

**CFR 47 FCC PART 15 SUBPART E
ISED RSS-247 ISSUE 2**

CERTIFICATION TEST REPORT

For

Acuity Brands – Juno AI

MODEL NUMBER: J6AIALXA DB, J6AIALXA DC, J6AISPKR DB, J6AISPKR DC

**FCC ID: 2ADCB-J6AIALXA
IC: 6715C-J6AIALXA**

REPORT NUMBER: 4789053728.1-4

ISSUE DATE: November 06, 2019

Prepared for

**Acuity Brands Lighting, Inc.
One Lithonia Way, Conyers, GA 30012**

Prepared by

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V0	11/06/2019	Initial Issue	



Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	6dB/26dB Bandwidth	FCC 15.407 (a)&(e) RSS-247 Clause 6.2	PASS
2	99% Occupied Bandwidth	RSS-Gen Clause 6.6	PASS
3	Maximum Conducted Output Power	FCC 15.407 (a) RSS-247 Clause 6.2	PASS
4	Power Spectral Density	FCC 15.407 (a) RSS-247 Clause 6.2	PASS
5	Antenna Conducted Spurious Emission	FCC 15.407 (b) RSS-247 Clause 6.2	PASS
6	Radiated Bandedge and Spurious Emission	FCC 15.407 (a) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	PASS
7	Conducted Emission Test For AC Power Port	FCC 15.207 RSS-GEN Clause 8.8	PASS
8	Frequency Stability	FCC 15.407 (g)	PASS
9	Dynamic Frequency Selection	FCC 15.407 (h) RSS-247 Clause 6.3	PASS
10	Antenna Requirement	FCC 15.203 RSS-GEN Clause 8.3	PASS
Note: This test report is only published to and used by the applicant, and it is not for evidence purpose in China.			



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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Acuity Brands Lighting, Inc.
Address: One Lithonia Way, Conyers, GA 30012

Manufacturer Information

Company Name: Acuity Brands Lighting, Inc.
Address: One Lithonia Way, Conyers, GA 30012

EUT Description

EUT Name: Acuity Brands – Juno AI
Model: J6AIALXA DB
Series Model: J6AIALXA DC, J6AISPKR DB, J6AISPKR DC
Model Difference: See section 5.1 of this report for detail
Brand Name: Juno AI
Sample Status: Normal
Sample ID: 2524327
Sample Received Date: August 30, 2019
Date of Tested: September 5 ~ November 06, 2019

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART E	PASS
ISED RSS-247 Issue 2	PASS
ISED RSS-GEN Issue 5	PASS

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, CFR 47 FCC Part 2, CFR 47 FCC Part 15, KDB 789033 D02 v02r01, RSS-GEN Issue 5, RSS-247 Issue 2, KDB414788 D01 Radiated Test Site v01, KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 and 905462 C Client Without DFS New Rules v01r02.

3. FACILITIES AND ACCREDITATIO

Accreditation Certificate	<p>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Delcaration of Conformity (DoC) and Certification rules</p> <p>IC(Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320.</p> <p>VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011</p>
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Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Uncertainty for Conduction emission test	3.62dB
Uncertainty for Radiation Emission test(include Fundamental emission) (9kHz-30MHz)	2.2dB
Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.00dB
Uncertainty for Radiation Emission test (1GHz to 40GHz)(include Fundamental emission)	5.78dB(1-18GHz)
	5.23dB (18GHz-26Gz)
	5.64dB (26GHz-40Gz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	Acuity Brands – Juno AI
Model	J6AIALXA DB
Series Model	J6AIALXA DC, J6AISPKR DB, J6AISPKR DC
Model Difference	The J6AIALXA DB and J6AIALXA DC are the same full function device while J6AIALXA DB have plastic baffle decorative part installed and J6AIALXA DC have metal cone decorative part installed. The J6AISPKR DB and J6AISPKR DC are reduce function of J6AIALXA DB and J6AIALXA DC, it removed the microphone and LED indicator board from J6AIALXA DB and J6AIALXA DC while the other hardware same as design model.
Radio Technology	IEEE802.11a IEEE802.11n HT20/n HT40 IEEE802.11ac VHT20/VHT40/VHT80
Operation frequency	UNII-1/UNII-2A/UNII-2C/UNII-3
Modulation	OFDM(BPSK,QPSK,16QAM,64QAM, 256QAM only for 11 ac mode)
Rated Input	AC 120V, 60Hz



5.2. CHANNEL LIST

20 MHz Bandwidth Channel frequencies		
Band	Channel	Frequency (MHz)
UNII-1	36	5180
	40	5200
	44	5220
	48	5240
UNII-2A	52	5260
	56	5280
	60	5300
	64	5320
UNII-2C	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	132	5660
	136	5680
	140	5700
UNII-3	149	5745
	153	5765
	157	5785
	161	5805
	165	5825



40 MHz Bandwidth Channel frequencies		
Band	Channel	Frequency (MHz)
UNII-1	38	5190
	46	5230
UNII-2	54	5270
	62	5310
UNII-2C	102	5510
	110	5550
	134	5670
UNII-3	151	5755
	159	5795

80 MHz Bandwidth Channel frequencies		
Band	Channel	Frequency (MHz)
UNII-1	42	5210
UNII-2A	58	5290
UNII-2C	106	5530
	134	5670
UNII-3	155	5775

Straddle Channel frequencies		
Bandwidth	Channel	Frequency (MHz)
20MHz	144	5720
40MHz	142	5710
80MHz	138	5690



5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
A	5150-5825	IFA antenna	3.30

Test Mode	Transmit and Receive Mode	Description
802.11a	1TX, 1RX	Antenna A can be can be used as transmitting/receiving antenna.
802.11n HT20	1TX, 1RX	Antenna A can be can be used as transmitting/receiving antenna.
802.11n HT40	1TX, 1RX	Antenna A can be can be used as transmitting/receiving antenna.
802.11ac VHT20	1TX, 1RX	Antenna A can be can be used as transmitting/receiving antenna.
802.11ac VHT40	1TX, 1RX	Antenna A can be can be used as transmitting/receiving antenna.
802.11ac VHT80	1TX, 1RX	Antenna A can be can be used as transmitting/receiving antenna.

5.4. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	35 ~ 75%	
Atmospheric Pressure:	1025Pa	
Temperature	TN	-20 ~ 40°C
Voltage :	VL	AC 102V/60Hz
	VN	AC 120V/60Hz
	VH	AC 138V/60Hz

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage
VH= Upper Extreme Test Voltage
TN= Normal Temperature



5.5. WORST-CASE CONFIGURATIONS

IEE Std. 802.11	Modulation Technology	Modulation Type	Data Rate (Mbps)	Worst Case (Mbps)
a	OFDM	BPSK,QPSK,16QAM, 64QAM	54/48/36/24/18/12/9/6	6

IEE Std. 802.11	Modulation Technology	Modulation Type	Data Rate	Worst Case
n HT20	OFDM	BPSK, QPSK, 16QAM, 64QAM	(MCS0~MCS7)	MCS0
n HT40	OFDM	BPSK, QPSK, 16QAM, 64QAM	(MCS0~MCS7)	MCS0

IEE Std. 802.11	Modulation Technology	Modulation Type	Data Rate	Worst Case
ac VHT20	OFDM	BPSK, QPSK, 16QAM, 64QAM, 256QAM	(MCS0~MCS9)	MCS0
ac VHT40	OFDM	BPSK, QPSK, 16QAM, 64QAM, 256QAM	(MCS0~MCS9)	MCS0
ac VHT80	OFDM	BPSK, QPSK, 16QAM, 64QAM, 256QAM	(MCS0~MCS9)	MCS0

Note: 1. 802.11ac VHT20 and VHT40 mode are different from 802.11n HT20 and HT40 only in control messages and have the same power settings, so for these 4 modes, only 802.11n HT20 and 802.11n HT40 modes data are recorded in the report .

2.All models had been evaluated, and the worst model is J6AIALXA DB, only the worst data for J6AIALXA DB recorded in the report.

5.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 5150 ~ 5825MHz Band		
Test Software		adb
Modulation Mode	Transmit Antenna Number	All Test Channel Power Setting
802.11a	A	12
802.11n HT20/HT40	A	11
802.11ac VHT20/VHT40	A	11
802.11ac VHT80	A	9

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	PC	Dell	Vostro 3902	8KNDDDB2
2	USB TO UART	/	/	/

I/O CABLES

Item	Port	Connector Type	Cable Type	Cable Length(m)	Notes
1	USB	/	/	1.0	/

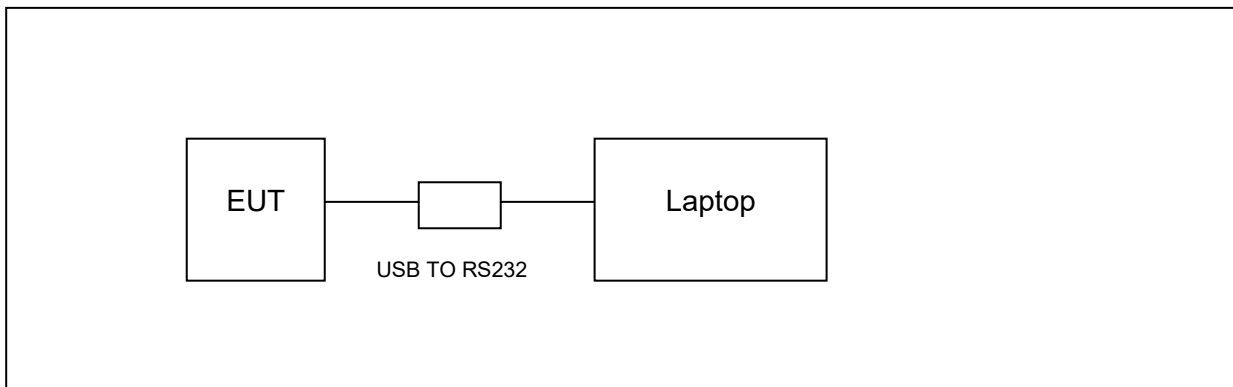
ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
1	/		/	/

TEST SETUP

The EUT can work in engineering mode with a software through a Laptop.

SETUP DIAGRAM FOR TESTS





5.8. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	EMI Test Receiver	R&S	ESR3	101961	Dec.10,2018	Dec.09,2019
<input checked="" type="checkbox"/>	Two-Line V-Network	R&S	ENV216	101983	Dec.10,2018	Dec.09,2019
Software						
Used	Description	Manufacturer	Name	Version		
<input checked="" type="checkbox"/>	Test Software for Conducted disturbance	UL	Antenna port	Ver. 7.2		
Radiated Emissions						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Dec.10,2018	Dec.09,2019
<input checked="" type="checkbox"/>	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Sep.17, 2018	Sep.16, 2021
<input checked="" type="checkbox"/>	Preamplifier	HP	8447D	2944A09099	Dec.10,2018	Dec.09,2019
<input checked="" type="checkbox"/>	EMI Measurement Receiver	R&S	ESR26	101377	Dec.10,2018	Dec.09,2019
<input checked="" type="checkbox"/>	Horn Antenna	TDK	HRN-0118	130939	Sep.17, 2018	Sep.16, 2021
<input checked="" type="checkbox"/>	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Sep.17, 2018	Sep.16, 2021
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Dec.10,2018	Dec.09,2019
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec.10,2018	Dec.09,2019
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-3	TRS-308-00002	Dec.10,2018	Dec.09,2019
<input checked="" type="checkbox"/>	Loop antenna	Schwarzbeck	1519B	00008	Jan.07, 2019	Jan.07, 2022
Software						
Used	Description	Manufacturer	Name	Version		
<input checked="" type="checkbox"/>	Test Software for Radiated disturbance	Farad	EZ-EMC	Ver. UL-3A1		
Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec.10,2018	Dec.09,2019
<input checked="" type="checkbox"/>	Power Sensor	Keysight	U2021XA	MY57030004	Dec.10,2018	Dec.09,2019



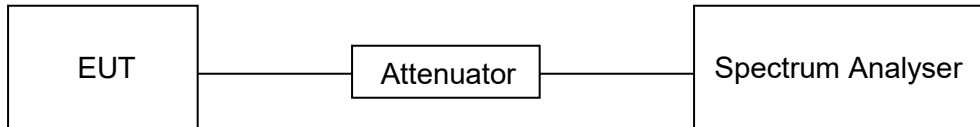
6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

TEST SETUP



TEST ENVIRONMENT

Temperature	25.9°C	Relative Humidity	54%
Atmosphere Pressure	101kPa	Test Voltage	AC120V_60Hz

RESULTS

ANTENNA A

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (KHz)	Final setting For VBW (KHz)
11a	1.394	1.498	0.9306	93.06%	0.31	0.72	1
11n20	1.306	1.409	0.9269	92.69%	0.33	0.77	1
11n40	0.6459	0.688	0.9388	93.88%	0.27	1.55	5
11ac VHT20	1.314	1.357	0.9683	96.83%	0.14	0.76	1
11ac VHT40	0.655	0.6981	0.9383	93.83%	0.28	1.53	5
11ac VHT80	0.3231	0.3656	0.8838	88.38%	0.54	3.10	5

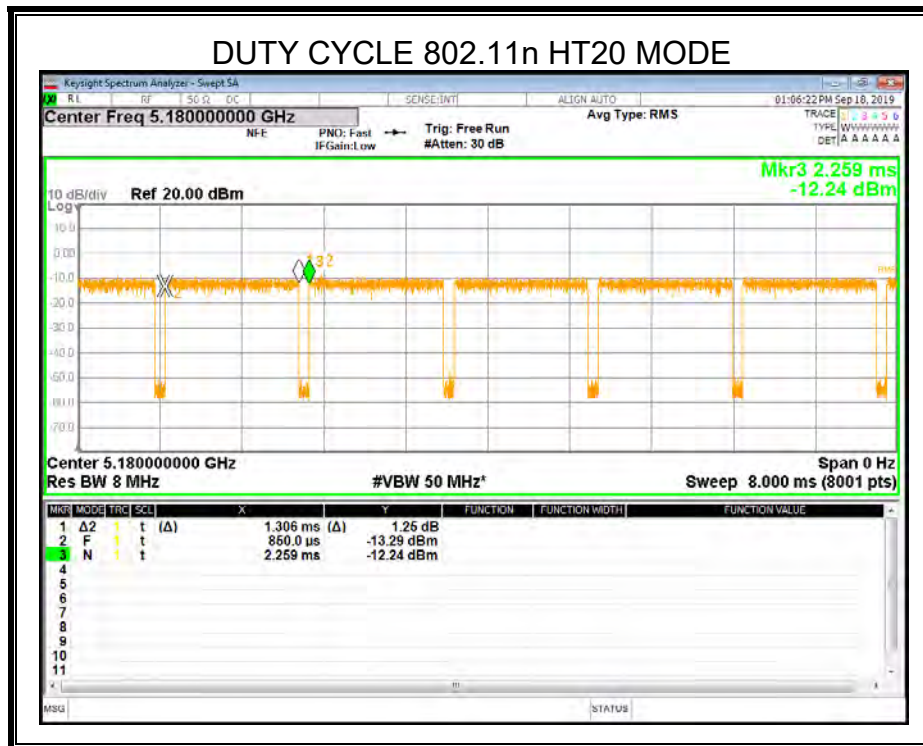
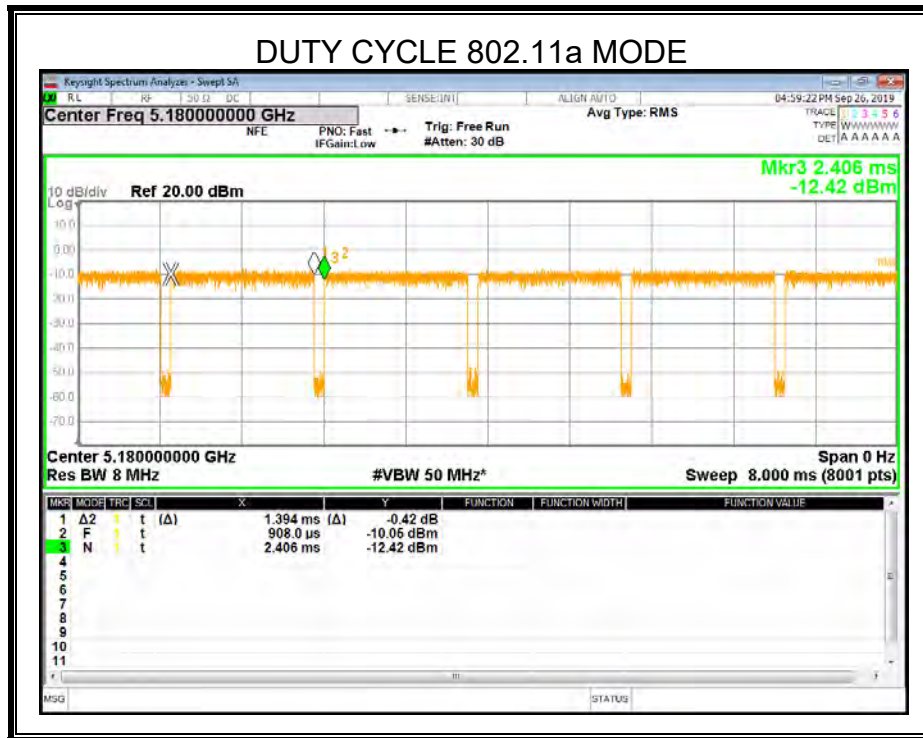
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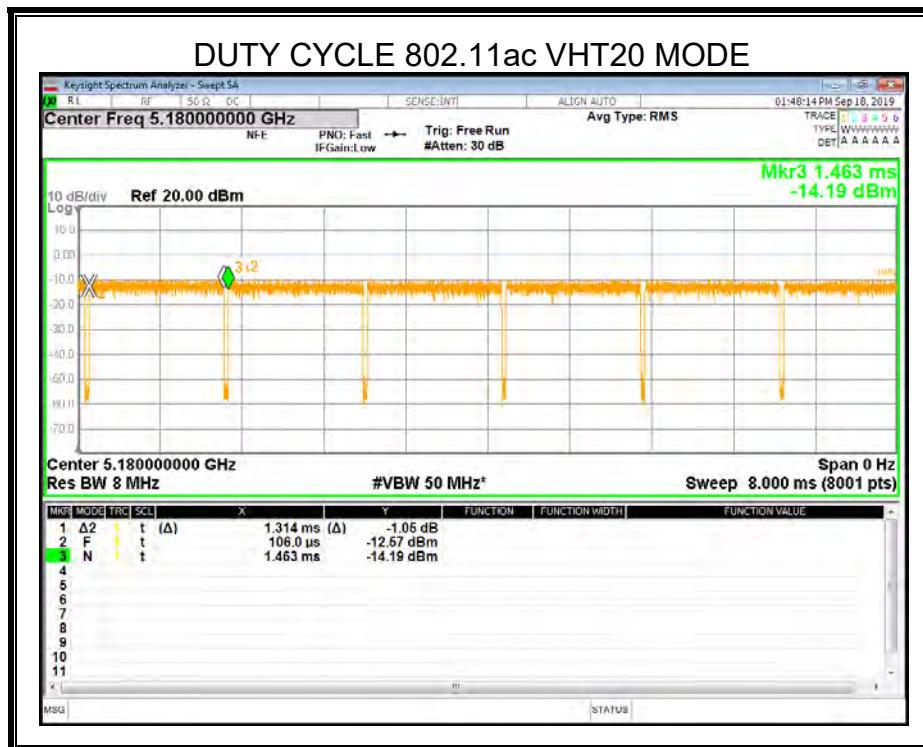
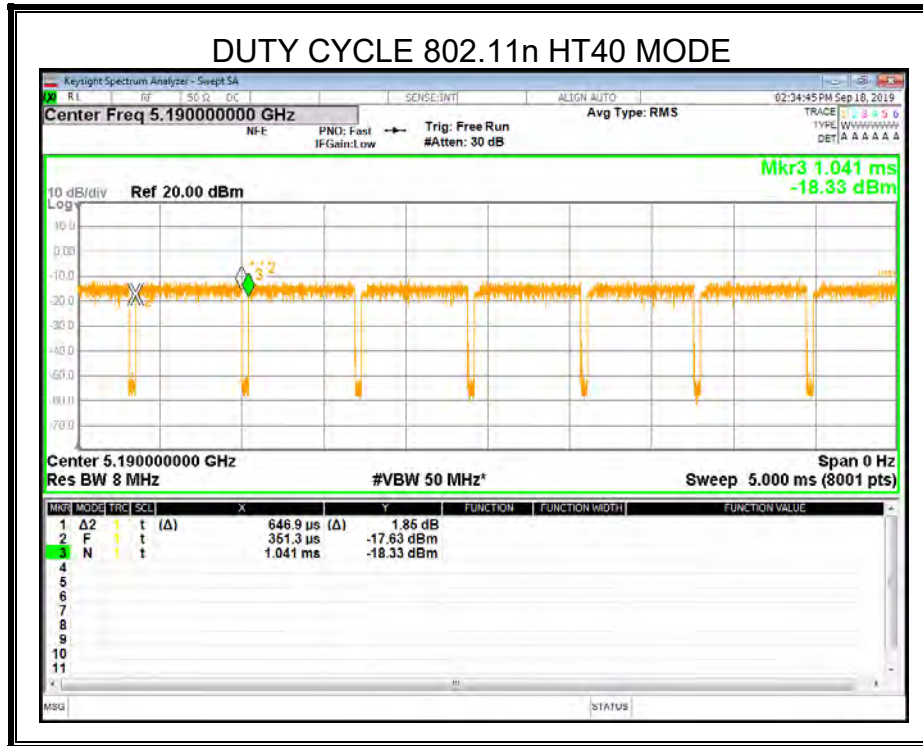
Duty Cycle Correction Factor=10log (1/x).

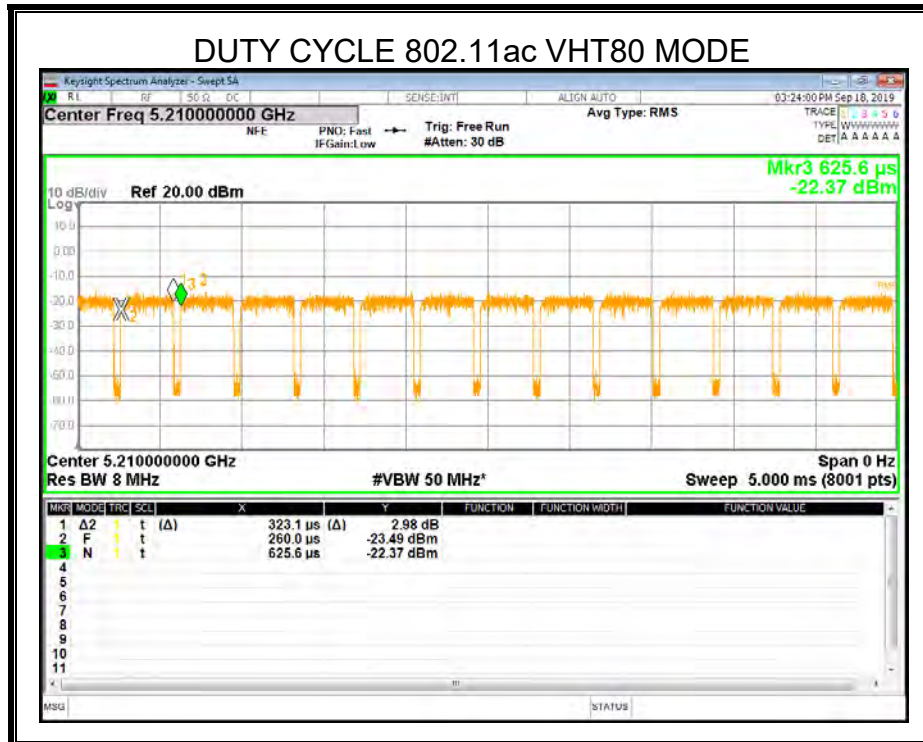
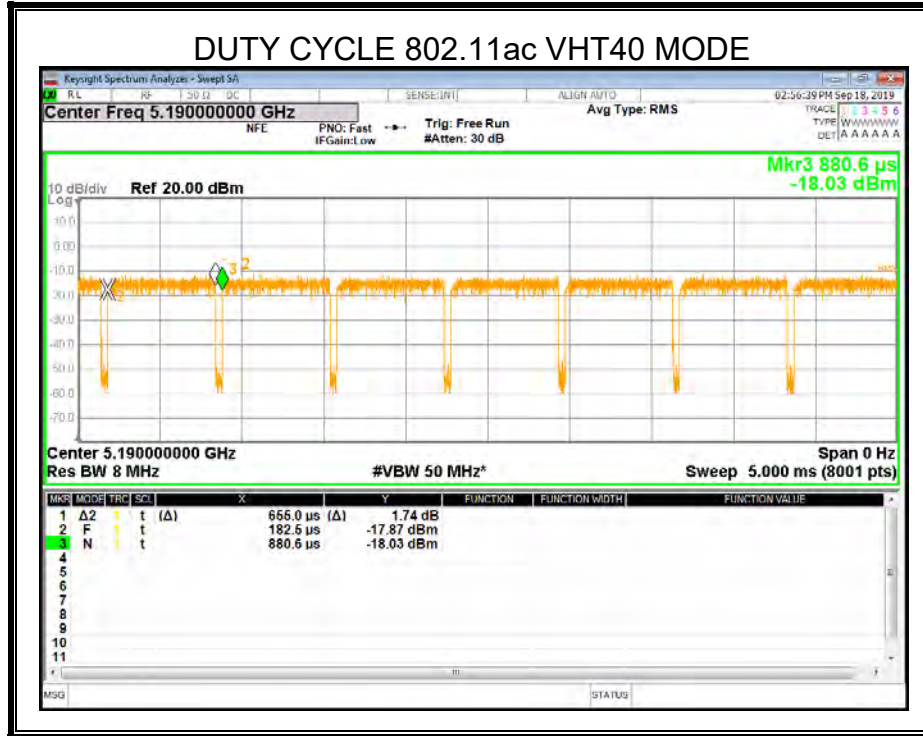
Where: x is Duty Cycle (Linear)

Where: T is On Time

If that calculated VBW is not available on the analyzer then the next higher value should be used.







6.2. 6dB/26dB/99% OCCUPIED BANDWIDTH

LIMITS

CFR 47 FCC Part15, Subpart E ISED RSS-247		
Test Item	Limit	Frequency Range (MHz)
Bandwidth	26 dB Bandwidth	5150-5250
	26 dB Bandwidth	5250-5350
	26 dB Bandwidth	For FCC:5470-5725 For IC:5470-5600 5650-5725
	Minimum 500kHz 6dB Bandwidth	5725-5850

ISED RSS-247 ISSUE 2		
RSS-Gen Clause 6.6	99% Occupied Bandwidth	For reporting purposes only.

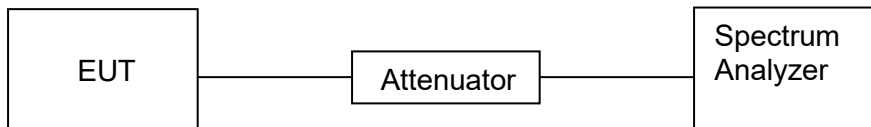
TEST PROCEDUREC

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6dB Bandwidth: RBW=100kHz For 26dB Bandwidth: approximately 1%~5% of the emission bandwidth. For 99% Occupied Bandwidth: approximately 1%~5% of the emission bandwidth.
VBW	For 6dB Bandwidth : VBW=300kHz For 26dB Bandwidth : >3RBW For 99% Occupied Bandwidth: >3RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and 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 6dB/26dB&99% Occupied Bandwidth relative to the maximum level measured in the fundamental emission.

TEST SETUP





TEST ENVIRONMENT

Temperature	25.9°C	Relative Humidity	54%
Atmosphere Pressure	101kPa	Test Voltage	AC120V_60Hz

RESULTS

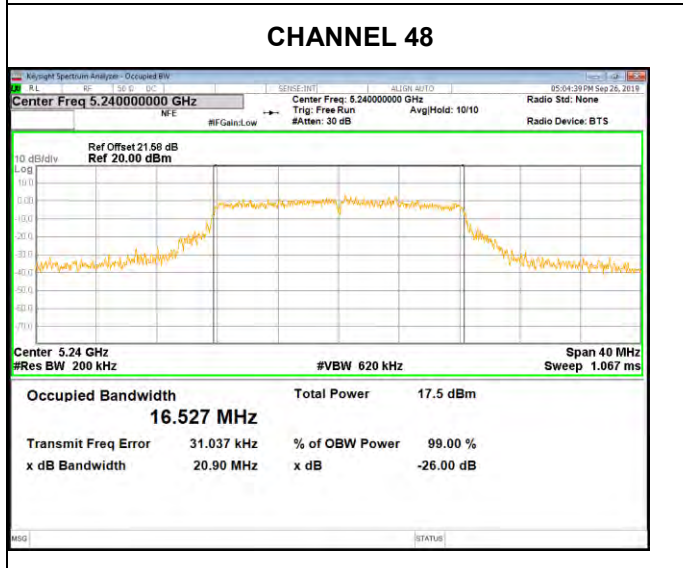
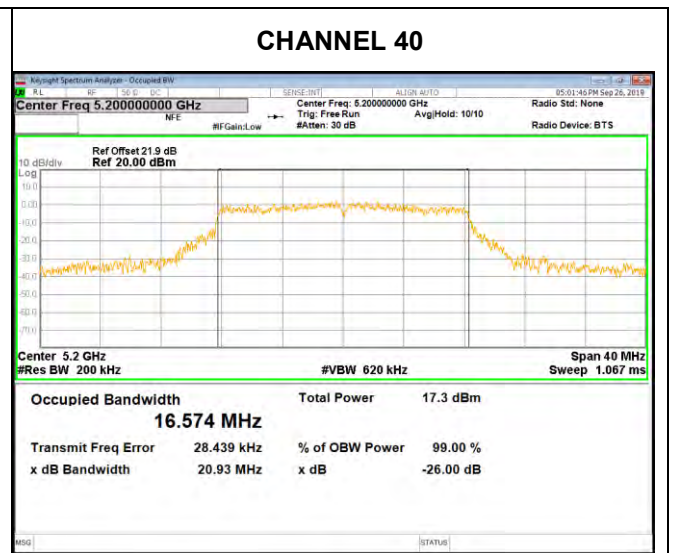
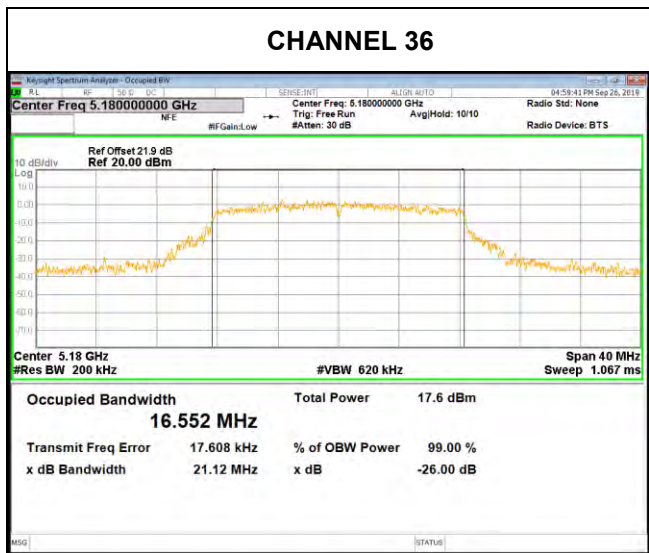
ANTENNA A



6.2.1. 802.11a MODE

6.2.1.1. UNII-1 BAND

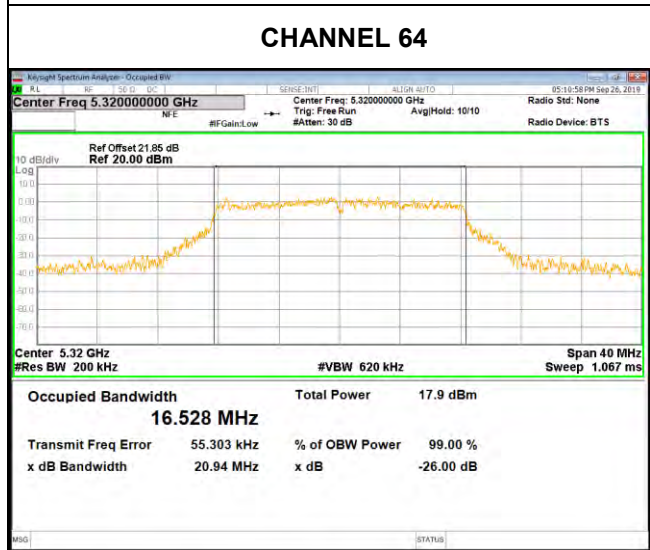
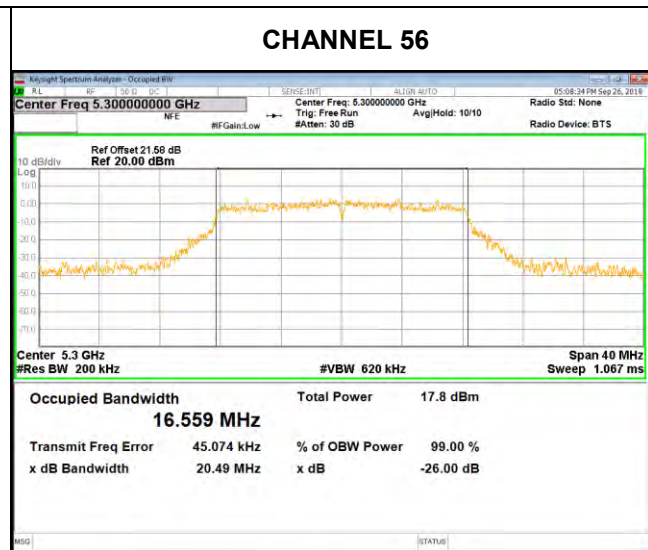
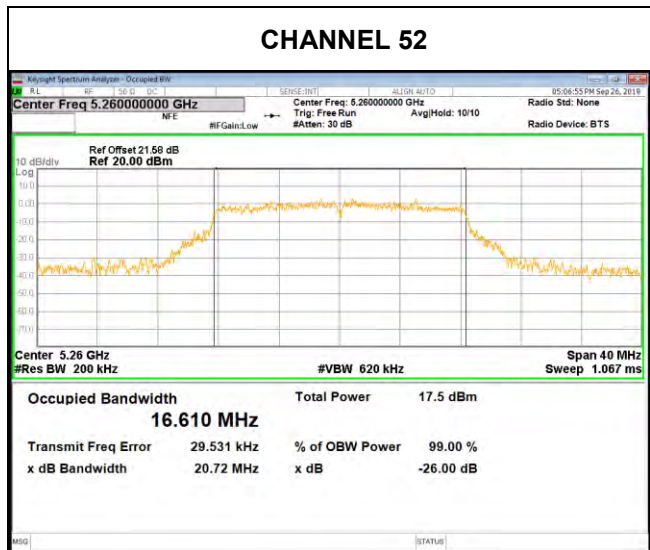
Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
36	5180	21.12	16.552
40	5200	20.93	16.574
48	5240	20.90	16.527





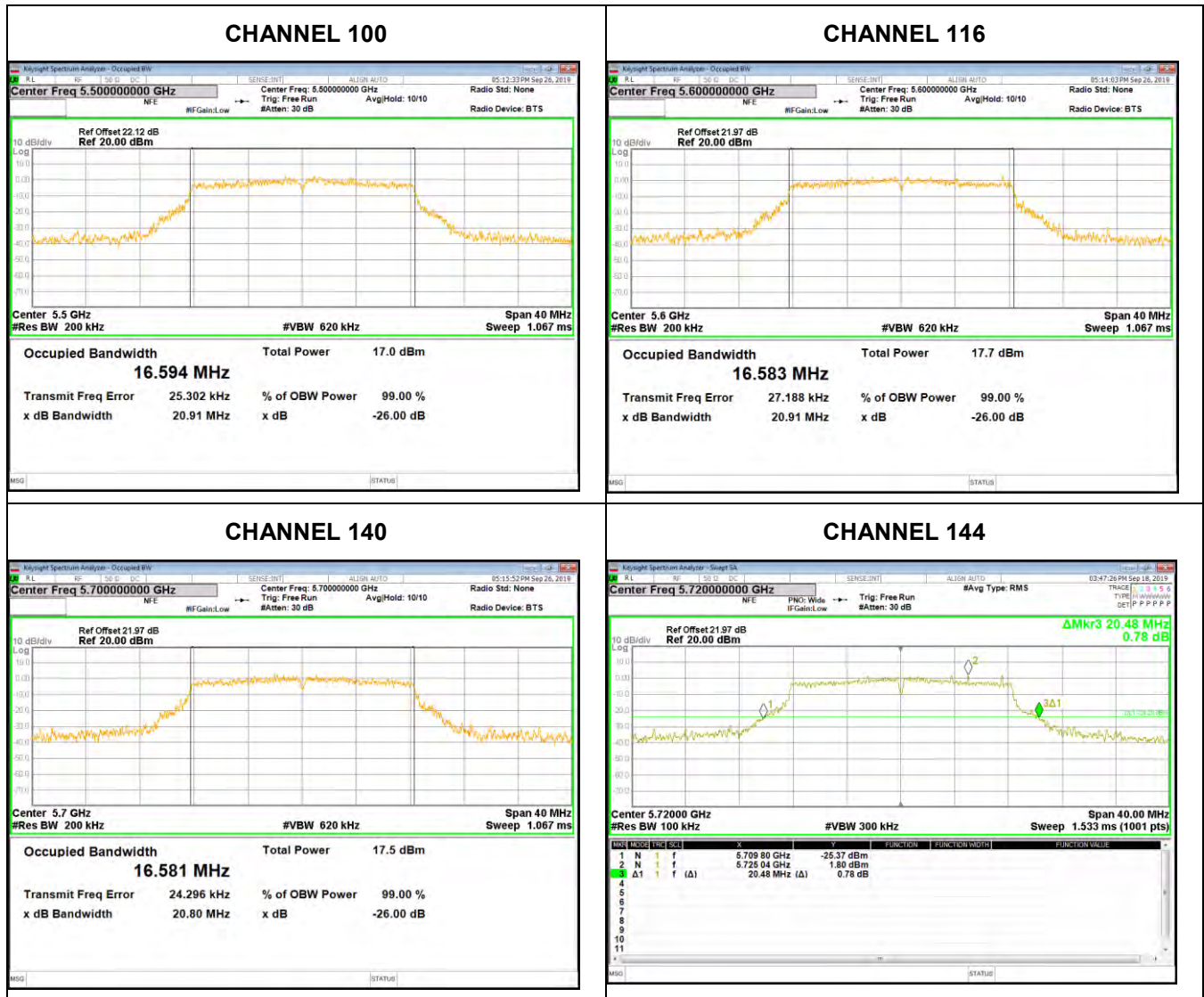
6.2.1.1. UNII-2A BAND

Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
52	5260	20.72	16.610
56	5300	20.49	16.559
64	5320	20.94	16.528



6.2.1.2. UNII-2C BAND

Channel	Frequency (MHz)	26 dB BW(MHz)	99% BW(MHz)
100	5500	20.91	16.594
116	5580	20.91	16.583
140	5700	20.80	16.581
144	5720	15.20	/



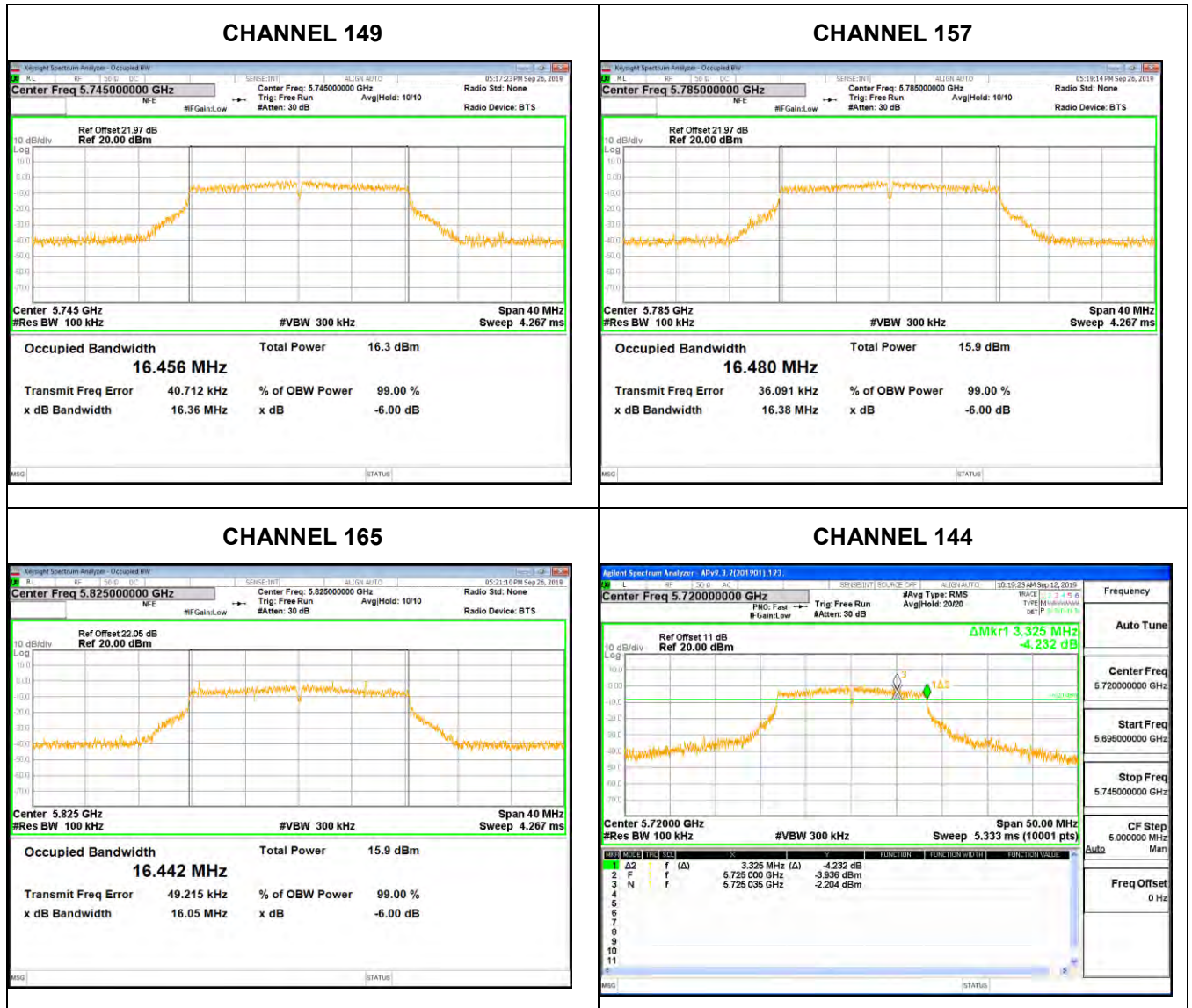
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6.2.1.3. UNII-3 BAND

Channel	Frequency (MHz)	6 dB BW (MHz)	Limit (KHz)	Result
149	5745	16.36	500	PASS
157	5785	16.38	500	PASS
165	5825	16.05	500	PASS
144	5720	3.325	500	PASS

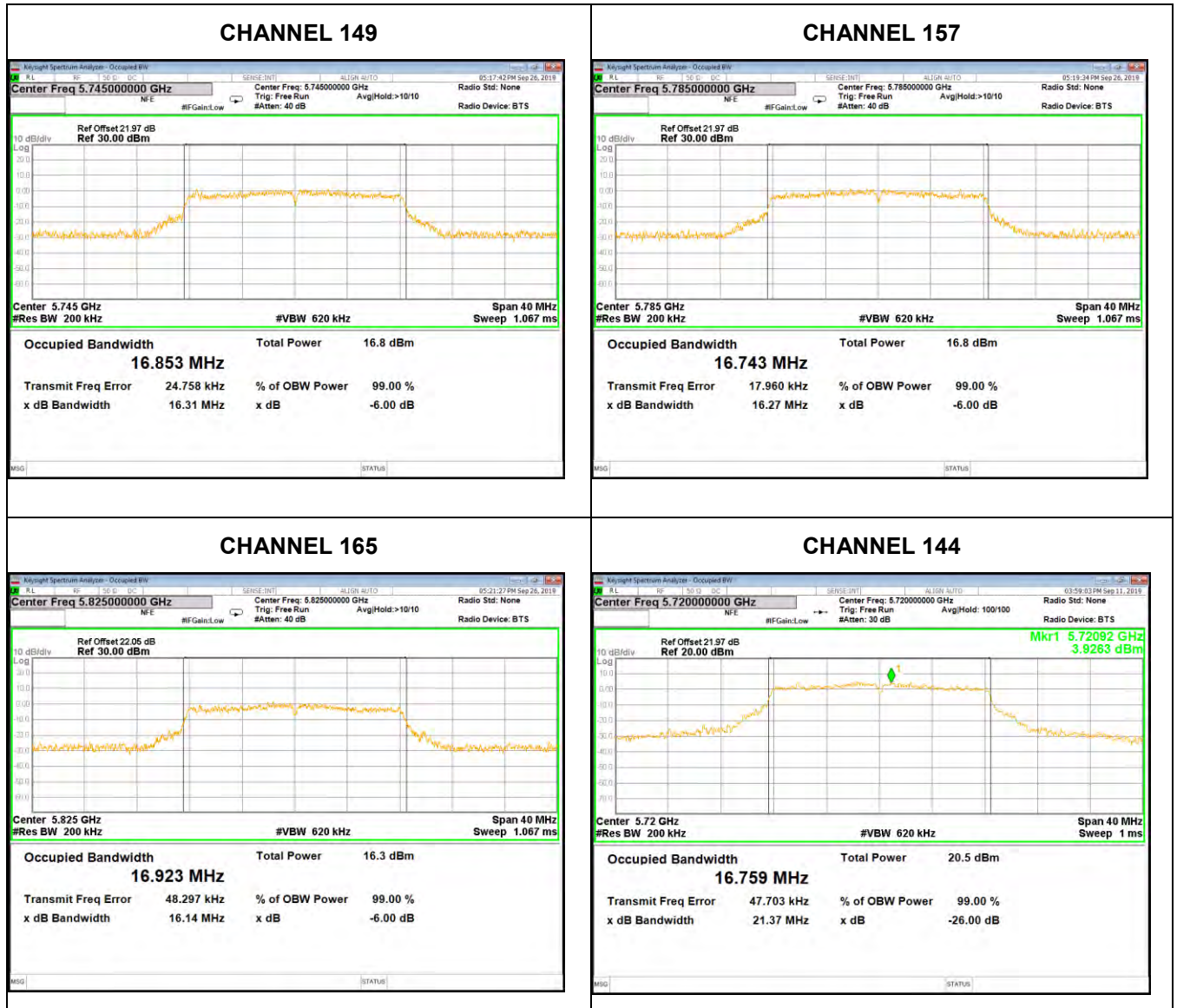
6 dB BW





Channel	Frequency (MHz)	99% BW
149	5745	16.853
157	5785	16.743
165	5825	16.923
144	5720	16.759

99% BW

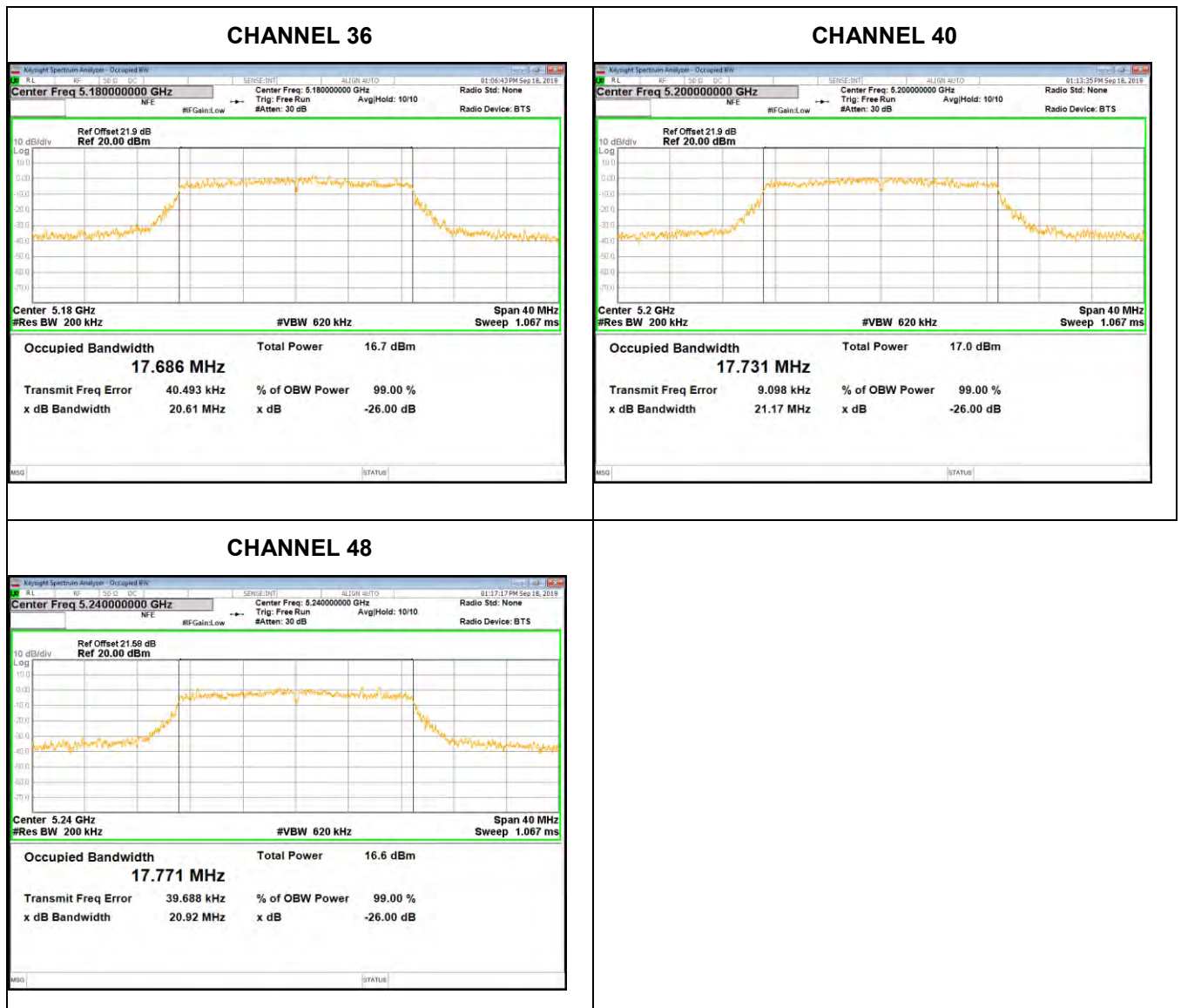




6.2.2. 802.11n HT20 MODE

6.2.2.1. UNII-1 BAND

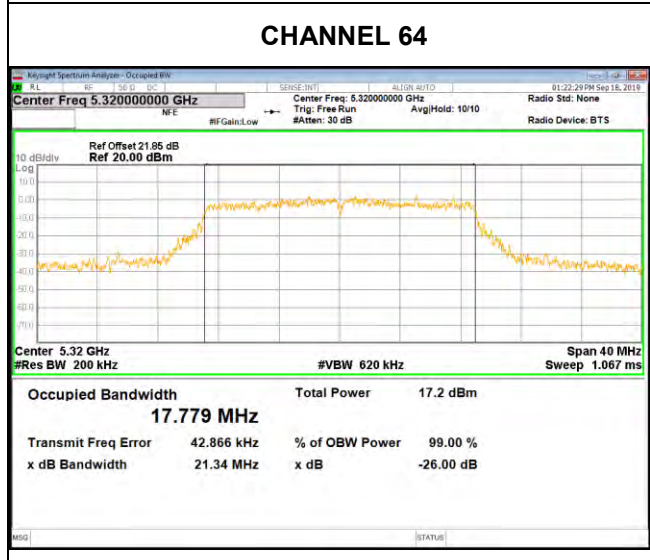
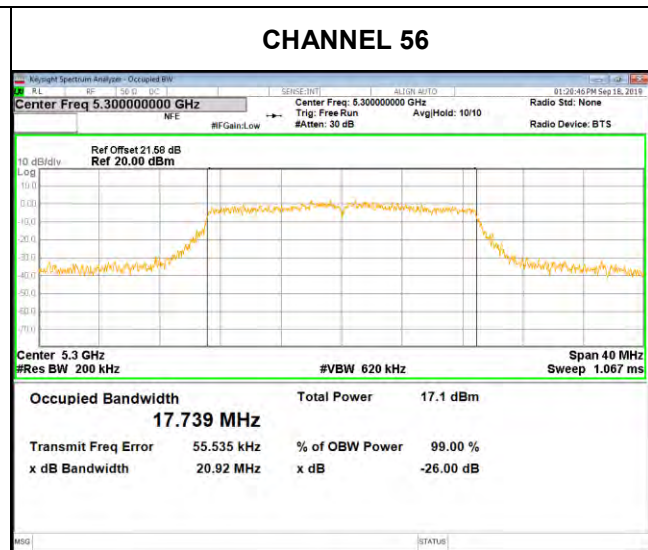
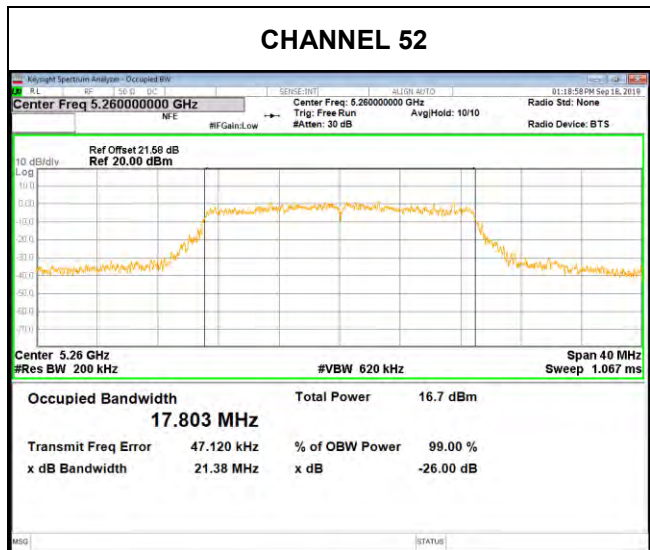
Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
36	5180	20.61	17.686
40	5200	21.17	17.731
48	5240	20.92	17.771





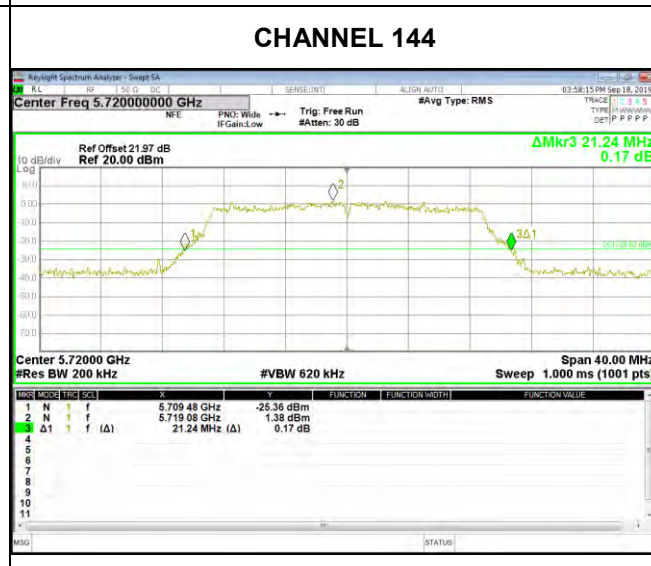
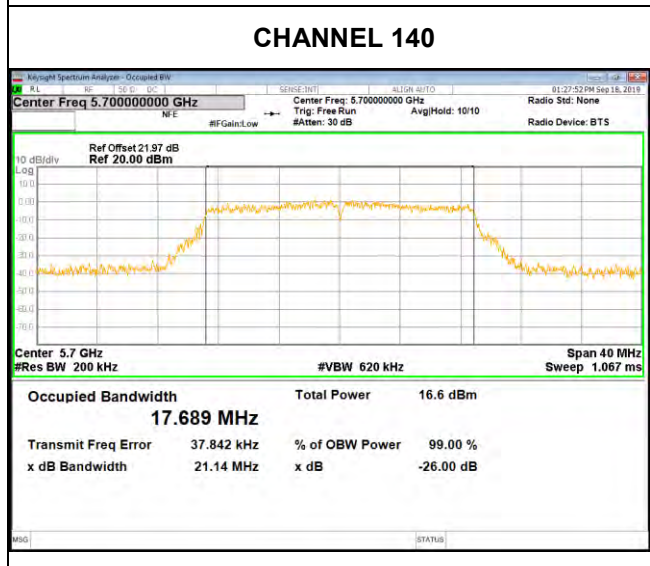
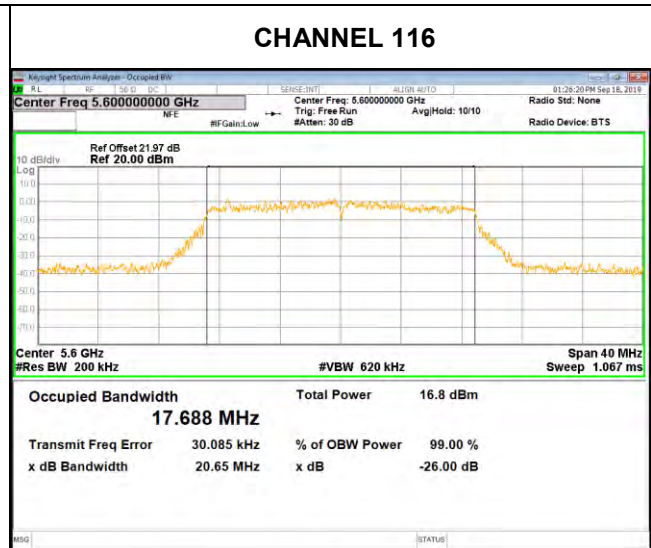
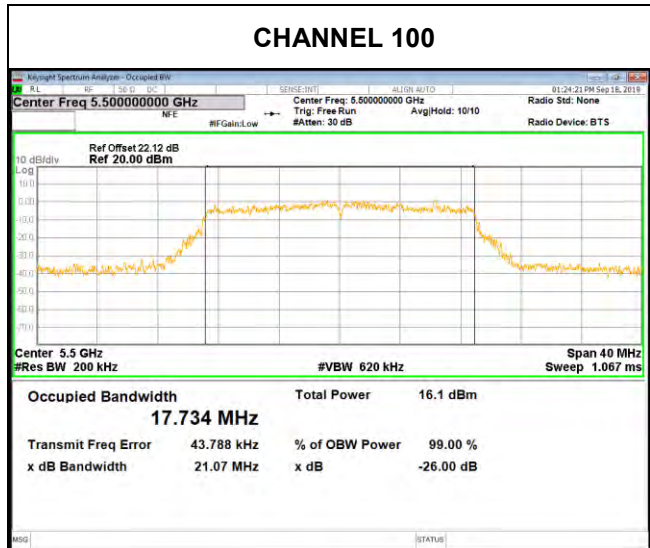
6.2.2.2. UNII-2A BAND

Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
52	5260	21.38	17.803
56	5300	20.92	17.739
64	5320	21.34	17.779



6.2.2.3. UNII-2C BAND

Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
100	5500	21.07	17.734
116	5580	20.65	17.688
140	5700	21.14	17.689
144	5720	15.52	/



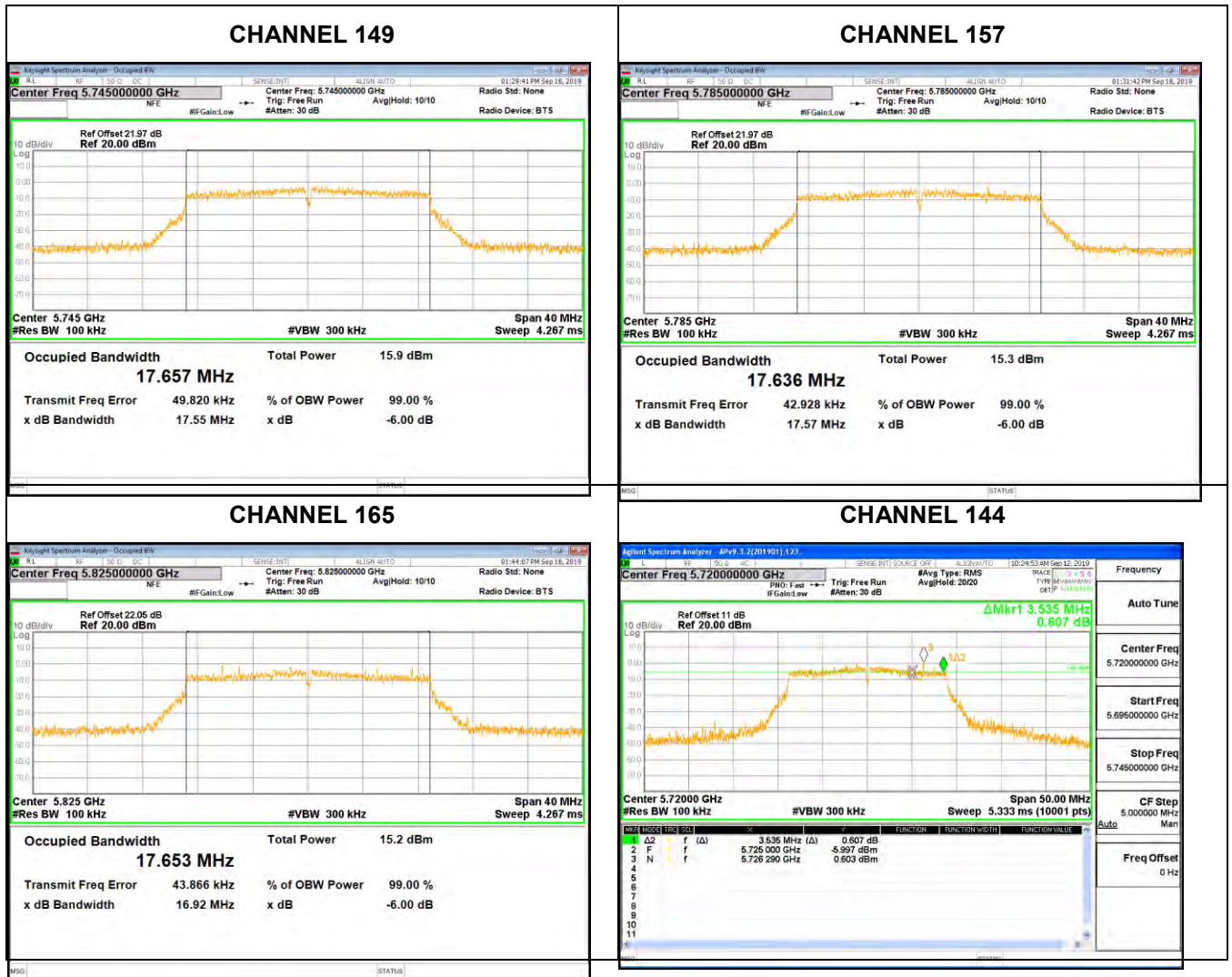
The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.



6.2.2.4. UNII-3 BAND

Channel	Frequency (MHz)	6 dB BW (MHz)	Limit (KHz)	Result
149	5745	17.55	500	PASS
157	5785	17.57	500	PASS
165	5825	16.92	500	PASS
144	5720	3.535	500	PASS

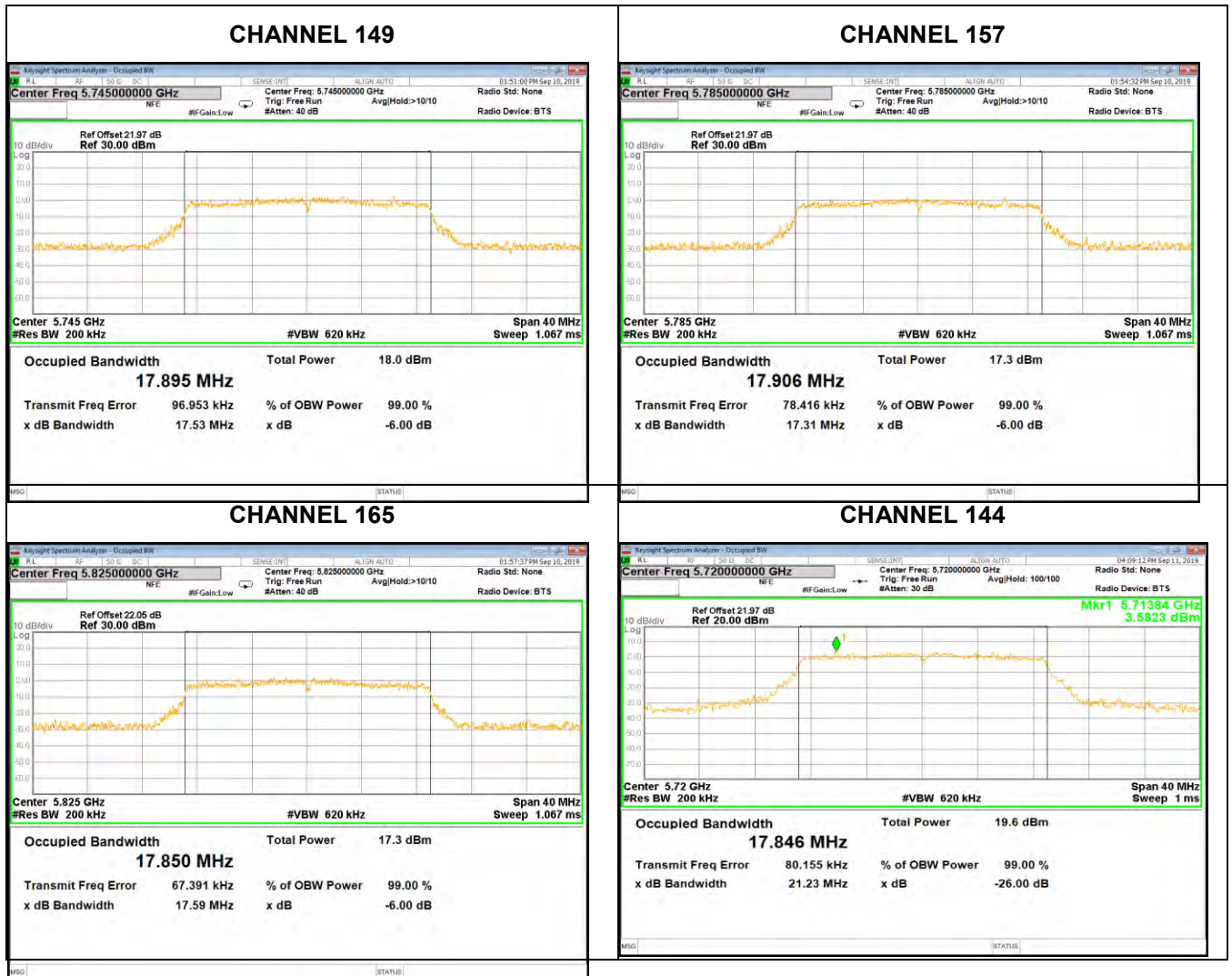
6 dB BW





Channel	Frequency (MHz)	99% BW (MHz)
149	5745	17.895
157	5785	17.906
165	5825	17.850
144	5720	17.846

99% BW

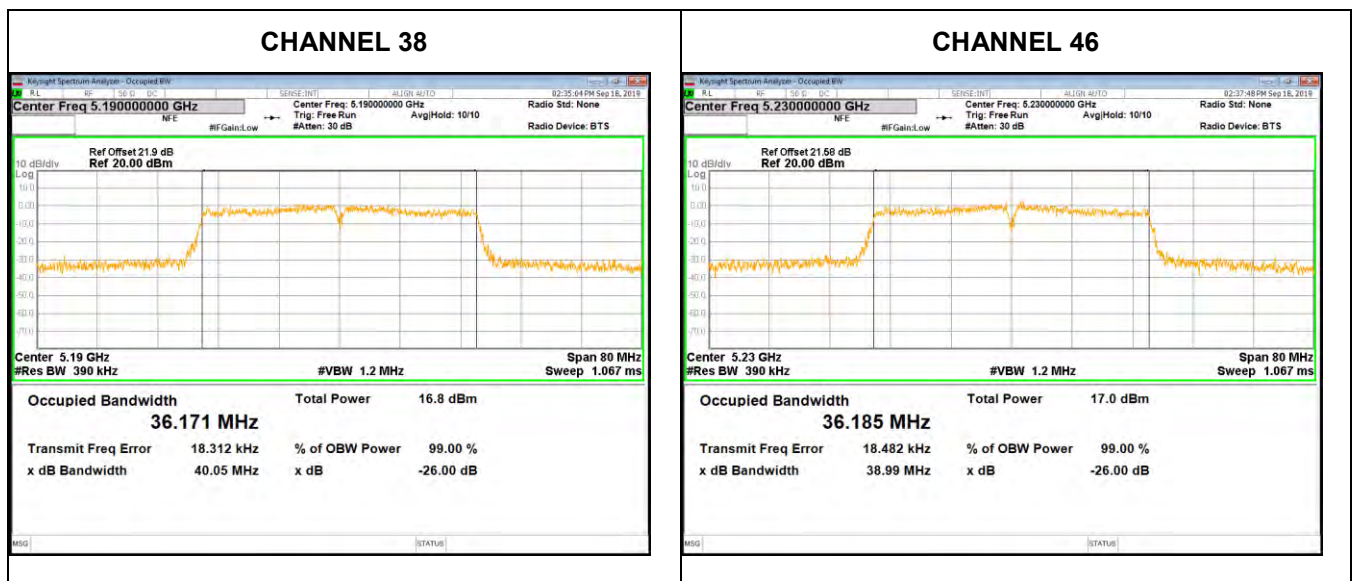




6.2.3. 802.11n HT40 MODE

6.2.3.1. UNII-1 BAND

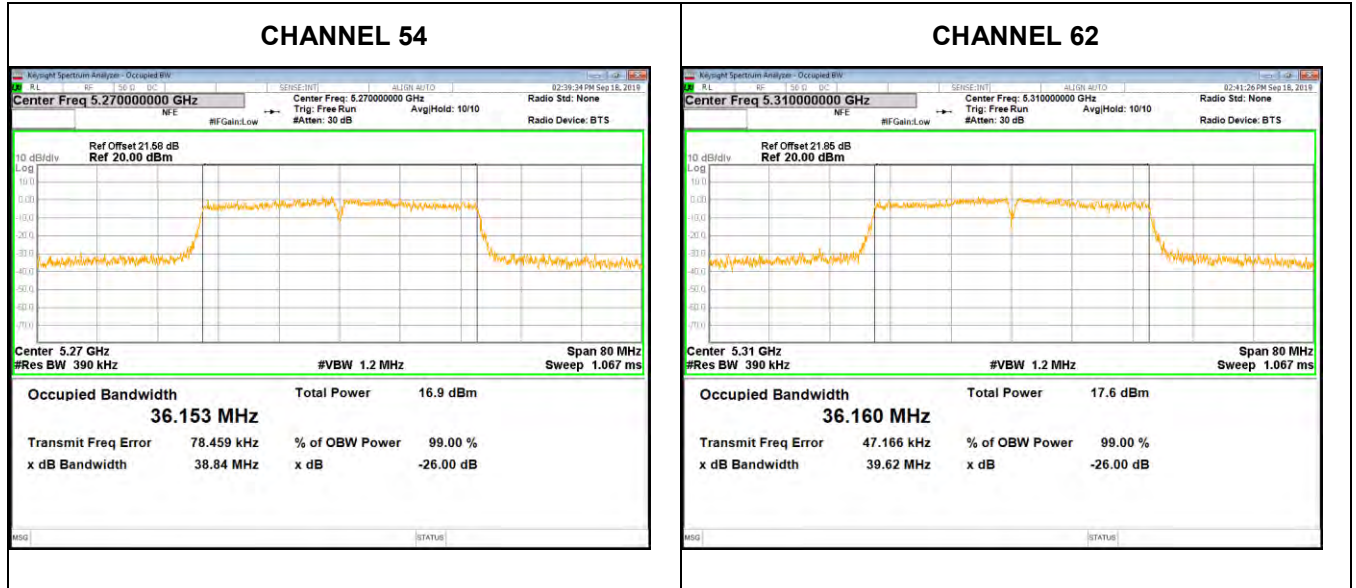
Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
38	5190	40.05	36.171
46	5230	38.99	36.185





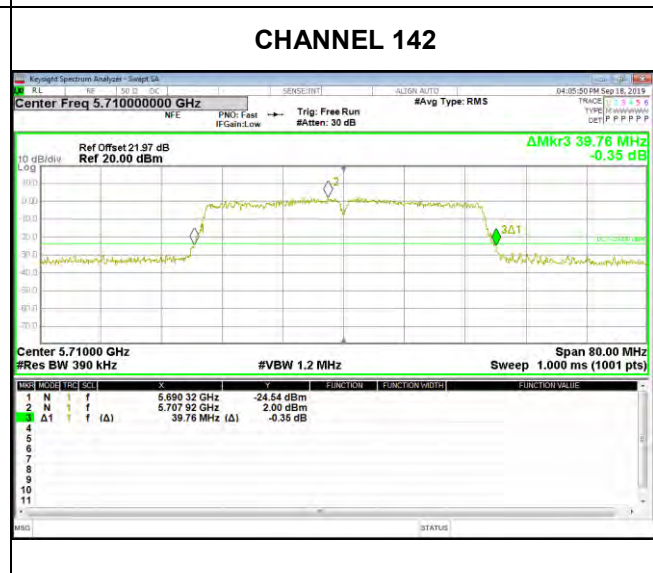
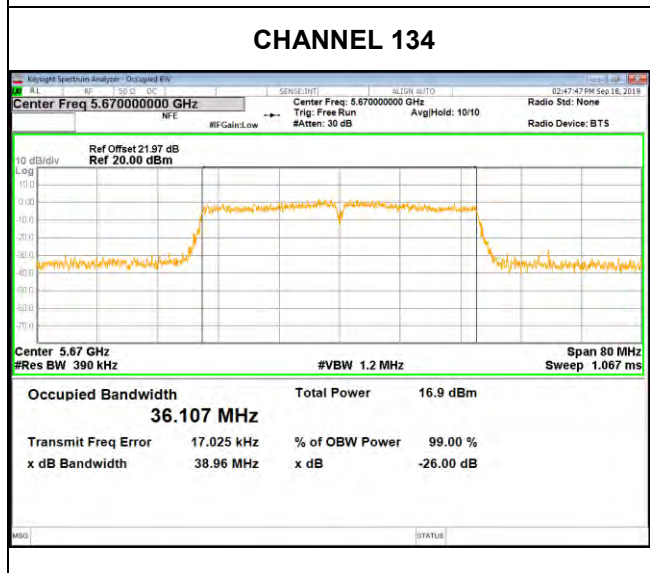
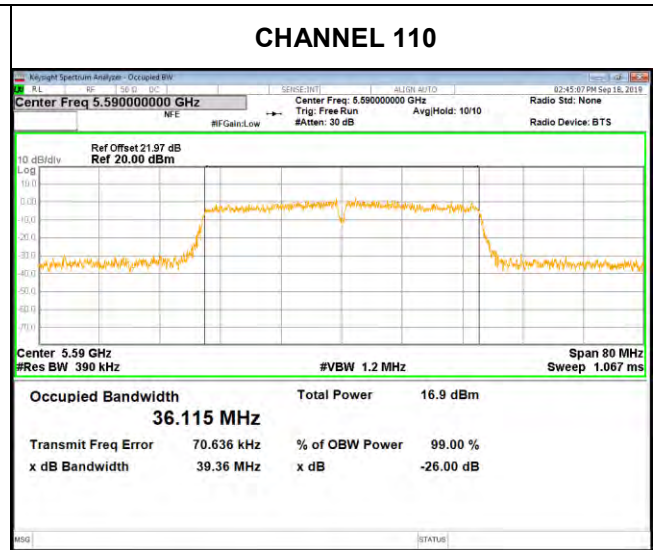
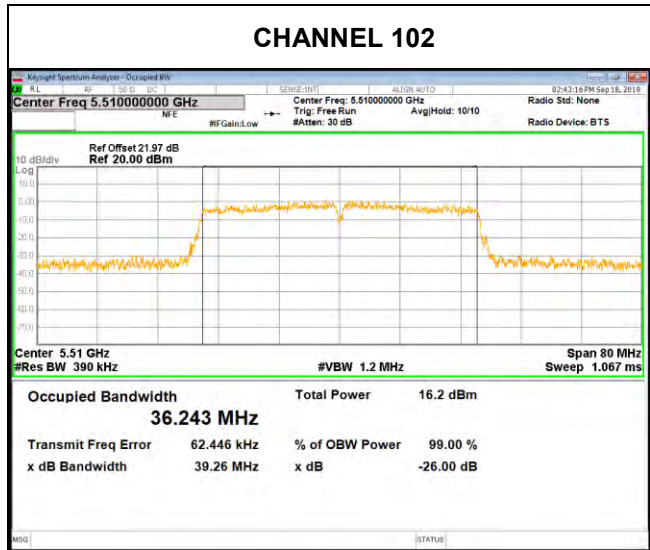
6.2.3.2. UNII-2A BAND

Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
54	5270	38.84	36.153
62	5310	39.62	36.160



6.2.3.3. UNII-2C BAND

Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
102	5510	39.26	36.243
110	5550	39.36	36.115
134	5670	38.96	36.107
142	5710	34.68	/



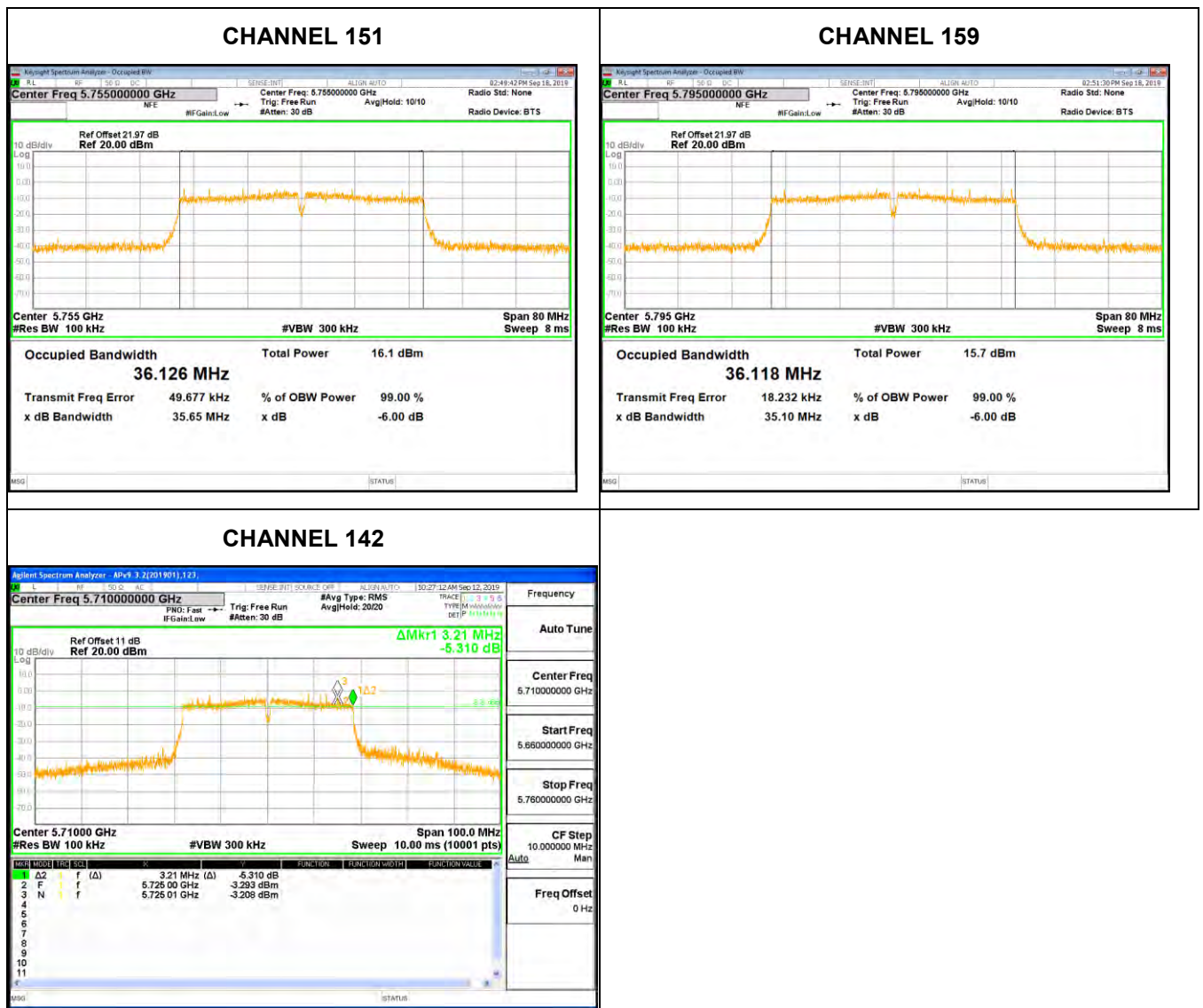
The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.



6.2.3.4. UNII-3 BAND

Channel	Frequency (MHz)	6 dB BW (MHz)	Limit (KHz)	Result
151	5755	35.65	500	PASS
159	5795	35.10	500	PASS
142	5710	3.21	500	PASS

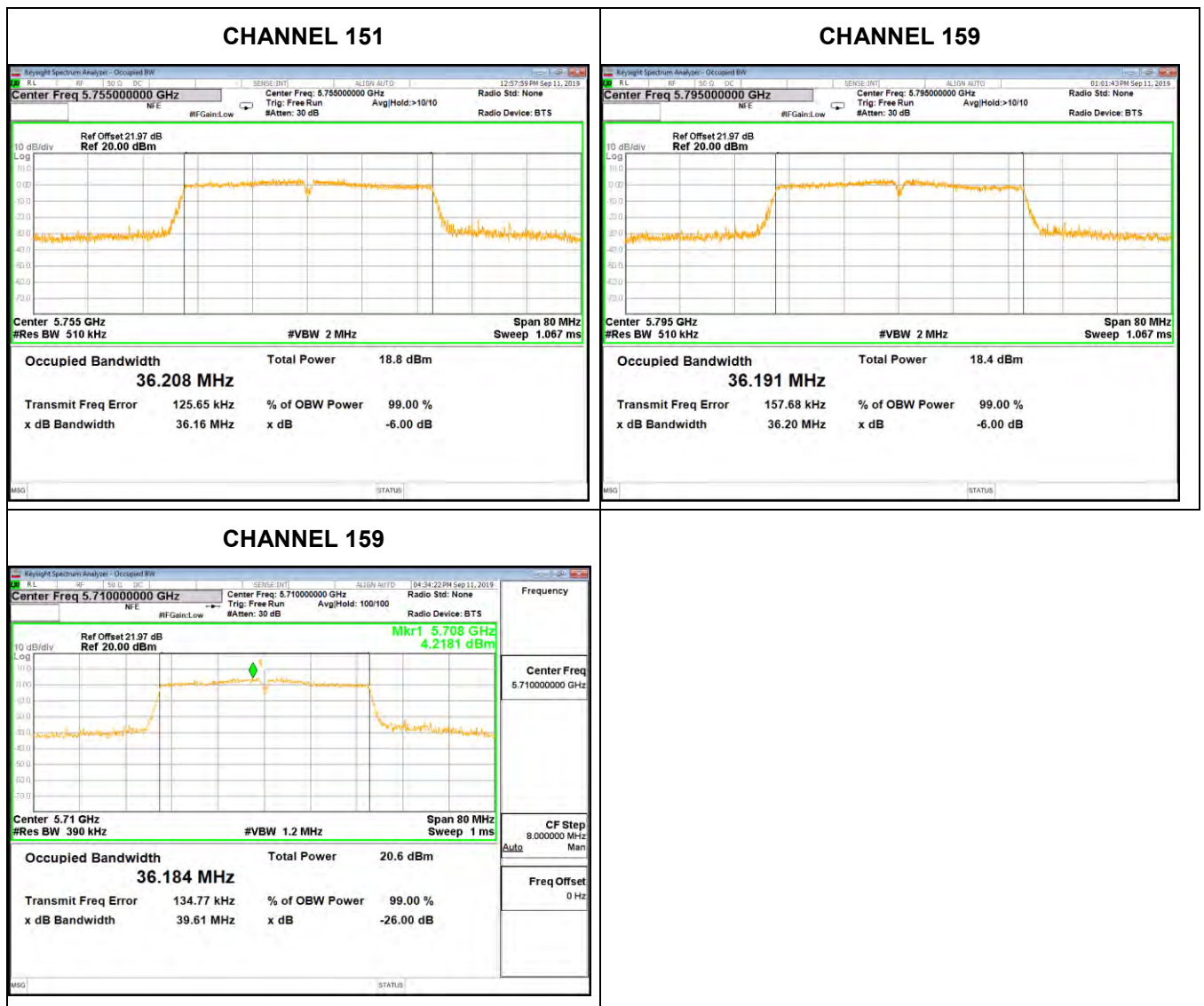
6 dB BW





Channel	Frequency (MHz)	99% BW(MHz)
151	5755	36.208
159	5795	36.191
142	5710	36.184

99% BW

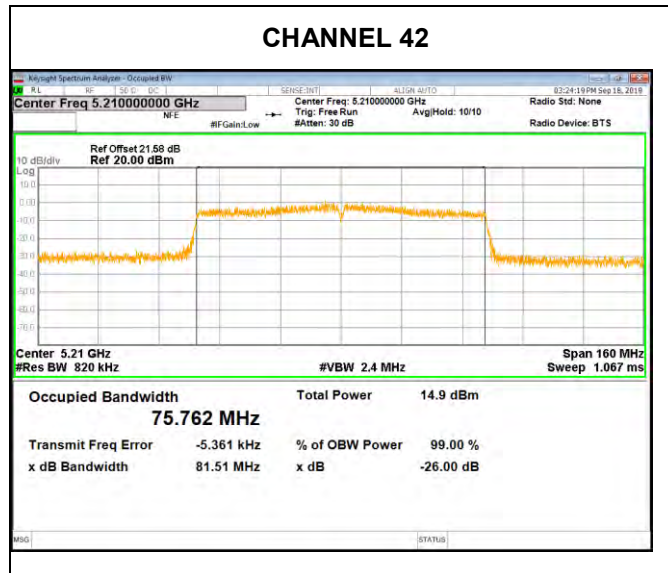




6.2.4. 802.11ac VHT80 MODE

6.2.4.1. UNII-1 BAND

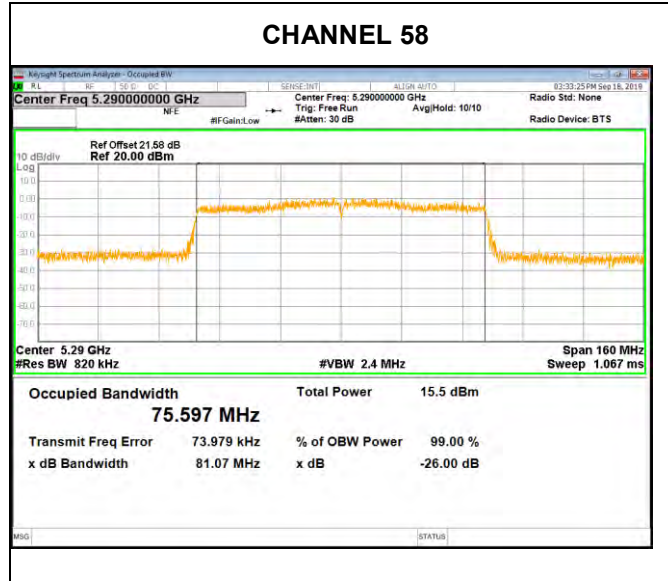
Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
42	5210	81.51	75.762





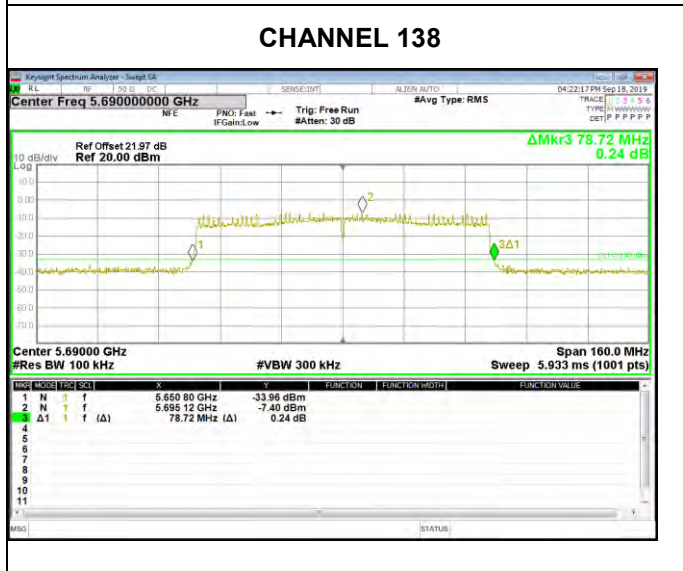
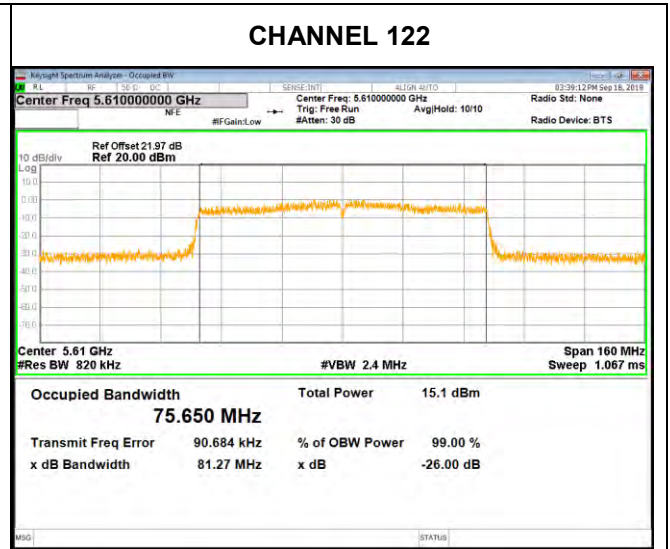
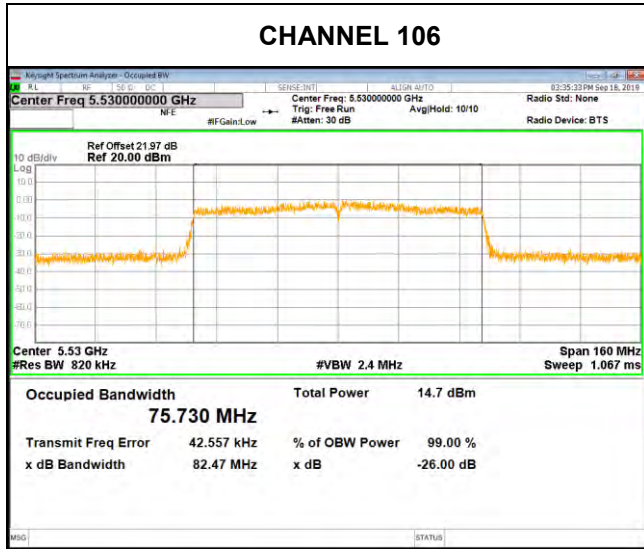
6.2.4.2. UNII-2A BAND

Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
58	5290	81.07	75.597



6.2.4.3. UNII-2C BAND

Channel	Frequency (MHz)	26 dB BW (MHz)	99% BW (MHz)
106	5530	82.47	75.730
122	5610	81.27	75.650
138	5690	74.20	/

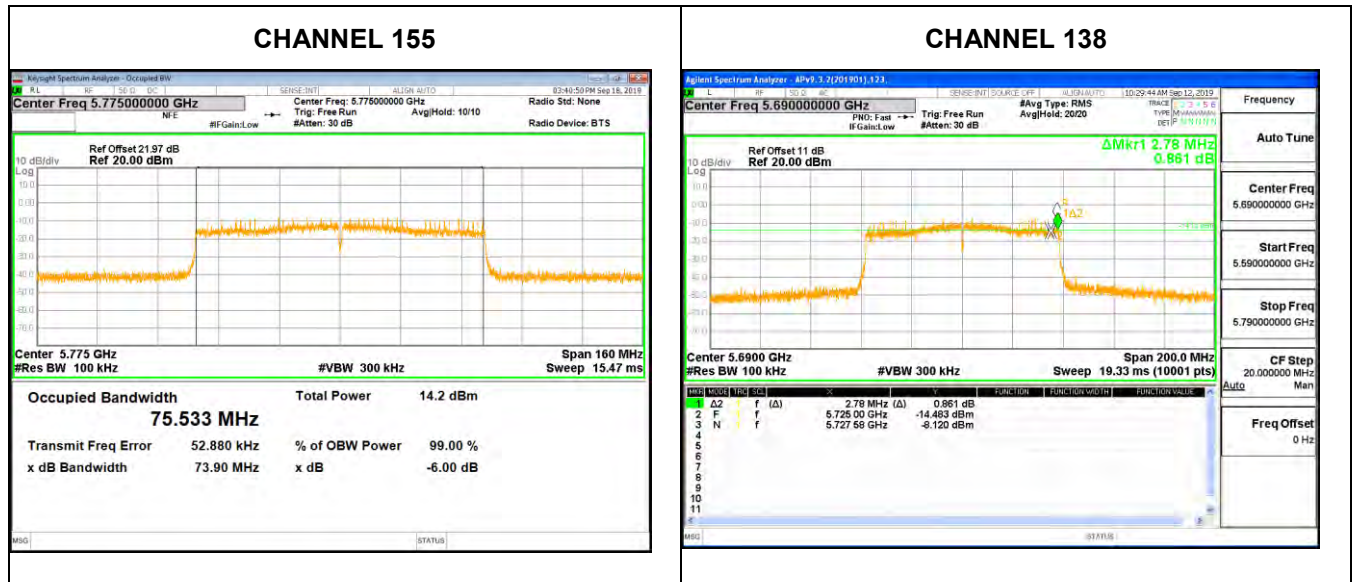




6.2.4.4. UNII-3 BAND

Channel	Frequency (MHz)	6 dB BW (MHz)	Limit (KHz)	Result
155	5775	73.90	500	PASS
138	5690	2.78	500	PASS

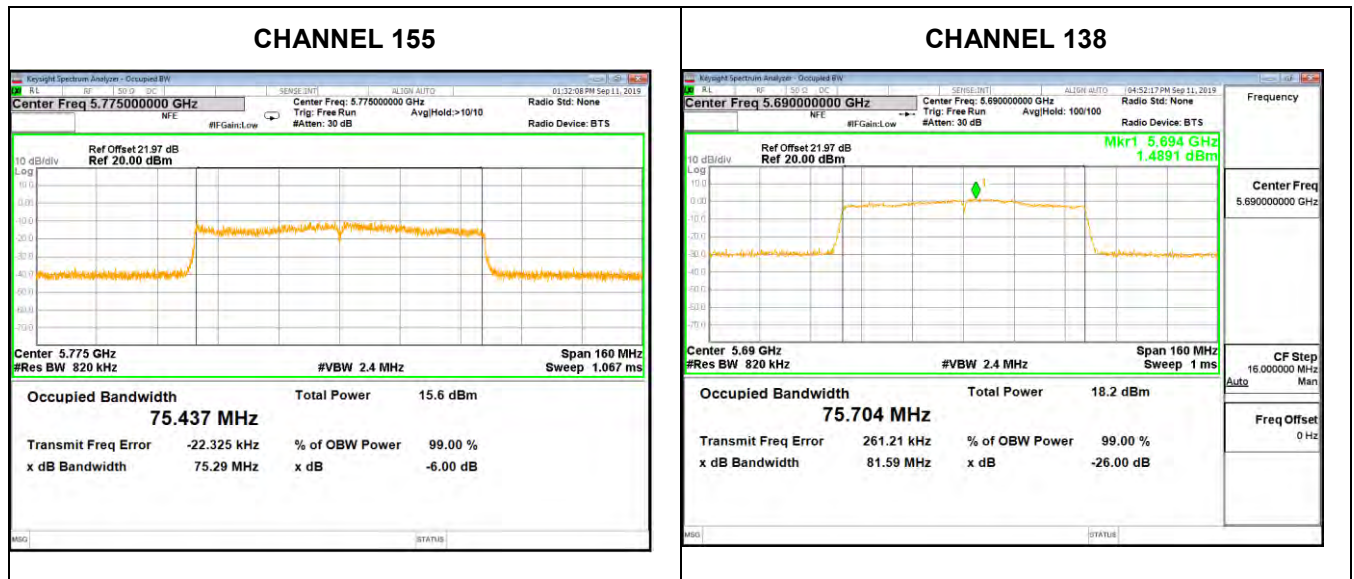
6 dB BW





Channel	Frequency (MHz)	99% BW (MHz)
155	5775	75.437
138	5690	75.704

99% BW





6.3. MAXIMUM CONDUCTED AVERAGE OUTPUT POWER

LIMITS

CFR 47 FCC Part15, Subpart E ISED RSS-247		
Test Item	Limit	Frequency Range (MHz)
Conducted Output Power	For FCC client devices:250mW (24dBm)	5150-5250
	For RSS:e.i.r.p. power: not exceed 200 mW(23dBm) or $10 + 10 \log_{10} B$, B is the 99% emission bandwidth in megahertz	
	250mW (24dBm) For RSS: conducted output power: not exceed 250 mW(24dBm) or $11 + 10 \log_{10} B$, B is the 99% emission bandwidth in megahertz	5250-5350
	250mW (24dBm) For RSS: conducted output power: not exceed 250 mW(24dBm) or $11 + 10 \log_{10} B$, B is the 99% emission bandwidth in megahertz	For FCC:5470-5725 For IC:5470-5600 5650-5725
	1 Watt (30dBm)	5725-5850

Note: If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

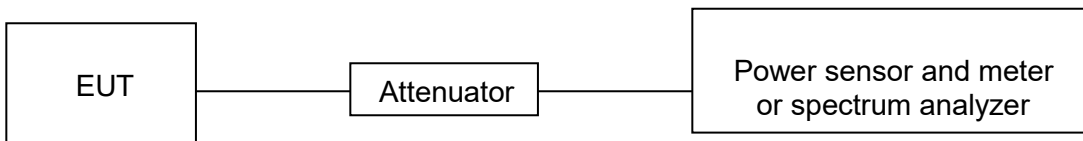
TEST PROCEDURE

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

Connect the EUT to the a broadband average RF power meter, the power meter shall have a video bandwidth that is greater than or equal to the bandwidth and shall utilize a fast-responding diode detector.

Straddle channel power is measured using PXA spectrum analyzer.

TEST SETUP



TEST ENVIRONMENT

Temperature	25.9°C	Relative Humidity	54%
Atmosphere Pressure	101kPa	Test Voltage	AC120V_60Hz



RESULTS

6.3.1. UNII-1 BAND

Mode	Frequency (MHz)	Antenna	CONDUCTED POWER (dBm)	Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
a	5180	A	13.59	24	16.89	22.2	PASS
	5200	A	13.24	24	16.54	22.2	PASS
	5240	A	13.38	24	16.68	22.2	PASS
n HT20	5180	A	12.43	24	15.73	22.5	PASS
	5200	A	12.79	24	16.09	22.5	PASS
	5240	A	12.48	24	15.78	22.5	PASS
ac VHT20	5180	A	12.22	24	15.52	22.5	PASS
	5200	A	12.33	24	15.63	22.5	PASS
	5240	A	12.22	24	15.52	22.5	PASS
n HT40	5190	A	12.34	24	15.64	23	PASS
	5230	A	12.49	24	15.79	23	PASS
ac VHT40	5190	A	12.41	24	15.71	23	PASS
	5230	A	12.42	24	15.72	23	PASS
ac VHT80	5210	A	9.92	24	13.22	23	PASS

- Note: 1. The test results have already included the duty cycle correction factor.
2. All the mode have been tested, but only the worst data recorded in the report.



6.3.2. UNII-2A BAND

Mode	Frequency (MHz)	Antenna	CONDUCTED POWER (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	Result
a	5260	A	13.53	24	23.2	PASS
	5300	A	13.56	24	23.2	PASS
	5320	A	13.86	24	23.2	PASS
n HT20	5260	A	12.35	24	23.5	PASS
	5300	A	12.92	24	23.5	PASS
	5320	A	12.95	24	23.5	PASS
ac VHT20	5260	A	12.25	24	23.5	PASS
	5300	A	12.51	24	23.5	PASS
	5320	A	12.70	24	23.5	PASS
n HT40	5270	A	12.51	24	24	PASS
	5310	A	13.01	24	24	PASS
ac VHT40	5270	A	12.45	24	24	PASS
	5310	A	13.09	24	24	PASS
ac VHT80	5290	A	10.54	24	24	PASS

- Note: 1. The test results have already included the duty cycle correction factor.
2. All the mode have been tested, but only the worst data recorded in the report.



6.3.3. UNII-2C BAND

Mode	Frequency (MHz)	Antenna	CONDUCTED POWER (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	Result
a	5500	A	12.54	24	23.2	PASS
	5580	A	13.35	24	23.2	PASS
	5700	A	13.41	24	23.2	PASS
n HT20	5500	A	11.77	24	23.5	PASS
	5580	A	12.32	24	23.5	PASS
	5700	A	12.38	24	23.5	PASS
ac VHT20	5500	A	11.75	24	23.5	PASS
	5580	A	12.26	24	23.5	PASS
	5700	A	12.30	24	23.5	PASS
n HT40	5510	A	11.71	24	24	PASS
	5550	A	12.26	24	24	PASS
	5670	A	12.42	24	24	PASS
ac VHT40	5510	A	11.64	24	24	PASS
	5550	A	12.37	24	24	PASS
	5670	A	12.39	24	24	PASS
ac VHT80	5530	A	9.89	24	24	PASS
	5610	A	10.29	24	24	PASS

Note: 1. The test results have already included the duty cycle correction factor. About correction Factor please refer to section 6.1.

2. All the mode have been tested, but only the worst data recorded in the report.



6.3.4. UNII-3 BAND

Mode	Frequency (MHz)	Antenna	CONDUCTED POWER (dBm)	Limit (dBm)	Result
a	5745	A	11.84	30	PASS
	5785	A	11.35	30	PASS
	5825	A	11.13	30	PASS
n HT20	5745	A	11.40	30	PASS
	5785	A	10.86	30	PASS
	5825	A	10.33	30	PASS
ac VHT20	5745	A	11.03	30	PASS
	5785	A	10.45	30	PASS
	5825	A	10.32	30	PASS
n HT40	5755	A	11.82	30	PASS
	5795	A	11.25	30	PASS
ac VHT40	5755	A	11.69	30	PASS
	5795	A	11.20	30	PASS
ac VHT80	5775	A	8.96	30	PASS

Note: 1. The test results have already included the duty cycle correction factor. About correction Factor please refer to section 6.1.

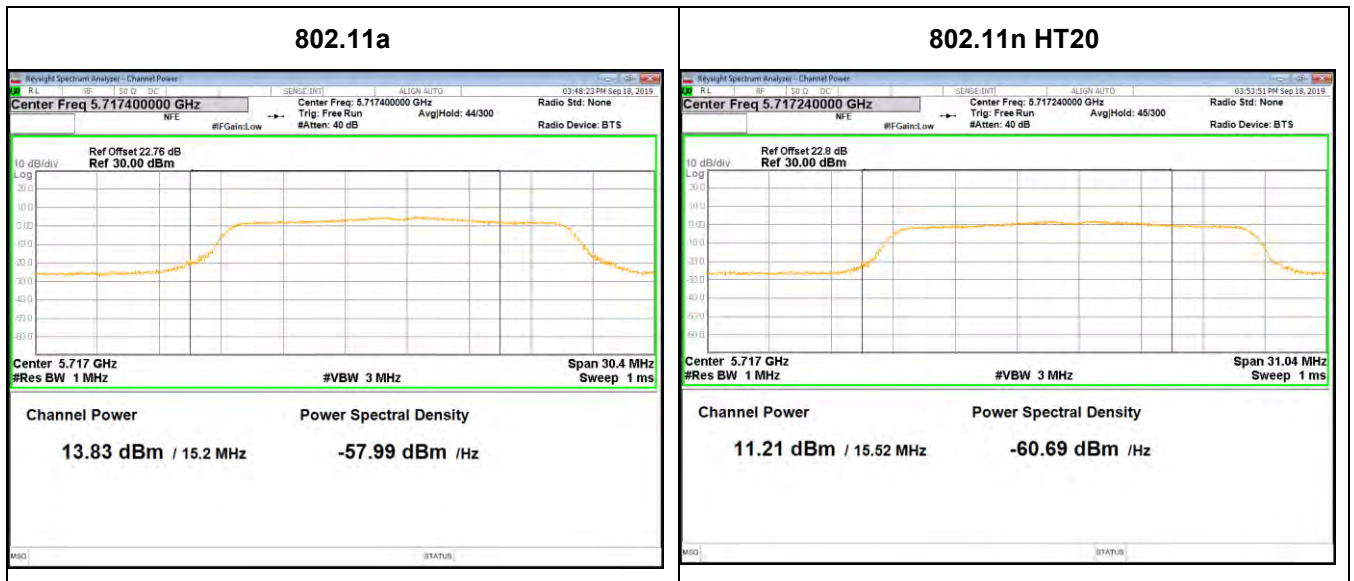
2. All the mode have been tested, but only the worst data recorded in the report.

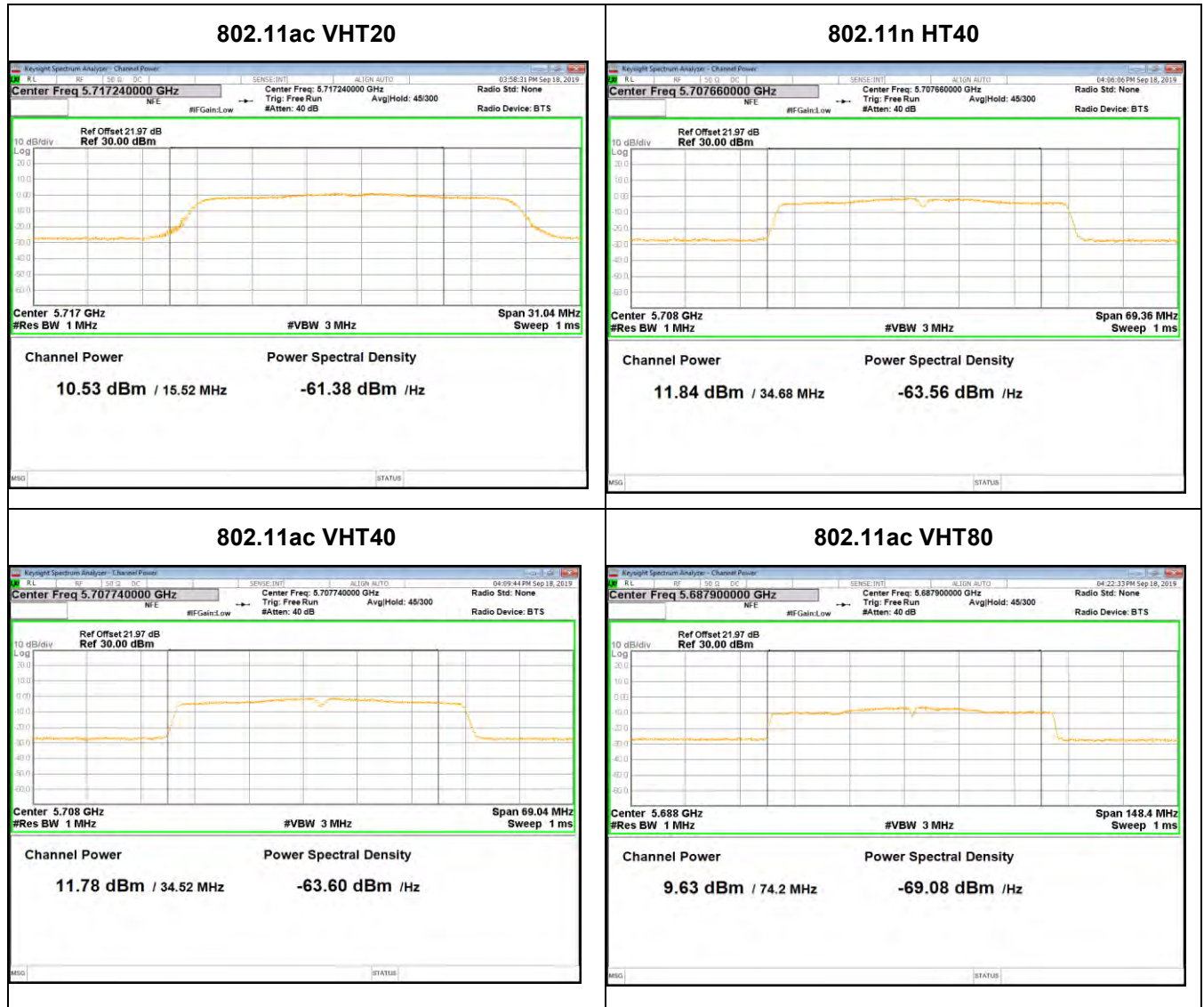


**6.3.5. STRADDLE CHANNEL
UNII-2C BAND**

Mode	Frequency (MHz)	Maximum AVG Conducted Output Power (dBm)	Min 26dB BW(MHz)	FCC Limit (dBm)	ISED Limit (dBm)
a	5720	14.14	15.20	22.8	22.26
n HT20	5720	11.54	15.52	22.9	22.4
ac VHT20	5720	10.67	15.52	22.9	22.4
n HT40	5710	12.11	34.68	24.0	24.0
ac VHT40	5710	12.06	34.52	24.0	24.0
ac VHT80	5690	10.17	74.20	24.0	24.0

- Note: 1. The test results have already included the duty cycle correction factor. About correction Factor please refer to section 6.1.
 2. For test plots, it not included the duty cycle correction factor.
 3. All the mode have been tested, but only the worst data recorded in the report.



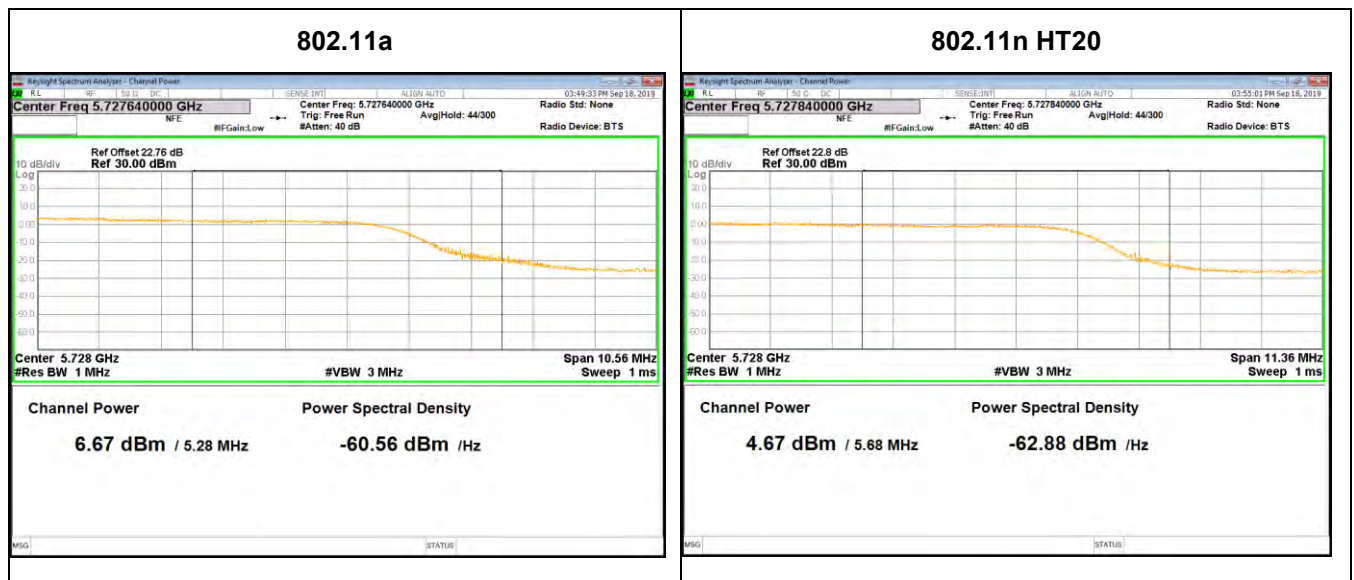


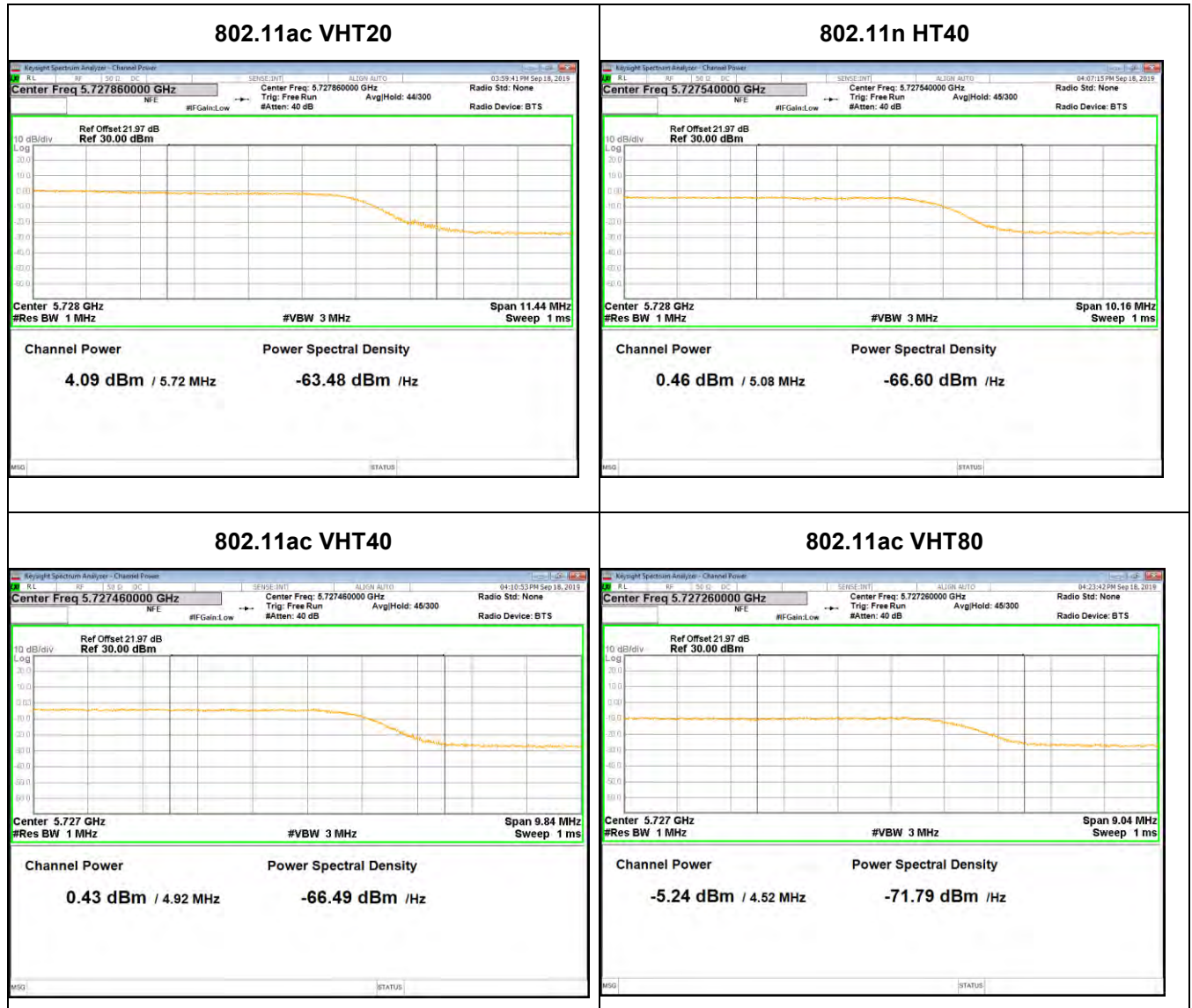


UNII-3 BAND

Mode	Frequency (MHz)	Maximum AVG Conducted Output Power (dBm)	Min 26dB BW(MHz)	Limit (dBm)
a	5720	6.98	5.28	30
n HT20	5720	5.00	5.68	30
ac VHT20	5720	4.23	5.72	30
n HT40	5710	0.73	5.08	30
ac VHT40	5710	0.71	4.92	30
ac VHT80	5690	-4.70	4.52	30

- Note: 1. The test results have already included the duty cycle correction factor. About correction Factor please refer to section 6.1.
 2. For test plots, it not included the duty cycle correction factor.
 3. All the mode have been tested, but only the worst data recorded in the report.







6.4. POWER SPECTRAL DENSITY

LIMITS

CFR 47 FCC Part15, Subpart E ISED RSS-247		
Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	For FCC: Other than Mobile and portable:17dBm/MHz Mobile and portable:11dBm/MHz	5150-5250
	For RSS: e.i.r.p. 10dBm/MHz	
	11dBm/MHz	5250-5350
	11dBm/MHz	For FCC:5470-5725 For IC:5470-5600 5650-5725
	30dBm/500kHz	5725-5850

Note: If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

For U-NII-1, U-NII-2A and U-NII-2C band:

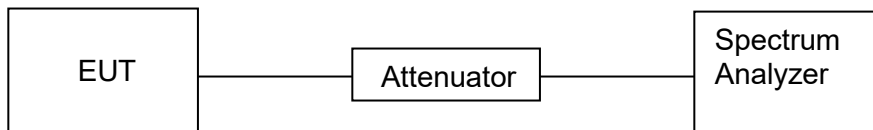
Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	1MHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Trace average
Sweep time	Auto

For U-NII-3:

Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	500kHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Trace average
Sweep time	Auto

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

TEST SETUP



TEST ENVIRONMENT

Temperature	25.9°C	Relative Humidity	54%
Atmosphere Pressure	101kPa	Test Voltage	AC120V_60Hz

RESULTS



6.4.1. UNII-1 BAND

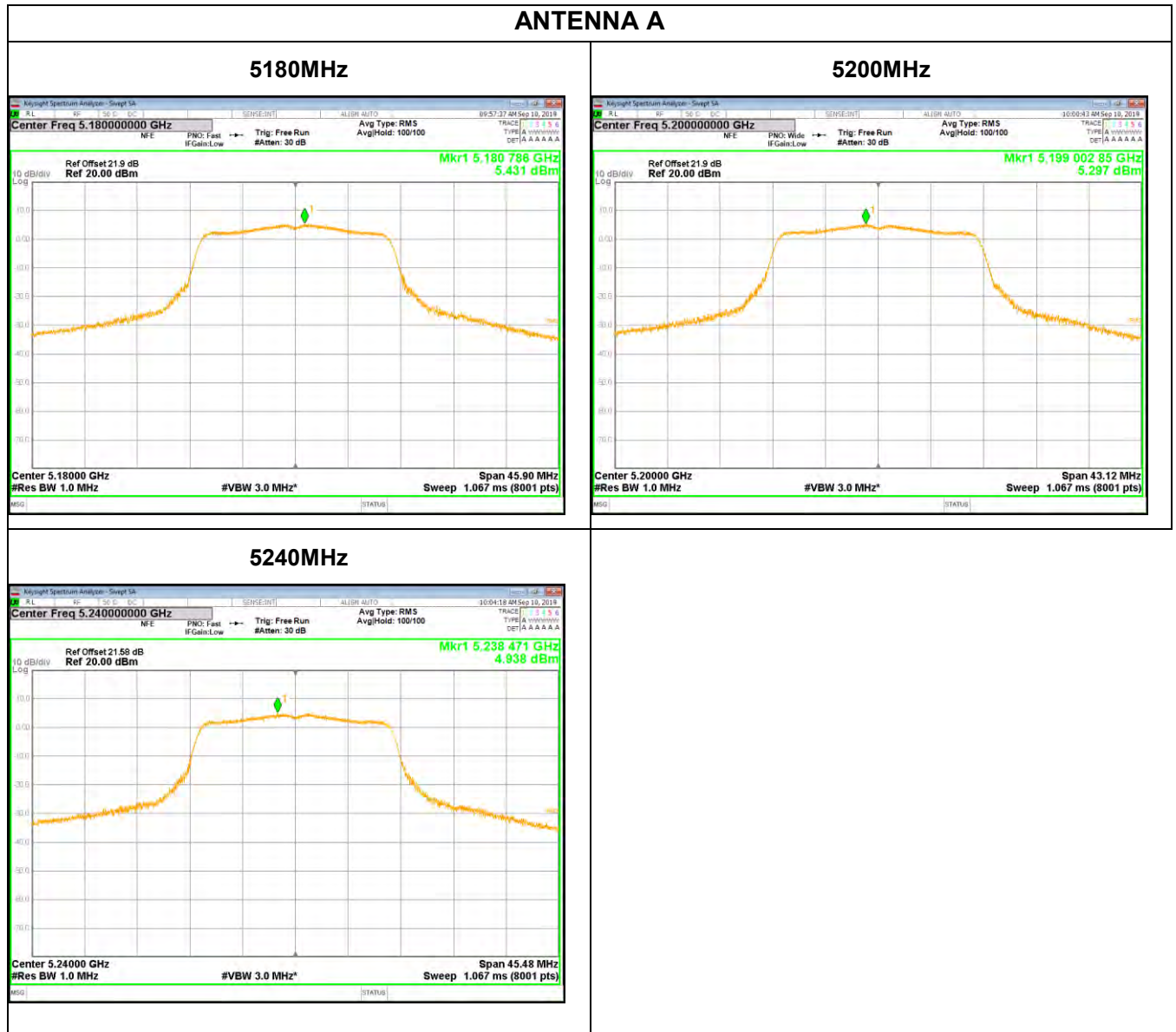
Mode	Frequency (MHz)	Chain	Conducted PSD (dBm)	Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
a	5180	A	5.741	11	9.041	10
	5200	A	5.607	11	8.907	10
	5240	A	5.248	11	8.548	10
n HT20	5180	A	4.030	11	7.330	10
	5200	A	4.079	11	7.379	10
	5240	A	4.373	11	7.673	10
n HT40	5190	A	1.342	11	4.642	10
	5230	A	1.607	11	4.907	10
ac VHT80	5210	A	-4.222	11	-0.922	10

Note: 1.PSD= TEST PLOT Value + 10 log (1/x), where x is the duty cycle.
2.About correction Factor please refer to section 6.1.



TEST PLOT

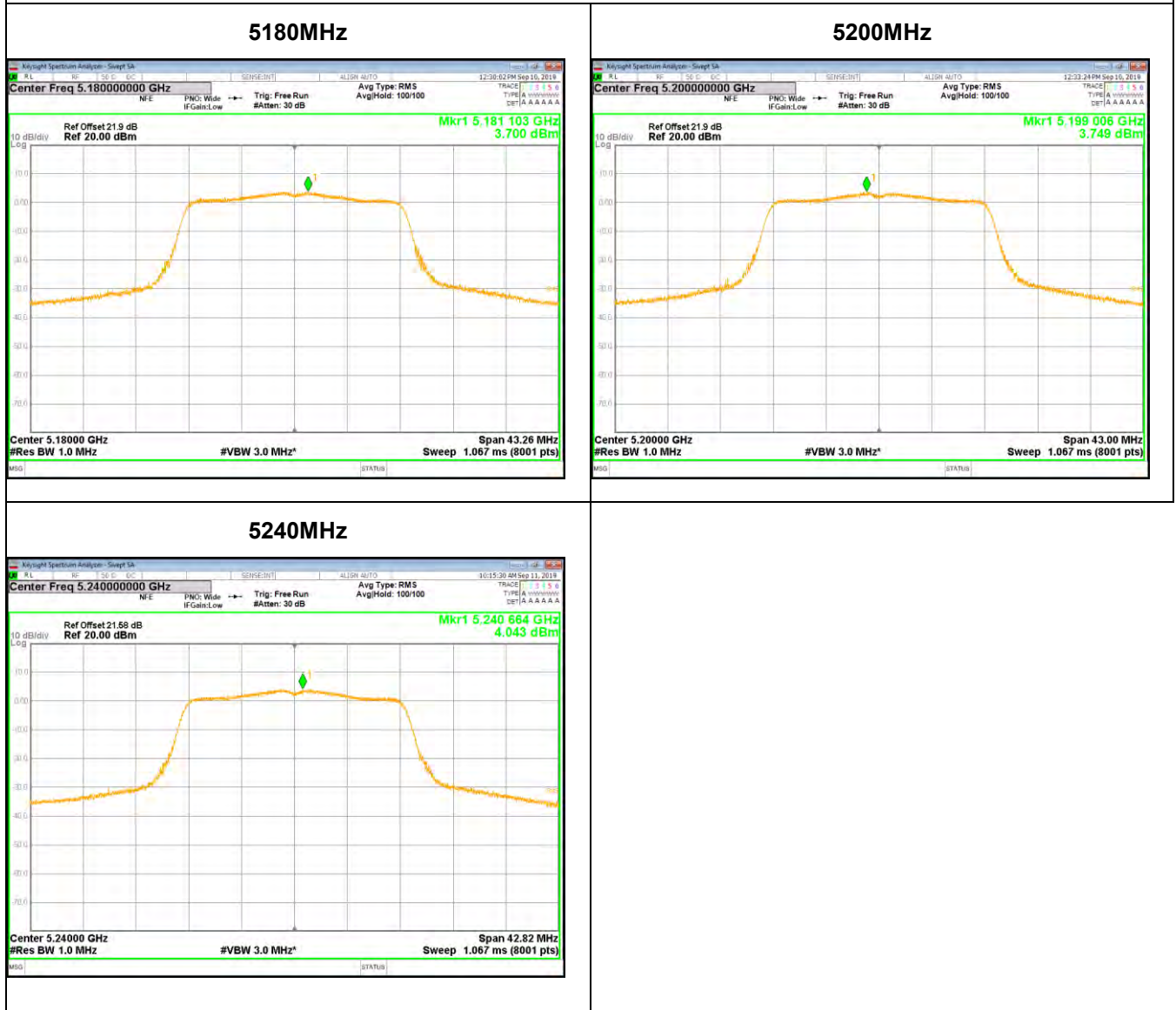
802.11a



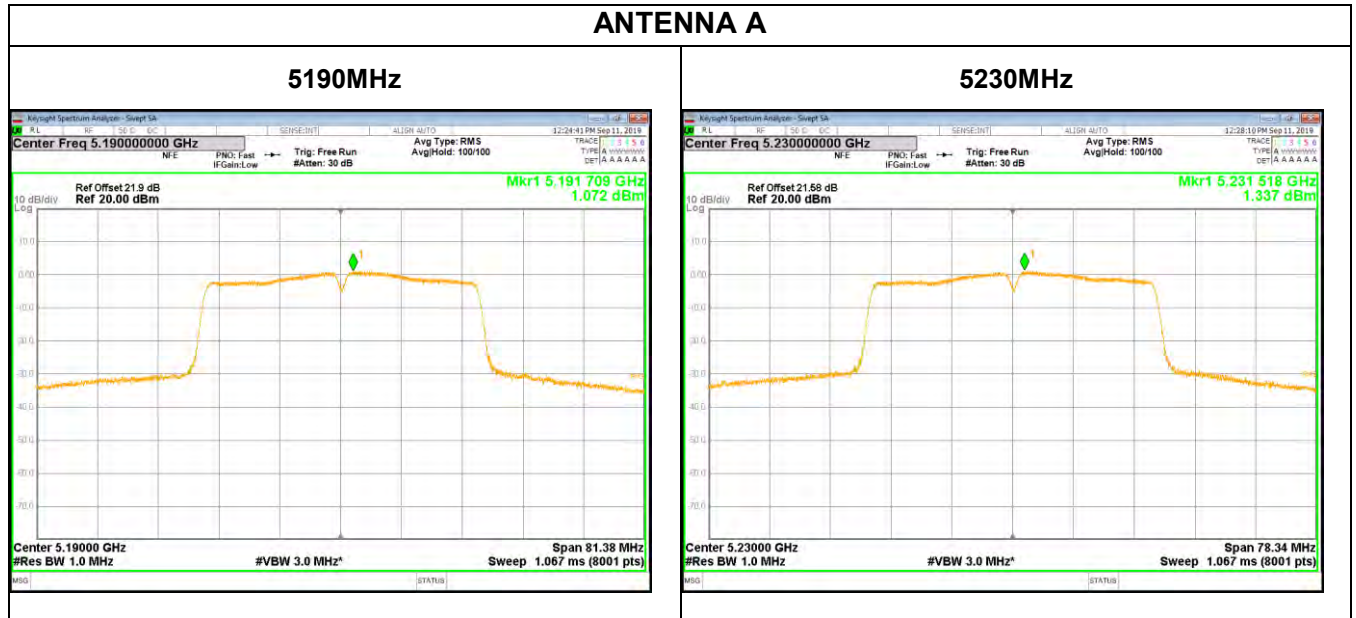


802.11n HT20

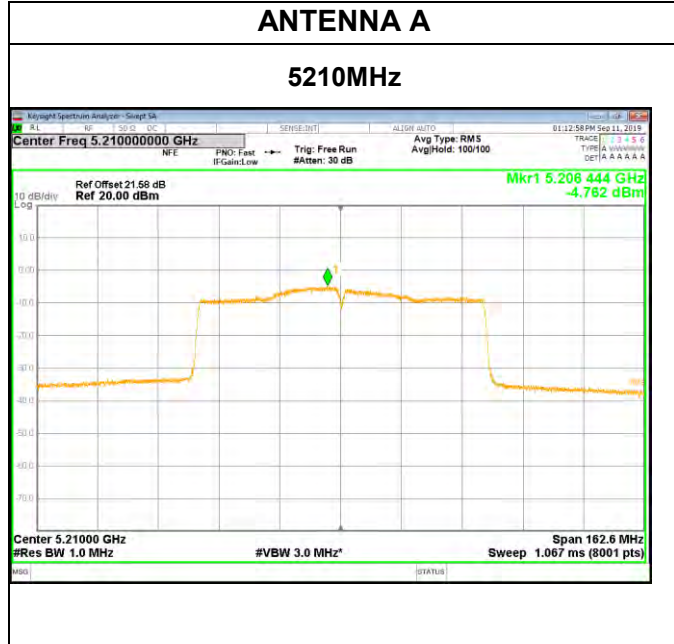
ANTENNA A



802.11n HT40



802.11ac VHT80





6.4.1. UNII-2A BAND

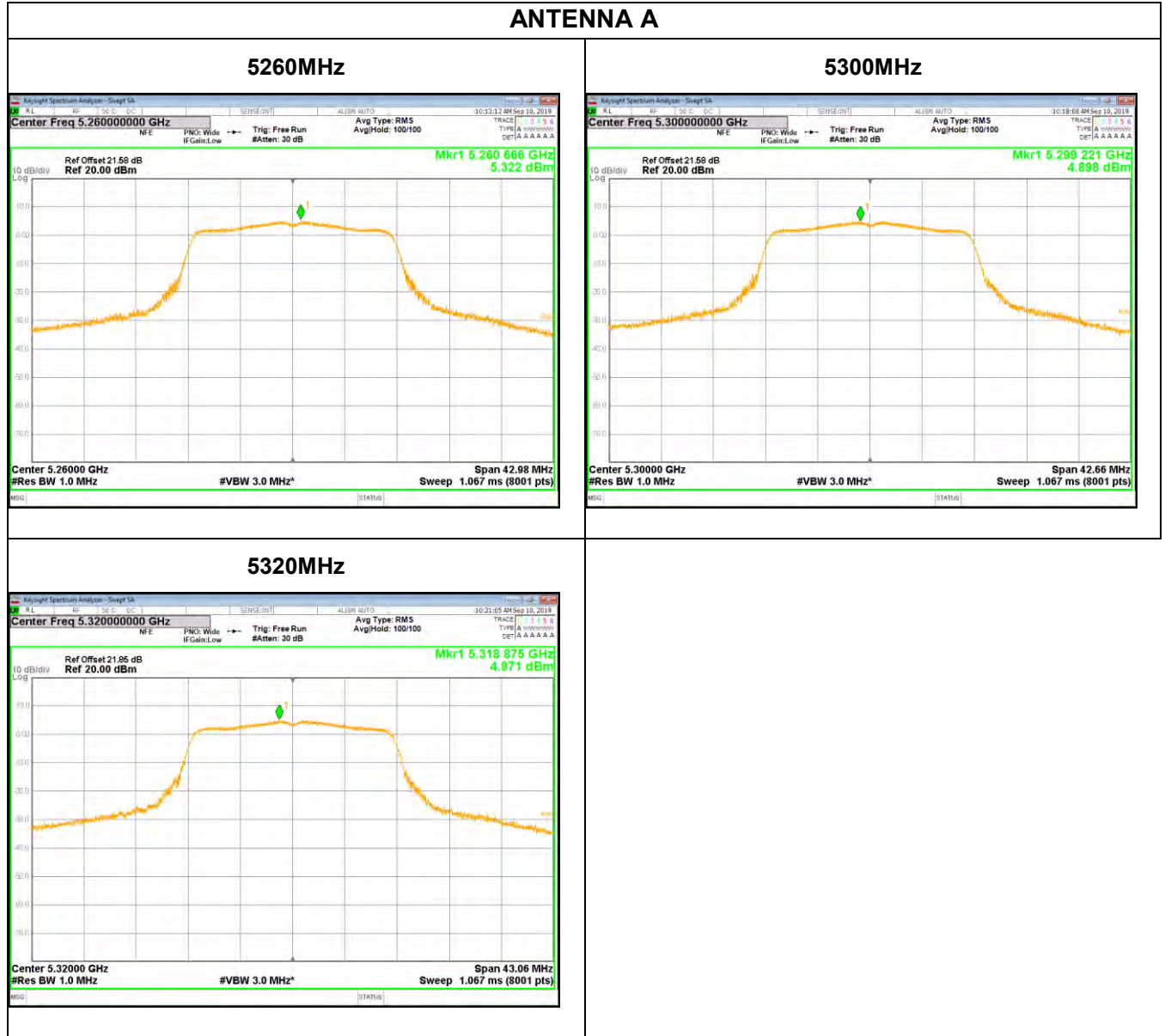
Mode	Frequency (MHz)	Chain	Conducted PSD (dBm)	Limit (dBm)
a	5260	A	5.632	11
	5300	A	5.208	11
	5320	A	5.281	11
n HT20	5260	A	3.577	11
	5300	A	4.153	11
	5320	A	5.073	11
n HT40	5270	A	1.461	11
	5310	A	1.892	11
ac VHT80	5290	A	-4.124	11

Note: 1.PSD= TEST PLOT Value + 10 log (1/x), where x is the duty cycle.
2.About correction Factor please refer to section 6.1



TEST PLOT

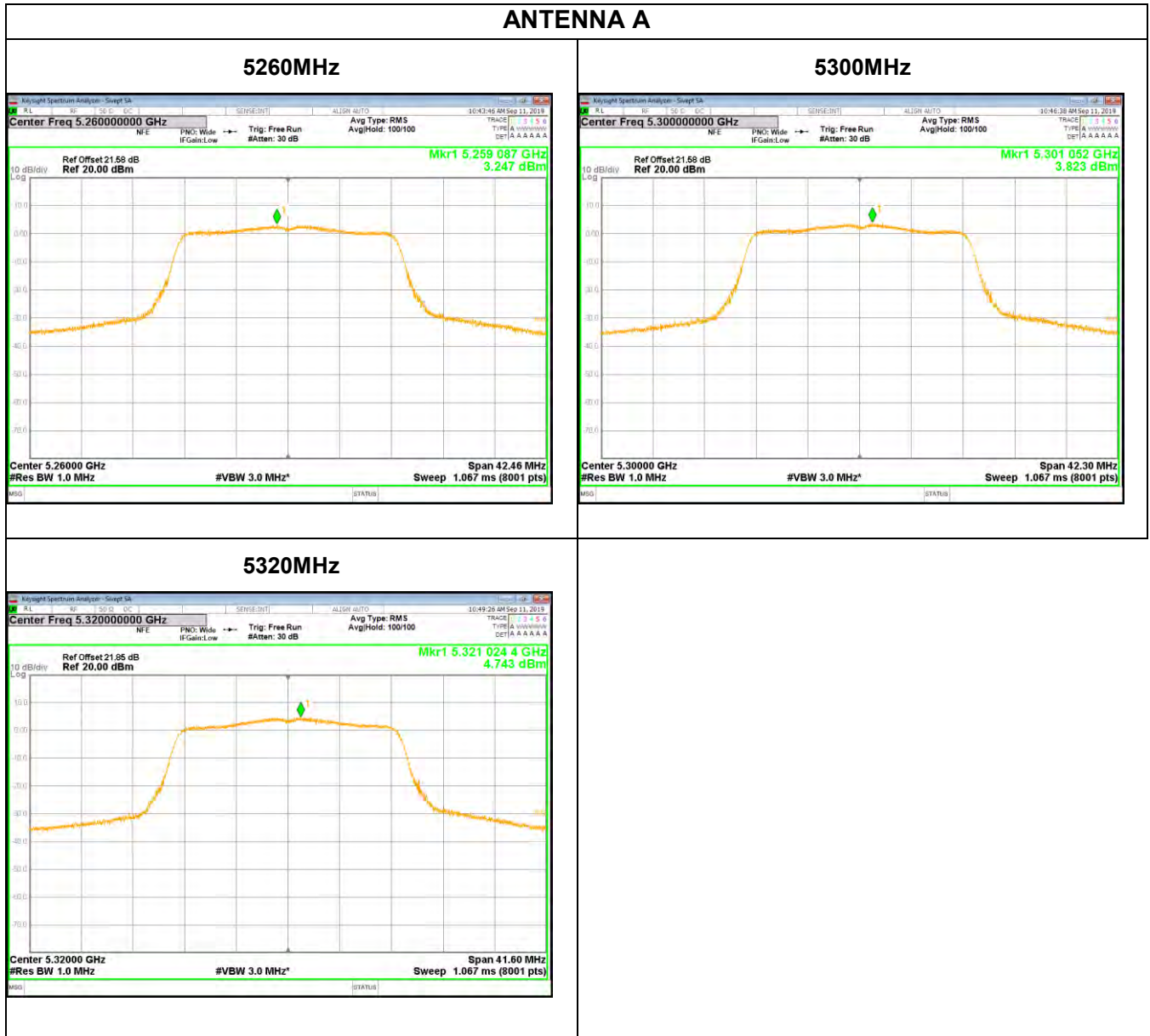
802.11a





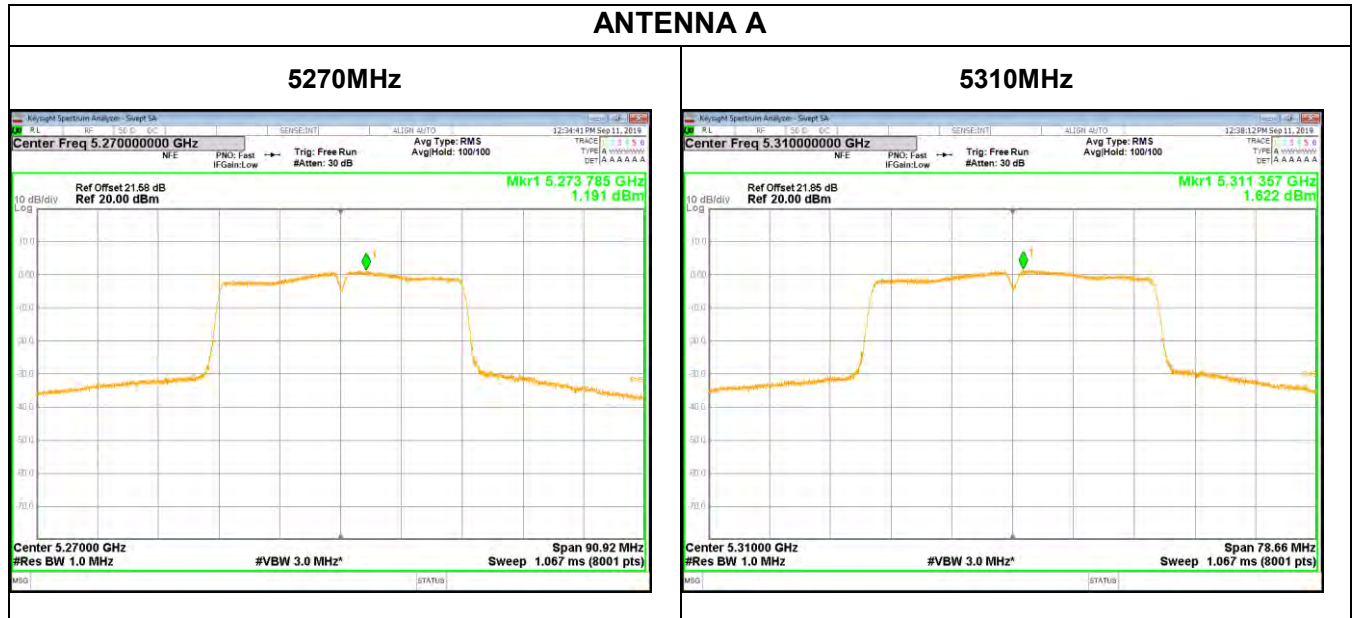
802.11n HT20

ANTENNA A

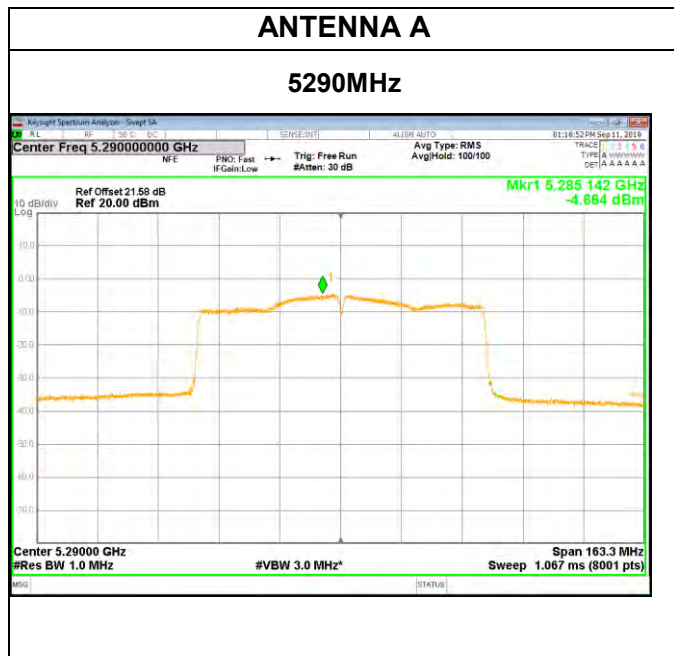




802.11n HT40



802.11ac VHT80





6.4.2. UNII-2C BAND

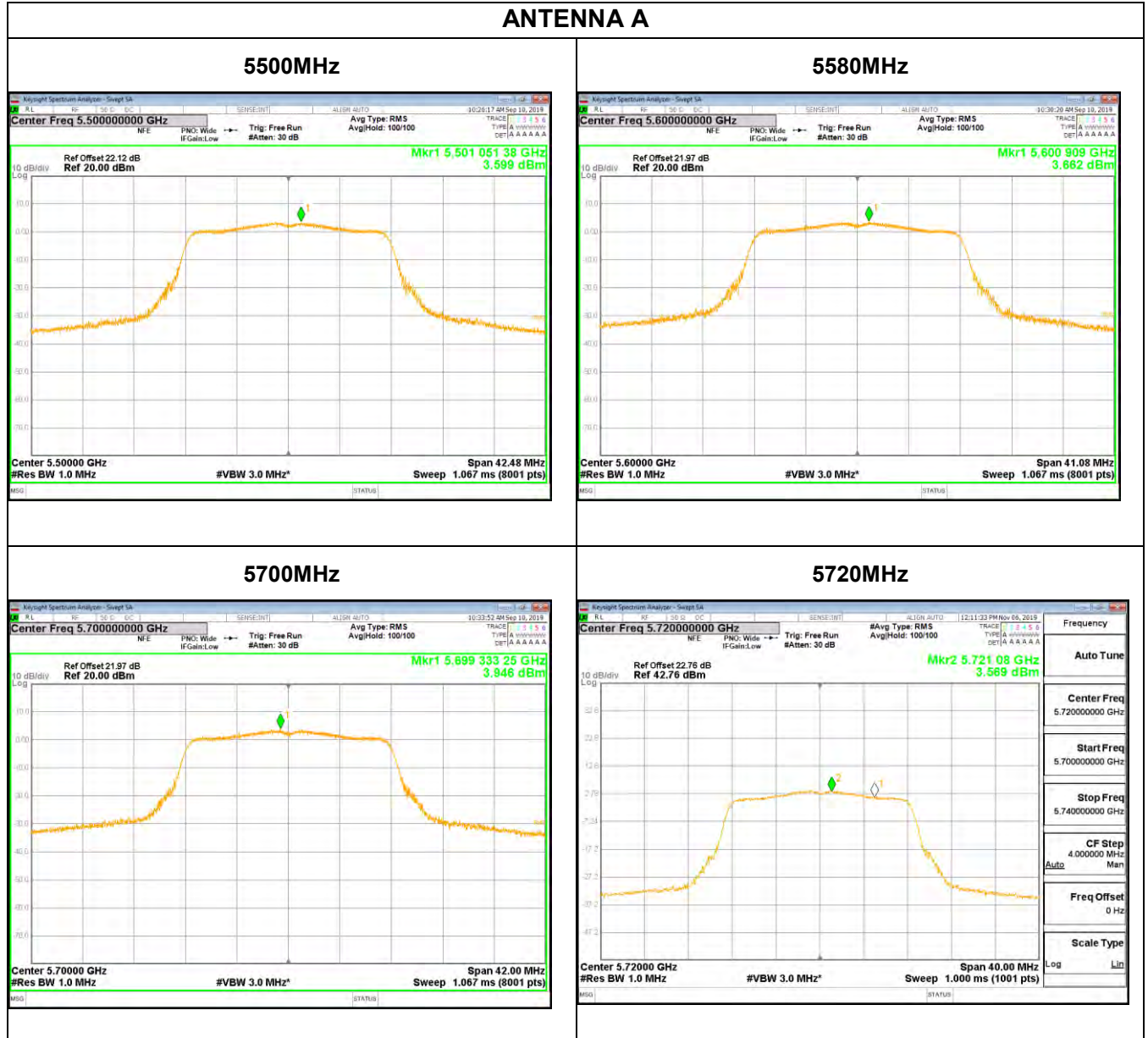
Mode	Frequency (MHz)	Chain	Conducted PSD (dBm)	Limit (dBm)
a	5500	A	3.909	11
	5580	A	3.972	11
	5700	A	4.256	11
	5720	A	3.879	11
n HT20	5500	A	4.312	11
	5580	A	3.908	11
	5700	A	4.622	11
	5720	A	1.418	11
n HT40	5510	A	0.344	11
	5550	A	0.925	11
	5670	A	1.646	11
	5710	A	-2.404	11
ac VHT80	5530	A	-4.681	11
	5610	A	-4.045	11
	5690	A	-6.471	11

Note: 1.PSD= TEST PLOT Value + 10 log (1/x), where x is the duty cycle.
2.About correction Factor please refer to section 6.1



TEST PLOT

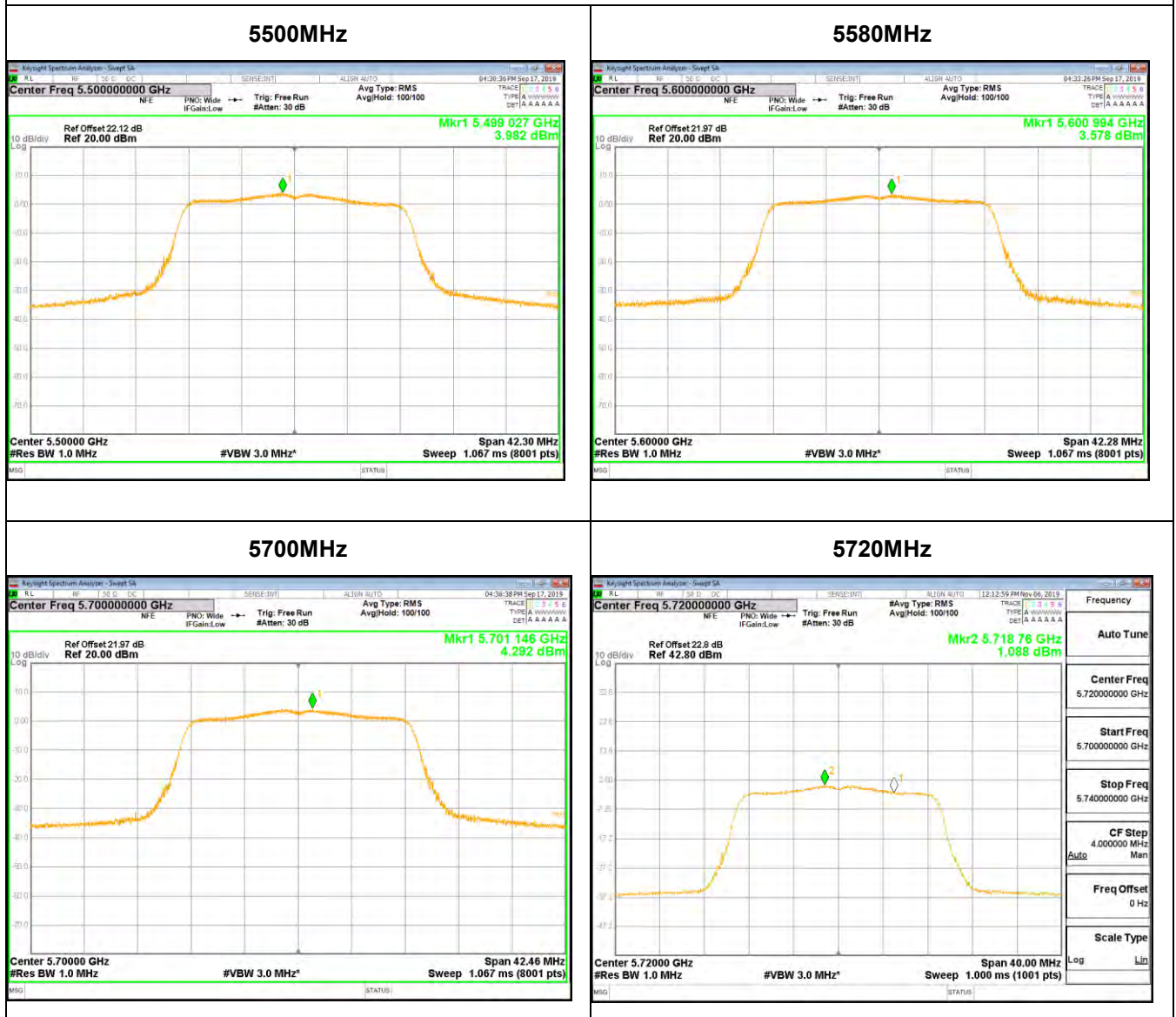
802.11a





802.11n HT20

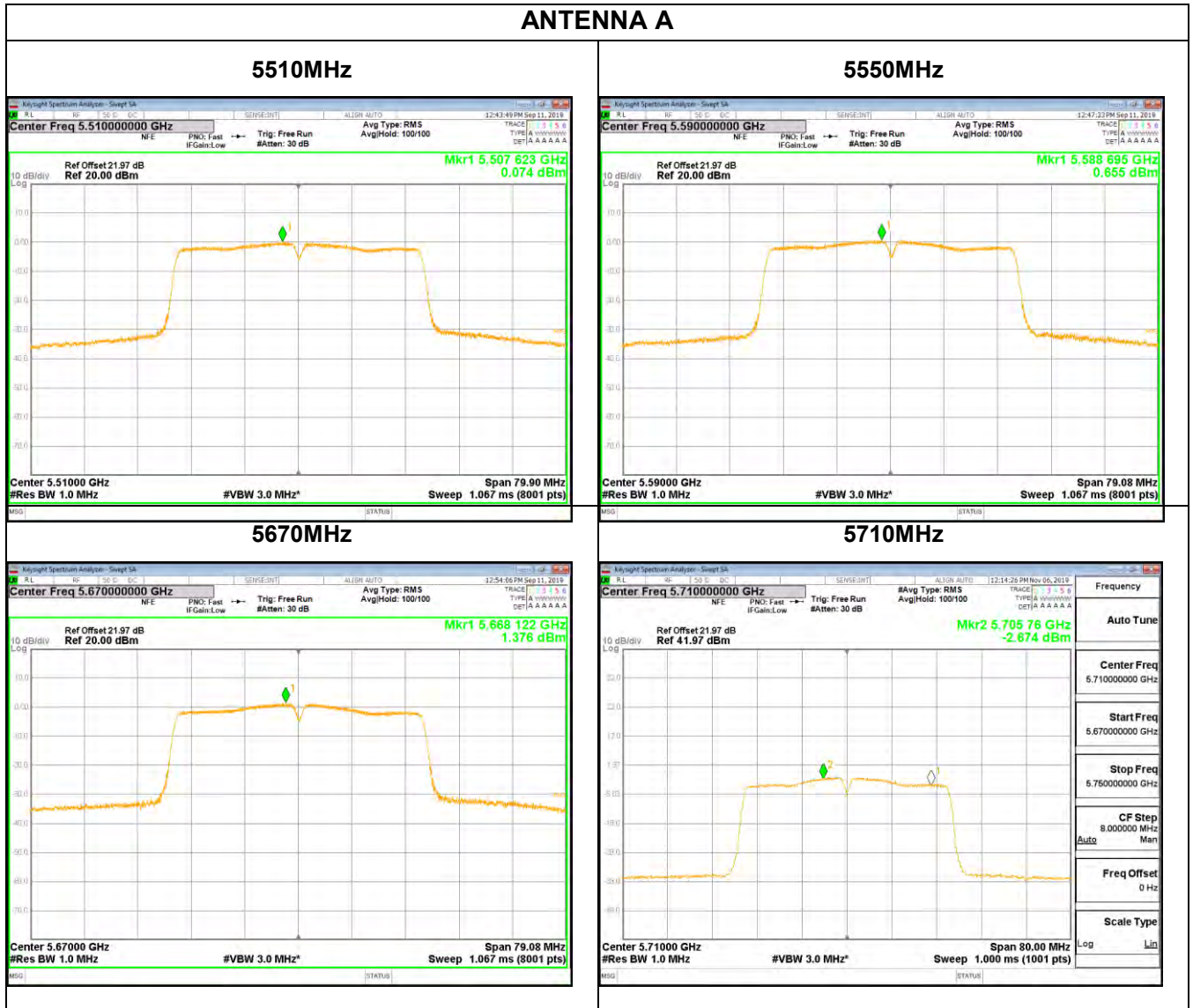
ANTENNA A





802.11n HT40

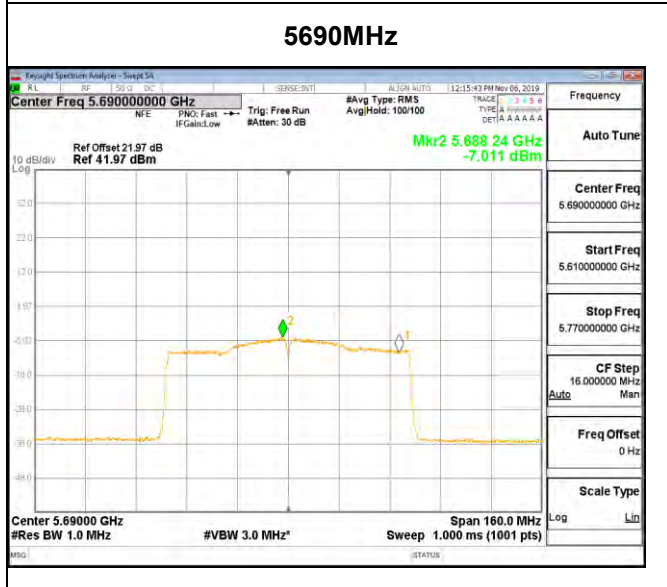
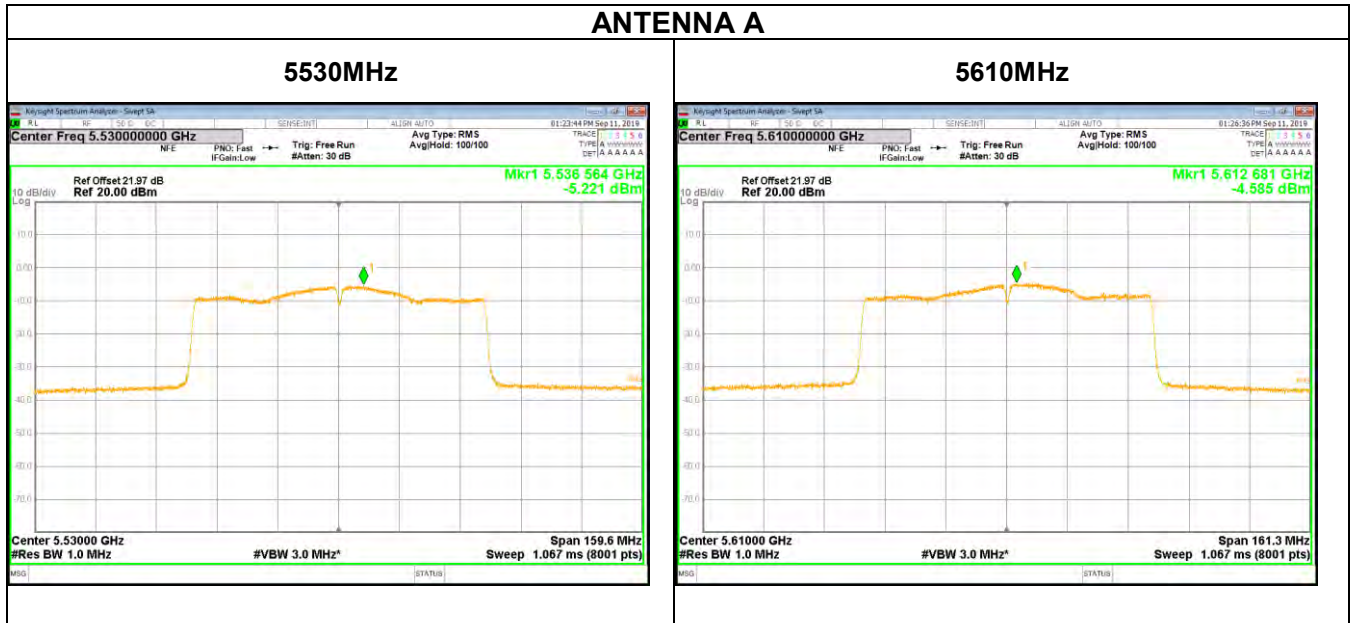
ANTENNA A





802.11ac VHT80

ANTENNA A





6.4.3. UNII-3 BAND

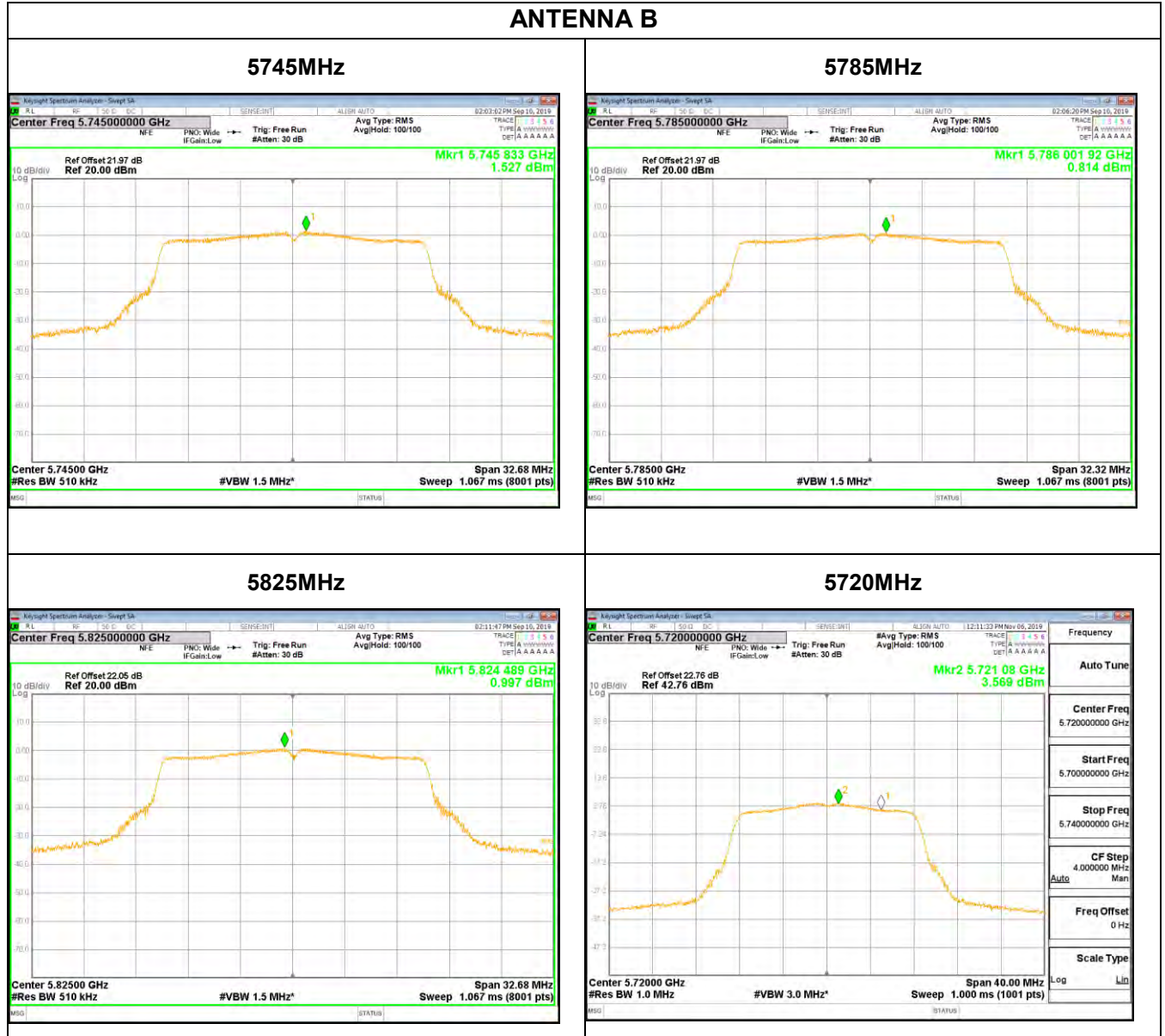
Mode	Frequency (MHz)	Chain	Conducted PSD (dBm)	Limit (dBm)
a	5745	A	1.837	30
	5785	A	1.124	30
	5825	A	1.307	30
	5720	A	1.156	30
n HT20	5745	A	-0.204	30
	5785	A	-0.660	30
	5825	A	-0.282	30
	5720	A	-1.698	30
n HT40	5755	A	-2.085	30
	5795	A	-2.403	30
	5710	A	-5.247	30
ac VHT80	5775	A	-8.442	30
	5690	A	-10.527	30

Note: 1.PSD= TEST PLOT Value + 10 log (1/x), where x is the duty cycle.
2.About correction Factor please refer to section 6.1



TEST PLOT

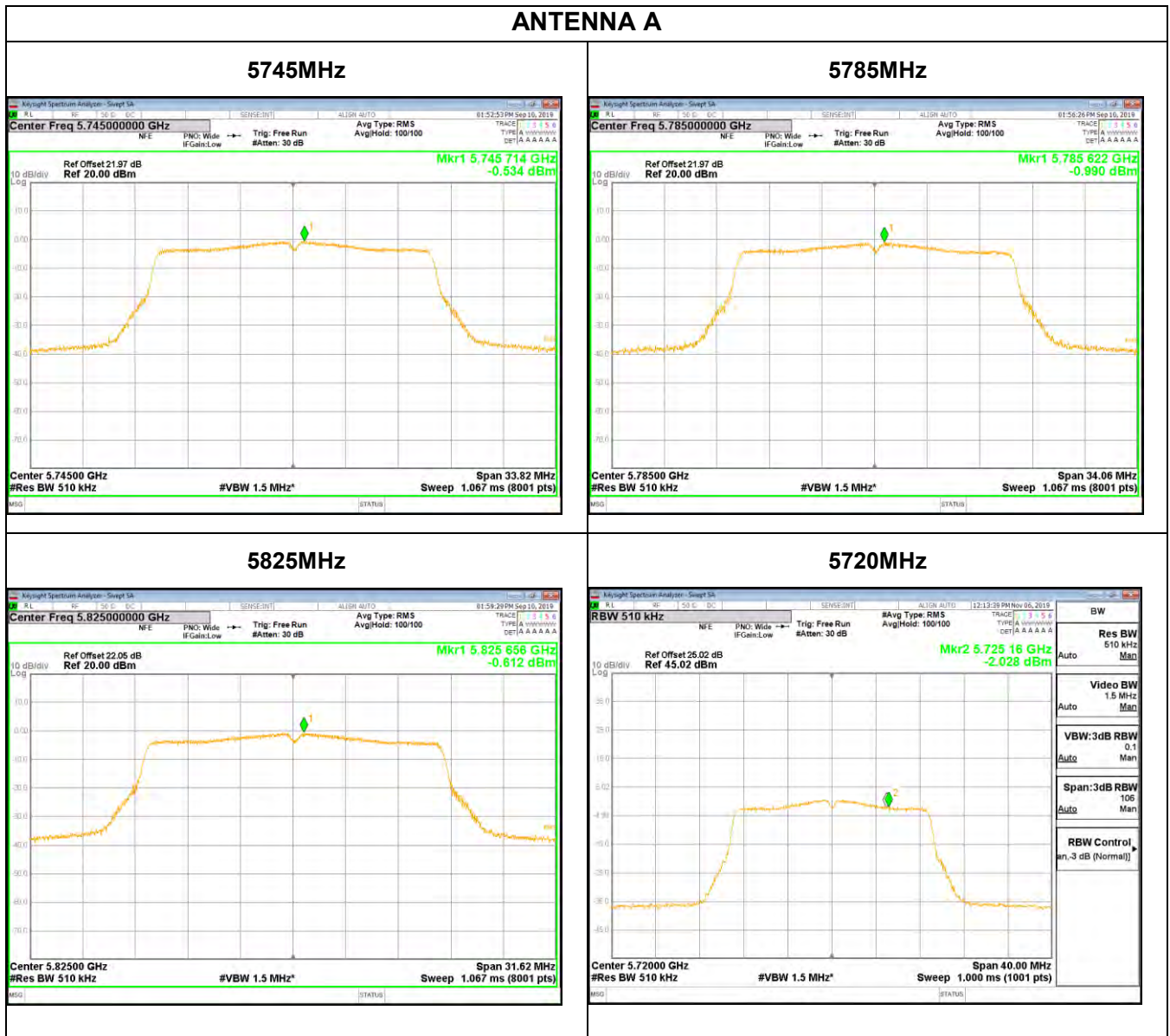
802.11a





802.11n HT20

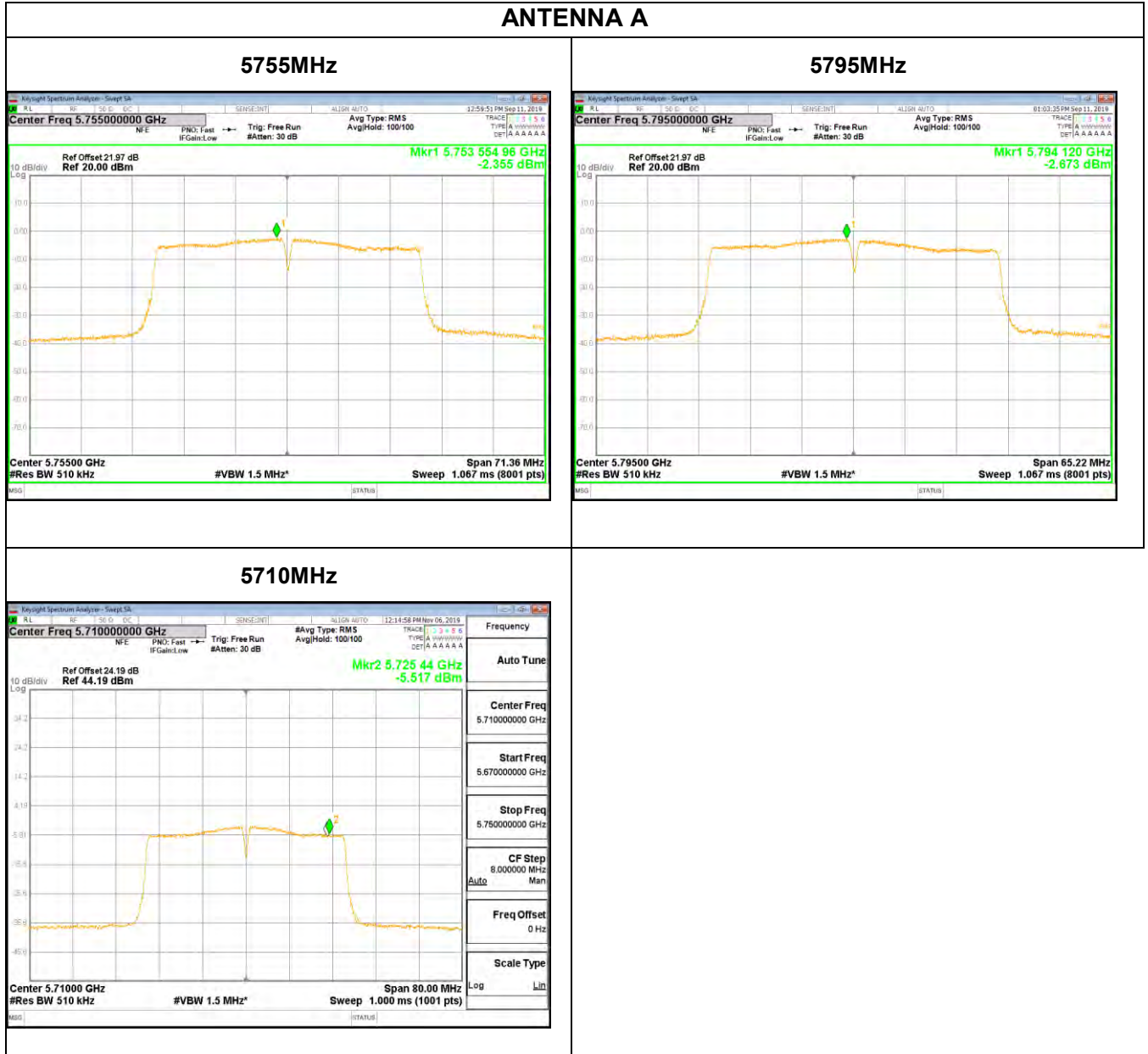
ANTENNA A





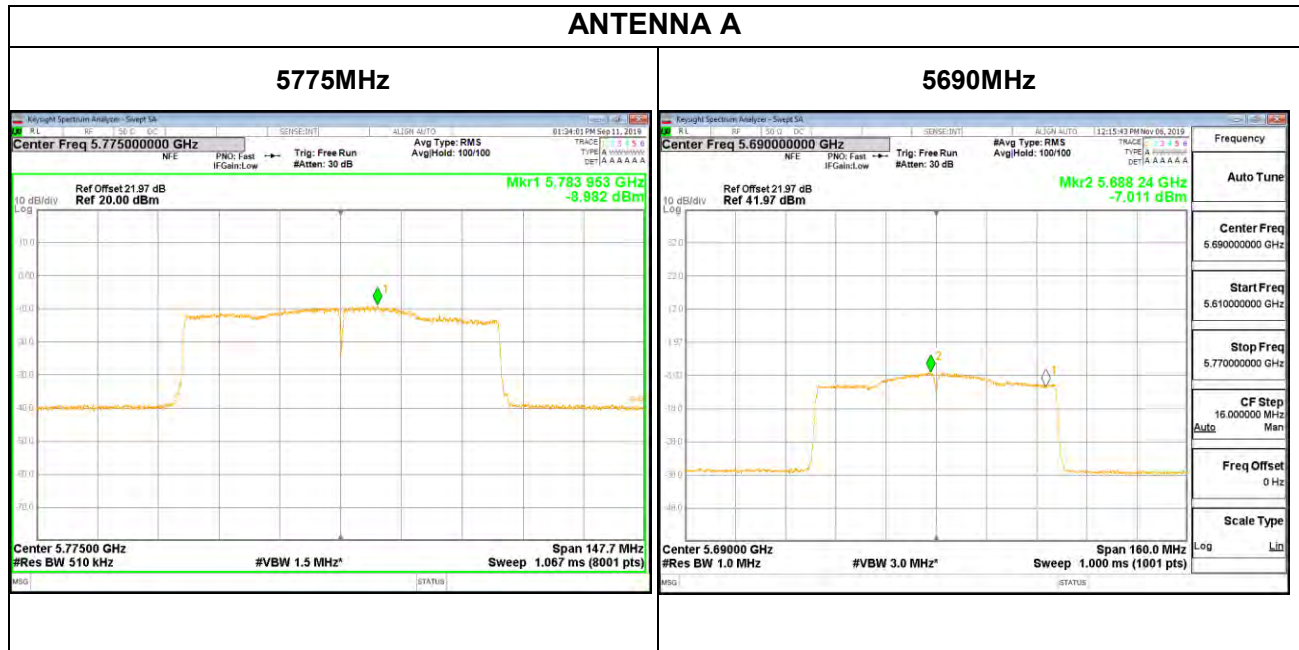
802.11n HT40

ANTENNA A





802.11ac VHT80





7. RADIATED TEST RESULTS

LIMITS

Please refer to CFR 47 FCC §15.205, §15.209 and §15.407(b) (4)

Please refer to ISED RSS-GEN Clause 8.9

Radiation Disturbance Test Limit for FCC (Class B)(9kHz-1GHz)

Frequency (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
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30MHz.



IC Restricted bands please refer to ISED RSS-GEN Clause 8.10.
FCC Restricted bands please refer to CFR 47 FCC 15.209.

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

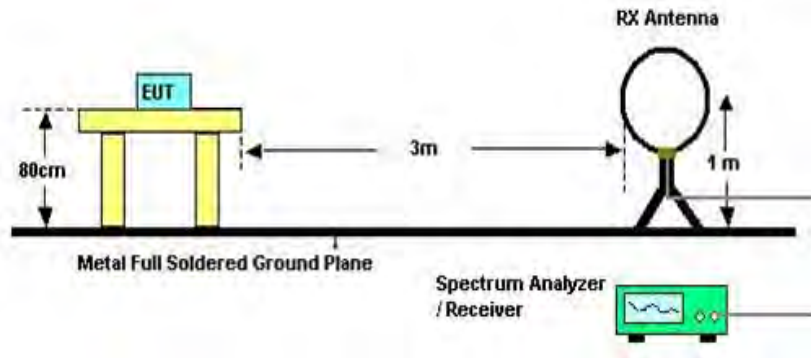
LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1GHz)		
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
		Quasi-Peak
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54
Above 1000	500	Peak
		Average
		74
		54

Limits of unwanted emission out of the restricted bands

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1GHz)		
Frequency Range (MHz)	EIRP Limit	Field Strength Limit (dBuV/m) at 3 m
30 - 88		
5150~5250 MHz	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
5250~5350 MHz		
5470~5725 MHz		
5725~5850 MHz	PK:-27 (dBm/MHz) *1 PK:10 (dBm/MHz) *2 PK:15.6 (dBm/MHz) *3 PK:27 (dBm/MHz) *4	PK: 68.2(dBμV/m) *1 PK:105.2 (dBμV/m) *2 PK: 110.8(dBμV/m) *3 PK:122.2 (dBμV/m) *4
<p>Note:</p> <p>*1 beyond 75 MHz or more above of the band edge.</p> <p>*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.</p> <p>*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.</p> <p>*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.</p>		

TEST SETUP AND PROCEDURE

Below 30MHz

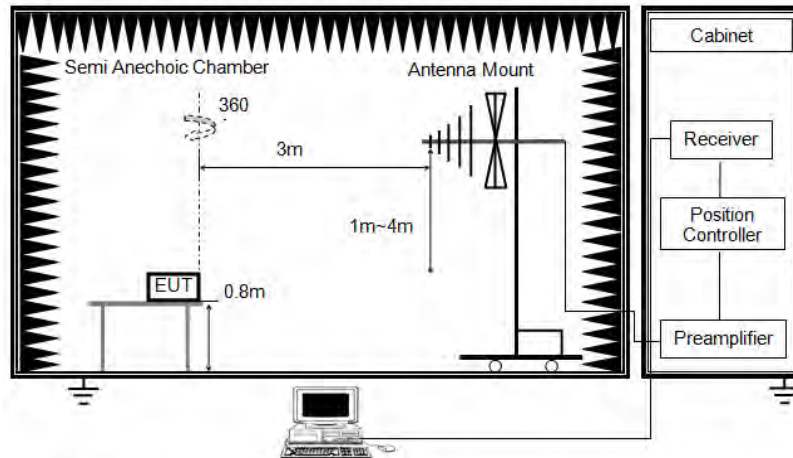


The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9kHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9kHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of 1 meter height antenna tower.
5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
6. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

Below 1GHz

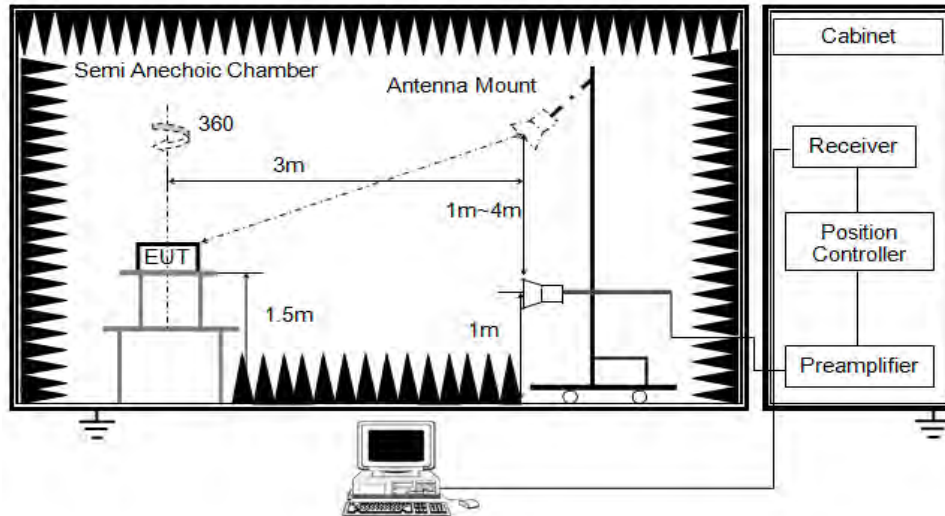


The setting of the spectrum analyser

RBW	120kHz
VBW	300kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1GHz

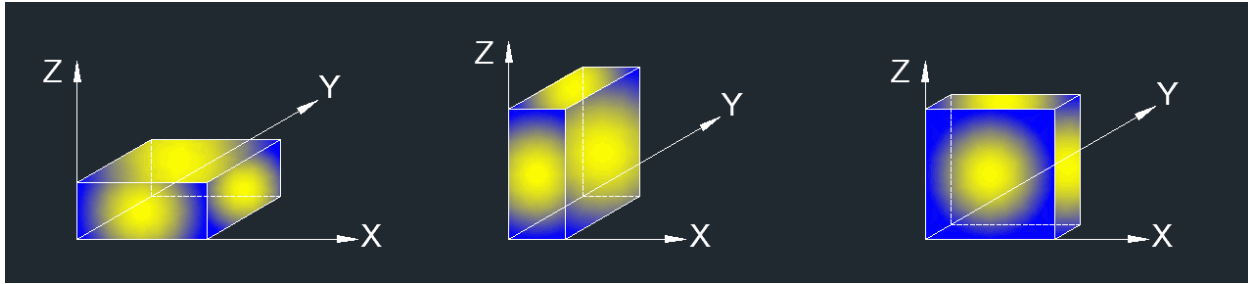


The setting of the spectrum analyser

RBW	1MHz
VBW	PEAK: 3MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 1.5m above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector. For the Duty Cycle please refer to clause 6.1.ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions have been tested, but only the worst case (X axis) data recorded in the report.

Note 2: The EUT does not support simultaneous transmission.

Note 3: The EUT was fully exercised with external accessories during the test. In the case of multiple accessory external ports, an external accessory shall be connected to one of each type of port.

TEST ENVIRONMENT

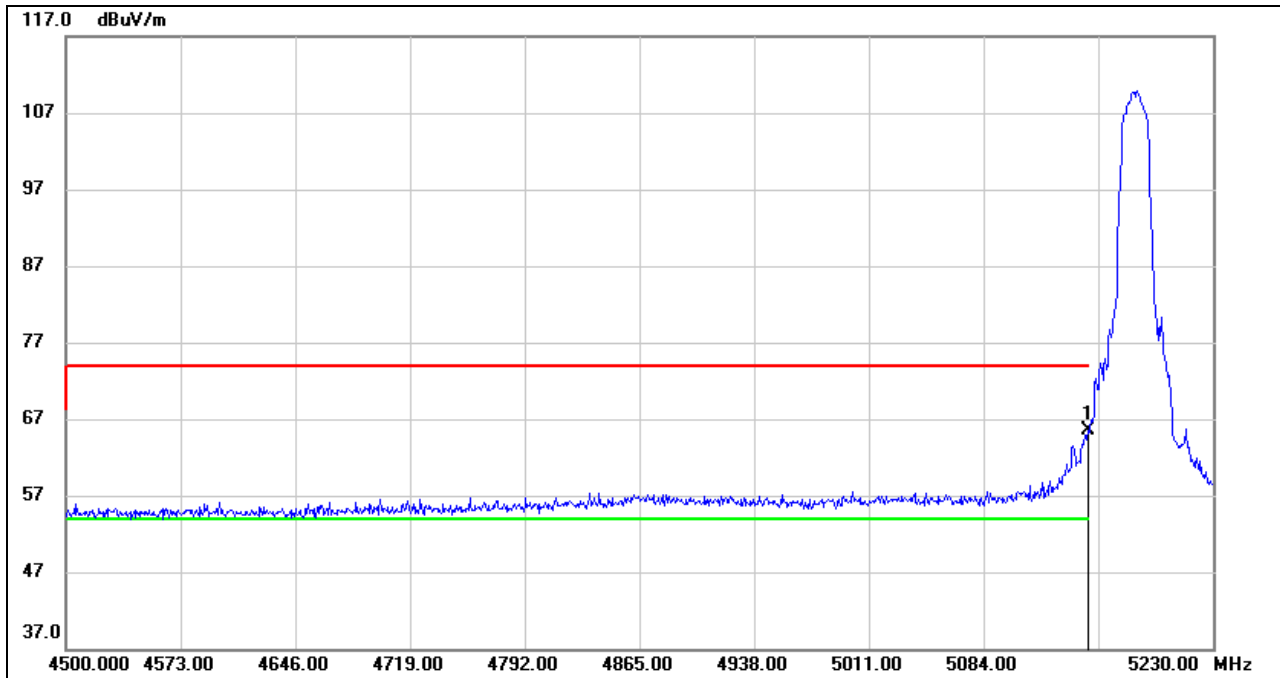
Temperature	24.2°C	Relative Humidity	47%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V_60Hz



7.1. 802.11a MODE

7.1.1. UNII-1 BAND
RESTRICTED BANDEDGE LOW CHANNEL

HORIZONTAL RESULTS
PEAK

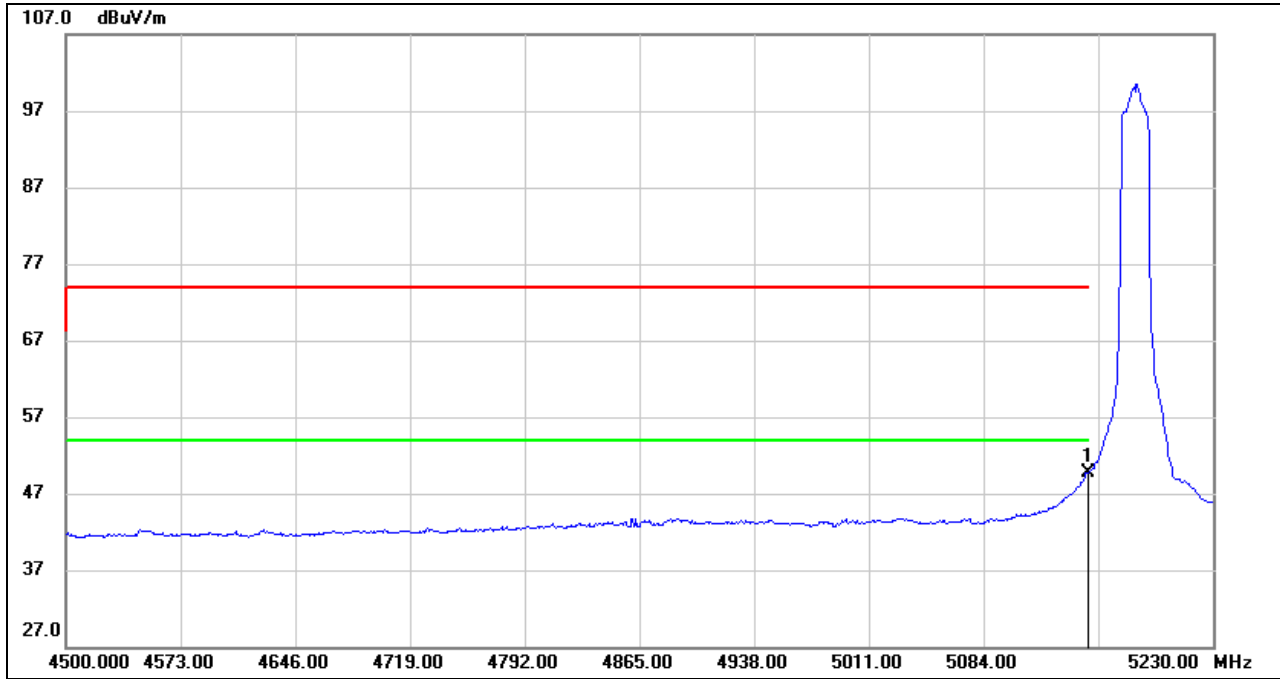


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5150.000	25.03	40.46	65.49	74.00	-8.51	peak

- Note:
1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Only the worst case emission will be recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG

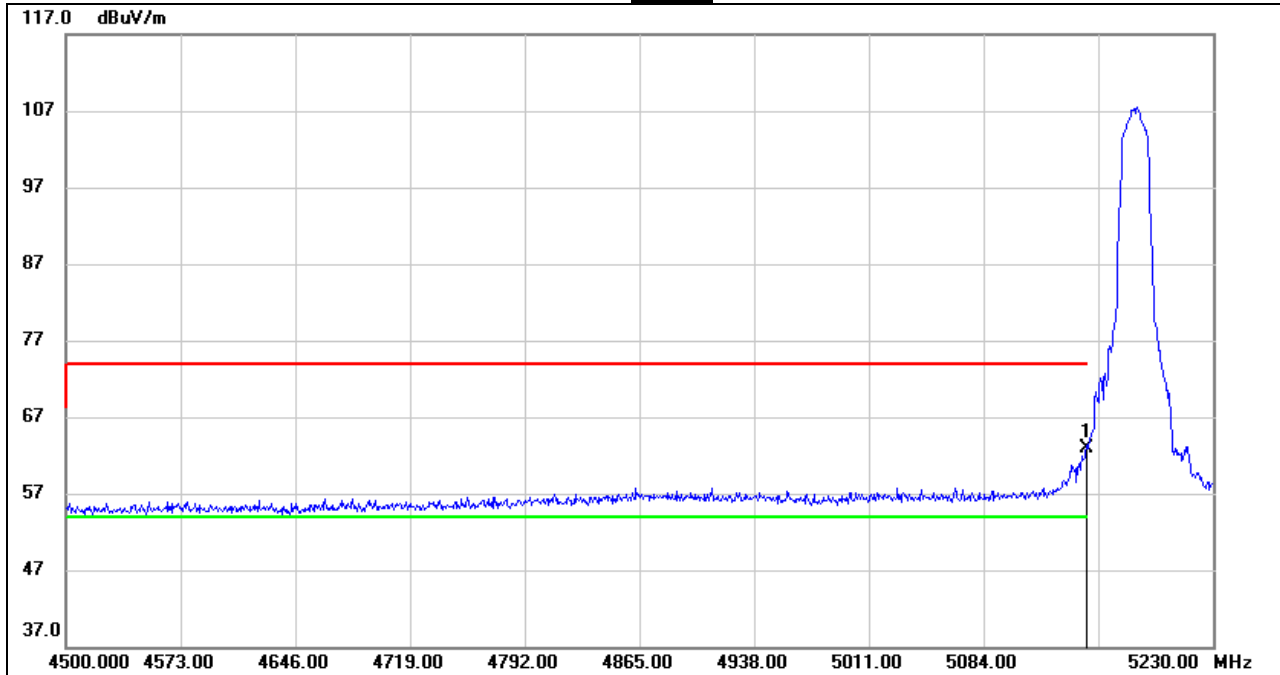


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5150.000	9.22	40.46	49.68	54.00	-4.32	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
 2. AVG: $VBW=1/T_{on}$ where: t_{on} is transmit duration.
 3. For duty cycle, please refer to clause 6.1.
 4. Only the worst case emission will be recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



VERTICAL RESULTS
PEAK

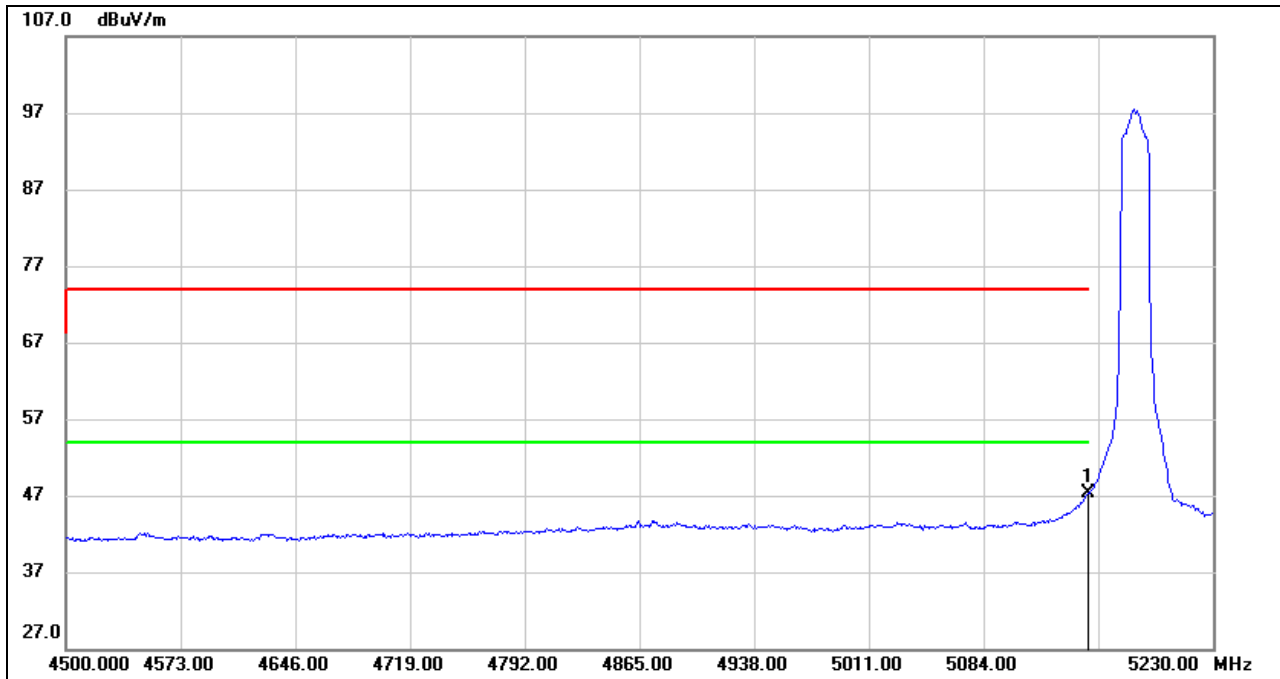


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5150.000	22.54	40.46	63.00	74.00	-11.00	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission will be recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



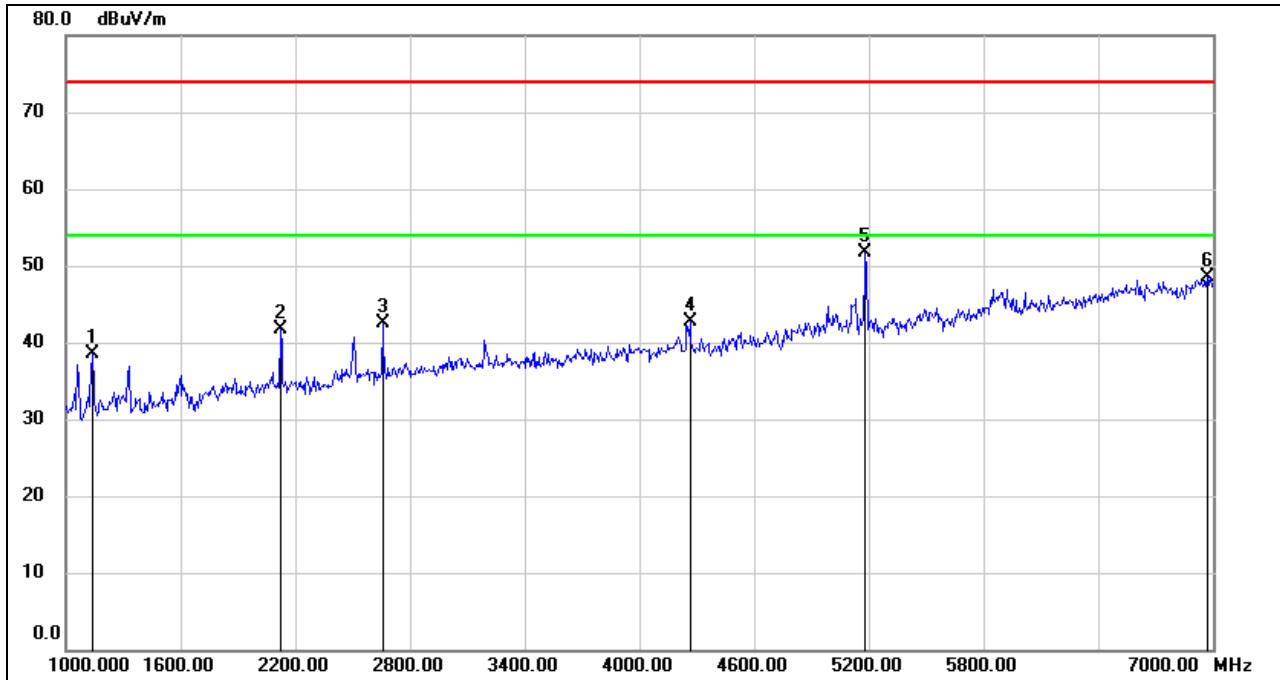
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5150.000	6.81	40.46	47.27	54.00	-6.73	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
 2. AVG: VBW=1/Ton where: ton is transmit duration.
 3. For duty cycle, please refer to clause 6.1.
 4. Only the worst case emission will be recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL

HORIZONTAL RESULTS
1-7GHz

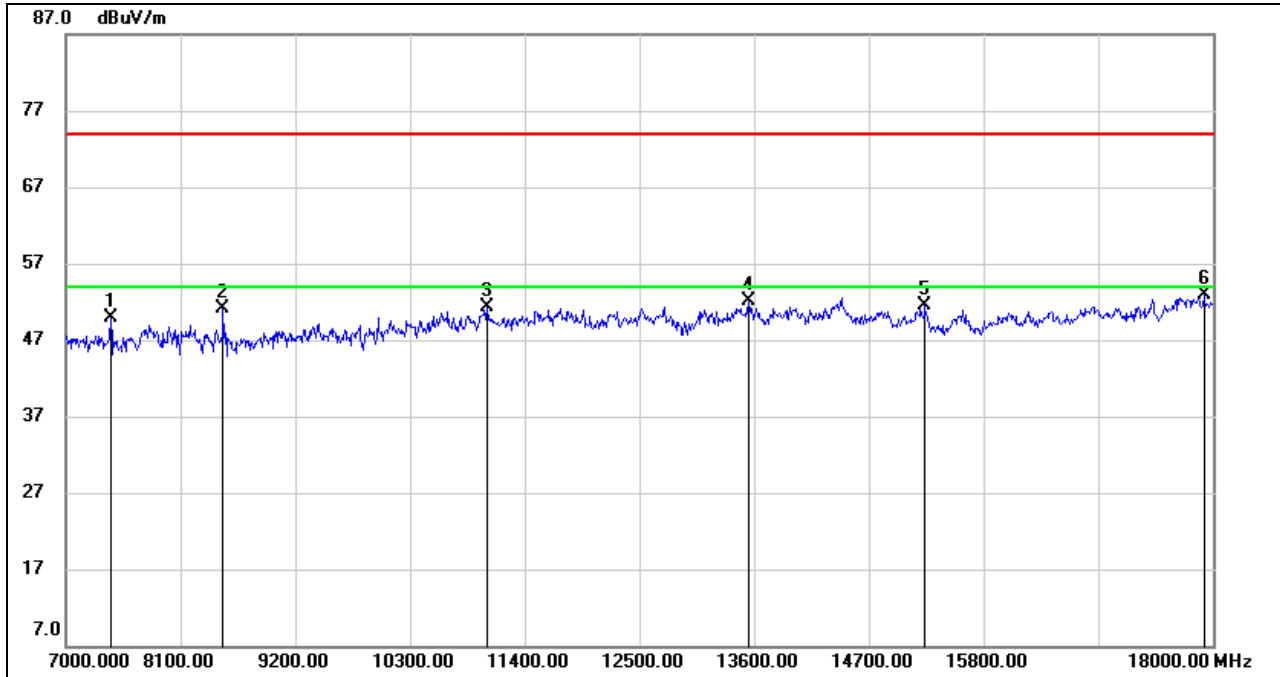


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1138.000	52.67	-14.07	38.60	74.00	-35.40	peak
2	2122.000	51.79	-10.11	41.68	74.00	-32.32	peak
3	2656.000	50.67	-8.21	42.46	74.00	-31.54	peak
4	4264.000	45.84	-3.11	42.73	74.00	-31.27	peak
5	5182.000	50.85	0.77	51.62	74.00	-22.38	peak
6	6970.000	42.02	6.39	48.41	74.00	-25.59	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



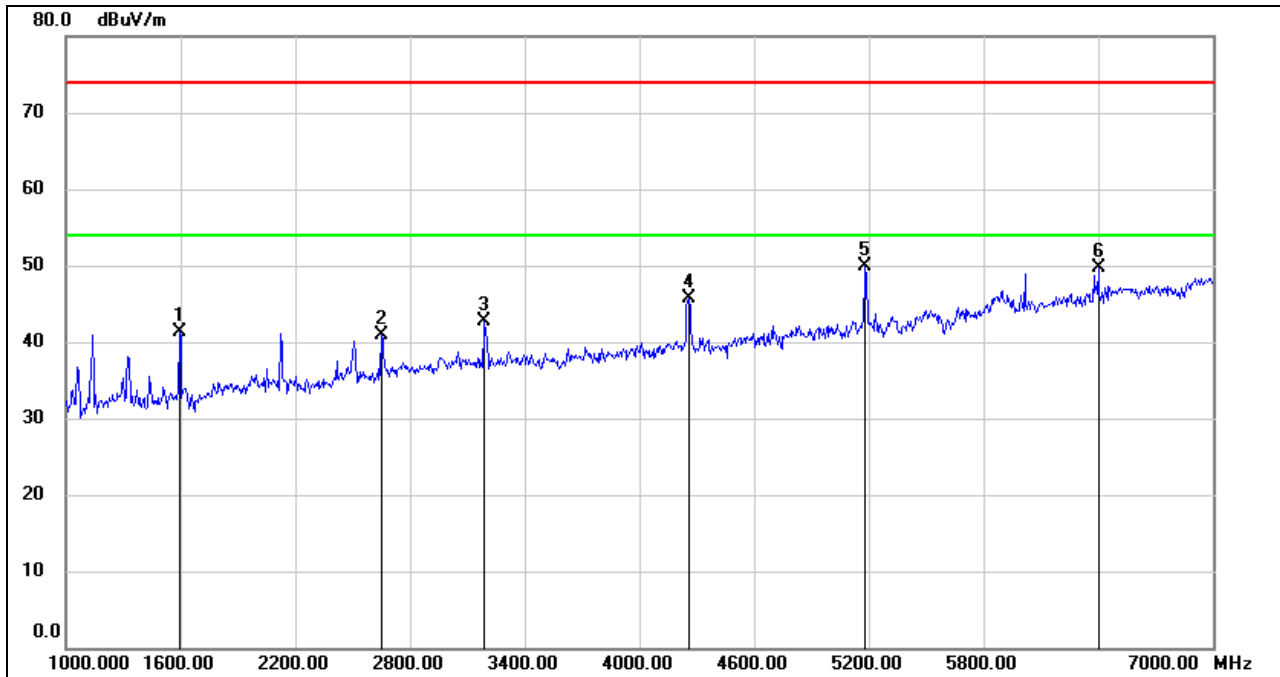
HORIZONTAL RESULTS
7-18GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7429.000	41.69	8.28	49.97	74.00	-24.03	peak
2	8507.000	41.82	9.24	51.06	74.00	-22.94	peak
3	11037.000	37.57	13.66	51.23	74.00	-22.77	peak
4	13545.000	35.75	16.33	52.08	74.00	-21.92	peak
5	15239.000	35.54	16.02	51.56	74.00	-22.44	peak
6	17912.000	29.55	23.40	52.95	74.00	-21.05	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.

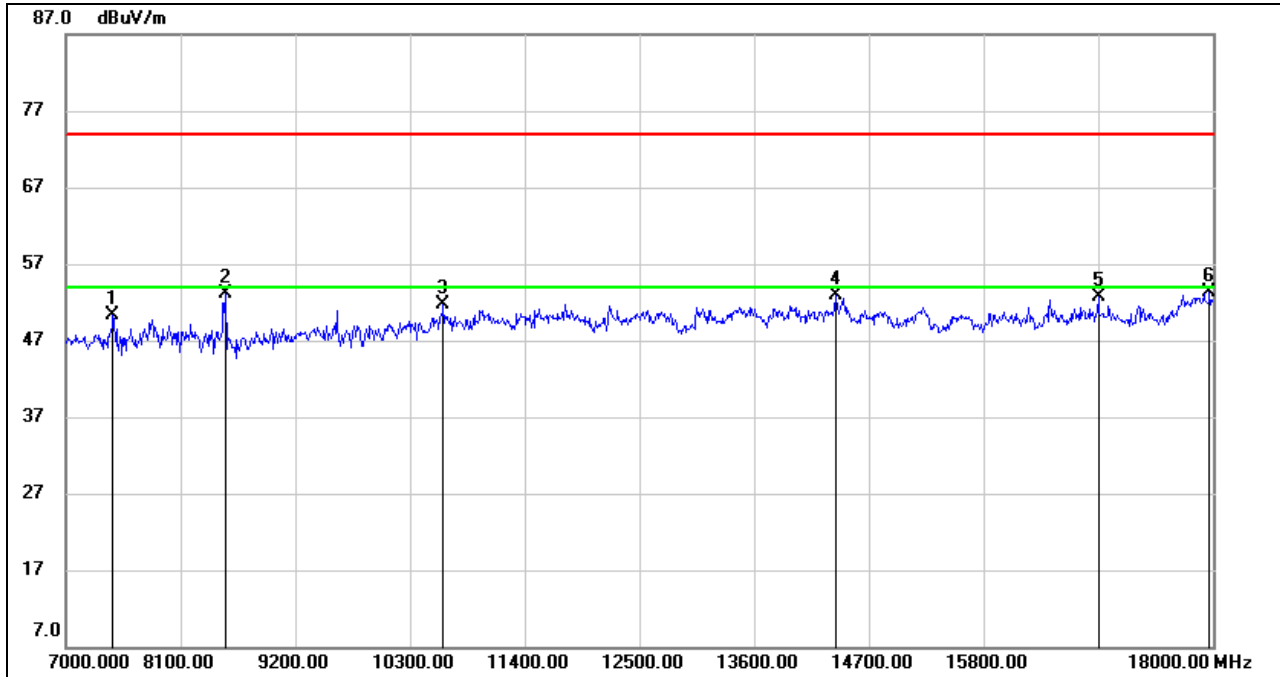
VERTICAL RESULTS
1-7GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1594.000	53.53	-12.27	41.26	74.00	-32.74	peak
2	2650.000	49.08	-8.26	40.82	74.00	-33.18	peak
3	3190.000	48.62	-5.94	42.68	74.00	-31.32	peak
4	4258.000	48.86	-3.08	45.78	74.00	-28.22	peak
5	5182.000	49.10	0.77	49.87	74.00	-24.13	peak
6	6400.000	45.22	4.54	49.76	74.00	-24.24	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.

7-18GHz



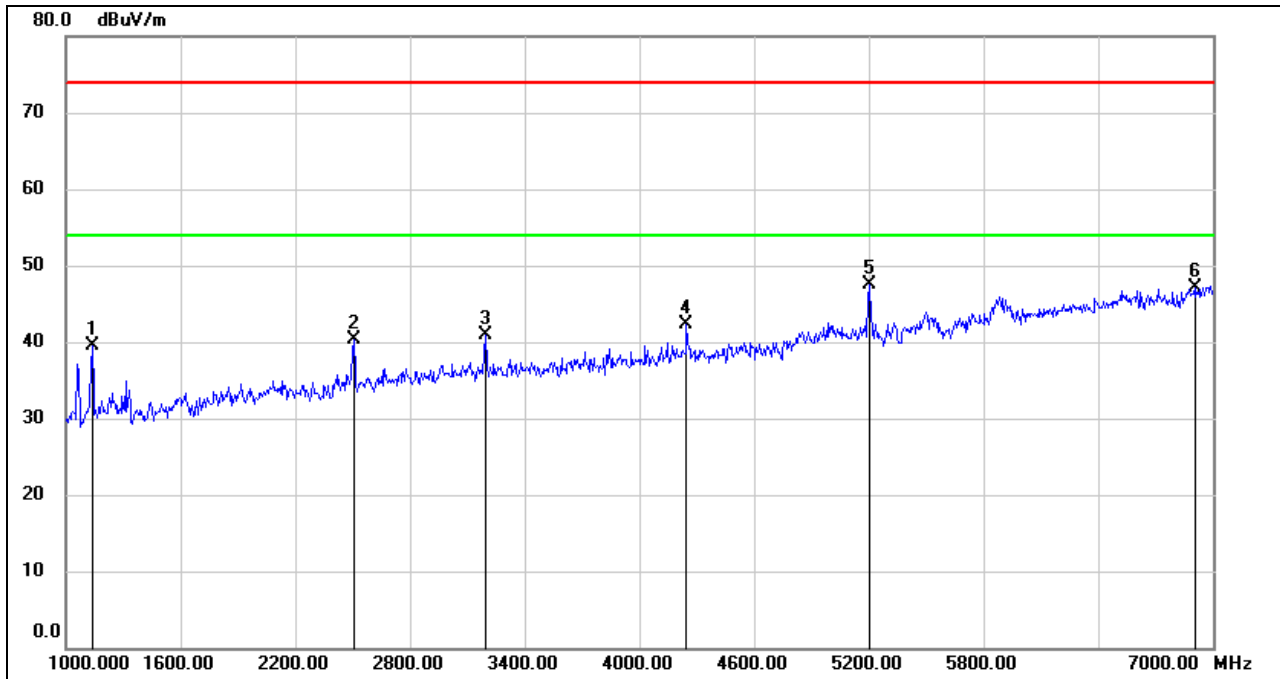
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7451.000	42.20	8.20	50.40	74.00	-23.60	peak
2	8529.000	43.88	9.18	53.06	74.00	-20.94	peak
3	10619.000	38.48	13.27	51.75	74.00	-22.25	peak
4	14381.000	35.90	16.97	52.87	74.00	-21.13	peak
5	16900.000	32.14	20.50	52.64	74.00	-21.36	peak
6	17967.000	29.83	23.45	53.28	74.00	-20.72	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



HARMONICS AND SPURIOUS EMISSIONS MID CHANNEL

HORIZONTAL RESULTS
1-7GHz

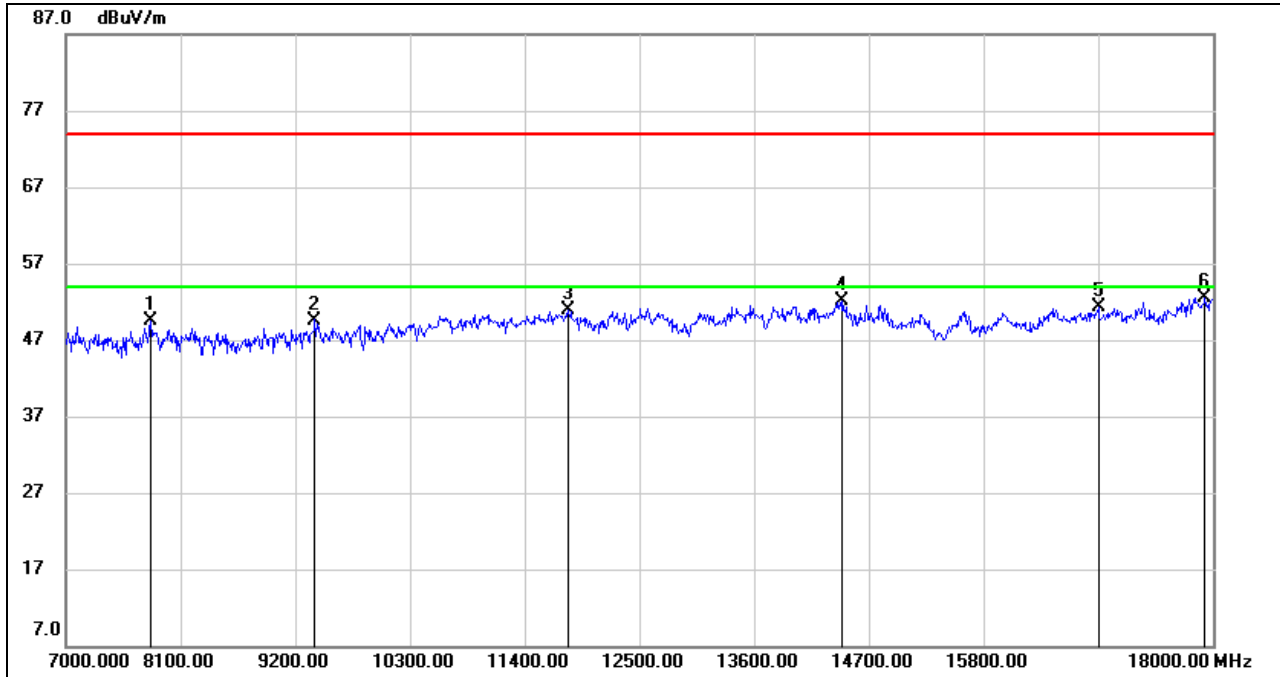


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1138.000	53.58	-14.07	39.51	74.00	-34.49	peak
2	2506.000	48.53	-8.18	40.35	74.00	-33.65	peak
3	3196.000	46.85	-5.96	40.89	74.00	-33.11	peak
4	4246.000	45.25	-3.03	42.22	74.00	-31.78	peak
5	5200.000	46.66	0.91	47.57	74.00	-26.43	peak
6	6904.000	40.89	6.30	47.19	74.00	-26.81	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



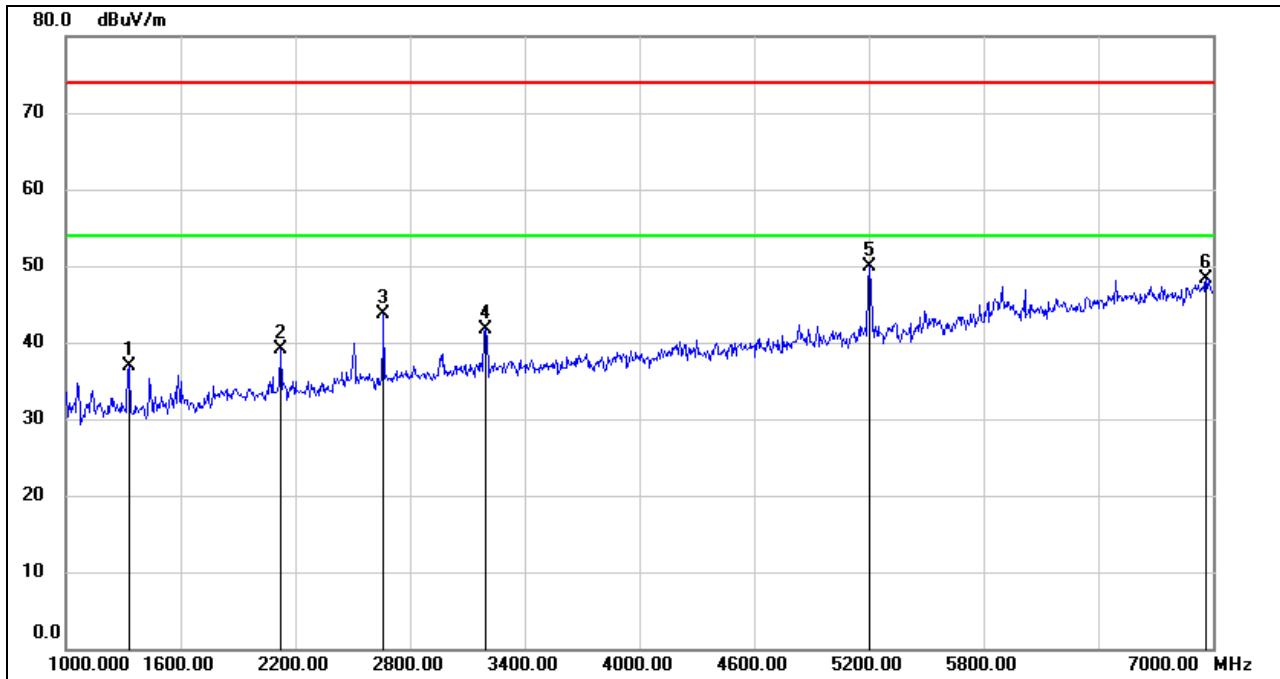
HORIZONTAL RESULTS
7-18GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7814.000	39.98	9.58	49.56	74.00	-24.44	peak
2	9387.000	38.71	10.89	49.60	74.00	-24.40	peak
3	11818.000	36.56	14.41	50.97	74.00	-23.03	peak
4	14447.000	35.27	16.93	52.20	74.00	-21.80	peak
5	16900.000	30.82	20.50	51.32	74.00	-22.68	peak
6	17923.000	29.05	23.40	52.45	74.00	-21.55	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.

VERTICAL RESULTS
1-7GHz

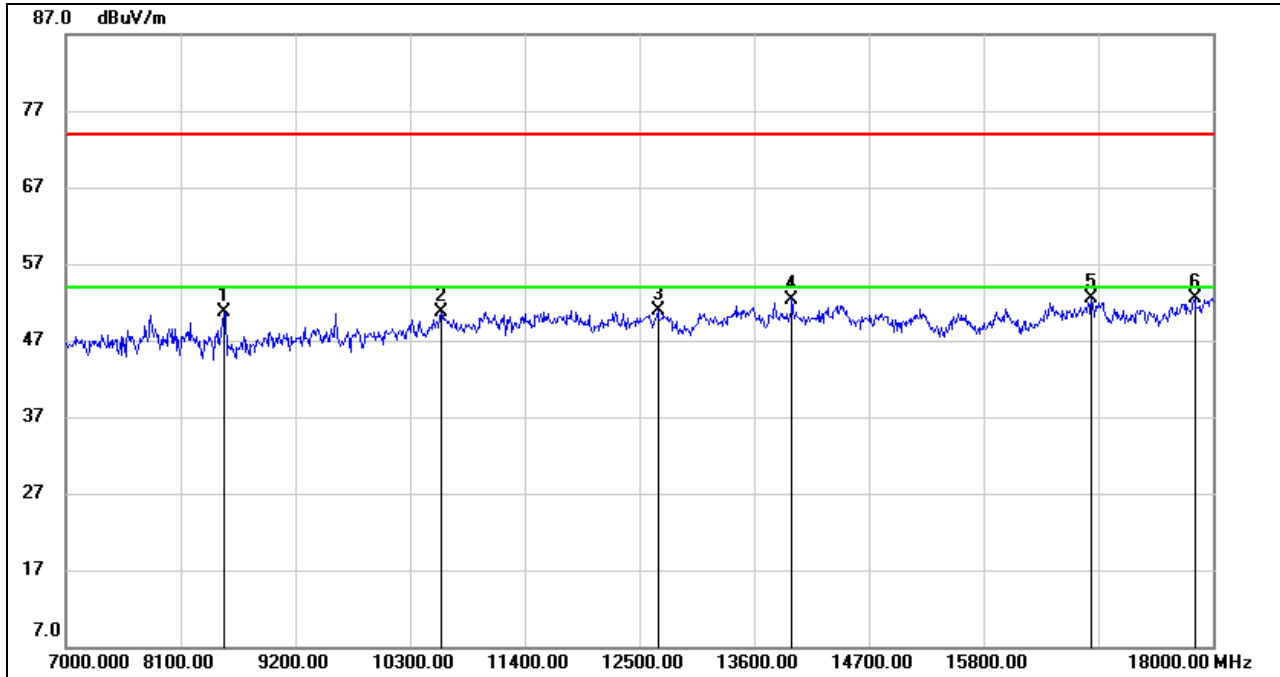


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1330.000	50.14	-13.18	36.96	74.00	-37.04	peak
2	2122.000	49.19	-10.11	39.08	74.00	-34.92	peak
3	2662.000	51.92	-8.18	43.74	74.00	-30.26	peak
4	3196.000	47.65	-5.96	41.69	74.00	-32.31	peak
5	5200.000	48.91	0.91	49.82	74.00	-24.18	peak
6	6964.000	41.83	6.38	48.21	74.00	-25.79	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



7-18GHz



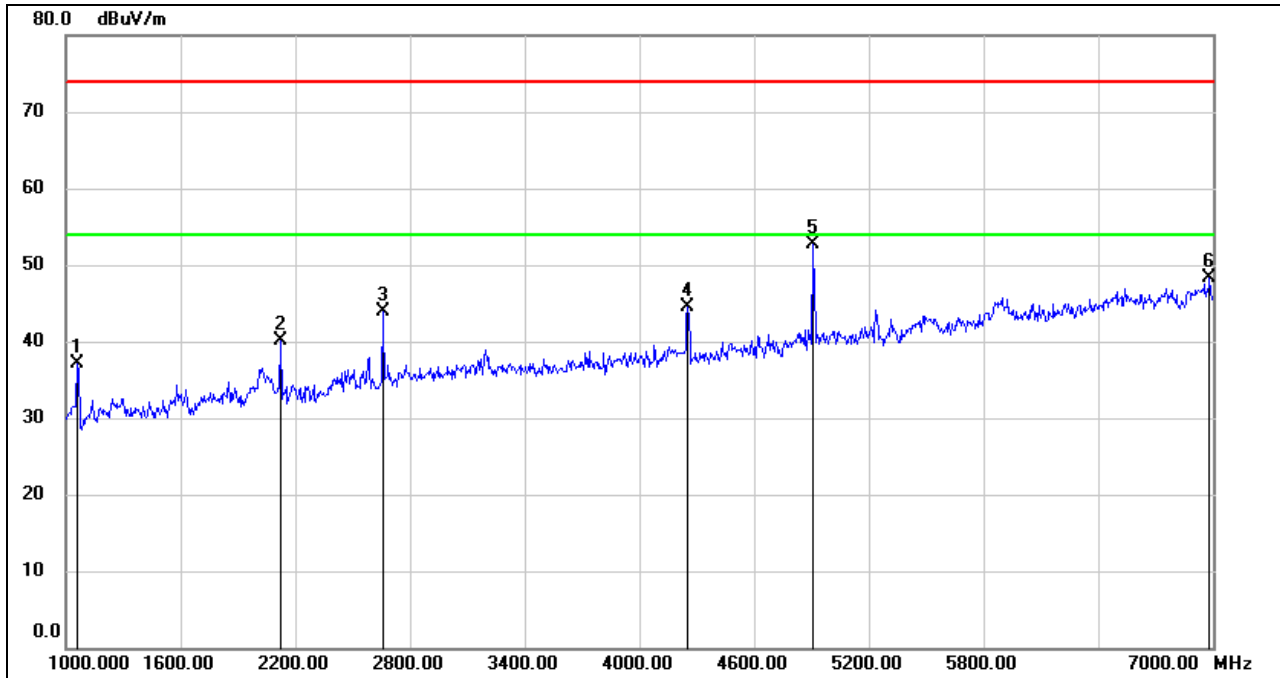
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8518.000	41.55	9.21	50.76	74.00	-23.24	peak
2	10597.000	37.39	13.38	50.77	74.00	-23.23	peak
3	12676.000	36.15	14.77	50.92	74.00	-23.08	peak
4	13963.000	35.65	16.75	52.40	74.00	-21.60	peak
5	16834.000	31.97	20.52	52.49	74.00	-21.51	peak
6	17824.000	29.10	23.45	52.55	74.00	-21.45	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



HARMONICS AND SPURIOUS EMISSIONS HIGH CHANNEL

HORIZONTAL RESULTS
1-7GHz

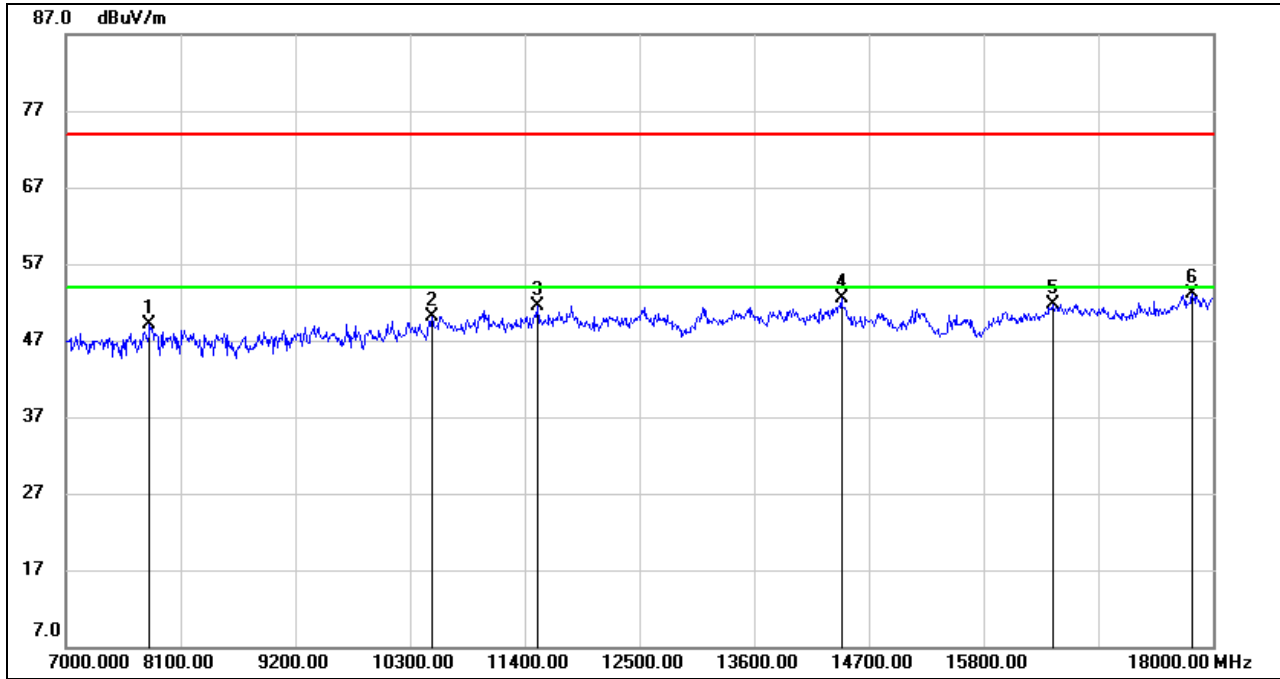


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1060.000	51.57	-14.51	37.06	74.00	-36.94	peak
2	2122.000	50.28	-10.11	40.17	74.00	-33.83	peak
3	2656.000	52.17	-8.21	43.96	74.00	-30.04	peak
4	4252.000	47.57	-3.05	44.52	74.00	-29.48	peak
5	4906.000	53.38	-0.77	52.61	74.00	-21.39	peak
6	6982.000	41.87	6.40	48.27	74.00	-25.73	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



HORIZONTAL RESULTS
7-18GHz



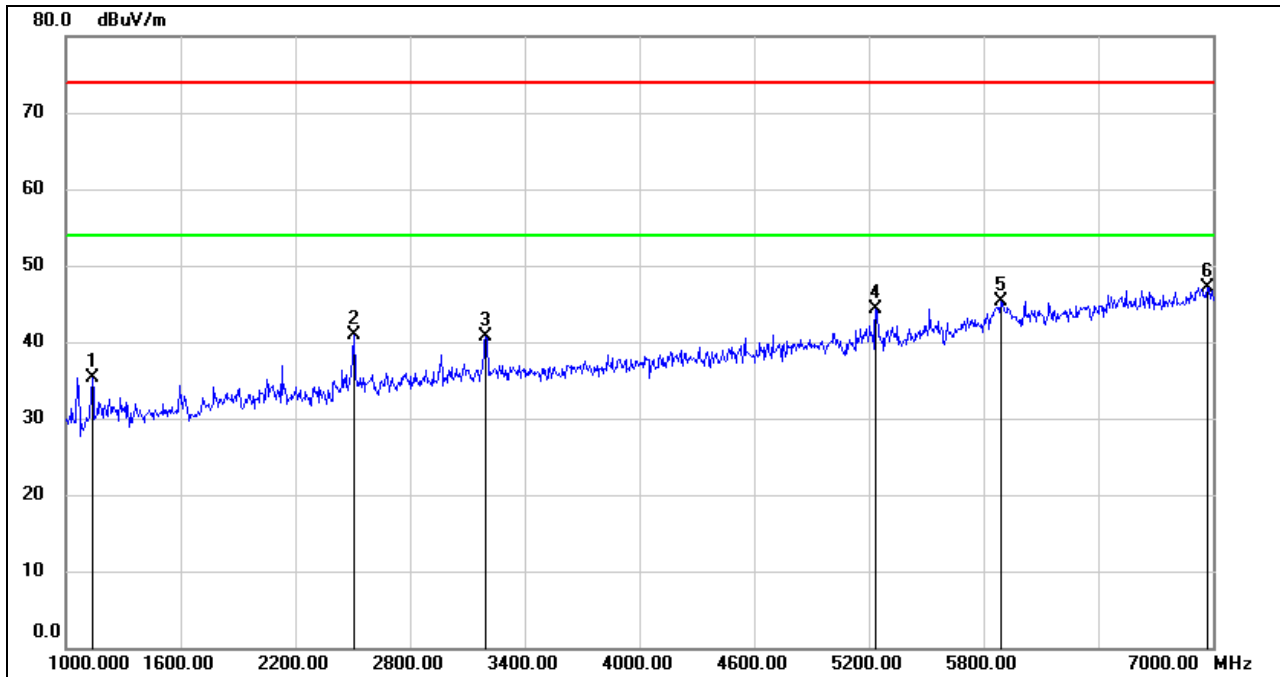
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7803.000	39.46	9.63	49.09	74.00	-24.91	peak
2	10509.000	37.62	12.39	50.01	74.00	-23.99	peak
3	11521.000	37.02	14.48	51.50	74.00	-22.50	peak
4	14436.000	35.52	16.95	52.47	74.00	-21.53	peak
5	16460.000	32.00	19.65	51.65	74.00	-22.35	peak
6	17802.000	29.64	23.45	53.09	74.00	-20.91	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



VERTICAL RESULTS

1-7GHz

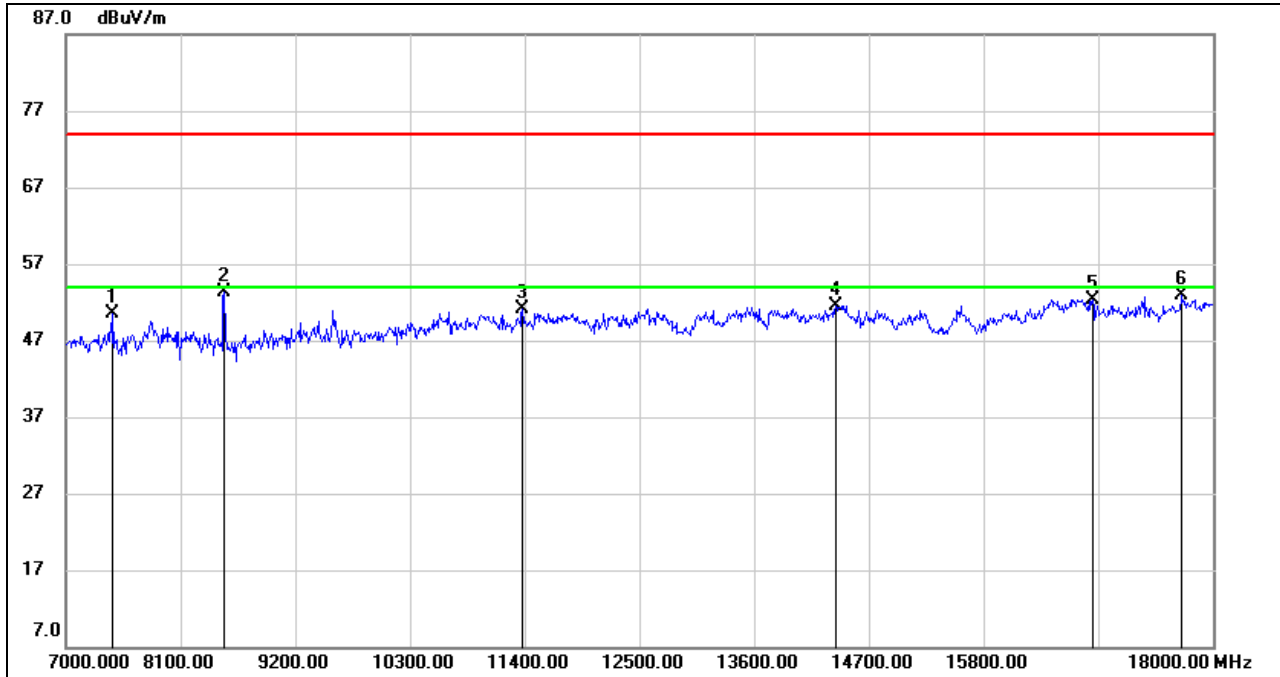


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1138.000	49.47	-14.07	35.40	74.00	-38.60	peak
2	2506.000	49.06	-8.18	40.88	74.00	-33.12	peak
3	3196.000	46.59	-5.96	40.63	74.00	-33.37	peak
4	5236.000	43.43	0.95	44.38	74.00	-29.62	peak
5	5890.000	40.62	4.68	45.30	74.00	-28.70	peak
6	6970.000	40.79	6.39	47.18	74.00	-26.82	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



7-18GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7451.000	42.22	8.20	50.42	74.00	-23.58	peak
2	8518.000	44.12	9.21	53.33	74.00	-20.67	peak
3	11378.000	37.42	13.69	51.11	74.00	-22.89	peak
4	14381.000	34.50	16.97	51.47	74.00	-22.53	peak
5	16845.000	31.87	20.52	52.39	74.00	-21.61	peak
6	17703.000	30.38	22.62	53.00	74.00	-21.00	peak

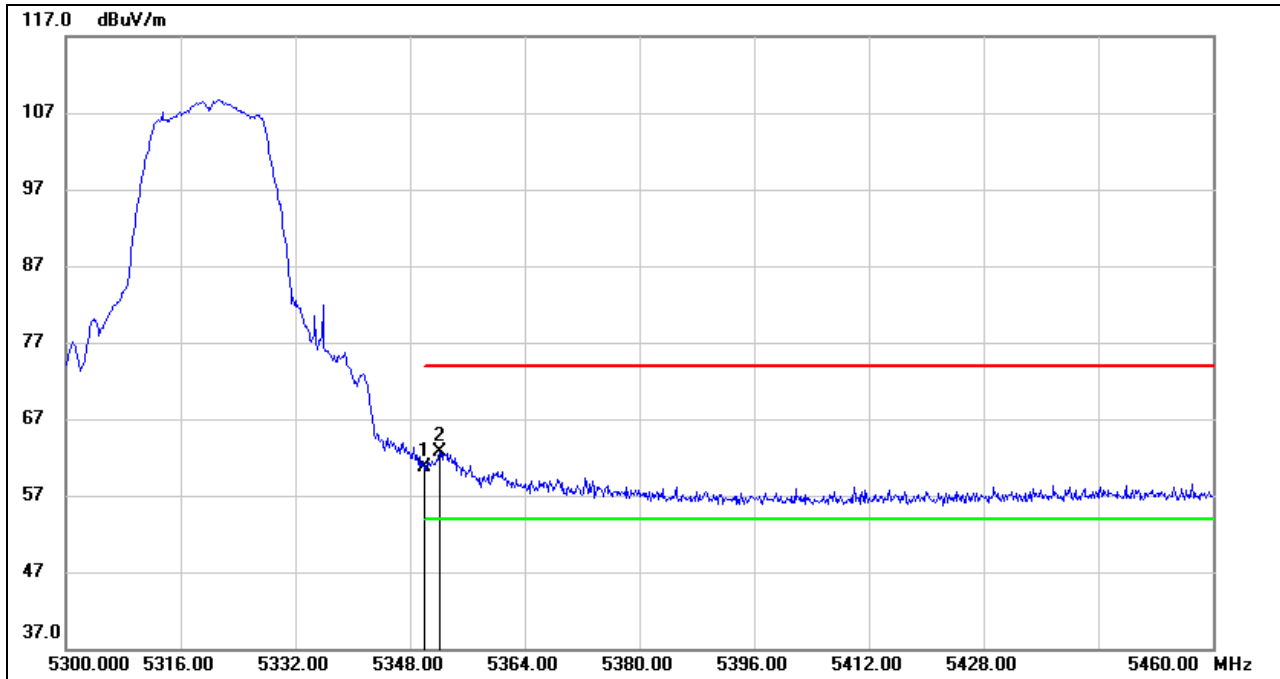
Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



7.1.2. UNII-2A BAND

RESTRICTED BANDEDGE HIGH CHANNEL

HORIZONTAL RESULTS
PEAK

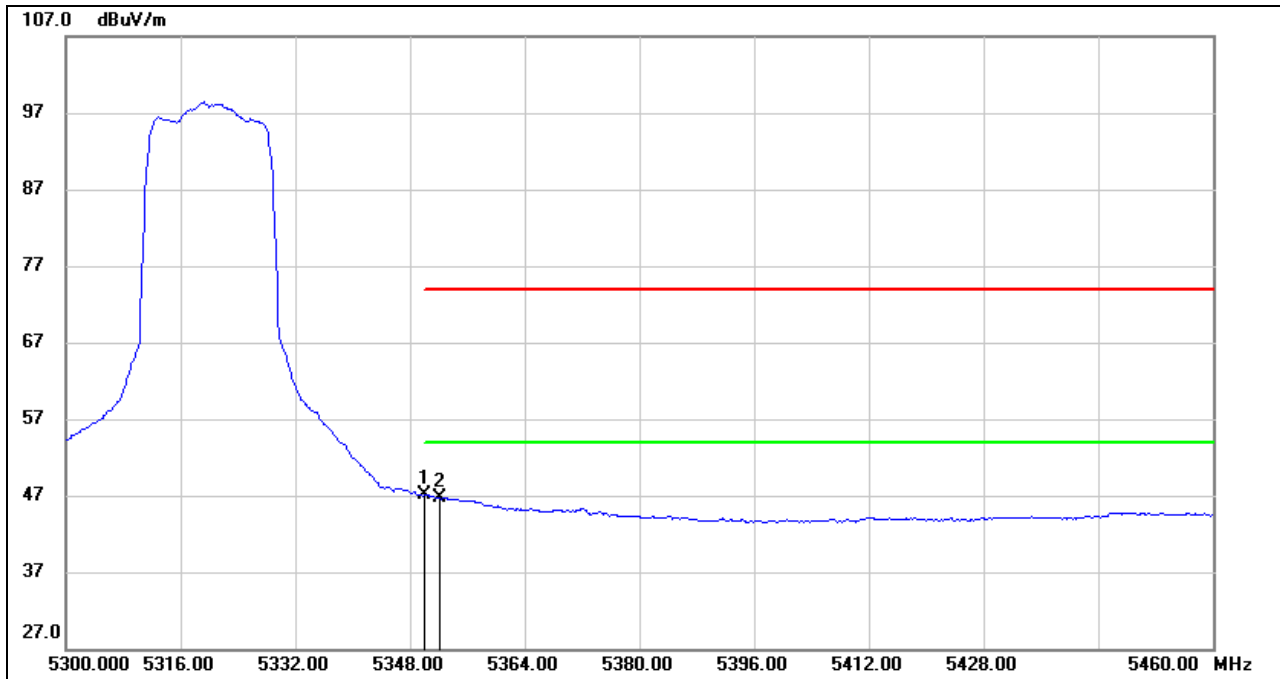


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	20.14	40.64	60.78	74.00	-13.22	peak
2	5352.160	21.98	40.63	62.61	74.00	-11.39	peak

- Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Only the worst case emission will be recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG

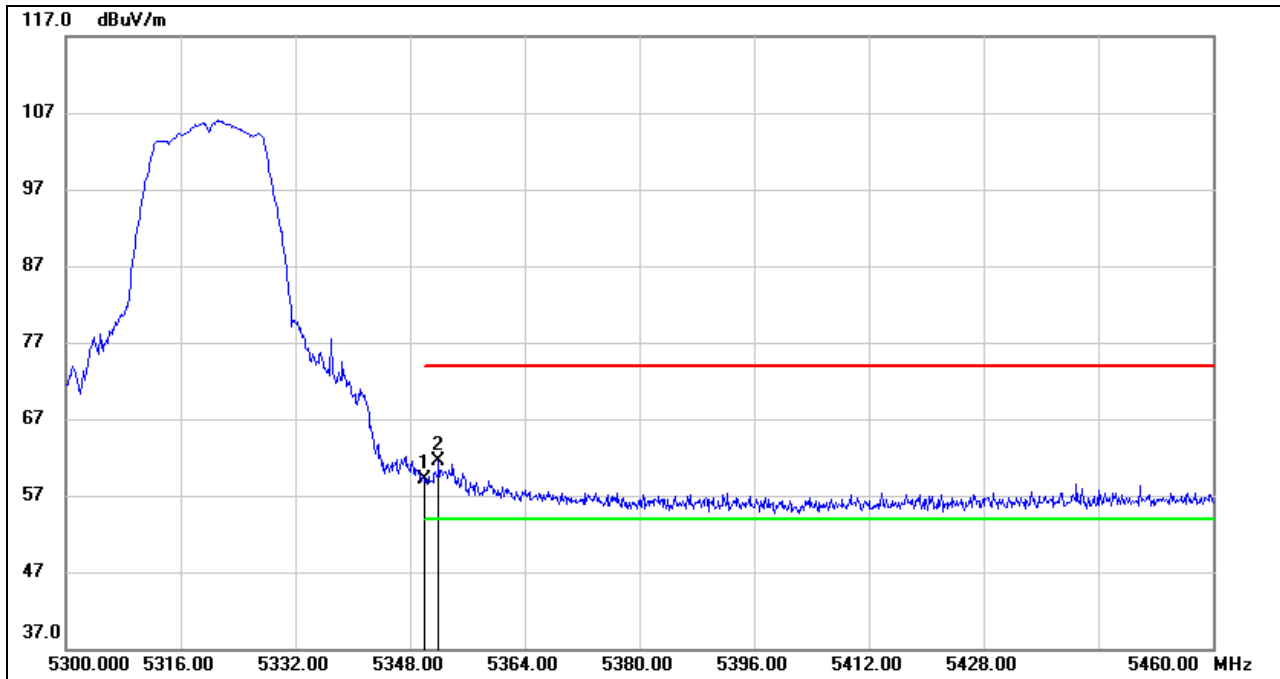


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	6.54	40.64	47.18	54.00	-6.82	AVG
2	5352.160	6.04	40.63	46.67	54.00	-7.33	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
 2. AVG: $VBW=1/T_{on}$ where: t_{on} is transmit duration.
 3. For duty cycle, please refer to clause 6.1.
 4. Only the worst case emission will be recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



VERTICAL RESULTS
PEAK

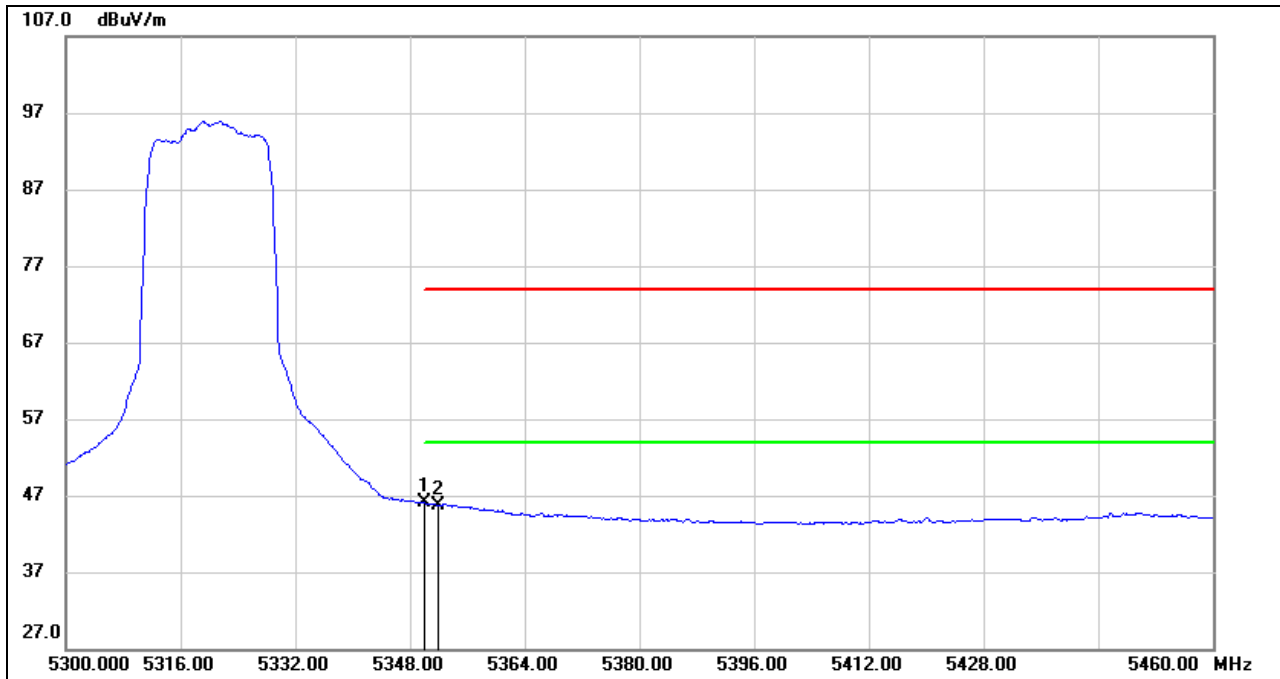


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	18.53	40.64	59.17	74.00	-14.83	peak
2	5352.000	20.81	40.63	61.44	74.00	-12.56	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission will be recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



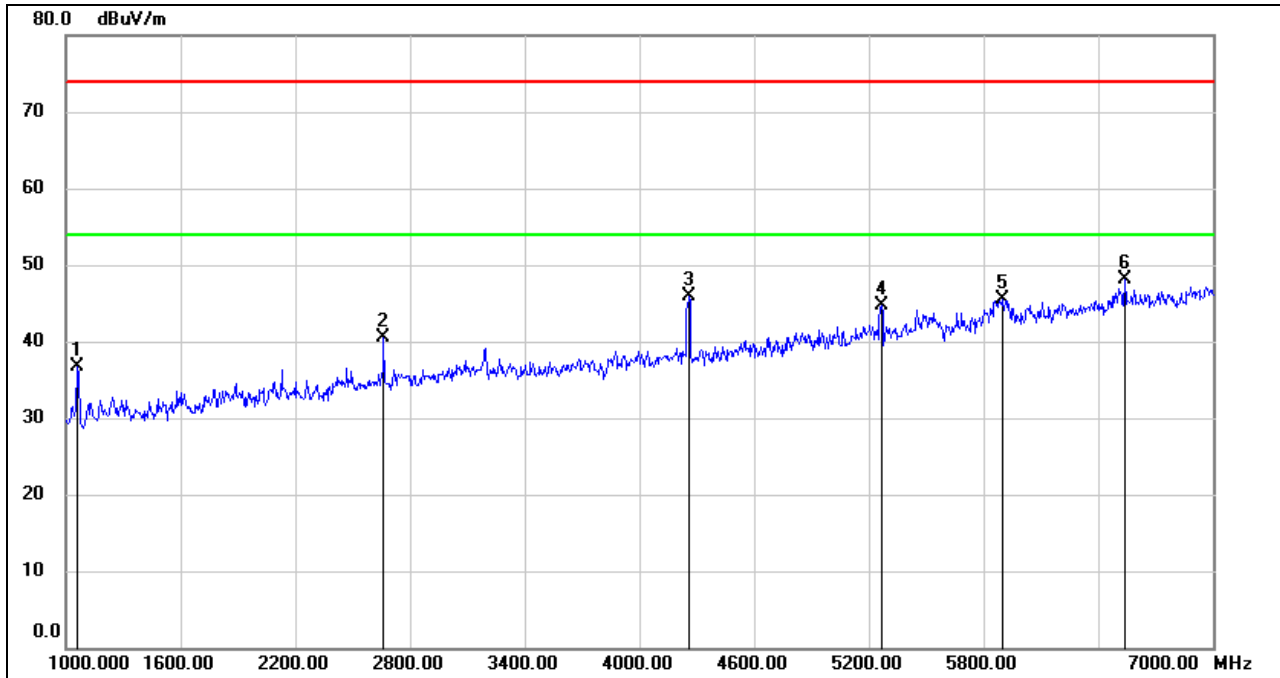
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5350.000	5.38	40.64	46.02	54.00	-7.98	AVG
2	5352.000	5.10	40.63	45.73	54.00	-8.27	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
 2. AVG: $VBW=1/Ton$ where: ton is transmit duration.
 3. For duty cycle, please refer to clause 6.1.
 4. Only the worst case emission will be recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL

HORIZONTAL RESULTS
1-7GHz

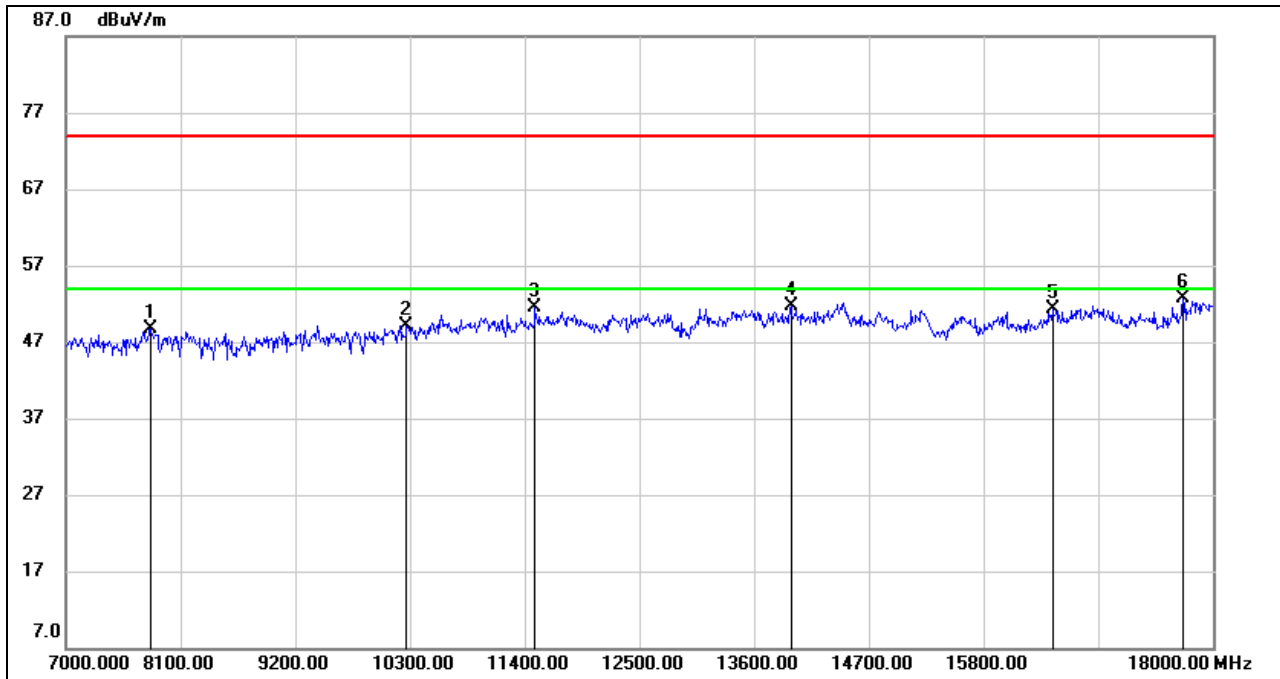


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1060.000	51.27	-14.51	36.76	74.00	-37.24	peak
2	2662.000	48.67	-8.18	40.49	74.00	-33.51	peak
3	4258.000	48.99	-3.08	45.91	74.00	-28.09	peak
4	5266.000	43.78	0.98	44.76	74.00	-29.24	peak
5	5896.000	40.74	4.79	45.53	74.00	-28.47	peak
6	6538.000	42.35	5.75	48.10	74.00	-25.90	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



HORIZONTAL RESULTS
7-18GHz

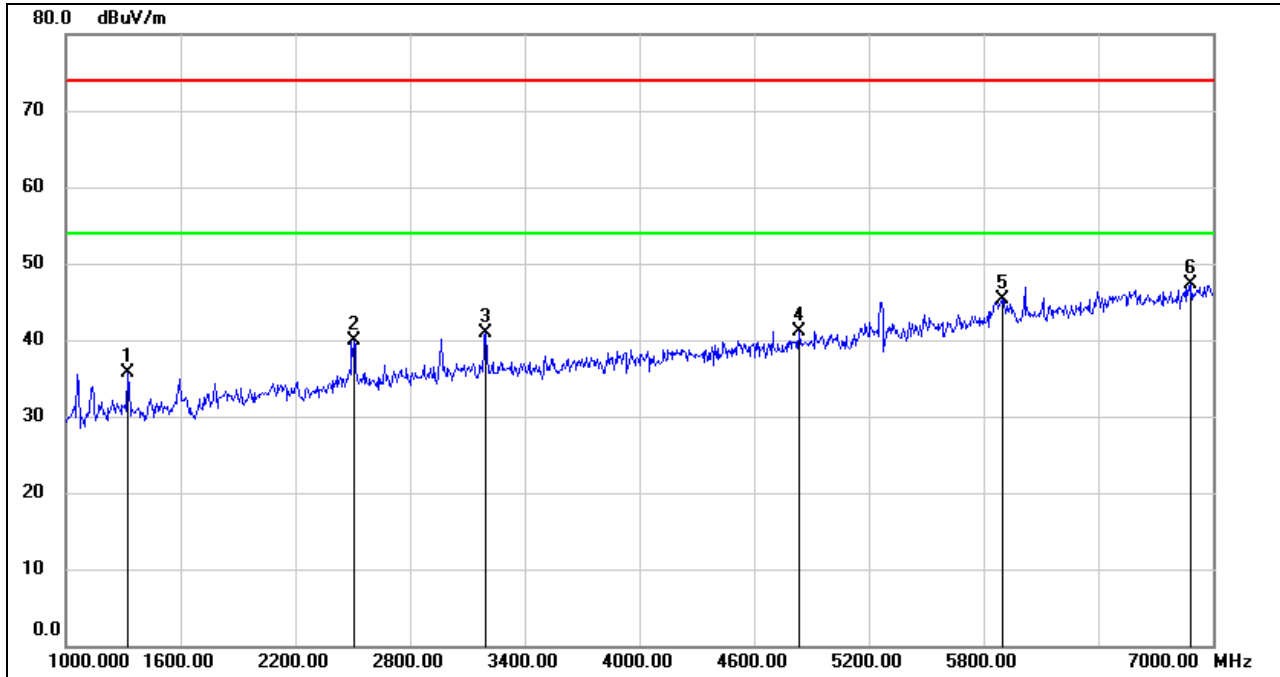


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7814.000	39.10	9.58	48.68	74.00	-25.32	peak
2	10267.000	37.22	11.90	49.12	74.00	-24.88	peak
3	11499.000	37.00	14.43	51.43	74.00	-22.57	peak
4	13952.000	34.92	16.74	51.66	74.00	-22.34	peak
5	16460.000	31.66	19.65	51.31	74.00	-22.69	peak
6	17714.000	30.07	22.71	52.78	74.00	-21.22	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



VERTICAL RESULTS
1-7GHz

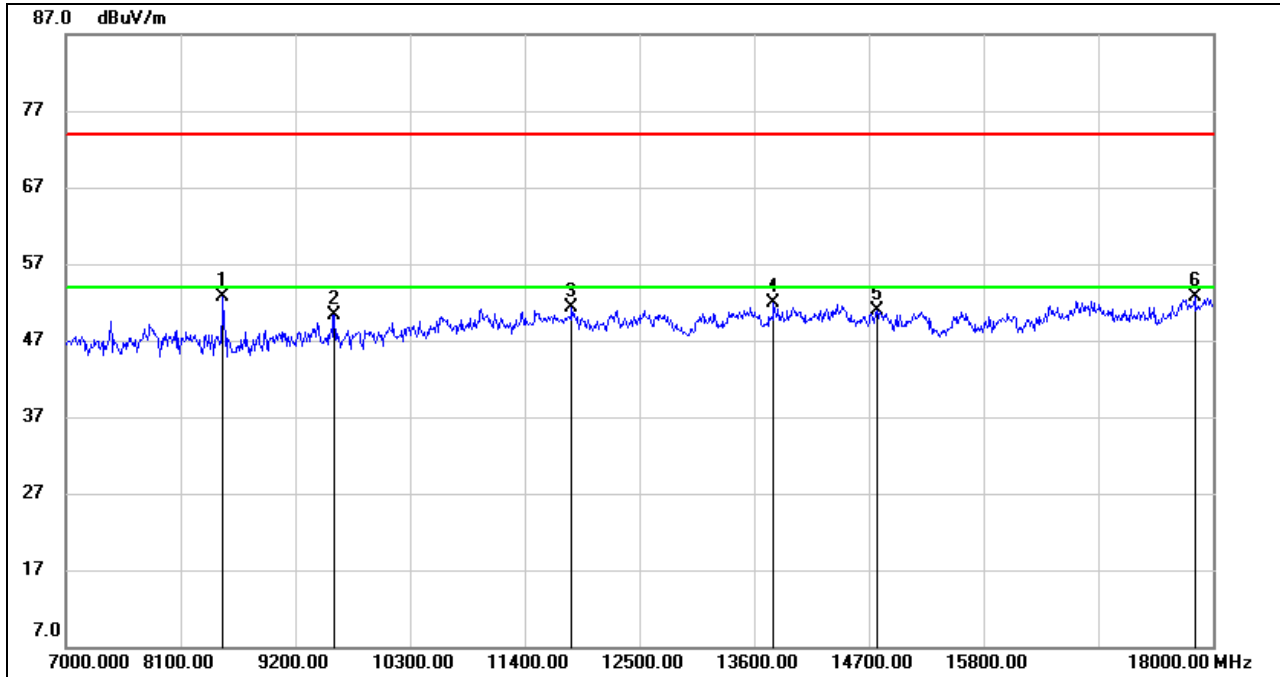


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1324.000	48.84	-13.17	35.67	74.00	-38.33	peak
2	2506.000	48.09	-8.18	39.91	74.00	-34.09	peak
3	3196.000	46.91	-5.96	40.95	74.00	-33.05	peak
4	4834.000	42.04	-0.91	41.13	74.00	-32.87	peak
5	5896.000	40.51	4.79	45.30	74.00	-28.70	peak
6	6886.000	41.19	6.19	47.38	74.00	-26.62	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



7-18GHz



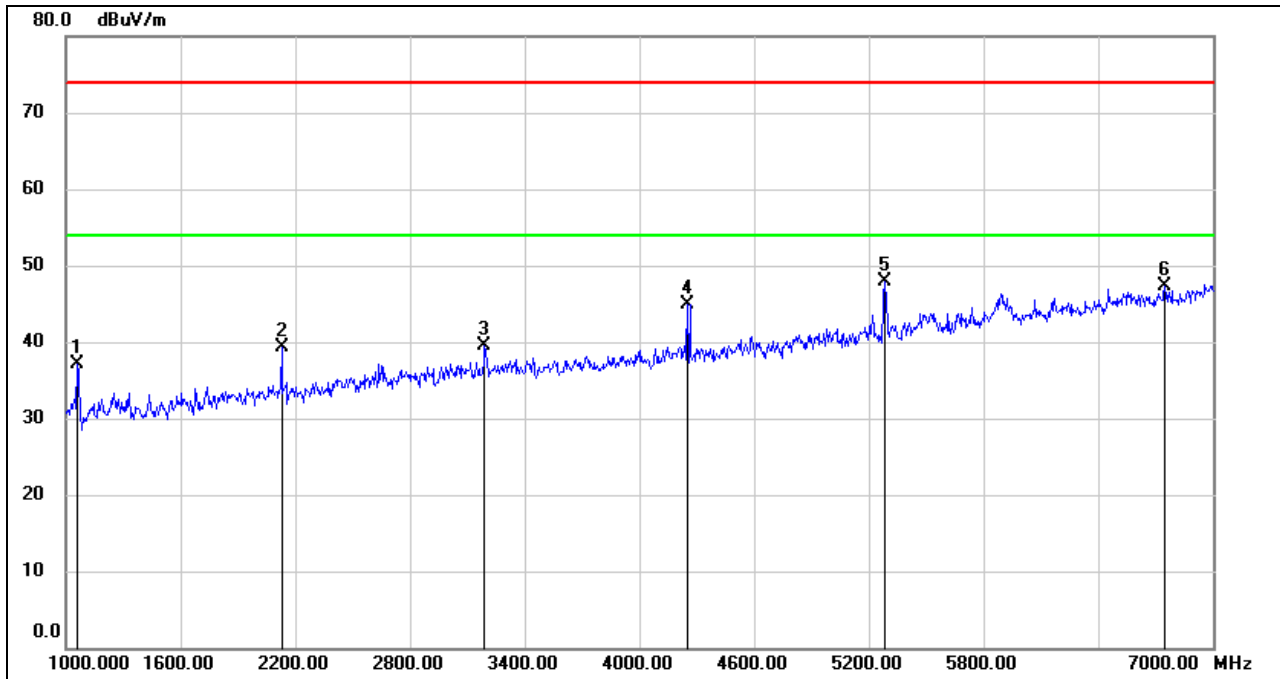
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	8507.000	43.46	9.24	52.70	74.00	-21.30	peak
2	9574.000	39.62	10.64	50.26	74.00	-23.74	peak
3	11851.000	36.79	14.46	51.25	74.00	-22.75	peak
4	13787.000	34.40	17.43	51.83	74.00	-22.17	peak
5	14777.000	34.73	16.17	50.90	74.00	-23.10	peak
6	17824.000	29.18	23.45	52.63	74.00	-21.37	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for HPF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.



HARMONICS AND SPURIOUS EMISSIONS MID CHANNEL

HORIZONTAL RESULTS
1-7GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1060.000	51.53	-14.51	37.02	74.00	-36.98	peak
2	2128.000	49.46	-10.09	39.37	74.00	-34.63	peak
3	3190.000	45.38	-5.94	39.44	74.00	-34.56	peak
4	4252.000	47.90	-3.05	44.85	74.00	-29.15	peak
5	5284.000	46.93	1.00	47.93	74.00	-26.07	peak
6	6748.000	41.63	5.61	47.24	74.00	-26.76	peak

Note: 1. Measurement = Reading Level + Correct Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Peak: Peak detector.
 4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
 5. Proper operation of the transmitter prior to adding the filter to the measurement chain.
 6. Owing to the highest peak level complies with the lowest limit of unwanted emission out of the restricted bands (Please refer to page 72), so all the test point were deemed to comply with the limits list in the standard.