

FCC 15.407 NII 5 GHz Test Report

for

LG Electronics Inc.

**222, LG-ro Jinwi-myeon, Pyeongtaek-Si, Gyeonggi-Do,
451-713, Korea**

Product Name : Notebook Computer
Model Name : 14Z980
Brand : LG
FCC ID : BEJNT-14Z980

**Prepared by: : AUDIX Technology Corporation,
EMC Department**



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APPENDIX A TEST DATA AND PLOTS

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TEST REPORT CERTIFICATION

Applicant : LG Electronics Inc.
Factory : LG Electronics Nanjing New Technology Co., Ltd.
EUT Description
(1) Product : Notebook Computer
(2) Model : 14Z980
(3) Brand : LG
(4) Power Supply: DC 19V, 2.53A

Applicable Standards:

47 CFR FCC Part 15 Subpart E

ANSI C63.10:2013

KDB 789033 D02 General UNII Test Procedures New Rules v01r04

Audix Technology Corp. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Audix Technology Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Report: 2017. 11. 30

Reviewed by:



(Sabrina Wang/Administrator)

Approved by:



(Ben Cheng/Manager)

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1. REVISION RECORD OF TEST REPORT

Edition No	Issued Data	Revision Summary	Report Number
0	2017. 11. 30	Original Report	EM-F170743

2. SUMMARY OF TEST RESULTS

Rule	Description	Results
15.207	Conducted Emission	PASS
15.205	Radiated Band Edge and Radiated Spurious Emission	PASS
15.407(a)(5)/15.407(e)	Emission Bandwidth Measurement	PASS
15.407(a)	Maximum Output	PASS
15.407(b)	Conducted Band Edges and Conducted Spurious Emission	PASS
15.407(a)	Power Spectral Density	PASS
15.203	Antenna Requirement	Compliance
15.407	Frequency Stability	PASS

3. GENERAL INFORMATION

3.1. Description of Application

Applicant	LG Electronics Inc. 222, LG-ro Jinwi-myeon, Pyeongtaek-Si, Gyeonggi-Do, 451-713, Korea
Factory	LG Electronics Nanjing New Technology Co., Ltd. No.346, Yaoxin Road, Economic & Technical Development Zone, Nanjing, China.
Product	Notebook Computer
Model	14Z980
Brand	LG

3.2. Description of EUT

Test Model	14Z980																						
Serial Number	N/A																						
Power Rating	DC 19V, 2.53A																						
RF Features	WLAN: 802.11 a/b/g/n/ac Bluetooth: BT and BLE																						
Transmit Type	<table><thead><tr><th colspan="2">2.4 GHz</th></tr></thead><tbody><tr><td>802.11b</td><td>1T1R</td></tr><tr><td>802.11g</td><td>1T1R</td></tr><tr><td>802.11n-HT20</td><td>2T2R</td></tr><tr><td>802.11n-HT40</td><td>2T2R</td></tr><tr><td>BT/BLE</td><td>1T1R</td></tr></tbody></table> <table><thead><tr><th colspan="2">UNII Bands</th></tr></thead><tbody><tr><td>802.11a</td><td>1T1R</td></tr><tr><td>802.11n-HT20/ 802.11ac-VHT20</td><td>2T2R</td></tr><tr><td>802.11n-HT40/ 802.11ac-VHT40</td><td>2T2R</td></tr><tr><td>802.11ac-VHT80</td><td>2T2R</td></tr></tbody></table>	2.4 GHz		802.11b	1T1R	802.11g	1T1R	802.11n-HT20	2T2R	802.11n-HT40	2T2R	BT/BLE	1T1R	UNII Bands		802.11a	1T1R	802.11n-HT20/ 802.11ac-VHT20	2T2R	802.11n-HT40/ 802.11ac-VHT40	2T2R	802.11ac-VHT80	2T2R
2.4 GHz																							
802.11b	1T1R																						
802.11g	1T1R																						
802.11n-HT20	2T2R																						
802.11n-HT40	2T2R																						
BT/BLE	1T1R																						
UNII Bands																							
802.11a	1T1R																						
802.11n-HT20/ 802.11ac-VHT20	2T2R																						
802.11n-HT40/ 802.11ac-VHT40	2T2R																						
802.11ac-VHT80	2T2R																						
Device Category	☐ Outdoor Access Point ☐ Fixed point-to-point Access Point ☐ Indoor Access Point ☒ Mobile and Portable client device																						
Sample Status	Production																						
Date of Receipt	2017. 11. 21																						
Date of Test	2017. 11. 28 ~ 30																						
Interface Ports of EUT	• One Micro SD Card Slot • One Earphone Port • Two USB 3.0 Ports • One USB Type C Port • One HDMI Port • One DC Input Port																						
Accessories Supplied	• AC Adapter																						

3.3. Antenna Information

2.4G Antenna					
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)
1	WA-F-LBLB-04-058 (Main)	INPAQ	FPCB	2400	1.94
				2450	2.72
				2500	1.20
2	WA-F-LBLB-04-058 (AUX)	INPAQ	FPCB	2400	2.79
				2450	2.29
				2500	1.90

5G Antenna					
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)
1	WA-F-LBLB-04-058 (Main)	INPAQ	FPCB	5100	1.35
				5400	3.06
				5800	2.10
2	WA-F-LBLB-04-058 (AUX)	INPAQ	FPCB	5100	2.82
				5400	1.12
				5800	0.58

3.4. EUT Specifications Assessed in Current Report

Mode	UNII Band	Fundamental Range (MHz)	Channel Number
802.11a	I	5180-5240	4
	II-2A	5260-5320	4
	II-2C	5500-5720	12
	III	5745-5825	5
802.11n-HT20/ 802.11ac-VHT20	I	5180-5240	4
	II-2A	5260-5320	4
	II-2C	5500-5720	12
	III	5745-5825	5
802.11n-HT40/ 802.11ac-VHT40	I	5190-5230	2
	II-2A	5270-5310	2
	II-2C	5510-5710	6
	III	5755-5795	2
802.11ac-VHT80	I	5210	1
	II-2A	5290	1
	II-2C	5530-5690	3
	III	5775	1
Remark: UNII Band II-2A and II-2C (DFS Function, Slave/no In service monitor, no Ad-Hoc mode)			

Mode	Modulation	Data Rate (Mbps)
802.11a	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 54
802.11n-HT20	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 144.4
802.11n-HT40		Up to 300
802.11ac-VHT20	OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)	Up to 173.3
802.11ac-VHT40		Up to 400
802.11ac-VHT80		Up to 866.7

Channel List					
802.11a/802.11n-HT20/802.11ac-VHT20					
UNII Band	Channel Number	Frequency (MHz)	UNII Band	Channel Number	Frequency (MHz)
I	36	5180	II-2C	120	5600
	40	5200		124	5620
	44	5220		128	5640
	48	5240		132	5660
II-2A	52	5260		136	5680
	56	5280		140	5700
	60	5300		144	5720
	64	5320	III	149	5745
II-2C	100	5500		153	5765
	104	5520		157	5785
	108	5540		161	5805
	112	5560		165	5825
	116	5580			

Channel List					
802.11n-HT40/802.11ac-VHT40					
UNII Band	Channel Number	Frequency (MHz)	UNII Band	Channel Number	Frequency (MHz)
I	38	5190	II-2C	118	5590
	46	5230		126	5630
II-2A	54	5270		134	5670
	62	5310		142	5710
II-2C	102	5510	III	151	5755
	110	5550		159	5795

Channel List					
802.11ac-VHT80					
UNII Band	Channel Number	Frequency (MHz)	UNII Band	Channel Number	Frequency (MHz)
I	42	5210	II-2C	138	5690
II-2A	58	5290	III	155	5775
II-2C	106	5530			
	122	5610			

Note Test modes are presented at section 3.7.

3.5. Description of Key Components

3.5.1. For the All Component Lists

Item	Supplier	Model / Type	Character
System	Microsoft	Win10 Home	---
Main Board	LG	14/15Z980 Main B/D PCB	(without Thunderbolt) Manufacturer: (1) Elec & Eltek Company (MCO) Limited (2) Hannstar Board Tech(Jiang Yin) Corp.,Ltd. (3) LG Innotek Co., Ltd.
	LG	14/15Z980 Main B/D PCB	(with Thunderbolt) Manufacturer: (1) Elec & Eltek Company (MCO) Limited (2) Hannstar Board Tech(Jiang Yin) Corp.,Ltd. (3) LG Innotek Co., Ltd.
SUB Board	LG	14Z980 WLAN SUB B/D	(without Finger Print) Manufacturer: (1) Hannstar Board Tech(Jiang Yin) Corp.,Ltd. (2) HYUNWOO
	LG	14Z980 WLAN SUB B/D	(with Finger Print) Manufacturer: (1) Hannstar Board Tech(Jiang Yin) Corp.,Ltd. (2) HYUNWOO
CPU (Socket: BGA1356)	Intel	i7-8550U	1.8GHz, up to 4.0GHz
	Intel	i5-8250U	1.6GHz, up to 3.4GHz
14" LCD Panel	LG Display	LP140WF5-SPG2	Resolution: 1920 x 1080, 60Hz FHD IPSW/ Touch (AIT Including touch)
	LG Display	LP140WF7-SPG1	Resolution: 1920 x 1080, 60Hz FHD IPS (Normal Non touch)
Storage (SSD)	SK hynix	HFS256G39TND-N210A BB	256GB (SATA)
	SK hynix	HFS512G39TND-N210A BB	512GB (SATA)
	Samsung	MZNLN256MHQ	256GB (SATA)
	Samsung	MZNLN512HMP	512GB (SATA)
Memory (RAM) (On Board)	Samsung	K4A8G165WB-BCRC	8Gbit DDR4 2400MHz (On Board) *4ea
	SK hynix	H5ANAG6NAMA UHC	4Gbit DDR4 2400MHz (On Board) *4ea
Memory (RAM)	Samsung	M471A5244CB0-CRC	4Gbit DDR4 2400MHz (On Card)
Battery Pack	LG	LBS1224E	DC 7.7V, 72Wh, Typ 9450mAh

Item	Supplier	Model / Type	Character
WLAN Combo Card	Intel	8265D2W	802.11a/b/g/n/ac 2.4GHz/5GHz + BT 4.2 BLE
WLAN Combo Antenna	LG (INPAQ)	WA-F-LBLB-04-058	FPCB Type Main: Black, Aux: Gray
Keyboard	LG	SN3871	Black: BL, White: BL 1
Finger Print	SUNTEL	SFPC-L0016A(White)	---
		SFPC-L0016B(Black)	---
		Above model have the same circuit and hardware. The model SFPC-L0016B(Black) is tested in this report.	
Web Camera	Lite-On	7BF109N2	With two MIC
LAN Gender (Type C to LAN)	LG	80-5946-111 (White)	10/100 Megabit Ethernet
		80-5946-101 (Black)	Manufacturer: SUZHOU MEC ELECTRONICS
		Above model have the same circuit and hardware. The model 80-5946-101 (Black) is tested in this report.	
	LG	GD-08MF-36-WH-LP05 (White)	10/100 Megabit Ethernet
		GD-08MF-36-BK-LP06 (Black)	Manufacturer: ARIN TECH CO. LTD
		Above model have the same circuit and hardware. The model GD-08MF-36-BK-LP06 (Black) is tested in this report.	
	Type C to LAN: Shielded, Undetached, 0.12m		
AC Adapter (65W)	LG (Lite-on)	PA-1650-43	I/P: AC 100-240V, 50/60Hz, 1.6A, O/P: DC 19V, 3.42A
	DC Power Cord: Non-Shielded, Undetached, 1.8m, Bonded a ferrite core AC Power Cord: Non-Shielded, Detached, 1.0m (3C)		

Remark: For more detailed features description, please refer to the manufacturer's specifications or the user manual.

3.5.2. The EUT collocates with following worst components, which are used to establish a basic configuration of system during test:

SKU		#1
Main Board	LG, 14/15Z980 Main B/D PCB (with Thunderbolt)	V
SUB Board	LG, 14Z980 WLAN SUB B/D (with Finger Print)	V
CPU	Intel, i7-8550U	V
14" LCD Panel	LG Display, LP140WF5-SPG2/(AIT Including touch)	V
Storage (SSD)	512GB	V
Memory (RAM)	8Gbit (On Board)	V
Battery Pack	LG, LBS1224E	V
WLAN Combo Card	Intel, 8265D2W	V
WLAN Combo Antenna	LG (INPAQ), WA-F-LBLB-04-058	V
Keyboard	LG, SN3871	V
Finger Print	SUNTEL, SFPC-L0016B(Black)	V
Web Camera	Lite-On, 7BF109N2	V
AC Adapter	LG (Lite-on), PA-1650-43	V
LAN Gender (Type C to LAN)	LG, GD-08MF-36-BK-LP06 (Black), 100Mbps	V

3.6. Data Rate Relative to Output Power

802.11a				802.11n-HT20			
Channel	Modulation	Date Rate	Power (dBm)	Channel	Modulation	Date Rate	Power (dBm)
36	BPSK	6	16.87	36	BPSK	HT MCS8	19.27
36	QPSK	9	16.71	36	QPSK	HT MCS9	19.13
36	QPSK	12	16.58	36	QPSK	HT MCS10	18.98
36	16-QAM	18	16.41	36	16-QAM	HT MCS11	18.82
36	16-QAM	24	16.28	36	16-QAM	HT MCS12	18.69
36	64-QAM	36	16.11	36	64-QAM	HT MCS13	18.53
36	64-QAM	48	16.03	36	64-QAM	HT MCS14	18.40
36	64-QAM	54	15.92	36	64-QAM	HT MCS15	18.31

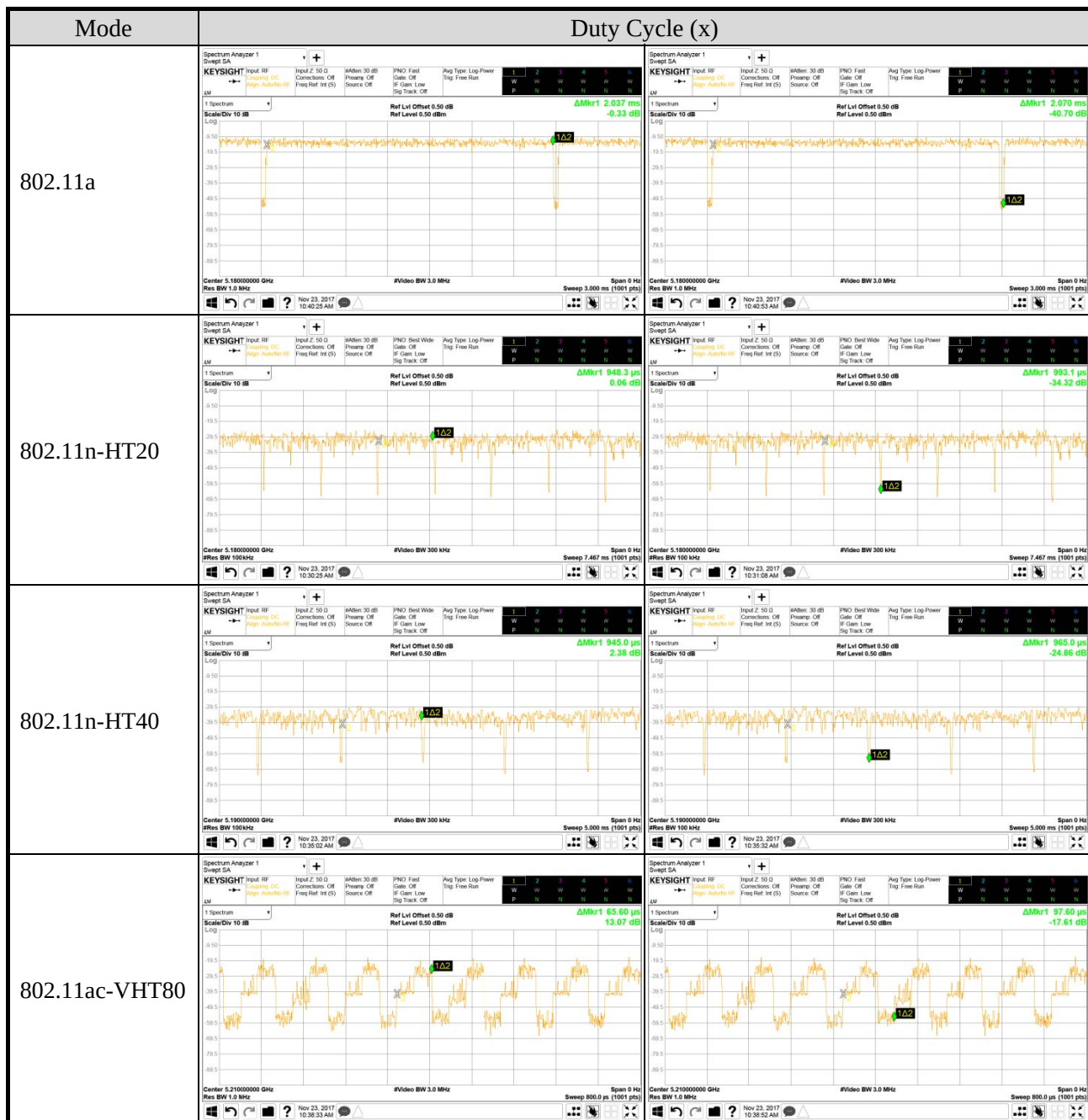
802.11n-HT40				802.11ac-VHT80			
Channel	Modulation	Date Rate	Power (dBm)	Channel	Modulation	Date Rate	Power (dBm)
38	BPSK	HT MCS8	15.43	42	BPSK	VHT MCS0	13.90
38	QPSK	HT MCS9	15.28	42	QPSK	VHT MCS1	13.74
38	QPSK	HT MCS10	15.10	42	QPSK	VHT MCS2	13.61
38	16-QAM	HT MCS11	14.98	42	16-QAM	VHT MCS3	13.49
38	16-QAM	HT MCS12	14.84	42	16-QAM	VHT MCS4	13.32
38	64-QAM	HT MCS13	14.72	42	64-QAM	VHT MCS5	13.18
38	64-QAM	HT MCS14	14.58	42	64-QAM	VHT MCS6	13.04
38	64-QAM	HT MCS15	15.43	42	64-QAM	VHT MCS7	13.90
				42	256-QAM	VHT MCS8	13.75
				42	256-QAM	VHT MCS9	13.52

Note: Above results are assessed in average power.

3.7. Test Configuration

Mode	Duty Cycle (x)	T (ms)	Duty Cycle Factor (dB)
802.11a	1.00	2.037	0
802.11n-HT20	0.95	0.9483	0.22
802.11n-HT40	0.97	0.9450	0.13
802.11ac-VHT80	0.67	0.0656	1.74

Note: When duty cycle is less than 98% (0.98) that duty cycle factor $10\log(1/x)$ is needed to add in conducted test items measured in average detector.



AC Conduction	
Test Case	Normal operation

Item	Mode	Data Rate	Test Channel
Radiated Test Case	Radiated Band Edge Note1	802.11a	6 Mbps
		802.11n-HT20	HT MCS8
		802.11n-HT40	HT MCS8
		802.11ac-VHT80	VHT MCS0
	Radiated Spurious Emission Note1 & 2	802.11a	36/40/48/52/60/64/116/140/140/149/157/165
		802.11n-HT20	36/40/48/52/60/64/116/140/140/149/157/165
		802.11n-HT40	38/46/54/62/102/110/134/151/159
		802.11ac-VHT80	42/58/106/138/155
Conducted Test Case	Emission Bandwidth	802.11a	36/40/48/52/60/64/100/116/140/149/157/165
		802.11n-HT20	36/40/48/52/60/64/100/116/140/149/157/165
		802.11n-HT40	38/46/54/62/102/110/134/142/151/159
		802.11ac-VHT80	42/58/106/122/138/155
	Maximum output power	802.11a	36/40/48/52/60/64/100/116/140/149/157/165
		802.11n-HT20	36/40/48/52/60/64/100/116/140/149/157/165
		802.11n-HT40	38/46/54/62/102/110/134/142/151/159
		802.11ac-VHT80	42/58/106/122/138/155
	Emission Limitations	802.11a	36/40/48/52/60/64/100/116/140/149/157/165
		802.11n-HT20	36/40/48/52/60/64/100/116/140/149/157/165
		802.11n-HT40	38/46/54/62/102/110/134/142/151/159
		802.11ac-VHT80	42/58/106/122/138/155
	Power spectral density	802.11a	36/40/48/52/60/64/100/116/140/149/157/165
		802.11n-HT20	36/40/48/52/60/64/100/116/140/149/157/165
		802.11n-HT40	38/46/54/62/102/110/134/142/151/159
		802.11ac-VHT80	42/58/106/122/138/155

Note 1: ☒ Mobile Device

☐ Portable Device, and 3 axis were assessed. The worst scenario for Radiated Spurious Emission as follow: ☐ Lie ☐ Side ☐ Stand

Note 2: Low, mid, and high channels were measured, only the worst channel of each modulation was presented in this report.

3.8. Tested Supporting System List

3.8.1. Support Peripheral Unit

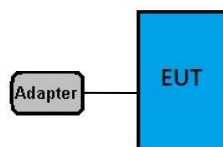
No.	Product	Brand	Model No.	Serial No.	Approval
1.	LCD Monitor	ASUS	VE228	N/A	FCC By DoC
2.	USB Mouse	Lenovo	45J4886	N/A	FCC By DoC
3.	Earphone	APPLE	N/A	N/A	FCC By DoC

3.8.2. Cable Lists

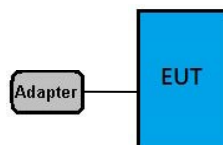
No.	Cable Description Of The Above Support Units
1.	HDMI Cable: Shielded, Detachable, 1.8m AC Power Cord: Unshielded, Detachable, 1.8m
2.	USB Cable: Unshielded, Undetachable, 1.8m
3.	Earphone Cable: Unshielded, Undetachable, 2.0m

3.9. Setup Configuration

3.9.1. EUT Configuration for Power Line & Radiated Emission



3.9.2. EUT Configuration for RF Conducted Test Items



3.10. Operating Condition of EUT

Test program “DRTU” is used for enabling EUT WLAN function under continues transmitting and choosing data rate/ channel.

3.11. Description of Test Facility

Name of Test Firm	Audix Technology Corporation / EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099303 Website : www.audixtech.com Contact e-mail: attemc_report@audixtech.com
Accreditations	The laboratory is accredited by following organizations under ISO/IEC 17025:2005 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724 (3) FCC OET Designation No. TW1004 & TW1090 & TW1724
Test Facilities	(1) No. 7 Shielding Room (2) Semi-Anechoic Chamber (IC Test Site Registration No.: 5183B-1) (3) Fully Anechoic Chamber (IC Test Site Registration No.: 5183B-4)

3.12. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	±3.50dB
Radiation Test (Distance: 3m)	30MHz~1000MHz	± 3.68dB
	Above 1GHz	± 5.82dB

Remark : Uncertainty = $ku_c(y)$

Test Item	Uncertainty
Emission Bandwidth	± 0.2kHz
Maximum output power	± 0.33dB
Power spectral density	± 0.13dB
Conducted Emission Limitations	± 0.13dB

4. MEASUREMENT EQUIPMENT LIST

4.1. Conducted Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESCI	101276	2017. 03. 23	1 Year
2.	A.M.N.	R&S	ESH2-Z5	100366	2017. 07. 20	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-881-13	2016. 12. 28	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	101495	2017. 01. 16	1 Year
5.	Test Software	Audix	e3	V.120619C	N.C.R.	N.C.R.

4.2. Radiated Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2017. 09. 13	1 Year
2.	Spectrum Analyzer	Agilent	N9010A-526	MY52220368	2016. 12. 01	1 Year
3.	Test Receiver	R & S	ESCS30	100338	2017. 06. 19	1 Year
4.	Amplifier	HP	8447D	2944A06305	2017. 02. 16	1 Year
5.	Amplifier	Sonoma	310N	187161	2017. 06. 08	1 Year
6.	Bilog Antenna	CHASE	CBL6112D	33821	2017. 01. 21	1 Year
7.	Loop Antenna	R&S	HFH2-Z2	891847/27	2016. 12. 23	1 Year
8.	Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00135902	2017. 03. 08	1 Year
10.	5G Notch Filter	Microwave Circuits	N0452502	459775	2016. 12. 28	1 Year
11.	5G Notch Filter	Microwave Circuits	N0555983	459481	2017. 05. 05	1 Year
12.	5G Notch Filter	Microwave Circuits	N0257881	459776	2017. 02. 03	1 Year
13.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

4.3. RF Conducted Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Spectrum Analyzer	Keysight	N9010B-544	MY55460198	2017. 04. 18	1 Year
2.	Power Meter	Anritsu	ML2495A	1145008	2017. 11. 03	1 Year
3.	Power Sensor	Anritsu	MA2411B	1126096	2017. 11. 03	1 Year

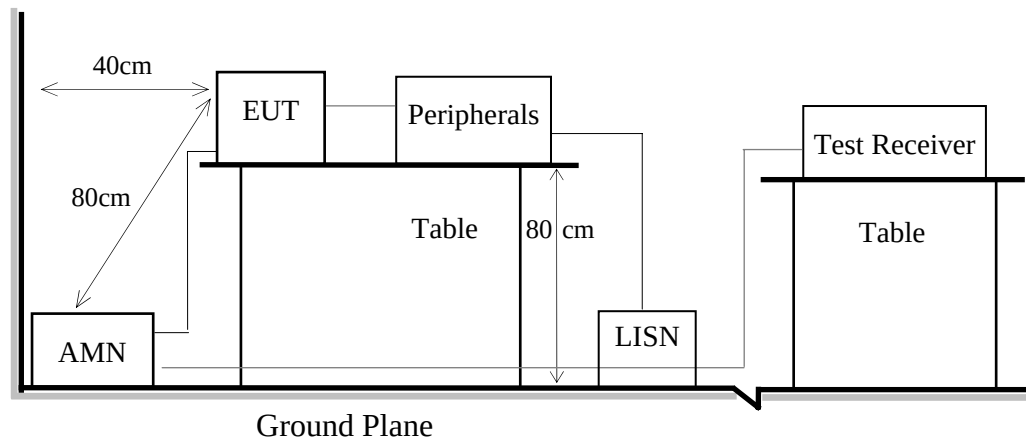
5. CONDUCTED EMISSION

5.1. Block Diagram of Test Setup

5.1.1. Block Diagram of EUT

Indicated as section 3.9

5.1.2. Shielded Room Setup Diagram



5.2. Conducted Emission Limit

Frequency	Conducted Limit	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB μ V	56 ~ 46 dB μ V
500kHz ~ 5MHz	56 dB μ V	46 dB μ V
5MHz ~ 30MHz	60 dB μ V	50 dB μ V

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.

2.: The lower limit applies to the band edges.

5.3. Test Procedure

- 5.3.1. To set up the EUT as indicated in ANSI C 63.10. The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.
- 5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).
- 5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)
- 5.3.4. Checking frequency range from 150 kHz to 30 MHz and record the emission which does not have 20 dB below limit.

5.4. Test Results

Please refer to Appendix A.

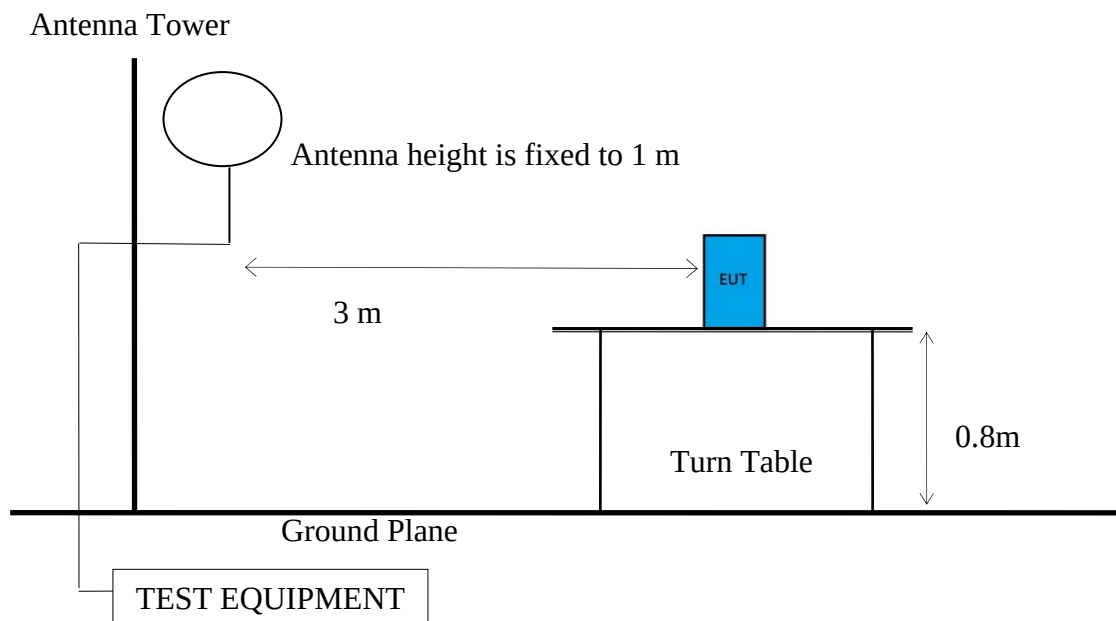
6. RADIATED EMISSION

6.1. Block Diagram of Test Setup

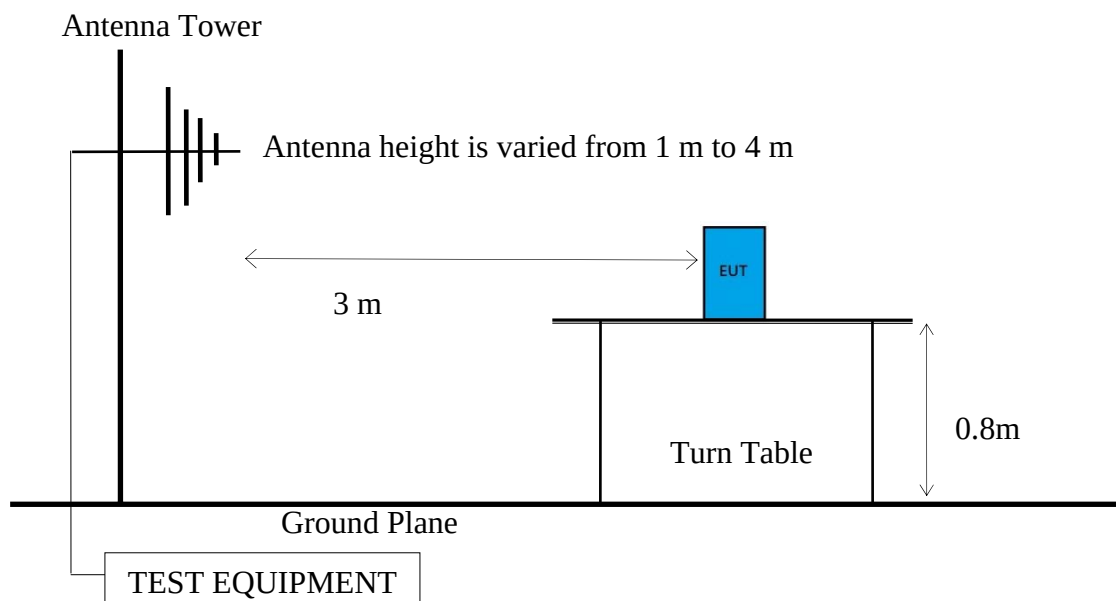
6.1.1. Block Diagram of EUT

Indicated as section 3.9

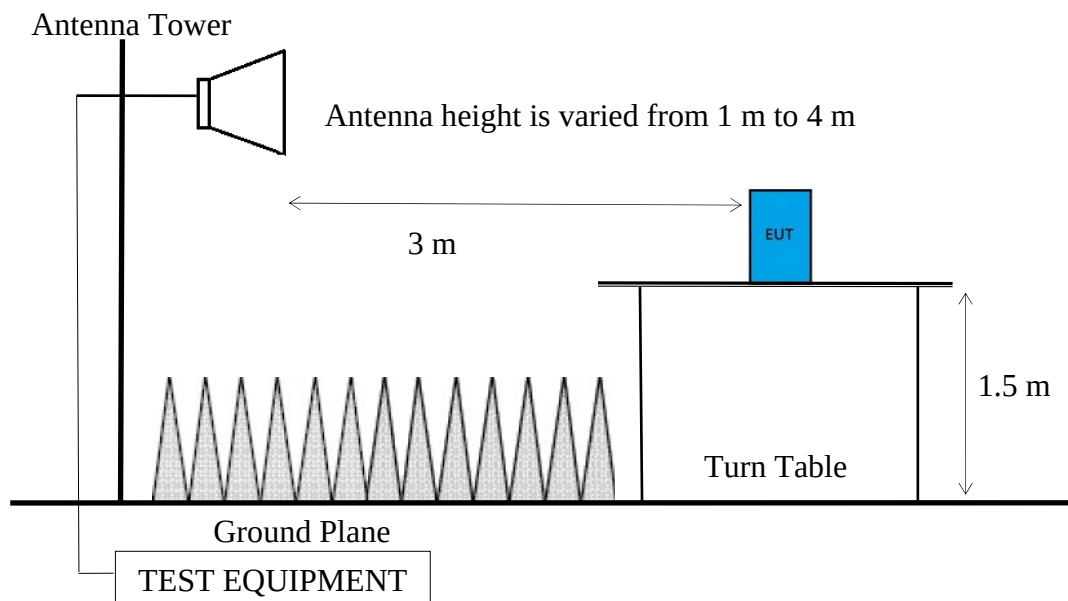
6.1.2. Setup Diagram for 9kHz-30MHz



6.1.3. Setup Diagram for 30-1000 MHz



6.1.4. Setup Diagram for above 1GHz



6.2. Radiated Emission Limits

Radiated emissions fall in restricted bands, as defined in Section 15.205 must be in compliance with the radiated emission limits specified in 15.209 as below.

6.2.1. General Limit

Frequency (MHz)	Distance (m)	Limits	
		dB μ V/m	μ V/m
0.009 - 0.490	300	67.6	2400/kHz
0.490 - 1.705	30	87.6	24000/kHz
1.705 - 30	30	29.5	30
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
Above 960	3	54.0	500
Above 1000	3	74.0 dB μ V/m (Peak) 54.0 dB μ V/m (Average)	

Remark : (1) dB μ V/m = 20 log (μ V/m)

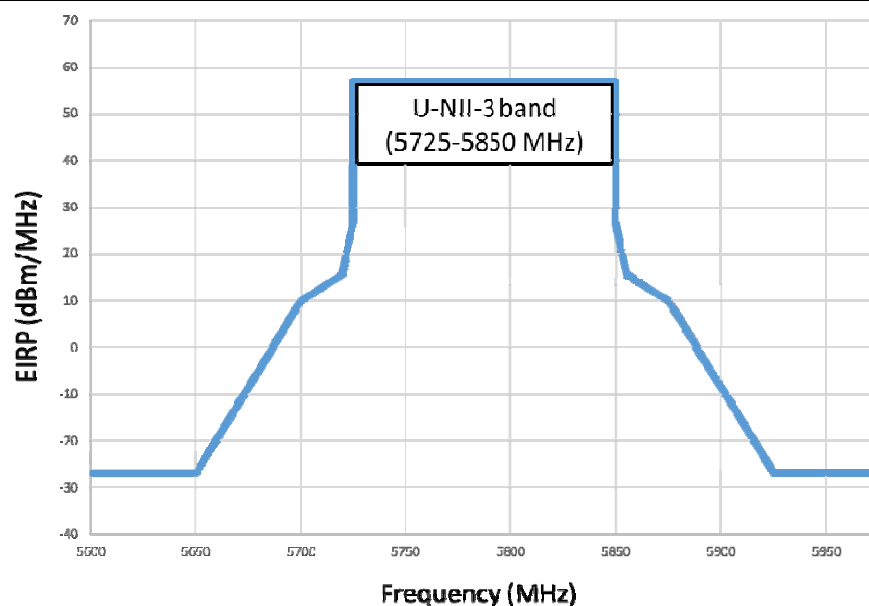
- (2) The tighter limit applies to the edge between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (4) Fundamental and emission fall within operation band are exempted from this section.
- (5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

6.2.2. Limit for non-restricted frequency above 1 GHz

Frequency Band (MHz)	E.I.R.P. Limit	Field Strength Limit at 3 m
5150 to 5250	-27 dBm	68.2
5250 to 5350		68.2
5470 to 5725		68.2

Note: Field Strength at 3 m = E.I.R.P. + 95.2 dB

Frequency Band (MHz)	Field Strength Limit at 3 m	
5725 to 5850	☒	15.407(b)(4)(i) All emissions shall be limited to a level of 68.2 dBμV/m at 75 MHz or more above or below the band edge increasing linearly to 105.2 dBμV/m 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 110.8 dBμV/m 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 68.2 dBμV/m at the band edge.
	☐	15.407(b)(4)(ii) ,compliance with the emission limits in § 15.247(d) Shall be at least 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power,. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))



6.3. Test Procedure

Frequency Range 9kHz~30MHz:

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

- (1) RBW = 9kHz with peak and average detector.
- (2) Detector: average and peak (9kHz-490kHz)
Q.P. (490kHz-30MHz)

Frequency Range 30MHz ~ 40GHz:

The EUT setup on the turn find table which has 80 cm (for 30-1000 MHz) and 1.5m (for above 1GHz) height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

Frequency below 1 GHz:

Spectrum Analyzer is used for pre-testing with following setting:

- (1) RBW = 120KHz
- (2) VBW $\geq 3 \times$ RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required. Otherwise using Q.P. for finally measurement.

Frequency above 1GHz to 10th harmonic (up to 40 GHz):

Peak Detector:

- (1) RBW = 1MHz
- (2) VBW $\geq 3 \times$ RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the average detector is not required. Otherwise using average detector for finally measurement.

Average Detector:☒ **Option 1:**

(1) RBW = 1MHz

(2) VBW $\geq 1/T$.

Modulation Type	T (ms)	1/T (kHz)	VBW Setting (kHz)
802.11a	2.037	0.491	10Hz
802.11n-HT20	0.9483	1.055	1kHz
802.11n-HT40	0.9450	1.058	2kHz
802.11ac-VHT80	0.0656	1.524	15kHz

N/A: 1/T is not implemented when duty cycle presented in section 3.7 is $\geq 98\%$.

(1) Detector = Peak.

(2) Sweep time = auto.

(3) Trace mode = max hold.

(4) Allow sweeps to continue until the trace stabilizes.

☐ **Option 2:**

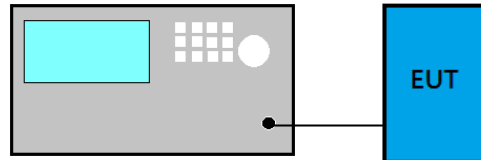
Average Emission Level = Peak Emission Level + D.C.C.F.

6.4. Measurement Result Explanation☒ Peak Emission Level = Antenna Factor + Cable Loss + Meter Reading☒ Average Emission Level = Antenna Factor + Cable Loss + Meter Reading☐ Average Emission Level = Peak Emission Level + DCCFDuty Cycle Correction Factor (DCCF) = $20\log(TX_{on}/TX_{on+off})$ presented in section 3.7☐ ERP = Peak Emission Level - 95.2dB - 2.14dB**6.5. Test Results**

Please refer to Appendix A.

7. EMISSION BANDWIDTH

7.1. Block Diagram of Test Setup



7.2. Specification Limits

Frequency Band (MHz)	Limit
5150 to 5250	Reference only
5250 to 5350	
5470 to 5725	
5725 to 5850	$\geq 500\text{kHz}$

7.3. Test Procedure

Following measurement procedure is reference to KDB 789033 D02 General UNII Test Procedures New Rules v01r04:

■ Applicable to all bands except to 5725 MHz- 5850 MHz

- (1) Set RBW= 1% of the emission bandwidth
- (2) Set VBW > RBW
- (3) Detector = Peak
- (4) Trace mode = max hold
- (5) Setting channel bandwidth function x dB to -26 dB to record the final bandwidth.

■ 5725 MHz- 5850 MHz

- (1) Set RBW = 100 kHz.
- (2) Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
- (3) Detector = Peak.
- (4) Trace mode = max hold.
- (5) Sweep = auto couple.
- (6) Allow the trace to stabilize.
- (7) Setting channel bandwidth function x dB to -6 dB to record the final bandwidth.

7.4. Test Results

Please refer to Appendix A

8. MAXIMUM OUTPUT POWER

8.1. Block Diagram of Test Setup



8.2. Specification Limits

Frequency Band (MHz)	Category	Limit
5150 to 5250	Outdoor Access Point	1 W(30 dBm)/ Max e.i.r.p. ≤ 125 mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon
	Fixed point-to-point Access Point	1 W(30 dBm)
	Indoor Access Point	1 W(30 dBm)
	Mobile and Portable client device	250 mW(24 dBm)
5250 to 5350	N/A	250 mW or $11 \text{ dBm} + 10 \log B$ ^{Note1}
5470 to 5725		250 mW or $11 \text{ dBm} + 10 \log B$ ^{Note1}
5725 to 5850		1 W(30 dBm)

Note 1: B is the 26 dB emission bandwidth, which presented in section 7 and appendix A.1.

8.3. Test Procedure

Following measurement procedure is reference to KDB 789033 D02 General UNII Test Procedures New Rules v01r04:

■ Method AVGPM (Measurement using an RF average power meter):

EUT is connected to power sensor and record the maximum average output power and duty cycle factor is added when duty cycle presented in section 3.7 is $< 98\%$.

□ Method AVGSA-2 (Spectrum channel power)

- (1) Set span to at least 1.5 times the OBW
- (2) Set RBW = 1 MHz
- (3) Set the video bandwidth (VBW) ≥ 3 MHz.

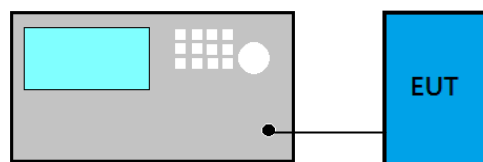
- (4) Detector = RMS.
- (5) Trace mode = trace average at least 100 traces
- (6) Sweep = auto couple.
- (7) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.
- (8) Duty cycle factor is added when duty cycle presented in section 3.7 is < 98%.

8.4. Test Results

Please refer to Appendix A

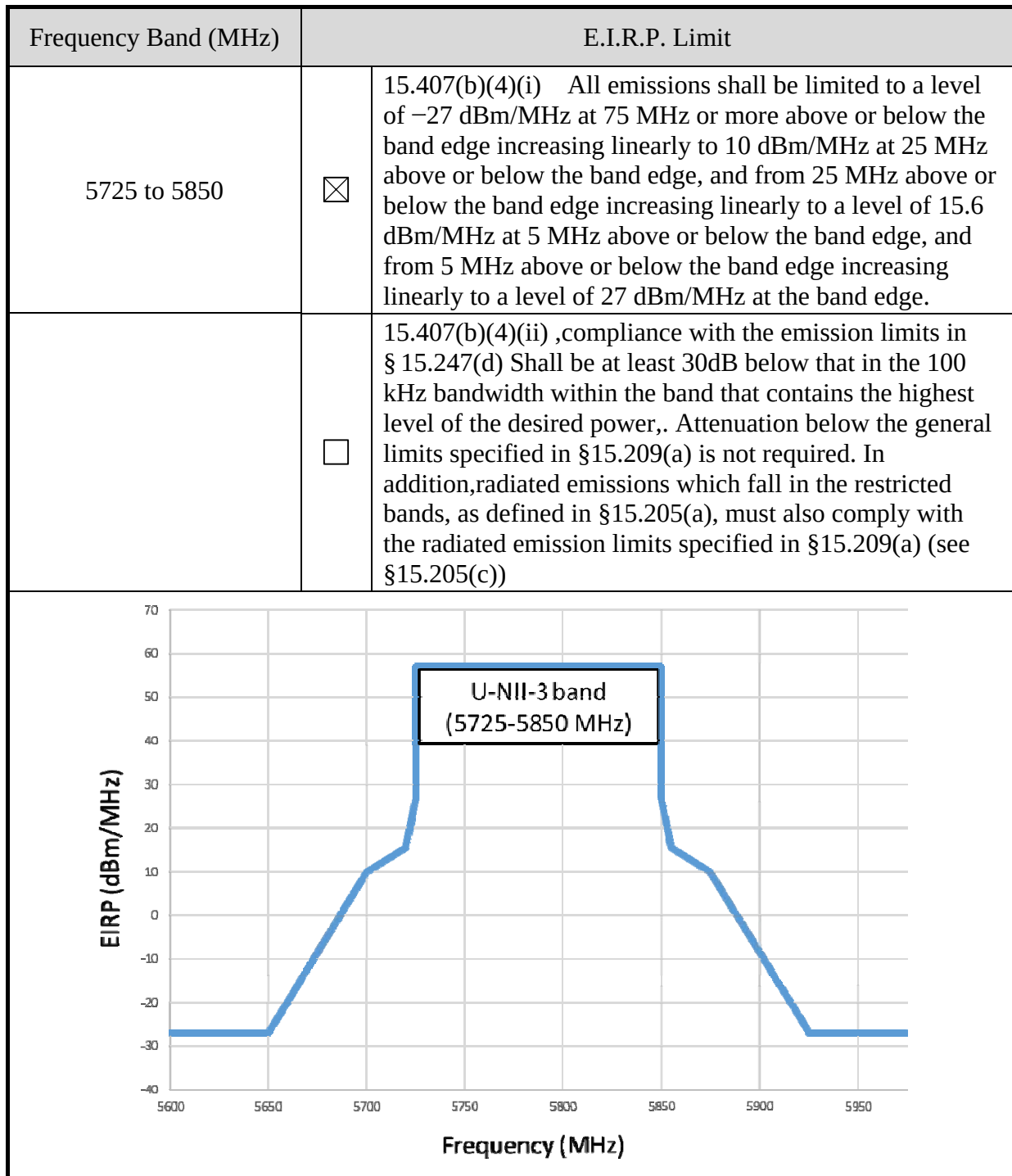
9. EMISSION LIMITATIONS MEASUREMENT

9.1. Block Diagram of Test Setup



9.2. Specification Limits

Frequency Band (MHz)	E.I.R.P. Limit
5150 to 5250	-27 dBm
5250 to 5350	
5470 to 5725	



9.3. Test Procedure

Following measurement procedure is reference to KDB 789033 D02 General UNII Test Procedures New Rules v01r04:

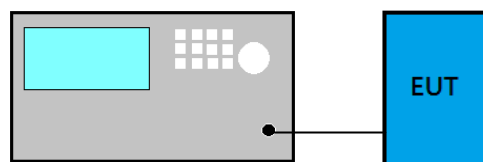
- (1) RBW = 1 MHz
- (2) VBW $\geq 3 \times$ RBW
- (3) Detector = Peak
- (4) Sweep time = auto
- (5) Trace mode = max hold
- (6) Allow sweeps to continue until the trace stabilizes.

9.4. Test Results

Please refer to Appendix A

10. POWER SPECTRAL DENSITY

10.1. Block Diagram of Test Setup



10.2. Specification Limits

Frequency Band (MHz)	Category	Limit
5150 to 5250	Outdoor Access Point	17dBm
	Fixed point-to-point Access Point	
	Indoor Access Point	
	Mobile and Portable client device	11 dBm/MHz
5250 to 5350	N/A	11 dBm/MHz
5470 to 5725		11 dBm/MHz
5725 to 5850		30dBm/500 kHz

10.3. Test Procedure

Following measurement procedure is reference to KDB 789033 D02 General UNII Test Procedures New Rules v01r04:

■ Method AVGSA-2 (Spectrum channel power)

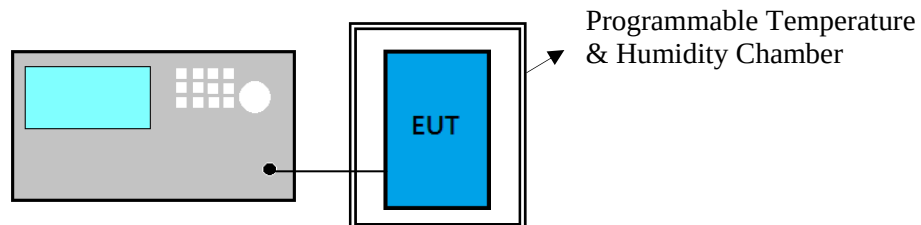
- (1) Set span to at least 1.5 times the OBW
- (2) Set RBW = 1 MHz
- (3) Set the video bandwidth (VBW) ≥ 3 MHz.
- (4) Detector = RMS.
- (5) Trace mode = trace average at least 100 traces
- (6) Sweep = auto couple.
- (7) Use peak search function to find out the maximum power density.
- (8) Duty cycle factor is added when duty cycle presented in section 3.7 is $< 98\%$.

10.4. Test Results

Please refer to Appendix A

11. FREQUENCY STABILITY

11.1. Block Diagram of Test Setup



11.2. Specification Limits

NONE

11.3. Test Procedure

- (1) Frequency: Test frequency.
- (2) Span: enough to cover the complete power envelope
- (3) RBW: 1MHz(modulation ON) ; 10KHz(CW)
- (4) VBW: 1MHz(modulation ON) ; 10KHz(CW)
- (5) Detector Mode: Positive Peak
- (6) Indication mode: Max hold
- (7) Find the peak frequency and take calculate by the formula:
(Measurement Value-declaration frequency)/ declaration frequency)

11.4. Test Results

Please refer to Appendix A

12.DEVIATION TO TEST SPECIFICATIONS

【NONE】



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APPENDIX A

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APPDNDIX A

TEST DATA AND PLOTS

(Model: 14Z980)

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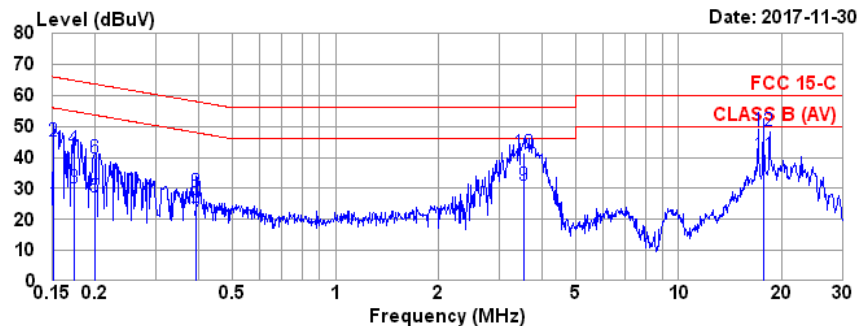
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A.1 CONDUCTED EMISSION

Test Date	2017/11/30	Temp./Hum.	24°C/57%
Test Voltage	AC 120V 60Hz (Via AC Adapter)		



Site no. : No.7 Shielded Room Data no. : 2
Condition : ESH2-Z5 366(ADAPTER) Phase : NEUTRAL
Limit : FCC 15-C
Env. / Ins. : 24°C / 57% ESCI(1276) Engineer : Nick Du
EUT : 14Z980
Power Rating : 120Vac/60Hz
Test Mode : Operating

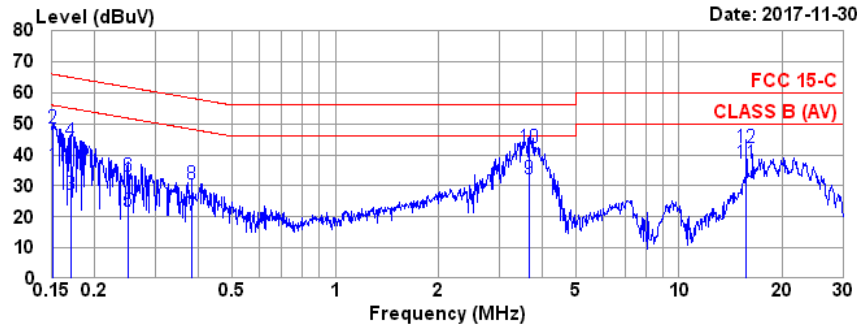
	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.152	0.19	0.03	9.86	15.27	25.35	55.91	30.56	Average
2	0.152	0.19	0.03	9.86	35.21	45.29	65.91	20.62	QP
3	0.174	0.18	0.04	9.86	20.25	30.33	54.77	24.44	Average
4	0.174	0.18	0.04	9.86	32.57	42.65	64.77	22.12	QP
5	0.199	0.17	0.04	9.86	17.31	27.38	53.67	26.29	Average
6	0.199	0.17	0.04	9.86	29.75	39.82	63.67	23.85	QP
7	0.393	0.19	0.04	9.86	9.70	19.79	47.99	28.20	Average
8	0.393	0.19	0.04	9.86	18.93	29.02	57.99	28.97	QP
9	3.547	0.31	0.16	9.87	20.85	31.19	46.00	14.81	Average
10	3.547	0.31	0.16	9.87	31.35	41.69	56.00	14.31	QP
11	17.661	0.91	0.29	9.93	29.60	40.73	50.00	9.27	Average
12	17.661	0.91	0.29	9.93	37.33	48.46	60.00	11.54	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

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Test Date	2017/11/30	Temp./Hum.	24°C/57%
Test Voltage	AC 120V 60Hz (Via AC Adapter)		



Site no. : No.7 Shielded Room Data no. : 1
Condition : ESH2-Z5 366(ADAPTER) Phase : LINE
Limit : FCC 15-C
Env. / Ins. : 24°C / 57% ESCI(1276) Engineer : Nick Du
EUT : 14Z980
Power Rating : 120Vac/60Hz
Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.151	0.18	0.03	9.86	26.55	36.62	55.96	19.34	Average
2	0.151	0.18	0.03	9.86	38.34	48.41	65.96	17.55	QP
3	0.171	0.17	0.03	9.86	17.22	27.28	54.90	27.62	Average
4	0.171	0.17	0.03	9.86	34.28	44.34	64.90	20.56	QP
5	0.249	0.17	0.04	9.86	11.61	21.68	51.78	30.10	Average
6	0.249	0.17	0.04	9.86	23.03	33.10	61.78	28.68	QP
7	0.383	0.18	0.04	9.86	10.36	20.44	48.21	27.77	Average
8	0.383	0.18	0.04	9.86	20.32	30.40	58.21	27.81	QP
9	3.661	0.32	0.16	9.87	21.82	32.17	46.00	13.83	Average
10	3.661	0.32	0.16	9.87	31.95	42.30	56.00	13.70	QP
11	15.718	0.93	0.28	9.92	26.02	37.15	50.00	12.85	Average
12	15.718	0.93	0.28	9.92	31.32	42.45	60.00	17.55	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

A.2 RADIATED EMISSION

Test Date	2017/11/30	Temp./Hum.	24°C/51%
Test Voltage	AC 120V, 60Hz (via AC Adapter)		

A.2.1 Emissions within Restricted Frequency Bands

A.2.1.1 Frequency 9kHz~30MHz

The emissions (9kHz~30MHz) not reported for there is no emission be found.

A.2.1.2 Frequency Below 1 GHz

Mode	802.11n-HT40	UNII Band	III
		Frequency	TX 5795MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
82.38	14.30	2.04	20.01	36.35	40.00	3.65	Peak
144.46	17.47	2.77	21.52	41.76	43.50	1.74	Peak
209.45	16.44	3.44	20.61	40.49	43.50	3.01	Peak
303.54	19.58	4.36	16.28	40.22	46.00	5.78	Peak
488.81	23.04	6.34	12.88	42.26	46.00	3.74	Peak
648.86	24.76	6.92	8.32	40.00	46.00	6.00	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
54.25	13.77	1.64	22.44	37.85	40.00	2.15	Peak
216.24	16.92	3.50	20.28	40.70	46.00	5.30	Peak
279.29	19.36	4.11	20.00	43.47	46.00	2.53	Peak
489.78	23.04	6.34	13.26	42.64	46.00	3.36	Peak
648.86	24.76	6.92	10.70	42.38	46.00	3.62	Peak
698.33	24.87	7.08	10.86	42.81	46.00	3.19	Peak

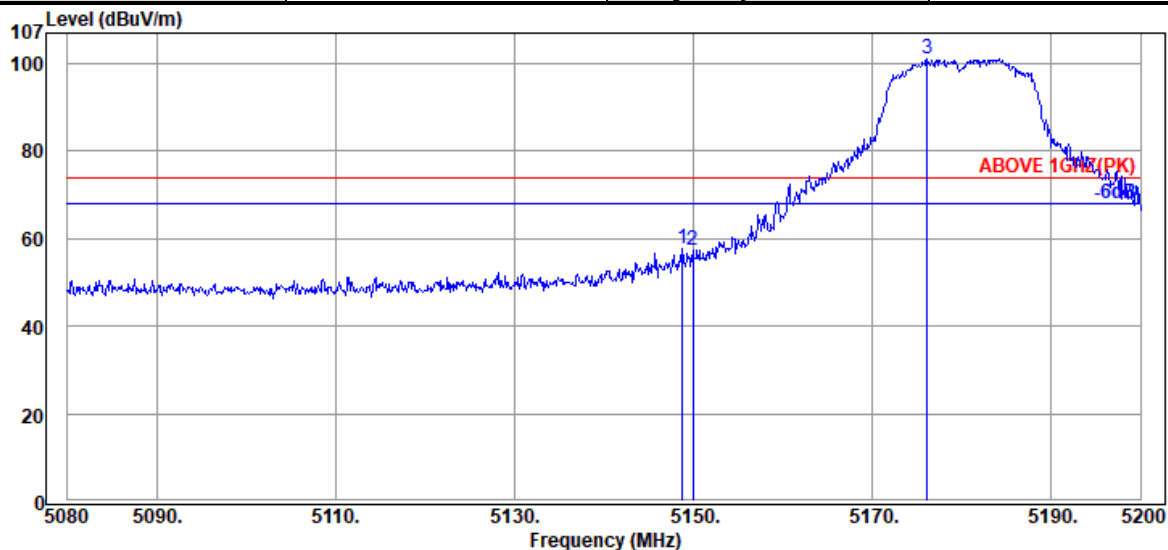
Audix Technology Corp.
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A.2.1.3 Frequency Above 1 GHz to 10th harmonics

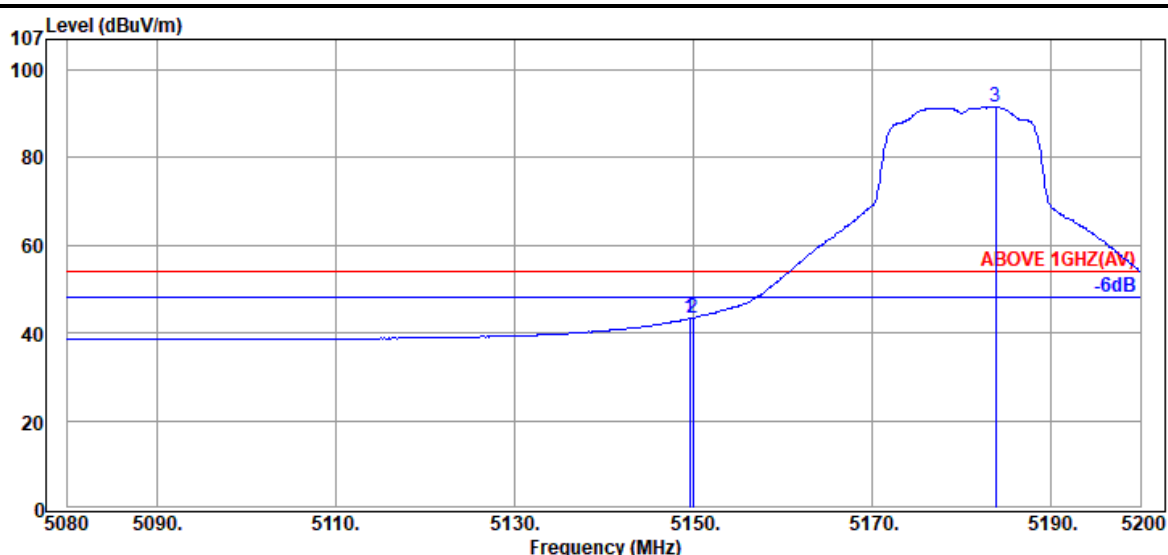
Band Edge:

Mode	802.11a	UNII Band	I
		Frequency	TX 5180MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5148.76	34.45	9.83	13.57	57.85	74.00	16.15	Peak
5149.96	34.45	9.83	12.94	57.22	74.00	16.78	Peak
5176.12	34.48	9.88	56.75	101.11	---	---	Peak



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.60	34.45	9.83	-0.97	43.31	54.00	10.69	Average
5149.96	34.45	9.83	-0.82	43.46	54.00	10.54	Average
5183.80	34.48	9.88	47.12	91.48	---	---	Average

Audix Technology Corp.

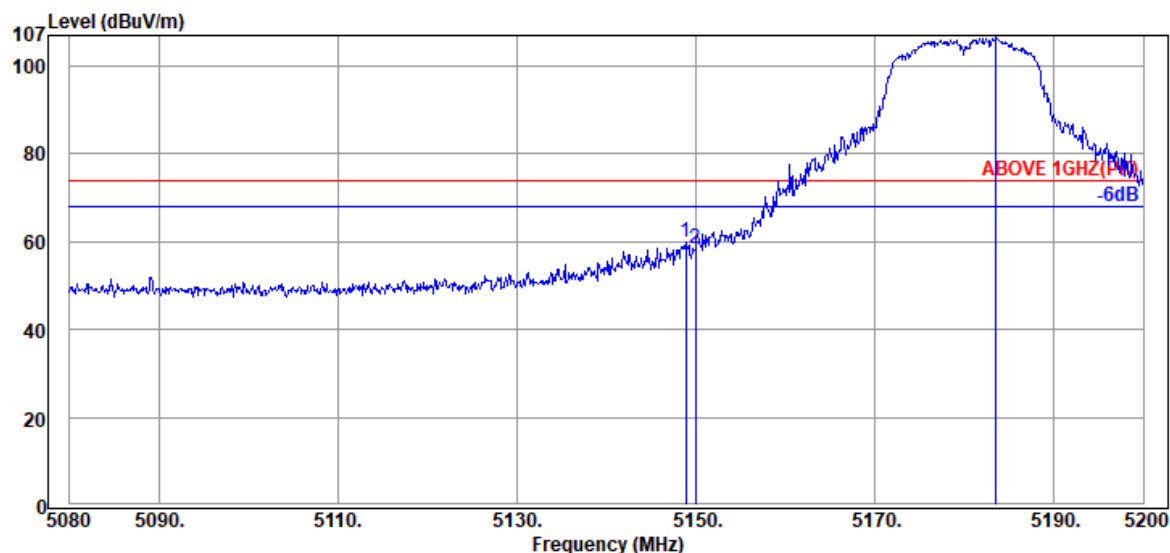
No. 53-11, Dingfu, Linkou, Dist.,

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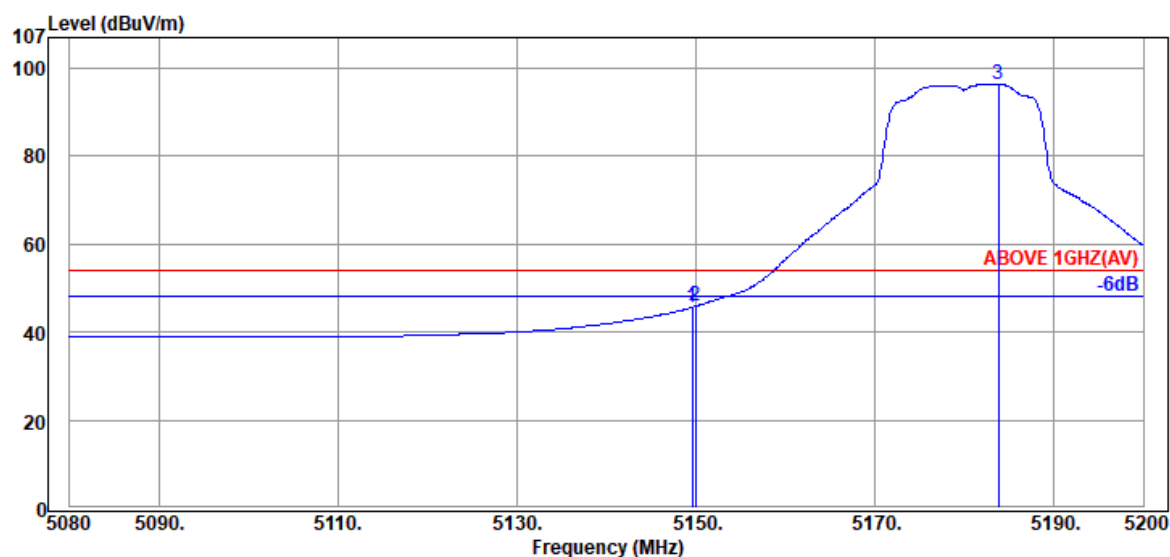
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Mode	802.11a	UNII Band	I
		Frequency	TX 5180MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5148.88	34.45	9.83	15.79	60.07	74.00	13.93	Peak
5149.96	34.45	9.83	14.20	58.48	74.00	15.52	Peak
5183.56	34.48	9.88	62.23	106.59	---	---	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.60	34.45	9.83	1.41	45.69	54.00	8.31	Average
5149.96	34.45	9.83	1.60	45.88	54.00	8.12	Average
5183.80	34.48	9.88	52.03	96.39	---	---	Average

File Number: C1M1711304

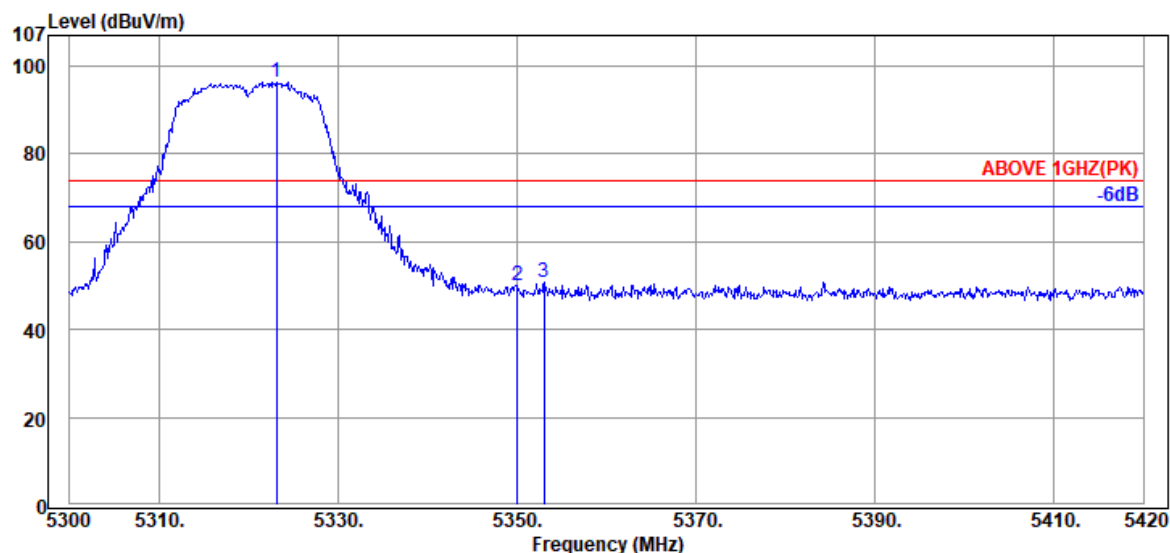
Report Number: EM-F170743

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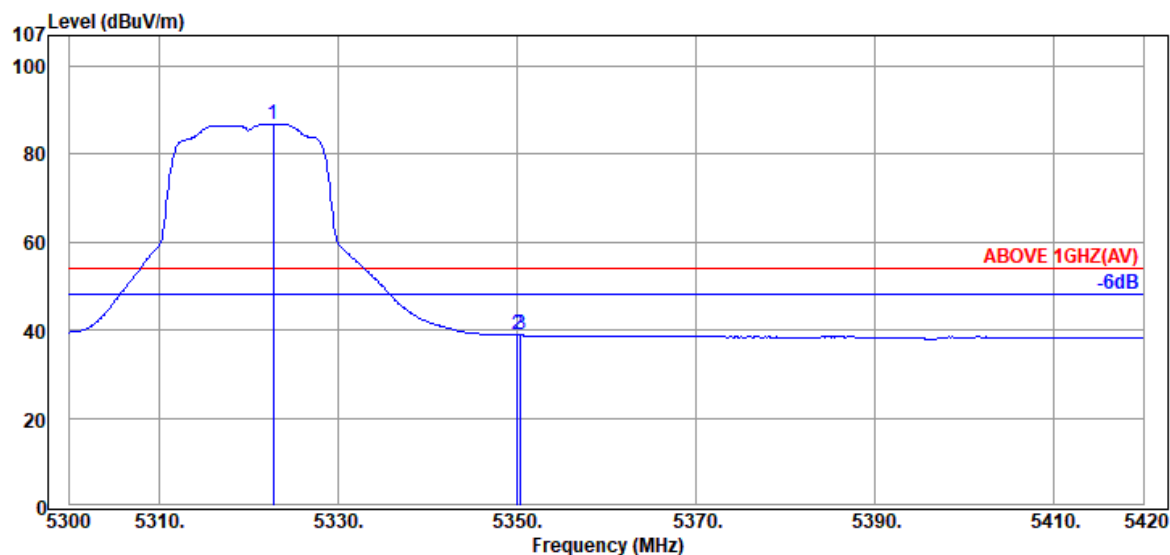
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Mode	802.11a	UNII Band	II-2A
		Frequency	TX 5320MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5323.16	34.62	10.08	51.78	96.48	---	---	Peak
5350.04	34.65	10.13	5.09	49.87	74.00	24.13	Peak
5353.04	34.65	10.13	6.08	50.86	74.00	23.14	Peak



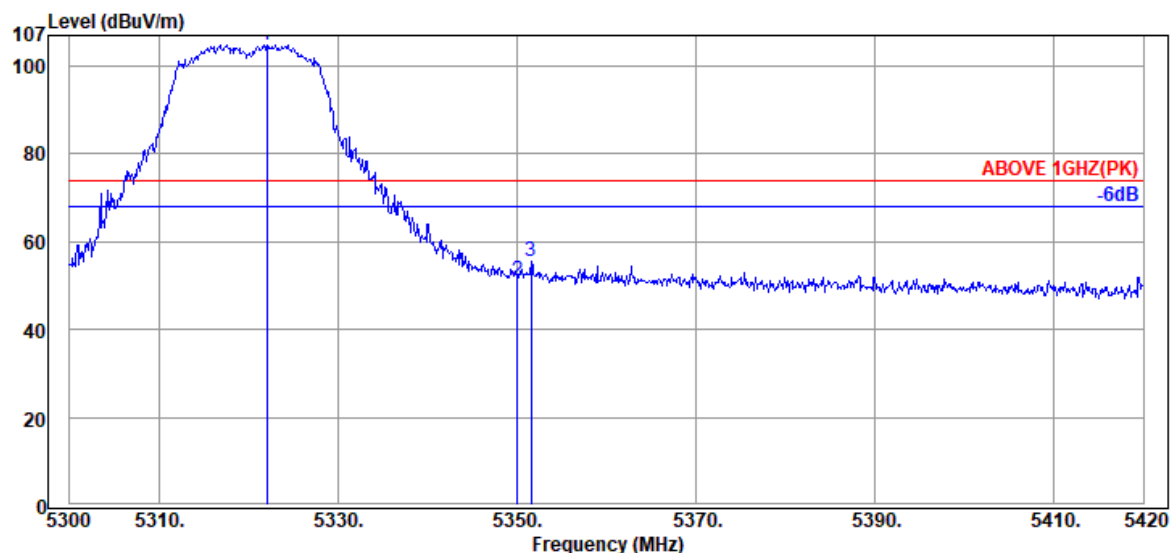
Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5322.80	34.62	10.08	42.12	86.82	---	---	Average
5350.04	34.65	10.13	-5.94	38.84	54.00	15.16	Average
5350.40	34.65	10.13	-5.97	38.81	54.00	15.19	Average

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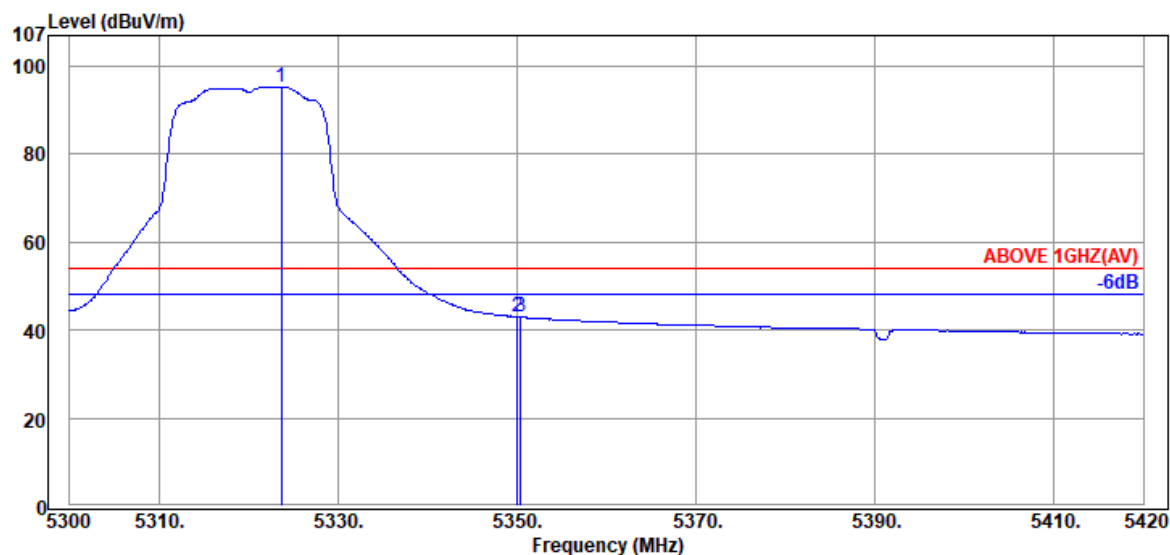
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Fax: +886 2 26099303

Mode	802.11a	UNII Band	II-2A
		Frequency	TX 5320MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5322.08	34.62	10.08	60.17	104.87	---	---	Peak
5350.04	34.65	10.13	6.41	51.19	74.00	22.81	Peak
5351.60	34.65	10.13	10.89	55.67	74.00	18.33	Peak



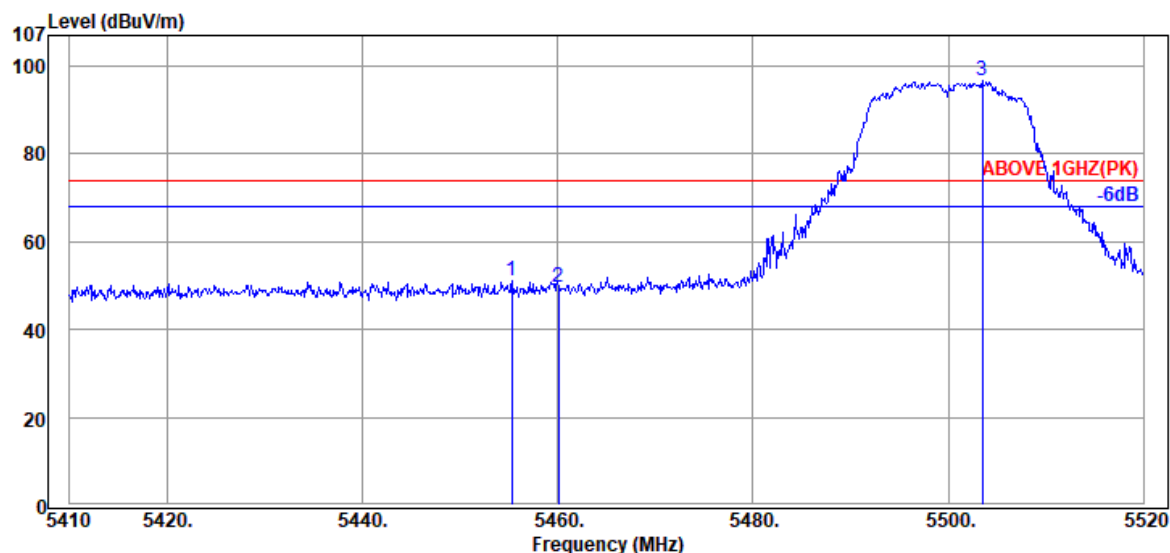
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5323.64	34.62	10.08	50.58	95.28	---	---	Average
5350.04	34.65	10.13	-1.80	42.98	54.00	11.02	Average
5350.40	34.65	10.13	-1.81	42.97	54.00	11.03	Average

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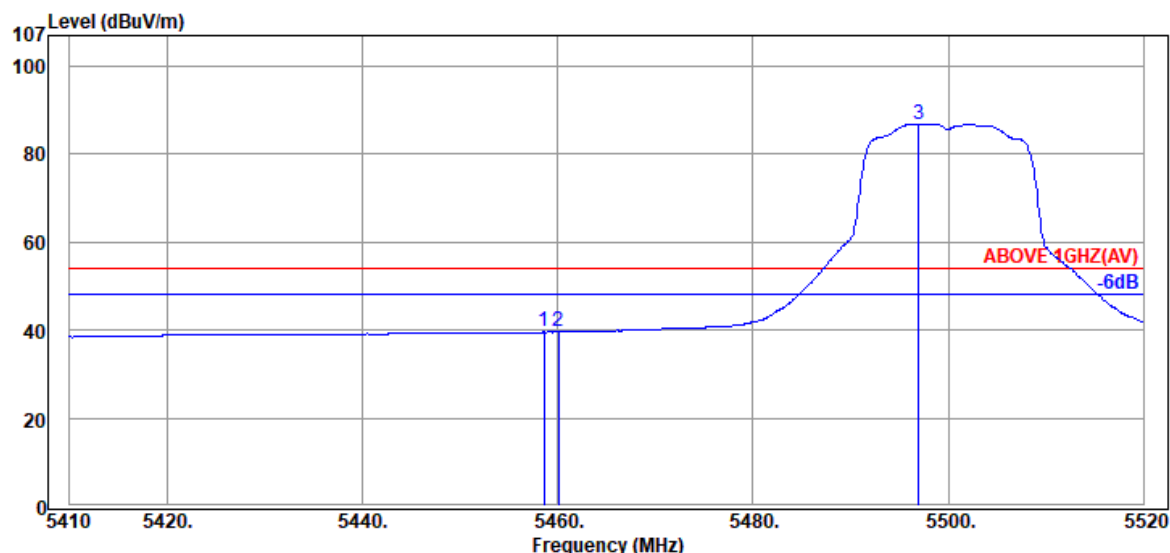
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Mode	802.11a	UNII Band	II-2C
		Frequency	TX 5500MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5465.11	34.77	10.30	6.77	51.84	74.00	22.16	Peak
5469.95	34.77	10.30	4.85	49.92	74.00	24.08	Peak
5503.50	34.80	10.35	51.43	96.58	---	---	Peak



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5468.08	34.77	10.30	-5.03	40.04	54.00	13.96	Average
5469.95	34.77	10.30	-4.87	40.20	54.00	13.80	Average
5497.01	34.80	10.35	41.62	86.77	---	---	Average

Audix Technology Corp.

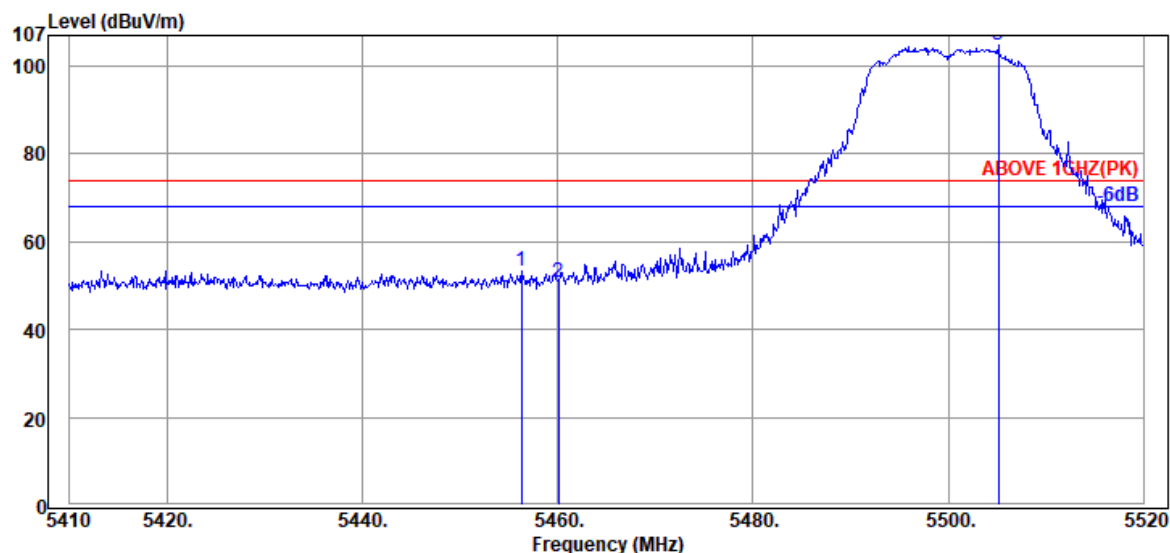
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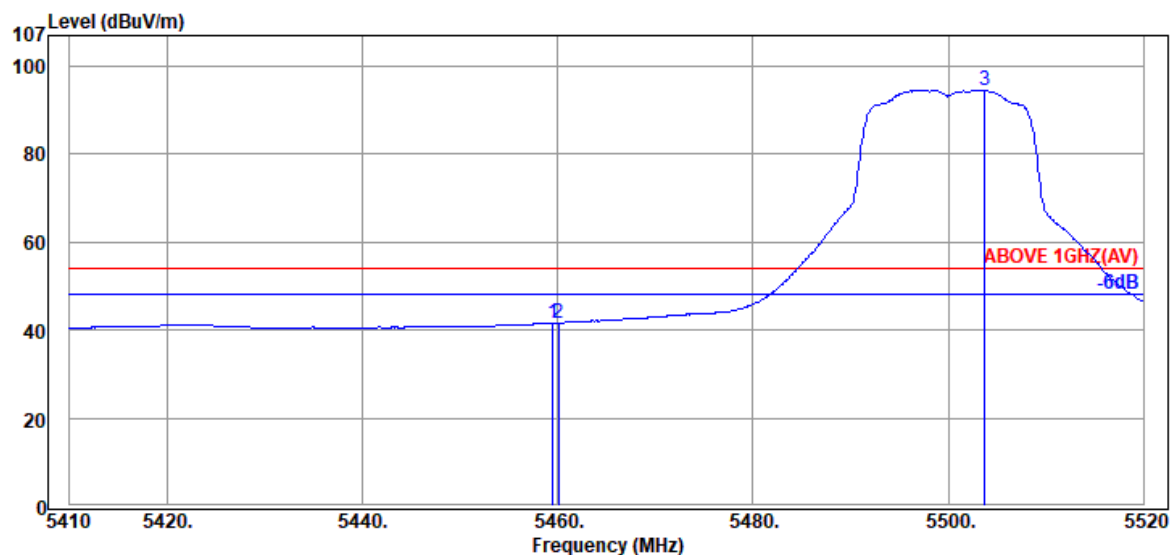
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Mode	802.11a	UNII Band	II-2C
		Frequency	TX 5500MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5465.88	34.77	10.30	10.46	55.53	74.00	18.47	Peak
5469.95	34.77	10.30	8.84	53.91	74.00	20.09	Peak
5505.15	34.80	10.35	59.53	104.68	---	---	Peak



Antenna at Vertical Polarization

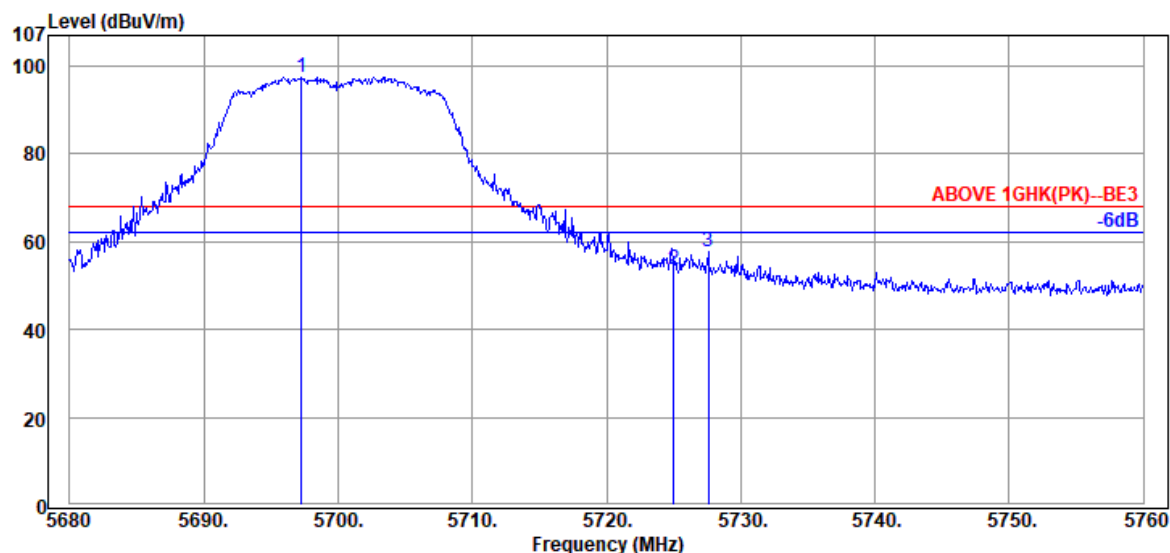
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5468.19	34.77	10.30	-2.38	42.69	54.00	11.31	Average
5469.95	34.77	10.30	-2.09	42.98	54.00	11.02	Average
5503.72	34.80	10.35	49.25	94.40	---	---	Average

File Number: C1M1711304

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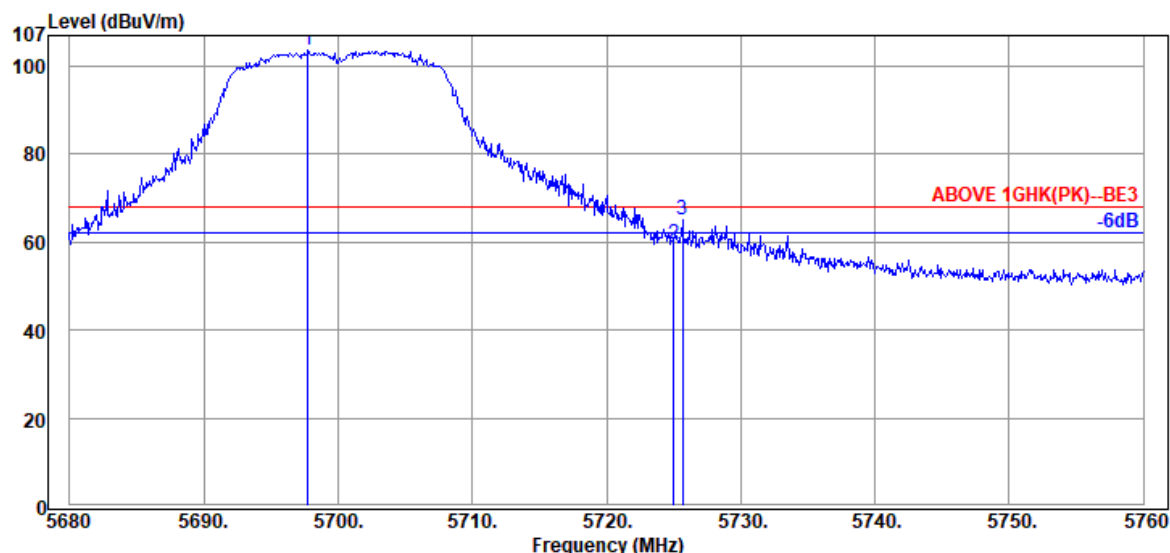
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Mode	802.11a	UNII Band	II-2C
		Frequency	TX 5700MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5697.28	35.03	10.50	51.98	97.51	68.20	---	Peak
5725.04	35.07	10.52	8.26	53.85	68.20	14.35	Peak
5727.60	35.07	10.52	12.32	57.91	68.20	10.29	Peak



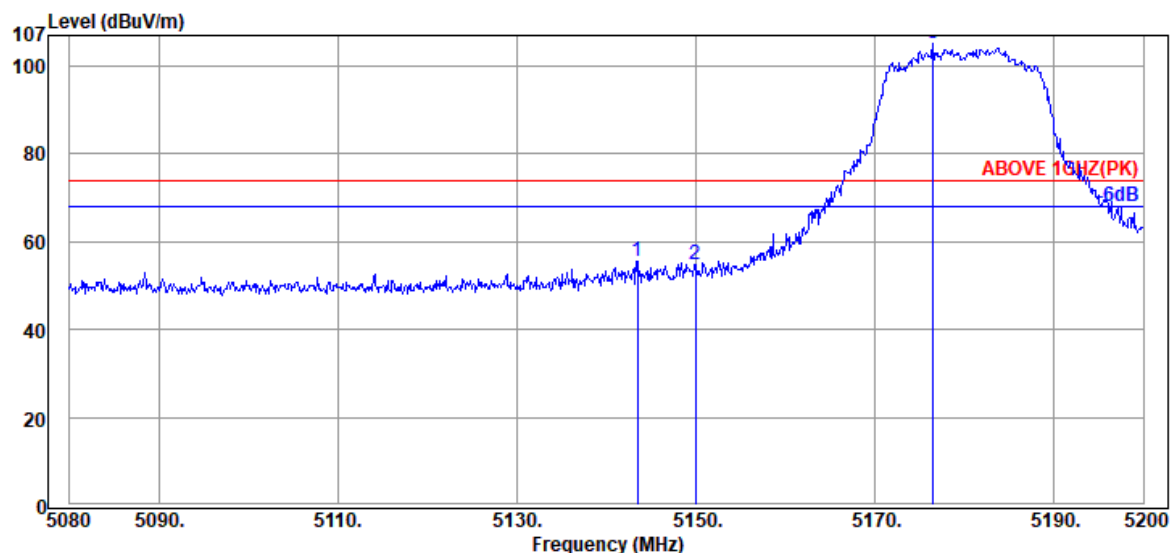
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5697.76	35.03	10.50	58.15	103.68	68.20	---	Peak
5725.04	35.07	10.52	14.16	59.75	68.20	8.45	Peak
5725.68	35.07	10.52	19.49	65.08	68.20	3.12	Peak

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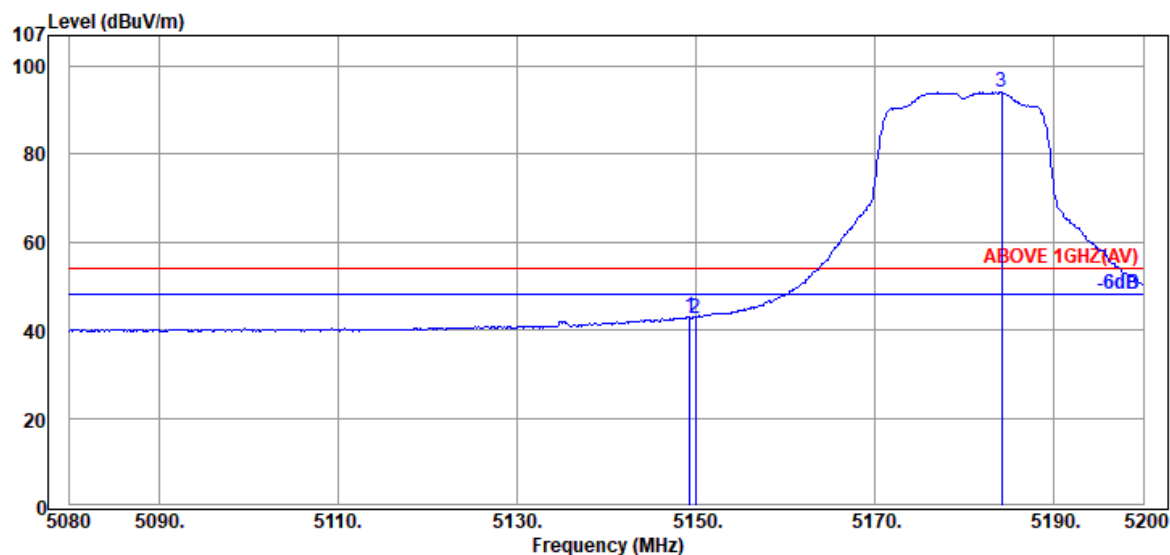
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Mode	802.11n-HT20	UNII Band	I
		Frequency	TX 5180MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5143.48	34.45	9.83	11.28	55.56	74.00	18.44	Peak
5149.96	34.45	9.83	10.68	54.96	74.00	19.04	Peak
5176.48	34.48	9.88	60.62	104.98	---	---	Peak



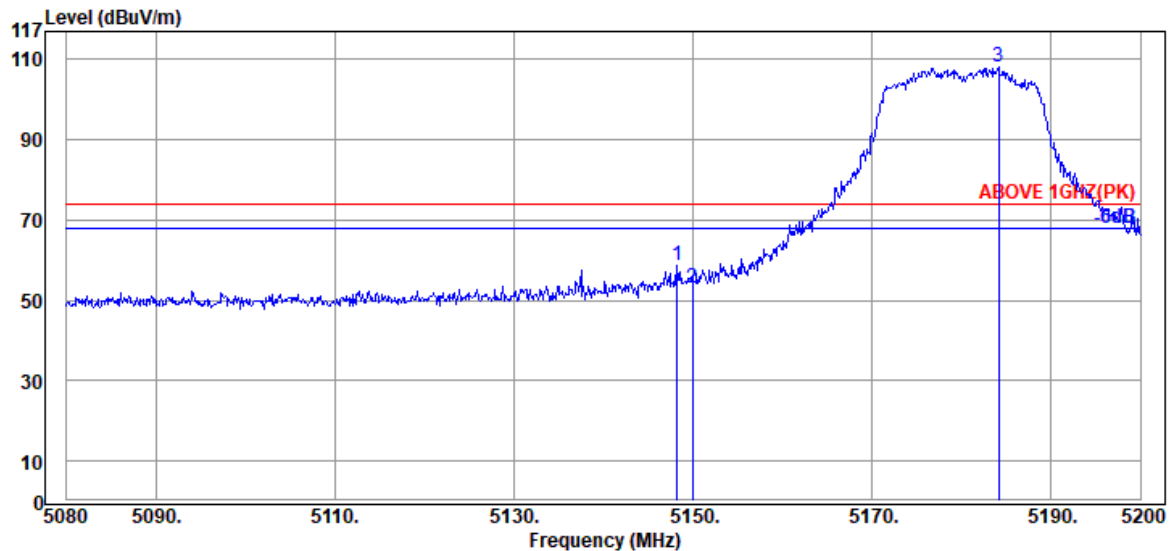
Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.36	34.45	9.83	-1.37	42.91	54.00	11.09	Average
5149.96	34.45	9.83	-1.44	42.84	54.00	11.16	Average
5184.16	34.48	9.88	49.71	94.07	---	---	Average

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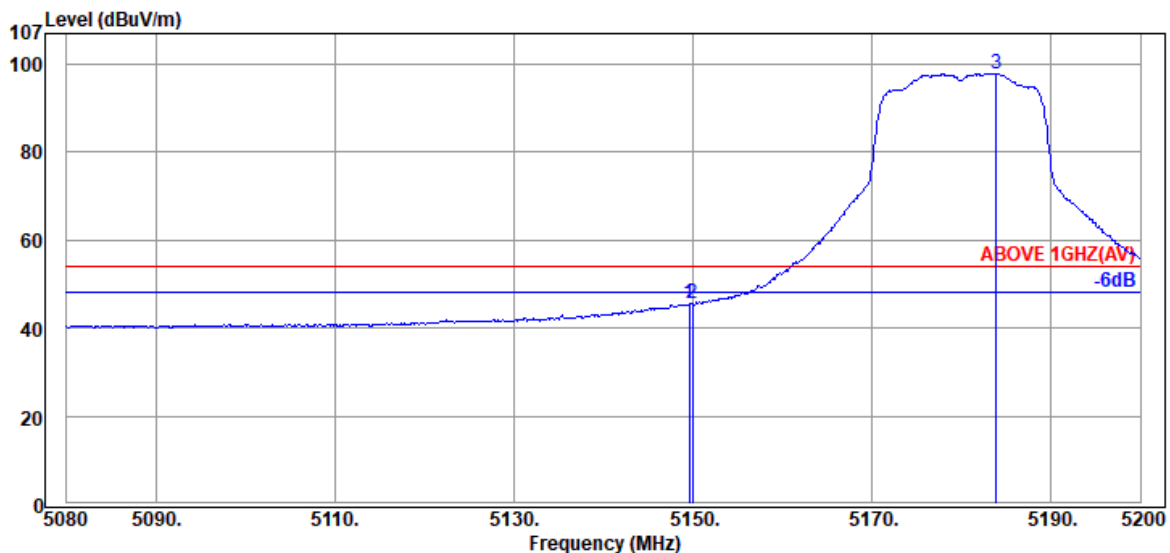
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Mode	802.11n-HT20	UNII Band	I
		Frequency	TX 5180MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5148.28	34.45	9.83	14.47	58.75	74.00	15.25	Peak
5149.96	34.45	9.83	8.94	53.22	74.00	20.78	Peak
5184.16	34.48	9.88	63.68	108.04	---	---	Peak



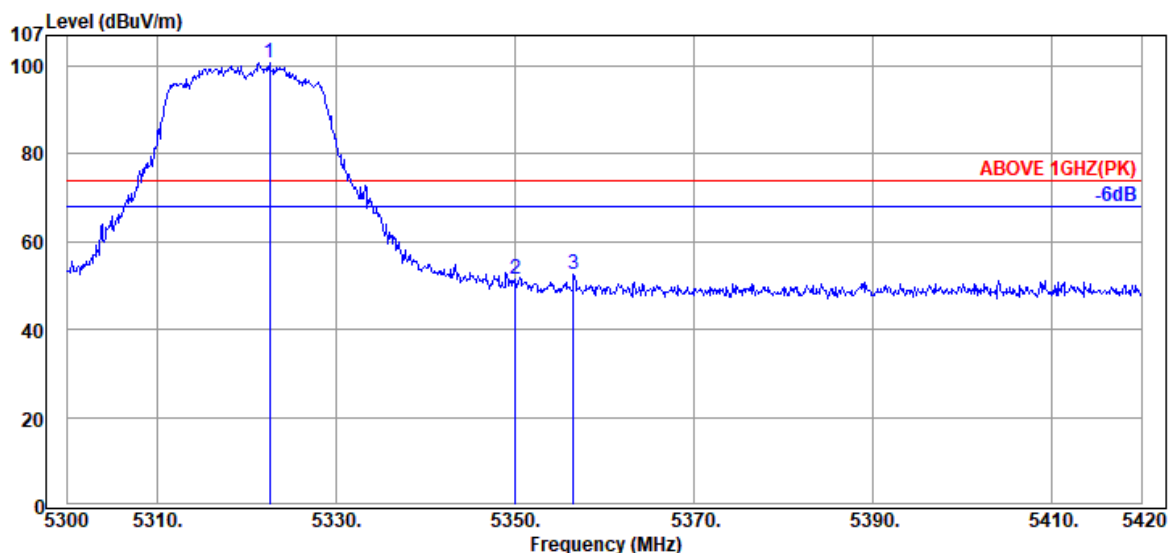
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.60	34.45	9.83	1.20	45.48	54.00	8.52	Average
5149.96	34.45	9.83	1.27	45.55	54.00	8.45	Average
5183.92	34.48	9.88	53.59	97.95	---	---	Average

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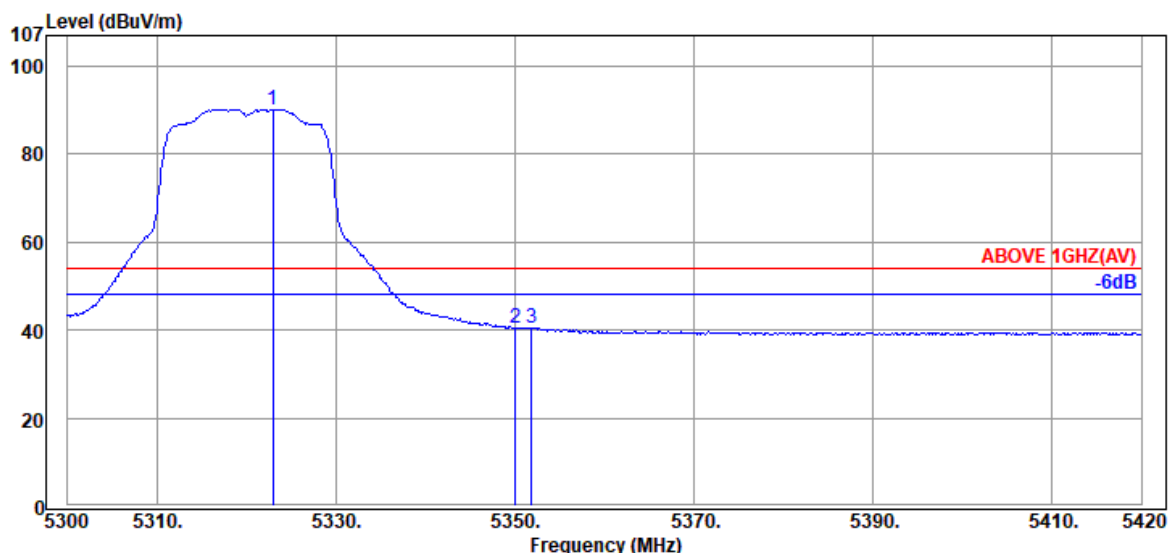
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Mode	802.11n-HT20	UNII Band	II-2A
		Frequency	TX 5320MHz



Antenna at Horizontal Polarization

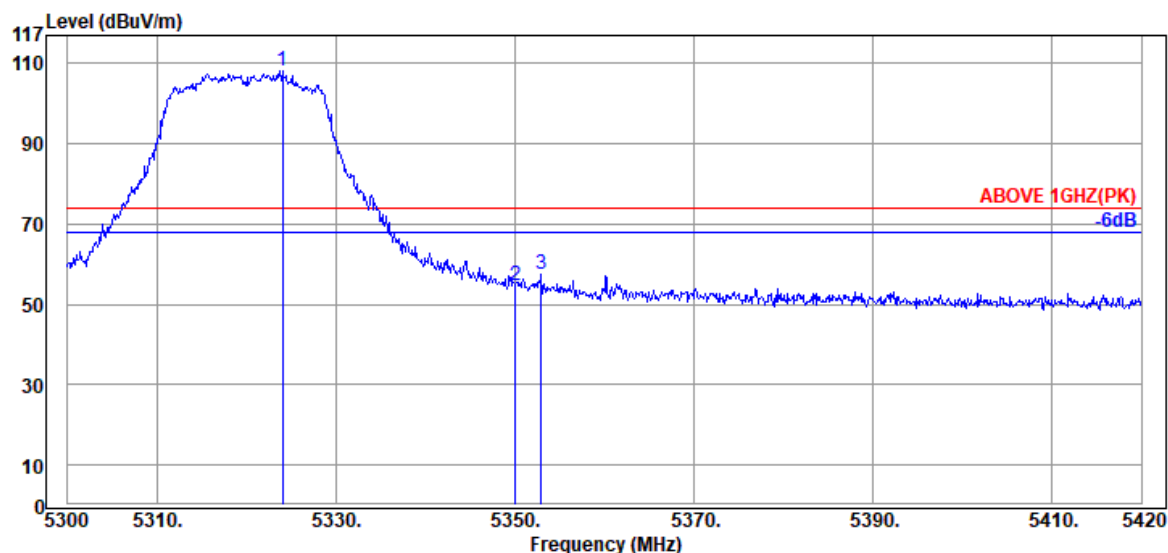
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5322.56	34.62	10.08	55.96	100.66	---	---	Peak
5350.04	34.65	10.13	6.80	51.58	74.00	22.42	Peak
5356.52	34.65	10.13	7.98	52.76	74.00	21.24	Peak



Antenna at Horizontal Polarization

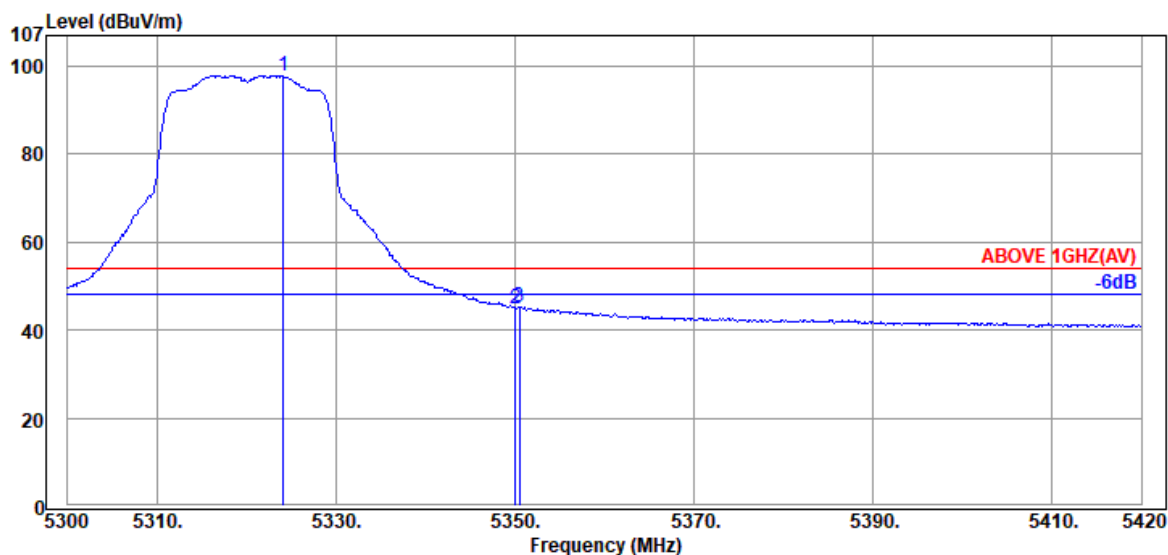
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5322.92	34.62	10.08	45.50	90.20	---	---	Average
5350.04	34.65	10.13	-4.26	40.52	54.00	13.48	Average
5351.84	34.65	10.13	-4.26	40.52	54.00	13.48	Average

Mode	802.11n-HT20	UNII Band	II-2A
		Frequency	TX 5320MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5324.00	34.62	10.08	63.33	108.03	---	---	Peak
5350.04	34.65	10.13	9.95	54.73	74.00	19.27	Peak
5352.92	34.65	10.13	12.60	57.38	74.00	16.62	Peak



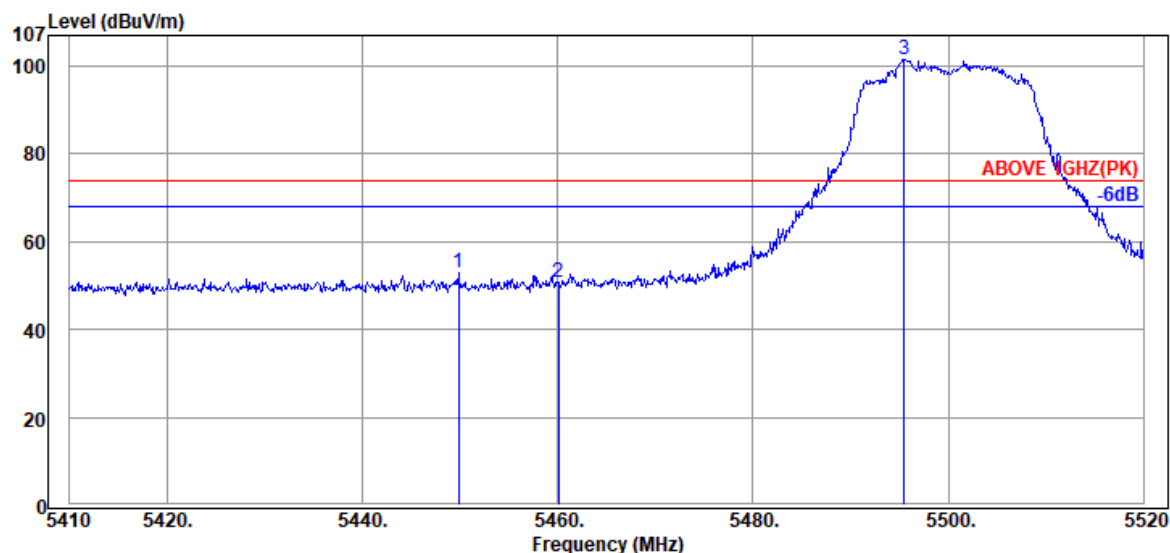
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5324.12	34.62	10.08	53.14	97.84	54.00	---	Average
5350.04	34.65	10.13	0.23	45.01	54.00	8.99	Average
5350.52	34.65	10.13	0.34	45.12	54.00	8.88	Average

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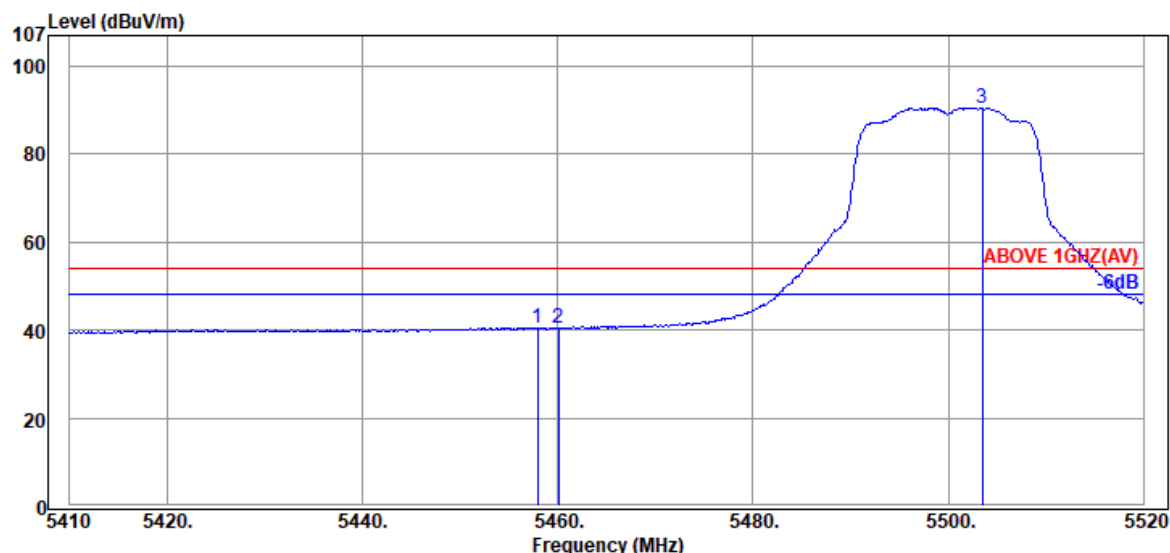
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Mode	802.11n-HT20	UNII Band	II-2C
		Frequency	TX 5500MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5461.26	34.75	10.28	7.38	52.41	74.00	21.59	Peak
5469.95	34.77	10.30	6.25	51.32	74.00	22.68	Peak
5495.47	34.78	10.33	56.35	101.46	---	---	Peak



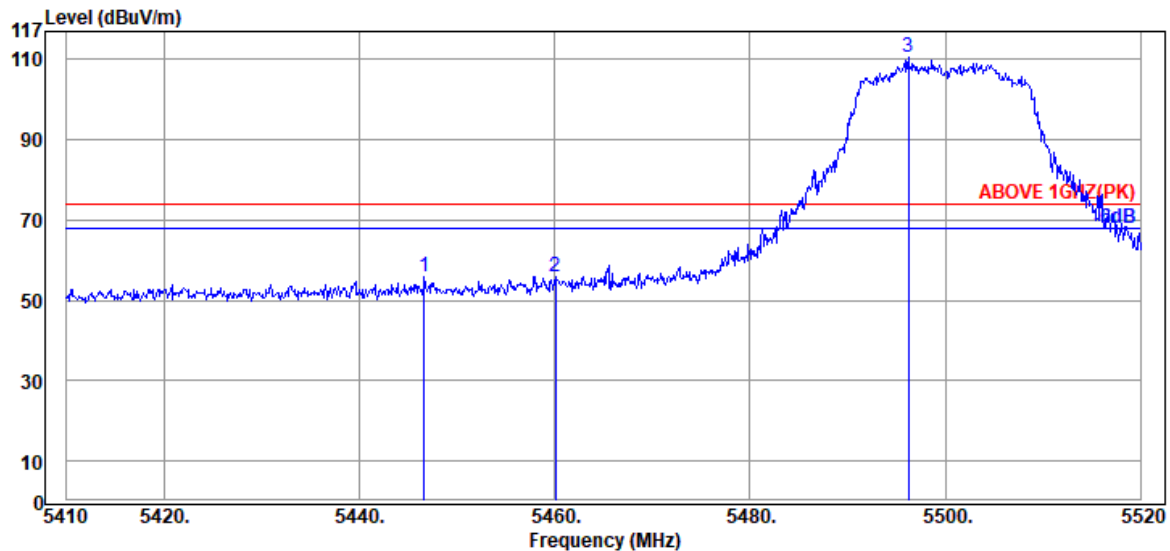
Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5468.41	34.77	10.30	-4.12	40.95	54.00	13.05	Average
5469.95	34.77	10.30	-3.95	41.12	54.00	12.88	Average
5503.50	34.80	10.35	45.48	90.63	---	---	Average

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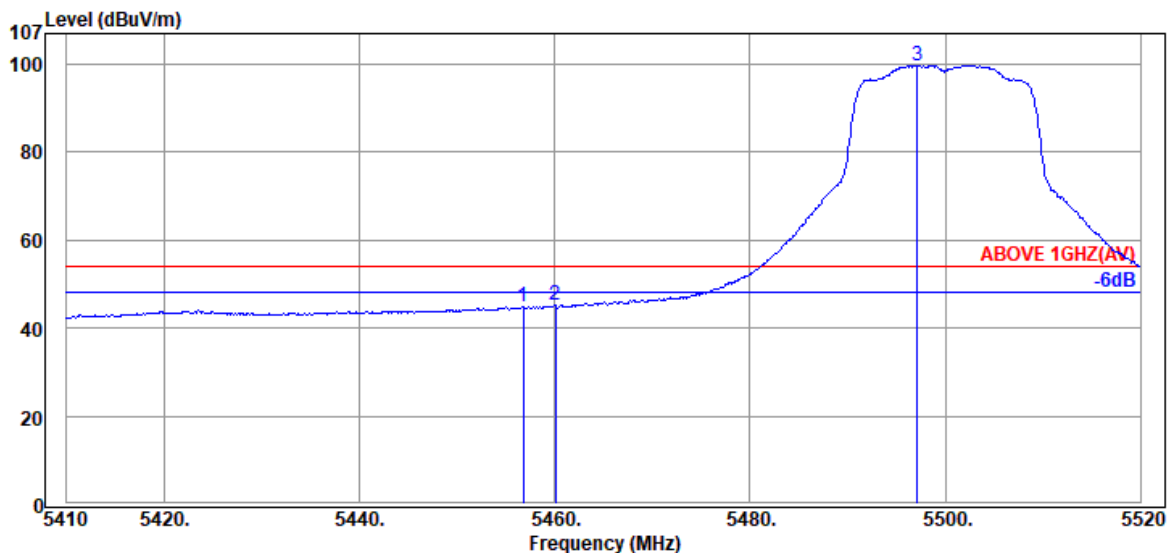
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Mode	802.11n-HT20	UNII Band	II-2C
		Frequency	TX 5500MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5465.55	34.77	10.30	13.82	58.89	74.00	15.11	Peak
5469.95	34.77	10.30	10.51	55.58	74.00	18.42	Peak
5496.24	34.78	10.33	65.36	110.47	---	---	Peak



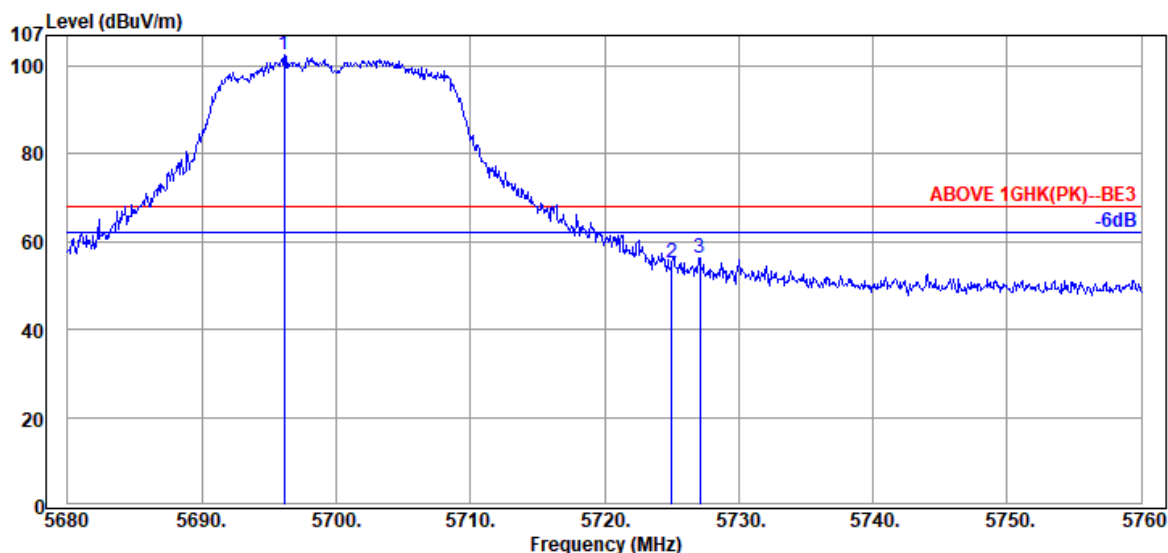
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5468.30	34.77	10.30	1.18	46.25	54.00	7.75	Average
5469.95	34.77	10.30	1.14	46.21	54.00	7.79	Average
5497.12	34.80	10.35	54.50	99.65	---	---	Average

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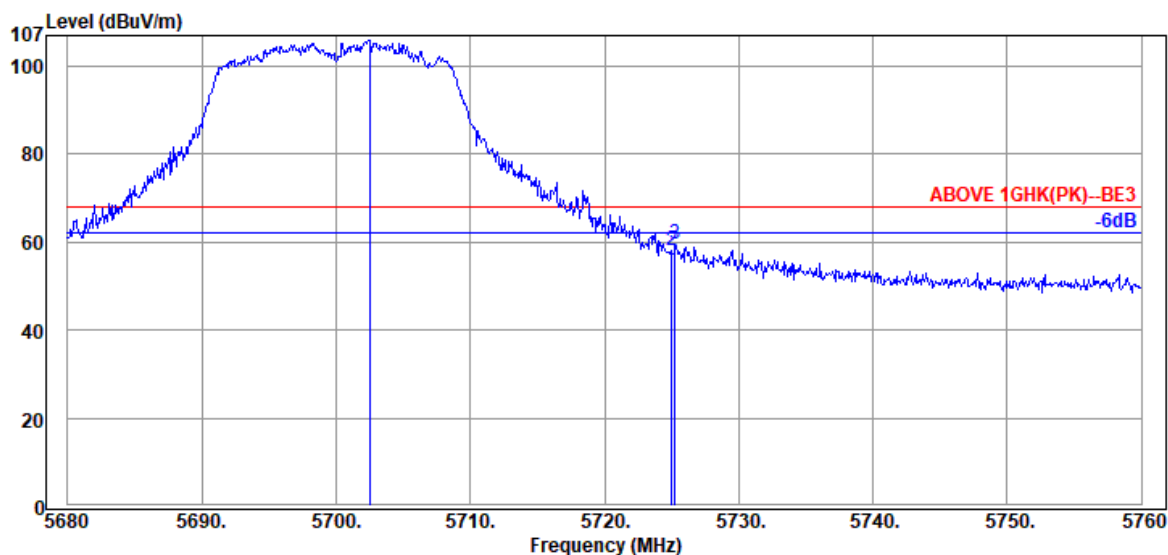
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Mode	802.11n-HT20	UNII Band	II-2C
		Frequency	TX 5700MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5696.16	35.03	10.50	56.89	102.42	68.20	---	Peak
5725.04	35.07	10.52	9.51	55.10	68.20	13.10	Peak
5727.12	35.07	10.52	10.81	56.40	68.20	11.80	Peak



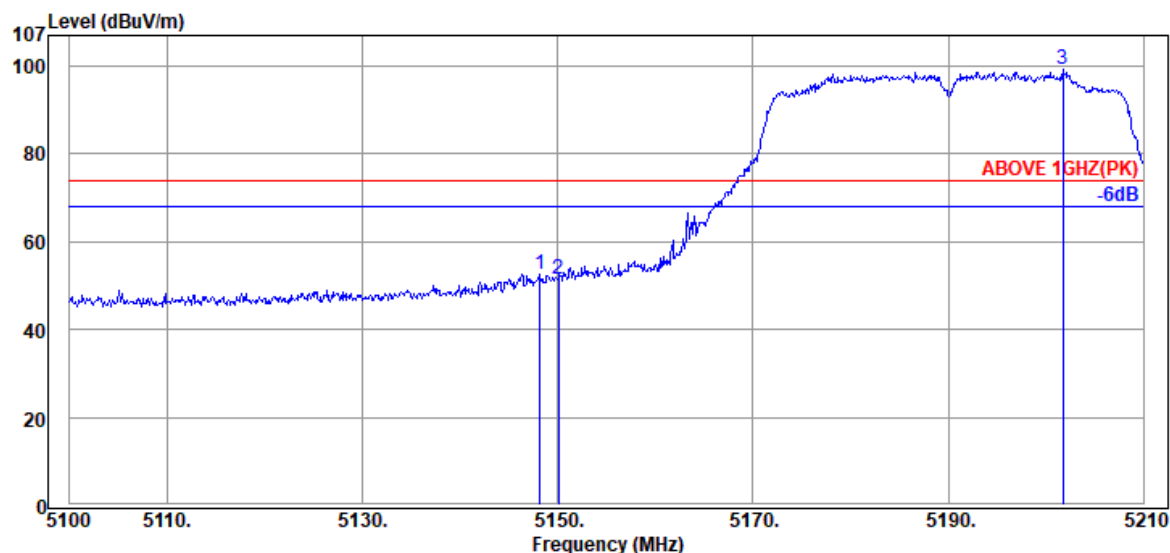
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5702.56	35.05	10.51	60.20	105.76	68.20	---	Peak
5725.04	35.07	10.52	12.56	58.15	68.20	10.05	Peak
5725.28	35.07	10.52	13.84	59.43	68.20	8.77	Peak

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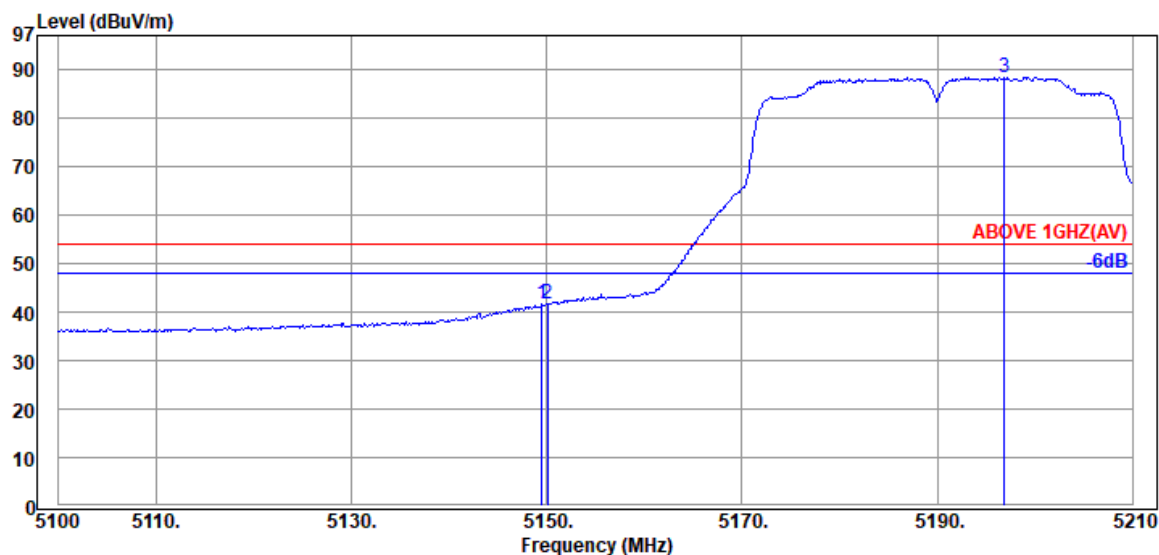
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Mode	802.11n-HT40	UNII Band	I
		Frequency	TX 5190MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5148.18	34.45	9.83	8.43	52.71	74.00	21.29	Peak
5150.05	34.45	9.83	7.29	51.57	74.00	22.43	Peak
5201.75	34.50	9.91	54.74	99.15	---	---	Peak



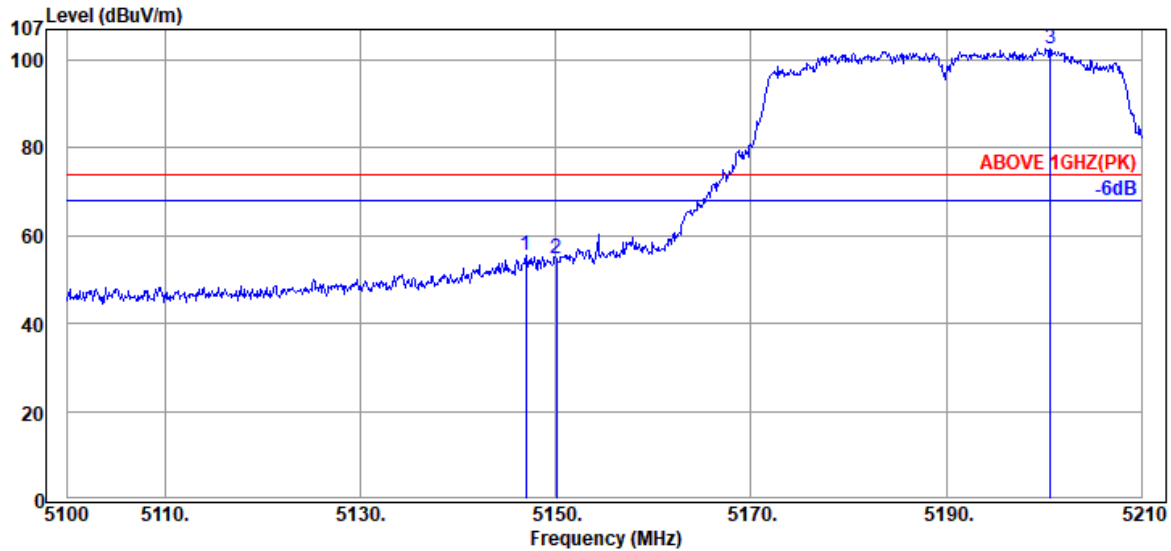
Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.50	34.45	9.83	-2.76	41.52	54.00	12.48	Average
5150.05	34.45	9.83	-2.61	41.67	54.00	12.33	Average
5196.91	34.50	9.91	44.04	88.45	---	---	Average

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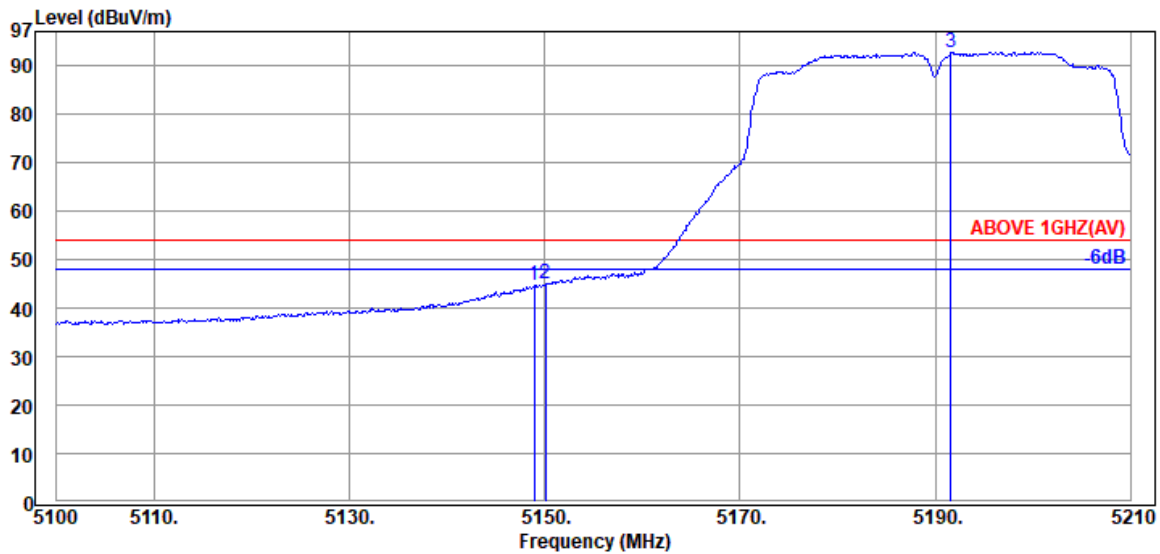
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Mode	802.11n-HT40	UNII Band	I
		Frequency	TX 5190MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5146.97	34.45	9.83	11.39	55.67	74.00	18.33	Peak
5150.05	34.45	9.83	10.51	54.79	74.00	19.21	Peak
5200.65	34.50	9.91	58.28	102.69	---	---	Peak



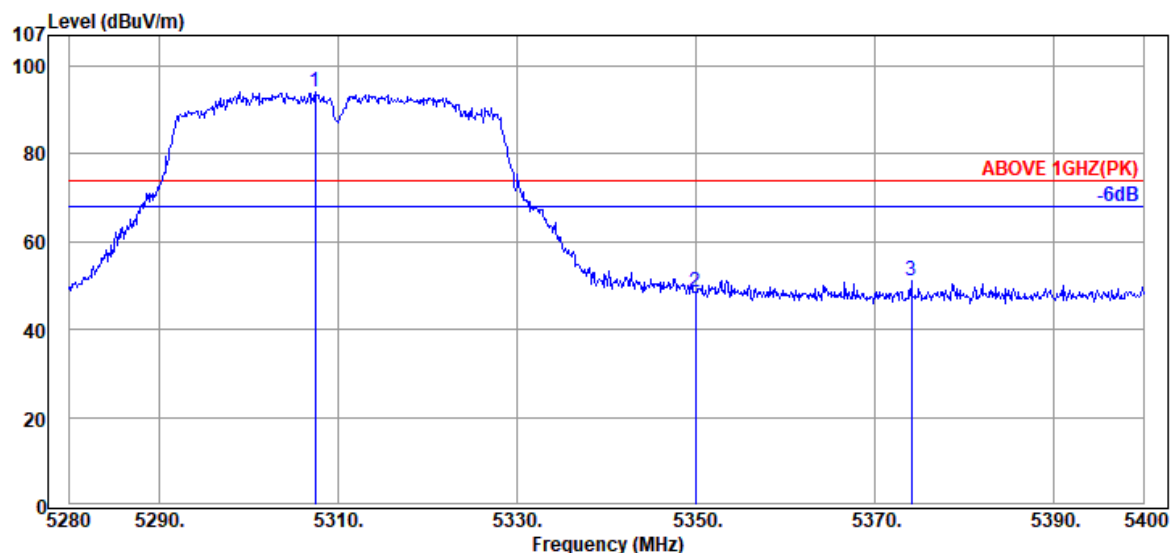
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5148.95	34.45	9.83	0.30	44.58	54.00	9.42	Average
5150.05	34.45	9.83	0.57	44.85	54.00	9.15	Average
5191.63	34.50	9.91	48.35	92.76	---	---	Average

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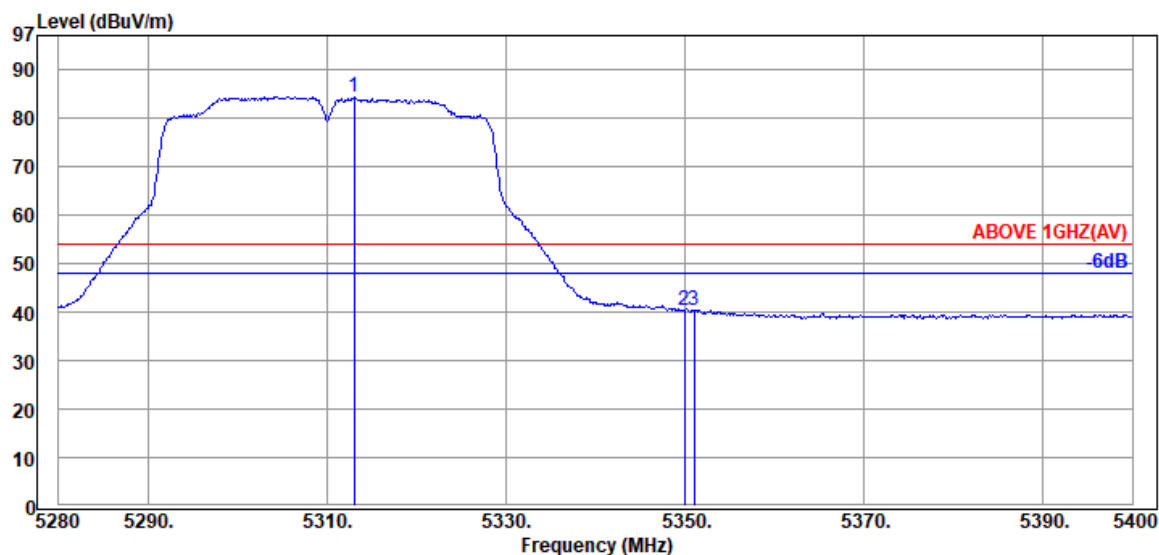
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Mode	802.11n-HT40	UNII Band	II-2A
		Frequency	TX 5310MHz



Antenna at Horizontal Polarization

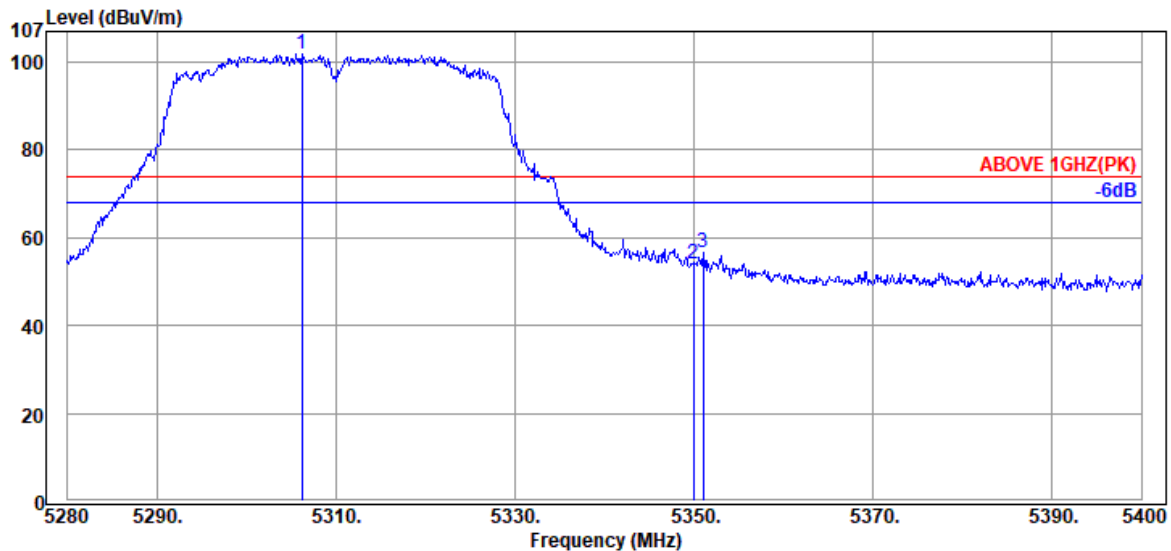
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5307.48	34.60	10.05	49.41	94.06	---	---	Peak
5349.96	34.65	10.13	3.73	48.51	74.00	25.49	Peak
5374.08	34.67	10.15	6.33	51.15	74.00	22.85	Peak



Antenna at Horizontal Polarization

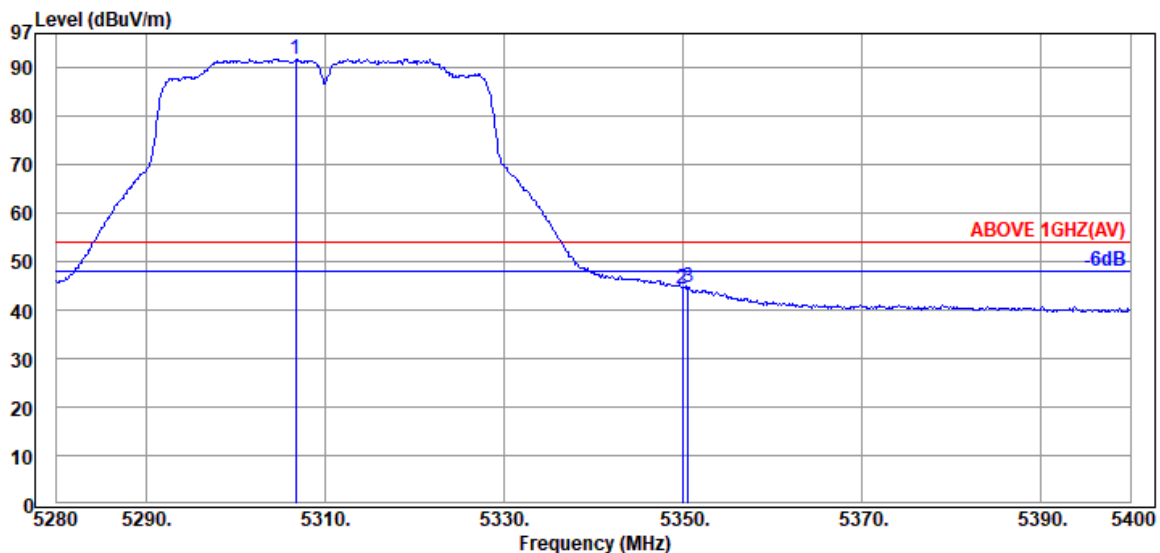
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5313.00	34.62	10.08	39.69	84.39	---	---	Average
5349.96	34.65	10.13	-4.54	40.24	54.00	13.76	Average
5351.04	34.65	10.13	-4.39	40.39	54.00	13.61	Average

Mode	802.11n-HT40	UNII Band	II-2A
		Frequency	TX 5310MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5306.16	34.60	10.05	57.20	101.85	---	---	Peak
5349.96	34.65	10.13	9.11	53.89	74.00	20.11	Peak
5351.04	34.65	10.13	11.70	56.48	74.00	17.52	Peak



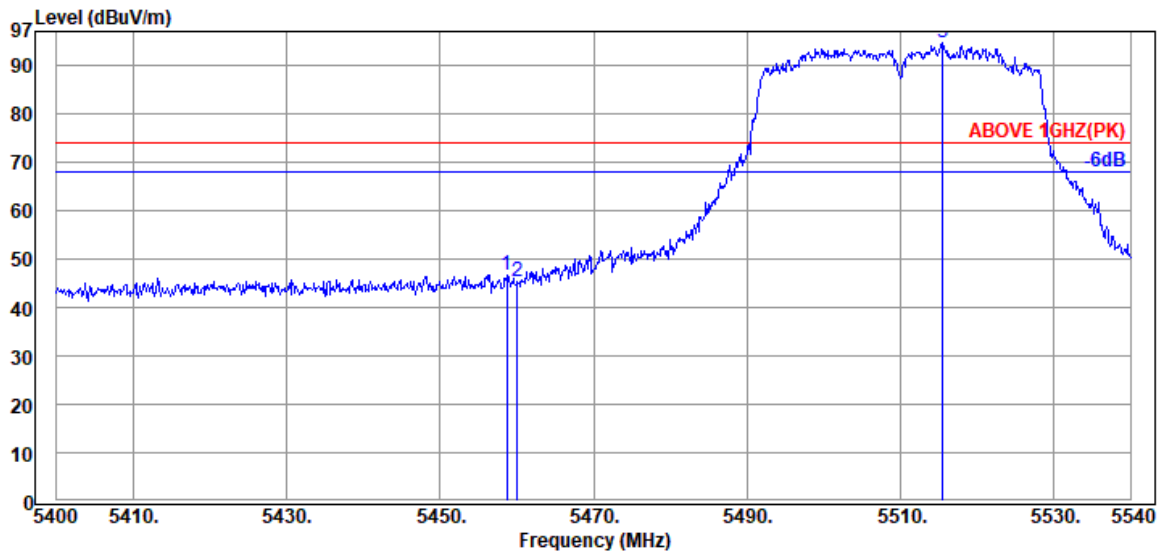
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5306.76	34.60	10.05	47.07	91.72	---	---	Average
5349.96	34.65	10.13	-0.35	44.43	54.00	9.57	Average
5350.56	34.65	10.13	-0.26	44.52	54.00	9.48	Average

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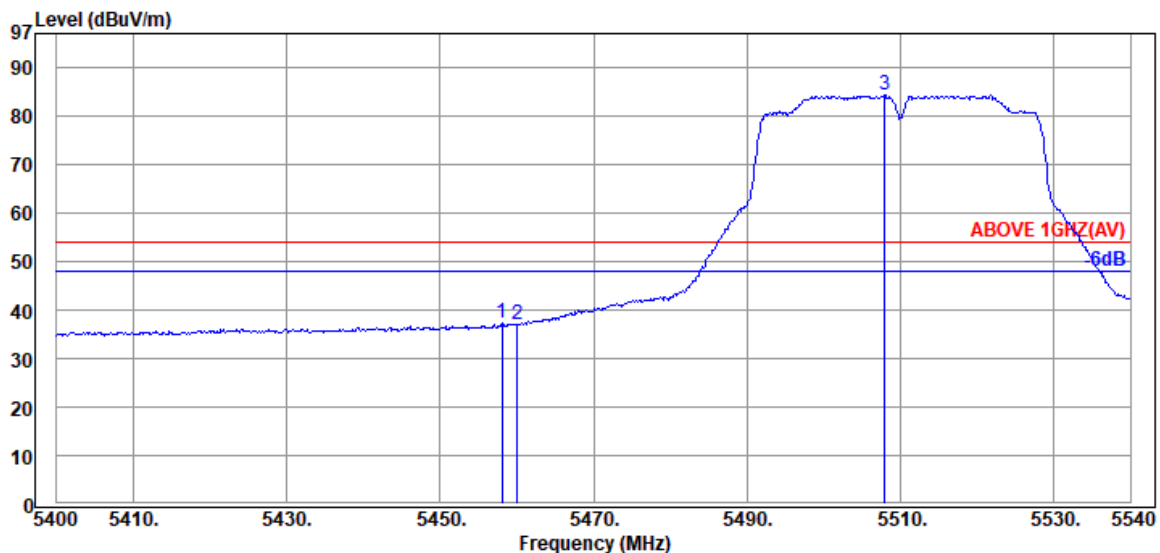
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Mode	802.11n-HT40	UNII Band	II-2C
		Frequency	TX 5510MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5467.48	34.77	10.30	5.09	50.16	74.00	23.84	Peak
5470.00	34.77	10.30	2.86	47.93	74.00	26.07	Peak
5515.50	34.82	10.36	49.56	94.74	---	---	Peak



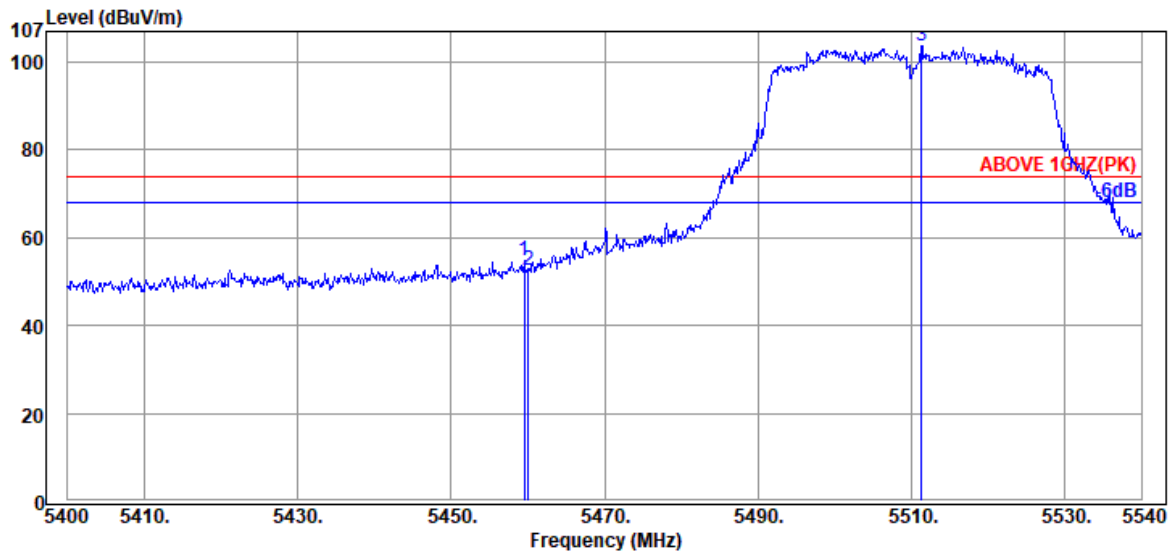
Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5468.04	34.77	10.30	-5.15	39.92	54.00	14.08	Average
5470.00	34.77	10.30	-5.16	39.91	54.00	14.09	Average
5507.94	34.80	10.35	39.13	84.28	---	---	Average

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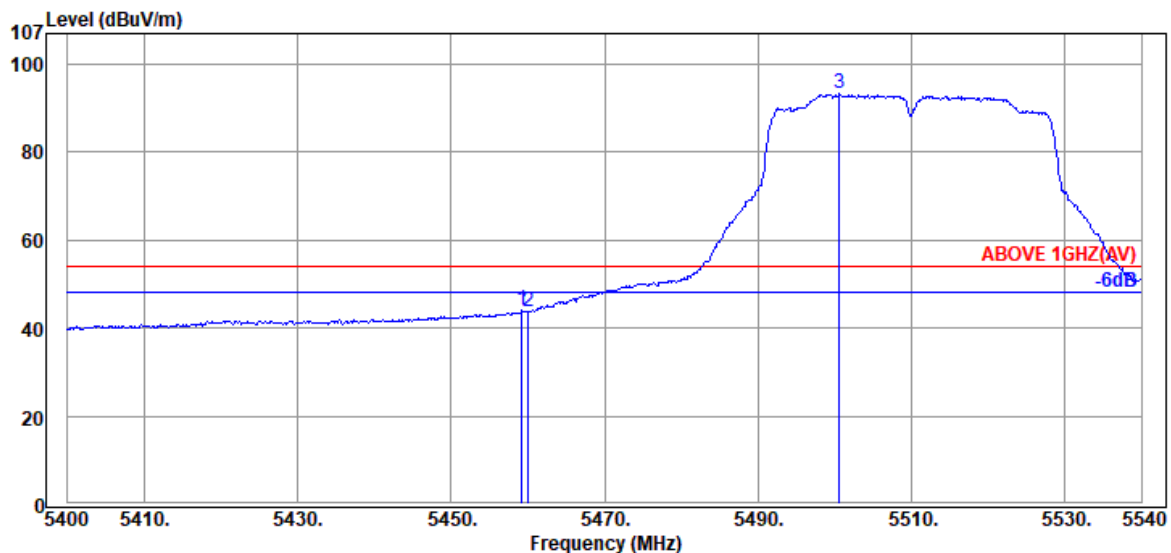
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Mode	802.11n-HT40	UNII Band	II-2C
		Frequency	TX 5510MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5467.48	34.77	10.30	14.24	59.31	74.00	14.69	Peak
5470.00	34.77	10.30	14.06	59.13	74.00	14.87	Peak
5511.30	34.80	10.35	58.51	103.66	---	---	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5469.16	34.77	10.30	3.09	48.16	54.00	5.84	Average
5470.00	34.77	10.30	3.20	48.27	54.00	5.73	Average
5500.66	34.80	10.35	48.08	93.23	---	---	Average

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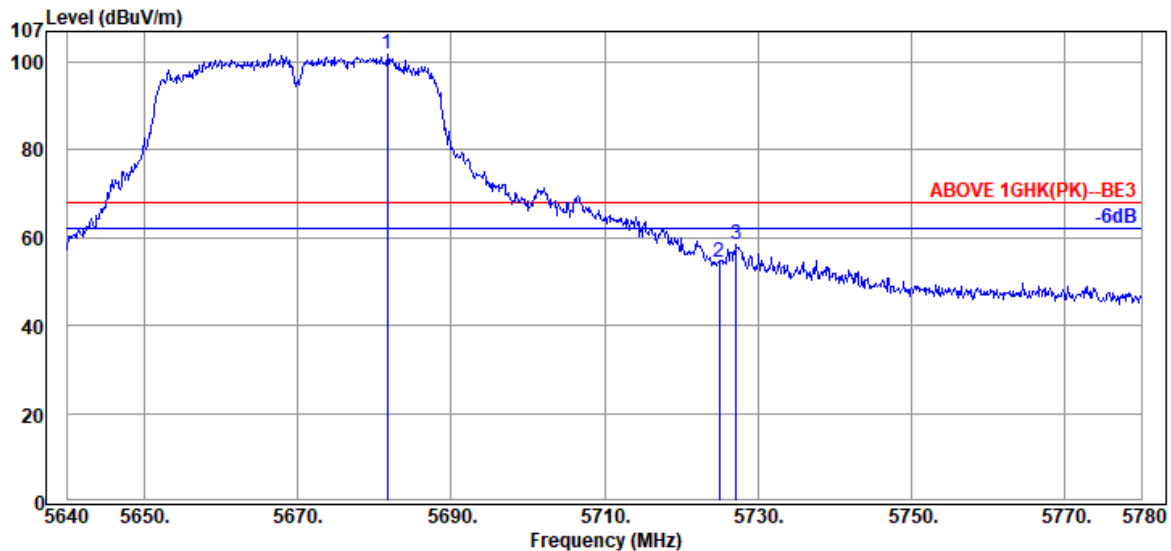
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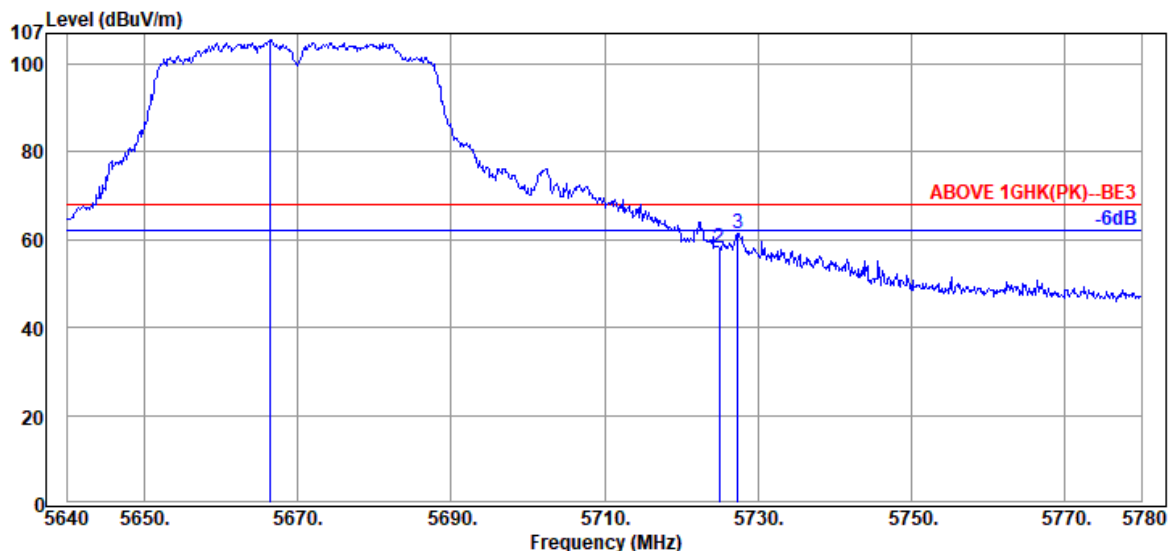
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Mode	802.11n-HT40	UNII Band	II-2C
		Frequency	TX 5670MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5681.72	35.01	10.48	56.34	101.83	68.20	---	Peak
5724.98	35.07	10.52	8.70	54.29	68.20	13.91	Peak
5727.22	35.07	10.52	12.88	58.47	68.20	9.73	Peak



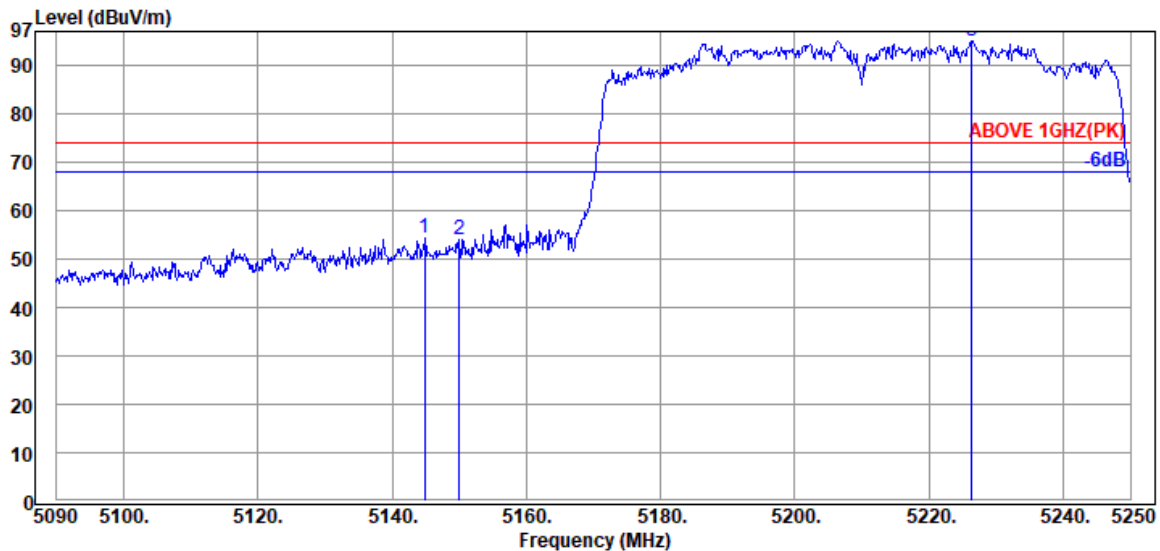
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5666.32	34.99	10.47	60.01	105.47	68.20	---	Peak
5724.98	35.07	10.52	12.37	57.96	68.20	10.24	Peak
5727.36	35.07	10.52	15.71	61.30	68.20	6.90	Peak

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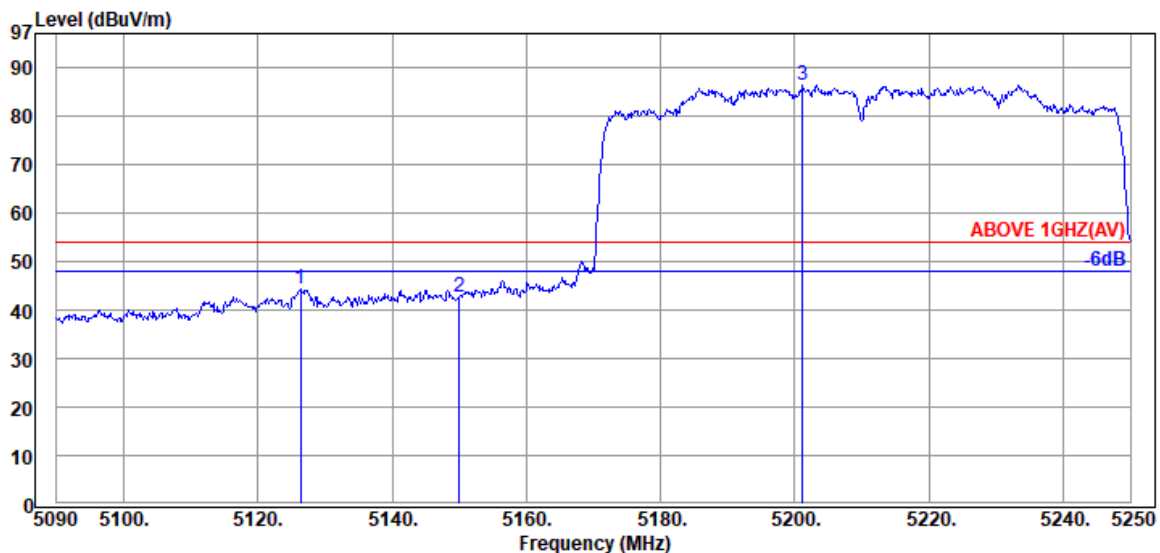
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Fax: +886 2 26099303

Mode	802.11ac-VHT80	UNII Band	I
		Frequency	TX 5210MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5144.88	34.45	9.83	10.07	54.35	74.00	19.65	Peak
5150.00	34.45	9.83	9.58	53.86	74.00	20.14	Peak
5226.32	34.53	9.96	50.53	95.02	---	---	Peak



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5126.32	34.43	9.81	0.18	44.42	54.00	9.58	Average
5150.00	34.45	9.83	-1.57	42.71	54.00	11.29	Average
5201.20	34.50	9.91	42.01	86.42	---	---	Average

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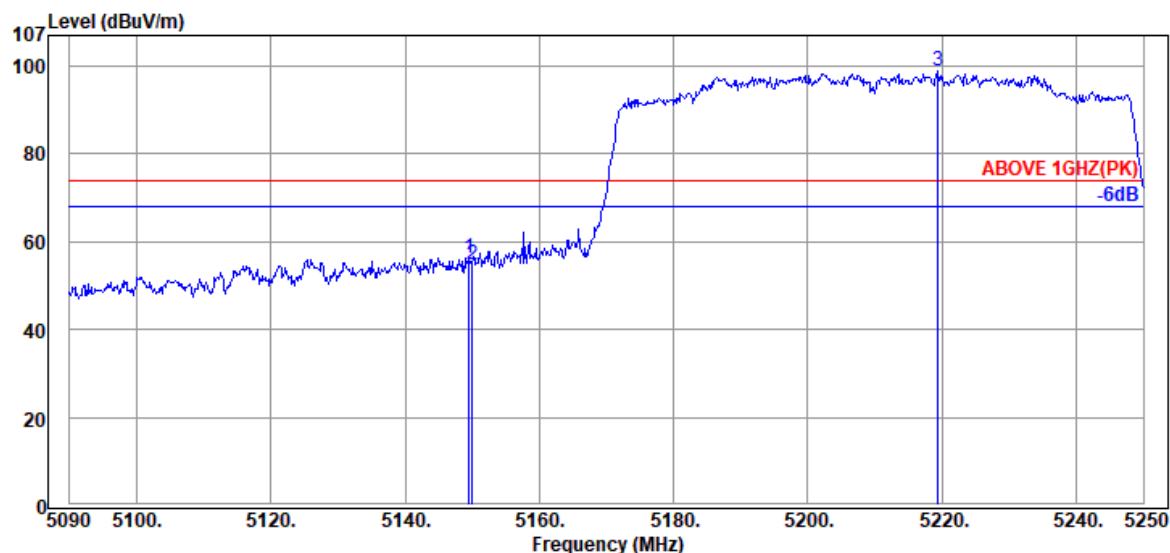
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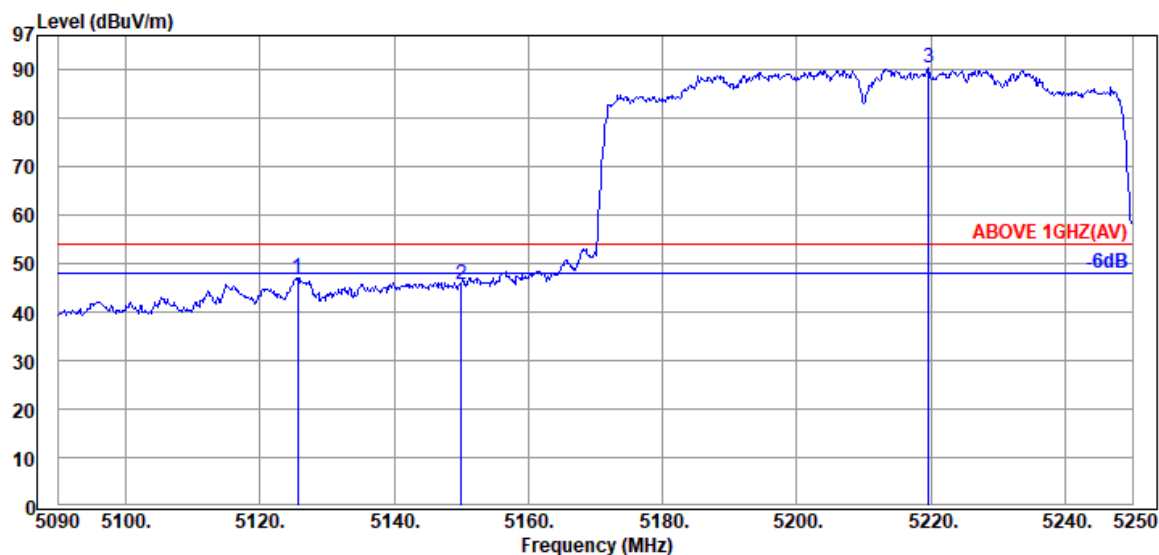
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Mode	802.11ac-VHT80	UNII Band	I
		Frequency	TX 5210MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5149.52	34.45	9.83	12.12	56.40	74.00	17.60	Peak
5150.00	34.45	9.83	10.67	54.95	74.00	19.05	Peak
5219.44	34.52	9.93	54.35	98.80	---	---	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5125.68	34.43	9.81	2.83	47.07	54.00	6.93	Average
5150.00	34.45	9.83	1.24	45.52	54.00	8.48	Average
5219.60	34.52	9.93	45.86	90.31	---	---	Average

File Number: C1M1711304

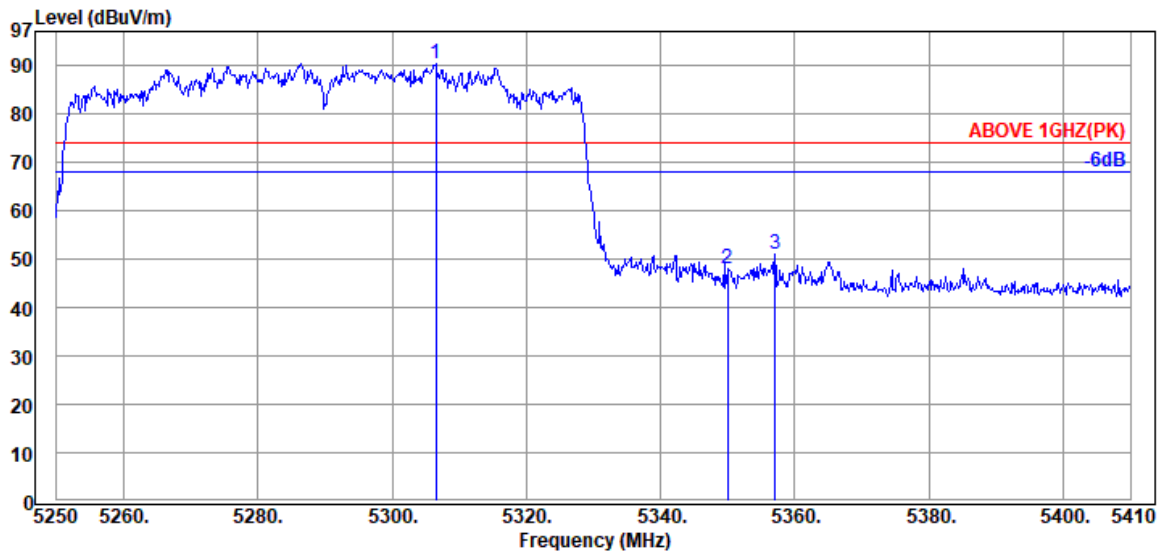
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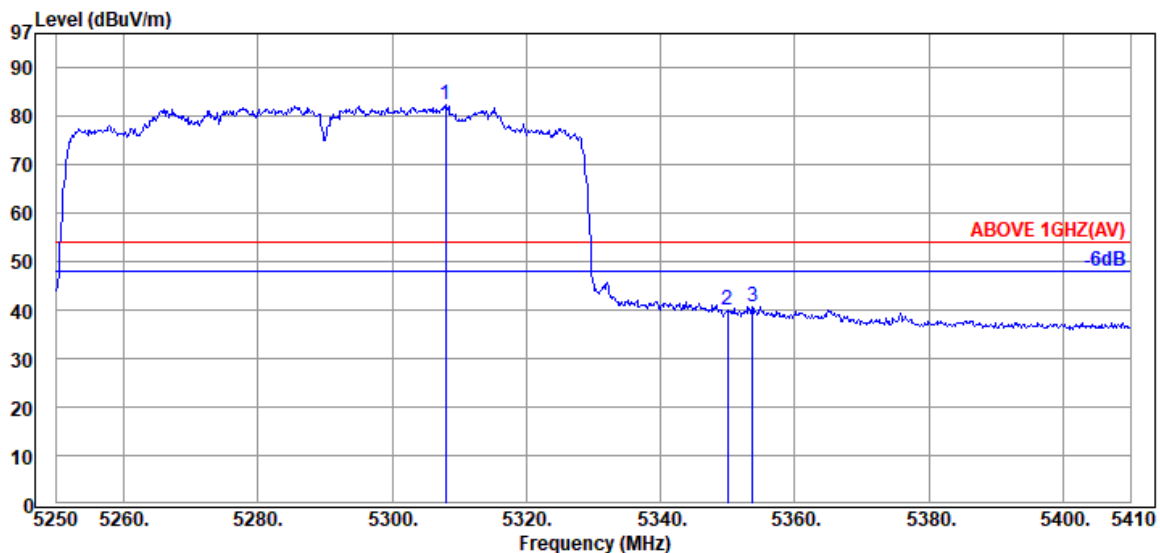
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Mode	802.11ac-VHT80	UNII Band	II-2A
		Frequency	TX 5290MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5306.48	34.60	10.05	45.72	90.37	---	---	Peak
5350.00	34.65	10.13	3.07	47.85	74.00	26.15	Peak
5357.04	34.65	10.13	6.12	50.90	74.00	23.10	Peak



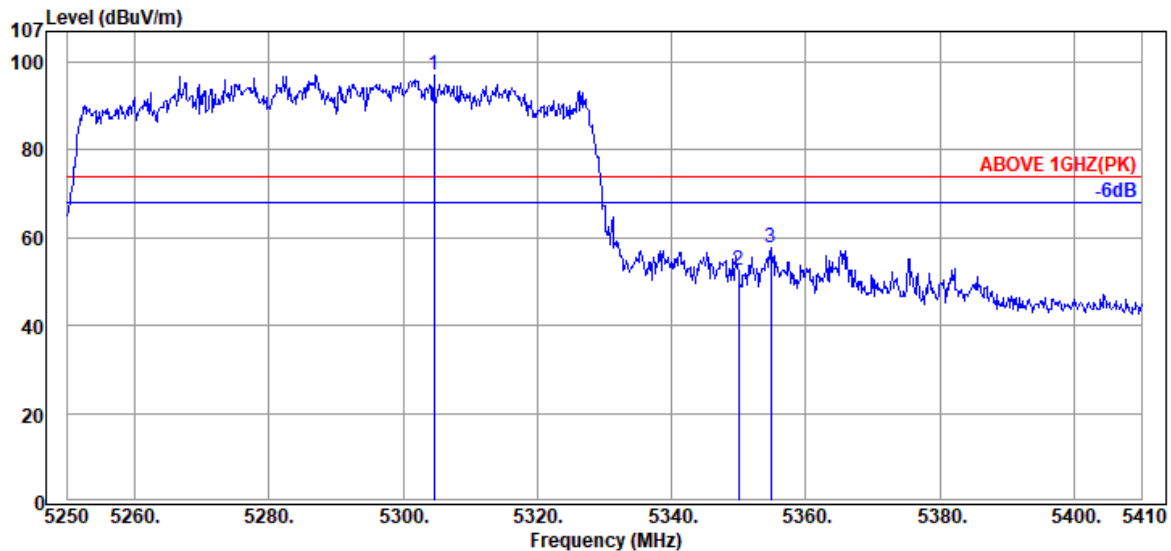
Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5307.92	34.60	10.05	37.55	82.20	---	---	Average
5350.00	34.65	10.13	-4.79	39.99	54.00	14.01	Average
5353.68	34.65	10.13	-4.13	40.65	54.00	13.35	Average

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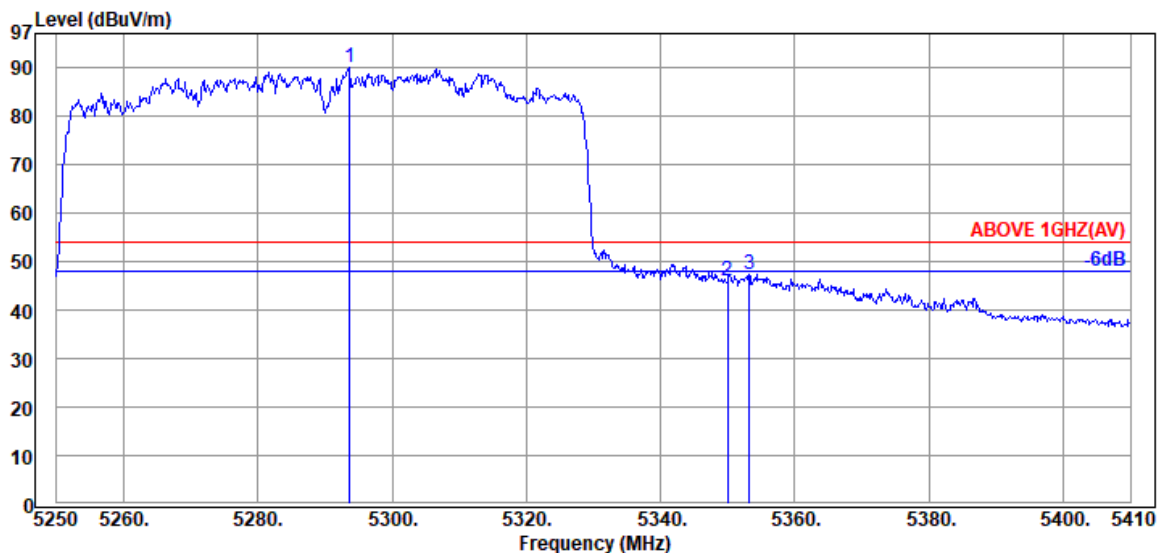
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Mode	802.11ac-VHT80	UNII Band	II-2A
		Frequency	TX 5290MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5304.56	34.60	10.05	52.49	97.14	---	---	Peak
5350.00	34.65	10.13	7.80	52.58	74.00	21.42	Peak
5354.80	34.65	10.13	13.13	57.91	74.00	16.09	Peak



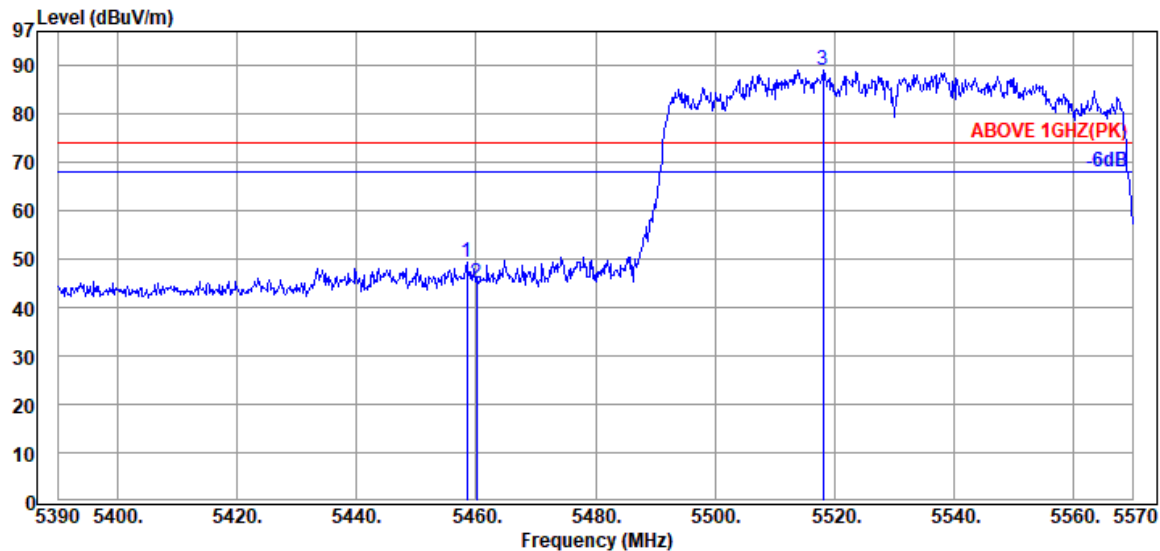
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5293.68	34.60	10.05	45.46	90.11	---	---	Average
5350.00	34.65	10.13	1.31	46.09	54.00	7.91	Average
5353.20	34.65	10.13	2.48	47.26	54.00	6.74	Average

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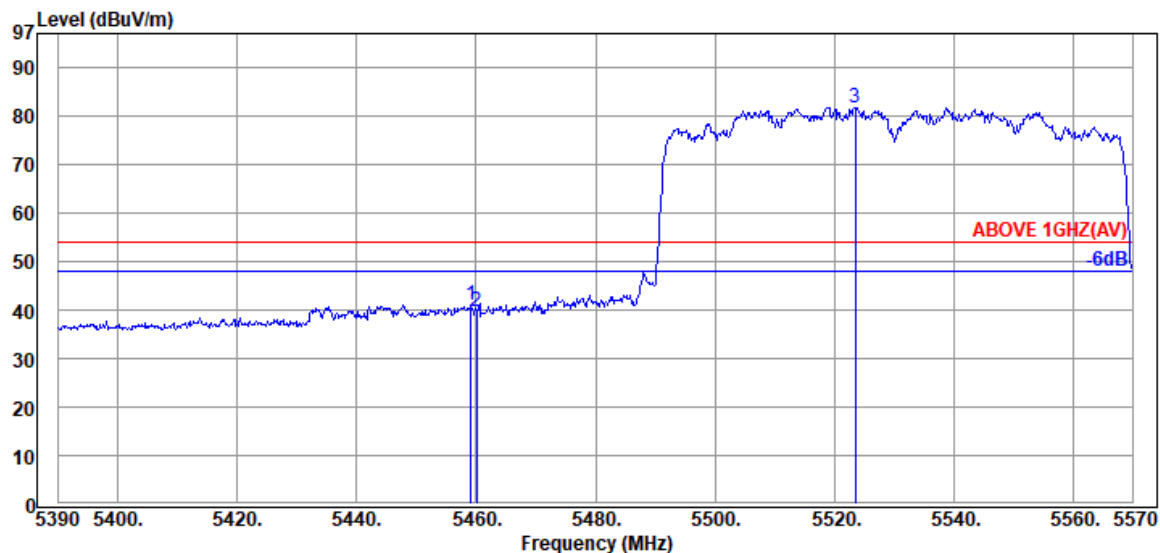
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Mode	802.11ac-VHT80	UNII Band	II-2C
		Frequency	TX 5530MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5464.70	34.77	10.30	4.47	49.54	74.00	24.46	Peak
5469.92	34.77	10.30	0.90	45.97	74.00	28.03	Peak
5518.16	34.82	10.36	43.91	89.09	---	---	Peak



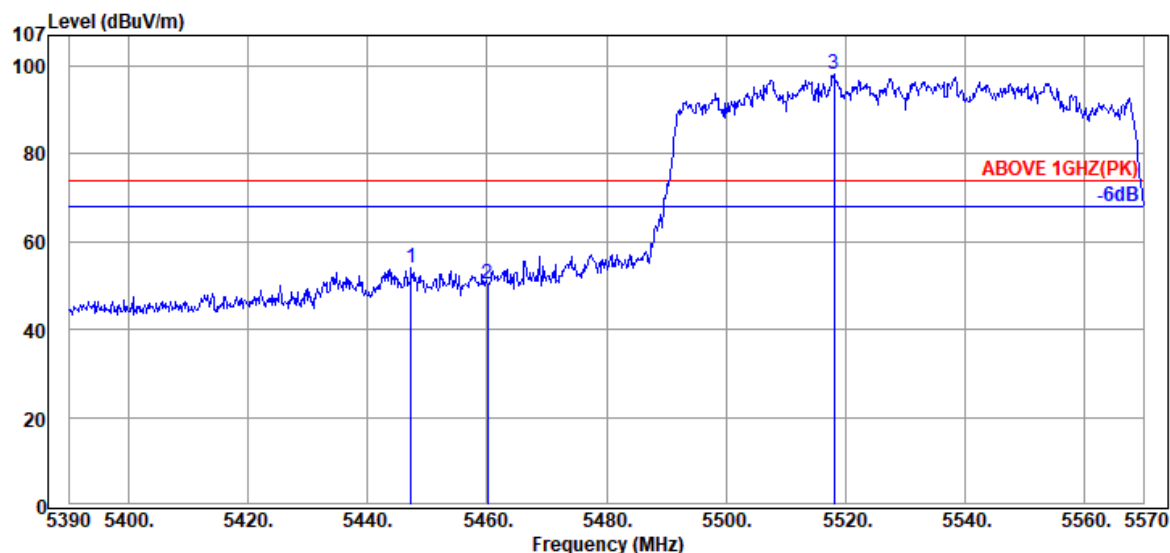
Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5460.56	34.75	10.28	-3.79	41.24	54.00	12.76	Average
5469.92	34.77	10.30	-3.37	41.70	54.00	12.30	Average
5523.56	34.82	10.36	36.53	81.71	---	---	Average

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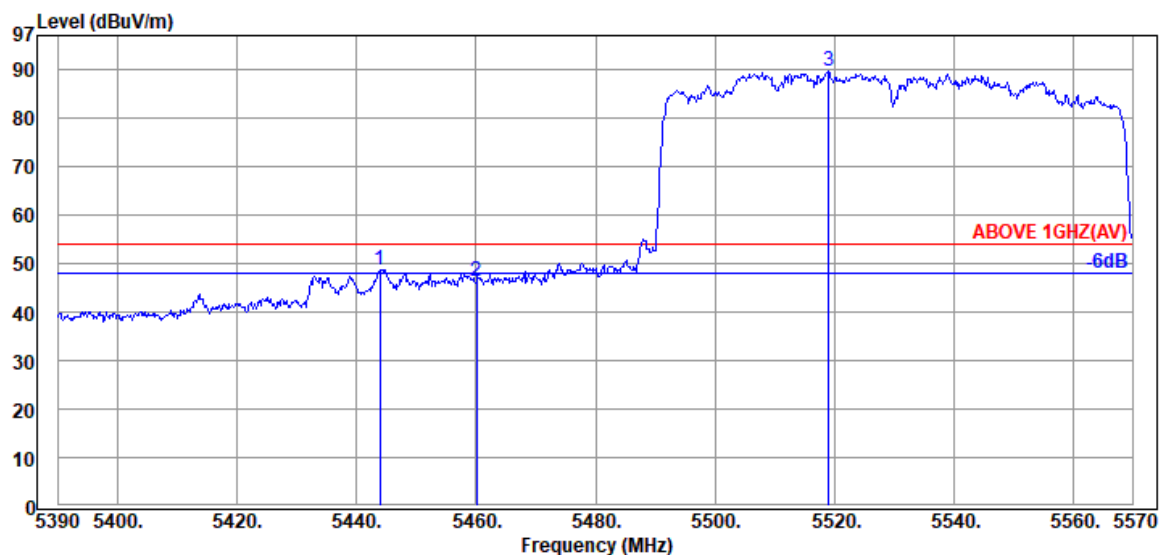
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Mode	802.11ac-VHT80	UNII Band	II-2C
		Frequency	TX 5530MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5468.66	34.77	10.30	11.60	56.67	74.00	17.33	Peak
5469.92	34.77	10.30	6.75	51.82	74.00	22.18	Peak
5518.16	34.82	10.36	52.93	98.11	---	---	Peak



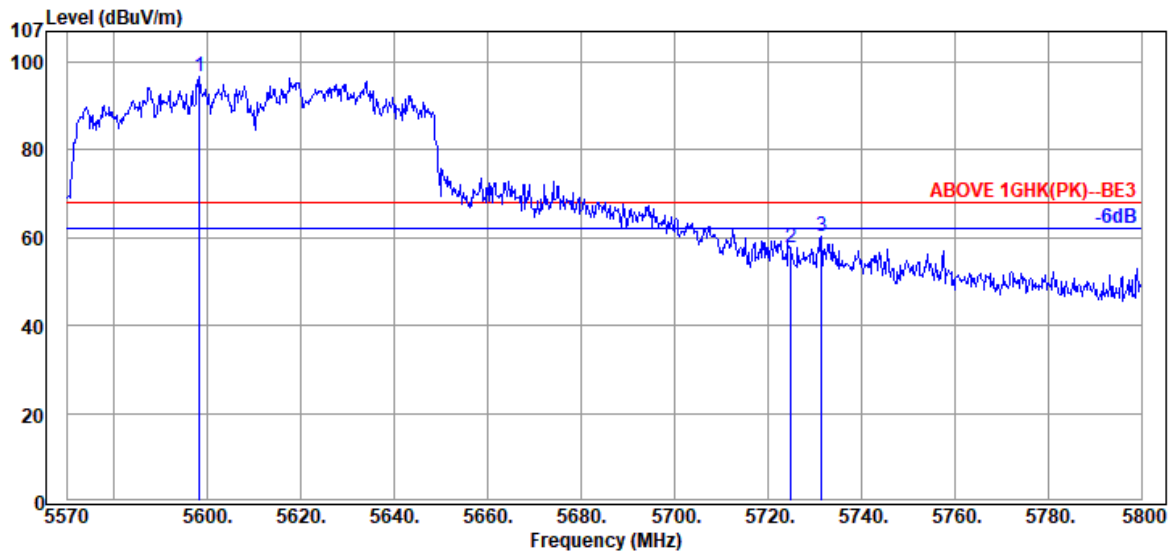
Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5443.82	34.73	10.25	3.74	48.72	54.00	5.28	Average
5469.92	34.77	10.30	2.15	47.22	54.00	6.78	Average
5519.06	34.82	10.36	44.32	89.50	---	---	Average

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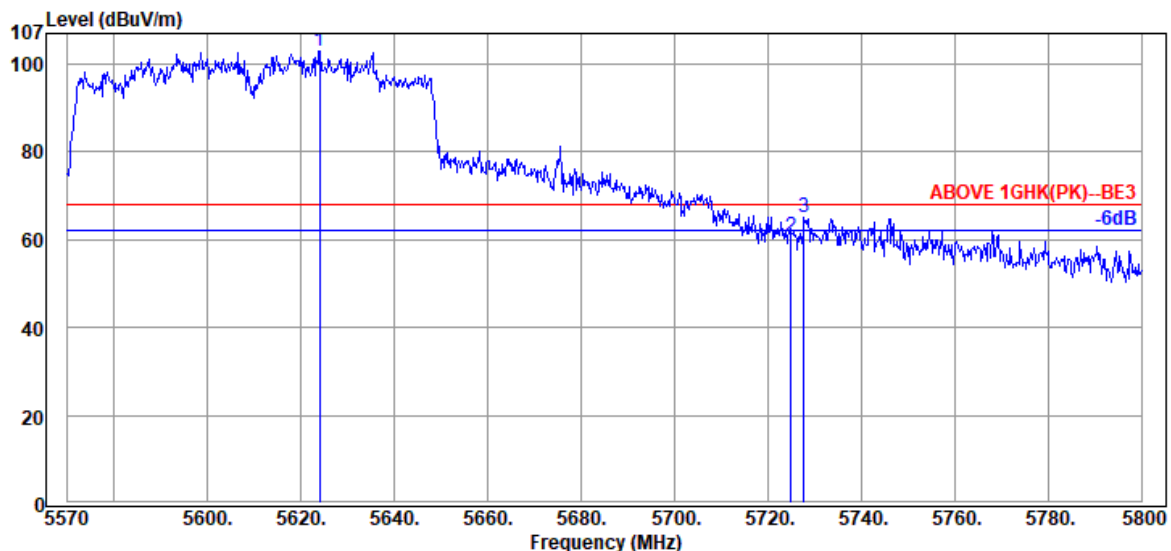
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Fax: +886 2 26099303

Mode	802.11ac-VHT80	UNII Band	II-2C
		Frequency	TX 5610MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5598.29	34.90	10.42	51.43	96.75	68.20	---	Peak
5725.02	35.07	10.52	12.19	57.78	68.20	10.42	Peak
5731.46	35.07	10.52	14.57	60.16	68.20	8.04	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
5624.05	34.94	10.44	57.53	102.91	68.20	---	Peak
5725.02	35.07	10.52	15.09	60.68	68.20	7.52	Peak
5727.78	35.07	10.52	19.49	65.08	68.20	3.12	Peak

A.2.2 Emissions outside the frequency band

The emissions (up to 40GHz) not reported for there is no emission be found.

Mode	802.11a	UNII Band	I
		Frequency	TX 5200MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10400.00	37.62	15.77	-8.83	44.56	54.00	9.44	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10400.00	37.62	15.77	-8.33	45.06	54.00	8.94	Peak

Mode	802.11a	UNII Band	II-2A
		Frequency	TX 5260MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10520.00	37.70	15.76	-8.24	45.22	54.00	8.78	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10520.00	37.70	15.76	-8.51	44.95	54.00	9.05	Peak

Mode	802.11a	UNII Band	II-2C
		Frequency	TX 5500MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11160.00	38.03	15.85	-7.92	45.96	54.00	8.04	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11160.00	38.03	15.85	-8.28	45.60	54.00	8.40	Peak

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Mode	802.11a	UNII Band	II-2C
		Frequency	TX 5720MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11440.00	38.41	16.08	-8.44	46.05	54.00	7.95	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11440.00	38.41	16.08	-8.44	46.05	54.00	7.95	Peak

Mode	802.11a	UNII Band	III
		Frequency	TX 5785MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11570.00	38.56	16.20	-8.46	46.30	54.00	7.70	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11570.00	38.56	16.20	-6.66	48.10	54.00	5.90	Peak

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Mode	802.11n-HT20	UNII Band	I
		Frequency	TX 5200MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10400.00	37.62	15.77	-8.46	44.93	54.00	9.07	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10400.00	37.62	15.77	-8.17	45.22	54.00	8.78	Peak

Mode	802.11n-HT20	UNII Band	II-2A
		Frequency	TX 5260MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10400.00	37.62	15.77	-8.46	44.93	54.00	9.07	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10400.00	37.62	15.77	-8.17	45.22	54.00	8.78	Peak

Mode	802.11n-HT20	UNII Band	II-2C
		Frequency	TX 5500MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11000.00	37.80	15.71	-8.27	45.24	54.00	8.76	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11000.00	37.80	15.71	-8.36	45.15	54.00	8.85	Peak

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Mode	802.11n-HT20	UNII Band	II-2C
		Frequency	TX 5720MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11440.00	38.41	16.08	-7.25	47.24	54.00	6.76	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11440.00	38.41	16.08	-7.87	46.62	54.00	7.38	Peak

Mode	802.11n-HT20	UNII Band	III
		Frequency	TX 5785MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11570.00	38.56	16.20	-8.11	46.65	54.00	7.35	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11570.00	38.56	16.20	-7.39	47.37	54.00	6.63	Peak

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Mode	802.11n-HT40	UNII Band	I
		Frequency	TX 5230MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10460.00	37.66	15.76	-9.04	44.38	54.00	9.62	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10460.00	37.66	15.76	-7.49	45.93	54.00	8.07	Peak

Mode	802.11n-HT40	UNII Band	II-2A
		Frequency	TX 5270MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10540.00	37.71	15.76	-8.31	45.16	54.00	8.84	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10540.00	37.71	15.76	-8.59	44.88	54.00	9.12	Peak

Mode	802.11n-HT40	UNII Band	II-2C
		Frequency	TX 5550MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11100.00	37.94	15.80	-8.63	45.11	54.00	8.89	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11100.00	37.94	15.80	-8.25	45.49	54.00	8.51	Peak

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Mode	802.11n-HT40	UNII Band	II-2C
		Frequency	TX 5710MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11420.00	38.38	16.07	-8.38	46.07	54.00	7.93	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11420.00	38.38	16.07	-7.94	46.51	54.00	7.49	Peak

Mode	802.11n-HT40	UNII Band	III
		Frequency	TX 5795MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11590.00	38.57	16.21	-7.83	46.95	54.00	7.05	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
11590.00	38.57	16.21	-7.82	46.96	54.00	7.04	Peak

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Mode	802.11ac-VHT80	UNII Band	I
		Frequency	TX 5210MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10420.00	37.63	15.77	-8.27	45.13	54.00	8.87	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10420.00	37.63	15.77	-8.79	44.61	54.00	9.39	Peak

Mode	802.11ac-VHT80	UNII Band	II-2A
		Frequency	TX 5290MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10580.00	37.72	15.75	-8.50	44.97	54.00	9.03	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
10580.00	37.72	15.75	-6.74	46.73	54.00	7.27	Peak

Mode	802.11ac-VHT80	UNII Band	II-2C
		Frequency	TX 5610MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11220.00	38.10	15.90	-8.79	45.21	54.00	8.79	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11220.00	38.10	15.90	-8.48	45.52	54.00	8.48	Peak

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Mode	802.11ac-VHT80	UNII Band	II-2C
		Frequency	TX 5690MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11380.00	38.34	16.04	-8.40	45.98	54.00	8.02	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11380.00	38.34	16.04	-8.63	45.75	54.00	8.25	Peak

Mode	802.11ac-VHT80	UNII Band	III
		Frequency	TX 5775MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11550.00	38.54	16.19	-8.14	46.59	54.00	7.41	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
11550.00	38.54	16.19	-8.27	46.46	54.00	7.54	Peak

A.2.3 Emissions in Non-restricted Frequency Bands

Pursuant to KDB 789033 D02 General UNII Test Procedures New Rules v01r04 that emission levels below the 15.209 general radiated emissions limits is not required.

A.3 EMISSION BANDWIDTH

Test Date	2017/11/28 ~ 30	Temp./Hum.	23°C/55%
Cable Loss	---	Test Voltage	AC 120V, 60Hz (via AC Adapter)

A.3.1 Emission Bandwidth Result

Mode	UNII Band	Centre Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit
802.11a	I	5180	26.49	17.039	Reference only
		5200	23.16	16.484	
		5240	32.22	19.189	
	II-2A	5260	30.53	17.598	
		5300	32.25	18.271	
		5320	22.73	16.510	
	II-2C	5500	22.69	16.532	
		5580	27.18	16.849	
		5700	22.70	16.451	
		5720	16.28	17.618	
802.11n-HT20	I	5180	23.66	17.728	Reference only
		5200	27.21	17.920	
		5240	27.76	18.000	
	II-2A	5260	27.74	17.940	
		5300	27.23	18.005	
		5320	23.31	17.671	
	II-2C	5500	27.47	18.064	
		5580	24.32	17.765	
		5700	23.34	17.672	
		5720	16.54	17.609	

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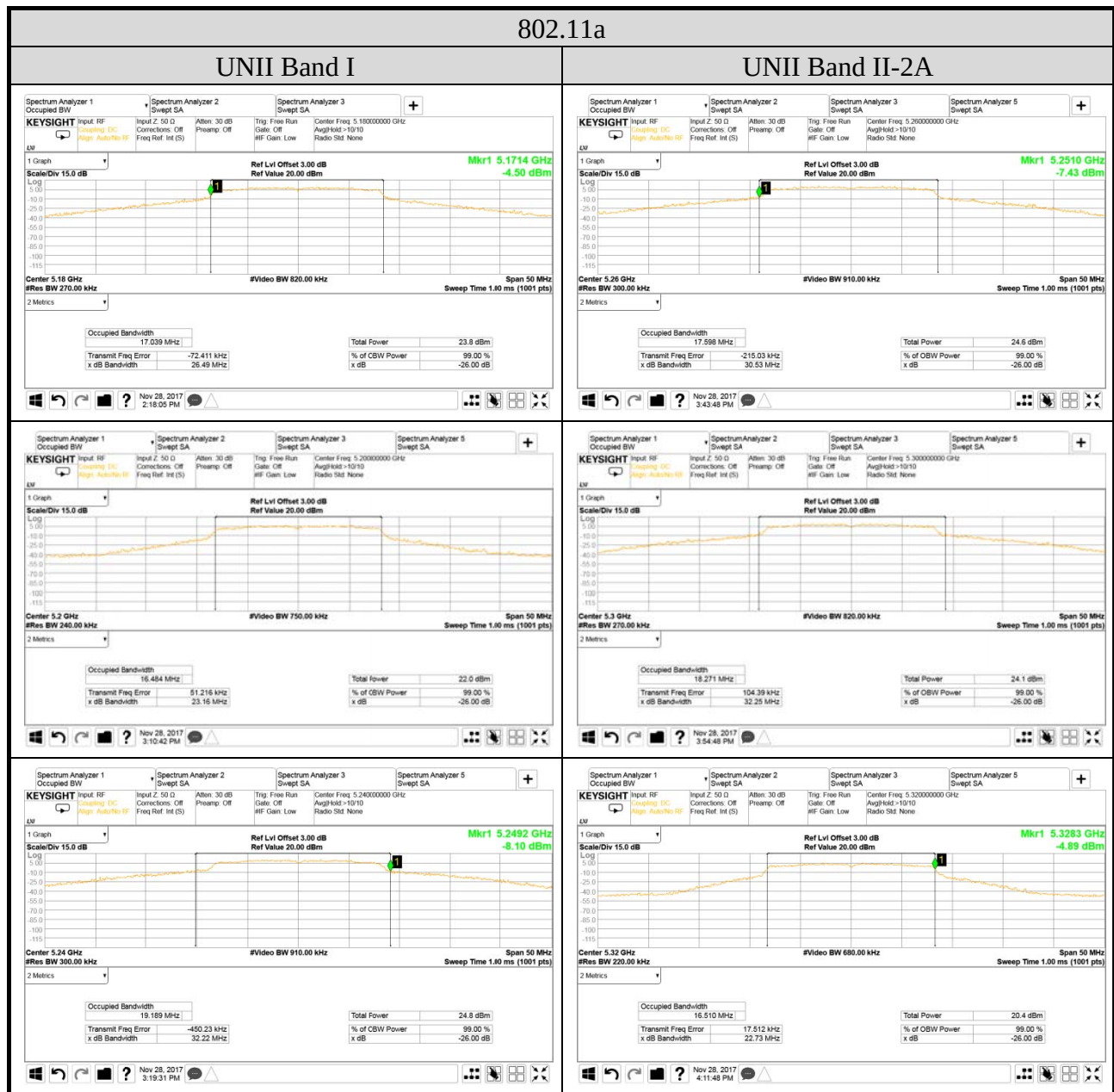
Mode	UNII Band	Centre Frequency (MHz)	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit
802.11n-HT40	I	5190	45.47	36.180	Reference only
		5230	44.55	36.229	
	II-2A	5270	45.11	36.331	
		5310	43.79	36.127	
	II-2C	5510	43.01	36.161	
		5550	44.83	36.214	
		5670	43.25	36.127	
		5710	35.08	36.247	
802.11ac-VHT80	I	5210	78.68	74.951	Reference only
	II-2A	5290	78.56	74.962	
	II-2C	5530	78.94	75.038	
		5610	78.79	75.266	
		5690	75.22	75.098	

Mode	UNII Band	Centre Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit
802.11a	III	5745	14.45	17.018	≥ 500kHz
		5785	15.26	18.882	
		5825	16.27	21.482	
802.11n-HT20	III	5745	16.29	18.092	
		5785	15.68	18.014	
		5825	16.29	18.354	
802.11n-HT40	III	5755	35.65	37.748	
		5795	35.67	37.602	
802.11ac-VHT80	III	5775	64.01	74.824	

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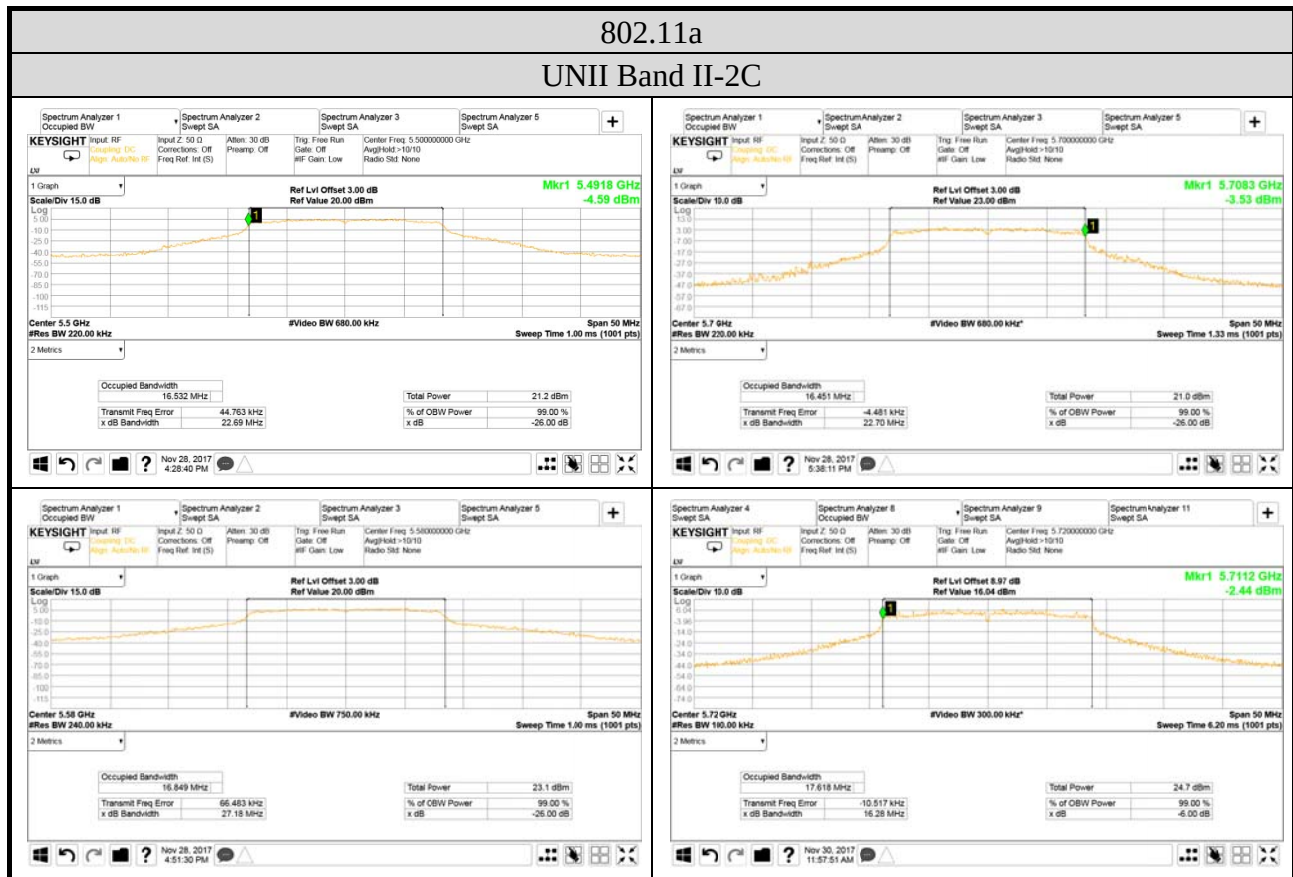
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A.3.2 Measurement Plots



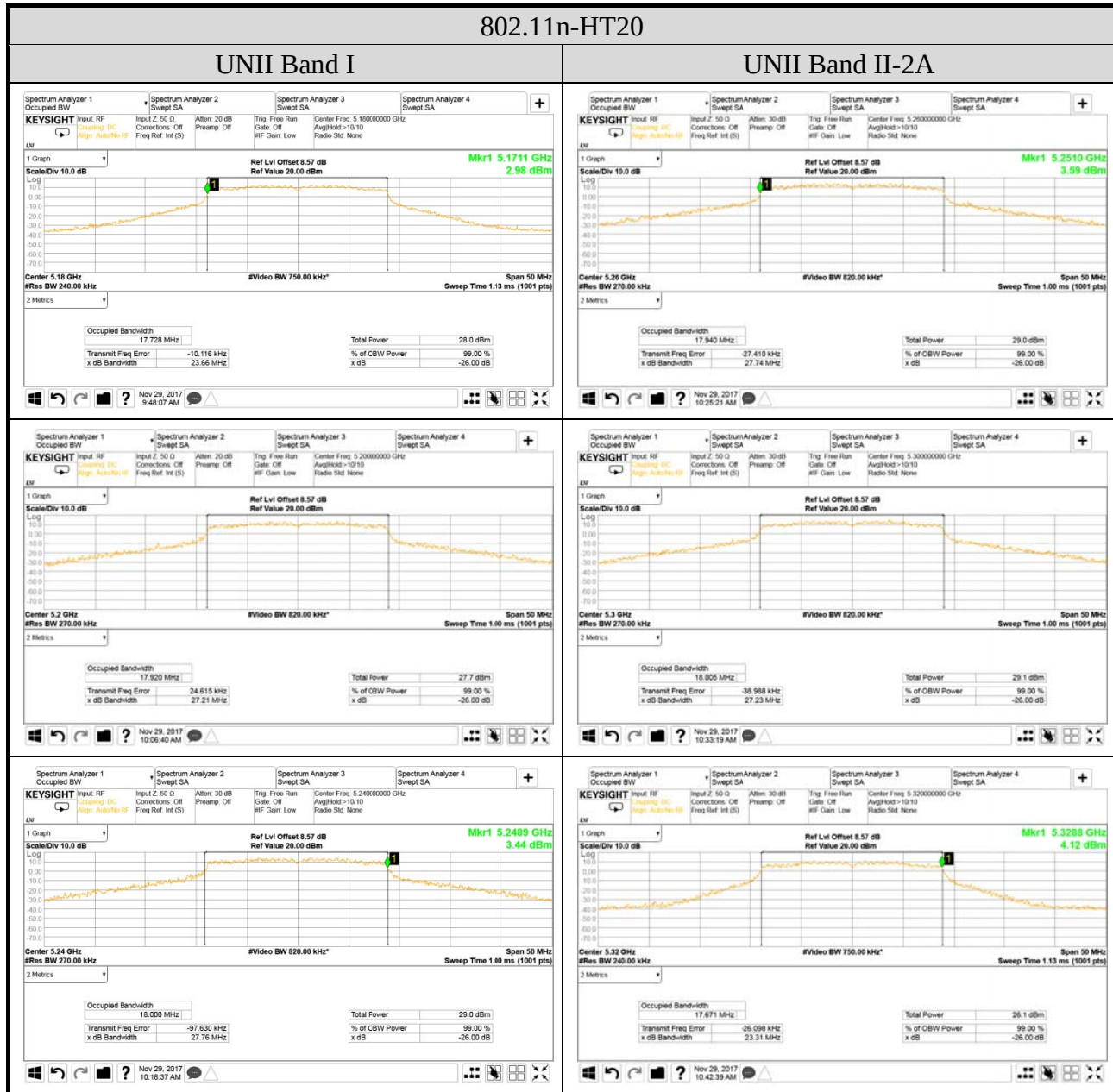
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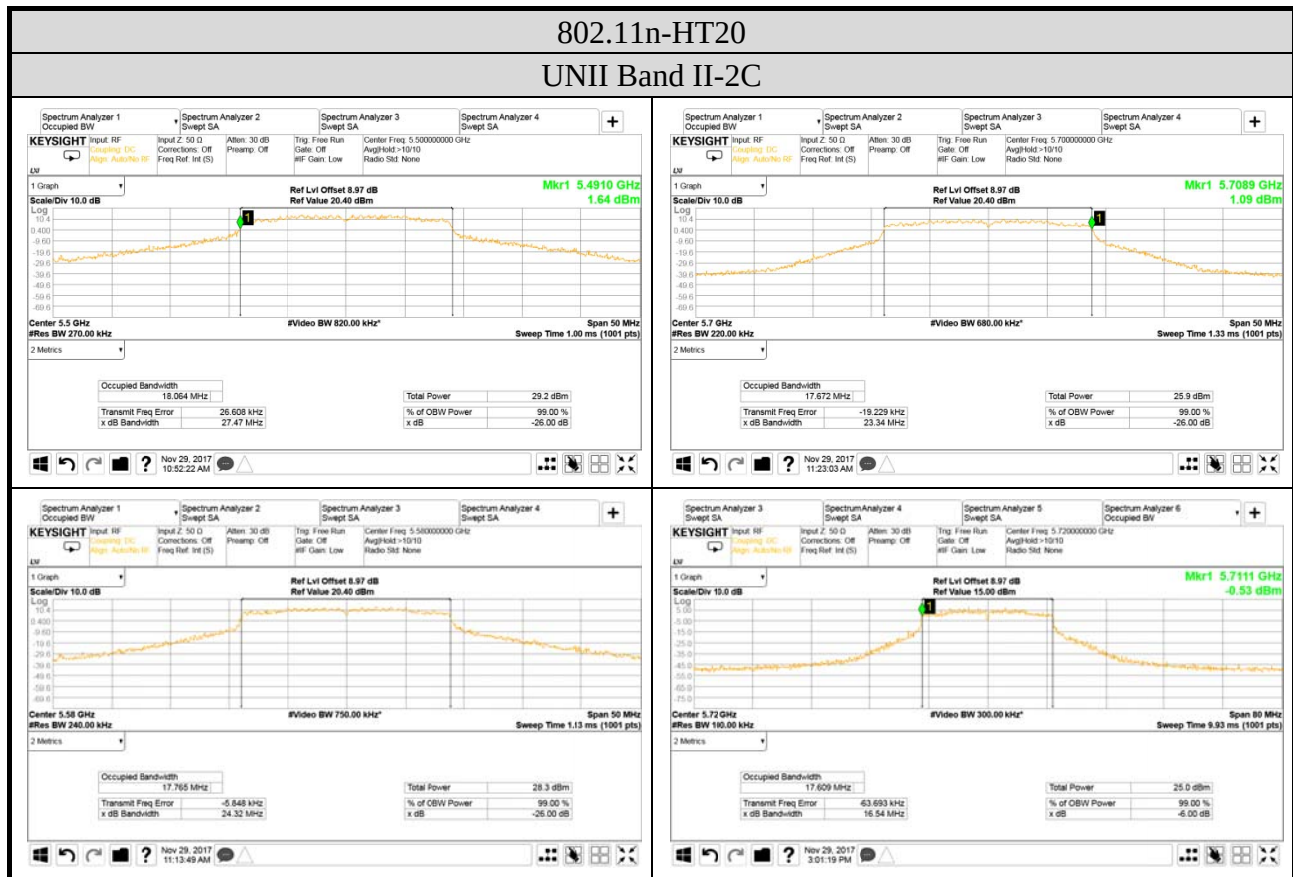
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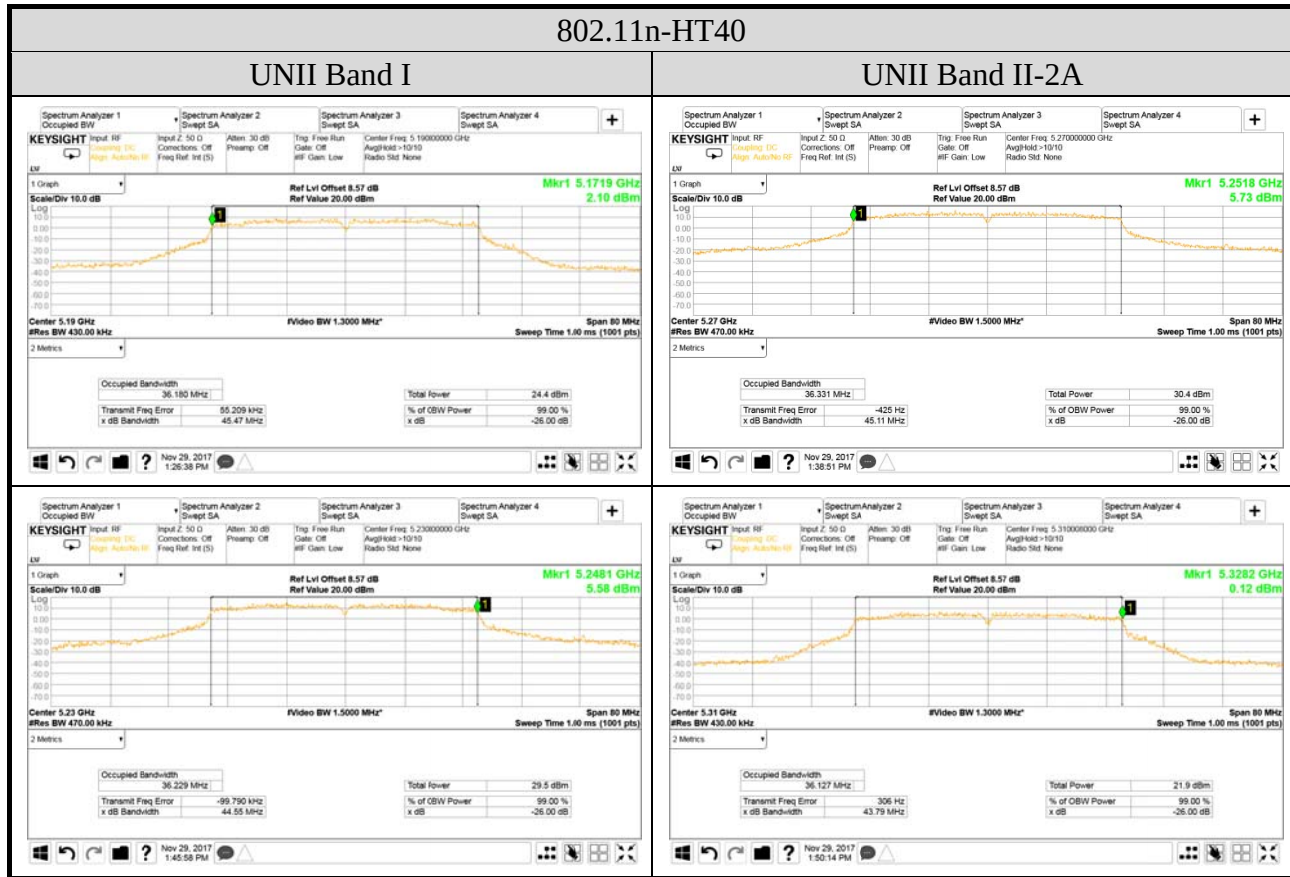
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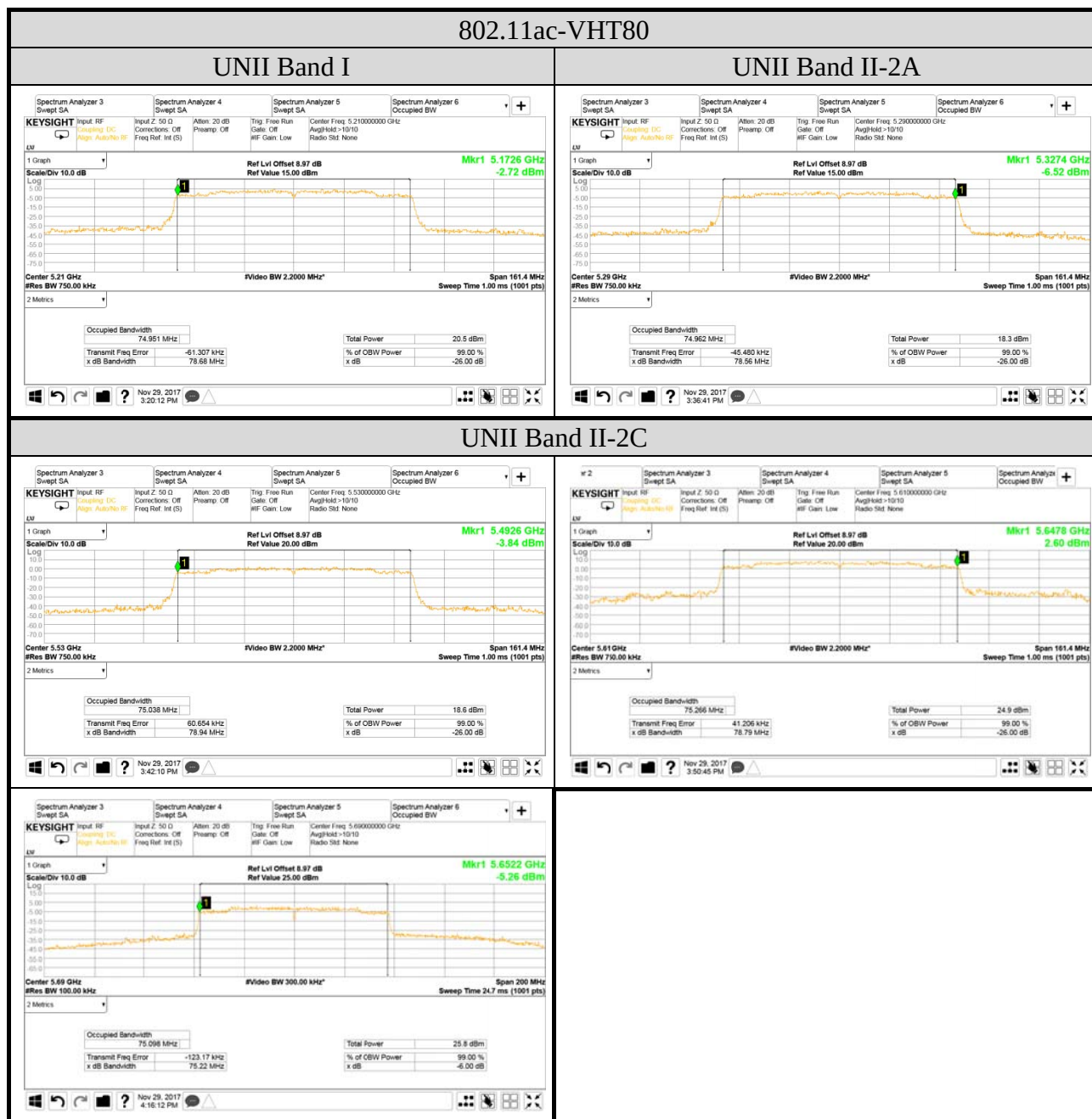
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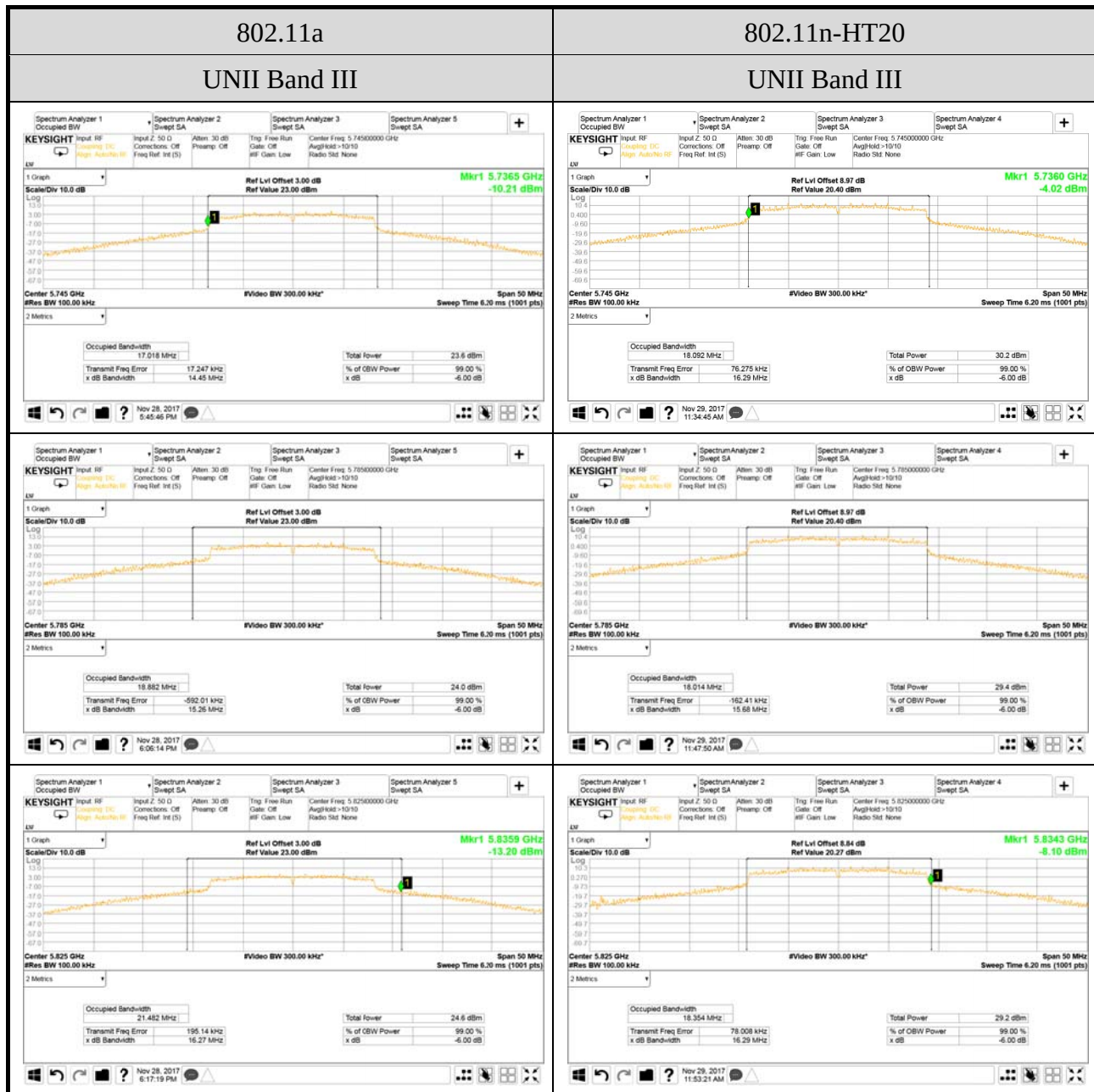
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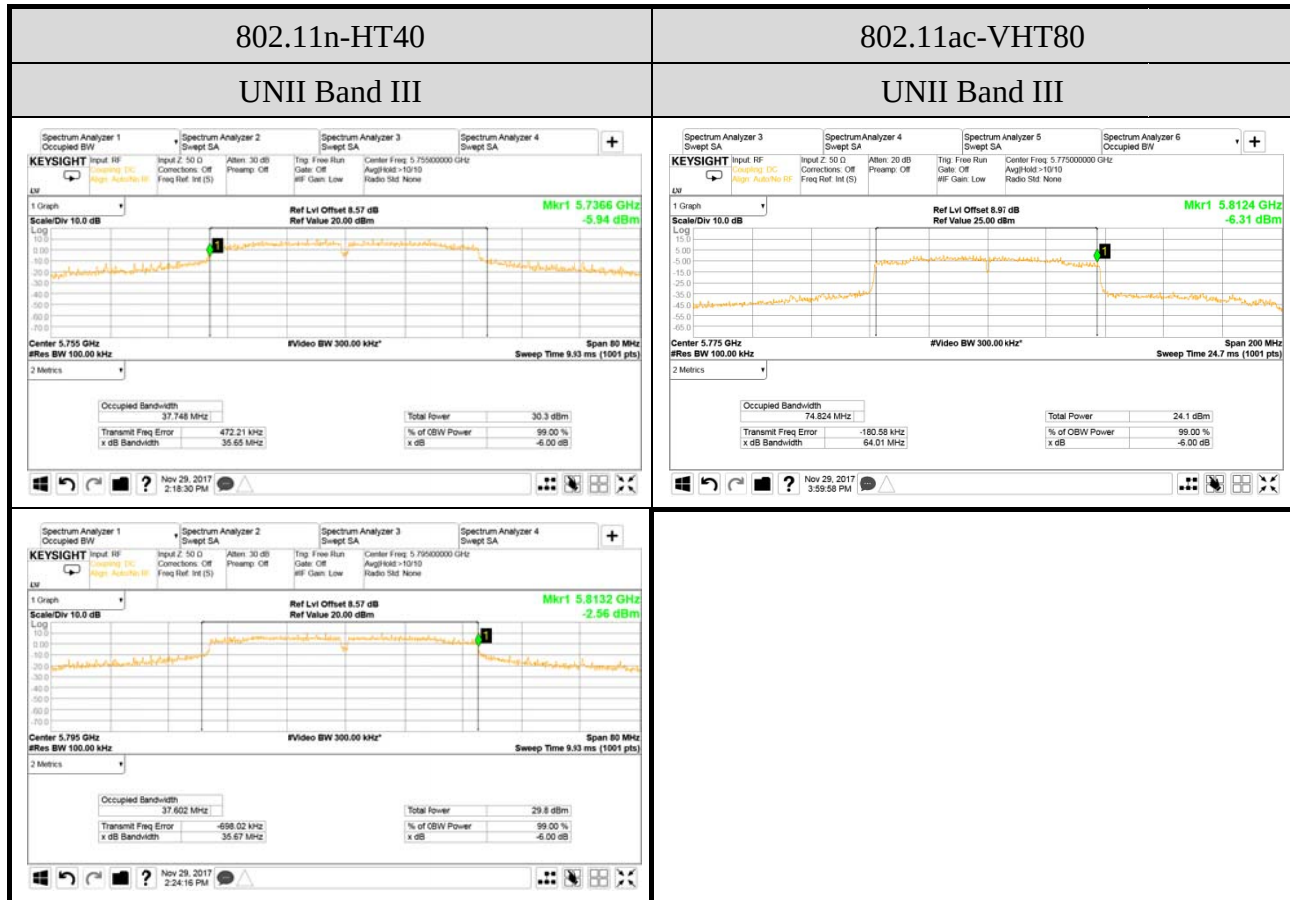
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A.4 MAXIMUM OUTPUT POWER

Test Date	2017/11/28~29	Temp./Hum.	25°C/55%
Cable Loss	3dB	Test Voltage	AC 120V, 60Hz (via AC Adapter)

A.4.1 Average Output Power

Mode	UNII Band	Centre Frequency (MHz)	Average Output Power (dBm)		10log (1/X)	Total Average Output Power				Limit
			Chain 0	Chain 1		Chain 0		Chain 1		
						(dBm)	(W)	(dBm)	(W)	
802.11a	I	5180	16.87	16.32	0	16.87	0.049	16.32	0.043	< 250 mW (24 dBm)
		5200	18.54	18.49		18.54	0.071	18.49	0.071	
		5240	18.51	18.41		18.51	0.071	18.41	0.069	
	II-2A	5260	18.88	18.77		18.88	0.077	18.77	0.075	
		5300	18.81	18.77		18.81	0.076	18.77	0.075	
		5320	16.55	15.47		16.55	0.045	15.47	0.035	
	II-2C	5500	15.49	16.47		15.49	0.035	16.47	0.044	
		5580	19.03	18.80		19.03	0.080	18.80	0.076	
		5700	14.99	14.88		14.99	0.032	14.88	0.031	
		5720	16.26	16.03		16.26	0.042	16.03	0.040	
	III	5720	8.63	8.13		8.63	0.007	8.13	0.007	< 1 W (30 dBm)
		5745	18.75	18.99		18.75	0.075	18.99	0.079	
		5785	19.05	18.92		19.05	0.080	18.92	0.078	
		5825	18.99	18.87		18.99	0.079	18.87	0.077	

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Mode	UNII Band	Centre Frequency (MHz)	Average Output Power(dBm)		10log (1/X)	Total Average Output Power		Limit
			Chain 0	Chain 1		(dBm)	(W)	
802.11n-HT20	I	5180	16.20	16.30	0.22	19.27	0.085	< 250 mW (24 dBm)
		5200	17.45	17.03		20.26	0.106	
		5240	17.37	17.00		20.21	0.105	
	II-2A	5260	17.42	17.01		20.24	0.106	
		5300	17.36	16.99		20.20	0.105	
		5320	15.77	15.55		18.68	0.074	
	II-2C	5500	15.39	15.11		18.28	0.067	
		5580	17.10	17.00		20.07	0.102	
		5700	13.74	13.99		16.90	0.049	
		5720	17.66	17.97		20.83	0.121	
	III	5720	10.49	11.03		13.82	0.024	< 1 W (30 dBm)
		5745	17.75	18.18		20.99	0.126	
		5785	18.85	18.34		21.62	0.145	
		5825	18.74	18.06		21.43	0.139	
802.11n-HT40	I	5190	12.35	12.22	0.13	15.43	0.035	< 250 mW (24 dBm)
		5230	17.62	17.43		20.67	0.117	
	II-2A	5270	17.48	17.27		20.52	0.113	
		5310	11.74	12.00		15.01	0.032	
		5510	11.90	12.05		15.12	0.033	
	II-2C	5550	17.28	17.38		20.47	0.111	
		5670	16.28	16.71		19.64	0.092	
		5710	16.33	16.19		19.41	0.087	
	III	5710	11.52	11.29		14.55	0.029	< 1 W (30 dBm)
		5755	18.84	18.44		21.79	0.151	
		5795	18.87	18.65		21.90	0.155	
802.11ac-VHT80	I	5210	9.36	9.57	1.74	14.22	0.026	< 250 mW (24 dBm)
	II-2A	5290	7.52	7.64		12.33	0.017	
	II-2C	5530	7.69	7.98		12.59	0.018	
		5610	15.82	15.84		20.58	0.114	
		5690	17.10	16.61		21.61	0.145	
	III	5690	0.96	0.29		5.39	0.003	< 1 W (30 dBm)
		5775	14.05	14.10		18.82	0.076	

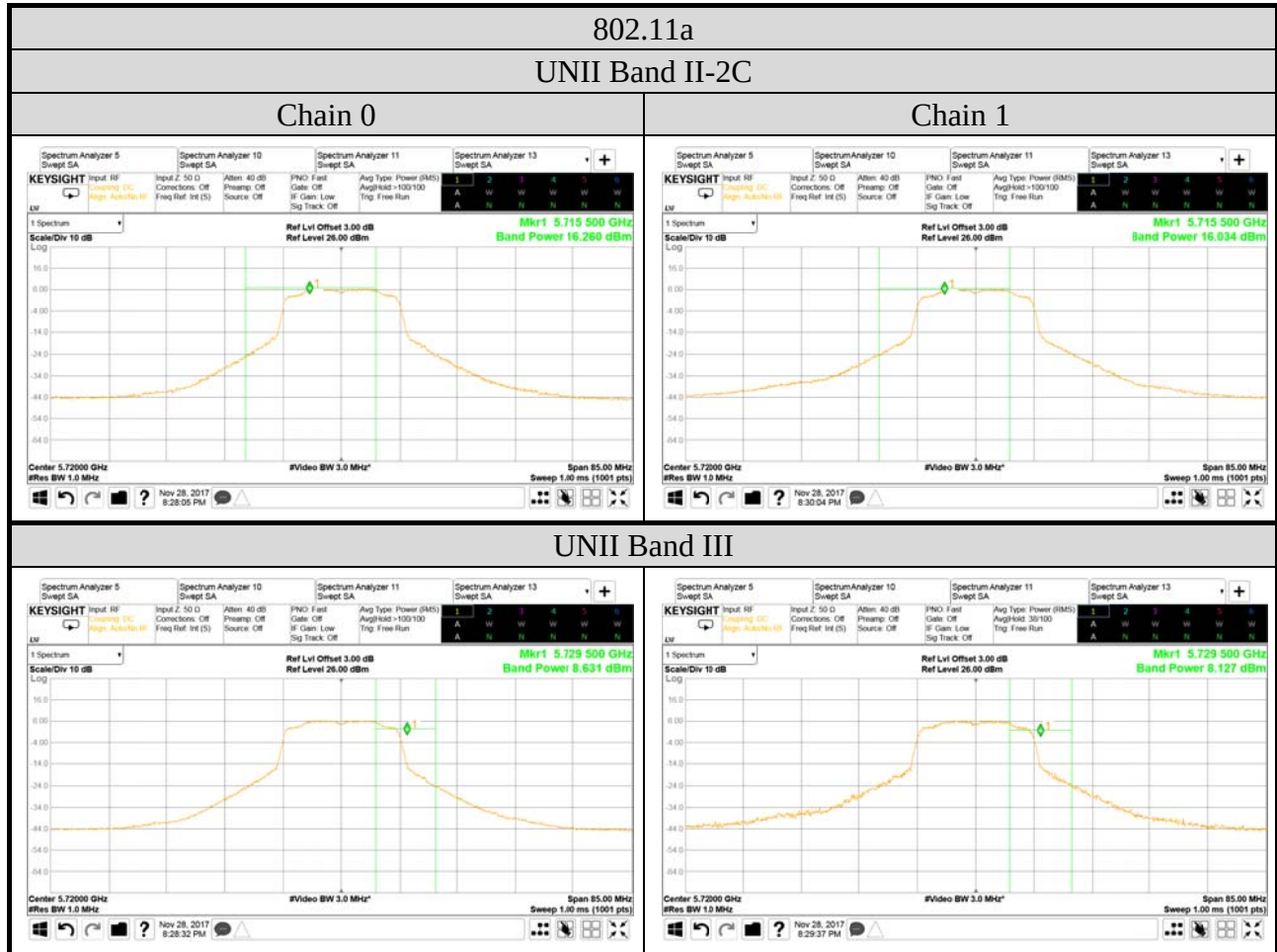
Note: The results have been included cable loss.

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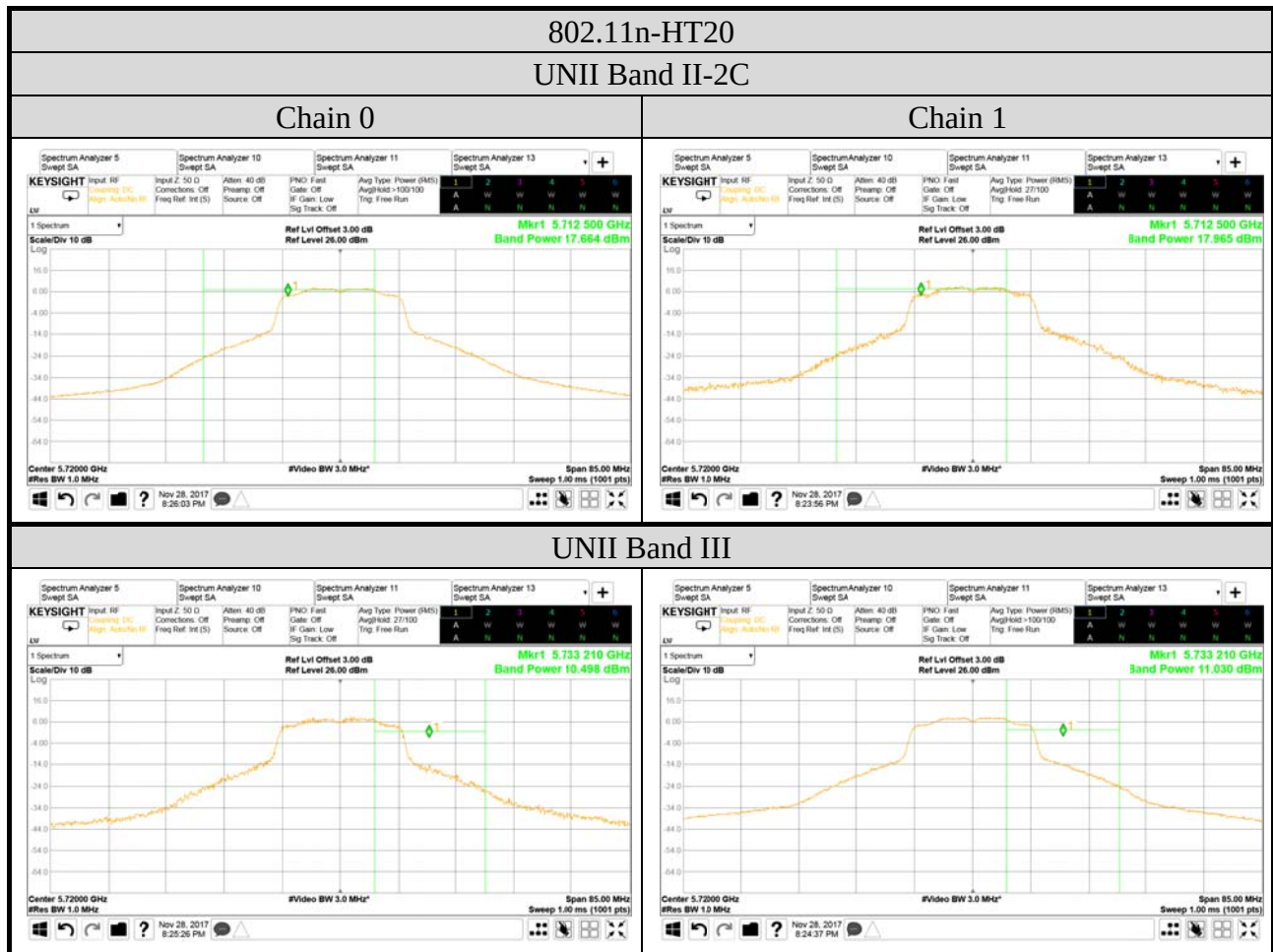
A.4.2 Measurement Plots

- Band Power



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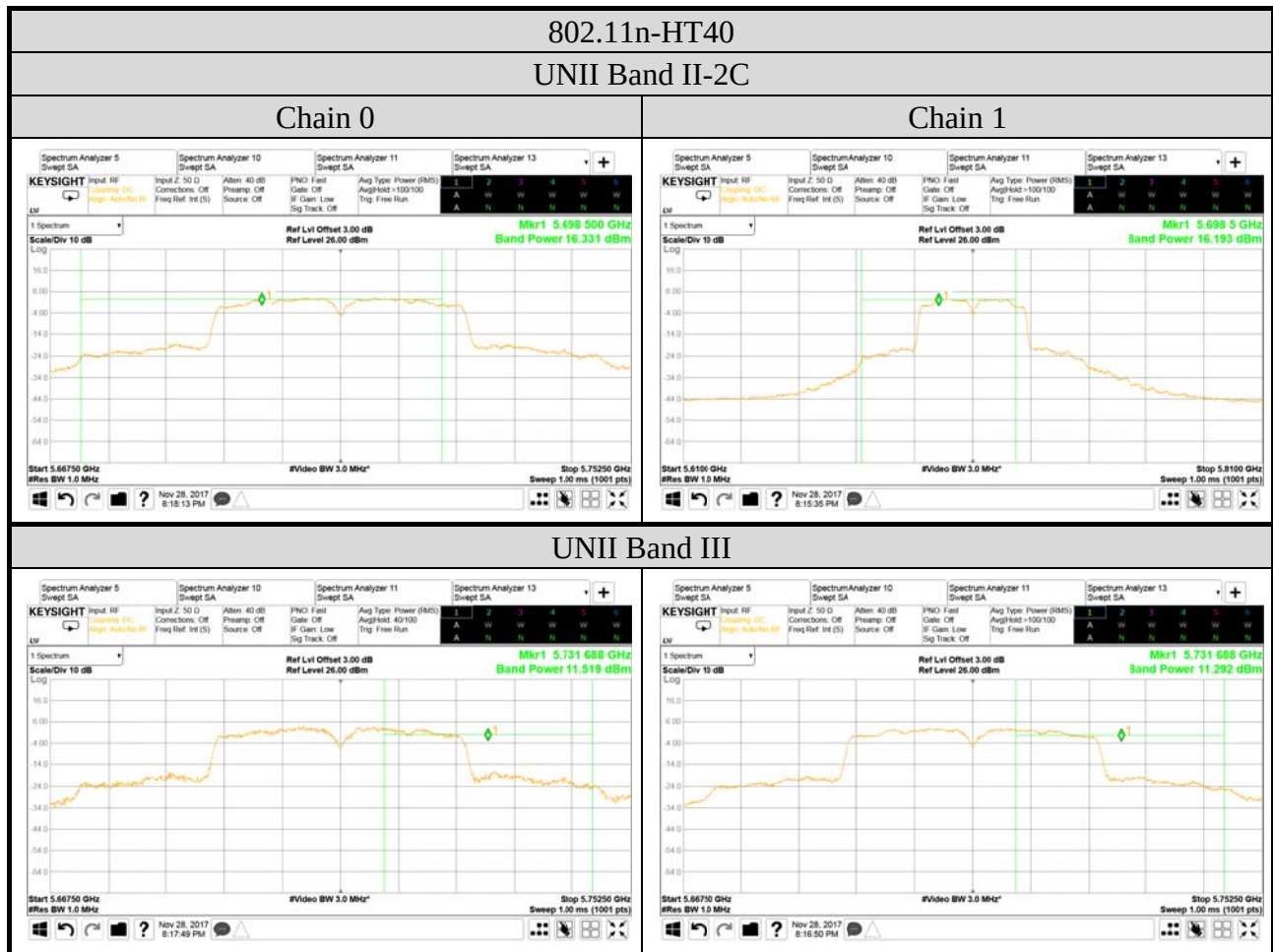
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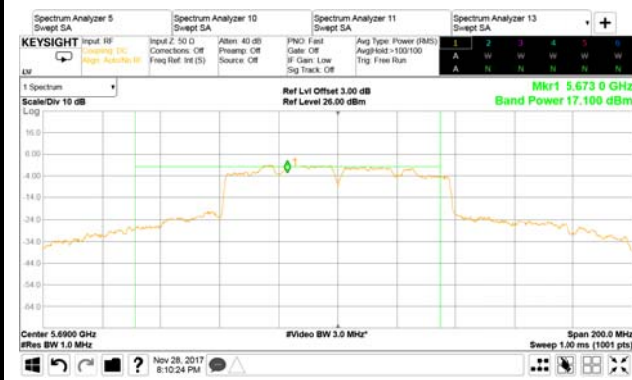
Tel: +886 2 26099301

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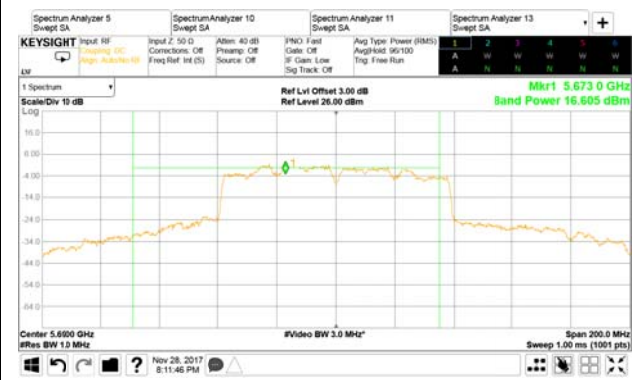
802.11ac-VHT80

UNII Band II-2C

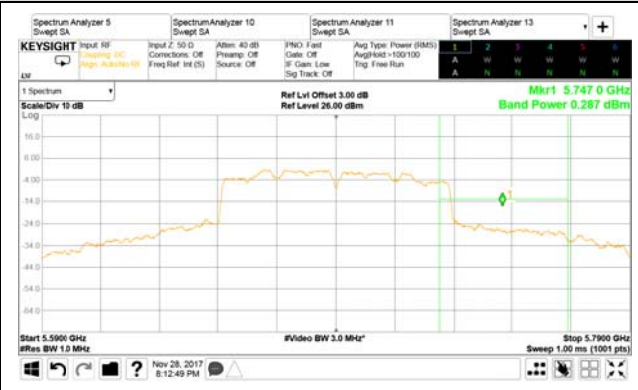
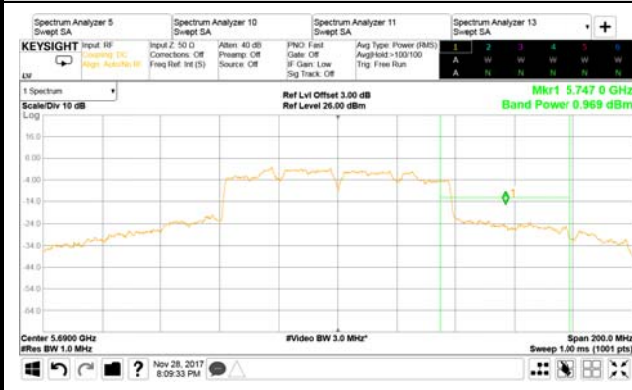
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Chain 1



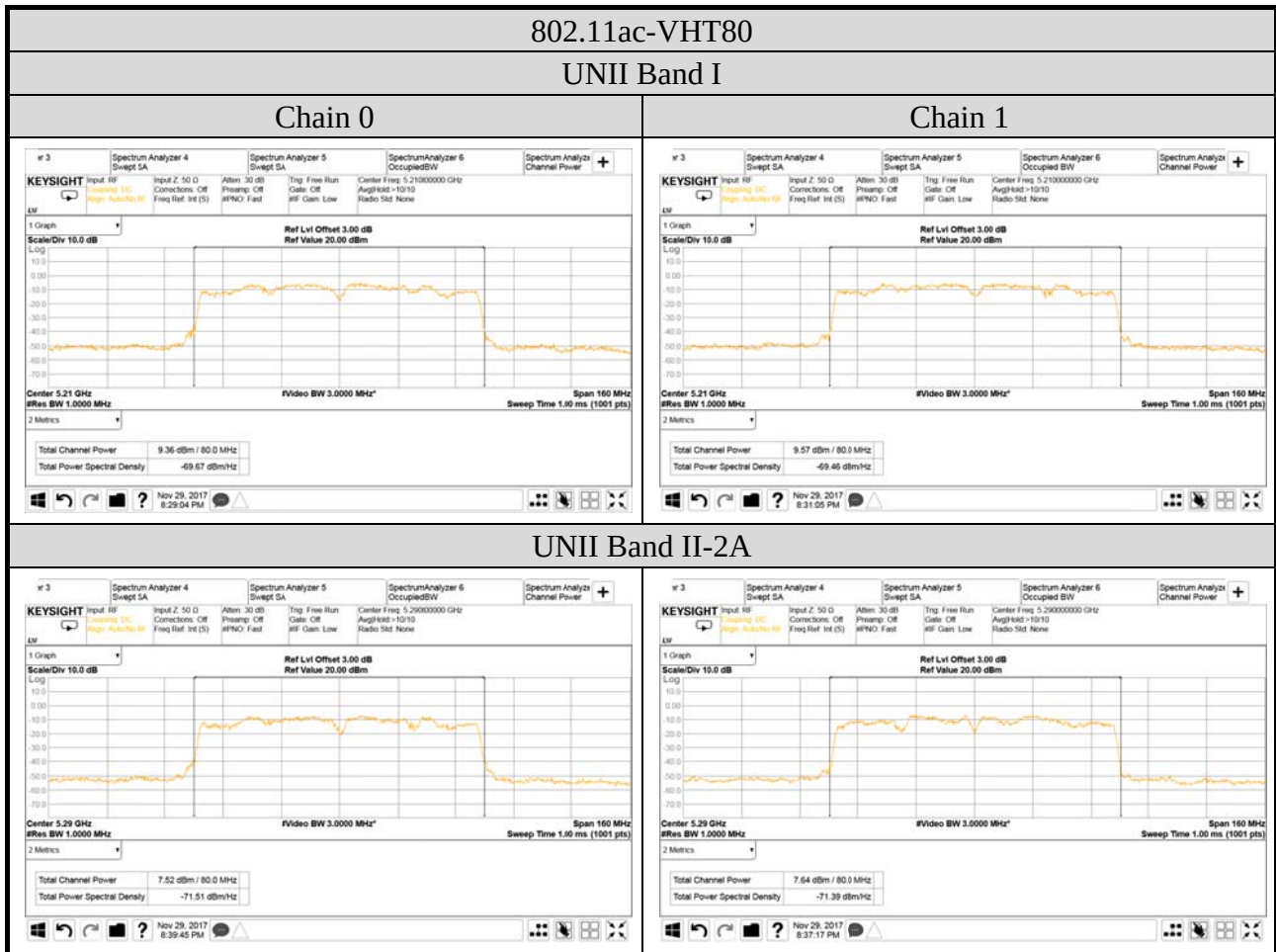
UNII Band III



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- Output Power



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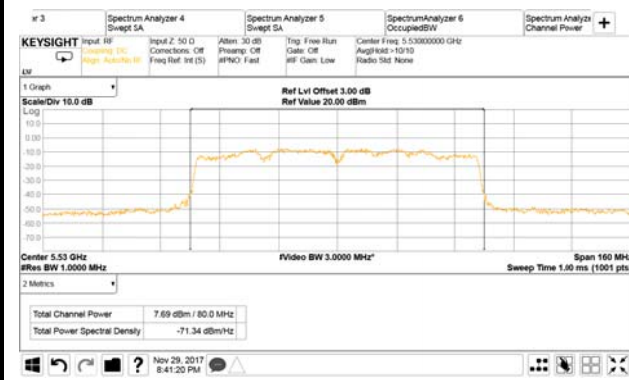
Tel: +886 2 26099301

Fax: +886 2 26099303

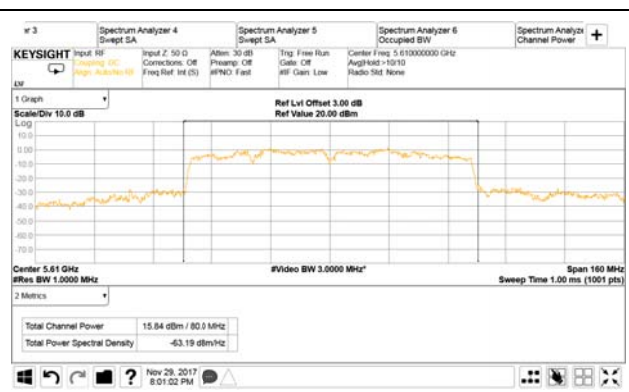
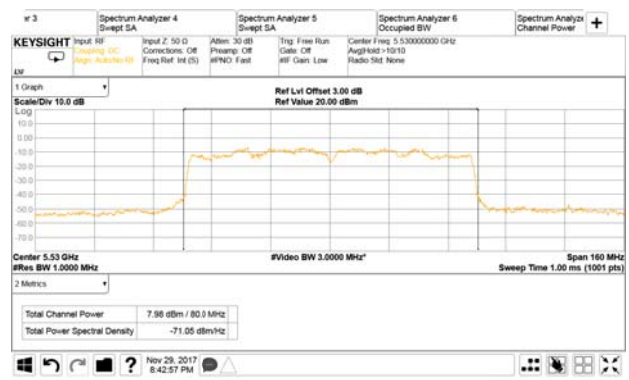
802.11ac-VHT80

UNII Band II-2C

Chain 0



Chain 1



UNII Band III

