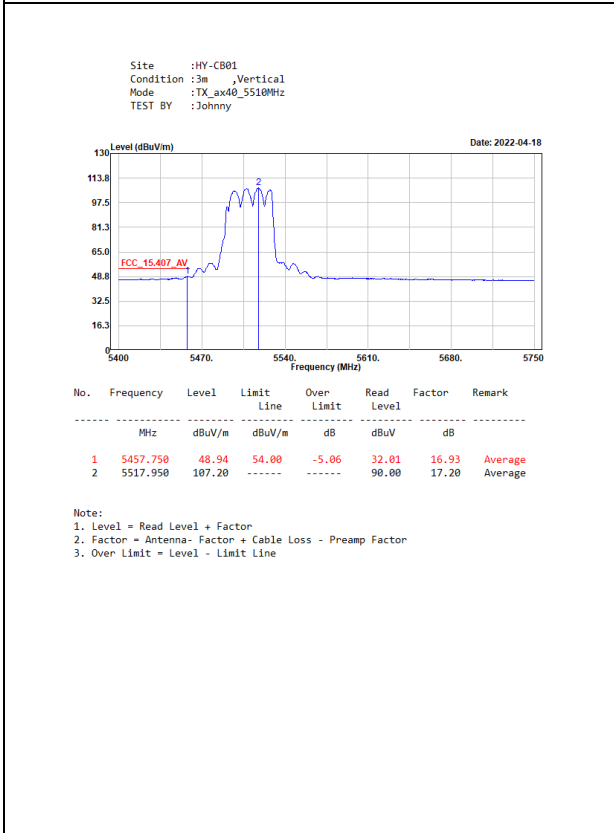
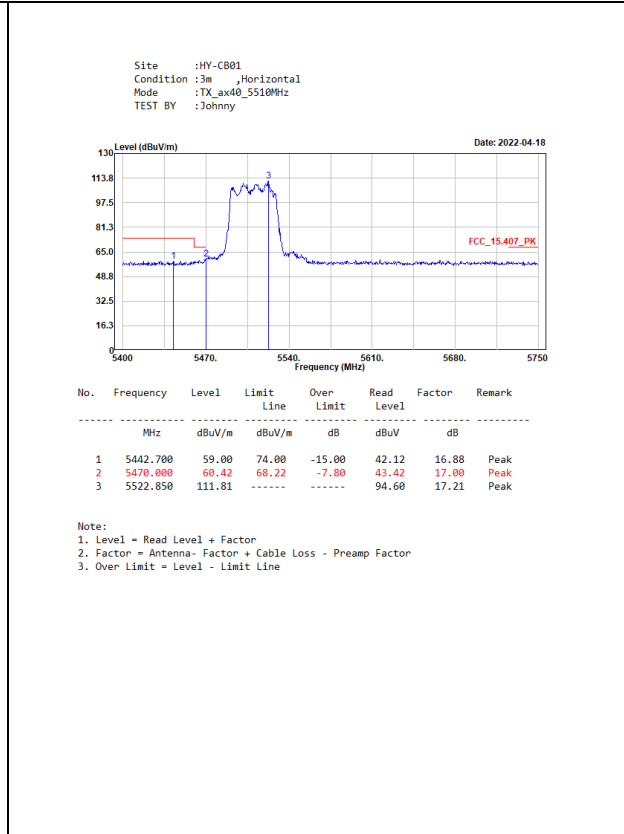
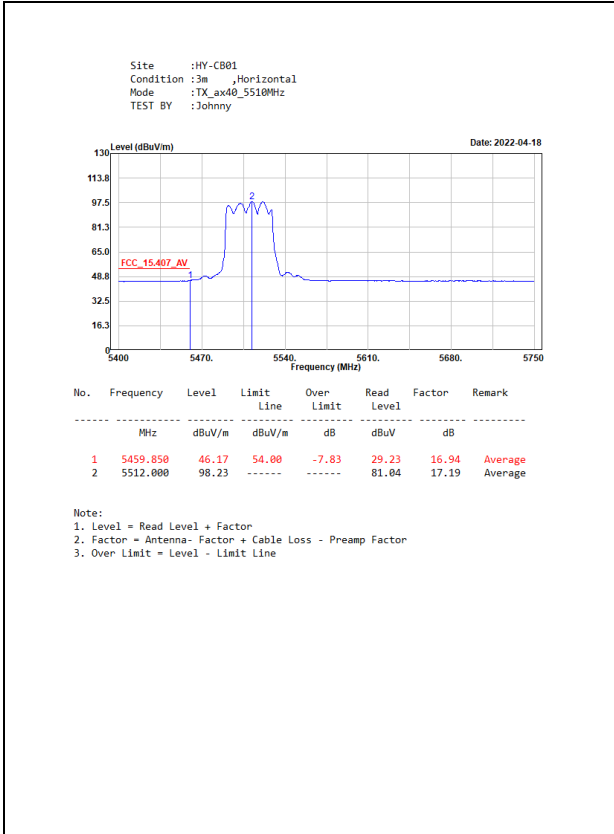


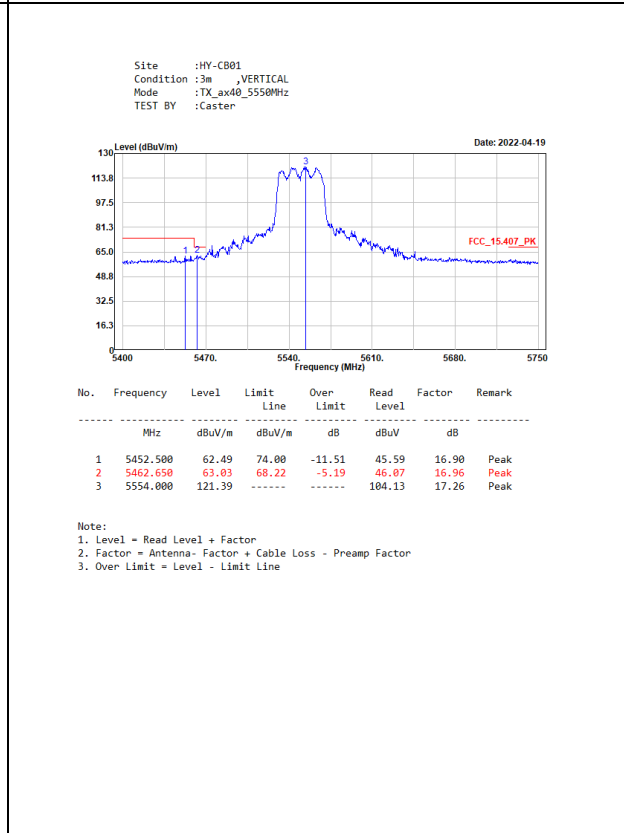
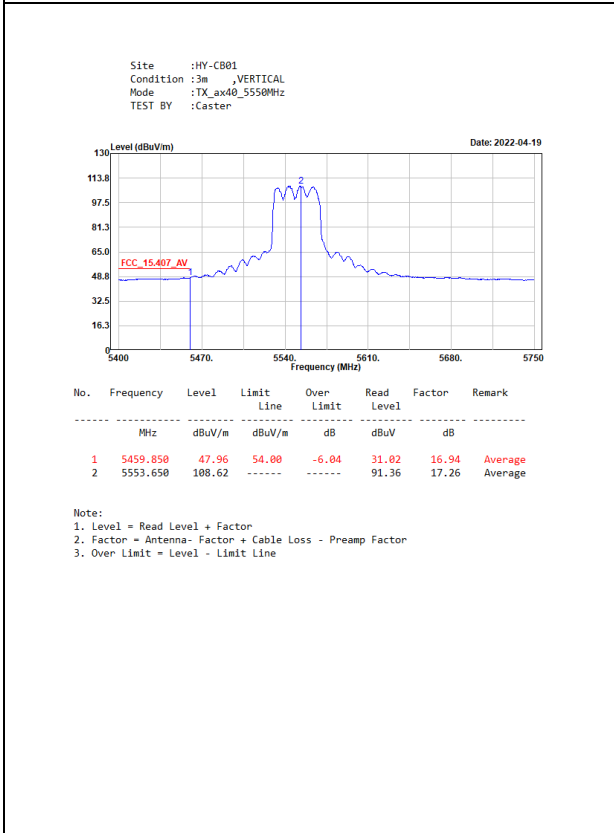
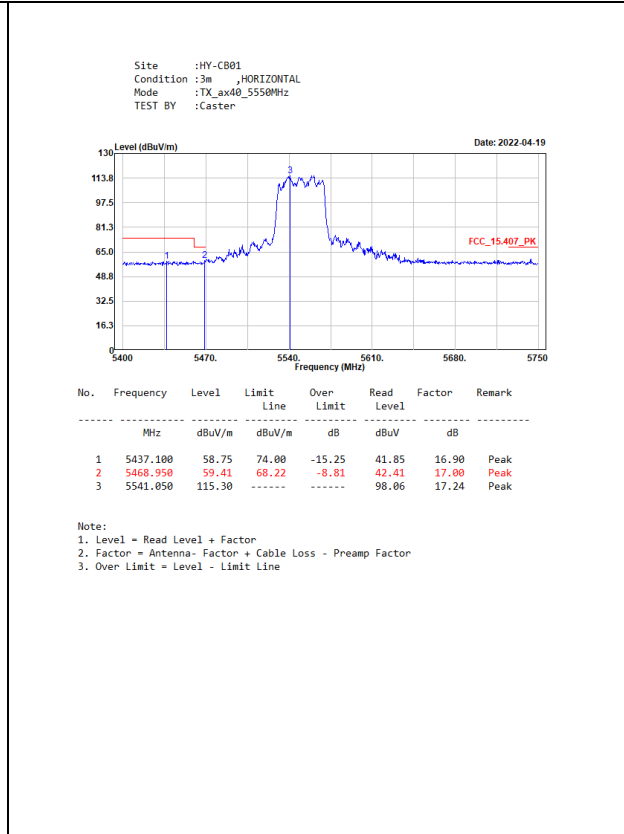
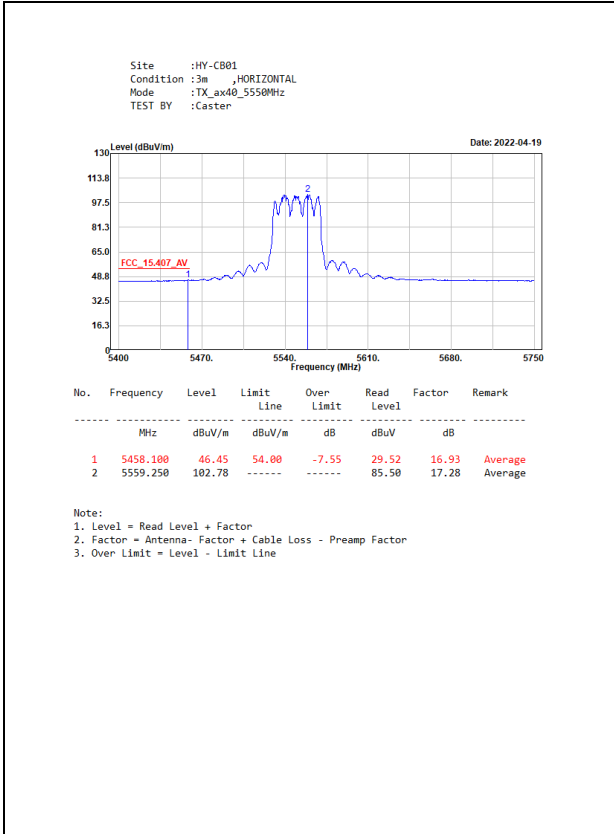


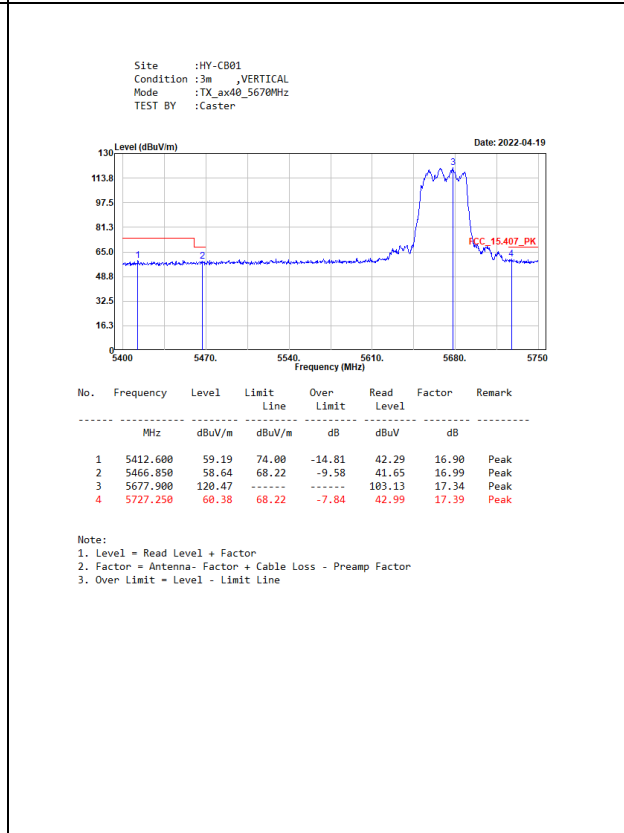
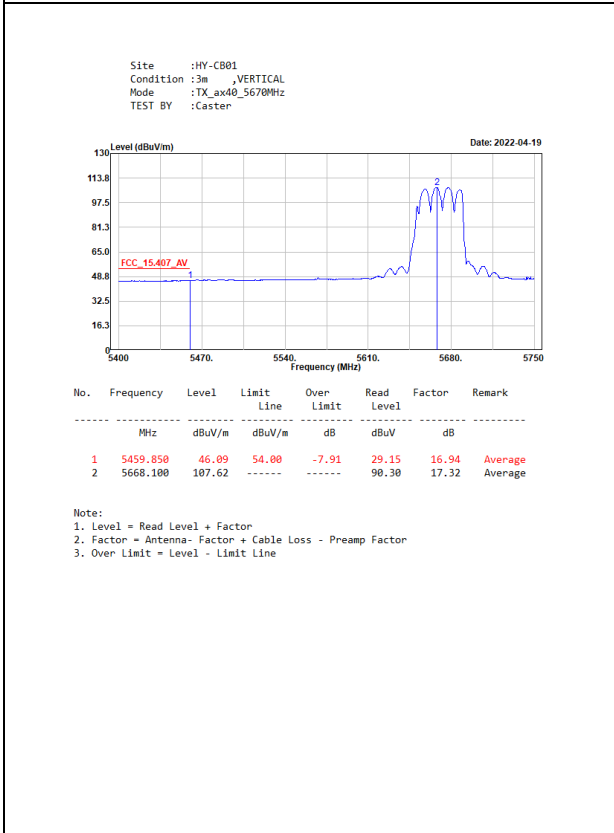
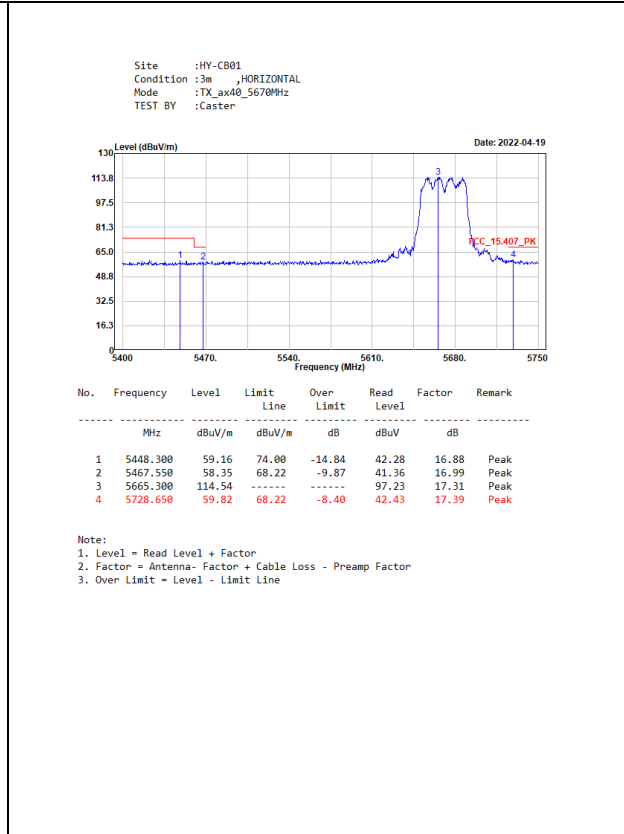
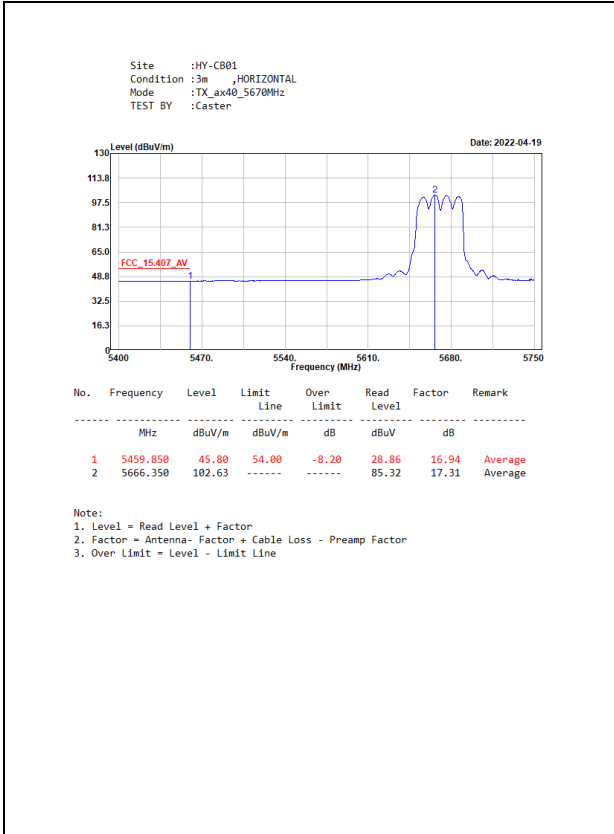


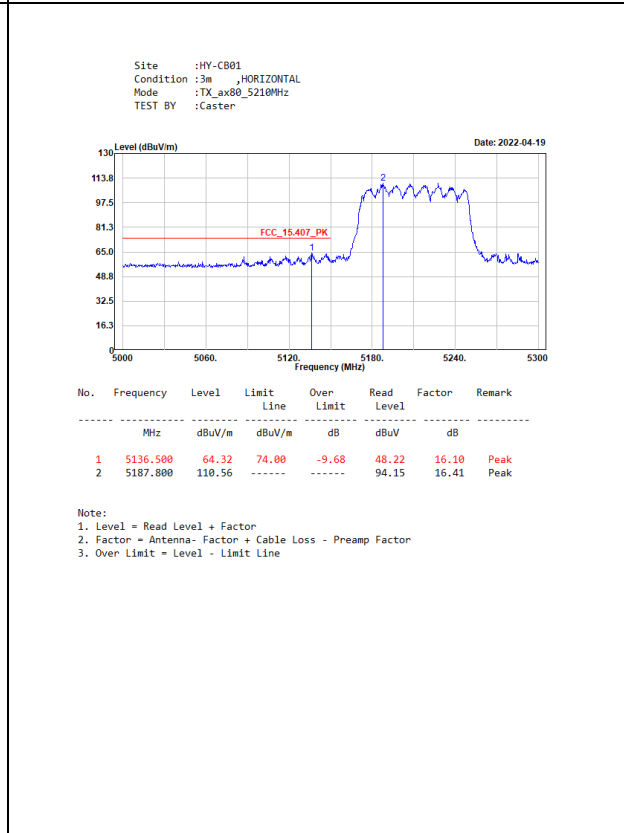
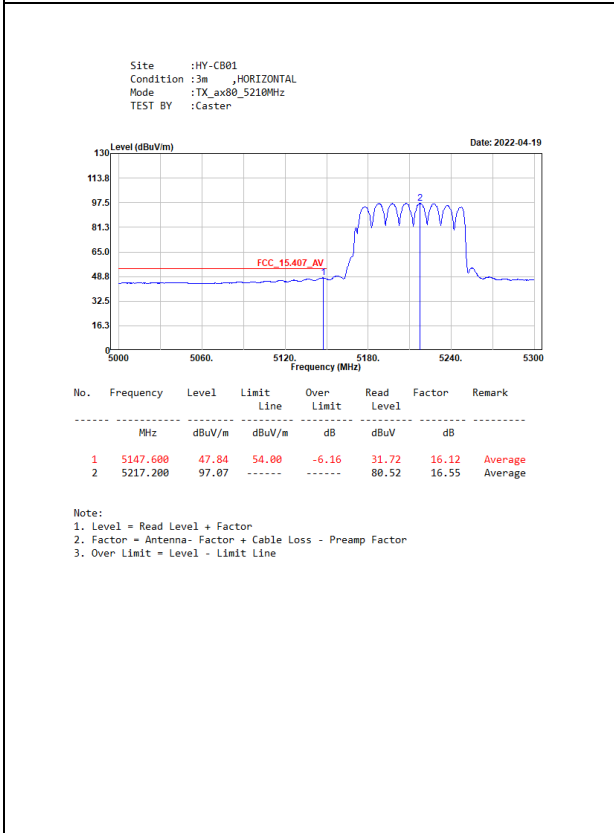
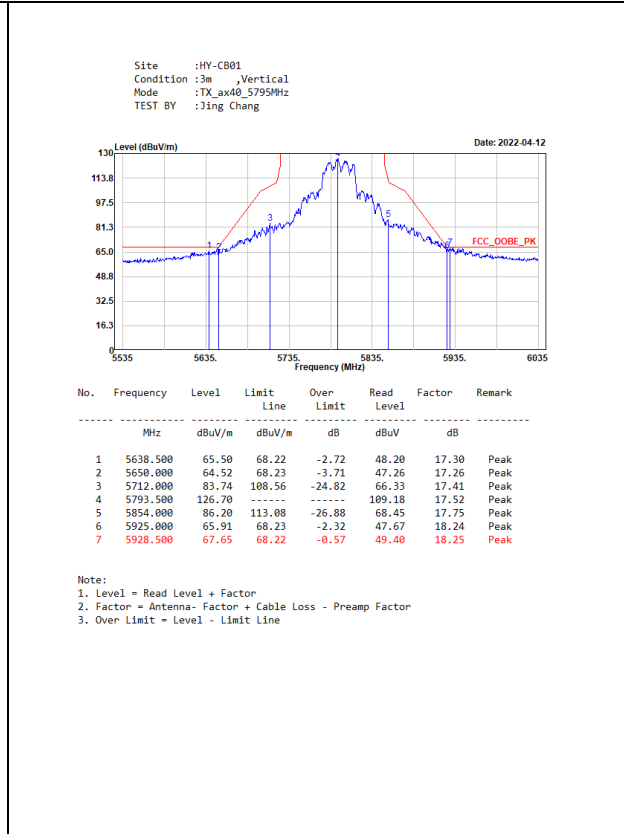
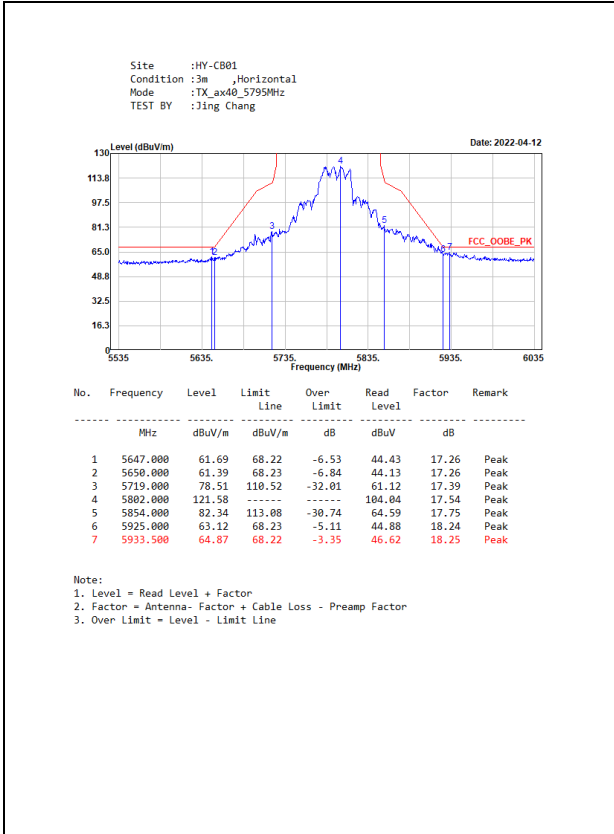


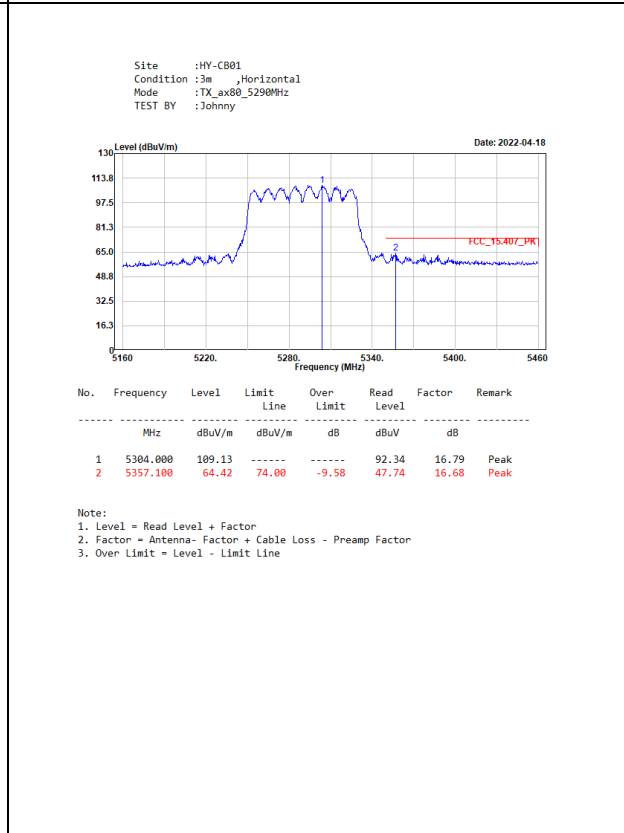
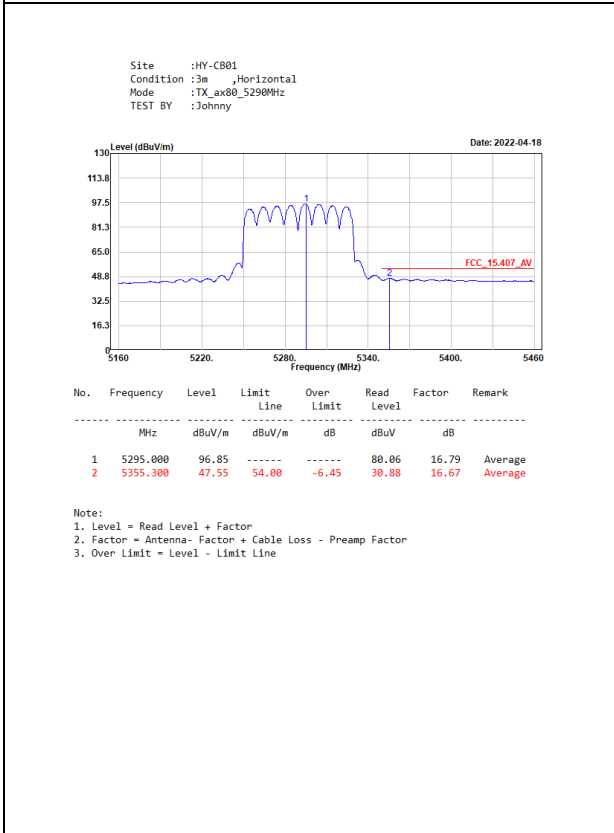
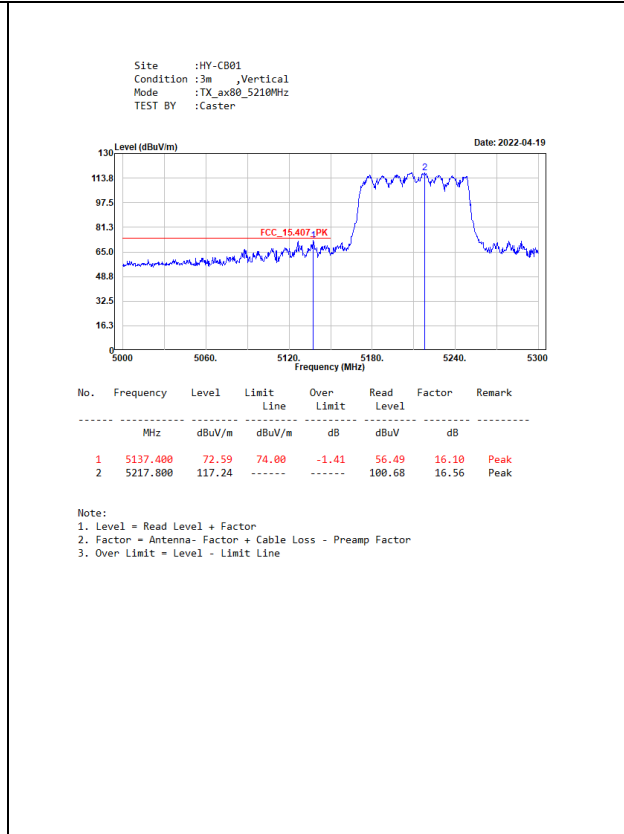
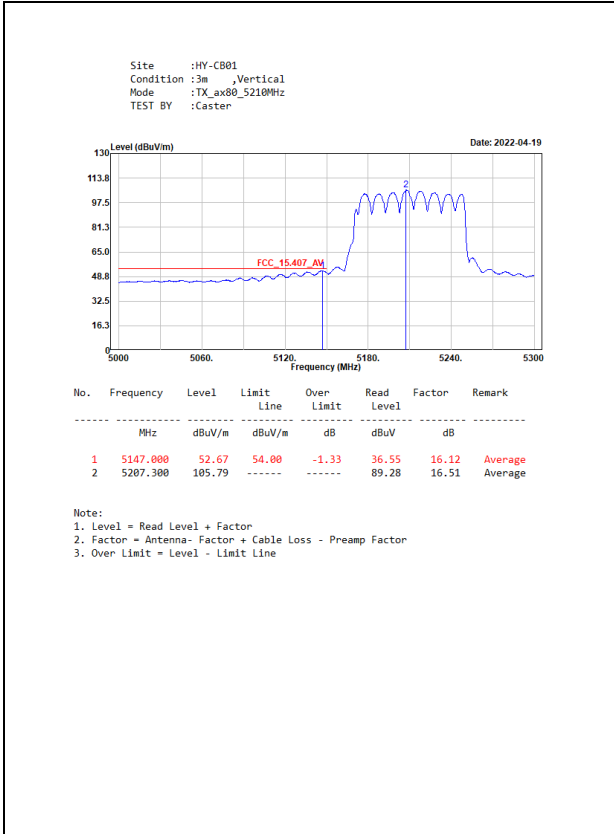


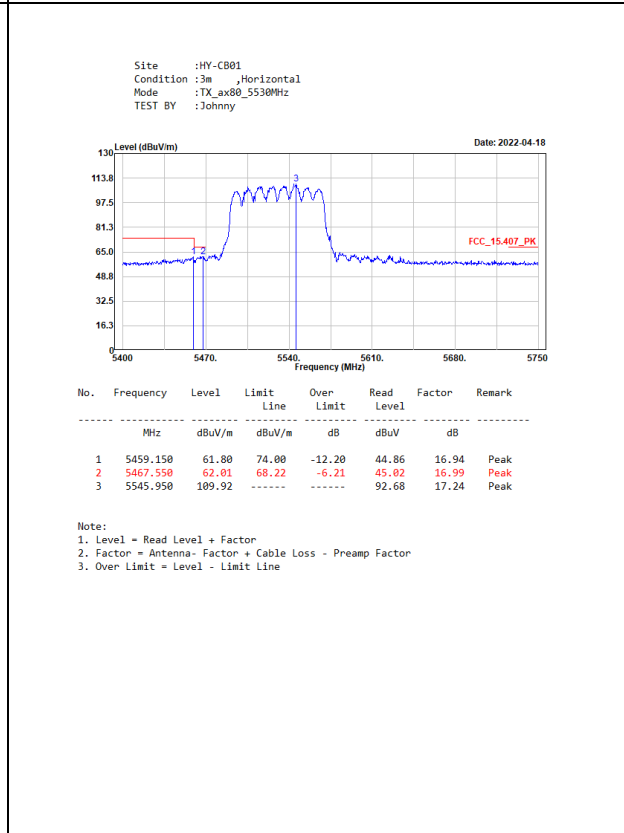
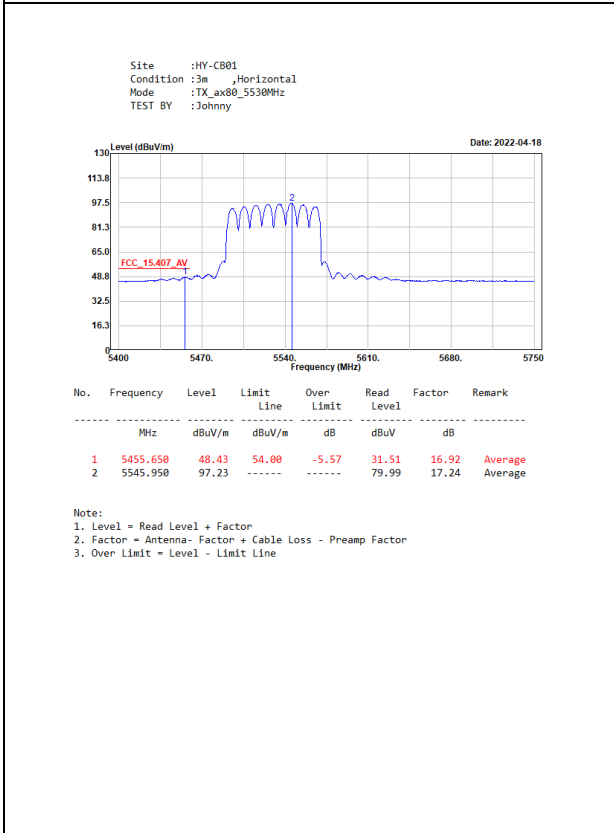
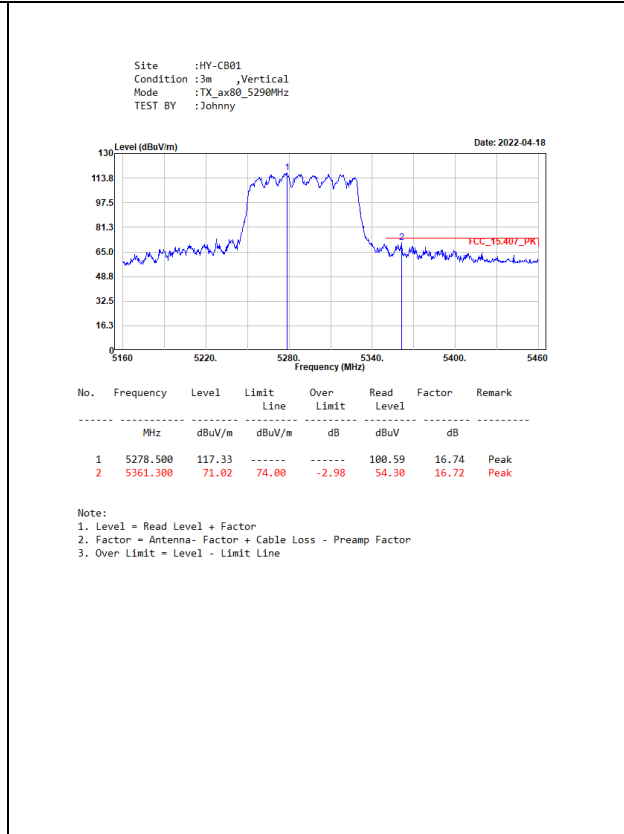
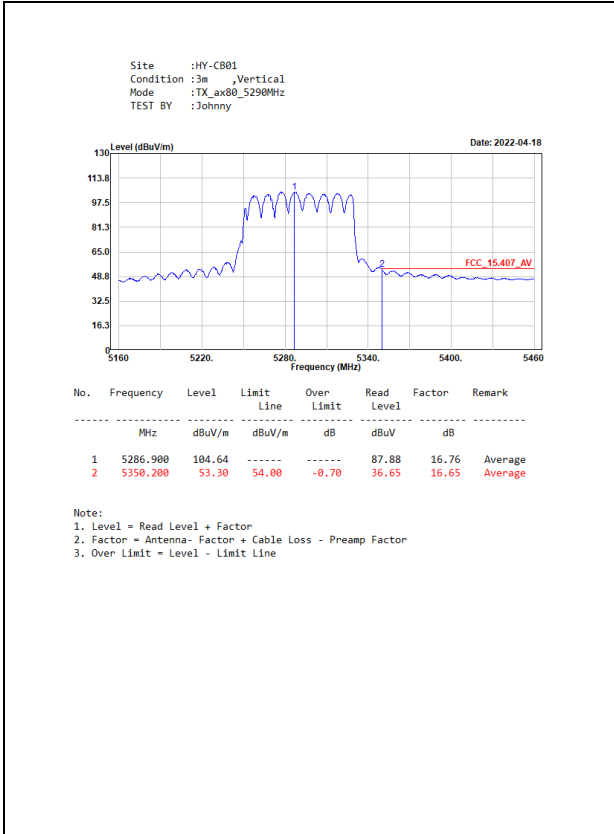


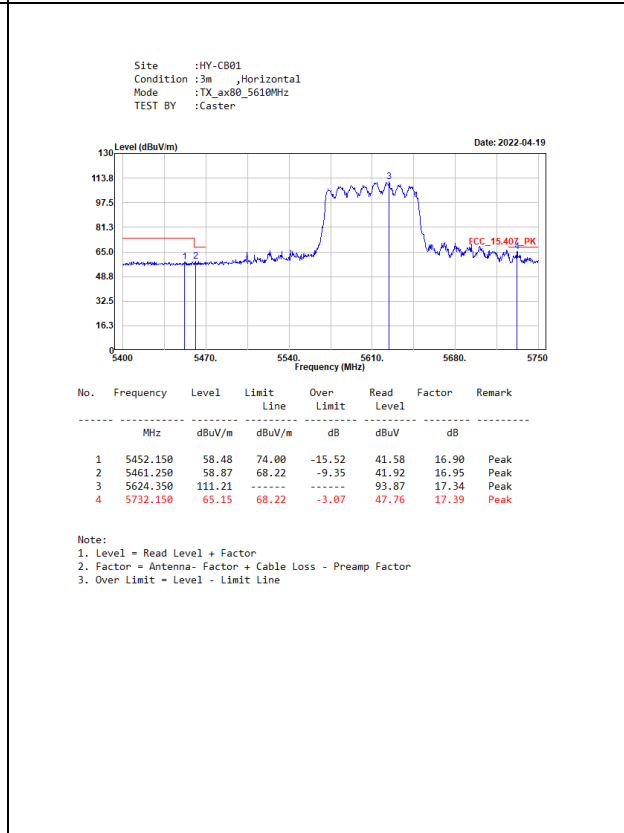
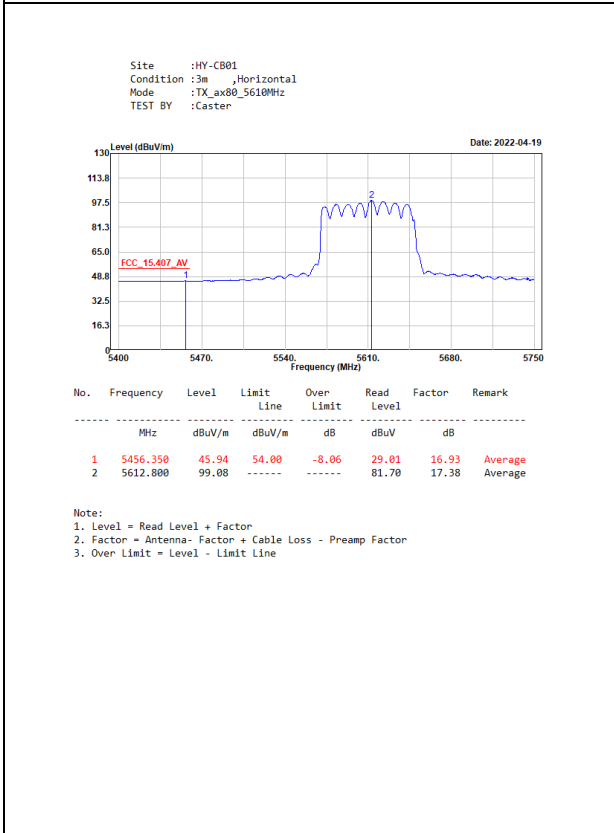
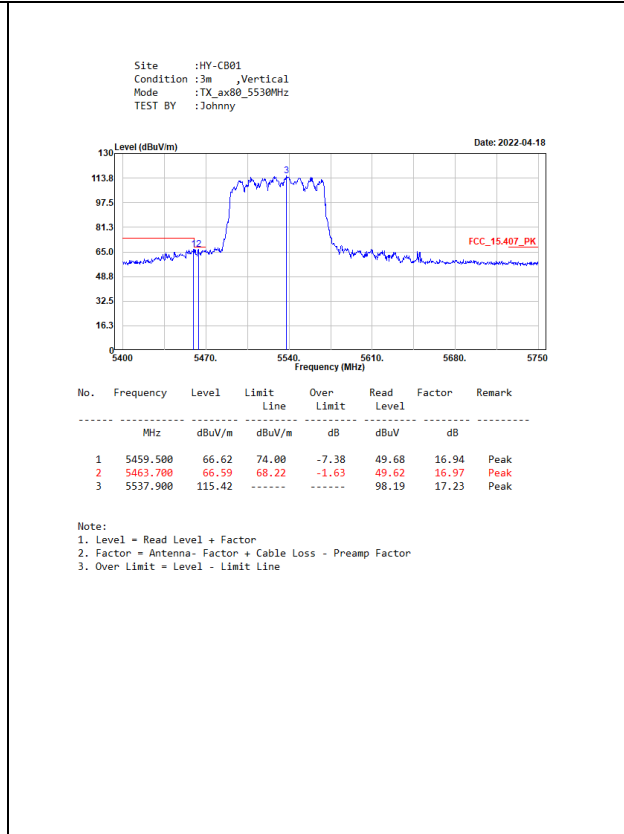
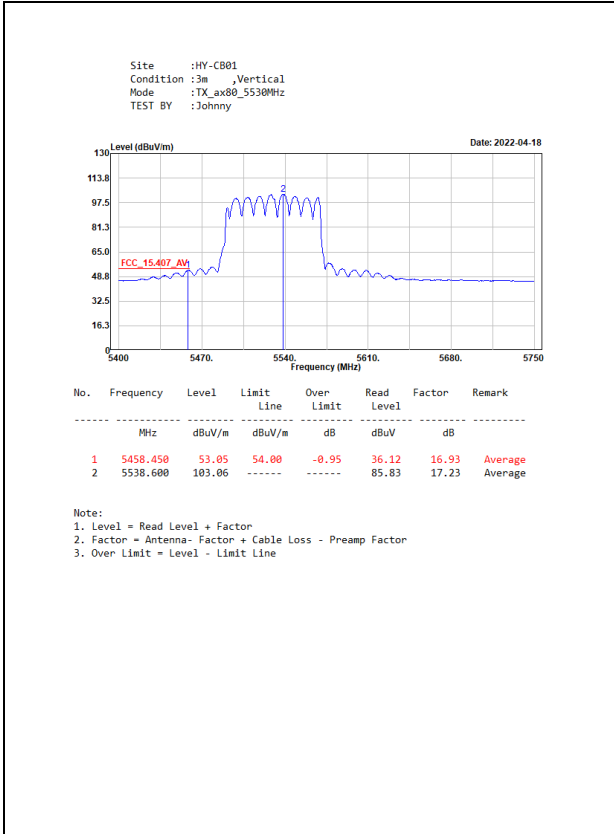


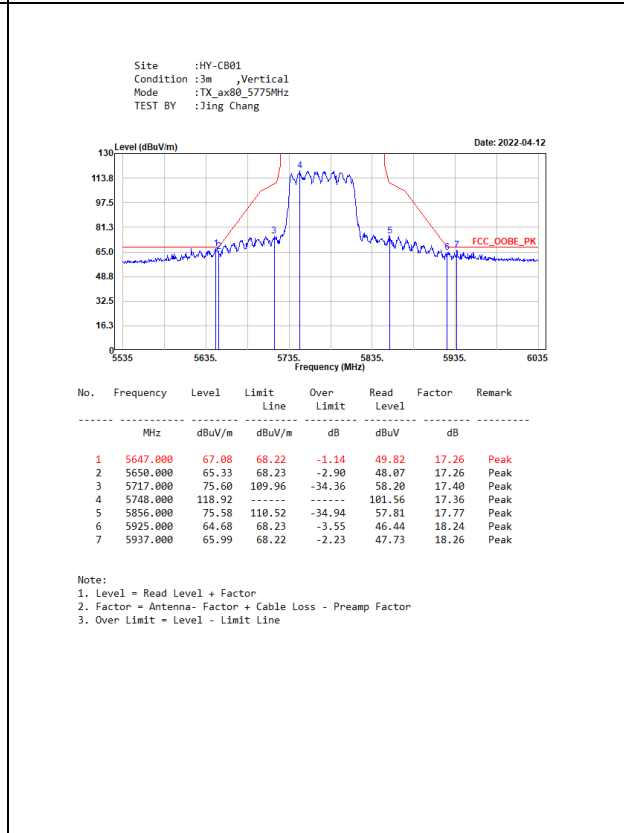
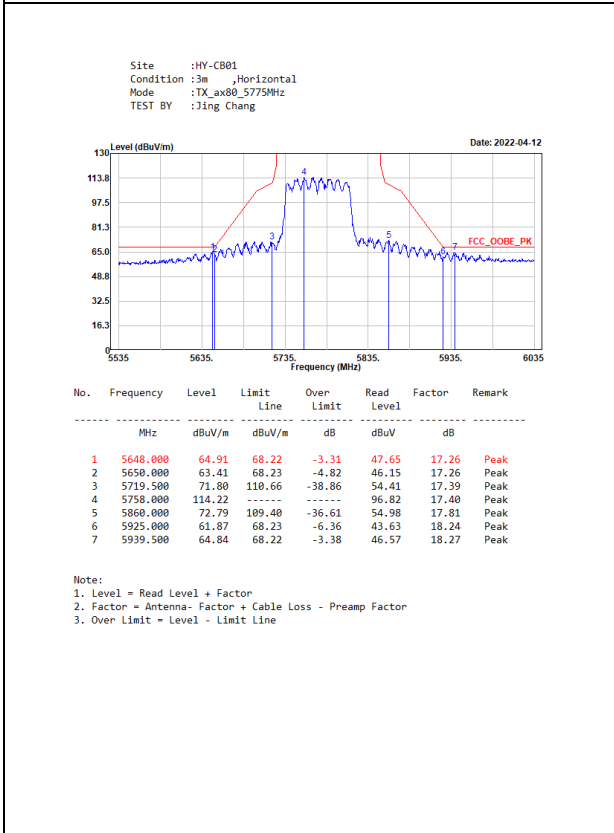
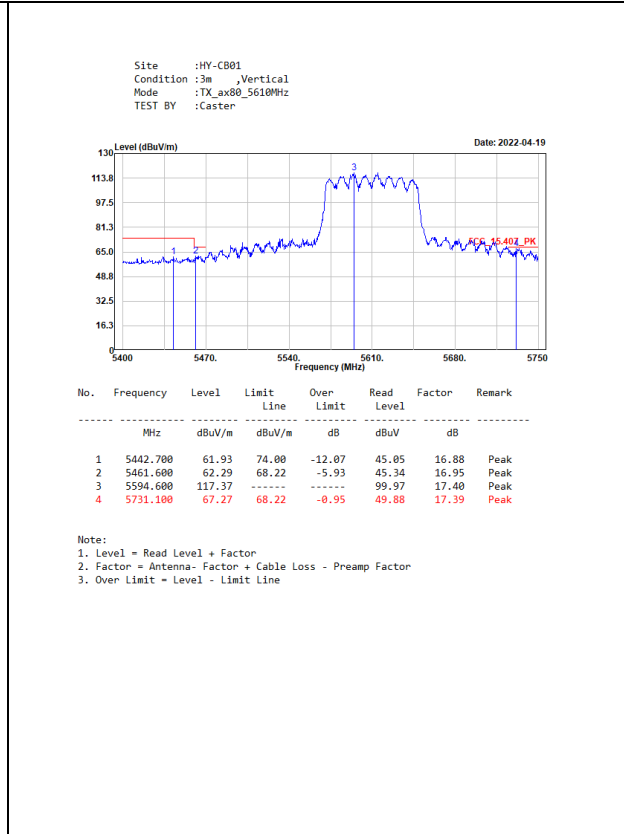
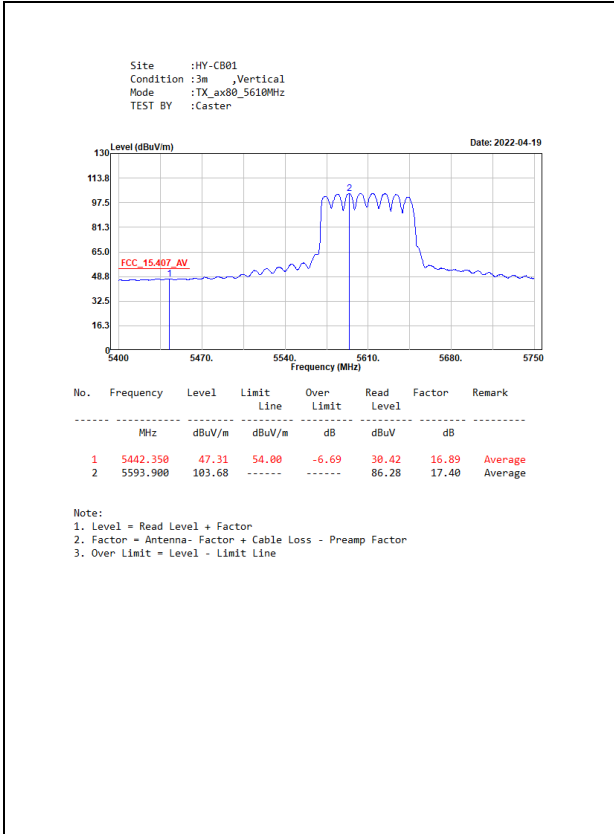








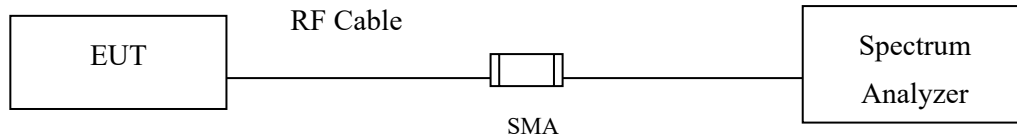






## 7. Occupied Bandwidth

### 7.1. Test Setup



### 7.2. Limits

For the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

### 7.3. Test Procedure

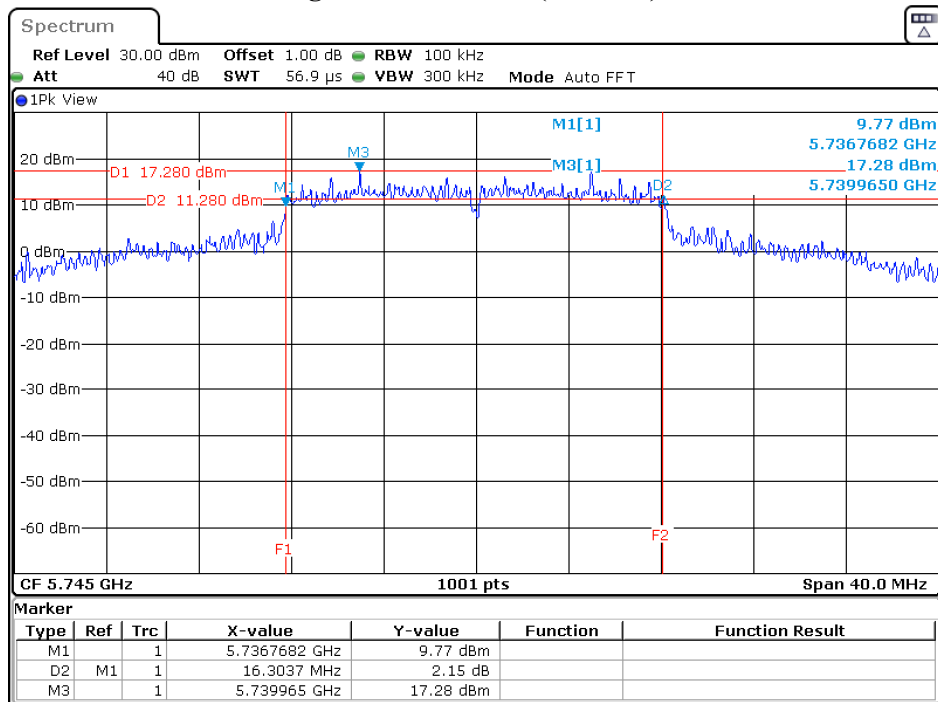
The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

### 7.4. Test Result of Occupied Bandwidth

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Occupied Bandwidth Data  
 Test Mode : Mode 1: Transmit (802.11a-CDD)  
 Test Date : 2022/04/19

Channel No.	Chain	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	A	5745	16304	>500	Pass
157	A	5785	16304	>500	Pass
165	A	5825	16304	>500	Pass
149	B	5745	16304	>500	Pass
157	B	5785	15704	>500	Pass
165	B	5825	15425	>500	Pass

Figure Channel 149 (Chain A):

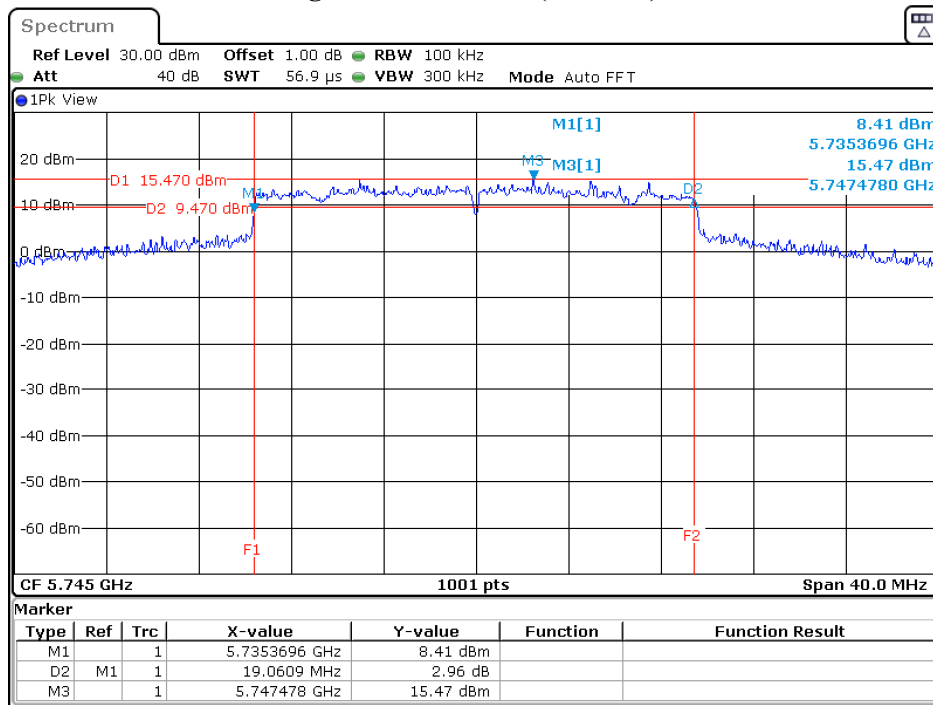


Date: 19.APR.2022 18:53:00

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Occupied Bandwidth Data  
 Test Mode : Mode 2: Transmit (802.11ax-20BW-CDD)  
 Test Date : 2022/04/20

Channel No.	Chain	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	A	5745	19061	>500	Pass
157	A	5785	18901	>500	Pass
165	A	5825	16583	>500	Pass
149	B	5745	17143	>500	Pass
157	B	5785	18981	>500	Pass
165	B	5825	16703	>500	Pass

Figure Channel 149 (Chain A):

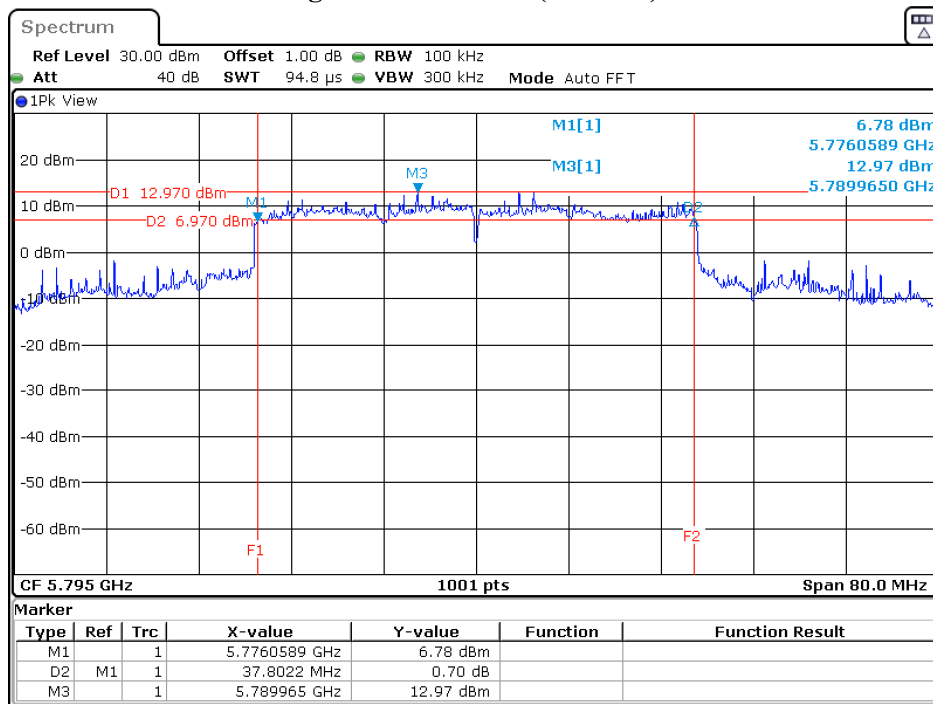


Date: 20.APR.2022 14:37:42

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Occupied Bandwidth Data  
 Test Mode : Mode 3: Transmit (802.11ax-40BW-CDD)  
 Test Date : 2022/04/20

Channel No.	Chain	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	A	5755	36843	>500	Pass
159	A	5795	37802	>500	Pass
151	B	5755	36603	>500	Pass
159	B	5795	36763	>500	Pass

Figure Channel 159 (Chain A):

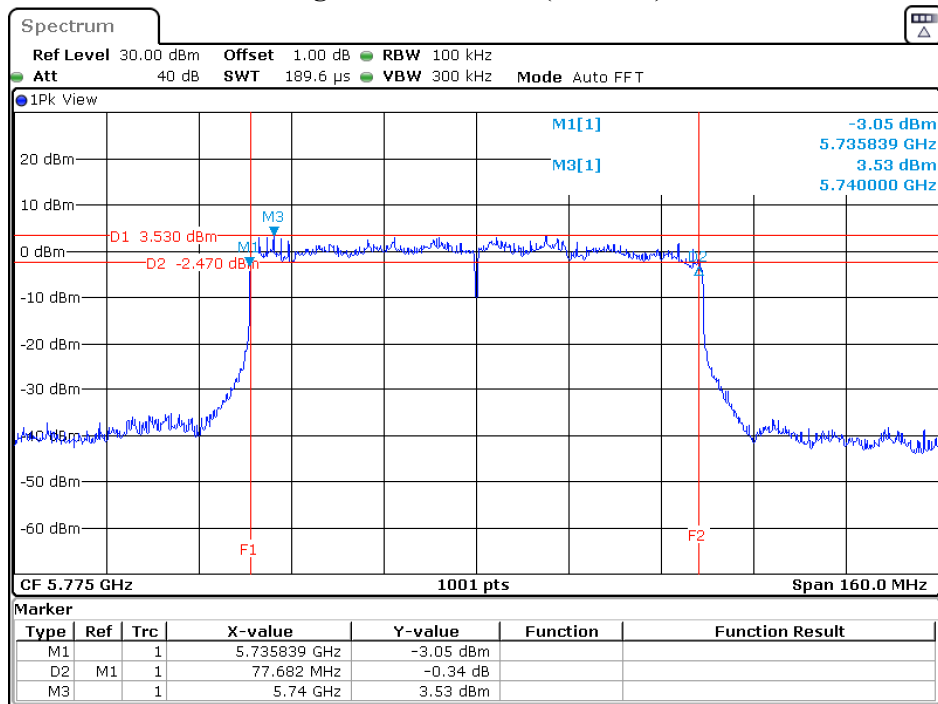


Date: 20.APR.2022 15:59:10

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
 Test Item : Occupied Bandwidth Data  
 Test Mode : Mode 4: Transmit (802.11ax-80BW-CDD)  
 Test Date : 2022/04/20

Channel No.	Chain	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	A	5775	70969	>500	Pass
155	B	5775	77682	>500	Pass

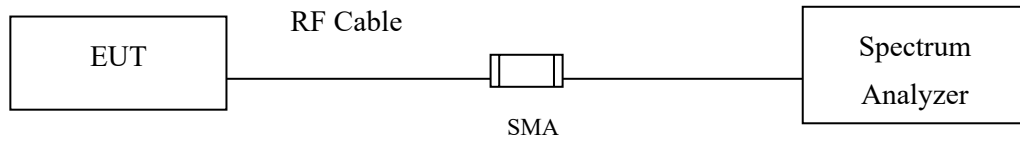
Figure Channel 155 (Chain A)



Date: 20.APR.2022 17:09:13

## 8. Duty Cycle

### 8.1. Test Setup



### 8.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to U-NII test procedure of KDB789033 for compliance to FCC 47CFR 15.407 requirements.

### 8.3. Test Result of Duty Cycle

Product : RadiX AXE6600 WiFi 6E Tri-Band Gaming Router  
Test Item : Duty Cycle  
Test Mode : Transmit-CDD mode

Duty Cycle Formula:

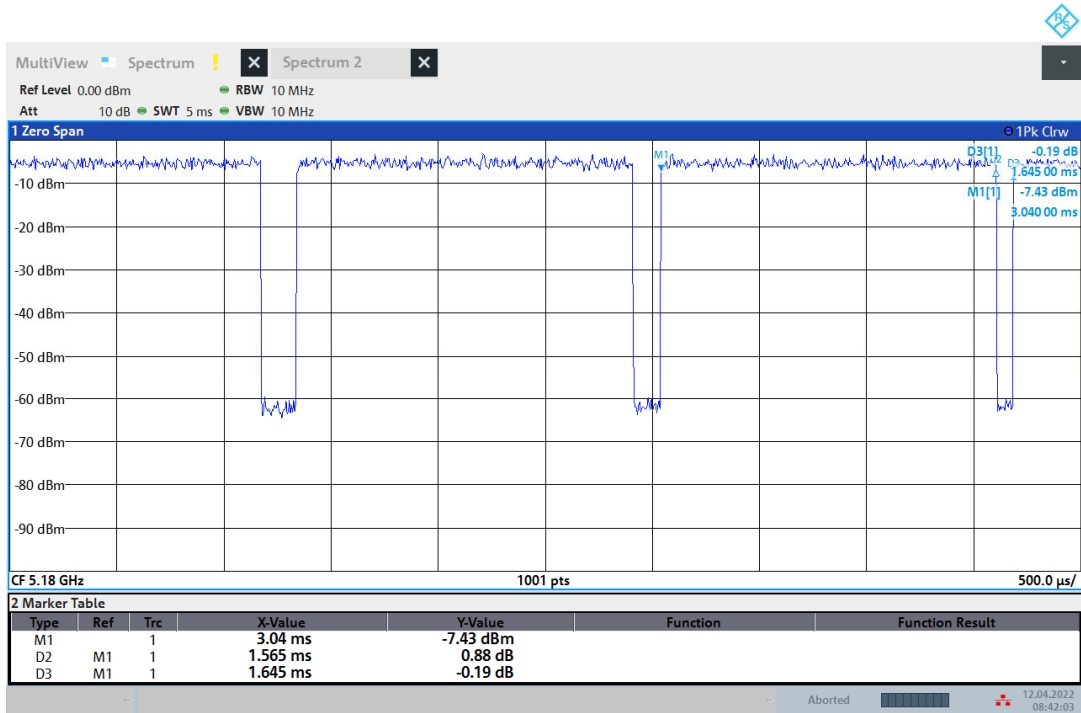
$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$

$\text{Duty Factor} = 10 \text{ Log} (1/\text{Duty Cycle})$

Results:

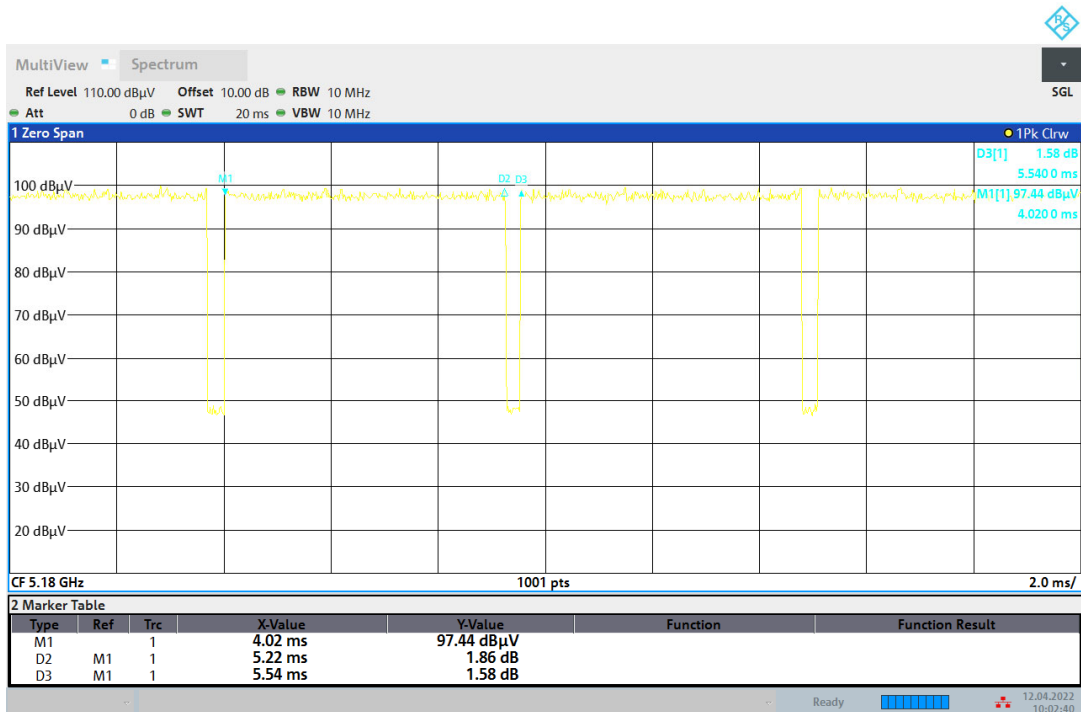
5GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11 a	1.5650	1.6450	95.14	0.22
802.11 ax20	5.2200	5.5400	94.22	0.26
802.11 ax40	5.2000	5.5800	93.19	0.31
802.11 ax80	5.1600	5.5200	93.48	0.29

802.11a



08:42:03 12.04.2022

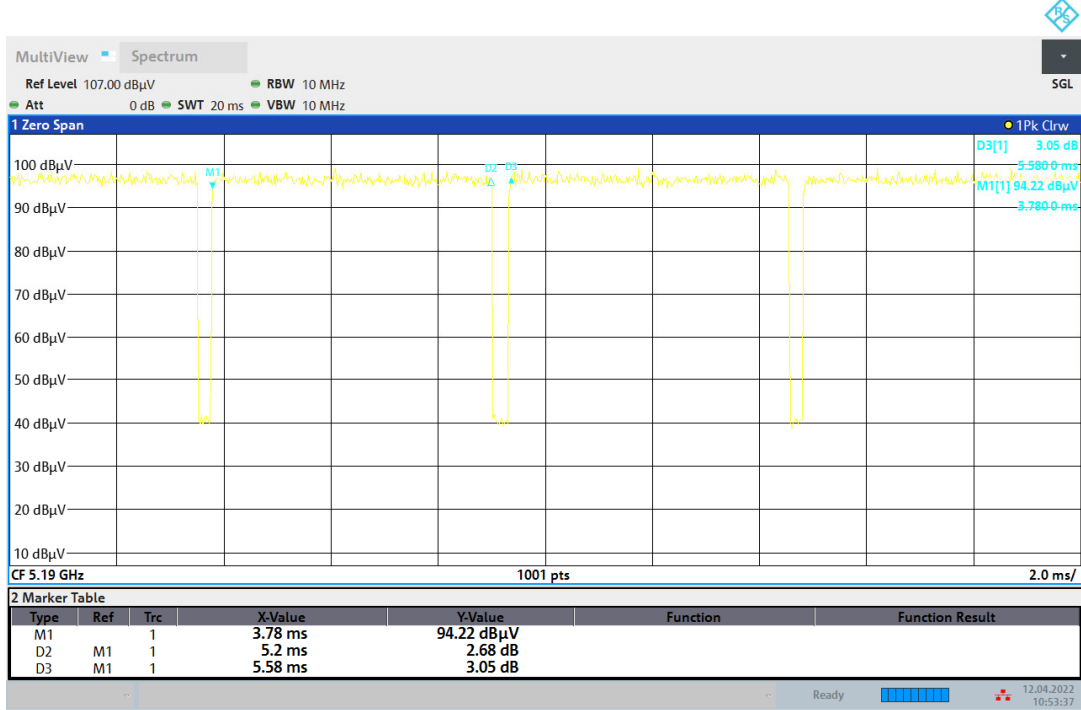
802.11ax20



10:02:41 12.04.2022

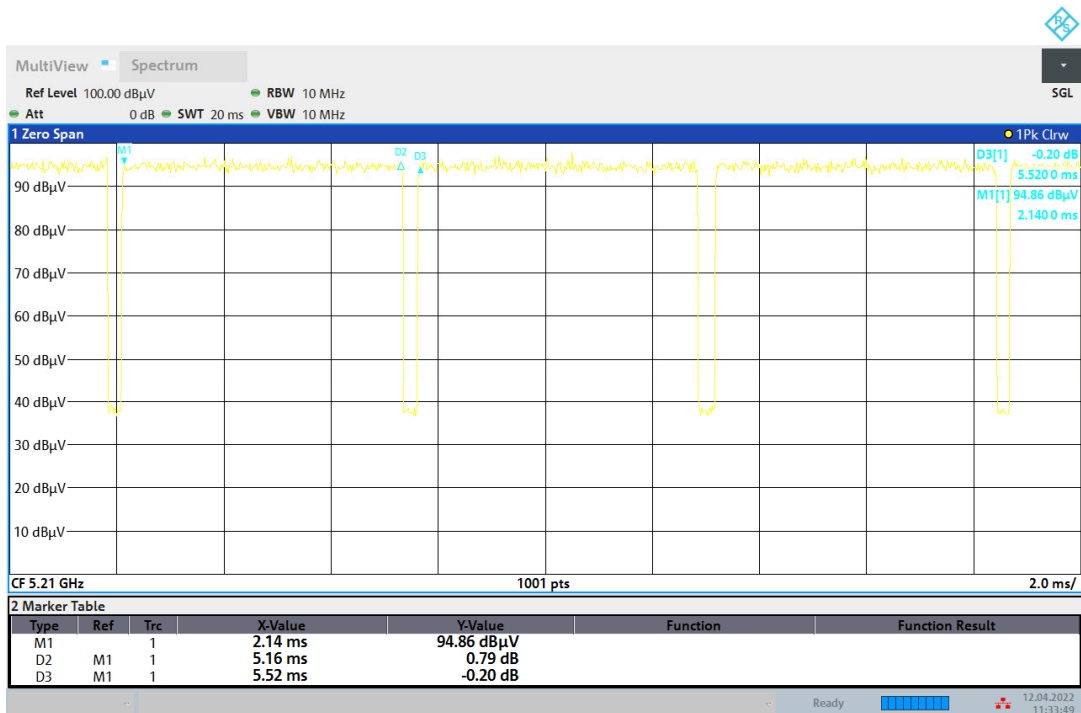


802.11ax40



10:53:37 12.04.2022

802.11ax80



11:33:49 12.04.2022