



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

CERTIFICATION TEST REPORT

For

**Wireless Speaker
MODEL NUMBER: LSX**

**FCC ID: UXD18001
IC: 21561-18001**

REPORT NUMBER: 4788430402-4

ISSUE DATE: July 8, 2018

Prepared for

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Prepared by

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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.

Revision History

Rev.	Issue Date	Revisions	Revised By
--	7/8/2018	Initial Issue	



Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	6/26db Bandwidth	FCC 15.407 (a)&(e) RSS-247 Clause 6.2	PASS
2	99% 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	Antenna Requirement	FCC 15.203 RSS-GEN Clause 8.3	PASS
9	Frequency Stability	FCC 15.407 (g)	PASS



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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: GP Electronics (HK) Ltd.
Address: 9/F, Building 12W, 12 Science Park West Avenue, Hong Kong
Science Park, Pak Shek Kok New Territories - Hong Kong

Manufacturer Information

Company Name: GP Electronics (HK) Ltd.
Address: 9/F, Building 12W, 12 Science Park West Avenue, Hong Kong
Science Park, Pak Shek Kok New Territories - Hong Kong

EUT Description

Product Name: Wireless Speaker
Model Name: LSX
Sample Status: Good
Sample Received date: April 23, 2018
Date Tested: April 23~July 6, 2018

APPLICABLE STANDARDS

STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	Pass
ISED RSS-247 Issue 2	Pass
ISED RSS-GEN Issue 5	Pass

Tested By:

Checked By:

Kebo Zhang
Engineer
Approved By:

Shawn Wen
Laboratory Leader

Stephen Guo
Laboratory Manager



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB 789033 D02 v02r01, RSS-GEN Issue 5, RSS-247 Issue 2 and KDB414788 D01 Radiated Test Site v01.

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>IAS (Lab Code: TL-702) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has demonstrated compliance with ISO/IEC Standard 17025:2005, General requirements for the competence of testing and calibration laboratories</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 ISED. 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.



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	2.90dB
Uncertainty for Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	2.2dB
Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.52dB
Uncertainty for Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	5.04dB(1-6GHz)
	5.30dB (6GHz-18Gz)
	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

Equipment	Wireless Speaker
Model Name	LSX
Power Supply	AC120V/60Hz

5.2. MAXIMUM OUTPUT POWER

Frequency Range (MHz)	IEE Std. 802.11	Frequency (MHz)	Max Power (dBm)
UNII-1	a	5150-5250	13.01
UNII-3	a	5725-5850	8.52
UNII-1	n(HT20)	5150-5250	12.22
UNII-3	n(HT20)	5725-5850	8.32
UNII-1	n(HT40)	5150-5250	12.01
UNII-3	n(HT40)	5725-5850	8.90



5.3. CHANNEL LIST

UNII-1(20M)		UNII-1(20M)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190
40	5200	46	5230
44	5220		
48	5240		

UNII-3(40M)		UNII-3(40M)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755
153	5765	159	5795
157	5785		
161	5805		
165	5825		



5.4. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under UNII-1 and UNII-3 Band					
Test Software		Tera Term			

Band	Mode	Rate	Channel	Antenna1	Antenna2
UNII-1	11a	6M	36	63	63
			40	63	63
			48	63	63
UNII-3	11a		149	45	48
			157	50	53
			165	50	53

Band	Mode	Rate	Channel	Antenna1	Antenna2
UNII-1	11n (20M)	MCS0	36	63	63
			40	63	63
			48	63	63
	11n(40M)		38	55	60
			46	55	60
UNII-3	11n (20M)		149	42	44
			157	47	49
			165	47	52
	11n(40M)		151	48	48
			159	48	48



5.5. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna No.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
Antenna 1 (Front)	5150-5250	Internal Antenna	2.6
	5725-5850		5.1
Antenna 2 (Side)	5150-5250		0
	5725-5850		2.1

IEE Std. 802.11	Transmit and Receive Mode
802.11a	1TX
802.11n HT20	1TX
802.11n HT40	1TX

Note:

1. 1TX: The EUT supports Antenna A or Antenna B,
2. The equipment has two antennas but only one antenna active at any moment in time
3. WIFI & BT can't transmit simultaneously. (declared by client)
4. WIFI and 2.4G can transmit simultaneously. (declared by client)

5.6. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	55 ~ 65%	
Atmospheric Pressure:	1025Pa	
Temperature	TN	23 ~ 28°C
Voltage :	VL	N/A
	VN	AC 120V/60Hz
	VH	N/A

Note: VL= Lower Extreme Test Voltage

VN= Nominal Voltage

VH= Upper Extreme Test Voltage

TN= Normal Temperature

**5.7. 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

802.11n HT20/HT40							
Antenna	MCS	Modulation	HT20 Data Rate(Mbps)		HT40 Data Rate(Mbps)		Worst Case (Mbps)
			GI=800ns	GI=400ns	GI=800ns	GI=400ns	
1x1	0	BPSK	6.5	7.2	13.5	15.0	MCS0
	1	QPSK	13.0	14.2	27.0	30.0	MCS0
	2	QPSK	19.5	21.7	40.5	45.0	MCS0
	3	16-QAM	26.0	28.9	54.0	60.0	MCS0
	4	16-QAM	39.0	43.3	81.0	90.0	MCS0
	5	64-QAM	52.0	57.8	108.0	120.0	MCS0
	6	64-QAM	58.5	65.0	121.5	135.0	MCS0
	7	64-QAM	65.0	72.2	135.0	150.0	MCS0

Note:

The equipment has two antennas but only one antenna active at any moment in time. All antenna ports have the same power setting.



5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	Laptop	ThinkPad	T460S	SL10K24796 JS
2	USB TO UART	N/A	N/A	N/A

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	N/A	N/A	0.5	N/A

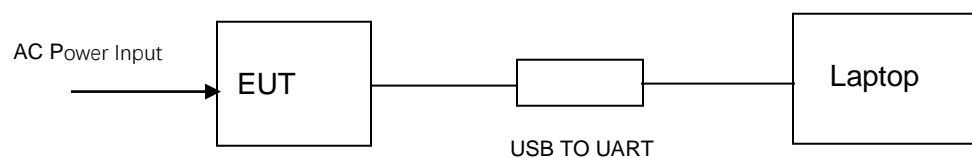
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	N/A	N/A	N/A	N/A

TEST SETUP

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

SETUP DIAGRAM FOR TEST



**5.9. 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.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Two-Line V-Network	R&S	ENV216	101983	Dec.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Dec.12, 2017	Dec.11, 2018
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.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jan.09, 2016	Jan.09, 2019
<input checked="" type="checkbox"/>	Preamplifier	HP	8447D	2944A09099	Dec.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	EMI Measurement Receiver	R&S	ESR26	101377	Dec.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Horn Antenna	TDK	HRN-0118	130939	Jan. 09, 2016	Jan. 09, 2019
<input checked="" type="checkbox"/>	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Jan.06, 2016	Jan.06, 2019
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Dec.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Loop antenna	Schwarzbeck	1519B	00008	Mar. 26, 2016	Mar. 26, 2019
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.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Power Meter	Keysight	N9031A	MY55416024	Dec.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Power Sensor	Keysight	N9323A	MY55440013	Dec.12, 2017	Dec.11, 2018
<input checked="" type="checkbox"/>	Power Sensor	Keysight	U2021XA	MY57030004	Dec.12, 2017	Dec.11, 2018



6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

RESULTS

ANTENNA1

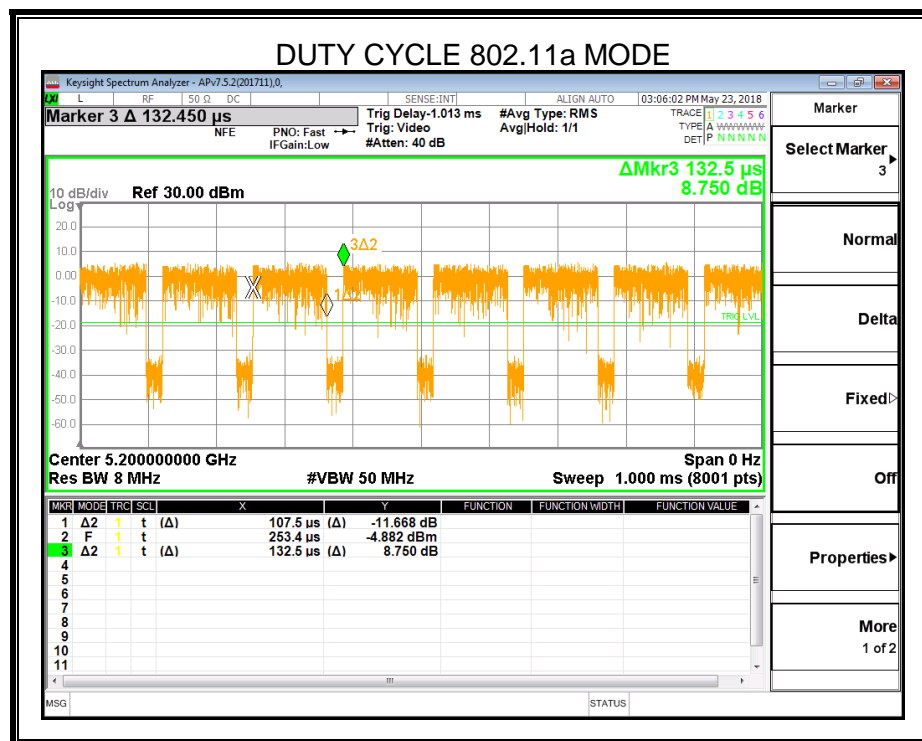
Mode	ON Time (ms)	Period (ms)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (KHz)
11a	0.1075	0.1325	0.811	81.1%	0.91	9.3
11n HT20	0.6561	0.6789	0.966	96.6%	0.15	1.5
11n HT40	0.3053	0.3293	0.927	92.7%	0.33	3.3

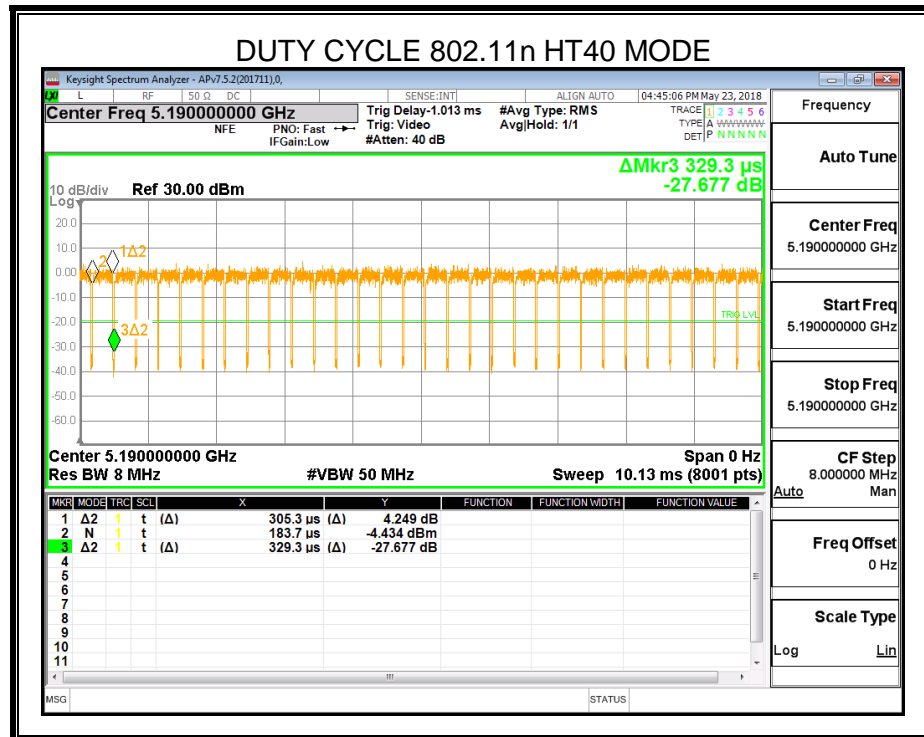
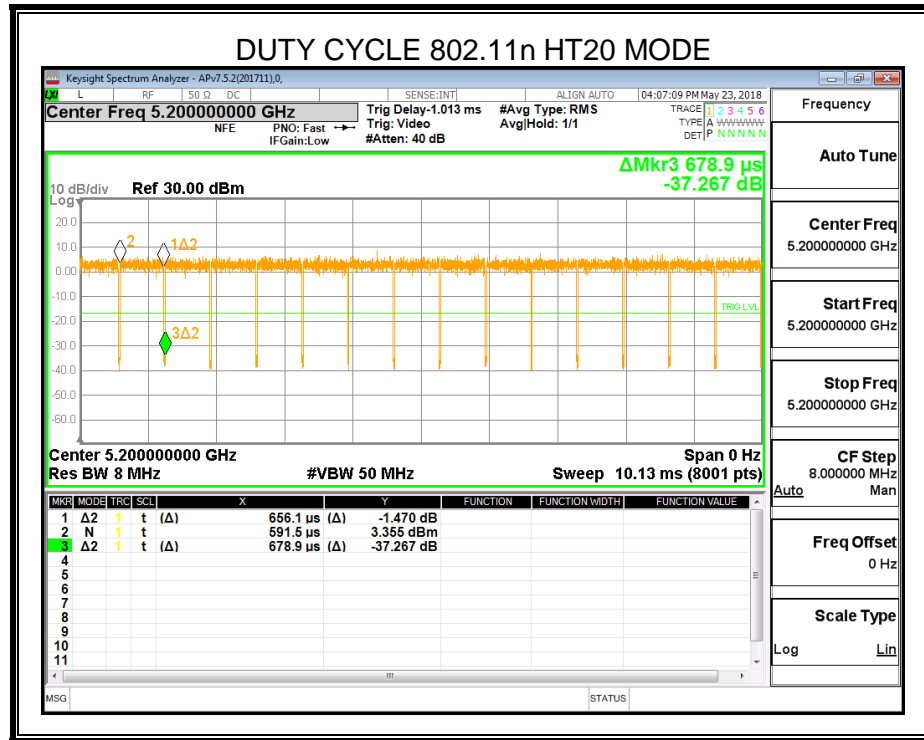
Note: Note: Duty Cycle Correction Factor=10log(1/x).

Where: x is Duty Cycle(Linear)

Where: T is Ton(ms)

Antenna 1 and Antenna 2 has the same duty cycle, only Antenna 1 data show here.







6.2. 6/26/99% dB BANDWIDTH

LIMITS

FCC Part15, Subpart E/ 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

RSS-247 ISSUE 2			
RSS-Gen Clause 6.6	99% Bandwidth	For reporting purposes only.	2400-2483.5

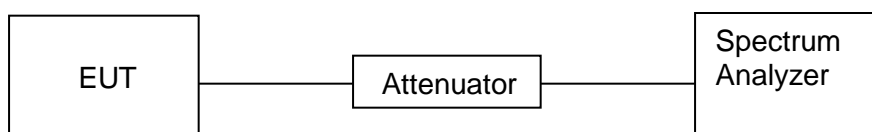
TEST PROCEDUREC

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% of the emission bandwidth. For 99dB Bandwidth: approximately 1%~5% of the emission bandwidth.
VBW	For 6dB Bandwidth : VBW=300kHz For 26dB Bandwidth : >3RBW For 99%dB 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 6/26/99% dB relative to the maximum level measured in the fundamental emission.

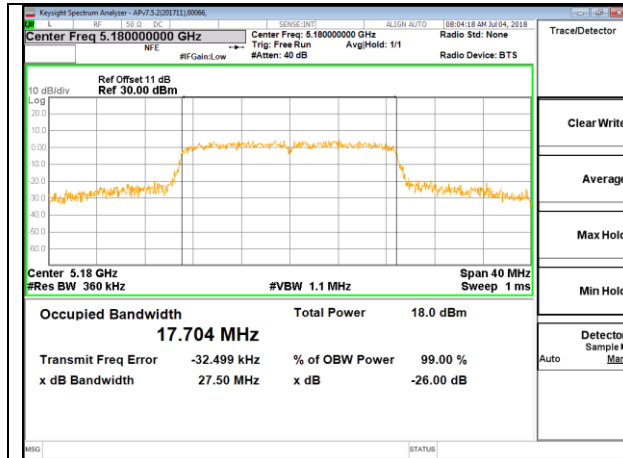
TEST SETUP



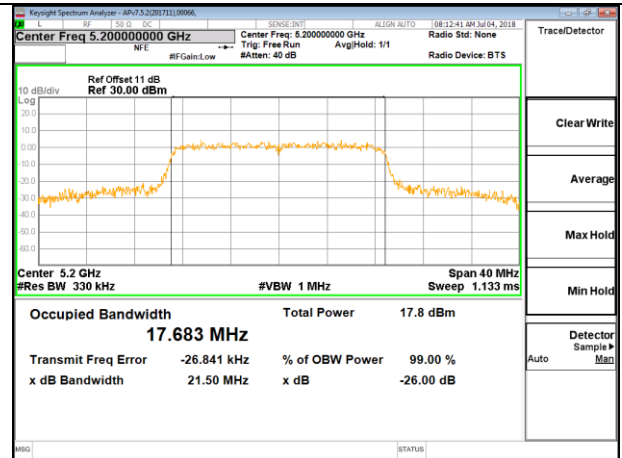
**RESULTS****6.2.1. 802.11a SISO MODE****6.2.1.1. UNII-1 BAND**

Channel	Frequency (MHz)	26 dB BW ANT1 (MHz)	26 dB BW ANT2 (MHz)
Low	5180	27.50	21.57
Mid	5200	21.50	23.80
High	5240	25.14	21.01

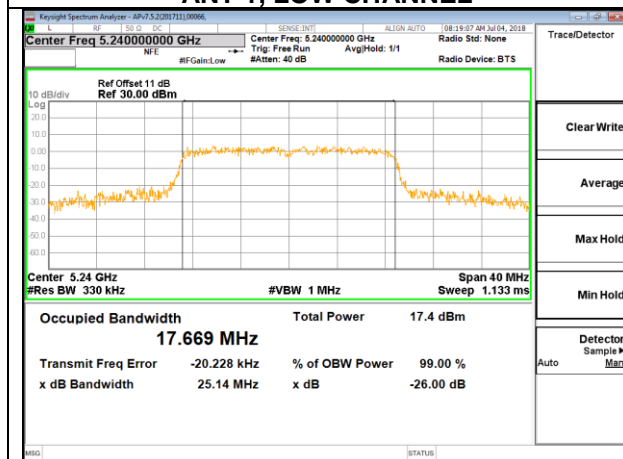
Channel	Frequency (MHz)	99% BW ANT1 (MHz)	99% BW ANT2 (MHz)
Low	5180	17.704	17.593
Mid	5200	17.683	17.602
High	5240	17.669	17.631



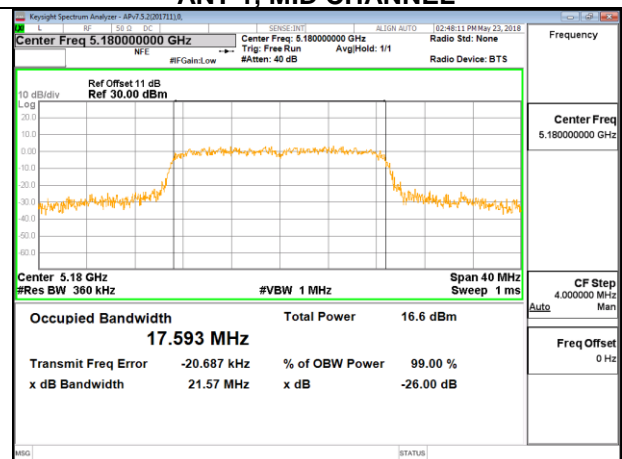
ANT 1, LOW CHANNEL



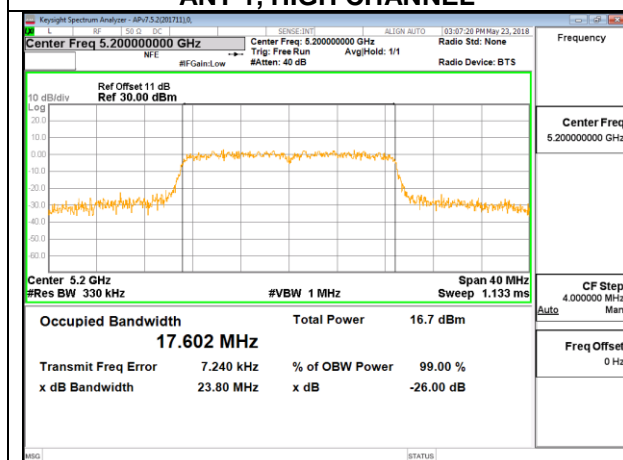
ANT 1, MID CHANNEL



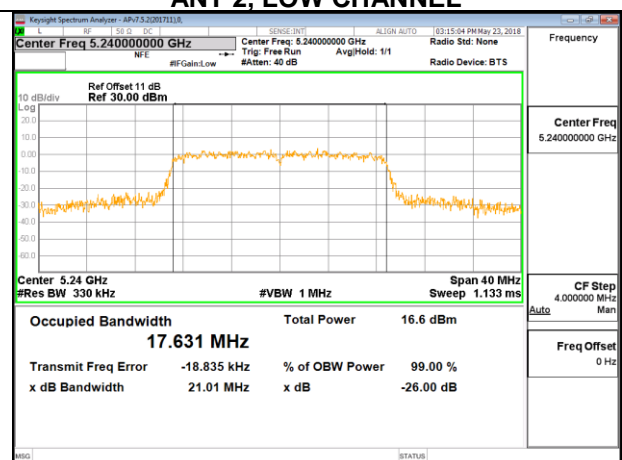
ANT 1, HIGH CHANNEL



ANT 2, LOW CHANNEL



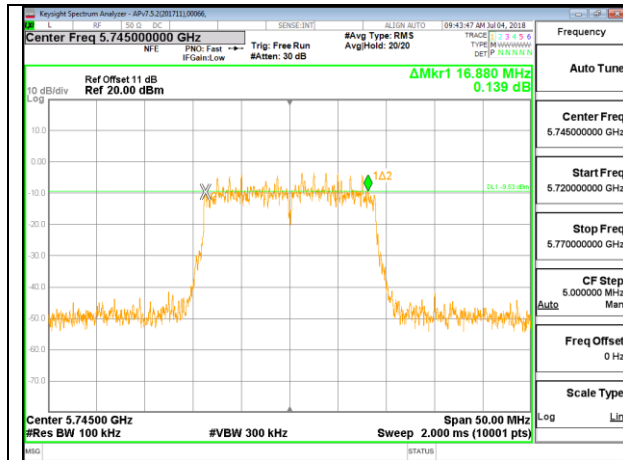
ANT 2, MID CHANNEL



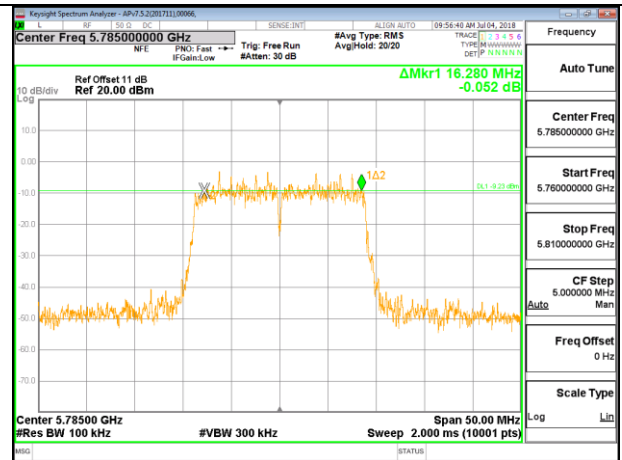
ANT 2, HIGH CHANNEL

**6.2.1.2. UNII-3 BAND**

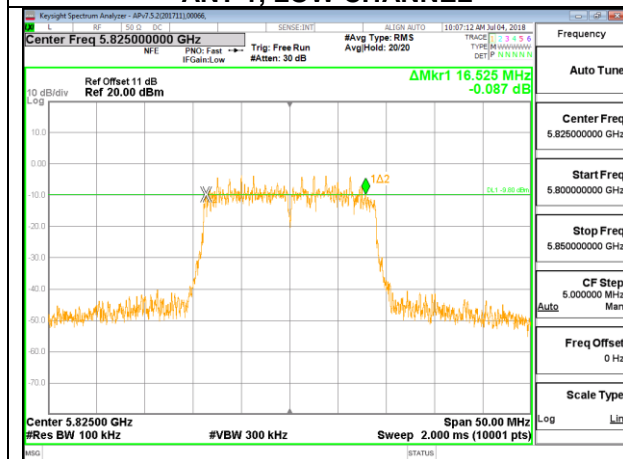
Channel	Frequency (MHz)	6 dB BW ANT1 (MHz)	6 dB BW ANT2 (MHz)	Limit (KHz)	Result
Low	5745	16.880	16.565	500	PASS
Mid	5785	16.280	16.995	500	PASS
High	5825	16.525	16.575	500	PASS



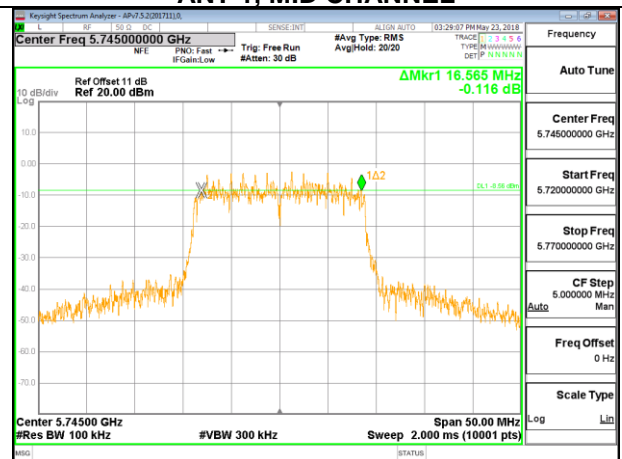
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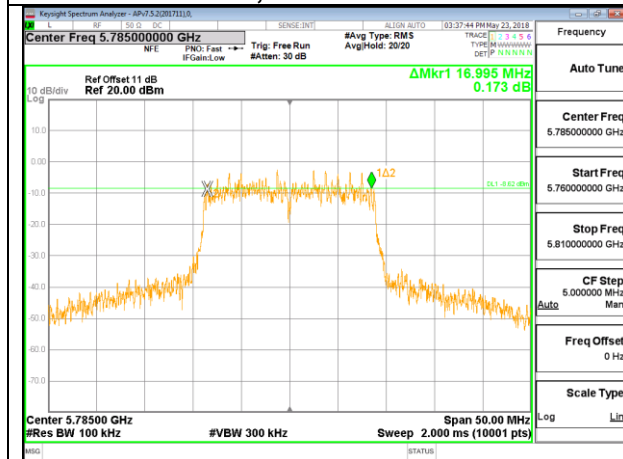
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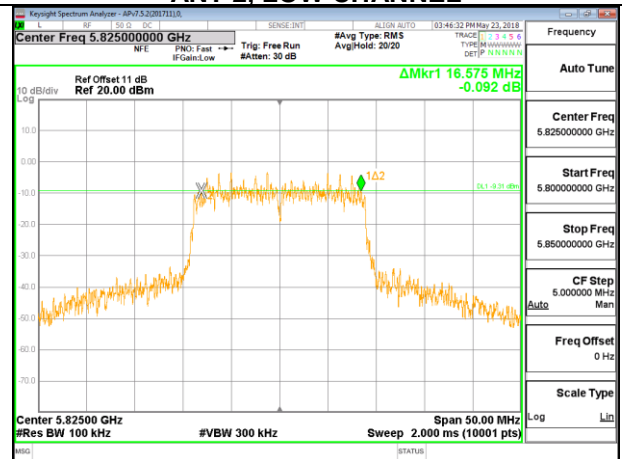
ANT 1, HIGH CHANNEL



ANT 2, LOW CHANNEL



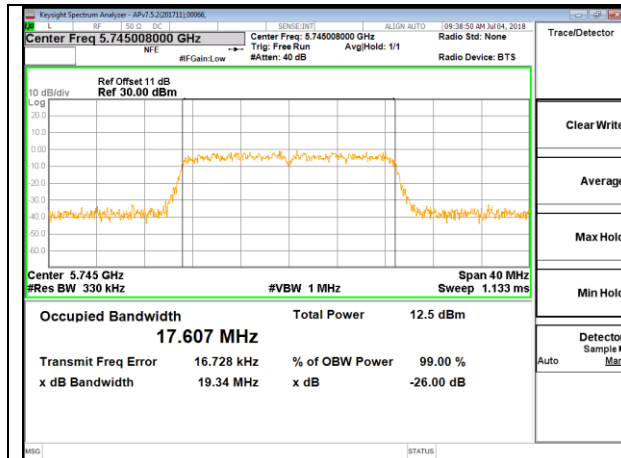
ANT 2, MID CHANNEL



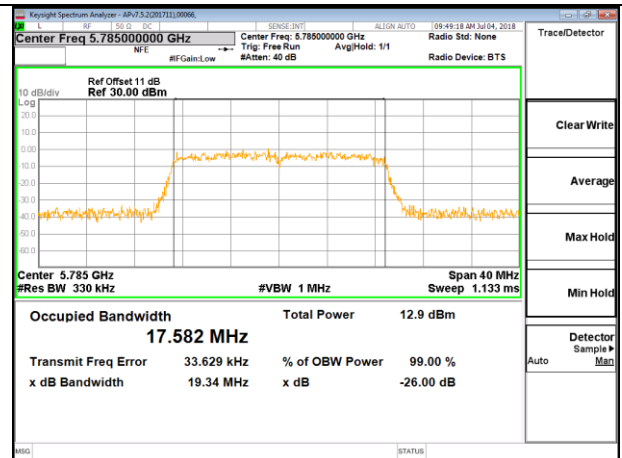
ANT 2, HIGH CHANNEL



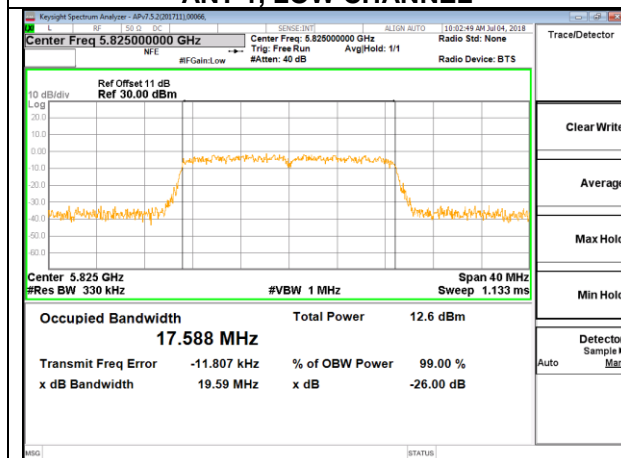
Channel	Frequency (MHz)	99% BW ANT1 (MHz)	99% BW ANT2 (MHz)
Low	5745	17.607	17.586
Mid	5785	17.582	17.571
High	5825	17.588	17.623



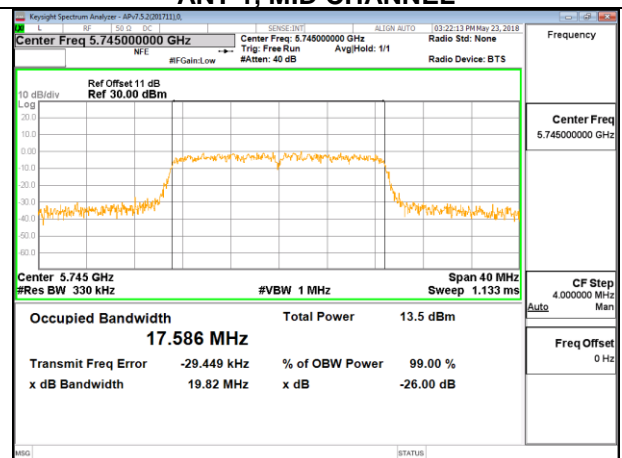
ANT 1, LOW CHANNEL



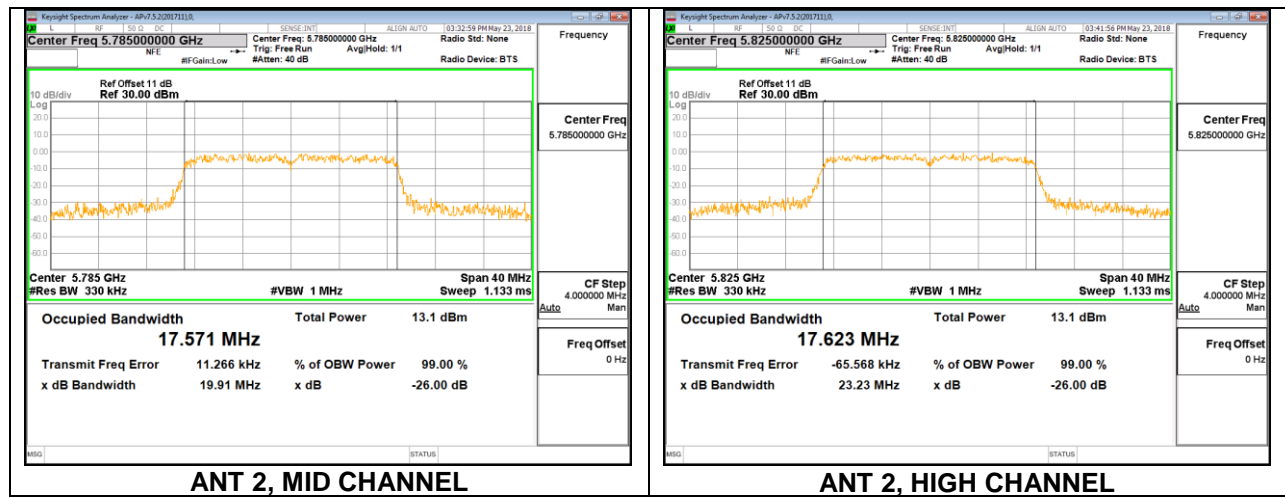
ANT 1, MID CHANNEL



ANT 1, HIGH CHANNEL



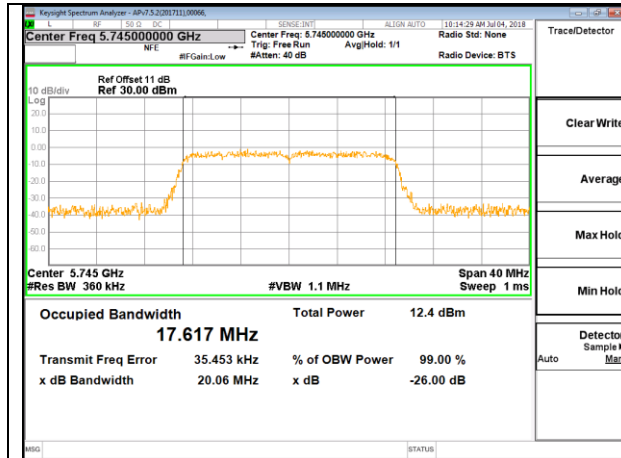
ANT 2, LOW CHANNEL



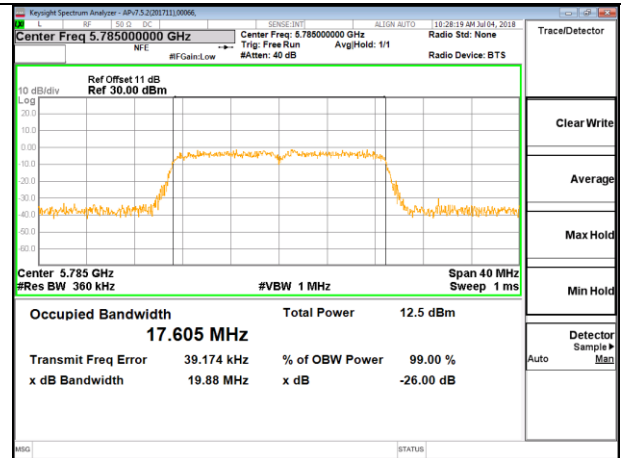
**6.2.2. 802.11n HT20 MODE****6.2.2.1. UNII-1 BAND**

Channel	Frequency (MHz)	26 dB BW ANT1 (MHz)	26 dB BW ANT2 (MHz)
Low	5180	20.06	26.30
Mid	5200	19.88	28.92
High	5240	19.72	26.74

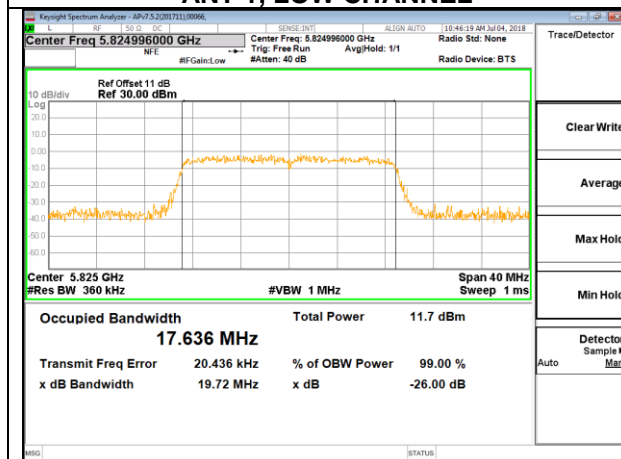
Channel	Frequency (MHz)	99% dB BW ANT1 (MHz)	99% dB BW ANT2 (MHz)
Low	5180	17.671	17.679
Mid	5200	17.605	17.667
High	5240	17.636	17.675



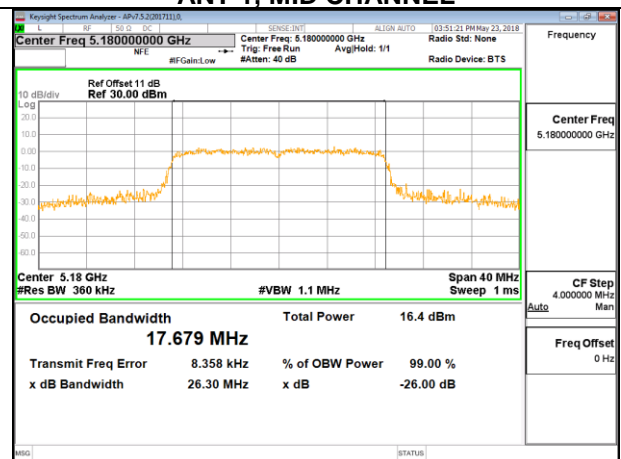
ANT 1, LOW CHANNEL



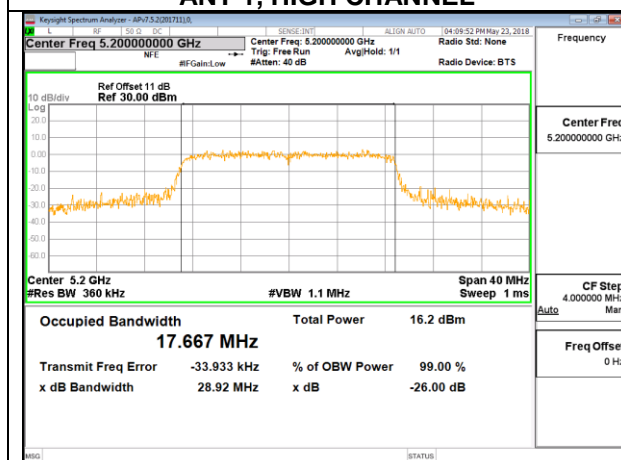
ANT 1, MID CHANNEL



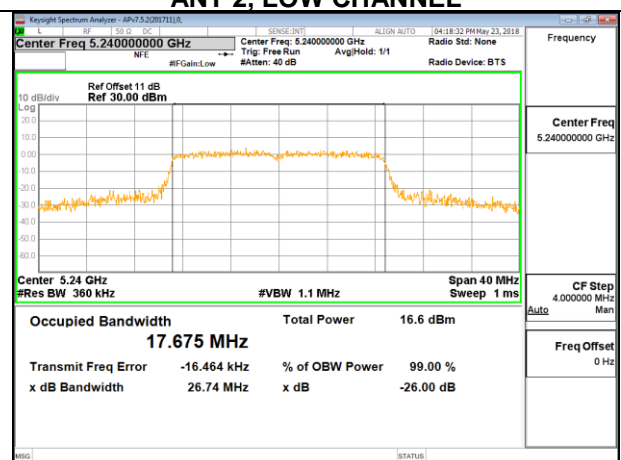
ANT 1, HIGH CHANNEL



ANT 2, LOW CHANNEL



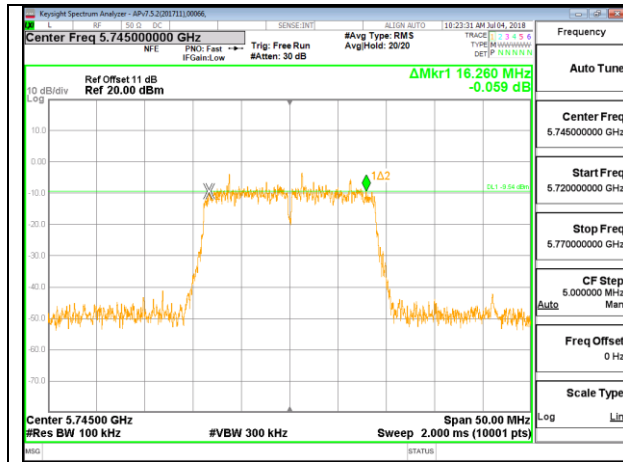
ANT 2, MID CHANNEL



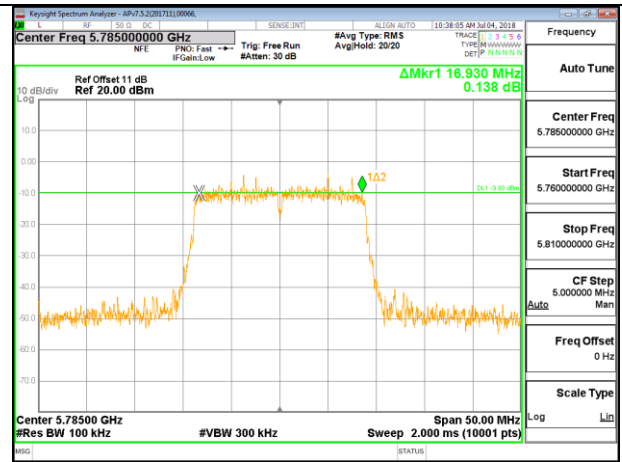
ANT 2, HIGH CHANNEL

**6.2.2.2. UNII-3 BAND**

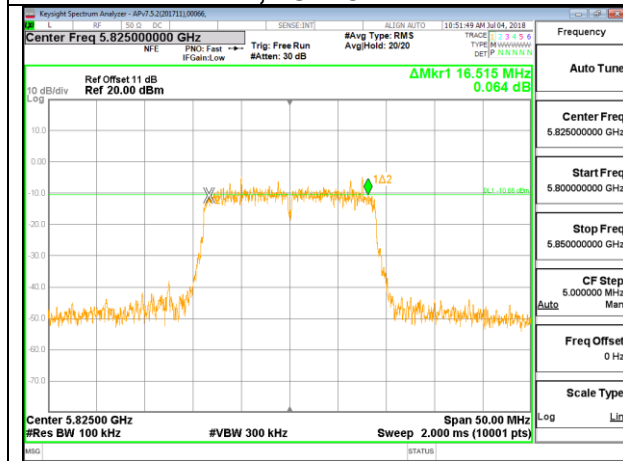
Channel	Frequency (MHz)	6 dB BW ANT1 (MHz)	6 dB BW ANT2 (MHz)	Limit (KHz)	Result
Low	5745	16.260	17.160	500	PASS
Mid	5785	16.930	17.035	500	PASS
High	5825	16.515	16.030	500	PASS



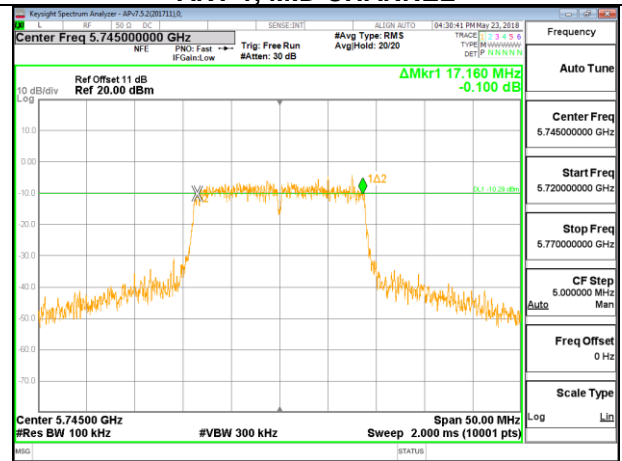
ANT 1, LOW CHANNEL



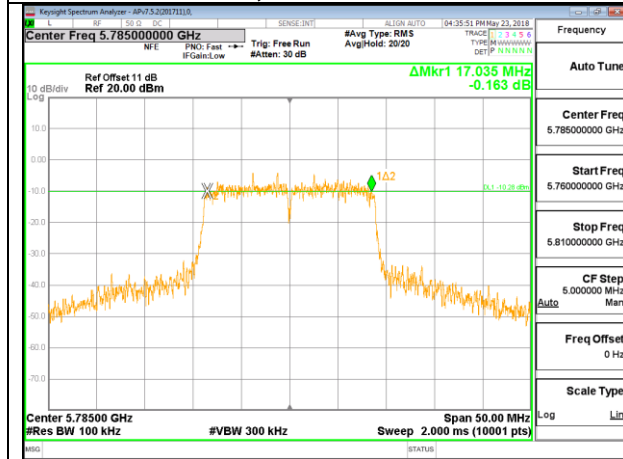
ANT 1, MID CHANNEL



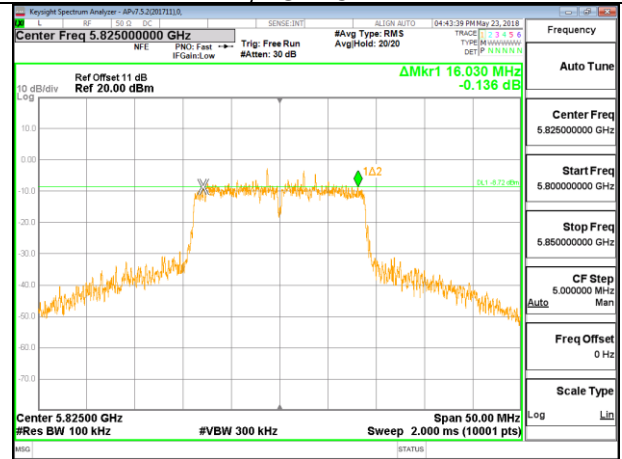
ANT 1, HIGH CHANNEL



ANT 2, LOW CHANNEL



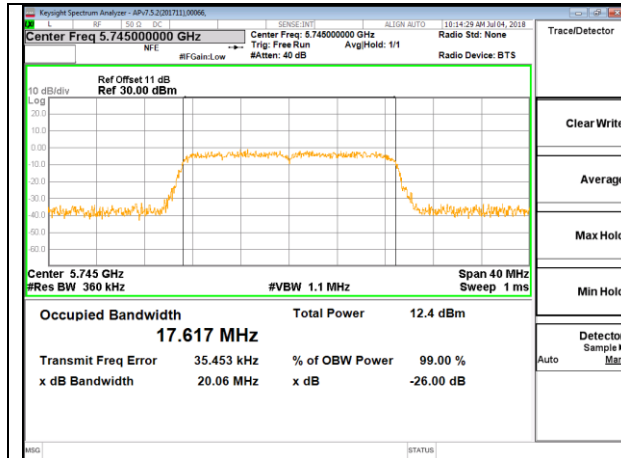
ANT 2, MID CHANNEL



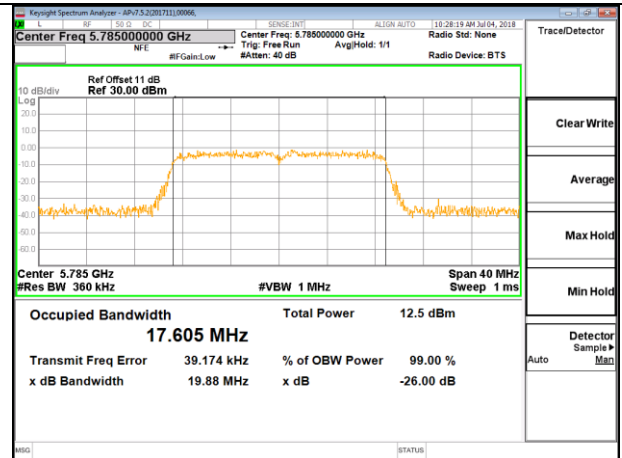
ANT 2, HIGH CHANNEL



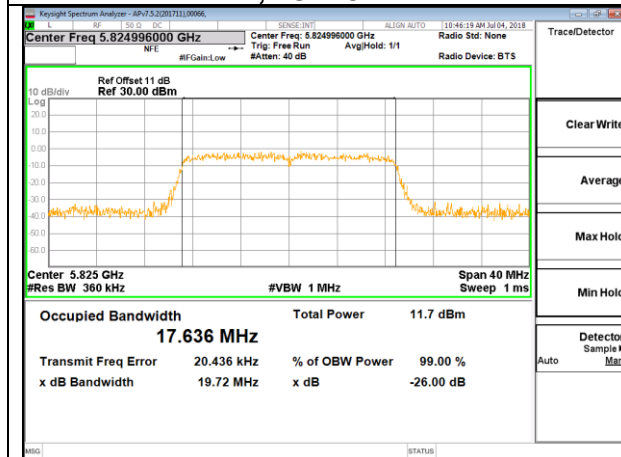
Channel	Frequency (MHz)	99% dB BW ANT1 (MHz)	99% dB BW ANT2 (MHz)
Low	5745	17.617	17.643
Mid	5785	17.605	17.612
High	5825	17.636	17.695



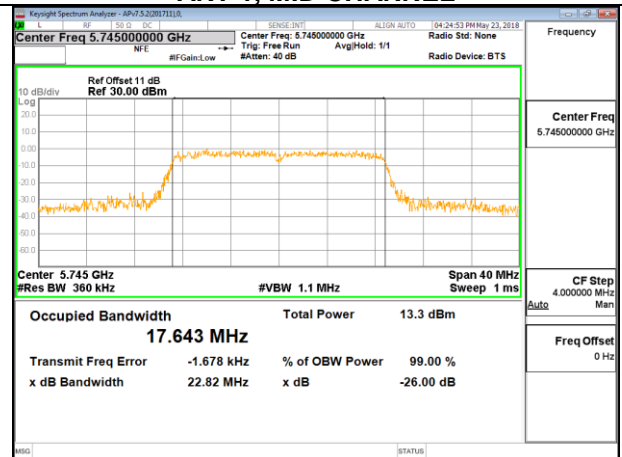
ANT 1, LOW CHANNEL



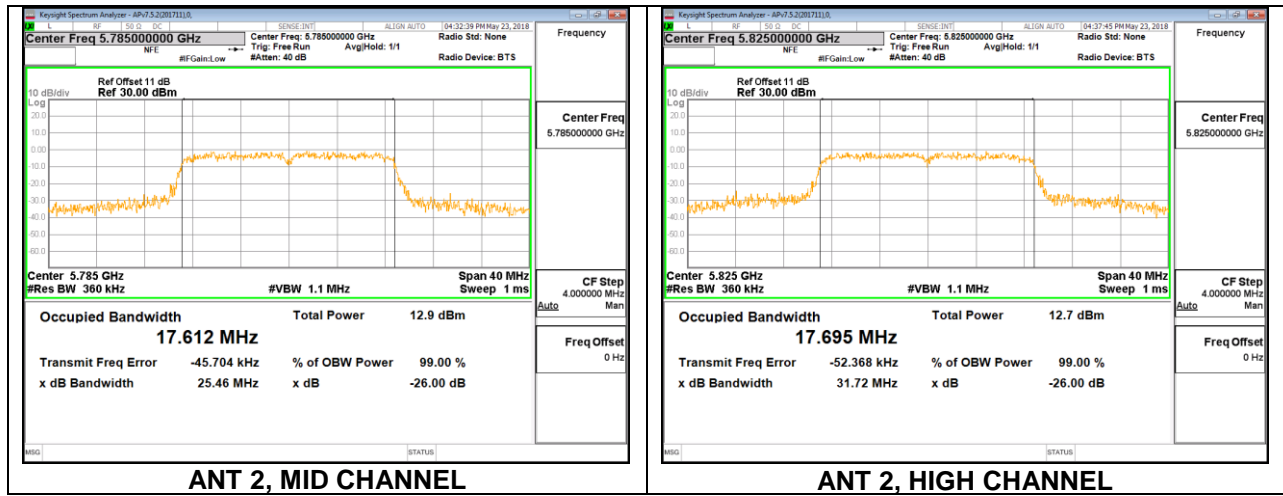
ANT 1, MID CHANNEL



ANT 1, HIGH CHANNEL



ANT 2, LOW CHANNEL



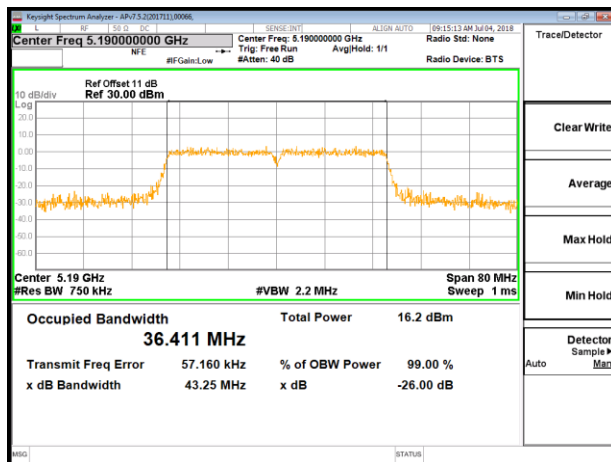


6.2.3. 802.11n HT40 MODE

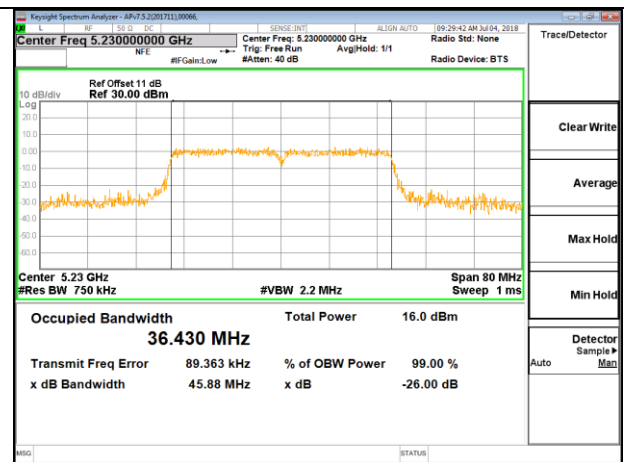
6.2.3.1. UNII-1 BAND

Channel	Frequency (MHz)	26 dB BW ANT1 (MHz)	26 dB BW ANT2 (MHz)
Low	5190	43.25	45.95
High	5230	45.88	46.36

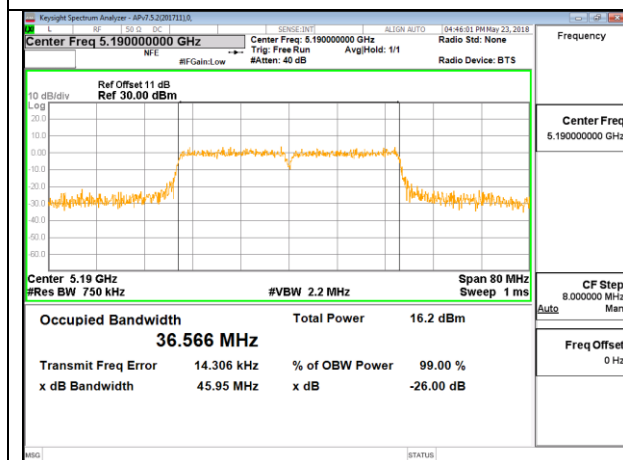
Channel	Frequency (MHz)	99% dB BW ANT1 (MHz)	99% dB BW ANT2 (MHz)
Low	5190	36.411	36.566
High	5230	36.430	36.655



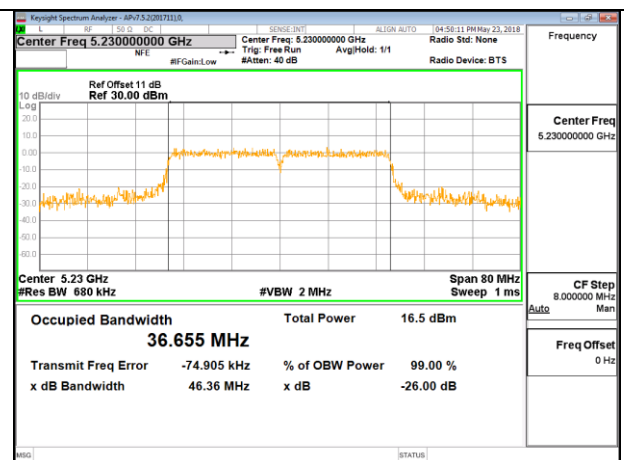
ANT 1, LOW CHANNEL



ANT 1, HIGH CHANNEL



ANT 2, LOW CHANNEL

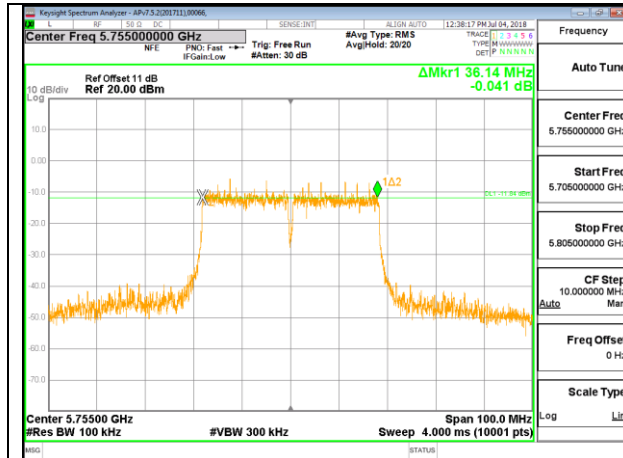


ANT 2, HIGH CHANNEL

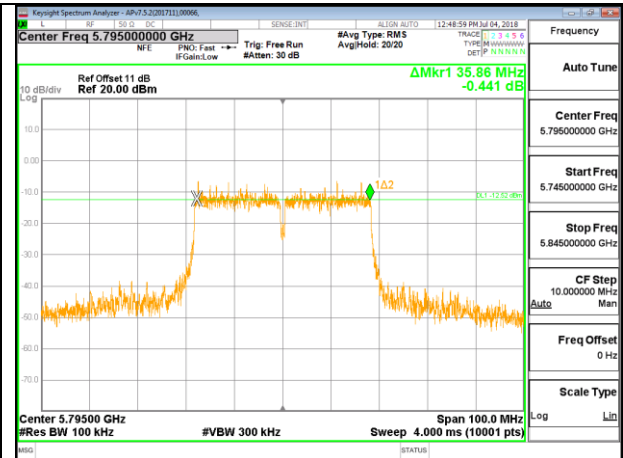


6.2.3.2. UNII-3 BAND

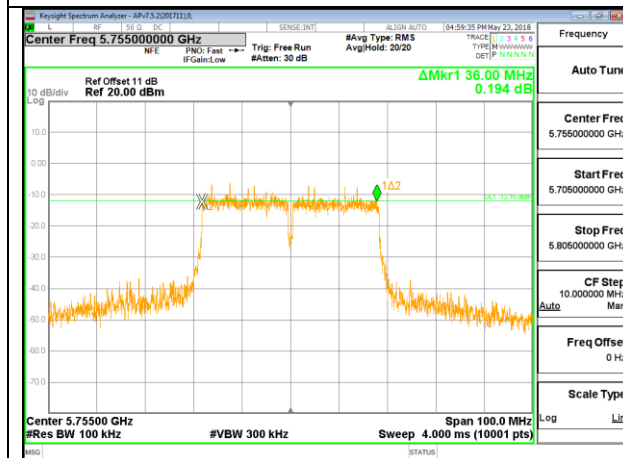
Channel	Frequency (MHz)	6 dB BW ANT1 (MHz)	6 dB BW ANT2 (MHz)	Limit (KHz)	Result
Low	5755	36.14	36.00	500	PASS
High	5795	35.86	36.15	500	PASS



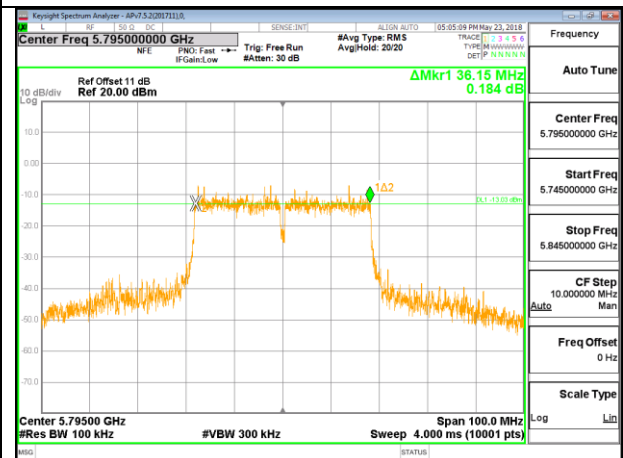
ANT 1, LOW CHANNEL



ANT 1, HIGH CHANNEL



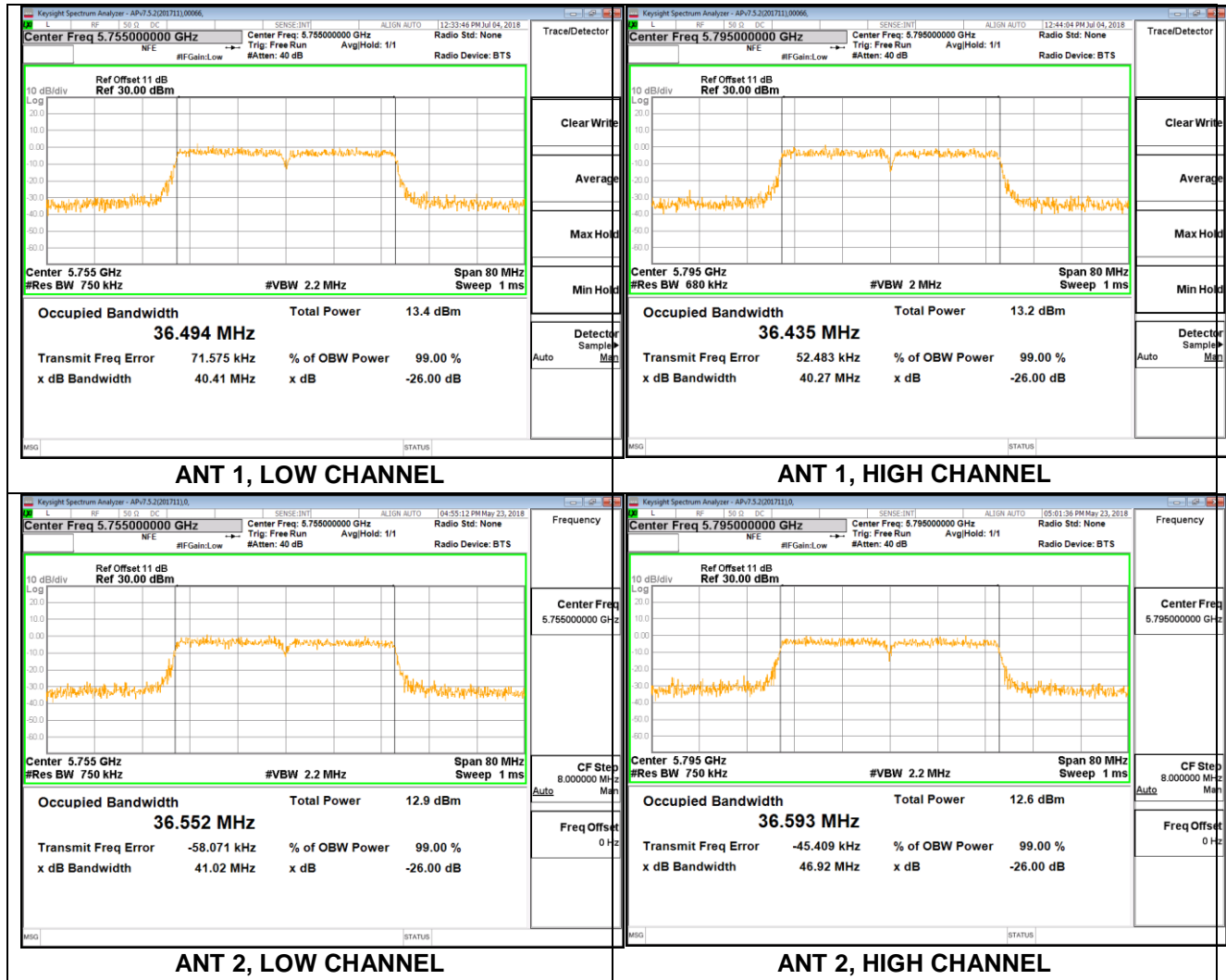
ANT 2, LOW CHANNEL



ANT 2, HIGH CHANNEL



Channel	Frequency (MHz)	99% dB BW ANT1 (MHz)	99% dB BW ANT2 (MHz)
Low	5755	36.494	36.552
High	5795	36.435	36.593





6.3. MAXIMUM CONDUCTED OUTPUT POWER

LIMITS

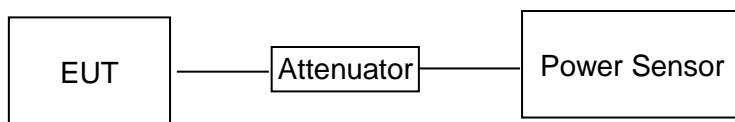
FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
Conducted Output Power	For FCC client devices :250mW (24dBm)	5150-5250
	For RSS:e.i.r.p. power: not exceed 200 mW(23dBm) or $10 + 10 \log_{10} B$	
	250mW (24dBm)	5250-5350
	250mW (24dBm)	For FCC:5470-5725 For IC:5470-5600 5650-5725
	1 Watt (30dBm)	5725-5850

TEST PROCEDURE

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

Connect the EUT to the a broadband peak 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.

TEST SETUP



**RESULTS****6.3.1. 802.11a MODE****6.3.1.1. UNII-1 BAND**

Test Channel	Frequency (MHz)	ANT	Maximum AVG Conducted Output Power (dBm)		EIRP For IC (dBm)	FCC Limit (dBm)	IC Limit (dBm)
			Single	Total			
Low	5180	1	12.76	N/A	15.36	24	23
		2	12.65		12.65		
Middle	5200	1	12.72		15.32		
		2	12.87		12.87		
High	5240	1	12.90		15.50		
		2	13.01		13.01		

6.3.1.2. UNII-3 BAND

Test Channel	Frequency (MHz)	ANT	Maximum AVG Conducted Output Power (dBm)		FCC Limit (dBm)	IC Limit (dBm)
			Single	Total		
Low	5745	1	8.37	N/A	30	30
		2	8.19			
Middle	5785	1	8.51			
		2	8.15			
High	5825	1	8.52			
		2	7.97			

NOTE: 1.EIRP= Maximum Conducted Output Power + ANT GAIN

2. Maximum Conducted Output Power= Conducted Output Power+ Correction Factor

3. About correction Factor please refer to section 6.1

**6.3.2. 802.11n HT20 MODE****6.3.2.1. UNII-1 BAND**

Test Channel	Frequency (MHz)	ANT	Maximum AVG Conducted Output Power (dBm)		EIRP For IC (dBm)	FCC Limit (dBm)	IC Limit (dBm)
			Single	Total			
Low	5180	1	11.88	N/A	14.48	24	23
		2	11.95		11.95		
Middle	5200	1	12.03		14.63		
		2	12.05		12.05		
High	5240	1	12.19		14.79		
		2	12.22		12.22		

6.3.2.2. UNII-3 BAND

Test Channel	Frequency (MHz)	ANT	Maximum AVG Conducted Output Power (dBm)		FCC Limit (dBm)	IC Limit (dBm)
			Single	Total		
Low	5745	1	8.11	N/A	30	30
		2	8.18			
Middle	5785	1	8.32			
		2	8.14			
High	5825	1	8.31			
		2	8.20			

NOTE: 1.EIRP= Maximum Conducted Output Power + ANT GAIN

2. Maximum Conducted Output Power= Conducted Output Power+ Correction Factor

3. About correction Factor please refer to section 6.1



6.3.3. 802.11n HT40 MODE

6.3.3.1. UNII-1 BAND

Test Channel	Frequency (MHz)	ANT	Maximum AVG Conducted Output Power (dBm)		EIRP For IC (dBm)	FCC Limit (dBm)	IC Limit (dBm)
			Single	Total			
Low	5190	1	11.24	NA	13.84	24	23
		2	11.87		11.87		
High	5230	1	11.44		14.04		
		2	12.01		12.01		

6.3.3.2. UNII-3 BAND

Test Channel	Frequency (MHz)	ANT	Maximum AVG Conducted Output Power (dBm)		FCC Limit (dBm)	IC Limit (dBm)
			Single	Total		
Low	5755	1	8.29	NA	30	30
		2	8.90			
High	5795	1	8.16			
		2	8.73			

NOTE: 1.EIRP= Maximum Conducted Output Power + ANT GAIN

2. Maximum Conducted Output Power= Conducted Output Power+ Correction Factor

3. About correction Factor please refer to section 6.1



6.4. POWER SPECTRAL DENSITY

LIMITS

FCC Part15, Subpart E/ 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:10dBm/MHz	
	11dBm/MHz	5250-5350
	11dBm/MHz	For FCC:5470-5725 For IC:5470-5600 5650-5725
	30dBm/500kHz	5725-5850

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	Max hold
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	Max hold
Sweep time	Auto

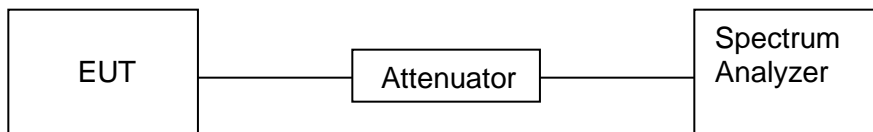


Note:

1. For UNII-3, according to KDB publication 789033 D02 General UNII Test Procedures New Rules v01, section II.F.5., it is acceptable to set RBW at 1MHz and VBW at 3MHz if the spectrum analyzer does not have 500kHz RBW.
2. The value measured with RBW=1MHz is to be added with $10\log(500\text{kHz}/1\text{MHz})$ which is - 3dB. For example, if the measured value is +10dBm using RBW=1MHz (that is +10dBm/MHz), then the converted value will be +7dBm/500kHz.

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

TEST SETUP



RESULTS

**6.4.1. 802.11a MODE****6.4.1.1. UNII-1 BAND**

Test Channel	Frequency (MHz)	ANT	Meas. Level (dBm/MHz)		FCC Limit (dBm/MHz)	IC Limit (dBm/MHz)
			Single	PSD		
Low	5180	1	1.500	2.410	10	10
		2	0.484	1.394		
Middle	5200	1	1.303	2.213		
		2	0.552	1.462		
High	5240	1	1.506	2.416		
		2	0.796	1.706		

Duty Cycle CF (dB)	0.91
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Note: 1.PSD=Meas. Level+ Correction Factor

2. About correction Factor please refer to section 6.1