

FCC Part 15, Subpart E Test Report

FCC ID: 2AR2STAB8507RE

Applicant: MMD Hong Kong Holding Limited

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Kwun Tong, Kowloon, Hong Kong

Manufacturer: MMD Hong Kong Holding Limited

Address: Unit 1006, 10th Floor, C-Bons International Center, 108 Wai Yip Street,
Kwun Tong, Kowloon, Hong Kong

Product(s): Soundbar speaker

Brand(s): PHILIPS or 

Test Model(s): TAB8507

Series Model(s): See section 2.1

Test Date: Apr. 06, 2022 ~ Apr. 25, 2022

Issued Date: May 17, 2022

Issued By: Hwa-Hsing (Dongguan) Testing Co., Ltd.

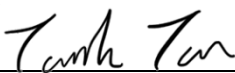
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Test Firm Registration No.: 915896

Standards: FCC Part 15, Subpart E, Section 15.407
ANSI C63.10:2013

The above equipment has been tested by **Hwa-Hsing (Dongguan) Testing Co., Ltd.**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

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Table of Contents

Release Control Record	4
1. Summary of Test Results	5
1.1 Measurement Uncertainty	5
1.2 Modification Record	5
2. General Information	6
2.1 General Description of EUT	6
2.2 Description of Test Channels	7
2.3 Power setting value from test software:	8
2.4 Test Mode Applicability and Tested Channel Detail	9
2.5 Description of Support Units	12
2.6 Configuration of System under Test	12
2.7 Duty Cycle of Test Signal	13
3. Test Types and Results	14
3.1 Radiated Emission and Band-edge Measurement	14
3.1.1 Limits of radiated emission and band-edge measurement	14
3.1.2 Limits of unwanted emission out of the restricted bands	14
3.1.3 Test Instruments	15
3.1.4 Test Procedures	16
3.1.5 Deviation from Test Standard	17
3.1.6 Test Setup	18
3.1.7 EUT Operating Conditions	19
3.1.8 Test Results	20
3.2 Conducted Emission Measurement	78
3.2.1 Limits of Conducted Emission Measurement	78
3.2.2 Test Instruments	78
3.2.3 Test Procedures	78
3.2.4 Deviation from Test Standard	78
3.2.5 Test setup	79
3.2.6 EUT Operating Conditions	79
3.2.7 Test Results	80
3.3 Transmit Power Measurement	82
3.3.1 Limits of Transmit Power Measurement	82
3.3.2 Test Setup	82
3.3.3 Test Instruments	82
3.3.4 Test Procedures	83
3.3.5 Deviation from Test Standard	83
3.3.6 EUT Operating Conditions	83
3.3.7 Test Results	84
3.4 Peak Power Spectral Density Measurement	101
3.4.1 Limits of Peak Power Spectral Density Measurement	101
3.4.2 Test Setup	101
3.4.3 Test Instruments	101
3.4.4 Test Procedure	102
3.4.5 Deviation from Test Standard	102
3.4.6 EUT Operating Condition	102
3.4.7 Test Results	103
3.5 Frequency Stability	111
3.5.1 Limits of Frequency Stability Measurement	111
3.5.2 Test Setup	111
3.5.3 Test Instruments	111
3.5.4 Test Procedure	111
3.5.5 Deviation from Test Standard	111



3.5.6	EUT Operating Conditions.....	112
3.5.7	Test Result.....	112
3.6	6dB Bandwidth Measurement.....	113
3.6.1	Limits of Conducted Out of Band Emission Measurement.....	113
3.6.2	Test Setup	113
3.6.3	Test Instruments	113
3.6.4	Test Procedure	113
3.6.5	Deviation from Test Standard.....	113
3.6.6	EUT Operating Condition	113
3.6.7	Test results	114
4.	Pictures of Test Arrangements	117
5.	Test Instruments.....	118
	Appendix – Information on The Testing Laboratories.....	119



Release Control Record

Issue No.	Description	Date Issued
220218KH01-1-RF-US-01	Original Release	May 17, 2022



1. Summary of Test Results

FCC part 15, subpart e (section 15.407 under new rule) ANSI C63.10:2013 789033 D02 General UNII Test Procedures New Rules v01r03 KDB 662911 D01 v02r01			
Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Meet the requirement of limit.

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC).
The test report has been issued separately.

1.1 Measurement Uncertainty

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

The listed uncertainties are the worst cases uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.66 dB
Radiated Emissions up to 1 GHz	9KHz ~ 30MHz	2.16 dB
	30MHz ~ 1000MHz	3.47 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	4.84 dB
	18GHz ~ 40GHz	4.67 dB

1.2 Modification Record

There were no modifications required for compliance.



2. General Information

2.1 General Description of EUT

Product(s)	Soundbar speaker
Test Model(s)	TAB8507
Sample No.	HS220311-02-07; HS220311-02-09
Series Model(s)	TAB8507B, TAB8507RE, TAB8507BRE, TAB8507/10, TAB8507B/10, TAB8507RE/10, TAB8507BRE/10, TAB8507/37, TAB8507B/37, TAB8507RE/37, TAB8507BRE/37, TAB8507/98, TAB8507B/98, TAB8507RE/98, TAB8507BRE/98, TAB8507xx/yy, TAB8507Bxx/yy (x=A-Z or blank, yy=00-99 or blank for country code)
Status of EUT	Engineering Prototype
Power Supply Rating	100-240V~, 50/60Hz, 35W
Modulation Technology	OFDM
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps 802.11ac: up to 867Mbps
Operating Frequency	5180~5240MHz, 5260~5320MHz 5500~5700MHz, 5745~5825MHz
Number of Channel	See the section 2.2
Maximum Output Power	15.07dBm for 5150 ~ 5250MHz (Maximum AVG Power) 15.22dBm for 5250 ~ 5350MHz (Maximum AVG Power) 15.86dBm for 5470 ~ 5725MHz (Maximum AVG Power) 14.41dBm for 5725 ~ 5850MHz (Maximum AVG Power)
Antenna Type	FPC Antenna
Max. Antenna Gain	1.88dBi for 5150 ~ 5250MHz (Peak) 2.28dBi for 5250 ~ 5350MHz (Peak) 2.43dBi for 5470 ~ 5725MHz (Peak) 2.19dBi for 5725 ~ 5850MHz (Peak)
Antenna Connector	I-PEX
Accessory Device	N/A
Data Cable Supplied	AC Line: 150cm

Note:

1. Please refer to the EUT photo document (220218KH01-1-01&-02) for detailed product photo.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.
3. Model difference: These models are only different for model name for trade purpose.
4. The EUT incorporates SISO function, provides 1 completed Transmit and 1 Receive Chain.

Support mode	Transmit and receive mode	Transmit and receive chain
802.11a	SISO	1TX/1RX
802.11n HT20	SISO	1TX/1RX
802.11n HT40	SISO	1TX/1RX
802.11ac VHT20	SISO	1TX/1RX
802.11ac VHT40	SISO	1TX/1RX
802.11ac VHT80	SISO	1TX/1RX



2.2 Description of Test Channels

For 5150 ~ 5350MHz

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

Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz
44	5220 MHz	48	5240 MHz
52	5260 MHz	56	5280 MHz
60	5300 MHz	64	5320 MHz

4 channels are provided for 802.11ac 40MHz, 802.11n (40MHz):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz
54	5270 MHz	62	5310 MHz

2 channels are provided for 802.11ac (80MHz):

Channel	Frequency	Channel	Frequency
42	5210MHz	58	5290MHz

For 5470 ~ 5725MHz

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	104	5520 MHz
108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz
124	5620 MHz	128	5640 MHz
132	5660 MHz	136	5680 MHz
140	5700 MHz	--	--

4 channels are provided for 802.11a c 40MHz, 802.11n (40MHz):

Channel	Frequency	Channel	Frequency
102	5510 MHz	110	5550 MHz
118	5590 MHz	134	5670 MHz

2 channels are provided for 802.11ac (80MHz):

Channel	Frequency	Channel	Frequency
106	5530MHz	122	5610MHz

For 5725 ~ 5850MHz

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

Channel	Frequency	Channel	Frequency
149	5745MHz	153	5765MHz
157	5785MHz	161	5805MHz
165	5825MHz	--	--

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (80MHz):

Channel	Frequency	Channel	Frequency
155	5775MHz	--	--



2.3 Power setting value from test software:

Test mode	Antenna Chains TX/RX	Freq. Band (MHz)	Power setting value
802.11a	SISO	5150-5350	Default
802.11n (20MHz)	SISO		Default
802.11n (40MHz)	SISO		Default
802.11ac 20MHz	SISO		Default
802.11ac 40MHz	SISO		Default
802.11ac 80MHz	SISO		Default
802.11a	SISO	5470-5725	Default
802.11n (20MHz)	SISO		Default
802.11n (40MHz)	SISO		Default
802.11ac 20MHz	SISO		Default
802.11ac 40MHz	SISO		Default
802.11ac 80MHz	SISO		Default
802.11a	SISO	5725-5850	Default
802.11n (20MHz)	SISO		Default
802.11n (40MHz)	SISO		Default
802.11ac 20MHz	SISO		Default
802.11ac 40MHz	SISO		Default
802.11ac 80MHz	SISO		Default

**2.4 Test Mode Applicability and Tested Channel Detail**

Applicable test items	X-Axis	Y-Axis	Z-Axis	Voltage Supply
AC Power Conducted Emission	N/A	N/A	N/A	AC120V, 60Hz
Radiated Emissions	√	√	√	
Band Edge Measurement	N/A	N/A	N/A	
Max Average Transmit Power	N/A	N/A	N/A	
Peak Power Spectral Density	N/A	N/A	N/A	
Frequency Stability	N/A	N/A	N/A	
1. The EUT had been pre-tested on the positioned of each 3 Axis. 2. “N/A” means no effect.				

Applicable test items	Antenna Transmit and receive mode	X-Axis	Y-Axis	Z-Axis
Radiated Emissions	SISO	√	√	*√
1. * means the worst-case axis.				

Antenna Transmit and receive mode	Test mode	Centre Frequency	Worst-Axis
SISO mode	802.11n HT20	5240MHz	Z
	802.11ac VHT20	5240MHz	Z
	802.11n HT40	5230MHz	Z
	802.11ac VHT40	5230MHz	Z

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

Power Line Conducted Emission Test:

EUT Configure mode	Worst Position	Freq. Band (MHz)	Antenna Transmitter technique	Tested channel	Modulation technology	Modulation type	Data rate (Mbps)
802.11a	-	5150-5250 5470-5725 5725-5850	SISO	100	OFDM	BPSK	6.0

Radiated Emission Test (Below 1GHz):

EUT Configure mode	Worst Position	Freq. Band (MHz)	Antenna Transmitter technique	Worst case channel	Modulation technology	Modulation type	Data rate (Mbps)
802.11a	Z-plane	5150-5250 5470-5725 5725-5850	SISO	100	OFDM	BPSK	6.0



Radiated Emission Test (Above 1GHz):

EUT configure mode	Worst position	Freq. Band (MHz)	Antenna Transmitter technique	Tested channel	Modulation technology	Modulation type	Data rate (Mbps)
802.11a	Z-plane	5150-5250	SISO	36, 40, 48	OFDM	BPSK	6.0
802.11n (20MHz)	Z-plane		SISO	36, 40, 48	OFDM	BPSK	6.5
802.11n (40MHz)	Z-plane		SISO	38, 46	OFDM	BPSK	13.5
802.11ac 80MHz	Z-plane		SISO	42	OFDM	BPSK	V0
802.11a	Z-plane	5250-5350	SISO	52, 60, 64	OFDM	BPSK	6.0
802.11n (20MHz)	Z-plane		SISO	52, 60, 64	OFDM	BPSK	MCS0
802.11n (40MHz)	Z-plane		SISO	54, 62	OFDM	BPSK	MCS0
802.11ac 80MHz	Z-plane		SISO	58	OFDM	BPSK	V0
802.11a	Z-plane	5470-5725	SISO	100, 112, 140	OFDM	BPSK	6.0
802.11n (20MHz)	Z-plane		SISO	100, 112, 140	OFDM	BPSK	MCS0
802.11n (40MHz)	Z-plane		SISO	102, 110, 134	OFDM	BPSK	MCS0
802.11ac 80MHz	Z-plane		SISO	106	OFDM	BPSK	V0
802.11a	Z-plane	5725-5850	SISO	149, 157, 165	OFDM	BPSK	6.0
802.11n (20MHz)	Z-plane		SISO	149, 157, 165	OFDM	BPSK	MCS0
802.11n (40MHz)	Z-plane		SISO	151, 159	OFDM	BPSK	MCS0
802.11ac 80MHz	Z-plane		SISO	155	OFDM	BPSK	V0



Antenna Port Conducted Measurement:

*This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

EUT configure mode	Antenna Transmitter technique	Freq. Band (MHz)	Tested channel	Modulation technology	Modulation type	Data rate (Mbps)
802.11a	SISO	5150-5250	36, 40, 48	OFDM	BPSK	6.0
802.11n (20MHz)	SISO		36, 40, 48	OFDM	BPSK	6.5
802.11n (40MHz)	SISO		38, 46	OFDM	BPSK	13.5
802.11ac 80MHz	SISO		42	OFDM	BPSK	V0
802.11a	SISO	5250-5350	52, 60, 64	OFDM	BPSK	6.0
802.11n (20MHz)	SISO		52, 60, 64	OFDM	BPSK	MCS0
802.11n (40MHz)	SISO		54, 62	OFDM	BPSK	MCS0
802.11ac 80MHz	SISO		58	OFDM	BPSK	V0
802.11a	SISO	5470-5725	100, 112, 140	OFDM	BPSK	6.0
802.11n (20MHz)	SISO		100, 112, 140	OFDM	BPSK	MCS0
802.11n (40MHz)	SISO		102, 110, 134	OFDM	BPSK	MCS0
802.11ac 80MHz	SISO		106	OFDM	BPSK	V0
802.11a	SISO	5725-5850	149, 157, 165	OFDM	BPSK	6.0
802.11n (20MHz)	SISO		149, 157, 165	OFDM	BPSK	MCS0
802.11n (40MHz)	SISO		151, 159	OFDM	BPSK	MCS0
802.11ac 80MHz	SISO		155	OFDM	BPSK	V0

Test Condition:

Applicable test items	Environmental Conditions	Tested by
AC Power Conducted Emission	25deg. C, 65%RH	Jim Xu
Radiated Emissions	25deg. C, 65%RH	Jim Xu
Antenna Port Conducted Measurement	25deg. C, 65%RH	Dragon long



2.5 Description of Support Units

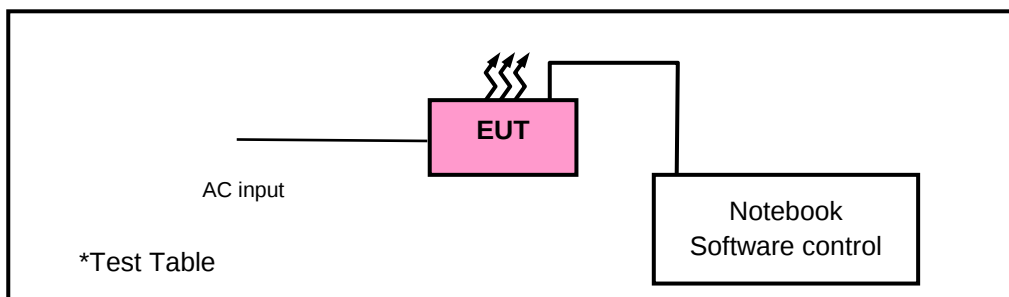
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Notebook	Lenovo	ThinkPad X280	SL10P97665	N/A

Insert Cable Connections to/from EUT provided by test team.

No.	Signal Cable Description Of The Above Support Units
1.	USB serial cable Un-shielding 1.0m

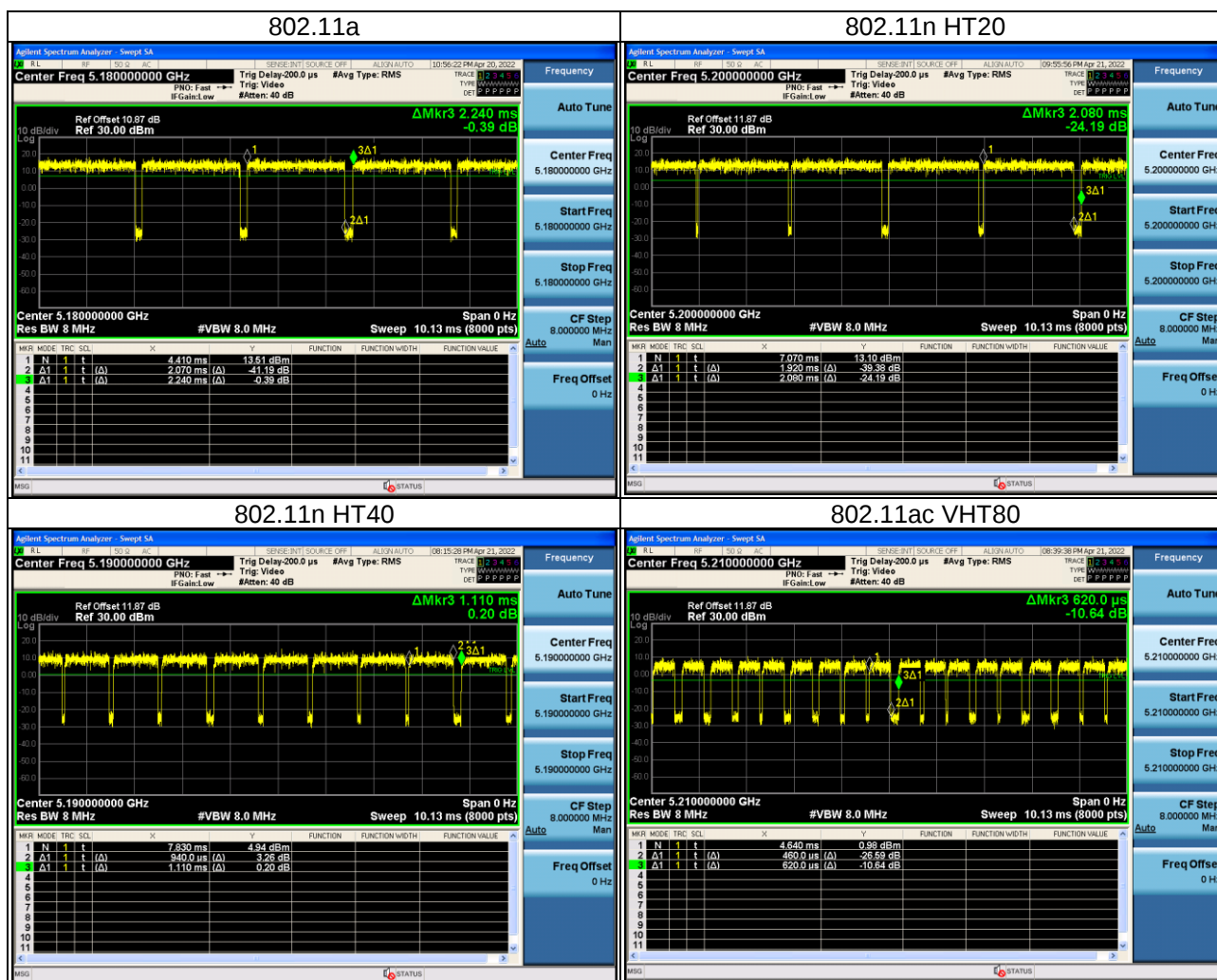
2.6 Configuration of System under Test





2.7 Duty Cycle of Test Signal

Test mode	Duty cycle (%)	Duty cycle factor= $10 \cdot \log(1/\text{duty cycle})$ (dB)
802.11a	92.41%	0.34
802.11n HT20	92.31%	0.35
802.11n HT40	84.82%	0.71
802.11ac VHT80	74.19%	1.30





3. Test Types and Results

3.1 Radiated Emission and Band-edge Measurement

3.1.1 Limits of radiated emission and band-edge measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

* DTS emissions in non-restricted frequency bands Subclause 11.11 of ANSI C63.10 is applicable.

* DTS emissions in restricted frequency bands Subclause 11.12 of ANSI C63.10 is applicable

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.1.2 Limits of unwanted emission out of the restricted bands

Applicable to	Limit	
789033 D02 General UNII Test Procedures New Rules v01r03	Field strength at 3m	
	PK: 74 (dBuV/m)	AV: 54 (dBuV/m)
Applicable to	EIRP Limit	Equivalent field strength at 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBuV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	Note	Note

*For transmitters operating in the 5.725-5.85 GHz band:

Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the alternative limit.

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

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



3.1.3 Test Instruments

Radiated emission below 30MHz:

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	100962	2023-01-13
3m Semi-anechoic Chamber	MAORUI	9m*6m*6m	NSEMC003	2023-04-15*
Test software	FARAD	FARAD	EZ EMCV1.1.4.2	N/A
Loop Antenna	EMCI	HLA 6121	56735	2023-04-15*
Preamplifier	EMCI	EMC001340	980201	2022-09-08
Antenna Tower	MF	MFA-440H	NA	NA
Turn Table	MF	MFT-201SS	NA	NA
Antenna Tower&Turn Table Controller	MF	MF-7802	NA	NA

Frequency Range below 1GHz:

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
3m Semi-anechoic Chamber	MAORUI	9m*6m*6m	NSEMC003	2023-04-15*
EMI Test Receiver	Rohde&Schwarz	ESR7	100962	2023-01-13
Broadband antenna	Schwarzbeck	VULB 9168	00937	2023-09-12*
Signal Amplifier	Com-power	PAM-103	18020051	2022-09-08
Attenuator	Rohde&Schwarz	TS2GA-6dB	18101101	N/A
Test software	FARAD	FARAD	EZ EMCV1.1.4.2	N/A

Frequency Range 1-18GHz:

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
3m Semi-anechoic Chamber	MAORUI	9m*6m*6m	NSEMC003	2023-04-15*
Horn Antenna	Schwarzbeck	BBHA 9120D	01959	2022-09-12*
Broadband Coaxial Preamplifier	Com-power	PAM-118A	1804003	2022-09-07
Spectrum	Keysight	N9020A	MY51240612	2022-09-08
Antenna Tower	MF	MFA-440H	NA	NA
Turn Table	MF	MFT-201SS	NA	NA
Antenna Tower&Turn Table Controller	MF	MF-7802	NA	NA

Frequency Range 18-40GHz:

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
3m Semi-anechoic Chamber	MAORUI	9m*6m*6m	NSEMC003	2023-04-15*
Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101783	2023-01-13
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170242	2023-04-10*
Pre-Amplifier	EMCI	EMC 184045	980102	2023-01-12
Antenna Tower	MF	MFA-440H	NA	NA
Turn Table	MF	MFT-201SS	NA	NA
Antenna Tower&Turn Table Controller	MF	MF-7802	NA	NA

Note: 1. The calibration interval of the above test instruments is 12/24months(*) and the calibrations are traceable to CEPREI/CHINA.
2. The test was performed in 966.



3.1.4 Test Procedures

a. Peak emission levels are measured by setting the instrument as follow:

- 1) RBW & VBW setting as a function of frequency:

Frequency	RBW	VBW
9kHz~150kHz	200Hz	600Hz
0.15MHz~30MHz	9kHz	30kHz
30MHz~1000MHz	120kHz	300kHz
>1000MHz	1MHz	3MHz

- 2) Detector = peak.
3) Sweep time = auto.
4) Trace mode = max hold.
5) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be lengthened for low-duty-cycle applications.)

Note: If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement

b. Average emission levels are measured by setting the instrument as follow:

● Trace averaging with continuous EUT transmission at full power

If the EUT can be configured or modified to transmit continuously ($D \geq 98\%$), then the average emission levels shall be measured using the following method (with EUT transmitting continuously):

- 1) RBW=1 MHz (unless otherwise specified).
2) VBW $\geq 3 \times$ RBW.
3) Detector =RMS
4) Sweep time = auto.
5) Perform a trace average of at least 100 traces.

● Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT ($D \geq 98\%$) cannot be achieved and the duty cycle is constant (duty cycle variations are less than $\pm 2\%$), then the following procedure shall be used

- 1) The EUT shall be configured to operate at the maximum achievable duty cycle.
2) Measure the duty cycle D of the transmitter output signal as described in 11.6.
3) RBW=1 MHz (unless otherwise specified).
4) VBW $\geq 3 \times$ RBW.
5) Detector =RMS
6) Sweep time = auto.
7) Perform a trace average of at least 100 traces.

A correction factor shall be added to the measurement results prior to comparing with the emission limit to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

*If power averaging (rms) mode was used in step 5), then the applicable correction factor is $[10 \log (1/D)]$, where D is the duty cycle.

**If linear voltage averaging mode was used in step f), then the applicable correction factor is $[20 \log (1/D)]$, where D is the duty cycle.

***If a specific emission is demonstrated to be continuous ($D > 98\%$) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that



● **Reduced VBW Averaging across ON and OFF times of the EUT transmissions with max hold**

If continuous transmission of the EUT ($D > 98\%$) cannot be achieved and the duty cycle is not constant (duty cycle variations exceed $\pm 2\%$), then the following procedure shall be used:

- 1) RBW = 1MHz.
 - 2) VBW $\geq 1/T$.
 - 3) Detector = peak
 - 4) Sweep time = auto.
 - 5) Trace mode = max hold.
 - 6) Allow max hold to run for at least $[50 \times (1/D)]$ traces
- c. The EUT was placed on the top of a rotating table 0.8 meters (below 1GHz) / 1.5 meters (1-18GHz) / 1.5 meters (18-40GHz) above the reference ground. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The EUT was set 3meters away from the interference-receiving antenna (Below 1GHz) & (Above 1-18GHz), which was mounted on the top of a variable-height antenna tower. The EUT was set 1meters away from the interference-receiving antenna (18-40GHz).
- e. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- f. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- g. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- h. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz & 360kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth = 3mHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth = $1/T$ for Average (Duty cycle $< 98\%$) detection at frequency above 1 GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is = 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

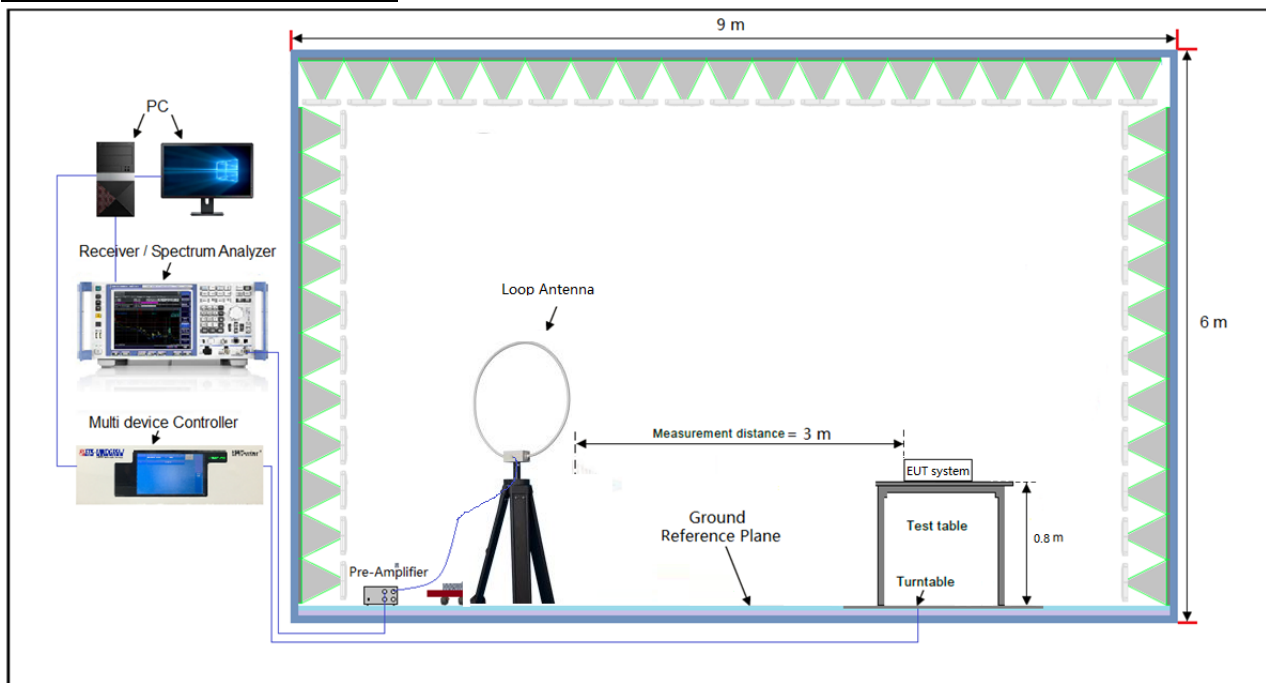
3.1.5 Deviation from Test Standard

No deviation.

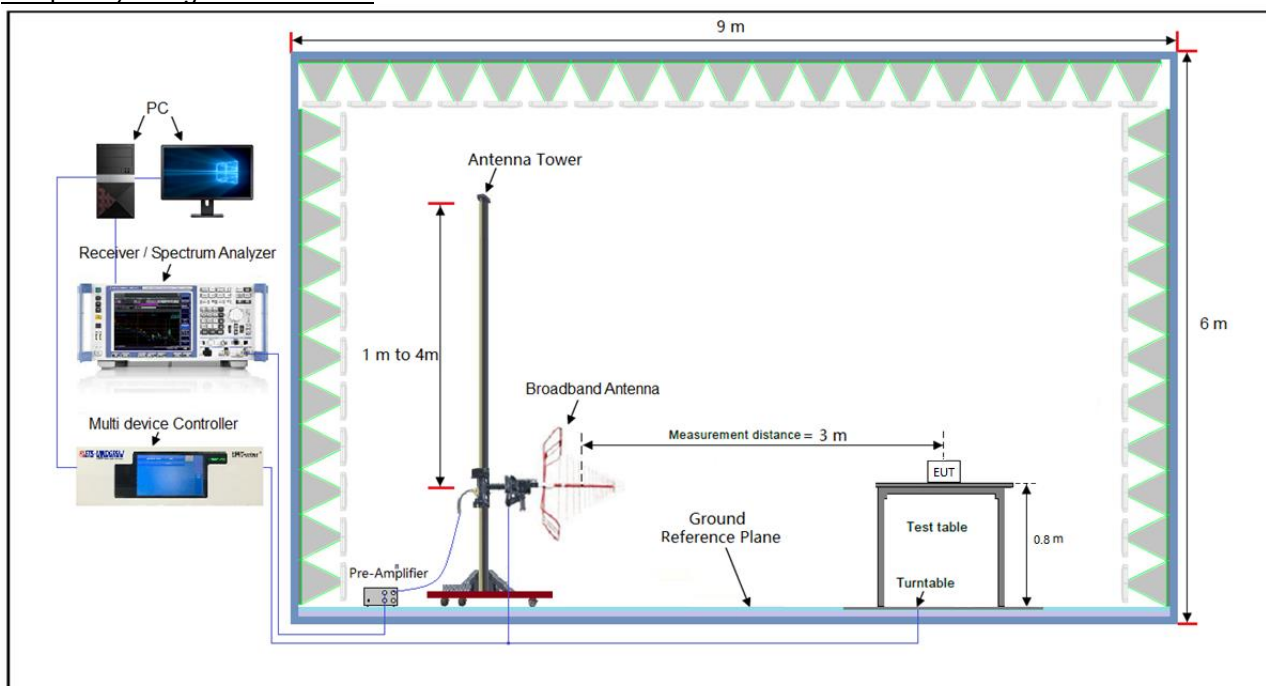


3.1.6 Test Setup

Radiated emission below 30MHz:

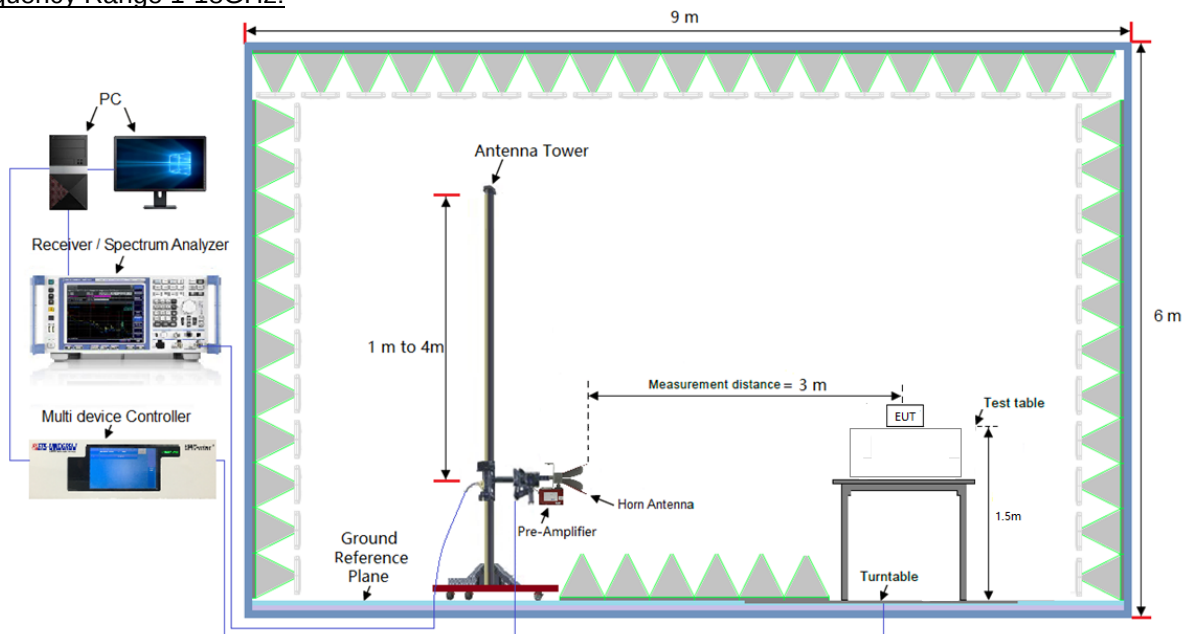


Frequency Range below 1GHz:

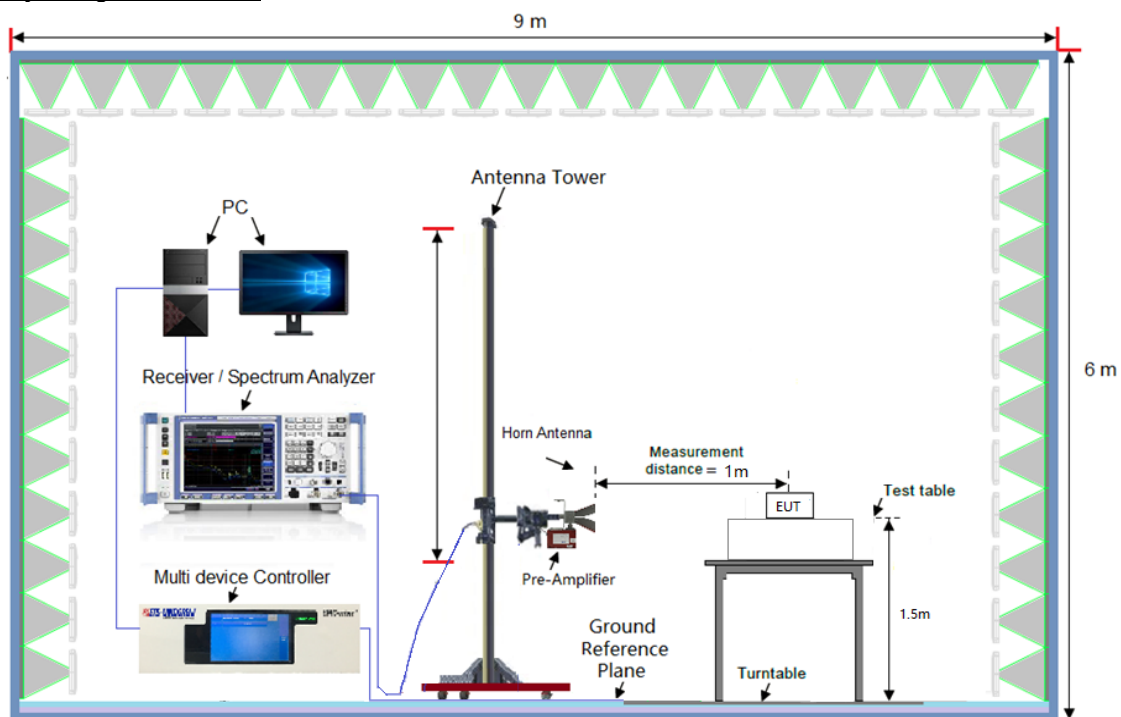




Frequency Range 1-18GHz:



Frequency Range 18-40GHz:



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

3.1.7 EUT Operating Conditions

- Placed the EUT on the testing table.
- Set the EUT under transmission condition continuously at specific channel frequency.



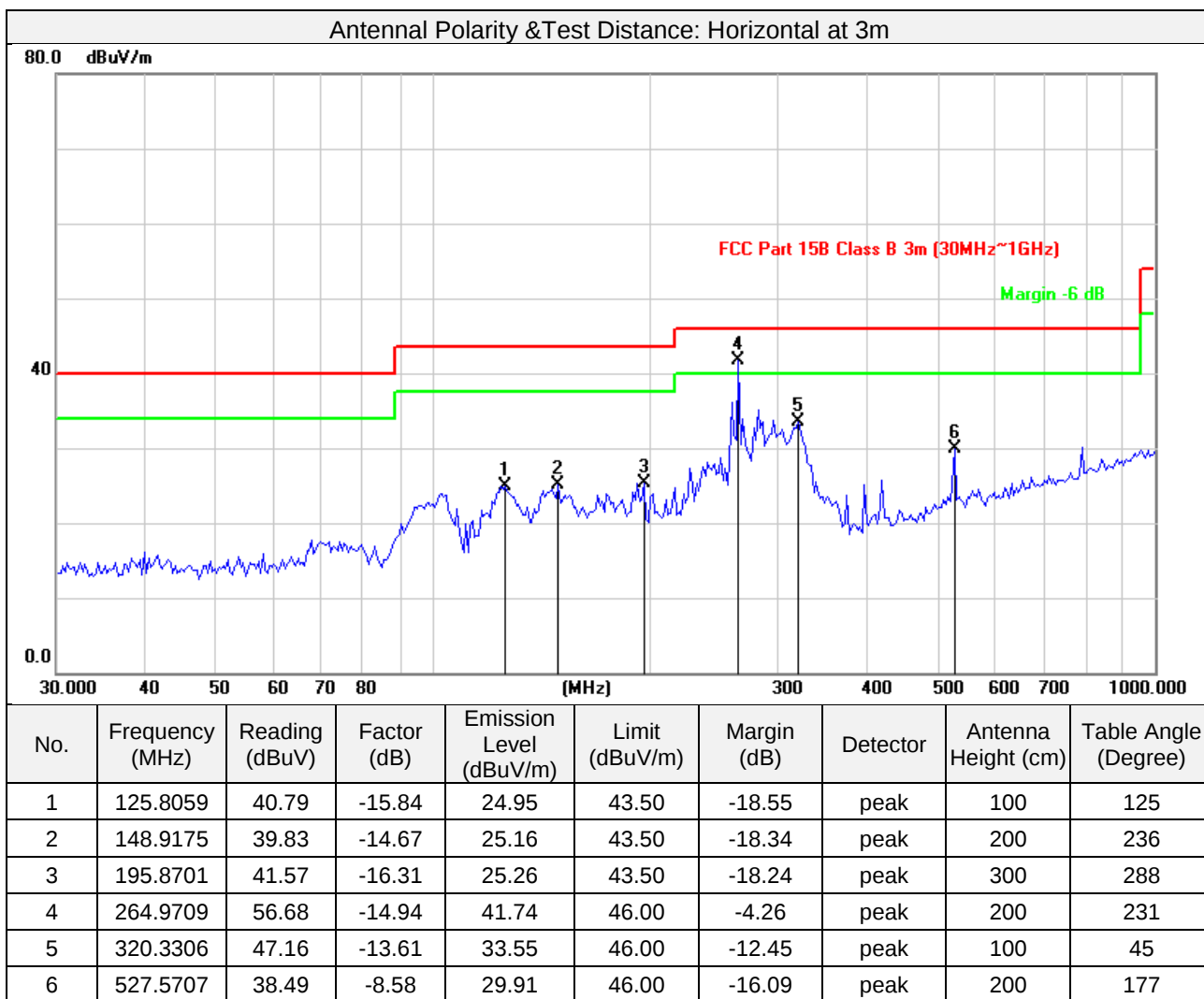
3.1.8 Test Results

9kHz ~ 30MHz Data:

The amplitude of spurious emissions attenuated more than 20dB below the permissible value is not required to be report.

30MHz ~ 1GHz Worst-Case Data:

Test Mode	802.11a TX		
Test Channel	Channel 100	Frequency Range	30MHz ~ 1GHz
Detector Function	Peak (PK) Quasi-peak (QP)	Tested By	Jim Xu

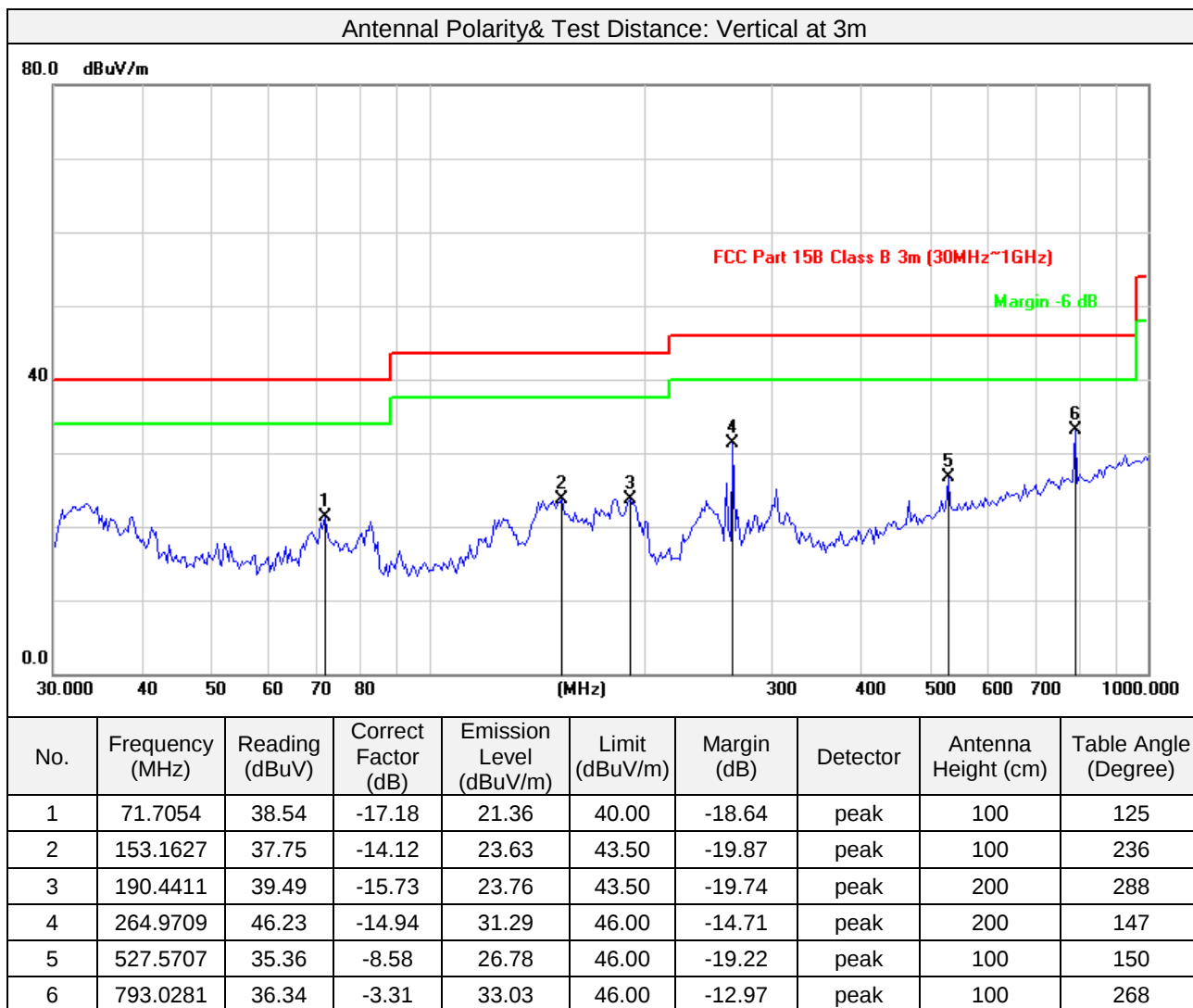


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11a TX		
Test Channel	Channel 100	Frequency Range	30MHz ~ 1GHz
Detector Function	Peak (PK) Quasi-peak (QP)	Tested By	Jim Xu



Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value

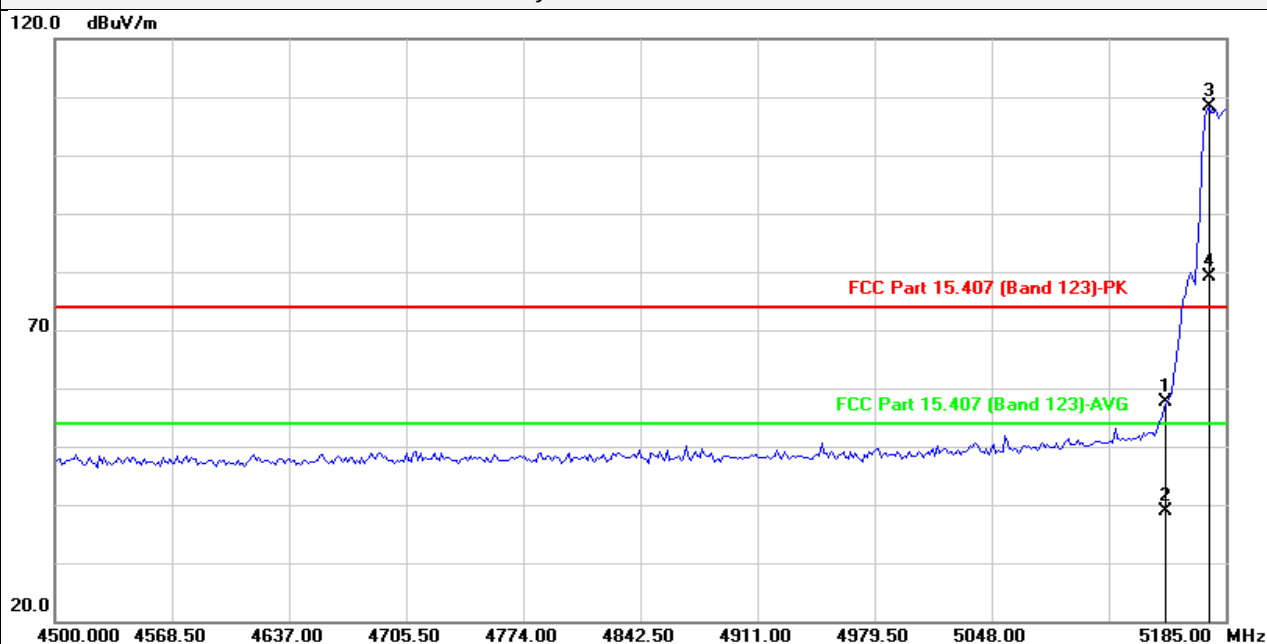


Above 1GHz Data:

802.11a

Test Mode	802.11a_5180MHz		
Test channel	36	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

Antennal Polarity& Test distance: Horizontal at 3m



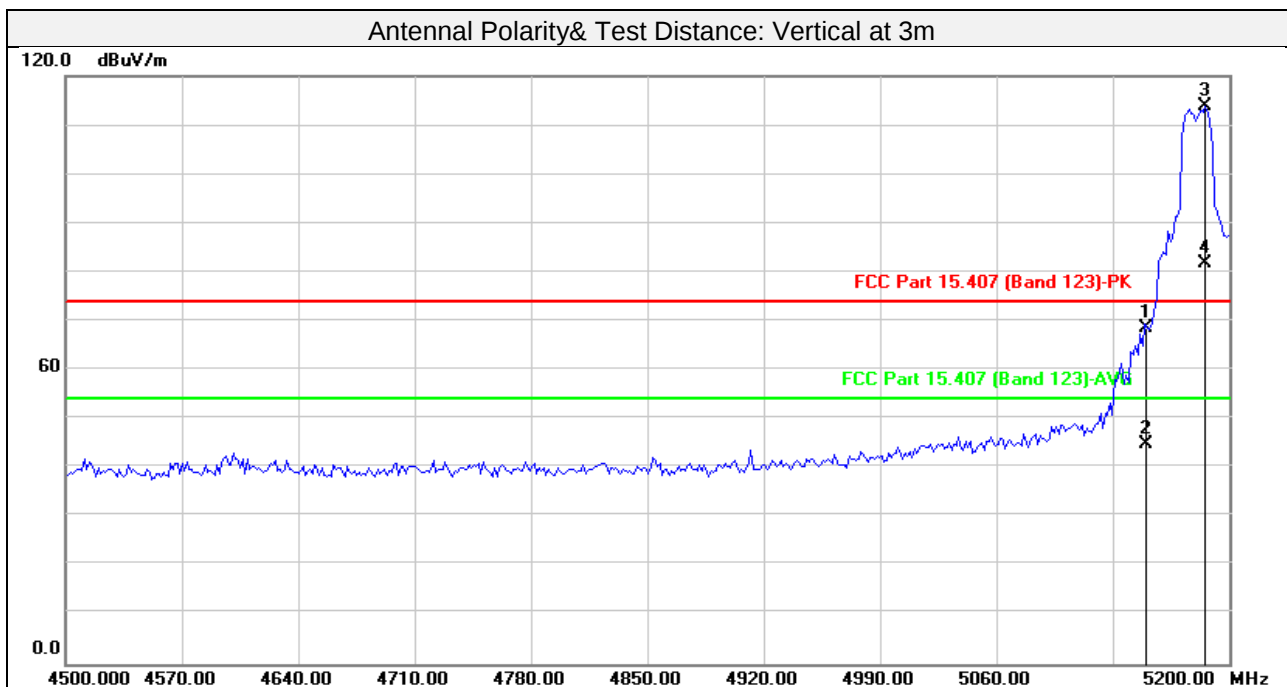
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5150.000	52.11	5.45	57.56	74.00	-16.44	peak	100	156
2	5150.000	33.43	5.45	38.88	54.00	-15.12	AVG	100	156
3	5175.391	102.85	5.53	108.38			peak	100	156
4	5175.391	73.48	5.53	79.01			AVG	100	156
5	10360.000	43.23	14.51	57.74	74.00	-16.26	peak	100	151
6	10360.000	28.94	14.51	43.45	54.00	-10.55	AVG	100	151
7	15540.000	41.32	18.62	59.94	74.00	-14.06	peak	100	104
8	15540.000	26.83	18.62	45.45	54.00	-8.55	AVG	100	104

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5180MHz		
Test channel	36	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5150.000	60.31	8.15	68.46	74.00	-5.54	peak	100	296
2	5150.000	36.66	8.15	44.81	54.00	-9.19	AVG	100	296
3	5185.972	105.57	8.27	113.84			peak	100	296
4	5185.972	73.37	8.27	81.64			AVG	100	296
5	10360.000	41.31	14.51	55.82	74.00	-18.18	peak	100	325
6	10360.000	29.17	14.51	43.68	54.00	-10.32	AVG	100	325
7	15540.000	37.90	18.62	56.52	74.00	-17.48	peak	100	254
8	15540.000	26.66	18.62	45.28	54.00	-8.72	AVG	100	254

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5240MHz		
Test channel	48	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

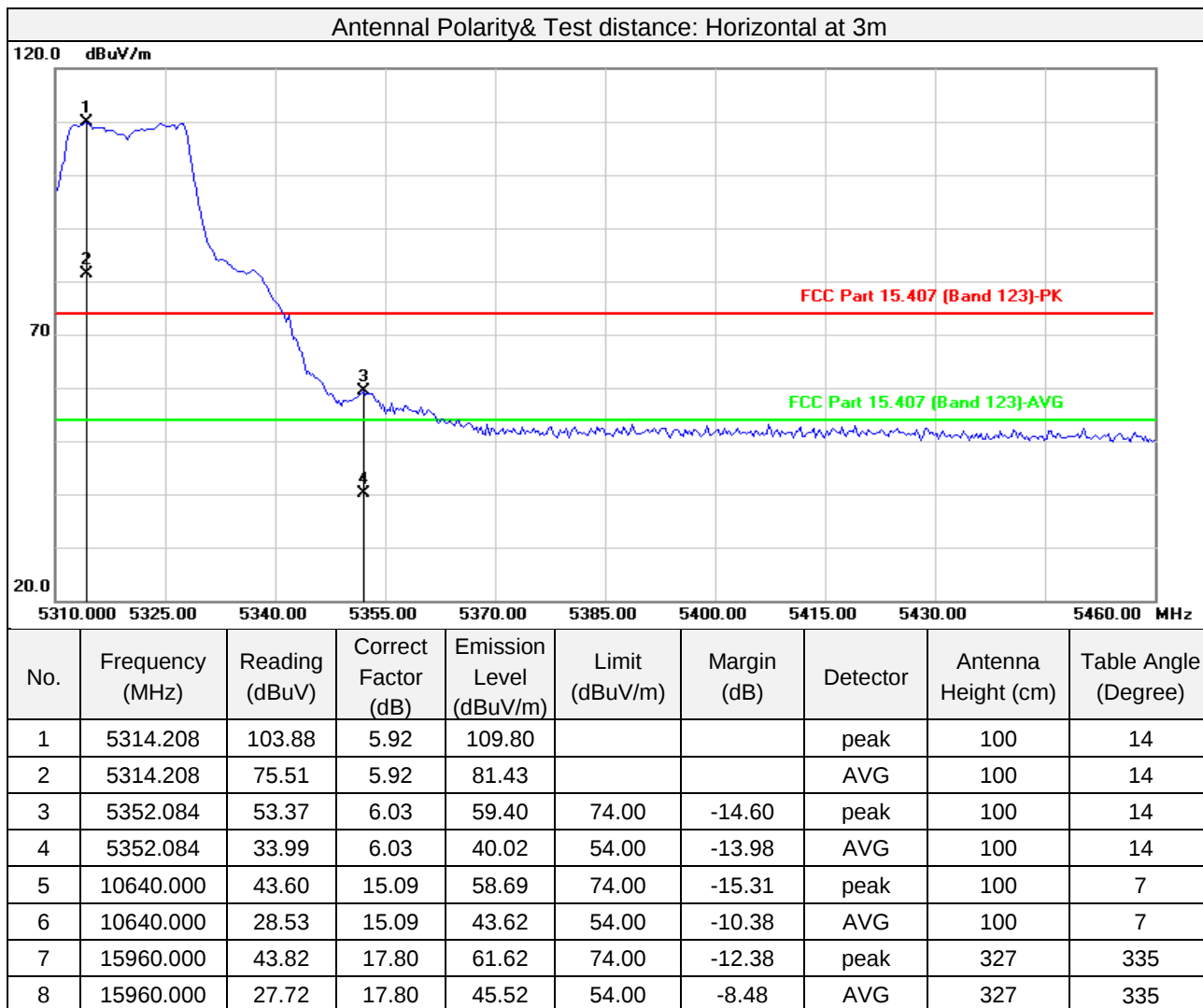
Antennal Polarity& Test Distance: Horizontal at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5240.000	103.77	5.70	109.47			peak	100	247
2	5240.000	74.97	5.70	80.67			AVG	100	247
3	10480.000	45.03	14.75	59.78	74.00	-14.22	peak	100	125
4	10480.000	30.57	14.75	45.32	54.00	-8.68	AVG	100	125
5	15720.000	41.78	18.27	60.05	74.00	-13.95	peak	277	44
6	15720.000	28.33	18.27	46.60	54.00	-7.40	AVG	277	44
Antennal Polarity& Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5240.000	105.08	5.70	110.78			peak	100	184
2	5240.000	77.59	5.70	83.29			AVG	100	184
3	10480.000	46.58	14.75	61.33	74.00	-12.67	peak	100	0
4	10480.000	30.76	14.75	45.51	54.00	-8.49	AVG	100	0
5	15720.000	44.44	18.27	62.71	74.00	-11.29	peak	100	325
6	15720.000	28.17	18.27	46.44	54.00	-7.56	AVG	100	325

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5320MHz		
Test channel	64	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

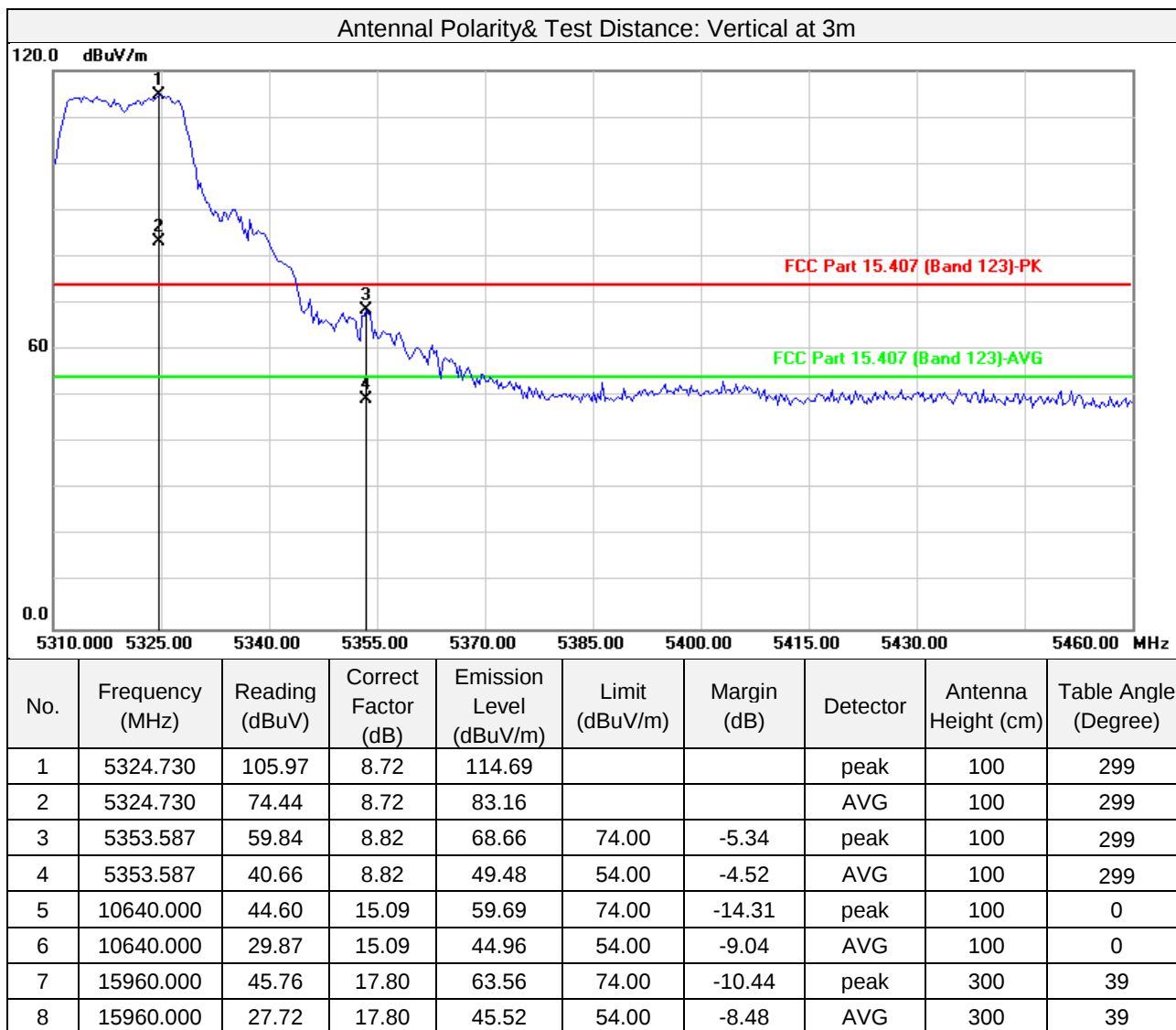


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5320MHz		
Test channel	64	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

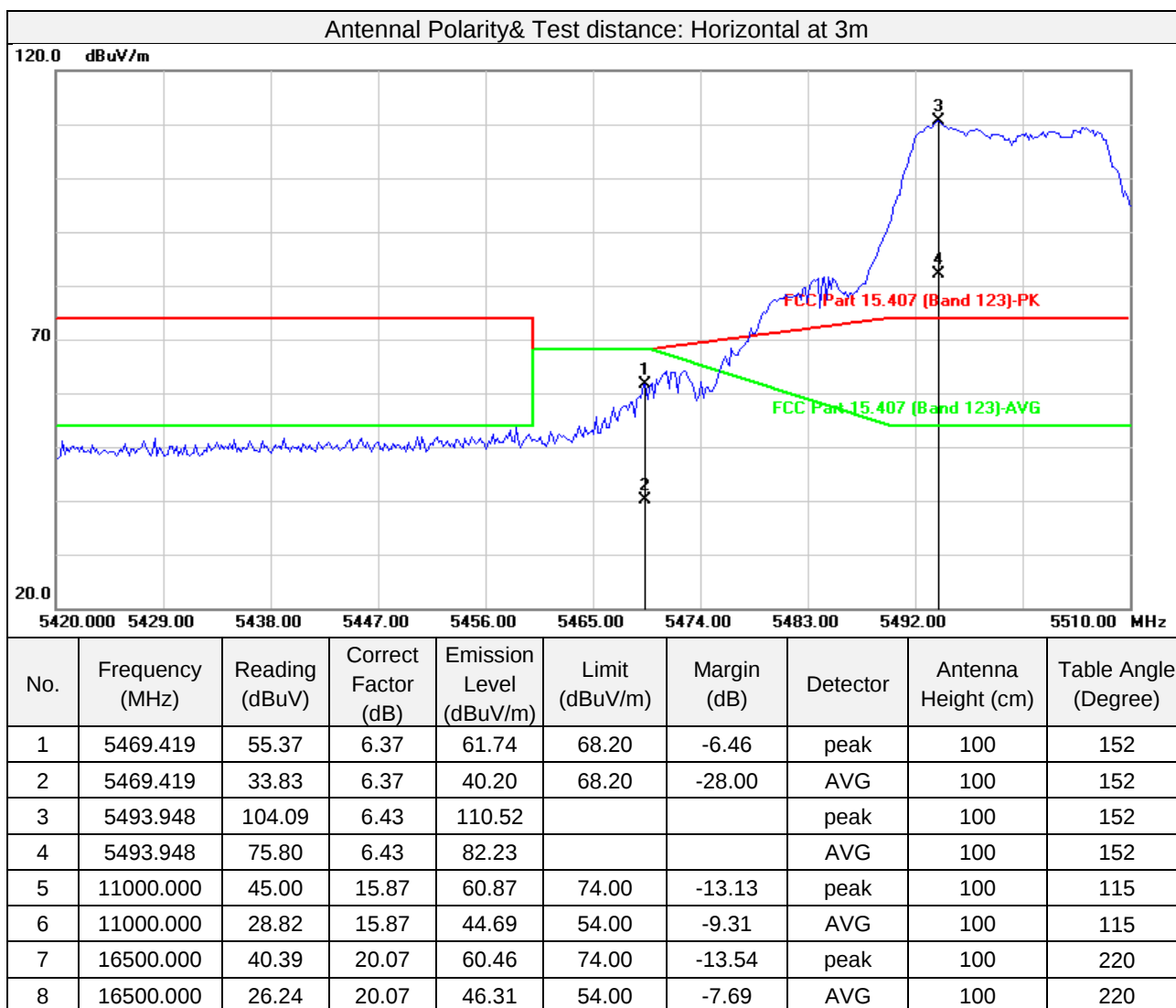


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5500MHz		
Test channel	100	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

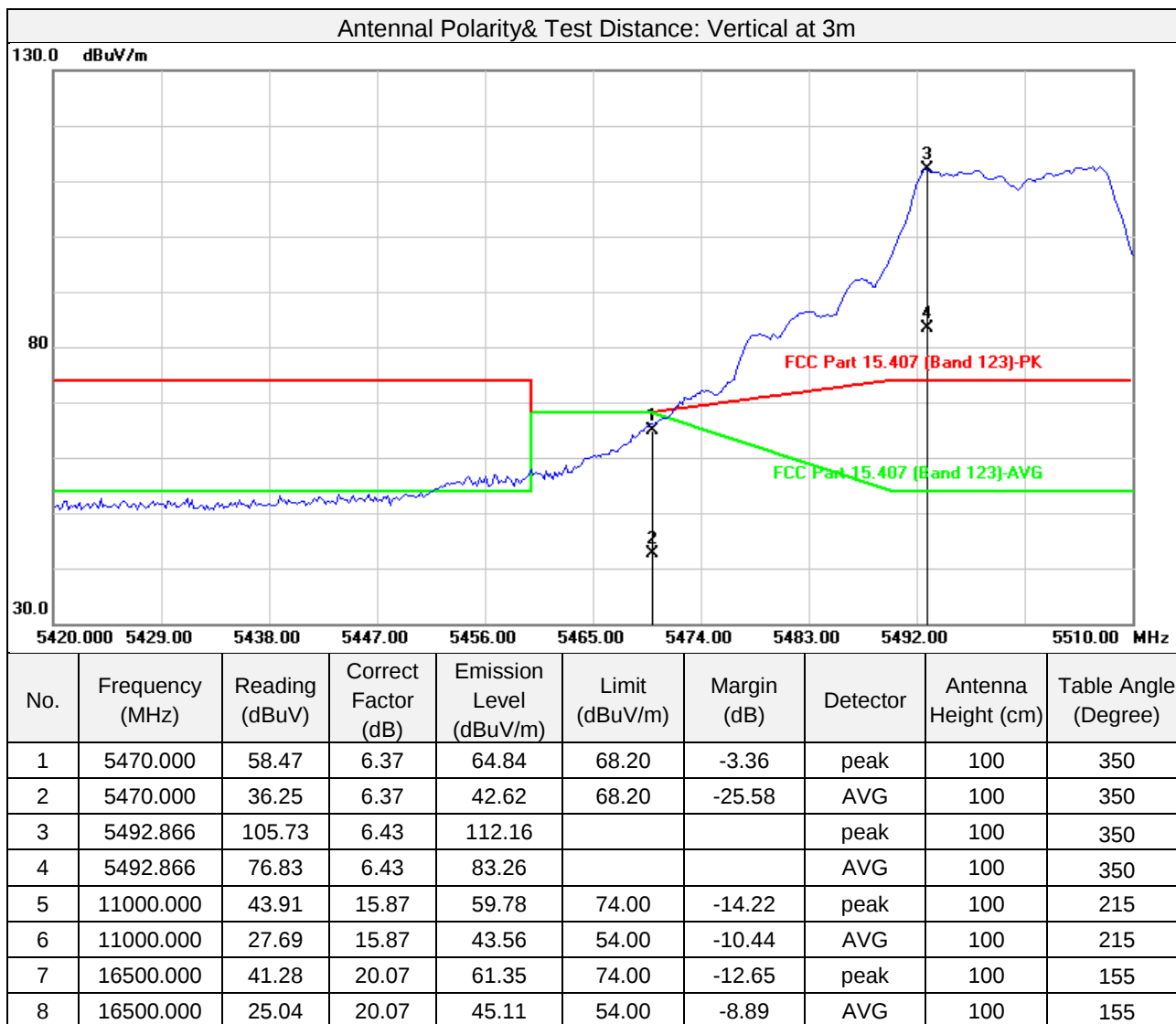


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5500MHz		
Test channel	100	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5580MHz		
Test channel	116	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

Antennal Polarity& Test Distance: Horizontal at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5580.000	103.77	6.54	110.31			peak	100	287
2	5580.000	74.82	6.54	81.36			AVG	100	287
3	11160.000	45.34	15.94	61.28	74.00	-12.72	peak	100	148
4	11160.000	29.53	15.94	45.47	54.00	-8.53	AVG	100	148
5	16740.000	38.57	21.21	59.78	74.00	-14.22	peak	100	102
6	16740.000	25.02	21.21	46.23	54.00	-7.77	AVG	100	102
Antennal Polarity& Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5580.000	104.10	6.54	110.64			peak	100	231
2	5580.000	76.82	6.54	83.36			AVG	100	231
3	11160.000	44.90	15.94	60.84	74.00	-13.16	peak	100	264
4	11160.000	31.03	15.94	46.97	54.00	-7.03	AVG	100	264
5	16740.000	39.26	21.21	60.47	74.00	-13.53	peak	100	201
6	16740.000	24.66	21.21	45.87	54.00	-8.13	AVG	100	201

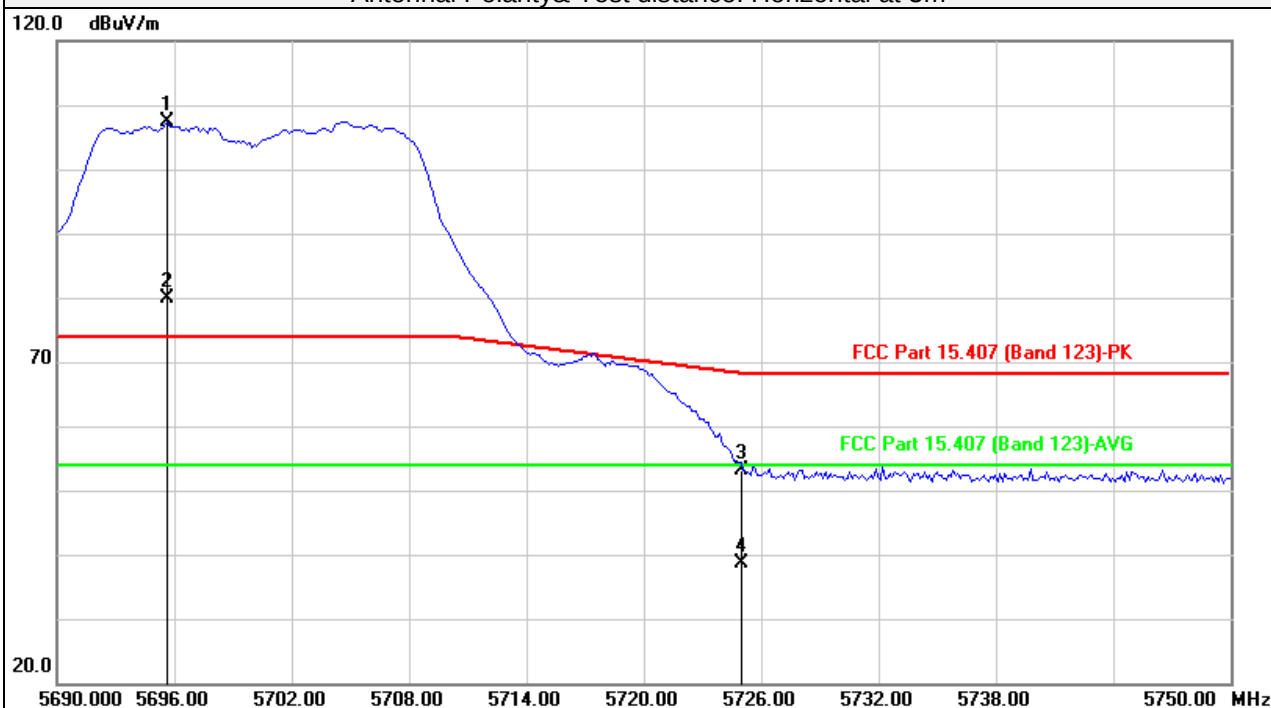
Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5700MHz		
Test channel	140	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

Antennal Polarity& Test distance: Horizontal at 3m



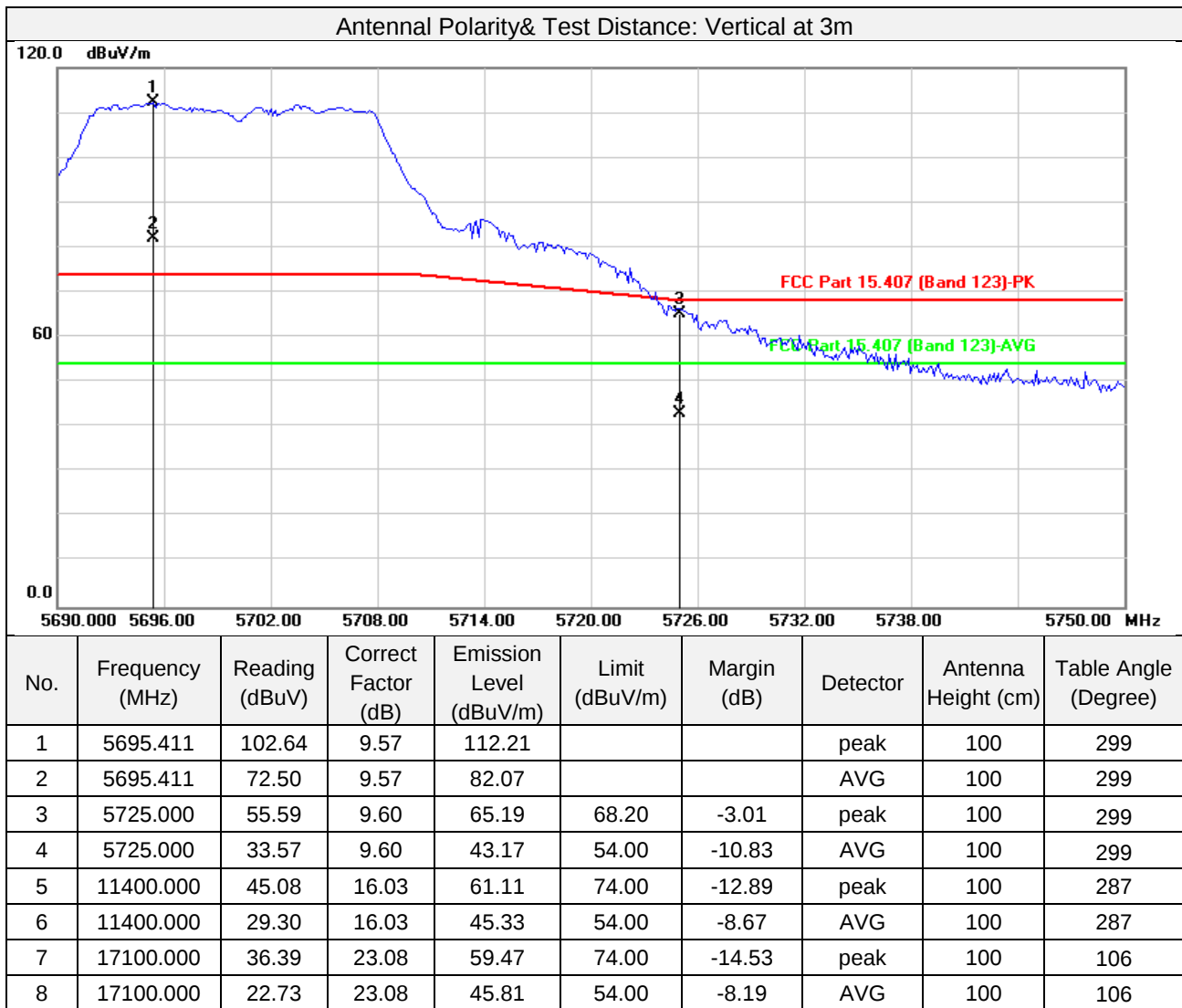
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5695.651	100.68	6.68	107.36			peak	100	150
2	5695.651	73.12	6.68	79.80			AVG	100	150
3	5725.000	46.30	6.71	53.01	68.20	-15.19	peak	100	150
4	5725.000	31.93	6.71	38.64	54.00	-15.36	AVG	100	150
5	11400.000	44.78	16.03	60.81	74.00	-13.19	peak	100	218
6	11400.000	28.75	16.03	44.78	54.00	-9.22	AVG	100	218
7	17100.000	37.56	23.08	60.64	74.00	-13.36	peak	100	236
8	17100.000	23.05	23.08	46.13	54.00	-7.87	AVG	100	236

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5700MHz		
Test channel	140	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

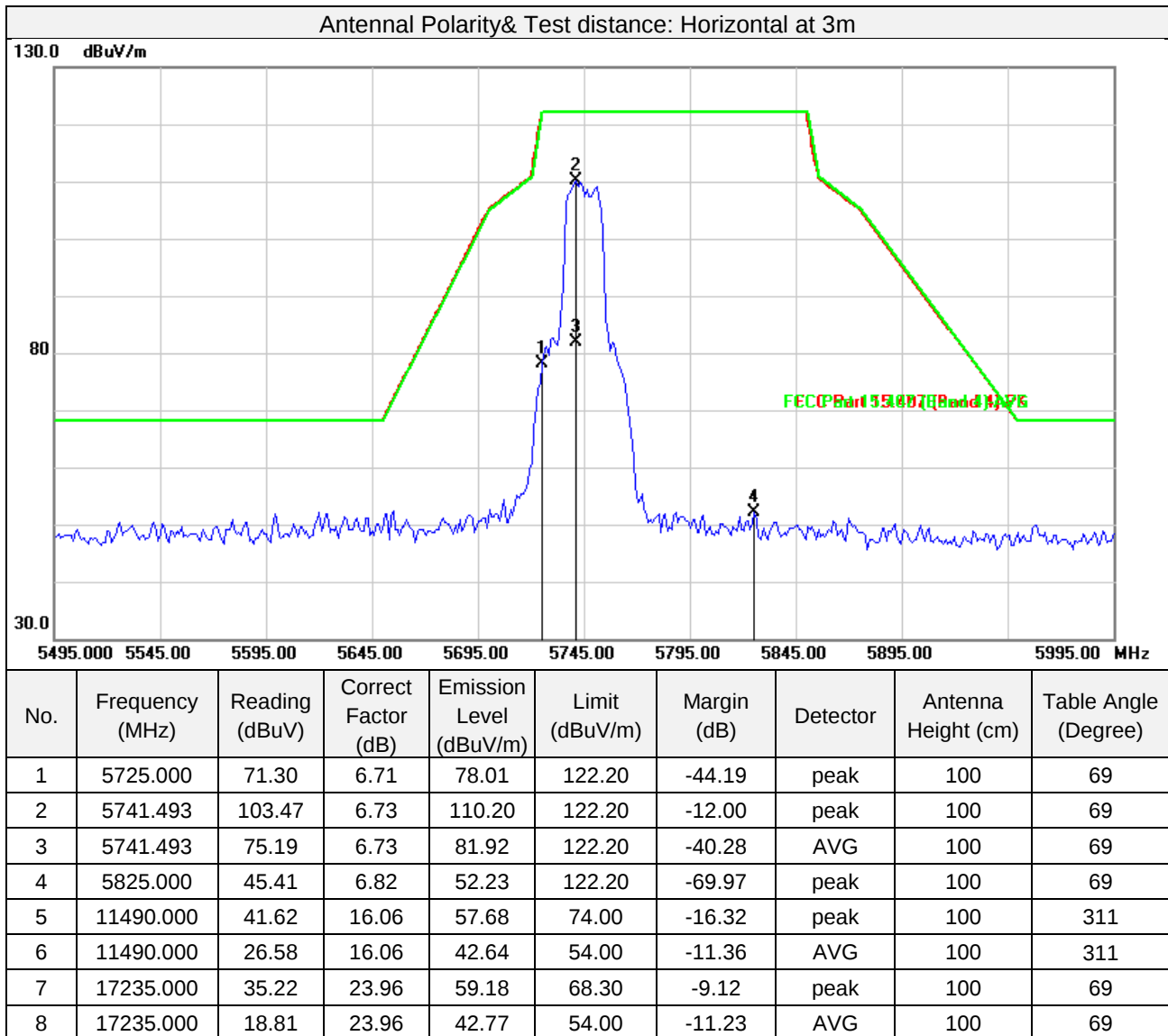


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5745MHz		
Test channel	149	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

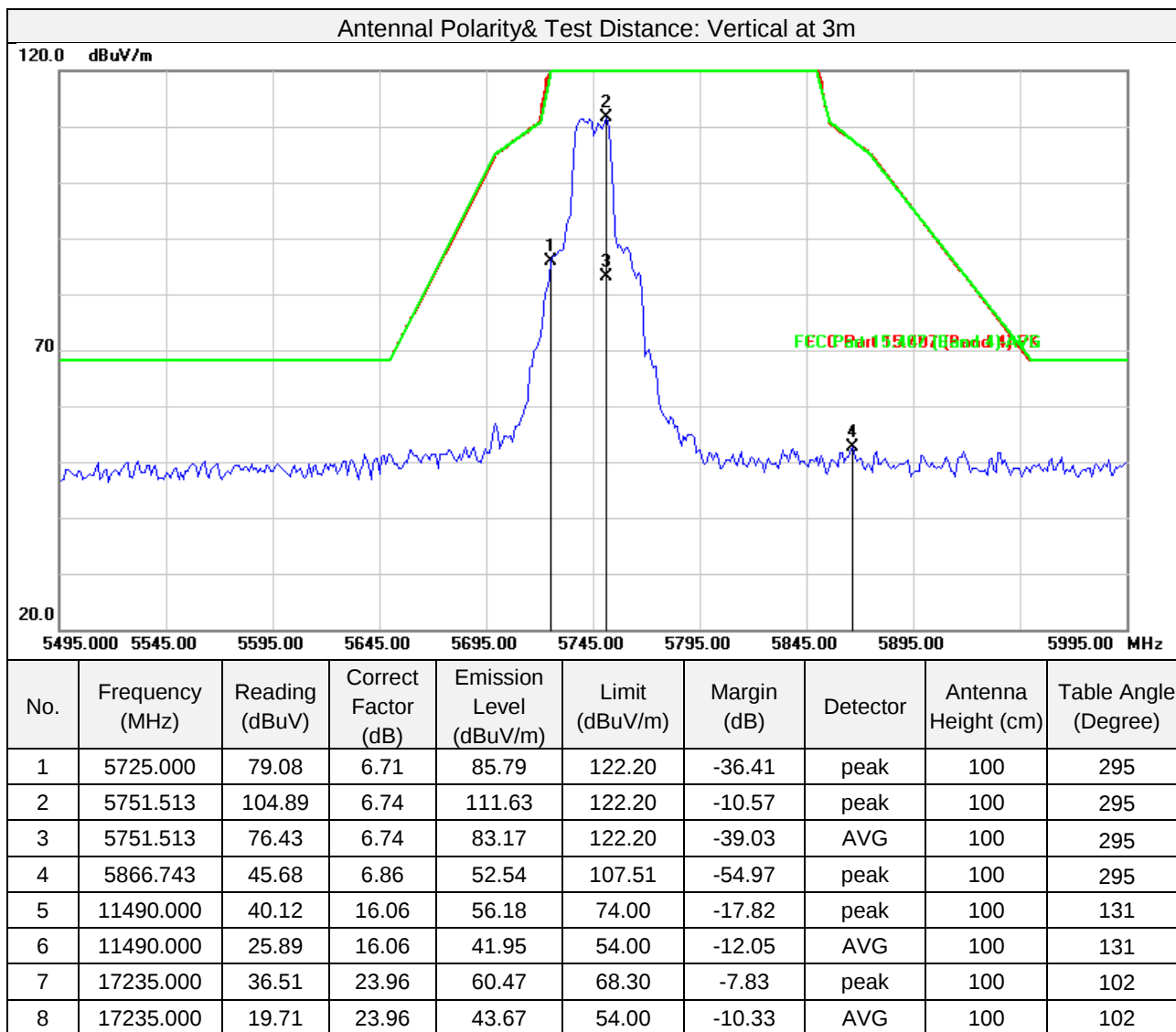


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5745MHz		
Test channel	149	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

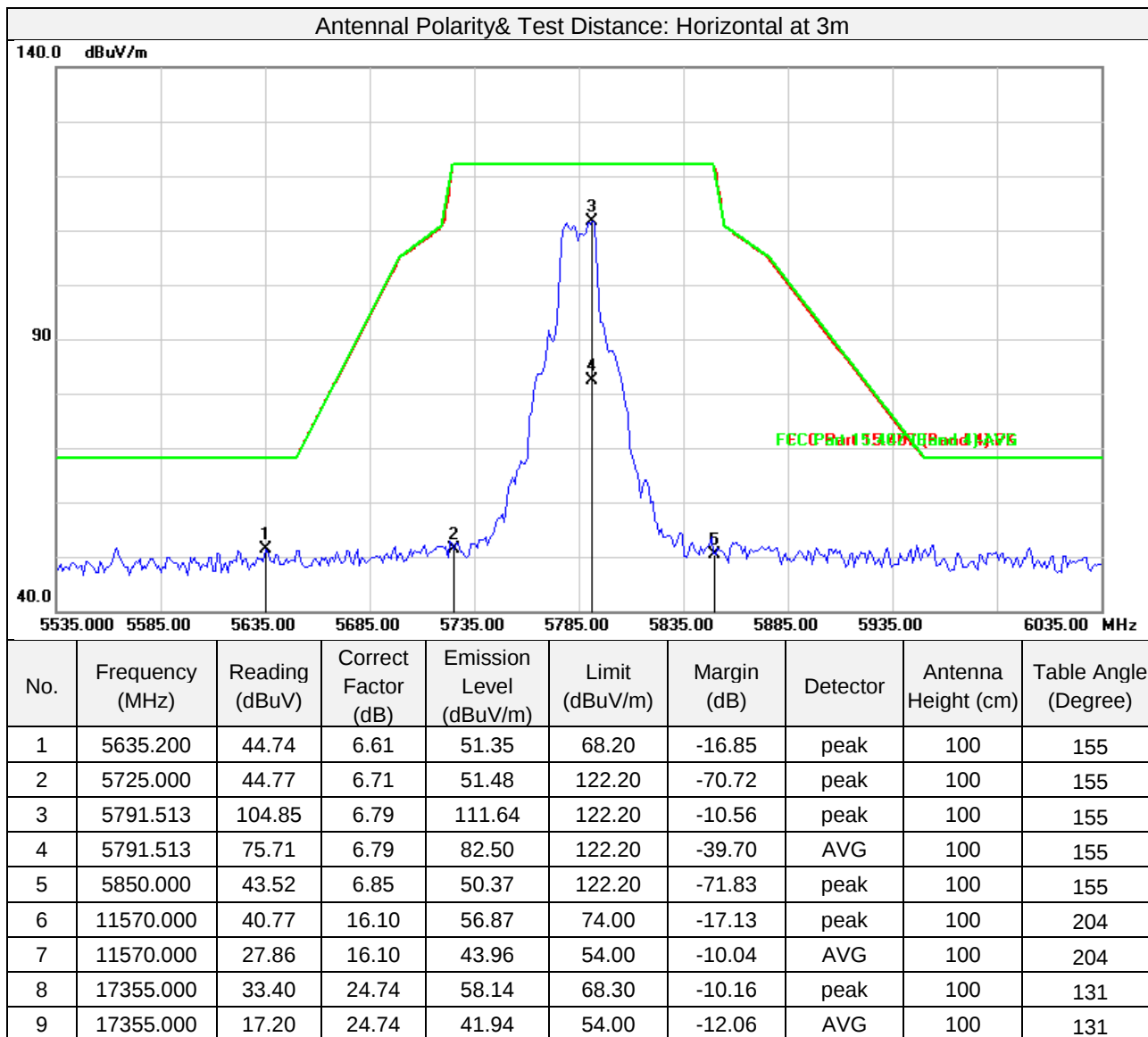


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5785MHz		
Test channel	157	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

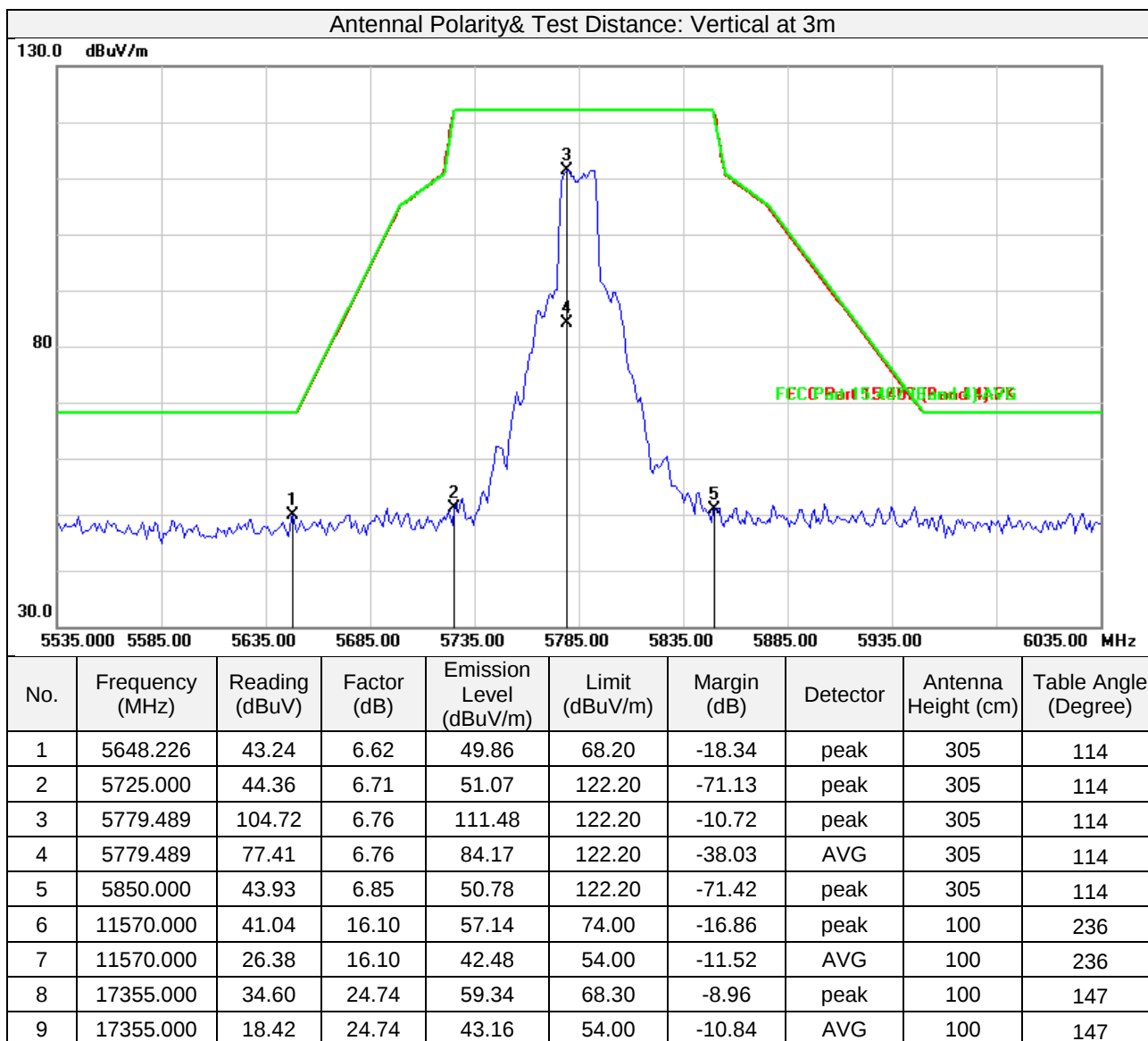


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11a_5785MHz		
Test channel	157	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

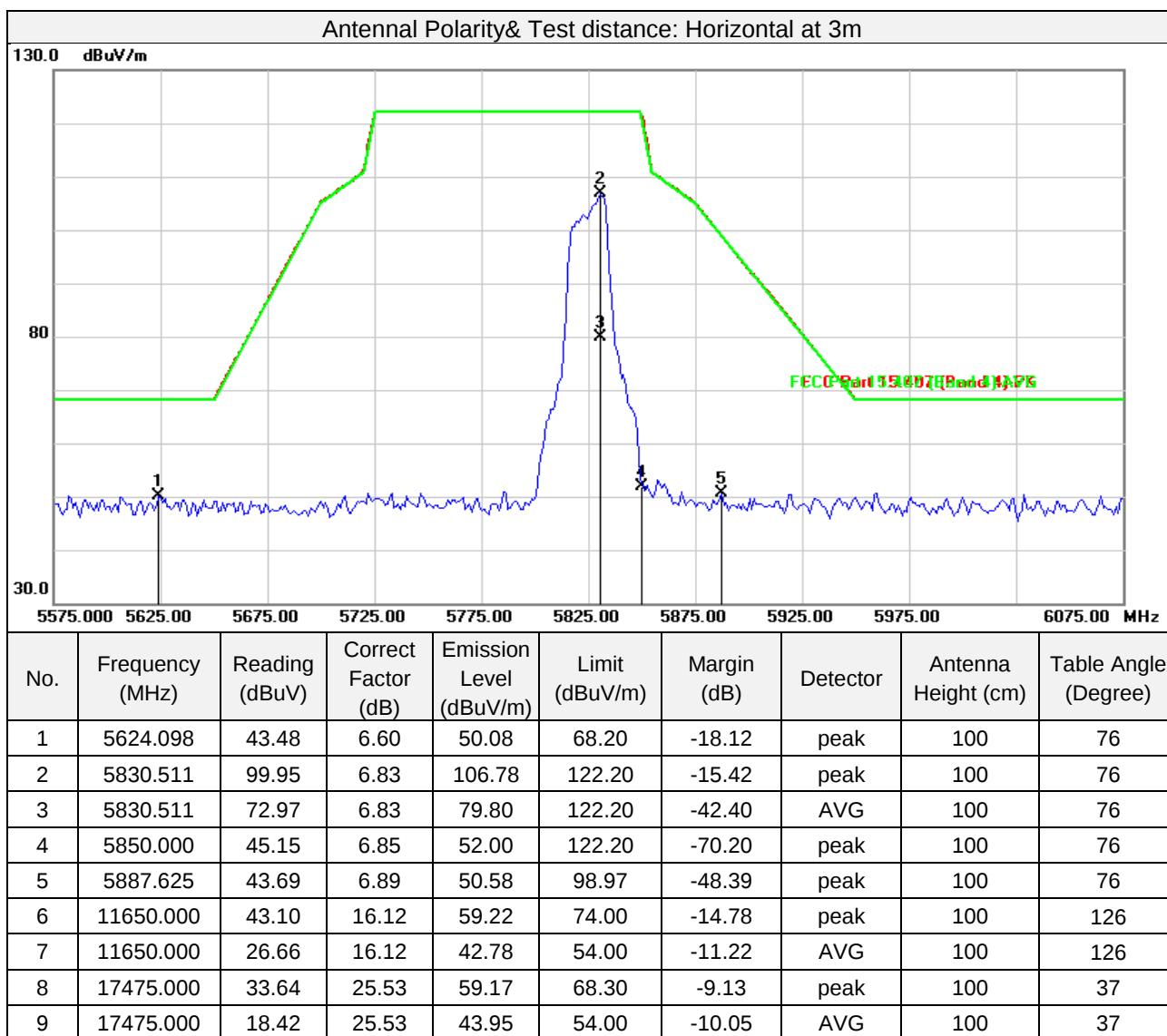


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5825MHz		
Test channel	165	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

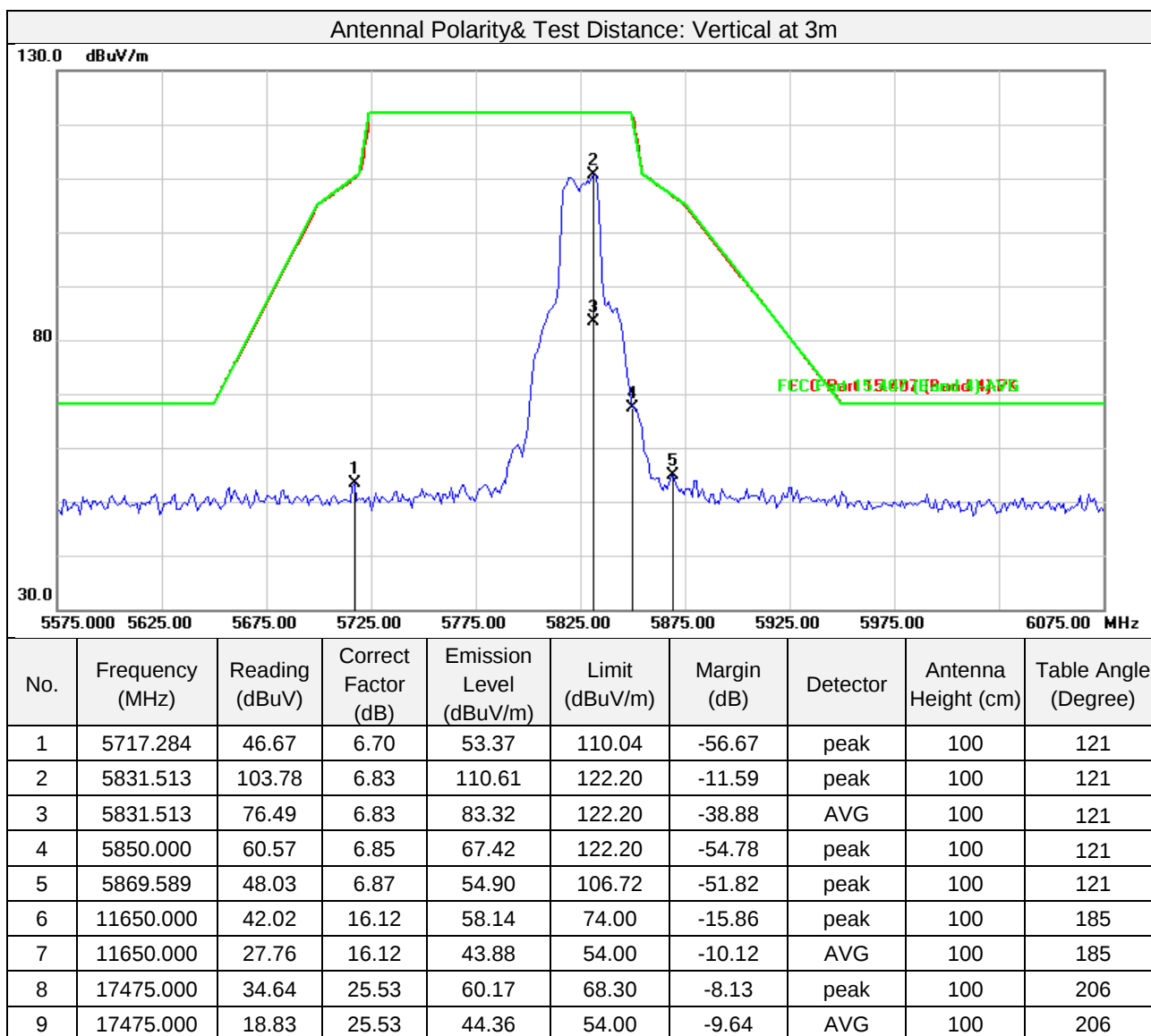


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11a_5825MHz		
Test channel	165	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



Remarks:

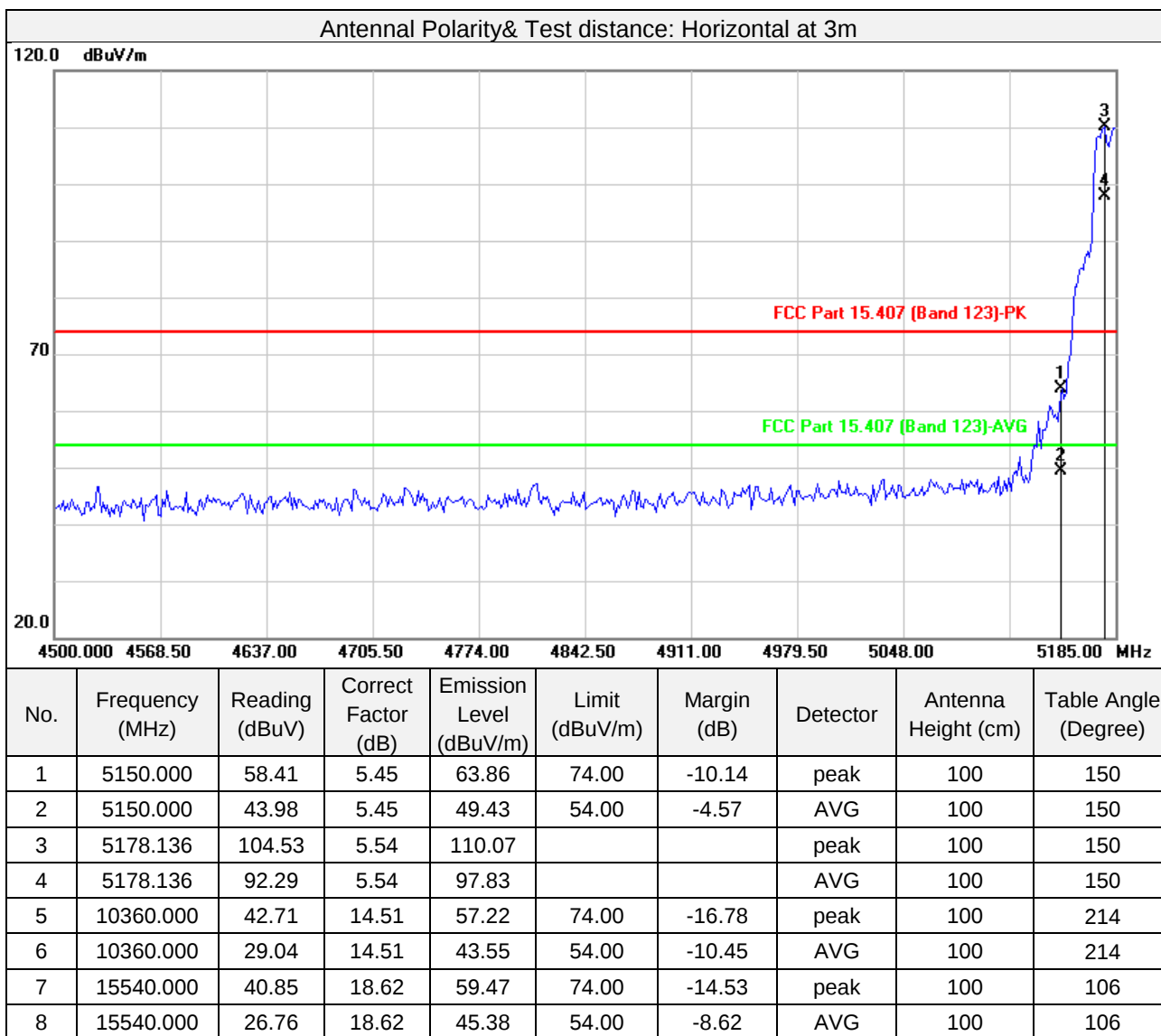
1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
- 3.The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Above 1GHz Data:

802.11n HT20

Test Mode	802.11n HT20_5180MHz		
Test channel	36	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

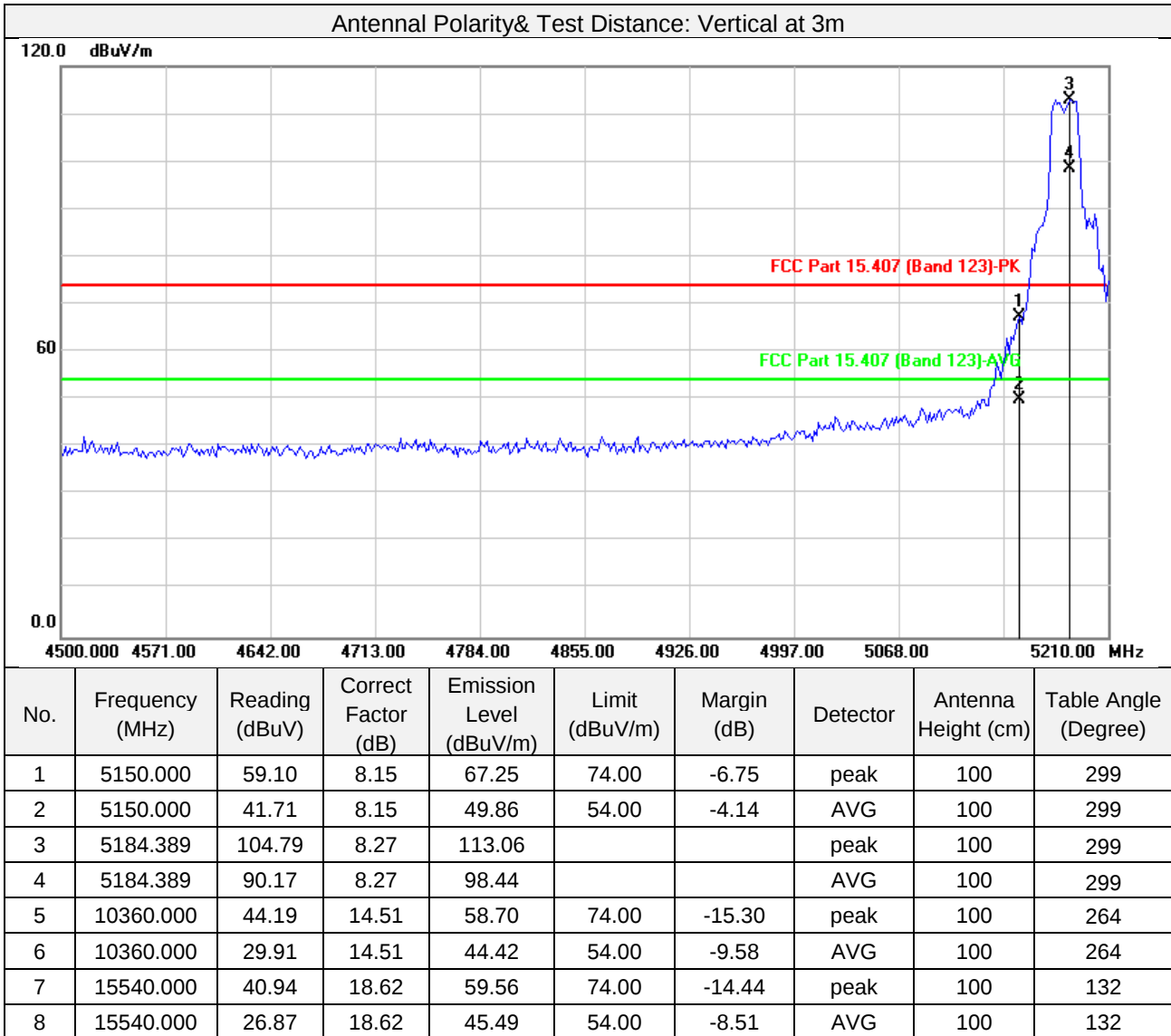


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value
3. The other spurious emissions attenuated more than 20 dB below the permissible value is not required to be report



Test Mode	802.11n HT20_5180MHz		
Test channel	36	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5240MHz		
Test channel	48	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

Antennal Polarity& Test Distance: Horizontal at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5240.000	106.14	5.70	111.84			peak	100	154
2	5240.000	91.44	5.70	97.14			AVG	100	154
3	10480.000	44.60	14.75	59.35	74.00	-14.65	peak	100	0
4	10480.000	29.81	14.75	44.56	54.00	-9.44	AVG	100	0
5	15720.000	43.69	18.27	61.96	74.00	-12.04	peak	261	42
6	15720.000	27.60	18.27	45.87	54.00	-8.13	AVG	261	42
Antennal Polarity& Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5240.000	105.78	5.70	111.48			peak	100	295
2	5240.000	90.78	5.70	96.48			AVG	100	295
3	10480.000	47.24	14.75	61.99	74.00	-12.01	peak	100	0
4	10480.000	30.97	14.75	45.72	54.00	-8.28	AVG	100	0
5	15720.000	42.24	18.27	60.51	74.00	-13.49	peak	100	342
6	15720.000	28.22	18.27	46.49	54.00	-7.51	AVG	100	342

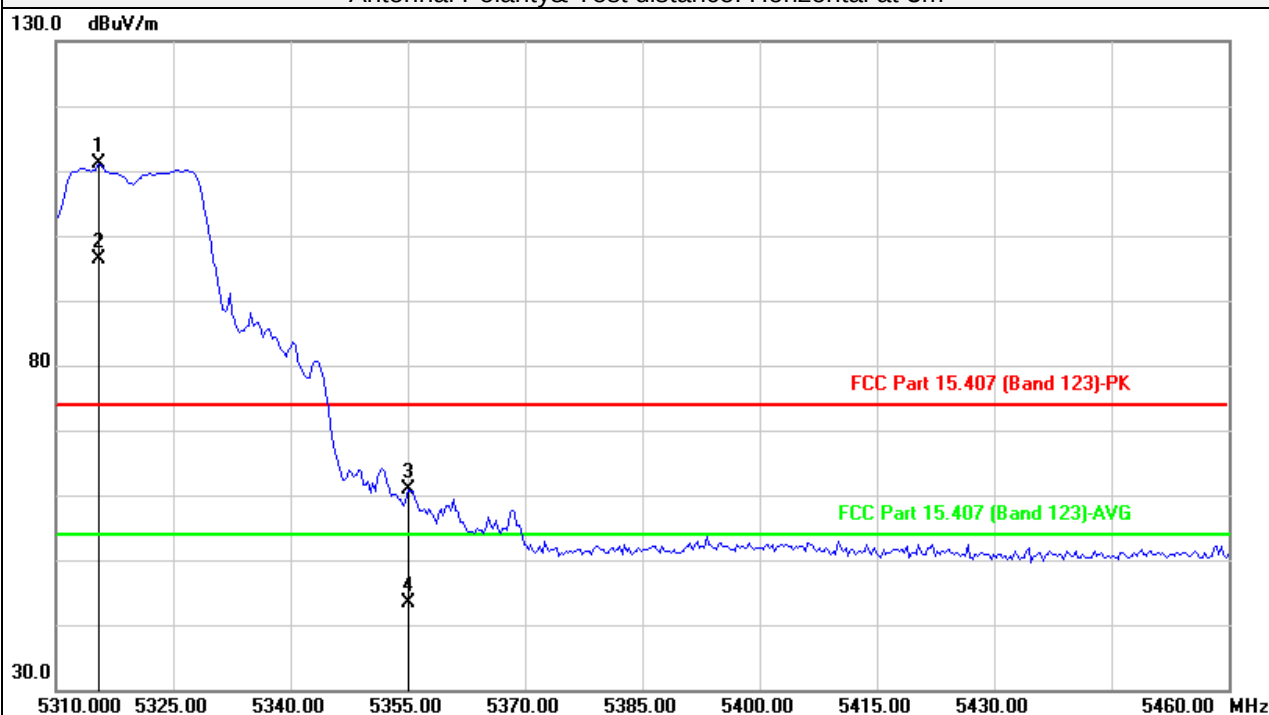
Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5320MHz		
Test channel	64	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

Antennal Polarity& Test distance: Horizontal at 3m



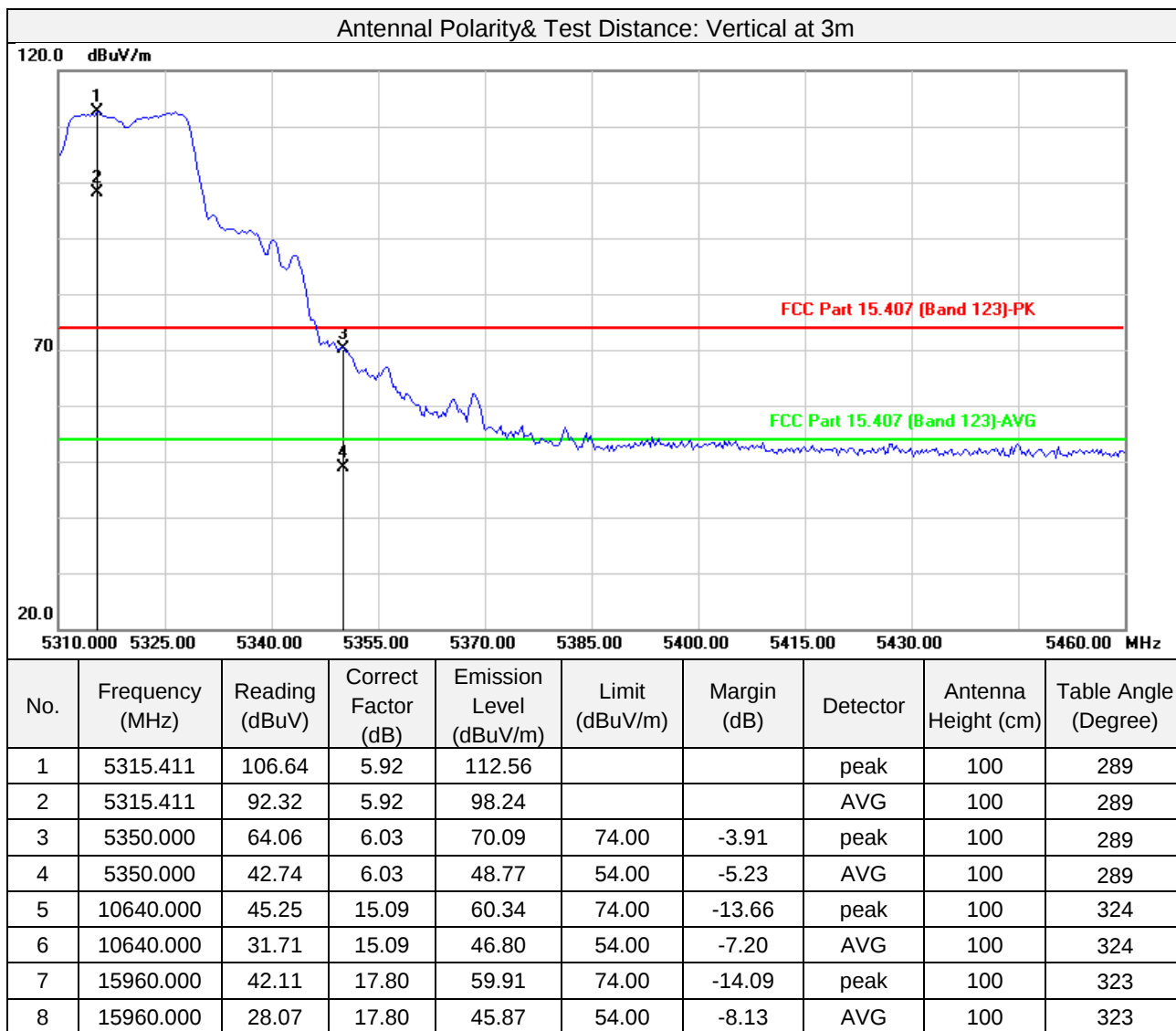
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5315.411	105.16	5.92	111.08	74.00	37.08	peak	100	12
2	5315.411	90.47	5.92	96.39	54.00	42.39	AVG	100	12
3	5355.090	54.75	6.04	60.79	74.00	-13.21	peak	100	12
4	5355.090	37.26	6.04	43.30	54.00	-10.70	AVG	100	12
5	10640.000	40.31	15.09	55.40	74.00	-18.60	peak	100	198
6	10640.000	29.85	15.09	44.94	54.00	-9.06	AVG	100	198
7	15960.000	42.25	17.80	60.05	74.00	-13.95	peak	100	25
8	15960.000	28.00	17.80	45.80	54.00	-8.20	AVG	100	25

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5320MHz		
Test channel	64	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

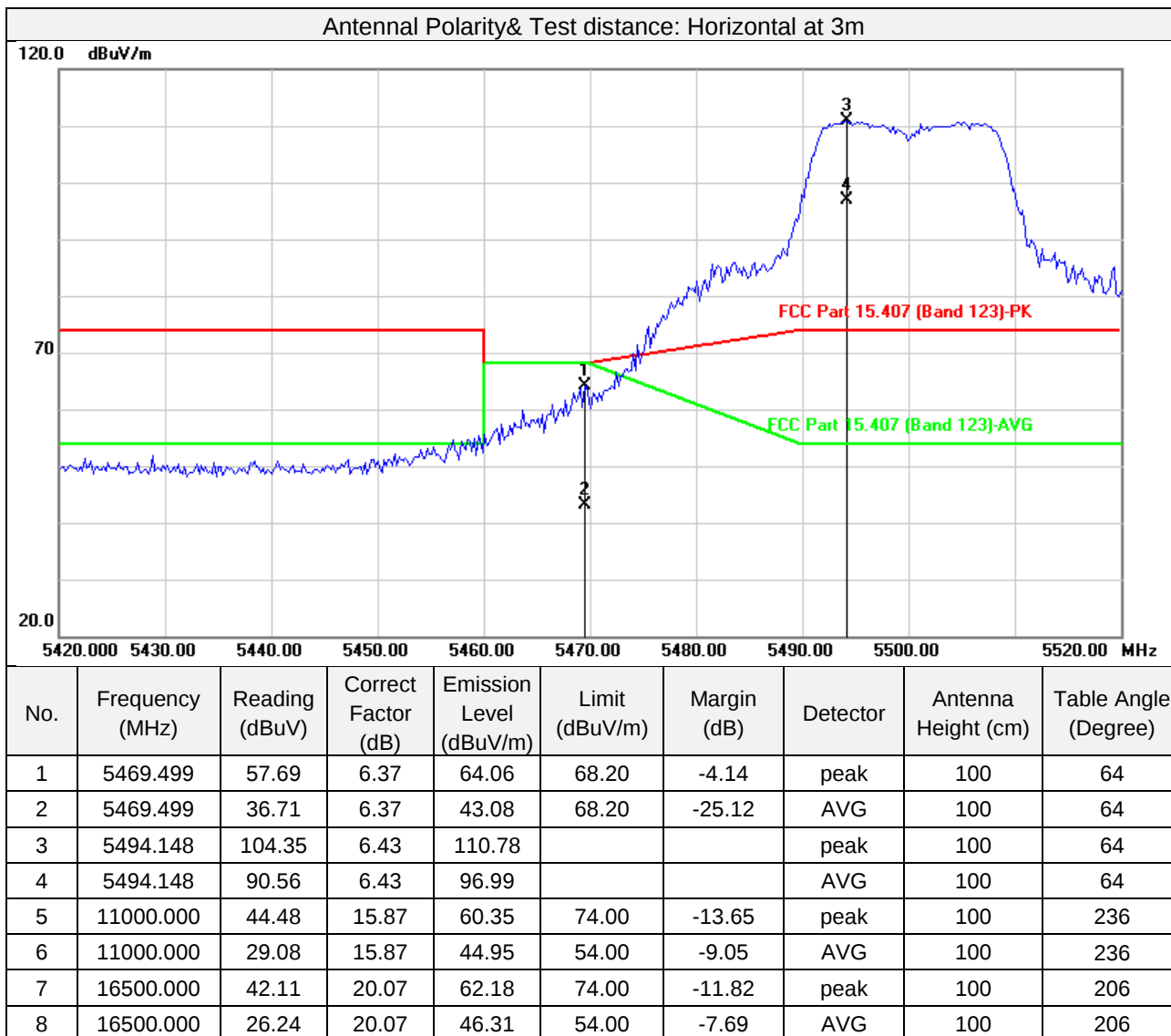


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5500MHz		
Test channel	100	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

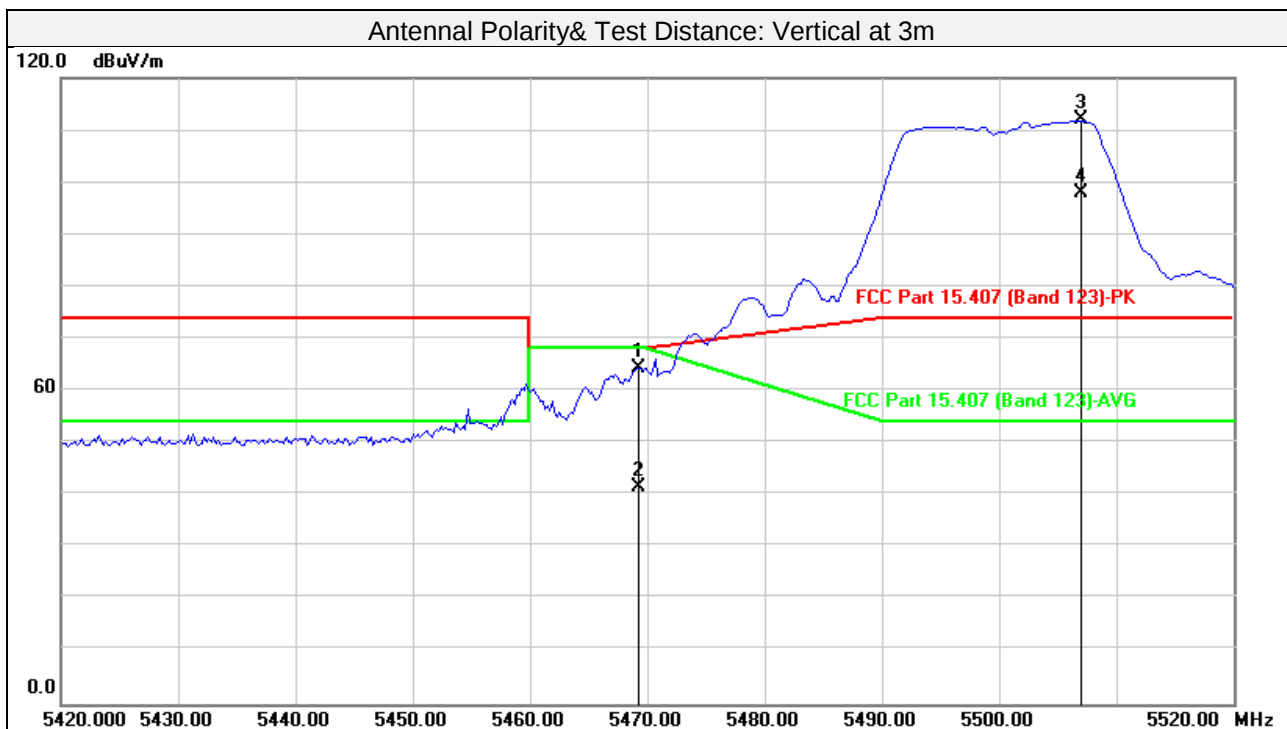


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5500MHz		
Test channel	100	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



No.	Frequency (MHz)	Reading (dBUV)	Correct Factor (dB)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5469.299	55.20	9.19	64.39	68.20	-3.81	peak	100	150
2	5469.299	32.23	9.19	41.42	68.20	-26.78	AVG	100	150
3	5506.974	102.61	9.29	111.90			peak	100	150
4	5506.974	88.78	9.29	98.07			AVG	100	150
5	11000.000	45.95	15.87	61.82	74.00	-12.18	peak	100	210
6	11000.000	29.27	15.87	45.14	54.00	-8.86	AVG	100	210
7	16500.000	40.70	20.07	60.77	74.00	-13.23	peak	100	125
8	16500.000	27.12	20.07	47.19	54.00	-6.81	AVG	100	125

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5580MHz		
Test channel	116	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

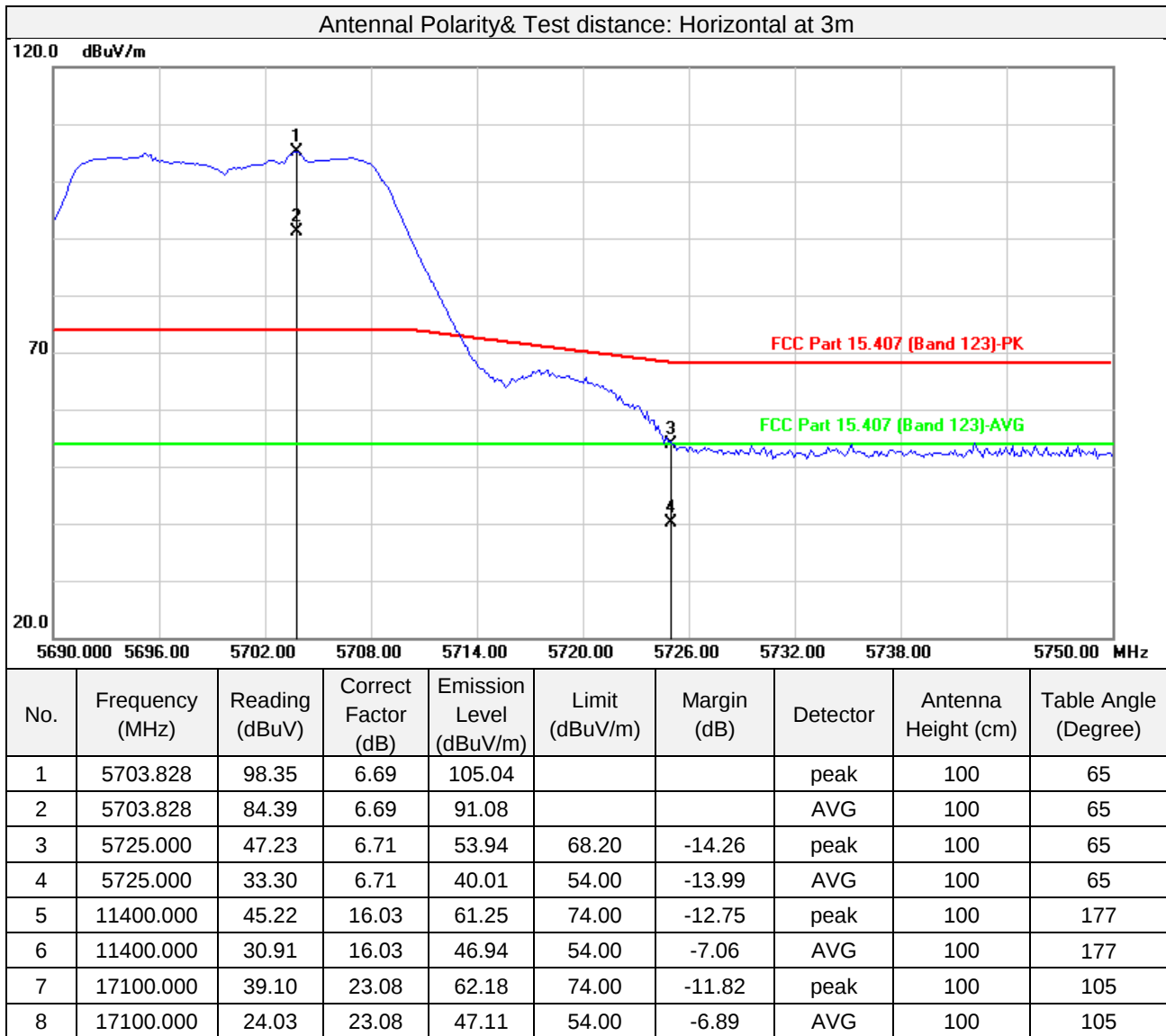
Antennal Polarity& Test Distance: Horizontal at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5580.000	103.94	6.54	110.48			peak	100	166
2	5580.000	88.77	6.54	95.31			AVG	100	166
3	11160.000	43.80	15.94	59.74	74.00	-14.26	peak	100	208
4	11160.000	29.41	15.94	45.35	54.00	-8.65	AVG	100	208
5	16740.000	40.60	21.21	61.81	74.00	-12.19	peak	100	106
6	16740.000	23.90	21.21	45.11	54.00	-8.89	AVG	100	106
Antennal Polarity& Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5580.000	105.30	6.54	111.84			peak	100	178
2	5580.000	89.60	6.54	96.14			AVG	100	178
3	11160.000	45.94	15.94	61.88	74.00	-12.12	peak	100	184
4	11160.000	30.97	15.94	46.91	54.00	-7.09	AVG	100	184
5	16740.000	40.83	21.21	62.04	74.00	-11.96	peak	100	226
6	16740.000	25.97	21.21	47.18	54.00	-6.82	AVG	100	226

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5700MHz		
Test channel	140	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

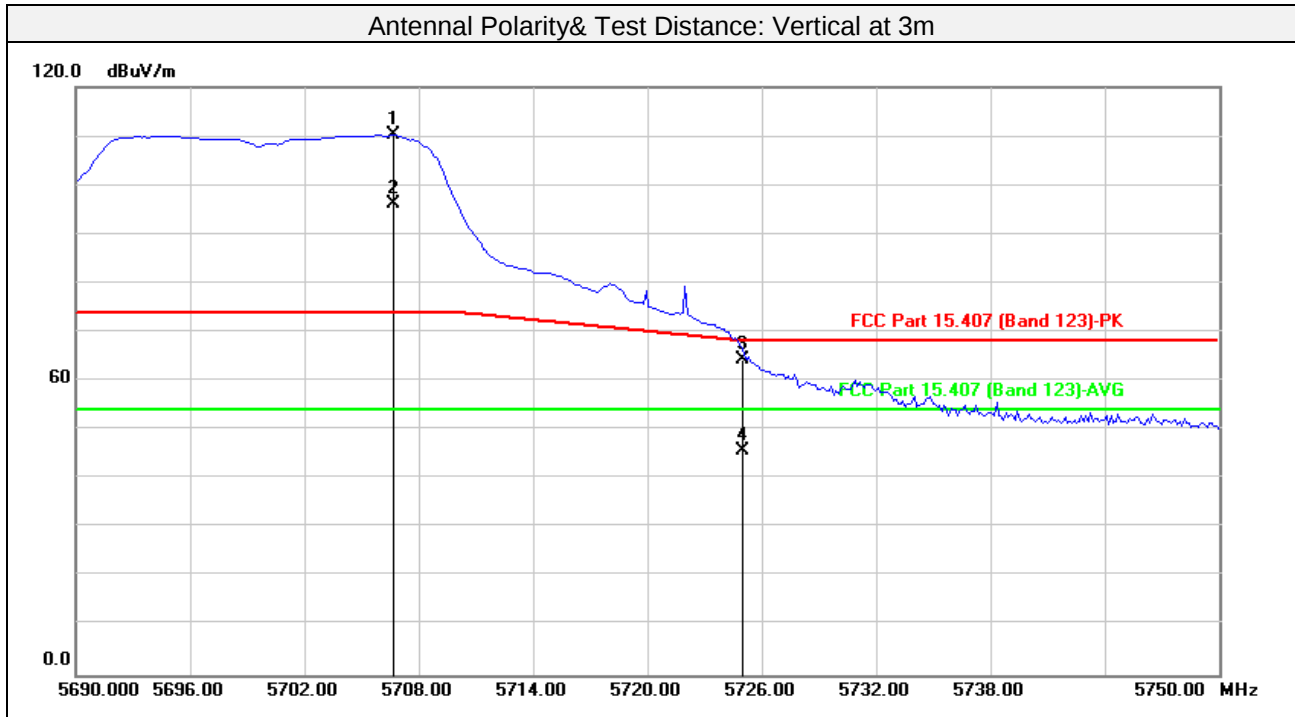


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5700MHz		
Test channel	140	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



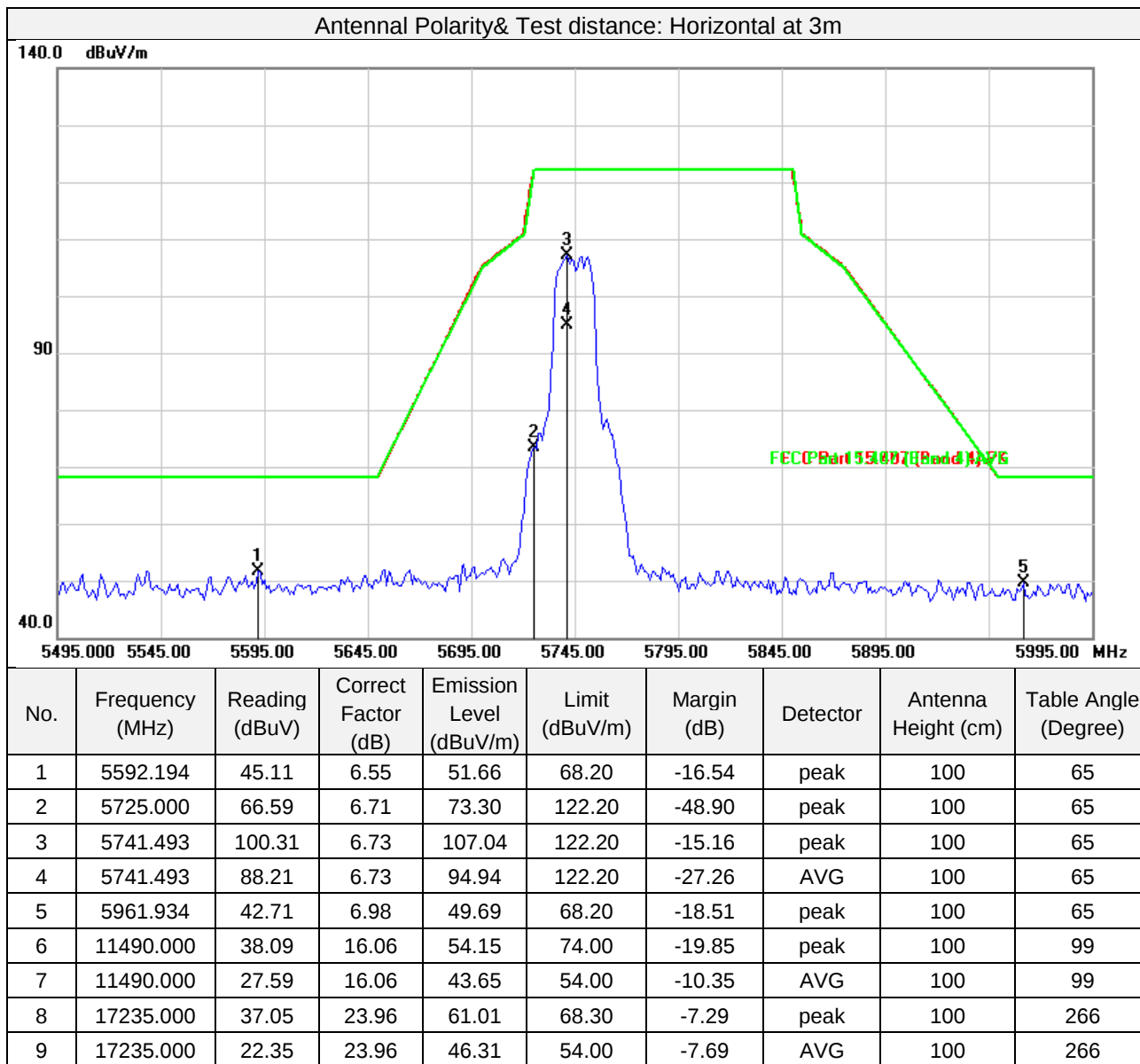
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5706.713	100.66	9.58	110.24			peak	100	303
2	5706.713	86.62	9.58	96.20			AVG	100	303
3	5725.000	54.88	9.60	64.48	68.20	-3.72	peak	100	303
4	5725.000	36.06	9.60	45.66	54.00	-8.34	AVG	100	303
5	11400.000	44.75	16.03	60.78	74.00	-13.22	peak	100	211
6	11400.000	29.08	16.03	45.11	54.00	-8.89	AVG	100	211
7	17100.000	38.68	23.08	61.76	74.00	-12.24	peak	100	206
8	17100.000	23.25	23.08	46.33	54.00	-7.67	AVG	100	206

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5745MHz		
Test channel	149	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

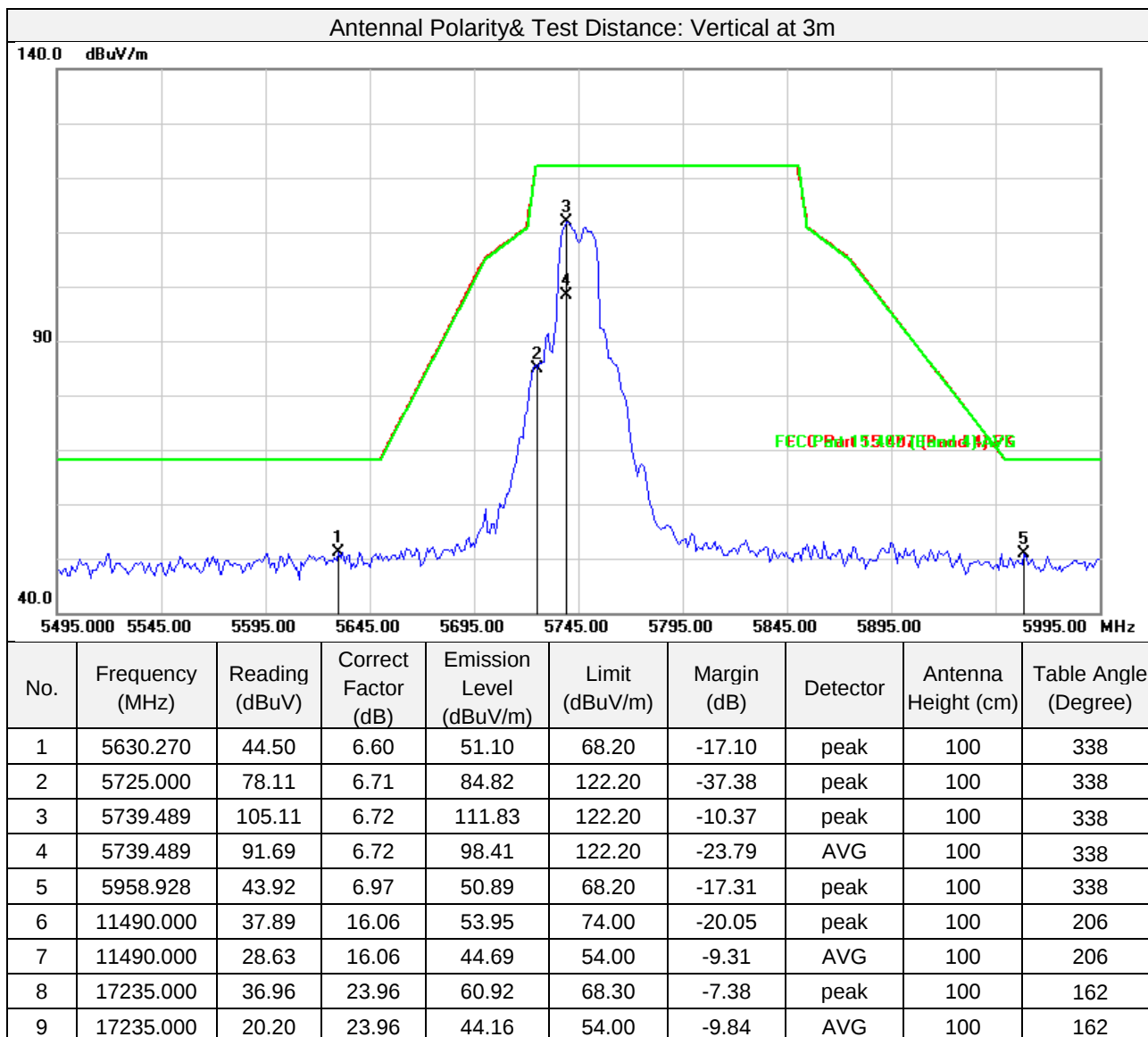


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5745MHz		
Test channel	149	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

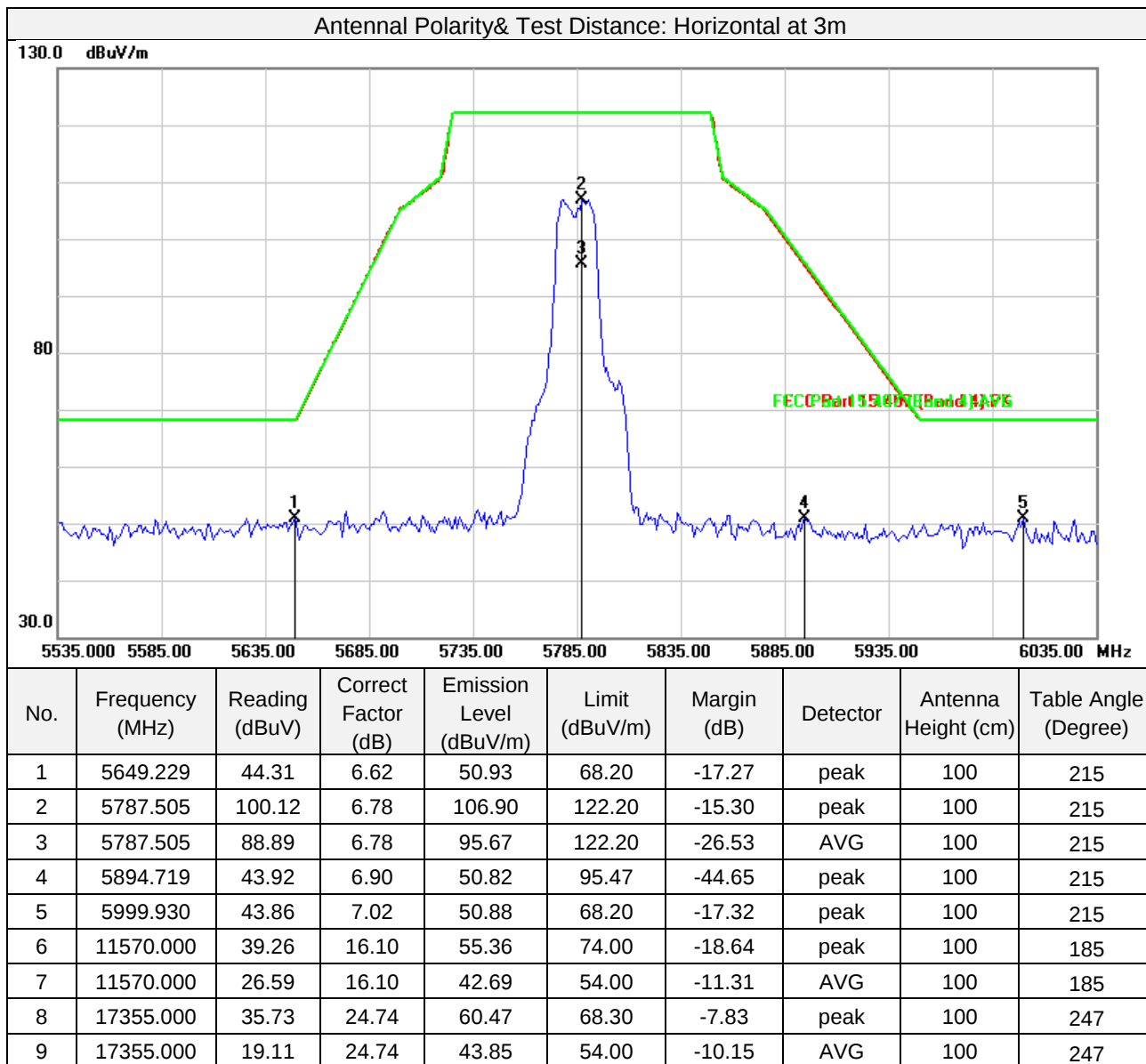


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5785MHz		
Test channel	157	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

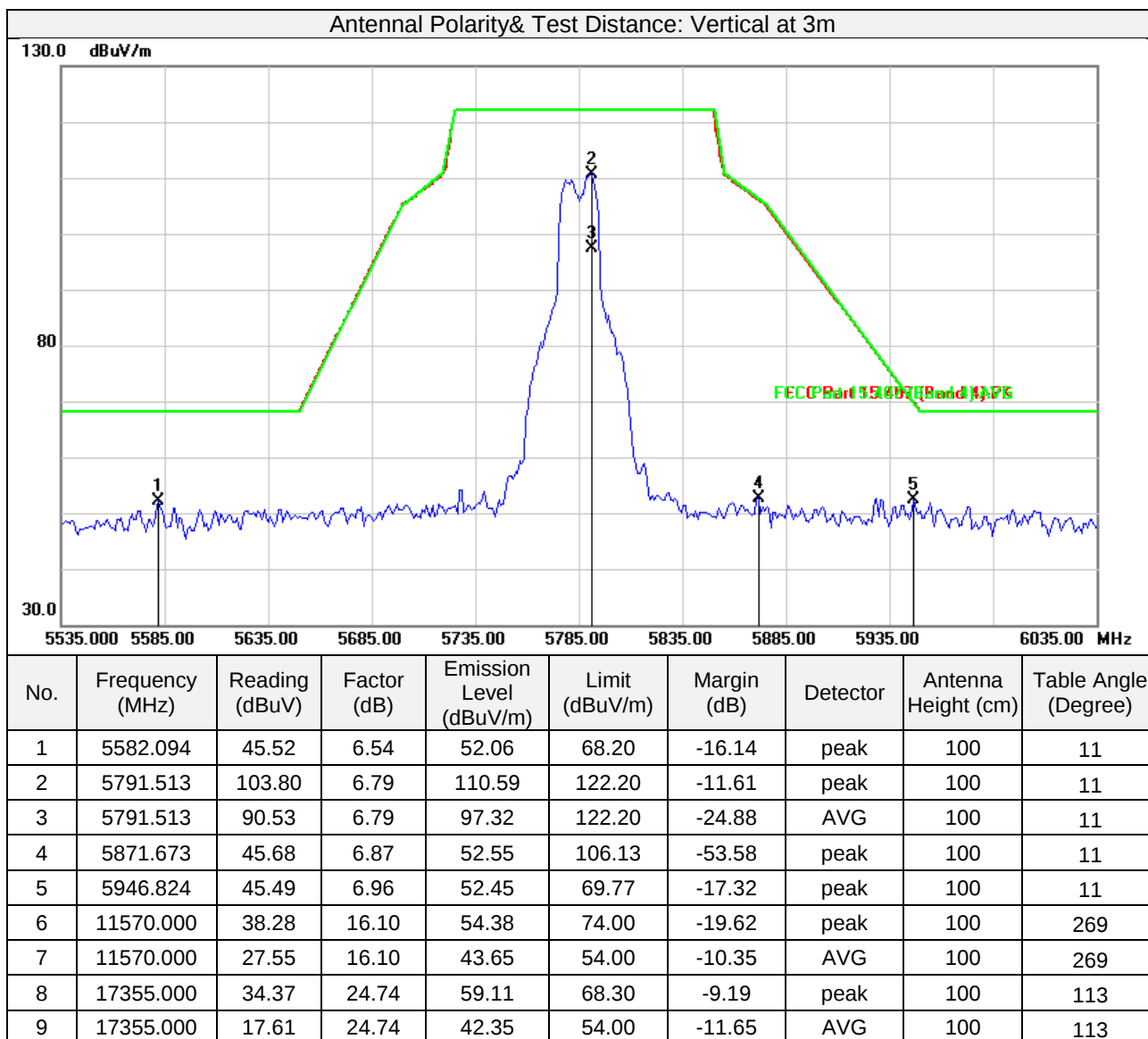


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5785MHz		
Test channel	157	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

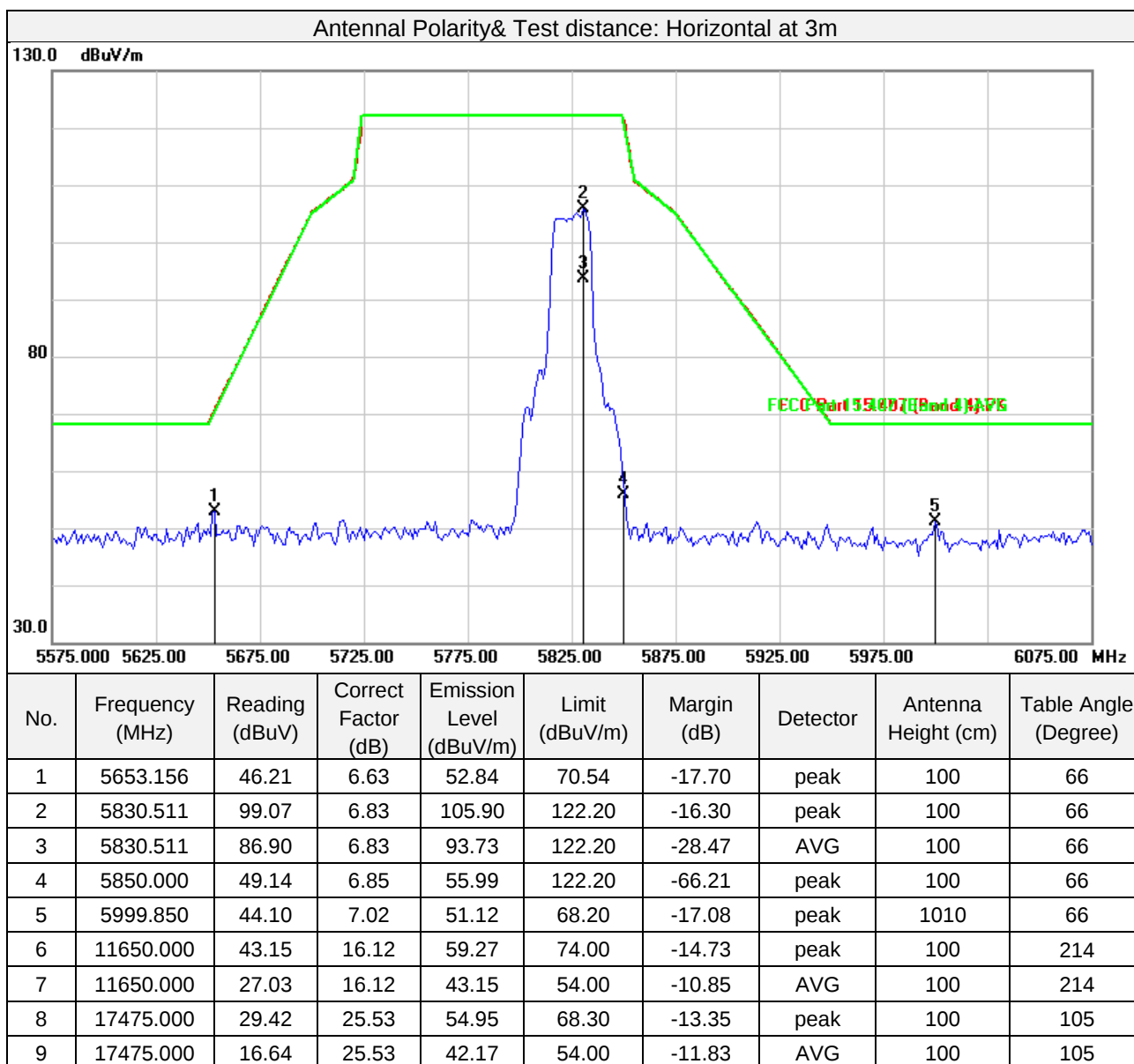


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5825MHz		
Test channel	165	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

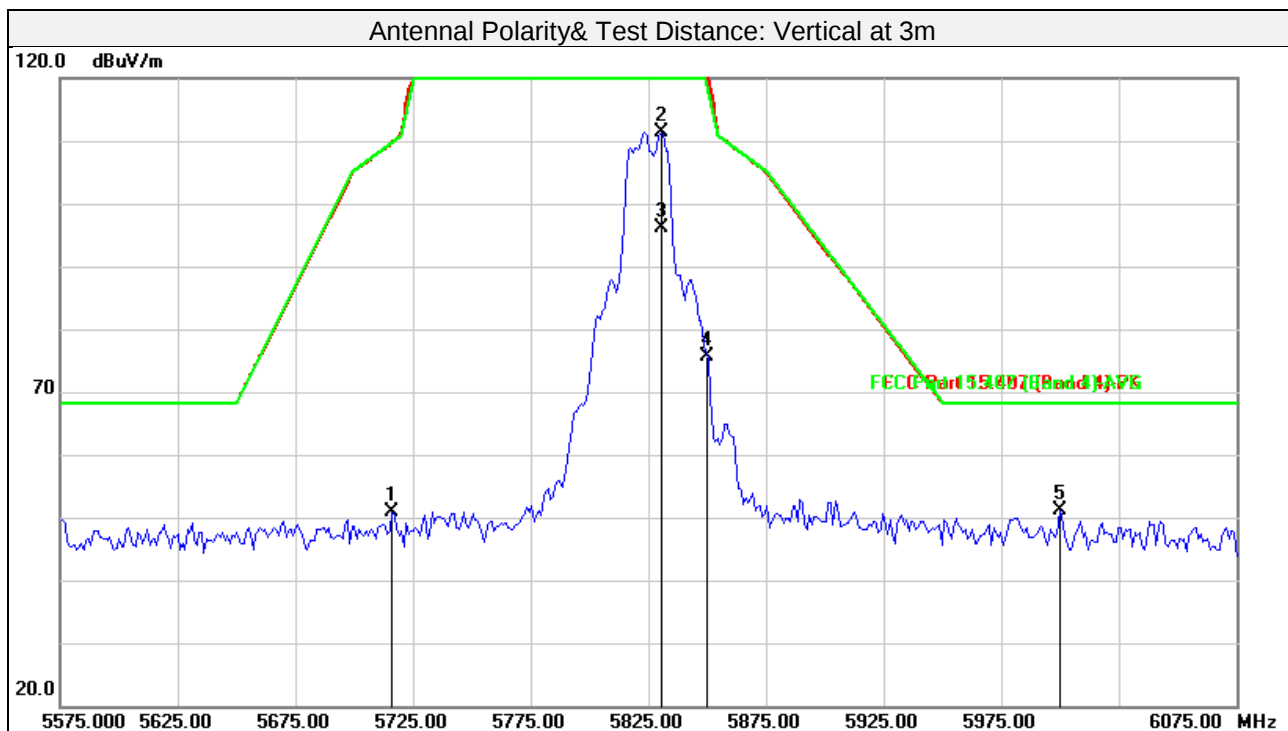


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT20_5825MHz		
Test channel	165	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5716.283	44.25	6.70	50.95	109.76	-58.81	peak	100	214
2	5830.511	104.58	6.83	111.41	122.20	-10.79	peak	100	214
3	5830.511	89.31	6.83	96.14	122.20	-26.06	AVG	100	214
4	5850.000	68.85	6.85	75.70	122.20	-46.50	peak	100	214
5	5999.850	44.02	7.02	51.04	68.20	-17.16	peak	100	214
6	11650.000	45.63	16.12	61.75	74.00	-12.25	peak	100	158
7	11650.000	26.86	16.12	42.98	54.00	-11.02	AVG	100	158
8	17475.000	29.78	25.53	55.31	68.30	-12.99	peak	100	244
9	17475.000	18.32	25.53	43.85	54.00	-10.15	AVG	100	244

Remarks:

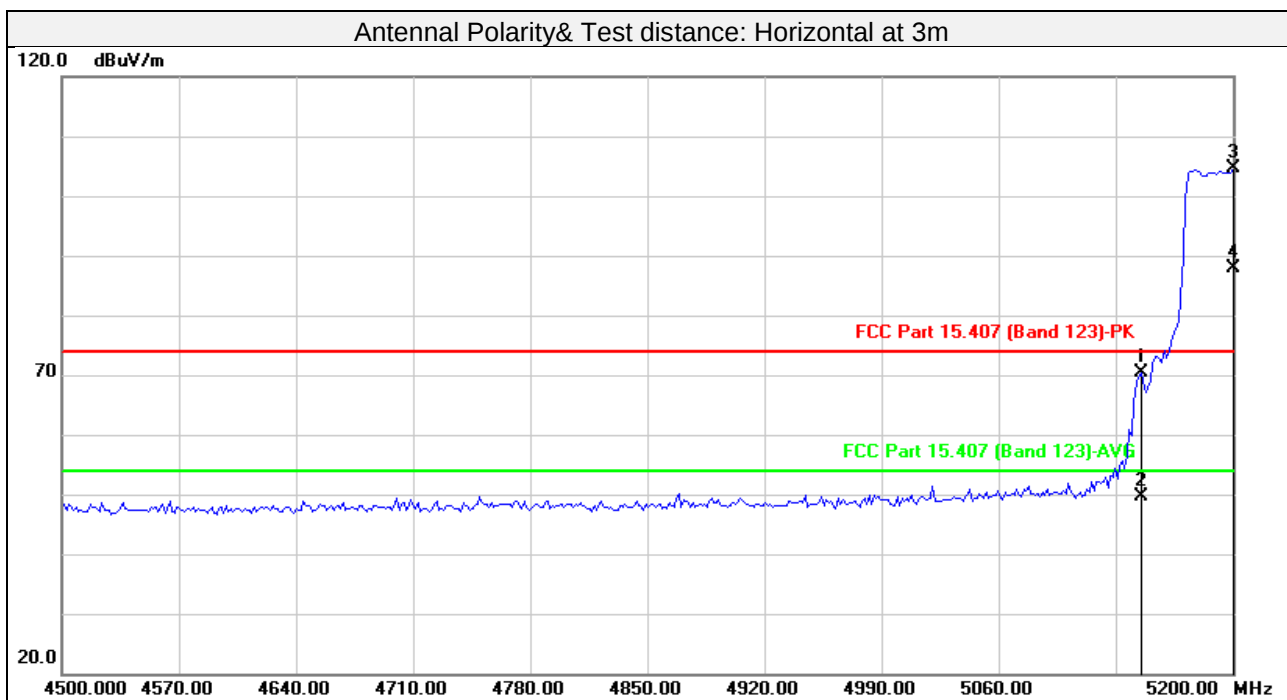
1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Above 1GHz Data:

802.11n HT40

Test Mode	802.11n HT40_5190MHz		
Test channel	38	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



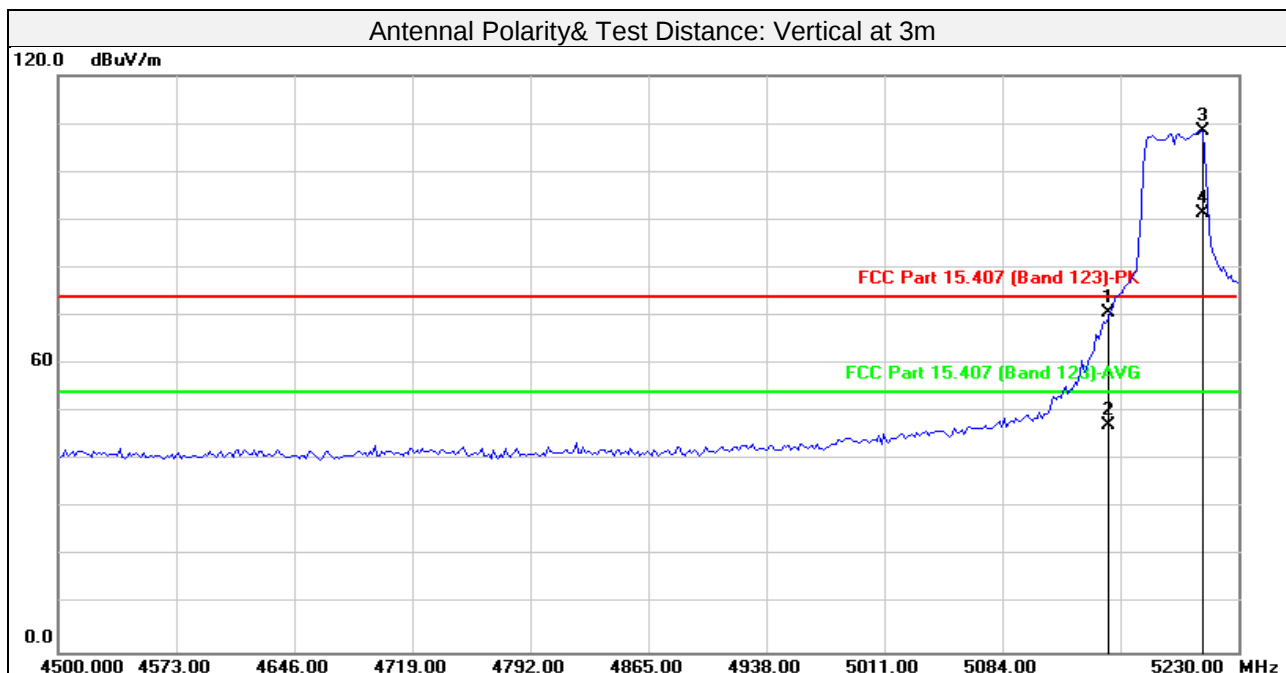
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5145.291	64.83	5.44	70.27	74.00	-3.73	peak	100	152
2	5145.291	44.19	5.44	49.63	54.00	-4.37	AVG	100	152
3	5200.000	99.04	5.59	104.63			peak	100	152
4	5200.000	82.25	5.59	87.84			AVG	100	152
5	10380.000	42.79	14.54	57.33	74.00	-16.67	peak	100	115
6	10380.000	29.02	14.54	43.56	54.00	-10.44	AVG	100	115
7	15570.000	40.50	18.57	59.07	74.00	-14.93	peak	100	106
8	15570.000	26.60	18.57	45.17	54.00	-8.83	AVG	100	106

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5190MHz		
Test channel	38	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5150.000	62.61	8.15	70.76	74.00	-3.24	peak	100	299
2	5150.000	39.01	8.15	47.16	54.00	-6.84	AVG	100	299
3	5208.056	100.04	8.35	108.39			peak	100	299
4	5208.056	82.91	8.35	91.26			AVG	100	299
5	10380.000	39.82	14.54	54.36	74.00	-19.64	peak	100	51
6	10380.000	28.98	14.54	43.52	54.00	-10.48	AVG	100	51
7	15570.000	37.98	18.57	56.55	74.00	-17.45	peak	100	216
8	15570.000	26.68	18.57	45.25	54.00	-8.75	AVG	100	216

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5230MHz		
Test channel	46	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

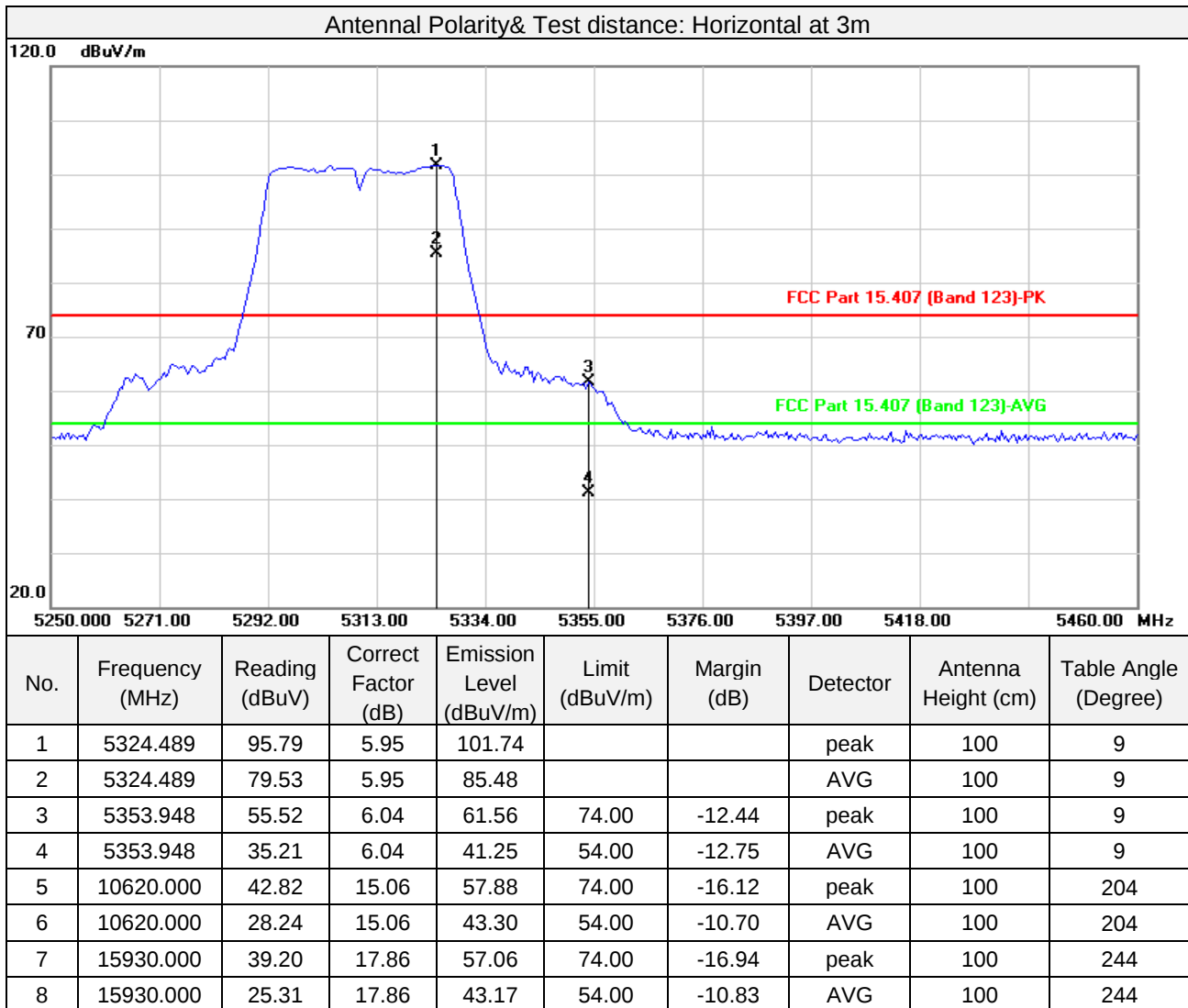
Antennal Polarity& Test Distance: Horizontal at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5230.000	100.23	5.68	105.91			peak	100	164
2	5230.000	82.78	5.68	88.46			AVG	100	164
3	10460.000	43.47	14.71	58.18	74.00	-15.82	peak	100	147
4	10460.000	29.37	14.71	44.08	54.00	-9.92	AVG	100	147
5	15690.000	41.57	18.32	59.89	74.00	-14.11	peak	100	216
6	15690.000	26.45	18.32	44.77	54.00	-9.23	AVG	100	216
Antennal Polarity& Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5230.000	99.27	5.68	104.95			peak	100	215
2	5230.000	81.46	5.68	87.14			AVG	100	215
3	10460.000	44.65	14.71	59.36	74.00	-14.64	peak	100	207
4	10460.000	30.06	14.71	44.77	54.00	-9.23	AVG	100	207
5	15690.000	40.67	18.32	58.99	74.00	-15.01	peak	100	175
6	15690.000	26.54	18.32	44.86	54.00	-9.14	AVG	100	175

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5310MHz		
Test channel	62	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

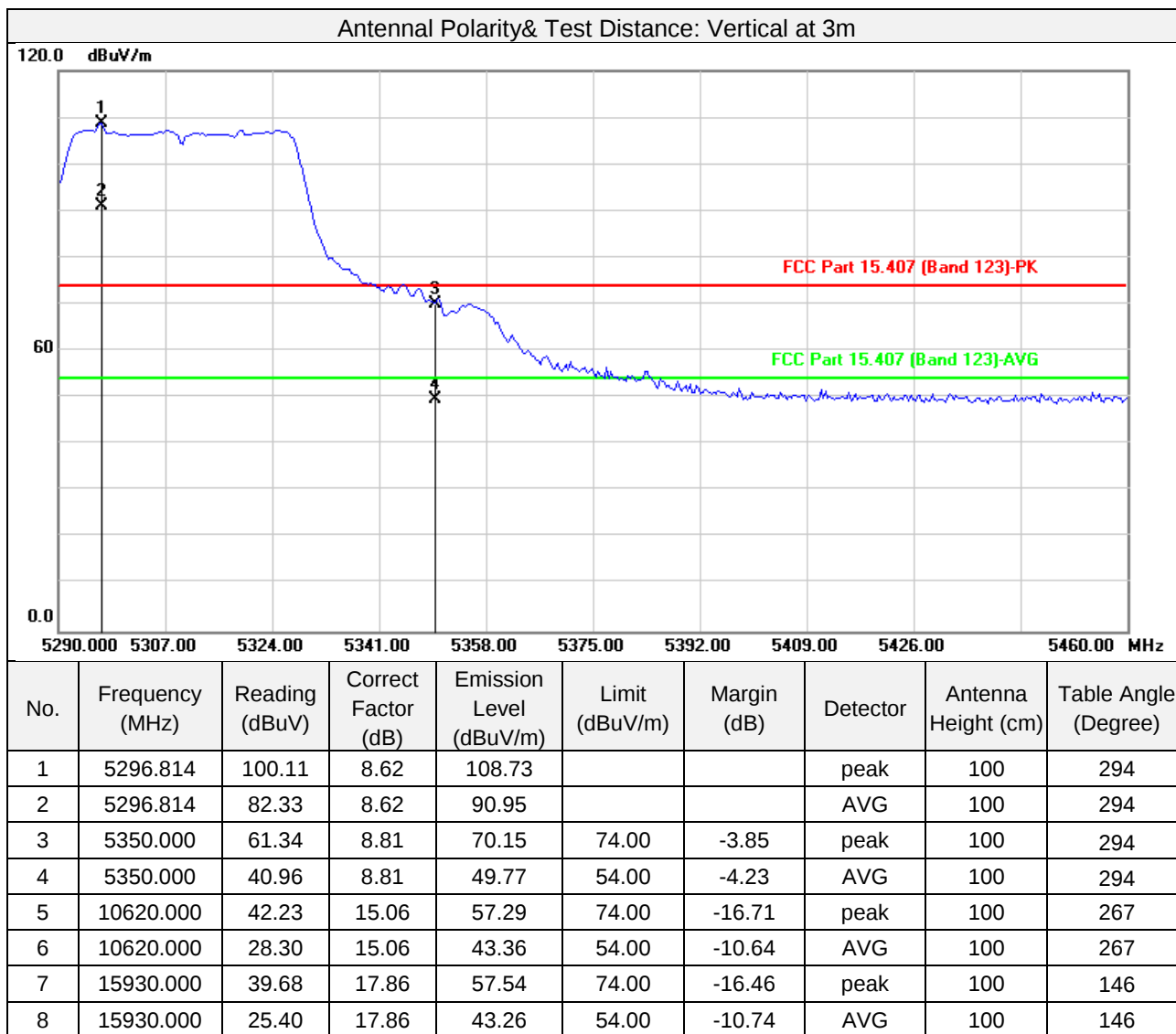


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5310MHz		
Test channel	62	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

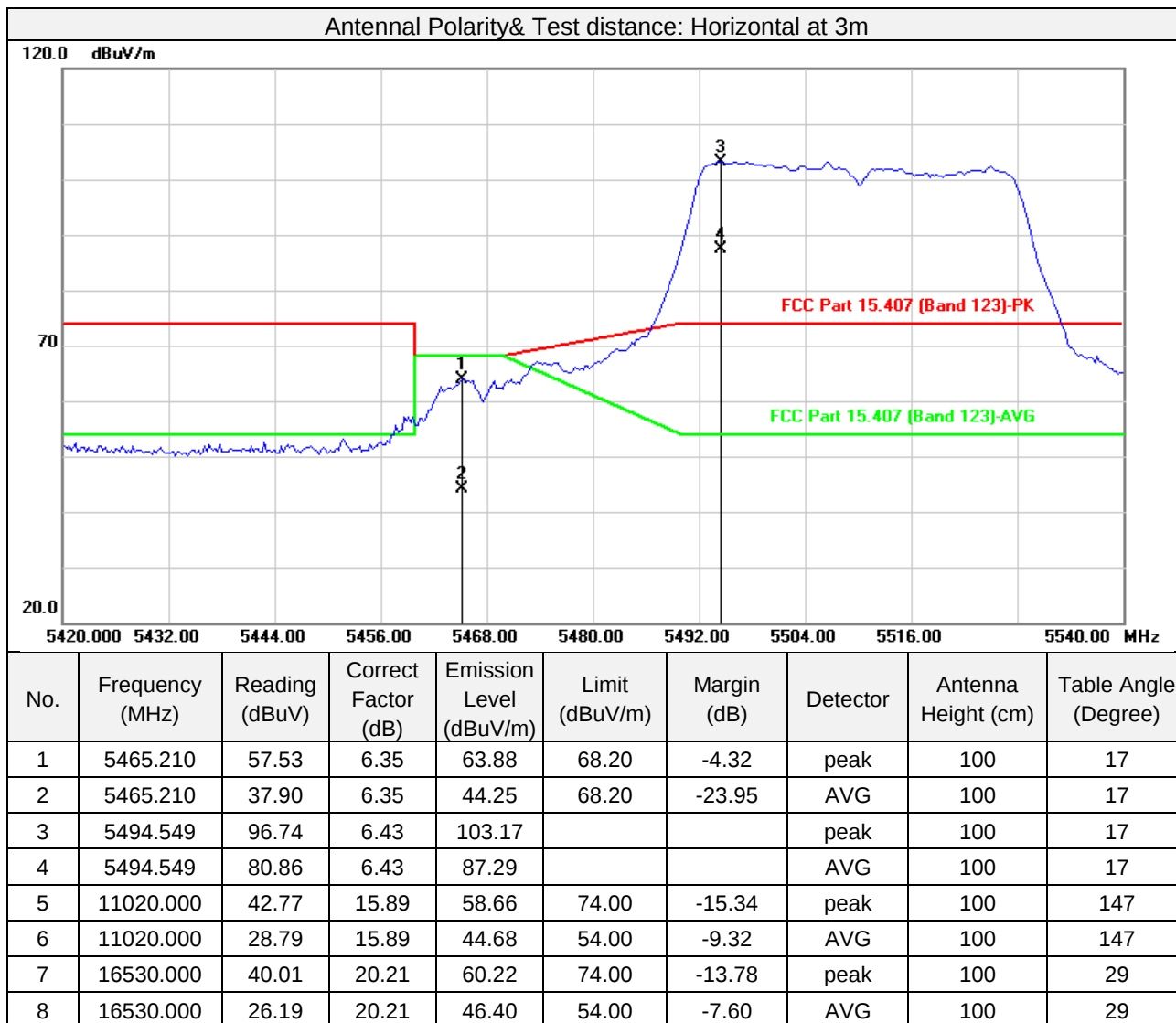


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5510MHz		
Test channel	102	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

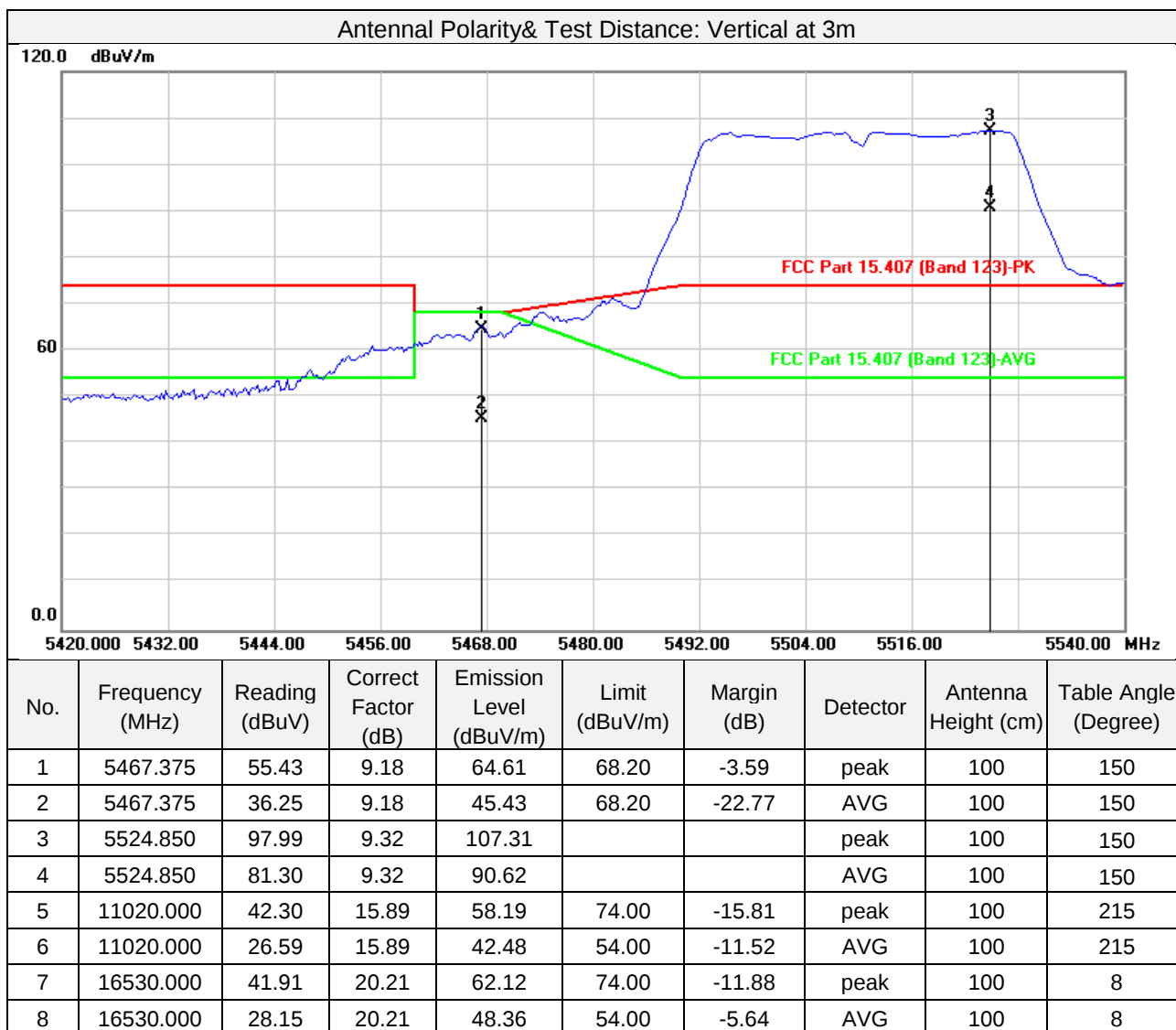


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5510MHz		
Test channel	102	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5550MHz		
Test channel	110	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

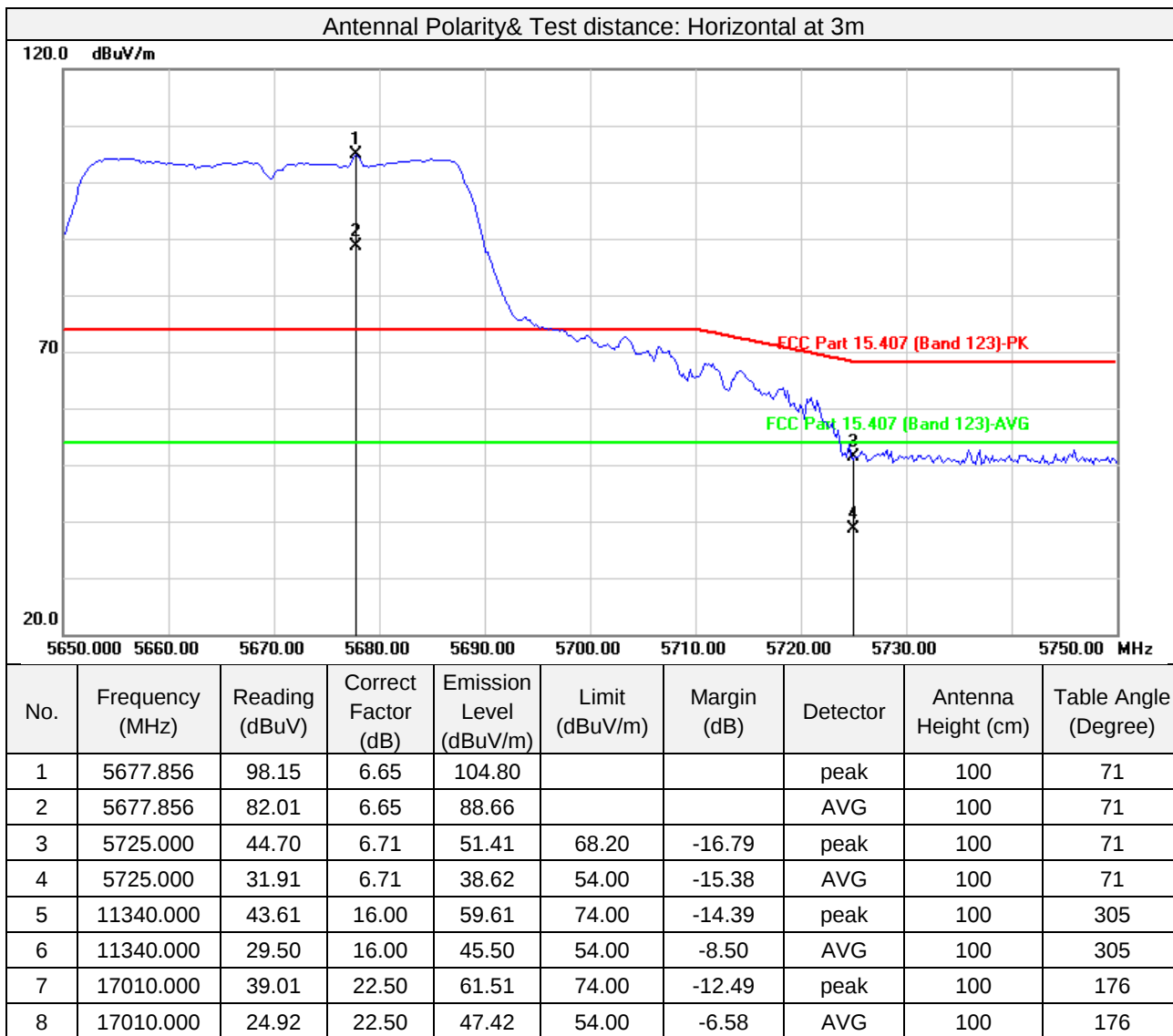
Antennal Polarity& Test Distance: Horizontal at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5550.000	97.13	6.51	103.64			peak	100	228
2	5550.000	81.63	6.51	88.14			AVG	100	228
3	11100.000	41.70	15.91	57.61	74.00	-16.39	peak	100	305
4	11100.000	28.28	15.91	44.19	54.00	-9.81	AVG	100	305
5	16650.000	39.39	20.79	60.18	74.00	-13.82	peak	100	211
6	16650.000	25.21	20.79	46.00	54.00	-8.00	AVG	100	211
Antennal Polarity& Test Distance: Vertical at 3m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5550.000	98.26	6.51	104.77			peak	100	174
2	5550.000	81.96	6.51	88.47			AVG	100	174
3	11100.000	42.59	15.91	58.50	74.00	-15.50	peak	100	315
4	11100.000	28.45	15.91	44.36	54.00	-9.64	AVG	100	315
5	16650.000	39.26	20.79	60.05	74.00	-13.95	peak	100	264
6	16650.000	25.06	20.79	45.85	54.00	-8.15	AVG	100	264

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5670MHz		
Test channel	134	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

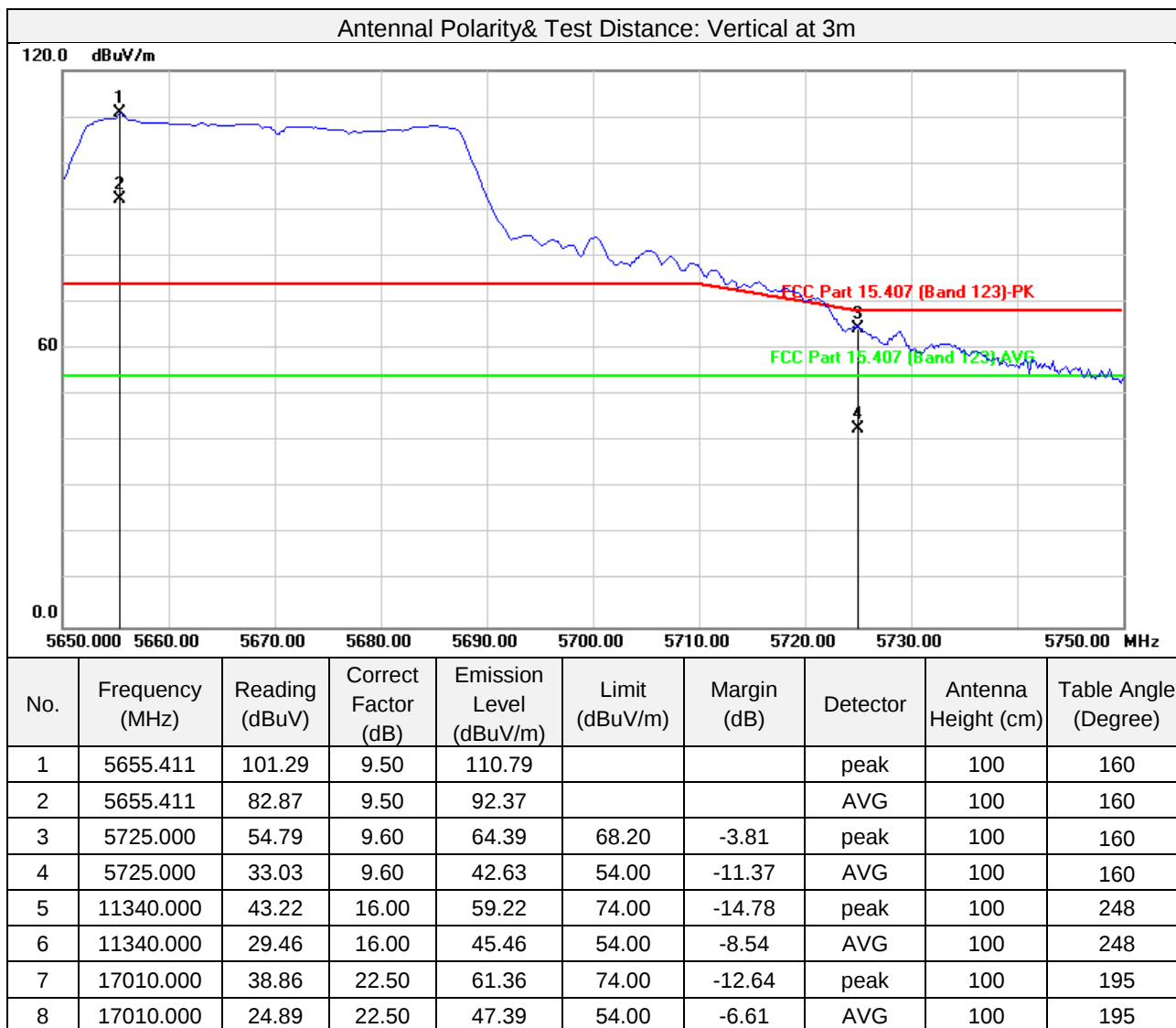


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5670MHz		
Test channel	134	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

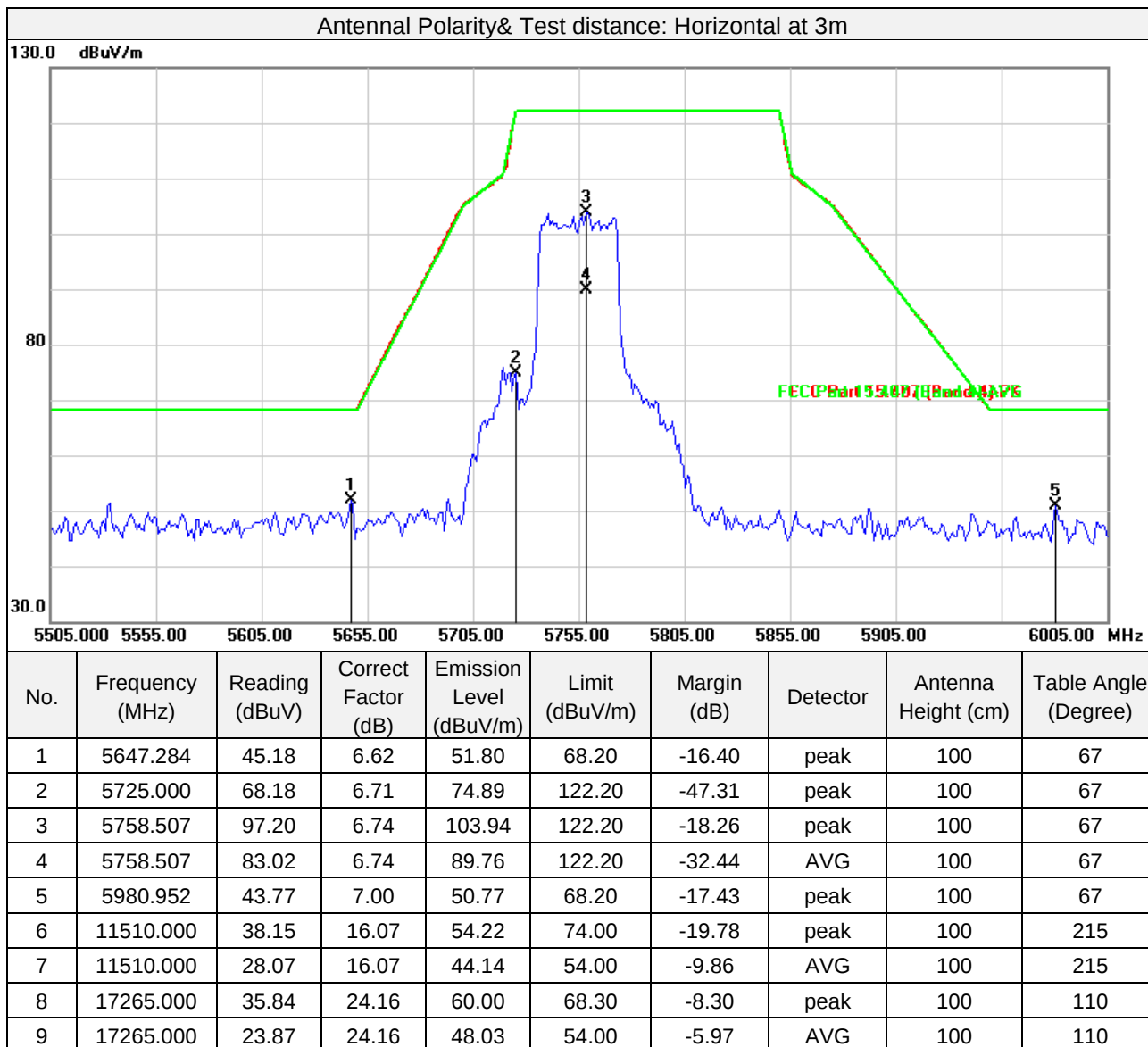


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



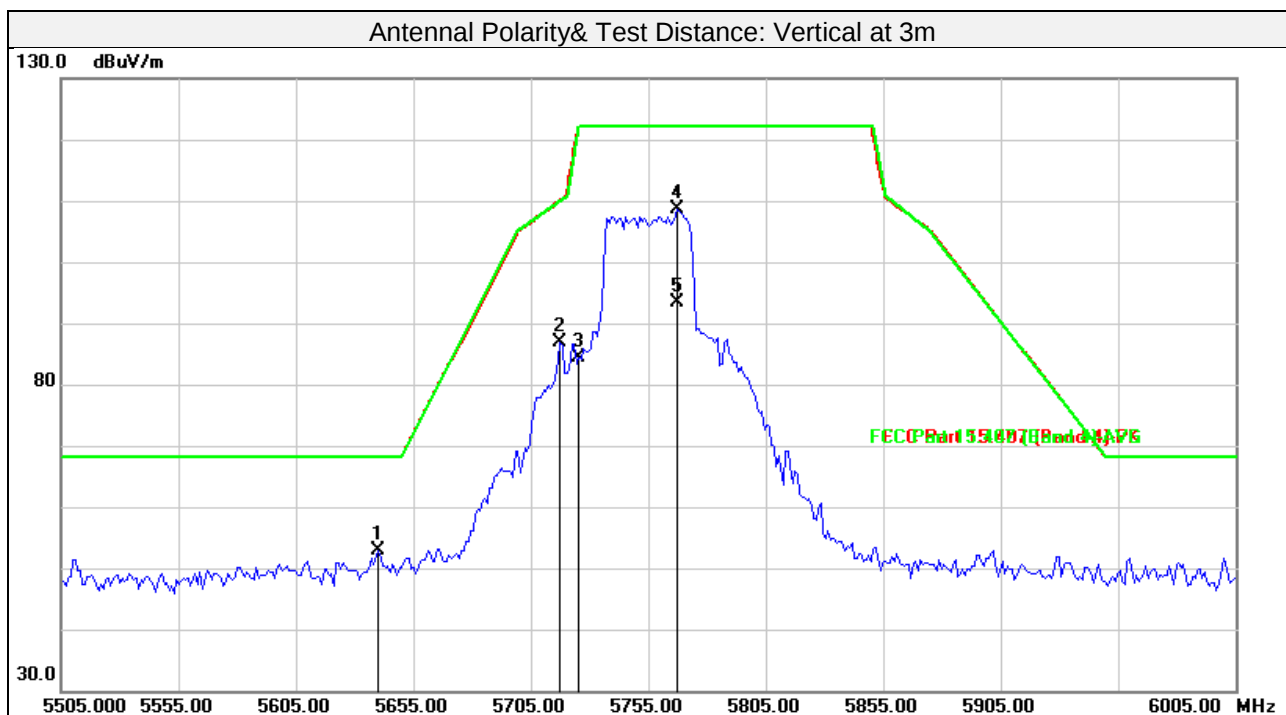
Test Mode	802.11n HT40_5755MHz		
Test channel	151	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value

Test Mode	802.11n HT40_5755MHz		
Test channel	151	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



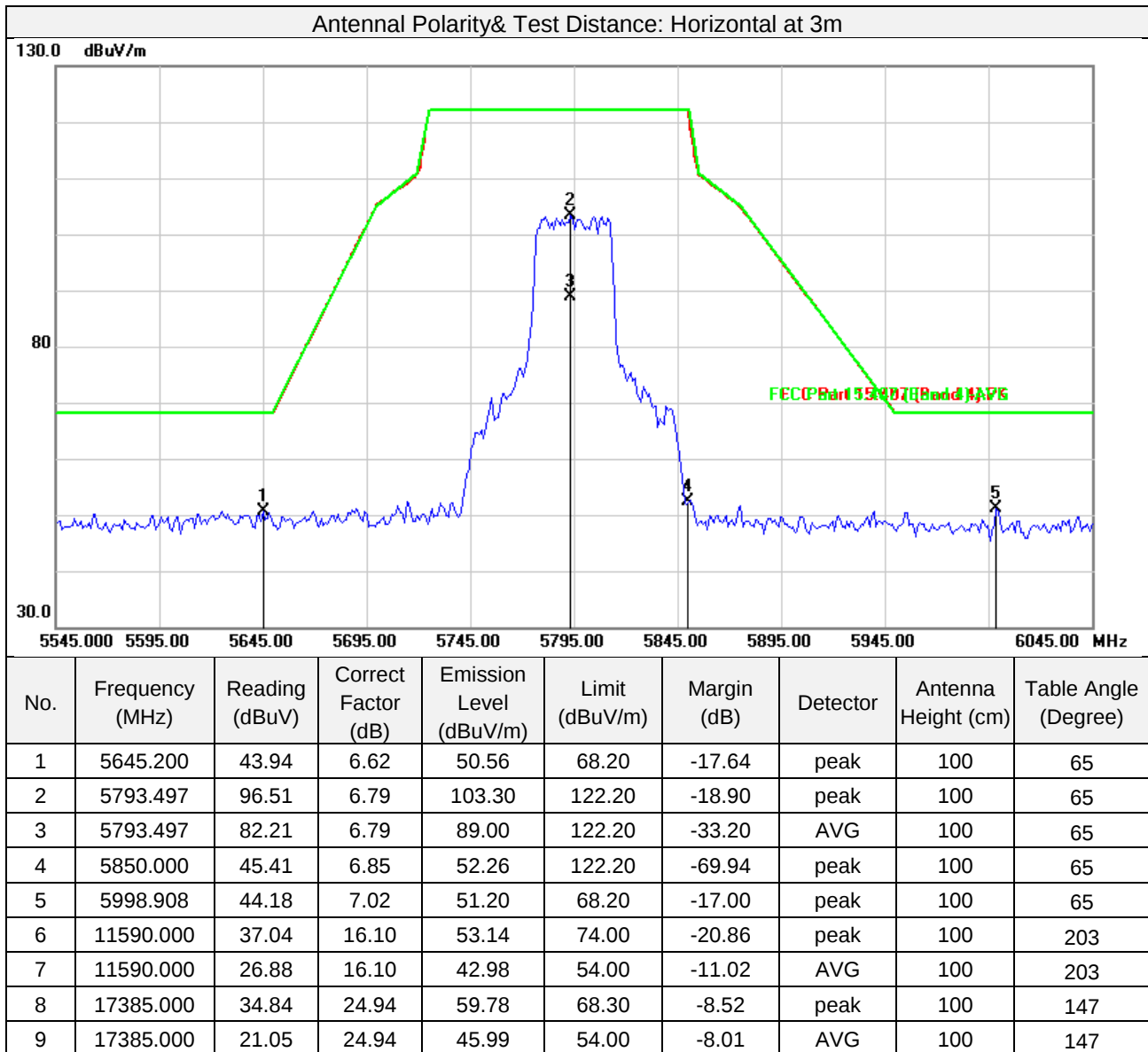
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5640.270	46.38	6.61	52.99	68.20	-15.21	peak	100	337
2	5717.425	80.08	6.70	86.78	110.08	-23.30	peak	100	337
3	5725.000	77.76	6.71	84.47	122.20	-37.73	peak	100	337
4	5767.525	101.77	6.75	108.52	122.20	-13.68	peak	100	337
5	5767.525	86.65	6.75	93.40	122.20	-28.80	AVG	100	337
6	11510.000	37.09	16.07	53.16	74.00	-20.84	peak	100	184
7	11510.000	27.04	16.07	43.11	54.00	-10.89	AVG	100	184
8	17265.000	35.05	24.16	59.21	68.30	-9.09	peak	100	216
9	17265.000	23.97	24.16	48.13	54.00	-5.87	AVG	100	216

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5795MHz		
Test channel	159	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

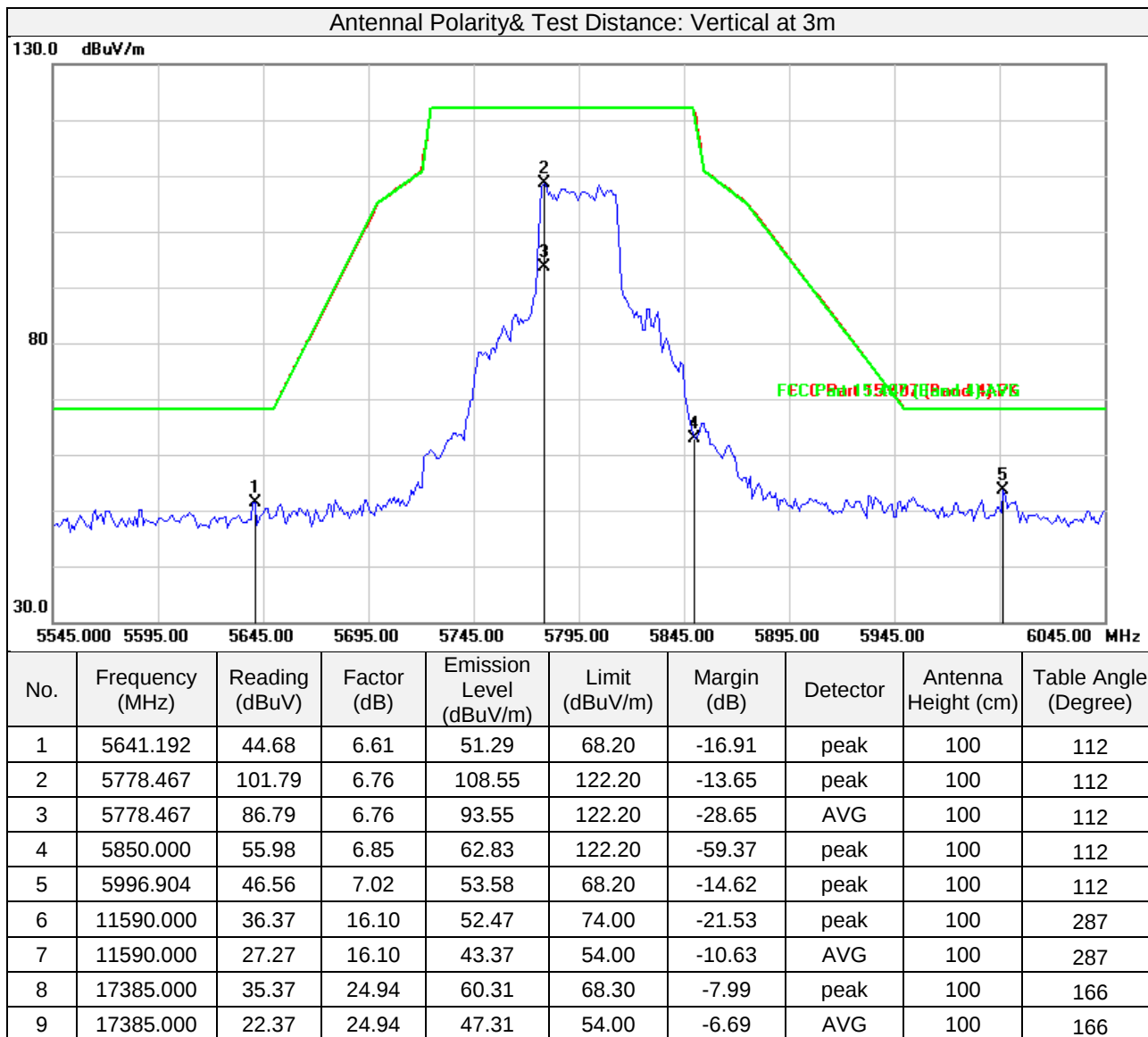


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11n HT40_5795MHz		
Test channel	159	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



Remarks:

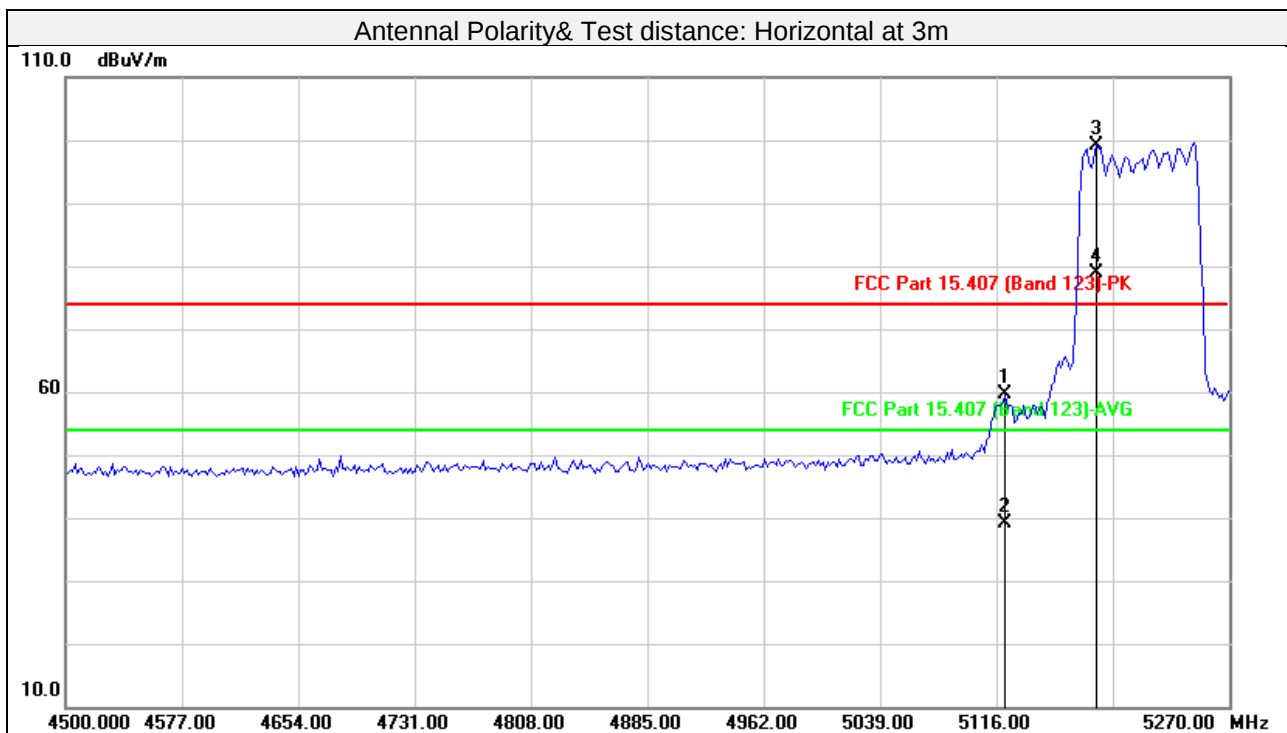
1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Above 1GHz Data:

802.11ac VHT80

Test Mode	802.11ac VHT80_5210MHz		
Test channel	42	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



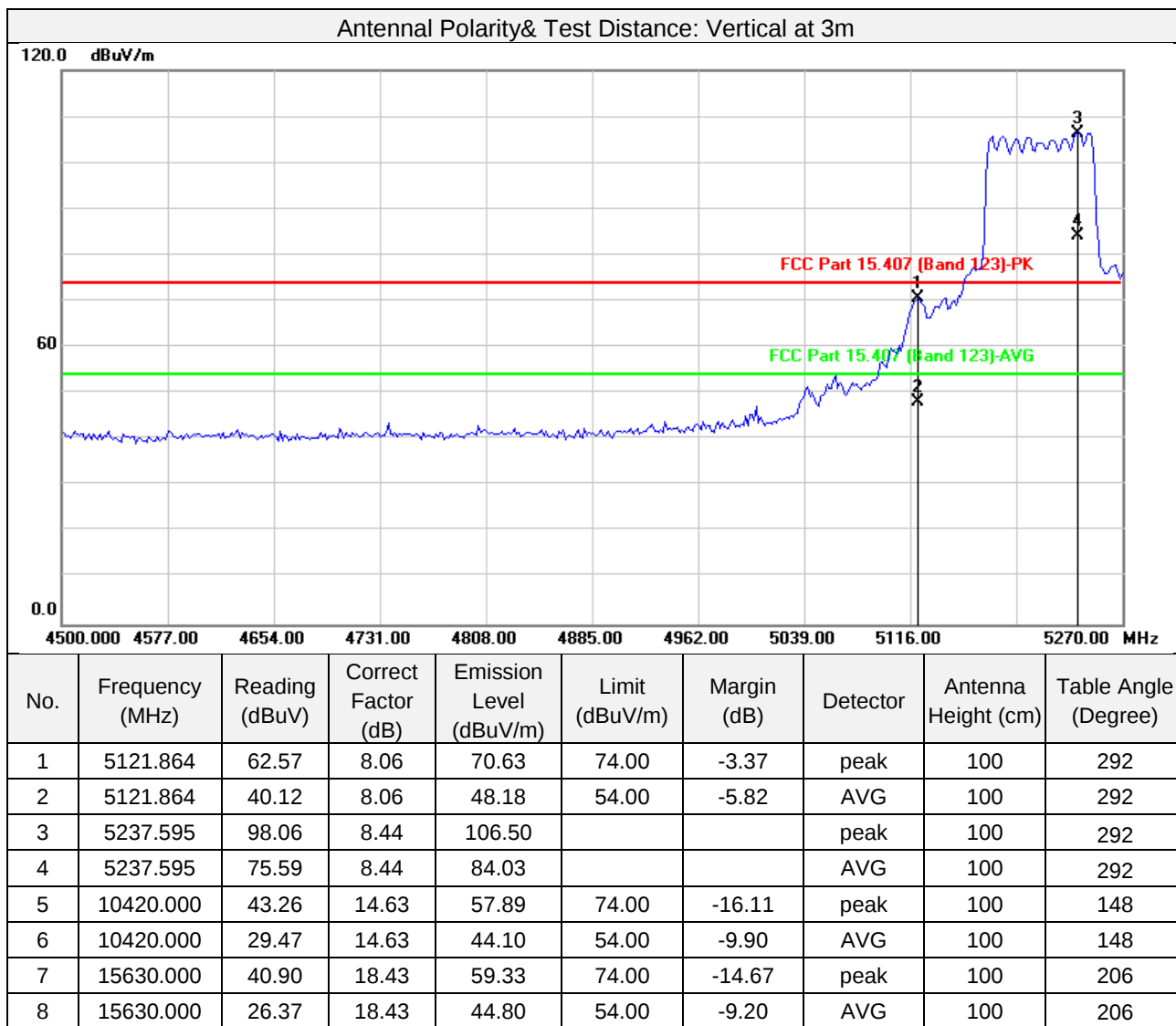
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5121.864	54.27	5.37	59.64	74.00	-14.36	peak	100	154
2	5121.864	33.78	5.37	39.15	54.00	-14.85	AVG	100	154
3	5182.044	93.70	5.55	99.25			peak	100	154
4	5182.044	73.40	5.55	78.95			AVG	100	154
5	10420.000	43.43	14.63	58.06	74.00	-15.94	peak	100	246
6	10420.000	29.07	14.63	43.70	54.00	-10.30	AVG	100	246
7	15630.000	40.41	18.43	58.84	74.00	-15.16	peak	100	206
8	15630.000	26.33	18.43	44.76	54.00	-9.24	AVG	100	206

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5210MHz		
Test channel	42	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

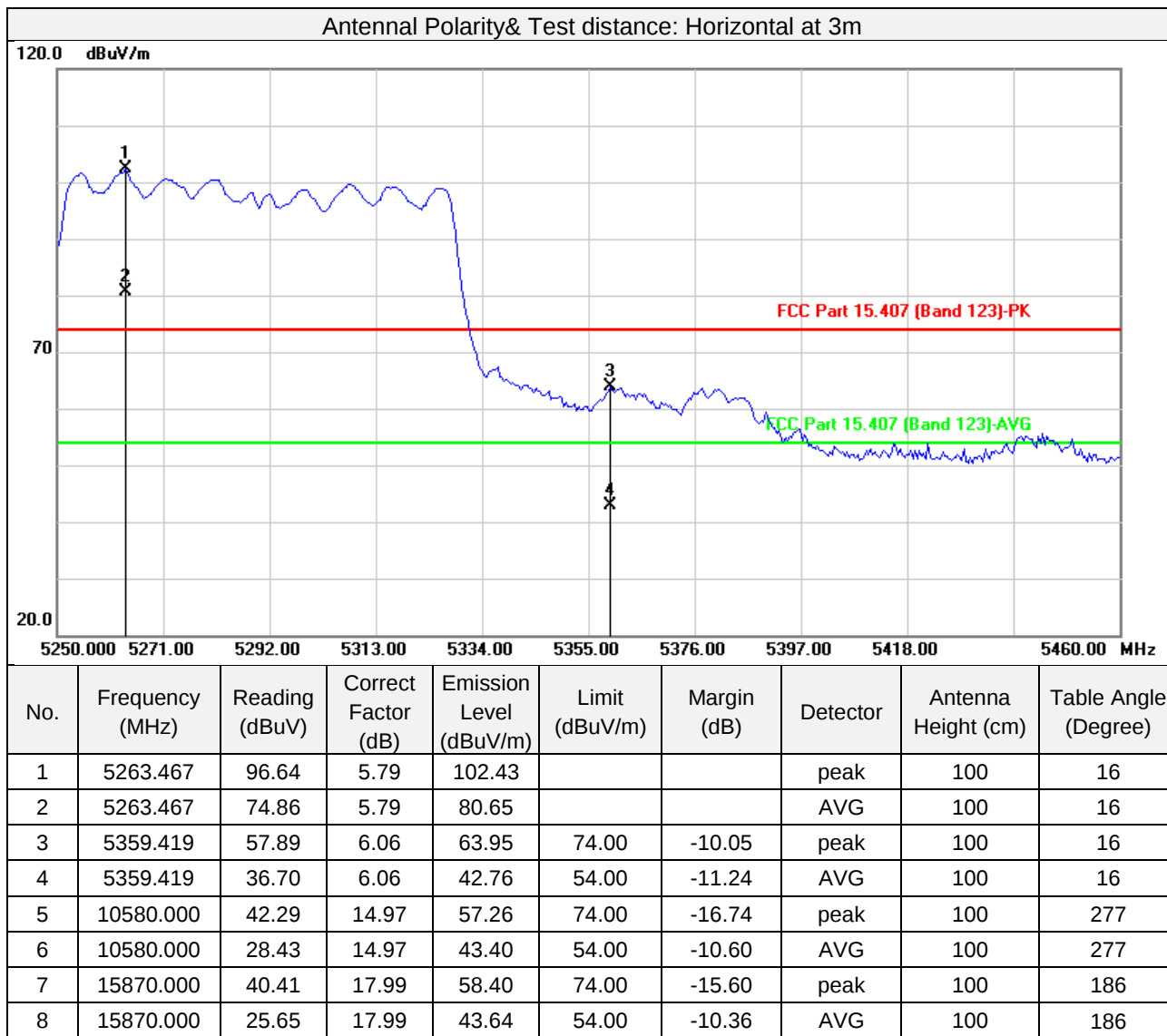


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5290MHz		
Test channel	58	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

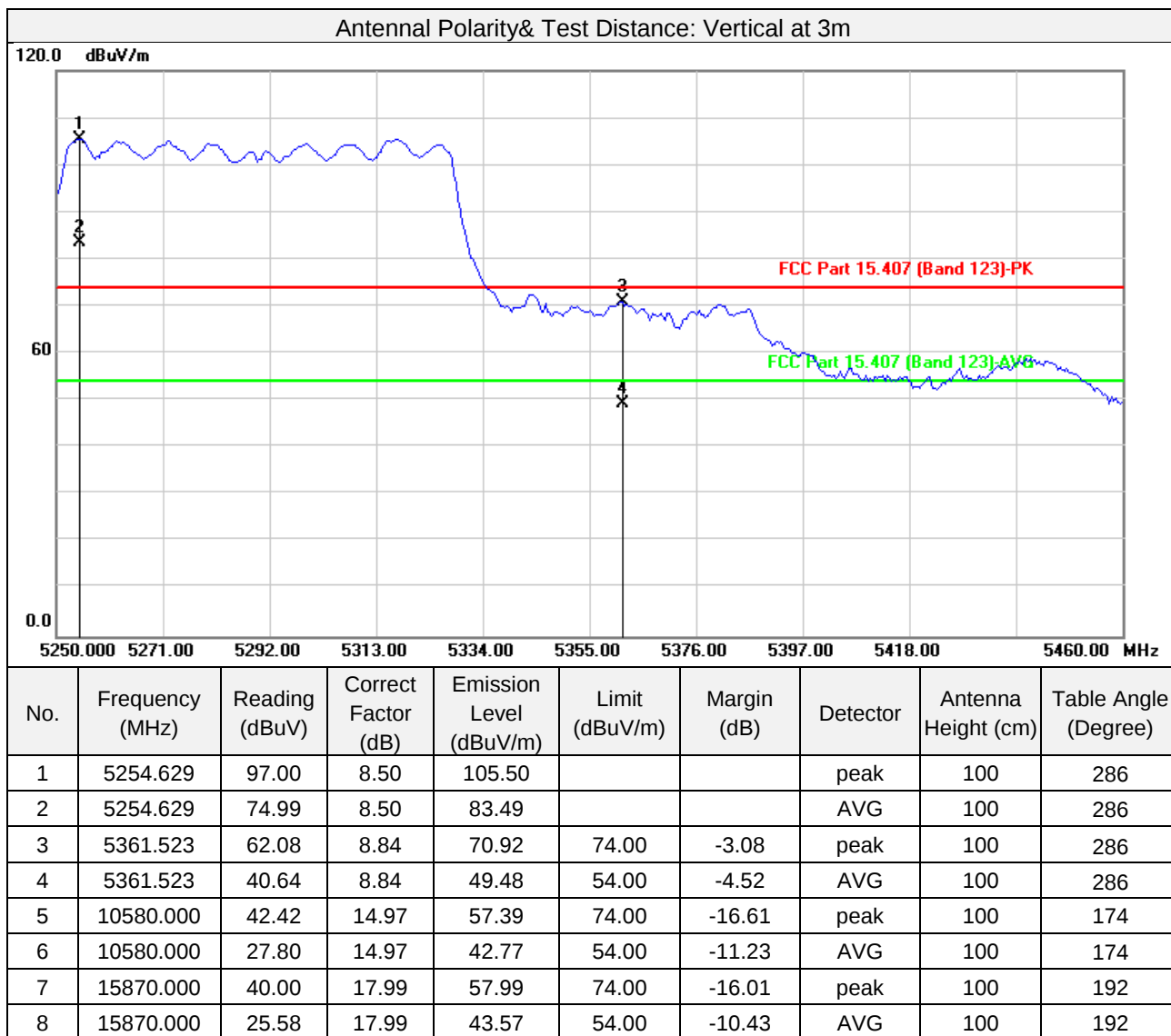


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5290MHz		
Test channel	58	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

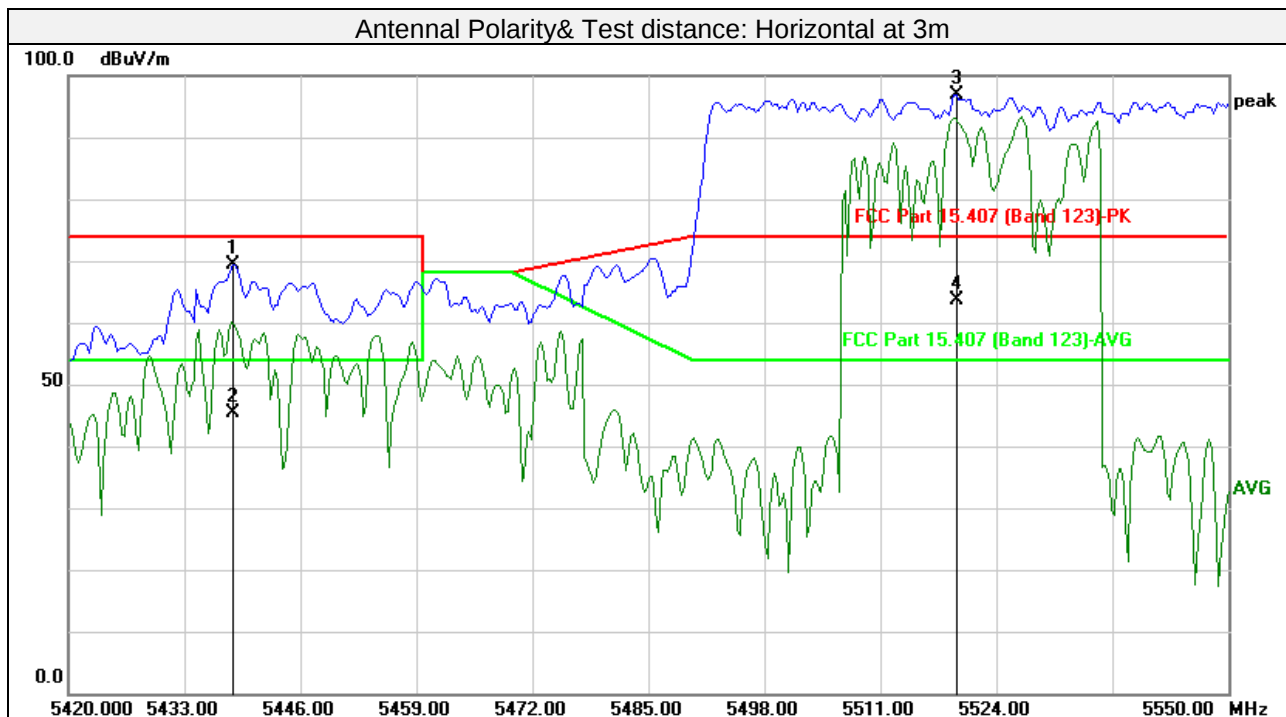


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5530MHz		
Test channel	106	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



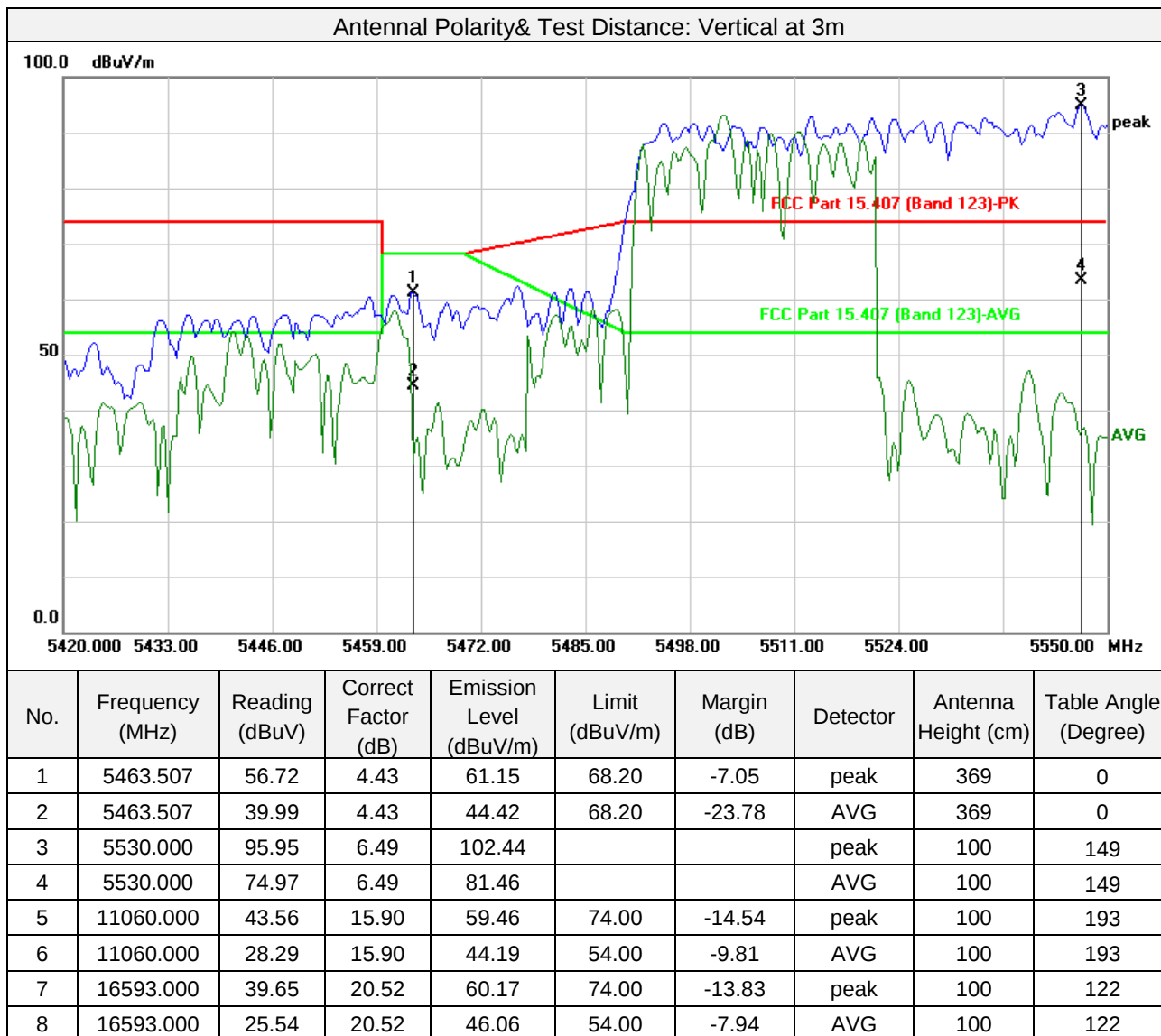
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	5438.497	64.89	4.37	69.26	74.00	-4.74	peak	390	298
2	5438.497	41.02	4.37	45.39	54.00	-8.61	AVG	390	298
3	5530.000	93.62	6.49	100.11			peak	100	213
4	5530.000	74.15	6.49	80.64			AVG	100	213
5	11060.000	42.91	15.90	58.81	74.00	-15.19	peak	100	257
6	11060.000	28.24	15.90	44.14	54.00	-9.86	AVG	100	257
7	16593.000	39.48	20.52	60.00	74.00	-14.00	peak	100	159
8	16593.000	25.59	20.52	46.11	54.00	-7.89	AVG	100	159

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5530MHz		
Test channel	106	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

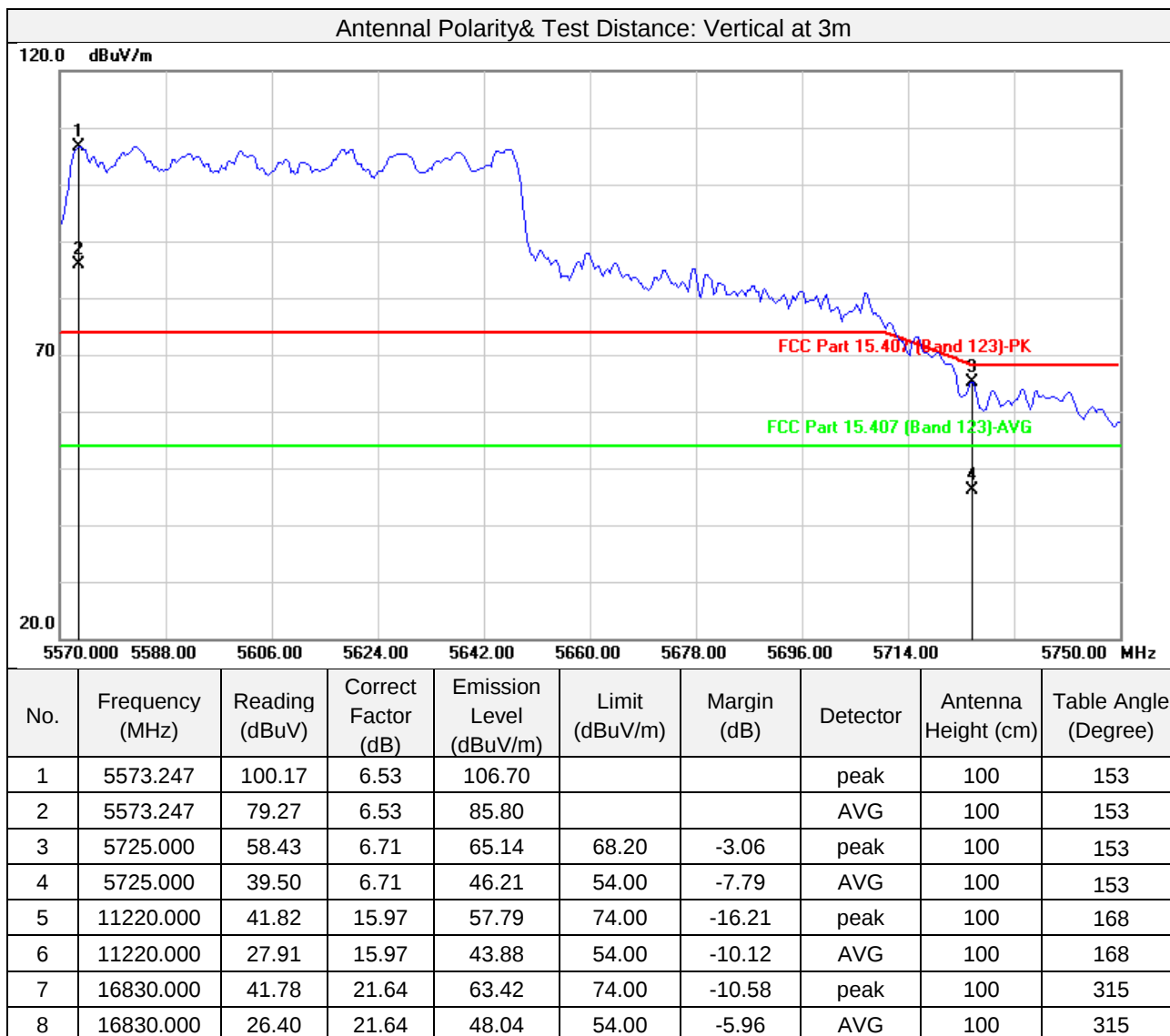


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5610MHz		
Test channel	122	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

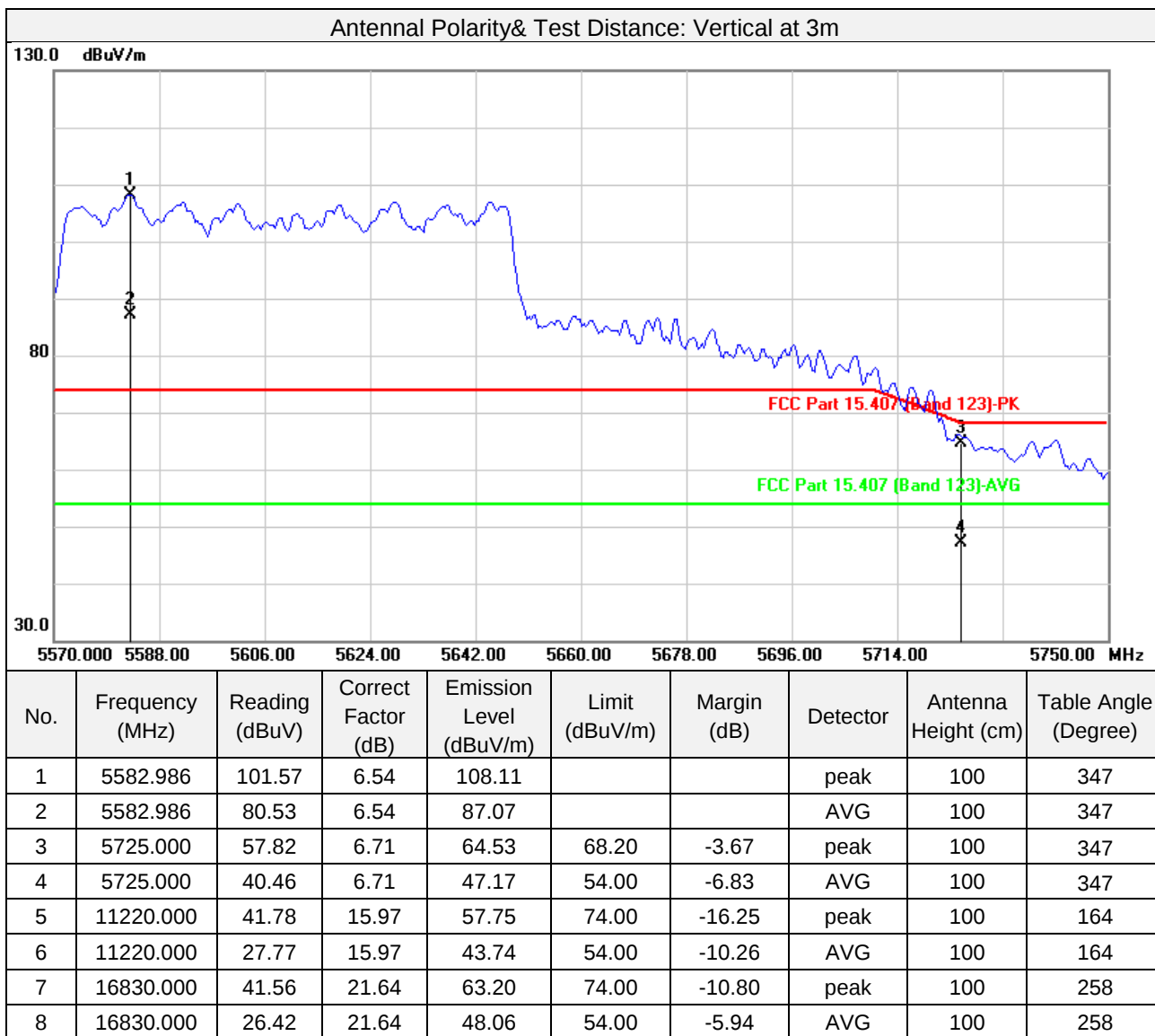


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5610MHz		
Test channel	122	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

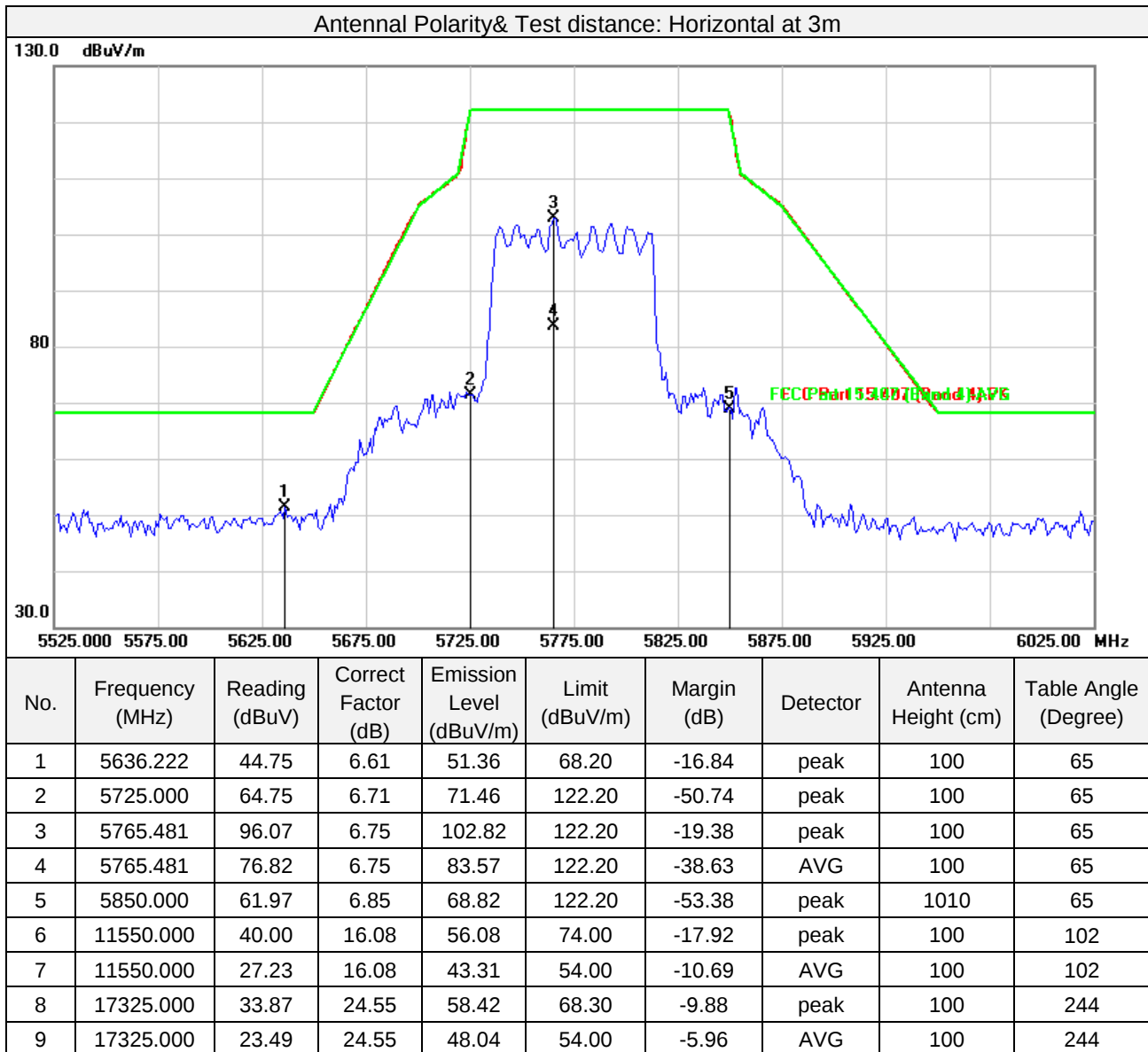


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5775MHz		
Test channel	155	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu

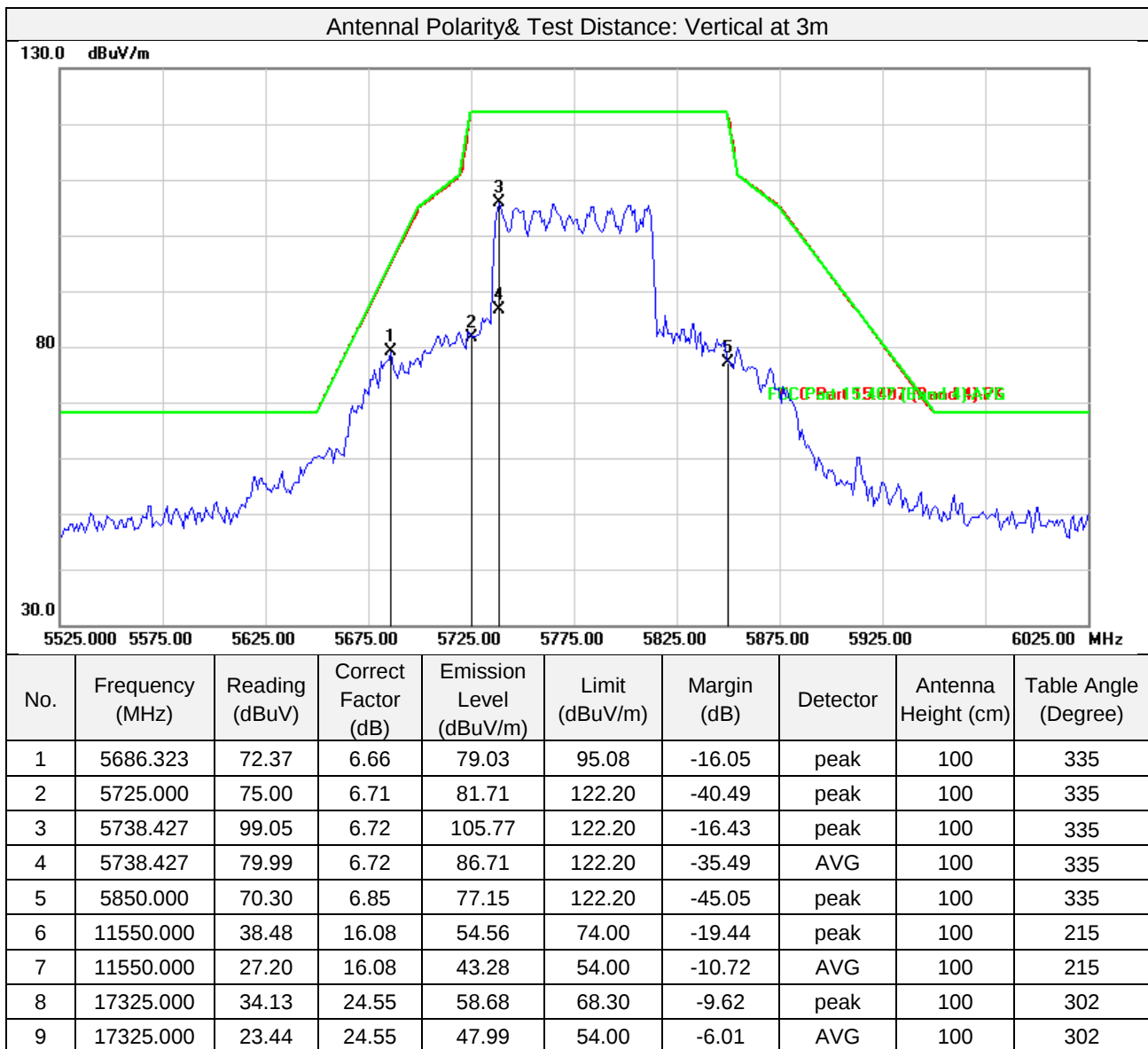


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamplifier Factor)
2. Margin value = Emission level – Limit value



Test Mode	802.11ac VHT80_5775MHz		
Test channel	155	Frequency Range	1GHz ~ 40GHz
Detector Function	Peak (PK) Average (AVG)	Tested By	Jim Xu



Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



3.2 Conducted Emission Measurement

3.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

- Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Due Date of Calibration
EMI Test Receiver Rohde&Schwarz	ESCI3	101418	2021/09/05
Artificial Mains Network Rohde&Schwarz	ENV216	3560.6550.15	2021/09/16
Test software FARAD	EZ_EMC V1.1.4.2	N/A	N/A
Hygrothermograph Yuhuaaze	HTC-1	NA	2021/09/16
Digital Multimeter FLUKE	15B+	43512617WS	2021/09/16

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA.
2. The test was performed in Shielded Room 1.

3.2.3 Test Procedures

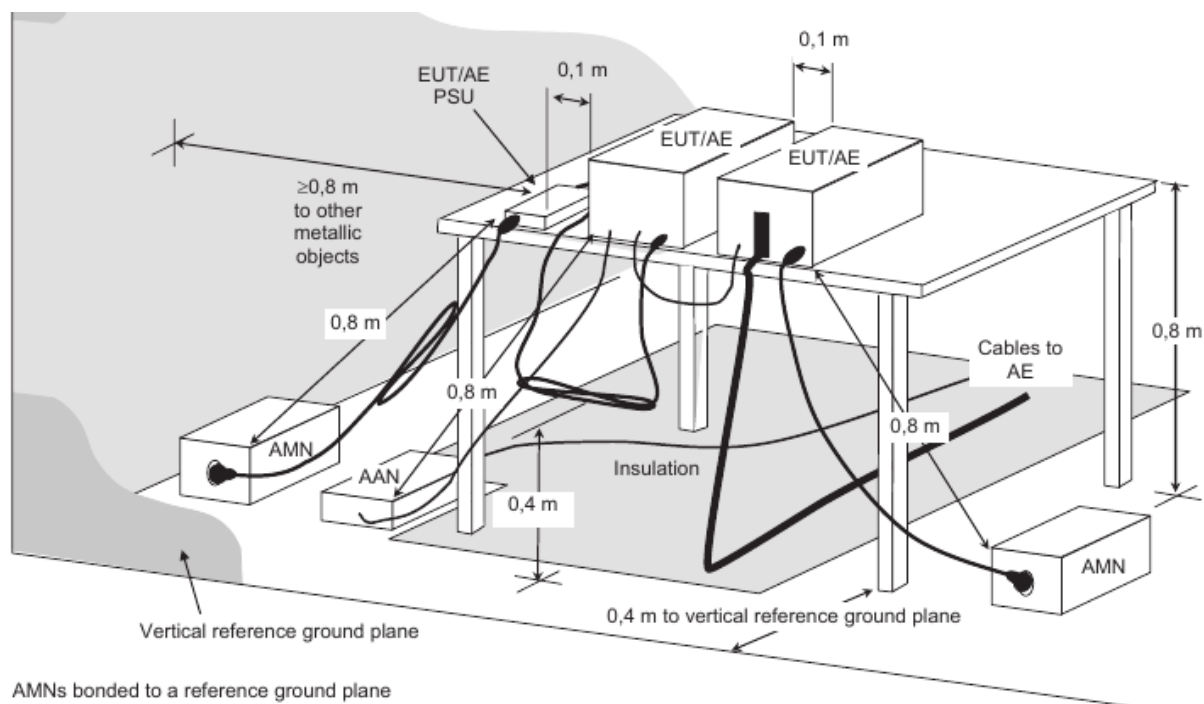
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit – 20dB) was not recorded.

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

3.2.4 Deviation from Test Standard

No deviation.

3.2.5 Test setup



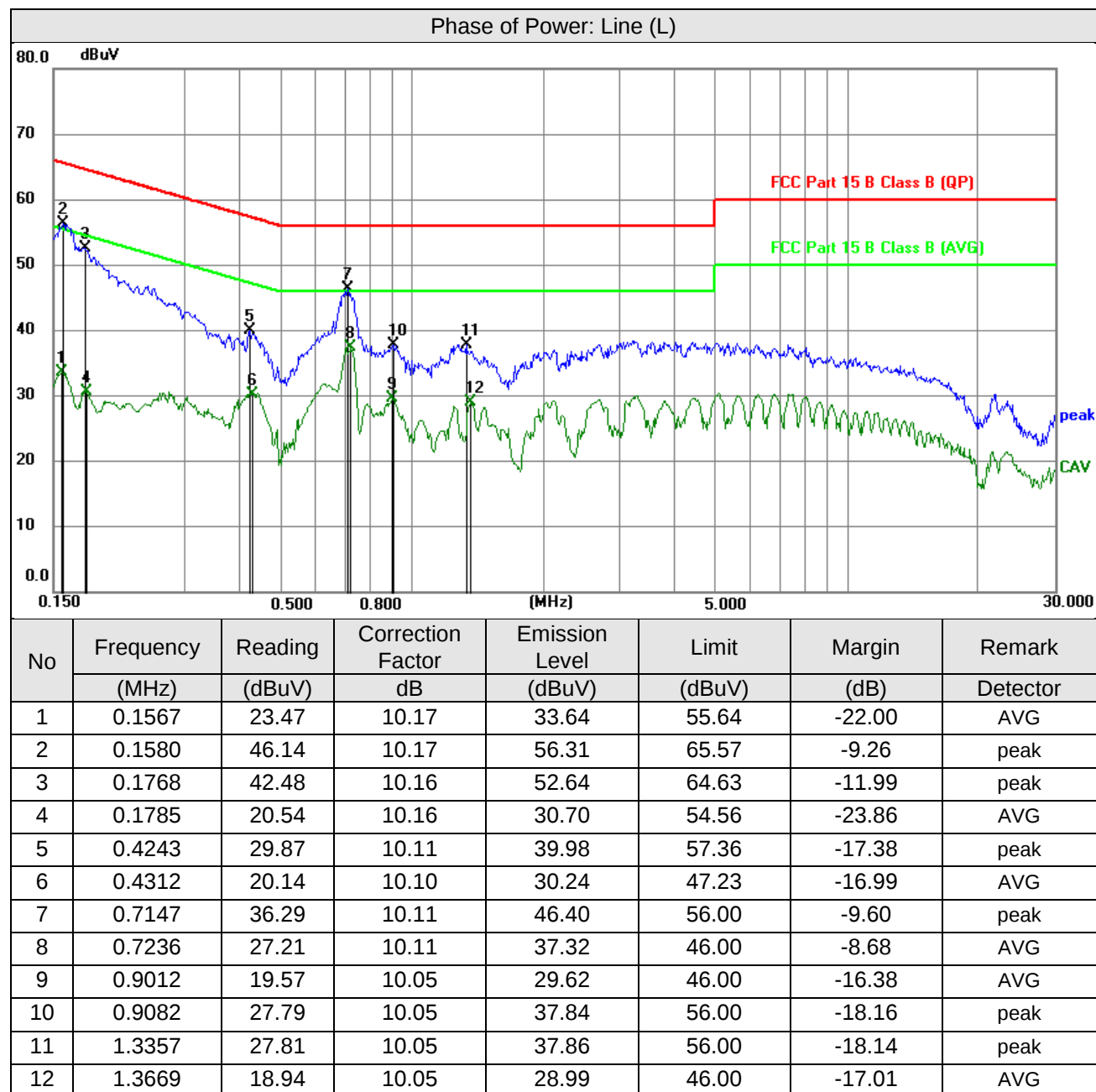
3.2.6 EUT Operating Conditions

- a. Placed the EUT on the testing table.
- b. Set the EUT under transmission condition continuously at specific channel frequency.



3.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
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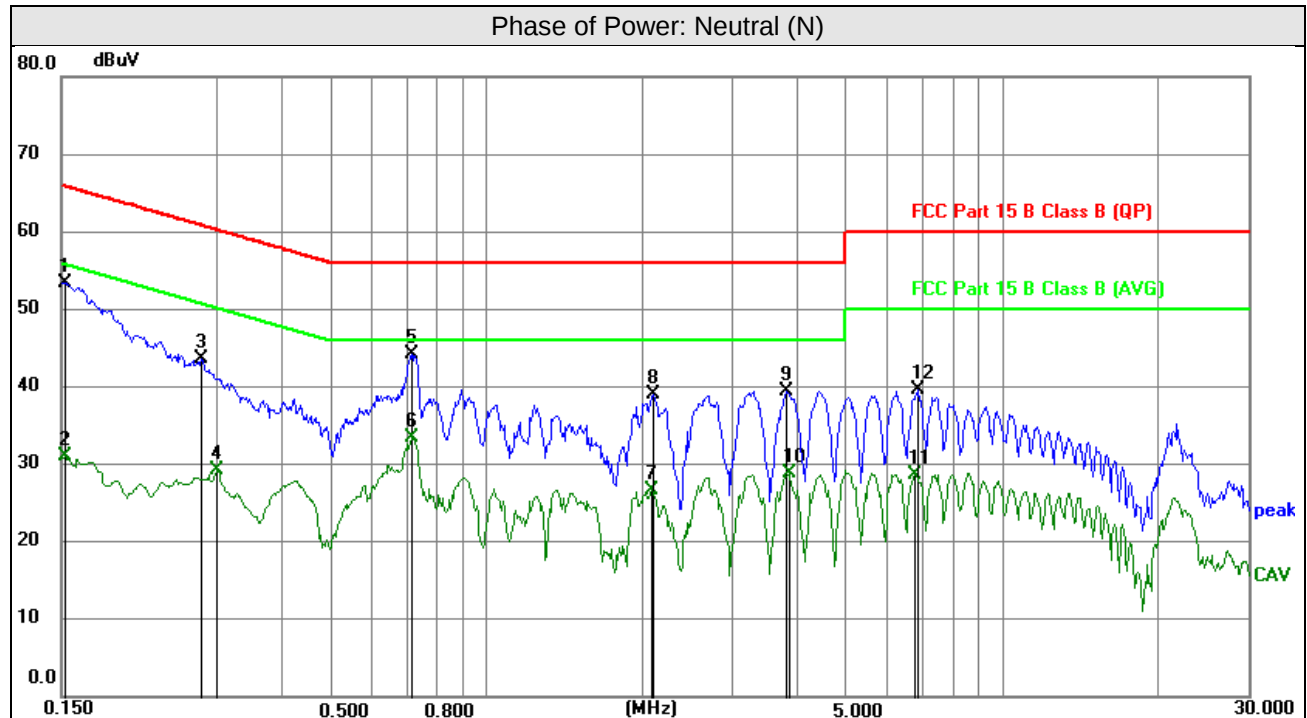


Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
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No.	Frequency	Reading	Correction Factor	Emission Level	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	Detector
1	0.1522	43.27	10.18	53.45	65.88	-12.43	peak
2	0.1522	20.90	10.18	31.08	55.88	-24.80	AVG
3	0.2802	33.33	10.17	43.50	60.81	-17.31	peak
4	0.3007	19.04	10.18	29.22	50.22	-21.00	AVG
5	0.7186	33.99	10.10	44.09	56.00	-11.91	peak
6	0.7186	23.37	10.10	33.47	46.00	-12.53	AVG
7	2.0985	16.62	10.10	26.72	46.00	-19.28	AVG
8	2.1120	28.94	10.10	39.04	56.00	-16.96	peak
9	3.8376	29.27	10.09	39.36	56.00	-16.64	peak
10	3.8668	18.64	10.09	28.73	46.00	-17.27	AVG
11	6.7896	18.51	10.03	28.54	50.00	-21.46	AVG
12	6.8887	29.51	10.04	39.55	60.00	-20.45	peak

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



3.3 Transmit Power Measurement

3.3.1 Limits of Transmit Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

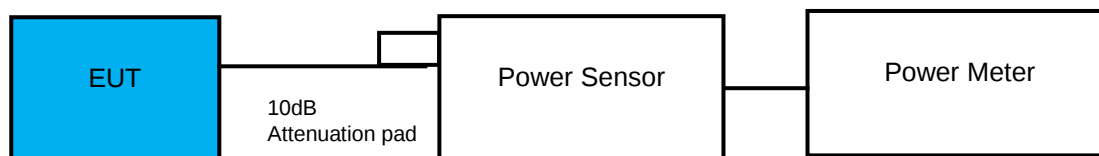
Operation Band	EUT Category		Limit
U-NII-1	-	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	-	Fixed point-to-point Access Point	1 Watt (30 dBm)
	-	Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	-		250mW(24dBm) or 11 dBm+10LogB*
U-NII-2C	-		250mW(24dBm) or 11 dBm+10LogB*
U-NII-3	√		1 Watt (30 dBm)

* B is the 26dB emission bandwidth in MHz.

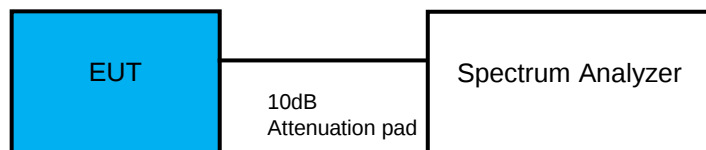
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths $20 \text{ MHz} \leq \text{channel width} < 40 \text{ MHz}$ for any $N_{ANT} \geq 4$,
Array Gain = $5 \log(N_{ANT}/N_{ss})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{ss})$ dB.

3.3.2 Test Setup

For conducted power measurement setup:



For 26dB and Occupied Bandwidth measurement setup:



3.3.3 Test Instruments

Refer to section 5 to get information of above instrument.



3.3.4 Test Procedures

*For average power measurement:

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

*For 26dB bandwidth measurement:

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = RMS.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

*For 6dB bandwidth measurement:

- 1) Set RBW = 100 kHz.
- 2) Set the video bandwidth (VBW) ≥ 3 RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Sweep = auto couple.
- 6) Allow the trace to stabilize.
- 7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.3.5 Deviation from Test Standard

No deviation.

3.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



3.3.7 Test Results

Test mode	Channel Number	Freq. (MHz)	Maximum conducted power	Duty cycle factor	Antenna Gain	EIRP	Conducted Power Limit	Verdict
			(dBm)	(dB)	(dBi)	(dBm)	(dBm)	
11a	36	5180	11.94	0.34	1.88	14.16	24.00	Pass
	40	5200	11.39	0.34	1.88	13.61	24.00	Pass
	48	5240	12.14	0.34	1.88	14.36	24.00	Pass
	52	5260	11.73	0.34	2.28	14.35	24.00	Pass
	56	5280	11.59	0.34	2.28	14.21	24.00	Pass
	64	5320	11.19	0.34	2.28	13.81	24.00	Pass
	100	5500	12.41	0.34	2.43	15.18	24.00	Pass
	116	5580	12.07	0.34	2.43	14.84	24.00	Pass
	140	5700	12.26	0.34	2.43	15.03	24.00	Pass
	149	5745	11.88	0.34	2.19	14.41	30.00	Pass
	157	5785	10.99	0.34	2.19	13.52	30.00	Pass
	165	5825	10.61	0.34	2.19	13.14	30.00	Pass
11n HT20	36	5180	11.44	0.35	1.88	13.67	24.00	Pass
	40	5200	11.81	0.35	1.88	14.04	24.00	Pass
	48	5240	12.84	0.35	1.88	15.07	24.00	Pass
	52	5260	12.59	0.35	2.28	15.22	24.00	Pass
	56	5280	12.52	0.35	2.28	15.15	24.00	Pass
	64	5320	11.86	0.35	2.28	14.49	24.00	Pass
	100	5500	13.06	0.35	2.43	15.84	24.00	Pass
	116	5580	12.84	0.35	2.43	15.62	24.00	Pass
	140	5700	12.19	0.35	2.43	14.97	24.00	Pass
	149	5745	10.55	0.35	2.19	13.09	30.00	Pass
	157	5785	9.91	0.35	2.19	12.45	30.00	Pass
	165	5825	10.25	0.35	2.19	12.79	30.00	Pass
11ac VHT20	36	5180	11.33	0.35	1.88	13.56	24.00	Pass
	40	5200	11.39	0.35	1.88	13.62	24.00	Pass
	48	5240	12.17	0.35	1.88	14.40	24.00	Pass
	52	5260	11.99	0.35	2.28	14.62	24.00	Pass
	56	5280	11.32	0.35	2.28	13.95	24.00	Pass
	64	5320	11.41	0.35	2.28	14.04	24.00	Pass
	100	5500	12.20	0.35	2.43	14.98	24.00	Pass
	116	5580	11.47	0.35	2.43	14.25	24.00	Pass
	140	5700	12.26	0.35	2.43	15.04	24.00	Pass
	149	5745	10.42	0.35	2.19	12.96	30.00	Pass
	157	5785	9.78	0.35	2.19	12.32	30.00	Pass
	165	5825	10.23	0.35	2.19	12.77	30.00	Pass



Test mode	Channel Number	Freq. (MHz)	Maximum conducted power	Duty cycle factor	Antenna Gain	EIRP	Conducted Power Limit	Verdict
			(dBm)	(dB)	(dBi)	(dBm)	(dBm)	
11n HT40	38	5190	10.80	0.71	1.88	13.39	24.00	Pass
	46	5230	11.88	0.71	1.88	14.47	24.00	Pass
	54	5270	11.95	0.71	2.28	14.94	24.00	Pass
	62	5310	11.48	0.71	2.28	14.47	24.00	Pass
	102	5510	12.62	0.71	2.43	15.76	24.00	Pass
	110	5550	12.12	0.71	2.43	15.26	24.00	Pass
	134	5670	11.79	0.71	2.43	14.93	24.00	Pass
	151	5755	10.79	0.71	2.19	13.69	30.00	Pass
	159	5795	10.08	0.71	2.19	12.98	30.00	Pass
11ac VHT40	38	5190	9.61	0.71	1.88	12.20	24.00	Pass
	46	5230	11.01	0.71	1.88	13.60	24.00	Pass
	54	5270	10.82	0.71	2.28	13.81	24.00	Pass
	62	5310	10.48	0.71	2.28	13.47	24.00	Pass
	102	5510	11.73	0.71	2.43	14.87	24.00	Pass
	110	5550	11.28	0.71	2.43	14.42	24.00	Pass
	134	5670	11.20	0.71	2.43	14.34	24.00	Pass
	151	5755	10.18	0.71	2.19	13.08	30.00	Pass
	159	5795	9.55	0.71	2.19	12.45	30.00	Pass
11ac VHT80	42	5210	10.95	1.30	1.88	14.13	24.00	Pass
	58	5290	11.26	1.30	2.28	14.84	24.00	Pass
	106	5530	12.13	1.30	2.43	15.86	24.00	Pass
	122	5610	11.98	1.30	2.43	15.71	24.00	Pass
	155	5775	10.40	1.30	2.19	13.89	30.00	Pass



Test mode	Channel Number	Freq. (MHz)	26dBc bandwidth (MHz)	11 dBm +10LogB* (dBm)	Occupied Bandwidth (MHz)
11a	36	5180	23.04	-	17.576
	40	5200	21.26	-	17.292
	48	5240	21.72	-	17.381
	52	5260	21.72	24.37	17.451
	56	5280	21.60	24.34	17.335
	64	5320	21.24	24.27	17.251
	100	5500	21.92	24.41	17.441
	116	5580	21.80	24.38	17.536
	140	5700	23.64	24.74	17.263
	149	5745	18.20	-	17.341
	157	5785	18.04	-	17.412
	165	5825	18.28	-	17.581
11n HT20	36	5180	22.00	-	18.238
	40	5200	23.48	-	18.395
	48	5240	22.60	-	18.365
	52	5260	21.60	24.34	18.326
	56	5280	22.28	24.48	18.392
	64	5320	21.96	24.42	18.221
	100	5500	22.16	24.46	18.362
	116	5580	21.92	24.41	18.226
	140	5700	24.36	24.87	18.172
	149	5745	19.44	-	18.220
	157	5785	19.44	-	18.318
	165	5825	19.44	-	18.454
11n HT40	38	5190	42.32	-	36.934
	46	5230	42.56	-	37.082
	54	5270	42.64	-	37.083
	62	5310	42.16	-	36.972
	102	5510	42.64	-	37.056
	110	5550	42.56	-	36.967
	134	5670	49.36	-	37.215
	151	5755	40.00	-	36.863
	159	5795	40.00	-	36.988
11ac VHT80	42	5210	82.56	-	76.281
	58	5290	83.20	-	76.388
	106	5530	83.72	-	76.354
	122	5610	83.20	-	76.463
	155	5775	81.28	-	76.515



26dBc bandwidth

802.11a

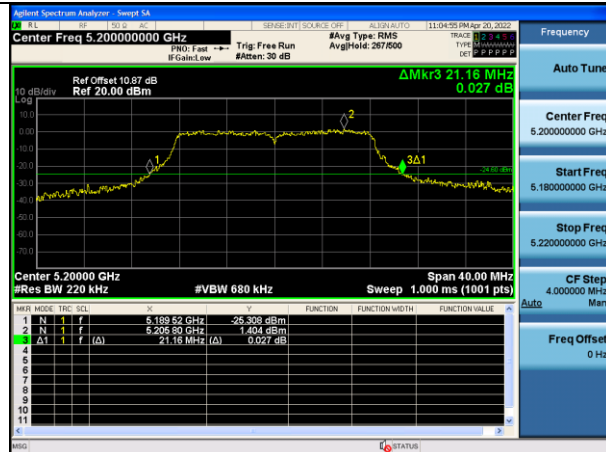
CH 36



CH 52



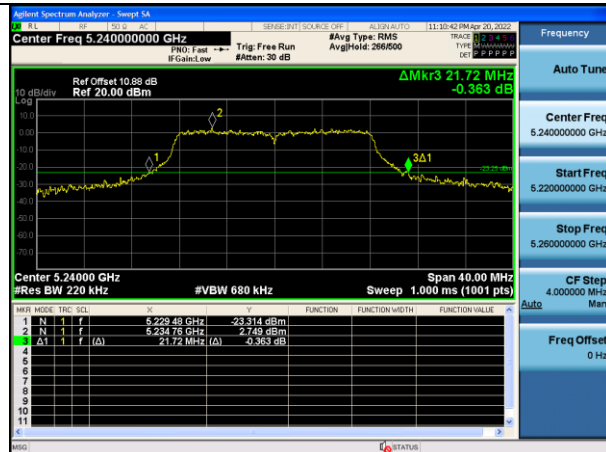
CH 40



CH 56



CH 48



CH 64





26dBc bandwidth

802.11n HT20

CH 36



CH 52



CH 40



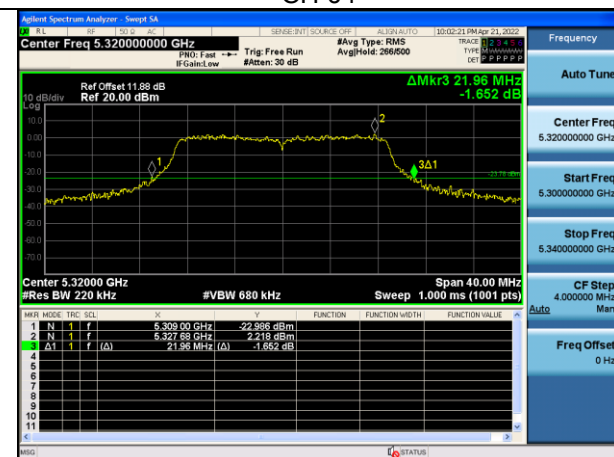
CH 56



CH 48

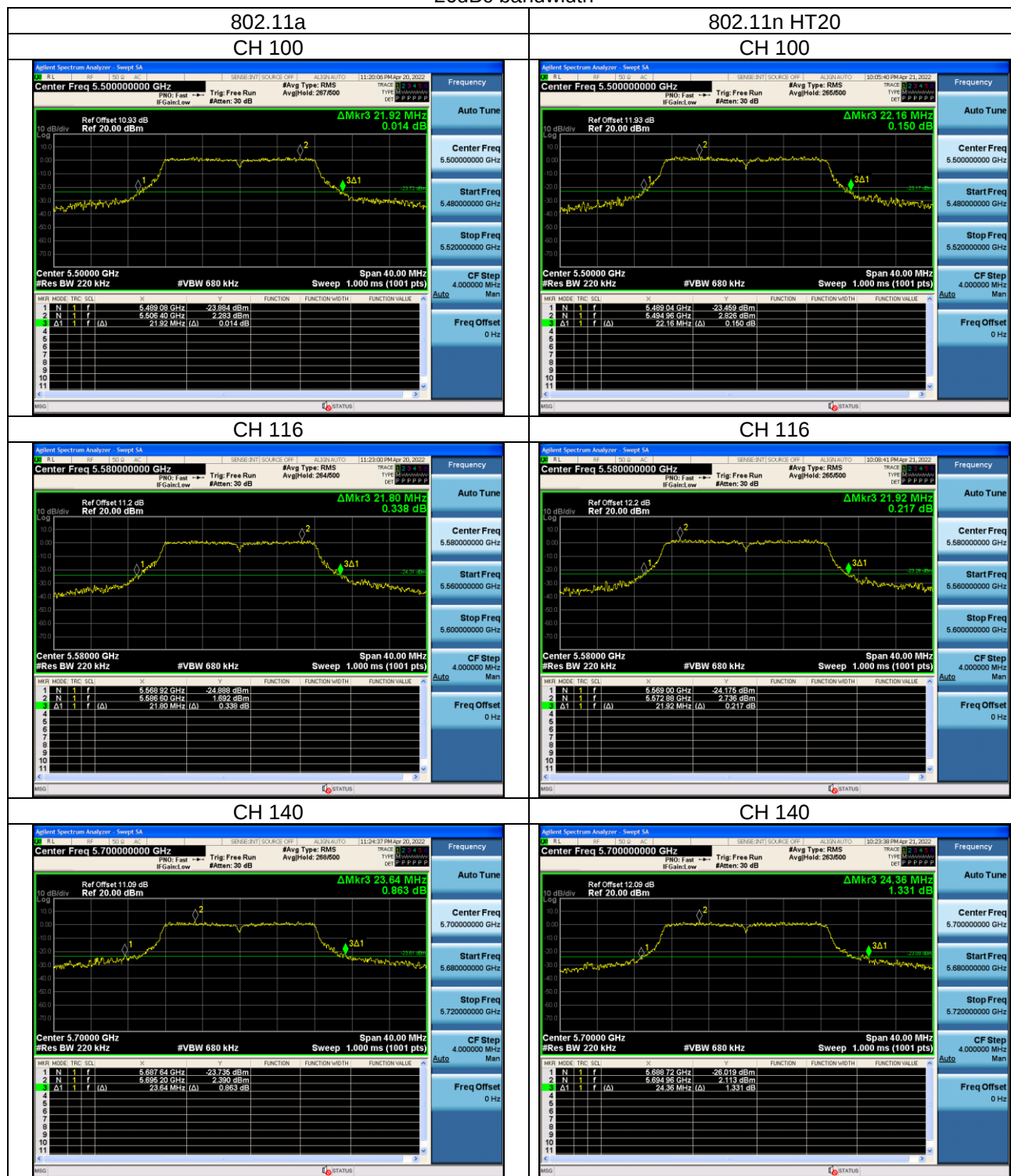


CH 64





26dBc bandwidth





26dBc bandwidth

